



SHRI SHIVAJI EDUCATION SOCIETY, AMRAVATI'S
SHRI SHIVAJI SCIENCE COLLEGE, AMRAVATI



NAAC Accredited by Grade A with CGPA 3.13 (3rd Cycle)
UGC awarded status of College with Potential for Excellence (2nd Phase)
ISO 9000:2015 Certified College

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4TH Cycle

Assessment & Accreditation by NAAC

Criterion-III

RESEARCH, INNOVATIONS AND EXTENSION

Metric No – 3.3.3

Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years (10)

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UGC Awarded College with Potential for Excellence ISO 9000:2015 certified College
Identified by DST for FIST and SGB Amravati University as Lead College

Shri Shivaji Science College

Shivaji Nagar, Morshi Road, Amravati - 444 603 M.S.

❖ *Founder* : Dr. Panjabrao Alias Bhausahb Deshmukh
❖ *President* : Hon. Shri Harshwardhan P. Deshmukh
❖ *Principal* : Dr. G. V. Korpe

E-mail : shivajiscamt.office@gmail.com
Web Site : www.shivajiscamt.org
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Ref. No.: SSSC/6471/IQAC/2021

Date: Nov. 22nd, 2021

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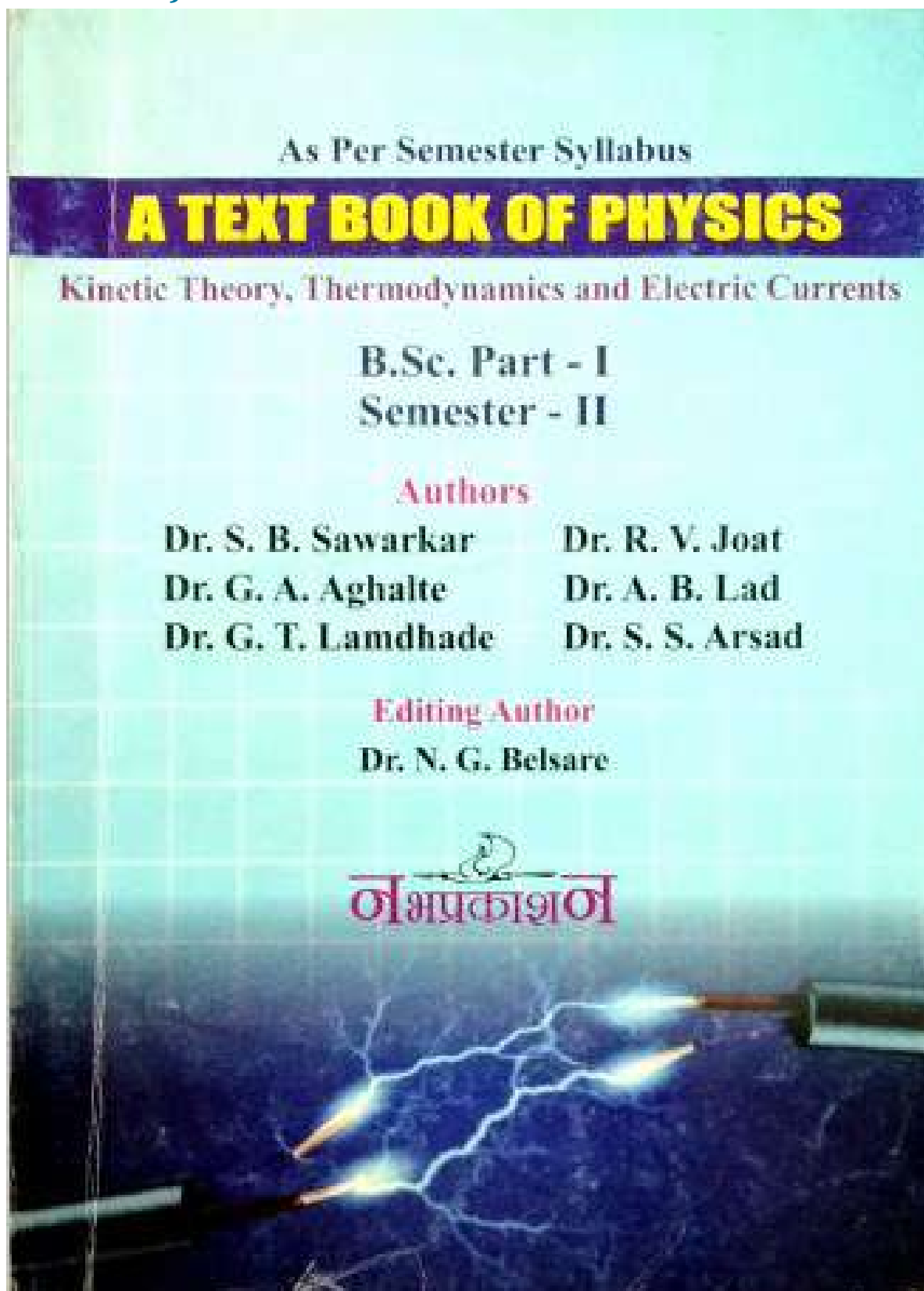
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H. S. Lunge
IQAC Coordinator
Shri Shivaji Science College
Amravati




G. V. Korpe
Chairman IQAC and Principal
Shri Shivaji Science College,
Amravati

1. Arsad SS: A Text Book of Physics B.Sc. I, Sem II (Liquefaction of Gases)



A TEXT BOOK OF PHYSICS

B.Sc.I Semester-II

ISBN- 978-81-905776-103-6

Edition: First 2016-17

Editor:

Dr. N.G. Belsare

Head, Department of Physics,

Vidyabharati Mahavidyalaya, Amravati.

Publisher:

Millad Dabake

Nabh Prakashan

Shyam Nagar, Amravati- 444 606

Mo. – 7798204500, 8177838400

Printer

Nabh Offset Printer

Shyam Nagar, Amravati- 444 606.

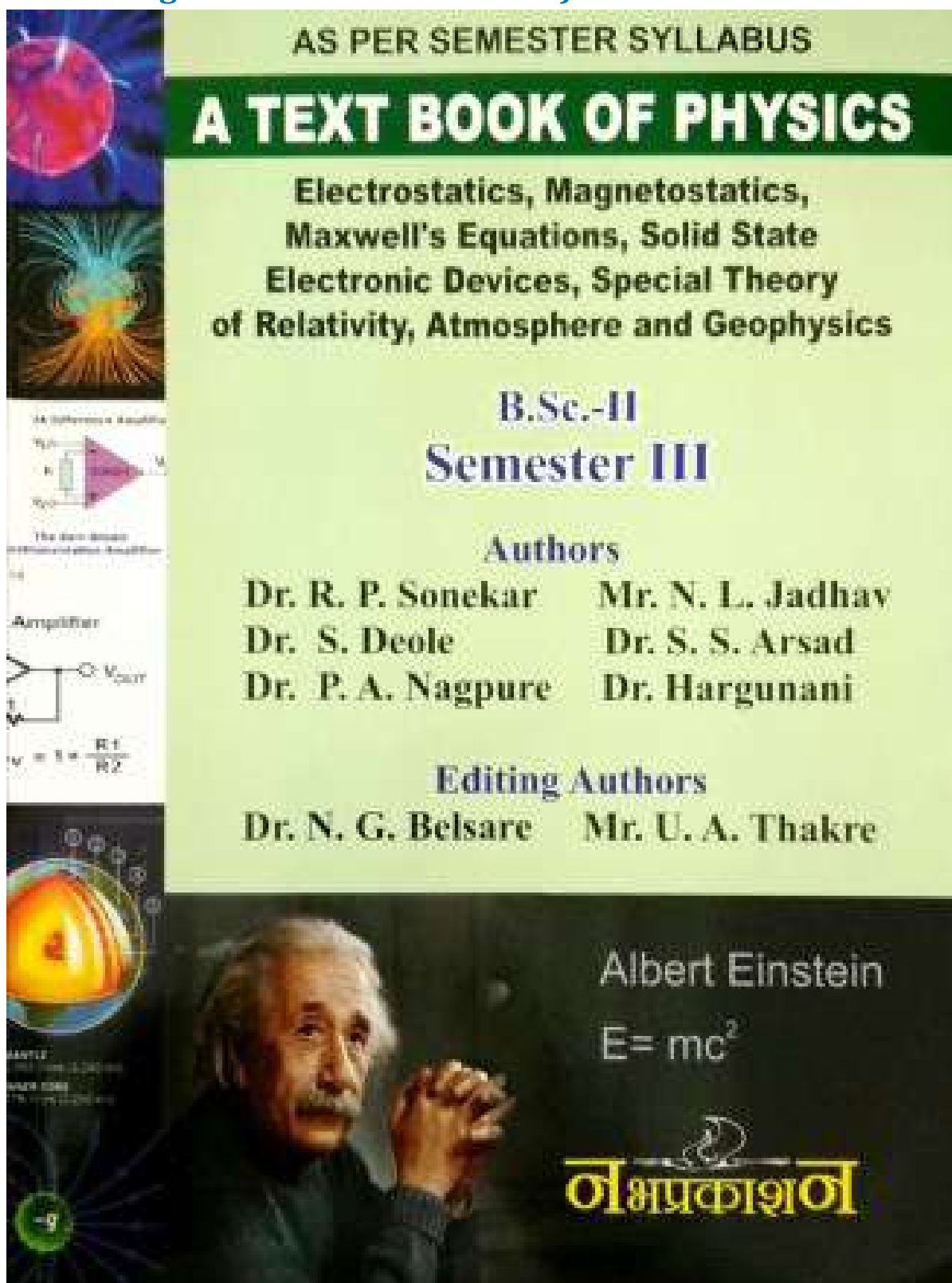
Price: Rs. 100 /-

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B.Sc.II Semester-III

ISBN- 978-81-905776-250-5

Edition: First 2016-17

1st June 2016

Editing Author :

Dr. N.G. Belsare

Head, Department of Physics,

Vidyabharati Mahavidyalaya, Amravati.

Publisher:

Milind Dahake

Nabh Prakashan

Shyam Nagar, Amravati- 444 606

Mo. – 7798204500, 8177838400

Printer

Nabh Offset Printer

Shyam Nagar, Amravati- 444 606.

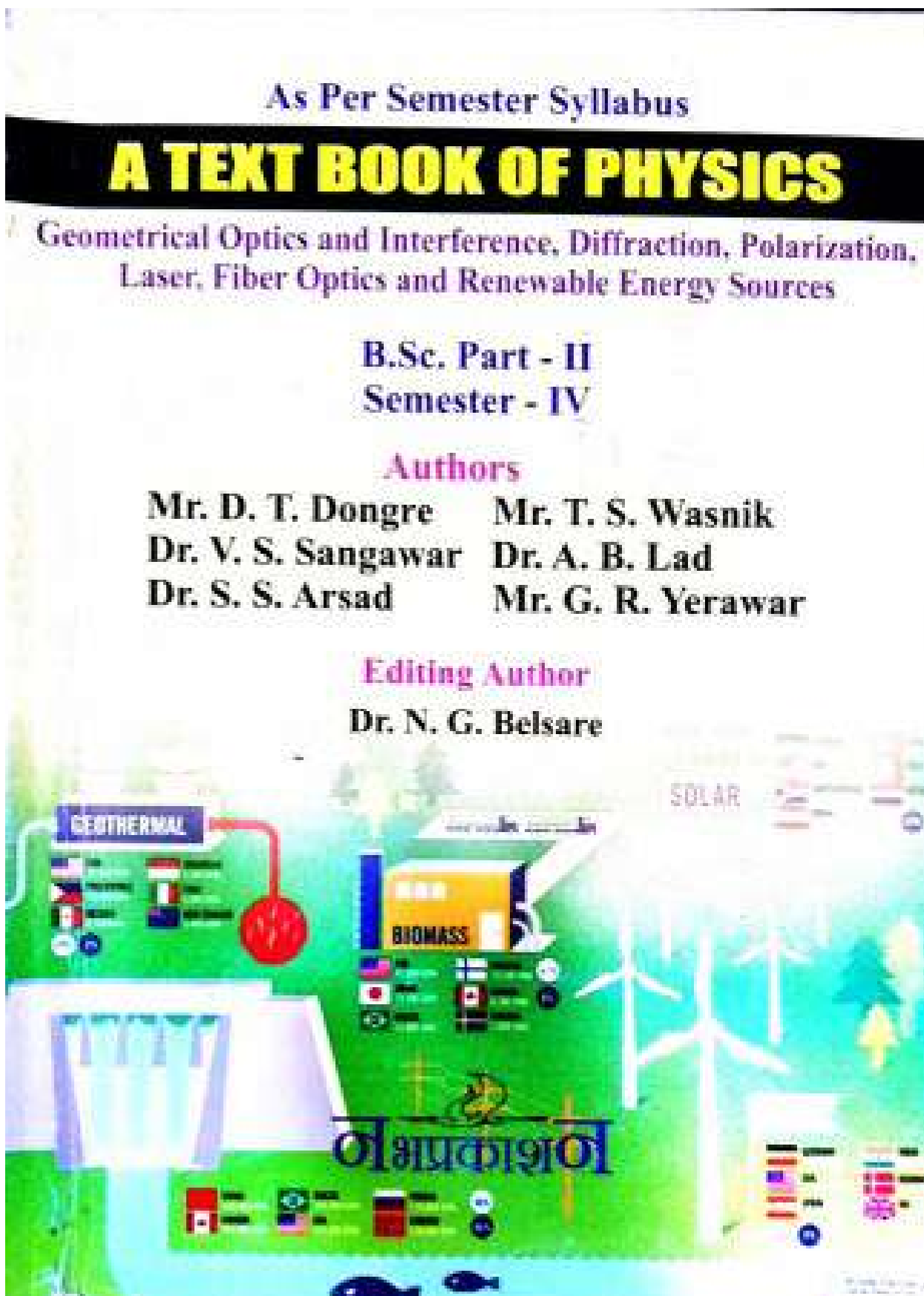
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Head, Department of Physics,

Vidyabharati Mahavidyalaya, Amravati.

Publisher:**Milind Dabake**

Nabh Prakashan

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Printer**Nabh Offset Printer**

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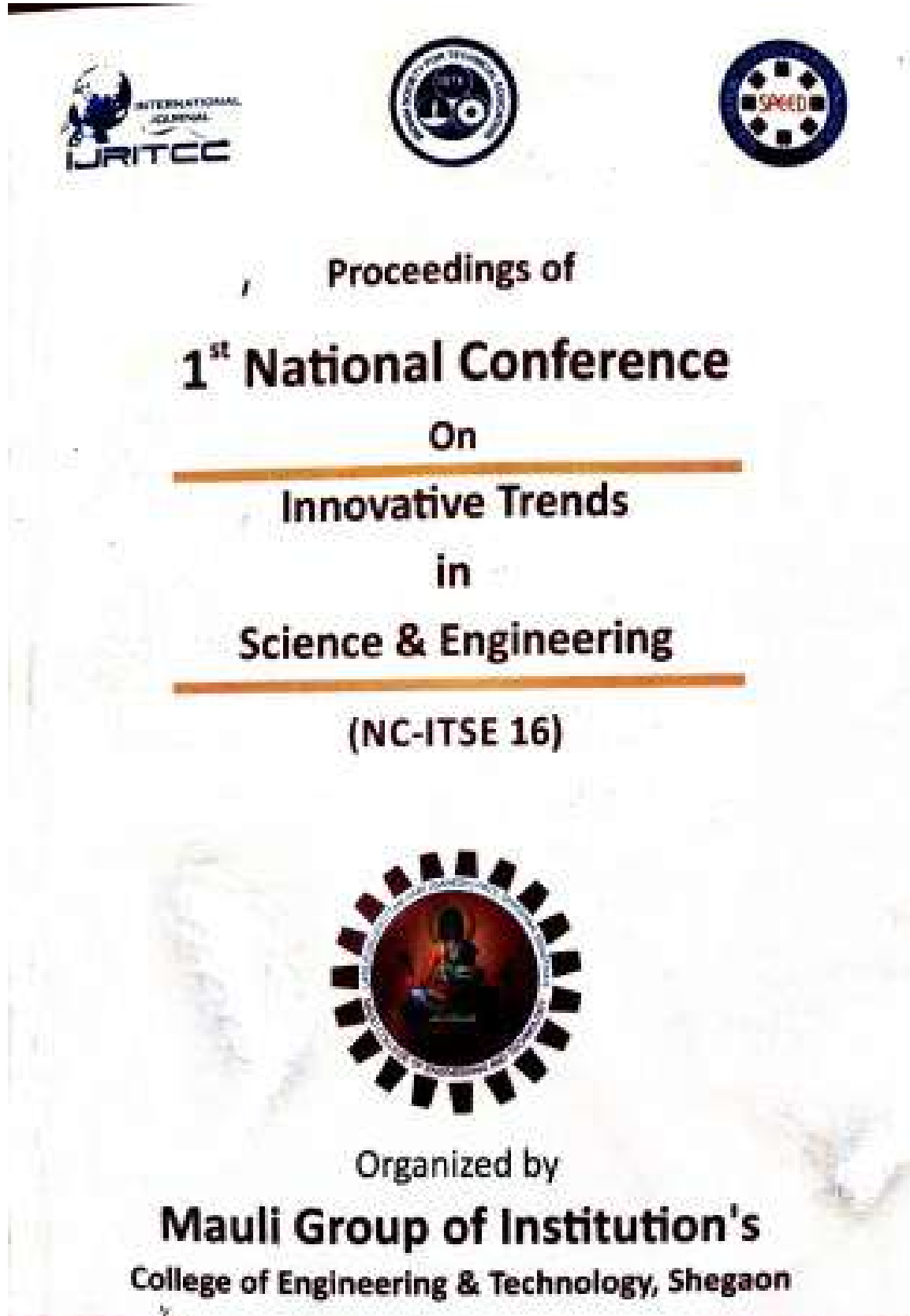
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5. Arsad SS: Vitiligo regaining normal skin color from physics point of view



Track 5: Applied Science & Humanities

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VITILIGO REGAINING NORMAL SKIN COLOUR FROM PHYSICS POINT OF VIEW

S. S. ARSAD, P. A. NAOPURE, U. K. KATHALE

E-mail: arsad@rediffmail.com

Dept. of Physics, Shri Shivaji Science College, Amravati

Abstract

Vitiligo in simple word means the white patches appearing on the skin. This disease causes a great degree of psychological distress. Even though it is not a life threatening disease the social stigma is cause of worry. Particularly female patients are found to suffer psychologically and their social life gets affected. The treatment options are many but all of them are unable to give immediate results. Regaining the lost colour of the skin depends on the melanin formation activity which takes place in melanocytes. The recent treatment modality includes the use of particular wavelength to enhance the repigmentation rate. The phototherapy is now a days treatment of choice and many clinics in our region are providing these facilities. We have studied the skin disorder and its treatment from physics point of view.

BACKGROUND

Vitiligo is a depigmentation disorder affecting nearly 1% of the world population. Fifty percent of cases appear before the age of 20, with the disfigurement resulting in psychiatric morbidity in 16 to 35% of those affected. Depression, sleep disturbances, suicidal thoughts, suicidal attempts, difficulties in relationships and avoidance of social situations have been reported in individuals afflicted by vitiligo before adulthood. Vitiligo can be confused with leprosy, leading to further stigmatization.

The disease pathogenesis of vitiligo has not been fully elucidated. Autoimmune, biochemical and oxidative stress, genetic, neuronal and environmental factors are thought to interact and contribute to the development of vitiligo¹. Forscher points to four distinct theories². The first is an "autoimmune hypothesis" supported by the observation that several autoimmune diseases often appear along with vitiligo³. In addition, vitiligo sufferers often display elevated levels of serum antibodies to melanocytic antigens (tyrosinase and tyrosinase-related proteins 1 and 2)^{4,5}. Second is the "neuronal hypothesis" which states that altered reactions of melanocytes to neuropeptides and catecholamines are responsible for melanocyte destruction⁶. Several studies have found that dopamine can induce apoptosis in human melanocytes^{7,8}. The neuronal hypothesis is further supported by the findings that there is close contact

between melanocytes and nerve endings in depigmented skin, an observation rarely seen in normal skin⁹. Third is the "self-destruct hypothesis", where melanocytes self-destruct due to defects in protective mechanisms responsible for removing toxic melanin precursors. This is thought to lead to the accumulation of melanotoxic labile derivatives and free radicals. Fourth is the "biochemical hypothesis" which postulates an overproduction of a tyrosine hydroxylase cofactor, hydrobiopterin, resulting in increased catecholamine synthesis. This is thought to result in increased reactive oxygen species that are toxic to melanocytes. This is supported by findings of reduced catalase and higher concentrations of hydrogen peroxide in affected and unaffected skin of vitiligo sufferers^{10,11}.

METHODS

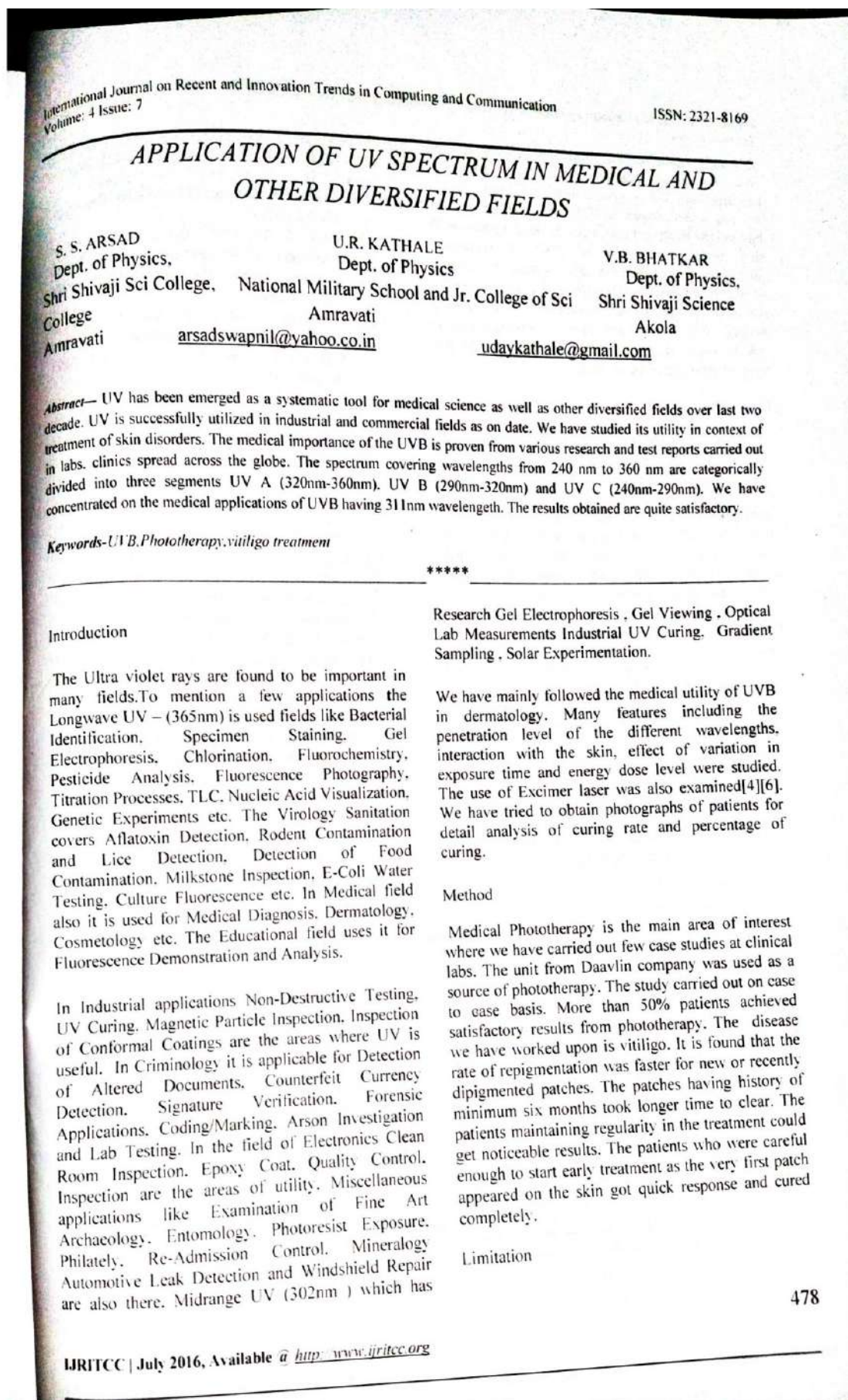
The study comprised of 4 visits: initial, and 3 follow up visits every 4 weeks. Total length of treatment was 12 weeks for each participant pursuing vitiligo treatment in Phototherapy clinics.

During the initial visit the patients registered with the skin specialist were checked and their data was collected: presence of vitiligo was verified under Wood's lamp. Of the three participants that improved the greatest two had progressive vitiligo, while one had non progressive; two were male, one was female; two had Fitzpatrick's skin type 5 and one Fitzpatrick skin type 4. They were 40, 14 and 19 years old and had suffered with vitiligo for 3, 7 and

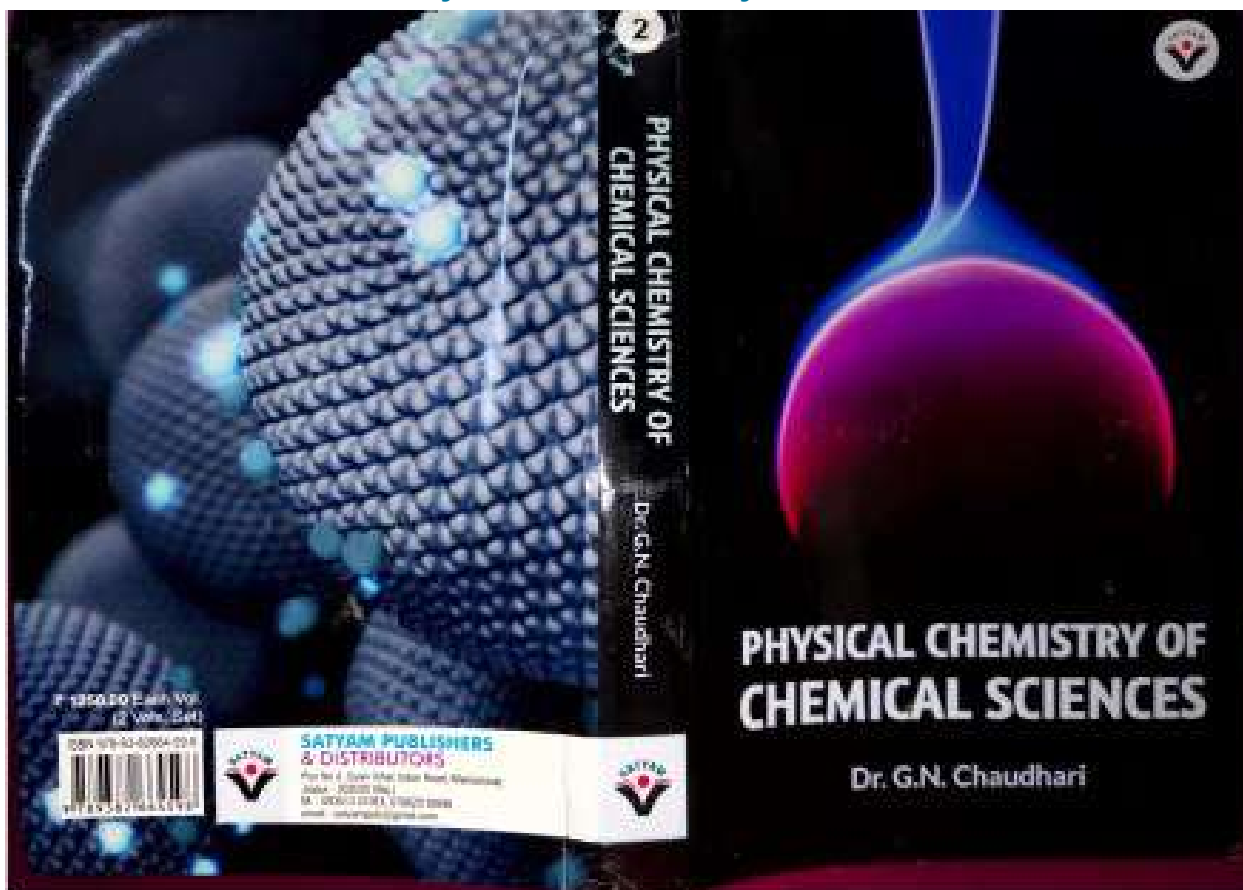
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LIBITIC | July 2016, Available @ <http://www.ijrcc.org>

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7. Chaudhari GN Physical Chemistry of Chemical Sciences



Published by :

Satyam Publishers & Distributors

Plot No. 4, Gyan Vihar, Iskon Road,

Mansarovar, Jaipur - 302020(Raj.)

(M) 9351331053, 7062050596

email : satyampub@gmail.com

ISBN : 978-93-82664-59-8

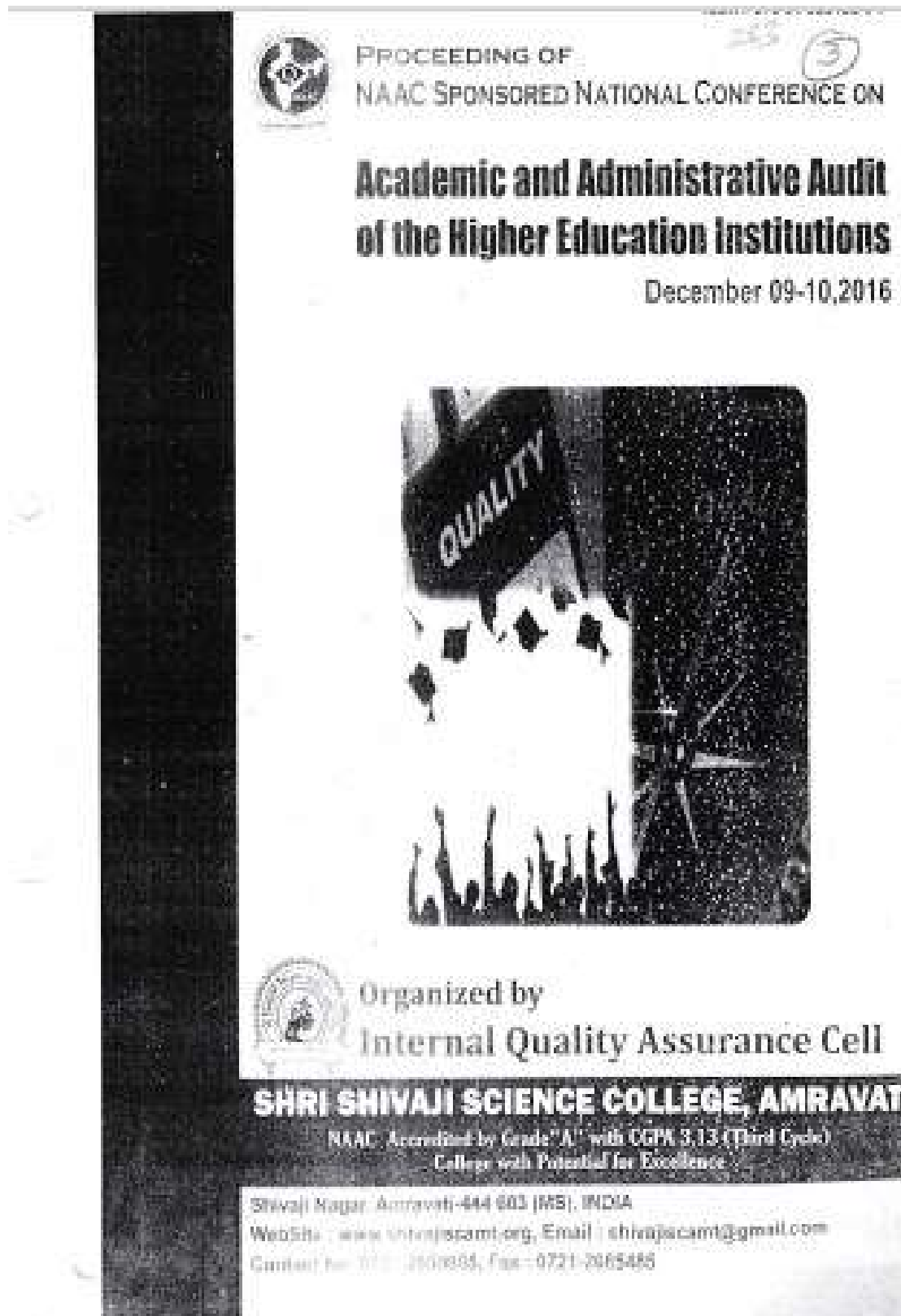
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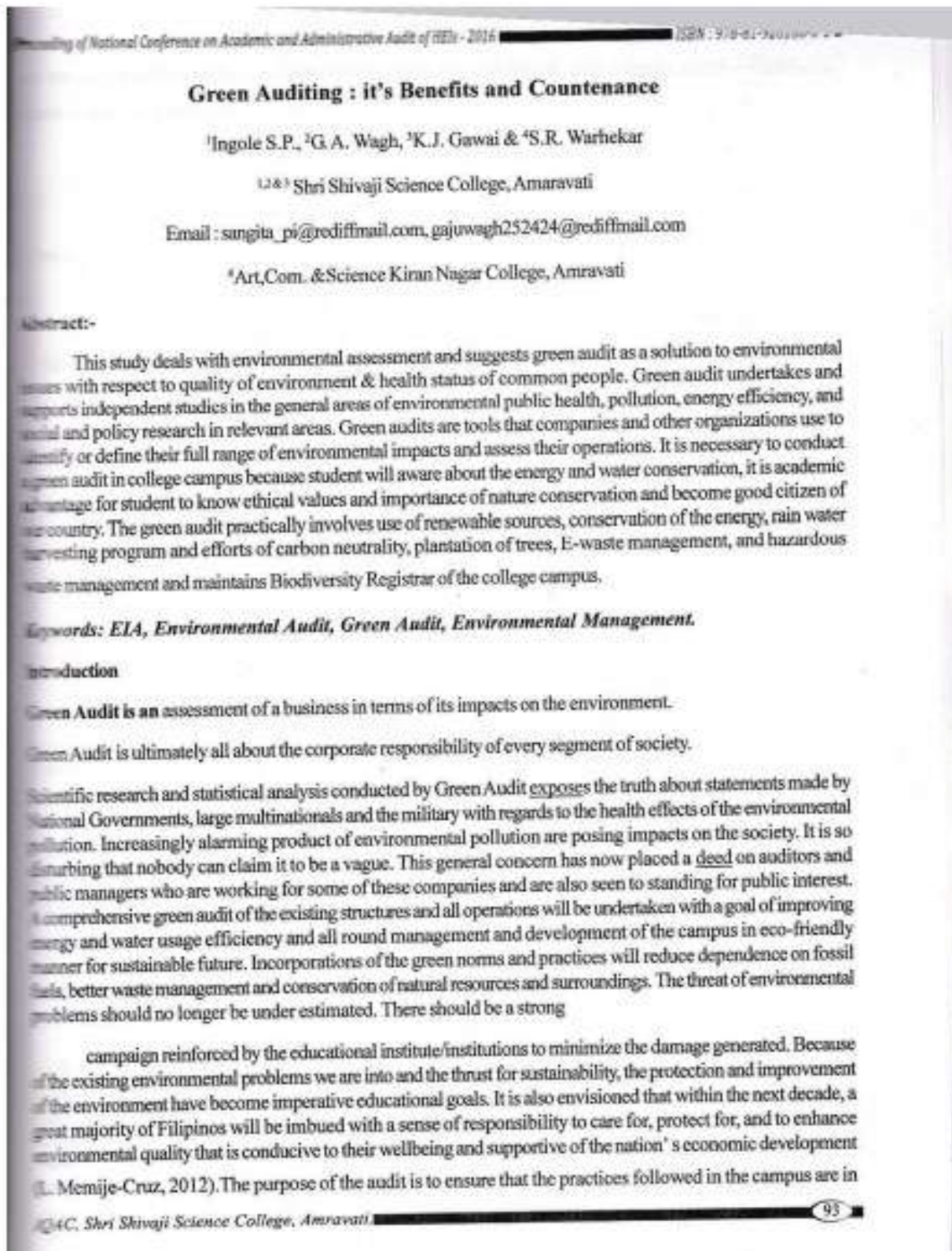
Rs. 1250/- Each (2 Volumes Set)

First Edition : 2016

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8. Ingole SP, Wagh GA, Gawai KJ and Warhekar SR Green Auditing: it's Benefits and Countenan





Proceeding of National Conference on Academic and Administrative Audit of IIEs - 2014 ISSN : 978-81-926186-9-1
 accordance with the Green Policy. With this in mind, the specific objectives of the audit are evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards.

Methodology:-

The methodology uses for green audit may include measuring keys of environmental parameters are as follows.

Name of Institute:-

Institute name, Area of institute, Map, Elevation, Longitude, Latitude, Weather report and Rain fall which help to actual use of environmental parameters according to weather and rain fall.

1) College Environment Cell:-

Environment Cell of the college which involve faculty members. It helps for audit and other environmental friendly practices, which will run in the campus and departments.

2) Infrastructure:-

It is the constructed and non constructed area of institute, which involves Office, Departments, Class rooms, Labs, Auditorium hall, Canteen, Play ground, Cycle stand and Garden.

3) Energy Audit:-

Architectural design based upon use of natural lighting and ventilation, to save extra power for bulbs and fans. The goal is to identify all points of energy wastage and leakage and to take appropriate steps for energy conservation by appropriate modifications and adopting green and best practices. Consumption of electrical energy of the grid may be reduced by installing solar panels on rooftops as well as using LED bulbs. In India, coal constituted about 90% of the total fuel mix used for electricity generation (MoEF, 2010). 0.98 Kg of CO₂ is produced for every kWh of electricity consumed (Jerath *et al.*, 2012).

To identify total electric consumption, questionnaire can prepare on the basis of number of instruments, its type and required electricity in watts as well as its running time. For example; Number of light with watt, fans, A.C., Fridge, Deep freezer, Motor pump etc. Alternative renewable source of energy can be identify by questionnaire i.e. Solar energy, biogas energy etc.

1) Water Audit:-

Water Audit can be defined as, "The assessment of the capacity of total water produced by the Water Supply Authority and the actual quantity of water distributed throughout the area of service of the Authority. The goal is conserve water as well as to recycle and reuse the wastewater in the Institute and in the campus. A sustainable water management plan will be adopted based on the local water table and geo hydrological characteristics of the aquifer. Farm pond and Rainwater harvesting units will be installed at suitable locations. To identify total water consumption, questionnaire can prepare on the basis use

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9. Kalambe NA, Thakare NR: Density and viscosity of 2-Hydroxy substituted chalcone dibromide and quinoxaline in ethanol solvent at 297, 301 and 305 k temperature

National Conference on Innovative Trends in Science and Engineering (NC-ITSE'16)
Volume: 4 Issue: 7

ISSN: 2321-8169
297 - 300

Density and viscosity of 2- Hydroxy Substituted Chalcone Dibromide and Quinoxaline in Ethanol, Solvent at 297,301 and 305 K Temperature

N. A. Kalambe
Department of Chemistry,
P.R. Pote (Patil) College of
Engineering
& Management, Amravati- 444602
(M.S.) India
E-mail : nakalambe@yahoo.com

N. R.Thakare
Department of Physics,
P.R. Pote (Patil) College of
Engineering
& Management, Amravati- 444602
(M.S.) India

H. R. Dhanbhar
Department of Chemistry,
P. R. Patil College of Engineering
& Technology, Amravati- 444602
(M.S.) India
E-mail :
hemantdhanbhar@rediffmail.com

Abstract— The density (ρ) and viscosity (η) values have been measured in the solvent ethanol, containing 2-hydroxy substituted chalcone dibromide using 0.01 M concentration at 297, 301 and 305 K. From the experimental data, the relative viscosity η_r in different solvents has been calculated at various temperatures. The relative viscosity have been used to discuss the presence of molecular interactions, ion-solvent interactions and solute-solvent interactions.

Keywords- Viscosity, density, relative viscosity, 2-hydroxy substituted chalcone dibromide, quinoxaline.

INTRODUCTION :-

Viscosity is one of the important physical property of liquid and gases and it implies resistance to flow as fluids (liquid and gases) exhibit a characteristic property of flowing under applied force of their own weight. The study of viscosity is widely used to obtain the molecular interaction in case of gases and liquids. In liquids of the binary mixtures, the additional forces between molecules are important. The viscosity measurements are easy and simple to carry out. The viscosity measurements is the best method used to determine Jones-Dole coefficient and Falkenhagen coefficient. These coefficients are directly related to solute-solvent and solute-solute interactions.[1]

Viscosity and density measurements for electrolytes in various mixtures of water with tert butyl alcohol and tert butyl amine[2] Density and viscosity studies of paracetamol in ethanol and water system at 301.5 K. [3].Viscosity of lithium chloride in different composition of lactose at different temperatures 303.15, 308.15, 313.15 and 318.15 K[4]. Viscosities (η) and densities (ρ) for the binary liquid mixture of dimethyl sulfoxide with benzene, ethyl benzene, chlorobenzene and bromobenzene system were found out as a function of mole fraction at atmospheric pressure and at a temperature of 303.15 K, 308.15 K and 313.15 K[5].Density and viscosities for the binary mixtures of 1,4-dioxane and benzene or chlorobenzene at 303.15, 308.15 and 313.15 K[6]. The observed molecular interaction, complex formation and hydrogen bond formation are responsible for the hetero molecular interaction in the liquid mixture. This provides useful information about inter and intra molecular interactions of the mixture as existing in the liquid systems[7].Volumetric and viscometric behaviour of acrylic esters with hexane-2-ol at 298.15 and 308.15 K[8]. Density and viscosity of zirconyl soaps in benzene, methanol solvent[9].

For the present work we have chosen the density and viscosity, relative viscosity in order to discuss solute-solvent interactions. From the literature survey it was seen that much work has been done on various concentration[10-12] but scanty work is found in pure ethanol, 1,4-dioxane and CCl₄ solvents. Also the review does not reveal any attempt made on density and viscometric study of 2-hydroxy substituted chalcone dibromide and quinoxaline. We have intended to analyze study of these ligands in different solvents to investigate protic- aprotic nature, polarity-non polarity, hydrogen bonding, dielectric constant and density, viscosity of solvent on solute-solvent, ion-solvent and molecular interactions.

EXPERIMENTAL

In this present investigation attempt is made to understand behavior of 2- hydroxy substituted chalcone dibromide and quinoxaline viz. 2'-hydroxy-5'-chloro-4-methoxy chalcone dibromide (IIIa), 2'-hydroxy-5'-chloro chalcone dibromide (IIIb), 2'-hydroxy-3'-bromo-5'-chloro-4-methoxy chalcone dibromide (IIIc), 2'-hydroxy-3'-bromo-5'-chloro chalcone dibromide (IIId), 2-(2-hydroxy-5-chloro) benzyl-3-(4-methoxy phenyl) quinoxaline (IVa), 2-(2-hydroxy-5-chloro) benzyl-3-phenyl quinoxaline (IVb), 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-(4-methoxy phenyl) quinoxaline (IVc) and 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-phenyl quinoxaline (IVd) have been carried out in organic solvents like ethanol, 1,4-dioxane and CCl₄. These chalcone dibromide (IIIa-IIId) and quinoxaline (IVa-IVd) have been synthesized by known method[13]. Then the viscosity and density measurements of 0.01 M solution of all ligands at 297, 301 and 305 K temperature was calculated. All chemicals used to synthesized substituted chalcone dibromide and quinoxaline were of A.R. grade.

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10. Thakare NR, Kalambe NA: Physical properties of semiconductor Cu:ZnO prepared by a simple route

National Conference on Innovative Trends in Science and Engineering (NC-ITSE'16)
Volume: 4 Issue: 7

ISSN: 2321-8169
301 - 304

Physical properties of semiconductor Cu: ZnO prepared by a simple route

N. R. Thakare
Engg. Physics Department
P.R.Pote(Patil) Engg.college
Amravati 444602(MS)
nilesh_thakarey@rediffmail.com

N. A. Kalambe
Engg. Chemistry Department
P.R.Pote(Patil) Engg.college
Amravati 444602(MS)
nakalambe@yahoo.com

Y. S. Sakhare
Engg. Physics Department
P.R.Pote(Patil) Engg.college
sakhare.yogesh@gmail.com

H. R. Dhanbhar
Engg. chemistry Department
P.R..Patil Engg.college
hemantdhanbhar@rediffmail.com

A. U. Bajpayee
Engg. Physics Department
Arts science commerce college kiran nagar
Amravati 444604
aubajpayee@gmail.com

Abstract-Physical properties of Zinc Oxide (ZnO) are studied with different doping in it. The dopants to study the varying physical properties of the ZnO semiconductor with respect to Copper (Cu), Aluminum (Al) and Gallium (Ga) semiconductor with changing doping by weight percent in it is studied in this paper. As discussed the physical properties included for the study are classified into three categories namely structural, electrical and the optical properties. The structural properties include X-ray Diffraction (XRD), Transmission Electron Microscopic Studies with the selected area electron diffraction patterns (TEM-ED) and Fourier Transform Infrared Spectroscopic studies (FTIR). The electrical properties include dc (direct component) electrical studies along with the gas sensing properties of the materials synthesized with the varying gases and its concentration. Its temperature effect by using given material as a thick film sensor is also studied. The gases used for the study are Ammonia (NH₃), Hydrogen disulphide (H₂S), Hydrogen (H₂) and Liquid Petroleum Gas (LPG). The different sensor by using the dopants shows remarkable sensing properties for different gases. Here in this section effect of Ga on the physical properties of ZnO is studied in detail.

Keywords- ZnO, Hydrogen disulphide, sensors

1. INTRODUCTION

Gas sensors have been widely used in the field of industry, agriculture, electronics and daily life. It plays a positive role in inspecting and monitoring harmful and inflammable gases. Semiconducting metal oxides are widely used as inexpensive and robust sensor material for toxic, hazardous and combustible gases and vapors in safety and automotive applications. Few semiconducting metal oxide materials used in these applications are ZnO, SnO₂, In₂O₃, Fe₂O₃, NiO, etc [1-11]. Of which, zinc oxide (ZnO), an n-type semiconductor that displays a hexagonal crystalline wurtzite-type structure, with space group P6₃mc. The importance of ZnO is due to its unusual physical properties such as high conductance, chemical and thermal stability, wide and direct band gap of 3.37 eV and a high excitation binding energy of 60 MeV. Moreover, it is harmless to the environment [12-16]. Zinc oxide (ZnO) has emerged as one of the most promising materials due to its optical and electrical properties, high chemical and mechanical stability together with its abundance in nature. The effects of preparation conditions and/or doping on electrical property of ZnO-based thin films have been intensively studied because of their interesting functionalities such as transparent electric conductor, electroacoustic transducer, etc. [17,18]. Appropriate donor doping can produce the electronic defects that increase the influence of oxygen partial pressure on the conductivity. Nanto et al. showed that a lower operating temperature may be achieved by the doping effect, and a significant resistance change can be

obtained in the doped ZnO rather than the undoped ZnO sensor, which results in a higher sensitivity [19].

Generally, nanometer-sized materials have been widely studied in recent years, due to their good gas sensitivity caused by high surface activity. Controlled ultra fine and narrow distribution of particle size of metal oxide powders can be obtained using various techniques, and the first step in keeping full control of the microstructure of the material is to control the preparation method of the starting powders. By selecting proper fabrication process, desired crystalline properties of metal oxides can be achieved.

2. EXPERIMENTAL DETAILS

2.1. Preparation of pure and doped ZnO nanocrystalline powders

All the chemicals used in this work are of AR grade (>99.9%). In a typical experiment of synthesis, appropriate quantity of zinc nitrate (Zn(NO₃)₂·6H₂O) was grounded for 30 min. in an agate mortar pestle and then dissolved in double distilled water. The aqueous solution was stirred for about 30 min. and subsequently transferred to Teflon lined stainless steel autoclave. The temperature of the autoclave was raised slowly to 180 °C and maintained for 10 h. Thereafter, the autoclave was allowed to cool naturally to room temperature and the resulting product washed several times with deionized water and absolute ethanol to remove the possible residue. Then the product was kept for drying at 100 °C in an oven for 12 h, which was followed by calcinations at 600 °C for 6 h.

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IJRITCC | July 2016, Available @ <http://www.ijritcc.org> (Conference Issue)

The working principle of semiconductor gas sensors is based on the conductivity changes of the semiconductor materials because of its interaction with test gas molecules. When gas molecules are adsorbed on the surface of a semiconductor, electron transfer occurs between the semiconductor and the adsorbents. The sensing mechanism of ZnO gas sensors is usually based on the surface properties of the material [27, 28]. At elevated temperatures, adsorption of atmospheric oxygen takes place. The adsorbed oxygen extracts the conduction electrons from the surface region of ZnO grains, leaving positively charged donor ions behind. An electric field develops between the positively charged donor ions and the negatively charged oxygen ions such as O²⁻, O⁻ or O²⁻ on the surface [27, 29]. The more the oxygen ions are on the surface, the higher the potential barrier and therefore the higher the resistance [29]. As the concentration of target gas present in the ambient atmosphere increases, the amount of O²⁻, O⁻ or O²⁻ decreases due to the reaction with target gas molecules, resulting in a decrease in resistance. When temperature is varied with a given concentration of target gas, usually a peak appears in the sensor response versus operating temperature correlation.

4. CONCLUSION

In summary, nanocrystalline powders of pure and Al, Cu and Ga-doped ZnO were prepared successfully by a hydrothermal decomposition route. The as-prepared materials were tested for their respective response towards different reducing gases. The sensor made of the 3.0 wt.% Al³⁺-doped ZnO nanoparticles exhibits high response and good selectivity to NH₃ as compared with pure ZnO nanoparticles. The sensor made of the 3.0 wt.% Cu²⁺-doped ZnO nanoparticles exhibits high response and good selectivity to H₂S as compared with pure ZnO nanoparticles. Also the sensor realized the detection of NH₃ with response time in seconds with excellent selectivity. Various gas-sensing responses to different gases may be because of the adsorption of the reducing gases and reaction between the gases and the adsorbed oxygen. All responses of the sensors were stable and repeatable.

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11. Kalambe NA: Density and viscosity of 2-Hydroxy substituted chalcone dibromide and quinoxaline in ethanol solvent at 297, 301 and 305 k temperature

National Conference on Innovative Trends in Science and Engineering (NC-ITSE'16)
Volume: 4 Issue: 7

ISSN: 2321-8169
297 - 300

Density and viscosity of 2- Hydroxy Substituted Chalcone Dibromide and Quinoxaline in Ethanol, Solvent at 297,301 and 305 K Temperature

N. A. Kalambe
Department of Chemistry,
P.R. Pote (Patil) College of
Engineering
& Management, Amravati- 444602
(M.S.) India
E-mail : nakalambe@yahoo.com

N. R.Thakare
Department of Physics,
P.R. Pote (Patil) College of
Engineering
& Management, Amravati- 444602
(M.S.) India

H. R. Dhanbhar
Department of Chemistry,
P. R. Patil College of Engineering
& Technology, Amravati- 444602
(M.S.) India
E-mail :
hemantdhanbhar@rediffmail.com

Abstract— The density (d) and viscosity (η) values have been measured in the solvent ethanol, containing 2-hydroxy substituted chalcone dibromide using 0.01 M concentration at 297, 301 and 305 K. From the experimental data, the relative viscosity η_r in different solvents has been calculated at various temperatures. The relative viscosity have been used to discuss the presence of molecular interactions, ion-solvent interactions and solute-solvent interactions.

Keywords- Viscosity, density, relative viscosity, 2-hydroxy substituted chalcone dibromide, quinoxaline.

INTRODUCTION :-

Viscosity is one of the important physical property of liquid and gases and it implies resistance to flow as fluids (liquid and gases) exhibit a characteristic property of flowing under applied force of their own weight. The study of viscosity is widely used to obtain the molecular interaction in case of gases and liquids. In liquids of the binary mixtures, the additional forces between molecules are important. The viscosity measurements are easy and simple to carry out. The viscosity measurements is the best method used to determine Jones-Dole coefficient and Falkenhagen coefficient. These coefficients are directly related to solute-solvent and solute-solute interactions.[1]

Viscosity and density measurements for electrolytes in various mixtures of water with tert butyl alcohol and tert butyl amine[2] Density and viscosity studies of paracetamol in ethanol and water system at 301.5 K. [3]. Viscosity of lithium chloride in different composition of lactose at different temperatures 303.15, 308.15, 313.15 and 318.15 K[4]. Viscosities (η) and densities (d) for the binary liquid mixture of dimethyl sulfoxide with benzene, ethyl benzene, chlorobenzene and bromobenzene system were found out as a function of mole fraction at atmospheric pressure and at a temperature of 303.15 K, 308.15 K and 313.15 K[5]. Density and viscosities for the binary mixtures of 1,4-dioxane and benzene or chlorobenzene at 303.15, 308.15 and 313.15 K[6]. The observed molecular interaction, complex formation and hydrogen bond formation are responsible for the hetero molecular interaction in the liquid mixture. This provides useful information about inter and intra molecular interactions of the mixture as existing in the liquid systems[7]. Volumetric and viscometric behaviour of acrylic esters with hexane-2-ol at 298.15 and 308.15 K[8]. Density and viscosity of zirconyl soaps in benzene, methanol solvent[9].

For the present work we have chosen the density and viscosity, relative viscosity in order to discuss solute-solvent interactions. From the literature survey it was seen that much work has been done on various concentration[10-12] but scanty work is found in pure ethanol, 1,4-dioxane and CCl₄ solvents. Also the review does not reveal any attempt made on density and viscometric study of 2-hydroxy substituted chalcone dibromide and quinoxaline. We have intended to analyze study of these ligands in different solvents to investigate protic- aprotic nature, polarity-non polarity, hydrogen bonding, dielectric constant and density, viscosity of solvent on solute-solvent, ion-solvent and molecular interactions.

EXPERIMENTAL

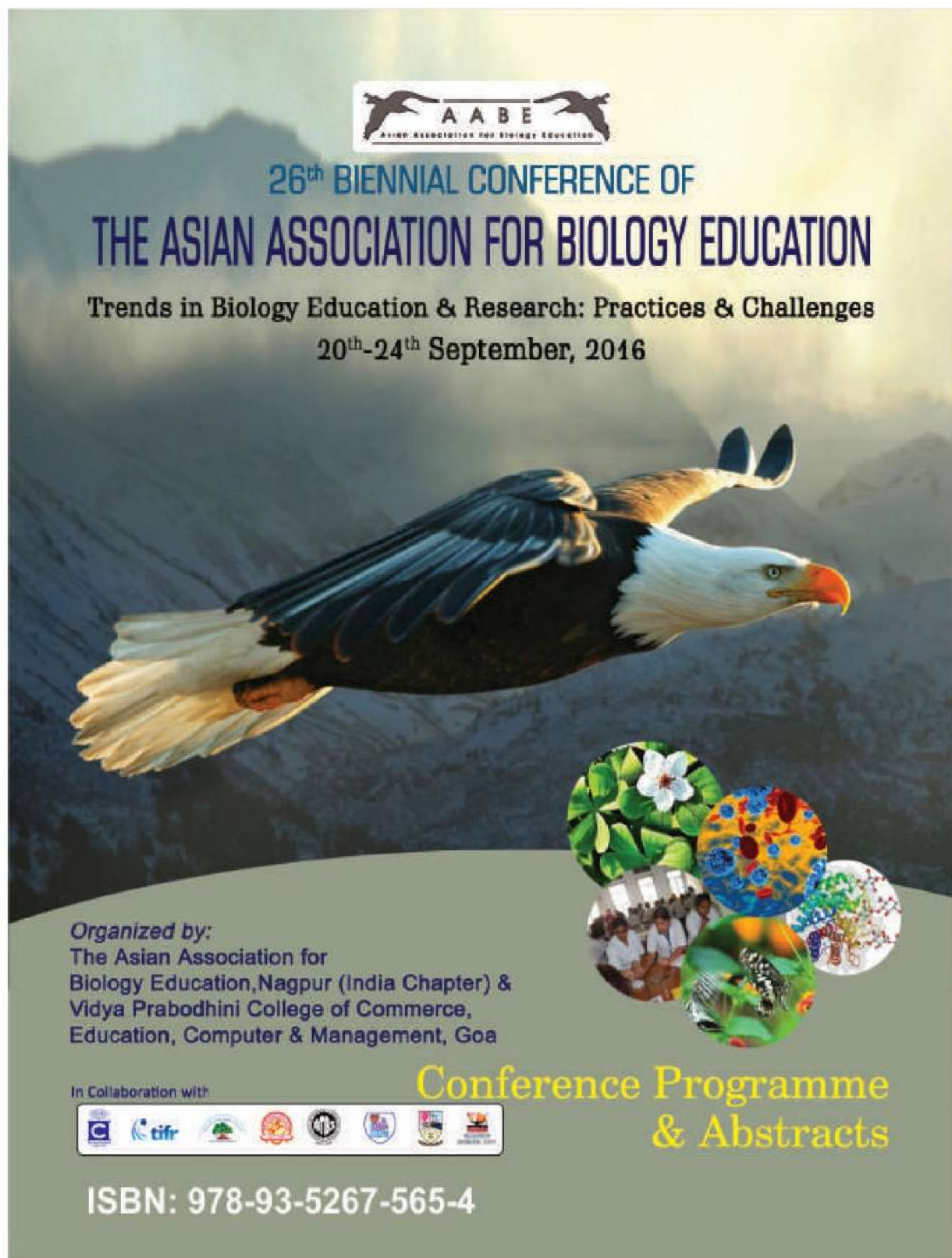
In this present investigation attempt is made to understand behavior of 2- hydroxy substituted chalcone dibromide and quinoxaline viz. 2'-hydroxy-5'-chloro-4-methoxy chalcone dibromide (IIIa), 2'-hydroxy-5'-chloro chalcone dibromide (IIIb), 2'-hydroxy-3'-bromo-5'-chloro-4-methoxy chalcone dibromide (IIIc), 2'-hydroxy-3'-bromo-5'-chloro chalcone dibromide (IIId), 2-(2-hydroxy-5-chloro) benzyl-3-(4-methoxy phenyl) quinoxaline (IVa), 2-(2-hydroxy-5-chloro) benzyl-3-phenyl quinoxaline (IVb), 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-(4-methoxy phenyl) quinoxaline (IVc) and 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-phenyl quinoxaline (IVd) have been carried out in organic solvents like ethanol, 1,4-dioxane and CCl₄. These chalcone dibromide (IIIa-IIId) and quinoxaline (IVa-IVd) have been synthesized by known method[13]. Then the viscosity and density measurements of 0.01 M solution of all ligands at 297, 301 and 305 K temperature was calculated. All chemicals used to synthesized substituted chalcone dibromide and quinoxaline were of A.R. grade.

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12. Khedkar DD: Editorial - 26th Biennial International Conference on Trends In Biology Education And Research: Practices And Challenges



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13. Khedkar DD: Exploration for Entrepreneurship Opportunities for students and Skill Development for establishment of Small Business

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Associate Professor in Botany
Shri Shivaji Science College
Amravati, MS, India

PUBLISHED BY
DR. V. G. THAKARE
PRINCIPAL
Shri Shivaji Science College
Amravati, MS, India

ISBN 978-93-6285-527-4



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Session III

Dr. D. D. Khedkar,
Associate Professor
Convener, Career Cell,
Shri Shivaji Science College,
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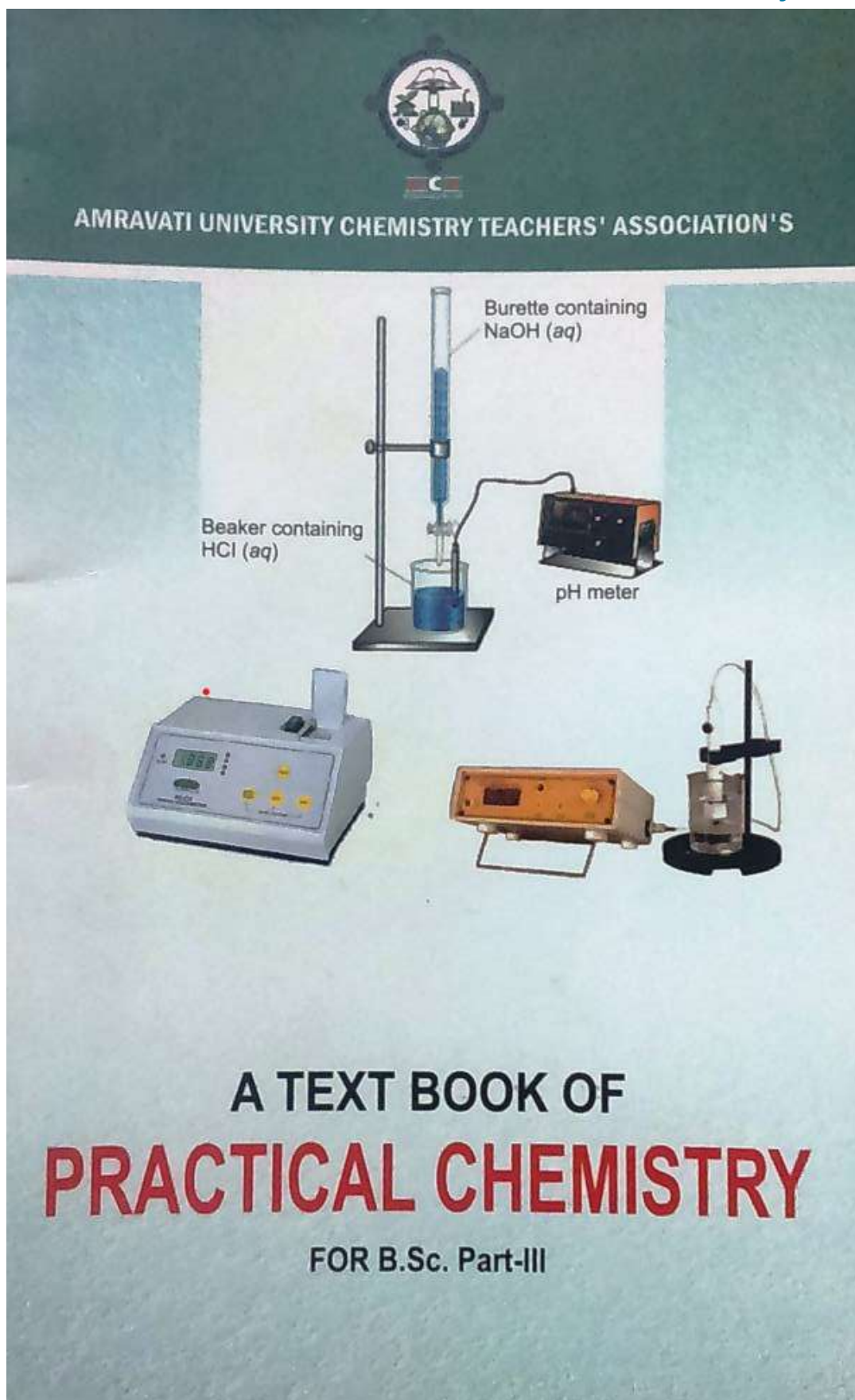
Exploration for Entrepreneurship Opportunities for students and Skill Development for establishment of Small Business

On the occasion of the first ever World Youth Skills Day on 15th July 2015, the Ministry of Skill Development and Entrepreneurship (MSDE), Government of India launched “SKILL INDIA” Campaign, coined by the Honourable Prime Minister of India, Narendra Modi. The launch of the Skill India Campaign is an important milestone towards achieving the objective of skilling with Speed, Scale and Standards across the country. The first integrated national policy for developing skills and promoting entrepreneurship at a large scale was also introduced. The objective of the National Policy on Skill Development and Entrepreneurship, 2015 is to provide an umbrella framework to all skilling activities being carried out within the country, to align them to common standards and link the skilling with demand centres.

Another key aspect that needs to complement a successful skill strategy is entrepreneurship, which can be a key source of employment generation and economic development in India. Given the changed landscape in the country, entrepreneurship opportunities have emerged as an important source of meeting the aspirations of the youth. An all-inclusive approach to strengthen the entrepreneurship development scenario in the country which boosts competent and globally competitive entrepreneurs, needs to be encouraged. We believe that Student- Entrepreneurs need not necessarily be born, but can be developed through well-conceived and well-directed activities.

Keeping in view the “Skill India” initiative, Shri Shivaji Science College, Amravati is organizing Three Days Activity entitled “Exploration for Entrepreneurship Opportunities for students and Skill Development for establishment of Small Business”. This Summit brought together the most innovative and influential organization from government like -

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Dr. R. R. Wankhade

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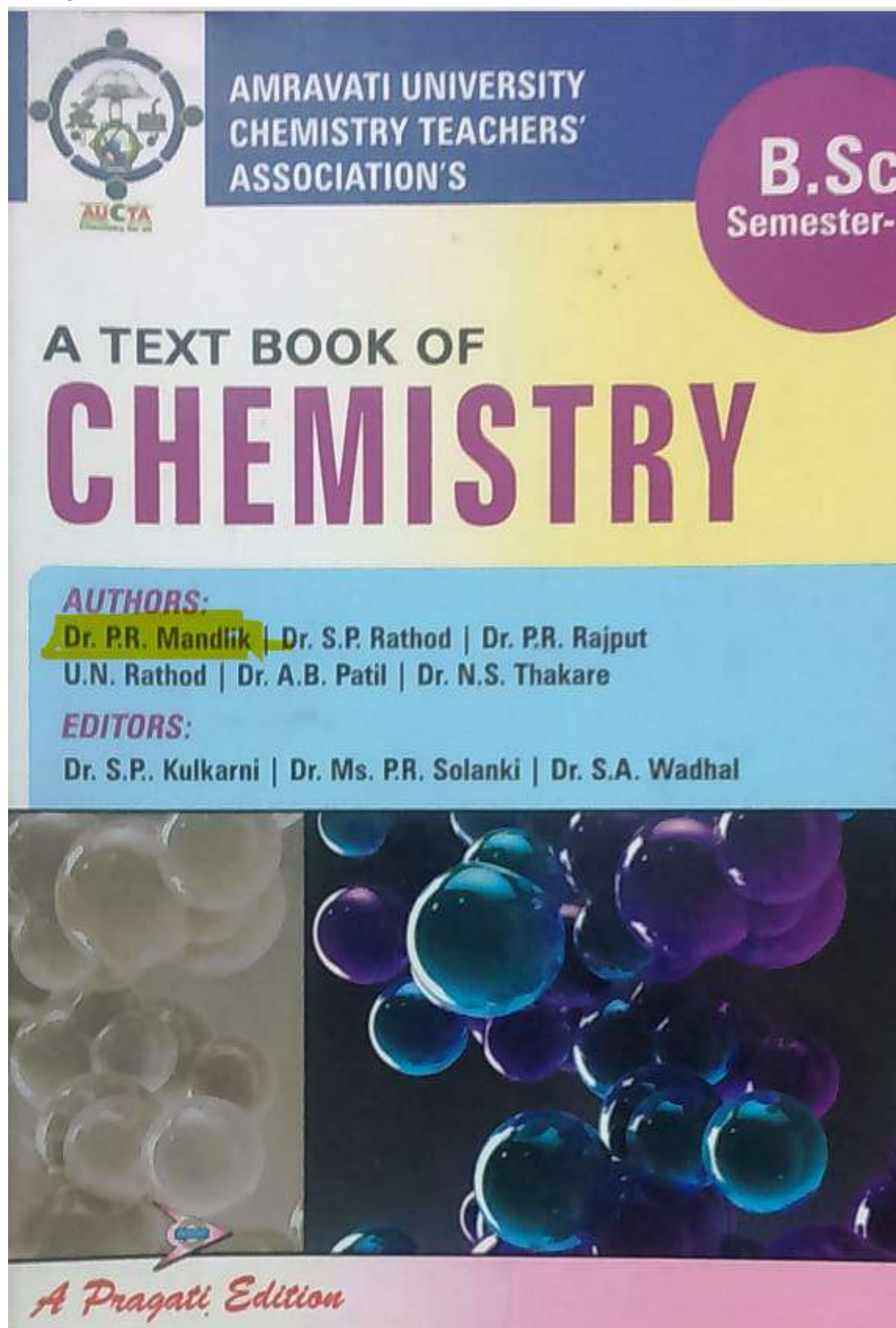
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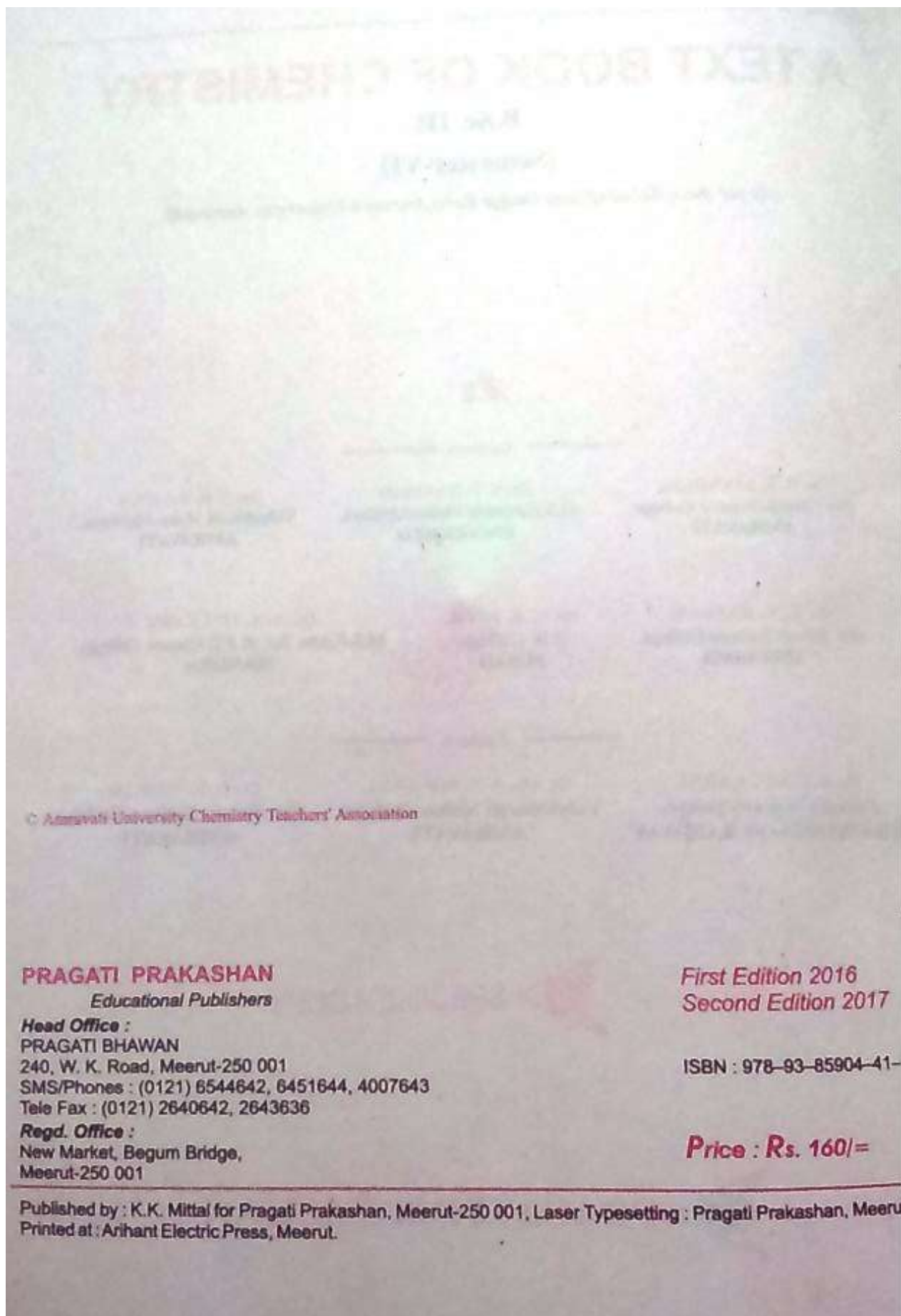
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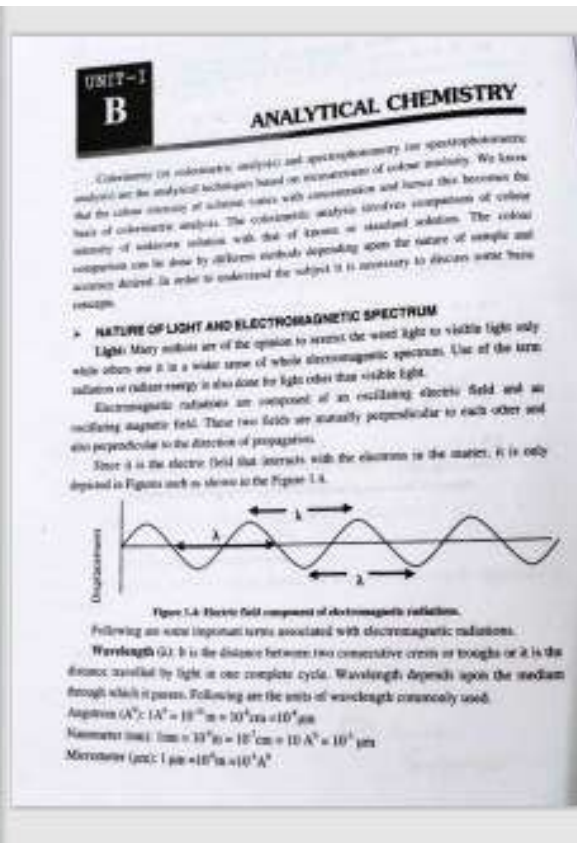
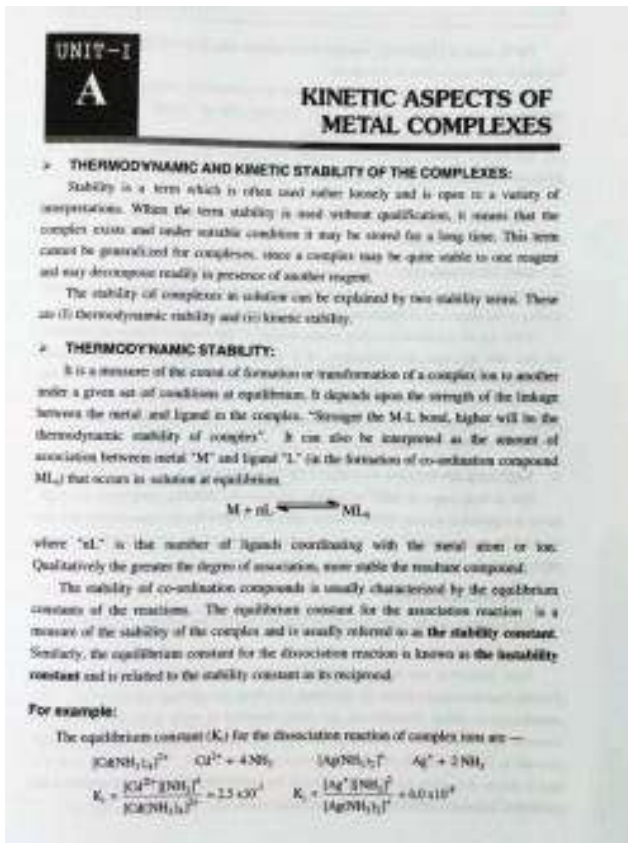
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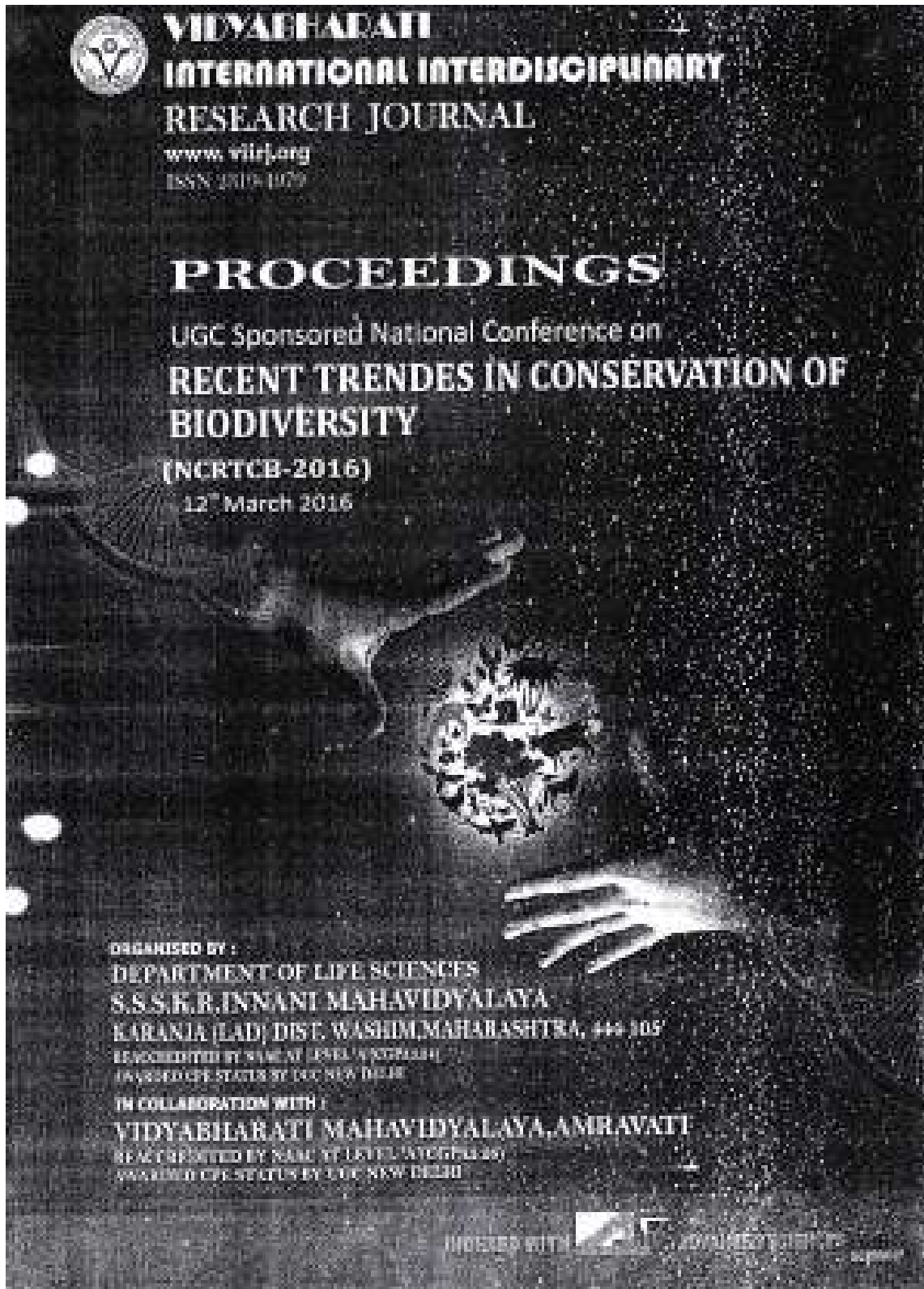
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17. Wagh GA: Survey of road vehicle collision mortality of avian fauna on state highway passing through Pohra -Malkhed Reserve forest.



SURVEY OF ROAD VEHICLE COLLISION MORTALITY OF AVIAN FAUNA ON STATE HIGHWAY PASSING THROUGH POHRA-MALKHED RESERVE FOREST

¹A.S. Rawankar, ²G.A. Wagh and ³J.S. Wadalkar

¹Jyotiramba Mahavidyalaya, Achalpur City, Dist – Amravati, Maharashtra Pin – 444 800
 email_rawankar@yahoo.co.in

²Shri Shivaji Science College, Amravati, Maharashtra, India. PIN- 444 803
 Email: gajawagh252424@rediffmail.com

³Wildlife and Environmental Conservation Society, Amravati (MS), India. PIN-444 804
 jayant.wadalkar@yahoo.co.in.

Abstract

Anthropogenic activities severely affect the avian population and becoming serious threat to avian population and its biodiversity. Road traffic is becoming one of the greater threats to animal and plant population. In India the highways are going through many protected forest areas and cause severe impact to wildlife and their habitat. In India, few studies were carried out regarding mortality of avian fauna. Hence the attempt has been made to study the mortality of birds on state highway passing through Pohra-Malkhed reserve forest and its percentage to total avian fauna by quantitative analysis of avian carcasses. For Surveillance, regular visits for six months or a weekly interval along with some occasional visits was undertaken during January 2015- August 2015 to identify the carcasses. The identification of birds was done by morphologically and through photographic evidences. The data was recorded including the name of species, family, place and date of occurrence etc. Frequency of mortality of birds was calculated by assessing the number of carcasses. From the observations it is found that the Greater Coucal (*Centropus urophasianus*) is the most dominant species found dead in road vehicle collisions, followed by Red - winged Blackbird (*Pyrocyonotus cafer*), Indian Nighthawk (*Caprimulgus asiaticus*), Spotted Owl (*Athene brama*), Laughing Dove (*Spilopelia sumatrana*), Common Myna (*Acridotheres tristis*). Family wise maximum mortality was recorded in the family Centropodidae followed by Pyrocyonidae, Scopsidae, Caprimulgidae. Seasonal variation shows that maximum mortality was found during the months of January- February-March and minimum mortality during the months of Apr – May and July. This preliminary study provides a baseline data on the magnitude of avian mortality on roads passing through reserve forest. The impact of such loss on avian population remains unknown. Long term study will be needed to evaluate such impact on Biodiversity.

Keywords: Avian Mortality, road vehicle collision, Pohra – Malkhed forest.

Introduction

Anthropogenic activities severely affect the avian population and becoming serious threat to avian biodiversity. In this era of industrialization and modernization, the activities of humans affecting the population of both the flora and fauna. To evaluate the impact of various threats to avian fauna several studies has been undertaken worldwide.

There are approximately 80 million birds are killed due to collision with road vehicles every year in the United States alone (Brickson et al., 2005). Highways through wild life reserve affects the fauna seriously and the effects range from habitat loss and fragmentation, direct mortality through collision with vehicle (Clifton and Swan 1991; Foster and Humphrey, 1995; Das et al., 2007; Row et al., 2009; Balkatan and Bismantahan

2010). Roads are becoming one of the greater threats to animal and plant population. In India the highways are going through many protected areas and cause severe impact to wildlife and their habitat (Vijayakumar et al., 2000; Das et al., 2007).

Besides road killing, the mortality in birds due to injury, poisoning, climatic factors, parasites, infectious diseases, and deaths due to some unknown causes has been studied (Jennings, 1967; 1961). The avian mortality due to collision with power line and electrocution is described from a long time (Bevenger, 1998; Desardakhie, 2014). Predator and scavenger bird species are poisoned from poison-baits particularly in the areas where game management and farmcock farming were done. Anthropogenic use of land is also found to be associated with the bird mortality (Allison and Whiteside, 2000).

night, but due to flash light of vehicle they cannot make pace with the speed of vehicle and get killed.

Laughing Dove is groundnest bird. They come on the roads to feed on the grains dispersed on the road or road side while Red-vented Bulbul, Common Myra, Prina and Tailor birds feeds on nectar and insect larvae on flowering plants along the road sides. Spotted Owl is the most frequently killed species of birds among the Owlets. The other birds whose carcasses are found are small in size and represented in table I.

Discussion

The above observation are found correlating with earlier studies on avian road kills in Kambhalgaoh Wildlife Sanctuary, Rajasthan, India and with former of Madhavaji Tiger Reserve, southern India by N. Bhatnagar & D. Boornatharan (2010). Seasonal variation shows that maximum mortality was found during the months of January- February-March and minimum mortality during the months of Apr - May

and July. Family wise maximum mortality was recorded in the family - Corropodidae followed by Pycnonotidae, Sittidae, Caprimulgidae, Sturnidae, Columbidae, Syrrhaptes. This preliminary study provides a baseline data on the magnitude of avian mortality on roads passing through Pabrai- Malkhed reserve forest. The impact of such loss on avian population remains unknown. Long term study will be needed to evaluate such impact. The number may be quite large, because the avian carcasses gets cleaned immediately by scavengers after death and cannot be noticed, further sometimes the collided birds are expelled far away from road and cannot be noticed. Further this is an small attempt to estimate the mortality. Hereby we recommend limiting the speed of vehicle on the highway passing through forest to 30 km / hour, further speed breakers and signposts at the road sides of the reserve forest.

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18. Wagh GA: Summer diet of Indian Eagle Owl Bubo Bengalensis from Melghat Tiger Reserve

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SUMMER DIET OF INDIAN EAGLE-OWL *Bubo bengalensis* FROM MELGHAT TIGER RESERVE, AMRAVATI, INDIA

*¹J.S.Wadkar, ²G.A.Wagh, ³A.R.Dhonde, ⁴S.S.Talmele and ⁵V.R.Patil

¹Wildlife and Environment Conservation Society, 42, Greenpark Colony, Near Ashok Colony, VMV post, Amravati, M.S. Email: jswadkar@yahoo.co.in

²Dept. of Zoology, Shri Shivaji Science College, Amravati, M.S.

³Dept. of Zoology, B.P. Arts, S.M.A. Science and K.K.C. Commerce College, Chafingon, Dist. Jalgaon, M.S.

⁴Zoological survey of India, Jabalpur, Vijaynagar, India.

⁵Dept. of Zoology, Government Vidyalaya Institute of Science and Humanities, Amravati, M.S.

Abstract

The diet of the Indian Eagle Owl *Bubo bengalensis* was studied in forest habitat of Melghat Tiger Reserve, Maharashtra, India, during summer of 2011 and 2012. Regurgitated pellets of this owl were analyzed to understand the dietary composition and to find out the variations in its food habits during the two consecutive summers. The diet mainly comprised small mammals such as *Sorex murina* (36.84%) and *Millardia melinda* (51.30%) in summer 2011, whereas *Bombus bengalensis* (23.37%) and *Millardia melinda* (45%) in summer 2012. *Stenomys oleria* was found to be new in Summer 2011 indicating more generalized food habits.

Keywords: Indian Eagle-owl, *Bubo bengalensis*, Owl pellets, Food preferences, Melghat Tiger Reserve

Introduction

The Genus *Bubo* contains some of the world's largest species of Owls, Most if not all of which are tertiary consumers and excellent indicators of ecosystems they inhabit. Like most others of its genus, the Indian Eagle-owl *Bubo bengalensis* (also known as the Indian Great Horned Owl, Bengal Eagle Owl, Rock Horned Owl and Rock Eagle Owl) has received some attention (Ramaswami, 2006).

The Indian Eagle-owl *Bubo bengalensis* is found in the outer hills of the Western Himalayas (at an altitude of about 1500 m, rarely rising up to 2400 m), and extending to Western and Central Nepal, and includes the entire Indian peninsula (Ali and Ripley, 1968). This nocturnal predator and endemic resident is not presently included in any of the threatened categories of the IUCN Red Data Book (2010). The Indian Eagle-owl has received less attention in the past (Jordan 1852, Dhoroobhambhani 1954, Ali and Ripley 1929), and its population status is unknown (Duncan 2003).

Owl pellets are accumulations of the undigested portions of prey which are regurgitated and ejected through the mouth in compact units. Owl pellet analysis serves two primary purposes. Foremost, pellet analysis serves as a non-destructive means of diet determination (Wadkar et al., Patil, et al.). Owl pellet analysis also

is a useful method for gaining additional insight into small mammal communities and distribution (Long, G.A. and Kerfoot, W.C., 1963; Clout, J.R., 1971; Jain, A.P. and Advani, R., 1983).

Published reports on this bird species are limited to descriptions of calls and diet (Ramaswami 2006, 2003, 2004, 2006). Studies reported their roost sites near human habitations (Ramaswami 2006, Parole et al. 2011) and agricultural croplands (Parole and Debnath 2011), however no detailed diet composition was studied in forest ecosystems in India, thus this study tries to assess the summer diet of Indian Eagle-owl *Bubo bengalensis* of two consecutive summers to observe any changes in their prey preferences.

Materials and Methods

The present study was carried out in Melghat Tiger Reserve (MTR), Amravati, Maharashtra which lies between 21°29.56'N and 077°12.338'E coordinates. MTR is located at southern foothold of Seopada hill range in Central India also called as Gawilghat hill range in Maharashtra. The forest area of MTR is tropical dry deciduous, dominated with Teak plantation *Tectona grandis*.

54 Pellets of the *Bubo bengalensis* were collected from roosting site which was on rock cliff in the Bharwar field near Chavandul in Melghat Tiger Reserve (N

International Interdisciplinary Research Journal (Special Proceedings Issue) ISSN 2319-4979

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19. Arsad SS: Skin graft is transplantation of human skin layer for re-pigmentation of vitiligo patches



ICV 2014: 59.28
SJIF Impact Factor 4.23
UGC Approved Journal
No. 48951

ISSN-2320-7817 (P)
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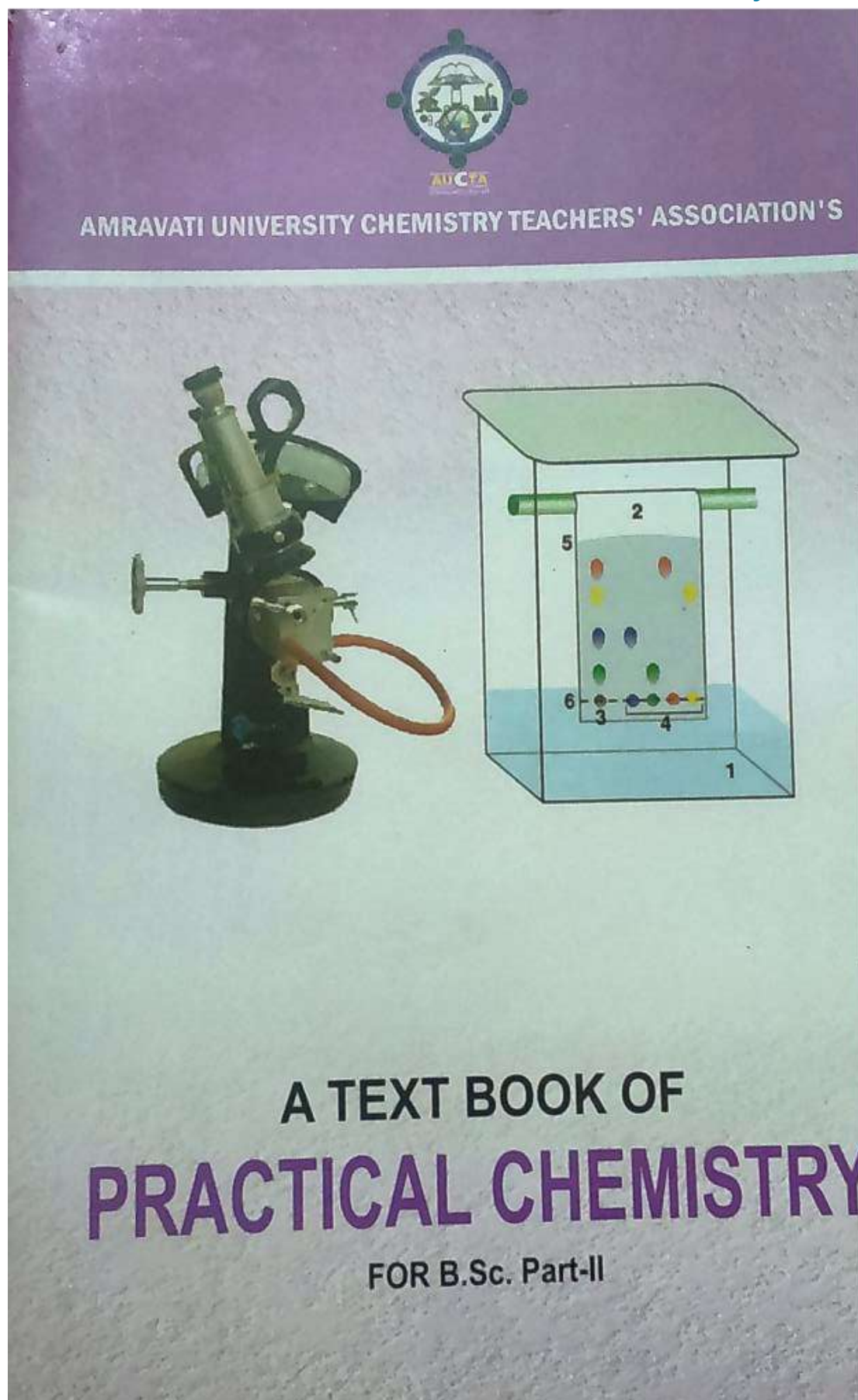
Skin graft is transplantation of human skin layer for re-pigmentation of vitiligo patches

Arvind Ss

Department of Physics, Shri Shivaji college of science, Amravati, MS, India

Manuscript details	ABSTRACT
<p>Available online on http://www.ijlss.in</p> <p>ISSN: 2320-2017 (Online) ISSN: 2320-7017 (Print)</p> <p>Editor: Dr. Arvind Chavan</p> <p>Cite this article as: Arvind Ss (2017) Skin graft is transplantation of human skin layer for re-pigmentation of vitiligo patches. Int. J. of Life Sciences, Special Issue, AI: 188-190.</p> <p>Copyright © Author: This is an open access article under the terms of the Creative Commons Attribution Non-Commercial - No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>Biototechnology means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use as per UN Convention on Biological Diversity, Art. 2. The human skin and diseases related to human skin are many. The vitiligo is a commonly found skin disorder in which the skin color is lost and white patches are visible. It is due to lack of melanin formation activity. The melanin decide color of the skin. There are many treatment methods for vitiligo. The purpose is to regain original skin color of the sites which are white. The transplantation of skin layer from the unaffected pigmented skin to the affected white skin area. It cannot stop the progression of the disease, but definitely it helps to treat many delicate areas like eyelid, lips which does not show adequate response to medical therapy.</p> <p>Keywords: Vitiligo, skin graft, repigmentation.</p> <p>INTRODUCTION</p> <p>Vitiligo is a skin disorder in which depigmented macules (white patches) start appearing and progressing. It has high psychosocial impact, particularly in darker skin. With vitiligo, the body's own immune system starts attacking these cells, which is why it's considered an autoimmune disease. Surgical methods become important in cases where medical therapy fails to cause re-pigmentation, or in cases of segmental vitiligo where the response to surgery is excellent.</p> <p>The vitiligo is treated by various methods like phototherapy, herbal medicine therapy, allopathic medicines and homeopathic treatment is also one of the options for patient. The idea of skin graft comes under surgical treatment. In this technique, natural skin colour is obtained by transplanting the skin from unaffected body part to the affected area of site which has lost colour. The transplanted skin patch helps to achieve the re-pigmentation.</p> <p>Skin grafting was first described in India in ancient Sanskrit texts around 2500 - 3000 BC as a technique for nasal reconstruction for mutilated</p>

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Commerce and Science College, Akola.

Editor

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Nagpur, Maharashtra, India

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Associate Professor, Chemical Engineering Department,
Laxminarayan Institute of Technology, RTM Nagpur University,
Nagpur, Maharashtra, India

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ABOUT THE EDITORS

Dr. Bharat A. Bhanvase is currently working as Associate Professor in the Chemical Engineering Department at the Laxminarayana Institute of Technology, RTM Nagpur University, Nagpur, Maharashtra, India. His research interests are focused on conventional and cavitation-based synthesis of nanostructured materials, ultrasound-assisted processes, polymer nanocomposites, heat transfer enhancement using nanofluid, process intensification, and microreactors for nanoparticle and chemical synthesis. He has published many articles in international and national journals and has presented papers at international and national conferences. He has written several book chapters in internationally renowned books and applied for three Indian patents. He is the recipient of a Summer Research Fellowship from the Indian Academy of Sciences, Bangalore, India, in 2009. He has more than 15 years teaching experience. He has completed several research projects with the University of Pavia. He is a reviewer for several international journals.

Rajendra P. Ugwekar, PhD, is currently working as Associate Professor in the Chemical Engineering Department at the Laxminarayana Institute of Technology, RTM Nagpur University, Nagpur, Maharashtra, India. His research interests are focused on hydrogen energy, nanotechnology, wastewater treatment, and heat transfer enhancement using nanofluid. He has published several articles in international and national journals and has presented papers at international and national conferences. He has more than 22 years of teaching experience and several years of industrial experience as well. He has completed research projects received from the All India Council for Technical Education and has several advanced students working with him. He has worked as Head of the Department at Amravathi Engineering College, Chikhali, Buldhana, India, and at the Priyasharan Institute of Engineering and Technology, Nagpur, India. He is a trainer and motivator for entrepreneurship.

Raju B. Mankar, PhD, is currently Director of the Laxminarayana Institute of Technology in Nagpur, India. He is also the former Vice-Chancellor of Dr. Babasaheb Ambedkar Technological University in Lonere-Rajgad, India. Professor Mankar was the Nominee of His Excellency, the Vice President of India on the Court of Pondicherry University during 2007–2010. He is also the Nominee of His Excellency, the Governor of Maharashtra on the Board of Management of Yashwantrao Chavan Maharashtra Open University, Nashik, India. He is the Member of Western Regional Committee, Mumbai, of All India Council for Technical Education (AICTE), New Delhi, and also a Member of Pravesh Niyamtraan Samiti, Government of Maharashtra. He has been nominated as a Council Member by the President of the Institution of Engineers (India), as an "Eminent Engineering Personality". Professor Mankar has served as Vice-Chairman of the Governing Council, Engineering Staff, College of India, Hyderabad, by the President Institution of Engineers (India) for several years. A Life Member of Indian Institute of Chemical Engineers (IICChE), Professor Mankar is a Fellow of the Institution of Engineers (India) and a Life Member of Indian Society for Technical Education (ISTE). He is also Fellow of DAAD, Federal Republic of Germany.

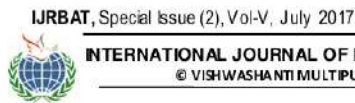
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Occurrence of Mycobiota Associated With *Ficus carica* L.

*G. B. Hedawoo, Harsha V. Bijwe and R. C. Maggirwar

P.G. Department of Botany, Mycology and Plant Pathology Lab, Shri Shivaji Science College, Amravati

*E-mail – drgbhedawoo@gmail.com

Abstract:

Fungal contamination of various agricultural commodities and foodstuffs (like dry fruits), is a major problem in the developing countries like India. Fungi play a significant role in deteriorating the aesthetic and nutritive value of stored food commodity. Therefore, the aim of this study was to evaluate the mycoflora associated with figs.

Ten samples of dried figs were collected from local shops of Amravati region during 2016-17. Samples were analyzed for the moisture contents and the presence of fungi by adopting direct plating and dilution plating methods. Altogether 15 fungal species were isolated from figs viz. *Alternaria alternata*, *Aspergillus candidus*, *Aspergillus flavus*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus parasiticus*, *Aspergillus versicolor*, *Eurotium chevalieri*, *Cladosporium cladosporioides*, *Cladosporium herbarum*, *Fusarium solani*, *Penicillium granulatum*, *Penicillium nigricans*, *Penicillium oxalicum* and *Rhizopus stolonifer*. Among all the fungi, genus *Aspergillus* was the most predominant isolate with 6 different species. Two species from *Aspergillus*, Section *Flavi-A. Flaus* and *A. parasiticus* are known to produce the toxic and carcinogenic compounds aflatoxins (AFs) which are hazardous to animal and human health.

Therefore, the occurrence of contamination with spoilage and toxigenic fungi in dried figs could be avoided or at least diminished if good agricultural (harvesting and handling), manufacturing (sorting and packaging) and proper storage practices will be applied.

Keywords: Dried figs, postharvest, ecological factors, mycoflora, aflatoxins (AFs).

Introduction

Fig (*Ficus carica* L.) family -Moraceae is a native to south west Asia and spread to Mediterranean by human (Tous and Ferguson, 1996). Fungal infections to figs may occur on the tree during ripening stages, after falling from the tree, during drying process, storage, transportation and handling (Ozay *et al.*, 1995; Heperkan *et al.*, 2012). Both the skin and inner cavity of fig fruits can be contaminated by fungi.

Thirty-one species assigned to 14 genera were isolated from dried figs. *Aspergillus* was represented by maximum 12 species, *Penicillium* was second by 5 species. Three teleomorphic ascomycetes namely, *Emericella nidulans*, *E. quadrilineata* and *Eurotium amstelodami* also detected. (Sadullah and Abdullah, 2015). Several environmental factors like humidity and temperature during storage influence the infestation by fungi and aflatoxin production (Drusch and Ragab, 2003).

Natural occurrence of fungal contamination of dried fruits and spices have been investigated in many parts of the world by different authors (Zohri and Abdel-Gawad, 1993; Ozay *et al.*, 1995; Abdel-Sater and Saber, 1999; MacDonaki *et al.*, 1999; Bayman *et al.*, 2002; Möller and Nyberg, 2003; Aksoy *et al.*, 2007; Juan *et al.*, 2007; Zinedine *et al.*, 2007; Musaiger *et al.*, 2008; Ozay and Özer, 2008;

Bircan, 2009; Hedawoo and Chakranarayan, 2011).

Figs infection by toxigenic fungi has been reported in a number of studies and revealed a high risk due to contamination with mycotoxins (Bircan, 2009; Heperkan *et al.*, 2012). Moreover, fungi contaminated dry figs caused considerable changes of all the biochemical contents (total Carbohydrates, Sugar, Proteins, Fat and dietary fibers) as well as affecting quality (Embaby *et al.*, 2012).

Materials and Methods:-

a) Sample collection:-

Ten samples of dried figs were purchased from local markets of Amravati region. The collected samples were put in paper bags and brought into laboratory for isolation of fungi.

b) Moisture content:-

The moisture content of dried figs was determined using the International Organization for Standardization (ISO) method (Hamid and Lopez, 2000).

c) Mycological analysis:-

i) Direct plating method- Direct plating is considered to be the more effective technique for mycological examinations of particulate foods. The dried fig pieces were surface disinfected with 2% Sodium hypochlorite solution for 2 min. then rinsed with sterile distilled water. Seven pieces

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Int. J. of Life Sciences, Special Issue, A8 | September, 2017

ISSN: 2320-7817 | eISSN: 2320-964X

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Shyam Ingle* and Yogita Rokade

P.G. Department of Bioinformatics, Shri Shivaji Science College, Shivaji Nagar, Amravati-444603.

*Correspondence author Email: bioinfo.sham@gmail.com

Manuscript details:	ABSTRACT
<p>Available online on http://www.ijlsci.in</p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as: Shyam Ingle and Yogita Rokade (2017) Target identification and drug interaction studies of <i>Bacillus anthracis</i>, <i>Int. J. of Life Sciences</i>, Special Issue, A8:180-187.</p> <p>Copyright: © Author, This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>Target based or structural based drug designing is the rapidly growing area. The explosion of genomic, proteomic and structural information has provided hundreds of new target and opportunity to find new drug lead compounds. Based on burgeoning structural data of <i>Bacillus anthracis</i> we focused on anthrax disease. <i>Bacillus anthracis</i> is a gram positive, rod shaped bacteria that caused serious infectious anthrax disease. In this study, we have taken 1669 protein sequences from NCBI protein database for which protein structure is available at PDB database. From these 1669 proteins, we have detected 10 druggable and 3 virulence protein sequences using TiD tool. Out of detected virulence protein, we have chosen N5-carboxyaminoimidazole ribonucleotide synthetase as a target. Against this target protein, we have screened Ropinriole and Isatin as a lead molecule for docking studies.</p> <p>Keywords: <i>Bacillus anthracis</i>, drug designing, TiD tool, Chemoinformatics, ligand screening, target identification, Autodock</p>
	<p>INTRODUCTION</p> <p>The oldest isolate of <i>Bacillus anthracis</i>, the causative agent of anthrax, dates back to 1917 (Redmond et al.,1998). <i>Bacillus anthracis</i>, a gram-positive rod shaped bacteria and belongs to the <i>Bacillus cereus</i> group has an extremely monomorphic genome and has high structural similarity with physiological and <i>B. cereus</i> and <i>B. thuringiensis</i> (Pavan et al., 2011). The proteome data is available on The Universal Protein Resource (UniProt) and Protein database at National center for biotechnological information (NCBI) database. UniProt provides a central resource for protein sequences and functional annotation with three database components, each addressing a key need in protein bioinformatics (Wu et al., 2006). Among the total proteome data of <i>B. anthracis</i>, few key proteins are identified as a target. Due to the burgeoning of protein data, there are many proteins are still remaining to explore as a drug target. Insilico approaches are good to explore this data. The target identification is the key step of Insilico drug designing</p>

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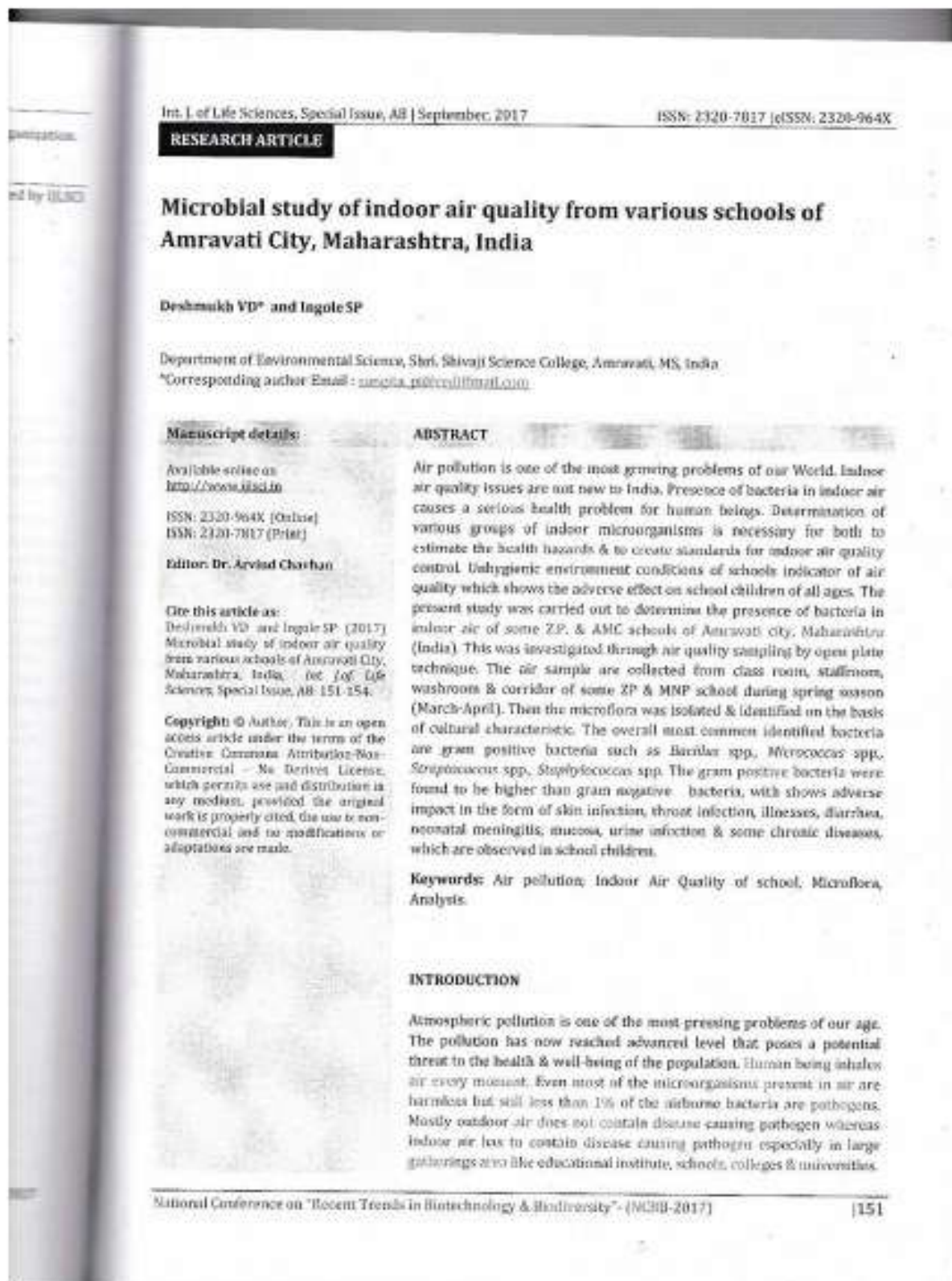
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24. Ingole SP: Microbial study of indoor air quality from various schools of Amravati City, Maharashtra, India



Authors, 2017

The quality of the indoor environment is not easily controlled or defined and can probably place human occupants at risk (Dimitra et al., 2014). The indoor air quality is one of the most significant factors affecting the health. The air inhaled by people is abundantly populated with microorganisms called bio aerosol. Bioraerosols represent roughly, all biologically originated aerosols & can be found both indoor & outdoors. The most studied bioraerosols are the airborne bacteria & fungi (Montepa et al., 2009).

Indoor air is mostly contaminated by airborne particles including bacteria, fungi, allergens, dusts, mold & yeast. Many bacterial genera are also emitted by indoor sources like food, pet animals, dusts, indoor plants, dust, flower pot, wood furniture, organic dust, various materials stored in the buildings, and the air flowing from the ventilation and air conditioning systems. People spend mostly (80-90%) of their time in indoor environments such as office, school & house. Therefore, these indoor environments are more significant for the contribution of the daily pollutant exposure than outdoors. The amount of the pathogenic microorganisms is higher in indoor compared with outdoor air (Dacser et al., 2001). School is the second most important indoor environment, which is evaluating the quality of indoor air and health components of occupants (Gedwin and Batterman 2007). In case of children, a great part of their time is spent at school for studying & working in enclosed spaces every day. Therefore, assessment of this microenvironment are important to evaluate their time-weighted exposure to air pollutants (Kathyan, 2013) (Hansen et al., 2013).

Indoor microflora is reported to be responsible for health problems, especially among children. Bioraerosols are decrease air quality and affect human health, and causing some diseases such as tuberculosis, diphtheria, legionellosis, fever, rhinitis, sinusitis and asthma (Karmali, 2003).

Poor indoor air quality of school causes illness, can cause acute health symptoms, requiring absence from school, decreasing performance in student. Children are more likely to suffer the consequences of indoor pollutants than adults, because they are still developing physically (Bayer and Ashwa, 2001).

The presence of the microbial content in school indoor air is an important factor because it has a direct impact

on the physical development, mental health and performance of the students (Naruka and Gaur, 2013).

The aim of this study was to identify and compare the airborne bacterial quality of indoor bacteria present in indoor environment of various ZP & AMC school of Amravati city.

MATERIALS AND METHODS

Sampling site-

Amravati is located at 20.93°N 77.75°E. It has an average elevation of 343 metres (1125 feet). Amravati has a tropical wet and dry climate with hot, dry summers and mild to cool winters. Summer lasts from March to June. The population of Amravati near about 2200057 loc.

In the present study ten schools are selected randomly as sampling sites in Amravati city from different areas of Amravati. The areas being selected by considering the different sources of pollution in the nearby areas of schools.

School Description

This study was focused on primary school of Zilla Parishad & Amravati Municipal Corporation of Amravati city, Maharashtra, India. Indoor air samples were collected at 10 schools from the city, in Mar-2017. For this study four sampling sites (Class room, Staff room, Corridor, Washroom) from each of the 10 schools were selected according to the different intensity of human activities inside the school building.

Sampling

Sample was taken from a sampling site by standard settling method. The cultural plate exposure method was adopted for trapping the air borne micro flora. A petri plate with the nutrient agar exposed to air for 5 min & at that time petri plate were setup at a height 1.5m above floor. The time of sampling was kept uniform at all the sites. After sufficient growth of bacterial colony which is identified by colony characteristics, Gram test & DNAC test. The bacterial cultures were identified on the macroscopic (shape, size, color, margin, elevation, opacity consistency & appearance of colony and microscopic (gram staining). Biochemical characterization of recovered isolates were performed according to Bergey's Manual of Determinative Bacteriology.

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Table 2: % of Occurrence / Contribution of bacteria in school

Sr. No	Types of microorganism isolate	ZP School		AMC School		Total No of Colony in all school	% of Occurrence/ Contributions in all school
		Total No of Colony	% of Occurrence/ Contributions	Total No of Colony	% of Occurrence/ Contributions		
	<i>Micrococcus</i> sp.	152	26.25	163	23.90	315	24.98
	<i>Staphylococcus</i> genus	136	22.45	155	22.72	285	22.60
	<i>Streptococcus</i> spp.	169	18.82	155	22.72	364	20.93
	<i>Escherichia</i>	13	2.24	18	2.63	31	2.45
	<i>Bacillus</i> spp.	134	23.14	142	20.82	276	21.80
	<i>Klebsiella</i>	9	1.55	11	1.61	20	1.58
	<i>Enterobacter</i> spp.	11	1.89	13	1.90	24	1.90
	<i>Pseudomonas</i>	7	1.20	9	1.31	16	1.26
	<i>Proteus</i>	5	0.86	5	0.73	10	0.79
	<i>Clostridium</i>	9	1.55	11	1.61	20	1.58

CONCLUSIONS

In particular, exposure to the most prevalent bacteria detected in the present study such as E-coli & Enterobacter has been strongly associated urinary tract disease like urine infection, kidney infection. Due to the presence of above mentioned bacterial species in school indoor environment causes health impact in children & staff are irritation of skin, rashes, urinary tract infection & diarrhea, irritation of eyes, nasal congestion, fever. In conclusion the present study suggests that the ZP & AMC school of Amr. Preventive measure for cleanliness & carried out regular air monitoring at indoor & outdoor environment of school. Monitoring of airborne bacteria can be useful in prevention of bacterial allergic diseases.

Conflicts of Interest: The authors stated that no conflicts of interest.

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Int. J. of Life Sciences, Special issue, 48-September, 2017

25. Ingole SP: Role of Physicochemical Parameter in Soil Quality of Amravati District

“National Conference on Biotechnology and Biodiversity (NCBB-2017)”- 22nd – 23rd September, 2017

concentration of suspended particulates matter PM_{2.5} max. 65 µg/m³ at MIDC Amravati & PM₁₀ max. 157 µg/m³ at Rajakamal square Amravati as commercial area. During whole year coefficient of variation showing higher variation in concentration recorded at S.S.S.C.Amt. 16.78% for PM₁₀, the conc. of PM_{2.5} is more consistent in MIDC, Amravati i.e 15.27% more variation are observed at Shri Shivaji Science College Amt.23.73% & Rajkamal 15.36%.

Key words: Air, Air quality, Air Pollution Analysis, PM₁₀, PM_{2.5}

ROLE OF PHYSICOCHEMICAL PARAMETER IN SOIL QUALITY OF AMRAVATI DISTRICT

Tale, SS* and Ingole, SP[#]

^{#1} Research student, Shri Shivaji Science College Amravati, Sant Gadge Baba Amravati University, Amravati-India.

^{#2} Shri Shivaji Science College Amravati, Sant Gadge Baba Amravati University, Amravati.
Email-(1) smitatayade83@gmail.com (2) sangita_pi@rediffmail.com

India is an agrarian country. Most of the people are dependent on farming. It has severe issues related farming. Vidarbaha region is major cultivator of agriculture land. It's farming and productivity affects due to the imbalance of nature, irregular rainfall, use of pesticide and fertilizers. Different agricultural practices leads to the excessive use of chemical fertilizer, which leads to depletion of soil quality and biomagnifications. To acquaint the soil quality, soil testing. Soil testing is the best tool to understand the productivity of soil which is directly related with its physicochemical properties. The objectives of the study is to determine the its physicochemical properties of the soil sample collected from the different agricultural lands of Amravati district. The study of physico chemical characteristics of the soil is based on various parameters like temperature, P^H, EC, Moisture , NPK. It is observed that different conclusions are observed in different parameters due to different soil quality. The study will be helpful to the farmers for the management of nutrient balance of their soil to increase the crop yield.

Key words – Soil quality, Soil analysis, Physicochemical parameter and NPK.

MICROBIAL STUDY OF INDOOR AIR QUALITY FROM VARIOUS SCHOOLS OF AMRAVATI CITY

Deshmukh, VD* and Ingole, SP[#]

* Dept. of Environmental Science, Shri. Shivaji Science College, Amravati
Email- vaishalindeshmukh18@gmail.com (2) sangita_pi@rediffmail.com

Air pollution is one of the most growing problems of our World. Indoor air quality issues are not new to India. Presence of bacteria in indoor air causes a serious health problem for human beings. Determination of various groups of indoor microorganisms is necessary for both to estimate the health hazards & to create standards for indoor air quality control. Unhygienic environment conditions of schools indicator of air quality which shows the adverse effect on

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Int. J. of Life Sciences, Special Issue, AB | September, 2017

ISSN: 2320-7817 | eISSN: 2320-964X

RESEARCH ARTICLE

Statistical Analysis of Air Quality as PM₁₀ and PM_{2.5} of Amravati city, Maharashtra, India

Jane Manisha¹, Ingole Sangita^{2*}, Lunge HS³¹Department of Environmental Science, ²Department of Statistic, Shri Shivaji Science College Amravati, MS, India^{*}Corresponding author Email: sangita_pitrediffmail.com

Manuscript details:

Available online on
<http://www.ijlsc.in>ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)

Editor: Dr. Arvind Chavhan

Cite this article as:

Jane Manisha, Ingole Sangita and Lunge HS (2017) Statistical Analysis of Air Quality as PM₁₀ and PM_{2.5} of Amravati city, Maharashtra, India, Int. J. of Life Sciences, Special Issue, AB: 159-162.

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ABSTRACT

This paper is dealing with the Statistical Analysis of Air Quality of Amravati city. The present work is carried out during the year 2013-2014 with respect to NO_x, SO_x, PM₁₀ and PM_{2.5}. The paper is based on seasonal comparative study of PM₁₀ & PM_{2.5} of Amravati city. Exposure to pollutants such as airborne particulate matter, oxides of sulphur, and oxides of nitrogen has been associated with increases in mortality and hospital admissions due to respiratory and cardiovascular disease. Suspended particulates matter in ambient air of four stations in Amravati city was collected using a fine dust sampling technique. Attention was focused on the various sources of Amravati city. The statistical calculation is carried out with respect to coefficient of variation and obtained results are compared with sampling sites. The sampling stations are divided into three areas. Sampling is carried out two days in week. The concentration of suspended particulates matter PM_{2.5} max. 65 µg/m³ = MIDC Amravati & PM₁₀ max. 177 µg/m³ at Rajakamal square Amravati as commercial area. During whole year coefficient of variation showing higher variation in concentration recorded at S.S.S.C. Amravati. 16.70% for PM₁₀ the conc. of PM_{2.5} is more consistent in MIDC, Amravati is 15.27% more variation are observed at Shri Shivaji Science College Am.23.73% & Rajakamal 15.36%.

Key words: Air, Air Pollution Analysis, PM₁₀, PM_{2.5}

INTRODUCTION

Air pollution could also be defined as "any atmospheric conditions in which substance are present in the high concentration enough higher than their normal ambient level to provide a measurable effect on, animals, vegetation or materials" (Seinfeld, 1986). According to the section 2(b) of air (prevention and control of pollution) act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant'. As per section 2(a) of air (prevention and control of pollution) 'air pollution' act, 1981 had been called as 'any solid, liquid or gaseous substance present in the atmosphere in such concentration as tend to be injurious to human beings or living creatures or environment' (CAAQMS 2011).

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The emissions are due to the several non-ideal processes taking place in real combustion and that are harmful to the surroundings and human health (Timoney, 2005).

Air supplies us with oxygen, which is crucial for our bodies to live. Adults breathe in on 10-20 cubic meters of air a day. Youngsters breathe almost double that amount because they are smaller, and their metabolic process systems are still maturing (Sood 2012).

Environmental issues studied in Iran, urban air pollution is one among the serious Environmental source, mostly stationary, industrial and domestic fuel combustion, motorized vehicles emissions and ineffective environmental rules (Mansouri, 2011).

Natural sources smoke that comes from volcanoes, methane, dust, pollen, spores and anthropogenic activities like Power Plants, and biomass burning, Fuel Adulteration, Construction Activity, Vehicle Emission and Traffic Congestion (Kumar, 1999). According to Hradilova (2006) Quality of air is one amongst the essential of indicators of the quality of the environment. Internal combustion unit, the prime movers like, vehicle emit hydrocarbons, carbon monoxide, lead, oxides of nitrogen, road and tire dust "A" human carcinogen studied by Balachandram (2012) Bhattachar et al (2006). The clean air act needs 'Environmental Protection Act' set national ambient air quality standards for common air pollutant are such as (NO_x), (O_3), (CO), (PM_{10} and $\text{PM}_{2.5}$), (SO_2), and (H_2S). These are called as 'criteria pollutants'

PM_{10}

less than 1-2 μm diameter get deposited within the alveolar region of the lung whereas the absorption of trace element is 60-80% (Srinastava, 2002).

$\text{PM}_{2.5}$

Worldwide Short-term exposure at elevated concentrations will considerably contribute to heart disease (Aaron, 2005). In 2011 study all over that traffic exhaust is that the single most serious cause of heart attack (7.4%) in the public. (Nawrot 2011).

Particulate pollution now borne overseas that floats into Canada, united Mexican states and also the US account for premature death such year (Bina Ran, Opna Sush 2011).

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MATERIALS AND METHODS

Determination Particulate Matter (PM_{10} & $\text{PM}_{2.5}$) Gravimetric Method

Sampler: Ambient fine dust Sampler with size selective inlet for PM_{10} , $\text{PM}_{2.5}$ and automatic volumetric flow control. Fine Dust sampler (Instrument IPM-FDS) is used for sampling.

RESULTS AND DISCUSSION

RSPM_{10} (Respirable Suspended Particulate Matter Less Than $10 \mu\text{g}/\text{m}^3$)

Coefficient of variation during 2013 & 2014 (RSPM_{10})

Coefficient of variation is calculated for selected sampling station for each pollutant to make the comparison between seasons. For RSPM_{10} the Amravati city S.S.S.C.22.51% varied drastically compared to Rajkamal 13.10%, MIDC-Nandgaon peth 14.40%, MIDC-Amravati 17.85% & rural places at Morshi more consistent 11% than the ward 18.57%, parbhada 16.99% & dhara 10% during whole year. During whole year from coefficient of variation it was found that the higher variation in concentration recorded at S.S.S.C. Amravati, 16.78% more variation was observed than the MIDC, Nandgaon peth 12.24%, MIDC, Amravati 13.39%, Rajkamal was more consistent sampling site 11.84%. Whereas in rural areas Dhara was more varied 20.70% than the Ward 16.59%, Parbhada 15.13% and Morshi 10.34% was more homogeneous than other places recorded (Table 1 & Fig. 1.)

$\text{RSPM}_{2.5}$ (Respirable Suspended Particulate Matter Less Than $2.5 \mu\text{g}/\text{m}^3$)

Coefficient of variation during 2013 & 2014

From $\text{RSPM}_{2.5}$ all samples calculated by coefficient of variation it was found that the S.S.S.C. sampling site 24.67% more variation was observed than the MIDC, Amravati 17.9%, Rajkamal 19.37% and MIDC, Nandgaon peth 19% recorded in Table 2 & fig.2.

During 2014 MIDC, Amravati 15.27% was more consistent than the S.S.S.C. Amravati, 23.73%, Rajkamal 15.36% and MIDC, Nandgaon peth 16.97%. Change in the temperature pattern due to Festival and wind speed.

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CONCLUSION

- From all four sampling stations, maximum RSPM₁₀ value is found 136µg/m³ for (Commercial area) and 100µg/m³ for Morchi during winter season 2013 whereas in 2014 it is 139µg/m³ for Industrial area.
- During summer 2013 maximum concentration of RSPM₁₀ is 117 µg/m³ in May recorded for Partwada and 155µg/m³ found for Commercial area whereas it is 157 µg/m³, for Industrial area during same season 2014.
- Maximum concentration of RSPM₁₀ is 131µg/m³ from Commercial area during Rainy season 2013 whereas maximum value is 134 µg/m³, for Industrial area Amravati, during 2014.
- During Monsoon Season 2013 the maximum value of RSPM₁₀ 177 µg/m³ is found from Commercial area and maximum 125µg/m³ for Ward whereas in 2014 it is 150µg/m³, for Amravati Industrial area.
- In winter season 2013 analysis it is found that the PM_{2.5} for MIDC, Amravati it is maximum 54 µg/m³whereas 2014 (64 µg/m³) for MIDC, Amravati.
- During summer 2013 at Rajkamal, it is found that PM_{2.5} maximum value noted 64 µg/m³whereas it is 65µg/m³for Commercial area during 2014.
- In Rainy Season 2013 it is found that PM_{2.5} maximum concentration 58 µg/m³for MIDC, Amravati whereas 2014 it is 50 µg/m³for Commercial areas.
- The sample of 4 sites show PM_{2.5} maximum 60 µg/m³is record for MIDC, Amravati during Post Monsoon Season 2013 & in 2014 maximum concentration is PM_{2.5} 60 µg/m³Amravati (Industrial area) The statistical calculation is carried out with respect to coefficient of variation and obtained results are compared with sampling sites.
- The RSPM₁₀ maximum variation in CV 22.51% for S.S.S.C. Amravati in 2013 where as in 2014 it is 16.78% MIDC, Nandgaonpath.
- In 2013 RSPM₁₀ show maximum variation in CV 24.67% for S.S.S.C. Amravati. Whereas in 2014 maximum variation are recorded 25.56 % commercial area

Conflicts of Interest: The authors stated that no conflicts of interest.

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27. Junghare US: Study of Restoration Techniques on Various Types of Images Using Image Processing

VIDYABHARATI
INTERNATIONAL INTERDISCIPLINARY
RESEARCH JOURNAL
 www.viirj.org
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SMART INDIA VISION 2020-
INNOVATIONS IN COMPUTER APPLICATIONS
MANAGEMENT AND COMMERCE
 18th February 2017
COMPUTER SCIENCE SECTION

ORGANISED BY :
VIDYABHARATI MAHAVIDYALAYA, AMRAVA'
 REACCREDITED AT LEVEL 'A' BY NAAC (CGPA 3.26) &
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STUDY OF RESTORATION TECHNIQUES ON VARIOUS TYPES OF IMAGES USING IMAGE PROCESSING

S. Deshmukh and U.S. Junghare
Brijlla Biyani Science College, Amravati.
Sheetalchingu@gmail.com, usjunghare@yahoo.co.in

ABSTRACT

This paper presents an outline for the reduction of noise and enhancement of various types of images. Various types of images are used such as satellite image, digital image, X-ray image. A noise is any unwanted signal/pixel that may be added or subtracted during transmission. These unwanted signals/pixels decrease the image quality. To reduce the noise from images, various image filters are used. In this paper we discuss and analyses the enhancement and filtrations of spatial domain techniques applies on images used for various recognition applications.

Keywords : Various images, Frequency Domain, Histogram Equalization, Restoration.

Introduction

Here Histogram Equalization, Adaptive Histogram Equalization Techniques and some Filtration techniques is applied to images, for overall face image restoration. Image filtering is a common procedure in digital image processing aiming at the suppression of different type of noises that might have corrupted an image during its acquisition or transmission[1]. This procedure is traditionally performed in the frequency-domain or transform-domain by filtering

The images are low resolution, with noises and bluer so need to remove all these noises and bluer with different filtration techniques. Also the improvement of brightness and contrast for face recognition application is given to progress the recognition rates. Various Face recognition algorithms need to verify the image databases. In this research area thousand of researchers was works and still continue, the huge amount of literature is available for work here only do the pre-processing techniques on the face images.

An image is restored after it has lost its most important features or degraded. An image could be degraded during digitization or during transmission. During digitization or transmission a noise may be included in a digital image from the environment around it. For example, while taking a picture using a camera a noise is added by the camera fault, the image sensor or from the environment where the image is taken. When it is from the camera fault it means if the shutter speed of the camera is too long.

Different Restoration Techniques

2.1 Image Acquisition:

For the image acquisition we use the Digital Camera. Digital image is taken from camera. Satellite image and X-ray image are taken from internet. Fig.6 shows all the camera use for image acquisition.

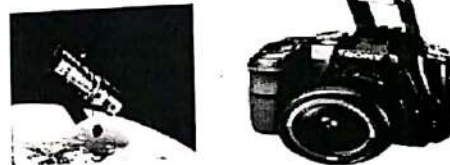


Fig.1: CAMERA USE FOR IMAGE ACQUISITION

2.2 Face Image Gray Scale Conversion:

After resizing images we convert the all RGB images in to the 8 bit gray scale images. The average image intensity level is 0 to 255. Then we perform enhancement and filtering techniques on the gray scale images. , removing noise from the images.[6] HE is used to display the enhanced output images which are based on the original input image.

2.3 Image Enhancement:

An Image is an array(or)matrix, of square of pixels arranged in rows and columns. Pixel is widely used in the term and it is denote the elements of an image[5]. Image enhancement is process of images more useful. It is mainly used to improve the q quality of images Image enhancement using Spatial domain and frequency domain. In frequency domain idle, Butterworth , Gaussian low pass , high pass filter various techniques is used .In Spatial domain direct

28. Kalambe NA: Synthesis and study of 2-Hydroxy Substituted Quinoxaline Effects on Different Crop Plant Growth

IJRBT, Special Issue (2), Vol-V, July 2017

ISSN No. 2347-517X (Online)



INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE & TECHNOLOGY
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Synthesis and Study Of 2-Hydroxy Substituted Quinoxaline Effects on Different Crop Plant Growth

Nilima A. Kalambe

Department of Applied Chemistry, P.R. Patil College of Engineering & Technology,
 Amravati-444604 (M.S.) India
 E-mail : nilimakalambe09@gmail.com

Abstract

As the population of the world is increasing day by day and land holding capacity is going to decreasing. So it is great challenge to feed the nation by increasing the productivity of crop. Synthesis of 2-hydroxy substituted quinoxaline prepared by using 2-hydroxy substituted chalcone dibromide and chalcone dibromide condensed with BDA in methanol solvent. 2-Hydroxy substituted quinoxaline gives 2-(2-hydroxy-5-chloro) benzyl-3,4-methoxyphenyl quinoxaline, 2-(2-hydroxy-5-chloro) benzyl-3-phenyl quinoxaline, 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-(4-methoxy phenyl) quinoxaline and 2-(2-hydroxy-3-bromo-5-chloro) benzyl-3-phenyl quinoxaline respectively. The structure of ligands was elucidated on the basis of molecular weight, elemental analysis and spectral data. In crop growth, growth hormones may play important role such as increase in height of plant, number of leaves per plant, number of pods per plant etc., which reflects yield of crop. The synthesized substituted quinoxalines were used for seed treatment as well as foliar application to find out their effect on plant growth as well as in respect of seed yield viz. Soybean (*Glycine max* (L.) Merrill), Groundnut (*Arachis hypogaea*) and Chickpea (*Cicer arietinum*). The synthesized ligands showed significant effect on crop plants growth.

Keywords:- Chalcone dibromide, Substituted quinoxaline, Growth promotion hormonal effect, Soybean, Groundnut, Chickpea

Introduction

Chalcone have been associated with diverse biological activities, e.g. cardiovascular, antiviral¹, anticancer and industrial application². Utale et al³ reported chalcone dibromide by the reaction of bromine in 25% w/v acetic acid with 3-substituted-2-hydroxy-5-chloro chalcone. Khadsan et al⁴ synthesized the α,β -acrylophenone dibromide from acrylophenones by bromination using acetic acid.

Antibacterial activity of novel substituted quinoxaline were studied by Noorulla and Sreenivasulu⁵. Antimicrobial activities of some substituted quinoxaline-2-(1H)-one derivatives were studied by Ghadge and Shirote⁶. The novel quinoxaline derivatives were studied by More et al⁷. Maurya et al⁸ reported the growth promoting effects of pyrazolines and isoxazoline on agriculture crop plants. Substituted isoxazolines and pyrazolines in 70% dioxane-water mixture and effect on seed germination were studied by Meshram et al⁹. Ramteke et al¹⁰ have been studied the effect of chloro-substituted pyrazoles and their complexes on Spinach (*Spinacia oleracea* L.) at different pH. Synthesis and growth promoting effects of chloro-substituted heterocycles on agricultural crop plants have been studied by Parhate et al¹¹. Synthesis and study of 2-hydroxy substituted chalcone dibromide effects on different crop plant reported by Kalambe et al¹².

MATERIALS AND METHODS

All chemicals used to synthesize substituted chalcone dibromide and substituted quinoxaline were of IR grade. The structure of ligands was elucidated on the basis of molecular weight, elemental analysis and spectral data. Physical and analytical data of synthesized compounds are summarized in Table-1.

Preparation of 2-hydroxy substituted chalcone dibromide

The 2-hydroxy substituted chalcone was dissolved in boiled glacial acetic acid. A solution of bromine in acetic acid was added to this solution with constant stirring. The product of 2-hydroxy substituted chalcone dibromide was filtered and washed with alcohol followed by petroleum ether.

- 5-Chloro-2-hydroxy chalcone dibromide (1)
- 5-Chloro-2-hydroxy-4-methoxy chalcone dibromide (2)
- 3-Bromo-5-chloro-2-hydroxy chalcone dibromide (3)
- 3-Bromo-5-chloro-2-hydroxy-4-methoxy chalcone dibromide (4)

Preparation of 2-hydroxy substituted quinoxaline

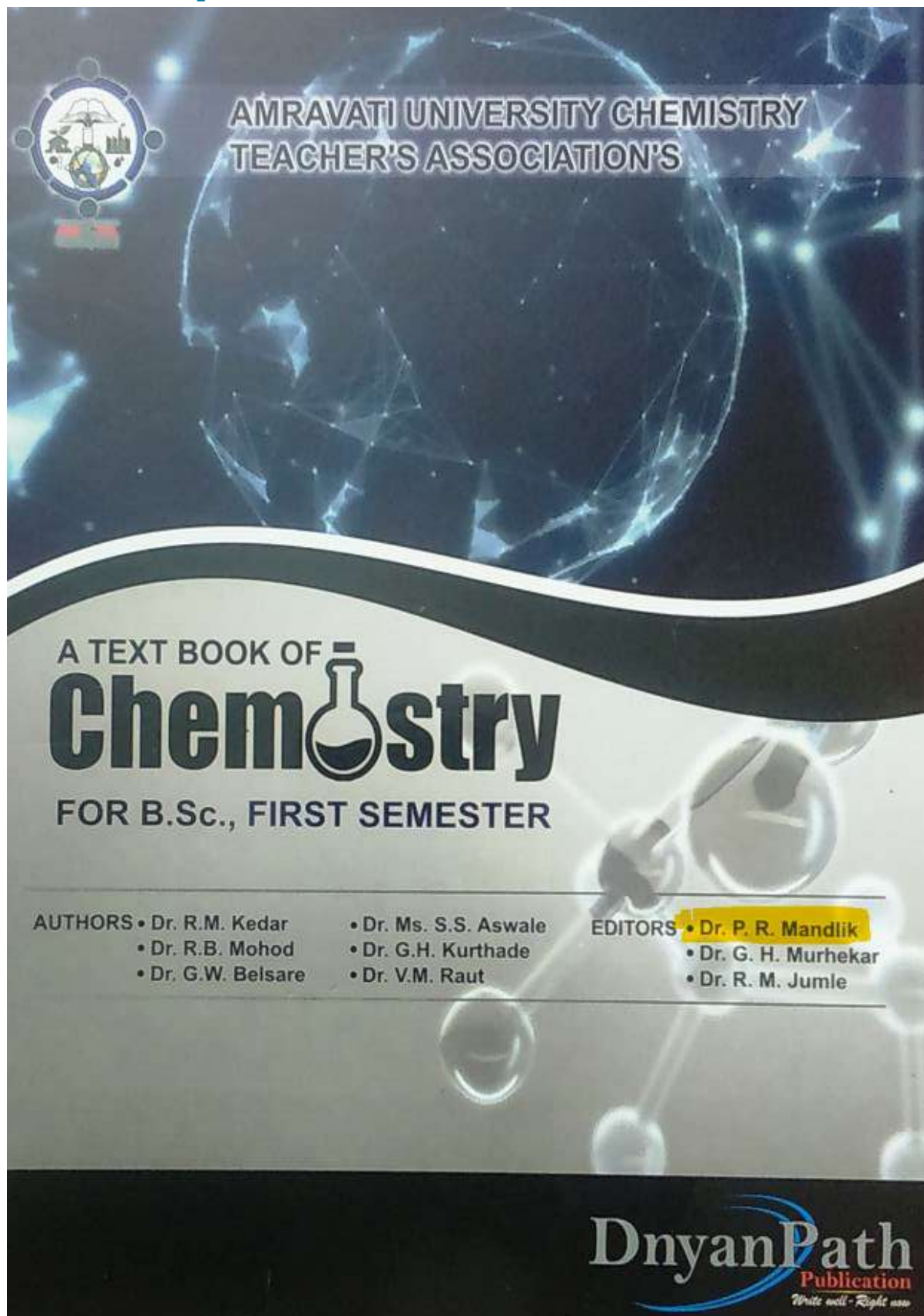
The 2-hydroxy substituted chalcone dibromide and BDA were condensed in methanol. A few drops of concentrated H₂SO₄ were added and heated on water bath. It was diluted with water and crude mass was extracted with solvent ether. Ether was removed and solid residue was

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A TEXT BOOK OF CHEMISTRY SEMESTER - I

ISBN 13 : 978-81-933884-0-2

Edition : First, June 2017

Second, June 2018



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Printed at Shri Gurudeo Printers, Amravati.

Mahatma Fule Sankul, Shegaon Naka, V.M.V. Road, Amravati - 444603 (Maharashtra)

Price : ₹ 135/-

Table-1: List of synthesized compounds, their % yield and melting points.

Sr. No.	Compounds	%Yield	Melting Point (in °C)
1	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-methoxybenzylidene) - 5-Imidazolone.	60	235
2	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-nitrobenzylidene) - 5-Imidazolone.	65	290
3	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-hydroxybenzylidene) - 5-Imidazolone.	68	220
4	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-dimethylaminobenzylidene)-5-Imidazolone.	62	310
5	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(3, 4,5-trimethoxybenzylidene)-5-Imidazolone.	64	170
6	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-chlorobenzylidene) - 5-Imidazolone.	69	230
7	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(2-nitrobenzylidene) - 5-Imidazolone.	69	210
8	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-hydroxy-3-methoxybenzylidene)-5-Imidazolone.	70	160
9	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-benzylidene) - 5-Imidazolone.	63	195
10	1-(4-chlorophenyl)-2-(3-sulphoxyphenyl)-4-(4-furanylidene) - 5-Imidazolone.	65	200

CONCLUSION

Hence we could synthesize a new series of imidazolones by introducing sulphonyl group as one of the new substituents. Use of zeolite as a catalyst afforded us increase in percent yield and reduction in reflux time. Most of these compounds are expected to show antimicrobial activity. Therefore, it may be suggested that more series of compounds are needed to be synthesized by introducing new substituents on benzylidene moiety in order to enhance its value as a drug.

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ISBN: 978-81-926186-5-4



Published on 30th Nov. 2016

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**EXPLORATION OF DIFFICULTIES IN TEACHING CONCEPTS IN
SCIENCE AT HIGH SCHOOL LEVEL (CLASS VIII)**

Dinesh D Khedkar

Associate Professor, Shri Shivaji Science College, Amravati

Objectives:

1. To identify the content of VIII std science textbook & to find out the science concepts.
2. To find out the concepts difficult to understand for the Science teachers at upper primary level.
3. To find out the difficulties encountered by science teachers for teaching science concepts in classroom at upper primary level.

Activities:

1. Tick difficult topics to explain in class room
2. Arrange difficulty level in order
3. Top five difficult concepts
4. Why do you find it difficult

NAME of the Teacher: _____

School : _____

Subjects Teaching : _____

Teaching Experience : _____

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ICV 2014: 59.28
SJIF Impact Factor 4.23
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ISSN:2320-7817 (P)
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ICV 2015 59.28
 UGC Approved Journal No. 48951
 Cosmos Impact Factor 4.369
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ISSN:2320-7817 | eISSN:2320-964X
 Special Issue, A 8, September 2017

INTERNATIONAL JOURNAL OF LIFE SCIENCES

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33. Khedkar DD: Editorial; Shivaji Vidnyan Parishad 28 – 30 Dec. 2017



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Leaning Science : Experiences and Challenges

EDITOR

DR. D. D. KHEDKAR

Associate Professor in Botany

Shri Shivaji Science College

Shivaji Nagar, Amravati, MS, India

Website: www.dineshkhedkar.com, Email: ddkhedkar@shivajiscamt.org

5th Shivaji Vidnyan Parishad - 28th to 30th December, 2017

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Learning Science : Experiences and Challenges

EDITOR

DR. D. D. KHEDKAR

Associate Professor in Botany

Shri Shivaji Science College

Shivaji Nagar, Amravati, MS, India

Website: www.dineshkhedkar.com,

Email: ddkhedkar@shivajiscamr.org

PUBLISHER

DR. V. G. THAKARE

Principal

Shri Shivaji Science College

Shivaji Nagar, Amravati, MS, India

Website: www.shivajiscamr.org,

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PUBLISHER

Students' Cooperative Consumer Store

Shri Shivaji Science College

Shivaji Nagar, Amravati, MS, India

ISBN: 978-81-926186-3-0



9 788192 618630 >

Published on 28th December, 2017

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Editorial

Greetings from the organizers of Shivaji Vidyan Parishad!

Science is a body of knowledge, a method of inquiry, a way of investigating the things. Science is an attitude towards life; a way of thinking. It should be inculcated in the upcoming student since their childhood. The successful science learning leads to the advancement as a technology which influences the life in toto.

In Indian context majority of the students belongs to the rural area. Though we are advancing towards modern world, still 80 % rural population has not matched the pace of this evolution. The lag may be directly shouldered to the lack of scientific attitude.

To transform India in to the developed country, its necessary to instil scientific attitude in the students. It's possible only when the complex processes of the scientific understanding will be simplified and conversant with common man. Eventually it will develop open mindedness, a desire for accurate knowledge, inquiring attitude and the expectation that the solution of the problem will come through the use of verified knowledge.

The 5th Shivaji Vidyan Parishad is all about administration of strategic change in existing education system. Parishad intended the blend of conventional, modern and innovative science teaching, learning and evaluation methods. We are delighted to present this book "Learning Science: Experiences and Challenges". It is compilation of the articles from the resource persons, delegate teachers and students participating in the science exhibition.

This Parishad has a tagline "Fervorous Teachers : Furious Students". It is simulating that the teachers of this generation need to be intensively zealous and passionate to adapt with the dynamic system of education and conversant with all the technologies and tools pupils are playing. This will definitely generate the shining and sparking students voracious for exploring the things or solving the problems.

Hopefully, Parishad will definitely serve the purpose to uplift and bring the students closer to the science. It will foster an aptitude towards those qualities characterizing person's way of behavior which serve to indicate, how well they can learn to meet and solve certain specified kind of problems.

34. Maggirwar RC: Effect of *Glomus Fecundisporum* Schenck and Smith on Plant Growth and P-Uptake in *Vigna radiata* L.

IJRBAT, Special Issue (2), Vol-V, July 2017

ISSN No. 2347-517X (Online)



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Effect of *Glomus Fecundisporum* Schenck and Smith on Plant Growth and P-Uptake In *Vigna Radiata* L.

R. C. Maggirwar, G.B. Hedawoo, S.P. Khodke, and P. B. Bobade

Mycorrhizal Bio-technology Lab P.G. Department of Botany, Shri Shivaji Science College, Amravati, Maharashtra, India. dr.krekha@yahoo.com

ABSTRACT

Agricultural production systems are limited by the capacity of the associated ecosystems to sustain their natural properties, even though advances in agricultural technology have reduced our dependency somewhat in this regard the relationship between sustainable agriculture and the environment is one of complimentary and interdependent. The soil is a part of farmer's environment as well as resource to be exploited. Biological management of soil fertility implies the harnessing of biological resources of ecosystem, particularly those of the soil itself, for the manipulation of soil fertility. The most direct means of biological management are those associated with the use of manipulation of biological populations, such as N-fixing bacteria, mycorrhiza and other soil flora and fauna. Arbuscular Mycorrhizal Fungi (AMF) has been described as a 'universal Symbiosis' in plant kingdom. This association plays an important role in the acquisition of mineral nutrients, specially the slowly mobile ion such as phosphorous. In the present work, the attempt has been made to find a niche for the production of mycorrhizal inoculated seedling with an objective of substituting partially or completely the heavy fertilizer application with mycorrhizal inoculation. The effect of most dominant *Glomus* sp. was studied on the major crop of Vidarbha region by performing the pot experiments. The results on *Vigna radiata* L. with AM inocula of *Glomus fecundisporum* Schenck and Smith has benefits over control to the host plant at 50% P fertilization. The present research data provides information for utilization of AM fungi as bio-fertilizer in soil management to protect soil cover and increase yield of this crop in this region. For sustainable development of agriculture *Glomus fecundisporum* Schenck and Smith and some more native species of AM fungi can be taken into account in near future.

Keywords:- *Glomus fecundisporum*, P-uptake, *Vigna radiata* L.

INTRODUCTION

Arbuscular Mycorrhizal Fungi (AMF) has been described as a 'universal Symbiosis' in plant kingdom. The beneficial effects of these intimate associations are well documented. These are symbiotic association formed between zygomycetes (order-Glomales) and with the roots of most terrestrial plants. These association creates an intimate link between plant root and the soil in many types of natural ecosystem throughout the world.

Overall, the use of sophisticated agricultural practices has had, so far, a net beneficial effect upon agricultural production, human welfare, nutrition and health. But mismanagement and overuse have the potential to overwhelm the ability of natural processes to "absorb" these practices. A critical challenge facing most countries is to halt and reverse the present extent of environmental degradation resulting from excessive exploitation of natural resources, especially those manifested in desertification, soil erosion, water logging and soil and water salinization, in order to ensure the needs of future generations.

The increasing use of chemical fertilizers for increasing crop productivity is adversely affecting the quality of the soil. Application of chemical biocides is an effective technique to manage plant disease but is controversial because of its highest costs and environmental effects. It is believed that soil microorganism plays a major role in

nutrient cycling and plant growth. In contrast to conventional agriculture and contrary to the chemical fertilizers the organic manures and bioinoculants are less expensive and increase productivity without harming the environment.

It is well known that Am fungi improve the growth of plants by increasing the absorptive surface of roots composed with root hairs and thus help in the absorption of phosphorus copper and zinc which are relatively immobile in the soil and form Am colonization and sporulation composition of plotting mixture is of great importance. Artificial introduction of more efficient species of Am fungi into soils, where they are lacking or are present in low numbers or inefficient species in the form of an inoculants can improve the growth of many plants.

AMF and P-Uptake

Phosphate is relatively immobile in soil and diffuses only slowly to the plant root. As a result, in soils of low P availability, depletion zones soon develop around the roots. It is now well established that mycorrhizal infection can enhance the uptake of P

(Plenchette, et al., 1983). Most of the work has been focused on phosphate nutrition, because P is one of the major plant nutrients and in P deficient soils AM can stimulate plant growth by several folds. The studies on effect of P-uptake and plant growth were carried out in different

Table-2 Effect of *Glomus fucoidisporum* on growth parameters of *Vigna radiata*

Most	Treatment	7 day Length in centimetre				14 day Length in centimetre				21 day Length in centimetre				28 day Length in centimetre			
		Root	Shoot	R/S	No.	Root	Shoot	R/S	No.	Root	Shoot	R/S	No.	Root	Shoot	R/S	No. Lys.
Radiat	Control	3.1cm	24.7	0.025	2	2 cm	17.2cm	0.116	2	3.2 cm	29.1cm	0.109	2	2.5cm	29.5	0.084	2
(100%)	Only Seed	2.8cm	26.8	0.173	2	3.2cm	25.2cm	0.125	2	2.2 cm	28.2 cm	0.078	2	2.9cm	30	0.096	2
(100%)	Only P ₂ O ₅	1.8cm	24.9	0.072	2	2.1cm	18.6cm	0.112	2	1.9 cm	30cm	0.063	2	3cm	30.2	0.099	2
(50%)	Only P ₂ O ₅	1.2cm	23.7	0.05	2	3 cm	21.3cm	0.102	2	3 cm	30cm	0.1	2	2.8cm	30.5	0.091	2
Sr. (100%)	Only P ₂ O ₅ + inocm																
1	Only P ₂ O ₅ + inocm	3cm	19.2cm	0.156	2	2.6cm	21.5cm	0.12.9	2	3cm	30cm	0.1	2	3.4cm	27.8	0.122	2
2	Only P ₂ O ₅ + inocm	2.1cm	19cm	0.11	2	1.8cm	23 cm	0.078	2	2.5 cm	29.1cm	0.85	2	3.1cm	30.5	0.101	2
3	Only P ₂ O ₅ + inocm	1.5cm	18.9cm	0.073	2	1.5cm	21.3cm	0.0704	2	2.9 cm	29cm	0.1	2	3.2cm	30.1	0.106	2
Sr. (100%)	Only P ₂ O ₅ + inocm																
1	Only P ₂ O ₅ + inocm	1.4cm	19.1cm	0.0732	2	2.1cm	25.8cm	0.078	2	2.9cm	21.9cm	0.132	2	3.2cm	32.5	0.098	2
2	Only P ₂ O ₅ + inocm	1.2cm	19.1cm	0.0628	2	1.7cm	25.2cm	0.054	2	1.6 cm	25.3cm	0.033	2	3.2cm	30	0.01	2
3	Only P ₂ O ₅ + inocm	1cm	19cm	0.0526	2	2 cm	18.3cm	0.1092	2	2.1 cm	24.1cm	0.087	2	3cm	30.1	0.099	2

Table-3. Effect of different levels of phosphorus & AM isolate on Fresh & Dry Wt. MIE(%) P, Uptake of vigna radiata

28 DAS	Treatments	Fresh Wt. (gm)	Dry Wt. (gm)	P-uptake(%)	MIE
	P2O5(100%)	0.36	0.5	0.42	9.5
	P ₂ O ₅ (50%)	0.24	0.3	0.21	16.36
	Control				
	Only Seed	0.14	0.05	0.15	
	Only inoculum	0.36	0.02	0.17	
	Only P ₂ O ₅ (50%)	0.24	0.04	0.2	
	Only P ₂ O ₅ (100%)	0.3	0.06	0.2	

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35. Maggirwar RC: Soil Trap Culture of Strawberry associated AM fungi from Melghat (M.S.) India

Int. J. of Life Sciences, Special Issue, A8 | September, 2017

ISSN: 2320-7817 | eISSN: 2320-964X

RESEARCH ARTICLE

Soil Trap Culture of strawberry associated AM fungi from Melghat (M.S.) India

Maggirwar RC*, Khodke SP, Deshmukh SB and Malokar SG

Mycorrhizal Bio-technology Lab P.G. Department of Botany, Shri Shivaji Science College, Amravati, MS, India.

*Corresponding author Email: dr.krekha@yahoo.com

Manuscript details:	ABSTRACT
<p>Available online on http://www.ijlsci.in</p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as: Maggirwar RC, Khodke SP, Deshmukh SB and Malokar SG (2017) Soil Trap Culture of strawberry associated AM fungi from Melghat (M.S.) India, <i>Int. J. of Life Sciences, Special Issue, A8</i>:28-32.</p> <p>Copyright: © Author, This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>Present world demands the production of high quality food in a most sustainable way causing least damage possible to the ecosystem. Today, fertilizers and pesticides are being used at high levels in the intensive production of plants. A cheap and non-destructive means of achieving high productivity rests on the establishment of a viable low input farming system. However, in order to implement such a plan, we must develop plant systems that can efficiently scavenge and utilize soil nutrients present at low levels. The symbiotic arbuscular mycorrhizal fungi (AMF) have a major impact on the functioning and stability of any ecosystem. An attempt has been made in the present research to isolate and identify AM fungi of strawberry fields in the Melghat area of Maharashtra, India. The rhizosphere soil was then used for soil trap culture of dominant AMF species. Various practices like use of waste substrates along with the traditional substrate (soil-sand mixture) are being tried for mass culture of AM fungi these days. Addition of any substrate into soil provides minerals in addition to beneficial elements that ultimately enhance the growth of AM fungi as well as plant.</p> <p>Since strawberry is the most economically competent crop of the area, the focus has been to isolate, characterize and identify its most dominant AM fungal species to prepare trap culture. The two varieties of Strawberry (<i>Fragaria</i> Sp.) namely winter down and tissue culture were collected for the study. Assessment of rhizosphere soil samples and roots was carried out. All the samples showed presence of AMF propagules. The genus <i>Glomus</i> was found to be the most frequent morpho-taxonomically identified AMF. The preparation of trap cultures is the only viable technique to increase spore number and to recover intact, fresh and healthy spores which may be used in future for initiation of monospecific cultures. The research finds its extension in the industrial produce on large scale by mass multiplication of these native AM fungal strains and its wider application in the farming. The findings of the present study are significant in upbringing of the local tribal community using nature's own resource.</p> <p>Keywords: AM fungi, strawberry, Melghat forest area.</p>

Maggirwar et al., 2017

syndrome could be a protective mechanism from the parasitic attack by soil microorganism or predatory larvae. The present study is the first report on inventory of AMF species associated with Strawberry from Melghat forest of Maharashtra for its soil trap culture. Similarly Norman et al. (1996) observed colonization rates of 55.4%-70.8% in strawberry plants when inoculated with *Glomus fasciculatum* and *Glomus etunicatum*.

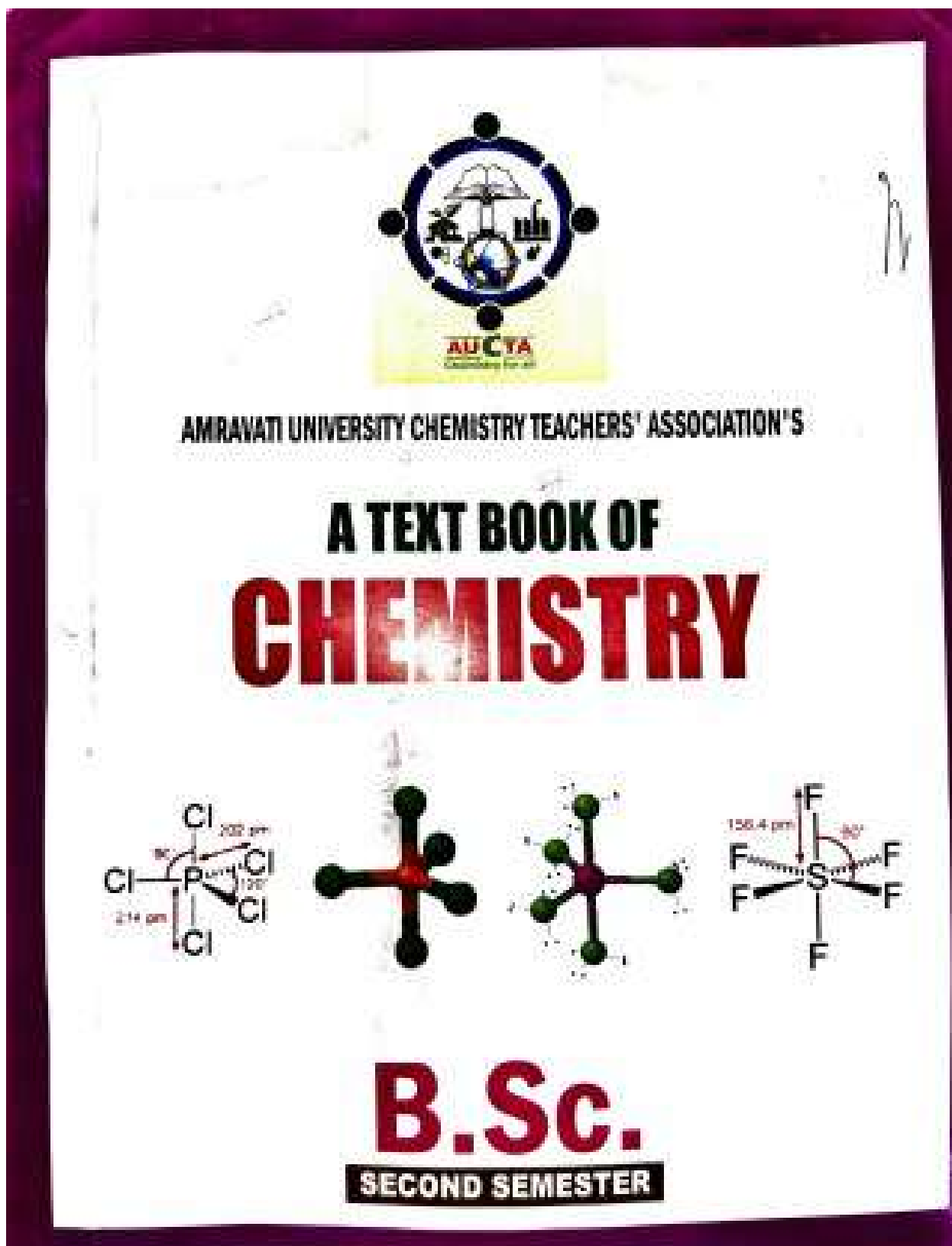
Conflicts of interest: The authors stated that no conflicts of interest.

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Mr.R.F.Pagariya

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Dr.P.R.Padole

Shri Shivaji Science College, Amravati.

Dr.H.S.Chandak

G.S.Science, Arts & Commerce College, Khargone.

Mr.G.H.Murbekar

Dr.R.G.Rathod Arts and Science College, Merthapur.

Dr.S.P.Wagh

Shri Shivaji College, Akot.

Dr.Ma.Y.S.Thakare

Shri Shivaji Science College, Amravati.

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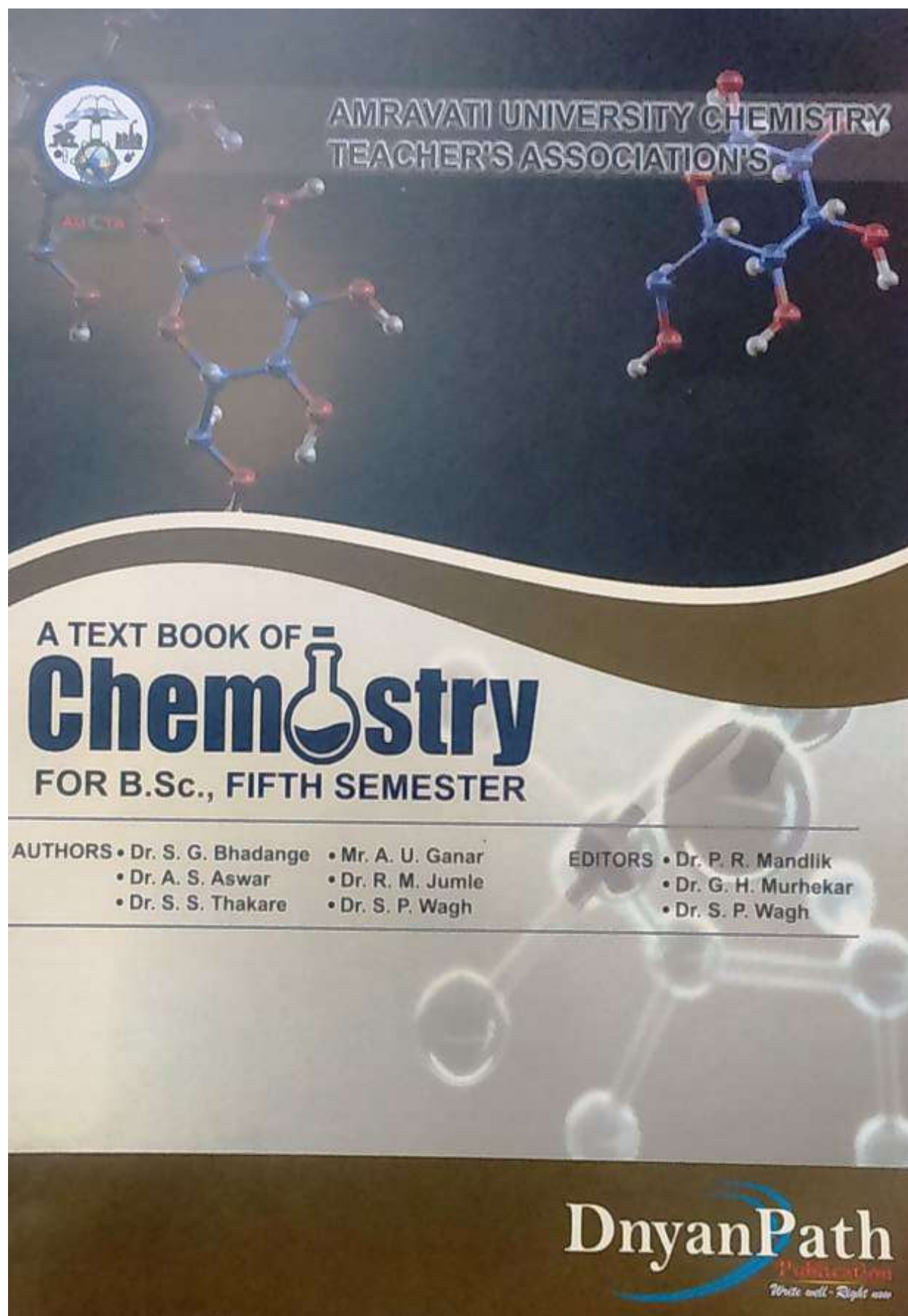
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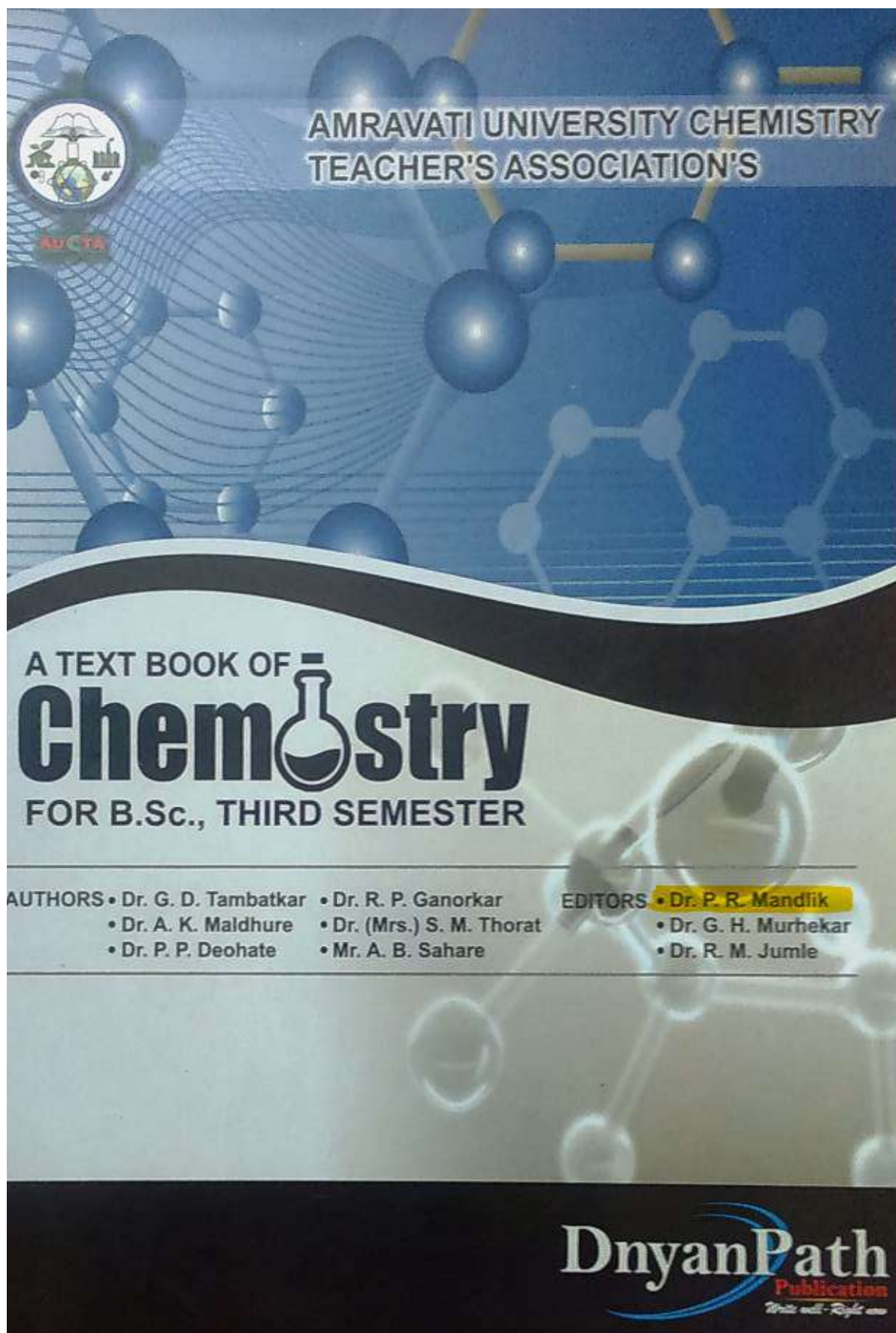
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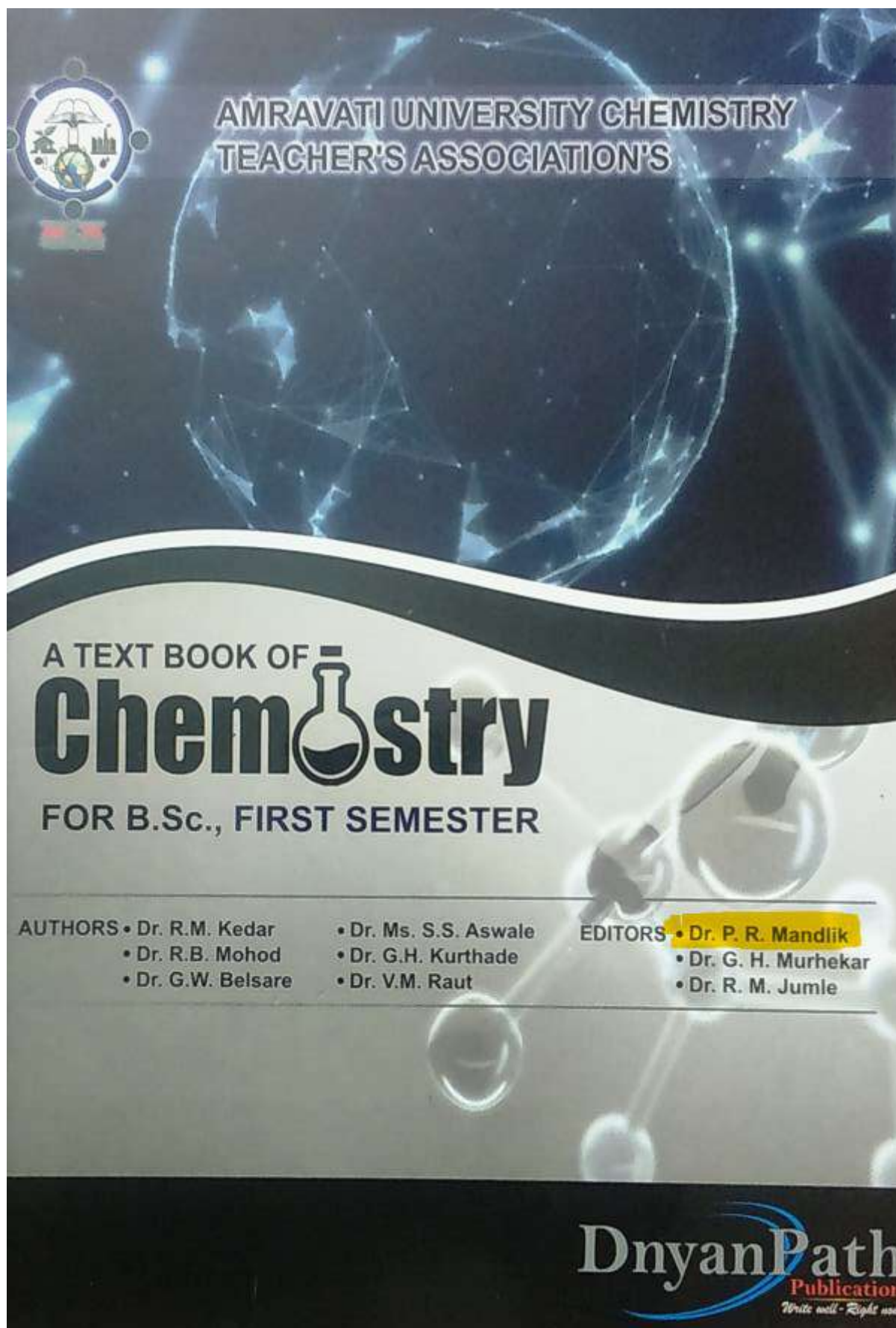
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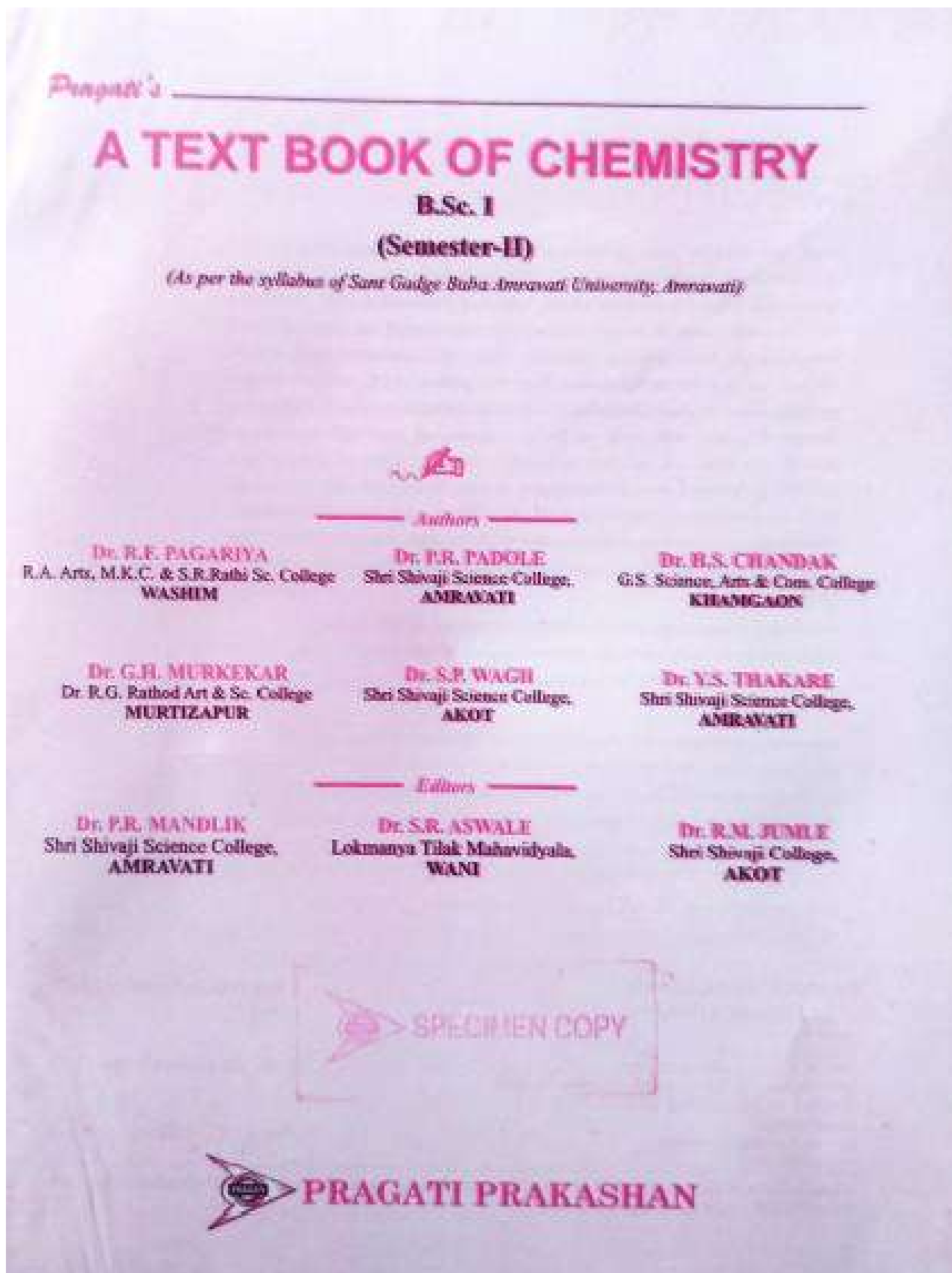
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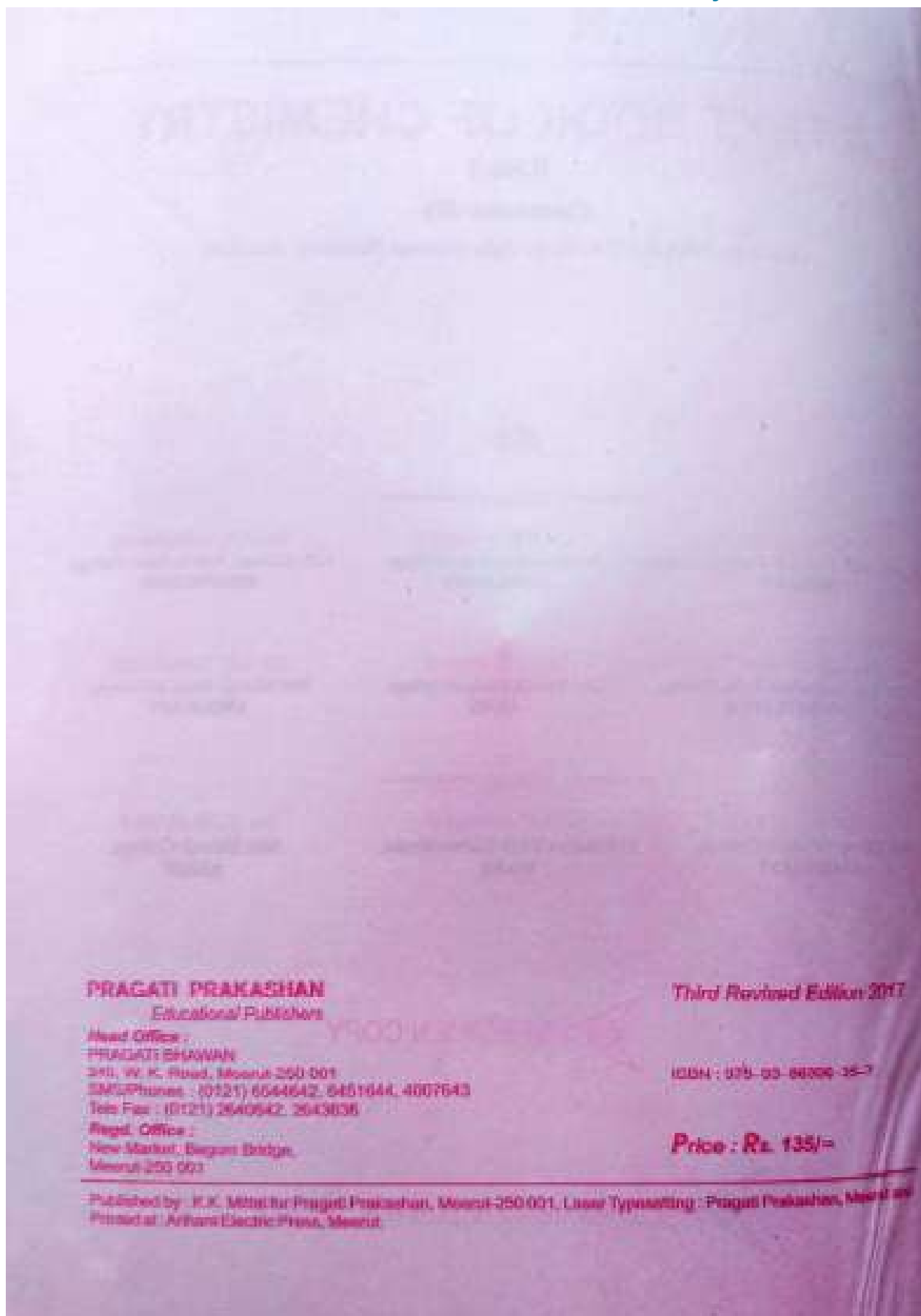
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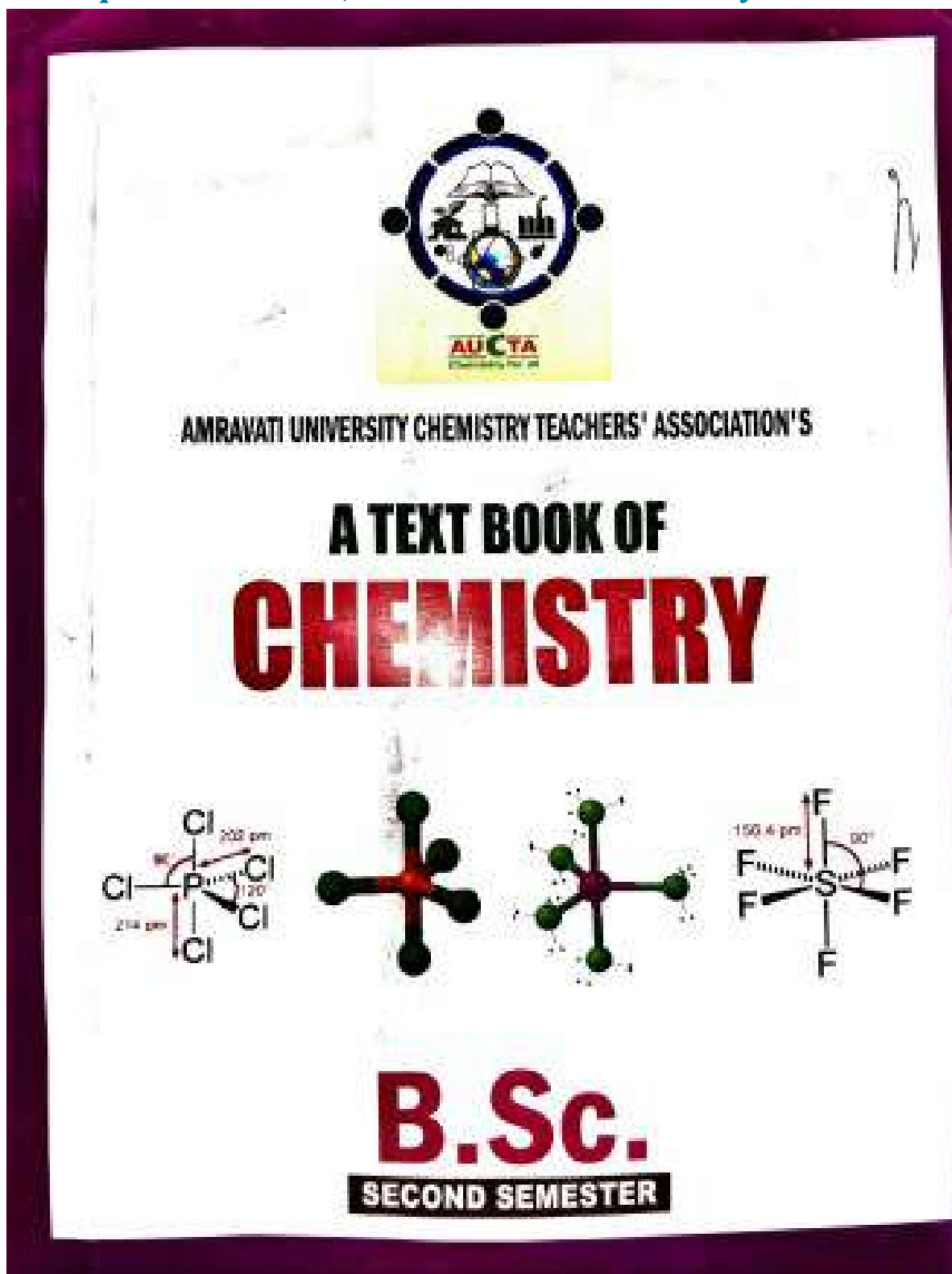
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Shri Shivaji Science College, Amravati

Dr.H.S.Chandak

G.S.Science, Arts & Commerce College, Kamgaon

Mr.G.H.Murhekar

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Shri Shriyaji College, Akot

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42. Suradkar KP, Hande DV, and Kadu SR: Screening of Antifungal activity of Endophytic fungi from *Dioscorea bulbifera*

Int. J. of Life Sciences, Special Issue, A8 | September, 2017

ISSN: 2320-7817 | eISSN: 2320-964X

RESEARCH ARTICLE

Screening of Antifungal Activity of Endophytic Fungi From *Dioscorea bulbifera*

Suradkar KP¹, Hande DV² and Kadu SR³¹Department of Botany, Indira Mahavidyalaya, Kalamb Dist. Yavatmal (MS) India²Department of Botany, Shri Shivaji Science College, Amravati (MS) India³Department of Botany, Arts, Com., Sci. College, Chhikhaldara (MS) India

Manuscript details:	ABSTRACT
<p>Available online on http://www.ijlsci.in</p> <p>ISSN: 2320-964X (Online) ISSN: 2320-7817 (Print)</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as: Suradkar KP, Hande DV and Kadu SR (2017) Screening of Antifungal Activity of Endophytic Fungi From <i>Dioscorea bulbifera</i>, <i>Int. J. of Life Sciences</i>, Special Issue, A8: 59-62.</p> <p>Copyright: © Author, This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>Antifungal potential of endophytic fungi was studied in the present investigation. Secondary metabolites were produced by endophytic fungi isolated from <i>Dioscorea bulbifera</i> to investigate their antifungal activity against two pathogenic fungi, one as a human pathogenic (<i>Candida albicans</i> MTCC 7315) and one as a plant pathogenic (<i>Colletotrichum acutatum</i> MTCC 2213) taken from IMTECH, Chandigarh, India.</p> <p>Key words; Secondary metabolites, Antifungal Potential.</p> <p>INTRODUCTION</p> <p>Metabolites produced by endophytes are being recognized as versatile arsenal of antimicrobial agents. Some endophytic fungi have been known to have capabilities to produce bioactive compounds, owing to their presumable gene recombination with their host while living and reproducing within the host tissues (Li <i>et al.</i>, 2005). 80% endophytic fungi produce biologically active compounds with antibacterial, antifungal, antioxidant, anticancerous and herbicidal properties (Schulz <i>et al.</i>, 2002). The development of new antimicrobial metabolites is important to prevail the problems related to the treatment of diseases caused by resistant pathogens (Petersen <i>et al.</i>, 2004). Thus, endophytic fungi have emerged as an alternative source to synthesize new antimicrobial compounds.</p> <p>Due to the ability of production of important secondary metabolites by endophytic fungi, the study of these fungi from selected medicinal plants provide greater understanding of its diversity and potentials to synthesize bioactive metabolites. In India from long period medicinal plants have been used for the treatment of different diseases and provides specific atmosphere to endophytic fungi. Many endophytic fungi with novel and natural bioactive secondary metabolites are reported previously from medicinal plants (Strobel <i>et al.</i>, 2004). In view of these earlier observations, the present study was carried out to investigate the bioactive potential of endophytic fungi.</p>

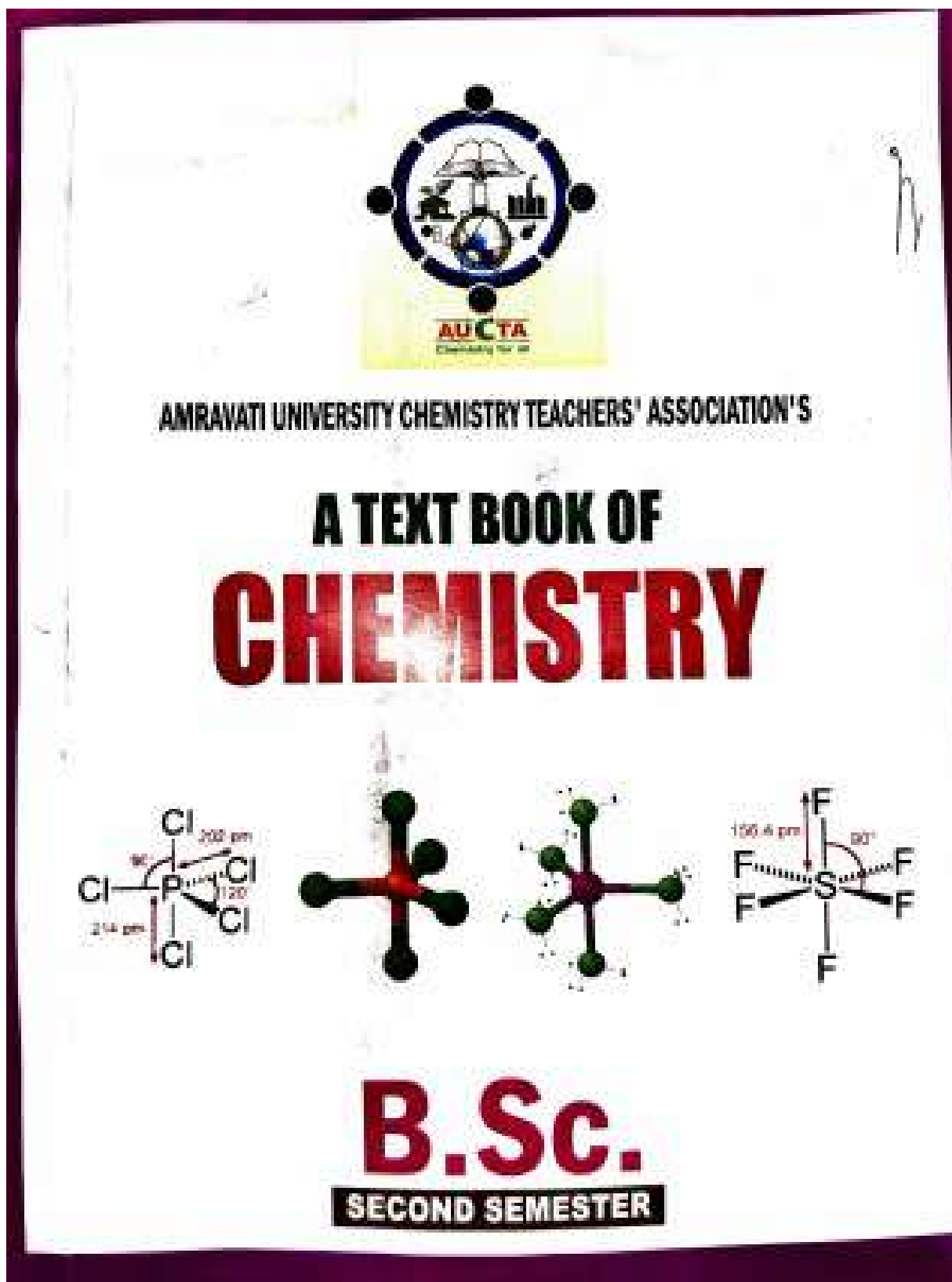
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Mr.R.F.Pagariya

P.A.Arts, M.K.C. & S.R.Rathi Science College, Warananagar

Dr.P.R.Padole

Shri Shivaji Science College, Amravati

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Dr.R.M.Jumle, *Shri Shivaji College, Akot*

A TEXT BOOK OF CHEMISTRY

B.Sc. (Semester-II)

ISBN-13

978-81-926163-3-9

Second Edition-2015

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44. Wakode AW, Burghate AS, Wadhwa SA: Studies on Refractive Index of Benzothiazolyl and Benzimidazolyl derivatives in different percentage of binary liquid mixture

IJRBAT, Special Issue (2), Vol-V, July 2017

ISSN No. 2347-517X (Online)



INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE & TECHNOLOGY

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Studies on Refractive Index of Benzothiazolyl and Benzimidazolyl Derivatives in Different Percentage of Binary Liquid Mixture

Ankush W. Wakode*, Archana S. Burghate and Shrikant A. Wadhwa

Department of Chemistry, Shri Shivaji Science College, Amravati-444603, MS, India

E-mail: ankushwakode@gmail.com

ABSTRACT

Refractive indices of benzothiazolyl and benzimidazolyl substituted derivatives in different percentage of binary liquid mixture such as acetone-water, dioxane-water & DMSO-water at 35 ± 0.1 °C were measured by Abbe's refractometer. The data obtained was utilized to calculate molar refraction and polarizability constant which explain solute-solvent interactions.

Keywords: Refractive indices, molar refraction, molecular interaction, polarizability constants.

INTRODUCTION

The heterocyclic compounds with wide application in pharmaceutical chemistry and have wide range of biological applicability. Benzothiazolyl and benzimidazolyl derivatives are widely found in bioorganic and medicinal chemistry with applications in drug discovery and development for treatment such as autoimmune and inflammatory diseases in the prevention of solid organ transplant rejection, epilepsy¹, antitumor², antiviral³, anticonvulsant⁴, anticancer neuroprotective and immunosuppressive properties no one has reported the physicochemical properties of these derivative in different solvents. The data may help to use these derivative in various fields.

The prediction of refractive indices of binary liquid mixture is essential for determination of composition of binary liquid mixtures. The studies of refractive indices are being increasingly used as tools⁵⁻⁶ for investigation of the physical properties of pure components and the nature of inter molecular interaction between the liquid mixture constituents⁷. Refractive index measurements in combination with density, melting point, boiling point and other analytical data have wide applicability in chemical analysis an industry⁸. Many researchers studied Schiff's bases with the determination of physical parameter⁹⁻¹⁰. Schiff's bases uses are some of the most widely used organic compound they are use as pigment and dyes, catalysts, intermediates in organic synthesis, and as polymer stabilizers. A.N. Sonar, N.S. Pawar¹ studied refractive index of substituted heterocyclic compound in different media.

The present study deals with refractive index measurement of benzothiazolyl and benzimidazolyl derivatives in different percentage of binary liquid systems.

MATERIAL AND METHODS

Acetone-water, dioxane-water and DMSO-water mixture of varying compositions as well as solutions of Benzothiazolyl and benzimidazolyl substituted derivatives in different percentage of binary mixture were prepared. All weighing was made on contech electronic balance (± 0.001 gm). The accuracy of density measurements was

within 0.1 kg m^{-3} . the refractive indices of solvent mixture and solutions were measured by Abbe's refractometer was within (± 0.001). The densities of the solutions were determined by a density bottle having volume of about 5 ml.

The present work deals with the study of molar refraction and polarizability constant of benzothiazolyl and benzimidazolyl substituted derivatives in different percentage composition of binary mixture at 307K (35 °C). The data obtained have been used to compute intermolecular interaction. The refractometric reading were taken as described in literature.

The molar refraction of solvent dioxane-water, acetone-water & DMSO-water were calculated from determined from-

$$R_{s-w} = x_1 R_1 + x_2 R_2$$

Where, R_1 , R_2 are the molar refractions of solvent and water respectively.

The molar refraction of solutes of benzothiazolyl and benzimidazolyl substituted derivatives in binary mixture were determined by a following equation,

$$R_m = \frac{(n^2 - 1)}{(n^2 + 2)} \left\{ \frac{[x_1 m_1 + x_2 m_2 + x_3 m_3]}{d} \right\}$$

Where,

n = is refractive index of solution

x_1 = is mole function of solvent

x_2 = is mole function of water

m_1, m_2 , and m_3 are molecular

weights of solvent, water and solute respectively

d = is density of solution

The polarizability constant(α) of compounds were calculated from the following relation

$$R_{lg} = \frac{4}{3} \pi N_o \alpha$$

Where, N_o is Avogadro's number

RESULT AND DISCUSSION

In the present investigation considers the refractive index Benzothiazolyl and benzimidazolyl substituted derivatives in solvent dioxane-water, acetone-water and DMSO-water

In the present work, there is increase in polarizability as well as molar refraction with increase in percentage of binary mixture with respect to more polar solvent. This may be due to dispersion force. It is the molecular force which arise from temporary dipole moment. The cumulative diople-dipole interaction may create weak dispersion force resulting in increase in molar refraction and polarizability.

From the observed result it may be predicted that for binary liquid mixtures on addition of mentioned compound 1a, 2a and 1c, there is decrease in molar refraction as well as polarizability. This may be due to the fact that the solvent-solvent interaction may be more strong than solute-solvent interaction.

ACKNOWLEDGEMENT:

The authors would like to thanks authorities of Shri Shivaji Science College, Amravati University, Amravati for providing necessary facilities.







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45. Gawande SP: Athlete and Food Choice

DOI Prefix: 10.22183 Journal DOI: 10.22183/23501081	UGC Approved Journal Sr.No.44476 ISSN 2350-1081	IMPACT FACTOR 5.210
 Research Demagogue	 MEMBER OF  OPEN ACCESS	 
DR. SUBHASH P. GAWANDE Shri Shivaji Science College, Amravati.	 International Conference on Future Prospective of Physical Education, Sports Sciences and Yogic Practices (15 th to 16 th December 2017) Department of Physical Education, S. G. B. Amravati University, Amravati, M.S. ATHLETE AND FOOD CHOICE	
	ABSTRACT <i>Food is an important part of life, and athletes should enjoy the foods that they eat, confident in the knowledge that they have made wise choices. Athletes are all different, and there is no single diet that meets the needs of all athletes at all times. Individual needs also change across the season and athletes must be flexible to accommodate this. Getting the right amount of energy to stay healthy and to perform well is the key. Athletes think about food only as fuel for the muscles, while others are more preoccupied with the effects on body composition and fat mass. Major Determinants of Food Choice: Attitudes, Beliefs and Knowledge and Optimistic bias, Influence of Skills and Abilities on Food Choice, Individual Energy and Nutrient Need, Health Concerns, Biological Determinants of Food Choice, Economic and Physical Determinants of Food Choice, Social Determinants of Food Choice, Psychological Factors & Environmental Factors. Concluding from the above article we can conclude that at the most basic level, nutrition is important for athlete because it provide energy required to perform the activity. The food we eat impacts on our strength, training, performance and recovery. Not only is the type of food important for sports nutrition but the times we eat throughout the day also has an impact on our performance levels and our bodies ability to recover after exercising.</i>	
Introduction Food is an important part of life, and athletes should enjoy the foods that they eat, confident in the knowledge that they have made wise choices. Diet affects performance, and the foods that we choose in training and competition will affect how well we train and compete. Athletes need to be aware of their nutritional goals and of how they can select an eating strategy to meet those goals. Diet may have its biggest impact on training, and a good diet will help support consistent intensive training while reducing the risk of illness or injury. Good food choices and a regular meal pattern can also promote adaptations in muscle and other tissues in response to the training stimulus. Athletes are all different, and there is no single diet that meets the needs of all athletes at all times. Individual needs also change across the season and athletes must be flexible to accommodate this. Getting the right amount of energy to stay healthy and to perform well is the key. Too much and body fat increases; too little and performance falls and illness results. Food choice is defined as; 'the selection of foods for consumption, which results from the competing, reinforcing and interacting influences of a variety of factors. These range from the sensory, physiological and psychological responses of individual consumers to the interactions between social, environmental and economic influences, and include the variety of foods available and the activities of the food industry to promote them'. • The action of choosing; preferential determinism between things proposed; selection, election • Abundance and variety to choose from; scope or field for choice • Person or thing chosen or selected • An alternative.		
Importance		
R. D. Special Issue Future Prospective of Physical Education, Sports Sciences and Yogic Practices		554

DOI Prefix: 10.22183
Journal DOI: 10.22183/23501081

UGC Approved Journal Sr.No.44476
ISSN 2350-1081

IMPACT FACTOR
5.210

• **Environmental concerns:** Scientific intervention in the food chain also may cause concerns for some people. “Genetically modified (GM) - organic “

10. Other Factors that may Affect Food Choice Human welfare and fair trading, where growers or producers in developing countries are paid a good minimum price to cover their costs, can be high concern for some people. This can affect the choice between caged or free range hens, or dolphin friendly tuna.








Conclusion

Concluding from the above article we can conclude that at the most basic level, nutrition is important for athlete because it provide energy required to perform the activity. The food we eat impacts on our strength, training, performance and recovery. Not only is the type of food important for sports nutrition but the times we eat throughout the day also has an impact on our performance levels and our bodies ability to recover after exercising.

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46. Watane KN: Experimental Research

DOI Prefix: 10.22183 Journal DOI: 10.22183/23501081		UGC Approved Journal Sr.No.44476 ISSN 2350-1081		IMPACT FACTOR 5.210	
 Research Demagogue		 MEMBER OF 		  	
MS. KAVITA N. WATANE Shri Shivaji Science College, Amravati		 International Conference on Future Prospective of Physical Education, Sports Sciences and Yogic Practices (15 th to 16 th December 2017) Department of Physical Education, S. G. B. Amravati University, Amravati, M.S. EXPERIMENTAL RESEARCH			
		ABSTRACT <i>Physical education and Sports have a vital role in the life of human from time immemorial. The progress of the Nation lies in the hands of the people, who are healthy and physically fit. Over a decade, the society in general has realized the need for keeping fit and health through organized physical activity programme. Scientific evidence has made with a clear and that unless man engages himself in organized vigorous physical activity programme. Purpose of Experimental research seeks to determine a relationship between two (2) variables—the dependent variable and the independent variable. After completing an experimental research study, a correlation between a specific aspect of an entity and the variable being studied is either supported or rejected. Experimental Designs 1. Pre-Experimental Designs 2. True Experimental Design 3. Quasi-experimental design 4. Correlational and Ex Post Facto Design. Experimental research designs are repeatable and therefore, results can be checked and verified. Through experimental research we can develop healthy life as well as healthy trend. And it's also important for development and the future well-being of our nation.</i>			
Introduction Physical education and Sports have a vital role in the life of human from time immemorial. The progress of the Nation lies in the hands of the people, who are healthy and physically fit. Every individual should develop physical fitness for a happy and effective living. In order to get physical fitness one has to involve in physical activities. Over a decade, the society in general has realized the need for keeping fit and health through organized physical activity programme. Scientific evidence has made with a clear and that unless man engages himself in organized vigorous physical activity programme. The real benefits would not come. The field of physical education and sports has been a relatively late convert to experimental evaluations. One might wonder why it took so long for education research to adopt these methods. I think that the recent emphasis in physical education on the experimental evaluation of programs is a healthy trend. Physical education and sports is vitally important to workforce development and the future well-being of our nation, yet there is a paucity of rigorous program evaluation on which to base those policies. To fill this gap, we should probably conduct more and more experiments and rigorous evaluations. Experimental research is a study that strictly adheres to a scientific research design. It includes a hypothesis, a variable that can be manipulated by the researcher, and variables that can be measured, calculated and compared. Most importantly, experimental research is completed in a controlled environment. The researcher collects data and results will either support or reject the hypothesis. Purpose of Experimental research seeks to determine a relationship between two (2) variables—the dependent variable and the independent variable. After completing an experimental research study, a correlation between a specific aspect of an entity and the variable being studied is either supported or rejected. Experiment:- An experiment is a procedure carried out to verify, refute or validate a hypothesis. Experiments provide insight into cause-and-effect by demonstrating what outcome occurs when a particular factor is manipulated.					
R. D. Special Issue Future Prospective of Physical Education, Sports Sciences and Yogic Practices 69					

DOI Prefix: 10.22183 Journal DOI: 10.22183/23501081		UGC Approved Journal Sr.No.44476 ISSN 2350-1081		IMPACT FACTOR 5.210
To study the effect of an influence on a carefully controlled sample	Pretest-posttest control group	$R - - O \Rightarrow X \Rightarrow O$ $[O \Rightarrow - \Rightarrow O$	This design has been called "the old workhorse of traditional experimentation." If effectively carried out, this design controls for eight threats of internal validity. Data are analyzed by analysis of covariance on posttest scores with the pretest the covariate.	
To minimize the effect of pretesting.	Solomon design	$R - - O \Rightarrow X \Rightarrow O$ $[O \Rightarrow - \Rightarrow O$ $[- \Rightarrow X \Rightarrow O$ $[- \Rightarrow - \Rightarrow O$	This is an extension of the pretest-posttest control group design and probably the most powerful experimental approach. Data are analyzed by analysis of variance on posttest scores.	
To evaluate a situation that cannot be pretested.	Posttest only control group	$R - - X \Rightarrow O$ $[- \Rightarrow O$	An adaptation of the last two groups in the Solomon four-group design. Randomness is critical. Probably, the simplest and best test for significance of this design is the t-test.	

3. Quasi-Experimental Design

Quasi-experimental design involves selecting groups, upon which a variable is tested, without any random pre-selection processes.

The word "quasi" in Latin means *as if* or *almost*. Considering this, quasi experimental research could be described as a best attempt at an experiment when it is impossible, or not reasonable, to meet all the criteria of a true experiment.

Aim of the Research	Name of the Design	Notation Paradigm	Comments
To investigate a situation in which random selection and assignment are not possible	Nonrandomized control group pretest-posttest	$O \Rightarrow X \Rightarrow O$ $O \Rightarrow - \Rightarrow O$	One of the strongest and most widely used quasi-experimental designs. Differs from experimental designs because test and control groups are not equivalent. Comparing pretest results will indicate degree of equivalency between experimental and control groups.
To determine the influence of a variable introduced only after a series of initial observations and only where one group is available	Time series experiment	$O \Rightarrow O \Rightarrow X \Rightarrow O \Rightarrow O$	If substantial change follows introduction of the variable, then the variable can be suspect as to the cause of the change. To increase external validity, repeat the experiment in different places under different conditions.
To bolster the validity of the above design with the addition of a control group	Control group time series	$O \Rightarrow O \Rightarrow X \Rightarrow O \Rightarrow O$ $O \Rightarrow O \Rightarrow - \Rightarrow O \Rightarrow O$	A variant of the above design by accompanying it with a parallel set of observations without the introduction of the experimental variable.
To control history in time designs with a variant of the above design.	Equivalent time-samples	$[X1 \Rightarrow O1] \Rightarrow [X0 \Rightarrow O2] \Rightarrow [X] \Rightarrow O3]$	An on-again, off-again design in which the experimental variable is sometimes present, sometimes absent.

4. Correlational and Ex Post Facto Design

An ex post facto research design is a method in which groups with qualities that already exist are compared on some dependent variable. Also known as "after the fact" research, an ex post facto design is considered quasi-experimental because the subjects are not randomly assigned - they are grouped based on a particular characteristic or trait.

Aim of the Research	Name of the Design	Notation Paradigm	Comments
To seek for cause-effect relationships between two sets of data	Causal-comparative correlational studies	\Rightarrow $Oa \nabla Ob$	A very deceptive procedure that requires much insight for its use. Causality cannot be inferred merely because a positive and close correlation ratio exists.
To search backward from consequent data for antecedent causes	Ex post facto studies	\Leftarrow	This approach is experimentation in reverse. Seldom is proof through data substantiation possible. Logic and inference are the principal tools of this design.

Conclusion

From the above study we can conclude that experimental research is the most appropriate way for drawing causal conclusions, regarding interventions or treatments and establishing whether or not one or more factors causes a change in an outcome. It is a basic, straightforward, efficient type of research that can be applied across a variety of disciplines. Experimental research designs are repeatable and therefore, results can be checked and verified. Through experimental research we can develop healthy life as well as healthy trend. And it's also important for development and the future well-being of our nation.

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<https://futureofworking.com/8-advantages-and-disadvantages-of-experimental-research/>

R. D. Special Issue Future Prospective of Physical Education, Sports Sciences and Yogic Practices

47. Arsad SS: Synthesis and Dosimetry Characterisation of $\text{CaF}_2:\text{Ce}^{3+}$ phosphor material



Int. Res. J. of Science & Engineering, 2018, Special Issue A2 (161-168)
ISSN: 2322-0015

ISI Impact Factor 4.11
UGC Approved Journal No. 14625

RESEARCH ARTICLE

OPEN ACCESS

Synthesis and Dosimetry Characterization of $\text{CaF}_2:\text{Ce}^{3+}$ Phosphor Material

Punse VS and Arsad SS

Department of Physics, Shri Shivaji Science College, Amravati, 444605 (INDIA)
Email: punse.vikas28@gmail.com, arsadss@nititp.ac.in

Manuscript Details

Available online on <http://www.ijrse.in>
ISSN: 2322-0015

Editor: Dr. Arvind Chavan

Cite this article as

Punse VS and Arsad SS: Synthesis and Dosimetry Characterization of $\text{CaF}_2:\text{Ce}^{3+}$ Phosphor Material, Int. Res. Journal of Science & Engineering, January 2018, Special Issue A2, 161-168.

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ABSTRACT

With the help of simple, fast as well as cost effective process of wet chemical method followed by reactive atmospheric process, $\text{CaF}_2:\text{Ce}^{3+}$ can be successfully synthesized. The XRD analysis shows the desired phase of CaF_2 and the photoluminescence spectra shows excitation and emission spectra coherently.

Keywords: Dosimetry, PL (photoluminescence), wet chemical method, CSL (optically stimulated Luminescence), RAP (reactive atmospheric process).

INTRODUCTION

Luminescence is the process of emission of optical radiation from a material except incandescence. The material absorbs energy, store fraction of it, convert and emit it in the optical radiation. When an organic and inorganic material absorb some form of energy by any means, it tries to attain equilibrium by disposing part of extra energy absorbed by way of heat, chemical or structural changes and luminescence. Phosphor materials convert UV radiation into visible radiation. Lamp Phosphor is mostly white in colour and they should not absorb the visible radiation. Optically Stimulated Luminescence (OSL) is a related phenomenon in which the luminescence is stimulated by the absorption of optical energy, rather than thermal energy. In the history, the Optically Stimulated Luminescence (OSL) is used by radiation dosimetry.

State level Seminar on "Advanced Methods for material Characterization" (SCAMMC -2018)
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48. Arsad SS: Advances in Technology for vitiligo treatment with photo therapy



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ADVANCES IN TECHNOLOGY FOR VITILIGO TREATMENT WITH PHOTOTHERAPY

S.S. ARSAD

Dept. of phy, Shri Shivaji Science College Amravati
 arasadnagrik@yahoo.co.in

ABSTRACT

It is a well known fact that ultraviolet light in the range of 308 nm to 311 nm (NBUVB) is worldwide accepted phototherapy standard for the treatment of vitiligo. The research in this field has published many clinical study reports approving the efficacy and suitability of NBUVB. The advances in technology for vitiligo treatment suggested excimer laser as the best treatment tool. Vitiligo is a chronically displacing disease in which white patches appear on any part of the skin. These patches are due to destruction of melanocytes which produce melanin the chemical that gives colour to skin. The excimer laser itself is costly and requiring special installation and power requirements. Recently excimer lamps are introduced. These lamps have same therapeutic results. The recent developments and advantages of new technology are discussed here.

Keywords : Excimer laser, Excimer lamp, Phototherapy, Vitiligo, NBUVB

INTRODUCTION

The molecule of XeCl is used in producing UVB with 308 nm wavelength which is found to be useful in accelerating melanin formation activity. The UVB units are available in various shapes and sizes to cover entire body surface or targeting to a small skin area like fingers or toes. The depigmented skin showing white patch can be repigmented to achieve normal skin colour. Primarily Mercury lamps were popular though they were not much ecofriendly. With the last generation lamps focus was shifted to various application areas. Initially XeCl rare gas was used as a lasing medium and excimer laser were launched but with advances in technology made it possible to develop excimer lamp.

Materials and methods : Xenon monochloride (XeCl) is an excimer which is used in excimer lamps emitting near ultraviolet light at 308 nm. It is most commonly used in medicine. At least two gases must be used to generate excimer: a halogen donor and a rare gas. However, not all rare gas halide molecules lead to the development of lasers; some may not even exist. Multiple molecules and applications have been developed.[1]

In a case study by Korean team who compared the clinical efficacy of a short-term intervention of 308-nm excimer laser with that of narrow-band UVB (NBUVB) phototherapy for vitiligo patients to see the early response. Twenty-three

symmetrically patterned patches of vitiligo on 8 patients were selected. Vitiligo patches on one side of the body were treated 2 times per week for a maximum of 20 treatments with the excimer laser, and NBUVB phototherapy was used on patches on the other side. They used a 308-nm excimer laser with a self-contained gas system of Xe-Cl (Photomedex®, Carlsbad, CA, U.S.A.). Output is initiated by a foot switch and consists of a train of short pulses with a pulse-width of 30 nanoseconds, delivered through a fiber optic hand piece. It is operated at 3 ml per pulse with pulse repetition of up to 200 Hz. The laser allows fixed fluences to be delivered, from 100 mJ/cm² to a maximum dose of 2,100 mJ/cm², in 50 mJ/cm² increments. Additional fluence can be delivered by pressing the foot switch. The NBUVB phototherapy unit (Waldmann Co., Germany) contains a bank of 48 fluorescent tubes (TL-100/801, Philips, Eindhoven, The Netherlands) with peak emission at 311 to 312 nm.[3]

In another case study by Goldinger et al. tried the combination therapy for two months i.e. 24 treatments (8 weeks), nine patients were evaluated. Eight patients showed evidence of repigmentation on both body sides, with no significant difference between the body side treated with calcipotriol and excimer laser and the side treated with excimer laser alone. The mean repigmentation rate was 22.4% (1-37%). The addition of calcipotriol adjunct to 308-nm xenon chloride excimer laser phototherapy does not significantly enhance its

Amravati International Interdisciplinary Research Journal (AIIRJ)
 ISSN 2494-6386 Impact Factor 4.574 Special Issue No. 25
 UGC Approved (U.No.04/2017) Website : www.aiirj.com, Email id:- aiirj@aiirj.com

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49. Band SE: Yoga for Health and Happiness

'RESEARCH JOURNEY' International Multidisciplinary E- Research Journal



Impact Factor - (CIF) - 3.452, (SJIF) - 6.261, (GIF) - 0.676 (2013)
Special Issue 76 : Self Employability Skills Development in
Physical Education and Sports Sciences
UGC Approved No. 40107 & 44117

ISSN :
2348-7143
December
2018

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Yoga For Health And Happiness

Dr. Sugband Band

Director Of Physical Education

Shri., Shivaji Science College, Amravati.

Abstract

Yoga Therapy is the exploration of applying the different systems of yoga in an assortment of diseases and conditions, to encourage ideal wellbeing, recuperating and arousing. Classes are intended for the individual or gathering with a remedial concentration for an explicit wellbeing condition e.g. disease, heart, pre-birth, diabetes, various sclerosis.

Introduction

Yoga involves an extensive variety of psyche/body works on, going from postural and breathing activities to profound unwinding and reflection. Yoga treatment tailors these to the wellbeing needs of people. It advances all round aggregate wellbeing, and in addition helping specific medicinal conditions. Yoga offers a brilliant preparing program to maintain one's wellbeing. Ordinary routine with regards to Yoga, for least 30 to 45 minutes day by day, helps in building up a physical wellness as well as, in keeping the event of numerous such diseases which perpetually result from chaotic pace of current way of life.

"On the off chance that psychotherapy is characterized as "relational technique for alleviating enduring" numerous psychotherapeutic frameworks have existed in India quite a while. In contrast to Western frameworks, these have come up short on a clinical predisposition yet have given an increasingly worldwide structure. The eventual fate of psychotherapy in both East and West lies in finding a reasonable structure with all inclusive legitimacy inside which specially appointed treatments—for side effect alleviation, identity improvement, or relational alteration—can be created"

Reason for yoga

At the appropriate time of lime, yoga is essentially viewed as an arrangement of strategies helpful for accomplishing wellness in every day life and anticipation and fix of some explicit illnesses or clutters. Be that as it may, the objective of yoga was diverse when yoga rehearses appeared in excess of three thousand years prior. Since its commencement, yoga appears to have experienced changes in regards to the reason for which it was drilled. A wide range of assortments of yoga came to be polished for various purposes. The primary assortments of yoga incorporate

Bhaktiyoga(Yoga of commitment): is the most seasoned assortment of yoga in which the individual rehearsing it summons the Creator of the universe to shower effortlessness and sympathy. This elegance and sympathy is intended to enable the lover to beat every one of

'RESEARCH JOURNEY' International Multidisciplinary E- Research Journal
 Impact Factor - (CIF) - 3.452, (SJIF) - 6.261, (GIF) - 0.676 (2013)
 Special Issue 76 : Self Employability Skills Development in
 Physical Education and Sports Sciences
 UGC Approved No. 40107 & 44117



ISSN :
2348-7143
December
2018

(e) **Meditation:** It is a compelling technique for enhancing the balance and dependability of the brain. At the point when contemplation is joined with different procedures of yoga, its impact is enormously upgraded for treatment of an extensive variety of medical issues or scatters.

What are the upsides of yoga ?

Yoga has numerous points of interest over different strategies for looking after wellbeing, for example, aerobic, games, high impact exercise, amusements, and different types of activity. It needn't bother with any expensive gear and materials, or play areas, swimming pool, rec centers, and so forth. Yoga can be polished consistently. It can likewise be drilled inside the house or in the open, separately or in gatherings. The main necessity is a thick cover spread on the floor and secured with a spotless sheet of fabric. Yoga should just be polished on void stomach. You can do it whenever amid the day. It will profit you regardless of whether you are youthful or old, lean or intensely fabricated, exceedingly instructed or unlettered, rich or poor, from higher or bring down white collar class, occupied, over occupied, or resigned or laborer in the manufacturing plant or in the field. Yoga has something entirely profitable, and valuable to offer to everybody. Usually depicted as the best type of medical coverage for all from the age of seven to seventy seven or more. Two fundamental points of interest of Yoga are avoidance of disarranges and illnesses and upkeep of wellbeing and wellness in every day life. Other preferred standpoint incorporate adaptable muscles, supple joints, loose and strain free personality and effectively working imperative organs, for example, the heart, lungs, endocrine organs, liver, pancreas and great harmony between different capacities, for example, neuromuscular coordination, and so forth.

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50. Band SE: Obesity and weight Control

Interdisciplinary National Conference on Role Of Physical Education and Other Disciplines In Enhancing the Performance of a Player & Fitness for Young and New India	24 th Dec. 2018
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Obesity And Weight Control

Prof. Sugandh Band
Director of Physical Education
Shri. Shivaji Science College, Amravati

What Is It?

Obesity is an excess of body fat, It is difficult to directly measure body fat. Body mass index (BMI) is a popular method of denning a healthy weight. BMI should be used as a guide, along with waist size, to help estimate the amount of body fat. BMI estimates a healthy weight based on your height. Because it considers height as well as weight, it is a more accurate guide than body weight alone. To calculate your BMI: 1. Multiply your weight in pounds by 703, 2. Divide that answer by your height in inches, 3. Divide that answer by your height in inches again Then use the chart below to see what category your BMI falls into. BMI Category Below 18.5 Underweight 18.5-24.9 Healthy 25.0-29.9 Overweight 30.0 - 39.9 Obese Over 40 Morbidly obese What Are the Risks?

It can also put you at risk of developing anumber of conditions. These include:

1 High blood pressure, 1 Diabetes, 1 Heart disease,! Some forms of cancer

Many other health risks are higher for people who are obese. These risks may increase as the degree of obesity increases. Where you carry the extra weight is also important. People who carry extra weight around their waist may be more likely to experience health problems caused by obesity than those who carry it in their legs and thighs.

People become obese for a number of reasons. Often, several of these factors are involved. Which drugs/medicines can cause increased weight?

Which drugs/medicines can cause increased weight?

- UtHum:used l brrr^cbipolar disorders. More.
- Cortisone: Cortisone, Prednisone used for rheumatism and allergies
- Anti-seizure medicines: Depakote, Valproate.
- Mood stabilizers: Elavil, Tofranil, Xeroxat, Cipramil, Sertraline, Zolof, etc. More.
- Antipsychotics: Zyprexa, Paxil, Ergenyl, Absenar, Orfilir, Chlorpromazine.
- Migraine medicines: Sandomigrin, Ergenyl 1, Trypizol.
- Oestrogen: Follimin, Follinett, Neovletta. » Insulin for type 2 diabetes: Insulatard, Humulin, Actrapid.
- Breastcancermedciresi Nolvadex^Tamoxifea
- Beta blockers: (against high blood pressure)

Inderal, Cardura. Re u mat ism cures: Etanercept,

Enhrel

Anti-heartburn medicines: Nexium, Prevacid (may instead cause weight loss for some people!)

In general, not all people using these drugs gain weight. The same drug may cause weight gain for some people and weight loss for other people. Do not stop using a medication without consultation with your physician. Almost always, there are alternative medicines which are just as good and do not cause weight gain. For example, Prozac/Fonex/ Fluoxetine is an anti-depressive medicine which more often cuses weight loss than weight gain.

Edication that negatively influences obesity

A growing problem is cropping up in modern days. That is the obesity, caused by medication. The medicine may be taken for some other purpose but it has contributed to induce obesity and the matter of fact is that, this type of obesity in most of the case, is very obstinate and refractory that dose not respond well to normal self regulatory efforts and it is always better to seek for some expert guide line before the thing goes beyond control.

There is an additional problem also as these sudden increase of body weight may give rise to some overt or hidden chronic problems, related to heart, blood pressure, diabetes or arthritis and may make the out come more complicated.

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How Is Obesity Treated?

Three factors are considered when treating obesity: the severity of the obesity, the presence of other risk factors for heart disease, and the possibility of other health problems that may be caused or made worse by excess weight, '.

Doctors now realize that it may be unrealistic to attempt to get a person who is obese to lose a large amount of weight and keep it off. However, recent studies have shown that even modest weight loss provides significant health benefits by reducing the risk for diabetes, heart disease, stroke, high blood pressure, and other diseases.

Everyone who is trying to lose weight should change his or her eating and exercise habits. Counseling or support groups are an important part of successfully making these lifestyle changes.

Doctors recommend that depression or physical problem that limits a person's ability to exercise be treated, if possible, before starting a weight-loss program. People with untreated depression often have a difficult time staying on a weight-loss program. If a person is unable to do at least mild exercise, he or she will have difficulty losing weight.

Weight-loss medications, either prescription or nonprescription, should only be used along with a weight-loss diet and exercise. Use of medications without lifestyle changes is unlikely to have great, long-term success.

A very low-calorie diet may be considered if you need to lose weight quickly to protect your health and your doctor decides it is a safe method for you to use. People are not kept on this diet for long periods of time because the diet lacks certain nutrients the body needs. Such diets should be done only with careful medical supervision.

Even if you and your doctor have developed a plan for weight loss, the daily decisions needed to make the plan work are up to you. Healthy, long-term success in conquering obesity depends on changing your eating and exercise habits. Surgery is a rarely used treatment for obesity. Many doctors will consider it only for people who have not been able to lose weight with other treatments and who are at high risk for developing other health problems because of their weight.

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Aayushi International Interdisciplinary Research Journal (ISSN 2349-638x) Impact Factor 4.574 Peer Reviewed Journal www.aiirjournal.com Mob.8999250451	476
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51. Band SE: Performance evaluation test in physical education and sports

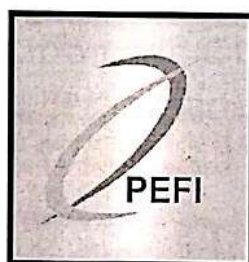
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Performance Evaluation Tests In Physical Education & Sports

Prof. Sugandh Band,
Director of Physical Education,
Shri. Shivaji Science College,
Amravati.

Introduction:-

Competition is the final check of overall performance capability, and is consequently the satisfactory indication of education achievement. However, whilst seeking to maximize performance, it's miles critical to decide the person's potential in specific factors of overall performance. Fitness evaluation tries to degree man or woman components of overall performance, with the last intention of studying and maximizing the Individuals ability in every element.

Competition evaluation Following competition, it's miles important that the teach and athlete get collectively as quickly as possible so as to examine the athlete's overall performance. Elements to be considered are pre race preparations, cognizance and overall performance plans and achievement of those plans. An evaluation shape is useful to assist the athlete and coach behavior this assessment.

Sport Performance Tests:-

The Sport Specific Performance Tests page presents steering on possible exams to assess the athlete's health additives for a diffusion of sports activities.

Normative statistics:-

Where normative statistics (average check outcomes) is to be had, it's far included on the correct evaluation test pages which are diagnosed below.

Maximal Tests:-

Maximal method the athlete works at maximum attempt or tested to exhaustion. Examples of maximal anaerobic exams are the 30 metre acceleration check and the Wingate ANaerobic 30 cycle take a look at. Examples of maximal cardio assessments are theMultistage Fitness Test or Bleep test and the Cooper VO2max test.

Sub maximal Tests:-

Sub maximal approach the athlete works underneath maximum effort. In sub maximal checks, extrapolation is used to estimate most potential. Examples of sub maximal aerobic take a look at are the PWC-170 take a look at and the Queens College Step Test.

Evaluation Test Groups:-

The performance evaluation tests are grouped as follows:

- Fitness General
- Flexibility
- Psychology
- Reaction Time
- Strength - Core
- Strength – Elastic
- Strength – General
- Speed and Power
- Aerobic Endurance - VO2 max
- Anaerobic Endurance
- Agility
- Balance
- Body Composition
- Coordination
- Event Time Predictors

Fitness General:-

- Medicine Ball Javelin Quadrathlon - fitness and strength test for Javelin throwers
- McCloy Physical Fitness test
- Quadrathlon - an excellent all round test - originally devised for throwers
- WilfPaish Rugby Football Tests - suitable for Rugby, USA Football

Flexibility:-

- Hip Flexion Test

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Conclusion:-

Fitness checking out is a way of gaining records approximately the fitness associated and ability associated additives of an athlete's health. Testing can take region in some of environments, with laboratory checking out being the maximum correct; however there may be still a large range of tests that can be finished, away from a lab, which provide numerous useful data.

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52. Bhatkar VB: Luminescence in Sr₂MgAl₂₂O₃₆:Eu²⁺ phosphor

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Luminescence in Sr₂MgAl₂₂O₃₆:Eu²⁺ phosphor

AIP Conference Proceedings **1953**, 070005 (2018); <https://doi.org/10.1063/1.5032783>

P. K. Tawalare^{1,4}, V. B. Bhatkar², R. A. Talowar³, C. P. Joshi³, and S. V. Mohari⁴

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TOPICS

- Atomic and molecular spectra
- Combustion synthesis

ABSTRACT

New results on luminescence of Eu²⁺ are reported in Sr₂MgAl₂₂O₃₆ host prepared by combustion synthesis. Different emission and excitation spectra are observed for Eu²⁺ ions

53. Bhatkar VB: Rare earth activated NaY (MoO₄)₂ phosphors for NIR emission

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No Access · Published Online: 08 May 2018

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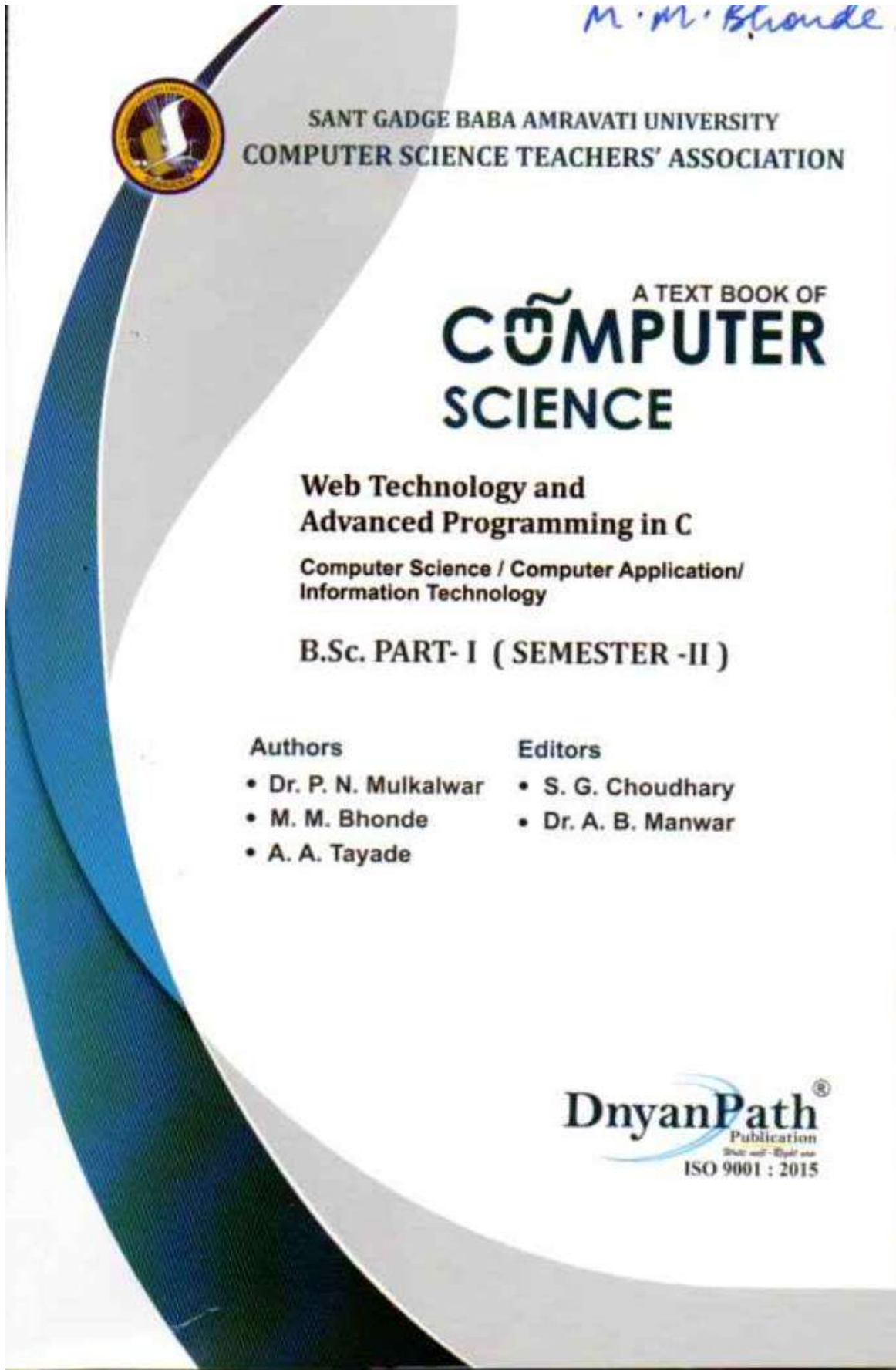
TOPICS

- Optical materials
- Ions and properties

ABSTRACT

Efficient NIR emission is reported for NaY(MoO₄)₂ activated with Nd³⁺ or Yb³⁺. Characteristic emission of rare earth ions is sensitized by MoO₄²⁻ group. The excitation is in the near UV

54. Bhonde MM: Web Technology & Advanced Programming in C



Preface

A TEXT BOOK OF **COMPUTER SCIENCE**

**Web Technology and
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B.Sc. PART- I (SEMESTER- II)

- AUTHORS -

Dr. P. N. Mulkulwar

Head & Associate Professor
Department of Computer Science,
Amolakchand Mahavidyalaya,
Godhani Road, Yavatmal

M. M. Bhonde

Assistant Professor,
Department of Computer Science,
Shri Shivaji Science College,
Amravati.

A. A. Tayade

Assistant Professor
Department of Computer Science,
G. S. Science, Arts And
Commerce College, Khamgaon

- EDITORS -

S. G. Choudhary

Head & Associate Professor,
Department of Computer Science,
R. D. I. K. & K. D. College,
Badnera-Amravati.

Dr. A. B. Manwar

Associate Professor,
Department of Computer Science
Sant Gadge Baba Amravati University,
Amravati

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Published by the DnyanPath Publication (INDIA)

A TEXT BOOK OF COMPUTER SCIENCE SEMESTER - II

ISBN 13 : 978-93-87278-71-4

Edition : First, January 2020



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Mahatma Fule Sankul, Infront of Abhiyanta Bhavan,
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Visit us : www.dnyanpath.org

Contact us : info@dnyanpath.org | dnyanpathpub@gmail.com

Phone : 08600353712, 09503237806

Printed at Shri Gurudeo Printers, Amravati.

Mahatma Fule Sankul, Shegaon Naka, V.M.V. Road, Amravati - 444603 (Maharashtra)

Price : ₹ 120 /-

55. Dhote JD: Practical Zoology B.Sc. II Fourth semester

As per the new syllabus of semester pattern of
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Practical
ZOOLOGY

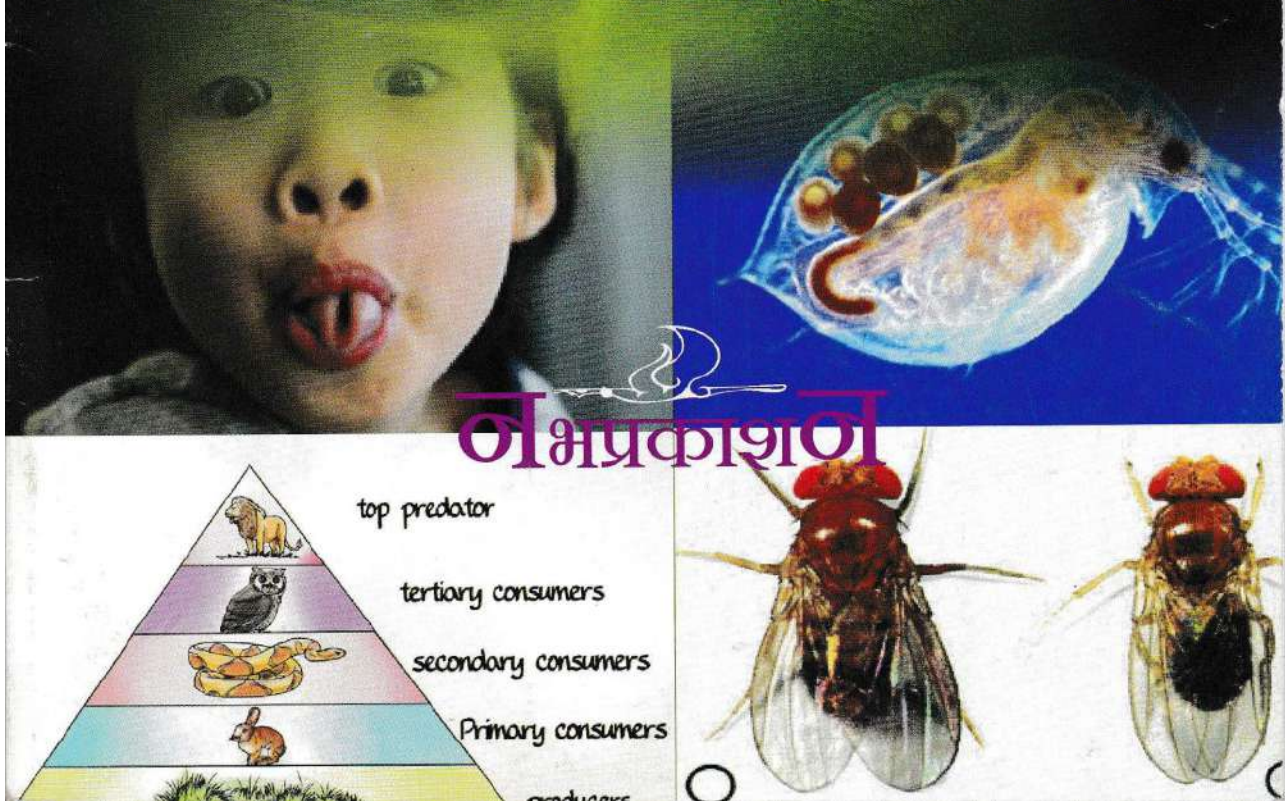
B.Sc. - II Fourth Semester

Authors

Dr. Jayashree D. Dhote Dr. Nilima V. Ingole
Dr. Sarita S. Nimgare Dr. Ujwala W. Fule

Editing Authors

Dr. Varsha S. Zade Dr. Jayashree D. Dhote



A TEXT BOOK OF PRACTICAL ZOOLOGY

B.Sc. II Semester Fourth

ISBN- 978-81-905776-80-1

First Edition : 2017 -18

Editor

Dr. V. S. Zade

Dr. J. D. Dhote

Publisher:

Milind Dahake

Nabh Prakashan

Shyam Nagar, Amravati - 444 606.

Mo. 7798204500, 9011317703

Printer

Nabh Offset Printer

Shyam Nagar, Amravati-444 606.

Price: Rs. 70 /-

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About Authors



Dr. Jayashree D. Dhote
M. Sc., Ph. D, M. A., M.Ed.
Assistant Professor
Shri Shivaji Science College,
Amravati
Teaching Experience - 13 Yrs.
Research Experience - 20 Yrs.



Dr. Nilima V. Ingole
M. Sc., Ph. D, M. Phil., B.Ed.
Principal and Assistant Professor
Yuvashakti Arts and Science
College, Amravati
Teaching Experience - 08 Yrs.
Research Experience - 14 Yrs.



Dr. Sarita S. Ningare
M. Sc., Ph. D, L.L.B, B.Ed.
Head and Associate Professor
Hutatma Rashtriya Arts and
Science College, Ashti
Teaching Experience - 24 Yrs.
Research Experience - 25 Yrs.



Dr. Ujwala W. Fule
M. Sc., Ph. D, M. Phil,
B.Ed. D. Pharm
Assistant Professor
Hutatma Rashtriya Arts and
Science College, Ashti
Teaching Experience - 10 Yrs.
Research Experience - 08 Yrs.

About Editors



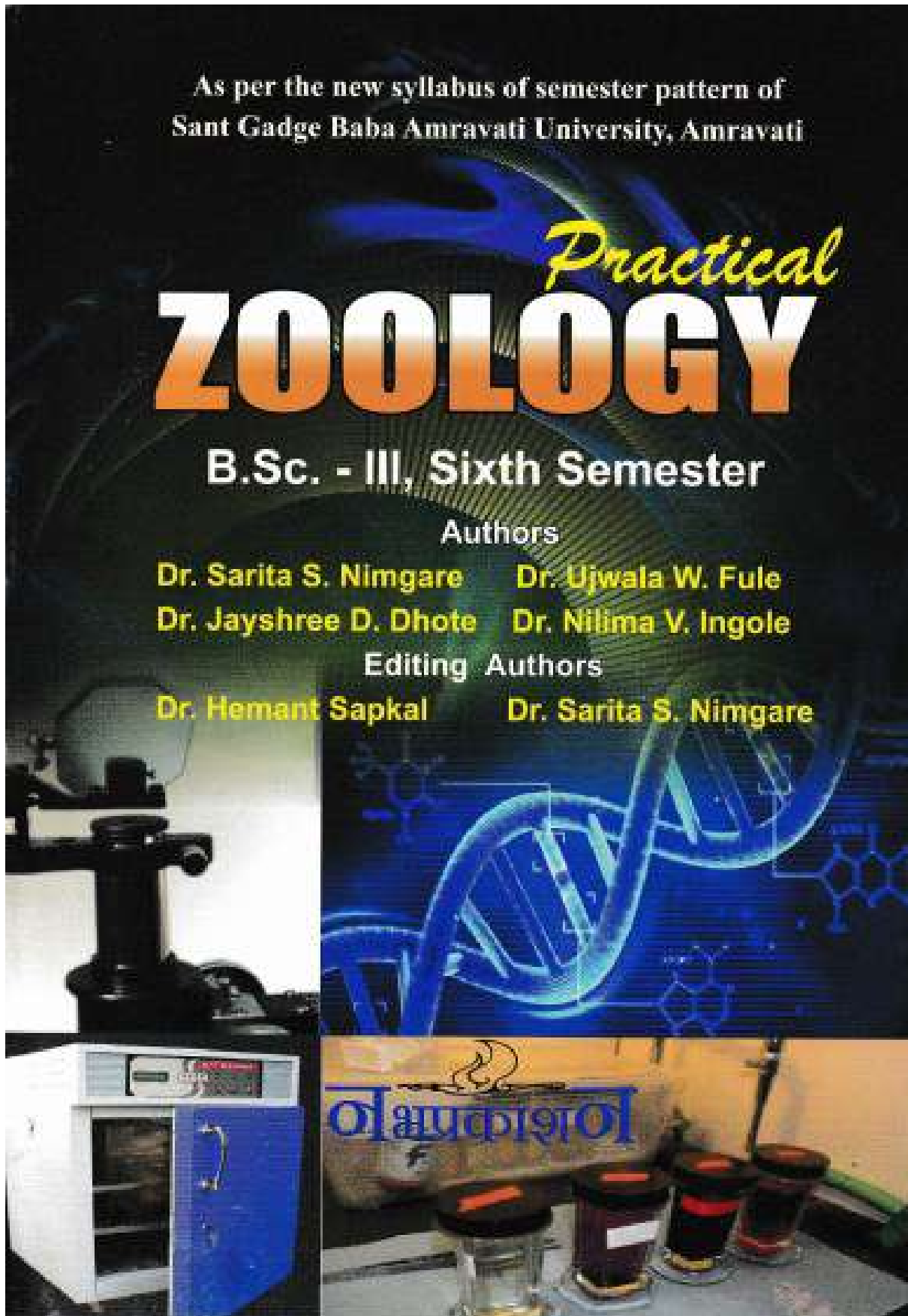
Dr. Varsha S. Zade
M.Sc., M.Phil., Ph.D.
Associate Professor
Department of Zoology,
Govt. Vidarbha Institute
of Science & Humanities,
Amravati
Teaching Experience : 23 years.
Research Experience :



Dr. Jayshree D. Dhote
M. Sc., Ph. D, M. A., M.Ed.
Assistant Professor
Shri Shivaji Science College,
Amravati
Teaching Experience - 13 Yrs.
Research Experience - 20 Yrs.

नभप्रकाशन
Shyam Nagar, Amravati-444606
Mob.- 7798204500, 9923145400
nabhprakashan@gmail.com
www.nabhprakashan.com
ISBN- 978-81-905776-80-1



56. Dhote JD: Practical Zoology B.Sc. III Sixth semester

A TEXT BOOK OF PRACTICAL ZOOLOGY

B.Sc. III Semester Sixth

ISBN- 978-81-905776-80-2

First Edition : 2017 -18

Editor

Dr. H. P. Sapkal

Dr. S. S. Nimgare

Publisher:

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Nabh Prakashan

Shyam Nagar, Amravati - 444 606.

Mo. 7798204500, 9011317703

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PRACTICAL ZOOLOGY

About Authors



Dr. Sarita S. Ningare
M. Sc., Ph. D, L.L.B, B.Ed.
Head and Associate Professor
Hutatma Rashtriya Arts and
Science College, Ashri
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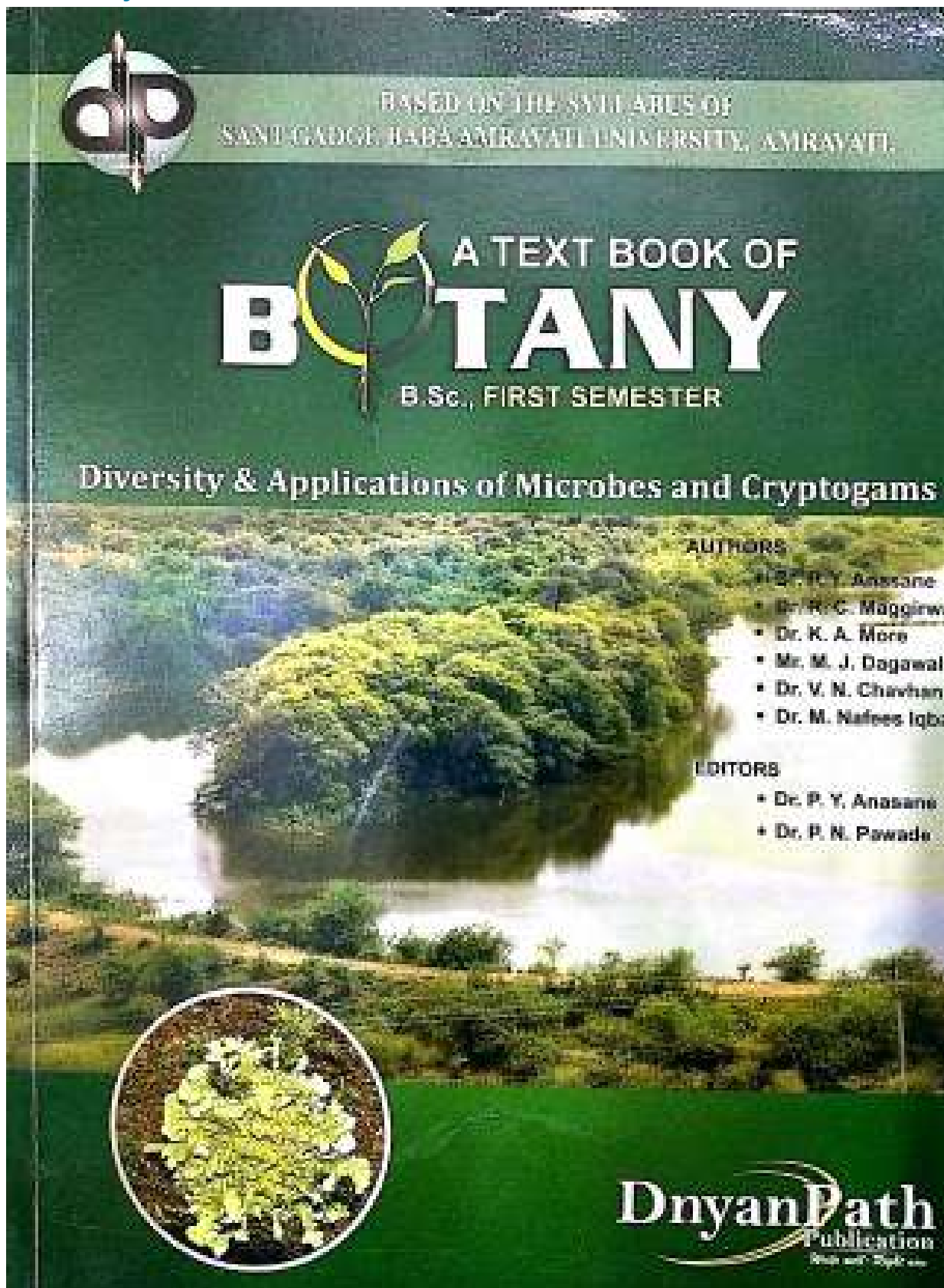
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Head and Associate Professor
Hutatma Rashtriya Arts and
Science College, Ashri
Teaching Experience - 24 Yrs.
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 Department of Botany
 G. S. Gokarna Mahavidyalaya Unmardol,
 District: Unmardol.

Dr. R. C. Maggirwar, M.Sc., Ph.D.
 Department of Botany
 St. A. Biological Science College,
 Amravati.

Dr. K. A. More, M.Sc., Ph.D.
 Department of Botany
 Yashwantrao Chavan Arts and Science College,
 Mangrulji, Dist. Maharashtra.

Mangesh J. Dagawal, M.Sc., M.Phil., NET
 Department of Botany
 Jai. Keshavnagar Santho Arts, Commerce and Science College,
 Arjunsingpur (Sur), Dist. Amravati.

Dr. V. N. Chavhan, M. Sc., D.Ed., M. Phil., Ph. D.
 Department of Botany
 Arts, Commerce and Science College,
 Mangar, Dist. Pravara.

Dr. M. Nafees Iqbal, M. Sc., D.Ed., M. Phil., Ph. D.
 Department of Botany
 Al-S.P. Arts, Science and IPT Commerce College,
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ISBN 13 : 978-93-87278-11-0
Edition : First, July 2018



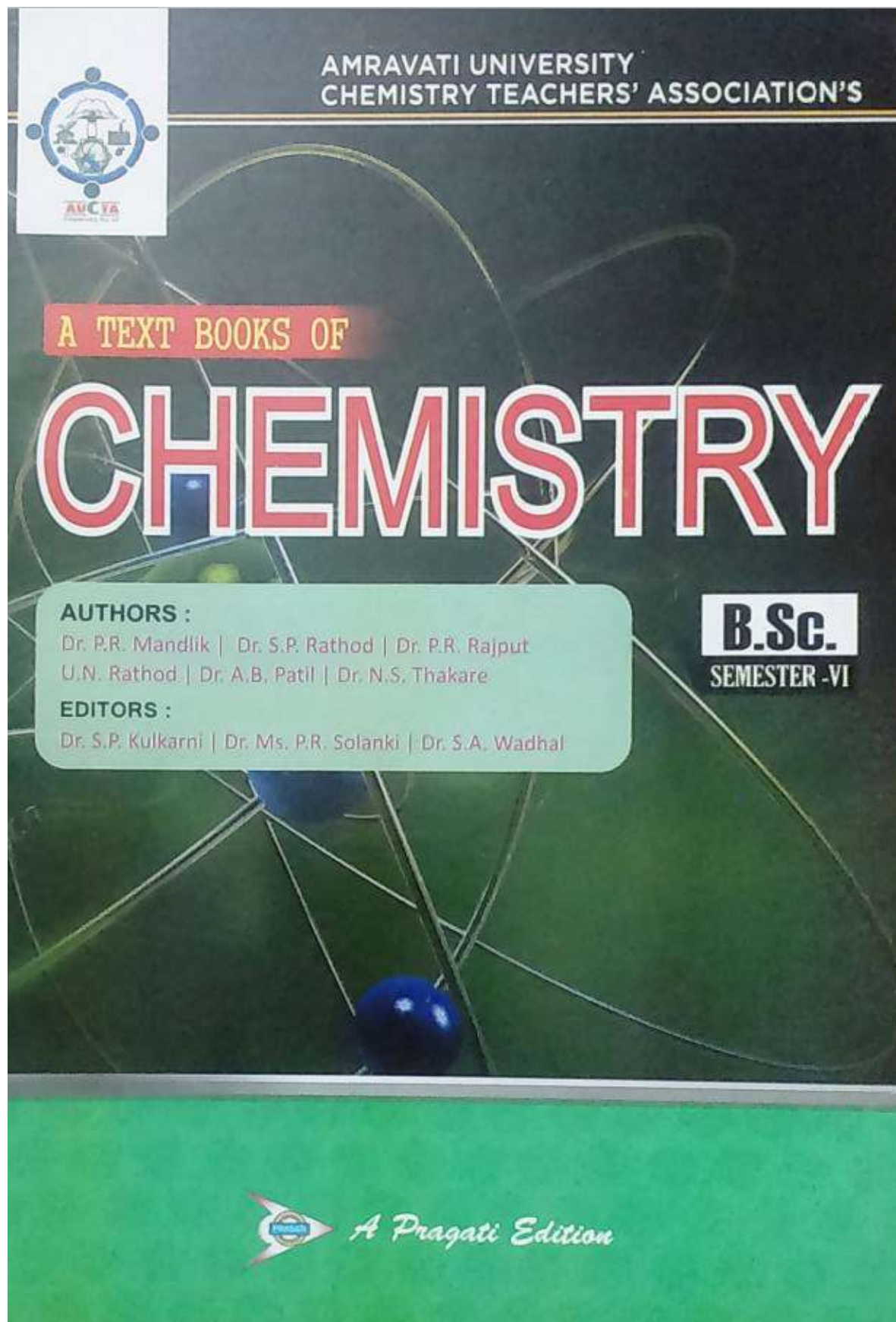
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Shri Shivaji Science College,
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Dr. P. R. RAJPUT
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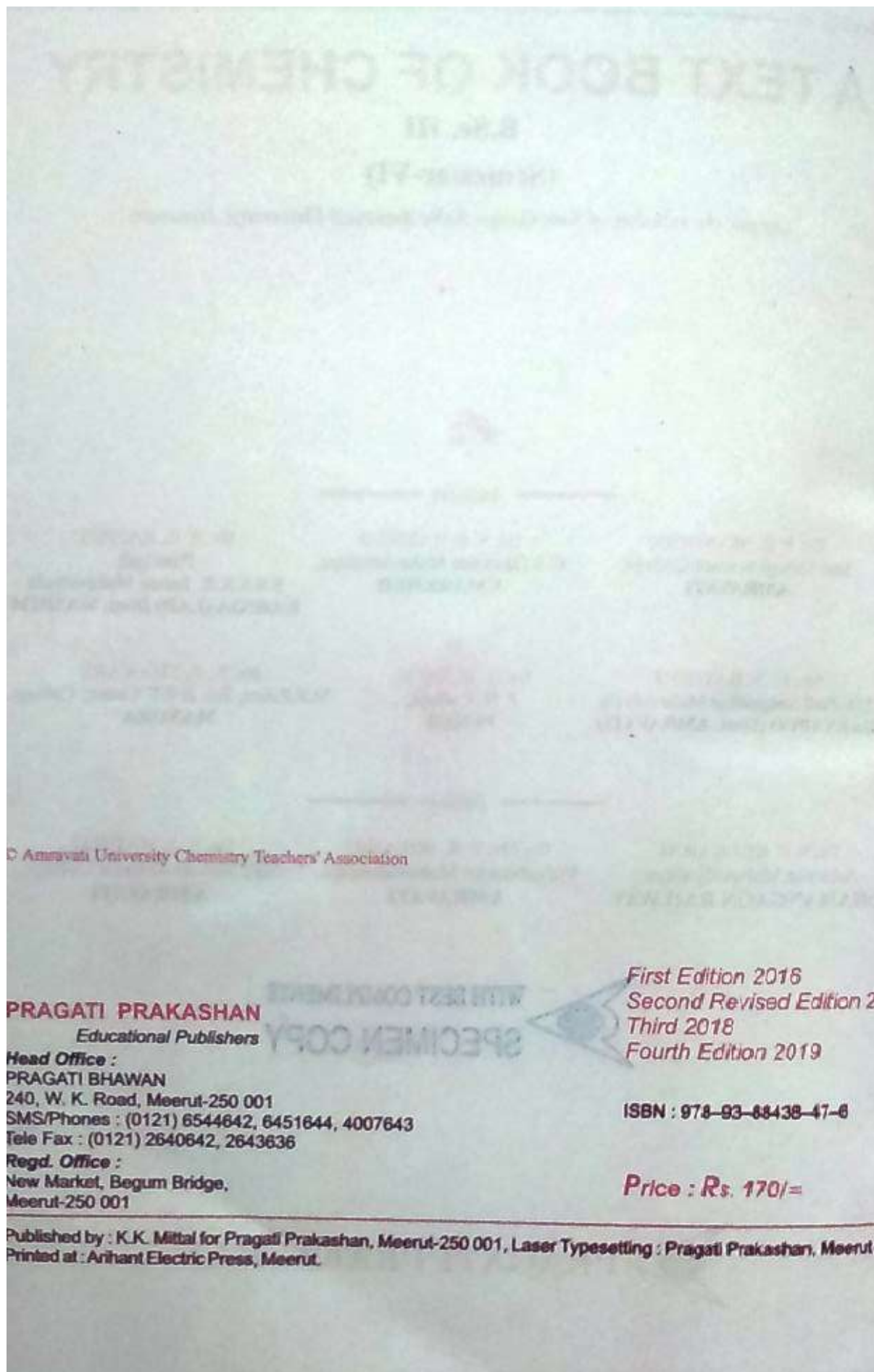
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59. Mandlik PR: Synthesis and characterization of Chalcone and their Fe(III) metal complexes



Int. Res. J. of Science & Engineering, 2018; Special Issue A3 : 55-60
ISSN: 2322-0015

SJIF Impact Factor 4.11
UGC Approved Journal No. 63628

RESEARCH ARTICLE

OPEN ACCESS

Synthesis and Characterization of Chalcone and their Fe(III) metal complexes

Thakare AP¹, Dahane AS², Rathod SB³ and Mandlik PR¹

¹P. G. Department of Chemistry, Shri Shivaji Science College, Amravati, MS, India

²Koradi Art, Science and Commerce College, Mahadula, Nagpur, MS, India

³Balasaheb Jadhao Arts, Commerce and Science College, Ale, MS, India

Email- ammol21086@gmail.com

Manuscript Details

Available online on <http://www.irjse.in>
ISSN: 2322-0015

Editor: Dr. Arvind Chavhan

Cite this article as:

Thakare AP, Dahane AS, Rathod SB and Mandlik PR. Synthesis and Characterization of Chalcone and their Fe(III) metal complexes, *Int. Res. Journal of Science & Engineering*, January 2018, Special Issue A3 : 55-60.

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ABSTRACT

In present study three chalcones 2-hydroxy-4-methylphenyl-3-phenylprop-2-en-1-one [HMPO], 2-hydroxy-4-methylphenyl-3-(p-tolyl) prop-2-en-1-one [HMTO] and 4-chlorophenyl-2-hydroxy-4-methylphenyl-prop-2-en-1-one [CHMPO] were synthesized by condensing 2-hydroxy-4-methylacetophenone with benzaldehyde, 4-methylbenzaldehyde and 4-chlorobenzaldehyde. The synthesized chalcones were characterized by IR, NMR and Mass spectral studies. With this chalcones Fe(III) metal complexes were prepared and also characterized by different spectroscopic techniques. IR spectra indicates that hydroxyl oxygen and neutral carbonyl involved in the coordination with Fe(III) ion. All the complexes possess octahedral geometry.

Keywords: Chalcone, metal complexes, IR, mass, TGA.

INTRODUCTION

Chalcone is an aromatic ketone and an enone that forms the central core for a variety of important biological compounds, which are known collectively as chalcones or chalconoids. The chemistry of chalcones has generated great scientific interest due to their biological and industrial applications. Chalcones are natural biocides and are well known intermediates in the synthesis of heterocyclic compounds exhibiting various biological activities.

CONCLUSION

The present article includes the synthesis and characterization of three chalcones and its Fe(III) complexes. Characterization of compounds includes IR, Mass, ¹H NMR and thermogravimetric analysis. Chalcones coordinates to Fe (III) metal ion through hydroxyl oxygen and neutral carbonyl oxygen and act as a dibasic ligand (Metal ligand ratio 1:2) The thermal data shows that complexes were highly stable and its thermal decomposition as well as thermodynamic parameters was studied.

Acknowledgement: The authors thanks the Principal Shri Shivaji Science College, Amravati for providing necessary laboratory facilities, Directors of RSIC, Chandigarh for recording of IR and ¹H NMR spectra and Mass spectra.

Conflicts of interest: The authors stated that no conflicts of interest.

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60. Thakare NR: Synthesis and Characterization of Azopyrazole derivatives



Int. Res. J. of Science & Engineering, 2018; Special Issue A3 :101-103
ISSN: 2322-0015

SJIF Impact Factor 4.11
UGC Approved Journal No. 63628

RESEARCH ARTICLE

OPEN ACCESS

Synthesis and Characterization of Azopyrazole derivatives

Thakare AP and Thakare NR

P. G. Department of Chemistry, Shri Shivaji Science College, Amravati
E-mail: anmol21086@gmail.com

Manuscript Details

Available online on <http://www.irjse.in>
ISSN: 2322-0015

Editor: Dr. Arvind Chavhan

Cite this article as:

Thakare AP and Thakare NR. Synthesis and Characterization of Azopyrazole derivatives, *Int. Res. Journal of Science & Engineering*, January 2018, Special Issue A3 : 108-110.

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ABSTRACT

In present investigation 3-(2-(4-substitutedphenyl)-hydrazono)-pentane-2,4-dione synthesized by using substituted aniline and acetyl acetone in presence of sodium nitrite. The synthesized compound further reacted with isoanizide and semicarbazide to obtained 4-(4-substitutedphenyl)diazonyl)-3,5-dimethyl-1H-pyrazol-1-yl)(pyridine-4-yl)methanone and 4-(4-substitutedphenyl)diazonyl)-3,5-dimethyl-1H-pyrazol-1-carboximide. All the newly synthesized compounds were characterized on the basis of elemental analysis, respective melting point, IR and ¹H-NMR spectroscopic techniques.

Keywords: Aniline, Azopyrazole, IR, ¹H-NMR.

INTRODUCTION

Pyrazole is an important heterocyclic compound containing three carbon atom and two adjacent nitrogen atom. Synthesis of azopyrazole derivatives from aniline bears a great attention in recent years. Azo pyrazole derivative exhibit wide variety of biological activities such as antibacterial, analgesic, antifungal, anti-inflammatory [1-5]. By considering this point of view the objective of present work is to prepare new derivatives of azopyrazole and characterized by different spectroscopic techniques.

RESULTS AND DISCUSSION

All the newly synthesized compound were characterized on the basis of IR and ¹H-NMR spectroscopic techniques.

Spectral data of 3-(2-(4-bromophenyl)-hydrazono)-pentane-2,4-dione (2a)

IR (KBr) ν_{\max} : cm^{-1} : 3318(-NH), 3072(-Ar-CH), 2927(-Al-CH), 1683(-C=O), 1489(-C=N), 1584(-C=C), 1065(C-O), 741(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 14.2(1H,s,NH), 7.6(2H,m,Ar-H), 7.3(2H,d,Ar-H), 2.6(3H,s,CH₃), 2.3(3H,s,CH₃)

Spectral data of 3-(2-(4-methoxyphenyl)-hydrazono)-pentane-2,4-dione (2b)

IR (KBr) ν_{\max} : cm^{-1} : 3315(-NH), 3069(-Ar-CH), 2931(-Al-CH), 1680(-C=O), 1501(-C=N), 1590(-C=C), 170(C-O), 740(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 14.3(1H,s,NH), 7.7(2H,m,Ar-H), 7.3(2H,d,Ar-H), 2.5(3H,s,CH₃), 2.3(3H,s,CH₃)

Spectral data of 3-(2-(4-chlorophenyl)-hydrazono)-pentane-2,4-dione (2c)

IR (KBr) ν_{\max} : cm^{-1} : 3320(-NH), 3075(-Ar-CH), 2929(-Al-CH), 1681(-C=O), 1485(-C=N), 1584(-C=C), 1067(C-O), 741(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 14.5(1H,s,NH), 7.5(2H,m,Ar-H), 7.4(2H,d,Ar-H), 2.6(3H,s,CH₃), 2.3(3H,s,CH₃)

Spectral data of 4-(4-bromophenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-yl(pyridine-4-yl)methanone (3a)

IR (KBr) ν_{\max} : cm^{-1} : 3060(-Ar-CH), 2921(-Al-CH), 1670(-C=O), 1514(-C=N), 1588(-C=C), 1171(C-O), 741(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 7.8(4H,m,Ar-H), 7.5(4H,m,Ar-H), 2.5(3H,s,CH₃), 2.2(3H,s,CH₃)

Spectral data of 4-(4-methoxyphenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-yl(pyridine-4-yl)methanone (3b)

IR (KBr) ν_{\max} : cm^{-1} : 3065(-Ar-CH), 2920(-Al-CH), 1674(-C=O), 1520(-C=N), 1590(-C=C), 1160(C-O); ¹H-NMR (DMSO-*d*₆) δ : 7.6(4H,m,Ar-H), 7.2(4H,m,Ar-H), 2.4(3H,s,CH₃), 2.2(3H,s,CH₃)

Spectral data of 4-(4-Chlorophenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-yl(pyridine-4-yl)methanone (3c)

IR (KBr) ν_{\max} : cm^{-1} : 3064(-Ar-CH), 2931(-Al-CH), 1672(-C=O), 1515(-C=N), 1591(-C=C), 1170(C-O); ¹H-NMR (DMSO-*d*₆) δ : 7.6(4H,m,Ar-H), 7.4(4H,m,Ar-H), 2.6(3H,s,CH₃), 2.4(3H,s,CH₃)

Spectral data of 4-(4-bromophenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-carboximide (4a)

IR (KBr) ν_{\max} : cm^{-1} : 3062(-Ar-CH), 2935(-Al-CH), 1665(-C=O), 1540(-C=N), 1587(-C=C), 1165(C-O), 741(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 7.2(2H,d,Ar-H), 7.8(2H,d,Ar-H), 2.2(3H,s,CH₃), 2.3(3H,s,CH₃)

Spectral data of 4-(4-methoxyphenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-carboximide (4b)

IR (KBr) ν_{\max} : cm^{-1} : 3069(-Ar-CH), 2940(-Al-CH), 1664(-C=O), 1541(-C=N), 1585(-C=C), 1161(C-O), 735(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 7.1(2H,d,Ar-H), 6.9(2H,d,Ar-H), 2.3(3H,s,CH₃), 2.5(3H,s,CH₃)

Spectral data of 4-(4-chlorophenyl)diazenyl)-3,5-dimethyl-1H-pyrazol-1-carboximide (4c)

IR (KBr) ν_{\max} : cm^{-1} : 3070(-Ar-CH), 2933(-Al-CH), 1664(-C=O), 1543(-C=N), 1581(-C=C), 1169(C-O), 743(C-Br); ¹H-NMR (DMSO-*d*₆) δ : 7.4(2H,d,Ar-H), 7.6(2H,d,Ar-H), 2.5(3H,s,CH₃), 2.8(3H,s,CH₃)

CONCLUSION

During this study some azopyrazole have been synthesized by using isoaniazide and semicarbazide. Spectroscopic data obtained matches with the structure of compounds.

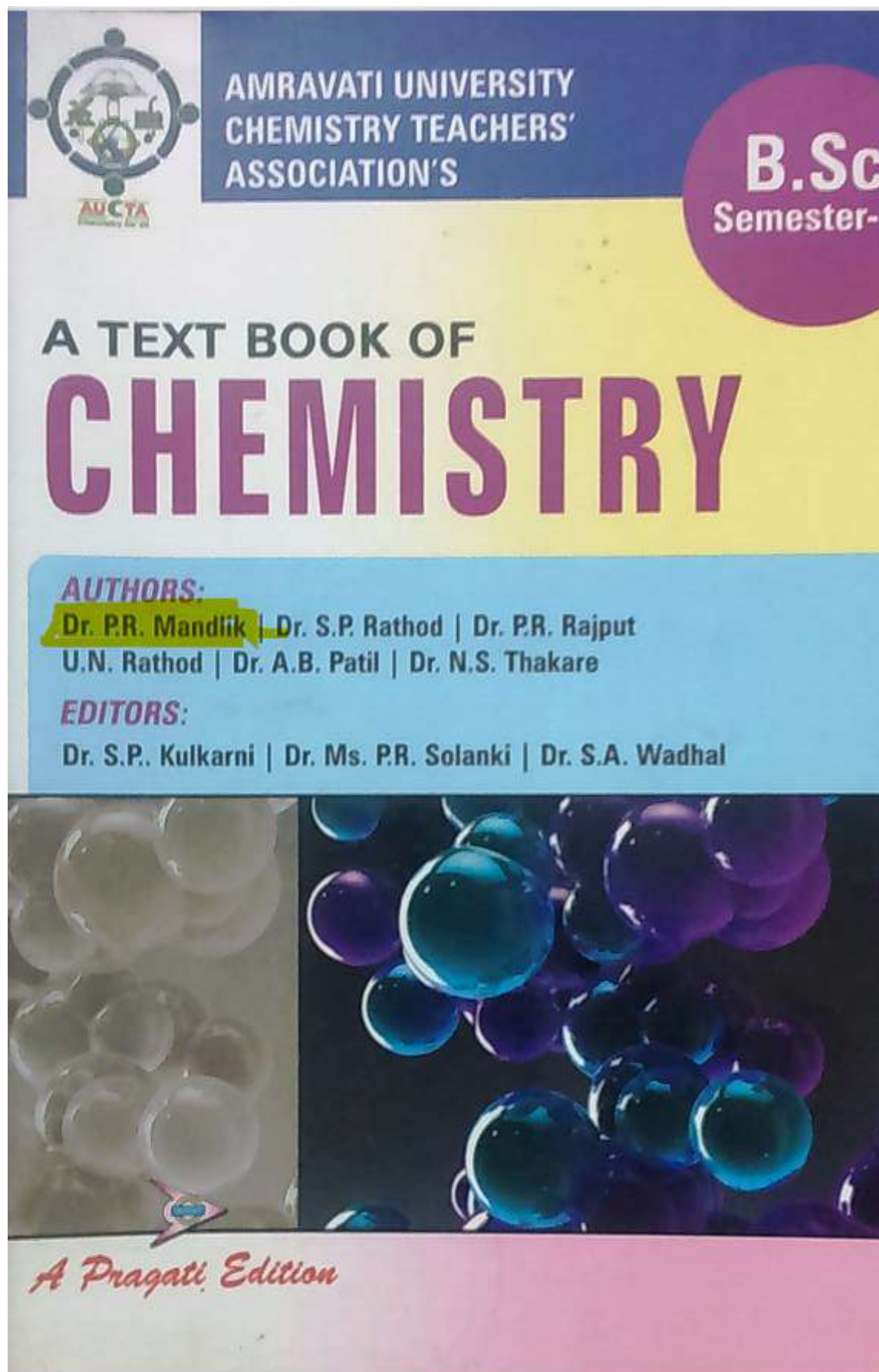
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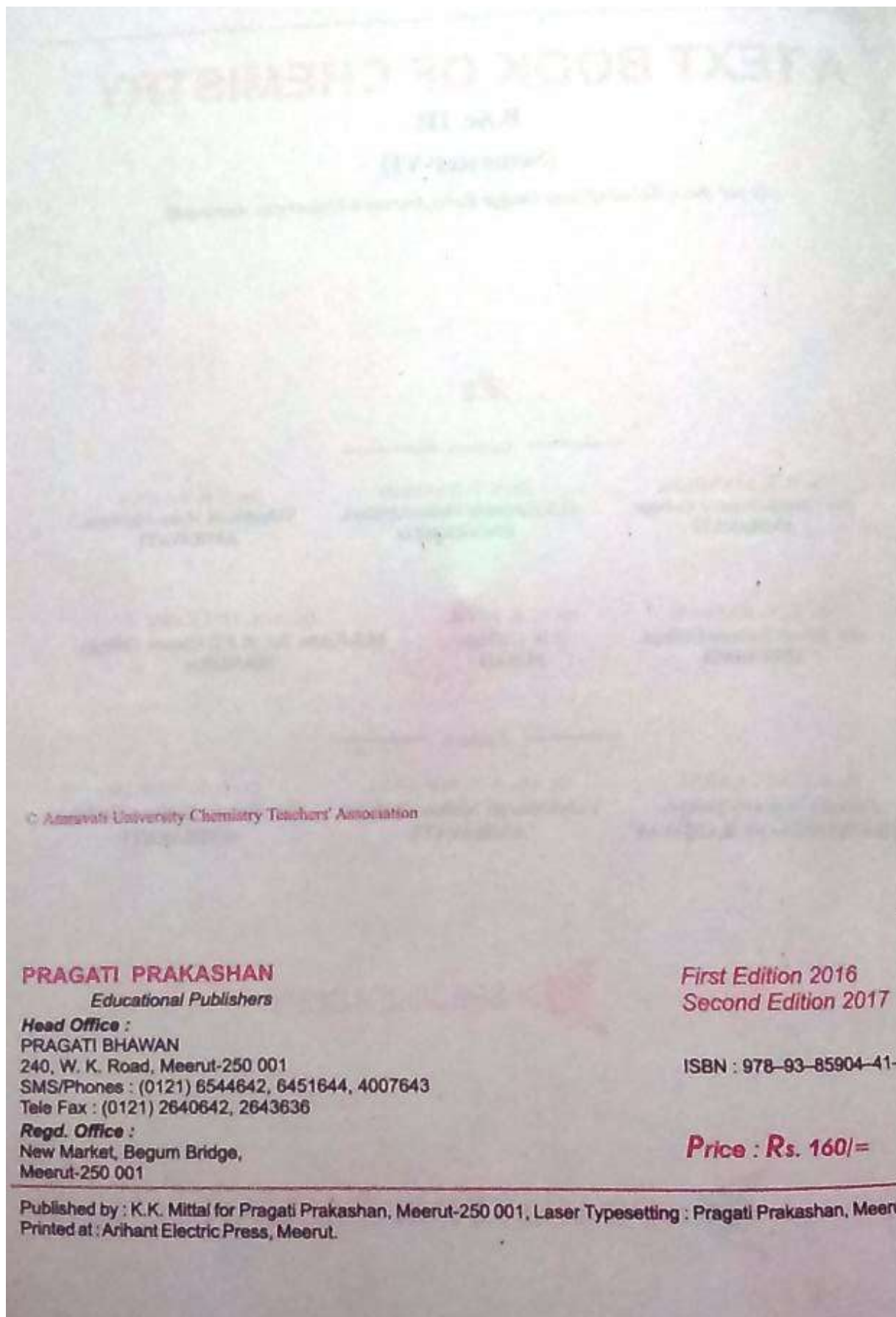
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61. Wadhal SA: A Text Book of Chemistry, B.Sc. Sem VI (Editor-Unit-III &IV)



UNIT-1
A

KINETIC ASPECTS OF METAL COMPLEXES

*** THERMODYNAMIC AND KINETIC STABILITY OF THE COMPLEXES:**
Stability is a term which is often used rather loosely and is open to a variety of interpretations. When the term stability is used without qualification, it means that the complex exists and under suitable conditions it may be stored for a long time. This term cannot be generalized for complexes, since a complex may be quite stable to one reagent and yet decompose readily in presence of another reagent.
The stability of complexes in solution can be explained by two stability terms. These are (i) thermodynamic stability and (ii) kinetic stability.

*** THERMODYNAMIC STABILITY:**
It is a measure of the extent of formation or transformation of a complex ion to another under a given set of conditions at equilibrium. It depends upon the strength of the linkage between the metal and ligand in the complex. "Stronger the M-L bond, higher will be the thermodynamic stability of complex". It can also be interpreted as the amount of association between metal 'M' and ligand 'L' (in the formation of co-ordination compound ML_n) that occurs in solution at equilibrium.

$$M + nL \rightleftharpoons ML_n$$

where 'nL' is the number of ligands coordinating with the metal atom or ion. Qualitatively the greater the degree of association, more stable the resultant compound.
The stability of co-ordination compounds is usually characterized by the equilibrium constants of the reactions. The equilibrium constant for the association reaction is a measure of the stability of the complex and is usually referred to as the **stability constant**. Similarly, the equilibrium constant for the dissociation reaction is known as the **instability constant** and is related to the stability constant as its reciprocal.

For example:
The equilibrium constant (K_s) for the dissociation reaction of complex ions are –

$$[Cr(NH_3)_4]^{3+} \rightleftharpoons Cr^{3+} + 4NH_3 \quad [Ag(NH_3)_2]^+ \rightleftharpoons Ag^+ + 2NH_3$$

$$K_s = \frac{[Cr^{3+}][NH_3]^4}{[Cr(NH_3)_4]^{3+}} = 2.5 \times 10^{-3} \quad K_s = \frac{[Ag^+][NH_3]^2}{[Ag(NH_3)_2]^+} = 4.0 \times 10^{-8}$$

UNIT-1
B

ANALYTICAL CHEMISTRY

Colometry (or colorimetric analysis) and spectrophotometry (or spectrophotometric analysis) are the analytical techniques based on measurement of colour intensity. We know that the colour intensity of solution varies with concentration and hence this becomes the basis of colorimetric analysis. The colorimetric analysis involves comparison of colour intensity of unknown solution with that of known or standard solution. The colour comparison can be done by different methods depending upon the nature of sample and accuracy desired. In order to understand the subject it is necessary to discuss some basic concepts.

*** NATURE OF LIGHT AND ELECTROMAGNETIC SPECTRUM**
Light: Many authors are of the opinion to restrict the word light to visible light only while others use it in a wider sense of whole electromagnetic spectrum. Use of the term, radiation or radiant energy is also done for light other than visible light.
Electromagnetic radiation are composed of an oscillating electric field and an oscillating magnetic field. These two fields are mutually perpendicular to each other and also perpendicular to the direction of propagation.
Since it is the electric field that interacts with the electrons in the matter, it is only depicted in Figure such as shown in the Figure 1.4.



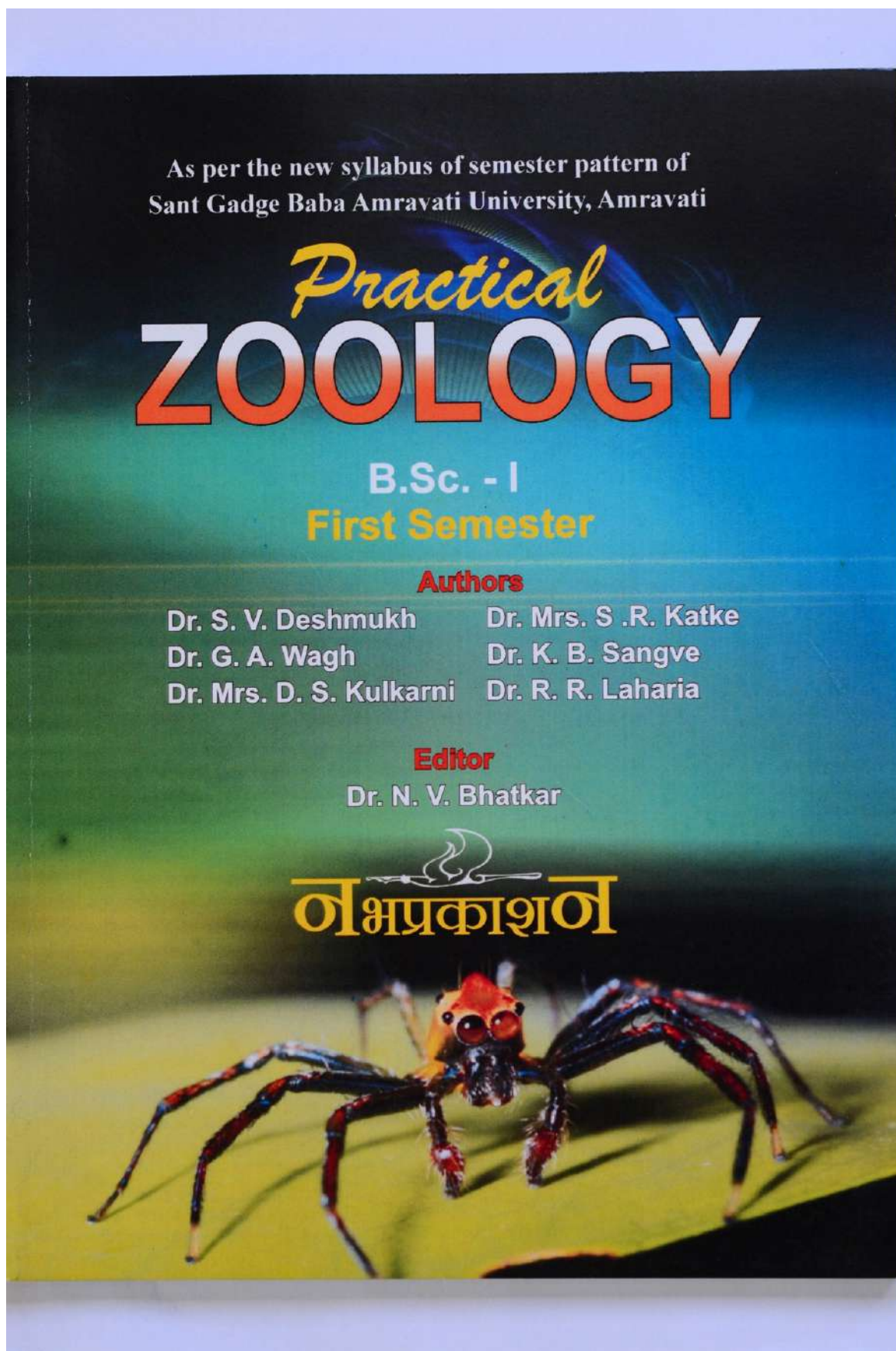
Figure 1.4 Electric field component of electromagnetic radiation.

Following are some important terms associated with electromagnetic radiations.

Wavelength (λ): It is the distance between two consecutive crests or troughs or it is the distance travelled by light in one complete cycle. Wavelength depends upon the medium through which it passes. Following are the units of wavelength commonly used.

Angstrom (\AA): $1 \text{\AA} = 10^{-10} \text{ m} = 10^{-8} \text{ cm} = 10^4 \mu\text{m}$
Nanometer (nm): $1 \text{ nm} = 10^{-9} \text{ m} = 10^{-7} \text{ cm} = 10 \text{\AA} = 10^3 \mu\text{m}$
Micrometer (μm): $1 \mu\text{m} = 10^{-6} \text{ m} = 10^4 \text{\AA}$

62. Wagh GA: Practical Zoology B.Sc.I(Sem –I)



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First Edition: 17 August 2018
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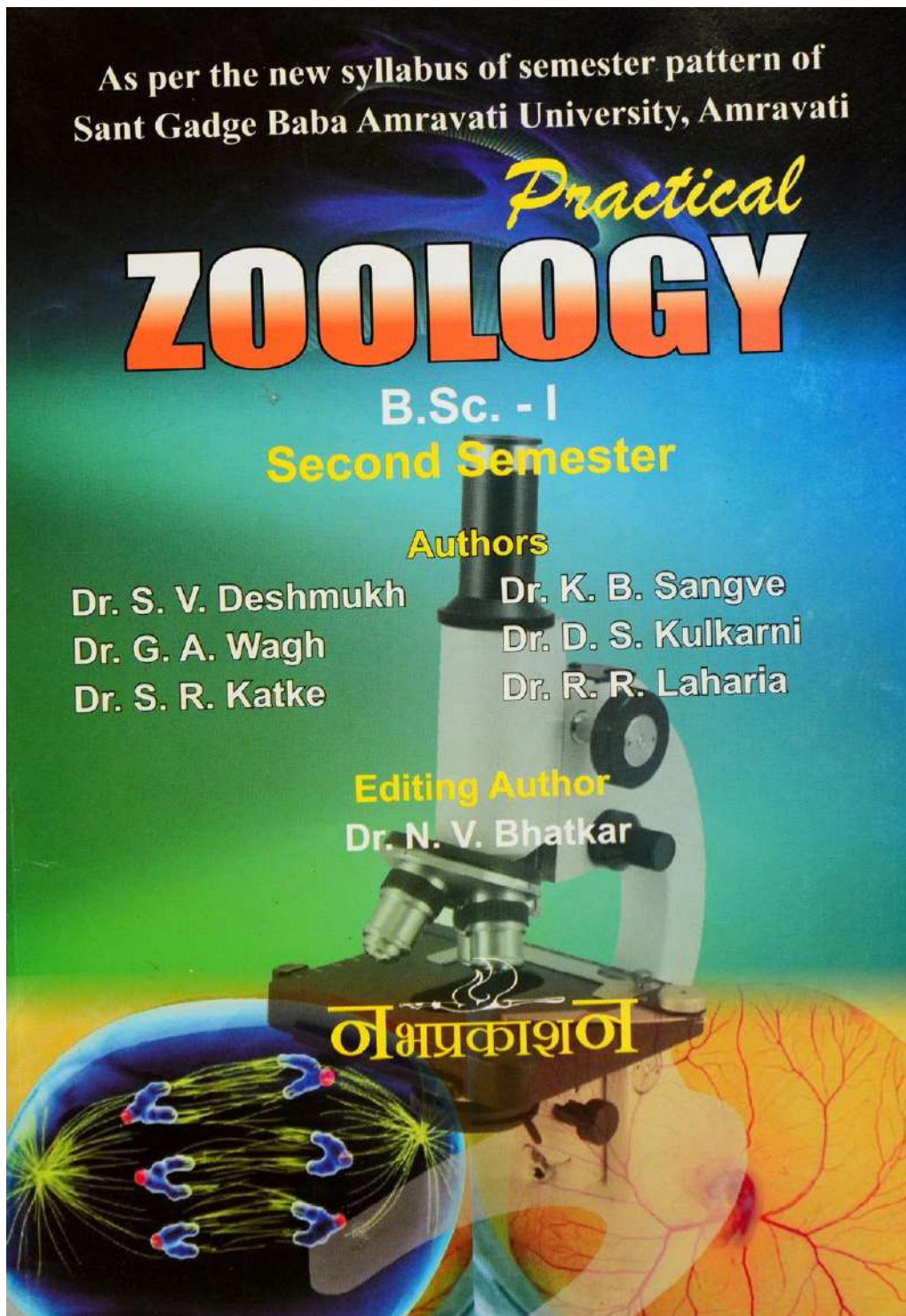
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B.Sc. I Semester Second

ISBN- 978-81-905776-80-1

First Edition : 2017 -18

Editor

Dr. Mrs. N. V. Bhatkar

Publisher:

Milind Dahake

Nabh Prakashan

Shyam Nagar, Amravati - 444 606.

Mo. 7798204500, 9011317703

Printer

Nabh Offset Printer

Shyam Nagar, Amravati-444 606.

Price: Rs. 70 /-

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नभ प्रकाशनतर्फे प्रकाशित झालेल्या कोणत्याही पुस्तकाची झेरॉक्स काढणे कॉपीराईट कायदानुसार फौजदारी गुन्हा आहे. या कायदानुसार झेरॉक्स सेंटर, विद्यार्थी व अन्य कोणीही झेरॉक्स काढून विक्री करू शकत नाही त्यामुळे झेरॉक्स काढल्यास किंवा विक्री केल्यास पोलीस कारवाईत झेरॉक्स मशीन जप्त तर होतेच सोबत कडक शिक्षेची तरतुद आहे. कृपया कायद्याचे पालन करून कारवाई टाळावी. (पुस्तकाची झेरॉक्स कोठे होते याची माहिती पुराव्यासह सिद्ध केल्यास योग्य बक्षिस दिल्या जाईल.) – मो. ९०११३१७७०३

64. Wankhade HG: Synthesis and characterization of chitosan based PbO₂ nanocomposite as peroxide sensor

Aayushi International Interdisciplinary Research Journal (AIIRJ)

ISSN 2349-638x Impact Factor 4.574 Special Issue No. 25

UGC Approved Sr.No.64259 Website :- www.aiirjournal.com Email id:- aiirjramod@gmail.com

SYNTHESIS AND CHARACTERIZATION OF CHITOSAN BASED PbO₂ NANOBIOCOMPOSITE AS PEROXIDE SENSOR

H G. WANKHADE^{a*} & G.N.CHAUDHARI^b

^aDepartment of Chemistry, Prof Ram Meghe Institute of Research and Technology, Badnera Amravati.

^bDepartment of Chemistry, Shri Shivaji Science College, Amravati 444602, MS, India

E-mail: wankhadehg@gmail.com

ABSTRACT

Lead oxide nanocomposite was synthesized by sol-gel citrate method. As synthesized PbO₂ was structurally characterized by XRD and FT-IR spectroscopy. From XRD analysis, the crystallite size was found to be nearly 35 nm. Synthesis of PbO₂ was confirmed by FT-IR. PbO₂nanocomposite was used for fabrication of Au-CH-PbO₂-HRP bioelectrode. Au-CH-PbO₂-HRP bioelectrode was characterized by Scanning Electron Microscopy (SEM), cyclic voltammetry (CV) and impedance analysis. CV shows defined redox peaks which confirmed immobilization, which was also supported by SEM and Conductivity data.

Keywords: peroxide sensor, Au-CH-PbO₂-HRP bioelectrode, XRD, SEM and CV.

INTRODUCTION

The key issues in developing advanced enzymatic biosensors lie in promoting direct electron transfer between the electrode and the immobilized enzyme. In recent years, there have been many reports about the applications of nanomaterials in bioanalytical detection, biomedical diagnostics and chemical catalysis.

Metal oxide nanomaterials have been demonstrated to have the capability of acting as an electron mediator to facilitate and promote direct electron transfer between electrodes and immobilized redox proteins.

Lead dioxides have been used frequently in industry because of their excellent properties such as good conductivity, low cost, high stability and relatively high service life. A great number of applications have been reported for lead dioxide as positive active material in lead acid batteries [1], oxidation of organic compounds in waste water [2-4], oxidation of glucose[5], ozone evolution [6-7], oxidation of phenol [8-9] and Cr³⁺ [10].

It is well known that PbO₂ has two different crystallographic forms: orthorhombic and tetragonal (α and β). α -PbO₂ is obtained from alkaline solution and β -PbO₂ from acid solution [11]. α -PbO₂ has a better contact between particles, and a more compact structure than β -PbO₂. Unfortunately, more compact structure leads to bad conductivity compared with β -PbO₂ [12]. Different electro-catalytic activities of α and β forms of PbO₂ were observed in other studies. It was also observed that the structure of crystallization of PbO₂ films influenced the electrocatalytic properties of the material [13].

In this paper we discussed, synthesis of PbO₂nanocomposite by sol-gel method. This material is characterized and further used for the fabrication of Au-CH-PbO₂ and Au-CH-PbO₂-HRP bioelectrode. The fabricated bioelectrode characterized and confirmed the immobilization.

Experimental

Preparation of PbO₂ nanoparticle

The nanocrystalline PbO₂ specimens were prepared by using sol-gelcitrate method. A stoichiometric mixture of Lead nitrate wasmagnetically stirred with citric acid and ethylene glycol at 80°C for 3 hrs to get homogeneous and transparent solution. The solution was furtherheated at about 130°C for 12 hrs in a pressure vessel to form the gelprecursor. The prepared product was subjected to 3 hrs heat treatmentat 350°C in a muffle furnace and then milled to a fine powder. The driedpowder then calcined in the range of 450-750°C in order to improve thecrystallinity of ceramic.

From conductivity data it is found that, PbO₂ nanoparticlesprepared using sol-gel method and calcined at 650°C was found to be good material for the fabrication of bioelectrode.

Preparation of CH-PbO₂ hybrid nanobiocomposite

PbO₂ nanoparticles were dispersed into 10 mL of CH (0.5 mg/mL) solution in acetate buffer of 0.05 M at pH 4.2 under continuous stirring atroom temperature. Finally, viscous solution of CH with uniformlysuspended PbO₂ nanoparticles is obtained. CH-PbO₂ hybridnanocomposite films have been fabricated by uniformly dispersingsolution of CH-PbO₂ composite onto gold surface and allowing it to dryat room

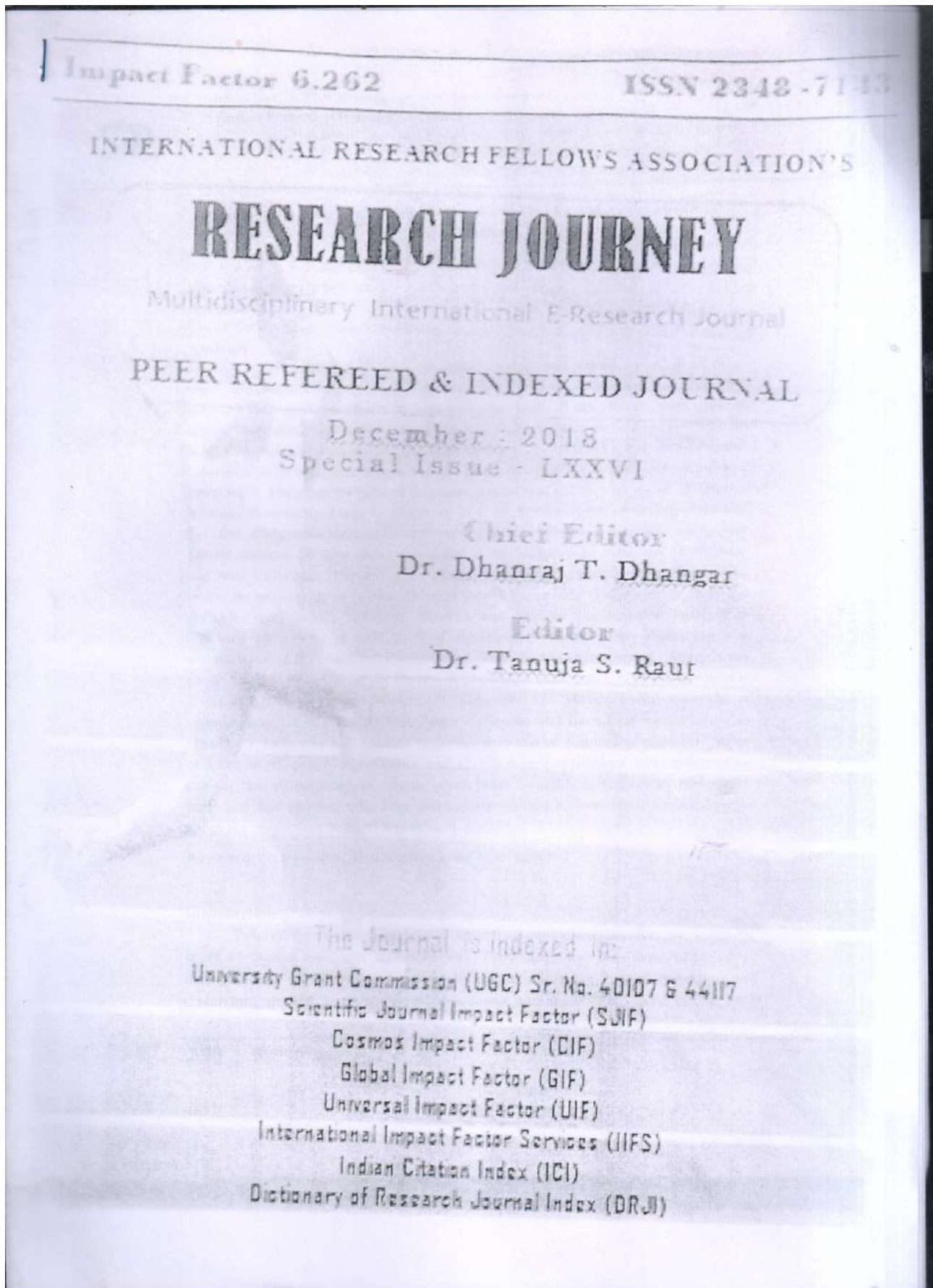
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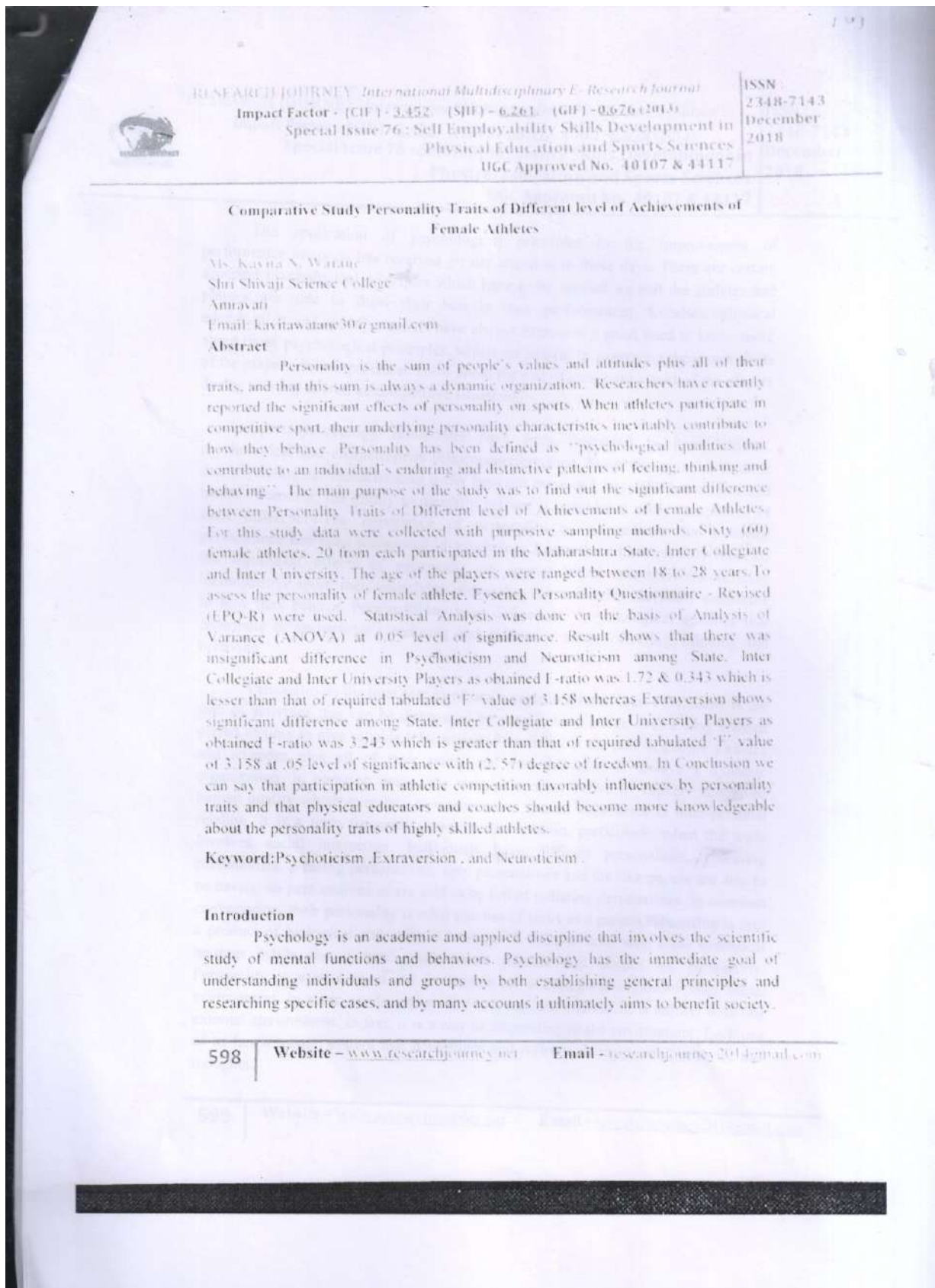
ISSN 2349-638x Impact Factor 4.574 Special Issue No. 25

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65. Watane KN: Comparative study personality forms of different level achievement of female athlete





Comparative Study Personality Traits of Different level of Achievements of Female Athletes

Ms. Kavita N. Watare
 Shri Shivaji Science College
 Amravati
 Email: kavitawatane30@gmail.com

Abstract

Personality is the sum of people's values and attitudes plus all of their traits, and that this sum is always a dynamic organization. Researchers have recently reported the significant effects of personality on sports. When athletes participate in competitive sport, their underlying personality characteristics inevitably contribute to how they behave. Personality has been defined as "psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking and behaving". The main purpose of the study was to find out the significant difference between Personality Traits of Different level of Achievements of Female Athletes. For this study data were collected with purposive sampling methods. Sixty (60) female athletes, 20 from each participated in the Maharashtra State, Inter Collegiate and Inter University. The age of the players were ranged between 18 to 28 years. To assess the personality of female athlete, Eysenck Personality Questionnaire - Revised (EPQ-R) were used. Statistical Analysis was done on the basis of Analysis of Variance (ANOVA) at 0.05 level of significance. Result shows that there was insignificant difference in Psychoticism and Neuroticism among State, Inter Collegiate and Inter University Players as obtained F-ratio was 1.72 & 0.343 which is lesser than that of required tabulated 'F' value of 3.158 whereas Extraversion shows significant difference among State, Inter Collegiate and Inter University Players as obtained F-ratio was 3.243 which is greater than that of required tabulated 'F' value of 3.158 at .05 level of significance with (2, 57) degree of freedom. In Conclusion we can say that participation in athletic competition favorably influences by personality traits and that physical educators and coaches should become more knowledgeable about the personality traits of highly skilled athletes.

Keyword: Psychoticism, Extraversion, and Neuroticism.

Introduction

Psychology is an academic and applied discipline that involves the scientific study of mental functions and behaviors. Psychology has the immediate goal of understanding individuals and groups by both establishing general principles and researching specific cases, and by many accounts it ultimately aims to benefit society.



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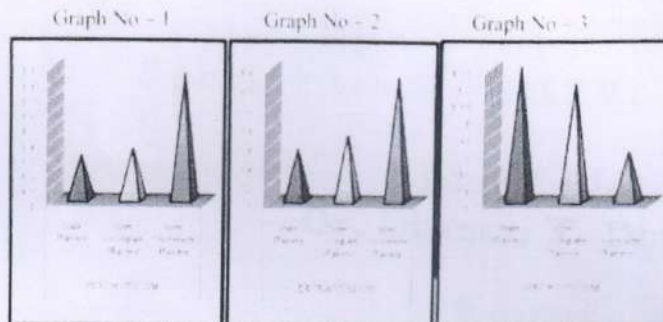
Impact Factor - (CIF) - 3.452, (SJIF) - 6.261, (GJF) - 0.676 (2013)

Special Issue 76: Self Employability Skills Development in
Physical Education and Sports Sciences

UGC Approved No. 40107 & 44117

ISSN :
2348-7143
December
2018

tabulated 'F' value of 3.158 whereas Extraversion shows significant difference among State, Inter Collegiate and Inter University Players as obtained F-ratio was 3.243 which is greater than that of required tabulated 'F' value of 3.158 at 05 level of significance with (2, 57) degree of freedom.



Finding

Comparison amongst all the three level of players with the performance of psychoticism shows insignificant difference, the reason may be attributed that psychoticism is defined by Eysenck as a personality type that is prone to take risks, might engage in anti-social behaviors, impulsiveness, or non-conformist behavior. Psychoticism appears to be linked with certain hormonal and biochemical secretions, such as serotonin and dopamine metabolites and with sex hormones. There seems to be little doubt that personality traits have a firm basis in the individual's biological structure and functioning, this may be the reason to be insignificant.

Extraversion shows significant difference the reason may be attributed that Extraversion-introversion appears to be related to differences in cortical arousal, mediated by the reticular formation, in the sense that introverts are characterized by greater resting levels of arousal. Extraversion athletes, also to be characteristics such as sensation seeking, risk taking, distractibility could not control their emotions. In this regard, these athletes motivate oneself and feelings of pleasure and satisfy their curiosity, show emotional behaviors. And it is mainly found in highly trained athlete i.e. Inter University players as compared to inter collegiate and state players.

66. Watane KN: Comparative study of balance and coordination of female athletes

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Comparative Study of Balance and Coordination of Female Athletes

Ms. Kavita N. Watane
Shri Shivaji Science College
Amravati

Abstract

The purpose of the study was to comparative Balance and Coordination of various levels of Female Athletes. For this study Sixty (60) female athletes, 20 from each participated in the Maharashtra State Tournaments (20), Inter Collegiate Tournaments of Sant Gadge Baba Amravati University, Amravati (20) and Inter University Tournaments (20) with the help of purposive sampling method were selected from Sant Gadge Baba Amravati University, Amravati. The age of the athletes were ranged between 18 to 25 years. Subjects did not use any ergogenic aids or supplementations and also they were all free from any injuries during the collection of data. The following tools were used to collect the data on:- Balance was measured by Stork Balance Stand Test and Coordination was measured by Alternate Hand Wall Toss Test. In order to find out the significant difference between personality traits of different level of achievement of female athletes the analysis of variance (ANOVA) was applied at 0.05 level of significance. Result shows that significant difference were found in balance and coordination ability among State, Inter Collegiate and Inter University Players as obtained F-ratio was 3.45 & 3.80 which was greater than that of required tabulated 'F' value of 3.158 at .05 level of significance with (2, 57) degree of freedom.

Keyword: Balance, Coordination, Female Athletes, etc.

Introduction

Motor fitness, or motor physical fitness, refers to how an athlete can perform at his or her sport, and involves a mixture of agility, coordination, balance, power, and reaction time. Improving this form of fitness is an indirect result of training in any of these attributes. All five components of fitness are essential for competing at high levels, which is why the concept is seen as an essential part of any athlete's training regime. Motor fitness is a term that describes an athlete's ability to perform effectively during sports or other physical activity. Each components is essential for high levels of performance.

Balance

Balance is the ability to stabilize your body, whether standing still or maintaining motion. Ice-skating, skiing and bicycle riding are balance exercises. There are two types of balance – static and dynamic. Static balance refers to remaining upright while staying still, standing on one leg, for example. Dynamic balance deals with stability in motion. Test your balance by holding a stationary position as long as you can, without wobbling, after moving around.

Balance is involved with all motor performances to some degree but some performances heavily depend upon balance. As quoted by Singh, Dynamics and stability both are of great importance in all body contact sports such as athletics, football, soccer, baseball, basketball and hockey.

Balance is the main factor of fitness competences for success in sports. Good balance plays an important role in skill development and the overall fitness profile of the players. There are two types of balance in sports. First is static balance, which maintains the body's centre of mass and second is dynamic balance which moves outside the body base of support.

Coordination

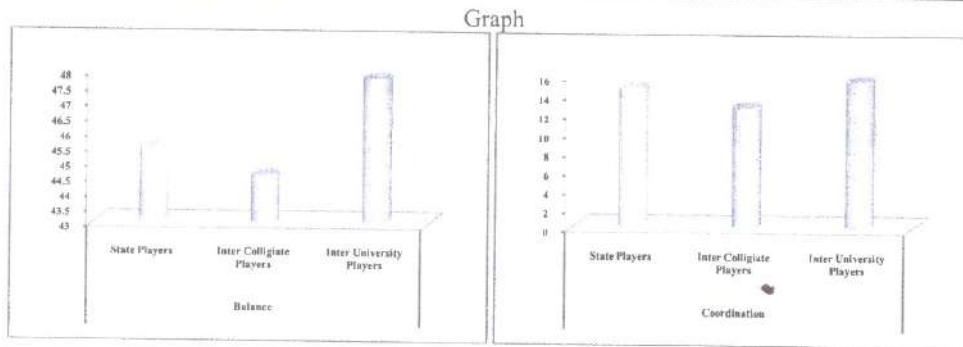
Coordination describes the synchronization of your senses and your body parts in a way that enhances motor skills. Volleying a table tennis ball is an example of hand-eye coordination. A variety of tests measure coordination, including juggling or hitting a ball.

“Co-ordination is the ability to integrate muscles movements into an efficient pattern of movement”. Co-ordination makes the difference between good performance and poor performance. The efficiency of skill patterns depends upon the interrelation of speed, agility, balance and muscle movements into as well co-ordinate pattern.

It is the good advice to the performer and is necessary for judging such variables factor as speed, distance, direction, and size. Countless skills involve co-ordination of the eyes with hands. The players in Cricket, Volleyball, Basketball and handball do require eye- hand co-ordination when they exhibit their skills for successful performance. As there is lack of research available on important of eye-hand co-ordination for games. Where accuracy is more needed, the research worker was interested to conduct the study on Cricket, volleyball, Basketball and Handball players. The Nero-

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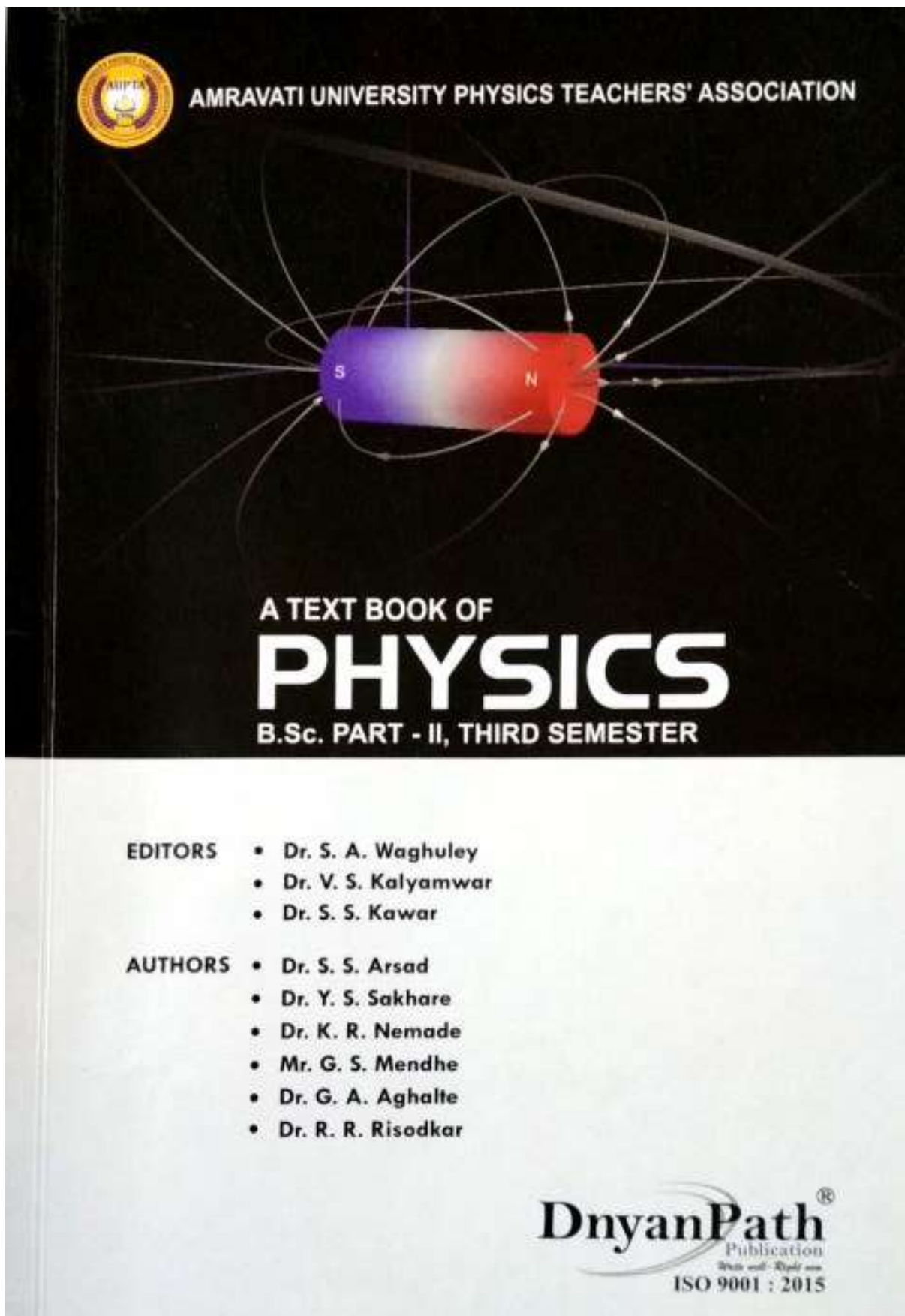
Conclusion

Result shows that significant difference were found in balance and coordination ability among State, Inter Collegiate and Inter University Players. In reference to balance, the reason may be attributed that everyday tasks such as bending, reaching and maneuvering around objects require the skill of balance. Any minor upset which affects our body system can have a negative effect on balance and create difficulties with movement. Several body systems are involved in the balance process, including the musculoskeletal system, inner ear, eyes and skin. Good balance relies on all of these systems and processes functioning perfectly. As inter university player's possess typically stereotyped with hardworking, strenuous and strong musculature body with great amount of energetic as compared state and inter collegiate players. And in reference to coordination, the reason may be attributed that coordination is the ability to repeatedly execute a sequence of movements smoothly and accurately. This may involve the senses, muscular contractions and joint movements. Everything that we participate in requires the ability to coordinate our limbs to achieve a successful outcome - from walking to the more complex movements of athletic events like the pole vault. Inter university players go through various training programs and their more participation, more conditioning, more practice makes them more fit. Their body becomes more conditioned and able to bear and have more stress and hard work due to their better playing environment and participation in games as compared to state and inter university players.

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67. Arsad SS: A Text Book of Physics B.Sc. II, Sem III (Mathematical Background and Electrostatics)



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Published by the DnyanPath Publication (INDIA)

A TEXT BOOK OF PHYSICS (THIRD SEMESTER)

ISBN 13 : 978-93-87278-51-6

Edition : First, July 2019



Mahatma Fule Sankul, Infront of Abhiyanta Bhavan,
Shegaon Naka, V.M.V. Road, Amravati - 444603 (Maharashtra)

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Printed at Shri Gurudeo Printers, Amravati.

Mahatma Fule Sankul, Shegaon Naka, V.M.V. Road, Amravati - 444603 (Maharashtra)

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68. Arsad SS: The journey of lasers in Dermatology

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'RESEARCH JOURNEY' International J- Research Journal
 Impact Factor - (SJIF) - 6.261, (CIP) - 3.482(2015), (COP) - 8.636 (2013)
 Special Issue 110 (I)- Physics
 UGC Approved Journal

ISSN :
 2349-7143
 February-2019

The Journey of Laser in Dermatology

S.S.Arsad
 Email: arsadswapsil@yahoo.co.in
 Dept. of Physics, Mahatma Jyoti Bahadur College, Warud

Abstract :
 It is a long time now that lasers are used in dermatology. The results achieved by the use of laser in dermatology are quite satisfactory and excellent in some cases. The journey is continuous and new devices have been under development for the therapy of different kind of diseases. The laser technology already in use is changing. The aim is to be more accurate, efficient and be useful in many types of dermatological disorders.

Background :
 The origin of the laser technology was suggested by Planck and Einstein's discoveries. The scientific basis for the development of the laser is the relationship between energy and frequency of radiation. The energy could be emitted or absorbed only in discrete chunks, named "quanta". In 1916, Einstein introduced the concept of stimulated emission: photons, by interacting with excited atoms or molecules, could stimulate the emission of new photons having the same frequency, phase and direction of the first one. It was only in 1954 that Einstein's theory became true in practice. In that year the American Townes and Weber, and the Russians Basov and Prokhorov, independently reported about their introduction of MASER ("Microwave Amplification by Stimulated Emission of Radiation"), a special device for generating microwave radiation, using excited ammonia molecules in a resonant cavity [2,3]. Finally, the 16th may 1960, Theodore H. Maiman, a physicist at Hughes Research Laboratories in Malibu, constructed the first laser, using a cylinder of synthetic ruby, with the ends silver-coated to make them reflective and able to serve as a Fabry-Perot resonator. Maiman used the photographic flash lamp as the laser's pump source [7]. Gould and Schawlow built their ruby lasers. Obviously, in the medical field physicians began testing lasers on the medical practice. In 1961, the American Charles Campbell and Charles Keester treated a patient with a retina tumour with a laser. About a week later, Zweng performed successfully a similar operation.

Method and Material:
 In 1963, Leon Goldman, reported the effects of Maiman's laser in the selective destruction of cutaneous pigmented structures, like black hairs [8]. He also described the potential use of ruby laser and the more innovative Q-switched device in tattoo removal and the possible treatment of other pigmented lesions and the use of Carbon dioxide laser for the photo-ablation of skin lesions [9]. The treatment of dermatological diseases, underlying the importance of protection measures and suggesting the idea of the laser as a diagnostic tool [10]. In 1973, he also introduced the non-dyadic: prismani-aluminium garnet (Nd:YAG) laser in the treatment of vascular lesions.

In 1968 the laser therapy has been deeply revolutionized by the selective photo-thermalysis theory, postulated by Roy Anderson and John Parrish by the use of specific wavelengths, we achieve the destruction of specific molecules (or chromophores), allowing better localization of thermal energy and minimization of damage to the surrounding tissue [5]. The modern dermatology may have at the disposal of a wide range of laser equipments, often very

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'RESEARCH JOURNEY' International J- Research Journal

ISSN :
 2349-7143

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"RESEARCH JOURNEY" International E- Research Journal
Impact Factor - (SJIF) - 5.261, (CJIF) - 3.452, (SJISL) (SJIF) - 0.474, (2013)
Special Issue 110 (I) - Physics
UGC Approved Journal

ISSN :
2348-7143
February-2019

Optical Limiting Properties of Sr and Cu Doped ZnO-PVA Nanocomposites Colloidal Suspension

Y. S. Tungadge^{1*}, G. G. Muley², S. S. Arsal³, N. B. Thakare⁴, R. P. Ganorkar⁴

¹Department of Physics, Mahatma Fule Arts, Commerce & Sitararnji Chaudhari Science Mahavidyalaya, Warud, Dist. Amravati (MS), India-444906

²Department of Physics, Sant Gadge Baba Amravati University, Amravati (MS), India-444602

³Department of Physics, Shri. Shivaji College, Chikhali, Dist. Buldana (MS), India-443201

⁴Department of Chemistry, Mahatma Fule Arts, Commerce & Sitararnji Chaudhari Science Mahavidyalaya, Warud, Dist. Amravati (MS), India-444906

*Corresponding author email: ystungadge@gmail.com

Abstract:

The present paper investigates effects of strontium and copper doping on the optical limiting properties of ZnO-polyvinyl alcohol (PVA) nano-composite colloidal suspension. Strontium and copper doped ZnO nanoparticles capped with L-arginine were synthesized by low cost soft chemical route. These nanoparticles have been characterized by X-ray powder diffraction (XRD), scanning electron microscopy (SEM), energy dispersive x-ray spectroscopy (EDX), ultraviolet-visible (UV-vis) spectroscopy and Fourier transform infrared (FT-IR) spectroscopy. Optical limiting studies of undoped, Sr and Cu doped ZnO-PVA nanocomposite colloidal suspension under cw diode laser at 685 nm are presented in this paper.

Keywords: ZnO nanoparticles, optical limiting, nonlinear optical properties, etc.

Introduction:

Optoelectronic devices having excellent nonlinear optical properties have achieved technological importance on account of day to day innovations in nanotechnology. Nanostructured materials offer great advantages over bulk materials owing to enhanced properties due to high surface to volume ratio and quantum size effects. Semiconducting nanomaterials are known to have peculiar shape and size dependent physical, chemical, electrical and optical properties which can be engineered as per application requirements [1]. These nanomaterials are widely used in optoelectronics, electronics, medicine, photonics etc. [2-4]. Third order nonlinearity in semiconducting materials is gaining extreme importance because of its potential applications in optical switching, optical limiters, optoelectronic devices, optical signal processing, optical waveguides, ultrafast optical communication systems, optical storage systems, ultrafast nonlinear optical (NLO) devices, etc. [5]. Among all other semiconducting nanostructured materials, ZnO is very active candidate for above fields. The effect of doping on properties of ZnO nanostructures are being studied widely for many practical applications like spintronics devices, light emitting diodes and diode lasers [6-9]. Nanocomposite materials consisting of two or more phases are known to show enhanced third order NLO susceptibility due to dielectric effect, quantum confinement and surface states effect. Such nanocomposite materials with enhanced nonlinearity can be studied for making optical limiters, optical modulators, second and third order harmonic generators, etc. [10, 11]. Composite materials containing ZnO and polyvinyl alcohol (PVA) exhibit the merits of blending, processability, flexibility and easy thin film forming properties. Such material designs are assumed to show excellent NLO properties especially related to optical limiting. The detailed investigations on the synthesis, linear and nonlinear optical properties of Sr and Cu doped ZnO-PVA nanocomposite thin films have

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International Journal of Research in Science and Technology

Volume 6, Issue 1 : January - March, 2019

ISSN 2394 - 9954

THE TREATMENT OF SKIN DISEASES WITH ULTRAVIOLET LIGHT

S. S. Arsad
M F M, Ward, Amravati

ABSTRACT

The phototherapy is being used for treatment of many skin diseases like psoriasis, hair removal, tattoo removal, skin resurfacing, wrinkles etc. The utility of UV radiation in the treatment of skin diseases is proven by various systematic studies on case to case basis. Phototherapy has undergone multifaceted improvements over few decades. While conventional phototherapy was based on body part exposure to UV radiation which included both affected and unaffected areas, targeted phototherapy using optic fiber cable and laser or excimer light with few mJ energy dose and spot size ranging from 1cm to 4 cm. In recent years, the research in the targeted phototherapy made availability of radiation with specific wavelength and intensity in portable models. Phototherapy is being used for effective treatment of about 20 dermatological problems. It is found that Lasers with 337.1 nm are also useful for many of these diseases.

INTRODUCTION

Conventional phototherapy used Ultraviolet spectrum (280nm-400nm) for the treatment of dermatological problems. It included Broadband UVB Therapy, UVA therapy, Selective phototherapy (311-318 nm), Narrowband UVB (311 nm) therapy, Ultraviolet A1 (UVA1) and Ultraviolet A2 (UVA2) therapy. Conventional phototherapy is based on the use of tube light having radiation of desired wavelength.

In recent years, Targeted phototherapy in which Excimer laser were used are replaced by excimer lamps, Intense pulsed light therapy, Light-based targeted phototherapy, Photodynamic therapy Low-level laser and light-emitting diode therapy are the new terminology used in phototherapy. All these devices have the source of radiation designed with the aim of improved wavelength and energy standards. These are smaller in size and their spot size is reduced with Controlled energy dose.

METHOD

Conventional phototherapy have the main disadvantage of exposure of unaffected areas to UV light. In this method the treatment continues for long session with step by step increment in doses. The devices used are not handy so patient has to visit the clinic for long period. Certain body parts cannot be treated due to risk involved. Especially children patients do not cope with such type of treatment.

Targeted phototherapy is emerging as a more effective treatment tool for various dermatological problems but it has some drawbacks. Since the spot size is reduced to few cm the treatment of large affected area become difficult. If the affected skin area is above 10% of the body then the targeted phototherapy is not recommended due to cost and time required for satisfactory results.

Along with these phototherapy modalities the use of topical or systemic agents was also tested which is referred as combination therapy.

COMBINATION THERAPY

Phototherapy may be combined with topical or systemic agents to achieve higher clearance rates, longer disease free intervals and a lower carcinogenic risk.⁸ Topical agents include anthralin, vitamin D analogues, retinoids, glucocorticoids, emollients, saltwater baths and tar. The combination of either broad band UVB or 311 nm UVB therapy with calcipotriol increases the therapeutic efficacy of phototherapy and reduces the irritation caused by calcipotriol.⁹

In psoriasis tarozone gel applied topically along with narrowband or broadband UVB which promotes fast and effective clearing of the disease.^[10] This combination therapy can be initiated at lower doses than usual when used in combination with tarozone.^[11]

LASER THERAPY

The Excimer laser power and exposure time were so adjusted that the number of photons in both the cases were same. Final evaluation was done after every one month of the treatment. The patches exposed to UVB radiation i.e. Excimer laser radiation clearly showed pigmentation. No serious or adverse side effects were observed.

UVA radiation phototherapy and 337.1 nm pulsed nitrogen laser ^[12] were targeted to affected lesions only. The use of laser in the treatment limits the total skin exposure to UV radiation and hence the risk of skin cancer may also be reduced. It also brings faster therapeutic effect and the total treatment time also reduced after getting

71. Arsad SS: Study of segmental vitiligo and its treatment with NUVB for better results

International Journal of Research in Science and Technology

Volume 6, Issue 1 : January - March, 2019

ISSN 2334 - 9954

STUDY OF SEGMENTAL VITILIGO AND ITS TREATMENT WITH NUUVB FOR BETTER RESULTS

S. S. Arsad and U. R. Kathale

Department of Physics, M. F. M. Warud, Amravati

ABSTRACT

The vitiligo is a commonly found skin disorder in which the skin color is lost and white macules are visible. It is due to lack of melanin formation activity. The melanin decides color of the skin. The vitiligo is classified by the appearance of patches, its pattern, areas affected by it and time. One of the sub types of vitiligo is segmental vitiligo. The purpose of treatment is to regain original skin color at the sites which are white. The vitiligo is treated by various methods like phototherapy, herbal medicine therapy, allopathic medicines and homeopathic treatment is also one of the options for patient. The present paper is based on study of segmental vitiligo and its treatment with NUUVB.

BACKGROUND

Segmental vitiligo is a small but unique subset of vitiligo requiring due importance due to its lack of response to medical treatment but excellent response to surgical treatment. Characterization of the pattern of segmental vitiligo will also help to understand the pathogenesis of the disease [1]. It is possible to treat it with phototherapy in better manner.

Aim: To study the role of NUUVB in the treatment of segmental vitiligo.

INTRODUCTION

Vitiligo is an acquired pigmentary disorder of the skin presenting as depigmented or hypopigmented macules. It affects 0.1-2% population worldwide, [2],[3] and its prevalence in India is about 0.5-2.5%. [4],[5] Vitiligo can be classified into segmental and non-segmental vitiligo. Segmental vitiligo has depigmented macules arranged in a dermatomal or quasi-dermatomal distribution, which does not cross the midline. It differs from non-segmental vitiligo in terms of clinical features, natural history, and also treatment response. [6] Segmental vitiligo usually has an early onset in childhood in contrast to non-segmental vitiligo, which predominantly affects adults. In segmental vitiligo, the lesions develop rapidly over short span of time in a localized area and then remain stable, whereas non-segmental vitiligo has a highly variable course with periods of progression, remission, and stability. [6] Segmental vitiligo responds poorly to medical treatment, [7],[8] and surgical methods are the treatment of choice. [7] The characteristic feature of segmental vitiligo is the distribution pattern of the lesions. In most cases, it is fairly easy to recognize segmental vitiligo due to its unilateral and patterned distribution. In a study on 450 patients of vitiligo at AIIMS, New Delhi, segmental vitiligo was seen in 6.7% cases. An additional 1.7% had lesions of segmental vitiligo along with other types of vitiligo (mixed vitiligo). [10] Previous reports have described certain clinical features of segmental vitiligo. It is a disease of childhood; the incidence of segmental vitiligo is significantly more in children (19%) as compared to adults (2%). [11] The mean age of onset reported previously was 13.6 years, [12]. The disease stabilizes by 6 months to 1 year irrespective of treatment and disease progression halts faster than non-segmental vitiligo. [12],[13] This 'self-limiting' nature of the disease reduces the requirement of aggressive systemic therapy at the onset of the disease. Koga and Taago have described type A and type B vitiligo as non-segmental and segmental, respectively, and they noted progression from type B (segmental) to type A (non-segmental) vitiligo in 1.2% (3/134 patients). [5] In a case series of 127 patients with segmental vitiligo, Ezzedine et al found that 26 (20.4%) progressed from segmental vitiligo to non-segmental vitiligo. [14] In this study, progression from segmental vitiligo to another type of vitiligo was seen in only 10% patients and most developed focal vitiligo. Hence, a patient can be counseled that it is less likely that his disease will spread to other parts of the body, thus reducing psychological burden. The pattern of the lesions is what characterizes segmental vitiligo, yet there is no consensus regarding it. Dermatomal pattern has been mentioned most commonly [6],[12],[15] and is given in the definition of segmental vitiligo in many reputed dermatology books.

METHODS

In this particular study, the NUUVB phototherapy unit from Dardis company was used. It was found that lesser number of exposures were required to achieve 25-75% repigmentation. Similarly, the cumulative dose was also lesser to achieve the same repigmentation, whereas Njoo et al. [21] reported the same repigmentation with more number of exposures (76.3 ± 16.7). The same observations were reported in other western studies. [18],[20],[22],[24],[27] Our study and other Indian studies [19],[33],[34] showed that dark skin (Fitzpatrick type IV and V) requires lesser number of exposures and cumulative dose to achieve 25-75% repigmentation when compared with white skin (Fitzpatrick I and II). It has also been observed in our study that

72. Band SE: Health Awareness in School Programme - A Necessity

MAH MUL/03051/2012
ISSN: 2319 931B

UGC Approved
Sr.No. 62759

Vidyawarta®

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Special Issue

0167

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HEALTH AWARENESS IN SCHOOL PROGRAMME - A NECESSITY

DR. SUGANDH BAND

Director of Physical Education
Shri Shivaji Science College, Amravati

Introduction

There is a growing awareness and demand that boys and girls; during their high school years be given opportunities to acquire useful and positive information about health. If the health education programme is successfully implemented in the school, students develop good health habits. Lacking scientific information, any adolescent with an inadequate background of experience is unable to safely adjust his living habits in various situation unless and until he knows how the various parts and organs of the body operate. But the usual high school course in biology or general science or in physiology do not fulfill the needs of practical situation because the emphasis is more on academic learning and not upon the practical aspect. A programme of health training instruction should be intimately linked with others school activities, which have health contents, and health relations because activities in sports and games are the means of achieving fitness.

Youth constitute the most creative segment of any society. About 34% of the total population of India are youth. The need and importance of physical education for health and fitness with a view to increasing individual productivity, and value of sports as a means of recreation and with a potential for promoting social harmony and discipline are well recognized. To fulfill this, view the ministry of youth affairs and sports was setup as department of sports in 1982 at the time of organization of ninth Asian games in New Delhi. It became a separate ministry on 27th May 2000. Their vision is to provide opportunities for developing the personality of youth so that they may achieve their full potential and involving them in various nation building activity on the one side, and broad basing of sports and achieving excellence at national and international levels.

Various Schemes Run by Youth Affairs and Sports Ministry.

1. Grants for creation of sports infrastructure
2. Grants to rural schools for sports equipments and play grounds.
3. Grants for installation of synthetic playing surfaces.

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Scanned with CamScanner

planned a big way the health and physical education activities at all levels of school education programme. Health is more important than anything else. It is not the sole or primary responsibility of the school or college but the general welfare of society demands that it be given a place which will attract attention, assure interest and command respect. Buccher also believe that health and physical educations programme are related to academic achievements in following ways-

- a) Through emphasis on the development of motor skill.
- b) By promoting physical fitness.
- c) By imparting knowledge and modifying behaviour regarding good health practices.
- d) By aiding the process of social and emotional development which leads to more positive

Self-Concepts

Education for keeping, maintaining good health and avoiding harmful agents may be understood as health awareness in school. For school children health education should be a systematic programme of developing healthy habits, proper attitude and correct knowledge which will contribute to physical, mental, and social health. However, strongly one may feel about the responsibility of the home for physical fitness, the educational institution must support and strengthen what is done on the out side. It is a well known fact that if the general curriculum does not include a programme of physical development and the essentials of good health, these "will be neglected by the students and will not be adequately supplied by the home or the other agencies. For the awareness of health and fitness among citizens mass media needs to be energized to make health a pivotal issue. Newspapers and periodicals carry lot of material only to cater base urges. There is hardly any coverage for health information. Such wastages must be plugged and health awareness must be promoted to make the people strong and healthy. As a healthy population can certainly bring about a better economic and national strength.

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73. Bhatkar VB: SrB₄O₇:Sm²⁺ phosphor for solar photovoltaics

The screenshot shows the homepage of AIP Conference Proceedings. At the top left is the AIP logo and the text 'AIP Conference Proceedings'. To the right are social media icons for Facebook and RSS, and a blue button labeled 'BUY PRINT BOOK'. Below the header is a navigation menu with links for HOME, BROWSE, INFO, FOR AUTHORS, and FOR ORGANIZERS. On the far right of the menu is a bell icon and the text 'SIGN UP FOR ALERTS'. A large banner below the menu features the AIP logo, the text 'Organizing a conference? Enjoy fast, cost-effective publication of your meeting's key research. AIP Conference Proceedings', and a yellow button labeled 'REQUEST A QUOTE'. To the left of the banner is a paragraph of text: 'AIP Conference Proceedings has been a trusted publishing partner for more than 40 years, delivering fast, affordable, and versatile publishing for maximum exposure of your meeting's key research. Our conference proceedings program reports the findings presented at scientific meetings from large international conferences to small specialist workshops. Subject areas span the physical sciences, including physics, math, chemistry, materials science, and engineering.' Below this is the heading 'Why publish with us:' followed by a bulleted list: 'Indexed in leading databases – Web of Science, Scopus, Inspec and Chemical Abstracts Service (CAS), Astrophysics Data System (ADS)' and 'Fast publication times – 4-6 weeks after final submission'. To the right of the main text is a 'Forthcoming Titles' section with an image of people and a 'SEE MORE' button. At the bottom right of this section are the labels 'Most Read' and 'Most Cited'.

The screenshot shows the article page for 'SrB₄O₇:Sm²⁺ phosphor for solar photovoltaics'. At the top left is the AIP logo and the text 'AIP Conference Proceedings'. To the right are social media icons for Facebook and RSS, and a blue button labeled 'BUY PRINT BOOK'. Below the header is a navigation menu with links for HOME, BROWSE, INFO, FOR AUTHORS, and FOR ORGANIZERS. On the far right of the menu is a bell icon and the text 'SIGN UP FOR ALERTS'. Below the menu is a breadcrumb trail: 'Home > AIP Conference Proceedings > Volume 2104, Issue 1 > 10.1063/1.5100389'. To the right of the breadcrumb trail are buttons for '< PREV' and 'NEXT >'. Below the breadcrumb trail is a red lock icon and the text 'No Access · Published Online: 07 May 2019'. The article title 'SrB₄O₇:Sm²⁺ phosphor for solar photovoltaics' is displayed in large black font. Below the title is the citation information: 'AIP Conference Proceedings 2104, 020021 (2019); <https://doi.org/10.1063/1.5100389>'. Below the citation is the author list: 'P.K. Tawalaro^{1,a)}, V.B. Bhatkar^{2,b)}, S.K. Omanwar^{3,c)}, and S.V. Moharij^{3,d)}' followed by 'more...'. Below the author list is the heading 'View Affiliations'. Below the heading is a navigation bar with buttons for PDF, E-READER, ABSTRACT (which is highlighted), and TOOLS. To the right of the navigation bar are buttons for SHARE and METRICS. On the left side of the page is a 'TOPICS' section with a circular icon containing a plus sign and a list of topics: 'Solar cells' and 'Semiconductors'. The main content area is titled 'ABSTRACT' and contains the text: 'Thin film solar cells were developed as an alternative to c-Si solar cells in an effort to bring'.

75. Hedawoo GB: Studies on Fungal Diseases of Betel Vine (Piper betle L.) from Anjangaon Surji Region (M.S.)



'RESEARCH JOURNEY' International E-Research Journal
Impact Factor - (SJIF) - 6.261, (CIF) - 3.452(2015), (GIF)-0.676 (2013)
Special Issue 182 (G) - Contemporary Innovation in Science
UGC Approved Journal

ISSN :
2348-7143
April-2019

Studies on Fungal Diseases of Betel Vine (Piper betle L.) from Anjangaon Surji Region (M.S.)

G. B. Hedawoo and Rupesh N. Makode

P. G. Department of Botany,
Shri Shivaji Science College, Amravati.
E-mail: drgbhedawoo@gmail.com

Abstract:

Betel vine (Piper betle L.) belonging to the family Piperaceae is an important horticultural crop with aesthetic, medicinal and commercial values. It is one of the cash crop widely cultivated in Anjangaon Surji taluka of Amravati district. Due to its very sensitive and delicate nature; during cultivation betel vine is very much affected by fungal diseases that outcome in heavy loss to the farmers of this region. The most important leaf spot, rotting problems occurred in a very virulent form and caused widespread injury with total demolition of the entire betel vine plantations. Moreover, the disease infected leaves should not be used in consumption and in medicine because of harmful to health. Hence, an investigation of fungal diseases on betel vine was undertaken.

Total ten fungi were isolated from infected parts of betel vine. Major leaf spot diseases are caused by Phytophthora parasitica, Alternaria alternata, Curvalaria lunata, Colletotrichum piperis (anthracnose) and Oidium piperis (powdery mildew). Alternaria alternata also caused the petiole rot. Wilting of betel vine is caused by Fusarium semitectum. Foot rots were caused by Phytophthora parasitica and Sclerotium rolfsii, while root system damaged by Pythium piperinum.

Keywords:- Fungal diseases, isolation, identification, betel vine, Anjangaon Surji region (M.S.)

Introduction

Betel vine is a shade loving perennial rooted climber. The deep green, heart shaped leaves are popularly known as Paan in India. Leaves of betel vine are chewed along with areca nut and lime among the people of India as a masticator. The leaf is widely used in social, cultural and religious events for hospitality. The leaf contains some vitamins, enzymes, thiamine, riboflavin, tannin, iodine, iron, calcium, minerals, proteins and essential oil, also used as medicine for lever, -rain and heart diseases (Chopra, et.al.,1956). The leaf juice is useful as an eye drops in night blindness. The leaves are traditionally used as a mouth refresher and have oral hygiene due to the presence of antimicrobial components. Leaves are useful for the treatment of boils, abscesses, wound, itches, abrasion, cuts, injuries, ringworm infections, headache, hysteria, cold and cough, throat infections, colic, dysentery and constipation, piles, swelling of gum, rheumatism and joint pain (Patel and Jasrai, 2013).

Review of literature

Among plant microbial pathogens, fungi are the most important and destructive pathogens, infecting a wide range of host plants and are responsible to cause great economic loss in the field and harvest during storage and transportation (Patel and Jasrai, 2013). Phytophthora and Colletotrichum spe. are the major constraints for the cultivation of the crop across the country (Goswami, et.al., 2002). The early detection of powdery mildew disease is studied by Vijaya Kumar and Arumugam(2012). Leaf rot can damage the crop within a week when it



up to 60% (Islam,2005). Gogoi et.al.(2008), reported that anthracnose disease on leaves are caused by Colletotrichum spe. Bashar et.al. (2014) stated that Alternaria spe., Curvularia spe. and Fusarium spe. found associated with anthracnose disease as secondary invaders. Several species of Fusarium have been isolated from the wilted plants from Maharashtra (Singh and Joshi, 1972). In India, Narasimhan (1933) first observed the powdery mildew disease in Mysore. It was later observed from almost all betel vine growing areas of India.

In Anjangaon Surji taluka of Amravati district, the farmers are encountered heavy loss in betel leaf yield every year. In rainy season, prolonged wet conditions with high relative humidity enhances the incidence of leaf, stem and root rot diseases. Moreover, the disease infected leaves should not be used for consumption and in medicine. Certain species of Fusarium and Aspergillus produces toxic and carcinogenic compounds. Hence, to control such fungal pathogens eco-friendly methods should apply. Recently, biological control agents like Trichoderma species are recommended to control pathogens. In some cases plant extracts (natural biocides) and cow's urine inhibit the mycelial growth of pathogens.

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76. Ingle SG: WeedsDB: The Indian Weeds Database



'RESEARCH JOURNEY' International E- Research Journal
 Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013)
 Special Issue 182 (G) - Contemporary Innovation in Science
 UGC Approved Journal

ISSN :
 2348-7143
 April-2019

WeedsDB : The Indian Weeds Database

Ingle Shyam¹, Hedawoo Ganesh² and Nagmote Sandip³

1. P.G. Department of Bioinformatics,

2. P. G. Department of Botany,

Shri Shivaji Science College, Shivaji Nagar, Amravati-444603.

3. Prof. N. G. Science, Prof. N. G. Science & A. G. Commerce College, Sakharkherda.

*Correspondence author Email: bioinfo.sham@gmail.com

Abstract:

Weeds are those plants, with harmful or objectionable habits or characteristics, which grow where they are not wanted. Weeds cause 10-80% crop yield losses besides impairing product quality and causing health and environmental hazards. Weeds referred as alien plants and those are a major constraint to agriculture, forestry and aquatic environment. On the other hand, as part of the primary producers within farming systems, weeds also considered as important components of the agroecosystem. Reductions in abundances of weeds which act as hosts may affect associated insects and other taxa which are beneficial. Correct identification of weed plant is an important step in making sure that new weeds can be eradicated before they become established. This work introducing the "WeedsDB: The Indian Weeds database". WeedsDB aims to provide a comprehensive source of information about weed plants from India. This database is user friendly web interface provides well annotated information about 336 weeds species for identification. Focus of the database content is the habit of weed plant with taxonomic description includes morphology of stem, leaf, flower, fruit and seed with high definition images, medicinal values.

Website available at: <https://weedsdb.live-website.com/>

Keywords: WeedsDB, weeds, database, medicinal, agriculture, taxonomy, India

Introduction:

India has a wide range of plant diversity and different soil types. Farming is one of the oldest economic activity of our country. The highly diverse agriculture and farming systems are beset with different types of weed problems. Weeds decrease the crop yield with impairing product quality and causing health and environmental hazards. Invasive alien weeds are a major constraint to agriculture, forestry and aquatic environment (Salisbury, 1961). Besides, weeds are the part of the primary producers within farming systems, weeds also considered as important components of the agroecosystem. Reductions in abundances of weeds which act as hosts may affect associated insects and other taxa which are beneficial (Naidu., 2012). Some of the weed plants are having economic benefits and medicinal values. Thus, weeds have a role within agroecosystems in supporting biodiversity more generally. Weeds play an important role as a resource in pharmaceuticals and animal nutrition. Knowing the weeds that are competing with the desirable crops is important to understand how to manage their populations. It is said that identification is half way to control. The first step in effective weed management is the accurate identification which in turn will help in a basic understanding of the weeds' life cycle. The types of weeds can also tell about the field and its management, and also the best form of direct control. Proper weed identification can help in selecting right herbicide to control a particular weed.



Fig: Weed plants family distribution within WeedsDB

Result and Discussion:

India is found to be one of the important biodiversity rich-area for varied weeds. WeedsDB provide the comprehensive source of information for 336 weed plants from the "Hand Book on Weed Identification" and different sources and it was recorded and annotated with referring the standard literature and protocol. Relevant WeedsDB version 1.0 was developed by Ingle Shyam, Hedawoo Ganesh, Nagmote Sandip. WeedsDB provide user friendly interface for the user to retrieve the appropriate weeds information and search the major weed plants as said above. Each search record provides the widerange of annotated information like botanical name, common name, Family, Habit, Stem, Leaves, Flowers, Fruits, Seeds information and Medicinal properties information. This database will helpful for upcoming researchers, industrialists, teachers and students for systematic and scientific study of weed plants and their potential. Recent survey records of weeds will be updated to the economic importance of weeds and etc.

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77. Ingole RA: Development of sports in India since independence and sports policies of India

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Development of Sports in India since Independence and Sports Policies of India

Rupali Abhijit Ingole
Shri Shivaji Science College, Amravati

Introduction

Position Of Sports In India After The Independence

India finally got Independence in the year 1947 and Government of India did various efforts to improve the deteriorated status of physical education. An important step in this direction was the establishment of a committee which was named "Tara Chand Committee". This committee came into existence in the year 1948. Various recommendations were made by this committee to improve the condition or status of physical education in the country. Dr. S. Radha Krishnan committee was also formed in 1948 on school education. To advise the government in various issues relating to physical education, a board, named Central Advisory Board of Physical Education and Recreation was set up in the year 1950. The Kothari Commission on Education (1965) stressed the need of compulsory physical education both in schools and colleges. To provide training to athletes in various games and sports, some special kinds of schemes were introduced by the Government of India. Some other important committees and boards were appointed for promotion of Physical education and sports, which are as under:

- All India Council of Sports (1954)
- National Institute of Physical Education renamed as Laxmibai National College of Physical Education, Gwalior (1957)
- National Institute of Sports, Patiala (1961)
- All India Sports Congress (1962)
- National Sports Policy (1980)
- Ministry of Sports and Youth Affairs (1982)
- National Sports Policy (1984) National Sports (Development) Bill (2011)

Because of various efforts of government, people got attracted towards various sports in a large number. As a result of such popularity, various federations were set up on national level. Government of India established certain institutions which were setup especially to provide training of various physical activities. In these institutions, bachelor degree and master degree can be obtained in games and sports. In India, it was realised by the government that people did not lack in natural qualities, but they did not get proper opportunities to show their talents. So, Sports Talent Search Scholarship scheme was introduced by Government of India. In 1982 Asian Games were conducted in India itself. The organisation of such international tournament in the country helps in improving the standard and infrastructure of games and sports at great extent.

Education Policy-1986

Government of India formulated a National Policy on Education in 1986 under the Prime Minister Rajiv Gandhi. According to this policy, learning procedure includes sports and physical education as important parts. These should be included in the evaluation procedure of performances of different participants. In educational area, a nationwide infrastructure for physical education and sports should be provided, which should comprise of various facilities necessary for sports organisation, students and coaches. In urban areas, open spaces should be kept reserved only for the organisation of different sports. Various steps should be taken to establish different kinds of sports institutions or organisations, where in addition to general education, knowledge of sports activities can be imparted. Students with interest in sports should be encouraged to participate in various sports events. Traditional games should be provided an important place in educational curriculum of schools. Yoga should be introduced in all the schools at various levels. Now, Government of India has realised that our country is lagging behind in the field of physical education in comparison to other developed countries of the world, because of which various kinds of steps are taken from time to time. One such step is the establishment of various commissions. One such commission was Kothari Commission. The reason of establishing such authorities is the poor performance of Indian players in international competitions, like Olympics and Asian Games. To improve the performance of various players in these competitions, Indian Government has taken such initiatives. Even presently, when the Olympic Games begin, all the Indian people have great expectations from Indian sportspersons but finally they always appear on the bottom of medal Tally. It is a matter of re-conciliation for us because India is the second highly populated country in the world and still is unable to produce such players who can bring medals for the country in international competitions. Although a good number of sports institutions are there but a lot is to be done in this field.

Some Important Sports Schemes and Institutions

Aayushi International Interdisciplinary Research Journal (ISSN 2349-638x) Impact Factor 5.707
Peer Reviewed Journal www.aiirjournal.com Mob. 8999250451

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lump sum ex-gratia assistance to outstanding sportspersons of yesteryears, who brought glory to the nation, but are now living in indignant circumstances.

Budget 2013-14, And Sports

A National Institute of Coaching Education will be established with the aim of producing quality coaches of international standards for which Rs 250 crore have been allotted in the 2013-14 budget for the Ministry of Youth Affairs and Sports. To establish the national coaching centre, the National Institute of Sport in Patiala will be de-merged from the Sports Authority of India. In all the finance ministry has allocated Rs. 1,219 crore to the Ministry of Youth Affairs and Sports for the new fiscal year, an increase of Rs 214 crore. For 2012-13, the sports ministry was allotted Rs 1,152 crore, which was later revised to approximately Rs 1005.60 crore. Out of the total outlay, Rs 792.72 crore has been kept aside for sports and games while the youth affairs department will receive Rs 301 crore. The Sports Authority of India (SAI) will receive Rs 326 crore out of the total amount sanctioned, while Rs160 crore will be given to the National Sports Federations. Last year, the sports federations received Rs110 crore.

Conclusion

As we see sports have traveled a long journey on the way of their upliftment in the Indian society. Government and Non-Government agencies have worked a lot for the broad basing of sports in the country, but a lot is to be done yet in this regard. People are also getting attracted toward games due to many incentives offered on various stages in the form of cash prizes, and reservation in jobs under sports quota etc. It is a good omen for the country that we are receiving positive results in all the sports especially in athletics. With such sincere efforts on the part of both government and public, we can hope that Indian Tri - colour will soar high because of sports achievements.

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MAH MUL/03051/2012
ISSN: 2319 9318UGC Approved
Sr.No. 62759

Vidyawarta®

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खेळाद्वारे बालक व तरुणांचा निरोगी विकास

प्रा.आर.ए.इंगोले

या.द.व.देशमुख कला व वाणिज्य महाविद्यालय तिवसा
rupaliatone@gmail.com

गोषवारा

छोट्यांच्या, तसेच मोठ्यांच्या जीवनातही खेळाला फार मोठे महत्त्व आहे. पुरातन कालापासून तत्कालीन संस्कृतीत खेळाचा उल्लेख सापडतो. खेळ खेळणे, हा वेळेचा दुरुपयोग असे काही जणांना वाटते; परंतु खेळाचे लाभ पाहिल्यास तोटे अल्प आहेत. आरोग्य म्हणजे आजारपणाची अनुपस्थिती, दुसरीकडे तंदुरुस्ती, शारीरिक क्षमताची उपस्थिती आणि फिटर तरुण जितके अधिक सक्षम असतात तितकेच योग्य शारीरिक विकासासाठी दोन्ही सामान्य शारीरिक आणि खेळात विशिष्ट तंदुरुस्त असणे आवश्यक आहे: मुले आणि तरुणांनी त्यांची तग धरण्याची क्षमता (एरोबिक क्षमता), त्यांची लवचिकता आणि लवचिकता, त्यांची चपळता, स्थूल आणि दंड मोटर कौशल्यांचे वेळ आणि समन्वय आणि त्यांची गती आणि त्यांची शक्ती विकसित करणे आवश्यक आहे. त्यांच्या संपूर्ण शारीरिक विकासासाठी एकाधिक खेळांमध्ये आणि क्रॉस प्रशिक्षणात सहभाग घेणे आवश्यक आहे. अर्थात फिटनेस फक्त शारीरिक क्षमतेबद्दल नसते - संज्ञान आणि सामाजिक विकासासाठी फिटनेस - खेळामध्ये नियमित शारीरिक क्रिया - महत्त्व यांचे समर्थन करणारे एक प्रचंड प्रमाणात संशोधन आहे. मुले आणि तरुण जे शारीरिकरित्या सक्रिय आहेत आणि खेळामध्ये व्यस्त आहेत त्यांच्यात आत्म्याची आत्मविश्वास वाढतो. खेळ हा तरुणांप्रमाणेच शारीरिक असतो - जशी मूल / तरुण शरीरी विकसित होते तसतसे या प्रक्रियेत ती तीव्रपणे गुंतलेली असतात आणि योग्य आणि पूर्ण विकसित होण्यासाठी त्यांना शारीरिकरित्या सक्रिय असणे आवश्यक आहे. मुले आणि तरुणांच्या लवकर विकासासाठी खेळ आणि शारीरिक शिक्षण मूलभूत आहे आणि खेळ शारीरिक शिक्षण आणि खेळ यांच्या दरम्यान शिकलेल्या कौशल्यामुळे तरुणांच्या समग्र

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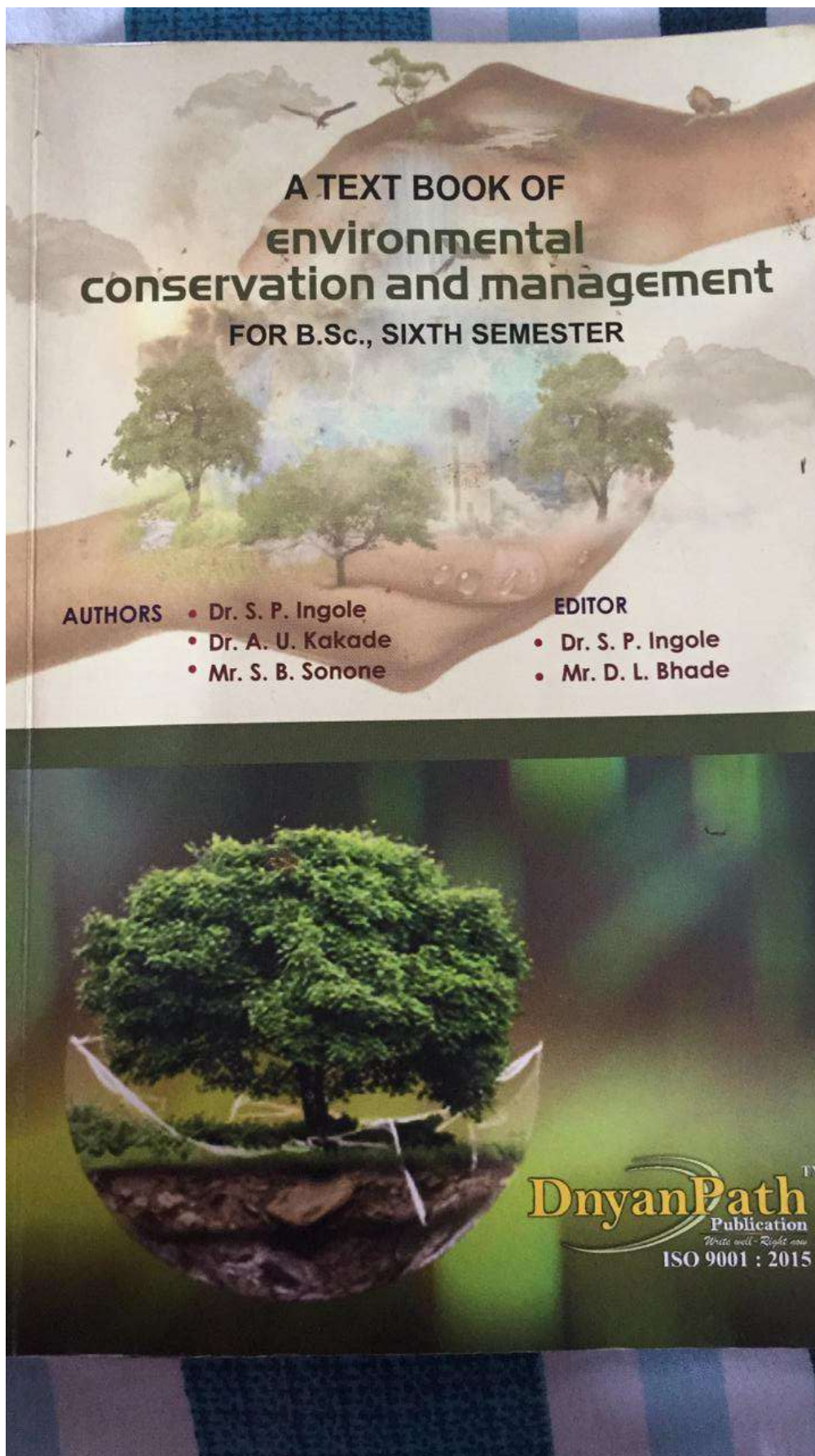
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- AUTHORS -

Dr. S. P. Ingole
M.Sc., B.Ed., Ph.D
Department of Environmental Science
Shri Shivaji Science College, Amravati
Dist. Amravati.

Dr. A. U. Kakade
M.Sc., Ph.D, SET
Department of Environmental Science
Shri Shivaji Science College, Amravati
Dist. Amravati.

Mr. S. B. Sonone
M.Sc., SET
Department of Environmental Science
Shri D.M.Burungale Science and Arts College, Shegaon
Dist. Buldana.

- EDITORS -

Dr. S. P. Ingole
M.Sc., B.Ed., Ph.D
Department of Environmental Science
Shri Shivaji Science College, Amravati
Dist. Amravati.

Mr. D. L. Bhade
M.Sc., SET
Department of Environmental Science
Shri D.M.Burungale Science and Arts College,
Shegaon, Dist. Buldana.

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The edition publish in 2019 by
ISBN 13 : 978-93-87278-27-1



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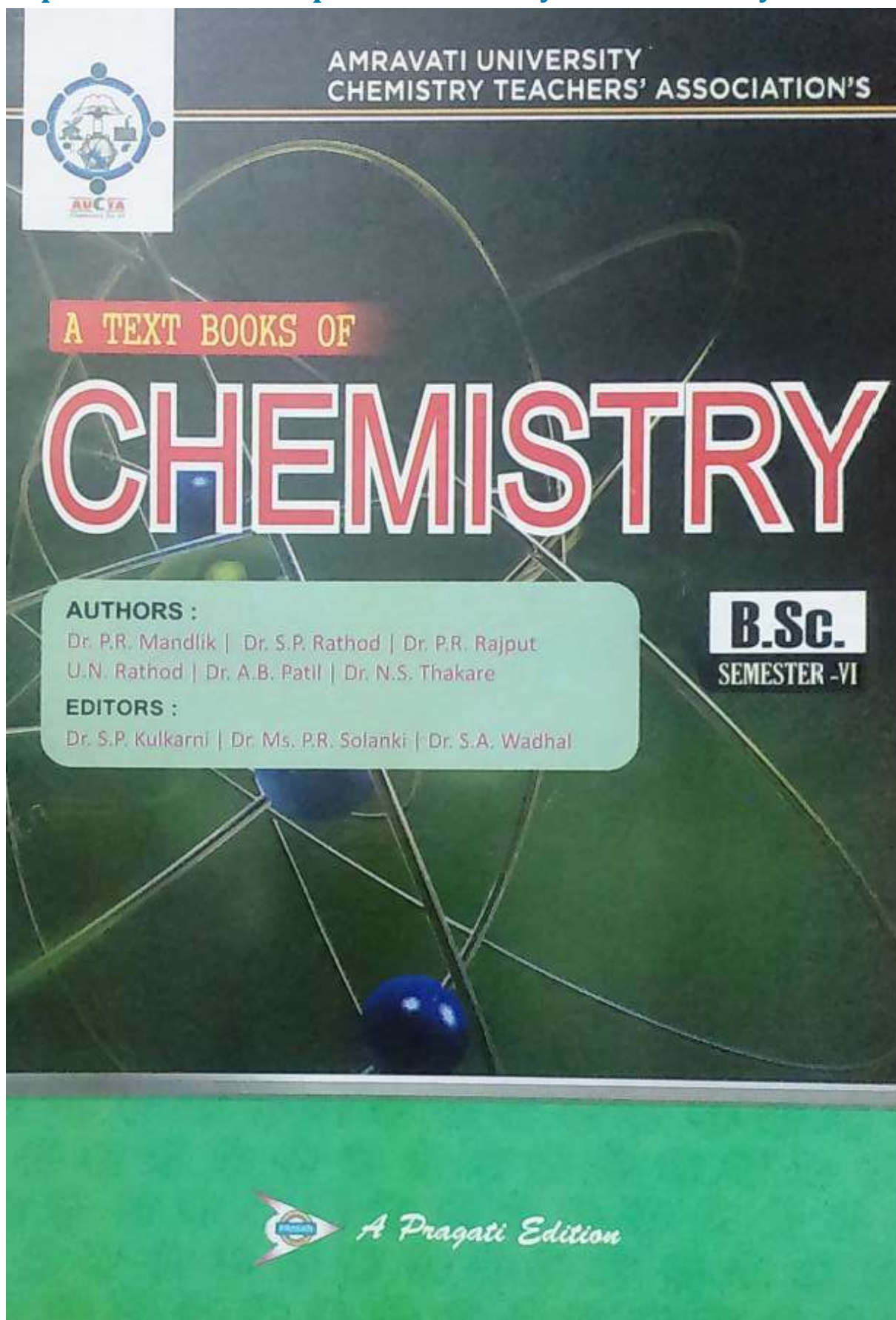
Phone : 08600353712, 09503237806

Printed at Shri Gurudeo Printers, Amravati.

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Shri Shivaji Science College,
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Dr. S. P. RATHOD
G.S.Gawande Mahavidyalaya,
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Dr. P. R. RAJPUT
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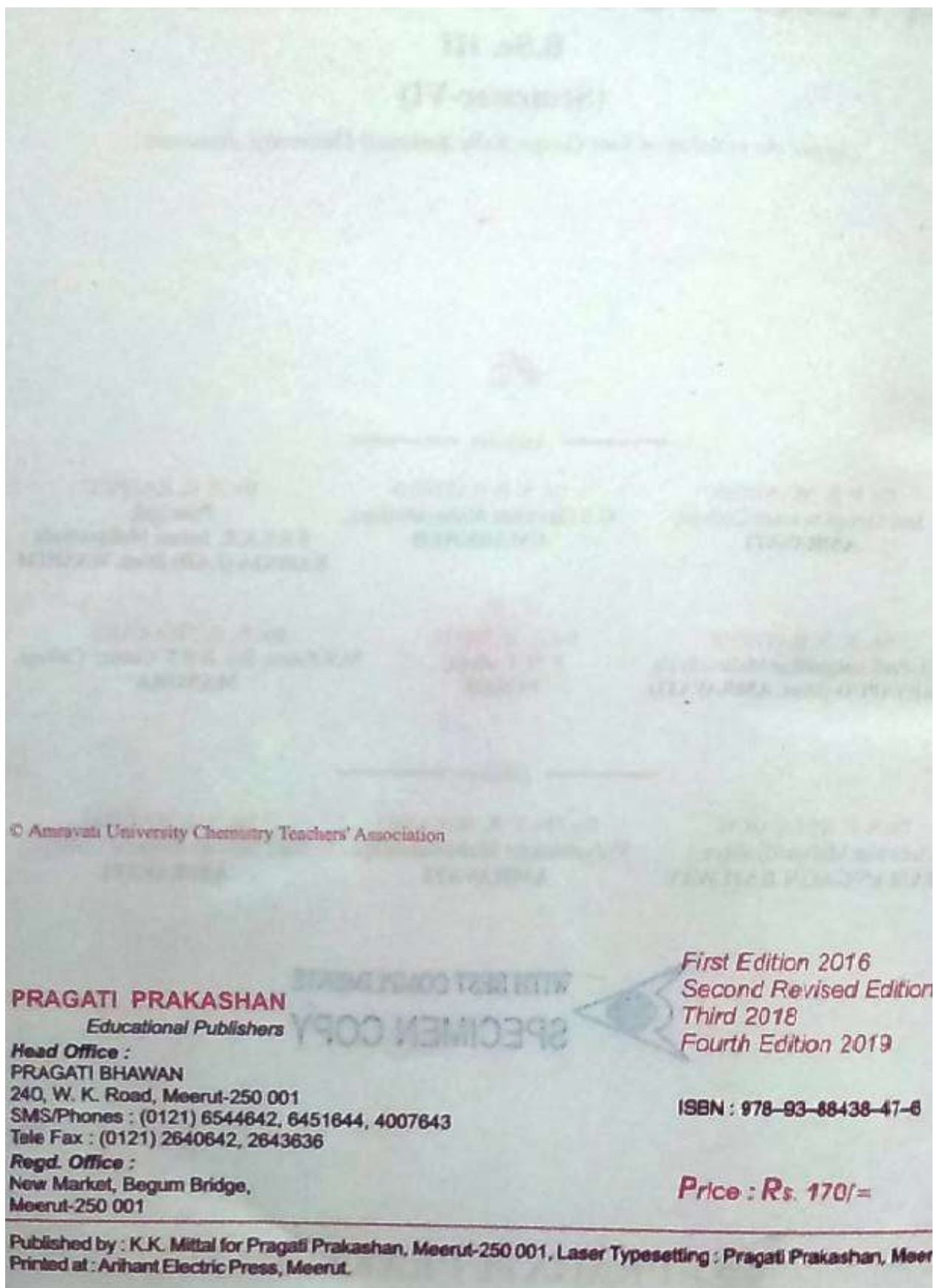
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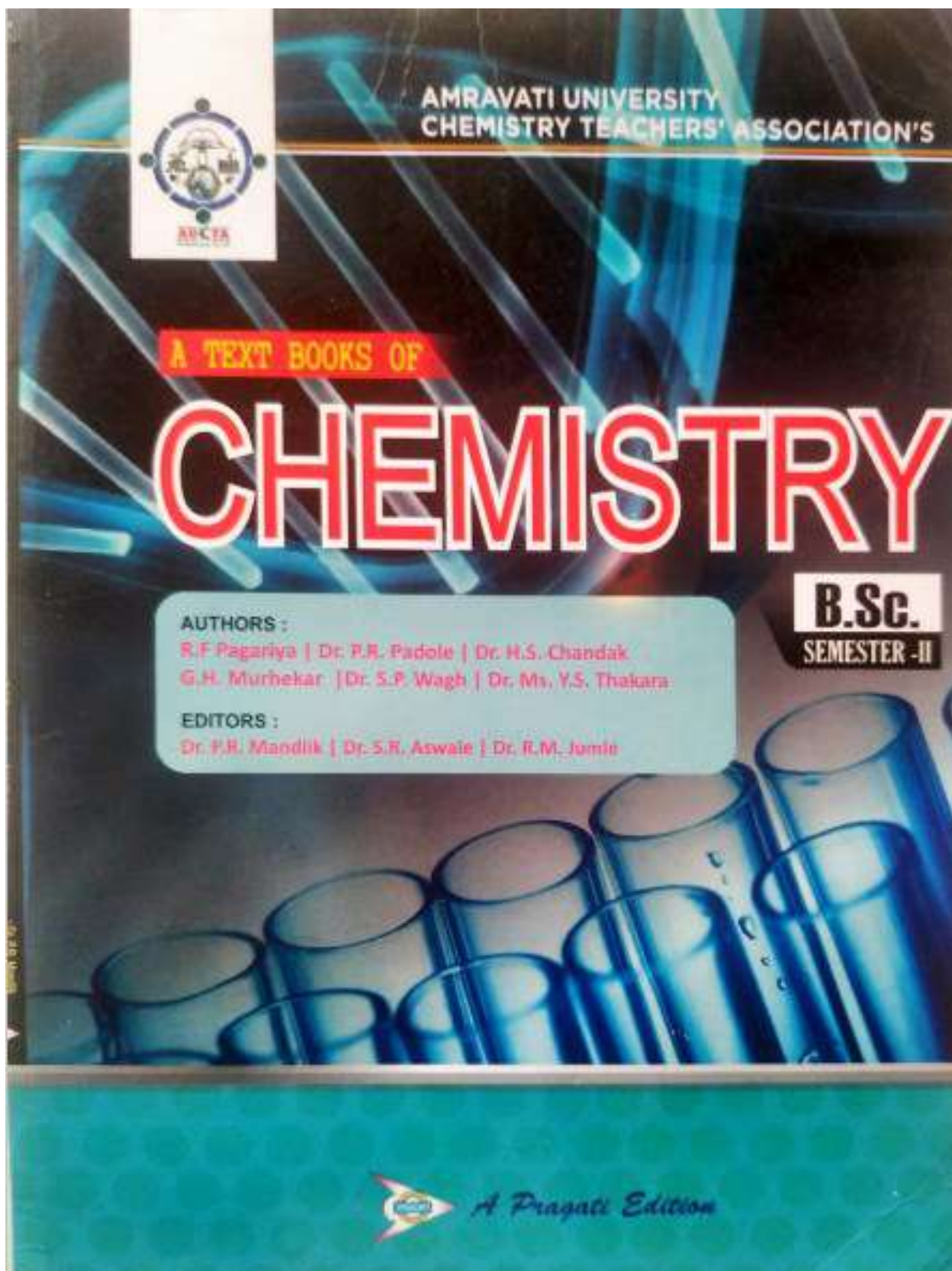
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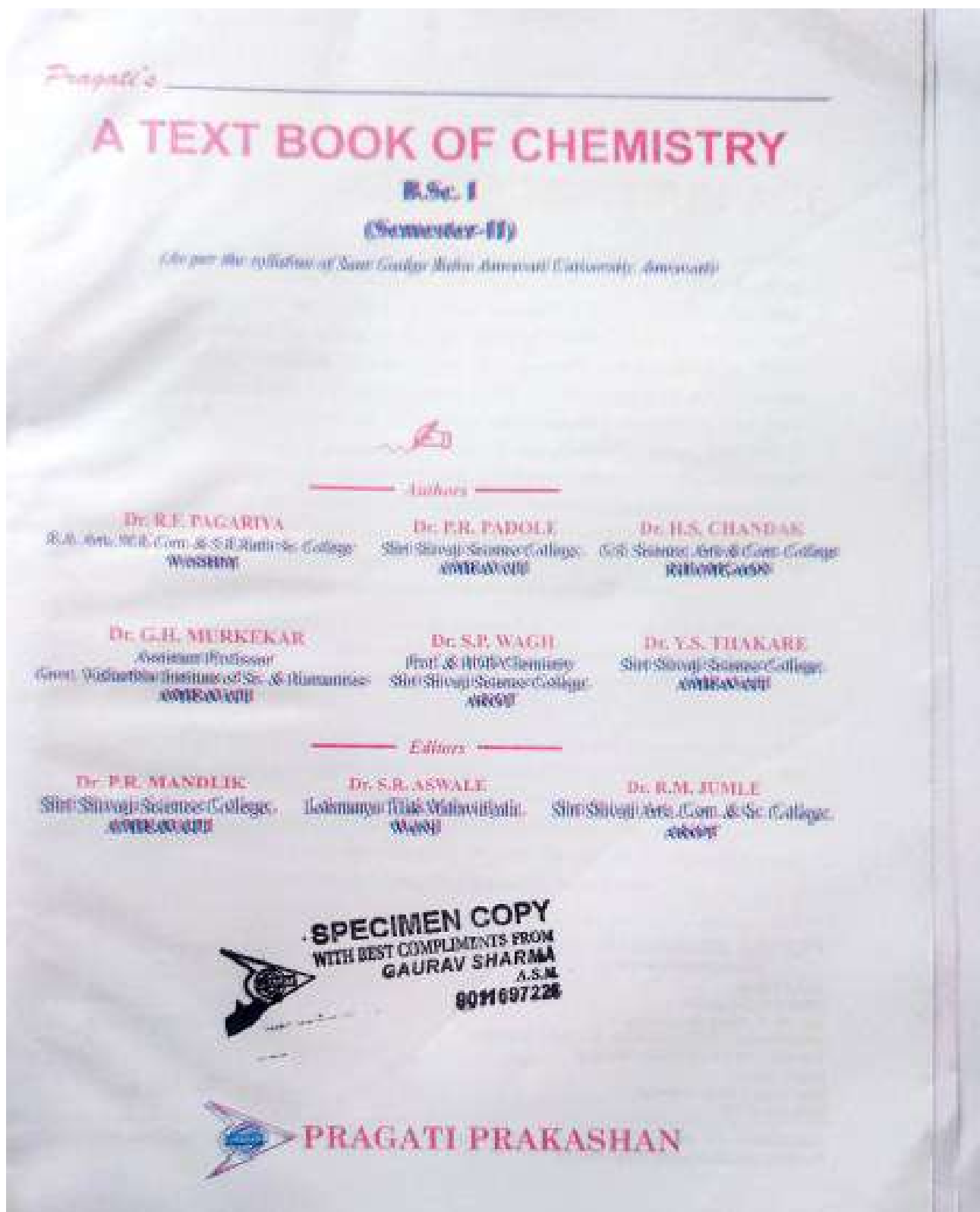
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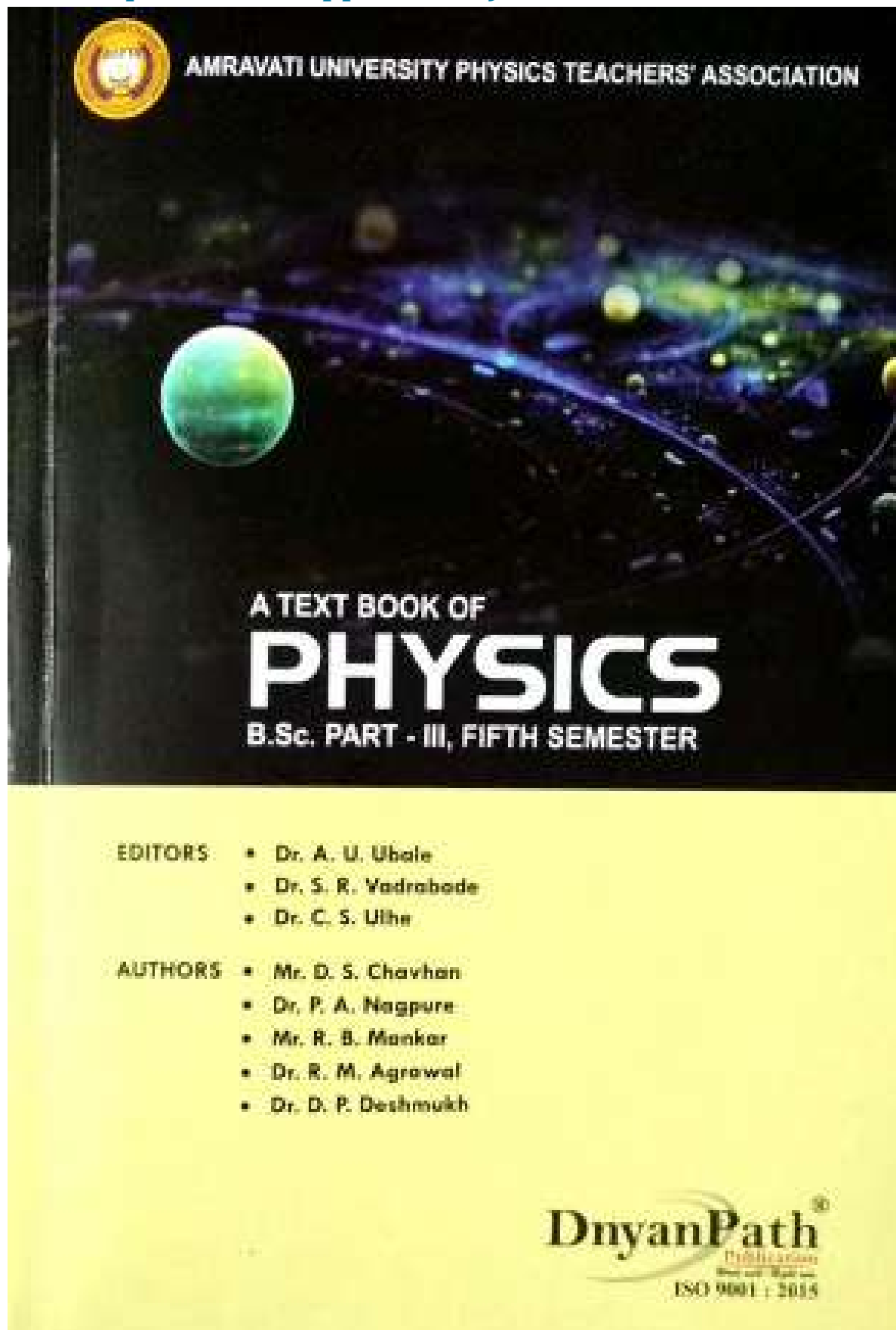
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ISBN 13 : 978-93-87278-52-3

Edition : First, July 2019



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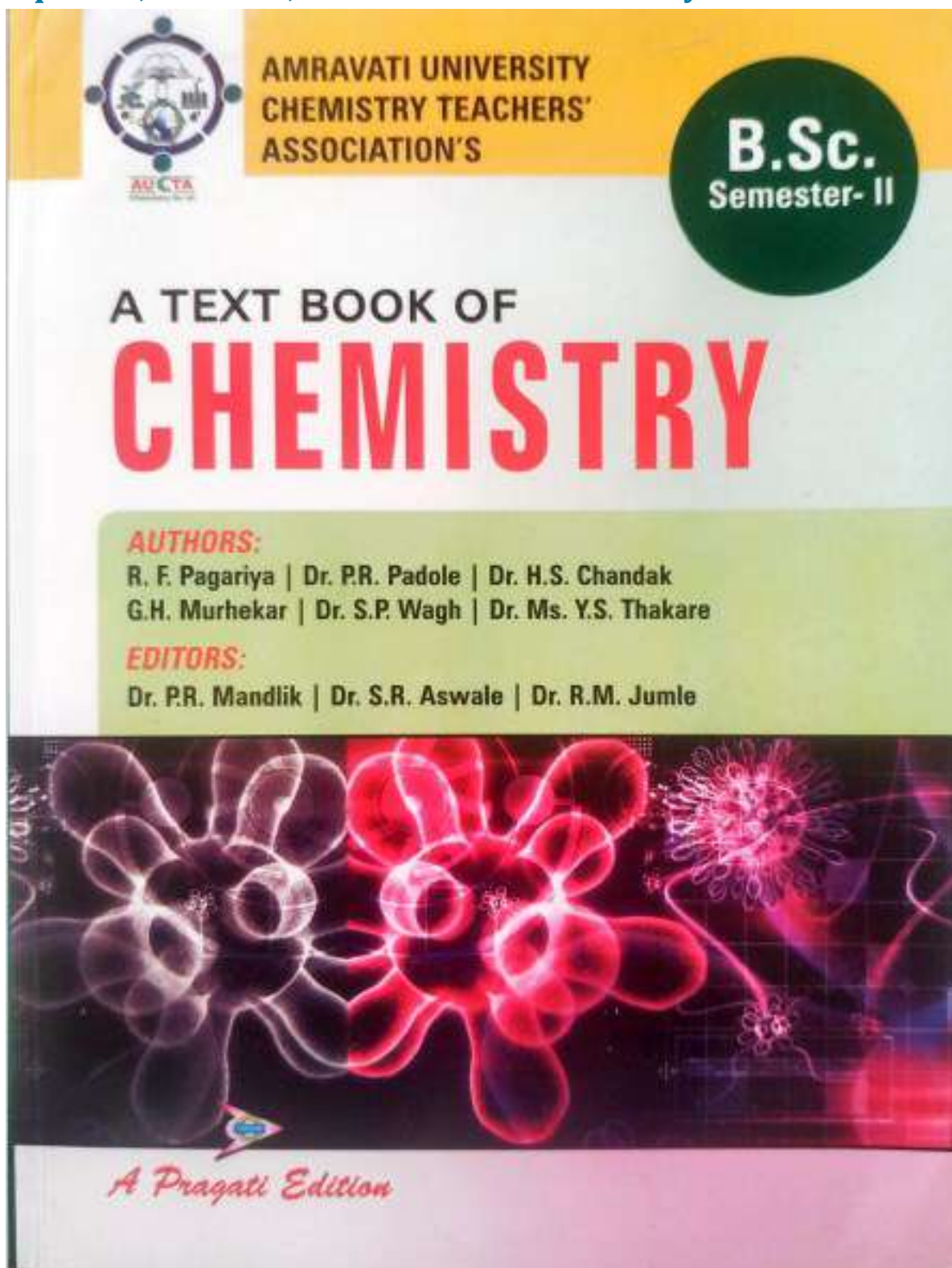
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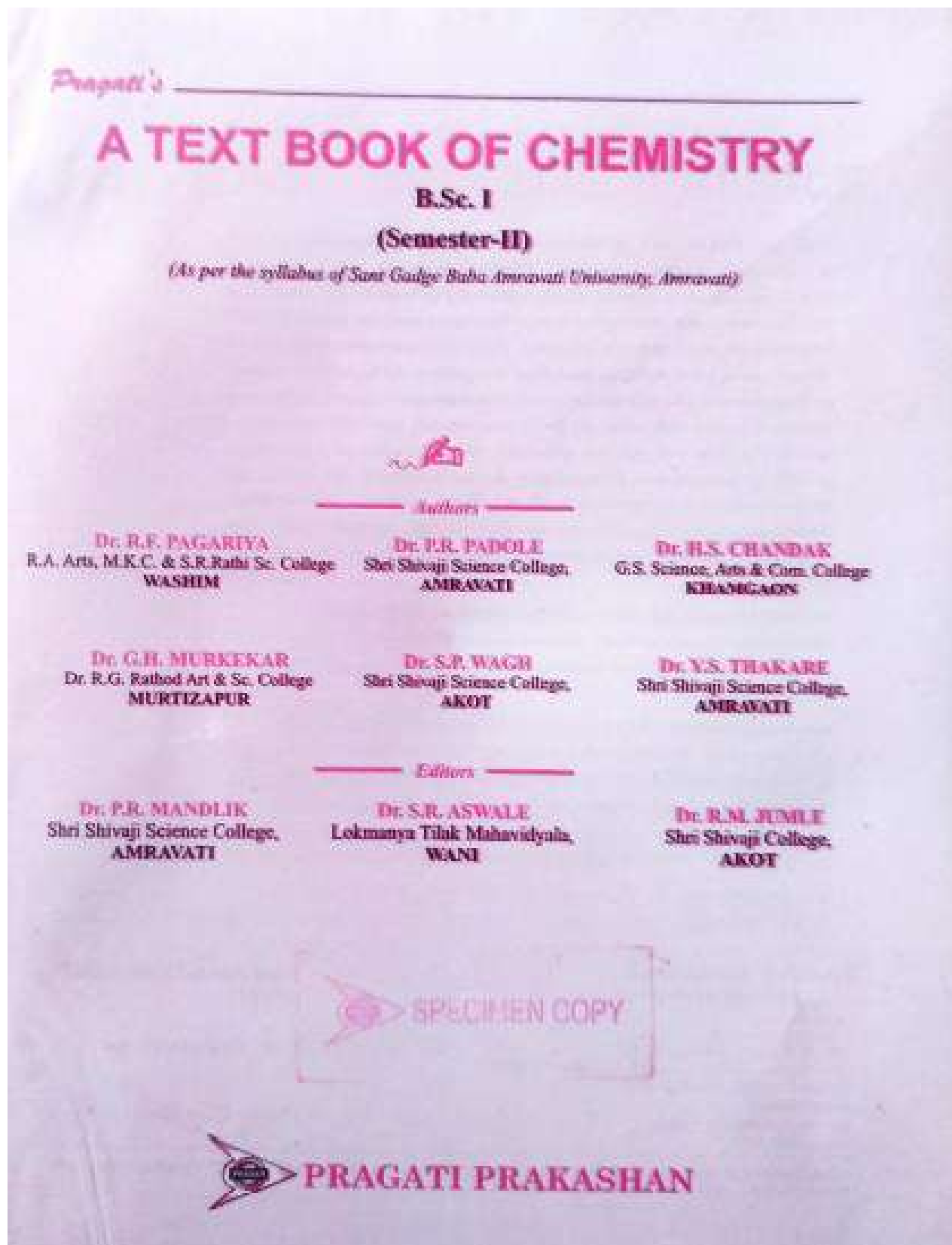
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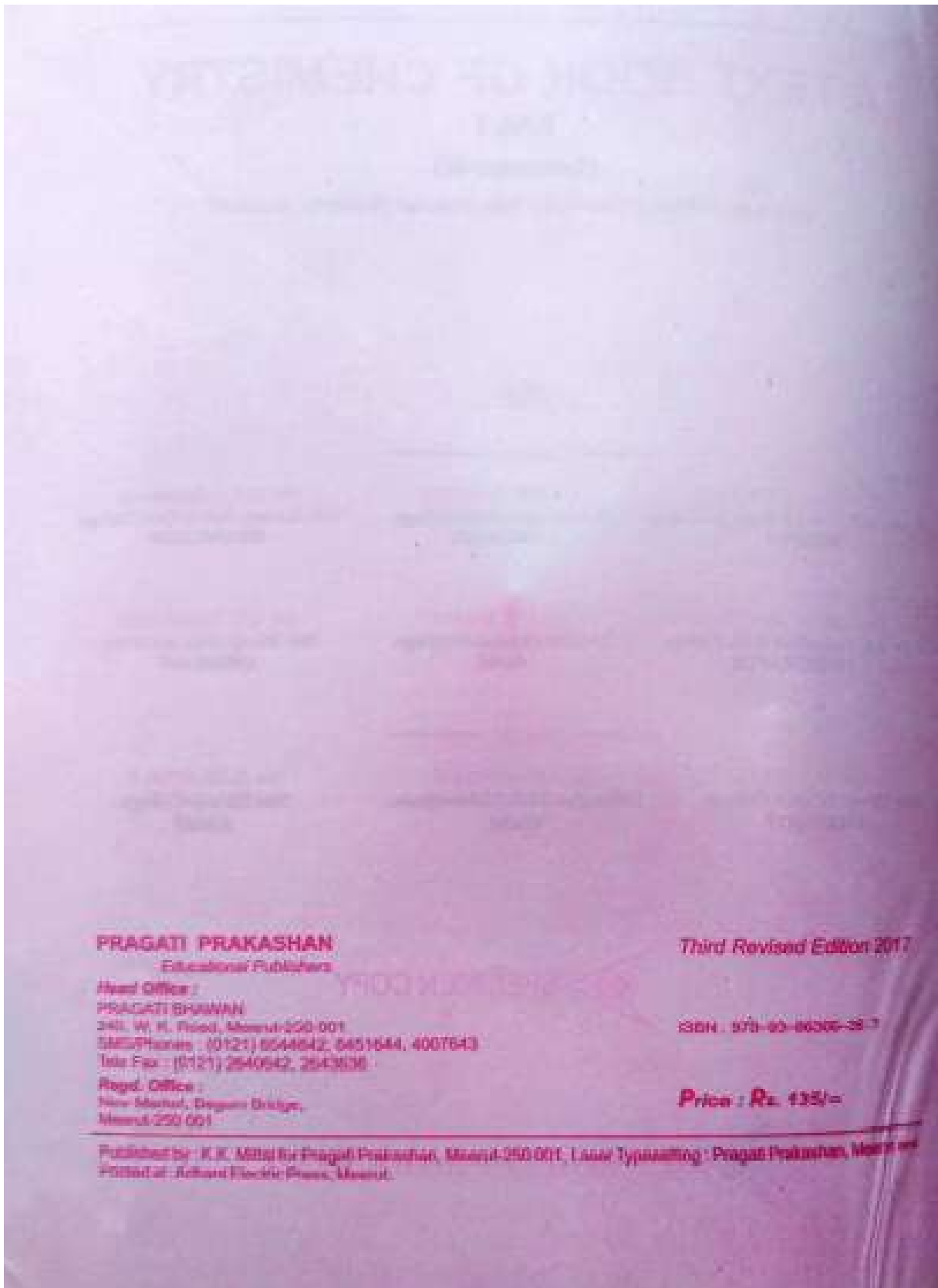
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Prioritization of Sub-Watersheds of Chandrabhaga River from Purna River Basin, Maharashtra, Using Geospatial Techniques

B.S. Manjare*, S.K. Paunikar, J.R. Shrivatra

Department of Geology, RTM Nagpur University, Nagpur-440001, India
*E-mail: yogesh_manjare1@rediffmail.com

Abstract

The study area is a part of upper catchment of Chandrabhaga river, sub-basin of Purna river. The north-western part of the area is mainly covered by Deccan trap basaltic rocks, whereas southern part of the catchments is occupied with alluvium cover. The whole catchment is divided into eight smaller units, as sub-watersheds CW-1, CW-2, CW-3, CW-4, CW-5, CW-6, CW-7 and CW-8. Based morphometry the sub-watersheds have been grouped into three categories, as per priority needs, high priority, medium priority and low priority. It is proposed that high-priority sub-watersheds may be taken up for development and management plans to conserve natural resources on sustainable basis with immediate effect. Such work will ultimately lead to soil and water conservation in the area.

Keywords: Prioritization, Morphometric analysis, Chandrabhaga and Purna, Sub-watersheds, Soil and water conservation.

Introduction

Anthropogenic alterations of the natural landscape by means of urbanisation, agriculture and forestry have been a continuous and increasing process since long time. Regions of natural vegetation and land cover are removed and replaced with numerous human-managed systems of altered structures. The resulting land use and land cover patterns are composed of both the natural and human-developed environments. Due to anthropogenic activities, the Earth surface is significantly altered in some manner or the other and use of land has a profound effect upon the natural environment, resulting into an observable pattern in the landuse/landcover over time. Only few landscapes on the Earth are still in their natural state. The resource development programs are applied generally on watershed basis and thus prioritization is essential for proper planning and management of the natural resources for sustainable development (Vittala *et al.*, 2008). Drainage basins, catchments and sub-catchments are the fundamental units of the management of the land and water, identified as planning units for administrative purposes to conserve natural resources (Honore, 1999). Thus, the integrated approach plays an important role for sustainable development and management of natural resources.

Watershed prioritization is the ranking of different watersheds of a catchment according to the order in which they

have to be taken for treatment and soil conservation measures. Morphometric analysis and land use parameters could be used for prioritization of watersheds by studying different linear and aerial parameters of the watershed even without the availability of soil maps. However, while considering watershed conservation work, it is not feasible to take the whole area at once. Thus the whole catchment is divided into 08 smaller units/sub-watersheds CW-1, CW-2, CW-3, CW-4, CW-5, CW-6, CW-7 and CW-8 by considering the drainage systems. In the present study, integration of morphometric analysis has been carried out at the watershed level using modern geospatial tools which could be the vital importance for the conservation and management strategies of Chandrabhaga catchment Amravati District of Maharashtra (Fig. 1).

Study Area

The study area of the Chandrabhaga river, sub-basin of Purna river extends between Latitude 20°52'20"5324" N and Longitude 77°04'23"77°25'19" E in Amravati district of Maharashtra (Fig.1). The study area is covered on the Survey of India topographical sheets No. 55G/7, 55G/8, 55G/11, 55G/12 on 1:50000 scale, occupying an area of 308.29km². The river Chandrabhaga originates from Satapura Hills (Chikaldhara) and flow in south direction. The elevation variation in the catchment is in between 290 and 1147m.

Table 9: Priority-wise categorization of sub-watersheds.

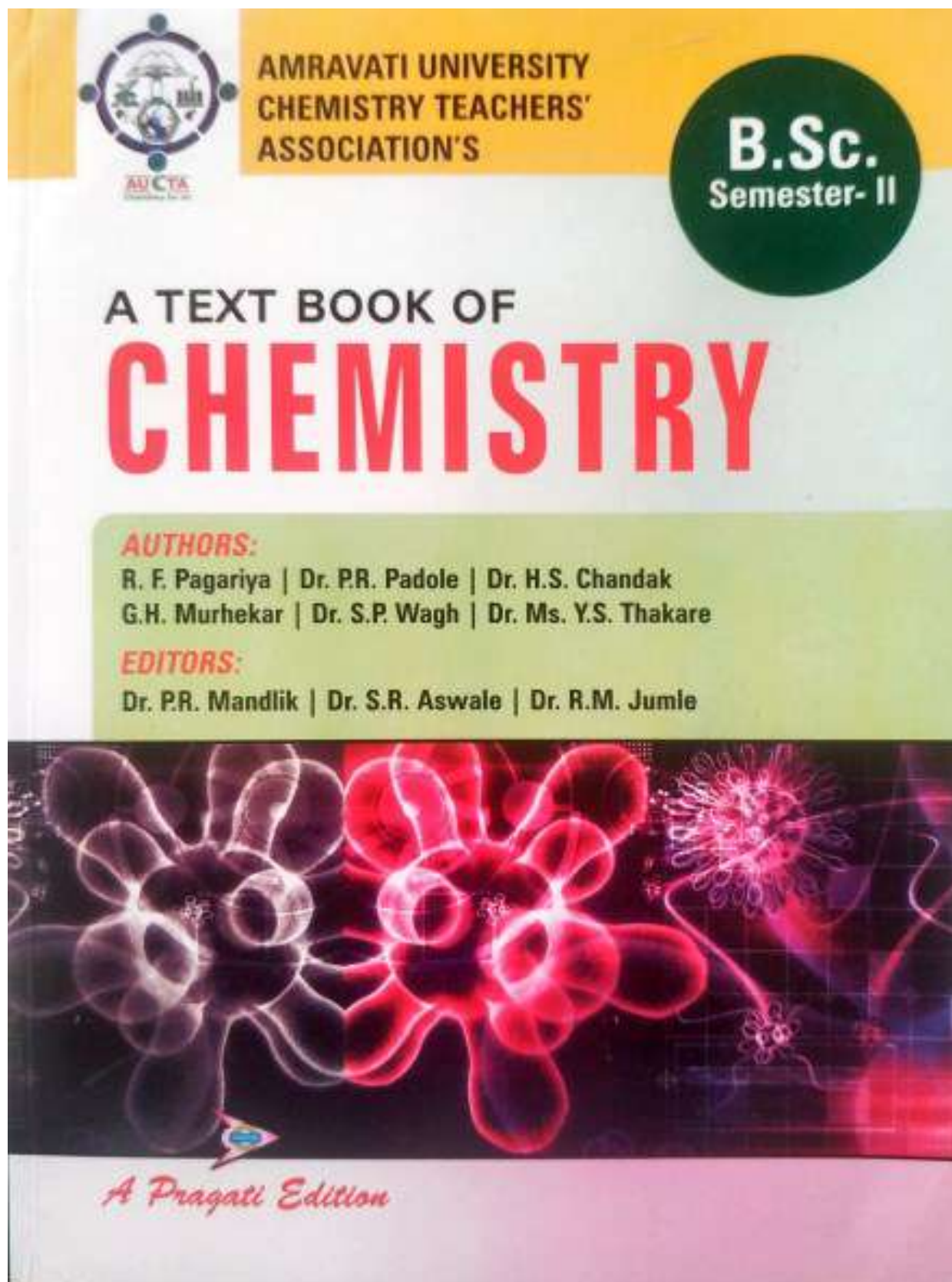
Sub-watershed	Compound Parameter	Rank for priority	Priority
CW-1	8.16	8	Low
CW-2	7.98	7	Low
CW-3	3.92	5	Medium
CW-4	4.07	6	Medium
CW-5	1.81	2	High
CW-6	1.94	3	High
CW-7	1.55	1	High
CW-8	2.34	4	Medium

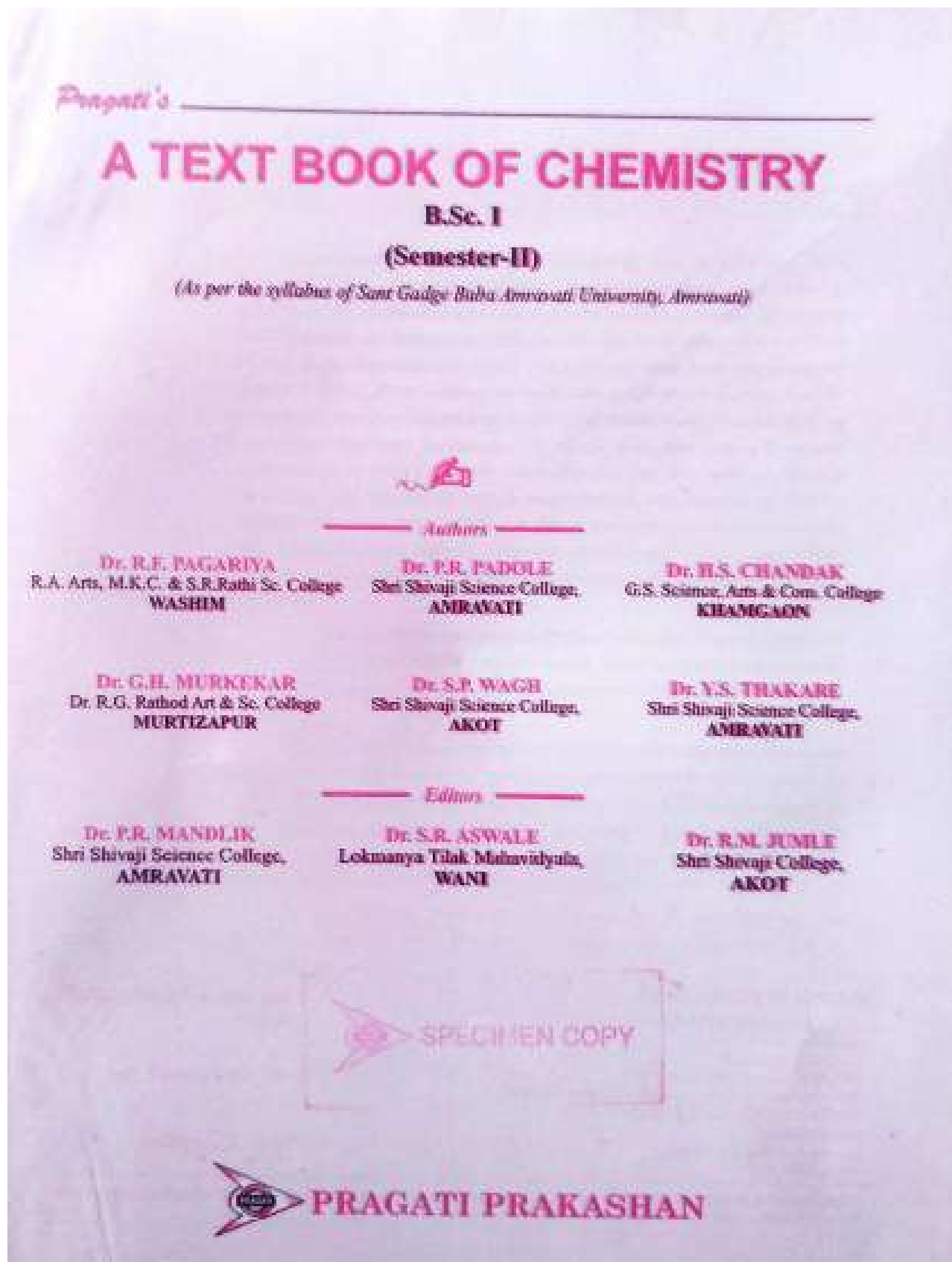
whereas low priority shows the low risk of land degradation. The sub-watersheds, falling under high priority category are more susceptible to soil erosion due to higher erosivity values. Therefore, these sub-watersheds can be taken for suitable soil erosion control measures to preserve the land from further erosion compared to medium and low ranking sub-watersheds. Moderate priority region is characterised by high to medium values of drainage texture, form factor and circulatory ratio with moderate slopes; whereas low priority zone has a low risk of land degradation.

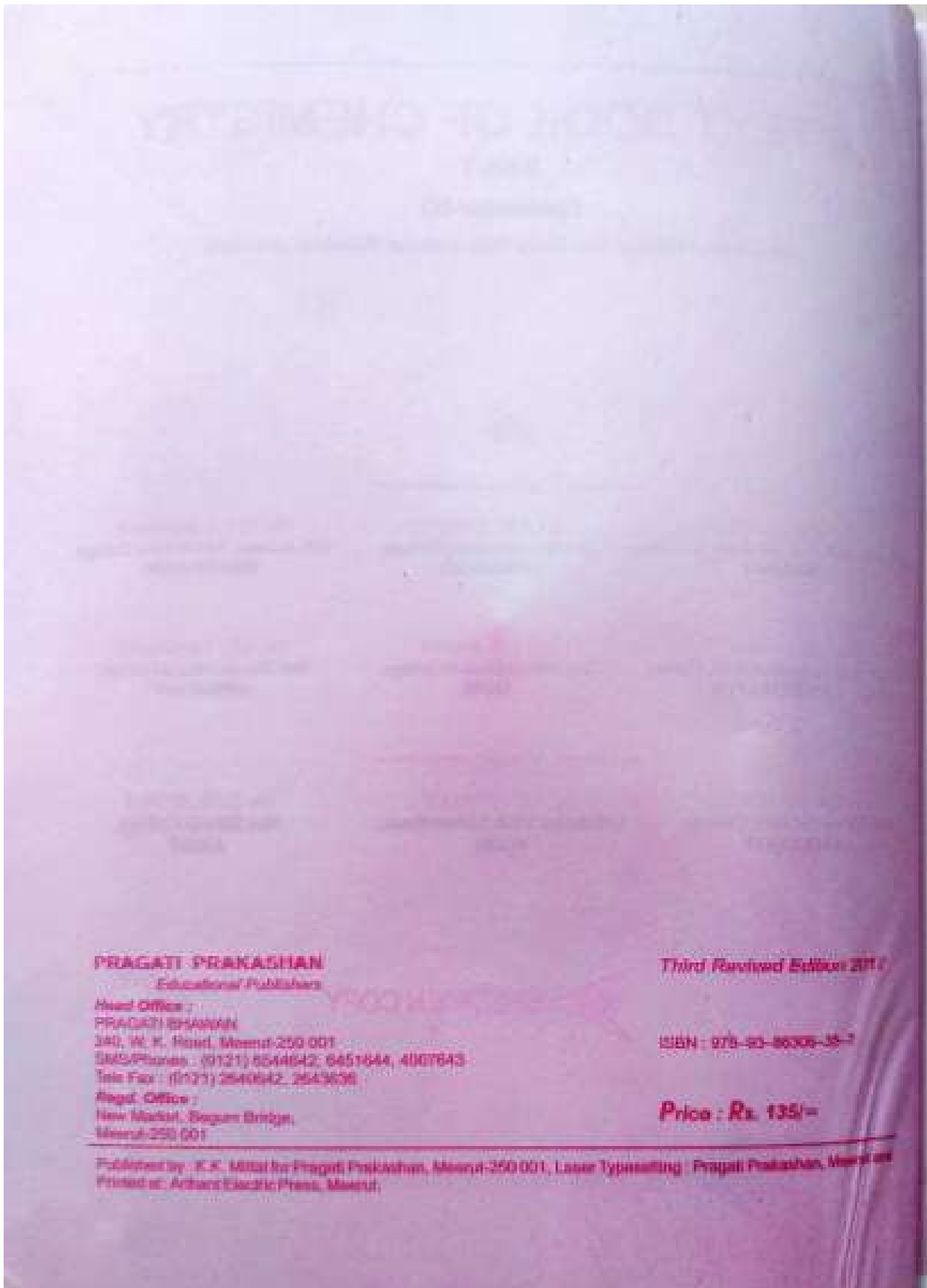
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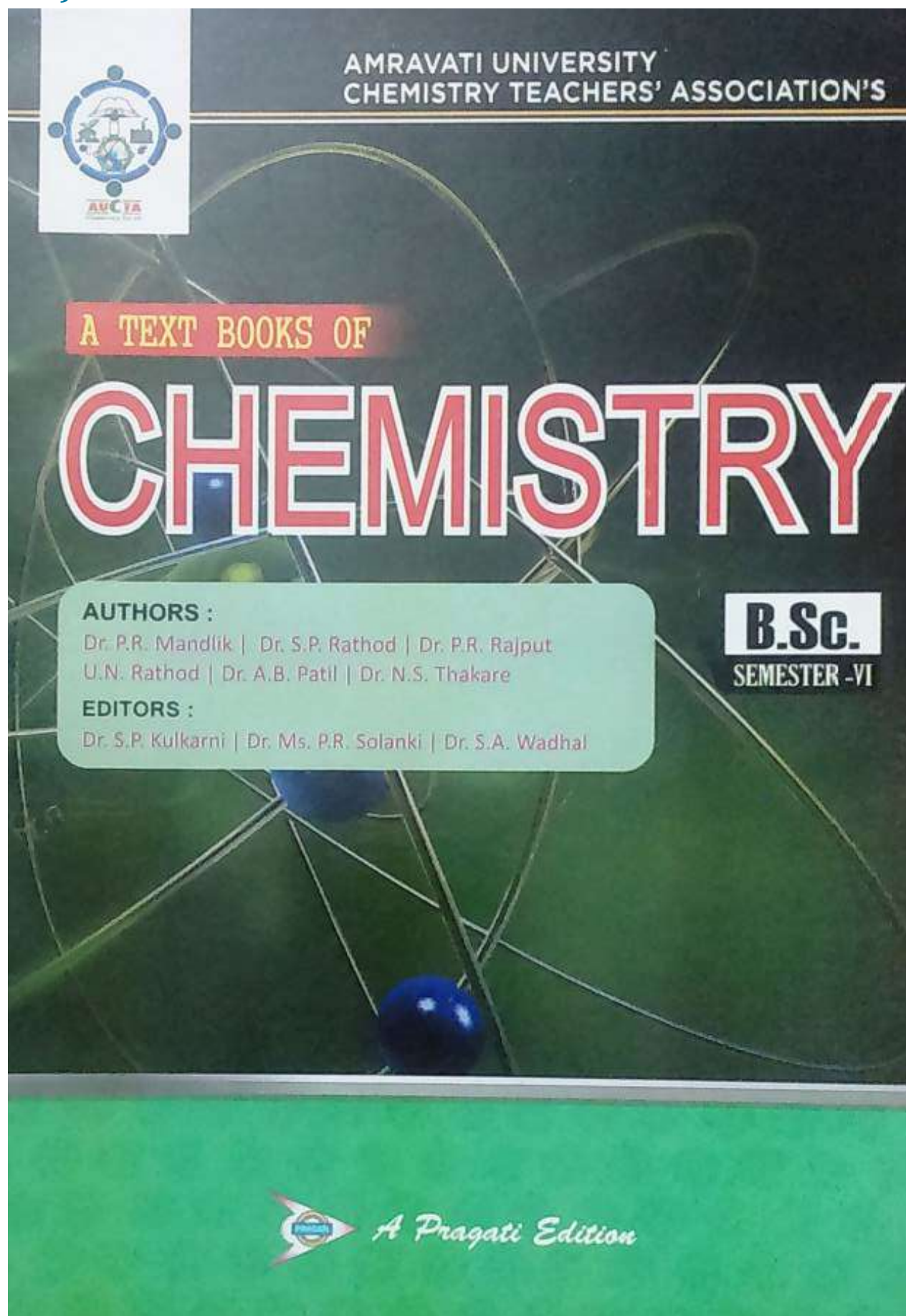
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86. Thakare YS: Unit-VI Chemical Kinetics, A Text Book of Chemistry;
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87. Wadhal SA: A Text Book of Chemistry; B.Sc. Sem VI (Editor-Unit-III &IV)

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Dr. P. R. MANDLIK
Shri Shivaji Science College,
AMRAVATI

Dr. S. P. RATHOD
G.S. Gawande Mahavidyalaya,
UMARKHED

Dr. P. R. RAJPUT
Principal,
S.S.S.K.R. Innani Mahavidyala
KARNJA (LAD) Distt. WASHIM

Mr. U. N. RATHOD
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MANORA

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AMRAVATI

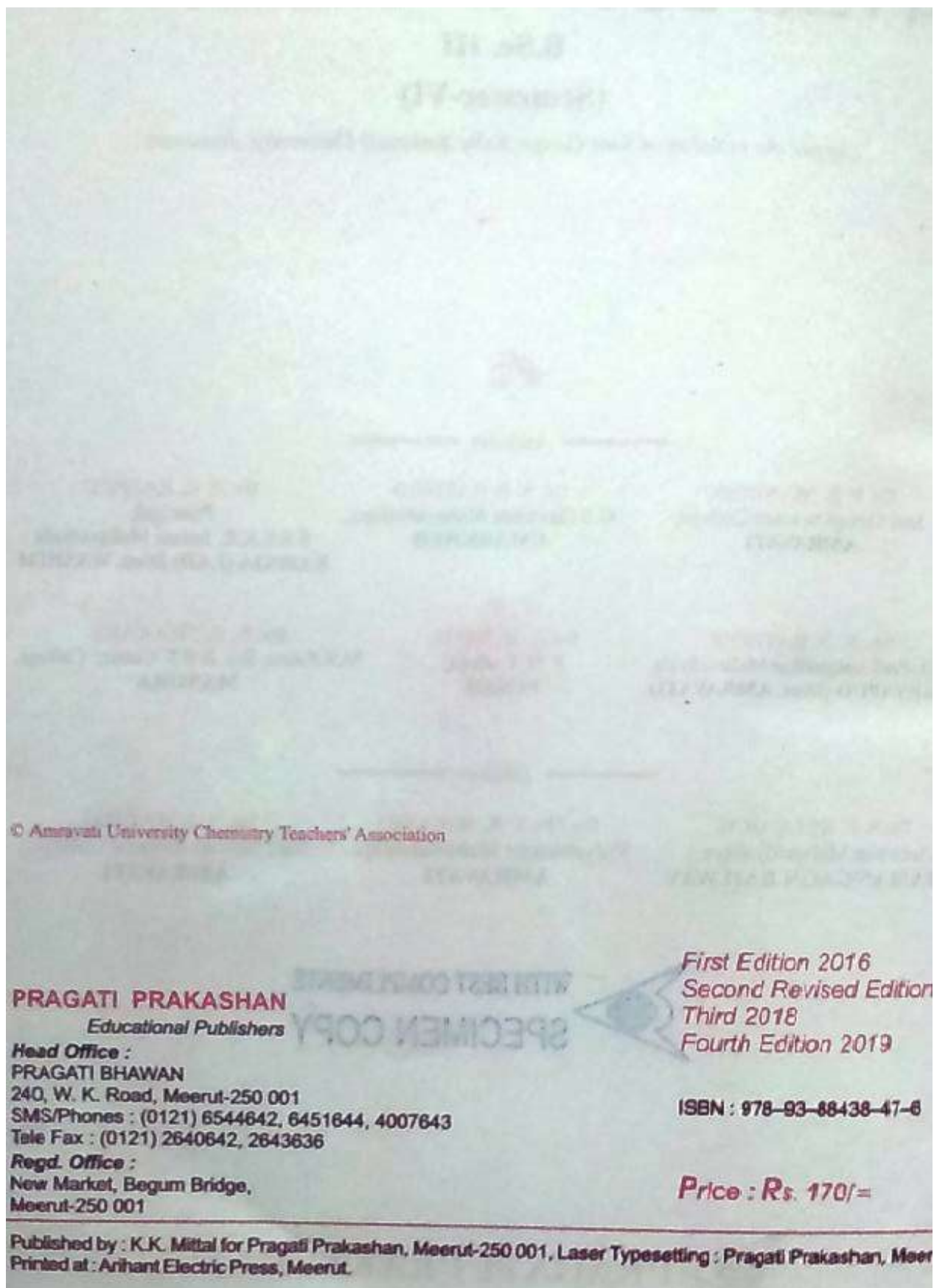
Dr. S. A. WADHAL
Shri Shivaji Science College,
AMRAVATI



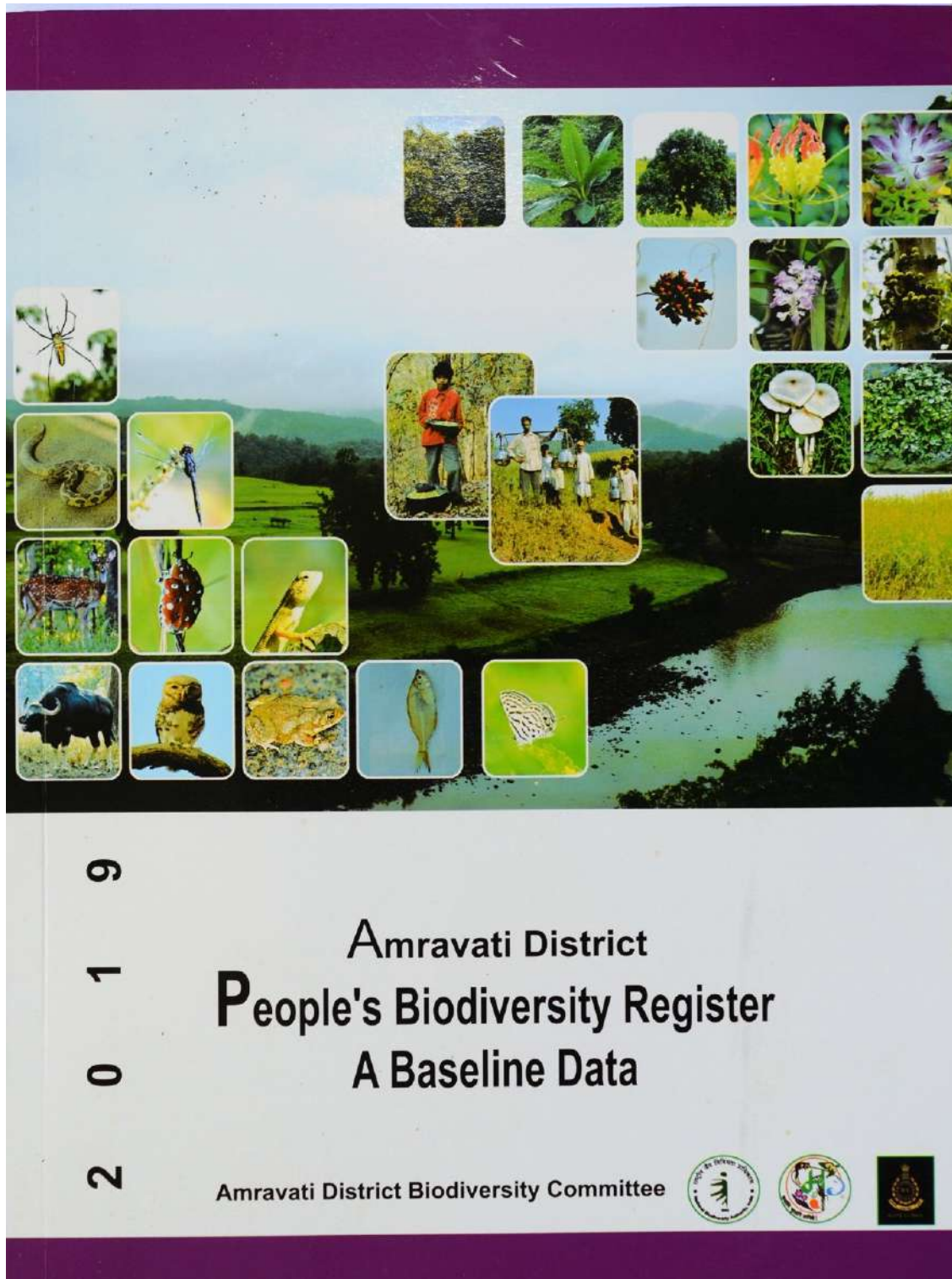
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PRAGATI PRAKASHAN



88. Wagh GA: Amravati District people’s Biodiversity Register-A Base line data



**Amravati District
People's Biodiversity Register –
A Baseline Data**

First Edition: 22 May 2019

Compilation:

Shri Gajendra Narwane
Dr. GajananWagh
Dr. JayantWadatkar
Shri Madhubhau Gharad
Dr. ShrikantWarhekar
Nikhil Borode

Editors:

Dr. GajananWagh
Dr. JayantWadatkar
Shri Madhubhau Gharad
Dr. ShrikantWarhekar

Photo Credits :

Dr. GajananWagh
Dr. JayantWadatkar
Mr. Hayat Qureshi &
Wildlife & Environment Conservation Society, Amravati.

Graphics and Cover Design:

Anup Sarode & Shital Mane

Printer:

Shri Gurudeo Printers
Mahatma Fule Sankul, Shegaon Naka,
Amravati-444604
Mob.09766656620,09422420083
Email-gurudeoprinters@gmail.com

Publisher:

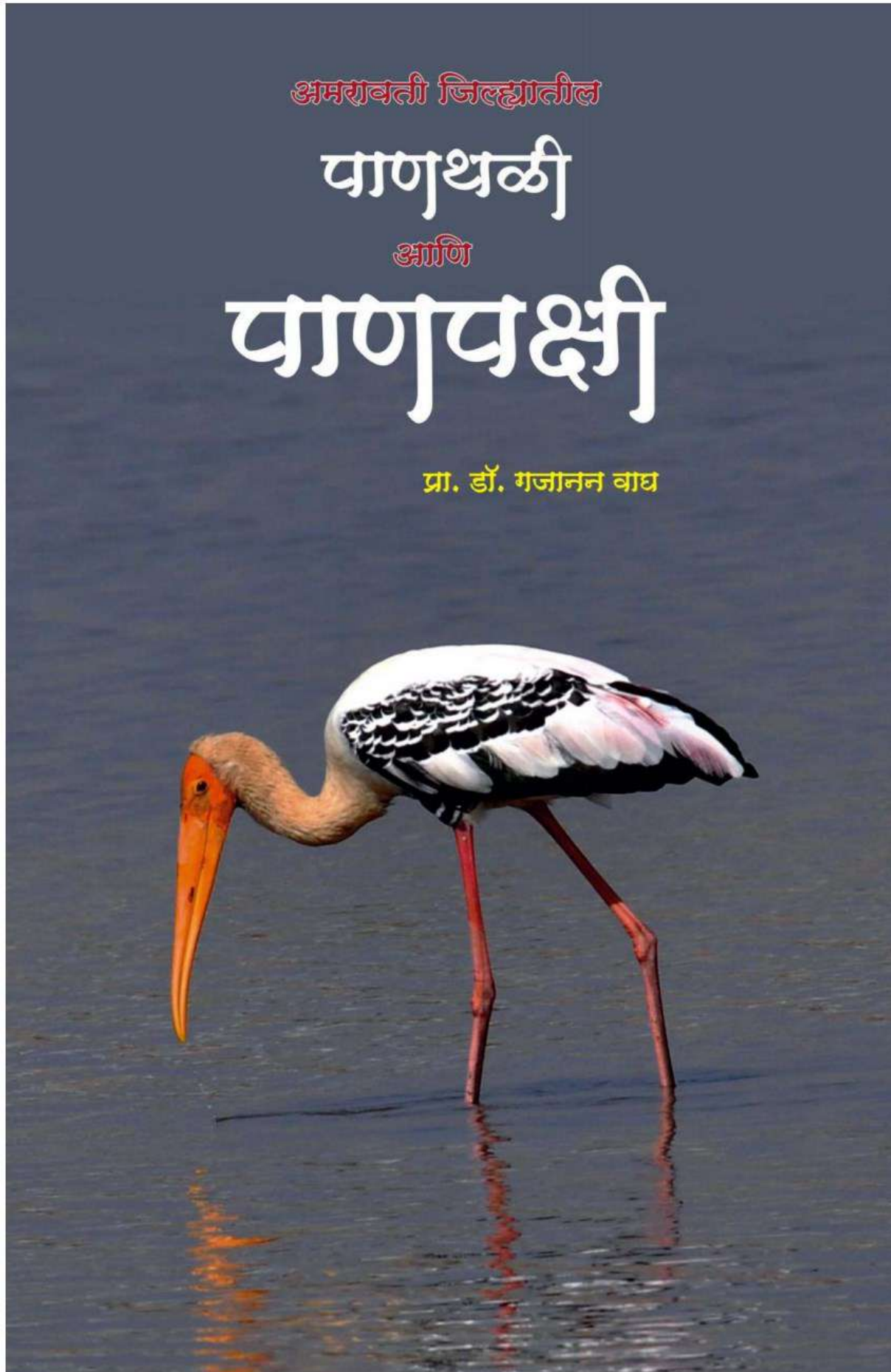
Member Secretary, Amravati District Biodiversity Committee &
Forest Department Amravati District

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Recommended Citation:

GajananWagh, JayantWadatkar, Madhubhau Gharad & Shrikant Warhekar (2019):
Amravati District People's Biodiversity Register- A Baseline Data .PP. 1 -126

89. Wagh GA: Wetland and Water birds of Amravati District



The following Water birds species details with quality photograph given in the Book entitled,
‘Wetlands and Water Birds of Amravati district’

Sr.No.	Common Name	Scientific Name	Family	Status	IUCN status
1	Lesser Whistling Duck	<i>Dendro cygnajavanica</i>	DENDROCYGNDIAE (1)	R	LC
2	Bar-headed Goose	<i>Anser indicus</i>	ANATIDAE (18)	W	LC
3	Greater White-fronted Goose	<i>Anser albifrons</i>		W	LC
4	Northern Pintail	<i>Anas acuta</i>		W	LC
5	Common Teal	<i>Anas crecca</i>		W	LC
6	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>		R	LC
7	Gadwall	<i>Mareca strepera</i>		W	LC
8	Garganey	<i>Anas querquedula</i>		W	LC
9	Tufted Duck	<i>Aythya fuligula</i>		W	LC
10	Northern Shoveller	<i>Anas clypeata</i>		W	LC
11	Eurasian Wigeon	<i>Anas penelope</i>		W	LC
12	Mallard	<i>Anas Platyrhynchos</i>		W	LC
13	Ruddy (Brahminy) Duck	<i>Tadorna ferruginea</i>		W	LC
14	Common Shelduck	<i>Tadorna Tadorna</i>		W	LC
15	Comb Duck (Knob-billed)	<i>Sarkidiornis melanotos</i>		W	LC
16	Red- Crested Pochard	<i>Rhedonessa rufina</i>		W	LC
17	Common Pochard	<i>Aythya ferina</i>		W	VU
18	Ferruginous Pochard	<i>Aythya nyroca</i>		W	NT
19	Cotton Pigmy goose	<i>Nettapus coromandelianus</i>		R	LC
20	Common Kingfisher	<i>Alcedo atthis</i>		ALCEDINIDAE (1)	R
21	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	HALCYONIDAE (3)	R	LC
22	Black- Capped Kingfisher	<i>Halcyon pileata</i>		R	LC
23	Stork-billed Kingfisher	<i>Halcyon capensis</i>		R	LC
24	Pied Kingfisher	<i>Ceryle rudis</i>	CERYLIDAE (1)	R	LC
25	Demoiselle Crane	<i>Grus virgo</i>	GRUIDAE (2)	W	LC
26	Common Crane	<i>Grus grus</i>		W	LC
27	Baillon’s Crake	<i>Porzana pusilia</i>	RALLIDAE (6)	W	LC

**The following Water bodies details with quality photograph given in the
Book entitled
'Wetlands and Water Birds of Amravati district'**

Sr. No.	Name of the Water body (Birding spot)	Distance from Amravati city in Km	Road
1	Chatri Lake	2	Amravati- Chandur Railway
2	Wadali Lake	2	Amravati- Chandur Railway
3	Malkhed(Sawanga Vithoba) Lake	25	Amravati- Chandur Railway
4	Indala Lake	05	Amravati- Chandur Railway
5	Pohara Lake	14	Amravati- Chandur Railway
6	Bhankhed Lake	12	Amravati-Bhankhed-Malkhed
7	Rajura Lake	06	Amravati –Rajura-Shewati
8	Shewati Lake	12	Amravati –Rajura-Shewati
9	Jalka Lake	16	Amravati- Rajura-Shewati-Jalka-Sawardi
10	Sawardi Lake	14	Amravati- Nagpur
11	Surya Ganga Lake	16	Amravati- Nagpur
12	Kekatpur Lake	25	Amravati-Morshi-Warud
13	Dastapur Lake	30	Amravati-Morshi-Warud
14	Upper Wardha dam	55	Amravati-Morshi-Warud
15	Sawangi Lake	75	Amravati-Morshi-Warud
16	Dabhi Lake	105	Amravati-Morshi-Warud-Nagpur
17	Pandhari Lake	115	Amravati-Morshi-Warud-Pandhurna
18	Virshi Lake	16	Amravati-Waigao-Wirshi
19	Chandi Dam	30	Amravati-Dhanora guraw-Chandi
20	Bagaji Dam	80	Amravati-Dhamangaon-Bagaji
21	Sipana River in Melghat	100	Amravati-Paratwada-Semadoh-Dharni
22	Dolar River in Melghat	110	Amravati-Paratwada-Koha-Dhakhna-Dharni
23	Khapra River in Melghat	160	Amravati-Paratwada-Semadoh-Dharni-Rangubeli
24	Tapi River in Melghat	170	Amravati-Paratwada-Semadoh-Dharni-Rangubeli

Recommended Citation: Wagh Gajanan A. (2019): Wetlands and Water birds of Amravati District, First edition, Wildlife and Environment Conservation Society.Pp1-61

90. Wakode AW, Burghate A.S., Wadhal S.A., Refractometric study of novel Benzothiazolyl and Benzimidazolyl substituted derivative in binary liquid mixture

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www.jetir.org (ISSN-2349-5162)

REFRACTOMETRIC STUDY OF NOVEL BENZOTHIAZOLYL AND BENZIMIDAZOLYL SUBSTITUTED DERIVATIVE IN BINARY LIQUID MIXTURE

¹Ankush W. Wakode, ²Archana S. Burghate and ³Shrikant A. Wadhal
Department of Chemistry, Shri Shivaji Science College, Amravati, 444603,(M.S.) India.

Abstract: Refractive indices of novel benzothiazolyl and benzimidazolyl substituted derivatives in different percentage of binary liquid mixture at 30 ± 0.1 °C were measured by Abbe's refractometer. The data obtained was used to calculate polarizability constant and molar refraction which explain solute-solvent interactions.

Index Terms: Refractive indices, molar refraction, molecular interaction.

INTRODUCTION:

One of the unique and important properties of fluid is the refractive index. When a ray of light travels from less dense to more dense medium, there is a change in the direction of refraction as well as changes in the angle of refraction and the refractive index has finally changed. During this investigation, the result was obtained directly by light on the ligand dipole association, intermolecular attraction between solvent and solute, medium dielectric constant, polarizability and dipole mutual compensation of dipole. These results are much more useful for the drug's transmission, stability, activity and effect, so this study is important. In the present study, pharmaceutical, medicinal and biochemical literature survey reveals that Benzothiazole derivatives are widely found in bioorganic and medicinal chemistry with drug discovery and autoimmune and inflammatory disease treatment applications in the prevention of the prevention of solid organ transplant rejection, antiviral¹, epilepsy², neuroprotective³ and immunosuppressive properties⁴, Antitumor⁵, anticongestant⁶⁻⁷. However, the importance of benzimidazoles⁸ as p38MAP kinase inhibitors, B-Rafkinase, antimicrobial agents⁹⁻¹¹ anti-HIV¹². Thiazoles are an important class of heterocyclic compounds found in many powerful biologically active molecules that also have pharmacological characteristics such as relative stability, starting material, built into a biocidal unit, and easy compound metabolism.

Benzothiazole ring system consists of thiazole fused with benzene which having multiple applications. Although they have been known from long ago to be biologically active, their varied biological features are still of great scientific interest. Refractometric¹³⁻¹⁴ measurement results directly provided information on interactions between solvent and solvent. The current study was conducted in different percentage compositions. This study explores the potential of newly synthesized drugs, drug stability, as well as renovation and modification of traditional drugs used by medical practitioners. This research work has been carried out taking all these things into consideration.

EXPERIMENTAL:

The 0.1 M solution of (1,2-Dihydro-benz[4,5]imidazo[2,1-c][1,2,4]triazin-3-ylidene)-(4-phenylthiazole-2-yl)-amine (1e) and (1-Benzothiazol-2-yl-[1,2]diazetid-3-ylidene)-(4-nitro-phenyl)-amine (2b) in different percentage of acetone-water and DMSO-water mixture were prepared. All weighing was made on contech electronic balance (± 0.001 g). The accuracy of density measurements was within 0.1 kg m^{-3} . The refractive indices of solvent mixture and solutions were measured by Abbes' refractometer was within (± 0.001). The densities of the solutions were determined by using density bottle. The temperature of prism box was maintained at 30 ± 0.1 °C. Initially, the refractometer was calibrated with glass piece ($n = 1.5220$) provided with the instrument.

OBSERVATION AND CALCULATION

The present work deals with the study of polarizability and molar refraction constant of (1,2-Dihydro-benz[4,5]imidazo[2,1-c][1,2,4]triazin-3-ylidene)-(4-phenylthiazole-2-yl)-amine and (1-Benzothiazol-2-yl-[1,2]diazetid-3-ylidene)-(4-nitro-phenyl)-amine at 70%, 80% and 90 % Acetone-water and dioxane-water mixtures at different concentration temperatures at different composition. Intermolecular

JETIRDOI06087 | Journal of Emerging Technologies and Innovative Research (JETIR) www.jetir.org | 455

91. Shrikant Ashokrao Wadhal, Shivani Gudadhe, A.S. Burghate, S.A. Ikhe, Synthesis of 4-phenyl-thiazolyl substituted Schiff bases.

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www.jetir.org (ISSN-2349-5162)

Synthesis of 4-phenyl-thiazolyl substituted Schiff bases

Shrikant Ashokrao Wadhal*, Shivani Gudadhe, A.S. Burghate, S.A. Ikhe
Department of Chemistry, Shri Shivaji Science College, Amravati, Maharashtra, India.

ABSTRACT

The present research has systematic approach to synthesized a series of 4-phenyl-thiazolyl substituted Schiff bases (3a-c) derivatives by the action of substituted aromatic aldehydes (2a-c) with 2-amino 4- phenyl thiazole. Structures of all the synthesized compounds were confirmed by their IR, ¹H-NMR.

Keywords: Schiff's base; aromatic aldehydes; 2- amino 4- phenyl thiazole.

INTRODUCTION

Thiazole derivatives have played a crucial role in medicinal chemistry. Thiazoles flaunt a wide range of biological activities like antimicrobial¹⁻⁴, analgesic⁶⁻⁷, anticonvulsant⁸⁻⁹, antioxidant¹⁰, hypolipidemic¹¹, anti-HIV-1¹²⁻¹³, adenosine receptor antagonist¹⁴⁻¹⁵, osteoporosis inhibitor¹⁶.

Schiff bases have been shown to be interesting moieties for the design of antimalarial agents¹⁷⁻¹⁸. Schiff bases have been pointed to as promising antibacterial agents¹⁹⁻²¹. The search and development of more effective antifungal agents are mandatory and some Schiff bases are known to be promising antifungal agents²².

EXPERIMENTAL SECTION

General Conditions: Melting points are uncorrected and were determined in open capillary tubes in. TLC was performed on silica gel-G and spotting was done using iodine. IR spectra were recorded on Nicolet 5ZDXFT-IR spectrometer in KBr phase and ¹HNMR on Bruker WP 200 and 500 SY.

General procedure for the preparation of [(3-chloro-benzylidene)-4-phenyl-thiazole-2-yl)-amine](3a)

A mixture of (0.001mole) 2- amino 4- phenyl thiazole and 0.70gm of 3- chlorobenzaldehyde in ethanol in presence of HCl was refluxed for 3-4 hours. The resulting solid was filtered, washed and recrystallised from ethanol to yield the product, m.p.-150-154⁰C.

3a: IR (KBr):1575 cm⁻¹ (C=N); ¹HNMR:δ 2.6 (s,1H, CH₃), 7.2-8.7 (m, 10H, Ar-H)

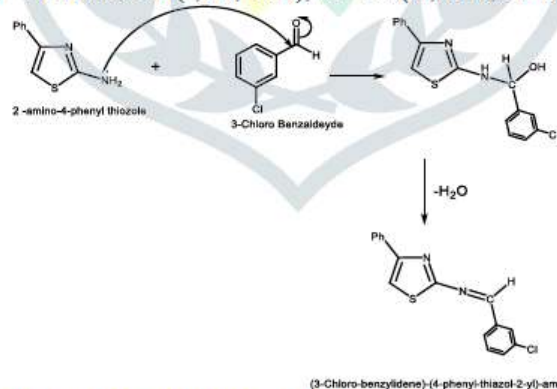


Fig: synthesis of [(3-chloro-benzylidene)-4-phenyl-thiazole-2-yl)-amine]

General procedure for the Synthesis of [(4-methoxy-benzylidene)-4-phenyl thiazole-2-yl)amine](3b)

A mixture of (0.001mole) 2- amino 4- phenyl thiazole and 1.36 ml of anisaldehyde in ethanol in presence of HCl was refluxed for 3-4 hours. The resulting solid was filtered, washed and recrystallised from ethanol to yield the product, m.p.-120-123⁰C.

3b: IR (KBr):3194(Ar-H),1608(C=N),1473(C=C)cm⁻¹; ¹HNMR: δ 2.6(s,OCH₃), δ 6-7.8 (10H Ar H).

9. Vrushali T. Kale ,Subodh A.Bhandarkar, Archana S. Burghate and Shrikant A. Wadhwal, STUDIES IN ANTIFUNGAL ACTIVITY OF NHETEROCYCLIC SUBSTITUTED HYDRAZONE SCHIFF'S BASES.

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www.jetir.org (ISSN-2349-5162)

STUDIES IN ANTIFUNGAL ACTIVITY OF N-HETEROCYCLIC SUBSTITUTED HYDRAZONE SCHIFF'S BASES.

Vrushali T. Kale¹, Subodh A. Bhandarkar²

¹Department of Chemistry, Government Institute of Science and Humanities, Amravati (M.S.), Pin 444604, India.

Archana S. Burghate³ and Shrikant A. Wadhwal⁴

³Department of chemistry, Shri Shivaji Science College, Amravati - 444603, M.S. India.

ABSTRACT

In the present study, we have reported the synthesis, spectral studies and biological evolution of substituted hydrazone schiff's bases derivatives of benzothiazolyl and benzimidazolyl for antifungal activity. In the present research series of 2-[1-(Benzothiazole-2-yl hydrazono)-ethyl]-5-methyl phenol, 2-(Benzothiazole-2-yl hydrazono)-methyl- phenol, N-Benzothiazole-2-yl-N-(1-(4-chloro-phenyl)-ethylidene)-hydrazine, 2-[1-H-Benzimidazole-2-yl hydrazono)-methyl]-4-methyl phenol were synthesized by green chemistry technique. Structures of all the newly synthesized compounds were confirmed by their IR, ¹H-NMR and CHN analysis. The antifungal activities of these synthesized compounds are done by cup plate method. The fresh cultures of *Candida albicans* (NCIM 3103). Present work was based on the synthesis of substituted benzothiazole derivatives in order to find out the antifungal activity against *C. albicans* and *Pityrosporum ovalue*. since *Candida albicans* is mainly responsible for skin infection, especially in the epithelial cells of the vagina. *Candida albicans* is a yeast that commensally inhabits the human body and can cause opportunistic or pathogenic infections.

Keywords: Antifungal activity; Cup plate method, Skin infection, 2-substituted benzothiazole.

INTRODUCTION

Hydrazones constitute an important class of biologically active drug molecules[1]. A number of hydrazone derivatives have been reported to exert notably as anti-bacterial [2], anti-microbial and cytotoxic[3], anti-diabetic [4], antitumor [5], anti-inflammatory [6], anthelmintic [7], antifungal [8] activities etc. Schiff bases play crucial role in inorganic chemistry, as they simply kind stable complexes with most transition metal ions the event of the field of bioinorganic chemistry has enhanced the interest in Schiff base complexes, *Candida* species, particularly *C. albicans* has normally inhabited the human skin surface and cause infection. However, skin barrier level defence mechanisms are unit terribly economical. Therefore, the skin is Associate in Nursing effective barrier against fungal infection. *C. albicans* as the most common fungal pathogens since last two decades mainly due to increased development of resistance to antifungal agents. We reported here a study on synthesis of some novel Schiff's base derivatives of benzothiazole and benzimidazole derivatives. These derivatives were screened for antifungal activity against the *Candida albicans*.

MATERIALS AND METHOD

All reagents and solvents were purchased from spectrochem and merk used as received. The melting point of the synthesized compounds were determined in open capillary tube and are uncorrected. The IR spectra were recorded on a Perkin-Elmer model 2000 spectrophotometer using KBr phase. ¹H-NMR spectra were recorded on Bruker (400MHz) spectrophotometer using TMS as an internal standard. The purity of the synthesized compounds was checked by TLC on Silica gel in solvent system toluene and ethyl acetate (1:1) and the spot were visualized under UV chamber. Microwave synthesis was carried out in domestic microwave oven.

SYNTHESIS

Synthesis of 2-[1-(Benzothiazole-2-yl hydrazono)-ethyl]-5-methyl phenol. (3a)

Method A: Conventional Method

A mixture 2-Hydrazinobenzothiazole (0.036 mole, 6 g) and 2-hydroxy-5methyl acetophenone (0.036 mole, 0.49g) was taken in a 100ml round bottom flask was shaken in 15-20 ml ethanol; it was refluxed for 7-8 hours. The progress of reaction was monitored by TLC, after completion of reaction; reaction mixture was cooled to room temperature and poured in ice cold water. The wet product was dried under vacuum for 10 min. and then dried at 40°C for 20 min under vacuum, to obtain 2-[1-(Benzothiazole-2-yl hyd

Method B:

Microwave Assisted Synthesis of 2-[1-(Benzothiazole-2-yl hydrazono)-ethyl]-5-methyl phenol(3a)

2-Hydrazinobenzothiazole (0.036 mole, 6 g) was taken in 25 ml beaker to this added 2-hydroxy-5methyl acetophenone (0.036 mole, 0.49g) in 1:1 ratio the mixture was moistened with 2-3 drops of ethanol and placed in microwave oven covered with watch glass and irradiated with microwave irradiation for 5 minutes at 180 watt after completion of reaction beaker was removed and the granular solid was crystallized from hot Ethanol to give 80-85 % yields. Yield – 80-85%, M.Pt-200-220°C, M. Wt -297.38, Formula-C₁₆H₁₅N₃SO, IR-(KBr

93. R. A. Thakare, A. S. Burghate, S. A. Wadhwal, Studies in Physical Parameters p-hydroxy,3methoxybenzaldehyde in binary liquid systems

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Studies in Physical Parameters p-hydroxy,3methoxybenzaldehyde in binary liquid systems

¹R. A. Thakare, ²A. S. Burghate, ³S. A. Wadhwal
¹Research student, ²Associate professor, ³Associate professor
 P. G. Department of Chemistry,
 Shri Shivaji Science College, Amravati, India.

Abstract: Viscosities and Densities of p-hydroxy,3 methoxybenzaldehyde aldehydes in binary solvent mixtures were measured with variation in percentage of binary mixtures at fixed concentrations. From relative viscosity, rheochor, and temperature coefficients were determined. The structure breaking and making property will judge the Solute - Solvent interactions.

Keywords: Relative viscosity, Rheochor, Temperature coefficient.

I. INTRODUCTION

Viscosity implies resistance to flow. Viscometry is a sensitive tool for understanding interactions of solutions. Viscosity measurements provide useful information about solute-solute and solute-solvent interaction. Temperature coefficient expresses the relation between change in physical property due to change in temperature. Rheochor is additive and constitutive property. These parameters are related with viscosity, Hence in present study attempt has been made to study Rheochor and Temperature coefficient by determining density and viscosity of substituted aldehydes in binary liquid system.

II. MATERIALS & METHODS

The reagent grade (purity 99.9%) and doubly distilled water were used. All weighing were made on Shimadzu corporation Japan type BL-220H No. D455008406 Capacity 220g Readability 0.001g. The accuracy of density measurement was within $\pm 0.1\%$ Kgm-3. The viscosity measurements were carried out using thoroughly cleaned, dried Ostwald's viscometer. The viscometer was kept in electrically heated water bath (SSCA /CHE/NCR-II/104/2008/01) and temperature variation was maintained within $\pm 0.1^\circ\text{C}$. The flow time was determined after equilibrating the viscometer with water bath temperature. The accuracy of viscosity measurement was within $\pm 0.11\%$ Kgm-1S-1.

Viscosity measurements for different percentage of binary solution were made to determine relative viscosity, Rheochor, temperature coefficient. Viscosities measurements are also made at different temperature to evaluate the values of thermodynamic parameters. The available data of velocities (η) and temperature (T) are used to plot the graph between $\log \eta$ Vs $1/T$.

The values of Rheochor may be evaluated by using formula,

$$R = \frac{M}{d} * \eta^{1/8}$$

R- Rheochor

M- Molecular weight

d- Density

η - Viscosity coefficient

Binary System	Percentage Composition of Binary System	η_r	R	α
Acetone-Water	70%	2.232	96.860	-5.4×10^{-2}
	75%	2.159	99.760	-6.5×10^{-2}
	80%	1.489	98.102	-3.0×10^{-2}
	85%	1.456	98.162	-1.1×10^{-1}
	90%	1.304	97.891	-9.9×10^{-2}
Ethanol-Water	70%	2.382	105.55	-8.3×10^{-2}
	75%	2.242	102.84	-8.9×10^{-2}
	80%	2.096	102.35	-9.9×10^{-2}
	85%	2.054	102.17	-8.3×10^{-2}
	90%	1.851	103.61	-7.1×10^{-2}

94. N.H.Bansod, G.N.Chaudhari, S.S.wagh, BIOSYNTHESIS OF COPPER NANOPARTICLES BY USING ROOT EXTRACT OF OCIMUM SANCTUM (TULSI PLANT)

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

BIOSYNTHESIS OF COPPER NANOPARTICLES BY USING ROOT EXTRACT OF OCIMUM SANCTUM (TULSI PLANT)

N.H.Bansod^{1*}, G.N.Chaudhari¹, S.S.wagh²

¹Department of Chemistry, Shri Shivaji Science College, Amravati (MS) 444603, India.

²Department of Chemistry Aadarsha College, Hingoli (MS) - 431003, India.

Abstract

Nanotechnology is the scientific field that has recently expanded due to its applications in pharmaceutical field, various industry and agriculture. The present study outlines the development of a method to synthesize copper nanoparticles (CuNPs) by mixing copper nitrate solution with aqueous root extract of Ocimum sanctum without using any surfactant or external energy. The green synthesized Copper nanoparticles (CuNPs) were characterized by UV-Vis spectroscopy, FTIR, and SEM. The XRD shows that crystalline nature of Copper nanoparticle with particle size range between 17-22 nm, which was also confirmed by FTIR Spectra. The surface morphology shows Copper a nanoparticle has globular morphology.

Keywords: biosynthesis, nanoparticles, X- ray techniques, FTIR, SEM.

1. Introduction

In recent years, the synthesis and use of metal nanoparticles have gained consideration due to their unique electrical, antibacterial, catalytic and magnetic properties [1-3] which are different from bulk materials. The synthesis of inorganic has been carried out by many chemical and physical methods. These are suffering from drawbacks like expensive reagent, hazardous reaction condition, longer time, tedious process to isolate nanoparticles. Hence, there is scope to develop new methods for the synthesis of nanoparticles which should be required inexpensive reagent, less drastic reaction condition and eco-friendly. The biosynthesis of nanoparticles has been proposed as a cost-effective and environmentally friendly alternative to chemical and physical methods. Plant-mediated synthesis of nanoparticles is a green chemistry approach that connects nanotechnology with plants. Novel methods of ideally synthesizing NPs are thus thought that are formed at ambient temperatures, neutral pH, low costs and environmentally friendly fashion. Keeping these goals in view nanomaterials have been synthesized using various routes. Among the biological alternatives, plants and plant extracts seem to be the best option. Plants are nature's "chemical factories". They are cost efficient and require low maintenance. The advantages and disadvantages of nanotechnology can be easily enumerated.

95. Sujata Kawade, Histopathological alterations in the liver of freshwater fish, *Channa gachua* (Ham.) on acute exposure to Nickel

© 2020 JETIR October 2020, Volume 7, Issue 10

www.jetir.org (ISSN-2349-5162)

Histopathological alterations in the liver of freshwater fish, *Channa gachua* (Ham.) on acute exposure to Nickel

Sujata Kawade

Assistant Professor,
Department of Zoology,
Shri Shivaji Science College, Amravati, Maharashtra, India.

Abstract: Industrial effluent containing heavy metals, on entering aquatic environment causes histopathological disturbances in the fish. The present study deals with the toxic effect of heavy metal - Nickel (Ni) as NiSO₄ on the liver of fresh water fish, *Channa gachua*. Liver was examined in the 96 hours LC₅₀ acute test. Histopathological examination of liver revealed marked pathological changes like shrinkage of central vein, accumulation of blood cells in the central vein, rupture of sinusoids, degeneration of hepatic tissue due to necrosis and hemorrhage in the hepatocytes and connective tissue.

Key words: Nickel, Liver, histopathology, *Channa gachua*

INTRODUCTION:

Water pollution is recognised as a potential threat to the aquatic organisms. Population explosion and rapid industrialization are the reasons for this type of pollution. The major sources of aquatic pollution are discharge of industrial effluents, fertilizers, pesticides, domestic sewage, etc. into the water bodies.

Effect of various pollutants on aquatic organisms have been studied by many workers. **Cengiz, (2006)** reported histological alterations in the gills and kidney of freshwater fish *Cyprinus carpio* after acute exposure to deltamethrin. **Santhakumar et al (2001)**, reported gill lesions in the perch, *Anabas testudineus*, exposed to **monocrotophos**. **Rao, et al (2005)**, reported sublethal effects of **monocrotophos** on locomotor behavior and gill architecture of the mosquito fish, *Gambusia affinis*. **Rana et al, 2015** reported histopathological study of liver and kidney in common carp (*Cyprinus carpio*) exposed to different doses of potassium dichromate.

Among the various pollutants, heavy metals have become a matter of great concern. Heavy metals are natural trace components of the aquatic environment but as they are non-biodegradable, their higher concentration may cause harmful effect on the aquatic organisms. Once discharged in the water bodies, these heavy metals bioaccumulate causing harmful effect on the organisms exposed to them (**Hollis et al, 1999**).

Many workers have reported the harmful effects of heavy metals on the aquatic environment. Effect of cadmium chloride on the histoarchitecture of kidney of freshwater Catfish, *Channa punctatus* was reported by **Amin et al, 2013**. **Drishya et al 2016** reported histopathological changes in the gills of fresh water fish, *Catla catla* on exposure to electroplating effluent. Changes in the biochemical profile including glucose, protein and cholesterol in the fresh water

96. Mitali B Ghormade, Target identification & molecular docking of *Burkholderia pseudomallei*

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Target identification & molecular docking of *Burkholderia pseudomallei*

Mitali B Ghormade

Department of Bioinformatics

Shri Shivaji Science College, Amravati, India.

Abstract:

Target based or structural based drug designing is the rapidly growing area. The explosion of genomic, proteomic and structural information has provided hundreds of new targets and opportunity to find new drug lead components. Based on burgeoning structural data of *Burkholderia pseudomallei*. I focused on tomato disease, *Burkholderia pseudomallei* also known as *Pseudomonas pseudomallei*) is a Gram- negative, bipolar, aerobic, motile rod-shaped bacterium. It infects human and animals and cause the disease Melioidosis , it also

infect plants. In this study I have taken 592 protein sequences from NCBI (National Centre of Biotechnological Information) protein database for which protein structure is available at PDB Database. From this study we have selected 4 druggable targets & 4 virulence protein sequences using Tid tool out of detected virulence protein we have choose 4bko protein as target.

1. Introduction

Bacterial diseases include any type of illness caused by bacteria. *Burkholderia pseudomallei* (also known as *Pseudomonas pseudomallei*) are a Gram-negative, bipolar, aerobic, motile rod-shaped bacterium. It is a soil-dwelling bacterium endemic in tropical and subtropical regions worldwide, particularly in Thailand and northern Australia. It infects humans and animals and causes the disease Melioidosis. It is also capable of infecting plants. *B. pseudomallei* measures 2–5 µm in length and 0.4–0.8 µm in diameter and is capable of self-propulsion using flagella. The bacteria can grow in a number of artificial nutrient environments, especially betaine- and arginine-containing ones.

Im vitro, optimal proliferation temperature is reported around 40 °C in neutral or slightly acidic environments (pH 6.8–7.0). The majority of strains are capable of fermentation of sugars without gas formation (most importantly, glucose and galactose; older cultures are reported to also metabolize maltose and starch). Bacteria produce both exo- and endotoxins. The role of the toxins identified in the process of 13 melioidosis symptom development has not been fully elucidated.

The Bacteria *Burkholderia pseudomallei* I have choose because it infects both plant as well as animals & causes serious disease that is Melioidosis. The aim was to access the deuggable targets for *Burkholderia pseudomallei* Tid tool. TiD is a standalone application, which relies on basic assumption that a protein must be essential for

97. Jane RR, Mankar SS, Patil SD, Agrawal NK, EVALUATION OF ANTIBACTERIAL ACTIVITY OF *CARDIOSPERMUM HALICACABUM* AGAINST CLINICAL ISOLATES OF OTITIS MEDIA.

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

EVALUATION OF ANTIBACTERIAL ACTIVITY OF *CARDIOSPERMUM HALICACABUM* AGAINST CLINICAL ISOLATES OF OTITIS MEDIA.

Jane RR¹, Mankar SS², Patil SD³, Agrawal NK⁴,Assistant Prof¹, Assistant Prof², Associate Prof³, Assistant Prof⁴,

Department of Biotechnology and Microbiology,

Shri Shivaji Science College

B.S.Patel Arts, commerce and Science College, Pimpalgaon Kale

Amravati – 444 603, M. S.,

INDIA.

Abstract

India is virtually herbarium of the world. India possesses all types of climatic conditions varying from cold temperature in the Himalayas to tropical in south for the growth of a variety of medicinal and aromatic plants. India, with her varied climatic conditions and topography has considered as “Botanical Garden of the World”. In the present study the phytochemical study, antioxidant activity and *in vitro* antibacterial activity of acetone, methanol and chloroform extracts of *Cardiospermum halicacabum* leaves were investigated. *Cardiospermum halicacabum* is a climber belongs to the family Sapindaceae. The plant is a twinner, pubescent or nearly glabrous annual or perennial. This plant exhibited a wide range of biological and pharmacological properties. Phytochemical analysis revealed the presence of alkaloids, tannins, saponins and flavonoids in leaves of *C. halicacabum*. Acetone extract of *C. halicacabum* showed 24.05% free radical scavenging at 50µg/ml. The extracts were screened for *in vitro* antibacterial activity against selected otitis media pathogens including *S. aureus*, *P. aeruginosa*, *E. coli*, *K. pneumonia* and *S. pneumonia* by disc diffusion method and acetone extract was predominant. Acetone extract of *C. halicacabum* inhibited 100% isolates of *S. pneumonia* and *E coli*, 90% isolates of *P. aeruginosa*, 79% *K. pneumoniae* and 97% isolates of *S. aureus* with effective zone range of 15-30 mm and MIC range was 08-32 mg/ml. Present study justifies the claimed uses of *C. halicacabum* in the Indian traditional system of medicine to treat various diseases. However, as the toxic effects of plant extracts were not tested in present study In future research is required to determine which chemicals are effective which will provide valuable clues for developing herbal drugs for treatment of otitis media.

Key words: Otitis media, *Cardiospermum halicacabum*, Antimicrobial activity.

Introduction

Medicinal plants occupied an important position in socio-cultural, spiritual and medicinal arena of rural people of India. The Indian systems of medicines i.e. Ayurveda predominantly use plant based raw materials in most of their preparations and formulations. There has been an increasing evidence of bacterial and fungal infections due to population explosion, changed environmental conditions, wastes from different sources. It may affect food with perfect nutritional value and results in reducing immunogenicity in human beings. These factors coupled with increasing resistance of microorganisms to allopathic agents, antibiotics increased toxicity in human being during prolonged treatment with several antimicrobials (Giordani *et al.*, 2001). Otitis media is highly prevalent worldwide (Ifante and Fernandez, 1993). Hearing loss was a significant sequel of chronic suppurative otitis media among the school children and it had adverse effect on their academic performance. Microbes commonly associated with otitis media include Streptococci, Staphylococci, *Heamophilus*, *Pseudomonas*, *Proteus* etc (Jokipii *et al.*, 1977 and Klein, 1994). Otitis media known to be the most common childhood infection which lead annually to death of over 50,000 children under 5 years (Rovers *et al.*, 2006). Increasing antibiotic resistance to commonly used antibiotics exhibited by pathogens has led to the screening of several medicinal plants for the potential antimicrobial activity (Mukherjee *et al.*, 1998). In the present scenario of emergence of multiple drug resistance to human pathogenic organisms has necessitated a search for new antimicrobial substances from other sources including plants. Higher plants produce

98. Agrawal Nikhil, Mankar Suwarna. Ukesh Chandrakiran. Jane Rasika, BIOBURDAN ON DRINKING WATER

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

BIOBURDAN ON DRINKING WATER

Agrawal Nikhil¹, Mankar Suwarna^{2*}, Ukesh Chandrakiran², Jane Rasika² .Assistant Prof ¹, Assistant Prof ², Associate Prof ², Assistant Prof ⁴,

Dept. of Microbiology & Biotechnology,

Shri Shivaji Science College, Amravati- 444603 (M.S.), India.

B.S.Patel Arts, commerce and Science College, Pimpalgaon Kale

Abstract:-

The drinking water is important for life . If water is not safe it causes serious infections to human beings. In this work the water from the different sources from the Amravati city and near by area were collected and studied. The microorganism were isolated and there antibiotic sensitivity observed .Out of total 117 samples 63(53.84%) were positive or considered as non potable for drinking purpose. Out of total 63 samples 49 *E. coli* (77.77%), 37 *Klebsiella* (58.73%), 21 *Salmonella* (33.33%), 19 *Streptococcus* (30.15%) and 14 *Staphylococcus* (22.2%) were isolated. The highest no of species of *E. coli* and *Klebsiella* were isolated , the susceptibility of these two microorganisms performed which shows highest resistant in *E. coli* for the first and second line of antibiotics . The safest and susceptible antibiotic was found to be Imipenem for *E.coli* and *Klebsiella* .

Key Words:- Water sample, MPN, Antibigram.

Introduction:-

Water is abundant in nature occupying 71% of the earth surface (Gleick, 2006), only 1 % is accessible for human consumption (Lefort, 2006). The drinking water comes with various sources these include rainwater, surface water (streams, rivers, springs, lakes etc.) and underground water (shallow wells and deep wells and springs). Surface water is easily polluted, either by direct contamination by man and animals, or indirectly when rain washes faeces and other pollutants from the banks into the water body. Shallow wells are liable to pollution by seepage from surface water. Even the accessible drinking water would require series of treatments before it could be safe or fit for drinking. One of World Health Organization primary goals is access to adequate supply of safe drinking water for all. This goal is far from achievement in most developing countries especially in the rural and peri-urban areas as over 5 million people die annually of water-borne diseases such as cholera, typhoid, diarrhea. (Lefort, 2006, WHO, 2008). As per the report of the scientists of All India Institute of Medical Sciences (AIIMS), New Delhi, finds an alarming prevalence of various diseases causing microbes in drinking water and recreational water. The use of this water may lead to several life threatening diseases. Different authors also reported that Indian River system is polluted mainly because of the human impact (Goel and Bhosale, 2001; Patil *et al.*, 2003; Maity *et al.*, 2004). In India, more lives are lost of unsafe drinking water than the wars and terrorism combined. About 85% rural population in India is depended on ground water, which is depleting at a fast rate. Large scale industrial growth has caused serious concern regarding the susceptibility of ground water contamination due to waste material (Mishra *et al.*, 2019) .

Material and Method:-

Sample collection

From different location that is tap water, borehole water, well water and river/lake water aseptically samples were collected into separate sterile containers. All the water samples were processed immediately for analysis within one hour of collection.

Multiple tube technique was used for the enumeration of Most Probable Number of coliform and non coliforms bacteria. Nutrient agar (NA) as a basal medium MacConkey agar as a differential medium and Blood agar as a special

99. Hedawoo, G B and Mandlik, P R, DYE YIELDING MUSHROOMS FROM AMRAVATI- MELGHAT REGION

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

DYE YIELDING MUSHROOMS FROM AMRAVATI- MELGHAT REGION

¹Hedawoo, G B and ²Mandlik, P R

1. Assist. Prof. P.G. Department of Botany, Shri Shivaji Science College, Amravati (India)

2. Asso. Prof. P.G. Department of Chemistry, Shri Shivaji Science College, Amravati

(India)

Abstract: Dye is a substance which is used to impart colour to various substrates. The dyeing is not readily altered by washing, heat, light or other factors. Mushrooms can be used to create colour dyes via colour extraction with a solvent as well as particulation of raw material. Many mushrooms contain pigments which will make a good lightfast and colour fast dye. Some mushrooms may be used to dye wool, textiles, paper, leather and other materials. Some simple natural mordants/ modifiers like salt water, vinegar, ammonia, a copper pot and a rusty iron pot are used by some dye makers.

To study the diversity of macromycetes in Amravati region, extensive surveys were undertaken in last ten years. During study along with edible, non-edible, medicinal mushrooms; some of the very precious dye yielding mushrooms were collected and studied. Following are some colourful and beautiful forms; from which dyes may be produced. Grey-green dye is extracted by using Grey Oyster Mushroom (*Pleurotus ostreatus*) and Shaggy ink cap (*Coprinus comatus*). Dye ball (*Pisolithus tinctorius*) and Turkey Tail (*Trametes versicolor*) is the source for brown dye. Rusty dye is extracted from Reishi (*Ganoderma lucidum*) and Artist's bracket (*Ganoderma applanatum*). Purple-spored puffball (*Calvatia cyathiformis*) is the source for rust-red dye. Field mushroom (*Agaricus campestris*) is used to produce yellow-tan colour. Horse Mushroom (*Agaricus arvensis*) is used to extract yellow-tan dye, while pink beige deeper tones are extracted from *Lepiota americana*.

Index Terms: Mushroom survey, Amravati- Melghat region, Dye yielding mushrooms.

I. INTRODUCTION

India is a rich treasure of natural resources and mushrooms is one of them. Amravati is endowed with Satpuda ranges. Due to suitable geographical and favourable climatic conditions, wide and rich mycoflora is hidden in this region. Studies on wild macromycetes with special reference to their edibility, utility, dyeing properties and medicinal value with the early references may be beneficial for society. Collecting larger fungi should not be considered a haphazard pursuit. It is to emphasize that the task of identification and proper record of larger fungi is of prime importance and can only be fulfilled by extensive surveys of different zones of the country.

II. REVIEW OF LITERATURE

Some wild edible mushrooms were reported from South-West India by Sathe and Kulkarni (1987). The mushroom flora of Kerala investigated by Devi and Nair (1988). Many Agarics were reported from Andhra Pradesh by Manoharachary and Vijay Gopal (1991). From several bio-geographical regions of India, at least 2000 edible species of larger fungi were reported. But Central India region has not been investigated extensively for mushroom flora (Kaul, 1999). A list of 37 wild mushroom species of Sundarjal and Kathmandu region is published by Pandey and Budhathoki, 2008.

100. Pundkar S.V., Kokate P. S., Thorat K. M., A PETRIFIED SEED *JUNEJOSPERMUM INTERTRAPPEA* GEN. ET. SP. NOV. FROM THE DECCAN INTERTRAPPEAN BEDS OF MOHGAONKALAN, M.P., INDIA

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

A PETRIFIED SEED *JUNEJOSPERMUM INTERTRAPPEA* GEN. ET. SP. NOV. FROM THE DECCAN INTERTRAPPEAN BEDS OF MOHGAONKALAN, M.P., INDIA

Pundkar S.V., *Kokate P. S., **Thorat K. M.

Department of Botany, Shri Shivaji Science college, Amravati.

*Head, Department of Botany, Shri Shivaji college of Arts, Com & Science, Akola.

**Dr. Manorama and Prof. Haribhau Shankarrao Pundkar College, Balapur.

ABSTRACT

The fossil chert were collected from Mohgaonkalan, District Chhindwara, M.P. India, a well known rich fossiliferous locality of Deccan Intertrappean beds for all major groups of plant parts but reports of fossil seed are less as compared to other parts.

The present fossil specimens is exposed in longitudinal plane. Seed is oval, small in shape and size. It is dicotyledonous and unitegmic in nature. Micropylar region is clearly seen. Embryo is large well preserved with two cotyledonous. Vasculature is not seen. Seed coat is differentiated into testa and tegmen. Testa not clearly seen, tegmen thick walled. The seed is compared with the living and reported fossils but this fossil seed shows close resemblance to the seeds of family Piperaceae. Therefore, it can assigned to the Piperaceae family. It is named as *Junejospermum intertrappea*. The generic is after the eminent paleobotanist Dr. C. D. Juneja and specific name given after series of Deccan name Intertrappean.

Key words: Fossil, Dicotyledon, Seed, Deccan, Intertrappean beds.

INTRODUCTION

Deccan Intertrappean beds of India is a rich fossiliferous locality. The reports of fossil seed are less as compare to other plant parts. They are *Deccanosperma arillata*, *Ramakonaspermuschitaleynensis* and *Mahabalespermum minutum* (Juneja, 1993), *Clusiocarpus indicum* (Wazalwar, 1990), *Clusiocarpus arillatus* (Kumar, 1984), *Unospermum corneri* (Bonde, 1993); *Ramakonaspermum singhpurii* (Shaikh and Bhowal, 2003); *Mohgaospermum deccanii*, *Flacourtiospermum nambudirii*, *Unitegmospermum ramanujani* (Kokate, 2006) are reported *Ramakonaspermuschitaleynensis* Martin and Juneja (Shaikh *et al.*, 2009). *Bitegmospermum mohgaonse*, *Orthotropouspermum hookerii*, *Chitaleyspermum intertrappea* (Thorat, 2016); *Unitegmospermum ramanujani* (Kokate, 2017); *Coccolobospermum ramanujanii*, *Iexospermum chitaleynensis* (Dighe, 2017) *Monocotepermum hookerii* (Deshmukh, 2019) are already reported.

MATERIAL AND METHODS

The present fossil specimen is embedded in the black chert. The seed is well preserved, it was studied anatomically by taking serial peel sections after etching in Hydrofluoric acid.

DESCRIPTION

The present fossil specimens exposed in longitudinal plane. Seed is oval, small in shape and size. It is dicotyledonous and unitegmic in nature. The structure of seed gradually increases in size. The present fossil specimen is 0.249 mm long and 0.153 mm broad. The cavity of seed is measuring 0.22 mm in length and 0.13 mm width. Micropylar region is clearly seen. Embryo is large well preserved with two cotyledonous. Vasculature is not seen. Seed coat is differentiated into testa and tegmen (Text Fig. 2, Plate Fig. 1 & 2).

Seed coat

In present specimen unitegmic seed, seed coat is differentiated into two layers, testa and tegmen but not well persevered. The seed coat is differentiated into outer testa and inner tegmen. The thickness of seed coat is measuring about 148 μ (Text Fig. 4, Plate Fig. 4).

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101. Suradkar Kishor, Kadu Suruchi and Dilip Hande, Isolation of Endophytic Fungi from Wild Medicinal plant *Helecteresisora* and their Antibacterial Properties

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Isolation of Endophytic Fungi from Wild Medicinal plant *Helecteresisora* and their Antibacterial Properties

¹Suradkar Kishor,²Kadu Suruchi and ³Dilip Hande¹Assistant Professor, ²Assistant Professor and ³Associate Professor¹Department of Botany,

1. Indira Mahavidyalaya Kalamb Dist. Yavatmal (MS) India.

²Department of Botany,

2. Brijlal Biyani Science College, Amravati (MS) India.

3. Shri Shivaji Science College Amravati (MS) India.

Abstract

In the present investigation the diversity of endophytic fungi was studied associated with medicinally important plant *Helecteresisora* in three different seasons. Secondary metabolites were produced from isolated endophytic fungi to investigate their antibacterial activity. The fungal culture was extracted with ethyl acetate and crude extract was used to test against pathogenic bacteria viz. *Pseudomonas aeruginosa* (MTCC 6458), *Escherichia coli* (MTCC 1698), and *Staphylococcus aureus* (MTCC 2639). A total of 13 fungal species viz. *Colletotrichum acutatum*, *Colletotrichum gloeosporioides*, *Pithomyces chartarum*, *Aspergillus nidulans*, *Trichostroma hughesii*, *Curvularia lunata*, *Cladosporium cladosporioides*, *Nigrospora oryzae*, *Alternaria alternata*, *Aspergillus stellatus*, *Acremonium kiliense*, *Fusarium oxysporum*, *Penicillium chrysogenum* were isolated and identified based on the morphology of the fungal culture and characteristics of the spores.

Key words: Antibacterial potential, Seasonal variation, Amravati.

Introduction

Endophytic fungi are microbes that colonize living internal tissues of plants without causing any harm to their host (Brown *et al.* 1998). Many recent studies have revealed the ubiquity of these fungi, with an estimate of at least one million species of endophytic fungi residing in plants (Dreyfus *et al.* 1994). Endophytes particularly fungi have proved to be a potential source for bioactive compounds which have immense value in agriculture, medicine and industry (Tan *et al.*, 2000; Tan and Zou, 2001; Aly *et al.*, 2010; Shankar and Krishnamurthy, 2010). Many important bioactive compounds with cytotoxic, insecticidal, anticancer and antimicrobial potential have been successfully obtained from the endophytic fungi (Aly *et al.*, 2010; Zhou *et al.*, 2008) and recently numerous novel bioactive substances characterized from these microorganisms (Wagenaar *et al.*, 2001; Li and Strobel *et al.*, 2001; Brady, 2001; Shrestha *et al.*, 2001; Kongsaree *et al.*, 2003). The study of endophyte distribution, biodiversity and their biochemical characteristics are of immense importance in plant biology to understand and to improve plant fitness. Medicinal plants are reported to harbor endophytes (Strobel, 2002), and have a potential to produce biologically active metabolites to protect their host from infectious agents and also provide adaptability to survive in adverse conditions.

The objective of this study was to isolate endophytic fungi from the medicinal plant *Helecteresisora* in three different seasons and to study the antimicrobial activity of the isolates against various pathogenic microorganisms.

Materials and Methods

Sample Collection

Medicinal Plant *Helecteresisora* was collected from various parts of Amravati district in three different seasons. The samples were brought to laboratory in sterile paper bags and stored at 4°C till further use.

Isolation of Endophytic Fungi

Collect sample were rinsed gently in running water to remove adhered dust and debris and cut into 1-2 mm segments. Surface sterilization was done according to the method described by (Suryanarayanan *et al.*, 2011). The sterilized samples were placed in Petri dishes containing potato dextrose agar (PDA). Petri dishes were sealed with parafilm and incubated at room temperature (25±2°C) for one week. The fungi growing out from the samples were sub cultured on fresh (PDA) medium to get pure culture.

102. GOPAL M. SHENDE , AMIT A. JADHAO, VINOD. S. SHRIVASTAVA, PRAMOD R. PADOLE, GAJANAN N. CHAUDHARI, GREEN SYNTHESIS, MORPHOLOGY AND ANTIMICROBIAL ACTIVITY OF COPPER NANOPARTICLES, A REVIEW

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

GREEN SYNTHESIS, MORPHOLOGY AND ANTIMICROBIAL ACTIVITY OF COPPER NANOPARTICLES, A REVIEW

¹GOPAL M. SHENDE , ²AMIT A. JADHAO, ³VINOD. S. SHRIVASTAVA, PRAMOD R. PADOLE, GAJANAN N. CHAUDHARI

¹Dept.of Chemistry, RFNS Senior Science College Akkalkuwa Dist.– Nandurbar -425415 (India)

²Nanotechnology Research Laboratory, Department of Chemistry, Shri Shivaji Science College, Amravati – 444601 (India)

³Nanochemistry Research Laboratory, GTP College, Nandurbar – 425412 (India)

Abstract : Copper nanoparticles received much attention due to its high electrical conductivity, high melting point, low electrochemical migration behavior and low cost. This review focuses on the distinct features of synthesis of copper nanoparticles by various methods. A detailed study of reduction of copper ion into copper nanoparticles mediated through chemical and most efficient green synthesis method were demonstrated with brief experimental procedures. Some method requires external reducing capping and stabilizing agent for synthesis where as other uses radiation source. The synthesized nanoparticles with different size and shapes like cubes, triangular, wires etc. were characterized through UV-visible spectroscopy, Fourier Transform Infra-Red Spectroscopy, X-Ray Diffraction analysis, Scanning Electron Microscopy(SEM), and high resolution Transmission Electron spectroscopy (TEM). Nanoparticles were comparatively analyzed for their absorbance, stabilization of bond, particle size in nanometer and particle shapes contributing configuration respectively. The Clinical significance of copper nanoparticles conferring the antimicrobial activity was studied with the zone of inhibition produced by some pathogenic gram positive and gram negative bacteria and fungus respectively. This review emphasizes the ecofriendly, cost effective, nonhazardous and green method of synthesis nanoparticles by using different plant part extracts which overcomes the other chemical method with all the way.

Keywords: Green synthesis, Chemical Synthesis, UV visible spectroscopy, SEM analysis, FTIR analysis,

I. Introduction:

The term nanotechnology was defined by professor Norio Taniguchi from Tokyo Science university in 1974 as “Nanotechnology mainly consists of the processing of separation, consolidation and deformation of material by one atom or by one molecule” [1]. In recent years nanotechnology attracts many researchers as more than a lac of research paper has been published in reputed journals. The nanoparticles refer to the particles of size less than 100 nanometer (nm) [2]. Due to the large surface area properties of nanoparticles alter optical, magnetic, electrical, thermoelectric, optoelectronic, thermomechanical, antibacterial, catalytic properties at Nano level (3-10). It opens the door for interest and wide application of nanoparticles in the field of pharmacy, medicine, industry, biomedical and biofuels as energy production [11-14].

Due to increase in demand by overpopulation causes rapid urbanization and industrialization our environment undergoes great damage by releasing large amount of unwanted and hazardous materials like chemicals and gases [15-16]. Now it is our need to learn about the secrets which are present in nature and its products which opens the door of ecofriendly nanoparticle synthesis [17]. The methods used to synthesize Copper nanoparticle by chemical and wide variety of green methods [18-22].

The chemical methods of synthesis of nanoparticles are non-ecofriendly, tedious, expensive, non-handly, require high temperature and toxic chemicals [23 -25]. This need can be cured by using alternative method of nanoparticle synthesis are green synthesis of nanoparticles by using fungi, yeast, algae, bacteria, and plant parts like leaf, stem, bark, root etc. extract [26-32]. Among these methods some requires the hygienic, closed tissues culture lab [26-27] and these green synthesis of nanoparticles by using the extract of plant parts like leaf, stem, flower, roots are fruitful because of handy, economical, less toxic procedure than the above biological and chemical method of nanoparticle synthesis [26-32]. In the present study, synthesis

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Nickel oxide Nano-composite–Synthesis, Structural and Antimicrobial Study

P. R. Padole, H. G. Wankhade & G. N. Chaudhari

Nano Technology Research Laboratory, Department of Chemistry Shri Shivaji Science College, Amravati 444602, MS, India.

Abstract: Nickel oxide (NiO) Nanocomposite was synthesized by sol-gel citrate method. As synthesized NiO was structurally characterized by X-Ray Diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). From XRD analysis, the NiO Nanocomposite had face-centered cubic (*fcc*) phase with crystallite size was found to be nearly 15 nm. Synthesis of NiO was confirmed by FT-IR. The antimicrobial activity was carried out against *Escherichia coli* (gram negative bacteria) and *Staphylococcus aureus* (gram positive bacteria). The NiO nanoparticles showed inhibitory activity in both strains of bacteria with best selectivity against gram-positive bacteria.

Keywords - Nickel oxide, *Escherichia coli*, *Staphylococcus aureus*, XRD and FT-IR.

Introduction: Nanoparticles (NPs) are cluster of atoms having at least one dimension in the size range of 1–100 nm. Due to their unique optical, magnetic, catalytic, and electrical properties, they have potential applications in various fields [1]. The physicochemical properties of NPs are different as compared to those of their bulk counterparts owing to the fact that surface area to volume ratio increases and quantum effects become dominant as the size decreases. The increase in surface area to volume ratio alters the mechanical, catalytic, and thermal properties of material [2].

For centuries metals such as silver, copper, zinc, gold and nickel have been used as bactericidal and bacteriostatic agents. Among those used is silver, copper, zinc, gold and nickel each with different properties and spectrum of activity. The antimicrobial activity of silver ions was known since ancient times and silver ions are widely used in catheters, burn wound and dental work [3].

High purity and ultra-fine nickel metal powder is a key component of many different materials that is used to manufacture a wide range of end-use products such as catalysts, magnetic devices, powder metallurgical components and gas sensing. Nickel nanoparticles are used in magnetic recording devices, catalysis, paint industry and used effectively as antimicrobial agent.

SYNTHESIS

PREPARATION OF NiO NANOPARTICLE

The Nanocrystalline NiO specimens were prepared by using sol-gel citrate method. A stoichiometric mixture of nickel nitrate was magnetically stirred with citric acid and ethylene glycol at 80°C for 4 h to get homogeneous and transparent solution. The solution was further heated at about 130°C for 12 h in a pressure vessel to form the gel precursor. The prepared product was subjected to 3 h heat treatment at 350°C in a muffle furnace and then milled to a fine powder. The dried powder then calcined at 500°C in order to improve the crystallinity of ceramic.

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www.jetir.org (ISSN-2349-5162)

ANTIFUNGAL ACTIVITY OF SILVER SUBSTITUTED COPPER FERRITE NANOPAWDER SYNTHESIZED BY SOL-GEL METHOD

P. R. PADOLE*, P. S. THAKARE and G. N. CHAUDHARI

Nanotechnology Research Laboratory, Department of Chemistry, Shri Shivaji Science College, Amravati- 444606 (MS), India.

ABSTRACT

Silver doped CuFe_2O_4 nanoparticles prepared by sol gel process based on the citric acid at room temperature. The structure, microstructure of the Ag doped CuFe_2O_4 nanoparticles was studied under the effect of calcinations temperature. The prepared nanoparticles were characterized by X-ray diffraction (XRD), Fourier transform infrared spectra (FTIR) and transmission electron microscope (TEM) studies were carried out to investigate the formation of crystalline nanosized Ag doped CuFe_2O_4 spinel. The XRD result shows the crystalline inverse spinel structure with particle size 15.23 nm. The sharp peaks showed all-crystalline nature of single phase ferrite. The antimicrobial activity of the Ag doped CuFe_2O_4 nanoparticles tested against three fungus. The results show that Ag doped CuFe_2O_4 nanoparticles exhibit a marked degree of activity against fungus. It is clear from the tables that CuFe_2O_4 NPs silver doped with 1 wt%, 2 wt% and 3 wt% exhibit higher antifungal activities as compared to pure CuFe_2O_4 . Furthermore, the antifungal result shows better inhibition for doped samples than pure samples. Ag doped Copper ferrite has high antimicrobial activity and it can also use for medicinal purpose.

Keywords: Nanoparticles, Spinal ferrites, XRD, FTIR, Fungal Pathogens.

Introduction:

Nanosized ferrite materials have attracted great attention in recent years due to their unique physical and chemical properties which differ significantly from their conventional counterparts [1]. Recent studies have demonstrated antimicrobial activity of various nanoparticles, including silver [2], Copper [3], titanium oxide and zinc oxide [4]. Metals and their compounds have been used as therapeutic agents from historical times until the present day. The material science research is focused on the invention of new materials with the enhanced properties. Transition metals of copper, zinc, chromium and nickel have shown very good antimicrobial properties [5]. Some researchers suggested that substitution of spinel with metals can help in enhancing the biomedical properties of the ferrite nanoparticles [6]. Magnetic nanoparticles are one of the most promising materials since they possess exceptional antibacterial properties because of their large surface area to volume ratio, which is of enthusiasm to researchers due to the developing microbial resistance against antibiotics, and the improvement of resistant strains [7 - 9]. Hence, interesting results were obtained by several methods for synthesizing nanosized magnetic spinel ferrite nanoparticles and to find its influence of dopant in magnetic and antibacterial properties, such as solid-state reaction [10], co-precipitation [11], hydrothermal [12], ceramic process [13] and sol-gel methods [14]. Among these methods, we have chosen sol-gel method, due to the fact that, with this method, significantly large amount of products can be produced within a short time. The sol-gel technique is a low temperature process which the formation of a three dimensional inorganic network [15]. As pointed out above, very few works have been found in literature on the Silver doped copper ferrite system and its antibacterial activity. Herein, we report the influence of doping on both Structural and antibacterial properties of copper-zinc ferrite nanoparticles prepared by sol-gel method.

Materials and Methods

Material

Copper nitrate tetra hydrate, Iron nitrate non hydrate and citric acid and $(\text{Ag}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O})$ was obtained of analytical grade. All experiment was done by using ethyl alcohol. Undoped CuFe_2O_4 and Ag doped CuFe_2O_4 were synthesized by sol-gel method.

Synthesis of CuFe_2O_4 nanoparticle

Silver doped CuFe_2O_4 nanoparticles were synthesis by sol-gel method. All chemicals add in beaker and continuous stirring on magnetic stirrer at 80°C for 2 hrs then form gel and heat at 131°C in pressure bomb for 12 hrs and calcinite at temperature 350°C .

Assay To Evaluate Antifungal Activity

Fungal Culture

Test Organism: *Aspergillus*, *Aspergillus flavus*

Medium Potato dextrose broth was used as a medium for Disc diffusion assay.

Preparation of Fungal Suspension

With the help of sterile wire loop, the test was inoculated into a test tube containing Potato dextrose broth. The concentration of the inoculum was adjusted to 0.5 McFarland's standards which is equivalent to 10^8 CFU/ml. This was used in assay.

Procedure

Disc diffusion assay antifungal activities of the synthesised NPs were evaluated by the standard disc diffusion method described by Bauer et al. [17] and modified according to clinical and laboratory standards institute guidelines.

1. As per the composition, 250 ml of Potato dextrose agar was prepared using sterile distilled water and it was sterilized at 121°C at 15 lb pressure for 15 min in an autoclave.
2. The medium was cooled at room temperature and poured in sterile petri plates and were allowed to solidify.
3. Fungal culture inoculum adjusted at 0.5 McFarland's standards was swabbed over the medium using sterile cotton swab.
4. Two sterile disc were placed on each petrify plate with the help of sterile forceps and two antibiotic disc, one as positive control and other for combination. The 20 μl of sample, sample control (methanol) were poured on each sterile disc as well as on

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

“GREEN SYNTHESIS AND ANTIFUNGAL ACTIVITY OF BENZAOXAZOLE DERIVATIVES”

P.R. Padole¹, H. G. Wankhade¹, B.N.Berad¹ and S.S. Ubarhande²¹Shri Shivaji Science College, Amravati²G.S.Tompe Arts, Commerce and Science College, Chandur Bazar.

ABSTRACT

Various 2-Substituted Benzaoxazoles derivatives in moderate to good yield have been prepared in a one-pot reaction by condensation of 2-aminophenol and different aromatic acids in the present of ammonium chloride as a catalyst and ethanol as solvent 80^o-90^oC. The reaction is green and economically viable. The characterization of newly synthesized compounds was made by chemical properties and FT-IR, ¹H-NMR and Mass Spectra. The advantage of this method is extremely mild reaction conditions, short reaction time, high yield, simple experimental technique and compliance with green chemistry protocols. A comparative antifungal study has also been carried out on the fungus *Fusariumdum*.

Key words- 2 amonophenol, Aldehyde, benzimidazole, catalyst, Green chemistry and antimicrobial activity.

1.INTRODUCTION-

Five- membered aromatic heterocyclic rings containing a C=N bond, such as benzoxazole, benzimidazole, and benzothiazole are important structural units in natural products, and in synthetic pharmaceutical and agrochemical compounds^{1,2}. These compounds received a considerable amount of attention for their biological and therapeutic activities^{3,4}. Recently, a survey showed that only 5% of all reactions achieved in the process research groups of three major pharmaceutical companies involve construction of a heteroaromatic rings.⁵ Therefore, the development of new methods for the synthesis of nitrogen-containing heterocycles is still a focus of intense and containing interest in the organic chemistry, as well as in pharmaceutical and agrochemical chemistry. Molecules with benzoxazole, benzimidazole and benzothiazole moieties are attractive targets for synthesis since they often exhibit diverse and important biological properties. These heterocycles have shown different pharmacological activities such as antibiotic ⁶, antifungal ⁷, antiviral ⁸, anticancer ⁹, antimicrobial ¹⁰, and antiparkinson¹¹ properties. Number of methods for the synthesis of 2- substituted benzoxazoles. Majority of them were obtained by the classical methods by using the different catalyst. Mohammadpoor-Baltork et al., ¹⁴ described an efficient method for the preparation of benzoxazoles, from reactions of orthoesters with *o*-substituted aminoaromatics and in the presence of silica sulfuric acid under heterogeneous and solvent-free conditions. In this connection we are reporting the synthesis of some 2-substituted benzoxazole by using 2-aminophenol and different aromatic aldehydes by using the new green route.

2.EXPERIMENTAL

The melting points of all synthesized compound were recorded using hot paraffin bath and are uncorrected. ¹H NMR spectra (CDCl₃) were recorded on Bruker Advance II 400 NMR spectrophotometer using TMS as internal standard. IR spectra were recorded on Perkin-Elmer-1800 FTIR spectrophotometer in the frequency range 4000-450 cm⁻¹ in Nujol mull and as KBr pellets. Mass spectra were recorded on a LC-MS Q-ToF Micro, Mass analyzer (Shimadzu). Chemicals used were of AR grade. The purity of the compound was checked on silica gel-G plates by TLC.

2.1. Preparation of 2-Phenyl -2,3- dihydrobenzo [d] oxazole – (1a)

Preparation of 2-Phenyl -2,3- dihydrobenzo [d] oxazole was carried out by the reaction of 2-amino phenol (1.09gm) and benzaldehyde in 5 ml of ethanol. NH₄Cl (0.5gm) was added to the mixture as a catalyst. The resulting mixture was stirred for 6-8 hrs at 80^oc. The completion of the reaction was confirmed by reaction mixture poured in to ice cold water and product was precipitate out. It was crystallized from ethanol to yield 2- phenyl -2,3- dihydrobenza [d] oxazol, (1a) m.p. 180^oc. The molecular formula was established as C₁₃H₁₁NO (Colour-Brown)

2.2. Preparation of 2-(4-methoxy phenyl)-2,3 dihydrobenzo [d] oxazol (1a)

Preparation of 2-Phenyl -2,3- dihydrobenzo [d] oxazole was carried out by the reaction of 2-amino phenol (1.09gm) and anisaldehyde in 5 ml of ethanol. NH₄Cl (0.5gm) was added to the mixture as a catalyst. The resulting mixture was stirred for 6-8 hrs at 80^oc. The completion of the reaction was confirmed by reaction mixture poured in to ice cold water and product was precipitate out. It was crystallized from ethanol to yield 2- phenyl -2,3- dihydrobenza [d] oxazol, (1a) m.p. 75^oc. The molecular formula was established as C₁₄H₁₃NO₂ (Colour-Brown). All other compounds (3c-e) were synthesized in similar manner by treatment of (1) with substituted aromatic aldehyde (2c- e) respectively Table No. 1

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

“GREEN SYNTHESIS OF BENZOXAZOLE DERIVATIVES AND THEIR CHARACTERIZATION”

P.R. Padole¹, H. G. Wankhade¹, B. N. Berad¹, P.P.Choudhari² and S. S. Ubarhande²

1. Shri Shivaji Science College, Amravati (MS)

2 G.S. Tompe Arts, Commerce And Science College, Chandure Bazar (MS)

ABSTRACT

Synthesis of Benzoxazole derivatives by simple condensation of 2-aminophenol and different aromatic and aliphatic acid in ethanol as solvent in presence of NH_4Cl as catalyst at 80-90°C. It give very good yield and the process was totally follow green path and economically viable. Benzoxazole derivatives have many medicinal and other biological properties. The characterization of newly synthesized compounds was made by chemical properties, elemental analysis and FT-IR, $^1\text{H-NMR}$ and Mass Spectra. The advantage of this method is extremely mild reaction conditions, short reaction time, high yield, simple experimental technique and compliance with green chemistry protocols.

KEYWORDS- Green synthesis, benzoxazole and their characterization.

1. INTRODUCTION

Molecules with benzoxazole, benzimidazole and benzothiazole moieties are attractive targets for synthesis since they often exhibit diverse and important biological properties. These heterocycles have shown different pharmacological activities such as antibiotic¹, antifungal², antiviral³, anticancer⁴, antimicrobial⁵, and antiparkinson⁶ properties. They have also been used as ligands for asymmetric transformations⁷. Benzimidazole derivatives are unique and broad spectrum classes of antirhino/enteroviral agents such as antiulcerative⁸ and anti allergic⁹ are effective against the human cytomegalovirus¹⁰ and are also efficient selective neuropeptide Y Y1 receptor antagonist¹¹. Benzoxazoles are an important class of heterocyclic compounds that have many applications in medicinal chemistry. For example, benzoxazole derivatives have been characterized as melatonin receptor agonists¹², amyloidogenesis inhibitors, Rho kinase inhibitors¹³ and antitumor agents¹⁴. In addition to their use in medicinal chemistry, benzoxazoles are recognized as an important scaffold in fluorescent probes such as anion and metal cation sensors¹⁵. Benzoxazoles are an important class of heterocycles that are encountered in a number of natural products and are used in drug and agrochemical discovery programs, as well as for a variety of other purposes. For example, the benzoxazole core structure is found in a variety of cytotoxic natural products, such as the UK-1,¹⁶ AJI9561,¹⁷ and salviaen.¹⁸ Recent medicinal chemistry applications of benzoxazoles include the cathepsin S inhibitor,¹⁹ selective peroxisome proliferator-activated receptor γ antagonist JTP-426467,²⁰ other applications of benzoxazoles include their use as herbicides, such as Fenoxaprop, and as fluorescent whitening agent dyes such as bisbenzoxazolyethylenes and arenes.²¹ Several synthetic methodologies were available for the synthesis of benzoxazoles. Generally the condensation of 2-aminophenol with different aromatic aldehyde, aromatic acids and their nitrile, imide and orthoesters derivatives have been widely used for benzoxazoles.

2. EXPERIMENTAL

2.1 The melting points of all synthesized compound were recorded using hot paraffin bath and are uncorrected. $^1\text{H NMR}$ spectra (CDCl_3) were recorded on Bruker Advance II 400 NMR spectrophotometer using TMS as internal standard. IR spectra were recorded on Perkin-Elmer-1800 FTIR spectrophotometer in the frequency range 4000-450 cm^{-1} in Nujol mull and as KBr pellets. Mass spectra were recorded on a LC-MS Q-ToF Micro, Mass analyzer (Shimadzu). Chemicals used were of AR grade. The purity of the compound was checked on silica gel-G plates by TLC.

2.2 General procedure for the preparation of 2-(4-chlorophenyl) benzoxazole.

Preparation of 2-(4-chlorophenyl)benzoxazole was carried out by 2-aminophenol (1.09 gm) and p-chlorobenzoic acid (1.56 gm) in presence of ammonium chloride (0.5 gm) as catalyst in 4-5 ml of ethanol. The resulting mixture was stirred for 6-8 hr at 80°C. After completion of reaction, the reaction mixture was poured into ice cold water and product was precipitated out as brownish solid. It was crystallized from ethanol to yield 2-(4-chlorophenyl) benzo[d] oxazole, yield 88% m.p 270°C. The molecular formula was established as $\text{C}_{12}\text{H}_9\text{ClNO}$. IR(KBr), $\nu = 1515$ (C=N), $\nu = 1587$ (C=C), $\nu = 1276$ (C-O), $\nu = 807$ 1,4-disub Aromatic ring & $\nu = 743$ 1,2-disub Aromatic ring cm^{-1} . $^1\text{H NMR}$ (CDCl_3) 7.9 ppm (2H, m, Ar-H), δ 7.6 ppm (2H, m, Ar-H), δ 6.4 ppm (2H, m, Ar-H), δ 6.6 ppm (2H, m, Ar-H). Mass (m/z) 229 (M^+).

2.3 General procedure for preparation of 2-benzo oxazole 2-yl phenol.

2-aminophenol (0.01 mole) and salicylic acid (0.01 mole) both in stoichiometric proportion were taken in ethanol as solvent in presence of NH_4Cl as catalyst. The reaction mixture was stirred for 6 to 8 hr at 80°C on hot plate. After the completion of reaction, the reaction mixture was cooled and poured in the ice cold water. The granular solid was obtained. It was crystalized from the alcohol, yield 85% m.p 180°C. IR(KBr) $\nu = 1509$ (C=N), $\nu = 1594$ (C=C), $\nu = 1244$ (C-O), $^1\text{H NMR}$ (CDCl_3) 7.9 ppm (1H, m, Ar-H), δ 7.6 ppm (1H, m, Ar-H), δ 6.6 ppm (4H, m, Ar-H), δ 6.3 ppm and 6.4 ppm (1H, m, Ar-H). Mass (m/z) 211.6 (M^+).

All other compounds (3c-e) were synthesized in similar manner by treatment of (1) with substituted aromatic acids (2c-e) respectively Table No.1

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

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P.R. Padole¹, H. G. Wankhade¹, B. N. Berad¹ and S. S. Ubarhande²

1. Shri Shivaji Science College, Amravati (MS)

2. G.S. Tompe Arts, Commerce And Science College, Chandure Bazar (MS)

ABSTRACT–

Benzothiazole ring made from thiazole ring fused with benzene ring. Thiazole ring is a five-member ring consists of one nitrogen and one sulphur atom in the ring. A number of 2-aminobenzothiazoles have been studied as central muscles relaxants and found to interfere with glutamate neurotransmission in biochemical, electrophysiological and behavioral experiments. Various 2-Substituted benzothiazole derivatives in moderate to good yield have been prepared in a one-pot reaction by condensation of 2-aminobenzene thiol and different aromatic aldehyde in the presence of ammonium chloride as a catalyst and ethanol as solvent 80^o-90^oC. The reaction is green and economically viable. The characterization of newly synthesized compounds was made by chemical properties, elemental analysis and FT-IR, ¹H-NMR and Mass Spectra. The advantage of this method is extremely mild reaction conditions, short reaction time, high yield, simple experimental technique and compliance with green chemistry protocols.

KEY WORDS- One pot, synthesis and characterization.

1. INTRODUCTION

The development of simple, efficient, environmentally-benign and economically viable chemical process or methodologies for widely used organic compounds is in great demand¹. Benzothiazole is a heterocyclic compound, weak base having varied biological activities and still of great scientific interest now a days. They are widely found in bioorganic and medicinal chemistry with application in drug discovery. Benzothiazole moieties are part of compounds showing numerous biological activities such as antimicrobial²⁻⁶, anticancer^{7-9,10}, anthelmintic¹¹, anti-diabetic¹² activities. Antimicrobial agents, since their discovery have substantially reduced the threats posed by infectious diseases. The use of these ‘wonder drugs’ has led to a dramatic drop in deaths from diseases that were previously widespread, untreatable and frequently fatal. Over the years, antimicrobials have saved the lives and eased the suffering of millions of people. But today’s main concern is the emergence and spread of microbes those are resistant to economical and effective first-line drugs. The bacterial infections which contribute most to human diseases are also those in which emerging and microbial resistance is most evident. Some important examples include diarrhoeal diseases, respiratory tract infections, meningitis, penicillin-resistant *Streptococcus Pneumoniae*, vancomycin-resistant enterococci, and multi-resistant *Mycobacterium Tuberculosis*. When infections become resistant to first line antimicrobials, treatment has to be switched to second or third line drugs which are nearly always much more expensive and more toxic as well e.g. the drug needed to treat multi drug-resistant form of tuberculosis are over 100 times more expensive than the first line drugs used to treat non-resistant forms¹³. Cancer is currently second leading cause of death after cardiovascular disease. Consequently, there is great unmet medical need for new anticancer small molecule therapeutics. A tumour is an abnormal mass of tissue, the growth of which exceeds and uncoordinated with that of normal tissue and continues in the same manner after cessation of the stimuli which have initiated it¹⁴. Wealth of basic knowledge with regard to molecular and cellular biology, better understanding of mechanism of cellular division, tumour immunology and detailed information of fundamental factors involved in both viral and chemical carcinogenesis and the improved investigative techniques have ultimately led to the introduction of a substantial number of newer antineoplastic agents¹⁵. Benzothiazole is a privileged bicyclic ring system. It contains a benzene ring fused to a thiazole ring. The small and simple benzothiazole nucleus is present in compounds involved in research aimed at evaluating new products that possess interesting biological activities like- antimicrobial, antitubercular, antitumour, antimalarial, anticonvulsant, anthelmintic, analgesic and anti-inflammatory activity¹⁶. 2-aminobenzothiazole derivatives were prepared from the substituted aromatic amines, in the presence of ammonium thiocyanate forms substituted 1-phenylthiourea in acidic medium. This substituted 1-phenylthiourea in the presence of oxidizing agent like bromine is cyclised into substituted 2-aminobenzothiazoles. The titled compounds were evaluated for anti-inflammatory property by λ-Carrageenan-induced paw edema method in rats¹⁷. Several synthetic methodologies were available for the synthesis of benzothiazole. Generally the condensation of 2-aminobenzene thiol with aldehyde and their nitrile, imide and orthoesters derivatives have been widely used for benzothiazole.

2. EXPERIMENTAL DETAILS

2.1 The melting points of all synthesized compound were recorded using hot paraffin bath and are uncorrected. ¹H NMR spectra (CDCl₃) were recorded on Bruker Advance II 400 NMR spectrophotometer using TMS as internal standard. IR spectra were recorded on Perkin-Elmer-1800 FTIR spectrophotometer in the frequency range 4000-450 cm⁻¹ in Nujol mull and as KBr pellets. Mass spectra were recorded on a LC-MS Q-ToF Micro, Mass analyzer (Shimadzu). Chemicals used were of AR grade. The purity of the compound was checked on silica gel-G plates by TLC.

2.2 General procedure for the synthesis of 2-(4-methoxyphenyl)-2,3-dihydrobenzo thiazole(3c)

2-aminobenzene thiol (1) (0.01 mole) and anisaldehyde (2c) (0.01 mole) both in stoichiometric proportion was taken in ethanol as solvent in presence of NH₄Cl as a catalyst. The reaction mixture was stirred for 4hrs at 90^oC on hot plate. After completion reaction, the reaction mixture was cooled and poured in the ice cold water. The granular solid was obtained. It was crystallized from the alcohol, yield 88.00%, m.p.120^oC.

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

INFLUENCE OF Ti DOPING ON THE ELECTRICAL PROPERTIES OF Sr₂FeNiO₆ NANOCOMPOSITES

P. R. Padole, A. A. Jadhao, G. N. Chaudhari, H. G. Wankhade*

Nanotechnology Research Laboratory, Department of Chemistry, Shri Shivaji Science College, Amravati (M.S), India.

Abstract

We have investigated the effect of Ti doping on structural and electrical properties of double perovskite Sr₂Fe_{1-x}Ti_xMn_{0.2}NiO₆ (x= 0, 0.2, 0.4, and 0.6) nanocomposites via Sol gel citrate method. The structure of the Ti doped double perovskite is tetragonal structure. Moreover, the compositional feature of Sr₂Fe_{1-x}Ti_xMn_{0.2}NiO₆ nanocomposites was investigated through energy dispersive X-ray spectroscopy (EDS) analysis. Impedance analysis shows the presence of mostly bulk resistive (grain) contributions which is found to decrease with the increase in Ti concentration. The electrical conductivities are enhanced with increasing Ti content due to the greater amount of electronic holes originating from the increased interstitial oxygen.

Key Word: Sol gel citrate; Double-Perovskite; Nanocomposites; Electrical conductivity.

1. Introduction

Nowadays, many researchers are interested in double perovskite oxides that consist of transition metals [1]. These materials cover a large part of material science research because of the various alluring chemical and physical properties such as thermal, electrical, optical, magnetic and biological [2-8] and their diverse applications in the fields such as electronics, sensors, magnetic memory components, fuel cells, and solar cells [9-12].

The B-site ordered double-perovskite compounds with chemical formula of A₂B'B''O_{6-δ} are derived from the simple perovskite ABO₃ through arranging two different cations B' and B'' on the B-site. In this formula A stands for alkaline earth metal ions (like Ba, Ca, Sr) and especially rare earth elements and B', B'' are transition metal ions [14]. Ideally, the framework of double-perovskite structure form is constructed by corner-shared B'O₆ and B''O₆ octahedra in the lattices [15].

The double-perovskite oxide compounds are synthesized at high temperatures and have a very high flexibility in crystal structure and chemical composition. Where it is possible to add or replace the A-sites and B-sites cations with the continuation of the octahedra network connection. Many of the physical properties of double perovskites depend crucially on the details of these distortions, particularly the electronic, magnetic and dielectric properties which are so important for many of the applications of double perovskites. Recently, perovskites have gained attention as ionic and mixed conductors for solid-oxide fuel cell (SOFC) applications as electrodes and electrolytes.

In the present research article, as-synthesized Sr₂Fe_{1-x}Ti_xMn_{0.2}NiO₆ double perovskite nanocomposites by sol-gel citrate method have been reported. The surface morphological study of prepared sample was studied using field emission scanning electron microscopy (FE-SEM) and elemental compositional study was done using Energy Dispersive X-ray Spectroscopy (EDS). The purpose of present study is to investigate the effect of Ti dopant on the structural and electrical properties of Sr₂Fe_{1-x}Ti_xMn_{0.2}NiO₆. An extensive dielectric and impedance analysis of Sr₂Fe_{1-x}Ti_xMn_{0.2}NiO₆ (x= 0.2, 0.4, 0.6 and 0.8) nanocomposites has been performed in the temperature range of Room temp to 700°C within the frequency domain of 42 Hz to 500 KHz.

109. N. R. Thakare, P. A. Nagpure, U. S. Joshi, S. V. Rathod, Synthesis and Ultrasonic Interferometric Study of Coumarinyl Derivatives

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Synthesis and Ultrasonic Interferometric Study of Coumarinyl Derivatives

N. R. Thakare¹, P. A. Nagpure², U. S. Joshi³, S. V. Rathod⁴^{1,3,4}Department of Chemistry, ²Department of Physics,
Shri Shivaji Science College, Amravati.(MS) INDIA.

Abstract:

The Synthesis of Coumarinyl derivatives (Pyrazole) is done in greener way. Further their Ultrasonic Interferometric study has been done with the standard value of density (ρ) and viscosity (η). The value of Ultrasonic velocity (U) was determined experimentally. The molecular interaction of various synthesized Pyrazoles has been studied. By using standard relations from measured values of density (ρ), ultrasonic velocity (U) and viscosity (η), the desired acoustical and thermodynamic parameters such as adiabatic compressibility (β_{ad}), intermolecular free length (L_d), acoustic impedance (Z), relaxation time (τ), has been calculated and their wide applications in the branch of medicine and pharmacy has been studied.

Index Term- Pyrazoles, Density, Viscosity, Ultrasonic Velocity, Molecular Interactions.

INTRODUCTION

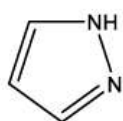
Coumarins are the best known aromatic lactones¹. The isolation of coumarin was first reported by Vogel² in Munich in 1820. He associated the pleasant odour of the tonka bean from Guiana with that of clover, *Melilotous officinalis*, which gives rise to the characteristic aroma of new-mown hay. Vogel then concluded that the long colorless crystals which he discovered on slicing open tonka beans and which crystallized as glistening needles from aqueous alcohol were identical with similar crystals he obtained, albeit in much lower yield, by extracting fresh clover blossoms³. The name coumarin originated⁴ from a Caribbean word 'coumarou' for the tonka tree, which was known botanically at one time as *Coumarouna odorata Aubl*. Coumarin is now well accepted trivial name. The IUPAC nomenclature of the coumarin ring system is 2H-1-benzopyran-2-one. The coumarin ring system has an easy acceptability in the biological system compared to its isomeric chromones and flavones nucleus⁵ and is widely distributed in nature⁶⁻⁸. An excellent account of these naturally occurring coumarins is presented by R D H Murray and S A Brown⁹.



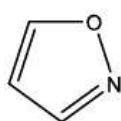
Coumarin

Coumarins can be synthesized by various methods such as, Pechmann, Perkin, Knoevenagel and Reformatsky reactions. Pechmann condensation is one of the most common procedures for the preparation of coumarin and its derivatives. This method involves the reactions between a phenol and a α -keto ester in the presence of an acid catalyst. Simple starting materials are required here to produce various substituted coumarins in good yields¹⁰.

Pyrazole (A) is the given name to organic compounds by Knorr,¹¹ which is consist of a five membered ring containing adjacent nitrogen atoms. It can also be assumed as an isoxazole nucleus (B) in which -O- is replaced by -NH- group¹².



(A) Pyrazole



(B) Isoxazole

110. N. R. Thakare, MEASUREMENT OF ACOUSTICAL AND THERMODYNAMIC PARAMETERS OF COUMARINYL DERIVATIVES

© 2020 JETIR March 2020, Volume 7, Issue 3

www.jetir.org (ISSN-2349-5162)

MEASUREMENT OF ACOUSTICAL AND THERMODYNAMIC PARAMETERS OF COUMARINYL DERIVATIVES

N. R. Thakare
Associate Professor,
Department of Chemistry,
Shri Shivaji Science College, Amravati, (MS) India.

ABSTRACT:

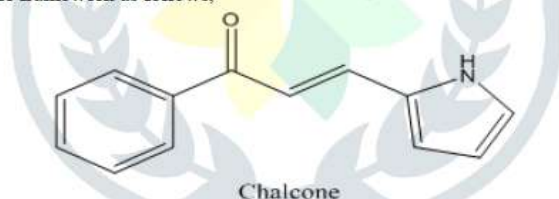
In the present research work green synthesis of Coumarinyl derivatives (chalcones) is reported. The ultrasonic velocity (U) was determined using ultrasonic interferometer. The molecular interaction of various synthesized Chalcones has been studied. By using standard relations from measured values of density (ρ), ultrasonic velocity (U) and viscosity (η), the desired acoustical and thermodynamic parameters such as adiabatic compressibility (β_{ad}), intermolecular free length (L_f), acoustic impedance (Z), relaxation time (τ), has been calculated and their wide applications in the branch of medicine and pharmacy has been studied.

Keywords- Chalcones, Density, Viscosity, Ultrasonic Velocity, Molecular Interactions.

INTRODUCTION

Coumarin and its derivatives are considered as the most active classes of heterocycles, which possess a broad spectrum of biological activity[1]. It have been proven to be active as antibacterial[2], antifungal[3], anti-inflammatory[4], antidepressant[5], anti-HIV[6] and antitumoragents[8]. Moreover, coumarin and its related derivatives have been used as inhibitors of lipoxygenase (LOX) and cyclooxygenase (COX) pathways of arachidonic acid metabolism[9]. Some reports are also found in literature regarding their applications in molecular engineering.

The name "Chalcones" was given first by Kostanecki and Tambor in 1899 and the word Chalcone is derived from a Greek word chalcos meaning .Chalcones are also known as Chalkone / Benzylideneacetophenone / Phenyl styryl ketone / benzalacetophenone or benzylideneacetophenone, β phenylacrylophenone, γ -oxo- α , γ -diphenyl- α -propylene and α -phenyl- β -benzoyl ethylene contains two aromatic rings of 1, 3-diphenyl-2-propen-1-one is linked by a three carbon α , β - unsaturated carbonyl system .Pyrrole Chalcone shows the basic framework as follows,



Measurement of ultrasonic velocity and its related properties in the liquid mixture plays an important role to study physicochemical behavior of the solutions [6–10]. From the literature survey it was cleared that study of various chalcones synthesized (2a-d) are not yet studied. It was therefore, thought of interest to study ultrasonic interferometric study of synthesized chalcones (a-d).

The values of ultrasonic velocities (U) were measured using ultrasonic interferometer. Using standard relations from measured values of density (ρ), ultrasonic velocity (U) and viscosity (η), the desired acoustical and thermodynamic parameters such as adiabatic compressibility (β_{ad}), intermolecular free length (L_f), acoustic impedance (Z), relaxation time (τ).

The value of ultrasonic velocity (U) for the following Coumarin derivatives were determined experimentally

1. 7-hydroxy-4-methyl-3-(3-phenylacryloyl) naphthalen-2(1H)-one
2. 7-hydroxy-3-(3-(4-hydroxyphenyl)acryloyl)-4-methyl naphthalen-2(1H)-one
3. 3-(3-(4-chlorophenyl)acryloyl)-7-hydroxy-4-methylnaphthalen-2(1H)-one
4. 7-hydroxy-3-(3-(2-hydroxyphenyl)acryloyl)-4-methylnaphthalen-2(1H)-one with their standard value of density (ρ) and viscosity (η), from these values we can calculate another physical parameters.

EXPERIMENTAL SECTION

Synthesis of 7-hydroxy-4-methyl-2H-chromene-2-one (1):

7-hydroxy-4-methyl-2H-chromene-2-one (1), m. p. 161°C, was used as starting material which was obtained by reaction of resorcinol and ethyl acetoacetate in acidic medium [12-13].

111. P.R.Mandlik, S.D. Deshmukh, SYNTHESIS, SPECTRAL AND THERMAL STUDIES OF METAL COMPLEXES OF 2,4-DIHYDROXYACETOPHENONE SALICYLOYL HYDRAZONE (DHASH)

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SYNTHESIS, SPECTRAL AND THERMAL STUDIES OF METAL COMPLEXES OF 2,4-DIHYDROXYACETOPHENONE SALICYLOYL HYDRAZONE (DHASH)

¹S.D.Deshmukh, ²P.R.Mandlik¹Lecturer, ²Associate Professor¹ Department of Chemistry, Government polytechnic, Amravati, India .¹ Department of Chemistry, Shri Shivaji Science College, Amravati- 444603, India.

Abstract : Co(II), Cu(II), Fe(III) and Zr(IV) complexes of 2,4-dihydroxyacetophenone salicyloyl hydrazone (DHASH) have been synthesized and characterized by elemental analysis, molar conductance, magnetic moments, electronic, ¹H NMR, Mass, IR spectra, ESR, and thermal studies. The molar conductivity data of the complexes show them to be non-electrolyte. The IR data suggest that the ligand acts as dibasic tridentate (ONO) (enol form) donor towards Co(II), Cu(II), Zr(IV) and tribasic tetradentate (ONOO) (enol form) donor towards Fe(III) complexes while the electronic spectral data together with magnetic moment suggest square planer geometry for Co(II), Cu(II) and octahedral geometry for Fe(III), Zr(IV) complexes. The TG analysis suggests high stability for most of the complexes followed by thermal decomposition in different steps. The kinetic parameters for their decomposition have been evaluated by using the Freeman Carroll and Sharp-Wentworth methods. ESR spectra of copper complexes were recorded and discussed.

Keywords: - Salicyloyl hydrazone, complexes, thermal analysis.

1. INTRODUCTION

In the recent years, there has been enhanced interest in the synthesis and characterization of hydrazine Schiff base metal complexes containing Schiff base as ligand due to their physiological, pharmacological and biological activity [1-3]. Schiff base hydrazones possessing azomethine proton (-NHN=CH-) play an important role for new drug development. High stability of the coordination compounds and their good solubility in common solvent. Schiff bases have been widely used as ligands [4]. It is well known that O and N atoms play a key role at the active sites of metal complexes in which they are bonded to metal ions [5].

We report here the synthesis and characterization of Co(II), Cu(II), Fe(III) and Zr(IV) complexes of Schiff base ligand derived from the condensation of 2,4-dihydroxyacetophenone and salicyloyl hydrazide. The newly synthesized compounds are characterized by elemental, molar conductance, magnetic moments, spectral (IR, ¹HNMR, UV, Mass, ESR) and thermal analysis.

2. EXPERIMENTAL

2.1. Reagents and materials

All the chemicals used were analytical reagent grade and solvents were dried and distilled before use according to standard procedure. Metal salts were purchased from Merck, Sigma-Aldrich. S.D. Fine were used as received. The precursor salicyloyl hydrazide (C₆H₄(OH)CONHNH₂) was prepared by the reported procedure [6] by refluxing methyl salicylate with hydrazine hydrate in 1:1 molar ratio containing 10 mL ethanol for 2 hours. The pure product was characterized by its melting point. M.P. 150°C.

2.2. Physical measurements

C, H, N content of the ligand were determined by Perkin Elmer CHN 2400 elemental analyzer. The infrared spectra of the ligand and its complexes were recorded in the range 4000 cm⁻¹ to 400 cm⁻¹ with a Bruker IF566V KBr and polyethylene medium for manganese complex. ¹H-NMR spectra of the ligand were recorded in DMSO-d₆ solution on a Bruker 400 FT-NMR spectrophotometer. Thermal analysis of complexes was carried out by heating in air at a rate of 10°C per minute on a Perkin Elmer thermobalance. The magnetic susceptibility values were recorded at room temperature by Gouy method using Hg[Co(NCS)₄] as a calibrant type magnetic balance. The molar conductance of the complexes was determined in dimethylsulphoxide using solution of about 10⁻³ mol concentration. The electronic spectra of the ligand and complexes were recorded on a shimadzu UV/Vis spectrophotometer in the region 200-1100 nm. ESR spectra of copper complex at room temperature and liquid nitrogen temperature were carried by using JES-FA 200 ESR spectrometer.

2.3. Synthesis of salicyloyl hydrazone ligand (LH₃)

A hot ethanolic solution of salicyloyl hydrazide (1.52 g, 0.01 mol) was added to an ethanolic solution of 2,4-dihydroxyacetophenone (1.52 g, 0.01 mol). The reaction mixture was refluxed in a water-bath for 4-6 hours. The yellow coloured product was filtered off and recrystallized from hot ethanolic solution. Yield 76%, M. P. 220°C. It was characterized by elemental analysis, IR, UV, ¹HNMR and mass spectra.

¹H-NMR- δ13.33(2H, S, Phenolic C₂-OH), δ11.44(1H, S, imino NH), δ6.98- δ7.99(7H, M, Aromatic proton), δ2.53(3H, S, Methyl, N=CCH₃), δ9.82(1H, S, Phenolic C₄-OH [7]. The schematic representation of synthesis of LH₃ is shown in reaction scheme 1.

112. Kishor N. Puri, SYNTHETIC STUDY OF 4-PHENYL-5-ARYLIMINO-3-S-TETRA-O-ACETYL- α -D-GLUCOSYL-1,2,4-DITHIAZOLIDINES AND ITS APPLICATIONS AS ANTIBACTERIAL AGENTS

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SYNTHETIC STUDY OF 4-PHENYL-5-ARYLIMINO-3-S-TETRA-O-ACETYL- α -D-GLUCOSYL-1,2,4-DITHIAZOLIDINES AND ITS APPLICATIONS AS ANTIBACTERIAL AGENTS

Kishor N. Puri

Department of Chemistry,
Shri Shivaji Science College, Amravati, (MS)-444603.**Abstract:**

Several 4-phenyl-5-arylimino-3-S-tetra-O-acetyl- α -D-glucosyl-1,2,4-dithiazolidines III (a-d) were synthesized by the interaction of S-tetra-O-acetyl- α -D-Glucosyl-1-phenyl-isodithiocarbamate I with N-aryl-S-chloro isothiocarbamoyl chlorides II(a-d). The identities of these new compounds have been established on the basis of chemical transformations and spectral studies. In the present investigation the *In-vitro* bacterial assay of compounds has been evaluated by using several bacteria such as *Staphylococcus aureus*, *S. Typhi* and *Pseudomonas aeruginosa*. All compounds studied shows satisfactory antibacterial activity.

Key words: synthesis, 1,2,4-dithiazolidines, isothiocarbamoyl chlorides, isodithiocarbamate, antibacterial activity.

Introduction:-

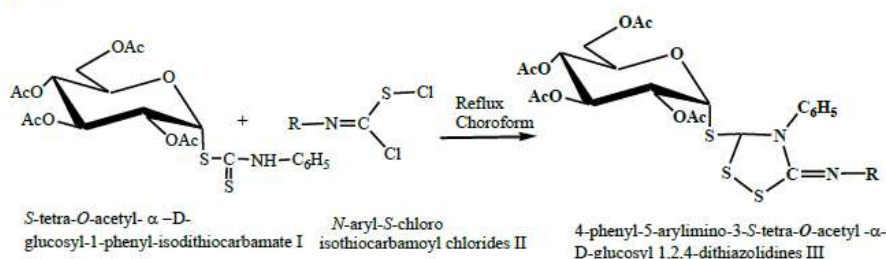
Carbohydrate derivatives have been extensively investigated, including synthesis, characterization and biological activity, partly due to facts that many naturally occurring saccharides and synthesized analogues exhibit various and potent biological activities like anti-inflammatory, analgesic, fungicidal, herbicidal and pesticide agents¹⁻³ and have been widely employed as agrochemicals and pharmaceuticals⁵⁻⁸.

Per-O-acetyl and per-O-benzoyl derivatives of sugars are important intermediates in carbohydrates synthesis. The resulting sugar per-acetate and per-benzoates have been utilized as glycosyl donors in monosaccharide transformation and oligosaccharide synthesis.

As a result of these factors and application in various fields, synthesis of per-acetylation of sugars and derivatives of such protected sugars become valuable in common transformations and in carbohydrate synthesis.

Heterocyclic compounds and medicines are interconnected in the recent era. 1, 3, 5-thiadiazines and their derivatives have been shown to possess brightening and fibre finishing properties in textile industries^{3,4}. Thiadiazines have exhibited remarkable pharmacological activities such as spasmolytic, anaesthetic, cardiovascular and hypo metabolic agents. They are also used as fungicidal³, insecticidal⁴ and as medicinal compounds.

Chemistry of S-Chloro-N-phenyl isothiocarbamoyl chloride with special utility in the synthesis of nitrogen and sulfur containing heterocyclic compounds has been exhaustively investigated by number of chemists⁹⁻¹¹. However, there is an increasing resistance to these drugs. Moreover, some of azole derivatives used as common antibiotics possess a toxic effect on humans as well as their antimicrobial effects.

Reaction Scheme:Where, OAc = OCOCH₃R= a) phenyl, b) *p*-tolyl, c) *p*-methoxy d) *p*-chloro**Experimental:-**

All the melting points recorded were found to be uncorrected. The structures of newly synthesized compound were confirmed on the basis of elemental and IR spectral analysis¹²⁻¹³. IR spectra were recorded in KBr on a FTIR Perkin-Elmer (4000-450cm⁻¹) spectrophotometer and in KBr disks on SHIMADZU IR affinity-1 FTIR spectrometer. Specific rotations were measured

113. YOGITA THAKARE, SOLVENT EXTRACTION AND SEPARATION OF ALUMINIUM(III) FROM REAL SAMPLES USING SUPRAMOLECULE

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SOLVENT EXTRACTION AND SEPARATION OF ALUMINIUM(III) FROM REAL SAMPLES USING SUPRAMOLECULE

YOGITA THAKARE*

**Department of Chemistry, Shri Shivaji Science College, Amravati, 444 603, India.*

Abstract. The present work investigates the rapid and precise extractive method for the determination of aluminium(III) with hexaacetato calix(6)arene. Toluene, xylene and cyclohexane were found to be the best diluents for quantitative extraction of aluminium(III). In this study, aluminium(III) was extracted at pH 5.0 by equilibrating ten min with 10 mL of 1×10^{-4} M acetyl derivative of calix(6)arene in toluene. Aluminium(III) was stripped quantitatively with 1 N hydrochloric acid and determined photometrically by complexation with eriochrome cynine-R at 535 nm. The method affords the binary separation of aluminium(III) from associate elements. The stoichiometry of the extracted species was determined on the basis of slope analysis method. The temperature dependence of the extraction equilibrium was examined by the temperature variation method and the thermodynamic functions ΔH , ΔG and ΔS were also evaluated for the extraction process. The metal loading capacity was also evaluated. The proposed method was applicable to the analysis of real samples. The results obtained were reproducible and accurate.

Keywords. Acetyl derivative; aluminium(III); calix(6)arene; separation; solvent extraction.

I. Introduction

Aluminium is the third most abundant element after oxygen and silicon in the Earth's crust. The chief ore of aluminium is bauxite [1]. It is light, malleable, ductile and durable hence used in making cars, automobiles, aircraft, photographic equipments, transistors, saucepans, airship frames, kitchen foil, etc. Aluminium is valuable today as it is used in power lines, the building, construction industry and packing foods. Actually it is not as toxic as heavy metals but there is evidence of some toxicity if it is consumed in excessive amount [2]. Higher consumption of it causes a renal failure which results in dialysis, breast cancer, neurotoxicity and Alzheimer's disease[3,4]. Each year 21 million tons of aluminum is made, mostly from bauxite. Hence study of recovery of aluminium is very essential.

There are very few methods reported in the literature for the solvent extraction and separation of aluminium(III) using variety of extractants. Recently organophosphorous extractants have received considerable attention for extraction and separation of aluminium(III). The distribution of Al(III) between aqueous thiocyanate solutions and formic acid solutions with di(2-ethylhexyl)phosphoric acid in organic solvents was investigated under different conditions [5,6]. It was confirmed that the extraction process was governed by the SN^2 mechanism. Solvent extraction of aluminium was carried out in the presence of cobalt, nickel and magnesium from sulphate solutions by cyanex 272, but the numbers of stages were required for both extraction and stripping processes for the recovery of aluminium[7,8]. A rapid method was developed for the solvent extraction separation of iron(III) and aluminium(III) from other elements with cyanex 302 in chloroform as the diluents where, extraction of aluminium(III) was depend on the concentration of reagent [9]. Aluminium(III) was also extracted from mixed sulphate solution using sodium salt of cyanex 272 and D2EHPA[10]. However efficiency was achieved with 0.3 M extractant in two stages. The separation of aluminium(III) and beryllium(II) were carried out quantitatively with different organophosphorous compounds taking advantage of difference in their stripping agents[11-13].

The extraction of aluminium(III) with decanoic acid in 1-octanol was carried out at 25°C and at aqueous ionic strength of 0.1 M NaClO₄. However, the aluminium(III) decanoate was highly polymerized in the solvent [14]. The micro amount of aluminium(III) was extracted using 8-quinolinol complex with nitrobenzene [15]. The aluminium(III) was also extracted in the pH range 5.9-6.2 by using n-octylaniline from succinate media [16]. The solvent extraction of aluminum(III), gallium(III) and indium(III) was studied by using mixture of 1-octanol and 1-octanol/octane with 8-quinolinol[17].

Calixarenes are macrocyclic compounds composed of phenolic units connected by methylene bridges to form a hydrophobic cavity that is capable of forming inclusion complexes with a variety of molecules. A new era was dawned with discovery of array of supramolecular compounds by Gutsche who

114. Yogita Thakare, Rushali Muratakar, Amol Thakare, SYNTHESIS, STRUCTURAL DETERMINATION AND VISCOMETRIC STUDY OF ISOXAZOLINE DERIVATIVES

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SYNTHESIS, STRUCTURAL DETERMINATION AND VISCOMETRIC STUDY OF ISOXAZOLINE DERIVATIVES

^{1,*}Yogita Thakare, ²Rushali Muratakar, ³Amol Thakare
^{1,2}Department of Chemistry, Shri Shivaji Science College, Amravati (M.S).
³Department of Chemistry, Rajarshree Shahu Science College, Chandur Rly (M.S).

Abstract: The Synthesis of isoxazoline derivatives are done by reacting with suitable chalcone and treated with hydroxylamine hydrochloride. The spectral determination was confirmed by using spectroscopic technique i.e. IR, NMR and Mass. Further study has been done by used photophysical property, viscometric measurement, and their thermodynamics parameters Entropy, Enthalpy and Gibbs free energy. The study shows positive value of ΔS , negative value of ΔG and positive value of ΔH which confirms that the reaction is endothermic and spontaneous. The maximum absorption of synthesized derivative 3-(4' methyl phenyl)-5-(furan) isoxazoline was found at 311 nm. The data obtained have been also observed that viscosity of solution increases with increase in the concentration of solution and positive value of B-coefficient may attribute to strong solute-solvent interaction. On the other hand value of A-coefficient is almost negative which indicates weak solute-solute interaction.

Index Terms- Photophysical, viscometric, thermodynamics, isoxazoline derivative.

I. INTRODUCTION

Most commonly known hetero atoms are nitrogen, oxygen and sulphur [1]. In the ring system a part from ring's carbon atoms at least one other atom is present, and then it's designated as a heterocyclic compound [2]. Compounds incorporating heterocyclic ring systems continue to attract considerable interest due to the wide range of biological activities they possess. Amongst them five member heterocyclic compounds occupy a unique place in the realm of natural and synthetic organic chemistry. In recent years, attention has increasingly been given to the synthesis of isoxazoline derivatives as a source of antibacterial agents. The synthesis of novel isoxazoline derivatives remain a main focus in medicinal research [3].

Isoxazoles have illustrious history; their chemistry is associated with Ludwig Claisen, who first recognized the cyclic structure of 3-methyl-5-phenylisoxazole in 1888 and was shown to possess typical properties of an aromatic compound. Dunstan and Dymond were the first to synthesize the isoxazole ring; they isolated a liquid base by heating nitro ethane with aqueous alkalis to obtain 3,4,5-trimethylisoxazole.

Isoxazole derivatives have been widely employed in the commercial world and several applications in the pharmaceutical and agricultural fields can be found [4]. The isoxazole is a five membered heterocyclic ring system containing both oxygen and nitrogen atoms at the adjacent positions (1,2-positions). They are isomers where in the hetero atom occupy (1,3 position). Isoxazole is a five membered heterocyclic compound containing oxygen and nitrogen atoms in the 1,2 positions, its partially saturated analogs are called isoxazolines and completely saturated analog is isoxazolidine [5].

Isoxazoline derivatives have been widely employed in the commercial world and several applications in the pharmaceutical and agricultural fields can be found. Furthermore, isoxazoline derivatives have important application in material science, such as fluorescence sensors, plastics and organ gels. There are modest numbers of reports presenting U-V visible spectral properties of isoxazoline derivatives [6]. In present study we are dealing with U-V visible spectral properties of synthesized isoxazoline derivatives in terms of their photophysical parameter. Isoxazole derivatives are used in the market as COX-2 inhibitor and anti-inflammatory drugs.

Chalcones represent an essential group of natural as well as synthetic products and some of them possess wide range of pharmacological activity such as antimicrobial, antitumor, anticancer, intertubercular, anti-inflammatory, antioxidant, antimalarial, ant leishmanial. The presence of reactive α , β -unsaturated keto group in chalcones is found to be responsible for their biological activity [7]. The viscosity and its derived parameters help study the structural change and intermolecular forces of the electrolyte solution at different

115. Vrushali Ravindra Kinshikar, Adsorption and Kinetic studies on the removal of Co^{2+} and Ni^{2+} from aqueous solution by the use Granular Activated Carbon.

© 2020 JETIR February 2020 . Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Adsorption and Kinetic studies on the removal of Co^{2+} and Ni^{2+} from aqueous solution by the use Granular Activated Carbon.

¹Vrushali Ravindra Kinshikar¹Department of Chemistry,¹Shri Shivaji Science College, Amravati, INDIA.

Abstract

This paper presents the feasibility of removal of basic heavy metal ions Cobalt and Nickel from aqueous solutions by using a low cost Granular Activated Carbon F100, F200, F300, F400 GAC as an adsorbent. Batch adsorption experiments were carried out as a function of contact time, initial concentration of the adsorbate, adsorbent dosage and temperature. Effects of adsorbent concentration, agitation time and initial ion concentration on the adsorption behaviour are investigated and adsorption isotherm and kinetics on Granular Activated carbons are also studied. Heavy metal ions adsorption equilibrium was rapidly attained after 5 hours of the contact time, and it was described by the Langmuir and Freundlich adsorption isotherms over the entire concentration range.

Keywords – F200 and F300 GAC, Isotherms and Kinetics.

I. INTRODUCTION

Introduction-

The presence of heavy metals in the environment can be detrimental to the living species. Despite strict environmental regulations, significant quantities of heavy metals are found in the wastewaters from several industries such as non ferrous metal, electroplating, porcelain enamelling, silver refining, welding, alloy manufacturing and fertilizer industry. The heavy metals are trace metals with density at least five times that of water. They are Table- elements and are bio accumulative in their nature. They include mercury, nickel, lead, arsenic, cadmium, chromium, aluminium, platinum, zinc, silver and gold (1) Heavy metals are usually present in wastewaters which are released into the environment from various industries. [1] The adverse effects caused by these heavy metals are of great environmental concern. Heavy metals are non biodegradable and accumulate in living organisms thereby causing various diseases and disorders. [2] Cobalt, Chromium and nickel are frequently used in industrial processes such as metal plating industries, galvanizing industries, mining operations and tanneries and are usually present in high concentrations in the liquid wastes which are released directly into the environment without any pre-treatment. Once in the environment, chromium exists mainly in two oxidation states (Cr(III) and Cr(VI)). While Cr(III) is relatively innocuous, Cr(VI) is toxic, carcinogenic and mutagenic. It is highly mobile in soil and aquatic system and is a strong oxidant capable of being adsorbed by the skin [3] Nickel toxicity has been known to inhibit spermatogenesis, amylase enzymes, insulin formation and kidney formation. Due to the high toxicity of these metals, there is increasing interest in the development of techniques for their removal from wastewaters before they are disposed into the environment. Some of the techniques which have been used in the removal of metals from effluents include ion-exchange, chemical precipitation, electro dialysis, electrolytic extraction, reverse osmosis and cementation. These methods are expensive and have the inability to remove metals at low concentration [4] Among these methods, carbon adsorption is the most attractive one because of its efficiency, economical feasibility and the ease for the treatment of wastewater containing lead ions. Due to their low cost, after these materials have been expended, they can be disposed of without expensive regeneration [5] Some studies on the use of adsorbent such as sawdust and teak tree bark, waste tea, coconut shell and dry plants on the removal of metals from aqueous solutions have been reported [6] The adsorption capacities of these materials have been shown to be dependent on experimental conditions such as, metal concentration and adsorbent loading. The aim of this research is to investigate the use of modified coconut husk in the removal of metals from aqueous solutions.

Apparatus

All absorbance measurements are taken by Digital Spectrophotometer (Type-166, Systronics India Ltd.) with matched cells of 1 cm optical path length.

Reagents and Chemicals

Various varieties of carbons of Corporation Filtrasorb used namely F-100, F200, F300 & F400 LCK, RRL, Lurgi (German). All the reagents and chemicals used are of A.R. Grade. hydrated cupric chloride (E. Merck India Ltd.) was used for the preparation of standard nickel solution and it was diluted proportionately to prepare the experimental solution. , HCl, dilute ammonia solution, Mureoxide indicator, buffer solution (citric acid + liquid ammonia) of the pH = 8.5, sodium diethyldithio carbamate solution, chloroform, anhydrous sodium sulphate used in the experiment were of Analytical Grade HNO_3 from E. Merck India Ltd. was also used for oxidizing the carbon surface.

116. Vrushali Ravindra Kinshikar, Adsorption study on F-400 Modified Granular Activated Carbon for the different ratio of Cr: Ni & Ni:Cr metal ions.

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www.jetir.org (ISSN-2349-5162)

Adsorption study on F-400 Modified Granular Activated Carbon for the different ratio of Cr: Ni & Ni:Cr metal ions.

¹Vrushali Ravindra Kinshikar¹Department of Chemistry,¹Shri Shivaji Science College, Amravati, INDIA

ABSTRACT

Activated carbon was used to remove Ni (II) from aqueous solution by adsorption. Batch adsorption studies were carried out by varying the contact time, initial Ni (II) ion & Cr₂O₇²⁻ concentration in the aqueous solution, adsorbent dosage, and temperature. Maximum adsorption was observed with contact time of 6 hrs, adsorbent dosage of 0.1 to 1gm and at the temperature of 28^o C. It was indicated from the results that the effective removal of Ni²⁺ and Cr₂O₇²⁻ by modified Granular Activated Carbon.

The adsorption isotherms were obtained in a batch reactor. It is observed that, the process of uptake followed first-order adsorption rate expression and obeyed Langmuir and Freundlich models of adsorption. Effects of variations in parameters such as contact time, adsorbent dose, initial Ni(II) concentration and particle size were also studied.

KEYWORDS: Nickel (II), Cr₂O₇²⁻ removal, Activated carbon, Adsorption isotherm.

I. INTRODUCTION

I. INTRODUCTION

The presence of heavy metals in the environment can be detrimental to the living species. Despite strict environmental regulations, significant quantities of heavy metals are found in the wastewaters from several industries such as non ferrous metal, electroplating, porcelain enameling, silver refining, welding, alloy manufacturing and fertilizer industry.

Heavy metals have been used extensively in electroplating and metal surface treatment processes generate significant quantities of wastewater containing heavy metals (such as cadmium, zinc, lead, chromium, nickel, copper, vanadium, platinum, silver and titanium) from a variety of applications. Therefore, it is necessary to treat metal contaminate wastewater prior to its discharge to the environment [1]. Various treatments technologies have been developed successfully for purification of contaminated water and wastewater from heavy metals [2].

The heavy metals are trace metals with density at least five times that of water. They are Table- elements and are bioaccumulative in their nature. They include mercury, nickel, lead, arsenic, cadmium, chromium, aluminium, platinum, zinc, silver and gold [3]. Nickel is highly toxic and is present in the waste waters of industries such as paper and pulp, fertilizer, silver refining, pigments and coatings, basic steel work foundry, automobile, petroleum refining[4].

The most likely sources of nickel emissions are found to be from metallurgical plants [5], engines burning fuel containing nickel additives, plating plants [6], and incineration of nickel products, metal extraction, fabrication operation and effluent from nickel cadmium battery industries [7]. The target tissues affected by nickel include skin, larynx, nasal passages and lungs. The signs and symptoms of nickel exposure include blue colored lips, cancer of lungs, nasal cavity and larynx, contact dermatitis, fever, headache, dizziness, skin rashes and vomiting (8). The incidence of lung and nasopharyngeal cancer in occupationally exposed population is due to the carcinogenic effect of nickel [9]. Various treatments technologies have been developed successfully for purification of contaminated water and wastewater from heavy metals [10].

The most commonly used methods for the removal of metal ions from industrial effluents include chemical precipitation, solvent extraction, reverse osmosis, membrane filtration, electro deposition, ion exchange and adsorption on to low-cost materials [11-14]. Adsorption is one of the easiest, safest, and less cost effective methods because it is widely used in effluent treatment processes [15, 16]. However, adsorption by activated carbon had been reported as a technically and economically viable technology for heavy metal removal [17]. Typically, the preparation of activated carbon can be divided into two processes [18]. First, the physical method consists of the pyrolysis of the precursor material and gasification of the resulting char in steam or carbon dioxide [19, 20]. Second, from the chemical method which pyrolysis char would be impregnated with acids, strong bases or other chemicals [21]. In this work, investigation on the effect of initial concentration, adsorbent dosage, particle size, pH and temperature on metal adsorption from aqueous solution was carried out using leaves of bitter orange based activated carbon.

Materials and Methods

- 1) **Power requirement** : All power needed for running electric appliances was obtained from an Automatic Servo stabilizer, 5 KVA capacity (M/s Dandekar Electricals Pvt. Ltd., Nagpur).
- 2) **Distilled water** : The present work involved estimation of metal ions in solution and hence good quality of distilled water was necessary for preparing experimental solutions. The distilled water obtained from laboratory distills water still (M/s. Kumar, Industries Mumbai, Capacity 1.5 lit/hour). Distilled water thus obtained was preferably prepared a fresh before use, as and when needed, and stored in a Borosil 5 liter flat bottom flask provided with a glass stopper.

117. N. A. Kalambe, Ultrasonic Interferometric Investigation of 2-Hydroxy substituted quinoxaline in Dioxane Medium

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Ultrasonic Interferometric Investigation of 2-Hydroxy substituted quinoxaline in Dioxane Medium

N. A. Kalambe

Department of Chemistry, Shri Shivaji Science College, Amravati, Maharashtra, India.

Abstract : Ultrasonic velocity and density measurements of ligand 2-hydroxy substituted quinoxaline were carried out at different concentration in dioxane solvent. For investigating solute-solvent, solute-solute interactions at temperature 305.85 K. The data obtained during the study is used for determining most significant acoustic parameters like velocity (v), density (d), adiabatic compressibility (β), apparent molar volume (ϕ_v), apparent molar compressibility (ϕ_k). The parameters explore solute-solute and solute-solvent interactions in different solvents. In this investigation, the comparative study of effect of solvent and effect of substituents in the solute are studied on molecular interaction of the matter.

Keywords: - Substituted quinoxaline, Acoustic parameters, Interferometry, Solute-solvent interaction.

Introduction

Ultrasonic behavior and study of molecular interaction synthesized Schiff base ligand in different percentage of ethanol-water mixture.¹ Determination of density, ultrasonic velocity and other acoustic parameters of aqueous binary mixtures of substituted hydrazone at 298 K.² Acoustic studies on binary liquid mixtures of o-chlorotoulene and ethanol at 303.15K to 318.15K.³ Adiabatic compressibility, apparent molal volume, apparent molal compressibility and salivation number of 2,3-dihydroquinazolin-4(1H)-one derivatives in 70% DMF-water.⁴ Apparent molal volume and viscometric study of ammonium sulphate in 10% DMF-water at temperature 303.15 and 313.15K.⁵ Comparative study of intermolecular interactions of S-Triazine and Triazinethio-Carbamides by ultrasonic interferometric technique.⁶ Viscometric studies of divalent transition metal sulphates in mixtures of water-Diethylene glycol at 298.15-318.15K.⁷ Solute-Solvent interactions in solutions of 2-hydroxy-5-chloro-3-nitroacetophenone Isonicotinoylhydrazone in N,N-dimethyl-formamide at 298-313K.⁸ Experimental and theoretical study of ultrasonic velocity in binary liquid mixture of chloroform and methanol.⁹ Ultrasonic interferometric investigations of substituted flavones in aqueous ethanol medium at 301k.¹⁰ Physico-chemical and excess thermodynamic properties of Acrolein with methanol at 298K temperature and 10MHz frequency.¹¹ Study of molecular interactions in antihistamine drug cinnarizine and benzene at different temperatures.¹² Viscometric and thermodynamic study of substituted-N,N'-bis(salicyliden) arylmethanediamine in a binary system of 70% DMF-water.¹³ Ultrasonic behavior and study of molecular interaction of substituted 3,5-diaryl isoxazoline in 70% DMF-water mixture at 32°C.¹⁴ The use of ultrasound is one of the well recognized approaches for the study of molecular interactions in fluids. The ultrasonic velocity plays an important role in the investigation of intermolecular interactions. Weak molecular interactions can also be studied by ultrasonic technique. The structural arrangement are influenced by the shape of the molecules as well as mutual interactions. The ultrasonic velocity and other acoustic parameters can be measured with great accuracy and consequently provides a powerful way to determine intermolecular interactions.

Hence in this present investigation attempt is made to understand behaviour of substituted

- 1) 2-(2-Hydroxy-5-chloro)-benzyl-3-phenyl quinoxaline (L_1)
- 2) 2-(2-Hydroxy-5-chloro)-benzyl-3-(4-methoxy phenyl) quinoxaline (L_2)
- 3) 2-(2-Hydroxy-3-bromo-5-chloro)-benzyl-3-phenyl quinoxaline (L_3)
- 4) 2-(2-Hydroxy-3-bromo-5-chloro)-benzyl-3-(4-methoxy phenyl) quinoxaline (L_4)

The ultrasonic velocity and densities of different concentration in dioxane solvent of L_1 , L_2 , L_3 and L_4 were determined from these β , ϕ_v , ϕ_k were calculated.

Experimental Section

All the chemicals used were of A.R. grade. 1,4-Dioxane were purified by described method¹⁹. Densities were measured with the help of bicapillary Pyknometer. Different concentration in dioxane solvent were prepared separately, that weighed on Mechaniki Zaktady Precyneyei Gdansk balance made in Poland (± 0.001 g). A special thermostatic arrangement was done for density and ultrasonic velocity measurements. Elite thermostatic water bath was used, in which continuous stirring of water was carried out with the help of electric stirrer and temperature variation was maintained within $\pm 0.1^\circ\text{C}$. Single crystal interferometer (Mittal Enterprises, Model MX-3) with accuracy of $\pm 0.03\%$ and frequency 1 MHz was used in the present work. The densities and ultrasonic velocity of ligands L_1 , L_2 , L_3 and L_4 in dioxane solvent were measured at 305.85 K.

Results and Discussion

A study of β , ϕ_v and ϕ_k directly relate the structural interaction of solvent with solute and provides the information regarding complex formation, stability, internal structure, molecular association and internal pressure. The values of acoustic parameters are given in Table-1.

Density (d)

Ligands L_2 have greater density than L_1 , L_3 and L_4 , due to presence of -OH, -Cl, -Br groups, these groups show -I effect and +R effect of which latter predominates +R effect increases the electron density.

118. H.R. DHANBHAR, N.A.KALAMBE, Global Warming: The Economic Perspective

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Global Warming: The Economic Perspective

H.R.DHANBHAR, N.A.KALAMBE

1. Asst Prof. P. R. Pote College of Engineering and management, Amravati.

2. Asst Prof. Shri Shivaji Science College, Amravati.

Abstract : Global warming is the increase in the average temperature of the Earth's near surface air and oceans in recent decades, and its projected continuation. Most of the observed increase in globally averaged temperature since the mid-twentieth century is due to increase in anthropogenic greenhouse gas concentrations through Greenhouse effect. Climate model projection summarized by IPCC indicate global surface temperature will likely rise further 1.1 to 6.4°C during 21st Century.

Increasing global temperature will cause sea levels to rise and expected to increase the intensity of extreme weather events. Other effects include changes in agricultural yields, trade routes, glaciers retreat, species extinctions, and increases in the ranges of disease vectors. Failing to curb the impact on climate due to global warming could damage the global economy on the scale of great depression. The environmental devastation could shrink the world's annual Gross Domestic Product (GDP) by 20% as per the report of Sir Nicholas Stern, the world renowned British economist. But taking action now would cost just 1% of world GDP. The economic impacts will be also experienced in insurance, infrastructure and investment sectors. Increased costs of migration slow down of economic development and thus retardation in poverty eradication process will also face the serious implications. The whole scenario will make it even harder to achieve the millennium development goals globally. It is not an option to wait and see, and we must act now. This paper highlights the different sectors of economy affected and cost estimates involved in mitigation efforts of global warming.

Keywords : Global warming, greenhouse gases, Sir Stern report, Economic impact on mitigation efforts, economic impact on various sectors, Global GDP Contraction.

Introduction

"Global warming" is universally debated topic, since the beginning of this century. The Intergovernmental Panel on climate change (IPCC) in the fourth assessment report published has come out with some of the stark realities about its overall impact on life. It is generally difficult to attribute specific natural phenomena to long term causes, but some effects of recent climate change may already be occurring. Rising sea levels, glacier retreat, Arctic shrinkage and altered patterns of Agriculture are cited as direct consequences. Predictions for secondary and regional effects include extreme weather events an expansion of tropical diseases, changes in timing of seasonal patterns in ecosystems and drastic economic impact. Concerns have led to political activism advocating proposals to mitigate, eliminate, or to adopt to it.

The IPCC findings claim that the effects of global warming will be mixed across regions. For smaller values of warming (1 to 3°C), changes are expected to produce net benefits in some regions and for some activities, and net costs for others. Greater warming is very likely to produce net costs to reduce the benefits from smaller warming in all regions. Most of the consequences of global warming would result from one of three physical changes: sea level rise, higher local temperatures, and changes in rainfall patterns.

Economics Effects:

Many estimates of aggregate net economic costs of damages from climate change across the globe are available. The social cost of carbon (SCC) expressed in terms of future benefits and costs are discounted to the present value. Estimates of the SCC have an average value of \$ 43 per ton of carbon (\$ 12 per ton of carbon dioxide).

Stern has warned that 1% of the global GDP is required to be invested in order to mitigate the effects of climate change and failure to do so could risk a recession worth up to 20 % of global GDP.

Agriculture :

Rising atmospheric temperatures, longer droughts and side effects of both such as higher levels of ground level ozone gas, are likely to bring about a substantial reduction in crop yields in the coming decades. Region likely to be worst affected is Africa, both because its geography makes it particularly vulnerable, and because 70% of the population rely on rain fed agriculture for their livelihoods. Countries in the tropical & Subtropical region are likely to be severely affected in terms of agricultural yields.

119. Atish K. Maldhure, Vijay H. Masand, Nilima A. Kalambe, Mahendrasingh J. Pawar, Anil R. Somwanshi, Quantum mechanical and pharmacophore analyses of transition metal complexes of N-(5-bromo-2-hydroxyacetophenone)-N'-(2-hydroxyacetophenone)-2,6-diaminopyridine

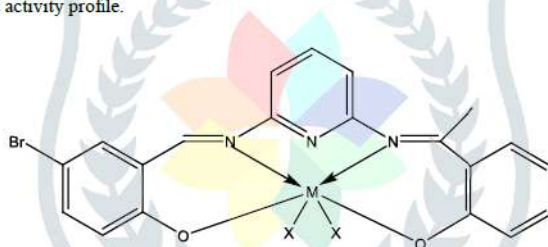
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www.jetir.org (ISSN-2349-5162)

Quantum mechanical and pharmacophore analyses of transition metal complexes of N-(5-bromo-2-hydroxyacetophenone)-N'-(2-hydroxyacetophenone)-2,6-diaminopyridine

Atish K. Maldhure^{1*}, Vijay H. Masand², Nilima A. Kalambe³, Mahendrasingh J. Pawar¹, Anil R. Somwanshi⁴¹Department of Chemistry, Arts, Commerce and Science College, Kiran Nagar, Amravati, Maharashtra, India²Department of Chemistry, VidyaBharati College, Camp, Amravati, Maharashtra, India³Department of Chemistry, ShriShivaji Science College, Amravati, MS, India,⁴Department of Chemistry, J. D. PatilSangludkarMahavidyalaya, Daryapur, MS, India.

Abstract: Unsymmetrical Schiff Base transition metal (Mn^{2+} , Co^{2+} , Ni^{2+} , Cu^{2+} , Cr^{2+} and Fe^{2+}) complexes with tetradentate unsymmetrical Schiff base ligand N-(5-bromo-2-hydroxyacetophenone)-N'-(2-hydroxyacetophenone)-2,6-diaminopyridine has been synthesized by a simple method using DMF as a solvent and alcoholic ammonia to maintained the pH 7.5 -8.00. This ligand has been prepared by condensation reaction between 5-bromo-2-hydroxyacetophenone and o-hydroxyacetophenone with 2,6-diaminopyridine. The ligand and the prepared complexes have shown good to better antimicrobial activity against bacteria *Staphalococcus aureus*, *Bacillus Subtilis*, *Salmonella typhimurium* and *Escherichia coli* and fungi *Aspergillusoryzae* and *Fusarium* species. Furthermore, quantum mechanical and pharmacophore analyses of transition metal complexes and ligand reveals that on coordinating with metal, the pharmacophore pattern as well as the electron density distribution of a metal ligand changes significantly. This could be used for achieving specific type of pharmacophore pattern for deriving novel compounds with desired pharmacophore with targeted activity profile.



Keywords: Unsymmetrical Schiff Base, Antimicrobial Activity, Pharmacophore analysis.

Introduction:

The chemistry of Schiff's bases, named after Hugo Schiff (Frankfurt, 26 April 1834-Florence, 8 September 1915), is more than hundred years old. Schiff bases, also known as azomethines or imines, are compounds that in a broad sense possess the general formula $R_2R_3C=NR_1$. The substituents R_2 and R_3 may be alkyl, phenyl, heteroaryl, hydrogen. The substituent R_1 at the N-imino ($C=N$) may be alkyl, phenyl, heteroaryl, hydrogen or a metal (generally Si, Al, B, Sn). A Schiff base derived from aniline, where R_3 is a phenyl or a substituted phenyl, can be called an *anil*. Thus, Schiff bases can be considered as a nitrogen analogue of an aldehyde or ketone in which the carbonyl group ($C=O$) has been replaced by an imine or azomethine group. The name "Organic Bases" first appeared in a German paper entitled "*EineneueReiheorganischerBasen*" ("A New Series of Organic Bases") [1], though, they are not used as bases in the conventional sense, the designation of these compounds as bases, has persisted up to the present time.

The chemistry of Schiff's bases originated, when Schiff [1-9] reported the reaction between aniline with aldehydes. The method involved Dean Stark apparatus for removal of water molecule.

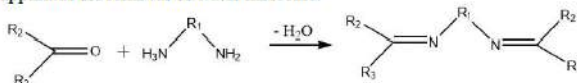


Figure 1 Synthetic protocol and general structure of amine

Schiff's bases readily form complexes with a variety of metals. The imino N atom is frequently employed for co-ordination with the metals. This has led to opening of new avenues for the chemical and biological profiles of Schiff's bases. Literature survey reveals that metal-Schiff's base complexes exhibits a range of anti-bacterial, anti-fungal, anti-cancer, etc. in micro to sub nanomolar range. This promising aspect of Schiff's base complexes has been the subject of study in the last decade [1-9]. In the present work, the newly synthesized ligands and their complexes [10] with different 3D-series elements have been subjected to pharmacophore analysis.

120. Shruti Pramod Ingole, SYNTHESIS OF SCHIFF BASES OF SALICYLALDEHYDE WITH CHLORO SUBSTITUTED 2-AMINOBENZOTHIAZOLE, THEIR METAL ION COMPLEXES AND ANTIBACTERIAL EVALUATION.

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SYNTHESIS OF SCHIFF BASES OF SALICYLALDEHYDE WITH CHLORO SUBSTITUTED 2-AMINOBENZOTHIAZOLE, THEIR METAL ION COMPLEXES AND ANTIBACTERIAL EVALUATION.

Shruti Pramod Ingole¹*Shri. Shivaji Science College, Amravati, Maharashtra, India.*

Abstract: A series of Chloro substituted 2-aminobenzothiazole were incorporated with salicylaldehyde under acidic condition. The novel synthesized imine products and their metal Ligand complexes have been elucidated by H¹ NMR, IR and mass spectral data. The prepared compound (Ligand) and metal ion complexes were screened against the Gram +Ve and Gram –Ve bacteria. Almost all complexes showed good antibacterial activity. In particular complex of Copper and Nickel showed the best result in the antibacterial evaluation.

Key-words: Chloro Substituted 2-aminobenzothiazole, Salicylaldehyde, Schiff bases, Metal-Ligand complexes, Antibacterial activity.

INTRODUCTION

Synthesis and antimicrobial activity of 2-aminobenzothiazole and its derivatives is reported [1]. Further, their other pharmacological activities such as anticancer, antiulcer, antihistaminic, anti-inflammatory activity and analgesic activities also reported [2-6]. It was envisaged that the compounds containing these moieties in their molecular frame work might show enhanced biological activity. Increasing physiological importance of oxygen donor organic compounds and active role played by coordination certain metal ions to them is of interest towards use in synthesizing and studying structural aspects of metal complexes with some oxygen, sulphur and nitrogen donor ligands. The aromatic benzothiazole nucleus is associated with a variety of antihistamine activity, pharmacological actions such as fungicidal and leishmanicides activities. The complexes of the ligand 2- amino acetate, 6-chloro benzothiazole with some transition metal ions have been studied. In the present study we now report the synthesis of complexes of 4, 6-dinitrobenzothiazole-2-amine acetate and their study of magnetic properties for the wide range of applications.

MATERIALS AND METHODS

Synthesis of Schiff base (Ligand):

A mixture of 4,6-Dichloro-2-amino benzothiazole (0.1 mol), salicylaldehyde (0.1 mol) and conc.H₂SO₄ has been refluxed for 3 hrs. The resultant yellow precipitate is filtered and crystallized from ethanol. The steps in the synthesis of Ligand are shown in figure 1

121. H. G. Wankhade, P. R. Padole, A. B. Bodade and G. N. Chaudhari, Effect of Temperature on Redox Potential of Au-PVA- Bi₂FeNiO₆ and Au-PVA-Bi₂FeNiO₆Ur Electrodes

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Effect of Temperature on Redox Potential of Au-PVA- Bi₂FeNiO₆ and Au-PVA-Bi₂FeNiO₆Ur Electrodes

H. G. Wankhade*, P. R. Padole, A. B. Bodade and G. N. Chaudhari
ShriShivaji Science College Amravati, Maharashtra

Abstract: Nano crystalline Bi₂FeO₆ was synthesized by using sol-gel method. The synthesized Bi₂FeO₆nanocomposite is structurally characterized by X-ray diffraction (XRD) and SEM. From the data it is found that Bi₂FeO₆ having globular morphology with crystallite size 40nm. Bi₂FeO₆nanocomposite is used for preparation of Au-PVA-Bi₂FeNiO₆-Urbioelectrodes. Electroactivity of the bio electrode is checked with the help of cyclic voltammetry (CV) and impedance analysis. From the CV data, it is observed that, the redox potential for Bi₂FeO₆ is increases with increasing calcination temperature upto 550°C and on further heating its potential decreases.

Keywords: XRD, SEM, Redox potential, Electroactivity and Bioelectrode.

Introduction

Novel electro catalyticbehavior of nanostructured metal oxide, which combines characteristics of electrochemistry (e.g., simplicity, fast, high sensitivity & selectivity and low detection limit) [1]. Metal oxide nanoparticles exhibit higher ratios of surface area to volume than their bulk counterparts, so metal oxide nanoparticle modified electrochemical interfaces will provide larger electrochemically active areas and therefore probably lead to higher detection sensitivity for target molecules. Magnetic nanoparticles are promising materials in fabrication of biosensors and bioreactors. Biosensors can be fabricated by using the biological entity [2-5].

In the last decade, increased investigations with several types of iron oxides have been carried out in the field of magnetic nanoparticles, among which magnetite and maghemite is the very promising and popular candidates since its biocompatibility have already proven, however, it is a technological challenge to control size, shape, stability, and dispersibility of nanoparticles in desired solvents. Magnetic iron oxide nanoparticles have a large surface-to-volume ratio and therefore possess high surface energies. Consequently, they tend to aggregate so as to minimize the surface energies. Moreover, the naked iron oxide NPs have high chemical activity, and are easily oxidized in air (especially magnetite), generally resulting in loss of magnetism and dispersibility.[6]

Here we made an attempt to synthesize nickel doped Bi₂FeO₆nanocomposite for biosensor application. Synthesized nanocomposites are structurally characterized by X-Ray diffraction and Scanning electron microscopy. Its electroactivity is checked with the help of EIS and Cyclic voltammetry.

Experimental

Synthesis of Bi₂FeNiO₆Nanocomposite

Nanocrystalline Bi₂FeO₆ powder was synthesized by using sol-gel citrate method. Bismuth nitrate, ferric nitrate were used as a raw materials. A stoichiometric mixture of nitrates was mixed with citric acid and ethylene glycol and stirred magnetically at 80°C for 3 hrs to obtain a homogenous mixture; the solution was further heated in a pressure vessel at about 130°C for 12 hrs and subsequently kept at 350°C for 3 hrs. In order to improve the sensitivity and selectivity, nickel nitrate was added in the reaction mixture in the proper ratio. The dried powder was then calcined at various temperature in the range from 450-650°C in order to improve the crystallinity of the powder. Conductivity data suggest that the sample calcined at 550°C is serves good material for biosensor fabrication.

Preparation of PVA-Bi₂FeNiO₆ hybrid Nanobio composite

Bi₂FeNiO₆ nanoparticles calcined at 550°C prepared using sol-gel citrate method is dispersed into 10 mL of PVA (Poly vinyl alcohol) (0.5 mg/mL) solution in distilled water under continuous stirring at room temperature. Finally, viscous solution of PVA with uniformly dispersed Bi₂FeNiO₆ nanoparticles is obtained. PVA-Bi₂FeNiO₆ hybrid Nanobio composite films have been fabricated by uniformly dispersing solution of PVA-Bi₂FeNiO₆ composite onto a gold surface and allowing it to dry at room temperature for 12 hrs. These solution cast PVA- Bi₂FeNiO₆ hybrid Nanobio composite films is washed repeatedly with deionized water to remove any unbound particles.

Immobilization of Urease onto PVA-Bi₂FeNiO₆ hybrid Nanobio composite film

10 µL of bio enzyme solution containing urease (10 mg/ml) [prepared in phosphate buffer (0.1 mol/l) pH-7] is immobilized onto PVA-Bi₂FeNiO₆Nanobio composite/gold electrode. The peroxidase immobilized PVA-Bi₂FeNiO₆nanobiocomposite/gold bio electrodes are kept undisturbed for about 12 h at 4°C. Finally, the dry bioelectrode is immersed in 50 mM PBS (pH 7.0) in order to wash out any unbound enzymes from the electrode surface. Fabrication of Au-PVA-Bi₂FeNiO₆-Ur bioelectrode is shown in the form of flow chart in figure1

122. U. S. Junghare, Dr.H.M.Deshmukh, Mr..Y.V.Hushare, Analytical Study of Big Data Security Issues and It's Tools and Techniques

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Analytical Study of Big Data Security Issues and It's Tools and Techniques

¹U. S. Junghare
Assistant Professor
Dept. of Computer Science
Shri Shivaji Science College,
Amravati, MS. India,

²Dr.H.M.Deshmukh
Associate Professor
Dept. of Computer Science
Shri Shivaji Science College
Amravati, MS. India,

³Mr..Y.V.Hushare
Assistant Professor
Dept. of Computer Science
Shri Shivaji Science College
Amravati, MS. India,

Abstract: Now a day big data is most crucial aspect for industries, education, hospitals, governments etc. Big data analytics is the complex process of examining large and diverse data sets or big data to uncover information including hidden patterns, unknown correlations, market trends and customer preferences that can help organizations make informed business decisions. Traditional techniques are not adequate for the analysis of the big data. There are many analytical tools and techniques available for big data analysis. As big data is one of the critical aspects so security of big data is vigorous issue because detecting and preventing fraud in data, datalost, error prone data, monitoring of real time data etc. are challenging tasks. With this approach paper comprises analytical study on big data security tools and techniques which is need of current research and development.

Keywords: Bigdata, Data analytics, Security, Security Tools.

I. INTRODUCTION

Big data requires a set of techniques and technologies with new forms of integration to reveal insights from datasets that are diverse, complex, and of a massive scale. Big data challenges include capturing data, data storage, data analysis, search, sharing, transfer, visualization, querying, updating, information privacy and data source. Big data is in focus not only because of its demand but for its privacy and security issues. Attacking on big data tools are increasing now a day so security of big data is a challenging task. Day to day data quantity is increasing with various formats but due to limited bandwidth of network and less storage and computation power security of data is the challenging task.

II. SECURITY ISSUES FOR BIG DATA

Security issues of Bigdata belongs to following category,

2.1 Data while transmission on social network

- Limited bandwidth- As bigdata is big in volume, velocity and variety so limited bandwidth is a major issue for cloud data.
- Data Attacks - Big Data may be attacked by malicious users [4]
- Access Controls- To restrict the non-desirable access, it is significant to provide access control for big data [2,3].

2.2 Data on System

- Less storage Capacity of system is critical issue for big data.
- Less or insecure Computation Power: Due to less and insecure computation power there is a chance of losing data or data corruption [3].
- Data redundancy is also a serious issue regarding big data [1].
- Infrastructure security [3] It belongs to the security of tools and technology used for bigdata. Also, while dealing with bigdata authentication is also important. Only authentic users can process data.
- Anonymization of data- It is very vital to protect data from anonymizing it by removing sensitive data or hiding data. [3]
- Integrity of data- Data can be in structured and non-structured form so streaming of data also one issue [4].

III. BIG DATA SECURITY TOOLS

3.1 Hadoop: It is Java based programming framework. It uses client server structure, in which server process large amount of data and applications run on number of client nodes. It handles number of nodes and uses distributed network. It increases the data transfer rate and reduce the frequency of system failure[6]. Main task of Hadoop Distributed File System (HDFS) is to improve reliability by overcoming nodes failure.

Hadoop is highly scalable tool for bigdata. It stores and processes the large and complex unstructured dataset. It performs the fast processing of bigdata. Its redirecting technique enables to response system in real time without failure [8].

3.2 NoSQL database: Non-relational data base is used to accumulate big data which handle the challenges of big data analytics security. NoSQL data base covers the security surrounded in middleware. It does not provide the explicit security. In NoSQL database complex integrity constrains cannot be instructed. In NoSQL authorization provides at higher level only. It means NoSQL database have security issue.

3.3 MapReduce: It is one of the software tools which process large unstructured dataset in cluster. It accomplishes two task one is mapping and other reducing. Map convert the input data into intermediate pair and reduce operation performs the sorting of intermediate pair with matching key. Reducing is done with three phase shuffles, sort and reduce [5].

123. Mukul M. Bhonde, Chandrashekhar H. Sawarkar, Dr. Pramod N. Mulkalwar, Data Mining and Recommender System: A Review

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www.jetir.org (ISSN-2349-5162)

Data Mining and Recommender System: A Review

¹Mukul M. Bhonde, ²Chandrashekhar H. Sawarkar, ³Dr. Pramod N. Mulkalwar¹Assistant Professor, ²Assistant Professor, ³Associate Professor¹Department of Computer Science, Shri Shivaji Science College, Amravati, Maharashtra, India²Department of Computer Science, Assistant Professor, Smt. Narsamma Arts, Commerce and Science College, Amravati, Maharashtra, India³Department of Computer Science, Amolakchand Mahavidyalaya, Yavatmal, Maharashtra, India.

Abstract: Due to the enhanced capabilities to generate and collect data from varied sources, a tremendous amount of data has flooded every part of our lives. This explosion in stored data has created necessity of new techniques and tools for filtering such data into meaningful information known as data mining, also be referred as knowledge discovery from data (KDD). In terms of the scalability, Web is growing exponentially and obvious increase in redundancy of information as well. Various forms of data in unstructured, semi-structured and structured form is augmented to Web every minute. Due to this scattered and distributed nature of Web it is very challenging to surf the Web using alone search engines and plain browsers. Recommender systems (RS) are a type of information filtering system that seek to predict the 'rating' or 'preference' that user could give to an item under consideration. Recommender system is defined as a decision making strategy for users under complex information environments. Recommender systems have become prominent issue of research in recent years, and are being used for variety of web domains. All Recommender Systems (RS) apply techniques and methodologies of Data Mining (DM) for information extraction such as Similarity measures, Sampling, Dimensionality Reduction, Classification, Association-Rule- Mining (ARM) and Clustering. Recommender Systems (RS) typically apply techniques and methodologies from other neighboring areas such as Human Computer Interaction (HCI) or Information Retrieval (IR).

Keywords: Data mining(DM), Knowledge discovery from data (KDD), Information Retrieval(IR), Web mining, Recommender System(RS).

I. INTRODUCTION

Today, we are living in the data age. We are amongst the networks flooded with terabytes or petabytes of data. Vast amount of data collected daily regarding variety of aspects. To analyze such data is an important need. This necessity has led to the birth of data mining. Data mining has an important place in today's world. It becomes an important research area as there is a huge amount of data available in most of the applications. This huge amount of data must be processed in order to extract useful information and knowledge, since they are not explicit. Data Mining is the process of discovering interesting knowledge from large amount of data. Data mining can be viewed as a result of the evolution of information technology. Many people treat data mining as a term knowledge discovery from data(KDD) while others view it merely an essential step in the process of knowledge discovery. This KDD process is an interactive sequence of the steps: data cleaning, data integration, data selection, data transformation, data mining, pattern evaluation and knowledge representation. Early four steps are different forms of data preprocessing where data are prepared for mining. So we can view it as process for discovering an interesting patterns and knowledge from large amount of data. Data mining functionalities involves characterization and discrimination, associations and correlations, classification and regression, clustering analysis. Data mining is a dynamic and fast growing field with great strengths touched each area of every field. Data mining is a process of extraction of useful information and patterns from huge data. It is also called as knowledge discovery process, knowledge mining from data, knowledge extraction or data /pattern analysis.

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

“Application of Wind Rose model in Environmental Impact Assessment of Air Quality in Amravati.”

¹Sangita Ingole, ²Manisha Jane

Department of Environmental Science, ShriShivaji Science College, Amravati, India.

Abstract: There are many situations in which human activities have significant impact on the environment. The health effects due to air quality have been subjected to intense study in recent years. Exposure to pollutants has been associated with increases lung irritation and damage; aggravates asthma and chronic bronchitis; increases susceptibility to respiratory infections such as the flu and common colds (especially in young children and older adults) study and Application of wind rose model is important for the protection of man, domestic animals, crops materials and it is also necessary to know the trends of Air quality for effective regulation. Air pollution regulation change in time and space according to transport, dispersion, development of wind rose model to assess through the environmental impact assessment of air quality Shri Shivaji Science College Amravati. Base on meteorological aspects in present study of Environmental Impact Assessment of air quality in Amravati. Daily meteorological parameter wind speed and temperature data for one year for four representative seasons (winter, summer, Monsoon, Post Monsoon) were studied for sampling station as Shri Shivaji Science College Amravati wind-rose model was prepared for the year 2014 and compared these with RSPM10, PM2.5, NOx and SO2. Average wind speed was 4.9km/hr. which was found lowest and act as a boost to spread of pollutants near the generation source. Cold temperature and stagnant air have a creative build-up with this substance, near ground.

Keywords: sources, air quality, wind speed, temperature, parameters of air.

1. INTRODUCTION

1.1 AIR QUALITY MODEL

Amravati district is very rapidly growing in terms of its population and number of vehicles. Industrial development IRB Talegaon Amravati Toll way Private Limited National Highway No. 6 approximately 66.73 km. pass through the near city. The heavy traffic on these highways has been significantly contributed to air pollution in the city.

Modeling is used in identifying the sources that contribute to poor air quality and ongoing project air quality changes for different "what if" scenarios: for example what would happen to the air quality if a new highway, industrial or housing development were built? In this way, modeling helps us inform us decisions on how to maintain and improve air quality.

1.2 WIND-ROSE MODEL

The wind speed, direction and intensity are graphically denoted by a diagram called wind rose diagram (guidelines NAAQMS 2003-04)

Wind -rose are mostly used in the fields such as environmental impact assessment, industrial emissions measurements, oceanography, noise impact modeling wind energy, agriculture engineering, ambient air monitoring, air quality measurements, air dispersion modeling , indoor air quality testing, and soil impact modeling (India Meteorological Department).(Lira, Taisa S et.al.2012)

The result of the environmental factor on plants increases with exposure time. The dying rates, change with injury, chlorophyll reduction, and cell size reduction and reduction of the cell size area are the parameters to watch air pollution impact on plant metabolism (LeBlanc and Rao, 1975). Impact of air pollution on completely different native plant species is one amongst the major ecological problem. The environmental condition and physicochemical properties of the waste product and their residence

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SEASONAL MICROBIAL STUDY OF INDOOR AND OUTDOOR AIR QUALITY FROM Z.P. SCHOOLS OF AMRAVATI CITY

¹Deshmukh, VD & ²Ingole, SP¹Research student, ²Head, Dept. of Environmental Science, Shri. Shivaji Science College, Amravati.

Abstract: This study was carried out to have an idea of fungal diversity in school environment so that, this could later on serves as a basis for developing database of the microbial load and to have a preliminary idea of the environmental status of school. Unhygienic environmental conditions in schools premises indicator of air quality which shows the adverse effect on school children of all ages. An assessment of the air borne fungi at some Z.P. school campus, Amravati was experimentally investigated by culture plate exposure method. The investigation period for this study was from March to December 2017. Total 62 fungal species (571 fungal colonies) belonging to 33 fungal genera were isolated. Experiments were carried out at indoor and outdoor sites (Class room, Staff room, Corridor, Washroom & Ground)) of Z.P. School. Total 818 fungal colonies belonging to 20 fungal genera were isolated. The highest fungal population was observed in rainy season (48.65%) and lowest in the winter season (22.86%). The most dominant air fungi isolated from each season were *Alternaria alternata*, *Aspergillus flavus*, *Cladosporium sp.* In all research site the concentration of fungi for the indoor air was higher than that of outdoor air. It was detected that the concentration of the fungal spores in the air differ from season to season probably due to variation in climatic parameters.

Keywords: Air pollution, seasonal analysis, aeromycoflora, fungi.

I. INTRODUCTION

Atmospheric pollution is one of the most burning problems of our age. The pollution has now reached advanced level that poses a potential threat to the health & well-being of the population. People spend mostly (80-90%) of their time in indoor environments such as office, school & house. The quality of the indoor and outdoor environment is not easily controlled or defined and can probably place human occupants at risk (Diriba et al., 2014). The indoor and outdoor air contain a variety of biotic air environmental pollutants, include fungi, bacteria, algae, pollen-grains, dusts, mould, yeast and other particles of biological and non biological origin. (Mentege et al., 2009). Many factors affect air pollution levels such as the climate, moisture, season, indoor humidity, temperature, and ventilation rates, maintenance activities.

Mostly outdoor air does not contain disease causing pathogen compared with indoor air has to contain disease causing pathogen especially in large gatherings area like schools, educational institute, colleges, universities and offices (Dacarro et al., 2003).

School is the second most important indoor environment, which is evaluating the quality of indoor air and health components of occupants (Godwin and Batterman 2007). In case of children, a great part of their time is spent at school for studying & working in enclosed spaces every day. Therefore, assessments of this

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www.jetir.org (ISSN-2349-5162)

“LEACHATE ANALYSIS OF MUNICIPAL SOLID WASTE COLLECTED FROM SUKALI DUMPING SITE, AMRAVATI (MAHARASHTRA)”

¹Dr. K. J. Gawai , ²Dr. A. U. Kakde¹Asst. Prof., Dept. of Environmental Science, Shri. Shivaji Science College, Amravati, M.S., India.

Abstract : Lifestyle of unconcern people created various environmental problems. Solid waste management is one of them. To take into consideration the probable effect of leachate formed due to unscientific land filling at the solid waste dumping site on the quality of ground water, leachate analysis is necessary. As there was no facility for leachate collection and treatment, leachate was prepared in laboratory from the solid waste sample collected from Sukali dumping site, Amravati city. Physico-chemical analysis of leachate showed the higher values than permissible limit indicating the contamination of groundwater due to leaching of mineral ingredients and heavy metals. Heavy metal analysis of leachate showed the presence of Mn, Fe, Pb, Co, and Cu above the permissible limit.

Keywords: Solid Waste Management, Leachate, unscientific land filling.

Introduction:

We have entered twenty first century, the beginning of a new millennium. The past century is a story of astounding advancement in technology and tremendous achievements in the economic well-being of many nations of the world. But human development can become a curse, was realized when more richness created more waste. Technology has provided many answers but it is unable to give solution for how to get rid of this waste.

Due to degradation of Environment and adverse impact on public health and life style, solid waste management has become top priority. Solid waste management has emerged as one of the greatest challenges facing municipal authorities worldwide especially in developing countries. (Babatunde B.B. *et al.* 2013)

The term “Municipal Solid Wastes” applies to those Solid Wastes generated by households and to solid wastes of similar character derived from Shops, Offices and other Commercial Units. (Cointreau, 1982).

Solid Wastes in cities are classified into the following groups (NEERI, 1983).

1. Urban Solid Wastes: Putrescible (decomposable) wastes generates from food, slaughter houses, canning and freezing industries etc.
2. Rubbish: Non-putrescible is either combustible or non-combustible wastes. Combustible waste includes- paper, wood, cloth, rubber, leather and garden wastes while Non-Combustible wastes include- metals, glass ceramics, stones dirt, masonry, paints and some chemicals.
3. Ashes and residues: cinders and fly ash of the combustion of solid fuels for heating and cooking or from the incineration of Solid Wastes by Municipal and apartment house incinerators.
4. Large waste, demolition and construction rubble: pipes, lumber, masonry, brick, plastic, roofing and insulating materials, automobiles, furniture, refrigerators and other home appliances, trees, tiles etc.
5. Dead animals: household pets, birds, rodents, zoo animals etc. and also anatomical and pathological wastes from hospitals.

Uncontrolled and illegal waste has increased pollution of rivers and underground aquifers. It is also increasing the economic burden. (Lokmat Daily, Sunday, 6th Nov.2016)

According to Anon, 2007, solid waste management is one of the important seven accepted components of sanitation.

Urbanization, the main cause of solid waste generation:

Solid waste is inextricably linked to urbanization and economic development. As countries urbanize, their economic wealth increases. As standards of living and disposable incomes increase, consumption of products and services increases, which ends up during a corresponding increase within the amount of waste generated. (World Bank, 2012)

National Status related to Solid Waste:

India is among the top 10 countries generating the highest amount of MSW in the world. (Abazeri Marium, 2014).

Urban India generates 3 million trucks piled high with garbage every day. According to statistics, more than 70 percent of the collected urban waste is dumped straight into the landfill. As much as 43 million tonnes of solid waste is collected annually, out

127. Vikrant D. Bute, GREEN AUDIT: ONE STEPS TOWARDS SUSTAINABLE DEVELOPMENT

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

GREEN AUDIT: ONE STEPS TOWARDS SUSTAINABLE DEVELOPMENT

Vikrant D. Bute

Assistant Professor

Dept. Of Environmental Science ,

Shri Shivaji Science College, Amravati, Maharashtra, India.

Introduction

Green auditing is a means of assessing environmental performance (Welford, 2002). It is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirements (EPA, 2003). It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all water, air, solid waste, energy noise status examination.

The term 'Green' means eco-friendly or not damaging the environment. This can acronymically be called as "Global Readiness in Ensuring Ecological Neutrality" (GREEN). An environmental audit as defined in ISO 14000 is a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process. "Green Auditing", an umbrella term, is known by another name 'Environmental Auditing'. To implement the green audit other important aspects such as objective of green audit. Drivers of green audit, future scope, benefits, and advantages are necessary to understand. The green audit practically involves energy conservation, use of renewable sources, rain water harvesting, efforts of carbon neutrality, plantation, hazardous waste management & E-waste management etc. The parameters such as activity, waste management, noise, soil, air and water pollution risks of the site are tested and corrective measures to be implemented (if the particular site threatens the surroundings with potential of damage) are suggested. Establishment of green cover through tree plantation and use of non conventional energy resources are included in the survey of a site for determining its environmental safety.

It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Goals

1. To conduct a baseline survey to know the reality status of green practices.
2. To identify strength and weakness in green practices conducted in college campus.
3. To analyze and suggest solution for problems identified from Audit Report.
4. To increase environmental consciousness throughout the campus among all the stakeholders.

128. Ukesh C S and Patil S D, INCIDENCE OF CANDIDA ALBICANS AND NON ALBICANS INFECTIONS IN HOSPITALIZED PATIENTS IN AMRAVATI

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

INCIDENCE OF CANDIDA *ALBICANS* AND NON ALBICANS INFECTIONS IN HOSPITALIZED PATIENTS IN AMRAVATI

Ukesh C S* and Patil S D

Associate Prof¹, Associate Prof²,

Dept of Microbiology & Biotechnology,

Shri Shivaji Science College, Amravati-444603 M.S., India.

Abstract: The high incidence of pathogenic yeasts throughout the world and importance of candidiasis in human pathology lead to the necessity of new information regarding its real incidence, etiology and clinical pathogenic correlation. Therefore, the present investigation was undertaken. 100 different oral specimens were studied. 93 were culture positive and the isolation rate was found to be 93.00%. The isolation rate was higher in male than female patients. The organisms isolated in majority included *C. albicans* and non-albicans *Candida* followed by *Cryptococcus* species.

Out of total 83 samples from male 78 (93.97%), while from female out of 17 samples 15 (88.21%) were found to be positive for pathogenic yeasts. *C. albicans* was the major organism 53.33% in female and 70.5% in male, followed by non-albicans *Candida* species. Age from 31 to 50 years shows maximum incidence.

Introduction

Candidiasis and Cryptococcosis are the world wide infections caused by pathogenic yeasts. The incidence of pathogenic yeasts was being studied in many parts of the world. Candidiasis has become the most common infection in AIDS and cancer patients.

A number of conditions can lead to *Candida* infections. Steroid drugs (such as cortisone), birth control pills and the long term use of antibiotics can invite the problem of candidiasis. Poor nutrition and impaired immune system are the main conditions of infection. The infections of pathogenic yeasts are oral thrush, vaginal thrush, infection, nail infection and allergies. The incidence of fungal infections has increased greatly over the past two decades (Wheat, 1994). Therefore the use of antifungal agents has increased dramatically and the new ones have also been developed.

Besides *Candida albicans* other non-albicans *Candida* species include *C. guilliermondii*, *C. krusei*, *C. glabrata*, *C. tropicalis*, *C. pseudotropicalis*, and also the species of *Cryptococcus* reported from oral thrush clinical specimens. Therefore, the present investigation was undertaken. 100 different clinical samples from oral thrush were studied.

Material and Methods:-

A total 100 oral thrush samples received from hospitalized patients in Amravati the samples were directly inoculated on Sabouraud dextrose agar tubes and incubated at 37°C for 24-48 hrs and 72 hrs *Candida* isolated were identified according to standard microbiological procedure (Evans, 1989). Speciation of *Candida* isolates were carried out by using germ tube test, Sabouraud dextrose agar, carbohydrate assimilation and fermentation test. (Koneman E. W. and Roberts G. D. 1985).

Results and Discussion

A Total of 93 *Candida* positive isolates were obtained from 100 oral thrush samples received from hospitals, of Amravati city. Out of the 100 samples, 83 were male and 17 were female patients. Positive culture were 78(93.97%) male and 15 (88.21%) from, the isolation rate was 93%.

129. N. R. Thakare, P. A. Nagpure, U. S. Joshi, S. V. Rathod, Synthesis and Ultrasonic Interferometric Study of Coumarinyl Derivatives

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Synthesis and Ultrasonic Interferometric Study of Coumarinyl Derivatives

N. R. Thakare¹, P. A. Nagpure², U. S. Joshi³, S. V. Rathod⁴^{1,3,4}Department of Chemistry, ²Department of Physics,
Shri Shivaji Science College, Amravati. (MS) INDIA.

Abstract:

The Synthesis of Coumarinyl derivatives (Pyrazole) is done in greener way. Further their Ultrasonic Interferometric study has been done with the standard value of density (ρ) and viscosity (η). The value of Ultrasonic velocity (U) was determined experimentally. The molecular interaction of various synthesized Pyrazoles has been studied. By using standard relations from measured values of density (ρ), ultrasonic velocity (U) and viscosity (η), the desired acoustical and thermodynamic parameters such as adiabatic compressibility (β_{ad}), intermolecular free length (L_f), acoustic impedance (Z), relaxation time (τ), has been calculated and their wide applications in the branch of medicine and pharmacy has been studied.

Index Term- Pyrazoles, Density, Viscosity, Ultrasonic Velocity, Molecular Interactions.

INTRODUCTION

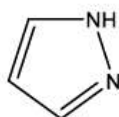
Coumarins are the best known aromatic lactones¹. The isolation of coumarin was first reported by Vogel² in Munich in 1820. He associated the pleasant odour of the tonka bean from Guiana with that of clover, *Melilotous officinalis*, which gives rise to the characteristic aroma of new-mown hay. Vogel then concluded that the long colorless crystals which he discovered on slicing open tonka beans and which crystallized as glistening needles from aqueous alcohol were identical with similar crystals he obtained, albeit in much lower yield, by extracting fresh clover blossoms³. The name coumarin originated⁴ from a Caribbean word 'coumarou' for the tonka tree, which was known botanically at one time as *Coumarouna odorata Aubl*. Coumarin is now well accepted trivial name. The IUPAC nomenclature of the coumarin ring system is 2H-1-benzopyran-2-one. The coumarin ring system has an easy acceptability in the biological system compared to its isomeric chromones and flavones nucleus⁵ and is widely distributed in nature⁶⁻⁸. An excellent account of these naturally occurring coumarins is presented by R D H Murray and S A Brown⁹.



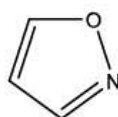
Coumarin

Coumarins can be synthesized by various methods such as, Pechmann, Perkin, Knoevenagel and Reformatsky reactions. Pechmann condensation is one of the most common procedures for the preparation of coumarin and its derivatives. This method involves the reactions between a phenol and a α -keto ester in the presence of an acid catalyst. Simple starting materials are required here to produce various substituted coumarins in good yields¹⁰.

Pyrazole (A) is the given name to organic compounds by Knorr,¹¹ which is consist of a five membered ring containing adjacent nitrogen atoms. It can also be assumed as an isoxazole nucleus (B) in which -O- is replaced by -NH- group¹².



(A) Pyrazole



(B) Isoxazole

130. W. S. Barde, Synthesis of Graphene Oxide (GO) and Reduced Graphene Oxide (RGO), its Characterization by XRD, UV-VIS Spectroscopy and measurement of DC conductivity

© 2020 JETIR February 2020 , Volume 7, Issue 2

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Synthesis of Graphene Oxide (GO) and Reduced Graphene Oxide (RGO), its Characterization by XRD, UV-VIS Spectroscopy and measurement of DC conductivity

W. S. Barde

Associate Professor, Department of Physics, Shri Shivaji Science College, Amravati, Maharashtra, India.

ABSTRACT

Graphene Oxide (GO) was chemically synthesized using Modified Hummer's method. The GO was chemically reduced to Reduced Graphene Oxide (RGO) using hydrazine hydrate. The GO and RGO samples were characterized by the usual methods such as X-ray diffraction, UV-VIS and FT-IR. The XRD results showed 2θ is 24° and 26° with inter layer spacing equal to 0.358nm and 0.334 nm in GO and RGO resp. UV-VIS spectra of GO and RGO exhibit maximum absorption peak at 221nm and 247nm respectively. These peaks are attributable to π - π^* transition of the atomic C=C bonds. Thin films of GO and RGO were also deposited on glass substrate using spray pyrolysis technique (SPT). The DC conductivity of the thin film GO and RGO was studied by the Four Probe Method. The DC conductivity of RGO was found out to be twice as that of GO.

Keywords: Graphene Oxide (GO), Reduced Graphene Oxide (RGO), Thin film, DC conductivity.

1. Introduction

Graphene is an exciting material that is getting a lot of attention. Graphene has attracted much attention also from researchers due to its interesting mechanical, electrochemical and electronic properties. Graphene, a single atomic layer of sp^2 -bonded carbon atoms tightly packed in a two dimensional (2D) honeycomb lattice, has evoked great interest throughout the

scientific community since its discovery [1]. Graphene oxide (GO) have recently emerged as a new carbon - based nanoscale material that provides an alternative path to graphene [2]. It is a single-atomic-layered material made of oxidizing graphite crystals which available in large quantities at inexpensive prices. Structurally, the Graphene oxide is similar to a graphene sheet with its base having Oxygen-containing groups.

2. Experimental

2.1 Materials

Graphite Flakes (acid treated 99%), Potassium permanganate (99%), Hydrogen peroxide (40% wt), Sulphuric acid (98%), Hydrochloric acid (35%), distilled water, phosphoric acid, hydrazine hydrate, DMSO, Ethylene glycol.

131. Arsad, S. S. Phototherapy: A healing power of light

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

Phototherapy: A healing power of light

Dr. S.S.Arsad

Dept.of Physics, Shri Shivaji Sci.College , Amravati,(M.S.),India.

Abstract:

Light can heal many skin disorders. Researchers were motivated to study specific wavelengths in order to safely treat the disorders. Many institutes worked to harness the therapeutic light rays. It was necessary to eliminate the rays with damaging wavelengths. Phototherapy is the application of light rays with standard parameters like wavelength, energy to treat specific skin disorders. It is found that ultraviolet light is safe and effective in dermatology for diseases like psoriasis, vitiligo. It is also useful in neonatal care. The photo-responsive skin diseases are well treated with phototherapy in modern medical institutes. Home phototherapy is gaining popularity as well. The scope of phototherapy in skin disorders like vitiligo, psoriasis, child care, baldness, hair removal etc. discussed here with practical reports from various places.

Introduction:

Phototherapy has undergone many changes over last few decades. Initially laser with high output power was considered as treatment tool but it was found that laser with minimal dose is sufficient to interact with the thin layers of skin. The advancement in the technology came up with many alternative light sources giving the similar results. The reports from various sources readily accepted phototherapy as suitable option for the treatment.

Materials and Method:

Vitiligo, a skin disorder characterized by white patches resulting from absence of melanin produced in melanocytes. It is found worldwide in all types of race, ethnic background, or gender. It causes psychological stress. In Indian culture vitiligo is considered as a curse for female. Phototherapy, surgical grafting techniques, and melanocyte transplants are the recent trends in the treatment of vitiligo. There is the possibility that the use of cytokines and growth factors that may mimic the actions of phototherapeutic agents at the cellular level and use of immunomodulators may prove helpful.[1] This is a very exciting phase of vitiligo research in which vitiligo is being tackled by multipronged attacks in the form of advancement in basic research, genetics and treatment including surgical management. In order to achieve the ultimate goal of total stability and complete repigmentation, there is a need to define a roadmap and roadblocks.[13] In a recent preliminary study, afamelanotide (16 mg subcutaneous implant) along with Narrowband UVB has given promising results.[14] Further, controlled studies are required to confirm its efficacy and define its role in the management of vitiligo.

A comprehensive database search of MEDLINE, EMBASE, and the Cochrane library from inception to January 26, 2016, was performed for all prospective studies. The main keywords used were *vitiligo*, *phototherapy*, *psoralen*, *PUV*, *ultraviolet*, *NBVB*, and *narrowband*. [15] Long-duration phototherapy should be encouraged to enhance the treatment response in vitiligo. The greatest response is anticipated on the face and neck. [15]

Infant care is one more application of phototherapy. It is used for treatment of neonatal hyperbilirubinemia.[2] The results of phototherapy is dependent on the absorption of light photons by the bilirubin molecules. Bilirubin can absorb light of certain colors or wavelengths. Since bilirubin is a yellow pigment, during phototherapy, the blue and green light is best absorbed by the bilirubin molecule.[3] When broad-spectrum white light is used for treatment, only a fraction of the light is acting on the bilirubin.[4] Blue light having wavelength 450 nm is absorbed as compared to green light [3] The light used must penetrate the newborn's skin. The green light has longer wavelength and it is expected to penetrate the baby's skin deeper. It is not confirmed whether the use of green light has any advantage over blue light.[5][6][7] A new high-intensity phototherapy light source using recently introduced high-intensity gallium nitride light-emitting diodes (LEDs).[12] This device has a narrow luminous spectrum, and therefore allows for the first time to compare blue (peak 459 nm) versus blue-green (peak 505 nm) phototherapy.

In Netherland NBVB used for treatment of psoriasis. Ultraviolet B phototherapy administered at home is equally safe and equally effective, both clinically and for quality of life, as ultraviolet B phototherapy administered in an outpatient setting. Furthermore, ultraviolet B phototherapy at home resulted in a lower burden of treatment and led to greater patients' satisfaction.[16] Baldness is referred as alopecia in medical science. It is a common disorder affecting more than half of the population worldwide. Androgenetic alopecia, the most common type, affects 50% of males over the age of 40 and 75% of females over 65. Hair transplant is the treatment alternative but the evidence for low-level laser therapy (LLLT) applied to the scalp as a treatment for hair loss and discusses possible mechanisms of actions. LLLT for hair growth in both men and women appears to be both safe and effective. The optimum wavelength, coherence and dosimetric parameters are expected to be determined.[17]

In cosmetology Intense pulsed light technologies are in practice for two decades now. Intense Pulse light devices can be used safely and effectively for the cosmetic treatment of many vascular lesions, unwanted hair, and pigmented lesions. These are newer technologies giving results equal to those of laser treatments.[18] Intense pulsed technology is a highly versatile, safe, and effective modality for the treatment of vascular and pigmented lesions, hypertrichosis, and epidermal and dermal atrophy associated with photoaging, as well as acne, rosacea etc. The biological efficacy of various wavelength distributions can lead to range of IPL technology. The wavelength filters, pulse durations, pulse frequencies, and cooling modalities to protect from side effects. The end result will be a widening domain of IPL's clinical applications and indications. It will be incumbent on clinicians who use these devices with regularity for such new

132. Archana B. Bodade, G.N. Chaudhari, Anjali B. Bodade, STRUCTURAL AND ELECTRICAL PROPERTIES OF PEROVSKITES La 1- XSr X MnO 3 (x=0,0.3) SYNTHESIZED VIA SOL –GEL CITRATE METHOD

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

STRUCTURAL AND ELECTRICAL PROPERTIES OF PEROVSKITES La 1-xSr x MnO 3 (x=0,0.3) SYNTHESIZED VIA SOL –GEL CITRATE METHOD

Archana B. Bodade¹, G.N. Chaudhari², Anjali B. Bodade³

Assistant Professor, Professor, Associate Professor

Department of Physics

Shri Shivaji Science College, Amravati (M.S), India.

Abstract: Nanocrystalline and nanocomposites of Sr doped La_{1-x}Sr_xMnO₃ (x=0,0.3) were synthesised by the sol–gel citrate method. Structural and dielectric analysis were performed for synthesized nanocomposites La_{1-x}Sr_xMnO₃. The XRD of La_{1-x}Sr_xMnO₃ (x=0,0.3) shows orthorhombic structure. Dielectric constant (ϵ' and ϵ'') of La_{1-x}Sr_xMnO₃ (x=0,0.3) were measured as a function of frequency in the range 42 Hz to 500 MHz and the temperature range 30 to 700°C. A ferroelectric like dielectric constant ranging from 10⁴ to 10⁶ was obtained for both. AC conductivity has been studied as a function of frequency and temperature to understand the conduction mechanism.

Key words: Nanocomposites of La_{1-x}Sr_xMnO₃, sol–gel, Electrical Conductivity, Dielectric Properties.

Introduction:

Nanotechnology is the engineering of systems and materials at the molecular scale. As far as nanomaterials are concerned, LaMnO₃ is one of the candidates which has been attracting actual interest of LaMnO₃ nanomaterial in chemistry and solid state physics is due to its excellence in electrical and optical properties [1]. LaMnO₃ (LMO) is an inorganic compound with perovskite structure. It is an A-type antiferromagnetic insulator with a low Neel temperature [2–5]. Depending on the synthesis process, LMO samples can be obtained as thin films [6], monocystals [4,7] and polycrystalline powders [8].

When lanthanum ions (La³⁺) in lanthanum manganese oxide (LaMnO₃) are partially substituted with divalent ions like Sr²⁺, a mixed valence state of Mn³⁺/Mn⁴⁺ is generated, leading to a number of spectacular physical properties, such as insulating to metal transition, colossal magneto resistance, and paramagnetic to ferromagnetic transition [9]. The electrical magnetic characteristics of (La, Sr) MnO₃ (LSMO) can be tuned per device requirements by changing Sr dopant concentration in LSMO. As a result, LSMO has potential applications in various magnetic devices including magnetic field sensors and recording devices [10].

The present work is an attempt to study the electrical properties (dielectric and ac conductivity) of La_{1-x}Sr_xMnO₃ (x=0, 0.3) ceramic prepared by sol-gel method.

2. Experimental

Polycrystalline La_{1-x}Sr_xMnO₃ (x=0,0.3) were prepared using sol–gel method. High purity nitrates were used for the preparation. A stoichiometric mixture lanthanum nitrate and manganese nitrate and strontium were used as raw materials. A stoichiometric mixture of nitrates was mixed with citric acid and ethylene glycol and stirred magnetically at 80°C for 3h to obtain a homogenous mixture; the solution was further heated in a pressure vessel at about 130°C for 12 hrs and subsequently kept at 350°C for 3 hrs a muffle furnace and then milled to a fine powder. The dried powder was then calcined in the range of 350°C to 750°C for 6 hrs in order to improve the crystallinity of the powder. The dielectric measurement were done on the pellets (the pellets of 13.2 mm diameter and 15.45 mm thickness were made by

133. P.A. Nagpure, Surface Tension and Coefficient of Viscosity of Liquid from the Diffraction Pattern of Surface Ripples

© 2020 JETIR March 2020, Volume 7, Issue 3

www.jetir.org (ISSN-2349-5162)

Surface Tension and Coefficient of Viscosity of Liquid from the Diffraction Pattern of Surface Ripples

P.A. Nagpure

Assistant Professor,
Department of Physics,
Shri Shivaji Science College, Amravati, INDIA.

Abstract : This paper describes a simple technique for determining the surface tension of the liquids, based on laser light diffraction on capillary waves. Capillary waves of given frequency are created by an exciter needle acting on the surface of liquid which acts as a reflection grating, the constant of which (the wavelength of capillary waves) can be determined based on unknown incidence angle of light (grazing angle). This technique permitted accurate measurement of the spot and eliminates most of the fluctuations due to vibration. The surface tension of liquids are calculated by applying the dispersion relation for capillary waves and analyze the difficulties that will arise when setting up and conducting the experiment in detail. It also reports the refractive index liquids in the visible region by an Abbe's refractometer.

Index Terms - Surface tension, Coefficient of viscosity of liquid, Refractive Index of liquids.

I. INTRODUCTION

Formation and propagation of waves on a liquid surface are important and well-studied phenomena. For such waves, the restoring force on the oscillating liquid is partly due to gravity and partly due to surface tension. For wavelengths much smaller than a critical wavelength, the effect of gravity is negligible and only surface tension effects are needed to be considered.

Surface tension is a property of liquids due to which the liquid surface behaves like a stretched membrane [1]. At liquid-air interfaces, surface tension results from the greater attraction of liquid molecules to each other (due to cohesion) than to the molecules in the air (due to adhesion) [2]. When the liquid surface is disturbed, the disturbance propagates as a wave just as on a membrane. An electrically-driven vibrator is used to produce waves on the water surface. When a laser beam is incident on these surface waves, they act as a reflection grating, producing a well-defined diffraction pattern.

In 1894, Lord Rayleigh measures the surface tension of water by analyzing ripple. Rayleigh's result of 74mN/m was remarkably close to accepted value, 72.75 mN/m of the surface tension for a water air interface at 20^o.

Surface tension waves are damped (their amplitude gradually decreases) as they propagate. This damping is due to the viscosity of the liquid, a property where adjacent layers of a liquid oppose relative motion between them [2]. At molecular level, viscosity is a results the interaction between the different molecules in a fluid. This can be also understood as friction between the molecules in the fluid.

The Abbe's instrument is the most convenient and widely used refractometer. The Abbe's refractometer is very popular and owes its popularity to its convenience, its wide range ($n_D = 1.3$ to 1.7), and to the minimal sample is needed. The accuracy of the instrument is about ± 0.0002 ; its precision is half this figure. A precision Abbe's refractometer, that diminishes the uncertainties of the ordinary instrument by a factor of about three, is also available; the improvement in accuracy is obtained by replacing the compensator with a monochromatic source and by using larger and more precise prism mounts. The former provides a much sharper critical boundary, and the latter allows a more accurate determination of the prism position [2].

II. THEORETICAL BACKGROUND

The equation for displacement of simple harmonic progressive wave is given by,

$$Y = A \sin \frac{2\pi}{\lambda} (vt - x) \quad (1)$$

If V be the velocity of the wave under the action of both gravity and surface tension,

Then,

$$v = \sqrt{\frac{\lambda g}{2\pi} + \frac{2\pi T}{\rho \lambda}} \quad (2)$$

If $\lambda > \lambda_c$, the first term becomes more important as λ increases and therefore neglecting the second term, we have

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

EFFECT OF VIBRIO SPECIES ASSOCIATED WITH HAEMOLYMPH IN THE CRAB, PARATELPHUSA JACQUEMONTII

¹Kondulkar S.R., ²A.U. Ghaware and ³Jadhao R.G¹Associate Professor And Head, Department of Zoology ,Mahatma Fule Mahavidyalaya ,Warud, Amravati²Assistant Professor, Department of zoology, Mahatma Fule Mahavidyala, Bhatkuli, Dist. Amravati³ Associate Professor,P.G.Department of Zoolgy, Shri Shivaji Science College . Amravati And Corresponding Author.

Abstract: The present research paper deals with effects of Vibrio species on Haemolymph of Crab Paratelphusa jacquemontii(Rathban),was observed during laboratory experimental conditions. The results were recorded that, infection of Vibrio sps.in haemolymph alters Total leucocyte count (TLC) and Differential leucocyte count (DLC)as wel as augmentation of disease in the body of Crab, P. jacquemontii (Rathban).Water pollution also affects health of said Crab.Due to this contamination of crabs with microorganism happens,the microorganisms are potential pathogens of human beings. Hence the research study suggest that,contaminated Crabs are never used as a Food. Peoples shall use uncontaminated Crabs as a Food.

Keywords: Effects of Vibrio Species on edible Crab, Paratelphusa jacquemontii.

Introduction: India is a country having great cultural diversity associated with all kinds of climates, rich flora and fauna, and supporting an estimated total of eight percentages of the globally documented species. It is experiencing increasing pressure on its bioresource and ecosystem services due to high demand of food (Kannupandi *et al.*, 2003; Varadharajan *et al.*, 2009). Microorganisms are widely distributed in nature and diversity of microorganisms may be used as an indicator for organic pollution. The bacteria are basically suffocating the other organisms. Some of the organisms that overpopulate from this can also are disease-causing microorganisms. Increasing pollution of rivers and other water bodies has become a matter of great concern in recent years. Further crabs, fishes are the non-target organisms are affected. The accumulated toxicant in their body may reach the consumers.

These variations are often stressing crustacean, resulting in a reduction of immune strength. Water quality monitoring has one of the highest significances in environmental protection policy. The main objective is to control and minimize the incidence of pollutant oriented problems, and to provide water of good quality to serve various environmental purposes (Sargaonkar and Deshpande, 2003). The water quality is also affected by pollutants which act on elements existing in water such as dissolved oxygen or produce substances such as ammonia, nitrates etc. It is not possible to understand biological phenomena fully without the knowledge of water chemistry. If we can find some correlations among these numerous parameters, however, the task of periodic monitoring of water quality may be facilitated to a good extent (Tiwari, 2011). Crustacean's hemocytes are known for their importance in defense reactions towards invasive microorganisms infection by several species of bacteria has been documented in decapods occupying freshwater habitats (Johansson *et al.*, 2000). Haemocyte classification in various crustaceans lacks consistency. Classification of the haemocyte types in decapod crustaceans is based mainly on the presence of cytoplasmic granules in hyaline cells, semi-granular cells and granular cells (Persson *et al.*, 1987). The same classification was given by (Johansson *et al.*, 1989) for crayfish. The circulating haemocyte number is a stress indicator (Le Moullac *et al.*, 2000) and haemocyte counts may be a valuable tool in monitoring the health status of crustacean species. The haematological index has been employed effectively in monitoring the response of the aquatic animals to the stressors and thus its health status under such adverse conditions and reflects the ecological condition of its habitat.

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

ENZYMOLOGICAL INDICES OF FRESHWATER FISH *CHANNAORIENTALIS*(Sch.) EXPOSED TO CYPERMETHRIN AND FANVALERATE

R. G. Jadhao

Associate Professor, P. G. Department of Zoology, Shri Shivaji Science College, Amravati.(M.S.).

KeyWords : Enzymological indices , Cypermethrin , Fenvalerate , *Channaorientalis* .

Abstract : Toxicity study was conducted on Freshwater Fish *Channaorientalis* to evaluate the enzyme activity of two Pesticides, Cypermethrin and Fenvalerate upto 96 hrs at a duration of 24, 48, 76, and 96 hrs, which shown toxic effect of Cypermethrin and Fenvalerate on Acid phosphatase. In present study Cypermethrin was found to be more toxic than Fenvalerate to the experimental fish, *Channaorientalis*.

Introduction: In Vertebrates and Invertebrates, Cypermethrin acts mainly on nervous systym. Cypermethrin is both stomach and Contact poison (Jin and Webster, 1998).It has been shown to inhibit ATPase enzyme involved in movement of ions against a concentration gradient which are regulated by active transport, this action is especially critical to fish and aquatic insect, where ATPase enzyme provide the energy to active transport, are very important at the sites of oxygen exchange. ATPase inhibition and disruption of active transport, possibly affect ion movement and ability to maintain ion balance and disrupt respiratory surfaces, indicating that Cypermethrin is inherently more toxic to aquatic organism (Siegfried, 1993). In pond water that contained apparently lethal concentration of Cypermehrin (5ppb) because the chemical was absorbed on to suspended solids(Crossland,1982).

The use of synthetic pyrethroid for control various pests is regularly increasing. They are drained into rivers, tanks and pools resulting to pollute aquatic environment. Such chemicals are toxic to non target species and hamper human health too via ecological cycling and biological magnification. Aquatic pollution is greatly affecting the metabolism of fishes and some time heavy mortality has been experienced. A major part of worlds food is being supplied fish source, so it is essential to secure the health of fishes. Among the pyrethroids, Fenvalerate is widely used as synthetic toxicant that causes severe metabolic disorders in fishes (Coats et.al., 1979, Reddy et.al., 1989, Reddy and Philip, 1994, Thakur and Bais 2000).It has been extensively popularized because of high insecticidal potency, low mammalian toxicity and very short persistence. However, Fenvalerate is extremely toxic to fish. The extreme toxicity of Fenvalerate to fish due to efficient gill uptake in efficient detoxification, elimination and sensitivity at the site of action (Bradbury et.al., 1997, Coats et.al.,1989,Tripathi et.al.,2001). Thus low rate of Fenvalerate elimination and metabolism appears to play an important role on the pesticidal activity of this insecticide (Bradbury et.al., 1986).So for there are much limited response dealing with the effects Cypermethrin & Fenvalerate on enzyme activity of freshwater fish. Therefore, it is considered of an interest to analyse the effect of Cypermethrin&Fenvalerate on fish enzyme, Glutamate oxaloacetate transaminase.

Material And Methods:

The freshwater fish, *Channaorientalis* were collected from Amravati local market and Rushi lake of Karanja (Iad),(M.S., India)and maintained in the laboratory conditions in large aquarium to the maximum number 2 lit/gm of fish weight for a period of one month for acclimatization in aerated well water. Fishes were fed daily with ad-libitum and boiled eggs. Fishes weighing about 15 gm. and 10 cm in length were selected for evaluation or actual toxicity study. Fishes were starved for 48 hrs. before the start of experiments and kept separately in a group of 10 fishes in each aquarium(test container about 20 lit. capacity). They were kept clean and away from visual and mechanical disturbances. The various physico-chemical factors of test water such as temperature, pH(by pH meter),Conductivity(by Conductometer), Acidity, Alkalinity, Hardness ,dissolved Oxygen and salinity were calculated daily during the toxicity test(following the method described in APHA). The test water was changed after every day average value and every alternate day average value of all these environmental parameters were recorded. The pesticides Cypermethrin and Fenvalerate were added to the test water to obtain the described concentration. Then healthy fishes were exposed to various concentration of pesticides for 24, 48,

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© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

STUDY OF EARLY MENSTRUAL CYCLE AMONG THE FEMALES OF AMRAVATI CITY

Pratiksha Puranik, *Jayashree Dhote
Research student Associate professor
Shri Shivaji Science College, Amravati.

Abstract: The menstrual cycle is a very important indicator of women's reproductive health and of their endocrine function. Menstruation, and the menstrual cycle are characterized by variability in volume, pattern and regularity. The purpose of this study was to determine the age of menarche, age of menopause, source of information regarding menstrual cycle, patterns, and problems faced by the adolescent urban school girls, of Amravati region, during menstruation. For collection of data Self-structured questionnaire based on issues related to menstruation cycle was used. This survey was conducted in Amravati region in some of the Muslim and Hindu areas (community). By using survey method. Average age of menarche for overall sample taken, of adolescent girls of Amravati is 14 years. It was observed that the girls whose age is present in between 12-20, 10 girls show irregularity in age menstrual cycle 4 girls show Oligomenorrhea, 10 girls show Menorrhagia. The girls whose age is present in between 21-30 8 girls show irregularity, 12 girls show Oligomenorrhea, 5 girls show Menorrhagia. the woman's whose age between 31-40, 4 women show irregularity, 3 women show Oligomenorrhea, 4 women show Menorrhagia. Higher percentage of females in Amravati city experience problem during menstruation cycle. Most of the females are suffer from Oligomenorrhea and Menorrhagia due to hormonal imbalance. Intervention program for awareness regarding Menstrual cycle and associated issues for adolescent girls and their parents should be planned so that the problems of the girls can be minimized. The aim of present study is to investigate among females, strategies of menstrual cycle.

Keywords: Menarch, Oligomenorrhea, Menorrhagia, Irregularity.

I. INTRODUCTION:

The menstrual cycle is naturally occurring function in women of reproductive age. The average length of the cycle is 28 days and is comprised of four phases: menstruation, follicular phase, ovulation, luteal phase. The cycle is required for the production of oocytes and for preparation of the uterus for pregnancy. During the menstrual cycle, body undergoes many physiological and hormonal changes. The process begins with brain triggering certain hormones to stimulate egg growth.

Once the egg matures it will release from the ovary and travel through the fallopian tube into the uterus. If the egg is not fertilized by the sperm it will disintegrate and be absorbed. When the egg goes unfertilized hormone levels will drop causing the lining of the uterus to shed and bleed resulting in a discharge through the vagina. Bleeding also known as "Menstruation". The first period usually begins between 12 and 15 years of age, a point in time known as menarch.

The typical length of time between the first day of the next is 21 to 45 days in young women and 21 to 35 days in adult. Bleeding usually lasts around 2 to 7 days. Menstruation stops occurring after menopause which usually occurs between 45 and 55 years of age. Women have common symptoms include acne, tender breasts, bloating, feeling tired, irritability and mood changes. These symptoms interfere with normal life and therefore known as premenstrual syndrome. In follicular phase, increasing amount of estrogen results in discharges of blood (menses) flow stop and the lining of the uterus thickens. Follicles in the ovary begin developing under the influence of a complex interplay of hormones, and after several days one or occasionally two become dominant (non-dominant follicles shrink and die). Approximately mid cycle, 24 to 36 hours after the luteinizing hormone (LH) surges, the dominant follicles releases an ovocyte, the ovocyte only lives for 24 hours or less without fertilization while the remains of the dominant follicle in the ovary become a corpus luteum; this body has a primary function of producing large amounts of progesterone. Under the influence of progesterone, the uterine lining changes to prepare for potential implantation of an embryo to establish a pregnancy, if implantation of the embryo does not occur within 2 weeks, the corpus luteum will involute, causing a

137. Pritesh Vitthalrao Kothekar, Jayashree Dhote., EXTR ACTION OF SOIL MICRO-ARTHROPODS BY TULLGREN FUNNEL

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

EXTR ACTION OF SOIL MICRO-ARTHROPODS BY TULLGREN FUNNEL

¹Pritesh Vitthalrao Kothekar ²Jayashree Dhote.¹Research Student ²Associate professor¹Dept. of Zoology¹Shri Shivaji Science College Amravati¹Shri Shivaji Science College Amravati, India.

Abstract : Nearly every soil is home to many different arthropods species. Certain row-crop soil contains several dozen species of arthropods in a square mile. Several thousand different species which may live in a square mile of forest soil. The sample was collected in the summer season and extracted the micro-arthropods with the help of modified Tullgren funnel. The identified micro-arthropods are majority belongs to the class insecta. These arthropods increase the fertility of the soil by burrowing in the soil, decomposition of soil matter and distribution of nutrient in the soil. Arthropods bite and sting are capable to trasmitte systemic disease also. The identified arthropods are *ant, pauropoda, pseudoscorpion, termite and rove beetle*. Aim of the study is to observed the behaviour of micro-arthropods and distribution of nutrient in soil by micro-arthropods.

Keywords: micro-arthropods, Tullgren funnel, insect.

I. Introduction

Many bugs, known as arthropods, make their home in the soil. They get their name from their jointed (arthros) legs (podos). Arthropods are invertebrates, that is, they have no back bone, and rely instead on an external covering called an exoskeleton.

Arthropods range in size from microscopic to several inches in length. They include insects, such as springtail, beetles and ants; crustaceans such as sowbugs; arachnids such as spiders and mite; myriapods such as centipedes, millipedes and scorpions.

Nearly every soil is home to many different arthropods species. Certain row-crop soil contains several dozen species of arthropods in a square mile. Several thousand different species which may live in a square mile of forest soil.

Arthropods can be grouped as shredders, predators, herbivores, and fungal-feeder, based on their function in soil. Most soil-dwelling arthropods eat fungi, worm or other arthropods. Root-feeder and dead-plant shredders are less abundant. As they feed, arthropods aerate and mix the soil, regulate the population size of other soil organisms and shred organic material.

Characters and classification:-

Phylum arthropoda (gr. Arthos= jointed; pods= foot) contains the great majority of the known animals, about one million species, and many of them are enormously abundant as individuals. It includes such common and well-known forms as the crabs, shrimps, insects, spiders, scorpions, ticks, centipedes, as well as a host of other less familiar forms. Cuvier (1800) placed all these animals together with annelida under the group articulate. Van siebold (1945) separated annelida from articu-lata. Annelida were placed under class vermes while the crustacea, arachnida and insecta under an independent group, the arthropoda.

General characters:-

1. Arthropoda are triploblastic. Bilaterally symmetrical, metamerically segmented animal.
2. Body is covered with a thick chitinous cuticle forming an exoskeleton.
3. Body segments usually bear paired lateral and jointed appendages.
4. Musculature is not continuous but comprises separate striped muscles.
5. Body cavity is haemocoel. The true coelom is reduced to the spaces of the organs.
6. Digestive system complete; mouthparts adapted for various modes of feeding.
7. Circulatory system open with a dorsal heart, arteries and blood sinuses.
8. Respiration by general body surface, gills, tracheae or book-lungs.
9. Excretory organs are green glands or malpighian tubules.
10. Nervous system with a dorsal nerve ring and a double ventral nerve cord.
11. Cilia are entirely absent from all parts of the body.
12. Sexes are generally separate and sexual dimorphism is often exhibited by several forms.
13. Fertilization is internal. Development is usually indirect through larval stages.
14. Parental care is also often will marked in many arthropods.

138. Jayashree Dhote, Aqib Hussain, COMPARATIVE BIOCHEMICAL ESTIMATIONS IN EGGS AND MUSCLE TISSUE OF FISHS

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

COMPARATIVE BIOCHEMICAL ESTIMATIONS IN EGGS AND MUSCLE TISSUE OF FISHS

¹Jayashree Dhote, ²Aqib Hussain¹Associate professor, ²Research student¹Department of zoology¹Shri Shivaji Science College, Amravati, India. 444603.

Abstract: Animal meat is a good source of protein for humans however, it is initiated that the source is unsatisfactory due to numerous aspects like economy and environmental conditions. In current examination, an effort has been made to compare the biochemical compositions of freshwater fish eggs and muscle tissue of *Catla catla* and *Labeo rohita*, in the following aspects: protein, carbohydrate, lipid, RNA, DNA, sodium and potassium. Samples of eggs and muscle were collected from the resident market of the Amravati city. Findings of the study reveal that, the carbohydrate, protein, RNA and potassium content in eggs of *Catla catla* were found more as compared to the eggs of *Labeo rohita* while as protein, carbohydrate and potassium content in muscle tissue of *Catla catla* were found more than the muscle tissue of *Labeo rohita* however, lipid content in muscle of *Labeo rohita* were more than the lipid content found in muscle of *Catla catla*.

Key words: Fish eggs, proteins, lipids, carbohydrates, DNA, RNA.

1. Introduction

Catla (*Catla catla*) and Rohu (*Labeo rohita*), also named as the major Indian carps they are economically important South Asian freshwater fishes in the carp family, they are native to rivers and lakes of northern India, Bangladesh, Myanmar, Nepal, and Pakistan. Biochemical assessment is necessary to ensure the nutritional value as well as palatability of the freshwater fish (Azam et al., 2004). Knowledge on biochemical composition of muscles of major carps, *Labeo rohita*, *Catla catla*, and *Cirrhinus mrigala*, is of great help in evaluating not only its nutritive value but also helps in quality assessment and optimum utilization of these natural resources (Gonzalez et al., 2006). This, in turn, can help in processing the fish into products and other byproducts without wastage or loss of constituents such as free amino acids, proteins, and fats. Biochemical investigations on fish help to evaluate the impact of the environment. (Pampatwar et al., 2006) Fish is generally of high value compared to other protein foods, because of its high protein quality and palatability (Lovell, 1978). Fish eggs also have a good source for human nutrition due to their therapeutic role in reducing certain cardiovascular disorders (Stickney and Hardy, 1989). The biochemical composition of eggs is one of the factors determining egg quality since eggs must contain all the nutrients required for normal development during embryonic and yolk-sac larval stages. Several nutrients such as vitamins and essential fatty acids (EFA) have been suggested to be related to egg quality in both freshwater and marine fishes (Takeuchi et al., 1981; Watanabe 1985; Foley et al., 2016). More information on the relationship between egg composition and egg quality is needed for the improvement of egg quality (Watanabe et al., 1984).

139. Aafreen A. Hasan, Jayashree Dhote, IN SILICO ANALYSIS AND PHYLOGENY OF VERTEBRATE RHODOPSIN

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

IN SILICO ANALYSIS AND PHYLOGENY OF VERTEBRATE RHODOPSIN

¹Aafreen A. Hasan, ²Jayashree Dhote¹Research student, ²Associate Professor

Department of Zoology,

Shri Shivaji Science College, Amravati, India.

Abstract: Phylogenetics & Evolutionary Biology is the field that deals with the study of evolutionary relations among groups of organisms and the computational simulation techniques for the study of biological, behavioural, and social systems. A phylogeny or evolutionary tree represents the evolutionary relationships among a set of organisms or groups of organisms. To analyze the protein rhodopsin, the amino acid sequence of human rhodopsin was retrieved from NCBI site and was used for analysis in PepTool 2.0. From the results of present *in silico* protein analysis and phylogenetic study of vertebrate rhodopsin it can be concluded that the amino acid sequences among different vertebrate species show slight to moderate differences without affecting its function of light absorption during the phenomenon of vision.

Keywords: phylogeny, evolutionary relationships, rhodopsin, amino acid sequence differences, effect on vision.

1. Introduction

The area within the eye that detects light and colour is called the Retina. The two types of detection cell present, rods and cones, process information coming through the Lens and send it down the optic nerve to the brain. Rod cells detect the degree of lightness entering the eye and their sensitivity is dependent on the amount of Rhodopsin present, which is itself generated within the cells. Rhodopsin, also known as visual purple, is a biological pigment in photoreceptor cells of the retina that is responsible for the first events in the perception of light. Rhodopsin of the rods most strongly absorbs green-blue light and, therefore, appears reddish-purple, which is why it is also called "visual purple". It is responsible for monochromatic vision in the dark. Several closely related opsins exist that differ only in a few amino acids and in the wavelengths of light that they absorb most strongly. A phylogenetic tree, represents the evolutionary relationships among a set of organisms.

2. Review of literature

Mario X. et al., 2003 studied the evolutionary history of type 1 rhodopsins. Type 1 (archaeal) rhodopsins and related Rhodopsin-like proteins had been described in a few halophile archaea, c-proteobacteria, a single cyanobacterium, some fungi, and a green alga. These close relationships suggest that at least one horizontal gene transfer event involving rhodopsin genes occurred between prokaryotes and eukaryotes.

Belinda and Campbell, 2000, studied the phylogenetic reconstruction of vertebrate Rhodopsin. Two spurious nodes were found in phylogenetic analyses of vertebrate rhodopsin sequences in comparison with well established vertebrate relationships. These spurious reconstructions were well supported in bootstrap analyses and occurred independently of the method of phylogenetic analysis used. Use of this data set of vertebrate rhodopsin sequences allowed us to exploit established vertebrate relationships, as well as the considerable amount known about the molecular evolution of this gene, to identify important factors contributing to the spurious reconstructions.

140. Gayatri D. Hande, FUNGAL INFECTIONS ON EDIBLE FISHES FROM WADALI LAKE, AMRAVATI MS

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

FUNGAL INFECTIONS ON EDIBLE FISHES FROM WADALI LAKE, AMRAVATI MS

Gayatri D. Hande

P.G. Department of Zoology, Shri Shivaji Science College, Amravati, MS India.

ABSTRACT:

In the present investigation *S. parasitica* and *A. niger* were found to be the most common water molds responsible for the fungal infections to fresh water fishes. *Saprolegnia* is found to be more virulent for fishes. Initially the infection was in the form of small patches and in advance cases big lesions penetrated up to the muscles. Saprolegniasis is considered as a localized infection and not systemic infection. Generally it is an external infection and can be appeared any where over the body surface especially fins, eyes, gills and ulcerated area on the body. The clinical signs exhibited by the fishes due to *Achlya* infection were characterized by the presence of a brownish cotton wool like growth and small white patches on the head and fins of the affected fishes. Morphotaxonomy of the fungi isolated from Fishes studied here.

INTRODUCTION:

Fishes are one of the most important groups of vertebrates which provide free economic services to human beings in several ways. These are more common and widely distributed almost in all parts of the world in marine, freshwater as well as estuarine ecosystems. The quality and quantity may vary but they are used by human being everywhere. Nearly all fishes fresh water and marine are edible and have been an important sources of protein food. Fishing is one of the oldest professions of man. It has received much attention from the very beginning of the human history, as fish constitute one of the most nutritionally important items for human consumption. Fishes are the primary source of protein along with omega three fatty acids. The fish protein is more easily digested in comparison to that obtained from other sources. One of the best ways to get Omega 3-fatty acids into the diet is to eat fish twice a week.

Nutritional studies have proved that fish proteins rank in the same class as chicken protein and superior to milk, beef protein and egg albumen. Fish proteins comprise of all the ten essential amino acids in desirable strength for human consumption, namely lysin (high concentration), arginine, histidine, leucine, isoleucine, valine, threonine, methionine, phenylalmine and tryptophane. This accounts for the high biological value of fish flesh. Fish therefore becomes a valuable supplement to human diet for people who are habitually taking cereals, starchy roots and sugar as their principle diet. In most fishes, the flesh is white and contains 16 to 29 percent of protein and has a food value of 300 to 1600 calories per pound. Fish oils are rich sources of the soluble fat. An excessive use of fish generally lowers the blood cholesterol level and reduces the risk of coronary heart diseases. As it contains all the ten essential amino acids in desirable quantity for human consumption, it is recommended by cardiologists to use generous quantities of fish in food to obtain adequate protein without taking in excessive fatty acids and lipids.

Representatives of all taxonomic classes of Fungi and the Oomycetes have been reported from aquatic habitats. Fungal species reported from aquatic habitats range from those that are adapted to complete their life cycles in aquatic habitats and are not found outside of the aquatic environment (residents) to those that occur in water fortuitously by being washed or blown in (transients). Knowledge about the occurrence of Fungi in aquatic habitats is important and its survey is essential.

Wong *et al.* (1998) studied more than 600 species of freshwater Fungi with a greater number known from temperate, as compared to tropical, regions. It is suggested that three main groups can be considered which include Ingoldian Fungi, aquatic Ascomycetes and non-Ingoldian hyphomycetes, chytrids and oomycetes. Freshwater Fungi are thought to have evolved from terrestrial ancestors. Many species are clearly adapted to life in freshwater as their propagules have specialized aquatic dispersal abilities. Freshwater Fungi are involved in the decay of wood and leafy material and also cause diseases of plants and animals.

141. Rupali Patil Bhagat and Mitali B Ghormade, DOCKING OF RIGID MACROMOLECULES USING AUTODOK

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

DOCKING OF RIGID MACROMOLECULES USING AUTODOK

Rupali Patil Bhagat and Mitali B Ghormade

Shri. Shivaji Science Collage, Amravati.

Abstract-

Molecular docking is a kind of bioinformatics modelling which involves the interaction of two or more molecules to give the stable adduct. Depending upon binding properties of ligand and target, it predicts the three dimensional structure of any complex. Molecular docking generate different possible adduct structures that are ranked and grouped together using scoring function in the software. This exercise again demonstrated a crucial importance of the correct local legand geometry for the overall success of docking. Knowledge of the preffered orientation in turnmay be used to predict the strength of association or bindingaffinity between two molecules using,for example scoring funstions. In the field of molecular biology,selected ligand can act as good drug lead and can be further go for clinical trial.

Introduction

Molecular docking is used for study of protein-ligand interactions and for drug discovery,synthesis and development. Actually the process starts with a target of known structure of an enzyme of medicinal interest. Docking is then used to predict the bound conformation and binding free energy of small molecules to the target. Single docking experiments are useful for exploring the function of the target, and virtual screening, where a large library of compounds are docked and ranked, may be used to identify new inhibitors for drug development.

AutoDock is a suite of free open–source software for the computational docking and virtual screening of small molecules to macromolecular receptors. The suite currently includes several complementary tools:

AutoDock Vina: a turnkey computational docking program based on a simple scoring function and rapid gradient-optimization conformational search. 1

AutoDock: a computational docking program based on an empirical free energy force field and rapid Lamarckian genetic algorithm search method2,3.

Raccoon2: an interactive graphical tool for virtual screening and analysis4.

AutoDockTools: an interactive graphical tool for coordinate preparation, docking and analysis.5

AutoLigand: a program for predicting optimal sites of ligand binding on receptors.6

The AutoDock suite, including source, is freely available, and has been widely used in research and drug discovery.

MATERIALS

Required Data

Coordinate file for receptor (in a variety of formats, including pdb, mol2, cif & sdf)

Coordinate file for ligand (in a variety of formats, including pdb, mol2, cif & sdf)

142. Rupali Patil Bhagat, APPLICATIONS OF BIO PHYSICS – AN OVERVIEW

© 2020 JETIR August 2020, Volume 7, Issue 8

www.jetir.org (ISSN-2349-5162)

APPLICATIONS OF BIO PHYSICS – AN OVERVIEW

Dr. Rupali Patil Bhagat, Asst Professor, Dept of Zoology, Shri Shivaji Science College, Amaravati, SGB Amaravati University, Maharashtra.

Abstract:

Biophysics is a branch of science that uses the methods of physics to study biological processes. Physics uses mathematical laws to explain the natural world, and it can be applied to biological organisms and systems to gain insight into their workings. Research in biophysics has helped prevent and treat disease, advance drug development, and create technology to allow humans to live more sustainably and protect the changing environment. In the first half of the 20th Century, German scientists dominated the biophysics. They studied electromagnetic fields and light, and they became mainly concerned with studying the effects of radiation on living things. The popularity of biophysics rose when the Austrian physicist Erwin Schrödinger published the book *What is Life?* in 1944. This book was based on a series of public lectures that Schrödinger gave on explaining the processes of living things through physics and chemistry. In it, he proposed the idea that there was a molecule in living things that contained genetic information in covalent bonds. This inspired scientists such as James Watson and Francis Crick to search for and characterize the genetic molecule, and with the aid of Rosalind Franklin's x-ray crystallography research, they discovered the double helix structure of DNA in 1953.

Keywords: Biophysics, branch, science, methods, physics, study, biological, processes.

Introduction:

History of Biophysics Biophysics is a relatively young branch of science; it arose as a definite subfield in the early to mid-20th Century. However, the foundations for the study of biophysics were laid down much earlier, in the 19th Century, by a group of physiologists in Berlin. The Berlin school of physiologists included Hermann von Helmholtz, Emil DuBois-Reymond, Ernst von Brücke, and Carl Ludwig. In 1856, Adolf Fick, one of Ludwig's students, even published the first biophysics textbook. But technology in physics had not sufficiently advanced at this time to study lifeforms in a detailed way, such as at the molecular level.

By the mid-20th century, biophysics programs had sprung up and gained popularity in other countries, and from 1950-1970, biophysics research occurred at a faster rate than ever before. In addition to the discovery of DNA and its structure, biophysics techniques were also used to create vaccines, develop imaging techniques such as MRI and CAT scans to help doctors diagnose diseases, and create new treatment methods such as dialysis, radiation therapy, and pacemakers. Currently, biophysics has also begun to focus on issues

143. R.A.Patil Bhagat, Impact Of Zoology in Bio physics-An Empirical study

© 2020 JETIR September 2020, Volume 7, Issue 9

www.jetir.org (ISSN-2349-5162)

Impact of Zoology in Bio physics – An Empirical study

Dr.Rupali Patil Bhagat, Asst Professor, Dept of Zoology, Shri Shivaji Science College, Amaravati, SGB Amaravati University, Maharashtra.

Abstract

One word that is never far from the agenda today is 'impact'. Increasingly, Universities are being challenged to demonstrate that research is having positive effects on the health, wealth, or well-being of people and the planet. We will always argue that fundamental curiosity-driven research is also essential, partly since surely it is important (and interesting) to understand how the world works, but also because very often far-reaching impacts come in quite unexpected ways. Below is a sample of some of the 'impacts' that have come from research in the Department of Zoology. The diversity is impressive, and shows that research in Zoology, and training the next generation of Biology students, really does have impact.

Biological life on planet Earth is undoubtedly immense and the subject that studies it - biology - is such a vast area of study that no graduate in the subject could hope to understand all of it. Increasingly, biology graduates are looking for ways to find their niche early and focus on one specific area. One of those vital areas of biology is called zoology. This is the study of animal life (1). It is so vast that it's broken down into many other sub-areas. Regardless of niche, zoologists examine many areas of animal life, covering such varied areas as animal anatomy, ecology, fetal development, their evolution (and common ancestors with similar animals in the same family or order and those related), distribution and habits, diet, and place in the food chain. But zoology is not just limited to living animals; some areas examine extinct species. Others are interested in how animals interact with humans.

As with many scientific disciplines, the term "zoology" comes from ancient Greek through Latin (2). "Zōion" - shortened to "zoo" simply means "animal". The second part of the word "ology" comes from "logos" which means study, learning, or knowledge. The older Latin term for the phrase was "Zoologia". Zoologists may take an interest in a specific order, family or genus, or take an interest in one specific species or one aspect of that species life.

Keywords: Impact, Zoology, Bio physics.

Introduction:

As with botany and several other biological sciences, zoology is relatively new as far as being an academic discipline is concerned. In some ways, ancient societies saw the study of animals as a luxury and unnecessary except in some limited cases. Interests in the processes of the animal life were limited to lifecycle and animal husbandry (gestation and reproduction), and lifestyle and health (diet, environmental needs, disease transmission), all of which were viewed purely through the lens of using animals for human benefit (meat, dairy, plant pollination, guard dogs, pets). A history of early zoology is simply the history of early agriculture.

But the fledgeling science of zoology began in this period. While most were only concerned with those issues above (categorized today as "Animal Science"), Aristotle's broad array of interests ignited the study of animal life beyond the merely functional. He is credited with effectively starting all of biology and although his interest in botany is well-understood, zoology also fascinated him. He looked at the biological functions of animals, commenting on such issues as metabolism, temperature and environment, embryo and sexual reproduction and inherited traits. He was not limited to the functional aspect but was interested in development for itself. His

144. N R Thakare and A P Thakare, Synthesis, characterization and biological evaluation of some isoxazole derivatives from various chalcones

© 2020 JETIR September 2020, Volume 7, Issue 9

www.jetir.org (ISSN-2349-5162)

Synthesis, characterization and biological evaluation of some isoxazole derivatives from various chalcones

¹N R Thakare and ²A P Thakare¹Department of Chemistry, Shri Shivaji Science College, Amravati,²Department of Chemistry, Rajarshree Shahu Science College, Chandur Rly.

Abstract : Synthesis and characterization of some isoxazol derivatives has been carried out from chalcone. Initially chalcone were prepared from aromatic aldehyde and ketone in basic medium which then condensed with hydroxylamine hydrochloride. Synthesized compounds were characterized by using NMR, IR and Mass spectroscopic techniques. Spectroscopic data matches with the structure of synthesized compounds. Biological activity of all the synthesized compounds was checked against gram positive and gram negative bacteria. It has been found that all compounds shows good antimicrobial activity. The paper consist of efficient and green method for the synthesis of isoxazole.

Index Terms – Chalcone, Isoxazole, NMR, IR, Antimicrobial.

I. INTRODUCTION

The need to reduce the amount of toxic waste and by products arising from chemical processes requires increasing emphasis on the use of less toxic and environmentally compatible materials in the design of new synthetic methods. One of the most promising approaches is the use of water as the reaction medium. Compared to organic solvents the aqueous medium is less expensive, less dangerous, and more environmentally friendly. In recent years, there has been increasing recognition that water is an attractive medium for many organic reactions. Heterocyclic compounds are very important compound in nature, and are essential to life in various ways. These compounds are important because of their variety of physiological activities associated with this class of substances. Heterocyclic rings are present in several compounds, e. g. most of the members of vitamin B complex, antibiotics, chlorophyll, haemin, other plant pigments, amino acids and proteins, drugs, dye stuffs, enzymes, the genetic material DNA etc. The vast importance of heterocycles in nature product chemistry and pharmacology constantly drive the search for new methods for the construction of heterocyclic unit viz., isoxazoles and pyrazoles. These isoxazoles and pyrazoles were prepared from chalcones which are important intermediate products and they also possess biological and pharmacological activities. Isoxazoles is the five membered ring compound containing nitrogen and oxygen atom and possess interesting medicinal properties and have some industrial utility. Derivatives of Isoxazole have played a crucial role in the history of heterocyclic chemistry and been used extensively important pharmacophores and synthons in the field of organic chemistry. Many biologically active isoxazoles and reduced isoxazole derivatives have been reported. In this paper we have described the synthesis of some chalcone and isoxazole derivatives [1- 4]. Initially chalcones were prepared by condensing aromatic aldehyde and ketone. These chalcone then condensed with hydroxylamine to form isoxazole.

II. EXPERIMENTAL

All melting points were determined in open glass capillaries and are uncorrected. The IR spectra were recorded on KBr disc using Perkin Elmer-1800 intrachord. ¹H NMR and ¹³C NMR spectra were recorded in CDCl₃ on Bruker Avance 400MHz spectrophotometer with TMS as internal standard (chemical shifts are expressed in δ ppm). The mass spectra were recorded on a Joel SX-102 (EI/CI/FAB) mass spectrometer at 70 eV. The reactions were monitored by the TLC on silica gel G plates in the solvent system benzene-methanol mixture (9:1). All reagents were purchased from commercial suppliers and used without further purification. The compound includes 2-hydroxy-4-methylacetophenone, benzaldehyde, p-chloro benzaldehyde, anisaldehyde, 4-methyl benzaldehyde.

Synthesis of chalcone:

A mixture of 0.01 mol 2-hydroxy-4- methylacetophenone and 0.01 mol various aldehyde added into ethanol solvent. To this reaction mixture 20 % NaOH added and heated for several minutes' upto formation of solid residue. By keeping overnight residue neutralized by ice cold HCl solution, filtered and dried in oven [5-7].

Synthesis of isoxazole:

When an equivalent mixture of synthesized chalcone and hydroxylamine hydrochloride was stirred at 50° C in aqueous media, various isoxazole derivatives were obtained in good yields [8-10].

145. Sujata Kawade, Histopathological alterations in the liver of freshwater fish, *Channa gachua* (Ham.) on acute exposure to Nickel

© 2020 JETIR October 2020, Volume 7, Issue 10

www.jetir.org (ISSN-2349-5162)

Histopathological alterations in the liver of freshwater fish, *Channa gachua* (Ham.) on acute exposure to Nickel

Sujata Kawade

Assistant Professor,
Department of Zoology,
Shri Shivaji Science College, Amravati, Maharashtra, India.

Abstract: Industrial effluent containing heavy metals, on entering aquatic environment causes histopathological disturbances in the fish. The present study deals with the toxic effect of heavy metal - Nickel (Ni) as NiSO₄ on the liver of fresh water fish, *Channa gachua*. Liver was examined in the 96 hours LC₅₀ acute test. Histopathological examination of liver revealed marked pathological changes like shrinkage of central vein, accumulation of blood cells in the central vein, rupture of sinusoids, degeneration of hepatic tissue due to necrosis and hemorrhage in the hepatocytes and connective tissue.

Key words: Nickel, Liver, histopathology, *Channa gachua*

INTRODUCTION:

Water pollution is recognised as a potential threat to the aquatic organisms. Population explosion and rapid industrialization are the reasons for this type of pollution. The major sources of aquatic pollution are discharge of industrial effluents, fertilizers, pesticides, domestic sewage, etc. into the water bodies.

Effect of various pollutants on aquatic organisms have been studied by many workers. **Cengiz, (2006)** reported histological alterations in the gills and kidney of freshwater fish *Cyprinus carpio* after acute exposure to deltamethrin. **Santhakumar et al (2001)**, reported gill lesions in the perch, *Anabas testudineus*, exposed to **monocrotophos**. **Rao, et al (2005)**, reported sublethal effects of **monocrotophos** on locomotor behavior and gill architecture of the mosquito fish, *Gambusia affinis*. **Rana et al, 2015** reported histopathological study of liver and kidney in common carp (*Cyprinus carpio*) exposed to different doses of potassium dichromate.

Among the various pollutants, heavy metals have become a matter of great concern. Heavy metals are natural trace components of the aquatic environment but as they are non-biodegradable, their higher concentration may cause harmful effect on the aquatic organisms. Once discharged in the water bodies, these heavy metals bioaccumulate causing harmful effect on the organisms exposed to them (**Hollis et al, 1999**).

Many workers have reported the harmful effects of heavy metals on the aquatic environment. Effect of cadmium chloride on the histoarchitecture of kidney of freshwater Catfish, *Channa punctatus* was reported by **Amin et al, 2013**. **Drishya et al 2016** reported histopathological changes in the gills of fresh water fish, *Catla catla* on exposure to electroplating effluent. Changes in the biochemical profile including glucose, protein and cholesterol in the fresh water

146. Pallavi N. Dabhade, Sameerkhan C. Pathan, SYNTHESIS AND COMPARISON OF CLEANING POWER OF EDIBLE OIL SOAPS WITH COMMERCIAL DETERGENTS

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

SYNTHESIS AND COMPARISON OF CLEANING POWER OF EDIBLE OIL SOAPS WITH COMMERCIAL DETERGENTS

¹Pallavi N. Dabhade, ²Sameerkhan C. Pathan

¹Department of Chemistry

¹Shri Shivaji Science College, Amravati - 444603, India.

Abstract : 5/6- Edible oil soaps were synthesized by following saponification process. They were separated and purified, allowed to demoiaturize to get in pure dry form. The surface tension of all synthesized soaps are recorded by standard procedure. The surface tensions of few commercial detergents was also determined. The comparison of the cleaning power of synthesized soaps was made with commercial samples. Few of the synthesized soaps showed higher cleaning power than commercial detergents. The findings are presented in this paper.

Keywords: Edible oils, NaOH, Edible oil soaps, Detergents, Stalagmometer.

Introduction: The discovery of soap predates recorded history back perhaps as far as 6000 years. Excavation of ancient Babylon uncovered cylinders with inscriptions for making soap around 2800 BC. Later records from ancient Egypt (1500BC) describe how animal and vegetable oils were combined with alkaline salts to make soaps. Soaps are cleaning agents that are usually made by reacting alkali (e.g. Sodium Hydroxide) with naturally occurring fats and fatty acids. The reaction produces sodium salts of these fatty acids, which improve the cleaning process by making water better able to lift away greasy stains from skin, hair, clothes and just about anything else. As a substance that has help clean bodies as well as possessions, soap has been remarkably useful.^[1] In industry, soaps are used as thickeners, components of some lubricants and precursors to catalysts apart from washing agent.^{[2][3]}

Results and Discussion: The basic structure of all soaps is essentially consisting of a long hydrophobic (water fearing) hydrocarbon tail and a hydrophilic (water loving) anionic head.

$\text{CH}_3(\text{CH}_2)_{17}\text{COO}^-\text{Na}^+$



The anionic charge on the carboxylate head is balanced by positively charged potassium(K^+) or sodium (Na^+) cation. In making soaps, triglycerides in fats or oils are heated in presence of strong alkali like NaOH or KOH to produce 3 moles of soap and 1 mole of glycerol. This process is called as **saponification**.

Soaps are surface active agents like synthetic detergents and make water better at cleaning surfaces. Surfactants work by reducing surface tension of water allowing water molecules to better wet. the surface thus increase ability of water to dissolve dirty and oily stains. The soaps work by forming micelle. In a micelle, the tails of soap molecules are oriented toward and into the grease, while the heads face outward into the water resulting in an emulsion of soapy grease particles suspended in the water.

147. Rupali Patil Bhagat and Mitali B Ghormade, DOCKING OF RIGID MACROMOLECULES USING AUTODOK

© 2020 JETIR February 2020 , Volume 7, Issue 2

www.jetir.org (ISSN-2349-5162)

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Molecular docking is used for study of protein-ligand interactions and for drug discovery,synthesis and development. Actually the process starts with a target of known structure of an enzyme of medicinal interest. Docking is then used to predict the bound conformation and binding free energy of small molecules to the target. Single docking experiments are useful for exploring the function of the target, and virtual screening, where a large library of compounds are docked and ranked, may be used to identify new inhibitors for drug development.

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AutoDockTools: an interactive graphical tool for coordinate preparation, docking and analysis.5

AutoLigand: a program for predicting optimal sites of ligand binding on receptors.6

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Coordinate file for receptor (in a variety of formats, including pdb, mol2, cif & sdf)

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148. Butte SM: Optical Properties of Cu₂O and CuO

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Optical properties of Cu₂O and CuO

AIP Conference Proceedings 2220, 020093 (2020); <https://doi.org/10.1063/5.0001644>

S. M. Butte¹ and S. A. Waghuley¹

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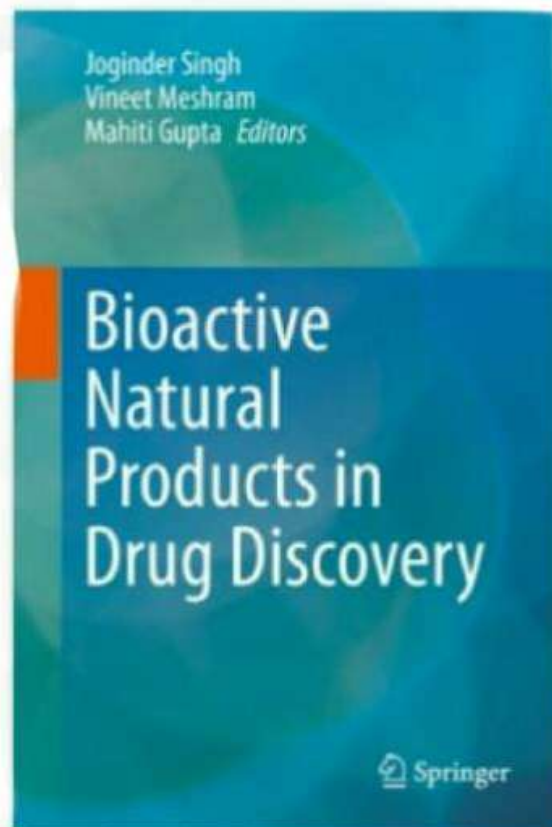
ABSTRACT

The present investigation reports on synthesis of copper oxides nanoparticles by chemical route method. In this investigation we are prepared CuO and Cu₂O by calcination process.

149. Hande DV: Bioscience Research and conservation



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Authors

Authors and affiliations

Kishor Suradkar 1

Dillip Hande 2

Editors

Joginder Singh
Department of Microbiology
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Agricultural Research Organization,
The Volcani Centre
Rishon LeZion, Israel

Mahiti Gupta
Department of Biotechnology
Lovely Professional University
Phagwara, Punjab, India

ISBN 978-981-15-1393-0 ISBN 978-981-15-1394-7 (eBook)
<https://doi.org/10.1007/978-981-15-1394-7>

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Characterization of Bioactive Secondary Metabolites of Fungal Endophytes from Melghat Forest in Maharashtra, India

21

Kishor Suradkar and Dillip Hande

Abstract

In recent years, endophytic fungi associated with medicinal plants have received much attention because of their special ability to synthesize analogous and non-analogous secondary metabolites with interesting biological activities. This study focuses on antibacterial potential of endophytic *Nigrospora oryzae* isolated from *Vitex negundo*, a medicinal plant collected from Melghat forest of Amravati District of Maharashtra, India. The endophytic fungus was grown over Potato Dextrose Broth (PDB) and then further extracted with ethyl acetate (EA). The crude EA extract was further screened for its antibacterial property via disc diffusion method against three pathogenic microorganisms such *Escherichia coli* (MTCC 1698), *Pseudomonas aeruginosa* (MTCC 6458) and *Staphylococcus aureus* (MTCC 2639). The crude EA residue exhibited prominent microbial activity (11.16–16.67 mm) against tested pathogens. Furthermore, the EA extract was analysed by GC/MS for characterization of bioactive fungal metabolites. The GC/MS analysis suggested the presence of major compounds like phenol 2,4-bis(1,1-dimethylethyl), 3-hexadecyloxycarbonyl-5-(2-hydroxyethyl)-4-methylimidazolium ion, naphthalene, 1,2-benzenedicarboxylic acid diisooctyl ester and eicosene. The antibacterial activity exhibited by the EA extract might be attributed to these compounds solely or synergistically.

Keywords

Antimicrobial potential · *Nigrospora oryzae* · *Vitex negundo* · Melghat forest Amravati

K. Suradkar

Department of Botany, Indira Mahavidyalaya, Kalamb, Maharashtra, India

D. Hande (✉)

Sant Gadge Baba Amravati University, Amravati, Maharashtra, India

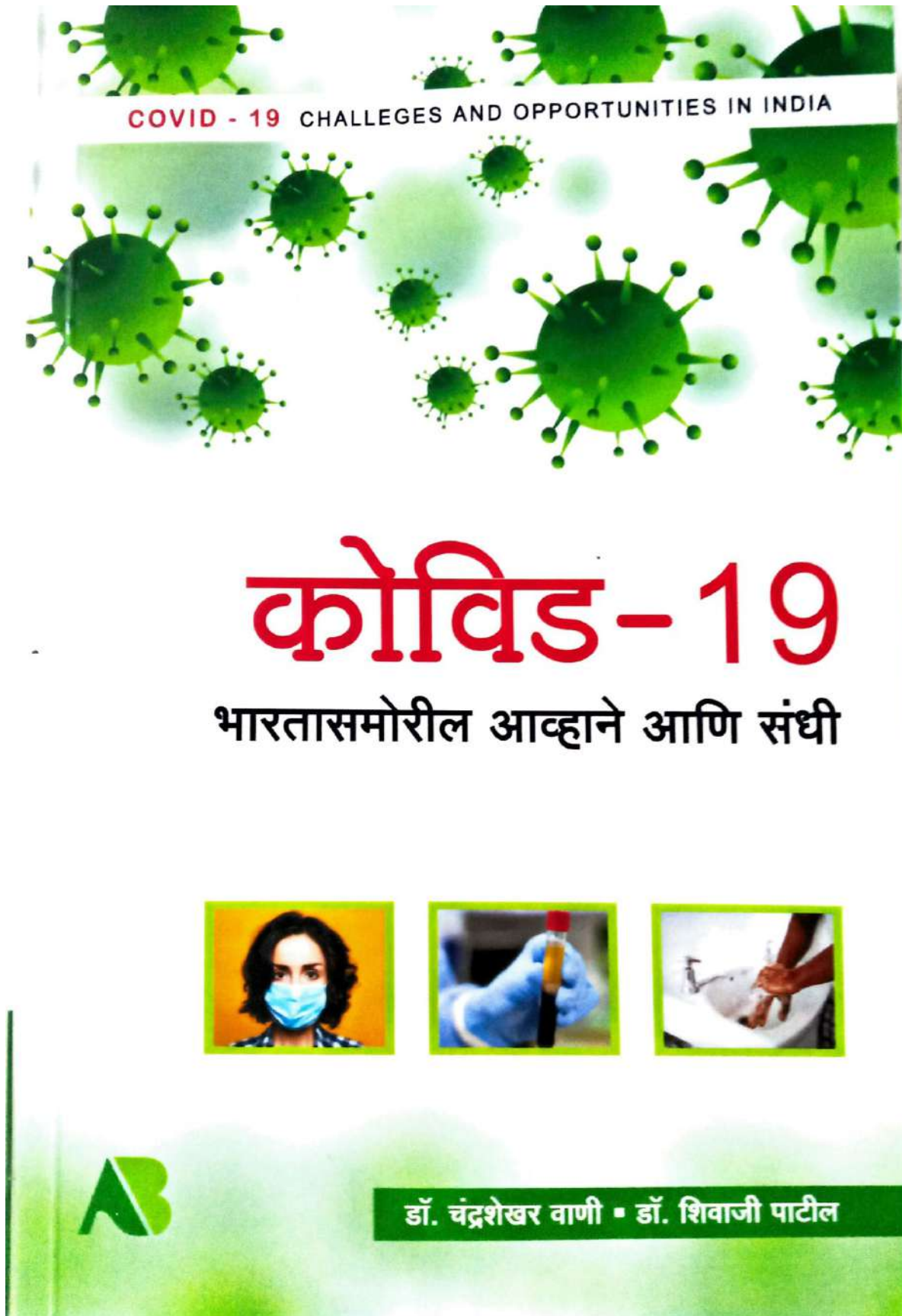
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J. Singh et al. (eds.), *Bioactive Natural Products in Drug Discovery*,

https://doi.org/10.1007/978-981-15-1394-7_21

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या पुस्तकातील कोणताही मजकूर, कोणत्याही स्वरूपात वा माध्यमात पुनर्प्रकाशित अथवा संग्रहित करण्यासाठी लेखक/प्रकाशक दोघांचीही लेखी पूर्वपरवानगी घेणे बंधनकारक आहे.
या पुस्तकातील मजकूराची जबाबदारी ही सर्वस्वी लेखकाची राहिल तसेच लेखकानी मांडलेल्या सर्वच मतांशी संपादक सहमत असतील असे नाही.

२ । अॅकेडमीक बुक पब्लिकेशन्स

कोरोना टाळेबंदी आणि पर्यावरणातील बदल

– डॉ. गणेश बा. हेडावू
सहा. प्राध्यापक (वनस्पतीशास्त्र),
श्री. शिवाजी विज्ञान महाविद्यालय, अमरावती

वैश्विक महामारी कोविड-१९ ने सध्या संपूर्ण जगात हाहाकार माजविला आहे. सन १८९८ ते १९१८ च्या कालखंडात प्लेग या महामारीने कोट्यावधींचे बळी घेतल्याची आठवण या कोरोनाने ताजी केली आहे. कोरोनावर नियंत्रण मिळविण्यासाठी अनेक देशांनी कधी नव्हे अशी टाळेबंदी जाहीर केली. टाळेबंदीचे सकारात्मक व नकारात्मक परिणाम आपण अनुभवतो आहोत. भारतात टाळेबंदीमुळे कोरोनाचे संक्रमण नियंत्रणात ठेवण्यास मदत झाली व दुसरा सकारात्मक परिणाम प्रामुख्याने पर्यावरणाच्या बाबतीत अनुभवता आला. देशभरात टाळेबंदी असल्याने बुद्धिजीवी जिवांच्या उपद्रवास आळा बसला आणि या चालून आलेल्या संधीचे सोने करित वसुंधरा स्वतःला काहीशा प्रमाणात सुधारण्याचा प्रयत्न करून पूर्वपदावर येण्याचा प्रयत्न करित आहे. वसुंधरेचे स्वास्थ्य सुधारत आहे, प्रदूषणात घट होत आहे, हवा, पाणी आणि माती यांच्या गुणवत्तेत सुधारणा होत आहे, हवेतील विषारी वायूंचे प्रमाण कमी होत आहे, जागतिक तापमानवाढ कमी होऊन ओझोनचा थर उंचावत आहे. वातावरण स्वच्छ झाल्यामुळे दूरवरचे देखील स्पष्ट दिसायला लागले. जंगलात मनुष्यप्राण्याचा हस्तक्षेप कमी झाल्यामुळे जंगलातील प्राण्यांनी मुक्तसंचार करित मानवीवस्ती, समुद्रकिनारा येथे फिरण्याच्या घटना घडताना दिसत आहेत.

जंगली प्राण्यांमध्ये सापडणारा विषाणू मनुष्य महामारीसाठी अधिक अनुकूल आहे. माणसात उद्भवणारे अनेक संसर्गजन्य रोग वन्यजीवांपासून संक्रमित झालेले पाहावयास मिळते. मानव आणि जंगली प्राणी यांच्यामध्ये असलेली खाद्यशृंखला याबद्दल विचार करणे क्रमप्राप्त झाले आहे. सार्सच्या संक्रमणामुळे अधिक प्रदूषण प्रभावित क्षेत्रांमध्ये मृत्युचे प्रमाण जवळपास ७.५ ते ९.० % नोंदल्या गेले तर कमी प्रदूषण प्रभावित क्षेत्रांमध्ये तेच प्रमाण ४.० % आढळले. आता जगातील अनेक वैज्ञानिकांनी विषाणू संसर्गाचा प्रदूषणाशी काय संबंध आहे याबद्दल संशोधन हाती घेतले आहे.

नोवेल कोरोना विषाणू महामारीमुळे वायुप्रदूषणाची पातळी बऱ्याच अंशी खाली आली आहे. एकीकडे जागतिक तसेच भारतीय अर्थव्यवस्थेची गती झपाट्याने कमी झाली आहे, पण दुसरीकडे टाळेबंदीच्या काळात प्रदूषण रोखण्यास

कोविड-१९ : भारतासमोरील आव्हाने आणि संधी | १९९

151. Hedawoo GB: *Podaxis pistillaris* (L.ex pers.) fr (desert shaggy mane): a potential gastroid mushroom from Amravati region

National Conference on Multidisciplinary Research in Science and Technology for Healthy Lifestyle Management
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24th Jan.
2020

Podaxis Pistillaris (L.Ex Pers.) Fr (Desert Shaggy Mane): A Potential Gastroid Mushroom From Amravati Region

G.B. Hedawoo,

P.G. Department of Botany,

Shri Shivaji Science College, Amravati (M.S.) India

Abstract

Many periodical surveys were conducted of Amravati region in Maharashtra for mycoforensic studies during monsoon season. A rich diversity of wild macromycetes was encountered that includes edible, non-edible and medicinal mushrooms. Identification, edibility and medicinal potential of collected mushrooms were noted by referring to standard literature.

During survey, *Podaxis pistillaris* (Desert Shaggy Mane) - a gastroid mushroom within the family Agaricaceae (Sub.div.-Basidiomycotina) is collected from many sandy habitats from Amravati-Melghat region. Locally it is known as 'Khumbi'. Commonly known as 'Desert Shaggy Mane' due to its resemblance to *Coprinus comatus*.

The sporophores have been used as food in many countries. Its nutraceutical value is so high. It contains proteins, amino acids, carbohydrates and low fats. Presence of secondary metabolites such as phenols, flavonoids, steroids, β -carotene and lycopene make it an important antioxidant source. It has been employed for the treatment of skin diseases, for wound-healing, anti-bacterial, against sunburn and inflammation as an efficient sunscreen. In different countries this mushroom is used as an edible (nutraceutical), medicinal, cosmoceutic resource and has potential use as a probiotic.

Key Words: *Podaxis pistillaris*, Amravati region, collection, identification, potentialities.

Introduction:

Podaxis pistillaris- is a very distinguishing relative of the puffballs. In old reference it was noted as *Lycoperdon pistillare* L. Though it is considered as 'stalked puffball' by many; but it is more closely related with the shaggy mane (*Coprinus comatus*) than with puffball. *P. pistillaris* belongs to family Agaricaceae. The sporophore has an ellipsoid head, supported on a slender stipe, and resembles certain mushrooms, however the texture of the sporocarp is entirely different. The sporophores have been used as food in many countries. Its nutraceutical value is so high. The fruiting bodies contain 76% moisture, 5% total nitrogen, 22-37% total crude protein, 18.5% carbohydrates, 2.3% total lipids and 2-4 % ash. In different countries this mushroom is used as an edible (nutraceutical), medicinal, cosmoceutic resource and has potential use as a probiotic.

Review of Literature:

The genus *Podaxis* includes ten species (Kirk et.al.,2008). *P. pistillaris*, is most common species found in India (Bilgrami et.al.,1979; Jamaluddin et. al., 2004, Hedawoo and Mohite, 2008). It is a gastroid agaric and many earlier workers has described it under a separate class Gasteromycetes (Nair and Patil,1978; Thind and Thind,1982). As per the earlier reports, *Podaxis pistillaris* (L.ex Pers.) Fr is collected by the people of rural areas in various parts of the world including India because of its nutritional and medicinal value (Arora,1986; Batra,1983).

Materials and Methods:

The specimens were collected from sandy soil, nearby bricks factories and dry road side areas of College campus, Rampuri Camp, Wadali Road, University campus, Pohara forest, Tapovan area of Amravati. Field photographs were taken in natural habitats. Taxonomic characters were noted as per standard methodology given by Atri et.al., (2005). Color terminology used is that of Kornerup and Wanscher (1978). The specimens were preserved fresh as well as dry. The examined collection has been deposited in the museum of P.G. Department of Botany, Shri Shivaji Science College, Amravati.

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Fig: Collected fruiting bodies of *Podaxis* from different habitats

Aayushi International Interdisciplinary Research Journal (ISSN 2349-638x) Impact Factor 6.293
(Special Issue No.70) Peer Reviewed Journal www.aijrjournal.com Mob. 8999250451

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View publication stats

152. Hedawoo GB: Phytochemical analysis of *Azadirachta indica*

B.Aadhar International Multidisciplinary Research Journal



Impact Factor - (SJIF) - **7.675**

Special Issue

ISSN :
2278-9308
March
2020

Phytochemical Analysis of *Azadirachta indica* A. Juss. leaves.

Patharkar S P¹ ., Hedawoo G B²

¹Assistant Professor, Department of Botany, Rajarshree Shahu Science College, Chandur Rly. (MS) India.

²Assistant Professor, Department of Botany, Shri Shivaji Science College, Amravati. (MS)

Abstract : *Azadirachta indica* is a member of family Meliaceae. Products made from neem leaves have been used in India for their medicinal properties. It contains pharmacologically bioactive compounds which are used for curing of various human diseases and also play an important role in healing. Neem products are believed by Ayurvedic practitioners to be anthelmintic, antifungal, antibacterial, antiviral, antidiabetic and anti-inflammatory activities. Primary phytochemical constituents include chlorophyll, proteins, sugar and amino acids. Secondary constituents contain terpenoids, saponins, flavonoids, steroids, glycosides, cardiac glycosides and alkaloids.

In the present study three different solvents were used *viz.* water, ethanol and methanol. Qualitative phytochemical investigations for leaves were carried out and results about occurrence are reported. During investigation, uniform presence of alkaloids was reported for all solvents. Glycosides, Tannins, Cardiac glycosides and Terpenoids were not evident in all the solvent systems. Selective presence of Saponins, Flavonoids and Steroids was noted. This combination of the phytochemicals creates possibility of justification of the claimed as well as prospective medicinal application.

Keywords - *Azadirachta indica*, medicinal plants, phytochemical analysis.

I. INTRODUCTION

Phytochemicals, a term given to naturally occurring, non-nutritive biologically active chemical compounds of plant origin, have some protective and disease preventive properties. Some phytochemicals are injurious to fungi and could be used to protect animals, humans, crops, food and feeds against toxigenic fungi and mycotoxin (OMAF 2004). Phytochemicals vary in plants depending on their growing conditions, varietal differences, age at harvest, extraction methods, storage condition at age of sample also. In recent years, the need to develop fungal disease control measures using phytochemical as alternative to synthetic chemicals has become a priority of scientist worldwide (Reddy et al., 2007). Therefore, it is important to find a practical cost effective and non-toxic method to prevent fungal contamination and mycotoxins load in stored farm produced. Today there are strict regulations on pesticides use and there is political pressure to remove the most hazardous chemicals from the market. Hence, use of natural plant extracts and bio control agents provides an opportunity to avoid chemical preservatives (Pal and Gardener, 2006).

The selection of this plant was based on the observation that these are being used by local healers intensively for treatment of various ailments grown widely. The details of this plant are as follows:

Azadirachta indica A. Juss.

It is commonly known as neem belongs to the family Meliaceae. It is native of India and widespread in the world. The chemical constituents contain many biologically active compounds that can be extracted from neem, including alkaloids, flavonoids, triterpenoids, phenolic compounds, carotenoids, steroids, ketones and azadirachtin also. It contains antibacterial, antifungal activities against different pathogenic fungi. Neem leaf is effective in treating eczema, ringworm and acne. It has antihyperglycemic, anti-inflammatory properties.

II. MATERIALS AND METHODS

Collection of plant materials:

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Website – www.aadharsocial.com

Email – aadharsocial@gmail.com.



In the present study, three solvents namely water, ethanol and methanol based extracts of plants has been used to evaluate their fungitoxic properties. The aqueous extracts were least active against all pathogens and methanol extracts of all plant were found to be moderately active against all fungi tested. It is observed that in ethanolic extract, fungal growth is inhibited by all plants. This may be further recommended for ecofriendly management of fungal disease of oilseeds.

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153. Ingle RA: लैंगिक असमानता और भारतीय समाज

लैंगिक असमानता और भारतीय समाज

प्रा. रुपाली ए. इंगोले

श्री शिवाजी विज्ञान महाविद्यालय

अमरावती

परिचय

लैंगिक समानता क्या है? आखिर क्यों यह किसी भी समाज और राष्ट्र के लिए एक आवश्यक तत्व बन गया है? क्या बदलते समाज में यह प्रासंगिक है? लैंगिक समानता का अर्थ यह नहीं की समाज का प्रत्येक व्यक्ति एक लिंग का हो अपितु लैंगिक समानता का सीधा सा अर्थ समाज में महिला तथा पुरुष के समान अधिकार, दायित्व तथा रोजगार के अवसरों के परिप्रेक्ष्य में है।

जिस प्रकार तराजू में दोनों तरफ बराबर भार रखने पर वह संतुलित होता है ठीक उसी तरह किसी भी समाज व राष्ट्र में संतुलन बनाने के लिए जरूरी है की वहाँ पुरुषों तथा स्त्रियों के मध्य लैंगिक समानता स्थापित की जानी चाहिए। आज आधुनिकता की जीवन शैली को अपनाने के बावजूद भारतीय समाज लैंगिक समानता के मामले में इतना पिछड़ा हुआ है। सही मायनों में देखा जाए तो लैंगिक समानता का न होना ही समाज में असंतुलन और अपराध को जन्म देता है। यह बहुत जरूरी है कि हर क्षेत्र में चाहे वह शिक्षा हो, राजनीति हो, रोजगार हो, अवसर या अधिकार हो हर क्षेत्र में लैंगिक समानता को ध्यान में रखा जाना चाहिए। जिस तरह एक सिक्के के दोनों पहलुओं की समानता है ठीक उसी तरह समाज के दोनों पहलुओं स्त्री तथा पुरुष के मध्य भी लैंगिक समानता होनी चाहिए। सरकार द्वारा लैंगिक समानता के स्तर को ऊंचा उठाने हेतु कई योजनाएं लागू की जा रही हैं किंतु फिर भी भारत इस मामले में पिछड़ा हुआ है। अब आवश्यकता है समाज के बुनियादी ढांचे को बदलकर दकियानूसी सोच को खत्म करने की। लैंगिक समानता के लिए समाज से न केवल स्त्रियों को बल्कि शिक्षित वर्ग को भी जनजागरण का कार्य करना होगा ताकि अपराधों में रोकथाम के साथ ही महिलाओं के आधिकारिक व कार्यस्थल में हो रहे शोषण का खात्मा किया जा सके।

भारत में लिंग असमानता

संवैधानिक सूची के साथ-साथ सभी प्रकार के भेदभाव या असमानताएं चलती रहेंगी लेकिन वास्तविक बदलाव तो तभी संभव हैं जब पुरुषों की सोच को बदला जाये। ये सोच जब बदलेगी तब मानवता का एक प्रकार पुरुष महिला के साथ समानता का व्यवहार करना शुरू कर दे न कि उन्हें अपना अधीनस्थ समझे। यहाँ तक कि सिर्फ आदमियों को ही नहीं बल्कि महिलाओं को भी औज की संस्कृति के अनुसार अपनी पुरानी रुढ़िवादी सोच बदलनी होगी और जानना होगा कि वो भी इस शोषणकारी पितृसत्तात्मक व्यवस्था का एक अंग बन गयी हैं और पुरुषों को खुद पर हावी होने में सहायता कर रही हैं।

हम केवल उम्मीद कर सकते हैं कि हमारा सहभागी लोकतंत्र, आने वाले समय में और पुरुषों और महिलाओं के सामूहिक प्रयासों से लिंग असमानता की समस्या का समाधान ढूँढने में सक्षम हो जायेगा और हम सभी को सोच व कार्यों की वास्तविकता के साथ में सपने में पोषित आधुनिक समाज की ओर ले जायेगा

संदर्भ

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154. Ingole RA: लॉकडाउन मध्ये देश विदेशात वाढता घरगुती हिंसाचार हि आपत्ती काळात महिलांसाठी आणखी एक समस्या

B.Aadhar International Peer-Reviewed Indexed Research Journal
 Impact Factor - (SJIF) -7.675, Issue NO, 239

ISSN :
2278-9308
June,2020

लॉकडाउनमध्ये देश विदेशात वाढती घरगुती हिंसाचार ही आपत्तीच्या काळात महिलांसाठी आणखी एक समस्या
प्रा. रूपाली अभिजीत इंगोले
श्री. शिवाजी विज्ञान महाविद्यालय , अमरावती

• प्रस्तावना :

कोरोना संकटाच्या काळात भारत आणि परदेशातील महिलांवरील वाढत्या घरगुती हिंसाचाराच्या बातम्या आल्या आहेत. कोरोनाच्या वाढत्या प्रकरणांमध्ये घरात बंदिस्त राहण्यावाचून पर्याय नाही. पण खेदाची बाब आहे की टेलिव्हिजनवरील सूचनांमध्ये कौटुंबिक हिंसाचाराविषयी जागरूकताचा संदेश नाही. महिलांवरील कामावरील ताणही विनोदांमध्ये बदलला आहे. प्रत्येक देश आणि प्रत्येक समाजासाठी, कोरोना संक्रमण ही एक चाचणी आहे आणि त्याविरुद्ध लढा देण्याचा एक सर्वात मोठा प्रयत्न – लॉकडाउन. हे लॉकडाउन एकीकडे कुटुंबांना एकत्र करण्याचे नाव बनले, परंतु दुसरीकडे या काळात महिलांना एका मोठ्या घटकाला घरगुती हिंसाचाराने वाईट रीतीने त्रास सहन करावा लागला. आंतरराष्ट्रीय एजन्सीनुसार कौटुंबिक हिंसाचाराच्या घटनांमध्ये युरोपपासून दक्षिण अमेरिका आणि चीनपर्यंत वाढ झाली आहे.

उत्तर प्रदेश, दिल्ली, बिहार, मध्य प्रदेश आणि महाराष्ट्र हे आघाडीवर आहेत. ही अशी प्रकरणे आहेत ज्यात महिलांनी ईमेल किंवा संदेशाद्वारे आयोगापर्यंत पोहोचण्याचा प्रयत्न केला. घरगुती हिंसाचाराने झगडणार्या महिला सामान्य दिवसांप्रमाणेच त्यांच्या पालकांकडे जाऊ शकत नाहीत किंवा मित्राला मदतीसाठी बोलू शकत नाहीत. देशांतर्गत हिंसाचाराचे प्रमाण केवळ भारतातच वाढलेले नाही, तर आंतरराष्ट्रीय स्तरावर जेथे लॉकडाऊन होते तेथे घरगुती हिंसाचाराच्या तक्रारी वाढल्या आहेत असे निदर्शनात येत आहे. भारतसोबतच फ्रान्स, इटली, पॅरिसमधील देशांतर्गत हिंसाचाराच्या घटनांमध्ये 40% वाढ झाल्याचे अनेक मध्यमांच्या सह्याने पुढे आले आहे. लॉकडाऊनच्या घटनेत लोक घराबाहेर पडू शकत नाहीत अशा देशात घरांच्या आत घरगुती हिंसाचाराच्या घटनांमध्येही वाढ झाली आहे. लॉकडाऊन दरम्यान राष्ट्रीय महिला आयोगाकडून आलेल्या तक्रारी दुप्पट झाल्या आहेत. केवळ भारतातच नाही तर फ्रान्स, इटली आणि पॅरिससारख्या ठिकाणीही देशांतर्गत हिंसाचाराच्या घटनांमध्ये 30 ते 40 टक्क्यांनी वाढ झाली आहे.

चिनी पोलिसांच्या म्हणण्यानुसार कोरोना लॉकडाऊन दरम्यान महिलांवरील घरगुती हिंसाचाराच्या घटनांमध्ये जवळपास तिप्पट वाढ झाली आणि अशा परिस्थितीत त्यांना अधिक जागरूक



बर्खास्त देशांनी "चेतावणी प्रणाली" सुरू केली स्पेनमध्ये असे वृत्त प्राप्त झाले आहेत की छळ टाळण्यासाठी काही महिलांनी खोल्या किंवा बाथरूममध्ये बंदिवास राहायला सुरुवात केली. परिणामी, स्पॅनिश सरकारने कठोर नियमांसाठी महिलांना शिथिल केले. आता तेथील सर्व घट्टपणाच्या परिस्थितीत अशा परिस्थितीत महिलांना सोडण्याची परवानगी देण्यात आली आहे. इटलीमध्ये, स्वयंसेवी संस्था आणि या विषयावर कार्य करणाऱ्या कार्यकर्त्यांची फौज 24 तासांच्या हेल्पलाइनवर उपलब्ध आहे. परंतु आपणास हेल्पलाइन आणि पोलिसांकडून मदत मागण्याची हिम्मत नसेल तर काय करावे? याचे उत्तर फ्रान्समध्ये आढळते, जेथे एखाद्या महिलेला स्वतः ला पोलिस बोलविण्याची हिम्मत नसेल तर जवळच्या औषध दुकानात जा आणि एक कोड शब्द म्हणा- मास्क १९. त्यानंतर केमिस्ट स्वतः ची मदत करण्याची व्यवस्था करेल. स्पेनमध्येही असेच पुढाकार घेण्यात आले आहेत.

अफशान अंजुम ज्येष्ठ टीव्ही पत्रकार म्हणतात की भारत या देशांपेक्षा अगदी वेगळ्या स्टेजवर असल्याचे दिसते. दररोज कोरोना बळी वाढत आहेत आणि याक्षणी देशवासीयांना त्यांच्या घरात बंदिस्त राहण्यावाचून पर्याय नाही. पोलिस रस्त्यावर लाठी धेऊन लोकांच्या मागे पळत आहेत - पण अशा वेळी महिला आणि मुलांसमवेत घरात काय चालले आहे हे जाणून घेण्याची त्यांची हिम्मत नाही. दुसरीकडे, टीव्हीवर हात धुण्यासाठी आणि घरीच बंद राहण्याच्या सूचना आहेत, परंतु कौटुंबिक हिंसाचाराबद्दल जागरूकता संदेश गहाळ आहेत. स्त्रियांवरील कामाचे ओझे चेष्टा म्हणून रूपांतरित झाले ही खेदाची बाबही आहे. गरज समजून घेण्याची गरज आहे की घरगुती हिंसाचार हा या आपत्तीचा एक महत्त्वाचा आणि वेदनादायक 'दुष्परिणाम' आहे, जेणेकरून समाज आणि यंत्रणा दोघांनाही बचावासाठी एकत्र यावे लागेल कारण आता हात उंचावण्याची नव्हे तर हात धरण्याची वेळ आली आहे.

● संदर्भ :

- 1) दैनिक भास्कर Apr 11, 2020, 09:23 AM IST
- 2) अफशां अंजुम वरिष्ठ टीव्ही पत्रकार द्वारा रिपोर्ट 07/04/2020
- 3) <https://www.gaonconnection.com/stories/there-are-four-types-of-domestic-violence?infiniteScroll=1>
- 4) <https://www.gaonconnection.com/stories/there-are-four-types-of-domestic-violence>

155. Ingole RA: Possible Risks on Children's Mental Health from Corona Virus Lockdown and Measures Taken on it

SCHE-DC19-LPIW 2020, Vol. I. (ISBN: 978-93-5407-920-7)

Possible Risks on Children's Mental Health from Corona Virus Lockdown and Measures Taken on it.

Prof. Rupali a. Ingole
Shri Shivaji Science College
Amravati

Abstract: This is a really challenging time for families. Parents are experiencing sudden changes in their lives and routines - and children have a full-time balance at home, in addition to caring for jobs, employment and health concerns, financial worries and insecure family members. This will inevitably feel stressful at times. As a parent, there are some things you can do to help you and your family understand each other as much as possible.

It has been reported that COVID-19 (epidemic disease) epidemic has led to a significant increase in health problems among people who are currently closed more than expected. One such issue is the risk to children's mental health. Following the worldwide lockdown, children as adults suffer from depression; however, this is being overlooked as a result of social anxiety and eating disorders, including physical weakness caused by the virus. The reprehensible mentality of the youth is being greatly affected. They may be physically strong to fight the virus but their innocent minds may not be able to cope with the permanent mental health problems that can result from it. The effects of this contagious disease are more terrible than what the eye encounters. That is why special care must be taken when communicating with children.

Research has shown that feelings of helplessness, loneliness and social exclusion, stigma or fear of being separated from loved ones are common in any epidemic, but prolonged stress, boredom and social isolation as well as lack of outdoor play can increase it. Mental health conditions, such as anxiety and even depression, are more common in children.

Annie-Sophie Diabdal, Senior Child Protection Consultant in Save the Children's Mental Health

and Psychosocial Support Unit, said: In the present situation children can be reduced to negative emotions or even depression."

A recent survey by several European countries found that children were more likely to be anxious, bored, and scared. The inability to play outside with friends or the fear of falling behind in their education added to their sense of deprivation and anxiety.

In Spain, Save the Children interviewed nearly 2,000 low-income families, a quarter of whom suffered more than the average person, and many families said they were struggling with fear, pain and anxiety about their children's family situation.

Mary Dahl, head of Save the Children's Mental Health and Psychosocial Support Unit, said: Children who are in a stable environment are better off but many children are not so lucky. People who live in poverty, who face domestic violence. Prolonged lockdowns can be kept on the edge - due to other mental health issues. The adverse effects of COVID-19 on mental health can be seen beyond life. Marie Dahl added: "Children are going through a tremendous upheaval that we have never seen in our lives. Their lives have changed abruptly and we do not

SCHE-DC19-LPIW 2020, Vol. I. (ISBN: 978-93-5407-920-7)






4. <https://youngminds.org.uk/find-help/for-parents/supporting-your-child-during-the-coronavirus-pandemic/>
5. <https://reliefweb.int/report/world/children-risk-lasting-psychological-distress-coronavirus-lockdown-save-children>

Please cite as:

Prof. Rupali a. Ingole. "Possible Risks on Children's Mental Health from Corona Virus Lockdown and Measures Taken on It." In *SCHE-DC19-LPIW 2020*, Vol. I. Amravati, Maharashtra, India: Government Vidarbha Institute of Science and Humanities, Amravati, 2020.

Note: All Published papers are referred, having undergone a peer-review process.

156. Ingole RA: कोरोना व्हायरस, लॉक डाऊन आणि बिघडते मानसिक आरोग्य

DOI PREFIX 10.22183 JOURNAL DOI 10.22183/RN www.ycjjournal.net	 RESEARCH NEBULA AN INDEXED, REFERRED & PEER REVIEWED JOURNAL	RESEARCH NEBULA An International Refereed, Peer Reviewed & Indexed Quarterly Journal in Arts, Commerce, Education & Social Sciences	ISSN 2277-8071 SIF 5.411
 RESEARCH NEBULA AN INDEXED, REFERRED & PEER REVIEWED JOURNAL	 J-Gate INDEXED	 OPEN ACCESS	 INNO SPACE SJIF Scientific Journal Impact Factor
कोरोना व्हायरस, लॉक डाऊन आणि बिघडते मानसिक आरोग्य एक समस्या			
प्रा.रूपाली अ. इंगोले			
श्री. शिवाजी विज्ञान महाविद्यालय अमरावती rupalitone@gmail.com			
ABSTRACT			
काय आहे नेमका कोरोना विषाणू ? तो खरच इतका महत्वाचा नी भयानक आहे कि ज्याने आमच्या शरीरालाच नव्हे तर मनालाही घेरले आहे . तो आम्हाला शरीरानेच नाहि तर मनाने कमकुवत करत आहे. शारीरिक स्वास्थ्य तर गेलेच पण मानसिक स्वास्थ्य पण याच कोरोना विषाणू मुळे गमवल्याचे निदर्शनात येत आहे. व्हाट्सअप, फेसबुक यासारखे कोणतेही अप्लिकेशन उघडा त्यावर ऐकायला येते फक्तच कोरोना कोरोना आणि कोरोनाच. टीव्ही जरी लावायचा म्हटलं तर फक्त कोरोना व्हायरस च्याच बातम्या. त्या ऐकाव्या पण वाटतात कारण भारतातीलच नव्हे तर संपूर्ण जगातील चॅनल वर सुद्धा कोरोना प्रादुर्भावाने वेढलेल्या जग आपल्याला बातम्यांच्या किंवा काही माध्यमांच्या स्वरूपातून पाहायला मिळते व सतत त्याच त्या कोरोनामय विश्वाचा एक भाग झाल्यासारखे सातत्याने जाणवत आहे.			
प्रस्तावना :			
सरकार द्वारा जाहीर लॉकडाऊन या काळात सातत्याने घरातच राहणे, घरच्या कामात स्वतःला रमवणे, व्यवसाय, मित्रमंडळी, समाज, नातेवाईक, आवडीच्या सवयी जसे की सिनेमा पहाणे, बगिच्यात जाणे, मॉलमध्ये खरेदी करणे, हॉटेलमध्ये जेवण या सर्वांपासून दूर राहणे व फक्तच कोरोना बद्दल सतत ऐकणे , वाचणे व पाहणे या सर्व बाबींमुळे अनेकांना मानसिक त्रासाला सामोरे जावे लागत आहे. त्याच मुळे या मानसिक अडचणींना घेऊन कोरणा ग्रस्त काळात आपले मानसिक स्वास्थ्य कसे राखायचे हा एक गंभीर प्रश्न समोर आला आहे.			
कोरोना विषाणू बद्दल वाढलेली उत्सुकता, कोरोना ची माहिती मिळवणे त्यांचे प्रादुर्भाव उपाययोजना या सर्वांबद्दल जाणून घेण्याची तगमग सहाजिक आहे आणि ते आवश्यकही आहे. मात्र सातत्याने कोरोना विषाणूच्या माहितीचा होणारा भडिमार मानसिक स्वास्थ्य बिघडवण्याचे मोठे कारण ठरत आहे. जागतिक आरोग्य संस्थेने वाढत्या कोरोना प्रादुर्भावास लक्षात घेता मानसिक			
आरोग्य संदर्भात काही माहिती सूचना प्रदर्शित केल्या आहेत त्या पुढील प्रमाणे आहेत.			
<ol style="list-style-type: none"> 1. तुम्हाला अस्वस्थ करतील अशा बातम्या वाचने व पहाणे टाळा 2. सार्वजनिक ठिकाणी वावरतांना काय काळजी घ्यावी याविषयी माहिती मिळवा व त्यानुसार तुम्ही व तुमच्या परिवाराला ने योग्य पावले टाका. 3. दिवसातून ठराविक वेळीच कोरोना विषाणू संबंधित अपडेट घ्या. सतत तेच ते पहाणे व वाचणे याकडे दुर्लक्ष करा . 4. सातत्याने त्याच विषयावर परिवारातील सदस्यांसोबत चर्चा करणे टाळा 			
मानसिक आरोग्यात अस्वस्थता ही सगळ्याच जगभरात आढळून येणारी समस्या आहे निकी लीडब्रेट या येगझायती यु. के. संस्थेत काम करणाऱ्या संशोधक आहेत. त्या आपल्या संशोधनात म्हणतात की ज्यांना अतिशय बेचैन होणे जास्त काळजी करणे यासारखे आजार आहेत त्यांना एखादी गोष्ट समस्या आपल्या काबूत नाही असं वाटणं हे फार त्रासदायक आहे .काय			
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DOI PREFIX 10.22183 JOURNAL DOI 10.22183/RN www.ycjournal.net	 RESEARCH NEBULA AN INTERNATIONAL REFEREED, PEER REVIEWED JOURNAL	RESEARCH NEBULA An International Refereed, Peer Reviewed & Indexed Quarterly Journal in Arts, Commerce, Education & Social Sciences	ISSN 2277-8071 SIF 5.411
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ठीक आहे हे लक्षात घ्या व स्वतः सकारात्मक वळण द्या .

ध्यान अवश्य करा मनाला शांत करा

मनाला शांत करण्याचा व आपल्यातील नकारात्मकता दूर करण्याचा हा उत्तम मार्ग आहे. अनेक संशोधक या गोष्टीला पाठिंबा देतात की ज्ञान आपल्यातील तान्त्री पातळी कमी करते, मन एकाग्र करते, नैराश्य दूर करते, चिंताग्रस्ततेची लक्षणे कमी करते आणि स्मरणशक्ती वाढवणे .यासाठी ज्ञान हा एक उत्तम पर्याय आहे म्हणूनच मानसिक आरोग्य उत्तम ठेवण्यासाठी ध्यानाचा आधार घ्या.

योग व व्यायामाला प्राधान्य द्या

आरोग्य ही प्रत्येक व्यक्तीची संपत्ती आहे त्याचप्रमाणे सुदृढ शरीरात उत्तम मन वास्तव्य करते . आपल्या शरीराला निरोगी ठेवण्यासाठी घरचे घरी रोज थोडा वेळ काढा आपण शारीरिकदृष्ट्या सुदृढ आहोत ही भावना देखील उत्तम मानसिक आरोग्य राखण्यासाठी प्रभावशाली ठरू शकते. उत्तम आहार घ्या घरचे घरी राहून जरी आपल्याला कंटाळा आला असेल तरी देखील व्यायामा सोबत उत्तम आहाराची जोड तुमचे आरोग्य उत्तम ठेवण्यास पर्यायाने तुम्हाला सकारात्मक बनवण्यात मदत करेल. एखाद्यावेळी आवडीचे पदार्थ बनवणे व आनंदाने ते इतरांना खाऊ घातले किंवा मनाला आवडेल ते पदार्थ बनवून खाणे हे देखील आनंददायी ठरू शकते. पर्यायाने मानसिक आरोग्य उत्तम ठेवण्यात आनंद हा सहाय्यक ठरतो.

शांत झोप महत्वाची

उत्तम आरोग्यासाठी व आपले मानसिक स्वास्थ्य उत्तम ठेवण्यासाठी चांगली झोप अत्यंत महत्वाचे आहे कारण जर आपली झोप पूर्ण झाली नाही तर व्यक्तीची चिडचिड वाढणे , थकवा येणे इत्यादी गोष्टी घडू शकतात. चांगली व शांत आठ तासाची झोप तुम्हाला तरोताजा करू शकते, तुमच्यात उत्साह भरू शकते. ज्यांना मधुमेह, हृदयरोग यासारखे अनेक आजार आहेत त्यांच्यासाठी तर झोपे औषधाचे देखील काम करते. उत्तम झोप हे कायम एक स्वस्थ व निरोगी आरोग्यासाठी फलदायी आहे.

म्हणूनच उत्तम मानसिक स्वास्थ्यासाठी शांत झोप व पुरेशी झोप हे आवश्यक ठरते.

मानसिक आरोग्य जपण्यासाठी प्रत्येकाला आपल्यात सकारात्मक भावना निर्माण करणे गरजेचे आहे नाहीतर कोरोना विषाणू च्या या विळख्यात आपण अन्य आजारांना देखील आमंत्रण देऊ व मानसिक आरोग्य सोबत शारीरिक व सामाजिक आरोग्य सुद्धा गमावून बसू . मानूनच या काळात स्वताचे छंद जोपासणे , मनाला शांत ठेवणे , उत्साही राहणे , उत्तम आहार , नियमित व्यायाम , ध्यान ,शांत झोप या सर्वांच्या आधाराने आपले मानसिक आरोग्य जपणे आजची अति आवश्यक आहे .

संदर्भ

- 1) क्रस्टी बुअर बीबीसी न्यूज 16 मार्च 2020
- 2) दवारा: नमामी अग्रवाल 11 एप्रिल, 2020 1:54:06 दुपारी
- 3) मॅटल हेल्थ फाउंडेशनच्या पीएचई एव्हरी माइंड मॅटर साइट.
- 4) <https://www.who.int/news-room/campaigns/connecting-the-world-to-combat-coronavirus/healthyathome/healthyathome---mental-health>
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157. Jadhao RG: Quantitative distribution of bacteria associated with freshwater crab *Paratelphusa JACQUEMONTII* (Rathbun) from Nal Damayanti sagar Dam TQ. Morshi Dist. Amravati (MS) India

QUANTITATIVE DISTRIBUTION OF BACTERIA ASSOCIATED WITH FRESHWATER CRAB *PARATELPHUSA JACQUEMONTII* (RATHBUN) FROM NAL-DAMAYANTI SAGAR DAM TQ. MORSHI DIST. AMRAVATI (MS) INDIA

A. U. Ghaware¹ and R. G. Jadhao²

¹Department of Zoology, Mahatma Fule Mahavidyala, Bhatkuli, Dist. Amravati (MS) India.

²P. G. Department of Zoology, Shri Shivaji Science College, Amravati (MS) India

Corresponding Authors Email: aghaware@gmail.com

ABSTRACT:

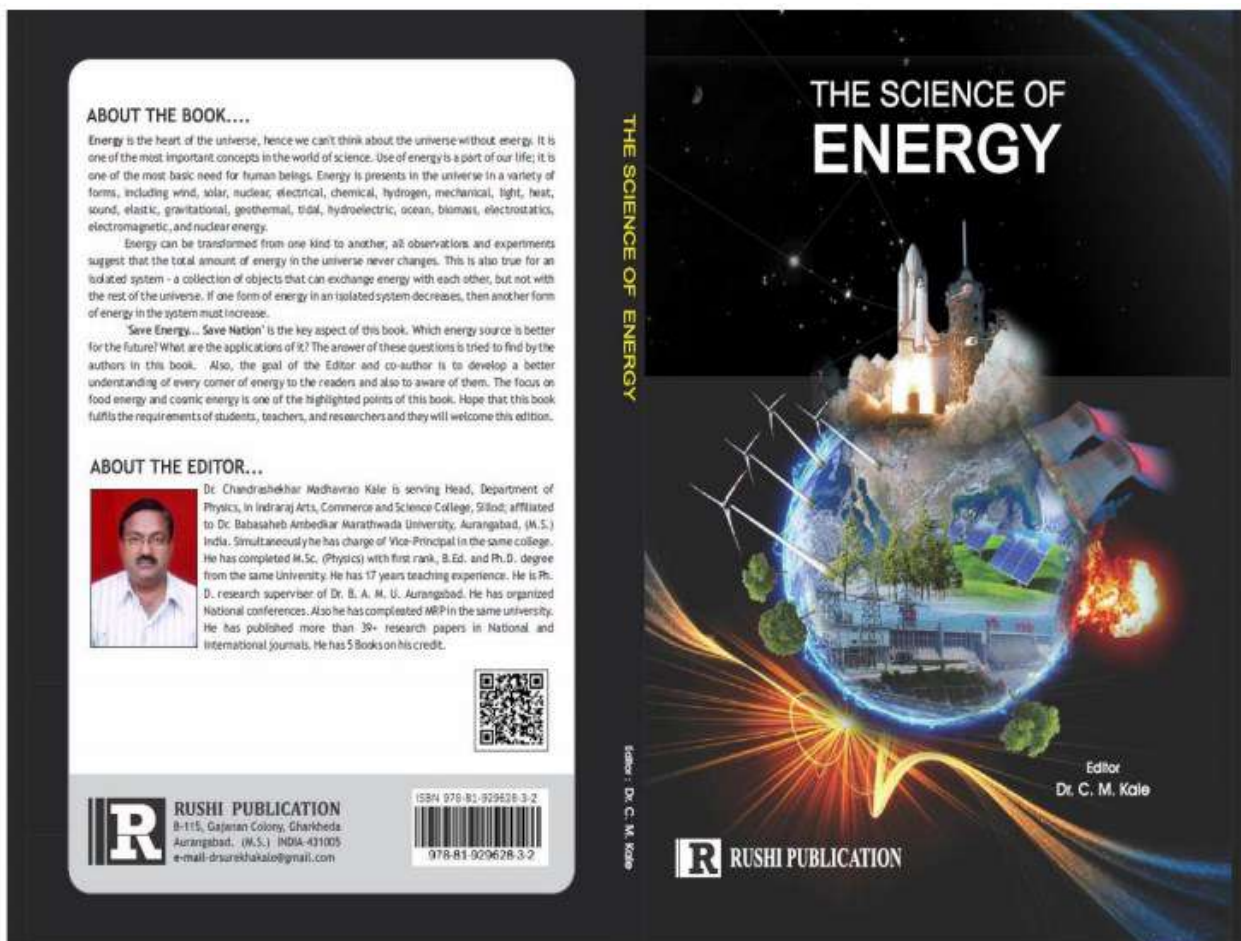
The aim of this study was to reveal quantitative distribution of bacteria associated with freshwater crab from Nal – Damayanti Sagar Dam of taluka Morshi Dist-Amravati is home to the freshwater crab *Paratelphusa jacquemontii*, which are consumed indiscriminately by inhabitants and tourists. Bulk of the crab meat is obtained by crabbing. A preliminary survey of bacteria associated with vulnerable morphological part of the crab species was carried out. Bacteria were isolated from body parts of crab. The edible crabs from sampled site were contaminated with bacteria species which were considered by Centre for Food Safety as hazardous to human health. Investigation on sample from other area would enhance regulation on aquaculture, handling, processing and consumption of freshwater crab.

Keywords: Pathogenic bacteria, Fresh water crab, *Paratelphusa jacquemontii*.

Introduction:

The fresh water crab *Paratelphusa jacquemontii* is found in large number at Nal-Damayanti Sagar Dam, Decline in the population of the crab species (Akpaniteaku, 2015) suggested investigation on other aspects of biology including the impact of bioaccumulation of essential and non essential elements in the environment (Akpaniteaku and Okoye, 2018; Akpaniteaku and Udeozor, 2018). Some parasites could devastate mud crab population in the wild if there was no action by researchers. But they have attracted less attention because of lack of the description of their infection as compared to other commercial exploited crustaceans and aquaculture species (Ihwan *et. al.*, 2015).

158. Khirade PP: The Science of Energy, Chapter: Light Energy



ABOUT THE BOOK...

Energy is the heart of the universe, hence we can't think about the universe without energy. It is one of the most important concepts in the world of science. Use of energy is a part of our life; it is one of the most basic need for human beings. Energy is presents in the universe in a variety of forms, including wind, solar, nuclear, electrical, chemical, hydrogen, mechanical, light, heat, sound, elastic, gravitational, geothermal, tidal, hydroelectric, ocean, biomass, electrostatics, electromagnetic, and nuclear energy.

Energy can be transformed from one kind to another, all observations and experiments suggest that the total amount of energy in the universe never changes. This is also true for an isolated system - a collection of objects that can exchange energy with each other, but not with the rest of the universe. If one form of energy in an isolated system decreases, then another form of energy in the system must increase.

"Save Energy... Save Nation" is the key aspect of this book. Which energy source is better for the future? What are the applications of it? The answer of these questions is tried to find by the authors in this book. Also, the goal of the Editor and co-author is to develop a better understanding of every corner of energy to the readers and also to aware of them. The focus on food energy and cosmic energy is one of the highlighted points of this book. Hope that this book fulfills the requirements of students, teachers, and researchers and they will welcome this edition.

ABOUT THE EDITOR...



Dr. Chandrashekhar Madhavrao Kale is serving Head, Department of Physics, in Indraraj Arts, Commerce and Science College, Sillod, affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, (M.S.) India. Simultaneously he has charge of Vice-Principal in the same college. He has completed M.Sc. (Physics) with first rank, B.Ed. and Ph.D. degree from the same University. He has 17 years teaching experience. He is Ph.D. research supervisor of Dr. B. A. M. U. Aurangabad. He has organized National conferences. Also he has completed MRP in the same university. He has published more than 39+ research papers in National and International journals. He has 5 Books on his credit.



RUSHI PUBLICATION
 B-115, Gajanan Colony, Charkheda,
 Aurangabad, (M.S.) INDIA-431005
 e-mail-drsureshkale@gmail.com

ISSN 978-81-929528-3-2
 978-81-929528-3-2

Editor: Dr. C. M. Kale

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RUSHI PUBLICATION
Regd. No.: 1641500310731143
E-mail: drsurekhakale@gmail.com

Dr. Mrs. Surekha S. Lakkas (Kale)
PUBLISHER
B-115, Gajanan Colony, Gharkheda
Aurangabad. (M. S.), INDIA-431 005
☎: +91 9975080017

Ref. No.

Date: 07-07-2020

Letter of Gratitude

To,

Dr. Pankaj P. Khirade
Assistant Professor in Physics
Shri Shivaji Science College, Amravati (MS), India.

Subject : Letter of appreciation regarding your contribution as a chapter for publication in edited book.

Dear Sir,

With reference to subject cited above, I kindly state you that a valuable reference book which is useful for interdisciplinary subject in faculty of science and technology entitled, "**The Science of Energy**" bearing **ISBN: 978-81-929628-3-2** includes your one chapter, namely, **Chapter 10 : Light Energy**. It has been accepted by our Rushi Publication. It has been also published on the occasion of Gurupournima, 6th July 2020. So, I express my sincere gratitude for your invaluable contribution to this academic enterprise.

We appreciate your academic work and expect the same in future also.

With warm regards!


6-7-2020

Mrs. Surekha C. Kale
Publisher
RUSHI PUBLICATION

159. Maggirwar RC: Higher Education in post Covid-19 India



SCHE-DC19-LPW 2020, Vol.1. (ISBN: 978-93-5407-920-7)

Higher Education in post COVID-19 India

S. P. Khadke,

Dept. of Botany, Vinayk Vigyan Mahavidyalay, Nandgaon (KH), Amravati.

V. D. Hute

Dept. of Botany, Government Vidarbha Institute of Science and Humanities, Amravati.

R. C. Maggirwar

Dept. of Botany, Shri Shivaji Science College, Amravati.
maggirwarreka@gmail.com

Entire mankind was excited to welcome 2020 on our planet and finally it arrived. Everything was going on smoothly; each one of us was busy in chasing his or her dreams. India had big dreams to become superpower in 2020 and was marching towards it, but it was unfortunate to know about the first case of COVID-19 pandemic in India, which was reported on 30 January 2020, originating from China. The infection rate of COVID-19 in India is reported to be 1.7, which is significantly lower than in the worst affected countries. The outbreak has been declared an epidemic in more than a dozen states and union territories, where provisions of the Epidemic Diseases Act, 1897 have been invoked, and educational institutions and many commercial establishments have been shut down. On 16 March, the union government declared a nationwide lock-down of schools and colleges. The very positive thing we have received from Michael Ryan, chief executive director of the World Health Organisation's health emergencies programme, is that India had "tremendous capacity" to deal with the coronavirus outbreak

and, as the second most populous country, will have enormous impact on the world's ability to deal with it, (https://en.wikipedia.org/wiki/COVID19_pandemic_in_India)

Teacher is always playing a key role in the society, always busy in gaining sound knowledge of the subject, clearing concepts and then disseminating knowledge to students. He is involved in shaping the minds of students and making them competent enough to fight globally. The future of our country is shaped in the class rooms and it is said that all the best minds should come into teaching profession. As the teacher shows best qualities in teaching, research and contributes for betterment of our society he brings excellence in higher education. India is third largest sector in higher education where we were expecting rise in GER up to 50% but now due to COVID-19 pandemic situation there might be fall and this will be the biggest challenge to face.

SCHE-DC19-LPIW 2020, Vol. I. (ISBN: 978-93-5407-920-7)

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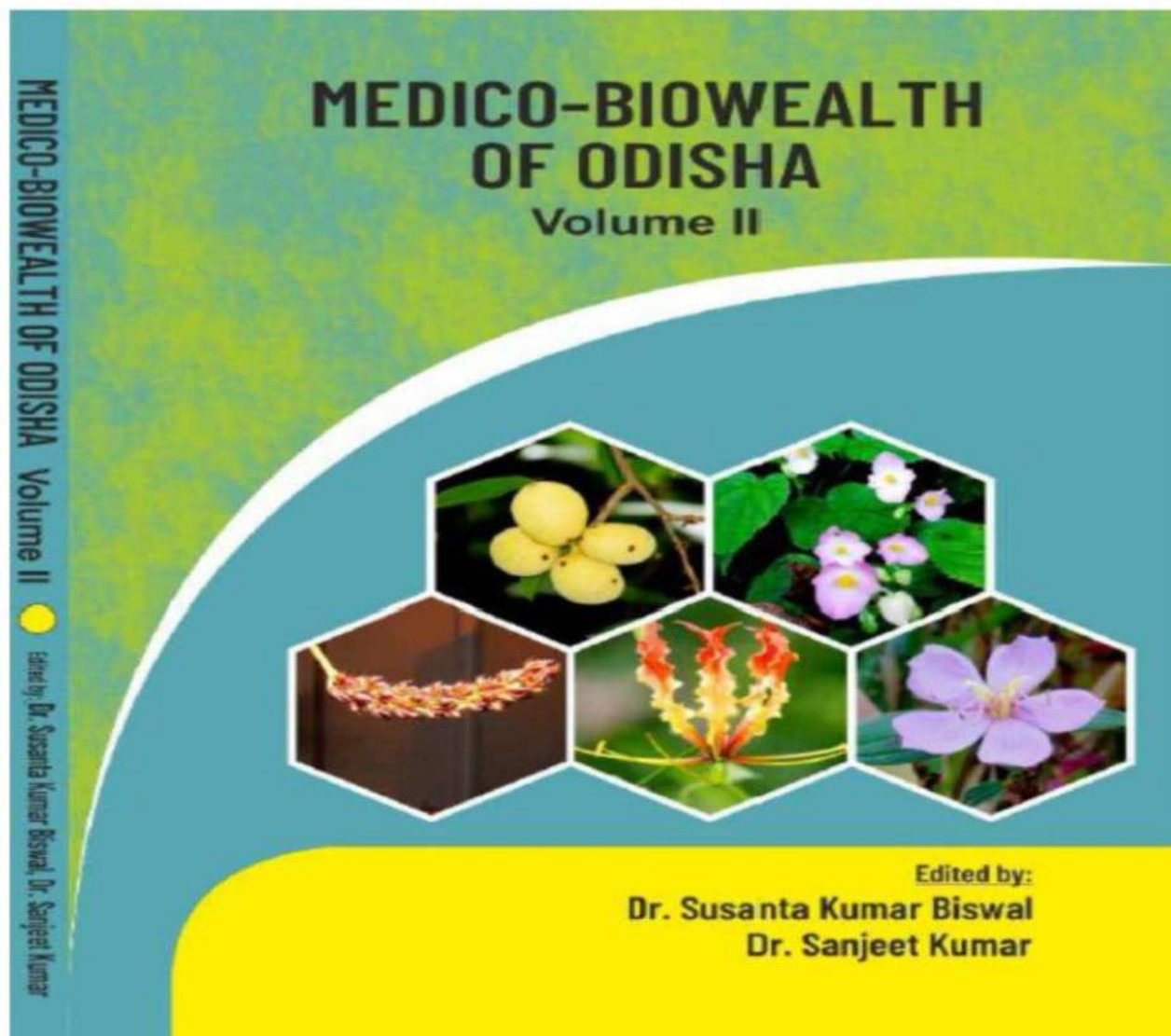
https://en.wikipedia.org/wiki/COVID-19_pandemic_in_India

Please cite as:

S.P. Khodke, V. D. Hutke, and R. C. Maggirwar. "Higher Education in Post COVID-19 India." In *SCHE-DC19-LPIW 2020*, Vol. I. Amravati, Maharashtra, India: Government Vidarbha Institute of Science and Humanities, Amravati, 2020.

Note: All Published papers are referred, having undergone a peer-review process.

160. Maggirwar RC: Phytochemical screening and antibacterial activity of *Tamarix indica*



Medico-Biowealth of Odisha

Vol. II

Edited by,

Dr. Susanta Kumar Biswal

Dr. Sanjeet Kumar



Title: *Medico-Biowealth of Odisha Vol. II / edited by Dr. Susanta Kumar Biswal and Dr. Sanjeet Kumar*

Description: Includes bibliographical references

Subject: Medicinal Plants India/ Ethnobotany India/ Ethnopharmacology/ Medicinal Plants Variation

Published by:

APRF Publishers

Ambika Prasad Research Foundation

First Floor, Saraswati Tower, Laxmisagar, Bhubaneswar

PIN- 751006, Odisha, India

Email-Id: sanjeet.biotech@gmail.com

www.aprf.org.in

Medico-Biowealth of Odisha

Vol. II

Second Edition: 2020

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ISBN: 978-81-945667-6-2

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Price: Rs. 1650

Designed by:

APRF, Odisha

CHAPTER 5

**Phytochemical screening and antibacterial activity of
*Tamarix indica***Kajal Priyadarshini¹, Sweta Mishra¹ and Rekha Chandrakant Maggirwar^{2*}¹Ambika Prasad Research Foundation, Bhubaneswar, Odisha, India²PG Dept. of Botany Shri Shivaji Science College, Amravati (MS)India*Email-Id: dr.krekha@yahoo.com**ABSTRACT**

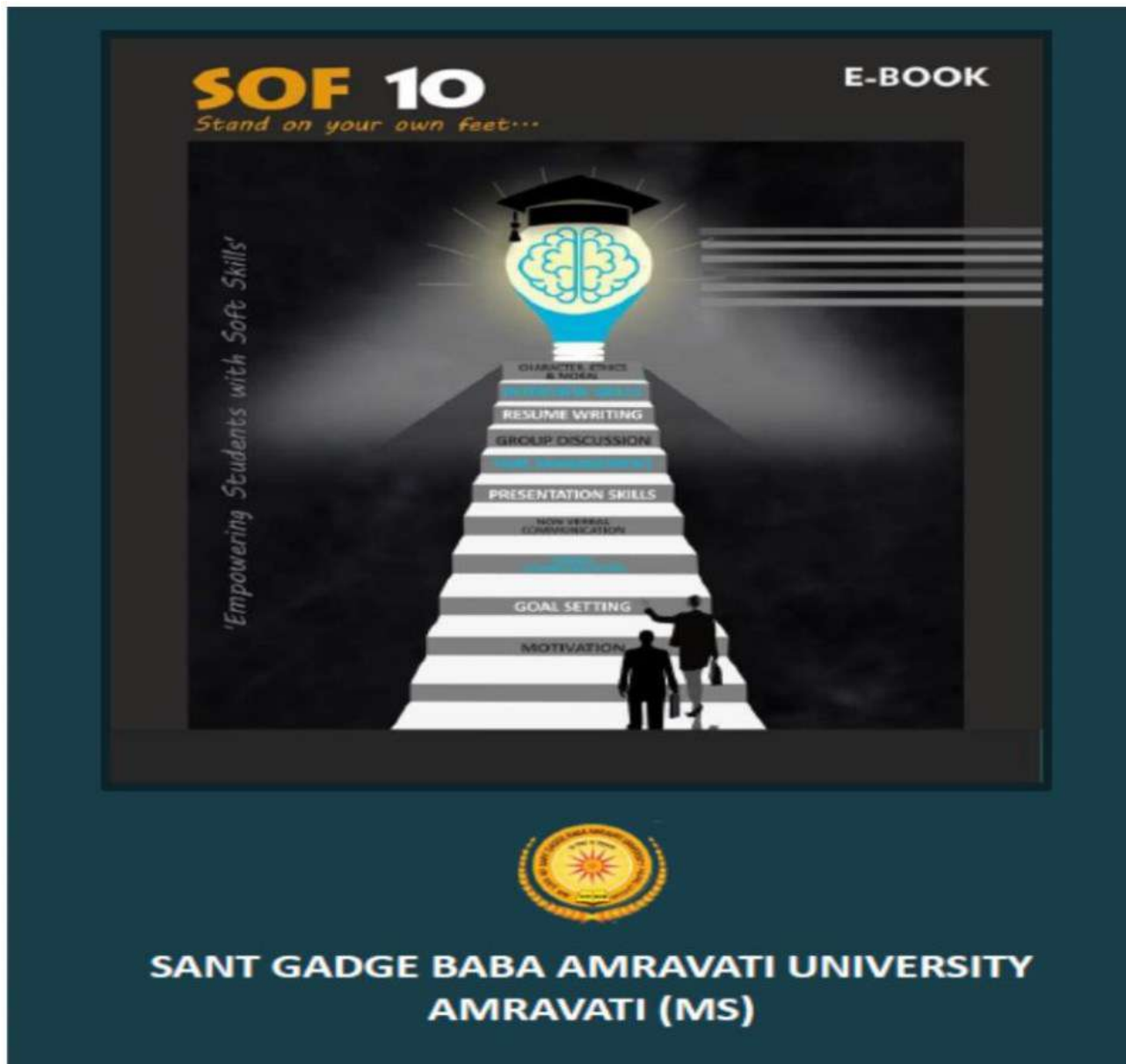
Tamarix indica L., a woody invasive plant species, has traditionally been considered as a source of medicine for various ailments. It possesses several undesirable attributes along with some beneficial characteristics. Hence, an attempt has been taken to gather the reported information and availability of this phreatophyte in the urban areas of Cuttack. The survey was made during the January 2020 to locate the said species in the study areas. Results revealed that this intrusive species is used to treat many diseases and disorders. The pharmacological interest of these compounds, coupled with the use of this plant in traditional medicine prompted the researchers to check its possible antinociceptive, anti-inflammatory and antibacterial activities in animal models. Due to availability of some medicinal values it showed a positive step towards the conservation of this medicinally important plant in urban areas. Phytochemical studies including extraction and detection of secondary metabolites have been done here for assessment of medicinal values of the used plant parts. The results revealed that whole plant possess diverse secondary metabolites and showed antibacterial activity against *Streptococcus pyogenes*. The obtained results provide a support for the use of this plant in traditional medicine and its further investigation.

Keywords: *Tamarix*, Invasive, pharmacological, phytochemical, *Streptococcus pyogenes*

5.1 INTRODUCTION

Traditionally herbal medicines form an important part of healthcare system of India. Ayurveda considered being the oldest medical system in the world. It provides potential leads to find active and therapeutically useful compounds from plants. Plants have always played an important role in the treatment of different ailment in human and animals all over the world. Many researchers are working on plant and plant products for the recognition of natural products. Herbal medicine is an important part of both traditional and modern system of medicine. Such as the family Tamaricaceae is recognised as a source of herbal

161. Maggirwar RC: SOF10





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Name of E Book:- **"SOF-10"** E-Book Empowering the students with Soft Skills

Publisher :- **Dr. Dineshkumar Satange** Director, Students' Development, SGBAU, Amravati.

Published By:- **Sant Gadge Baba Amravati University, Amravati**

Author:- **Dr. Dineshkumar Satange**

Edition :- I

Cover and Interior design By:- **Dr. Pavan Deshmukh**, Dean Training & Placement, Prof Ram Meghe College of Engineering & Management, Badnera (MS).

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ISBN :- 9788194757009



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Certified Trainer

Dr. Rekha C. Maggirwar
M.Sc., B.Ed., M.Phil., Ph.D., SET
Assistant Professor
Shri Shivaji Science College, Amravati (MS)
E-mail: maggirwarrekhi@gmail.com



ABOUT AUTHOR

Author has 16 years of experience and Member of BoS. Amravati district coordinator of Board of student's development SGBAU. Recognised P.G. Teacher and Ph.D. Supervisor of SGBAU Amravati. Published 28 Research papers, presented 35 papers in India, Mauritius, Korea and Sri Lanka also completed 2 Research projects. Worked in the capacity of coordinator Ecofriends to organise clay Ganesh Idol campaign, Jt. secretary of IWSA. Working as a secretary of Amravati Garden Club.

Chapter 6 SETTING GOALS

Dear Students, the difference between Dreams and Goals must be clear in your mind. The dreams can be seen when you are sleeping and you will have to spend many sleepless nights to achieve your goals. Therefore, a goal is the desired objective that a person strives to achieve through visualization, commitment and a plan.

Importance of a Goal

A goal is an objective which you have to plan to achieve. Without a goal you are bound to move off in the wrong direction or randomly, thus wasting time and effort. Your goal should be the bigger picture and not trivial like getting in college. You need to visualize in your head a clear picture of what you want five years down the row and why you want it? This clear picture in your mind will help you establish faith and will help you to keep going even in an uncertain future.



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162. Nagpure PA: Investigation of Visible Quantum Cutting In $\text{KCaF}_3:\text{Gd}^{3+}, \text{Eu}^{3+}$ Phosphor



National Conference on
Multidisciplinary Research in Science and Technology
 for Healthy Lifestyle Management

NCMRST-2020

Friday, 24th January 2020

Special Issue of
 Aayushi International Interdisciplinary Research Journal
 ISSN 2349-638x



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In collaboration with

Aayushi International Interdisciplinary Research Journal (AIIRJ)

ISSN-2349-638X

National Conference on Multidisciplinary Research in Science and Technology for Healthy Lifestyle Management
(NCMRST-2020) Organizer :- Shri R.L.T. College of Science, Akola

24th Jan.
2020

Investigation of Visible Quantum Cutting In $\text{KCaF}_3:\text{Gd}^{3+}, \text{Eu}^{3+}$ Phosphor

S. R. Jaiswal

Department of Physics, Shri R.L.T. College of
Science, Akola

V. B. Bhatkar

Department of Physics, Shri Shivaji Science College,
Amravati

P.A. Nagpure

Department of Physics, Shri Shivaji Science College,
Amravati

S. K. Omanwar

Department of Physics, Sant Gadge Baba Amravati
University, Amravati

Abstract

In this work we prepared KCaF_3 Co-doped with $\text{Gd}^{3+}, \text{Eu}^{3+}$ phosphor synthesis via reactive atmosphere process. Powder X-ray diffraction analysis shows structural purity of as-synthesized phosphor. The emission and excitation spectra of $\text{KCaF}_3:\text{Gd}^{3+}, \text{Eu}^{3+}$ were investigated using the VUV beam line of the Beijing Synchrotron Radiation Facility (BSRF). Here we investigate the mechanism of Energy transfer in Gd^{3+} ions to Eu^{3+} through cross relaxation process. In this phosphor we got negative results. The excitation peak of 273 nm was very much greater than that of the excitation peak of 147 nm at emission wavelength 593 nm. Hence there was no energy transfer in between the ions Gd^{3+} and Eu^{3+} . The results was no quantum cutting in the given phosphor material.

Keywords: Reactive Atmosphere Process (RAP), Quantum cutting (QC), Vacuum Ultraviolet (VUV)

Introduction

For the development of mercury free florescent lamps and plasma display panels (PDPs), we require phosphor having quantum efficiency is greater than unity under VUV excitation. The phosphors having quantum efficiency is greater than unity are called quantum cutting phosphors. Quantum cutting provides a means to obtain two or more low energy photons for each high energy absorbed photon. Therefore it serves as a down converting (DC) mechanism with quantum efficiency greater than unity and it offers the prospect of providing enhanced energy effectiveness in lighting devices [1]. Calcium fluoride with rare earth doped phosphor has conventional attention for numerous research works [2]. B. Herden *et al.* reported photon cascade emission in Pr^{3+} -doped fluorides with CaF_2 structure [3]. W. Binder *et al.* reported $\text{CaF}_2:\text{Sm}^{3+}$ Phosphor was used for the application of solid state laser materials [4]. R. Wegh *et al.* explain detail about visible quantum cutting through down-conversion in rare-earth compounds [5]. B. Liu *et al.* also explain visible quantum cutting in $\text{BaF}_2:\text{Gd}, \text{Eu}$ via down-conversion in which one VUV photon absorbed by Gd^{3+} can be split into two visible photons emitting by Eu^{3+} through cross relaxation between Gd^{3+} and Eu^{3+} [6].

Experimental

$\text{KCaF}_3:\text{Gd}^{3+}, \text{Eu}^{3+}$ phosphor was synthesis via reactive atmospheric process. In this method we used metal nitrate like $\text{Ca}(\text{NO}_3)_2$ (99.99% A.R.) and potassium nitrate KNO_3 as a precursor. The above both inorganic precursors were taken in Teflon beaker. A little amount of double distilled water was added in beaker and stirred it, then hydrofluoric acid (HF) added in it to get slurry. The slurry was dried by blowing air or heating on hot plate (80°C). A freshly prepared KCaF_3 host was obtained. Gd_2O_3 (AR 99.9%) and Eu_2O_3 (AR 99.9%) were boiled in HNO_3 and evaporated to dryness, so as to convert them into relevant nitrates. The aqueous solution of these nitrates were use as a dopants. The 1 mol% of gadolinium nitrate and 1mol% of europium nitrate were assorted in the host material and dehydrated completely.

The dried powder was transferred to a glass tube and about 1.0 wt. % RAP agent was added. In this process we used ammonium fluoride as a RAP agent. The tube was closed with a tight stopper and slowly heated to 500°C for 3 h. The stopper was removed and the powders were transferred to a graphite crucible pre-heated to a suitable temperature. After heating in the graphite crucible for 1 h the resulting phosphor was rapidly quenched to room temperature. Belsare *et al.* well discussed about RAP in their literature [7]. The complete process involved in the reaction was represented as a flow chart in Fig. 1.

Aayushi International Interdisciplinary Research Journal (ISSN 2349-638x) Impact Factor 6.293
(Special Issue No.70) Peer Reviewed Journal www.aiirjournal.com Mob. 8999250451

300

163. Nagpure PA: Visible Quantum Cutting & Down-Conversion in CaF₂: Gd³⁺, Eu³⁺ Phosphor



IMPACT FACTOR : 5.7631(UJF)

ISSN: 2249-694X

VOLUME - 1 | ISSUE - 3 | MARCH - 2019

REVIEW OF RESEARCH

VISIBLE QUANTUM CUTTING & DOWN-CONVERSION IN CaF₂: Gd³⁺, Eu³⁺ PHOSPHOR

S. R. Jaiswal¹, P.A. Nagpure², V. B. Bhatkar², S. K. Omanwar³

¹Department of Physics, Shri R. L. T. College of Science, Akola. 444606(INDIA)

²Department of Physics, Shri Shivaji Science College, Amravati. 444601 (INDIA)

³Department of Physics, SantGadge Baba Amravati University, Amravati. 444602 (INDIA)

(Corresponding author: srjaiswal07@gmail.com)

ABSTRACT :

The conversion of vacuum ultraviolet (UV) radiation to visible (VIS) light is described which makes it possible to obtain two VIS photons for each vacuum ultraviolet (VUV) photon absorbed. Often it is termed as Quantum Cutting (QC). The phenomenon also called as down conversion (DC), is demonstrated by CaF₂: Gd³⁺, Eu³⁺. We prepared CaF₂: Gd³⁺, Eu³⁺ phosphor synthesis via reactive atmosphere process. Powder X-ray diffraction analysis shows structural purity of as-synthesized phosphor. The emission and excitation spectra of CaF₂:Gd³⁺, Eu³⁺ were investigated using the VUV beam line of the Beijing Synchrotron Radiation Facility (BSRF), China. The energy transfer (ET) in calcium fluoride compound from the Gd³⁺ ions to Eu³⁺ through cross relaxation occurs. On the basis of the calculations from the emission spectra in the visible region obtained, we have obtained optimal quantum efficiency as high as 117% for red-emitting CaF₂:Gd³⁺, Eu³⁺ phosphor under excitation of 203 nm in reactive atmosphere process (RAP).

KEYWORDS: Reactive Atmosphere Process (RAP), Quantum cutting, VUV spectroscopy, Energy transfer, CaF₂.

1. INTRODUCTION

For the development of mercury free fluorescent lamps and plasma display panels (PDPs), we require phosphor having quantum efficiency is greater than unity under VUV excitation. The phosphors having quantum efficiency is greater than unity are called quantum cutting phosphors. Quantum cutting provides a means to obtain two or more low energy photons for each high energy absorbed photon. Therefore it serves as a down converting (DC) mechanism with quantum efficiency greater than unity and it offers the prospect of providing enhanced energy effectiveness in lighting devices [1]. In order to obtain quantum-cutting phosphors with quantum efficiencies exceeding unity, the lanthanide ions are obvious candidates for this purpose due to their energy level structures that afford metastable levels from which quantum-splitting processes are capable. The inorganic calcium fluoride is one of the most important host with certain weird characteristics like wide band gap greater than 11 eV. Calcium fluoride with rare earth doped phosphor has conventional attention for numerous research works [3]. B. Herdener *et al.* reported photon cascade emission in Pr³⁺ doped fluorides with CaF₂ structure [4]. W. Binder *et al.* reported CaF₂:Sm³⁺ Phosphor was used for the application of solid state laser materials [5]. A. Lucas discussed CaF₂: Dy and CaF₂: Tm phosphors are used for the application of dosimetry [6]. In our experiments we use gadolinium and europium lanthanides as a dopant in the host of CaF₂ for the application of quantum cutting. The process energy transfer and quantum cutting in CaF₂: Gd³⁺, Eu³⁺ can occur by the dopant combination of Gd³⁺ and Eu³⁺, in which Gd³⁺ (acts as a sensitizer) and absorbing high energy VUV photon is cut into two visible photons emitted by two Eu³⁺ ions (acts as an activator).

164. Pundkar SV: A petrified seed *Uricotyledospermum rodeii* gen. Et. Sp. Nov. from the Deccan Intertrappean Beds of Mohgaonkalan, M.P., India in Current Updates in Life Sciences

A PETRIFIED SEED *UNICOTYLEDOSPERMUM RODEII* GEN. ET. SP. NOV. FROM THE DECCAN INTERTRAPPEAN BEDS OF MOHGAONKALAN, M.P., INDIA

S.V. Pundkar¹, P. S. Kokate², and K. M. Thorat³

¹Department of Botany, Shri Shivaji Science College, Amravati (MS) India.

²Department of Botany, Shri Shivaji college of Arts, Com & Science, Akola (MS) India.

³Dr. Manorama and Prof. Haribhau S. Pundkar College ACS College, Balapur (MS) India.

Corresponding authors Email - swatipundkar54@gmail.com

ABSTRACT:

The fossil chert were collected from Mohgaonkalan, District Chhindwara, M.P. India, a well known rich fossiliferous locality of Deccan Intertrappean beds for all major groups of plant parts but reports of fossil seed are less as compared to other parts.

The seed is monocotyledonous having single cotyledon, bitegmic, consist of seed coat differentiated into testa and tegmen, seed cavity and embryo. A seed is biconvex, more or less oval in shape, albuminous, exarillate. The seed is compared with the living and reported fossils but most of the characters, except few are closely related to family Liliaceae. Therefore, fossil seed can be assigned in the family Liliaceae and name *Uricotyledospermum rodeii*. Generic name is given after seed is with single cotyledon and specific name is after eminent palaeobotanist Dr. K.P. Rode.

Key words: Fossil, Monocotyledon, Seed, Deccan Intertrappean beds.

Introduction:

There are many reports of dicot and monocot fruits but seeds from the various localities of the Deccan intertrappean of Central India are few. Some Dicot seeds are, *Mahabalespermum minutum*; *Deccanospermum arillata* and *Ramakonaspermus chitaleyensis* (Juneja, 1993); *Clusiocarpus arillatus* (Kumar, 1984); *Clusiocarpus indicum* (Wazalwar, 1990); *Unonospermum corneri* (Bonde, 1993); *Ramakonaspermum sishpurii* (Sheikh and Bhowal, 2003); *Flacourtiospermum nambudirii*, *Mohgaospermum deccanii* (Kokate, 2006); *Ramakonaspermus chitaleyensis* Matin and Juneja (Shaik *et al.*, 2009); *Bitegmospermum mohgaonse*, *Orthotropouspermum hookerii*, *Chitaleypermum intertrappea* (Thorat, 2016); *Unitegmospermum ramanujani* (Kokate, 2017) *Coccolobospermum ramanujanii*, *Iioxospermum chitaleyensis* (Dighe, 2017) *Monocoteospermum hookerii* (Deshmukh, 2019) are already reported.

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165. Pundkar SV: A New Petrified Dicotyledonous Berry Fruit from the Deccan Intertrappean Beds of Mohgaonkalan, M.P. India.

'RESEARCH JOURNEY' International Multidisciplinary E- Research Journal



Impact Factor - (SJIF) – 6.625,
Special Issue 251 : Recent Trends in Research
Peer Reviewed & Indexed Journal

ISSN :
2348-7143
August-2020

A New Petrified Dicotyledonous Berry Fruit from the Deccan Intertrappean Beds of Mohgaonkalan, M.P. India.

*Thorat K.M, Kokate, P.S; Pundkar S.V.

* Department of Botany, Dr. Manorama and Prof. H. S. Pundkar Arts, Commerce and Science college, Balapur.

Department of Botany, Shri. Shivaji College of Arts, Commerce and Science, Akola.

Department of Botany, Shri. Shivaji Science College Amravati.

Email: kmthorat12@gmail.com

Email: pratikshakokate811@gmail.com

Abstract:

The present paper deals with study of fossil berry fruit was collected from Mohagaonkalan M.P, India. The fossil fruit is spherical in shape, globose and fleshy in nature, fruit broadly divided into fruit wall - pericarp and seeds, Pericarp thick, fleshy and seeds absent but only one chamber, pericarp made up of thin walled parenchymatous cells and central part also consist of thin walled parenchymatous tissue. The present fossil fruit shows close resemblances with family Solanaceae.

Keywords: Berry fruit, Fossil, Mohagaonkalan, Solanaceae,

Introduction:

Mohagaonkalan, M.P., India, well known fossiliferous locality belonging to uppermost Cretaceous period. There are many different type of fruits reported from Mohagaonkalan. M.P. India. But some of very few berry types of fruits of dicotyledons and monocotyledons are reported these are - *Mohgaoncarpon eydei* (Yawale, 1977), *Kremocarpum indicum* (Upadhye and Patil, 1978), *Erythroxylocarpum intertrappea* (Khubalkar, 1982) and *Kremocarpum aquatica* (Kate, 1974). *Cucurbitaceocarpum sahani* (Bobabe, 2005) *Bicarpelocarpum Singhpurii* (Bhowal and Sheikh, 2008) *Portulacaceaeocarpum jamsavlaii* (Meshram and et al., 2011) *Coffeocarpum deccani i* (Dighe, 2017) *Lycopersicocarpum harishii* (Deshmukh, 2018) *Momordiocarpum deccanii* (Deshmukh, 2019)

Materials And Methods:

The present fossil fruit specimen is collected from the fossiliferous locality. On cutting the chert, the present specimen was exposed as a petrification, in transverse plane. It is studied by peel method by taking serial sections of material.

Description:

The present petrified fossil specimen is unilocular and without seeds which looks like berry fruit.

The present fossil berry fruit is spherical in shape, globose and fleshy in nature. It measures 1.4 mm in diameter.

The fruit is broadly divided into fruit wall that is pericarp and seeds. The pericarp is fleshy. There are no seed but only one chamber is which might be containing seed. In cavity of fruit there is a presence of ill preservation of axis.



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166. Pundkar SV: A Dicotyledonous Drupaceous Fossil Fruit *Myrtocarpon Ganeshii* Gen. Et. Sp.

'RESEARCH JOURNEY' International Multidisciplinary E- Research Journal



Impact Factor - (SJIF) – 6.625,
Special Issue 251 : Recent Trends in Research
Peer Reviewed & Indexed Journal

ISSN :
2348-7143
August-2020

A Dicotyledonous Drupaceous Fossil Fruit *Myrtocarpon Ganeshii* Gen. Et. Sp. Nov. from Mohgaonkalan, M.P., India

Dr. Pundkar S.V., * Dr. Kokate P. S., **Dr. Thorat K.M.

Department of Botany, Shri Shivaji Science College, Amravati.

*Department of Botany, Shri Shivaji college of Arts, Com & Science, Akola.

**Dr. Manorama and Prof. Haribhau Shankarrao Pundkar College, Balapur

Email Id- swatipundkar54@gmail.com

EmailId - pratikshakokate811@gmail.com

Abstract:

The present fossil fruit is small, fleshy, globular, dicotyledonous, drupe. It is unilocular and single seeded, having three distinct wavy appendages at the apical region. Pericarp composed epicarp, mesocarp and innermost layer is hard endocarp. Seed coat not fused with pericarp. Inside embryo two unequal and large cotyledons are seen prominently. Drupaceous fruit structure shows similarities with the *Syzygium* genus of Myrtaceae, hence name given to present fossil fruit as *Myrtocarpon ganeshii*. The generic name given from family Myrtaceae and specific name is give after the name of eminent Palaeobotanist Dr. Ganesh V. Patil, Former V.C. of S.G.B. Amravati University, Amravati.

Key words: Fossil, Dicotyledon, Drupe, Deccan, Intertrappean beds.

Introduction:

Mohgaonkalan is the well known locality of the Deccan Intertrappean series, in Chhindwara district of Madhya Pradesh. Fossil palms forms a major group of the Indian fossil flora. Some monocotyledons fruits are described from the same locality, many species of *Palmocarpon* have been described by Sahni (1934). Fossil fruit resembling with present fossil fruit is reported by Trivedi and Verma (1969). Other drupaceous fruits are *Hyphaenocarpon indicum* (Bande, et al., 1981), *Areoidocarpon kulkarnii* (Bonde, 1990). Other fructification comprising drupaceous fruitlets are *Viracarpon hexaspermum* (Sahni, 1934, 1944, 1964).

The dicotyledons fruits are also reported from the same locality. The drupaceous dicot fossil fruit is of *Trapa mohgaonsis* (Paradkar and Patki, 1987). *Euphorbiocarpon drypeteoides* (Mehrotra et al., 1983) and *Grewia mohgaonsis* (Paradkar and Dixit, 1984) *Gyrocarpusocarpon intertrappea* (Mistri and Kapgate, 1990); *Plectroniocarpon intertrappeans* (Kokate et al., 2009); *Pinangocarpon deccanensis* (Kokate, 2009); *Scaevolacarpon indicum* (Kokate, 2010); *Solanoceocarpon agashi* (Thorat, 2015); *Lycopersicocarpon harisiigen* (Deshmukh, 2016); *Premnocarpon Mohgaonii* (Dighe, 2016); *Coffeocarpon deccanii* and *Azimocarpon indicum* (Dighe, 2017); *Clerodendrocarpon deccanii* and *Momordiocarpon deccanii* (Deshmukh, 2019)

Material And Methods:

The present fossil specimen was well preserved in black chert. The etching of chert was done by Hydrofluoric acid. This specimen was studied by taking serial peel sections. As the preservation is very good the sections shows all anatomical details clearly.

Description:

The present fossil specimen is fleshy fruit, globular in shape. Fruit is exposed in longitudinal plane. Fruit is single seeded, drupaceous in nature. It is 1.38 mm in length and 1.08



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167. Wagh GA: Spatial Distribution and habitat choice of two sympatric species of Hornbills in Vidarbha, Maharashtra, Central India.

SPATIAL DISTRIBUTION AND HABITAT CHOICE OF TWO SYMPATRIC SPECIES OF HORNBILLS IN VIDARBHA, MAHARASHTRA, CENTRAL INDIA

Gajanan A. Wagh^{1*}, Jayant Wadatkar² and Raju Kasambe³

¹Shri Shivaji Science College, Amravati (MS) 444 603, India

²Sant Gadge Baba Amravati University, Amravati (MS) 444 602, India

³Bombay Natural History Society, Hornbill House, Opp. Lion Gate,

Shaheed Bhagat Singh Road, Fort, Mumbai (MS) 400001, India

*Corresponding author. Email: gajuwagh252424@rediffmail.com

Abstract

Vidarbha is the eastern region of Maharashtra state, lies on the northern part of the Deccan Plateau and has the Satpuda Hill ranges to the north. Vidarbha region has two species of hornbills, i.e., Indian Grey Hornbill *Ocyrceros birostris* and Malabar Pied Hornbill *Anthracoceros coronatus*. The Malabar Pied Hornbill is now listed as Near Threatened by the IUCN. Data collected from three methods is used in this paper, data collected during field surveys by the authors, compilation of published bibliographic data of previous sightings and by compilation of data from citizen science forums. The study indicates that the spatial distribution of the two sympatric hornbill species is largely influenced by fragmentation of well protected forests due to agricultural expansion and urbanisation. The Malabar Pied Hornbill prefers and is mainly confined to the protected areas like tiger reserves and wildlife sanctuaries. Whereas, the Indian Grey Hornbill prefers fragmented forests and large gardens in urban areas and is also found in protected forested areas overlapping with the Malabar Pied Hornbill.

Keywords: Spatial distribution, habitat choice, *Ocyrceros birostris*, *Anthracoceros coronatus*, Central India

INTRODUCTION

Nine species of hornbills are found in India but five of these are threatened (IUCN 2017). Indian subcontinent's hornbill species are, Great Hornbill *Buceros bicornis* (Near Threatened), Rufous-necked Hornbill *Aceros nipalensis* (Vulnerable), Wreathed Hornbill *Aceros undulatus* (Least Concern), White-throated Brown Hornbill *Anorrhinus austeni* (Near Threatened), Malabar Pied Hornbill *Anthracoceros coronatus* (Near Threatened), Malabar Grey Hornbill *Ocyrceros griseus* (Least Concern), Oriental Pied Hornbill *Anthracoceros albirostris* (Least Concern), Indian Grey

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Adina cordifolia, may help sustain large numbers roosting hornbills. They also possibly act as centres for information exchange between foraging birds and also offer better protection from arboreal and nocturnal predators (Gadgil & Ali 1974).

SUMMARY

The Indian Grey Hornbill was found to be more widely distributed and abundant in the study area. However, the Malabar Pied Hornbill sightings were less numerous and it was recorded in protected forest areas and from one reserve forest area. This indicated that the Malabar Pied Hornbill is more selective about the habitat than the sympatric Indian Grey Hornbill.

ACKNOWLEDGEMENTS

We thank the citizen science forums for making available the data about distribution of birds. Special thanks to Mr. Nandkishor Dudhe, BNHS, Mumbai for his help in compiling the data on hornbill sightings from Vidarbha region. We thank University Grants Commission, New Delhi, for the financial support for a research project to the first author (GW). Also, we thank Maharashtra Forest Department staff of protected and Reserve forest areas. Thanks to PCCF (Wildlife), Department of Forests, Govt. of Maharashtra, Nagpur for giving permission and for partially supporting the visits to protected areas in Maharashtra. The authors wish to thank, Dr. V.G. Thakare, Principal and Head of the Department of Zoology, for their constant support and encouragement. Thanks are also due to our field colleagues, Mr. Alkesh Thakare, Mr. Kiran More, Mr. Neenad Abhang, Mr. Manish Dhakulkar, Mr. Gaurav Kadu, Mr. Rahul Sawarkar and Mr. Suraj Pawar for accompanying us during the field trips to the study area.

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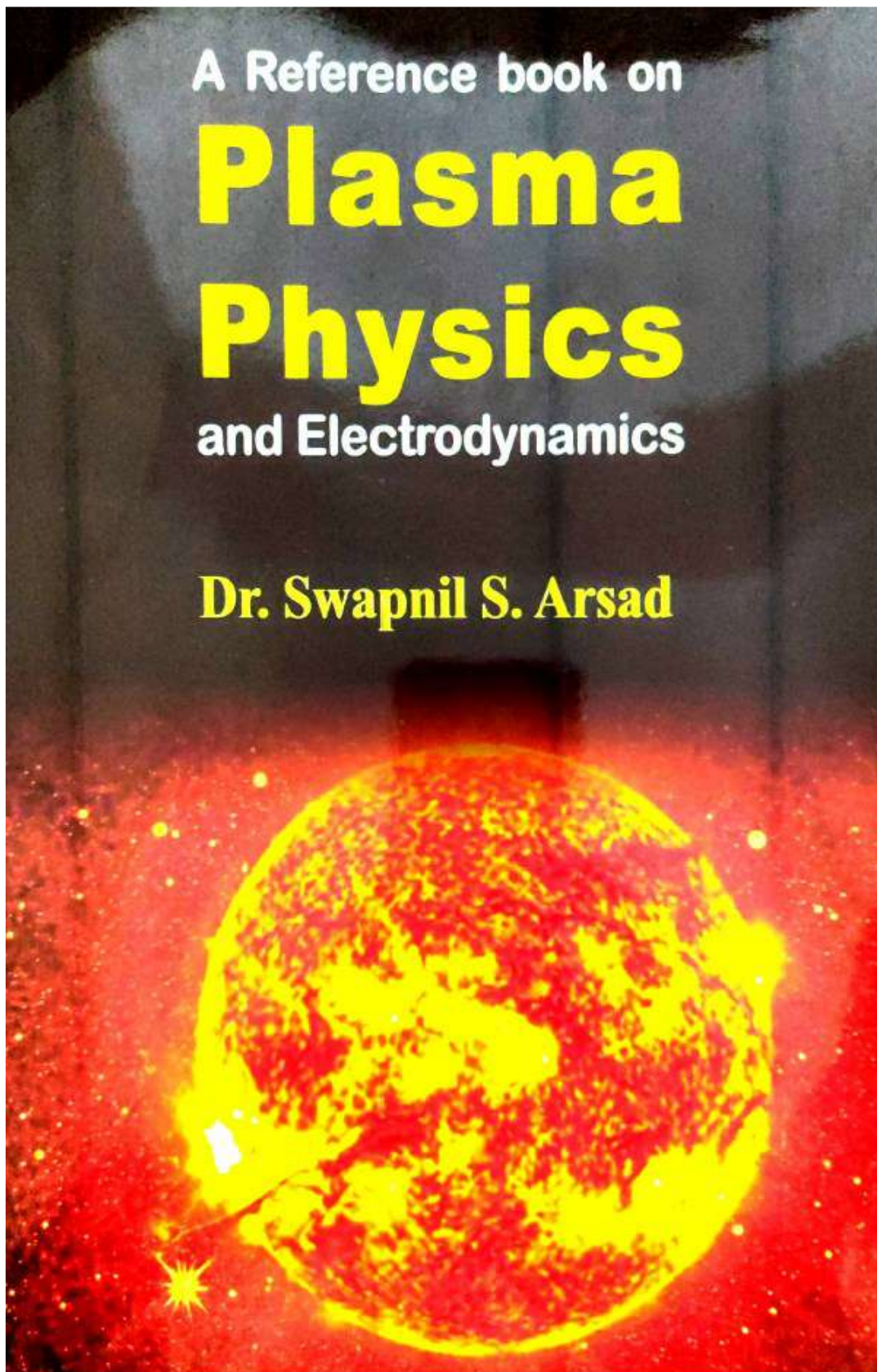
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2015 Studies on the Status, Distribution, Habitat Ecology and Strategic Planning for Conservation of Malabar Pied Hornbill *Anthracoceros coronatus* in Central India. *Malayan Nature Journal*, 67(2): 228–239.

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**Plasma Physics
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Nabh Prakashan

Shyam Nagar, Amravati-444 606

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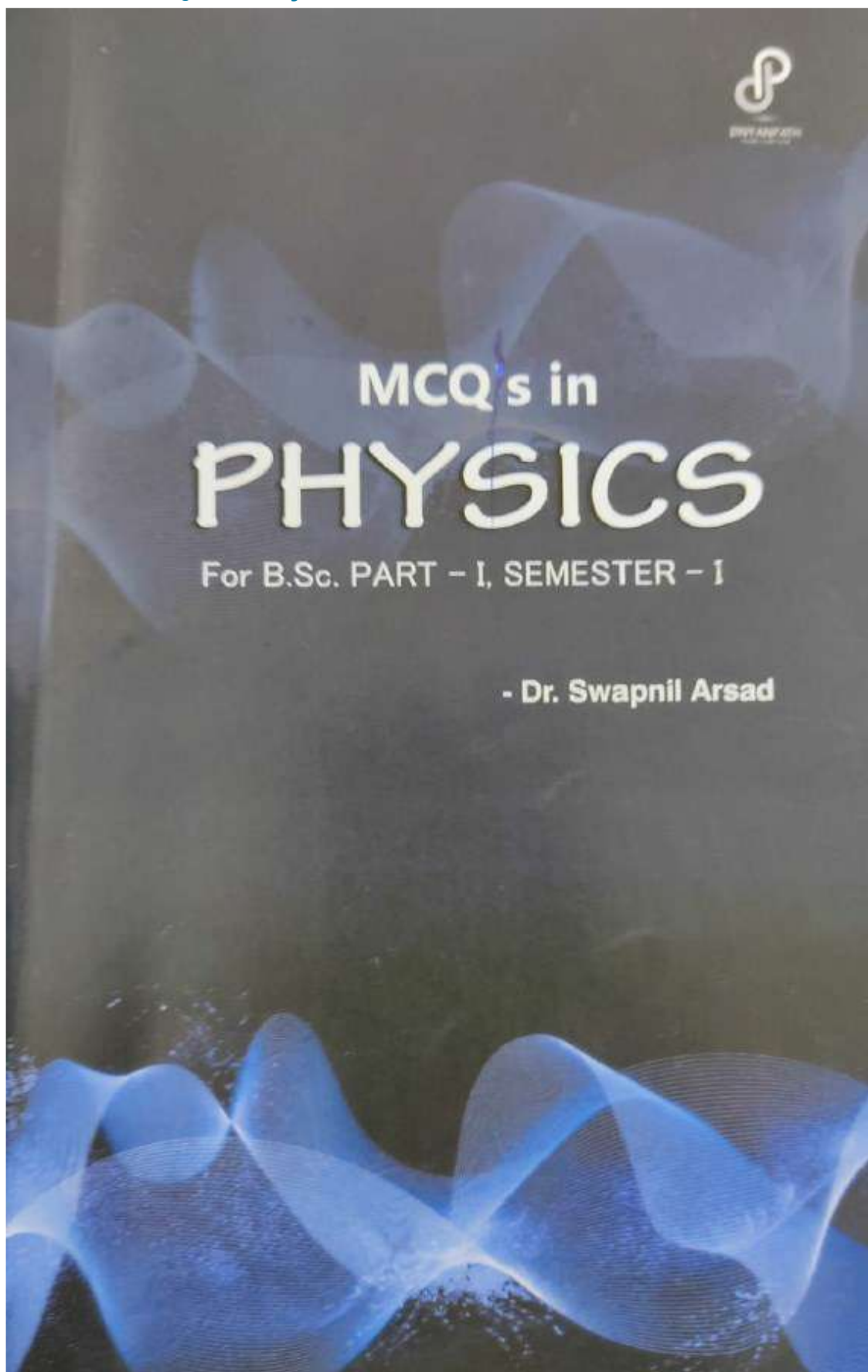
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MCQs in Physics For B.Sc. Part - I, Semester - I

Authors - Dr. Swapnil Arsad

Published by the **DnyanPath Publication (INDIA)**

Edition : March, 2021

ISBN 13 : 978-81-947250-4-6

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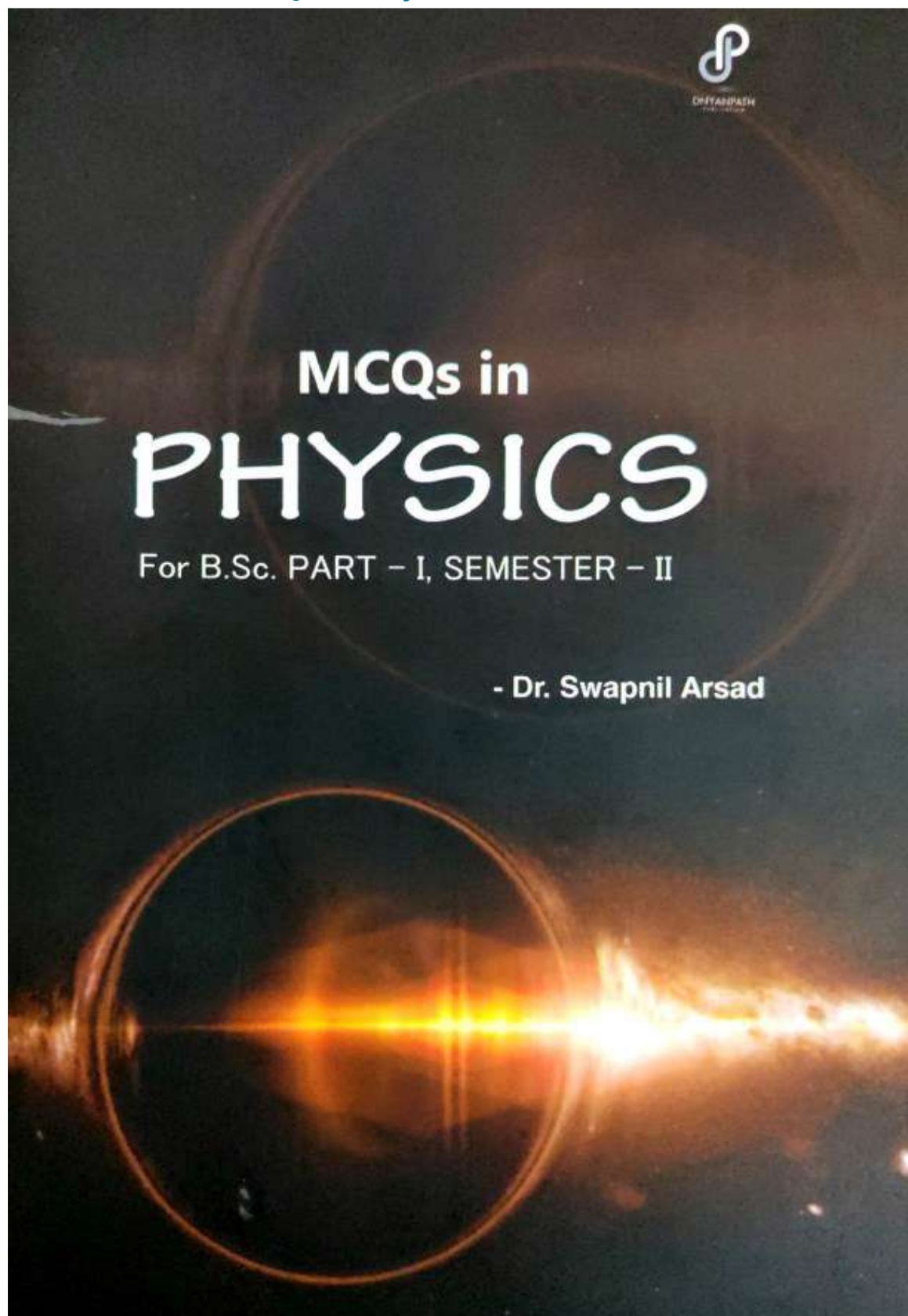
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Assistant Professor

Shri Shivaji Science College,
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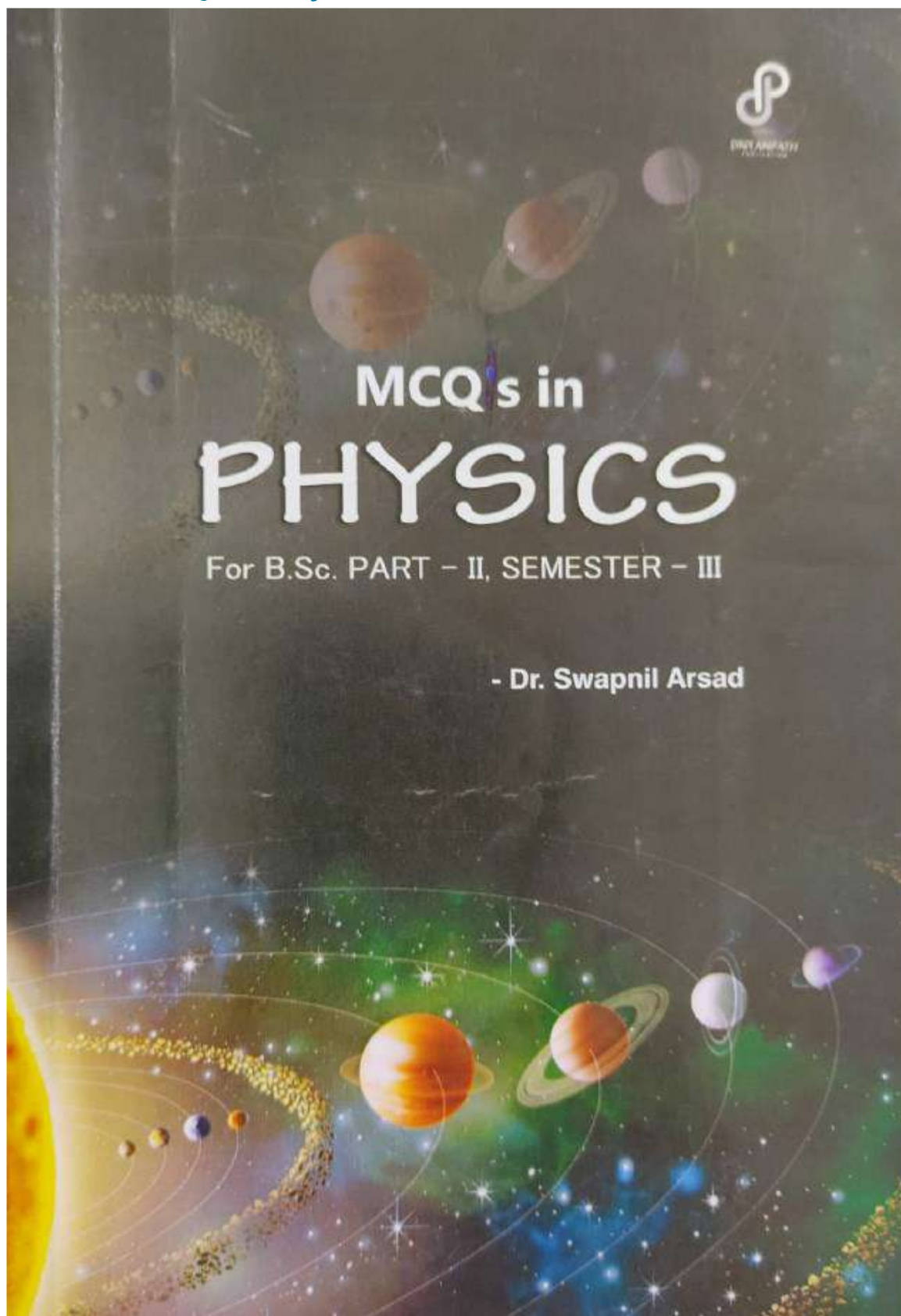
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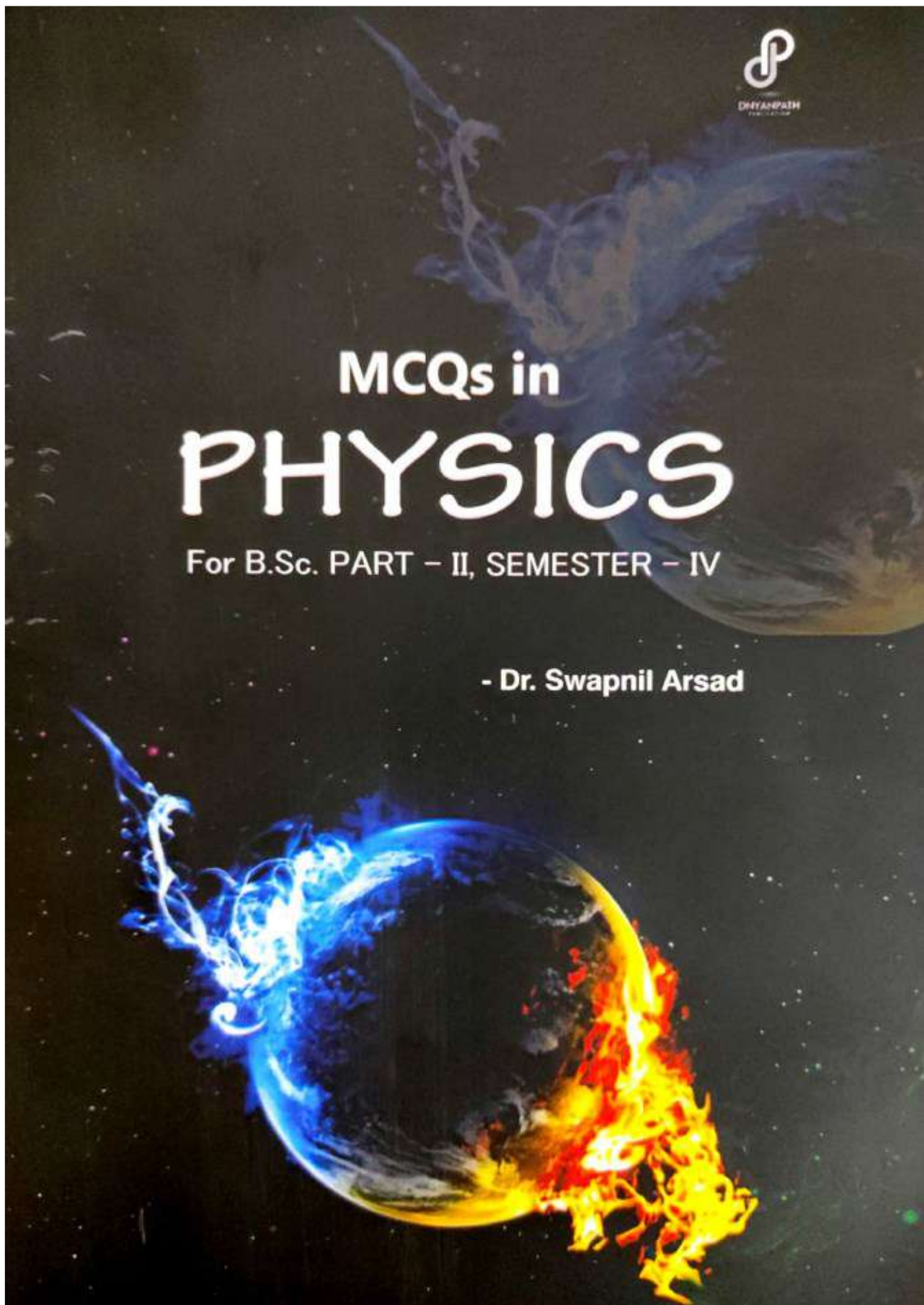
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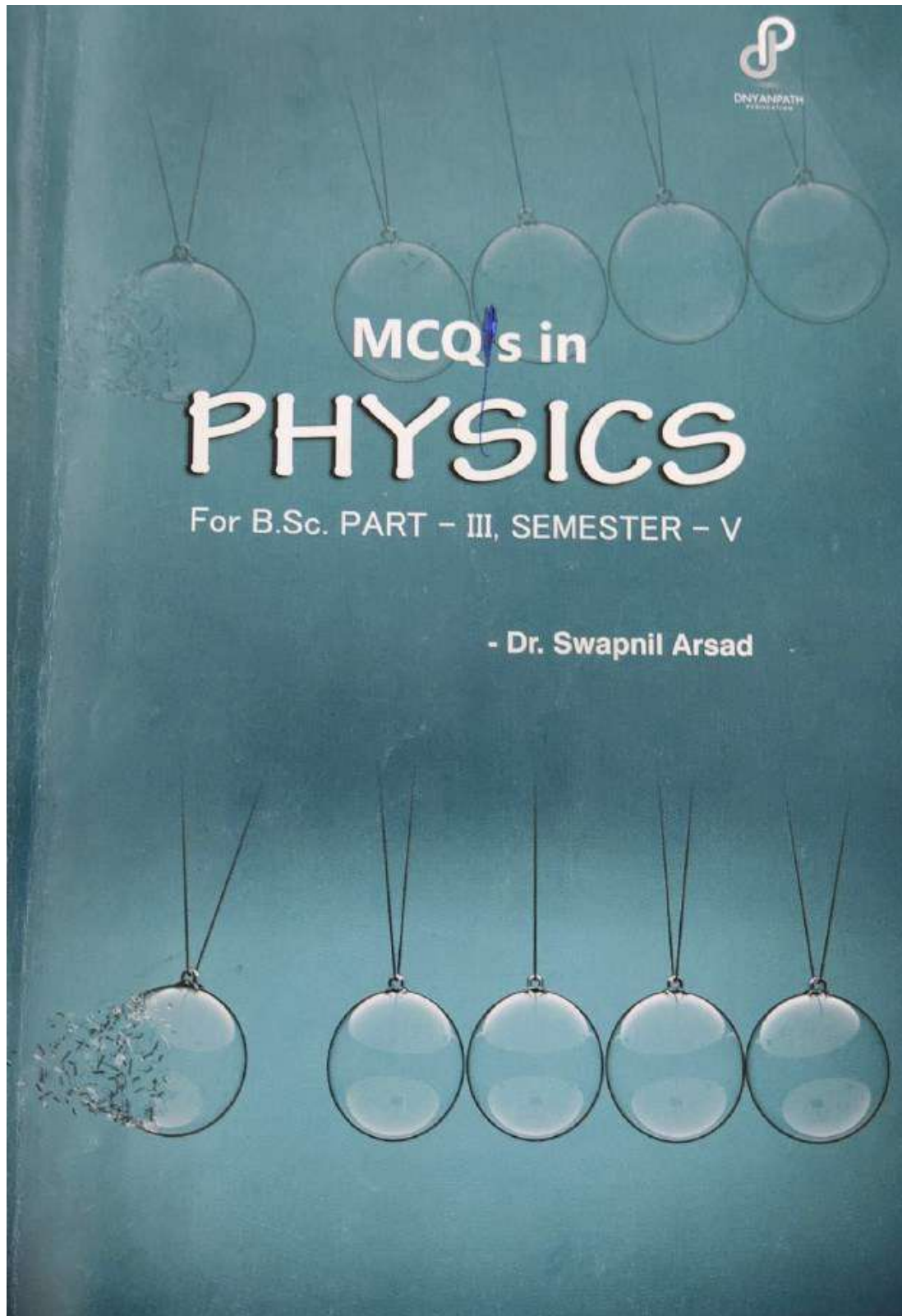
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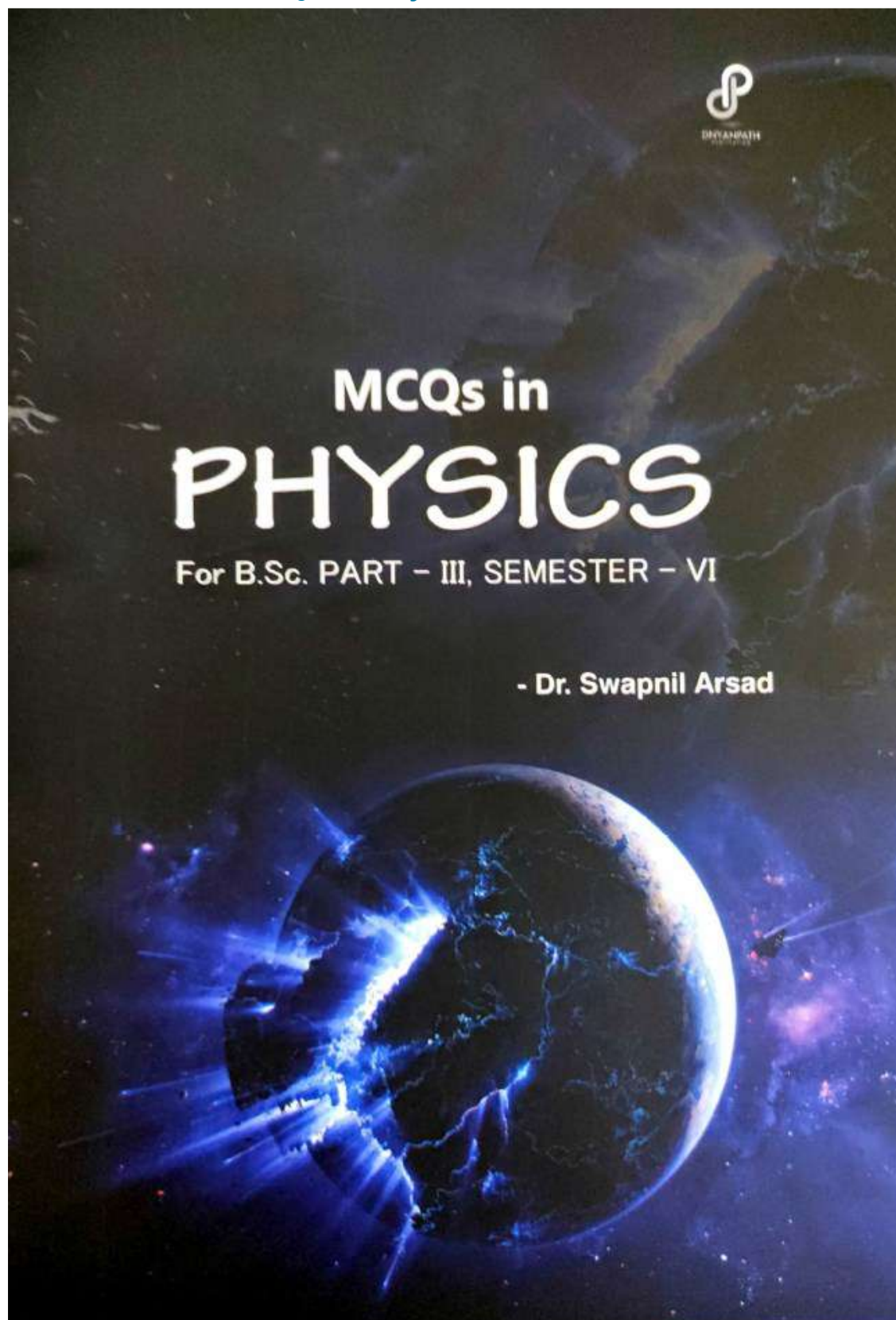
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- Author -

Dr. Swapnil Arsad

Assistant Professor
Shri Shivaji Science College,
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For B.Sc., Part - III, Semester - VI

Author - *Dr. Swapnil Asad*

The edition first published in 15th July 2021

ISBN 13 : 978-93-91331-30-6

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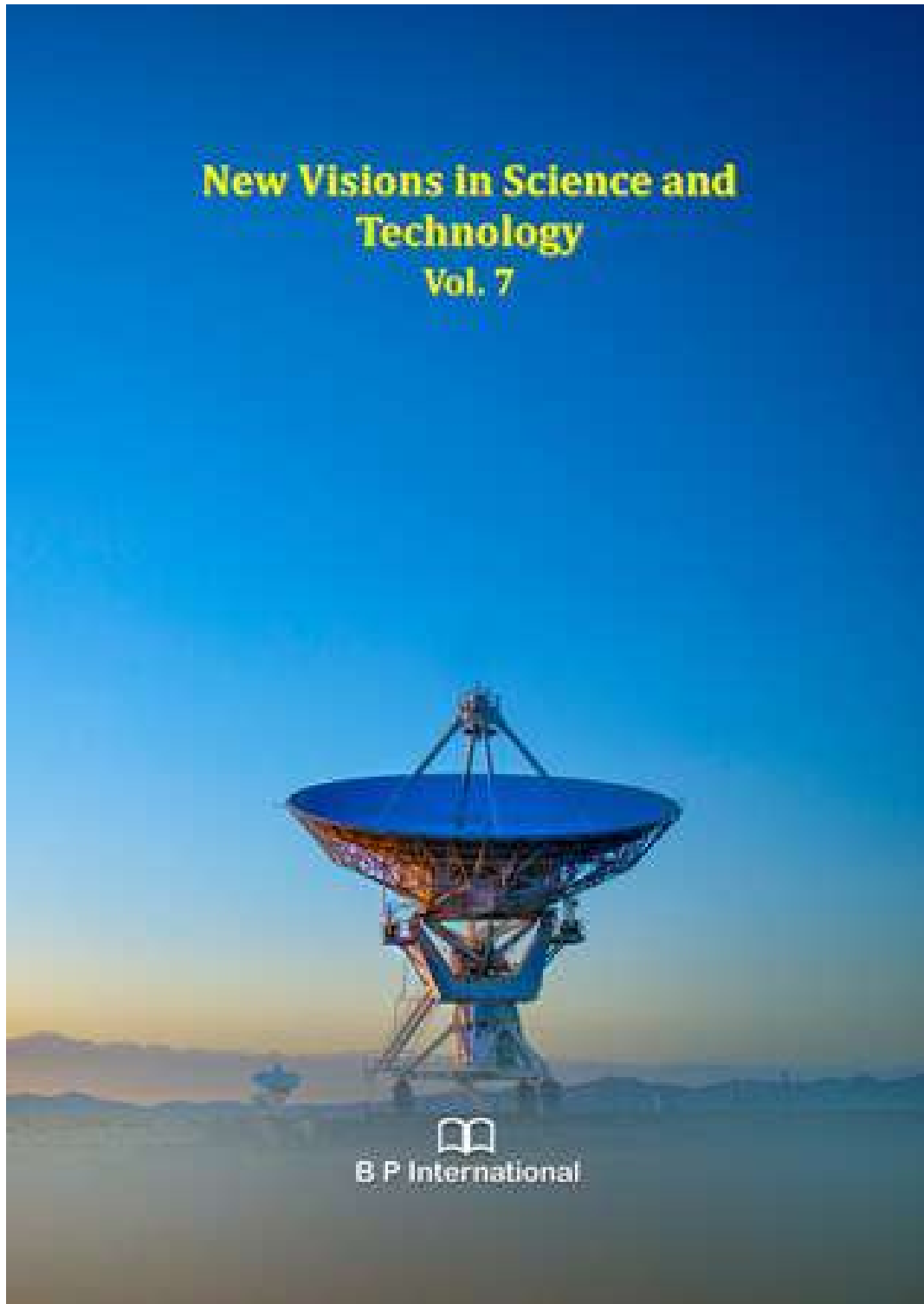
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**176. Deshmukh MM: New Visions in Science and Technology Vol.7
Morphometric Investigations of Tapi Micro Watershed, Asirgarh,
Burhanpur District, MP, India with Emphasis on Geographical Data
Analysis**



Morphometric Investigations of Tapi Micro Watershed, Asirgarh, Burhanpur District, MP, India with Emphasis on Geographical Data Analysis

Mayura Deshmukh S. F. R. Khadri

New Visions in Science and Technology Vol. 7, 26 October 2021, Page 135-146

<https://doi.org/10.9734/bpi/nvst/v7/14090D>

Published: 2021-10-26

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Abstract

Morphometry is a significant pointer to recognize the morphological and hydrological characteristics of earth. Current investigation intentions to identify the morphological characteristics of Tapi micro watershed. In the field of current day geographical and geological studies, geospatial investigation is, remote sensing (RS), geographical information system (GIS) and global positioning system (GPS) have showed to be a successful device. Geographical information system and Remote sensing techniques have been implemented for the identification of different morphological features and to evaluate their presence in a hilly river basin of Asirgarh volcanic, which is located in the Burhanpur district, MP, India. Morphometric analysis is a quantitative description and analysis of landforms. Morphometry of any drainage basin is a systematic method has a great importance in understanding hydrological behaviour of the basin. The morphometric parameters of the study area have been discussed with respect to three types of aspects such as linear, areal and relief aspects. The morphometric parameters of study area were measured are stream order, stream length, bifurcation ratio, drainage density, drainage frequency, drainage texture, form factor, circulatory ratio, elongation ratio and compactness ratio, etc. The results of morphometry undoubtedly specify relations midst numerous morphometric attributes of the basin and help to recognize their role for delineating groundwater potential zones for the sustainable development of the region. Various maps have been prepared using remote sensing and GIS techniques to delineate groundwater potential zones for the sustainable development of the Tapi micro watershed. The drainage network in the study area is dendritic to sub-dendritic, indicating that lithology and terrain have an impact on drainage pattern.

Keywords: Remote sensing morph metric parameters geographical data GIS

177. Deshmukh RG: Current trends in materials chemistry/ A Review - Comparison of types of solar cells and solar technologies

CURRENT TRENDS IN MATERIALS CHEMISTRY

Editors

Dr. H P Nagaswarupa

Dr. H C Ananda Murthy

Published by



First Impression: 2021

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CURRENT TRENDS IN MATERIALS CHEMISTRY

ISBN: 978-93-85682-66-7

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Recent Advances in Supercapacitors: Materials, Methods and Applications

Vaishali V. Deshmukh*

Department of Physics, Shri Shivaji Science College, Amravati (MS)-444603

*Corresponding Email: vaishalideshmukh27@gmail.com

Abstract

Because of the availability of high efficiency and cost effectiveness nanomaterials, nanotechnology is expected to play an important role in the field of energy. Natural energy resources such as solid fossil fuel (coal), liquid fuel (crude oil), and natural gas, which are used in power generation, transportation, communication, agriculture, industry, and many other applications, are limited and depleting at a rapid rate. Future generations will need to look for an alternative renewable energy such as solar cells, fuel cells, batteries, and so on. Many electronic devices, such as laptops, cell phones, radios, calculators, toys, and so on, require rechargeable, lightweight batteries or cells. The batteries used for these devices have the drawbacks of lower power density and poor cycling durability. Scientists and technologists around the world are working to replace batteries with higher power density and long cycling stability energy storage systems such as supercapacitors. Since then, researchers have focused on developing nanomaterials to enhance the specific capacitance of supercapacitors. The advancement of electrode materials for supercapacitors is thoroughly reviewed in this work.

Keywords: Supercapacitors, Electrochemical capacitors, Ultra capacitors, Activated carbon, Graphene, Polyaniline

1. Introduction

All is driven by energy, which is found everywhere. Humans have always required energy, however the energy crisis poses a significant challenge to the feasible development of mankind, forcing humans to evaluate researching and developing efficient, clean, safe, green, and high-performance energy storage and conversion materials and equipment. Unquestionably, one of the challenges of the twenty-first century is energy storage. As a result, it is crucial to build new, environmentally sustainable, and low-cost energy storage solutions (Fig 1) to address the needs of evolving ecological issues and modern society [1].

Radhika G. Deshmukh

A Review - Comparison of types of Solar cells and Solar Technologies

Radhika G. Deshmukh*

Shri Shivaji College of arts commerce and science Akola, (Maharashtra)

*Corresponding Email: radhikadeshmukh35@gmail.com

Abstract

The nonrenewable sources of energy are sun, wind, hydro, biofuel. Solar energy from sun is affordable clean energy. Affordable clean energy is pollution free. To make the progress of our development more efficient and less harmful to our current conditions, individuals need a new source of clean energy that replaces it. Approved solar energy applications were expanded, solar-powered fuel is a source of clean energy for the purpose of solar energy generation. Solar- directed cell is an electronic gadget that converts directly into daylight into energy. In this article we need to understand the key metals and elements of solar-based development that are often tested. We have examined the evolutionary changes in the solar system, and we have examined their future patterns and angles. In this article we will learn about the types of solar cells and their combinations as shown in their applications, high business application capabilities, business simplification, and high productivity changes. It is a promising method for research into the study of solar-powered cell types.

Keywords: Solar Cells, Civilization, Sustainable Energy, Mechanisms, Investments.

1. Introduction

The sun is the most powerful source of energy for earth's energy. Solar energy obtained from the sun pollutes the source of clean energy that can meet the demand for energy. In addition, the total energy interest received increases by 5 percent annually. Solar power can ensure the greatest and most consistent growth. There are different uses of solar energy. Solar energy can be converted into electrical energy. Recent experiments are a variety of innovative techniques to convert solar energy into energy. Since energy directed at the sun is abundant and pure in the source of sustainable energy, it is important to convert it into energy and other forms of energy through new ways of thinking. It is important to learn about safety and recycling. There are a variety of solar-based methods currently available with different perspectives and different tastes. Exploring and linking between the various developments will help us to embrace the first and most helpful innovations. These two improvements are photovoltaic solar

178. Deshmukh RG: Green synthesis of silver nanoparticles by flowers and its application

Green Synthesis of Silver Nanoparticles by Flowers and It's Application

Dr. Radhika Deshmukh¹, Aakanshka P. Pinjarkar²

Shri Shivaji College of Arts Commerce and Science, Akola, Maharashtra, India

ABSTRACT

Green synthesis of silver nanoparticle by flowers is an easy, efficient, economical, ecofriendly, biological synthesis approach. The biological synthesis of nanoparticle has provide a means for improved technique compared to the traditional method that uses the harmful reducing agents. Flowers have unique properties that are useful to synthesis nanoparticles. Chemical and physical Methods of synthesis are toxic and costly that reduce medicinal application. As compared to microbial nanoparticles are more stable and monodispersed and plant extract takes less time to reduce metal ions. Chemical and physical methods for the synthesis are toxic and very costly affects the medicinal application. Biogenic method of silver nanoparticle synthesis are eco-friendly and produced nanoparticle with the precise shape and size. To form the green synthesized silver nanoparticle by flower extract and used it in various application.

I. INTRODUCTION

Nanotechnology is a versatile field that deals with the study and application of materials at the nanoscale. Nanoparticles exhibit new and improved properties as compared to bulk counterparts due to change in their characteristics such as shape, size, size distribution and larger surface area to volume. Nowadays, metal nanoparticles have found many applications in the field of science and technology due to their unique electronic, mechanical, optical and magnetic properties. In recent years, silver nanoparticles (AgNps) have greatly focused the researcher's attention because of their important application as antimicrobial, catalytic, textile fabrics and plastics to eliminate micro-organisms. Green synthesis of nanoparticles aims at minimizing generated waste and implementing sustainable processes. In recent years,

green processes using mild reaction conditions and nontoxic precursors have been emphasized in the development of nanotechnology for promoting environmental sustainability. The main aim of green synthesis is to minimize the use of toxic chemicals to prevent the environment from pollution. The biogenic routes for the fabrication of nanomaterials are therefore becoming more and more popular. The three main conditions for nanomaterials preparation are the choice of environment-friendly solvent medium, environmental friendly reducing agent and a nontoxic material for their stabilization. Nanomaterials fabricated from plants, fungi and bacteria have several potential applications in all fields of science and technology. Nanocatalysis has undergone great prosperity in the past decade. One of the main branches of nanocatalysis is nanoparticle (NP) catalysis in liquid phase. NP catalysis in traditional

harsh and lethal procedures used at present for the synthesis of nanoparticles.

V. CONCLUSION

Technical barriers are the obstructions that are involved during the synthesis of flower mediated nanoparticles. While green nanoscience has gained significant attention, efforts are still being made to standardized the protocols for the synthesis of uniform nanoparticles. Further advancements involving the use of tools and techniques for the scaled-up production of NPs through green synthesis need to be identified to design commercially feasible production technology at the industrial scale. Another pivotal issue regarding the large-scale use of green synthesized nanoparticles is nano-toxicity, which has to be addressed stringently.

The toxicology and analysis protocols have to be developed and updated constantly to reflect the need of the application. Furthermore, the uncertainty and ambiguity associated with the regulatory bodies and laws has to be clearly understood to allow for the use and commercialization of ecologically safe nano-based products. The end market demands need to be made clear, as there are only limited numbers of commercial grade products that can be compared to conventional materials in terms of performance. A unique idea, which still needs to be developed and established, is the use of flowers in the green synthesis of nanoparticles, as this research is still restricted to the synthesis of Au and Ag NPs. To further strengthen this field, it is important to create monodispersed nanoparticles—such as CdS, ZnO, TiO₂, and Fe₃O₂. More studies are required to recognize the various components that may lead to the reduction of metal ions. In the literature, it has been reported that proteins are responsible for the equilibrium, but it is

very difficult to recognize the proteins responsible for the functionalization of these nanoparticles.

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179. Deshmukh VV: Current Trends in Material Chemistry/ Recent Advances in Supercapacitor: Materials, Methods and Applications

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First Impression: 2021

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CURRENT TRENDS IN MATERIALS CHEMISTRY

ISBN: 978-93-85682-66-7

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Vaishali V. Deshmukh

Recent Advances in Supercapacitors: Materials, Methods and Applications

Vaishali V. Deshmukh**Department of Physics, Shri Shivaji Science College, Amravati (MS)-444603****Corresponding Email: vaishalideshmukh27@gmail.com**

Abstract

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124. Ingole RA: खेल द्वारा महिला सक्षमीकरण

DOI PREFIX 10.22183 JOURNAL DOI 10.22183/RN SIF 7.399	RESEARCH NEBULA An International Refereed, Peer Reviewed & Indexed Quarterly Journal in Arts, Commerce, Education & Social Sciences	ISSN INTERNATIONAL STANDARD SERIAL NUMBER ISSN 2277-8071
डॉ. रुपाली अ इंगोले श्री शिवाजी विज्ञान महाविद्यालय अमरावती	One Day International E – Conference On Covid-19 Pandemic: Challenges, Opportunities & Solutions in Front of Higher Education on 21 st August, 2021 @ S.K. College Akola, AS College Kurha, S.K. Maha Dahihanda & PEF, New Delhi. खेल द्वारा महिला सक्षमीकरण ABSTRACT खेल एक उचित माध्यम है महिलाओं को सक्षम बनाने के लिए क्योंकि खेल अच्छी सेहत , शिक्षा, नेतृत्व गुण ,टीम स्पिरिट, सहायता भावना ,समायोजन ,निडरता, लिंग समानता इन सभी को बढ़ावा देने वाला क्षेत्र है। इस क्षेत्र के माध्यम से महिलाओं में उन गुणों की वृद्धि की जा सकती है जिसके लिए वह बाध्य है। महिलाओं को खेल द्वारा सक्षम करने के लिए खेल द्वारा प्राप्त अनेक सीढ़ियों को चढ़के उन्हें प्रेरित किया जा सकता है। खेल हमें वह दिशा प्रदान करता है जो कि प्रगति के मार्ग पर सभी की सहायता से उंचाइयों को छूने के लिए बनी गई है। खेल महिलाओं में उन शक्ति का निर्माण करती है जिनके आधार पर वह स्वयं को सशक्त समझ कर दुनिया की उन सारी समस्याओं को निडरता से लड़ने के लिए अपने आप में मजबूत समझती है। खेल महिलाओं को एक दूसरे के साथ बांध कर रखने के लिए प्रेरणा देती है। खेल समाज में अपने साथ अपने साथी को लेकर आगे बढ़ने की समझ को प्रदान करता है। जो कि अपने आप में एक सक्षमता की तरफ उठया गया मजबूत कदम है अगर एक स्त्री दूसरे स्त्री को अपनी उंगली थाम कर उच्चतम चोटी के तरफ जाने के लिए सहायता प्रदान करती है इसी का मतलब वह समाज में आने वाले हर एक मुसीबत को लड़ने के लिए तैयार हो रही है। और अपने मुकाम को पाने के लिए स्वयं को सिद्ध कर रही है। यही तो सक्षमीकरण है और यही तो क्षमता है जो कि खेल हमें प्रदान करता है।	
प्रस्तावना: भारत देश को एक प्राचीन परंपरा है। जिनमें रानी लक्ष्मीबाई जैसी वीरांगना और जिजामाता जैसी राष्ट्रमाता भी हो चुकी है। जिनके माध्यम से भारत में हर कोई स्त्री अपने आपको समाज में उंचे स्तर पर पहुंचाने के लिए प्रेरित होती है। लक्ष्मी बाई को कौन नहीं जानता है उन्होंने तलवारबाजी और घुड़सवारी द्वारा अपने आप को मजबूत किया। उन्हें यह हुनर अपने जन्म से नहीं बल्कि अपनी काबिलियत से मिला उनकी अथक परिश्रम एवं राष्ट्र निष्ठा से सभी परिचित है। जिजामाता जिन्हें राष्ट्रमाता के नाम से भी जाना जाता है इन्होंने शिवबा को घुड़सवारी तलवारबाजी और न जाने कितने अलग अलग हुनर से नवाजा उनके मन में स्वतंत्र राज्य का एक सपना बनने के लिए वह प्रेरणादाई रही ऐसे इस देश में आज भी महिलाओंको उचित सम्मानमिलता है या नहीं यह भी एक चिंतन का विषय है। पुरुष प्रधान संस्कृति में महिलाओं को घर की दीवारें दहलीज और चूल्हा चौकी तक सीमित रखने वाला यह समाज क्या महिला सक्षमीकरण के लिए उचित प्रयास कर पा रहा है ? यह एक सवाल है जो न जाने कितने भारतीयों के मन में अनगिनत समय के लिए आता होगा।	इसी दौर में कुछ ऐसा हो गया कि सारी समाज की आंखें चौंक गई 2016 का रियो ओलंपिक जिसमें केवल और केवल 2 महिलाओं ने भारत की शान और मान रख ली। जबकि कोई भी पुरुष खिलाड़ी किसी पदक पर अपना नाम अंकित नहीं कर पाया। जबकि साक्षी मलिक मलिक ,पीवी सिंधु ,आदित्य अशोक ,दीपा करमारकर इन सभी के अच्छे प्रदर्शन को संपूर्ण विश्व में सराया गया। साक्षी मलिक जो कि ऐसे राज्य से आती है जहां महिलाओं को चारदीवारी के भीतर ही रखना उचित समझा जाता है। ऐसे राज्य में से साक्षी मलिक का कुश्ती जैसे खेल में पदक प्राप्त करना सभी को चौंका देने वाला था। साक्षी मलिक के तुरंत हरियाणा वापस आने के बाद में साक्षी मलिक को बेटी बचाओ बेटी पढ़ाओ इस आंदोलन का ब्रांड एंबेसडर बना दिया जाता है। क्यों? जबकि हम जानते हैं कि इस आंदोलन का ब्रांड एंबेसडर पद परिणीति चोपड़ा जी को दिया गया था और ओलंपिक में मेडल आने के बाद तुरंत वह बदलकर साक्षी मलिक को दे दिया गया। क्या कर रही है साक्षी मलिक? साक्षी मलिक ने यह सिद्ध कर दिया कि देश की हर एक बेटी अपने नाम ओलंपिक का पदक कर सकती है बस जरूरत है मेहनत और शिद्दत की।	
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DOI PREFIX 10.22183
JOURNAL DOI 10.22183/RN
SIF 7.399

RESEARCH NEBULA

An International Refereed, Peer Reviewed & Indexed Quarterly
Journal in Arts, Commerce, Education & Social Sciences

ISSN
INTERNATIONAL
SERIAL
NUMBER
ISSN 2277-8071

पुरुष को मिलता है उतना और वैसा ही अवसर स्त्री को भी दिया जाता है। जिसके माध्यम से वह में आप के बराबर हो यह सिद्ध करने के लिए प्रयास करती है। खेल एक ऐसा माध्यम है जो सिद्ध करता है कि कम या ज्यादा ऊंचा और नीचा लिंग कोई नहीं होता है। बल की अपने आप में हर एक लिंग समान है और समानता की दिशा में हर एक को समान अवसर मिलना जरूरी है। इस बार टोक्यो ओलंपिक सही मायने में लिंग समानता को बढ़ावा देने वाला साबित हुआ जिसमें इस ओलंपिक टूर्नामेंट की जोत को प्रज्वलित करने का सम्मान एक स्त्री को मिला। इसी के साथ-साथ ध्वज को अपनी देश के सामने ऊंचा करके चलने के लिए एक पुरुष के साथ एक स्त्री भी समान रूप में देखने के लिए मिली जिसमें मेरी कॉम जी पुरुष खिलाड़ी के साथ में भारतीय ध्वज को पकड़े हुए हमें नजर आई। टोक्यो ओलंपिक में ऐसे कई खेल थे जिनमें महिलाओं की स्पर्धा संख्या बढ़ाकर पुरुषों के पर्दा संख्या को कम करने में आया जिसका मुख्य उद्देश्य जेंडर इक्वलिटी को प्रमोट करना था। मैं हर एक उचित कर सकती हूँ जो पुरुष वर्ग कर सकता है यह भावना स्वयं में ही समानता को बढ़ावा देने वाली है और खेल हमें वह प्रयास और वह अवसर देता है कि हम अपने आप को बाकी के स्वरूप में समानता के स्तर पर प्रस्तुत करने में समर्थ हो।

सारांश :

इन सभी बातों को मध्य नजर रखते हुए क्या हम यह कह नहीं सकते कि खेल एक महिला को सक्षम करने में वाकई एक अहम भूमिका निभाता है। खेल उस हर एक नारी को आगे बढ़ने के लिए प्रेरित करता है जिसकी वह दावेदार है। महिला हर क्षेत्र में अपने आप को मजबूत कर सकती है जिसके लिए वह कटिबद्ध है। खेल द्वारा महिला अपने आप को उस स्तर पर ले जा सकती है जिसकी वह अहम दावेदार है। आप देख रहे हैं महिला हर दिन अपने नए नए रिकॉर्ड को बना रही है और तोड़ रही है। वह यह दिखा रही है कि मैं किसी भी स्तर पर जाने के लिए तैयार हूँ मैं उन सब बातों के लिए मेहनत करने के लिए तैयार हूँ जहाँ मैं पहुँच सकती हूँ। मेरे मार्ग में आने वाले हर एक उस रोडे को मैं पार करना चाहती हूँ जो मेरे प्रगति के मार्ग पर मुझे सक्षम बनाने से रोकता है।

खेल हर एक महिला को अनुमति देता है कि वह अपने साथ उस दूसरी महिला को भी लेकर चले जो आगे बढ़ना

चाहती है। खेल हमें वह सिखाता है कि हमें केवल अपने आप को ही जीत के पास नहीं ले जाना है तो अपनी टीम को भी जीत के उस क्षण का हिस्सेदार बनाना है जिसकी वह काबिल है। एक महिला दूसरी महिला को प्रगति के स्थान पर चलने के लिए सहायता करें अपनी उंगली दें इससे बड़ी सक्षमता और क्या हो सकती है। और यह सिर्फ और सिर्फ खेल प्रदान करता है खेल द्वारा हमें सेहत, शिक्षा, नेतृत्व गुण, समायोजन, टीमस्पिरिट इक्वलिटी, निडरता, यह सारे गुण प्राप्त होते हैं। जो कि एक नारी को सशक्त और सक्षम बनाने के लिए बहुत ही महत्वपूर्ण होते हैं तो क्या खेल महिलाओं को सक्षम बनाने के लिए और उन्हें प्रेरणा देने के लिए उचित नहीं है ? अगर ऐसा सवाल पूछा जाए तो उसका जवाब यही हो सकता है कि हा खेल वह माध्यम है जो एक स्त्री को सक्षम बनाने के लिए उचित मार्ग में कार्य करता है।

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125. Ingole RA: "महिला सबलीकरणाची व लिंग समानतेची जोत पुढे नेणारे टोकियो ऑलीम्पिक २०२०"

महिला सबलीकरणाची व लिंग समानतेची ज्योत पुढे नेणारे टोकियो ओलंपिक 2020

डॉ. रुपाली अ. इंगोले
संचालक शारिक शिक्षण व खेळ (सॉफ्टबॉल प्रशिक्षिका)
श्री शिवाजी विज्ञान महाविद्यालय अमरावती

क्षेत्र कुठलेही असो प्रत्येक क्षेत्रात महिला आपल्या कर्तृत्वाचा ठसा उमटवत पुरुषांच्या बरोबरीने किंबहुना त्यांच्याही पुढे जाण्याचा मार्ग सुकर करत आहे. एकेकाळी पुरुषप्रधान संस्कृतीमध्ये कायम डावल्या जाणाऱ्या स्त्रियांचे अस्तित्व आता हळूहळू प्रत्येकच क्षेत्रात जग मान्य करत आहे व त्यांच्या कर्तृत्वाचा गौरव करण्यासाठी त्यांना नवनवीन संधी उपलब्ध करून देण्यात येत आहे. मग त्यातून क्रीडाक्षेत्र तरी कसे बरे वगळता येईल .

संपूर्ण जगाच्या नजरा आता होऊ घातलेल्या सर्वश्रेष्ठ क्रीडा स्पर्धा टोकियो ओलंपिक 2021 कडे लागल्या आहे . देशाची प्रतिष्ठा व सामर्थ्य सिद्ध करण्याची ही संधी जगभरात मोठ्या उत्साहात साजरी केली जाते. खरंतर टोकियो ऑलंपिक 2021 काहीतरी नवीन इतिहास घडवून जाईल असे कायमच सगळ्यांना वाटत आहे . कारण कोरोना महामारी काळातील या जागतिक लढाईनंतर आशेची एक सकारात्मक किरण घेऊन येणारे हे टोकियो ओलंपिक सर्व स्तरावरून विचार केले असता असे जाणवते की खास करून हे ऑलंपिक महिलांचा सन्मान व त्यांच्या प्रगतीच्या वाटा मोकळ्या करण्यात सहाय्यभूत ठरणारे असेल . कारण एकेकाळी ऑलंपिक स्पर्धेत महिलांना सहभाग घेणे तर दूरच पण त्या स्पर्धा महिलांना पाहण्यासाठी देखील बंदी असणाऱ्या या ऑलंपिक खेळाची सुरुवात टोकियो ओलंपिक 2021 मध्ये महिलांकरता असलेल्या सॉफ्टबॉल या खेळाच्या सामन्याने केला जावा ही महिलांचे कर्तृत्व व खेळातील वर्चस्व सिद्ध करणारी बाब आहे. इतिहासात प्रथमच ऑलंपिक खेळाची सुरुवात ही महिलांच्या सॉफ्टबॉल सामन्याने होत असल्याने माझ्यासारख्या महिला सॉफ्टबॉल प्रशिक्षिका साठीच नव्हे तर जगातील प्रत्येक स्त्री साठी मानाची ठरणारी बाब आहे. भूतकाळ पाहता ऑलंपिक खेळाची सुरुवात पुरुषांचे वर्चस्व असणाऱ्या व अनेक देशांच्या पाठीचा आर्थिक कणा सबळ करणाऱ्या फुटबॉल खेळाने झाल्याचे दिसते . त्यातही ते सर्व सामने पुरुषांच्या संघाचे असल्याचे विशेष 1996 पासून झालेल्या सर्वच ऑलंपिक मध्ये फुटबॉल खेळाच्या सामान्यांनी ऑलंपिक खेळाची सुरुवात करण्यात आल्याचे निदर्शनास येते . मात्र टोकियो ऑलंपिक मध्ये ऑस्ट्रेलिया आणि जपान या दोन महिला सॉफ्टबॉल संघांच्या ओपनिंग मॅच ने ऑलंपिक खेळांच्या सुरुवातीचा बिगुल वाजणार आहे हा बिगुल जगातील प्रत्येक महिला खेळाडू व प्रत्येक स्त्रीच्या सन्मानाचा असेल असे म्हटल्यास वावगे ठरणार नाही. जगातील सर्वात मोठ्या व सन्मानाच्या क्रीडा स्पर्धा ओलंपिक खेळाची सुरुवात करण्यासाठी प्रज्वलित करण्यात येणारी ज्योत एका महिला खेळाडू नाओमी ओसाका द्वारा प्रज्वलित करण्यात यावी यापेक्षा जास्त सन्मानाची व महिला प्रति आदर दाखविण्याची कुठली वेळ असुच शकत नाही.

करून किंबहुना त्यांच्याही पुढे जाऊन आपल्या अस्तित्वाची जाणीव संपूर्ण जगाला करून देण्यासाठी सज्ज झाल्या आहेत असे म्हटल्यास वावगे ठरणार नाही.

कधी मुलगी, कधी पत्नी तर कधी आई म्हणून तिने कायमच आपले कर्तृत्व, अस्तित्त्व मेहनतीने सिद्ध केले आहे व समाजात स्वतःसाठी स्थान निर्माण करण्यासाठी ती सिद्ध झाली आहे . या प्रगतीच्या नव्या आलेखात निश्चितच तिचे स्थान उंचावत पाहायला मिळणार यात दुमत नसावे .

२०२१ टोकियो ऑलिंपिक खेळात सहभागी होणाऱ्या प्रत्येक स्त्री ला माझा मानाचामुजरा. आता वाट आहे फक्त उत्तम प्रदर्शनाची व भारतीय पदक तालिकेत महिला खेळाडूंच्या पदकांच्या उजळत्या आलेखाची कर्णम मल्लेश्वरी, पी. व्ही .सिंधू, मेरी कॉम, साक्षी मलिक आणि सायना नेहवाल यांच्या समवेत काही नवीन महिला खेळाडूंच्या चेहऱ्यावर पदकाची झळाळी पाहण्यास मिळेल यात शंका नाही.

संदर्भ:

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182. Ingole SP: Synthesis of Schiff base of 5-Bromosalicylaldehyde with 4,6- Dinitro-2-Aminobenzothiazole, their transition metal-ligand complexes and antibacterial study

CS-119

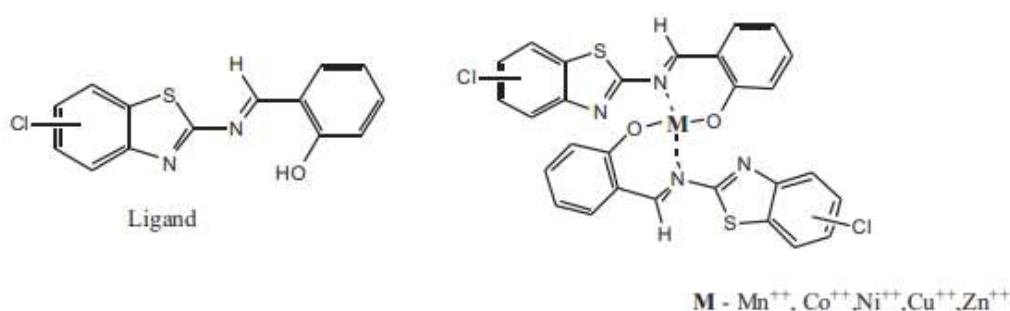
SYNTHESIS OF SCHIFF BASES OF SALICYLALDEHYDE WITH CHLORO SUBSTITUTED 2-AMINO BENZOTHAZOLE, THEIR METAL ION COMPLEXES AND ANTIBACTERIAL EVALUATION.

Shruti Pramod Ingole

Shri.Shivaji Science College, Amravati, Maharashtra, India.

E-mail: shrutipingole@gmail.com

A series of Chloro substituted 2-aminobenzothiazole were incorporated with salicylaldehyde under acidic condition. The novel synthesized imine products and their metal Ligand complexes have been elucidated by H1 NMR, IR and mass spectral data. The prepared compound (Ligand) and metal ion complexes were screened against the Gram +ve and Gram –ve bacteria. Almost all complexes showed antibacterial activity. In particular, Ligand showed the best result in the antibacterial evaluation.



183. Kalambe NA: Innovative Research Trends in Science and Humanities



Title: Innovative Research Trends in Science and Humanities

Volume: First-2021

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Dr. Ninad S. Dharkar, Assistant Professor , Department of Botany at S.P.M. Science College and Gilani Arts Commerce College Ghatanji Dist.Yavatmal (MS) India.

Dr. Kishor P. Suradkar, Assistant Professor and Head , Department of Botany at Indira Mahavidyalaya Kalamb Dist.Yavatmal (MS) India.

Dr. Suruchi R. Kadu, Assistant Professor, Department Botany at Brijlal Biyani Science College Amravati (MS) India.

Dr. Dasharath M. Chavhan, Assistant Professor, Department of Chemistry at Indira Mahavidyalaya Kalamb Dist.Yavatmal (MS) India.

Dr. P. B. Ingle, Assistant Professor, Department of Psychology at Indira Mahavidyalaya Kalamb Dist.Yavatmal (MS) India.

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ISBN: 978-1-954461-44-4

Publishing Typeset & Distribution by:
INSC PUBLISHING HOUSE (IPH)
Pushpagiri Complex, Beside SBI
Housing Board, K.M. Road
Chikkamagaluru Karnataka
Tel.: +91-7619574868
E-mail: iph@insc.in

IMPRINT: INSC Publishing House (IPH)

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Management of Municipal Solid Waste and Production of Manure from MSW**H.R.Dhanbhar**P.R.Pote College of Engineering & Management, Amravati.
hemantdhanbhar@rediffmail.com**N.A.Kalambe**Shri Shivaji Science College,
Amravati.**I. Introduction**

The ecological imbalance leads this universe to natural calamities. Our green earth, being an important part of this universe, it is our primary duty to protect its environment, clean, healthy and safe for living. Modern human life, pollute our surroundings making our life miserable day by day. The term Municipal Solid Waste (MSW) describes the stream of solid waste (‘‘trash’’ or ‘‘Garbage’’) generated by households and apartments, commercial establishments, industries and institutions. MSW consists of everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint and batteries. It does not include medical, commercial and industrial hazardous or radioactive wastes, which must be treated separately.

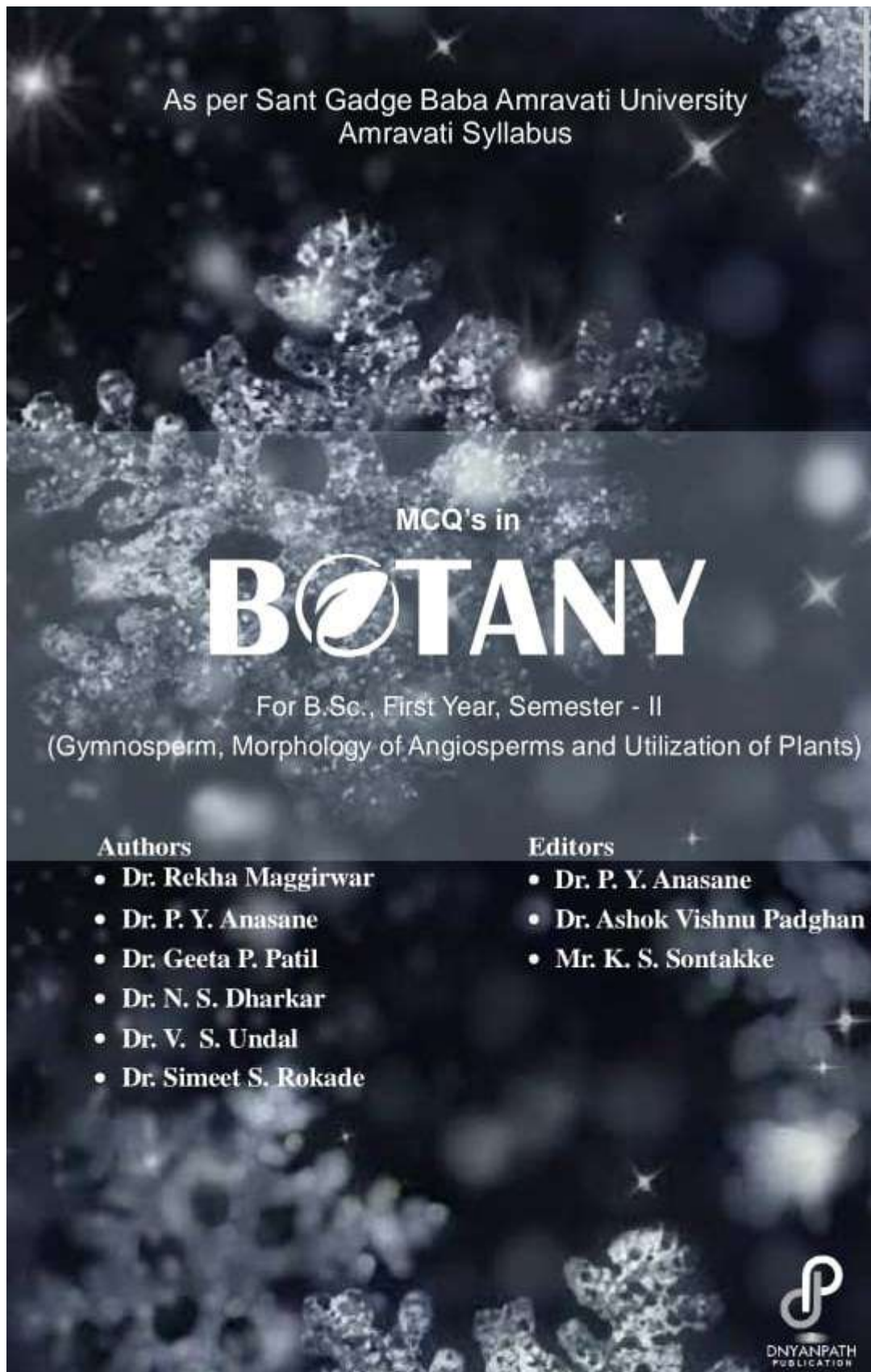
MSW is managed by a combination of disposal in landfill sites, recycling, and incineration. Wastes and garbage are an unavoidable by-products of any industrialized society. As a city grows in terms of both industrial activity, numbers of residents as well as floating populations, it is but natural that a city generates more waste.

We all generate wastes on daily basis, which we collect in a waste bin at our home, until it is removed to the nearest municipal community garbage bin. The garbage is then transported to the dumping area notified by the municipal authority. However, this method only shifts the menace of garbage from one backyard to another. The garbage hardly undergoes any sanitization treatment at source or bio-conversion process at dumping sites, before it is dumped in the dumping ground. The integrated solid waste management programme (ISWMP) initiated by a coalition of 40 odd voluntary organizations in the city with BMC’s blessings has hardly made any impact what so ever. Consequently, it started encouraging private sector in waste management, it received proposals for the conversion of city municipal wastes into organic manure and energy.

The core of any waste management programme is waste reductions and recycling. This requires sorting garbage to separate organic wastes that can be treated or composted from that which can be recycled. The lack of awareness is the main killer of waste disposal projects. There is almost no awareness over among large sections of the educated population that waste management, because of environmental hazards it poses, has become a highly sophisticated and complex business which needs the co-operation of individuals and institutions.

Companies approached BMC to use garbage to set up a bio waste energy project to generate power. Several corporate houses are also interested in the conversion of organic wastes into fuel pellets, while others such as the Institute of Natural Organic Agriculture have been promoting vermiculture to convert organic wastes into manure.

184. Maggirwar RC: MCQ's in Botany



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MCQ's in Botany for B.Sc., First Year, Semester - II

(Gymnosperm, Morphology of Angiosperms and Utilization of Plants)

Published by the **DnyanPath Publication (INDIA)**

The edition published in 1 May, 2021

ISBN 13 : 978-81-952191-0-0



Mahatma Fule Sankul, Infront of Abhiyanta Bhavan,
Shegaon Naka, V.M.V. Road, Amravati - 444603 (Maharashtra)

Visit us : www.dnyanpath.org

Contact us : dnyanpathpub@gmail.com

Phone : 08600353712, 09503237806

Printed at Shri Gurudeo Printers, Amravati.

Mahatma Fule Sankul, Shegaon Naka,
V.M.V. Road, Amravati - 444603 (Maharashtra)

Price : ₹ 60/-

As per Sant Gadge Baba Amravati University
Amravati Syllabus

MCQ's in

BOTANY

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- AUTHORS -

Dr. Rekha Maggirwar

M.Sc., M.Phil., B.Ed., Ph.D. SET
Associate Professor,
Shri Shivaji Science College, Amravati

Dr. P. Y. Anasane

M.Sc., Ph.D.
Associate Professor,
G. S. Gawande Mahavidyalaya,
Umarkhed Dist: Yavatmal

Dr. Geeta P. Patil

M.Sc., Ph.D.
Arts, Commerce and Science College,
Bodwad Dist. Jalgaon

Dr. N. S. Dharkar

M.Sc., Ph.D, F.B.E.I, F.I.S.C.A
Assistant Professor in Botany S.P.M.
Science and Gilani Arts Commerce College,
Ghatanji, Dist. Yavatmal

Dr. V. S. Undal

M.Sc., Ph.D
Assistant Professor, G. N. A. College,
Barshitakli
Dist. Akola (MS) INDIA

Dr. Simeet S. Rokade

M.Sc., M.Phil, Ph.D
Assistant Professor and Head
Late Pandalikrao Gawali Arts and
Science Mahavidyalaya Shirpur (Jain)
Tq. Malegaon, Dist. Washim

- EDITORS -

Dr. P. Y. Anasane

M.Sc., Ph.D
G. S. Gawande Mahavidyalaya,
Umarkhed

Dr. Ashok Vishnu Padghan

M.Sc., Ph.D
Associate professor and Head
Department of Botany G. S. College
Khamgaon, Dist. Buldhana

Mr. K. S. Sontakke

M.Sc., SET, NET
G. S. Gawande Mahavidyalaya,
Umarkhed

185. Maggirwar RC: Am fungal studies associated with *Dendrocalamus strictus*(roxb.) Nees from Melghat forest

International Journal of Science Technology and Management

Volume No.10, Special Issue No. 01, April 2021, QUEENS OF ERA-2021

www.ijstm.com



“AM FUNGAL STUDIES ASSOCIATED WITH DENDROCALAMUS STRICTUS (Roxb.) Nees FROM MELGHAT FOREST”

Priti Dhakulkar¹, Suchita Khodke² and RekhaMaggirwar*³

1, 3 PG Department of Botany, ShriShivaji Science College, Amravati, Maharashtra

2. Department of Botany, VinayakVidnyanMahavidyalaya, Nandgaon (Kh.)Amravati

*Corresponding author's E-mail: dr.krekha@yahoo.com, Mob+919822576066

ORCID ID: <https://orcid.org/0000-0002-8824-029X>

ABSTRACT

Arbuscular Mycorrhizal fungi (AMF) are vital components of the microbial soil community forming the most commonly occurring underground symbiosis between members of phylum Glomeromycota and roots of 80% of terrestrial plant species. It is now well established that Mycorrhizal fungal networks act as a potential conduit for interplant transfer of resources. As *Dendrocalamusstrictus* the suitable host for the maintenance and propagation of AM Fungi the main aim of the present study was to investigate the AMF associated with it from Melghat Forest and mass multiplication of dominant AMF strains. In the present investigation, *Dendrocalamus* was found to be colonized with AM fungal species and 9 AMF species belonging to the genus *Glomus* and *Acaulospora* were found to be associated. The soil trap culture was maintained to develop culture of viable spores. For sustainable development this native most dominant and some more species of AMF can be taken into account in near future as biofertilizers for *Bamboo* after its mass multiplication.

AMF are primary biotic soil components which, when missing or impoverished, can lead to a less efficient ecosystem functioning. The process of re-establishing the natural level of AMF richness can represent a valid alternative to conventional fertilization practices, with a view to sustainable development. These days there is an increase in the cultivation of Bamboo plants and to maintain a steady supply to support the increasing demand there is a need of ecofriendly approach. Corresponding researches of AMF fungi and their association in *Bambusa* plants are very sporadic; hence a vast research on this field is necessary for a better tomorrow.

Key Words: *Melghat, Dendrocalamus, AM Fungi, Glomus*

International Journal of Science Technology and Management

Volume No.10, Special Issue No. 01, April 2021, QUEENS OF ERA-2021

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186. Nagpure PA: Energy Transfer Process in MgF₂ : Gd³⁺, Eu³⁺ Phosphor : Application to Visible Quantum Cutting



International Journal of Scientific Research in Science and Technology
 Print ISSN: 2395-6011 | Online ISSN: 2395-602X (www.ijrst.com)
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Energy Transfer Process in MgF₂ : Gd³⁺, Eu³⁺ Phosphor : Application to Visible Quantum Cutting

S. R. Jaiswal¹, P. A. Nagpure², S. K. Omanwar³

¹ Department of Physics, Shri R.L.T. College of Science, Akola, Maharashtra, India

² Department of Physics, ShriShivaji Science College, Amravati, Maharashtra, India

³ Department of Physics, SantGadge Baba Amravati University, Amravati, Maharashtra, India

ABSTRACT

Visible quantum cutting (QC) is observed in MgF₂ Co-doped with Gd³⁺, Eu³⁺ phosphor synthesis via wet chemical method. Powder X-ray diffraction analysis shows structural purity. The emission and excitation spectra of MgF₂:Gd³⁺, Eu³⁺ were investigated using the VUV beam line of the Beijing Synchrotron Radiation Facility (BSRF). Energy transfer in gadolinium compounds from the Gd³⁺ ions to Eu³⁺ through cross relaxation occurs in this process. Quantum efficiency was found to be greater than 100% under the excitation of 172 nm and 203 nm corresponding ⁸S_{7/2} – ⁶G₇ transition of Gd³⁺ ions. The synthesized phosphor material is potential candidates for the applications of plasma display panel and mercury free fluoresce lamps.

Keywords : Quantum Cutting, Plasma Display Panels (PDPs), VUV Spectroscopy

I. INTRODUCTION

For the development of mercury free florescent lamps and plasma display panels (PDPs), we require phosphor having quantum efficiency is greater than unity under VUV excitation. The phosphors having quantum efficiency is greater than unity are called quantum cutting phosphors. Quantum cutting provides a means to obtain two or more low energy photons for each high energy absorbed photon. Therefore it serves as a down converting (DC) mechanism with quantum efficiency greater than unity and it offers the prospect of providing enhanced energy effectiveness in lighting devices [1]. In order to obtain quantum-cutting phosphors with quantum efficiencies exceeding unity, the lanthanide ions are obvious candidates for this purpose due to their energy level structures that afford metastable levels

from which quantum-splitting processes are capable. [3-6]

II. METHODS AND MATERIAL

MgF₂: Gd³⁺, Eu³⁺ phosphor was synthesis via reactive atmospheric process. In this method we used metal carbonate like MgCO₃(99.99% A.R.) as a precursor. The inorganic magnesium carbonate was taken in Teflon beaker. A little amount of double distilled water was added in beaker and stired it, then hydrofluoric acid (HF) added in it to get slurry. The slurry was dried by blowing air or heating on hot plate (80°C). A freshly prepared MgF₂ host was obtained. Gd₂O₃ (AR 99.9%) and Eu₂O₃ (AR 99.9%) were boiled in HNO₃ and evaporated to dryness, so as to convert them into relevant nitrates. The aqueous

IV. CONCLUSION

The inorganic material $\text{MgF}_2: \text{Gd}^{3+}, \text{Eu}^{3+}$ was successfully prepared through reactive atmosphere process. The XRD pattern confirmed its cubic structure. The visible quantum cutting and energy transfer through down-conversion was observed in $\text{MgF}_2: 1\% \text{Gd}^{3+}, 1\% \text{Eu}^{3+}$ and the quantum efficiency was found to be around 132% under the excitation of 203 nm equivalent $^8\text{S}_{7/2} \rightarrow ^6\text{G}_7$ transition of Gd^{3+} ions.

V. ACKNOWLEDGEMENTS

We are thankful to 4B8 VUV spectroscopy beam line scientists of Beijing Synchrotron Radiation Facility (BSRF), China for given that access in recording VUV on beamline 4B8 under dedicated synchrotron mode using remote access mode. One of the authors S.R. Jaiswal thankful to Head, Department of Physics SantGadge Baba Amravati University, Amravati for providing necessary facilities.

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187. Pundkar SV: A Report of New Fossil Seed From Deccan Intertrappean Beds Of Mohgaonkalan, M.P. India in National Conference on Multidisciplinary Research (NCRM)

NCRM21- Peer-Reviewed Book Chapter

March,
2021

ISBN : 978-81-95551-4-9

A Report Of New Fossil Seed From Deccan Intertrappean Beds Of Mohgaonkalan, M.P. India

Pundkar S.V.¹ and Kokate P.S.²

Department of Botany, Shri Shivaji Science College, Amravati.¹

Department of Botany, Shri Shivaji Science Arts, Commerce and Science College, Akola²

ABSTRACT

The fossil chert were collected from Mohgaonkalan M.P. India, a well known rich fossiliferous locality. Seed small, dicotyledonous, ovate, anatropous, bitegmic, testa thick with longitudinal, elongated fibres, multiplicative, tegmen thin, exarillate, albuminous. The seed is compared with the living and reported fossils but it shows close resemblances with seed of Annonaceae. The elongation of cells into fibres is the original character of Annonaceous seed. Few minor characters are different. Hence the present fossil seed name as *Sahniospermum trapii*. The generic name is after the great eminent palaeobotanist Dr. Birbal Sahni, *Sahniospermum* and specific name is after Deccan Trap.

Key Words: Dicot seed, Intertrappean, Fossil.

INTRODUCTION

Mohgaonkalan, District Chhindwara, M.P., India is the well known locality of Deccan Intertrappean beds, is a rich fossiliferous area for all major groups of plant parts but reports of fossil seed are less as compared to other parts. Deccanosperma arillata, Ramakonaspermum chitaleyensis and Mahabalespermum minutum (Juneja, 1993), Clusiocarpus indicum (Wazalwar, 1990), Clusiocarpus arillatus (Kumar, 1984), Unonaspermum corneri (Bonde, 1993); Ramakonaspermum singhpurii (Shaikh and Bhowal, 2003); Mohgaonspermum deccanii, Flacourtiospermum nambudirii, Unitegmosperrum ramanujani (Kokate, 2006); Ramakonaspermum chitaleyensis Matin and Juneja (Shaikh et al., 2009) Bitegmosperrum mohgaonse, Orthotroposperrum hookerii, Chitaleyspermum intertrappea (Thorat, 2016); Unitegmosperrum ramanujani (Kokate, 2017) Coccolobosperrum ramanujanii, liexosperrum chitaleyensis (Dighe, 2017) Monocoteosperrum hookerii (Deshmukh, 2019) few fossil seeds are reported from various localities.

MATERIAL AND METHODS

The present fossil specimen is embedded in the black chert. The seed was studied anatomically by taking serial peel sections after etching in Hydrofluric acid.

DESCRIPTION

The present fossil seed is well persevered in longitudinal section.

Seed

The present fossil seed is small, round to oval, dicotyledonous and bitegmic. The seed is about 1.73 mm in length and 1.23 mm in breadth, vasculature is not seen. Seed coat is with mechanical layer. The seed coat is differentiated into testa and tegmen (Text Fig. 1 to 5, Plate Fig. 1 to 3).

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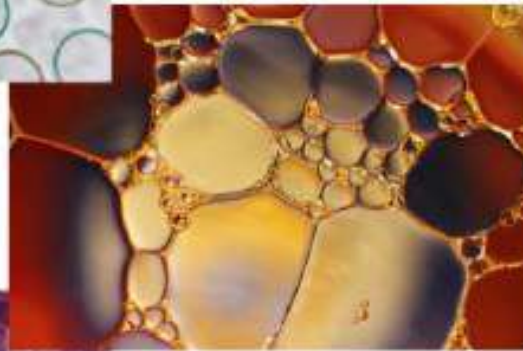
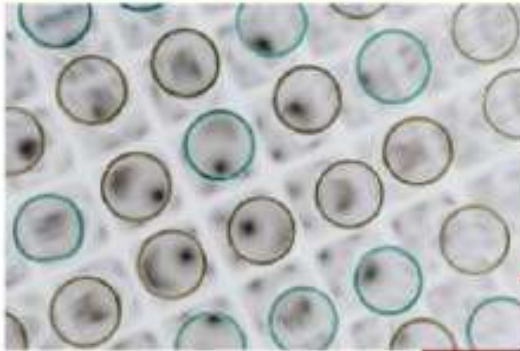
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ABOUT THE AUTHORS



Dr. Tarveer Guzel, Assistant Professor in Physics, Anjuman College of Engineering and Technology Nagpur, has 15 years of teaching Experience and published 19 research papers in International and national journals and conference proceedings. He has participated and presented 22 research papers in various international and national conferences across India and abroad. He has worked on DRDO research Fellowship, received Visiting Scientist Fellowship- ICFP Federation Scheme (Funded by UNCSG and IAEA), Trieste, ITALY and was awarded INSA-DST FELLOWSHIP For SRF (National Science Academy). He has also worked at BARC Mumbai. His area of research includes Physics and Materials Science.



Dr. (Ms) Jasvirkaur Randhawa, Assistant Professor in Physics, Government College of Engineering Nagpur has 22 years' experience of teaching Physics at Engineering and M. Sc. Physics. Her research interests are Electrochemical Gas Sensors, Composite materials and Impedance Spectroscopy. She is recipient of Prof. Sushor Chandra Medal for Best Paper Presented in 4th National Conference on Solid State Ionics, IT Bombay. She has completed MODROBS project on materials' electrical characterization. She has published 18 research papers in National and International Journals and conference proceedings, an international book chapter and edited a book. She is granted a patent on CO₂ sensor.



Ms Uma V. Galikwad, Assistant Professor in Physics, Priyadarshini Bhagwati College of Engineering Nagpur, has over 18 years of teaching Experience. She has published papers in International, national journal and two book chapters have been published in Apple Academic Press, CRC, Taylor and Francis. She has participated and presented research papers in various international and national conferences across India. Her area of research includes Physics and Materials Science.



Ms. Smita Chandar Tolani, Assistant Professor in Applied Physics, St. Vincent Pallotti College of Engineering And Technology Nagpur is recipient of Ram Chandra Chendurkar Gold Medal, K. L. Seth Gold Medal, National Crystallography Award, and P. L. Khare Prize in Physics. She has 16 years of teaching experience and number of publications in reputed journals, National/International conferences. She has authored a book and wrote chapters in three reputed national book publications on Physics, Research and Management. She is a columnist and writes for local newspapers. Her areas of interests include Solid State Physics, Materials Science, Vedic Mathematics, HR Management.



Dr. Prashant Ambekar, Assistant Professor in Physics, Dharampeth M. P. Deo Memorial Science College, Nagpur since 2002 has 23 years of research and teaching experience. He has received SRF (Direct Awarded) CSIR, New Delhi and Summer Research Fellowship jointly awarded by IAS, Bangalore, INSA, New Delhi and NASI, Allahabad for three times. He has completed two minor research projects of UGC WRD, Pune and published 21 papers at National/International journals and conferences and authored an international book chapter (Taylor and Francis). He is granted a patent on CO₂ sensor. He has designed and developed instruments for UGPG laboratories. His research interest includes Electrochemical gas sensors, photocatalytic water splitting, DSSCs and nanomaterials.



Dr. Shahin Sayyad, is working as an Assistant Professor with Shri. Shivaji Science College, Amravati. She has teaching experience in Engineering and Science Colleges. He has received MAF National Fellowship for regular Ph.D. work. She has published 16 research papers in reputed international and national journals and conference proceeding in India and abroad. One book chapters have been published in Advanced Nanomaterials and Nanotechnology, Springer publication. Her area of research is last free piezoelectric materials and synthesis of nanomaterials.

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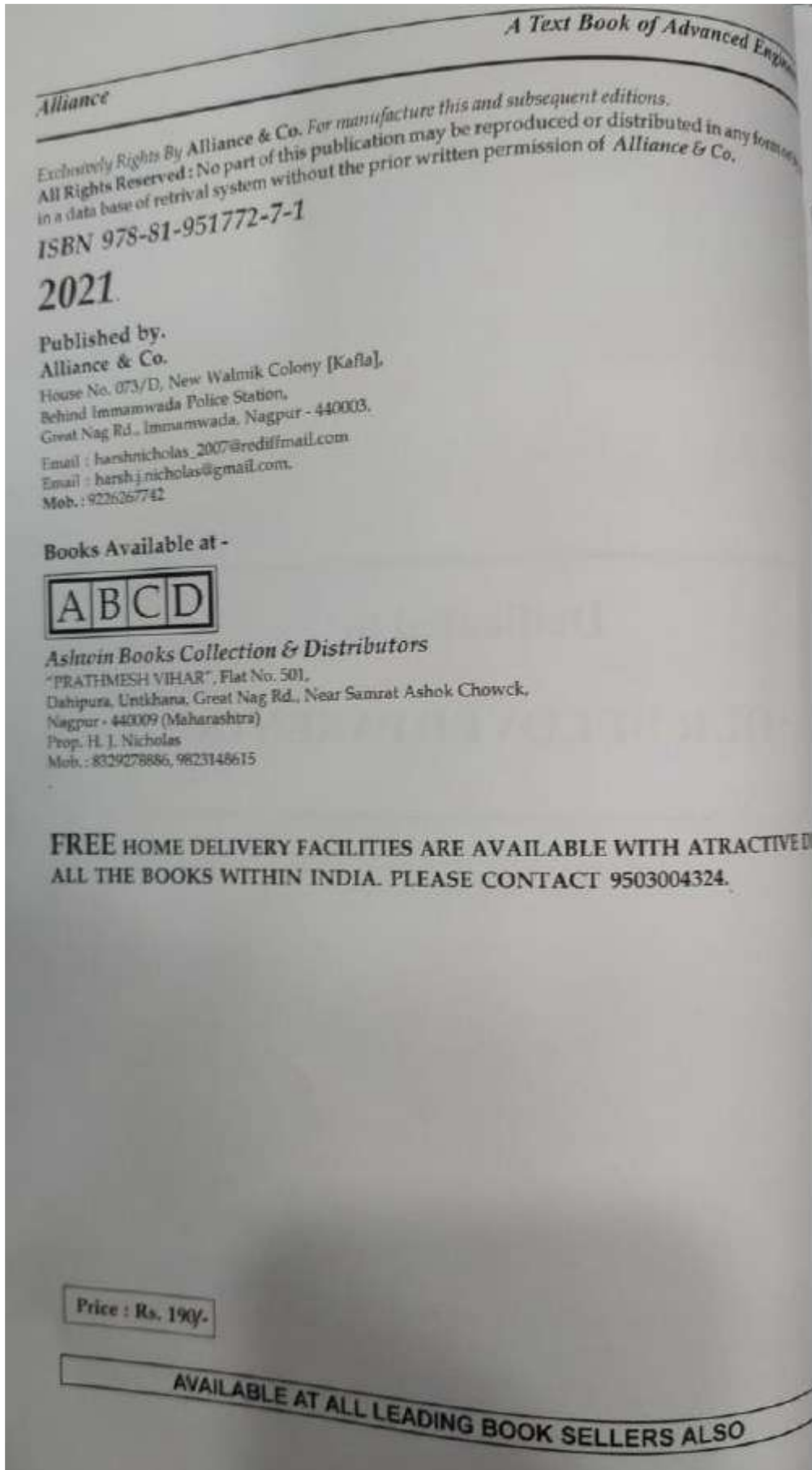
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Dr. Tanveer Quazi, Assistant Professor in Physics, Anjanam College of Engineering and Technology Nagpur, has 15 years of teaching Experience and published 19 research papers in International and national journals and conference proceedings. He has participated and presented 22 research papers in various international and national conferences across India and abroad. He has worked on DRDO research Fellowship, received Visiting Scientist Fellowship- ICIP Federation Scheme (Funded by UNOSCO and AEA), Trieste, ITALY and was awarded INS-A-EST FELLOWSHIP For SRF (National Science Academy). He has also worked at BARC Mumbai. His area of research includes Physics and Materials Science.

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Ms. Smita Chatur Talani, Assistant Professor in Applied Physics, St. Vincent Pallotti College of Engineering And Technology Nagpur is recipient of Ram Chandra Chavhan Gold Medal, K. L. Srin. Gold Medal, National research fellowship award and P. L. Khar Patil Physics. She has 16 years of teaching experience and number of publications in national journals, National/International conferences. She has authored a book and wrote chapters in three reputed national book publications on Physics, Research and Management. She is a columnist and writes for local newspapers. Her areas of interests include Solid State Physics, Materials Science, Vedic Mathematics, HR Management.

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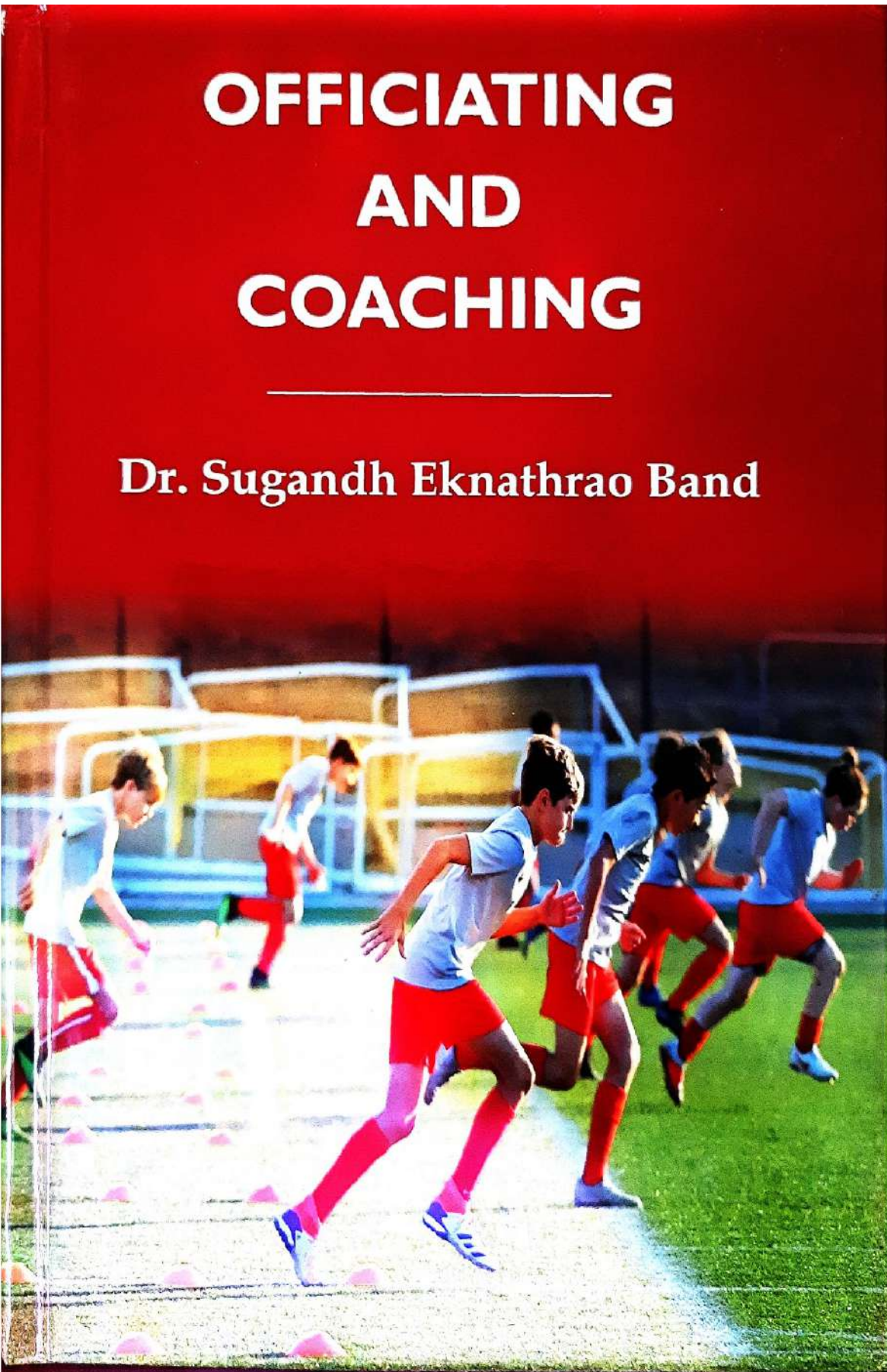
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190. BAND SE: Officiating and Coaching

OFFICIATING AND COACHING

Dr. Sugandh Eknathrao Band



ABOUT THE BOOK

Sports has gained massive popularity all over all the world and it has become a way of life. Sports serve a vital social and cultural function in the society and helps in all round development of human personality. It provides ample scope and healthy means for recreation and relaxation of human mind and society. And a healthy body is always recognised as important as a healthy mind. It provides opportunities for social interaction fostering peace and understanding among different people, nations, race, religion etc. Sports also provide platforms for the people and nations to compete with each other for achieving heights of excellence in human endeavour. From ancient times, yoga, sports and games, martial arts etc. have been the characteristics of our nations history. It is not surprising therefore, that the same tradition continued and sports started receiving a great deal of attention in India since Independence.

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ABOUT THE AUTHOR

Dr. Sugandh Eknathrao Band

MA, M.P.Ed. M.Phil, D.Y.Ed., D.N.Y.S., PhD., NET

Date of Birth : 12/05/1976

Hobby : Sports, Reading, Travelling

Post: Director of Physical Education Shivaji Science College
Amravati

Job Exp: 21 Year

Research Paper : 25

Seminar : 23

PhD Guide : SGBAU Amravati

JJTU University, Mumbai

Colour holder in games : Athletic, Handball, Ballbadminton, Judo Softball

SGBAU Amravati Coach Handball, Ballbadminton, Boxing

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