SHRI SHIVAJI SCIENCE COLLEGE, AMRAVATI

DEPARTMENT OF CHEMISTRY

Annual Report — Session 2025–2026

Determination of pH and Conductivity of Borewell Water Sample for Potability

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a one-day practical activity titled "Determination of pH and Conductivity of Borewell Water Sample for Potability" on 23 September 2025 in the UG Chemistry Laboratory under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and Dr. S. P. Ingole, Activity In-charge. The programme benefited 100 B.Sc. II Chemistry (Major + Minor) students by providing hands-on training in the determination of pH and electrical conductivity of borewell water samples collected from different locations. Students gained practical experience in instrument calibration, sample analysis, data interpretation, and evaluation of water quality based on standard drinking water parameters. The activity enhanced laboratory skills, analytical thinking, scientific temperament, and environmental awareness while emphasizing the importance of regular groundwater quality monitoring for ensuring safe drinking water and protecting public health. The programme effectively integrated theoretical knowledge with practical application, contributing to experiential learning, skill development, outcome-based education.

Designing and Developing Modern Pedagogical Tools

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a one-day workshop titled “Designing and Developing Modern Pedagogical Tools” on 10 October 2025 under the DBT STAR College Activity Programme under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, Dr. S. P. Ingole, Workshop President, Dr. Y. S. Thakare, and Dr. A. M. Mopari, Programme Coordinators. The programme benefited 74 faculty members and teachers from colleges, junior colleges, and high schools by providing comprehensive exposure to modern pedagogical tools and innovative teaching methodologies for effective classroom instruction. Participants gained valuable insights into active learning, inquiry-based teaching, concept mapping, multimedia resources, digital tools, simulations, and virtual laboratories for enhancing student engagement and conceptual understanding. The workshop strengthened participants’ understanding of technology-enabled, student-centred teaching approaches while encouraging the adoption of innovative instructional practices to improve the quality of teaching and learning. The programme effectively promoted professional development, collaborative learning, and the integration of modern pedagogical concepts with practical teaching strategies, contributing to quality enhancement in higher education.

Assessment of Environmental Impact of Ratan Power Station, MIDC Amravati on Agro-Ecosystem: A 20 km radius Questionnaire Survey

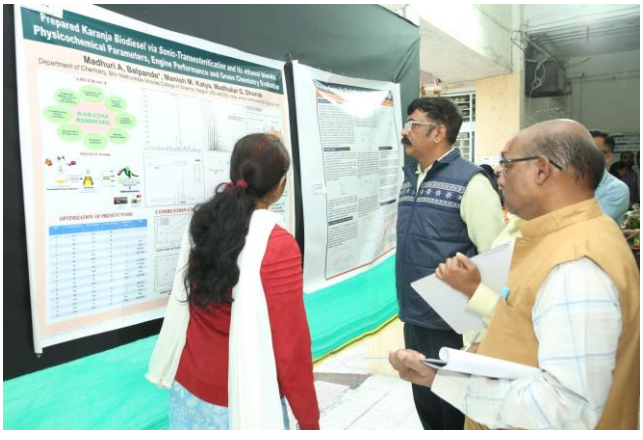
The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a survey-based project titled “Assessment of Environmental Impact of Ratan Power Station, MIDC Amravati on Agro-Ecosystem: A 20 km Radius Questionnaire Survey” under the DBT STAR College Programme under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and Dr. N. R. Thakare, Dr. N. A. Kalambe, and Ms. R. D. Bankar, Project Activity In-charges. The programme benefited 20 B.Sc. II Chemistry students by providing field-based learning through questionnaire surveys, environmental observations, and interaction with local communities across nine villages within a 20 km radius of the power station. Students gained practical experience in environmental impact assessment, data collection, statistical analysis, interpretation of survey findings, and evaluation of air, water, soil, noise, biodiversity, and human health-related issues associated with industrial activities. The project developed students’ research aptitude, field investigation skills, environmental awareness, and scientific approach while enabling them to assess the localized environmental impact of industrial activities on agricultural ecosystems and nearby communities. The survey findings highlighted the need for continuous environmental monitoring, effective pollution control measures, and sustainable industrial practices to safeguard ecosystem health and public well-being.

Preparation of Food Adulteration Kits and Creating Awareness About Food Adulteration in Rural Areas

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a DBT STAR College Project activity titled “Preparation of Food Adulteration Kits and Creating Awareness About Food Adulteration in Rural Areas” during October–December 2025 under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and Dr. N. A. Kalambe, Activity In-charge. The programme benefited 50 B.Sc. I students by providing practical training in the preparation of food adulteration detection kits and qualitative testing of commonly consumed food items, including turmeric powder, chilli powder, sugar, edible oil, butter, and black pepper. Students acquired hands-on experience in identifying common food adulterants using simple analytical techniques and conducted awareness campaigns through demonstrations and interactions with rural communities in Pohrabandhi, Walgaon, Darapur, Murtizapur, and Revasa. The activity enabled participants to educate the public on identifying adulterated food, understanding its harmful health effects, and adopting preventive measures for safe food consumption, thereby promoting food safety awareness and responsible consumer practices. The programme successfully combined laboratory-based experimentation with community outreach, fostering scientific awareness, public engagement, and practical application of chemistry for societal benefit.

Earth, Elements and Energy: Interdisciplinary Perspectives (NCE3IP-2025)

The Departments of Chemistry, Physics and Geology, Shri Shivaji Science College, Amravati, successfully organized the National Conference on “Earth, Elements and Energy: Interdisciplinary Perspectives (NCE3IP–2025)” on 28th and 29th November 2025. The conference provided an interdisciplinary platform for academicians, scientists, researchers and students to exchange ideas, present research findings and discuss emerging developments in Earth sciences, material sciences, energy studies and environmental sustainability. The conference received an encouraging response with 496 registrations, including 242 faculty members and scientists and 254 research scholars and students, with participation from institutions within Maharashtra and other states. Discipline-wise participation comprised 278 registrations in Chemistry, 124 in Physics and 94 in Geology. The academic programme included 16 invited speakers, comprising 11 from within the state and 5 from outside the state, and a total of 17 sessions, including technical, keynote/plenary and panel discussion sessions. The conference provided substantial opportunities for research dissemination, with 44 oral presentations and 369 poster presentations across Chemistry, Physics and Geology. The presentations covered diverse areas including material science, renewable energy, environmental monitoring, computational studies, geochemical analysis and interdisciplinary applications. Best Oral and Best Poster Presentation Awards were instituted in all three disciplines to encourage research excellence and presentation skills. The successful organization of the conference was supported by PM-USHA Scheme, DBT Star College Scheme, Sant Gadge Baba Amravati University (SGBAU), Association of Chemistry Teachers (ACT), AUCTA and AUPTA. A souvenir of NCE3IP–2025 was also published containing messages from dignitaries, conference details, abstracts of invited talks and research papers, and information about the organizing committee. Overall, the conference successfully achieved its objectives of fostering interdisciplinary dialogue, promoting research culture, encouraging academic collaboration and providing a platform for knowledge exchange among Chemistry, Physics and Geology professionals, thereby concluding on a highly positive and inspiring note.



Study of Physicochemical Parameters and Micronutrient Status of Soil: A Case Study of Adgaon Village

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a DBT STAR Project titled “Study of Physicochemical Parameters and Micronutrient Status of Soil: A Case Study of Adgaon Village” under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, Dr. P. R. Mandlik, and Dr. N. R. Thakare, Project Guides. The programme benefited B.Sc. II Chemistry (Major) students by providing practical exposure to scientific soil sampling, physicochemical analysis, and micronutrient estimation using standard analytical techniques. Students gained hands-on experience in determining soil pH, electrical conductivity, nitrogen, phosphorus, potassium, iron, zinc, magnesium, and other soil quality parameters, followed by interpretation of analytical data to assess soil fertility and crop suitability. The project enabled students to understand the significance of soil testing in sustainable agriculture, nutrient management, and environmental conservation while developing their analytical, research, and problem-solving abilities through field and laboratory investigations. The findings highlighted nutrient deficiencies and salinity-related concerns in the studied soils, emphasizing the need for balanced fertilization, micronutrient supplementation, and appropriate soil management practices to improve soil health and agricultural productivity.

Air and Water Pollution: Causes and Solution – Guest Lecture, Intra-Collegiate Poster Competition and Class to Class School Outreach

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a DBT STAR College Project activity titled “Air and Water Pollution: Causes and Solution – Guest Lecture, Intra-collegiate Poster Competition and Class-to-Class School Outreach” from 3 October 2025 to 3 February 2026 in the PG Chemistry Laboratory under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, Dr. D. D. Khedkar, DBT STAR Project Coordinator, Dr. N. A. Kalambe, and Dr. V. B. Khobragade, Activity In-charges. The programme benefited 60 B.Sc. I, II, and III students by providing a platform to creatively depict the causes, effects, and preventive measures of air and water pollution through handmade posters, expert lectures, and oral presentations. Students enhanced their understanding of environmental pollution, its impact on ecosystems and human health, and developed communication, presentation, and scientific awareness skills through poster presentations and outreach activities conducted in local schools. The activity encouraged environmental responsibility, creative expression, and public awareness by enabling students to disseminate scientific knowledge among school students and the community. The programme successfully combined scientific learning with outreach and awareness initiatives, promoting environmental conservation, community engagement, and responsible citizenship.

Aptitude Test in Chemistry

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized an activity titled “Aptitude Test in Chemistry” on 2 February 2026 under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and Dr. N. H. Bansod and Ms. R. D. Bankar, Programme Coordinators. The programme benefited 100 B.Sc. I students by evaluating their conceptual understanding, analytical reasoning, and problem-solving abilities through a structured multiple-choice aptitude test based on the XI and XII standard Chemistry syllabus. Students demonstrated their knowledge of fundamental chemical concepts and developed confidence in applying scientific principles to objective-type questions commonly encountered in competitive examinations. The activity provided an effective platform for assessing students' academic preparedness, identifying promising talent for the intra-collegiate Chemistry Quiz Competition, and motivating them to strengthen their conceptual foundation through self-evaluation and healthy competition. The programme successfully fostered scientific aptitude, critical thinking, and academic excellence while encouraging students to pursue higher learning and competitive opportunities in the field of Chemistry.

Siyaram Silk Mills Ltd (Denim & Fabric Division), MIDC, Amravati

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized an educational industrial visit to Siyaram Silk Mills Ltd. (Denim & Fabric Division), MIDC, Amravati, on 21 February 2026 under the DBT STAR College Project under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and coordinated by Dr. N. R. Thakare, Dr. H. G. Wankhade, Dr. A. M. Mopari, and Ms. R. D. Bankar. The programme benefited 85 B.Sc. III Chemistry students by providing first-hand exposure to large-scale textile manufacturing processes, including yarn preparation, ball warping, indigo rope dyeing, long chain beaming, knitting, quality control, and packaging operations. Students gained practical insights into modern industrial machinery, continuous production systems, quality assurance practices, and the commercial aspects of textile manufacturing through direct observation and interaction with industry personnel. The visit enabled students to understand the sequential stages of textile production, appreciate the role of advanced technology in ensuring product quality and operational efficiency, and relate industrial manufacturing practices to their academic learning. The industrial experience inspired students to explore career opportunities in manufacturing industries and strengthened their understanding of industrial organization, process optimization, and quality management practices.

CSIR-National Environmental Engineering Research Institute (NEERI), Nagpur

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized an educational visit under the DBT STAR College Project to the CSIR–National Environmental Engineering Research Institute (NEERI), Nagpur, on 25 February 2026 under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and coordinated by Dr. N. H. Bansod, Dr. S. A. Wadhal, Dr. N. A. Kalambe, and Dr. S. P. Ingole. The programme benefited 98 B.Sc. II and III Chemistry students by providing exposure to advanced environmental research laboratories, modern analytical instruments, and scientific approaches used in pollution monitoring and environmental management. Students observed the working principles and applications of sophisticated instruments such as the High-Volume Air Sampler (HVAS), Gas Chromatograph (GC), and ICP–OES, and gained valuable insights into air pollution monitoring, water quality analysis, environmental chemistry, waste management, and sustainable remediation technologies. The visit enabled students to appreciate the role of interdisciplinary research in addressing environmental challenges, interact with research scientists, and understand how laboratory investigations are translated into practical solutions for environmental protection and sustainable development. The experience broadened students' scientific outlook, inspired them to explore research and innovation in environmental science, and reinforced the significance of chemistry in developing sustainable technologies for a cleaner and healthier environment.

Experimental Seminar Competition February 2026

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized an Experimental Seminar Competition – February 2026 under the DBT STAR College Activity Programme on 28 February 2026 at Dr. Panjabrao Deshmukh Memorial Science Centre, Amravati, under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and coordinated by Ms. R. D. Bankar. Dr. V. B. Khobragade proposed the vote of thanks. The programme benefited 42 B.Sc. I and II Chemistry students, who presented 21 innovative experimental models through live demonstrations and oral presentations. The activity provided students with hands-on exposure to experimental techniques, scientific presentation, and analytical thinking. It enhanced their confidence in explaining chemical concepts through practical demonstrations and encouraged teamwork, creativity, and a research-oriented approach. The competition also inspired students to develop scientific temper and appreciate the role of chemistry in solving real-world problems and advancing modern technology.

Research Paper Writing and Patent Filling

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized a one-day workshop titled “Research Paper Writing and Patent Filing” on 6 April 2026 for M.Sc. II Chemistry students under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, and coordinated by Dr. Y. S. Thakare and Dr. Shruti P. Ingole. The programme benefited 15 M.Sc. II Chemistry students by providing comprehensive knowledge of scientific research writing, publication ethics, journal selection, research metrics, and the fundamentals of intellectual property rights and patent filing. Participants gained practical insights into the preparation of research manuscripts, literature review, plagiarism-free writing, citation practices, patent search, drafting of patent specifications, and the procedures involved in filing patents through interactive sessions and practical demonstrations. The workshop encouraged research-oriented thinking, innovation, and ethical scientific practices while motivating students to transform their research ideas into quality publications and patentable inventions. The programme strengthened participants’ awareness of academic publishing, intellectual property protection, and the significance of research and innovation in higher education and scientific advancement.

Visit to Regional Forensic Science Laboratory (RFSL), Amravati

The Department of Chemistry, Shri Shivaji Science College, Amravati, organized an educational visit to the Regional Forensic Science Laboratory (RFSL), Amravati, on 21 April 2026 under the DBT STAR College Scheme under the guidance of Dr. G. V. Korpe, Principal, Dr. P. R. Mandlik, Head, Department of Chemistry, Dr. H. G. Wankhade and Dr. P. R. Mandlik, Activity In-charges, and accompanied by Ms. K. S. Mawande, Mr. S. P. Chaudhary, and Ms. S. A. Thakare. The programme benefited **150 students** by providing practical exposure to the application of chemistry in forensic science and criminal investigations through demonstrations conducted by forensic experts. Students visited the Toxicology, Serology, Narcotics, and Questioned Document divisions, where they observed scientific techniques used for evidence examination, sample analysis, and crime investigation. The visit familiarized students with the systematic procedures followed in forensic laboratories, the significance of scientific evidence in criminal investigations, and the critical role of analytical chemistry in supporting law enforcement and the judicial system. The interaction with forensic scientists stimulated students' interest in forensic sciences, strengthened their understanding of scientific problem-solving in legal investigations, and introduced them to emerging career opportunities in forensic analysis and criminal justice.

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