NEWSLETTER

Chem News

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HoD's Desk...

Myself, as the Head of the Department, welcome all to the 17th issue of the Department of Chemistry Newsletter "Chem News". The Department of Chemistry at Visvesvaraya National Institute of Technology stands as one of the pioneering departments established within our esteemed institution. With a legacy steeped in academic excellence and research innovation, our department has played a pivotal role in shaping the scientific landscape not only within the institute but also beyond its boundaries. Our faculty members, renowned for their expertise and commitment to teaching and research, spearhead numerous interdisciplinary initiatives that contribute significantly to advancing knowledge in various domains of chemistry. Beyond the classroom, our department serves as a crucible for nurturing the next generation of scientists and innovators, instilling in them the values of critical thinking, problem-solving, and ethical conduct. Moreover, our research endeavors span a wide spectrum, from fundamental studies elucidating the intricacies of chemical reactions to applied research addressing pressing societal challenges, thereby making tangible contributions to the fields of materials science, environmental sustainability, and healthcare. In this 16th issue of the Department Newsletter, we continue on our journey of academic and research excellence. We remain steadfast in our commitment to pushing the boundaries of scientific discovery and grooming future leaders who will drive positive change in the world through the transformative power of chemistry.

Mission & Vision

- Promote fundamentals of chemistry through UG and PG courses.
- Offer high end-research projects on concept-theory-practical topics.
- To establish excellent teachers, entrepreneurs and innovative independent researchers.
- Become a nationally recognised centre of chemical sciences.

To establish state of art centralised research facility.

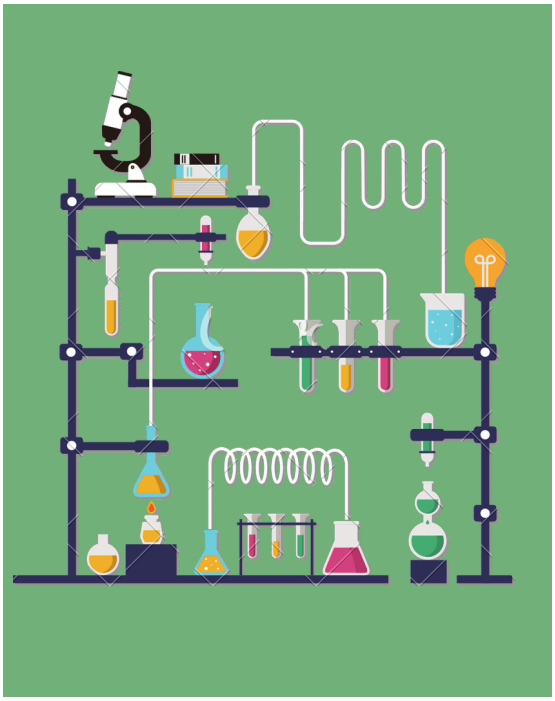
FACULTY MEMBERS

DR. SUJIT K. GHOSH (HoD)
DR. SURESH S. UMARE
DR. JAYANT D. EKHE
DR. ANUPAMA KUMAR
DR. RAMANI V. MOTGHARE
DR. CHAYAN DAS
DR. ATUL V. WANKHADE
DR. UMESH R. PRATAP
DR. SANGESH P. ZODAPE
DR. SUSANTA K. NAYAK
DR. S. LAXMI GAYATRI
DR. ABHISHEK BANERJEE
DR. SANDIPAN HALDER

UNVEILING OUR CHEMISTRY DEPARTMENT

A CLOSER LOOK:CHEMISTRY DEPARTMENT

Department of Chemistry is one of the oldest departments in the Institute. This Department has been serving to cater to the needs of UG and PG level students of sciences and engineering discipline of various branches, in the field of chemistry, since long. Initially involved in the teaching of UG engineering, the department started the two years M.Sc. Programme in Chemistry in 2012. The Department has highly qualified faculty members who are actively engaged in R&D work in different areas of science and technology. Faculty members of the Department have been awarded various research fellowships and grants. Organizing and participation in national and international conferences, and publishing research work in various reputed journals are the regular activities of the Department. The faculties from the department have also authored many books, which are used regularly in course curricula at VNIT and other institutes.



DISCOVERING DEPARTMENT EXCELLENCE

The department has been successful in obtaining Many R&D projects funded by different funding agencies which includes DST, SERB, MHRD, UGC, BRNS, CSIR, MoE and others. Some of the R&D projects have been completed by the department and some are currently under progress. More than fifty Ph.D. degrees have been awarded from the department while above forty students are currently pursuing their research work for Ph.D. Degree. The department has also been involved in Continuing Education programmes such as STTP courses, Seminars and conferences. Department has well equipped laboratories with modern instrumental facilities. Since 2017 the Department has had an unique distinction to be a DST-FIST Sponsored Department !!!

FACULTY MEMBERS

CONFERENCE CHRONICLE

NSC-51, NOV- 27-29, 2024

CHAIRMAN- DR. SUJIT K. GHOSH, CONVENER- DR. SUSANTA K. NAYAK , CO-CONVENER- DR. ABHISHEK BANERJEE

The Department of Chemistry, VNIT, successfully hosted the 51st National Seminar on Crystallography (NSC-51) from November 27–29, 2024, a prestigious annual event held under the aegis of the Indian Crystallographic Association (ICA). In conjunction with the seminar, a Satellite Workshop on Materials Characterization Using Powder X-Ray Diffraction (SWMC-PXRD) was also organized, marking a significant milestone in the advancement of crystallography and materials science. The event received generous funding of ₹4.00 lakh from the Anusandhan National Research Foundation (ANRF). The seminar was steered by Chairman Dr. Sujit K. Ghosh, with Dr. Susanta K. Nayak as Convener and Dr. Abhishek Banerjee as Co-Convener. The event witnessed participation from over 200 delegates, including leading scientists, researchers, academicians, and young scholars, and was graced by eminent dignitaries from IITs, IISERs, NITs, CFTIs, IISc Bangalore, and internationally recognized experts from the USA, Italy, Germany, and Switzerland. To encourage and recognize young talent in the field, several prestigious awards were presented, including the Prof. Venkatesan Award, American Chemical Society (ACS) Publications Awards supported by journals such as Crystal Growth & Design, Organometallics, and Inorganic Chemistry (with recipients receiving certificates and one-year ACS memberships), and Royal Society of Chemistry (RSC) Awards for journals like CrystEngComm, RSC Chemical Biology, and PCCP, which included certificates and RSC student memberships.

Satellite Workshop NSC51 (SWMC-PXRD), Nov 25-26, 2024 conducted at VNIT, Nagpur

HONORARY TALKS

EXPANDING HORIZONS BEYOND OUR CAMPUS

PROF. SURESH UMARE

Professor Suresh Umare delivered several invited talks at prestigious academic events in 2025. On March 6, 2025, he was invited by the Department of Chemistry, IGNTU Amarkantak, to speak at the Science Academies Educational Panel Sponsored Lecture Workshop. His talk was titled "Polymers: Their Modification and Structure-Property Relationship." Earlier, on February 3, 2025, he gave an invited lecture on "Modified g-C_3N_4 for a Sustainable Future: Multi-dimensional Application" at the National Conference on Recent Trends in Material Science for Sustainable Development, organized by Shivprasad Sadanand Jaiswal College, Arjuni-Morgao. Additionally, on March 18, 2025, he was invited by the Department of Chemistry at Gramgeeta Mahavidyalaya, Chimur, Dist. Chandrapur, to present a talk on "Advanced Polymers."

DR. CHAYAN DAS

Dr. Chayan Das, Associate Professor of the department, delivered an invited talk in the international conference on Advances in Materials and Chemical Sciences (AMCS-24,) organised by Department of Chemistry, Birla Institute of Technology, Mesra (BIT Mesra) during 18-20th December 2024.

DR. ABHISHEK BANERJEE

Dr. Abhishek Banerjee was invited to deliver presentations at two prestigious international conferences in 2024, showcasing his ongoing research on energy storage materials. He presented a talk titled "Exploration of Vanadates as New Age Energy Storage Materials" at the Conference on Modern Trends in Molecular Magnetism (MTMM), held in conjunction with the 3rd Edition of Spins in Molecular Systems, hosted by the Indian Institute of Science, Bangalore, from November 5 to 8, 2024. Subsequently, he was invited to speak at the 21st Modern Trends in Inorganic Chemistry (MTIC–XXI), organized by the Indian Institute of Technology, Kharagpur, from December 14 to 17, 2024, where he delivered the presentation on the promising role of vanadates in future energy storage technologies.

CHEMISTRY FACULTY EXCELLENCE

DR. SUSANTA KUMAR NAYAK

Prestigious Recognition in Soft Matter Science: Dr. Susanta K. Nayak Awarded by Indian Liquid Crystal Society (ILCS) Bronze Medal 2024.

Dr. Susanta K. Nayak, Assistant Professor, Department of Chemistry, Visvesvaraya National Institute of Technology (VNIT), Nagpur, has been honoured with the Bronze Medal 2024 by the Indian Liquid Crystal Society (ILCS). This recognition highlights his exceptional contributions to Soft Matter Science, his unwavering academic excellence, and his impactful roles in teaching and research. He was awarded and deliver the BM Award Lecture at the 31st National Conference on Liquid Crystals (NCLC-2024) at Navyug Science College, Surat, Gujarat, December 2024.

CHEMISTRY STUDENT EXCELLENCE

MR. OMKAR DASH

Mr. Omkar Dash, Ph.D. student under the guidance of Dr. Susanta Kumar Nayak received the 2nd prize for the best poster award from Soft Matter- Royal Society of Chemistry at the 31st National Conference on Liquid Crystals organized at Navyug Science College, Surat, Gujarat from 20th – 22nd December, 2024.

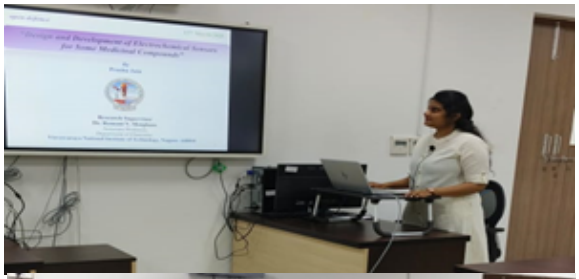
INVITED TALK

An invited talk by Prof. Archita Patnaik (Visiting Professor, Department of Chemical Sciences, IISER Berhampur) was organized on March 12, 2025. She delivered an insightful lecture entitled "Chemistry at Restricted Dimensions." The event was coordinated and organized by Dr. Ramani Motghare, Associate Professor, Department of Chemistry.

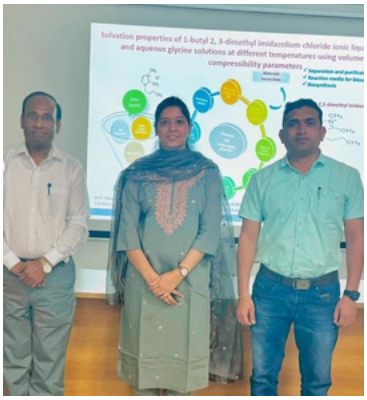
IKS 2025

The National Conference on Indian Knowledge Systems with Science & Engineering Perspective (IKS–2025), jointly organized by Visvesvaraya National Institute of Technology (VNIT) Nagpur and Indian Institute of Information Technology (IIIT) Nagpur on 28th February and 1st March 2025, concluded with enthusiastic participation and impactful discussions on the integration of traditional Indian wisdom with modern science and engineering.The conference was guided by Patron Shri Madabhushi Madan Gopal, BOG Chairman, and chaired by Dr. Prem Lal Patel, Director, VNIT. Dr. Atul V. Wankhade, Associate professor from Chemistry department was organising secretary of this conference.

SCHOLASTIC MILESTONE



Ph.D awarded to Ms. Prashu Jain under supervision of Dr. Ramani V. Motghare, (Associate Prof.) Thesis Titled: Design and Development of Electrochemical Sensors for Some Medicinal Compounds.



Ph.D awarded to Mrs. Anuja Jain under supervision of Dr. Sangesh Zodape, (Assistant Prof.) Thesis Titled: Unveiling the molecular interactions of ionic liquids in aqueous solutions through volumetric and compressibility approach

Ph.D awarded to Mr. Adarsh Kumar Mourya under supervision of Dr. Atul V. Wankhade, (Associate Prof.) Thesis Titled: Design and Development of Nanostructured Materials for Energy and Environmental applications.

RESEARCH CORNER

RESEACHER SPOTLIGHT: LATEST PUBLISHED WORK

- Investigating the Crucial Role of 1, 2-Dimethyl Imidazole in Developing Ferric-Mediated Recyclable XNBR Composites. **Suraj W Wajge**, Amit Das, Pradip K. Maji, Shiva Singh, Subhradeep Mandal, and **Chayan Das***. **ACS Sustainable Resource Management** 1, 9, 2158-2167 (2024) (ACS) https://pubs.acs.org/doi/10.1021/acssusresmgt.4c00294.
- Fabrication of Zinc (II) Mediated Poly (Acrylamide Co Acrylic Acid) Hydrogel with Thixotropic and Tribological Properties. **Paresh Nageshwar**, Suraj W. Wajge, Gopal Lal Dhakar, Avinash A. Thakre, Swapnil Tripathi, Shiva Singh, Pradip K. Maji, and **Chayan Das* Macromolecular Rapid Communications** 2400670 (2024). (**Wiley**) https://doi.org/10.1002/marc.202400670.
- Investigating the effect of ferric ion on crosslinking of XNBR at higher content. **Suraj W. Wajge**, **Chayan Das* Journal of Polymer Research** 31, 230 (2024). (**Springer**). https://doi.org/10.1007/s10965-024-04060x
- Hydroxyl-functional acrylic adhesives: leveraging polysilazane chemistry for curing Amrita Chatterjee, **Shashank Jha**, Sushmit Sen, Keshav Dev, **Chayan Das** and Pradip K. Maji, **RSC Appl. Polym.**, 2025 (**RSC**)
  DOI: 10.1039/D4LP00354C
- Structural Analysis, In Vitro Anti-tubercular Activities, and In Silico ADMET Evaluation of Ethyl 7-Methoxy-3-(4-Substituted Benzoyl) indolizine-1-carboxylates, **R.D. Nagdeve**, J.S. Thakur, S. Chandrashekharappa, P.K. Mondal, P.K. Deb, M. Polentarutti, K.M. Bairagi, G. Rakshit, O.I. Alwassil, M. Pillay, K. N. Venugopala, **S. K. Nayak***, **CrystalEngComm** (2025). https://doi.org/10.1039/D4CE01018C
- Design, Photoresponsive Halogen-Bonded Complexes of 1, 3, 5-Trifluoro-2, 4, 6-triiodobenzene and Alkoxyazopyridine Derivatives Based on Py-N··· I Interactions: Synthesis, Structural, and Theoretical Insights, **J.S. Thakur**, O. Dash, K.S. Ingle, K.B. Lahoti, A. Sudheendranath, N.A. Bhale, A.G. Dikundwar, **S.K. Nayak***, **Crystal Growth and Design**, 24(22), 9391-9402, 2024. doi.org/10.1021/acs.cgd.4c00781
- G. M. Satish, C. A. Taylor, S. J. Cowling, R. J. Gammons, A. C. Whitwood, J. S. Thakur, O. Dash, K. S. Ingle, **S. K. Nayak**, D. W Bruce, "Re-evaluation of the Thermal Behavior of 2: 1 Halogen-Bonded Complexes Formed between 4-Alkoxycyanobiphenyls and 1, 4-Diiodotetrafluorobenzene," **Cryst. Growth Des.** 2024, 24, 21, 8669−8673, https://doi.org/10.1021/acs.cgd.4c01103
- Evolution of Organic Light Emitting Diode (OLED) Materials and their Impact on Display Technology. **Shrestha Banerjee**, Piyush Singh, Pradipta Purkayastha, and **Sujit Kumar Ghosh***. **Chemistry–An Asian Journal** 20, no. 4 (2025): e202401291.
- Binder-Free Approach of Mixed-Valent Oxovanadates Anchored on MWCNTs as Supercapacitive Electrodes to Symmetric Supercapacitor Devices: Enriched Performance through the Incorporation of Guest Molecules in Capsular-Shaped Polyanions, **Kalyankumar S. Morla**, Tushar Balasaheb Deshmukh, Ravari Kandy Aparna, Babasaheb R. Sankapal,* and **Abhishek Banerjee***, **Energy & Fuels**, 2024, 38, 21482-21497
- Tuning Optical and Electronic Property via M-S-Si (M= Zn, In) Interface Charge Mediator in ZIS/DFNS for Efficient Reductive Water Splitting under Visible Light Irradiation. **Mohd Amin**, Rudra P. Singh, Adarsh K. Mourya, Sakshi R. Barad, and **Atul V. Wankhade***. **Advanced Sustainable Systems**: 2500153.
- Integration of ZnO into Polyhedral Oligomeric Silesquioxane (POSS) for Enhanced Adsorption and Removal of Malachite Green Dye from Aqueous Solution. **Sneha A.Wahurwagh**, Shivani Bhagat, Awanti S. Talmale, Atul V. Wankhade, Sangesh P. Zodape, and **Umesh R. Pratap***. **Journal of Inorganic and Organometallic Polymers and Materials** (2024): 1-15.
- Harnessing synergy: Immobilized Cu (II) and Pd (II) species on magnetic silica-coated copper ferrite for A3 and Sonogashira coupling reactions. **Shivani Bhagat**, Sneha Wahurwagh, Ankit Verma, and **Umesh Pratap***. Applied Surface Science 687 (2025): 162264.

Glimpses of 51st National Seminar on Crystallography (NSC-51)

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