



CHEM NEWS Issue 5



A Newsletter from the Department of
Chemistry, VNIT Nagpur, 2020, Issue 5

DOWN TO CHEMISTRY...

Published on 15th October, 2020

Message from HoD's Desk...



Welcome to the Department of Chemistry, VNIT Nagpur! We, the Department of Chemistry, feel our enthusiasm to publish the fifth issue of the quarterly newsletter, "**CHEM NeWS.**" I, as a head of the department would like to thank all the faculty members, non-teaching staff and students for their limitless support and sincere efforts for the betterment and development of department. On this occasion, I congratulate all the team members of the editorial board for bringing up this issue in a better shape.

Overview of the Department...

Department of Chemistry has started the journey from the inception of the institute, initially it has been serving to cater the need of engineering students of various branches. The Department started new program for undergraduate (B.Tech.) in Chemical Engineering in the year of 2006. Later on, the post-graduation program (M.Sc.) in Chemistry for two years duration was commenced in the year of 2012. More than sixty Ph.D. degrees have been awarded till 2019. At present thirty students are pursuing their research work to attain their doctoral degree. The highly motivated students, who understand the research dynamics and upgrade their skills, are strengthening the department's backbone. In their curriculum they are encouraged to take part in different projects to supplement theoretical knowledge with practical experiences. In order to interact with the outside world, the department has active collaboration with the academic as well as research organizations in India and abroad. The department is organizing Continuous Educational Events like STTP courses, Seminars, and conferences. The curriculum is taught by the distinguished faculty members with the combination of academic excellence and diverse research exposure in working different areas of science and technology with complete dedication and commitment. The research field includes Organic synthesis, Solid state chemistry, Crystal engineering and Nano-materials, Polymers and elastomeric composites, Inorganic Chemistry, Photo-catalysis and Bioinorganic Catalysis, Biophysical Spectroscopy and Photobiology, Chemical Thermodynamics, Resource Recovery and Environmental remediation, Biocatalysis and Organic Chemo-Sensor, Electro-analytical Chemistry. The faculty members of the department have been awarded various national and international research fellowships. They have also authored many books and participated in national and international conference. The publication of their research works in various SCI index journals are the regular activities of the Department. Many R&D projects are being funded by different funding agencies viz. SERB, DST, MHRD, UGC, BRNS, CSIR, etc. Department has well-equipped laboratories with modern instrumental facilities and has been recognized by **DST-FIST** Sponsored Department since 2017!

FACULTY MEMBERS

DR. SURESH S. UMARE (HOD)

DR. JAYANT D. EKHE

DR. ANUPAMA KUMAR

DR. SUJIT K. GHOSH

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

Recent Publications...

1. "Template-free macro-mesoporous TiO_2 /carbon nitride interface for visible-light-Driven photocatalysis" Devthade Vidyasagar, Aniket Balapur, Sachin G. Ghugal, Ashok G. Shende and **Suresh S. Umare** *Physica Status Solidi A*: **2019**, 216, 1900212.
2. "Europium Doped TiO_2 - Ta_2O_5 Heterostructure for Photodegradation of Dyes" Sachin Ghugal, Devthade Vidyasagar, Sandeep Ghugal, Ashok G. Shende, Toshali, H. Bhojar, **Suresh S. Umare** *Chemistry Select* **2020**, 5, 2981-2984.
3. "Synthesis, crystal structure and Hirshfeld surface analysis of 2-(4-fluorophenyl)-2,3-dihydroquinazolin-4(1H)-one" Keshab M. Bairagi, Katharigatta N. Venugopala, Osama I. Alwassil, Viresh Mohanlal, Sandeep Chandrashekarappa, **Susanta K. Nayak**, *Chemical Data Collections* **2020**, 20, 100355, <https://doi.org/10.1016/j.cdc.2020.100355>.
4. "Synthesis, crystal structure and Hirshfeld surface analysis of the hydrated form of N', N'-(1,4-phenylenebis(methanylylidene) di(iso-nicotinic hydrazide)" Kapil S. Ingle, Smital A. Mohurle, Keshab M. Bairagi, Tabrez R. Shaikh, Katharigatta N. Venugopala, Sandeep Chandrashekarappa, Rajesh G. Gonnade, **Susanta K. Nayak**, *Chemical Data Collections*, **2020**, 28, 100401, <https://doi.org/10.1016/j.cdc.2020.100401>.
5. "Facile synthesis of benzazoles through biocatalytic cyclization and dehydrogenation employing catalase in water" P. Shrivasa, **S. Zodape**, **A. Wankhade**, **U. Pratap**, *Enzyme and Microbial Technology*, **2020**, 138, 109562.
6. "Green synthesis of pyranopyrazoles via biocatalytic one-pot Knoevenagel condensation-Michael-type addition-heterocyclization cascade in non-aqueous media" P Shrivasa, R Pandey, **S. Zodape**, **A. Wankhade**, **U. Pratap**, *Research on Chemical Intermediates*, **2020**, 46, 2805.
7. "Graphitic carbon nitride @ silver zirconate nanocomposite ($gC_3N_4@Ag_2ZrO_3$): A Type-II heterojunction for an effective visible light photocatalysis and bacterial photo-inactivation" by Ranjita S. Das, Swapnil K. Warkhade, **Anupama Kumar**, G. S. Gaikwad and **Atul V. Wankhade**, *Journal of Alloys and Compounds*, **2020**, 846, 155770. <https://doi.org/10.1016/j.jallcom.2020.155770>.
8. **Book chapter** entitled as "Cellulose Nanoparticles: Synthesis and Manufacturing" by **Anupama Kumar** has been published by the Royal Society of Chemistry.

Achievement by our MSc. student...

Mr. Shiva Singh has undergone his MSc. project work under the supervision of **Dr. Chayan Das** and published his work as a research paper entitled as "**Synthesis and chemical modification of crystalline nanocellulose to reinforce natural rubber composites**" by **Shiva Singh**, Gopal L. Dhakar, Bharat P. Kapgate, Pradip K. Maji, Chhavi Verma, Monika Chhajed, Kasilingam Rajkumar and **Chayan Das** in the journal *Polymers for Advanced Technologies*, *Polym Adv. Technol.* **2020**; 1–11 (<https://doi.org/10.1002/pat.5030>).

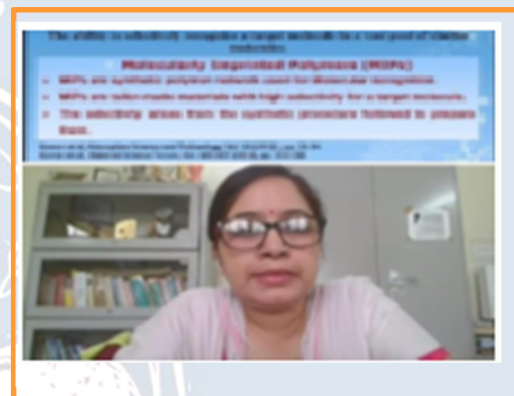
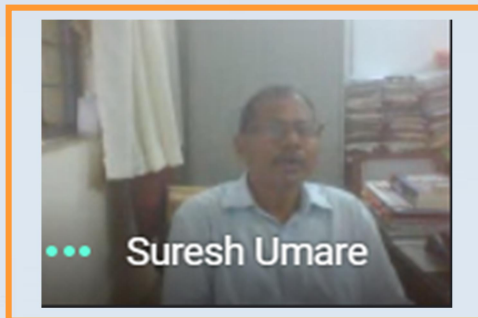
Training Program...

Department of Chemistry, Visvesvaraya National Institute of Technology, Nagpur, in association with IGNOU Regional Centre, Nagpur, has organized a Faculty Development Program for Science Teachers at school level as an event of the **Diamond Jubilee Celebration** of the institute, during **1st to 2nd February, 2020**. This two days event is sponsored by Royal Society of Chemistry (London), Indian Chapter, Bangalore under Yusuf Hamied Inspirational Chemistry Programme. **Prof. S. S. Umare** and **Dr. Chayan Das** were the coordinators of the program.



Invited Talks..

- **Prof. S. S. Umare** delivered an invited talk entitled *Design of Visible Light Active Photocatalysts for Energy and Environmental Applications* at Department of Chemical Engineering, VNIT Nagpur, for AICTE FDP Nanotechnology for Green Process and Sustainable Development during **25th to 28th August, 2020**.
- **Prof. S. S. Umare** delivered an invited talk entitled *Challenges of Corrosion and its Control*, at Ujjain Engineering College, Ujjain (M.P), on **9th September, 2020**.
- **Dr. Anupama Kumar** delivered a keynote address entitled *"Molecular imprinting: Sustainable technique for diverse applications -Idea, Concept and execution"* at Kalinga University, Naya Raipur, Chhattisgarh, for the National Webinar on New Challenges Post Pandemic: A step towards connecting people to environment on the occasion of "World Environment Day" on **5th June, 2020**.
- **Dr. Anupama Kumar** delivered a Keynote address entitled *"Molecular imprinting: a dynamic and Sustainable technique for diverse applications"* for the Webinar conducted by Department of Applied Chemistry, Yeshwantrao Chavan College of Engineering (YCCE) on **18th June, 2020**.
- **Dr. Anupama Kumar** delivered an invited Talk on **23rd June, 2020** for the STTP on "Interdisciplinary Research Methodology, ICT Application and Innovation" organized by Department of Humanities and Social Sciences VNIT during **22nd to 27th June, 2020**.
- **Dr. Anupama Kumar** and **Dr. J. D. Ekhe** chaired two technical sessions for the International Conference entitled "*Chemical Science for Drug Discovery & Therapy (CSDDT) 2020*", organized by the department of Chemistry VNIT, Nagpur during **22nd to 26th of July, 2020**.



Conferences Organized...

The vision and determination of the Department of Chemistry in keeping the trend going and setting new milestones were fully tested during the lockdown period. The conferences earlier planned to be conducted in-person were executed successfully through online mode during the challenging time of COVID-19 pandemic.

- **Crystal Engineering: From Molecule to Crystals (CEFMC 2020)**

The Department of Chemistry, VNIT Nagpur in association with IIT Kharagpur, IISER Kolkata, IIT Patna, IIT Bhilai and NIT Raipur organized the second edition of the international conference entitled **Crystal Engineering: From Molecule to Crystals (CEFMC 2020)**, from the 19th - 20th of June, 2020. **Dr. Gautam R. Desiraju**, from the Indian Institute of Science, Bangalore, India, acted as chief patron for the event. Participants for invited lectures, short lectures and poster presentations included scientists from various countries such as India, USA, UK, Italy, Germany, and Australia among others. The oral presentations were organized via Video conference and the poster session via Twitter. Several best poster prizes were awarded and sponsored by the academic journals 'Crystal Growth and Design' published by the **American Chemical Society (ACS)**, USA, and the journal 'Crystal Engineering Communications' published by the **Royal Society of Chemistry (RSC)**, UK. This conference served as a platform to discuss the fundamental concepts as well as the latest developments in the field of Crystal Engineering bringing together the community of crystal engineers. **Dr. Susanta K. Nayak** and **Dr. Abhishek Banerjee** from the Department of Chemistry, VNIT, Nagpur were part of the organizing committee for CEFMC 2020.



- **Chemical Science for Drug Discovery & Therapy (CSDDT-2020)**

Department of Chemistry, VNIT Nagpur has organized an international conference entitled **Chemical Science for Drug Discovery & Therapy CSDDT-2020** during 22nd to 26th of July, 2020. It was a five-day event, with more than 350 participants and 30 invited speakers, from national and international academic and research institutes. Researchers and academicians from total 10 different countries such as India, USA, Germany, Portugal, Hungary, Scotland, France, Greece, Russia & Spain participated in the conference. This international event was organized by the department of Chemistry VNIT Nagpur with the patronage of **Prof. P. M. Padole (Patron and Director, VNIT)**, **Dr. Suresh S. Umare (Organizing Chair and HoD, Department of Chemistry)** & **Dr. Sandipan Halder (convener)**. Sponsorship has been received from **TEQIP III, VNIT Nagpur** and the **American Chemical Society (ACS)**.

Highlighting the Chemistry Achievers...**The Nobel Prize in Chemistry 2020**

The Nobel Prize in Chemistry 2020 has been awarded to

- **Emmanuelle Charpentier**

Max Planck Unit for the Science of Pathogens, Berlin,
Germany

- **Jennifer A. Doudna**

University of California, Berkeley, USA.



“for the development of a method for genome editing”

Emmanuelle Charpentier and **Jennifer A. Doudna** have discovered an important tool of gene technology, named as the **CRISPR/Cas9** genetic scissors. Using this technology, researchers can change the DNA of animals, plants and microorganisms with extremely high precision. This technology is having a revolutionary impact contributing to the cancer therapies and may solve numerous problems of curing the genetically inherited diseases.

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