



# National Conference on Chalcogenide Compounds

and Applied Chemistry

(NC<sup>3</sup>-2023)

March 16<sup>th</sup>-17<sup>th</sup>, 2023

Organized by

Department of Applied Chemistry

Defence Institute of Advanced Technology

(Deemed University) Girinagar, Pune- 411025

NAAC 'A' GRADE and NIRF RANK - 71

in association with

Society for Materials Chemistry, SMC-Pune Chapter &  
SPARC Programme, Min. of Education, Govt. of India



X-Ray Diffraction  
(XRD)



NMR



**INTRODUCTION:** The first National conference on “Chemistry of Chalcogens” (NC<sup>3</sup>) was held in 2013 which attracted more than 200 participants and 14 invited speakers delivered top class chemistry and materials chemistry lectures. Due to grand success of NC<sup>3</sup>-2013, NC<sup>3</sup>-2015, NC<sup>3</sup>-2017 NC<sup>3</sup>-2019 and NC<sup>3</sup>-2021, it is decided to organize NC<sup>3</sup>-2023 with a view to have number of expert lectures from scientists and professors with about 100 posters and several oral presentations by the students. This year, National conference on “Chalcogenide compounds and applied chemistry” (NC<sup>3</sup>-2023) is being organized during 16-17 March at DIAT, Pune. The primary objective of the conference is to bring together the expert from academic institutions, industries and research organizations devoted to various domains of advanced research in chalcogen and applied chemistry and its impact in strategic sector community.

**ABOUT DIAT (DU), PUNE:** The Defence Institute of Advanced Technology, (DIAT) as it is known today, came into existence as the Institute of Armament Studies in 1952 in the CME campus. In 1967, the Institute was renamed as “Institute of Armament Technology, (IAT)”, which moved to its present location at Girinagar, Pune. From relatively narrow scope of Armament Studies alone in Fifties, the role of the Institute was considerably enlarged by the Defence R&D Council in 1964 and further in 1981. On the basis of accreditation by the All India Council of Technical Education (AICTE), Pune University recognized eight courses for the award of ME degree in 1980. In the year 2000, the Institute acquired the status of a Deemed University. IAT has been renamed as DIAT w.e.f. 1st April 2006.

**ABOUT THE DEPARTMENT:** The department of Applied Chemistry started in 1985 with the aim to impart education and training to DRDO work force in the area of high energy materials and propellants. Over the years Department has moved on to cater to the need of DRDO and civilian students in order to bring the DRDO achievements closer to our society. The Department’s aim is to contribute the knowledge through excellence in observational, theoretical and experimental science and to extend quantitative and other appropriate methodologies to address problems in the fields of applied chemical science. In Applied Chemistry, we are endowed with faculties who are dedicated teachers and distinguished researchers that carry out cutting-edge research in all modern areas of Applied Chemistry, as well as in inter-disciplinary areas like nanosciences and nanotechnology, high energy materials, polymer science and technology. **From July 2023 academic session, the dept. is commencing M.Sc. in Applied Chemistry** to cater the need of industry and defence sector. The first PhD degree of DIAT (DU) was awarded to a student from the department of chemistry and so far, department has produced over 30 PhDs and currently 15 scholars are pursuing their Ph.D. degree. In addition, we provide a vibrant and creative learning environment for our M.Tech and Master of Science ( M.Sc. & MS) students and researchers through internal training and expert lecture series. We also participate in R&D with various DRDO labs and industries. **Department boasts of highest number of PhDs in DIAT as well as highest number of research publications.** In recent times, Department has contributed highest revenue generation through grant-in-projects and customized course. **For three consecutive years, two faculties (Prof. P. K. Khanna and Dr. P. S. Kulkarni) of the department have been listed as top 2% of the world scientists as per the study undertaken by researchers at Stanford university USA.**

**THE CHALCOGENS:** Chalcogens are elements from group VI from the Periodic Table. Compounds containing S, Se and Te have made special impact on advanced technology particularly semiconductor technology. Organochalcogen compounds have various advantages for advanced materials preparation e.g., their low thermal stability and complexation with transition metals makes them suitable for their application in semiconductor technology via CVD/PVD thin films methodology. The emergence of Nanotechnology has led to dedicated and focused research in quantum dots based on binary metal chalcogenide semiconductors e.g., ZnSe, CdSe CdTe and PbSe etc. Likewise, Ternary metal selenides e.g., CISE and combinations thereof e.g., hybrid metal selenides etc. Organic metals have also been generated through the chemistry of chalcogens. Organochalcogens have potential to be used as antimicrobial and anti-cancer agents also. Recent research has shown that many of organoselenium compounds show anti-HIV and anti-diabetic properties. Quantum dots as well as other metal chalcogenides are of great importance to defence sector since these can lay platform to advancement in nanotechnology-based devices e.g., quantum dot for decoy application, thermoelectric devices, solar cells, LED and biomedical imaging etc. The precursors are as important as the final metal chalcogenide technology & devices and therefore this conference will focus on the chemistry of chalcogens and chalcogenides to highlight the importance of synthesis of organochalcogen compounds and their application as precursors for nanotechnology covering devices. This event will also cover topics in applied chemistry.

**ABOUT THE CONFERENCE:** The National conference on “Chalcogenide compounds and applied chemistry (NC<sup>3</sup>-2023), aims to bring together researchers, scientists, engineers and scholarly students to exchange and share their experiences, new ideas, and research results on all aspects of technology of chalcogenides, their chemistry and physics to discuss the practical challenges encountered by the researchers to handle the critical situations during preparation and studies that can lead to technology development for a range of application in photonics, energy device, photocatalysts and biological applications. Eminent scientists will deliver plenary, key-note and invited lectures to highlight the recent advancements made in this specialized field. There will also be poster presentations by participants and oral presentations by selected students. The conference will also cover general applied chemistry.

### **OBJECTIVES:**

- To provide a platform for sharing of knowledge among researchers in the field of applied chemistry, chalcogenides and related nanotechnology topics.
- To promote partnership amongst the academia, R&D organizations and industries.
- To address scope of chalcogenides in defence R&D.
- To address the importance of chalcogens in Nanotechnology and future scope.

**ABSTRACT:** An extended abstract with relevant figures & references should be submitted by **28<sup>th</sup> February, 2023**. The abstract should include title, name and affiliation of authors, email and contact numbers. The authors should mention choice for **oral or poster presentation**. DIAT will not be responsible for any plagiarism issue. The abstracts can be submitted to: **Email: [naeem\\_pac22@diat.ac.in](mailto:naeem_pac22@diat.ac.in); [mdcheminfo@gmail.com](mailto:mdcheminfo@gmail.com) MOBILE: 9660848511**

### **CHIEF-PATRON**

**Dr Samir V Kamat**

Secretary, Department of Defence R&D and Chairman, DRDO

### **PATRON**

**Dr. C.P. Ramanarayanan**

Vice Chancellor, DIAT, Pune

### **ORGANIZING TEAM**

Prof.PK Khanna, Chairman/Convener

Dr. S Banerjee, Treasurer

Dr PS Kulkarni, Member

Dr CJ Bhongale, Member

### **TENTATIVE LIST OF SPEAKERS**

- Dr. V. K. Jain, CBS, DAE, Mumbai
- Prog. G. Mughesh, IISc, Bangalore
- Prof. J. D. Singh, IIT Delhi
- Prof. Sameer Sapra, IIT Delhi
- Dr. S. Tripathi, DMSRDE, Kanpur
- Prof.PS.Patil, Shivaji Uni, Kolhapur
- Prof. Amarjeet Kaur, Delhi Univ
- Prof. Poonam R, BHU Varanasi
- Dr. Pankaj Poddar, NCL Pune
- Prof. KK Bhasin, Chandigarh
- Dr. I. Priyadarshani, DAE, Mumbai
- Dr. R. K. Vatsa, BARC, Mumbai
- Prof. Anita Verma, Delhi University
- Prof. Sangeet Kumar, IISER Bhopal
- Prof. R. Vaidyanathan, IISER, Pune
- Dr. Abhisek Kumar, BHU, Varanasi
- Dr. G. Kedarnath, BARC, Mumbai
- Dr. Gouriprasanna, IIT Tirupati
- Prof. A. Kumbhar, SPPU, Pune
- Prof. R. Chikate, Pune

**REGISTRATION FEES:** Rs. 590/- for students, Rs. 1770/- for R & D Scientist, and Rs. 2360/- for Industry including GST@18%. \*Registration fees are non-refundable. Pay the registration fees using the bank details given below. Click on the google form link below and submit after filling in all the details:

Link for Registration: <https://forms.gle/UmsQuPzCopfUQJpXA>

Bank Details A/c No. – 30166494269, A/c Name –Defence Institute of Advanced Technology, IFSC: SBIN0002155, Bank Name – SBI IAT Girinagar, Pune

**CONTACT:** Prof. P. K. Khanna, Chairman & Convener, NC<sup>3</sup>- 2023; Email: [khannap@diat.ac.in](mailto:khannap@diat.ac.in)  
FOR ANY INQUIRY PLEASE CONTACT: [priyankaphalswal1996@gmail.com](mailto:priyankaphalswal1996@gmail.com)

### **HIGHLIGHTS OF NC<sup>3</sup>-2023**

- Invited talks by eminent researchers
- Oral Presentations by students
- Prizes for best oral & poster presentations
- Spot Registration with late fees

### **IMPORTANT DATES**

- Submission of abstract: 28<sup>th</sup> Feb 2023
- Intimation of acceptance: 4<sup>th</sup> Mar 2023
- Last date of registration: 8<sup>th</sup> Mar 2023
- Date of conference: 16<sup>th</sup>-17<sup>th</sup> Mar 2023
- Accommodation request: 8<sup>th</sup> Mar 2023

### **SUPPORT TEAM**

Sandesh, Mayur, Prashant, Dilip, Nitin, Madhu, Priyanka, Akash, Naeem, Mruganchali, Alok, Shubhangi, Prathamesh, Rahul, Samprik, Semontee, Shubham, Sougat, Mysura, Kartik, Yogesh, Debkanta, Sumiran, Dinesh, Gauri

