



National Seminar On Ferroelectrics and Dielectrics (XXIII NSFD - 2024)

Organized by

Department of Physics

School of Natural Sciences
Central University of Jharkhand, Ranchi

Website

<https://cuja.ac.in/index.php>

Dates

December 17-19, 2024



ABOUT CENTRAL UNIVERSITY OF JHARKHAND, RANCHI

The Central University of Jharkhand (CUJ) was established under the Central University Act, 2009, with a clear vision to pioneer contemporary educational initiatives and advance research in cutting-edge technologies. Offering a diverse range of programs including 5-year integrated (UG/PG), Postgraduate, and Ph.D. courses across various schools and departments, CUJ remains at the forefront of educational innovation. Embracing flexibility in its curriculum and fostering robust research collaborations, CUJ's faculty members have garnered national and international recognition, securing prestigious fellowships, project funding, and accolades. They actively contribute to governmental, public, and private sectors through teaching and consultancy, enriching both academia and industry. CUJ's commitment to excellence reflects in its consistent ranking among India's top 300 institutes by NIRF, MHRD, Government of India. In 2020, Times Higher Education acknowledged CUJ among the top 1000 institutes globally, underscoring its international standing and academic prowess. Situated in Ranchi's burgeoning smart city, CUJ's new campus spans 510 acres in Cheri-Manatu, Kanke, offering a picturesque environment conducive to learning and research. The original campus, nestled in a serene 45-acre landscape at CTI Campus in Brambe on Ranchi's outskirts, seamlessly integrates classrooms and hostels with the natural surroundings. For further information on CUJ, Ranchi, including admissions and academic programs, visit their website at <http://cuja.ac.in/>.

ABOUT SCHOOL OF NATURAL SCIENCES

The School of Natural Sciences (SNS) stands as a cornerstone of CUJ, housing the Departments of Physics, Chemistry, Mathematics, Statistics, and Life Sciences. Our school is committed to imparting a robust understanding of natural sciences, catering to graduate, postgraduate, and PhD students through the latest advancements in science and technology. At SNS, we employ project-based learning (PBL) methodologies to cultivate critical thinking among our students. We encourage them to question, explore, and conduct research across diverse scientific disciplines. Our goal is to nurture skilled professionals and visionary leaders who can contribute significantly to the nation's progress and development. We prioritize excellence in education and research, aiming to instill ethical values and professional standards in our students. By enhancing their logical reasoning and problem-solving abilities, we prepare them to tackle the evolving challenges of today and the future. For more information about the School of Natural Sciences, please visit our website at <http://cuja.ac.in/CNS.php>.

ABOUT THE DEPARTMENT OF PHYSICS

The Department of Physics (DoP) at CUJ offers comprehensive B.Sc. and M.Sc. programs specializing in cutting-edge technologies. These programs cater not only to physics majors but also provide a diverse array of courses for undergraduate and postgraduate students from across the University's schools. Our department is dedicated to building strong foundational knowledge in basic and engineering sciences. We offer Ph.D. programs in research areas such as Experimental Condensed Matter Physics, Atomic and Molecular Physics, High Energy Physics, Experimental Nuclear Physics, and Applied Optics/Photonics. Through initiatives like the DST-FIST program, we are expanding our infrastructure to develop state-of-the-art laboratories for both experimental and theoretical research.

Laboratory sessions complement classroom learning, providing hands-on experience and exposing students to the latest technological advancements. Starting from the undergraduate level, students have opportunities to engage in research projects with faculty members, fostering essential analytical and problem-solving skills necessary to address current and future technological challenges.

The department is actively involved in research spanning diverse fields including Condensed Matter Physics, Nano-Composite Materials, Multiferroics, Transparent Conducting Materials for Optoelectronic Applications, Graphene Materials, Photonics/Nanophotonics, Lasers, Photovoltaics, Sensors, and Quantum Transport in nano-systems. For more details about the Department of Physics and its programs, please visit our website at <http://cuja.ac.in/DoP.php>.

ABOUT NSFD

The National Seminar on Ferroelectrics and Dielectrics (NSFD), a biennial conference, has completed a remarkable 43-year journey since its inception in 1980 at the Indian Institute of Technology Delhi. Initiated by the Dielectrics and Ferroelectrics group in India, NSFD has grown from its modest beginnings to become a pivotal event in the field. Dielectrics, a class of materials encompassing polar materials such as piezoelectrics, pyroelectrics, and ferroelectrics, play crucial roles in modern technology. They are integral to applications in data storage, energy harvesting, wireless communications, and more. This symposium will showcase the latest advancements in materials pivotal to a wide range of related technologies. It aims to gather experts from diverse disciplines, providing a comprehensive platform to discuss materials and devices relevant to the field. Special tutorial sessions will be tailored for young researchers and initiators, offering foundational research insights and fostering collaboration. NSFD continues to be a beacon for the scientific community, driving innovation and collaboration in the ever-evolving realm of ferroelectrics and dielectrics. For more information about NSFD and its upcoming symposium, please visit the conference website.

The Topics of Seminar are broadly classified into five areas.

I. Fundamentals of dielectrics, ferroelectrics & related materials IV. Applications of ferroelectrics and dielectrics

- Relaxor and bi-relaxor ferroelectrics/dielectrics and disorder effects
- Ferroelectric tunneling junctions, ferroelectric and magnetoresistive barriers
- Domain and domain wall engineering (functional domain walls)
- Ionic and electronic phenomena in ferroelectrics
- Surface and interface tailoring and basic emergent phenomena
- Multiferroics & magnetoelectrics, magnetoresistive phenomenon
- Topological states

II. Materials design and processing

- Bulk materials, Thin films, heterostructures, composites, nanofibres and multilayers
- Film processing technologies (preparation and characterization)
- Patterning methods (net-shape forming, microfabrication)
- Biomaterials and Lead-free systems
- Hybrid materials
- Low-energy sintering
- Textured materials

III. Characterization of polar materials

- Fundamental phenomena probed by scattering techniques (X-ray and neutron scattering)
- Electron microscopy (surface and interface phenomena, in-situ studies of domain switching)
- Raman and optical spectroscopies
- Local phenomena by scanning probe microscopy techniques
- Optical near-field imaging
- Spectroscopic probing of electrochemical phenomena
- Electrical and electromechanical characterization

- Dielectrics, Ferroelectrics and antiferroelectrics for energy applications
- Medical ultrasound transducers, ultrasound actuators, and sensors for harsh environments
- Sound absorption materials
- Ferroelectric memory materials and devices
- Piezoelectricity (high-performance and lead-free piezoelectrics, piezoelectric polymers, MEMS and other integrated piezo-devices, sensors and actuators)
- Pyroelectric materials and devices
- Optical phenomena tuning: photonic band-gaps, luminescence and phosphorescence materials
- Biomaterials (hydroxyapatite, polypeptides, etc.)
- Relaxor dielectrics, ferroelectrics and smart materials

V. Theoretical modelling in dielectrics

- Phenomenological Analysis of dielectrics and ferroelectrics
- Nonlinearity and scaling behaviour in non-linear dielectrics
- First principle and Ab initio studies in dielectrics, ferroelectrics, piezoelectrics and multiferroics.

All the presented full length papers will be peer-reviewed and the accepted papers will be recommended to "Ferroelectrics" journal for further process.

For Payment Details:

Bank Name: Punjab National Bank
Account Name: NSFD24
Account No.: 7277000100018636
IFSC code: PUNB0727700
MICR code: 834024020

Website: <https://cuja.ac.in/nsfd2024/>

Conference E-mail Id: nsfd2024@gmail.com

For any further details please contact:

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Publication

The full length manuscripts of the presented papers will be published in **Ferroelectrics** journal after peer review.

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Registration:

Student Participant: Rs. 1000/-
Postdoctoral Participant: Rs. 1500/-
Faculty Participant: Rs. 2000/-
Industry and National Research Lab Participant: Rs. 3000/-

Abstract Submission

Authors are requested to submit their abstract in the provided template only through online portal of abstract submission available on the website : <https://cuja.ac.in/nsfd2024/>

Important Dates

Abstract Submission Start: **October 1, 2024**
Extended Date of Abstract Submission: **October 21, 2024**
Acceptance Notification: **November 5, 2024**
Registration Start: Standard **November 6, 2024**
Registration Deadline: **November 25, 2024**