



# DEPARTMENT OF PHYSICS

SCHOOL OF PHYSICAL SCIENCES

## St. JOSEPH'S COLLEGE (Autonomous)

Special Heritage Status awarded by UGC, Accredited at 'A++' Grade ( Cycle-IV) by NAAC  
College with Potential for Excellence by UGC, DBT-STAR & FIST sponsored College

TIRUCHIRAPPALLI – 620002, INDIA

Organises

Council of Scientific & Industrial Research (CSIR)

Ministry of Science & Technology, Govt. of India

Sponsored

Jan. 30 & 31, 2025

# ICAM 2025



## INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS

### ABOUT THE INSTITUTION

St. Joseph's is an autonomous college of the Bharathidasan University, Tiruchirappalli, located in the central part of Tamil Nadu, South India. It was established in 1844 by the Society of Jesus (The Jesuits). The motto of the college is "For the Good and the True". The college celebrated its centenary in 1944, sesqui-centenary in 1995 and Dodransbicentenary in 2019. The college was recognised by UGC as a College with Potential for Excellence (CPE) in 2004 and 2014, NAAC has reaccredited the college at the highest A++ Grade (Cycle-IV) in 2019 and is ranked as 25<sup>th</sup> position in NIRF India rankings 2023 under college category. St. Joseph's is the only college in Tamil Nadu that has been awarded with Special Heritage Status by UGC. The college trains young men and women of quality to be leaders in all walks of life so that they serve the people of the Nation in truth justice and love. Accordingly, this college strives to be an agent of social change, by incorporating the scientific and technological growth in its UG, PG and Research (Ph.D) programmes.

### ABOUT THE DEPARTMENT

This century-old Department of Physics started B.A. Physics (1881), B.Sc (Hons.) Physics (1911), B.Sc (1930), M.Sc Physics (1961), Ph.D. (1971) and M.Phil (1977). Other than its own evolution, it had given birth to two departments, Computer science (1983) and Electronics (1993) in the college. To cater the needs of the students, BSc and MSc (Physics) programmes in Self-financing section (shift II) were established in 1982 and in 2004 respectively. Presently there are 31 faculties and 9 non teaching staff in the department. The department is constantly developing with the continuous support of management and the funding of UGC, DST-FIST, DST-SERB, DRDO and CSIR. The department had established national and international collaboration in many fields of research in recent years and organises symposia and conferences periodically at all levels to ignite the students with scientific spirit. Over a period of 140 years, the alumni of the department have served and are still serving the nation in various capacities. Notable among them are Bharat Ratna, Dr APJ Abdul Kalam, the former President of India and Dr G N Ramachandran, an Indian Physicist who was known for his work, "The Ramachandran Plot" for understanding peptide structure, nominated for nobel prize (Doctoral student of Nobel laureate Sir C. V. Raman).

### OBJECTIVES OF THE CONFERENCE

Material Science is a multi disciplinary branch of science and technology, investigates the relationship between the structure of materials and their micro/macrosopic properties. In recent years with significant focus on Nano Science and Nanotechnology, Material science becomes a more significant field of science and engineering.

- This conference highlights the fundamentals, synthesis, characterization, analysis and applications of materials
- To create scientific and research temper among the students and researchers through the interaction with the experts in the field
- To provide a platform for researchers to share their knowledge and expertise with other researchers of the field
- To get exposure to the latest developments in the field of material science from scientists and experts

### CALL FOR ABSTRACTS

The organizing committee invites abstracts of experimental or theoretical research in the above mentioned thrust areas from faculty, research scholars and industrialists. The abstract as soft copy (MS-Word - Arial, 12pts & 1 line spacing) have to be sent to the email [sjcicam2025@gmail.com](mailto:sjcicam2025@gmail.com). Registrations can be done on the college website [www.sjctni.edu/icam2025/](http://www.sjctni.edu/icam2025/) on or before 25-01-2025. Best paper presentations (oral/Poster) will be awarded.

### ACCOMMODATION

The participants are requested to make their own arrangements for accommodation. A number of hotels are located in and around the campus.

### FOCUS AREAS OF THE CONFERENCE

This conference highlights the latest developments, research innovations, and applications in advanced materials and nanotechnology, organized as follows:

- 1. Nanomaterials and Advanced Materials**
  - Nanomaterials and 2D materials for diverse applications, including 2D layered nanomaterials for biosensors, bioelectronics, and cancer detection
  - Crystals, Nanocrystals, Colloidal Semiconductor Nanocrystals
  - Composites and Alloys for industrial advancements
  - Semiconductors and Superconductors for electronic and quantum technologies
  - Magnetic and Soft Materials for flexible and wearable technologies
  - LASER material processing and Nonlinear Optical Materials for communication and sensing
  - Luminescent and Fluorescent Materials for imaging and display technology
  - MXene Nanomaterials Fabrication for biomedical applications via electrochemical methods
  - Eco-friendly Synthesis of Bimetal and Bimetal Oxide Nanoparticles and Tri-metal Oxides/Bimetal Chalcogenides for electro/photo catalytic applications
  - Ultrashort laser-matter Interactions & Materials Processing
- 2. Bio-Nanomaterials and Biomedical Applications**
  - Organic and Biological Materials for healthcare innovations
  - Bio-Nanomaterials for medical applications, including Nanodrug Delivery and Nanomedicine
  - Biosensors for health and environmental monitoring
  - Materials for Nuclear Reactors and Space Applications
  - Flexible Biosensors and Field-Effect Transistor (FET) Biosensors for DNA/RNA detection, bioelectronics, and cancer biomarkers detection
  - Real-time Applications of Electrochemical Biosensors for Biological Sample Analysis
- 3. Energy and Storage Materials**
  - Nanomaterials for Energy Generation and sustainable technologies
  - Advanced materials for Energy Storage Solutions, including supercapacitors, sodium-ion batteries, and materials for Hydrogen Evolution Reaction (HER) and Oxygen Evolution Reaction (OER)
  - Fabrication of High-Performance Electrochemical Devices for green energy applications
  - Electrochemical Supercapacitors, including symmetric and asymmetric supercapacitor devices and performance characterization
- 4. Environmental and Agricultural Impact**
  - Harmful Effects of Nanoparticles in the environment and on plant life
  - Nanotechnology for Agriculture, including Nano Foods for Space Applications and crop enhancement
  - Photocatalytic Degradation of environmental pollutants in river water
  - Electrochemical Applications for Food and Water Analysis
- 5. Modeling and Simulation**
  - Mathematical and Simulation Models for understanding material properties
  - Studying the behavior and interactions of nanomaterials at atomic and molecular scales
  - Toxic chemical detections and degradation using Photodegradation Methods

### ORGANISING COMMITTEE

**Chief Patron:** Rev. Dr. Pavulraj Michael SJ, Rector, St. Joseph's College

**Patron:** Rev. Dr. K. Amal SJ, Secretary, St. Joseph's College

**Chairman:** Rev. Dr. S. Mariadoss SJ, Principal, St. Joseph's College

**Convenor:** Dr. I. Johnson, Head, Department of Physics

**Co-Convenor:** Mr. A. Patrick Prabhu, Associate Professor of Physics

**Organising Secretary:** Dr. A. Maggie Dayana, Associate Professor of Physics

**Jt. Organising Secretary:** Dr. M.M. Armstrong Arasu, Assistant Professor of Physics

**Jt. Organising Secretary:** Dr. P. Adal Arasu, Assistant Professor of Physics

### EXECUTIVE COMMITTEE

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Dr. J. Charles

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Dr. S. Lourduraj

Dr. M. Lawrence

Dr. A. Sinthiya

Ms. B. Mary Dayana

Mr. G. Novin Senetra Roy

Dr. M. Augustin

Dr. G. Genifer Silvena

Dr. S. Rex Rosario

Dr. A. Alexandar

### REGISTRATION DETAILS

- ❖ PG Students: Rs.500/-
- ❖ Faculty/Research Scholars: Rs.800/-
- ❖ Industrial Persons/others: Rs.1,200/-
- ❖ Online Participation only Rs. 200/-
- ❖ Mode of payment: online through website: [www.sjctni.edu/icam2025/](http://www.sjctni.edu/icam2025/)
- ❖ Spot registration is also allowed for participants

### IMPORTANT DATES

Last Date for Abstract Submission : Jan, 22, 2025  
For Registration : Jan. 25, 2025  
Spot Registration : Jan, 30, 2025

**Mode of Conduct: Hybrid  
Presented Papers will be  
published in Scopus or Web of  
Science indexed Journals.**

### \* FOR FURTHER DETAILS CONTACT

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