

MAR IVANIOS COLLEGE (AUTONOMOUS)

Thiruvananthapuram, Kerala – 695015

Affiliated to the University of Kerala, Accredited with NAAC A++ Grade

NIRF Ranked College

National Symposium

on

Monazite to Megawatt: Emerging Frontiers in Nuclear Science and Technology

**(Exploring the Future of Nuclear Science • Rare Earth Resources • Nuclear Fuel Cycle • Radiation
Technologies • Sustainable Energy)**

Venue

Mar Ivanios College (Autonomous)
Bethany Hills
Nalanchira, Thiruvananthapuram – 695015
Kerala, India

3–4 November 2026



Organised by

**Postgraduate and Research Department of Chemistry
Mar Ivanios College (Autonomous)**

In Association with

Atomic Energy Retirees' Association (AERA), Kerala

Preamble

As the global energy paradigm shifts toward net-zero emissions, the quest for sustainable and secure baseload power has brought nuclear energy into the international spotlight. Current nuclear reactors are primarily based on uranium and plutonium fuel technology. India, which possesses one of the world's largest reserves of monazite—the primary source of thorium—has envisaged a three-stage nuclear program designed to indirectly harness thorium as a cleaner, safer, and more sustainable energy source for centuries to come. Kerala, with its rich coastal monazite deposits, holds the key to unlocking this "clean energy" potential. This two-day symposium, *"Monazite to Megawatt: Emerging Frontiers in Nuclear Science and Technology"* serves as a vital platform to bridge the gap between geological abundance and technological realization. The symposium aims to explore the scientific, technological and environmental dimensions of thorium-based fuel technology and its potential contribution to India's long-term energy security.



This two-day symposium offers an immersive platform for students, researchers, educators, and the public to engage with the critical scientific, economic, and environmental dimensions of thorium utilization. Through expert-led lectures and interactive discourse, we aim to demystify nuclear science, foster an understanding of advanced reactor technologies, and ignite the curiosity of the next generation of decision makers.

The spectre of climate change looms large, casting a shadow over our planet's future existence. As the urgency to transition away from fossil fuels intensifies, nuclear energy emerges as a crucial pillar for a sustainable tomorrow. The programme is designed to inspire young minds to the inevitability of adopting nuclear energy for a cleaner and better tomorrow. These are some aspects which will be covered in the above symposium.

About Mar Ivanios College (Autonomous)

Established in 1949 by the Venerable Archbishop Mar Ivanios, Mar Ivanios College (Autonomous), Thiruvananthapuram, is one of the premier institutions of higher education in Kerala. Managed by the Major Archdiocese of Trivandrum, the college is committed to its motto, "*Veritas Vos Liberabit*" ("Truth Shall Make You Free"), fostering academic excellence, ethical values, and holistic development. The college offers 18 undergraduate and 9 postgraduate programmes, supported by six recognized research centres that promote advanced research and innovation across diverse disciplines. Initially affiliated with the University of Travancore, the institution has been affiliated with the University of Kerala since 1957.

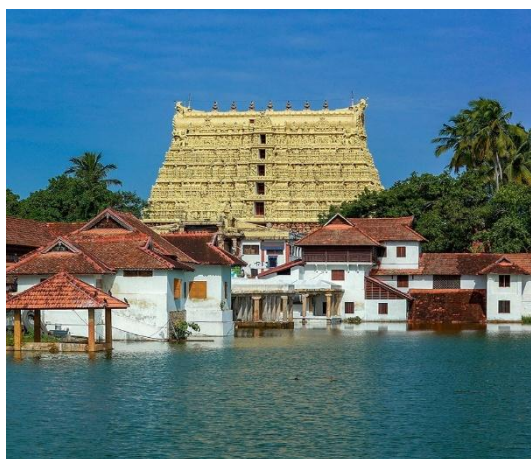


Mar Ivanios College has consistently been a pioneer in quality assurance and higher education. It was the first affiliated college under the University of Kerala to be accredited by the National Assessment and Accreditation Council (NAAC) in 1999 and has since maintained its reputation for academic excellence, currently holding the prestigious NAAC A++ Grade (Fifth Cycle). The college was also the first private affiliated college under the University of Kerala to be recognized by the University Grants Commission (UGC) as a "College with Potential for Excellence (CPE)." In 2014, the University Grants Commission (UGC) conferred Autonomous Status on the institution in recognition of its outstanding academic performance and commitment to quality education. Today, Mar Ivanios College continues to be a centre of excellence in teaching, research, innovation, and community engagement, nurturing generations of socially responsible and professionally competent graduates.

Location & Significance

Thiruvananthapuram, the capital of Kerala, is a unique synthesis of historical grandeur, architectural splendour, and tranquil natural beauty. Nestled between the verdant Western Ghats and the pristine Arabian Sea, the city is defined by its distinctive colonial-era heritage.

Beyond its rich cultural tapestry, the city serves as a gateway to world-renowned tourism destinations; the golden sands of Kovalam Beach offer serene seaside relaxation, while the tranquil backwaters of Veli and the spiritual aura of the Padmanabhaswamy Temple attract visitors from across the globe. As a strategic administrative and educational hub, Thiruvananthapuram provides a peaceful yet intellectually vibrant environment—a unique characteristic that sets it apart from more industrialised metropolitan centres.



Shri Padmanabhaswamy temple

Atomic Energy Retirees' Association

The Atomic Energy Retirees' Association (AERA) was established in 2009 by a vibrant community of former Department of Atomic Energy (DAE) employees who chose to settle in Kerala. This non-profit, non-political, and secular organization brings together engineers, scientists, administrators, and technicians who have dedicated their careers in advancing Nuclear Science and Technology in India. The Association also serves as a platform for continued social and intellectual interaction among DAE retirees.

Since its inception, AERA has made significant efforts to dispel irrational fears regarding nuclear reactors among the general public and future decision-makers through educational initiatives, including symposium and technical talks at various colleges across Kerala. The association strives to provide an objective understanding of nuclear science, technology, and their broader social significance.

About this symposium

The symposium, "Monazite to Megawatt: Emerging Frontiers in Nuclear Science and Technology" scheduled for November 3–4, 2026, at Mar Ivanios College, serves as a vital academic platform to unite students, research scholars and experts in nuclear technology, in exploring the scientific, economic, and environmental potential of nuclear energy as a cornerstone for India's long-term energy security and a sustainable, carbon-neutral future.

Objectives

- **Technological Evaluation:** To deliberate the importance of the India's three-stage nuclear programme and to critically examine the essential role of fast reactors in enabling efficient utilization of resources and to explore long-term sustainability of thorium-based fuels.
- **Nuclear Safety & Reliability:** To analyse the sophisticated safety features incorporated in nuclear reactors and the superiority inherent in thorium-based reactor technologies, including passive safety systems, decay heat management, and their role in preventing radiological incidents.
- **Environmental Stewardship & Mitigation:** To conduct a comprehensive assessment of the environmental impact associated with monazite extraction and processing, waste management, radiation monitoring and the preservation of Kerala's coastal ecosystems.

Who should attend this symposium?

Faculty, research scholars and students from arts, science, engineering and law colleges of India and professionals in the industry and research institutions in and around Thiruvananthapuram are the target group of this symposium.

Exhibition

An exhibition on Nuclear Energy shall be arranged on November 3-4, 2026 at the symposium venue. Materials, models and posters from DAE and IREL will be displayed in the exhibition. Experts from Department of Atomic Energy will interact with students and visitors.

Theme Areas

- **Thorium Fuel Cycles:** Physical properties, extraction, and reactor utilization.
- **Energy Security:** The role of thorium in India's long-term energy independence
- **Safety & Regulatory Mechanism:** Addressing radiation safety and public concerns.
- **Environmental Stewardship:** Balancing resource extraction with ecological conservation.

Expected Outcomes

- **Enhanced Strategic Awareness:** Participants will gain a comprehensive understanding of thorium as a pivotal strategic resource within India's long-term

energy roadmap, fostering a deeper appreciation of Kerala's unique role as a custodian of one of the world's most significant monazite reserves.

- **Scientific Temper & Energy Literacy:** By bridging the gap between experts and the decision makers of the future, the symposium will dispel common misconceptions and exaggerated dangers of nuclear reactors and radioactivity. Students and attendees will develop a robust grasp of nuclear science, radiation physics, and the necessity of evidence-based discourse in shaping national energy policy.
- **Catalysing Research & Innovation:** It aims to inspire the next generation of scholars to pursue rewarding careers in nuclear science, materials engineering, and renewable energy systems.
- **Forging Strategic Linkages:** The symposium will serve as a vital hub for fostering enduring networks among academic institutions, research organizations, government agencies, and industry stakeholders. These connections are specifically designed to facilitate robust collaborative research ventures and structured student internship programs, providing undergraduates with hands-on experience in nuclear and energy-related fields.
- **Advancing Sustainability Goals:** Deliberations will highlight the critical role of nuclear power in decarbonizing the energy sector and mitigating climate change.

How to reach the venue

- By Air: Thiruvananthapuram International Airport is approximately 12 km from the campus.
- By Rail: Thiruvananthapuram Central Railway Station is approximately 8 km from the college.
- By Road: The college is well-connected by local transit networks, making it easily accessible from all major city junctions.

Travel & accommodation

Expenditure for travel and accommodation must be borne by the participants. We are happy to book accommodation for the participants on request.