

DEPARTMENT OF PHYSICS
FACULTY OF MATHEMATICAL AND PHYSICAL SCIENCES

Hands-on training workshop on
Materials for Luminescence and its applications

 26th and 27th March, 2024

 Venue:
A206, Ramaiah Technology Campus, Peenya,
MS Ramaiah University of Applied Sciences, Bengaluru



About the workshop

The Department of Physics, Faculty of Mathematical and Physical Sciences at MS Ramaiah University of Applied Sciences is organizing a two-day hands-on training workshop, sponsored by the DST-SERB CRG grant, under the project titled "Inorganic-organic Hybrid Materials for Anti-counterfeiting Applications" (sanction number CRG/2020/006446) headed by Dr. Premakumar H. B., the Principal Investigator and Prof. H. Nagabhushana, the Co-PI. Our primary goal is to delve into the latest advancements and developments in material science. Esteemed international and national speakers from various institutions will share insights into recent advancements in the field, providing participants with an understanding of emerging trends and technologies. The workshop includes practical training sessions focusing on the synthesis of nanomaterials and basic characterization techniques such as UV-Vis DRS spectroscopy, FTIR spectroscopy analysis, phase determination utilizing Rietveld refinement and photoluminescence spectroscopy analysis. Beyond the talks and hands-on training sessions, our aim is to foster a collaborative platform for participants, researchers, and industry professionals, facilitating dialogue and partnership to drive innovation and progress in the fields of materials science, functional materials, and nanophosphor technology. We extend a warm invitation to all interested participants to join the workshop.

Workshop Objectives:

- Explore nanomaterial synthesis techniques, understanding scalability, reproducibility, and techniques for tailored properties.
- Enhance participants' understanding of nanophosphor structures and properties utilizing advanced XRD techniques, including Rietveld Refinement, to gain insights into crystallographic parameters and phase determination
- Familiarize participants with photoluminescence analysis techniques and photometric parameters, enabling them to effectively characterize luminescent materials and understand their optical properties.
- Foster interdisciplinary networking among participants to facilitate the exchange of ideas and identify future research directions in material synthesis and luminescence applications, promoting collaborative efforts towards innovation and advancement in these fields.



Prof. Ranjani Viswanatha

Professor, International Centre for Material Science, New Chemistry Unit, JNCASR

Research Areas:

Electronic and Optical Properties, Nanomaterials, Quantum Materials, Semiconductor nanocrystals, nanoplasmonics and their heterostructures

Research Areas:

Solid State Chemistry, Materials Science, Luminescent Materials, Crystallography

Dr. C. Shivakumara

Principal Research Scientist, IISc, Bangalore



Dr. Kassa Belay Ibrahim

Assistant Professor, Ca' Foscari University of Venice, Italy

Research Areas:

Renewable Energy technology, Nano-structured materials, Energy Conversion, X-ray diffraction and crystallography

Research Areas:

Material Science, Anticounterfeit technology, Luminescence, Display Applications

Dr. Premakumar H. B.

Head, Department of Physics, MSRUAS



Hands-on training:

DAY 1

- **Nanomaterial Synthesis: Solution Combustion and Sonochemical Synthesis Techniques followed by Characterization using UV-Vis DRS spectroscopy, FTIR spectroscopy**

DAY 2

- **XRD Rietveld Refinement for Phase Determination and Photoluminescence studies**
- **Applications of nanophosphors in Anticounterfeiting Innovation**

MS Ramaiah University of Applied Science (MSRUAS) is a Private University aims to focus its programs on student centric higher education. Students can expect to experience an approach to academic, research, training, real life problem solving and entrepreneurship. The University, at present, offers undergraduate, postgraduate and doctoral programs in Engineering and Technology, Art and Design, Management and Commerce, Hospitality Management and Catering Technology, Pharmacy, Dental Sciences, Mathematical and Physical Sciences and Life, Allied Health Sciences, as well as programs through Ramaiah Medical College, Ramaiah College of Physiotherapy, Ramaiah Institute of Nursing Education & Research, School of Social Sciences, and the School of Law.

About the Department:

The Department of Physics was established under the Faculty of Mathematical and Physical Sciences in the year 2014 with an emphasis on courses and project work to equip undergraduate and postgraduate students with necessary skills to navigate the rapid changes in science and technology. The faculty members are well qualified and actively engaged in academic programmes and research.

The department has currently funded projects from DST-SERB amounting to over ₹1 crore. The department Offers B.Sc. (Hons.) in Physics and M.Sc. programmes in Physics with specialization in Applied Solid state Physics and Nuclear Physics & Technology. The department also offers Ph.D. programme in Physics.

We take pride in the achievements of our students, who consistently excel in national-level examinations such as JAM and JEST, securing commendable All India Rankings (AIR). Many of our alumni pursue higher education in esteemed universities and research institutes both nationally and internationally.

Our postgraduate students tackle advanced research problems as part of their dissertation work in the fourth semester and publish their findings in reputable peer-reviewed journals. This provides them with abundant opportunities to pursue careers in renowned universities and research institutes worldwide.

About the Materials Research Laboratory:

The Materials Research Laboratory (MRL), at the Department of Physics, was established in 2021 with the support of RUAS leadership and DST-SERB CRG project "Inorganic-organic Hybrid Materials for Anti-counterfeiting Applications" (sanction number CRG/2020/006446), headed by Dr. Premakumar H. B. the Principal Investigator. The MRL is equipped with a wide array of state-of-the-art advanced tools and material synthesis facilities. This includes a probe sonicator with various diameter titanium probes, muffle furnaces, and a high-temperature rotary tubular furnace. The muffle furnaces are capable of operating at temperatures up to 1000 °C and 1300 °C respectively. The high-temperature rotary tubular furnace can operate up to 1200 °C under an inert gas atmosphere. Additionally, the laboratory is equipped with a hot air oven, hydrothermal autoclaves, precise analytical weighing balances and pelletizers. Recently, with the support of RUAS seed money, we have expanded our capabilities by adding an advanced Photocatalytic Reactor to our repertoire.

At the MRL, we are dedicated to providing a supportive environment for scholars pursuing Ph.D., M.Sc., and B.Sc. programs, enabling them to carry out exceptional research in the diverse field of material science. To date, the lab has facilitated 8 B.Sc. Dissertation Projects and 7 M.Sc. Dissertation Project works. Our accomplishments include 28 publications in reputed high impact factor journals, the filing of 2 patents, delivery of 4 presentations at prestigious International Conferences, and reception of 2 accolades for best paper presentations at esteemed International Conferences.


Who can attend?

- Faculty members seeking to deepen their understanding and explore research opportunities in Material Science, particularly luminescence materials.
- PhD Research Scholars and postgraduate students from any academic institution interested in expanding their knowledge and gaining practical experience in luminescence materials.
- Individuals aiming to broaden their expertise in advanced characterization methods for materials analysis and research applications.
- Participants eager to connect with experts and peers in the field, fostering collaborations and networking opportunities for future endeavors.

Registration and contact details:

Scan the QR code provided to register using the Google form.





 Registration

CONTACT:

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Convenor



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Dr. M.R. Jayaram - Hon'ble Chancellor, MSRUAS

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Prof. Govind R Kadambi - Pro-Vice Chancellor, MSRUAS

Dr. J V Desai - Dean, Ramaiah Technology Campus, MSRUAS

Prof. H. Nagabhushana - Professor, CNR Rao Centre for Advanced Material Research, Tumkur University

Prof. Krishnamurthy Jayanna - Professor and Dean-Office of Research and Innovation, MSRUAS

Prof. T. Niranjana Prabhu - Associate Dean - Office of Research and Innovation, MSRUAS

Convenor

Dr. Premakumar H. B. - Head, Department of Physics, MSRUAS

Student Co-ordinator

Mr. Akshay Arjun - SRF, Department of Physics, MSRUAS

Participation Guidelines

- Registration is compulsory to attend the workshop
- The workshop is open to all interested individuals, with no registration fees for first 25 candidates only after which a nominal fee of ₹ 500 will be charged towards registration
- Last date for registration: 23-03-2024

