Objectives of the workshop:

- To provide a comprehensive overview of nanotetrapod structures, composition, morphology, and unique properties in the context of materials and devices for optoelectronic technologies.
- To demonstrate fabrication methods for producing hybrid nanotetrapod structures, such as chemical synthesis, assembly techniques, and surface functionalization.
- Discuss characterization tools and techniques to analyze the structural, morphological, optical, and electronic properties of hybrid nanotetrapod structures.
- Introduce theoretical models and simulation approaches for understanding the behavior of hybrid nanotetrapod structures, aiding the design and optimization of devices.
- To demonstrate / give hands-on experience utilizing hybrid nanotetrapod structures in optoelectronic devices, such as solar cells, sensors, OLEDs, LCDs and photodetectors.

Topics to be covered in the Workshop:

Lectures / Demonstrations / Hands-on training

- Advancements in the field of nanostructured materials for optoelectronic technology
- Synthesis methods of nanostructured materials to tune their optoelectronic properties
- Fundamentals of nanostructured materials, thin films and characterization techniques
- Fundamental principles of OLED, LCD and Photodetectors
- Modelling of nanostructured materials and devices
- Demonstration / Hands-on training on
  - Imaging of tetrapods using SEM and measurement of bandgap using UV-Vis-DRS Thin film deposition (Thermal evaporation / Spray / Spin coating methods) and characterization (UV/Vis - DRS, Resistivity by Four probe method, etc.).
  - Device fabrication (LCD & photodetectors) and characterization (I-V measurements, voltage and frequency response for LCDs).

Note: Experiments related to selected topics will be demonstrated and the participants will be given opportunity to perform the experiments in a team.

Resource Persons:

Prof. Yogendra Kumar Mishra, University of Southern Denmark is the key resource person for the workshop FMHFOT-2024. Faculty and scientists from Centrally Funded Research Institutes / Universities and NIT Warangal will deliver lectures and demonstrate/assist in fabrication of optoelectronic devices.

Registration is open to:

Faculty members / Research Scholars / Students of Institutions of higher education in Science, Engineering who teach / do research in the related areas of nanostructured optoelectronic materials and devices.

How to Apply:

Interested candidates can submit their application through the google form **(http://tinyurl.com/FMHFOT-2024) on or before 06-02-2024.** As the program is conducted in an offline workshop mode with hands-on sessions, the number of participants in the workshop is limited to 50. Selection will be done based on first come first serve basis, hence, the candidates are advised to apply early to avoid disappointment. **Selected applicants will be intimated only through E-mail** on or before **10-02-2024.**

SPARC
Scheme for Promotion of Academic and Research Collaboration

A One-week International Hands-on Workshop

On

Fabrication and Modelling of Hybrid-nanotetrapod structures for Future Optoelectronic Technologies

(FMHFOT-2024)

4th – 9th March, 2024

Sponsored by

Scheme for Promotion of Academic and Research Collaboration (SPARC), Ministry of Education, Govt. of India

Coordinators

Dr. K. Thangaraju Dr. D. Paul Joseph Dr. V. Jayalakshmi

(Dept. of Physics, National Institute of Technology, Warangal)

Key Resource Person

Prof. Yogendra Kumar Mishra

University of Southern Denmark, Denmark

Organized by

Department of Physics

National Institute of Technology, Warangal – 506 004,

Telangana State, India.

Registration Details:

There is ***NO Registration Fees*** to attend this workshop. It is free for the selected participants. The selected participants will also be provided with free breakfast, lunch and dinner during the six days of the workshop. Upon successful completion, the participants will be issued participation certificates.

Accommodation and Travel:

Limited accommodation for the shortlisted outstation participants will be provided upon request in the International student's hostel (for male participants) and institute visitors block on sharing basis upon payment only (as per the standard NIT-Warangal rates). Details of the accommodation tariff will be intimated to the concerned participants in response to their request. If accommodation is exhausted within the campus, the participants have to manage themselves outside.

No travel assistance will be provided, the selected participants have to arrange on their own.

Brief profile of the Department of Physics:

The Department of Physics is involved in teaching UG & PG students of Engineering and Science Programs. The department has highly qualified, motivated and experienced faculty, who guide Ph.D Scholars in several topics of current technological interests. The department offers a three year M.Sc (Tech) Engineering Physics program with specializations in Photonics, Electronics, & Instrumentation. The department is also offering integrated M.Sc (05 years) and integrated B.Sc B.Ed (04 years) courses. The department also received DST-FIST project for the development of the program. The department is actively engaged in research and having a number of sponsored R&D projects. The areas of research include Nanomaterials, Glasses and Biomaterials, Luminescent, Energy Harvesting and Magnetic materials, Bio-Polymers, Photonics, Electronics, Biomedical instrumentation, transparent conducting oxides, liquid crystals, Microfluidics, organic LEDs and solar cells. The department has liaison with reputed industries and R&D organizations like BEL, CSIO, ELOIRA, Honeywell etc. The alumni of the department are well placed in key positions in various multi-national companies and also in premier research institutes worldwide.

About NIT Warangal:

NIT-Warangal, formerly known as Regional Engineering College was established in 1959. Over the years it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 14 departments offering 8 undergraduate and 35 post-graduate programs besides doctoral programs. About 6000 students across the country and about 500 international students stay in the campus. It is a fully residential campus sprawling over 250 acres with excellent infrastructure in the form of state-of-the-art library, seminar halls, guest houses and research laboratories. The institute has demonstrated remarkable foresight in securing substantial high-quality research and consultancy projects during the last few years.

About Warangal:

Warangal is the burgeoning second largest city of the new state of Telangana. It is situated at a distance of 140 km from the state capital Hyderabad (Nearest Airport, connected through expressway). It is well connected by Rail (Kazipet Junction is two km away and Warangal Station is 12 km away) and by Road (NH 163). Warangal is renowned for its rich historical and cultural heritage. It was the seat of erstwhile Kakatiya dynasty. It is a seat of tourist attractions with a number of historical monuments like Thousand Pillars Temple, Warangal Fort, Bhadrakali Temple, Ramappa Temple (UNESCO recognized Heritage site) and Laknavaram lake located within a radius of 40 kms. Also, Ramappa and Yadadri temples are located about 75 km from Warangal.

For any queries regarding this workshop, please contact:

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