



## Faculty Development Program



**VIT**<sup>®</sup>  
Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

**Title :** Clean Energy and Green Hydrogen in Integrated Energy Systems: A Multidisciplinary Pathway to Net-Zero

**Date :** 2026-01-27 - 2026-01-31

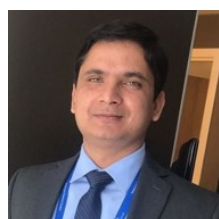
**Time :** 10:00 - 17:30

**Venue :** TT 134

### Event Outcome

- Participants will get exposure to the hydrogen research in the country's new-zero vision
- Participants understand the working principles of fuel cells and electrolyzers.
- Participants learn battery technologies for energy storage and grid support.
- Participants gain knowledge on carbon dioxide reduction in the context of the hydrogen economy.
- Participants analyze the integration of fuel cells, electrolyzers, and batteries for the electron mobility.

	<p><b>Resource Person 1 - Details</b>  <b>Name :</b> Laxmi Narayan Tripathi  <b>Designation :</b> Assistant Professor Sr. Grade 1, School of Advanced Sciences  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 2 - Details</b>  <b>Name :</b> Shanmugam R  <b>Designation :</b> Assistant Professor Sr. Grade 2, CO2 Research and Green Technologies Centre  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 3 - Details</b>  <b>Name :</b> Senthil Kumar A  <b>Designation :</b> Professor Higher Academic Grade, VIT Centre for Advanced Research Facility and Testing  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 4 - Details</b>  <b>Name :</b> Ramesh Kumar Singh  <b>Designation :</b> Assistant Professor Sr. Grade 2, CO2 Research and Green Technologies Centre  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 5 - Details</b>  <b>Name :</b> Kothandaraman Ramanujam  <b>Designation :</b> Professor, Department of Chemistry  <b>University/ Company :</b> IIT Madras, Chennai  <b>Address :</b> India, 600036.</p>
	<p><b>Resource Person 6 - Details</b>  <b>Name :</b> A Muthukrishnan  <b>Designation :</b> Associate Professor, School of Chemistry  <b>University/ Company :</b> Indian Institute of Science Education and Research Thiruvananthapuram, Vithura  <b>Address :</b> India, 695551.</p>
	<p><b>Resource Person 7 - Details</b>  <b>Name :</b> Manoj Neergat  <b>Designation :</b> Professor, Department of Energy Science and Engineering  <b>University/ Company :</b> IIT Bombay, Mumbai  <b>Address :</b> India, 400076.</p>
	<p><b>Resource Person 8 - Details</b>  <b>Name :</b> AKHILA KUMAR SAHU  <b>Designation :</b> Principal Scientist, Central Electrochemical Research Institute Madras Unit  <b>University/ Company :</b> Central Electrochemical Research Institute , Chennai  <b>Address :</b> India, 600113.</p>

**Resource Person 8 - Details****Name :** AKHILA KUMAR SAHU**Designation :** Principal Scientist, Central Electrochemical Research Institute Madras Unit**University/ Company :** Central Electrochemical Research Institute , Chennai**Address :** India, 600113.**Resource Person 9 - Details****Name :** Dr SANKARARAO MUTYALA**Designation :** Director, NANOSOL ENERGY Pvt Ltd**University/ Company :** NANOSOL, Hyderabad**Address :** India, 535215.**Resource Person 10 - Details****Name :** Tiju Thomas**Designation :** Professor, Department of Metallurgical and Materials Engineering**University/ Company :** IIT Madras, Chennai**Address :** India, 600036.**Resource Person 11 - Details****Name :** Mudit Dixit**Designation :** Senior Scientist, CSIR CLRI**University/ Company :** CSIR Central Leather Research Institute CLRI, Chennai**Address :** India, 600020.**Resource Person 12 - Details****Name :** Vanchiappan Aravindan**Designation :** Associate Professor, Department of Chemistry**University/ Company :** IISER Tirupati, Tirupati**Address :** India, 517507.**Resource Person 13 - Details****Name :** Raja Sellappan**Designation :** Professor Grade 2, Centre for Nanotechnology Research**University/ Company :** VIT, Vellore**Address :** India, 632014.**Resource Person 14 - Details****Name :** Hemaprabha E**Designation :** Assistant Professor, DEPARTMENT OF Metallurgical and Materials Engineering**University/ Company :** IIT Madras, Chennai**Address :** India, 600036.

## **Resource Person's Profile :**

### **1. Profile of Laxmi Narayan Tripathi**

Dr. Laxmi Narayan Tripathi is an assistant professor in the department of physics, School of advanced sciences (SAS), Vellore Institute of technology, Vellore, Tamil Nadu. His current research interest include : 1) Quantum materials (Two- dimensional materials) for energy applications (photovoltaics, H2 evolution) 2) Quantum materials for quantum communications devices 3) Quantum technology enhanced Ultrasensitive Biosensors

### **2. Profile of Shanmugam R**

Dr. Shanmugam Ramasamy currently works as Assistant Professor at Vellore Institute of Technology, Vellore. Dr. Shanmugam has rich research expertise in Spectroscopy, Inorganic Chemistry, and Physical Chemistry using DFT methods.

### **3. Profile of Senthil Kumar A**

Annamalai Senthil Kumar is a Professor, Dept. of Chemistry, School of Advanced Sciences, Vellore Institute of Technology University, Tamil Nadu, India. His research interests centered on interdisciplinary areas of nano and bio electrochemistry, redox reactions, electroanalytical, carbon nanomaterials, and carbon dioxide reduction. He is leading Nano and Bio electrochemical Research Laboratory at VIT Vellore.

### **4. Profile of Ramesh Kumar Singh**

Dr Ramesh Kumar Singh is currently an Assistant Professor at carbon dioxide Research and Green Technologies Centre at Vellore Institute of Technology, Vellore, India. He received an MSc PhD dual degree from the IIT Bombay, focusing on oxygen reduction reaction electrocatalyst development for proton exchange membrane fuel cell cathodes. Dr Singh research interests are in developing electrode materials and electrolytes for electrolyzers, fuel cells, and metal air batteries.

### **5. Profile of Kothandaraman Ramanujam**

Prof Kothandaraman Ramanujam is a Professor in the Department of Chemistry and also serves as the adjunct faculty of the National Centre for Catalysis Research. Dr Kothandaraman expertise as a fine electrochemist of the country is focusing and contributes to realize India centric solutions for the ever-growing need of energy storage and conversion.

### **6. Profile of A Muthukrishnan**

Dr A Muthukrishnan is an Associate Professor in the School of Chemistry, IISER-Thiruvananthapuram. He has rich expertise in Fuel cell electrocatalysis, platinum-free catalysts for the cathodic reduction of oxygen in polymer electrolyte membrane fuel cells.

### **7. Profile of Manoj Neergat**

Dr. Manoj Neergat is a Professor in the Department of Energy Science and Engineering at IIT Bombay. Dr Neergat did his Ph D from the IISc, Bangalore. He was a Postdoctoral Fellow at Technical University Munich, Germany and then at Los Alamos National Laboratory USA. He has rich experience in the fuel cell electrocatalysis, Direct Methanol Fuel Cells, and Polymer Electrolyte Membrane Fuel Cells, Flow Batteries, Impedance, and Dielectric spectroscopy.

### **8. Profile of AKHILA KUMAR SAHU**

Dr. Akhila Kumar Sahu is a Principal Scientist at CSIR CERCRI at Madras Unit. He has gathered significant expertise in the fuel cell and electrolyzer work. He works on fuel cell and electrolyzer electrode materials and all the way through their testing in the devices to assess their practical implication which align with India's net zero mission.

### **9. Profile of Dr SANKARARAO MUTYALA**

Dr Sankara Rao is a Ph D from CSIR-CERRI. He has sound knowledge in synthesis and assessment of various catalyst materials like CNTs, graphene, and its related materials for Low High temperature fuel cells, Green Hydrogen Generation through PEM Electrolysis, membrane electrode assembly and other energy applications. Currently, he is the director of NANOSOL ENERGY Pvt Ltd, Hyderabad, India.

### **10. Profile of Tiju Thomas**

Dr. Tiju Thomas is a Professor at IIT Madras in the Department of Metallurgical and Materials Engineering. His group focuses on developing compositionally complex oxides, oxynitrides and nitrides, and nanometals for achieving engineering ends. Problems concerning the functional properties of materials are of abiding interest to him. The group's work on on-demand hydrogen production is internationally well-known.

### **11. Profile of Mudit Dixit**

Dr. Mudit Dixit is a senior scientist at CSIR CLRI. His research guides experiments by providing atomic-level insights employing principles of Quantum Chemistry, Thermodynamics, Electrochemistry, and Catalysis. Specifically, we develop advanced battery materials and exploring alternative energy storage systems in energy storage. We are also interested in catalysis research, focusing on designing novel catalysts for various applications.

### **12. Profile of Vanchiappan Aravindan**

Dr Vanchiappan Aravindan is an Associate Professor in the Department of Chemistry at IISER Tirupati. We perform research activity in Materials Chemistry, specifically energy storage materials for batteries and supercapacitors. Our prime aspect of work is to realize the high energy and power capability in a single device by integrating rechargeable batteries and supercapacitors.

### **13. Profile of Raja Sellappan**

Dr RAJA SELLAPPAN is a Professor in CNR VIT Vellore. He works on Photoelectrochemical hydrogen production and related areas.

### **14. Profile of Hemaprabha E**

Dr. Hema has her bachelors degree in materials science and engineering from the College of Engineering Guindy, Anna University Chennai, and she is the gold medalist of her batch. Later, she joined for her Masters and Ph.D. from Indian Institute of Science Bangalore. She was then a postdoctoral fellow at the Technion Israel Institute of Technology. Her research focuses on synthesising, developing, and fabricating functional nanomaterials and devices.

This FDP is designed to help faculty gain a clear understanding of hydrogen based energy technologies that have emerged as the forefront of global decarbonization efforts. The program will introduce practical aspects of water electrolyzers for clean hydrogen production and fuel cells for sustainable power generation. It will also cover electrochemical carbon dioxide reduction as an emerging route for carbon utilization. Participants will explore how hydrogen systems connect with renewable energy, storage, and industrial applications. Aligned with India National Green Hydrogen Mission this FDP aims to strengthen interdisciplinary teaching and research related to the energy transition.

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**Coordinator's: Prof. RAMESH KUMAR SINGH 18925 - Assistant Professor Sr. Grade 2 - CO2**  
**Prof. SREETAMA GHOSH 20041 - Assistant Professor Sr. Grade 2 - CO2**