

# ADVANCED MATERIALS FOR SUSTAINABLE ENERGY AND STORAGE

## Overview

The advancements in Science and Technology have brought in a revolutionary change in the lifestyles of people all over the world and the per capita demand of energy is constantly on the rise. Alternative sources of energy and the mechanistic pathways of harnessing them are not in pace with the energy demand. Solar Energy seems to be the ultimate solution for this crisis but the methods and materials to improvise the efficiency of its tapping and harnessing are continuing to cause frustration. In order to ensure normal and healthy living for the present and future generations, focus is now on the exploration and administration of sustainable energy systems with the use of devised materials and methods of enhancing the efficiency of tapping solar and other unconventional energy sources. Serious attempts are being made to mine energy from wastes that have got the consumed energy sunk into them during the complex contemporary human activities. One of the best ways is catalytic chemical intervention on energy-rich industrial and domestic solid wastes and biomasses so as to produce hydrogen.

Knowledge about the solid state chemistry, thermochemistry and electrochemical redox properties of solid wastes and biomasses would provide not only gainful career opportunities for the young students but also enables them play their due role in energy production and management for sustainable development.

A short-term multi-disciplinary course, covering topics related to fabrication and application of novel materials effectively suitable for energy tapping and storage, is very useful and be a value-addition to the academic qualifications the target participants may already possess or to what they are presently studying. Course participants will learn these topics through lectures, discussion and hands-on experiments. Case studies and assignments will be shared to stimulate participants towards research pursuits in these very relevant areas of energy.

<b>Dates</b>	<b>May 23<sup>rd</sup> (Monday) - June 3<sup>rd</sup> (Friday), 2016</b>
<b>Modules</b>	<b>A:</b> Solid State Chemistry, Thermochemistry and Electrochemistry of Energy Systems: <b>Profs. KVR &amp; ARC</b> <b>B:</b> Solid Wastes and Biomass as Energy Systems: <b>Profs. KVR &amp; KLR</b> <b>C:</b> Advanced Materials for Energy Systems and Hydrogen Production: <b>Prof. KVR</b> <b>D:</b> Workshop on Fabrication and Fuel Cell Applications of Smart Materials: <b>Prof. KVR</b>
<b>Number</b>	<b>Limited to 40 Participants</b>
<b>You should attend if....</b>	<ul style="list-style-type: none"><li>▪ You are a student of BTech or MTech in Electrical, Mech, Civil, Chemical, Materials Engg,</li><li>▪ You are a student of MSc in Chemistry or MSc or MSc (Tech) Physics</li><li>▪ You are a PhD Scholar in Chemistry, Physics or in Electrical, Mech, Civil, Chemical, Materials Engg,</li><li>▪ You are young faculty at academic or technical institutions engaged in energy science and technology</li><li>▪ You are executive or engineer or technical officer from enterprises in energy and environment</li><li>▪ You are engineer or technical staff of municipal corporations</li><li>▪ You are interested in expanding your qualifications, expertise and knowledge</li></ul>
<b>Fees (Course Fee (Excluding Lodging and Boarding)</b>	<b>Participants from abroad : US \$200</b> <b>Industry/ Private Research Organizations: Rs. 8000</b> <b>Faculty of Academic Institutions: Rs. 4000</b> <b>Students (with award of Grades): Rs. 2000</b> <b>Students (without award of Grades): Rs. 1000</b>  The above fee includes all instructional materials, computer and laboratory usage charges, internet facility, library, etc. The participants will be provided with twin-sharing accommodation on payment basis in the Institute's Visitors' Block, subject to availability on first-come-first-served basis.

**KVR:** Ramanujachary V. Kandalam; **ARC:** A. Ramachandraiah; **KLR:** K. Laxma Reddy

# The Faculty

## Prof. Ramanujachary V Kandalam



**Prof. K.V. Ramanujachary** is a Senior Professor in the Department of Chemistry and Biochemistry at **Rowan University, New Jersey, USA**. His research interests encompass Advanced Materials for Hydrogen Production through Fuel Cell Technologies, Oxide Chemistry of Transition Metals, Chalcogenides, Conducting Polymers, Sensors, Heterogeneous Catalysis, etc among others. Prof. Chary has developed novel methods of fabrication of ceramic materials, inorganic oxides and other advanced functional nano materials. His methods of characterisation and interpretation include some of the most modern and highly sophisticated ones. He is a fellow of the American Chemical Society. He has published more than 200 papers in highly reputed journals and authored a couple of Wiley Published books. Being an excellent teacher and effective communicator, he is one of the most sought after academicians for invited and guest lectures at many Indian higher education institutes such as IITs, NITs, etc

## Prof. A. Ramachandraiah



**Prof. A. Ramachandraiah** is a Senior Professor in the Department of Chemistry at the NIT Warangal. His research interests are in Coordination Chemistry, Supramolecular Chemistry, Electrochemistry, Molecular Modeling, Chemical Education, etc. He has published more than 70 papers in national and international journals and authored many technical and popular science books. Prof. Ramachandraiah is a Fellow of AP Akademi of Sciences and Telangana Academy of Sciences. He is the Editor of the Telugu Children's Science Monthly, *Vidyarthi Chekumuki* for 25 years

## Prof. K. Laxma Reddy



**Prof. K. Laxma Reddy** is a Senior Professor in the Department of Chemistry at the NIT Warangal. His research interests are in Coordination Chemistry, Environmental Chemistry, Solid Waste Management, Chemical Education, etc. He has published more than 60 papers in national and international journals. Prof. Laxma Reddy is a Fellow of Telangana Academy of Sciences and is its Regional Coordinator (Warangal and Khammam). He is also the Coordinator of Vigyan Prasara-All India Radio Science Episodes. He is presently the State President of Jana Vignana Vedika (Telangana), a National Award winning voluntary science organisation.

## Course Coordinators:

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