CENTRE FOR ADVANCED STUDIES

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY

5-Days Online Workshop

on

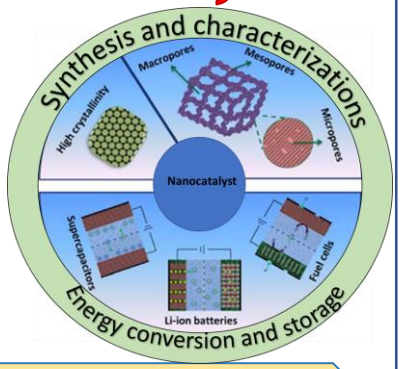
Nanomaterials for Energy Conversion and Storage Applications (NECSA-2022)

Highlights

- *Course Completion Certificate*
- *Projects, Assignments,*
- *Discussion*
- *Experts led Training*
- *20+ hours Online training*

Free Registration – Limited seats

Last Date of Registration: 25 March, 2022



Registration Link:
https://cas.res.in/workshopreg.html

Coordinators

Dr. Chandresh K. Rastogi
Assistant Professor, CAS

Dr. Gyanprakash
Assistant Professor, CAS

Duration : 5-days
Date: April 4-April 8, 2022
Timing: 11 am - 4 pm
Eligibility: *B. Tech (4th Year ME / CHE/MME/ CE/Environ Engg/ EE) and B.Sc/M.Sc chemistry/Physics)*
Mode: *Online*
Number of Seats: *30*

Contents

- ✓ *Basics of electrochemical catalysis*
- ✓ *Catalysis of electrochemical and Photo-electrochemical water splitting*
- ✓ *Electrode materials for Super-capacitor and Li-ion Batteries*
- ✓ *Nanomaterial preparation using Chemical synthesis methods (sol-gel, hydrothermal, and microwave assisted synthesis, etc)*
- ✓ *Characterization of nanomaterials (e.g., X-ray diffraction (XRD), scanning electron microscopy (SEM), and thermogravimetric analysis*

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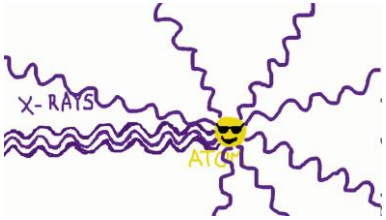
(NECSA-2022)

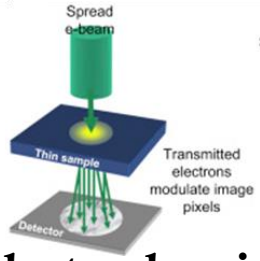
SCHEDULE

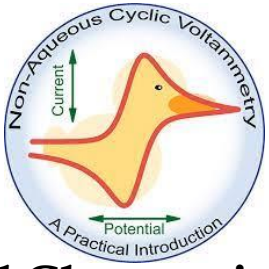
Day	Session	
	Forenoon (11:00 – 13:00)	**Afternoon (14:00 – 16:00)**
Day 1	**Fundamentals and applications of electrochemistry** *Basics of electrochemical catalysis, catalysis of hydrogen evolution reaction*	**Hands-on Session 1-** *Demonstration of Cyclic Voltammetry, experimental and theoretical aspects of Tafel analysis*
Day 2	**Electrocatalysis for Battery and Supercapacitor** *Catalysis of Li-ion battery, supercapacitor, and Fuel cell*	**Hands-on Session 2-** *Demonstration of electrochemical impedance spectroscopy (EIS)*
Day 3	**Photo-electrochemical (PEC) water splitting** *Catalysis of electrochemical and Photo-electrochemical (PEC) water splitting, catalyst characterization*	**Hands-on Session 3-** *Understanding hydrodynamic with the help of rotating disc electrode, Interpretation of experimental data*
Day 4	**Electrode preparation** *Nanomaterials preparation and electrode fabrication*	**Hands-on Session 4-** *Working in materials chemistry lab, demonstration of clean room, synthesis of nanomaterials*
Day 5	**Simulation and Experimental Analysis of electrocatalyst** *Density functional theory (DFT) based simulation, and characterization of electrode materials*	**Hands-on Session 5-** *DFT simulations, Materials characterizations*

Focus:

Synthesis







Physical and electrochemical Characterizations