PROGRAM SCHEDULE

Two days Virtual

National Conference on Energy Technologies (NCET-2022)

On 29th & 30th April, 2022

Organized by INAE Chennai Chapter along with IIT Madras and ARCI Chennai /Hyderabad

Main link/ Session A

https://iitmadras.webex.com/iitmadras/j.php?MTID=m218c52aca680ebadf2c8667fd5a33034

Session B link

https://iitmadras.webex.com/iitmadras/j.php?MTID=m7e4bcebdd68312b4c6ef5c5e9d6439e5

About the Conference

IIT Madras , ARCI Chennai / Hyderabad along with INAE Chennai Chapter is organizing a two day National Conference on Energy Technologies (NCET) at IIT Madras, during 29-30th April 2022. The Conference aims to bring together leading academic scientists, researchers, research scholars and industry experts to exchange and share their experiences and research results on all aspects of energy storage systems and technologies including battery, fuel cell, super capacitors, solar and wind energy.

Objectives

The initiative proposes to meet the following objectives.

- *Provide a common platform for sharing and exchanging ideas*
- *Deliberate on emerging national interest and global research trends*
- *Evolve mechanisms for research/industry collaborations*

Topics of Discussion

- *Energy Storage Technologies for EVs, stationary applications and strategic sectors*
- *Hydrogen and Fuel Cell technologies*
- *Material selection and design for Energy Storage and Conversion*
- *Process technologies for Recycling and Waste management*
- *Energy Demand Analysis in Smart Grids and other sectors*
- *Data Analytics for Renewable Energy Integration*
- *Artificial Intelligence Applications to Energy storage devices*

Program Schedule

Day 1: 29th April 2022 (Friday)

09.00 - 9.10 **Welcome address**

Dr. R. Gopalan, Regional Director, ARCI Chennai

Prof. R. Sarathi, IIT Madras

09.10 - 10.00 **Special Remarks**

Dr. Anil Kakodkar,
Former Chairman of Atomic Energy Commission;
Chairman of Rajiv Gandhi Science &Technology Commission;
Chairman of Governing Council, ARCI

Prof. V. Kamakoti,
Director, IIT Madras

Prof. Indranil Manna
President , INAE

Dr. G. Sundararajan,
Distinguished Emeritus Scientist, ARCI

Prof. S. Narayanan,
President, INAE Chennai Chapter

10.00 – 10.45 **Keynote Speaker**

Prof. Ashok Jhunjhunwala,
Institute Professor, IIT Madras;
President, IITM Research Park, IITM Incubation Cell and RTBI

"How soon Can India get to Net-Zero"

Invited Talks – Session I; Chair: Dr. Ramya K.		
Time	**Speaker**	**Title**
10.45-11.15	**Prof. Vijayamohanan Pillai** *Senior Professor, IISER Tirupati.*	*India's Imminent Electric Vehicle Revolution: Challenges and Promises*
11.15-11.45	**Dr. Rahul Walawalkar** *President & MD, IESA, India*	*Roadmap for making India a global hub for R&D and manufacturing of advanced energy storage technologies*
11.45-12.15	**Prof. Suddhasatwa Basu** *Director, CSIR-IMMT, Bhubaneswar ; Director, CSIR-CIMFR, Dhanbad*	*Hydrogen Production in 3D Printed Microfluidic Electrolyzer with an Asymmetric Electrolyte Configuration*
12.15-12.45	**Prof. Sreenivas Jayanti** *Professor, IIT Madras*	*Reversible Fuel Cells for Utility-scale Electrical Energy Storage Needs*
12.45-13.15	**Dr. R. Prakash** *Scientist-F, ARCI, Chennai*	*Lithium-Ion Batteries for emerging demands: progress and challenges*
13.15-14.00	Lunch Break	
Invited Talk – Session II; Chair: Prof. Kothandaraman		
14.00-14.30	**Dr. N. Kalaiselvi** *Director, CSIR-CECRI, Karaikudi*	*Electrochemical Power Sources of Today and Tomorrow*
14.30-15.00	**Dr. G A Pathanjali** *Managing Director, High Energy Battery, Trichy*	*High Energy Batteries For Defence Applications*
15.00-16.30	**Contributed Oral Presentations (Part I)**	
	Session A: Chair: Dr. Sahana	***Session B: Chair: Dr. Balaji***
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15.00	**NCET – 002** *Ultrafast and scalable microwave synthesis of in-situ carbon coated Na3V2(PO4) embedded in 3D-mesoporous carbon matrix as dual electrode for high performance sodium ion battery*	**NCET – 001** *Modified Digital Pulse Skipping Modulation Strategies for DC-DC Converters to Improve the Power Conversion Efficiency at Partially Loaded Conditions*

15.00-16.30	**Contributed Oral Presentations (Part I – Contd.)**	
	Session A: Chair: Dr. Sahana	***Session B: Chair: Dr. Balaji***
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15.10	**NCET – 003** *Recovery of metal ions from complex system of spent Lithium-ion battery cathode materials for sustainable energy storage application*	**NCET – 021** *Design and Analysis of Deadbeat control strategy for Multiinput DC-DC Converter with Hybrid Energy Storage System*
15.20	**NCET – 006** *Quantitative recovery of energy grade materials from NMCbased spent LIB cathodes*	**NCET – 004** *Structural , Microstructural and Optical properties of Co doped ZnO nanostructures*
15.30	**NCET – 008** *Recycled Spent Lithium-Ion Cathode Material for High-Performance Asymmetric Supercapacitor Applications*	**NCET – 005** *Development of Ethanol Biofuel-anode for the efficient Energy production system*
15.40	**NCET – 009** *Rational design of P2 and P3-type Mg doped Na2/3Mn2/3Ni1/3O2 cathodes via microwave assisted sol-gel route for high performance sodium-ion battery*	**NCET – 007** *Performance Improvement of Multi Source Interconnected Solar, Wind and Thermal System using Revolutionary Energy Balance Controller*
15.50	**NCET – 011** *Fabrication of lithium-ion pouch cells (LiNi 1/3 Mn 1/3 Co1/3 O2 - Graphite) for Electric Vehicle Applications.*	**NCET – 012** *Simulation and performance analysis of photovoltaic system using PVSYST software*
16.00	**NCET – 013** *Investigation of micron-sized lithium iron phosphate as cathode using aqueous binder for lithium-ion batteries*	**NCET – 014** *From small area to large area: Perovskite solar cells for targeted application*

15.00-16.30	**Contributed Oral Presentations (Part I – Contd.)**	
	Session A: Chair: Dr. Sahana	***Session B: Chair: Dr. Balaji***
16.10	**NCET – 015** *Effect of electrode thickness and porosity on the long cyclic stability of lithium-ion batteries*	**NCET – 018** *Investigations on conducting polymer-coated metallic bipolar plate in simulated proton exchange membrane fuel cell conditions*
16.20	**NCET – 016** *Structural, optical and electrochemical properties of LiNix Mny Coz O2 cathode material for Lithium-ion batteries*	

Day 2: 30th April 2022 (Saturday)

Invited Talks – Session III; Chair: Prof. Ranga Rao		
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9.30-10.00	**Dr. T. N. Rao** *Director (Additional Charge), ARCI*	*Indigenization of Technologies for Energy Storage Materials & Devices - towards Make in India*
10.00-10.30	**Prof. Sagar Mitra** *Professor, IIT Bombay*	*Strategies to overcome polysulphides dissolution and anode protection in Lithium sulphur battery*
10.30-11.00	**Dr. R. Ratheesh** *Director, C-MET, Hyderabad*	*Lithium-ion battery recycling: A circular economy approach*
11.00-11.30	**Dr. S. T. Aruna** *Senior Principal Scientist, NAL, Bangalore*	*An overview of the Solid Oxide Fuel Cell Activities at CSIR-NAL*
11.30-12.00	**Prof. Venkatasailanathan Ramadesigan** *Professor, IIT, Bombay*	*Use of Physics-Based Models for the Development of Next-Generation Batteries*
12.00-12.30	**Dr. Bijoy Kumar Das** *Scientist, ARCI, Chennai*	*Sodium-ion batteries: Towards a sustainable, low-cost energy storage technology*
12.30-14.00	**Lunch**	

14.00-15.30	**Contributed Oral Presentations (Part II)**	
	Session A: Chair: Dr. Bijoy Das	***Session B: Chair: Dr. Raman***
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14.00	**NCET – 017** *Synthesis and electrochemical properties of LiNi 1/3 Co 1/3 Mn 1/3 PO 4 for Li-ion hybrid capacitors*	**NCET – 022** *Bioelectricity Production From Up-flow Microbial Fuel Cell Using Distillery Wastewater Treatment*
14.10	**NCET – 019** *Polypyrrole-MoS2 Nanopetals as Efficient AnodeMaterial for Lead-based Hybrid Ultracapacitors*	**NCET – 025** *Estimation of SOC of Lithium-ion battery using Adaptive Neural Network Model for Electric Vehicle Application*
14.20	**NCET – 020** *Microsphere Hard carbon for High Reversible Capacity for Sodium-Ion Batteries: A Technology beyond Lithium-ion batteries*	**NCET – 026** *SoC Estimation of Li-Ion Battery using Deep Neural Network Model*
14.30	**NCET – 023** *Electrochemical Analysis of NaTi2(PO4)3 Cathode for Sodium Ion Capacitor*	**NCET – 027** *A Review of Parameter Estimation for the Single Particle Modeling (Spm) and Controller Modeling (Cm) of Lithium-ion Batteries Using PSO Technique*
14.40	**NCET – 024** *Facile Synthesis of NiO-Mn2O3@Reduced Graphene Oxide Ternary Composites as Electrode Material for Supercapacitor Application*	**NCET – 029** *CO2 conversion using swirl flow plasma reactor: an avenue for energy storage*
14.50	**NCET – 028** *Biomass derived hard carbon as anode for Sodium ion Batteries*	**NCET – 030** *Electrochemically nitrided stainless steel electrodes for oxygen evolution reaction in alkaline water electrolyzer*

Contributed Oral Presentations (Part II – Contd.)		
	Session A: Chair: Dr. Bijoy Das	***Session B: Chair: Dr. Raman***
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15.00	**NCET – 034** *Engineering of Gas diffusion layer for improved water management in PEMFC*	**NCET – 031** *The LCLC Resonant Converter for microgrid application*
15.10	**NCET – 035** *Sustainable utilization of Plastic Wastes (SPI Code-7) using Non-catalytic and Catalytic Fast Pyrolysis in the Prospects of Circular Economy*	**NCET – 032** *Degradation mechanism of Polymer Electrolyte Membrane in PEMFC and PEM Electrolyser*
15.20	**NCET – 036** *Synthesis and Characterization of High Performing Metal-doped Carbon Catalysts for Oxygen Reduction Reactions in Al-air Batteries*	**NCET – 033** *Patterning of platinum coating on flow field plates for PEM water electrolyzers for hydrogen production*
15.20 -15.30	**Best Presentation award ceremony** **Chief Guest** **Prof. Suddhasatwa Basu** *Director, CSIR-IMMT, Bhubaneswar ; Director, CSIR-CIMFR, Dhanbad*	
15.30 onwards	**Vote of Thanks** **Prof. Nandita DasGupta ,** *Professor, IIT Madras*	
Closure of Conference		

Organizing Committee

For any queries and clarifications, contact Prof. R. Sarathi/ Dr. R. Gopalan, ARCI
email : energies@ee.iitm.ac.in; Tel : 044 2257 4436 / 66632723

National Advisory board

Patron: Director of IIT Madras, Prof. Kamakoti Veezhinathan

Local organizing committee

- Dr. Bijoy Kumar Das
- Dr. Raman Vedarajan
- Dr. M. B. Sahana
- Dr. VVN Phanikumar
- Mr. Puppala Laxman Mani Kanta

National Advisory Committee

- Dr. S. Chandrasekhar, Secretary, DST, Govt of India
- Mr. Indu Shekhar Chaturvedi, Secretary, MNRE, Govt of India
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