

ICIITCEE-2023

*BNM Institute of Technology, Bengaluru*

27<sup>th</sup>-28<sup>th</sup> Jan 2023

\*\*\*\*\* Special Session Proposal \*\*\*\*\*

**TITLE OF THE SESSION**

**Advances and Future trends in Battery Management System for E-Mobility.**

**SESSION ORGANIZERS:**

**Dr. Shubha Rao K**, Associate Professor, Department of Electrical and Electronics Engineering, BNM Institute of Technology, Bengaluru.

**Dr. Venkatesha K**, Professor, Department of Electrical and Electronics Engineering, BNM Institute of Technology, Bengaluru

**OBJECTIVES OF THE SPECIAL SESSION:**

In recent years, the Electrification of transportation systems is gaining a lot of prominences worldwide to reduce greenhouse gas emissions thereby reducing dependence on fossil-fuels based vehicles. The power to run an Electric Vehicle (EV) comes from the energy stored in the battery which is considered the heart of the EV. However, the battery performance degrades due to several issues like high charge/discharge cycles, charge imbalance, overcharging and under-discharging, thermal runaway, Aging effect, pressure buildup inside the battery, etc. Hence, the battery management system has to be focused greatly to improve the lifetime of the battery and making it more efficient and safe for the user

The Goal of the Special session on Battery Management Techniques is to explore recent advances and future trends in battery management and charging technologies in Electric Vehicles that will enable achieving zero-carbon energy transition around the world. This special session intends to cover research work related to algorithmic and hardware aspects of Battery Management Systems (BMSs), and different types of battery charging circuits.

**TOPICS OF THE SPECIAL SESSION:**

Topics to be discussed in this special session include (but are not limited to) the following:

- State-of-art in Battery Management System for EVs.
- Artificial Intelligence and Machine learning algorithms in battery monitoring
- Advanced algorithms for Estimation and Monitoring of the state of charge (SOC), state of health (SOH), state of power (SOP), etc;
- Thermal management for batteries;
- Battery temperature measurement and control technologies

- Innovative sensing technologies to enhance battery safety;
- Improved cell and pack design for promoting the recycling and re-use of batteries;
- Applications of novel power electronics and switching strategies;
- Online/offline Battery diagnosis, prognostic, and health management
- Active and Passive balancing of battery Pack.
- Battery charging technologies
- Integration of renewable energy sources for battery charging in electric vehicle stations
- Next-generation energy storage technologies

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