

Special Session on

**“E-Mobility and Energy Storage towards Smart Electrification- Recent
Advancements, Challenges and Future Directions”**

Organized by

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Call for Papers

The concept of E-mobility is increasingly becoming popular with their demand rising continuously at a faster rate in electrified transportation. The nature of operation of electric vehicles on roads can be categorised in following ways; purely electric vehicles (EVs), hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). Power electronics converters play an important role in efficient conversion from DC-AC, DC-DC, AC-DC, and AC-AC. The smarter operation of converters provides a suitable interface between the renewable energy sources, load and the grid. Intermittent nature of renewables such as solar and wind makes it necessary to have energy storage as part of the smart electrification. Coordinated and smarter operation of e-mobility requires new concepts and research. To enhance the performance in terms of control, reliability and lifespan, many aspects need to be investigated. This special issue deals with the recent advances, open challenges, and future directions of e-mobility and its related aspects. The focus of this special session is to address the requirement of state of art research and recent technological development related to e-mobility integrated with energy storage and grid, challenges and future directions. We invite original and unpublished work not currently under review.

Topics of the Session:

General topics of interest include (but are not limited to):

- Power Electronics and its control for electric vehicle
- Novel converter topologies for EV applications
- High gain DC-DC converters for LV battery charger
- Control Framework: supervisory control and multi-charging port
- IoT enabled charging infrastructure and its control
- Monitoring/Control Security: battery SoC based decision making, accurate prediction and measurement
- Control and optimization of energy storage systems with power electronics interface
- Grid ancillary services from energy storage systems.
- Performance of Electric Vehicles with various control strategies
- Battery storage systems with bidirectional DC-DC/DC-AC converters
- On-board and off-board chargers
- Vehicle-to grid (V2G) and grid-vehicle (G2V) integration and its control.
- Solar operated EVs and its design
- Model development for energy storage systems
- Management strategy analysis, optimization, and control for energy storage systems.
- Energy storage systems in transportation electrification