Topical Collection

Transportation Electrification: Challenges and Opportunities

Message from the Collection Editors

Transportation electrification has economic, environmental, and equity benefits over conventional fossil-fuel-based transportation systems. Electric transportation, however, decreases greenhouse gas emissions; increases efficiency, acceleration, and overall performance; and reduces maintenance costs. Although this ever-emerging field has exhibited immense potential and exponential growth in academic research and industrial manufacturing, adopting mass electrification in transportation remains challenging, with inadequate vehicle count and charging infrastructure, as well as supply chain constraints. Nevertheless, advent but consistent support from state, federal, and international entities has started to clear constrictions in terms of policy and technological development.Furthermore, researchers and engineering manufacturers are pushing boundaries in technological advancements. Their efforts consider industry codes, standards amendments, and grid integration. Furthermore, interface technologies related to power and energy conversion, traction, propulsion, and actuation are necessary for all electrified vehicles.

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