



batteries



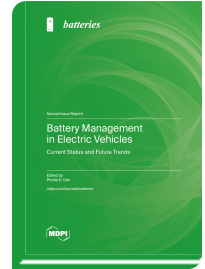
Special Issue Reprint

Battery Management in Electric Vehicles: Current Status and Future Trends

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Lithium-ion batteries are an indispensable component of the global transition to zero-carbon energy and are instrumental in achieving COP26's objective of attaining global net-zero emissions by the mid-century. However, their rapid expansion comes with significant challenges. The continuous demand for lithium-ion batteries in electric vehicles (EVs) is expected to raise global environmental and supply chain concerns, given that the critical materials required for their production are finite and predominantly mined in limited regions worldwide. Consequently, significant battery waste management will eventually become necessary. By implementing appropriate and enhanced battery management techniques in electric vehicles, the performance of batteries can be improved, their lifespan extended, secondary uses enabled, and the recycling and reuse of EV batteries promoted, thereby mitigating global environmental and supply chain concerns. Therefore, this reprint was crafted to update the scientific community on recent advancements and future trajectories in battery management for electric vehicles. The content of this reprint spans a spectrum of EV battery advancements, ranging from fundamental battery studies to the utilization of neural network modeling and machine learning to optimize battery performance, enhance efficiency, and ensure prolonged lifespan.



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