

## Special Issue

# Battery Aging and Circular Economy Strategies: Extending Lifespan and Reducing Environmental Impact

### Message from the Guest Editors

The rapid deployment of battery energy storage systems is essential for enabling global transition towards renewable and low-carbon energy sources. However, battery aging remains a key challenge affecting performance, lifespan and environmental impact. As batteries degrade over time, questions arise regarding their sustainable use, second-life potential and end-of-life management. This Special Issue aims to explore innovative strategies that address battery aging within the broader framework of the circular economy—extending battery life, reducing resource consumption and minimizing ecological footprints. This Special Issue will center on the intersection between battery aging and circular economy strategies, with a primary aim of exploring how aging mechanisms in battery technologies can be better understood, managed and integrated into sustainable energy system planning. As energy storage becomes indispensable in the global energy transition, the performance degradation and eventual obsolescence of batteries pose growing sustainability, economic and environmental challenges.

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