



## In Situ and Operando Characterizations for Energy Materials

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### Message from the Guest Editors

A better design of energy materials (for batteries, solar cells, fuel cells, supercapacitors, etc.) demands the in-depth understanding of failure mechanisms in their native working environment. Unlike ex situ characterizations, in situ and/or in-operando methods can provide comprehensive insights into complex phenomena, including dynamic phase transitions, air-sensitive interphases, metastable intermediates, and kinetically dependent heterogeneity in systems.

This Special Issue aims to solicit contributions to further develop in situ and operando characterization techniques to better understand energy materials. The topics of interest include, but are not limited to, the following: (1) the improvement of existing characterization methods, (2) the development of new characterization tools and data analysis methods, (3) new findings on energy materials using in situ/operando characterizations, and (4) the review of recent advances on topics listed above.





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## Message from the Editor-in-Chief

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