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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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Special Issue



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Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

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