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Application of Nanomaterials for Electrochemical Energy Conversion and Storage Devices

Guest Editor:

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Deadline for manuscript submissions:
closed (20 September 2022)

Message from the Guest Editor

Electrochemical energy conversion and storage devices show promise of overcoming climate change problems caused by the use of fossil fuels. However, issues related to electrode efficiency, electrocatalyst performance, electrolyte stability, and membrane costs still limit the widespread commercialization of batteries, capacitors, and fuel cells. The main performances, including those of specific energy and power, cycle life, and safety, are determined by the choice of materials for electrodes, electrocatalysts, and electrolyte, while nanomaterials play an important role, such as nanostructured electrodes, nano-electrocatalysts, as well additives in the electrolyte. Accordingly, it is essential to develop the existing and introduce new procedures for the preparation of nanomaterials in batteries, capacitors, and fuel cells. This is expected to have great impact on device performance and, consequently, their commercialization.

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call "nanomaterials". These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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