Special Issue

Advanced Nanomaterials for Electrochemical Energy and Environmental Applications

Message from the Guest Editors

This Special Issue focuses on the innovation and application of state-of-the-art nanomaterials aimed at tackling critical global issues in clean energy and environmental sustainability. As the need for better energy systems and water cleaning methods grows, electrochemically active nanomaterials have become crucial for new technologies. This issue seeks to compile original research and review articles that investigate the synthesis, characterisation, and efficacy of nanostructured materials—including metal oxides, carbon-based materials, quantum dots, and hybrid composites—for applications such as fuel cells, batteries, supercapacitors, electrochemical pollutant degradation, and sensing technologies. The focus is on comprehending the relationships among structure, properties, and performance, as well as charge transfer mechanisms and the influence of surface/interface engineering, doping, and defect modulation on enhancing electrochemical behaviour. Both experimental and theoretical investigations are encouraged, particularly those that suggest scalable, cost-effective, and eco-friendly methodologies.

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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