Special Issue

Application of Nanotechnology in Detection and Removal of Pollutants in Water System

Message from the Guest Editors

The application of nanotechnology in water treatment began in the 1990s, as researchers recognized the potential of nanomaterials (e.g., nanoparticles, nanotubes) to enhance pollutant detection and removal. Early breakthroughs focused on using magnetic nanoparticles and metal oxides for removing heavy metals and organic contaminants. By the 2000s, nanomaterial-based sensors enabled the sensitive detection of pollutants in water, while nanocomposites and photocatalysis advanced pollutant degradation. In recent years, nano-based filtration technologies have improved membrane efficiency and removed microplastics. Despite challenges related to scalability and toxicity, nanotechnology continues to offer innovative, sustainable solutions for global water pollution. This Special Issue will focus on the exploration of eco-friendly, scalable nanotechnologies that can be implemented in large-scale water treatment systems, addressing both the cost-effectiveness and environmental impacts of nanomaterial use.

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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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