Special Issue

Cellulose Nanocrystals for Biomimetics, Energy, and Flexible Electronics Applications

Message from the Guest Editor

Cellulose nanocrystals (CNCs) are nanoscale derivatives of cellulose, which is the most abundant natural polymer on Earth. CNCs, characterized by their high tensile strength, large surface area, biocompatibility, and renewability, have emerged as a sustainable alternative to petroleum-based materials. Early research focused on extraction methods, such as acid hydrolysis, to isolate crystalline regions from lignocellulosic biomass. The shift toward biomimetics and advanced applications began with the realization that CNCs' hierarchical structure and liquid crystalline behavior mimic those of natural systems, such as plant cell walls and spider silk. Over the past decade, advancements in surface modification and hybrid material design have expanded their utility in energy storage, flexible electronics, and bioinspired systems. This Special Issue aims to consolidate interdisciplinary research on CNCs, emphasizing their role in addressing global challenges through biomimetic design, sustainable energy solutions, and next-generation electronics. Submissions emphasizing scalability, environmental impact, and cross-disciplinary integration are particularly encouraged.

Guest Editor

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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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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