Special Issue

New Trend of Nanostructures for Next-Generation Energy Harvesting Systems

Message from the Guest Editors

Energy harvesting transforms ambient energy sources like light, heat, vibration, and mechanical motion into usable electrical energy, enabling self-powered operation of compact electronic devices. By harnessing mechanisms such as piezoelectric, thermoelectric, electromagnetic, triboelectric, and photovoltaic effects, combined with advances in nanogenerators and bio-hybrid systems, energy harvesting is critical for powering wireless sensors, medical wearables, and IoT nodes. This special issue highlights the latest developments in nanostructures for next-generation energy harvesting systems. We welcome original research and reviews on topics including piezoelectric and electromagnetic transducers, photovoltaic and wind energy harvesters, thermoelectric and thermoacoustic systems, triboelectric nanogenerators, wearable energy solutions, AI-enhanced energy harvesting, and energy harvesting for IoT applications. Contributions that advance energy conversion efficiency, system integration, and sustainable, battery-free technologies are especially encouraged.

Guest Editors

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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.

Editor-in-Chief

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