



Nanomaterial Catalysts for Clean Energy Conversion and Carbon Neutrality

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Deadline for manuscript
submissions:

closed (31 October 2023)

Message from the Guest Editors

As we all know, the consumption of fossil fuels will release CO₂ into the atmosphere, the resulting global warming is also becoming increasingly severe. One interesting approach to reducing CO₂ emissions consists of the capture, storage, and subsequent transformation of this molecule into high-value chemical products or fuels. Therefore, previous research efforts have mostly focused on developing nanostructural catalysts that are able to achieve the conversion of CO₂ into a single-target product. Apart from the nature of metals, heteroatom-doped carbon, and other materials, the configuration of nano-catalysts and reactors has been found to play an important role in the CO₂ reduction capability. This Special Issue focus on the topics but is not limited to the following:

- Mechanism studies of CO₂ reduction;
- Mechanism studies of the formation of major C1 and C2 products;
- Surface crystallography and product selectivity;
- Selectivity and rational design;
- Conversion of CO₂ to chemicals, materials, and fuels;
- Intermediate species during CO₂RR;
- Energetics of the CO₂ reduction reaction;
- CO₂ hydrogenation;
- Catalysis theories and experiments.





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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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