

Special Issue

Efficient Catalysts in Carbon Dioxide (CO₂) Conversion

Message from the Guest Editor

The urgent need to mitigate climate change and achieve carbon neutrality has driven significant interest in catalytic technologies for converting CO₂ into value-added chemicals, fuels, and materials. This Special Issue focuses on advancements in the design, synthesis, and application of high-performance catalysts for CO₂ conversion processes, including thermochemical, electrochemical, photocatalytic, and hybrid approaches. Contributions highlighting novel catalytic materials (e.g., single-atom catalysts, metal-organic frameworks, nanostructured composites), mechanistic insights into active sites and reaction pathways, and strategies to enhance catalytic activity, selectivity, and stability are encouraged. Additionally, studies addressing scalability, cost-effectiveness, and sustainability of catalyst synthesis will be prioritized. By bridging fundamental research and practical applications, this Issue aims to accelerate the development of efficient catalytic systems that enable the circular utilization of CO₂, contributing to renewable energy storage, sustainable chemical production, and global decarbonization efforts.

Guest Editor

Dr. Hao Wang

Faculty of Chemical Engineering, Kunming University of Science and Technology, Kunming 650500, China

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Catalysts
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
catalysts@mdpi.com

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