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Photocatalytic Materials: New Perspectives and Challenges

Guest Editors:

Prof. Dr. Kai Yu

College of Environmental Science and Engineering, Nankai University, Tianjin 300071, China

Dr. Yue Chang

Institute for Advanced Materials and Technology, University of Science and Technology Beijing, Beijing 100083, China

Prof. Dr. Minmin Han

National Engineering Research Center for Intelligent Electrical Vehicle Power System, College of Mechanical and Electrical Engineering, Qingdao University, Qingdao 266071, China

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Message from the Guest Editors

Dear Colleagues,

Photocatalysis is a green and sustainable technology that can directly convert renewable solar energy into chemical energy, holding the potential to effectively tackle the economic and environmental challenges associated with fossil fuels. By utilizing solar energy as a driving force, exciting photocatalysts generate photocarrier charges, triggering various reactions, including water splitting, carbon dioxide reduction, ammonia synthesis, biomass conversion, cancer treatment, self-cleaning, and pollutant degradation. Among these, photocatalysts play a crucial role in the conversion of light energy, directly impacting the thermodynamic trends and kinetic efficiency of catalysis. Various methods such as morphological engineering, heterojunction structures, bandgap modulation, element doping, and crystal facet control have proven effective in enhancing the catalytic performance of photocatalytic materials. However, the development of low-cost, highly active, and long-lasting photocatalytic materials remains a significant challenge. New mechanisms, processes, and novel discoveries involved in the photocatalytic reaction process continue to warrant widespread attention.



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Special Issue



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Editor-in-Chief

Prof. Dr. Alessandra Toncelli

Department of Physics, University
of Pisa, 56126 Pisa, Italy

Message from the Editor-in-Chief

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Contact Us

Crystals Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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