



## Photocatalytic Materials: New Perspectives and Challenges

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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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## Message from the Editor-in-Chief

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