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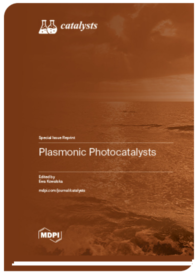
Special Issue Reprint

Plasmonic Photocatalysts



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Plasmonic properties of noble metals (NMs) have been used to activate wide-band-gap semiconductors. Although plasmonic properties were observed more than a century ago, scientifically explained, ca., 40 years ago, and have been commercially used in many fields, the examination of their application for photocatalysis is quite new. Despite the novelty of plasmonic photocatalysis, many studies have already been performed to improve photocatalytic activity and stability and to clarify the mechanism.

Although desirable photoabsorption properties of plasmonic photocatalysts can be easily achieved by the preparation of nanoparticles of different sizes and shapes, their photocatalytic activities under vis are still low, and thus must be improved for possible commercialization. Therefore, various studies have been performed to obtain stable and highly active materials. Moreover, the mechanism of plasmonic photocatalysis has not been clarified yet. It is thought that the mechanism depends directly on the morphology of plasmonic photocatalysts and reaction conditions.

Despite the novelty, plasmonic photocatalysts have already proven promising activity for environmental purification, solar energy conversion, and organic compound synthesis.
This Special Issue describes the significant and increasing role of plasmonic materials in catalysis.