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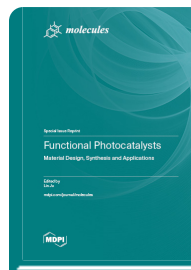
Special Issue Reprint

Functional Photocatalysts: Material Design, Synthesis and Applications

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Sustainable green and efficient technologies are recognized as one of the greatest challenges in chemical engineering. It has been reported that photocatalysis is one of the most promising eco-friendly technologies that can work under milder operating conditions than conventional processes when photon activation is performed using a cost-effective light source rather than thermal activation. Many studies have concentrated on some applications of heterogeneous photocatalysis, such as air and water cleaning, organic synthesis, and hydrogen production. However, the low efficiency of photocatalysts becomes the bottleneck for these applications. Moreover, the sustainability of these processes implies high productivity with reduced costs in the synthesis of efficient photocatalysts, requiring high selectivity and kinetic rates. As a result, extensive research has been conducted on a range of topics, including the design and synthesis of photocatalysts; photocatalytic-mechanism clarification; co-catalysts, single-atom catalysts, organic-inorganic hybrid materials, bio-inspired materials and heterojunctions; photoreactor design and modeling; and scale-up and commercialization for the development of photocatalytic reactions.



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