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Special Issue Reprint

Advances in Heterocatalysis by Nanomaterials

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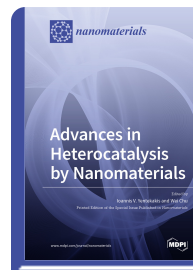
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Heterogeneous catalysis played, plays, and will continue to play, a major key role in industrial processes for large-scale synthesis of commodity chemicals of global importance, and in catalytic systems that possess a critical role in energy generation and environmental protection approaches. As a result of the ongoing progress in materials science, nanotechnology, and characterizations, great advances have been achieved in heterogeneous catalysis by nanomaterials. Efficient approaches and advanced methods for the design of nano-structured composite materials (up to atomic level), subject to specific nano-morphologies with enhanced metal-metal and metal-support interactions favorable for catalysis (that enable fine-tuning of the critical properties of the designed catalysts), provide optimized catalysts with outstanding performances in numerous eco-friendly and cost-effective applications. Accordingly, great progress has been achieved involving, for example, emissions control, waste treatment, photocatalytic, bio-refinery, CO₂ utilization, and fuel cells applications, as well as hydrocarbon processing for H₂, added-value chemicals, and liquid fuels production. The themed Special Issue has succeeded in collecting 10 high-quality contributions that cover recent research progress in the field for a variety of applications (e.g., environment, energy, added-value chemicals/organics synthesis, and bio-transformation) declaring the prospect and importance of nanomaterials in all the directions of heterogeneous catalysis.



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