Special Issue

Biomass Catalysis—Sustainable Developments of Energy

Message from the Guest Editors

The urgent need for sustainable energy solutions has placed biomass catalysis at the forefront of the global energy transition. As a renewable, abundant, and carbon-neutral resource, biomass holds immense promise for producing clean energy, chemicals, and materials. Key topics include:

- Catalyst Innovation: Cutting-edge designs in heterogeneous, homogeneous, and biocatalysts tailored for efficient and selective biomass conversion.
- Advanced Processes: Integrating technologies like pyrolysis, hydrothermal liquefaction, and gasification with catalytic systems for optimal energy and material recovery.
- Feedstock Diversification: Strategies for utilizing a broad spectrum of biomass sources, from lignocellulosic residues to algal biomass, with an emphasis on scalability and regional adaptability.
- Sustainable Practices: Green chemistry principles.
- Systematic Evaluation: Life-cycle assessments, environmental impact studies, and techno-economic analyses to ensure the viability of catalytic systems for industrial deployment.

- biomass conversion
- sustainable catalysis
- renewable energy
- green chemistry
- biofuels
- waste valorization
- circular economy

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