

Special Issue

Catalysis for Solid Waste Upcycling: Challenges and Opportunities

Message from the Guest Editors

The growing global production of solid waste, along with environmental concerns and the depletion of non-renewable resources, highlights the urgent need for sustainable waste management. Catalytic upcycling of solid waste into value-added products offers a promising path toward a circular economy. This approach focuses on converting waste streams—including plastics, biomass, electronic waste, and industrial byproducts—into renewable fuels, chemicals, and materials via advanced catalytic processes. Despite recent advances, key challenges remain in catalyst design, mechanistic understanding, and assessing scalability and economic viability. This Special Issue invites original research, reviews, and perspectives on:

- Novel catalysts (heterogeneous, homogeneous, enzymatic)
- Reaction mechanisms, kinetic modeling and catalytic strategies for mixed or complex waste
- Life-cycle and techno-economic assessments and Scalable and industrial applications

By promoting interdisciplinary collaboration, this issue seeks to drive innovation in sustainable waste-to-resource technologies. Authors unsure about topic suitability are encouraged to contact the .

Guest Editors

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