

Special Issue

Catalysts for Polymer Synthesis and Selective Polymer Pyrolysis: Toward Circular and Sustainable Materials

Message from the Guest Editors

This special issue, "Catalysts for Polymer Synthesis and Selective Polymer Pyrolysis: Toward Circular and Sustainable Materials," focuses on the critical role of catalysts in sustainable polymer development and environmental technologies. It highlights advanced catalytic systems for the polymerization of olefins, diolefins, and biodegradable monomers, including metallocene, Ziegler-Natta, and organometallic catalysts. The issue also emphasizes catalyst-assisted co-pyrolysis of biomass and plastics for producing H₂-rich syngas, bio-oils, and carbon-based materials, promoting waste valorization and energy recovery. Additionally, it explores polymer composites integrated with MOFs, COFs, and HOFs for CO₂ capture, energy storage, and environmental remediation. Submissions are welcome in the form of original research, reviews, and perspectives covering catalytic mechanisms, structure–activity relationships, and scalable solutions for decarbonization and the circular economy.

Guest Editors

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