Special Issue

Back to the Future: Advances in Porous and Nanoscale Catalysts for Biomass Conversion to Value-Added Products

Message from the Guest Editors

Balancing energy production with carbon emission reduction is a key challenge. Biomass, including second-generation biomass (BM), offers great potential for producing green fuels and petrochemical inputs. Through photosynthesis, BM can be sustainably generated in sufficient quantities to support modern societies. However, its complex composition, low density, and reactive functional groups create challenges, such as parallel reactions and undesirable byproducts during conversion. Advancing catalytic materials and processes is essential to overcoming these issues. Innovations in porous zeolites, active site design, and multifunctional catalysts can enhance yield and selectivity while reducing waste. Additionally, improved thermal and catalytic processes can upgrade bio-feedstock quality, increasing efficiency and value. This Special Issue welcomes research on catalytic materials and processes that enhance BM conversion into platform chemicals, fuels, and high-value products. Advancing these technologies will bridge the gap between biomass resources and sustainable chemical production, contributing to environmental sustainability and societal progress.

Guest Editors

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