

Special Issue

Direct Catalytic Conversion of Raw or Waste Biomass to Biofuels and Chemical Building Blocks

Message from the Guest Editors

The development of innovative approaches and resources for the sustainable production of chemicals and fuels from renewable materials is imperative, because of the depletion of fossil reserves and the environmental impact of fossil fuels. Biomass represents a sustainable feedstock for the chemical industry, offering also the opportunity for potentially CO₂-neutral products. Recently, an increasing interest has been devoted to the direct synthesis of platform molecules from biomass resources, adopting one-pot approaches or cascade ones. Very important platform chemicals and biofuels as furfural, furfuryl alcohol, HMF or its ethers, but also levulinic acid and levulinates and their hydrogenation products can be obtained directly from raw or waste biomass, by proper tuning of the catalytic systems and by optimization of the reaction conditions. Different catalytic reactions can be involved in these approaches, as hydrolysis, alcoholysis, hydrogenation or hydrogen transfer, etherification. The proper selection of the starting raw materials and the optimization of the involved reactions represent the toughest challenge in the field of catalysis for renewables.

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