International Journal of Chemical Engineering

Special Issue on

Catalytic Upgrading of Biorenewables to Value-Added Products

CALL FOR PAPERS

In recent decades, a great deal of attention has been paid to the exploration of alternative and sustainable resources to produce biofuels and valuable chemicals, with the aim of alleviating the reliance on depleting confined fossil resources, as well as emerging economic and environmental issues. In line with this, lignocellulosic biomass, a promising candidate, is being developed to be the most abundant and carbon-neutral feedstock for replacing petroleum-based commodities. To keep this value chain, special emphasis is laid upon designing appropriate chemocatalytic and catalytic materials with controllable functionalities or establishment of fitting catalytic processes.

Due to the inherent structural complexity of macromolecular biomass derivatives (e.g., high oxygen content and rich in active species), multistep degradation or conversion routes are typically involved to gain specific products. On the other hand, C-X (X = C, N, S) coupling is a key approach to synthesize organic compounds with increased molecular weight or chain length from small molecules such as CO_2. In both cases, the distribution of resulting products is highly dependent on the adopted catalytic systems and coupled auxiliaries like solvent type and heating mode.

This special issue intends to highlight current progress on the development and optimization of catalytic systems and processes for selective transformation of biorenewables to value-added products. Manuscripts submitted should present novel approaches (research article) and recent advances (review article) on the application of new and green technologies to upgrade biomass and waste resources. We particularly encourage submission of manuscripts focusing on the preparation of functional catalytic materials and the use of correlated auxiliaries to boost reaction rate and selectivity in the production process.

Potential topics include but are not limited to the following:

- Catalytic reaction engineering or chemical engineering (kinetics, reactor design, mass transfer effect, phase behavior, and surface adsorption-desorption) for biorefinery
- Intensification and integration of catalytic processes to facilitate biomass conversion
- Appropriate design of solid functional catalytic materials for biomass valorization
- Catalytic one-pot production of furanic compounds from bio-based sugars
- Efficient transformation of carbohydrates into oxygenated products such as organic acids, esters, and alcohols
- Hydrogen transfer process for catalytic valorization of biomass derivatives
- Biodiesel production from nonedible and waste oils
- Synthesis of valuable heteroatom-containing compounds from biomass derivatives
- Green solvents (supercritical fluids, water, ionic liquids, and their mixtures) enabled efficient upgrade of biomass to functional materials and valuable chemicals
- CO_2 valorization, sustainable approach to produce carbon-based organic compounds and to alleviate the greenhouse effect
- Chemical functionalization of biomass-derived cellulose and lignin

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/ijce/cuvp/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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