

Special Issue

Integrated Process Modelling and Life-Cycle Sustainability of Bio-Based Fuels

Message from the Guest Editors

The transition toward a low-carbon energy future demands innovative approaches to the production and utilization of bio-based fuels. As global efforts intensify to decarbonize transportation, industry, and power generation, integrated process modelling and life-cycle sustainability assessment have emerged as critical tools for evaluating the environmental, economic, and social impacts of biofuel technologies. This Special Issue highlights recent advances in integrating process engineering with life-cycle sustainability assessment for bio-based fuels. It also encompasses developments in experimental process modelling and validation, renewable energy integration, carbon capture and utilization, sustainable feedstock mobilization, and the application of digitalization and AI in process optimization. Contributions aim to inform policy, support investment decisions, and accelerate the deployment of bio-based fuels within a circular and climate-resilient economy.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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