Special Issue

Sustainable Biorefinery Platforms for Water Treatment, Nutrient Recovery, and the Biomass Waste Valorization

Message from the Guest Editors

Waste to energy and waste to materials have become part of the sustainable development goals (SDG) in a circular bioeconomy. In the biorefinery concept, waste water treatment for nutrient recovery and biomass valorization to produce energy and materials are some important aspects. Sustainable biorefineries link water treatment, nutrient circularity, and biomass valorization using biodiverse tech stacks—hydrothermal, biological, electrochemical, and thermochemical. The most advanced setups are modular and circular, yet research is ongoing to optimize integration, economics, and real-world viability. This Special Issue will focus on the latest research and development related to sustainable biorefinery platforms for water treatment and nutrient recovery by microalgae cultivation, waste biomass valorization to energy, fuels, and materials. The main topics include, but are not limited to, the following:

- Sustainable biorefinery concept for waste biomass valorization.
- Microalgae cultivation for nutrient recovery and water treatment.
- Residual and waste biomass valorization to energy and materials.
- Nutrient recovery strategies from waste water and residues.

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