Special Issue

Microalgae-Based Wastewater Treatment Processes and Biorefineries

Message from the Guest Editors

Conventional wastewater treatment plants (WTTP) typically rely on biological processes to remove nutrients and other contaminants from wastewaters due to their high efficiency and low cost compared to other treatments. These systems can achieve high removal efficiencies for biodegradable organic matter, inorganic nitrogen, and phosphorus compounds. However, the high energy requirement for the oxygenation of mixed liquors in activated sludge processes, and the emissions of large quantities of greenhouse (CO2, N2O) and toxic (NH3) gases, has led to an increasing interest in the use of microalgae-based wastewater treatment processes and biorefineries. The main advantage of integrating microalgae in WWTPs is the possibility of exploiting synergic consortia among microalgae and aerobic bacteria, thus leading to simultaneous nutrient removal, CO2 biofixation, and biomass production. The algal biomass can be valorised in different ways, including the production of biofuels (biogas, bio-biodiesel, bio-hydrogen, among others) and bio-based materials: i) bioplastics; ii) soil biofertilizers and biostimulants; iii) feed for animal consumption; iv) biochar and other bio-absorbent materials.

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Deadline for manuscript submissions

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