

Special Issue Reprint

Efficient Technology for the Pretreatment of Biomass

Edited By:

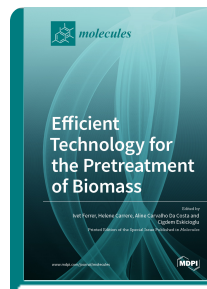
Helene Carrere

Aline Carvalho Da Costa

Cigdem Eskicioglu

Ivet Ferrer

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Biomass corresponds to organic matter of animal, vegetable, microbial, or algal origin. Biomass use as feedstock for biomaterial, chemicals, platform molecules, biofuel or bioenergy are the most reliable alternatives to limit fossil fuel consumption and to reduce greenhouse gas emissions. Resource recovery from different kinds of waste, such as sludge, food waste, municipal solid waste, and animal waste (manure and slaughterhouse waste), is particularly interesting from an environmental point of view, as it also reduces environmental pollution. In addition, lignocellulosic biomass and algae, which do not compete for food production, represent an important source of renewable resources (i.e., energy and other value-added products). However, a pretreatment step is generally required before biomass (bio)-conversion into valuable products in order to increase the process yield and/or productivity.

Pretreatments are applied upstream of various conversion processes of biomass into biofuel or biomaterial with valuable end products such as bioethanol, biohydrogen, biomethane, biomolecules or biomaterials. Pretreatments cover a wide range of processes that include mechanical, thermal, chemical and biological techniques. This step is recognized as crucial and cost intensive for the development of biorefineries. Thus, more research is necessary to identify the most effective and economical pretreatment options for different biomass sources.



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