Green Chemistry, Biofuels, and Biorefinery

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Abstract

In the current climate of several interrelated impending global crises, namely, climate change, chemicals, energy, and oil, the impact of green chemistry with respect to chemicals and biofuels generated from within a holistic concept of a biorefinery is discussed. Green chemistry provides unique opportunities for innovation via product substitution, new feedstock generation, catalysis in aqueous media, utilization of microwaves, and scope for alternative or natural solvents. The potential of utilizing waste as a new resource and the development of integrated facilities producing multiple products from biomass is discussed under the guise of biorefineries. Biofuels are discussed in depth, as they not only provide fuel (energy) but are also a source of feedstock chemicals. In the future, the commercial success of biofuels commensurate with consumer demand will depend on the availability of new green (bio)chemical technologies capable of converting waste biomass to fuel in a context of a biorefinery.

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