Photocatalytic processing of algae

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Recently, an enormous research effort has been devoted to develop alternative renewable biofuels as sustainable energy resources. Macroalgae are photosynthetic living creatures that grow in living waters and even in wastewater tanks therefore does not compete with terrestrial food crops. Algae are capable of producing high amount of biomass over a short period of time that can be processed into biofuel for sustainable future.
Decomposition of organic pollutants, eradicating Gram-positive human pathogens, as well as hydrogen generation from ethanol-water mixtures by suspended, surface immobilized or by cellulose composites of TiO_2 nanomaterials have been shown [1-5] and hold a great promise of this new family of photocatalysts materials for a number of novel applications. In this work, we report on the photocatalytic decomposition of brown and green algae (*Macrocystis pyrifera* and *Ulva rigida*, respectively) over various types of TiO_2 nanostructures to produce biofuels. The aim of the work is to convert complex carbohydrates into smaller molecules, thereby enabling further fermentation processes, by applying solar energy driven photocatalytic reactions.

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