

International Congress and Expo on **Biofuels & Bioenergy**

August 25-27, 2015 Valencia, Spain

Biodiesel production from microalgae grown on wastewater

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Concerns about energy security and independence, environmental pollution and climate changes are promoting the development of sustainable and renewable biofuels. The most popular alternative to fossil energy sources today is biodiesel from agricultural crops, mainly corn. However, this alternative may cause a reduction in the world's food sources. Microalgae are considered to be very promising for biofuel production, since they do not compete with plants for agricultural areas and can be cultivated in existing reservoirs of wastewater treatment stations. Microalgae exhibit high metabolic and biochemical flexibility, including lipid, carbohydrate and protein accumulation, which can be regulated by varying the cultivation conditions at high growth rates. A traditional scheme for biodiesel production includes two separate stages extraction of triglycerides of fatty acids from the biomass and a trans-esterification reaction for conversion of the triglycerides into monoesters which comprising biodiesel. The aim of the study is development of biodiesel production from microalgae grown in wastewater by in situ transesterification of triglycerides.

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