

OZOFLOTATION FOR MICROALGAE HARVESTING FROM WASTEWATER

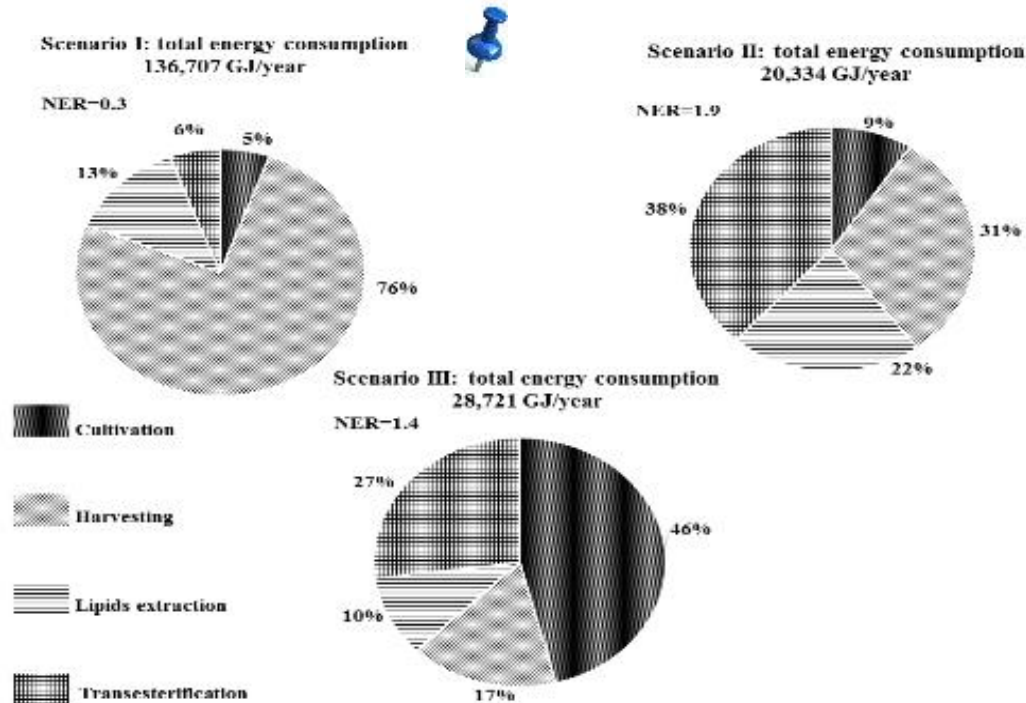
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OZOFLOTATION FOR MICROALGAE HARVESTING



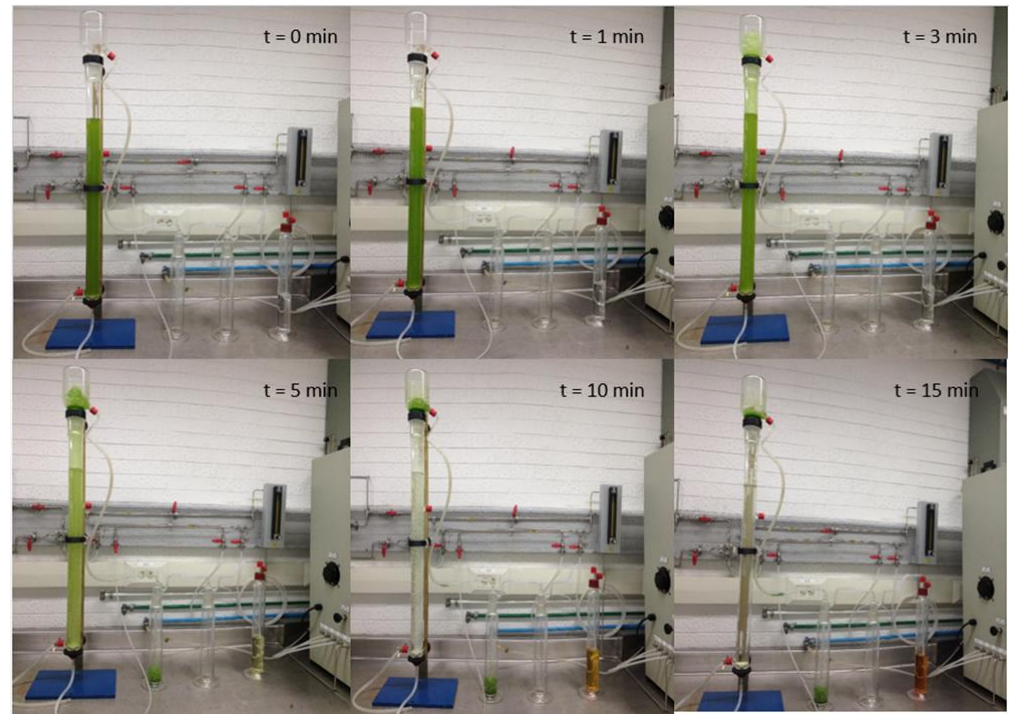
- ✓ Microalgae require several process stages to be transformed into biodiesel
- ✓ Wastewater is a favourable option for cultivation
- ✓ If wastewater is used for cultivation, harvesting and lipid extraction+transesterification are the most energy intensive

Aim

To decrease the processing time of transforming microalgae to biodiesel by evaluating rapid ways of microalgae harvesting and biomass to FAME conversion.

OZOFLOTATION OF *SCENEDESMUS* GROWN IN WASTEWATER

Ozone-flotation tests were carried out based on a design of experiments 33, composed of three variables and three levels per variable: O₃ concentration in the gas phase: 10, 20 and 30 mg/L; time ozone-flotation: 5, 10 and 15 min, and initial concentration of microalgal biomass: 300, 500 and 700 mg TSS/L).

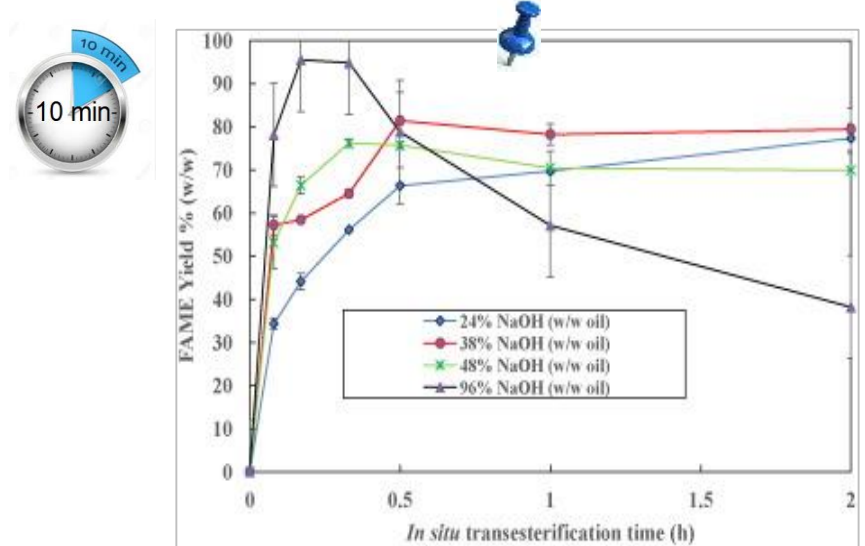
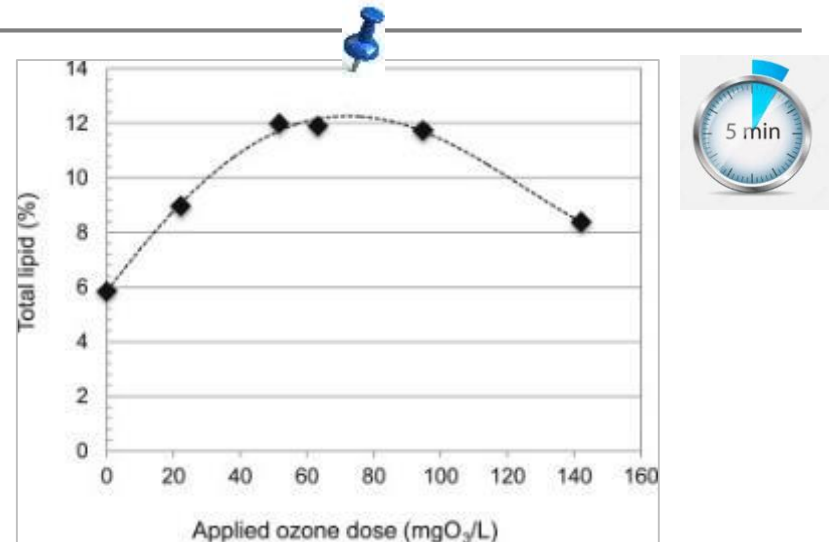


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RESULTS

Highlights:

- Ozoflotation was able to harvest 79.6% of microalgae in 5 min doubling the amount of extracted lipids.
- A high FAME yield of 96% was obtained after 10 min when using an alkaline catalyst despite high levels of FFA (6%) and water content up to 30%.
- A positive NER of 1.8 can be achieved when using algae species cultivated in wastewater and harvested by ozoflotation



PUBLICATIONS

Publications

- Kamoru A, Velasquez Orta S., Harvey A., 2016 Kinetics of fast alkali reactive extraction/ in situ transesterification of Chlorella vulgaris. Fuel Processing Technology:144, 212-219
- Velasquez-Orta SB, Garcia-Estrada R, Monje-Ramirez I, Harvey A, Orta Ledesma MT. 2014, Microalgae harvesting using ozoflotation: Effect on lipid and FAME recoveries. Biomass and Bioenergy:70, 356-363

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Novel pilot-scale system for wastewater/leachate treatment and carbon dioxide capture using a microalgae and ozoflotación. (ATZINTLI).



Inadequate sewage treatment and its negative impact upon health, the economy and environment poses a significant challenge for Mexico. This is recognized by government as evidenced by the Mexican Water Agenda 2030. Advances have been made but there is still much to achieve. It was projected that by 2012, Mexico would count with infrastructure to

<http://proyectos.iingen.unam.mx/atzintli/en-us/Pages/default.aspx>