Supatchalee Sophonthammaphat et al., J Fundam Renewable Energy Appl, 5:5
http://dx.doi.org/10.4172/2090-4541.S1.003

OMICS International
conferenceseries.com

International Congress and Expo on
Biofuels & Bioenergy
August 25-27, 2015 Valencia, Spain

Flocculation Chlorella vulgaris using chitosan

Supatchalee Sophonthammaphat and **Robert Edyvean**
The University of Sheffield, United Kingdom

The global demand for biofuel is expected to increase in the coming decades. Microalgae are a new source of biomass and biofuel components. Separating the algae from the growth media is a major problem in harvesting microalgae on a large scale. Numerous studies have been completed to explore various approaches to harvesting microalgae. Development of an efficient flocculation technology for microalgae may yield major cost and energy saving in large-scale production of biomass. Although chemical flocculants promise to be a low cost method, they can also result in contamination of the biomass. Bioflocculants, using natural polymers, have potential to be effective flocculants, combine with wastewater treatment and avoid a contamination of the biomass with chemicals. The objective of this study is to investigate the use of chitosan as a bioflocculant in the sedimentation process of a microalga (*Chlorella vulgaris*). Chitosan was tested at 0,25,50, 100, 150, 200, 250, 300, 350, 400 and 450 mg/L of algal suspension. Mixing time and speed (min-rpm) were varied: 1-120,5-120,5-150,5-200. The results indicate that the chitosan dosing increased algal sedimentation to a highest settlement rate is around 200 mg/L at 5-200 min-rpm (381 NTU). Then, the sedimentation rate tends to decrease when the levels of chitosan are 250 mg/L or above. The highest media solution clarify point (289 NTU) is 350 mg/L at 5-120 min-rpm and 450 mg/L at 1-120 rpm. pH changes around 7.8-8.1 when chitosan is added. Different time, rapid speeds, chitosan dosages, and pH provide variations of settlement rate. It is conclusion that the vary factors of these may affect algal aggregation and drowning.

Biography

Supatchalee Sophonthammaphat graduated in Environmental Science (B.Sc) from Silpakorn University in Thailand in 1996 and completed a bachelor degree in Law at Thammasat University in 2003 and an MSc in Environmental Management at the National Institute of Development Administration in 2006 where she attained the highest grade point averages in this field. At present, she is a Ph.D. student in Chemical and Biological Engineering, E-Futures Programme, The University of Sheffield, UK.

ssophonthammaphat1@sheffield.ac.uk

Notes: