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HARVESTING CHLORELLA SPP. FOR GREEN AEROSPACE FUELS PRODUCTION USING FLOCCULANTS

Abstract

Given the high cost of space launch and climate change, production of energy from renewable resources and development of CO2 sequestration methods have been recognized as high priorities. A number of methods are being investigated to reduce greenhouse gas (GHG) emissions, including reforestation, increased use of renewable fuels and CO2 sequestration. Algal CO2 utilization and biofuel production have attracted a great deal of this attention because algae are productive utilizers of CO2 and can produce a wide range of fuels (e.g., biodiesel, methane, hydrocarbon fuels) and value-added chemicals and materials (e.g. animal feeds, polymers). However, the production of the algal biomass as a promising source of raw material for aviation fuels production is a major problem. Because harvesting algal biomass generally involves one or more solid–liquid separation processes and can account for 20-30In this project, flocculants promote the formation of cell aggregate by creating bridges between the neutralized microalgae. Jar tests are conducted using a number of flocculants, including multivalent metal salts (alum, ferric chloride), cationic polymers (current tests are focused on Zetag 8000 series), and combinations of metal salts and anionic or nonionic polymers. Unamended jars are used as controls to examine bioflocculation. So far we found that Chlorella spp. harvested using commercial polymer required lower dosage than conventional coagulation based on ferric salts and alum. In addition, biomass concentration did not show a significant impact on flocculation performance within the concentration range tested.