



Biochar as catalyst for conversion of algal lipid into biodiesel

Vassiliki D. Tsavatopoulou (1), John Vakros (2), and Ioannis D. Manariotis (1)

(1) University of Patras, Department of Civil Engineering, 26504 Patras, Greece (idman@upatras.gr), (2) University of Patras, Department of Chemistry, 26504 Patras, Greece

Biochar is obtained from the incomplete combustion of carbon-rich biomass under oxygen-limited conditions. Various organic-rich wastes including wood chips, animal manure, and crop residues have been used for biochar production. Biochar has specific properties and can have significant applications in environmental remediation including soil amendment, water and wastewater treatment, and recently in biodiesel production. Biodiesel is usually produced through transesterification of lipid, which include the use of a catalyst. The aim of this work is to investigate the use of biochar as a heterogeneous catalyst for the conversion of algal lipid into biodiesel. Biochar were produced from malt spent rootlets (MSR), which was pyrolyzed at 850oC, under limited oxygen conditions, and was activated by sulphuric acid. The materials produced were systematically characterised for their surface characteristics such as BET surface area, pore and micropore volume, thermogravimetric analysis and point of zero charge. The preliminary results showed that the catalyst to lipid ratio affected the production of methyl esters and low ratios resulted in higher conversion.