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Catalytic Pyrolysis of microalgae (*Chlorella* sp.) Using Zeolite as Catalysts in a Fixed Bed Reactor

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The potential of catalytic pyrolysis of non-edible biomass derived from microalgae (*Chlorella* sp.) for bio-oil using commercial and synthesis nano-crystalline HZSM-5 catalyst in a fixed bed reactor was studied in this work. The *Chlorella* sp. biomass was used as the feedstock and the chemical and elemental components of the *Chlorella* sp. were identified by proximate and ultimate analysis. The maximum yield of bio-oil was optimized in order to find the optimum condition of the operation variables. In addition the obtained bio-oils were analyzed by elemental GC-MS and FTIR. The results revealed that at 500 degree C with 2.5 gram of nano HZSM-5 in fixed bed reactor for 90 minutes is the optimum conditions which provides the maximum yield of bio-oil around 33% by weight. The whole bio-oil derived from microalgae biomass is comprised of a various chemical compound of oxygenated compounds, various aromatics and their derivatives, long-chain alkanes, and nitrogenous compounds.

Authors: RUJIACHIRAKORN, Kotchapat; Dr CHETPATTANANONDH , Pakamas; RATANAWILAI, Sukritthira

Presenter: RATANAWILAI, Sukritthira

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