(M1-PS2-19004) Obtaining aromatic compounds with co-pyrolysis of microalgae and plastic wastes

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In the world, necessity of renewable energy sources increases day by day. Plastic wastes are in these renewable energy sources with high aromatic content. Nowadays biomass that so many researchers has been studying on forms another chemical compound source. For example Chen et al. (2017) compared that changing yields of pyrolysis products for three different algae species with temperature in fixed bed glass reactor. Aim of this research is determining effects of parameters that are temperature and feedstock ratio on the yield of liquid product in the co-pyrolysis of *Spirulina* which is a kind of microalgae and plastic wastes which include low density polyethylene (LDPE) and polystyrene (PS). Spirulina was characterized by elemental analysis. Co-pyrolysis experiments were conducted in semi-batch pyrolysis set up which involves glass equipments. Temperature was varied between 470 °C and 620 °C, heating rate of pyrolysis furnace was kept constant at around 10 °C/min, nitrogen flowrate and total feedstock amount were choosen 25 ml/min and 15 g respectively throughout all experiments. Firstly temperatures that were obtained maximum liquid yield for *Spirulina*, polystyrene and polystyrene feedstocks were found. Then by changing feedstock ratios which are 1:1, 1:2, 2:1 in mixture of two or three feedstock, it was reached the optimum temperature and optimum feedstock ratio for *Spirulina*/PS, *Spirulina*/LDPE and *Spirulina*/(PS/LDPE). Finally selectivity of aromatic components in the liquid products were determined with GC-MS analysis.

Keywords: Microalgae, LDPE, PS, co-pyrolysis, thermal degradation

References

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