Characterization and application of aluminum dross as catalyst in pyrolysis of waste cooking oil

ABSTRACT

Aluminium dross, a waste material produced by dissolution of aluminum scrap, was characterized physically and chemically by various analysis techniques for a potential to be used as catalyst. Using catalyst from waste materials reduced the cost for synthesizing of new catalyst. An efficient catalyst derived from industrial solid waste was modified by acid washing for using in a pyrolysis of waste cooking oil. The modification of aluminum dross resulted in increased surface area (from 0.96 to 68.24 m2/g), acidity (from 315 to 748 µmol/g) and thermal stability. Pyrolysis waste cooking oil was used to test the performance of aluminum dross as catalyst before and after modification. The product analysis showed a better result than the unmodified material based on increased yield of bio-oil and improved selectivity.

Keyword: Al dross; Thermal activation; Chemical activation; Pyrolysis waste cooking oil