

Abstract

In this work, *Jatropha curcas* de-oiled seed cake has been used. It is a by product (solid waste; de-oiled cake) of mechanical/reactive extraction of *Jatropha* oil from seeds for transesterification to produce bio-diesel. Hydrothermal Upgradation (HTU) of the cake into liquid, solid fuel and carbonaceous functional value-added chemicals has been performed and it is also a solution to solid management for the growing biodiesel industry. HTU of *Jatropha* cake, waste of a major energy crop (*Jatropha*) is studied to produce the high energy density biooils, biochar in a stirred batch reactor at 260-360°C for 15 min at thermal; aq. 1N and 0.5N K₂CO₃; aq. 1N and 0.5N KOH in detail, at the heating rate of 5°C/min. Also the HTU is investigated for the model component viz. cellulose and dealkaline lignin for comparison with the real biomass. The effect of temperature, heating rate, residence time were examined. The products are characterized for molecular structure by FTIR, XRD, CHN analysis, SEM, GC and GC-MS. The results demonstrate that the HTU process can provide an efficient route for high energy density fuel and value added chemicals for different purpose in near future.