Production of Bio-Oil using coconut shells

M.Shireesha¹, M.Surya², Ahad³, Prem Kumar .M⁴, Naresh Sureshkumar.L⁵, P. Kartheek Rao⁶

¹ Department of Chemical Engineering, Anurag Group of Institutions, Ghatkesar, Medchal (Dist.), Hyderabad, Telangana 500038 shireeshachem@cvsr.ac.in

Abstract

In recent times, the dependence on fossil fuels has grown to an alarming rate. These fossils fuels such as coal, petroleum, natural gas are all being depleted at a much faster rate than they are being generated. Apart from the depletion, burning of these fossil fuels releases large amounts of pollutants such as CO₂ which have been found to cause global climate change.

Research upon alternate fuel sources has always been important as our dependence cannot be completely cut off at once as our lives would come to a halt. Keeping this in light, my team has researched and developed bio-oil using coconut shells. We selected coconut shells as our raw material because utilisation of the bio-mass we produce helps us to reuse the waste that we produce and allows us to reuse it with the least utilization of man power while also giving us the best yield of bio oil.

The bio-oil was produced from coconut shells using a combination of both unit operations and unit processes as well. The ease of availability and efficient extraction of oil can be obtained from the coconut shells with large possible surface area at 450°C and at 1 atmosphere pressure yields oil of 50%/kg of feed.

The analysis of the produced bio-oil has also been done and the results obtained have been compared with conventional diesel.

References:

- 1. Appenzeller T. "The End of Cheap Oil". National Geographic. June 2004
- 2. Biomass Energy Center. Biomassenergycentre.org.uk
- 3. Sudalimuthu S., Senthilkumar P. and Sivakumar B., Coconut Industry in a nutshell, Market Survey
- 4. W.T.Tsai, M.K.Lee, Y.M.Chang "Fast pyrolysis of rice straw, sugarcane bagasse and coconut shell in an induction-heating reactor" Journal of analytical and applied pyrolysis Volume 76, Issues 1–2, June 2006, Pages 230-237