

## Bioenergy II: production of biodegradable lubricant from *Jatropha curcas* and trimethylolpropane

### ABSTRACT

*Jatropha* oil has good potential as the renewable energy as well as lubricant feedstock. Production of *Jatropha* oil based lubricant was performed via a two-step process; (i) the transesterification of *Jatropha* oil to produce *Jatropha* Methyl Ester (JME) and, (ii) transesterification of JME with trimethylolpropane (TMP) under the presence of alkaline based catalyst. Transesterification of *Jatropha* oil was carried out at 65°C for 1 hour by using 1-2% NaOH as catalyst. While, the transesterification of JME was carried out at 150°C with pressure kept at 10mbar. The conversion of JME to *jatropha* biolubricant was found to be more than 80%. However, to maintain forward reaction, the amount of JME was maintained at about 4:1 ratios to TMP. The basic properties of *jatropha* biolubricant are found comparable to other plant based biolubricant.

**Keyword:** Trimethylolpropane; *Jatropha curcas*; Biodegradable lubricant