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Authors: D. Kotaiah Naik, Md. Sakinul Islam, B. Satyavathi, Suresh K. Bhargava, Kalpit Shah, Rajarathinam Parthasarathy



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Experimental investigations on the effect of pyrolytic bio-oil during the liquefaction of Karanja Press Seed Cake

D. Kotaiah Naik ^{a,b}, Md. Sakinul Islam ^b, B. Satyavathi ^{a,*}, Suresh K. Bhargava ^c, Kalpit Shah ^b, Rajarathinam Parthasarathy ^{b*}

^a Chemical Engineering Division, CSIR–Indian Institute of Chemical Technology, Hyderabad 500007, India

^b Chemical and Environmental Engineering, School of Engineering, RMIT University, Victoria 3001, Australia

^c School of Science, RMIT University, Victoria 3001, Australia

* Corresponding Author 1: E-mail address: rajarathinam.parthasarathy@rmit.edu.au,

Tel.: +61 3 99252941; Fax: +61 3 99253746

* Corresponding Author 2: E-mail address: drsatyavathib@gmail.com (B. Satyavathi),

Tel.: +91 040 27191399; Fax: +91 040 27193626

Highlights

- The experimental investigations on the liquefaction of Karanja PSC were performed.
- The pyrolytic bio-oil (PBO) was used as a solvent for liquefaction.
- Effects of reaction temperature and PBO amount were studied. Also, comparison has been made against phenol and sulphuric acid.
- 99% of bio-crude yield was obtained at 240°C and Karanja PSC to PBO ratio 1:6.
- PBO was found to be less effective than phenol and sulphuric acid. Hence, the production of PBO at low cost might improve the economics.

Abstract

In this study, experimental investigations on the liquefaction of Karanja Press Seed Cake (PSC) were carried out in the presence of Pyrolytic Bio-oil (PBO) produced from the slow pyrolysis of the same feedstock. The effects of PBO amount and temperature were studied with an aim to achieve the highest conversion in liquefaction experiments. Also, comparison has been established between the use of PBO and conventional solvent and acid catalyst such as phenol and sulphuric acid, respectively for achieving the highest liquefaction conversion. A detailed chemical analysis and a comparison of PBO and liquefied product (bio-crude) have been carried out using FT-IR, and GC-MS techniques. The results showed

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