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Decanter cake as a feedstock for biodiesel production: A first report

Abstract

Decanter cake (DC), with an oil content of 11.5 ± 0.18 wt.%, was subjected to ultrasound-aided transesterification using boiler ash as a base catalyst, petroleum ether and hexane as co-solvents. Optimization work revealed that at MeOH:oil mass ratio of 6:1 and 2.3 wt.% catalyst (based on DC weight) with 1:2 co-solvents:DC mass ratio as the optimal reaction conditions. Both decanter cake and boiler ash, waste materials from oil palm mill, were successfully utilized to produce methyl ester (biodiesel) with highest conversion of 85.9 wt.% in a 1 h reaction period at 55 C.

Keywords

Biodiesel; Boiler ash; Decanter cake; In situ transesterification; Ultrasound