Production of methyl ester from soybean oil by using impregnated mixed domestic-waste catalysts

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Abstract:
Nowadays due to the depletion of non-renewable energy resources, production of green material from domestic wastes has played an important role. The waste of banana peel impregnated with calcium oxide (CaO) from eggshell had successfully been used as a low-cost catalyst to transesterify soybean oil to produce methyl ester. The catalytic actions from potassium and calcium oxide content in calcined banana peel (700 °C) and eggshell (900 °C) discover through FT-IR, XRD, and SEM. Production of methyl ester obtained at 82.29 wt. % with the optimal condition of 7 wt. % of catalyst amount, methanol/oil mass ratio, 9:1; and the reaction temperature, 65 °C within 2 h reaction time.

Keywords: Banana Peel; Calcium Oxide; Eggshell; Methyl Ester; Potassium
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