LIQUID FUEL PRODUCTION BY CO-PYROLYSIS OF SUGARCANE BAGASSE AND RUBBER SEED OIL

USING ZEOLITE-A SYNTHESIZED FROM RICE HUSK SILICA AND ALUMINUM METAL AS CATALYST

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**Abstract**

In this investigation, a mixture of sugarcane bagasse and rubber seed oil was subjected to pyrolysis for liquid fuel production. A series of pyrolysis experiments was conducted using zeolite-A synthesized from rice husk silica and aluminum metal through sol-gel route as catalyst, with the main objective to investigate the effect of calcination temperatures on the chemical composition of the liquid fuel obtained. The pyrolysis experiments were conducted at the temperature range of 250 to 500 oC, and the liquid fuels produced were analyzed using gas chromatography-mass spectrometry (GC-MS) technique for component identification. The experimental results show that optimum production of liquid took place at the temperature range of 350 to 480 oC, while at lower temperatures gaseous product emerged as the main product. Analysis of the product using GC-MS technique revealed the presence of a series of compounds in the liquids, and broadly belongs to hydrocarbon, alcohol, ester, ketone, aldehyde, and acid. The results display significant effect of the calcination temperatures on the composition of the liquid, the hydrocarbon contents in particular, in which the higher the calcination temperature, the lower the hydrocarbon content. The liquid fuel with the highest hydrocarbon content was obtained using the catalyst calcined at 800 oC.

*Keywords: Liquid fuel, pyrolysis, sugarcane bagasse, rubber seed oil, zeolite-A*