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## Emissions of jatropha oil biodiesel blend fuels during combustion using swirl burner with different swirl angle

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Experimental works on combustion of jatropha oil biodiesel blends of fuel with high swirling flow in swirl burner have been studied in various blends percentage. Jatropha oil biodiesel was produced using a two-step of transesterification process. Firstly, jatropha oil was esterified using methanol with 1% of  $H_2SO_4$  catalyst to diminish their free fatty acid level. Then, the oil ester was taken through the transesterification process with methanol and the catalyst of KOH. The paper focuses on the emissions of biodiesel blends fuel using jatropha oil biodiesel blends of fuel in lean through to rich air/fuel mixture combustion. The 4 different blends of jatropha oil biodiesel included B10, B15, B20 and B25 are evaluated in this swirl burner with 3 various angles of swirler. The results show that the B25 has good emissions even though it has a higher emission of  $NO_x$  than diesel fuel, while it emits as low as 42% of CO, 33% of SO<sub>2</sub> and 50% of UHC emissions. These are due to the different density and viscosity of the blends.

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