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Transesterification of Virgin and Waste Oil by TiO_2/KI as an Effective Heterogeneous Catalyst

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Abstract : TiO_2 impregnated KI was used as a heterogeneous catalyst in different concentrations (3wt%, 5wt% and 10wt%) for the transesterification of various virgin and waste cooking oils. Transesterification reaction parameters were varied to obtain the maximum yield of biodiesel. In the course of study it was observed that the maximum conversion of virgin/waste oil to the biodiesel was observed in the 10wt% amount of catalyst when tried with the various reaction timings. The biodiesel can be separated by the usual methods and the catalyst left over after separation can be reused for 5 times without effecting much on the conversions. The optimum reaction condition obtained or achieving maximum conversion >97% were – 6:1 methanol to oil molar ratio, 5 h of reaction time, 10 wt% catalyst amount (reusability 5 times) and 65 °C reaction tim.

Key words: Transesterification, Heterogeneous Catalyst, Biodiesel, Waste oi.

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