International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.9, No.07 pp 334-339, 2016

Optimization of Process Parameters to Enhance the Yield of Biodiesel by using Heterogeneous Catalyst

S.Sathish*, Apurva Shankar, Ankita Paul Choudhury

Department of Chemical Engineering, Sathyabama University, Chennai – 117, India

Abstract : Depletion of fossil fuel resources and raising demand for fuels are the major drives for the research on alternative fuels. Biodiesel produced from vegetable oils is one of renewable fuel which fulfils most of the requirements. Conventionally, biodiesel is produced by transesterification of vegetable oil with methanol in the presence of alkali catalyst. Homogeneous base catalyst processes suffer from several drawbacks and disadvantages. The problem can be overcome by the use of heterogeneous catalyst. Washing process is not required using heterogeneous catalyst during biodiesel production which deducts the use of wash water and also the catalyst can be regenerated and so has very low wastage. The glycerine obtained from heterogeneous catalyst is also of very high purity. So in this work the biodiesel produced by homogenous catalyst was compared with the heterogeneous catalyst such as TiO2, CaO and CaO nano particle impregnated on zeolite. The percentage conversion is similar for CaO nano partice and KOH homogeneous catalyst.

Keywords: Biodiesel, transesterification, Nanoparticle, Catalyst.

S.Sathish *et al* /International Journal of ChemTech Research, 2016,9(7),pp 334-339.

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