

# **Biodiesel from Sesame Oil: Base Catalyzed Transesterification**

**Kaniz Ferdous<sup>1\*</sup>, M. Rakib Uddin<sup>1</sup>, Maksudur R. Khan<sup>1,2</sup>, and M. A. Islam<sup>1</sup>**

<sup>1</sup> Department of Chemical Engineering and Polymer Science, ShahJalal University of Science and Technology, Sylhet-3114, Bangladesh.

<sup>2</sup> Faculty of Chemical and Natural Resources Engineering, University Malaysia Pahang, 26300 Gambang, Kuantan, Pahang, Malaysia.

\*Corresponding Author e-mail: engr\_kaniz@yahoo.com

## **Abstract**

A process for the production of methyl ester from Sesame oil containing 6.1% free fatty acid (FFA) for the use as a biodiesel was studied. These studies were carried out on transesterification reaction of Sesame oil with methanol to produce biodiesel. The reaction parameters such as Methanol/Oil molar ratio, catalyst concentration and reaction time were optimized for the production of sesame oil methyl ester (SOME). Conversion of triglyceride has been monitored from viscosity measurement and also by measuring produced glycerin concentration. Pseudo first order kinetic model has been proposed for the transesterification of Sesame oil to biodiesel and the data are fitted with the model to evaluate the kinetic parameters. Biodiesel properties such as cetane number, kinematic viscosity, flash point, pour point, cloud point are measured and compared with biodiesel and petrodiesel standard.

**Keywords:** *Biodiesel, Catalyst, Glycerin, Sesame oil, Transesterification.*

## **1 Introduction**

As the global debate over reducing the dependence on fossil fuel heats up, discussion of alternative fuels is more and more prevalent. One of the most commonly mentioned is biodiesel; a 100% agriculturally derived liquid fuel, often called B100. Most often used as fuel in diesel vehicle engines, biodiesel can also