

Biodiesel fuel synthesis using dolomite as a catalyst

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Some of the more recent methods of obtaining biodiesel fuel are based on heterogeneous catalysis, which has the advantage of multiple uses of a catalyst. Natural minerals, such as dolomite, opoca, and serpentinites, could be promising for use in biodiesel synthesis. The purpose of this study was to optimize the reaction conditions for biodiesel synthesis from sunflower oil and methanol using dolomite as a catalyst. Optimum reaction conditions for the transesterification of sunflower oil with methanol, using dolomite calcined at the temperature of 850°C, have been identified: the amount of the catalyst–6%, the molar ratio of methanol to oil–8:1, the reaction duration–5 hours and the reaction temperature–60°C. The amount of fatty acid methyl esters (FAME) of the sunflower oil obtained–97.6%. FAME is in conformity with the requirements of EN 14214 standard when 500 ppm of antioxidant Ionol and 500 ppm of depressant Infineum R-442 are added. The cold filter plugging point of FAME is reduced to 7°C by adding 500 ppm of Infineum R-442. This product can be used in summer in the countries that are placed in Class E, including Lithuania. It has been established that dolomite without regeneration can be used for the transesterification of sunflower oil by 2 times.

Biography

Egle Sendzikiene in 2005 has completed his PhD at the Aleksandras Stulginskis University (Lithuania). She is the Head research fellow and associate professor at Aleksandras Stulginskis University. She has published more than 50 papers in the scientific journals. She has also conducted a number of national and international projects. She has both scientific and practical knowledge of the analysis and usage of renewable energy, biodiesel fuel, and biogas.

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