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Ways to produce a non-polluting biofuel for diesel engines

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Diesel fuel is an important component of our today's life. There is a strong need for producing diesel fuels in larger amounts and also improving their operational and ecological characteristics. One of the alternative sources of diesel fuels is biodiesel fuel produced from vegetable oils, animal and vegetable fats.

The main components of vegetable oils are ethers of glycerin and fat acids. Vegetable oils have too big viscosity which prevents their direct use as a diesel fuel. One of the ways to improve these properties is to run a re-etherification of these oils. Thus glycerin is replaced with methyl or ethyl alcohol. The received products have considerably smaller molecular weight and are quite suitable for direct use as biofuel.

According to one option, for producing methyl ether it is necessary to add one mass part of methanol to nine mass parts of vegetable oil and also a catalyst. The components are mixed at temperature 50-80°C and normal atmospheric pressure. After settling and cooling the liquid is stratified into two fractions: glycerin (heavy) and methyl ether (light). Thus, the biodiesel fuel is the name given to ethers of the corresponding oils which are used as diesel fuel or an additive to it.

Russian climate is quite severe and considerably limits applicability of biofuels. In our research we developed the biofuel which is most suitable for Russian conditions. Synthesis of the ether was run by carrying out the reaction of etherification of triglycerides of vegetable oil with aliphatic alcohol according to our method.

Biography

Nataliya Kondrasheva has completed her PhD studies at the Ufa State Petroleum Technological University (Russia) in 1998 and become a professor at the university in 2001. She has published more than 100 scientific works in the field of oil refining. Now she is a professor at the National Mineral Resources University, Saint-Petersburg, Russia.

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