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ORAL PRESENTATIONS

Sediment Electro-Oxidation After Biodiesel Production

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Abstract

The EU's energy policy is to increase the energy of renewable sources to 15% by 2020 with the production of biodiesel being ~ 7% of the total energy produced. In the field of transport energy supply the EU policy is to support the reduction of polluting gases emissions [1].

It should be taken into account that biofuel is 1.5 times cheaper than gasoline and when biofuel is burned, just as much carbon dioxide (CO_2) is released into the atmosphere as absorbed by its plants which are its raw materials.

While working with various physicochemical methods (chromatographic, X-ray (DRON-2), IR spectroscopy (Specord), electrochemical (Sistem-500)), the electrochemical oxidation of sediment formed after biodiesel production was investigated [2,3].

Electro-oxidation was performed in an alkaline medium (7M KOH), on Raney nickel (Ni – Re) based catalysts modified with metal additives, prepared by various methods at different sediment concentrations and different temperatures [4].

The obtained results showed that sediments are a complex mixture of methyl and ethyl esters (C-16:0), methyl ester (C-22:0), monoglycerides, ethyl ester (C-18:0) and glycerol (85-95%). Electro-oxidation in an electrochemical reactor showed the ability to remove current densities of –10–20 mA/cm^2 and obtain products that can be used in householding: 1.3 dihydroxypropane (dioxyacetone); 2-oxo, 3-hydroxypropanoic acid (hydroxygravic acid); 2-oxopropanedioic acid (mesoxalic acid) - a component of lotions, emulsifiers, tanning intensifying creams; catalyst of esters synthesis.

Keywords: biodiesel, electro-oxidation, catalysts.

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