Extended Abstract

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The International Debate on Investigation of the Dispersion of Synthesized Mn- And Co-Containing Nanocatalysts in Oil Concentrate

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The high electrophilicity of the surface of fullerenes, carbon nanotubes and nanofibers is explained by the presence of weak π-bonds on their surface, which are formed by the free electrons present on the surface of the nanostructure. During long storage, these substances agglomerate due to the breaking of weak π-bonds, which creates problems in their use in various catalytic medium. Therefore, it becomes necessary to deagglomerate these substances before using them in chemical reactions as a catalyst. A ultrasonic cavitation (UT) effect can be used to deagglomerate carbon nanostructures. Under ultrasonic testing, the formation of cavitation vibrations and collapsing cavitation bubbles begins to occur, which contribute to the dispersion of particles, that is, the destruction of the agglomerated bonds of carbon nanoparticles in the oil concentrate. Mn and Co-containing catalysts (MnOx / C, CoOx / C) were synthesized from the salt of natural petroleum acids (NPA), with their further processing on the CVD-753 unit according to the procedure /1,2/. The elemental, phase compositions of the synthesized nanocatalysts were studied by the methods of elemental and X-ray analyzes, the results of which indicate the presence of oxygen in the catalyst, due to the formation of metal oxides. However, the data also suggests that the available oxygen in the system is not sufficient for oxidation, for example, of all manganese in MnO (55: 16> 17.5: 7.25), and manganese not bound to oxides is likely to stabilize as carbide. From the histograms of dynamic light scattering of samples, it follows that the catalyst studied does not dissolve in the reaction medium, and the catalytic system consists of a dispersed medium with catalyst particles, the “hydrodynamic diameter” of which is in the range from 0.5 to 1.3 μm. In the control sample of the composition, the distribution of particles is in the range of 850-1250 nm, and after the ultrasonic impact test, the particles are displaced from 100 to 1000 nm, which generally characterizes the ability of the ultrasonic inspection to activate the dispersion of agglomerates in a liquid medium.

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Aliyeva Aygun Zabit, PhD on chemistry. I work in Institute of Petrochemical Processes of National Academy of Sciences of Azerbaijan, (Baku).. I have 17 years of experience in the field of research on the oxidation of petroleum hydrocarbons in the presence of metal-containing carbon nanostructures (fullerenes, nanofibers and nanotubes), as well as synthesized metal-modified nanocatalysts based on oil acid. I was born and live in the city of Baku (Azerbaijan), I was invited to various conferences (Nano-2014(Moscow), Termam-2017(Germany,Rostock), 2016-Makedonia, 2015-Bulgary.). I am the winner of grants of the Republican Foundation for the Development of Science under the President of the Republic of Azerbaijan.

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