

PREPARATION OF CATALYTIC ADDITIVES NiO/SiO₂ AND Fe₂O₃/SiO₂ SEPARATELY DEPOSITED ON THE FERROSPHERE

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High content of heteroatomic high-molecular components (resins, asphaltenes) in heavy petroleum residues make it difficult to process them at existing refineries by traditional methods. Heteroatomic compounds adversely affect the activity of catalysts, the quality of marketable products, the state of the environment [1].

The purpose of our work is to study the processing of a mixture of tar and primary coal resin in the presence of synthesized nanocatalytic additives NiO/SiO₂ and Fe₂O₃/SiO₂ separately deposited on the ferrosphere. Ferrospheres were obtained from energy ashes, which are obtained by burning Karaganda coals at TPP-3.

The ferrosphere was used as a carrier for the catalytic addition of NiO/SiO₂ and Fe₂O₃/SiO₂. Catalytic additives applied to the ferrosphere were prepared by the "wet" method by impregnation. The catalytic addition of Fe₂O₃/SiO₂ was applied to the ferrosphere by mixing the ferrosphere with 20% solutions of ferric chloride salts and sodium silicate, followed by heating the mixture to 70-800°C for 2 hours. The resulting suspension of the starting compounds was then dried at a temperature of 100-1050 °C. The dry mass was calcined at 500-5500C for 60 minutes and then formed into a tablet. By this method, a second NiO/SiO₂ catalyst additive applied to the ferrosphere was similarly prepared. The ferrosphere was mixed with 20% solutions of nickel sulfate and sodium silicate salts.

Thus, we determined the average sizes of nickel (213,9 nm) and iron (1064nm). The phase composition of nanocatalytic additives NiO/SiO₂ and Fe₂O₃/SiO₂

References:

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