

Generation of Hydrocarbons by Hydrothermal Transformation of Organic Matter of Domanik Rocks

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Abstract

© 2016, Springer Science+Business Media New York. The distinctive properties of products of hydrothermal transformations of organic matter of bituminous rocks from Upper Devonian Domanik carbonate-argillaceous deposits of the Romashkino field, which were formed due to generation of bituminous components present in the rock in free state as well as of hydrocarbons and high-molecular heteroatomic compounds in the insoluble kerogen degradation process, are determined. It is shown that, among the n-alkanes, homologs with even number of carbon atoms dominate in the kerogen degradation products and that the asphaltenes contain two solid disperse phases differing in aromaticity, heteroatom, microelement and vanadium porphyrin complex contents, free radical concentration, and solubility in organic solvents. The sequence of leaching out of hydrocarbons, heteroatomic compounds, resins, and asphaltenes from the rock by vapor-gas mixture is studied. The migration and adsorption capacity of n-alkanes with even and odd numbers of carbon atoms is shown to be diverse. Changes in the microstructure of Domanik rocks upon hydrothermal transformations are studied.

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Keywords

carbonate-argillaceous rock, Domanik rock, heavy crude oil, hydrothermal transformations, kerogen, organic matter