

New data on the composition of organic matter of deep-seated rocks of Bashkortostan by NMR in a low magnetic field

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Abstract

© 2020 IOP Publishing Ltd. All rights reserved. The study of the organic matter of Riphean-Vendian deposits, the features of its distribution are the subject of research by many authors. The problem of hydrocarbon of these deposits remains relevant. We have conducted studies of deep-seated rocks of the Lower Riphean of the kaltasinskaya suite of the Eastern-Askinskaya area, with an increased content of organic matter in individual intervals. In addition to standard research methods, the method of nuclear magnetic relaxation in a low magnetic field was used. This method allows determining the phase state of organic matter in the original rock without any impact and after isothermal heating of the rock at 350°C. The free induction signal and the type of solid-phase signal, which corresponds to the waveform for the asphaltene component of the oil, were analyzed. The predominant part of the liquid-phase signal - about 35%, is characterized by a transverse relaxation time of 540 1/4s, corresponding to the resinous component of organic matter. The quantitative ratio of asphaltenes before and after heat treatment was also analyzed. A significant decrease in its amount was recorded. During thermal exposure, more than 55% of light, more mobile hydrocarbon molecules are formed in the liquid-phase part of organic matter.

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