

The application of gamma-spectrometry with a germanium detector for oil and ore geology.

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The use of the gamma spectroscopy method for measuring the value of the indicator of the ratio of the activities of uranium and thorium $A(U) / A(Th)$ makes it possible to estimate quantitatively the manifestations of various geological processes from the accumulation of thorium and uranium in the ore content to the formation of reservoirs favorable for the accumulation of hydrocarbons, and also to determine the position of the wells relative to the supply faults.

We present the results of research on the example of the Timan-Pechora oil and gas province.

The method is based on measurements of the ratio of the intensities of gamma lines 351.9 keV (for uranium) and 238.6 keV (for thorium) in the decay of daughter nuclides ^{214}Pb and ^{212}Pb . Based on the values of the experimental indicator $A(U) / A(Th)$, a comparative analysis of rocks, oils and formation waters is possible. also established by an independent geochemical method.

Another methodological approach used in this work consists in recalculating the values of the activities of uranium and thorium into values generally accepted for geochemical studies - into weight indicators (ppm) of the content of uranium and thorium in the rock.

Analysis of the calculated values of the U and Th contents in conjunction with the $A(U) / A(Th)$ values makes it possible to evaluate in quantitative characteristics the manifestations of various geological processes from the accumulation of thorium and uranium in the ore content.

1. I R. Makarova, at all. Georesources, №1. –pp. 17 –29. (2021).

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