

EPR study of hard coals reached in Kuzbass

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Abstract

The metamorphism of coals is a process of simplifying a multicomponent structure, accompanied by a whole series of physico-chemical transformations in which the stages of evolutionary changes alternate with qualitative transformations of the chemical composition and restructuring of the structure of the hydrocarbon substance. Each qualitatively new state of the coal substance will differ in paramagnetic properties, and, consequently, in the value of the g-factor, whose numerical value corresponds to the degree of its carbonization.

The article is devoted to the investigation of the paramagnetic properties of Kuzbass hard coals of an average degree of metamorphism and the influence of the mineral component on the EPR spectrum and their paramagnetic characteristics. Study of changes in the paramagnetic characteristics of coals of an average degree of metamorphism associated with the growth of the stage of coalification and the processes of structural transformations that are taking place at the same time.

In the paper, the authors obtained data on the calorific value of coals, the ash content, moisture content, and paramagnetic features of the investigated coals. EPR spectroscopy used to study the paramagnetic properties of coals of various grades mined in the Kuzbass. A comparison made comparison between coals of various grades within the limits of the average degree of metamorphism. The dependence of these properties on the degree of coal metamorphism is established. The results obtained are in good agreement with the theory and results of other authors.

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