

Dependence of the g-Factor of Mineral Coals on a Metamorphism Level

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The basic directions of the up-to-date use of fossil mineral coals of all levels of metamorphism: energetic electric power, heat production and technological reception of furnace coke, chemical raw materials, gasification and devolatilization of coal of coals. Mineral coals also use at their transmutation into liquid yields as motor, furnace fuel and raw materials for the chemical industry [1]. Efficiency of their application is in many respects spotted by quality of diagnostics of their physicochemical properties at procedure stages. Methods of magnetic-resonance spectroscopy are accessible express methods of their controls [2]. Perfection of quick tests of diagnostics of heterogeneous structure of coals is necessary also at definition dangerous the gas-dynamic phenomena (fire danger, bump hazard, sudden exhausts of coal and gas) [3].

In the report possibility of use of specialized evaluators of a magnetic resonance for the express control of a level of metamorphism of coals on value of the g-factor [4] is proved. The method is grounded on sensitivity of a signal of a magnetic resonance of coals with various concentration ch- and c-phases [5]. The physicochemical connection of the g-factor of a signal of a magnetic resonance and a linewidth of a spectrum of the gauged sample is compared with similar observational dependence. Character of dependence of the g-

factor from the c-phase share in the sample of coal is presented in figure 1.

RESULTS

It is positioned, that accuracy of definition of shared C- and CH-phases in heterostructure practically does not depend on the shape of the first derivative spectrum line. Thus, the expedient of definition of the g-factor by measured of a zero signal of the powdery sample of the coal traditionally used in methods of magnetic-resonance spectroscopy of mineral coals [3] is necessary.

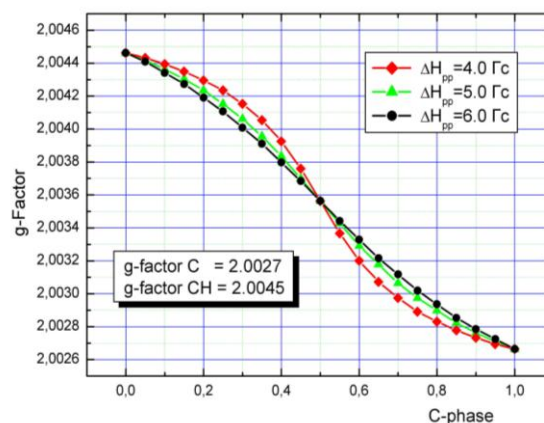


Figure1: Dependence of the g-factor of absorption spectrum (EPR) from a C-phase shared at three values ΔH_{p-p}

- [1] Н. А. Поклонского, Энциклопедия для школьников и студентов / под общей ред. // Минск: Беларуская Энцыклапедыя імя П. Броўкі, **177** (2012).
- [2] С. В. Адашкевич, В. Г. Баев, Н. М. Лапчук, В. Ф. Стельмах, Г. Шилагарди, Х. Цоохуу. Спектроскопия ЭПР каменных углей низкой степени метаморфизма // II-я Международная научно-техническую конференцию «Альтернативные источники сырья и топлива»: сб. тез. докл. – Минск: БГТУ, **66** (2009).
- [3] А. А. Обухов, Г.Д. Фролков, В. Б. Артемьев. Структурно-химическая механика углей метаморфического ряда пластов, опасных по внезапным выбросам угля и газа. – Шахты: издательство ЮРО АГН, **152** (2000).
- [4] В. В. Акунец, В. Ф. Стельмах, Л. В. Цвирко. Анализатор электронного парамагнитного резонанса: Учебно-справочное пособие /. – Мн.: УП «Технопринт», **102** (2002).
- [5] S. V. Adashkevich, A. D. Smychnic, V. F. Stelmakh, G. D. Frolkov, G. Shilagardi, L. Demberel, R. Galbadrah, L. Enkhtor. Динамические явления в углях // Proceedings of International School on Contemporary Physics-II (ISCP-II). Edited by G. Khuukhenkhuu. – University Press, Ulaanbaatar, Mongolia, **105** (2002).

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