

ELECTRON PARAMAGNETIC RESONANCE IN GRAPHENE STRUCTURES

Baitimbetova B. A.^{1,2}, Ryabikin Yu. A.², Serikkanov A.S.², Lebedev I.A.².
¹Satbaev Kazakh National Technical University, Almaty, Kazakhstan, 050013
²Physical-Technical Institute, Almaty, Kazakhstan, 050032

Graphene is fast becoming a key instrument in nanotechnology, which in a number of cases can replace carbon nanotubes, thus competing with silicon [1]. The electron paramagnetic resonance (ESR) is a widely used method for studying carbon nanostructures [2-3]. This study has identified the method of obtaining graphene structures under the influence of an ultrasonic field on graphite with aromatic hydrocarbons.

The investigation of the EPR spectra of the samples was found that they mainly consist of one rather intense line with a g-factor equal to $g = 2.00414 \div 2.00416$. Such a value of the g-factor of the EPR spectrum is characteristic of graphene. In the analysis of the EPR line, was found that there is a slight bend on the straight line connecting the extremes of the spectrum, due to the contribution to the total line of the line with another g-factor.

REFERENCES

- [1] Geim A.K., Novoselov K.S. The rise of graphene., Nature Materials. V6 (3) (2007) 183–191.
- [2] Baitimbetova B.A., Vermenichev B. M. etc A study of graphene formed in the atmosphere of vapors of aromatic hydrocarbons., Russian Physics Journal, 58(3) (2015) 394-398
- [3] Garaj S., Thien-Nga L., Gaal R., Forry L., Takahashi K., Kokai F., Yudasaka M., Iijima S.
Electronic properties of carbon nanohorns studied by ESR., Phys. Rev. B. 62 (2000) 17115-17119