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INVESTIGATION OF THE CARBON NANOTUBES PROPERTIES

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At present, nanotechnologies are being intensively developed that has resulted in an increasing interest in studying nanomaterials. Now carbon nanotubes are insufficiently studied material, though in the future they can significantly affect all spheres of human life.

The article presents a scientific review of such promising material as carbon nanotubes.

The purpose of the article is to give information about carbon nanotubes (CNT), their properties and the prospects of their use, as well as to provide insight into the results of our experiments.

The article considers mechanical, optical, and temperature properties of carbon nanotubes, as well as the heterojunction, which is formed when a metal nanotube is connected to a semiconductor one. Different types of carbon nanotubes, related structures and their formation mechanisms were investigated.

Carbon nanotubes are allotropes of carbon with a cylindrical nanostructure. These cylindrical carbon molecules have unusual size-dependent characteristics, which are of value to nanotechnology, electronics, optics and other fields of materials science and technology. We analyzed some synthesis methods of CNT, including a chemical vapor deposition method – the most optimal one.

Our full-scale experiments show that increase of the laser radiation power directed to the CNT coated substrate results in decrease of the CNT resistance, and increase of the resistance is observed in the case of the power decrease. As a result, we managed to obtain a CNT resistance and power characteristics of the illuminating laser beam in the time frame from 0 to 180 seconds.

The results of the carried out experiments can be used to conduct further works to study of the CNT properties. These studies will allow us to determine further possible applications of CNT in the field of nanotechnology.

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