

Nanostructured surfaces

SYNTHESIS AND APPLICATION OF NANOCOATINGS WITH THE USE OF HIGH-ENERGY POWER SOURCES

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IPPT of the NAS of Ukraine developed a method for obtaining nanocarbon with an onion-like structure by high-voltage pulse discharges with a repetition frequency in the kilohertz range directly affecting the propane-butane gas mixture. The main working element of this method of obtaining nanocarbon is the plasma channel which provides the energy required for the destruction of gases and generating nanocarbon in the electrode gap. However, there is a need for profound research of how the discharge parameters and processing environment influence the quality of the original product [1].

The use of nanocarbon ultrafine powders has a great tendency of development. Nanocarbon is used both to increase the strength of materials, improve anti-corrosion properties, create antifriction materials, and as electromagnetic radiation protection. The scope of application of such coatings are: aviation, space and mechanical engineering industry [2-3].

Joining the processes of obtaining nanocarbon powder with application of carbon coatings on various materials will help to speed up flow processes and reduce the production cost.

1. Physical Processes of Synthesis of Amorphous Nanocarbon from Gaseous Hydrocarbons by the High-Frequency Electrodischarge Method / L. Z. Boguslavskii, V. D. Vinnichenko, N. S. Nazarova, L. E. Ovchinnikova // Visnyk of NTU "HP". Series: Technics and Electrophysics of High Voltages. – H.: NTU "HP", 2012. – No. 52 (958). – p. 25-31. – References: 7 names.
2. http://nanorf.ru/events.aspx?cat_id=227&d_no=450
3. Novikov, L. S. Prospects of Application of Nanomaterials in Space Technology: Textbook / L. S. Novikov, E. N. Voronin. // M.: University book, 2008, 188 p.