

Structure of carbon dendrites obtained in an atmospheric-pressure gas discharge

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Abstract

© 2017, Pleiades Publishing, Ltd. The influence of growth conditions on the carbon dendrite structure has been investigated. The threshold values of the ratio between electron temperature T_e and kinetic temperature T of the gas near a needle electrode and of the discharge current density, which are necessary for dendritic growth, have been determined. It has been shown that the hexagonal structure of submicron carbon particles arises when a number of hydrocarbons are used to synthesize dendrites. It has been found that the degree of order in the carbon structure can be controlled by applying external actions at the stage of graphite particle nucleation. The characteristic frequencies of inertial actions that may be energetically appropriate must exceed 10 kHz.

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