

Effect of synthesis temperature on the structure of carbon nanotubes and nanofibers

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Today, there are many methods for the synthesis of carbon nanotubes [1]. However, the control and management of the properties of carbon nanotubes is studied area. This report describes the effect of temperature on the synthesis of structural perfection of carbon nanotubes. We investigate carbon nanotubes of the synthesis technology from ethanol without the use of hydrogen as a reducing agent. [2] Synthesis of carbon nanotubes is carried out on the sol-gel nickel catalyst and sputtering palladium catalyst.

Transmission electron microscopy (TEM) images were obtained for carbon nanotubes produced in the temperature range from 550 to 900 °C. By electron diffraction and TEM-images of nanotubes determined the number of defects in the structure of the nanotubes and their degree of amorphization. With increasing temperature, the synthesis of carbon nanotubes on their electron diffraction showing greater reflections from crystal planes of the material. As a result, it has been shown that an increase in the synthesis temperature formed nanotubes with fewer defects and lower degree of amorphization

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[2] I. Bobrinetskii, V. Nevolin, M. Simunin, Theor. Found. Chem. Eng. 41(5) (2007) 639–643.