

Nanocomposites composed of carbon nanotubes coated with nanocrystals of noble metals

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Abstract

Purpose of the book: The purpose of the book is to present, on the background of the literature review, the results of own researches, including the study of the structure and the properties of MWCNTs multiwalled carbon nanotubes produced by catalytic chemical-vapour deposition method (CCVD), which terms of implementation were optimized taking into consideration the following parameters: time, temperature and flow rate of hydrogen and the nanocomposites formed as a result of deposition on the surface of previously formed functionalized carbon nanotubes of nanocrystals of the following precious metals: Pt, Pd, Re and Rh.

The content and scope of the book: The book is a collection of four appropriately selected, but separately worked out monothematic papers. The first paper provides an overview of carbon nanomaterials, with particular emphasis on MWCNTs and methods for their preparation and the results of microscopic, spectroscopic, X-ray and thermographic MWCNTs researches produced by CCVD method. The second paper includes an overview of the methods of nanocomposites manufacturing consisting of carbon nanotubes decorated with nanoparticles of precious metals, a description of methods of functionalization of carbon nanotubes and the characteristics of authors' manufacturing methods of MWCNTs-Pt, MWCNTs-Pd, MWCNTs-Re and MWCNTs-Rh nanocomposites. In the third article the results of microscopic, spectroscopic and heuristic researches of newly produced composite materials MWCNTs-Pt, MWCNTs-Pd, MWCNTs-Re and MWCNTs-Rh are presented. The fourth paper focuses on the application aspect concerning the application of the newly outworked nanocomposites, and in particular MWCNTs-Pt nanocomposite, as gas sensors harmful to the environment, due to the specific electrical properties of those materials.

Reference to the collection of papers included in the book should be given in the following way:

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