Carbon Nanotubes produced by HiPCO Process in Nanopharmaceuticals Applications

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Abstract:

Single-Walled Carbon Nanotubes (SCWNTs) have attracted a lot of attention in biomedical fields. Their easily functionalised surface and ability to encapsulate different materials make them interesting not only for imaging, but also for other applications, such as drug delivery and cell targeting. This work concerns specifically the use of SWCNTs producced by HiPCo process to fabricate in situ encasulated by iron nanoparticle for bio-imaging. These nanoprobes are composed of iron nanoparticle encapsulated inside the SWCNTs and the nanotubes are grafted with anti-bodies functionalized on the outer surface.

The results of the analysis on the nanohybrids nanomagnet show an average radius of 40 nm is favourable to the development of nanoprobes in cancer diagnosis and therapy.

Keywords:

Carbon nanotubes; HiPCO process; Optical absorption spectroscopy (OAS); Raman scattering; Magnetic iron core-shell nanoparticles; Purification; Sterilization; Functionalization; Fe@SWCNTs; Therapeutic nanoparticles; Cellular mechanisms; Nanomedicine application; Cancer tumor therapy and diagnosis; Nanomaterials; Nanobiotechnology; Nanotechnology; Cancer diagnosis; Cancer therapy; In vivo nanobiomedical applications.

Biography

Prof. Badis BENDJEMIL, has got his PhD in solid states Physics (Surface-Interface-Spectroscopy) as PhD joint researcher between the LEREC Laboratory institute of physics, University of Badji-Mokhtar, Annaba, Algeria and, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden (IFF-IFW-Dresden), Germany (august 2001 – september 2004) (Deutscher Akademischer Austauschdienst (DAAD, STUPENDIUM) under the direction of the Pr. Martin KNUPFER and Pr. Jorg FINK (Dresden, Germany). Since 2004, I computed by FPLO 3 code from the Institut of theoritical physics of IFW-Dresden-Germany (Pr. Dr Manuel Richter and Pr. Dr Klaus Kopernick) (Dresden, Germany). and have unpdated the license by FPLO 18 in 2018 for calculation of the electronic structure of the solids and molecule more than 20 atoms, Fermi surface of the superconductor materials and dHvA magnetisation are also visualised and computed.

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