

عنوان مقاله:

The Study of Biofunctionalization of Carbon Nanotubes and their Applications in Biology

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خلاصه مقاله:

A carbon nanotube is a tube-shaped material, made of carbon, having a diameter measuring on the nanometer scale. A nanometer is one-billionth of a meter, or about one ten-thousandth of the thickness of a human hair. Carbon nanotubes have many structures differing in length, thickness, and in the type of helicity and number of layers. Although they are formed from essentially the same graphite sheet, their electrical characteristics differ depending on these variations, acting either as metals or as semiconductors. Since their discovery in 1991, carbon nanotubes have generated huge activity in most areas of science and engineering due to their unprecedented physical and chemical properties. No previous material has displayed the combination of superlative mechanical, thermal and electronic properties attributed to them; these properties make nanotubes ideal, not only for a wide range of applications but as a test bed for fundamental science. The tubular, vesicle-like character of carbon nanotubes has been used for drug containment and focused drug delivery in clinical trials (e.g., for the dispersal of cancer drugs for localized tumor treatment). Consequently, carbon nanotubes are also amenable for nano-sized platforms, whereby functional groups that would normally not coincide (e.g., like antibodies, polyethylene glycol, and cancer medication) can be brought together. Functionalization, through the attachment of different functional groups, has also made it possible to create nanotube-based moieties with complex behavior (e.g., a drug-delivery vehicle that can traverse the plasma membrane, and release the drug in a target organelle). Keywords: Carbon Nanotubes, Nanotoxicity, silver nanoparticles, fullerene, Cytotoxicity, Surface Functionalization

کلمات کلیدی:

Carbon nanotubes, nanotoxicity, Silver nanoparticles, Fullerene, Cytotoxicity, Surface functionalization

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