# Functionalization and Characterization of Carbon Nanotubes solubles in physiological media

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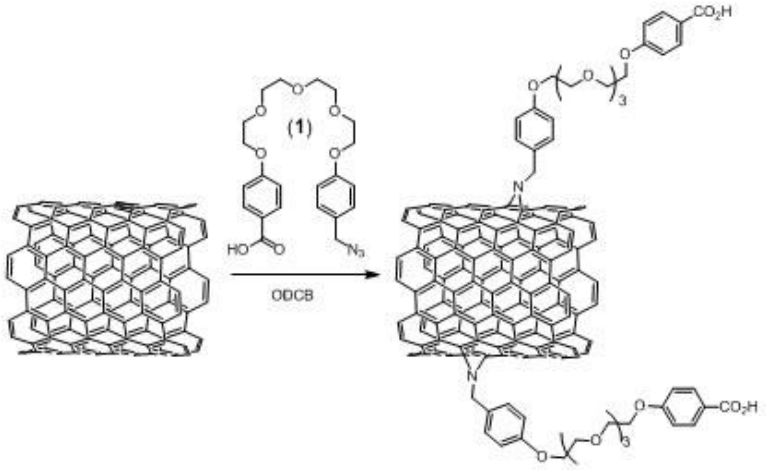
Over the last few years, single-walled carbon nanotubes (SWNTs) have triggered intensive study towards numerous applications. In nanomedicine SWNTs have been used as substrates for detecting antibodies associated with human autoimmune diseases with high specificity and carriers of contrast agent. When covalently or noncovalently attached by nucleic acids, vaccines, and proteins, SWNTs have been shown as effective gene and drug transporters.[1] Considerable efforts have therefore been made to make carbon nanotubes stably dispersed or soluble in water and in organic solvents.[2]

In this communication we describe a covalent functionalization of SWNT to obtain water-soluble nanotubes. The reaction of purified SWNTs with excess azide (**1**) in *o*-dichlorobenzene under thermal condition involved a [2+3] cycloaddition of azide to a double bond of nanotube with formation of intermediate triazole, followed by thermal cleavage of $N_2$. [3].




Functionalized SWNT were characterized by analytical, spectroscopic such Raman, UV/Vis, XPS and NMR techniques. The Raman spectra taken both in aqueous dispersion and in the solid phase indicated modification of the SWNT backbone. These simple functionalized SWNTs are promising for attaching other functional groups, amino acids, and DNA to nanotube for chemical and biological applications.

**References:**

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