

# Nanotechnology Congress & Expo

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### Nano carbon onions cross blood brain barrier with potential to entrap and release Alzheimer drug

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Water soluble carbon nano onion (wsCNO) (25-50 nm) is made from cheap woodwool and used by us earlier to image the full life cycle of *Drosophila melanogaster*. The present lecture covers the application of this multi-layered wsCNO in drug delivery. The blood-brain barrier (BBB) regulates brain homeostasis and selectively permit the entry of necessary molecules to pass into the brain through tight junctions and enzymatic carriers. This BBB is the greatest impediment preventing any diagnostic or therapeutic probe in combating neuronal disorders or the growth of a tumor inside the brain. Fluorescent wsCNO may be used as a Trojan horse to carry the drug, the drug on its own is a foreign body, may be impermeable to the brain. We report here the crossing of wsCNO through the BBB in the murine model of CADASIL as well as in GBM induced mice. Donepezil, an inhibitor of acetylcholinesterase, is entrapped by wsCNO in acidic phosphate buffer saline (PBS) demonstrating its function as Trojan horse from which the drug is readily released at pH 7.4

#### Biography

Sabyasachi Sarkar is a Professor Emeritus at IESTS, and was a Senior Professor and former Head, Chemistry Department of IIT Kanpur. He researched in the diversified fields on the modeling of the metalloproteins, chemical Darwinism, synthetic leaf and non-invasive bioimaging, *in vivo* drug carrier and delivery including crossing BBB using nano carbons. He has guided 40 PhD, 150 Masters theses with over 200 publications and four US and Indian patents. He is an Av Humboldt, INSA research, Raja Ramanna and DAAD Fellow, Fellow of the Indian Chemical Society, Indian Academy of Sciences and of the Royal Society of Chemistry.

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