

Synthesis and Characterization of Novel Nano-Cocoon like Structures of Polymer-CNT Nanocomposite

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Abstract

Multi-Walled Carbon NanoTubes (MWCNTs) dispersed in Polyethylene Glycol (PEG) were broken into small tubes by vortexing with tungsten-carbide balls for about 15 hrs and centrifuged using differential centrifugation for separating the CNTs size-wise. Centrifugation is being used for sorting of MWCNTs based on their length[1]. PEG 400 of various concentrations was used as centrifugation medium. The separated fractions of CNT-PEG solution were further pelletised and purified using high speed centrifugation. The pellets were dispersed again in water to get nano-cocoon like structures in one of the fractions, when observed under field emission scanning electron microscopy. High resolution transmission electron microscopy of the cocoons reveals polymer capsules of 100-200 nm in dimension with few CNTs. These structures can be used as biocompatible drug delivery particles for longer blood circulation time.

References

[1] Qing-Ping Feng, Xu-Ming Xie, Yi-Tao Liu, Yan-Fang Gao, Xiao-Hao Wang and Xiong-Ying Ye, Letters to the Editor / Carbon, **45** (2007) 2307–2320.

Figures

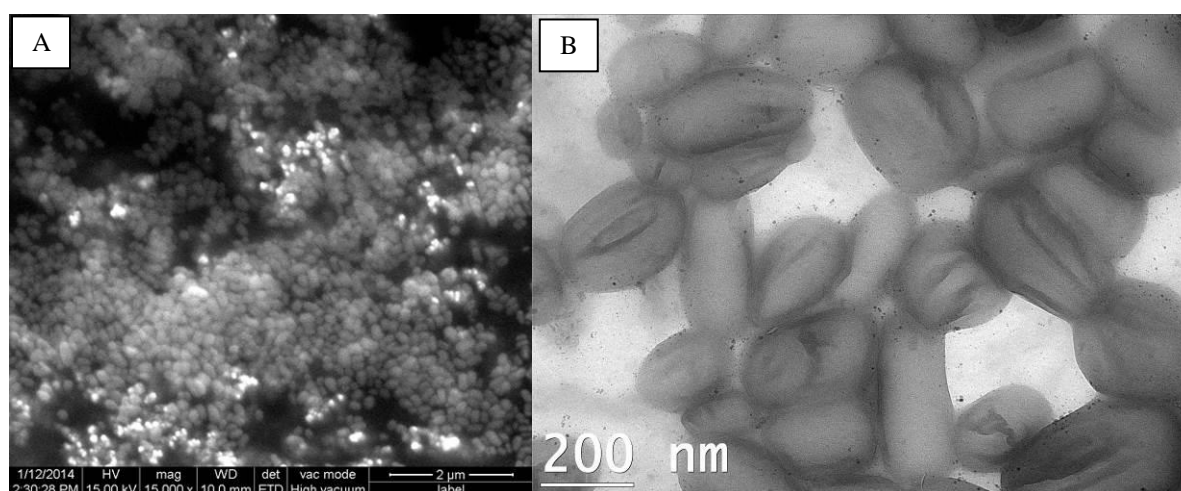


Fig.1 (A) FE-SEM image and (B) HR-TEM image of PEG-CNT nano-cocoons