

## Accepted Manuscript

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PII: S1385-8947(16)31670-9  
DOI: <http://dx.doi.org/10.1016/j.cej.2016.11.108>  
Reference: CEJ 16109

To appear in: *Chemical Engineering Journal*

Received Date: 30 July 2016  
Revised Date: 6 November 2016  
Accepted Date: 15 November 2016

Please cite this article as: A. Abo-Hamad, M. Hayyan, M. AbdulHakim AlSaadi, M.E.S. Mirghani, M. Ali Hashim, Functionalization of carbon nanotubes using eutectic mixtures: A promising route for enhanced aqueous dispersibility and electrochemical activity, *Chemical Engineering Journal* (2016), doi: <http://dx.doi.org/10.1016/j.cej.2016.11.108>

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**Functionalization of carbon nanotubes using eutectic mixtures: A promising route for enhanced aqueous dispersibility and electrochemical activity**

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**Abstract**

Eutectic mixtures (EMs) were used for functionalization of carbon nanotubes (CNTs). The process consists of two main steps: a pretreatment with an acidic  $\text{KMnO}_4$  solution followed by an ultrasound treatment of CNT with the EM as a new class of environmentally-friendly solvents. Various ammonium and phosphonium based-EMs were used in the process and changes were recorded with respect to the functional groups on the CNT surface. Raman spectroscopy and X-ray diffraction analysis confirmed successful covalent functionalization without substantial damage to the structure. Accurate characterization of CNT dispersions was also carried out using UV-Vis spectroscopy and zeta potential. Studying the dispersion behavior of CNTs in aqueous solutions showed that modified-CNTs presented different dispersibility due to the changes in hydrophilicity after functionalization. The suspension stability of all

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