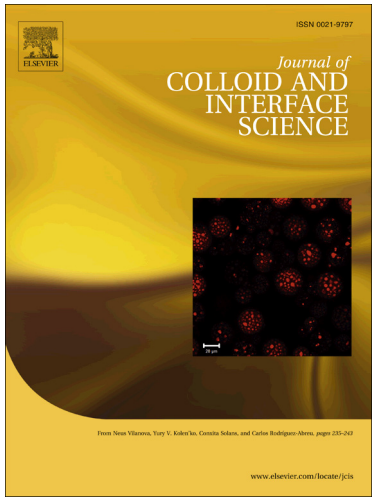

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Production of hierarchical all graphitic structures: A systematic study

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Abstract

We report the production of hierarchical all graphitic structures through a systematic study involving the use of wet chemical treatments for dip coating of carbon fibres (CFs) for surface grafting with multiwalled carbon nanotubes (CNTs). Realization of a thin homogeneous veil of CNTs onto the CF surface was achieved through an extensive parametric survey. Optimization of aqueous dispersions of CNTs eliminated the need for oxidation of the CF surface. The effects of chemical processes onto the surface and structural characteristics of the involved graphitic species were evaluated via thermogravimetric analysis, and X-Ray photoelectron, infrared and Raman spectroscopies. The dielectric properties of the produced CNT aqueous dispersions were monitored via electrochemical impedance spectroscopy. A final assessment of the produced hierarchical CFs was performed through scanning electron microscopy.

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