

First Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-1) 21-25 November 2011**Surfactant assisted dispersion of carbon nanotubes and their effect on the properties of PVA/CNTs fibers nanocomposites**

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Abstract:

Carbon nanotubes (CNTs) have generated a lively interest in the scientific community after their discovery in 1991. These nanoparticles exhibit outstanding structural, mechanical and thermal properties which make them ideal fillers for making nanocomposites. To employ these nanoparticles as effective reinforcement in polymer and nanocomposites, proper dispersion and appropriate interfacial adhesion between the CNTs and polymer matrix have to be guaranteed. While their structure consists in highly entangled agglomerates of individual CNT, due to the surface interactions which make their dispersion very difficult. In this work, we focused our research on the soft dispersion of CNTs using both surfactant and polymer. Stable homogeneous dispersions of CNTs, in water, have been prepared by using Sodium Dodecyl Sulfate (SDS) as surfactant dispersing agent. Enhanced dispersion and alignment of CNTs in the polyvinyl alcohol (PVA) polymer matrix will promote and extend the applications and developments of PVA/CNTs nanocomposites, that's why we was using electrospinning process to elaborate the nanocomposites fibers.

The morphology of the electrospun fibers was studied using scanning electronic microscopy. In addition infrared and Raman spectroscopy were used to elucidate the interaction between the PVA and CNTs. These results were confirmed with the Thermogravimetric Analysis (TGA).

Keywords: CNTs, Dispersion, Raman spectroscopy, TGA.