

2 ABSTRACT

In the current study the **reinforcing properties** of **carbon nanotubes** in **PDMS** (poly-dimethyl-siloxane) were investigated. The samples were prepared in two different ways, with and without the addition of Nanospense AC, a **surfactant** to facilitate the interaction during the mixing and the formulation of the composite. The samples were characterized dielectrically by Dielectric Relaxation Spectroscopy (**DRS**) in a wide temperature and frequency range (-150 to -20°C and 10^{-1} to 10^6 Hz), thermally by Differential Scanning Calorimetry (**DSC**) (-150 to -20°C, 10°C/min), mechanically by Dynamic Mechanical Analysis (**DMA**) (-145 to -20°C, 3°C/min, 1 Hz) and, finally, morphologically by Scanning and Transmission Electron Microscopy (**SEM & TEM**). The improved dispersion of the filler in the samples that contained surfactant, as compared to the ones without, was validated by both conductivity and crystallization results. The electrical percolation threshold was below 0,1 phr and there were indications that the dispersion was problematic at higher loading. The filler content and the surfactant presence had no significant influence on the glass transition temperature (T_g).