Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

On the Radial Breathing Mode in SWCNTs dispersed within PVC FERNANDO FLOR, The University of Texas Rio Grande Valley, PULLICKEL AJAYAN, ALIN CHIPARA, Rice University, KAREN LOZANO, DORINA CHIPARA, The University of Texas Rio Grande Valley, ROBERT VAJTAI, Rice University, MIRCEA CHIPARA, The University of Texas Rio Grande Valley, UTRGV-RICE COLLABORATION — The Radial Breathing Mode (RBM) is an unique set of Raman lines, characterized by shifts smaller than 500 cm^{-1}, assigned to vibrations that affect the diameter of carbon nanotubes. The position of the RBM lines is inversely proportional to the diameter of nanotubes. RBM was reported in Single Walled Carbon Nanotubes (SWCNTs) and Double Walled Carbon Nanotubes. This mode is very sensitive being frequently used to obtain information regarding the stress transfer from the polymeric matrix. Nanocomposites have been prepared by loading the polyvinylchloride (PVC) purchased from Sigma Aldrich with SWCNTs from Cheap Tubes Inc., by melt mixing, using Haake Rheomix equipped with two counter rotating screws. The concentration of SWCNTs dispersed within PVC ranged from 0 % wt. up to 20 % wt. The as recorded spectra have been deconvoluted into several individual lines characterized by an extended Breit-Wigner-Fano line shape. A full analysis of the Raman spectra of the polymeric matrix and of the matrix is reported with emphasize on the RBM features. The spectra have been recorded by using a Renishaw InVia spectrometer equipped with Eclipse filters that allow the recording of Raman lines starting from about 25 cm^{-1}.

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Date submitted: 05 Nov 2015 Electronic form version 1.4