Raman intensity analysis of the Radial Breathing Mode in a Single Wall Carbon Nanotube sample with diameters ranging from 0.7nm to 3.0nm

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In this work, we measure the Raman spectra of a SWNT sample in the energy range from 1.26eV to 2.71eV. Using the RBM spectra we assign (n,m) indices to 84 different SWNTs with diameters ranging from 0.7nm to 3.0nm. We analyze the intensities of the features associated with each carbon nanotube present in the sample in regard to its diameter, chirality and the observed optical transition, as well as the kind of nanotube (metallic, semiconductor type I or type II). Finally, we show an empirical equation dependent on (n,m) and the optical transition that fits the experimental intensity data.