Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Resonance Raman Spectroscopy of 1.2¡ d_t < 2.0 nm Diameter Single Wall Carbon Nanotubes in the E_{33}^S and E_{44}^S Optical Range[1] PAULO A.T. ARAÚJO, UFMG, S.K. DOORN, Los Alamos National Lab , A.G. SOUZA FILHO, UFC, J. JIANG, Tohoku University, R. SAITO, Tohoku University, S. MARUYAMA, Tokyo University, M.A. PIMENTA, UFMG, A. JORIO, UFMG — This work uses Resonant Raman Spectroscopy with excitation laser energy from 1.26 to 2.98 eV to measure the E_{33}^S and E_{44}^S optical transition energies, for single wall carbon nanotubes (SWNTs) with diameters in the range$1.2 < d_t < 2.0$ nm.We identify the families of $(2n + m)$ = constant and analyse the radial breathing mode (RBM) frequencies, the E_{33}^S and E_{44}^S energies and intensities as a function of (n, m). The excitonic effects are weaker in the E_{33}^S and E_{44}^S, the energies being blue-shifted when compared with earlier predictions. We also study the relation between the RBM intensity and tube chirality, clearly showing that the RBM Raman spectrum is less intense for armchair tubes.

[1]Brazilian authors acknowledge CNPq-Brazil

Paulo A.T. Araújo
UFMG

Date submitted: 06 Dec 2005 Electronic form version 1.4