Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Chirality dependence of Raman intensity of single wall cabon nanotubes[1] RIICHIRO SAITO, JIE JIANG, KENTARO SATO, Tohoku UNIV. and CREST JST, ADO JORIO, UFMG, GEORGII SAMSONIDZE, GRACE CHOU, GENE DRESSELHAUS, MILDRED DRESSELHAUS, MIT — We present calculated Raman intensity of radial breathing modes (RBM), and other first and second order Raman signals as a function of (n,m) with exciton wavefunctions. Because of strong k dependent electron-phonon and electron-photon matrix elements, the Raman intensity shows (2n+m) family pattern. Within the extended tight binding calculation, we make exciton Kataura-plot for RBM. The Raman intensity is enhanced by localized wavefunction of the bright exciton which decreases with increasing energy and diameter. We will further discuss disorder induced D-band Raman intensity with some experimental results.

[1]RS acknowledges MEXT Grant 16076201, MIT authors acknowledges NSF Grants DMR 04-05538

Riichiro Saito
Tohoku UNIV and CREST JST

Date submitted: 16 Jan 2006 Electronic form version 1.4