

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Electronic Structure Effects in Single Wall Carbon Nanotubes Dielectric Response. KEVIN TATUR, LILIA WOODS, University of South Florida — The electronic structure of various single wall carbon nanotubes is considered within the sp^3 tight-binding model. Parameters for this model are taken from the Slater-Koster model. The sp^3 approach is applied in order to take into account the hybridization of the carbon $\sigma - \pi$ orbitals due to curvature of the cylindrical surface of the nanotubes. The curvature dependence of the hopping integrals is also taken into account. Only nearest neighbor interaction is used. The obtained electronic states and energies are then used to calculate the dielectric response of the carbon nanotubes within random phase approximation methods. The real and imaginary parts of the dielectric response function are calculated and the curvature and geometry effects of the different nanotubes are discussed.

Kevin Tatur
University of South Florida

Date submitted: 28 Nov 2006

Electronic form version 1.4