Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

IPS verification of the integrity of CNTs walls after purification. PATRICIO HABERLE, SAMUEL HEVIA, RODRIGO SEGURA, UTFSM, MANISH CHHOWALLA, Rutgers University — We report results from measurements by inverse photoemission spectroscopy (IPS) from single wall carbon nanotubes (SWCNTs). We have used this technique to verify the influence of strong purification procedures on the integrity of the tube walls. The purification included an HNO_3 immersion in a solution for 3 hours, before a 400 ˚C annealing. Even though the thin layers of CNTs present a high conductivity, the treated tubes trap the electronic charges from the IPS electron beam. A possible explanation for this apparent inconsistency is that the acid treatment induces the formation of charge traps in the outside tubes of the bundles. RAMAN spectroscopy from the same samples, with and with out the acid treatment, show almost no variations. The IPS signal is extremely sensitive to the conditions of the tube's external wall, while Raman spectroscopy can detect signals form inner tubes. Using IPS may then prove useful to determine electronic quality of CNTs arrays.

Patricio Haberle
UTFSM

Date submitted: 27 Nov 2007

Electronic form version 1.4