

ULTRASONIC HORN CUTTING OF SINGLE-WALLED CARBON NANOTUBES. *P. Denno, B. Landi, R. Raffaele**, Department of Chemistry, NanoPower Research Labs, pld7177@rit.edu, rprsps@rit.edu

Single-walled carbon nanotubes (SWNTs) synthesized by an Alexandrite laser vaporization process were purified using a nitric acid reflux procedure. Cutting procedures consisted of 3:1 sulfuric/nitric acid and 4:1 sulfuric acid/hydrogen peroxide (piranha) solutions with high energy probe and bath ultrasonication. Characterization of these “as-cut” samples was performed via optical absorption spectroscopy, thermogravimetric analysis (TGA), scanning electron microscopy (SEM), Raman spectroscopy, and atomic force microscopy (AFM). Optical absorption analysis over a range of concentrations has been utilized to estimate the dispersion limits for as-cut SWNTs in *N,N*-dimethylacetamide (DMA). The length distributions were determined by a series of measurements using AFM after each cutting procedure process. The effects of acid conditions, ultrasonication technique, and cutting duration on the SWNT properties will be discussed.