

Developing Carbon Nanotube Standards at NASA

Pasha Nikolaev¹, Sivaram Arepalli¹, Edward Sosa¹, Olga Gorelik¹ and Leonard Yowell²

- 1. ERC @ NASA Johnson Space Center*
- 2. NASA Johnson Space Center
Houston, Texas 77058*

Abstract

Single wall carbon nanotubes (SWCNTs) are currently being produced and processed by several methods. Many researchers are continuously modifying existing methods and developing new methods to incorporate carbon nanotubes into other materials and utilize the phenomenal properties of SWCNTs. These applications require availability of SWCNTs with known properties and there is a need to characterize these materials in a consistent manner. In order to monitor such progress, it is critical to establish a means by which to define the quality of SWCNT material and develop characterization standards to evaluate of nanotube quality across the board. Such characterization standards should be applicable to as-produced materials as well as processed SWCNT materials. In order to address this issue, NASA Johnson Space Center has developed a protocol for purity and dispersion characterization of SWCNTs (Ref.1). The NASA JSC group is currently working with NIST, ANSI and ISO to establish purity and dispersion standards for SWCNT material. A practice guide for nanotube characterization is being developed in cooperation with NIST (Ref. 2). Furthermore, work is in progress to incorporate additional characterization methods for electrical, mechanical, thermal, optical and other properties of SWCNTs.

Ref. 1: Carbon **42**, pp. 1783-1791 (2004)

Ref. 2 : http://www.msel.nist.gov/Nanotube2/Carbon_Nanotubes_Guide.htm