



**SAN FRANCISCO BAY AREA  
NANOTECHNOLOGY COUNCIL**

**July 21, 2009 Seminar**

**Co-Sponsored by the American Institute of Chemical Engineers (AIChE)  
Northern California Chapter**

**Subject:**

**Synthesis and Applications of Carbon Nanotubes and Nanofibers.**

**Speaker:**

**Brett A. Cruden, Ph D**

**NASA Ames University Affiliated Research Center**

**Date:** Tuesday, July 21, 2009

**Time:** Registration & light lunch 11:30am. Presentation & Q/A 12:00 to 1pm

**Location:** National Semiconductor Bldg E-1 CMA Room. 2900 Semiconductor Drive, Santa Clara, CA

<http://www.google.com/search?hl=en&q=2900+Semiconductor+Drive.+santa+clara+%2C+ca&btnG=Google+Search>

**Cost:** IEEE Members and Students \$5. Non-Members \$10

**Please RSVP at our web site:** [www.ieee.org/nano](http://www.ieee.org/nano)

**Talk Abstract:**

Carbon nanotubes have generated significant interest in recent years due to their remarkable physical properties, being stiffer than diamond, higher yield strengths than any other material, thermal conductivities 5 times larger than copper and electrical properties that may be either semiconducting or metallic with high current carrying capacities and ballistic electrical conduction characteristics. This talk will review some synthesis and applications of carbon nanotubes being investigated at NASA Ames, including recent progress in electric field enhanced and water assisted chemical vapor deposition processes. These developments have led to enhanced alignment, density and growth rates of the carbon nanotubes. We have demonstrated a micelle patterning growth for precise control of nanotube diameters. The impact of these developments, and other approaches employed, on applications such as thermal interface materials, NEMS devices, field emitters and large scale wiring will also be reviewed.

**Speaker Biography:**

Dr. Brett A. Cruden is a senior research scientist at the NASA Ames Center for Advanced Aerospace Materials and Devices with an academic appointment at the University of California at Santa Cruz. Dr. Cruden serves as the manager of the Nanomaterials Process Characterization and Plasma Research Laboratories, where he supervises several projects related to nanomaterials, plasma-material interactions, plasma physics and their related spectroscopic characterization. He is a founding member of the American Institute of Chemical Engineers Nanoscale Science and Engineering Forum, where he served as vice-chair and technical liaison from 2003-2005. He is the 2009 chair of the Northern California Chapter of the American Vacuum Society and serves on the society's Thin Film and Plasma Etch Users Groups (TFUG chair 2007, PEUG chair 2003-2005). He has a Ph.D. from the Massachusetts Institute of Technology and a B.S. from Stanford University. Dr. Cruden has authored over 40 peer-reviewed journal articles, 75 conference presentations and 2 book chapters.

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