Postdoctoral Position: Carbon Nanostructures for Hydrogen Storage
Center for Nanophase Materials Sciences
Oak Ridge National Laboratory

The Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory (ORNL) is seeking to fill a postdoctoral position in the **Functional Hybrid Nanostructures** group. The applicant will purify, synthetically modify, and characterize single-wall carbon nanohorns, single-walled and multi-walled carbon nanotubes, carbon quantum dots, and other nanostructures, and will carry out research to test and modify these materials for use as hydrogen storage media. The successful candidate should have a strong interest in hydrogen storage and be capable of innovative, independent research in this area. The applicant will spend a fraction of time involved in the user-initiated research program at the CNMS, developing chemistry and processing techniques to integrate these materials with polymers and other materials to develop novel functional nanocomposites. The applicant also is responsible for helping to establish the user facilities in this area, for collaborating with and supporting users, and for operating and maintaining the facilities. The CNMS (http://cnms.ornl.gov/) is a collaborative nanoscience user research facility established by the Office of Science, U.S. Department of Energy. The CNMS has a diverse spectrum of nanoscience research activities including a nanofabrication facility; laboratory-based research on macromolecular materials, catalysts, functional nanomaterials, and magnetism and transport; characterization with electron microscopes, scanning probes, and x-ray diffraction and scattering; and theory, modeling, and simulation.

DUTIES: The primary duties are to develop synthetic methods to process and chemically-decorate single-wall carbon nanohorns (SWNHs) for use as hydrogen storage media through adjustments in pore size and decoration with metal catalyst particles. A strong background in chemical synthesis, processing, and characterization techniques is required in order to develop synthetic methods to chemically modify SWNHs and/or SWNTs to improve solubility, dispersion, or function and characterize the products. Experience in transmission electron microscopy and scanning electron microscopy to characterize the nanostructures is highly desirable. Experience in surface area and pore size measurements by BET techniques is also highly desirable. Methods of processing nanomaterials into functional forms, such as membranes and nanoengineered architectures is desirable. The candidate will interact with partners in a national DOE Hydrogen Sorption of Excellence. As part of their duties, the applicant will interact with users at the CNMS to modify and process nanomaterials such as SWNHs, SWNTs, nanowires, and nanoparticles into functional hybrid nanostructures with enhanced functional properties, especially optoelectronic composites with photovoltaic or electroluminescent functionality. In consultation with CNMS/ORNL staff, develop collaborative user facilities and provide scientific support for users. Participate in projects involving scientific research and developing methodology and instrumentation. Train users in the methods used and to operate equipment as needed, and provide timely technical support. Ensure efficient use of the facilities by coordinating scheduling with users and staff. Participate with other scientists in developing methodology and instrumentation. Participate in the design, implementation, and evaluation of collaborative experiments.

MINIMUM QUALIFICATIONS: Ph.D. (within last 4 years) in organic or polymer chemistry, or materials science. Experience in organic synthesis and characterization, and standard analytical techniques is required, with experience in carbon nanotube chemistry or processing highly desirable. Electron microscopy experience and a broad range of knowledge regarding materials characterization techniques are desirable. Ability to conduct creative, independent research is required. Applicants should have excellent analytical and interpersonal skills, and the ability to work collaboratively in a team environment and interact effectively with a broad range of colleagues. Demonstrated ability to communicate in English to an international

scientific audience is essential. Record of productive and creative research demonstrated by publications in peer-reviewed journals.

HOW TO APPLY:
Qualified applicants may apply online at https://www2.orau.gov/ORNL_POST/. All applicants will need to register before they can begin the online application. For complete instructions, on how to apply, please see the instructions at http://www.orau.gov/orise/edu/ornl/ornl-pdpm/application.htm. When applying for this position, please reference the position title and number (ORNL08-37-CNMS). Questions regarding the position can be directed to Dr. David B. Geohegan (geoheganb@ornl.gov). Applications will be accepted until January 1, 2008 or until the position is filled.

This appointment is offered through the ORNL Postgraduate Research Participation Program and is administered by the Oak Ridge Institute for Science and Education (ORISE). The program is open to all qualified U.S. and non-U.S. citizens without regard to race, color, age, religion, sex, national origin, physical or mental disability, or status as a Vietnam-era veteran or disabled veteran.