



**Postdoctoral Research Associate
in Ultrafast Laser Spectroscopy of Nanomaterials**

**Center for Nanophase Materials Sciences
Physical Sciences Directorate
Oak Ridge National Laboratory
Oak Ridge, Tennessee**

ORNL08-122-CNMS

Project Description:

The Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory (ORNL) is seeking a candidate to fill a postdoctoral position in the Multiscale Functionality group. The applicant will carry out research on ultrafast laser spectroscopy and optical interactions on nanomaterials and optoelectronic nanocomposites. The successful candidate should have a strong interest and skills in ultrafast lasers and laser spectroscopy and be capable of innovative, independent research in this area. The position requires experience in pump-probe spectroscopy and Raman microscopy. Experience with implementation of laser-based scanning probe techniques and nanoscale localization of light is highly desirable. The applicant will spend a fraction of time involved in the user-initiated research program at the CNMS, developing laser spectroscopic techniques to investigate nanomaterials and in a variety of research areas developing laser-based synthesis and processing, including surface structuring, and near-field femtosecond laser spectroscopy. 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.

Qualifications:

This position requires a Ph.D. (within last 5 years) in physics, chemistry, or materials science. Experience in ultrafast lasers and laser spectroscopy is required, with experience in pump probe, nonlinear and near-field spectroscopy highly desirable. Ability to conduct creative, independent research is required. The primary duties are to develop a femtosecond laser spectroscopy system to study ultrafast exciton dynamics and charge transfer processes in nanomaterials and their composites. A strong background in femtosecond lasers and laser techniques including pump-probe and nonlinear spectroscopy is required in order to carry out experiments on ultrafast dynamics at the nanometer scale through the combination of ultrafast optical spectroscopy and scanning near-field optical microscopy (SNOM). Experience in SNOM is highly desirable. Experience in nonlinear laser methods such as second and third harmonic laser spectroscopy, especially with combination with SNOM is also highly desirable. As part of their duties, the successful applicant will interact with

users at the CNMS to carry out laser spectroscopic experiments with nanomaterials such as carbon nanotubes, nanowires, and nanoparticles and their functional hybrid nanostructures. 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. 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.ornl.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.ornl.gov/orise/edu/ornl/ornl-pdpm/application.htm>. When applying for this position, please reference the position title and number. Applications will be accepted until October 1, 2008 or until the position is filled.

Technical Questions:

Technical questions regarding the position can be directed to Dr. Alexander A. Puretzky, (puretzky@ornl.gov).

This appointment is offered through the ORNL Postdoctoral Research Associates Program and is administered by Oak Ridge Institute for Science and Education (ORISE). This appointment 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.