

Postdoctoral Research Associate – Electrophoretic Deposition
Vanderbilt University & Center for Functional Nanomaterials, Brookhaven National Laboratory

Postdoctoral Research Associate – Electrophoretic Deposition: This one-year position involves using non-polar solvent based suspensions of nanoparticles to fabricate nanostructured films on targeted substrates. The project also involves the synthesis and characterization of said nanoparticles to be used in the deposition processes. This project is laboratory intensive -- much of the work involves colloidal chemistry, nanoparticle film fabrication, materials characterization, and measurement. The qualified candidate will have a Ph.D. in an appropriate discipline (Chemistry, Materials Science, Chemical Engineering, or Physics) and significant experience with nanoparticle synthesis and the fabrication of nanoparticle films and structures. Expertise in nanometer-scale materials characterization and analysis, such as electron microscopy, dynamic light scattering, mechanical analysis, and others, is very important. The successful applicant will demonstrate an ability to work independently within broadly defined research directions, and an ability to supervise and to perform research and technical duties of the laboratory. Additional responsibilities include ensuring that the laboratory has adequate supplies, properly maintained equipment, and adequate staff; scheduling work to meet experimental and publication deadlines, either directly or in conjunction with the Principal Investigator; communicating laboratory policies; evaluating instrument and experimental quality.

Preferred Education, Skills, and Experiences:

- Doctorate in Chemistry, Materials Science, Chemical Engineering, or Physics.
- Highly skilled in nanoparticle synthetic methods, including hot injection, solid state thermolysis, solvothermal, etc.
- Highly skilled in colloidal suspension characterization, such as dynamic light scattering, zeta potential measurement, etc.
- Experienced in electrophoretic deposition, electron microscopy (both TEM and SEM), and atomic force microscopy.
- Highly organized.
- Proficient in Microsoft Office, Labview, COMSOL, Origin, and Photoshop.

Key Functions and Expected Performances:

- **Under minimal supervision, plan, conduct and evaluate experiments toward the fabrication of nanoparticle films using an Electrophoretic Deposition System**
 - Plan and coordinate experiments in conjunction with the Principal Investigator.
 - Understand and follow experimental protocols.
 - Coordinate with collaborators in different laboratories and departments to achieve research goals in a timely-manner.
 - Record, compile, interpret, and communicate data/results.
 - Follow safety protocols (may include use of combustibles, toxic materials, and/or carcinogens).
 - Perform complex data analysis, including statistical analysis.
- **Prepare, operate and troubleshoot equipment in experimental procedures.**
 - Recommend equipment and supplies needed for research projects.
 - Read and follow all equipment manuals.
 - Maintain and repair equipment according to manufacturer and University guidelines.

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- **Assist PI in modifying procedures and techniques.**
 - Recognize problems and suggest solutions, assist in modifications.
 - Recommend improvements to established techniques and/or protocols.
 - Maintain personal knowledge of scientific trends through literature reviews, attendance at meetings, conferences and seminars.
- **Provide appropriate written/oral documentation of experiments**
 - Prepare research progress reports.
 - Analyze and summarize test results.
 - Preparation and oral presentation of data as required.
 - Compose scholarly publications based on research results.
- **Assist in the effective operation of the laboratory.**
 - Train other employees.
 - Supervise projects and/or personnel.

Additional Information:

This is a full-time, exempt position (40 hours per week). Hours are typically Monday - Friday from 8:00 a.m. - 5:00 p.m., but this is dependent upon research needs.

The Postdoctoral Research Associate position will be in affiliation with Vanderbilt University, Nashville, Tennessee. However, the research activities will take place at the Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, New York.

Basic Qualifications:

This job requires doctoral degree in Chemistry, Materials Science, Chemical Engineering, Physics, or a related topic, and strong laboratory and analytical skills. Requirements include a background in colloidal nanoparticle synthesis, electron microscopy, atomic force microscopy, and electrochemical methods.

Start Date:

The projected start date for this position is June 1, 2012. Interviews will be conducted, effective immediately, until the position is filled.

Contact Information:

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