

ORNL Publications

External Publication

Job Posting Title

Postdoctoral Research Associate - Inorganic Nanoparticles/Quantum Dots Assemblies / NB50357755

Posted Date

02/26/2013

End Posting Date

03/19/2013

Purpose

Under general supervision, the incumbent will focus on the development of functional inorganic nanoparticles/quantum dots assemblies. This position resides in the Functional Hybrid Nanostructures Group in the Center for Nanophase Materials Sciences (CNMS) Division, Physical Sciences Directorate (PSD) at Oak Ridge National Laboratory (ORNL). The applicant will focus on the inorganic QD/nanoparticles modification and their assembly in opto-electronic devices such as solar cells, light emitting diodes and field-effect transistors. The work is part of an inter-departmental project on the synthesis, modification and processing of nanoparticles for photovoltaic and light emitting applications.

Major Duties/Responsibilities

- Design and implement surface modification of nanoparticles using inorganic and organic ligands
- Characterize nanoparticles stability in the solutions
- Design and assemble semiconducting nanoparticles in the functional device architecture including all-inorganic and organic-inorganic
- Applicant should have good analytical skills and hands on experience for characterization of nanoparticle structure and thin film morphology using AFM, SEM, TEM, XRD
- Carry optical characterization of nanoparticles using various spectroscopy techniques
- Ensure compliance with environment, safety, health and quality program requirements
- Maintain strong commitment to the implementation and perpetuation of values and ethics

Qualifications Required

The incumbent must have a PhD in Physics or a related discipline within Physical Sciences, must have completed all degree requirements before starting their appointment, and be within five years of receiving their Doctorate. A strong background in QD synthesis, ligand-exchange chemistry for optimization of coupling between nanoparticles/QDs in thin films is required. The incumbent will possess expertise in device physics and working knowledge of device assembly using inert atmosphere glove box and cleanroom environment. Extensive experience in Nanoparticle assemblies, evidenced by publications with focus on device physics is required. The incumbent should be motivated, safety conscious and have superior nanomaterial laboratory skills. Experience in presenting research at technical meetings and have publications in peer-reviewed journals is required. The ability to work in a team and interact effectively with a broad range of colleagues as well as demonstrated ability to communicate in English to an international scientific audience both orally and in writing is essential. The ability to work collaboratively in a team environment and to interact effectively with a broad range of colleagues are keys to success. Must be able to set priorities, multi-task and adapt to ever changing needs. The abilities to work on multiple tasks in a limited amount of time and to independently set priorities to accomplish multiple tasks to meet deadlines are required. Must interact

with team members to assist and further the research and development efforts.

This position is for one year with the option to renew term annually for a maximum of three years.

QUALIFICATIONS DESIRED: A strong background in optical, electrical measurement techniques, and data acquisition techniques (LabVIEW, MATLAB, etc.) used to explore the correlation between optical and electrical functionalities is a plus. Experience in semiconducting QD/nanoparticles compatible synthesis methods is also highly desirable.

Work Directions and Interfaces

Position reports to the Group Leader, CNMS Functional Hybrid Nanostructures Group. Interfaces with administrative staff, managers and visitors to ORNL.

This position will remain open for a minimum of 5 days after which it will close when a qualified candidate is identified and/or hired.

We accept Word(.doc, .docx), Excel(.xls, .xlsx), PowerPoint(.ppt, .pptx), Adobe(.pdf), Rich Text Format(.rtf), HTML(.htm, .html) and text files(.txt) up to 2MB in size. Resumes from third party vendors will not be accepted; these resumes will be deleted and the candidates submitted will not be considered for employment.

If you have trouble applying for a position, please email ORNLRecruiting@ornl.gov.

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