Postdoctoral Research Fellow for the Center for Defect Physics: Materials Theory and Simulation

Materials Science and Technology Division
Oak Ridge National Laboratory
Oak Ridge, Tennessee

CDP–02–ORNL

Project Description:
The *"Energy Frontier Center for Defect Physics in Structural Materials"* (CDP) has several postdoctoral fellowships available for highly motivated researchers in Experimental and Theoretical Materials Science and Materials Physics. The successful candidates will be highly integrated within the CDP's overall research agenda and will be identified as *"CDP Fellows."*

The CDP is one of the 46 Energy Frontier Research Centers (EFRC) that were recently funded by the Department of Energy's Office of Basic Energy Sciences (BES). The CDP brings together a team of scientists from the Oak Ridge National Laboratory (ORNL), six Universities, and Lawrence Livermore National Laboratory to address basic research challenges in structural materials for energy. The Center's research agenda is to provide the fundamental scientific knowledge to facilitate atomistic control and manipulation of the defects, defect interactions, and defect dynamics that currently limit material performance and lifetime with the goal of charting new pathways to the development of improved materials – materials with potentially undreamed of strength, toughness, radiation damage tolerance, and self-recovery. The Center deploys first-of-their-kind measurements and models of defects in three interrelated thrust areas

- *Fundamental Physics of Defect Formation and Evolution during Irradiation* (see posting CDP-01-ORNL)
- *Fundamental Physics of Defect Interactions during Deformation* (see posting CDP-01-ORNL)
- *Quantum Theory of Defects and Interactions*

The CDP research agenda will provide an opportunity for the successful candidates to work within a highly collaborative team environment and will provide ample access to frontier research facilities such as the LCLS, APS, NERSC and the NCCS.

Qualifications:
CDP Fellowships are available for highly qualified candidates in each of the research thrusts having relevant expertise in first principles based atomic/electronic scale methods that advance the state of-the-art with respect to attainable accuracy and system size for calculation of ionic and spin dynamics in metals, alloys, and magnetic materials. A PhD in theoretical physics or materials science and a strong background in one or more areas including Density-Functional-Theory (DFT), Time Dependent DFT, Classical (atomic) DFT, Quantum Monte Carlo, or Spin Dynamics. Experience with parallel algorithms and high performance computing will be an added advantage.

Applicants cannot have received the most recent degree more than five years prior to the date of application and must complete all degree requirements before starting their appointment.

US citizenship is not a requirement for the CDP Fellowships. Additional information regarding the CDP can be found at http://www.ms.ornl.gov/cdp/index.shtml.

Technical Questions:
For more information about this position please contact the office of the CDP director Dr. G. Malcolm Stocks, stocksgm@ornl.gov or (865)-574-5163, or the CDP Administrative Assistant Ms. Ann Strange, strangear@ornl.gov or (865)-576-7054.

How to Apply:
Qualified applicants must 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.

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.