Sandia National Laboratories

LIVERMORE, CALIFORNIA

POSITION: Fatigue, Fracture and Failure of Metals Post-Doctoral Researcher

JOB ID: 668911

MANAGER: Jonathan Zimmerman

The Post-Doctoral Appointee Program is designed to recruit outstanding Ph.D. applicants to assist a line organization in meeting its mission objectives and to provide a professional technical work environment for the employee. The Ph.D. must have been conferred within one to five years prior to employment. These assignments are for a one-year period, with the option at management's discretion to serve no more than five additional one-year assignments.

We are seeking a mechanical engineer, civil engineer, metallurgical engineer, materials scientist or similar who has recently earned their Ph.D. to collaborate with a diverse community of senior researchers engaged in developing a comprehensive understanding of fatigue, fracture and failure of structural materials, such as steel and aluminum alloys and their welds. This scope includes how fracture and damage processes in materials change upon exposure to environments such as hydrogen, hydrogen isotopes, sub-ambient temperature and moisture.

On any given day, the candidate may be called on to:

- Design and execute mechanical experiments to probe environment-deformation interactions as well as fatigue and fracture processes in complex microstructures in metal alloys
- Develop experimental platforms and test plans to study specific aspects of microstructural evolution and performance during deformation, including manufacturing processes
- Use principles of both physical and mechanical metallurgy to develop understanding of the materials, their microstructures and their deformation and fracture behavior
- Perform microstructural assessment and characterization using electron microscopy tools, individually and in collaboration with staff
- Communicate your findings to colleagues, customers and the larger scientific community through presentations, technical reports and articles suitable for publication in high-impact journals

QUALIFICATIONS

Required:

- A PhD in materials science, metallurgical or mechanical engineering, or a related field
- Experience with fatigue and/or fracture of metals and metal alloys
- Experience with servohydraulic mechanical test frames for tensile, fracture, and fatigue testing
- A record of first-author or co-authored scientific publications in the above areas within peer-reviewed journals and presentations at scientific conferences
- Ability to obtain a Department of Energy Q-level security clearance

Desired:

- Documented experience with microstructural characterization of structural steels and/or aluminum alloys using conventional and advanced microscopy and microanalysis techniques
- Strong understanding of physical and mechanical metallurgy and knowledge of thermomechanical processing of steels and aluminum alloys
- Familiarity with the effects of hydrogen on the behavior of structural materials: ferritic and austenitic steels and aluminum alloys
- Experience with light sources and neutron diffraction to evaluate residual stress and microstructure
- Design of experiments (including safety planning)
- Collaborative work habits – ability to efficiently leverage available expertise
- Inclusive research approach - ability to work with a diverse group of scientists and engineers
- Excellent communication skills

HOW TO APPLY

On the Sandia Careers Web page (http://www.sandia.gov/careers) search for JO668911 (advanced search). Click the "Apply Now" button and follow the instructions to upload a resume, and complete the submission process to indicate your interest in this position.

ABOUT OUR TEAM

Sandia National Laboratories LIVERMORE, CALIFORNIA

The Hydrogen and Materials Science Department provides expertise to both Sandia and the Nation on the interaction of hydrogen (and its isotopes) with all types of materials. The Department performs scientific and engineering research to develop fundamental understanding on the aging of materials in gaseous environments, including hydrogen, and applies this understanding to determine its effects on the performance and reliability of materials relevant to Sandia's nuclear weapons and energy missions. Department staff conducts research and development primarily for two important customers: 1) Gas Transfer Systems (GTS) for the Nation's Nuclear Weapons Enterprise; and 2) the Fuel Cell Technologies Office (FCTO), part of DOE's Office of Energy Efficiency and Renewable Energy. The Department's work covers a broad range of areas, including analyzing hydrogen's long-term impact on materials used in fuel cell and gas transfer systems, developing solar thermochemical technology for hydrogen production, assessing the suitability of materials for hydrogen storage, advising hydrogen safety codes and standards, maintaining and enhancing nationally recognized core and enabling capabilities in hydrogen science, and initiating hydrogen storage and fuel cell market transformation strategies to bring technological advancements towards broad-based commercial availability.

ABOUT SANDIA

Sandia National Laboratories is the nation's premier science and engineering lab for national security and technology innovation. We are a world-class team of scientists, engineers, technologists, postdocs, and visiting researchers—all focused on cutting-edge technology, ranging from homeland defense, global security, biotechnology, and environmental preservation to energy and combustion research, computer security, and nuclear defense. To learn more, visit http://ca.sandia.gov/.

SECURITY CLEARANCE

Position requires a Department of Energy (DOE) granted Q-level security clearance.

Sandia is required by DOE directive to conduct a pre-employment background review that includes personal reference checks, law enforcement record and credit checks, and employment and education verifications. Applicants for employment must be able to obtain and maintain a DOE Q-level security clearance, which requires U.S. citizenship.

Applicants offered employment with Sandia are subject to a federal background investigation to meet the requirements for access to classified information or matter if the duties of the position require a DOE security clearance. Substance abuse or federally illegal drug use, falsification of information, criminal activity, serious misconduct or other indicators of untrustworthiness can cause a clearance to be denied or terminated by the DOE, rendering the inability to perform the duties assigned and resulting in termination of employment. As a national laboratory funded by a U.S. government agency, Sandia is subject to federal laws regarding illegal drug use. Marijuana use, including for medicinal purposes, is a violation of federal law, even in places where it does not violate state law. Illegal use of a controlled substance within the last 12 months will automatically disqualify candidates from consideration for employment or for a Department of Energy security clearance.

BENEFITS

At Sandia you will receive many benefits as a valued employee of a premier national multi-program engineering and science research laboratory. In our Total Rewards package you will enjoy competitive pay, great benefits, a stimulating, positive environment and learning opportunities that will help build your career. More information may be found on our Careers website.

EEO

Sandia National Laboratories is an Equal Opportunity Employer M/F/D/V.