Sandia National Laboratories LIVERMORE, CALIFORNIA

POSITION: R&D S&E, Materials Science – Residual Stress Characterization (Early/Mid-Career)

JOB ID: 655320

MANAGER: Jonathan Zimmerman

We are seeking a materials scientist, metallurgist or mechanical engineer (or similar) to perform scientific research to characterize residual stresses in forged, machined, and welded metal components as well as structures built using additive manufacturing technologies, and to use this research to advance the fundamental understanding of processing-structure-property relationships.

On any given day, you may be called on to:

- Conduct experimental research characterizing residual stress distributions in processed parts with complex geometries using existing capabilities at Sandia (e.g. contour method, hole drilling)
- Establish new techniques as needed to fully characterize residual stresses
- Perform inverse finite element calculations to infer how material properties are affected by residual stresses
- Discover and quantify how residual stresses alter upon exposure to hydrogen gas
- Analyze and interpret mechanical property data to identify processing-structure-property relationships
- Use fractography and other characterization techniques to refine such relationships
- Communicate your findings to colleagues, customers and the larger scientific community through presentations, technical reports and articles suitable for publication in high-impact journals
- Develop and maintain responsive, accountable relationships with internal and external program managers

QUALIFICATIONS

Required:

- A PhD in materials science, metallurgical engineering, mechanical engineering, or a related field
- A record of first-author or co-authored scientific publications in peer-reviewed journals and presentations at scientific conferences

Desired:

- Knowledge about residual stresses and experience with methods for measuring them in materials, particularly those that can be performed in a laboratory environment (e.g. hole drilling or the counter method, rather than x-ray or neutron beamline facilities)
- Experience or familiarity with finite element structural analysis
- Experience with servo-hydraulic mechanical test frames and data acquisition techniques
- Ability to use experimental results to develop processing-structure-property relationships for materials
- Familiarity with hydrogen-metal interactions and effects on mechanical properties of structural metals
- Familiarity about microstructural characterization techniques including microscopy
- Good communication skills

HOW TO APPLY

On the Sandia Careers Web page (http://www.sandia.gov/careers) search for JO655320 (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

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

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 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.

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.