

ORNL Publications

External Publication

Job Posting Title

Postdoctoral Research Associate, Data-driven Computational Design of High-Temperature Materials / NB50651455

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01/19/2018

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03/19/2018

Purpose

We are seeking a Postdoctoral Research Associate to focus on computational material design. As a postdoc, you will work within a multidisciplinary research team to develop high-throughput computational thermodynamics and kinetics approaches and data analytic methods to accelerate the development of high-temperature materials. While this role resides in our Materials Processing and Joining Group, you will work with a diverse group of experimentalists, theorists, and data scientists as part of one or more projects funded by one or more of the following: 1) Oak Ridge National Laboratory's (ORNL) Laboratory Directed Research Development (LDRD) Program, which supports innovative research to keep ORNL at the forefront of science and technology, 2) DOE's Vehicle Technologies program, and 3) DOE's Fossil Energy program. The position resides in the Materials Processing and Joining Group, Materials Science and Technology Division (MSTD) within the Physical Sciences Directorate (PSD) at Oak Ridge National Laboratory (ORNL).

OVERVIEW: This position will emphasize developing a theoretical framework to generate a large volume of data in a high-throughput manner followed by materials informatics approaches to guide the data-driven design and synthesis of advanced high-temperature materials. The research will be directed toward the correlation of materials thermochemistry and diffusion kinetics with finite-temperature properties. Advanced data analytic methods will be extensively used to identify key descriptors that represent indicative physical/chemical properties of advanced materials and train surrogate models to utilize the same in modern computational material design.

Major Duties/Responsibilities

- Conduct high-temperature materials research using computational thermodynamics and kinetics, which will focus primarily on developing high-throughput computation to be correlated with materials development
- Work with members of dynamic research groups within MSTD (e.g., Materials Processing and Joining, Corrosion Science and Technology, Alloying Behavior and Design, etc.) to develop theoretical approaches to support the development of next generation ceramic matrix composites and high-temperature alloys
- Responsible for presenting and reporting research and publishing scientific results in peer-reviewed journals in a timely manner
- Ensure compliance with environment, safety, health and quality program requirements
- Maintain strong dedication to the implementation and perpetuation of values and ethics

Qualifications Required

Basic Qualifications:

- A PhD in Materials Science & Engineering, physics, chemistry, or a related discipline completed within the last five years
- Experience with computational thermodynamic (CALPHAD) software (e.g., Thermo-Calc, DICTRA, PANDAT, FactSage)
- Experience with Linux/UNIX environment
- A record of productive and creative research demonstrated by publications in peer-reviewed journals

Preferred Qualifications:

- Strong background in kinetic and microstructure modeling/simulation
- Strong background in first-principles calculations based on density functional theory (DFT)
- Strong background in materials data analytics (correlation analysis and machine learning)
- Strong background in parallel computing (high-performance computing/MPI programming)
- Excellent written and oral communication skills and the ability to communicate in English to an international scientific audience
- Motivated self-starter with the ability to work independently and to participate creatively in collaborative and frequently interacting teams of researchers
- Ability to function well in a dynamic research environment, set priorities to accomplish multiple tasks within deadlines, and adapt to ever-changing needs

OTHER INFORMATION:

Applicants cannot have received their Ph.D. more than five years prior to the date of application and must complete all degree requirements before starting their appointment. The appointment length will be up to 24 months with the potential for extension. Initial appointments and extensions are subject to performance and availability of funding.

Please provide a list of publications when applying for this position. Three letters of reference are required and can be uploaded to your profile or emailed directly to PSDrecruit@ornl.gov. Please include the title of the position in the subject line.

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.

Notice: If the position requires a Security Clearance, reviews and tests for the absence of any illegal drug as defined in 10 CFR 707.4 will be conducted by the employer and a background investigation by the Federal government may be required to obtain an access authorization prior to employment and subsequent reinvestigations may be required.

If the position is covered by the Counterintelligence Evaluation Program regulations at 10 CFR 709, a counterintelligence evaluation may include a counterintelligence-scope polygraph examination.

ORNL is an equal opportunity employer. All qualified applicants, including individuals with disabilities and protected veterans, are encouraged to apply. UT-Battelle is an E-Verify Employer.