ORNL Publications

External Publication

Job Posting Title

Computational Scientist in Modeling and Simulation for Electrical Energy Storage / NB50485000

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Purpose

Oak Ridge National Laboratory (ORNL) is committed to a broad, integrated science and technology program devoted to discovery and development of materials and processes needed to revolutionize electrical energy storage for transportation, grid, and other applications. As part of this effort, the Computational Engineering and Energy Sciences Group is seeking computational scientists to participate in and lead scientific efforts related to modeling and simulation of materials and processes for batteries and high-power-density capacitors by leveraging ORNL strengths in large-scale simulation, materials and chemical sciences, and specialized state-of-the-art capabilities in neutron scattering, nanoscience, electron microscopy, and leadership computing.

Major Duties/Responsibilities

The ideal candidate will be able to contribute to an on-going research program centered on modeling and simulation of the materials physics and chemistry of charge transfer and storage related to the materials design, selection, processing requirements, and system behavior of high power and energy density devices. The candidate will be expected to conduct research, pursue new scientific and technical directions, and creatively participate in and lead program development and proposal writing to external sponsors, primarily, but not limited to, the U.S. Department of Energy.
The position requires collaboration within a multi-disciplinary research environment consisting of computational scientists, computer scientists, experimentalists, and engineers/physicists conducting basic and applied research in support of the Laboratory's missions. Specific responsibilities include participating in the design and architecture of integrated, multi-scale, coupled-physics computer codes, design and implementation of scalable numerical methods, uncertainty quantification, collaboration with experts from various scientific disciplines on coupled-physics issues, and following team planning, documentation, verification and validation, and software quality processes. The candidate will also be expected to conduct work in strict accordance with the environmental, safety, and health requirements of the Laboratory.

Qualifications Required

Minimum Qualifications:

- The minimum required education is a Ph.D., or equivalent experience, in physics, applied mathematics, computer science, or a relevant engineering field.
- 2+ years of experience outside of a Ph.D. with expertise in one or more areas of particular relevance to simulations of interest such as numerical linear and/or non-linear algebra, adaptive mesh refinement (AMR), differencing schemes on unstructured and/or AMR meshes, multi-scale methods, high-order time integration, coupled physics methods, and/or advanced verification, validation, and uncertainty quantification methodologies.

- Demonstrated experience in the design and implementation of numerical algorithms in one or more high-level computing languages, preferably within a team that follows software quality standards.
- Effective interpersonal skills.
- Demonstrated written and oral communication skills.

Desired Skills:

- A record of publication and presentation in the field is highly-desirable.
- Experience working in a multi-disciplinary research environment.
- Experience in the development of large-scale numerical physics simulation codes.
- Experience with C++, generic programming, object-oriented analysis, and scripting languages.
- Software design education or experience.
- Understanding of verification and validation and the relationship between theory, experiments, and simulation.
- Parallel algorithm and software development, including message-passing (MPI) and programming models for multicore and heterogeneous architectures (e.g. CUDA, OpenMP, OpenCL).

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, .hmtl) 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.