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| **TITLE:** | Computational Materials Scientist |
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| **DEPARTMENT:** | U.S. Department of Energy/National Energy Technology Laboratory (NETL) |
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| **NETL CONTACT:** | Youhai Wen, youhai.wen@netl.doe.gov |
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| **DUTY LOCATION:** | Albany, OR |

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| **ACADEMIC LEVEL:** | **x** | PhD |  | MS |  | BS |  | Undergrad |  | Faculty |

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| **POSITION**  **INFORMATION:** | 1-year appointment; full time (40 hours per week) with the possibility of extension |
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| **CLOSING DATE:** | 6/30/2018 |
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| **WHO MAY BE**  **CONSIDERED:** | United States Citizens, LPRs, & Foreign Nationals with appropriate approval which includes F-1 OPT with EAD (STEM extension not valid), J-1 Exchange Visitor, and LPR with EAD |

**SUMMARY:**

An opportunity exists for a post-doctoral researcher to develop computational models to support the National Energy Technology Laboratory (NETL) Extreme Environment Materials research, a multi-year initiative involving multiple national laboratories across the Department of Energy enterprise. Research efforts focus primarily on developing physics-based advanced computational tools to provide in-depth understanding of the thermo-chemo-mechanical behavior of structural alloys under extreme environments such high temperature, high pressure, and corrosive environment, to facilitate design of novel high performance and cost-effective structural alloys in energy applications.

At high temperatures, the material processes are often close to local thermodynamic equilibrium. Subsequently, the Ginzburg-Landau based phase-field approach is appropriate for studying the complex microstructure evolution and its associated physicochemical processes. NETL has built up substantial research on phase-field modeling of high temperature oxidation as well as plasticity. We are looking to further expand our modeling capabilities. For the first year, one area of interest is to model exfoliation due to oxidation. The exfoliation model developed by ORNL and EPRI might be a good starting point -- a 1D model but comprehensive enough to include some essential physics such as heat conduction, stress and mechanical failure. Using this modeling framework and combining it with some ongoing efforts at NETL to evaluate stress generated due to oxide growth, we seek to deliver a more physics-based exfoliation modeling capability.

The successful candidate will possess demonstrable skill in computational methods for solving complex thermo-chemo-mechanical problems and significant experience in programming suitable for a high-performance computing environment (e.g. parallel processing and programming in MPI environment). Computational modeling experience using phase-field or finite element method is preferred, but not required. The successful candidate will possess excellent communication skills, and will possess demonstrable experience completing research in a collaborative/team environment. The successful candidate is NOT required to possess specific experience in oxidation modeling, but must be a quick learner.

**HOW TO APPLY:**

Applicants should apply through the Oak Ridge Institute for Science and Education (ORISE) program. The ORISE Program provides opportunities for undergraduate students, recent graduates, graduate students, postdoctoral researchers, and faculty researchers to apply classroom knowledge in a real-world setting to learn about NETL Research and Innovation Center’s (R&IC) core mission areas.

* Interested applicants should complete the online application at <http://www.orau.gov/netl/>.
* In the online application **list** **Youhai Wen as your requested mentor.** This will associate your application with this research opportunity. Please send a CV to youhai.wen@netl.doe.gov.
* If you have additional questions please contact Patricia Adkins-Coliane, [Patricia.adkins-coliane@netl.doe.gov](mailto:Patricia.adkins-coliane@netl.doe.gov), who is the NETL Graduate Education Program Manager.