

POSITION TITLE: Post-Graduate Researcher, Computational Energy Sciences

DEPARTMENT: U.S. Department of Energy

AGENCY: National Energy Technology Laboratory (NETL)

LEVEL: Post-Graduate

POSITION INFORMATION: Full-time, one year appointment, with the possibility of extension

DUTY LOCATION: Morgantown, WV

WHO MAY BE CONSIDERED: United States Citizens & Foreign Nationals with appropriate approval

SUMMARY:

Applications are sought for a post-graduate research engineer in the area of computational energy sciences at the National Energy Technology Laboratory (NETL) as part of the ORISE research participation program. The research engineer would be part of a multidisciplinary team developing and analyzing next generation energy systems and related processes. The specific activity would involve the development, testing and application of multi-scale/multi-fidelity computational tools for chemical looping. The envisioned models and simulations would include single particle and particle cluster models, faster-executing “reactor design models”, and multi-dimensional multiphase reacting CFD. The tools used would include those developed as part of the project leveraging code from numerical and scientific libraries as well as customized versions of commercial and open-source CFD tools. Experimental measurements from oxygen carrier and coal characterization experiments are available for calibration of reaction models. Experimental measurements from chemical looping systems are available for reactor model validation. This position would be at the Morgantown, West Virginia campus.

For additional information about the chemical looping project and project team, please visit the following website: <http://www.netl.doe.gov/newsroom/labnotes/jan-2014>.

KEY REQUIREMENTS:

- Applicants must be U.S. Citizens or approved Foreign Nationals
- Suitable for Federal employment, as determined by background investigation
- **Minimum qualifications:** An M.S. in Chemical Engineering, Mechanical Engineering, Computational Science, Applied Mathematics or a related field, with experience and in the development and application of computational tools for analyzing reacting flow systems. **Preferred qualifications:** A Ph.D. in Chemical Engineering, Mechanical Engineering, Computational Science, Applied Mathematics or a related field and experience in the development and application of computational tools for analyzing reacting gas-solid flow systems (see below for additional details).
- Desired skills and knowledge include some combination of those which follow and a strong interest in expansion of knowledge and learning new skills and associated tools. This would include: programming experience in python and C++ or Fortran, experience developing analysis and simulation tools using existing numerical libraries (e.g. scipy, Cantera, SUNDIALS, MINPACK), experience applying and/or customizing a general computational fluid dynamics package (e.g. MFX, Fluent, Star, OpenFOAM, Barracuda) including meshing, visualization and data analysis, experience with parameter estimation

and optimization, knowledge of particle chemistry and coal chemistry, knowledge of gas-solid fluidization engineering.

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. NETL utilizes the ORISE program to support research and work within NETL's Office of Research & Development.

- Interested applicants should complete the online application at <http://www.ornl.gov/netl/>
- In the online application list **David Huckaby** as your requested mentor. This will associate your application with this job posting. Please send a CV to David Huckaby, e.david.huckaby@netl.doe.gov
- If you have additional questions please contact Nancy Andres, Nancy.Andres@NETL.DOE.GOV, who is the NETL ORISE program contact.