TITLE: Graduate or Post-Doctoral Researcher - Particle/Material Strength Characterization
DEPARTMENT: U.S. Department of Energy
AGENCY: National Energy Technology Laboratory (NETL)
LEVEL: Graduate or Post-Doctoral
POSITION INFORMATION: Full-time, one year appointment, with the possibility of extension.
DUTY LOCATION: Morgantown, WV
WHO MAY BE CONSIDERED: United States Citizens, LPRs, & Foreign Nationals with appropriate approval

SUMMARY:

In advanced energy systems like chemical looping combustion the solid material experiences significant chemical and structural (morphological) changes as it is depleted of oxygen and then re-oxidized. An example of such a material for chemical looping combustion is hematite (Fe_2O_3) as it is reduced to Fe_3O_4 and FeO and re-oxidized to Fe_2O_3. These materials undergo significant changes leading to an eventual loss of material from the reactor. It is imperative to be able to predict that loss rate a priori. Therefore, the Department of Energy, NETL is developing a novel model that can predict particle mass loss rates as the material undergoes chemical and structural changes during reduction and re-oxidation in fluidized bed reactors. This initial work will involve identification of what particle properties are important in resisting comminution while maintaining chemical reactivity. Developing an understanding of how these properties change during the chemical cycling of the material so that a simple engineering population balance model can be developed to provide a first order approximation of the material loss during cyclic operation in a chemical looping reactor system.

KEY REQUIREMENTS:

- Applicants must be U.S. Citizens or approved Foreign Nationals
- **Minimum qualifications:** An M.S. in chemical engineering, mechanical engineering, mining or material science or a related field, with experience and publications in operational and experimental characterization of particles. **Preferred qualifications:** A Ph.D. in chemical or mechanical engineering, mining or material science. The qualifications above plus experience cfd or population balance modeling.

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.orau.gov/netl/
- In the online application **list Ronald W. Breault as your requested mentor.** This will associate your application with this job posting. Please send a CV to Dr. Ronald W. Breault at ronald.breault@netl.doe.gov.

- If you have additional questions please contact Nancy Andres, Nancy.Andres@NETL.DOE.GOV, who is the NETL ORISE program contact.