

POSITION TITLE: Post-Doctoral Researcher (Materials Science and Engineering) for Evaluating the Performance in Extreme Environments of Materials Produced Using Advanced Manufacturing Techniques.

DEPARTMENT: U.S. Department of Energy

AGENCY: National Energy Technology Laboratory (NETL)

LEVEL: Post Doc

POSITION INFORMATION: Full Time, annual appointments, renewal up to 5 years

DUTY LOCATION: Albany, OR

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

SUMMARY:

A highly motivated post-doctoral research associate is sought with materials knowledge/experience in evaluation of the high temperature corrosion and mechanical behavior of ceramics, metals and composite materials. The applicant will be part of an integrated research team developing new chemical reactor concepts for gasification of coal (with up to 20 wt pct biomass additions). The design of prototype chemical reactors will be optimized by team members utilizing computational fluid dynamics of reacting flows. It is ultimately envisioned that these designs will be translated into modular chemical reactors through advanced manufacturing, such as additive manufacturing (or 3-D printing) methods.

Specifically, the applicant will be part of this team and will conduct research to: 1) identify materials and manufacturing methods of suitable materials systems (metal with an appropriate ceramic/refractory environmental barrier); and (2) evaluate articles made through these methods. The candidate will work to identify the appropriate materials systems (metal with ceramic/refractory environmental barrier) to resist the extreme gasification environment (corrosion, wear, erosion, mechanical stress, etc) through a combination of materials modeling (such as using commercial thermodynamic phase prediction software [i.e, FactSage and/or Thermocalc] and laboratory experiments; engage outside vendors for producing test articles through appropriate manufacturing means; and finally, evaluate the performance of the manufactured articles in coal gasification environment by designing and conducting laboratory experiments to simulate the appropriate coal gasification conditions.

KEY REQUIREMENTS:

- Applicants must be U.S. Citizens or approved Foreign Nationals
- PhD in materials science/engineering
- College courses or work experience preferred in the following areas:
 - course work metallurgy, ceramics, physics, chemistry, and engineering
 - course work in materials thermodynamics and kinetics
 - course work in mechanical behavior of materials
 - knowledge of gaseous corrosion and/or hot-corrosion of metals and/or ceramics
 - knowledge of powder (or particulate) processing of metals and/or ceramics
 - knowledge of additive/advanced manufacturing methods of metal and/or ceramics.
 - high level of motivation and self-direction

- good verbal and written English communication skills, including at conferences or other meetings
- demonstrated experience in conducting scientific research

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 James Bennett as your requested mentor**. This will associate your application with this job posting. Please send a CV to James.Bennett@netl.doe.gov.
- If you have additional questions please contact Nancy Andres, Nancy.Andres@netl.doe.gov, who is the NETL ORISE program contact.