**TITLE:** University Coal Research (UCR) Outreach

**DEPARTMENT:** U.S. Department of Energy

**AGENCY:** National Energy Technology Laboratory (NETL)

**LEVEL:** Undergraduate/Graduate/Post-doctoral candidate

**POSITION INFORMATION:** Summer appointments (may also be potential for full time appointments)

**LOCATION:** NETL Pittsburgh, NETL Morgantown

**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:**

Students and post-doctoral candidates are sought to engage in collaborative research with scientists at NETL’s Research and Innovation Center (R&IC). NETL is seeking researchers for projects in the following research areas (RAs):

1. **Surface Acoustic Wave (SAW) Based Sensors:** NETL R&IC has a long history in development of thin film functional sensor layers and has also performed work in the integration with SAW sensors for high temperature oxy-fuel combustion applications. There exists opportunity for a successful candidate to to learn about past experience along with existing capabilities for thin film deposition, high temperature automated gas reactors for sensor testing, and surface science analytical capabilities at the NETL. Potential project research is envisioned to consist of a full-time post-doctoral researcher or graduate student on-site at NETL to leverage NETL facilities, and promote the collaborative development of the SAW-based sensing technology in conjunction with university partners. Part-time opportunities may also exist for successful applicants at the graduate student-level researching in related areas to access NETL’s reactor facilities and promote collaborations with on-site researchers. The primary duty station will be NETL’s Pittsburgh facility.
2. **Oxide-Based Nanowires in SAW Sensors:** Similar in scope to RA1, this research area will focus on the development of oxide-based nanowires for application in chemi-resistive and functionalized SAW based sensors in collaboration with university partners. It will also integrate the development of nanowire arrays on SAW devices and the leveraging of data analytics approaches for achieving selectivity in complex gas streams. The balance of a full-time post-doctoral researcher or graduate student on-site site at NETL could be allocated to this effort to collaborate and learn with both projects in RA1 and RA2. As in the case of RA1, part-time opportunities may also exist for successful applicants at the graduate student level researching in related areas to access reactor facilities and promote collaborations with on-site researchers. The primary duty station will be NETL’s Pittsburgh, PA facility.
3. **Embedded Sensing in Solid-Oxide Fuel Cell (SOFC) Applications:** The NETL R&IC solid oxide fuel cell group has developed a unique test platform for testing and demonstration of new embedded sensor technology. This system could be used by a successful applicant as a demonstration platform to understand and develop methods for sensor integration into SOFC relevant environments, particularly as it relates to the capability for wireless interrogation and real-time process monitoring. NETL facilities could also be potentially leveraged for testing of sensors under application relevant fuel gas streams as well as for materials characterization related to embedded sensor development efforts. The primary duty station will be NETL’s Morgantown, WV facility.

**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 R&IC core mission areas.

* Interested applicants should complete the online application at <http://www.orau.gov/netl/>
* Please designate Omer Bakshi, [omer.bakshi@netl.doe.gov](mailto:omer.bakshi@netl.doe.gov), as a mentor in your application.
* If you have additional questions please contact Nancy Andres, [nancy.andres@netl.doe.gov](mailto:nancy.andres@netl.doe.gov), who is the NETL ORISE program contact.