

Opportunity Title: Breakthrough Advances in Mineral Processing

Opportunity Reference Code: NETL-FRP-2027-Stuckman

Organization National Energy Technology Laboratory (NETL)

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How to Apply A complete application consists of:

- An application, including academic history, work history experiences, and honors/awards
 - A current resume/CV, including academic history, employment history, relevant experiences, and publication list
 - Two educational or professional recommendations
- You must provide contact information for at least two recommenders in your application. The first two recommendations received will be attached to your application for review by NETL. You may click the "send" (paper airplane) button to send the recommendation request email immediately after entering their information prior to submitting your application; if not, a request will automatically be sent when you submit your application. Your recommenders will receive an email with a subject line of "[Your Name] - ORISE Recommendation Request - [your email]", from Zintellect@ornl.gov. This email will include information on the opportunity to which you have applied, as well as a secure link to submit a recommendation for you for this application. If you ask the same person to submit a recommendation for you for multiple applications in Zintellect, they must click the unique link in each email request, but will be given the opportunity to copy over what they had previously submitted.

All documents must be in English or include an official English translation.

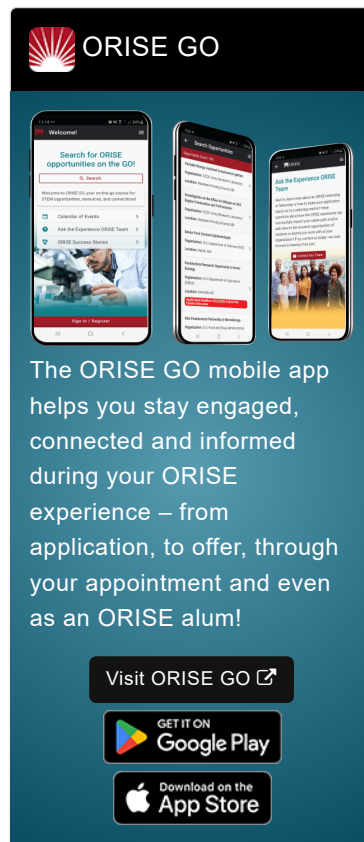
If you have questions before, during, or after you submit an application, you may reach out to NETLinfo@ornl.gov.

Selection Decisions

Selection decisions are made directly by NETL researchers and staff looking to host an internship. Your application will be available to the hosting mentor(s) for up to 12 months after you apply. You may withdraw your application at any time. Applications may be reviewed and selected on a rolling basis or the hosting mentor(s) may choose to wait until after the application deadline before reviewing all applications simultaneously. A final decision of non-selection may not be confirmed for several months after the listed application deadline.

Application Deadline 12/31/2026 11:59:59 PM Eastern Time Zone

Description The National Energy Technology Laboratory's (NETL's) record of success has been built on understanding the future of energy and the technologies required to make that future possible. We've long touted our success in developing the technologies that took on acid rain in the 1970s and mercury in the early 2000s.



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Program Goals

The NETL Faculty Research Program (FRP) offers qualified academic faculty an opportunity to collaborate with NETL principal investigators on research at state-of-the-art NETL facilities. While typical appointments are part-time, some appointments are offered on a full-time basis during the summer or as a sabbatical. Prior to the appointment, the NETL principal investigator and selected applicant will define the scope of research and schedule the appointment period. Appointment periods range from one month to more than one year. Funding varies and is awarded based upon the participant's institutional salary. Faculty members are expected to elevate the collaboration with NETL by supporting connections with students at their home institution, in addition to the research project.

Connecting Students with NETL

The collaboration between the selected faculty member and NETL will include connecting their academic institution and students with NETL. Student connections may be fostered through activities such as, but not limited to, the following:

- Inviting NETL scientists and engineers to present at a departmental seminar
- Joining NETL at institutional career/job fairs to discuss your experiences with NETL
- Speaking about your experiences with NETL at information sessions
- Sharing invitations to NETL information sessions with students
- Partnering with NETL on proposals and other funding opportunities
- Recommending opportunities to NETL scientists and engineers, such as serving as a reviewer or editor, leading a workshop, etc.
- Serving as an ambassador to NETL for students interested in careers in the national lab complex

Research Project

Through the Oak Ridge Institute for Science and Education (ORISE), this posting seeks a faculty collaborator to engage in projects with the Research Innovation Center (RIC) at the National Energy Technology Laboratory (NETL) in the area of CMAA Process Development Goal 3: Breakthrough Advances in Mineral Processing under the mentorship of Mengling Stuckman. This project will be off-site but will be hosted by the NETL [Pittsburgh, PA](#) and [Albany, OR](#) campuses.

Selected candidate(s) will collaborate with current researchers on the topics of manufacturing product development and domestic resilience, bolster supply chains and encourage cross-cutting collaborations between industries. The project will be affiliated with researchers at the National Energy Technology Laboratory. This project will involve collaboration on the development and validation of integrated technology platforms to convert waste streams or other major economic loss of material processing, including waste management liabilities, into significant value streams for domestic mining and mineral production or other relevant industrial processing operations. The goals of the project include identifying difficulties with processing

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mineral fines and ultra-fines and identify novel approaches to optimize or 'unlock' fines utilization.

The participant will primarily perform research activities remotely to (1) conduct a literature review of beneficiation technologies for existing industrial mineral processing to identify the challenges of fine and 'slime' (ultra-fine) processing, for both conventional and unconventional feedstocks or processing flowsheets; (2) learn and co-develop refined processing methods and workflows that resolve known challenges and/or capture value from fines and slimes processing, and improvements in down-stream metal recoveries; (3) develop hands-on experience, via on-site visits to NETL sites (located in Pittsburgh, PA, and Albany, OR), with participation in experimentation and optimizations with NETL researchers, and (4) learn optimized unit operations for beneficiation technologies that address challenges of processing fines, such as agglomeration or separation technologies for fines via physical, or mechanical, or chemical techniques to aid domestic industries to push the limitations of fines mineral processing for the recovery of critical minerals commodities or byproducts.

Stipend: The selected faculty participant will receive a monthly stipend commensurate with their institutional salary.

Program Requirements: To document the effectiveness of the program, participants are required to submit a pre-appointment and post-appointment survey, as well as a reflection on their appointment experience when they renew or end their appointment. The reflection should summarize their project(s), additional activities, and overall experience. Details are provided as the appointment end date approaches.

Participants may also have the opportunity to contribute to manuscripts, journal articles, book chapters, conference presentations, posters, patents, and other publications as a part of their appointment. Such achievements should also be reported to ORISE; additional details are provided after an offer has been accepted.

The National Energy Technology Laboratory (NETL), part of the U.S. Department of Energy (DOE) national laboratory system, is owned and operated by the DOE. NETL supports the DOE mission to advance the energy security of the United States. This is an educational opportunity offered by NETL and administered by the Oak Ridge Institute for Science and Education. Participants in the program are not considered employees of NETL, DOE, the program administrator, or any other office or agency.

Qualifications To be eligible, applicants must be a full-time regular permanent faculty member at an accredited college/university with a research interest in NETL core R&D areas.

Potential participants should have:

- 5+ years of post-PhD research or professional experience in mineral processing, beneficiation experimentation, or process/ flowsheet optimization efforts.
- Demonstrated experience in field sampling, material characterization analysis, QA/QC protocols on geologic materials or processed mine tailings, with an emphasis on

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geometallurgy, mineral liberation analysis, and mineralogical microanalysis techniques.

- Practical experience handling and interpreting data from solids and liquids from complex matrices. Strong foundational understanding of analytical limitations, detection limits, and matrix interferences.
- An interest in applying or expanding expertise across techniques including, but not limited to: portable Energy-Dispersive X-ray Fluorescence (pXRF), floor-standing WD X-ray Fluorescence (XRF), micro XRF, Tescan Integrated Mineral Analyzer (TIMA), Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN), X-ray Diffraction (XRD), Visible and Short Wave Infrared Spectroscopy (VIS-SWIR), Laser-Induced Breakdown Spectroscopy (LIBS), X-Ray Photoelectron Spectroscopy (XPS), Scanning Electron Microscopy (SEM), Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES), Inductively Coupled Plasma Mass Spectroscopy (ICP-MS), Gas Chromatography (GC), Thermogravimetric Analyzer (TGA), Ion Chromatography (IC), and laser diffraction particle size analyzers.
- In-depth geochemical background to evaluate what trace metals, elemental ratio proxies, and useful isotopic ratios are needed to facilitate the fingerprinting of the source of- or chemical process for the critical metal enrichments in unconventional feedstocks (e.g., Sr and Li, or base-metal enrichment in produced waters, Gallium and Germanium behavior in legacy Zinc mine tailings, etc.).

Point of Contact [Jordan](#)

- Eligibility Requirements**
- **Citizenship:** LPR or U.S. Citizen
 - **Degree:** Master's Degree or Doctoral Degree.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Communications and Graphics Design** ([2](#) )
 - **Computer, Information, and Data Sciences** ([17](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([29](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([51](#) )
 - **Mathematics and Statistics** ([11](#) )
 - **Physics** ([16](#) )
 - **Science & Engineering-related** ([2](#) )
 - **Social and Behavioral Sciences** ([29](#) )
 - **Age:** Must be 18 years of age

Affirmation I certify that:

1. To the best of my knowledge all information contained in this application is accurate.
2. I am currently a faculty member at an accredited college/university.
3. I understand that any falsification will render me ineligible for participation and, if found after participation has begun, may require me to reimburse any funds received.