Opportunity Title: Numerical Simulation and Laboratory Analysis of Methane Hydrate - Students
Opportunity Reference Code: NETL-2021-PIP-Seol-1

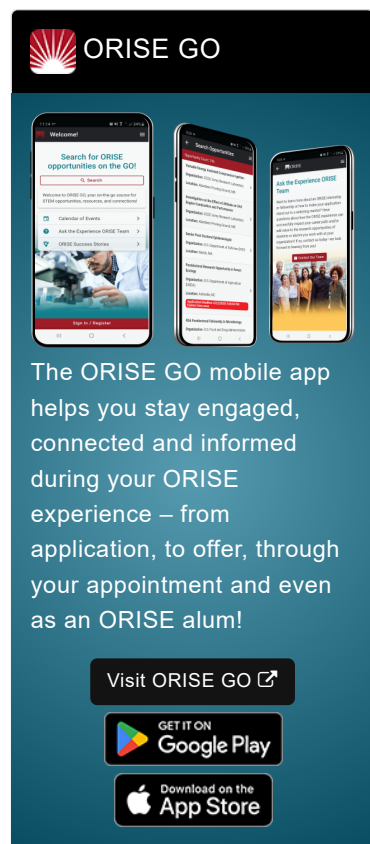|	
Organization	National Energy Technology Laboratory (NETL)
Reference Code	NETL-2021-PIP-Seol-1
How to Apply	Applicants should apply through the Oak Ridge Institute for Science and Education (ORISE) program. The ORISE Program provides opportunities for undergraduate students, recent graduates, graduate students, postdoctoral researchers, and faculty researchers to apply classroom knowledge in a real-world setting to learn about NETL Research and Innovation Center's (R&IC) core mission areas. A complete application consists of: • An application • Transcripts – **Click here for detailed information about acceptable transcripts** • A current resume, including academic history, employment history, relevant experiences • Two educational or professional references All documents must be in English or include an official English translation. If you have questions, send an email to NETLinfo@orau.org. Please include the reference code for this opportunity in your email.
Application Deadline	6/30/2022 3:00:00 PM Eastern Time Zone
Description	Through the Oak Ridge Institute for Science and Education (ORISE), this posting seeks a graduate student or post-bachelors physical research scientist to engage in projects with the Research Innovation Center (RIC) researchers at the National Energy Technology Laboratory, under the mentorship of Yongkoo Seol. RIC performs research within the National Gas Hydrate Research and Development Program to obtain pertinent, high-quality information on gas hydrates that will benefit the development of models and methods for predicting the behavior of gas hydrates in their natural environment under natural conditions and production scenarios. RIC supports major gas hydrate production field tests by providing numerical predictions on fluid migration, gas production, and potential reactions occurring during gas production activities, as well as by providing fundamental understanding and knowledge on hydrate behavior derived from experimental investigations on thermal, hydrological, geo-mechanical, and reactive responses of hydrate. RIC research includes, but is not limited to, numerical modeling efforts, including simulations of long-term production tests, laboratory experimental tests on geo-mechanical stress-strain measurements, water conductivity and relative permeability of fluid through hydrate-bearing sediments, high resolution visualizations of hydrate distributions and fluid migration in porous media under in situ conditions, developing state-of-the art pressure core analysis tools for characterizing geo-mechanical responses of field-retrieved hydrate-bearing pressure cores, and machine learning application to gas hydrate system to develop efficient key parameter estimation tools and large-scale 3D geologic model for gas hydrate reservoir.. The selected applicant will have the opportunity to learn about and gain advanced skillsets to support numerical reservoir simulations for gas production, laboratory characterization of hydrate bearing sediments, basin petroleum system modeling and machine learning application, depending on qualifications and background.

For more information about research ongoing in the Hydrate Portfolio at NETL please visit https://edx.netl.doe.gov/hydrate/

Qualifications The ideal candidate will have some of, but not all, the following skills:

- High-pressure/low temperature laboratory experiment skill
- Laboratory geo-mechanical characterization and analysis
- Hydrologic or fluid transport models using fully coupled THCM code
- Machine learning algorithm and applications
- Programming (C++, Fortran, Matlab, Python)
- Basin model development (PetroMod)

Eligibility Requirements
- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Associate's Degree, Bachelor's 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** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (46 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
  - **Social and Behavioral Sciences** (28 👁)

Affirmation I certify that:

- I have received a Bachelor's degree no more than two years before the date of the internship appointment.

OR

- I am currently pursuing an undergraduate degree.

OR

- I am currently pursuing a master's degree.

OR

- I am currently pursuing a doctoral degree and I have <u>not</u> received a master's degree within the last three years.
  Note: recent Master's graduates should apply to the Postgraduate opportunity