

Opportunity Title: Post-Graduate Combustion Engineer/Scientist-PGRP

Opportunity Reference Code: NETL-2019-PGRP-Ferguson-1

Organization National Energy Technology Laboratory (NETL)

Reference Code NETL-2019-PGRP-Ferguson-1

How to Apply A complete application consists of:

- An application
- Transcripts
- Two educational or professional references

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

Please send a CV to Dr. Don Ferguson
(donald.ferguson@netl.doe.gov)

If you have questions, send an email to NETLinfo@orau.org.
Please include the reference code for this opportunity in your email.

Application Deadline 9/1/2019 11:59:00 PM Eastern Time Zone

Description Through the Oak Ridge Institute for Science and Education (ORISE) this posting seeks a graduate student or post-doctoral researcher to apply for an appointment to assist in the development and testing of a bench scale detonation-based combustion test facility and adjacent shock tube at the National Energy Technology Laboratory (NETL). NETL is a multi-disciplinary, scientific and technical-oriented national laboratory and the U.S. Department of Energy's primary lab supporting fossil fuel-based energy research.

Pressure gain combustion through detonation technologies such as Rotating Detonation Combustion (RDC) offers the potential for significant efficiency gains when used as a replacement for conventional constant pressure combustion in a Gas Turbine Engine or Direct Power Extraction. The candidate will learn more about these technologies and applications and will be expected to assist with design and installation of the experimental facility, conduct day-to-day testing, and perform detailed analysis of time dependent measurements (pressure, temperature, ion, thin-film heat flux) as well as digital image processing and advanced laser diagnostics (i.e. Tunable Diode Laser Absorption Spectroscopy). Relevant concepts include shock wave dynamics, high speed fluid dynamics, jet mixing, combustion, heat transfer, mechanical design and data acquisition / instrument control. The candidate will also be expected to disseminate the research by preparing and presenting technical papers and reports.

Qualifications An ideal candidate will have demonstrated completion of



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coursework pursuant to a Master's or PhD in science or engineering. The candidate will research for a period of 1 year, with the possibility of extending that appointment (up to five years).

An ideal candidate will have:

- An expertise in experimental combustion and fluid mechanics, heat transfer and thermodynamics, specifically with application to highly dynamic environments
- A working understanding of experimental data acquisitions using commercial software applications such as National Instruments LabView is required.
- Experience with analysis and reduction of experimental data including image processing is desirable using Mathworks MATLAB or Python.
- Must have good oral and written skills to enable communication of the research to the scientific and technical communities.

**Eligibility
Requirements**

- **Degree:** Any degree .
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Communications and Graphics Design** (2 )
 - **Computer, Information, and Data Sciences** (16 )
 - **Earth and Geosciences** (21 )
 - **Engineering** (27 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (45 )
 - **Mathematics and Statistics** (10 )
 - **Other Non-Science & Engineering** (2 )
 - **Physics** (16 )
 - **Science & Engineering-related** (1 )
 - **Social and Behavioral Sciences** (27 )

Affirmation I certify that I:

- Have an earned or will receive a doctoral or master's degree by appointment start date.

OR

- Have received the degree no more than three years before the date of application (postmasters' applicants).

OR

- Have received the degree no more than five years before the date of application (postdoctoral applicants).