

**Opportunity Title:** R&D SOFC Grid Integration Power Electronics

**Opportunity Reference Code:** NETL-2019-PGRP-Ohodnicki-2

**Organization** National Energy Technology Laboratory (NETL)

**Reference Code** NETL-2019-PGRP-Ohodnicki-2

**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.

In the online application **list Paul Ohodnicki as your requested mentor**. This will associate your application with this job posting. Please send a CV to [paul.ohodnicki@netl.doe.gov](mailto:paul.ohodnicki@netl.doe.gov).

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 [NETLadmin@orau.org](mailto:NETLadmin@orau.org). Please include the reference code for this opportunity in your email.

**Application Deadline** 6/1/2019 11:59:00 PM Eastern Time Zone

**Description** Through the Oak Ridge Institute for Science and Education (ORISE) this posting seeks a researcher to apply for an appointment to participate in the research and development of power electronics applications for interfacing between solid oxide fuel cell (SOFC) systems and utility grids 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.

The selected individual will collaborate on an interdisciplinary team spanning industry, academic, and national laboratory partners with the primary learning objective to study and gain a deeper understanding of the interactions between SOFC and power conditioning systems and to research novel methods to optimize SOFC system operations with emerging power electronics and power conversion applications.

**Qualifications** An ideal candidate would be capable of researching within the team to (1) analyze and investigate potential interactions between SOFC systems and power conditioning systems, (2) design and simulate power electronics systems for grid integration, and (3) design the controller for the power electronics system for mitigating the disturbances from utility grids to SOFC systems for optimal SOFC operations. The ideal candidate would also be capable of leveraging analytical control design methods and power electronics simulations tools.

A successful candidate will have:



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1. An advanced degree in Electrical Engineering, Applied Physics, Materials Science, or a related field (MS or PhD preferred).
2. Experience with designing and implementing controllers for single- and three-phase inverters.
3. Experience with MATLAB/Simulink/PLECS simulation tools or other power electronics simulation packages.
4. Experience with Si-based and SiC-based MOSFET and IGBT devices and gate drivers.
5. An understanding of circuit design and analysis.
6. Experience with designing and applying electronics and electrical test equipment including oscilloscopes with current and voltage probes, DSP controllers with PWM capability, impedance measurement systems, LCR meters, network analyzers, function generators, and other power electronics instruments.
7. Prefer the candidate is familiar with distribution class, medium voltage converters, such as multi-level converters.

- Eligibility Requirements**
- **Degree:** Master's Degree or Doctoral 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).