

Opportunity Title: Hydrogen Shot Fellow: Hydrogen and Fuel Cell Technologies Office

Opportunity Reference Code: DOE-EERE-STP-HFTO-2023-1802

Organization U.S. Department of Energy (DOE)

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The U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy's (EERE) Science, Technology, and Policy (STP) Program serves as a next step in the educational and professional development of scientists and engineers by providing opportunities to participate in policy-related projects in Washington, D.C. Participants will become part of a group of highly-trained scientists and engineers with the education, background, and experience to be part of the workforce that supports the DOE's mission in the future.

Description DOE announced the Energy Earthshots Initiative aimed at accelerating breakthroughs of more abundant, affordable, and reliable clean energy solutions within the decade. The first Energy Earthshot, launched June 7, 2021—Hydrogen Shot—seeks to reduce the cost of clean hydrogen by 80% to \$1 per 1 kilogram in 1 decade ("1 1 1"). Achieving the Hydrogen Shot's \$1/kg cost goal will enable new markets for hydrogen, including energy storage, steel manufacturing, clean ammonia, and heavy-duty trucks. This will create more clean energy jobs, reduce greenhouse gas emissions, and position America to compete in the clean energy market on a global scale. Hydrogen and Fuel Cell Technologies Office (HFTO) will play a key role in this effort and is launching a Hydrogen Shot Opportunity to recruit diverse talent that can contribute to achieve Hydrogen Shot.

HFTO funds research, development, demonstration, and deployment (RDD&D) of hydrogen and fuel cell technologies across multiple sectors enabling innovation, a strong domestic economy, and a clean, equitable energy future (<https://www.energy.gov/eere/fuelcells/fuel-cell-technologies-office>). Research programs within HFTO include Hydrogen Infrastructure, Fuel Cell Technologies, Systems Development and Integration, and Systems Analysis. Hydrogen Shot Fellows will engage with one or more programs, or functional areas (i.e. operations, communications, stakeholder engagement, etc.), within HFTO and focus on activities to tackle key challenges and to make Hydrogen Shot a reality. **HFTO is seeking innovative Fellows to engage in one of five subprograms and functional areas. The Hydrogen Shot Fellowship will last one year, with the opportunity to renew for additional years at the discretion of HFTO. Details of programmatic areas include:**

Hydrogen Production Program

HFTO's Hydrogen Production Program is looking for a Hydrogen Shot Fellow to focus on clean hydrogen production research and development. Key areas of RDD&D include various electrolysis



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technologies, as well as solar thermochemical, photoelectrochemical, and biological processes. There is a strong interest in candidates with experience in electrolysis for hydrogen production to contribute to the Clean Hydrogen Electrolysis Program and Hydrogen Shot efforts.

Hydrogen Infrastructure Program

HFTO's Hydrogen Infrastructure Program is looking for Hydrogen Shot Fellows to focus on hydrogen infrastructure technologies research and development. Key areas of RDD&D include materials compatibility with hydrogen, hydrogen liquefaction, pipelines, tube trailers, physical and materials-based hydrogen storage, and technologies used at hydrogen fueling stations, such as compressors, storage vessels, dispensers, and cryopumps.

Fuel Cell Technologies Program

Hydrogen Shot Fellows in this program will focus on polymer electrolyte membrane fuel cells (PEMFCs) for medium and heavy-duty transportation applications, as well as reversible fuel cells (RFCs) for power generation and energy storage. Candidates with experience in fuel cell materials, components, stacks, and systems are of interest. Preferred candidates will also have experience in manufacturing and recycling processes relevant to fuel cells and related technologies.

Systems Development and Integration Program

HFTO's SDI Program is seeking a Hydrogen Shot Fellow to engage in the commencement of the program and collaborate on hydrogen and fuel cell technology demonstration efforts, as well as collaborating in technologies such as safety, codes, and standards and manufacturing of key components. Technology demonstrations span a wide range of hydrogen end uses including (1) grid energy storage and power generation (2) transportation and hydrogen fueling demonstrations, such as heavy-duty trucks and marine vessels, and (3) decarbonizing chemical and industrial processes, such as steel and ammonia production, by integrating green hydrogen.

Systems Analysis Program

Hydrogen Shot Fellows in the SA Program will engage in critical review of analyses, stakeholder engagement to inform analysis priorities, briefing materials, and coordination of analysis efforts across HFTO and with other DOE Offices. SA funds cross-cutting analysis that informs RDD&D priorities by characterizing the value proposition of hydrogen and fuel cell technologies in emerging applications (e.g., steelmaking, chemicals, energy storage, and heavy-duty transportation), life cycle emissions, as well as technical and cost barriers to market adoption.

General Fellow Activities include:

- You will learn and engage in critical aspects of HFTO's mission, mainly supporting Hydrogen Shot related activities, conducting technical reviews of Hydrogen Shot projects funded by the HFTO, drafting key documents summarizing program strategy and accomplishments, technoeconomic analysis to inform program target-setting, organization of workshops and conferences to

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solicit feedback from expert stakeholders on program direction and strategy, identification of priority areas of research for future program activities, and giving presentations at technical conferences and events to solicit stakeholder feedback on program activities.

- Collaborate with DOE to learn how to manage projects including monitoring Hydrogen Shot project progress and milestones as well as reviewing and analyzing project progress reports and other technical reports. Engage with DOE to communicate with researchers to address questions and issues that arise.

Location

Washington, D.C.

Participant Benefits

Selected candidates will receive a competitive stipend. Stipend rates are determined by DOE officials, and are based on the candidate's academic and professional background. Candidates will also be eligible to receive a stipend supplement to offset the cost of health insurance premiums and relocation of up to \$5,000. A travel and research allowance of \$10,000 will also be available to participants for each appointment year.

Nature of the Appointment

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOE, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE letter of appointment and Terms of Appointment.

Qualifications

- Be a U.S. Citizen or Lawful Permanent Resident.
- Be currently pursuing, or have completed requirements for, a Bachelor's, Master's, or Doctoral Degree.

An ideal applicant will have superior academic performance and publication record, strong analytical, research and communication (oral and written) skills and demonstrated capacity for creative thinking, a strong technical background and experience in an energy-technology-related field, and be interested in being part of a multi-disciplinary, fast-paced environment, focused on energy technology research and development. Expertise in one or more EERE technology area (e.g., renewable energy, clean transportation, storage technologies) is helpful, but enthusiasm and willingness to develop new expertise are paramount.

A completed application consists of:

- Profile Information
- Application Questions (*goals, experiences, and skills relevant to the opportunity*)
- Transcript(s) - An unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Selected candidate may be required to provide proof of completion of the degree before the appointment can start.
- A current resume/CV

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- One Letter of recommendation - While a letter of recommendation is not required to be considered, applicants are required to provide contact information for one recommendation in order to submit the application. Applicants are encouraged to request a letter of recommendation before submission as this may help reviewers have a better understanding of the applicant's qualifications and interests. The letter of recommendation must be submitted on your behalf before selections are completed and offers are made.

CV must include the following:

- Applicant Information
- Education History. List all institutions from which you received or expect to receive a degree, beginning with current or most recent institution. Include the name of the academic institution, degree awarded or expected, date of awarded or expected degree, and academic discipline.
- Work and Research Experience. List all work and research experiences beginning with current or most recent. Include the name of the employer, location, position held, and time period involved.
- Leadership Experience. List experiences (e.g., work, civic, volunteer, research) that demonstrate your leadership skills. Detail your role, type of experience, organization, location, and duration.
- Honors and Awards. List in chronological order (most recent first) any awards or public recognitions. Include the name of awarding institution, title of the award or honor, and date of award or honor.
- Publications. List publications in the following order: 1) referee journals; 2) books; 3) published proceedings; 4) non-refereed articles; and 5) patents. Citations must include a) authors; b) year of publication; c) title; d) full name of journal; e) volume number; and f) page number(s).

If you have questions, please send an email to DOE-RPP@orise.ora.gov. Please list the reference code [DOE-EERE-STP-HFTO-2023-1802] for this opportunity in the subject line of your email.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Academic Level(s):** Faculty, Graduate Students, Post-Bachelor's, Postdoctoral, or Post-Master's.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Engineering** (27 )
- **Age:** Must be 18 years of age