Postdoctoral Researcher Position in Microfluidic Electrochemical Platforms
Vanderbilt University

Job Title Postdoctoral Researcher Position in Microfluidic Electrochemical Platforms

Department Mechanical Engineering, Chemical Engineering, Applied Physics, or a related field.
https://engineering.vanderbilt.edu/departments/mechanical-engineering/

Institution Vanderbilt University
Nashville, Tennessee

Date Posted Jul. 18, 2025

Application Deadline Open until filled

Position Start Date Available Immediately

Job Categories Post-Doc

Academic Field(s) Mechanical Engineering
Engineering Physics
Chemical/Petroleum Engineering - Other

Job Website https://www.vanderbilt.edu/postdoc/prospective-postdocs/current-opportunities/

Apply By Email haoxiang.luo@vanderbilt.edu

Job Description

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Department of Mechanical Engineering, Vanderbilt University
Nashville, Tennessee, USA

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Position Description

The Department of Mechanical Engineering at Vanderbilt University invites applications for a Postdoctoral Scholar position in the area of microfluidic platforms for studying electrochemical processes. This position is part of a multidisciplinary effort to develop innovative microfluidic platforms that enhance the performance and mechanistic understanding of electrochemical systems, including those for energy storage, desalination, and resource extraction. The successful candidate will work closely with faculty and graduate researchers in a collaborative research environment that bridges microfluidics, electrochemistry, and computational modeling.

Key Responsibilities

- Design, fabricate, and test microfluidic devices for integration with electrochemical systems.
- Utilize microscopy and flow measurement techniques, e.g., high-speed imaging.
- Conduct CFD modeling of fluid flow, multiphase transport, and reaction dynamics.
- Analyze experimental and simulation data to extract fundamental insights.
- Prepare manuscripts and reports, and present research findings at national and international conferences.
- Engage with interdisciplinary teams across mechanical engineering, environmental engineering, chemical engineering, and materials science.

Required Qualifications

- Ph.D. in Mechanical Engineering, Chemical Engineering, Applied Physics, or a related field.
- Demonstrated expertise in:
    - Microfluidic device design
    - Microfabrication techniques
    - Electrochemical processes
    - Microscopy and flow diagnostics
    - CFD modeling (COMSOL, ANSYS Fluent, or similar)
- Strong foundation in fluid mechanics, multiphase flow, electrochemistry, micro/nano-fluidics, and computational modeling.
- Excellent communication skills and the ability to work independently and in teams.

Preferred Qualifications

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- Background in electrochemical systems or electrochemical analysis.
- Experience with sensor integration or materials characterization.
- Proficiency in scientific programming (Python, MATLAB, or equivalent).

Appointment Details

- **Start Date:** Immediately available
- **Duration:** One-year appointment with potential for renewal based on performance and funding.
- **Salary:** Commensurate with experience, following NIH and Vanderbilt University guidelines.

Application Instructions

This postdoc is expected to work with several research labs, including Profs. Shihong Lin, Deyu Li, and Haoxiang Luo. To apply, please submit the following as a single PDF file to Prof. Haoxiang Luo at haoxiang.luo@vanderbilt.edu

- A cover letter outlining your research background and fit for the position
- Full curriculum vitae
- Names and contact information for at least two academic references

EEO/AA Policy

Vanderbilt University is an equal-opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, or status as a protected veteran, or any other characteristic protected by law.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact Haoxiang Luo
Mechanical Engineering

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Vanderbilt University

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