



Unsteady
Flow
Interactions
Laboratory



LEHIGH
UNIVERSITY

Postdoctoral Research Associate Opportunity

Application Deadline: For full consideration, please submit an application by **October 07, 2022**. Afterwards the position will be open until a suitable candidate is identified.

Position Start Date: January 2023

Duration: 1 – 2 years

Department Institution: Department of [Mechanical Engineering and Mechanics](#), Lehigh University

The [Unsteady Flow Interactions Laboratory](#) at [Lehigh University](#) invites applications for a postdoctoral research associate position. We are currently looking to hire a highly motivated candidate in Dr. Keith Moored's research laboratory as part of an ARPA-E sponsored project on Bio-Inspired Renewable Energy (BIRE) for Highly-efficient Low-cost Riverine Hydrokinetics; part of the [SHARKS program](#).

In this project, we are focused on maximizing the energy extraction efficiency of a Bio-Inspired Renewable Energy (BIRE) hydrokinetic turbine for electricity generation to be used from remote villages to large cities. Our efforts in understanding and optimizing the hydrodynamics of the BIRE device are part of a collaborative effort with researchers at three other institutions that will be contributing power generator, controls, and structural expertise. Our BIRE research will result in levelized costs of energy and an environmental impact that is lower than in current hydroelectric river-based power generation. The research is highly collaborative with a consortium of collaborators at the University of Virginia, University of Michigan, and Sandia National Laboratories.

The position focuses on the experimental bio-inspired hydrodynamics component of this research. We are examining the power generation of oscillating hydrofoils and their associated unsteady flows using direct force and power measurements combined with particle image velocimetry (PIV) flow measurements. The experiments are also closely corroborated with in-house numerical simulations. We are focusing on how and why non-sinusoidal kinematics, dual-foil interactions, hydrofoil shape, and non-uniformly flexible foils can maximize the power extraction efficiency of the system. The successful candidate will have the opportunity to mentor undergraduate and graduate students, publish high-quality journal articles, attend conferences and review meetings, and get further professional development to prepare them for their future endeavors.

Applicants are expected to be experienced in experimental fluid mechanics. Prior experience in unsteady flows, motion control systems, direct force measurements, and PIV is desirable. Experience in bio-inspired flows, numerical simulations, and/or power generation applications is beneficial, though not necessary.

The successful candidate must hold a Ph.D. in Mechanical and/or Aerospace Engineering or other related disciplines. The candidate should be fluent in English and have good verbal and written communication skills. The candidate should be self-motivated, enthusiastic to explore new areas, and able to work both independently and collaboratively.

Appointment will be for one year, renewable up to two years by mutual agreement. We believe that diversity in race and ethnicity, gender and gender identity, sexual orientation, socioeconomic status, language, culture, national origin, religious commitments, age, and (dis)ability status makes our team stronger. Candidates of all backgrounds are encouraged to apply.

Interested candidates should send a single PDF file including: (i) a CV with a complete list of publications, (ii) a short letter (maximum 2 pages) explaining your interest in the project and any relevant prior experience that uniquely qualifies you for the position, and (iii) contact information of three references to Dr. Keith Moored at kmoored@lehigh.edu.