

Postdoctoral Researchers: Laser/Optical Diagnostics in Hydrogen Combustion and Reacting, Multiphase Systems

The Turbulence and Combustion Research Laboratory (TCRL) within the Department of Mechanical and Aerospace Engineering at Ohio State University has openings for up to two (2) qualified postdoctoral researchers in the areas of (1) hydrogen combustion with applications towards gas turbine systems and (2) optical diagnostics in reacting, multiphase systems. Ideal candidates would be able to work across both areas. The two positions are for experimentalists, where the focus varies depending on position. For the first position (*hydrogen combustion*), responsibilities of the postdoc will include the application of advanced laser diagnostics in high-pressure hydrogen-fueled systems to understand flame stabilization, flashback, and blowout. Targeted measurement approaches include particle imaging velocimetry (PIV), optical flow techniques, filtered Rayleigh scattering (FRS), and laser-induced fluorescence (LIF) diagnostics. For the second position (*reacting, multi-phase systems*), the focus is the development of advanced optical diagnostics for application in dense, reactive media, including energetics scenarios. For this position, the postdoc also will help support existing work in high-pressure spray research. For both positions, the postdoc will be expected to take an active role in the mentoring of graduate students, which includes offering expertise and assistance where needed.

Applicants should have earned a doctoral degree in mechanical engineering, aerospace engineering, or a related scientific discipline with a focus area on the application of laser and optical diagnostics to fluid mechanics and/or thermal science problems. Position-specific skills that are

highly desired include previous experience using high-pressure facilities; laser diagnostics; application of optical diagnostics in dense media; and the use of hydrogen or hydrogen-derived fuels in combustion experiments. The successful candidate should be familiar with basic image processing and have proficiency in software applications such as Matlab, LabView, C/C++, or other similar platforms. The postdoc is expected to present results at national and international conferences, publish in peer-reviewed journals, and assist in grant proposal preparation. In this manner, strong oral and written communication skills are required. It is expected that the positions will be for a minimum of two years with the possibility of a third year appointment. Start dates are flexible, but there is an immediate need for the first position (*hydrogen combustion*) and a targeted start date of October-November for the second position (*reacting, multi-phase systems*).

Interested applicants should prepare a package that includes: (i) a brief cover letter describing their background and interest in the position, (ii) a C.V., (iii) two representative publications, and (iv) names and email addresses of three references. This should be sent via email to:

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