**The Combustion Institute**
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# Postdoctoral Appointee in Hybrid DNS-LES of Engine Flows

We seek to hire a postdoctoral researcher who will perform hybrid direct numerical simulation and large-eddy simulation of turbulent reacting flows relevant to gasoline and natural gas direct injection engines towards the development of predictive turbulence-chemistry interaction models for ignition, flame propagation, knock, and soot films near walls. The postdoc will be working as part of a multi-disciplinary team both within Sandia and with external collaborators. Research success is expected to result in impactful publications in major scientific journals and widespread recognition within the international scientific research community, as well as relevant contributions to the long-term energy and environmental and high-performance computing mission objectives of the U.S. Department of Energy.

## Essential Requirements

This position requires a PhD in engineering, computational sciences, physical sciences, or mathematics, with expertise in high-fidelity simulation of turbulent combustion and high-performance scientific computing. Strong verbal and written communication skills are also required. A strong background in turbulence, combustion, chemical kinetics, engine physics, numerical algorithms, and computational science is desirable.

## How to Apply

Click this link for more details and to apply – position number 667955.

## Our Team

The Reacting Flow Research Department is part of the Combustion Research Facility (http://crf.sandia.gov/ ) at Sandia National Laboratories in Livermore, California. The department focuses on basic research, including theoretical, computational, and experimental investigations, in scientific, engineering, and mathematical disciplines related to chemical and thermo-fluid energy sciences. The department operates state-of-the-art experimental facilities for laser-diagnostic combustion measurements, emphasizing the highly resolved detection of chemical species concentrations, temperature, and velocity in reacting flows. We also have a major focus on large-scale computations of turbulent combustion processes, particularly using large eddy simulation (LES) and direct numerical simulation (DNS) techniques on some of the largest supercomputer clusters today and preparing for simulations on future extreme-scale architectures. In addition, we focus on the development of mathematical and computational tools for uncertainty quantification and stochastic modeling, as well as reacting-flow computations, data

analysis, and model reduction, with application to a wide array of complex problems where multiple physical and chemical processes interact over a wide range of length and time scales.