



POSITION: Postdoctoral Appointee – Energy Transfer/Combustion Chemistry

JOB ID: 64082

MANAGER: Tom Settersten

Sandia National Laboratories is the nation's premier science and engineering lab for national security and technology innovation. We are a world-class team of scientists, engineers, technologists, postdocs, and visiting researchers—all focused on cutting-edge technology, ranging from homeland defense, global security, biotechnology, and environmental preservation to energy and combustion research, computer security, and nuclear defense. To learn more, visit <http://ca.sandia.gov/casite/>.

DEPARTMENT DESCRIPTION

The Combustion Chemistry Department is part of the Combustion Research Facility at Sandia National Laboratories. Under the principal sponsorship of the Department of Energy's Office of Basic Energy Sciences, the department seeks to reveal the key chemical processes that underlie the complex mechanisms of combustion. Department emphases include determining the rates and mechanisms of chemical reactions, characterizing molecular structure and energetics, and measuring and modeling idealized combustion devices. Researchers in the department employ laser-based pump/probe techniques to interrogate chemical reactivity and structure, ion imaging to simultaneously measure velocity and internal-state distributions of reaction products, and experiments in the femtosecond domain to directly probe energy conversion within a molecule. In other work, molecular photolysis is coupled with absorption/fluorescence detection methods to determine the thermal rate coefficients and product distributions for reactions that constitute the individual steps in the combustion chain process. Current computational efforts include ab initio calculations of molecular structure and energetics, as well as computer modeling of the complete kinetics of combustion processes in both laminar and turbulent environments.

JOB DESCRIPTION

Sandia/California's Combustion Chemistry Department is seeking a postdoctoral associate who will conduct experimental studies of energy transfer in gas-phase chemical reactions. The postdoctoral associate will be responsible for designing and implementing novel experiments to probe energy transfer from highly excited molecules. Experimental results will be used to activate chemical reactions and to understand the origins of the second high-pressure limit in reaction kinetics. Working under the direction of staff scientists in the Combustion Chemistry Department, the postdoctoral associate will use state-of-the-art, high-pressure chemistry apparatus for both laser-based and photoionization mass-spectrometry detection. In addition, the postdoctoral associate will conduct novel negative-ion dissociative photodetachment studies under the direction of Prof. Robert Continetti at the University of California, San Diego. The postdoctoral associate will also be expected to interact strongly with related, ongoing theoretical studies of energy transfer in the department.

The annual salary for this position is \$80,000.

QUALIFICATIONS

This position requires a recent PhD (conferred within the past five years) in chemistry, mechanical engineering, physics, or a related field. (An emphasis on chemical reaction kinetics, energy transfer, or chemical dynamics is strongly preferred.)

Candidates must have substantial expertise in at least one of the following areas: chemical kinetics, laser spectroscopy, mass spectrometry, or the photoionization detection of chemical species.

Desired qualifications include (1) familiarity and experience with computational-kinetics methods, (2) familiarity with high-pressure (>50-bar) chemical-kinetics experiments, (3) experience with the master-equation modeling of chemical reactions, and (4) knowledge of combustion chemistry and photodetachment spectroscopy.

Apply at: <http://sandia.gov/careers/search-openings.html>. Click on Search for Openings, and type the Job ID number **64082** into the Keywords box. Click on the Search button to access this job opening, and complete an online application.

ABOUT SANDIA

Located in Livermore, Sandia/California enjoys close proximity to San Francisco, Silicon Valley, several world-class educational institutions, and diverse cultural and year-round recreational opportunities. Sandia provides employees with a comprehensive benefits package that includes medical, dental, vision, and a 401(k) savings plan. Our culture values work-life balance; we offer programs such as flexible work schedules with alternate Fridays off, on-site fitness facilities, three weeks of vacation, and more.

Sandia National Laboratories is an Equal Opportunity Employer M/F/D/V. If this position requires a security clearance granted by the U.S. Department of Energy (DOE), U.S. citizenship and employee eligibility for clearance processing will be required at the time of hire. If you hold dual citizenship and accept a job offer for a position that requires a DOE-granted security clearance, you may be asked by the DOE to renounce your foreign citizenship and retain only your U.S. citizenship.