

# Postdoctoral position (#673042) in Thermal/Fluids Computational Modeling Fire Science and Technology Department Sandia National Laboratories, Albuquerque, New Mexico

## ***What Your Job Will Be Like***

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Are you passionate about your work and want to join in creating state-of-the-art predictive capabilities to explore solutions? Join a diverse team that helps tackle some of the most challenging issues facing our nation's security!

We are seeking a Postdoctoral Appointee to focus on computational analysis and model development. The department focuses on quantitative descriptions of multi-physics thermo-fluids environments, with fire being the example of primary concern. We develop capabilities and enable new predictions of challenging phenomena over an extensive range of application-driven needs!

On any given day, you may be called on to:

- Improve the predictive modeling of reacting flow environments.
- Develop and validate computational models in one of the following areas: combustion, turbulent flows, aerosol formation and transport, electrochemistry, non-ideal solution chemistry, multi-phase flows, radiation heat transfer through participating media, and/or condensed (solid) fuel combustion.
- Support a diverse range of technical activities related to turbulent flows, reacting systems, heat and mass transfer, multiphase flows, and aerosol dynamics.
- Support other projects such as modeling of battery performance and safety, pollutant emissions, mixing and precipitation, aerosol dynamics and multiphase flows.
- Provide application analysis support in multiple physics areas.
- Design experimental campaigns to obtain validation quality data.
- Partner with dynamic teams engaged in experimental measurements, computational algorithm development, diagnostics development, and massively parallel multi-physics code development.

## ***Qualifications We Require***

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- PhD, conferred within 5 years prior to employment, in engineering, computational science, or related field.
- Experience in the modeling of systems in at least one of the following areas: Combustion; Turbulent flows; Explosions; Aerosol formation and transport; Electrochemistry; Non-ideal solution chemistry; Multi-phase flows; Radiation heat transfer through participating media; Condensed fuel combustion.
- Ability to obtain and maintain a DOE Q level clearance.

## ***Qualifications We Desire***

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- Expertise in more than a single related topic area.
- Experience in areas involving stochastic variation from underlying uncertainties or directly from stochastic processes like turbulence or particle formation.
- Understanding of quantitative application of model predictions.
- Numerical application of best practice methods including verification and validation, as well as uncertainty quantification for model prediction characterization.
- Working knowledge of C++ and/or Python.

- Experience in model implementation in large computational frameworks and the challenges of massively-parallel computational science.
- Experience working with a diverse team.
- Excellent interpersonal, written and verbal communication skills.
- Ability to obtain and maintain a sigma 15 clearance (subject to random polygraph).

### ***Position Information***

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This postdoctoral position is a temporary position for up to one year, which may be renewed at Sandia's discretion up to five additional years. The PhD must have been conferred within five years prior to employment.

Individuals in postdoctoral positions may bid on regular Sandia positions as internal candidates, and in some cases may be converted to regular career positions during their term if warranted by ongoing operational needs, continuing availability of funds, and satisfactory job performance.

### ***About Our Team***

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The Fire Science and Technology Department performs experimental and phenomenological fire research to support Sandia's national security mission. The main focus of the department is to ensure the safety and security needs of nuclear weapons in abnormal thermal environments. The department offers a spectrum of computational and experimental capabilities for addressing fire related challenges throughout the government, civilian, and industrial sectors. Efforts in the computational arena include development of physics-based subgrid models for phenomena important to fire dynamics, detection and suppression. The department maintains and operates unique facilities for radiant heating, open and enclosed large fires. These facilities are used in conjunction with new diagnostics and experimental capabilities developed and employed to provide data for discovery, validation, and system qualification. The group interacts extensively with complementary technical organizations in computational sciences and thermal and fluid sciences within the Center, across the laboratory, and with academia and government.

### ***About Sandia***

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Sandia National Laboratories is the nation's premier science and engineering lab for national security and technology innovation, with teams of specialists focused on cutting-edge work in a broad array of areas. Some of the main reasons we love our jobs:

- Challenging work with amazing impact that contributes to security, peace, and freedom worldwide
- Extraordinary co-workers
- Some of the best tools, equipment, and research facilities in the world
- Career advancement and enrichment opportunities
- Flexible schedules, generous vacations, strong medical and other benefits, competitive 401k, learning opportunities, relocation assistance and amenities aimed at creating a solid work/life balance\*

*World-changing technologies. Life-changing careers.* Learn more about Sandia at: <http://www.sandia.gov>

\*These benefits vary by job classification.

## ***Security Clearance***

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Sandia is required by DOE to conduct a pre-employment drug test and background review that includes checks of personal references, credit, law enforcement records, and employment/education verifications. Applicants for employment need to be able to obtain and maintain a DOE Q-level security clearance, which requires U.S. citizenship. If you hold more than one citizenship (i.e., of the U.S. and another country), your ability to obtain a security clearance may be impacted.

Applicants offered employment with Sandia are subject to a federal background investigation to meet the requirements for access to classified information or matter if the duties of the position require a DOE security clearance. Substance abuse or illegal drug use, falsification of information, criminal activity, serious misconduct or other indicators of untrustworthiness can cause a clearance to be denied or terminated by DOE, resulting in the inability to perform the duties assigned and subsequent termination of employment.

## ***EEO***

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All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability, or veteran status and any other protected class under state or federal law.