

# Computational Analysis & Modeling Postdoctoral Appointee - Fire Science and Technology



Sandia National Laboratories

**Location:** Albuquerque, NM

**Full Time, Temporary**

**What Your Job Will Be Like:**

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, and engages in problem-solving analysis and experimental activities ranging from discovery through hardware qualification and physics model development to enable computational predictions.

Key functions of this role include, but are not limited to:

- Improving the predictive modeling of reacting flow environments
- Computational modeling in these 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
- Contribute other projects such as modeling of pollutant emissions, mixing and precipitation, aerosol dynamics, multiphase flows and batteries
- Develop models in multiple physics areas and provide application analysis support
- Work closely with colleagues engaged in experimental measurements, computational algorithm development, diagnostics development, and massively-parallel multi-physics code development

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.

**Qualifications We Require:**

- PhD, conferred within 5 years prior to employment, in engineering, computational science, or related discipline
- Experience in the modeling of systems in at least 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; Condensed fuel combustion
- Ability to obtain and maintain a DOE Q level clearance

**Qualifications We Desire:**

- 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++
- 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)

**About Our Team:**

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 normal and abnormal thermal environments. The department offers a spectrum of computational and experimental capabilities, combined with a problem-solving focus, 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, fire suppression and fire detection. The department maintains and operates state-of-the-art facilities for large-scale radiant heat, open-air, and enclosed fire testing. 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 within the Engineering Sciences Center and across the laboratory. Staff members are also involved in national and international collaborative endeavors with colleagues in academia and government.

**To Apply:**

Visit:

[sandia.gov/careers](https://sandia.gov/careers)  
and search for job number **656452**

**About Sandia:**

Sandia provides employees with a comprehensive benefits package that includes medical, dental, vision, and a 401(k) with company-match. Our culture values work-life balance; we offer programs such as flexible work schedules with alternate Fridays off, on-site fitness facilities, and three weeks of vacation. In addition, Sandia/California enjoys close proximity to San Francisco, the Silicon Valley, first-tier universities, and diverse cultural and year-round recreational opportunities.

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, post docs, 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.