



**TECHSOURCE**<sup>®</sup>  
A Science & Engineering Consultancy

# Nuclear Science & Engineering

For nuclear technologies to continue and expand their role in meeting the Nation's energy, environmental, medical, and national security needs, technical barriers related to cost, safety, waste disposition, proliferation resistance, and security must be addressed and overcome. Extensive nuclear science and engineering research, development, and exhaustive demonstration must be undertaken to accomplish these goals.

## Enhance Security and Design the Future

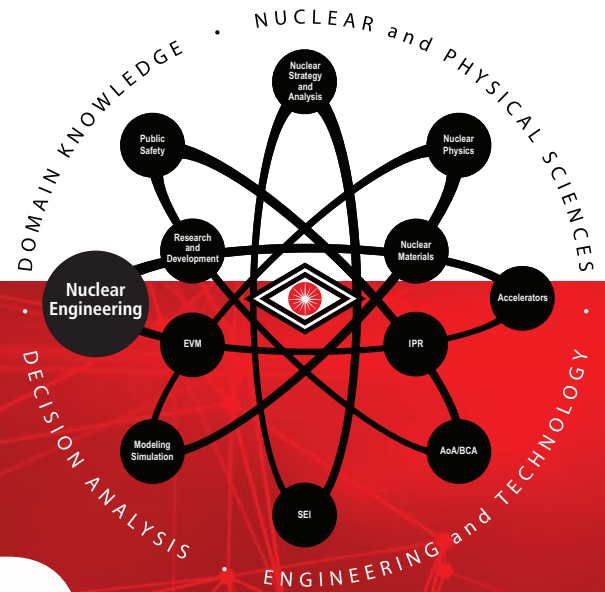
Since its inception, the U.S. Department of Energy (DOE) has been at the forefront of actively addressing all challenges related to nuclear technology. DOE has achieved mission requirements through unwavering dedication to leveraging its vast resources and exceptional capabilities. Using its sophisticated network of research programs at the national laboratories and at the Nation's leading universities in cooperation with subject-matter experts (SMEs) from international programs and organizations, exciting advancements are being realized. But a problem looms on the horizon. The expertise that DOE needs to drive innovation is becoming a scarce resource where need is outpacing availability.

The experts and skills once routinely available within the DOE complex have dwindled, leaving the organization facing an impending knowledge gap that will inevitably impact DOE's overall ability to address future problems of national importance. This is where TechSource's internationally recognized technical and scientific experts bridge the gap by providing unmatched subject-matter expertise gained from many decades of experience.

*TechSource experts use their decades of nuclear science and engineering experience to make profound contributions to the research required in applied areas of accelerator physics, nuclear physics, advanced reactor technologies, nuclear fuels, materials and chemical separations, materials protection accountability and control technologies, and spent fuel and waste disposition.*

Our experts, either individually or as a specialized team, are key in helping DOE, the national laboratories, and affiliated universities and private organizations address the emerging issues and technical challenges associated with the complexities of the nuclear fuel cycle and in enabling the application of nuclear technology to programs of national and international importance.

Our experts' contributions to required, targeted research, development, and demonstration projects ensure the safety and viability of existing nuclear systems and assist in the design and development of future systems that are less complex and inherently more secure.



## TechSource Provides Rapid Deployment of Experts to Solve Critical Scientific or Technical Questions

TechSource experts have both the comprehensive experience with nuclear systems and the specific knowledge in crucial technical specialties to solve emerging scientific or technical questions in a timely manner to enable research projects to move to the next phase.

### TechSource offers extensive experience and specialized expertise in the following areas:

- Accelerator Transmutation of Waste
- Accelerator Production of Tritium
- Accelerators Used in Nuclear Medicine and Radiation Therapy
- Nuclear Detection and Analysis
- Nuclear Fuels and Materials
- Nuclear Transport and Simulation Modeling
- Separations and Nuclear Waste Technology
- Reactor and Accelerator Engineering and Design
- Nuclear Thermal Power Generators
- International Programs in Nuclear Energy

Our experts possess hands-on knowledge of the policy and institutional challenges associated with nuclear science and its applications. Our experts' comprehensive perspectives are key to achieving nuclear science and engineering research goals by sustaining development and design progress in the United States and within the international community.

## Overcome Scientific and Technical Challenges

TechSource experts provide independent review and assessment of proposed projects, develop methodologies to improve nuclear detection and analysis, and investigate new and unique chemical separations technologies for use in waste form processing.

A major TechSource research and development nuclear detector study was conducted at the High Flux Isotope Reactor at Oak Ridge National Laboratory for DOE's Office of Nuclear Energy using high-purity germanium detectors to measure unprecedented systematic error limits in a reactor radiation environment. The new methodology provides high sensitivity and accuracy for use in applications such as materials protection, control and accountability, and other radiation-monitoring applications.

TechSource experts also contribute to crucial research to develop safe, secure, sustainable, competitive, and versatile commercial reactor designs and to improve approaches to separations and nuclear waste technology.

Our experts provide project support and engineering for the development and deployment of power generators for remote applications in deep space—a program crucial for security and scientific missions of national importance. Our experts also contribute to international nuclear nonproliferation efforts by supporting DOE's conversion of highly enriched uranium fueled reactors to low-enriched fuels and by providing programmatic support to cooperative initiatives with China, Japan, and Korea.

## Our Bench

Our nuclear science and engineering SMEs have years of experience leading, conducting, and reviewing research and development projects in the critical areas

## We're the Go-To Experts for Experts

### Science & Engineering Expertise

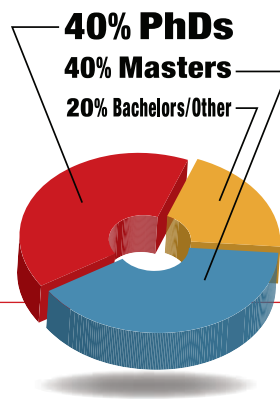
TechSource is a leading high-technology science and engineering small business offering recognized expertise in nuclear and physical sciences, engineering and technology, domain knowledge, and decision analysis.

### Unparalleled Expertise

TechSource's talented and innovative 500-plus cohort is composed of experts, most with 35 years or more of hands-on experience.

### Complex Management Solutions

TechSource offers policy to test bench technical and management services in coordination with point-of-interest expertise to organizations responsible



of accelerator engineering and design, accelerator applications, separations radiochemistry, conventional and superconducting electromagnetism, geophysics, materials radiation-effects physics, and radiation biology. Our experts have assessed and addressed nuclear safety issues associated with nuclear reactor and nuclear accelerator facilities and their operations.

## Contact

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for developing, implementing, operating, and managing high-technology programs nationwide.

### The World's Smartest Organizations Use TechSource

For over 20 years, TechSource has successfully supported a diverse and expanding client base, including U.S. federal agencies, the national laboratories, the Navajo Nation, universities, and commercial entities focused on solving some of the most complex issues facing the United States today.

### Recognized Qualified Expert

TechSource is recognized as an independent, qualified expert whose advice and products uniquely and effectively bridge technical and programmatic requirements.

## A Major TechSource Strength Is the Depth and Breadth of Our Experts

Putting the power of our knowledge to work has reaped substantial benefits for our clients. We carefully select individual SMEs or commission customized review teams to enable a rapid response and targeted technical assessment or comprehensive review to solve emerging issues and move critical research forward.



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