

Nuclear Engineering Seminar

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3:30 pm | WTHR 200

Innovation Powers Global Nuclear Energy Resurgence

Abstract

In the past three decades, the electricity output of the average nuclear power plant in the United States has increased by nearly 60%. The increase is the direct outcome of a combination of power uprates, fuel burnup extension, and outage efficiency improvements enabled by increased understanding of fuel and component performance. Innovations in many fields – nuclear data, advanced modeling and simulation, fuel material performance, cladding performance, multi-phase flow, advanced coolants, coolant and surface chemistry – have been essential enablers of that success. At ORNL, we recognize that these milestones are more than historical achievements—they are the foundation for a forward-looking nuclear energy industry. As we chart our course into the future, our evolving capabilities will serve as the cornerstone for:: 1) enabling the continued optimization and extension of the light water reactors operating today, 2) facilitating the successful licensing and deployment of first-of-a-kind advanced reactor technologies, 3) building a supply chain that supports success in achieving economic success of nth-of-a-kind advanced reactors, and 4) continued optimization and improvement of the next generation of operating reactors. Fueled by breakthroughs in computing, manufacturing, materials science, sensor technology, and design methodologies, today's nuclear research holds the promise of big impacts that secure a more efficient, sustainable, and resilient energy future.



W. David Pointer leads the Nuclear Energy and Fuel Cycle Division of Oak Ridge National Laboratory. He received his PhD, MS and BS from the University of Tennessee Knoxville.

Dr. Pointer is a recognized expert in the thermal hydraulics and safety of both conventional and advanced nuclear energy systems. He has extensive experience in the application, validation and development of computational fluid dynamics software as well as a strong background in experimental fluid dynamics methods for nuclear energy system and component design and licensing. Dr. Pointer has contributed to a wide variety of technical initiatives, numerous publications and affiliations.