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Engineering Physics  
UNIVERSITY OF WISCONSIN-MADISON

INSTITUTE FOR  
**N**UCLEAR  
ENERGY SYSTEMS

*Presents:*

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## Challenges and Opportunities for Nuclear Energy

**Abstract.** Today, the commercial nuclear power industry in the United States is undergoing market-driven change with early closure of reactors and stiff competition in the energy market. The headlines are daunting, and the news about the current fleet rarely seems positive. Outside of the U.S., however, the market environment for nuclear energy is much different. Population-dense countries such as India and China are investing heavily in nuclear energy to support their growing economies. Nuclear energy deployment around the world is growing at its fastest pace in 25 years, creating a multitrillion-dollar global market. At the same time, the world faces unprecedented environmental challenges as it tries to provide clean electricity to a world of 8 billion people. And nuclear energy is an essential part of the global response. American companies and entrepreneurs are responding by pursuing a new generation of advanced reactors markedly different from today's fleet. They are smaller, modular, and can be used to generate electricity as well as power industrial processes.

This seminar will review the current challenges and opportunities for nuclear energy, with a focus on the research, development, and demonstration priorities to support a thriving current fleet, advanced reactor deployment, and the associated fuel cycle. Additionally, the seminar will include a brief overview of the Idaho National Laboratory and discuss collaboration and employment opportunities.

**Biography:** Dr. John C. Wagner is the Associate Laboratory Director of INL's Nuclear Science and Technology directorate. His previous INL roles include director of Domestic Programs in NS&T, as well as director of the Technical Integration Office for the DOE-NE Light Water Reactor Sustainability Program. Dr. Wagner initially joined INL as the Chief Scientist at MFC in 2016. He has more than 20 years of experience performing research and managing R&D projects, programs, and organizations.

Dr. Wagner received a B.S. in nuclear engineering from the Missouri University of Science and Technology in 1992, and M.S. and Ph.D. degrees from the Pennsylvania State University in 1994 and 1997, respectively. Following graduate school, he joined Holtec International as a principal engineer. He joined Oak Ridge National Laboratory (ORNL) as an R&D staff member in 1999, where he held a wide range of technical leadership and management positions in many areas, including radiation and fuels storage and transport, advanced simulation of LWRs, and others.

Dr. Wagner is a Fellow of the American Nuclear Society and recipient of the 2013 E.O. Lawrence Award. He has authored or co-authored more than 170 refereed journal and conference articles, technical reports, and conference summaries. He was the original developer of the A3MCNP and ADVANTG codes and led the development of the CADIS and Forward-Weighted CADIS hybrid transport methods.

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