

## Nuclear Engineering Seminar

# Dr. Kevin Robb,

*Senior R&D Staff, Oak Ridge National Laboratory*



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**3:30pm | WALC 1018**

Molten Salts: Progress and Potential

### Abstract

Molten halide salts are being pursued for a range of clean energy technologies. The diverse applications for high-temperature fluoride and chloride salts include molten salt fission reactors (MSRs), breeder blankets for fusion power, next generation concentrating solar power plants, and thermal energy storage. For molten salt reactors, Oak Ridge National Laboratory built and operated the only two MSRs during the historic development efforts spanning the 1950-1970's. A resurgence in interest has led to two construction permit applications currently under review by the U.S. Nuclear Regulatory Commission. This seminar will highlight the progress in the development of this promising technology and touch on the applications with an emphasis on MSRs.

Dr. Kevin Robb is a Senior R&D Staff at Oak Ridge National Laboratory (ORNL) within the Nuclear Energy and Fuel Cycle Division. He leads the Energy Systems Development Group which focuses on thermal/fluid experimentation.

Dr. Robb is a recognized expert in high temperature molten salt technology and nuclear reactor accident phenomena. Since joining ORNL in 2011, he has led the design, construction, and operation of several high-temperature molten salt experiments. These include two state-of-the-art salt loops (i.e., the fluoride salt LSTL and the chloride salt FASTR), a calibration stand for flow meters, and four salt purification systems. He's completed several experimental studies on salt properties, pumps, valves, and heat exchangers as well as contributing to the conceptual designs for molten salt reactor concepts and next generation concentrating solar power plants. He has conducted several reactor safety studies covering the topics of accident tolerant fuel, molten core-concrete interactions, BWR internal structure failure, and passive containment cooling. He currently serves on the U.S. DOE's Fukushima Forensics Effort Expert Panel. Finally, he is active in the American Nuclear Society serving on the Technical Journals Committee and the Publications Steering Committee. Dr. Robb received his BS degrees in Mechanical and Nuclear Engineering from Pennsylvania State University and a MS and PhD degree in Nuclear Engineering and Engineering Physics from the University of Wisconsin-Madison.