

Workshop on Tritium Control and Capture in Salt-Cooled Fission and Fusion Reactors:

Experiments, Models and Benchmarking

A workshop on tritium control and capture in high-temperature salt-cooled fission and fusion reactors is planned for October 27-28, 2015, in Salt Lake City. The objectives of the workshop are to bring together researchers involved in experiments, modeling and benchmarking to (1) exchange information and enable future exchange of information, (2) initiate an effort for benchmarking of experiments and models, and (3) encourage cooperation between different groups working on the same challenges. The workshop includes tritium sorption behavior in carbon because the FHR has carbon matrix fuels and carbon beds are a leading candidate to remove tritium from high-temperature salts.

Experiments and modeling to develop tritium control and capture systems in fluoride salts at 700°C are underway at Massachusetts Institute of Technology (MIT), the University of Wisconsin (UW), the Chinese Academy of Science (CAS) and elsewhere. Two irradiations at the MIT reactor of materials in salt at 700°C have been completed in fluoride salts. Design of in-core reactor irradiation experiments of carbon and other materials in 700°C salt to understand tritium behavior is underway at the MIT reactor.

The expanding experimental and modeling work is because of three factors. Work is underway in the United States, China, the Czech Republic, and the United Kingdom to develop Fluoride-salt-cooled High-Temperature Reactors (FHR). The CAS is planning to build a 10 MWt FHR by 2020. There is a renewed interest in molten salt reactors (MSRs) where the fuel is dissolved in the salt in China, Europe, the United States, Russia and other countries. Last, there is a growing interest in using fluoride salts as coolants, tritium breeding blankets and shielding in advanced fusion machines where tritium is created in large quantities as the fuel.

An effort to initiate comparison of results and benchmarking of models is being initiated by two U.S. university consortiums¹ and the CAS. This workshop is also the first step in that process and is to be followed by a second meeting in April 2016 in Berkeley.

The workshop is asking for submission of summaries and/or papers describing current results and future plans. The summaries, papers, and presentations will be available on a website and converted into a proceedings. There is no workshop fee. Please submit interest to attend and abstracts to David Carpenter (david_c@mit.edu).

NSE
Nuclear Science & Engineering at MIT
science : systems : society

 **MIT NUCLEAR REACTOR LABORATORY**
AN MIT INTERDEPARTMENTAL CENTER

PSFC
MIT Plasma Science & Fusion Center

 **WISCONSIN**
UNIVERSITY OF WISCONSIN-MADISON

 **中国科学院**
CHINESE ACADEMY OF SCIENCES

¹ The MIT consortium includes MIT, the University of California at Berkeley, the University of Wisconsin, and the University of New Mexico with Westinghouse as an industrial collaborator. The Georgia Tech consortium includes Georgia Tech, Ohio State, Texas A&M and Areva as an industrial collaborator.