Consortium for Advanced Simulation of Light Water Reactors

CASL Core Partner

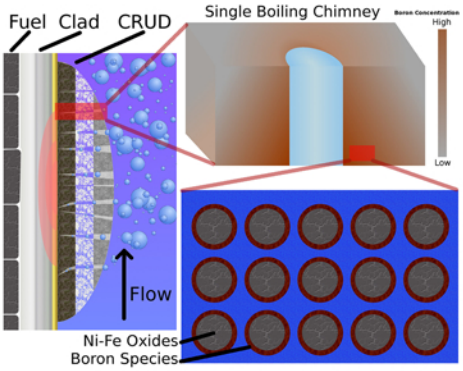
Massachusetts Institute of Technology

The Department of Nuclear Science and Engineering at MIT has been a leader in the development of the nuclear engineering discipline for over 50 years. It offers a wide spectrum of curriculum and research activities, integrating foundational scientific knowledge with engineering practice to advance

- Fission and fusion energy
- Advanced materials
- Nuclear radiation technologies
- Science policy

Optical probe measures bubble rise velocity and local void fraction

Multiscale modeling of crud deposition on PWR fuel rods



Key contributions

- Leadership of the CASL Board of Directors
- Scientific contribution and coordination in the Material Performance and Optimization focus area
- Computational thermal hydraulics and experiments
- New multigroup discretization methods in reactor physics

Key outcomes

- Innovations in science of transport across CASL challenge problems
- Multiphysics models and simulations of materials safety and performance
- Advanced computational methods and high-resolution experiments of boiling phenomena
- Efficient and scalable treatment of neutron energy transport

The MIT 6.0 MW research reactor is used to examine irradiation effects on materials

U.S. DEPARTMENT OF ENERGY
Nuclear Energy