

"Recent advances in the application of fluoride salts to cool high temperature reactors"

Abstract

Among the candidate coolants for nuclear reactors, liquid fluoride salts have uniquely high volumetric heat capacity, along with very high boiling temperature, transparency, and excellent heat transport capability. This seminar will summarize recent work at UC Berkeley on the design of a Modular Pebble Bed Advanced High Temperature Reactor (PB-AHTR). Experiments have verified the capability to circulate pebbles, while simulation has verified the capability to design for negative void reactivity and high discharge burn up, and to obtain gentle thermal response during transients and accidents including loss of forced circulation. These results will be summarized, and then the major experimental, modeling and design activities needed for development and licensing of the PB-AHTR will be reviewed.