

Abstract Submitted  
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**Materials Testing for an Accelerator-Driven Subcritical Molten Salt Fission System: A look at the Materials Science of Molten Salt Corrosion**<sup>1</sup> ELIZABETH SOOBY, SHREYAS BALACHANDRAN, DAVID FOLEY, KARL HARTWIG, PETER MCINTYRE, Texas A&M University, SUPATHORN PHONGIKAROON, The University of Idaho, NATHANIEL POGUE, Texas A&M University, MICHAEL SIMPSON, PRABHAT TRIPATHY, Idaho National Laboratory — For an accelerator-driven subcritical molten salt fission core to survive its 50+ year fuel life, the primary vessel, heat exchanger, and various internal components must be made of materials that resist corrosion and radiation damage in a high-temperature environment, (500-800 C). An experimental study of the corrosion behavior of candidate metals in contact with molten salt is being conducted at the Center for Advanced Energy Studies. Initial experiments have been run on Nb, Ta, Ni, two zirconium alloys, Hastelloy-N, and a series of steel alloys to form a base line for corrosion in both chloride and bromide salt. Metal coupons were immersed in LiCl-KCl or LiBr-KBr at 700 C in an inert-atmosphere. Salt samples were extracted on a time schedule over a 24-hr period. The samples were analyzed using inductively coupled plasma-mass spectrometry to determine concentrations of metals from corrosion. Preliminary results will be presented.

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