

NE-25-36449 – Development of Analytical Techniques for Trace Impurities in 2LiF-BeF₂

Kairos Power LLC, located in Alameda, CA, is a nuclear energy technology and engineering company whose mission is to enable the world's transition to clean energy, with the goal to dramatically improve quality of life while protecting the environment.

The monitoring of salt coolant chemistry, whether in a liquid fueled molten salt reactor (MSR) or in the solid-fueled Fluoride-Salt-Cooled, High-Temperature Reactor (FHR), is vital throughout the lifetime of these reactor designs. However, analytical methods to measure chemical composition require further refinement. This project seeks to yield optimized methods for analyte detection in FLiBe.

Kairos will partner with Pacific Northwest National Laboratory (PNNL) to extend measurements of dissolved oxygen and corrosion products in FLiBe to the full range of relevant/significant impurities, as well as incorporating the measurement methods into their quality assurance program/practices. Refinement of analytical methods for species in salt that impact system operation will enable Kairos to continue along the aggressive timeline for near term nuclear demonstration and commercial deployment.