

NE-24-33971 – Thermogravimetric Analysis of IMSR Fuel Salt Simulants

Terrestrial Energy, located in Charlotte, NC, is an industry-leading technology company committed to delivering reliable, emission-free, and cost-competitive nuclear energy with a transformative advanced reactor, the Integral Molten Salt Reactor (IMSR).

A critical aspect of the performance evaluation and safety case of the IMSR design is to understand how the thermophysical behavior of the fuel salt evolves during normal operation and accident scenarios, specifically due to the buildup of fission and corrosion products as it related to radionuclide transport.

Terrestrial Energy will partner with Pacific Northwest National Laboratory (PNNL) using their expertise in thermogravimetric analysis to analyze the IMSR fuel salt. This project will help determine what chemical species are present in the fuel salt vapor as a function of temperature and partial pressure, whether the fuel salt decomposes at elevated temperatures, and the kinetics of fuel salt vaporization. The work will support the optimization of the reactor components in the IMSR Core-unit as well as the overall design.