NE-23-31247 – Salt to Metal to Salt Heat Transfer in Narrow Fuel Pins

Moltex Energy USA LLC, located in Wilmington, DE, specializes in innovative molten salt fuel reprocessing and fast spectrum reactors, specifically the Stable Salt Reactor (SSR).

Most aspects of the reactor core safety demonstration of the SSR class of reactors rely upon the transfer of heat from the fuel salt to the coolant salt. The objective of this project is to understand heat transfer for the novel molten fuel salt pin in a molten salt core concept. Heat transfer due to natural convection driven flow is a very complex phenomenon owing to the range of active length scales.

Moltex will collaborate with Argonne National Laboratory (ANL) to perform large eddy simulation (LES) CFD using Nek5000/NekRS. The results of this project will enable the benchmarking and validation of relevant thermal-hydraulics models that will inform design activities of the SSR.