NE-23-30938 – Redox Potentials for Proliferation-Hardened Actinide Recovery in NuCycle

Curio Solutions, located in Washington D.C., is focused on the development of its used nuclear fuel (UNF) recycling process called NuCycle. Its vision is to develop and demonstrate a technology that can potentially be deployed for recycling spent nuclear fuel in the United Statesand closing the legacy light-water reactor (LWR) fuel cycle.

It is well known that there is a large reserve of nuclear energy remaining in UNF from the current LWR fleet, specifically in the form of heavier-than-uranium elements known as transuranics (TRU). Curio seeks to develop electrochemical data to support the development of an electrolysis unit operation that is the final stage in its NuCycle used nuclear fuel recycling process.

Curio will work with Idaho National Laboratory (INL) to acquire reduction potentials for NuCycle's electrolysis process that will allow: (1) the implementation of safeguards by design, and (2) the generation of a coextracted actinide product meeting recyclespecifications.