

## **NE-24-32490 – Safeguards Technologies and Assessments to Support Efficient UNF Recycling in the U.S.**

SHINE Technologies is a nuclear technology development company based in southern Wisconsin. Their current mission is focused on medical isotope production but are leveraging that expertise to investigate used nuclear fuel (UNF) recycling to recover fission products and recycle unspent uranium and transuranic isotopes.

Aqueous reprocessing has been operable for decades and is used commercially in other countries. However, safeguarding the process facilities relies on sample-based approaches which can be slow and costly. There are new sensors and techniques that can be incorporated into recycling processes that have the potential to reduce costs and optimize processes. However, the sensors need to be tested to understand longevity, accuracy, and stability to support MC&A operations in targeted processing scenarios.

SHINE will work with Argonne National Laboratory (ANL) and Sandia National Laboratory (SNL) to help integrate sensors into the MC&A requirements for SHINE's flowsheets and perform modeling to define sensor placement and requirements.