

INL Chemical Separations Timeline



Idaho's national laboratory has a long history of chemical separations research. Beginning in 1953, when the Idaho Chemical Processing Plant began recovering U-235 from nuclear fuel, our expertise has diversified into several non-nuclear research areas.

1980

1986: Idaho researchers evaluate the use of polyphosphazene-based polymer membranes for chemical separations. Research focuses on separating metal ions from aqueous solutions.

1988: INL receives an R&D 100 Award for a Biodegradation System for Toxic Organic Waste Processing.

1990

1991: Separations using supercritical fluids begins at INL Research Center and Test Reactor Area.

1993: INL receives an R&D 100 Award for the Biocube, a biofilter that can remove hydrogen sulfide, volatile organic compounds, NO_x and SO_x from industrial off-gas streams.

2000

2000: Collaborative effort with the Khlopin Radium Institute in St. Petersburg, Russia, develops Universal Solvent Extraction (UNEX) process for simultaneous separation of cesium, strontium and actinides in acidic high-activity tank waste.

2004: INL receives an R&D 100 Award for Ultrastable Catalase, an enzyme that removes hydrogen peroxide from industrial wastewater at high temperatures.

2006: Novel phosphazene membranes for carbon capture receive a U.S. patent.

2010

2013: INL initiates work within the Critical Materials Institute, a DOE-sponsored Energy Innovation Hub. Work is directed to recycling and reusing rare earth elements that are critical to U.S. economic and national security.

2013: INL receives an R&D 100 Award for the Switchable Polarity Solvent Forward Osmosis (SPS FO) technology for separating clean water from concentrated solutions.

2015: INL develops a bioleaching process to separate rare earth elements from petroleum catalysts, lighting phosphors and ores.

2016: E-RECOV, a novel method for separation of rare earth metals from electronic waste awarded an Early Stage Idaho Innovation Award. Nominated for an R&D 100 award 2017.

2020