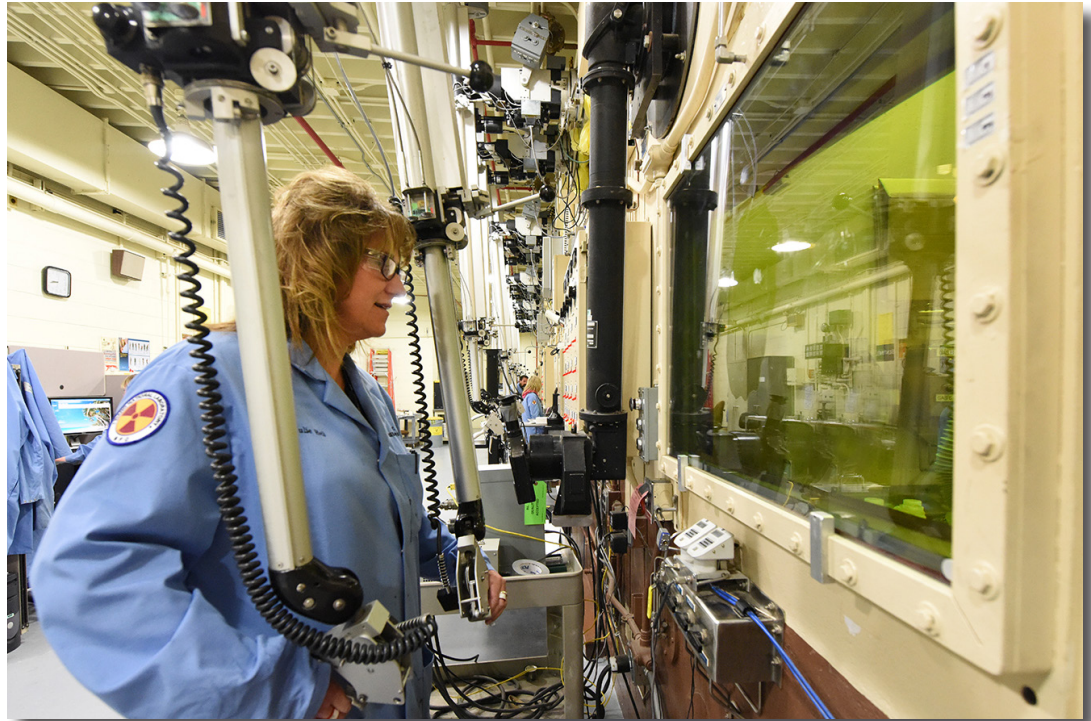


INL's Analytical Laboratory hosts a full suite of analytical chemistry tools designed for work on radioactive samples. Many of these steps are performed in shielded hot cells, gloveboxes, or hoods in the facility.



Analytical Laboratory

Located at Idaho National Laboratory's Materials and Fuels Complex west of Idaho Falls, the MFC Analytical Laboratory provides the chemical, radiochemical, physical, and other analytical data needed for research and engineering development programs for various INL programs and customers. In addition, Analytical Laboratory capabilities enable applied research and engineering development activities in support of advanced nuclear fuel design, waste management, environmental, and other INL programs.

The Analytical Laboratory receives a wide variety of samples from across INL as well as from other outside entities, including irradiated

and unirradiated fuels and materials, and samples needed for testing related to material accountability, radiation monitoring, process monitoring, and environmental monitoring.

The laboratory also supports engineering development activities, such as the preparation of samples for irradiation testing.

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The Gas Mass Spectrometer in MFC's Analytical Laboratory helps researchers determine the chemical makeup of various samples.

The Energy of Innovation

The Casting Lab Glovebox houses an advanced casting furnace to allow creation of various fuel types and other research capabilities.

For more information

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The laboratory was originally constructed in the late 1950s to provide analytical support for the Experimental Breeder Reactor II program. The facility was expanded in 1970 with the addition of a wing dedicated to sodium chemistry, and again in 1977 with the addition of a second wing to house a laboratory for mass spectrometry measurements and a laboratory for nondestructive assay measurements.

The main features and equipment in the laboratory's A-wing include six interconnected hot cells, gloveboxes, a chemistry laboratory, a 5-ton overhead bridge crane, and other cask handling equipment. The primary features of the B-wing include state-of-the-art analytical instrumentation and general chemistry laboratories,

inert-atmosphere gloveboxes, fume hoods, counting rooms, and assay equipment.

The Analytical Laboratory maintains a wide variety of equipment typical of a standard chemistry laboratory, including furnaces, X-ray diffractometers, and equipment to test fundamental physical properties. The laboratory also hosts several unique fuel fabrication capabilities in the Casting Laboratory, including the INL-designed Glovebox Advanced Casting System (GACS) furnace. This furnace gives INL a world-leading capability to cast metallic fuel samples containing transuranic elements with greater efficiency and less waste than previous designs.

Key Capabilities

- 6 hot cells
- 8 gloveboxes
- Fume hoods

- Counting laboratory (Gamma, alpha spec, gas proportional counter)
- Gas Mass Spectrometer
- Mass Spectrometers
- Glovebox Advanced Casting System (GACS) furnace
- Analysis and characterization of as-built and post-irradiated nuclear fuels and reactor components
- Analysis of hazardous, mixed, or highly radioactive wastes, other waste forms, and samples
- Analytical chemistry support for nuclear forensics
- Determinations of inorganic isotopic content constituents and radionuclides
- Radioisotope separation
- Characterization of engineered materials
- Expertise in characterization of engineered materials and the nuclear fuel life cycle