

# Argonne's Analytical Chemistry Laboratory

Providing analytical chemistry support services to the scientific and engineering programs at Argonne National Laboratory

The Analytical Chemistry Laboratory (ACL) provides a broad range of analytical chemistry support services to the scientific and engineering programs at Argonne National Laboratory, and specialized analysis for government, academic, and industrial organizations, including other national laboratories and QA/QC programs and audits.

## Analytical Services and Research

We handle a wide range of analytical problems, from routine standard analyses to unique problems that require significant development of methods and techniques.

## Inorganic Analysis

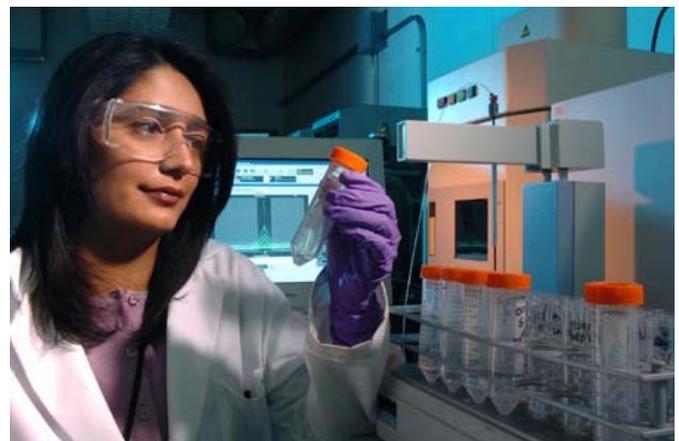
Wet-chemical and instrumental methods for elemental, compositional and isotopic analysis of solid and liquid samples. Analysis can be done on radioactive samples.

- Ion chromatography (IC)
- Inductively coupled plasma/atomic emission spectrometry (ICP/AES)
- Inductively coupled plasma/mass spectrometry (ICP/MS) with dynamic reaction cell (DRC)
- Thermal ionization mass spectrometry (TIMS)
- Carbon, sulfur LECO analysis
- Autotitration
- Cold vapor atomic absorption mercury analysis
- pH, cyanides, mercury, conductivity, reactive sulfides, flashpoint
- TCLP (toxicity characteristic leaching procedure) for RCRA metals

## Radiochemical Analysis

Nuclear counting and separations analysis available over a wide range of sample types, from low radioactivity environmental samples to samples with high radioactivity requiring containment.

- Gamma spectrometry
- Alpha spectrometry
- Gross alpha and beta analysis by gas proportional or liquid scintillation
- Liquid scintillation counting
- $K_d$  analysis of soil and rock



## Organic Analysis

Separation and quantitative analysis of trace-level complex organic mixtures and compounds.

- Gas chromatography/mass spectrometry (GC/MS)
- Gas chromatography/electron capture device for PCB analysis (GC-ECD)

## SEM User Facility

Scanning electron microscope (SEM) with EDS system available for use by the half or full day.

## Recent Projects in the ACL

- Analysis of short-lived isotopes for medical isotope development
- Distribution coefficient ( $K_d$ ) measurements of radionuclides in soils
- Isotopic analysis of high-burnup spent nuclear fuel
- ICP-OES method for material accountancy measurements
- Tritium Target Qualification Project
- Development of novel separations for nuclear forensics

## For More Information

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