

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. We also provide specialized analysis for government, academic, and industrial organizations, including other national laboratories, as well as support to 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

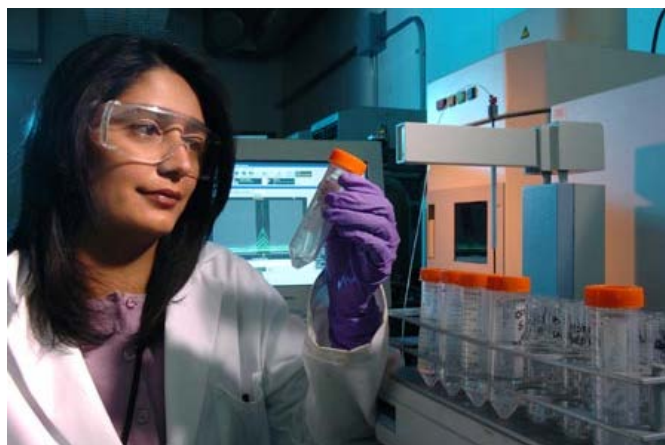
Wet-chemical and instrumental methods for elemental, compositional and isotopic analysis of solid and liquid samples. Analysis can be done on radioactive samples.

- Inductively coupled plasma/optical emission spectrometry (ICP/OES)
- Inductively coupled plasma/mass spectrometry (ICP/MS) with dynamic reaction cell (DRC)
- Ion chromatography (IC)
- Carbon, sulfur LECO analysis
- Autotitration: Acid-base, redox, and Karl Fischer water
- Cold vapor atomic absorption mercury analysis
- pH, mercury, conductivity, flashpoint
- Selected industrial hygiene and environmental parameters

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
- Chemical conversions and separations involving radionuclides



Organic Analysis

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

- Gas chromatography/mass spectrometry (GC/MS)
- Gas chromatography/electron capture detector (GC/ECD)

Microscopy

- Scanning electron microscope (SEM) with energy dispersive spectroscopy (EDS)
- High-resolution atomic force microscope (AFM)
- High-resolution scanning tunneling microscope (STM)
- Environmentally controlled scanning probe microscope (SPM)



Recent Projects in the ACL

- Analysis of short-lived isotopes for medical isotope development
- Development of novel separations and target purification for accelerator production of radionuclides
- Distribution coefficient (K_d) measurements for radionuclides in soils
- ICP/OES method for high-precision compositional analysis for lithium ion batteries
- Development of dissolution, separation, and ICP-MS protocols for nuclear forensics

For More Information

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