

The Irradiation-Assisted Stress Corrosion Cracking hot cells are located in FASB's west room.



Fuels and Applied Science Building

Fuel Fabrication, Irradiation, Characterization, Post-irradiation Examination, Process Development

General Information

The Fuels and Applied Science Building (FASB) is a radiological facility that houses small hot cells, gloveboxes, hoods, and other equipment that support nuclear energy research and development. This equipment complements a host of capabilities within the Materials and Fuels Complex at Idaho National Laboratory. FASB provides numerous capabilities needed to support research and development related to nuclear fuel, used fuel treatment options, nuclear waste management, and other scientific activities.

The FASB west room contains inert atmosphere gloveboxes used for developing low-enrichment fuels, treating waste from glovebox operations, working with corrosive materials, and

testing equipment that will be used in other facilities. The most recent addition is the Irradiation-Assisted Stress Corrosion Cracking hot cells.

This addition supports several program customers through the Department of Energy's Nuclear Science User Facilities program to perform crack growth rate measurements on irradiated structural materials to support light water reactor life extension.

The east room contains processing areas, work control areas, offices and a characterization area under the mezzanine.

Key Capabilities:

- Irradiation-Assisted Stress Corrosion Cracking hot cells
- 4 inert atmosphere gloveboxes
- 5 radiological hoods
- Thermal properties characterization instruments (laser flash, dilatometer, differential scanning calorimeter)
- Cobalt-60 gamma irradiator
- Lab-scale molten salt electrorefiner
- Lab-scale fabrication equipment (hot isostatic press, arc melting furnace)
- Metal and ceramic powder processing equipment (atomizer, milling, mixing, pressing/sintering)
- Numerous heat treating and sintering furnaces

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Technical Information

In addition to the Gamma Irradiation Test Loop shown here, FASB contains inert atmosphere gloveboxes used for fuel development, treating waste from other glovebox operations, and testing equipment that will be used in other facilities.



The Fuels and Applied Science Building (FASB) is a radiological facility that has broad capability in fuel fabrication and characterization in support of nuclear energy research and development.

The most recent addition to FASB is the irradiation assisted stress corrosion cracking (IASCC) hot cell. This addition supports several program customers through the Department of Energy's Nuclear Science User Facilities (NSUF) program to perform crack-growth-rate measurements on irradiated structural materials to support light water reactor life extension.

Basic Capabilities:

- Uranium fuel development at all enrichments
- Materials characterization

- IASCC testing of irradiated materials
- Multiple uranium gloveboxes to support fuel development
- Cobalt-60 gamma irradiator with a radiolysis/hydrolysis test loop

Key Instruments:

- Inert, radiological gloveboxes (4)
- Radiological fume hoods (4)
- Cobalt-60 gamma irradiator
- Solvent test loop
- Laboratory-scale molten salt electrorefiner
- Fabrication equipment
- Arc-melting furnace
- Induction furnace
- Hot isostatic press
- Hot rolling mill
- Powder metallurgy
- Atomizer
- Hydriding/nitriding apparatus
- Sieving
- Powder milling
- Particle-size analysis
- Pressing/sintering
- Characterization equipment
- Density measurement (helium pycnometer)
- Differential scanning calorimeter
- Dilatometer
- Laser-flash thermal diffusivity
- Scanning electron microscopy
- Optical microscopy
- Metallographic sample preparation
- Microhardness testing
- Positron-annihilation spectroscopy
- Tensile, compression and bend testing
- Ultrasonic testing
- Tribological testing
- High-temperature corrosion testing

For more information

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