

*Arc melting in the Advanced Fuel Cycle Initiative (AFCI) glovebox, which supports fabrication of experiments for irradiation at reactors such as the Advanced Test Reactor.*



## Fuel Manufacturing Facility

The Fuel Manufacturing Facility (FMF) is a nuclear facility that consists of multiple workrooms and a material storage vault. This facility complements a host of capabilities within the Materials and Fuels Complex at Idaho National Laboratory, the nation's lead nuclear energy research lab.

FMF was constructed in 1986 for the purpose of housing binary (i.e., uranium and zirconium) fuel and its associated equipment to

fabricate the driver fuel for the Experimental Breeder Reactor (EBR)-II. With the shutdown of the EBR-II reactor, the focus at FMF transitioned to research and development (R&D) of transuranic metallic and ceramic fuels. As part of this transition, the equipment associated with the fabrication of the EBR-II fuel has been removed and replaced with gloveboxes that support this new R&D focus. Additionally, the material storage vault contains and supplies various INL and off-site facilities with feedstock materials.

### **Key Equipment/ Capabilities:**

#### **4 inert gloveboxes**

- Advanced Fuel Cycle Initiative (AFCI) glovebox
  - Provides the capabilities to develop transuranic metallic and ceramic fuel experiments for irradiation
  - Feedstock production/purification
  - Characterization sample fabrication

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*The Energy of Innovation*

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Equipment includes:

- Arc melter
- Distillation/tube furnace
- Sintering furnace
- Orbital welder
- Ceramic powder mixing/pressing equipment
- Neptunium repackaging glovebox (NRG):
  - Provides the capability to recertify neptunium packages for transport to other DOE facilities

- Supports material inspection/inventory
- Special nuclear materials (SNM) glovebox:
  - Provides the capability for uranium material recovery through the sodium separations process, which provides additional uranium feedstock material for DOE complex-wide utilization
  - Supports uranium material inspection/inventory/breakouts
  - Has the capability for furnace reconfiguration

(sodium separation furnace/roasting furnace)

- Transuranic breakout glovebox (TBG)
  - Supports transuranic material inspection/inventory/breakouts

**Radiography**

- Provides the capability for verification of experiment fabrication requirements such as fuel placement and rodlet/capsule welding

**Vault Storage**

- Receipt and storage of programmatic materials

**For more information**

**Nora Heikkinen**  
 (208) 533-7783  
 nora.heikkinen@inl.gov

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*Material processing in the special nuclear material (SNM) glovebox, part of an ongoing material disposition program that supports work at INL and other DOE labs.*

