

# Strategic Materials Laboratory

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BWXT Nuclear Energy, Inc. (BWXT) maintains extensive facilities for analyzing and testing radioactive materials at the Lynchburg Technology Center located in Virginia.

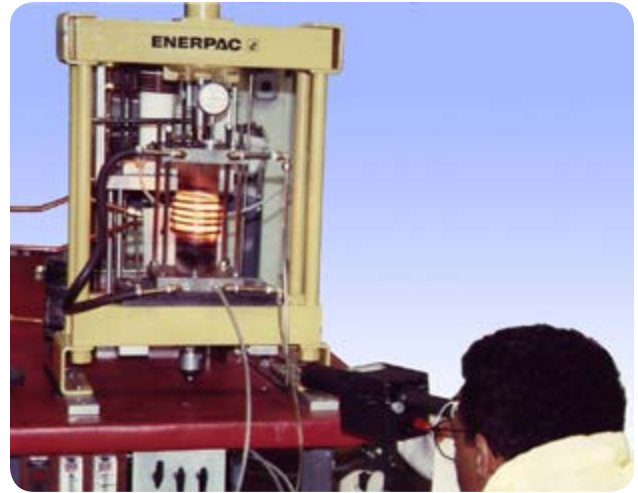
The Strategic Materials Laboratory (SML) is a radiologically controlled area where nuclear and non-nuclear materials are processed and evaluated. The laboratory is used to develop and test nuclear fuel and related components as part of the Nuclear Materials & Inspections Systems at the facility.

## **Background**

For more than 40 years BWXT's Lynchburg Technology Center (formerly the R&D Division of BWXT) has supported the company's interest in the nuclear industry.

The SML was built for processing, developing, and testing advanced nuclear fuels and its components in the late 1980's under the U.S. Air Force Space Nuclear Thermal Propulsion Program.

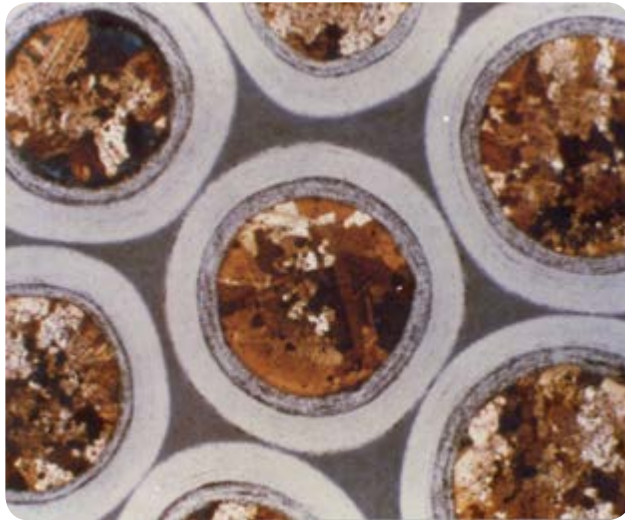
The laboratory supported developing and testing coated particle fuel for advanced particle-bed reactors. Other notable projects include high temperature fuel development for advanced reactors, solar bimodal propulsion, and work on Russian high temperature fuel.



*A hot-press reactor used to fabricate high temperature nuclear fuel and ceramic materials*

## **Capabilities**

Nuclear and non-nuclear materials can be processed, tested, and characterized in the SML by our staff of materials scientists and technicians. We support internal and external customers.



*An optical micrograph of a polished cross-section of fuel particles showing coatings and center fuel kernel*



*A scanning electron micrograph of a coated nuclear fuel particle after a crush test*

*(Continued on reverse side)*

**Laboratory test facilities include:**

- High-temperature (>3000°C) exposure in inert gas of 100% hydrogen
- Deformation (plasticity)
- Static and dynamic compression
- Bed thermal expansion
- Thermal stability / interaction / compatibility
- Cyclic temperature
- Melt-point determinations

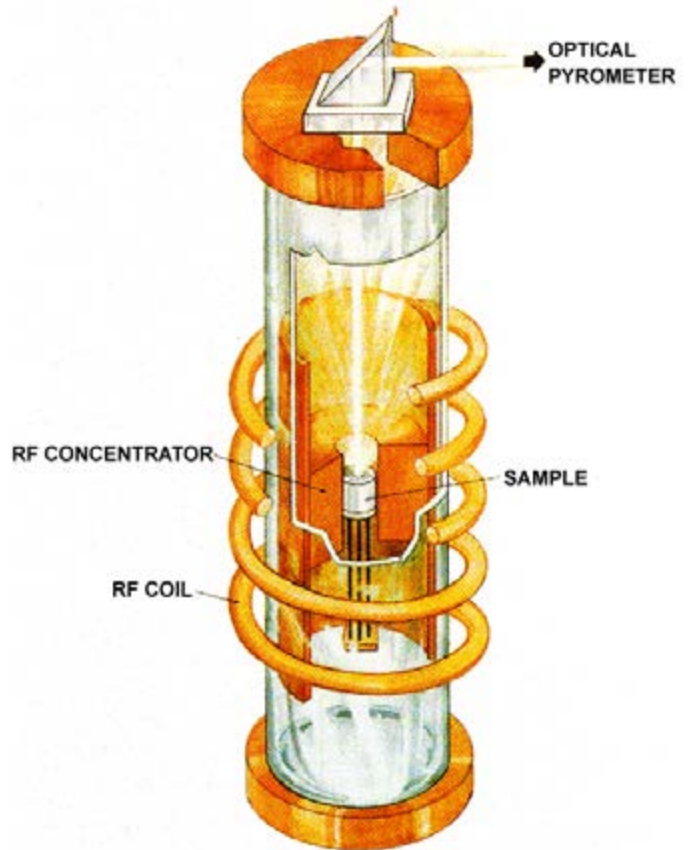
**Processing facilities include:**

- High temperature induction furnaces
- High temperature graphite furnace
- Hot isostatic pressing
- Cold isostatic pressing
- Chemical vapor desposition / infiltration
- Supercritical fluid infiltration
- Hot machining

**Other section facilities include:**

- Scanning electron microscopy with x-ray microanalysis (EDS/XRF)
- Hot cell facilities (rated to 300,000 curies)
- Electron microprobe
- Mechanical testing
- Microhardness

The SML is approved by the U.S. Department of Defense and U.S. Department of Energy for secret and classified projects. Facilities are available on-site for storage and communications.



*A melt-point apparatus used to measure the melting point of advanced nuclear fuel*

**NUCLEAR ENERGY**

**GOVERNMENT SERVICES**

**ADVANCED TECHNOLOGIES**

Headquartered in Lynchburg, Va., BWX Technologies, Inc. (BWXT) is a leading supplier of nuclear components and fuel to the U.S. government; provides technical, management and site services to support governments in the operation of complex facilities and environmental remediation activities; and supplies precision manufactured components and services for the commercial nuclear power industry. BWXT has more than 5100 employees and significant operations in Lynchburg, Va.; Erwin, Tenn.; Mount Vernon, Ind.; Euclid, Ohio; Barberton, Ohio; and Cambridge, Ontario, as well as more than a dozen U.S. Department of Energy sites around the country. Follow us on Twitter @BWXTech and learn more at [www.bwxt.com](http://www.bwxt.com).

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