

NATIONAL ENERGY TECHNOLOGY LABORATORY ALBANY, OREGON



May 2025



NETL's Albany, Oregon, laboratory traces its origins to 1943 when President Franklin D. Roosevelt announced that the U.S. Department of the Interior's Bureau of Mines had selected Albany as the site for the Northwest Electro-Development Laboratory. The laboratory was originally established to develop methods for processing the region's abundant low-grade resources using innovative metallurgical techniques and electrical energy. Over the decades, the site became a leader in materials science, contributing to breakthroughs such as the commercialization of the Kroll Process, which enabled the large-scale production of zirconium and other reactive metals essential to national security. These innovations laid the foundation for a thriving reactive metals industry, with several companies in Albany continuing this work today.

In 1995, Congress closed the Bureau of Mines and transferred the Albany laboratory to the Department of Energy's (DOE) Office of Fossil Energy. A decade later, in 2005, the Albany Research Center officially became part of NETL. This action strengthened site's role in advancing materials performance and process development to support energy technologies.





Analytical Laboratory

The laboratory has a rich history in energy innovation and is internationally recognized for significant contributions in materials research. In 1984, ASM International, the world's largest and most established materials information society, recognized the laboratory for pioneering the process of making ductile zirconium and designated the Albany site an ASM Historic Landmark. Other contributions include development of radiopaque alloys for medical coronary stents; a measurement technology developed for the specialty metals industry to identify arc distribution conditions during

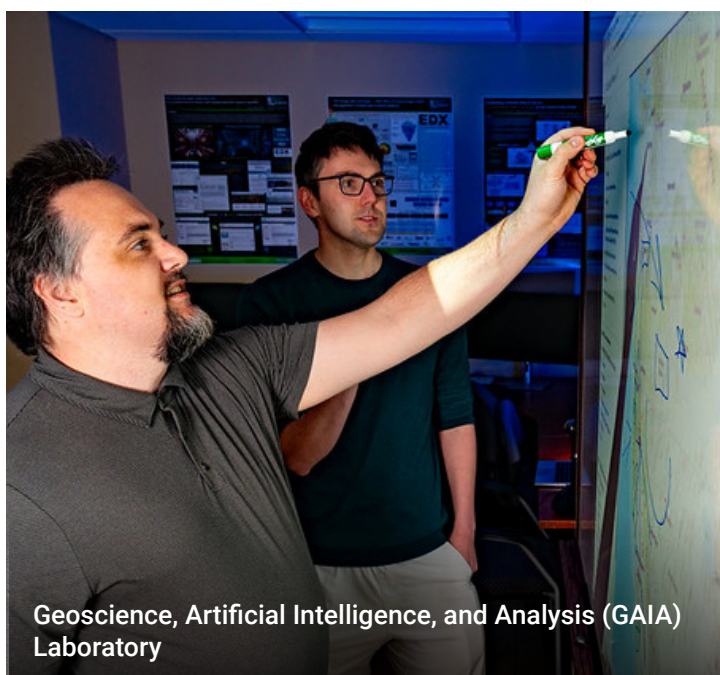
arc melting; enhanced processing methods to improve armor materials for military applications; computational tools for heat treating and homogenization processing of alloys; and development of modified chrome-oxide refractory brick material that extended the service life of slagging gasifiers.

Over the years, scientists and engineers working at NETL's Albany site have been awarded numerous patents and contributed substantially to the fields of metals and minerals research.

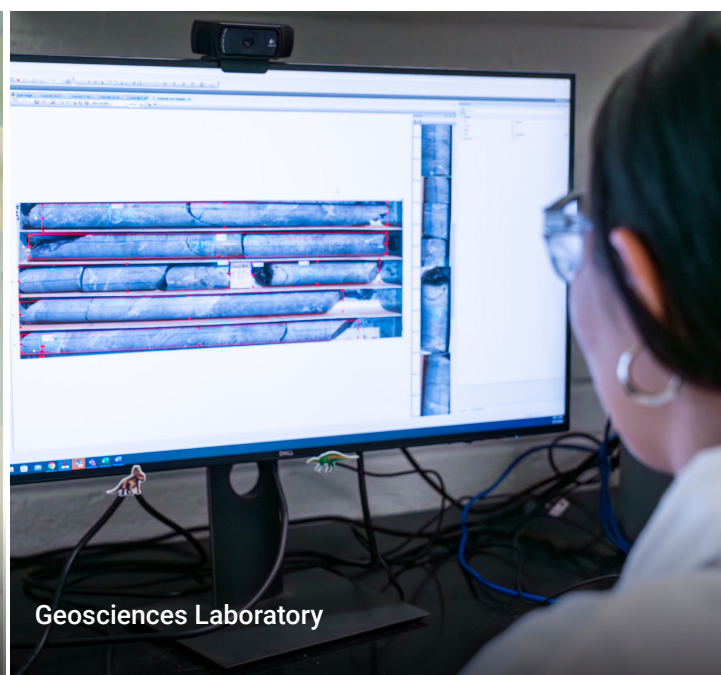
Today, approximately 170 Albany-based NETL personnel are dedicated to advancing the nation's energy future by creating solutions that strengthen the security, affordability and reliability of energy systems and natural resources. The Albany site plays a key role in advancing applied energy technologies that support DOE's mission.

NETL researchers leverage computational tools, engineering expertise, and strategic partnerships to address national energy challenges. These include developing advanced alloys and materials designed for extreme environments, critical minerals and materials research, and AI-driven geospatial data analysis.

Collaborations with industry, academia and government agencies, including Oregon State University and the University of Oregon, help accelerate the transition of innovative solutions from the lab to real-world applications.



Geoscience, Artificial Intelligence, and Analysis (GAIA) Laboratory



Geosciences Laboratory

RESEARCH IN ACTION

NETL's Advanced Alloys Signature Center (AASC) is a key example of the cutting-edge research facilities based in Albany. AASC is a complete alloy development facility for prototyping alloy manufacturing that enables NETL and research partners to pilot alloy solutions at scales that translate to industrial practice. AASC helps companies and researchers create innovations that improve performance, reduce costs and increase efficiency by solving problems related to material properties and manufacturing processes like corrosion resistance, strength and durability.

AASC features a 13,000-square-foot melting facility with a \$2.3 million 500-pound vacuum induction melting furnace that can melt and process almost any alloy. NETL can prototype specialty alloys for advanced energy, defense, aerospace, automotive, chemical processing, biomedical device applications and more.

The AASC research portfolio of accomplishment is wide ranging, demonstrates capabilities in alloy development and highlights relevance to DOE's research and development priorities. For example:

- NETL researchers, in collaboration with industry partners and government agencies, produced casting for General Motors' aluminum engines.
- AASC developed a refractory material used in nearly every slagging gasifier worldwide.
- NETL helped develop an advanced biodegradable medical alloy for Boston Scientific.
- AASC helped develop armor used by the U.S. Army.



Metals Fabrication Laboratory



NETL is a U.S. Department of Energy national laboratory dedicated to advancing the nation's energy future by creating innovative solutions that strengthen the security, affordability and reliability of energy systems and natural resources. With laboratories in Albany, Oregon; Morgantown, West Virginia; and Pittsburgh, Pennsylvania, NETL creates advanced energy technologies that support DOE's mission while fostering collaborations that will lead to a resilient and abundant energy future for the nation.

