

ADVANCING AMERICA *through* TECHNOLOGY TRANSFER

OAK RIDGE NATIONAL LABORATORY

HARNESSING TINY PARTICLES
for **BIG IMPACT**



RADIOISOTOPES

TREAT CANCER, FIGHT TERROR,
and **ENABLE SPACE EXPLORATION**

 **OAK RIDGE**
National Laboratory

U.S. DEPARTMENT OF
ENERGY

Office of
TECHNOLOGY TRANSITIONS



How can a half-life give you a long life?

Oak Ridge National Laboratory (ORNL) made history in 1943 when Manhattan Project scientists created the first continuously operating nuclear reactor and soon recognized the unprecedented potential to produce and study radioisotopes spanning the periodic table. Nearly 80 years later, radioisotopes boast a long resume of commercial applications that improve American lives and expand the boundaries of scientific research.

ORNL's High Flux Isotope Reactor is one of only two facilities worldwide capable of producing high-impact particles that power satellites and Mars rovers, reduce cancer-induced bone pain, and make possible countless scientific experiments. Today, ORNL propels innovation in both radioisotopes' production and their applications across healthcare, counter-terrorism, and space exploration.

ORNL at a Glance

Rooted in the hills of East Tennessee, Oak Ridge has served the nation for more than 75 years, pioneering the study of radioisotopes, radiation's effects on materials, and neutron diffraction. Scientists of the Manhattan Project built the first continuously operating nuclear reactor at Oak Ridge in 1943, fueling the development of modern technologies to treat cancer and heart disease, prevent terrorism, and power deep space exploration. Thirteen different research centers and reactors, including the Spallation Neutron Source, keep ORNL at the forefront of advances in biology, chemistry, and physics, producing cutting-edge technologies in materials, medicine, nuclear energy, and computing benefiting millions of Americans.

U.S. Department of Energy National Laboratories

The 17 U.S. Department of Energy (DOE) National Laboratories comprise a preeminent federal research system that executes long-term government scientific and technological missions, often with complex security, safety, project management, or other operational challenges. The National Laboratory system produces the scientific research needed to develop national energy policy and solutions allowing DOE to be one of the largest supporters of technology transfer in the federal government.

Radioisotopes are used in more than 100 million therapies and tests each year to diagnose and treat cancer and heart disease

Improve Lives

ORNL completes more than 100,000 annual shipments of life-saving therapeutic isotopes exclusively manufactured in its state-of-the-art facilities.

Counter Terrorism

ORNL's nickel-63 isotope is used in airport screening and detection.

Power Exploration

NASA's Voyager 1, Voyager 2, Galileo, and Cassini spacecraft, and the Mars Curiosity Rover are powered by radioisotope iridium alloy-clad fuel spheres.

Contact Us

The scientific discovery highlighted on this poster is just one of DOE's many successes advancing America.

Learn more about available resources and partnering opportunities with the National Labs by visiting:

www.energy.gov/technologytransitions

Technology Transitions

The mission of the Office of Technology Transitions (OTT) is to expand the commercial impact of the DOE's research and development portfolio to advance the economic, energy, and national security interests of the Nation. The office develops the Department's policy and vision for expanding the commercial impact of its research investments, and streamlines information and access to DOE's National Labs and sites to foster partnerships that will move innovations from the labs into the marketplace.

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