

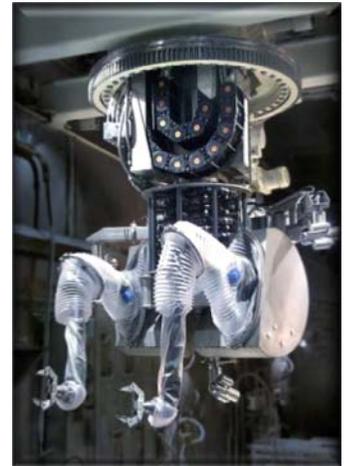
<http://www.ornl.gov/nstd>

Fuels, Isotopes, and Nuclear Materials

ORNL is advancing the applications of medical, industrial, and research isotopes; developing separation processes for the processing of radioisotopes and spent nuclear fuels; and designing robotic systems and unique facilities for the safe handling of nuclear materials.

Robotics and Remote Handling

Develop and apply advanced robotics and remote handling technologies for hazardous environments and remote processes in nuclear fission, radiochemical processing, environmental restoration, space exploration, military defense, nuclear accelerators, and fusion energy.



Fuel Cycle R&D

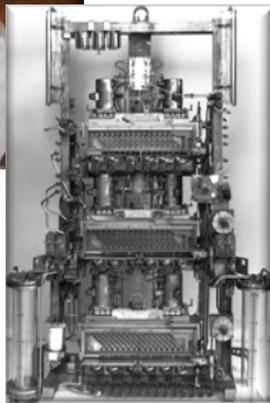
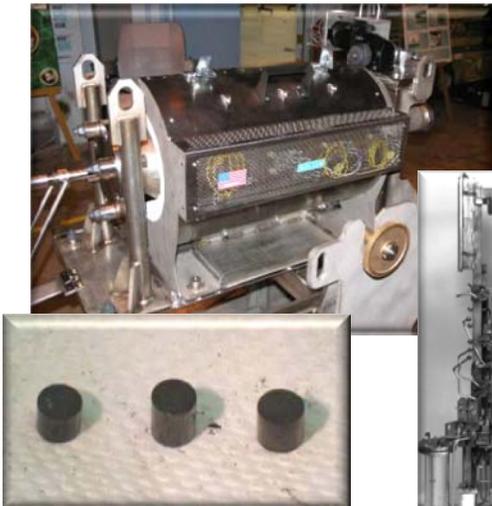
Conduct research and development on the recycle of used nuclear fuel and methods for improved stabilization and minimization of wastes. A coupled-end-to-end demonstration of used fuel recycle technologies is taking place in ORNL hot cell facilities and is scaled to process about 20 kg/year.

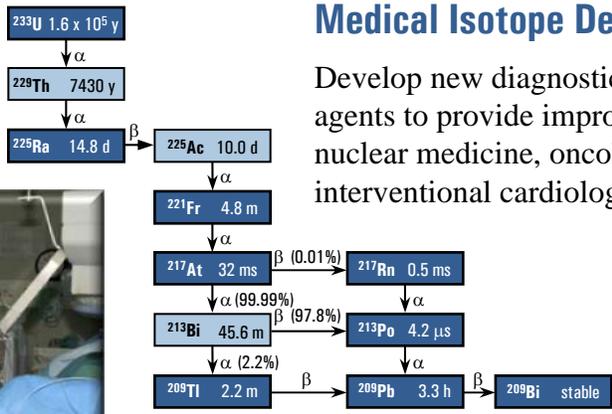
Separations Science and Technology

Conduct research and development of energy-related separations, including basic studies of physical properties, modeling of chemical processes from continuum to molecular scale, development of advanced processes for the separation of radioisotopes, and demonstrations of separations and treatment technologies for nuclear waste.

Nuclear Material Processing

Conduct research, process demonstrations, material separation, and production operations involving highly radioactive materials in hot cell facilities in support of various programmatic areas, including fuel cycle R&D, heavy element production, medical isotopes production, and micropower source development.





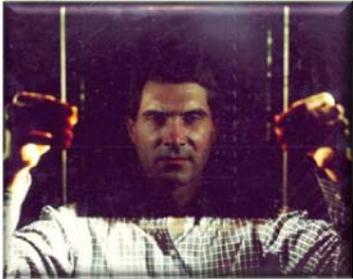
Medical Isotope Development

Develop new diagnostic and therapeutic radiopharmaceutical agents to provide improved applications and procedures in nuclear medicine, oncology and cancer pain management, interventional cardiology, and arthritis treatment.



Stable and Radioactive Isotopes

Manage all business facets of the DOE Isotope Production and Application Program through the Isotope Business Office. This function supports ORNL's role as the world's leading supplier of enriched stable and radioactive isotopes.



Californium Production

Produce and purify Cf-252 for basic research, commercial, and national security applications. These activities are conducted at the High Flux Isotope Reactor (HFIR) and Radiochemical Engineering Development Center (REDC).



Nuclear Fuels

Develop unique processes for the preparation of nuclear fuel ranging from pellets made from recycled U/Pu/Np to preparation of highly uniform uranium microsphere particles that will fuel the Generation IV high-temperature reactors.



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