PNNL is Your Science-Driven Nonproliferation Research Partner

Pacific Northwest
NATIONAL LABORATORY

U.S. DEPARTMENT OF
ENERGY

Proudly Operated by Battelle Since 1965

Current Nonproliferation Research

Signature Discovery
Developing applications in border security, bioforensics, and nuclear nonproliferation.

Material Production Detection
Developing advanced in-situ, near-field, and remote sensing technologies to improve detection, location, and characterization of foreign nuclear weapons development.

Nuclear Forensics
Performing R&D of innovative radiochemical separations and methods development.
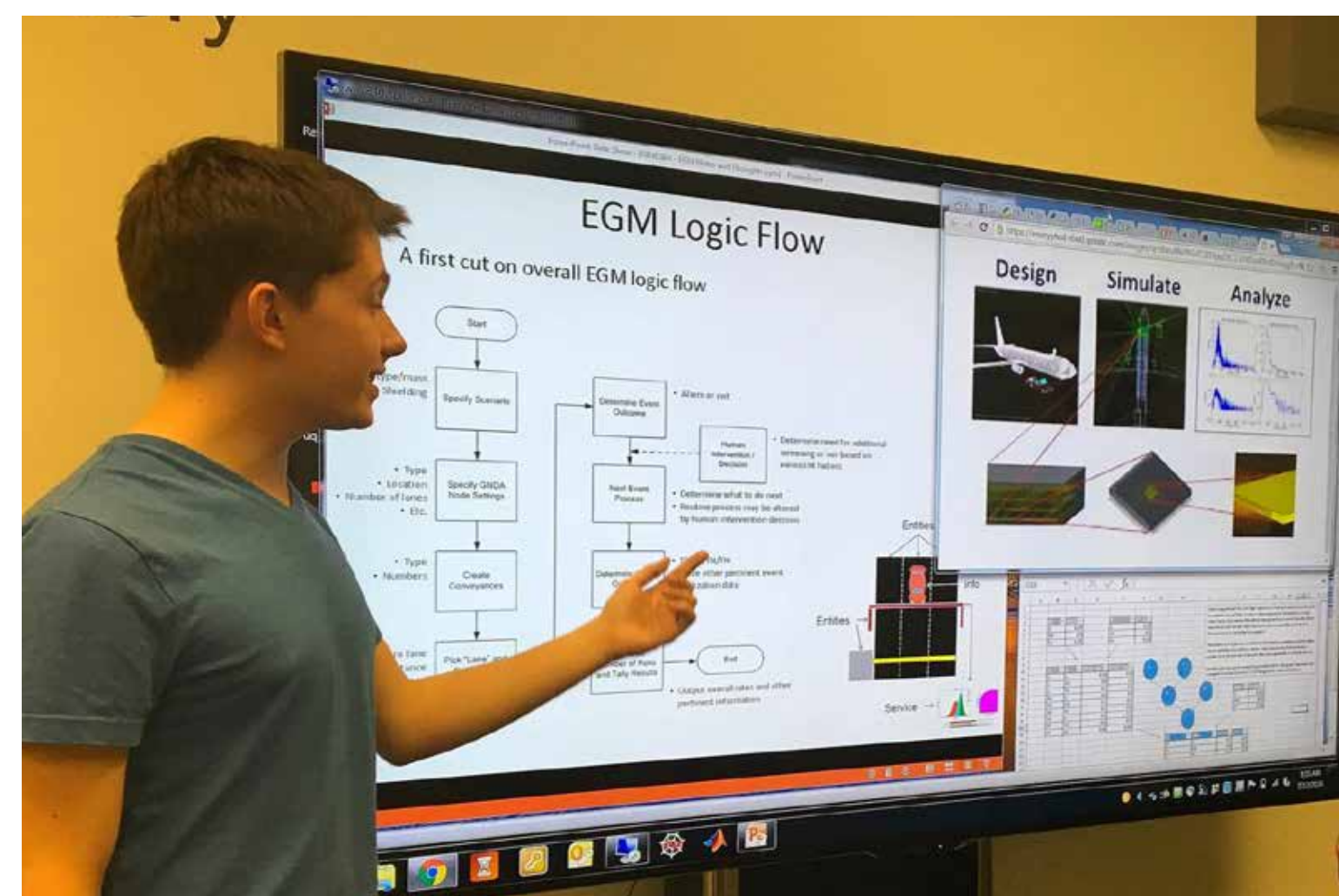
Radiation Detectors
Developing robust, automated collection and measurement systems for border security, treaty verification, environmental monitoring, etc.

PNNL develops the world's most sensitive radionuclide sensors – deployed in various conditions and locations worldwide. The Xenon International system, pictured here, is the next generation of the world's most-sensitive xenon-monitoring technology."


Shown here a former CNEC intern working with nonproliferation modeling software. SoftWare for the Optimization of Radiation Detectors (called SWORD) helps us simplify the process of radiation detector modeling.
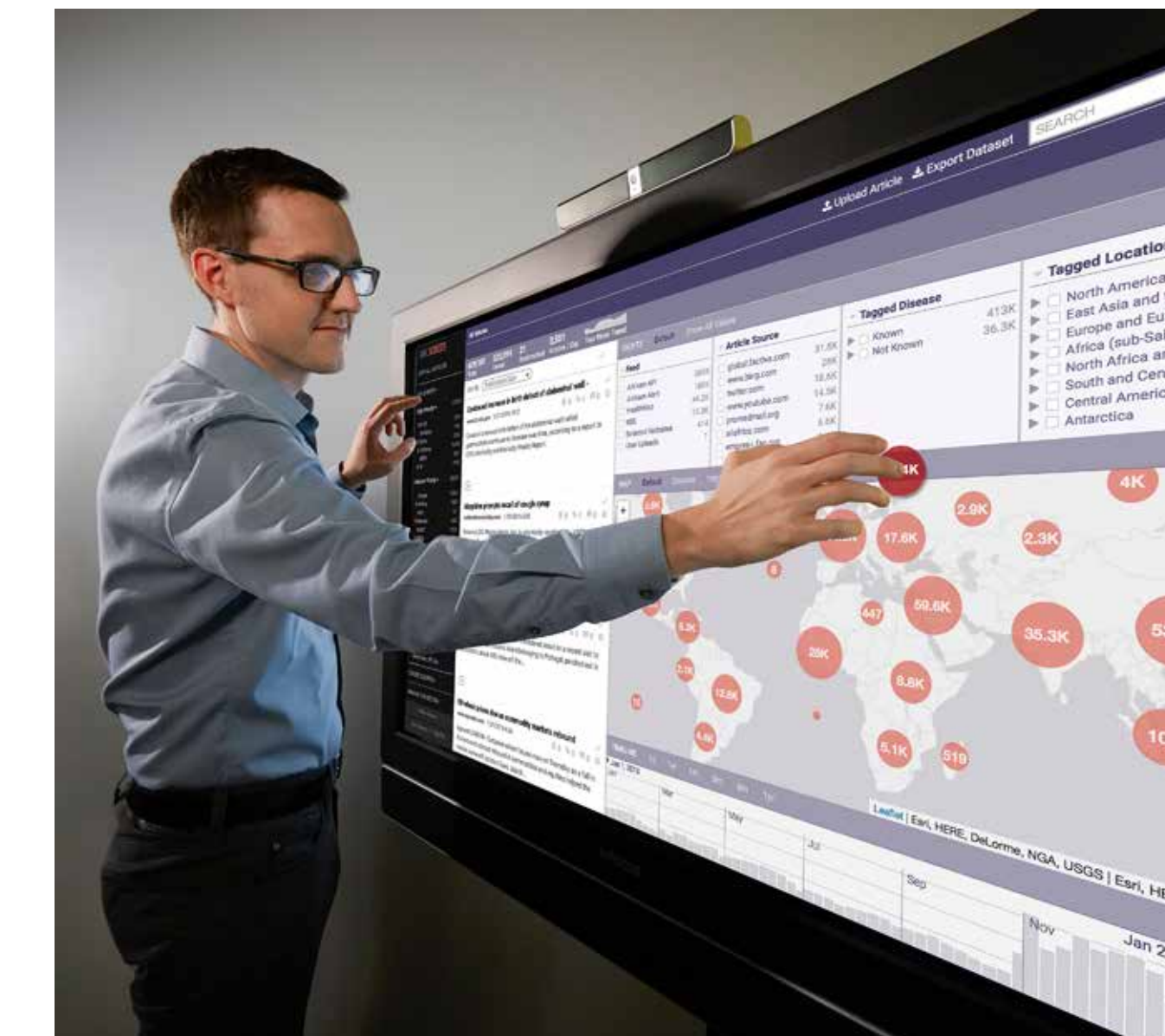

Early career scientists study aspects of radiation detectors.

CASCADES multi-crystal low-background gamma spectrometer helps us solve environmental questions by measuring isotopes at extremely sensitive levels.
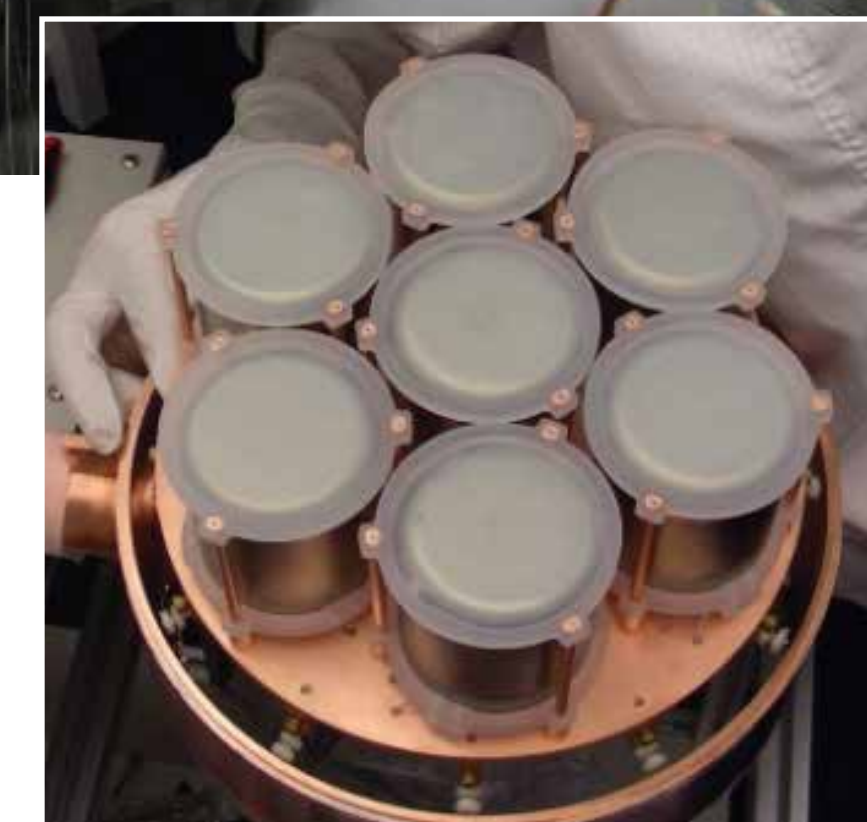
Cutting-Edge Research

PNNL is a leader in large-scale data analytics and visualization. Our analytic tools are used in a variety of applications, including cyber systems defense, power grid control systems, intelligence analysis, and climate change.

ATM-109, Bare, 803 cm, 180 seconds
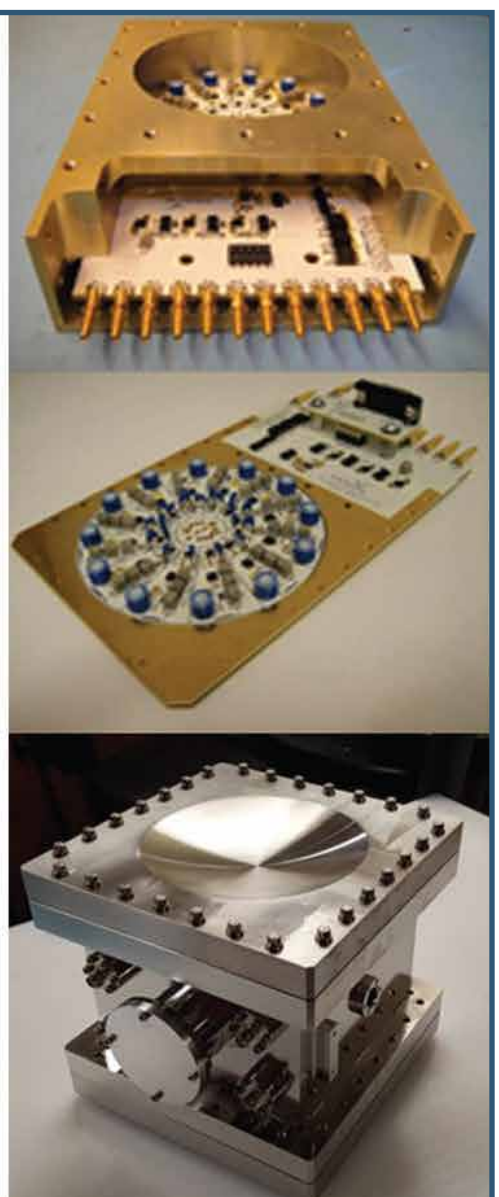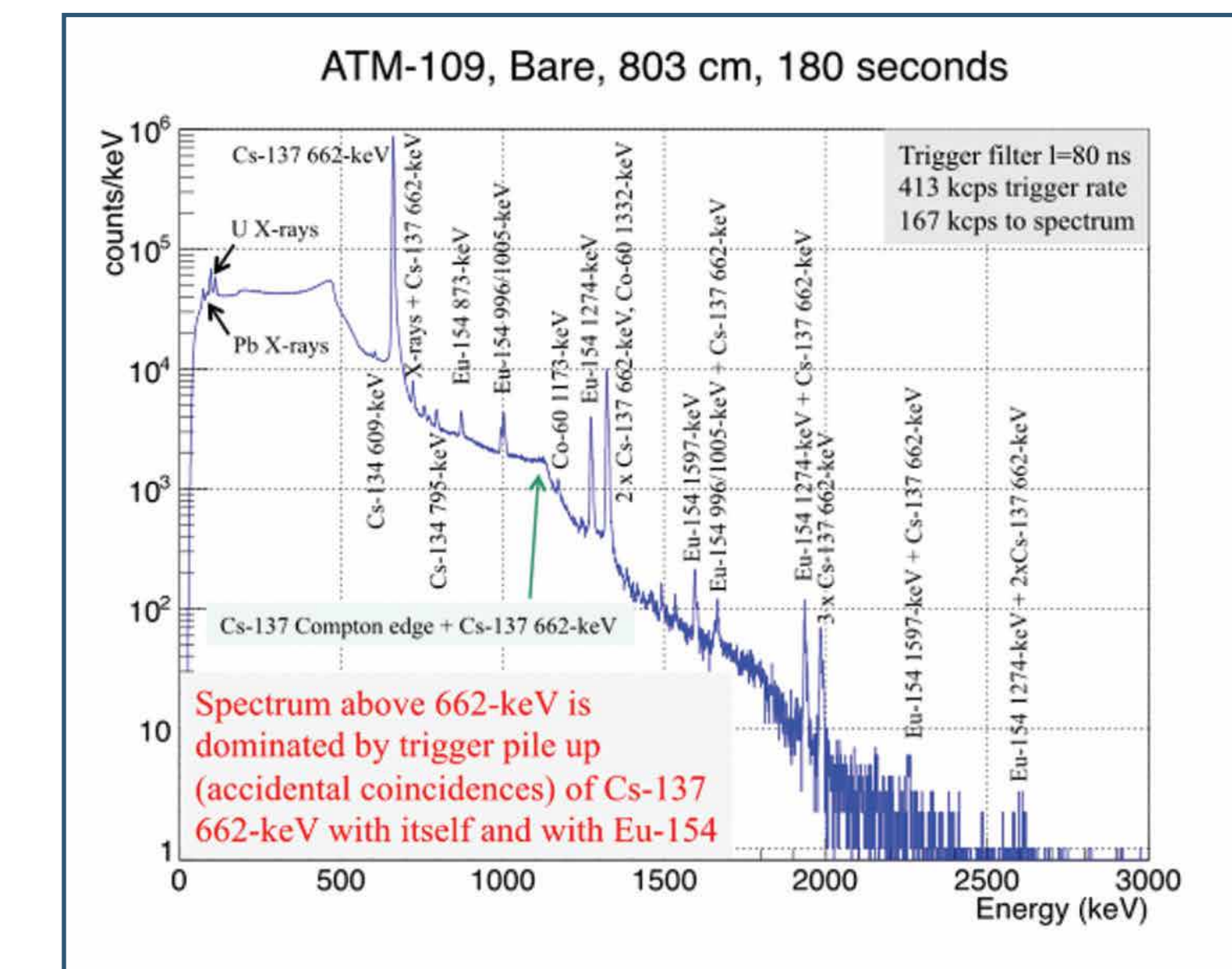
PNNL's Ultra-High Rate Germanium (UHRGe) detector project demonstrated an ability to maintain good energy resolution up to an input count rate of ~650,000 counts/ second with a constant throughput of ~200,000 counts/second. This result is about 4x better throughput than a conventional high-purity germanium spectrometer system.
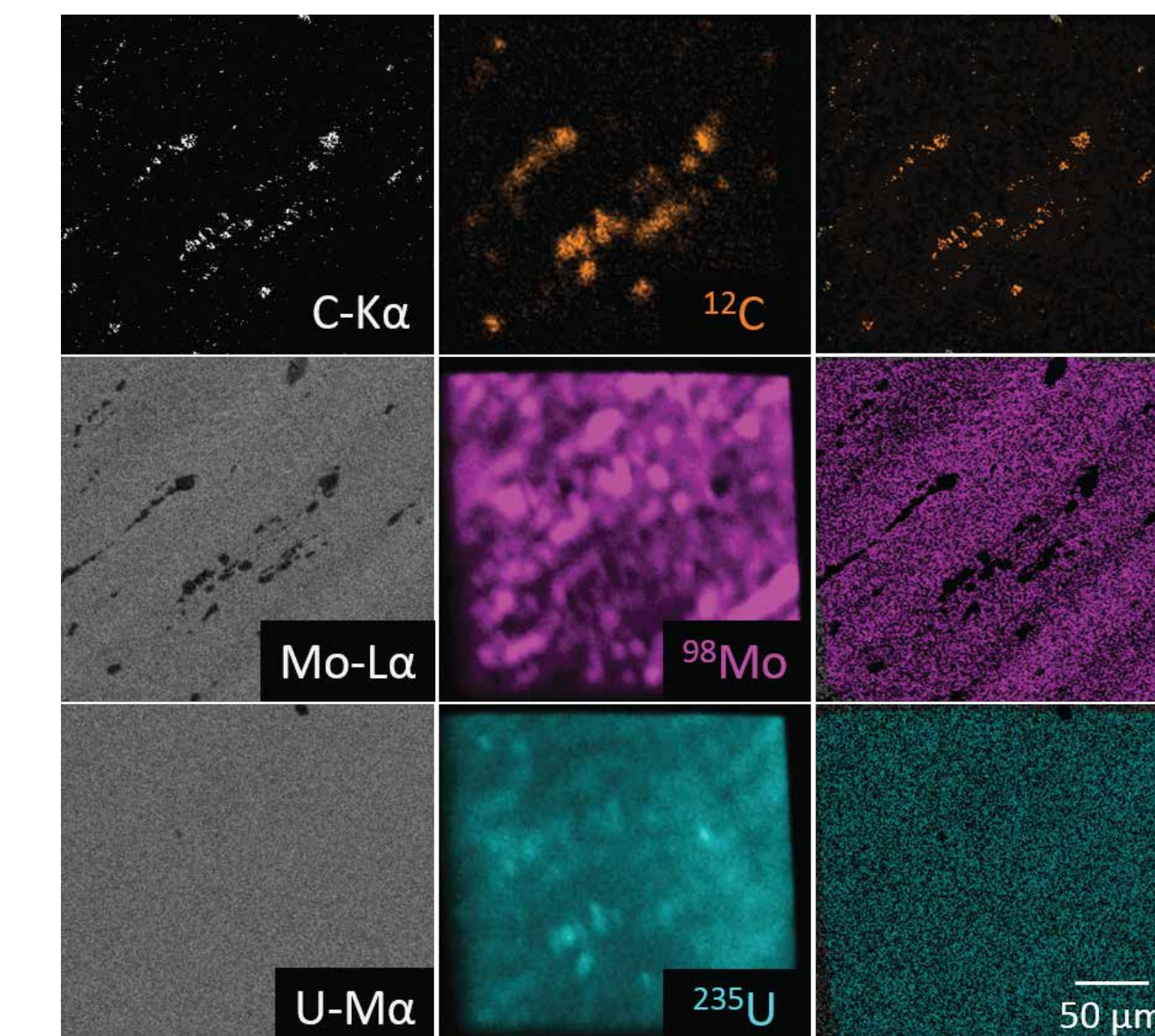
We are using image fusion to significantly decrease the analysis time for precision isotopic ratio measurements. We combine secondary ion mass spectrometry (SIMS) images and X-ray elemental maps from energy-dispersive spectroscopy to verify declarations of fissile material production.
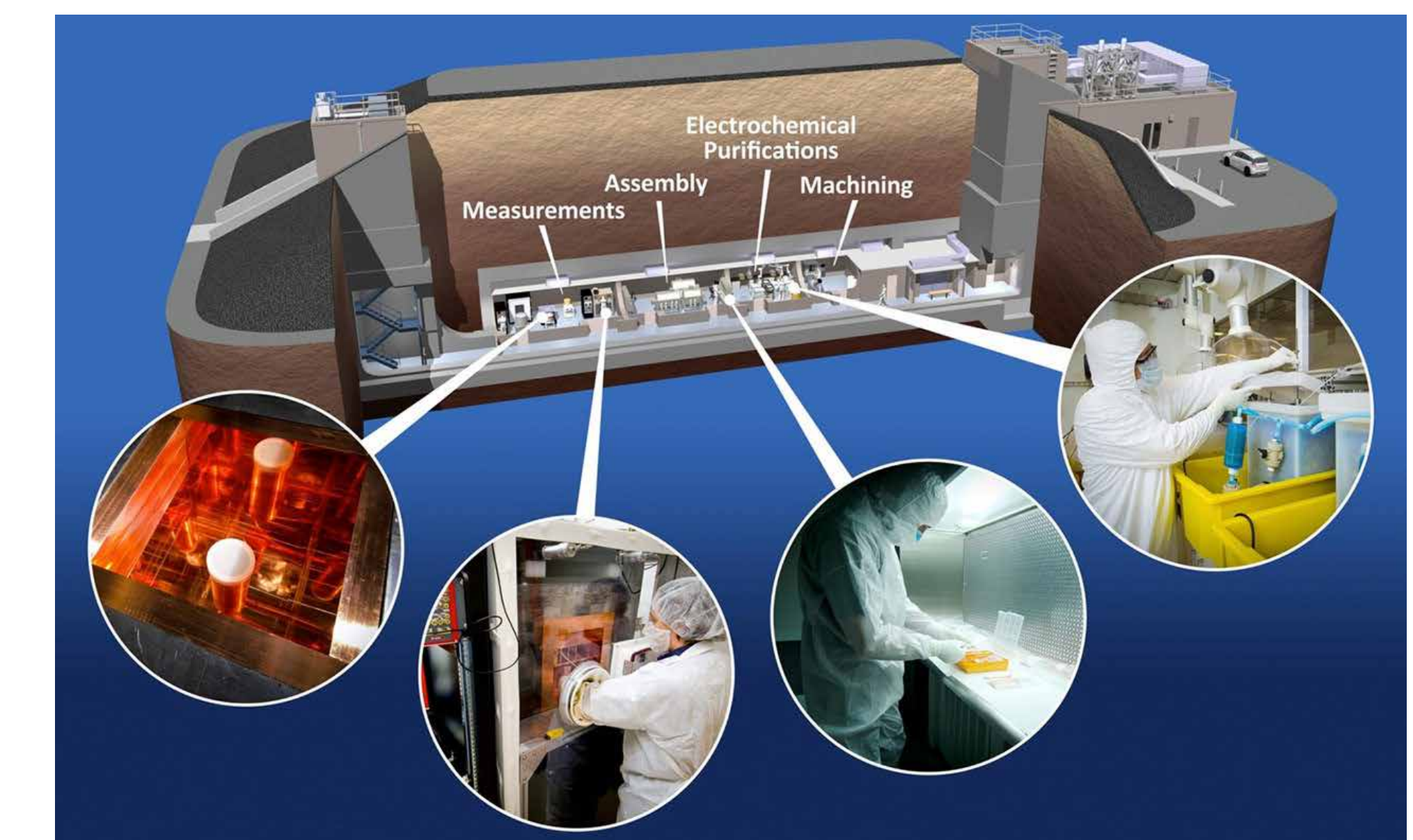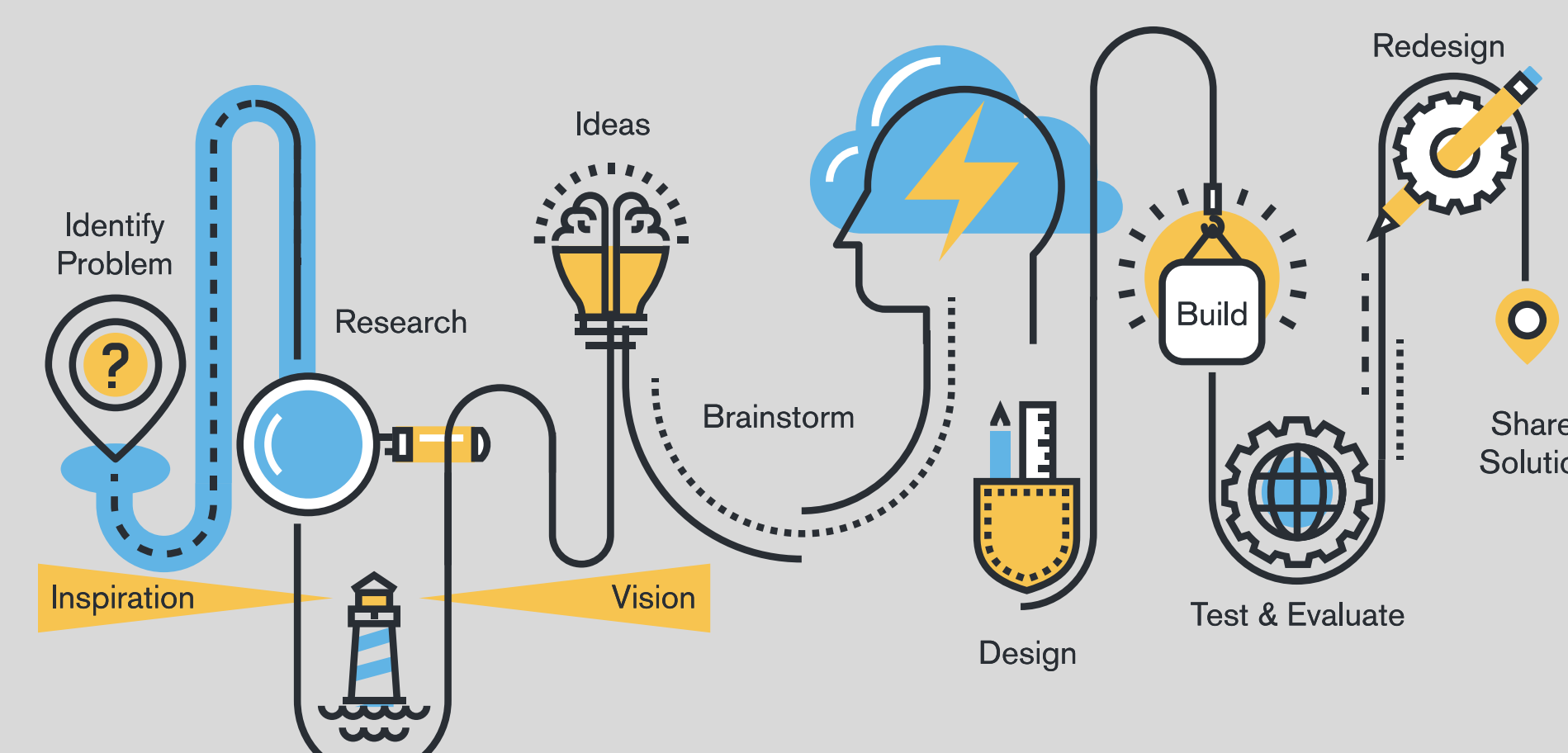

Our Shallow Underground Laboratory is 40 feet underground to shield it against cosmic rays. Here researchers support international treaty verification and also search for dark matter in the universe.

A U.S. Department of Energy – Office of Science laboratory that transforms the world through courageous discovery and innovation.

Unique Campus

Seattle, WA

Richland, WA

Sequim, WA

Imagine working on any of these three open, modern campuses, beautifully situated with easy access to water, mountains, and wilderness for recreation.

Identify Problem — Research — Ideas — Brainstorm — Redesign — Build — Share Solution — Inspiration — Vision — Design — Test & Evaluate

PNNL delivers unique research capabilities to detect and prevent proliferation and terrorism.

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