## **AIR FORCE TECHNICAL APPLICATIONS CENTER**



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## AFTAC, University of Texas to partner on nuclear forensics research

By Susan A. Romano, AFTAC Public Affairs

**PATRICK AIR FORCE BASE, Fla.** – The Air Force Technical Applications Center will soon be collaborating with the University of Texas at Austin to conduct research in the field of nuclear forensics.

Sponsored by the Department of Homeland Security's, Domestic Nuclear Detection Office, the Nuclear Forensics Research Award establishes a team of researchers including faculty, graduate and undergraduate students, as well as a national or defense laboratory to conduct advanced nuclear forensics research. AFTAC's Ciambrone Radiochemistry Lab was chosen by DHS'



National Technical Nuclear Forensics Center to collaborate with two graduate students from UTA on short-lived radionuclide analysis.

AFTAC, the Department of Defense's sole organization responsible for nuclear treaty monitoring, is also on the forefront of protecting the homeland as part of the NTNF program. Through an established array of sensors across the United States, AFTAC assists the Federal Bureau of Investigation with nuclear forensic collection and analysis after a nuclear detonation.

Technically speaking, AFTAC and UTA will focus on analyzing short-lived radionuclides using gamma coincidence spectroscopy with multiple high-purity germanium detectors. The two organizations will use fission-spectrum neutron sources in conjunction with rapid sample retrieval systems to produce relevant fission-product forensic samples.

In layman's terms, the students, faculty and scientists collaborate to develop methods and techniques to improve nuclear forensics timelines after a nuclear explosion in order to provide data rapidly to senior decision makers.

"AFTAC's efforts and involvement with the NTNF program are making the DoD's vision to protect U.S. personnel and interests from the threat of a weapon of mass destruction a reality," said Dr. Bill Johnson, Ciambrone Radiochemistry Lab senior scientist. "Nuclear forensics is a keystone of AFTAC's responsibility of assisting the U.S. government in its commitment to hold perpetrators accountable, and also counters the smuggling of nuclear material by helping to identify those responsible. Our lab performs that analysis, and having this partnership with the University of Texas will bolster our analytical capabilities, while helping the students gain invaluable hands-on experience in an operational radiochemistry lab."

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The Ciambrone Radiochemistry Lab, the only lab of its type in the Air Force and one of many in AFTAC's own network of analytical labs across the United States, is used to identify radiologic or nuclear debris in support of AFTAC's Nuclear Debris Collection and Analysis Program. The lab analyzes samples to assess signatory compliance to established nuclear weapons testing treaties in support of the U.S. Atomic Energy Detection System.

"The award helps ensure a robust nuclear forensics operational capability," said Dr. Mark Suriano, DNDO assistant director who leads the NTNF Center at DHS. "This award is key to bringing students into the nuclear forensic workforce and to supporting the United States government's capability to counter nuclear terrorism."

Dr. Glenn Sjoden, AFTAC's chief scientist, emphasized the importance of partnerships like this.

"Nuclear deterrence is critical to the overarching role this center plays in our national strategy," he said. "When we're able to introduce new minds to our unique 70-year history of monitoring nuclear activity across the globe, it allows us to stress the vital importance and necessity of deterring other nationstates or even non-state actors from waging war with nuclear weapons. As long as the threat exists, however, AFTAC stands ready to support our leaders in their decision-making. I look forward to working with the students from UTA."

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