Tandem microwave destroys hazmat, disinfects

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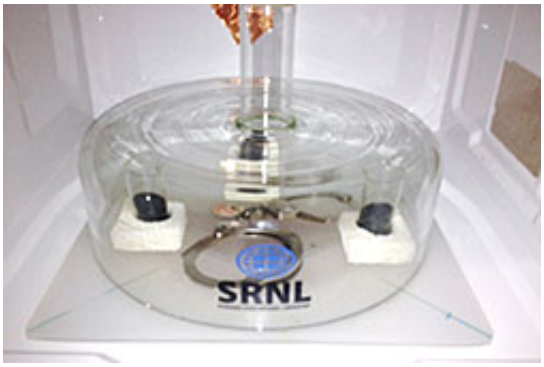

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Dangerous materials can be destroyed, bacteria spores can be disinfected, and information can be collected that reveals the country of origin of radiological isotopes - all of this due to a commercial microwave modified by DOE's Savannah River National Laboratory (SRNL). SRNL and Hadron Technologies have joined together to create a tandem-microwave that is part of the next level in advanced law enforcement and health safety technology.

Robin Brigmon, SRNL Senior Fellow Engineer, said the tandem microwave, fabricated from two commercial microwave ovens, can be used for the destruction of materials ranging from harmful viruses to methamphetamine, while still allowing for the DNA or chemical analysis of the destroyed material. He said it can also be used for disinfecting

wastes, sterilizing materials, and modifying liquid waste to solid.

This new law enforcement tool consists of two modified microwave ovens connected together. The first microwave is the primary chamber and is used for controlled combustion of materials. The second microwave is used to further treat gases released from the primary chamber. A laptop computer with software developed at SRNL is used for precise temperature control and analysis. Unlike typical microwave ovens, this technology allows for the neutralization and evaluation of material on metals, such as handcuffs.

This technology began as the idea of retired SRNL scientist Dr. George Wicks. He saw a critical need for microwave technology that could be used with forensics, and began experimentation at SRNL. He worked extensively in ceramic engineering and microwaves and developed the invention in conjunction with researchers from the University of Florida.

The joint venture with Hadron Technologies allows this new tool to be more fully developed and used by a greater number of customers. "For instance, one customer has requested a larger forensic microwave in order to treat five gallon size waste material," said Brigmon."Hadron can do this more rapidly and efficiently in collaboration with SRNL while maintaining the high standards needed by the customer."

"We have also partnered with Hadron on proposals for potential new applications for this device. SRNL can leverage Hadron's resources and personnel for future research and development projects, and Hadron can benefit from the technology created here at the national lab," he said.

Provided by Oak Ridge National Laboratory