

# TechBriefs

## Savannah River National Laboratory

U.S. DEPARTMENT OF ENERGY • SAVANNAH RIVER SITE • AIKEN • SC

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### At a glance

- > New hybrid material
- > Capability of conductive and non-conductive materials
- > Integrated circuits within rapid prototype parts
- > Rapid prototype circuit boards Resistant to reverse engineering
- > Patent applied for

### Contact Information

**Dale Haas**  
**Commercialization Manager**

Savannah River National Laboratory  
Bldg. 773-41A, Room 238  
Aiken, SC 29808

Phone: 803.725.4185

FAX: 803.725.4988

E-mail: [dale.haas@srnl.doe.gov](mailto:dale.haas@srnl.doe.gov)

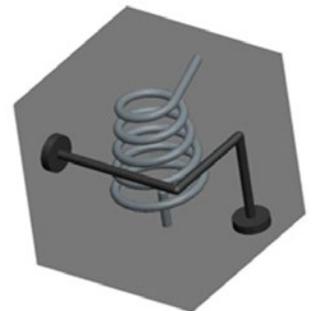


## Additive Manufacturing (3D Printing): Selectively Printed Conductive Pathways

Researchers at the Savannah River National Laboratory (SRNL) have developed a rapid prototype conductive material that can be used for electrical shielding or circuit fabrication.

### Background

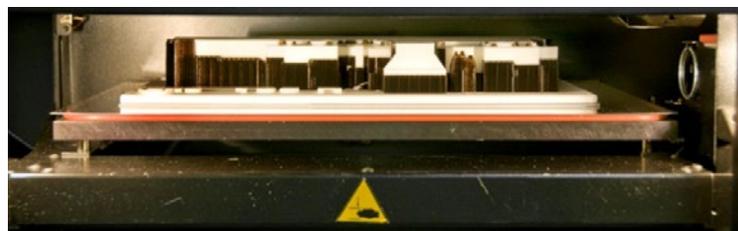
Several rapid prototype technologies currently exist. A few of the technologies produce metallic parts, but the majority produce nonconductive parts made from various grades of plastic. In all of these technologies however, only conductive material or nonconductive material can be used within one part created. There is no known option for 3D printing conductive material for shielding or circuit fabrication.



### How it works

This technology provides the capability of having both conductive and nonconductive material within one 3D printed part. This will allow the creation of three dimensional embedded electronic circuits or shielding, provided by a hybrid material which allows for electrical conductivity in the machines that traditionally produce nonconductive parts. This will produce a part with nonconductive and conductive pathways as one complete unit.

Possible end uses for this technology are integrated circuits within 3D printed parts, or printed circuit boards. In addition, enclosures can be manufactured with integral shielding.



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### Technology transfer

The Savannah River National Laboratory (SRNL) is the U.S. Department of Energy's (DOE) applied research and development laboratory at the Savannah River Site (SRS).

With its wide spectrum and expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting edge technology delivers high dividends to its customers.

The management and operating contractor for SRS and SRNL is Savannah River Nuclear Solutions, LLC. SRNS is responsible for transferring its technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

### Partnering opportunities

SRNS invites interested companies with proven capabilities in this area of expertise to develop commercial applications for this process or product under a cooperative research and development agreement or licensing agreement. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

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