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Hybrid Nanomanufacturing of Semiconductor Nanostructures on Printed Liquid Metal for Stretchable, Wearable Devices

A novel additive printing method for liquid metal structures facilitates the creation of highly ductile semiconductor materials for advanced, flexible wearable electronics and non-destructive testing applications.

Wearable electronics has had many limitations that are just beginning to be broken through. These barriers include its stretch ability, nanomanufacturing, and material reactivity. Many wearable devices only work when contracting, like a bicep or finger, but when extending, the electronics are susceptible to their yield limits. One method for counteracting this is printing the electronic circuitry onto a medium, but this is an available resolution only if stable printing can be achieved.

Researchers from Purdue University have developed a method of additive printing for liquid metal structures. The ability to manufacture semiconductor materials through printing provides open doors for wearable electronics especially as the designed materials for this method have high ductility. This presents future wearable technology to be flexible for a better mimicry of human or animal motion. The developed method of nanomanufacturing will allow for better designing of wearable electronics.

Advantages:

-Patterning of Liquid Metal

-Controlled Manufacturing

-Printable

Potential Applications:

-Wearable Devices

-Nondestructive Testing

Technology ID
2017-WU-67651

Category
Semiconductors/Fabrication & Process Technologies
Materials Science & Nanotechnology/Nanomaterials & Nanostructures

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TRL: 3

Intellectual Property:

Provisional-Patent, 2017-11-06, United States | Utility Patent, 2018-11-06, United States

Keywords: Wearable electronics, additive printing, liquid metal structures, nanomanufacturing, semiconductor materials, high ductility, flexible electronics, stretchable electronics, nondestructive testing, patterning of liquid metal