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Cold Spray-based Rapid Production of Printed Flexible Electronics

Cold spray fabrication produces crack-free, conductive flexible electronics at scale without post-processing.

Researchers at Purdue University have developed a fabrication process for the scalable production of printed flexible electronics (FE). Unlike previous approaches to FE production, Purdue's method leverages cold spray (CS) particle deposition technology to eliminate the need for high temperature post-sintering. This results in a process that is both more energy efficient and easily scaled due to its simplicity. Electrodes fabricated via this method were shown to have electrical conductivity of 8.72Ã—10^5 S/m, adhesion, and long-term stability without significant property reductions after 1000 bending cycles. Applications of this technology are in the rapid, scaled production or repair of printed flexible electronics.

Advantages

- Eliminates need for post-processing

- Easily scalable

- Energy efficient

Applications

- Rapid and scalable production of printed flexible electronics

- Repair of damaged electronics

Technology Validation:

This technology has been validated through fabrication and characterization of flexible heating elements and LED circuits.

TRL: 6

Intellectual Property:

Technology ID
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Category
Energy & Power Systems/Energy Storage
Materials Science & Nanotechnology/Materials
Testing & Characterization Tools

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