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Electrically Conducting Adhesives

Conductive adhesive polymers combine bonding strength with transistor properties for flexible electronics.

Currently, there are few, if any, adhesives that can simultaneously bond together and conduct between two substrates. To address the need for a joining material that can also behave as a transistor, researchers at Purdue University have developed a polymer blend exhibiting both electronic and adhesive properties. This material serves as the active layer of a "sticky" organic thin film transistor (OTFT). This technology has applications in the design and manufacture of electronic systems. Examples include solar cells, semiconductor chips, or printed circuit boards where adhesion is valued.

Advantages

-Simultaneous adhesion and conductivity between substrates

-Constant charge carrier mobility through thin film

-Capability for both adhesion and transistor properties

Applications

-Electronic devices

-Adhesive organic thin film transistors (OTFTs)

-Polymer based adhesives

Technology Validation:

This technology has been validated through testing of the created polymers. Testing showed that blend films maintained relatively constant field-effect charge carrier mobility in OTFTs. Lap shear adhesion strength tests showed values ranging from 0.05 to 4.30 MPa depending on composition.

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Semiconductors/Devices & Components

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