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Electroactive Polymer Chemical Strain and Conductive Polymer Layers

A novel chemical process simplifies the manufacturing of Electroactive Polymers, making them more durable and flexible for use in mechanical systems and medical devices.

Electroactive polymers (EAP) are polymers that change size or shape when activated by an electric field. EAPs behave similarly to artificial muscles and have many applications as actuators or sensors in robotics and devices such as microfluidic pumps and optical membranes. During manufacturing, these materials need to be stressed, usually mechanically or thermally, in order to improve their strain behavior in the final application. These processes add additional cost and complexity to the manufacturing process.

Purdue University researchers have developed a novel chemical process that can be used to prestrain a wide range of EAP materials. This process simplifies and greatly improves the manufacturability of EAPs, making them durable, flexible, and in constant contact with the circuit. EAPs have many applications in mechanical systems and medical devices.

Advantages:

-Simplifies manufacturing

-Creates durable polymers

Potential Applications:

-Mechanical systems

-Medical devices

TRL: 5

Intellectual Property:

Technology ID
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Category
Chemicals & Advanced Materials/Polymer Science & Smart Materials
Robotics & Automation/Automation & Control

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Provisional-Patent, 2015-03-13, United States | PCT-Patent, 2016-03-10, WO | NATL-Patent, 2017-09-08, United States | NATL-Patent, 2017-10-06, European Patent | DIV-Patent, 2020-11-23, United States | NATL-Patent, N/A, France | Provisional-Patent, N/A, United States | NATL-Patent, N/A, Germany

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