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3D-architected Soft Machines with Structurally Encoded Actuation

Highly compressible and stretchable soft robots offer expanded motion capabilities for applications in soft robotics, prosthetics, and wearable devices, while maintaining low-cost, simplicity, and modularity.

During the last decade, the field of soft robotics has experienced a great expansion due to the advantages of soft robots in safety, adaptability, and maneuverability. Unfortunately, material, design and manufacturing choices can limit mechanical properties and functionality of the robots.

Purdue researchers have developed soft robots that demonstrate high degrees of compressibility (400%), stretchability (500%) and can exhibit complex biologic type movements while retaining low-cost, simplicity, and modularity. The soft robots can be used for advanced soft materials such as prosthetics and wearable devices.

Advantages:

-Expanded range of motions for soft robots including contraction, twisting, bending, an cyclical motion

-Simple and modular

Potential Applications:

-Soft robotics

-Prosthetics

-Wearable devices

TRL: 3

Intellectual Property:

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Category
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Materials Science & Nanotechnology/Biomedical & Bioinspired Materials

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