



TECHNOLOGY

Electro-Osmotic Artificial Muscle

OVERVIEW

Background:

One of the enabling technologies that will aid the advancement of robotics in the coming years is new actuators. The three most important metrics for actuators are strain, stress, and speed. These determine work and power. Closely following those is efficiency; robustness, lifetime, and other factors must also be considered in the long run. While there has been longstanding interest in developing "artificial muscles," and there are numerous types (thermal, electronic, ionic), none have shown a combination high force and large stroke at reasonable speed.

Innovation:

Researchers at the University of Maryland have developed a novel design for an electro-osmotic artificial muscle. This design is similar to that of a McKibben muscle, comprising a bladder inside a sealed woven jacket without any fluid connections to the outside, providing the advantage of operating without the need of an external source of pressurized fluid (gas, liquid) and the associated hardware (tubes, valves, pumps).

APPLICATIONS

Robotics
Medical Devices
Prosthetics

ADVANTAGES

No requirement for an external fluid source
High force, large displacement

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Additional Information

INSTITUTION

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EXTERNAL RESOURCES

PS-2014-176