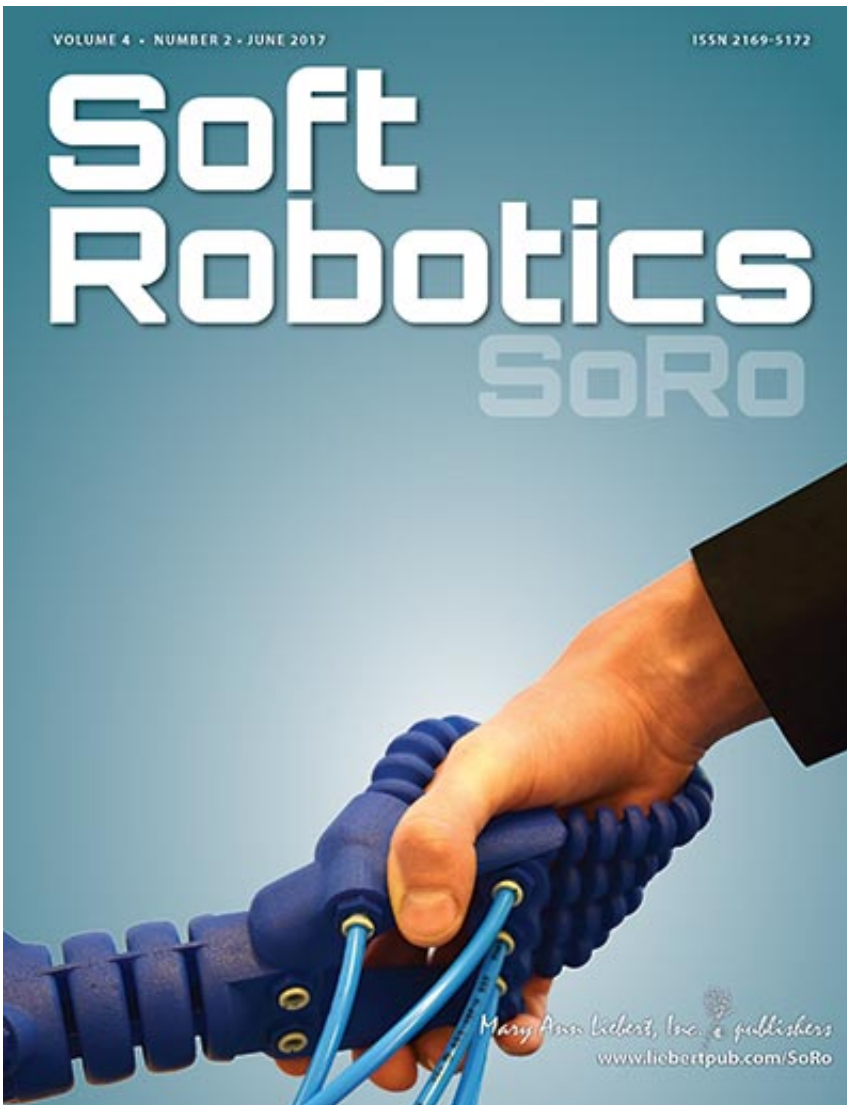


Researchers describe pneumatic actuator that generates cyclical motion

July 18 2017



Credit: Mary Ann Liebert, Inc., publishers

A new study demonstrated the design, potential applications, and advantages of an innovative multi-chambered soft pneumatic actuator. Researchers described how the actuator generates cyclical motion and characterized its trajectory and the force it exerts in an article published in *Soft Robotics*.

Coauthors Alar Ainla, Mohit Verma, Dian Yang, and George Whitesides, Harvard University, Cambridge, MA presented two sample applications of the actuator in the article entitled "Soft, Rotating Pneumatic Actuator": delivering fluid through a needle while stirring; and mimicking the gait of a reptile to achieve locomotion. They identified several advantages of this novel method for achieving revolution of a central rod-like unit within a soft pneumatic [actuator](#) including no need for lubrication, no risk of bursting at actuation pressures above the operating specifications because it functions under negative pressure, and its ability to be used in operations that are sensitive to electromagnetic fields or use flammable liquids where an unshielded electric motor could cause interference or explosion.

"Working with soft machines presents enormous challenges in design and then in the technical aspects needed to build a working [device](#). This report is an ingenious example of a device that leverages soft materials to operate in environments that would not be suitable for more traditional robots," says Editor-in-Chief Barry A. Trimmer, PhD, who directs the Neuromechanics and Biomimetic Devices Laboratory at Tufts University (Medford, MA).

More information: Alar Ainla et al, Soft, Rotating Pneumatic Actuator, *Soft Robotics* (2017). [DOI: 10.1089/soro.2017.0017](https://doi.org/10.1089/soro.2017.0017)

Provided by Mary Ann Liebert, Inc

Citation: Researchers describe pneumatic actuator that generates cyclical motion (2017, July 18)
retrieved 20 April 2024 from
<https://phys.org/news/2017-07-pneumatic-actuator-cyclical-motion.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.