Special Issue

Dielectric Elastomer Actuators (DEAs)

Message from the Guest Editor

Along with recent advances in materials sciences, stretchable electronics, and mechatronics, the research and development of dielectric elastomer actuators (DEAs) is rapidly increasing. The reasons lie in their multifunctionality, scalability, and performance characteristics resembling skeletal muscles, making them a promising solution for the creation of next-generation machines and devices driven by soft intelligent materials. DEAs are a type of electroactive polymers made of compliant elastomers and are able to generate large actuation strokes, exhibit a fast response, and have theoretically high electro-mechanical efficiency compared to other soft actuator technologies. Applications of DEAs cover a wide range of fields such as soft robotics, optics, and medical and biological engineering. This Special Issue invites contributions from all aspects of DEAs, including but not limited to:

- Novel robots, actuator configurations, and other mechatronic devices
- Switches, generators, and other transducers
- Theory and modeling
- Design, fabrication, and control
- Applications in research, industry, and education

Guest Editor

Prof. Dr. Jun Shintake

Department of Mechanical and Intelligent Systems Engineering, University of Electro-Communications, Tokyo 182-8585, Japan

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Actuators
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
actuators@mdpi.com

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About the Journal

Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

Editors-in-Chief

Prof. Dr. Kenji Uchino
Emeritus Academy Institute, The Pennsylvania State University, University Park, PA 16802, USA

Prof. Dr. Norman M. Wereley
Department of Aerospace Engineering, University of Maryland, 3179J Martin Hall, College Park, MD 20742, USA

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