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Smart Dielectric Elastomer Actuator and Sensor Systems

Guest Editors:

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Deadline for manuscript submissions:
closed (31 December 2022)

Message from the Guest Editors

Dear Colleagues,

Dielectric elastomer actuators (DEAs) are among the most promising technologies for the new generation of smart multifunctional systems. Due to their large deformations, inherent compliance, lightweight property, high power density and efficiency, and self-sensing capability, DEAs can excel in tasks which are difficult, if not impossible, to achieve for conventional drives and servo systems.

This Special Issue collects novel contributions in the field of multifunctional systems based on DEAs.

The topics of interest to the Special Issue include, but are not limited to:

- Advanced DEA applications (acoustics, haptics, soft robotics, wearables);

- New DEA system architectures and layout;

- Multi-actuator and cooperative systems;

- Design, fabrication and optimization of novel DEA-driven systems;

- System-level modelling and simulation;

- Innovative driving/sensing electronics;

- Control concepts for DEA systems;

- Self-sensing and sensorless control;

- Condition monitoring and lifetime assessment.

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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.

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