

Special Issue

Innovative MEMS: Merging Smart Materials with Electronic Techniques for Enhanced Sensing and Actuation

Message from the Guest Editors

In recent decades, micro electro-mechanical systems (MEMSs) have had a significant impact in the fields of sensors and actuators, with continuous progress still being made. A noteworthy advancement that significantly extends the applications of MEMSs is the possibility of integrating them with smart materials, such as piezoelectric and magnetic materials combined with silicon, leveraging these materials' multiphysics behavior. Their cutting-edge design and the use of smart materials are leading to new miniaturized chemical, physical, biological, and optical sensors and microactuators. In this context, we invite researchers and scientists to submit articles on the scientific and technical aspects of microsystems used for sensors and actuators. Both review articles and original research articles are welcome.

The covered topics include, but are not limited to, the following:

- Design and fabrication processes of MEMS devices;
- Sensors, actuators, and transducers at the microscale;
- Energy conversion devices and energy harvesters;
- Electronic circuits and techniques for microsystems;
- Smart materials for microsystems.

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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.

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