Special Issue

New Design and Applications for Magnetoelastic Actuators

Message from the Guest Editors

Dear colleagues, Actuators based on smart materials represent an important and wide research area. Indeed, they are capable of “connecting” different physics by expanding the horizons of technology and industry. Among the smart materials applications, magnetostrictive actuators play an important role. Their applications are potentially wider than those of traditional actuators because of the higher energy density and intrinsic robustness. Indeed, they hardly suffer from wear over time. Magnetoelastic actuators are used for micropositioning, motors, active vibration control, fuel injectors, micropumps, acoustic applications, etc. Their capability to be miniaturized and to show strong mechanical properties allows them to potentially be used in several high-tech areas, such as:

- biomedical,
- MEMS,
- automotive,
- precision mechanics,
- precision surgery,
- aerospace,
- nondestructive testing (NDE) for SHM of infrastructure or buildings,
- self-sensing.

Guest Editors

Dr. Carmine Stefano Clemente
Department of Engineering, University of Sannio, 82100 Benevento, Italy

Prof. Dr. Daniele Davino
Department of Engineering, University of Sannio, 82100 Benevento, Italy

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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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