Special Issue

Electrothermal and Electrostatic Actuators for Assembly, Robotics and Micromanipulation Applications

Message from the Guest Editors

In this Special Issue, we aim to highlight some of the recent developments and achievements in electrothermal and electrostatic actuators, their integration in different MEMS/MOEMS/NEMS devices and sensors, and structural advanced materials used for fabrication and different applications, such as micromanipulation techniques. The realization of actuators with an out-of-plane motion is still a challenging task in the domain of micro-electro-mechanical (optical) systems (MEMS/ MOEMS). The designed micro-actuators can be used in a variety of applications, such as in bio-medicine, micro-robotics, for grippers actuation, in assembling for positioning, and the manipulation of micro-elements (like mirrors, lenses, or bio-elements)in electronics as for switches or RF applications or mirrors. We invite the submission of research papers and reviews that focus on tethered or untethered actuators used for devices with applications in the manipulation, fabrication, or characterization of different structural materials used. Topics of particular interest include but are not limited to, modeling and simulation, design, fabrication, as well as characterization at small scales and experiments.

Guest Editors

Dr. Rodica Voicu

IMT Bucharest Modeling, Simulation and CAD Laboratory, National Institute for Research and Development in Microtechnologies—IMT Bucharest, 126A Erou Iancu Nicolae Street, 077190 Bucharest, Romania

Dr. Jian Lu

Device Technology Research Institute National Institute of Advanced Industrial Science and Technology (AIST) Namiki 1-2-1, Tsukuba, Ibaraki, 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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