

Special Issue

Actuating, Sensing, Control, and Instrumentation for Ultra Precision Engineering

Message from the Guest Editors

Ultra Precision Engineering (UPE) is a comprehensive field that concerns the design, manufacture and measurement of ultra-precision components and systems. It has impacted several diverse fields of science and technology, including microelectronics, optics, biotechnology, etc. UPE covers research and development areas such as materials, machining and fabrication processes, design of ultra-precision devices at nanoscales, sensors, actuators and control systems. With the progress of new solutions to UPE, the demand of advanced mechatronic systems with high-performance on freedom, stroke, resolution, accuracy and bandwidth has been continuously increasing. This Special Issue aims to provide a forum for researchers and developers to exchange ideas, recent trends, and achieved results related to these fields. Original and innovative research works from both academia and industry are welcomed. The topic covers novel actuators and advanced mechatronic systems for UPE as well as ultra-precision machines. The proposed topics are sclosely related to the integration of mechanism, actuators, sensors and control systems.

Guest Editors

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Deadline for manuscript submissions

closed (15 June 2023)



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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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