Special Issue

Smart Systems for Vibration Damping, Control and Energy Harvesting Based on Piezoelectric Actuators: Latest Findings and Applications

Message from the Guest Editors

In recent decades, many studies have focused on the development of novel smart-material systems which offer the opportunity to modulate systems' responses through external stimuli, such as strain, magnetic field, electric field, temperature, etc. Shape-memory alloys, electrorheological and magnetorheological fluids and piezoelectrics are the most promising materials for use in vibration damping and control, energy harvesting, precision positioning devices, actuators and sensors' development. Smart materials have several valuable features; for instance, piezoelectrics have large bandwidths, fast responses to stimuli and high displacement resolutions. In this Special Issue, we focus on the recent advancements and novel techniques in modeling, placement optimization strategies, experiments and new applications, at the macro-scale, based on smart materials. Review and special topic papers are also welcome.

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Deadline for manuscript submissions

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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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