Special Issue

NEMS for Precision Sensing: Self-Sensing Transduction, Noise, and Drift Control

Message from the Guest Editor

Nanoelectromechanical systems (NEMSs) are redefining precision sensing by leveraging ultralow mass, exceptional stiffness-to-mass ratios, and scalable, low-power transduction.

This Special Issue is dedicated to advances in NEMS sensing principles and implementations, including fully electrical, self-sensing readout schemes (capacitive, down-mixing/lock-in, piezoresistive, piezoelectric), as well as bias- and strain-tunable frequency stabilization. Topics of interest include the exploitation of nonlinear dynamics (Duffing, parametric, internal resonance) for enhanced sensitivity, bandwidth and dynamic range; dissipation, noise, and drift mechanisms (thermoelastic, surface, anchor, adsorption) with strategies for Q-factor engineering; and in situ calibration, standards and reliability under diverse environments.

We particularly welcome contributions spanning theory, modeling, and metrology, as well as sensing, and RF timing/filtering. Submissions emphasizing CMOS compatibility, low-voltage operation, and on-chip integration are especially encouraged, together with concise reviews and perspectives that map emerging research directions.

Guest Editor

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Message from the Editor-in-Chief

Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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