Special Issue

Advanced Electromagnetic Sensors Technologies and Their Applications

Message from the Guest Editors

This Special Issue covers advances in electromagnetic sensors and sensing for direct and indirect measurements. Electromagnetic sensing is key in non-destructive testing (NDT), biomedical diagnostics, geophysical exploration, subsurface characterization, and remote or contactless measurement of electrical currents and sources. A main challenge is extracting reliable information from indirect, noisy, or incomplete data, requiring advanced sensing to reduce errors and uncertainties. Progress in theory, computation, and data-driven methods has expanded solvable electromagnetic inverse problems. Artificial intelligence increasingly aids sensor design and data processing. This Issue highlights application-driven advances integrating physics-based models with data-driven methods, including machine learning, deep learning, and hybrid physics–AI frameworks. Topics include sensor design, measurement principles, learning-enhanced inverse problem strategies, uncertainty quantification, and neural-network-based methods for imaging, classification, and parameter estimation.

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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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