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IEEE Journal of Selected Areas in Sensors Special Section on Emerging Technologies in Next-Generation Gas and Bio- Sensors for Biological and Industrial Applications

With growing global demands in environmental monitoring, personalized healthcare, precision agriculture, and smart manufacturing, gas and bio- sensors are becoming central to the next wave of intelligent sensing systems. Rapid advances in materials engineering, low-power electronics, miniaturization, and AI-enhanced signal processing are revolutionizing how these sensors are designed, deployed, and applied.

This Special Section aims to highlight recent breakthroughs and innovations in gas sensors and biosensors designed for biological and industrial applications. It welcomes contributions that explore novel materials, sensor architectures, smart signal processing, and system-level integration. This Special Section welcomes innovative contributions that demonstrate significant advances in selectivity, stability, responsiveness, wearability, and biocompatibility. Topics of interest include

- Nanostructured and hybrid materials engineered for advanced gas sensors and biosensors in biological and industrial environments
- Electrochemical, optical, and MEMS-based sensing platforms for gas detection and biosensing applications
- Wearable and implantable biosensors for health diagnostics, monitoring, and therapeutic feedback
- High-performance gas sensor systems for industrial safety, environmental monitoring, and pollution control
- Lab-on-chip and organ-on-chip biosensors for diagnostics, pharmaceutical testing, and bioprocess monitoring
- Flexible, stretchable, and biodegradable substrates for integration into next-generation gas and biosensing systems
- Intelligent signal processing, data fusion, and calibration techniques for robust gas and biosensor performance in dynamic conditions
- Wireless, IoT-enabled, and AI-integrated gas sensors and biosensors for connected biological and industrial applications

This Special Section is expected to include **10–15 high-quality contributions**, featuring original research articles, review papers, and application-focused studies. Submissions should present either theoretical advancements, experimental developments, or systems-level integration of gas/biosensing technologies. Papers highlighting translational outcomes, multi-domain applicability, or field-deployed prototypes are particularly encouraged.

All submissions will undergo a rigorous peer-review process as per IEEE JSAS standards. Manuscripts must be submitted through the IEEE Author Portal at <u>https://ieee.atyponrex.com/journal/jsas</u>. When submitting, please choose "Emerging Technologies in Next-Generation Sensors for Biological and Industrial Applications" from the "Manuscript Type" dropdown menu. For manuscript guidelines and submission procedures, refer to the IEEE JSAS website: <u>https://ieee-jsas.org/</u>

Deadlines:

- Manuscript Submission Deadline: October 15, 2025
- First-Round Review Completion: November 15, 2025
- Revision Submission Deadline: November 30, 2025
- Notification of Final Acceptance: January 31, 2025
- Publication Date: February 2026

Guest Editors:

- Lead GE: Prof. Ray-Hua Horng, University Chair Professor, Institute of Electronics, National Yang Ming Chiao Tung University, Hsinchu, Taiwan (email: <u>rayhua@nycu.edu.tw</u>), conducting research on solid-state lighting devices, gas sensors, optoelectronics, flexible electronics, and nitride/oxide semiconductor materials and device fabrication.
- GE1: Prof. Irmantas Kasalynas, Professor at the Physics Department, Vilnius University, Vilnius, Lithuania (<u>irmantas.kasalynas@ftmc.lt</u>), conducting research on photonics, 2D materials, GaN-based semiconductors, metasurfaces, and spectroscopic techniques for material characterization.
- GE2: Dr. Duc Huy Nguyen, Research Assistant Professor, National Yang Ming Chiao Tung University, Hsinchu, Taiwan (email: <u>ndhuyvn1994@nycu.edu.tw</u>), conducting research on hardware accelerators for AI and deep learning in real-time biomedical signal processing.