

INTERNATIONAL SYMPOSIUM ON

ADVANCED BIOSENSING MATERIALS AND TECHNOLOGIES (BIO-SENS 2026)

April 2–5, 2026



 **International Symposium on Advanced Biosensing Materials and Technologies (BIO-SENS 2026)**

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1. Material Platforms for Biosensors

- Oxide Semiconductor–Based Biosensors (ZnO, SnO₂, TiO₂, In₂O₃, NiO, vb.)
- Graphene and 2D Materials for Sensing Applications
- Conducting Polymers and Hybrid Organic–Inorganic Interfaces
- Nanostructured Metal and Metal-Oxide Electrodes (AuNPs, AgNPs, CuO, etc.)
- Functionalization and Surface Chemistry for Biomolecule Immobilization
- Laser-Induced Graphene (LIG) and Flexible Substrate Sensors
- Quantum Dots, MXenes, and Perovskite-Based Biosensors

2. Transduction Mechanisms and Signal Processing

- Electrochemical and Impedimetric Biosensors
- Field-Effect Transistor (FET) Biosensors
- Optical Biosensors (SPR, fluorescence, Raman, plasmonic)
- Piezoelectric and Acoustic Biosensors (QCM, SAW)
- Thermal and Calorimetric Detection Techniques
- AI-Enhanced Signal Processing and Noise Reduction in Biosensing

3. Biorecognition and Analytical Strategies

- Enzyme-Based and Affinity Biosensors
- DNA, RNA, and Aptamer Biosensors
- Immunosensors and Antibody-Based Detection

- Synthetic Receptors, Molecularly Imprinted Polymers (MIPs)
 - Label-Free Detection Technologies
 - Multi-Analyte and Cross-Reactive Sensor Arrays
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4. Device Integration and Microfabrication

- Microfluidic and Lab-on-a-Chip Systems
 - CMOS and MEMS-Integrated Biosensors
 - Flexible, Stretchable, and Implantable Biosensor Platforms
 - 3D Printing and Additive Manufacturing in Sensor Design
 - Point-of-Care (POC) and Portable Biosensing Devices
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5. Applications and Emerging Fields

- Glucose, Lactate, and Electrolyte Monitoring
 - Cancer and Disease Biomarker Detection
 - Environmental Monitoring and Water Quality Biosensors
 - Food Safety and Agricultural Biosensors
 - Pathogen and Virus Detection (COVID-19, Influenza, etc.)
 - Neurochemical and Hormonal Sensing
 - Wearable and Real-Time Health Monitoring Devices
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6. Data, AI, and Smart Systems

- Machine Learning for Biosensor Calibration and Prediction
 - Data-Driven and Cloud-Connected Biosensing Platforms
 - IoT-Based Biosensor Networks
 - Digital Twin and Predictive Diagnostics Using Biosensors
 - Explainable AI in Biomedical Sensing
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7. Energy, Sustainability, and Manufacturing

- Self-Powered and Energy-Harvesting Biosensors
 - Paper-Based and Low-Cost Disposable Biosensors
 - Biodegradable and Eco-Friendly Materials
 - Scalable Manufacturing and Standardization Challenges
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8. Translational and Clinical Biosensing

- Clinical Validation and Standardization
- Regulatory and Ethical Considerations
- Integration into Medical Devices and E-Health Platforms
- Industrial Partnerships and Commercialization Strategies