

Special Issue

Advances in Electrochemical Sensors and Materials

Message from the Guest Editor

Electrochemical sensors play a vital role in medical diagnostics, environmental monitoring, food safety, and industrial process control. By converting chemical information into electrical signals, these sensors benefit from recent advances in materials science, nanotechnology, and fabrication techniques, which have improved their sensitivity, selectivity, and stability.

Surface modifications with ligands, antibodies, enzymes, or aptamers enhance selectivity for specific analytes, while hybrid materials combine the strengths of each component for better performance. Developments in stretchable and printable electronics have enabled skin-mounted and textile-integrated sensors for real-time health monitoring. There is also increasing emphasis on biodegradable and recyclable materials to address environmental concerns in sensor production and disposal. Despite these advancements, achieving long-term stability and reproducibility, especially for biological or flexible sensors, remains a challenge. The integration of novel nanomaterials, advanced fabrication methods, and digital technologies is expanding the capabilities of real-time, sensitive, and selective chemical sensing.

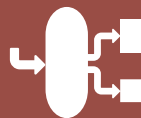
Guest Editor

Dr. Dhanasekaran Vikraman

Division of Electronics and Electrical Engineering, Dongguk University-Seoul, Seoul 04620, Republic of Korea

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
processes@mdpi.com

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Prof. Dr. Giancarlo Cravotto

Department of Drug Science and Technology, University of Turin, Via P. Giuria 9, 10125 Turin, Italy

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