



Chemosensors

an Open Access Journal by MDPI

CiteScore: 7.3

Impact Factor: 3.7

Special Issue Reprint

Advanced Nanomaterials-Based (Bio)sensors for Electrochemical Detection and Analysis

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This Reprint compiles selected peer-reviewed contributions from the Special Issue “Advanced Nanomaterials-Based (Bio-)Sensors for Electrochemical Detection and Analysis”, presenting recent advances in nanomaterials applied to chemical and biological sensing platforms. While electrochemical sensing represents a central theme, this Reprint also encompasses complementary sensing strategies, including colorimetric, plasmonic, and gas-sensing approaches, reflecting the multidisciplinary nature of modern sensor research. The collected articles explore the synthesis, functionalization, and integration of advanced nanomaterials such as nanoparticles, two-dimensional materials, polymers, metal oxides, and hybrid heterostructures into sensing interfaces. Emphasis is placed on structure–property–performance relationships, signal transduction mechanisms, and analytical applicability across environmental monitoring, food analysis, biomedical diagnostics, and industrial safety. Overall, this Reprint provides a comprehensive overview of how advanced nanomaterials enable diverse sensing modalities, highlighting converging trends that bridge electrochemical and non-electrochemical detection technologies.

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