

SPECIAL ISSUE ON RECENT TRENDS IN ELECTROCHEMICAL BIOSENSING

PREFACE



Electrochemical biosensing technologies are powerful tools for obtaining information of bio-related molecules and phenomena from a viewpoint different from those of other sensing methods such as optical sensing. In particular, “digital health”, which has been attracting attention recently as a system to help manage and track health and health-related activities on the basis of information and communication technology (ICT), requires technology to monitor the health of individuals using simple and small sensors such as wearable sensors. Electrochemical sensors are expected to make a major contribution to the promotion of health through digital monitoring, with their characteristics of providing chemical information, easy connection to ICT, miniaturization of devices, and ease of measurement.

This special issue includes nine papers covering a wide range of topics in the electrochemical biosensing such as an enzymatic biofuel cell for health monitoring, an electrochemical real-time reverse transcription polymerase chain reaction analytical method for COVID-19 detection, a sensor for continuous monitoring of potassium ions in a plant leaf, antibody/enzyme-introduced nanoparticles for the detection of glucose and bacteria causing food poisoning, an LSI based-multiple amperometric sensor for the monitoring of respiration activity of embryos, a microgap monolayer graphene electrode for amperometric signal amplification, and an ISFET-based aptasensor for inflammatory protein detection. In all the papers, new methodologies are proposed for constructing easy-to-use, inexpensive, and highly sensitive biosensing platforms needed by society. The information is useful for not only researchers aiming for similar applications but also for people involved in a wide field of electrochemical biosensing. I believe this special issue will contribute to the advancement of electrochemical biosensing research and technologies.

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