Special Issue

Mass Sensitive Biosensors for Biomedical Applications

Message from the Guest Editors

Mass-sensing devices operate generally on the principles of acoustic wave physics associated with piezoelectric materials. These sensors operate based on a probe deposited on the device, which is allowed to interact with a target species in a sample solution. Among various wave motions, two major types have been employed for bio-detection—surface acoustic wave (SAW) and thickness shear mode (TSM) devices. The former function by instigating acoustic waves using interdigital transducers (IDTs), whereas TSM devices involve bulk waves generated by conventional electrodes. The notion of mass sensitivity has its origin in the iconic Sauerbrey expression, which correlates the resonance frequency of the sensor's piezoelectric material with mass deposited on the device's surface. This has spawned the term "quartz crustal microbalance". Recently, it has been recognized that acoustic wave biosensors respond not only to mass loading but also to material surface changes in the device. These observations open up possibilities for the development of novel and highly sensitive reposes to target molecules, as well as for investigating new aspects of surface chemistry.

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Biosensors is a leading journal, devoted to fast publication of the latest achievements, technological developments and scientific research in the exciting multidisciplinary area of biosensors. Both experimental and theoretical papers are published, including all aspects of biosensor design, technology, proof of concept and application. Special issues are devoted to specific technologies and applications, and a selection of the most outstanding papers each year is recognized. Pushing the boundaries of the discipline, we invite original papers, as well as timely reviews on cutting edge fields within the subject area.

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