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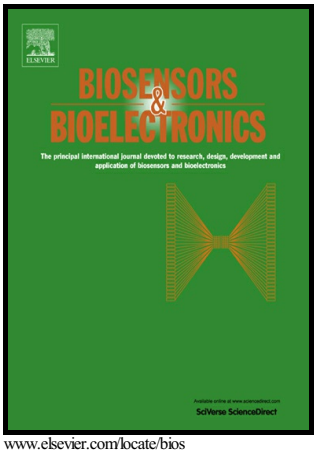

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Film Bulk Acoustic Resonators (FBARs) as Biosensors: A Review

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Abstract

Biosensors play important roles in different applications such as medical diagnostics, environmental monitoring, food safety, and the study of biomolecular interactions. Highly sensitive, label-free and disposable biosensors are particularly desired for many clinical applications. In the past decade, film bulk acoustic resonators (FBARs) have been developed as biosensors because of their high resonant frequency and small base mass (hence greater sensitivity), lower cost, label-free capability and small size. This paper reviews the piezoelectric materials used for FBARs, the optimisation of device structures, and their applications as biosensors in a wide range of biological applications such as the detection of antigens, DNAs and small biomolecules. Their integration with microfluidic devices and high-throughput detection are also discussed.

Keywords: Film bulk acoustic resonators, FBARs, Biosensors, Biomarkers, Antibodies, Biointerfaces