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Titre du proceeding (ACTI): Specificity and Sensitivity Characterization of a Gallium Arsenide Resonant Bio-Sensor

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Abstract/ Résumé :
The characterization of the performances of a Gallium Arsenide (GaAs) based biosensor, in terms of sensitivity and specificity, is reported. The design of the sensor consists in a resonant membrane fabricated in GaAs crystal that operates at shear modes of bulk acoustic waves generated by lateral field excitation. The transducer element was fabricated by using typical clean room microfabrication techniques. The backside of the membrane is functionalized by a self-assembled monolayer (SAM) of alkanethiols to immobilize bio-receptors, which will allow the specific capture of the analyte of interest. The theoretical sensitivity of the sensor had been determined by modeling at 0.1ng. Hz-1. The operation of the device was experimentally evaluated using lymphocyte-activation protein 3 (LAG 3), simulating a real biological model for detection. As a proof of concept, the ability of the sensor to specifically detect and quantify proteins has been demonstrated.

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