A Surface Acoustic Wave Device for Biosensing Application

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The development of a micro electromechanical device using the principle of surface acoustic wave (SAW) for the detection of biological species is discussed. SAW based biosensors possess the potential to provide high sensitive and high specificity in detecting biological species of interest (e.g., Glucose, RSV virus). We demonstrated the ability to discriminate the addition of a self assembled monolayer (i.e., cystamine dihydrochloride) onto the active surface of a SAW Love wave sensor. To increase the sensitivity and decrease signal damping, we investigated the effect of the waveguide layer thickness on the retention of acoustic energy inside the waveguide layer (Parylene C), such that the developed biosensors will have sufficient acoustic energy for application in liquid environments. The magnitude of scattering parameters and the signal phase shift were characterized with a two port sensor platform.