Guided SH-SAW Devices for Liquid-Phase Biochemical Sensors

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Abstract

Polymer-guided shear horizontal surface acoustic wave (SH-SAW) devices used for bio-chemical sensing applications will be presented and described. Two possible sensor geometries consisting of a 3- and 4- layers will be covered and contributions from mass loading and coating (polymer, bio-receptor layer) viscoelasticity changes to the biochemical sensor response will be evaluated. Devices with selective absorptive and adsorptive coatings as well as the mechanisms of interaction in the acoustic wave bio-chemical sensors will be described. The electronic/electrical characteristics of the sensor devices will be given. Sensor device principles, design parameters, operating characteristics, and key sensing parameters will be covered. Measurement schemes as well as the responses of various bio-chemical sensors will be described and discussed.