



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.

Thesis Title: A Surface Acoustic Wave based biosensor for the detection of Hepatitis B Surface Antigen

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SHORT ABSTRACT

The thesis presents a Surface Acoustic Wave (SAW) based dual delay line immuno-biosensor for successful in vitro detection of Hepatitis B Surface Antigen (HBsAg) in human serum. HBsAg is the first biomarker to appear in the blood of an infected patient. The immuno-biosensor system includes interdigitated transducer (IDT) electrodes wherein area between the transmitting and receiving interdigitated transducer (IDT) is functionalized by a linker. To achieve highly specific detection, Anti-HBsAg antibody is bound to the linker to capture HBsAg in the sample. PBS was used as the negative control in the reference delay line. Thus, the effect of common factors like noise and humidity on the output characteristic of the system is advantageously avoided. Samples of HBsAg of varying concentrations are used for measurements, whereby detection of HBsAg in the sample is confirmed by the change in S_{21} parameter of the system in real time whenever the antigen-antibody reaction took place on the system platform.