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PAPER TITLE: Porous Silicon Characterizations for Lab on Chip Application

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ABSTRACT:

In this paper we present our work on manufacturing opto-chemical sensor based on porous silicon for the purpose of lab on chip application. Anodic bonding technology was used for encapsulation of the silicon by glass. Successful anodic bonding was carried out by investigating the change in voltage, time and temperature. Porous silicon was formed by contact with hydrofluoric acid (HF) and manganese dioxide (MnO_2) in different etching time interval. Ellipsometry was used to determine the refractive index and porosity. The measurement shows a general increase in thickness with processing time. Fourier Transform Infra Red Spectroscopy (FTIR), Photoluminescence (PL) and ellipsometry measurements were carried out to characterize the porous silicon response on exposure to organic compounds such as isopropanol and acetone. Atomic force microscopy (AFM) and scanning electron microscopy (SEM) were used to determine the surface roughness and porosity of the samples.