

ES7

Conductometric Biosensors Using Microfabricated Interdigitated Electrodes and Sol-Gel Chemistry

미세 제작된 Interdigitated 전극과 Sol-Gel 화학을 이용한
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Conductometric biosensors can be considered as generic sensors because many biocatalytic reactions in a solution produce or consume ionic species thus resulting in conductivity changes. From technical point of view it is important that conductometric biosensors are suitable for miniaturization and mass production using inexpensive thin-film technology. Conductometric transducers we made consists of interdigitated gold or platinum electrode pairs on the silicon wafer surface in planar configuration. The closeness of the electrodes in each pair allows a small-amplitude sinusoidal wave (10 kHz, 100 mV peak-to-peak about 0 V) to induce a measurable alternating signal that is linearly related to the solution conductance. The transducers were tested with glucose oxidase and acetylcholinesterase immobilized on the transducer surface using sol-gel technique. The resulting conductivity changes are produced by enzymatically catalyzed hydrolysis of the different substrates according to the following schemes;