A NOVEL CAPACITIVE SENSOR BASED ON ALUMINUM-DEPOSITED SILICON WAFER FOR IMMUNODIAGNOSIS

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The interest concerning fast and sensitive techniques for diagnosis has increased as a consequence of the rapid developments within the biotechnology. The capacitive biosensor has a metal surface transducer with immobilized specific antibodies. The interactions between the antibodies and the target analyte result in a capacitance change at the solid–liquid interface due to alterations of the electric double layer created in close proximity to the transducer during the applied potential pulses. The main advantages is that no labels is necessary, since the binding of the antigen was detected directly. In this work, microelectrodes was performed by thermal evaporation on the backside of silicon wafer, the aluminum-deposited silicon wafer was annealed for the purpose of performing ohmic contact between two strips. The purposed microelectrode was coupled to a Parameter Analyser(Hewllet-Packer,USA) for potentiostatic capacitance measurements. The capacitive sensor consisted of self-assembled of thiols compounds on aluminum strips to which antibodies towards. As model of antibodies was used immunoglobulin G(anti-IgG). The self-assembled monolayer onto electrodes was obtained by immersing of the silicon wafers in a cysteamine solution(25mM) followed by glutaraldehyde for cross linking immobilization of anti-IgG. The capacitive response to the immobilization was proportional to the amount of the IgG attached to the anti-IgG immobilized. This developed platform can be applied for several immunoassay systems due to rapid and low cost advantaging.

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