

## Characterization of Capillary Immunosensor for Capillary-Assembled Microchip (CAs-CHIP) Integration

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(Received April 23, 2007; accepted May 23, 2007)

**Key words:** capillary immunosensor, microfluidic immunoassay, capillary-assembled microchip (CAs-CHIP)

A capillary immunosensor is developed as a sensing unit of a capillary-assembled microchip (CAs-CHIP) that is geared towards simultaneous multiple immunoassay. It is prepared by subsequently treating the inner surface of a square glass capillary (internal dimension 50  $\mu\text{m}$ ) with 3-aminopropyltriethoxysilane -glutaraldehyde-protein A (APTES-GA-Protein A), which significantly reduced the non-specific adsorption. Consequently, accurate quantitative immunoassay measurement is demonstrated using human and chicken IgG as model samples, yielding a detection limit of about 1 ng mL<sup>-1</sup> for both antigens with a total analysis time of about 60 min. The immunosensor also displayed interesting practical properties like long-term stability of at least a month at 10°C and minimal consumption of secondary labeled-antibody with one-million-fold dilution. It is expected that the integration of this fluorescent immunosensing unit into the CAs-CHIP will enhance the analytical performance of the microchip through simultaneous multiple immunoassay in a single microfluidic device. This type of biochip may have a significant impact in clinical diagnostics and drug-screening applications.

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