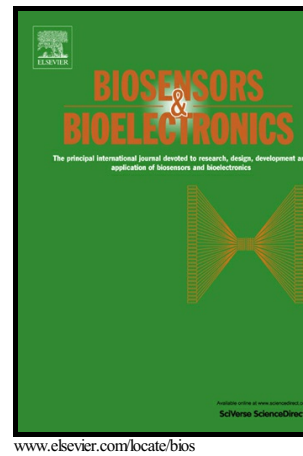


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Reflectionless glass

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## Multi-Spot, Label-Free Immunoassay on Reflectionless Glass

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### Abstract

Biosensing platforms that combine high sensitivity, operational simplicity and affordable costs find wide application in many fields, including human diagnostics, food and environmental monitoring. In this work, we introduce a label-free biosensing chip made of glass with a single anti-reflective layer of SiO<sub>2</sub>. This common and economic material coated by a multi-functional copolymer based on dimethylacrylamide enables the detection even in turbid media. The copolymer coating provides covalent immobilization of antibodies onto the surface and prevents the non-specific adsorption of analytes and matrix constituents. The specific capture of target compounds yields a local increase of surface reflectivity measured by a simple imaging system. Chip design and quantitative interpretation of the data are based on a theoretical optical model. This approach enables the multiplex detection of biomolecular interactions with state-of-the-art sensitivity and minimal instrumental complexity. The detection performance is demonstrated by characterizing the interaction between human growth hormone in solution and the corresponding antibodies immobilized on the sensing surface, both in buffer and human serum, obtaining a clear signal for concentrations as small as 2.8 ng/ml.

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