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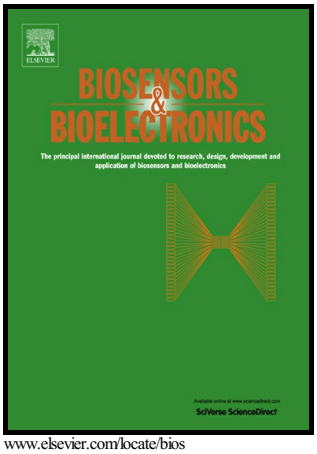

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Semi-continuous, Real-time Monitoring of Protein Biomarker using a Recyclable Surface Plasmon Resonance Sensor

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Abstract

Although label-free immunosensors based on, for example, surface plasmon resonance (SPR) provide advantages of real-time monitoring of the analyte concentration, its application to routine clinical analysis in a semi-continuous manner is problematic because of the high cost of the sensor chip. The sensor chip is in most cases regenerated by employing an acidic pH. However, this causes gradual deterioration of the activity of the capture antibody immobilized on the sensor surface. To use sensor chips repeatedly, we investigated a novel surface modification method that enables regeneration of the sensor surface under mild conditions. We introduced a monoclonal antibody (anti-CBP Ab) that detects the conformational change in calcium binding protein (CBP) upon Ca^{2+} binding (>1 mM). To construct a regenerable SPR-based immunosensor, anti-CBP Ab was first immobilized on the sensor surface, and CBP conjugated to the capture antibody (specific for creatine kinase-MB

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