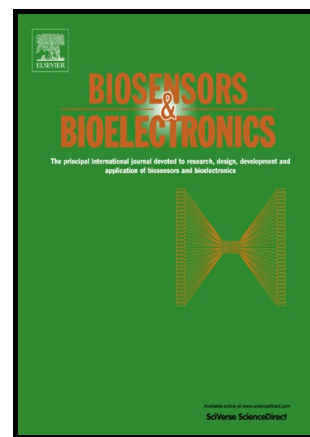


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Non-invasive, *in vitro* analysis of islet insulin production enabled by an optical porous silicon biosensor

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Abstract

A label-free porous silicon (pSi) based, optical biosensor, using both an antibody and aptamer bioreceptor motif has been developed for the detection of insulin. Two parallel biosensors were designed and optimised independently, based on each bioreceptor. Both bioreceptors were covalently attached to a thermally hydrosilylated pSi surface through amide coupling, with unreacted surface area rendered stable and low fouling by incorporation of PEG moieties. The insulin detection ability of each biosensor was determined using interferometric reflectance spectroscopy, using a range of different media both with and without serum. Sensing performance was compared in terms of response value, response time

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