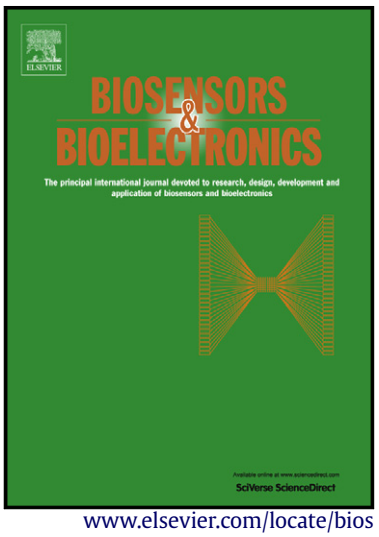

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Silicon nanograss based impedance biosensor for label free detection of rare metastatic cells among primary cancerous colon cells, suitable for more accurate cancer staging

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Abstract

Detection of rare metastatic cells within a benign tumor is a key challenge to diagnose the cancerous stage of the patients tested by clinical human biopsy or pap smear samples. We have fabricated and tested a nanograssed silicon based bioelectronic device with the ability of detecting a few human colon invasive cancer cells (SW48) in a mixed cell culture of a primary cancerous colon cells (HT29) without any biochemical labels. A discernible impedance change was elicited after the presence of 5% metastatic cells in whole benign sample. The electric field