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Label-free cancer biomarker detection using multiplexed silicon nanoribbon bioFETs ALEKSANDAR VACIC, Yale University, ERIC STERN, NITIN RAJAN, JASON CRISCIONE, TAREK FAHMY, MARK REED — In this work we investigate label-free detection of cancer biomarkers using multiplexed silicon nanoribbon field effect transistors. Prostate, PSA and breast cancer, CA 15-3, antigens are obtained from the whole blood using capture-release method. The sensor surface is modified using 3-aminopropyltrietoxysilane, followed by appropriate antibody attachment. Since, asymptotic saturation value of sensor response is weakly dependent on analyte concentration for reversible reactions with low dissociation constant, such as this one, we use normalized initial rate as a parameter for device response calibration. We show that device response is linear in the region of clinically relevant biomarker concentrations.

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