

Abstract Submitted  
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**Surface-functionalized Microelectrofluidic Biosensors** MICHAEL

A. STANTON, UC Santa Barbara, GUILHERME N.M. FERREIRA, Universidade do Algarve, Institute for Biotechnology and Bioengineering, JEAN-LUC FRAIKIN, A. N. CLELAND, UC Santa Barbara — We are developing all-electronic, label-free biosensors for the rapid, selective and label-free detection of viruses and viral proteins. We are using a thiol-based self assembled monolayer (SAM) on gold as the functional element, sensed using radiofrequency reflectometry, with the functionalized sensor embedded in a microfluidic channel. We are exploring using mixed-length SAMs to bind single-chain fragments and single domain antibodies for the recognition of HIV1 and other virus targets. RF reflectometry is used to measure impedance changes in the sensors, which occur upon binding of viral or antibody targets. With an active sensing volume of a few hundred attoliters and sensitivity to impedance changes of order 1 part in  $10^5$  we expect to be able to detect the binding of small numbers of viral antibodies or viral particles.

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