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PAPER TITLE: DNA Microarrays: a low power CMOS microarray biosensor

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ABSTRACT:

A low power CMOS Microarray biosensor for characterisation of biochemical molecules is presented. The changes in concentration such as DNA are detected using an electronic transducer. The electronic readout is a printing circuit board with four switches to control the circuit and LEDs that indicate which array output is activated and read. The characterisation of the samples will be transduced into electrical output signals, in voltametric, amperometric or impedance spectroscopy which will be further analysed.

Experimental results showed that the system can detect a concentration of ions up to few nanomolars (nM), and characterised the concentration of Bovine Serum Albumin (BSA) and DNA in different dilutions. The impedance spectroscopy showed significant capacitance, as the concentration of BSA or DNA changes. Further experiments will be done about the size dependent DNA mobility.

Reference

"A low power CMOS Micro-Array Biosensor", R. Chaji, N. Safavian, A. Nathan, V. Karanassios, J. A. Rowlands.