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Overview of Lab-on-Chip Laboratory-on-Chip (LoC) is a multidisciplinary approach used for the miniaturization, integ...

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Fully integrated CMOS capacitive sensor for Lab-on-Chip applications Abstract:

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We present a new Charge Based Capacitance Measurement (CBCM) CMOS sensor for Lab-on-Chip applications. This integrated capacitive sensor consists of a fully differential capacitance to voltage converter, a sigma delta ($\Sigma\Delta$) modulator, and interdigitated electrodes realized on top metal layer in 0.35 μm CMOS process.

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CMOS Capacitive Sensors for Lab-on-Chip Applications. A Multidisciplinary Approach. Springer. Contents. 1 Introduction 1 1.1 Overview of Lab-on-Chip 1 1.1.1 Main Objectives of LoC Systems 1 1.2 From Macro to Micro Bioassays 3 1.2.1 Micro-scale Liquid

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Handling 3 1.2.2 Thermal Management in Microenvironment 4 1.2.3 DNA Amplification 5 1.2.4 Sample Handling 5 1.2.5 Advantages of Performing Bioassays in Microscale 8 1.3 CMOS-Based LoC 9 1.3.1 Manipulation Methods 10 1.3.2 Optical Techniques 12 1.

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Chip Applications

A CMOS-based capacitive sensor LoC, from engineering point of view, consists of three different parts—microfluidic components for fluidic regulations, the sensing layer for transducing the biological quantities to capacitance changes and finally on-chip capacitive measurement system for sensing of the

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capacitive changes.

**A 0.18- μm CMOS capacitive sensor
Lab-on-Chip - ScienceDirect**

Lab-on-CMOS capacitance sensor array
for real-time cell viability measurements
with I2C readout Abstract: Capacitance
sensing is an emerging technology for
monitoring cell viability. This work

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extends a previously developed sensor that measured capacitive loading by cells on the oscillation frequency of a current-starved ring oscillator and converted the frequency to a digital value by counting oscillation cycles.

Lab-on-CMOS capacitance sensor array for real-time cell ...

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Capacitive Sensor Signal Conditioner with Digital Output The ZSSC3123 cLite™ is a CMOS integrated circuit for accurate capacitance-to-digital conversion and sensor-specific correction of capacitive sensor signals.

ZSSC3123 - Capacitive Sensor Signal Conditioner with ...

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A CMOS MEMS Humidity Sensor
Enhanced by a Capacitive Coupling
Structure Jian-Qiu Huang *, Baoye Li and
Wenhao Chen Key Laboratory of MEMS
of the Ministry of Education, Southeast
University, Sipailou 2, Nanjing 210096,
China; 220143654@seu.edu.cn (B.L.);
230149404@seu.edu.cn (W.C.)

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A CMOS MEMS Humidity Sensor Enhanced by a Capacitive ...

Capacitive CMOS Sensors for Cell Viability Testing Capacitive sensing based on capacitive coupling can be utilized for cell studies with the use of CMOS sensors. Capacitive biosensors enable label-free detection, which is a desired aspect in point-of-care diagnosis

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[61].

CMOS Cell Sensors for Point-of-Care Diagnostics

The capacitive pressure sensor is formed on a CMOS chip by using a post-CMOS MEMS processes. The proposed device consists of a sensing capacitor that is square in shape, a reference capacitor

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and a readout circuitry based on a switched-capacitor scheme to detect capacitance change at various environmental pressures.

MEMS capacitive pressure sensor monolithically integrated ...

Even so, there is almost no miniature temperature sensor compatible with

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CMOS manufacturing process that can operate in the range between -90°C and 60°C . In order to produce a temperature sensor...

Piezoresistive temperature sensors fabricated by a surface ...

The method is purely capacitive, without electrodes in contact with the cells and

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is based on a CMOS chip with an interdigitated electrode array, connected to the second stage of individual three-stage ring oscillators. The capacitance change can be interpreted from the change of oscillation frequency.

Nanoparticle activated neutrophils-on-a-chip: A label-free ...

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Lab-on-CMOS microsystems incorporate one or more CMOS chips that can perform laboratory functions directly on the surface of the chips, allowing for intimate contact between sensing inputs and the cells under analysis.

Real-time imaging platform for lab-on-CMOS biosensor ...

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(CMOS) image sensors are more compatible than charge coupled devices (CCDs) for lab-on-a-chip platforms due to their inherited advantages. However, without the noise reduction circuits, CMOS technology wouldn't be able to compete with CCDs. Today, correlated double sampling circuits (CCDs) are used in all CMOS imagers in order to remove

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the reset noise
**A Switched Capacitor Fully
Differential Correlated Double ...**

, A CMOS-based Capacitive Sensor for
Laboratory- on- Chips: Design and
Experimental Results” IEEE international
symposium on circuits and systems
(ISCAS), New Orleans,2007. E. Ghafar-

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Zadeh et al., "A Micro-Electro-Fluidic Packaging for Lab-on-Chips" ASME And Mechanical Engineering Congress and Exposition(IMECE), Chicago, 2006.

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