

# Technology Development Group

## Available Technologies

## **Request Information**

## **Novel Nanowire Field-Effect Transistor Biosensor With Superb Sensitivity**

Tech ID: 22120 / UC Case 2011-117-0

### SUMMARY

Researchers at UCLA have developed a highly sensitive, real-time, and label-free chemical and biomedical sensor in conventional silicon nanowire Field Effect Transistors (nw-FET), utilizing a built-in signal amplification mechanism to significantly improve detection sensitivity.

#### BACKGROUND

There has been an increasing demand for highly sensitive bio- and chemical sensor devices. Optical and MEMS methods provide highly specific platforms; however, problems of scalability and cost have hindered their employability in real field applications. With the recent advancements in nanotechnology, integrated systems have been developed through the use of silicon nw-FETs. However, the low level of output signal in the design of these sensors limit their potential applications.

## INNOVATION

Researchers at UCLA have developed a novel, highly-sensitive integrated biochemical sensor with significant detection performance. Through integrating a sensing nanowire with a nw-FET channel, a built-in signal amplification mechanism is introduced, which greatly enhances detection sensitivity. Additionally, because the technology is compatible with conventional silicon fabrication techniques, it provides a simple and low-cost solution to integrated biomedical and chemical sensors.

#### **APPLICATIONS**

Chemical/Biomedical sensors

> Toxin detection, Disease diagnosis, Drug screening, Label-free biosensing (proteins, DNA, enzymes), Environmental monitoring

## **ADVANTAGES**

- Standard semiconductor processing methods
- Tunable electronic properties

### STATE OF DEVELOPMENT

#### **PATENT STATUS**

Country	Туре	Number	Dated	Case
United States Of America	Issued Patent	9645135	05/09/2017	2011-117

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

PCR-Free Ultrasensitive Hiv And Other Virus Quantitation Device

## Gateway to Innovation, Research and Entrepreneurship

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### INVENTORS

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#### **OTHER INFORMATION**

## KEYWORDS

Nanowire FET, Chemical sensor, Biomedical Sensor, Silicon On Insulator (SOI), Schottky barrier

CATEGORIZED AS

#### Nanotechnology

▶ NanoBio

- Sensors & Instrumentation
  - Biosensors

**RELATED CASES** 

2011-117-0

