CHEMICAL-SENSITIVE FIELD-EFFECT TRANSISTOR

Tech ID: 24184 / UC Case 2014-191-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,330,637	06/25/2019	2014-191

BRIEF DESCRIPTION

Conventional metal-oxide semiconductor field-effect transistor (MOSFET) technology consists of a source, drain, gate, and substrate. The chemical field-effect transistor (chemFET) is a type of a field-effect transistor acting as a chemical sensor, and is similar to MOSFET except for the gate structures. Modern industrial players seek higher-sensitivity technologies which are small, durable, efficient, and versatile. Further advances in these materials and structures could enable many new kinds of layered semiconductors and devices. To address need, researchers at the University of California, Berkeley, have developed chemical-sensitive field-effect transistor (CS-FET) platform technology. By exploiting selective thin films incorporated into the CS-FET, researchers have created chemical sensors with commercial promise in terms of chemical-versatility and low-power.

SUGGESTED USES

- Chemical sensing and analysis
- Gas sensing and analysis
- Environmental monitoring

ADVANTAGES

- Smaller footprint than conventional chemFET
- High sensitivity
- Leverages industry standard platforms and low-cost parts

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Spectral Kernel Machines With Electrically Tunable Photodetectors
- Enhancing Photoluminescence Quantum Yield for High Performance Optoelectrics

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INVENTORS

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OTHER INFORMATION

KEYWORDS

metal oxide semiconductor field effect transistor, MOSFET, chemical field effect transistor, chemFET, chemical sensitive field effect transistor, CS-FET, chemical sensor, sensor, layered semiconductor, multi-gas, gas sensor, lab-on-chip

CATEGORIZED AS

- **Environment**
  - Sensing
- **Semiconductors**
  - Design and Fabrication
- **Sensors & Instrumentation**
  - Environmental Sensors
  - Process Control
  - Scientific/Research

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