



Ultrasensitive Nitrogen Oxide/Dioxide Gas Sensor Based On Iron Nanocubes

Applications

- Health or Pollution sensor

Problem & Solution

The use of gas nano-sensors has recently attracted significant interest in industrial, medical and environmental applications. In particular, nitrogen oxide/dioxide (NO_x) can be used as a potential indicator for health (e.g. asthma marker) and pollution conditions. However, fabrication of these nano-sensors is not compatible with complementary metal-oxide silicon (CMOS) technology, and thus, miniaturization cannot be fully realized.

An ultrasensitive NO_x gas sensor based on a porous film of iron nanocubes has been developed. Well-defined iron nanoparticles with controlled size and shape were deposited on gold electrodes using CMOS compatible technology. These iron nanocubes undergo electrical changes when exposed to NO_x which enables detection.

Benefits

- Miniaturized NO_x gas sensor
- Low cost thin film allows detection of very low concentrations (ppb level) of NO_x gas.
- CMOS (complementary metal-oxide silicon) compatible method.

Patent Pending

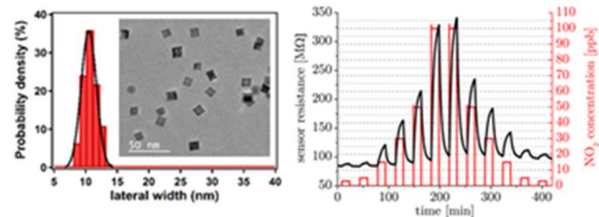
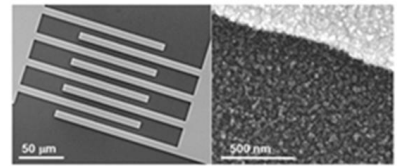
Keywords

NO gas sensor, NO₂ gas sensor, Fe nanocubes, nanomaterials, semiconductor devices

For more information

Business Development/Technology Licensing Section

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(Top) SEM image of the electrode device covered with a percolating film of Fe nanocubes; (Left) TEM image showing the Fe nanocubes with their corresponding size distribution; (Right) Resistance change of the gas sensor during exposure to ppb-level NO₂