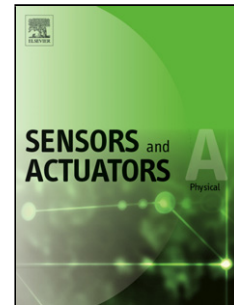


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Selective gas sensors using graphene and CuO nanorods

Ahmad I. Ayesh^{1,*}, Rayyan E. Ahmed², Mai A. Al-Rashid², Rafah Ahmed Alarrouqi², Belal

Saleh¹, Tahir Abdulrehman³, Yousef Haik³, and Leena A. Al-Sulaiti¹

¹ Department of Math., Stat. and Physics, Qatar University, Doha, Qatar

² Electrical Engineering department, Qatar University, Doha, Qatar

³ College of Science and Engineering, Hamad Bin Khalifa University, Doha, Qatar

* Corresponding author: email: ayesh@qu.edu.qa, Tel.: +974-4403-6592, P. O. Box 2713, Qatar

University, Doha, Qatar

Highlights

- Sensitive and selective gas sensors fabricated using graphene and CuO nanorods
- The nanorods were deposited on either graphene/SiO₂/Si substrates
- The sensors were found to be selective to H₂S at concentrations as low as 10 ppm
- The sensors operate at room temperature which indicates their low power needs.

Abstract:

This work reports on the fabrication of sensitive and selective gas sensors fabricated using graphene and/or copper oxide (CuO) nanorods. Herein, three batches of sensors were produced based on graphene/SiO₂/Si, CuO nanorods, and graphene/SiO₂/Si decorated with CuO nanorods. The nanorods were synthesized chemically and deposited on either graphene/SiO₂/Si or glass substrates. The produced sensors were tested against H₂S and H₂ gases. Sensors based on CuO/graphene/SiO₂/Si were found to be selective to H₂S and sensitive to concentrations as low as 10 ppm. Furthermore, the sensors could detect H₂S at room temperature which indicates their low power consumption. The produced sensors have potential for applications in industries that include release of H₂S such as petroleum refineries.

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