

5th World Congress on

Materials Science & Engineering

June 13-15, 2016 Alicante, Spain

Nanowire gas sensors for a range of analytes of industrial interest

Mansur Yahaya Ibrahim
Newcastle University, UK

Gas sensor networks have a wide variety of applications in environmental and safety monitoring that can be very useful to businesses and the general public. Environmentalists can use sensors to measure atmospheric pollution and monitor industrial emissions, and safety monitors can use sensors to detect harmful chemical vapors and explosives in public spaces, government and military facilities, and chemical processing plants. However, gas sensor technologies are still developing and have yet to reach their full potential in capabilities and usage. Conducting polymers (CPs) are unique materials because they exhibit electronic, magnetic and optical properties of metals and semiconductors while retaining the attractive mechanical properties and processing advantages of polymers. This research work reports the synthesis, chemical (FTIR, UV-vis and XPS), structural (AFM and TEM) characterisations, electrical measurements (I_V and C-V) and design of gas sensors for a range of analytes of industrial interest. The sensing elements were based on CPs nanowire created using a simple and low cost fabrication method by employing DNA as a template on which to carry out the polymerization. The gas characteristics of the different CP-DNA nanowire were investigated by recording their electrical responses when exposed to different analyte vapour, passed at different flow rate.

Biography

Mansur Yahaya Ibrahim received his BSc Applied Chemistry from Usmanu Danfodiyo University, Sokoto, Nigeria, and an MSc in Chemistry from Obafemi Awolowo University, Nigeria. He joined College of Basic and Advanced Studies, Kebbi, Nigeria as an assistant lecturer in 2001, and rose to the position of Senior lecturer and head of Chemistry department, before moving to Sokoto State University, Nigeria as a lecturer in Chemistry department. He has published ~ 12 research papers in chemistry. He is a Chartered Chemist of Nigeria and has membership in different international chemistry associations. He is currently a 3rd year postgraduate student at Newcastle University UK, pursuing his PhD at the Chemical Nanosciences Department, School of Chemistry.

m.i.yahaya@ncl.ac.uk

Notes: