Abstract

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Room Temperature CO2 Gas Sensors of AuNPs/mesoPSi Hybrid Structures

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Meso porous silicon (meso-PSi) layer prepared by laser-assisted etching process in HF acid was employed as CO2 gas sensors. Embedded gold nanoparticles AuNPs could modify the surface morphology of meso-PSi and form meso-PSi/Au-NPs hybrid structures through simple and quick dipping process in different gold salts concentrations. The morphology of the hybrid structures was investigated using scanning electron microscopy (SEM) and x-ray diffraction (XRD). The electrical characteristics of the prepared gas sensor were measured at room temperature. Nanoparticles size, shape and specific surface area strongly influenced the current-voltage characteristics. Considerable improvements in sensitivity, response and recovery times of gas sensor were noticed when decreasing the incorporated AuNPs into the meso-PSi matrix.

Biography

ASST.Proff Alwan M. Alwan, he received B.S degree in physical science from University of Technology, in 1991, M.S degree in Laser and optoelectronics university of Technology-Baghdad in 1996 and he Ph.D degree in laser and optoelectronics Technology from Technology University /Iraq-Bagdad in 2006. He has published more than 50 articles, supervised on 13 Ph.D. and M.Sc. Students, and carried out research in thin films design system, optical design, laser electro optics and nano technology applications.