

Abstract

A gas sensing device based on Vanadium oxide (V_2O_5)/Porous Si (PS)/Si structure has been used to detect ethanol vapor at different concentrations. The V_2O_5 thin films were deposited on porous silicon by sol-gel (Dip-coating) technique. The Vanadium oxide has been produced from vanadium alcoxide precursor. The capacitance-voltage (C-V) and conductance-voltage (G/ω -V) characteristics of Al/ V_2O_5 /PS/Si structure have been measured in the range from 1 Hz to 10 MHz frequency at room temperature in the presence of ethanol vapor. It is found that both C-V and G/ω -V of the capacitor are very sensitive to frequency and the sensor characteristics are modified in the presence of the gas. Conductance and capacitance measurements at low frequencies indicate the presence of interface states which can follow an alternating current (ac) signal that contributes to excess capacitance and conductance