

T1-002

NH₃ Sensing Properties of SnO Thin Film Deposited by RF Magnetron Sputtering

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SnO thin films, 100 nm in thickness, were deposited on glass substrates by RF magnetron sputtering. A stack structure of SnO₂/SnO, where few nanometers of SnO₂ were determined on the SnO thin film by X-ray photoelectron spectroscopy. In addition, XPS depth profile analysis of the pristine and heat treated thin films were introduced. The electrical behavior of the as-sputtered films during the annealing was recorded to investigate the working conditions for the SnO sensor. Subsequently, The NH₃ sensing properties of the SnO sensor at operating temperature of 50-200°C were examined, in which the p-type semiconducting sensing properties of the thin film were noted. The sensor shows good sensitivity and repeatability to NH₃ vapor. The sensor properties toward several gases like H₂S, CH₄ and C₃H₈ were also introduced. Finally, a sensing mechanism was proposed and discussed.

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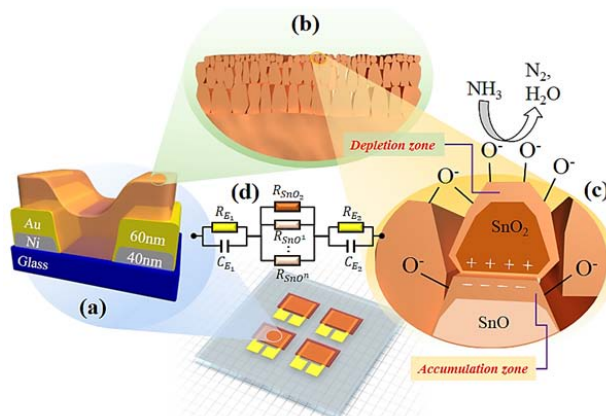


Fig. Structure and equivalent circuit of the SnO sensor.