

TiN_xO_y/TiN_x 다층 박막을 이용한 고저항 박막 저항체의 특성평가

박경우¹, 허성기¹, 안준구¹, 윤순길^{1,*}

¹충남대학교 나노정보시스템공학과

Characteristic and Electrical Properties of TiN_xO_y/TiN_x Multilayer Thin Film Resistors with a High Resistance

Kyoung-Woo Park¹, Sung-Gi Hur¹,

Jun-Ku Ahn¹ and Soon-Gil Yoon^{1,*}

¹School of Nano Science and Technology, Chungnam National University, Daejeon 305-764, Korea,

Abstract : TiN_xO_y/TiN_x multilayer thin films with a high resistance (~kΩ) were deposited on SiO₂/Si substrates at room temperature by sputtering. The TiN_x thin films show island and smooth surface morphology in samples prepared by dc and rf magnetron sputtering, respectively. TiN_xO_y/TiN_x multilayer has been developed to control temperature coefficient of resistance (TCR) by the incorporation of TiN_x layer (positive TCR) inserted into TiN_xO_y layers (negative TCR). Electrical and structural properties of sputtered TiN_xO_y/TiN_x multilayer films were investigated as a function of annealing temperature. In order to achieve a stable high resistivity, multilayer films were annealed at various temperatures in oxygen ambient. Samples annealed at 700 °C for 1 min exhibit a good TCR value and a stable high resistivity.

Key Words : Thin film resistor, TiN_xO_y, TCR, Thermal annealing, Sputtering