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반도체 메모리 소자 응용을 위한 고유전 $(Ba_{1-x}Sr_x)(Ti_{1-x}Zr_x)O_3$ 박막 캐패시터의 연구

High dielectric $(Ba_{1-x}Sr_x)(Ti_{1-x}Zr_x)O_3$ thin film capacitors for semiconductor memory device applications

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High dielectric $(Ba_{1-x}Sr_x)(Ti_{1-x}Zr_x)O_3$ (BZST) thin films were prepared on $Pt/Ti/SiO_2/Si$ substrates at 500℃ by rf magnetron sputtering technique. The dielectric constant and dissipation factor of a 100nm thick $(Ba_{0.65}S_{0.35})(Ti_{0.8}Zr_{0.2})O_3$ were 430 and 0.03 at an applied frequency of 100kHz, respectively. The dielectric films do not contain mobile ions and defects from the capacitance-voltage characteristics. The leakage current density was about 9.0×10^{-10} A/㎠ at 200 kV/㎝.