

EI01

Effect of excess PbO content on the crystallization and electrical properties of sputter deposited PZT thin films

PZT 박막의 결정화 및 전기적 특성에 미치는 과다 PbO의 영향

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The effect of excess Pb and O content on the formation of PZT film with perovskite phase and its electrical properties has been investigated. PZT films were sputter-deposited from a target containing 50 % excess Pb and O on Pt/Ti/SiO₂/Si substrates. When PZT films were deposited at room temperature, they crystallized with pyrochlore and perovskite phases after rapid thermal annealing (RTA) treatments at 520 and 700 °C, respectively. But with substrate-heating at 520 °C, PZT film was crystallized directly with a perovskite phase. After RTA treatments at 600 and 700 °C of the PZT films deposited at 520 °C, reduction of coercive field (E_c) and amelioration of fatigue property were found. An improvement of I-V characteristics was also observed. This amelioration of ferroelectric properties of high temperature annealed PZT films were explained with 'space charge layer model'.