

Influence of Mn doping on domain wall motion in Pb(Zr(0.52)Ti(0.48))O(3) films

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Abstract: Mn-doped PbZr(0.52)Ti(0.48)O(3) (PZT) films were utilized to study the effect of acceptor dopant concentration on the mobility of ferroelectric domain walls. For chemical solution deposited PZT films between similar to 0.5-2 μm in thickness doped with 1-2mol.% Mn, the low field relative permittivity remained between 900 and 1000. With increasing Mn concentration, a threshold field developed in the ac field dependence of the relative permittivity. Furthermore, both the reversible and irreversible Rayleigh constants decreased. These observations are consistent with the possibility that Mn²⁺(Ti) - V(O)(center dot center dot) (or Mn²⁺(Ti)-V(O)(center dot center dot)) defect dipoles act as strong pinning centers.

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