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Properties of Yttrium Doped $Pb(Zr_{0.3}Ti_{0.7})O_3$ Thin Films Prepared by Sol-gel Method

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Yttrium doped $Pb(Zr_{0.3}Ti_{0.7})O_3$ (PYZT, Y 0, 2, 4, 6 and 8 at%) thin films were prepared by sol-gel method on PZT(seed layer)/Pt/Ti/SiO_2/Si substrates The crystal structure, Photoluminescence(PL) spectra and ferroelectric properties of PYZT thin films were investigated It is observed the crystallographic orientation and surface morphologies of PYZT thin films can be controlled by the yttrium doping level The band gap calculated from the PL data shifts from 3 24 eV to 3 39 eV with the doping of yttrium by 8% With the doping of yttrium, the remanent polarization and leakage current property was improved, while the coercive field (E_C) was slightly increased.

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Fatigue-free $Bi_4Ti_3O_{12}$ Thin Films by Sol-gel Technique

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A random polycrystalline $Bi_4Ti_3O_{12}$ (BIT) thin film having with enhanced *a*(*b*)-axis-orientation was fabricated by sol-gel technique on Pt/Ti/SiO_2/Si substrate It was observed that excess bismuth concentration can influence on the orientation, grain size and electrical characteristics of the BIT thin film A BIT thin film of 150 nm in thickness showed a remanent polarization of P_r=7.7 μC/cm^2 and a coercive field of E_C=129 3 kV/cm at the applied voltage of 8 V The leakage current density was about 1.5×10^{-7} A/cm^2 at 4 5 V applied voltage This BIT thin film showed a good fatigue endurance up to 1×10^{10} switching cycles