

Highly Textured Laser Annealed $\text{Pb}(\text{Zr}_{0.52}\text{Ti}_{0.48})\text{O}_3$ Thin Films

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Abstract: RF sputtered amorphous $\text{Pb}(\text{Zr}_{0.52}\text{Ti}_{0.48})\text{O}_3$ (PZT) films (similar to 300-350 nm in thickness) on {111}Pt/Ti/SiO₂/Si or {001}PbTiO₃/Pt/Ti/SiO₂/Si substrates were laser crystallized to obtain highly textured {111} and {001} PZT thin films. The measured remanent polarizations and coercive fields were 31 $\mu\text{C}/\text{cm}^2$ and 86 kV/cm for {001} films and 24 $\mu\text{C}/\text{cm}^2$ and 64 kV/cm for {111} oriented PZT films, respectively. The maximum $e(31, f)$ piezoelectric charge coefficients are similar to - 11 C/m² for {001} and similar to - 9 C/m² for {111} PZT thin films respectively.

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