

薄膜厚度对透明 PLT 厚膜的介电及光学性质的影响

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摘要 用溶胶-凝胶法在镀有氧化锡透明导电电极的玻璃基片上沉积钛酸镧铅薄膜, 在相对较低温度580℃退火, 得到了纯钙钛矿结构的透明PLT薄膜, 薄膜厚度从580~1830nm. 随着薄膜厚度的增加,

PLT薄膜的晶粒变大、介电常数增大, 而矫顽场减小. 所有样品的透射率都在70%以上, 最大达到90%左右.

当薄膜厚度增加后, 透射率降低, 并且截止波长向长波方向移动. 在633nm处, 1830nm厚的PLT(掺镧8%)

薄膜的折射率 n 和消光系数分别为2.39和0.009.

关键词 [PLT厚膜](#) [介电性质](#) [光学性质](#) [溶胶-凝胶法](#)

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Preparation of Transparent Ferroelectric $\text{Pb}_{0.92}\text{La}_{0.08}\text{TiO}_3$ Thick Films

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Abstract $\text{Pb}_{0.92}\text{La}_{0.08}\text{TiO}_3$ films with thicknesses between 580 and 1830nm were deposited on ITO-coated glass substrates by using a sol-gel process under a relative low temperature of 580℃. The results obtained show that the films are crystallized well with pure perovskite polycrystalline structure. The surfaces of the films are smooth and condense. With the increase of the film thicknesses, the grain sizes and dielectric constants of the films increase. The dielectric constant-electric field curves are symmetric about zero bias axis, and show the hysteresis for all the films. In addition the coercive fields E_c decreases with the film thicknesses increasing. All the films are transparent and the absorption edges shift to longer wavelength with increasing thicknesses of the films. The refractive index (n) and extinction coefficient (k) of 1830nm thick film are 2.39 and 0.009, respectively, at 633nm wavelength.

Key words [erroelectric thick films](#) [dielectric properties](#) [optical properties](#) [sol-gel](#)

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