**Optical modulation of** **PZT/LNO thin films with different periodic structures in the terahertz range**

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**Abstract:** The optical modulation of PZT/LNO films with different periodic structures with optical pump was investigated by terahertz spectroscopy at room temperature. Three samples had the same thickness. Best performance on the dielectric permittivity and the refractive index modulation was observed in the PZT/LNO films with three periodic structures, due to the soft mode hardening. The largest loss was also found in the same sample. This phenomenon was interpreted by an interfacial dead-layer model with low permittivity interface layer in the film.