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Strain effects on Coherent Epitaxial Ferroelectric Pb(Zr_{0.2}Ti_{0.8})O₃ ASIF KHAN, SAYEEF SALAHUDDIN, UC Berkeley — A comprehensive study of strain coupling to ferroelectricity in coherent epitaxial Pb(Zr_{0.2}Ti_{0.8})TiO₃ thin films is presented. The epitaxial strain variants are obtained by growing coherent PZT thin films on three different substrates, SrTiO₃, DyScO₃ and GdScO₃ by pulsed laser deposition technique. The strain sensitivity of remnant polarization is found to be less in the epitaxial strain variants with larger tetragonality. Despite the fact that the tetragonality of PZT is more sensitive to the epitaxial strain than that of BaTiO₃, the polarization-strain coupling is weaker in PZT than in BTO. These results underpins that the strong sensitivity of ferroelectricity to epitaxial strain is not a universal characteristic of complex oxide ferroelectrics and may depend on the intricate details of individual material systems.

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