

Abstract Submitted
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Strains observed in 180° domain walls in LiNbO_3 with Laue topography TERRENCE JACH, NIST, SUNGWON KIM, Penn State University, STEPHEN DURBIN, Purdue University, VENKATRAMAN GOPALAN, Penn State University — A comparison of the strains associated with domains in congruent LiNbO_3 , previously observed with Bragg x-ray topography and currently with Laue x-ray topography, reveals some surprising differences. The Laue geometry allows imaging through the entire crystal. Using monochromatic collimated synchrotron radiation and a magnifying x-ray camera, we are able to image domains and the strains created by electric field poling, as well the additional strain created by the application of electric fields in real time. The unusual strain patterns can be taken into account with higher order terms in the ferroelectric Ginzberg-Landau theory. Electric fields below the coercive field applied along the c-axis produce Pendellösung stripes due to complex strains that are precursors to 180° domain wall switching. The strains observed with field off and field on in the Laue topographs differ significantly from the surface strains observed previously with Bragg topography.

Terrence Jach
NIST

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