

Abstract Submitted  
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**Study of phase transitions in ternary lead indium niobate-lead magnesium niobate-lead titanate relaxor ferroelectric morphotropic single crystals**<sup>1</sup> PETER FINKEL, HAROLD ROBINSON, AHMED AMIN, NUWC — In this work we report on the elastic hysteretic behavior observed in ferroelectric lead indium niobate-lead magnesium niobate-lead titanate (PIN-PMN-PT) relaxor single crystals under conditions of cooperative stress, temperature, and electric field. Room temperature elastic response displays strong and sharp discontinuity associated with stress induced phase transition. Quasistatic elastic response and ultrasonic wave propagation measurements demonstrated that this strain discontinuity in PIN-PMN-PT single crystal is associated with a ferroelectric rhombohedral (FR)—ferroelectric orthorhombic (FO) phase transition. The temperature dependent elastic response and transition strain were modeled by Devonshire theory. The crystal instability under compression is significantly improved by application of a dc bias electric field.

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