

## Poster-2-17

**Highly anisotropic in-plane ferroelectricity in CaTiO<sub>3</sub> thin films**

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While CaTiO<sub>3</sub> is non-polar in its bulk form, ferroelectricity has been demonstrated in epitaxial thin films [1,2,3]. We have discovered two unusual, highly anisotropic in-plane ferroelectric states in CaTiO<sub>3</sub> films caused by the interaction between polarization, oxygen octahedral rotations, and epitaxial strain. Films deposited on (110)-oriented NdGaO<sub>3</sub> substrates show uniaxial in-plane ferroelectricity with a regular dielectric response in the orthogonal in-plane direction. In films on (001)-oriented NdGaO<sub>3</sub>, the polarization lies near the *a* axis in the ground state — however, electric fields along the *b* axis cause a discontinuous rotation of the polarization, resulting in antiferroelectric-like double-hysteresis loops.

[1] Biegalski et al., Appl. Phys. Lett. 106, 162904 (2015).

[2] Haislmaier et al., Adv. Funct. Mater. 26, 7271 (2016).

[3] Kim et al., Nat Commun 11, 4944 (2020).