

Supporting Information

Epitaxial growth and nanoscale electrical properties of $\text{Ce}_2\text{Ti}_2\text{O}_7$ thin films

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To highlight local ferroelectricity in the films, poling experiments were performed. Commonly, rectangular-shaped domains ($\sim 12 \mu\text{m} \times 10 \mu\text{m}$) were polarized by applying a negative bias voltage ($V_{\text{dc}} = -12 \text{ V}$) on the CeTO film. Next, second rectangle ($\sim 9 \mu\text{m} \times 7 \mu\text{m}$) were reverse polarized inside the previous polarized areas by applying a positive bias voltage ($V_{\text{dc}} = +12 \text{ V}$). Then, third rectangle ($\sim 5 \mu\text{m} \times 4 \mu\text{m}$) were polarized by applying a negative bias voltage ($V_{\text{dc}} = -12 \text{ V}$). Finally, PFM images were recorded over large regions ($\sim 15 \mu\text{m} \times 15 \mu\text{m}$) including the three polarized areas (Figure S1). Ferroelectric properties are present regardless of the synthetic route used.

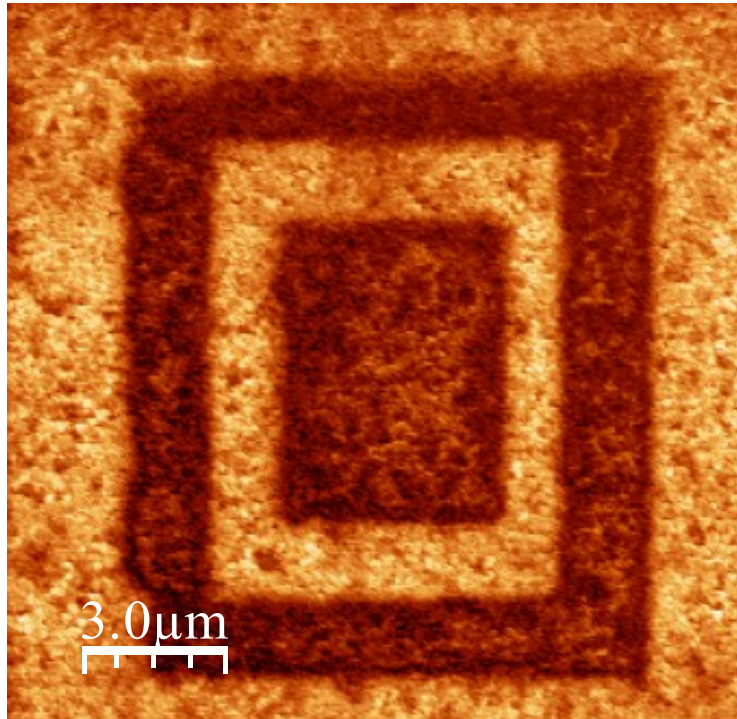


Figure S1. Out-of-plane piezoresponse image after poling and reverse poling experiments recorded on a $\text{Ce}_2\text{Ti}_2\text{O}_7$ thin film grown on (110)-oriented SrTiO_3 substrate by PLD. The scan area is $15 \mu\text{m} \times 15 \mu\text{m}$.

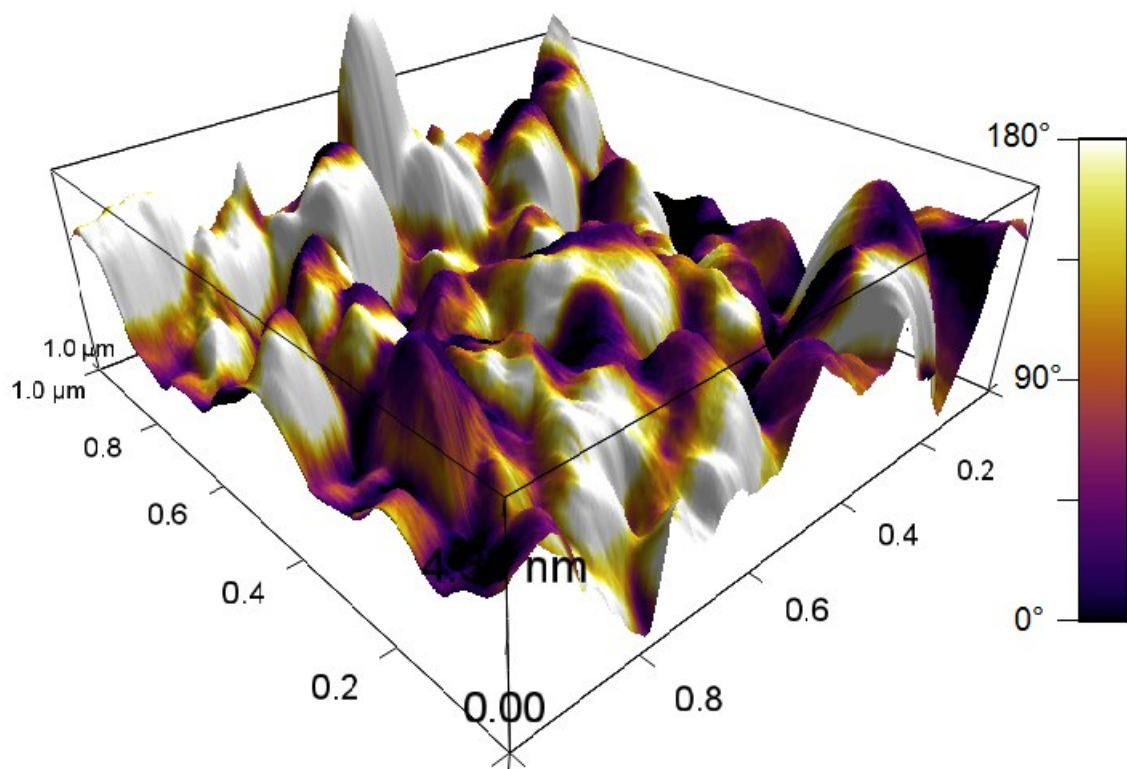


Figure S2. Projection of in-plane piezoelectric domains on the 3D topography of the CeTO thin film grown by PLD.