

## Supplementary

### Ultra-high piezoelectric properties and labyrinthine-domain structure in (K, Na)(Ta, Nb)O<sub>3</sub> with phase boundary

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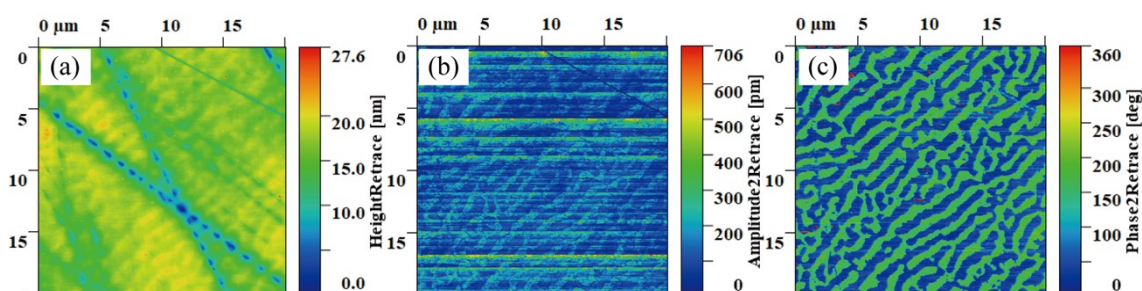
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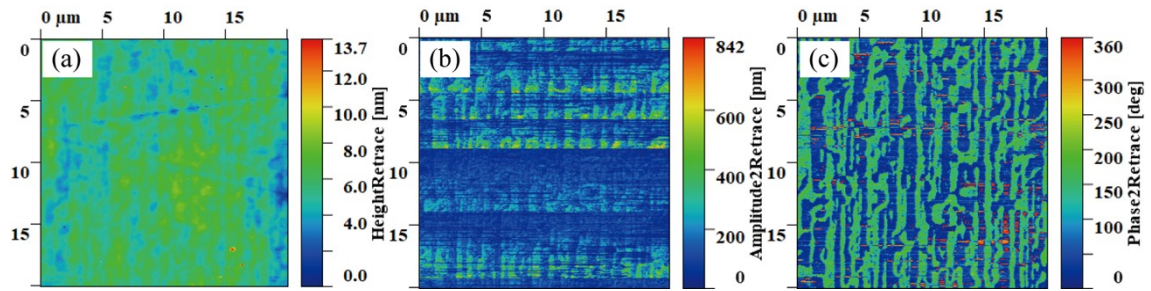
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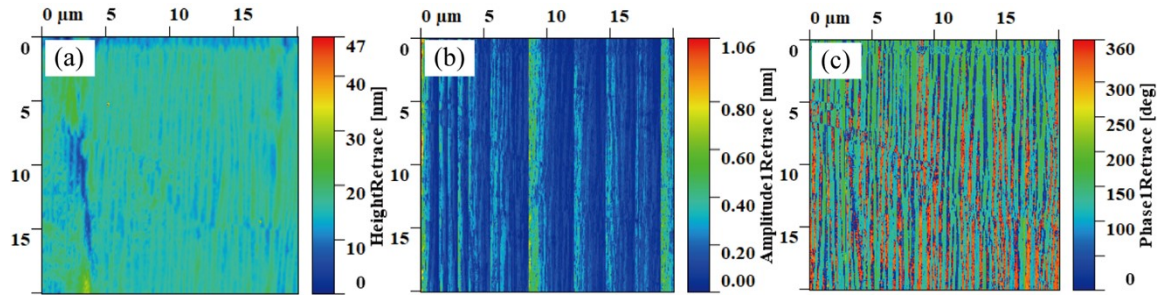
**Figure S1.** (a) (b) (c) The height, amplitude and phase of out-plane PFM patterns using DART PFM mode for KNTN41 sample, respectively.



**Figure S2.** (a) (b) (c) The height, amplitude and phase of out-plane PFM patterns using DART PFM mode for KNTN34 sample, respectively.



**Figure S3.** (a) (b) (c) The height, amplitude and phase of out-plane PFM patterns using DART PFM mode for KNTN28 sample, respectively.



**Figure S4.** (a) (b) (c) The height, amplitude and phase of out-plane PFM patterns of KNTN41 sample after poling under 7.5V for a certain 2  $\mu\text{m}$  region, respectively.

