Supporting Information

Synthesis, piezoelectric property and domain behaviour of the vertically aligned $\text{K}_{1-x}\text{Na}_x\text{NbO}_3$ nanowire with a morphotropic phase boundary

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Figure S1

Figure S1 the FT-IR spectrum of KNN gel powder and KNN powders after various reaction periods at 190 °C and 220 °C.
Fig. S2 SEM images of KNN nanowire arrays via hydrothermal at 190 °C for 3h in top-down view (a), 45° tilt view (b); for 6h in top-down view (c) and 45° tilt view (d); for 12h after ultrasonic treatment in top-down view (e) and 45° tilt view (f).
Fig. S3 XRD patterns (black lines) and the Rietveld fit (red plus sign) curves of KNN powder via hydrothermal at 220 °C for 12h. Refinement was carried out using tetragonal $P4mm$ space group (pink vertical tick marks), the rhombohedral $R3m$ space group (dark cyan vertical tick marks), and the blue line is the difference between the observed and calculated patterns. The lattice parameters of tetragonal were $a = b = 3.97942$ Å and $c = 4.04230$ Å. The lattice parameters of rhombohedral were $a = 4.01878$ Å and $\alpha = 89.5918°$. 
Figure S4

Fig. S4 SEM images of of KNN nanowire arrays via hydrothermal at 220 °C for 3h in top-down view (a), 45° tilt view (b); for 6h in top-down view (c) and 45° tilt view (d); for 12h after ultrasonic treatment in top-down view (e) and 45° tilt view (f).

Figure S5
Fig. S5 The schematic illustration of PFM experiment.