

Electronic Supplementary Information

Synthesis of $\text{Ba}_x(\text{Bi}_{0.5}\text{Na}_{0.5})_{1-x}\text{TiO}_3$ Perovskite Mesocrystals via Solvothermal Topochemical Process

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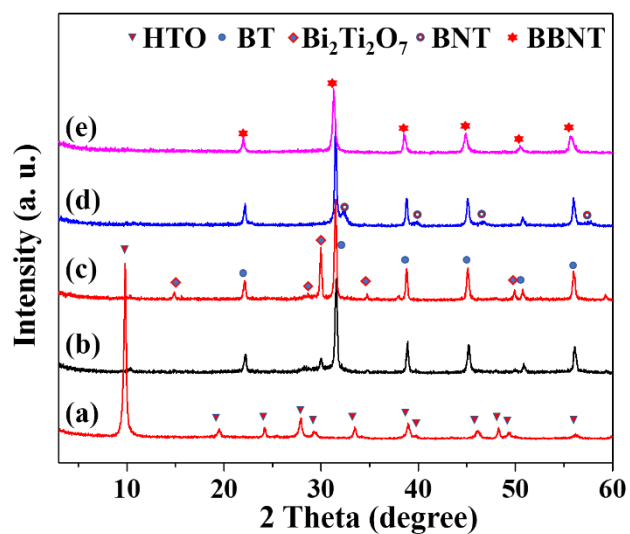


Fig. S1. XRD patterns of (a) layered titanate HTO precursor and samples obtained by hydrothermally treating HTO- $\text{Ba}(\text{OH})_2$ - BiCl_3 mixture with mole ratio of Ba/Bi/Ti = 2/1/4 in (b) 2, (c) 4, (d) 8, and (e) in 15 mol/L NaOH solutions at 200 °C for 12 h.

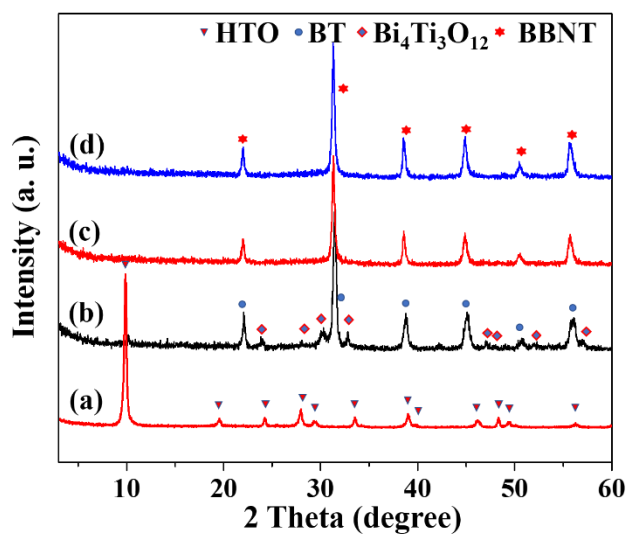


Fig. S2. XRD patterns of (a) layered titanate HTO precursor and samples obtained by hydrothermally treating HTO- $\text{Ba}(\text{OH})_2$ - BiCl_3 mixture in 15 mol/L NaOH solutions at 200 °C for (b) 0.5, (c) 6, and (d) 12 h.

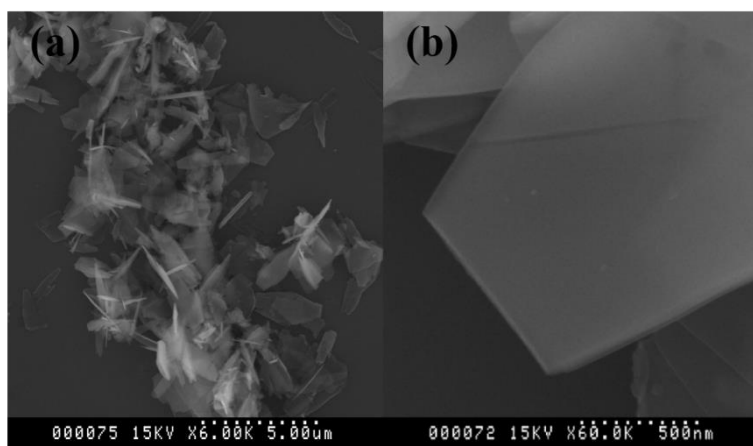


Fig. S3. FE-SEM images of HTO precursor.

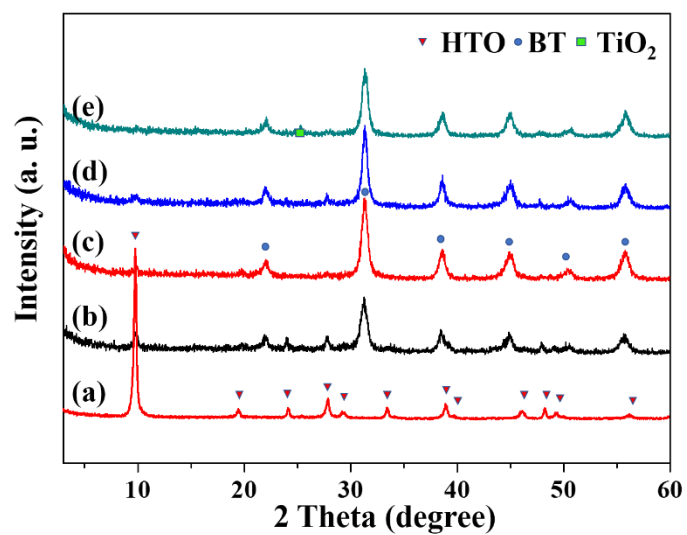


Fig. S4. XRD patterns of (a) layered titanate HTO precursor and BT/HTO samples obtained by solvothermal treatments of HTO-Ba(OH)₂ mixture with Ba/Ti=1/2 at (b) 100, (c) 125, (d) 150, and (e) 175 °C for 12 h in mixed solvent of water/ethanol=2/28, respectively.

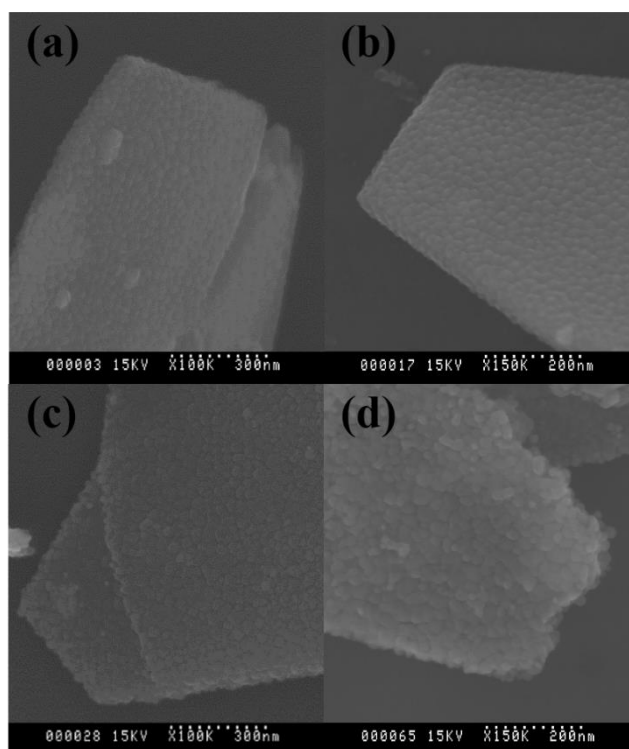


Fig. S5. FE-SEM images of BT/HTO samples obtained by solvothermal treatment of HTO-Ba(OH)₂ mixture with Ba/Ti = 1/2 at (a) 100, (b) 125, (c) 150, and (d) 175 °C for 12 h in mixed solvent of water/ethanol = 2/28.

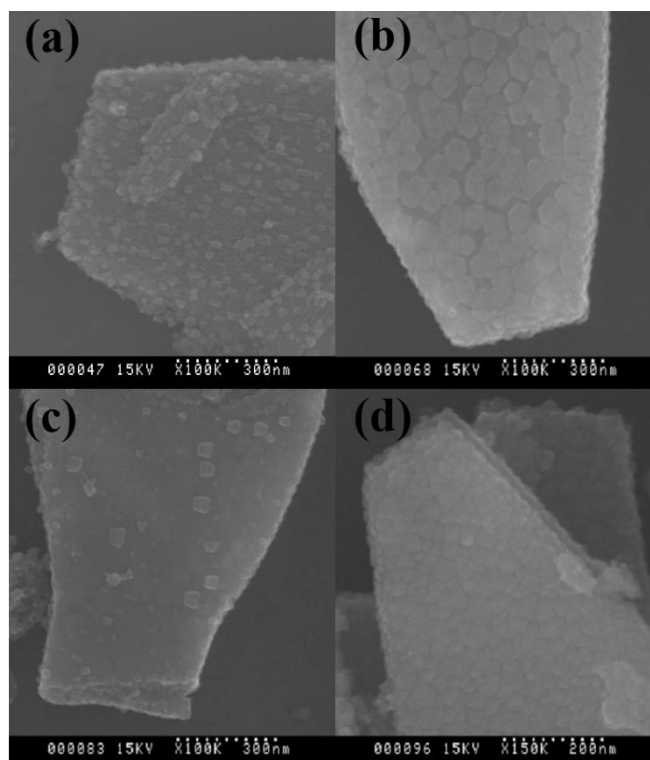


Fig. S6. FE-SEM images of BT/HTO samples obtained by solvothermal treatment of HTO-Ba(OH)₂ mixture with Ba/Ti mole ratios of (a) 1/8, (b) 1/4, (c) 3/4, and (d) 1/1 at 150 °C for 12 h.

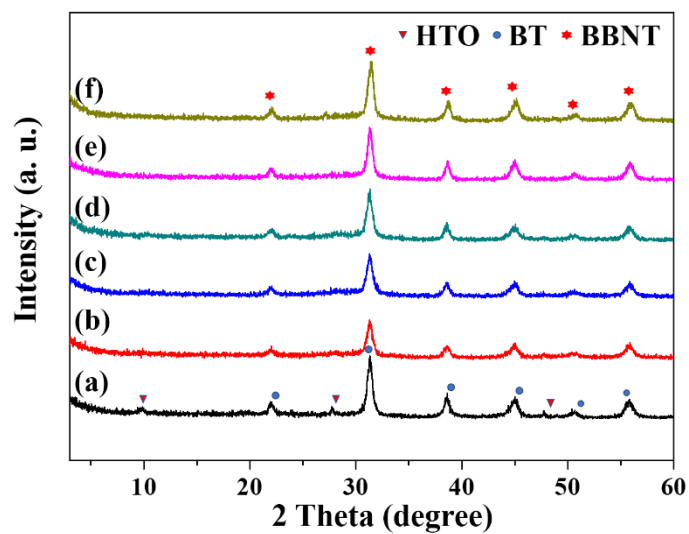


Fig. S7. XRD patterns of (a) BT/HTO and products obtained by the hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at (b) 100, (c) 125, (d) 150, (e) 175, and (f) 200 °C for 12 h.

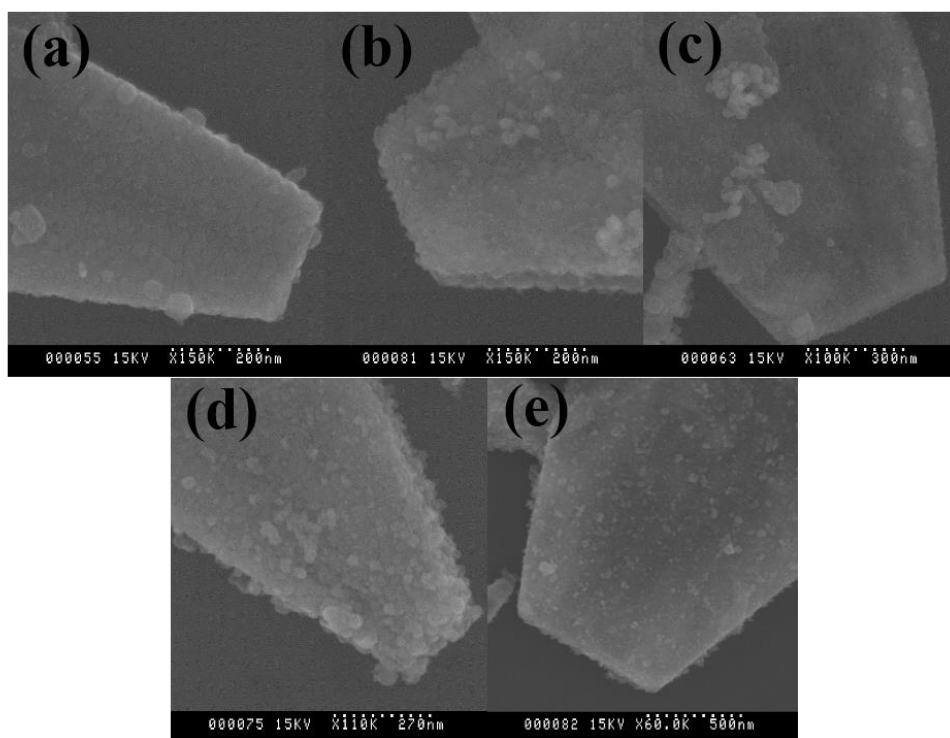


Fig. S8. FE-SEM images of products obtained by the hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at (a) 100, (b) 125, (c) 150, (d) 175, and (e) 200 °C for 12 h.

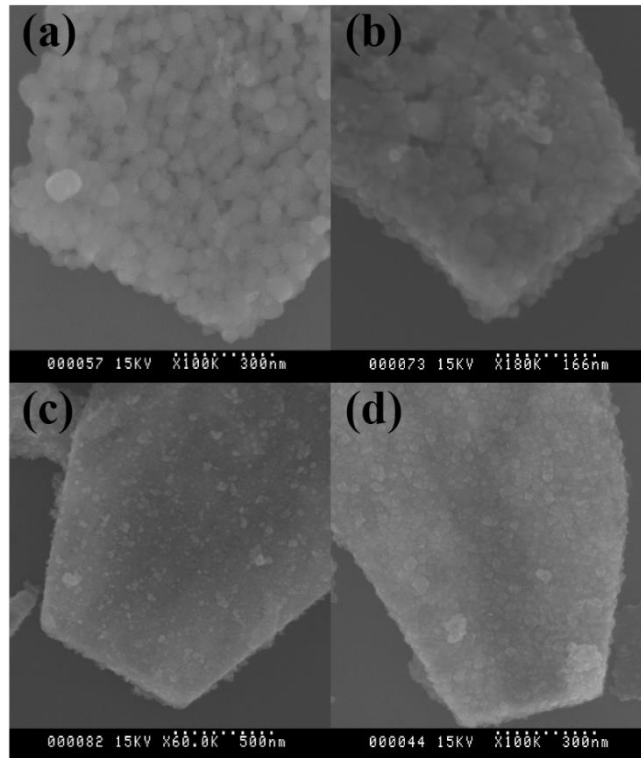


Fig. S9. FE-SEM images of samples obtained by hydrothermal treatments of BT/HTO-X-BiCl₃ mixtures in 15 mol/L NaOH solution at 200 °C for 12 h, where X is (a) 1/8, (b) 1/4, (c) 1/2, and (d) 3/4.

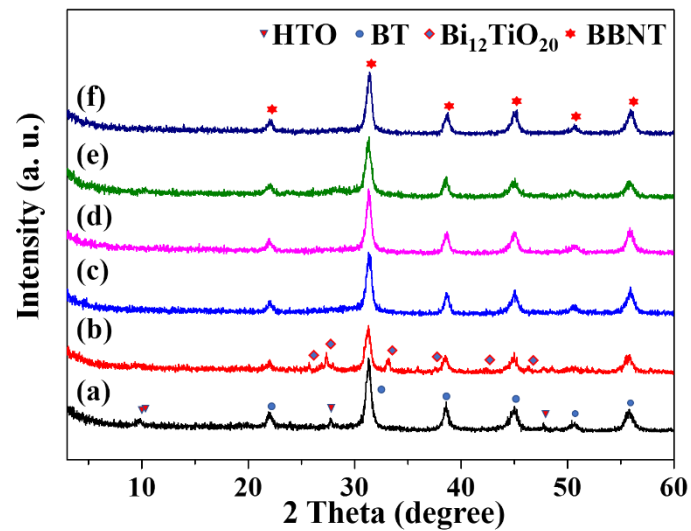


Fig. S10. XRD patterns of (a) BT/HTO-1/2 and products obtained by hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at 200 °C for (b) 0.5, (c) 3, (d) 6, (e) 12, and (f) 24 h.

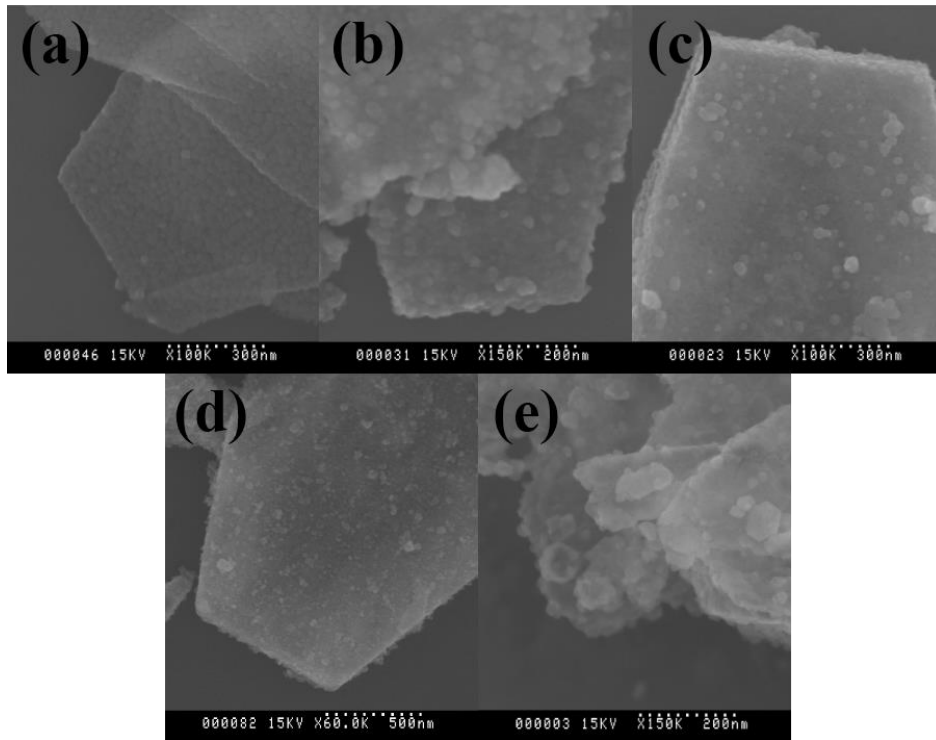


Fig. S11. FE-SEM images of products obtained by hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at 200 °C for (a) 0.5, (b) 3, (c) 6, (d) 12, and (e) 24 h.

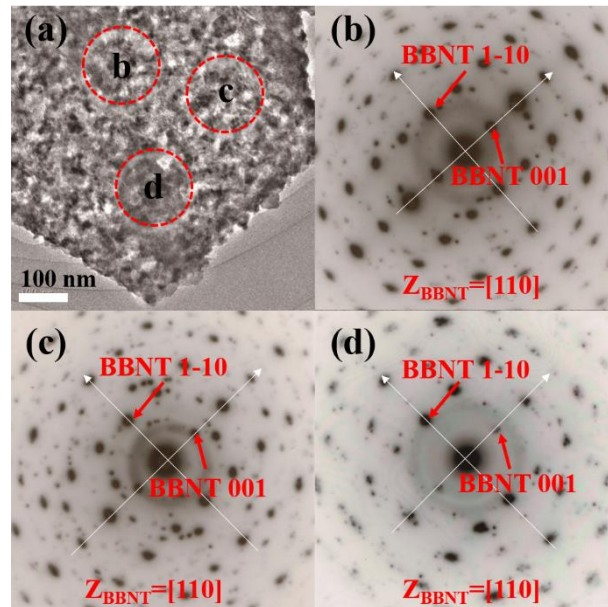


Fig. S12. TEM images of (a) BBNT platelike particle obtained by hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at 200 °C for 12 h, and SAED patterns (b, c, d) at different positions in one platelike particle.

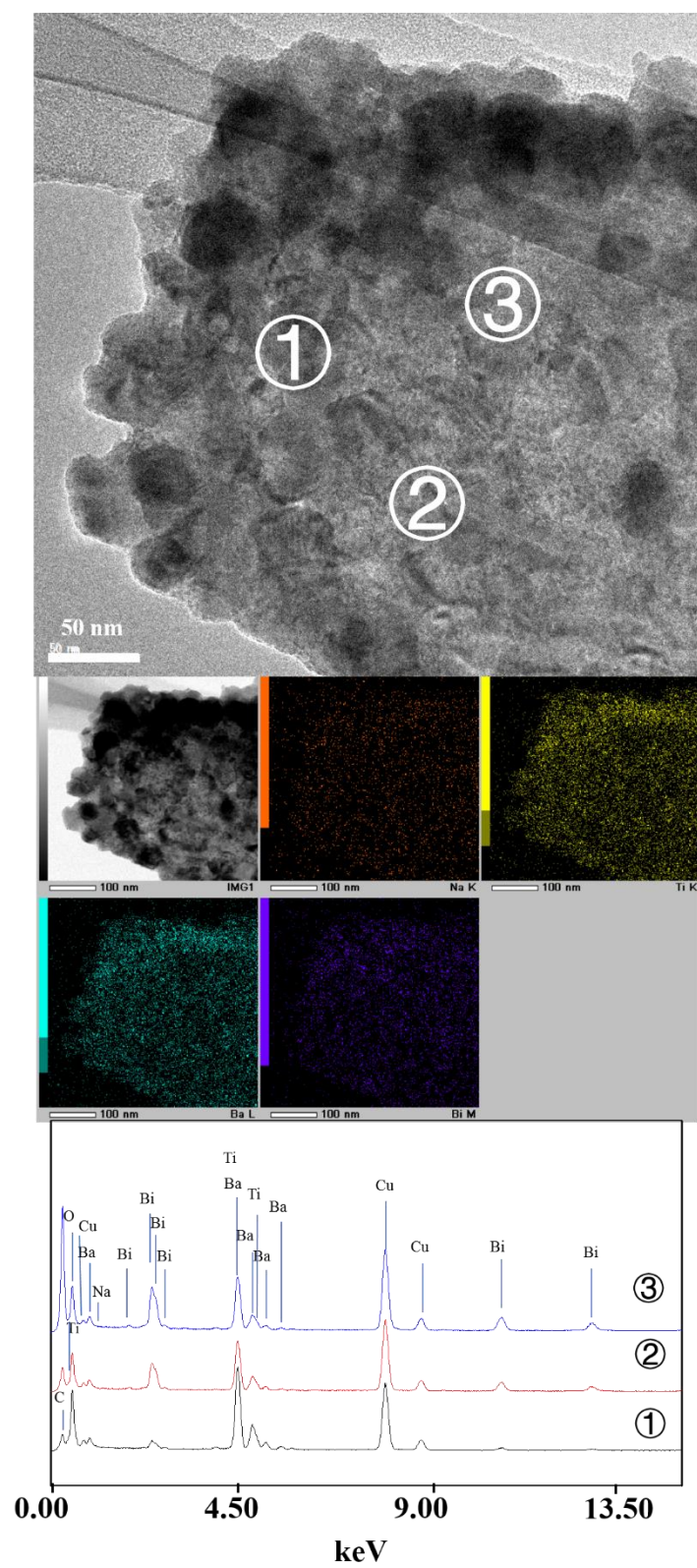


Fig. S13. TEM image and EDS spectra at different positions of BBNT platelike particle obtained by hydrothermal treatment of BT/HTO-1/2-BiCl₃ mixture in 15 mol/L NaOH solution at 200 °C for 12 h.