

Supporting Information

Thermally Stimulated Light Reflection and Photoluminescence of BaTiO₃

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Figures S1–S6

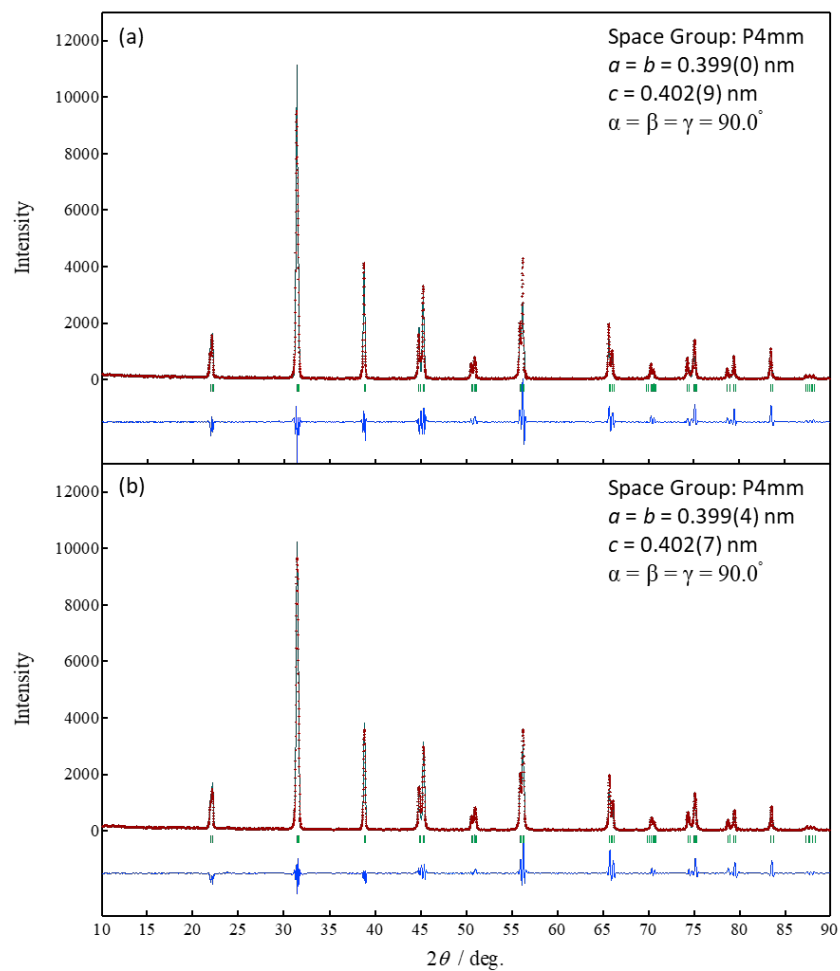


Figure S1. Reitveld analysis of BaTiO₃ crystals prepared in this study (a) and provided by Kojundo Chemical Laboratory (b).

Figure S2 shows the energy dispersive spectroscopy of BaTiO_3 crystals we synthesized and prepared by Kojyundo Chemical Laboratory, TiO_2 and BaCO_3 as reagents. The energy dispersive spectroscopic curves of both BaTiO_3 crystals only had the peaks attributed to Ba, Ti, and O atoms, and perfectly coincided with each other. The energy dispersive spectroscopic peaks of TiO_2 and BaCO_3 reagents were attributed to Ti and O atoms, and Ba and O atoms, respectively. The major peaks by Ba and Ti atoms were close to each other and hard to be distinguished. This strongly affected the elemental analysis, as shown below. The atomic ratios were Ba:Ti:O = 14:8:78 for the synthesized BaTiO_3 crystals and Ba:Ti:O = 14:9:77 for the referenced BaTiO_3 crystals, although the equivalent atomic ratio of Ba, Ti, and O is 20:20:60.

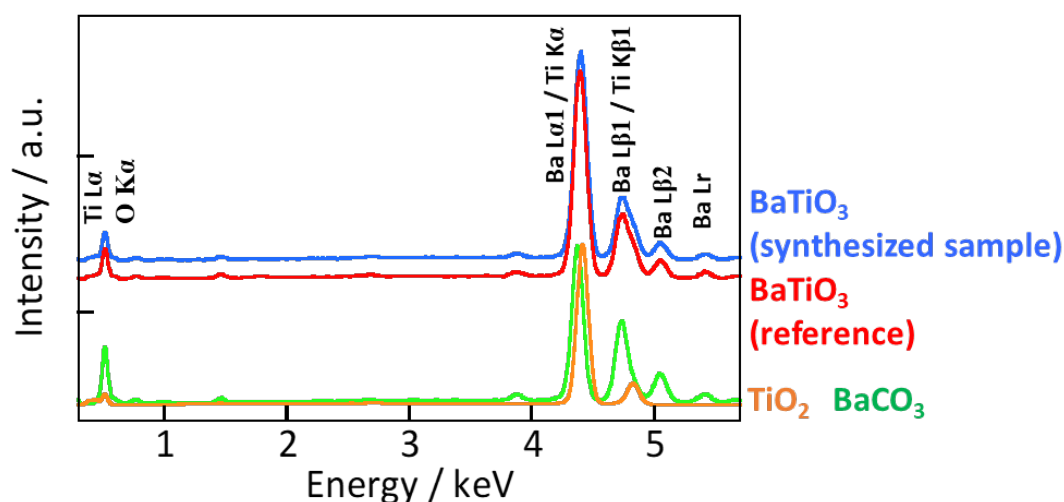


Figure S2. Energy dispersive spectroscopy of BaTiO_3 crystals prepared in this study, provided by Kojundo Chemical Laboratory, TiO_2 , and BaCO_3 as reagents for BaTiO_3 synthesis.

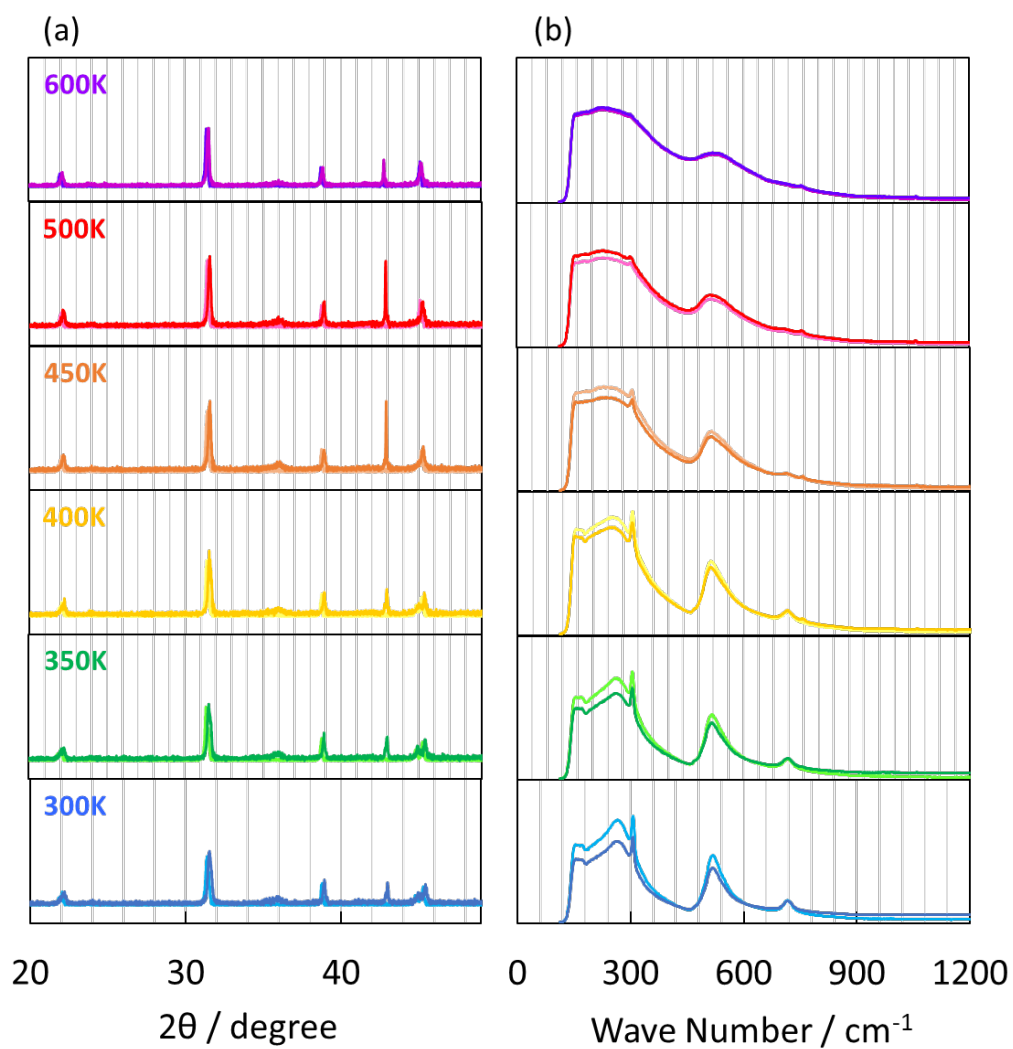


Figure S3. XRD patterns (a) and Raman spectra (b) of BaTiO₃ (b) at 300–600 K. Dark and light curves represent heating and cooling processes, respectively.

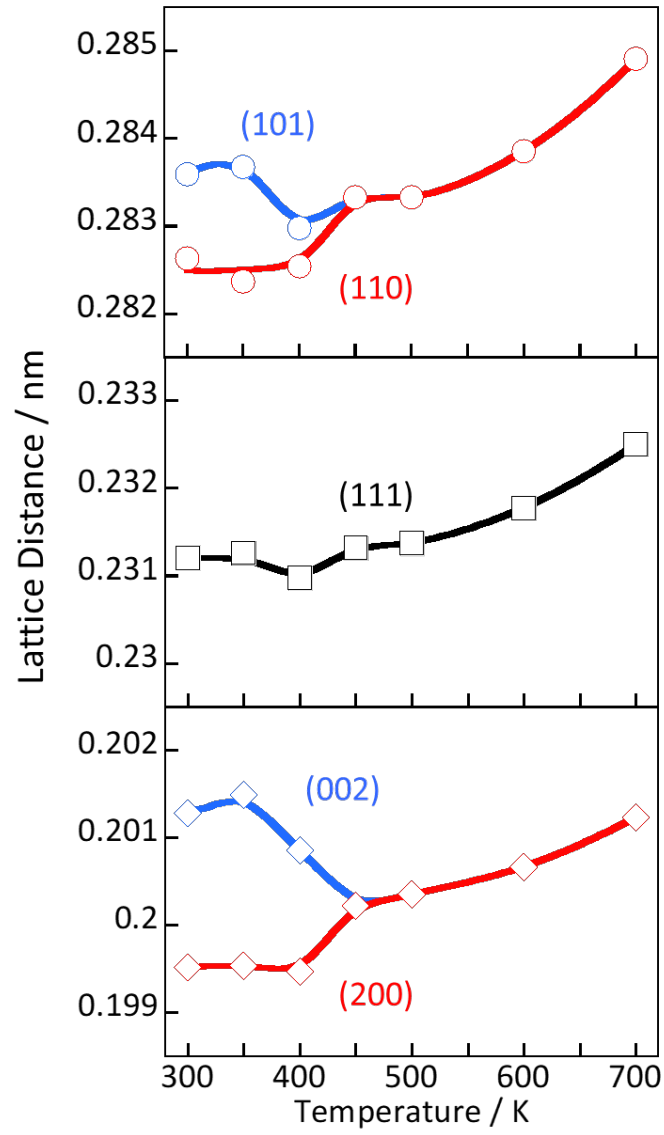


Figure S4. Temperature-dependence of lattice size of BaTiO₃ crystals for (101)/(110), (111), and (002)/(200) faces.

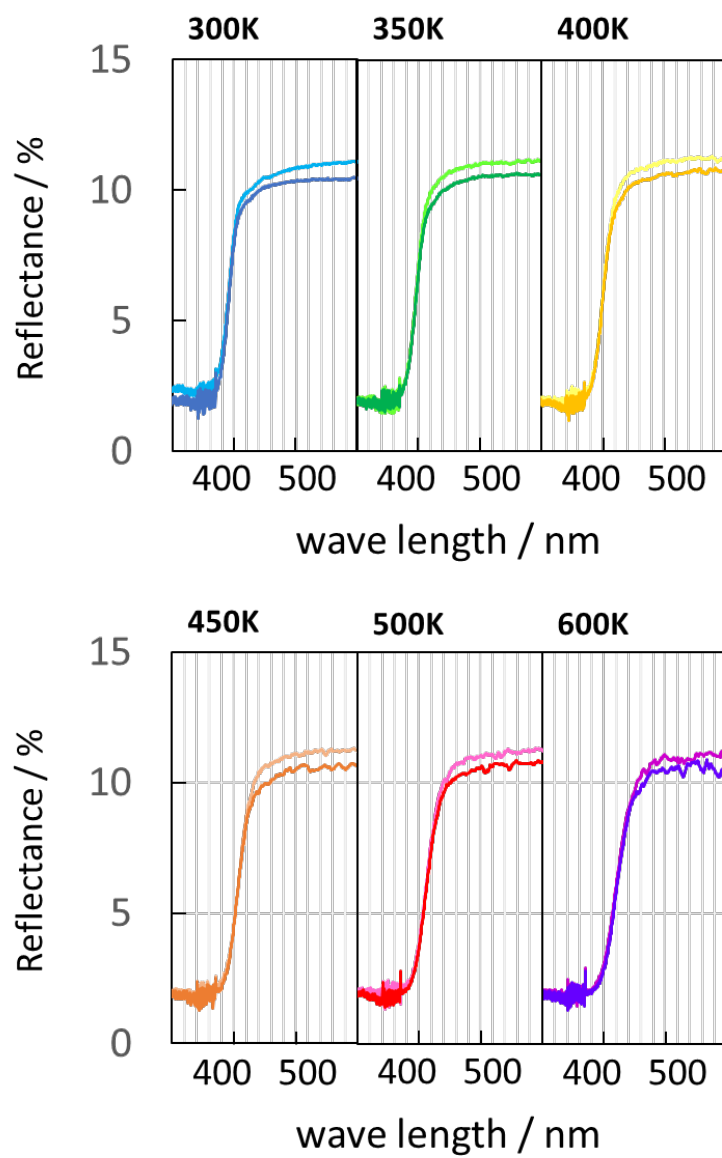


Figure S5. Reflectance spectra of BaTiO₃ at 300–600 K. Dark and light curves represent heating and cooling processes, respectively.

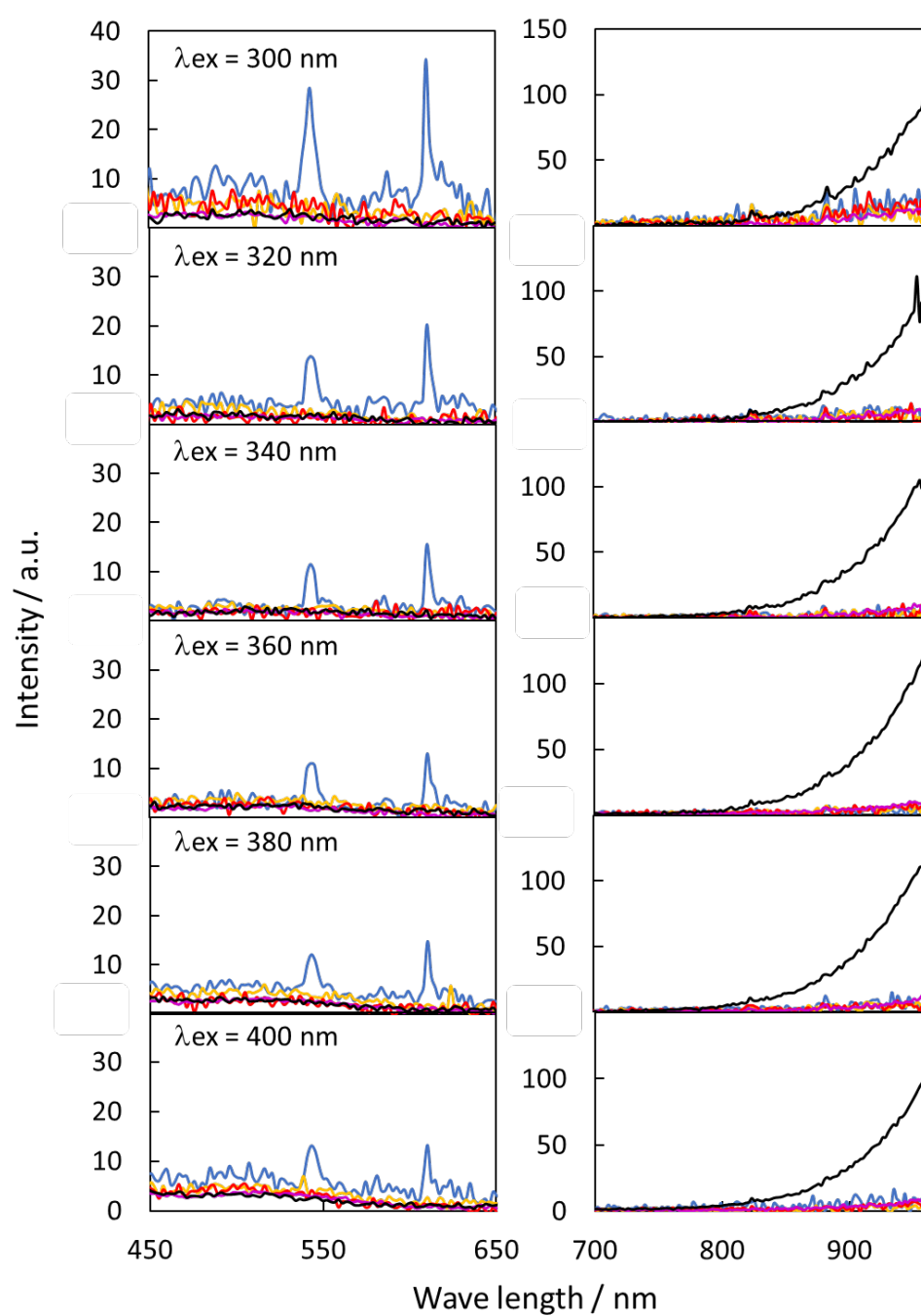


Figure S6. Photoluminescence spectra of BaTiO₃ at 300 (blue), 400, (yellow), 500 (red), 600 (purple), and 700 K (black) at excitation wavelengths of 300–400 nm.