

Supporting Information for:

Synthesis, Crystal Growth, and Characterization of the Orthorhombic BaTeW₂O₉: A New Polymorph of BaTeW₂O₉

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Figure S1. (a) Powder X-ray diffraction pattern of synthesized polycrystalline of orthorhombic BaTeW₂O₉(BTW). Calculated pattern was shown for comparison. (b) X-ray diffraction pattern of powder obtained by grounding a small piece of single crystal of orthorhombic BTW.

Figure S2. The UV-vis diffuse reflectance spectrum of the powder of Orthorhombic BTW. The up right shows the $(\nu h\nu)^2-(h\nu)$ curve.

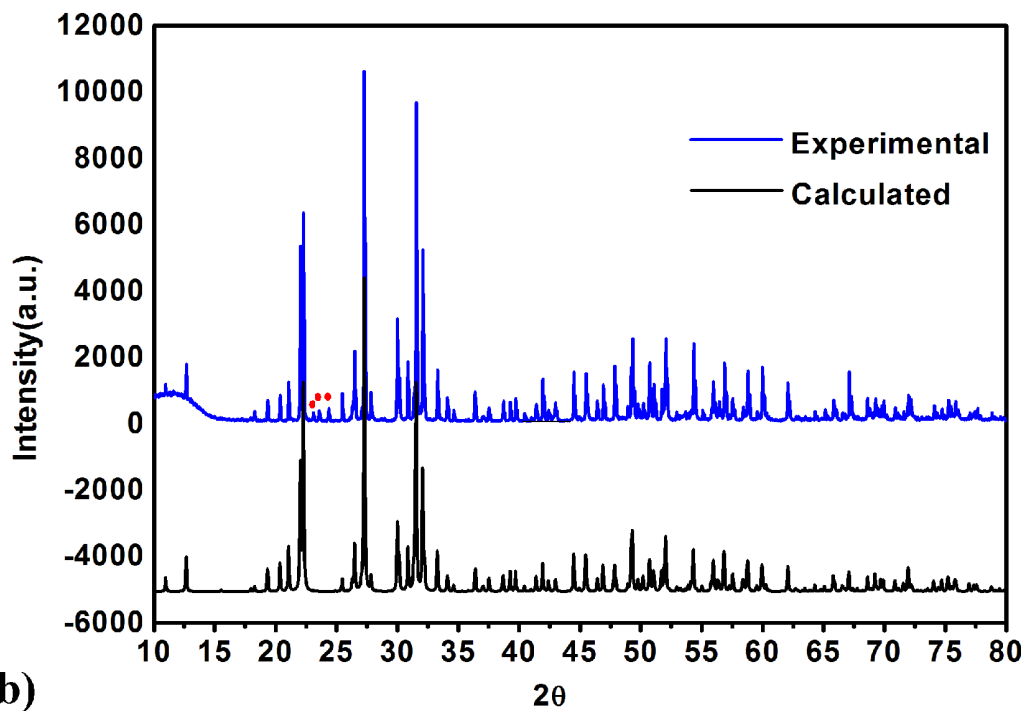
Figure S3. Raman Spectrum of orthorhombic BTW. The Raman shift with the highest intensity is at 910.93 cm⁻¹.

Figure S4. Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) data of orthorhombic BTW.

Figure S5. PXRD pattern of the residue after DSC and TGA measurement.

Figure S6. Thermal Properties of orthorhombic BTW. (a)The thermal diffusion vs. temperature curves. (b)Thermal expansion vs. temperature curves. The left-up inset shows the temperature depended density of the crystal. (c) The specific heat of the crystal vs. temperature curve. (d) The thermal conductivity vs. temperature curves.

(a)



(b)

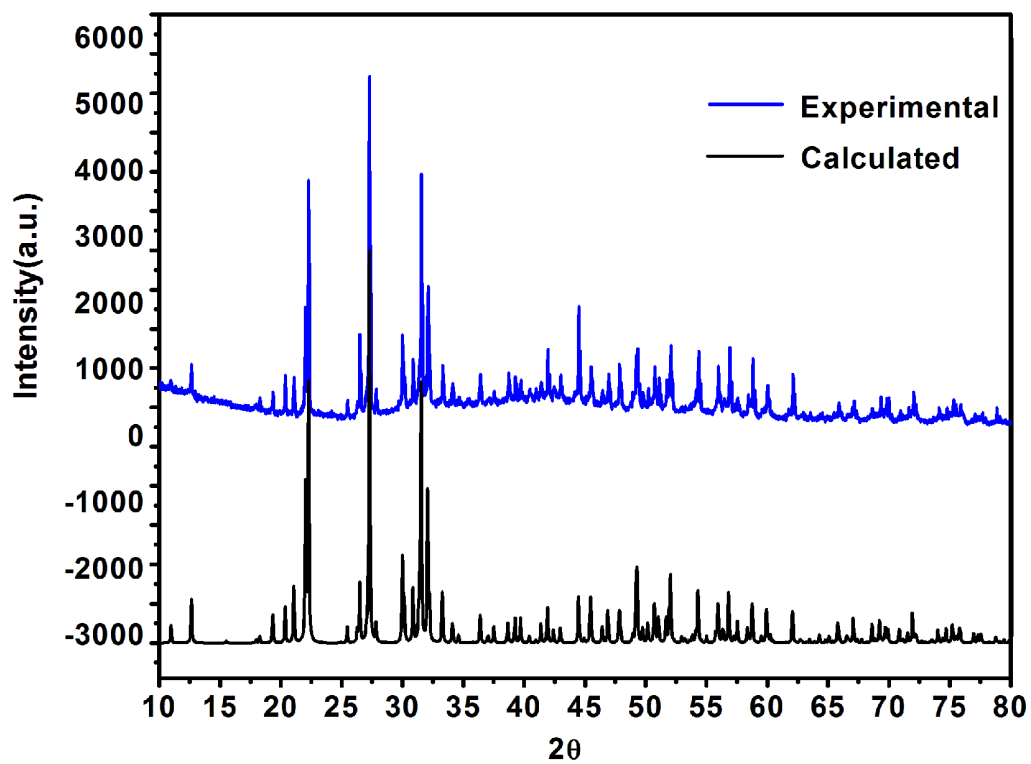


Figure S1. (a) Powder X-ray diffraction pattern of synthesized polycrystalline of orthorhombic BTW. Calculated pattern was shown for comparison. Note that there are three impurity's peaks labored by yellow points. (b) X-ray diffraction pattern of powder obtained by grounding a small piece of single crystal of orthorhombic BTW.

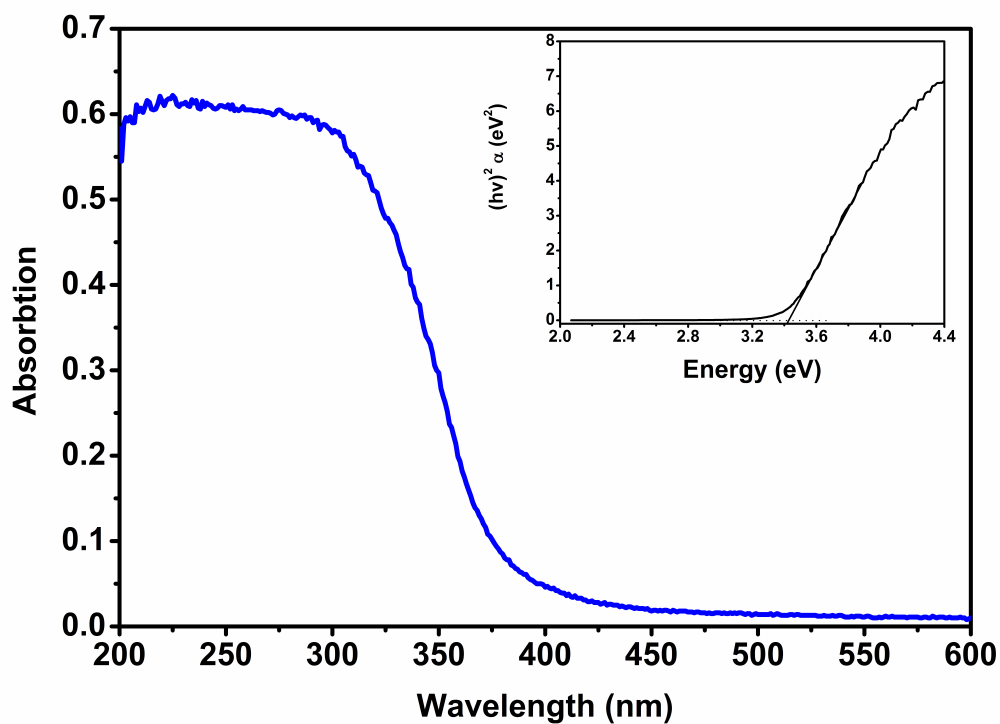


Figure S2. The UV-vis diffuse reflectance spectrum of the powder of Orthorhombic BTW. The up right shows the $(\nu h \alpha)^2 - (h\nu)$ curve.

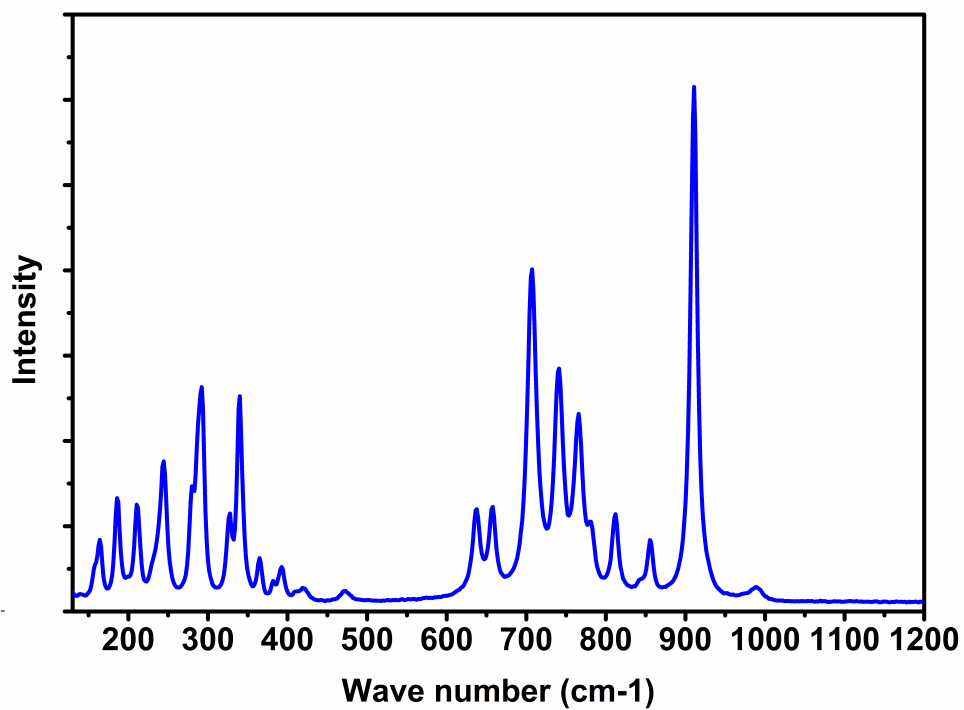


Figure S3. Raman Spectrum of orthorhombic BTW. The Raman shift with the highest intensity is at 910.93 cm-1.

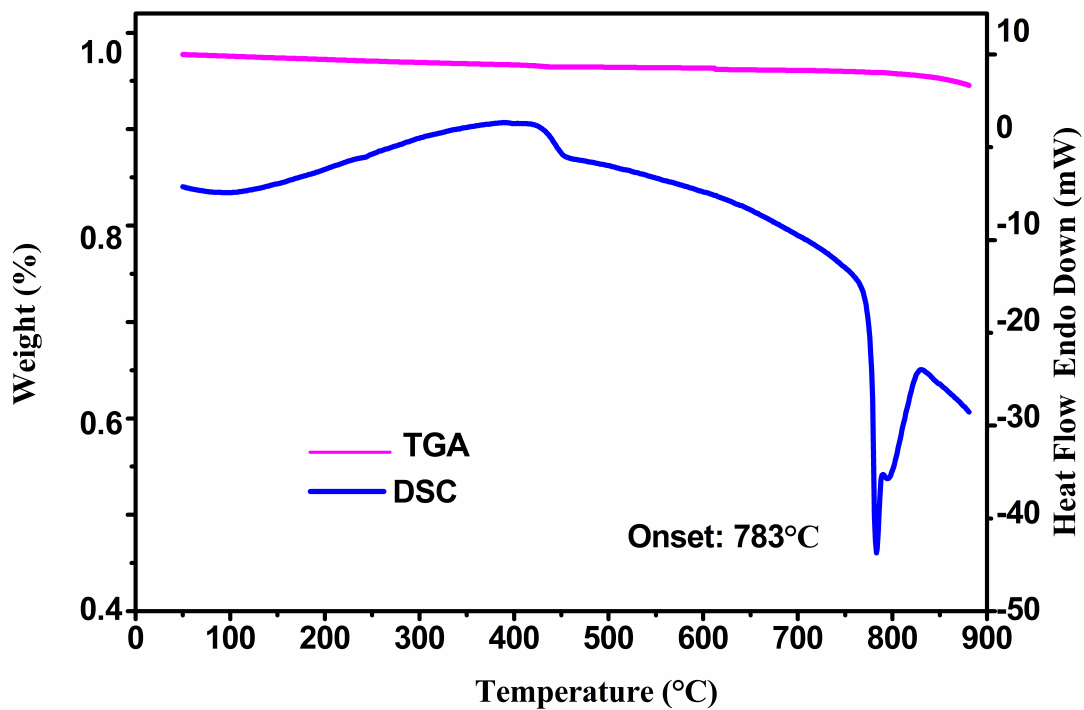


Figure S4. Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) data of orthorhombic BTW. The onset temperature was indicated. Note that there is only one endothermic peak on the heating curve of DSC and no weight loss on the curve of TGA.

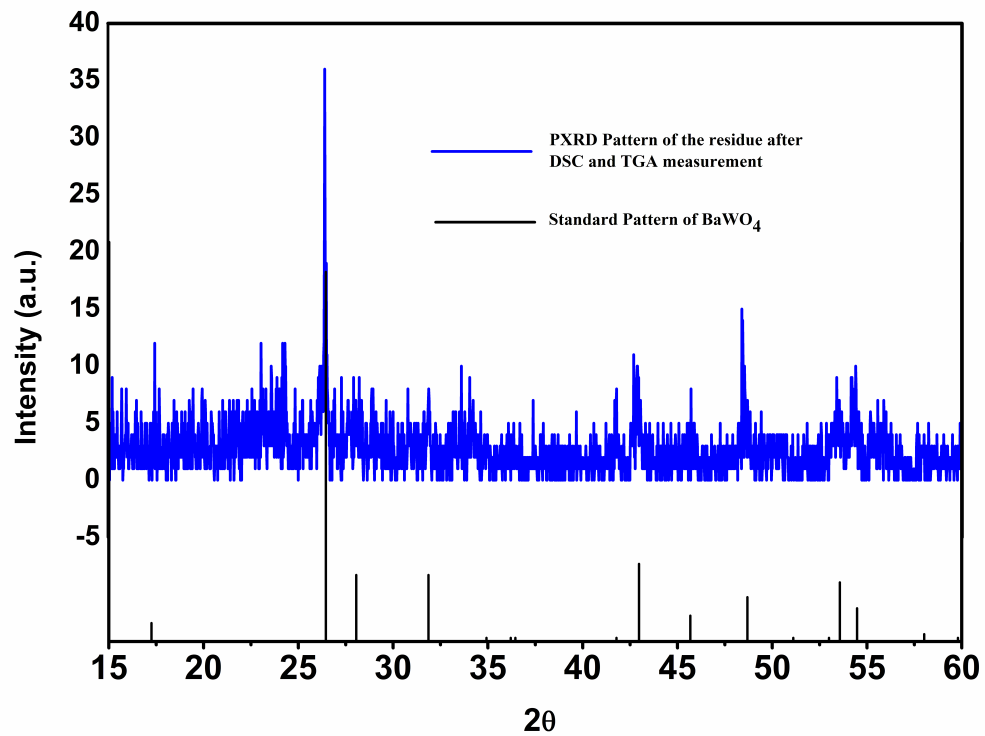


Figure S5. PXRD pattern of the residue after DSC and TGA measurements. The result indicated that the crystal deposited to be BaWO₄ and some amorphous phase.

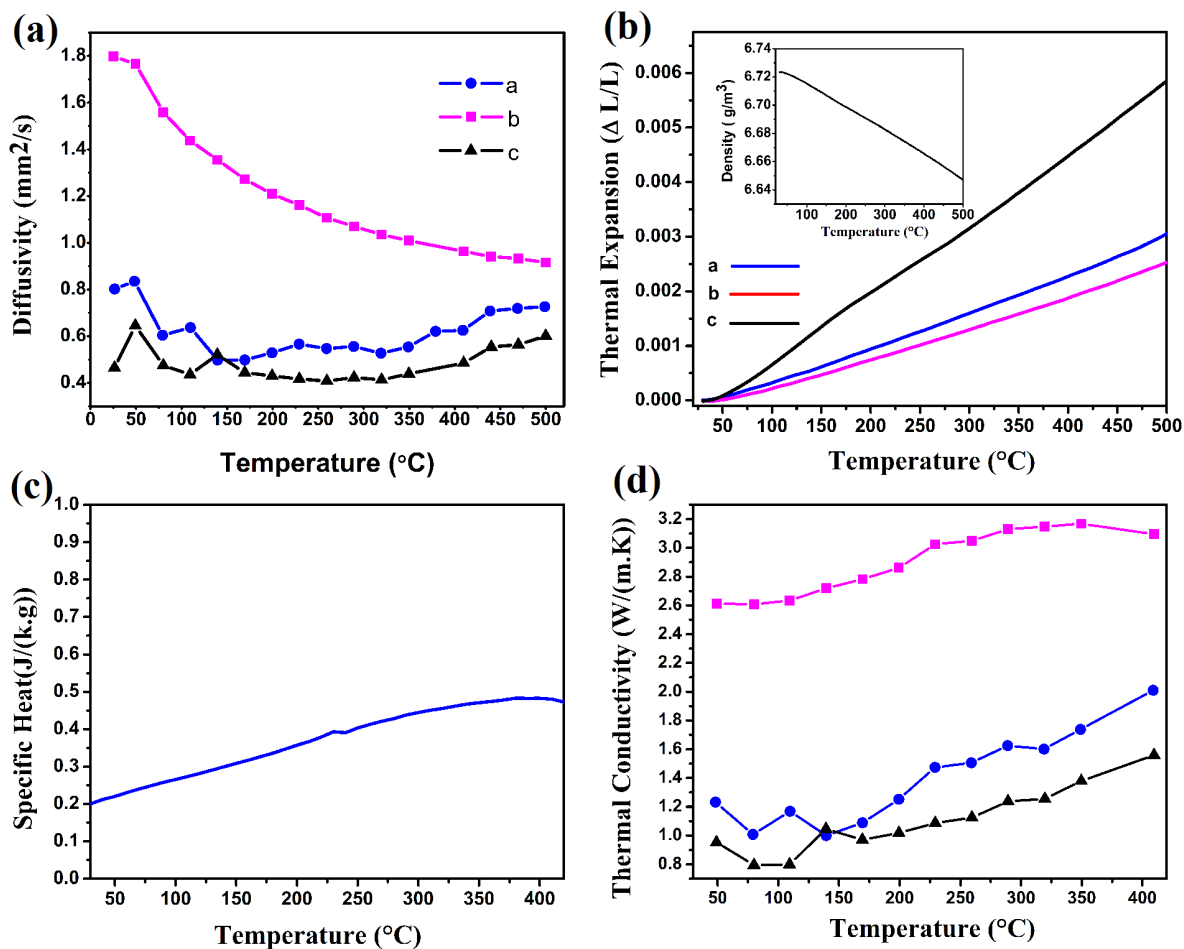


Figure S6. Thermal Properties of orthorhombic BTW. (a) The thermal diffusion vs. temperature curves. (b) Thermal expansion vs. temperature curves. The left-up inset shows the temperature depended density of the crystal. (c) The specific heat of the crystal vs. temperature curve. (d) The thermal conductivity vs. temperature curves.