Supporting Information

Barocaloric and magnetocaloric effects in the *A*-site layer-ordered Double Perovskite $YBaCo_2O_{5.5}$

Mayuri Ito[1], Masato Goto[*,1], Kevin Iputera[1], and Yuichi Shimakawa[*,1]

[1]Institute for Chemical Research, Kyoto University, Uji, Kyoto 611-0011, Japan

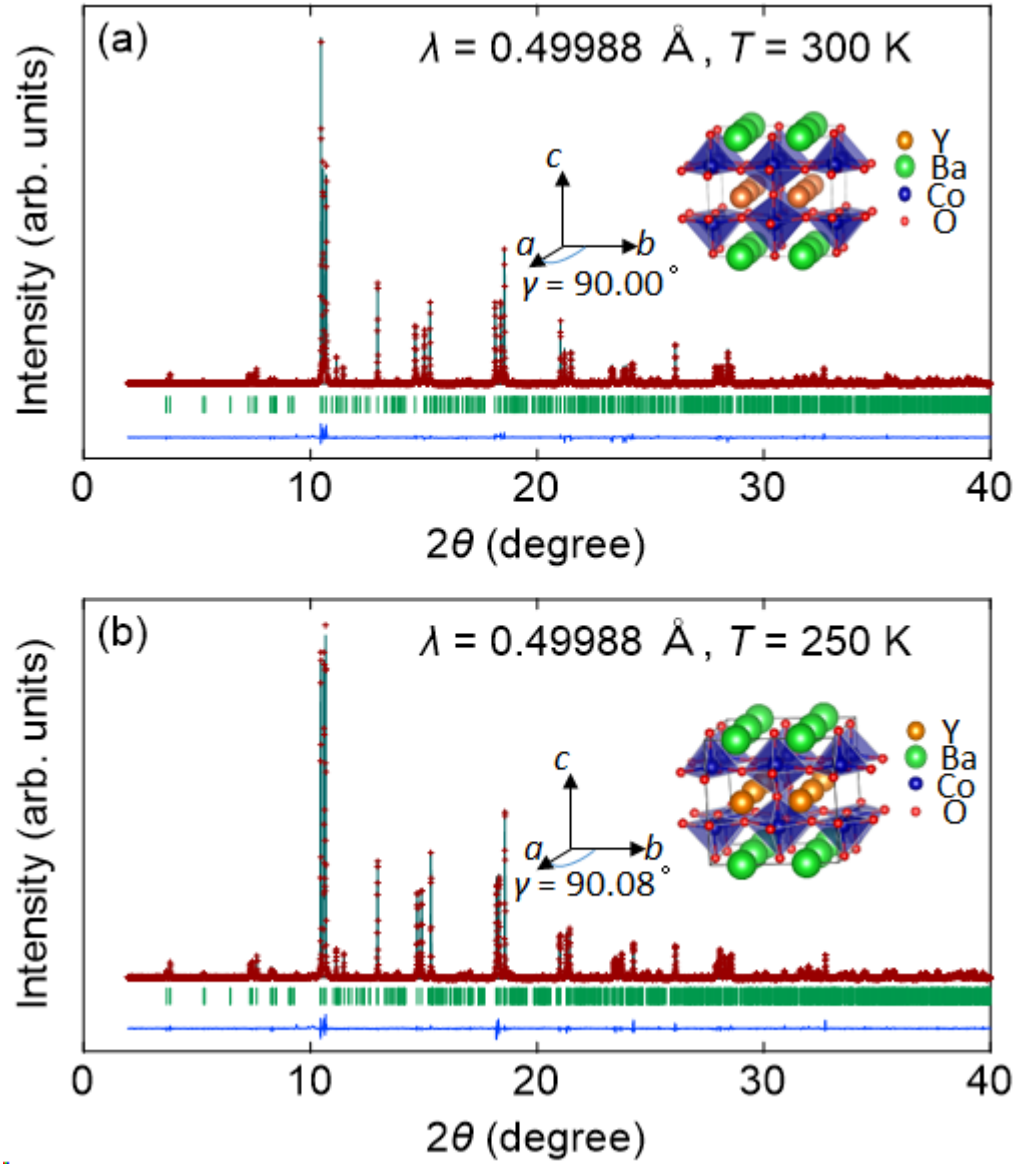

Figure S1. Results of the Rietveld refinement of the synchrotron X-ray diffraction data at (a)300 K and (b)250 K for $YBaCo_2O_{5.5}$. The dots and solid lines represent observed and calculated patterns, respectively. The plots below the diffraction patterns are the difference between the observed and calculated intensities. Vertical marks below the profile are Bragg reflection positions. Each crystal structure is shown in the inset.

Table S1. Structural parameters of $YBaCo_2O_{5.5}$ at 300 K and 250 K: molecular weight *MW*, unit-cell volume *V*, space group, number of formula units in the unit cell *Z*, number of reflections in the refinements, final R_{wp}, R_e, and *S* values.

T(K)	MW(g/mol)	V(Å^3)	S.G.	Z	Number of reflections	R_{wp} (%)	R_e (%)	S (%)
300	432.1	451.564(4)	*Pmma*	8	702	4.767	1.602	2.976
250	432.1	451.463(5)	$P2/c$	8	1230	4.867	1.598	3.046

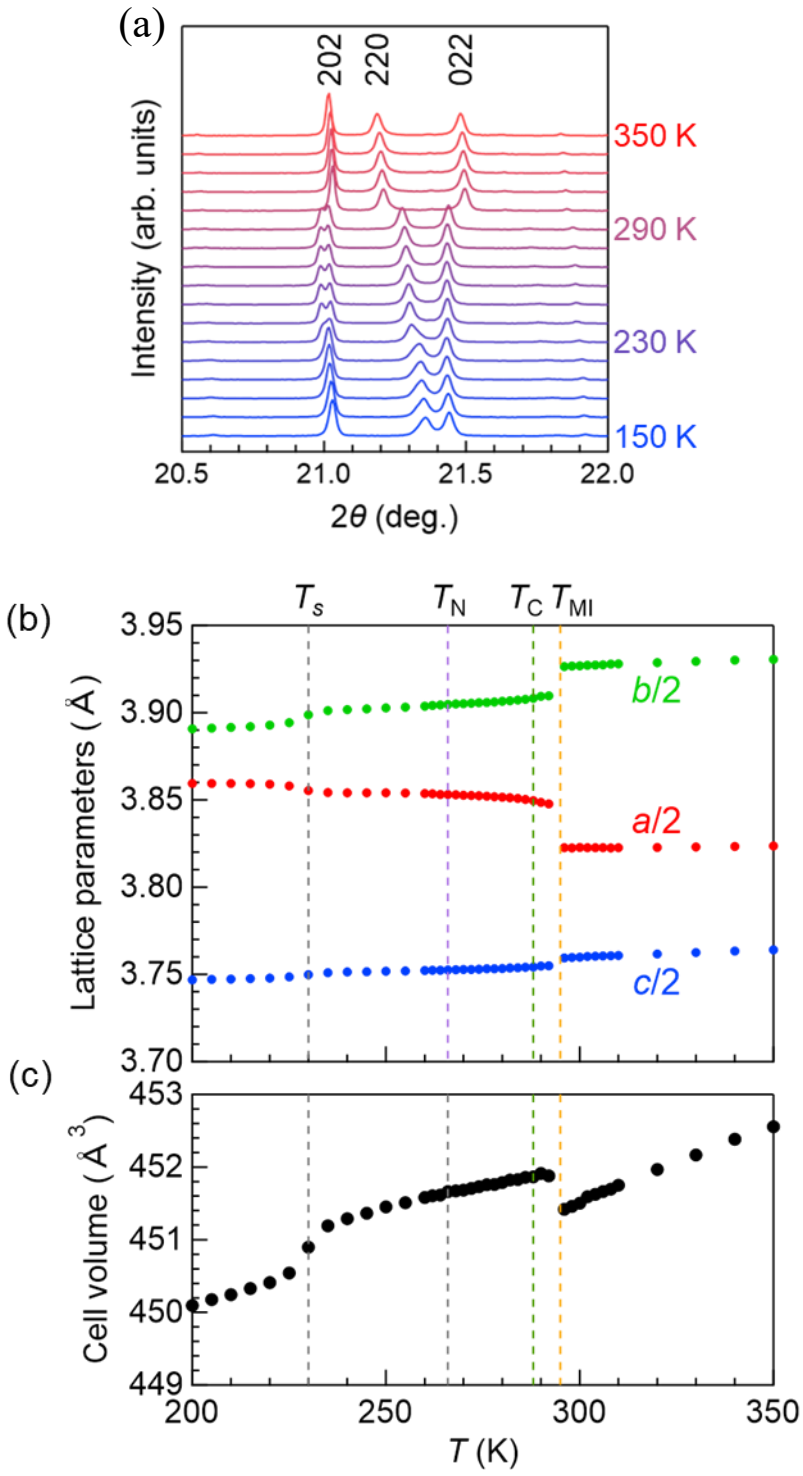

Figure S2. Temperature dependence of (a) synchrotron X-ray diffraction data (b) lattice constants, and (c) cell volume of $YBaCo_2O_{5.5}$. The splitting of 202 peak between 290 and 230 K indicates a monoclinic distortion. The indices are based on the simple perovskite.

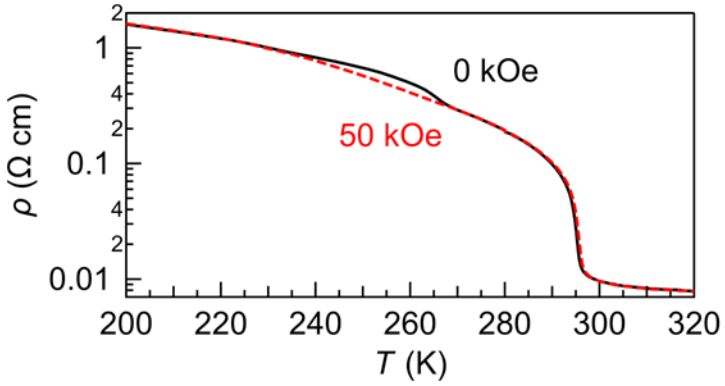

Figure S3. Temperature dependence of electrical resistivity under 0 and 50 kOe.