Supplementary Information

High-pressure synthesis of highly oxidized $Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-\delta}$ cubic perovskite

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Table S1. Structure Parameters of RT- and HT-BSCF Obtained from the Final Rietveld Refinement.

	RT-BSCF	HT-BSCF
Ba/Sr		
g	0.5/0.5[a]	0.5/0.5[a]
U_{iso} (Å^2)	0.0204(3)	0.0187(3)
Co/Fe		
g	0.8/0.2 [a]	0.8/0.2[a]
U_{iso} (Å^2)	0.0260(3)	0.0239(3)
O		
g	0.873[b]	0.883[b]
U_{iso} (Å^2)	0.0344(8)	0.0368(9)
a (Å)	3.9831(2)	3.9809(3)
R_{wp} (%)	3.756	6.289
R_B (%)	3.371	2.626
GOF	1.9607	2.9959

Space group $Pm\bar{3}m$; Sites: Ba/Sr 1*a* (0, 0, 0), Co/Fe 1*b* ($^1/_2$, $^1/_2$, $^1/_2$), O 3*c* (0, $^1/_2$, $^1/_2$).

[a]The occupancy factors for *A*- and *B*-sites were fixed to the values of nominal composition.

[b]The occupancy factors for O site were fixed to the values obtained by iodometric titration.

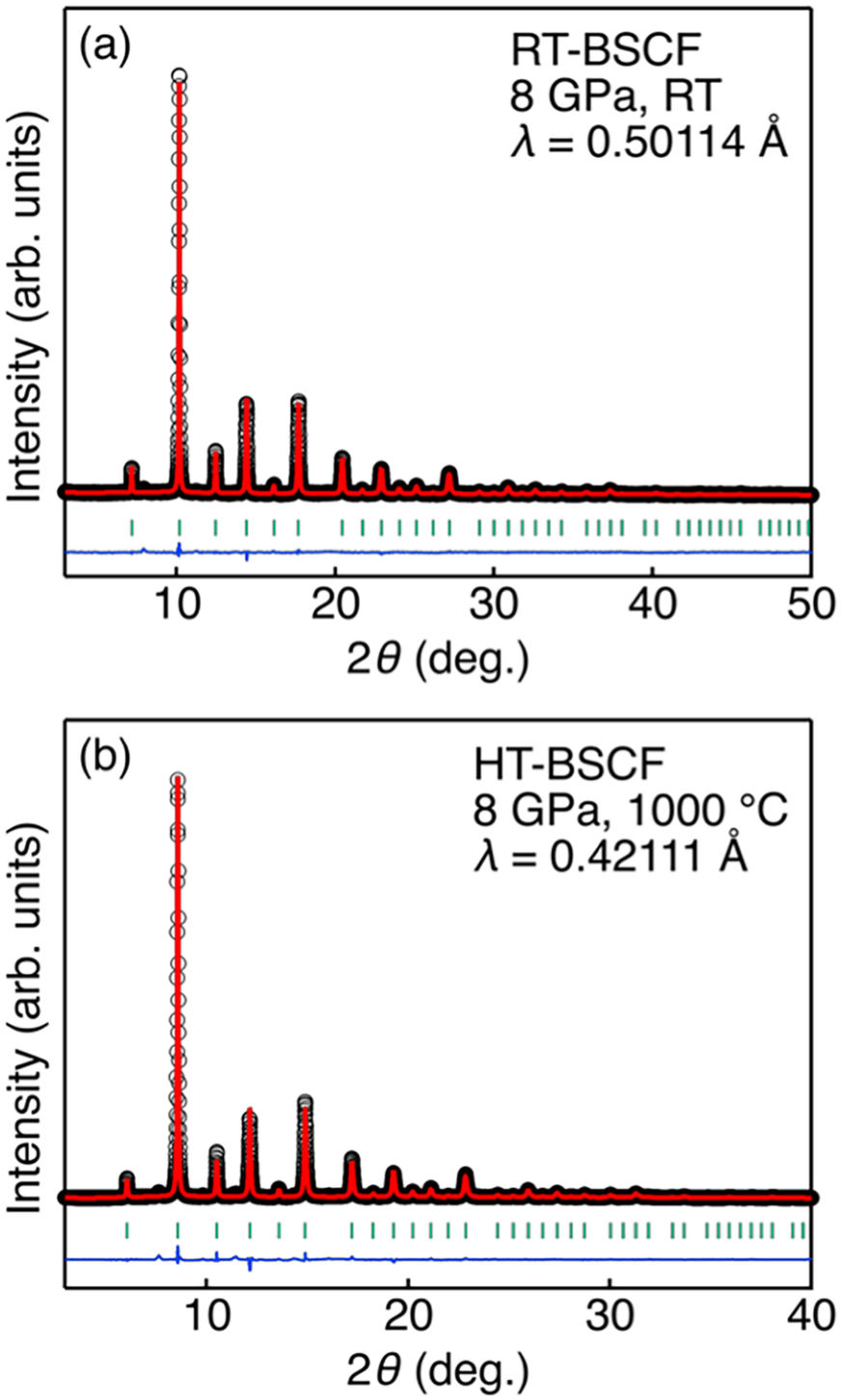

Figure S1. Rietveld refinement results for (a) RT-BSCF and (b) HT-BSCF. The wavelength was (a) 0.50114 and (b) 0.42111 Å, respectively. Circles (black) and solid lines (red) represent observed and calculated patterns, respectively. The difference between the observed and calculated patterns is shown at the bottom (blue). The vertical marks (green) indicate the Bragg reflection positions of the cubic BSCF phase.

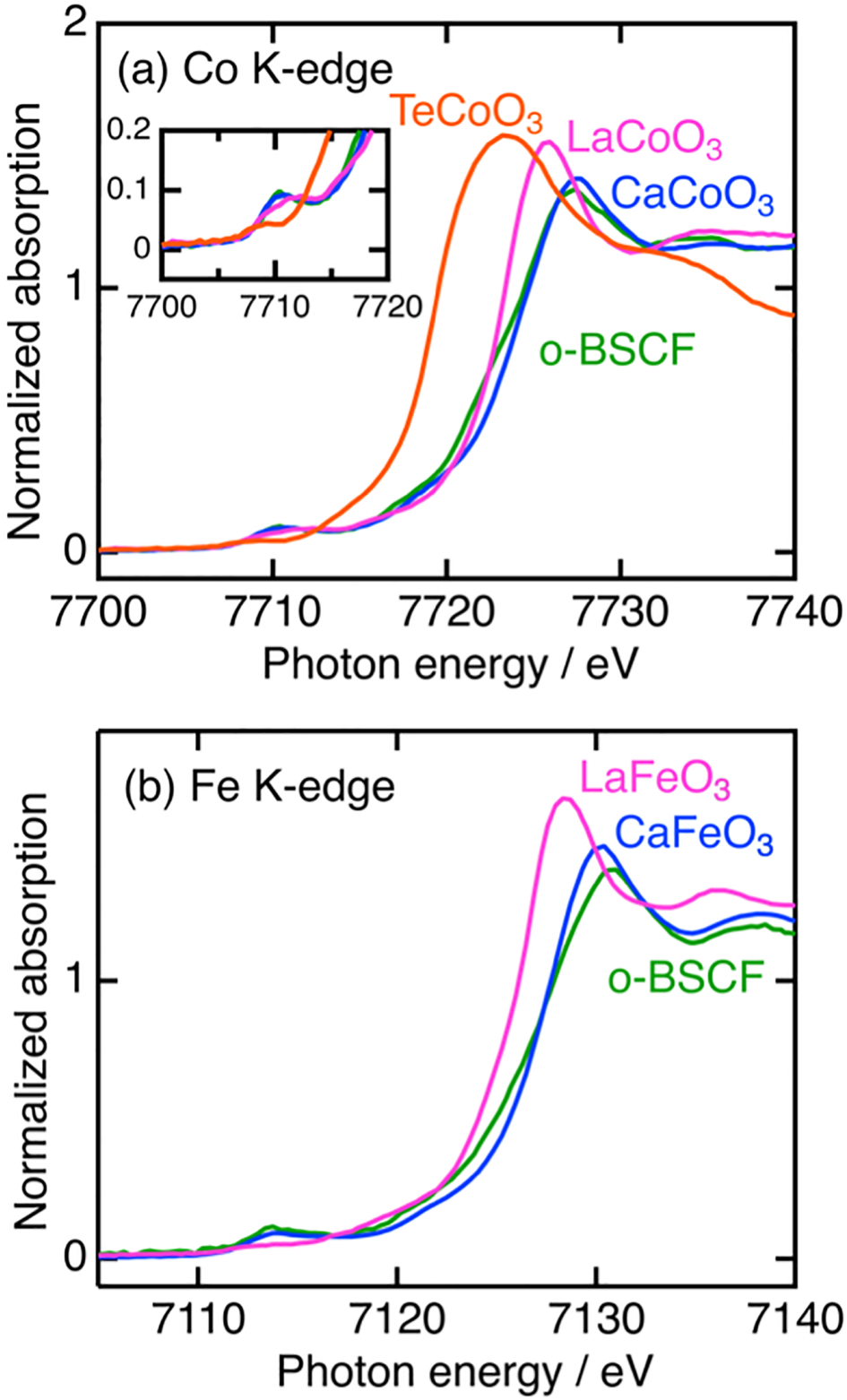

Figure S2. (a) XANES spectra of Co K-edges for o-BSCF and references of Co^{2+} ($TeCoO_3$), Co^{3+} ($LaCoO_3$), and Co^{4+} ($CaCoO_3$). The inset represents the pre-edge region. (b) XANES spectra of Fe K-edges for o-BSCF and references of Fe^{3+} ($LaFeO_3$) and Fe^{4+} ($CaFeO_3$).