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Supplementary information

Fundamental and technological aspects of thermochemical expansion of proton-conducting oxides: a case study of $BaSn_{1-x}Sc_xO_{3-\delta}$

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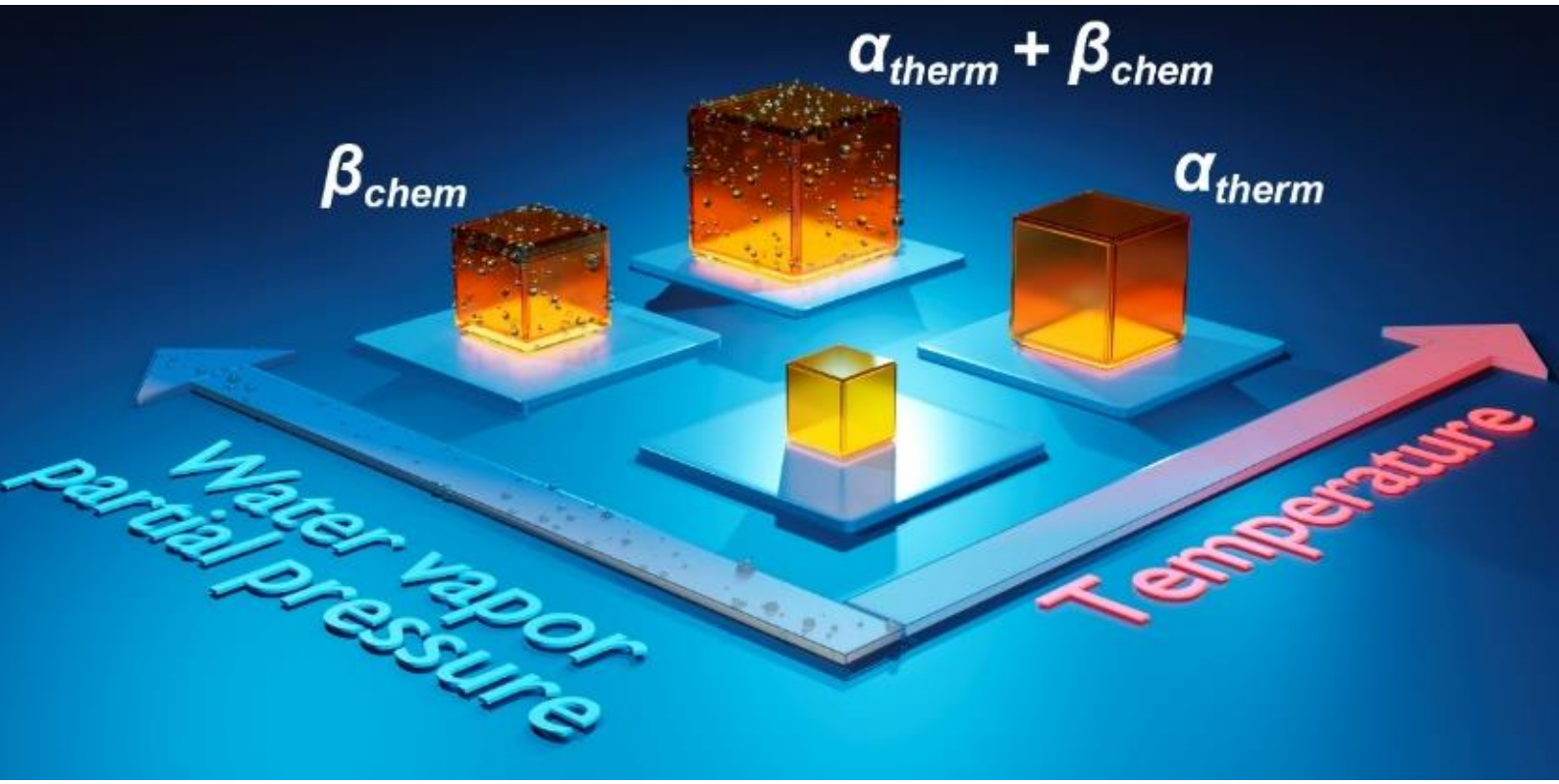

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3 Figures

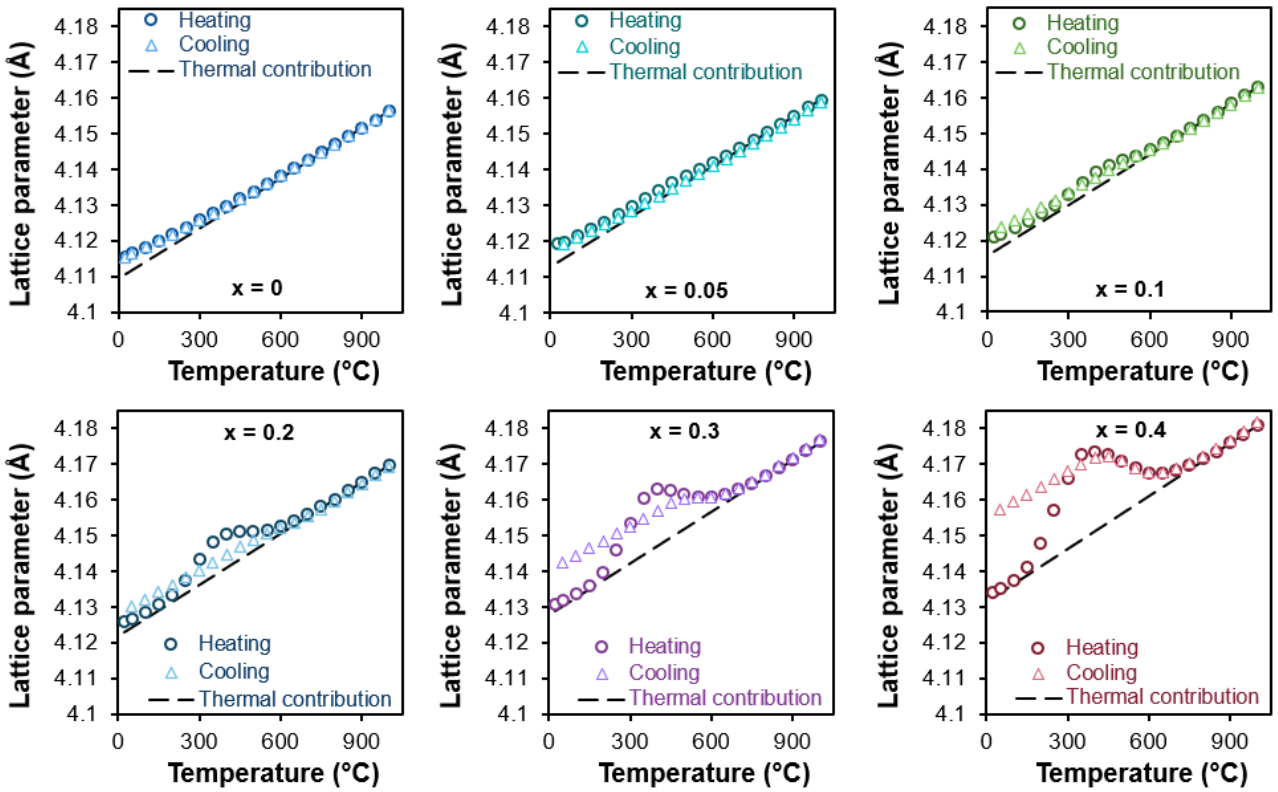

Figure S1. Variation in lattice parameter of barium stannate materials ($BaSn_{1-x}Sc_xO_{3-\delta}$) in heating and cooling modes, as well as the linear part of the curve extrapolated from the high-temperature region relating the thermal contribution to the overall evolution of the lattice parameter from temperature.

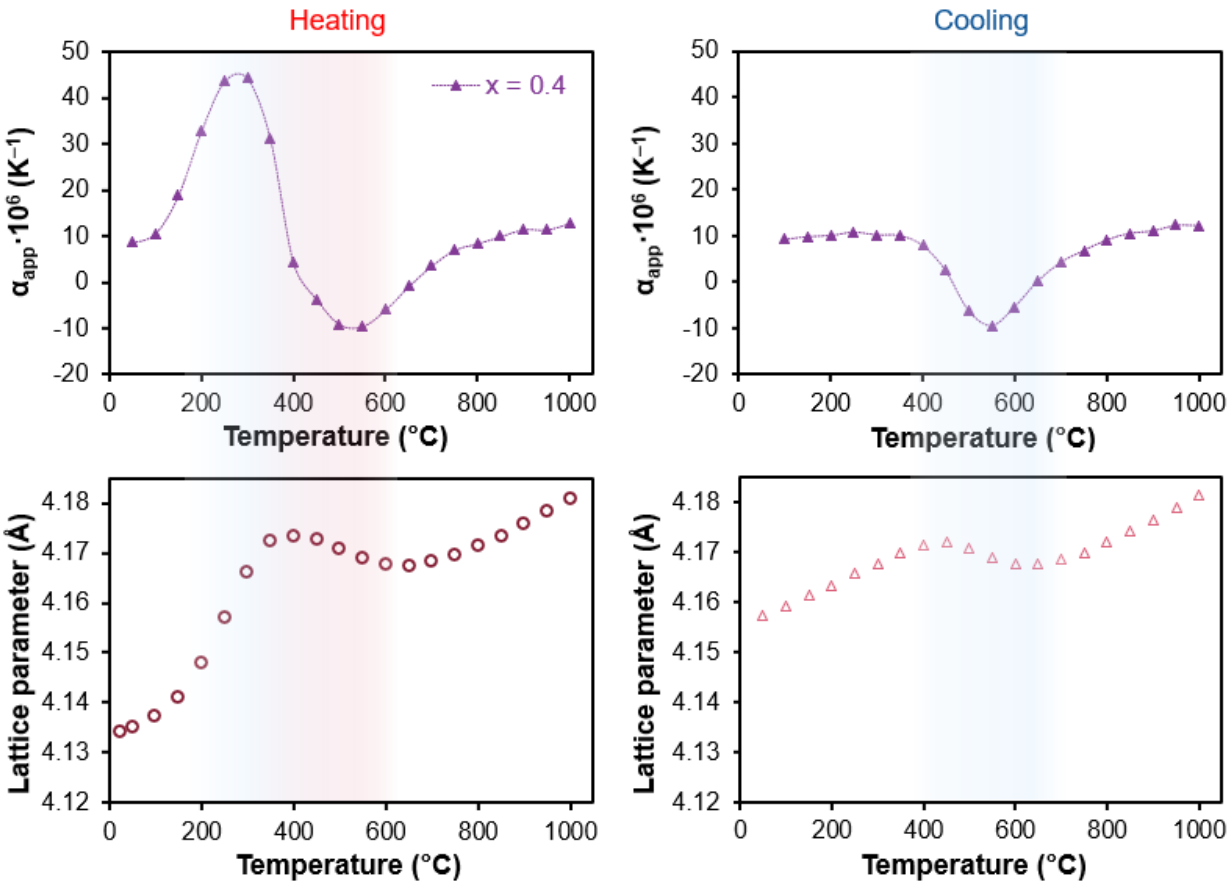

Figure S2. HT-XRD data for $BaSn_{0.6}Sc_{0.4}O_{3-\delta}$ material: correlation between the apparent TEC variation and the evolution of the lattice parameter in both heating and cooling modes.

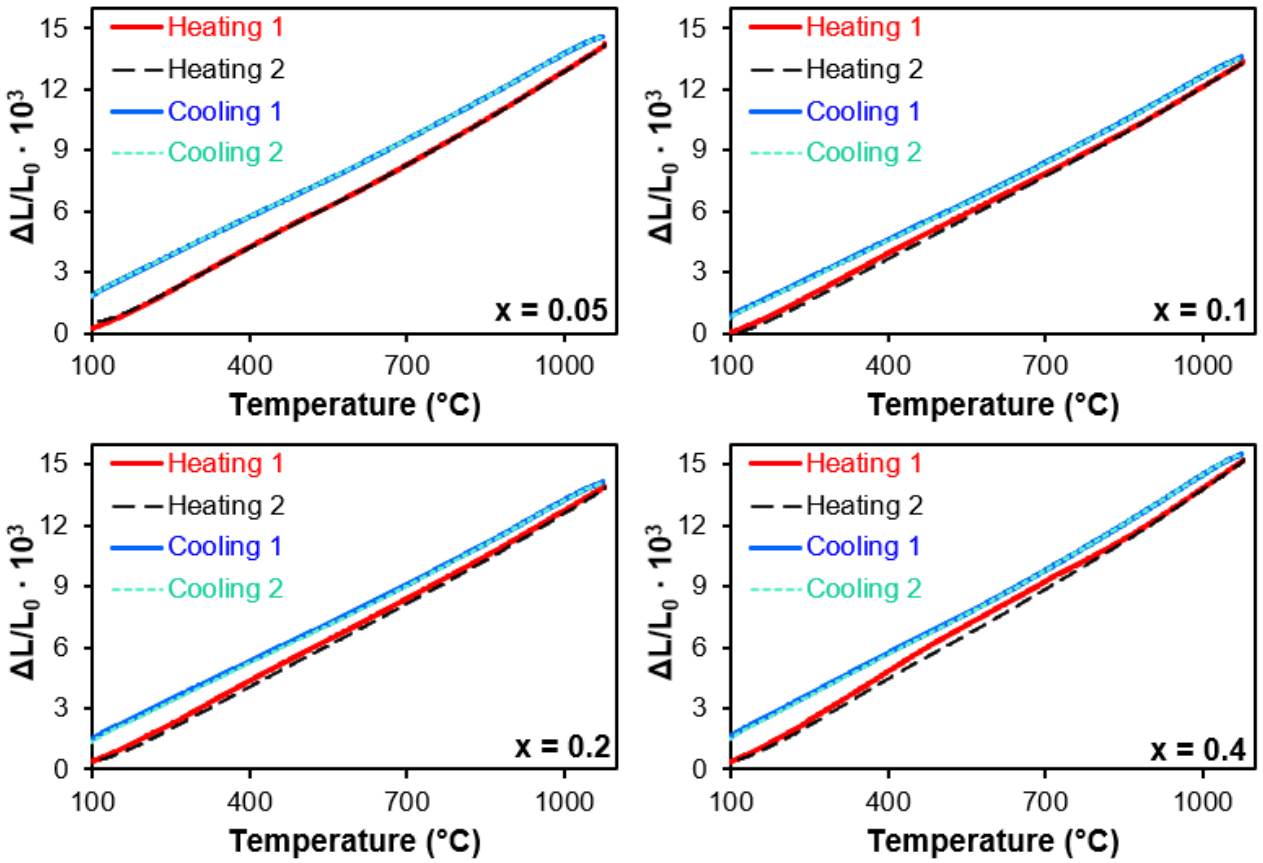

Figure S3. Dilatometric dependences for $BaSn_{1-x}Sc_xO_{3-\delta}$ ceramic materials obtained in two heating and cooling cycles.

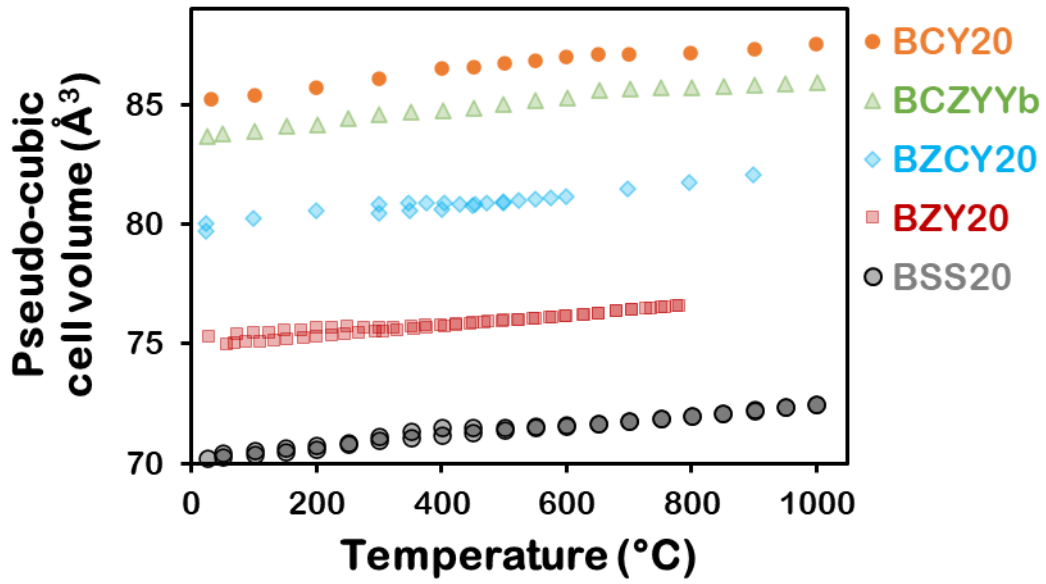

Figure S4. Temperature dependences of pseudo-cubic cell volume for $BaSn_{0.8}Sc_{0.2}O_{3-\delta}$ and the state-of-the-art proton-conducting electrolytes with the same acceptor dopant amount: BCY20 ($BaCe_{0.8}Y_{0.2}O_{3-\delta}$),[S1] BCZYYb ($BaCe_{0.7}Zr_{0.1}Y_{0.1}Yb_{0.1}O_{3-\delta}$),[S2] BZCY20 ($BaZr_{0.4}Ce_{0.4}Y_{0.2}O_{3-\delta}$),[S3] BZY20 ($BaZr_{0.8}Y_{0.2}O_{3-\delta}$).[S4]

References

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