Supporting Information

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In Situ Nanoscale Dynamics Imaging in a Proton-Conducting Solid Oxide for Protonic Ceramic Fuel Cells

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S1. Pre-characterization of the BaZr$_{0.8}$Y$_{0.2}$O$_{3-d}$ pellet

Laboratory x-ray diffraction (XRD) patterns for powder and pellet can be indexed to BaZrO$_3$ (matching International Centre for Diffraction Data PDF 01-089-2486) (Figure S1, a) SEM images indicate that the pellet has significant porosity, consistent with the low sintering temperature (Figure S1, b).

Figure S1. Pellet characterization. a, Lab-scale XRD pattern for BaZr$_{0.8}$Y$_{0.2}$O$_{3-d}$ powder and BaZr$_{0.8}$Y$_{0.2}$O$_{3-d}$ pellet matches with PDF 01-089-2486, b, Cross-sectional SEM image of BaZr$_{0.8}$Y$_{0.2}$O$_{3-d}$ pellet