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Intermediate-temperature solid oxide electrolysis cells with thin proton-conducting electrolyte and robust air electrode

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Results

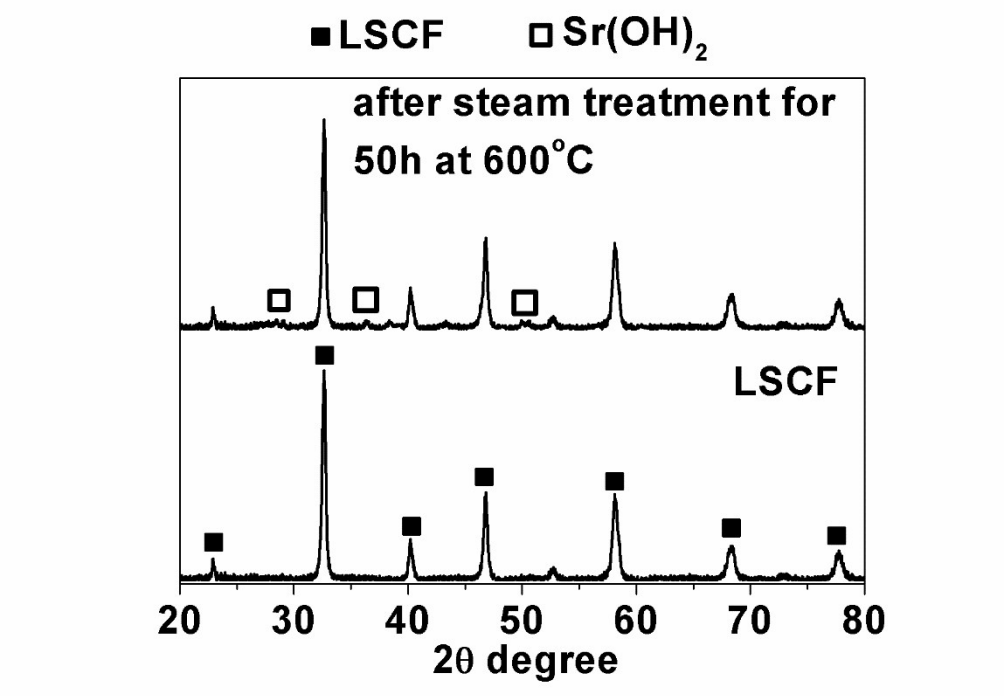

Fig.S1 The stability of LSCF in 20%H_2O-Air at 600°C.

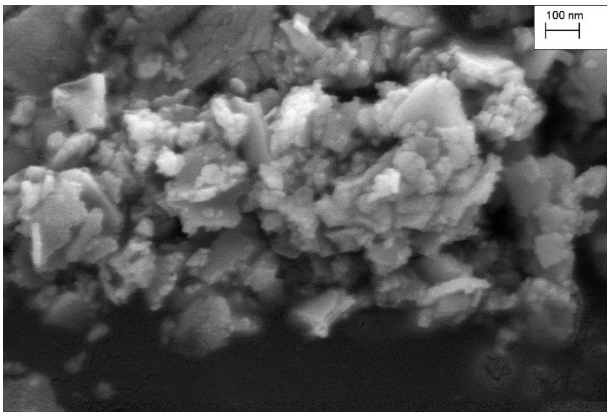

Fig.S2 SEM image of the BZY powders pre-calcined at 1000 ^{o}C

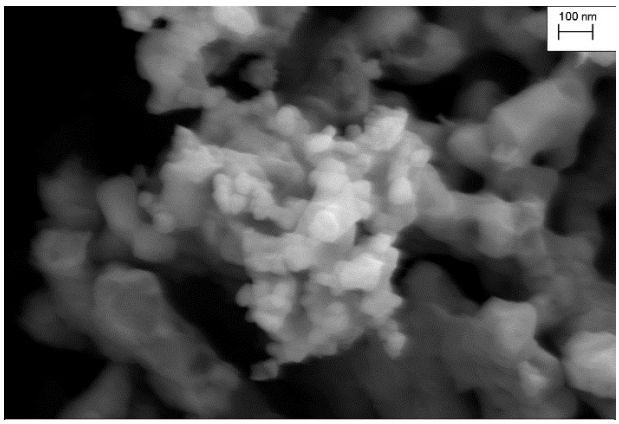

Fig.S3 SEM image of the SFM powders pre-calcined at 1050 ^{o}C

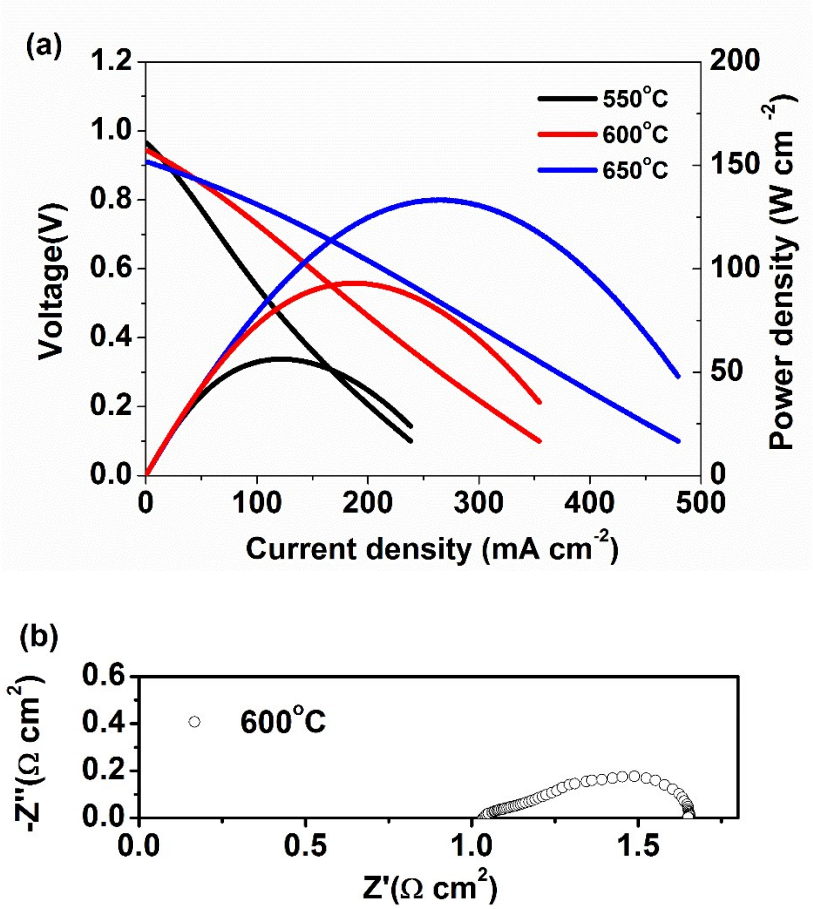

Fig.S4 Electrochemical performance of single cells in the fuel cell mode (a) I-V curves at different temperatures; (b) Impedance spectrum under OCV at 600°C.

Table S1 Comparison of the performance of H-SOFCs with BZY as the electrolyte

Configuration of electrolysis cell	Operation temperature (^oC)	Polarization resistance (Ω cm^2)	Maximum Power Density (W cm^{-2})	Ref. (year)
LSCF -BZYP ($BaZr_{0.7}Y_{0.2}Pr_{0.1}O_{3-\delta}$)/ BZY20 (30 μm)/Ni-BZY	600	3.18	0.050	[1] 2011
LSCF /BZY20 (5 μm) /Ni-YSZ	600	1.19	0.080	[2] 2015
SFM-BZY /BZY20 (16 μm) /Ni-BZY	600	0.65	0.094	This study

1. L. Bi, E. Fabbri, Z. Sun and E. Traversa, *Energy & Environmental Science*, 2011, 4, 1352.
2. H. Bae, J. Choi, K. J. Kim, D. Park and G. M. Choi, *International Journal of Hydrogen Energy*, 2015, 40, 2775-2784.