

Supporting Information

Effect of NiO Addition on the Sintering and Electrochemical Properties of $\text{BaCe}_{0.55}\text{Zr}_{0.35}\text{Y}_{0.1}\text{O}_{3-\delta}$ Proton-Conducting Ceramic Electrolyte

Chengxin Peng^{a,†}, Bingxiang Zhao^{a,b,†}, Xie Meng^b, Xiaofeng Ye^{b,c}, Ting Luo^b, Xianshuang Xin^{b,c*}, Zhaoyin Wen^{b,c*}

^a School of Materials and Chemistry, University of Shanghai for Science and Technology, Shanghai 200093, P. R. China

^b The State Key Laboratory of High Performance Ceramics and Superfine Microstructure Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050, P. R. China

^c Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing 100049, P. R. China

* Corresponding authors: E-mail: xinxianshuang@mail.sic.ac.cn,

zywen@mail.sic.ac.cn

Table S1. Comparison of conductivity of BCZY, BCZY-0.5, BCZY-1.0 in air and H₂ at 600-700°C.

σ (mS cm ⁻¹)	BCZY-0		BCZY-0.5		BCZY-1.0	
	Air	H ₂	Air	H ₂	Air	H ₂
600°C	1.5	2.3	6.7	8.4	6.6	7.7
650°C	2.2	3.0	9.5	10.0	8.8	9.3
700°C	3.0	3.7	12.2	11.3	11.3	10.8

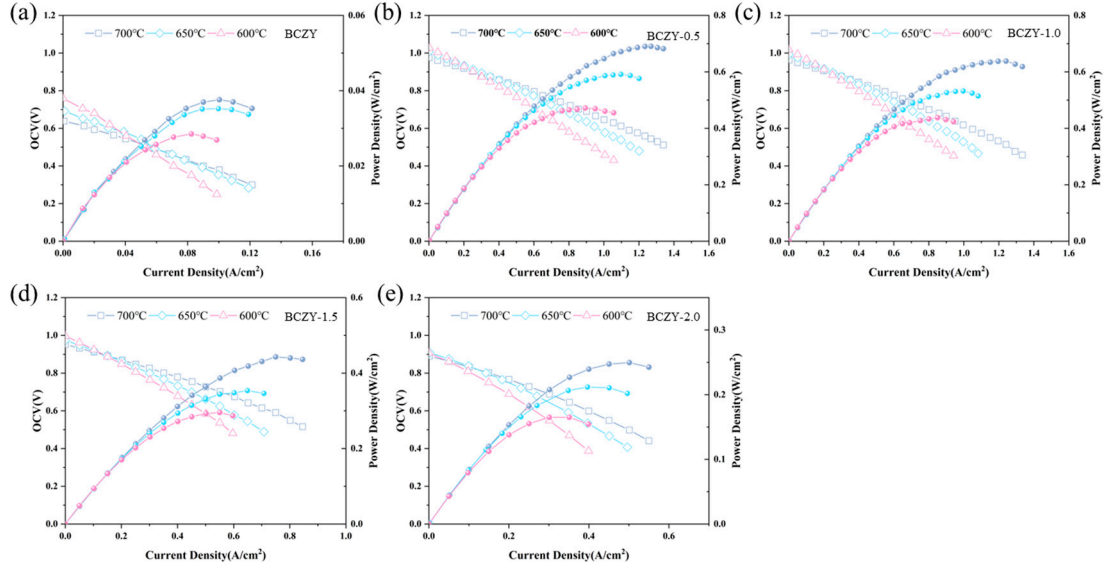


Figure S1. The single cell I-V and I-P diagrams of NiO-BCZY/BCZY-x ($x=0, 0.5, 1.0, 1.5, 2.0$)/BCZY-LSCF with a cell structure tested in 700°C、650°C and 600°C.

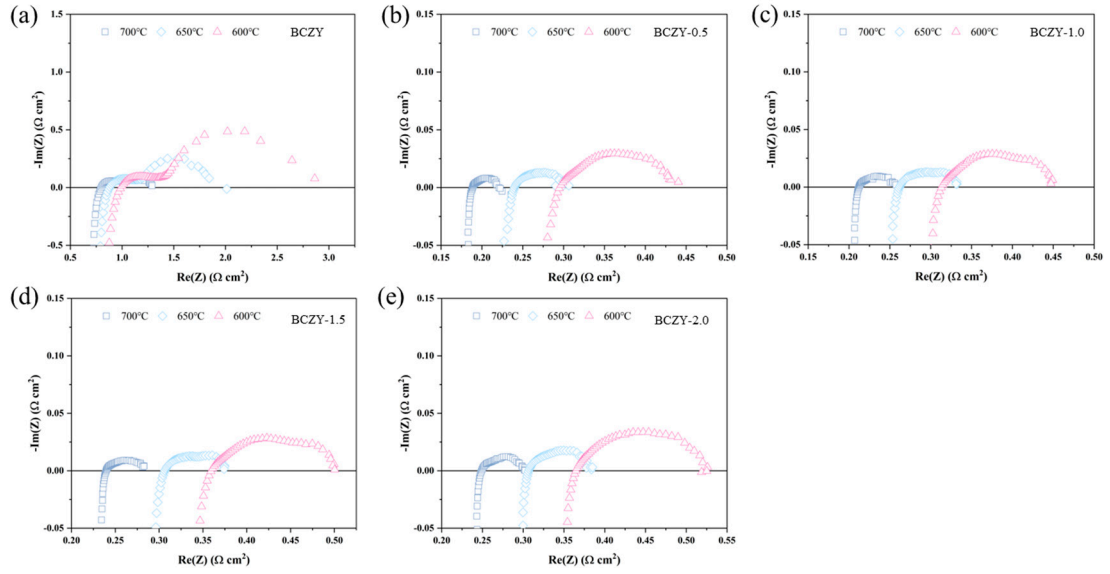


Figure S2. EIS diagrams of NiO-BCZY/BCZY-x ($x=0, 0.5, 1.0, 1.5, 2.0$)/BCZY-LSCF with a cell structure tested in 700°C、650°C and 600°C.

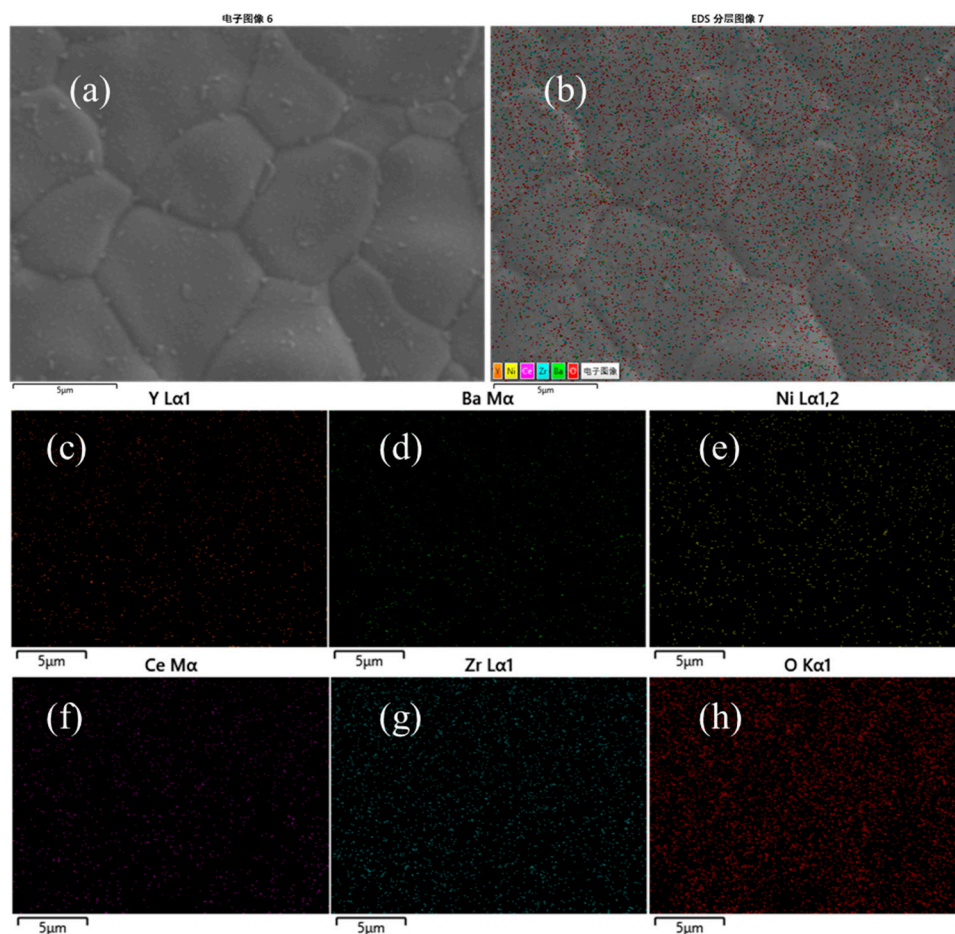


Figure S3. SEM-EDS mapping results for the surface of the BCZY-0.5 electrolyte membrane after testing (a)-(h).