



Article

Self-Assembled Triple ($H^+/O^{2-}/e^-$) Conducting Nanocomposite of Ba-Co-Ce-Y-O into an Electrolyte for Semiconductor Ionic Fuel Cells

Dan Xu ¹, An Yan ¹, Shifeng Xu ^{1,2,*}, Yongjun Zhou ¹, Shu Yang ¹, Rongyu Zhang ¹, Xu Yang ¹ and Yuzheng Lu ^{3,*}

¹ College of Science, Shenyang Aerospace University, Shenyang 110136, China; xudan@sau.edu.cn (D.X.); 952270756@qq.com (A.Y.); zhouyj999@126.com (Y.Z.); yangshu@stu.sau.edu.cn (S.Y.); zhangrongyu1987@foxmail.com (R.Z.); xuyangmark@foxmail.com (X.Y.)

² Liaoning General Aviation Academy, Shenyang 110136, China

³ School of Electronic Engineering, Nanjing Xiaozhuang University, Nanjing 211171, China

* Correspondence: sfxu@sau.edu.cn (S.X.); luyuzheng@njxzc.edu.cn (Y.L.)

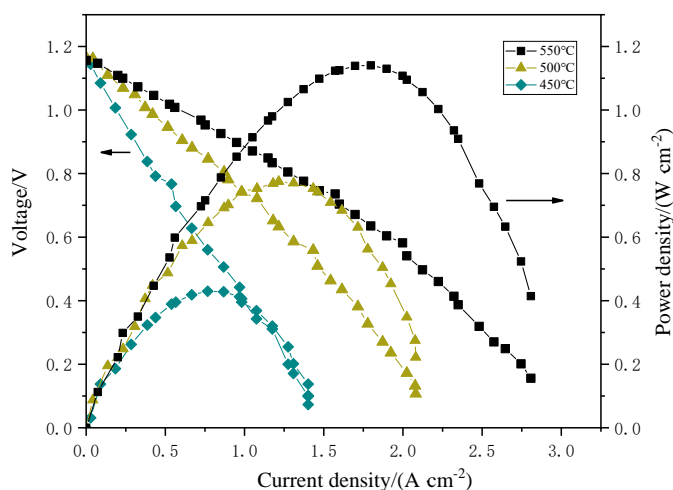


Figure S1. The electrochemical performances for fuel cells using BCCY-4CeO₂ electrolyte at different temperature.

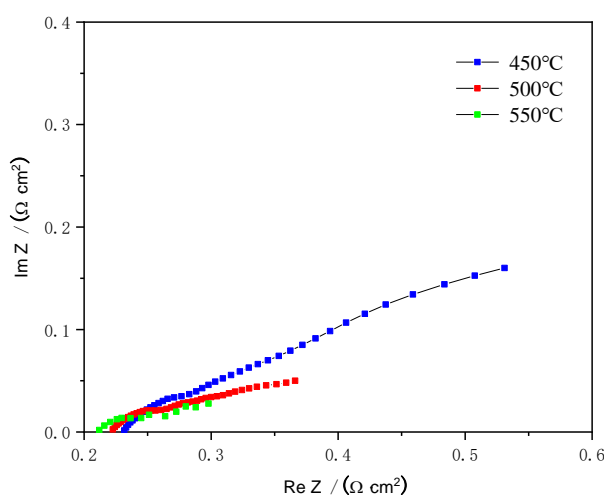


Figure S2. Electrochemical impedance spectroscopy of the fuel cell with BCCY-4CeO₂ electrolyte at different temperature.

Table S1. The Hall-effect parameters of BCCY at 400°C in air circumstance.

Sample	Carrier type	Carrier concentration	Hall coefficient	Mobility of the carrier
BCCY	n	2.28×10^{16} (1/cm ³)	−27930 (cm ³ /C)	86.32 (cm ² /V·s)

Table S2. Comparison of the ohmic ASR, peak power density and open circuit voltage (OCV) between the SOFCs with the composite electrolyte this work and the conventional electrolyte.

Electrolyte	ASR(Ω·cm ²)	Peak Power Density(mW/cm ²)	OCV(V)	Ref.
This work	0.21 (550°C)	1140	1.05	This work
BaCe _{0.7} Zr _{0.1} Y _{0.1} Yb _{0.1} O _{3-δ} −1.0wt.% NiO	0.35 (550°C)	520	1.1	[1]
La _{0.8} Sr _{0.2} Ga _{0.83} Mg _{0.17} O _{3-δ} −La-doped CeO ₂	0.21~0.24 (800°C)	1000	1.05	[2]
BaZr _{0.3} Ce _{0.5} Y _{0.2} O _{3-δ} −2 mol% Bi ₂ O ₃	0.23 (650°C)	440	0.99	[3]
BaZr _{0.3} Ce _{0.5} Y _{0.2} O _{3-δ}	0.40 (650°C)	513	1.01	[4]

References

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