Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information

Renewable acetic acid in combination with solid oxide fuel cells for sustainable clean electric power generation

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Supplementary Table

Table S1 The OCV of the cell without the catalyst layer (cell 1) operating on hydrogen and acetic acid, respectively and the cell with the catalyst layer (cell 2) operating on acetic acid.

T (^{o}C)	cell 1		cell 2
	OCV $_{\text{hydrogen}}$ (V)	OCV $_{\text{acetic acid}}$ (V)	OCV $_{\text{acetic acid}}$ (V)
800	1.017	0.962	1.012
750	1.031	0.970	1.000
700	1.044	0.978	1.005
650	1.058	0.987	1.010
600	1.069	1.000	0.993

Table S2 The ohmic resistances (R_{Ω}) of the cell at various temperatures with hydrogen or acetic acid as the fuel.

T (^{o}C)	$R_{\Omega,\text{ hydrogen}}$ (Ω cm^2)	$R_{\Omega,\text{ acetic acid}}$ (Ω cm^2)
800	0.149	0.164
750	0.161	0.171
700	0.183	0.203
650	0.227	0.266
600	0.328	0.421

Supplementary Figure

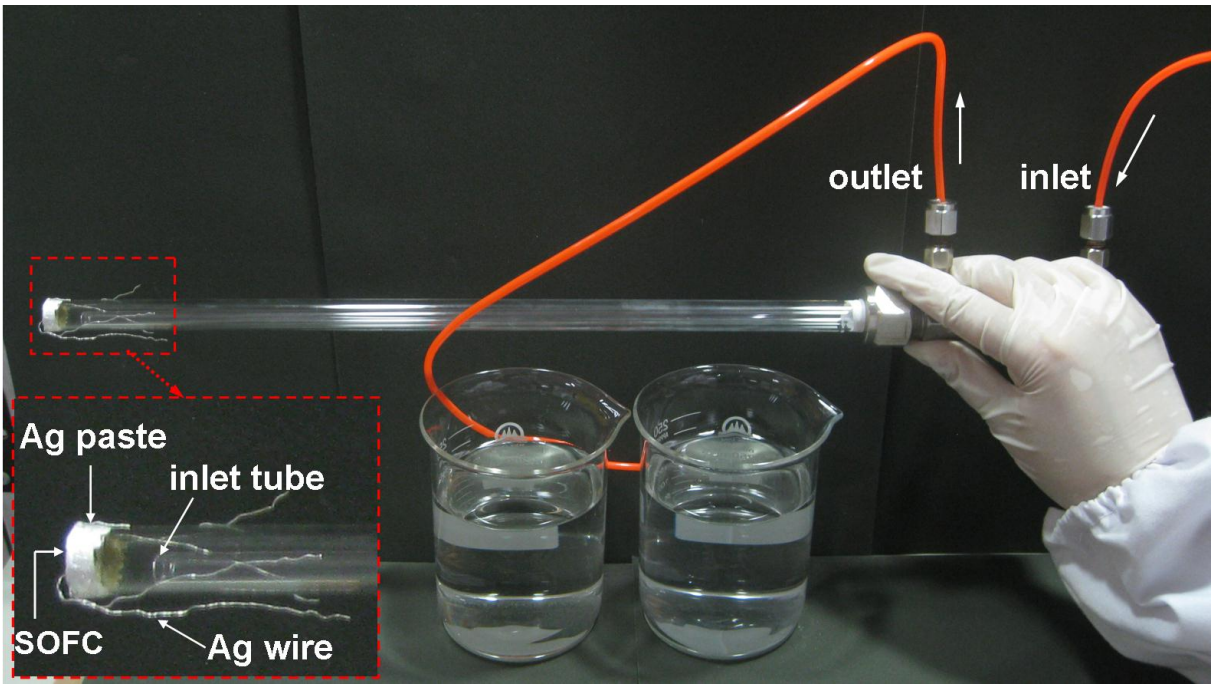

Fig. S1 Schematic of detecting the degree of sealing of the SOFC after cell performance test

The single SOFC after cell performance test was cooled down to room temperature slowly under the protection of a hydrogen atmosphere to go through the gas leakage test. The hydrogen fuel at a flow rate of 80 ml min^{-1} [STP] was introduced from inlet, and exhausted from outlet (Fig. S1), which can be confirmed by the bubble appearance in the beaker of water from the video in the Supporting Information. Then the cell was put into water, and no bubbles appeared in the whole process, so it proved no gas leakage. In other words, the good cell sealing after the performance test is still maintained.