Electronic Supplementary Information (ESI)

Cathodic Electrochemical Deposition: A New Strategy to Enhance the Activity and Stability of Silver Cathodes for Thin-film Solid Oxide Fuel Cells

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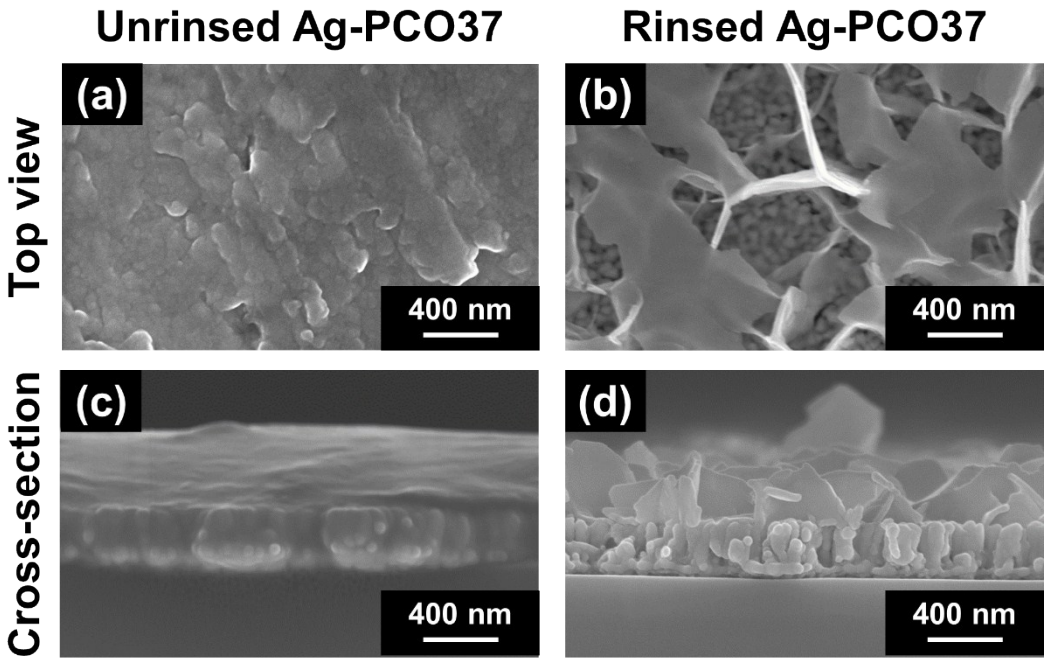

Figure S1. (a, b) Top-view and (c, d) cross-section SEM images of CELD-treated and (a, c) unrinsed Ag-PCO37 film and (b, d) Ag-PCO37 film rinsed with deionized water

Table S1. ICP-OES compositional analysis of the CELD-treated PCO films deposited at an applied potential of -0.5 V versus saturated calomel electrode for a deposition time of 300 s.

% of Pr in CELD bath	**10**	**15**	**20**
at% of Pr in film	**15.5 ± 0.4**	**20.7 ± 1.1**	**28.1 ± 0.5**

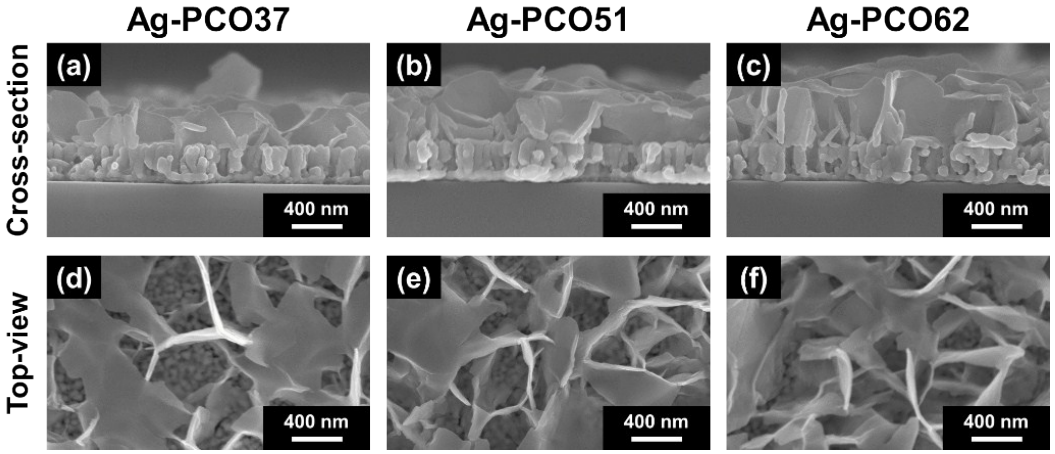

Figure S2. The (a-c) cross-section and (d-f) top-view SEM images of (a, d) Ag-PCO37, (b, e) Ag-PCO51, and (c, f) Ag-PCO62 films.

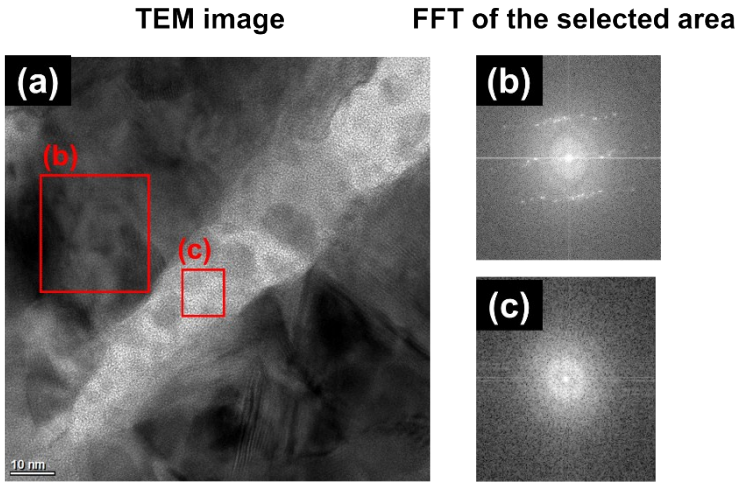

Figure S3. (a) Cross-section TEM image of PCO-coated Ag film, (b, c) fast Fourier transformation results of the selected area shown in (a)

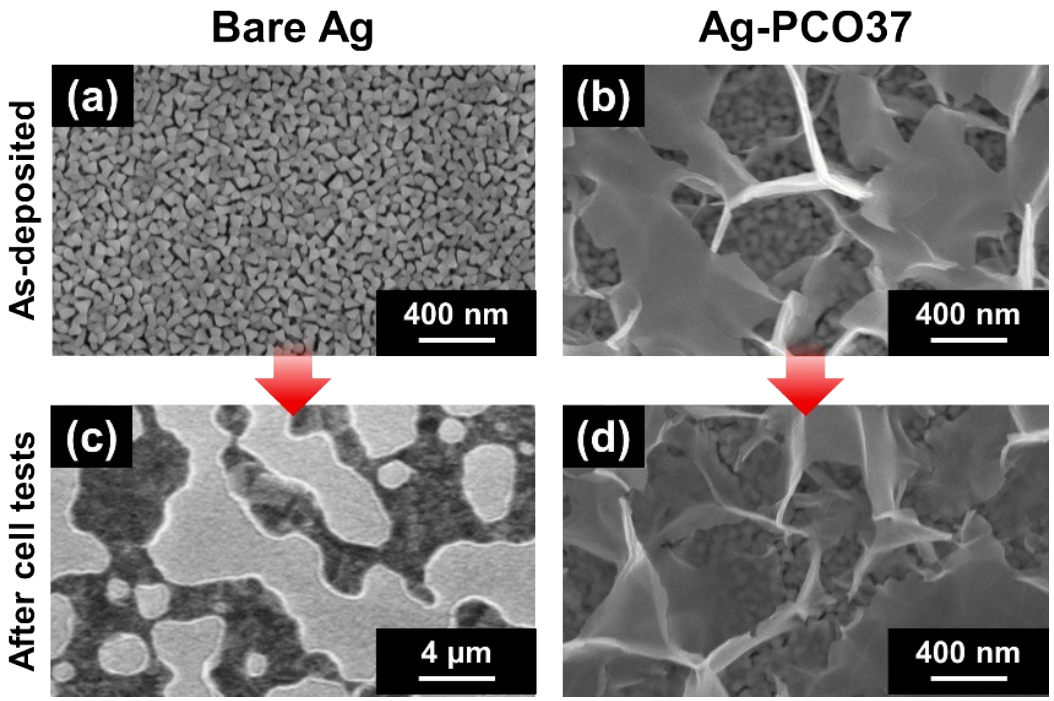

Figure S4. The top-view SEM images of the (a, c) bare Ag and (b, d) Ag-PCO37 films (a, b) as-deposited and (c, d) after the cell tests.

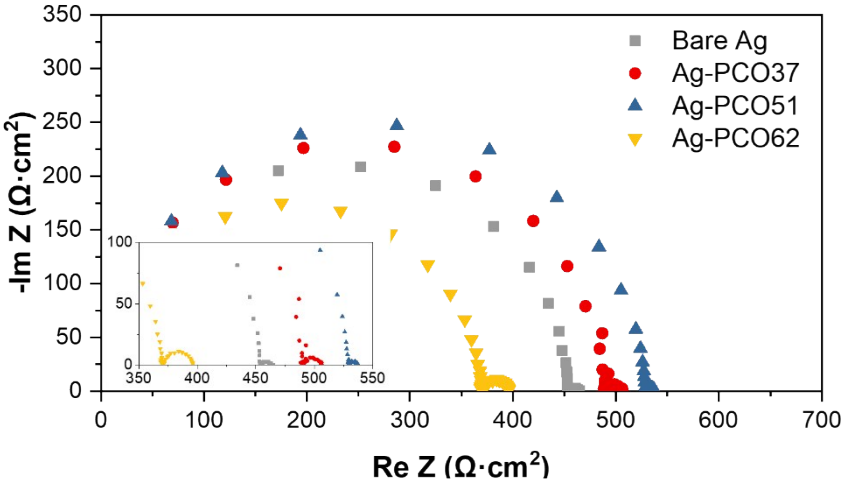

Figure S5. Full AC impedance spectra of the symmetric cells (bare Ag, Ag-PCO37, Ag-PCO51, Ag-PCO62) obtained at 450 °C while maintaining the oxygen partial pressure at 0.21 atm (frequency sweep = 2 MHz to 10 mHz)