**Supplementary Information**

# Fabrication of Gd2O3-doped CeO2 thin films through DC reactive sputtering and their application in solid oxide fuel cells

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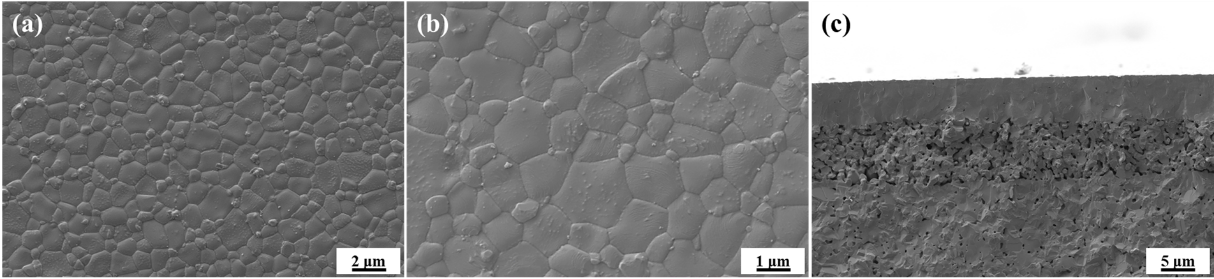


Fig. S1. Surface (a, b) and cross-sectional (c) morphology of NiO–YSZ/YSZ half cells.

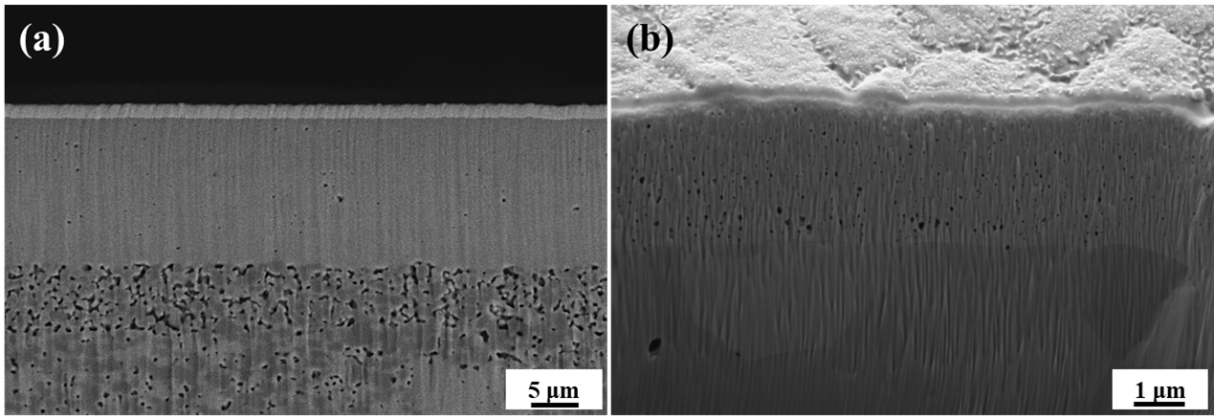


Fig. S2. Cross-sectional morphology of the annealed GDC films: (a) BSD mode; (b) SE2 mode.

Table S1. Ohmic resistance *R*s and polarization resistance *R*p of GDC-MS and GDC-SP tested at 800, 750, and 700℃

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cell | 800℃ | | 750℃ | | 700℃ | |
| *R*s / (Ω·cm2) | *R*p / (Ω·cm2) | *R*s / (Ω·cm2) | *R*p / (Ω·cm2) | *R*s / (Ω·cm2) | *R*p / (Ω·cm2) |
| GDC-MS | 0.170 | 0.313 | 0.214 | 0.423 | 0.295 | 0.655 |
| GDC-SP | 0.278 | 0.521 | 0.381 | 0.699 | 0.569 | 1.091 |

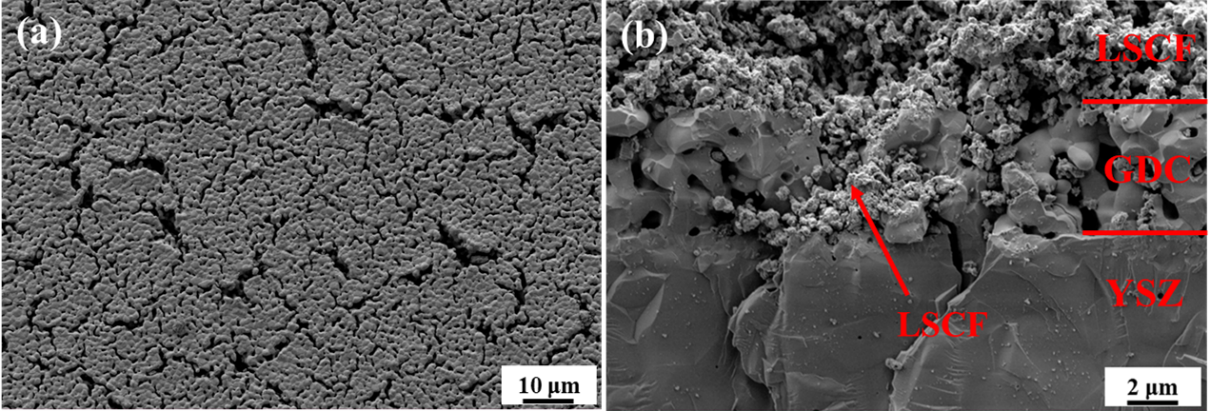


Fig. S3. Surface morphology of screen-printed GDC buffer layer (a) and cross-sectional morphology after sintering of LSCF cathode (b).

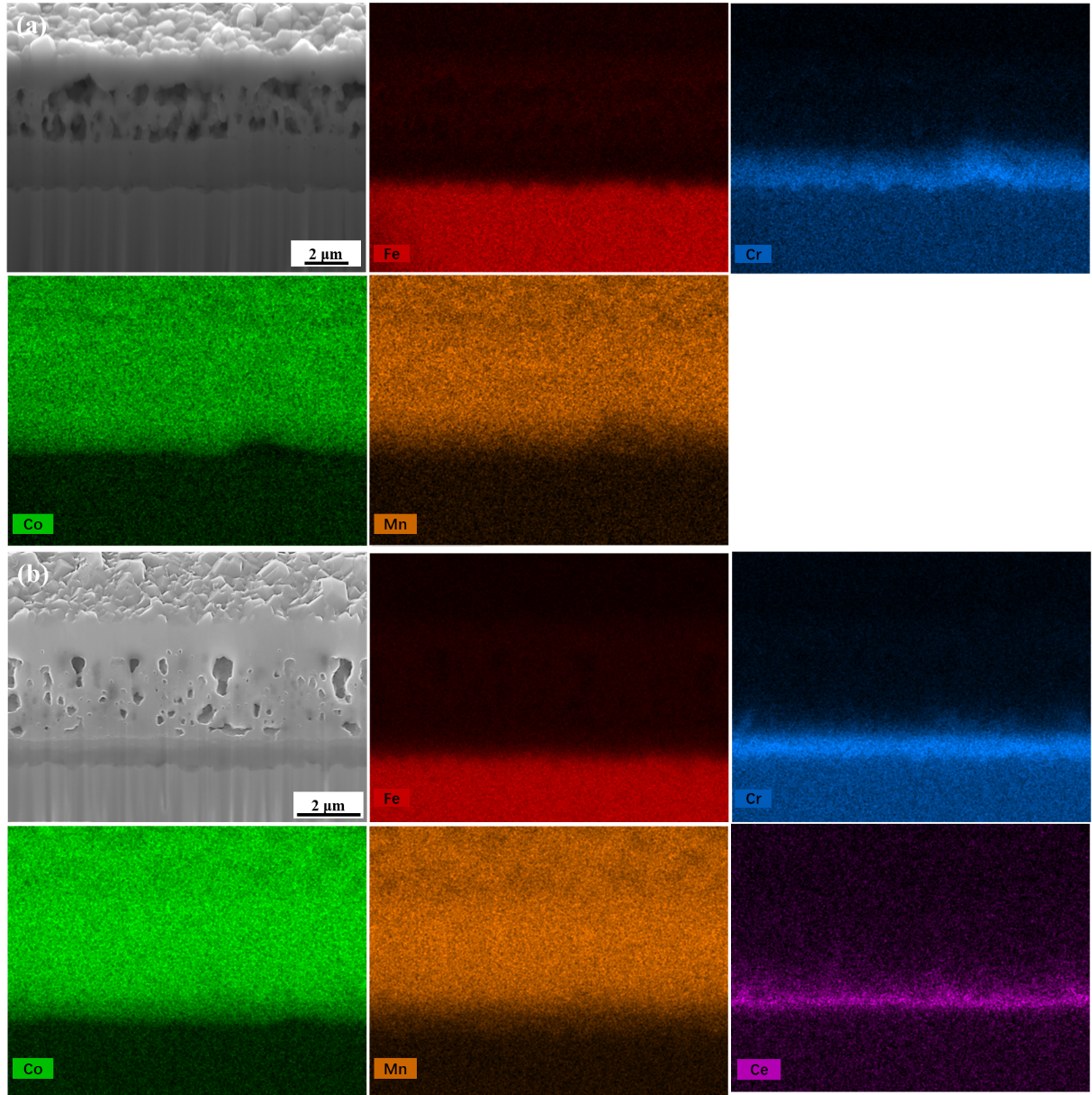


Fig. S4. Cross-sectional SEM-EDX of (a) SUS441/MCO and (b) SUS441/GDC/MCO.



Fig. S5. ASR of SUS441/MCO annealed in air as a function of time.