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In situ fabrication of (Sr,La)FeO_4 with CoFe alloy nanoparticles as an independent catalyst layer for direct methane-based solid oxide fuel cell with nickel cermet anode

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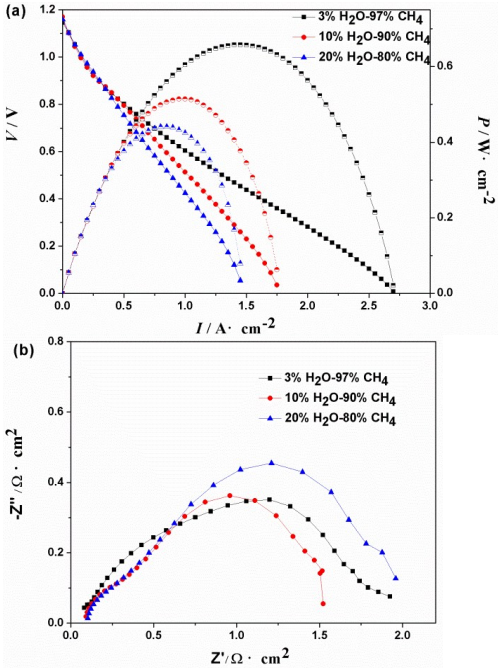

Fig. S1 The *I-V(P)* (a) and *ESI*(b) of the cells with modified anode at 850 °C in CH_4 fuels containing different H_2O content, indicating that the optimal H_2O content was 3 mol% among those tested.

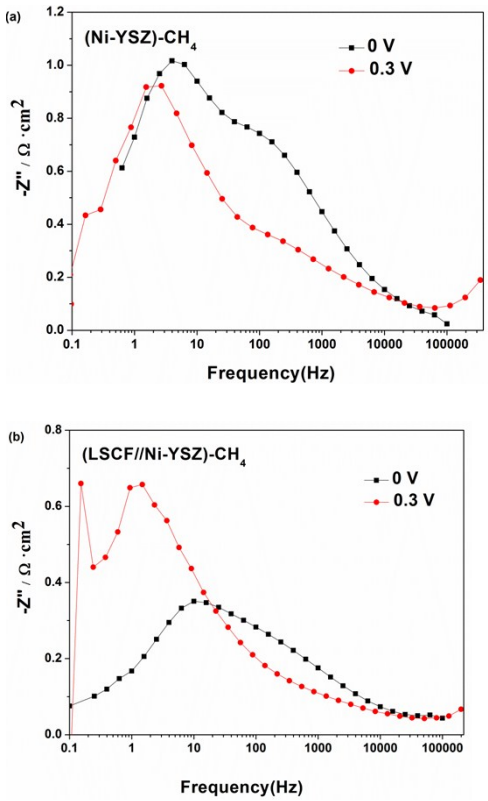

Fig. S2 . Bode plots of the ESI of cells with (b) and without (a) catalyst layer at 850 ºC in 3% H_2O–97% CH_4 under DC bias voltage (0.3 V)

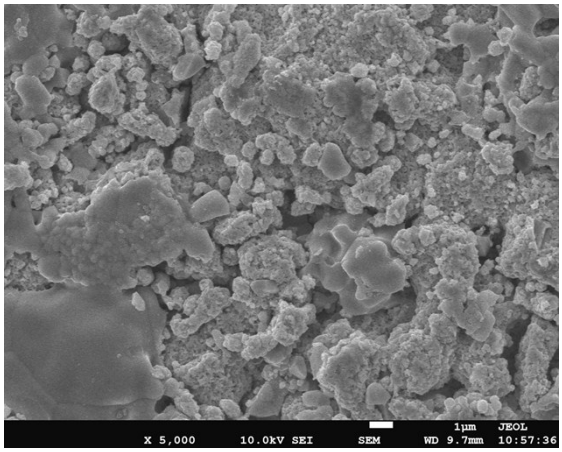

Fig. S3 SEM images of the anode surface of the cell with LSCF catalyst layer after the discharge stability test using wet CBM fuel.

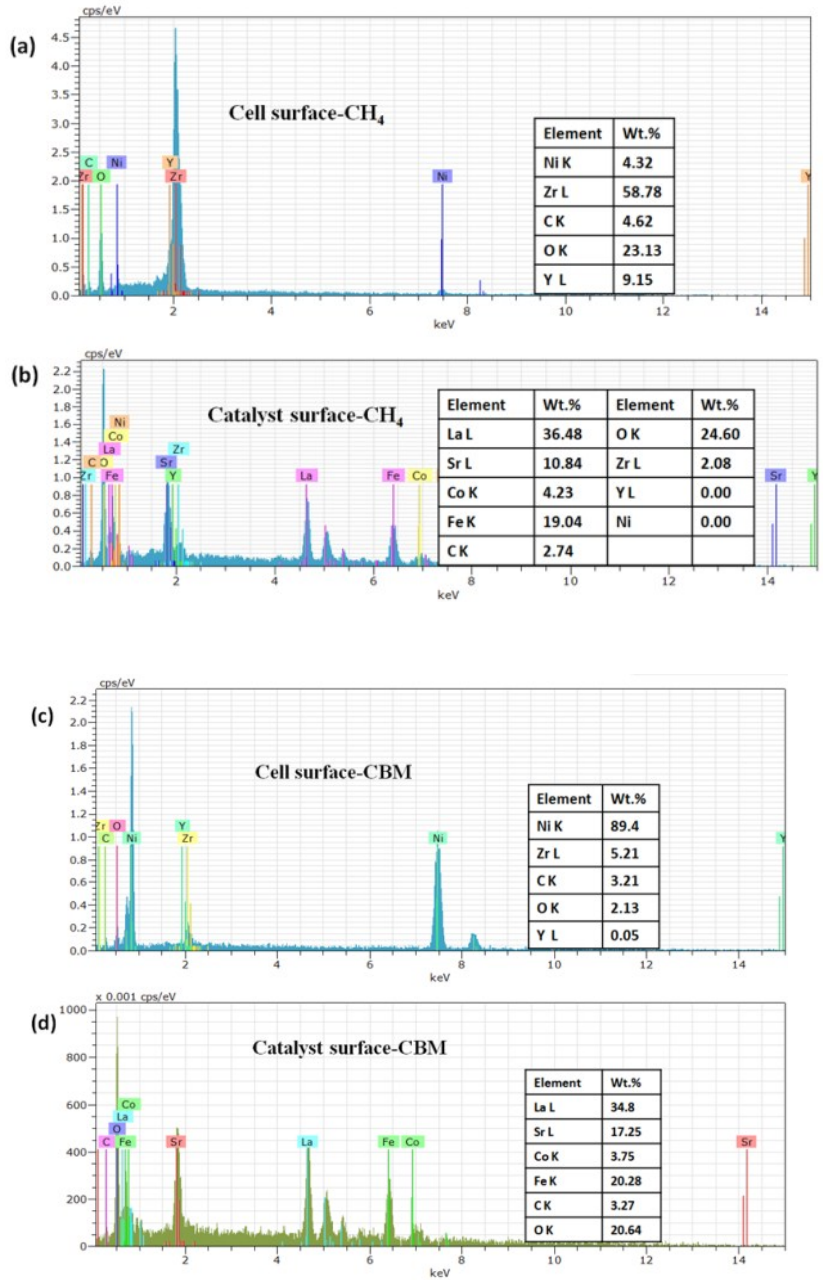

Fig. S4 EDX spectra taken on the anode surface (a) and LSCF catalyst surface (b) after the discharge stability test using wet CH_4 fuel.