

Direct Synthesis of Methane from CO₂/H₂O in a Oxygen-ion Conducting Solid Oxide Electrolyser-Supporting Information

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Fig.S1* XRD of La_{0.2}Sr_{0.8}TiO_{3+δ} prepared by solid-state reaction method

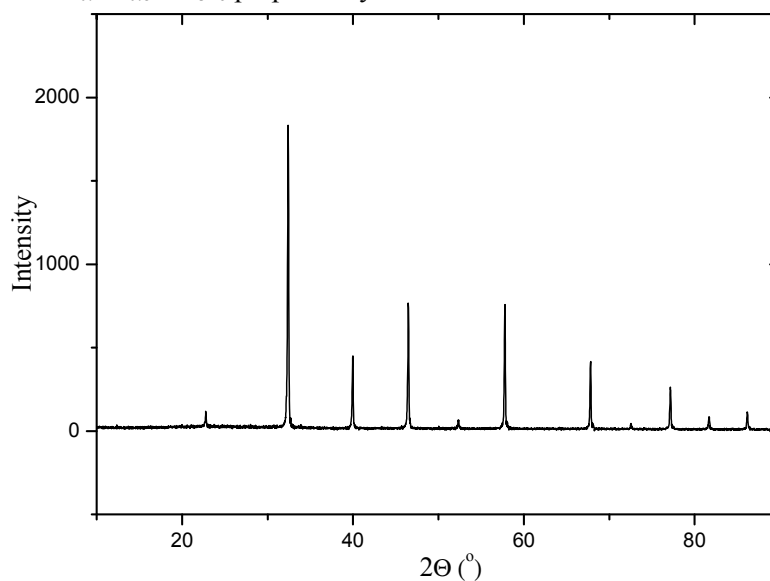
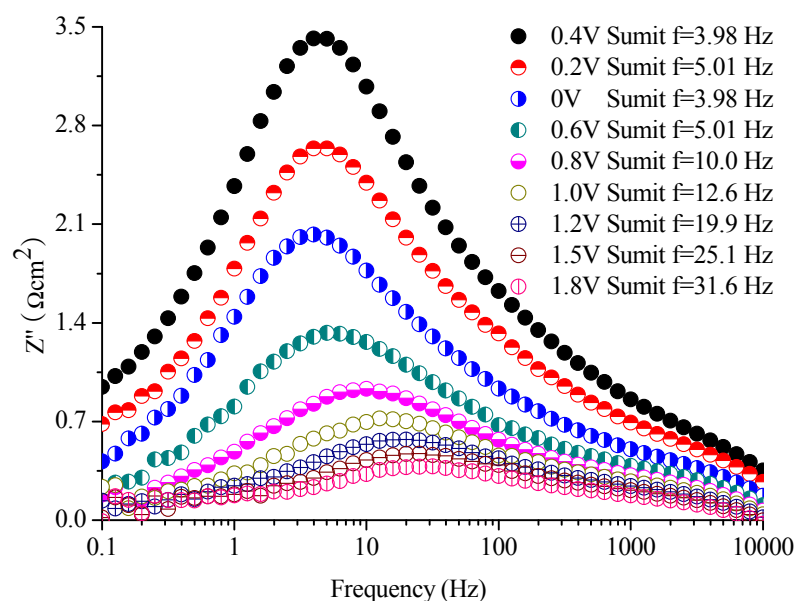


Fig.S2* Bode plots of the electrolyser under different voltages at 650 °C



Mass spectroscopy are shown as follows:

Characteristic peaks for gas analysis in mass spectroscopy: (1) H_2 , Mass=2; (2) CO , Mass=28; (3) CH_4 , Mass=15 and (4) CO_2 , Mass=44.

Fig.S3* Mass spectroscopy of output gas in electrochemical reduction process

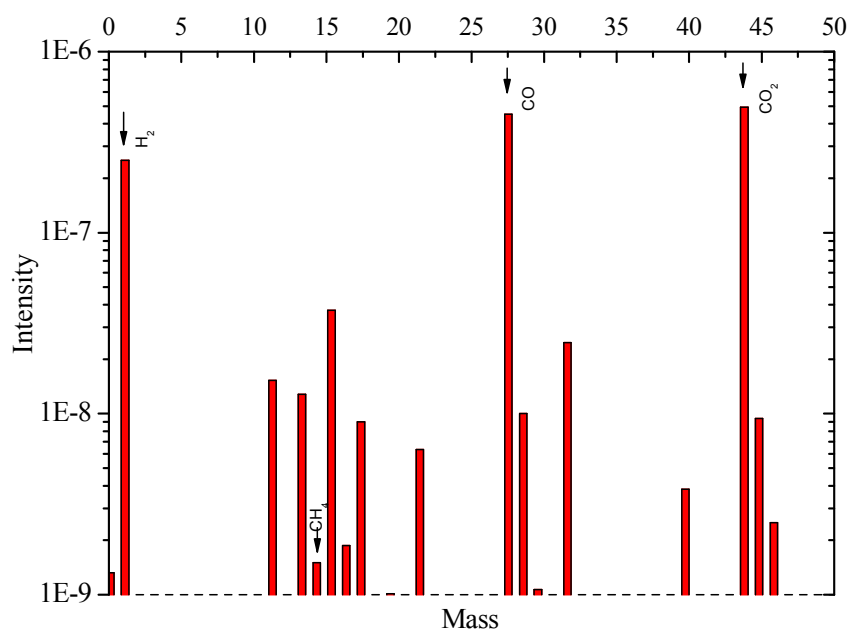


Fig.S4* Mass spectroscopy of 10% methane in argon

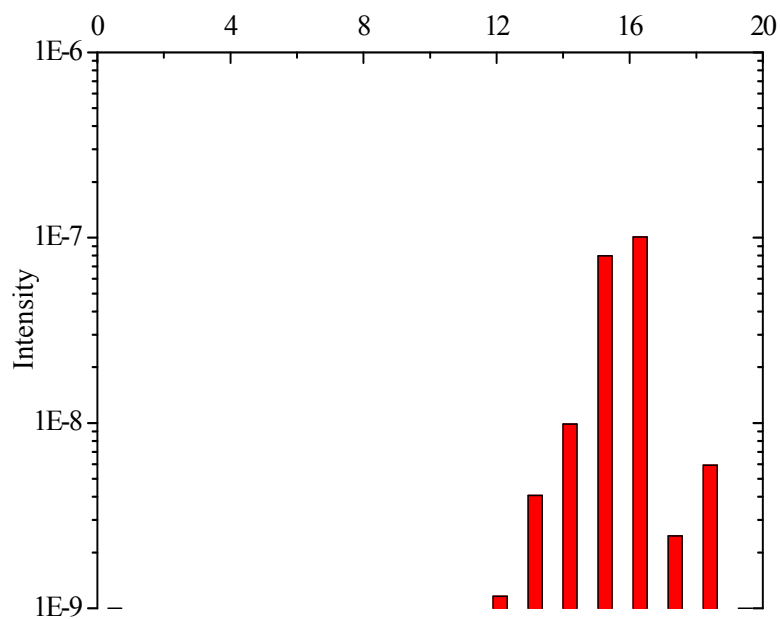


Fig.S5* Mass spectroscopy of 100% CO

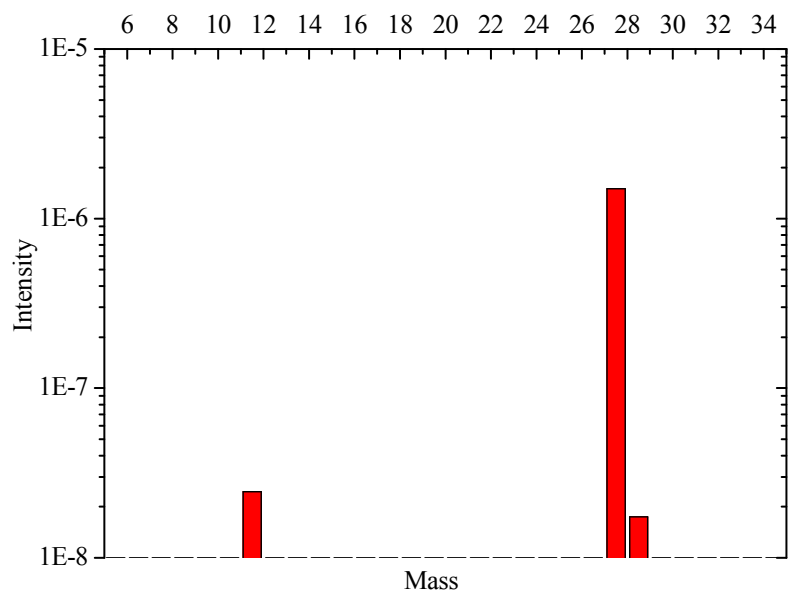


Fig.S6* Mass spectroscopy of 5% hydrogen in argon

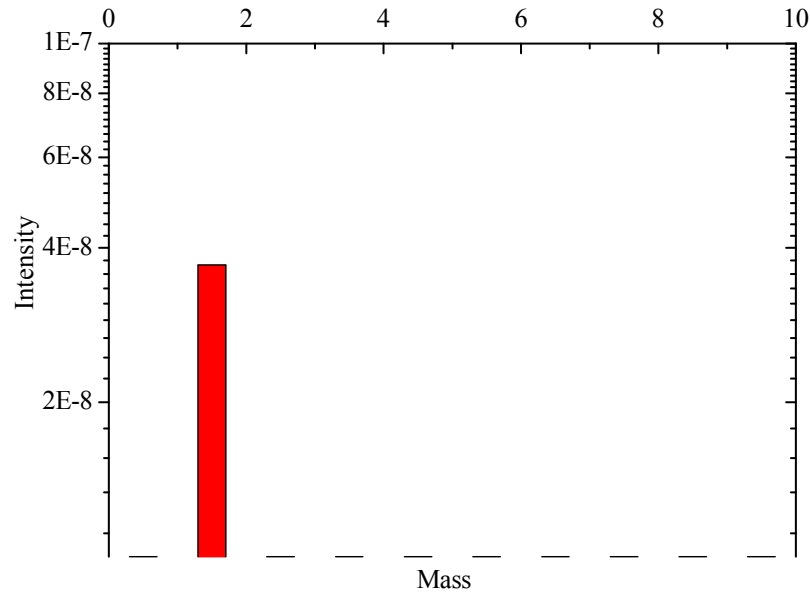


Fig.S7* Mass spectroscopy of 100% CO₂

