

Supporting Information

Reversible Perovskite-Fluorite Phase Transition in Alumina-Supported CeFeO_x Films

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This supporting information file provides the schematic diagram of the coulometric titration system, data for the mass increase of CeFeO₃ on the γ -Al₂O₃ support, X-ray diffraction (XRD) patterns of reduced CeFeO_x/ γ -Al₂O₃ after being calcined in air at different temperatures for 12 h, XRD patterns of the CeFeO_x/ γ -Al₂O₃ sample reduced in 3% H₂O, 10% H₂, and 87% He at 1073 K for 12 h, the TEM image of bare γ -Al₂O₃ annealed at 1173 K for 24 h, and the TEM image of the CeFeO₃/ γ -Al₂O₃ sample reduced in 10% dry H₂ for 12 h.

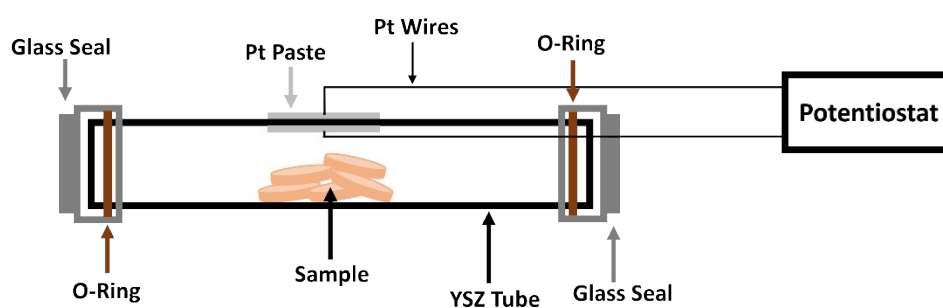


Fig. Sup1. Schematic diagram of the coulometric titration apparatus.

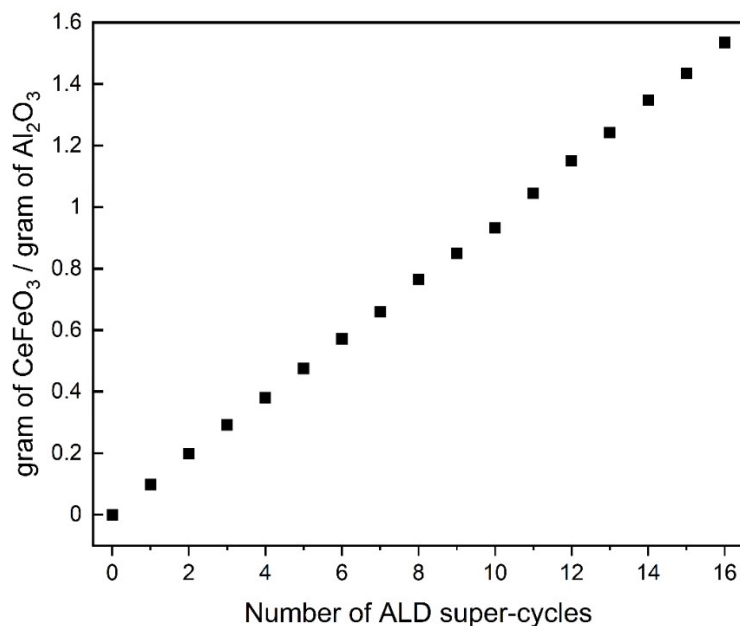


Fig. Sup2 Plot of the mass increase normalized to the mass of the γ -Al₂O₃ support as a function of the number of CeFeO₃ ALD super-cycles.

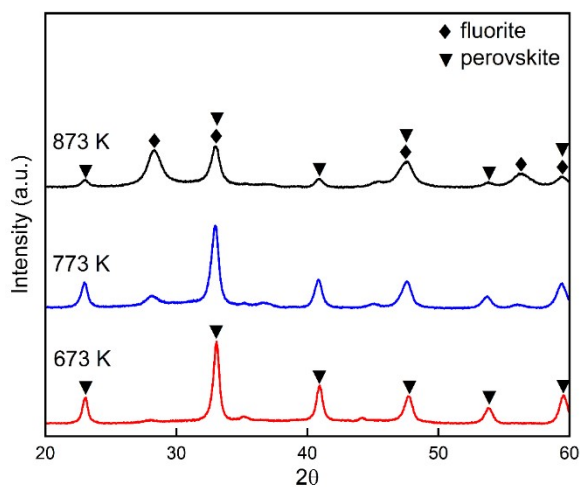


Fig. Sup3 The XRD patterns of reduced CeFeO_x/γ-Al₂O₃ calcined in air at different temperatures for 12 h. The sample was pretreated by 5 redox cycles followed by reduction in hydrogen at 1073K to obtain the reduced state.

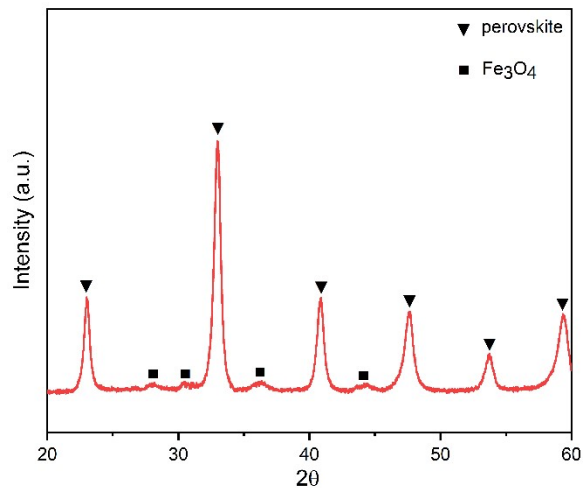


Fig. Sup4 The XRD pattern of the $\text{CeFeO}_x/\gamma\text{-Al}_2\text{O}_3$ sample pretreated by 5 redox cycles followed by reduction in 3% H_2O , 10% H_2 , and 87% He at 1073 K for 12 h.

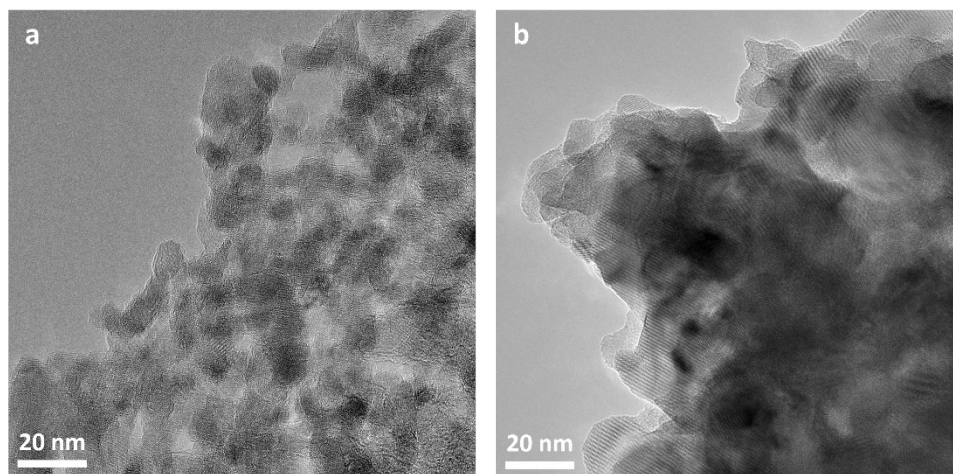


Fig. Sup5 TEM images of (a) bare $\gamma\text{-Al}_2\text{O}_3$ annealed at 1173 K for 24 h, and (b) the $\text{CeFeO}_3/\gamma\text{-Al}_2\text{O}_3$ sample reduced in 10% dry H_2 for 12 h.