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Supporting Information

Nanoparticulate $Mn_{0.3}Ce_{0.7}O_2$: a novel electrocatalyst with improved power performance for metal/air batteries

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Figures S1 – S3

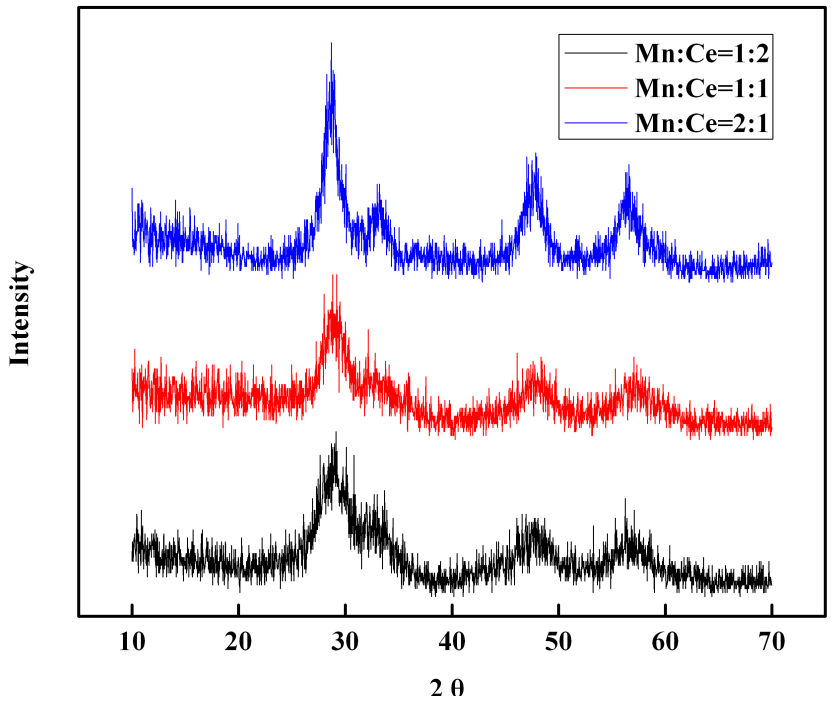

Fig. S1 XRD patterns of as-prepared MnO_x-CeO_2 composite oxides

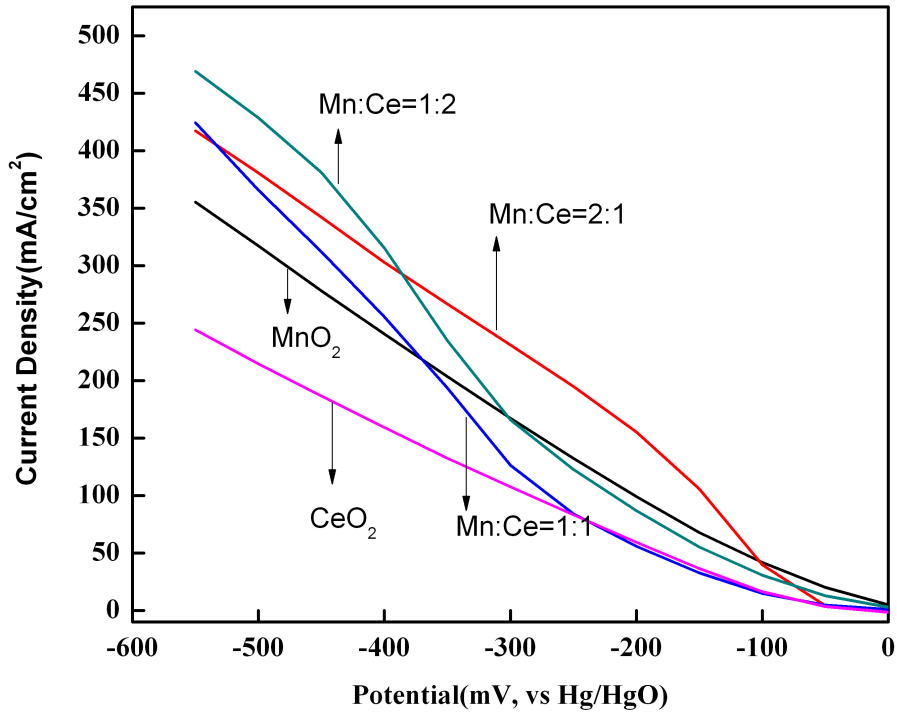

Fig. S2 The linear polarization curves of air electrodes with different catalyst in 6 M KOH solution at 25 °C

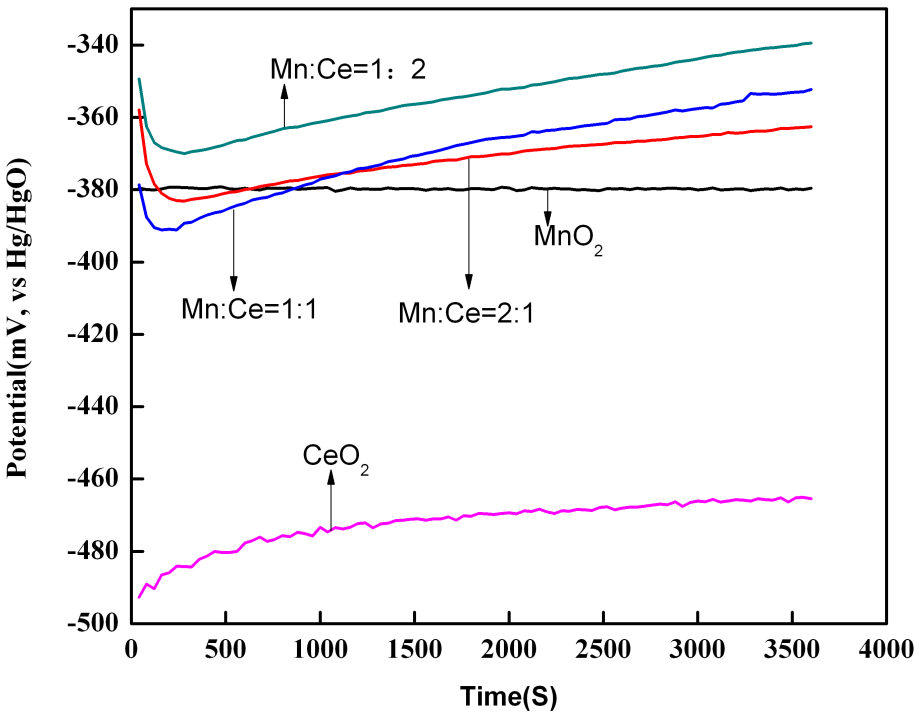

Fig. S3 Galvanostatic discharge curves of air electrode with different catalyst in 6 M KOH solution at discharge current densities of 200 mA cm^{-2}

Table S1 – S2

Table S1 The BET surface areas of the prepared catalysts

Samples	BET surface area (m^2 g^{-1})
Pure MnO_2	20.31
Pure CeO_2	54.29
$Mn_{0.3}Ce_{0.7}O_2$	188.22

Table S2 Specific energy density of the aluminum air batteries with various electrocatalysts at a discharge current density of 200 mA cm^{-2} for 40 hours

Samples	energy(mWh)	mass loss (g)	specific energy density [kWh (kg^{-1}, Al)]
Pure MnO_2	3751.1	2.0213	1.856
Pure CeO_2	3460.1	2.0321	1.702
$Mn_{0.3}Ce_{0.7}O_2$	3843.5	2.0205	1.902

In the current experiment, the mass loss of aluminium alloy electrode is calculated by the following process: before the discharge process, the mass of aluminum alloy electrodes is weighed (denoted as m_1). Then the electrode is coated with paraffin except a 1cm×1cm square, which is the working area. After the discharge process, the paraffin on the surface of the electrode is removed and the electrode is degreased in acetone and rinsed in deionized water, dried at 60 °C in a vacuum oven for 24 h. At last, the mass of aluminum alloy electrodes is weighed again (denoted as m_2). Therefore, the mass loss of aluminium alloy electrode is m_1-m_2.