Supplementary Information

Oxygen deficient yolk–shell structured Co_3O_4 microspheres as an oxygen evolution reaction electrocatalyst for anion exchange membrane water electrolyzers

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KEYWORDS: anion exchange membrane water electrolysis; electrocatalysts; spray pyrolysis; oxygen evolution reaction; yolk-shell

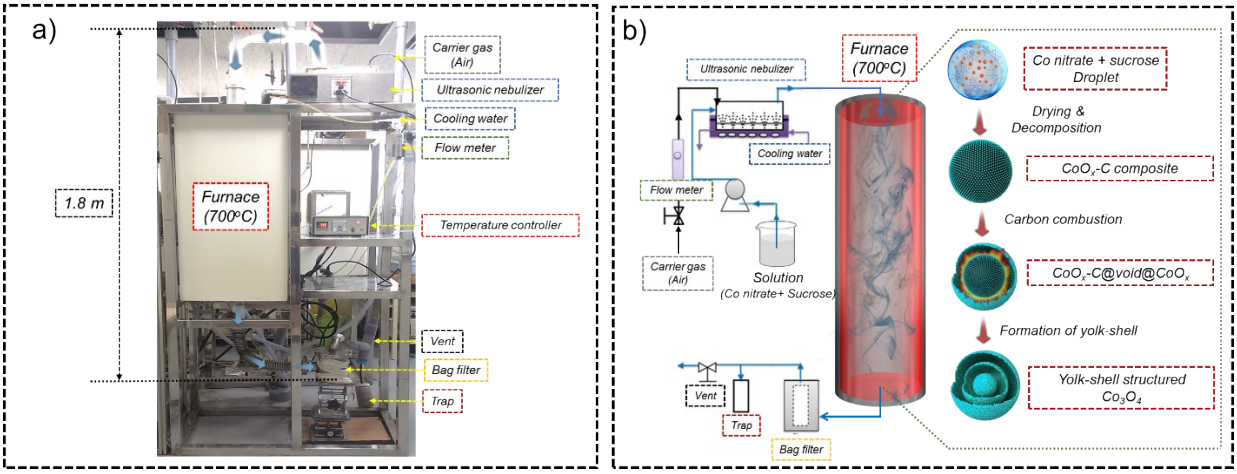

Figure S1. (a) Digital photo and (b) schematic diagram of the spray pyrolysis system for the yolk-shell structured Co_3O_4 powders.

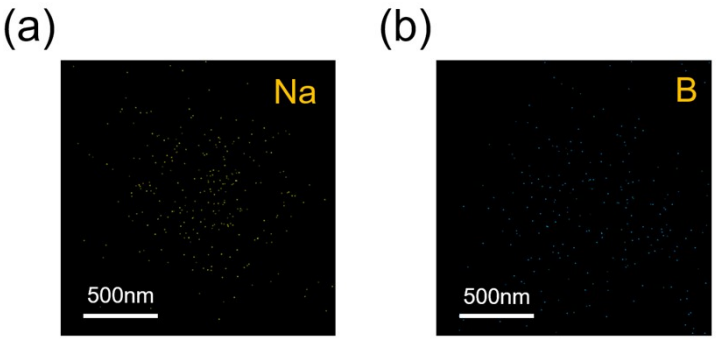

Figure S2. Elemental mapping images of oxygen deficient yolk-shell structured Co_3O_4 microsphere (R-Co_3O_4-YS): (a) Na (b) B.

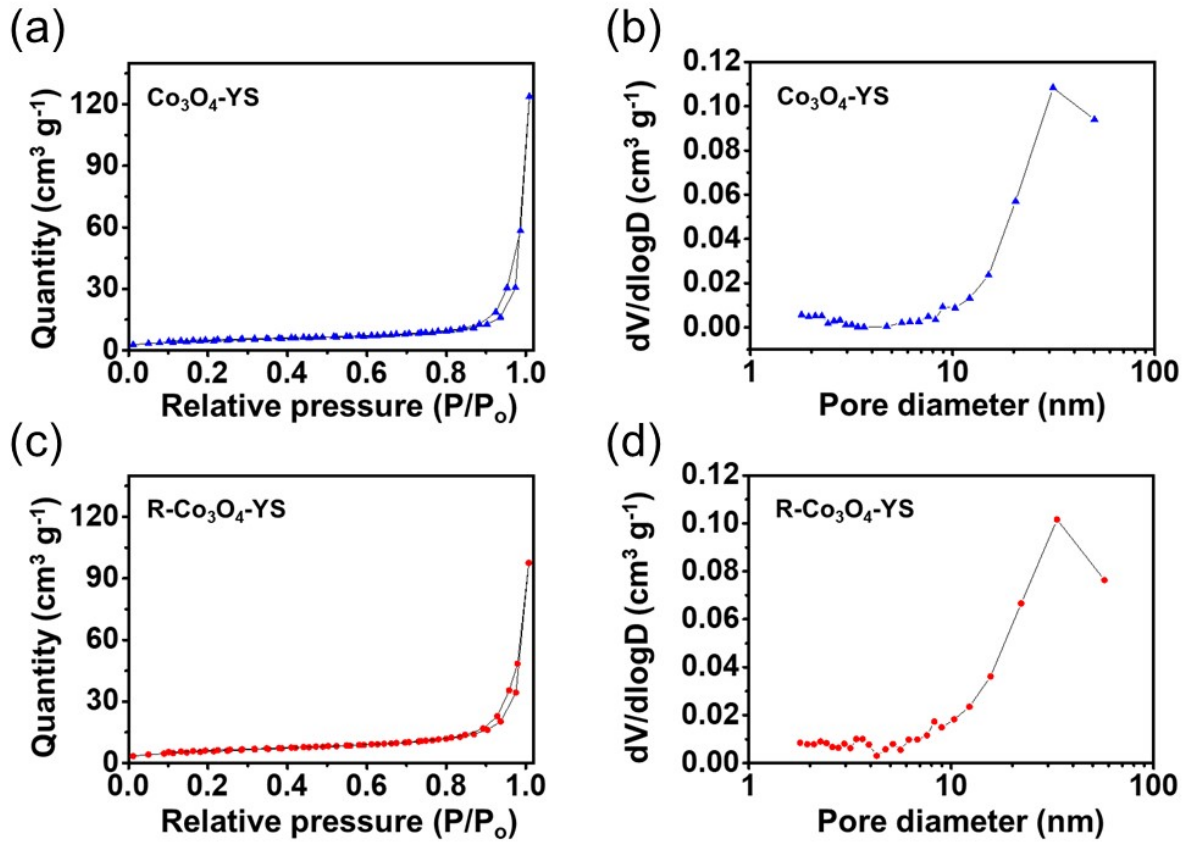

Figure S3. Brunauer-Emmett-Teller (BET) of (a,b) Co_3O_4-YS and (c,d) R-Co_3O_4-YS.

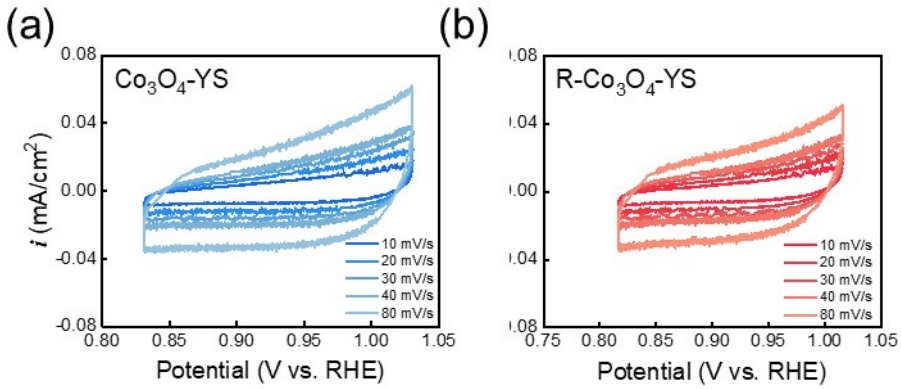

Figure S4. Cyclic voltammetry of (a) Co_3O_4-YS and (b) R-Co_3O_4-YS in non-faradaic region with different scan rates.

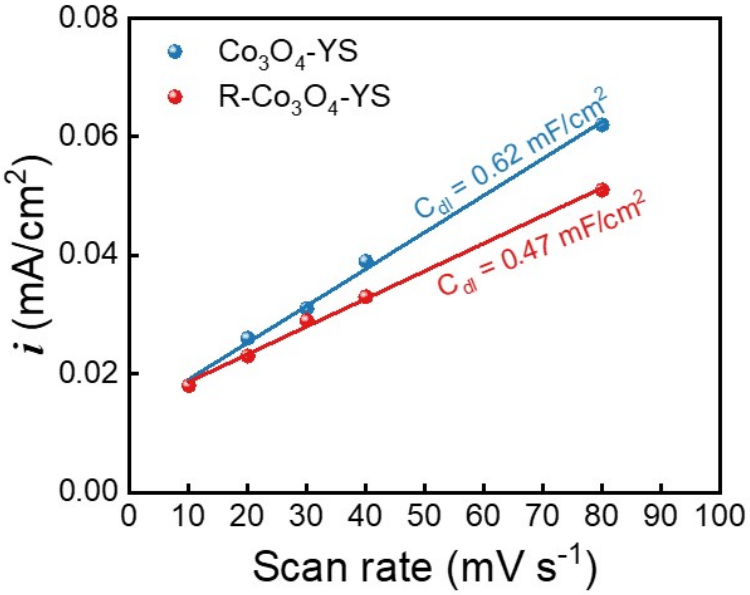

Figure S5. Double layer capacitance (C_{dl}) of Co_3O_4-YS and R-Co_3O_4-YS.

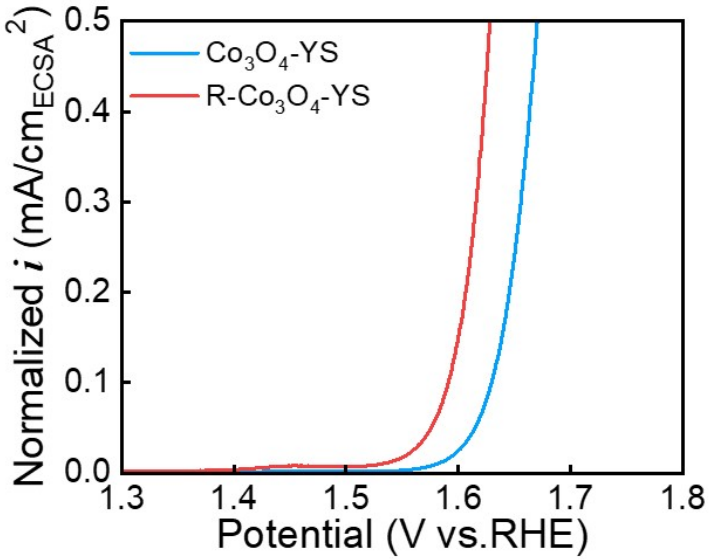

Figure S6. Polarization curves of Co_3O_4-YS and R-Co_3O_4-YS normalized by ECSA.

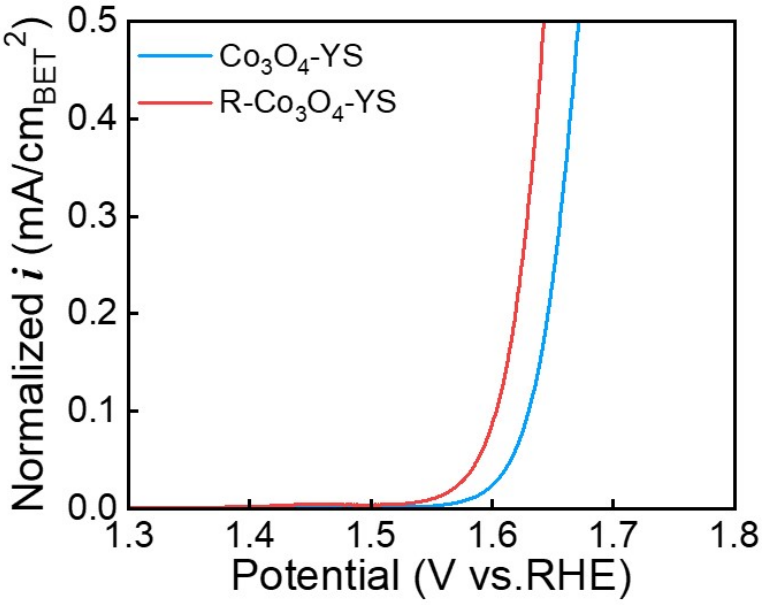

Figure S7. Polarization curves of Co_3O_4-YS and R-Co_3O_4-YS normalized by BET.

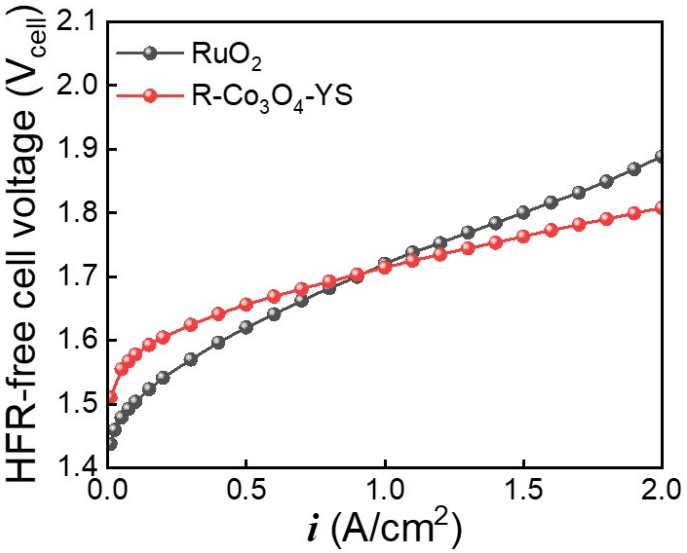

Figure S8. HFR-free polarization curves of AEMWE equipped with RuO_2 and R-Co_3O_4-YS.

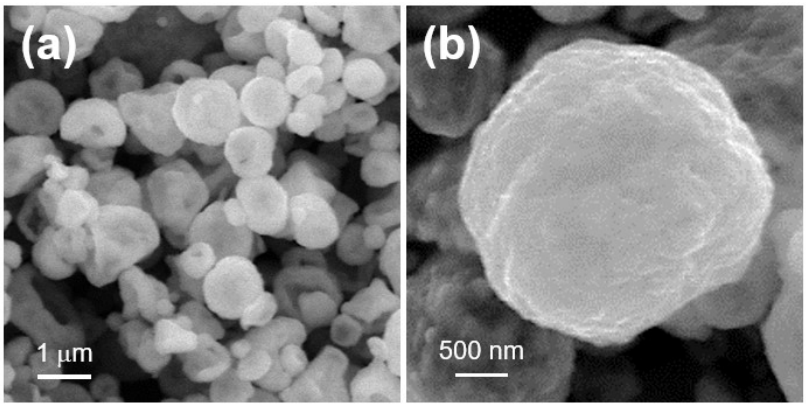

Figure S9. SEM images of non-yolk-shell Co_3O_4 microsphere (Co_3O_4-dense).

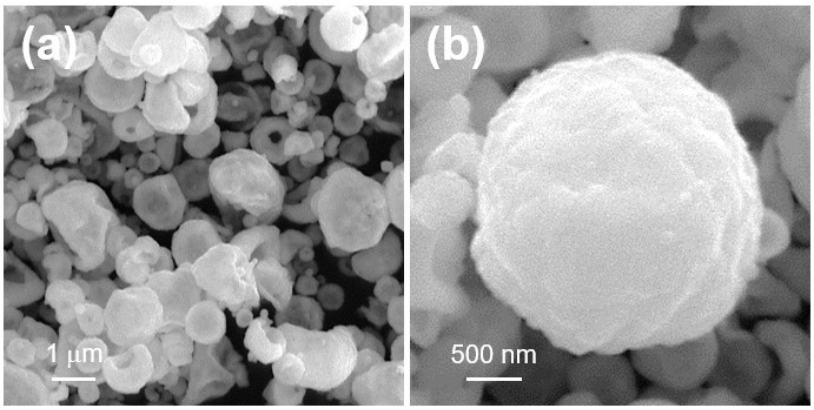

Figure S10. SEM images of oxygen deficient non-yolk-shell Co_3O_4 microsphere (R-Co_3O_4-dense).

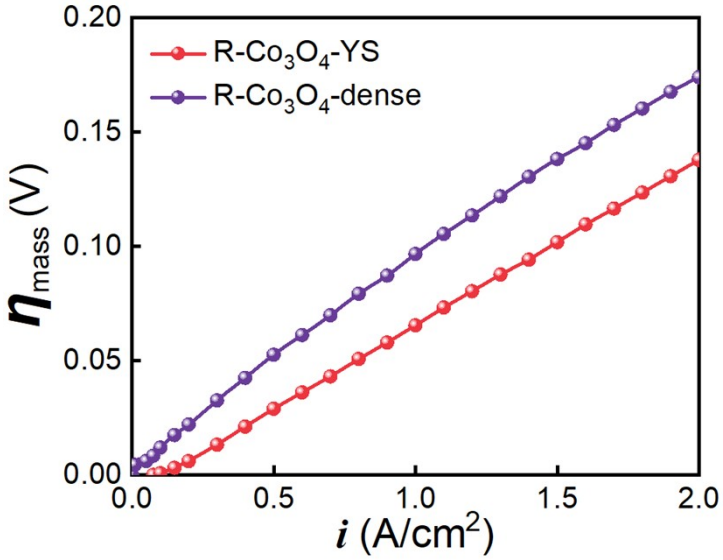

Figure S11. Mass transport losses of AEMWE equipped with R-Co_3O_4-YS and R-Co_3O_4-dense.

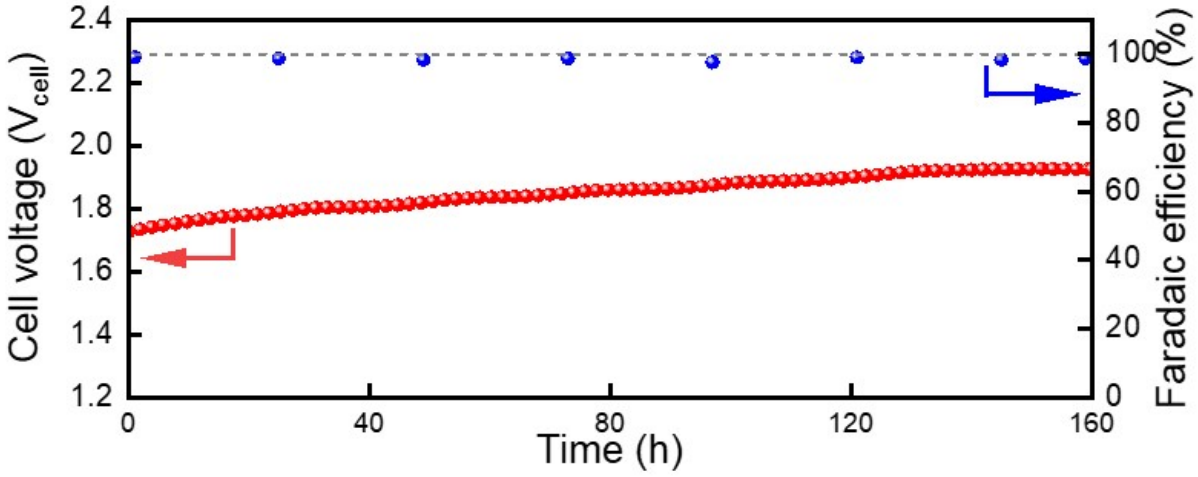

Figure S12. Durability of AEMWE equipped with R-Co_3O_4-YS at 0.5 A/cm^2.

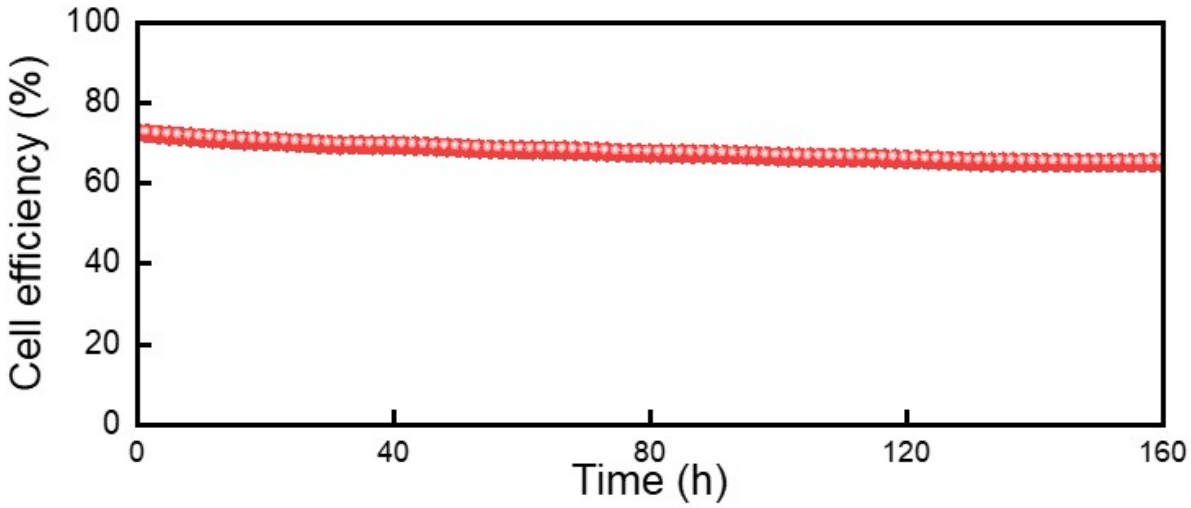

Figure S13. Cell efficiency of AEMWE equipped with R-Co_3O_4-YS at 0.5 A/cm^2.