

Core-shell Mo₂C@NC/Mo₂C hollow microspheres as highly-efficient electrocatalyst for hydrogen evolution reaction

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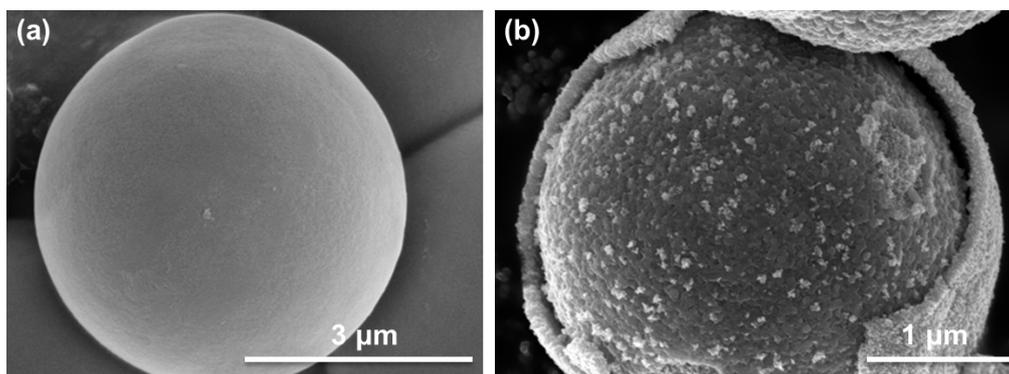


Figure S1. Field emission scanning electron microscopy (FESEM) images for (a) $\text{MoO}_2\text{@HTC}/\text{MoO}_2\text{-2}$ and $\text{MoO}_2\text{@HTC}/\text{MoO}_2\text{-12}$ samples, respectively.

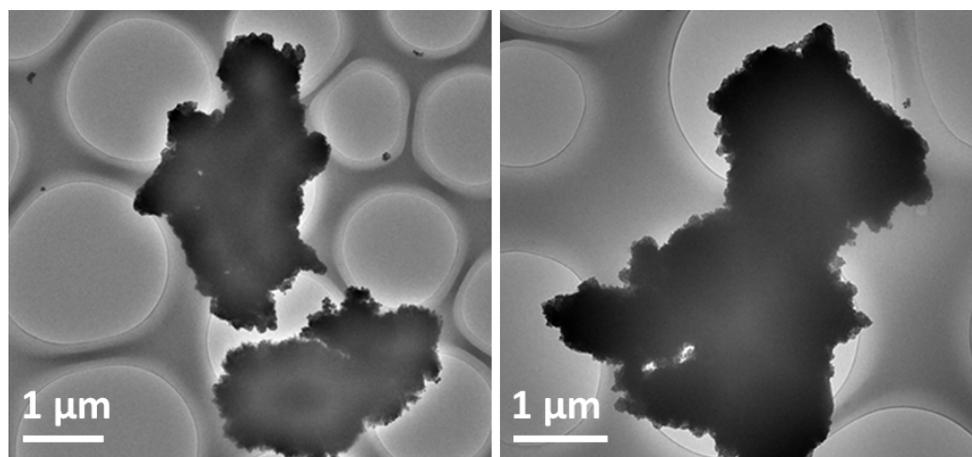


Figure S2. TEM images of $\text{MoO}_2\text{@HTC}/\text{MO}_2\text{-12-no}$ with absence of H_2SO_4 .

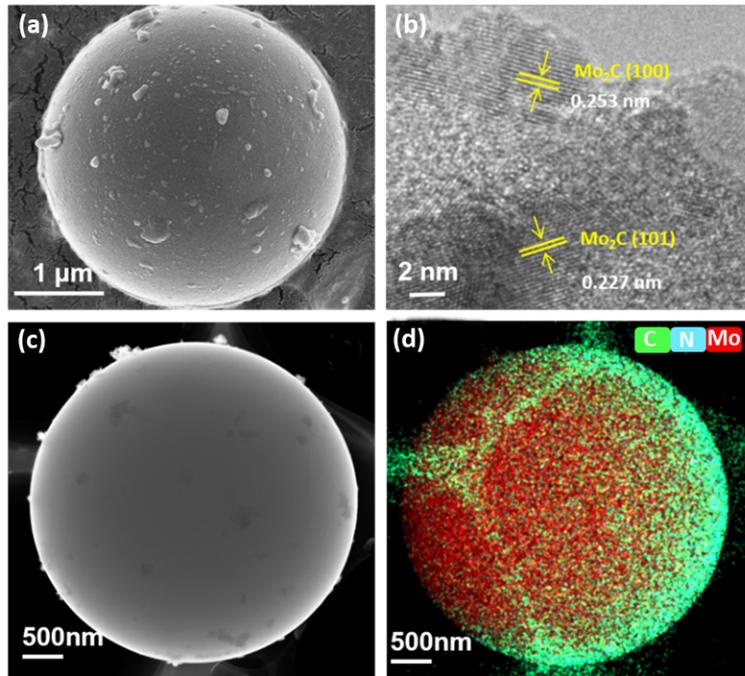


Figure S3. (a) SEM image of Mo₂C@NC/Mo₂C-2, (b) HRTEM image, (c) STEM image, (d) The corresponding C+N+Mo mapping images for Mo₂C@NC/Mo₂C-2 sample.

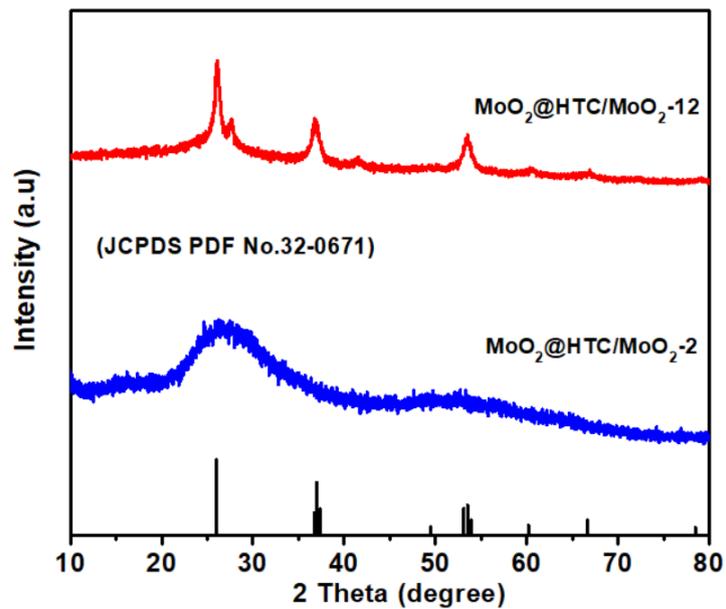


Figure S4. Powder X-ray diffraction patterns for MoO₂@HTC/MoO₂-2 and MoO₂@HTC/MoO₂-12 samples.

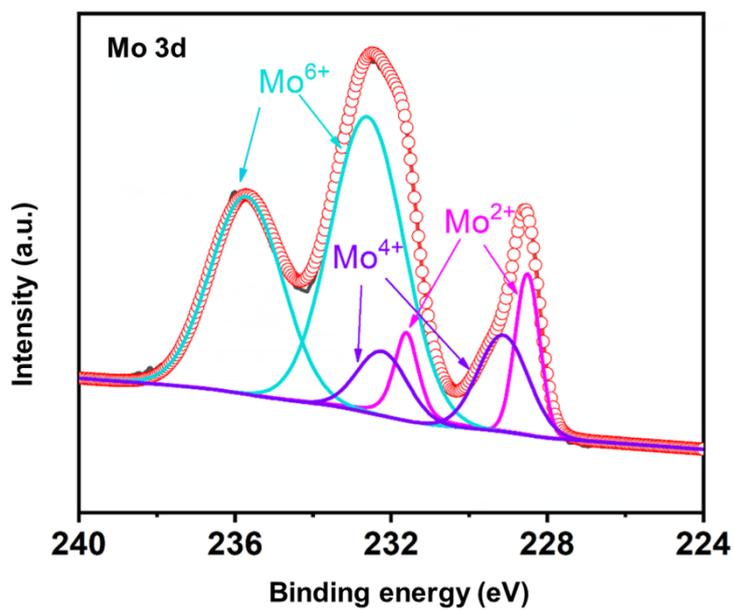


Figure S5. Mo 3d XPS of Mo₂C@NC/Mo₂C-2 sample.

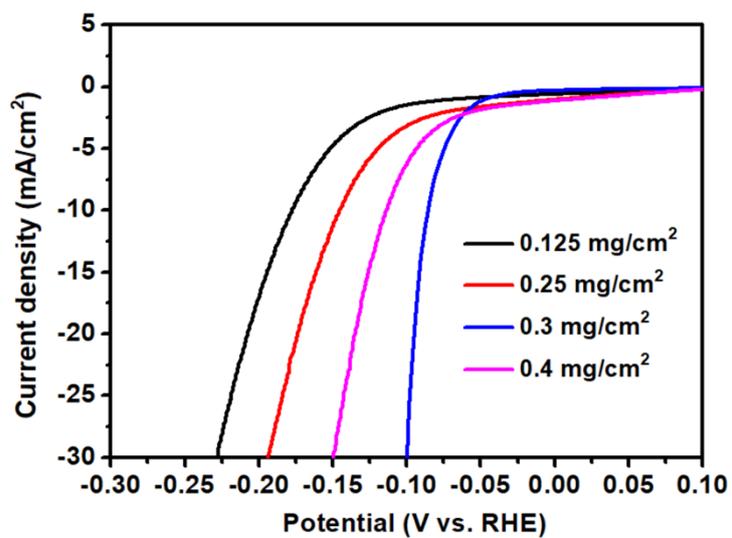


Figure S6. Polarization curves in 1 M KOH aqueous media on Mo₂C@NC/Mo₂C-12 samples with different loading amounts.

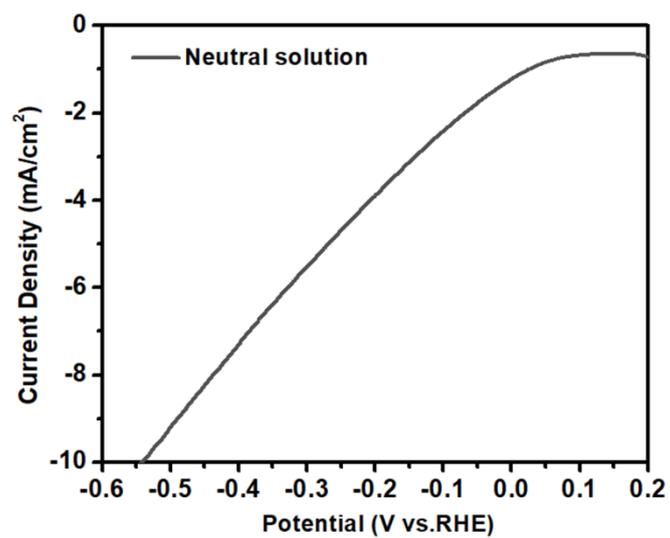


Figure S7. Polarization curves in neutral solution on Mo₂C@NC/Mo₂C-12 samples.

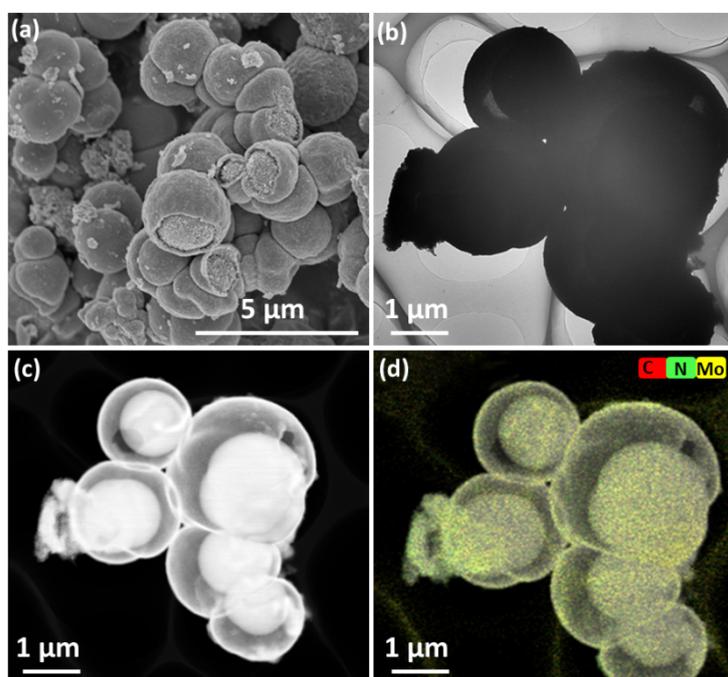


Figure S8. (a) SEM image of Mo₂C@NC/Mo₂C-6, (b) TEM image, (c) and (d) HAADF-STEM image and corresponding mapping images of the Mo₂C@NC/Mo₂C-6 sample.

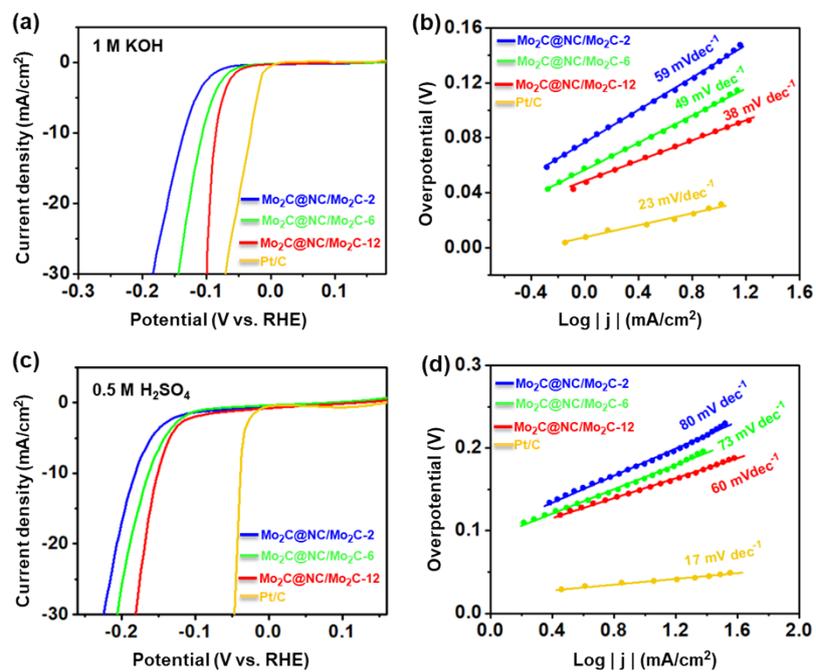


Figure S9. (a) Polarization curves in 1 M KOH aqueous media on Mo₂C@NC/Mo₂C-t samples, and (b) Corresponding Tafel plots, (c) Polarization curves in 0.5 M H₂SO₄ aqueous media, and (d) Corresponding Tafel plots.

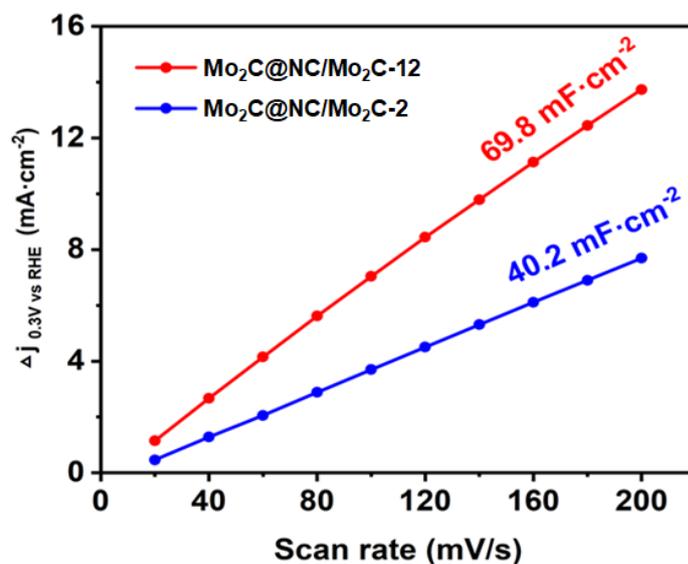


Figure S10. Capacitive currents at 0.45 V as a function of the scan rate for different catalysts in 1 M KOH solution.

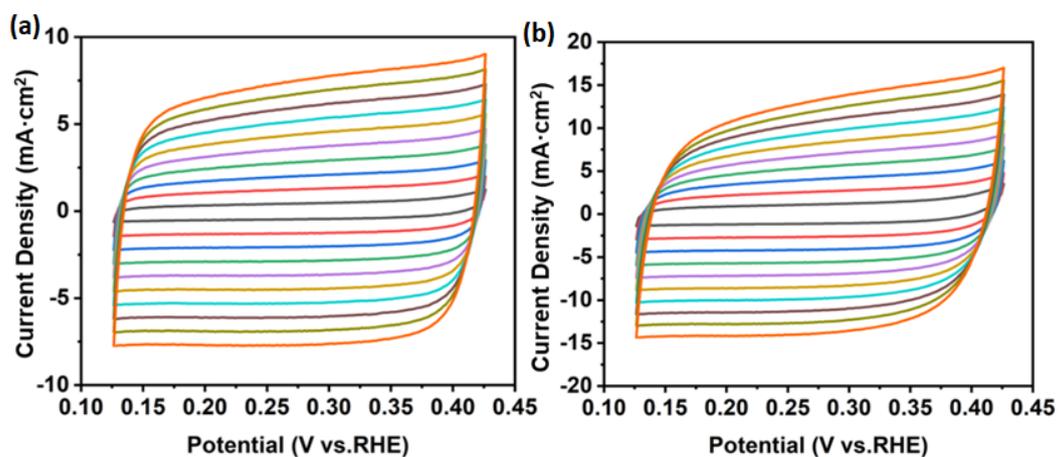


Figure S11. The cyclic voltammetry curve in the sweep speed range of 20 mV-200 mV for (a) $\text{Mo}_2\text{C}@NC/\text{Mo}_2\text{C}-2$, and (b) $\text{Mo}_2\text{C}@NC/\text{Mo}_2\text{C}-12$ sample.

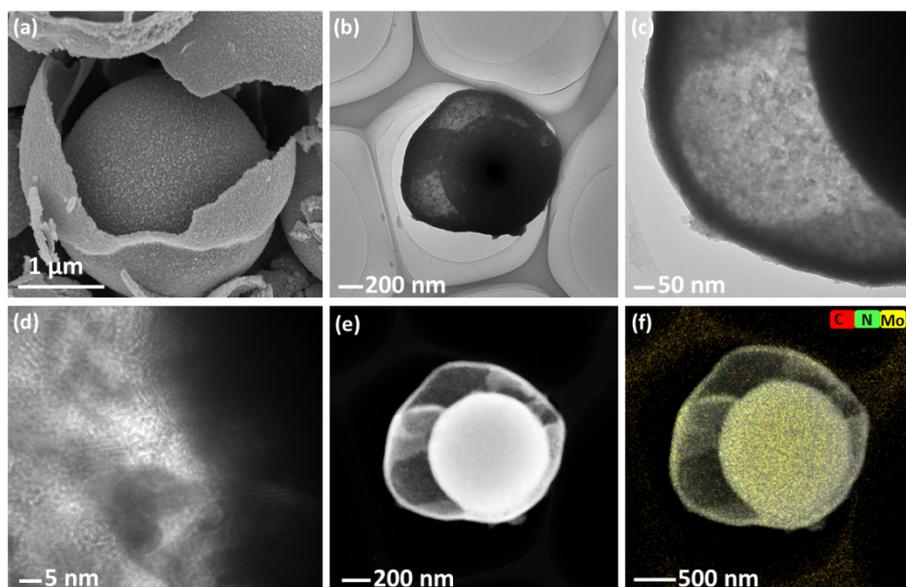


Figure S12. (a) SEM image of spent $\text{Mo}_2\text{C}@NC/\text{Mo}_2\text{C}-12$, (b) TEM image, (c) and (d) HRTEM images, (e) HAADF-STEM image, (f) The corresponding mapping images of spent $\text{Mo}_2\text{C}@NC/\text{Mo}_2\text{C}-12$ sample.