Electronic Supplementary Material

Capacitance and voltage matching between MnO_2 nanoflake cathode and Fe_2O_3 nanoparticle anode for high-performance asymmetric micro-supercapacitors

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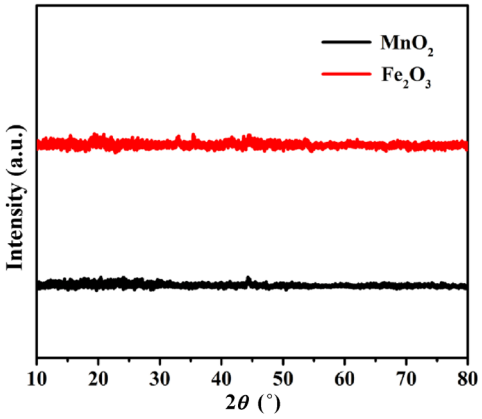

Figure S1 XRD patterns of Fe_2O_3 nanoparticles and MnO_2 nanoflakes.

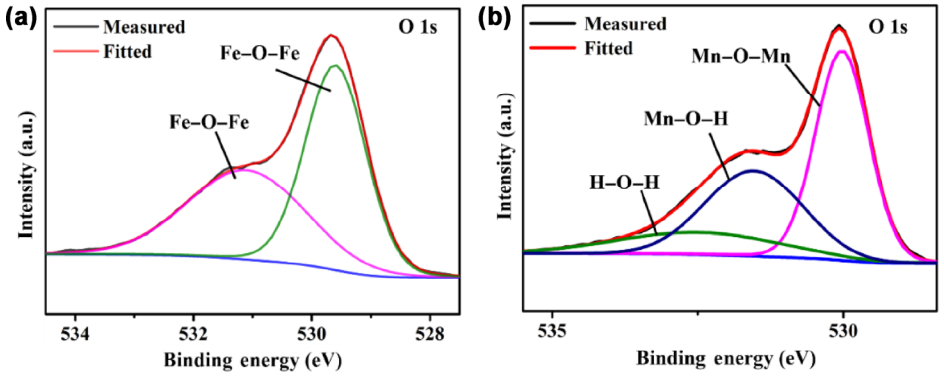

Figure S2 XPS spectra of O 1s in Fe_2O_3 nanoparticals (a) and MnO_2 nanoflakes (b).

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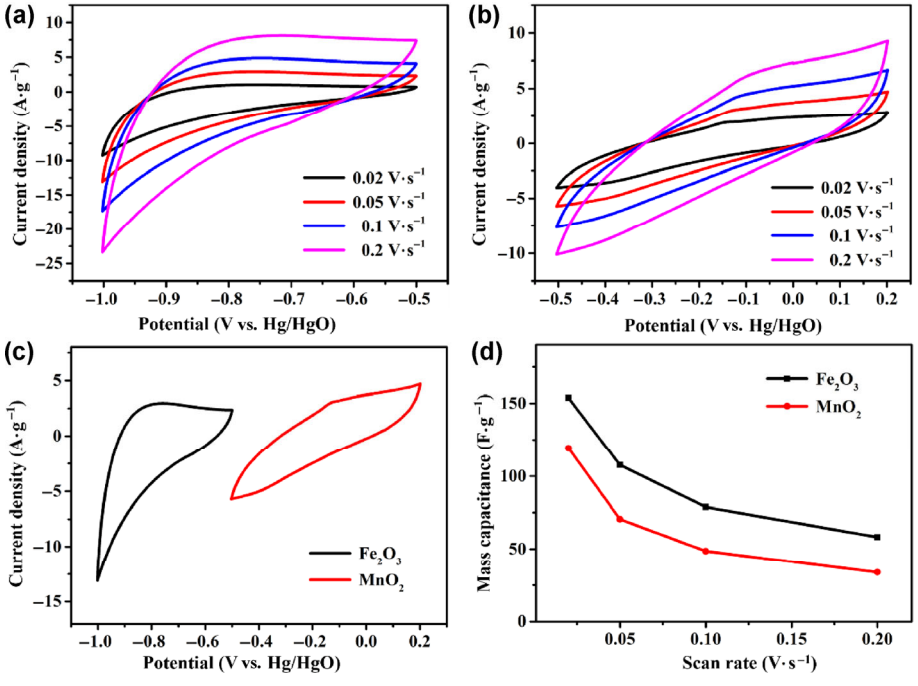

Figure S3 CV curves of Fe_2O_3 nanoparticles (a) and MnO_2 nanoflakes (b) at various scan rates (vs. Hg/HgO) in 1 M KOH. (c) Comparison of CV curves collected for MnO_2 and Fe_2O_3 electrodes at a scan rate of 50 $mV·s^{-1}$. (d) Mass capacitance of MnO_2 and Fe_2O_3 electrodes at different scan rates ranging from 20 to 200 $mV·s^{-1}$. The MnO_2 nanoflakes or Fe_2O_3 nanoparticles were electrodeposited onto nickel foam. Then, the sample was annealed at 350 ˚C under nitrogen atmosphere for 3 h. The electrochemical studies of MnO_2 nanoflakes and Fe_2O_3 nanoparticles were conducted in a three-electrode configuration. Hg/HgO reference electrode and Pt counter electrode were used in the measurement.

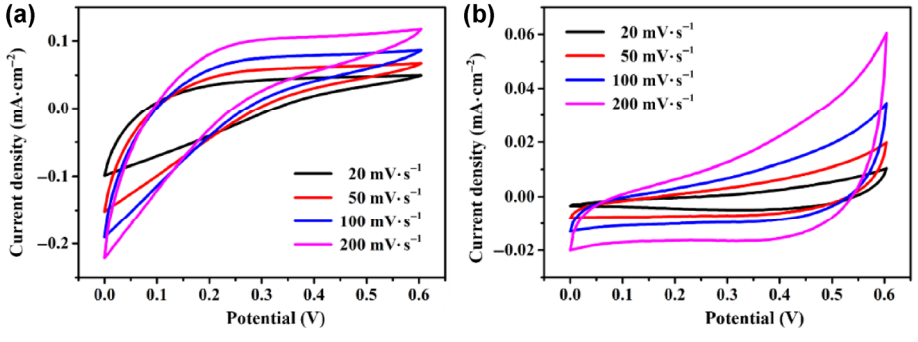

Figure S4 CV curves of M-MSCs (a) and F-MSCs (b) at various scan rates in 1 M KOH with the potential window from 0 to 0.6 V.

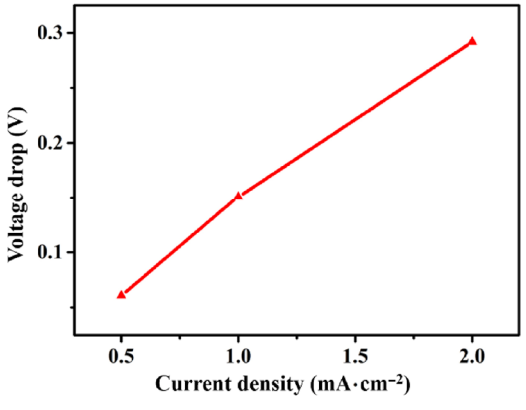

Figure S5 The voltage drops of the A-MSCs at various current densities.

Table S1 The thicknesses of MnO_2 and Fe_2O_3 microelectrodes

Fe_2O_3 (nm)	1,360	1,338	1,400	1,450	1,463	1,418	1,362	x = 1,398.7
MnO_2 (nm)	490	470	560	547	547	530	511	x = 522.1

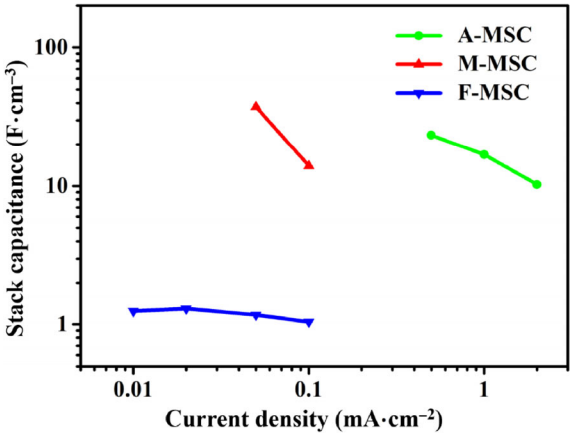

Figure S6 The stack capacitances of A-MSCs, M-MSCs and F-MSCs at different current densities.

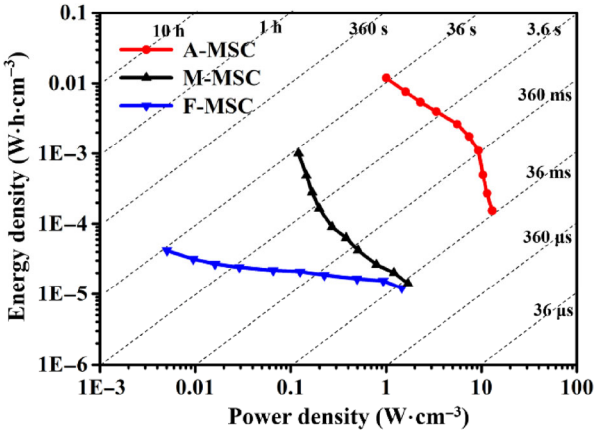

Figure S7 Ragone plot of the specific volumetric energy density vs. power density of A-MSCs, M-MSCs and F-MSCs.