Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Needle-like MnO_2/activated carbon nanocomposites derived from human hair as versatile electrode materials for supercapacitors

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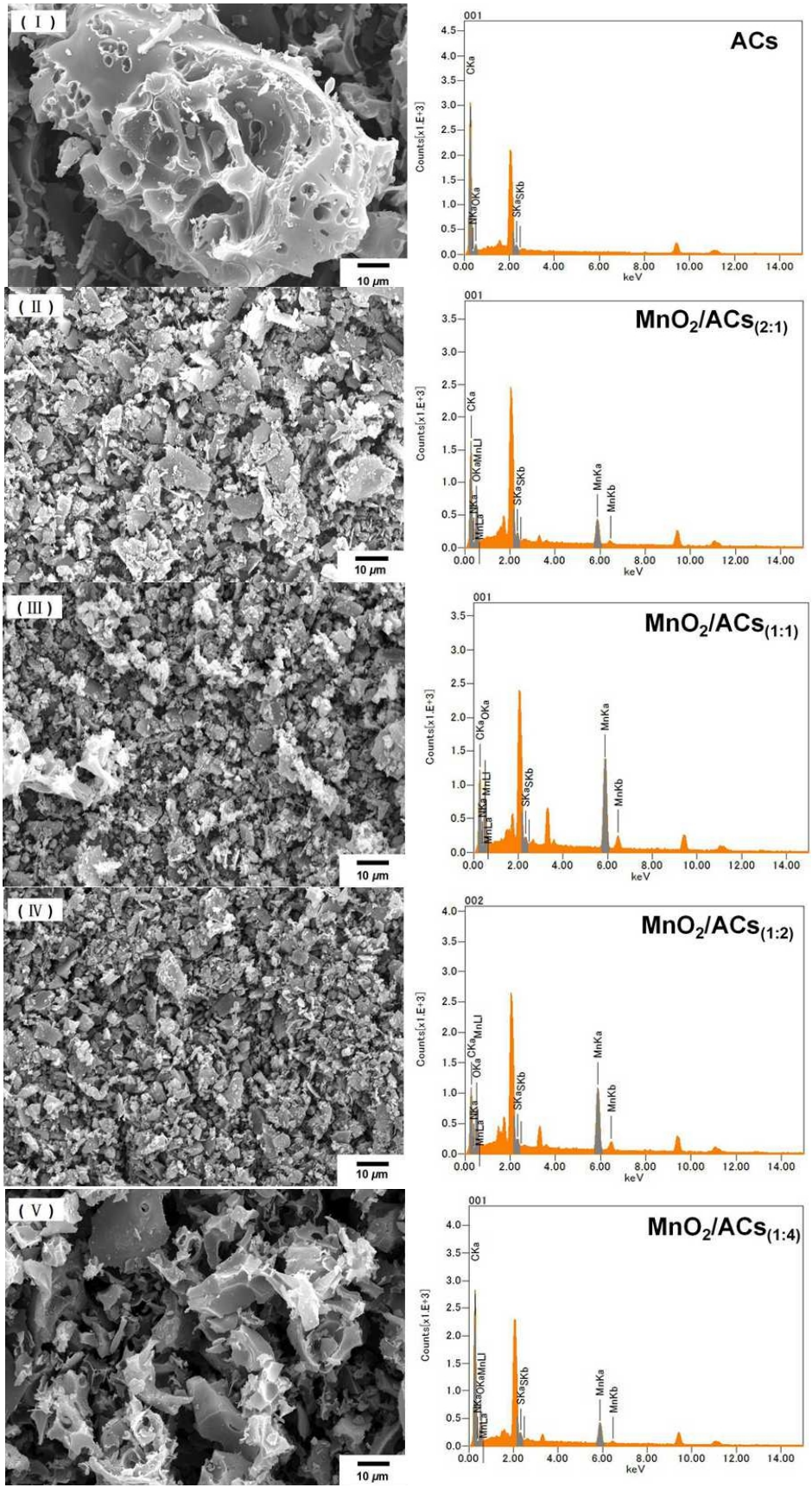
(I)
10 μm
001
ACs
CKa
Counts[x1.E+3]
keV
(II)
10 μm
001
MnO2/ACs(2:1)
CKa
OKaMnLl
SKaSKb
MnKa
MnKb
(III)
10 μm
001
MnO2/ACs(1:1)
OKa
MnLl
SKaSKb
MnKa
MnKb
(IV)
10 μm
002
MnO2/ACs(1:2)
CKa
MnLl
OKa
SKaSKb
MnKa
MnKb
(V)
10 μm
001
MnO2/ACs(1:4)
CKa
OKaMnLl
SKaSKb
MnKa
MnKb

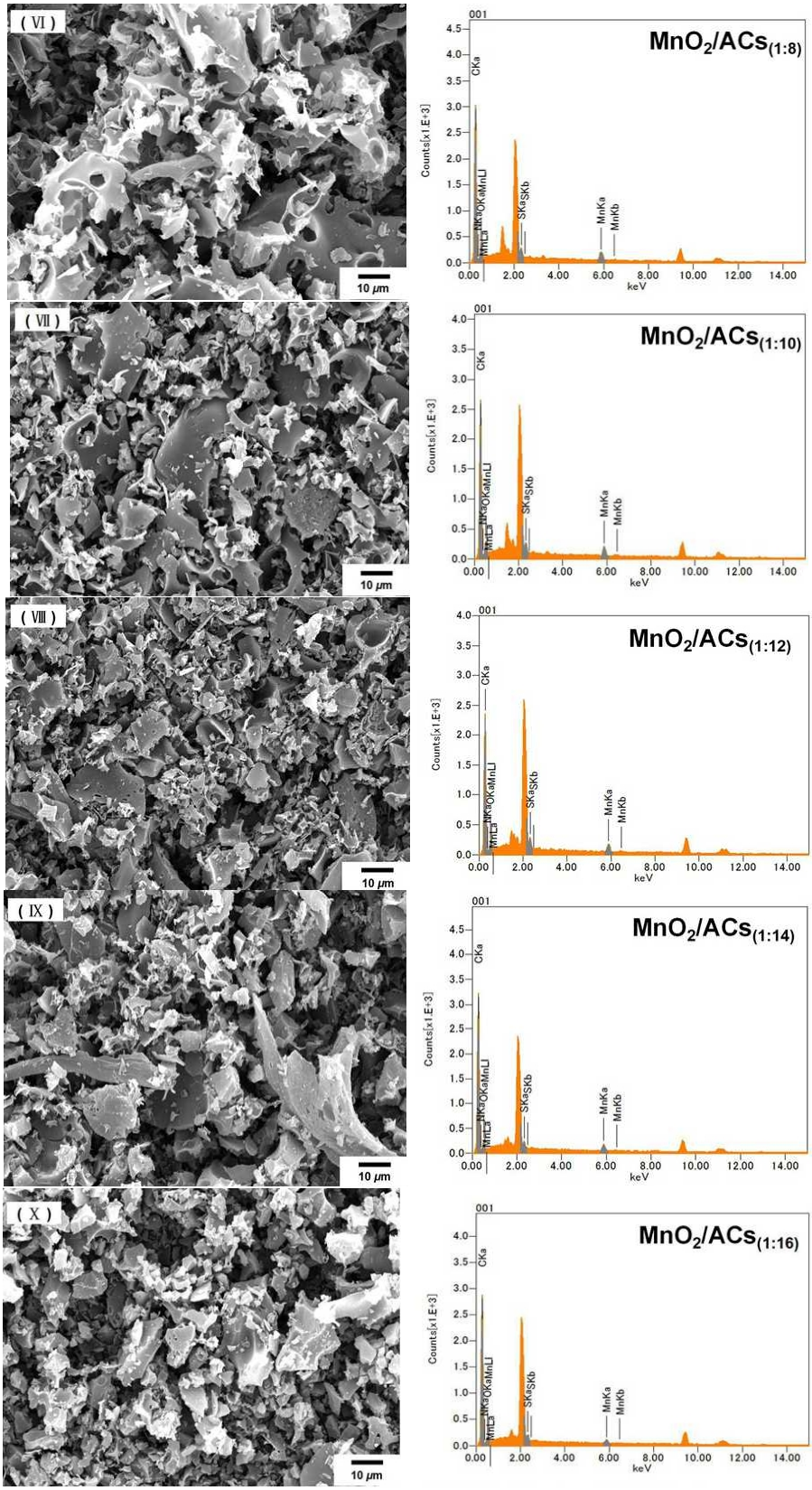

Fig. S1 SEM images and corresponding EDS spectrum of ACs and $MnO_2/ACs_{(X:Y)}$.

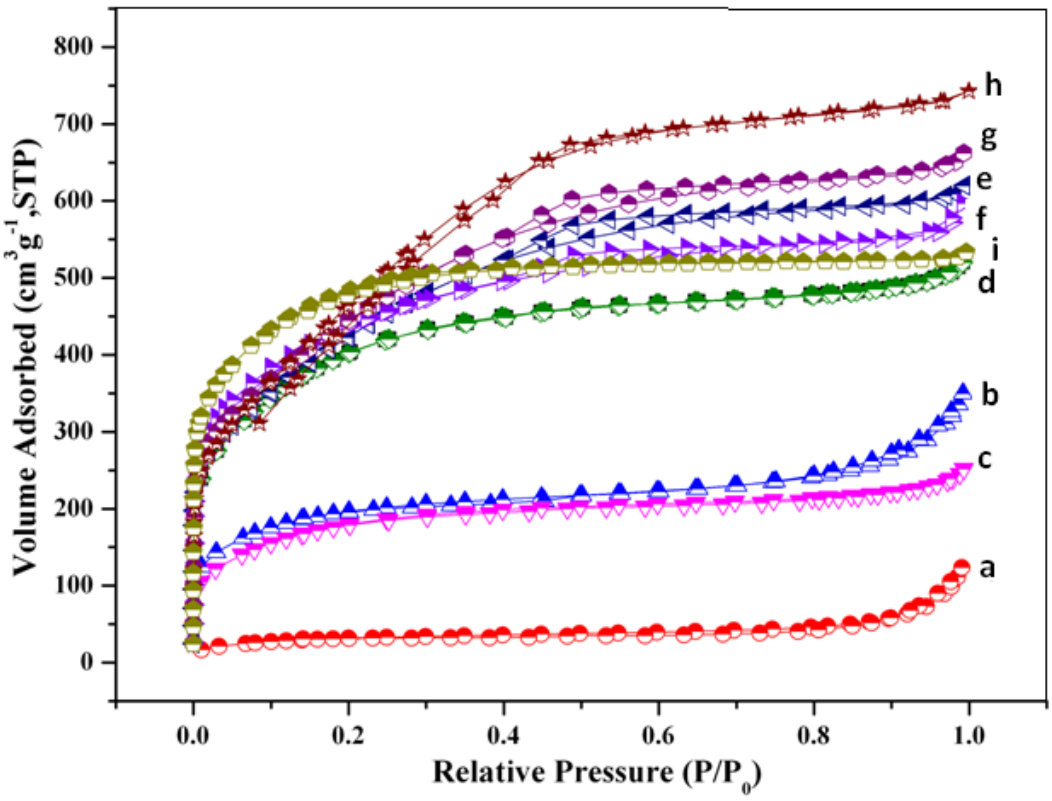

Fig. S2 Nitrogen adsorption–desorption isotherms of (a) $MnO_2/ACs_{(1:2)}$, (b) $MnO_2/ACs_{(1:1)}$, (c) $MnO_2/ACs_{(1:2)}$, (d) $MnO_2/ACs_{(1:4)}$, (e) $MnO_2/ACs_{(1:8)}$, (f) $MnO_2/ACs_{(1:10)}$, (g) **$MnO_2/ACs_{(1:12)}$,** (h) $MnO_2/ACs_{(1:14)}$, and (i) $MnO_2/ACs_{(1:16)}$.

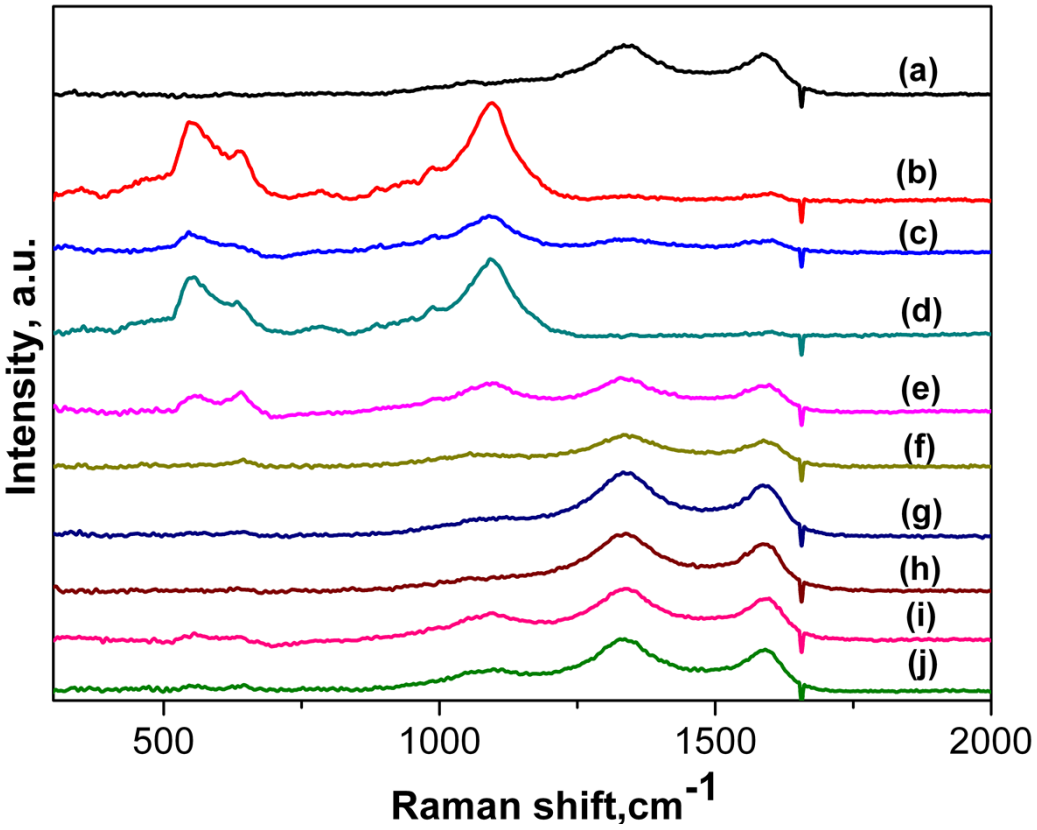

Fig. S3 Raman spectra of (a) pure ACs, (b) $MnO_2/ACs_{(1:2)}$, (c) $MnO_2/ACs_{(1:1)}$, (d) $MnO_2/ACs_{(1:2)}$, (e) $MnO_2/ACs_{(1:4)}$, (f) $MnO_2/ACs_{(1:8)}$, (g) $MnO_2/ACs_{(1:10)}$, (h) $MnO_2/ACs_{(1:12)}$, (i) $MnO_2/ACs_{(1:14)}$, and (j) $MnO_2/ACs_{(1:16)}$.

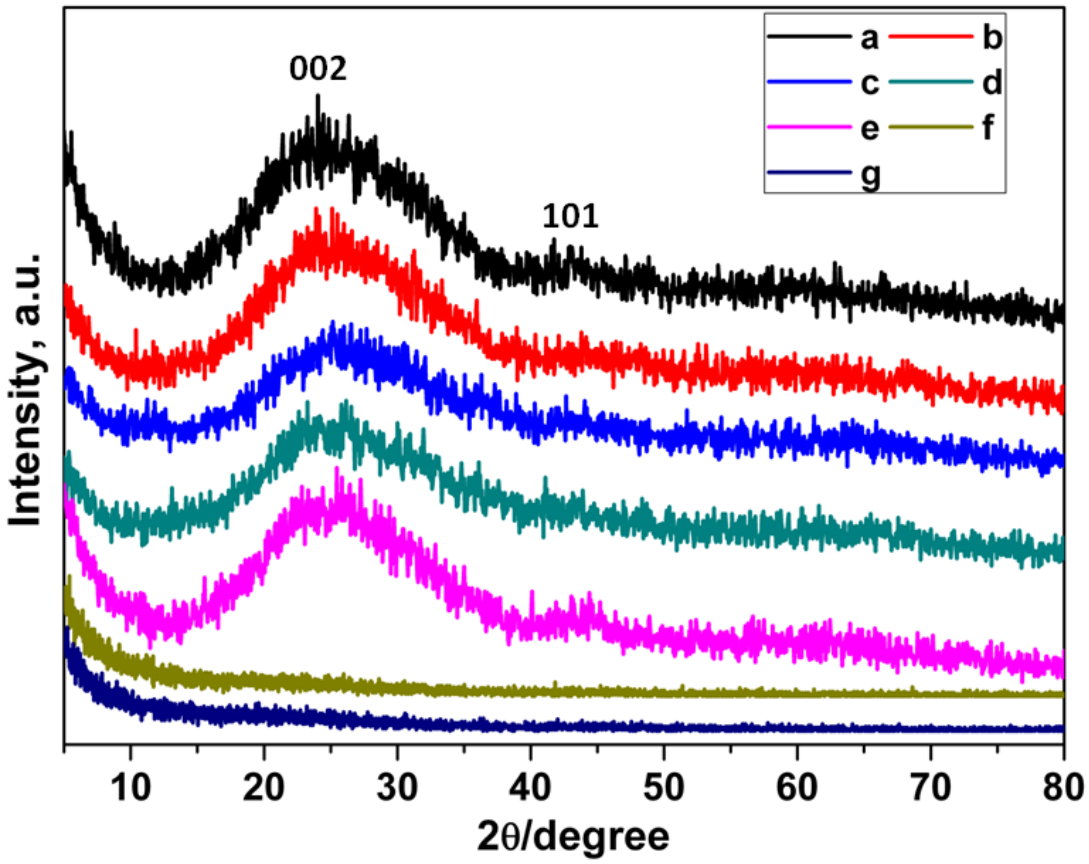

Fig. S4 XRD patterns of (a) pure ACs, (b) $MnO_2/ACs_{(1:2)}$, (c) $MnO_2/ACs_{(1:1)}$, (d) $MnO_2/ACs_{(1:2)}$, (e) $MnO_2/ACs_{(1:4)}$, (f) $MnO_2/ACs_{(1:8)}$, and (g) $MnO_2/ACs_{(1:10)}$.