Supporting Information

From NiCo-Glycerate to Tri-Metallic Selenide: Engineering Yolk-Shell MnNiCoSe spheres with Nanosheet Arrays for Hybrid Supercapacitors

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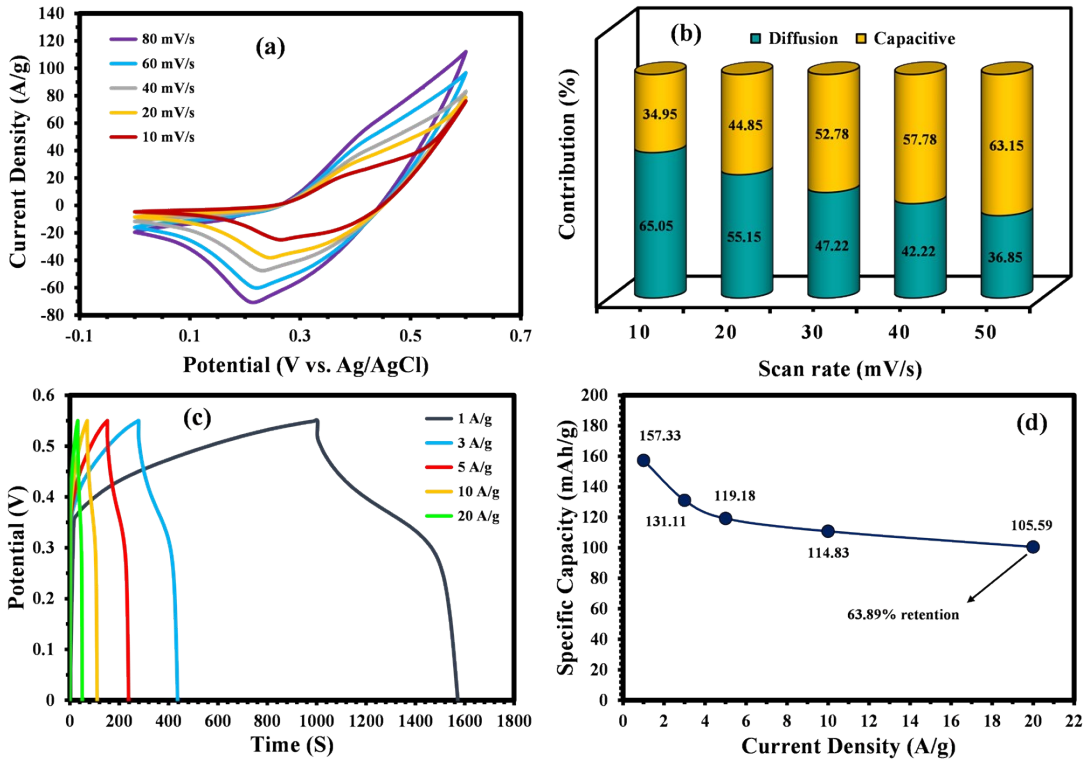

Figure S1. (a) CVs of the NiF@MnNiCo-LDH electrode from 10 to 80 mV/s (b) The relative contributions of the capacitive and diffusion-controlled charge storage in the prepared NiF@MnNiCo-LDH electrode at different scan rates (c) GCD curves of the NiF@MnNiCo-LDH electrode from 1 to 20 A/g (d) Specific capacities vs. current densities of the NiF@MnNiCo-LDH electrode.

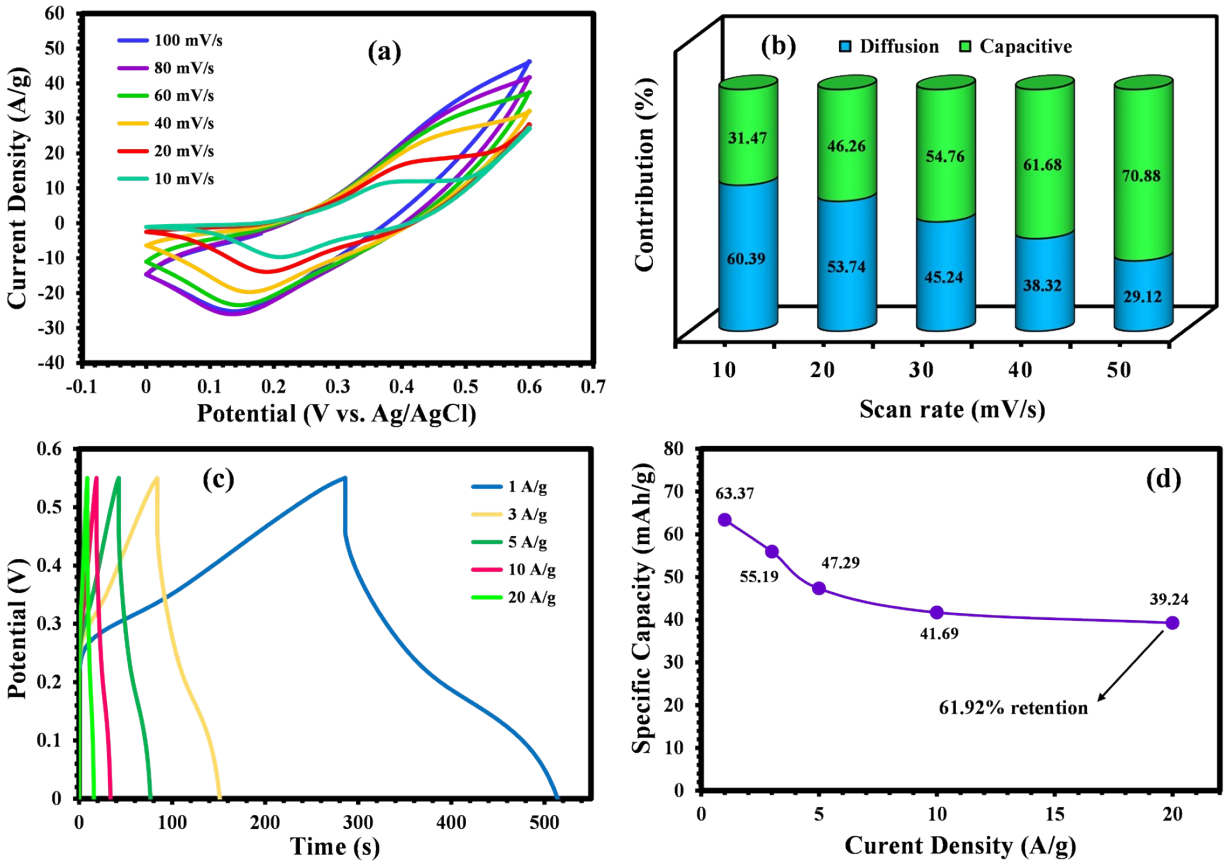

Figure S2. (a) CVs of the NiF@NiCo-Gly electrode from 10 to 100 mV/s (b) The relative contributions of the capacitive and diffusion-controlled charge storage in the prepared NiF@NiCo-Gly electrode at different scan rates (c) GCD curves of the NiF@NiCo-Gly electrode from 1 to 20 A/g (d) Specific capacities vs. current densities of the NiF@NiCo-Gly electrode.

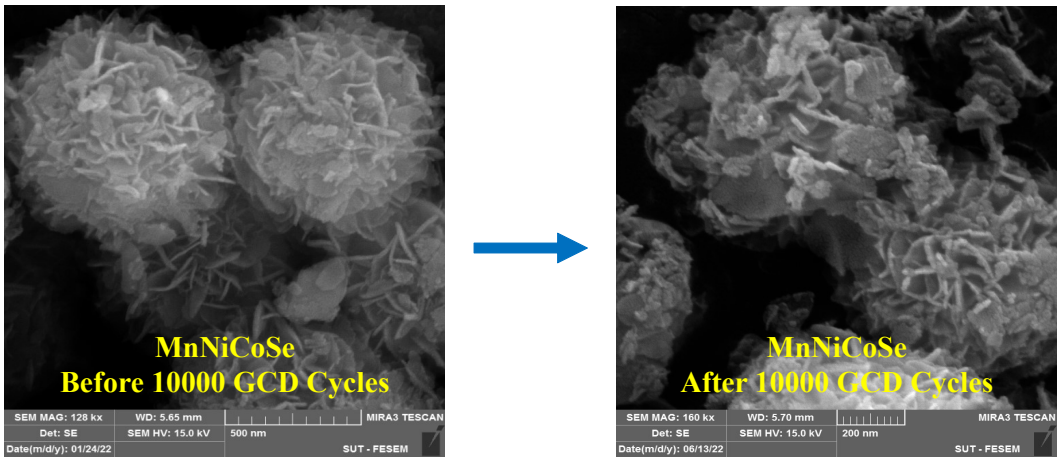

Figure S3. FE-SEM images of the MnNiCoSe electrode material after 10,000 GCD cycles.

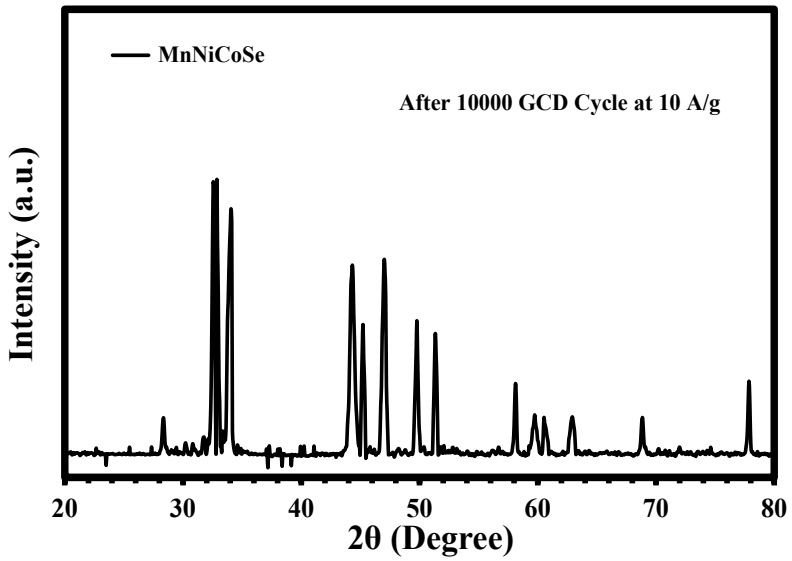

Figure S4. XRD pattern of the MnNiCoSe electrode material after 10,000 GCD cycle.

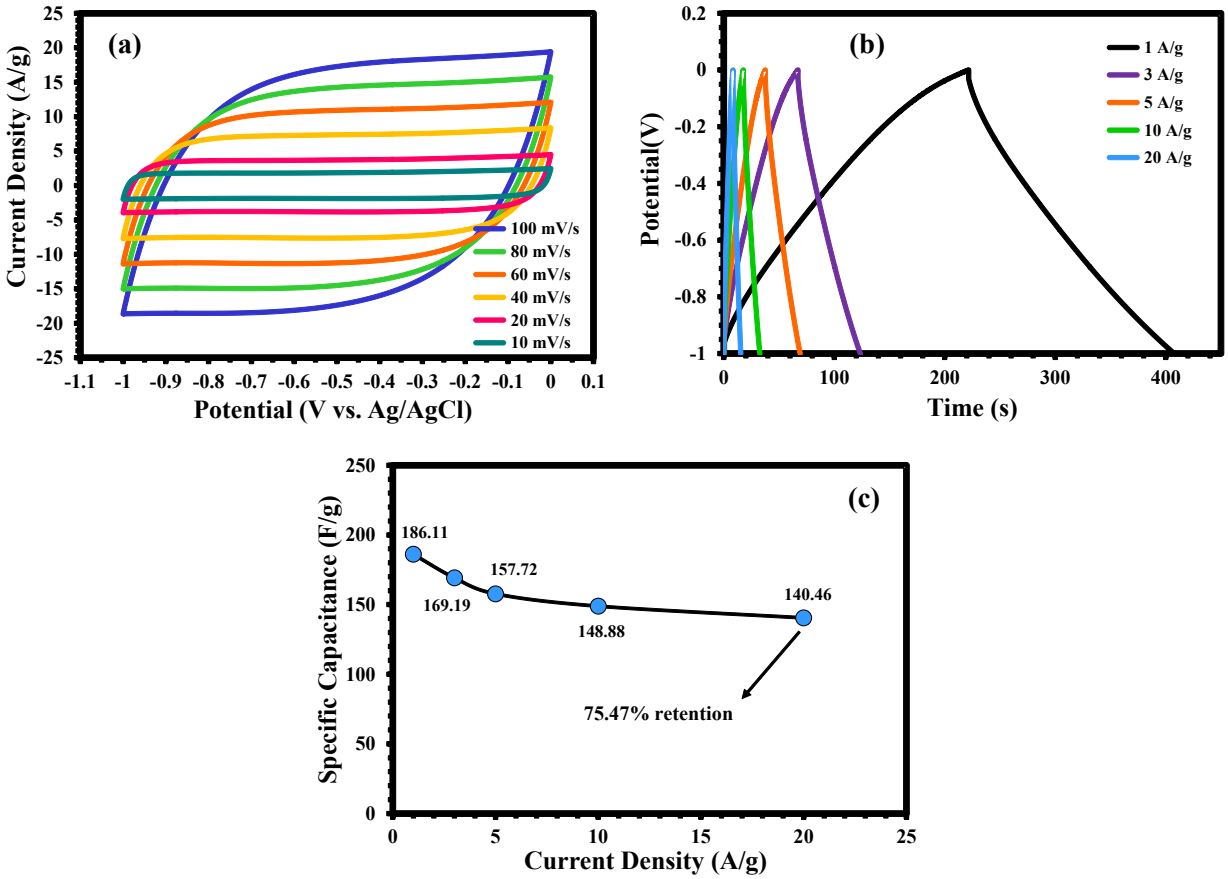

Figure S5. (a) CVs of the activated carbon-based electrode at various scan rates of 10-100 mV/s (b) GCD curves of the activated carbon-based electrode at various current densities of 1-20 A/g (c) Specific capacitance (F/g) vs. current density (A/g) of the activated carbon-based electrode.

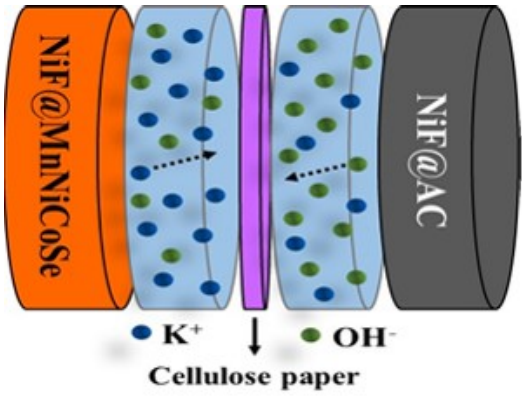

Figure S6. Schematic illustration of the NiF@MnNiCoSe (+)//NiF@AC (-) fabricated of NiF@MnNiCoSe (positive electrode) and NiF@AC (negative electrode).

Table S1. Comparison of the performance of the MnNiCoSe electrode material with other previously reported materials.

Composition	Capacity($mAhg^{-1}$)	Cycles, retention	Rate capability	ED(Wkg^{-1})	Reference
Ni-Co-Mn-S	182.69	1100, 97.8% At 7 A/g	51.62% at 50 Ag^{-1}	36.3	[1]
$Ni_xCo_{1-x}Se_2$	197.5	20000, 90% At 10 A/g	76.26% at 20 Ag^{-1}	44.1	[2]
NiCoMn-S	183.61	1000, 86.45%	66.56% at 50 Ag^{-1}	42.1	[3]
$MnCoSe_2$	227.77	10000, 95% At 5 A/g	39.63% at 5 Ag^{-1}	32	[4]
$NiCoSe_2$/C	232.6	5000, 88.3% At 10 A/g	72.60% at 10 Ag^{-1}	-	[5]
$CoSe_2/NiSe_2$	179.25	20000, 87.59% At 10 A/g	83.68% at 10 Ag^{-1}	20.4	[6]
$MnSe_2/CoSe_2$	202.33	5000, 88% At 10 A/g	-	28.6	[7]
MnNiCoSe	263.67	10000, 84.28% At 10 A/g	76.63% at 20 Ag^{-1}	53.32	This work

References

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