Supporting Information

MOF-assisted construction of Co_9S_8@Ni_3S_2/ZnS microplate array with ultrahigh areal specific capacity for advanced supercapattery

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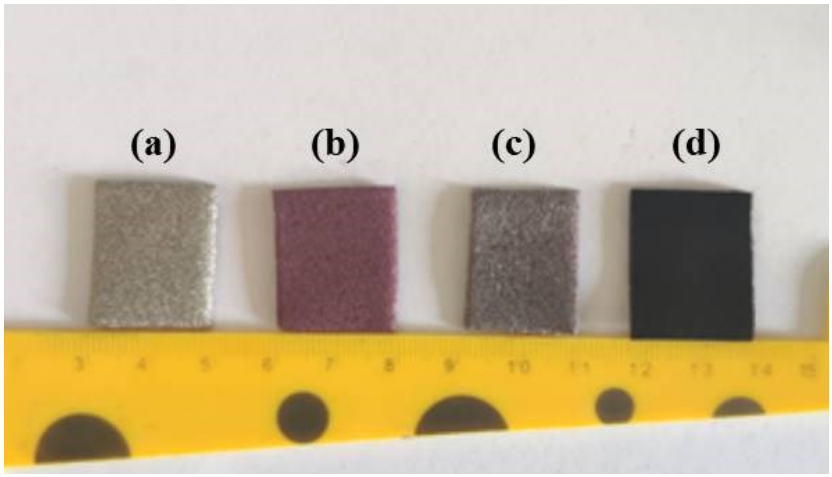

Figure S1. Photographs of (a) Ni foam, (b) $Co_2(OH)_2CO_3$, (c) $Co_2(OH)_2CO_3$@NiZn-MOF, (d) Co_9S_8@Ni_3S_2/ZnS.

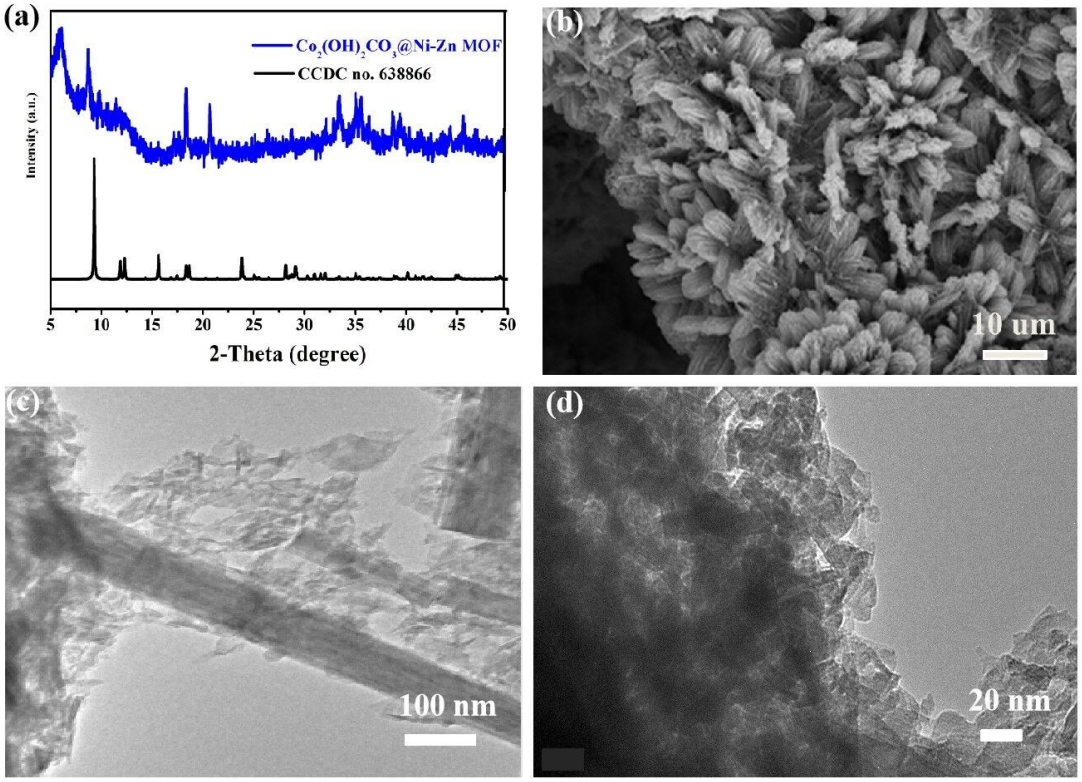

Figure S2. (a) XRD pattern, (b) SEM image, (c,d) TEM images of $Co_2(OH)_2CO_3$@NiZn-MOF.

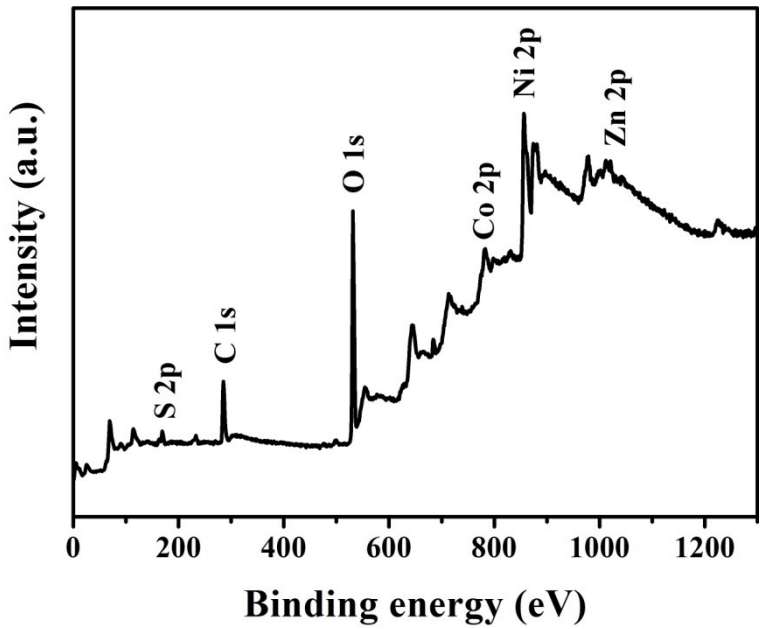

Figure S3. XPS survey spectrum of Co_9S_8@Ni_3S_2/ZnS composite.

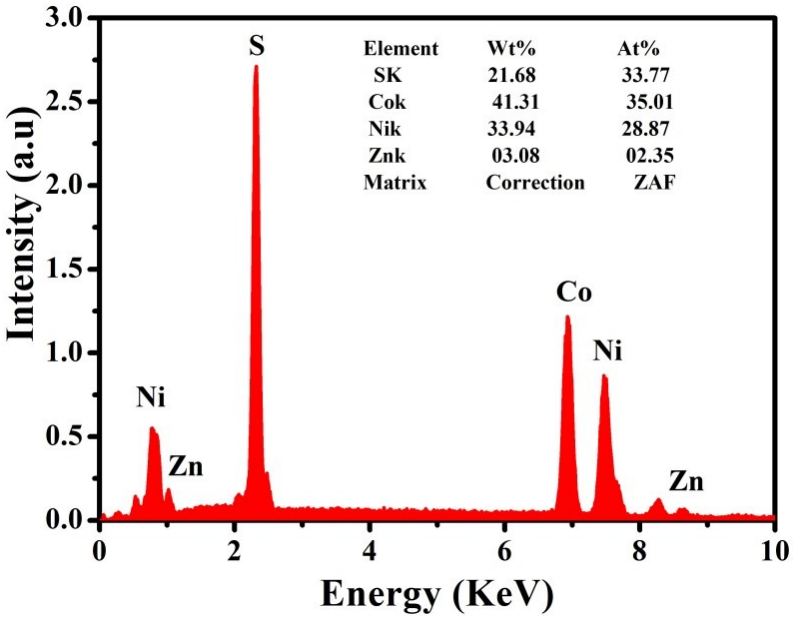

Figure S4. EDS spectrum of Co_9S_8@Ni_3S_2/ZnS array.

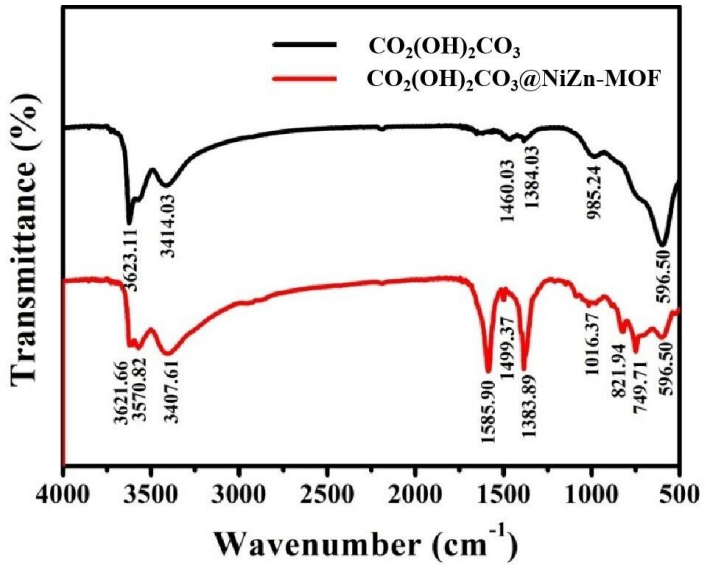

Figure S5. FT-IR spectra of $Co_2(OH)_2CO_3$ and $Co_2(OH)_2CO_3$@NiZn-MOF scraped from Ni foam.

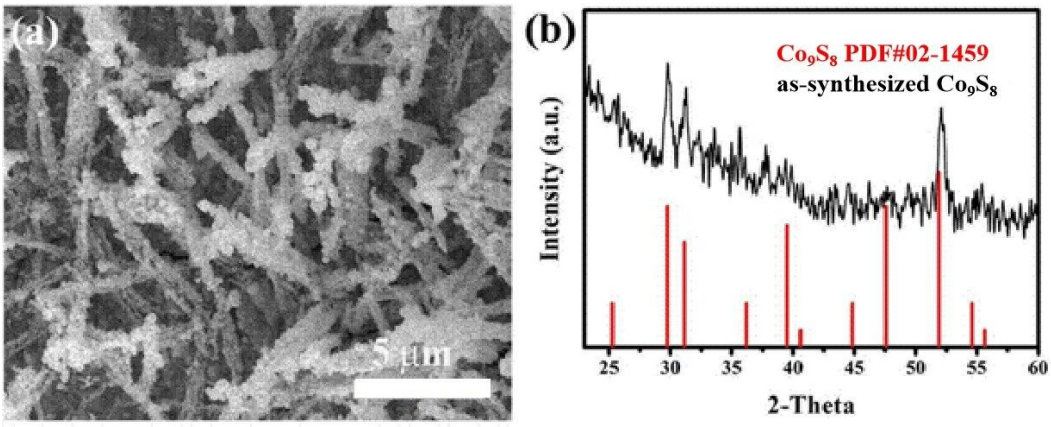

Figure S6. (a) SEM images and (b) XRD pattern of as-synthesized Co_9S_8.

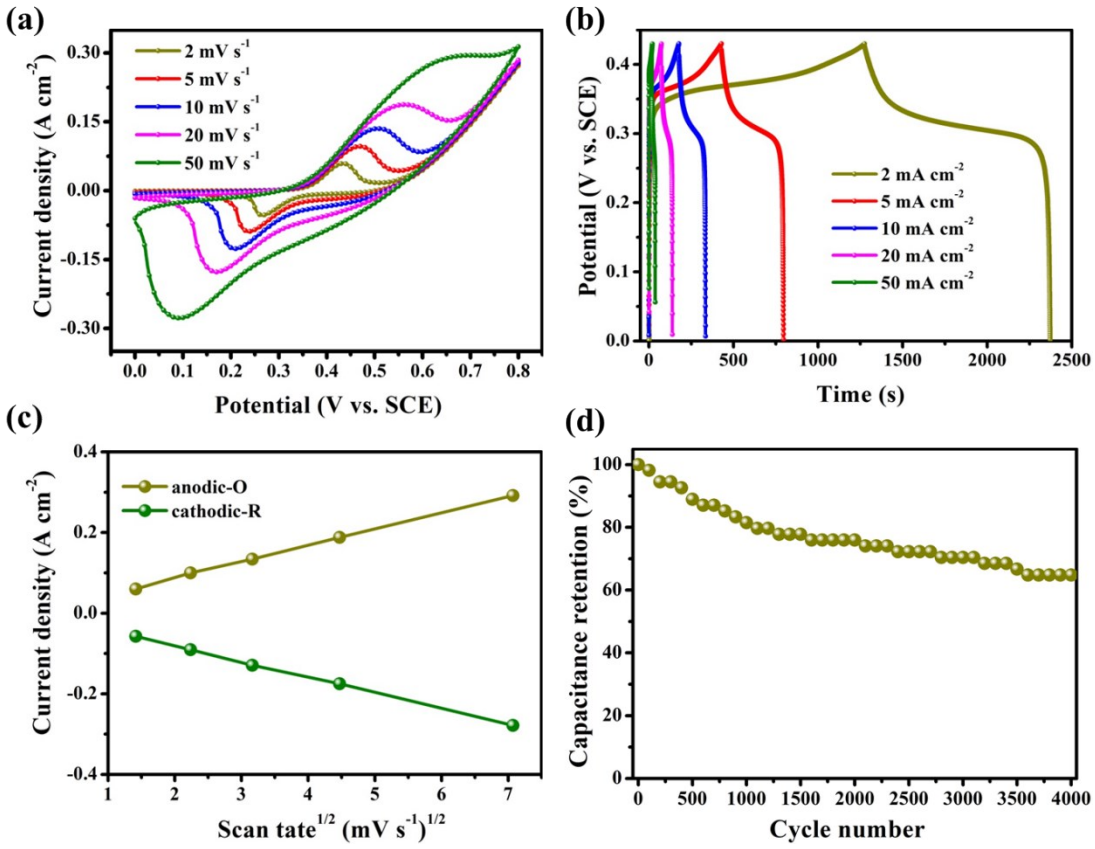

Figure S7. (a) CV cureves of Co_9S_8 array electrode at different scan rates; (b) GCD curves of Co_9S_8 array electrode at different current densities; (c) i_p vs. $V^{1/2}$ polts of Co_9S_8; (d) Cycling performance of Co_9S_8 array electrode measured at a current density of 30 mA cm^{-2} for 4000 cycles.

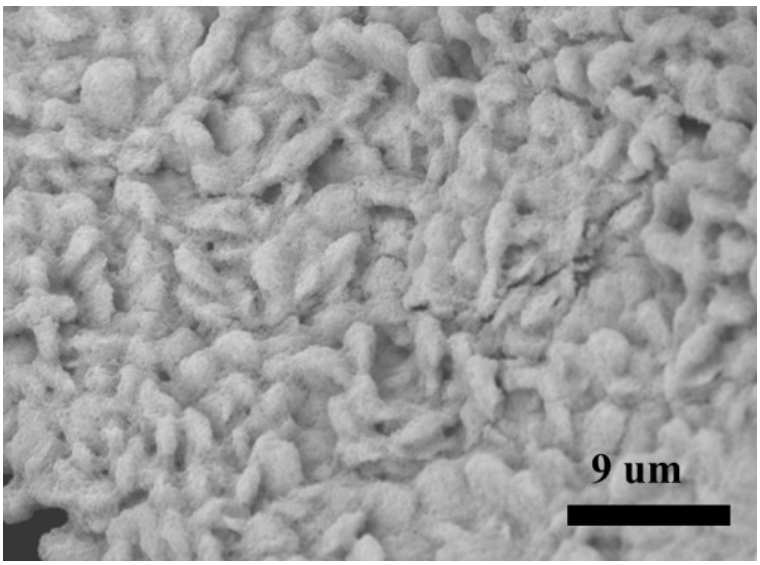

Figure S8. SEM image of Co_9S_8@Ni_3S_2/ZnS after 4000 cycles.

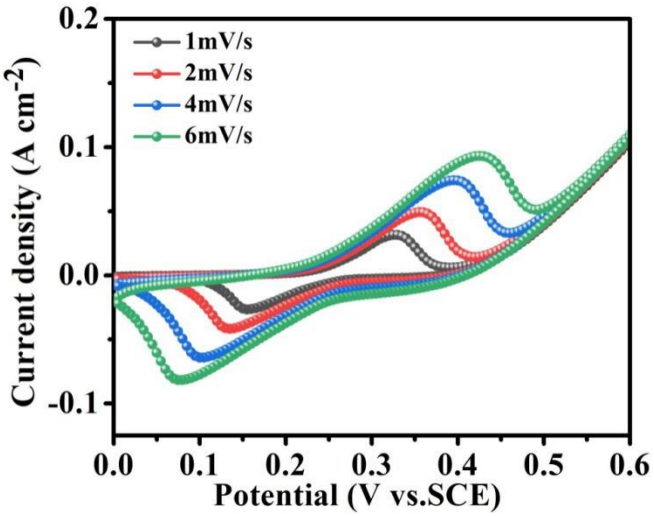

Figure S9. CV curves of Co_9S_8@Ni_3S_2/ZnS electrode at increasing scan rate (1-6 mV s^{-1}).

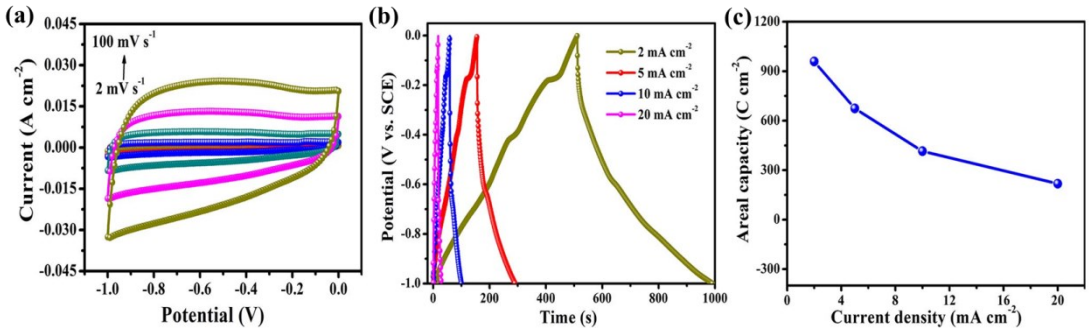

Figure S10. (a) CV curves, (b) GCD curves and (c) areal specific capacitance of AC electrode.

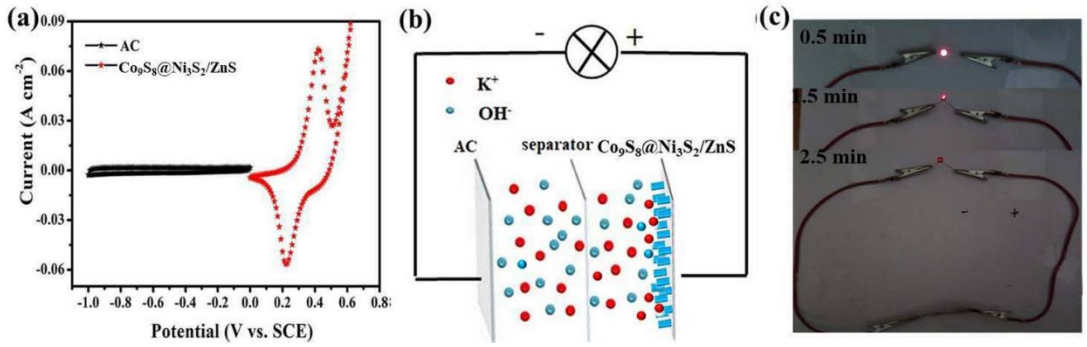

Figure S11. (a) CV curves of Co_9S_8@Ni_3S_2/ZnS and AC; (b) Schematic illustration of assembled supercapattery device; (c) LED indicator lighted up by one supercapattery device.