Supporting information

Two-dimensional porous CeO_2@Co_3O_4 sheet-like heterostructures for high-performance aqueous hybrid supercapacitors

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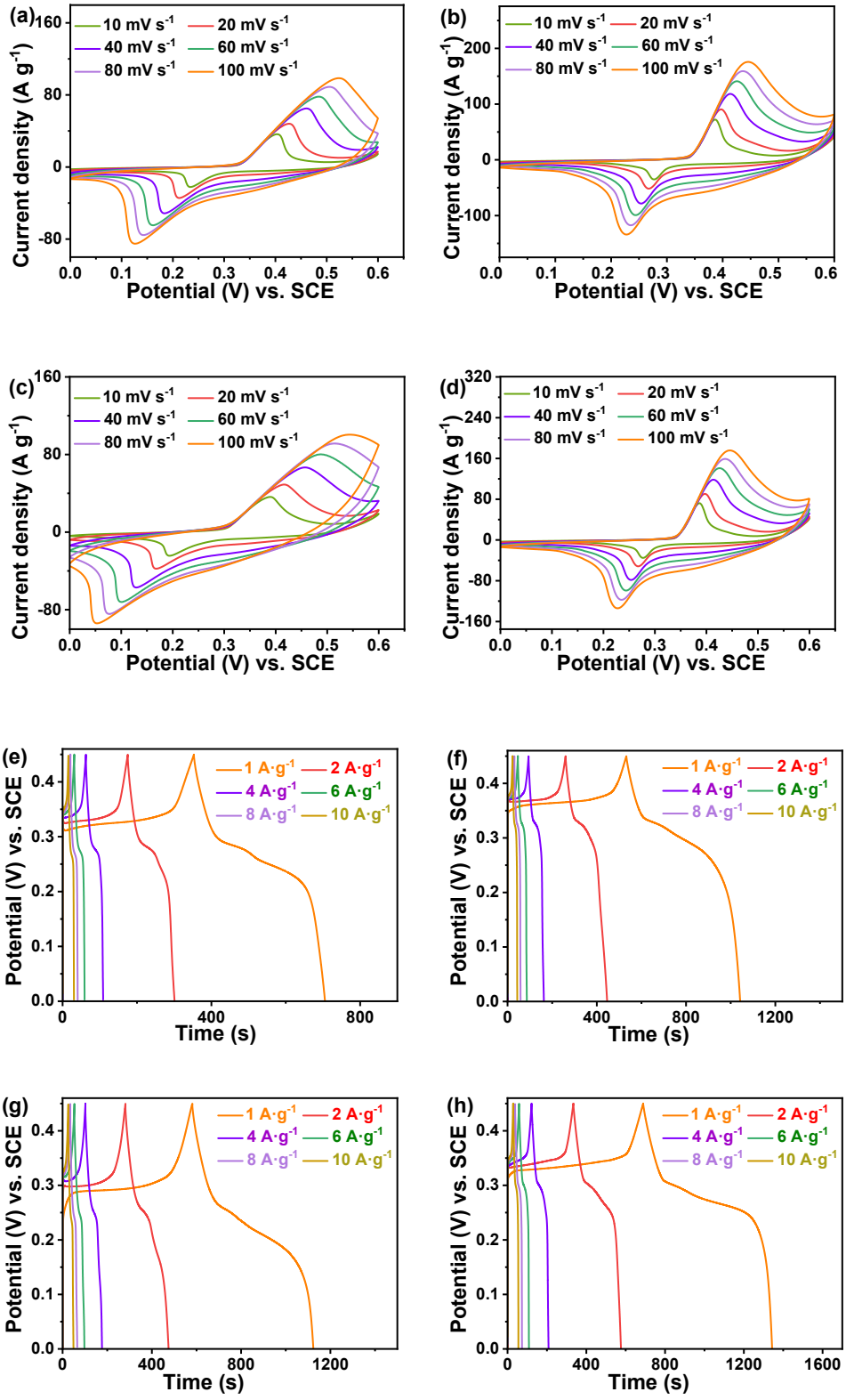

Fig. S1. CV curves at different scan rates and GCD curves at different of (a,e) CeO_2, (b, f) Co_3O_4, (c,g) $2CeO_2@Co_3O_4$, (d, h) $CeO_2@2Co_3O_4$

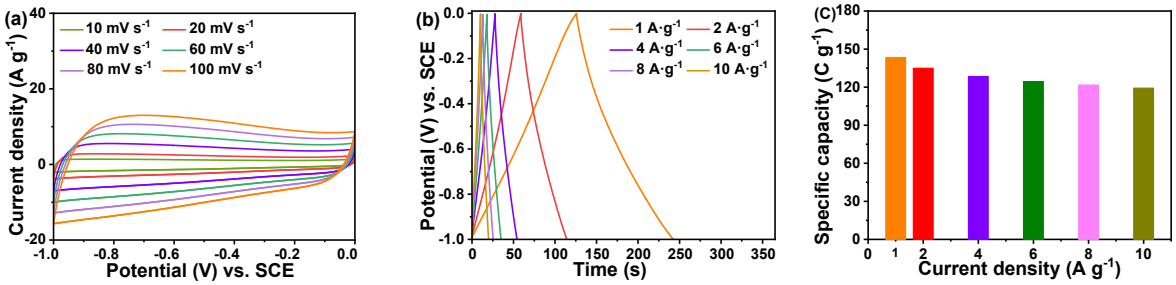

Fig. S2. (a) CV curves at different scan rates, (b) GCD curves, and (c) corresponding specific capacitance at various current densities of AC.

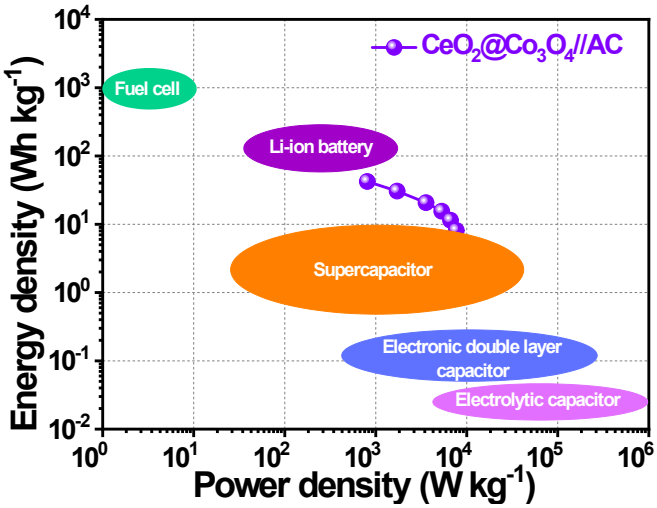

Fig. S3. Ragone plot illustrating the performances of specific power vs specific energy for the device and different electrical energy-storage technologies

Table S1. The comparison of the nanostructure, preparation method, and electrochemical property of CeO_2-based composites.

Nano-structure	Preparation method	Specific capacitance	Electrolyte	Cycle stability (cycles, current density)	Ref.
CeO_2@ZnO monodispersed spherical-shaped	Chemical precipitation	377 F g^{-1}(1 A g^{-1})	1 M $LiClO_4$	94.6% (1000, 1 A g^{-1})	1
CdS/rGO/CeO_2 spherical nanoparticles	Hydrothermal	407 F g^{-1}(1 A g^{-1})	2 M KOH	96% (5000, 1 A g^{-1})	2
CeO_2/rGO spherical nanoparticles	Hydrothermal	89 F g^{-1} (10 mV s^{-1})	3 M KOH	96% (1000)	3
MnO_2/CeO_2 nanorods	Hydrothermal	274 F g^{-1} (500 mA g^{-1})	3 M KOH	93.9% (1000, 500 mA g^{-1})	4
rGO/CeO_2 nanoparticles	Self-assembly	265 F g^{-1} (5 mV s^{-1})	3 M KOH	96.2% (1000, 80 mV s^{-1})	5
rGO-CeO_2/porous nanoparticles	In situ polymerization	454.8 F g^{-1} (1 A g^{-1})	1 M H_2SO_4	70.23% (10,000, 5 A g^{-1})	6
NiO@CeO_2 Spherical flowerlike	Hydrothermal	543.6 F g^{-1} (1 A g^{-1})	2 M KOH	74.39 % (10,000, 20 A g^{-1})	7
CeO_2/C integrated MoS_2 spherical particles	Hydrothermal	1325.67 F g^{-1} (1 A g^{-1})	2 M KOH	92.8% (1000, 1 A g^{-1})	8
CeO_2@CoP/NF nanoflowers	Hydrothermal	595.1 C g^{-1} (1 A g^{-1})	6 M KOH	89% (5000, 5 A g^{-1})	9
Mn_3O_4-CeO_2/ holey-graphene hierarchical architectures	Hydrothermal	310 F g^{-1} (2 A g^{-1})	1 M Na_2SO_4	92.4% (1000, 2 A g^{-1})	10
CeO_2/Co_3O_4/rGO flammulina-velutipes-like	Hydrothermal	1606.6 F g^{-1} (1 A g^{-1})	6 M KOH	92.4% (10,000, 10 A g^{-1})	11
α-Fe_2O_3@CeO_2 core-shell	Calcination	168 F g^{-1} (5 mV s^{-1})	2 M Na_2SO_4	87.5% (2000, 200 mV s^{-1})	12
CeO_2@Co_3O_4 thin sheets	Hydrothermal	1856 F g^{-1} (1 A g^{-1})	2M KOH	83.79% (10,000, 10 A g^{-1})	This

Table S2. The fitted result of EIS date

Electrode	R_{ct} **(Ω)**	R_s **(Ω)**
CeO_2	7.112	1.151
$CeO_2@Co_3O_4$	0.380	0.626
$2CeO_2@Co_3O_4$	3.491	0.627
$CeO_2@2Co_3O_4$	2.011	0.622
Co_3O_4	4.309	0.630

References

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