Carbon quantum dots modified ZnS nanospheres for highly efficient electrocatalytic hydrogen evolution

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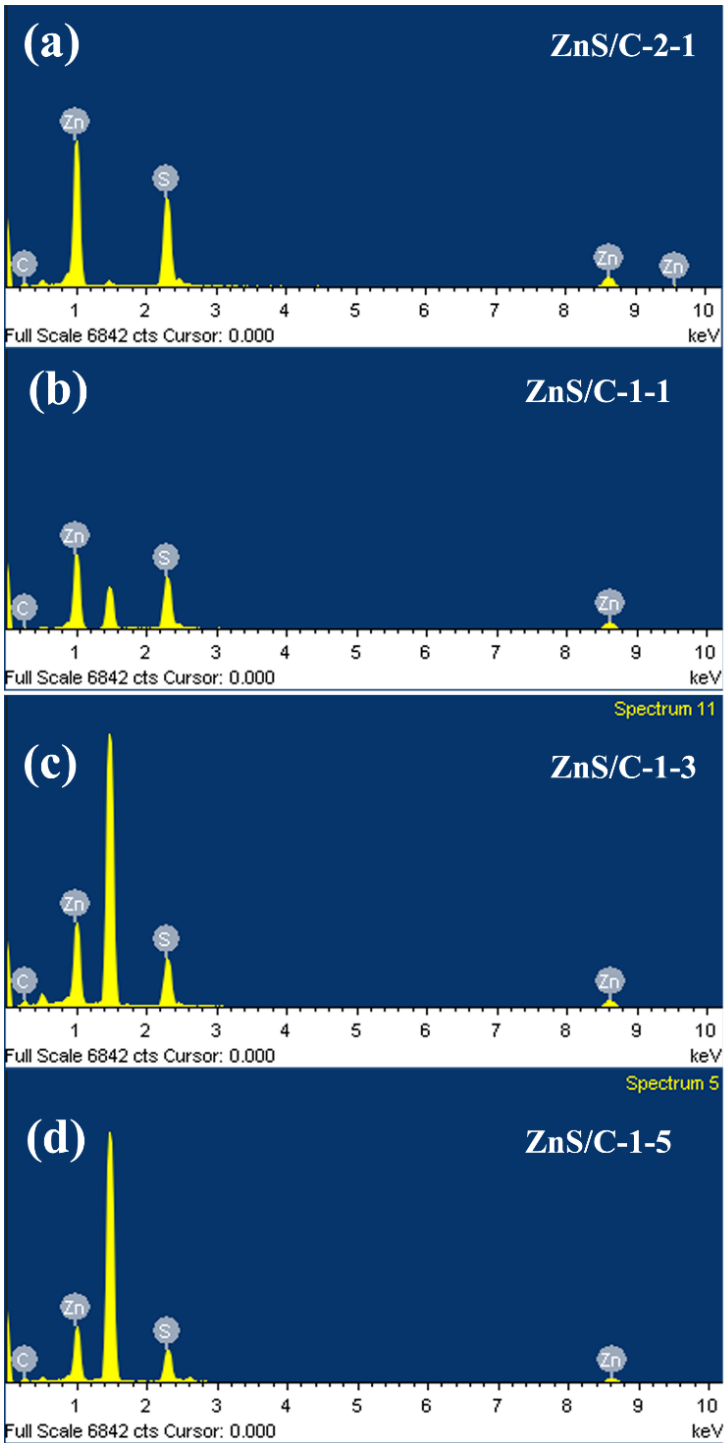

Element	Weight%	Atomic%
C K	8.27	26.30
S K	33.06	39.40
Zn L	58.67	34.30

Element	Weight%	Atomic%
C K	12.17	35.83
S K	29.61	32.67
Zn L	58.22	31.50

Element	Weight%	Atomic%
C K	23.24	55.24
S K	24.75	22.04
Zn L	52.01	22.72

Element	Weight%	Atomic%
C K	24.88	57.22
S K	25.17	21.68
Zn L	49.95	21.10

Fig. S1 The The specific of atomic ratios of Zn, S and C in (a) ZnS/C-2-1, (b) ZnS/C-1-1, (c) ZnS/C-1-3 and (d) ZnS/C-1-5.

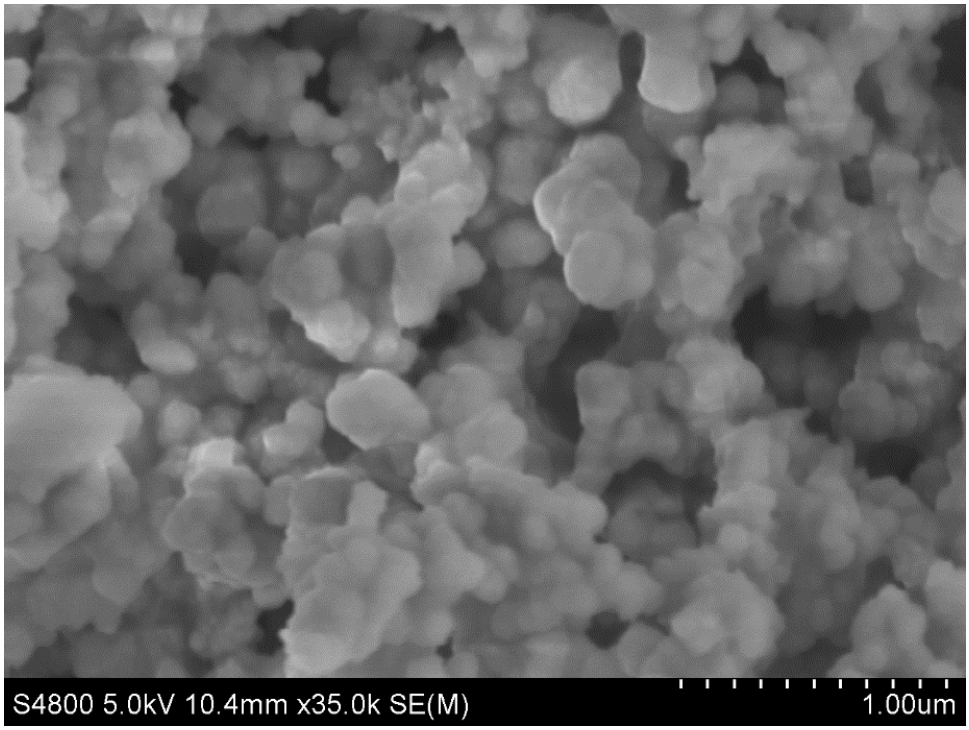

Fig. S2 SEM image of pure ZnS nanospheres.

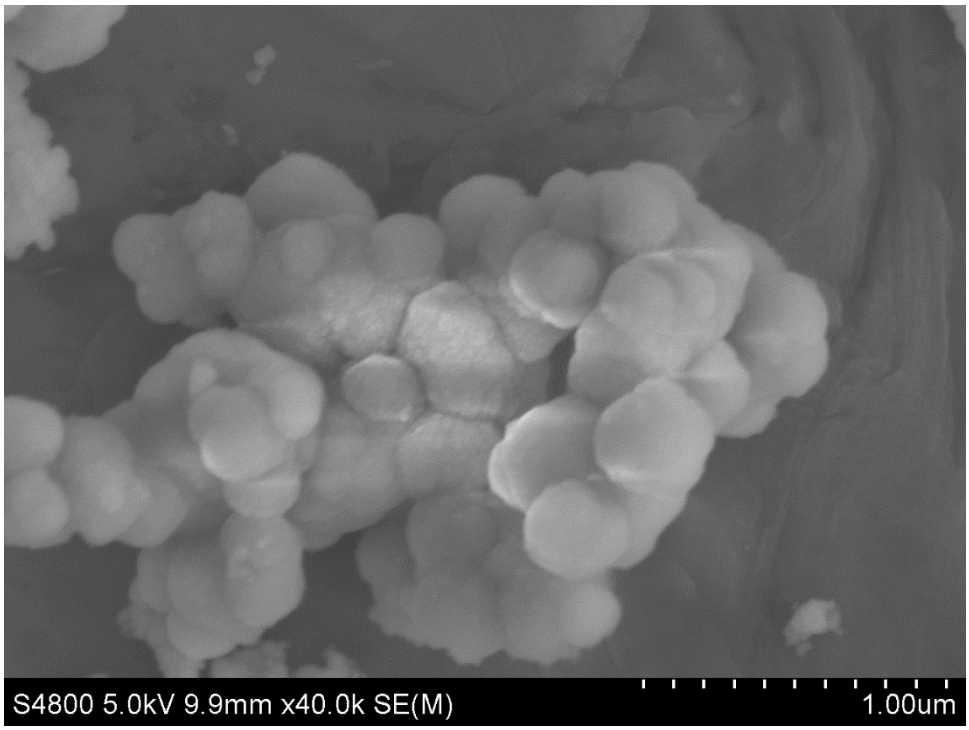

Fig. S3 SEM image of ZnS/C nanosphere.

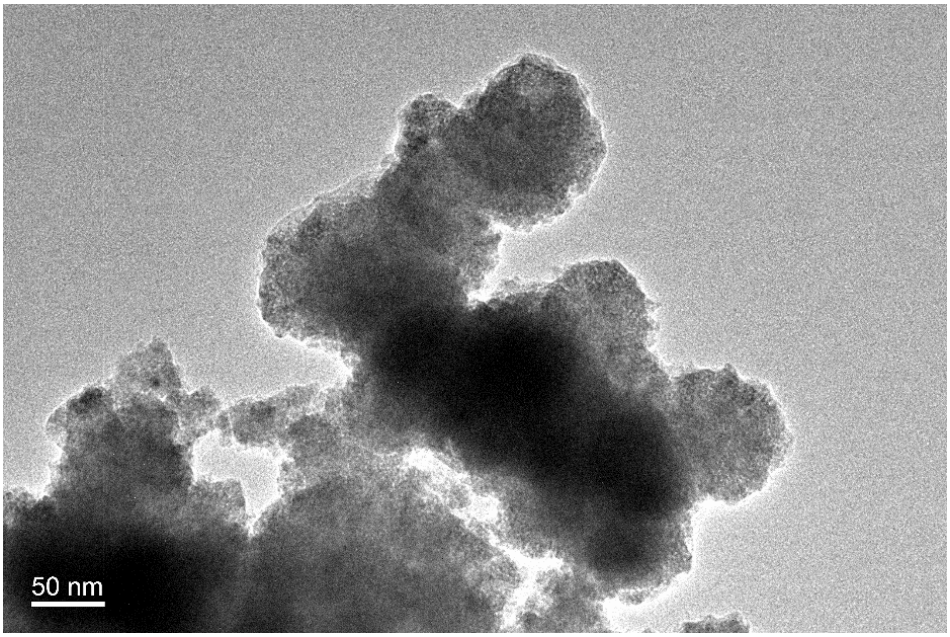

Fig. S4 TEM image of pure ZnS nanpspheres.

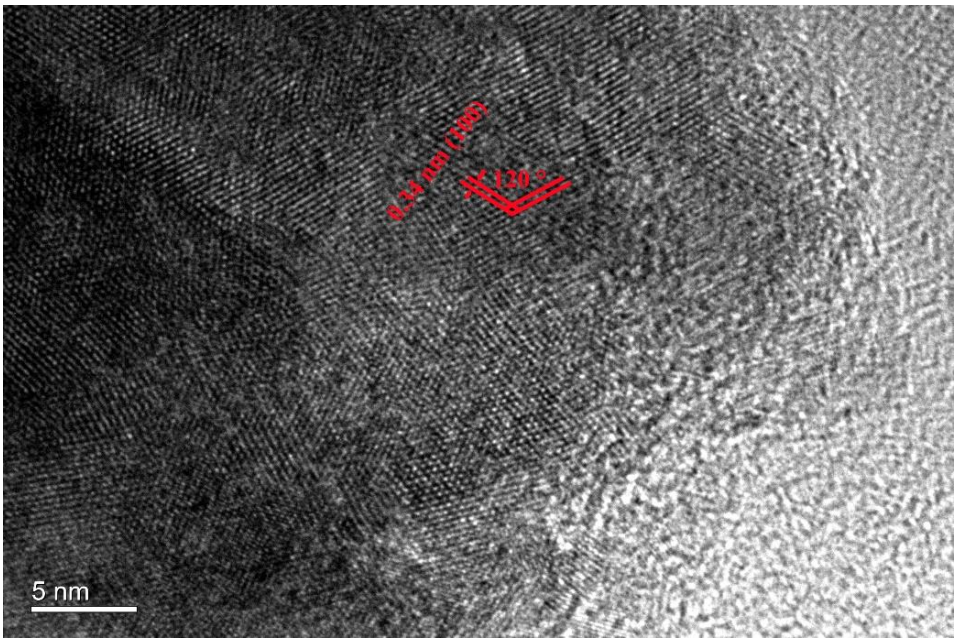

Fig. S5 HRTEM image of pure ZnS nanpspheres.

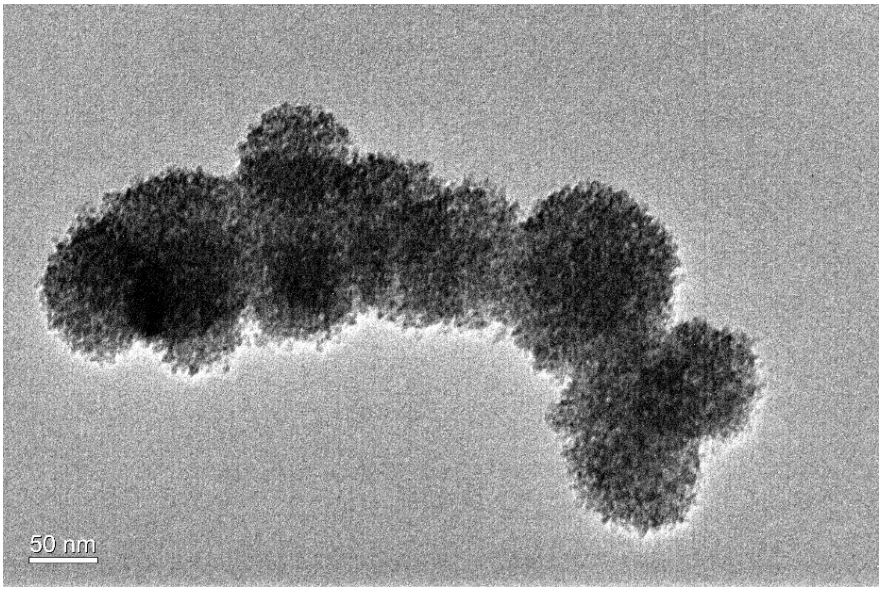

Fig. S6 TEM image of ZnS/C nanosphere.

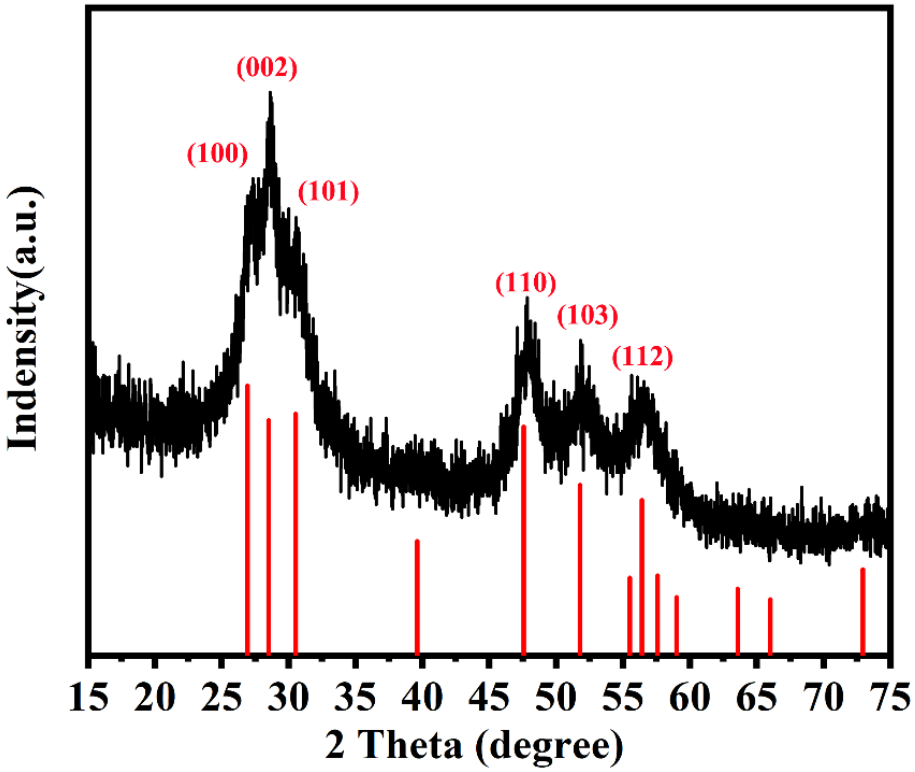

Fig. S7 XRD pattern of ZnS nanosphere.

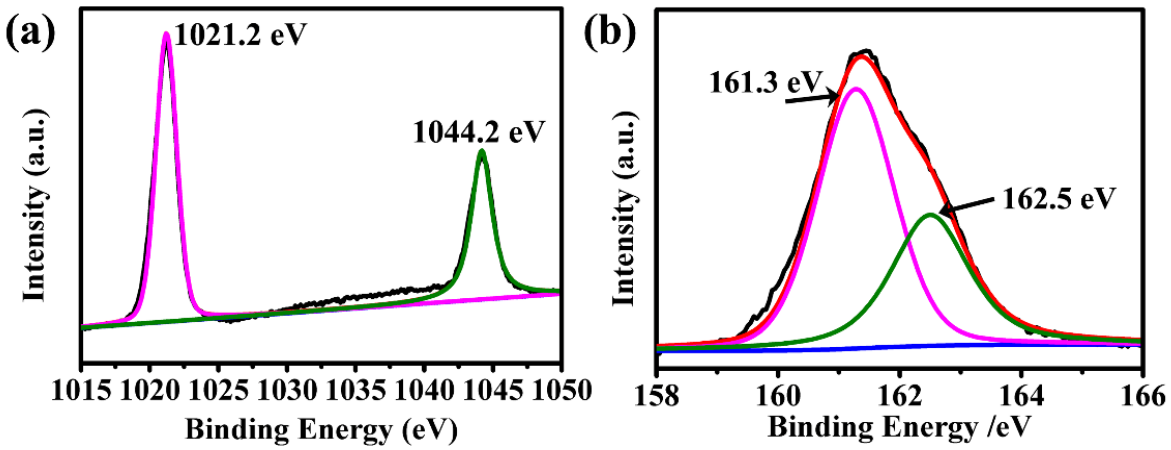

Fig. S8 High resolution XPS spectra of (a) Zn 2p, (b) S2p in pure ZnS nanosphere.

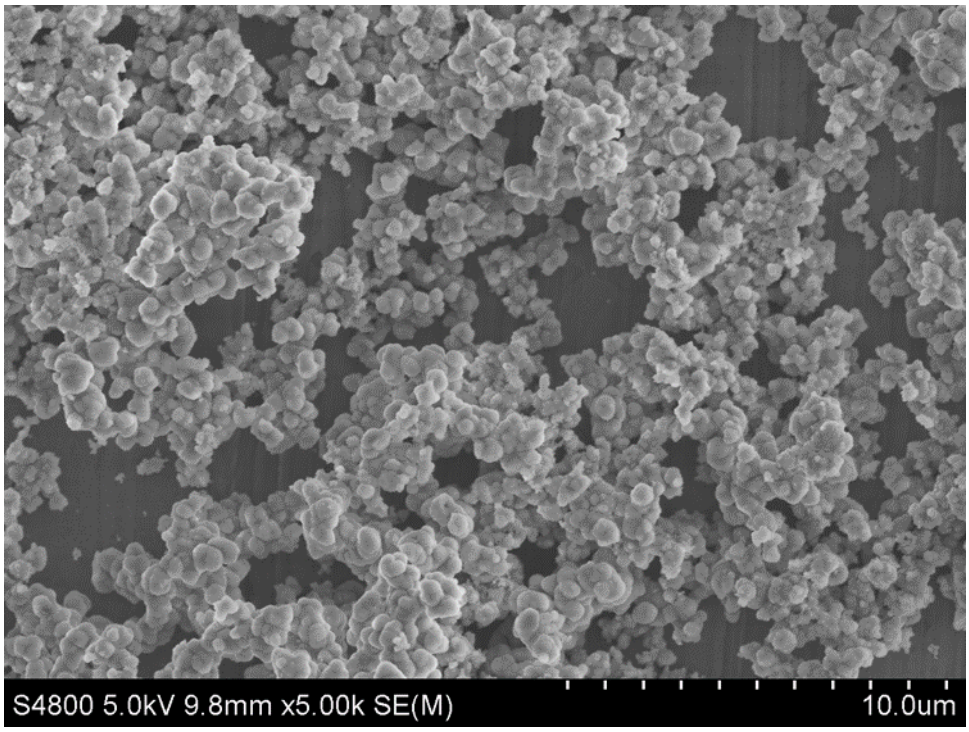

Fig. S9 SEM image of ZnS/C nanosphere after cyclic voltammetry test with 1000 cycles.

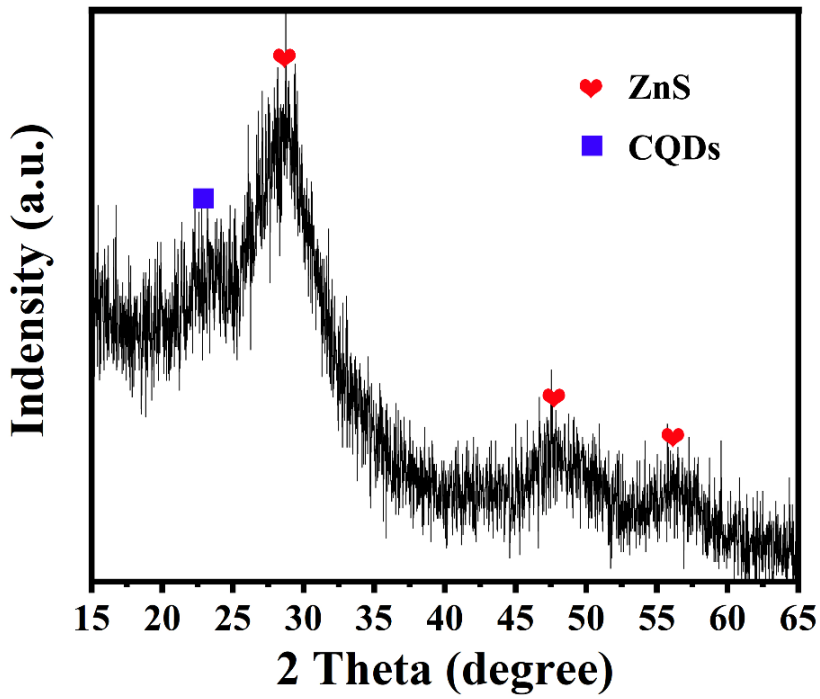

Fig. S10 XRD pattern of ZnS/C nanosphere after cyclic voltammetry test with 1000 cycles.

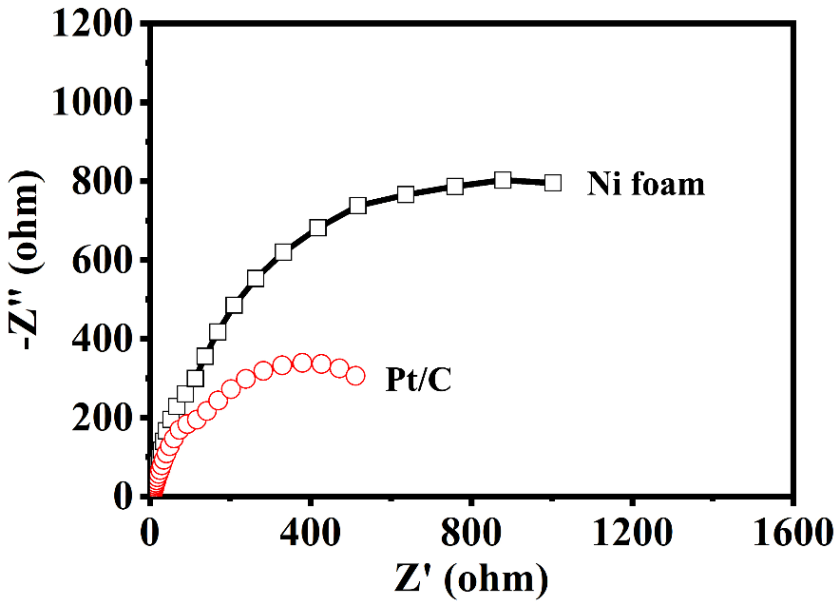

Fig. S11 Electrochemical impedance spectroscopy (EIS) Nyquist plots for Ni foam and commercial 20 wt% Pt/C.

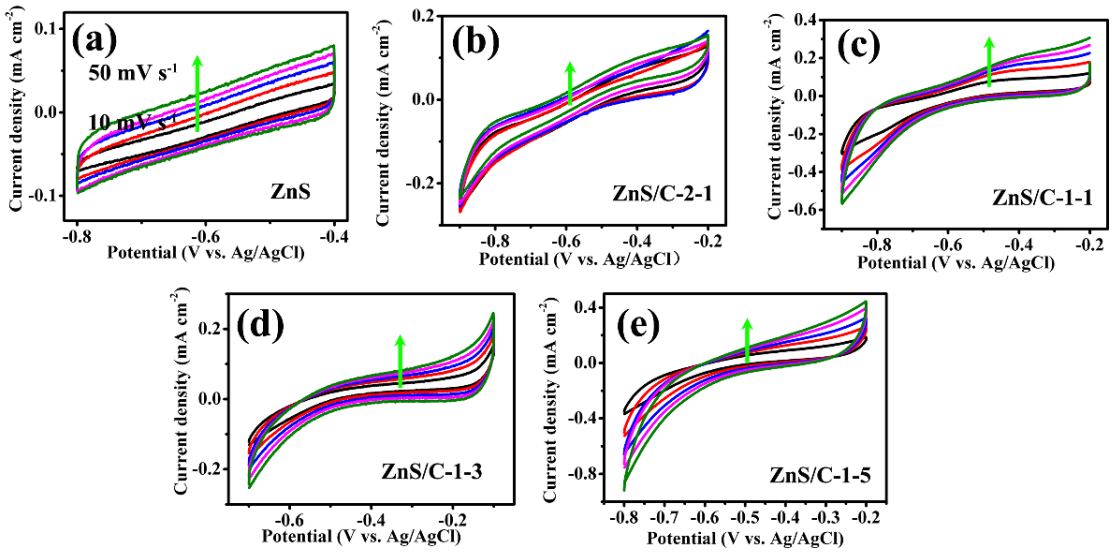

Fig. S12 Electrochemical cyclic voltammetry curves of (a) ZnS nanosphere, (b) ZnS/C-2-1 nanosphere, (c) ZnS/C-1-1 nanosphere, (d) ZnS/C-1-3 nanosphere, and (e) ZnS/C-1-5 nanosphere with scan rates from 10 mV s^{-1} to 50 mV s^{-1} with an interval point of 10 mV s^{-1}.

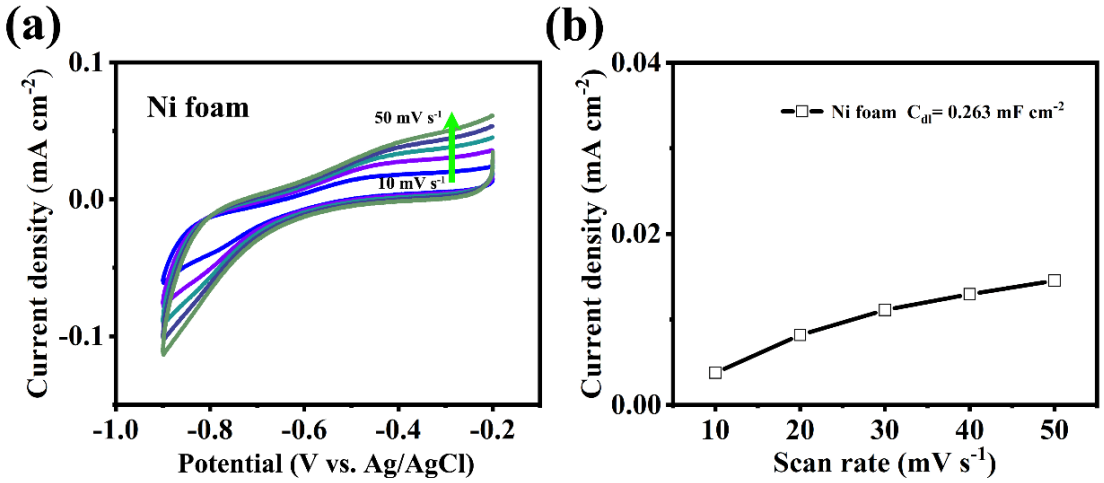

Fig. S13 (a) Electrochemical cyclic voltammetry curves of Ni foam, (b) The fitting plots showing C_{dl} for Ni foam.