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Supplementary Material

In Situ Formation and Superior Lithium Storage Properties of Tentacle-Like ZnO@NC@CNTsComposites

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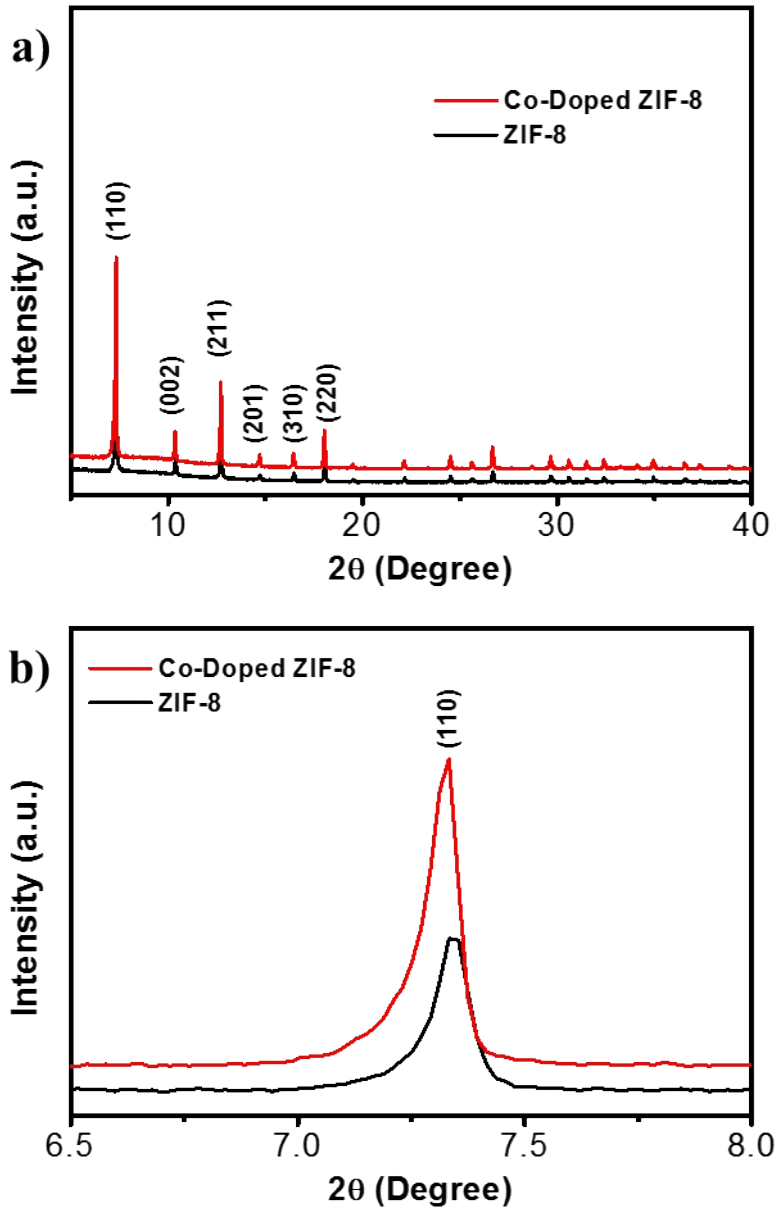

Fig. S1.(a) Full-scale XRD patterns for ZIF-8 and Co-doped ZIF-8, (b) the enlarged part of (110) diffractions, which show a slightly shift of the Co-doped ZIF-8 sample.

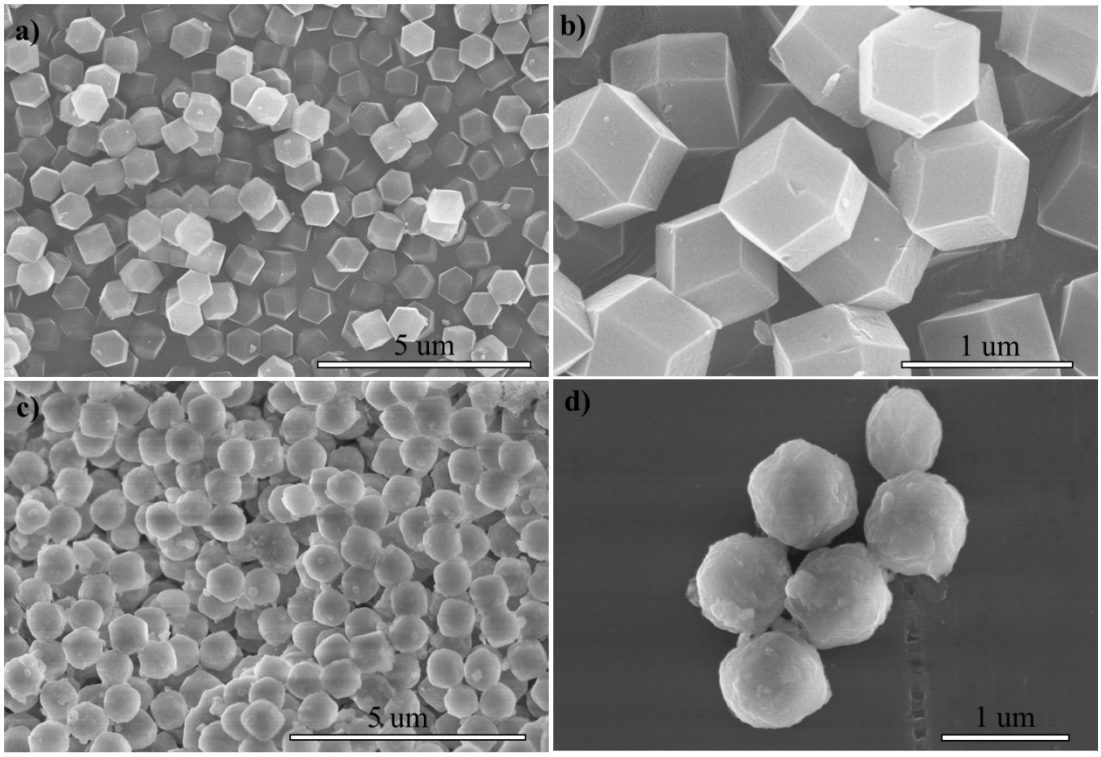

Fig. S2. SEM images of (a, b) ZIF-8, and (c, d) Co-doped ZIF-8

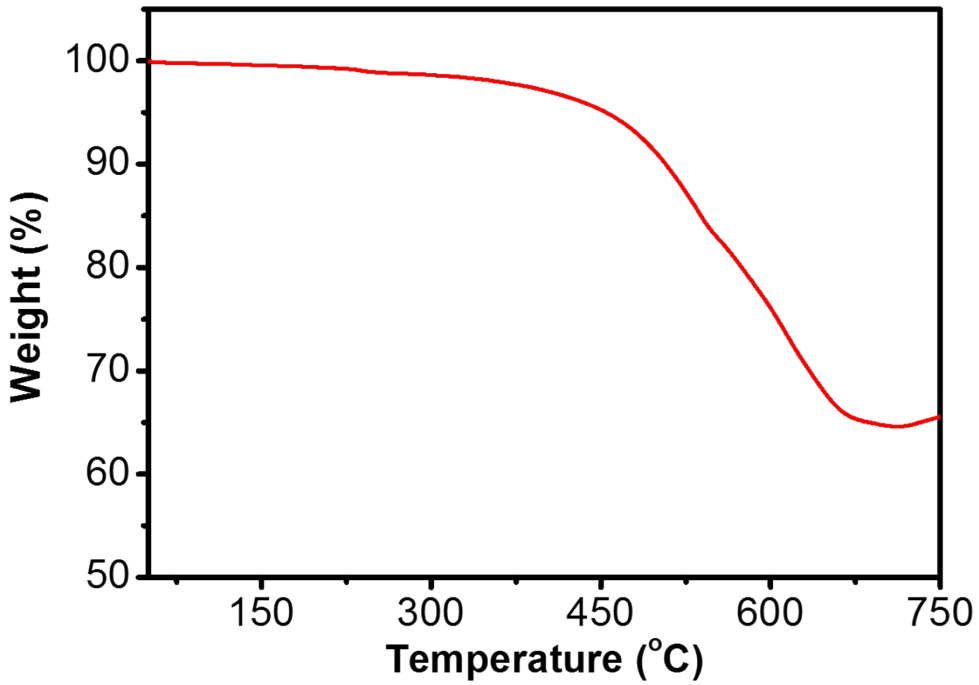

Fig. S3. TG curve of Co-doped ZIF-8 performed in nitrogen with a heating rate of 10 °C min^{-1}.

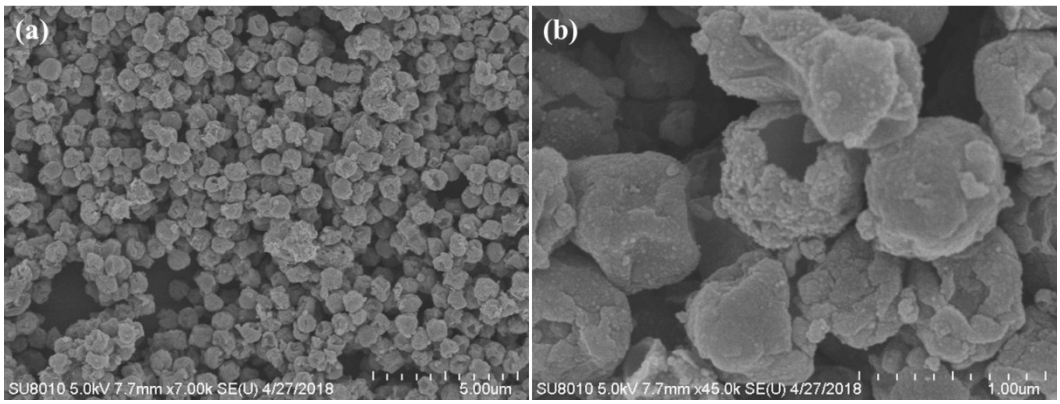

Fig. S4. SEM images of the Co_h-doped ZIF-8 derived Zn@Co-NC samples (a, b) in different resolutions.

Co_h-doped ZIF-8 was synthesis by evaluate the $Co(NO_3)_2 \cdot 6H_2O$ content to a higher value of 7.5 mM, then the Co_h-doped ZIF-8 was treated under same conditions as the Co-doped ZIF-8 to investigate the effect of Co content on the resultant sample.

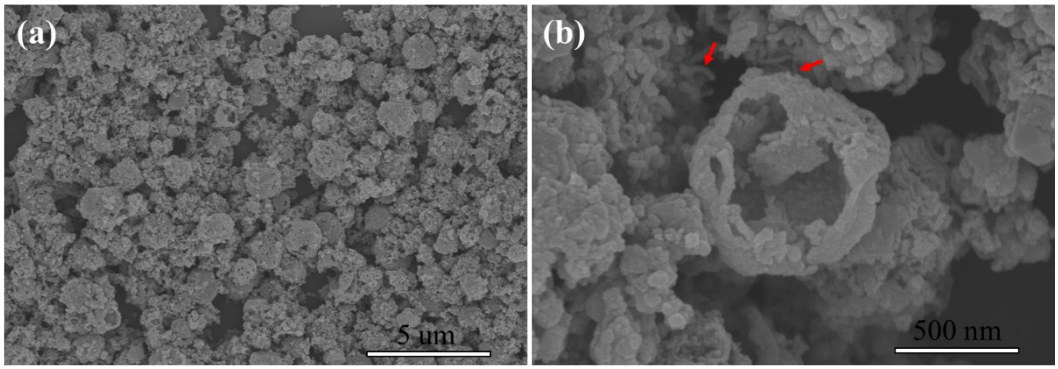

Fig. S5. SEM images of ZnO@NC@CNTs annealed at 650°. The red arrow in (b) points to the CNTs.

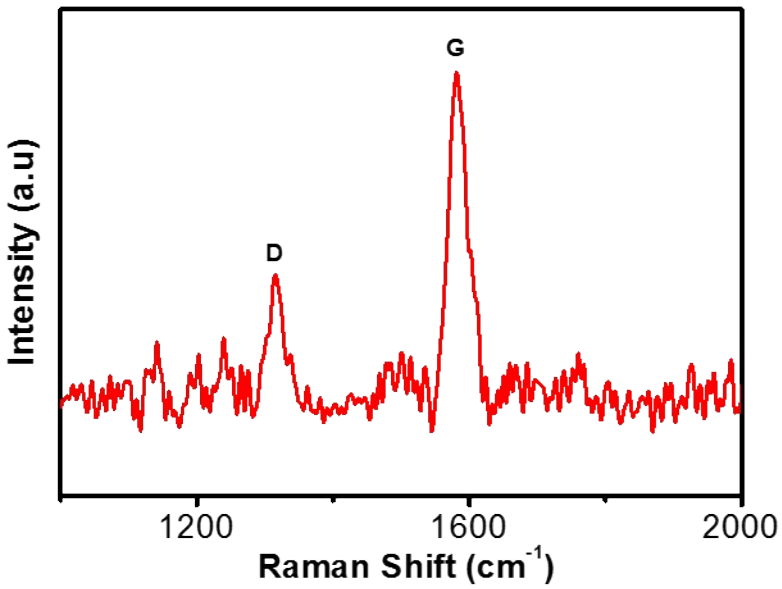

Fig. S6. Raman spectrum of the ZnO@NC@CNTs sample.

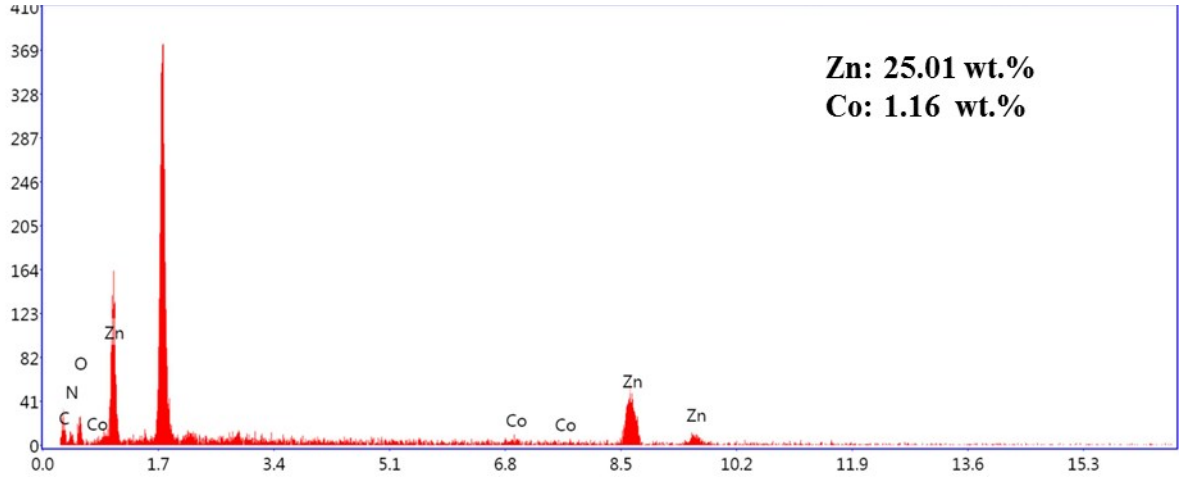

Fig. S7. SEM-EDS spectra of ZnO@NC@CNTs.

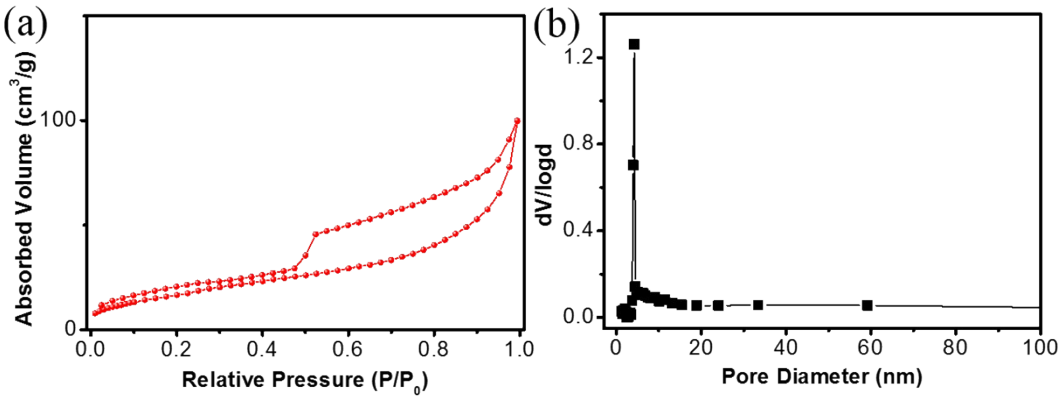

Fig. S8. (a) Nitrogen isothermals and(b) pore size distribution curve of the ZnO@NC.

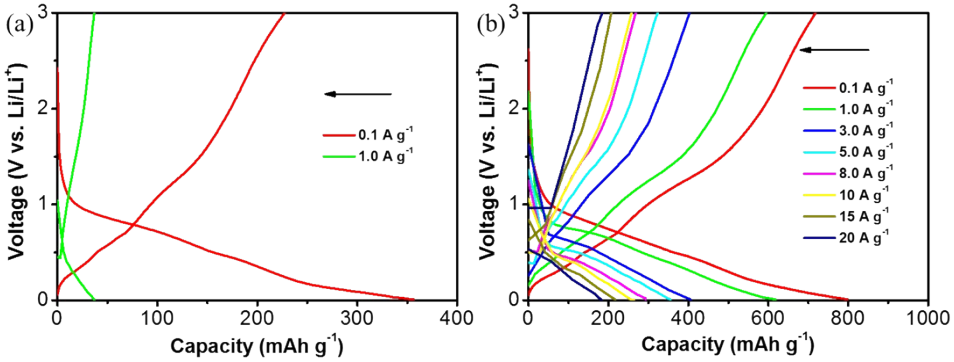

Fig. S9. Galvanostatic charge/discharge curves of (a) ZnO@NC and (b) ZnO@NC@CNTs at various current densities.

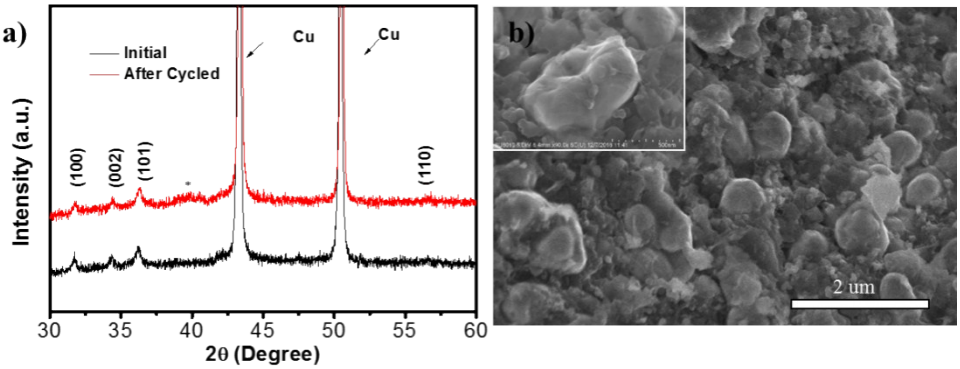

Fig. S10. Investigation of the after cycled ZnO@NC@CNTs electrode, (a) XRD pattern, (b)SEM image, inset is the enlarge picture of an individual polyhedron.

Table S1 Electrochemical comparison of this ZnO@NC@CNTs with other highly studied electrode

Samples	**Current density ($A\ g^{-1}$)**	**Capacity ($mAh\ g^{-1}$)**	**Cycle**	**Ref.**
ZnO@NC@CNTs	0.1	672	105	This work
ZnO QD/carbon bubble	1.0	510	400	1
ZnO/multiwall CNTs	0.2	419.8	100	2
ZnO/C nanofibers	2.0	452	500	3
Co-doped ZnO	1.0	412.5	1000	4
ZnS/C NPS	0.5	506	600	5
MoS_2-$MoSe_2$	0.2	676	200	6
TiO_2@NC@MoS_2	1.0	590	200	7
NiP_2@C-CNTs	1.3	816	1200	8
	5.0	654	1500	
SnO_2–Co_3O_4	1.0	963	1000	9
Co_3O_4@CNT	0.1	862	60	10
Triple shelled MoO_2/C	0.5	580	200	11
MoO_2-Graphene	1.0	600	70	12

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