Supporting Information

MOFs-derived Bi-metal Embedded N-doped Carbon Polyhedral Nanocages with Enhanced Lithium Storage

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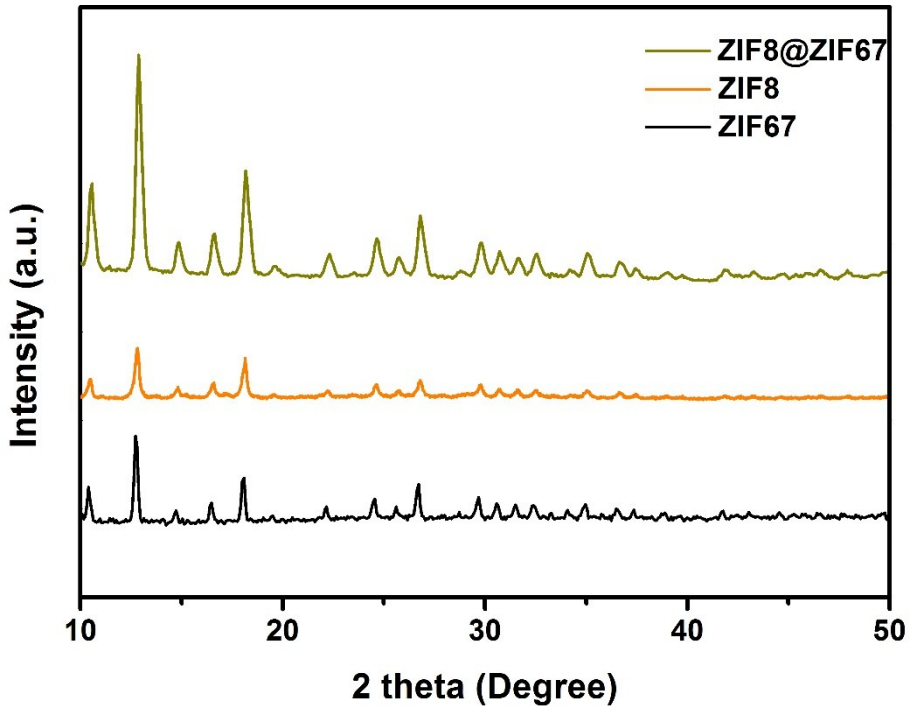

Figure S1. XRD patterns of the as-synthesized ZIF-8, ZIF-67, and ZIF-8@ZIF-67crystals.

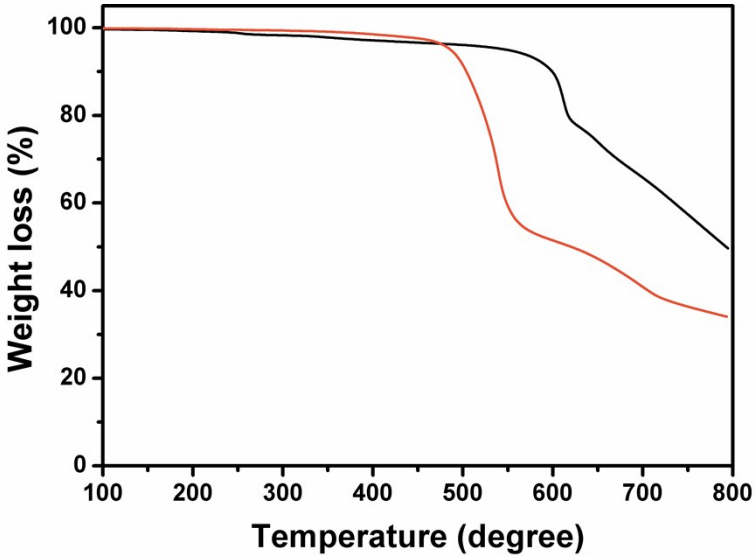

Figure S2. TGA curves of ZIF-8 and ZIF-8@ZIF-67.

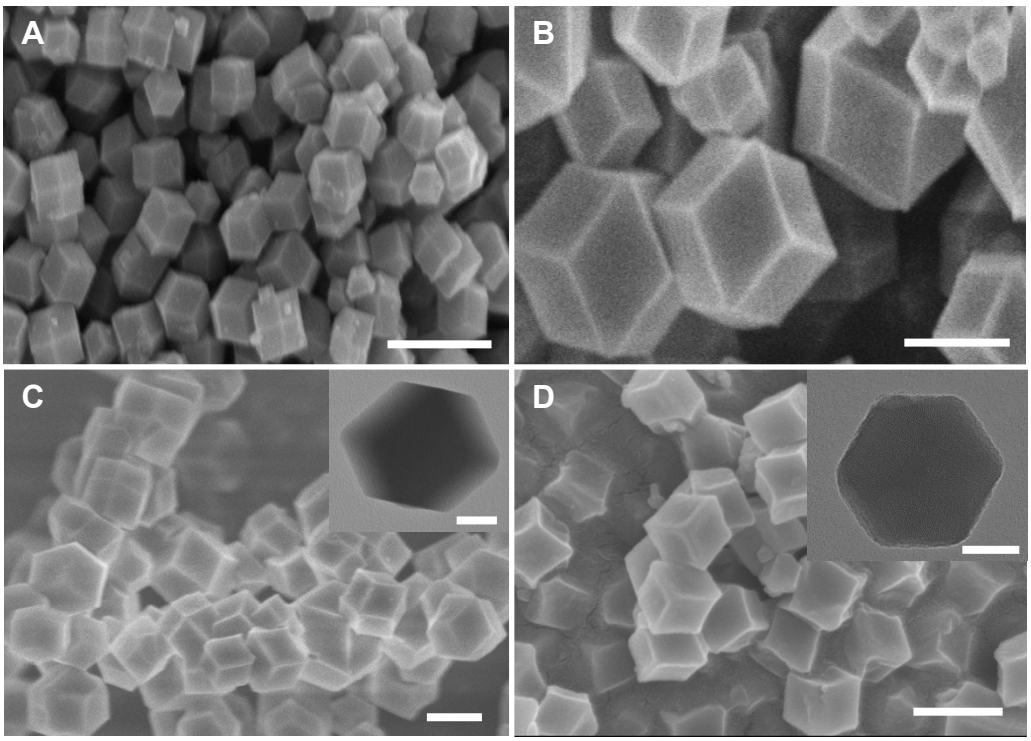

Figure S3. FESEM images of (A) ZIF-8, (B) ZIF-67, (C) ZIF-8@ZIF-67, (D) ZIF-8 derived N-doped C. Scale bars: (A- C) 500 nm; (D) 300 nm; the inset (C,D) 100 nm.

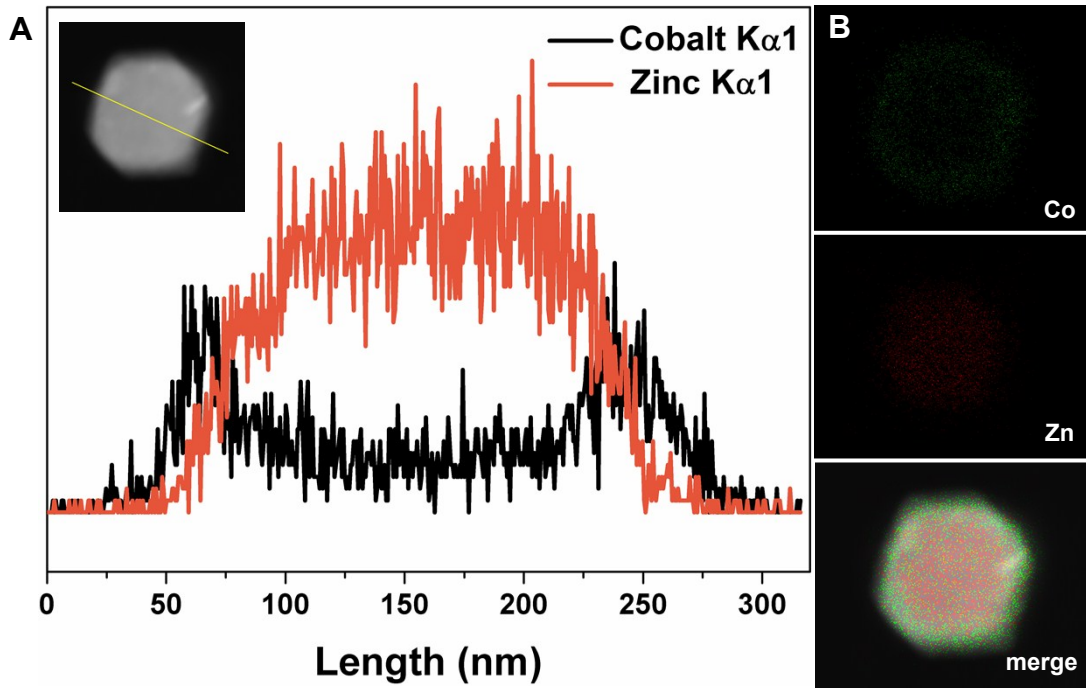

Figure S4. (A) elemental line profiles (refer to the yellow line in the inset of STEM image), and (B) elemental mappings of ZIF-8@ZIF-67 core-shell polyhedral nanocage (see the inserted STEM image in (A)).

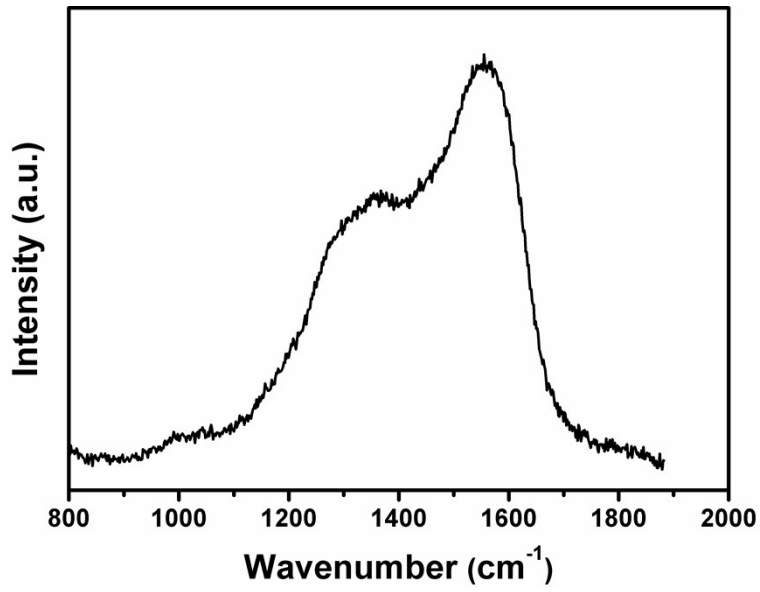

Figure S5. Raman spectrum of porous Co-Zn/N-C polyhedral nanocage.

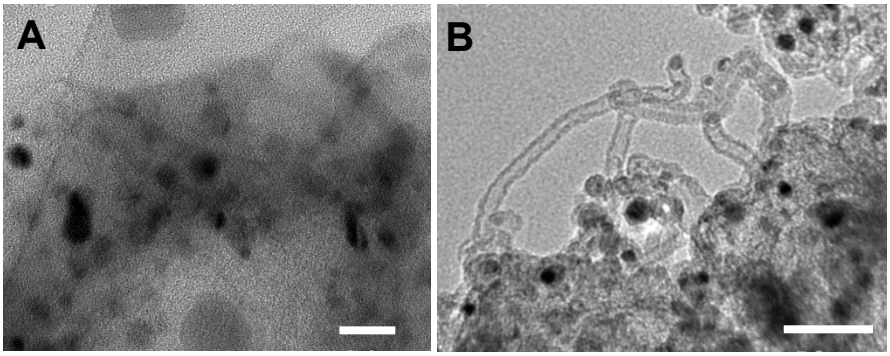

Figure S6. (A) high magnification TEM image of the wall of porous Co-Zn/N-C polyhedral nanocages; (B) TEM image of CNTs growing on the edge of porous Co-Zn/N-C polyhedral nanocages. Scale bars: (A) 20nm, (B) 50 nm.

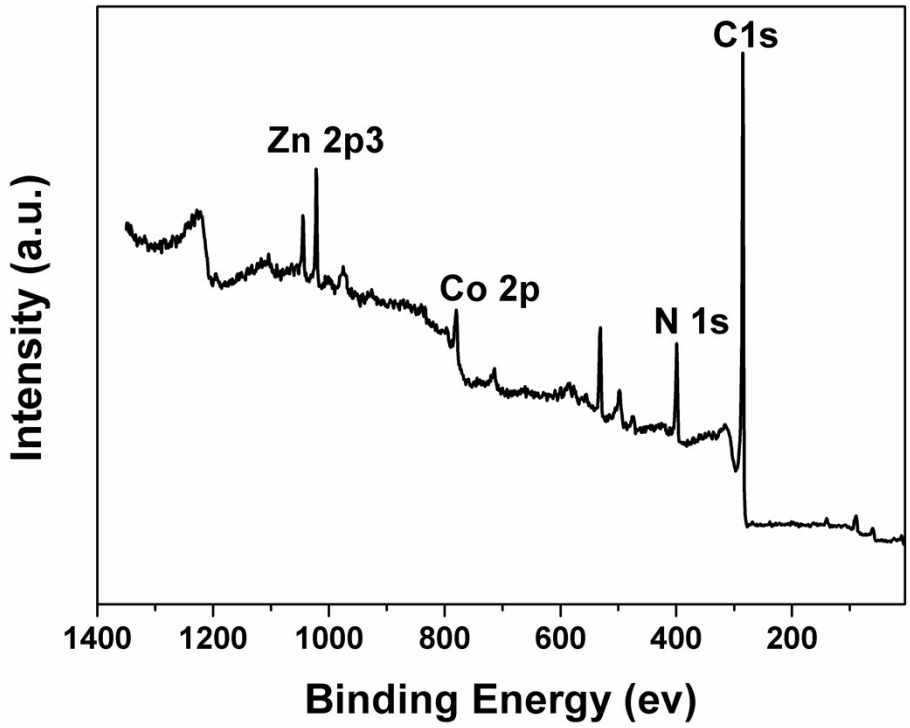

Figure S7. Full XPS spectrum of porous Co-Zn/N-C polyhedral nanocages.

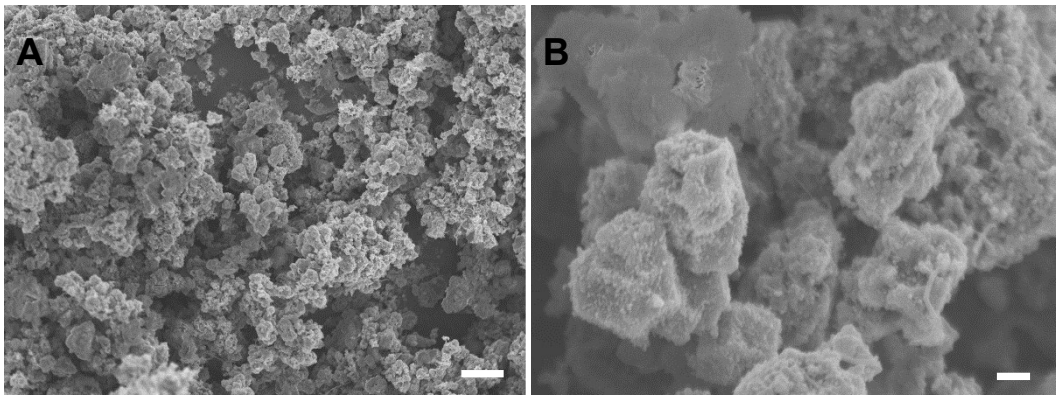

Figure S8. FESEM images of Co-Zn/N-C electrodes were observed after 30 charge/discharge cycles at 200 mA g^{-1}. Scale bars: 100 nm (A,B).

Table S1. Comparison of electrochemical performance of porous carbon-based anodes for LIBs.

Sample	Current density [mA g^{-1}]	Cycle number	Final capacity [mA h g^{-1}]	Current density [A g^{-1}]	Capacity [mA h g^{-1}]	Reference
Co-Zn/N-C	**200**	**400**	**702**	**2**	**444**	**This work**
porous carbon fibers	186	45	400	3.72	250	[1]
mesoporous carbon	500	1100	485	4	214	[2]
bagasse microwave derived carbons	100	60	600	2	262	[3]
nitrogen doped porous carbon	37.2	500	505	3.72	190	[4]
porous bio-carbons	372	500	370			[5]
porous carbon	37.2		493	11.16	220	[6]
hierarchically porous carbon	100	100	805	20	210	[7]
nitrogen containing bio-carbon	100	50	610	3.8	181	[8]
Porous graphene	372	100	926	7.44	211	[9]

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