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Supporting Information

Selenium-infiltrated metal-organic framework-derived porous carbon nanofibers comprising interconnected bimodal pores for Li-Se batteries with high capacity and rate performance

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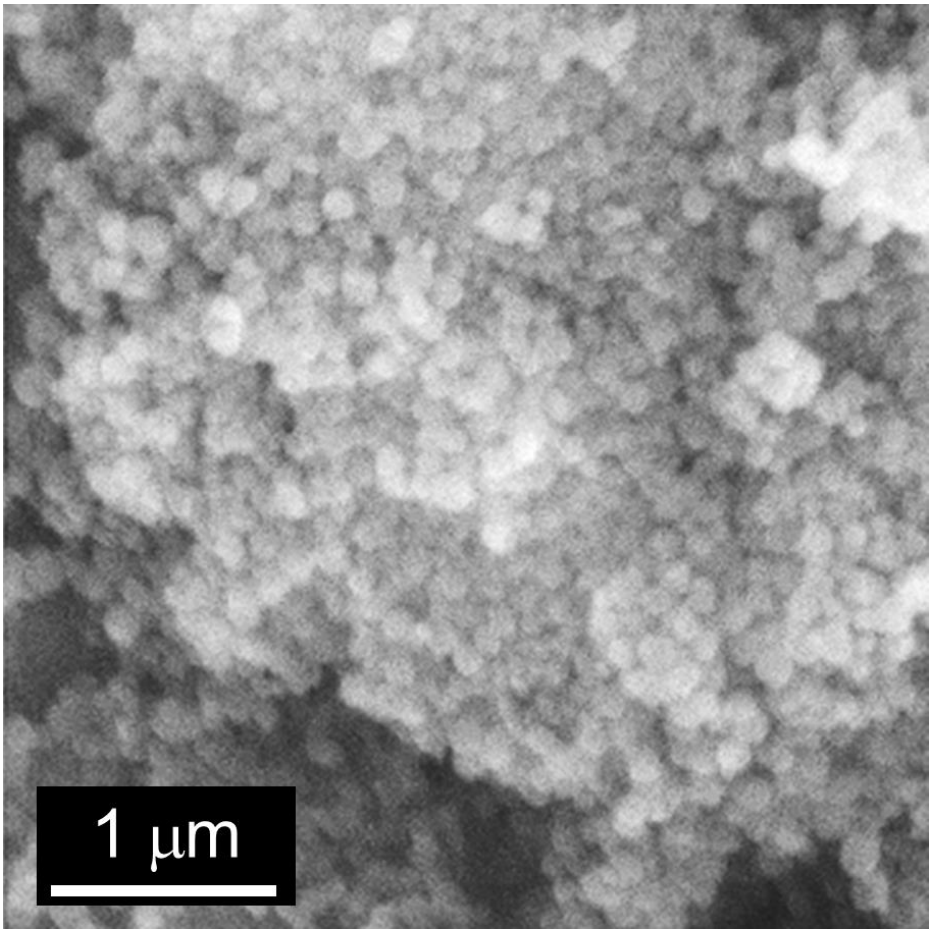

Fig. S1. SEM images of ZIF-8 nanoparticles constituting PAN/ZIF-8 nanofibers.

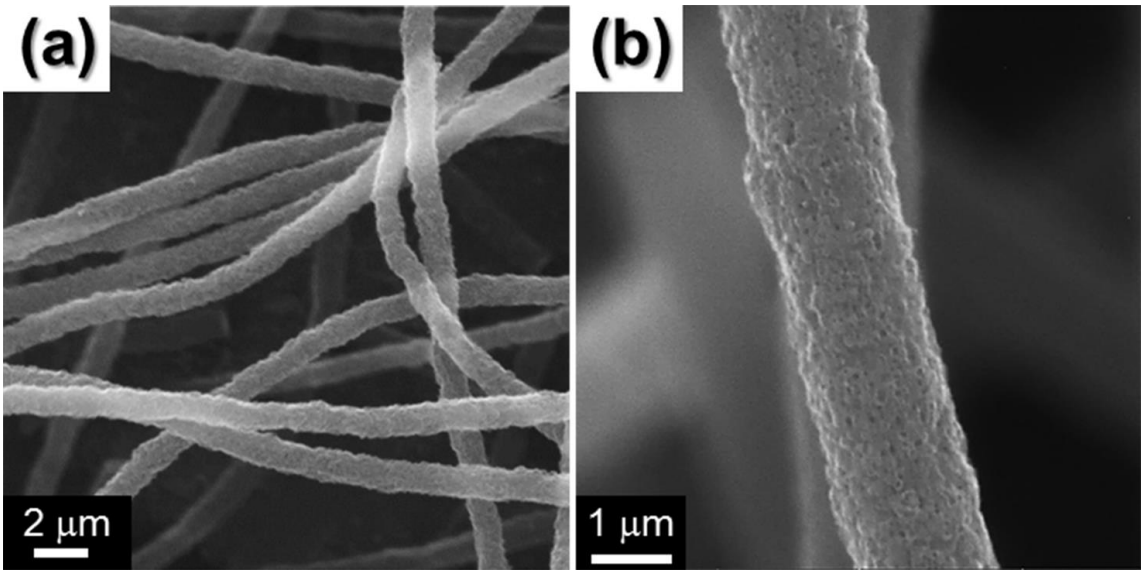

Fig. S2. (a) Low and (b) high resolution SEM images of M-CNF.

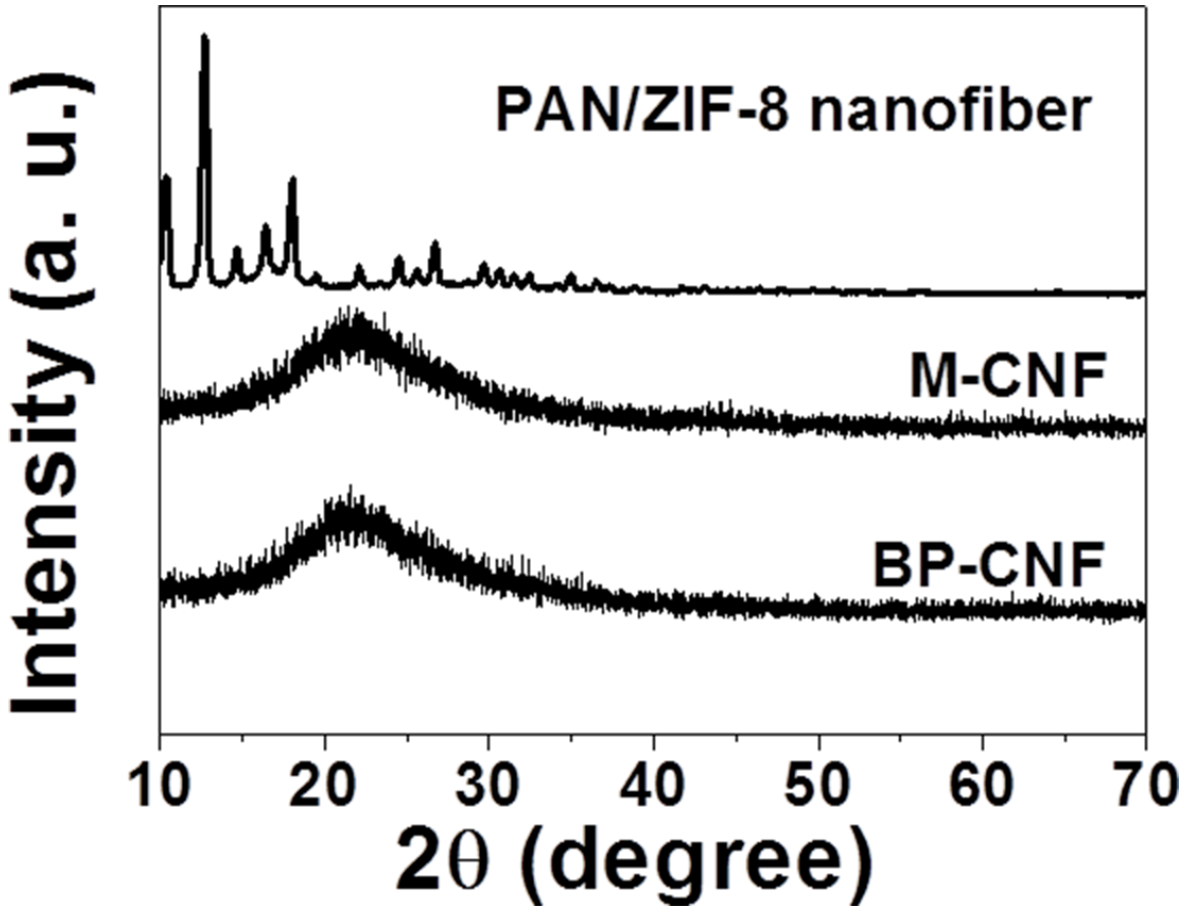

Fig. S3. XRD patterns of PAN/ZIF-8 nanofiber, M-CNF, and BP-CNF.

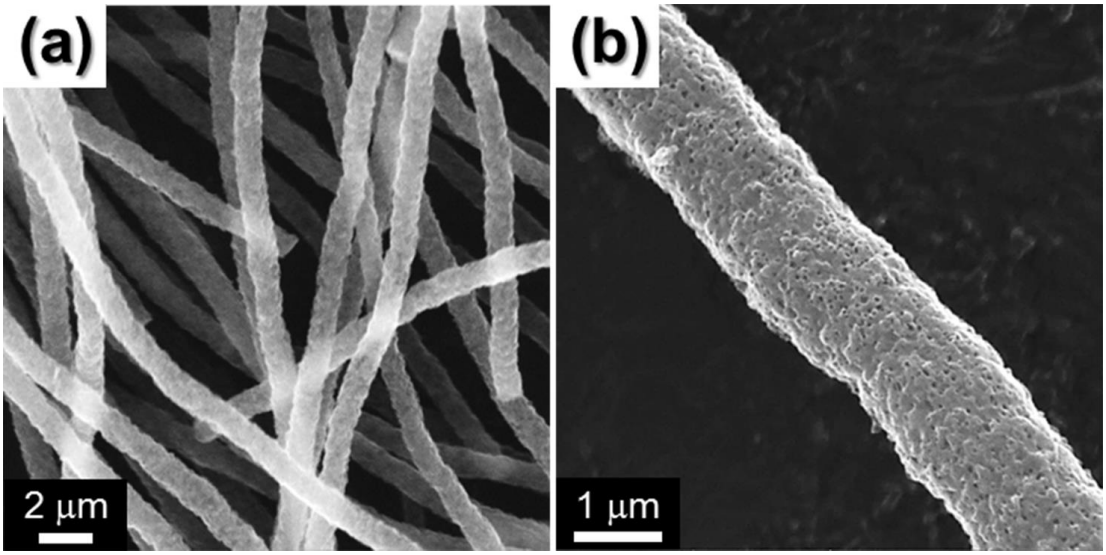

Fig. S4. (a) Low and (b) high resolution SEM images of BP-CNF.

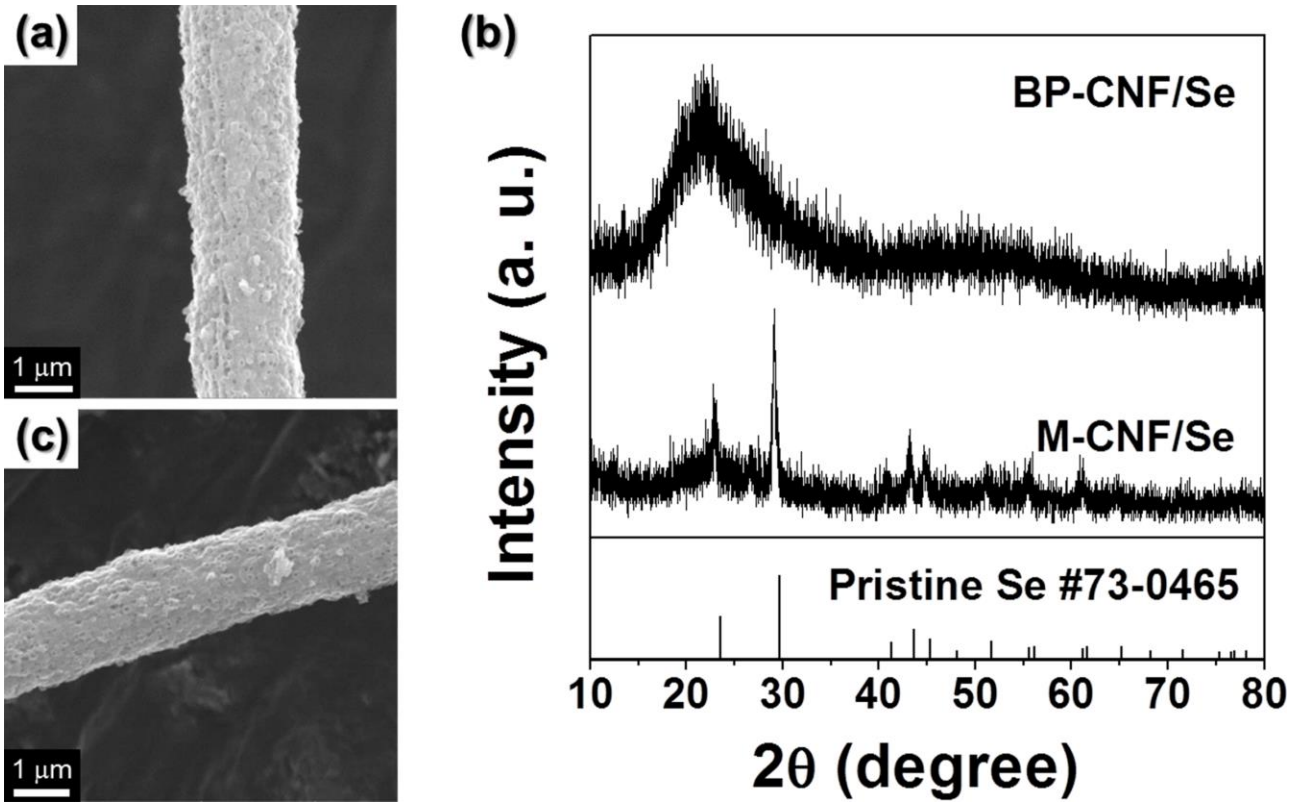

Fig. S5. (a) SEM image of M-CNF/Se, (b) XRD patterns of M-CNF/Se and BP-CNF/Se, and (c) SEM image of BP-CNF/Se.

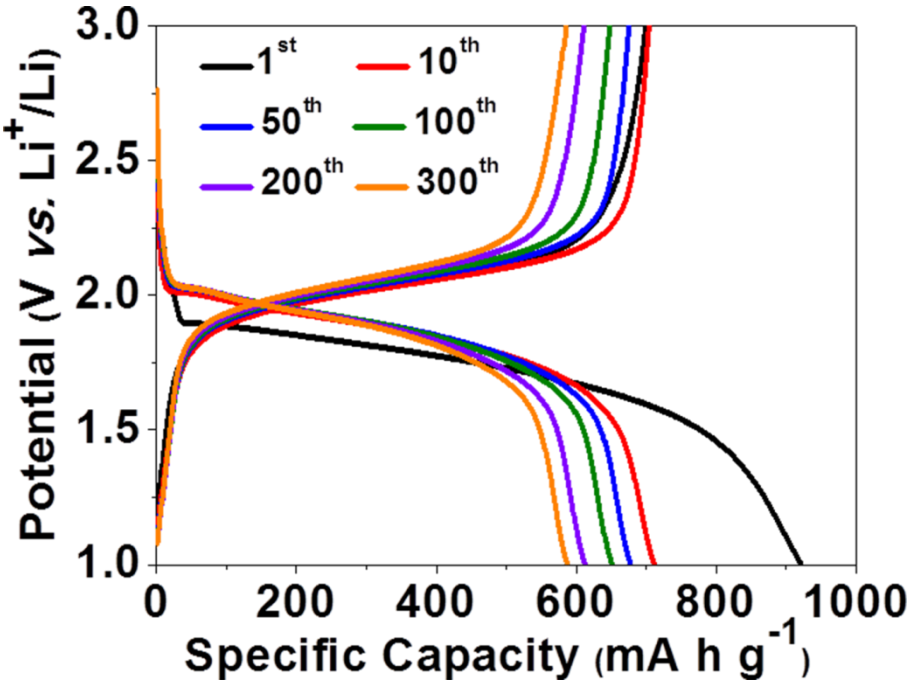

Fig. S6. Charge-discharge profiles of BP-CNF/Se electrode at 1st, 10th, 50th, 100th, 200th, and 300th cycles.

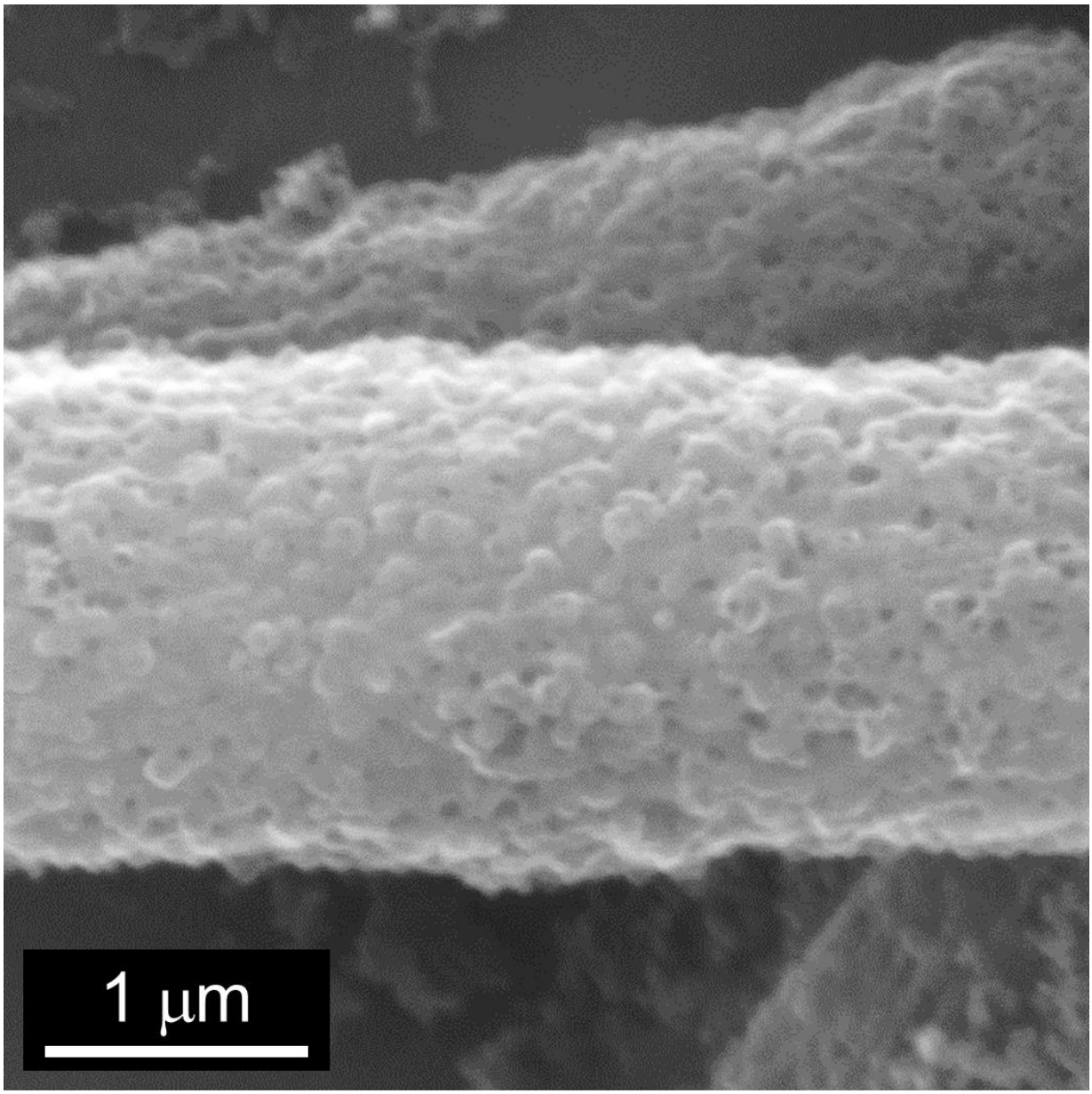

Fig. S7. SEM image of BP-CNF/Se nanofiber after 50 cycles at 0.5 C.

Table S1. Electrochemical properties of various nanostructured materials applied as lithium-selenium batteries reported in the previous literatures.

Morphology [preparation method]	Se content (%)	Current density	Initial discharge/charge capcities [mA h g^{-1}]	Discharge capacity [mA h g^{-1}] and (cycle number)	Rate capacity [mA h g^{-1}]	Ref.
Bimodally porous carbon nanofibers/Se [electrospinning & chemical activation]	**60**	**0.5 C**	**921/700**	**588 (300)**	**568 (10 C)**	***This work***
Nitrogen-containing hierarchical porous carbon [template-assisted]	56.2	2 C	435/~314	305 (60)	~246 (5 C)	S1
Macro-/micro-porous biochar-based framework [carbonizaion of pomelo]	56.1	0.2 C	877.2/597.4	467 (300)	421 (2 C)	S2
Porous hollow carbon bubbles [hydrothermal]	~50	0.1 C	691.1/454.6	606.3 (120)	431.9 (1 C)	S3
Graphene–encapsulated selenium / polyaniline core–shell nanowires [*in situ* chemical oxidative polymerization]	~59.7	0.1 C	917/~708	540 (100)	430 (5 C)	S4
Metal complex-derived porous carbon [salt-bake approach]	72	0.1 C	904/~635	636 (150)	547 (10 C)	S5
Porous carbon nanofiber webs [modified oxidative template assembly]	33.2	1 C	439/-	323.7 (300)	345.6 (1 C)	S6
Mesoporous carbon microsphere [spray drying]	50	0.5 C	513/-	300 (100)	320 (5 C)	S7
3D mesoporous carbon [heating melt-infiltration]	62	0.1 C (first 5 cycles) 1 C	655/- 432/-	385 (1300)	274 (3C)	S8
Carbon bonded and encapsulated selenium composites [*in situ* carbonization]	54	100 mA g^{-1}	862/560	430 (250)	280 (1200 mA g^{-1})	S9
Heteroatom-doped microporous carbon [carbonization of polypyrrole with KOH]	60	1 C	~1200/664	506 (150)	303 (20 C)	S10

References

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