Supporting Information

Bi/C Nanosheet Microspheres with Open Pore Structure as Anodes for Sodium Ion Batteries with High Capacity, Excellent Rate Performance and Long Cycle Life

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Tab. S1. Electrochemical performance comparison

Material	First reversible capacity [mA g^{-1}] (current density [A g^{-1}])	ICE /%	Rate capability [mA g^{-1}] (current density [A g^{-1}])	Long cycle life [mA g^{-1}] (cycle number, current density [A g^{-1}])	Ref.
Multicore–Shell Bi@N-doped Carbon Nanospheres	355 (1)	36.5	262 (5), 252 (10), 240 (20), 211 (50)	235 (2000, 10)	[1]
Free-standing bismuthene/graphene	/	/	~263 (1.2)	317 (1000, 0.71)	[2]
Bismuth nanoparticle@carbon	315 (0.8)	50.3	232(60)	265 (30000, 8)	[3]
Bi@Graphite	164 (0.16)	74.5	110 (48)	144 (10000, 32)	[4]
$C_{PVP+C2H2}$ /Bi/rGO	~420 (0.1)	76.0	373 (5), 359 (10), 322 (20), 188 (50)	327.6 (1200, 5)	[5]
Bi nanoflakes on Ni foam	377 (0.02)	/	318 (0.4), 282 (0.8), 240 (1.2), 206 (2.0)	302.4 (100, 0.2)	[6]
bismuth nanosheets on carbon cloth	451 (0.05)	61.2	~120 (2)	240 (300, 0.2)	[7]
Bi nanorod bundles	367 (0.05)	55	102 (2)	302 (150, 0.05)	[8]
This work	426 (0.1)	73.8	396 (0.2), 395 (5), 392 (10), 381 (20)	361 (10000, 5)	

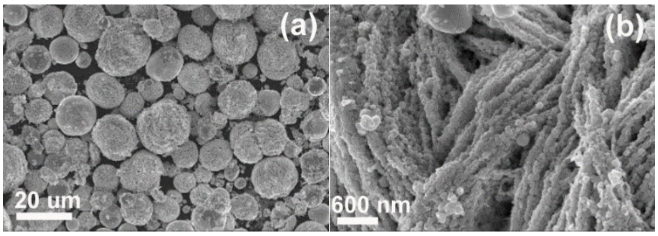

Fig. S1. SEM images of pure Bi nanosheet microspheres.

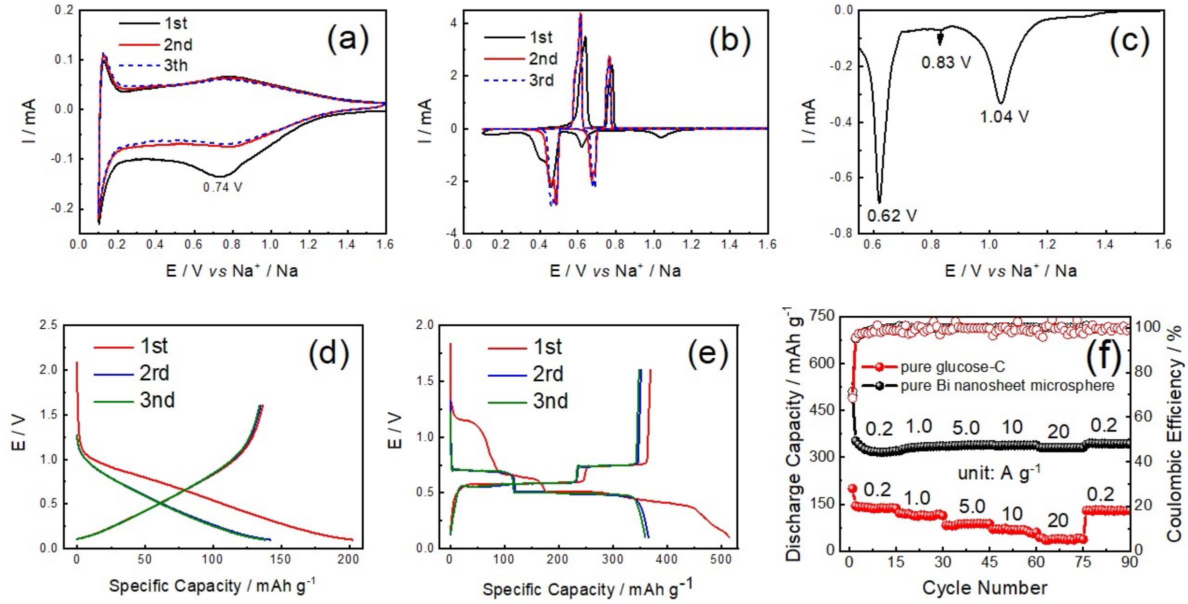

Fig. S2. CV curves of (a) pure glucose-C and (b) pure Bi nanosheet microspheres at 0.2 V s^{-1}; (c) Magnified first cathode scan curve of pure Bi nanosheet microspheres; Charge and discharge profiles of (d) pure glucose-C and (e) pure Bi nanosheet microspheres in the first three cycles at 100 mA g^{-1}; (f) Rate capability of pure glucose-C and pure Bi nanosheet microspheres.

Table S2. Thickness change of the ops-Bi/C nanosheet microsphere electrode during alloying and dealloying

Electrode number	1	2	3	4	5	6
Thickness before cycling [μm]	31	32	32	32	30	31
Thickness after discharged to 0.1 V [μm]	36	38	36	/	/	/
Thickness after charged to 1.6 V [μm]	/	/	/	33	30	32
Average relative thickness change (%)		16.0			2.1	

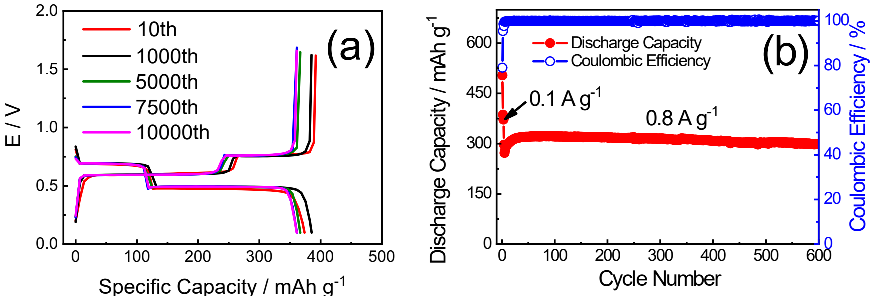

Fig. S3. Charge and discharge profiles of the ops-Bi/C nanosheet microsphere electrode in differnt cycles at 5 A g^{-1} (a) and cycle performance of the ops-Bi/C nanosheet microsphere electrode with a high active material loading of 10.58 mg cm^{-2} (b).

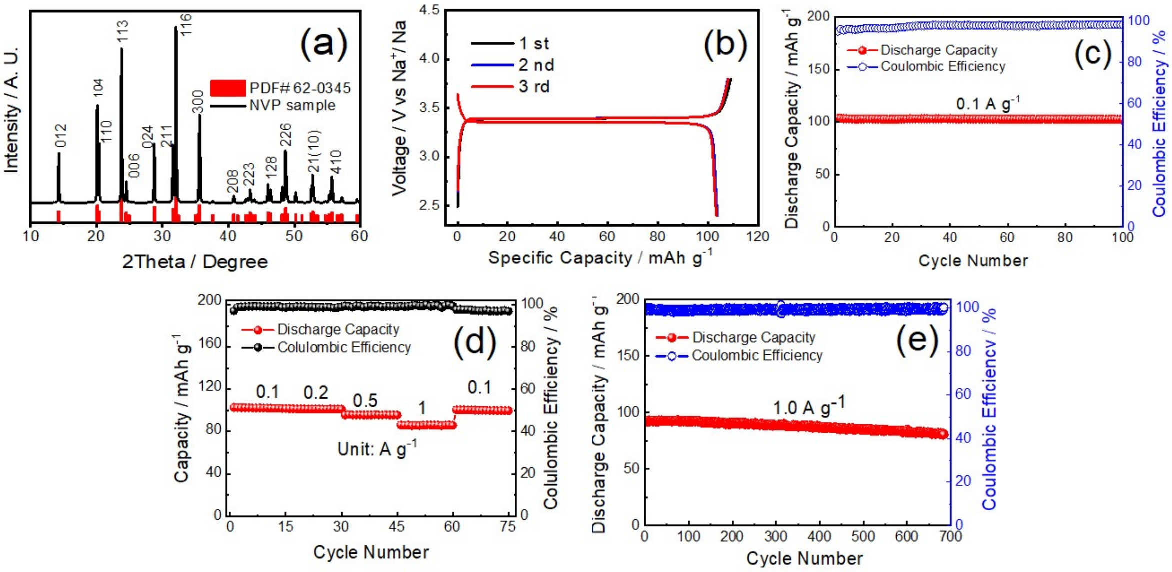

Fig. S4. XRD pattern of commercial $Na_3V_2(PO_4)_3$ (a); Electrochemical behaviours of commercial $Na_3V_2(PO_4)_3$ in a sodium ion half cell: charge-discharge profiles (b), cycle performance at 0.1 A g^{-1}(c), rate capability (d) and long cycle life at 1.0 A g^{-1} (e).

References

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