Electronic Supplementary Material (ESI) for RSC Advances.

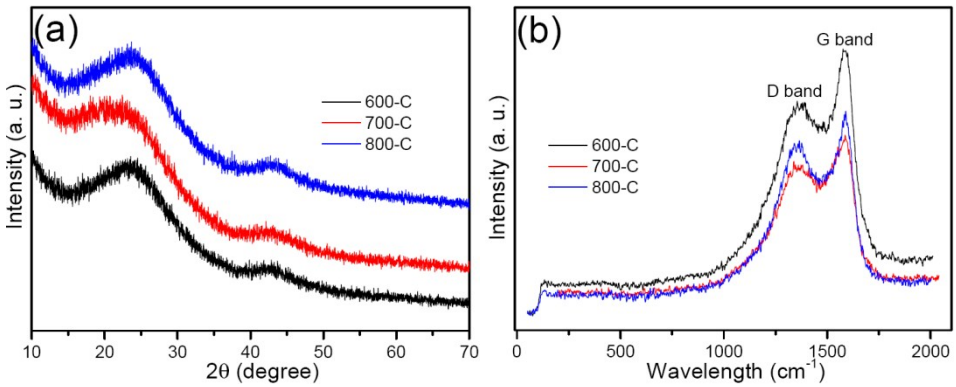

Fig. S1 (a) XRD patterns and (b) Raman spectrums of potassium tartrate derived carbon obtained from different carbonization temperatures.

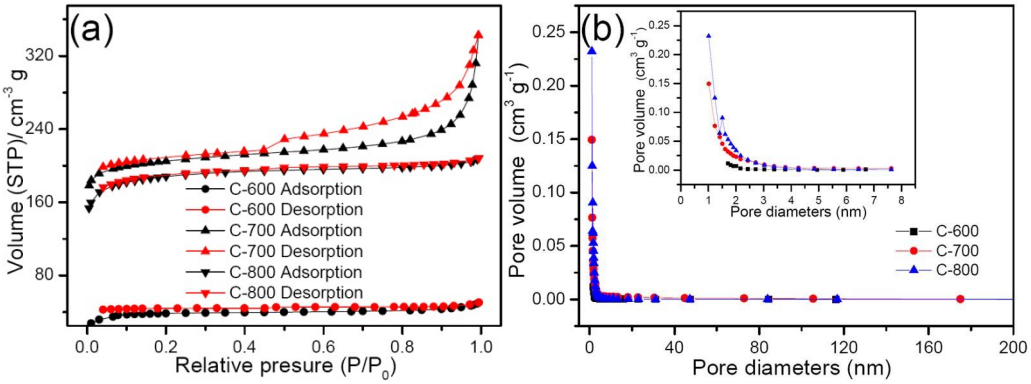

Fig. S2. (a) N_2 adsorption-desorption isotherms and (b) pore size distribution of different carbon, the insert is the pore size distribution of 0-8 nm.

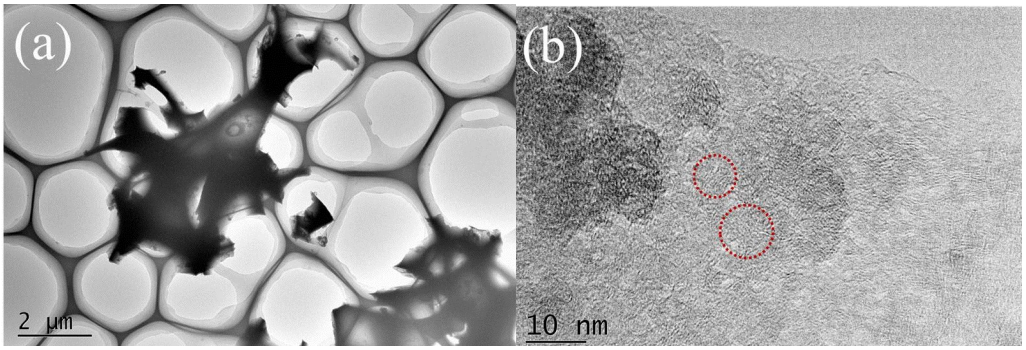

Fig. S3. (a) TEM and (b) HR-TEM image of as-prepared Se/C composite.

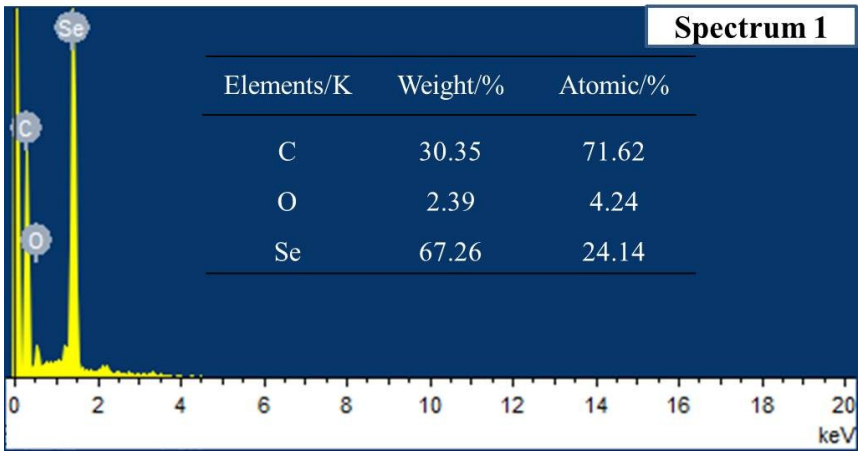

Fig. S4. EDS element analysis of Se/C-700 composite.

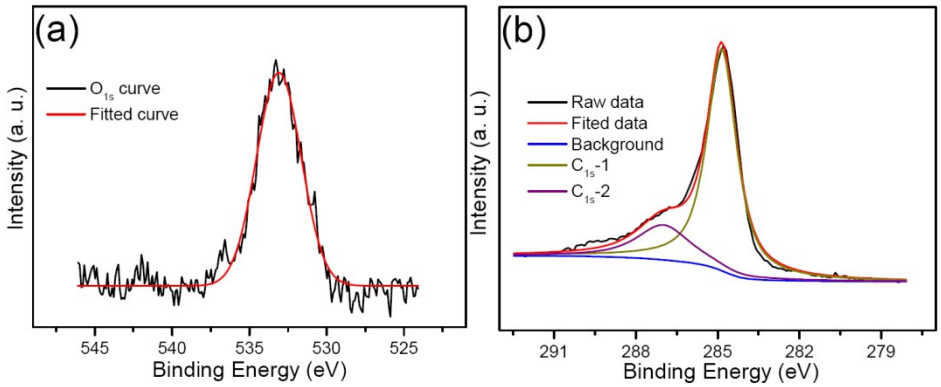

Fig. S5. XPS spectra of O_{1s} and C_{1s} for potassium tartrate derived carbon.

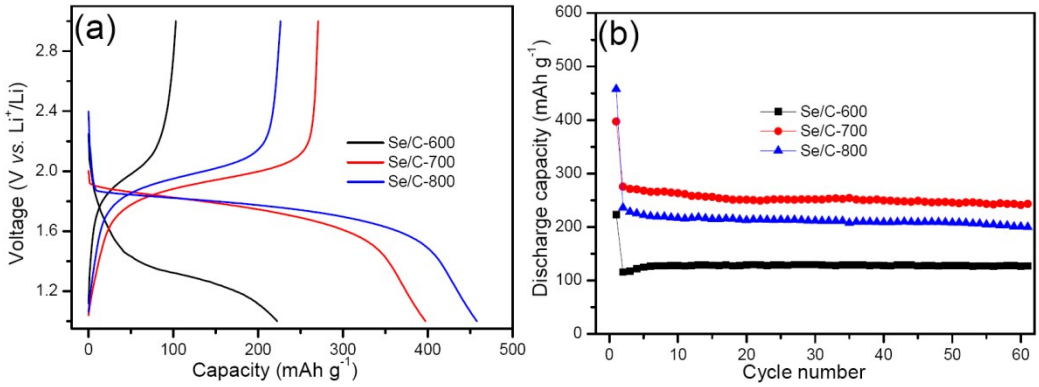

Fig. S6. (a) Initial discharge-charge curves and (b) cycling stability of as-prepared different Se/C composite at 81 mA g^{-1} (the overall data based on total Se/C composite).

Tab. S1. The comparative structures and electrochemical performances of similar Se/C composite.

Sample	BET surface area ($m^2 g^{-1}$)	Se content (wt%)	Capacity (mAh g^{-1})	Capacity retention	Rate capability (mAh g^{-1})
Se/porous carbon sphere [1]	1358	~50	660 (0.1C)	Almost no decay	485 (1.87C)
Se/MOFs-based carbon [2]	~300	48	719.7 (2C)	79.4% (3C, 100 cycles)	281.2 (5C)
Se/porous carbon fibers[3]	936	52.3	555 (0.5C)	93.0% (0.5C, 900 cycles)	306 (4 A g^{-1})
Se/Carbon bubbles [4]	Unknown	~50	691.1 (0.1C)	74.5% (0.1C, 100 cycles)	431.9 (1C)
Se/PPDC [5]	1852	47	650 (0.1C)	75.4% (0.1C, 80 cycles)	410 (1.3C)
Se/MMPBc [6]	1539.4	56	597.4 (0.2C)	78.1%(0.2C, 300 cycles)	421.0 (2C)
This work	816.2	~50	550.5 (0.24C)	88.2% (0.24C, 80 cycles)	452.3 (1.2C)

The total electrochemical data based on net Se component, 1C = 675 mA g^{-1}.

Reference

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