Fabricating MnO/C composite utilizing pitch as soft carbon source for rechargeable Li-ion batteries

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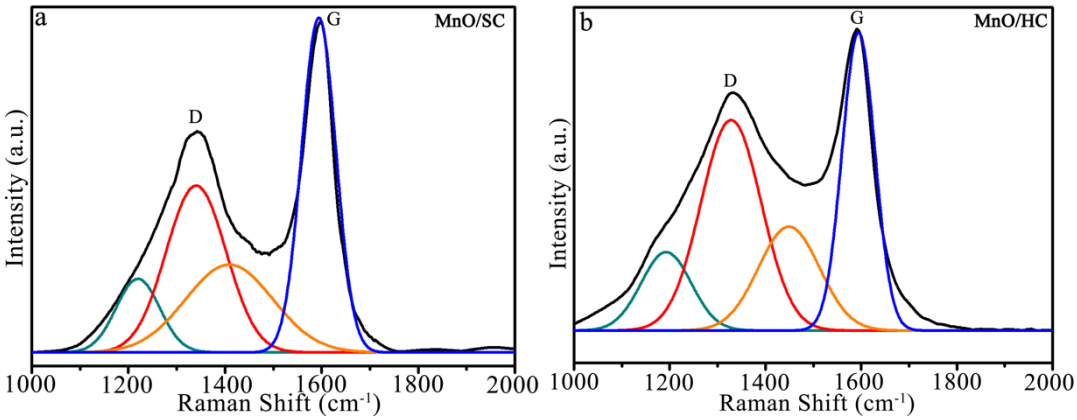


Fig. S1 Raman spectra of MnO/SC (a), and MnO/HC (b).

Table. S1 Capacity retention at varied current densities (mA g^{-1}) for MnO/SC and MnO/HC

Sample	Capacity retention at varied current densities					
	100	200	400	800	1600	100
MnO/SC	100%	83%	67%	50%	33%	108%
MnO/HC	100%	81%	42%	9%	1%	98%

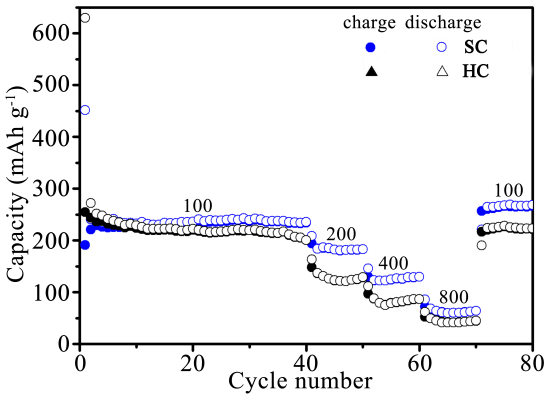
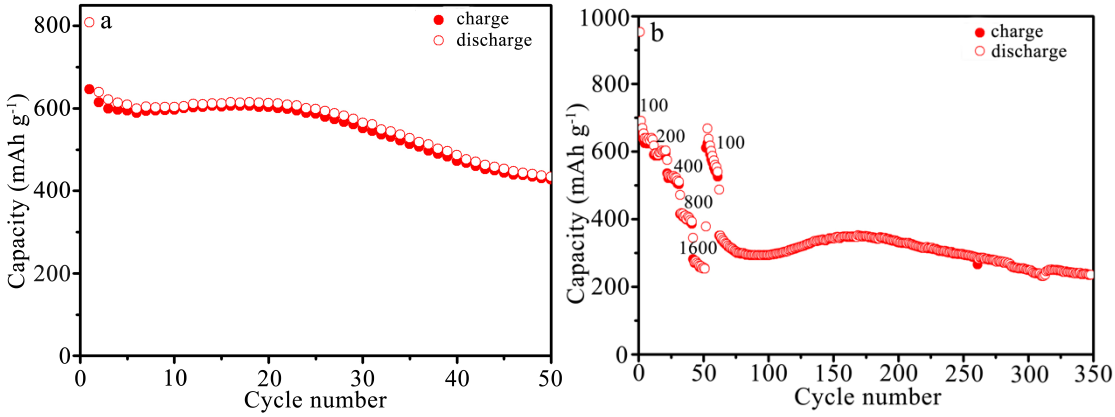


Fig. S2 Cycling performance at 100 mA g^{-1} and rate performance for the SC derived from pitch and HC derived from glucose.



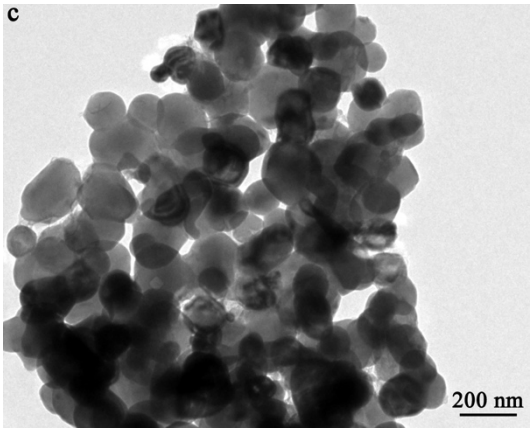


Fig. S3 Cycling performance at 100 mA g^{-1} (a), rate performance and long-term cycling performance at 500 mA g^{-1} after the rate performance test (b), and TEM image (c) for the

MnO/SC composite fabricated at 750 ºC with the same amount of pitch and manganese oxides as the MnO/SC prepared at 600 ºC.

1. Estimation of the theoretical capacity of MnO/C composites

Theoretical capacity (MnO/C) = Theoretical capacity of carbon × mass fraction of carbon + Theoretical capacity of MnO × mass fraction of MnO

According to the TG curves, the weight percent is 88.8 wt% for MnO and 11.2 wt% for carbon in MnO/SC, and is 95.1% for MnO and 4.9% for carbon in MnO/HC.

The theoretical capacity of MnO/SC=372×11.2% + 756×88.8 %=710 mAh g^{-1}

The theoretical capacity of MnO/HC=372×4.9% + 756×95.1 %= 737 mAh g^{-1}