

## Supporting Information

### Design and Preparation of Three-Dimensional MnO/N-doped Carbon Nanocomposites Based on Waste Biomass for High Storage and Ultra-Fast Transfer of Lithium Ions

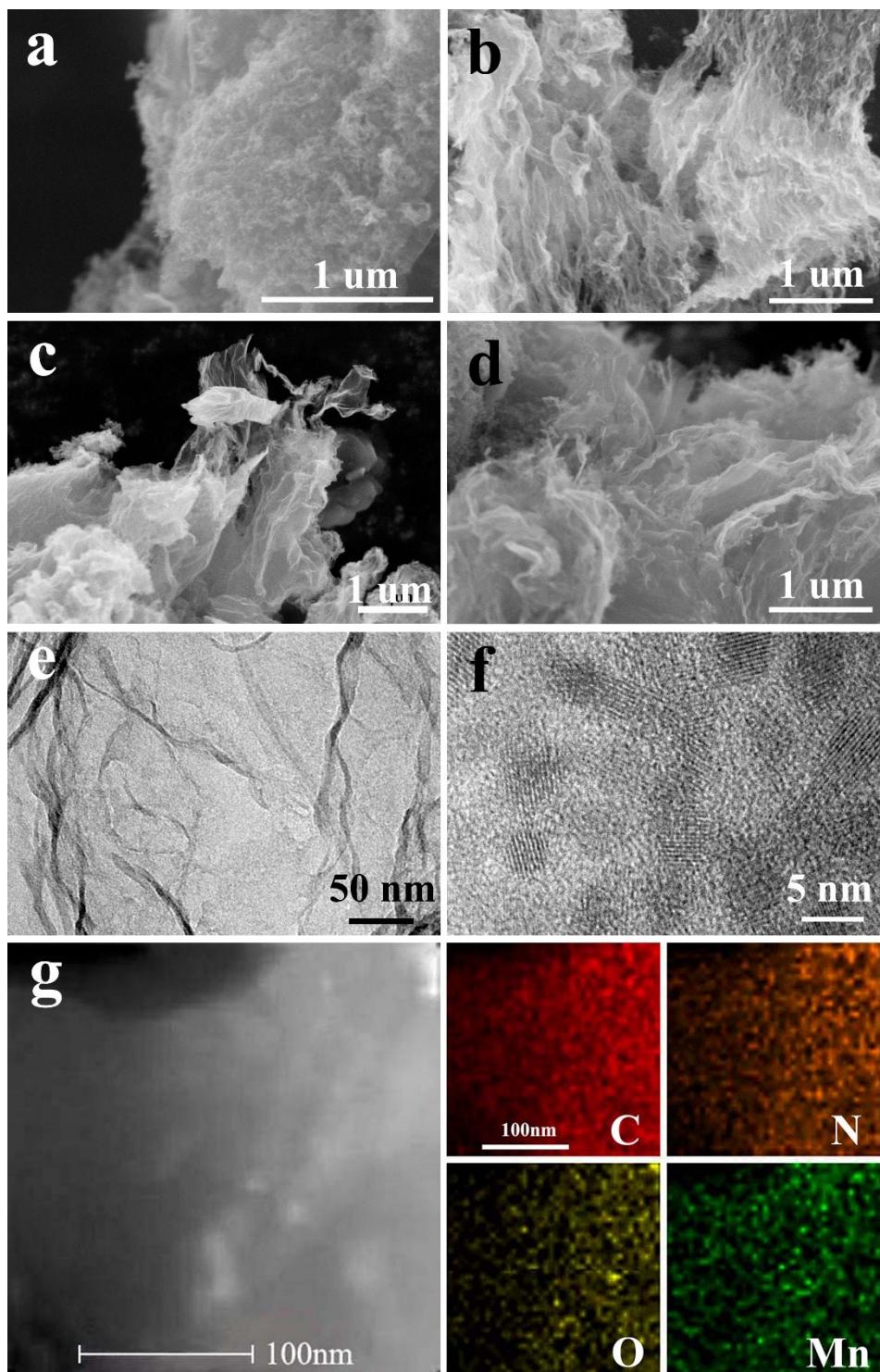
Qiaoxia Feng,<sup>a,b,†</sup> Huanxin Li,<sup>a,b,†</sup> Zhong Tan,<sup>a,b</sup> Zhongyuan Huang,<sup>a,b\*</sup> Lanlan Jiang,<sup>a,b</sup> Haihui Zhou,<sup>a,b\*</sup> Hongyu Pan,<sup>a,b</sup> Qiang Zhou,<sup>a,b</sup> Shuai Ma,<sup>a,b</sup> Yafei Kuang<sup>a,b\*</sup>

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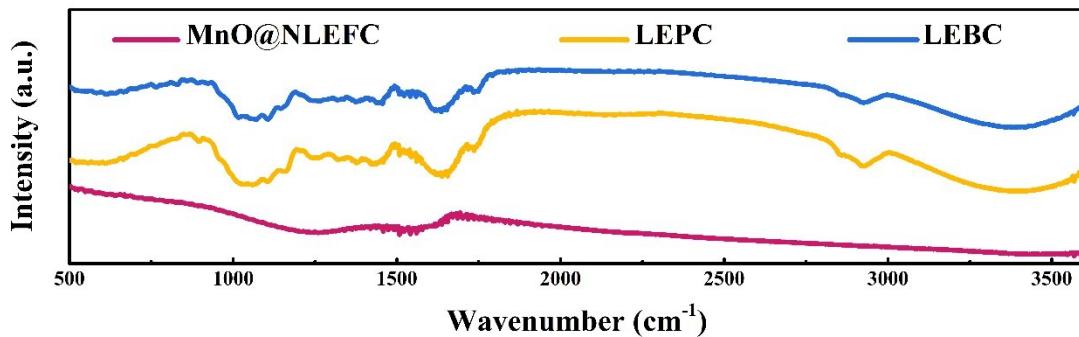
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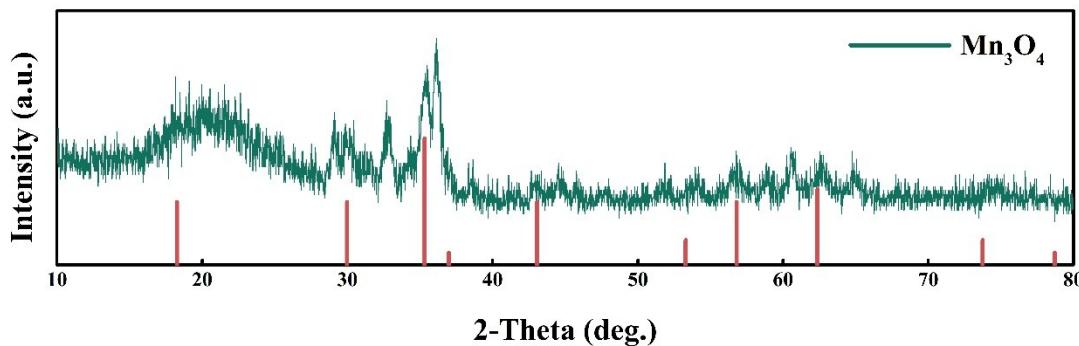
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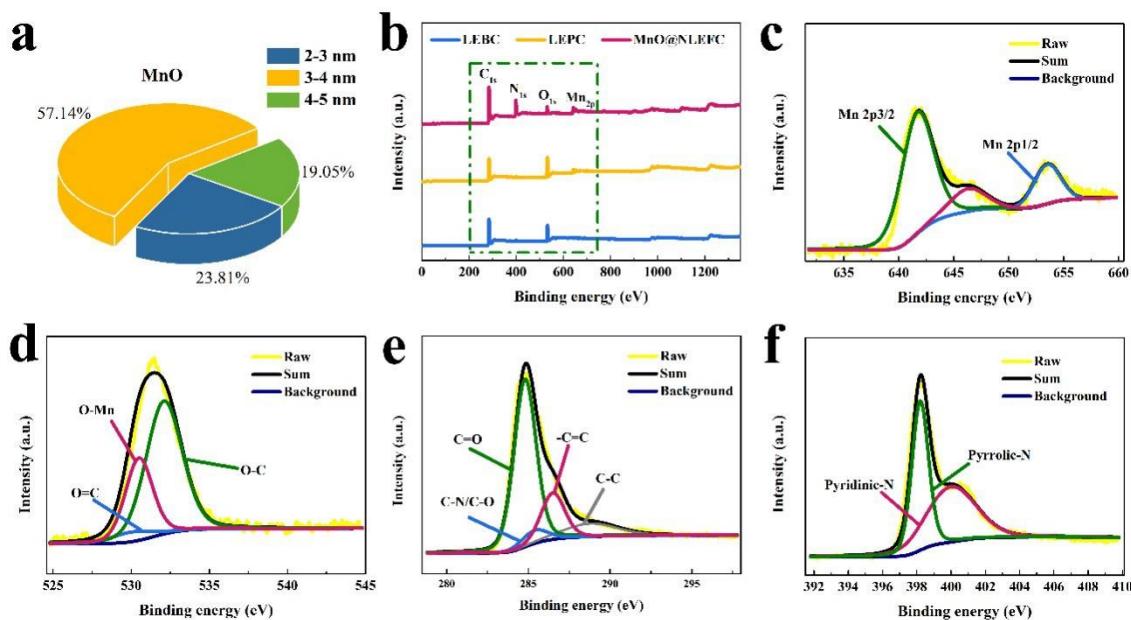
**Fig. S1.** SEM images of (a) LEPC and (b)-(d) MnO@NLEFC; (e)-(f) TEM and HRTEM images of MnO@NLEFC; (g) SEM image of MnO@NLEFC and the corresponding elemental mapping images of C, N ,O and Mn.



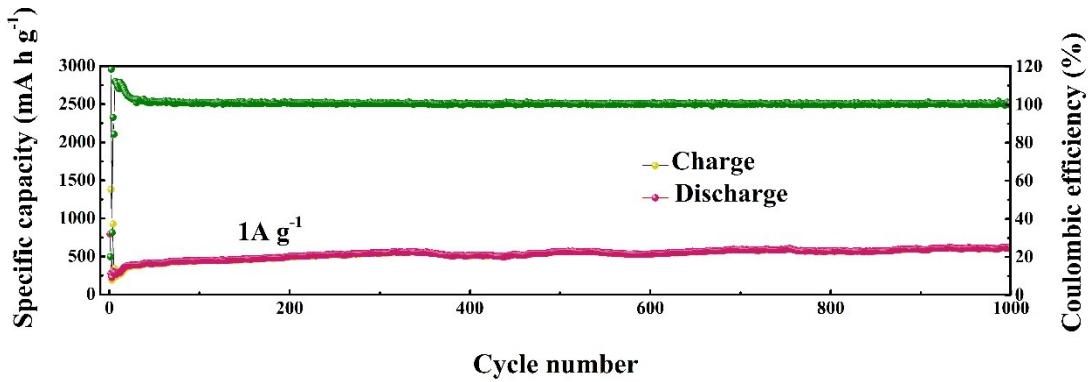
**Fig. S2.** FTIR of MnO@NLEFC, LEPC and LEBC .



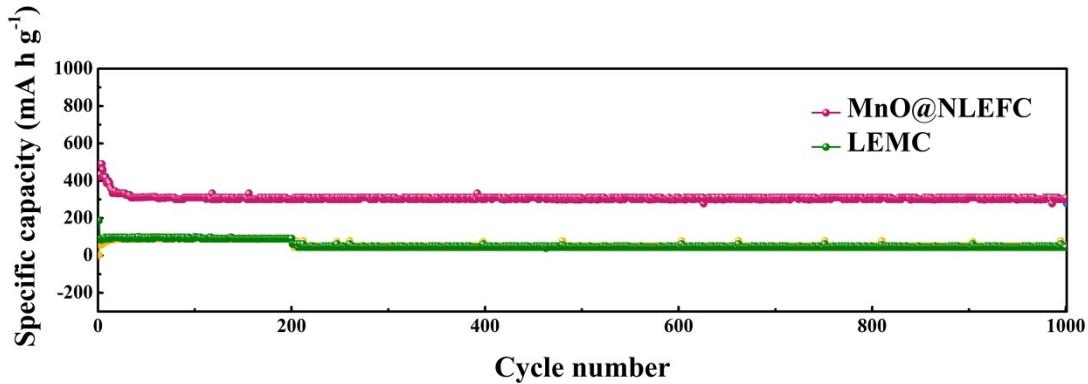
**Fig. S3.** XRD of the residue of MnO@NLEFC after TGA in air atmosphere.



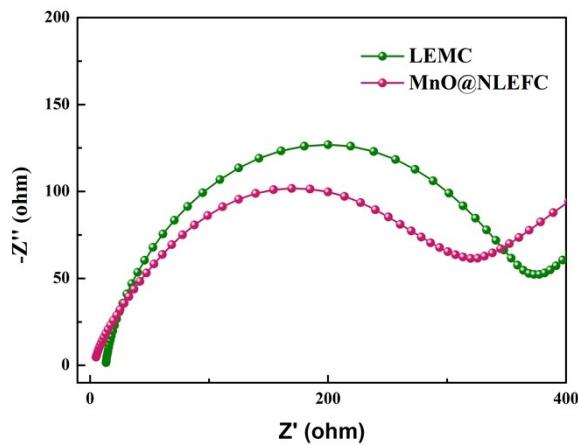
**Fig. S4.** (a) Diameter statistics of MnO NPs; (b) XPS survey of the LEBC, LEPC and MnO@NLEFC electrodes; high resolution XPS of (c) Mn2p peak, (d) O1s peak, (e) C1s peak and (f) N1s peak in MnO@NLEFC.



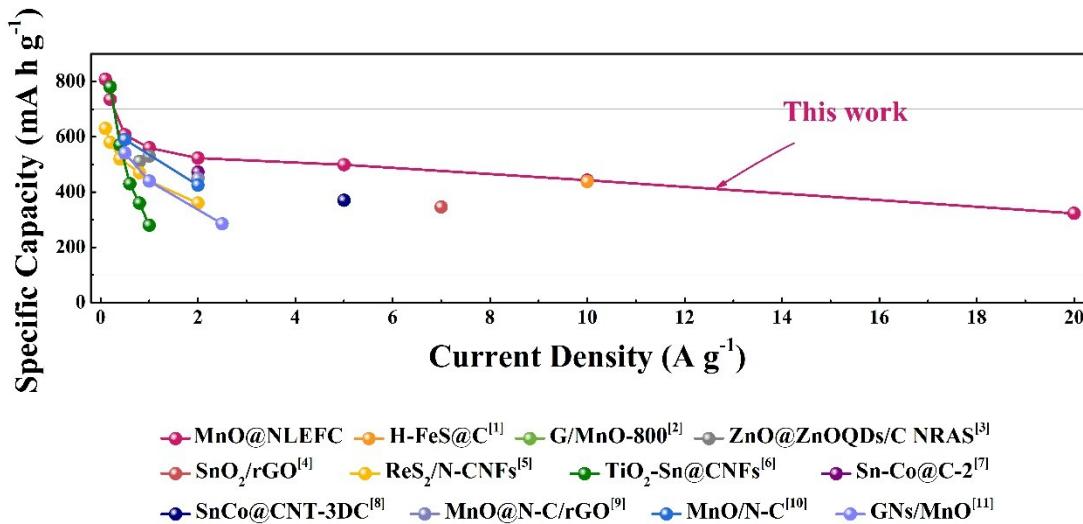
**Fig.S5.** Cycling performance of MnO@NLEFC at  $1 \text{ A g}^{-1}$ .



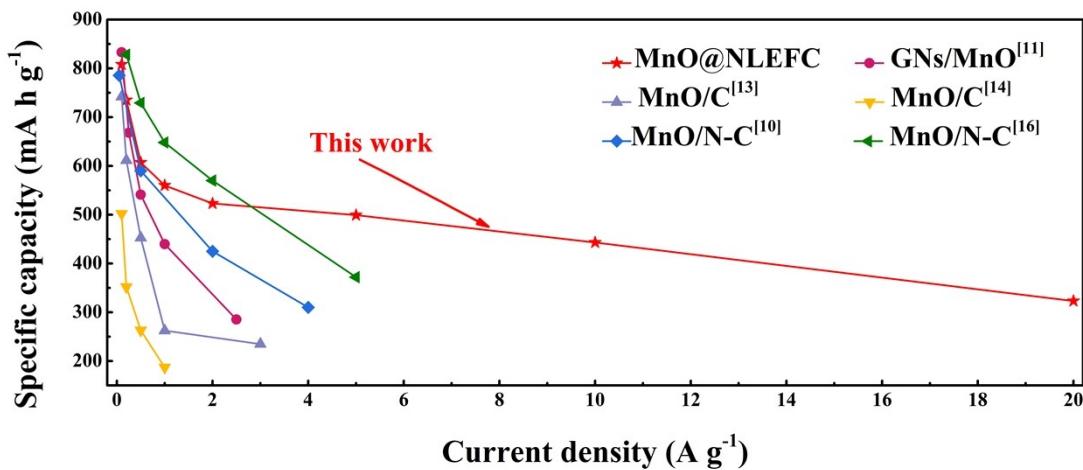
**Fig.S6.** Cycling performances of MnO@NLEFC and LEMC at  $20 \text{ A g}^{-1}$ .



**Fig.S7.** EIS plots of MnO@NLEFC and LEMC.



**Fig.S8.** Performance comparison of MnO@NLEFC with other materials.



**Fig.S9.** Rate performances of MnO@NLEFC and other reported MnO-C samples.

## References :

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