

Supporting Information

Preparation of NbN/graphene nanocomposite by solution impregnation and its application in high-performance Li-ion hybrid capacitors

Zhen-Kun Chen ^{a,b}, Jun-Wei Lang ^b, Ling-Yang Liu ^b, Ling-Bin Kong ^{a,*}

^a State Key Laboratory of Advanced Processing and Recycling of Non-ferrous Metals,
School of Materials Science and Engineering, Lanzhou University of Technology,
Lanzhou 730050, PR China

^b Laboratory of Clean Energy Chemistry and Materials, State Key Laboratory of Solid
Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences,
Lanzhou 730000, PR China

*Corresponding author. Tel.: +86-931-2976579; Fax: +86-931-2976578.

E-mail address: konglb@lut.cn

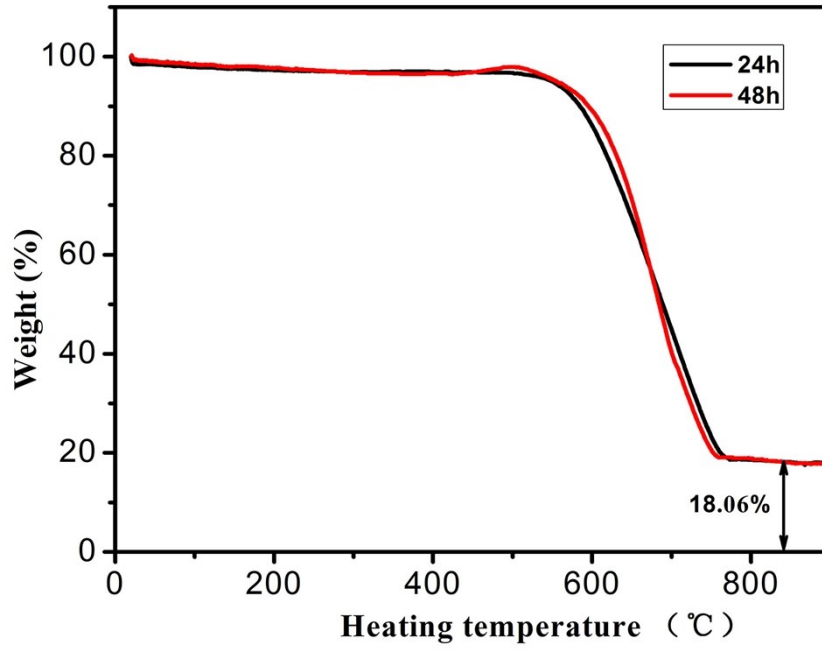


Fig. S1 TGA curve for the NbN/GNSs with different impregnation time in air (18.06% is the content of Nb₂O₅, and the corresponding content of NbN: 14.5% = 18.06% ×

$$\frac{M_{NbN}}{M_{Nb_2O_5}}).$$

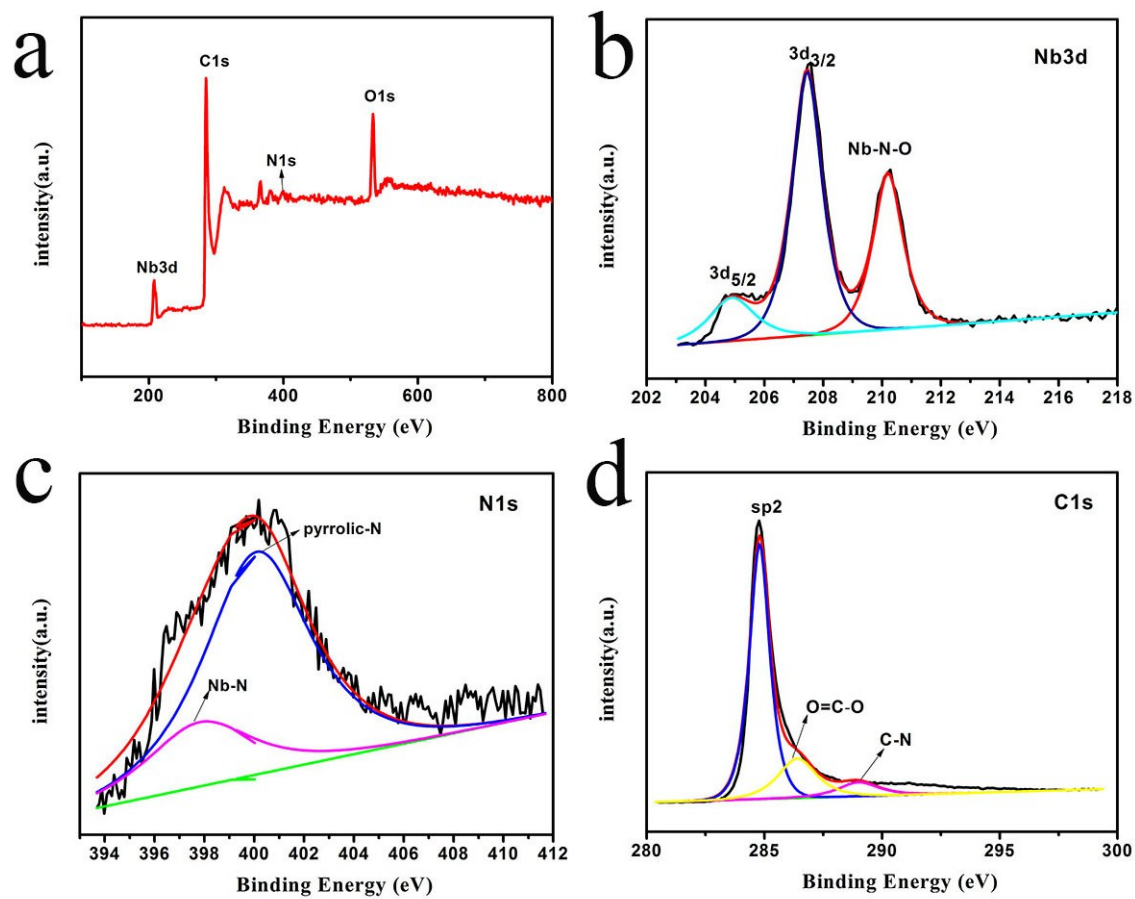


Fig. S2 (a) XPS survey scan of the NbN/GNSs, (b–d) High resolution XPS spectra for Nb, N, and C, respectively.

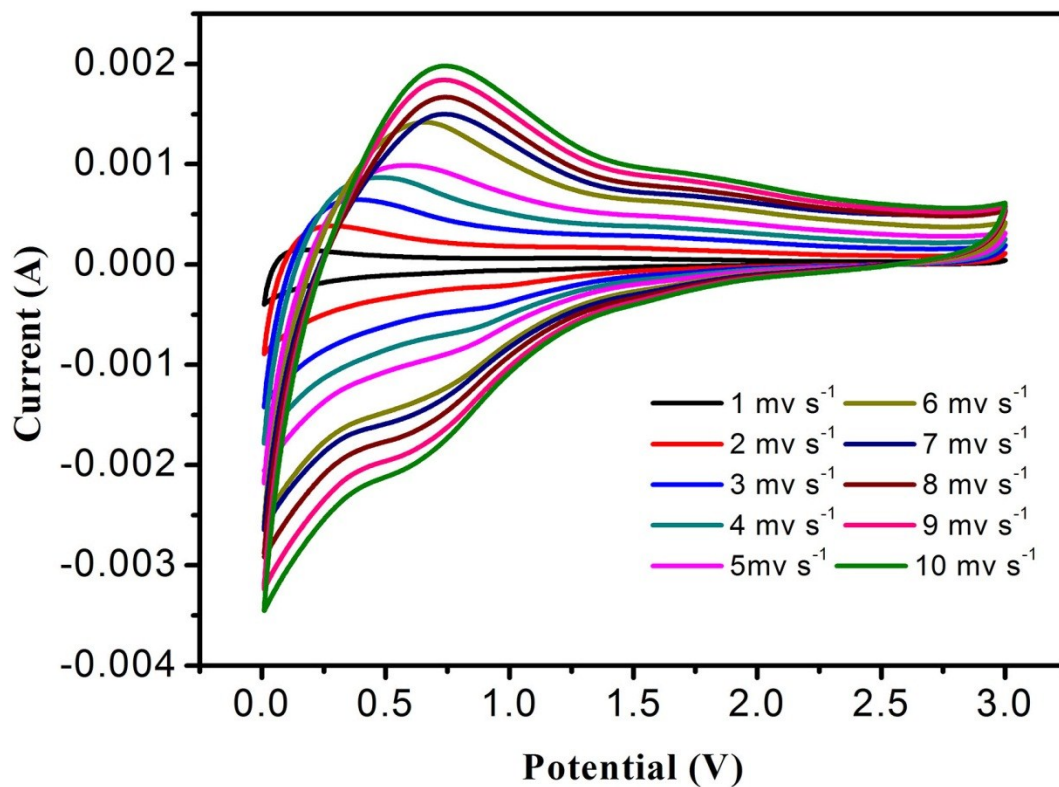


Fig. S3 CV curves of NbN/ GNSs composite papers at different sweep rates range from 1–10 mV/s.

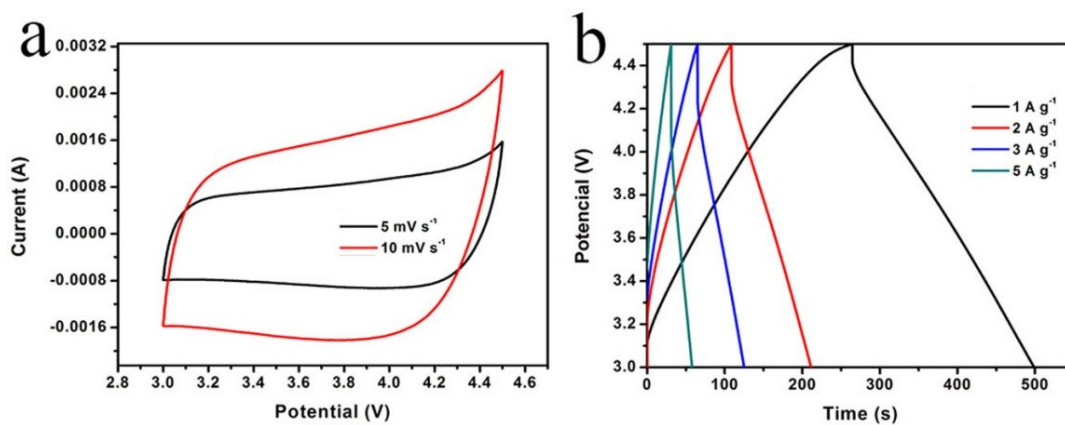


Fig. S4 (a) CV curves of APDC within the potential region of 3–4.5 V (vs Li/Li⁺). (b) Galvanostatic charge/discharge curves of APDC at different current densities.

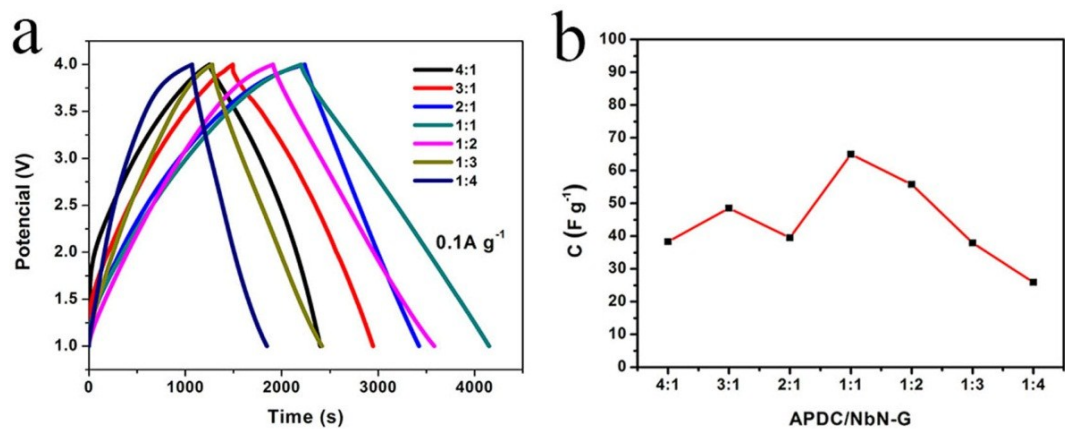


Fig. S5 (a) Galvanostatic charge/discharge curves of LIHC with the different mass ratios (cathode: anode). (b) The capacity Comparison with different mass ratios of APDC and NbN/G.

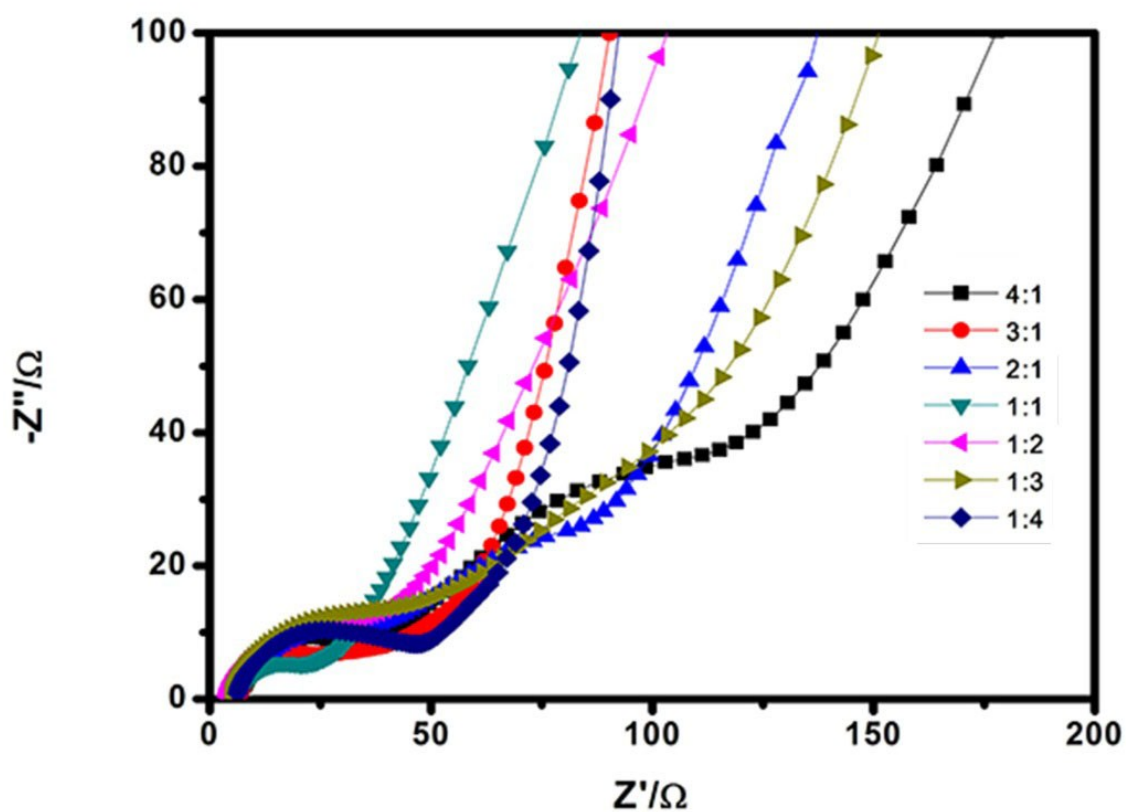


Fig. S6 Nyquist plots of LIHC with the different mass ratios (cathode: anode).

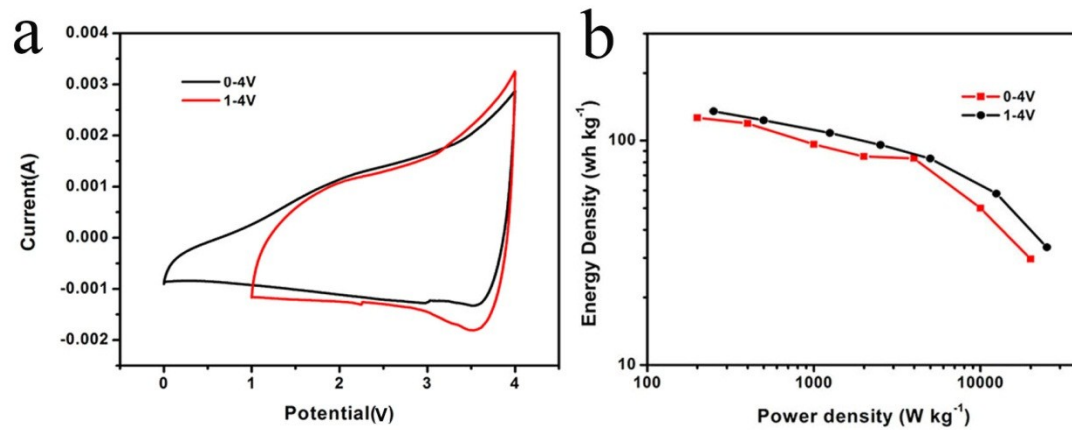


Fig. S7 (a) CV curves (sweep rates: 20 mV/s) and (b) Ragone plots of LIHC in different potential windows.