

Supplementary data

Ultrahigh capacity potassium-based dual carbon batteries with high concentration electrolyte

Qing Wang^{a,b,c,d,e*}, Dengyang Wang^{a,b}, Mingxiu Tan^{a,b}, Wuxin Liu^{a,b}, Meng Zhou^{a,b},
Shaohua Luo^{a,b,c,d,e**}, Pengqing Hou^{a,b,c,d,e}, Yahui Zhang^{a,b,c,d,e}, Shengxue Yan^{a,b}, Xin
Liu^{a,b,c,d,e}

^a School of Materials Science and Engineering, Northeastern University, Shenyang
110819, China

^b State Key Laboratory of Rolling and Automation, Northeastern University,
Shenyang 110819, China

^c School of Resources and Materials, Northeastern University at Qinhuangdao,
Qinhuangdao 066004, China

^d Hebei Key Laboratory of Dielectric and Electrolyte Functional Material,
Qinhuangdao 066004, China

^e Qinhuangdao Key Laboratory of Advanced Energy Storage and Conversion
Technology, Qinhuangdao 066004, China

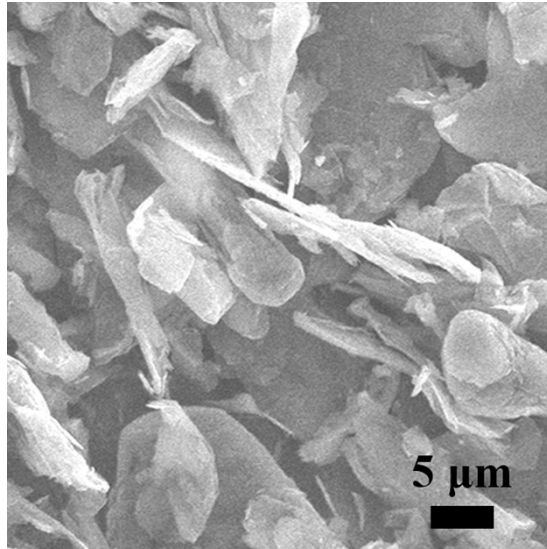


Fig.S1 SEM image of pristine expanded graphite.

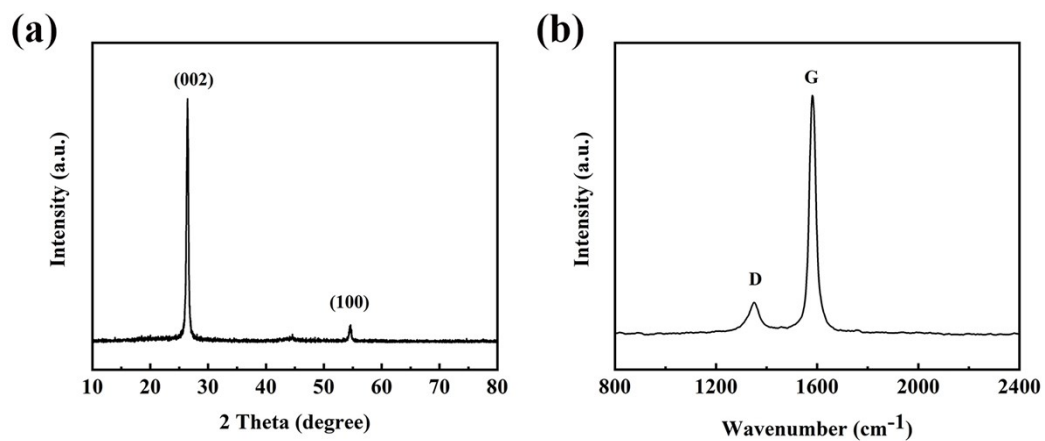


Fig.S2 (a) XRD pattern and (b) Raman spectra of EG.

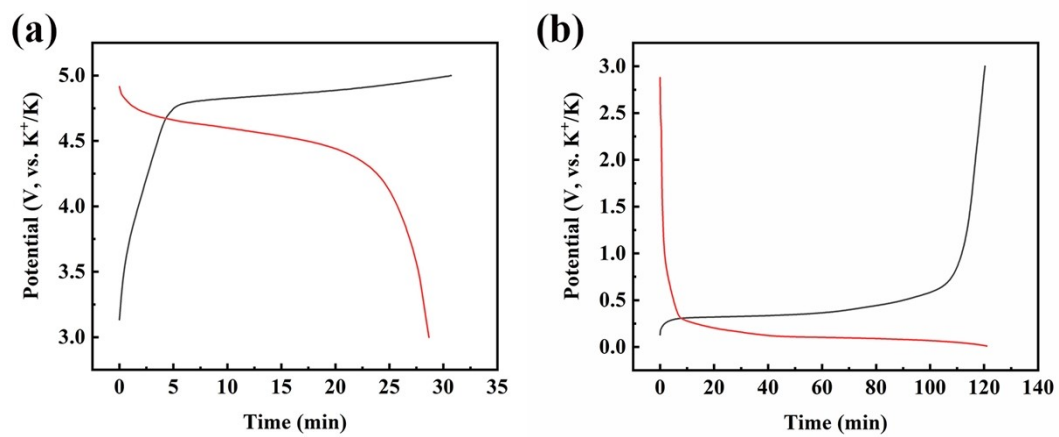


Fig.S3 (a) Potassium-graphite cathode half-cell charge-discharge curve, (b) Potassium-graphite anode half-cell charge-discharge curve.

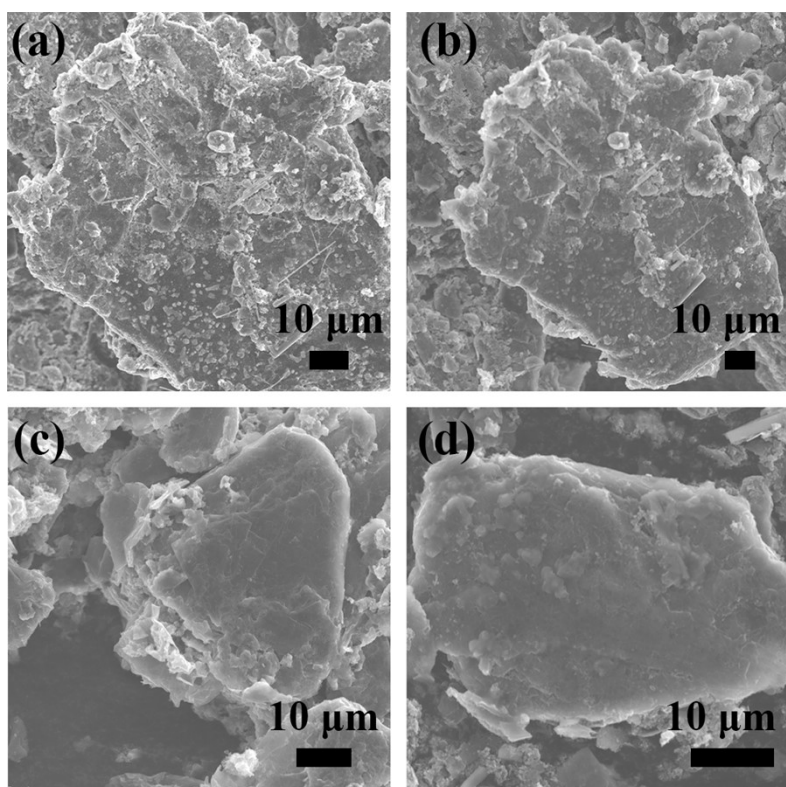


Fig. S4 SEM images of expanded graphite cathode after cycling under different concentrations of electrolytes: (a) 1 M; (b) 2 M; (c) 3 M; (d) 4 M.

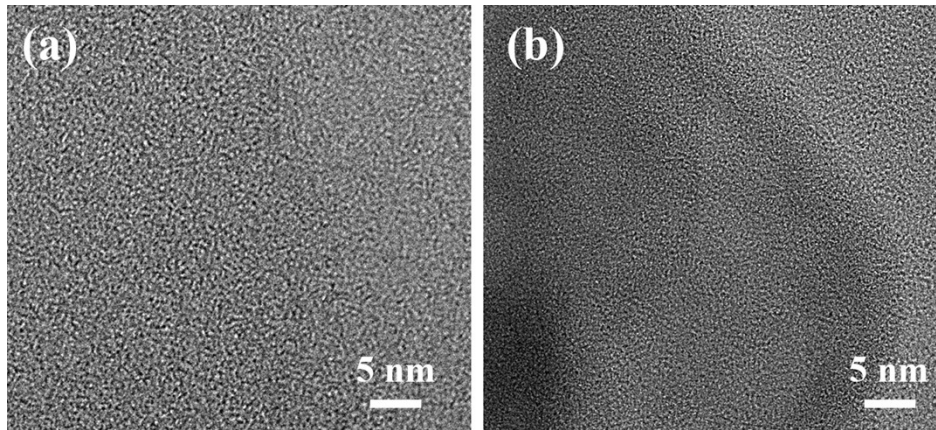


Fig. S5 TEM images of expanded graphite electrode before and after cycling.

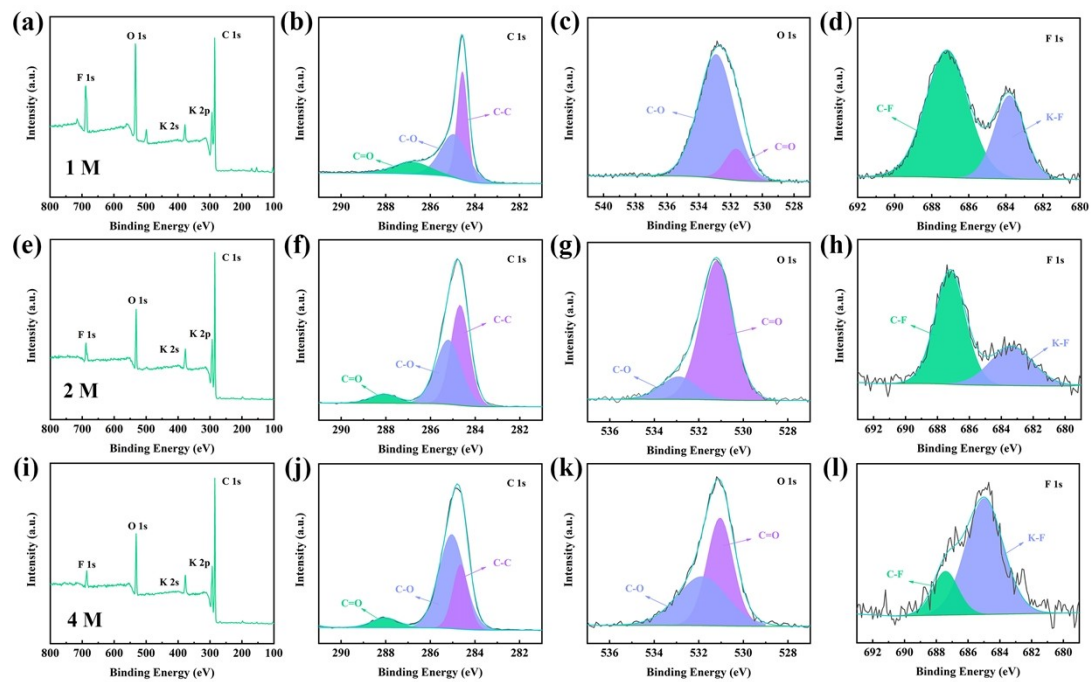


Fig.S6 XPS spectra of graphite electrode after cycling in KPF₆/EC: DEC: PC:(a-d) 1 M;(e-h) 2 M; (i-l) 4 M.