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Supporting information

Ruthenium@mesoporous graphene-like carbon: a novel three-dimensional material as cathode catalyst for lithium oxygen batteries

Xiaodong Lin[a], Yong Cao[a], Senrong Cai[a], Jingmin Fan[a], Yijuan Li[a], Qi-Hui Wu[b], Mingsen Zheng[a*] and Quanfeng Dong[a*]

[a]Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Collaborative Innovation Center of Chemistry for Energy Materials, State Key Laboratory of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen, Fujian, 361005, China

[b]Department of Materials Chemistry, College of Chemical Engineering and Materials Science, Quanzhou Normal University, Quanzhou 362000, China

*Email: mszheng@xmu.edu.cn; qfdong@xmu.edu.cn

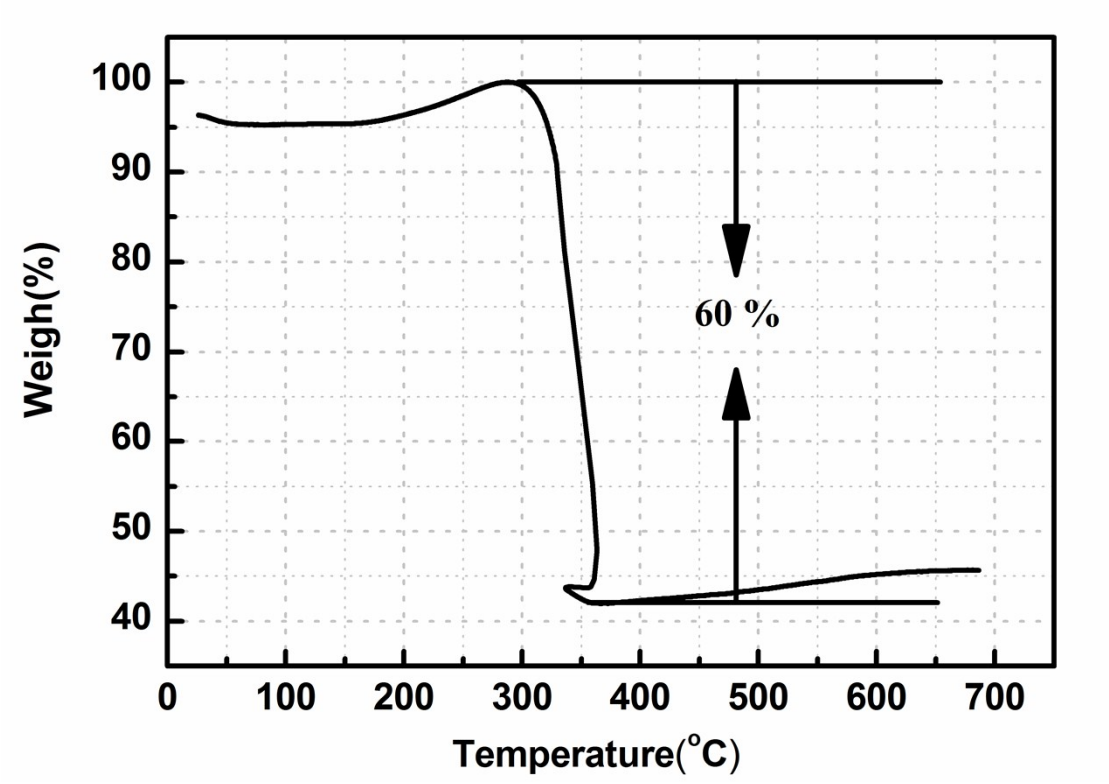

Fig. S1 TGA curve of the Ru@MPG composites.

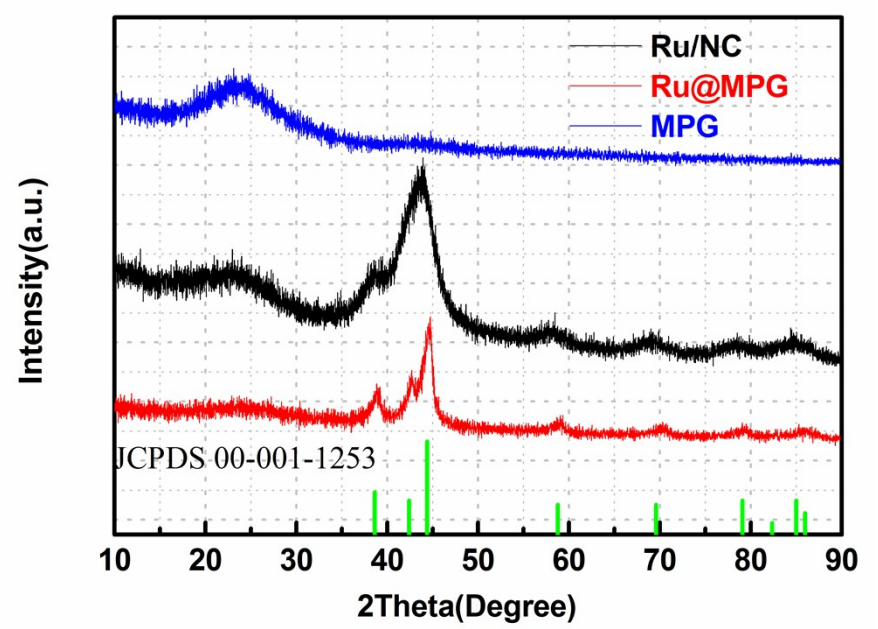

Fig. S2 XRD patterns of the MPG, Ru@MPG, and Ru/NC composites.

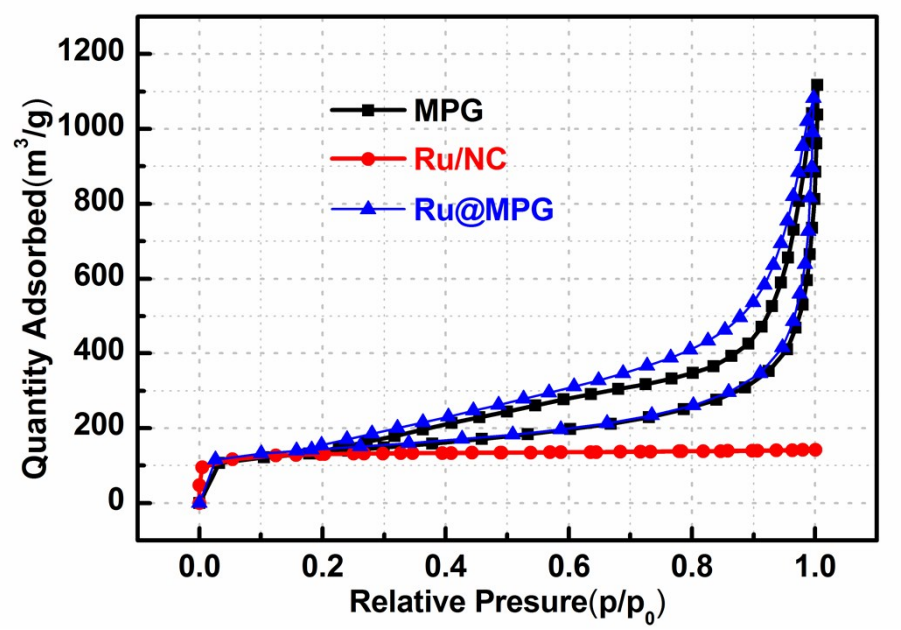

Fig. S3 Nitrogen adsorption/desorption isotherms of the MPG, Ru@MPG, and Ru/NC composites.

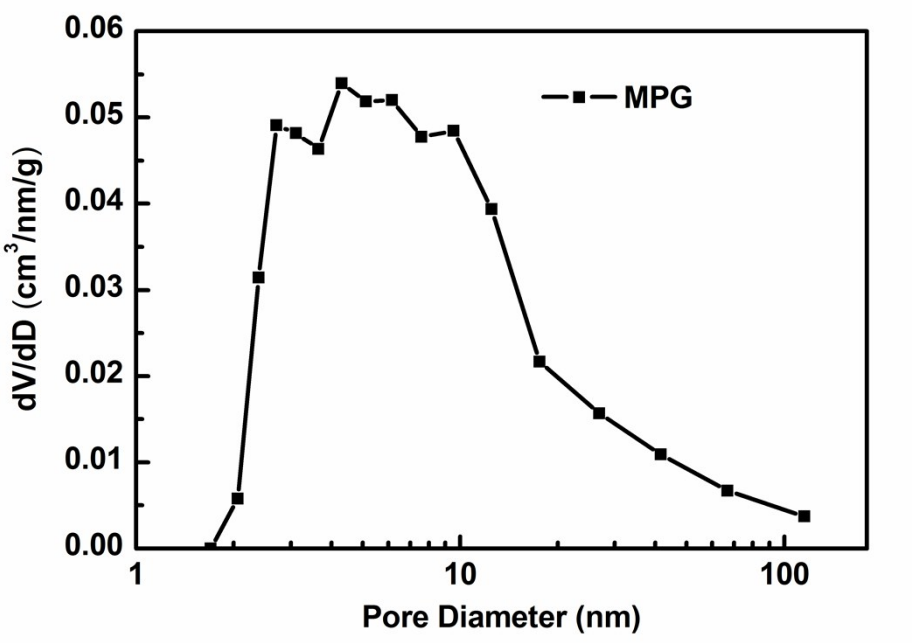

Fig. S4 BJH pore size distributions of the MPG.

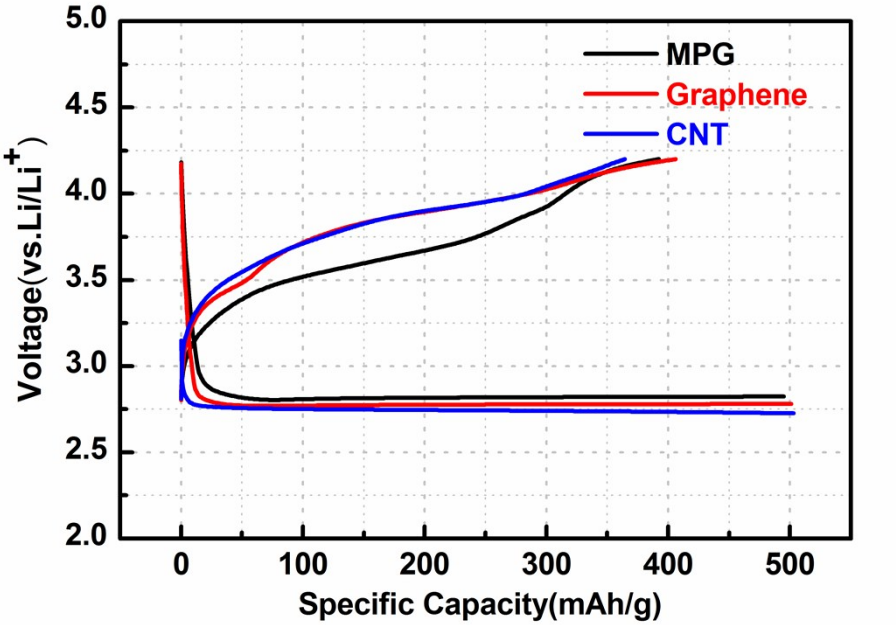

Fig. S5 Discharge/charge profiles of the MPG, Graphene and CNT electrodes at a current density of 100 mA g^{-1} with a discharge capacity of 500 mA h g^{-1}.

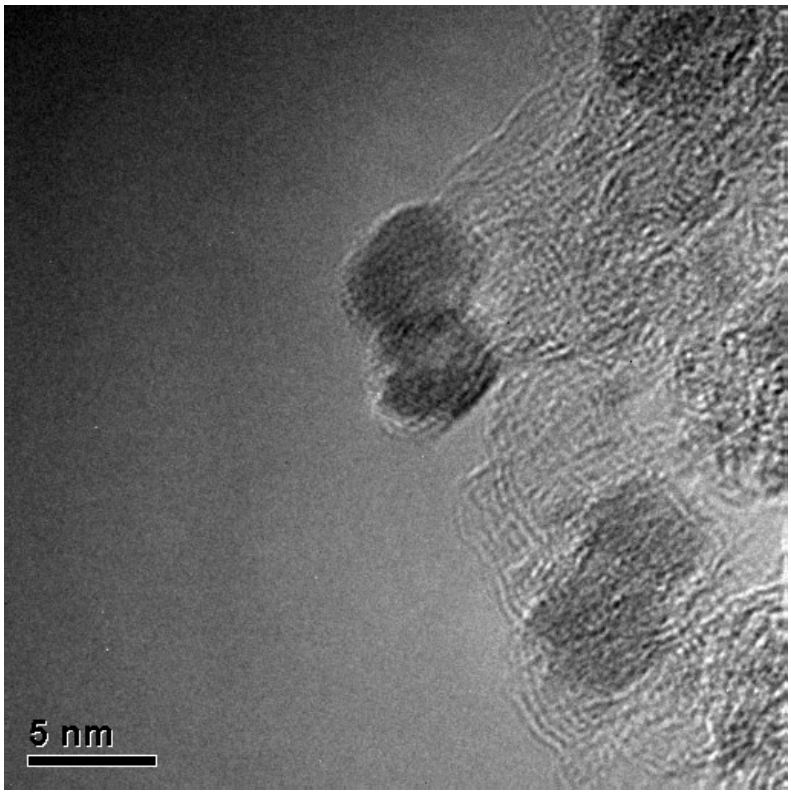

Fig. S6 HRTEM image of the Ru@MPG composite.

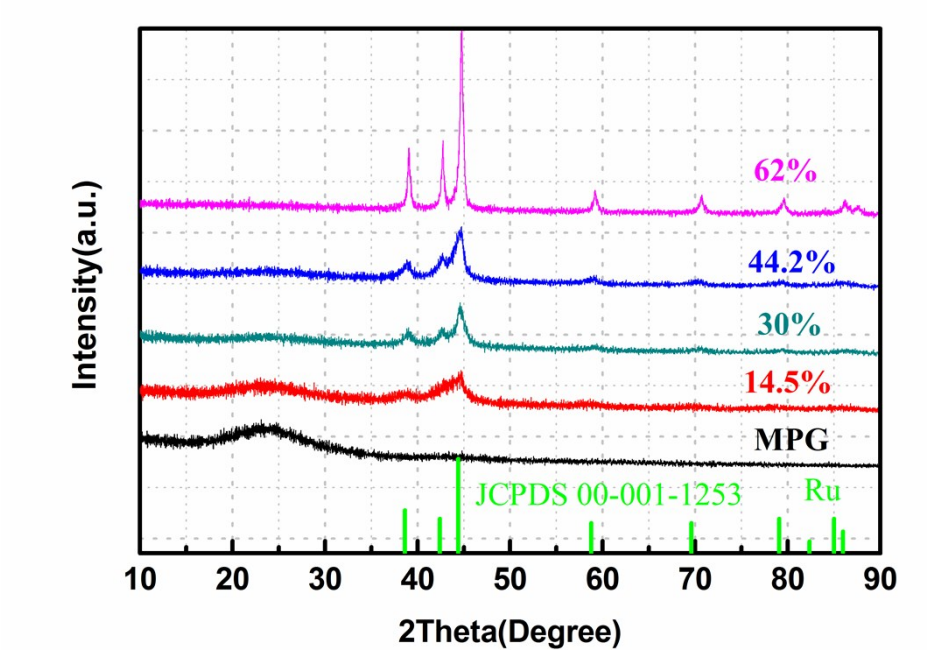

Fig. S7 XRD patterns of the MPG, 14.5 wt%, 30 wt%, 44.2 wt% and 62 wt% Ru@MPG composites.

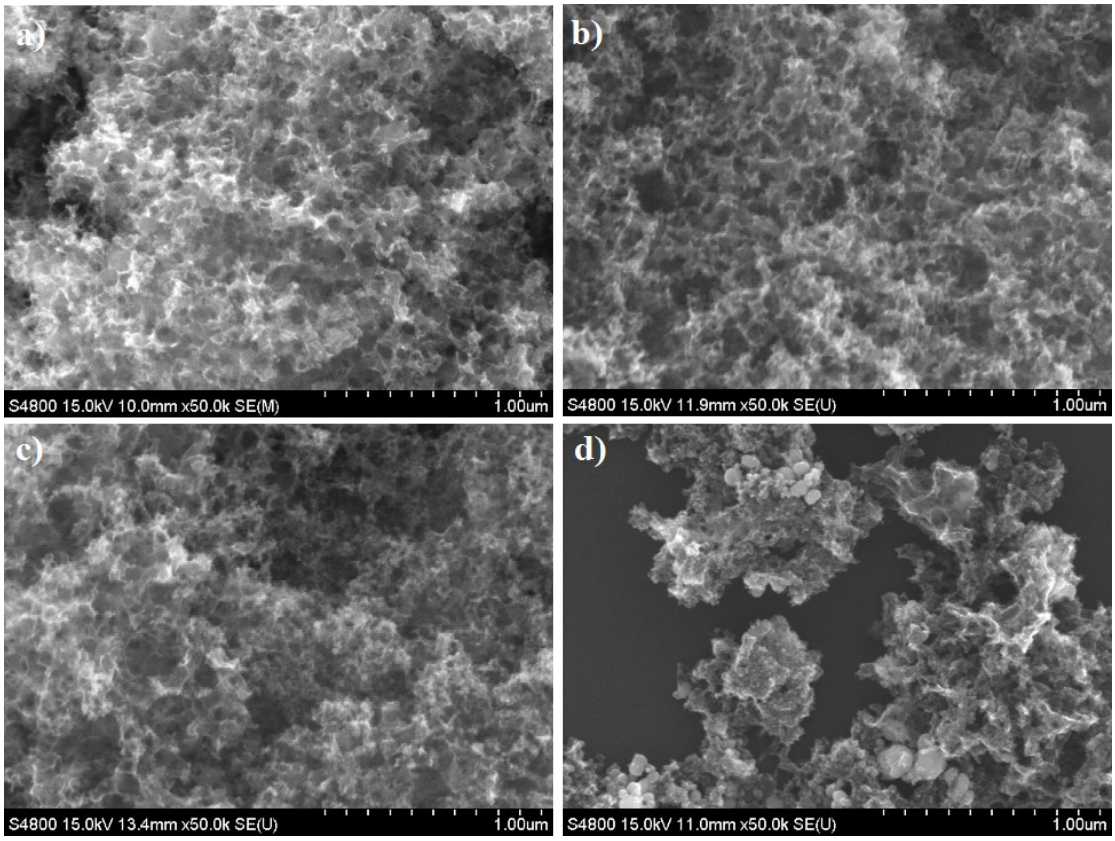

Fig. S8 SEM images of 14.5 wt%, 30 wt%, 44.2 wt% and 62 wt% Ru@MPG composites.

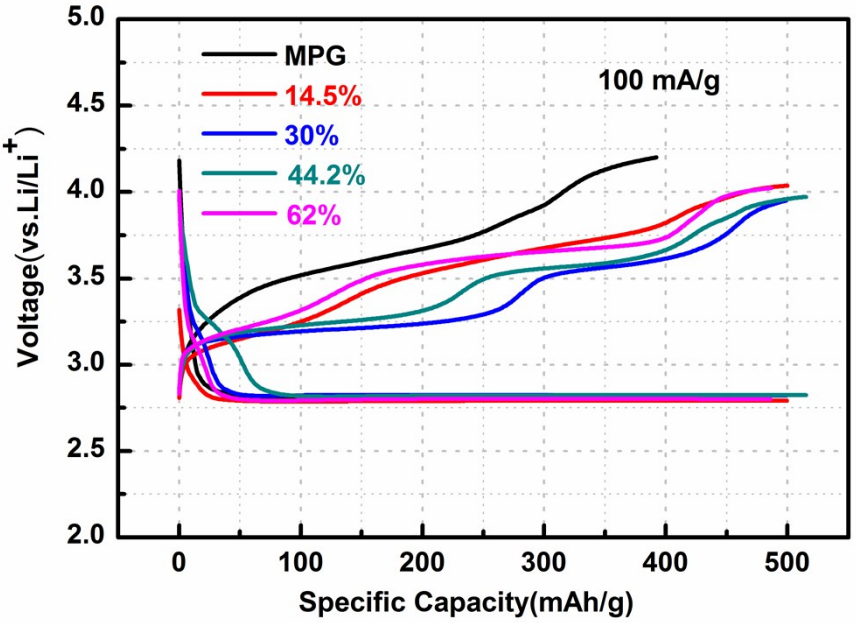

Fig. S9 Discharge/charge profiles of the MPG, 14.5 wt%, 30 wt%, 44.2 wt% and 62 wt% Ru@MPG composites electrodes at a current density of 100 mA g^{-1} with a discharge capacity of 500 mA h g^{-1}.

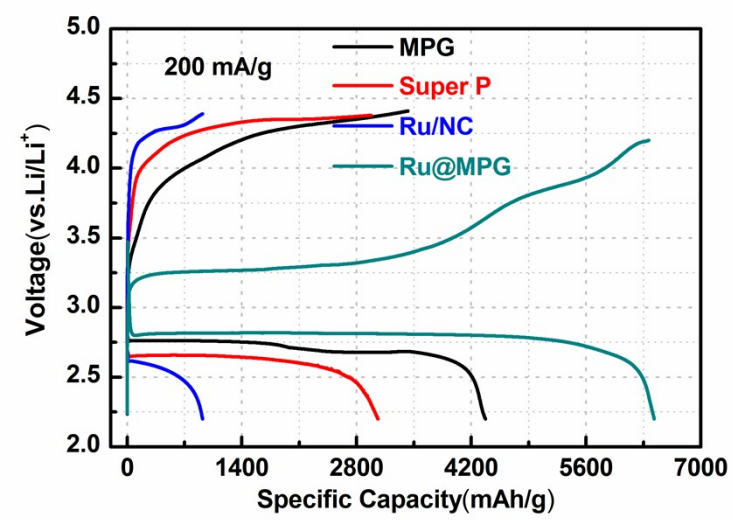

Fig. S10 Full discharge/charge profiles of the MPG, Super P, Ru@MPG, and Ru/NC composites electrodes at a current density of 200 mA g^{-1}.

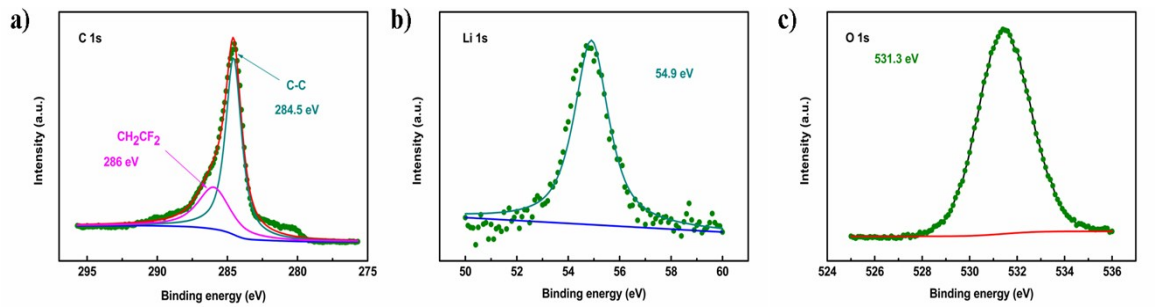

Fig. S11 XPS spectra of a) C 1s, b) Li 1s and c) O 1s of Ru@MPG composite after discharged for 10 h at a current density of 100 mA·g^{-1}.

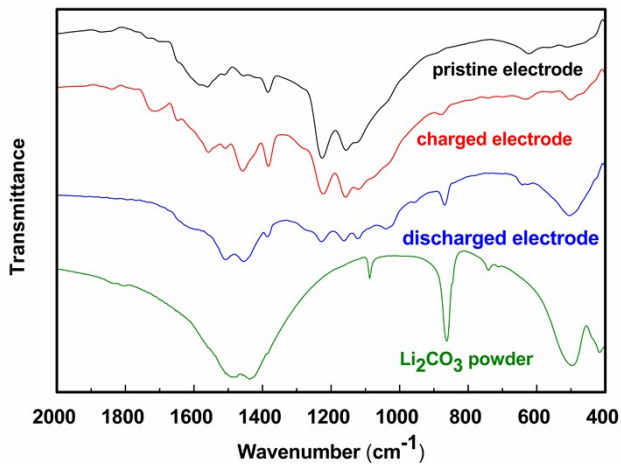

Fig. S12 FTIR spectra of the discharged, charged and pristine electrode of Ru@MPG and commercial Li_2CO_3 powder.

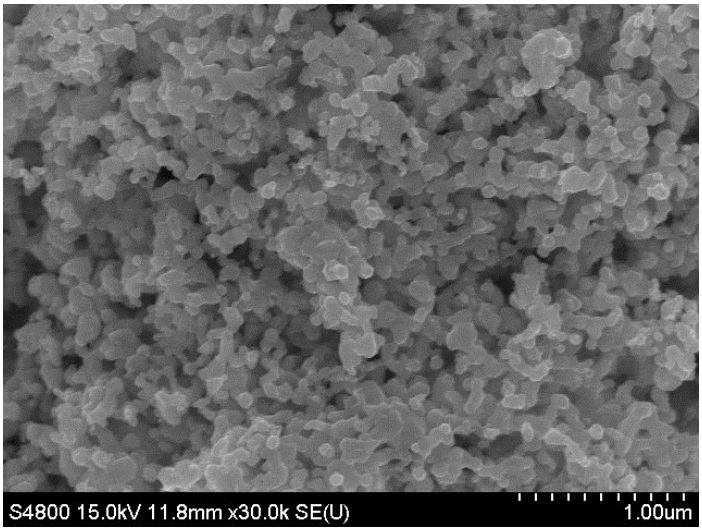

Fig. S13 SEM image of the Ru nanoparticles.

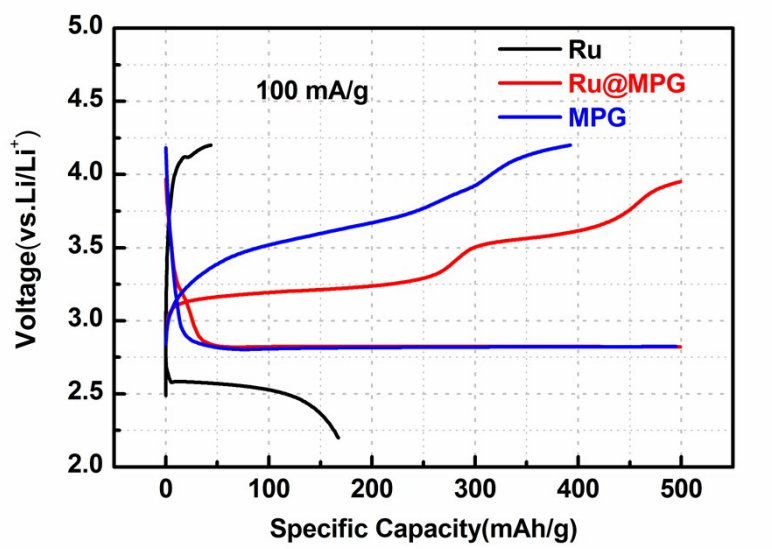

Fig. S14 Discharge/charge profiles of the MPG, 30 wt% Ru@MPG composites, and Ru electrodes at a current density of 100 mA g^{-1} with a discharge capacity of 500 mA h g^{-1}.