Electronic Supplementary Information for

Tuning porous structure of carbon matrixes for loading sulfur toward long lifespan cathode materials of Li-S batteries

Huan Ye, Ya-Xia Yin, Sen Xin and Yu-Guo Guo*

CAS Key Laboratory of Molecular Nanostructure and Nanotechnology, and Beijing National Laboratory for Molecular Sciences (BNLMS), Institute of Chemistry, Chinese Academy of Sciences (CAS), Beijing, 100190, P.R. China

*Correspondence author. E-mail: ygguo@iccas.ac.cn

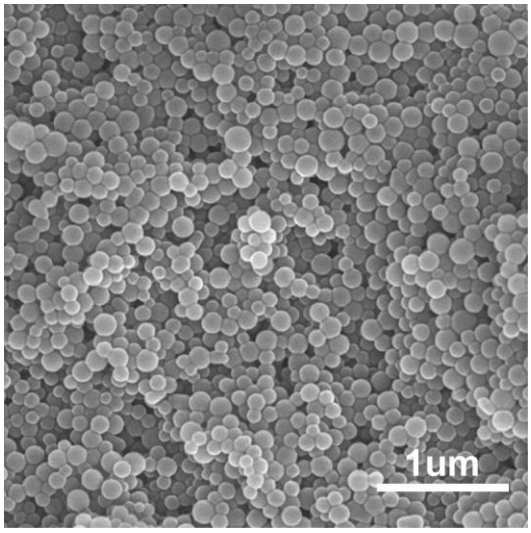

Figure S1. SEM image of carbon precursor spheres.

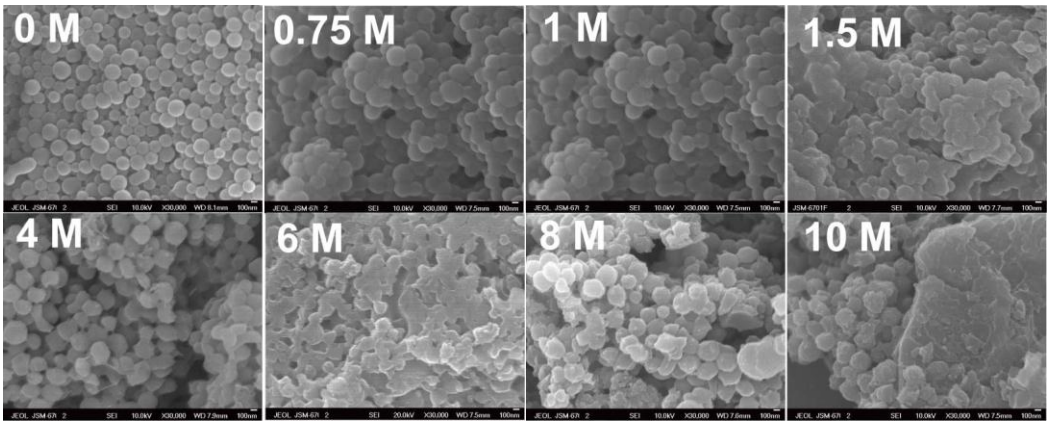

Figure S2. SEM images of MPCSs activated at different KOH concentrations.

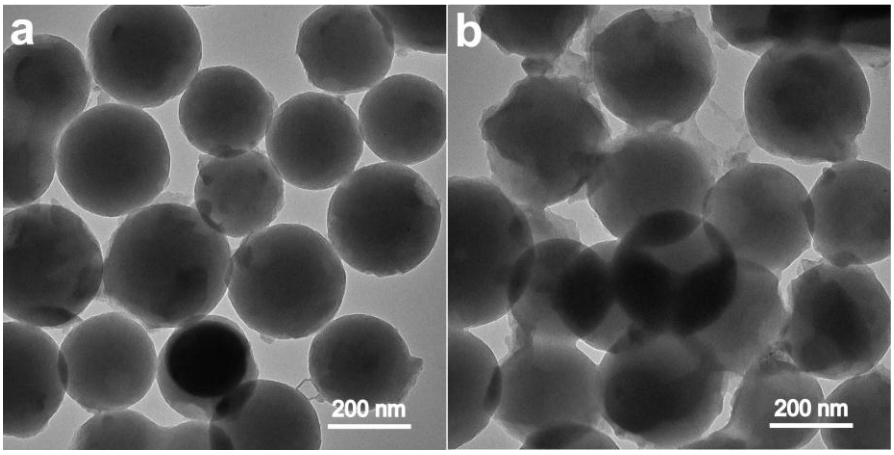

Figure S3. TEM images of (a) non-activated MPCS and (b) MPCS activated with 1 M KOH.

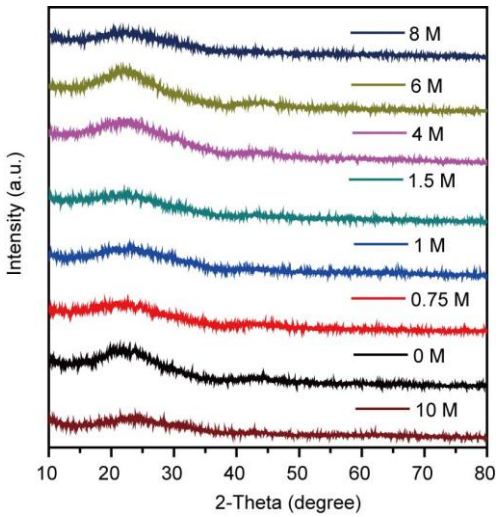

Figure S4. X-ray diffraction patterns of MPCSs activated with various concentration of KOH.

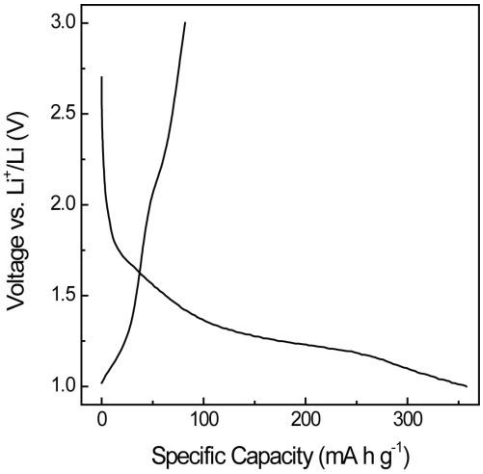

Figure S5. The discharge-charge curve of bare MPCS activated with 1 M KOH in the first cycle.

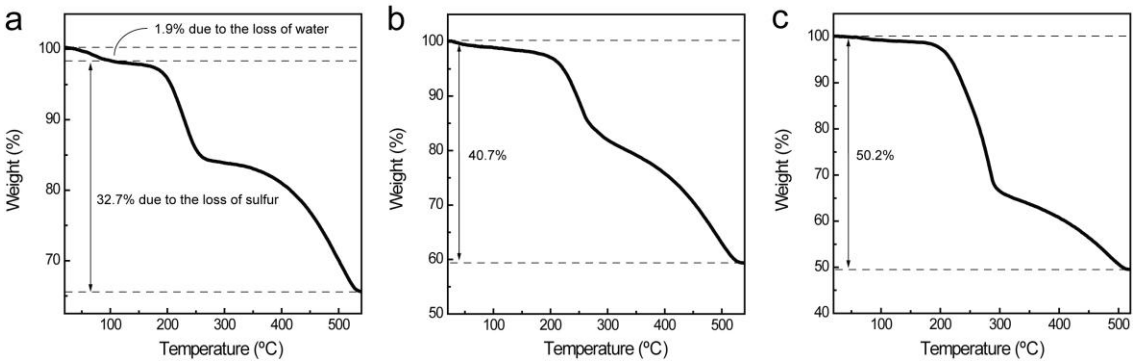

Figure S6. TG curve of (a) $S_{33.3}$/MPCS, (b) S_{40}/MPCS, and (c) S_{50}/MPCS.

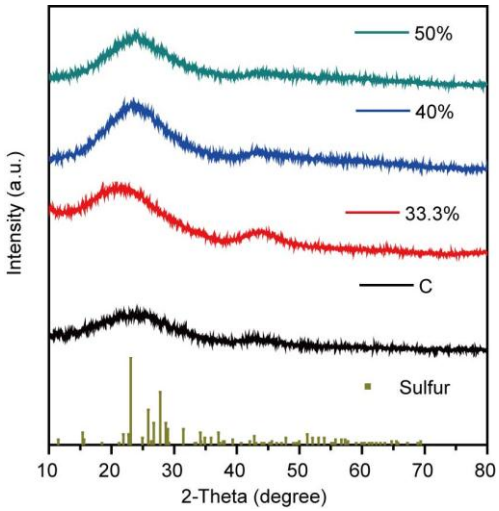

Figure S7. X-ray diffraction patterns of MPCS activated with 1 M KOH, $S_{33.3}$/MPCS, S_{40}/MPCS, S_{50}/MPCS, and standard card of sulfur（JCPDS Card No. 08-0247).

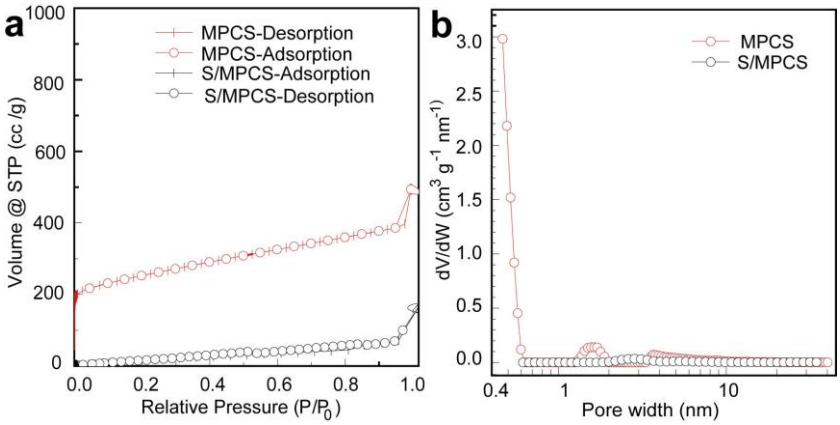

Figure S8. (a) Nitrogen adsorption/desorption isotherms at 77K and (b) Pore size distribution of MPCS and S_{40}/MPCS activated with 1 M KOH.

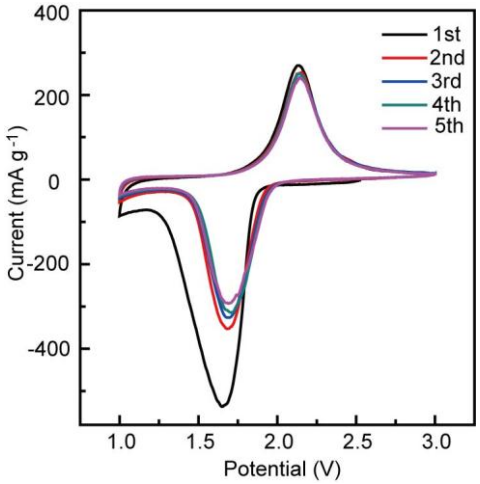

Figure S9. The first five cycling voltammograms of S_{40}/MPCS obtained in carbonate-based electrolyte at a scan rate of 0.05 mV s^{-1}.