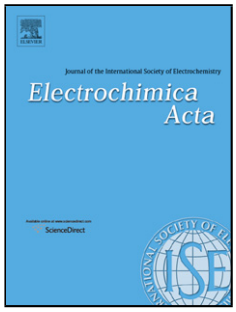

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PII: S0013-4686(17)31535-9
DOI: http://dx.doi.org/doi:10.1016/j.electacta.2017.07.117
Reference: EA 29934

To appear in: *Electrochimica Acta*

Received date: 22-6-2017
Revised date: 17-7-2017
Accepted date: 19-7-2017

Please cite this article as: Bo Zhang, Yingming Zhao, Jia Liu, Xiuling Wang, Dejun Li, Xifei Li, Impact of Micro-/Mesoporous Carbonaceous Structure on Electrochemical Performance of Sulfur, Electrochimica Actahttp://dx.doi.org/10.1016/j.electacta.2017.07.117

Impact of Micro-/Mesoporous Carbonaceous Structure on Electrochemical Performance of Sulfur

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Abstract: The hierarchical porous carbon materials with specific areas from 3425.688 $m^2\ g^{-1}$ to 988.768 $m^2\ g^{-1}$ and total pores volumes from 1.979 $cm^3\ g^{-1}$ to 0.434 $cm^3\ g^{-1}$ were prepared by carbonization of the polypyrrole precursor and activated with potassium hydroxide under different activation conditions. Among them, two kinds of hierarchical porous carbon materials with similar high specific surface area were investigated by SEM, TEM，XRD, BET and electrochemical methods after loading 70 wt% sulfur in micropores, in order to study the key role of the micro-/mesoporous carbonaceous structure in influencing the electrochemical performance of sulfur. The test results show that the hierarchical porous carbon with higher mesopores content exhibited better cycle and rate performance after loading 70 wt% sulfur, attributing to the efficient penetration of electrolyte and migration of Li^+.