Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information

A macroporous $LiFePO_4$ as a cathode for an aqueous rechargeable lithium battery of high energy density

Yuyang Hou[a], Xujiong Wang[a], Yusong Zhu[a], Chenglin Hu[a], Zheng Chang[a], Yuping Wu*[a] and Rudolf Holze[b]

1. The SEM micrograph of the PS template

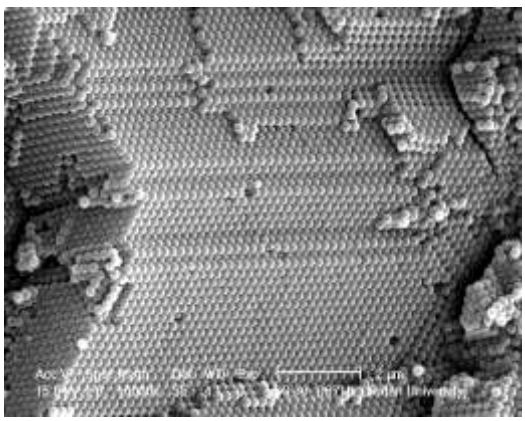

Figure S1. SEM micrograph of the PS template to prepare three dimensional (3D)-ordered macroporous $LiFePO_4$.

The SEM of the PS template is shown in **Figure S1**. The stacking of the PS particles is three-dimensionally regular and the shapes of the pores are very uniform. The PS particle size is about 200 nm.

2. Cycling behaviour of the $LiFePO_4$ cathode in 0.5 mol l^{-1} Li_2SO_4 aqueous solution

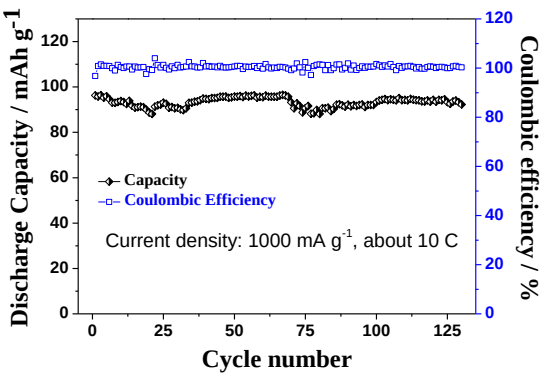

Figure S2. Cycling behaviour of the $LiFePO_4$ cathode in 0.5 mol l^{-1} Li_2SO_4 aqueous solution at the current density of 1000 mA g^{-1}.

Cycling behaviour of the $LiFePO_4$ cathode in 0.5 mol l^{-1} Li_2SO_4 aqueous solution at the current density of 1000 mA g^{-1} is shown in **Figure S2**, which was tested using activated carbon as the counter electrode and SCE as the reference electrode. It shows clearly that the $LiFePO_4$ in the aqueous solution presents good cycling behaviour as in the aqueous electrolytes.

3. The "cross-over" effect of Li^+ ions in the composite coating

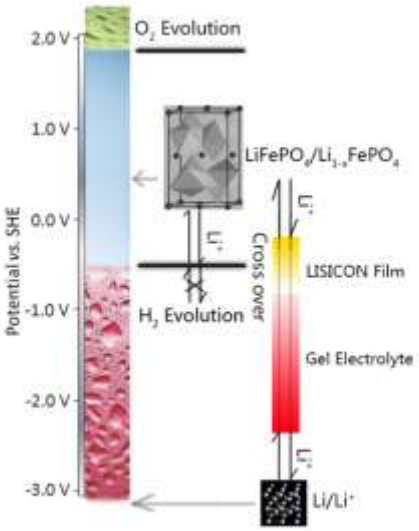

Figure S3 Schematic illustration of the "cross-over" effect of Li^+ ions in the composite coating.