A Novel Polymer Electrolyte with In-Situ Polymerization and High

Concentration of Lithium Salts for Lithium Metal Batteries

Chunhua Wang^{1,2,3}, Donglou Li², Na Liu², Guoliang Bai^{2,*}, Wenxiang He², Xuehua Zhou², Junwei Wang², Jianli Zhang⁴ and Xingjiang Liu^{3,*}

1) School of Chemical Engineering and Technology, Tianjin University, Tianjin, 300072 P.R. China

2) Anhui Province Key Laboratory of Optoelectronic and Magnetism Functional Materials, Key

Laboratory of Functional Coordination Compounds of Anhui Higher Education Institutes, Anqing Normal University, Anqing 246001, P.R. China

 Science and Technology on Power Sources Laboratory, Tianjin Institute of Power Sources, Tianjin 300384, P.R. China

4) State Key Laboratory of High-efficiency Utilization of Coal and Green Chemical Engineering, Ningxia University, Yinchuan, 750021, P.R. China



Figure S1. Mechanical properties of the polymer electrolyte



Figure S2. a) ¹H NMR spectrum of DOL and LEUI, and b) ¹³C NMR spectrum of DOL and LEUI



Figure S3. The lithium-ion transference number of LEUI3



Figure S4. SEM images of lithium surface in LiFePO₄/LEUI3/Li battery after cycling