SUPPORTING INFORMATION

Use of ion-selective polymer membranes for an aqueous electrolyte rechargeable Li-ion/polysulphide battery

Rezan Demir-Cakan[a,b*], Mathieu Morcrette[b,c], Jean-Marie Tarascon[c,d]

[a] Gebze Technical University, Department of Chemical Engineering, 41400 Gebze, Turkey
[b] Laboratoire de Réactivité et Chimie des Solides, Université de Picardie Jules Verne, CNRS UMR 7314, 33 rue Saint Leu, 80039 Amiens, France
[c] Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France
[d] Collège de France, 11 Place Marcellin Berthelot, 75005 Paris, France

[*] *e-mail: demir-cakan@gyte.edu.tr*

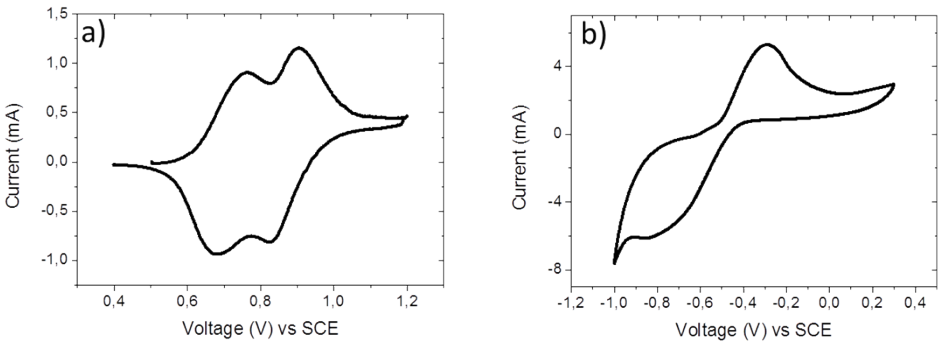

Fig. S1 a) Cyclic voltammograms for $LiMn_2O_4$ at the scan rate of 0.2 mV/s over 0.4-1.2 V vs SCE b) cyclic voltammograms of dissolved polysulphide at the scan rate of 5 mV/s over -1.0 to 0.3V vs SCE

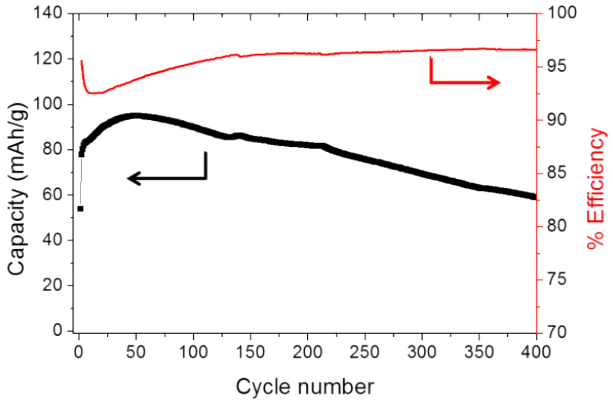

Fig. S2 Cycling performance of the aqueous electrolyte $LiMn_2O_4$-polysulphide cell at a 10 C current density. Capacity values refer to $LiMn_2O_4$ whose theoretical capacity is mAh g^{-1}.

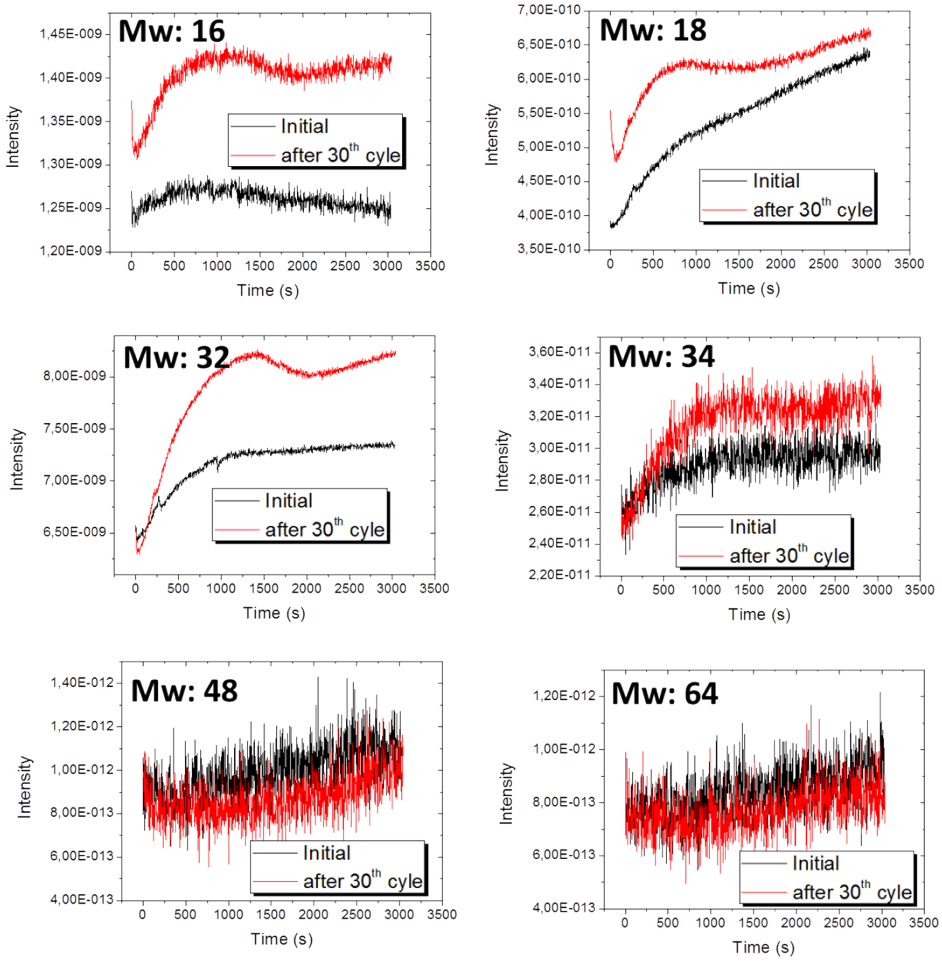

Fig. S3 The evolution of gases products detected by GCMS analysis. Molecular weight (Mw) and related gases products are as follows; O_2 (16, 32), H_2S (34), H_2O (18) SO_2 (48, 64)

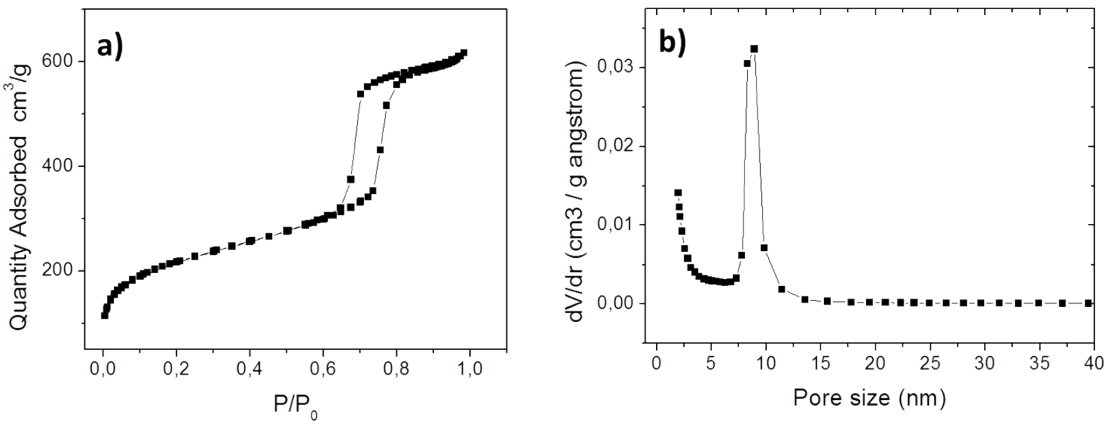

Fig. S4 a) Adsorption/desorption isotherm of SBA-15 silica, b) pore size distribution of SBA-15 silica

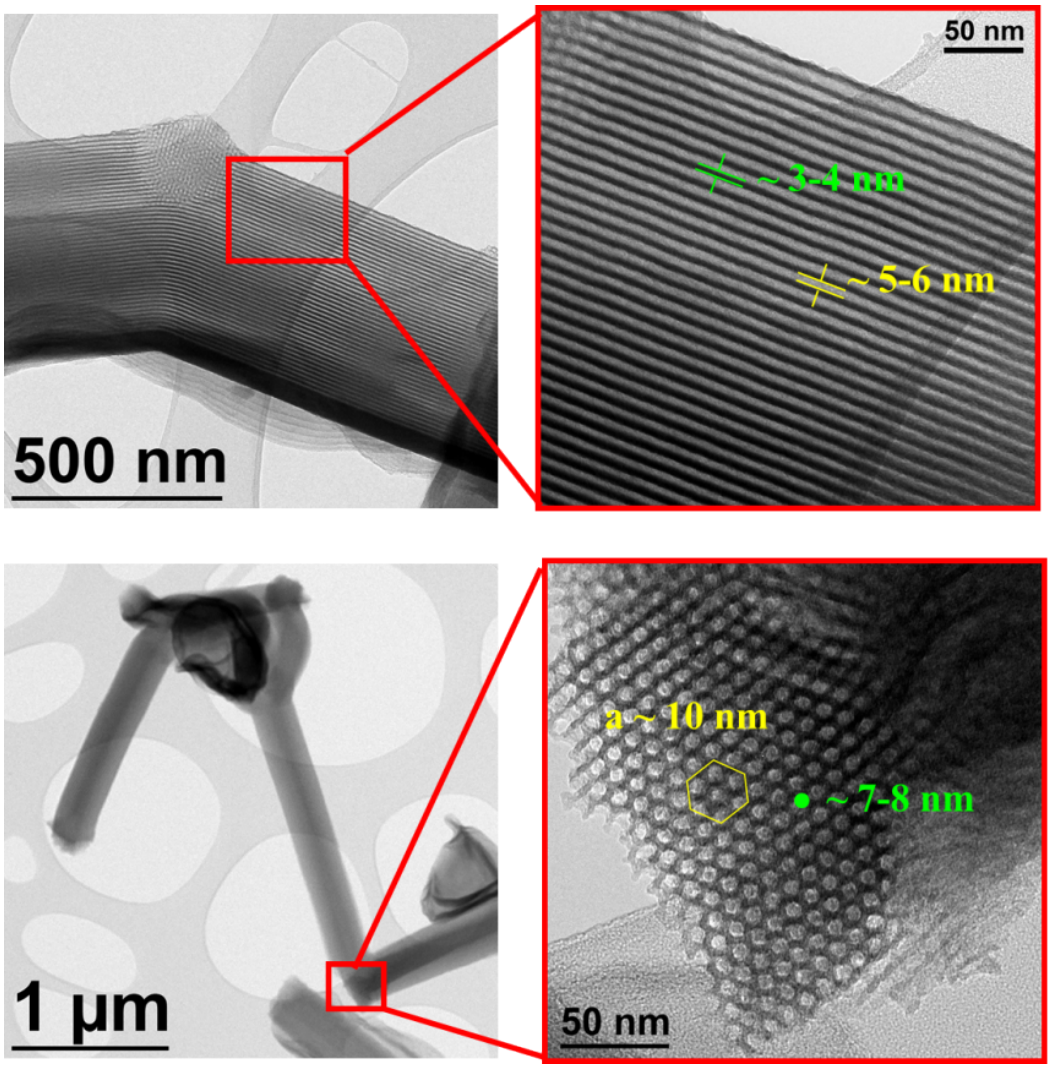

Fig. S5 High-resolution TEM images of SBA-15 silica at different magnifications