Supplementary information

Controllable synthesis of high-performance LiMnPO4 nanocrystals by a facile one-pot solvothermal process

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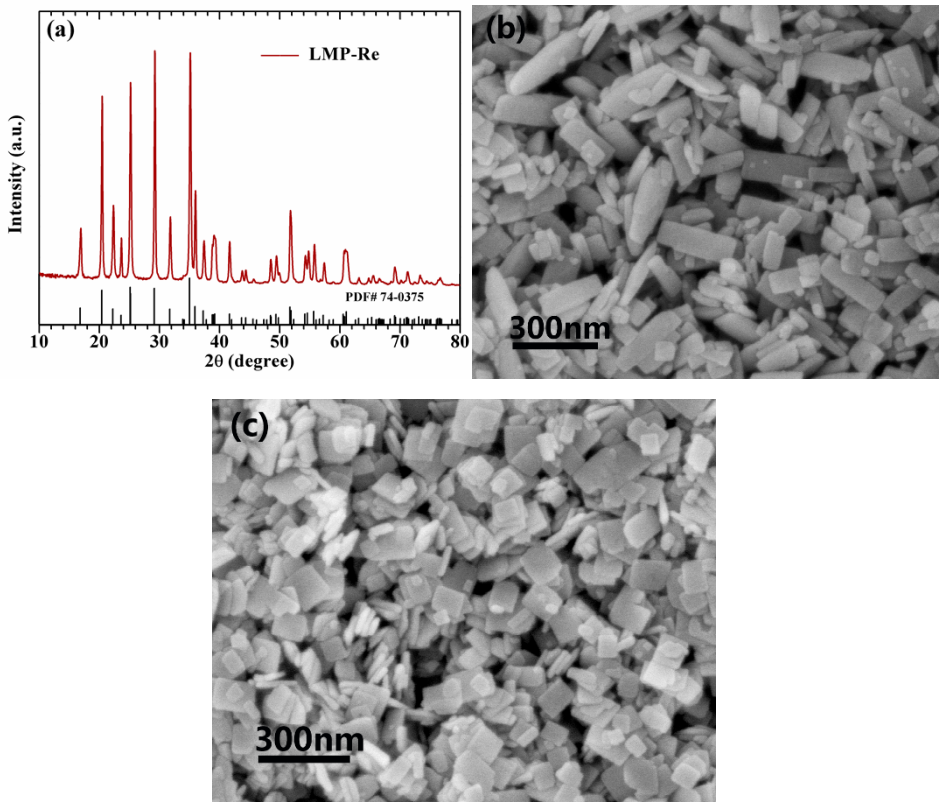

Fig. S1 (a) XRD pattern of LMP-Re; (b) SEM image of LMP-Re; (c) SEM image of LMP-Db.

We have performed additional experiments and tried to reuse EG to synthesize $LiMnPO_4$ (the sample was named LMP-Re). The EG was retrieved after the synthesis of LMP-VR, where the ratio of $LiOH/H_3PO_4/MnSO_4$ was 3:1.1:1. In the synthesis of LMP-Re, therefore, we set the ratio of $LiOH/H_3PO_4/MnSO_4$ at 3:1:1 (to reuse the "extra" H^+ in the solvent). XRD result in Fig. S1a shows that pure $LiMnPO_4$ could be synthesized using the reused EG. SEM image (Fig. S1b) reveals the obtained LMP-Re exhibits a cuboid-like shape, which is slightly larger than LMP-VR. For synthesis of LMP-Re, the water content in the mixed precursor before the solvothermal process is enlarged to 10%, which may result in the larger particle dimension. Besides, we provide another method to lower the cost. We double the amount of the starting material using the same volume of EG (sample: LMP-Db).The morphology and particle size of LMP-Db keep the same with the LMP-VR as shown by SEM images (Fig. S1c).