Electronic Supplementary Information

Sputtering graphite coating to improve the elevated-temperature cycling ability of $LiMn_2O_4$ electrode

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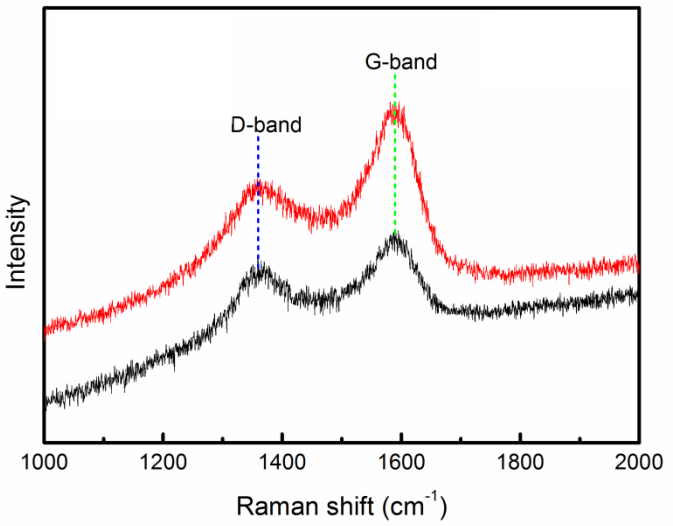

Fig. S1 Raman spectra of samples before (black line) and after (red line) 30 min sputtering of graphite

In Fig. S1, two peaks are observed at ~1360 and ~1588 cm^{-1}, which correspond to the A1g mode of disordered carbon (D-band) and the Raman active E2g mode of the graphitic carbon lattice vibration (G-band), respectively. The G-LMO sample shows a lower I_D/I_G ratio than LMO, indicating that G-LMO owns higher degree of graphitization. With this evidence, we can conclude that the graphitic carbon has been coated on the surface of the $LiMn_2O_4$ electrode by magnetron sputtering.

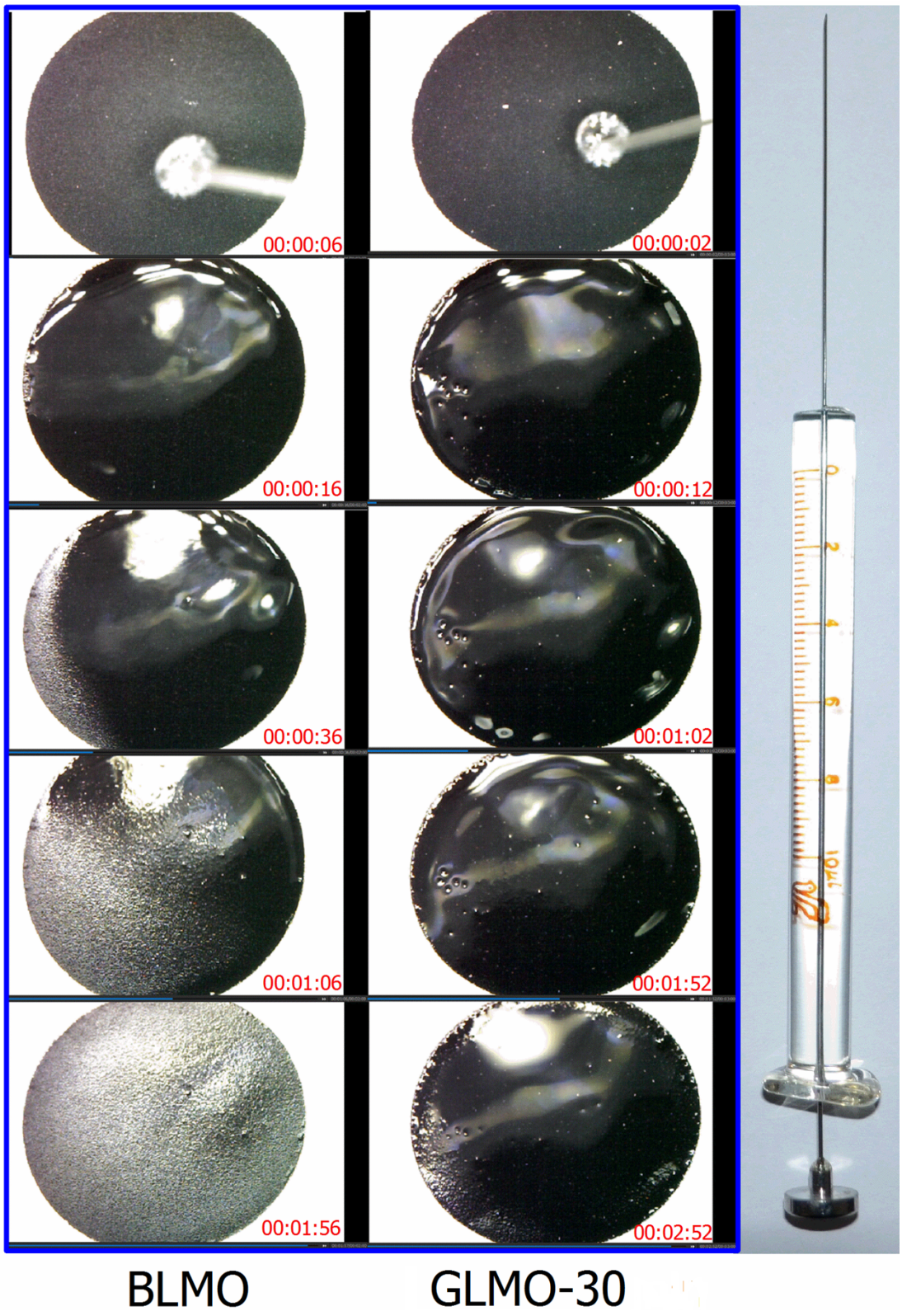

Fig. S2 Pictures of videos recording the electrolyte dispersion into the BLMO and GLMO-

To identify the difference of wettability of LMO cathodes before and after graphite coating, we videoed by adding the same amount (10 μL) of electrolyte to the prepared electrodes (BLMO and GLMO-30) and observing the dispersion into the electrodes as a function of time. To clearly and intuitively observe the electrolyte dispersion, Pictures at different time were taken and shown in Fig. S1. It is clearly seen that the electrolyte can completely dispersed into BLMO while there still exists large amount of liquid electrolyte on the surface of GLMO-30. Given this phenomenon, we are able to conclude that the BLMO has better wettability than GLMO-30.