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

Supporting Information

Template Free Synthesis of Hollow Li_2O-Fe_2O_3-Ag Heterostructures for Ultra High Performance Li-ion Batteries

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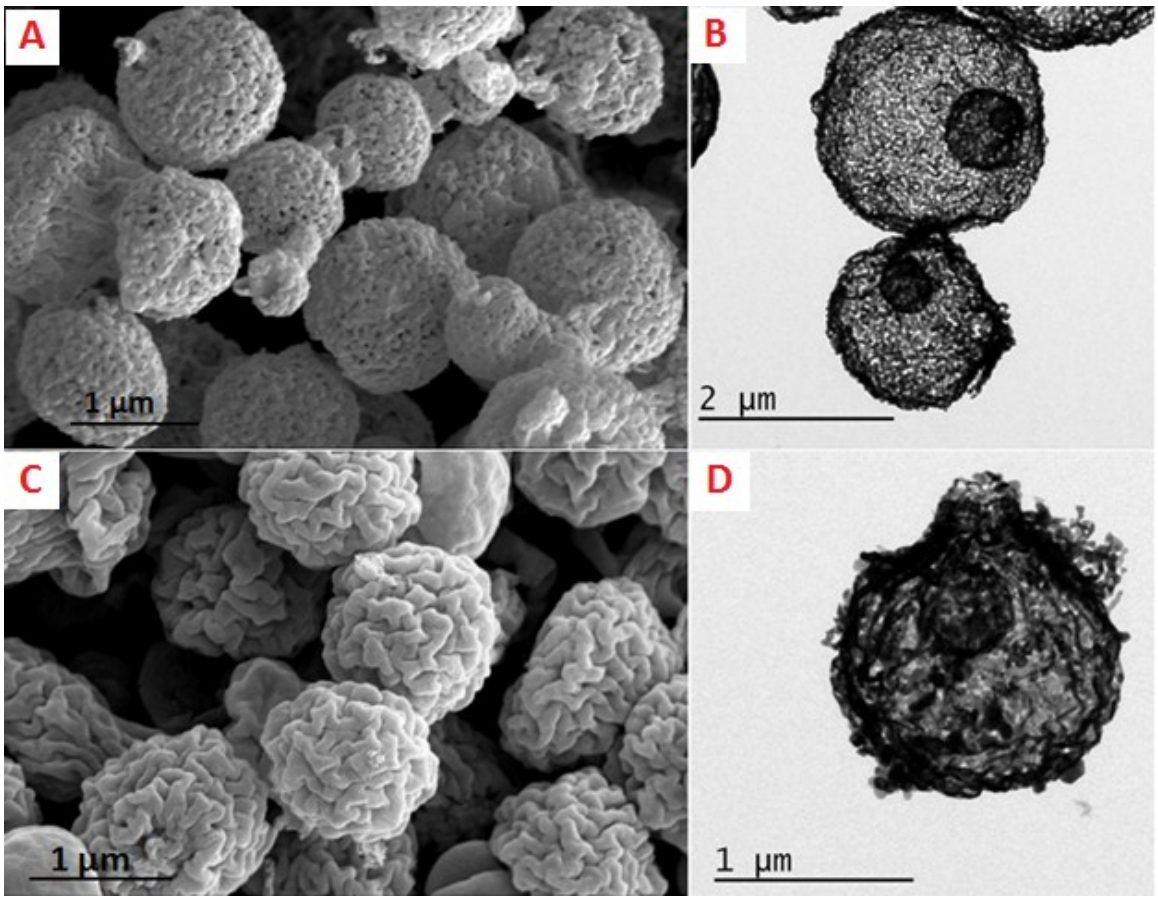

Fig S1: *FE-SEM images of (A) Fe_2O_3-Ag and (C) Fe_2O_3 structures showing a porous flower-like surface morphology. TEM images of (B) Fe_2O_3-Ag, and (D) Fe_2O_3, revealing the formation of a hollow structure.*

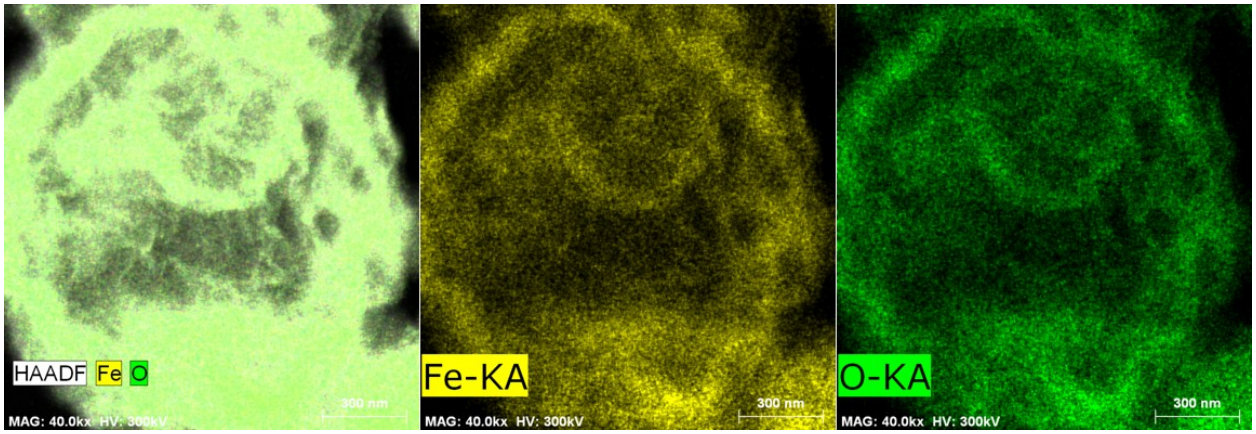

Fig S2: *Elemental mapping images of Li_2O-Fe_2O_3 composite showing a homogenous distribution of Fe_2O_3.*

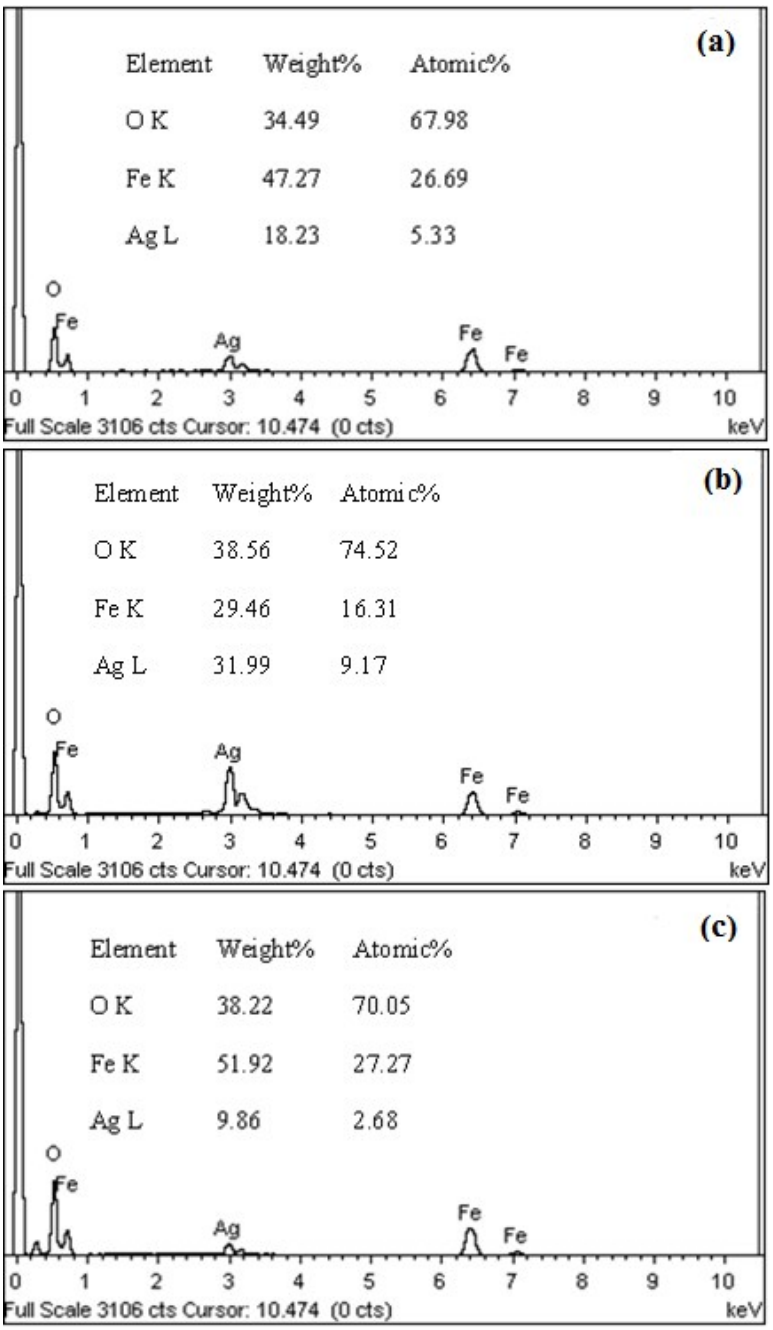

Fig S3: *EDX spectra obtained for (a) Li_2O-Fe_2O_3-Ag –I, (b) Li_2O-Fe_2O_3-Ag –II and (c) Li_2O-Fe_2O_3-Ag –III composites, showing the average Ag weight percentage in the composite to be 18%, 32% and 10%, respectively.*

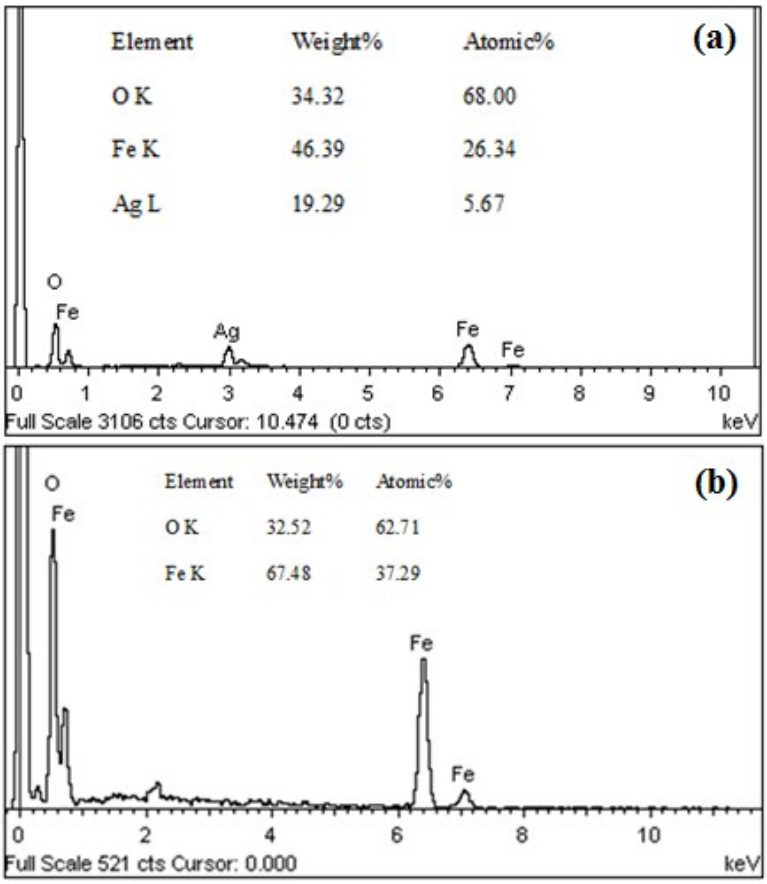

Fig S4: *EDX spectra obtained for (a) Fe_2O_3-Ag and (b) Li_2O-Fe_2O_3 composites, showing the average weight percentage of the constituents.*

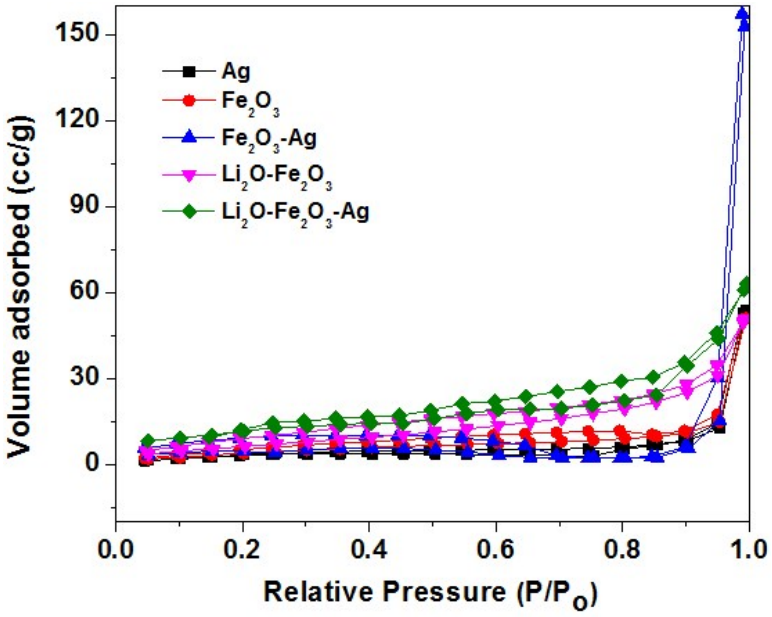

Fig S5: *Nitrogen adsorption-desorption isotherms of Li_2O-Fe_2O_3-Ag, Li_2O-Fe_2O_3, Fe_2O_3-Ag, Fe_2O_3 and Ag structures.*

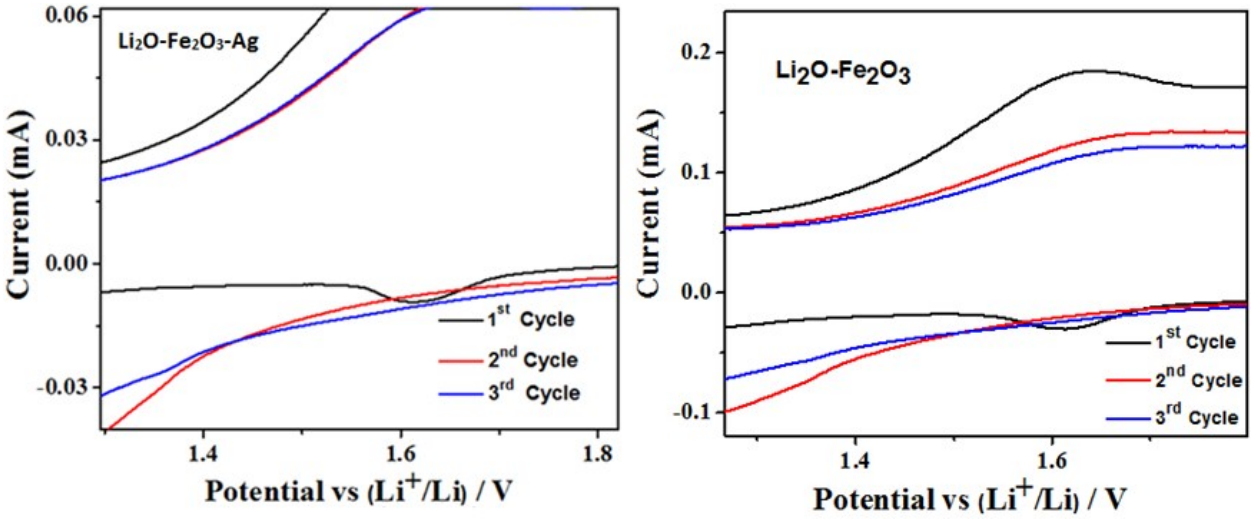

Fig S6: *Magnified CV sections of Li_2O-Fe_2O_3-Ag and Li_2O-Fe_2O_3, showing the reduction peak occurring at about 1.6 V in the first cathodic cycle.*

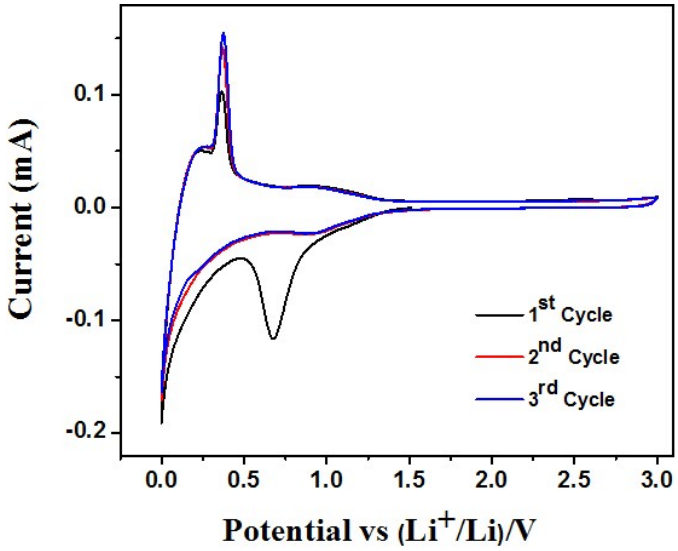

Fig S7: *Cyclic voltammogram of the Ag electrode at a slow scan rate of 0.1mV/s.*

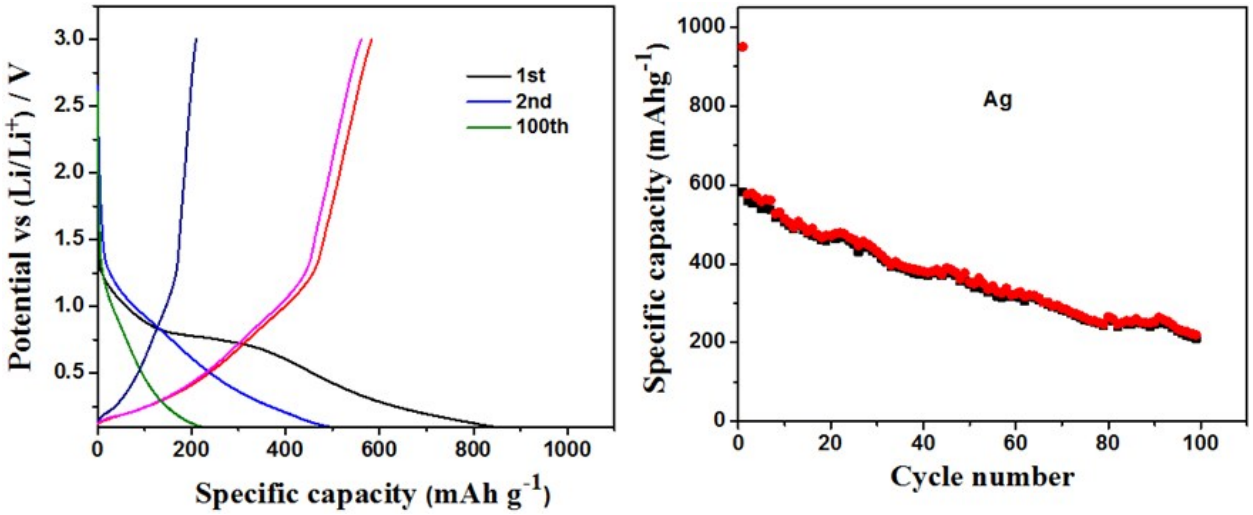

Fig S8: *(a) Galvanostatic charge/discharge profile of the Ag electrode at a current density of 100mA/g; (b) Cycling performance of the Ag electrode at a current density of 100mA/g.*

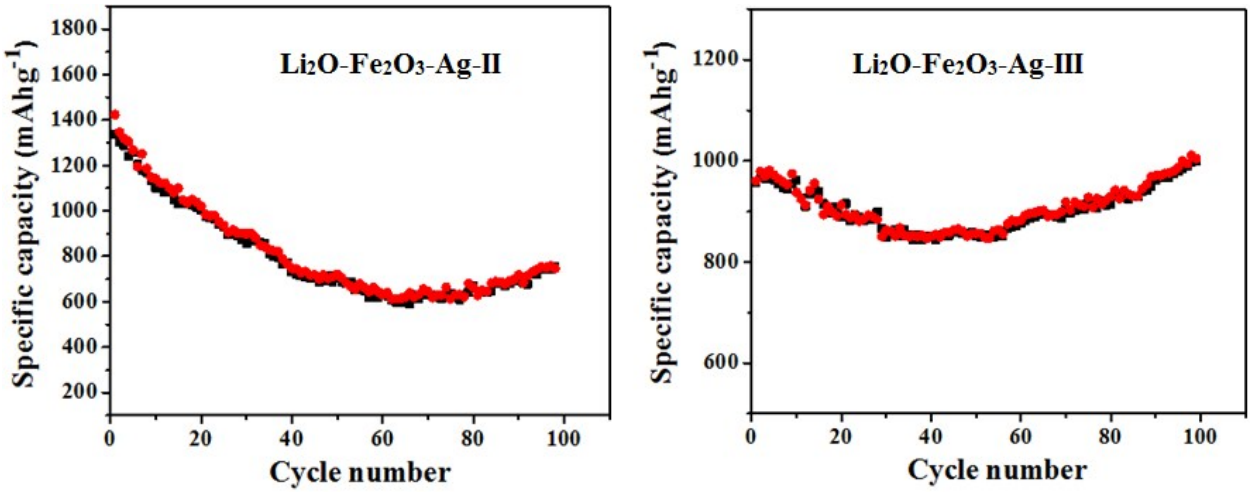

Fig S9: *Cycling performance of Li_2O-Fe_2O_3-Ag-II composite (*weight ratio of 5.4**:** 53.2**:** 41.4) *with higher Ag concentration, and Li_2O-Fe_2O_3-Ag-III composite (weight ratio of 17.6**:** 69.0**:** 13.4) with higher Li_2O concentration.*