

Supplementary information

Plasma assisted vapor solid deposition of Co_3O_4 tapered nanorods for energy applications

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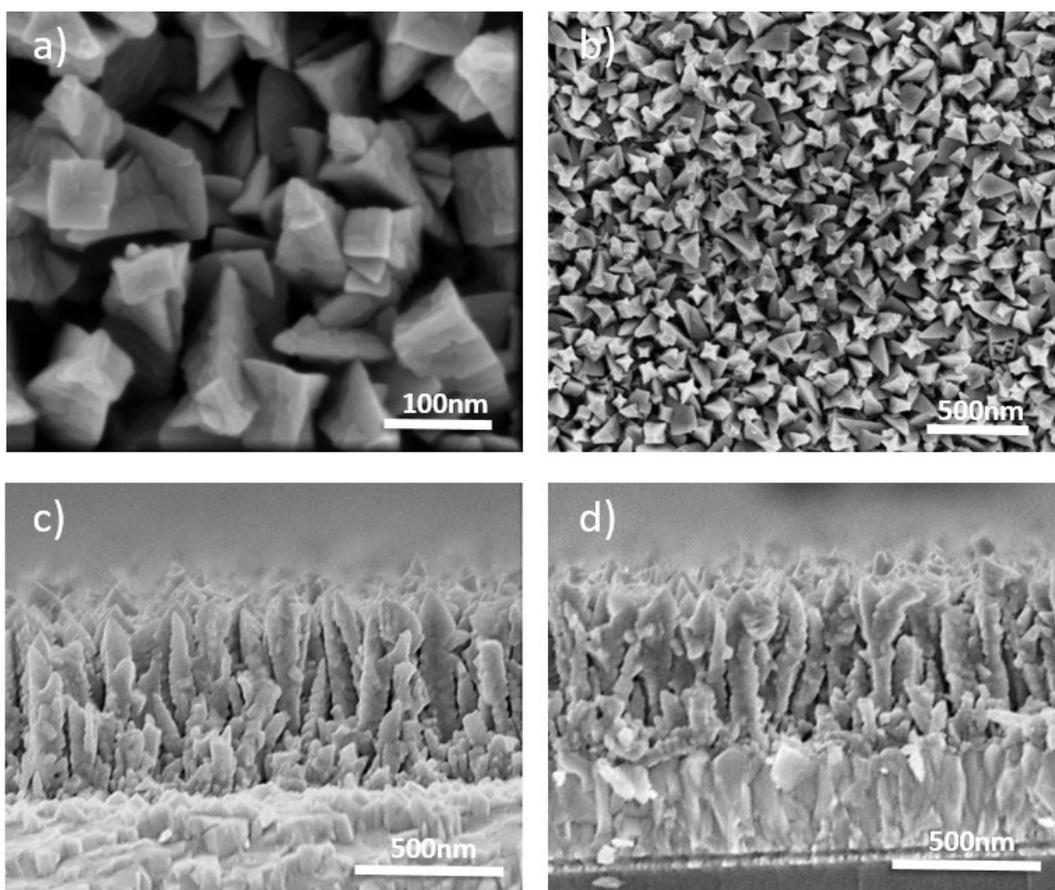


Fig S1 (a),(b) planar and (c), (d) cross section SEM images of the Co_3O_4 NRs on Fluorinated-doped tin oxide (FTO) conducting glass upon 60 min deposition.

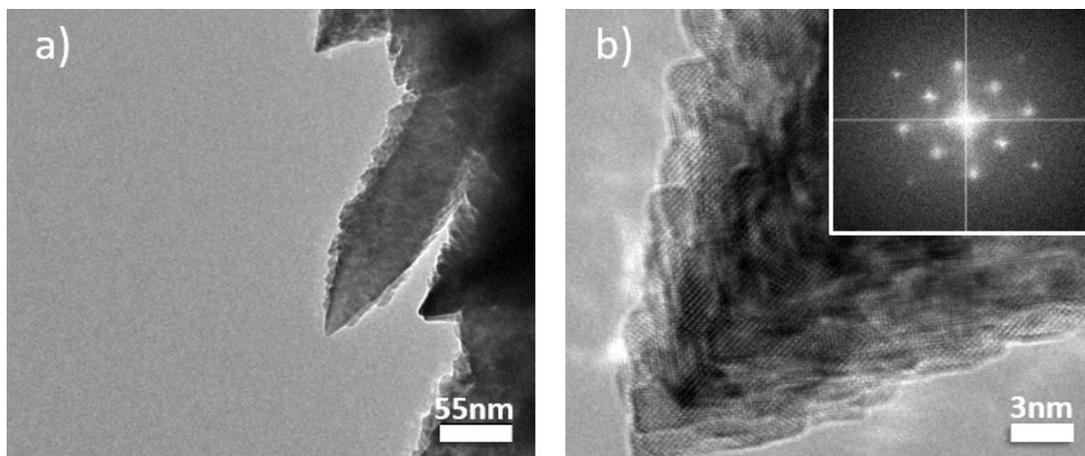


Fig S2 (a) Low magnification TEM image of the Co_3O_4 NRs exhibits high crystallinity and featured roughness. (b) High resolution cross-section TEM presents high-orientated crystals of NRs featuring $[111]$ direction confirming the XRD results. (Inset) corresponding FFT of the selected area.

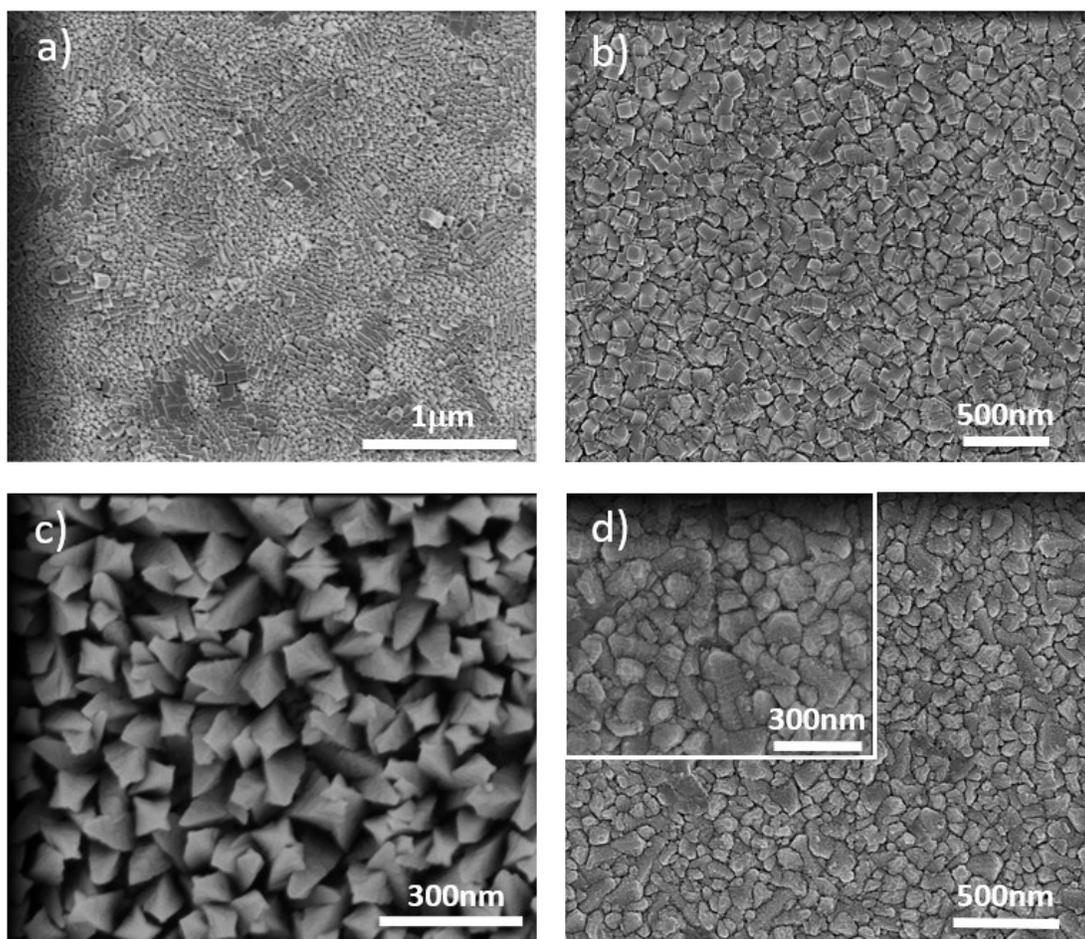


Fig S3 Evolution of structural changes of produced films via modification of deposition pressure. (a) The morphology of the Co_3O_4 film deposited at 1.7×10^{-3} mPa exhibits crinkled surface. (b) Compact cubic structure of the film deposited at 9.8×10^{-3} mPa. (c) Formation of the 1D NR structure at 1.6×10^{-2} mPa. The structural and morphological properties of this film was the primary focus of this work. (d) Deposition at

4.2×10^{-2} mPa resulted in a grainy and coarse film with very low deposition rate. (Inset) relative high magnification FESEM image.

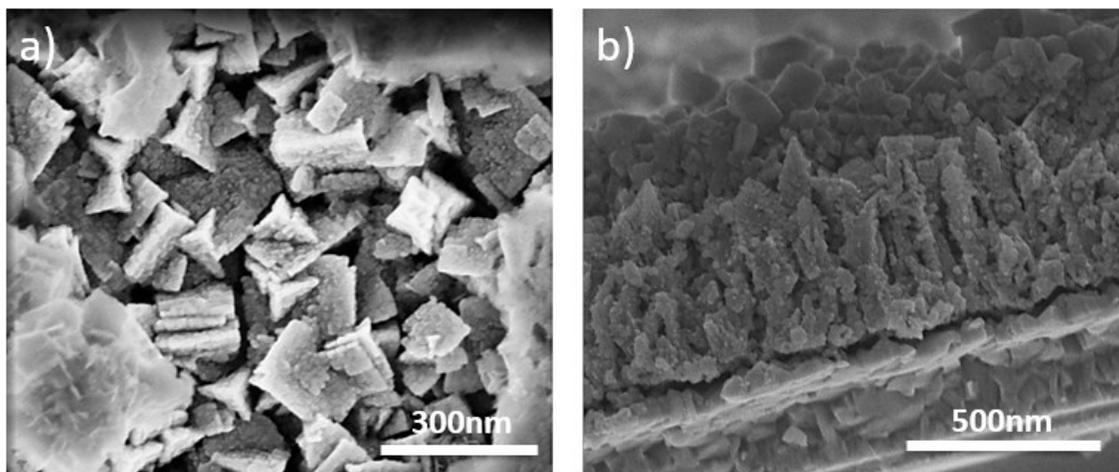


Fig S4 (a) FESEM images of the Co_3O_4 NRs after 200 cycle stability test. The overall integrity of the NRs is preserved whilst; formation of SEI layer is also evident. (b) Cross-section images of the samples after lithium storage process exhibits full infiltration of ions in depth of the electrodes.
