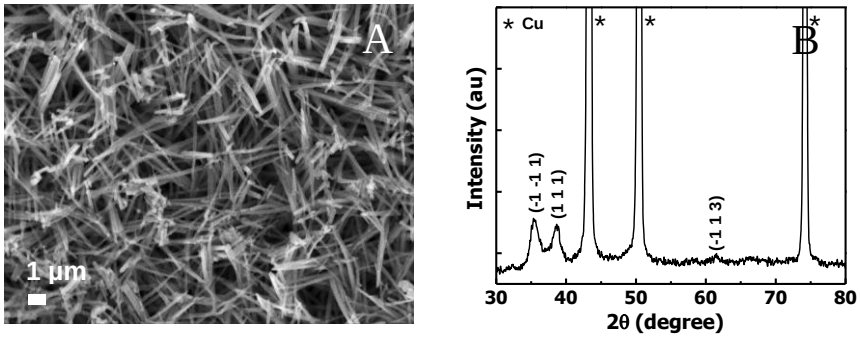

Figure S1 (A) SEM, (B) XRD of CuO nanoneedle arrays fabricated by heat treatment of $Cu(OH)_2$ nanoneedles arrays at 120^{o}C for 2 h and then maintained at 180^{o}C for 2 h.

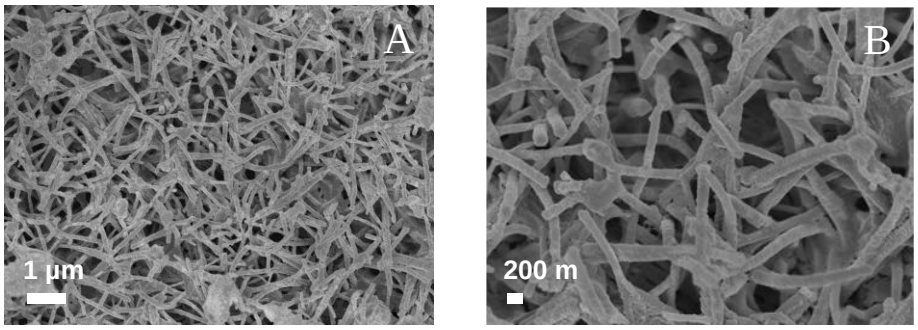

Figure S2 (A-B) SEM images of CuO nanoneedle arrays after Charge/discharge at current of 674 mA/g between 0.05-3.00 V (vs Li/Li^+) for 100 cycles.

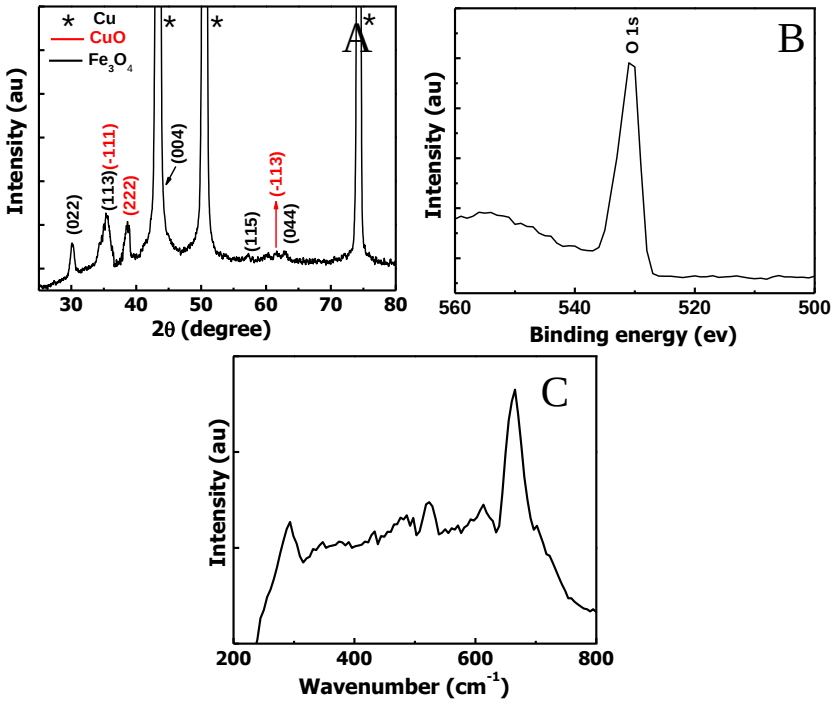

Figure S3 (A) XRD, (B) XPS spectra of the O region, (C) Raman spectra of Fe_3O_4/CuO hybrid nanowires fabricated by two step electrochemical fabrication method.

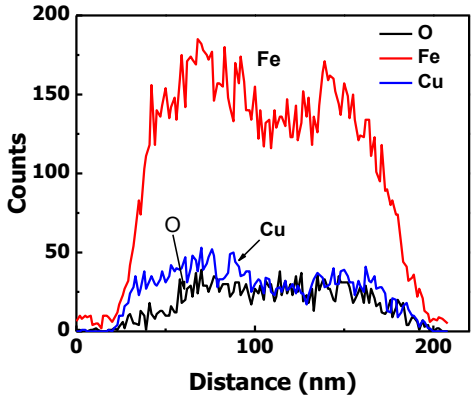

Figure S4 Linear scan of energy dispersive X-ray spectroscopy (EDX) of Fe_3O_4/CuO hybrid nanowires.

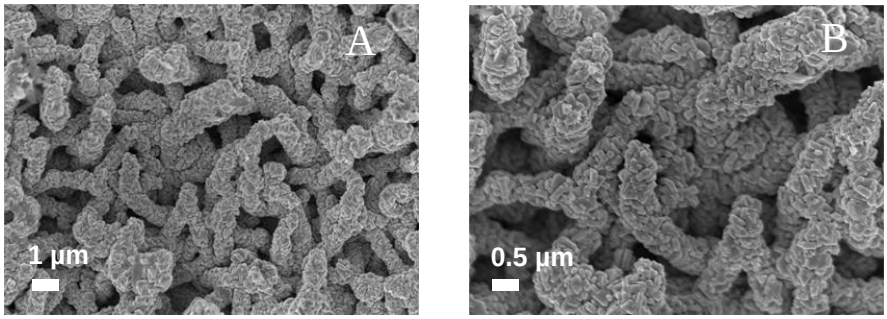

Figure S5 (A-B) SEM image of Fe_3O_4/CuO hybrid nanowires fabricated by electrodeposition of Fe_3O_4 at -1.1 V on $Cu(OH)_2$ for 200 s.

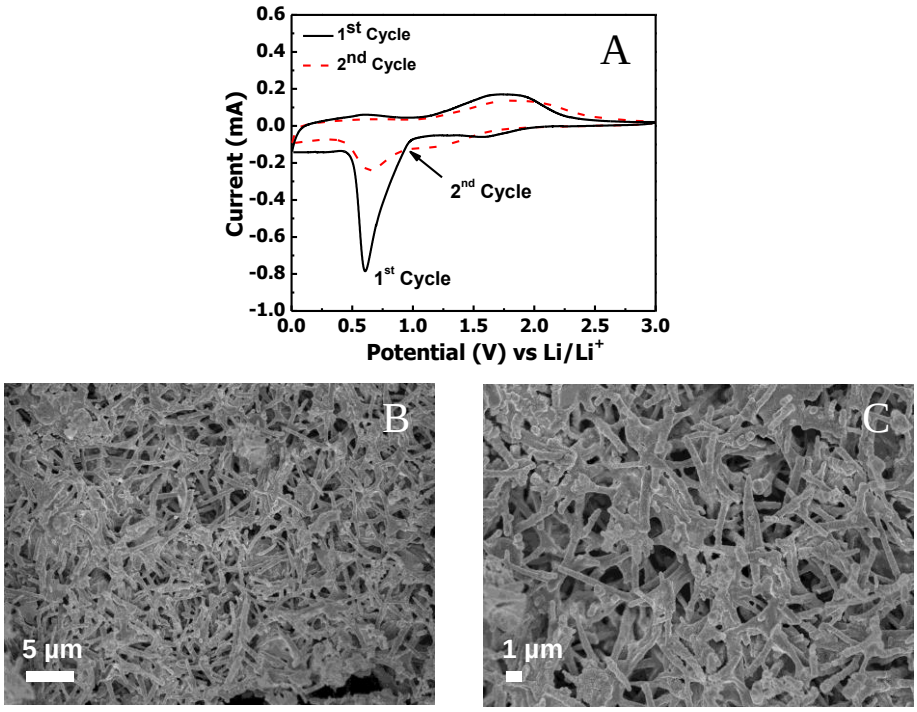

Figure S6 (A) Cyclic voltammograms (CVs) of the first two cycles of pure Fe_3O_4, (B-C) SEM images of Fe_3O_4/CuO hybrid nanowires after Charge/discharge at a current density of 820 mA/g between 0.05-3.00 V (vs Li/Li^+) for 100 cycles.

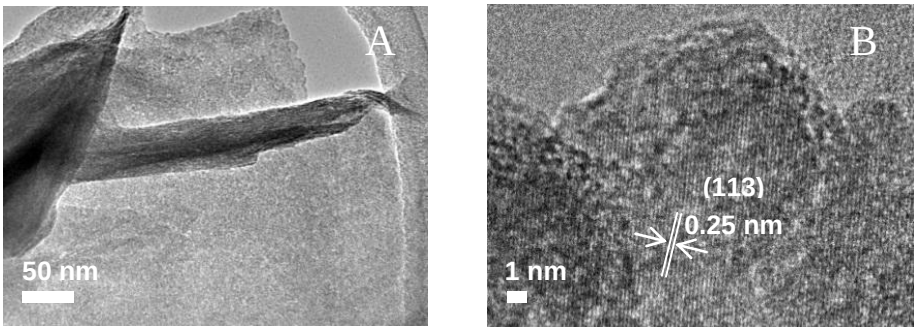

Figure S7 (A) TEM, (B) HRTEM of Fe_3O_4 nanoflakes.

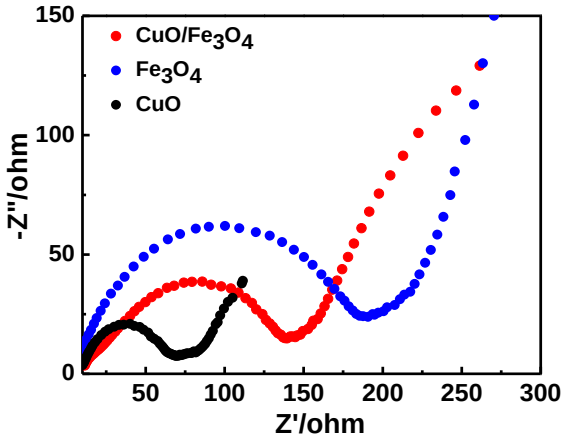

Figure S8 Nyquist plots of CuO, Fe_3O_4 and Fe_3O_4/CuO electrodes obtained by application of a sine wave at amplitude of 10.0 mV over the frequency range 10 kHz–0.1 Hz.