Electronic Supplementary Information

XRD, TGA, SEM, TEM and BET surface area. The samples was characterized by X-ray diffraction (XRD) employing a Bruker D8 Focus X-ray Diffraction with Cu Kα radiation. TGA was carried out on a NETZSCH STA 449F3 simultaneous thermal analyzer in air with a heating rate of 10 ^{o}C min^{-1}. The morphology and crystalline structure were characterized by SEM (Hitachi S-4800) and TEM (Tecnai G2) with an accelerating voltage of 200 kV. Brunauer-Emmett-Teller (BET) surface area was measured by nitrogen sorption using a Micromeritics ASAP 2020 analyzer.

Electrochemical measurements. The electrochemical properties were measured via CR2025 type half-cells. The working electrodes were prepared by mixing the active material, acetylene black and polyvinylidene fluoride (PVDF) with a weight ratio of 80:10:10. Li foil and Celgard 2400 membrane were used as counter electrode and separator, respectively. The electrolyte was 1M $LiPF_6$ dissolved in ethylene carbonate (EC) and dimethyl carbonate (DMC) with a volume ratio of 1:1. Galvanostatic charge-discharge measurements were performed in the voltage range between 0.01 and 3 V at room temperature by LAND CT2001A battery testing system. Electrochemical impedance spectroscopy (EIS) tests were performed on a VMP3 Electrochemical Workstation (Bio-logic Inc.) in the frequency range from 700 kHz to 100 mHz at room temperature.

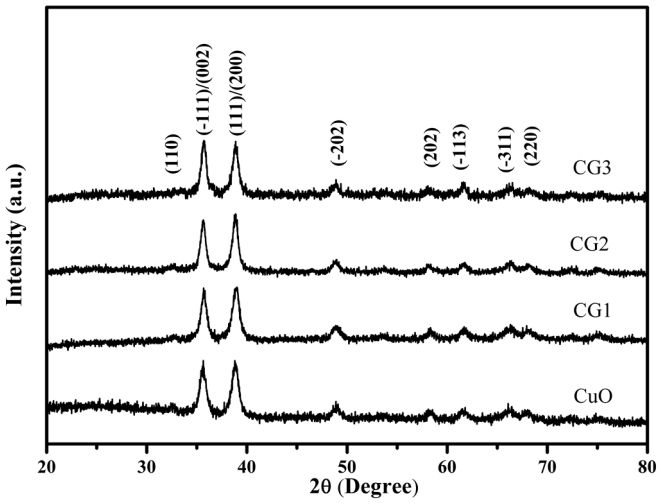

Fig. S1 XRD patterns of the obtained samples.

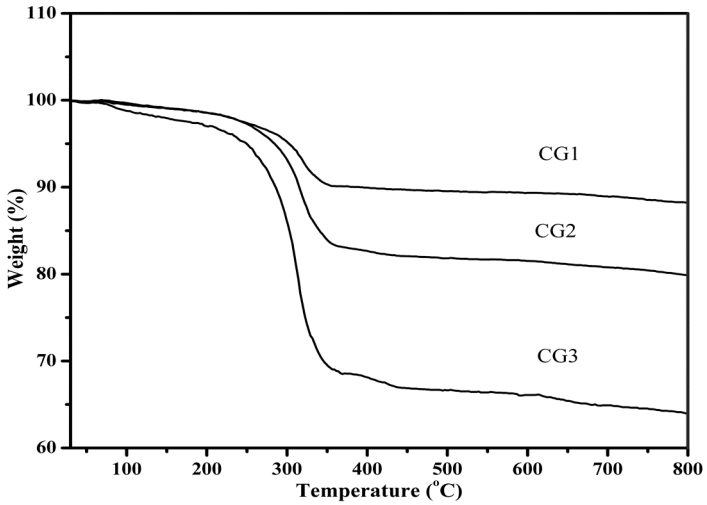

Fig. S2 TGA curves of the CuO-graphene hybrids.

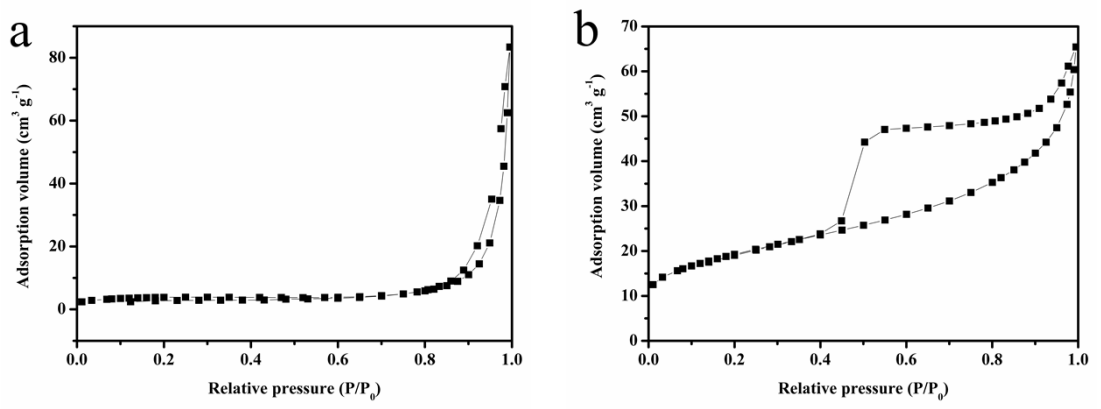

Fig. S3 Nitrogen sorption isotherms of (a) pristine CuO and (b) CG2.

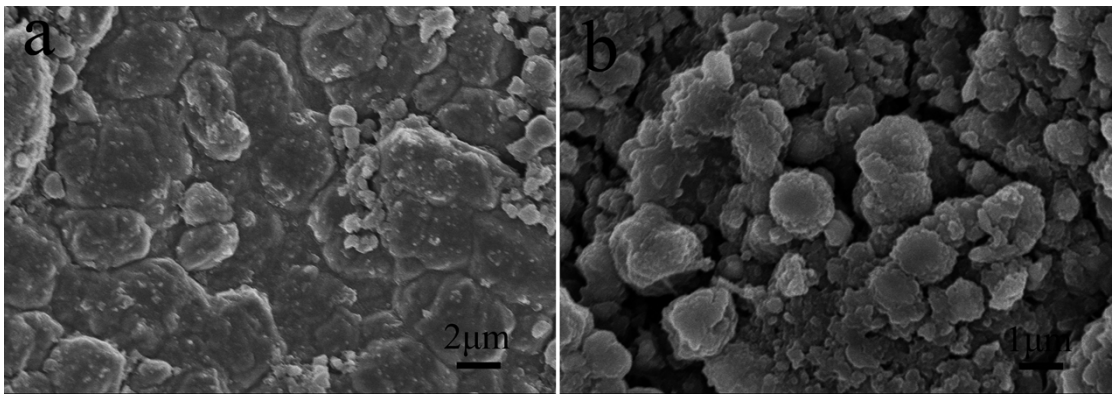

Fig. S4 SEM images of (a) pristine CuO and (b) CG2 electrodes after 120th cycling at 0.2 A g^{-1}.