Electronic Supplementary Information (ESI) for

One-pot scalable synthesis of Cu-$CuFe_2O_4$/graphene composites as anode material of lithium-ion batteries with enhanced lithium storage properties

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Preparation of $CuFe_2O_4$/G composites

A certain amount of Cu-$CuFe_2O_4$/graphene composites was added into deionized water under sonication to form colloidal suspension, and then $FeCl_3$ was dissolved into the resultant suspension under mechanical stirring for several hours. The color of the solution became light green due to the presence of $FeCl_2$ and $CuCl_2$. The metallic Cu was dissolved by the following reaction:

$$2FeCl_3 + Cu \rightarrow 2FeCl_2 + CuCl_2$$

After washing several times by alcohol and deionized water, the residual powder was collected by centrifugation and dryed in oven at 60 ^oC for 12 h.

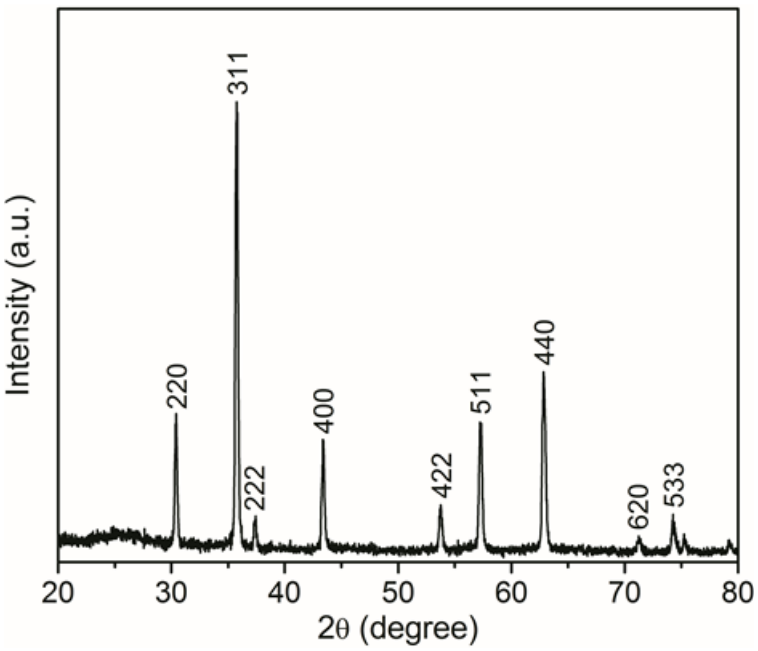

Fig. S1 XRD pattern of $FeCl_3$ treated Cu-$CuFe_2O_4$/G composites, all the diffraction peaks and relative intensity are consistent with those cubic phase of $CuFe_2O_4$ (PDF, 01-077-0010), which confirmed the nonextence of metallic Cu in the $FeCl_3$ treated Cu-$CuFe_2O_4$/G composites and the good crystallinity of $CuFe_2O_4$/G composites.

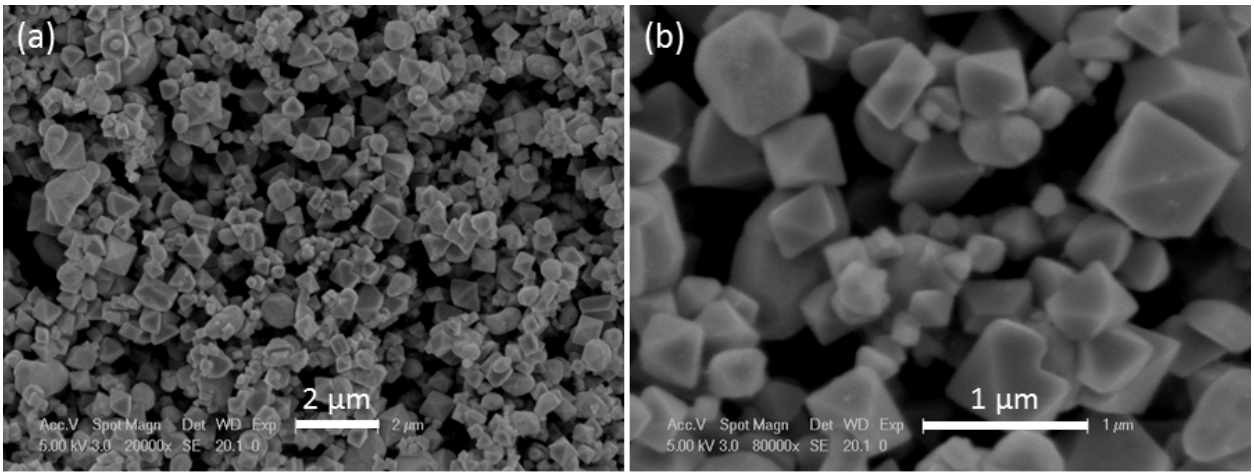

Fig. S2 SEM images of pure Cu-$CuFe_2O_4$ crystals with different magnification.

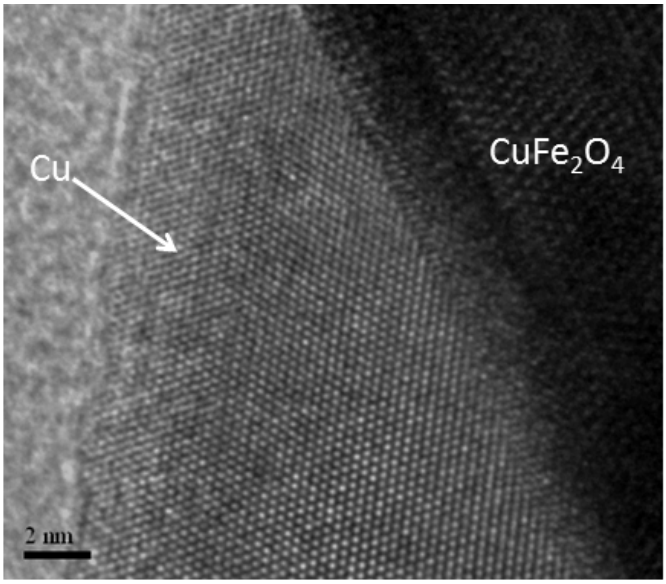

Fig. S3 HRTEM image of metallic Cu attached to the edge of $CuFe_2O_4$ hexagonal platelet in the Cu-$CuFe_2O_4$/G composites.

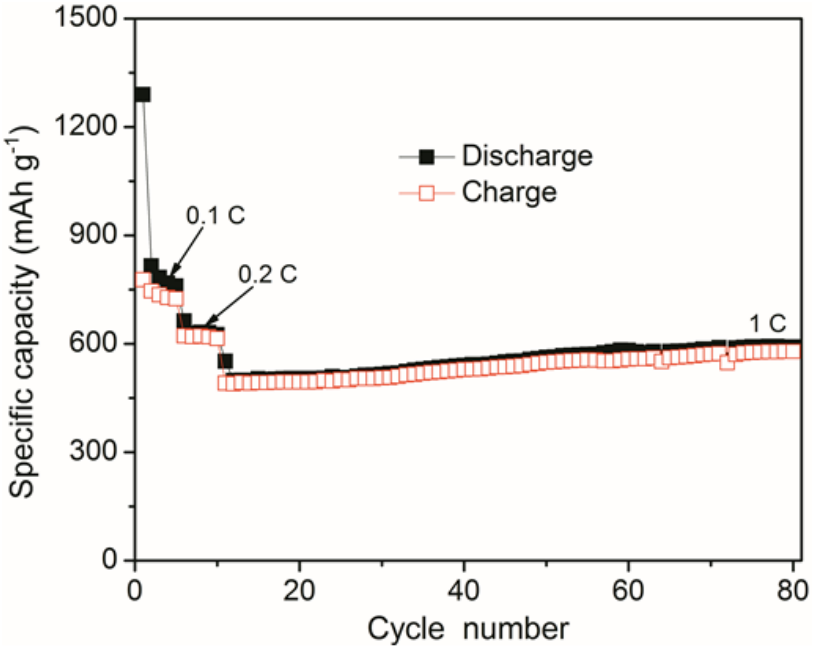

Fig. S4 Cycling performance of $CuFe_2O_4$/G composites at a current density of 1000 mA/g. (1C=1000 mA/g)

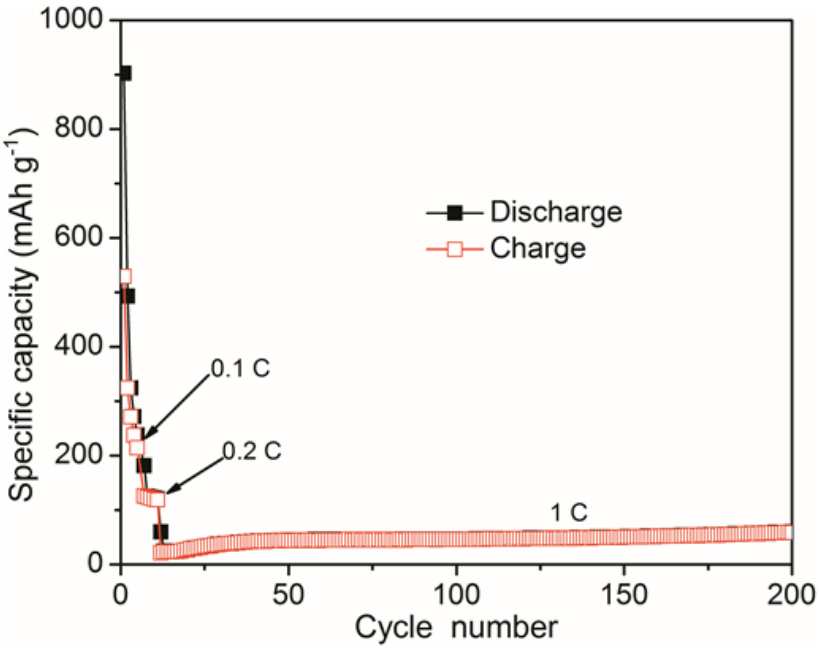

Fig. S5 Cyclic stability of pure Cu-$CuFe_2O_4$ crystals at a current density of 1000 mA/g. (1C=1000 mA/g)