Electronic Supplementary Material (ESI) for RSC Advances

Supporting information

XRD and SEM. The samples were analyzed by X-ray diffraction (XRD) employing a Philips X' pert X-ray diffractometer with Cu K_α radiation (λ = 1.54178 Å). A scan rate of 0.05 deg·s^{-1} was applied to record the pattern in the 2θ range of 10-80°. The samples were also investigated using a JEOL-7500B scanning electron microscope (SEM) at an accelerating voltage of 5.0 kV.

Electrochemical measurements. The electrochemical behaviors were measured via CR2016 coin-type test cells assembled in a dry argon-filled glove box. The test cell consisted of a working electrode and lithium sheet which were separated by a Celgard 2400 membrane and electrolyte of 1 M LiPF6 in EC–EMC–DMC (1:1:1 v/v). The working electrode consisted of 70 wt% active material, 15 wt% acetylene black and 15 wt% polyvinylidene difluoride. The typical loading of the films was approximately 1.0 mg cm^{-2}. The cells were cycled by LAND CT 2001A at room temperature.

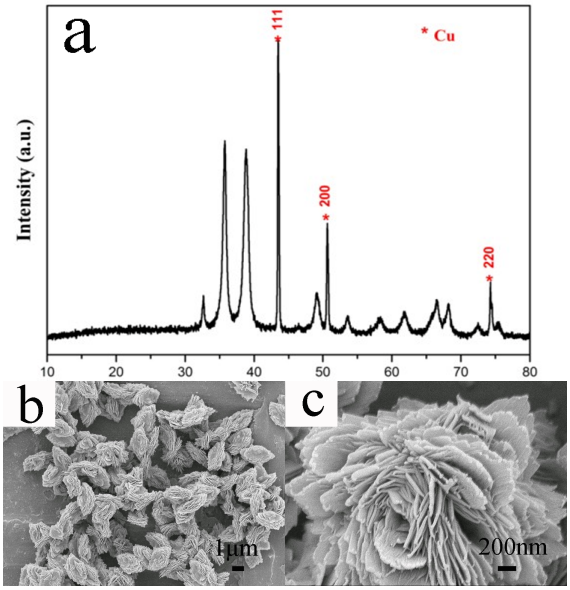

Fig. S1 (a) XRD and (b, c) SEM images of the flower-like CuO prepared using reaction time eight hours, while other conditions remained unchanged.

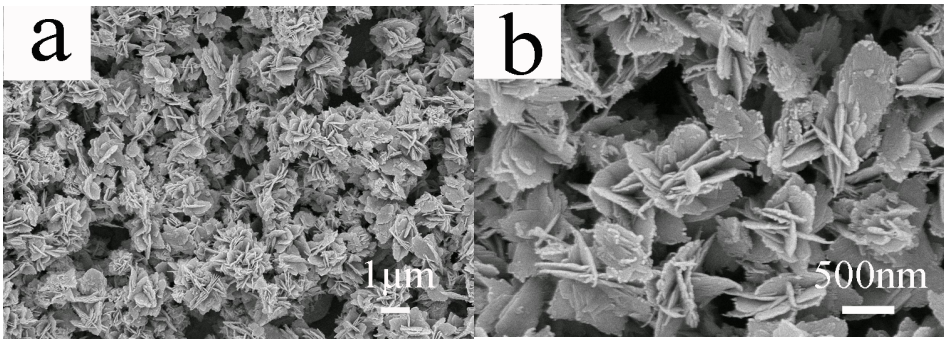

Fig. S2 (a) and (b) are the SEM images of the CuO prepared in an ultrasonic environment, while other reaction conditions remained unchanged.

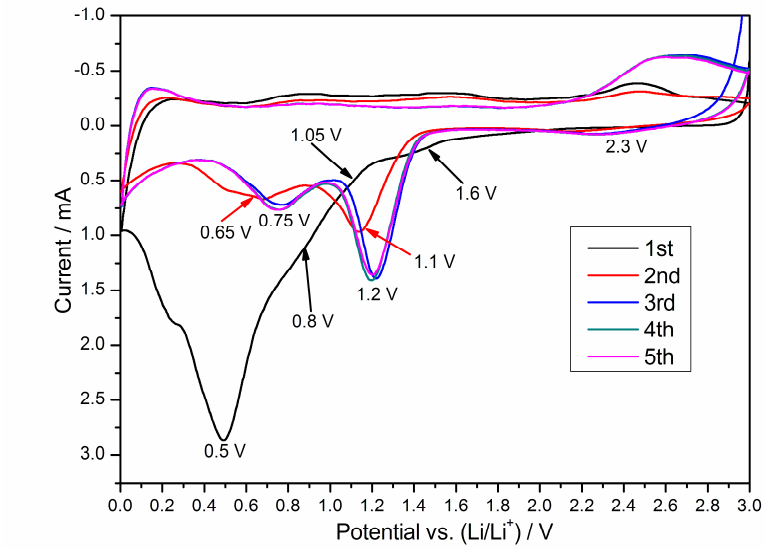

Fig. S3 Cyclic voltammogram of a flower-like CuO electrode between 0V and 3V at a scan rate of 0.5 mV s^{-1}.

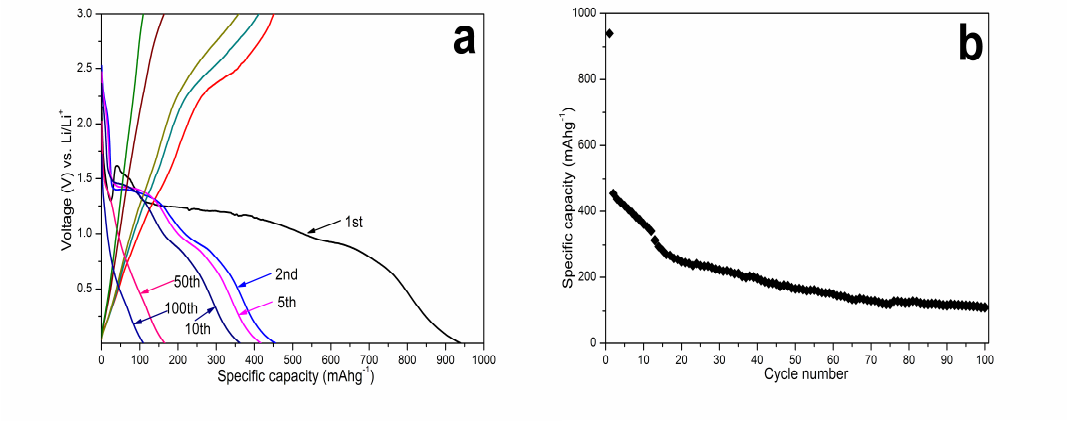

Fig. S4 Electrochemical measurements of the commercial CuO powder. (a) Voltage profiles for the first galvanostatic discharge curve and charge-discharge curves for 100 cycles. (b) Cycling performance of the sample. The galvanostatic test is performed at a current rate of 200 mA g^{-1} between 0.005 V and 3 V.

Fig. S5 SEM image of flower-like CuO after cycling test at various rates.