

Supplementary Information

Fig. S1 XRD patterns of Cu_{2-x}Se nanosheets synthesized through a solvothermal process in a different volume ratio of ethylene glycol/water (*R*), (a) R = 0/30, (b) R = 5/25, (c) R = 15/15, (d) R = 20/10, (e) R = 25/5, (f) R = 30/0



Fig. S2 Charge-discharge capacity, and Coulombic efficiency of $Cu_{2-x}Se$ nanosheets at a current density of 50 mA g⁻¹ with a voltage window of 0.01 V-3 V.



Fig. S3 charge–discharge curve of Cu_{2-x} Se nanosheets measured at a current density of (a) 100 mA g⁻¹, (b) 200 mA g⁻¹.