Supporting Information

Graphene Network for High-Performance Flexible and Transparent Supercapacitors

Xueliu Fan, Tao Chen and Liming Dai*

Center of Advanced Science and Engineering for Carbon (Case4Carbon) and Department of Macromolecular Science and Engineering, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, Ohio, 44106, USA

Email: liming.dai@case.edu.

Fig. S1 Schematic diagrams of two-step chemical vapor deposition for the synthesis of graphene network films. Step 1: heating up to 960°C with a fast cooling process to form copper network; Step 2: at 960°C for graphene growth on the copper network.
Fig. S2 SEM images of copper network-like structures by annealing 300-nm-thick sputter-coated copper layer on silicon wafers as function of the annealing temperature. a) and b) the dot-like copper formed at 1000°C; c) and d) the finger-like copper formed at 970°C.
Fig. S3 The surface coverage ratio of the Cu network formed by annealing at 960°C for 180 s as function of the Ar flow rate (50, 100, 200, and 400 sccm).
Fig. S4 Raman spectra of the pure GN films transferred onto silicon wafers prepared by the two-step method as function of growth time. The GN films were synthesized at 960°C with 5 sccm CH₄ under the gas mixture of 200 sccm Ar/5sccm H₂. The exposure time to carbon source for red, black and blue lines are 30s, 90s, 120s respectively.
**Fig. S5** SEM images of the pure GN films transferred onto Silicon wafers. a), b) and c) the graphene networks formed at 960°C after 30 s exposure time to carbon source. d), e), and f) the graphene networks formed at 960°C after 120 s exposure time to carbon source. The gas flowing rate ratio of Ar, H₂ and CH₄ is 200: 5: 5.