Supporting Information

Synergistic Electrochemical Properties of Conductive Additives by 1D-2D Carbon Networks

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Supporting information S1 Comparison BET surface area of rGO/CNS powder with and without ethanol treatment. The black and red solid line represents the adsorption-desorption isotherm of rGO/CNS powder without ethanol treatment and after ethanol treatment, respectively, with the closed circles indicating adsorption and the open circles indicating desorption.



Supporting information S2 SEM image of the rGO powder.



Supporting information S3 Comparison the BET surface of rGO powder and rGO/CNS powder. The adsorption-desorption isotherms of GO/CNS powder for rGO and rGO/CNS are shown by the black and red solid lines, respectively. Closed circles indicate adsorption points, whereas open circles indicate desorption points.



Supporting information S4 A typical AFM of (a) a rGO sheet (b) a rGO/CNS particle. The right side of images show the AFM images and the height and length determined based on red dashed lines. The particle size peaks shown on the right side represent the particle height and length, respectively. And they illustrate the size and surface morphology.



Supporting information S5 Particle size distribution analysis by DLS for (a) rGO particles and (b) rGO/CNS particles. The black line represents the particle size distribution based on the intensity of scattered light, while the red line indicated the cumulative distribution percentage by weight. Each powder was prepared at a concentration of 0.5wt% in ethanol.



Supporting information S6 Bode plots for rGO and rGO/CNS measured in coin cell-type. The black line indicated the phase plot based on frequency of rGO/CNS, while the red line represents the phase plot of rGO.



Supporting information S7 SEM images of the rGO/CNS composite. (a) High-magnification image (scale bar: 500 nm), (b) Low-magnification image (scale bar: $2 \mu m$) highlighting CNS connecting rGO layers.



Supporting information S8 TEM image of the cathode after cycling. The rectangular region in the image represent the rGO sheets and the circular mark is the active material. Only yellow arrows indicated the CNS.