Supporting Information

Rationally designed spider web-like trivanadium heptaoxide nanowires on carbon cloth as a new class of pseudocapacitive electrode for symmetric supercapacitors with high energy density and ultra-long cyclic stability

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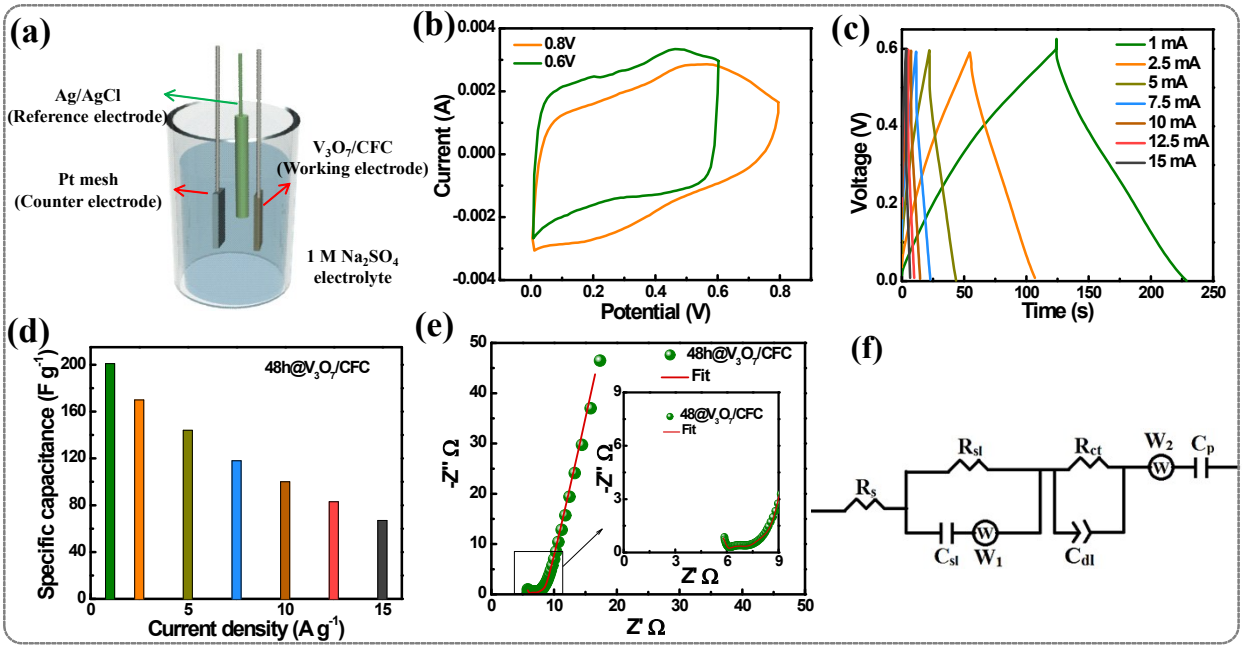

Fig. S1 (a) Electrochemical properties of the V_3O_7/CFC measured in three-electrode system in 1 M Na_2SO_4 aqueous solution, (b) comparative cyclic voltamograms of 48h@V_3O_7/CFC three electrode cell at a scan rate of 5 mV s^{-1} for two different (0.6 and 0.8V) potential windows, (c) galvanostatic charge/discharge (GCD) curves of 48h@V_3O_7/CFC electrode for different charge/discharge current densities, (d) Variation of C_{sp} with discharge current densities of 48h@V_3O_7/CFC electrode, (e) Nyquist plot of 48h@V_3O_7/CFC electrode (inset displays the magnified portion of high frequency region) and (f) equivalent circuit used to fit the Nyquist plot of the materials.

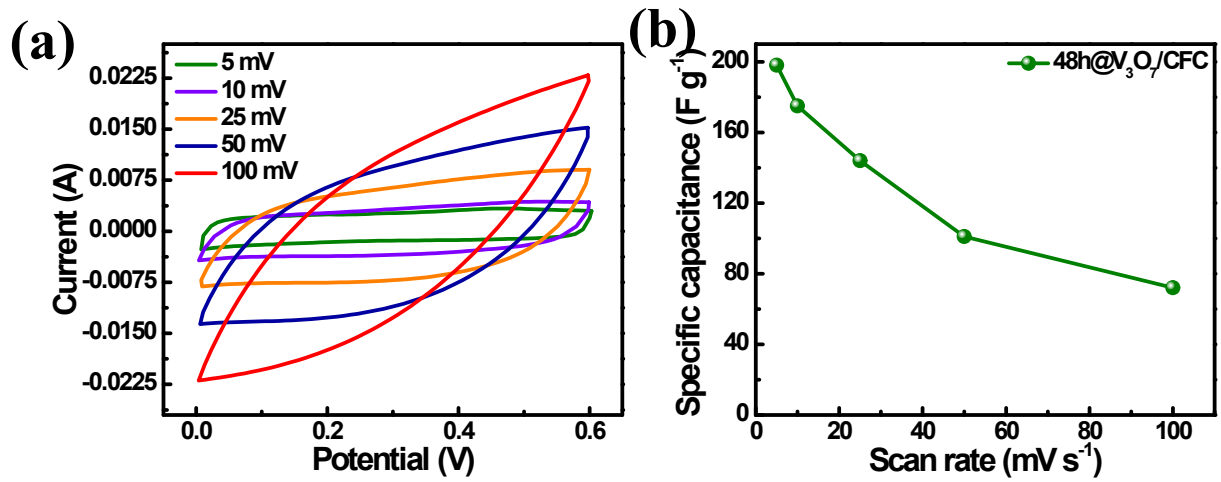

Fig. S2 (a) Cyclic voltamograms of 48h@V_3O_7/CFC in three electrode cell for different scan rates and (b) scan rate depended specific capacitance values of 48h@V_3O_7/CFC electrode (5 to100 mV s^{-1}).

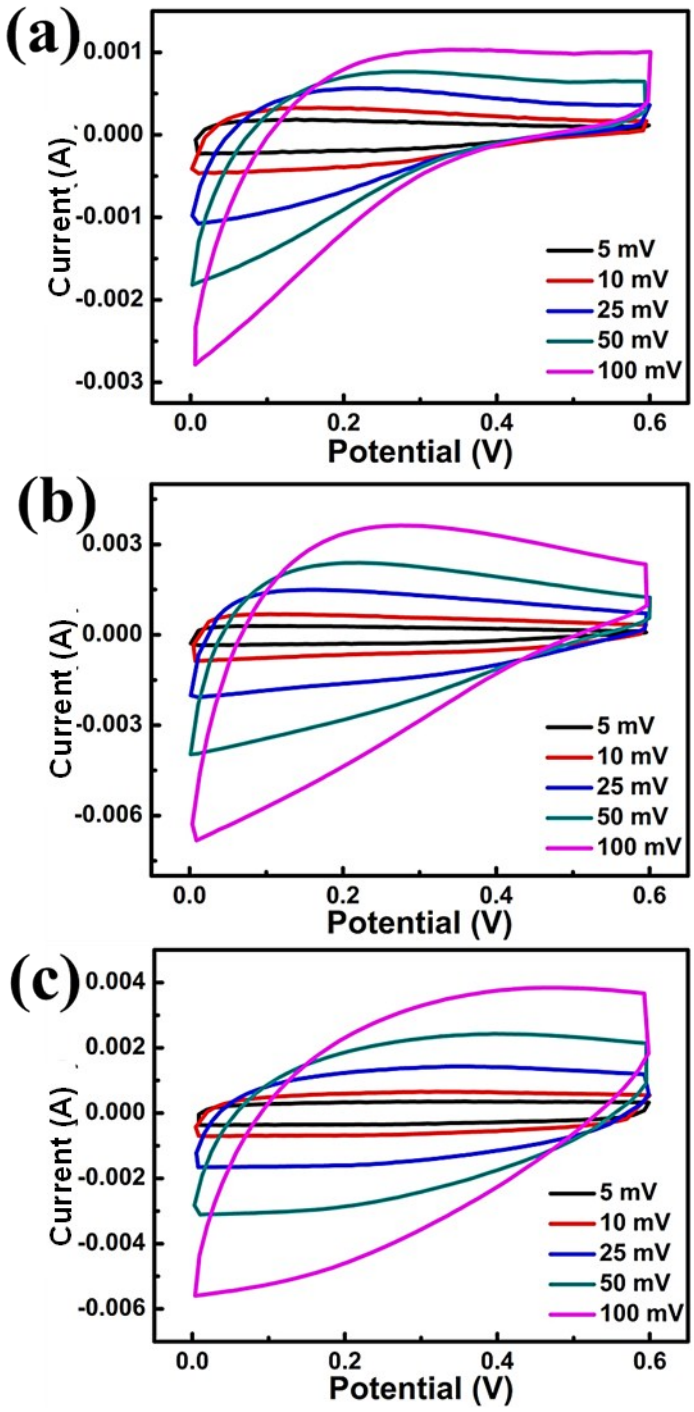

Fig. S3 Cyclic voltamograms of (a) 12h@V3O7/CFC (b) 24h@V3O7/CFC and (c) 48h@V_3O_7/CFC samples for different scan rates (5, 10, 25, 50 and 100 mV s^{-1}).

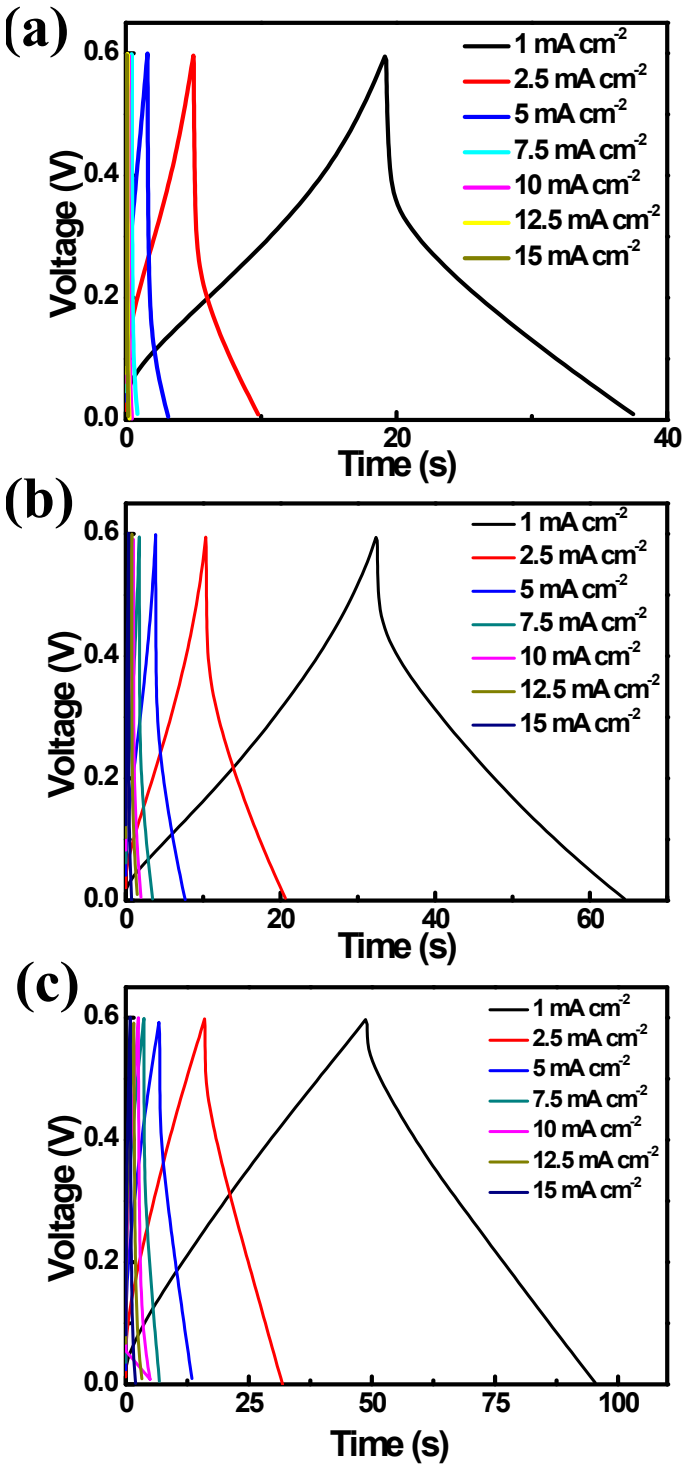

Fig. S4 GDC curves of symmetric device a) 12h@ V_3O_7/CFC, (b) 24h@V_3O_7/CFC and 48h@ V_3O_7/CFC for various current densities 20, 15, 12.5, 10, 7.5, 5, 2.5 and 1 A g^{-1}.

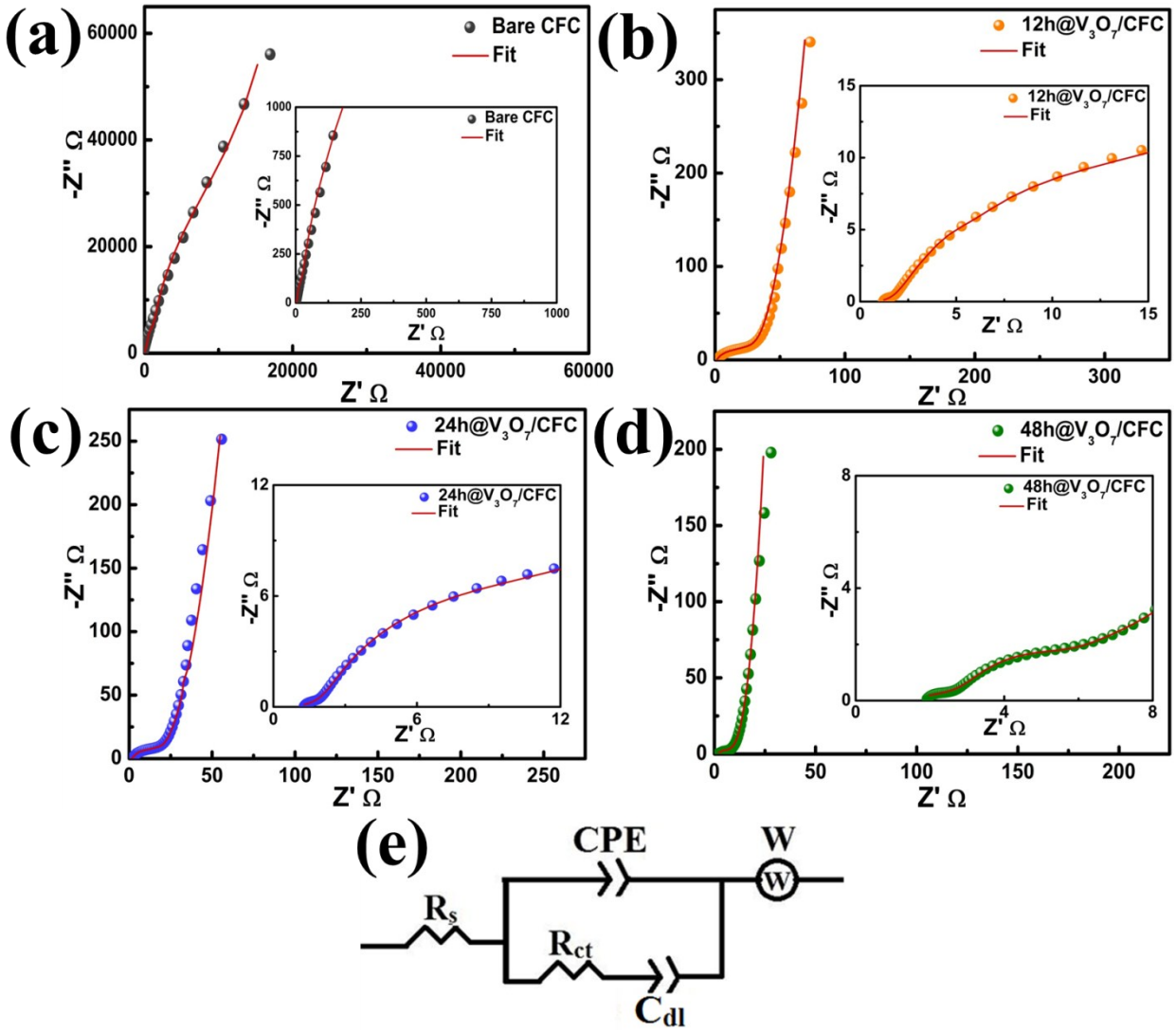

Fig. S5 Nyquist plots with fitted curve of a) bare b) 12h@V_3O_7/CFC c) 24h@V_3O_7/CFC d) 48h@V_3O_7/CFC (inset shows the magnified plots at high frequency) and (e) Equivalent circuit for bare CFC devices in Na_2SO_4 and ionic liquid electrolytes.

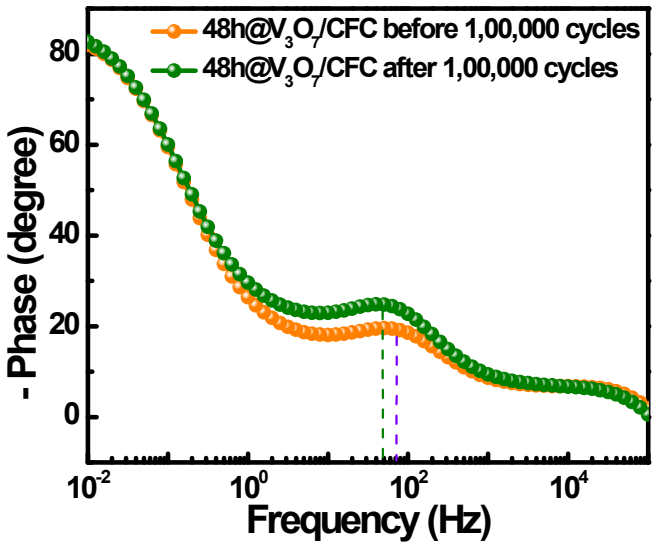

Fig. S6 Bode plots of 48h@V_3O_7/CFC-based SSC before and after long-term cycling stability in 1 M Na_2SO_4 electrolyte.

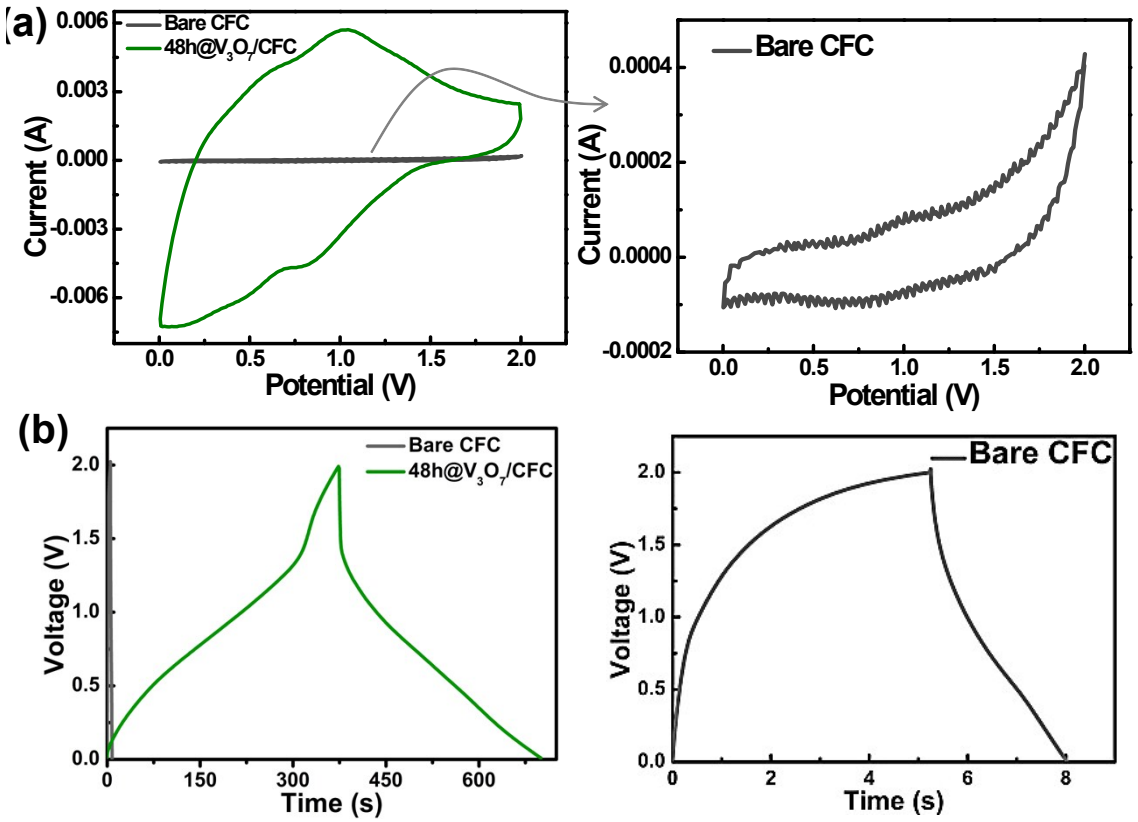

Fig. S7 a) CV curves of bare CFC and 48h@V_3O_7/CFC samples at scan rate 50 mV s^{-1}, (b) GCD curves of bare CFC and 48h@V_3O_7/CFC samples at 0.5 mA cm^{-2} current density in ionic liquid electrolyte.

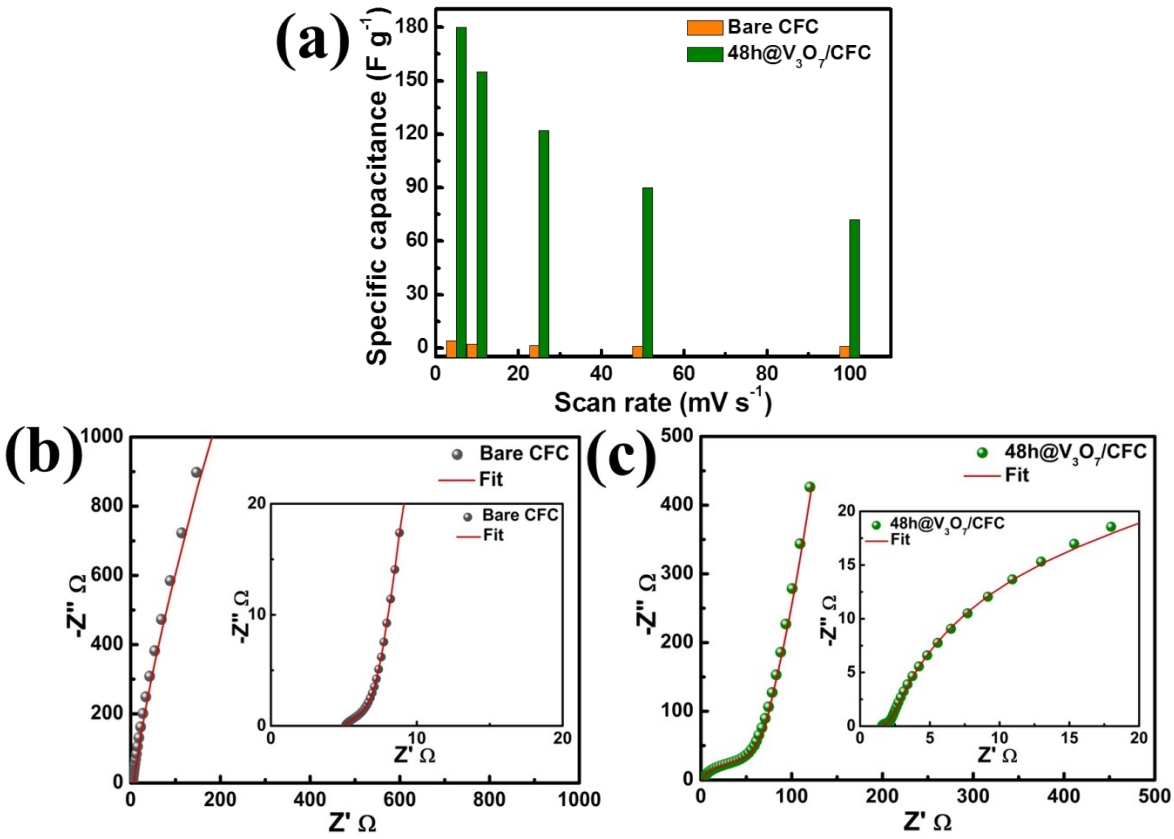

Fig. S8 (a) C_{sp} of bare CFC and 48@ V_3O_7/CFC for different scan rates, Nyquist plots of (b) shown bare CFC and (c) 48h@V_3O_7/CFC with fit curve.