

## Electronic Supplementary Information

### Ultra-fast rate capability of a symmetric supercapacitor with a hierarchical $\text{Co}_3\text{O}_4$ nanowire/nanoflower hybrid structure in non-aqueous electrolyte

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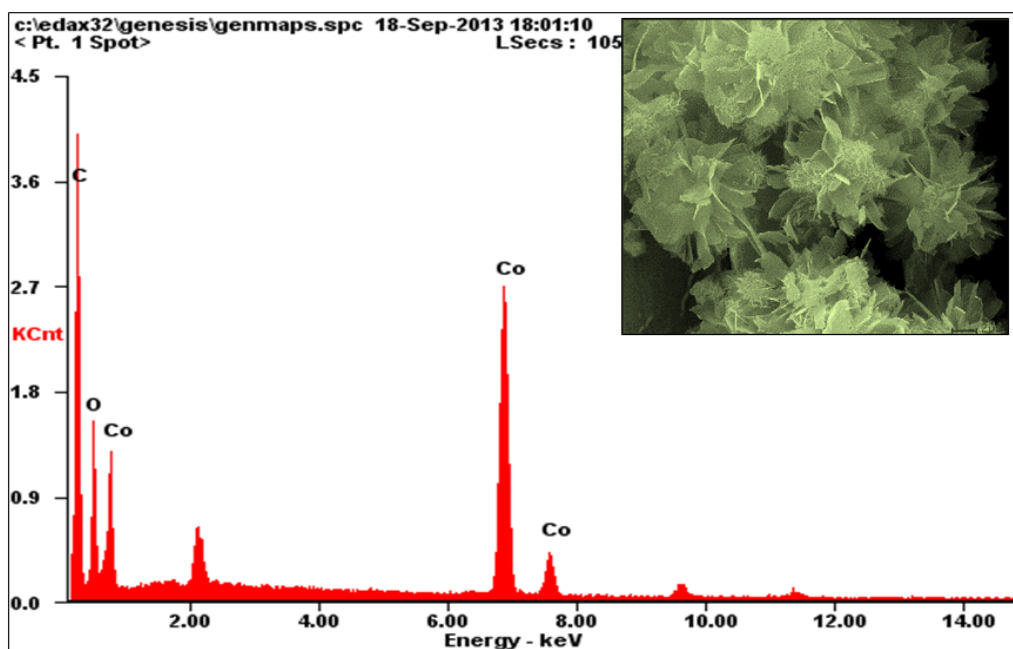


Figure S1. EDS spectrum of  $\text{Co}_3\text{O}_4$  nanoflowers on CFC. Inset shows the SEM image of the nanoflowers with artificial colour.

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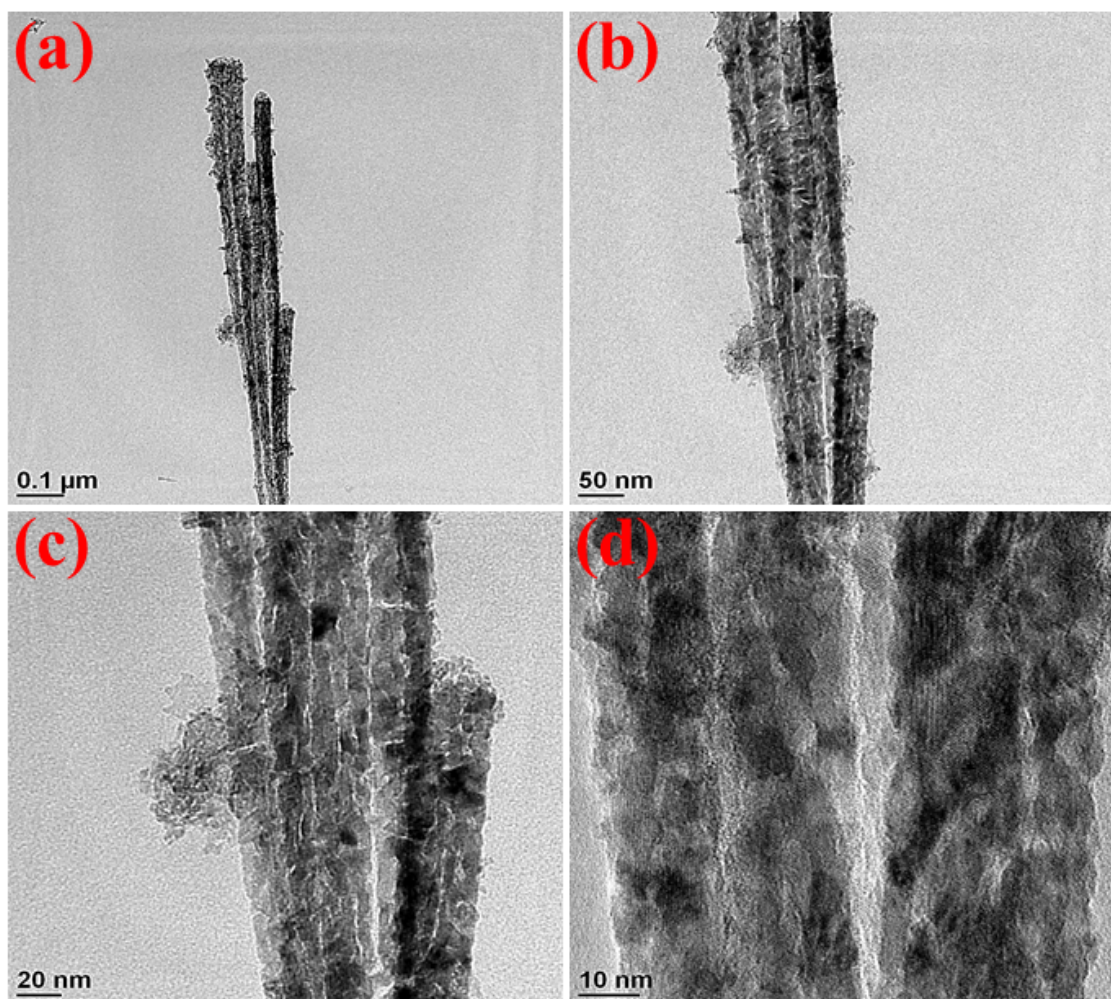


Figure S2. TEM images of  $\text{Co}_3\text{O}_4$  nanowire/nanoflower hybrid structure.

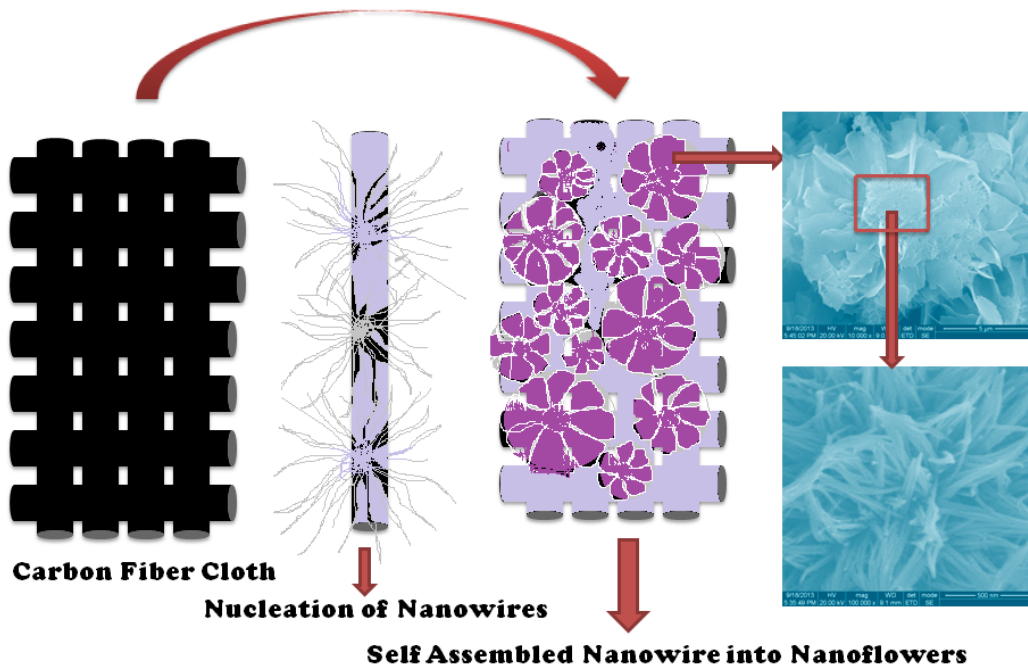


Figure S3. Schematic representation of  $\text{Co}_3\text{O}_4$  nanowire/nanoflower hybrid growth process.

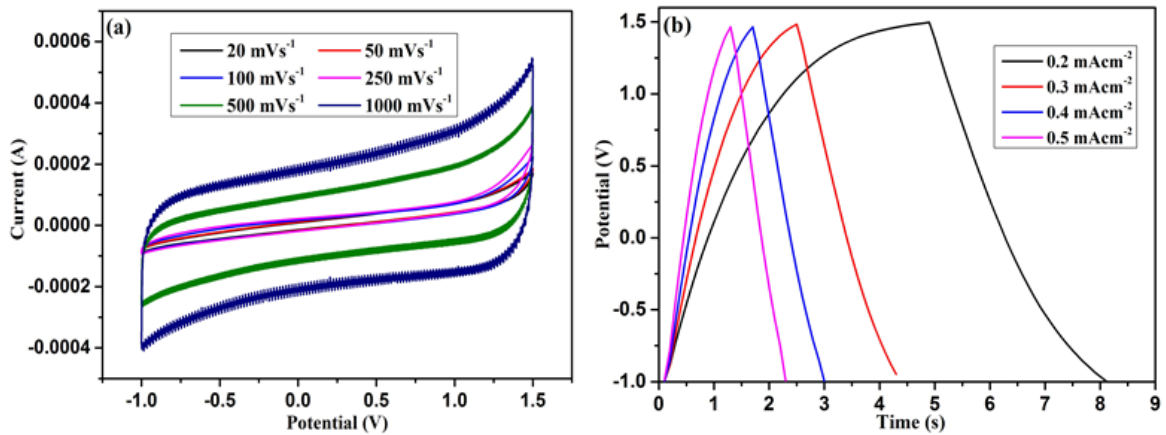


Figure S4. Cyclic voltammogram (a) and Charge/discharge (b) curves of CFC||CFC based symmetric supercapacitor in 1 M TEABF<sub>4</sub>.

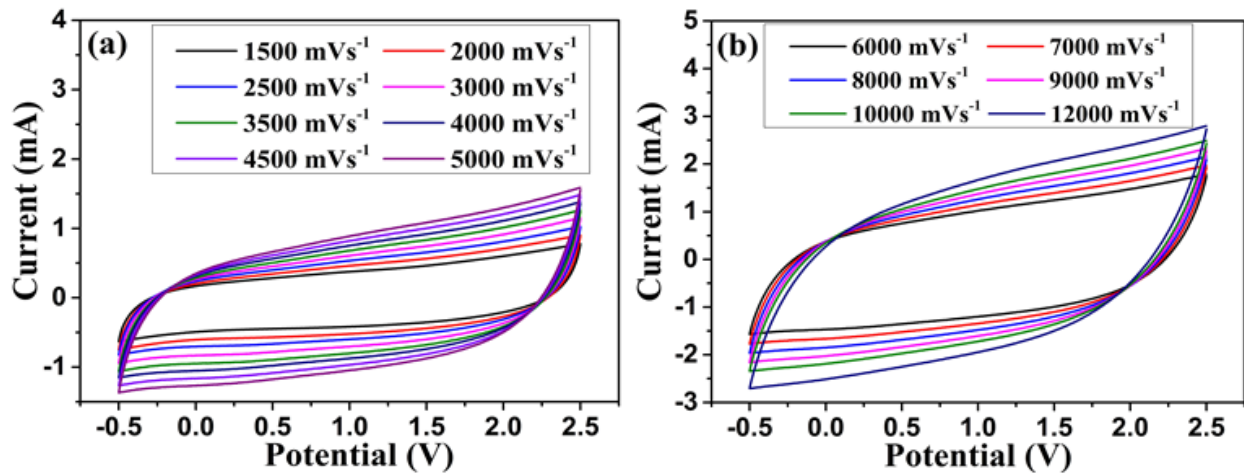


Figure S5. Cyclic voltammogram of  $\text{Co}_3\text{O}_4/\text{CFC}$  based symmetric supercapacitor in 1 M  $\text{TEABF}_4$  at high scan rates.

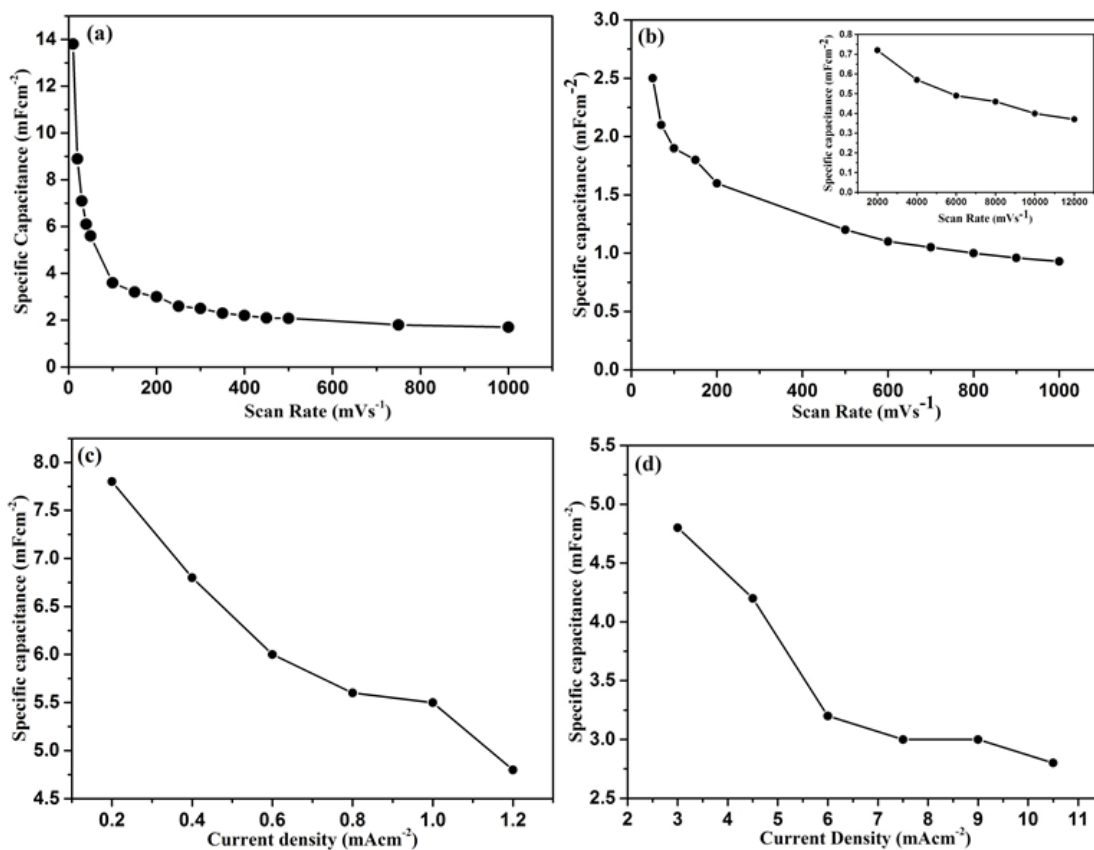


Figure S6. Scan rate and current density dependent specific capacitance of  $\text{Co}_3\text{O}_4/\text{CFC}$  based symmetric supercapacitor in 3 M  $\text{KOH}$  (a and c) and 1 M  $\text{TEABF}_4$  (b and d).

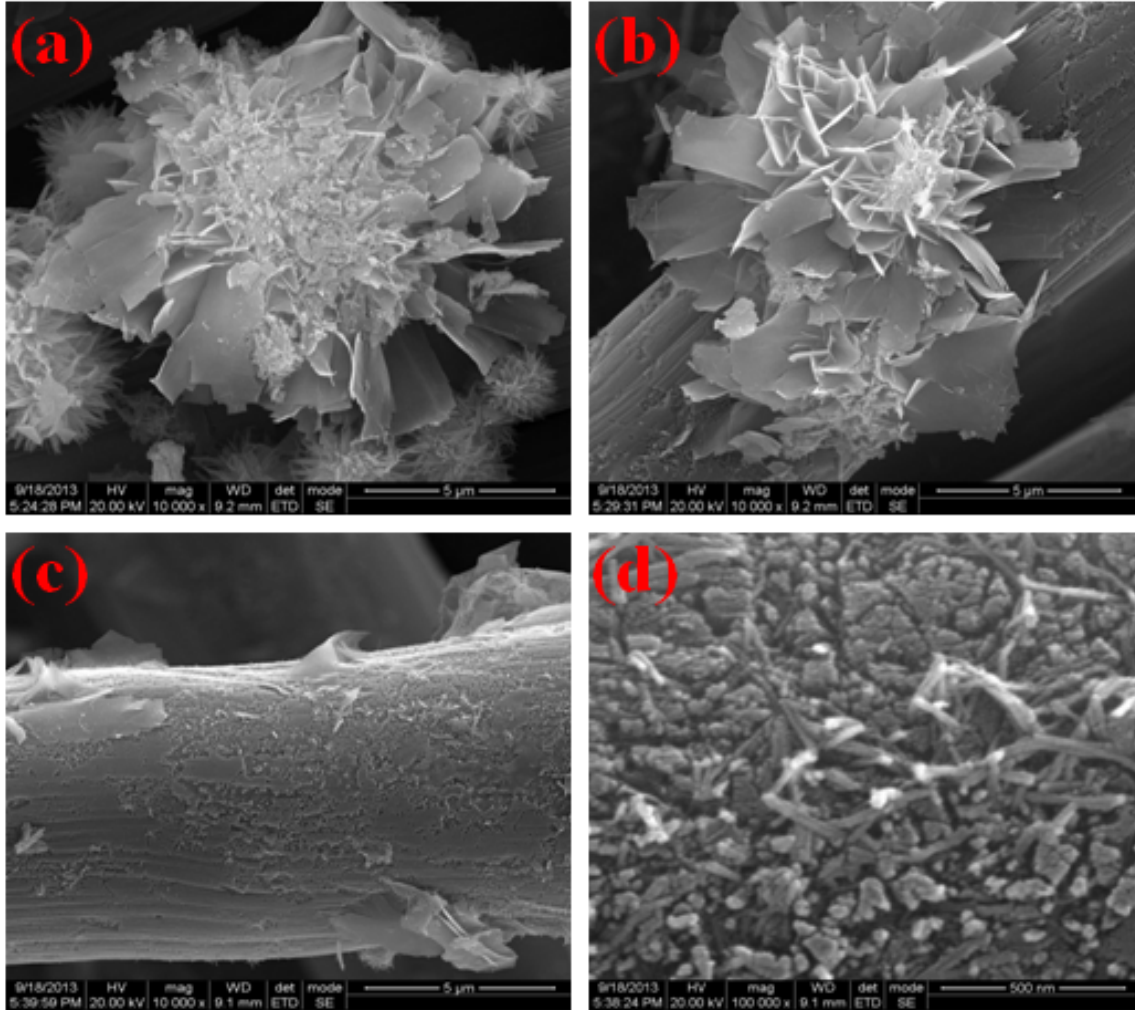


Figure S7. SEM images of  $\text{Co}_3\text{O}_4$  electrode after 5000 cycles in 3 M KOH.

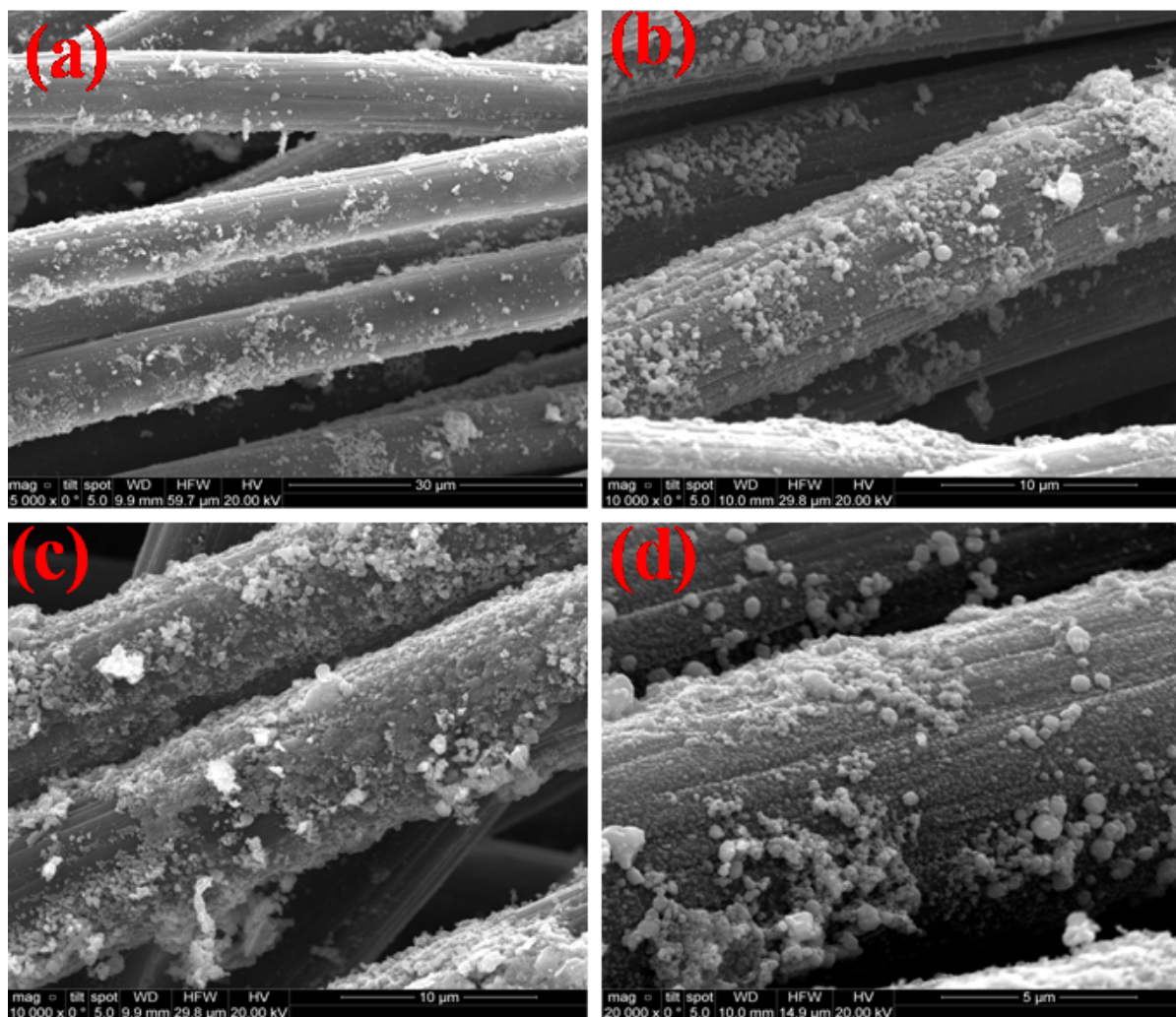


Figure S8. SEM images of  $\text{Co}_3\text{O}_4$  electrode after 10000 cycles in 1 M TEABF<sub>4</sub>.

**Table 1:** Energy and Power performance of  $\text{Co}_3\text{O}_4$  based symmetric supercapacitor in aqueous and non-aqueous electrolytes

<b><math>\text{Co}_3\text{O}_4</math> based symmetric supercapacitor in 3 M KOH</b>			<b><math>\text{Co}_3\text{O}_4</math> based symmetric supercapacitor in 1 M TEABF<sub>4</sub></b>		
<b>Current Density (mAcm<sup>-2</sup>)</b>	<b>Energy Density (mWhcm<sup>-3</sup>)</b>	<b>Power density (mWcm<sup>-3</sup>)</b>	<b>Current Density (mAcm<sup>-2</sup>)</b>	<b>Energy Density (mWhcm<sup>-3</sup>)</b>	<b>Power density (mWcm<sup>-3</sup>)</b>
0.2	3.2	295	3.0	4.2	1260
0.4	2.8	593	4.5	3.6	1851
0.6	2.45	882	6.0	2.75	2475
0.8	2.32	1193	7.5	2.6	3120
1.0	2.3	1505	9.0	2.6	3744
1.2	2.0	1800	10.5	2.4	4320