

## ***Electronic Supplementary Information***

### **In-situ synthesis of nanostructured Fe<sub>3</sub>O<sub>4</sub>@TiO<sub>2</sub> composite grown on activated carbon cloth as a binder-free electrode for high performance supercapacitors**

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Supplementary material is attached in this section to further support research findings. These include the ultraviolet absorption spectroscopy of Fe<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub>@C product (Figure S1), a local EDX mapping of Fe<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub>@C electrode of the certain area (Figure S2), integrated CV area and corresponding capacitance of Fe<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub>@C electrode at the cycle number of 1, 2500, 5000 and 10000 respectively (Table S1), load mass of active material and specific capacitance measured by mass ratio (Table S2).

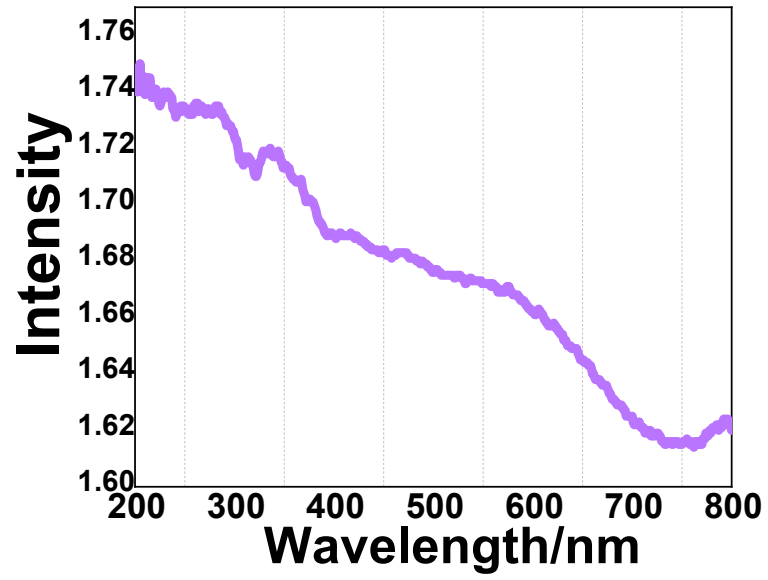


Figure S1 Ultraviolet absorption spectroscopy of  $\text{Fe}_3\text{O}_4/\text{TiO}_2@\text{C}$  electrode

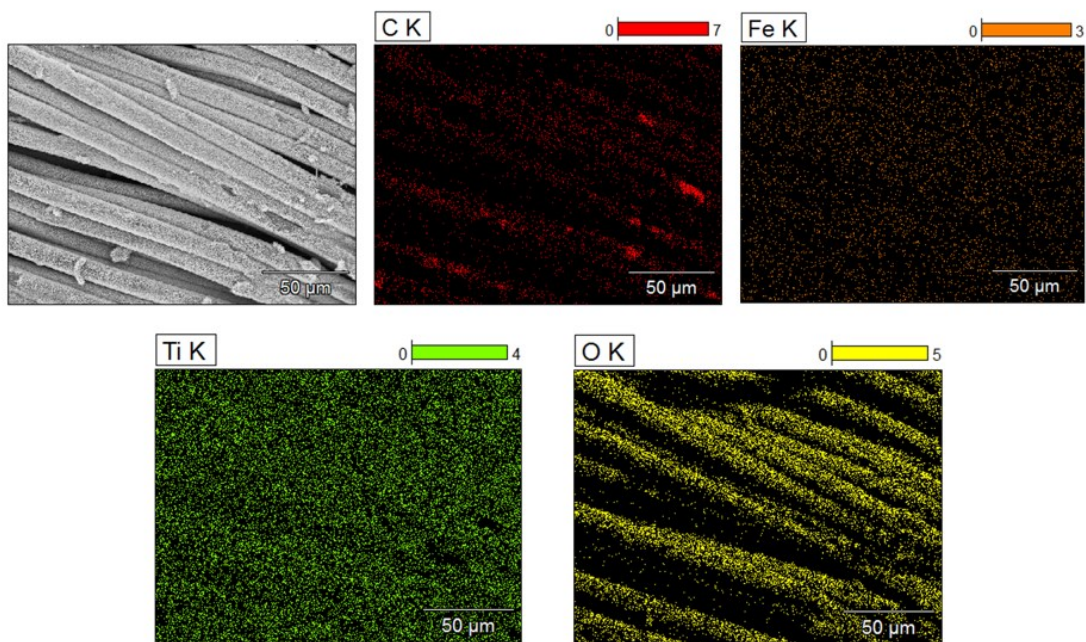


Figure S2 EDX mapping of  $\text{Fe}_3\text{O}_4/\text{TiO}_2@\text{C}$  electrode

**Table S1 Integrated CV area and corresponding capacitance at various cycles**

Cycle Number	Integrated area (V·A)	Capacitance (mF cm <sup>-2</sup> )
1	0.00972	151.84
2500	0.00935	148.68
5000	0.00907	144.16
10000	0.00867	142.72

**Table S2 Load mass of active material and specific capacitance measured by mass ratio**

Sample Num.	Load mass (mg)	Capacitance (F)	Current density (A g <sup>-1</sup> )	Specific Capacitance (F g <sup>-1</sup> )
1	7.32	2.101	1.0	287.15
2	10.61	4.017	1.0	378.62
3	7.16	3.115	1.0	435.06
4	6.20	2.018	1.0	325.57