## **Electronic Supplementary Information**

## Synthesis of polypyrrole-titanium dioxide brush-like

nanocomposites with enhanced supercapacitive performance

Yan Gao,† Yanzhou Wang,† Xin Xu,\* Kun Ding and Demei Yu\*

Department of Applied Chemistry, School of Science, Xi'an Jiaotong University, Xi'an 710049, China. †Yan Gao and Yanzhou Wang contributed equally to this work.

> \*CORRESPONDING AUTHOR E-mail: (<u>xu.xin@stu.xjtu.edu.cn;</u> <u>dmyu@mail.xjtu.edu.cn</u>)



Fig.S1. SEM images of TiO<sub>2</sub> nanotube arrays under different anodization time. (a) 2 h, (b) 6 h, (c) 8 h, (d)10 h and (e) 12 h. (f) a diagram showing the relationship between tube length and anodization time.



Fig.S2. (a) Galvanostatic discharge curves of  $TiO_2$  based PPy/TiO<sub>2</sub> composites with different anodization time at the current density of 15 A g<sup>-1</sup>. (b) A diagram showing the relationship between tube length of the  $TiO_2$  nanotube array and specific capacitance of the PPy/TiO<sub>2</sub> nanocomposite.



Fig.S3. Galvanostatic discharge curves of calcined and uncalcined  $TiO_2$  based composites at the current density of 15 A g<sup>-1</sup>.