Plum-branch-like carbon nanofibers decorated with SnO₂ nanocrystals

Zunxian Yang,^{1,2,3} Guodong Du,¹ Zaiping Guo,^{1,4*} Xuebin Yu,^{1,5*} Sean Li,⁶ Zhixin Chen,⁴ Peng Zhang,¹ Huakun Liu¹

¹Institute for Superconducting & Electronic Materials, University of Wollongong, NSW 2522, Australia

²Department of Electronics Science and Technology, Fuzhou University, Fuzhou 350108, P. R. China

³Key Laboratory of Analysis and Detection Technology for Food Safety of the Ministry of Education, Fuzhou University, Fuzhou 350002, P. R. China

⁴School of Mechanical, Materials & Mechatronics Engineering, University of Wollongong, NSW 2522, Australia

⁵Department of Materials Science, Fudan University, Shanghai 200433, P. R. China ⁶School of Materials Science and Engineering, University of New South Wales, NSW 2052, Australia

E-mail: <u>zguo@uow.edu.au</u> (Z. Guo)

<u>yuxuebin@fudan.edu.cn</u> (X. Yu)

^{*} Corresponding author should be addressed. Tel.: +61 2 4221 5225; Fax: +61 2 4221 5731

Supporting Information

Caption

Scheme s1 Schematic diagram of the electrospinning setup.

Figure S1 TGA curve of polyacrylonitrile (PAN) in argon.

Figure S2 High magnification FE-SEM images of (a) S11, (b) S12, (c) S13, (d) S14,
(e) S21, (f) S22, (g) S23, (h) S24, eight samples as-pyrolysed in an Ar/H₂O environment.

Figure S3 (a) Low-magnification TEM image of **S13.** (Many SnO₂ nanoparticles fell off after ultrasonic process.) (b) Low-magnification TEM image of **S23.** (Many SnO₂ nanoparticles fell off after ultrasonic process.) (c) HRTEM image of a section of **S23.** (Some SnO₂ crystals were loaded inside the carbon nanofibers.)

Figure S4 Energy dispersive X-ray (EDX) spectra of carbon nanofibers decorated with SnO₂ nanocrystals and the corresponding content tables for the samples (inset):
(a) S11, (b) S12, (c) S13, and (d) S14.

Figure S5 Raman spectra of carbon nanofibers decorated with SnO₂ nanocrystals.Figure S6 XPS high-resolution spectra of (a) C1s, (b) O1s, and (c) Sn3d regions of S23, respectively.



Scheme s1 Schematic diagram of the electrospinning setup



Figure S1



Figure S2



Figure S3



Figure S4



Figure S5



Figure S6