Electronic Supplementary Material (ESI) for CrystEngComm

Supporting Information

Instant, Template-Free and Fluorin-Free Synthesis of TiO_2 Nanotube Arrays with a Room-Temperature Solid-Liquid Arc Discharge Technique

Xiaoyu Chen, [#,†] Yong Zhou, [#,§,‡,*] Qi Liu, [†,$,#] Wenguang Tu,[#,§] Zhigang Zou, [#,§,†,‡,*]

National Laboratory of Solid State Microstructures, Eco-materials and Renewable Energy Research Center (ERERC), School of Physics, Department of Materials Science and Engineering, Nanjing University, Nanjing 210093, P. R. China. Anhui Polytechnic University, Wuhu 241000, P. R. China

Email: zhouyong1999@nju.edu.cn; zgzou@nju.edu.cn

FOOTNOTE

* To whom correspondence should be addressed.

ERERC.

‡ School of Physics.

† Department of Materials Science and Engineering.

§ National Laboratory of Solid State Microstructures.

$ Anhui Polytechnic University.

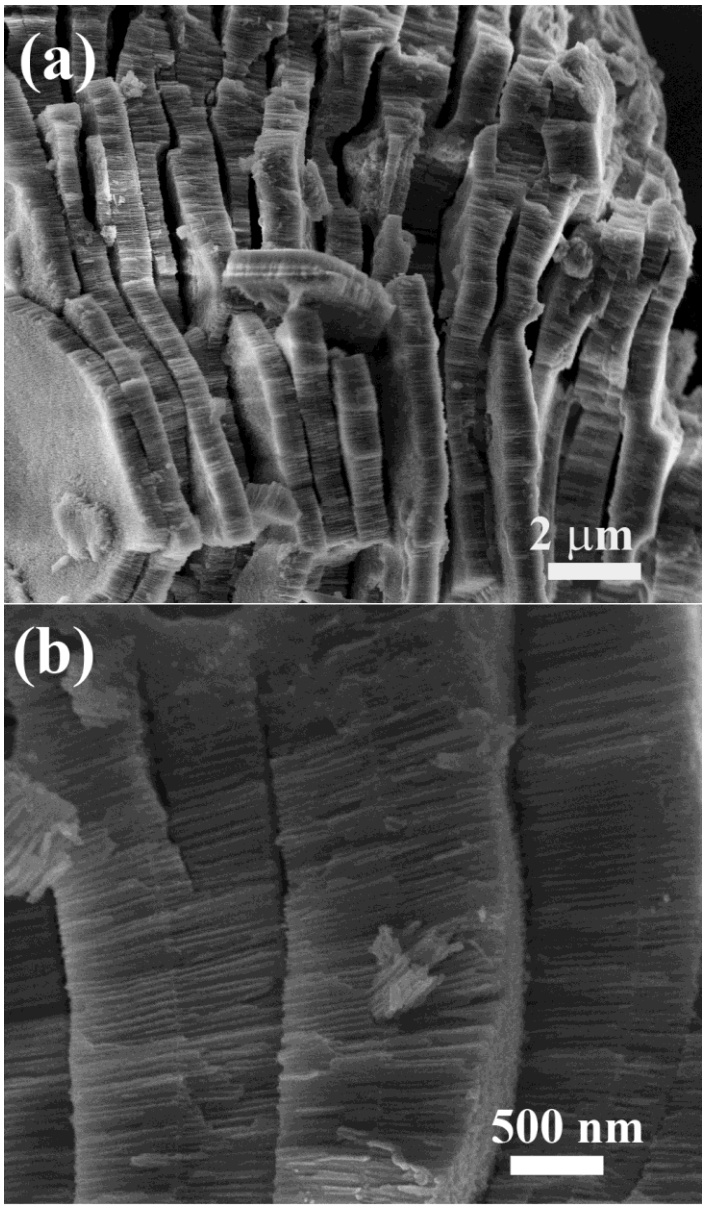

Figure SI1 Cross-sectional FE-SEM images of the TNAs at different magnification formed at AC 190 V in 0.1 M $NaNO_3$,.

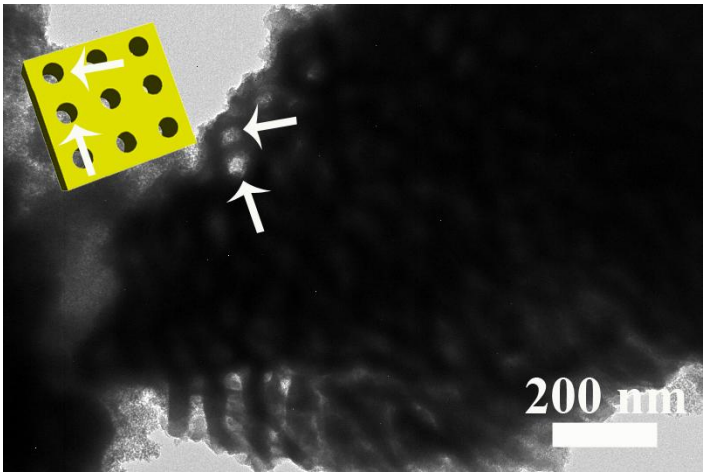

Figure SI2 TEM image of the TNAs formed at AC 190 V in 0.1 M $NaNO_3$, revealing open ends of the pore, marked with arrows. Inset: schematic illustration of TNAs viewing from a certain angle to show throughout pore.

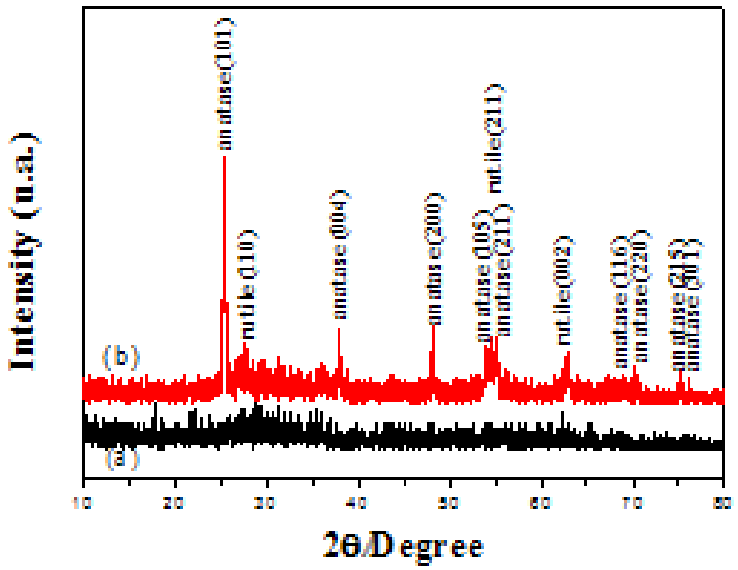

Figure SI3 XRD patterns of (a) as-formed TNAs formed at AC 190 V in 0.1 M $NaNO_3$, (b) after calcinations at 400 ^{o}C for 1 h.

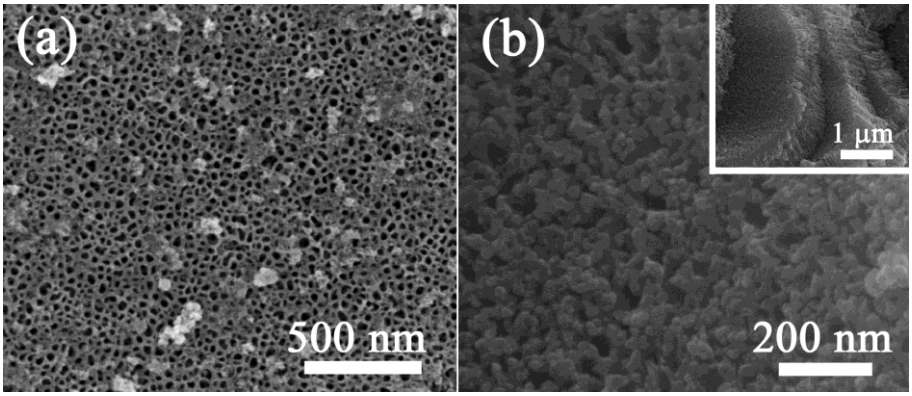

Figure SI4 FE-SEM images of TNA calcined (a) at 400 ^{o}C and (b) 500 ^{o}C for 1h.

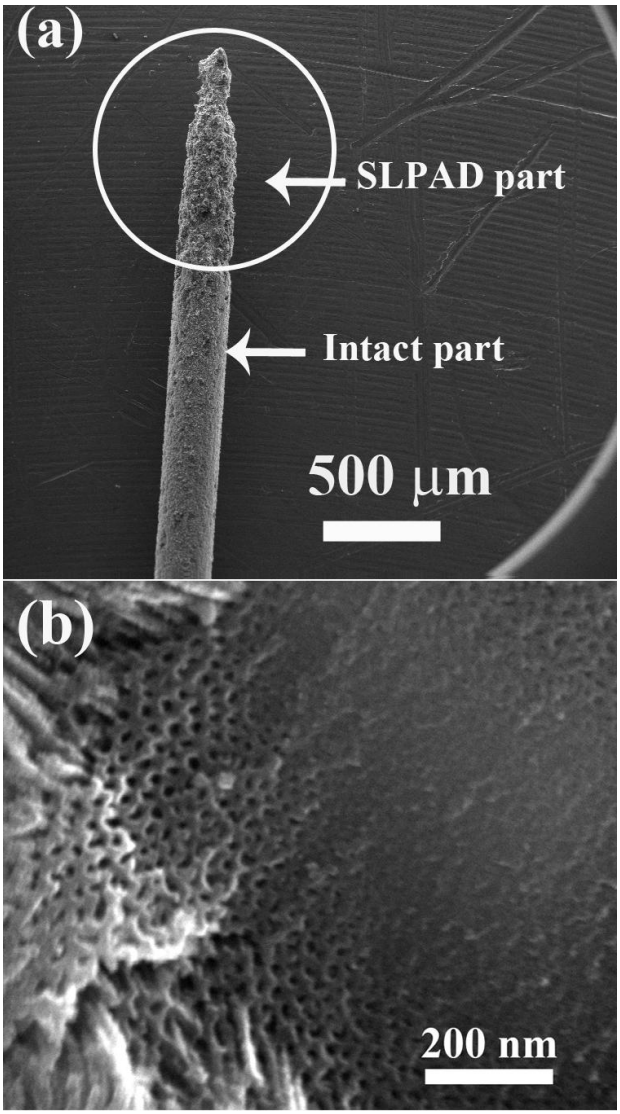

Figure SI5 FE-SEM images of *Electrode 2* (a) at low magnification, (b) the SLPAD-treated part of the electrode at high magnification.

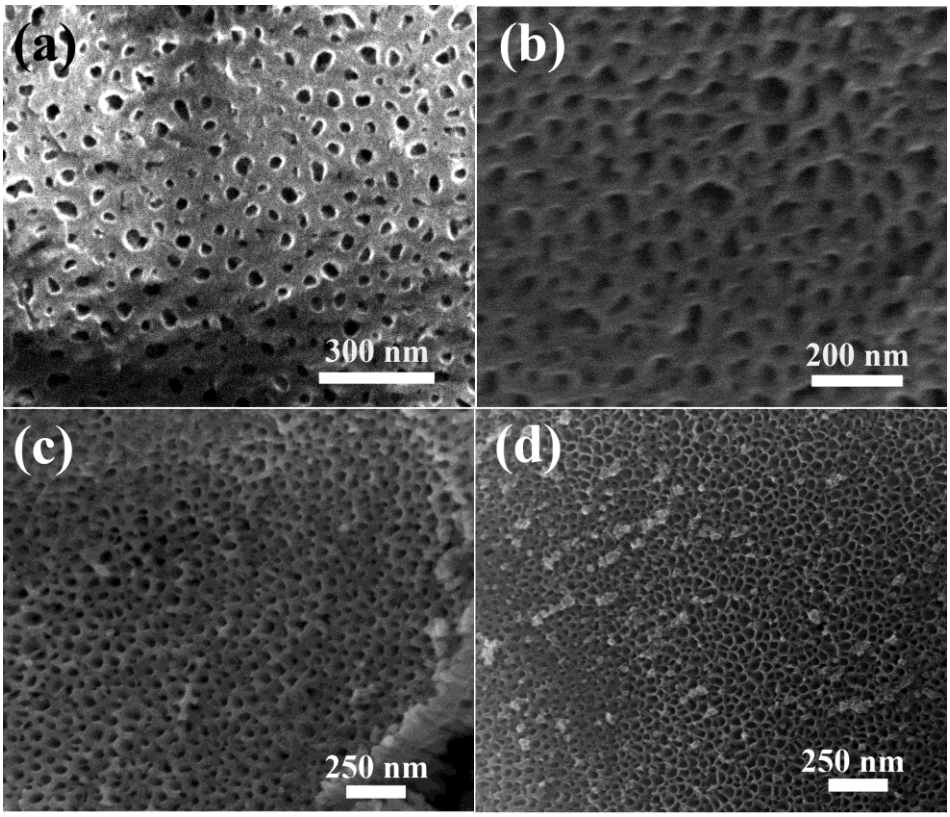

Figure SI6 FE-SEM images of the TNAs formed in 0.1 M $NaNO_3$ at the applied AC voltage of (a) 20 V, 40 V, 80 V, and 150 V.

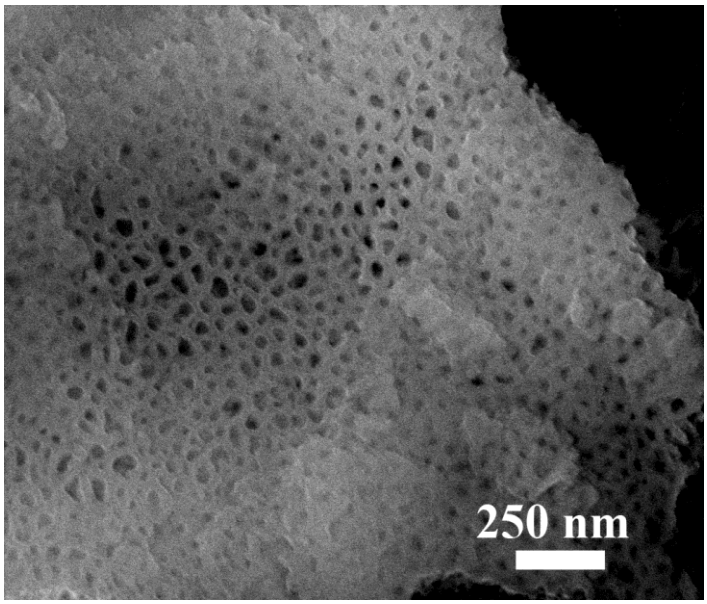

Figure SI7 FE-SEM image of the TNAs formed at AC 190 V in 0.01 M $NaNO_3$ solution.

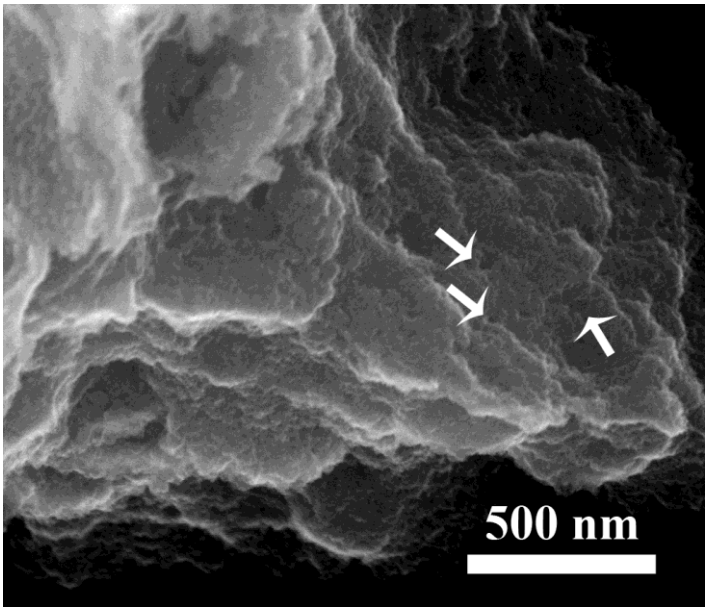

Figure SI8 FE-SEM image of the TiO_2 powder at DC 150 V in 0.1 M $NaNO_3$. Arrow marked the random pores.