Supplementary Information

Continuous dry-wet spinning of white, stretchable and conductive fibers of poly(3-hydroxybutyrate-co-4-hydroxybutyrate) and ATO@TiO_2 nanoparticles for wearable e-textiles

Chunxia Gao,[a †] Sisi He,[b †] Longbin Qiu,[c] Mingxu Wang,[a] Jiefeng Gao,[a] and Qiang Gao *[ad]*

[a]*School of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225002, China*

[b]*School of Science, Harbin Institute of Technology (Shenzhen), University Town, Shenzhen 518055, Guangdong, China*

[C]*Department of Mechanical and Energy Engineering, Southern University of Science and Technology, Shenzhen 518055, Guangdong, China*

[d]*State Key Laboratory of Molecular Engineering of Polymers, Fudan University, Shanghai 200438, China*

Corresponding author: *Dr. Qiang Gao, E-mail: gaoqiang@yzu.edu.cn*

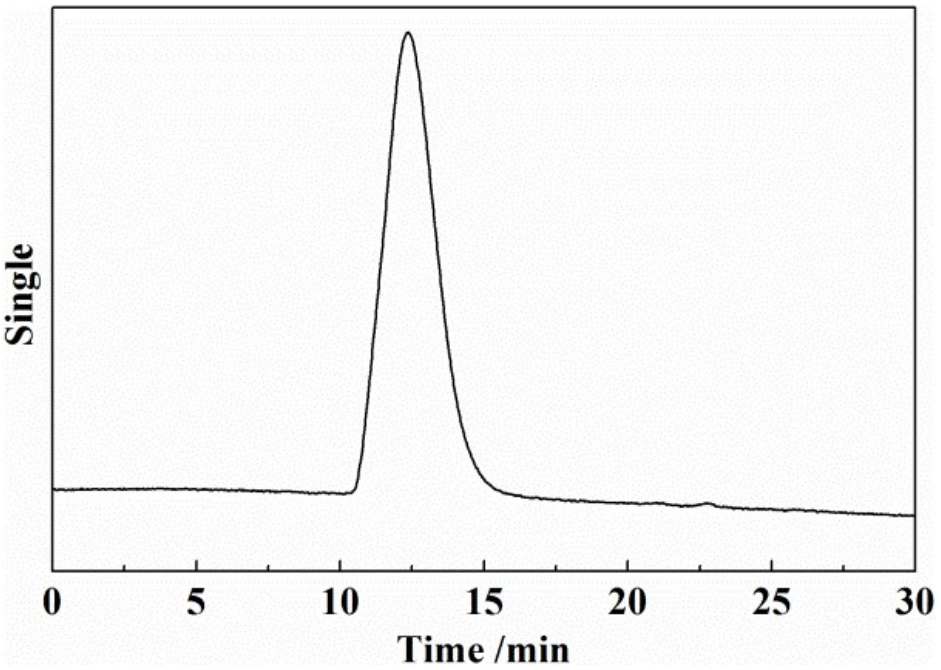

Figure S1. Gel Permeation Chromatography Curve of P3HB4HB.

Result of GPC data showed that the weight-average molecular weight (M_W) was 1.14×10^5 g/mol.

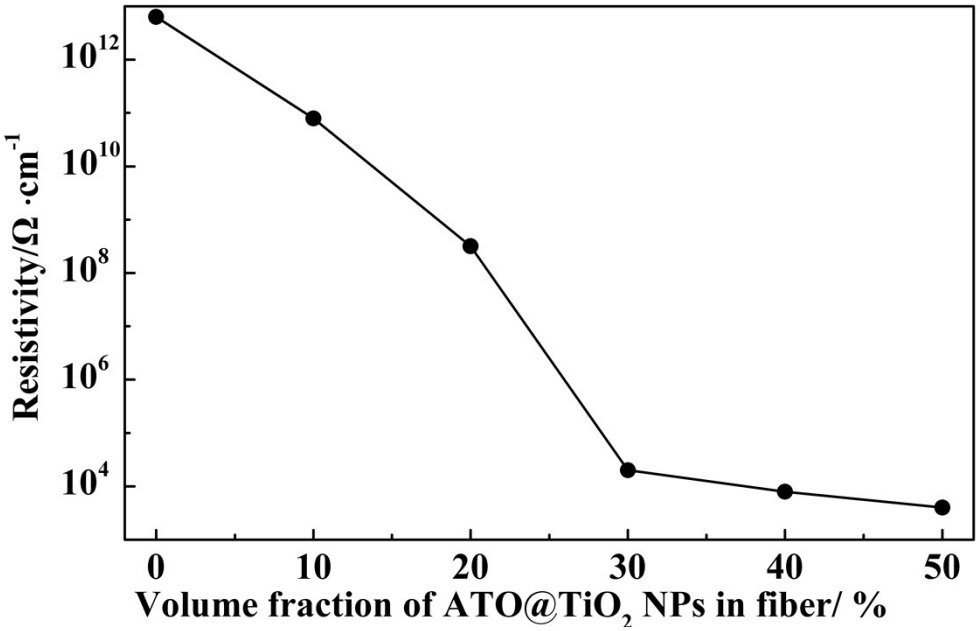

Figure S2. Resistivity of PATN fibers with different volume fraction of ATO@TiO_2 NPs.

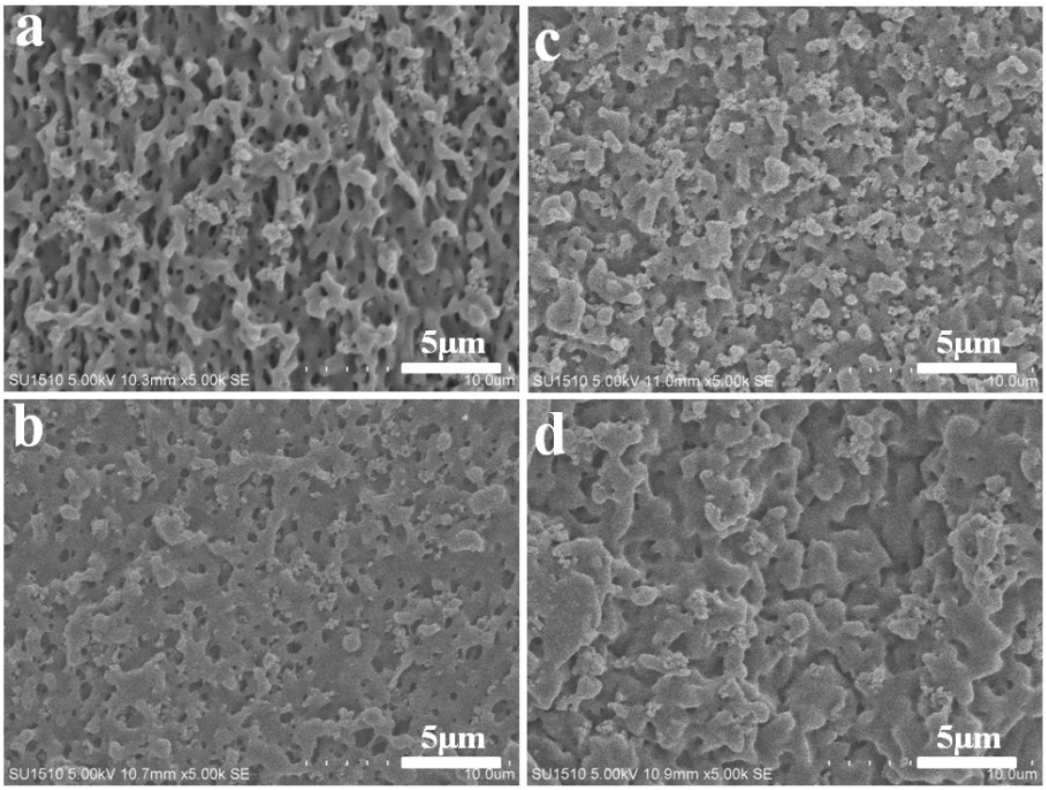

Figure S3. SEM images of typical surface for P3HB4HB composites microfibers with different solvent systems: (a) chloroform, (b) DMSO: chloroform=1:1, (c) DMSO: chloroform=5:1, (d) DMSO.

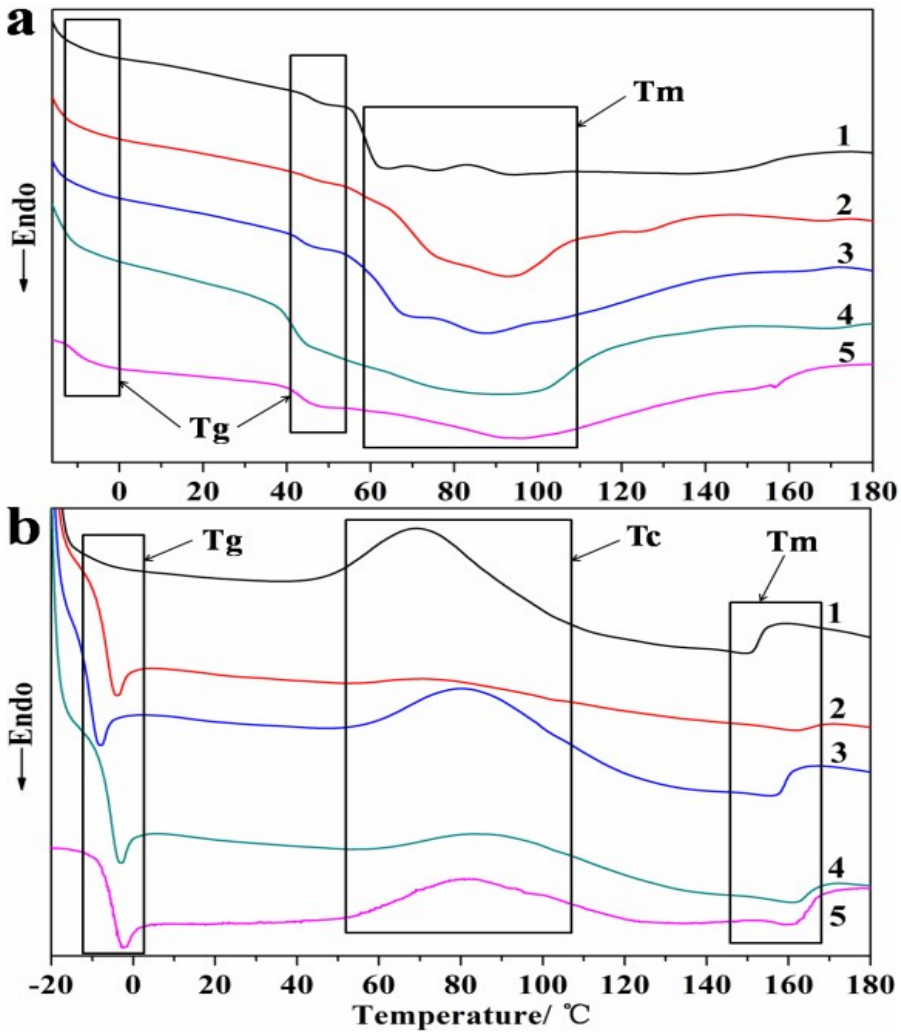

Figure S4. DSC curves of PANT fibers with different solvent ratios of DMSO: chloroform (1) 0:1, (2) 5:1, (3) 3:1, (4) 1:1, (5) 1:0.

Differential scanning calorimeter (DSC) (Q200, TA, America) was used to studying the melting and crystallization behavior of the composites. The studies were performed in the temperature range of -20 to 180°C at a rate of 5°C/min in nitrogen atmosphere.

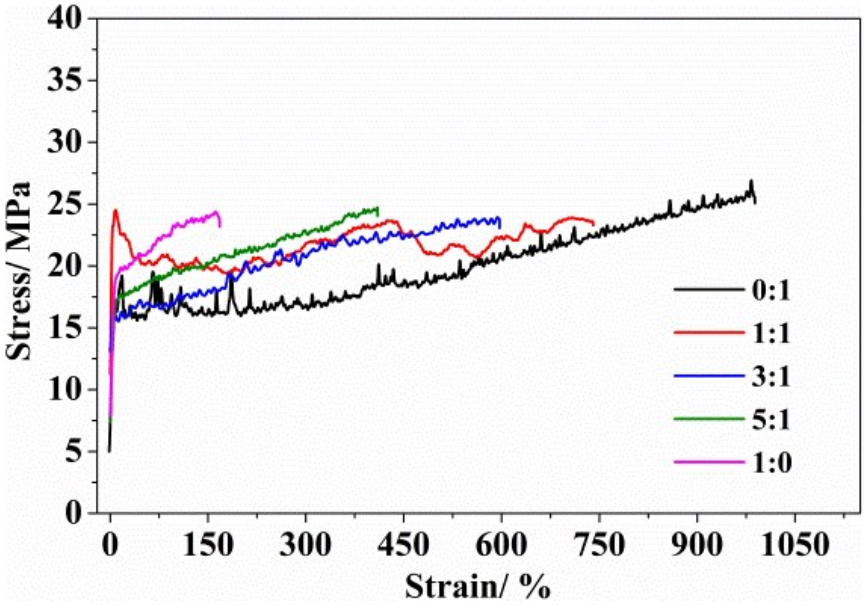

Figure S5. Tensile properties of the PANT fibers prepared from mixed solvent of DMSO and chloroform.

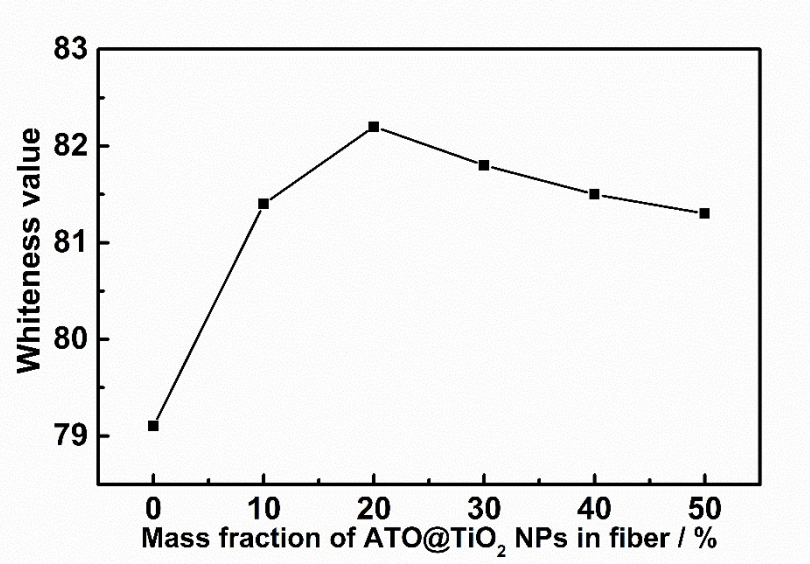

Figure S6. Whiteness index of PATN fibers with different mass fraction of ATO@TiO_2 NPs.

The whiteness index of fiber was displayed directly on the screen of a color reader (CR-14, Konica Minolta, Japan).

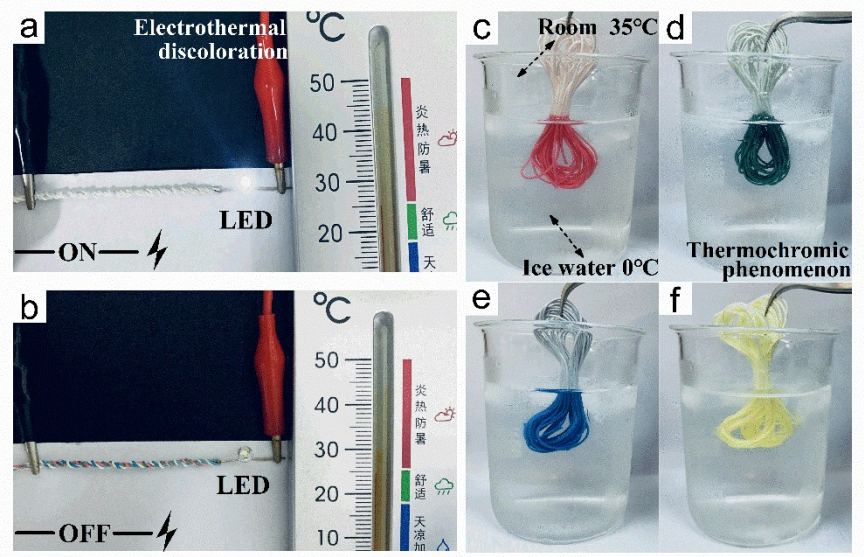

Figure S7. Optical images of PATN fibers containing different temperature-sensitive pigments (a) Power on (24v), (b) Power off, (c-f) Four PATN fibers with different temperature-sensitive pigments discolored at the interface of air and ice water.