

Supporting Information

β -cyclodextrin enhanced polyethylene terephthalate film with improved contact charging ability in high humidity environment

Nannan Wang^{a,b,#}, Yizhe Liu^{a,b,#}, Yang Wu^c, Zibiao Li^{d,e,*}, Daoai Wang^{a,c,*}

^a State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China;

^b Center of Materials Sciences and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing, 100049, China

^c Qingdao Center of Resource Chemistry and New Materials, Qingdao 266100, China;

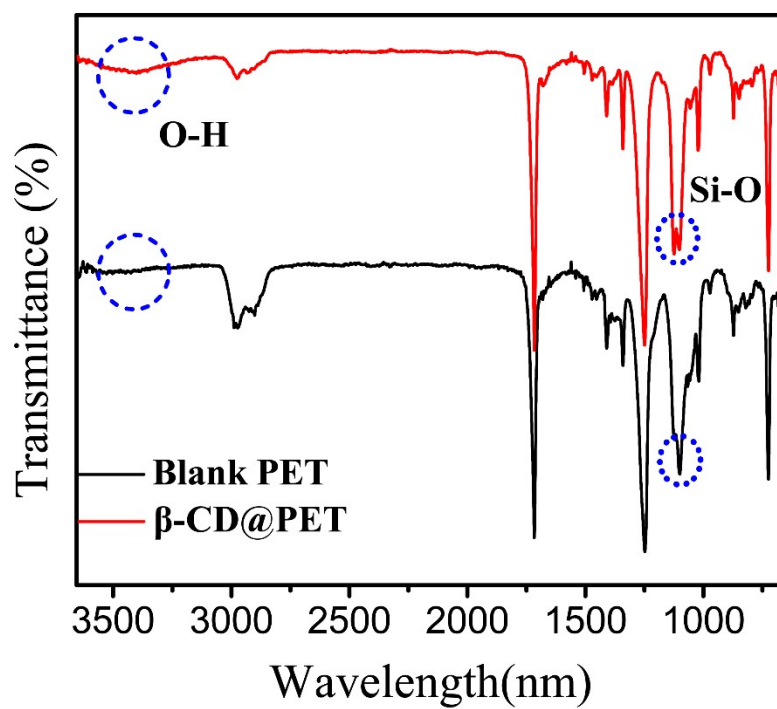
^d Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), 2 Fusionopolis Way, Innovis, #08-03, Singapore 138634, Singapore

^eDepartment of Materials Science and Engineering, National University of Singapore, Singapore 117575, Singapore

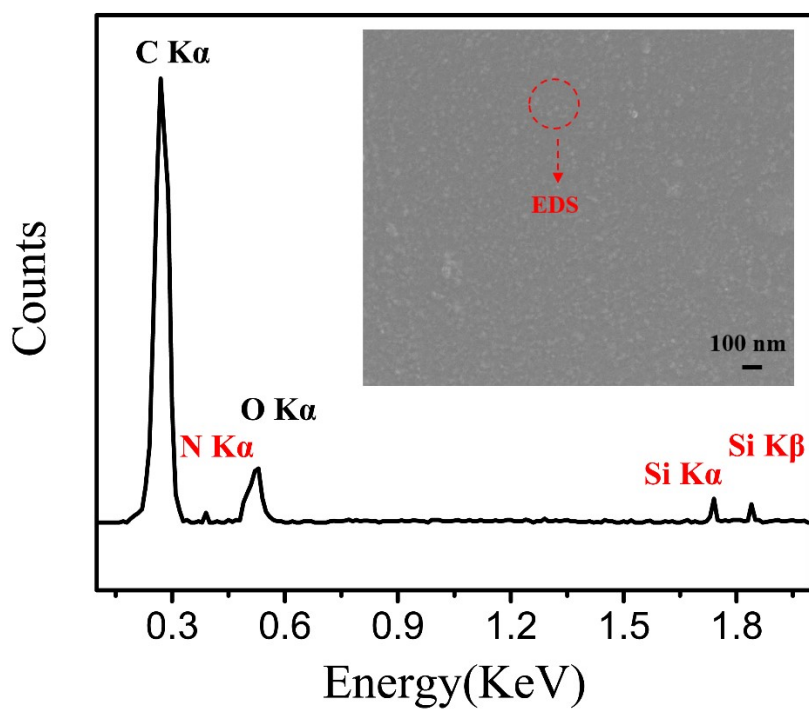
*Corresponding Author. Tel: +86-931-4968169; E-mail: wangda@licp.cas.cn; lizb@imre.a-star.edu.sg

#These authors contributed equally to this work and should be considered co-first authors.

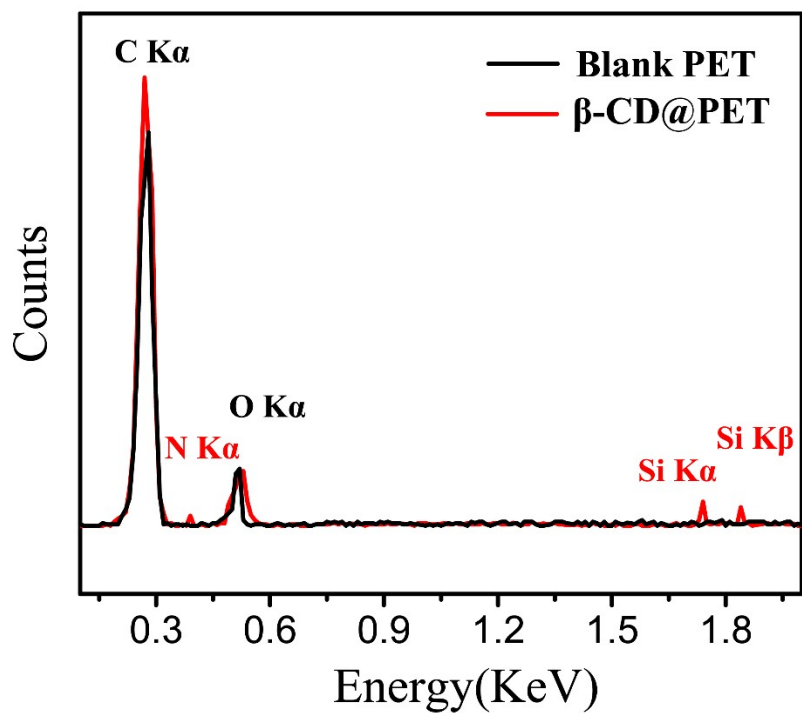
Supplementary Figures



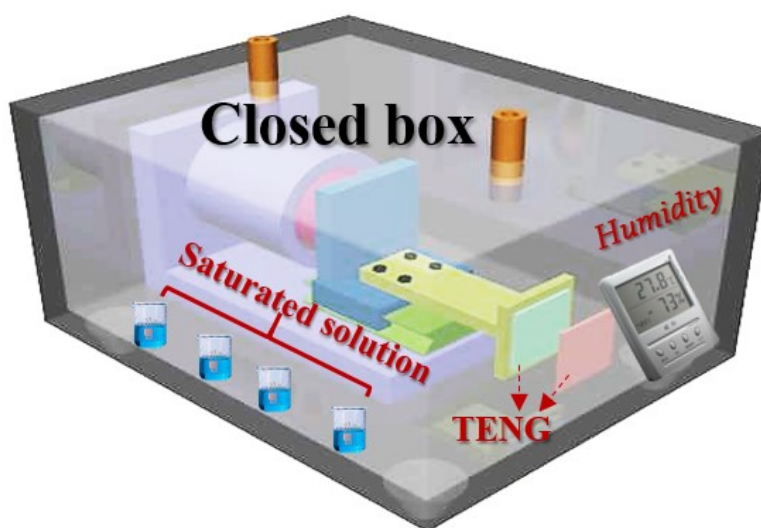
Supplementary Figure 1. Infrared spectra of blank PET film and modified PET film.



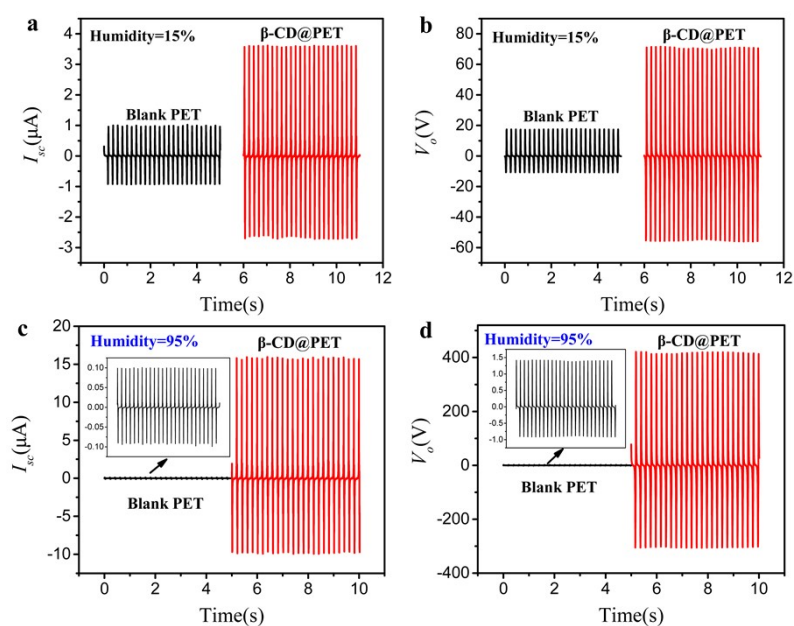
Supplementary Figure 2. SEM and EDS of β -CD@PET film.



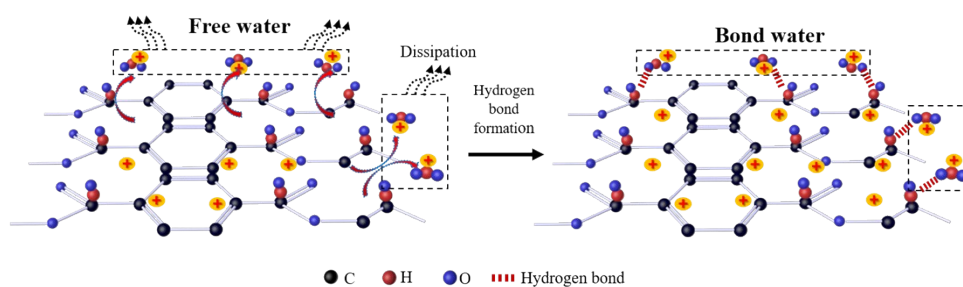
Supplementary Figure 3. SEM and EDS of blank PET and β -CD@PET film.



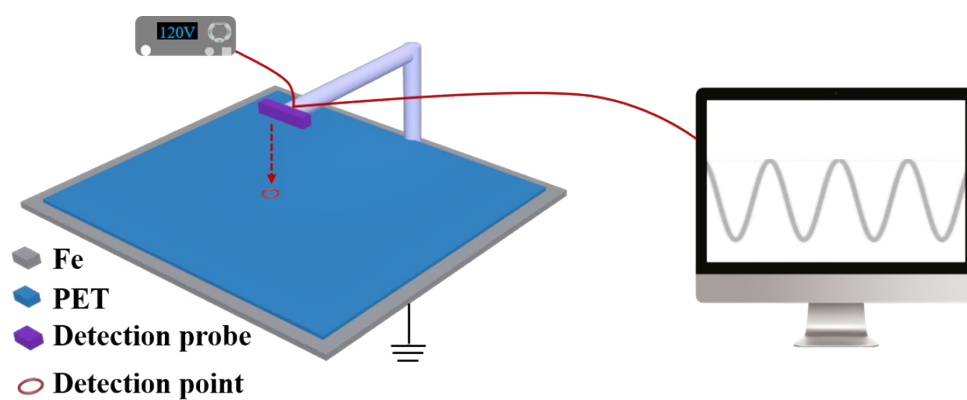
Supplementary Figure 4. Schematic diagram of TENG electrical output test in a closed box with controlled different humidity.



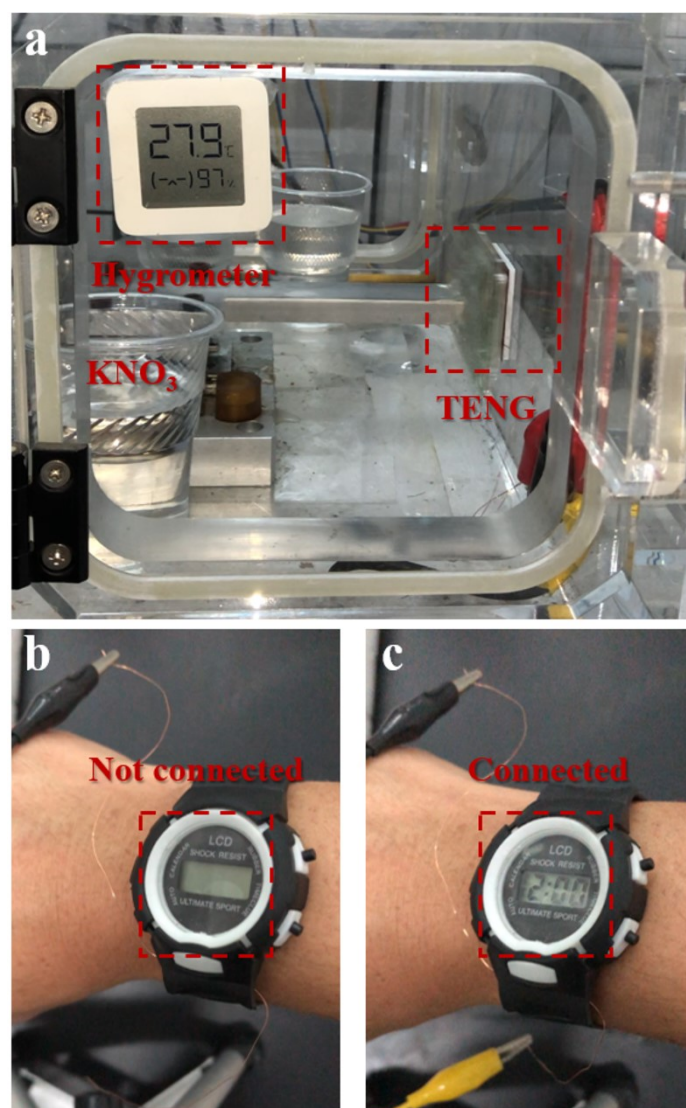
Supplementary Figure 5. Contrast of I_{sc} and V_o of blank PET-based and β -CD@PET-based TENG at 15% RH (a, b) and 95% RH (c, d).



Supplementary Figure 6. Mechanism of water molecules immobilization on PVA film surface and participating in triboelectric charging.



Supplementary Figure 7. Schematic of the surface potential test.



Supplementary Figure 8. Demonstration experiment of β -CD@PET-based TENG for powering electronic watch at 97%RH.

Supplementary Videos

Supplementary Video 1: Demonstration experiment of lighting of blank PET-based TENG under 95% humidity. Blank PET-based TENG can light up 22 LEDs.

Supplementary Video 2: Demonstration experiment of lighting of β -CD@PET -based TENG under 95% humidity. β -CD@PET -based TENG can light up 248 LEDs.

Supplementary Video 3: Demonstration experiment of β -CD@PET-based TENG for powering electronic watch at 97%RH.