

## Electronic Supplementary Information

### **A wireless smart UV accumulation patch based on conductive polymer and CNT composites**

*Dandan Wen<sup>1,2</sup>, Yumeng Liu<sup>2</sup>, Chuang Yue<sup>2</sup>, Jing Li<sup>4</sup>, Weihua Cai<sup>2</sup>, Huiliang Liu<sup>2,3</sup>,  
Xiaoqian Li<sup>2</sup>, Feiming Bai<sup>1\*</sup>, Huaiwu Zhang<sup>1</sup> and Liwei Lin<sup>2,3\*</sup>*

*1: State Key Laboratory of Electronic Thin films and Integrated Devices, University  
of Electronic Science and Technology, Chengdu, 610054, China*

*2: Berkeley Sensor and Actuator Center, University of California, Berkeley,  
California, 94720, USA*

*3: Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China*

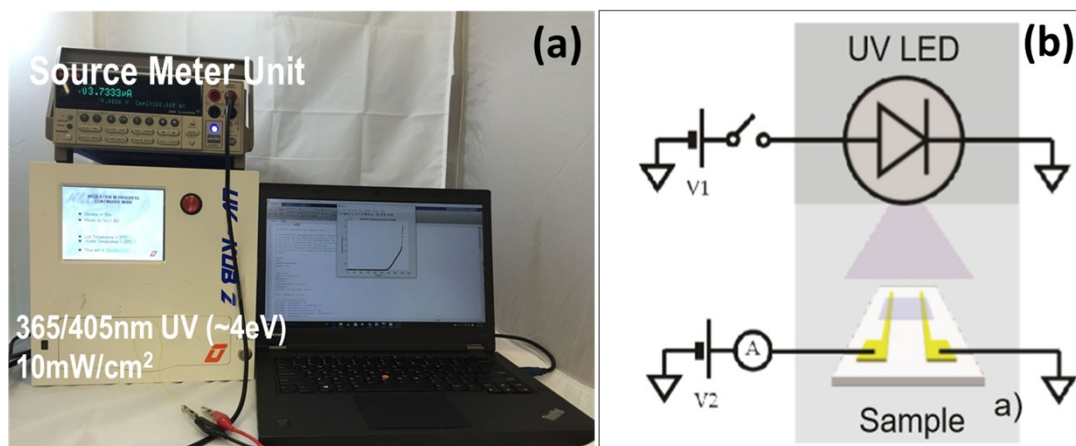
*4: Pen-Tung Sah Institute of Micro-Nano Science and Technology, Xiamen University,  
Xiamen 361005, China*

\*Corresponding Email:

E-mail: [lwlin@berkeley.edu](mailto:lwlin@berkeley.edu) (L. L)

E-mail: [fmbai@uestc.edu.cn](mailto:fmbai@uestc.edu.cn) (F. B)

## Supplementary figures



**Figure S1.** (a) Photograph of the UV box test setup, and (b) corresponding equivalent circuits.

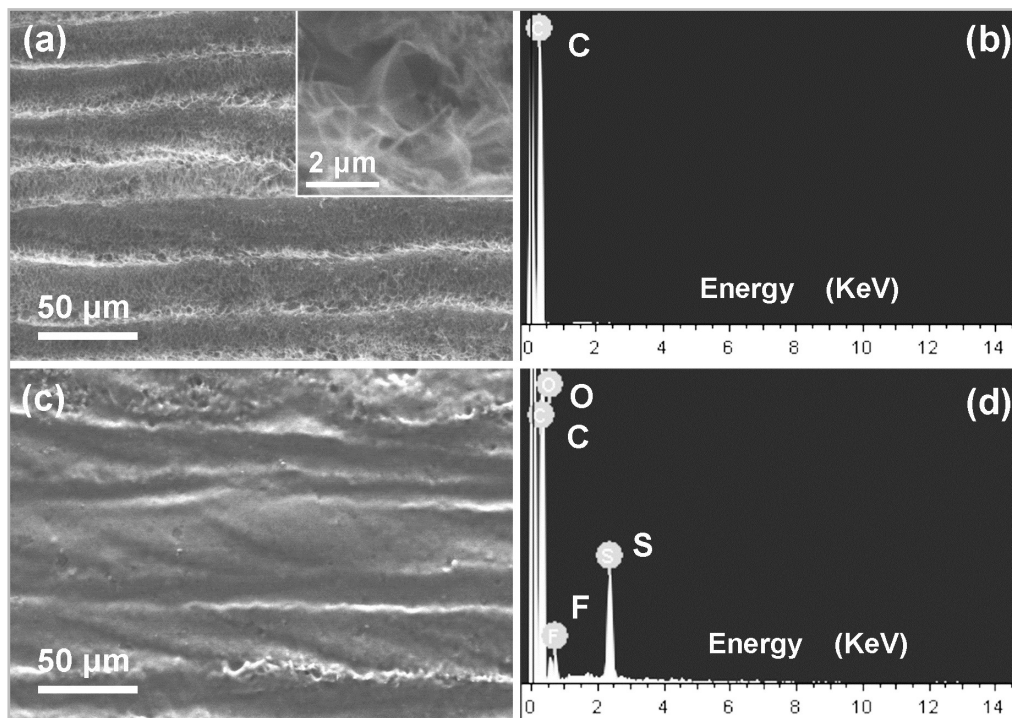
The photoresistance properties of the thin film composites were investigated under the programmable UV LED (365/405nm, 10Mw/cm<sup>2</sup>) light source. During the UV illumination process, a constant voltage ( $V_2$ ) was applied to measure the changing resistance of the composites polymer.

Recipe	PEG:PANI-EB (weight) (PANI=0.044g)	TST:PANI-EB (mol) (TST=0.1g)	Resistance Drop
1	1:2	1:2	700X
2	1:1	1:2	50X
3	2:1	1:2	3X

**Table S1.** The resistance drop after UV exposure by using different PEG:PANI-EB weight ratios polymer composites while the TST:PANI-EB mole ratio was kept constant.

Recipe	PEG:PANI-EB (weight) (PEG=0.022g)	TST:PANI-EB (mol) (TST=0.1g)	Resistance Drop
1	1:2	1:4	30X
2	1:2	1:3	15X
3	1:2	1:2	700X

**Table S2.** The resistance drop after UV exposure by using different TST:PANI-EB mole ratios polymer composites while the PEG:PANI-EB weight ratio remains constant.



**Figure S2.** (a, c) SEM images of the fabricated porous IDTs structure before & after the polymer composites coating and (b, d) their corresponding EDS patterns. After dip-coating the polymer solution, except the C element, the other elements including the F, S, O are all from the polymer components.