

## **Conversion of WO<sub>3</sub> thin film into self-crosslinked nanorods for large scale ultra-violet detector**

Youngho Kim<sup>a,b#</sup>, Sang Hoon Lee<sup>c#</sup>, Seyoung Jeong<sup>b</sup>, Bum Jun Kim<sup>d</sup>, Jae-Young Choi<sup>c,d\*</sup>,  
and Hak Ki Yu<sup>a,b\*</sup>

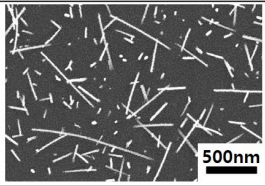
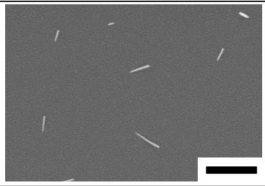
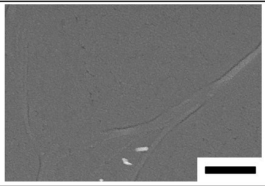
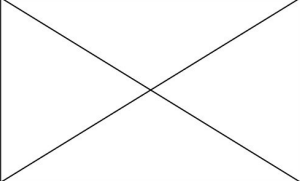
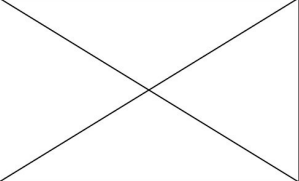
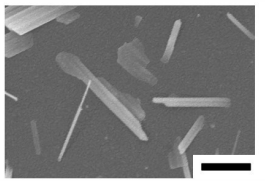
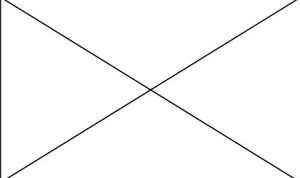
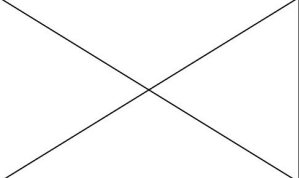
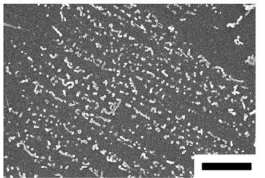
<sup>a</sup>Department of Materials Science and Engineering & Department of Energy Systems Research, Ajou University, Suwon, 16499, Republic of Korea

<sup>b</sup>Department of Materials Science and Engineering, Ajou University, Suwon 16499, South Korea

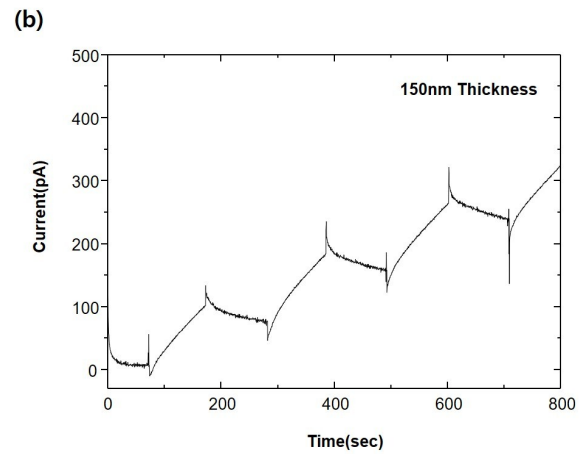
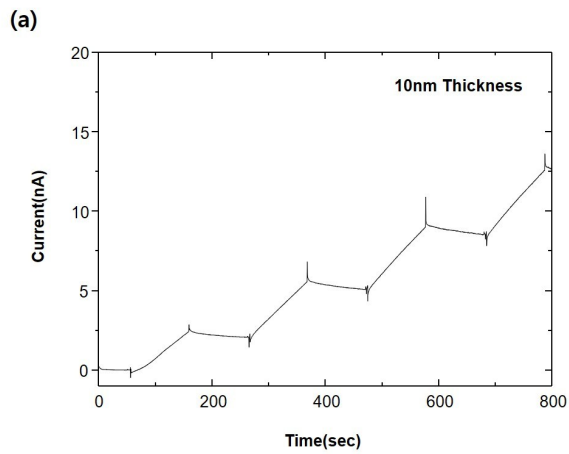
<sup>c</sup>School of Advanced Materials Science & Engineering, Sungkyunkwan University, Suwon, 16419, Republic of Korea

<sup>d</sup>SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University, Suwon, 16419, Republic of Korea

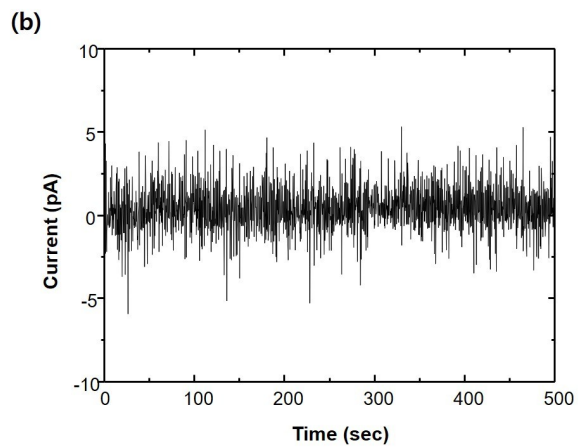
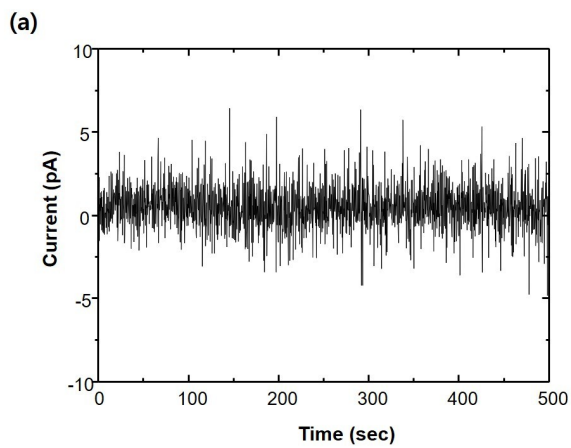
#These authors contributed equally to this work

	10nm	25nm	50nm
700°C annealing			
900°C annealing			
1000°C annealing			

**Supplementary Information S1** The SEM image of  $\text{WO}_3$  surface according to annealing time and thickness of thin film.



**Supplementary Information S2** Photocurrent response of UV-C ray (261 nm) irradiation of Amorphous thin film  $\text{WO}_3$  (a) of thickness 10nm and (b) of thickness 15nm.



**Supplementary Information S3** Photocurrent response of UV-A ray (365 nm) irradiation of self-crosslinked  $\text{WO}_3$  (a) without Ag nano particle and (b) with Ag nano particle.