

Electrospun SnO_2/WO_3 Heterostructure Nanocomposite Fiber for Enhanced Acetone Vapor Detection

Ting-Han Lin ^{1†}, Yin-Hsuan Chang ^{1†}, Ting-Hung Hsieh ^{1†}, Yu-Ching Huang ^{1,2*}, and Ming-Chung Wu ^{1,2,3,4*}

¹ Department of Chemical and Materials Engineering, Chang Gung University, Taoyuan 33302, Taiwan

² Department of Materials Engineering, Ming-Chi University of Technology, New Taipei City 24301, Taiwan

³ Center for Sustainability and Energy Technologies, Chang Gung University, Taoyuan 33302, Taiwan

⁴ Division of Neonatology, Department of Pediatrics, Chang Gung Memorial Hospital at Linkou, Taoyuan 33305, Taiwan

* Correspondence: Y.-C. Huang: huangyc@mail.mcut.edu.tw; M.-C. Wu: mingchungwu@cgu.edu.tw

† These authors contributed equally to this work as first author.

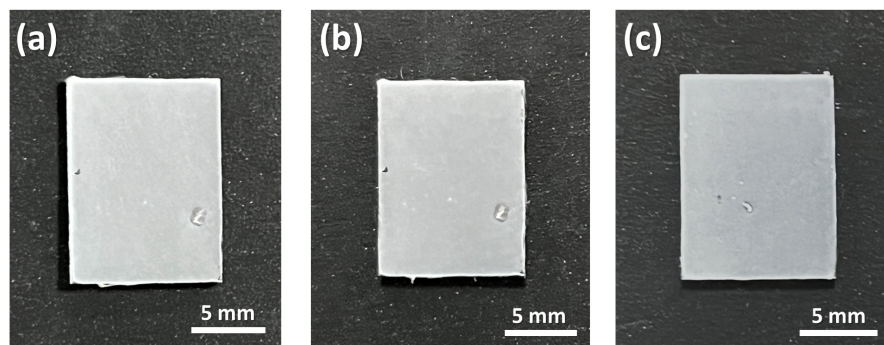


Figure S1. Photographs of the PMMA-Ag- SnO_2/WO_3 sensing fibers: (a) in initial state, (b) post UV-Ozone treatment, and (c) exposure to acetone vapor.

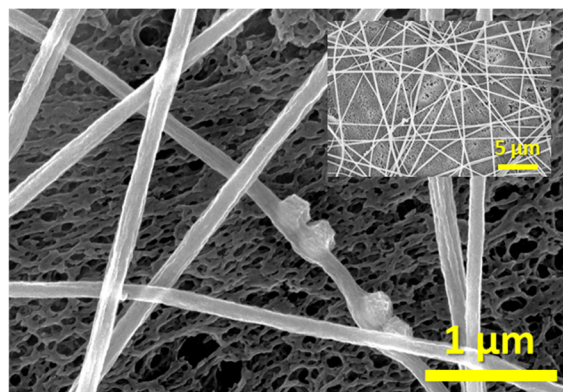


Figure S2. Morphology of PMMA-Ag- SnO_2/WO_3 fibers with UV ozone treatment.

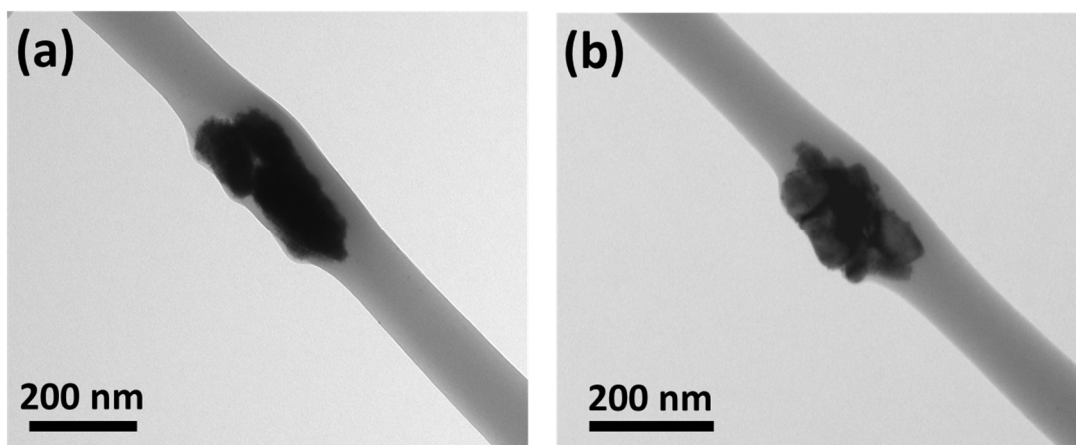


Figure S3. TEM images of PMMA-Ag-SnO₂/WO₃ fibers (a) without and (b) with UV-ozone treatment.

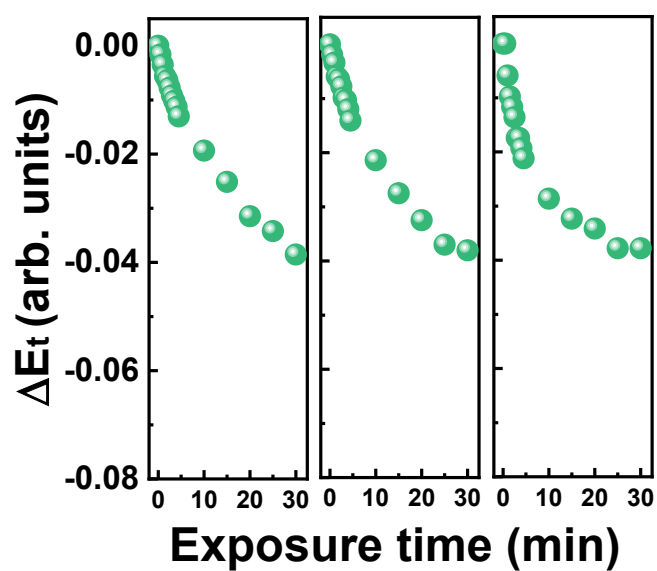


Figure S4. Reproducibility test of PMMA-Ag-SnO₂/WO₃ fibers exposed to 100 ppm acetone vapor.

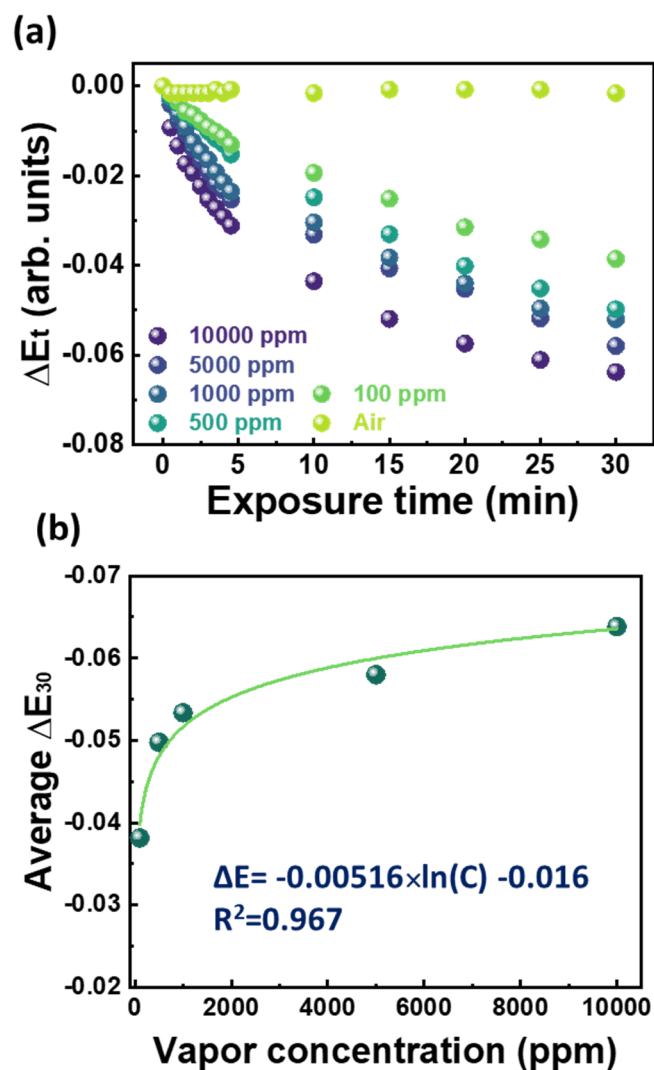


Figure S5. (a) Extinction change of PMMA-Ag-SnO₂/WO₃ fibers exposed to acetone with various concentration ppm over exposure time, t min and (b) the calibration curve corresponding to 30-min exposure of PMMA-Ag-SnO₂/WO₃ fibers to acetone vapor.

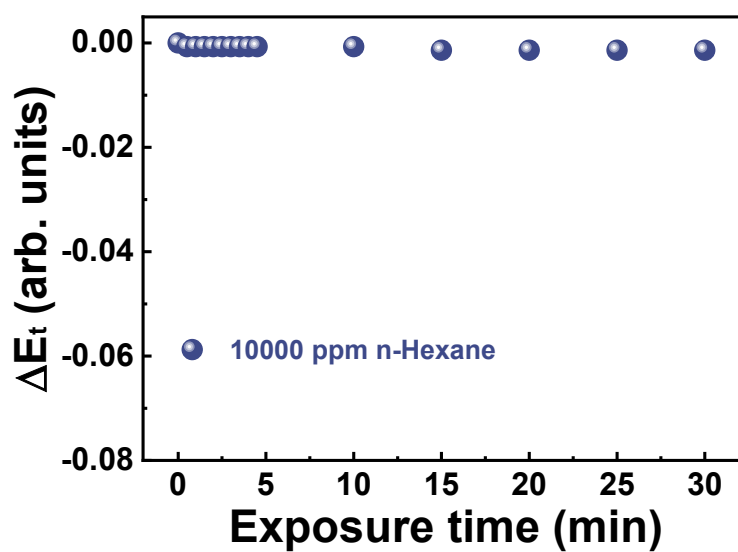


Figure S6. Extinction change of PMMA-Ag-SnO₂/WO₃ fibers exposed to 10,000 ppm n-hexane over exposure time, t min.