

## Supplementary Information

### Stretchable and highly sensitive graphene-on-polymer strain sensors

Xiao Li<sup>1</sup>, Rujing Zhang<sup>1</sup>, Wenjian Yu<sup>2</sup>, Kunlin Wang<sup>1</sup>, Jinquan Wei<sup>1</sup>, Dehai Wu<sup>1</sup>, Anyuan Cao<sup>3</sup>, Zhihong Li<sup>4</sup>, Yao Cheng<sup>5</sup>, Quanshui Zheng<sup>5\*</sup>, Rodney S. Ruoff<sup>6</sup>, Hongwei Zhu<sup>1,5\*</sup>

<sup>1</sup>Department of Mechanical Engineering, Key Laboratory for Advanced Manufacturing by Materials Processing Technology, Tsinghua University, Beijing 100084, China

<sup>2</sup>Department of Computer Science and Technology, Tsinghua University, Beijing 100084, China

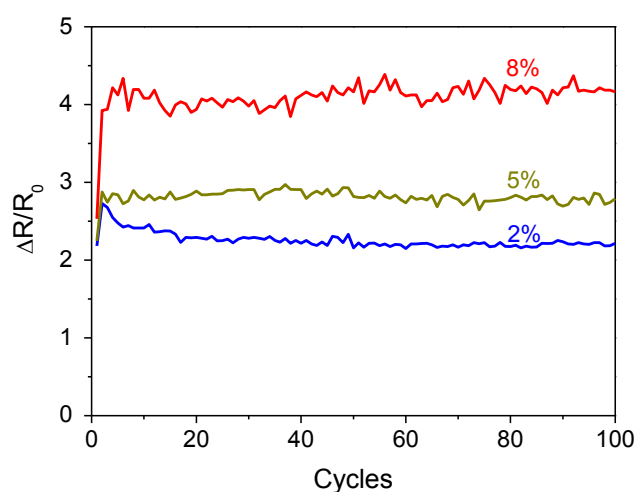
<sup>3</sup>Department of Materials Science and Engineering, College of Engineering, Peking University, Beijing 100871, China

<sup>4</sup>National Key Laboratory of Science and Technology on Micro/Nano Fabrication, Institute of Microelectronics, Peking University, Beijing 100871, China

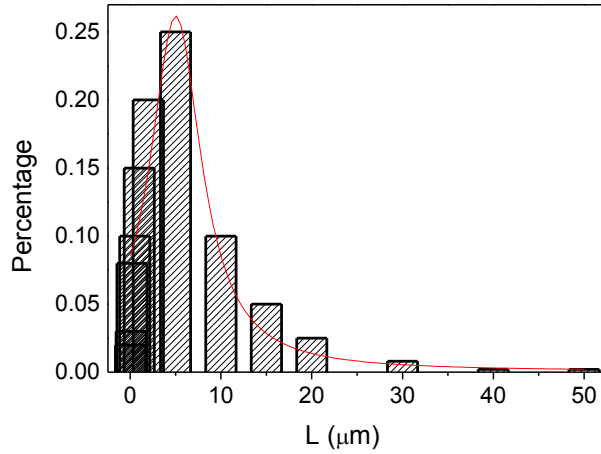
<sup>5</sup>Center for Nano and Micro Mechanics (CNMM), Tsinghua University, Beijing 100084, China

<sup>6</sup>Department of Mechanical Engineering and the Materials Science and Engineering Program, University of Texas at Austin, Austin, TX 78712, USA

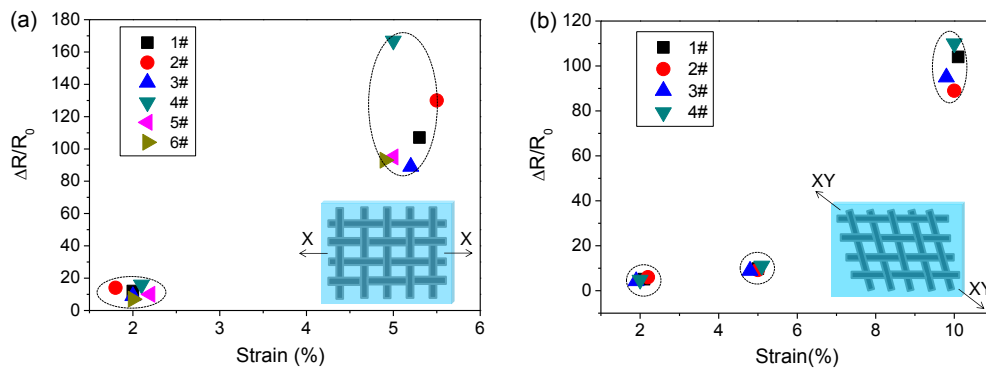
\*Corresponding authors: H. W. Zhu ([hongweizhu@tsinghua.edu.cn](mailto:hongweizhu@tsinghua.edu.cn)); Q. S. Zheng ([zhengqs@tsinghua.edu.cn](mailto:zhengqs@tsinghua.edu.cn)).



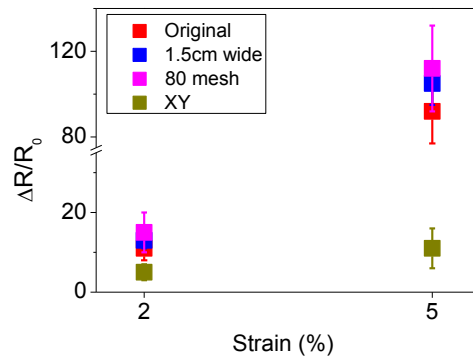
**Figure S1.** Sensor stability.



**Figure S2.** Size distribution of graphene sheets in a GWF.



**Figure S3.** Anisotropic response. (a) X direction. (b) XY direction. Insets show model schematics.



**Figure S4.** Tensile tests on four different types of GWF sensors: (1) Original: 1cm wide, 120 mesh, stretched along X direction; (2) 1.5cm wide; (3) 80 mesh; (4) along XY direction. Other parameters are same as the sample in (1).