

Electronic Supplementary Information

High Sensitivity and Wide Dynamic Range Torsion Sensors based on Graphene Woven Structure

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The Electronic Supplementary Information includes:

Figures S1~S4

Supplementary Movies S1~S3

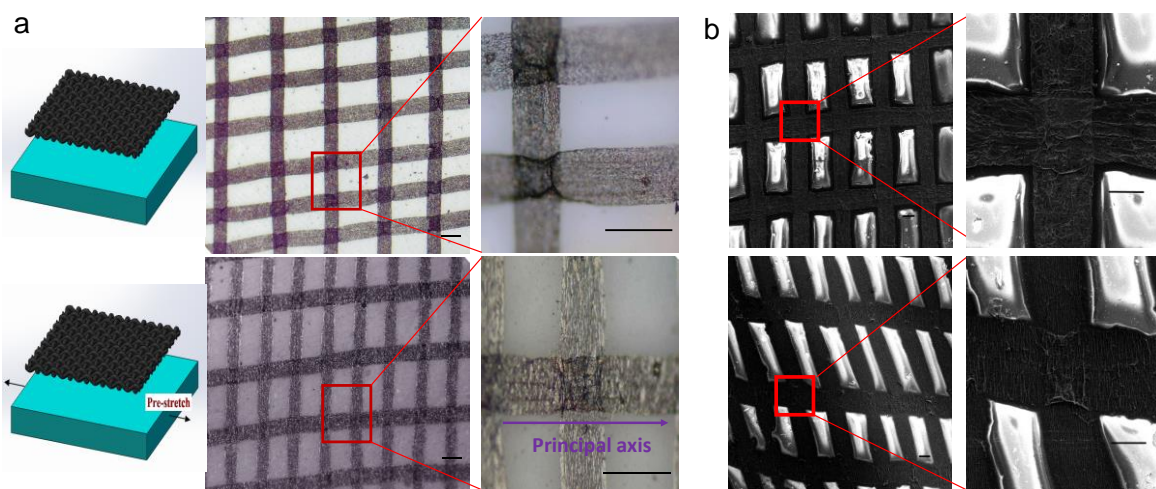


Figure S1. Characterizations of GWFs-on-PDMS film, illustrating the ordered parallel wavy microstructure of pre-strained GWFs. (a) Top-view optical images of GWFs without pre-strain (upper) and with 10% pre-strain (bottom) along the principal axis, scale bars: 100 μ m. (b) Top-view SEM images of GWFs without pre-strain (upper) and with 10% pre-strain (bottom) along the principal axis, scale bars: 50 μ m.

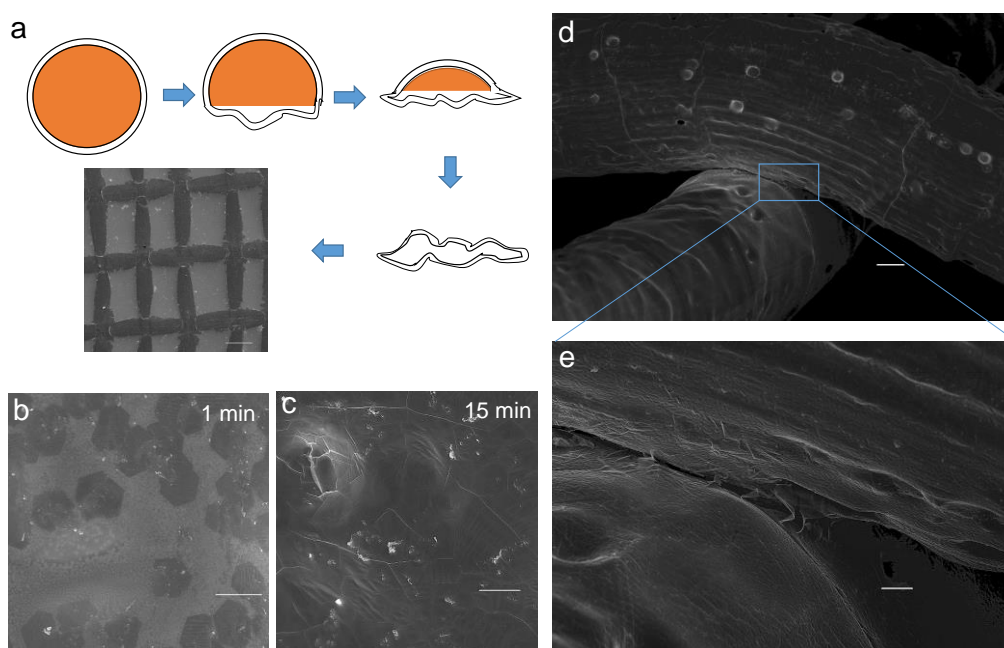


Figure S2. (a) Schematic diagram of the etching process of a copper wire. Characterizations of GWFs-on-copper mesh structure: (b) Multilayer islands nucleation grown for 1 min, scale bar: 2 μ m; (c) Islands grow (15 min) and finally interconnect into an integral film, scale bar: 2 μ m; (d) SEM image of copper wire cross-linking point after graphene growth, scale bar: 10 μ m; (e) Enlarged view SEM image of the region marked with a blue box, scale bar: 2 μ m.

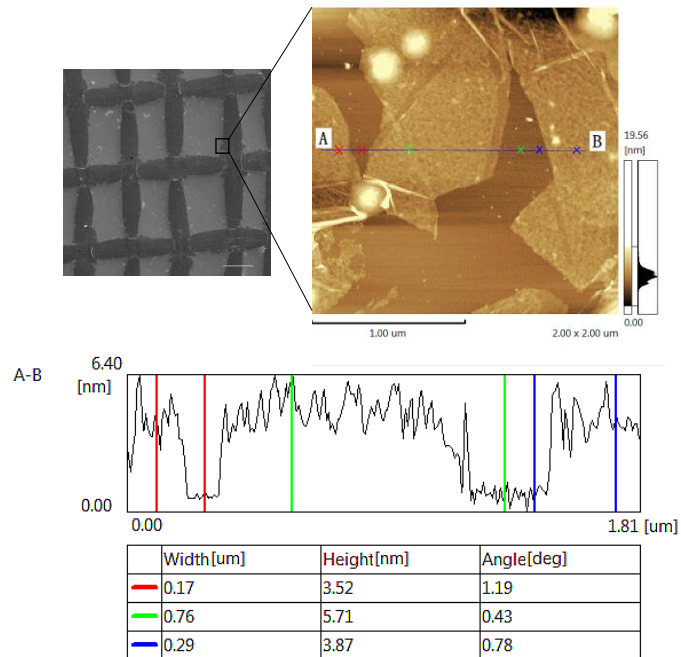


Figure S3. AFM characterization of the edge of the graphene micron-ribbon, demonstrating its nanometers thickness (3~7 nm).

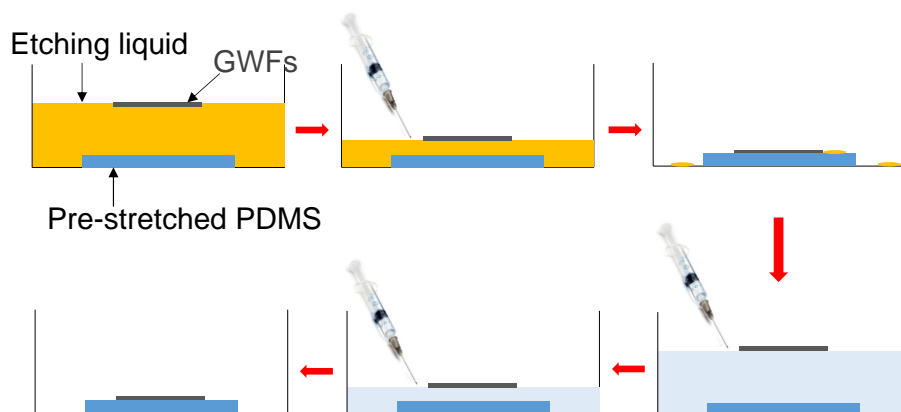


Figure S4. Schematic diagram of the transfer process.