Supporting Information

Flexible Graphene-Assembled Film-Based Antenna for Wireless Wearable Sensor with Miniaturized Size and High Sensitivity

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Author Contributions:

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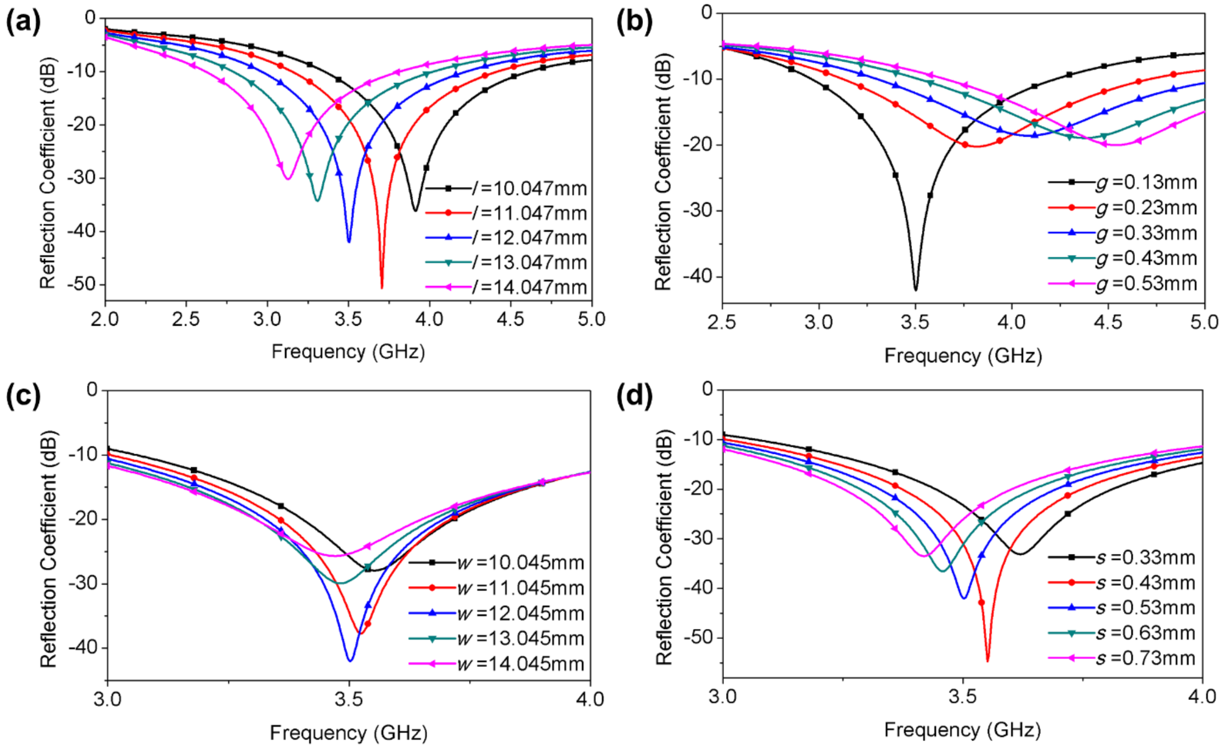

Figure S1. Simulation results of reflection coefficients of the antenna with different parameters. (a) simulated reflection coefficient curves of the antenna with increasing l from 10.047 mm to 14.047 mm with a step of 1 mm. (b) simulated reflection coefficient curves of the antenna with increasing g from 0.13 mm to 0.53 mm with a step of 0.1 mm. (c) simulated reflection coefficient curves of the antenna with increasing w from 10.045 mm to 14.045 mm with a step of 1 mm. (d) simulated reflection coefficient curves of the antenna with increasing s from 0.33 mm to 0.73 mm with a step of 0.1 mm.

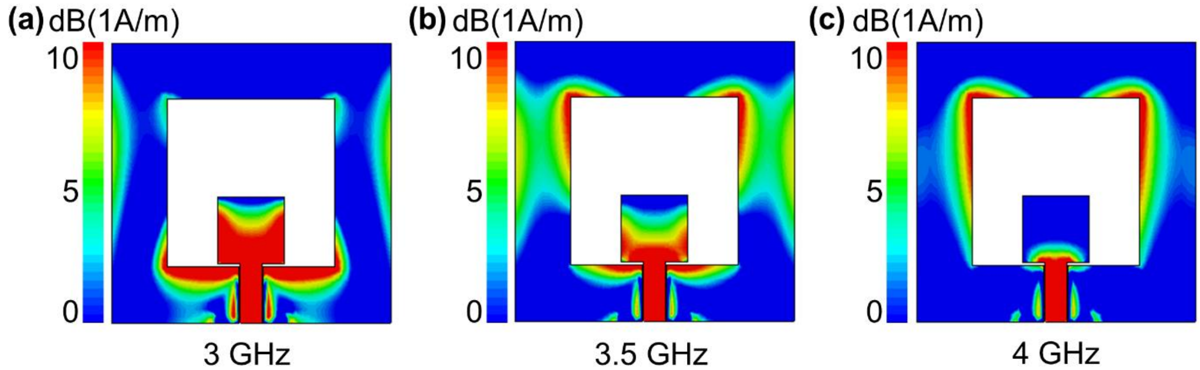

Figure S2. Simulation results of surface current of the antenna at different frequencies: (a) 3 GHz, (b) 3.5 GHz, (c) 4 GHz.

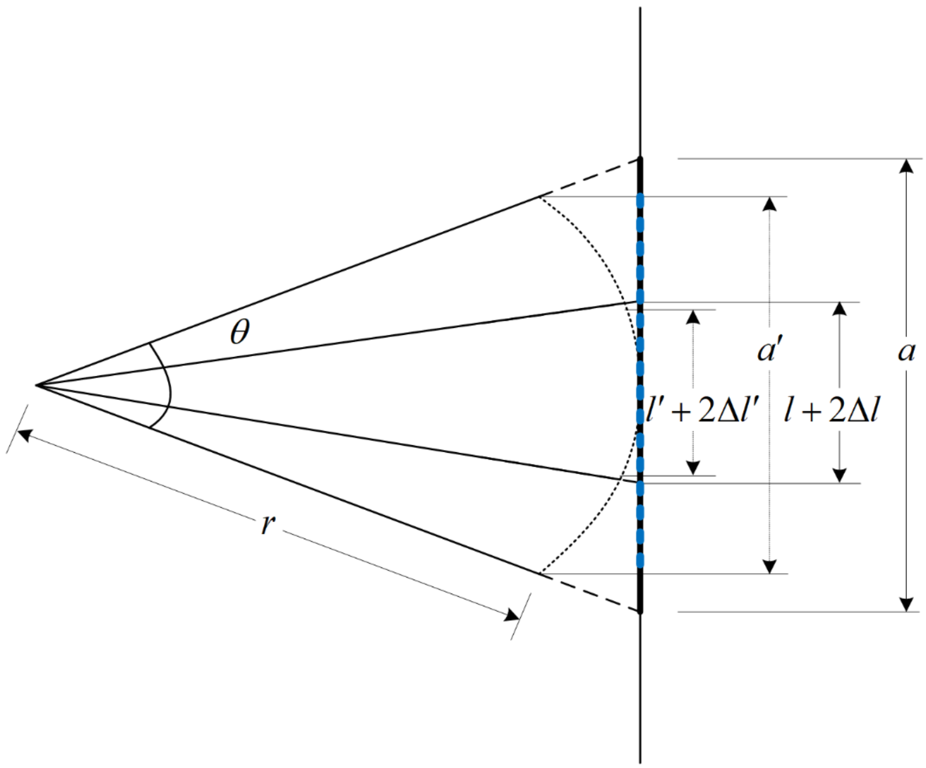

Figure S3. The geometric structures of the antenna before and after bending.

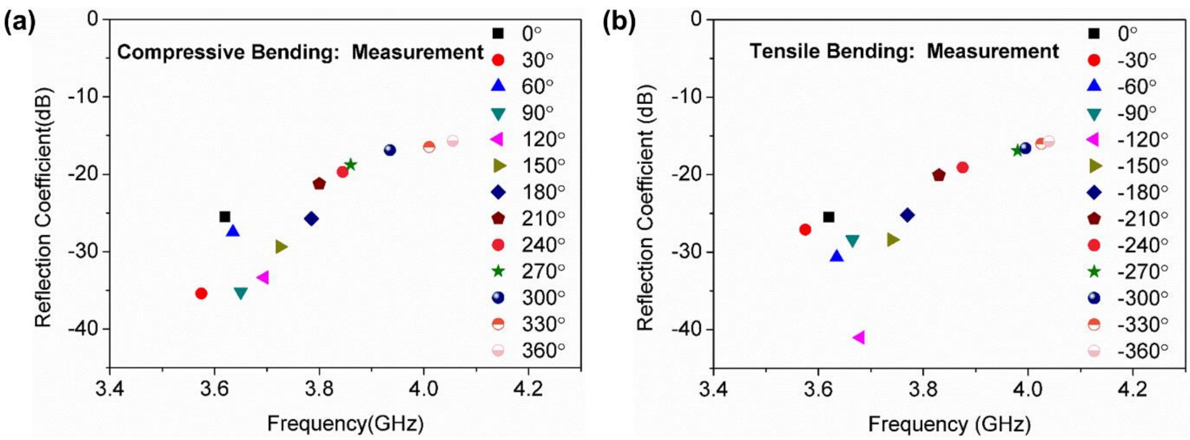

Figure S4. (a-b) Reflection coefficients of antenna with the central angle increasing from 0° to 360° with a step of 30° under compression (a) and tension (b), respectively.

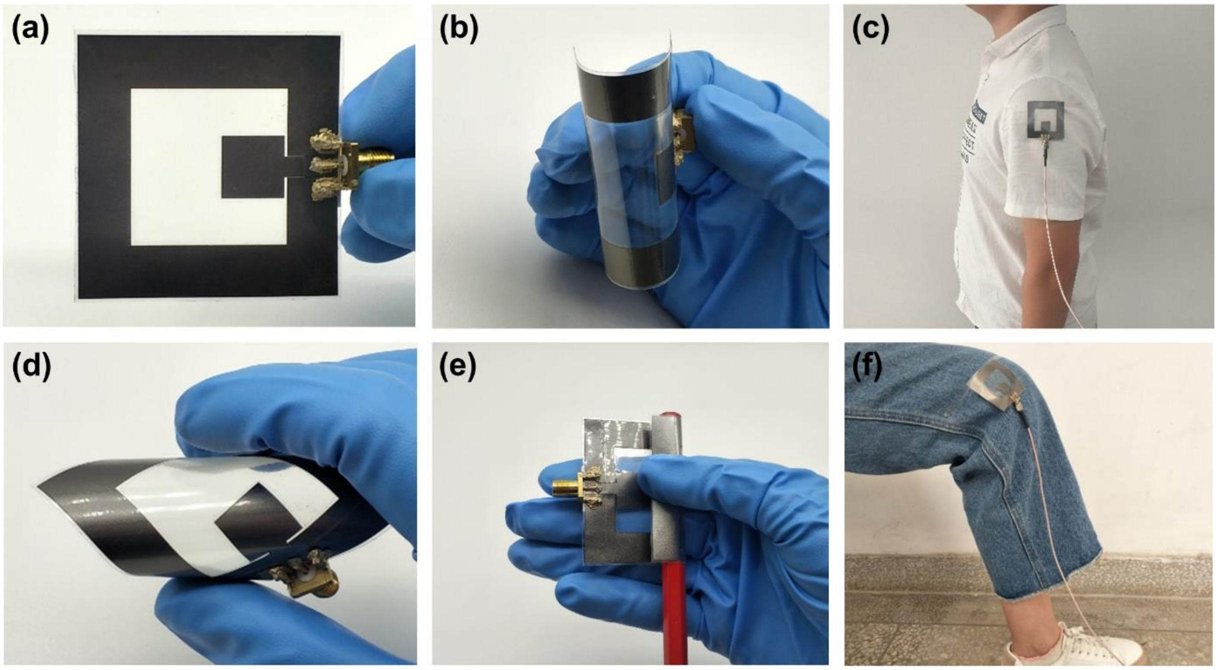

Figure S5. Photographs of a GAF antenna sensor in different statuses: (a) relaxed, (b) bent, (c) attached to the shoulder, (d) twisted, (e) rolled, and (f) attached to the knee.

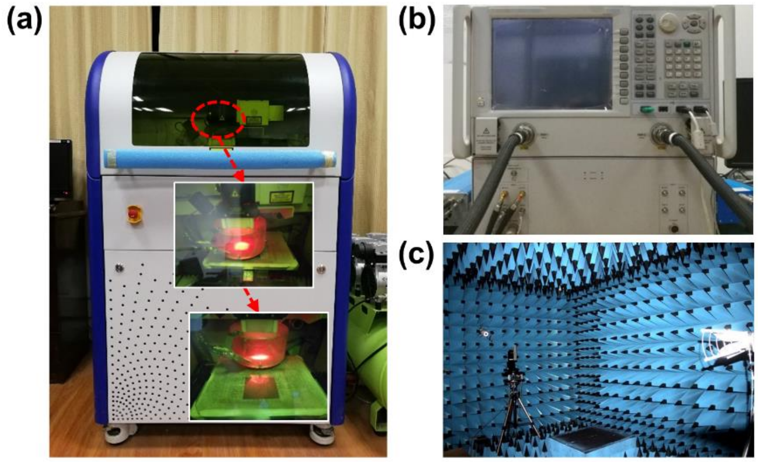

Figure S6. Fabrication device and measurement environment. (a) Laser direct molding engraving machine (LPKF ProtoLaser S) used to manufacture the antenna. (b-c) Keysight N5247A network analyzer (b) and microwave anechoic chamber (c) used to obtain reflection coefficient, frequency bandwidth, and radiation pattern.

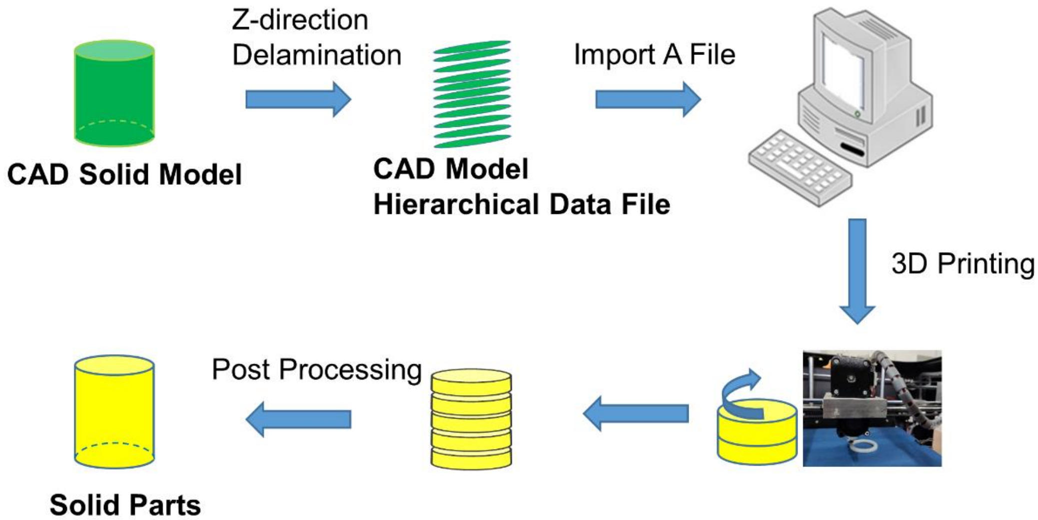

Figure S7. Fabrication scheme of polylactic acid fixture using 3D printing.