Supporting Information

Application of Graphene Nanowalls In Intraocular Pressure Sensor

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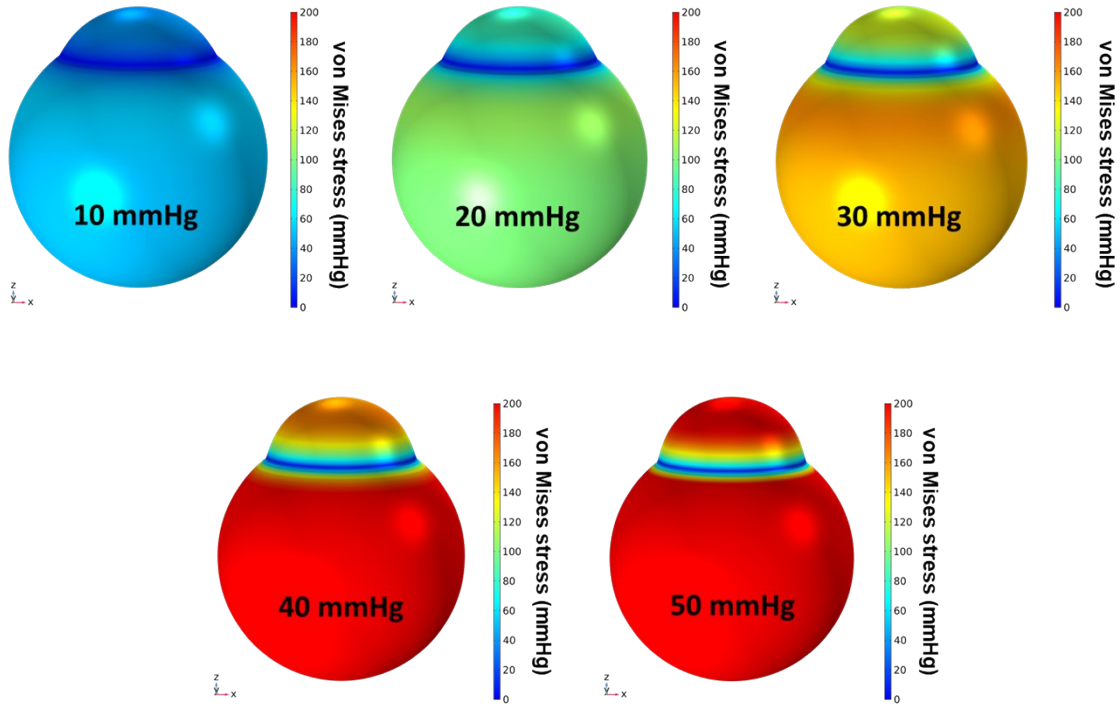

Figure S1. Finite element simulation analysis of corneal von Mises stress distribution.

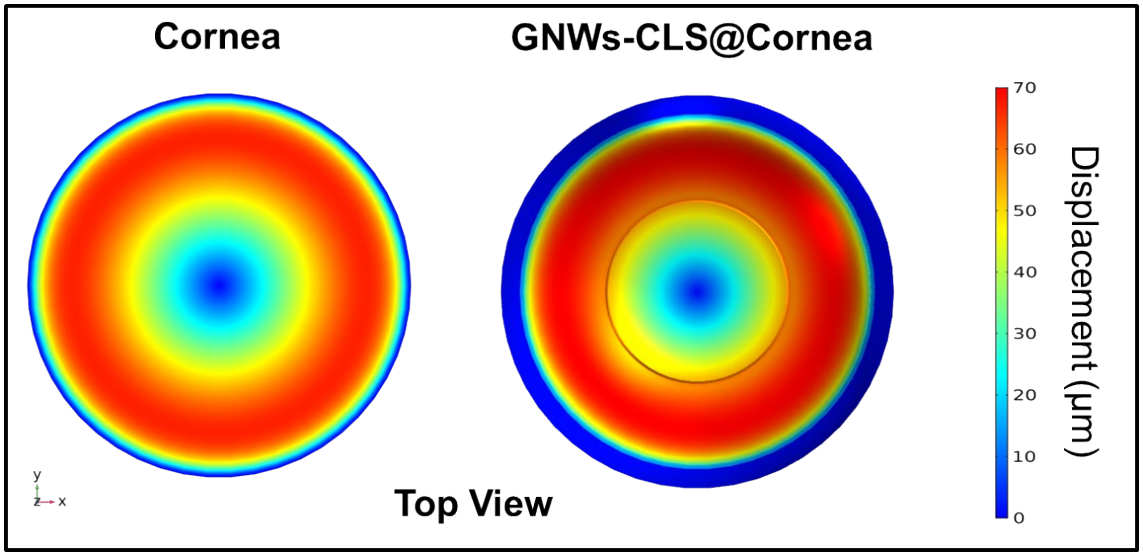

Figure S2. The top view of the corneal deformation at 50 mmHg before and after the GNWs-CLS is worn.

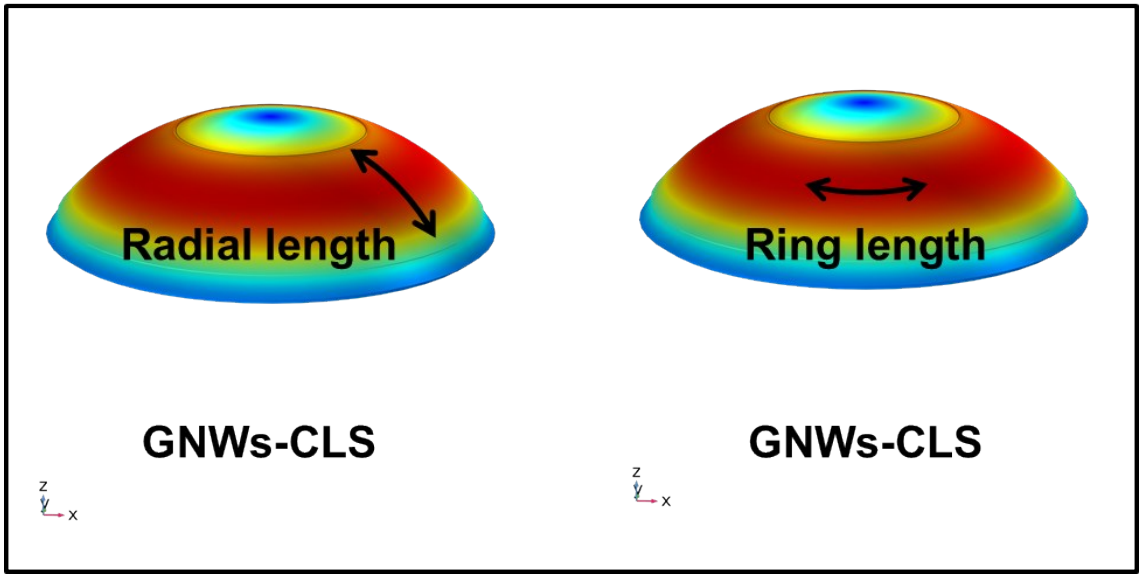

Figure S3. Illustration of the directional length change in simulation.

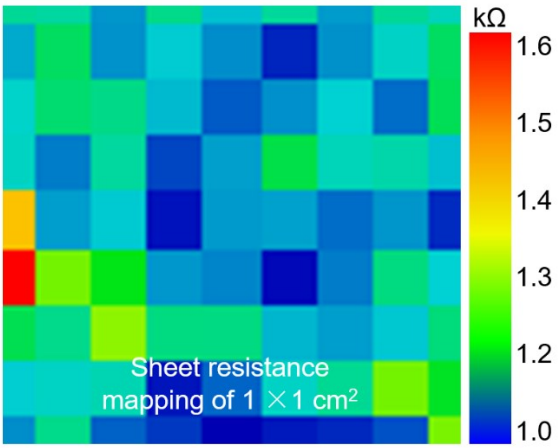

Figure S4. A mapping for sheet resistance of as-growth graphene nanowalls.

The process of preparing graphene nanowalls in detail:

The Si substrate (doping density: ~1×10^{18} cm^{-3}; thickness: ~125 μm) was cut into 2 × 2 cm^2 pieces. The samples were placed in a quartz tube furnace. The quartz tube was evacuated to nearly 10^{-5} mbar and then 10 sccm argon (Ar, purity: 99.9999%) and 1 sccm hydrogen (H_2, purity: 99.9999%) were bled into the system. The quartz was heated to 700 ^oC. After shutting off the Ar and H_2 flow, 5 sccm methane (CH_4) was added to grow the GNWs for 20 min at plasma powers (120 W). Afterward, plasma power was switch off and CH_4 gas was turned off.

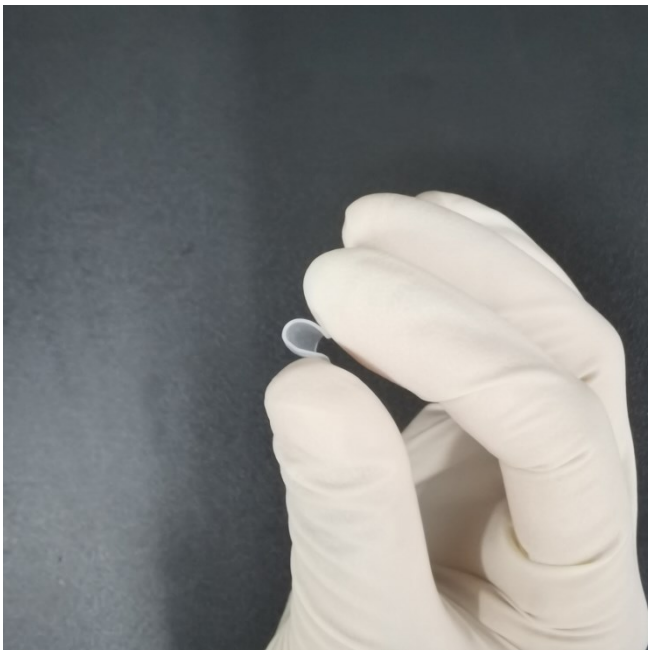

Figure S5. The flexibility demonstration of the as-prepared contact lens.

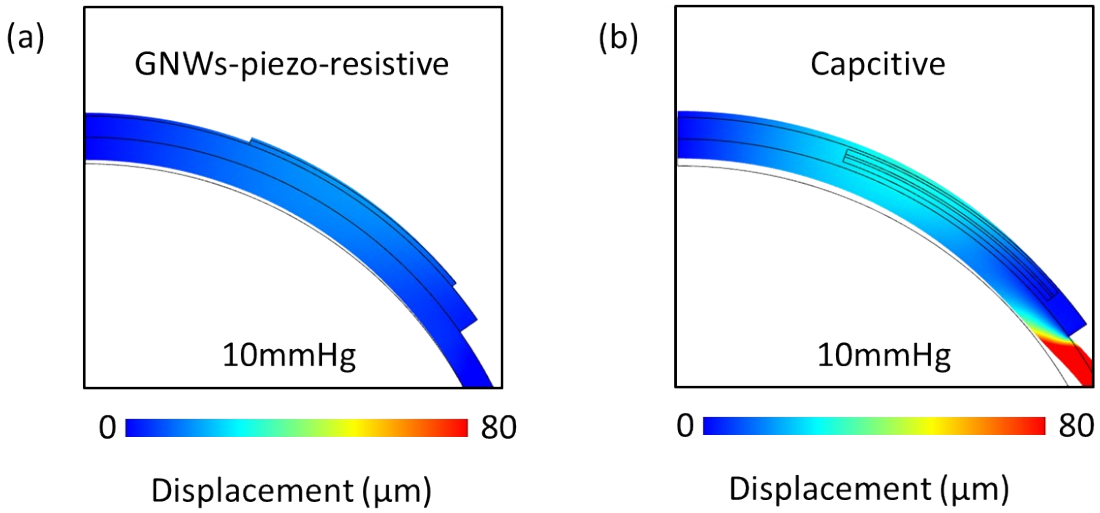

Figure S6. Simulation results of the deformation for (a) the CNWs-piezo-resistive sensor and (b) the capacitive sensor.