

Electronic Supplementary Information

**Hierarchically Engineered Unibody Au mesh for Stretchable  
and Transparent Conductors**

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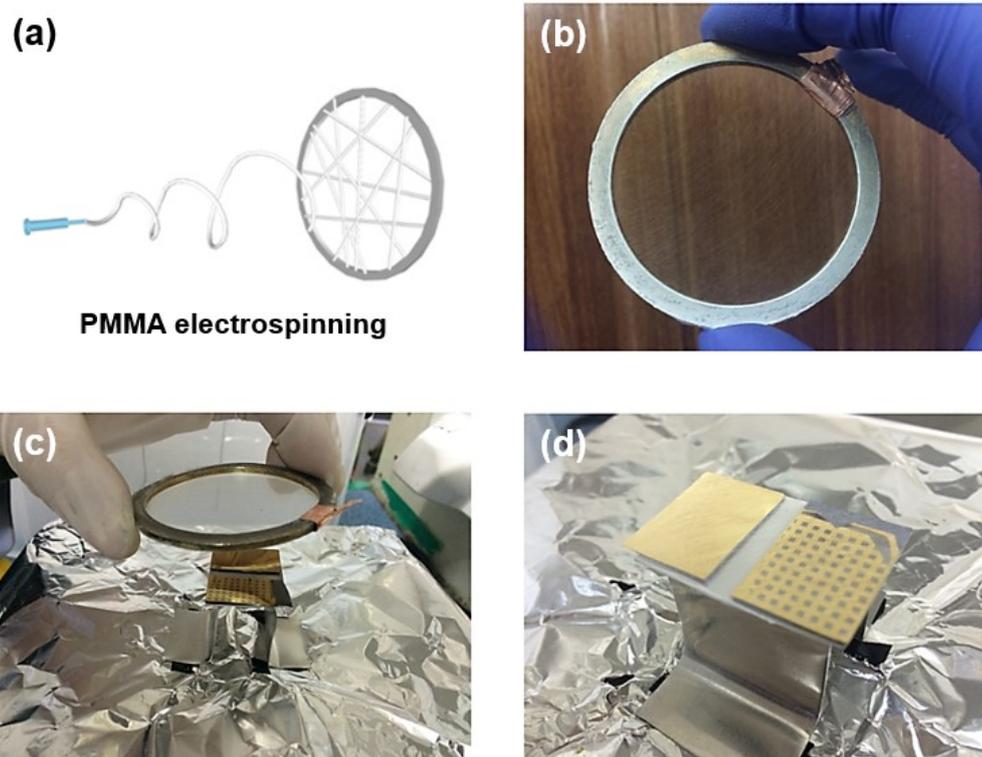
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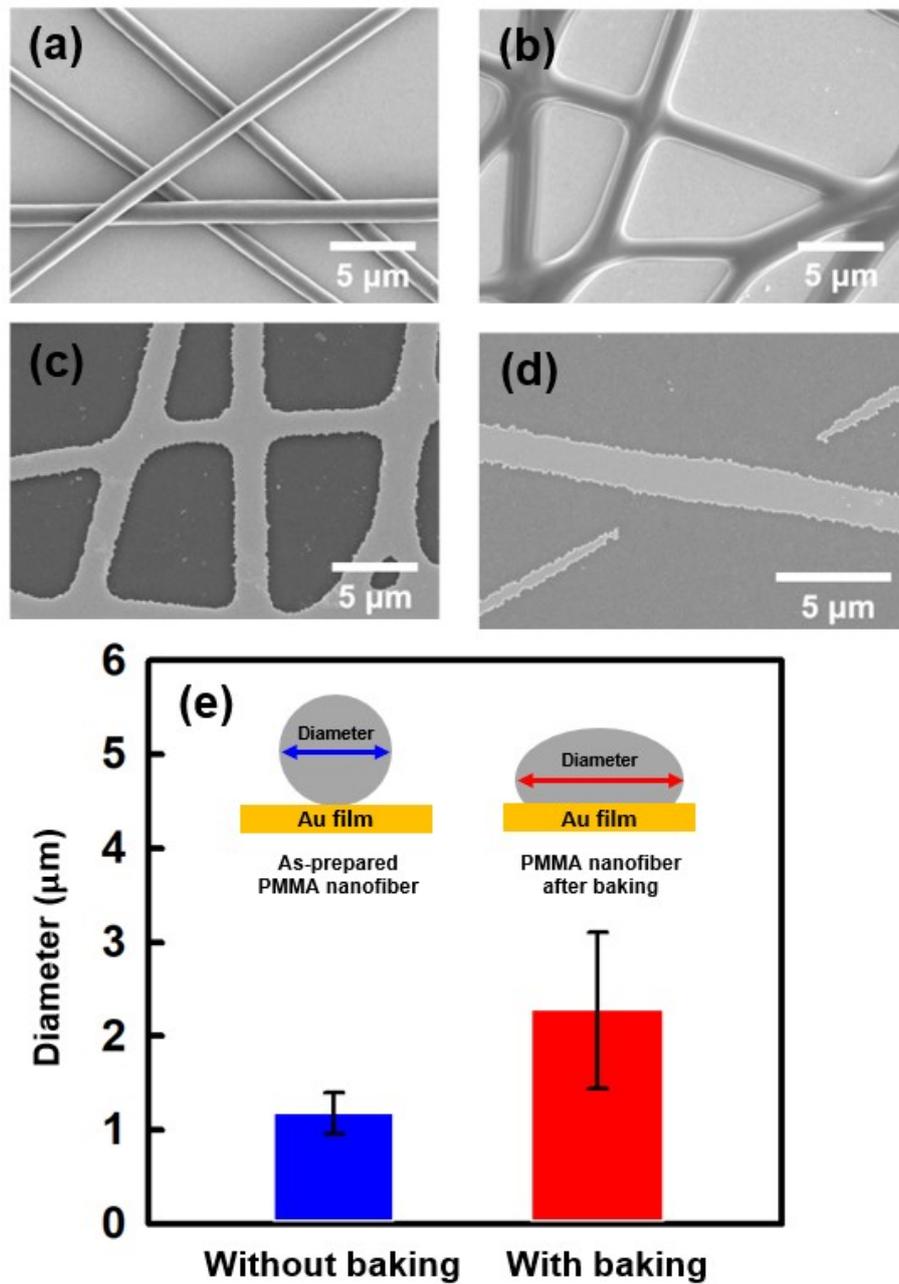
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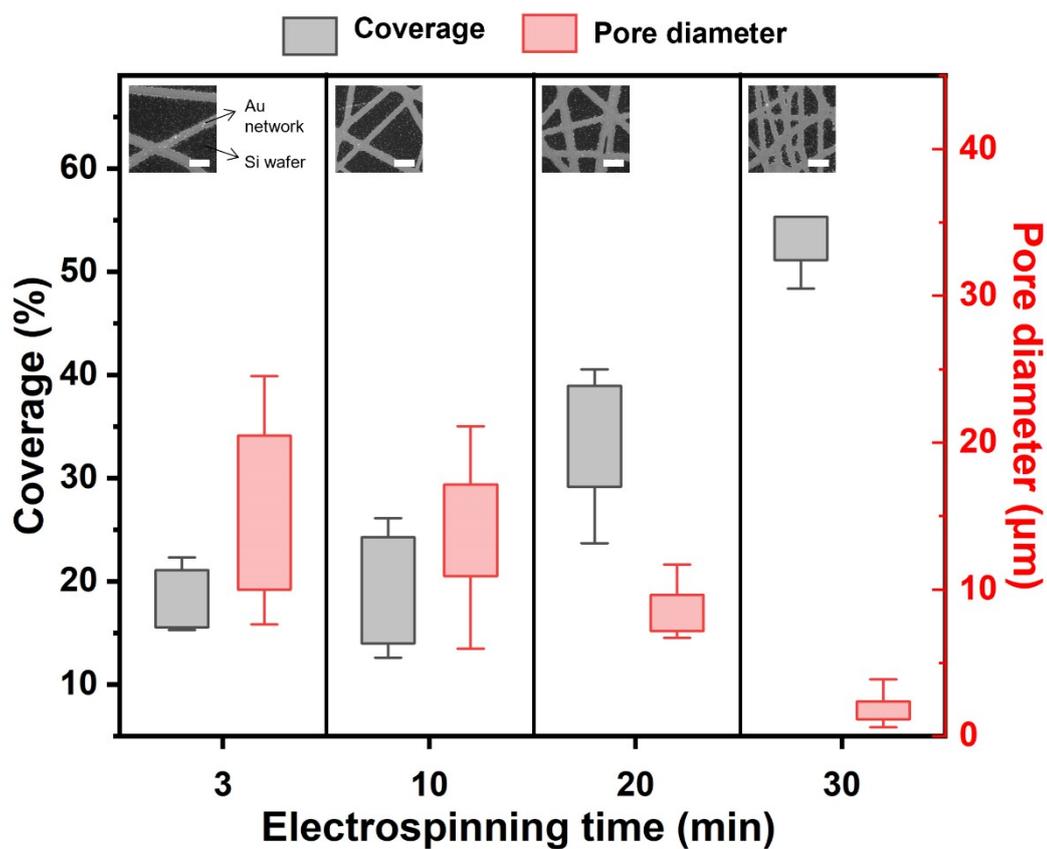
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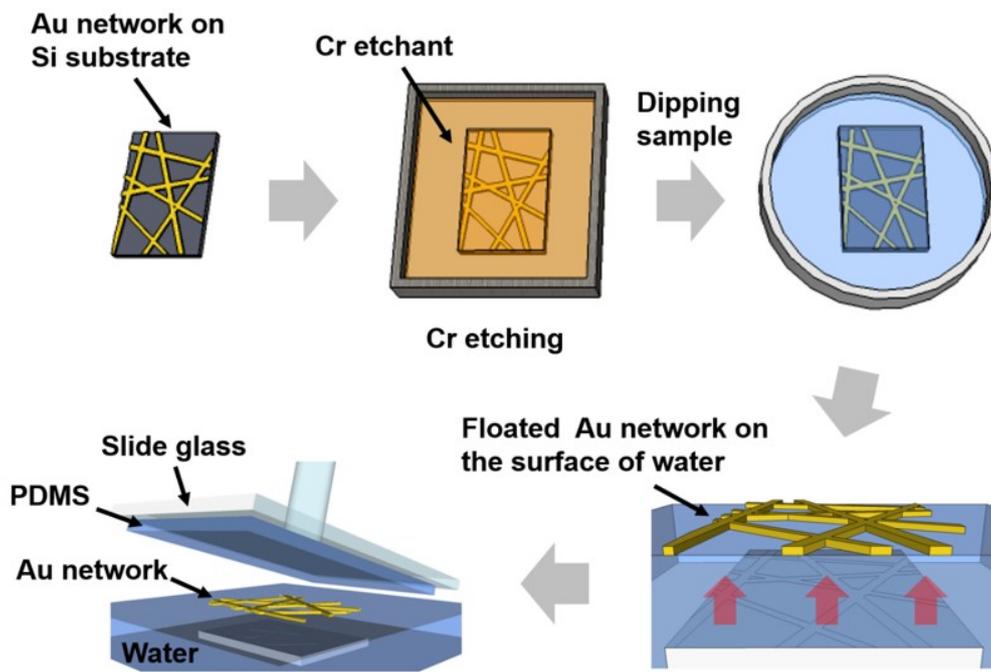
**Figure S1.** Details of transfer process of PMMA nanofibers onto the WWAC patterned Au film.



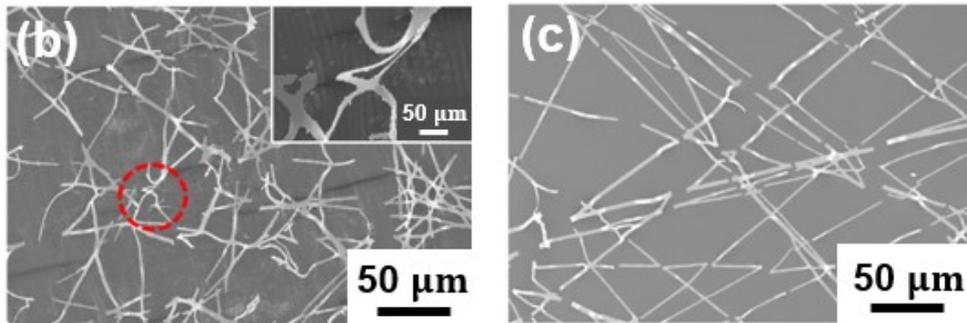
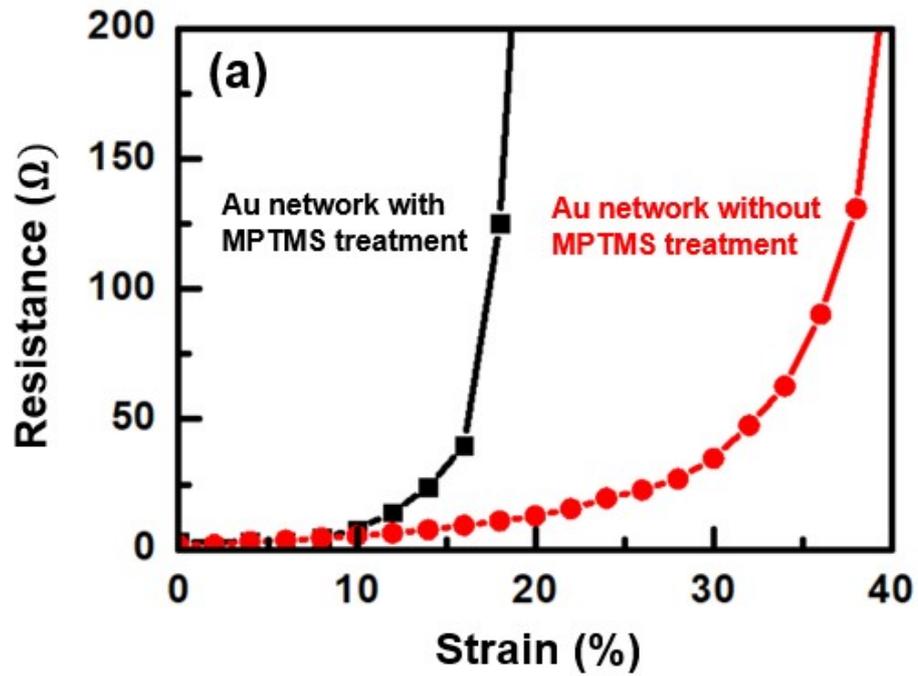
**Figure S2.** Scanning electron microscopy images of (a) as-prepared PMMA nanofibers on Au film; (b) PMMA nanofibers on Au film after baking; (c) Au network on Cr/Si substrate after wet etching of Au film and removal of PMMA nanofibers; (d) Au network on Cr/Si substrate without baking (200 °C, 4 h); and (e) average diameter of banded and unbanded PMMA nanofibers.



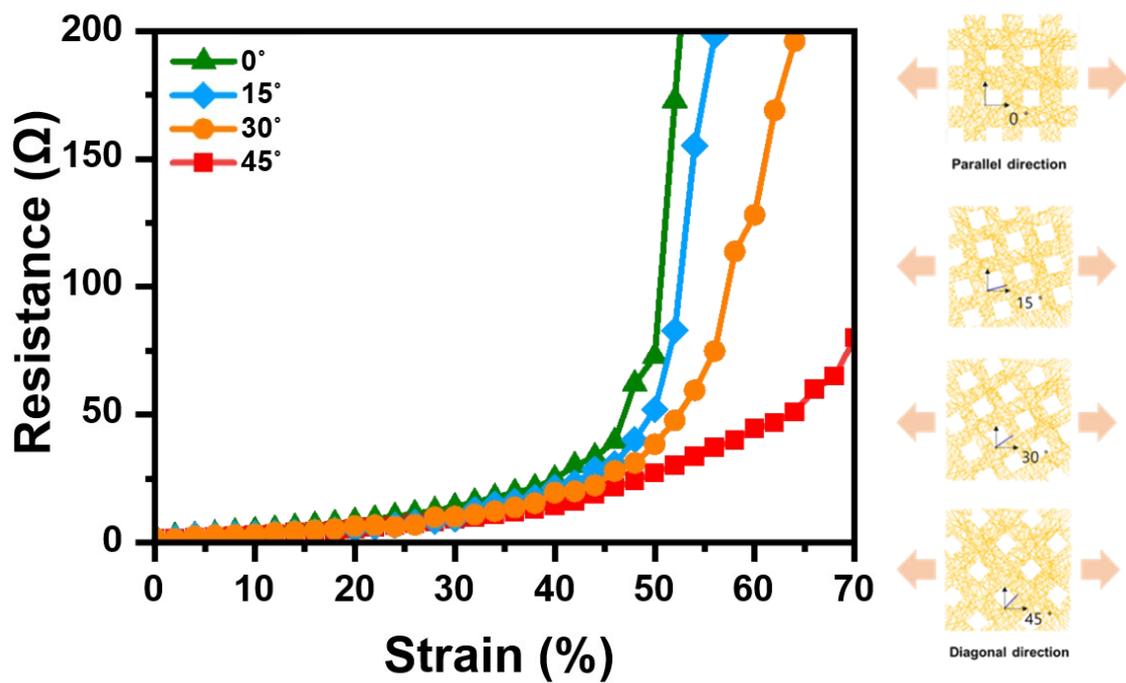
**Figure S3.** Coverage and pore diameter of Au network on Si substrate according to the PMMA electrospinning time. SEM images were obtained from samples after transferring the electrospun nanofiber to the Si wafer and subsequent Au wet etching. The Image J program was used for the analysis of pore size and porosity.



**Figure S4.** Schematic illustration of transfer of Au network onto PDMS substrate.

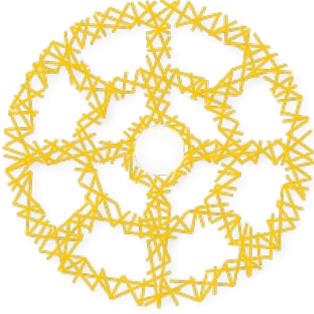


**Figure S5.** (a) Electrical resistance of Au network versus applied tensile strain of up to 40% with and without MPTMS treatment; SEM images of Au network on PDMS substrate (b) without MPTMS treatment and (c) with MPTMS treatment.

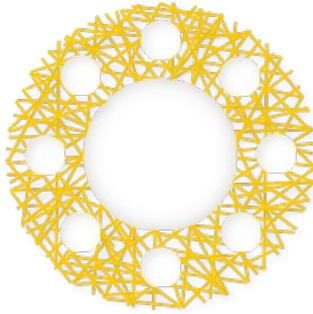


**Figure S6.** Resistance versus applied strain from 0 to 70 % with different angles (0, 15, 30, and 45°) of the Au grid lines.

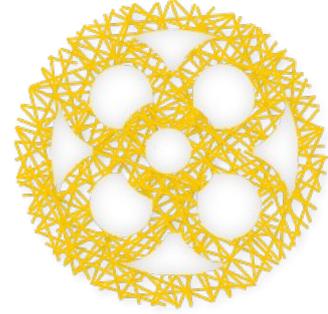
(a)



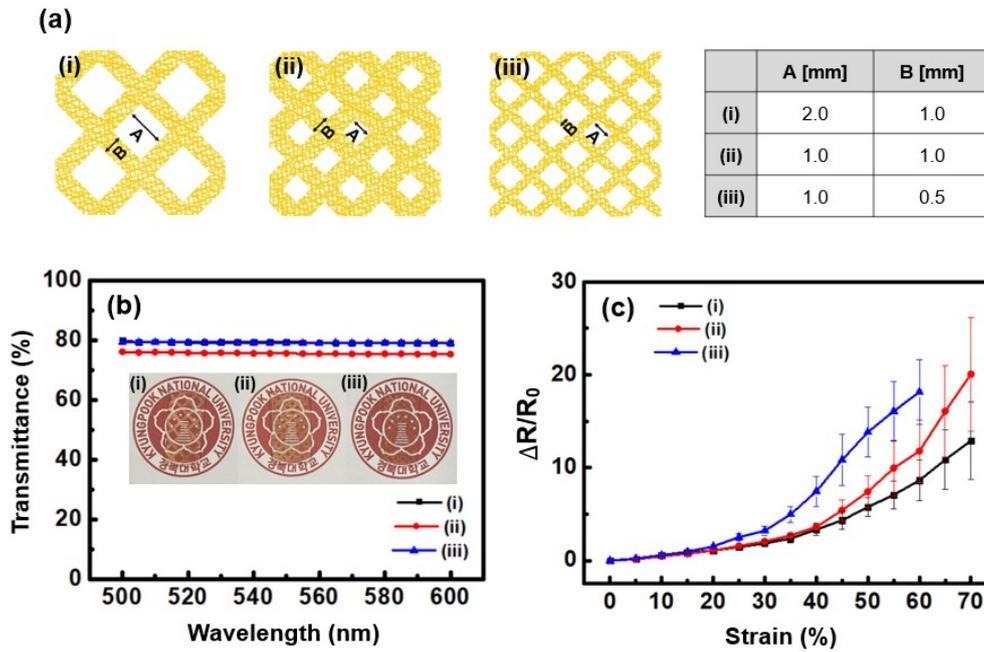
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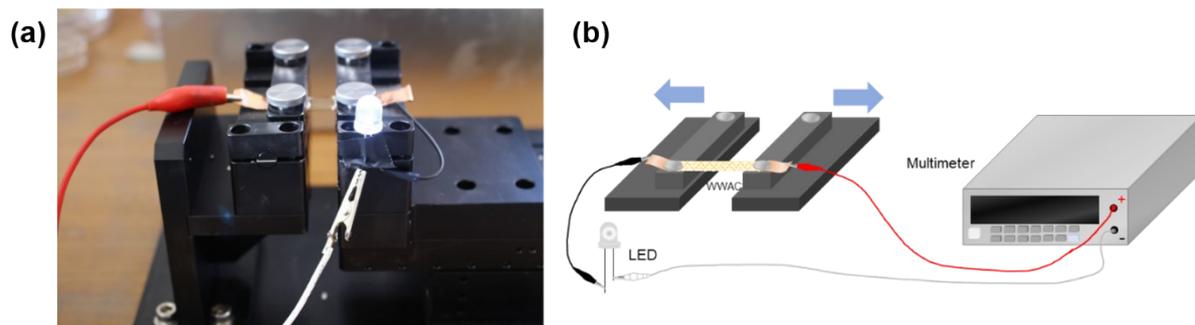
(c)



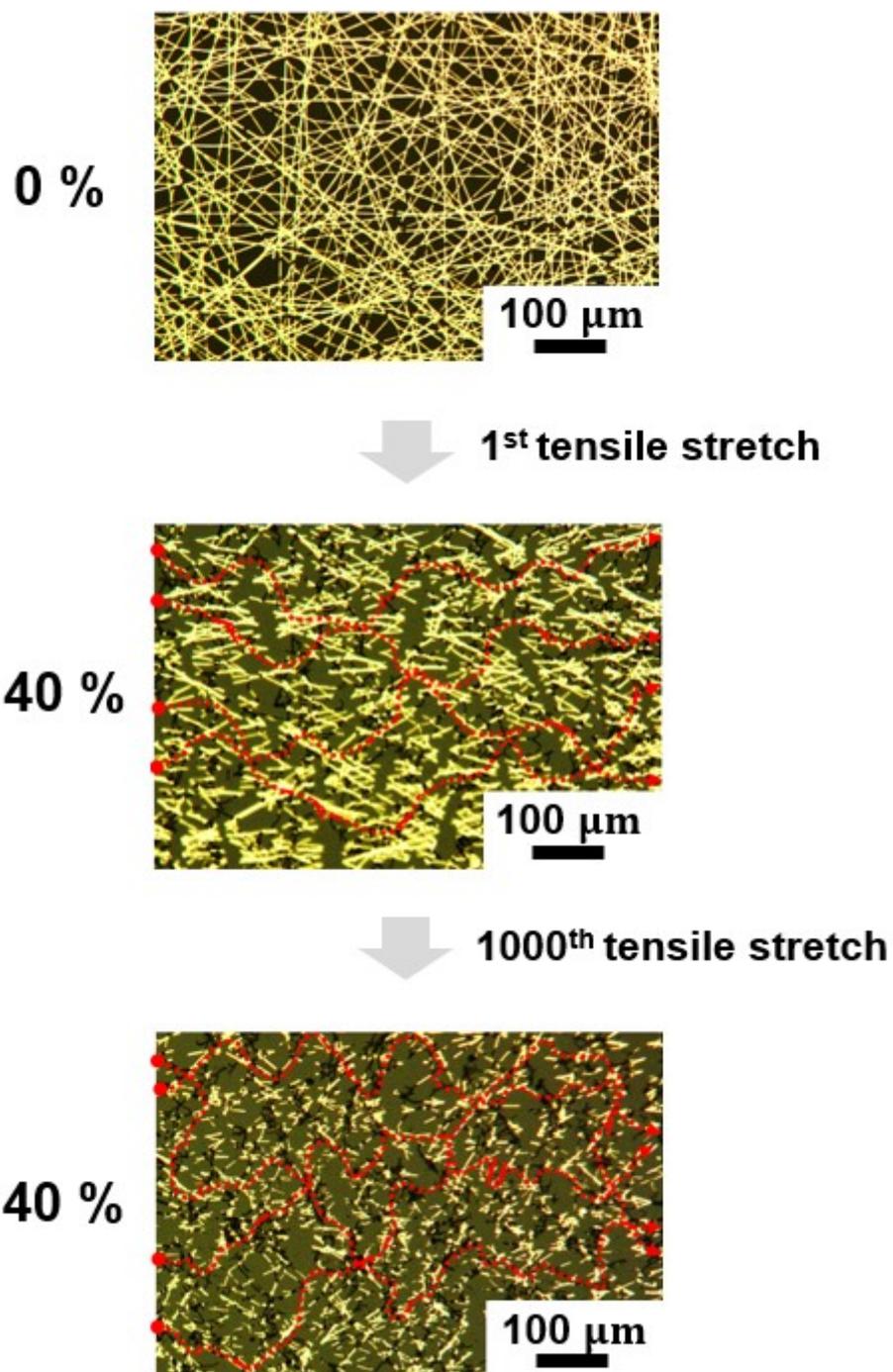
**Figure S7.** Drawings of the web-in-web Au network for potential isotropic transparent conductors.



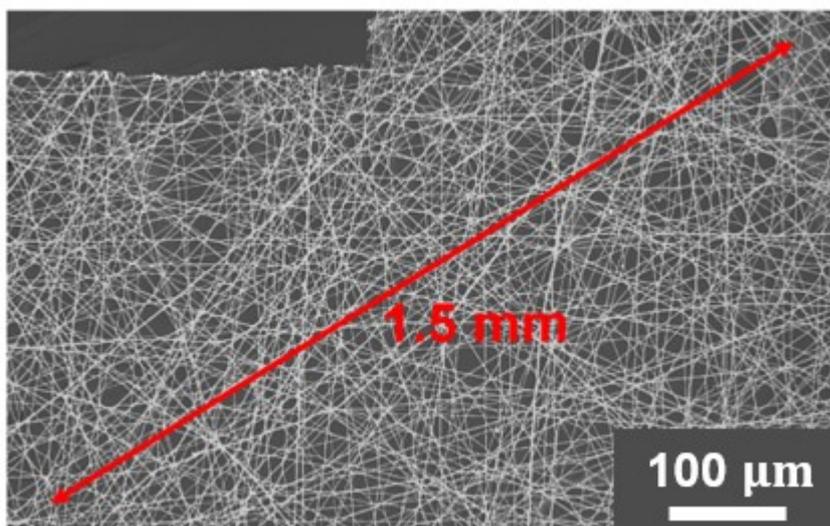
**Figure S8.** WWAC network structure with (i) 2 mm × 1 mm pattern, (ii) 1 mm × 1 mm pattern, and (iii) 1 mm × 0.5 mm pattern: (a) illustrations; (b) transmittance and image (inset); and (c) relative changes in resistance according to magnitude of applied strain (percentage value).



**Figure S9.** (a) Photo and (b) schematic diagram for the LED device.



**Figure S10.** Optical images of Au network before stretching (top), after 40 % stretching in the first cycle (middle), and after 40% stretching in the 1000<sup>th</sup> cycle.



**Figure S11.** SEM image of WWAC networks.