

Supporting Information

Enhancing the intrinsic stretchability of micropatterned gold film by covalent linkage of carbon nanotubes for wearable electronics

*Xiaoli Zhao,[†] Shuo Yang,[†] Zijing Sun, Nan Cui, Pengfei Zhao, Qingxin Tang,**

Yanhong Tong, and Yichun Liu**

Center for Advanced Optoelectronic Functional Materials Research, and Key Lab of UV-Emitting Materials and Technology of Ministry of Education, Northeast Normal University, 5268 Renmin Street, Changchun 130024, China

[†] These authors contributed equally to this work.

* Corresponding author. Tel.: +86-431-85099873; fax: +86-431-85099873.

E-mail address: tangqx@nenu.edu.cn (Q. Tang); tongyh@nenu.edu.cn (Y. Tong);

ycliu@nenu.edu.cn (Y. Liu).

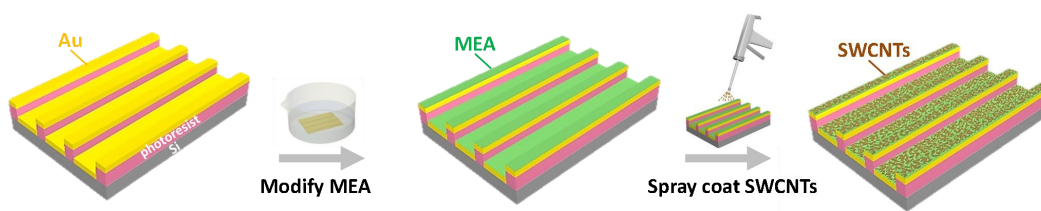


Figure S1. Schematic images of MEA and SWCNTs modification. After depositing Au film, the sample was immersed into MEA water solution (5 mg mL^{-1}) for 15 min at room temperature. Then the SWCNT aqueous dispersion (0.15 mg mL^{-1}) was sprayed coat to form the dense SWCNTs network on the MEA modified Au.

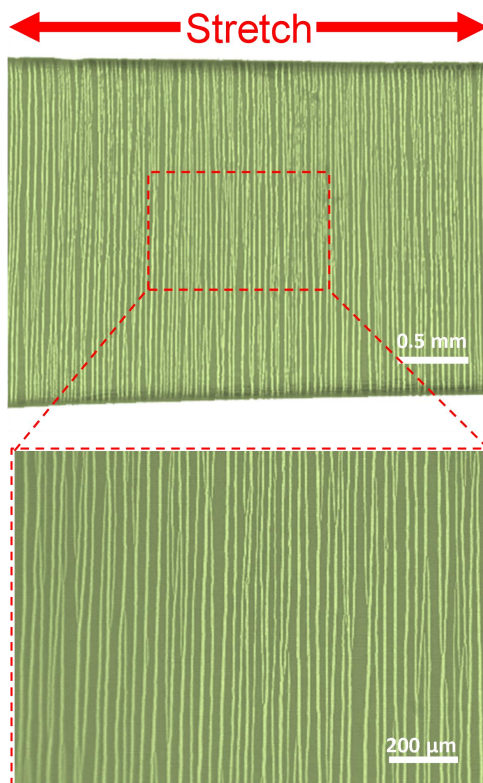


Figure S2. Optical microscopic images of 3 mm-wide Au film at tensile strain of 96%. Cracks have pass through the entire width of the track, leading to the poor electrical conductivity.

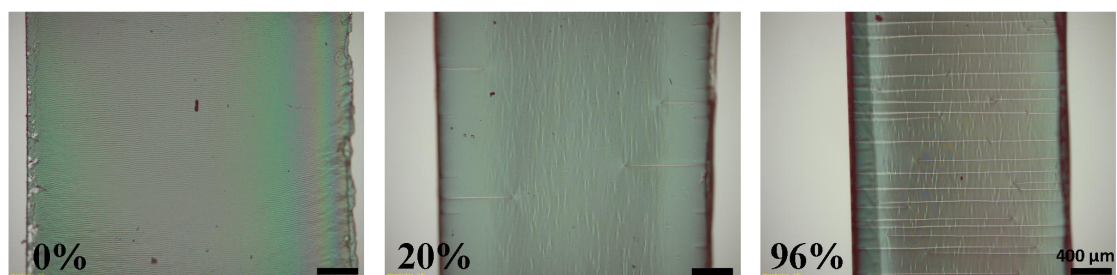


Figure S3. Optical microscopic images of Au film at different tensile strains.

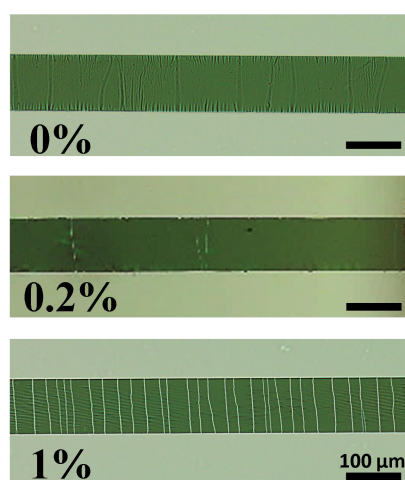


Figure S4. Optical microscopic images of Au pattern electrode at different tensile strains.

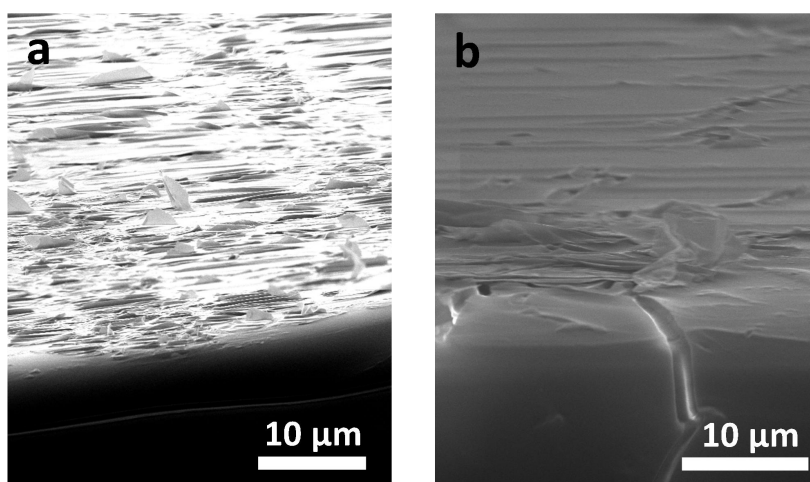


Figure S5. SEM cross-sectional view of Au/SWCNTs hybrid electrodes with and without MEA modification at 150% tensile strain.

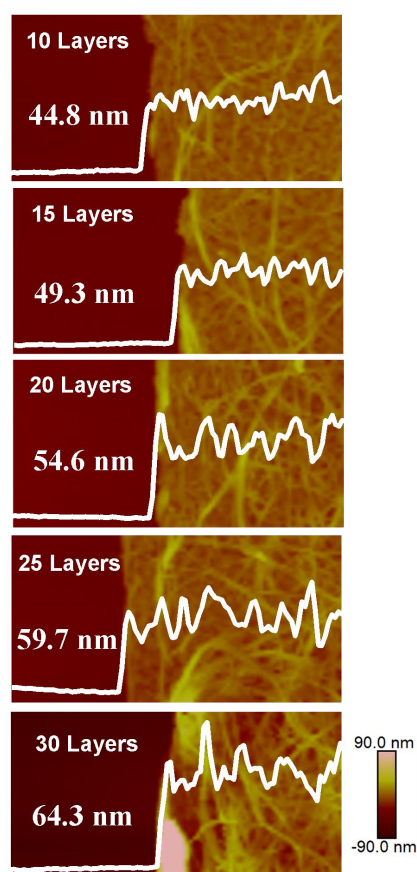


Figure S6. Thickness of carbon nanotube with different sprayed layers.

Table S1. Electrode thickness with different number of sprayed carbon nanotube layers.

Layers	t/nm (Au+SWCNTs)	t/nm (SWCNTs)
10	44.8	19.8
15	49.3	24.3
20	54.6	29.6
25	59.7	34.7
30	64.3	39.3

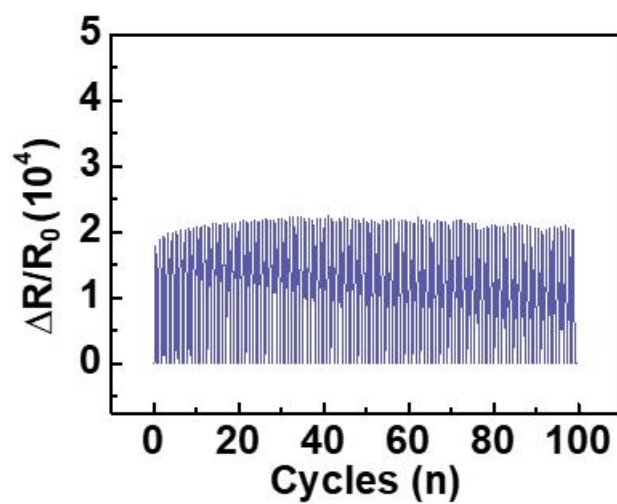


Figure S7. Durability tests of the stretchable micropatterned Au/SWCNTs electrode during 100 cycles at 50% strain with a continuous loading/unloading force.