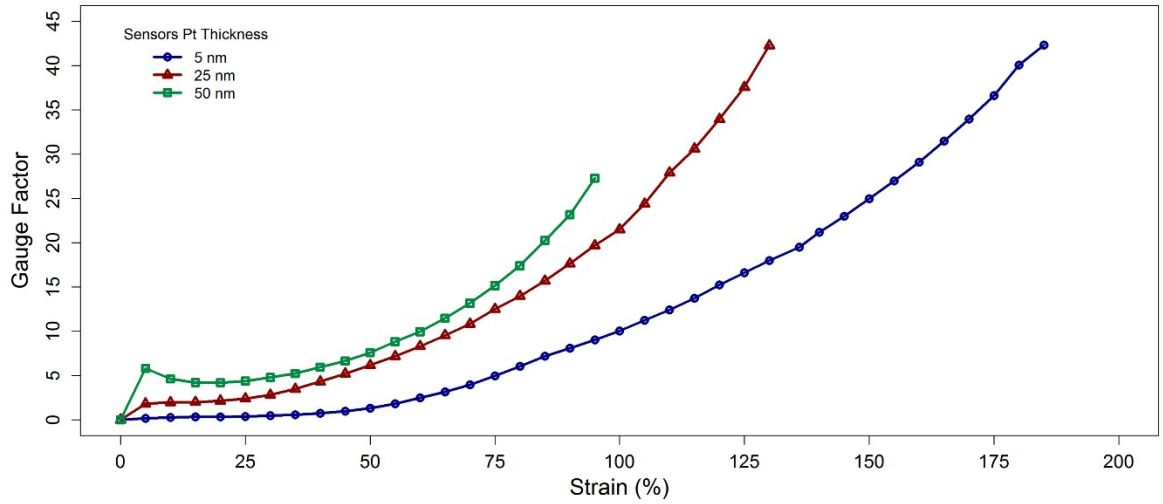
Electronic supplementary information

A.

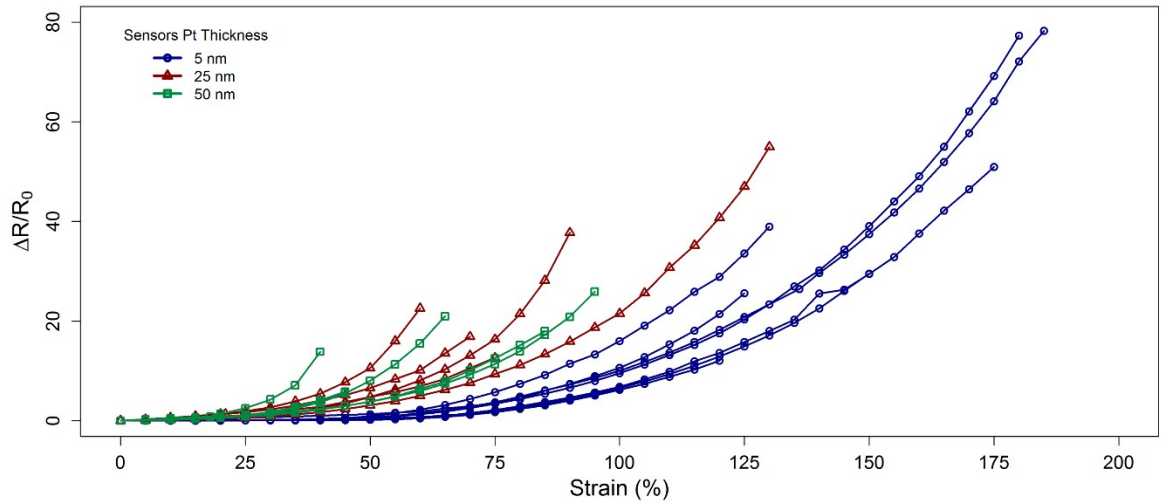
Table S1. Sheet Resistance for Bimetallic layer (V = 100mV)

Pt:Au Thickness (nm)	As deposited (Ω/□)	Wrinkled (Ω/□)	Transferred (Ω/□)
5:5	3068 ± 274	724 ± 97	1243 ± 15
25:5	3954 ± 363	501 ± 30	1070 ± 214
50:5	2711 ± 438	419 ± 91	1031 ± 160

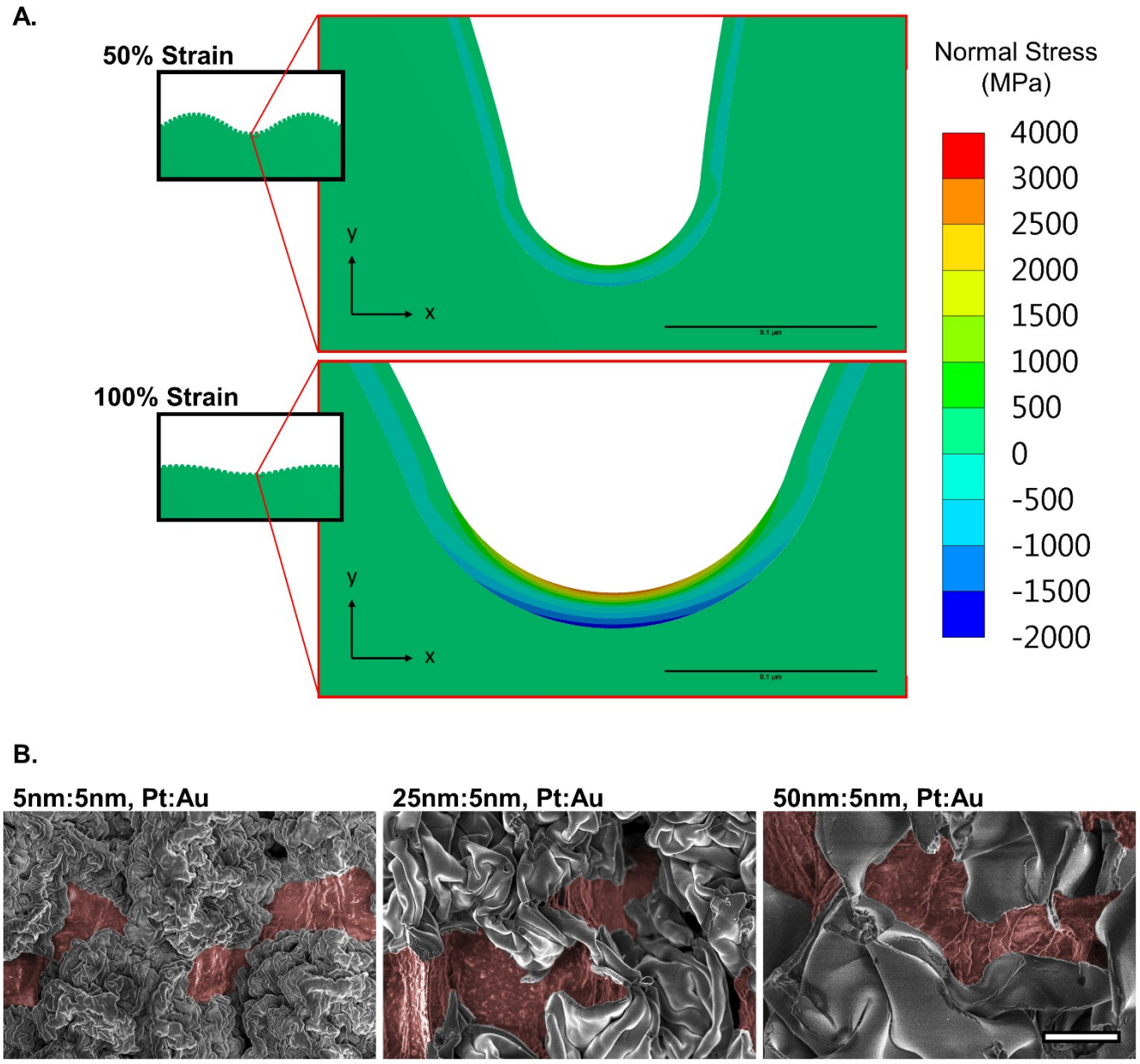
B.



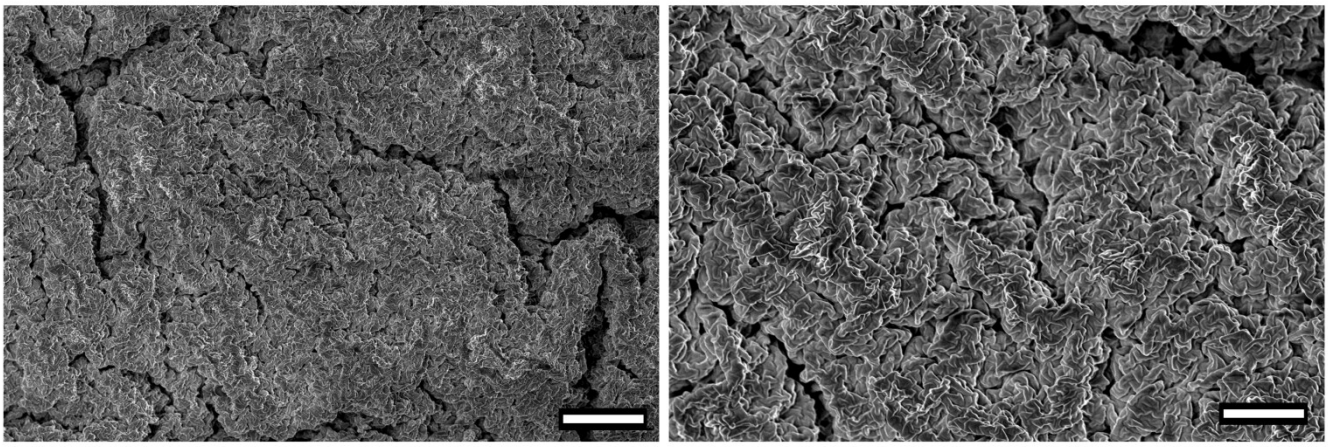
C.



Supplementary figure 1 shows a table of sheet resistance measurements for Pt and Au bimetallic thin films. Of important note, probes contact the Au films directly on as deposited and wrinkled samples whereas probes on transferred samples contact the Pt thin films. (B.) shows the gauge factors versus strain of the samples shown in Figure 2. At equivalent strain the 50 nm wPt sensor shows the highest sensitivity to strain, however, the 5 nm wPt sensor has the highest gauge factor at a maximum strain of 185%. (C.) shows all of the sensors tested in order to establish strain sensitivity according to thin film thickness.



Supplemental figure 2 (A) shows a FEA model showing stress in the wPt and Au bimetalic thin film when fixed on top of an elastomeric substrate at 50% and 100% strain. Strain was applied along the x-axis. The model shows that upon strain, stress is concentrated in the valleys of the serpentine wrinkled structure. (B) shows SEM of wPt thin films at 100% strain. Fractures in the thin film have been made more visible by pseudo-coloring the exposed polymer support layer red. All SEM are at equivalent magnification and the scale bar represents 5 µm.



Supplementary figure 3 shows SEM of the 5 nm thick wPt after 6500 strain cycles demonstrating integrity of the thin film is maintained with no apparent delamination from the EF30 elastomer support film. Scale bar is (left) 10 μm and (right) 5 μm.