Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information for

Wearable Transparent Thermal Sensors and Heaters based on Metal-Plated Fibers and Nanowires

Hong-Seok Jo[a,†], Hyuk-Jin Kwon[a,†], Tae-Gun Kim[a], Chan-Woo Park[a], Seongpil An[a,b], Alexander L. Yarin[a,b,*], Sam S. Yoon[a,*]

[a]School of Mechanical Engineering, Korea University, Seoul 02841, Republic of Korea

[b]Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, IL 60607, USA

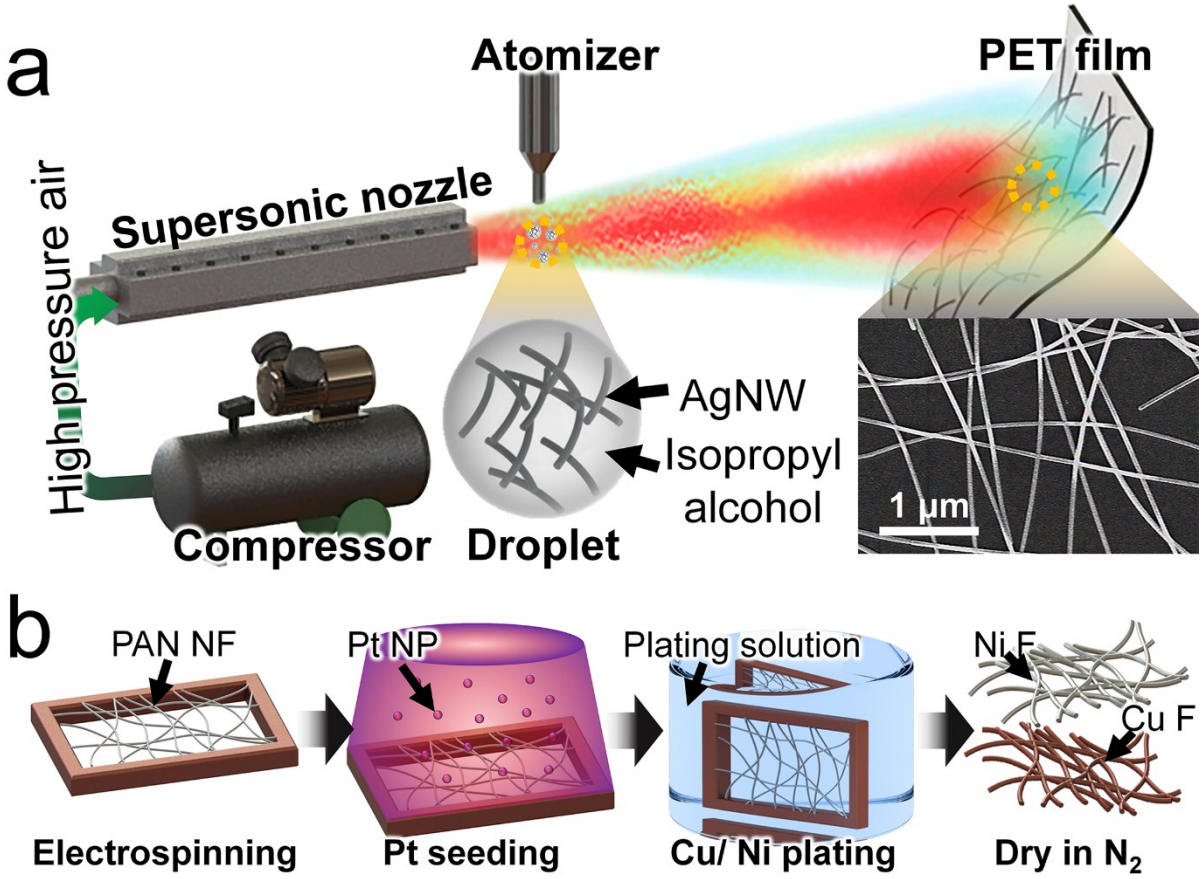
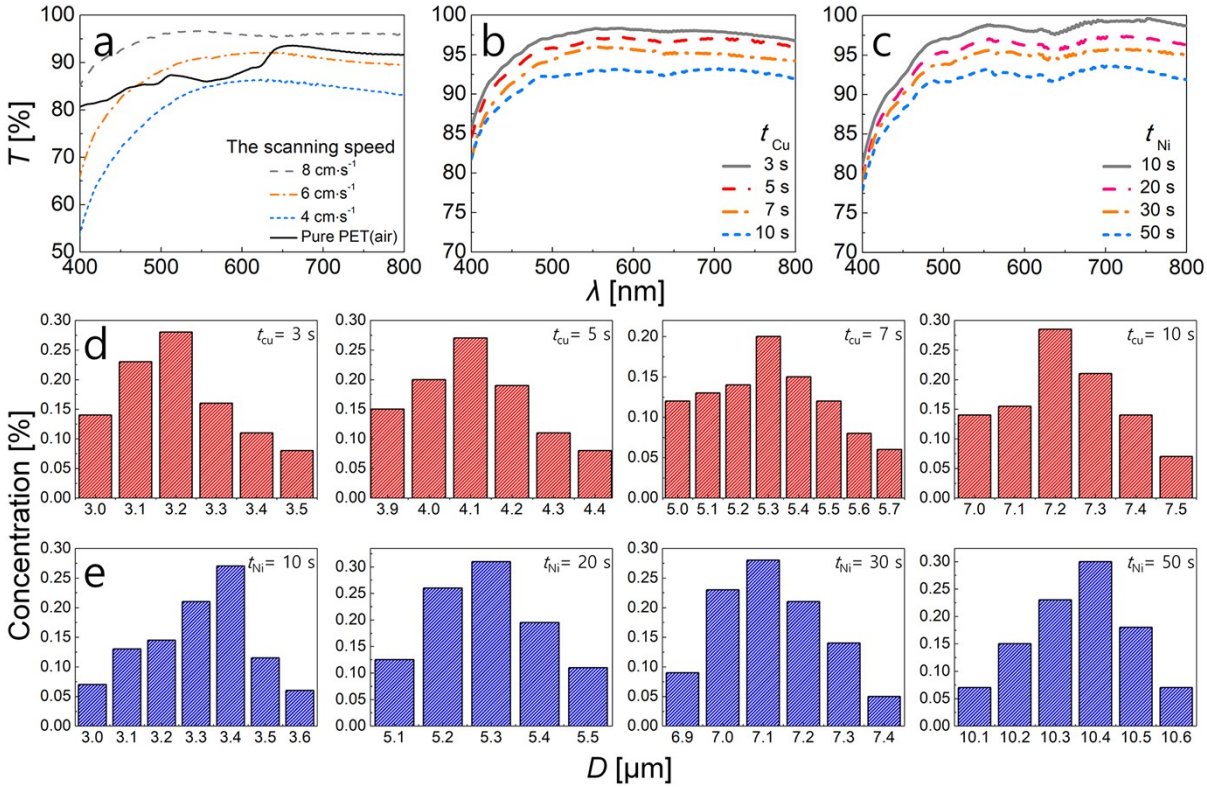


Fig. S1 Schematic of the fabrication of the AgNW, Cu, and Ni TCF using (a) cold-sprayed AgNW films and (b) electroplated Cu/Ni films.



(R1-9, 1-10) Fig. S2 Transmittance *T* of (a) the AgNW TCF at a scanning speed of 4, 6 and 8 cm·s-1, (b) Cu TCF formed at t_{Cu} = 3, 5, 7 and 10 s and (c) Ni TCF formed at t_{Ni} = 10, 20, 30 and 50 s. The distribution of (d) the Cu fibers diameter at at t_{Cu} = 3, 5, 7 and 10 s and (e) the Ni fiber diameter at t_{Ni} = 10, 20, 30 and 50 s.

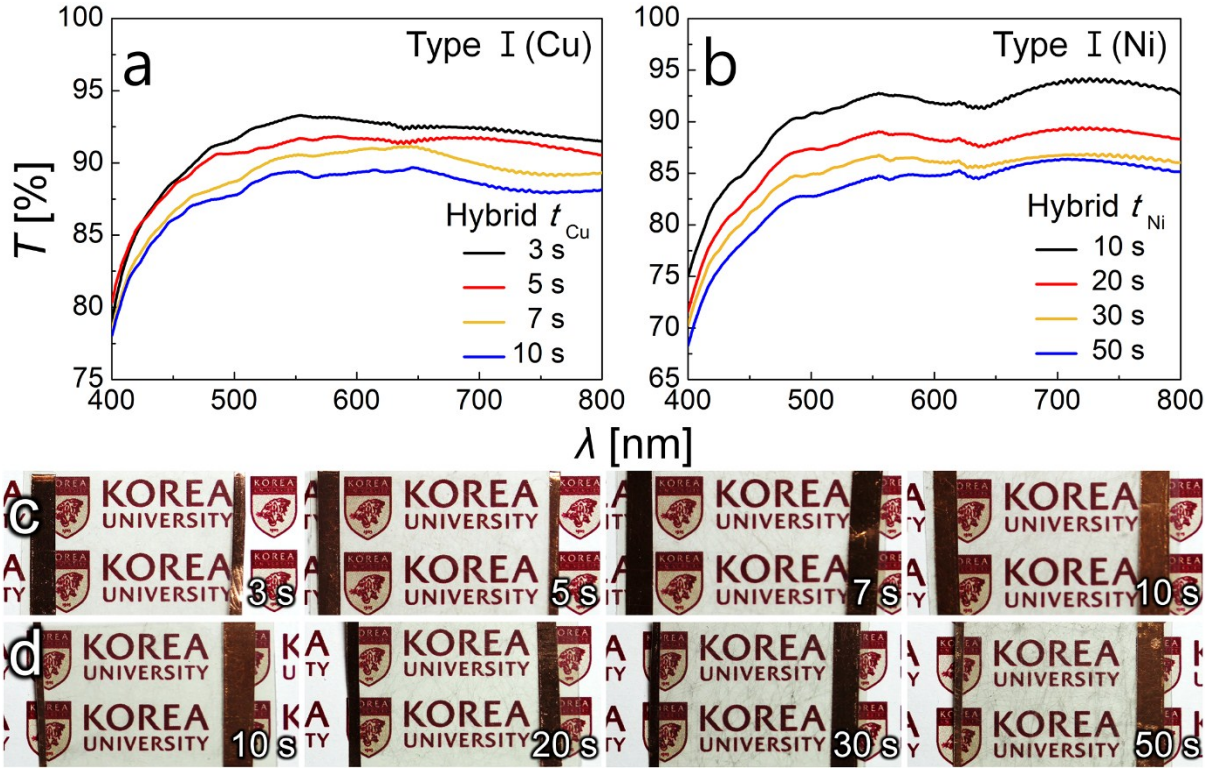
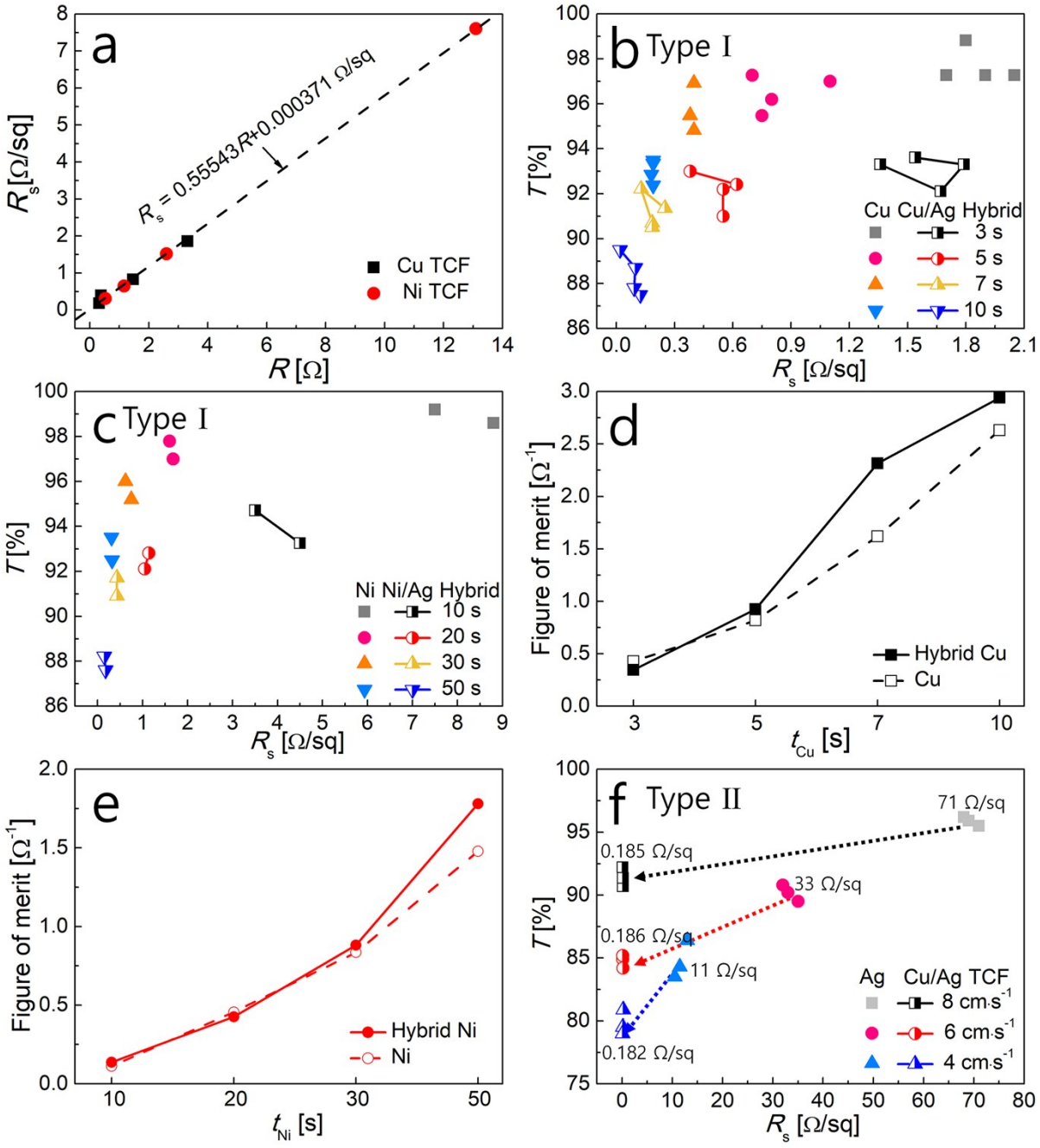


Fig. S3 *T* of the hybrid TCF of (a) Cu fiber at t_{Cu} = 3, 5, 7 and 10 s and (b) Ni fiber at t_{Ni} = 10, 20, 30 and 50 s. Photos of the hybrid TCF with (c) AgNW/Cu at t_{Cu} and (d) AgNW/ Ni at t_{Ni}.



(R1-12) Fig. S4 (a) The relationship of the experimental R_s and R of the Cu/Ni TCF. Transmittance (T) versus the theoretical R_s of the hybrid film with (b) Cu Fs and (c) Ni Fs. Figure of merits of (d) the Cu TCF and the hybrid TCF with AgNW/Cu and (e) the Ni TCF and hybrid TCF with AgNW/Ni. T and R_s of the hybrid TCF in terms of (f) the AgNW TCF.

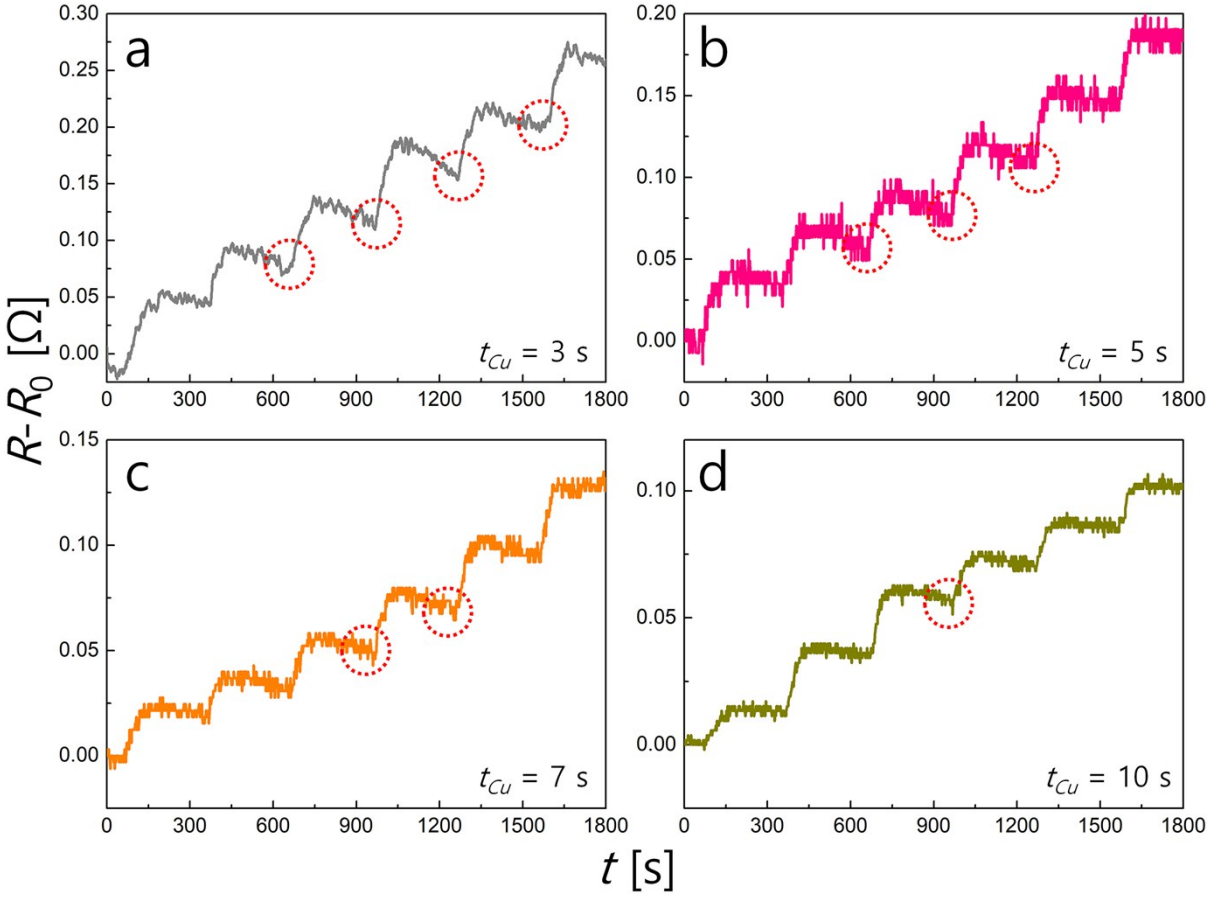


Fig. S5 Electric characterizations of the sensor in response to temperature by the Cu TCF at t_{Cu} = (a) 3, (b) 5, (c) 7 and (d) 10 s.