Supporting Information

Self-catalyzed copper-silver complex inks for low-cost fabrication of highly oxidation-resistant and conductive copper-silver hybrid tracks at a low temperature below 100 °C

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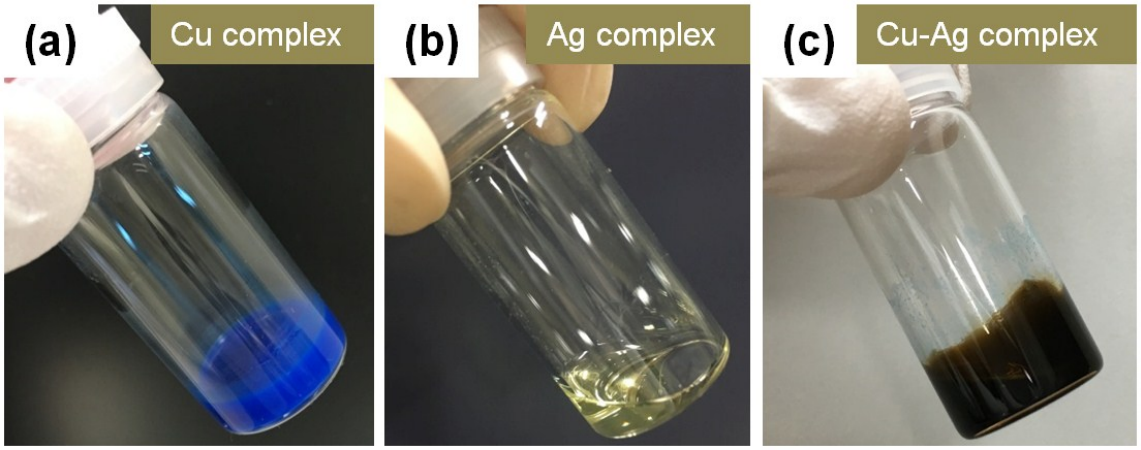
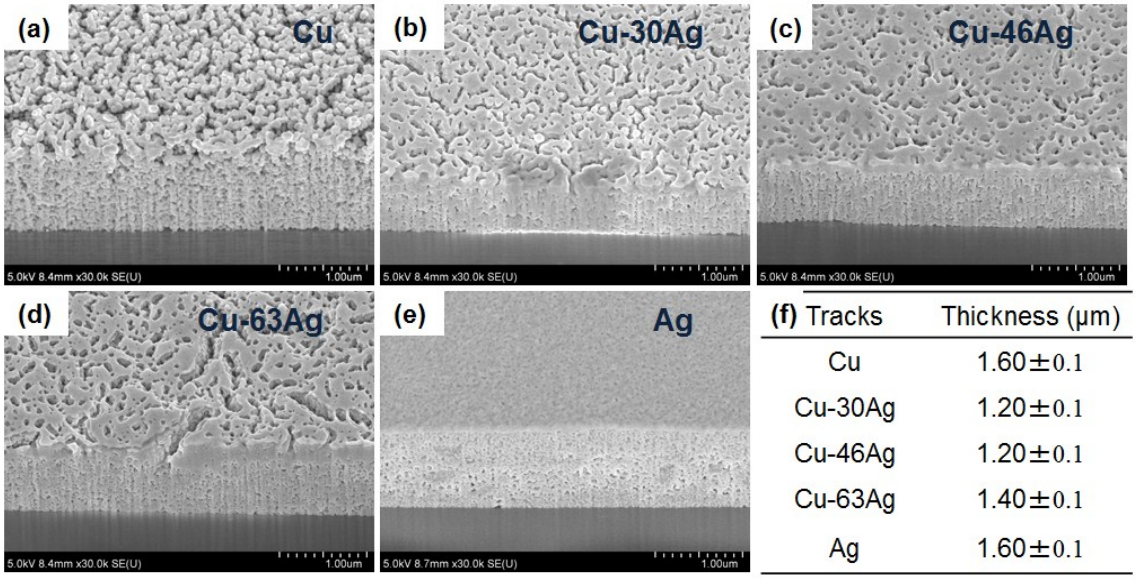


Fig. S1 Photos of (a) Cu complex, (b) Ag complex, and (c) Cu-46Ag complex.



(f) Tracks	Thickness (μm)
Cu	1.60±0.1
Cu-30Ag	1.20±0.1
Cu-46Ag	1.20±0.1
Cu-63Ag	1.40±0.1
Ag	1.60±0.1

Fig. S2 Thickness measurement of printed tracks based on SEM images. Cross-section images of printed tracks prepared from (a) Cu complex ink, (b) Cu-30Ag complex ink, (c) Cu-46Ag complex, (d) Cu-63Ag complex ink and (e) Ag complex ink; (f) thickness values of printed tracks. The SEM images were taken on an angle of 30°.

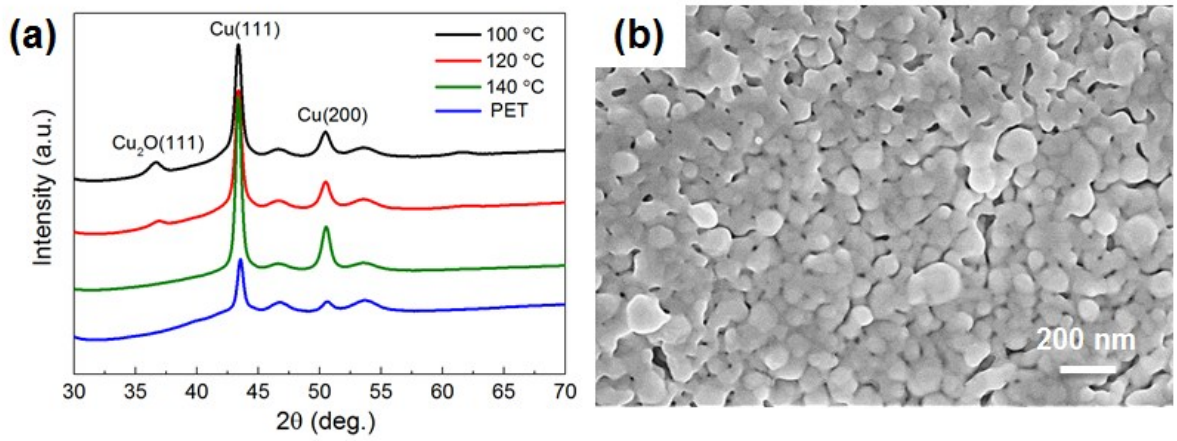


Fig. S3 (a) XRD patterns of Cu track annealed at different temperatures for 30 min and (b) microstructure of Cu track annealed at 140 °C for 30 min.

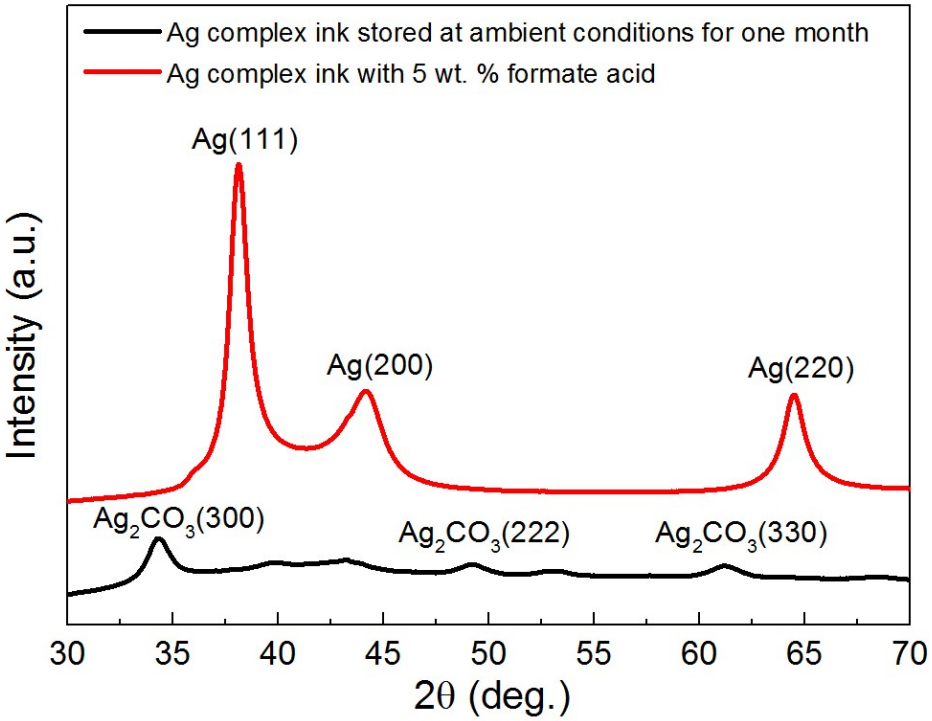


Fig. S4 XRD patterns of Ag complex ink after storage in ambient conditions for one month and Ag complex ink with addition of 5 wt. % formate acid.

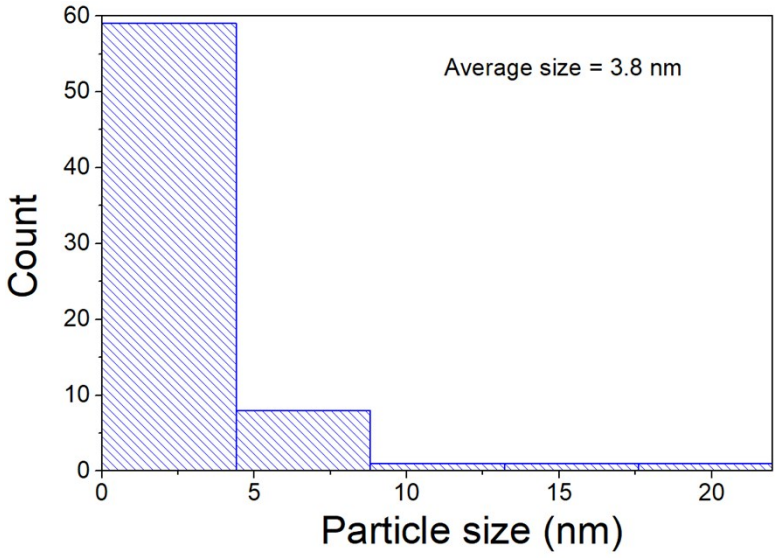


Fig. S5 The distribution of particle size of in-situ formed Ag nanoparticles.

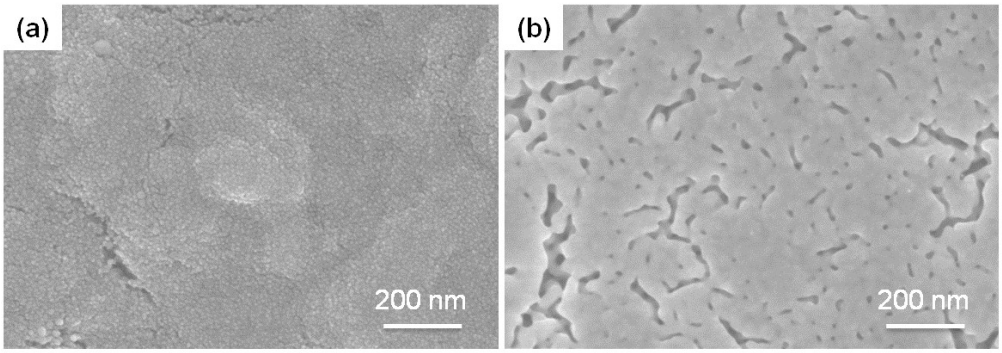


Fig. S6 Microstructures of (a) original Cu-63Ag-100 track and (b) Cu-63Ag-100 track after aging at 80 for 2 h.

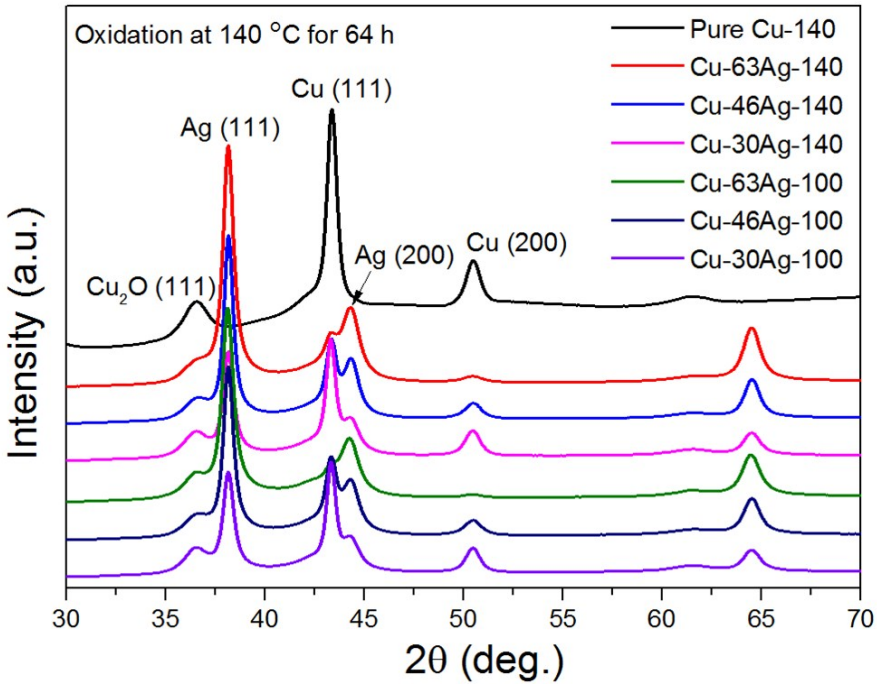


Fig. S7 XRD patterns of printed tracks after oxidation at 140 °C for 64 h.

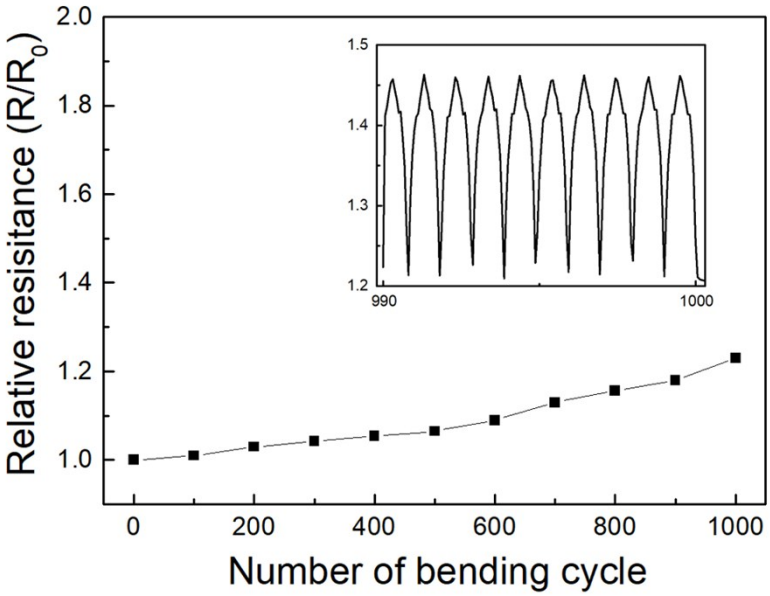


Fig. S8 Change of relative resistance of the Cu-46Ag track during bending test. The bending radius is 7 mm. Inset graph shows the real-time relative resistance during the last ten cycles of bending and releasing process.