Supporting Information

Low temperature nanoredox two-step sintering of gelatin nanoskin-stabilized submicrometer-sized copper fine particles for preparing highly conductive layers

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**Figure S1.** Schematic of the six measured points of Al$_2$O$_3$ substrate for resistivity measurements. Resistivity Correction Factors were 2.244 for the measured points of (1), (3), (4), and (6) and 3.168 for the measured points of (2) and (5).
Figure S2. The XRD pattern of the as-synthesized copper particles.

Figure S3. TG charts of the paste vehicle including ethyl cellulose under air flow (bold line) and \( \text{N}_2 \) flow (dashed line). The heating ratios were fixed to \( 0.5 \, ^\circ\text{C} \, \text{min}^{-1} \). The liquid component of the paste vehicle evaporated at around 120 \(^\circ\text{C}\). The decomposition of ethyl cellulose started at 210 \(^\circ\text{C}\) for air flow.
Figure S4. XRD pattern of the Al₂O₃ substrate plate (Furuuchi) used for sintering. Some extra small peaks can be found in the pattern of Al₂O₃ substrate plate (Furuuchi) comparing with the pattern of Al₂O₃ of JCPDS card.
Figure S5. TG (solid) and temperature (dotted) charts of the commercially available Cu$_2$O particles under 3% H$_2$ in N$_2$ gas mixture. The heating ratios were fixed to 10 °C min$^{-1}$ (~ 150 °C) and 5 °C min$^{-1}$ (150 to 200 °C). The weight loss of Cu$_2$O particles was within 3 wt.% during calcination kept at 200 °C. Thus Cu$_2$O particles couldn’t be reduced in this calcination condition.

Figure S6. SEM image of the commercially available Cu$_2$O particles. The average particle size was 2 μm.