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# 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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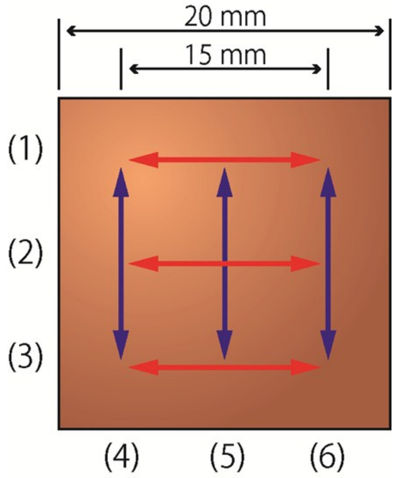


**Figure S1.** Schematic of the six measured points of $Al_2O_3$ substrate for resistivity measurements. Resistivity Correction Factors were 2.244 for the measured points of (1), (3), (4), and (6) and 3.168 for the measured points of (2) and (5).

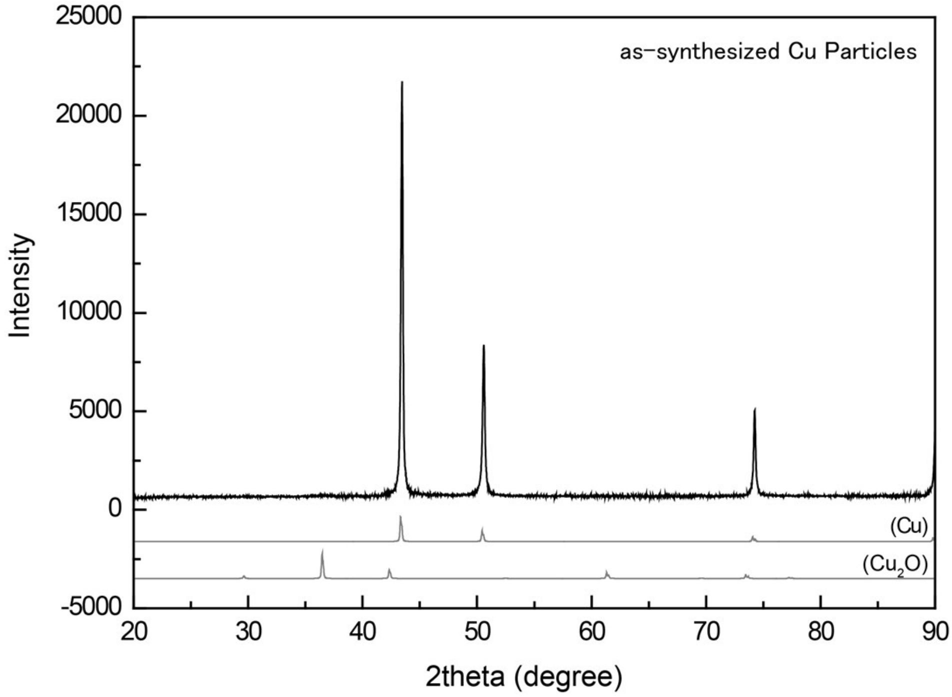


**Figure S2**. The XRD pattern of the as-synthesized copper particles.

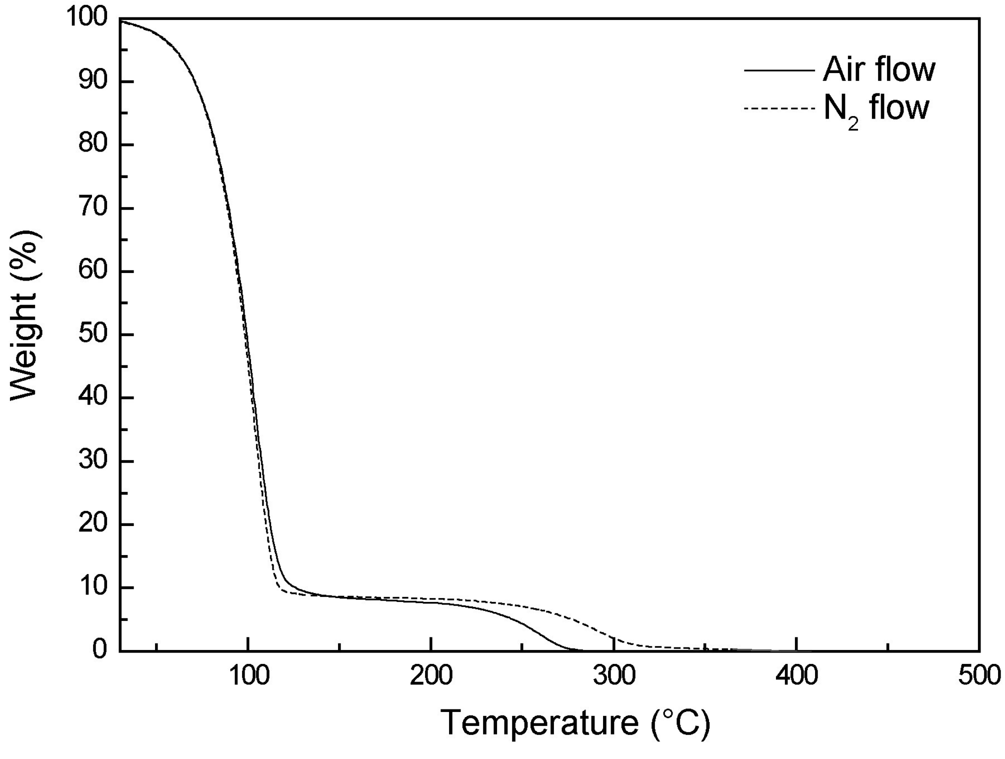


**Figure S3**. TG charts of the paste vehicle including ethyl cellulose under air flow (bold line) and $N_2$ flow (dashed line). The heating ratios were fixed to 0.5 °C $min^{-1}$. The liquid component of the paste vehicle evaporated at around 120 °C. The decomposition of ethyl cellulose started at 210 °C for air flow.

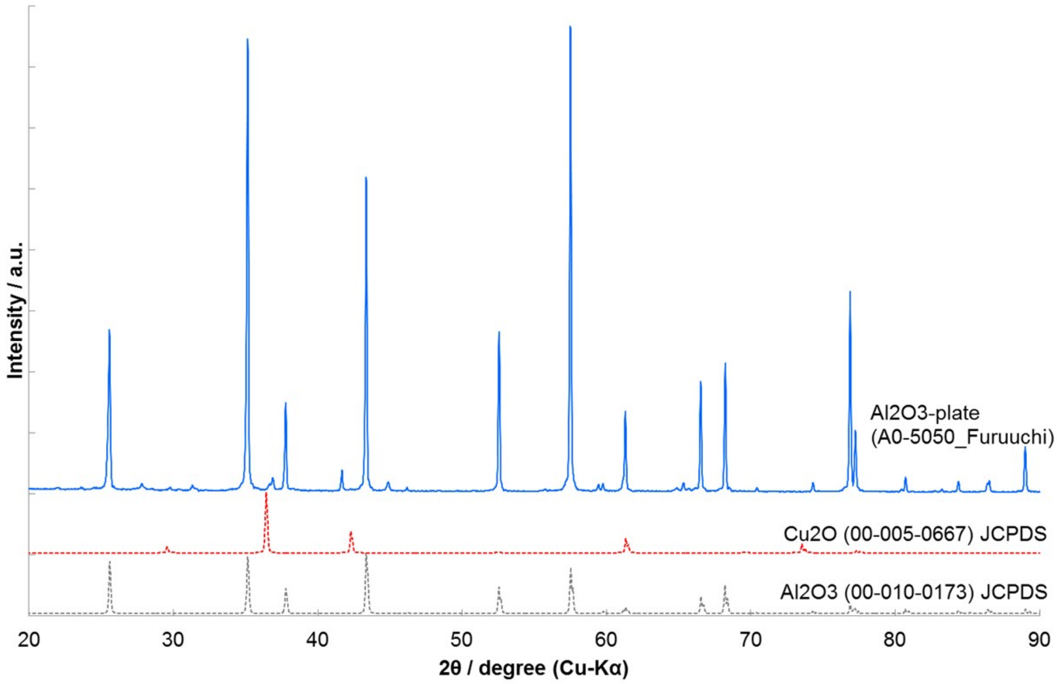


**Figure S4.** XRD pattern of the $Al_2O_3$ substrate plate (Furuuchi) used for sintering. Some extra small peaks can be found in the pattern of $Al_2O_3$ substrate plate (Furuuchi) comparing with the pattern of $Al_2O_3$ of JCPDS card.

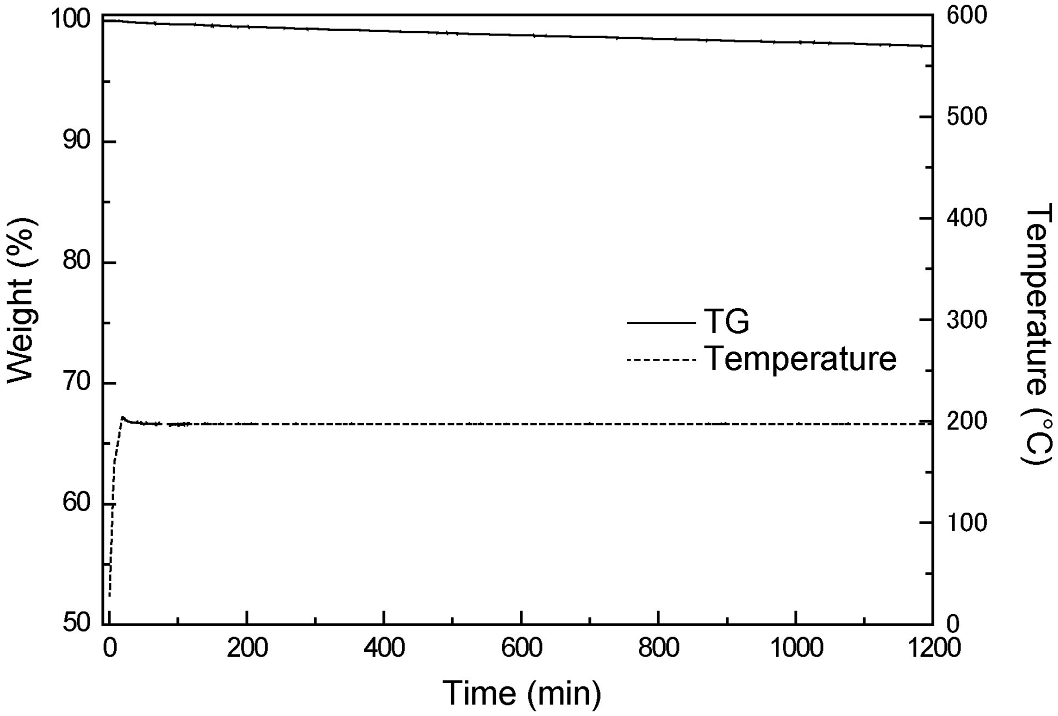


**Figure S5**. TG (solid) and temperature (dotted) charts of the commercially available $Cu_2O$ particles under 3% $H_2$ in $N_2$ gas mixture. The heating ratios were fixed to 10 °C $min^{-1}$ (~ 150 °C) and 5 °C $min^{-1}$ (150 to 200 °C). The weight loss of $Cu_2O$ particles was within 3 wt.% during calcination kept at 200 °C. Thus $Cu_2O$ particles couldn't be reduced in this calcination condition.

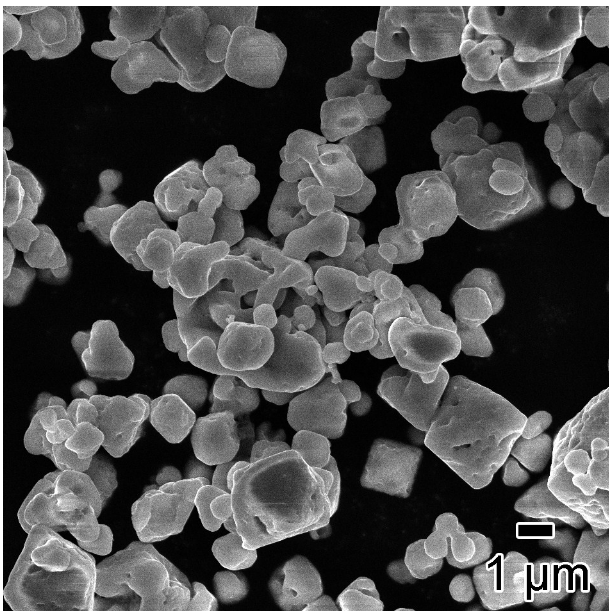


**Figure S6.** SEM image of the commercially available $Cu_2O$ particles. The average particle size was 2 μm.