Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Use of decomposable polymer-coated submicron Cu particles with effective additive for production of highly conductive Cu films at low sintering temperature

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Preparation and sintering of PPC-Cu inks

Synthesized PPC-Cu particles (0.3 g, 4.7 mmol) were mixed with α-terpineol (0.3 g, 1.9 mmol, 95%, Kanto, Japan) using conditioning mixer for 18 min and printed on the Al_2O_3 substrates. Then the printed inks were sintered under N_2 for 1 h at 100 °C and 150 °C.

Figure S1. Image of CuF-IPA complex.

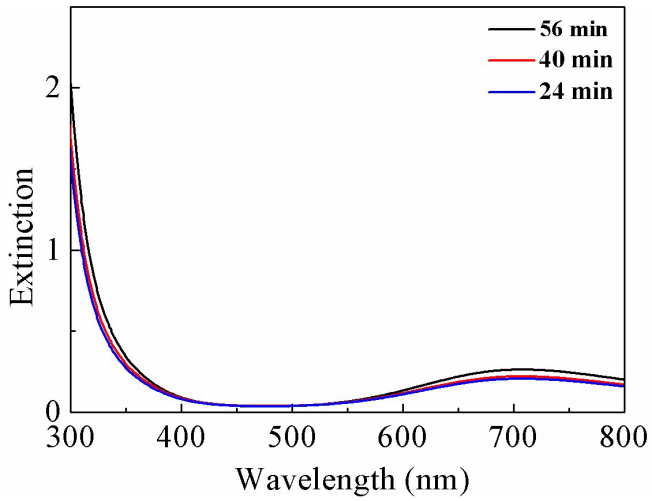

Figure S2. UV−vis extinction spectra of CuF-IPA complex with various mixing time.

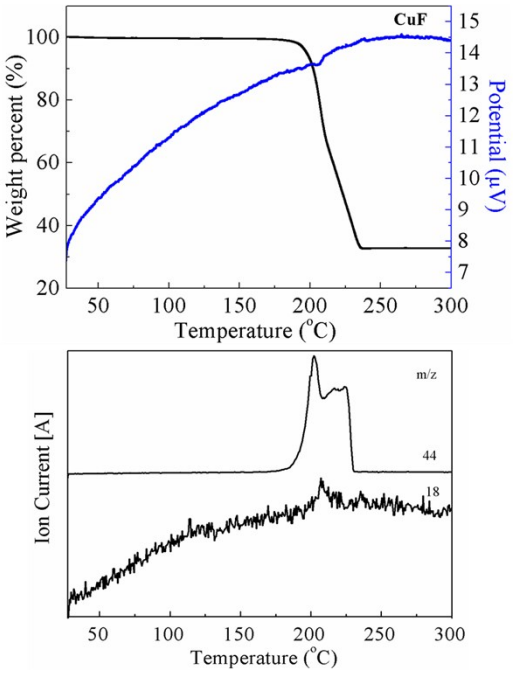

Figure S3. DTA/TGA-MS of CuF. The mass to charge ratios (*m*/*z*) detected as pyrolysis product were H_2O (amu=18), and CO_2 (amu=44).

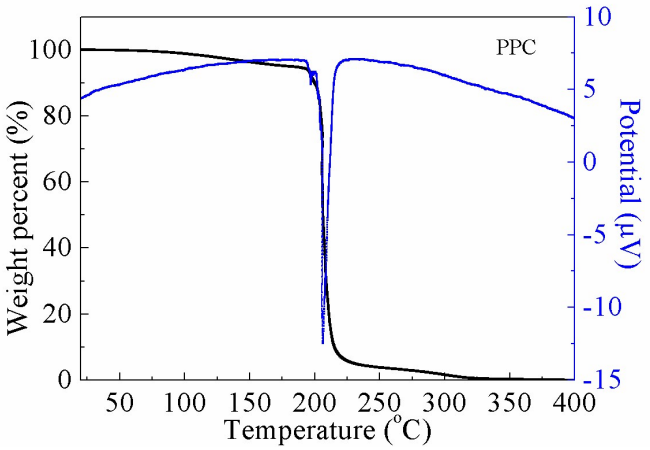

Figure S4. DTA/TGA of PPC under He gas.

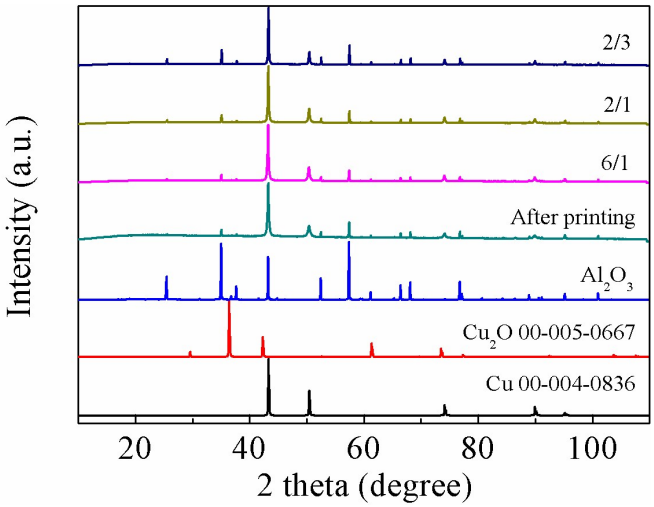

Figure S5. XRD patterns of obtained copper films after sintering at 100 °C for 1 h using PPC-Cu/CuF-IPA 6/1, 2/1 and 2/3 inks.

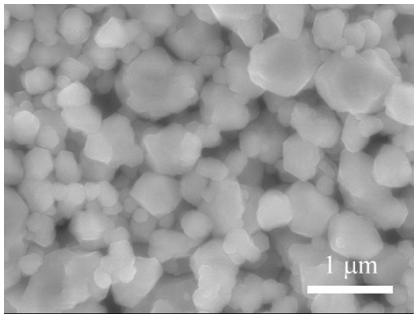

Figure S6. SEM image of obtained copper films using the PPC-Cu/CuF-IPA 2/3 ink after sintering at 100 °C for 2 h.

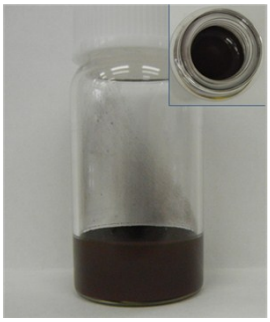

Figure S7. Image of PPC-Cu/CuF-IPA 2/1 ink.

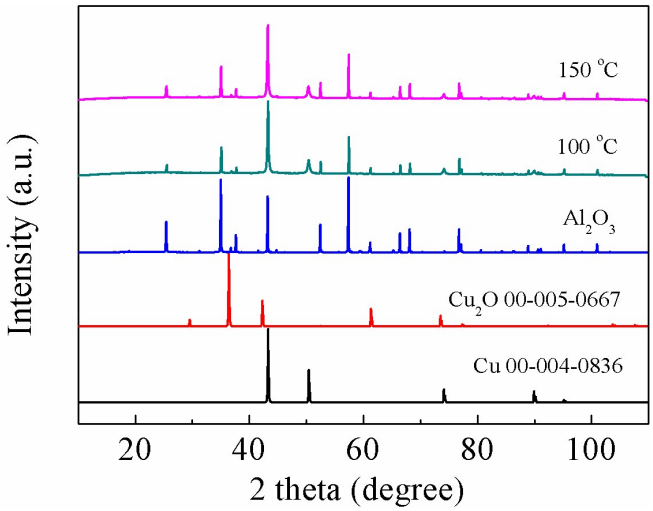

Figure S8. XRD patterns of PPC-Cu particles after sintering at 100 °C and 150 °C under N_2 for 1 h. Reference patterns for Al_2O_3, Cu_2O and Cu are given.

Table S1. Resistivities of the obtained copper films (using only PPC-Cu particles) sintered under N_2 for 1 h

Sintering temperature (°C)	Resistivity (Ω m)
100	Over range
150	Over range

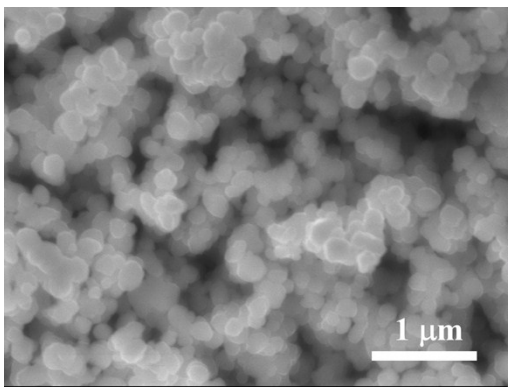

Figure S9. SEM image of the PPC-Cu particles after sintering at 100 °C under N_2 for 1 h.