



Title	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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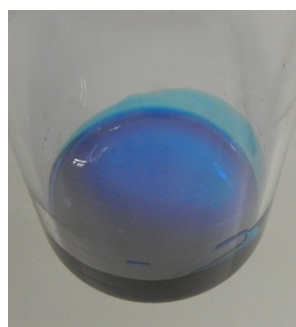
## Supporting Information

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

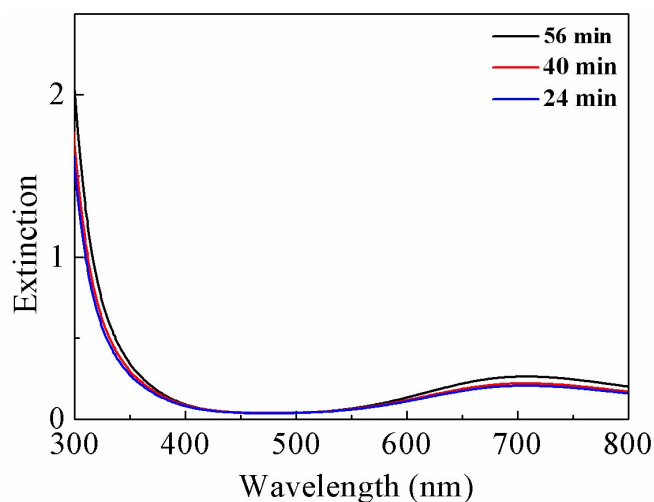
Yingqiong Yong, Mai Thanh Nguyen, Tetsu Yonezawa,\* Masaki Matsubara, Hiroki Tsukamoto, Tengfei Zhang, Shigehito Isobe, and Yuki Nakagawa

### Preparation and sintering of PPC-Cu inks

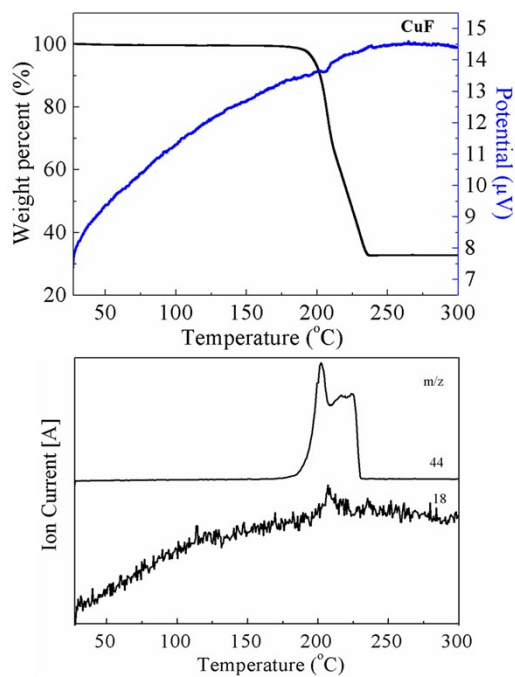
Synthesized PPC-Cu particles (0.3 g, 4.7 mmol) were mixed with  $\alpha$ -terpineol (0.3 g, 1.9 mmol, 95%, Kanto, Japan) using conditioning mixer for 18 min and printed on the  $\text{Al}_2\text{O}_3$  substrates. Then the printed inks were sintered under  $\text{N}_2$  for 1 h at 100 °C and 150 °C.



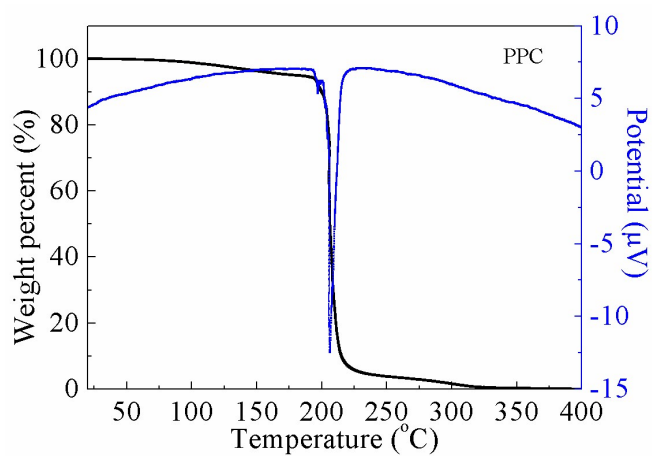
**Figure S1.** Image of CuF-IPA complex.



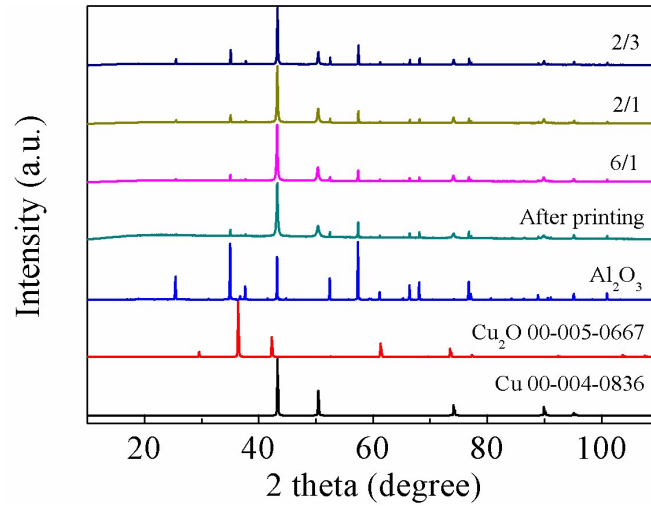
**Figure S2.** UV-vis extinction spectra of CuF-IPA complex with various mixing time.



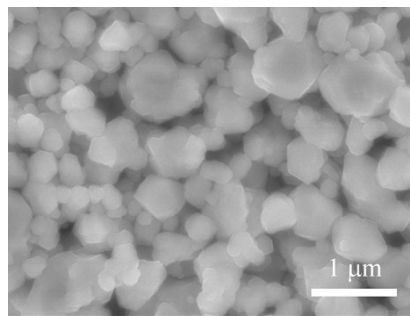
**Figure S3.** DTA/TGA-MS of CuF. The mass to charge ratios ( $m/z$ ) detected as pyrolysis product were H<sub>2</sub>O (amu=18), and CO<sub>2</sub> (amu=44).



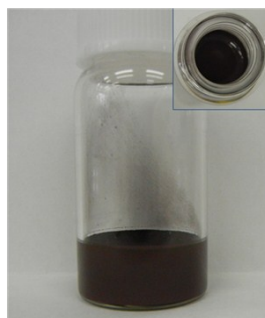
**Figure S4.** DTA/TGA of PPC under He gas.



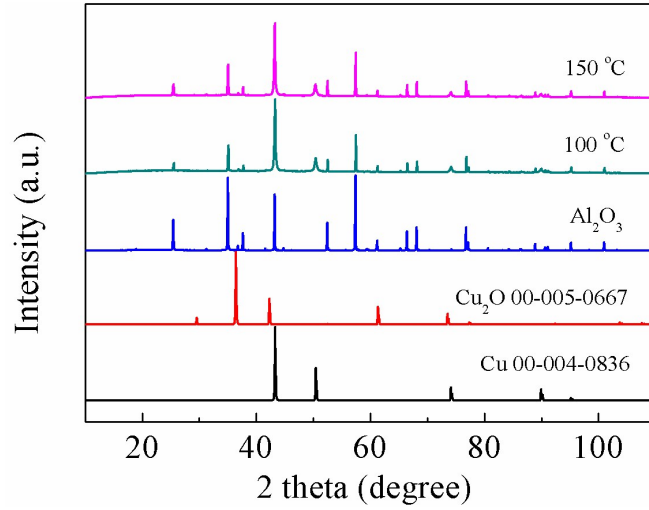
**Figure S5.** XRD patterns of obtained copper films after sintering at 100 °C for 1 h using PPC-Cu/CuF-IPA 6/1, 2/1 and 2/3 inks.



**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.



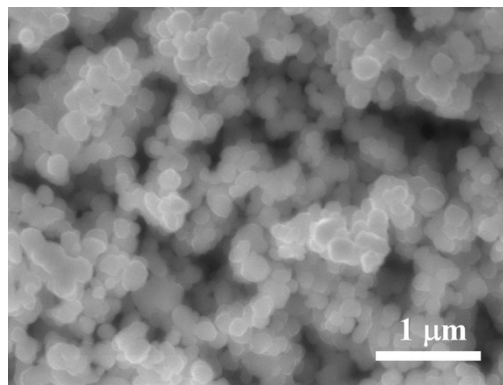
**Figure S7.** Image of PPC-Cu/CuF-IPA 2/1 ink.



**Figure S8.** XRD patterns of PPC-Cu particles after sintering at 100 °C and 150 °C under N<sub>2</sub> for 1 h. Reference patterns for Al<sub>2</sub>O<sub>3</sub>, Cu<sub>2</sub>O and Cu are given.

**Table S1.** Resistivities of the obtained copper films (using only PPC-Cu particles) sintered under N<sub>2</sub> 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<sub>2</sub> for 1 h.