

Electronic Supplementary Information

**Encapsulation of Cu nanoparticles in nanovoids of plate-like
silica sodalite through interlayer condensation of Cu²⁺
ion-exchanged layered silicate RUB-15**

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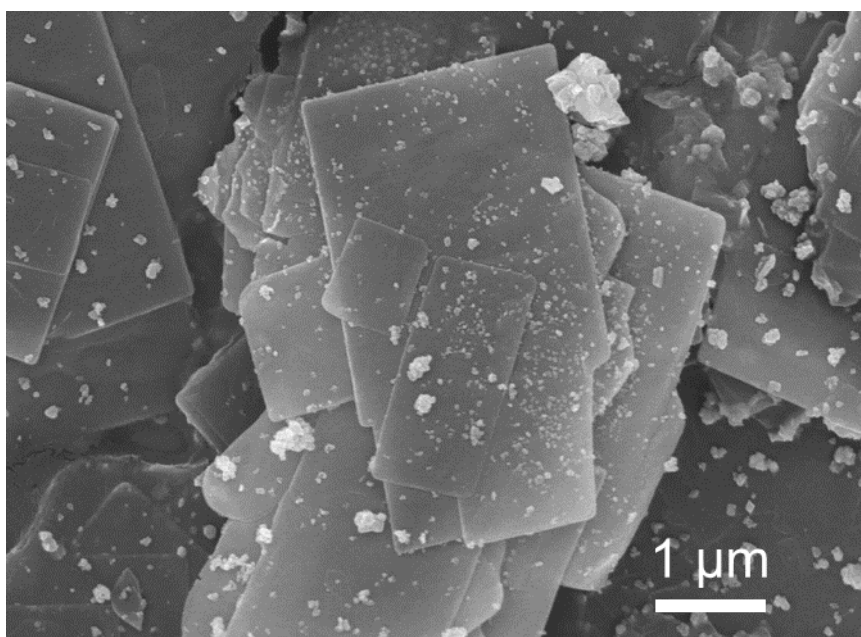


Figure S1. SEM image of CuRUB.

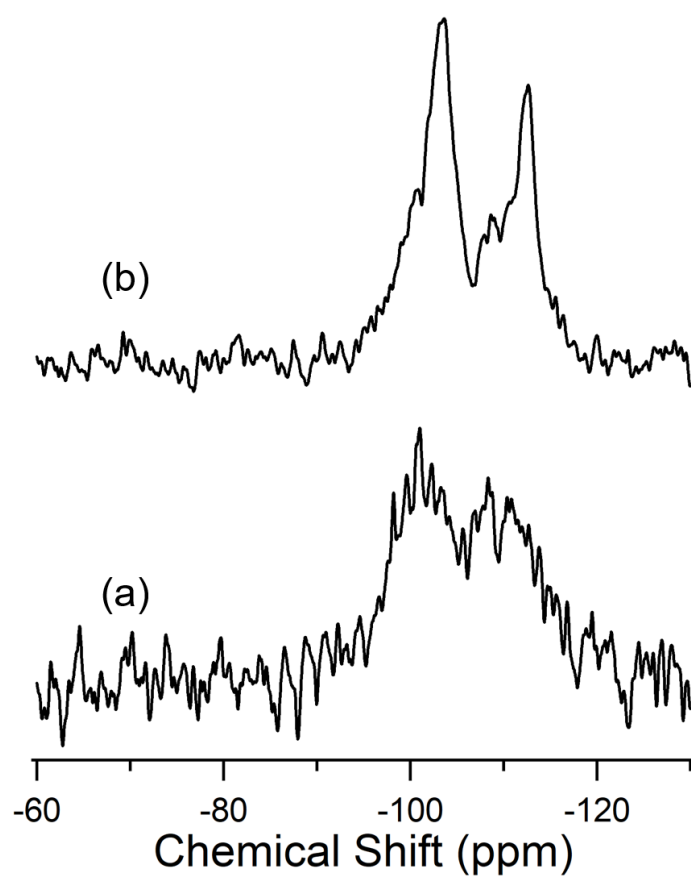


Figure S2. ²⁹Si MAS NMR spectra of (a) CuRUB and (b) the sample after HCl treatment of CuRUB.

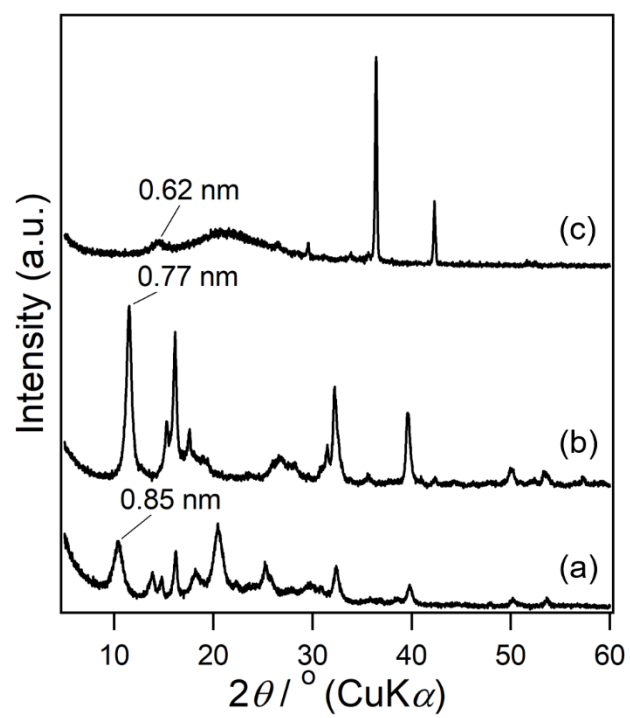


Figure S3. XRD patterns of (a) CuRUB, (b) the sample fully exchanged with Cu ions, and (c) the sample after calcination of sample (b).

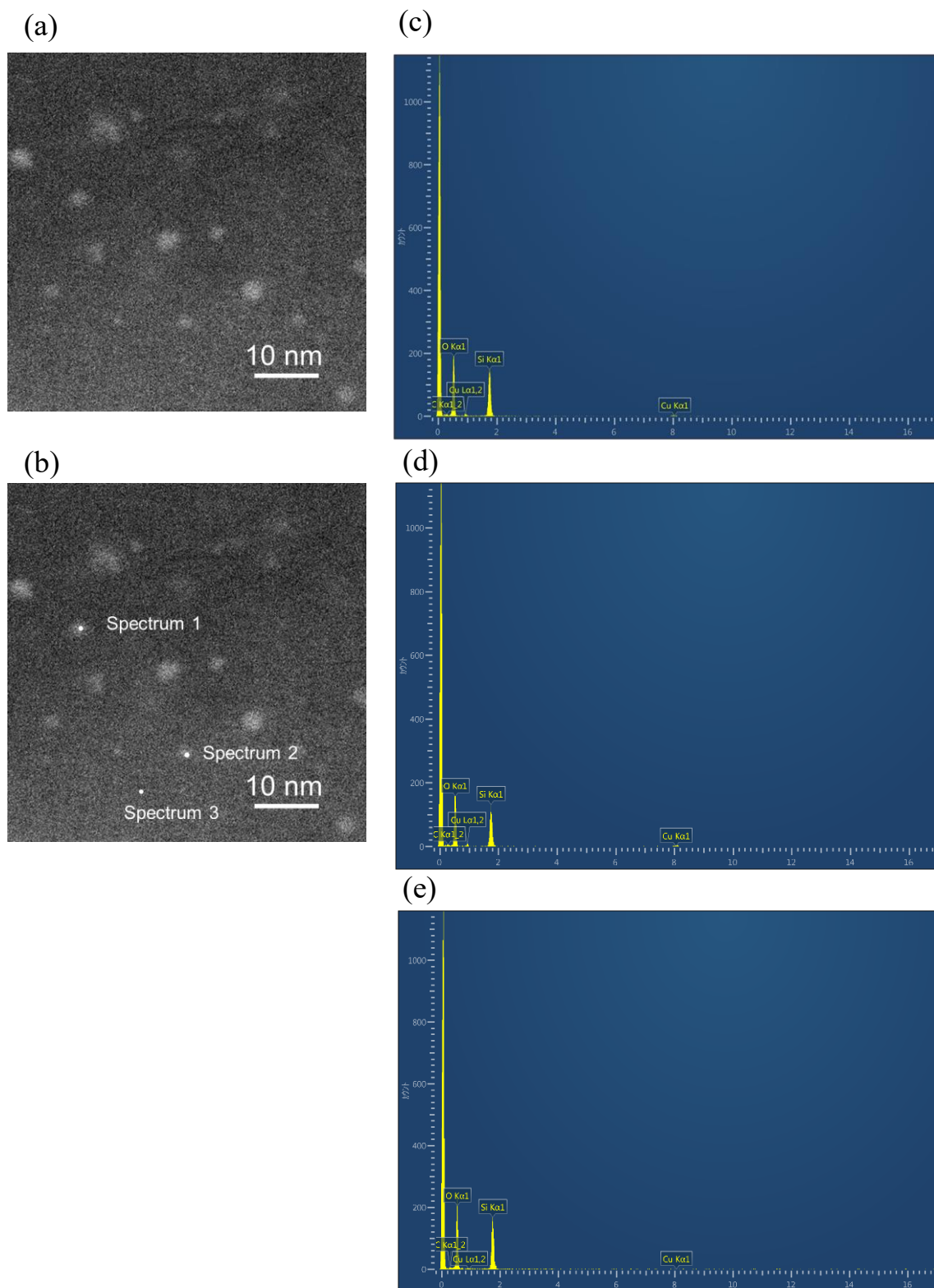


Figure S4. STEM-EDS point analysis images and spectra of CuRUB-heat-acid. (a) and (b): STEM images. (c) EDS Spectrum 1, (d) EDS Spectrum 2, and (e) EDS Spectrum 3.

Table S1. STEM-EDS point analysis of CuRUB-heat-acid.

| | Atomic concentration / counts | | |
|-------|-------------------------------|------------|------------|
| | Spectrum 1 | Spectrum 2 | Spectrum 3 |
| C | 2.07 | 3.62 | 1.91 |
| O | 56.66 | 57.75 | 58.71 |
| Si | 39.83 | 36.15 | 39.38 |
| Cu | 1.44 | 2.48 | 0.00 |
| Total | 100.00 | 100.00 | 100.00 |

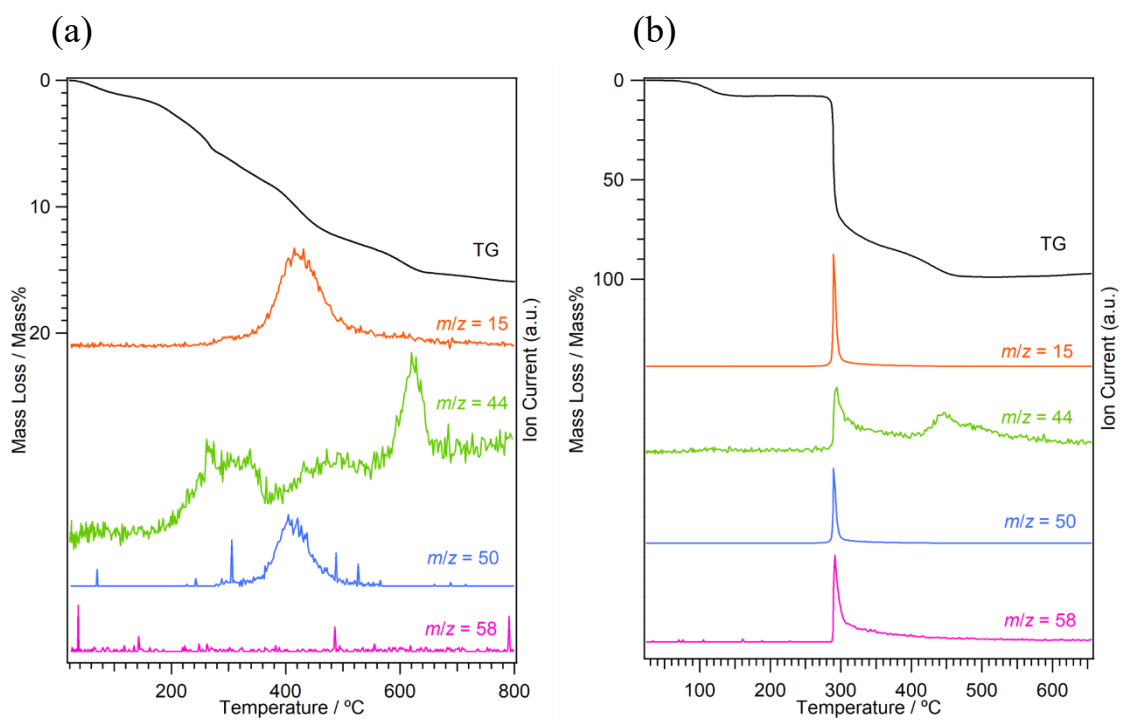


Figure S5. TG-MS data of (a) CuRUB and (b) a mixture of TMACl and CuCl_2 .

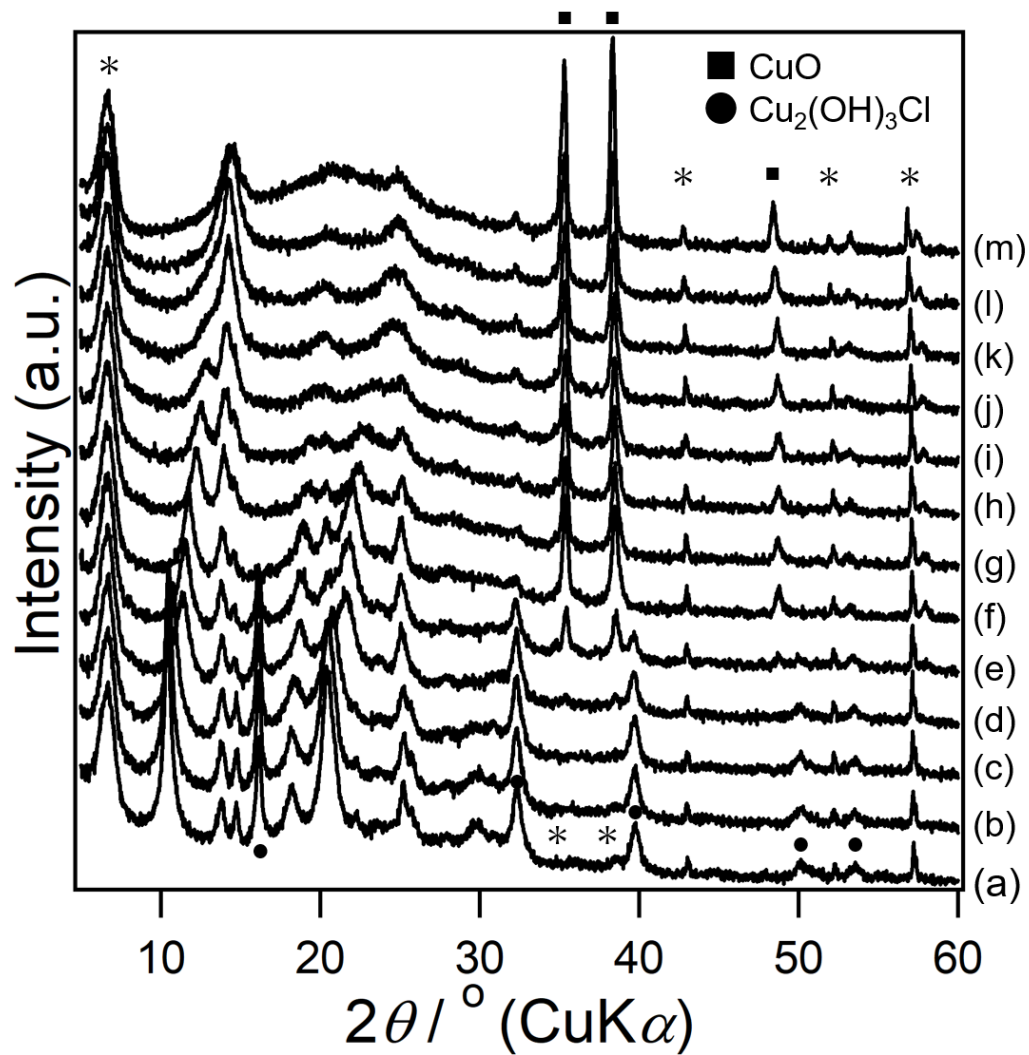


Figure S6. *In-situ* XRD patterns of CuRUB heated in air ((a) 25 °C, (b) 100 °C, (c) 150 °C, (d) 190 °C, (e) 205 °C, (f) 235 °C, (g) 280 °C, (h) 295 °C, (i) 310 °C, (j) 385 °C, (k) 450 °C, (l) 650 °C, (m) 800 °C) by Bragg-Brentano geometry. (*: artificial peak and sample holder (Al_2O_3)).