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

Supplementary Information

Kinetically Controlled Synthesis of Cu Nanowires with Tunable Diameters and Their Applications in Transparent Electrodes

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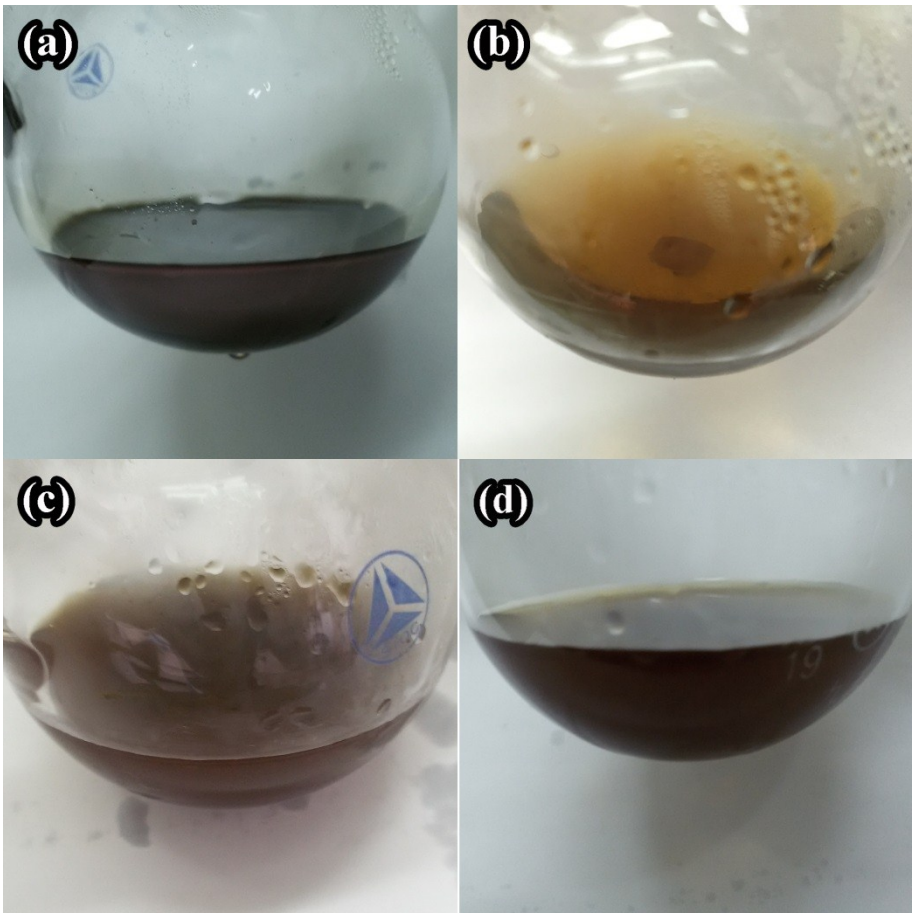

Figure S1. Photographs of the reaction system at different stages of the reaction: (a) At the end of stage I, without the addition of $CuCl_2$; (b) 3 min after the addition of $CuCl_2$; (c) 30 min after the addition of $CuCl_2$; (d) 4 h after the addition of $CuCl_2$.

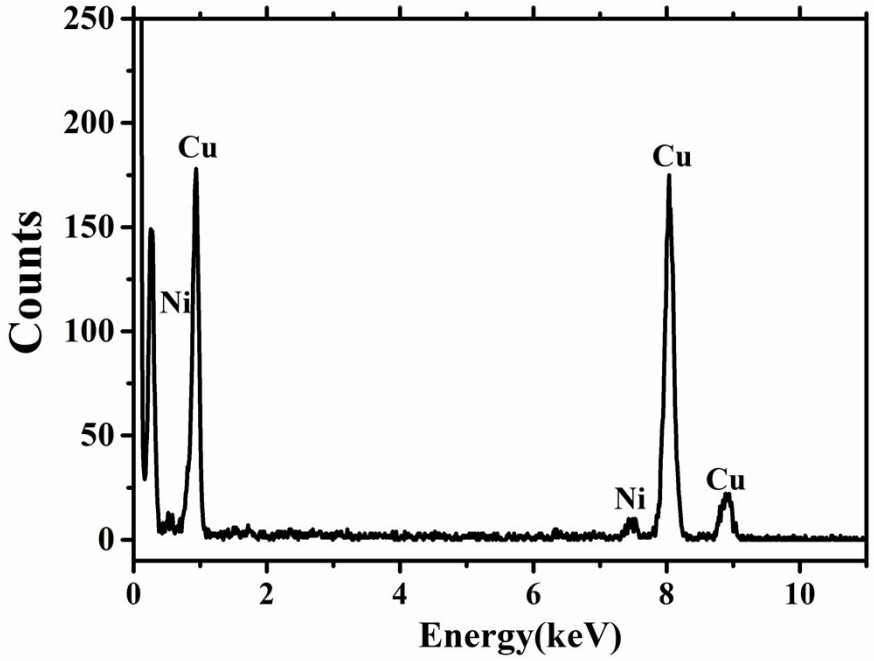

Figure S2. Energy Dispersive Spectrometer of an as-prepared Cu nanowire. Nickel atoms, as well as Cu atoms, were detected, indicating the co-reduction of Cu and Ni. The existence of Mo atoms was caused by the Mo grid used in the characterization process.

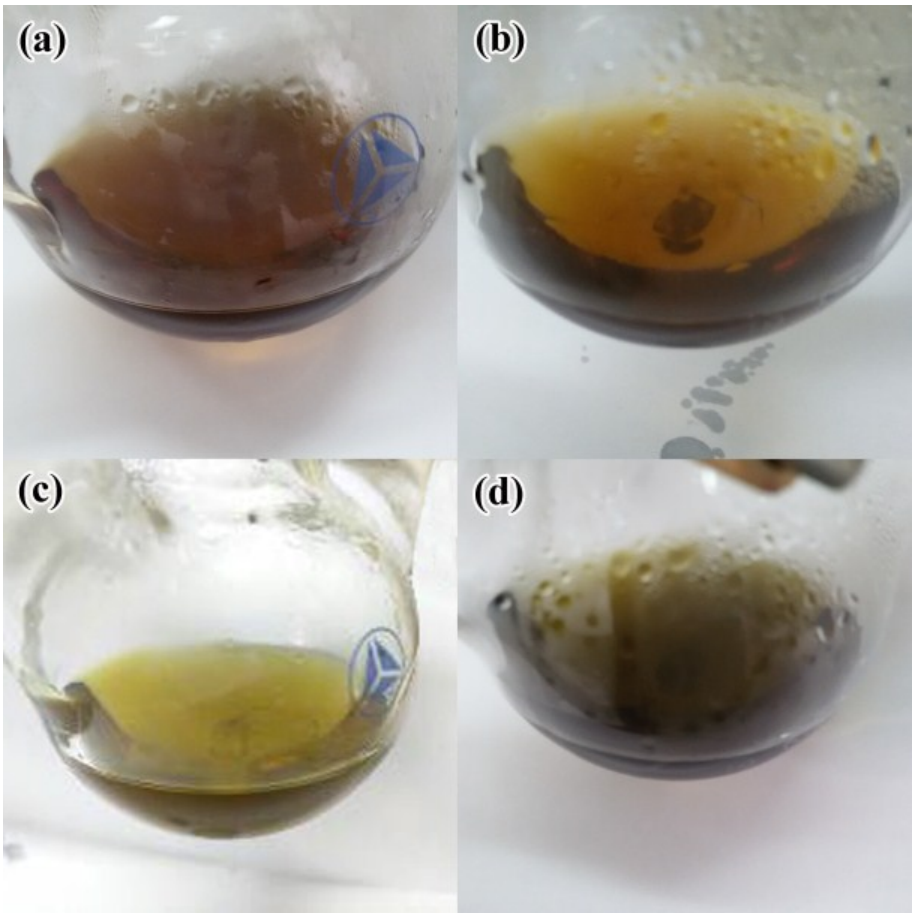

Figure S3. Photographs of the reaction system applying different parameters 3 min after the addition of CuX_2: (a) 0.8 mmol $CuBr_2$; (b) 0.8 mmol $CuCl_2$; (c) 0.8 mmol $CuCl_2$ and 0.2 mmol $NiCl_2$; (d) 0.8 mmol $CuCl_2$ and 0.5 mmol $NiCl_2$.

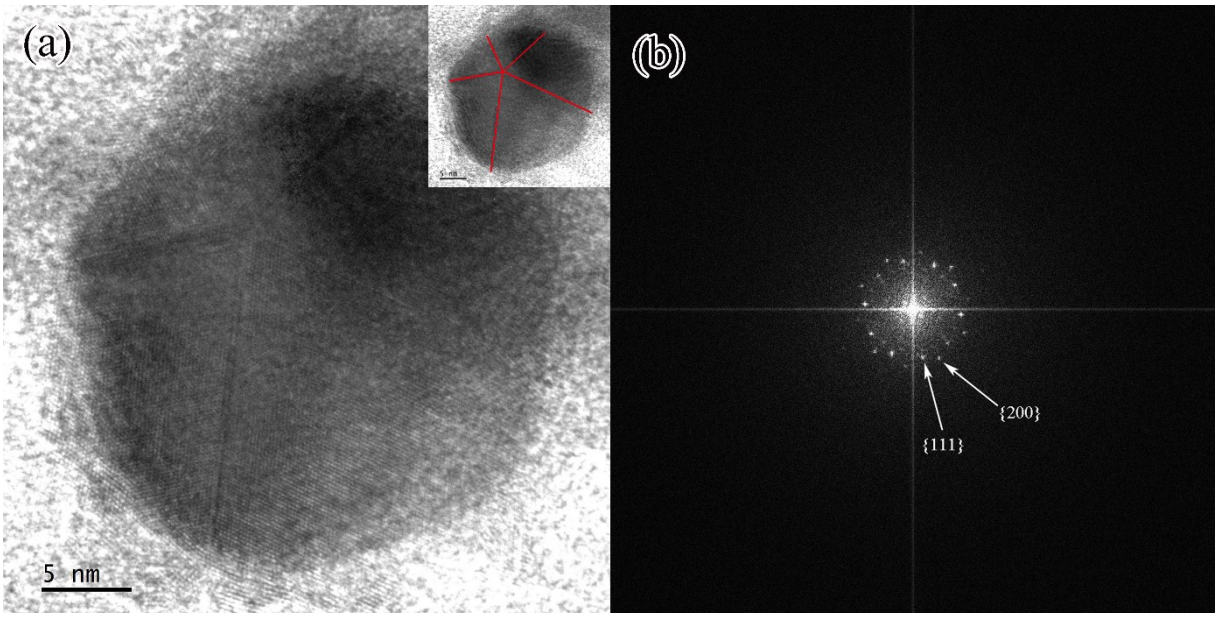

Figure S4. HRTEM image (a) and FFT pattern (b) of nanoseeds separated at the end of stage II.

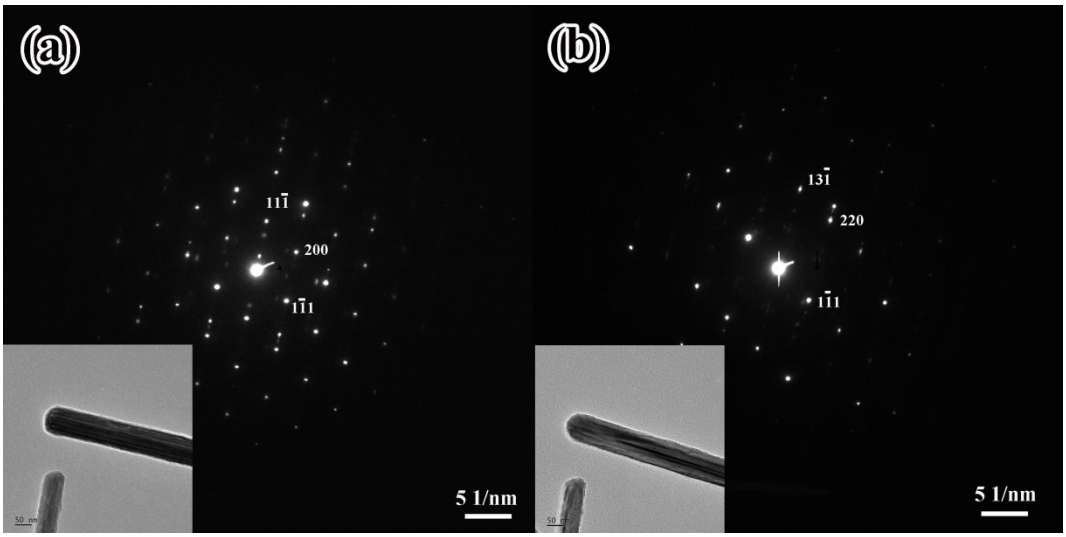

Figure S5. SEAD patterns of an as-prepared Cu nanowire with different facets being perpendicular to the electron beam (a) (b). Insets show the TEM images of the nanowire.

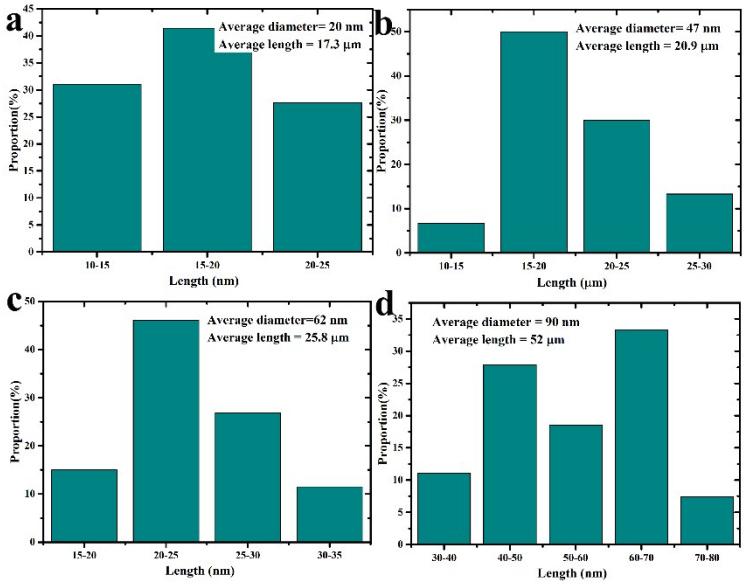

Figure S6. Length distributions of nanowires synthesized under different conditions: (a) 0.8 mmol $CuCl_2$ &0.5 mmol $NiCl_2$; (b) 0.8 mmol $CuCl_2$ &0.2 mmol $NiCl_2$; (c) 0.8 mmol $CuCl_2$; (d) 0.8 mmol $CuBr_2$.

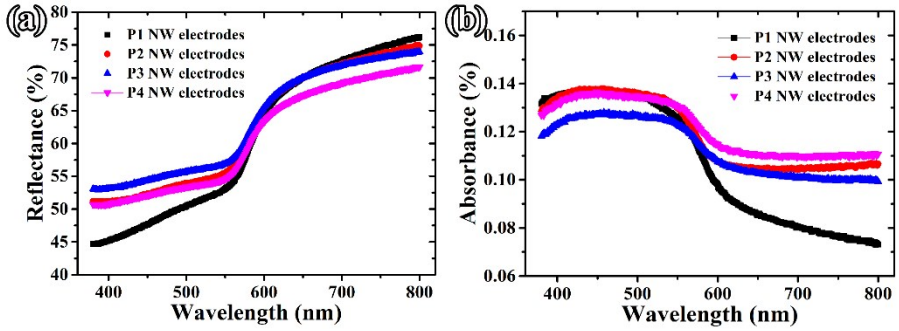

Figure S7. The absorption (a) and reflectance (b) spectra of nanowire electrodes electrodes composed of Cu nanowires synthesized under different synthesis parameters. P1:0.8 mmol $CuCl_2$ &0.5 mmol $NiCl_2$; P2: 0.8 mmol $CuCl_2$ &0.2 mmol $NiCl_2$; P3: 0.8 mmol $CuCl_2$; P4: 0.8 mmol $CuBr_2$.

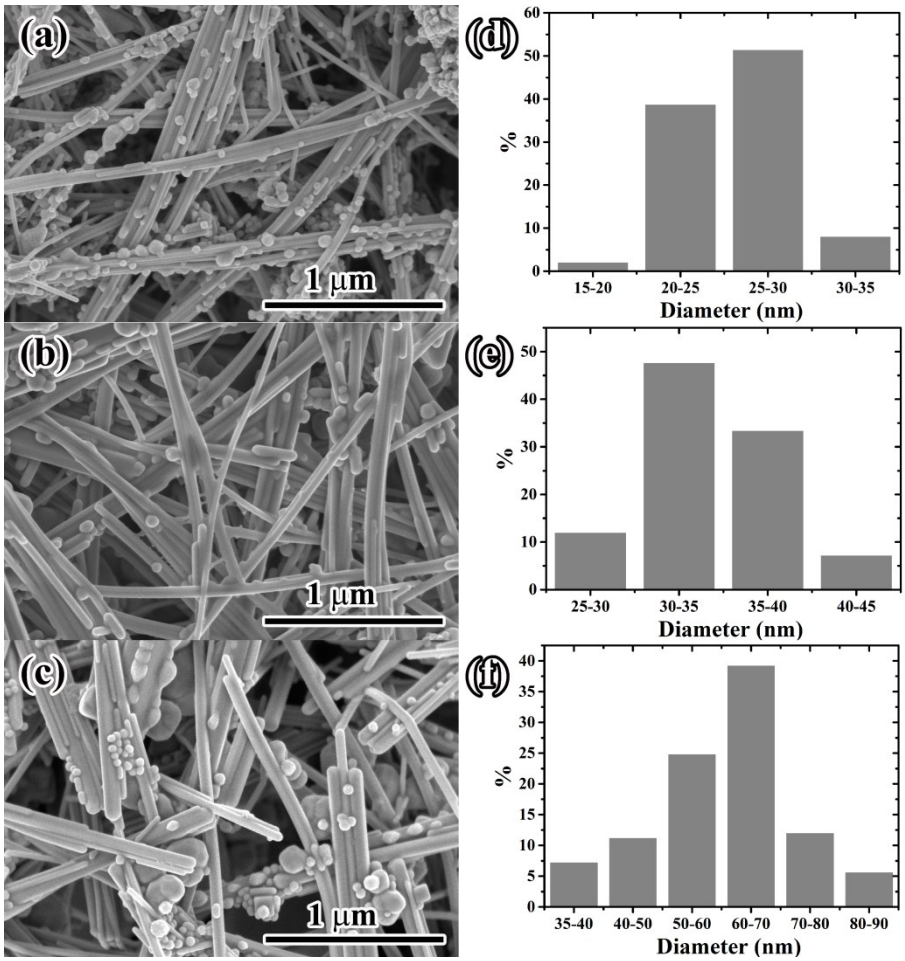

Figure S8. SEM images and size distribution of Ag nanowires synthesized with different amounts of halide ions: (a) (d) (1 mmol AgBr); (b) (e) (0.2 mmol $AgNO_3$ and 0.8 mmol AgBr); (c) (f) (1 mmol $AgNO_3$).