Supplementary Information

Converting AgCl Nanocubes to silver nanowires through a glycerol-mediated solution route

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1. Synthesis of irregular AgCl particles in water

The irregular AgCl particles were prepared using a simple precipitation reaction between $AgNO_3$ and NaCl in water without any capping agent. Typically, 22 mg NaCl and 52 mg $AgNO_3$ were added directly to 15 mL of de-ionized water and precipitate of AgCl would happen immediately. The product was centrifuged at 8000 rpm for 2 min and then vacuum-dried at 50 ^oC for 5 h. The AgCl powders were dispersed in 15 mL glycerol by ultrasonication and 108 mg of PVP was then added. After the solution was kept at 60 ^oC for 10 min under magnetic stirring, the mixture was heated to 220 ^oC for 7 h to ensure complete conversion of the AgCl particles to silver.

2. Synthesis and reduction of AgBr

The procedure of synthesis and reduction of AgBr is similar to that of AgCl. In a typical experiment, 15 mL of glycerol was placed in a flask with the capacity of 50 mL and heated to 60 ^oC under magnetic stirring at 350 rpm. Then PVP (108 mg) and NaBr (39 mg) were sequentially added. After the complete dissolution of both PVP and NaBr, a glycerol solution (1 mL) of $AgNO_3$ (52 mg) was rapidly injected. The solution was maintained at 60 ^oC for an additional 20 min, and then elevated to 80 ^oC and kept at that temperature for another 40 min, resulting in the formation of a dispersion containing AgBr nanoparticles. Finally, the temperature was further increased to 220 ^oC under magnetic stirring rate of 600 rpm. Aliquots of the solution (0.5 mL) was taken at different intervals using a micropipette and quickly injected into the de-ionized water. The products were centrifuged at 10000 rpm for 5 min, followed by washing with acetone and de-ionized water to remove excessive glycerol and PVP. The final product was dispersed in ethanol for further characterization.

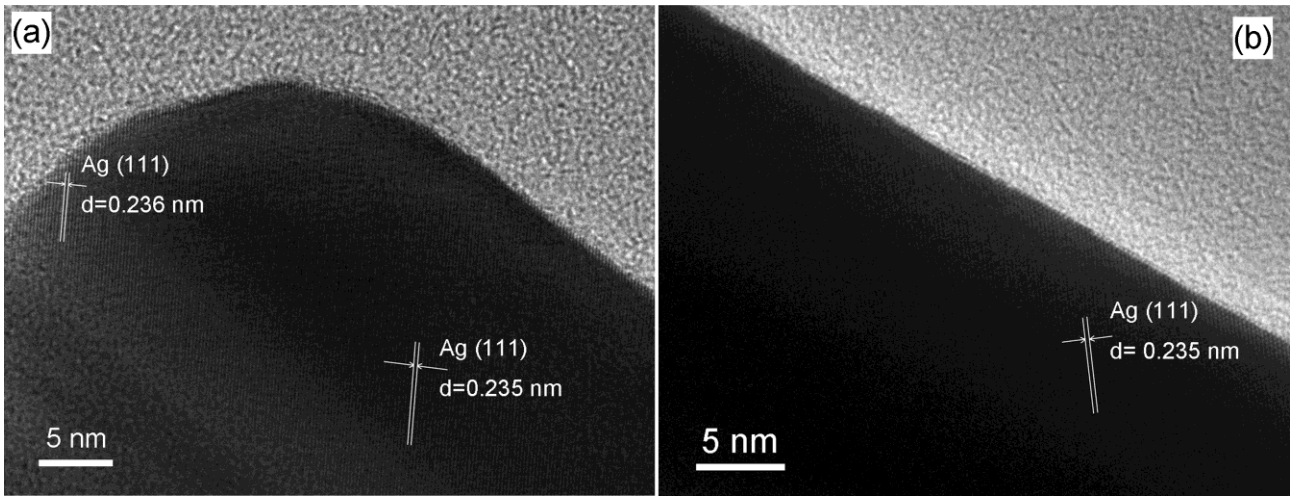

Figure S1. HRTEM images of the end part (a) and the central part of a single silver nanowire (b).

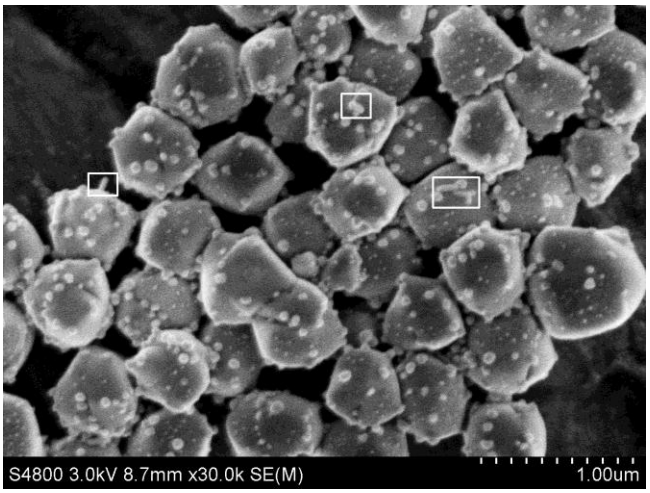

Figure S2. SEM images of the sample obtained at 15 min. As highlighted in square symbols, short nanorods have been produced at this stage.

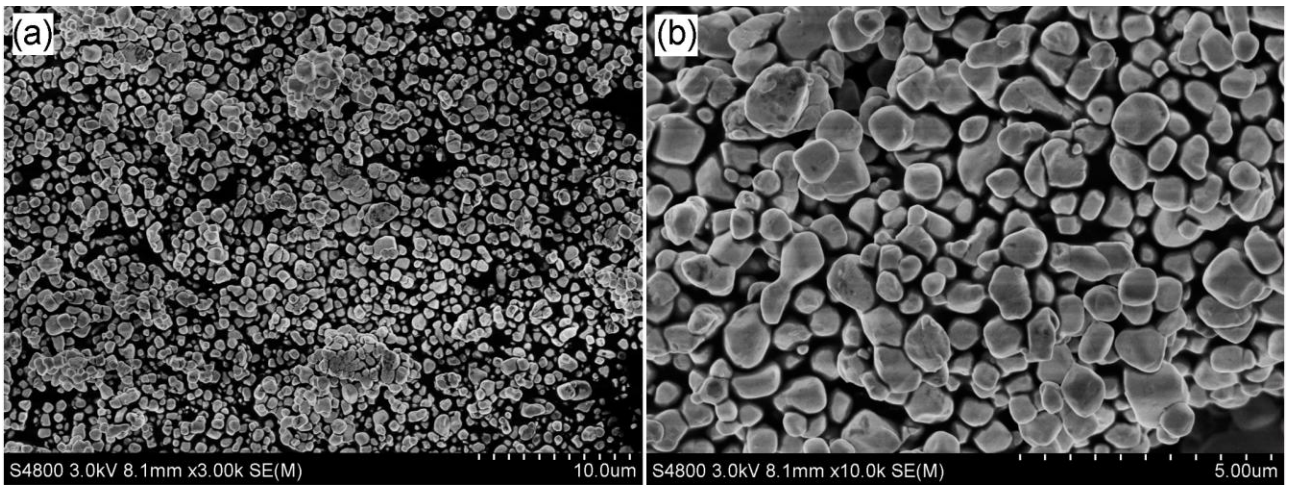

Figure S3. Low (a) and high-magnification (b) SEM images of AgCl particles synthesized in water.

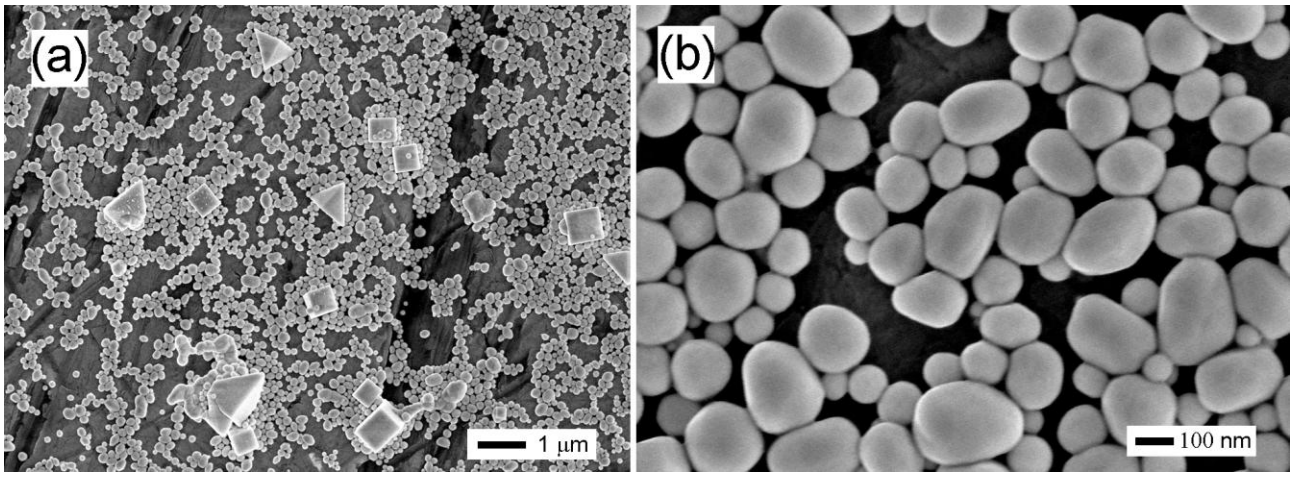

Figure S4. Low (a) and high-magnification (b) SEM images of Ag particles by reduction of AgCl formed in water.

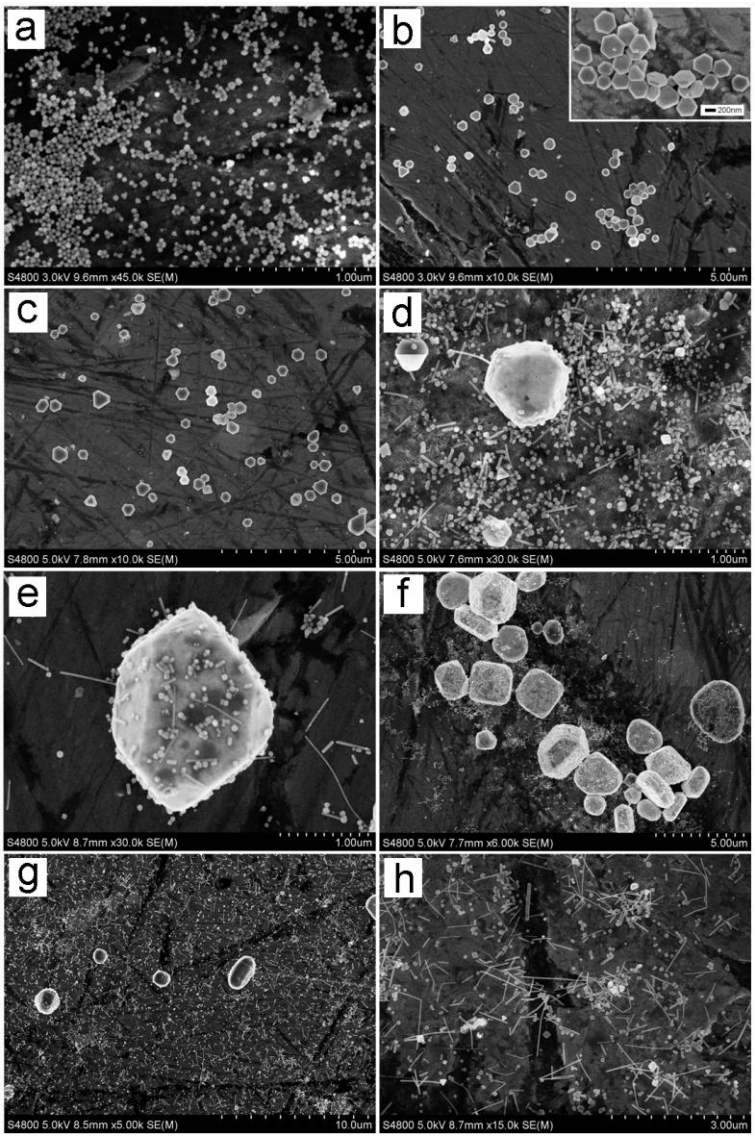

Figure S5. SEM images of the samples obtained by reducing AgBr at different reaction times:

(a) 0 min, (b) 20 min, (c) 40 min, (d) 90 min, (e) 120 min, (f) 180 min, (g) 240 min, (h) 300 min.

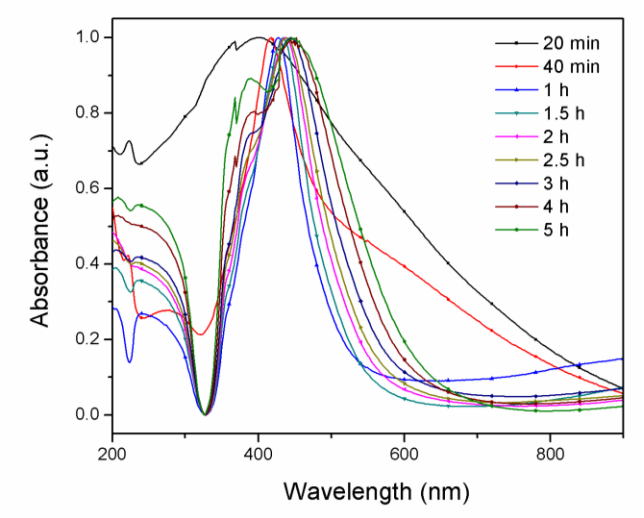

Figure S6. UV-visible spectra of the samples obtained from reduction of AgBr nanoplates at different reaction times.