Electronic Supplementary Information (ESI)

Galvanic exchange process visualized on single silver nanoparticles via dark-field microscopic imaging

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Additional figures



Fig. S1 UV LSPR absorption spectra of Ag nanoparticles, the LSPR peak is located at 416 nm.



Fig. S2 The colocation of DFM images and corresponding SEM images of AgNPs. (A) DFM image and (B) SEM images in the same collection of AgNPs, and (C) SEM images of numbered AgNPs in (B) with high magnification.



Fig. S3 DFM images of spherical AgNPs at different time points with a latency time of 2 min during the galvanic exchange reaction using 100 μ M HAuCl₄. The scale bar is 20 μ m for all images.



Fig. S4 DFM images of spherical AgNPs during the galvanic exchange reaction using 5μ M HAuCl₄. The scale bar is 20 μ m for all images.



Fig. S5 HAADF-STEM image of AgNPs of the dynamics process in galvanic exchange at initial stage.



Fig. S6 HAADF-STEM images of AgNPs of the dynamics process in galvanic exchange at intermediate stage.



Fig. S7 HAADF-STEM images of final Au/Ag nanocage in galvanic exchange reaction. B, C, and D are of the numbered particle 1, 2, 3 in A with high magnification.





Fig. S8 Characterization of the chemical composition of Ag/Au nanoalloys of galvanic exchange at intermediate stage. TEM image of Ag/Au nanoalloys of galvanic exchange at intermediate stage, and EDS spectra for the areas indicated particle1, 2, 3.







Fig. S9 Characterization of the chemical composition of Ag/Au nanoalloys of galvanic exchange at Final stage. TEM image of Ag/Au nanoalloys of galvanic exchange at Final stage, and EDS spectra for the areas indicated particle1, 2, 3, 4.