

Electronic Supplementary Information

Facile formation of folic acid-modified dendrimer-stabilized gold-silver alloy nanoparticles for potential cellular computed tomography imaging applications

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Experimental Section

The fluorescein isothiocyanate (FI)-modified G5.NH₂ was prepared according to our previous work.^{1,2} In brief, an FI solution (8.87 μmol, in 1.856 mL DMSO) was added into a G5.NH₂ (1.77 μmol, 5 mL DMSO) solution under vigorous stirring. The reaction was stopped after 24 h. Then, the reaction mixture was extensively dialyzed against water (6 times, 2 L) for 3 d to remove the excess reactants, followed by lyophilization to get the G5.NH₂-FI product. Under similar protocol used to prepare {(Au⁰₁₅-Ag⁰₅)-G5.NH₂-FA} alloy DSNPs, {(Au⁰₁₅-Ag⁰₅)-G5.NH₂-FI} alloy DSNPs were formed and acetylated. The G5.NH₂-FI dendrimers were characterized by ¹H NMR spectroscopy. The formed FI-modified Au-Ag alloy DSNPs were characterized via UV-Vis spectroscopy and TEM.

References

- (1) Wang, Y.; Cao, X.; Guo, R.; Shen, M.; Zhang, M.; Zhu, M.; Shi, X. *Polym. Chem.* **2011**, *2*, 1754.
- (2) Wang, Y.; Guo, R.; Cao, X.; Shen, M.; Shi, X. *Biomaterials* **2011**, *32*, 3322.

Table S1. Practical molar ratios of Au atom/Ag atom in the formed FA-modified Au-Ag alloy DSNPs before and after acetylation as analyzed by ICP-OES. Data were provided with mean±S.D. (n=3).

Feed ratio	Au/Ag molar ratio of product	
	Before acetylation	After acetylation
15:5 (3)	9.94±0.03	3.51±0.05

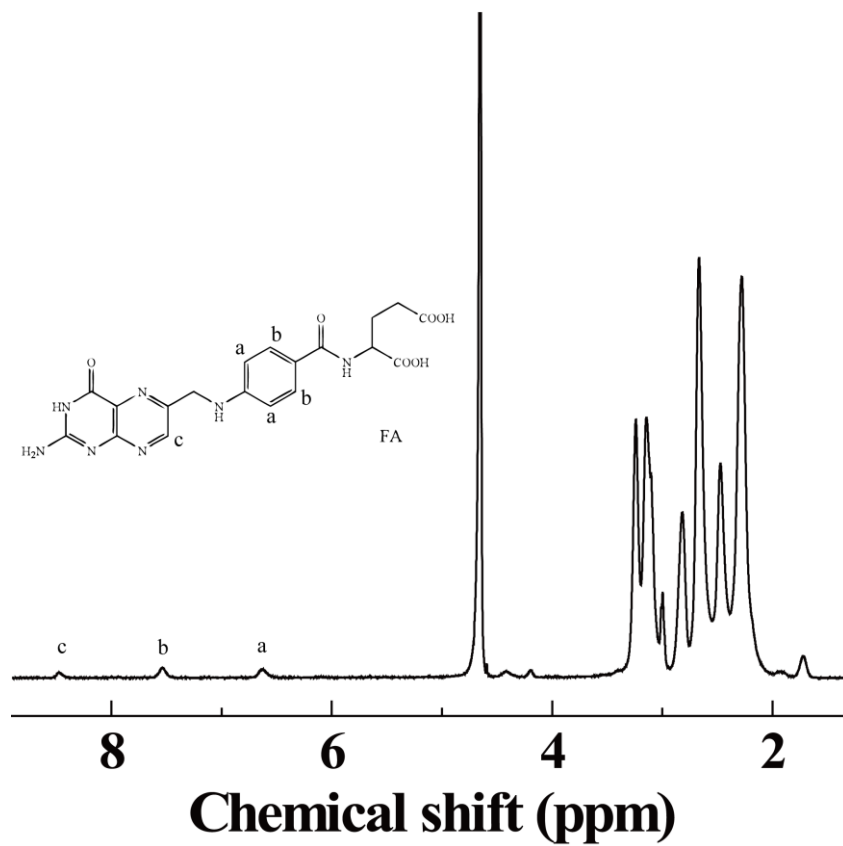


Figure S1. ^1H NMR spectrum of G5.NH₂-FA dendrimers.

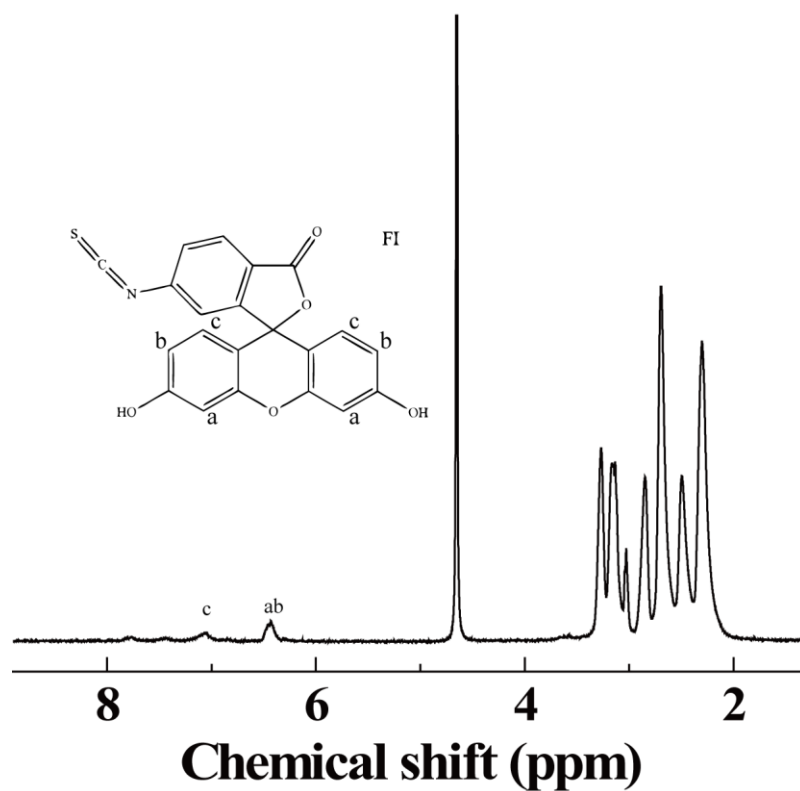


Figure S2. ^1H NMR spectrum of G5.NH₂-FI dendrimers.

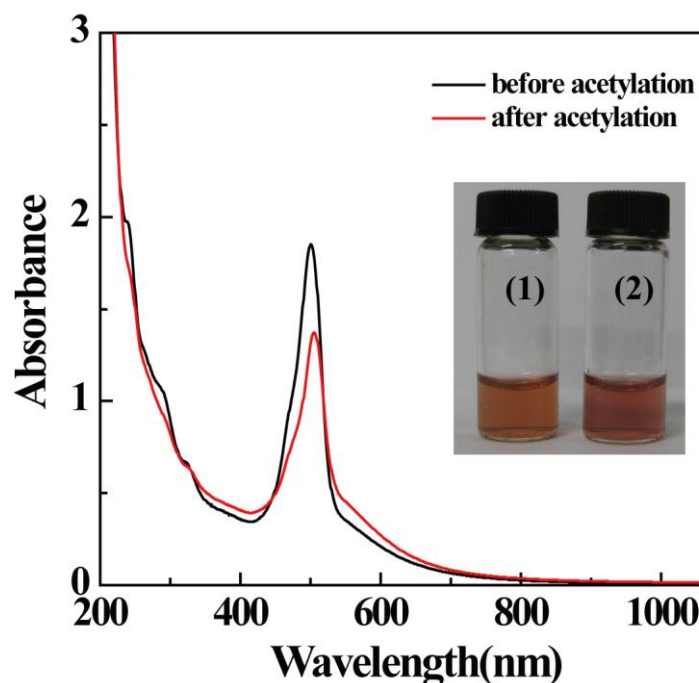


Figure S3. UV-Vis spectra of the obtained FI-modified Au-Ag alloy DSNPs before and after acetylation. Inset is the photograph of before (1) and after (2) acetylation samples.

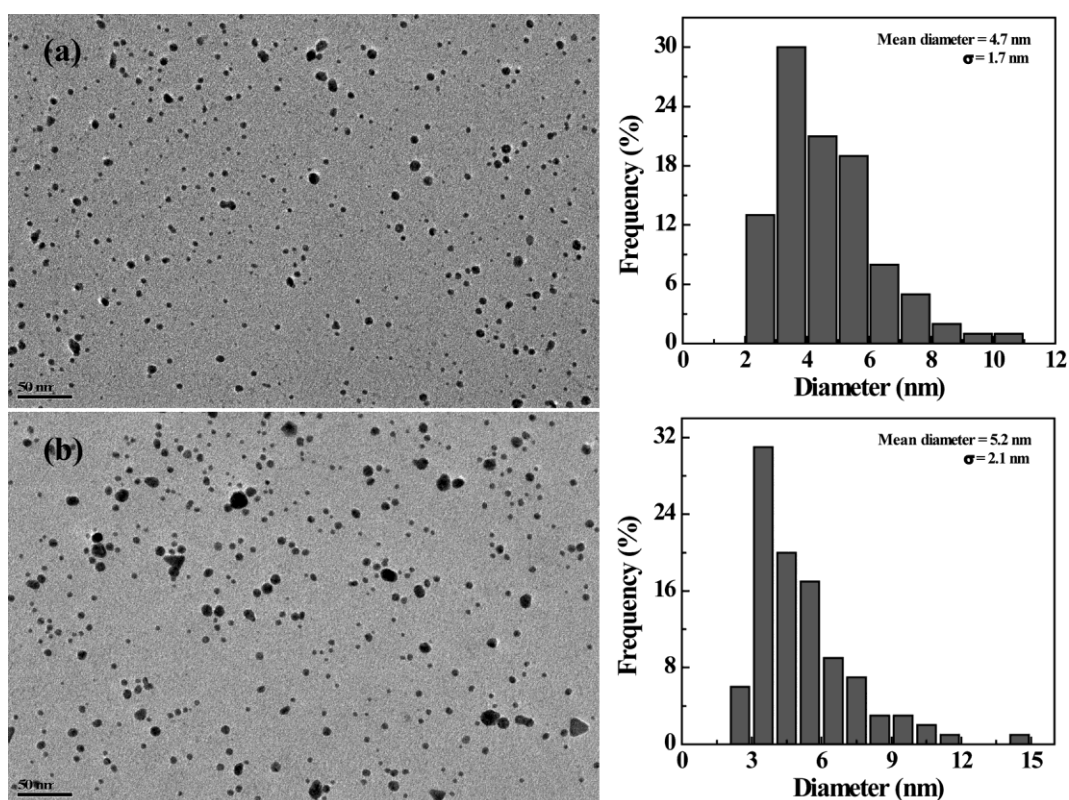


Figure S4. TEM images and size distribution histograms of the $\{(Au^0_{15}-Ag^0_5)-G5.NH_2-FI\}$ (a) and $\{(Au^0_{15}-Ag^0_5)-G5.NHAc-FI\}$ (b) alloy DSNPs.

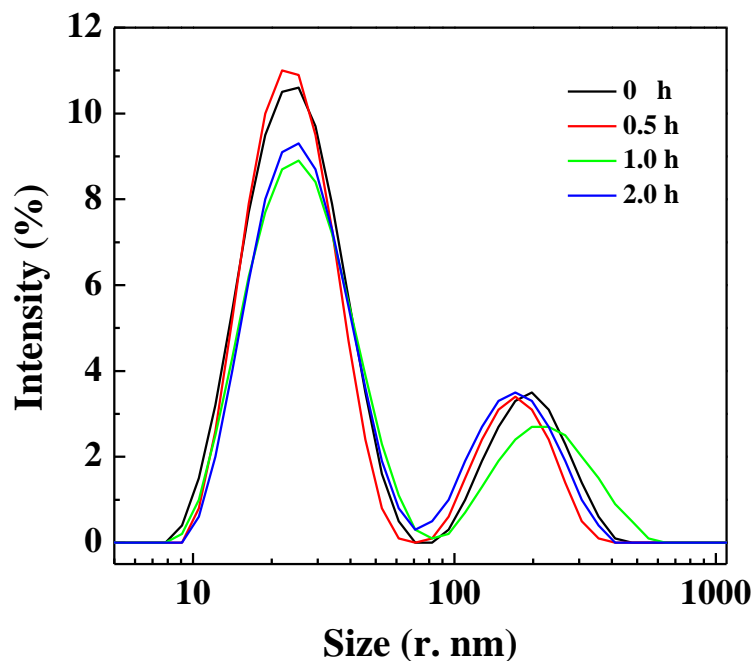


Figure S5. Hydrodynamic radius of $\{(Au^{0}_{15}-Ag^{0}_{5})-G5.NHAc-FA\}$ DSNNPs at different time points.

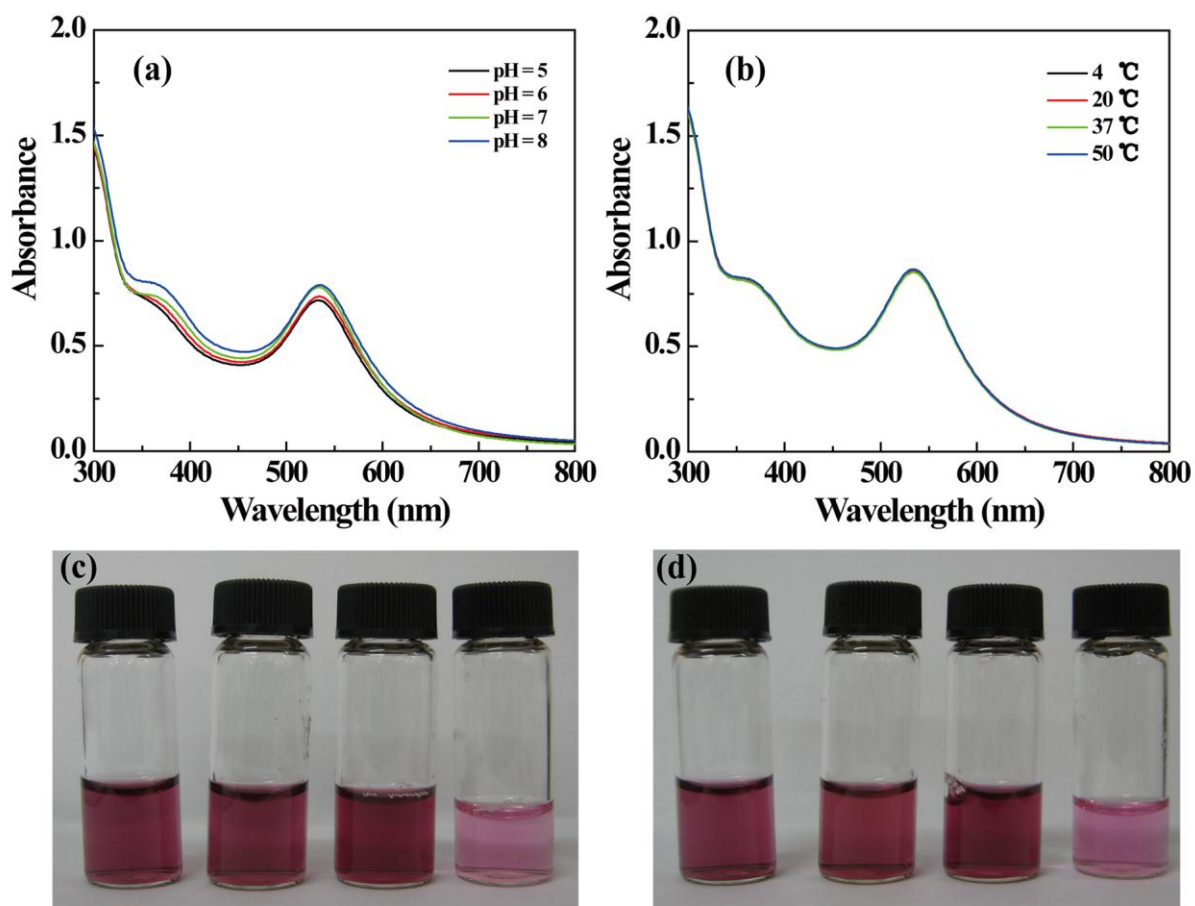


Figure S6. UV-Vis spectra of $\{(Au^{0}_{15}-Ag^{0}_{5})-G5.NHAc-FA\}$ DSNNPs under different pH (a) and temperature (b) conditions. The photograph of the freshly prepared (c) alloy DSNNPs dispersed in different aqueous media (From left to right, the medium is water, PBS buffer, cell culture medium, respectively). (d) shows the same solutions after stored at room temperature for two months. The rightmost vial in both (c) and (d) shows blank cell culture medium without NPs.

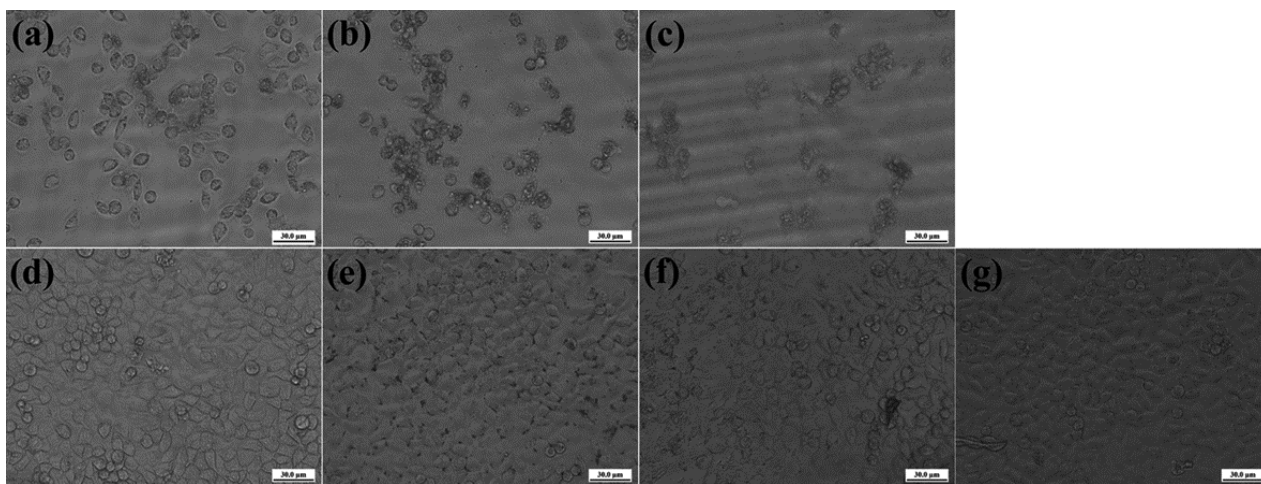


Figure S7. Phase-contrast photomicrographs of KB cells treated with $\{(Au^{0}_{15}-Ag^{0}_{5})-G5.NH_{2}-FA\}$ DSNPs at a concentration of 1000 nM (a), 2000 nM (b), and 3000 nM (c) and $\{(Au^{0}_{15}-Ag^{0}_{5})-G5.NHAc-FA\}$ DSNPs at a concentration of 1000 nM (d), 2000 nM (e), 3000 nM (f). KB cells treated with PBS buffer (g) were tested for comparison.