Supporting Information

Interface Synthesis of Gold Mesocrystals with Highly Roughened Surface for Surface-enhanced Raman Spectroscopy

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FIGURES

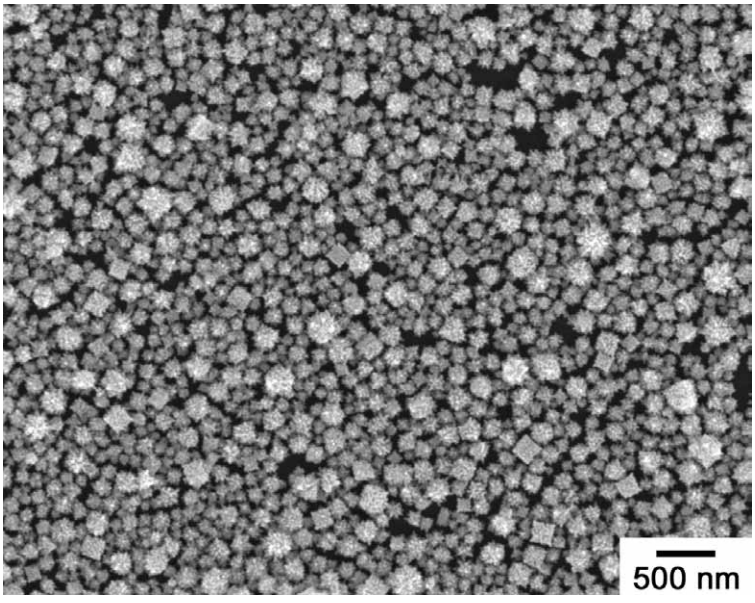

Fig. S1 Large area SEM image of gold sea urchin-like mesoparticles, synthesized with 20 mM of gold precursor and 100 mM of ascorbic acid.

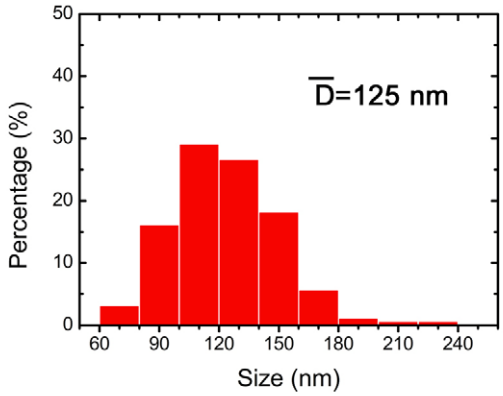

Fig. S2 Size distribution histogram of gold sea urchin-like mesoparticles, synthesized with 20 mM of gold precursor and 100 mM of ascorbic acid.

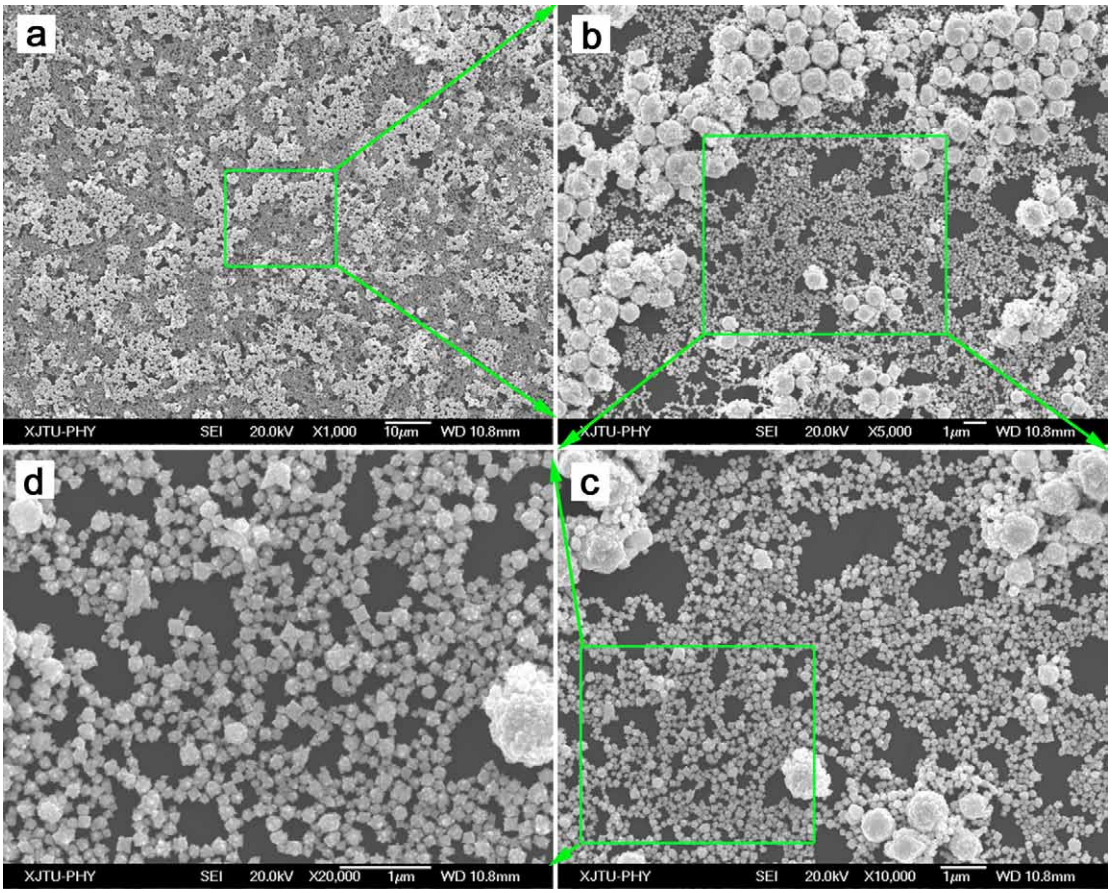

Fig. S3 (a-d) Different magnifications of SEM images of gold mesoparticles when the gold precursor concentration is increased from 20 mM to 50 mM. The concentration of ascorbic acid was kept without change (100 mM).

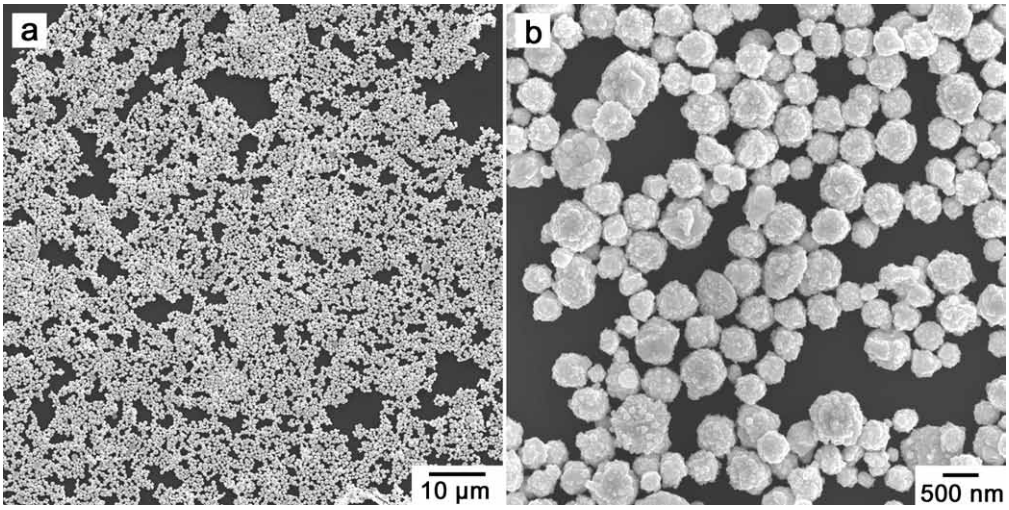

Fig. S4 (a) Large area and (b) magnified SEM images of gold meatball-like mesoparticles when the gold precursor concentration is increased from 20 mM to 100 mM. The concentration of ascorbic acid was kept without change (100 mM).

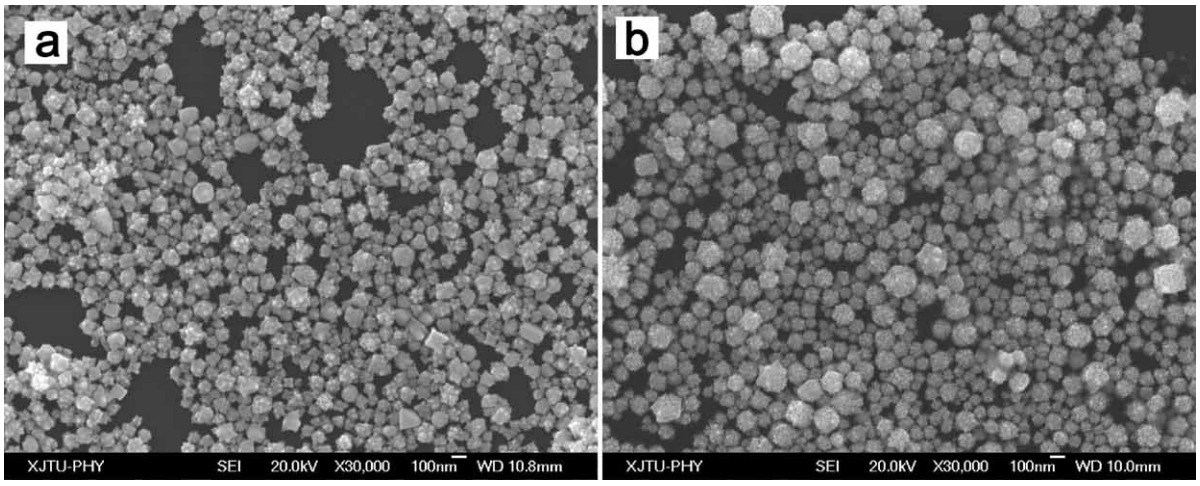

Fig. S5 Large area SEM images of gold mesoparticles synthesized with same gold precursor concentration (20 mM) but different ascorbic acid concentrations: (a) 20 mM, (b) 1 M. The image of 100 mM ascorbic acid is shown in Fig. S1.

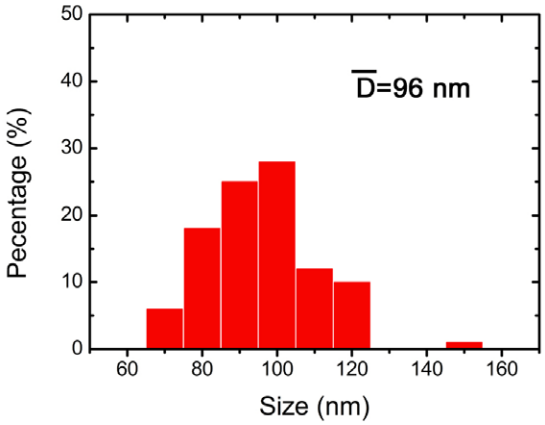

Fig. S6 Size distribution histogram of gold polyhedral mesoparticles synthesized with the conditions of ascorbic acid 20 mM, gold precursor 20 mM, CTAB 20 mM.

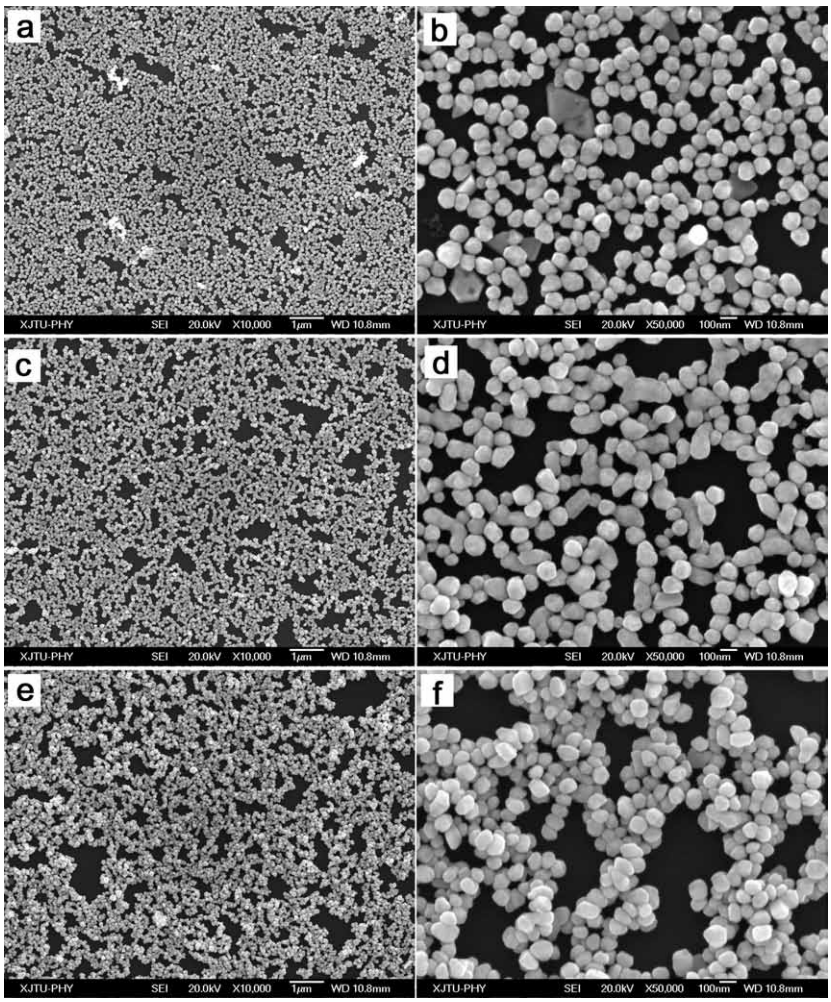

Fig. S7 SEM images of gold polyhedral mesoparticles synthesized with 20 mM ascorbic acid and 20 mM gold precursor after adding different CTAB concentrations: (a, b) 20 mM, (c, d) 30 mM, and (e, f) 40 mM.

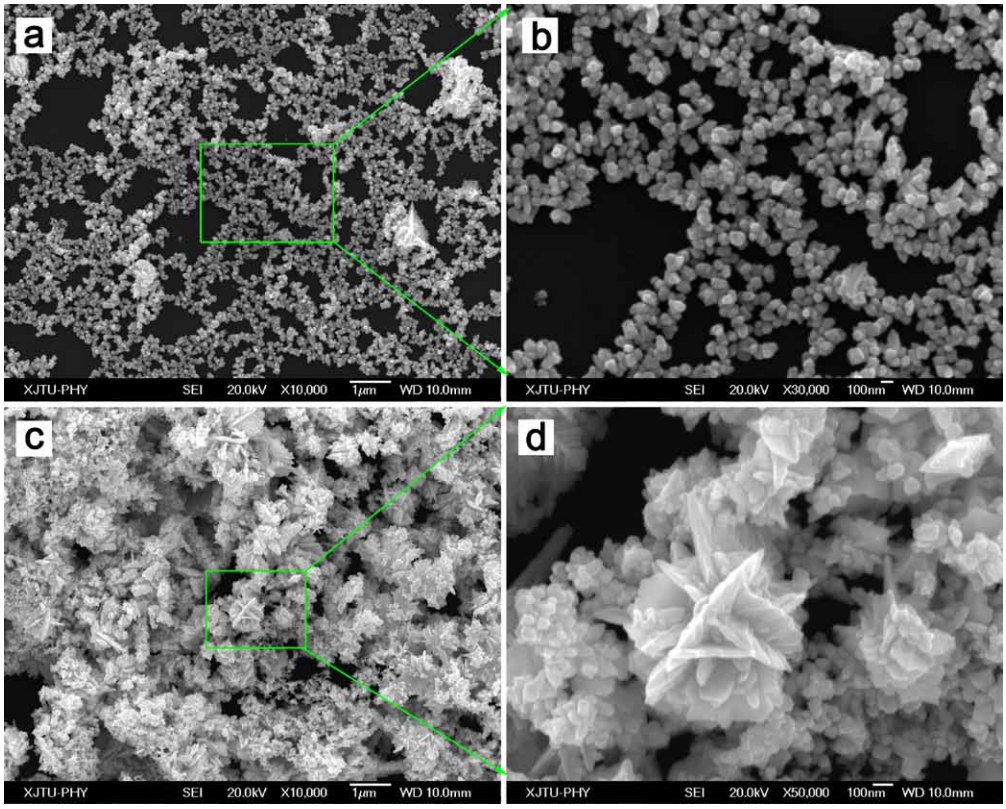

Fig. S8 SEM images of gold mesoparticles synthesized with 100 mM ascorbic acid and 20 mM gold precursor after adding different CTAB concentrations: (a, b) 20 mM, and (c, d) 40 mM.

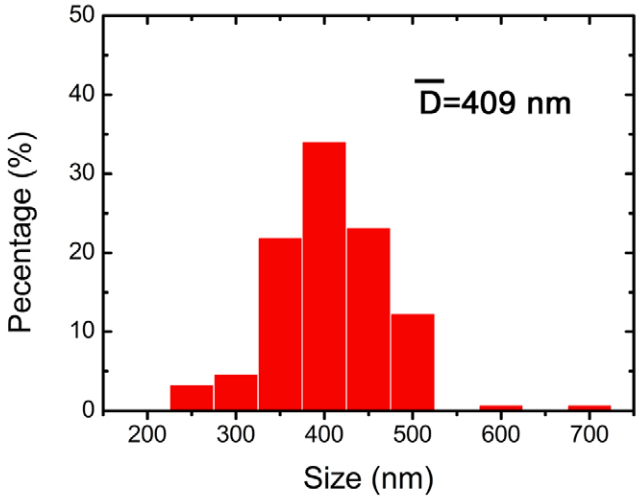

Fig. S9 Size distribution histogram of flower-like gold mesoparticles synthesized with the conditions of ascorbic acid 1 M, gold precursor 20 mM, and CTAB 40 mM.

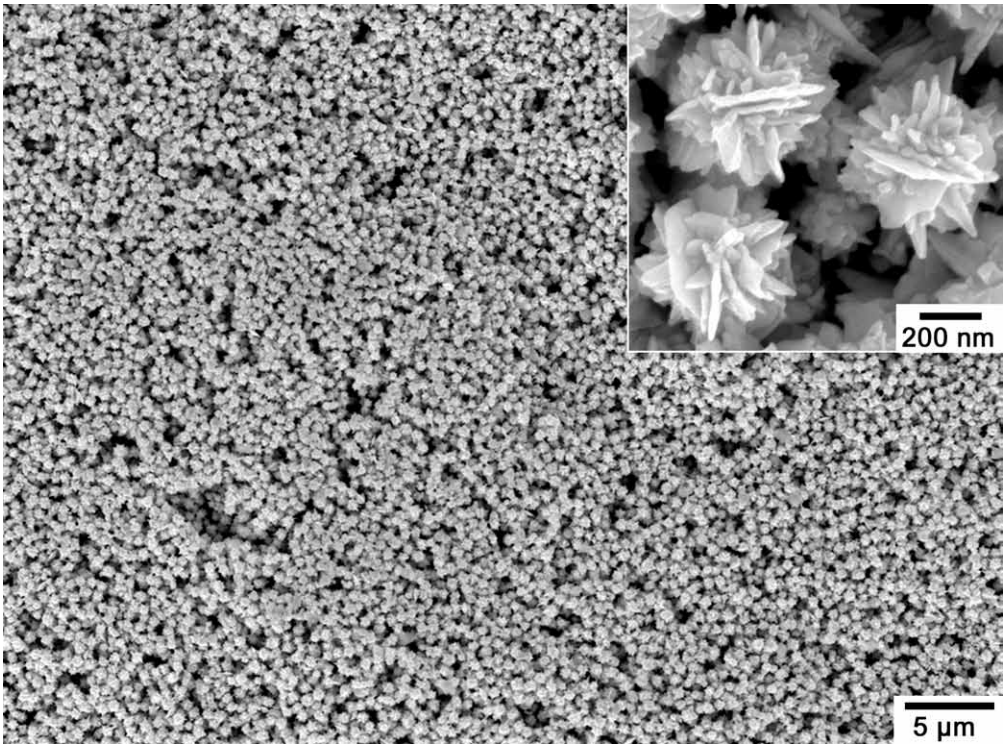

Fig. S10 Large area SEM images of gold flower-like mesoparticles, synthesized with the conditions of ascorbic acid 1 M, gold precursor 20 mM, and CTAB 40 mM.

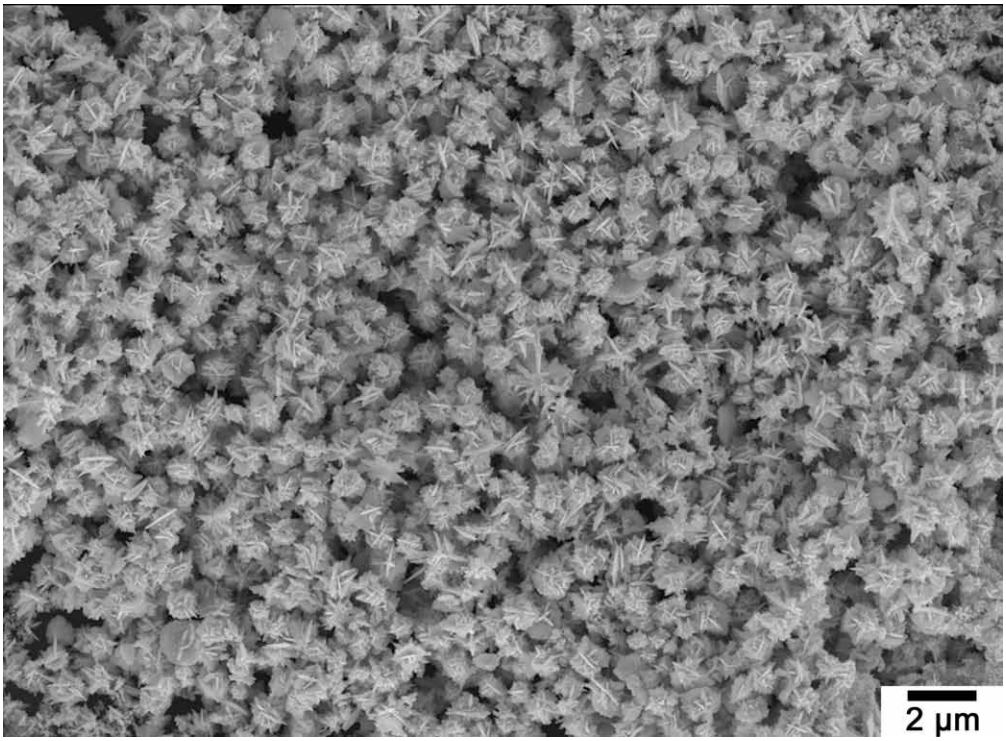

Fig. S11 Large area SEM images of larger gold flower-like mesoparticles, synthesized with the conditions of ascorbic acid 1 M, gold precursor 20 mM, and CTAB 80 mM.

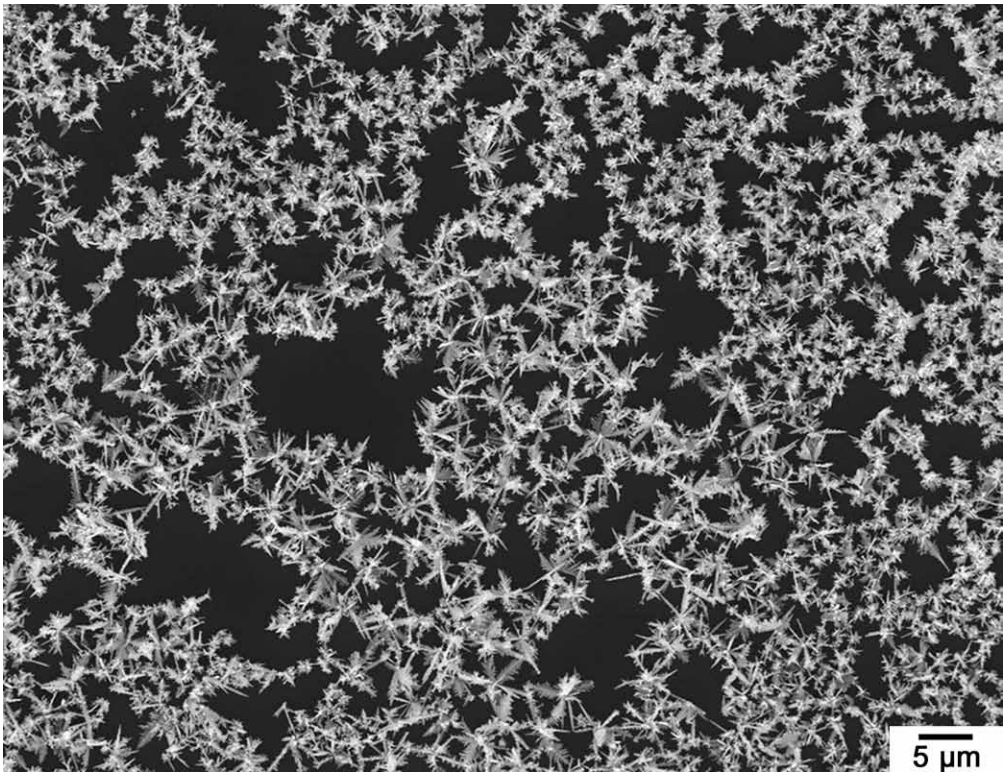

Fig. S12 Large area SEM image of gold dendritic mesoparticles, synthesized with the conditions of ascorbic acid 1 M, gold precursor 20 mM, and CTAB 160 mM.

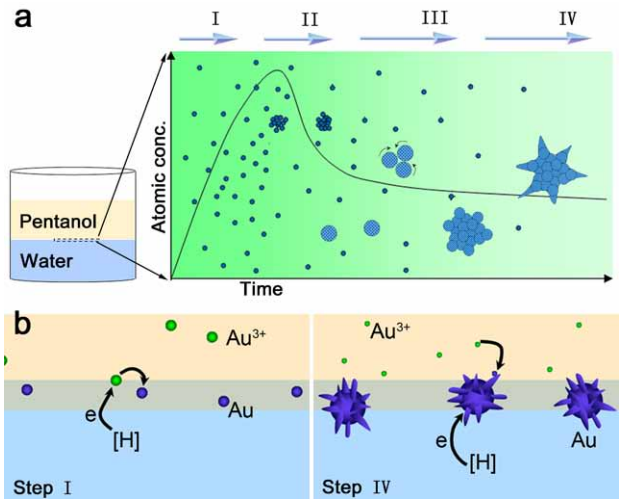

Fig. S13 Schematic of gold sea urchin-like mesostructure growth at the pentanol/water interface, which includes four steps: I atoms generation, II nucleation, III aggregation of tiny primary nanocrystals through OA mechanism, IV overgrowth of protuberance. (a) The plot illustrating the gold atom concentration versus reaction time during the reaction process. (b) Illustration of the reaction mechanism of step I and IV.

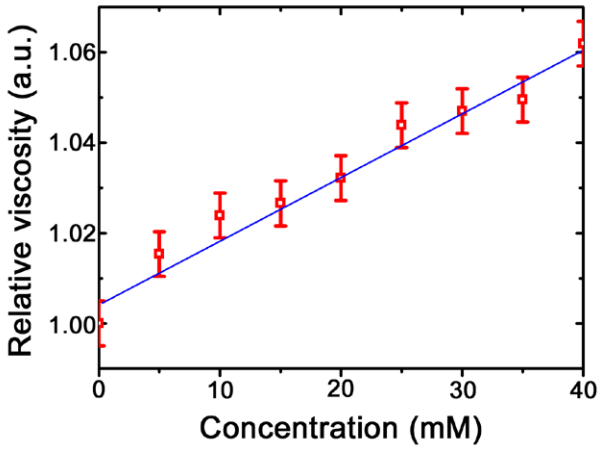

Fig. S14 Relative viscosity evolution of pentanol solution with various CTAB concentrations. The linear line is the fitting curve from the experiment data. The viscosity of pentanol without CTAB is normalized as 1. The relative viscosity was measured with an Ubbelohde viscometer.