Supporting Information

Temporal-spatially transformed synthesis and formation mechanism of gold bellflowers

**Fig. S1** TEM images of GNUs obtained by the monophasic synthesis method with sonication after adding (a) 3 µL, (b) 7.5 µL, and (c) 9 µL of o-phenetidine into 5 mL 0.8 mM HAuCl₄ aqueous solution. (d-f) TEM images of high magnification.

**Fig. S2** (a) Diameter change and (b) UV-vis-NIR absorbance spectra of GNUs prepared by using different volumes of o-phenetidine.
Fig. S3 TEM images of GMPs obtained by biphasic synthesis method under vigorously stirring. The 0.5 mL (a), 1 mL (b), 3 mL (c), and 4 mL (d) of 20 mM o-phenetidine in hexane were gently added on the top of 5 mL of HAuCl₄ aqueous solutions (0.8 mM) prior to stirring.

Fig. S4 (a) Diameter and (b) UV-vis-NIR absorbance spectra of GMPs obtained by biphasic synthesis method under vigorously stirring.
Fig. S5 XRD pattern of GNUs.

Fig. S6 XRD pattern of GMPs.
**Fig. S7** XRD pattern of GBFs.

**Fig. S8** Photographs of two-phase systems using different reduction agents under sonication.