Photoreductive synthesis of monodispersed Au nanoparticles with citric acid as reductant and surface stabilizing reagent

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**Fig. S2** XPS (Au 4f level) charts of AuNPs prepared by (a) thermal reduction (60 °C, 25 min) and (b) photoreduction (25 °C, 100 min) methods. The blue line is sum of the components.

**Fig. S3** $^1$H NMR analysis (DMSO-d$_6$, 400 MHz) of (a) citric acid and (b) the oxidation products obtained after photoirradiation of water containing HAuCl$_4$·4H$_2$O (0.8 mM) and citric acid (2.0 mM) for 100 min. The AuNPs in the solution were removed by centrifugation. The resulting solution was concentrated by evaporation and dissolved in DMSO-d$_6$. The ratio of citric acid, dicarboxyacetone and acetoacetate was determined to be 2:55:10.
Fig. S4  Time-dependent change in absorption spectra of water containing HAuCl₄·4H₂O (0.2 mM) and citric acid (0.5 mM) during stirring at 25 °C under 254 nm irradiation at different light intensity. The red is the spectrum for the solution containing HAuCl₄·4H₂O at 25 °C, and the blue is the spectrum for the solution after addition of citric acid (1 min).
Fig. S5  Time-dependent change in absorption spectra of water containing HAuCl₄·4H₂O (0.2 mM) and different amount of citric acid during stirring at 25 °C under 254 nm irradiation (light intensity: 150 mW m⁻²).
Fig. S6  Time-dependent change in (a) the LSPR absorbance and (b-d) absorption spectra of water containing HAuCl₄·4H₂O (0.2 mM) and citric acid (0.5 mM) obtained by stirring at 25 °C under light irradiation at different light wavelengths (light intensity: 150 mW m⁻²).