Integration of Gold Nanoparticles into Crosslinker-Free Polymer Particles and Their Colloidal Catalytic Property

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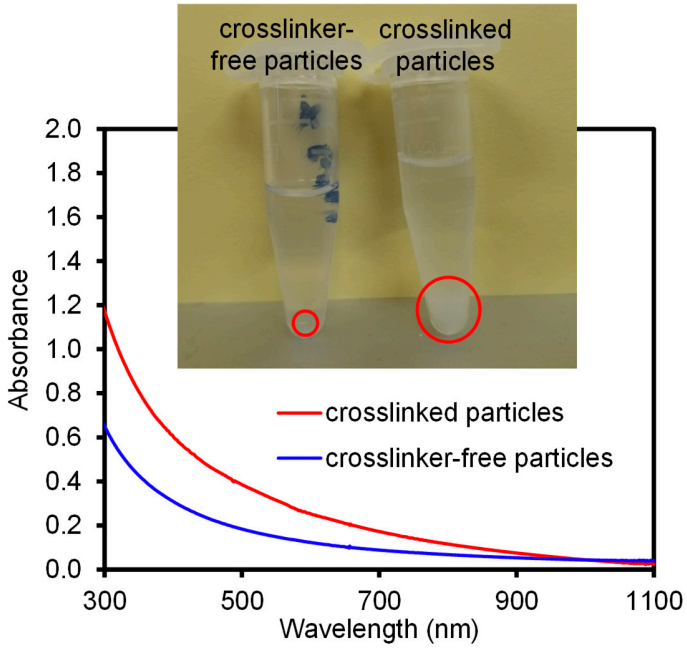


Figure S1. A digital photo and absorbance of crosslinker-free and crosslinked PNIPAM particles in water after centrifugation (red circles indicate the precipitated particles).

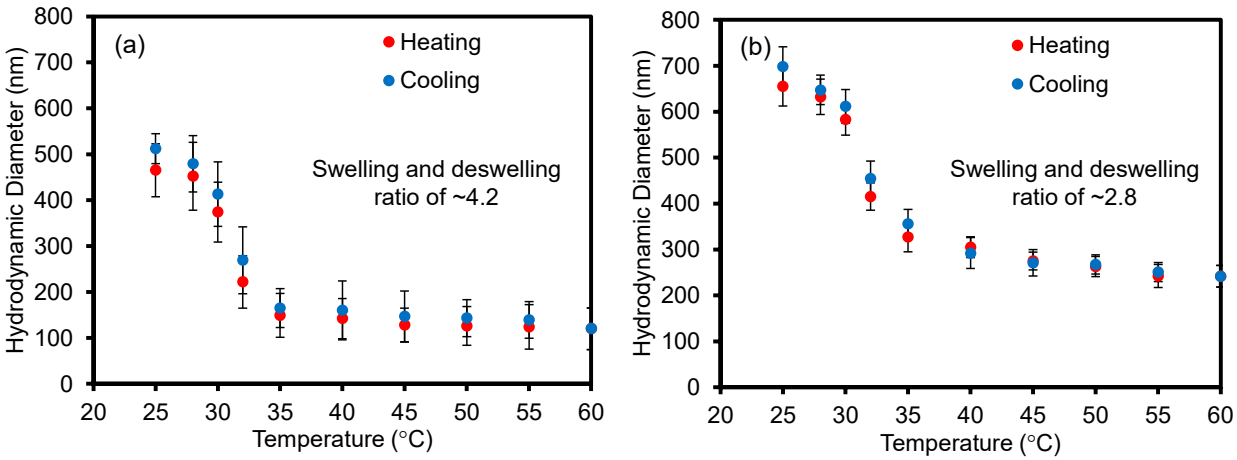


Figure S2. Hydrodynamic diameter changes of (a) crosslinker-free and (b) crosslinked PNIPAM particles as a function of temperature.

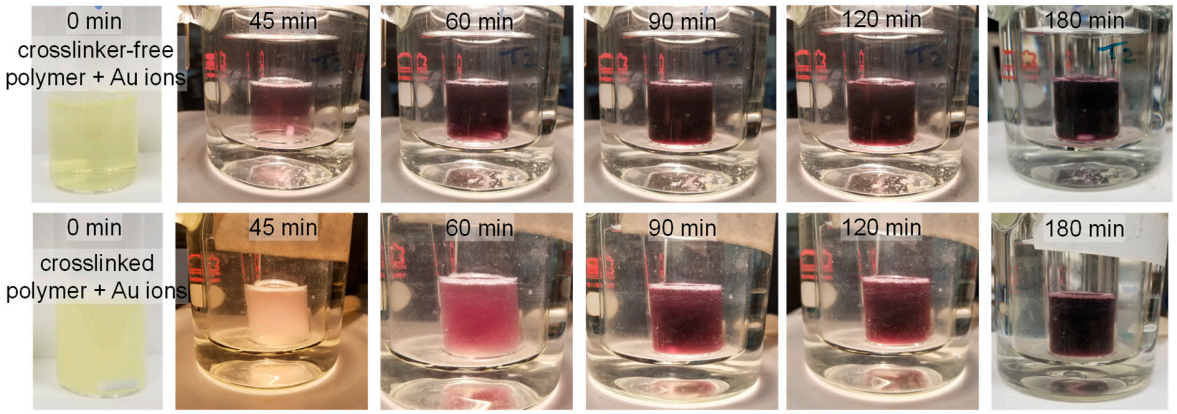


Figure S3. The reduction process of gold ions in the presence of crosslinker-free (top) and crosslinked (bottom) polymer particles under a solar-simulated light source as a function of time.

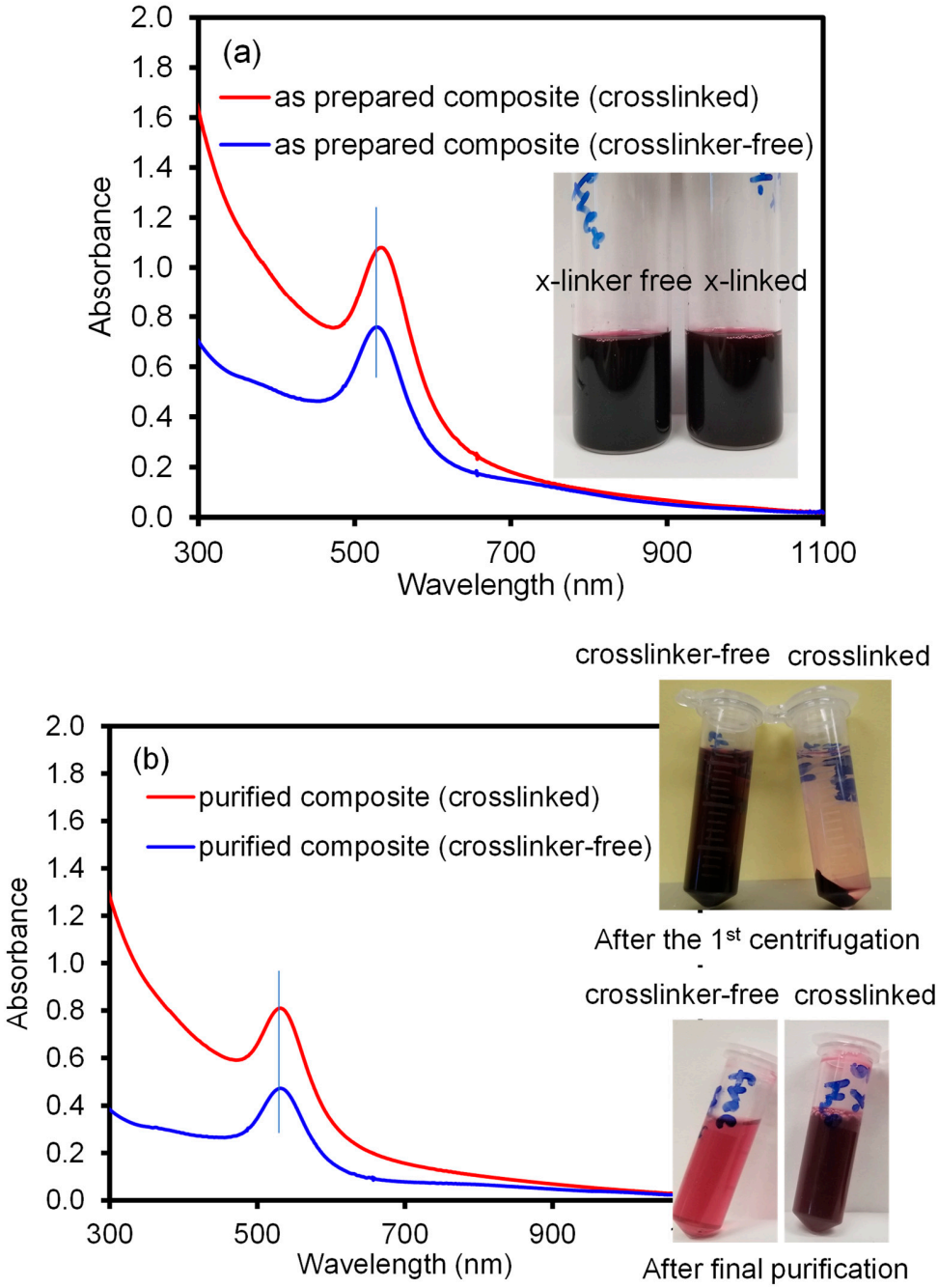


Figure S4. Absorption (i.e., SPR) patterns of crosslinker-free and crosslinked composite particles (a) before and (b) after the purification as well as their corresponding photos.

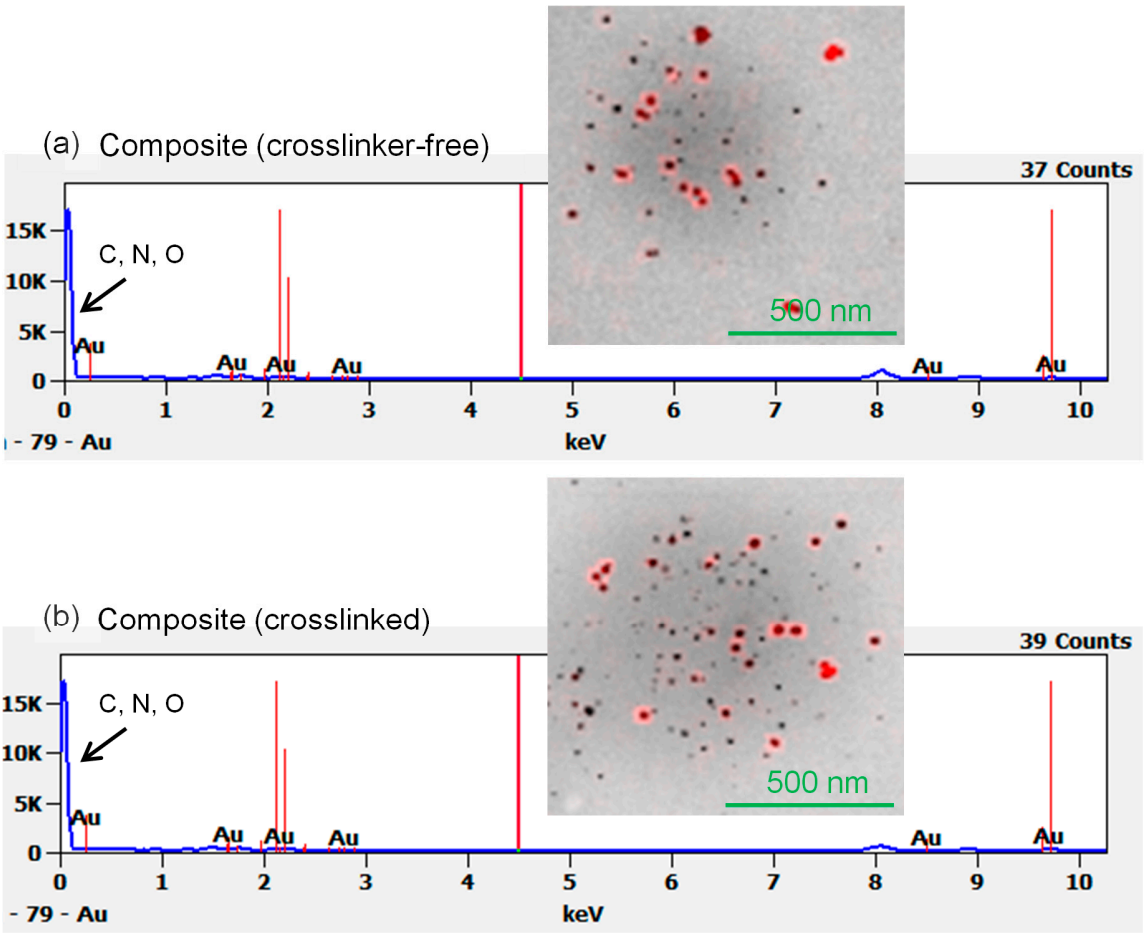


Figure S5. Energy dispersive x-ray maps and spectra for composite particles prepared with (a) crosslinker-free and (b) crosslinked PNIPAM particles.

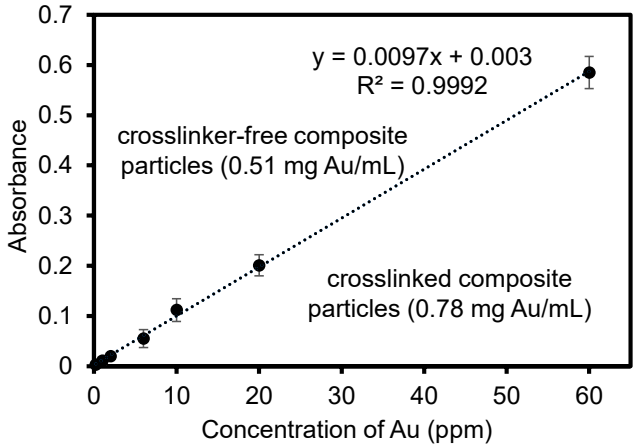
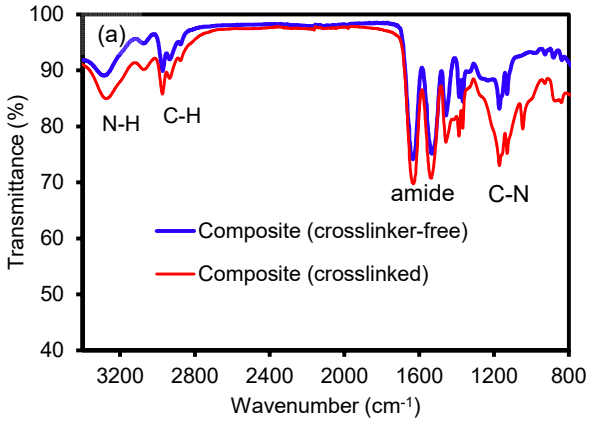
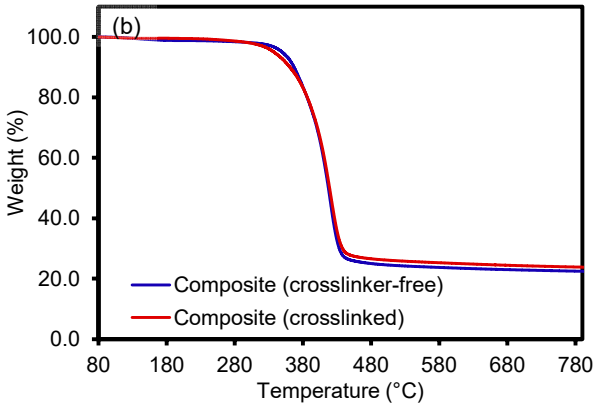


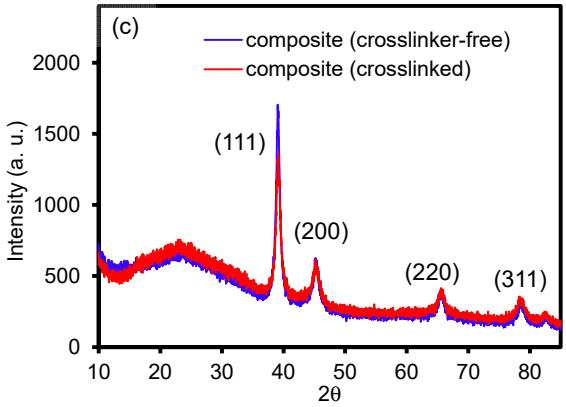
Figure S6. Calibration curve of Au atom standards by atomic absorption spectroscopy.



Obtained by a Spectrum 100 FT-IR Spectrometer (Perkin Elmer) equipped with an ATR sampling accessory under the following conditions (scan range: 4,000 to 650 cm^{-1}, resolution of 4 cm^{-1}, 64 scans).



Obtained by a thermogravimetric analyzer (SDT Q600, TA Instrument) under the following conditions (10 min of pre-heating at 80 ℃, a ramping rate of 25 ℃ /min from 80 ℃ to 800 ℃, 50 mL/min N_2 gas flow).



Obtained by a benchtop powder X-ray diffraction system with Cu K*α* radiation (MiniFlex 600, Rigaku Corp.) under the following conditions (scan rage: 5-85°, 0.02 steps, 5 degree/min)

Figure S7. Additional characterization of crosslinker-free and crosslinked composite particles by (a) Fourier transform infrared spectrometer, (b) thermogravimetric analyzer, and (c) powder x-ray diffractometer.

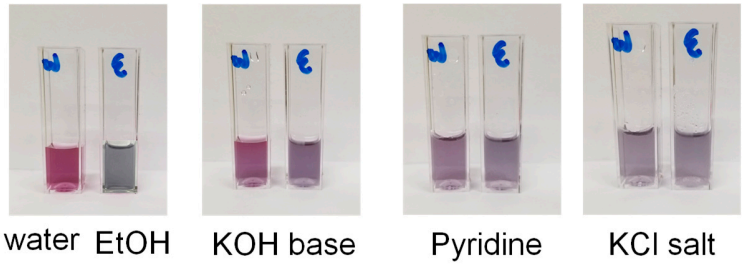


Figure S8. Stability of bare AuNPs in water and EtOH under various conditions.