Supporting information for:

Controllably Tuning the Near-infrared Plasmonic Modes of Gold Nanoplates for Enhanced Optical Coherence Imaging and Photothermal Therapy

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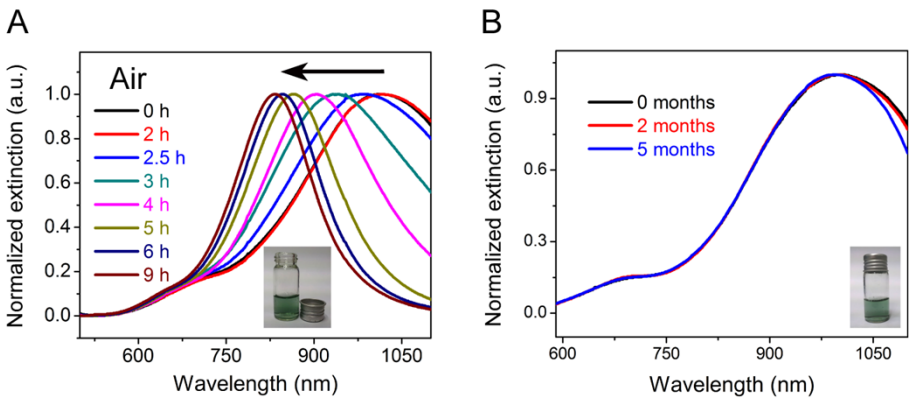

Figure S1. (A) Normalized UV-vis absorption spectra taken from solution exposed to air. Inset: photograph of sample exposed to air. The longitudinal plasmon band shifts from 1021 nm to 832 nm in 9 h. (B) Time-depended normalized UV-vis extinction spectra of GTNPs suspension which was sealed in a bottle for several months. Inset: photograph of suspension sealed in a bottle. The plasmon mode of GTNPs suspension almost didn't shift.

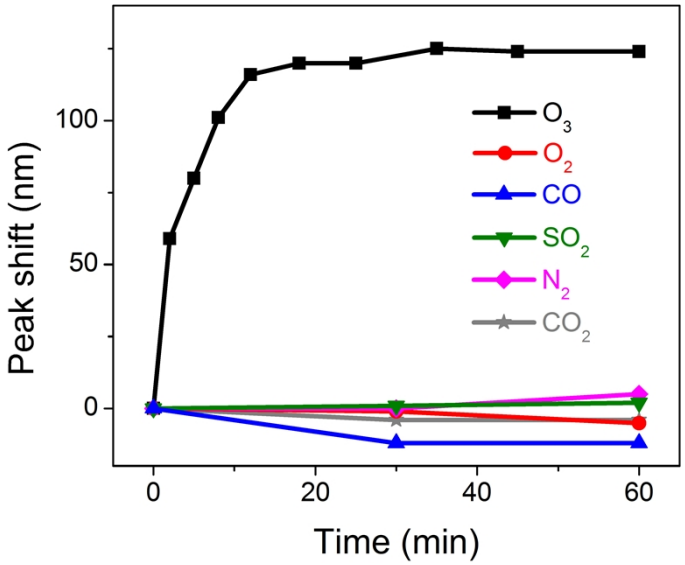

Figure S2. The influence of different types of gases in air on the plasmon mode shifts of GTNPs. The plasmon mode shifts of GTNPs as a function of time after exposure to different

gases included O_3, O_2, CO, SO_2, N_2, CO_2.

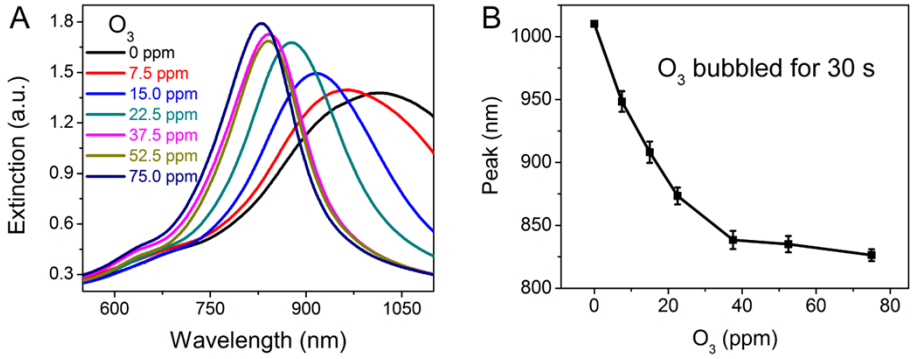

Figure S3. The effect of ozone with different concentrations on the plasmon mode shifts of GTNPs. (A) UV-vis extinction spectra of the GTNPs suspensions after exposing to different concentrations of O_3 for 30 s. (B) The concentration-dependent plasmon mode shifts of the GTNPs suspensions corresponding to (A).

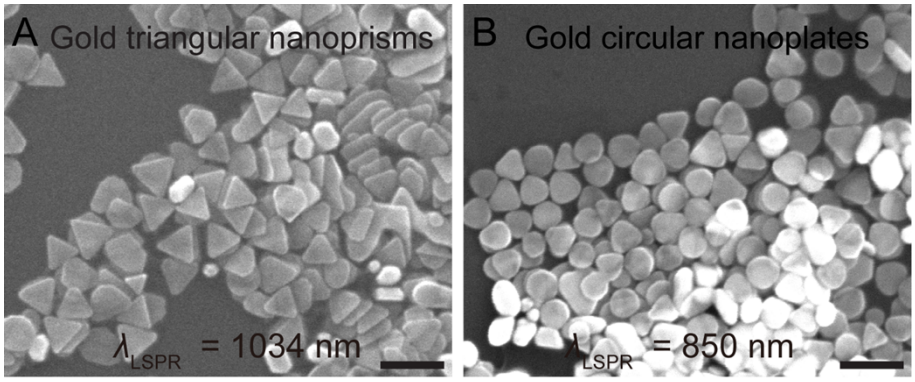

Figure S4. Morphologic changes of the GTNPs during the exposing process. Scanning electron microscope (SEM) images taken from the GTNPs (A) before and (B) after being exposed to O_3 (75 ppm) for 60 min with their plasmon modes shifted from 1034 nm to 850 nm. The sharp corners of GTNPs were gradually rounded to form circular nanoplates but the plate-like morphology was preserved. The scale bars are 150 nm.

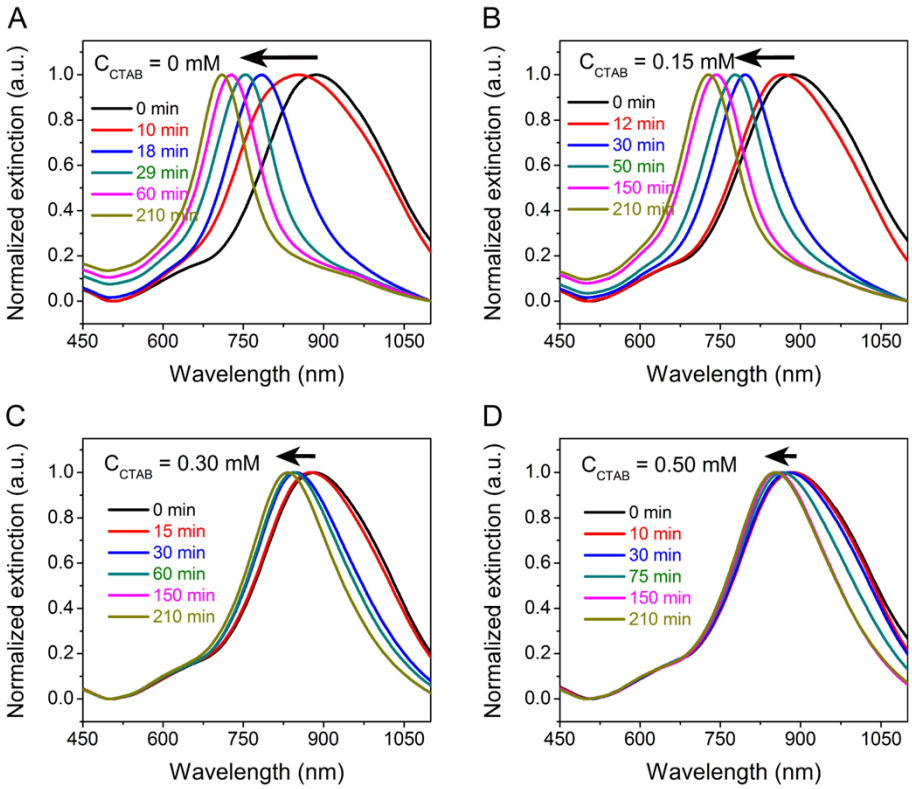

Figure S5. The rates of the plasmon mode shifts of GTNPs with different concentrations of CTAB in the suspension. Normalized UV-vis extinction spectra taken from GTNPs exposed to O_3 (~0.08 ppm) with the concentrations of CTAB in the suspension: (A) 0 mM; (B) 0.15 mM; (C) 0.30 mM; (D) 0.50 mM.

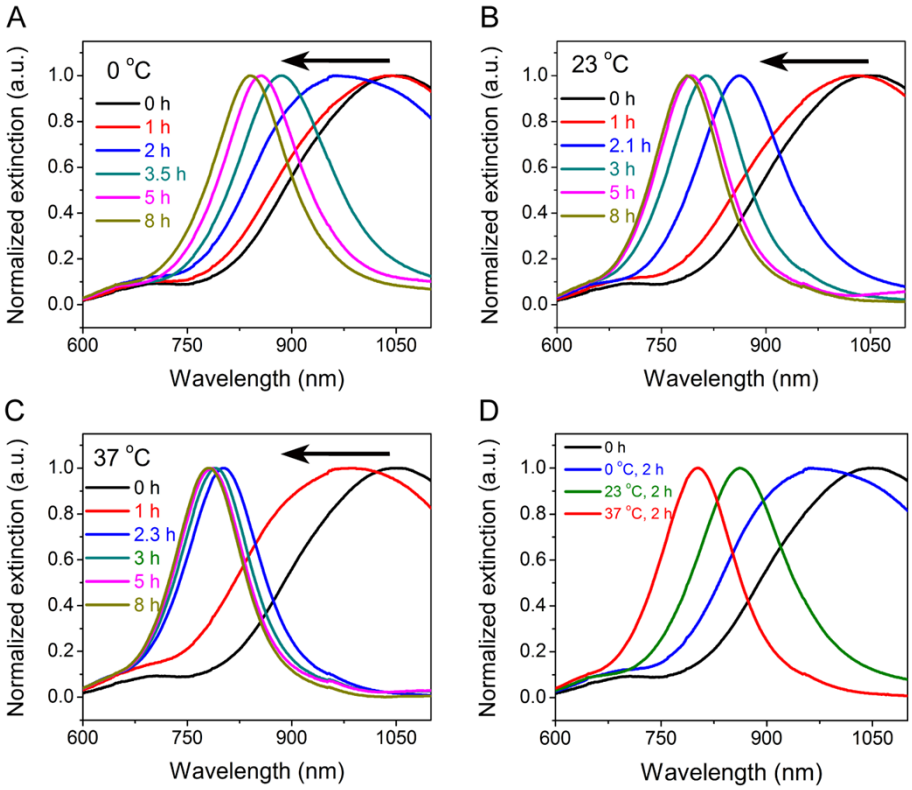

Figure S6. The rates of the plasmon mode shifts of GTNPs at different temperatures. Normalized UV-vis extinction spectra taken from GTNPs suspensions exposed to O_3 (~ 0.08 ppm) at (A) 0 °C; (B) 23 °C; (C) 37 °C; (D) Normalized UV-vis extinction spectra of the GTNPs suspensions after exposing to O_3 at above-mentioned temperatures for 2 h.

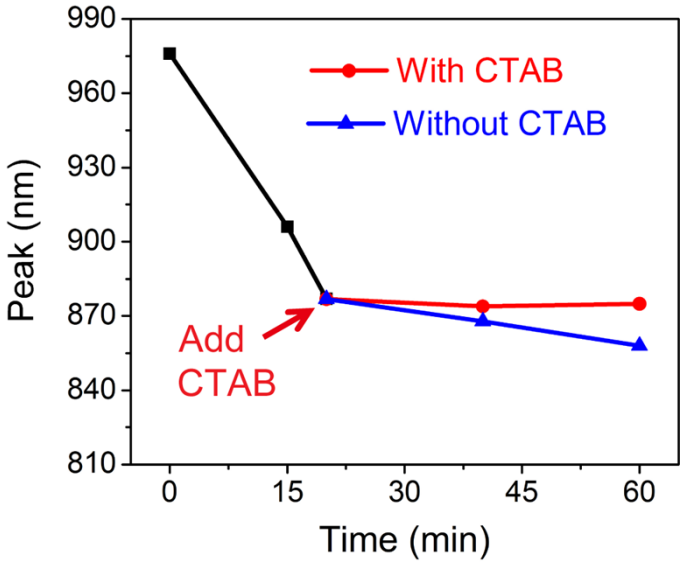

Figure S7. The stop of the plasmon mode shifting with and without adding CTAB. The GTNPs suspensions whose plasmon mode shifted to a specific wavelength in O_3 (in the atmosphere, ~0.12 ppm) were transferred to sealed bottles with (the red line) and without (the blue line) adding CTAB into the suspension.

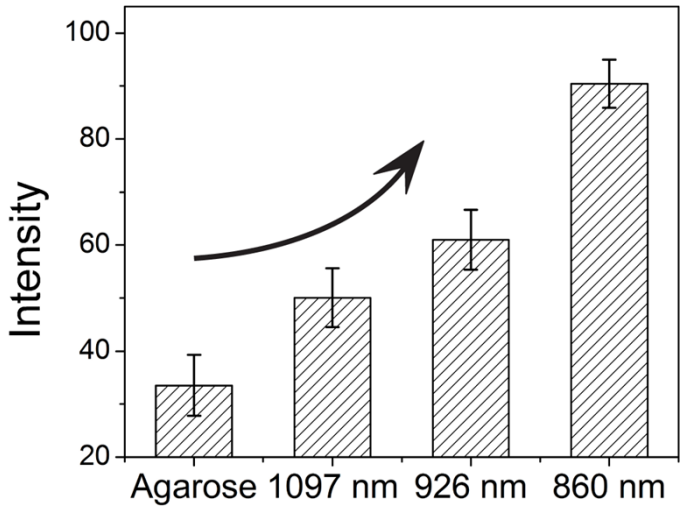

Figure S8. Enhancement of OCT signal using GTNPs with different plasmon modes. The signal intensities of agarose gel and GTNPs-agarose phantoms containing GTNPs before (λ_{LSPR} = 1097 nm) and after (λ_{LSPR} = 926 nm and 860 nm) tuning the process were measured by an 840-nm OCT system. We employed an area of 100 μm (width) x 25 μm (height) for intensity calculation; the

area was selected ~5 μm below the air-agarose interface.

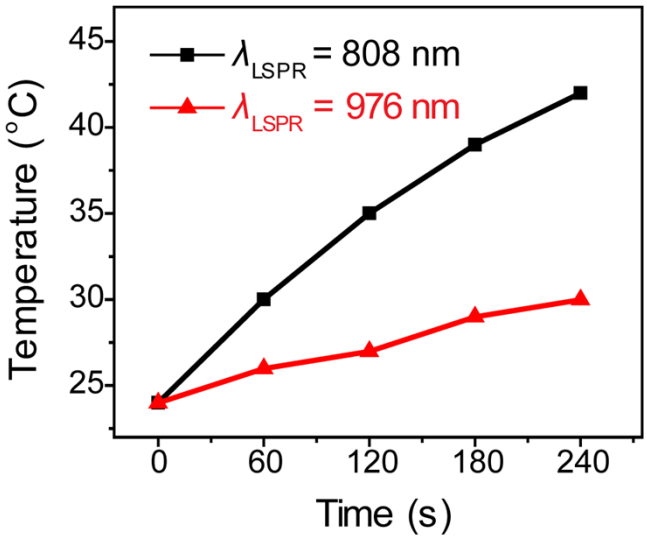

Figure S9. The temperature of the center of the channel loaded on with GTNPs obtained plasmon modes of 808 nm (the black line) and 976 nm (the red line) under radiation of a 808 nm laser.

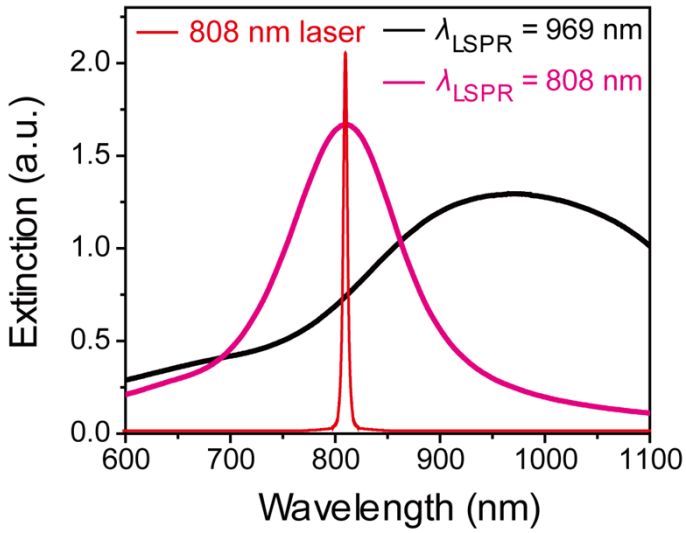

Figure S10. A schematics showing the wavelength of the NIR laser and UV-vis extinction spectra of GTNPs-agarose mixtures used in the demonstrations of thermotherapy.