Supporting Information

An Easy-to-Fabricate Clearable CuS-Superstructure-Based Multifunctional Theranostic Platform for Efficient Imaging Guided Chemo-Photothermal Therapy

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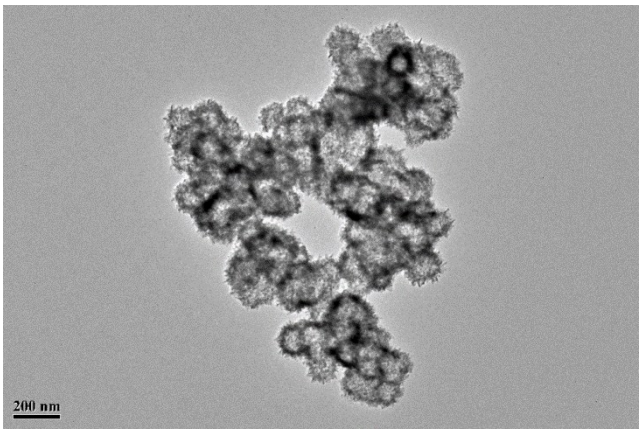

Fig. S1 Low magnification TEM image of CuS superstructures.

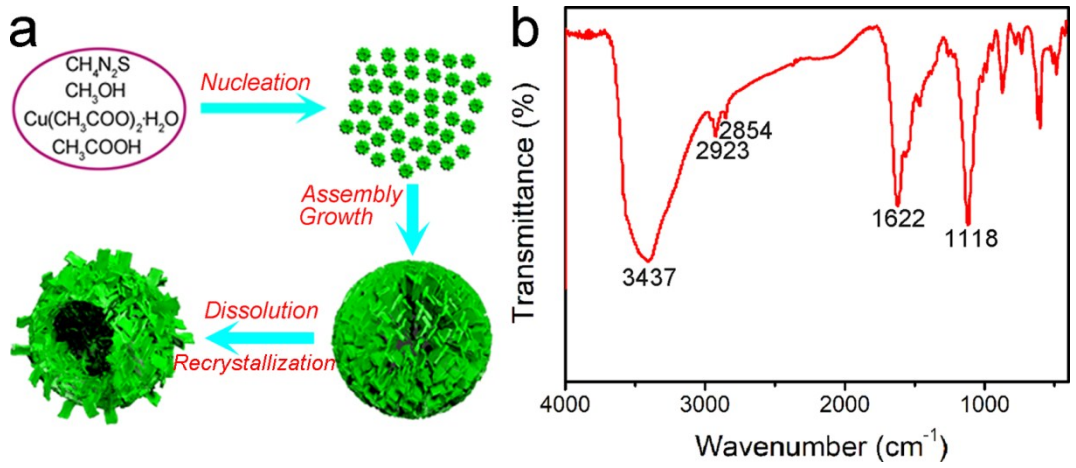

Fig. S2 (a) Proposed growth mechanism and (b) FTIR spectrum of CuS superstructures.

The proposed growth mechanism for the CuS superstructures is illustrated in Fig. S2a†. In the whole formation process of the CuS superstructures, acetic acid was reported to play an important role. In addition to functioning as the reaction solvent to restrain the growth rate of CuS in synthetic process [1], the existence of acetic acid, at the same time, possibly improves the water dispersibility and anti-aggregation of

our product [2,3].

The presence of carboxylate group on the surface ofthe CuS superstructures was identified by Fourier transform infrared (FTIR) spectrum (Fig. S2b†). The broad absorption band at 3437 cm^{-1} represents the stretching vibration of -OH groups of adsorbed H_2O molecules. The bands at 2923 and 2854 cm^{-1} are assigned to the C-H stretching vibrations. The band at 1622 cm^{-1} should be related to a strong C = O absorption from the carboxylate group. In addition, the band near 1118 cm^{-1} corresponds to C-O stretching vibration. It is deduced that there exists the carboxylate group on the surface of the CuS superstructures.

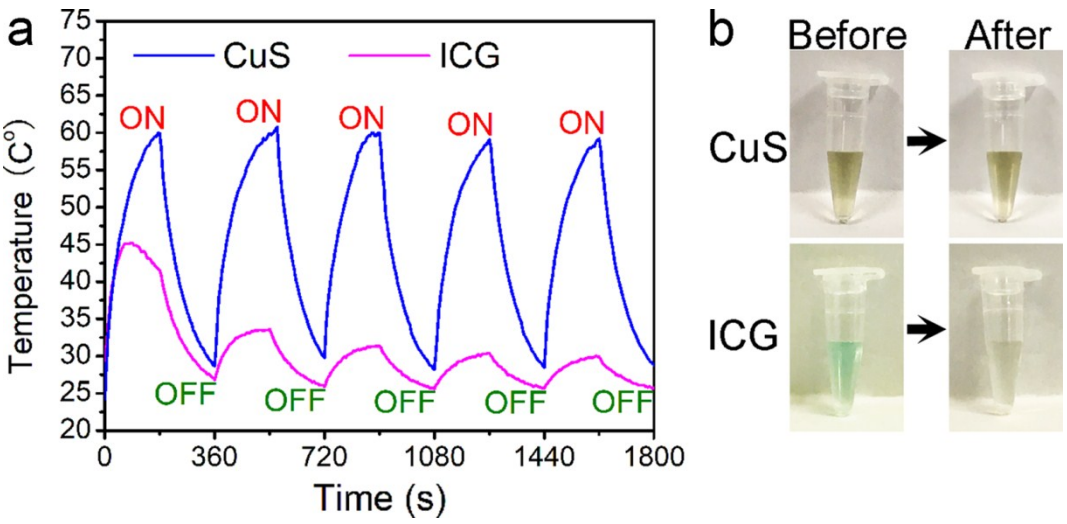

Fig. S3 (a) Temperature variations of the CuS superstructure aqueous dispersion (Cu^{2+} concentration: 100 ppm) and indocyanine green (ICG) solution (20 ppm) under irradiation by the 808 nm laser at the power density of 0.7 W/cm^2 for 5 cycles (3 min of irradiation for each cycle). (b) Photos of CuS dispersion and ICG solution before and after laser irradiation.

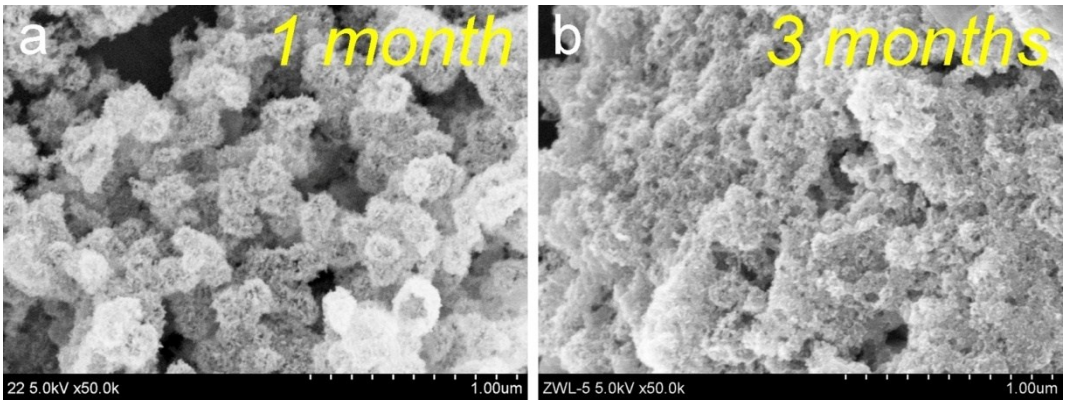

Fig. S4 SEM images of the CuS superstructure aqueous dispersions after being placed quietly for (a) 1 month and (b) 3 months.

References

[1] X. Y. Meng, G. H. Tian, Y. J. Chen, R. T. Zhai, J. Zhou, Y. H. Shi, X. R. Cao, W. Zhou and H. G. Fu, *CrystEngComm*, 2013, **15**, 5144.

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