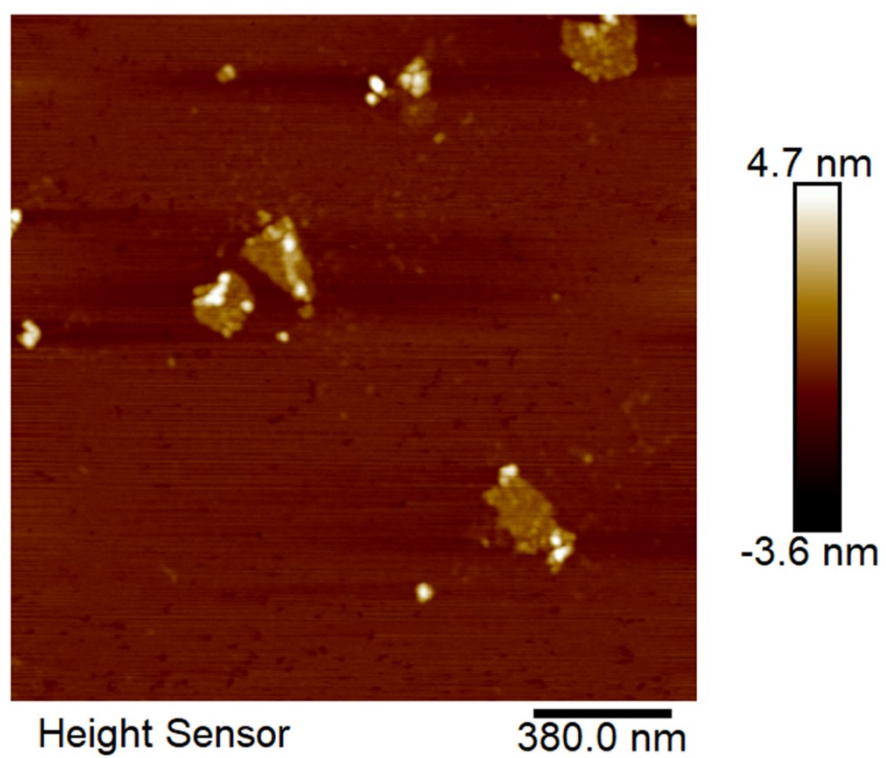
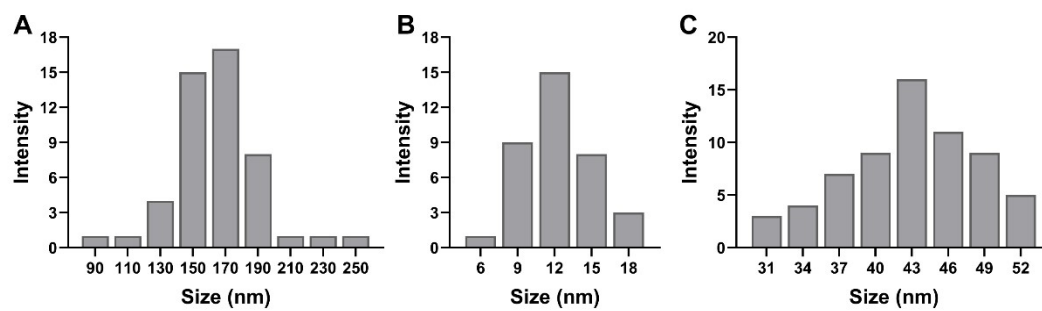


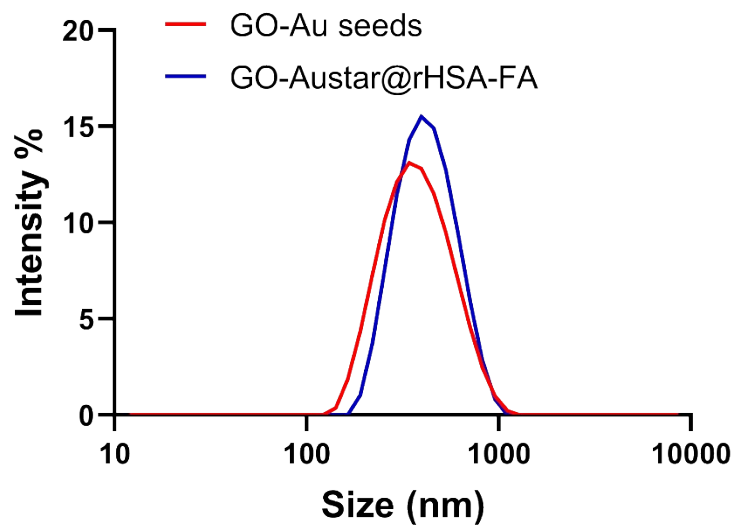
**Figure S1.** AFM topography image of GO-Au seeds.



**Figure S2.** The statistical diameter distribution of (A) GO, (B) Au seeds and (C) Austar.



**Figure S3.** The DLS size distribution of (A) GO-Au seeds and (B) GO-Austar@rHSA-FA.



**Figure S4.** Full elements X-ray photoelectron spectroscopies of GO (A) and GO-Austar (B).

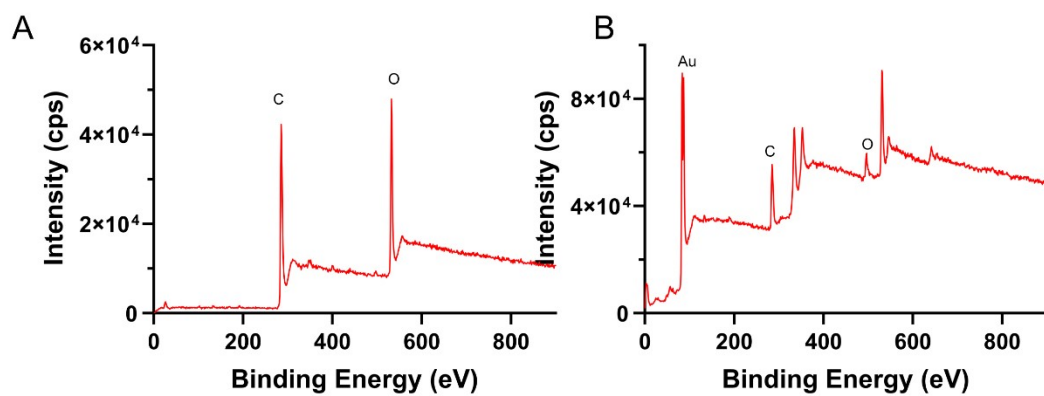
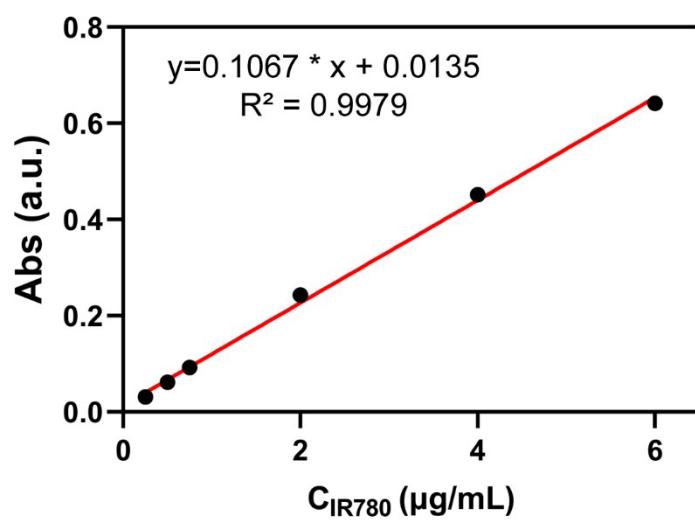
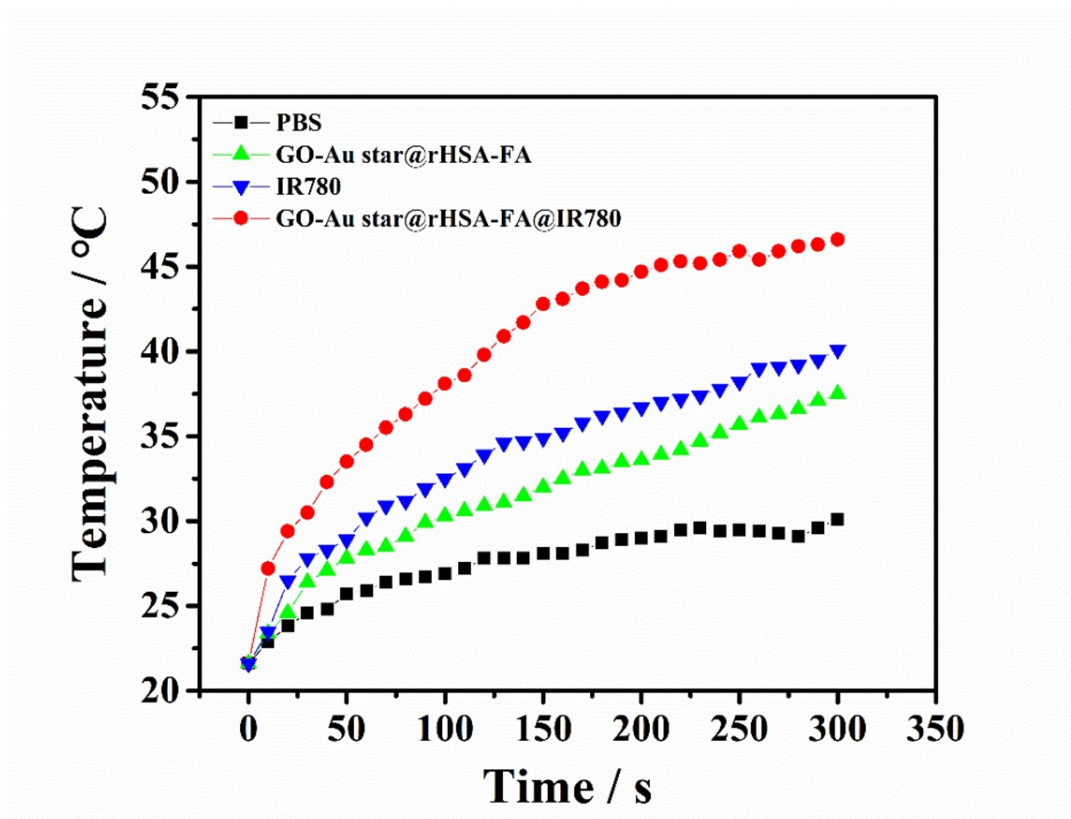


Figure S5. IR780 stander curve.



**Figure S6.** Representative heating profile of different formulations in PBS buffer with 808 nm laser irradiation. IR780: 20  $\mu\text{g}/\text{mL}$ , GO-Austar@rHSA-FA: 40  $\mu\text{g}/\text{mL}$



**Figure S7.** In vivo photothermal therapy of all the formulations with/without irradiation.

