

Supporting Information: Hybrid magneto-plasmonic nanoheaters

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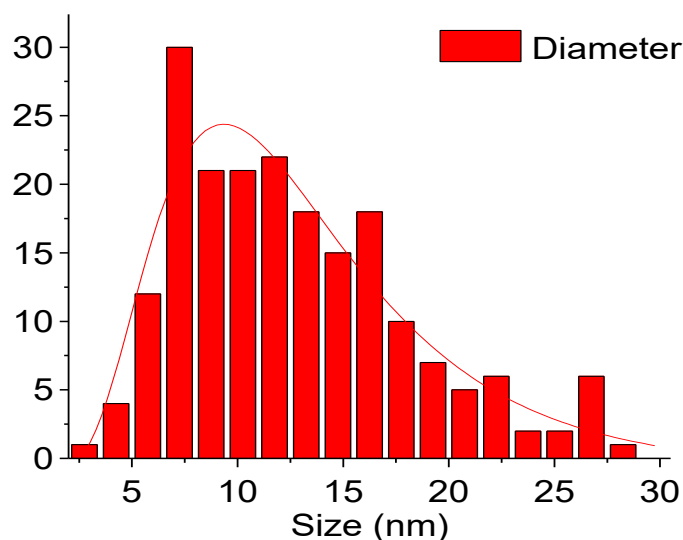


Figure S1. Diameter distribution of iron oxide nanoparticles (IONP) measured with transmission electron microscopy. Red line represents the log-normal fitting used to obtain the average diameter and the size dispersion.

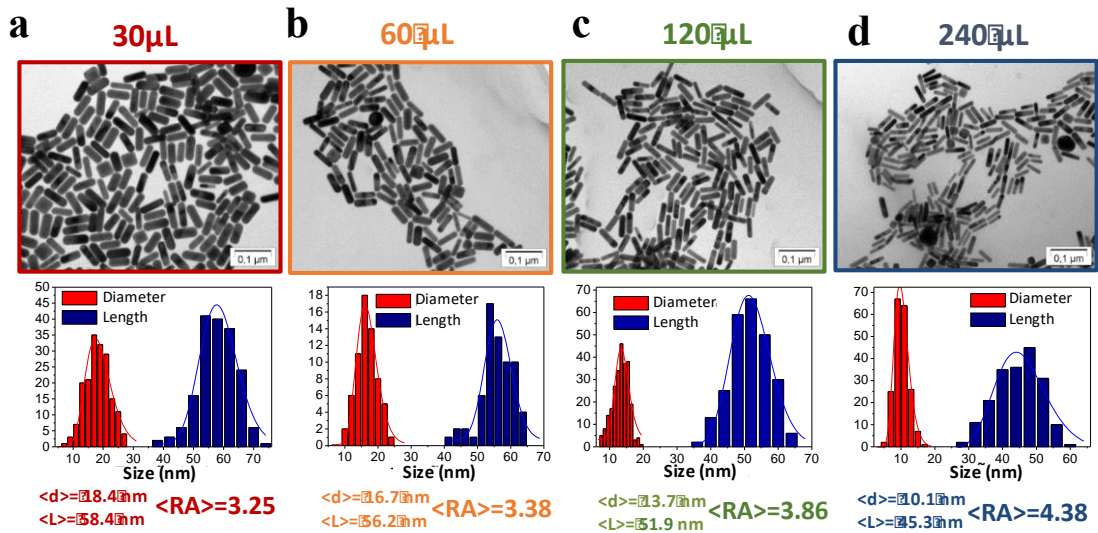


Figure S2. Transmission electron microscopies of Au nanorods (AuNR) prepared adding different amount of seeds to the growth solution: (a) 30 μL , (b) 60 μL , (c) 120 μL and (d) 240 μL . Histograms of the diameter and length distributions of each population of AuNR were included each picture. The average diameter and length of each population were obtained fitting the histograms with a log-normal distribution.

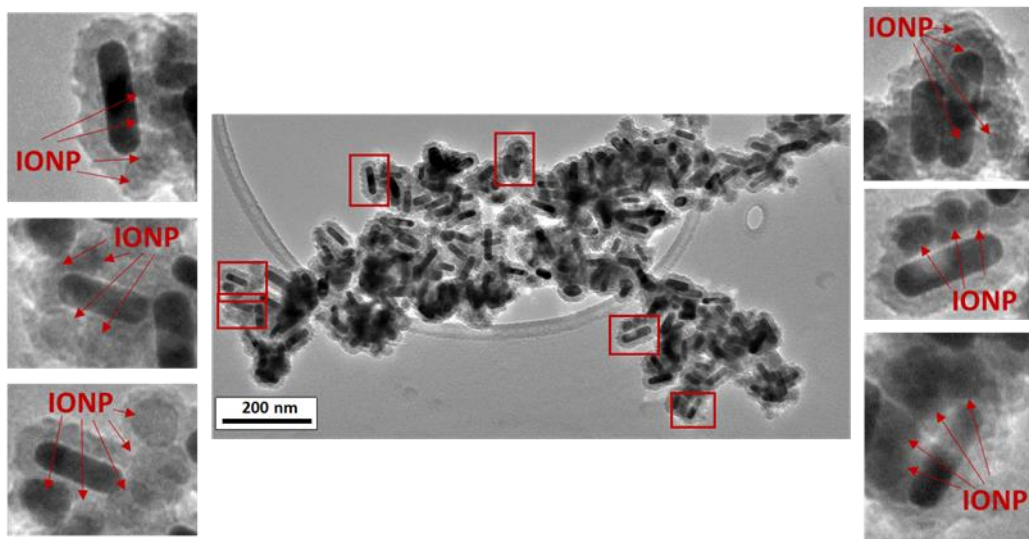


Figure S3. TEM image of HMPNPs. The IONPs in the HMPNPs were identified using red arrows in the insets displayed around the picture.

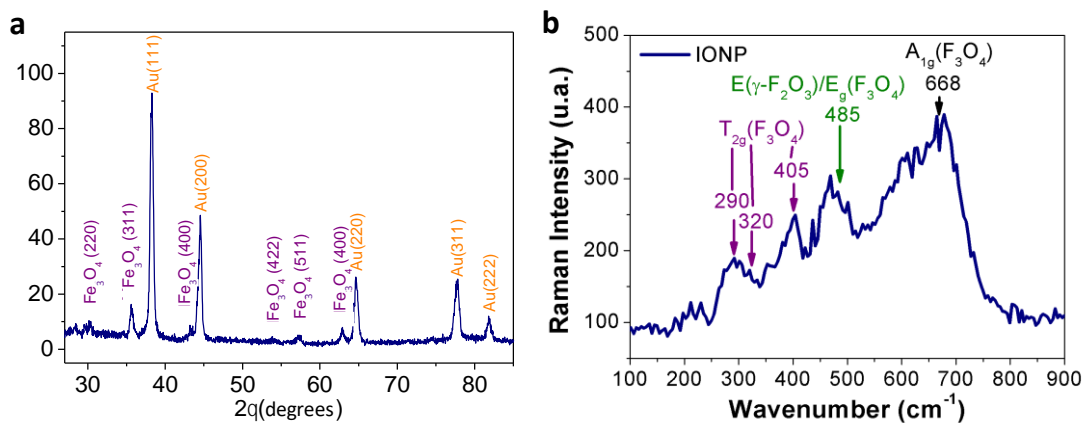


Figure S4. (a) X-ray diffraction pattern of hybrid magneto-plasmonic nanoparticles (HMPNP). Labels indicate the position of Au and Fe_3O_4 crystal planes. (b) Raman spectra of IONP indicate the presence of Fe_3O_4 and $\gamma\text{-Fe}_2\text{O}_3$ phases.

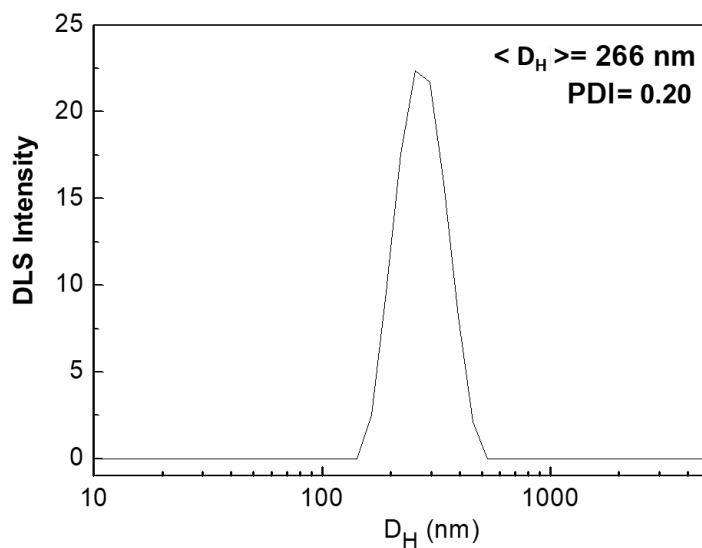


Figure S5. DLS measurements of hydrodynamic diameters (D_H) of HMPNP and polydispersity index (PDI).

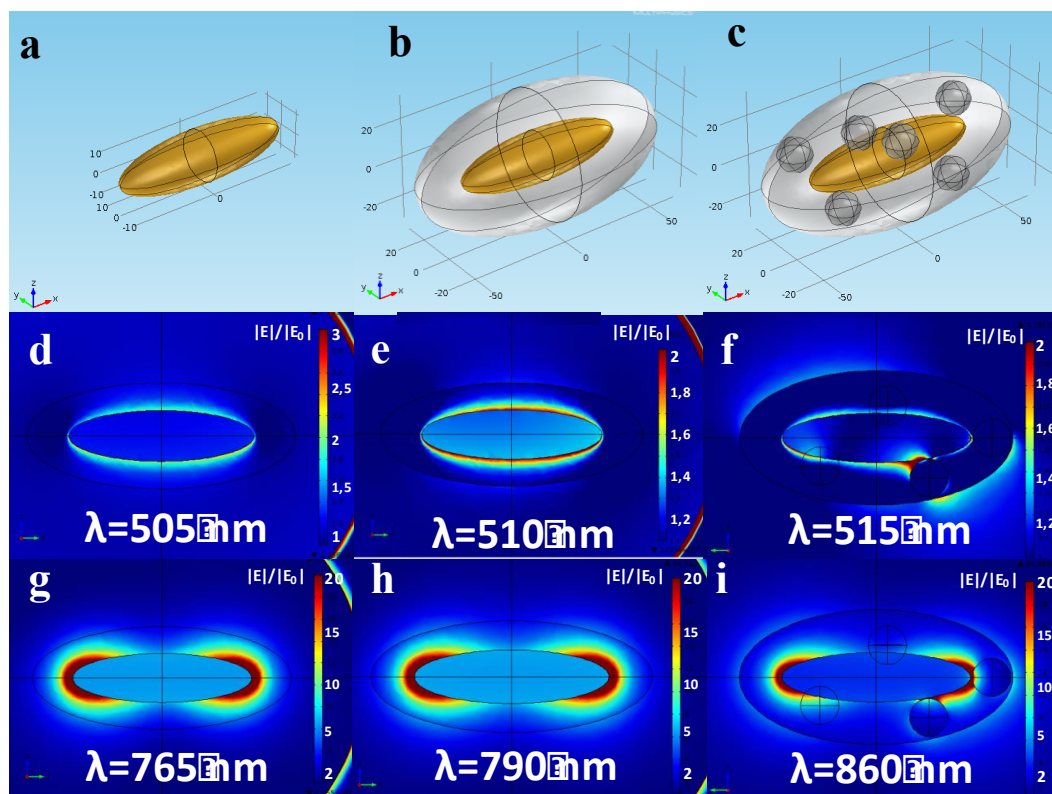


Figure S6. Geometries employed in the finite element method COMSOL simulations for: (a) AuNR, (b) AuNR@SiO₂ and (c) HMPNP. Near electric field enhancement generated by each nanostructure at the transversal (d,e,f) and longitudinal (g,h,i) plasmonic resonances wavelengths.

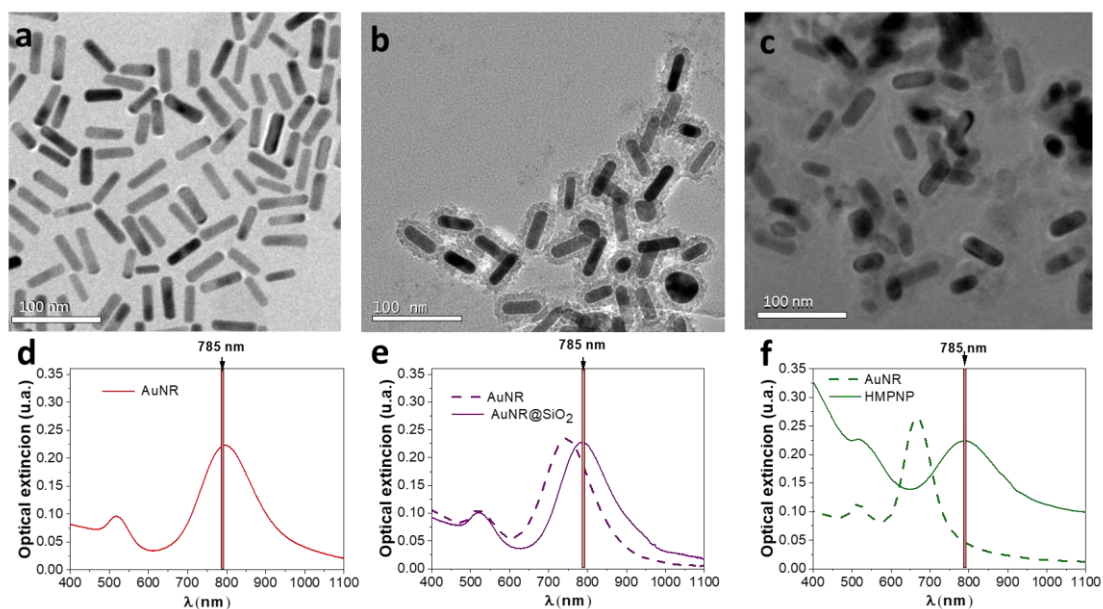


Figure S7. TEM images of the samples studied in photothermal comparative tests: (a) AuNR, (b) AuNR@SiO₂ and (c) HMPNPs. The position of longitudinal resonance was fitted to 785 nm by changing the aspect ratio of the AuNR employed for the synthesis. Optical extinction spectra of: (d) AuNR, (e) AuNR@SiO₂ and (f) HMPNPs. Dot lines indicated the spectra of the AuNR used in each case.