

Electronic Supplementary Information (ESI)

Room temperature synthesized solid solution AuFe nanoparticles and their transformation to Au/Fe Janus nanocrystals

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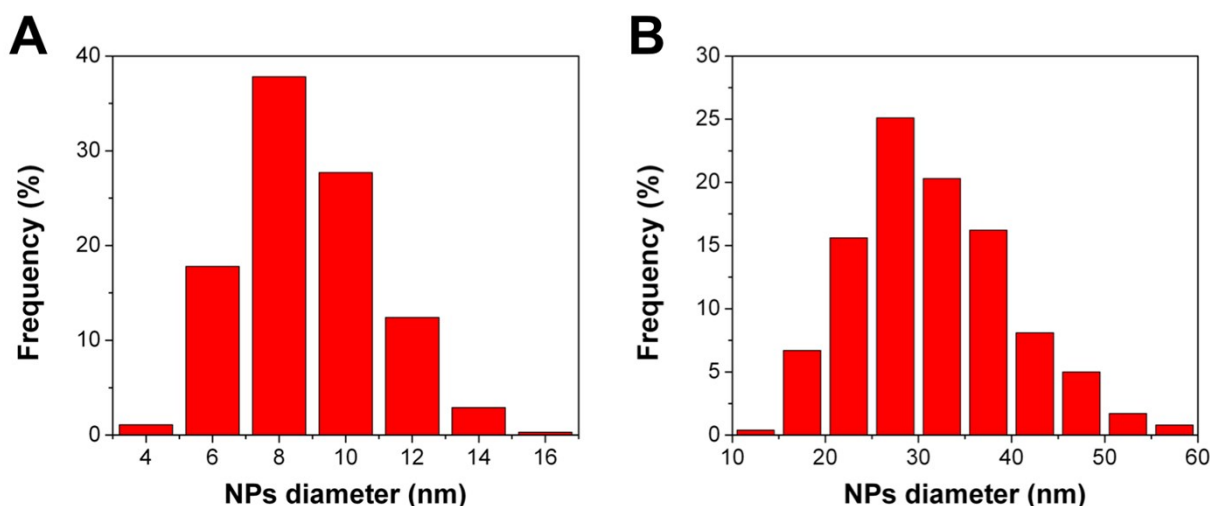


Figure S1. Size distribution of Fe₃O₄ NPs (A) and AuFe NPs (B).

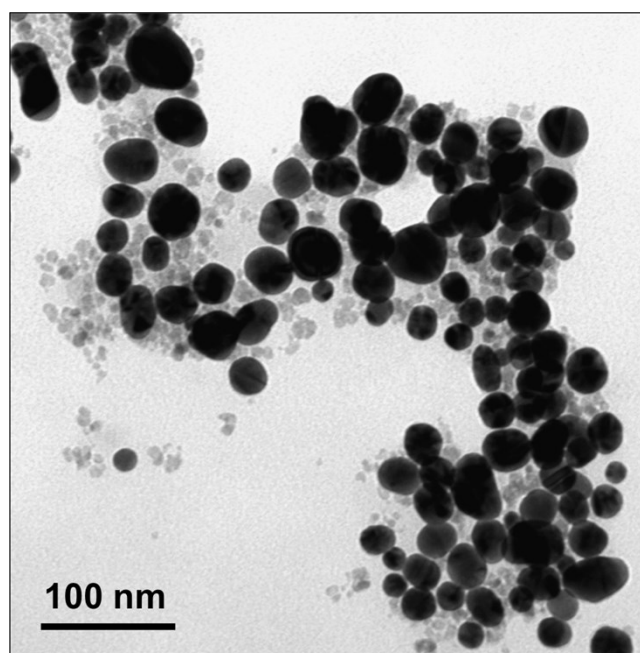


Figure S2. Bright-field TEM image of AuFe NPs on a carbon-coated Cu grid before the purification.

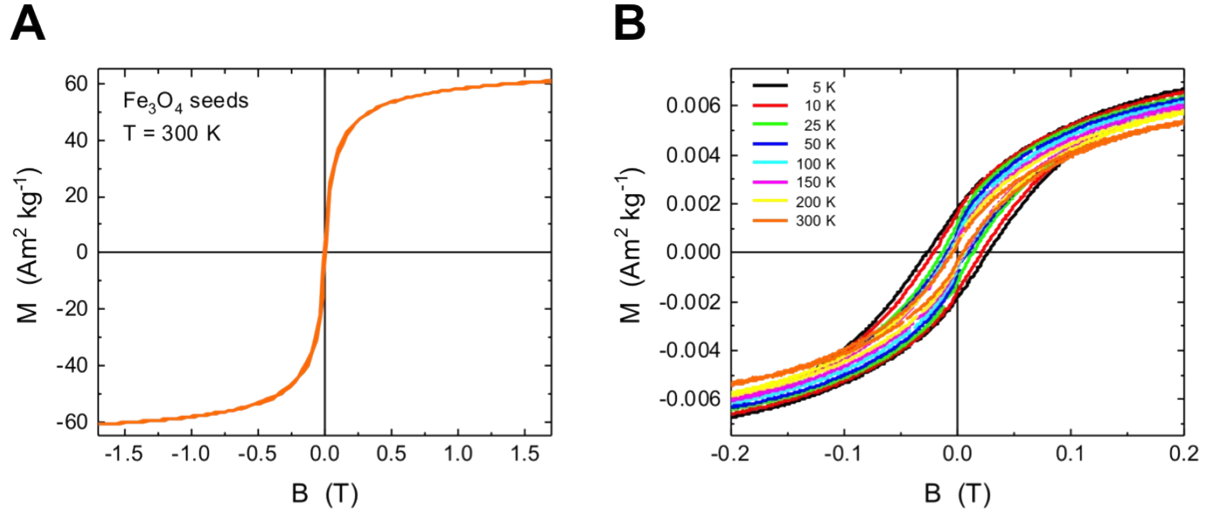


Figure S3. Magnetic characterization of Fe_3O_4 seeds and AuFe NPs. (A) Hysteresis loop for Fe_3O_4 seeds recorded at 300 K. (B) Hysteresis loops for AuFe NPs recorded at various temperatures between 5 K and 300 K, magnification around zero-field from the Figure 5A in the main text.

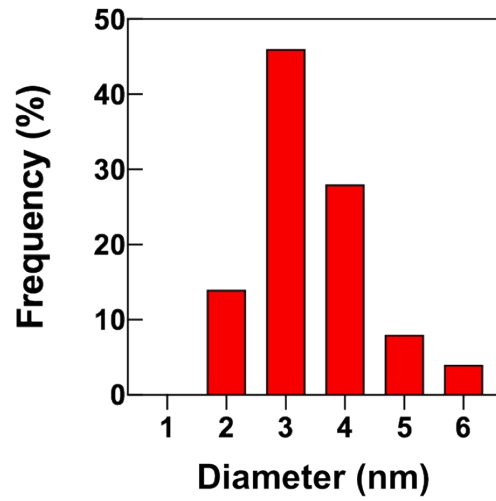


Figure S4. Size distribution of inclusions (regions of a different contrast) in the TEM images of the AuFe NPs.

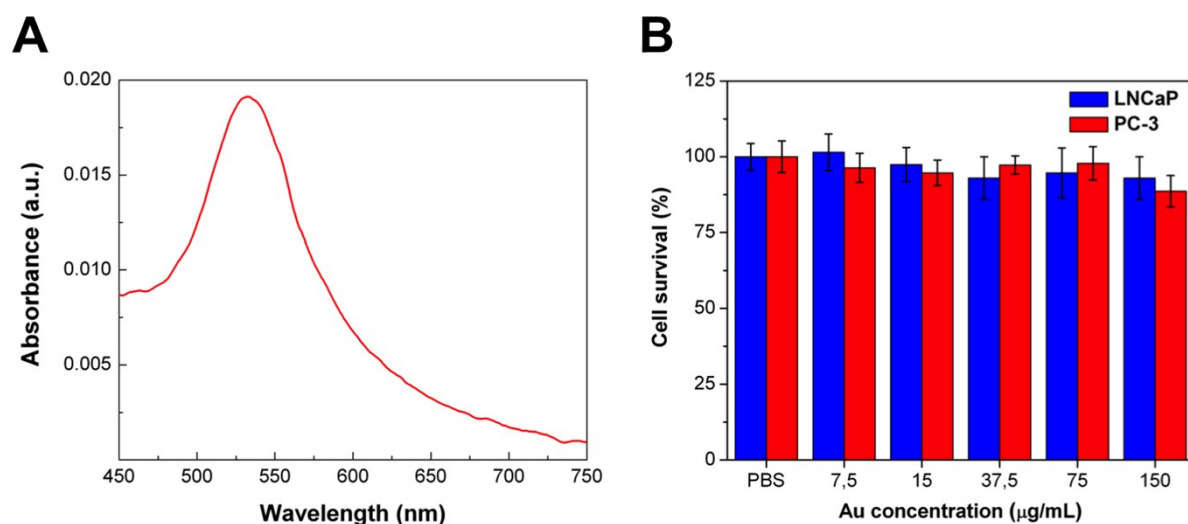


Figure S5. Properties of AuFe NPs for bio-applications. (A) UV-VIS spectra showing a plasmon resonance peak at 533 nm. (B) Cell viability study (MTS assay) of LNCaP and PC-3 cells after 48 h incubation with NPs in the concentration range 7.5 – 150 µg/mL Au.

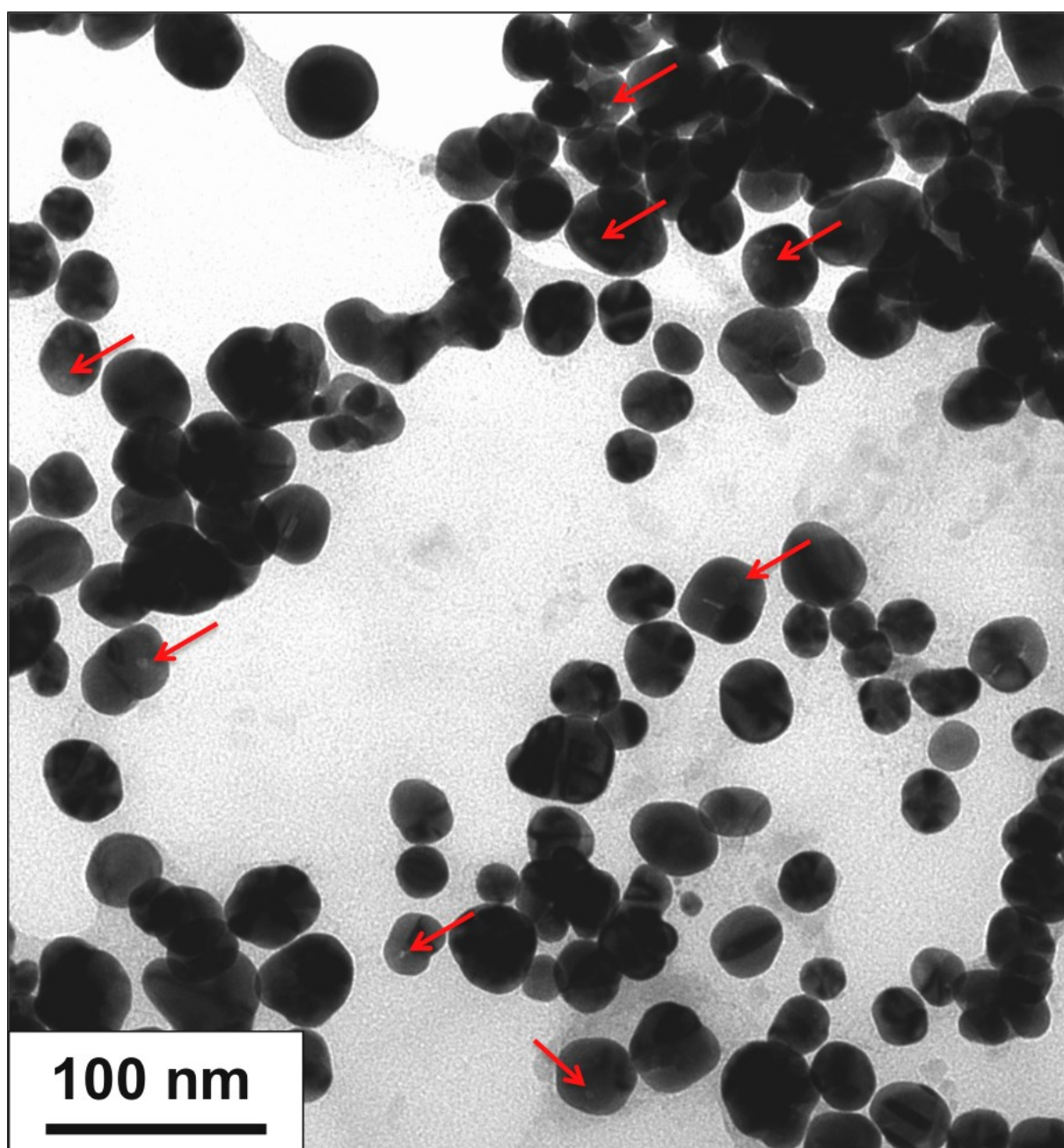


Figure S6. TEM image of AuFe NPs after the purification step. The presence of Fe inclusions is indicated by red arrows where obvious.

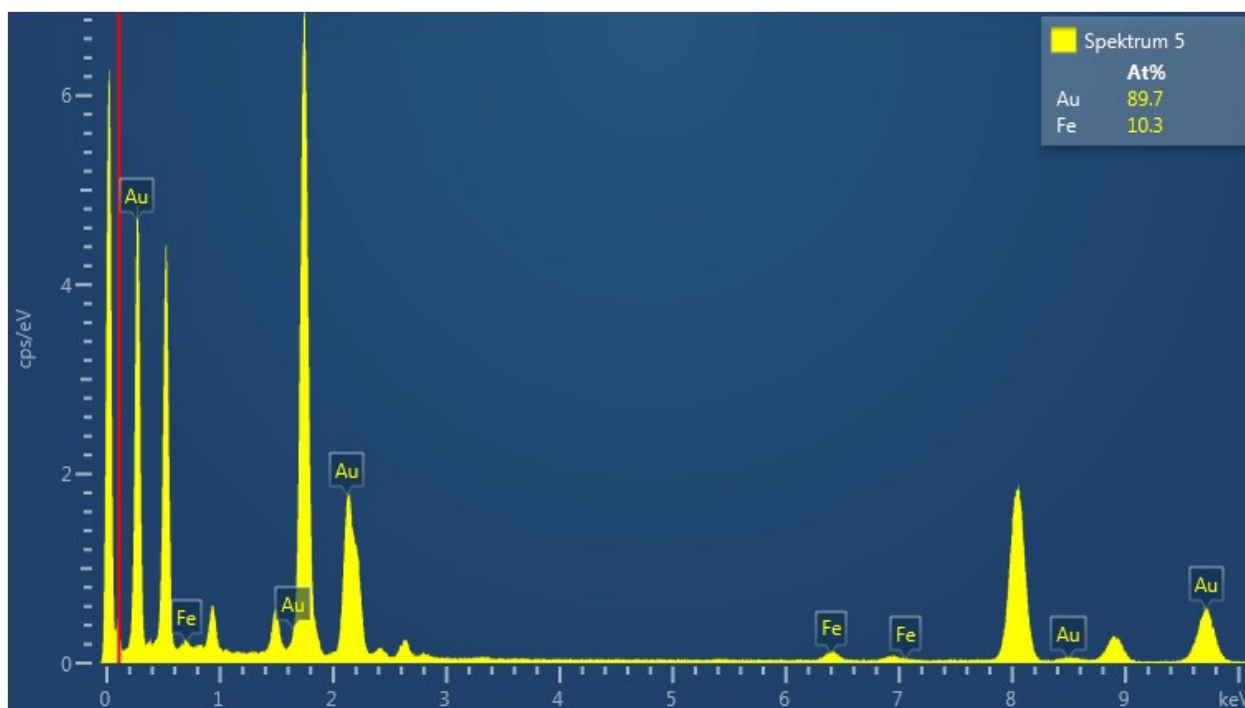


Figure S7. Overview EDX spectrum of AuFe NPs.

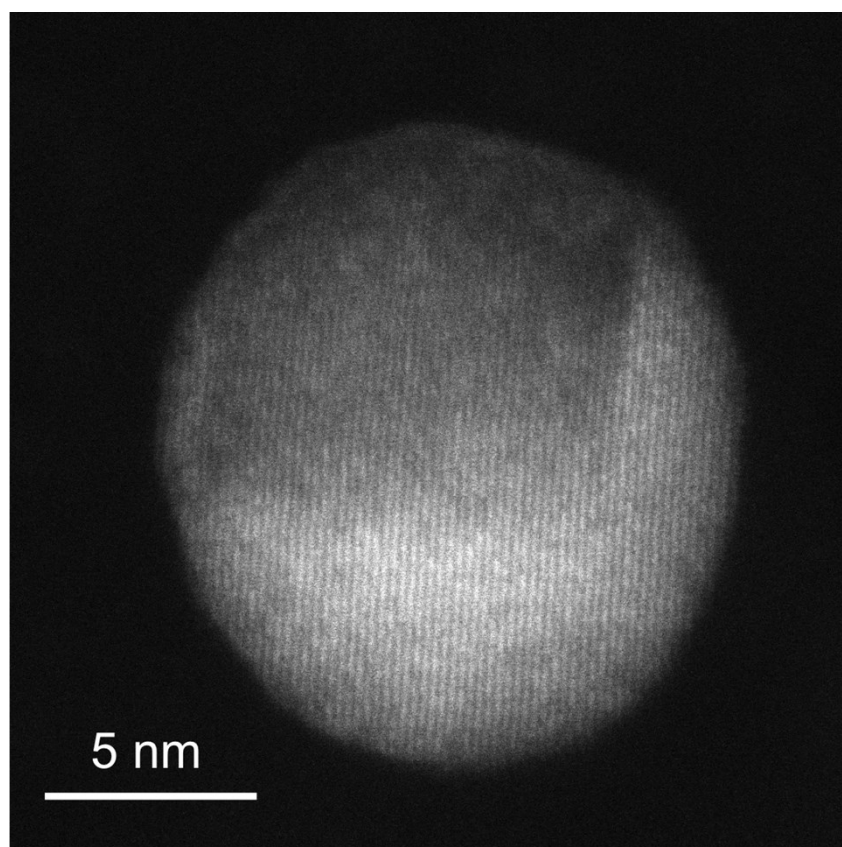


Figure S8. HAADF-STEM image of an Au/Fe NP on a SiN chip formed after the annealing of AuFe NP at 700°C. The image is taken at 25°C after 1 year in air demonstrating the resistance to atmospheric oxygen.