Supporting Information

Controlled UV-C Light-Induced Fusion of Thiol-Passivated Gold Nanoparticles

Salvador Pocoví-Martínez[a] *Miriam Parreño-Romero,*[a] *Said Agouram* [b]

*and Julia Pérez-Prieto**[a]

[a]Department of Organic Chemistry, ICMOL, Universidad de Valencia, Catedrático José Beltrán 2, 46980 Paterna, Valencia , Spain

[b]Department of Applied Physics and Electromagnetism and SCSIE, Dr. Moliner 50, 46100 Burjassot, Valencia, Spain

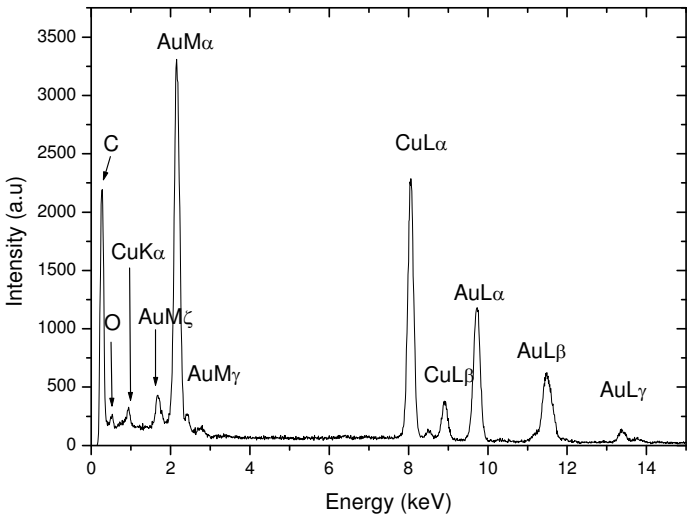

Figure S1. TEM-EDX spectrum of a **Au@ODCN** sample after UV-C irradiation (240 nm<λ<280 nm).

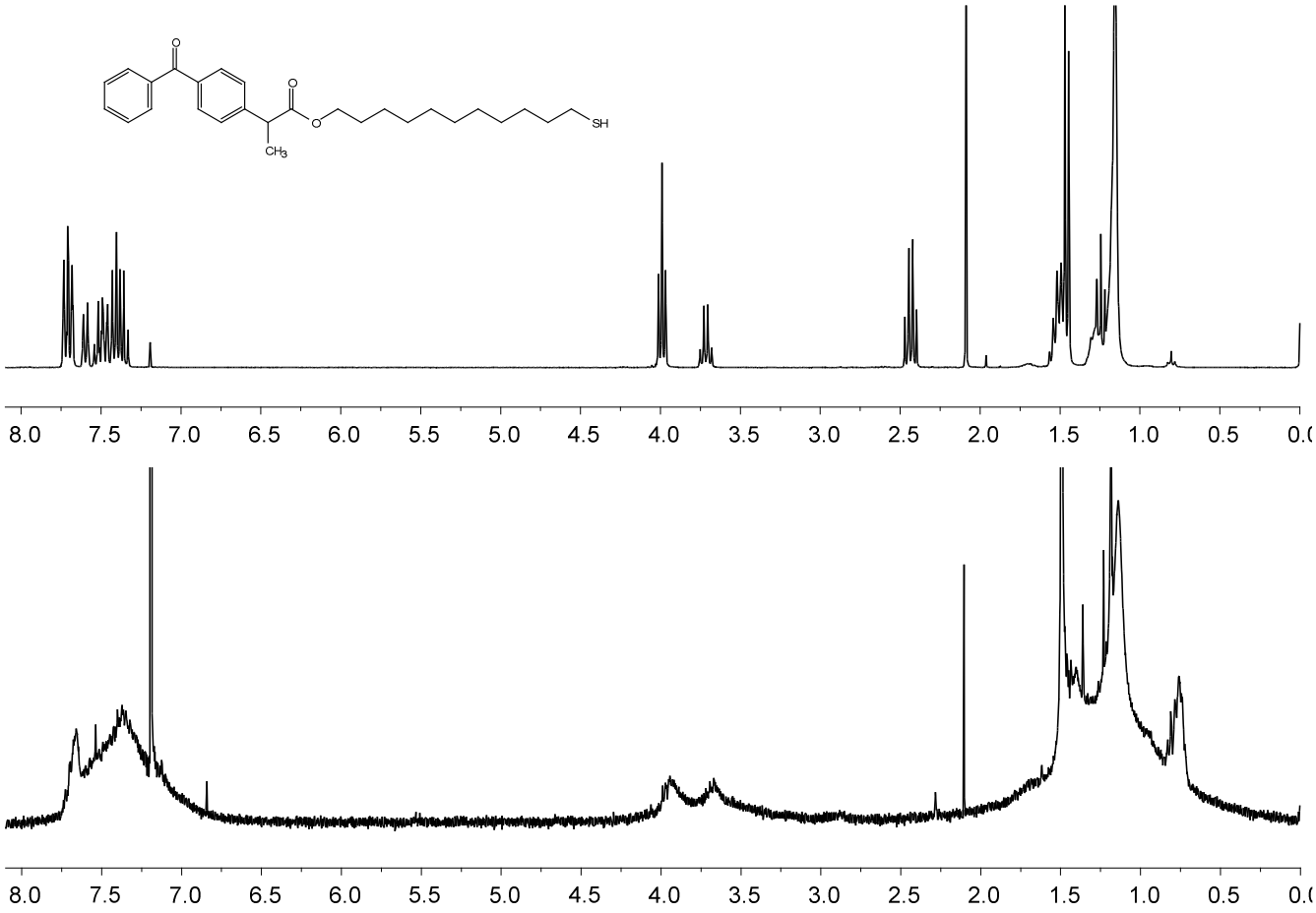

Figure S2. ^{1}H-NMR spectra in $CDCl_3$ of BP-SH and **Au@BP** NPs.

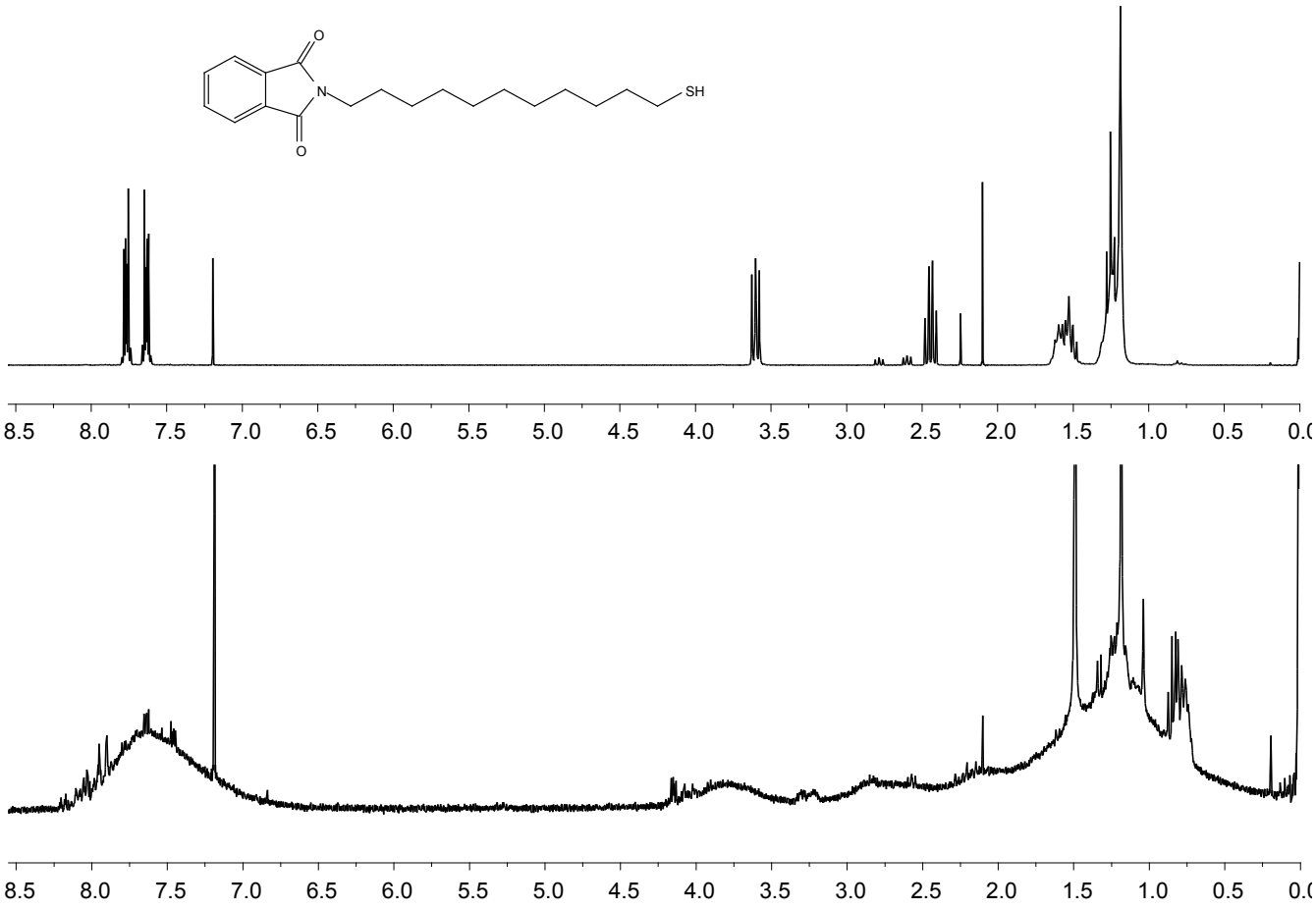

Figure S3. ^{1}H-NMR spectra in $CDCl_3$ of PH-SH and **Au@PH** NPs.

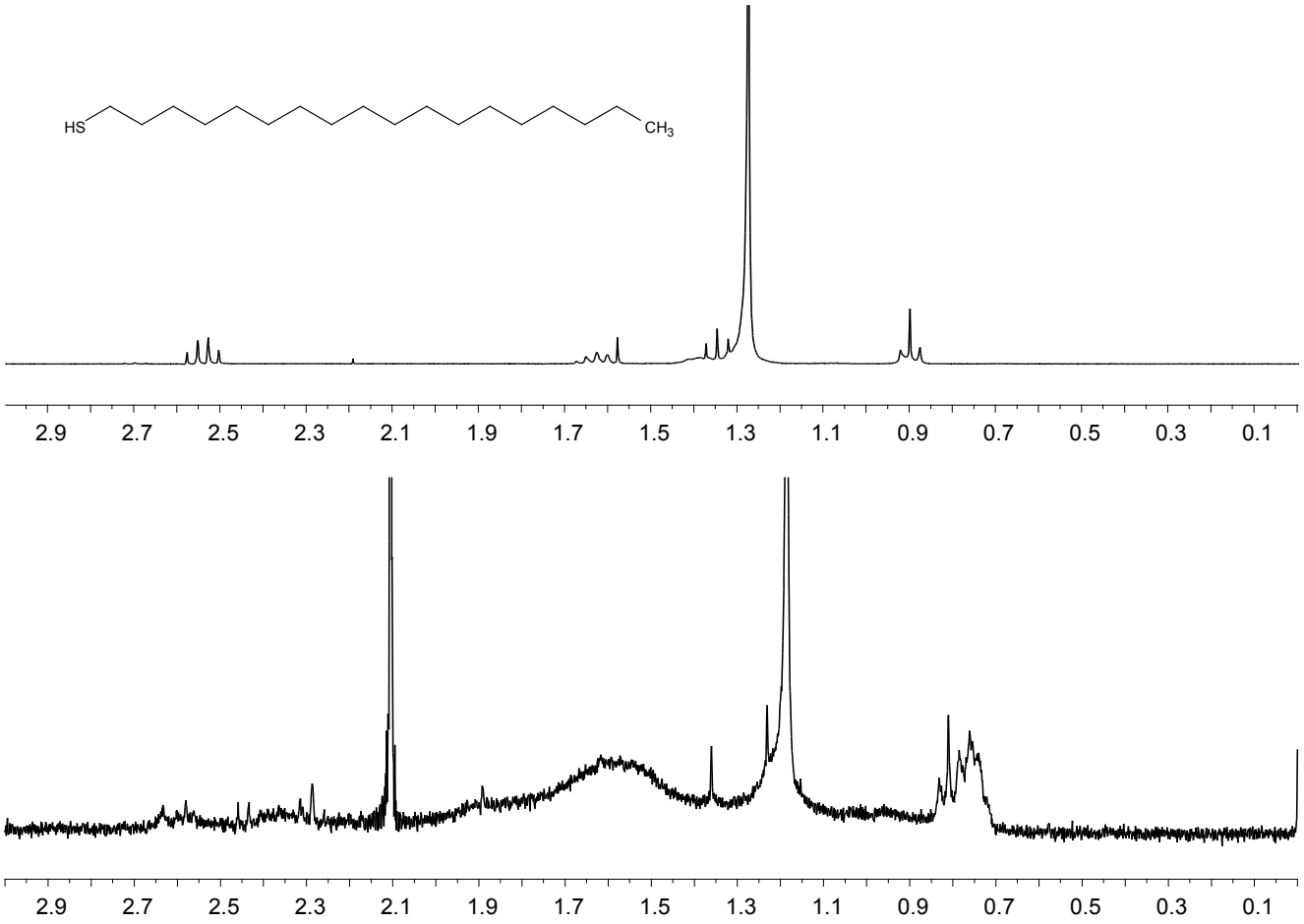

Figure S4. ^{1}H-NMR spectra in $CDCl_3$ of ODCN and **Au@ODCN** NPs.

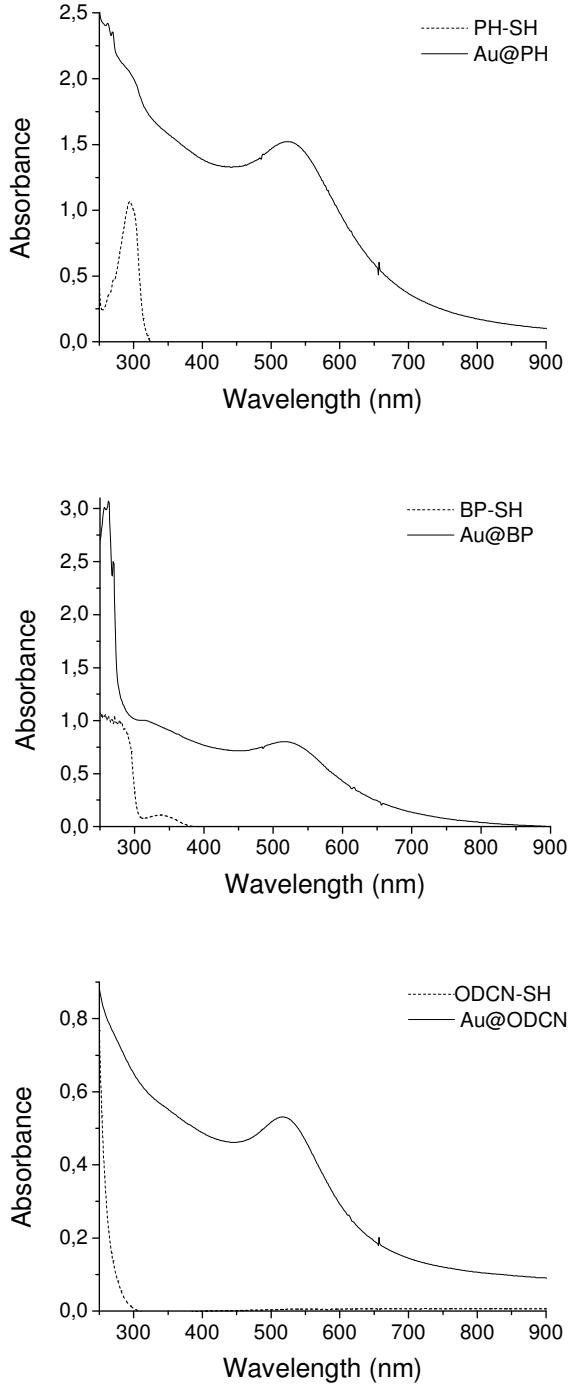

Figure S5. UV-vis spectra in chloroform of the functionalized thiol-capped AuNPs (**Au@PH**, **Au@BP**, and **Au@ODCN**) compared with that of their corresponding organic ligand (PH-SH, BP-SH, and ODCN-SH).

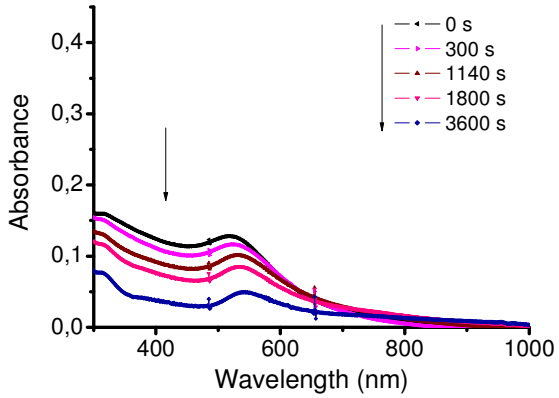

Figure S6. UV-vis spectra of **Au@BP** NPs in chloroform before and after laser irradiation (355 nm) for up to 3600 s.

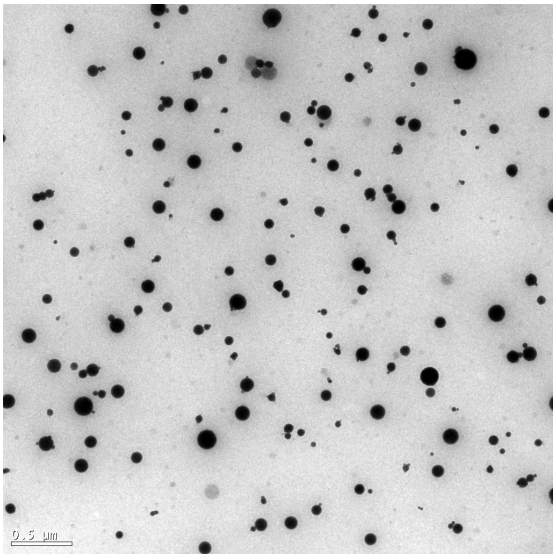

Figure S7. Typical bright field TEM images of **Au@BP** nanoparticles after 35 min irradiation with a 266 nm laser.

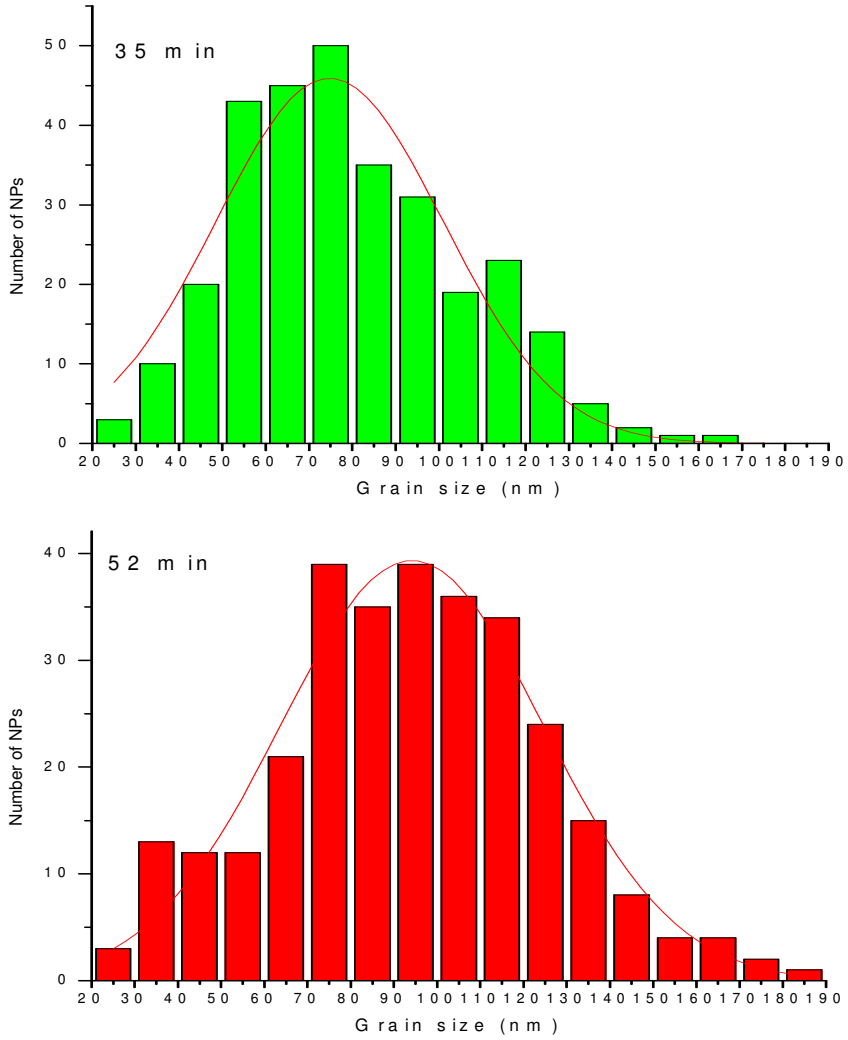

Figure S8. Comparative size distribution of **Au@BP** nanoparticles irradiated with a 266 nm laser for 35 and 52 min.

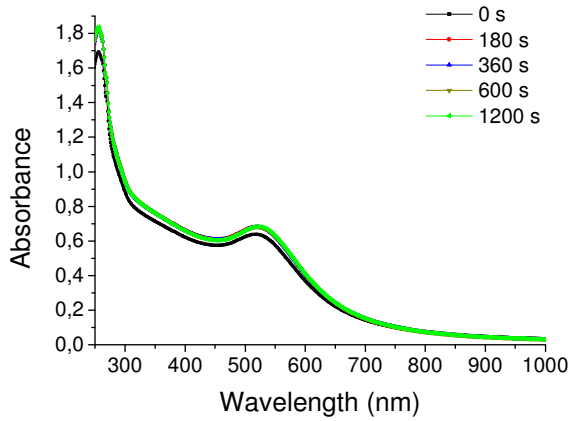

Figure S9. UV-vis absorption spectra of **Au@BP** NPs in deaerated chloroform before and after irradiation at 300 nm<λ<400 nm up to 1200 s.

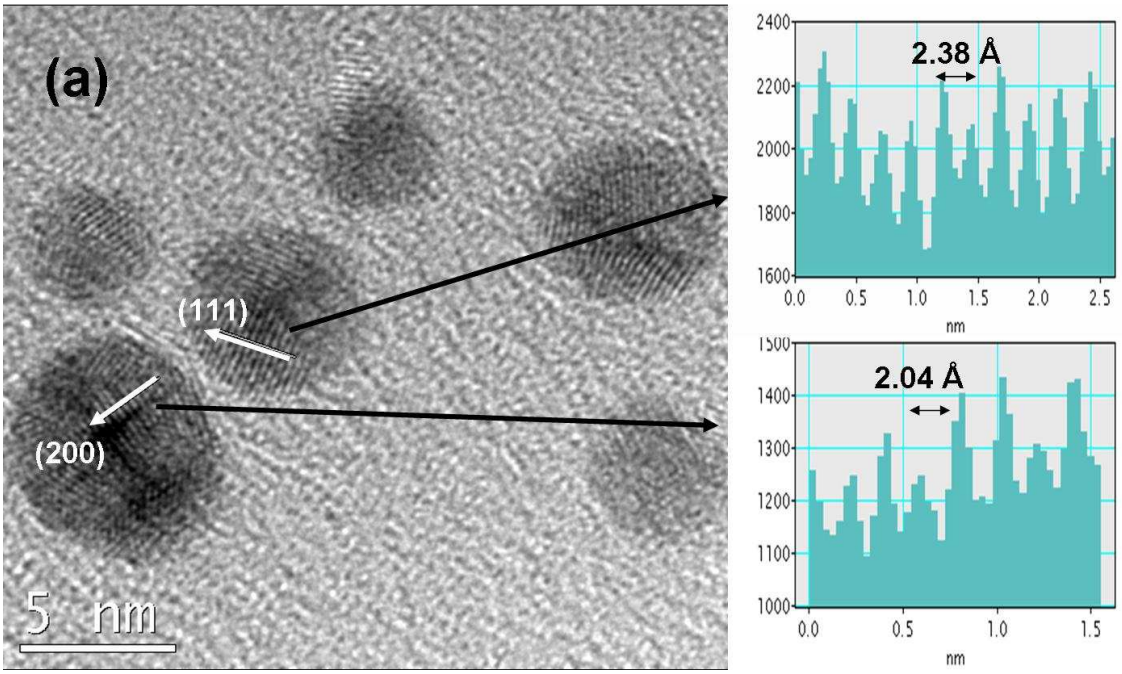

Figure S10. High Resolution TEM image of **Au@PH** NPs before irradiation. Line profiles of the AuNPs and their Fast Fourier transform (FFT) also shown; d-spacing between adjacent lattice planes of 2.38 Å and 2.04 Å correspond to the (111) and (200) planes.

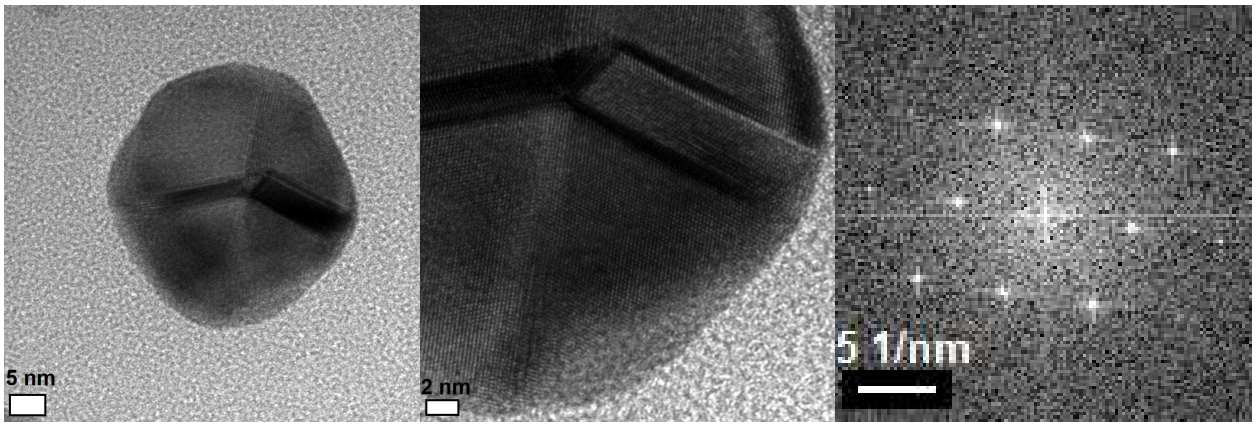

Figure S11. TEM and high resolution TEM images of a big **Au@PH** NP formed through a coalescence process of various small NPs and a surface reorganisation. The corresponding FFT showed the good crystalline quality of the particle.

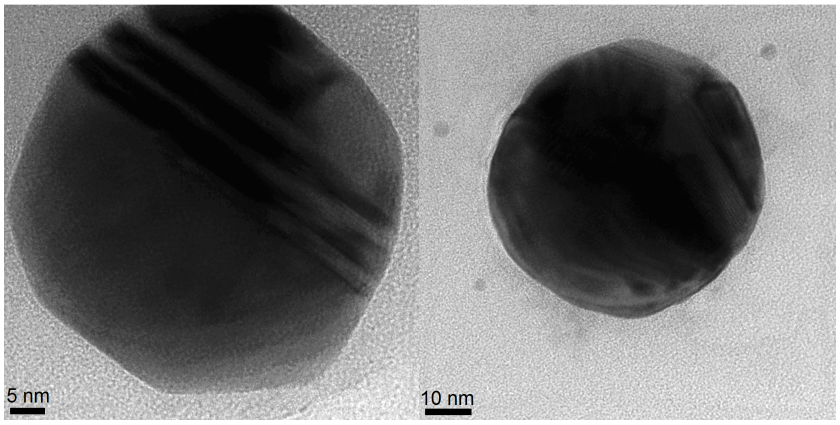

Figure S12. HRTEM images of **Au@BP** nanoparticles after 35 min of irradiation with a 266 nm laser.

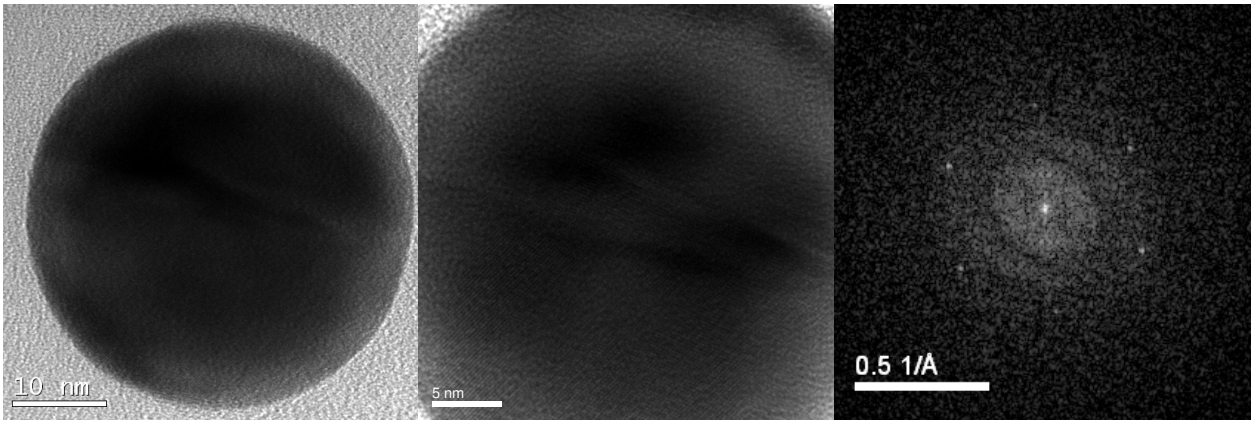

Figure S13. TEM and high resolution TEM images of a big **Au@BP** NP formed through a coalescence process of various small NPs and a surface reorganisation. The size of the particle and resolution line are clearly seen in the figure with an interplanar distance of 2.37 **Å;** this value corresponds to (111) orientation. The corresponding FFT showed the crystallinity of the particle.

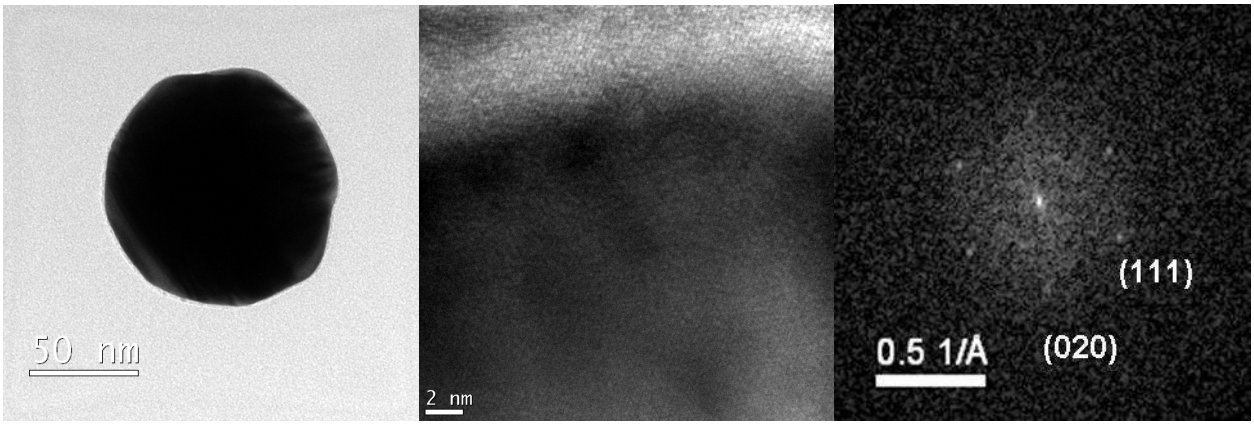

Figure S14. TEM and high resolution TEM images of a big **Au@ODCN** NP formed through a coalescence process of various small NPs and a surface reorganisation. The size of the particle and resolution line are clearly seen in the figure with an interplanar distance of 2.37 **Å;** this value corresponds to (111) orientation. The corresponding FFT showed the crystallinity of the particle.

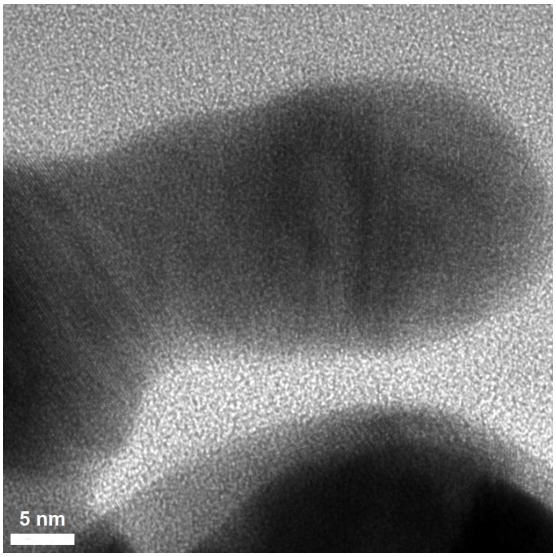

Figure S15. HRTEM images of **Au@BP** NPs after UV-C lamp irradiation (480 s).