

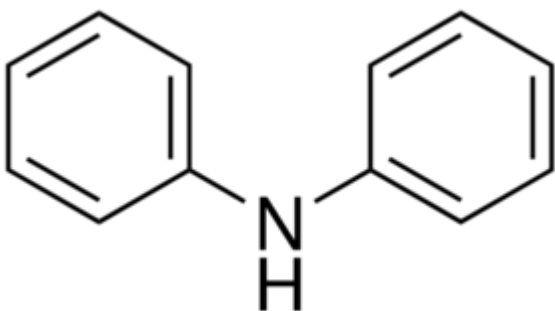


Figure S1. Diphenylamine

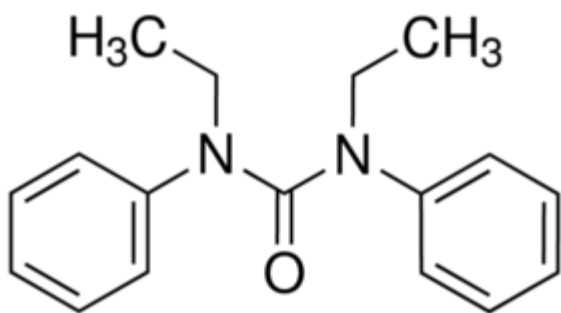


Figure S2. Ethylcentralite

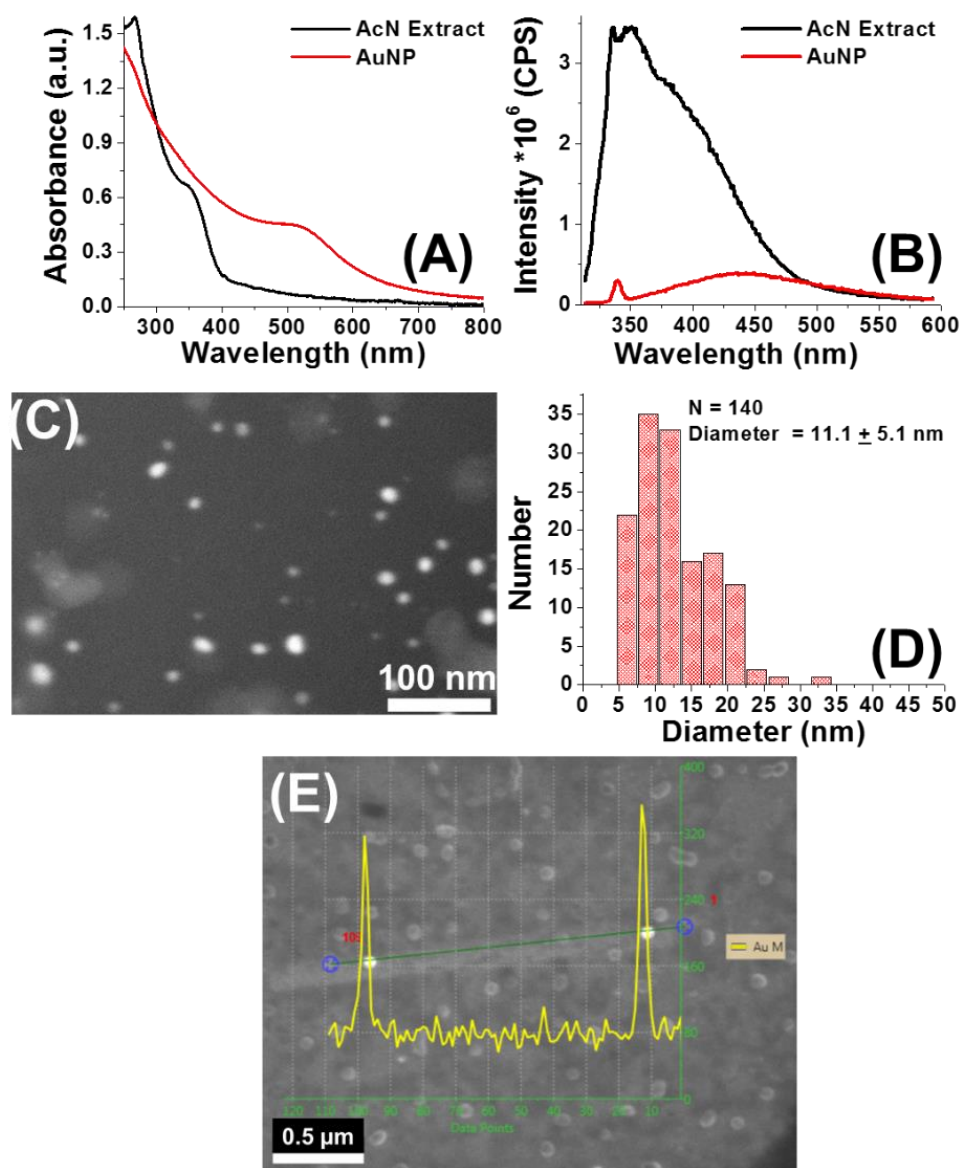


Figure S3: Gold nanoparticle characterization. (A) UV-Vis spectra of the nanoparticle and extract (B) Steady-state fluorescence spectra of the free extract and nanoparticle (C) Scanning electron micrograph of the gold nanoparticles (D) Size distribution histogram of the nanoparticles (E) EDS spectra of two particles indicating 100% gold.

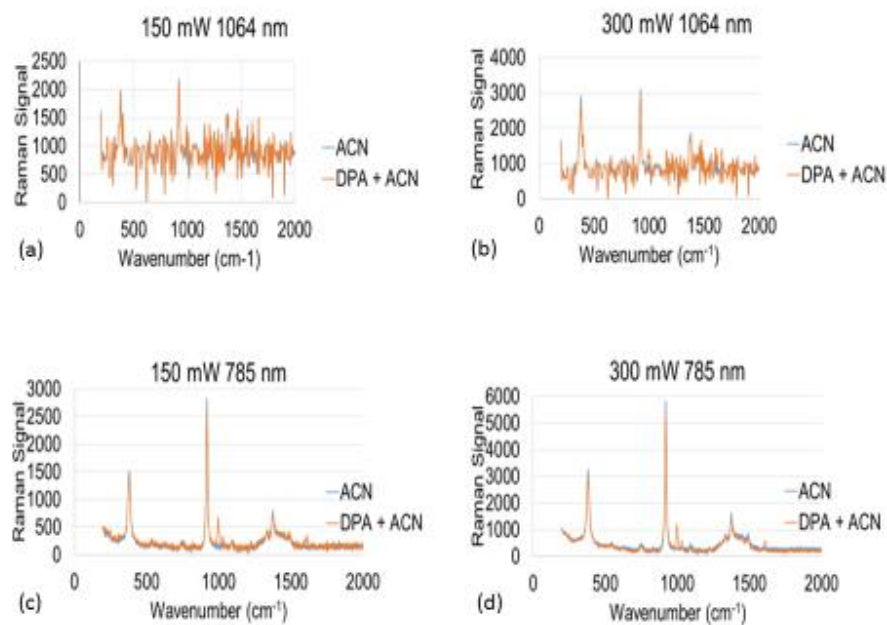


Figure S4. Effect of laser power and excitation wavelength on the Raman spectrum of DPA in acetonitrile. (a) 150 mW, 1064 nm (b) 300 mW, 1064 nm (c) 150 mW, 785 nm (d) 300 mW 785 nm

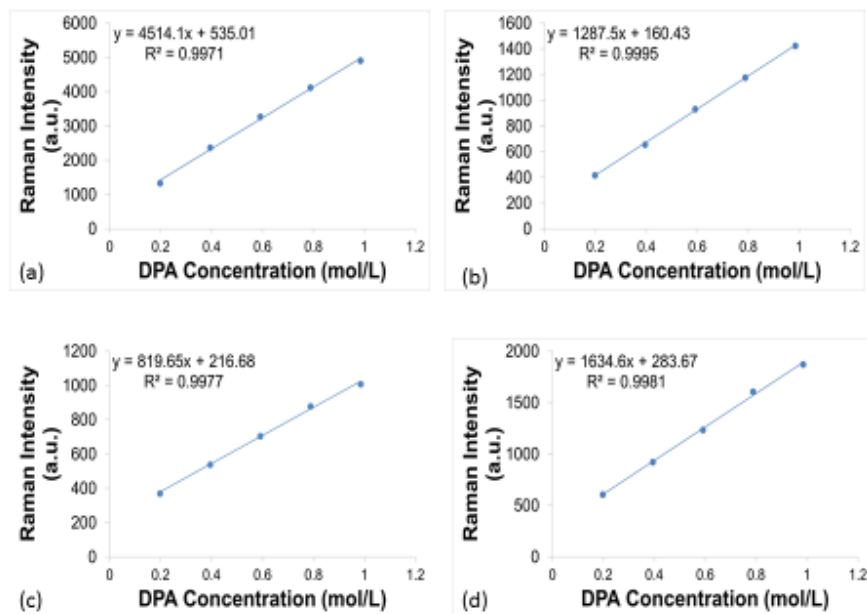


FIG S5. Calibration curve for DPA in MeOH (a) 995 cm⁻¹, (b) 1028 cm⁻¹, (c) 1220 cm⁻¹, (d) 1604 cm⁻¹

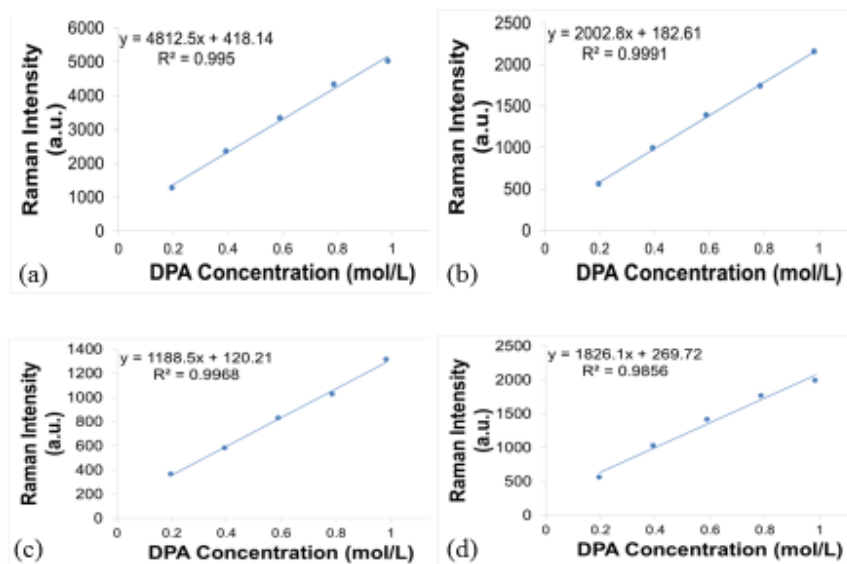


FIG S6. Calibration curve for DPA in EtOH (a) 995 cm^{-1} , (b) 1028 cm^{-1} , (c) 1220 cm^{-1} , (d) 1604 cm^{-1}

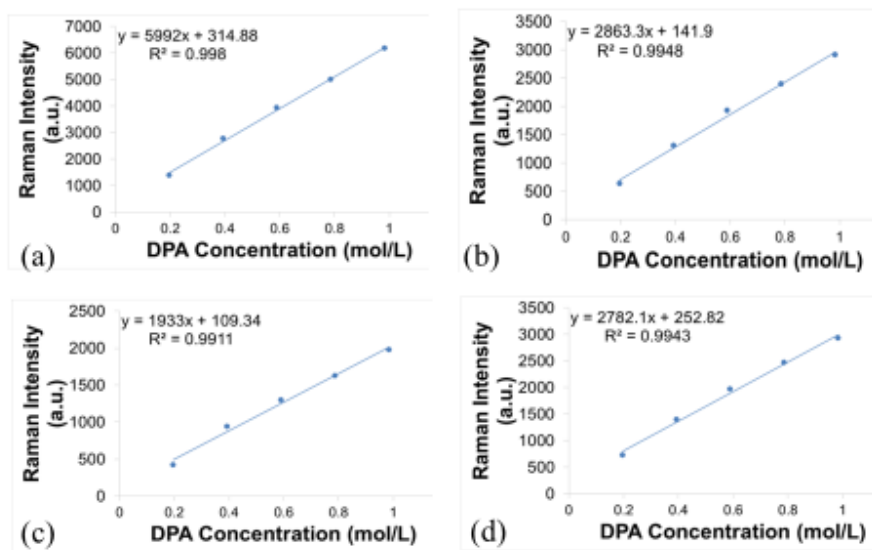


FIG S7. Calibration curve for DPA in acetone (a) 995 cm^{-1} , (b) 1028 cm^{-1} , (c) 1220 cm^{-1} , (d) 1604 cm^{-1}

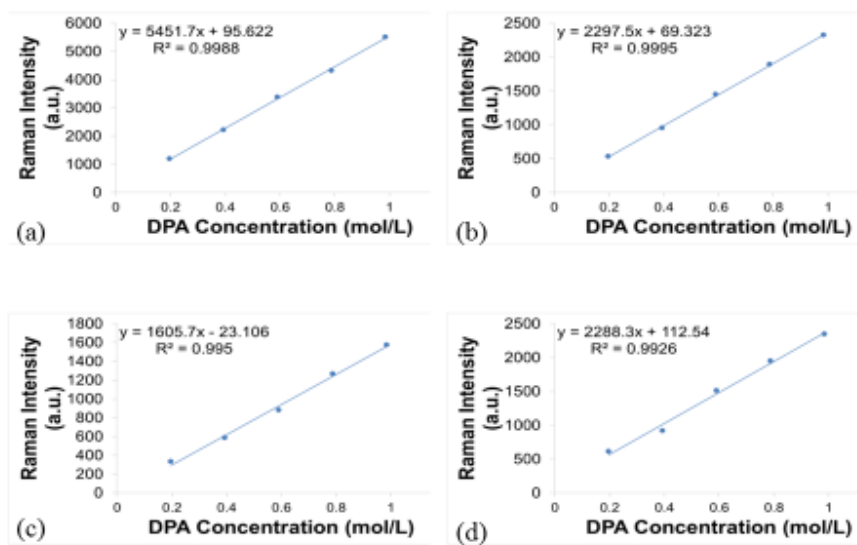


FIG S8. Calibration curve for DPA in acetonitrile (a) 995 cm^{-1} , (b) 1028 cm^{-1} , (c) 1220 cm^{-1} , (d) 1604 cm^{-1}