

Supporting information

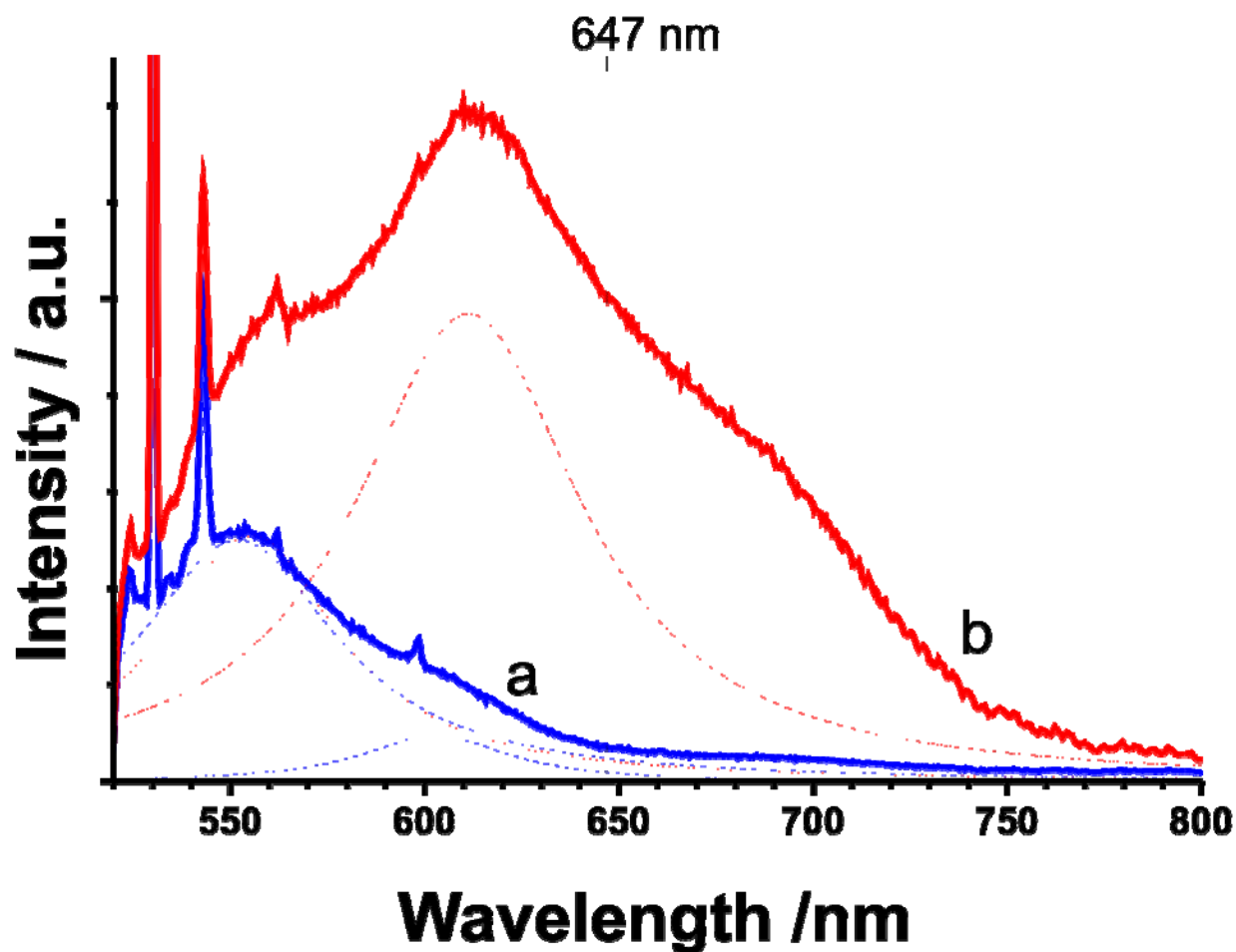


Figure 1: Fluorescence spectra obtained with $\lambda_{\text{exc}}=514\text{nm}$ for the two gold nanoparticles of Figure 5 ($a=35\text{nm}$ Au NP, position 2; $b=70\text{nm}$ Au NP, position 3). The higher fluorescence of b at 647nm is correlated with the higher NT's Raman enhancement as shown in Table 1 and derives from the red shift of the plasmon resonance for NPs of bigger size; on the other side, for the small NP the plasmon absorption at this wavelength is too weak and therefore both fluorescence and Raman enhancement are negligible.

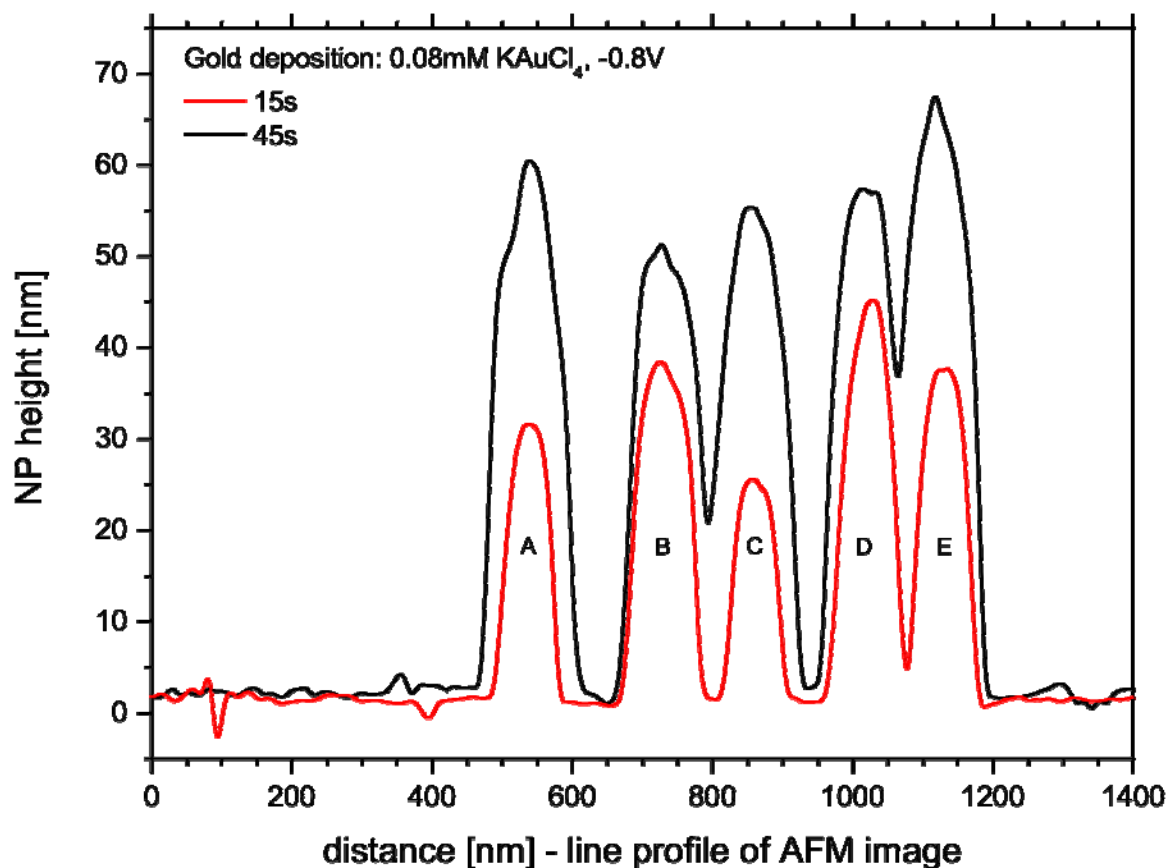


Figure 2: AFM height profile of five nearby nanoparticles (A-E) electrodeposited on a NT with a 0.08mM KAuCl_4 solution. After 15s the NPs formed have an average size of ~30nm. After a second ECM run (45s total deposition time), the average particle size increased to ~55nm.