

Electronic Supplementary Information for Near Field optical image of a gold surface: a luminescence study

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In Figure S1 we can see an SEM images a gold tip fabricated by an electrochemical process. The contrast visible comes from a carbon layer that growth around the tip when exposed to the 20 kV electron beam of the microscope. The carbon layer was identified by EDX as shown in Figure S2.

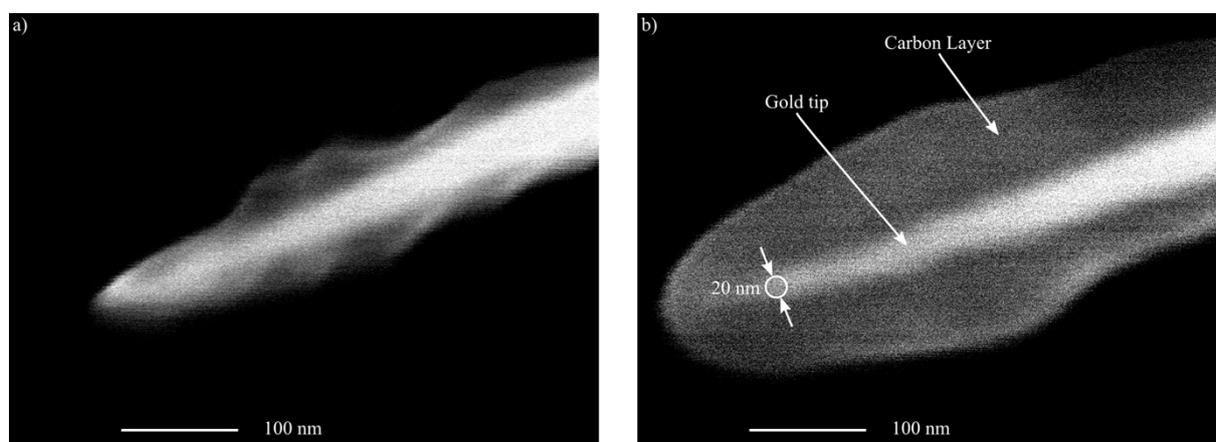


Figure S1: SEM image of a gold tip under a 20 kV electron beam: a) after few second, b) after one minute.

On the Figure S2, one can see that between the background and the apex spectra, the amount of aluminum (coming from the sample holder) remains the same but carbon and gold are detected at the apex. Moreover, between the apex and the point taken along the tip, the amount of carbon remains comparable but the amount of gold increase showing that the carbon does not comes from the tip preparation.

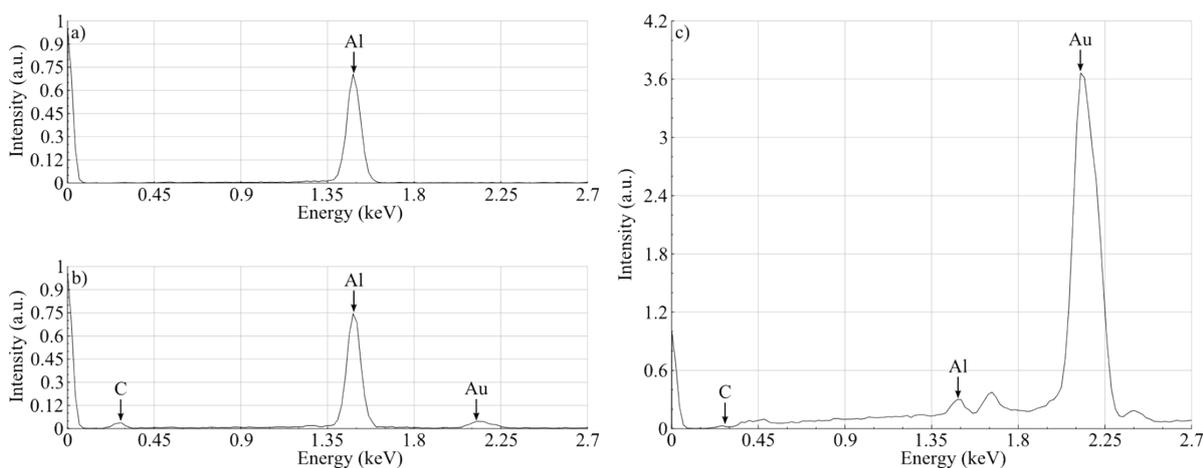


Figure S2: EDX spectra of: a) the background; b) the apex of the tip; c) along the tip.

Cross section of topography and luminescence are presented in Figure S3. The luminescence cross section show an optical resolution below 20 nm

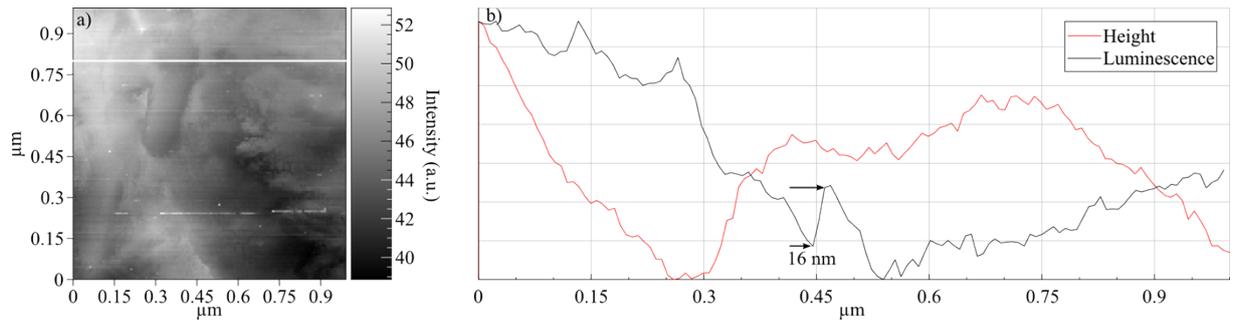


Figure S3: a) Luminescence image (identical to figure 3c), b) Normalized cross section at $y = 0.8 \mu\text{m}$ for both Height and luminescence signal.