Electronic Supplementary Information for High resolution scanning near field mapping of enhancement on SERS substrates: comparison with photoemission electron microscopy

C. Awada,*[a] J. Plathier,[a] C. Dab,[a] F. Charra,[b] L. Douillard[b] and A. Ruediger*[a]

a Nanophotonics-Nanoelectronics, INRS-EMT, 1650 Boul. Lionel-Boulet, Varennes J3X1S2, Canada.
b SPEC, CEA, CNRS, Université Paris-Saclay, F-91191 Gif sur Yvette, France.
*Corresponding author: awada@emt.inrs.ca, ruediger@emt.inrs.ca
Submitted to PCCP

In the figure S1, to the attention of the reviewer, we display here the polarization dependence of the electron yield of an Au sample. The latter dependence allows for a direct measurement of the nonlinearity order n of the electron emission process. For Au particles excited at 880 nm (1.41 eV), the data fitting with a $(\cos\theta)^{2n}$ function points to a n = 3 apparent multiphoton process lower than the n = 4 order expected from a work function of Au film either amorphous 4.7 eV (present case) or crystalline 5.3 eV. The latter non linearity keeps a n= 3 value down to 542 nm, as shown the Figure S2, where photoemission data exhibit a Fermi step toward n = 2.

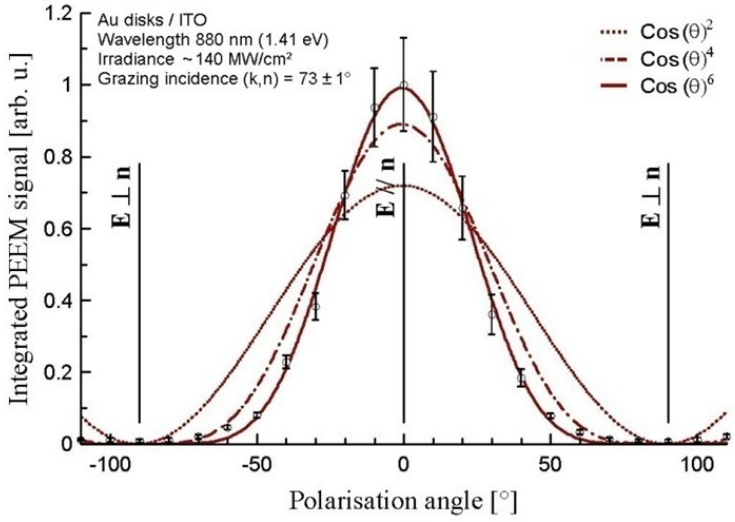

Figure S1: Polarization dependence of the electron yield of an Au sample measured by photoemission.

Figure S2 shows the transition of the non-linearity order from n=2 to n=3 at wavelength of 542 nm (2.3 eV).

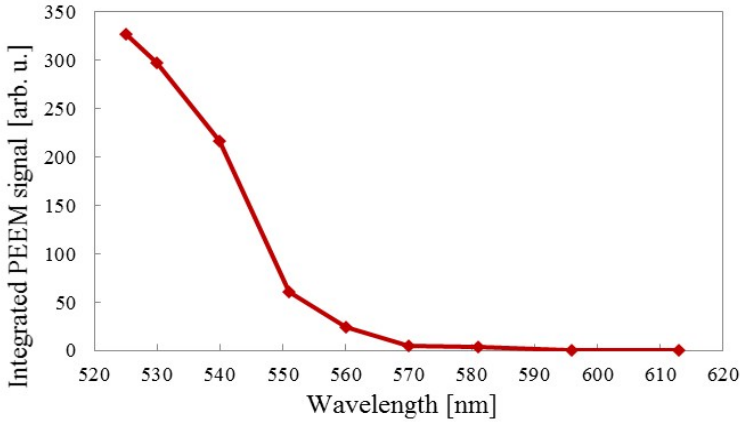

Figure S2: Wavelength dependence of the electron yield of an Au sample measured by photoemission.