constitutes a one-dimensional lattice of parallel gold ridges (50 nm height, 140 nm width) separated by a distance P defining the period of the lattice. The period P is connected to the SPP wavelength by $\lambda_{SPP} = 2\pi/k_{SPP} < \lambda$ and to the angle of incidence reflection θ_{SPP} of the SPP beam relatively to the (in plane) normal to the lattice by

$$P = \frac{\lambda_{SPP}}{2\cos\theta_{SPP}}. \tag{24}$$

In the present case shown in Fig. 10 the Bragg mirror is optimized for $\lambda = 800nm$ (i. e., $\lambda_{SPP} = 785nm$) and for $\theta_{SPP} = 45°$ incidence angle which means $P \simeq 555nm$. The experimental analysis of such a Bragg mirror when the resonance condition (λ, θ_{SPP}) is fulfilled reveals a very high reflectivity of $R \simeq 95\%$ (see, for example, [34] for some earlier results on SPP Bragg mirrors studied with fluorescence microscopy). However, in the present experiment we choose an incident angle $\theta = 65°$. As a consequence the reflectivity was much lower (see Fig. 10 A and more details in [39]). This configuration

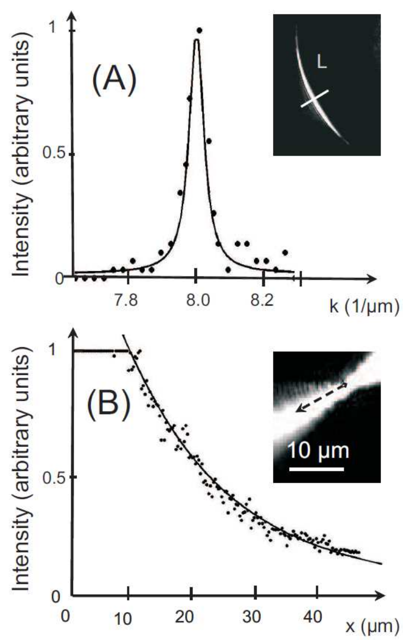

FIG. 11: (A) Fourier space cross-cut along the short solid line in Fig. 10 B corresponding to the L beam (see inset). Experimental data (symbols) are compared with a Lorentz fit (solid curve). The intensity is normalized by setting the maximum intensity of L to 1. (B) Direct space cross-cut along the L beam in Fig. 10 A. Data points (symbols) are compared to an exponential fit (solid line). Data from [39] (©, Appl. phys. Lett., American Institute of physics, 2006).

reveals SPP interferences in the vicinity of the mirror (Fig. 10 A). In Fig. 10 B we show the