NANO LETTERS
Addition/Correction
pubs.acs.org/NanoLett

Correction to Nanowire Antenna Emission

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Nano Lett. **2012**, *12* (11), 5481−5486; DOI: 10.1021/nl301907f

The dispersion relation of the leaky mode shown in Figure 6 of the original manuscript is partially incorrect. Also, the captions to the original Figure 6b−e refer to electric and magnetic field intensities, whereas the field magnitudes are actually plotted. The corrected dispersion relation is included below in Figure 1 with a proper caption indicating the magnitudes of the plotted fields. These corrections affect none of the simulations of the original Letter, since the mode wave vector is not explicitly used in the numerical implementation. Moreover, the mode wave vector for the 100-nm-thick nanowire obtained from the dispersion relation given in Figure 1 has the same value as that given in the original manuscript.

It should be noted that, according to the dispersion relation given in Figure 1, there exists a leaky TM_0 mode for a nanowire with a diameter of 50 nm ($\omega d/c$ = 0.37, marked with a vertical dashed line in Figure 1), contrary to the calculations of Figure 6 of the original manuscript. However, the electric field profile of the TM_0 mode in 50-nm-thick nanowire leads to an inefficient coupling of the dipole radiation to this mode. Moreover, the imaginary component of the wave vector of this leaky mode is about 5 times larger than that of the same mode in a 100-nm-thick nanowire, making the mode very leaky (almost no guidance). Due to such a large imaginary component of the wave vector of this mode, a small fraction of dipole radiation still coupled to the mode produces the radiation pattern that closely resembles that of a free dipole,[1] enhanced or inhibited by its corresponding local density of states. This is indeed corroborated by the simulated directional emission patterns shown in Figure 7a and b of the original manuscript.

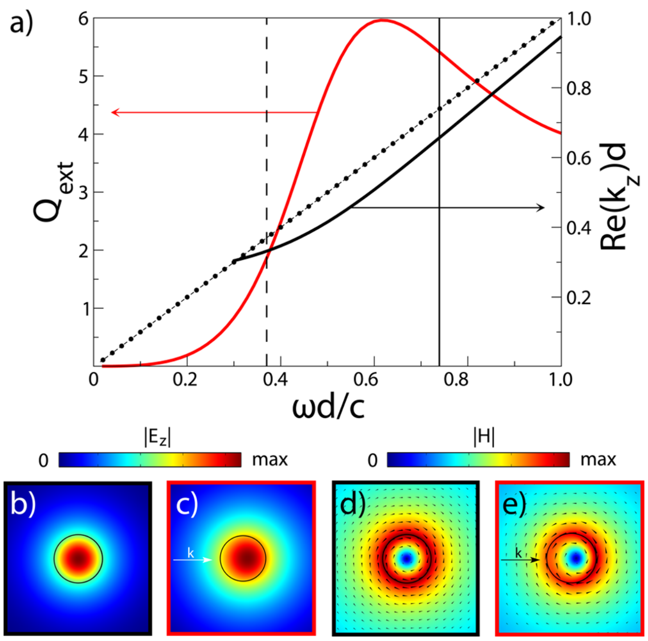

Figure 1. (a) Dispersion relations of the leaky mode (black curve) and the weakly guided HE_{11} mode (black dots) supported by an infinite InP cylinder (fixed wavelength at 850 nm, n_{InP} = 3.42, with varying diameter d). The short-dashed line nearly on top of the HE_{11} mode represents the light line. Dispersion relations refer to the right axis in the plot. The red curve (corresponding to the left axis in the plot) represents the Mie extinction efficiency of the same InP cylinder illuminated with a plane wave with a wave vector perpendicular to the axis of the cylinder and polarized parallel to this axis (p-polarization). The vertical solid line indicates the particular case d = 100, and the vertical long-dashed line indicates d = 50 nm. (b) Contour map of the magnitude of the z-component of the electric field of the leaky mode. (c) Contour map of the magnitude of the z-component of the electric field scattered by the same cylinder in Mie resonance. The white arrow indicates the incident wave vector. (d) Contour map of the in-plane magnetic field magnitude of the leaky mode. (e) Contour map of the in-plane magnetic field magnitude scattered by the same cylinder in Mie resonance. The long black arrow indicates the incident wave vector. The small black arrows in d and e indicate the directions of the in-plane magnetic field vector.

REFERENCES

(1) Snyder, A. W.; Love, J. *Optical waveguide theory*; Springer: New York, 1983; Vol. *190*.

Published: November 20, 2013