Vibrational study of adsorption of Congo red onto TiO$_2$ and the LSPR effect on its photocatalytic degradation process

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In Figure S1 A it is shown the extinction spectrum of the Ag NPs with maximum at 420 nm and the absorbance spectra of TiO$_2$ P25 and nanoTiO$_2$. The absorption of both TiO$_2$-based catalysts and the extinction (absorption + scattering effects) overlap with maxima in approximately 380 nm, which was indicated to cause the near field enhancement associated with the photocatalysis improvement.

The emission spectrum of the high pressure Hg lamp is presented in Figure S1 B. The lines at 365.1, 366.4 and 390.7 nm are present in the UV region and the 404.8, 407.8, 435.9, 491.6, 496.0, 546.0, 576.9, 579.0 and 690.7 nm in the visible region.

**Figure S1.** (A) Extinction spectrum of Ag NPs and absorption spectra of P25 and nanoTiO$_2$; (B) Hg lamp without glass bulb emission spectrum.