

Supporting Information

Rh-6G concentration [mol cm⁻² nm⁻¹ 10⁻¹²]						
	pH =3.8		pH=5.5		pH=6.6	
	Preilluminated	Non preilluminated	Preilluminated	Non preilluminated	Preilluminated	Non preilluminated
TiO ₂ -I	0	0	1.68	2.87	6.52	13.07
Ta ₂ O ₅	0	0.86	5.58	6.83	7.86	11.91

Rh-800 concentration [mol cm⁻² nm⁻¹ 10⁻¹²]						
	pH =3.8		pH=5.5		pH=6.6	
	Preilluminated	Non preilluminated	Preilluminated	Non preilluminated	Preilluminated	Non preilluminated
TiO ₂ -I	3.94	5.82	5.42	4.12	6.41	7.85
Ta ₂ O ₅	3.07	3.09	5.62	5.92	4.71	6.26

Table T1. Concentration of the adsorbed dyes in the TiO₂-I and Ta₂O₅ thin films as a function of the pH and pre illumination.

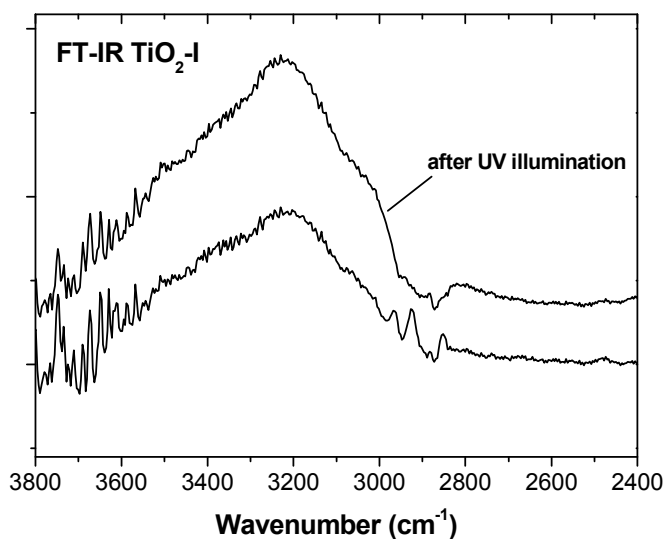


Figure S1. FT-IR spectra of a $\text{TiO}_2\text{-I}$ thin film before and after the UV illumination treatment.

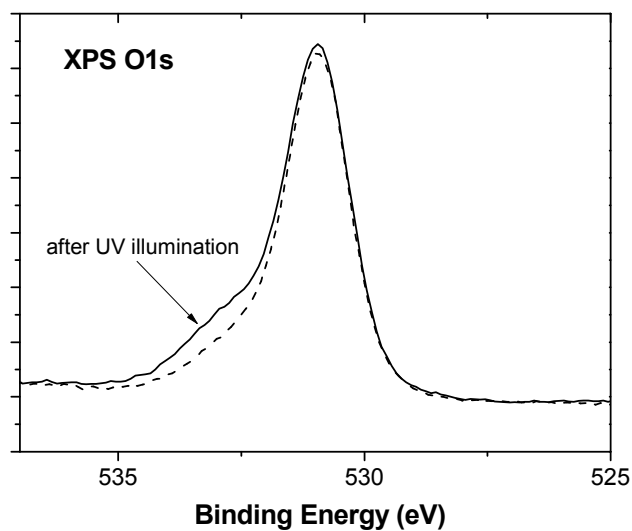


Figure S2. $\text{O}1\text{s}$ photoelectron spectra of the $\text{TiO}_2\text{-I}$ thin film surface before and after being illuminated with UV light during 15 minutes in air. The spectra were acquired with an ESCALAB210 spectrometer from VG. It was operated at constant pass energy with a value of 20 eV. The $\text{Mg K}\alpha$ radiation was used as excitation source.