

Investigation of the Photocatalytic Activity of Titanium Dioxide Films Under Visible Light Measured by Electrospray Mass Spectrometry

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SUPPORTING INFORMATION

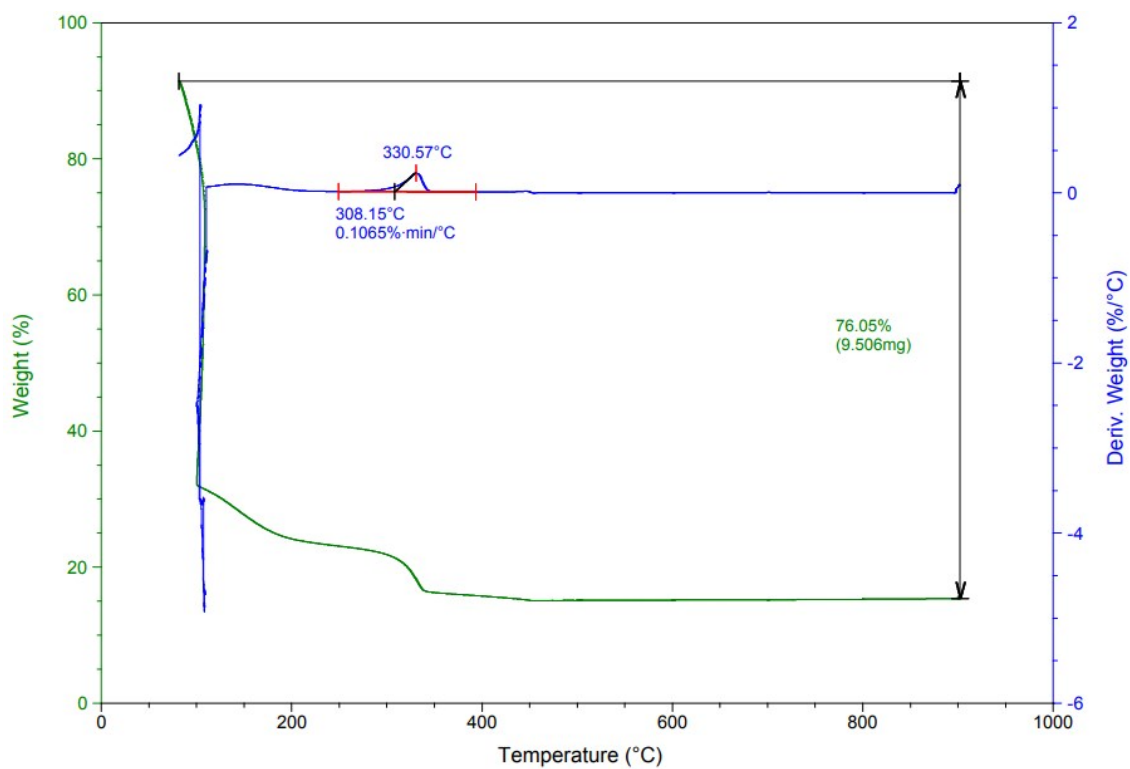


Figure S1 - Thermogravimetric analysis of the TiO₂ P-25 paste. The sample was heated following the same calcination procedure that was used to prepare the films (10 min at 100 °C and 30 min at 450 °C). The same sample was heated up to 900 °C. All the procedure was carried out under air atmosphere.

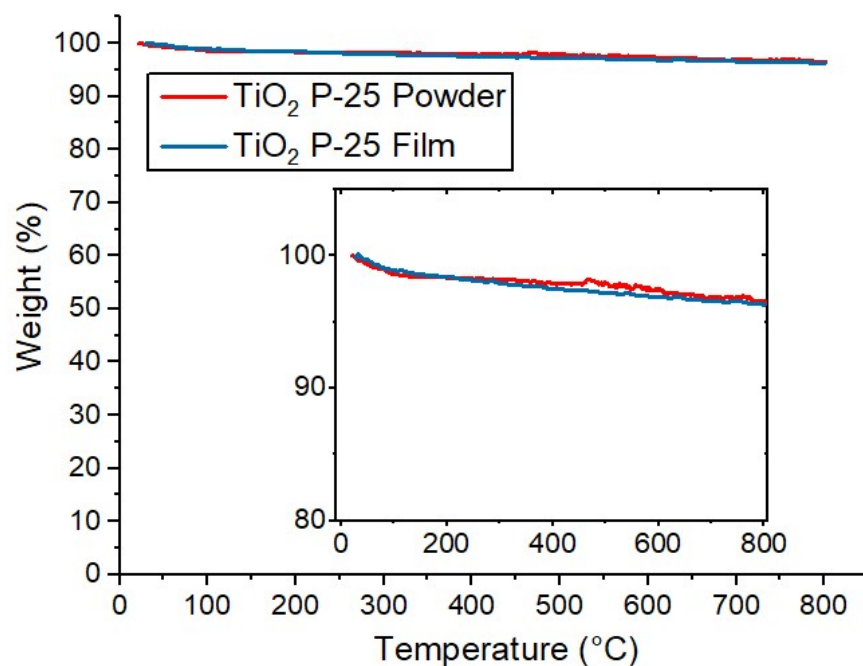


Figure S2 - Thermogravimetric analysis of the TiO_2 P-25 powder (red) and of the scrapped TiO_2 P-25 film (blue).

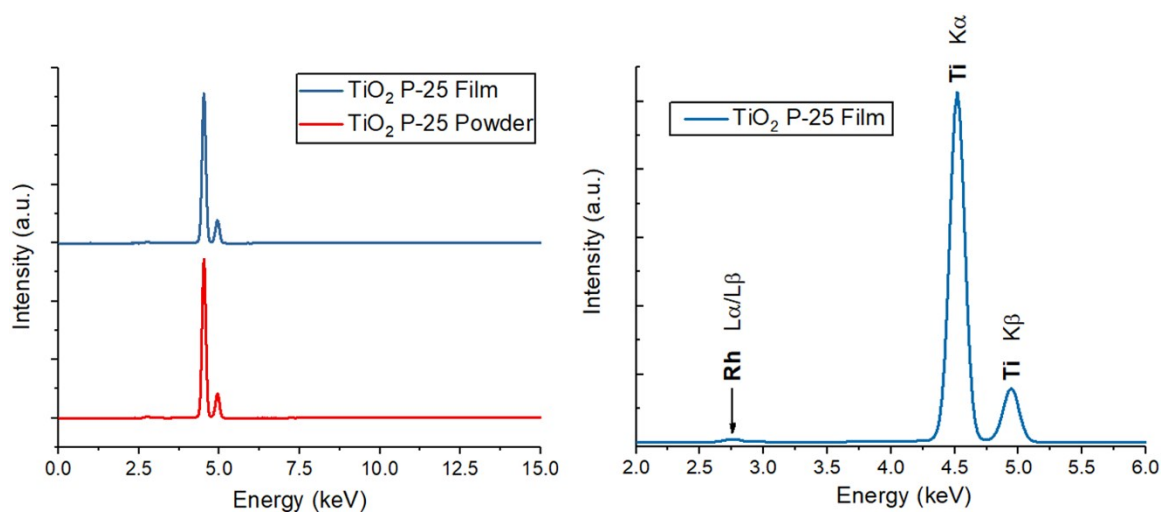


Figure S3 – EDX fluorescence spectra of the scrapped TiO_2 P-25 film (blue) and of the TiO_2 P-25 powder (red). The graph in the right is just a magnification of the scrapped TiO_2 P-25 film spectrum with the indication of each emission. The Rh X-ray source of the equipment generates the small fluorescence emissions at 2.558 keV ($\text{L}\alpha$) and at 2.683 keV ($\text{L}\beta$).

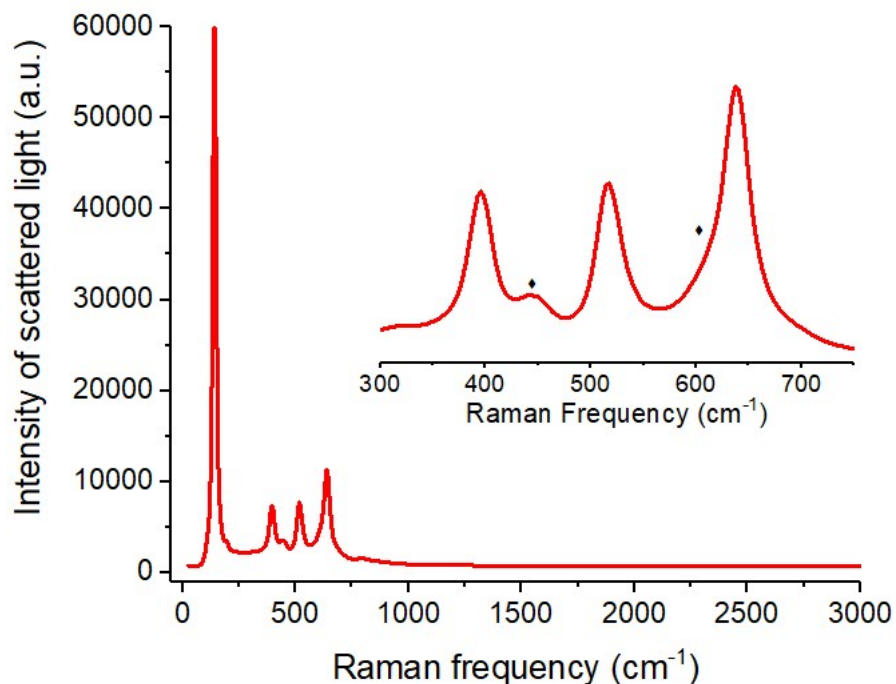


Figure S4 - Raman spectrum of TiO₂ P-25 film. The peaks centered at 141, 196, 394, 516 and 637 cm⁻¹ represent the anatase vibration, and the broad and smooth peaks (highlighted with a ♦) at 446 and 612 cm⁻¹ represent the rutile vibration. None peaks of organic molecules can be observed on the spectrum.

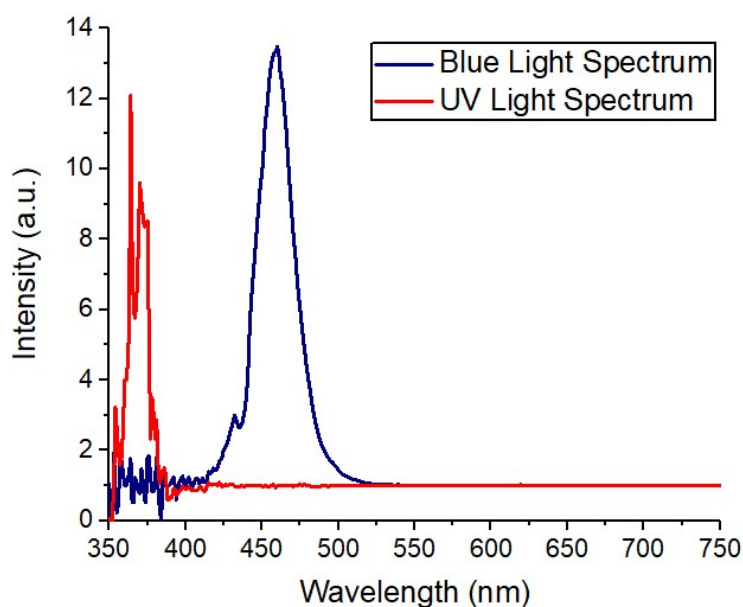


Figure S5 - Spectrum range of the blue light lamp (without UV filter) that was used to carry out the experiments (blue) and spectrum range of a UV light lamp (red).

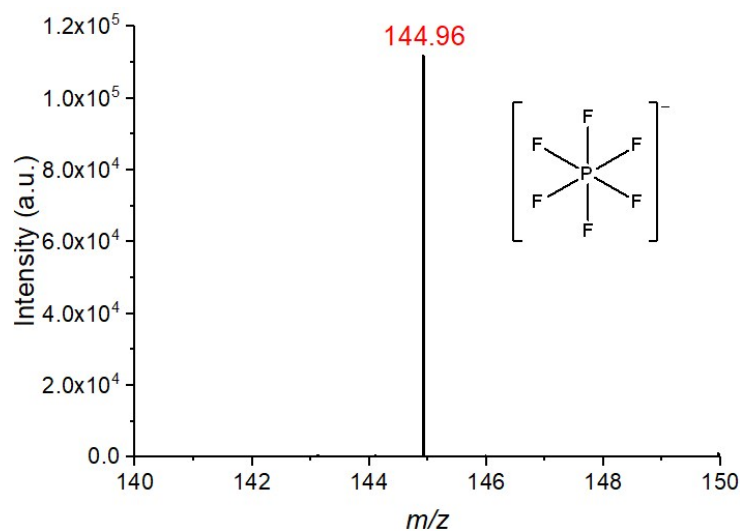


Figure S6 - ESI(-)-MS spectrum of a 1×10^{-5} mol L^{-1} aqueous solution of NH_4PF_6 (pH 7.0). Representation of the chemical structure of hexafluorophosphate anion.

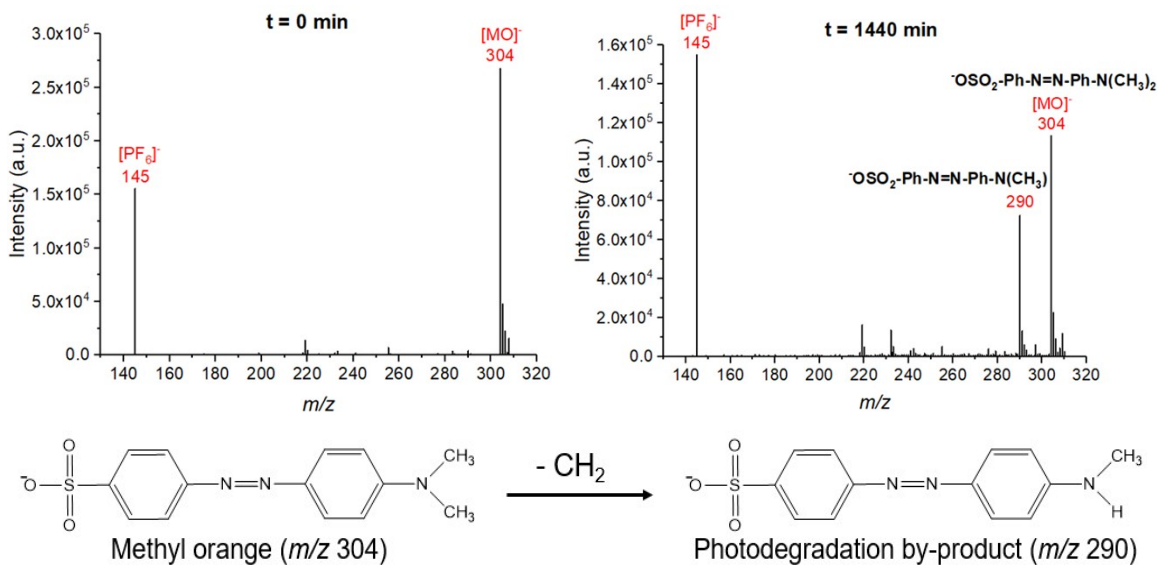


Figure S7 - ESI(-)-MS spectra of the test solution composed by methyl orange (2.5×10^{-6} mol L^{-1}) and ammonium hexafluorophosphate (1×10^{-4} mol L^{-1}) with TiO_2 P-25 films under blue light radiation before the beginning of the reaction ($t = 0$ min) and after 24 h ($t = 1440$ min). Representation of the chemical structure of methyl orange and its photodegradation by-product identified at m/z 290.