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Supplementary Material

The Influence of Calcination Temperature on Photocatalytic Activity of TiO_2-Acetylacetone Charge Transfer Complex Towards Degradation of NO_x under Visible Light

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S1.
Fourier transform infrared **(**FTIR) spectrum of pure acetylacetone

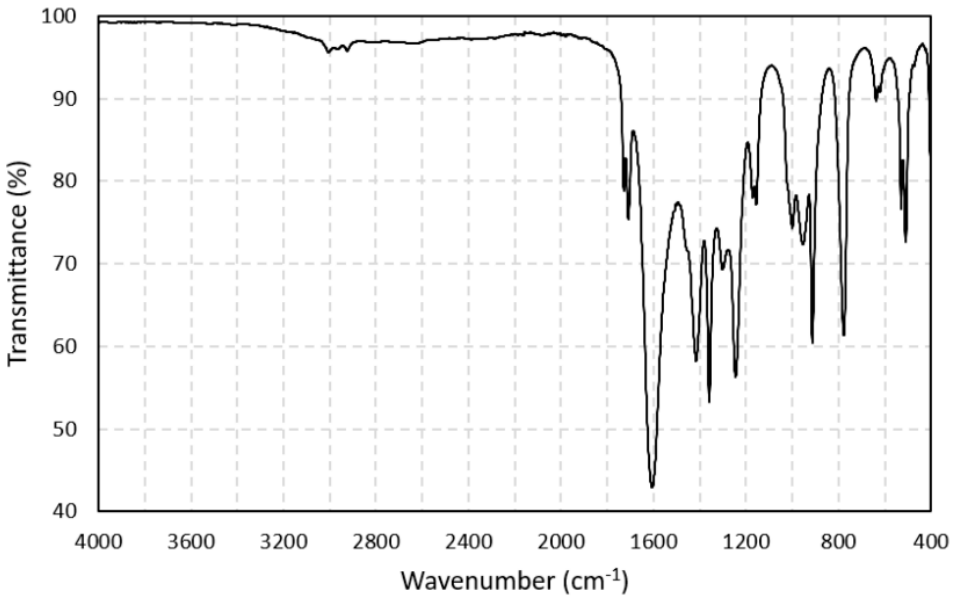

Figure S1. FTIR spectrum of acetylacetone.

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S2.

Fourier transform infrared (FTIR) spectra of TiO_2-ACAC, TiO_2-ACAC-300, TiO_2-ACAC-400

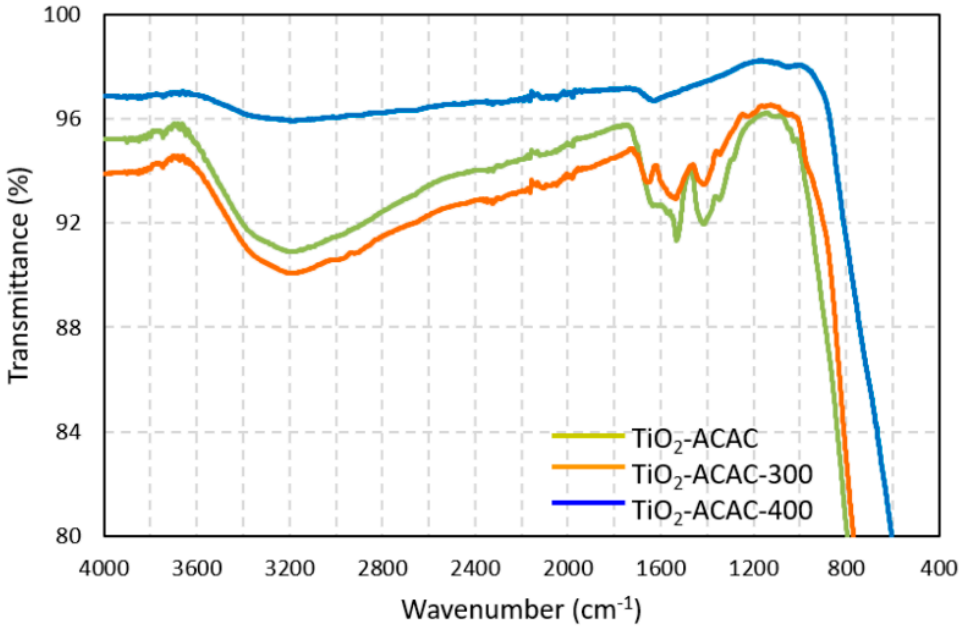

Figure S2. FTIR spectra of TiO_2-ACAC, TiO_2-ACAC-300 and TiO_2-ACAC-400.

S3.

N_2 adsorption-desorption isotherms of TiO_2-ACAC, TiO_2-ACAC-300 and TiO_2-ACAC-400

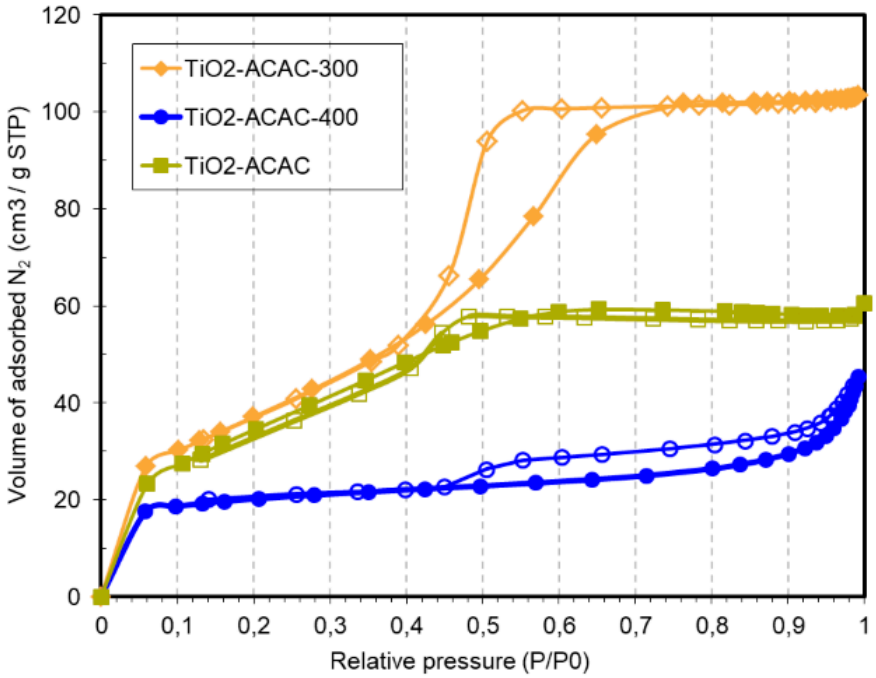

Figure S3. N_2 adsorption-desorption isotherms of TiO_2-ACAC, TiO_2-ACAC-300 and.

TiO_2-ACAC-400.

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T1.
Mean pore diameter of TiO_2-ACAC, TiO_2-ACAC-300 and TiO_2-ACAC-400

Table S1. Mean pore diameter.

Samples	Mean pore diameter (BJH), nm
TiO_2-ACAC	2.9
TiO_2-ACAC-300	4
TiO2-ACAC-400	7.9

S4.
XPS spectra within Ti 2p range of TiO_2-ACAC, TiO_2-ACAC-300, TiO_2-ACAC-400 and TiO_2-ACAC-550

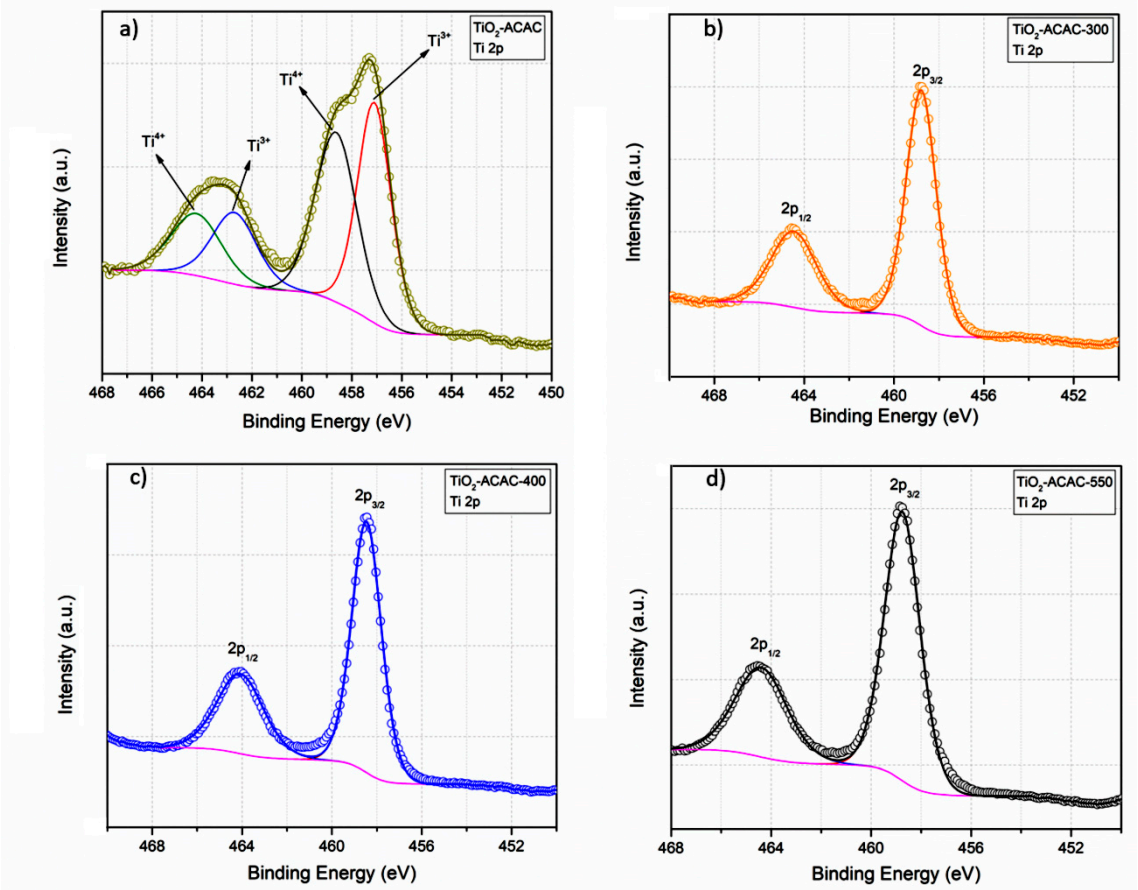

Figure S4. XPS spectra within Ti 2p range of TiO_2-ACAC, TiO_2-ACAC-300, TiO_2-ACAC-400 and TiO_2-ACAC-550.

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S5.

XPS spectra within C 1s range of TiO_2-ACAC, TiO_2-ACAC-300, TiO_2-ACAC-400 and TiO_2-ACAC-550

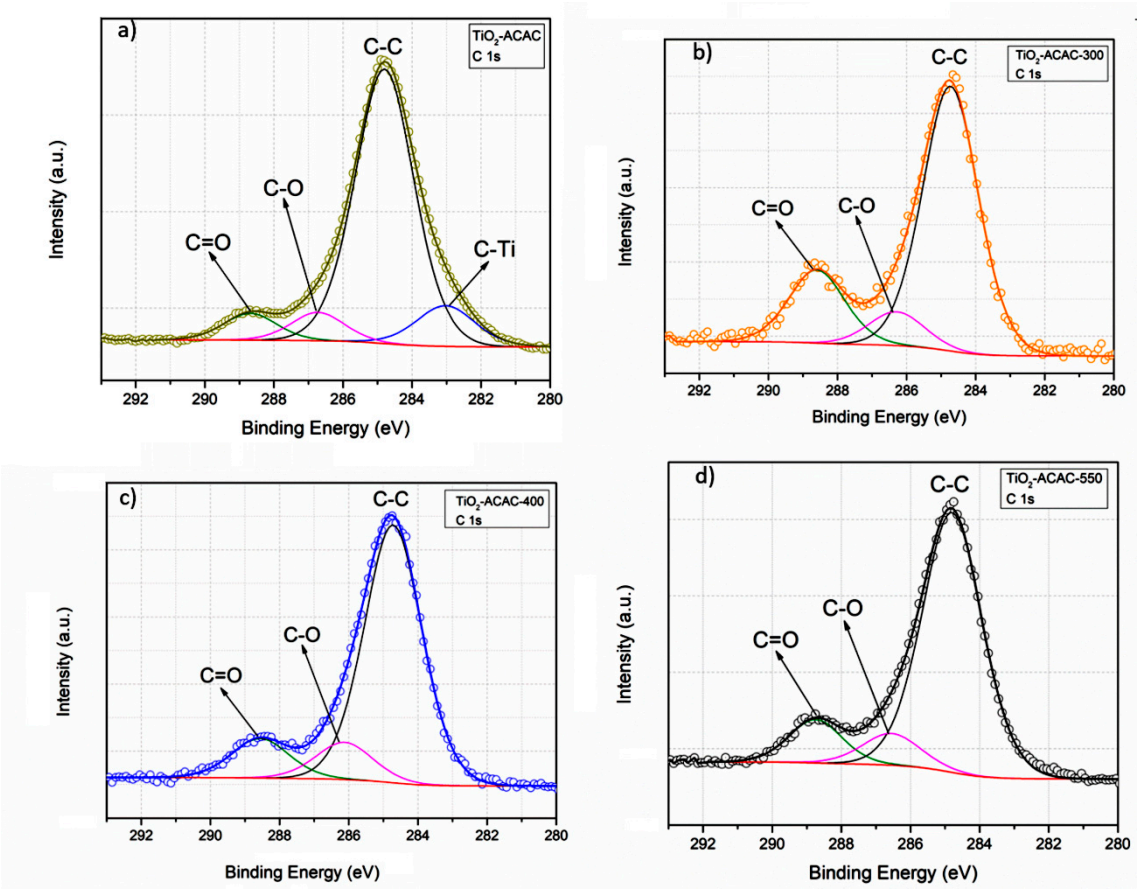

Figure S5: XPS spectra within C 1s range of TiO_2-ACAC, TiO_2-ACAC-300, TiO_2-ACAC-400 and Table 2. ACAC-550.

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S6.

XPS spectra within O 1s range of TiO_2-ACAC-300, TiO_2-ACAC-400 and TiO_2-ACAC-550

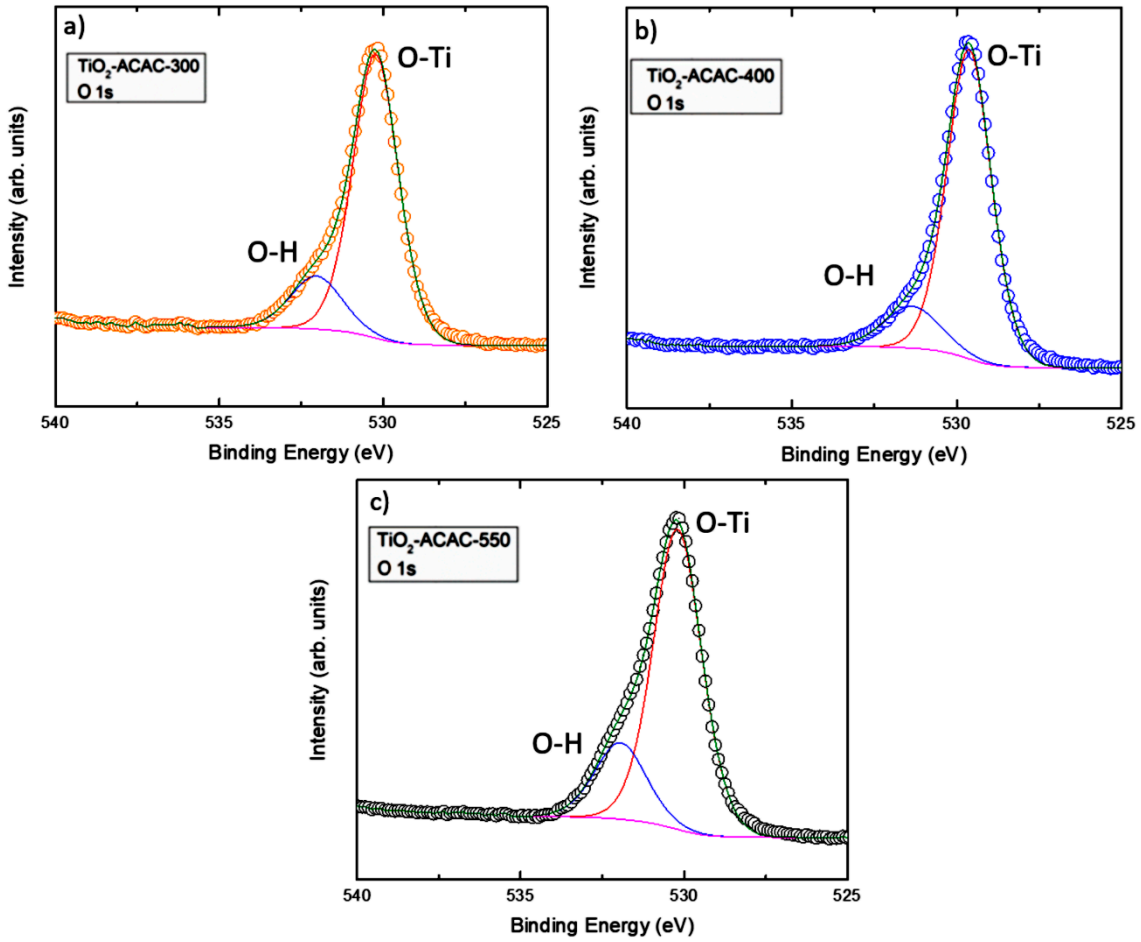

Figure S6. XPS spectra within O 1s range of TiO_2-ACAC-300, TiO_2-ACAC-400 and TiO_2-ACAC-550.

S7.

PL spectrum of TiO_2-ACAC-550

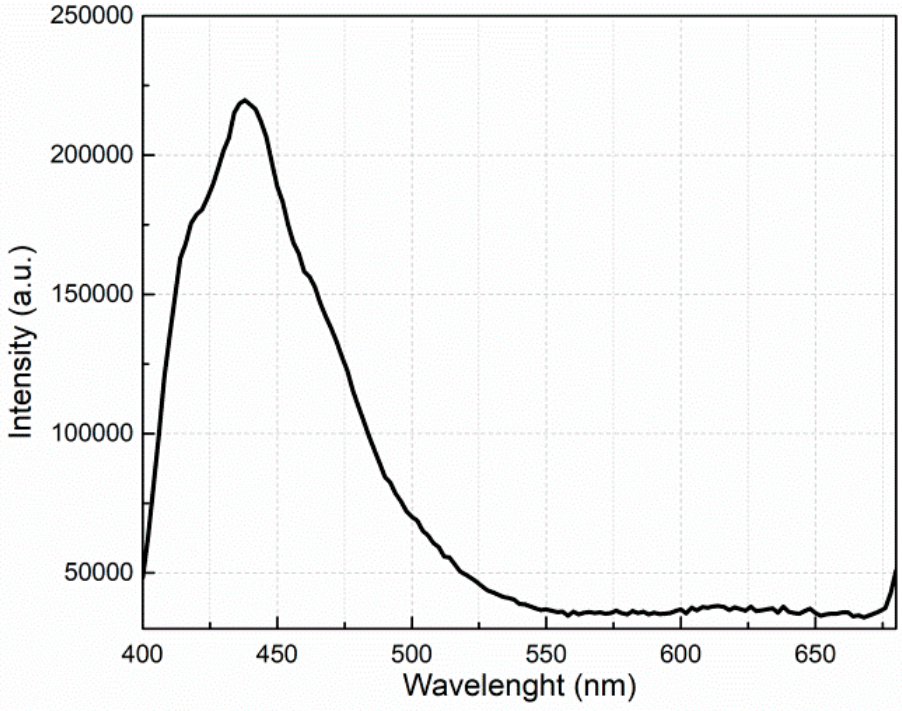

Figure S7. PL spectrum of TiO_2-ACAC-550.

S8.

Concentration of SETOV defects as a function of time for TiO_2-ACAC-300 and TiO_2-ACAC-400

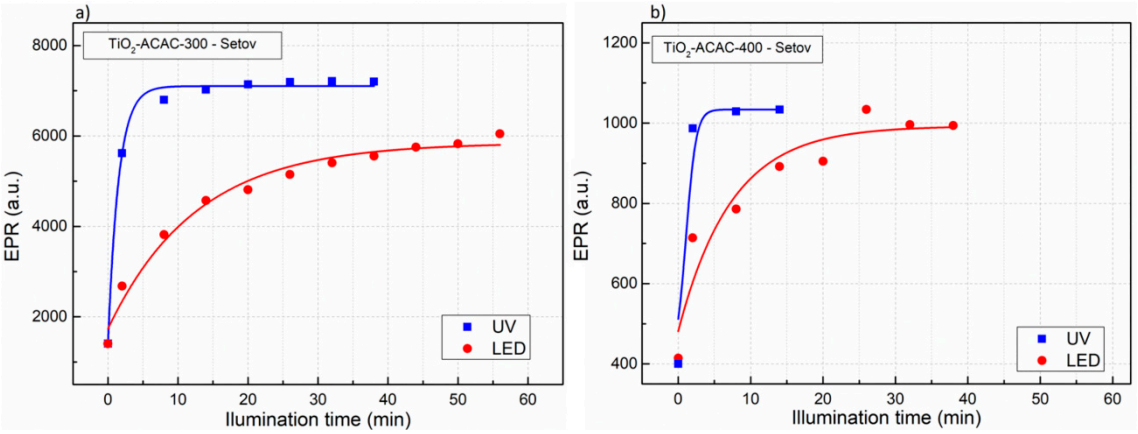

Figure S8. Concentration of SETOV defects as a function of time for TiO_2-ACAC-300 and TiO_2-ACAC-400, under visible (white LED) and ultraviolet radiation.

S9.

Experimental XRPD pattern of deactivated TiO_2-ACAC-300

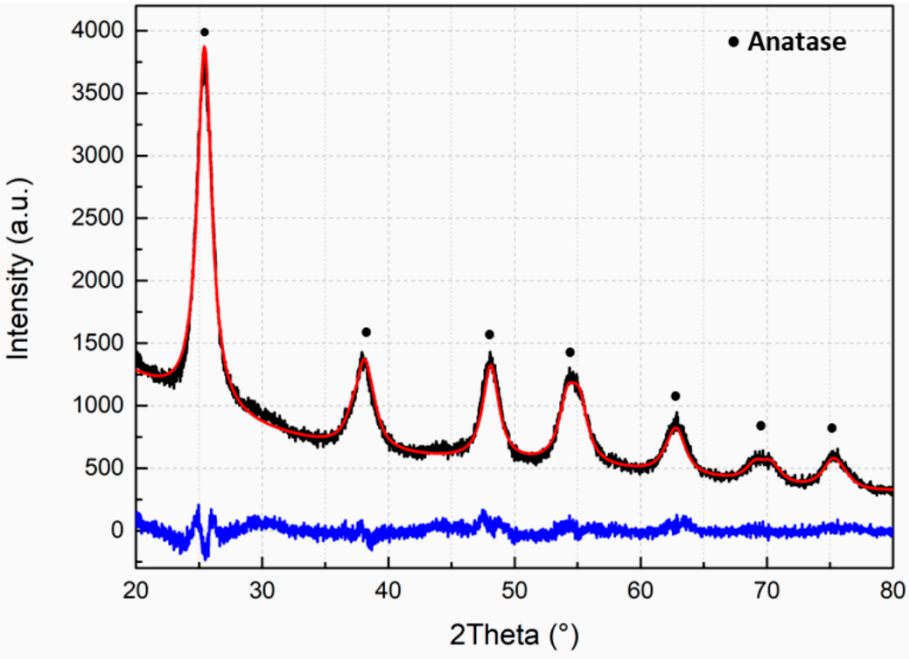

Figure S9. Experimental XRPD patterns refined by Le Bail method for deactivated TiO_2-ACAC-300. The experimental pattern is black, the calculated pattern is red and the difference plot is blue.

S10.

Experimental procedure of Ion Chromatography analysis of virgin and deactivated photocatalysts

About 0.3 g of the deactivated powder was dispersed in 20 mL of distilled water and ultrasonicated for 30 min. Afterwards, the dispersion was filtered with filter paper with the aid of 5 mL of distilled water. The final volume of the filtered solution was 25 mL.

The same procedure was carried out with the virgin photocatalyst.

Ion Chromatograph Dionex-DX 2000 was used to measure content of ions in the as-prepared liquid, especially looking for NO_3^- since it was expected that this ion was adsorbed at the surface of deactivated photocatalysts.

For the measurements we used a precolumn AG 18 4 × 50 mm and the column AS 18 4 × 25 mm with the flux of solution of 1.0 mL min^{-1}.

The virgin powder presented 0.16 mg L^{-1} of NO_3^-, while the deactivated photocatalyst presented 6.40 mg L^{-1} of NO_3^-.