Supplementary Materials

Defective grey TiO_2 with minuscule anatase-rutile heterophase junctions for hydroxyl radicals formation in a visible-light triggered photocatalysis

Sanjay Gopal Ullattil[1], Janez Zavašnik[2], Ksenija Maver[1], Matjaž Finšgar[3], Nataša Novak Tušar[1,4], Albin Pintar[1,*]

[1]Laboratory for Environmental Sciences and Engineering, Department of Inorganic Chemistry and Technology, National Institute of Chemistry, Hajdrihova 19, SI-1001 Ljubljana, Slovenia

[2]Department for Gaseous Electronics, Jožef Stefan Institute, Jamova 39, SI-1000 Ljubljana, Slovenia

[3]Faculty of Chemistry and Chemical Engineering, University of Maribor, Smetanova 17, SI-2000 Maribor, Slovenia

[4]Graduate School, University of Nova Gorica, Vipavska 13, SI-5000 Nova Gorica, Slovenia

[*]Corresponding author. Tel.: +386 1 47 60 237; fax: +386 1 47 60 460. *E-mail address:* albin.pintar@ki.si (A. Pintar).

Table S1. Calculated *g*-values, line width Γ (peak-to-peak width of measured EPR spectra) for isotropic broadening, and intensities evaluated from the double-integrated EPR spectra. The uncertainties of the last digit are given in parenthesis.

Sample	***g*-value**	**Γ (mT)**	**Intensity (arb. u.)**
PT	/	/	0
NT-3	2.0030(5)	0.31(2)	0.80(8)
NT-4	2.0025(5)	0.42(2)	2.2(2)
NT-5	2.0024(5)	0.32(2)	6.0(5)
NT-O-3	2.0025(5)	0.47(2)	0.85(9)
NT-O-4	2.0026(5)	0.36(2)	2.4(2)
NT-O-5	2.0022(5)	0.30(2)	8.6(9)

Table S2. Initial rates of 7-OHC formation obtained during the photocatalytic oxidation of aqueous solution of coumarin in the presence of investigated TiO_2 photocatalysts under visible-light illumination.

Sample	**$10^3 \times (r_{7\text{-OHC}})_0$ (μmol/($g_{cat.}$ min))**
PT	0.02
NT-3	0.08
NT-4	1.6
NT-5	5.9
NT-O-3	0.19
NT-O-4	2.6
NT-O-5	4.0

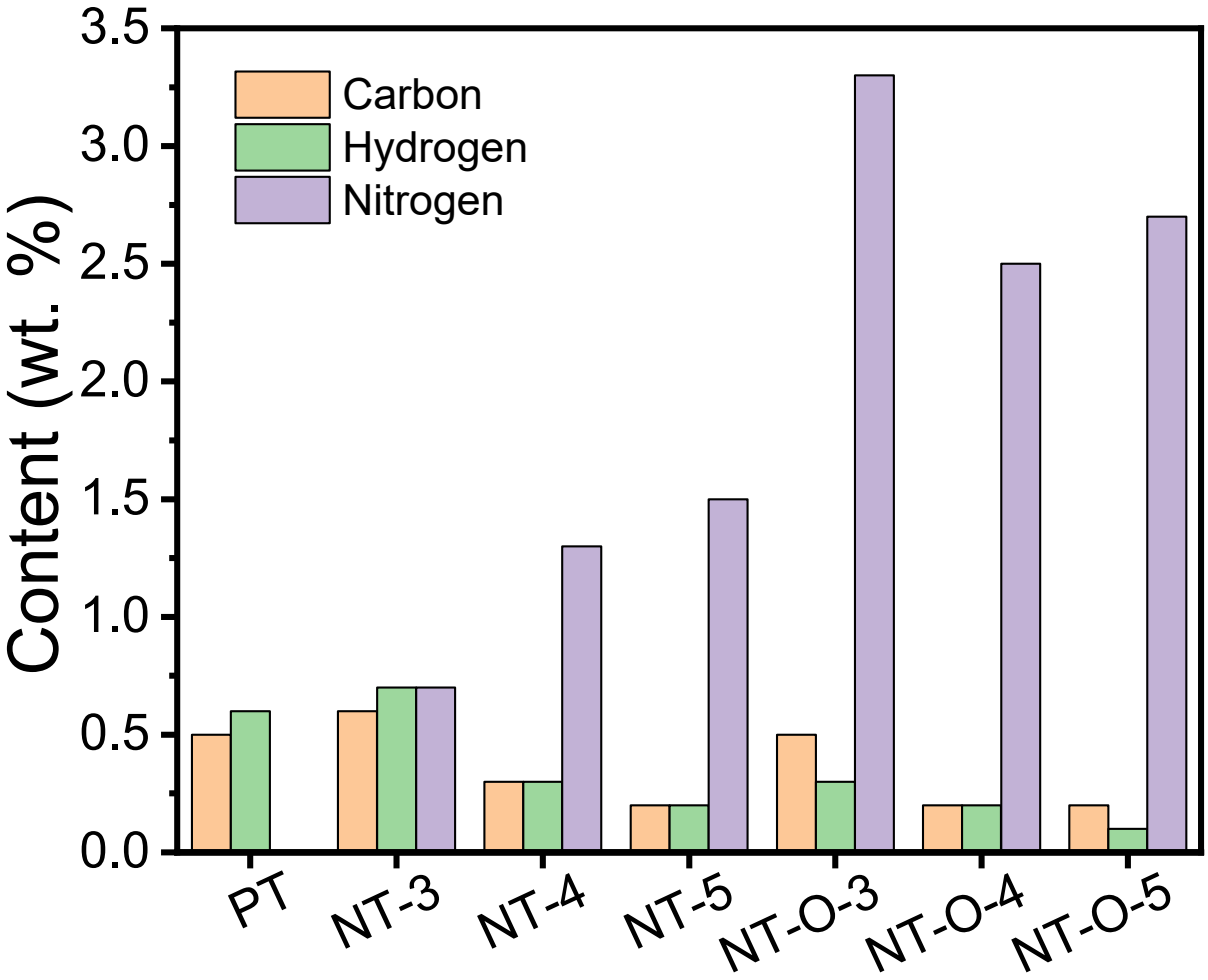

Figure S1. Results of CHN elemental analysis of fresh TiO_2 samples.

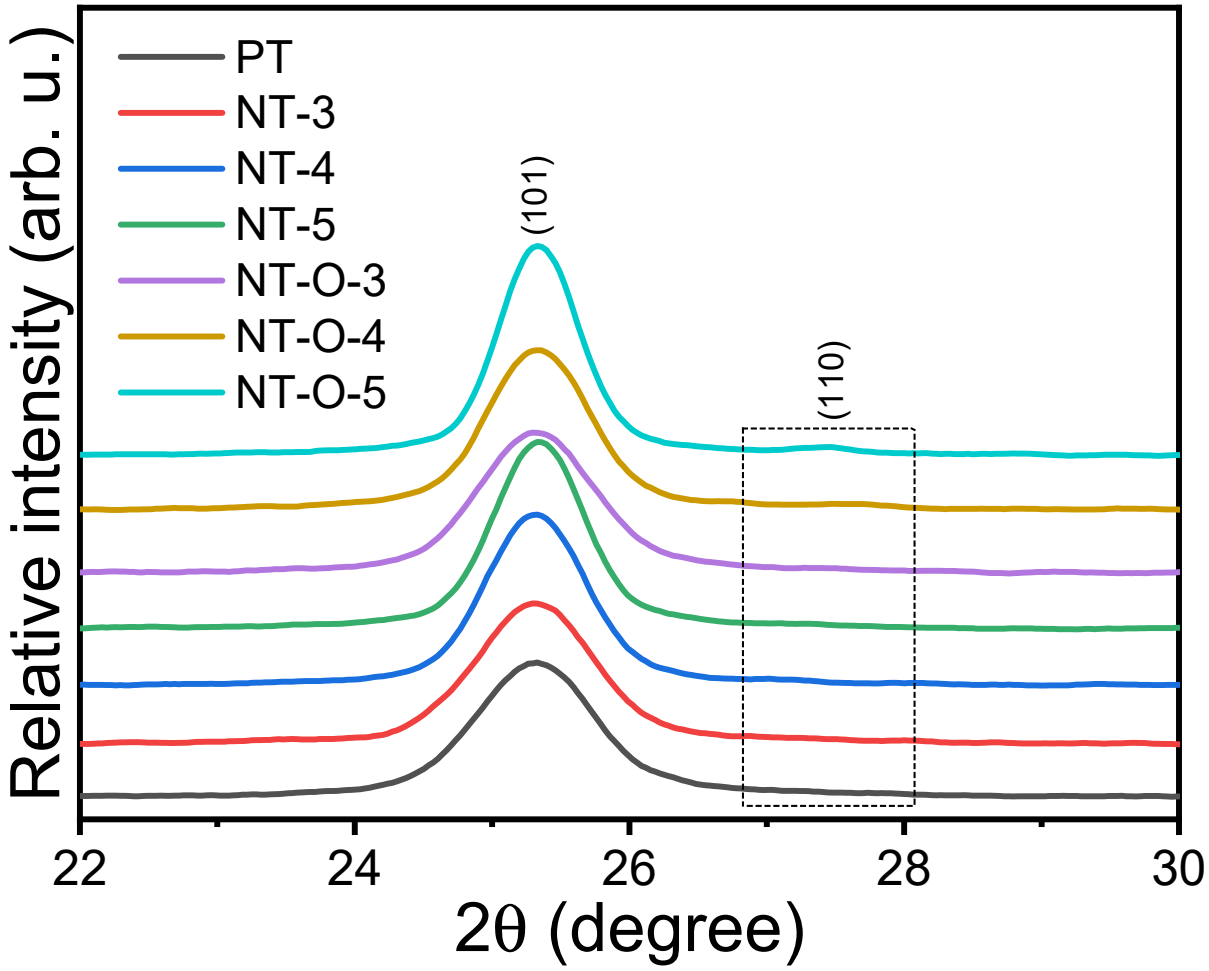

Figure S2. Zoomed XRD diffractograms of solids examined in the present study in the range of 22-30°.

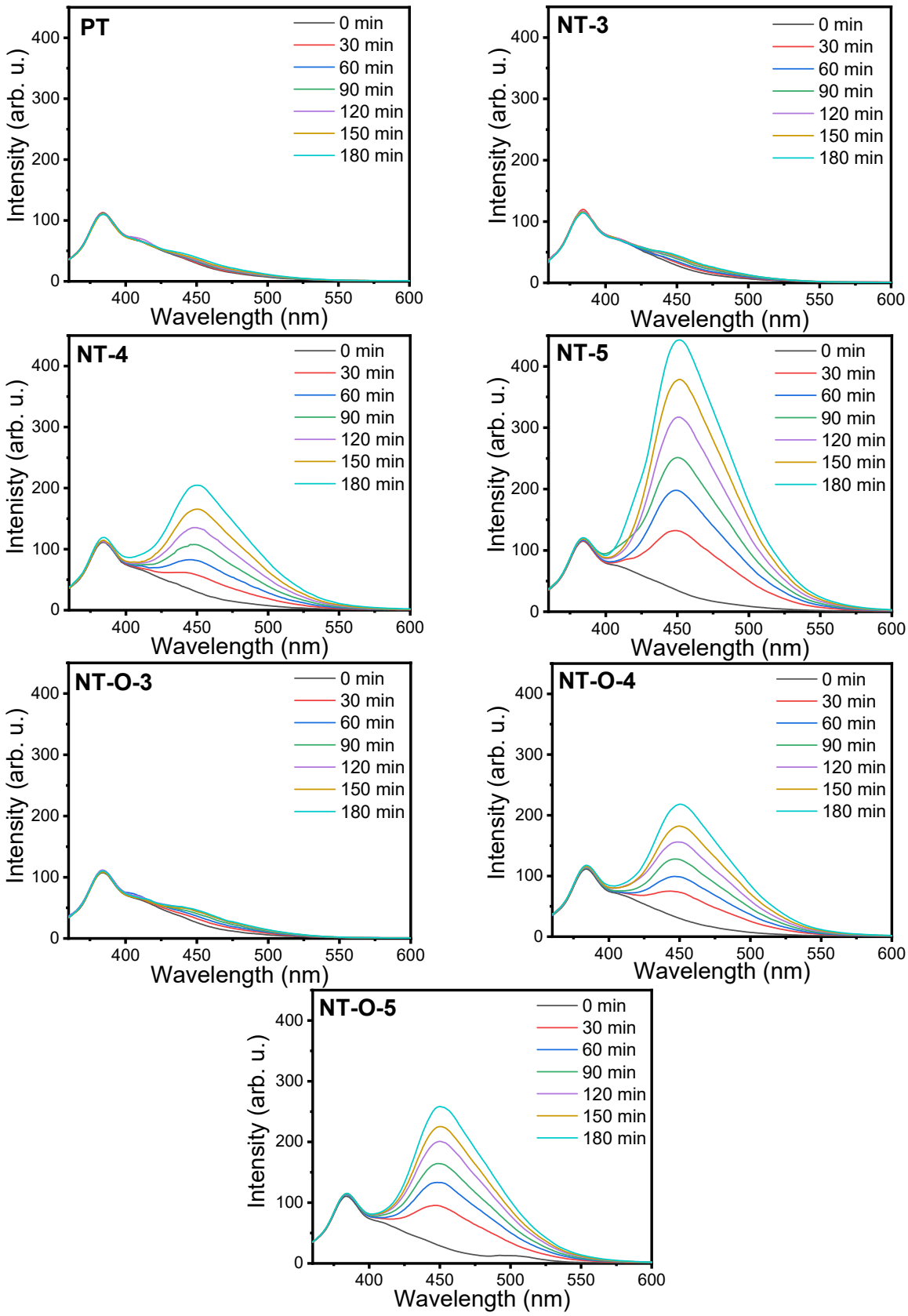

Figure S3. Photoluminescence spectra obtained during the photocatalytic oxidation of aqueous solution of coumarin conducted in the presence of investigated TiO_2 samples.

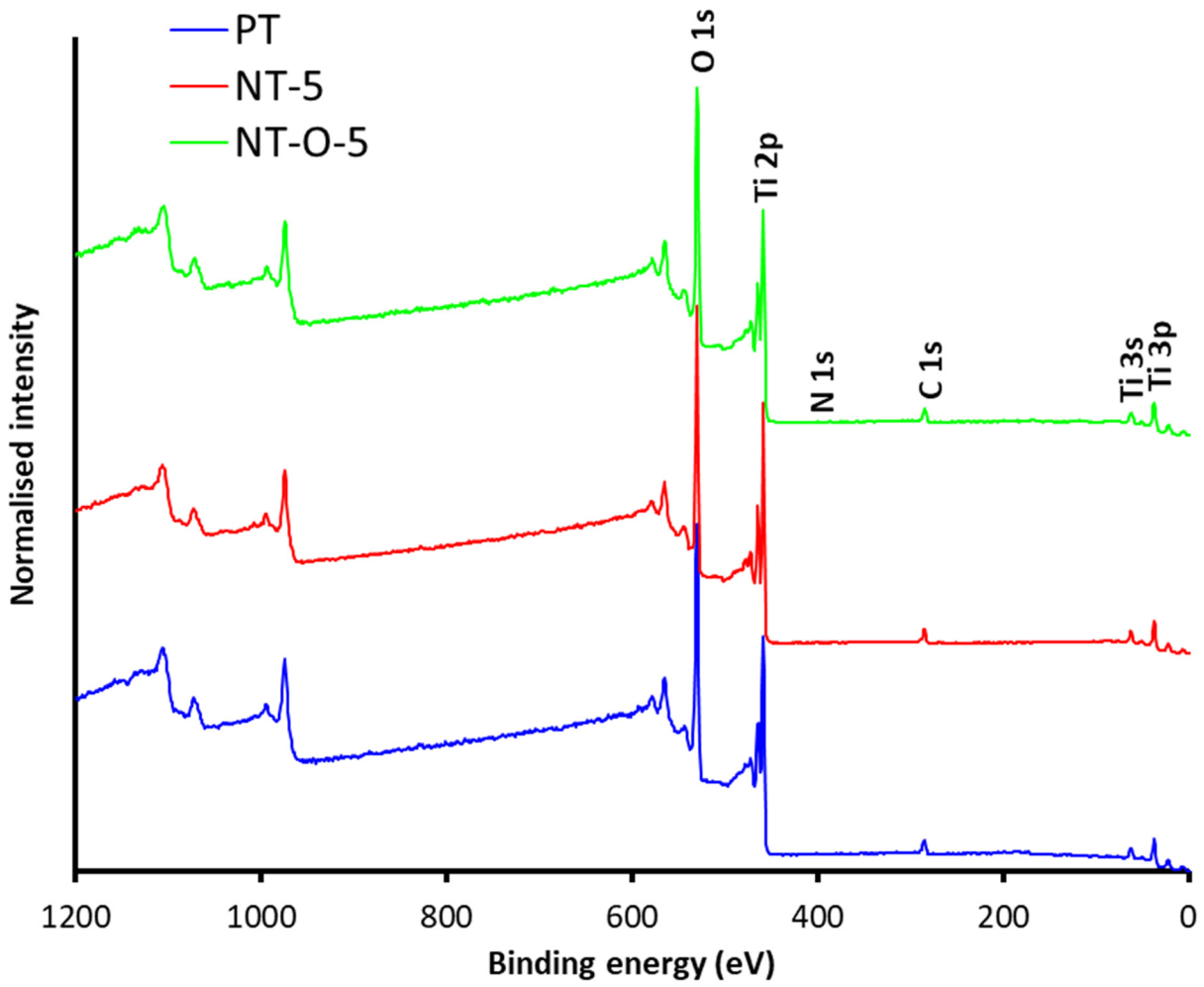

Figure S4. XPS survey spectra measured for PT, NT-5 and NT-O-5 samples.

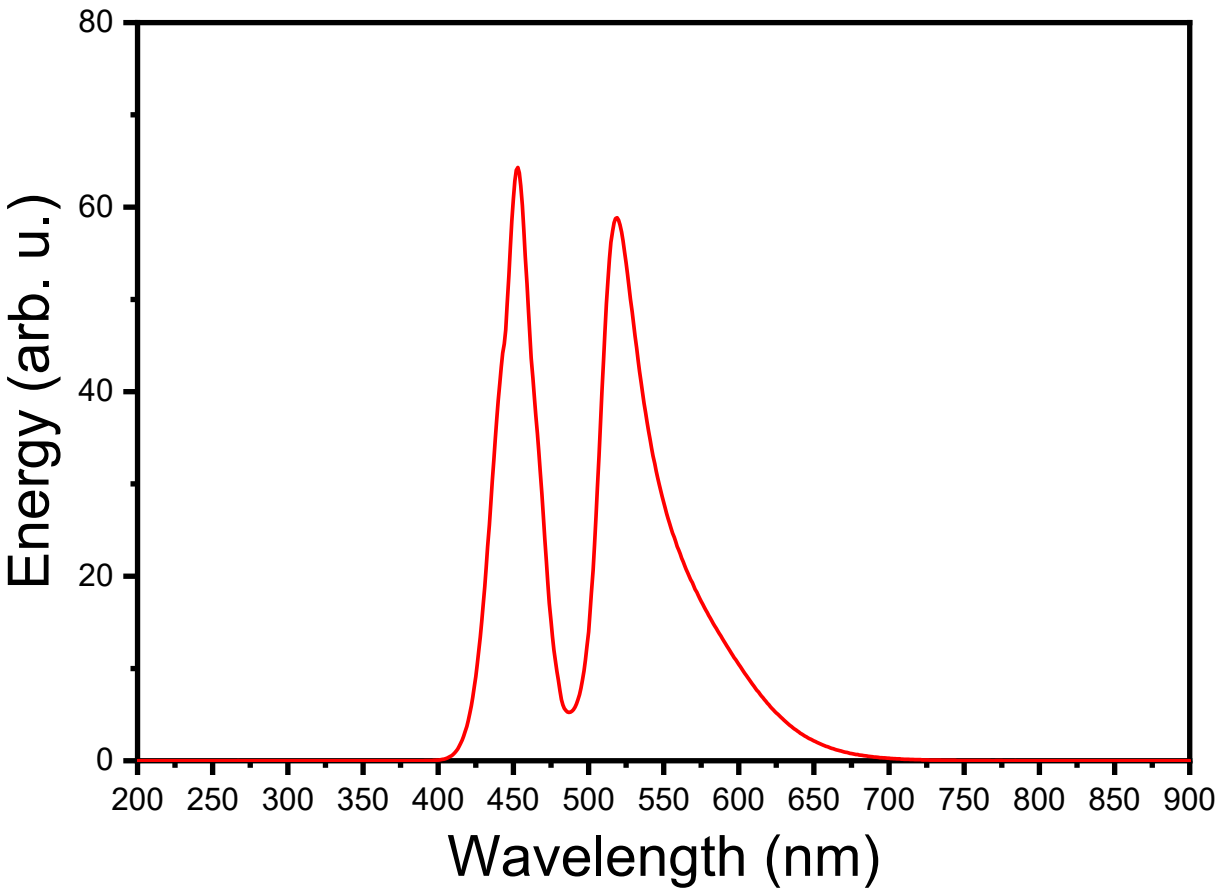

Figure S5. Energy spectrum of LED lamp (KL 1600 LED, Schott, Mainz, Germany) used in the present study.