

# Global Challenges

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## Supporting Information

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**Porous Silica Microspheres with Immobilized Titania Nanoparticles for In-Flow Solar-Driven Purification of Wastewater**

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# Porous silica microspheres with immobilized titania nanoparticles for in-flow solar-driven purification of wastewater

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## SUPPLEMENTARY INFORMATION

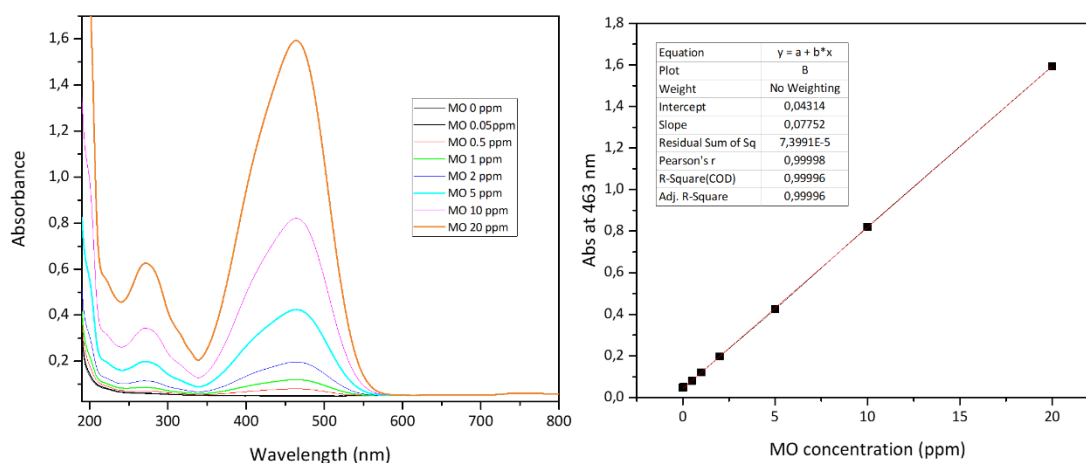


Figure S1. UV-Vis spectra of methyl orange (MO) aqueous solutions at different concentrations indicating two absorption maxima (271 and 463 nm). Calibration curve for MO.

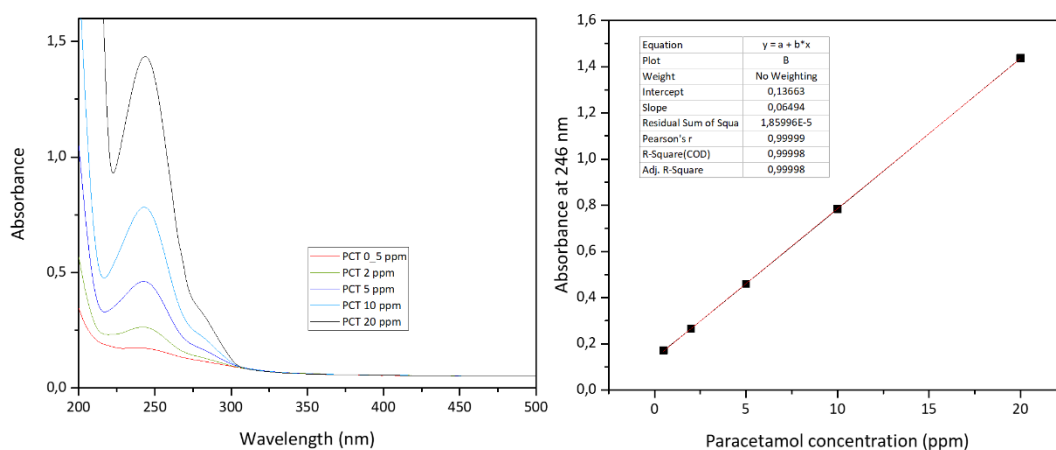


Figure S2. UV-Vis spectra of paracetamol (PCT) aqueous solutions at different concentrations indicating an absorption maximum (246 nm). Calibration curve for paracetamol.

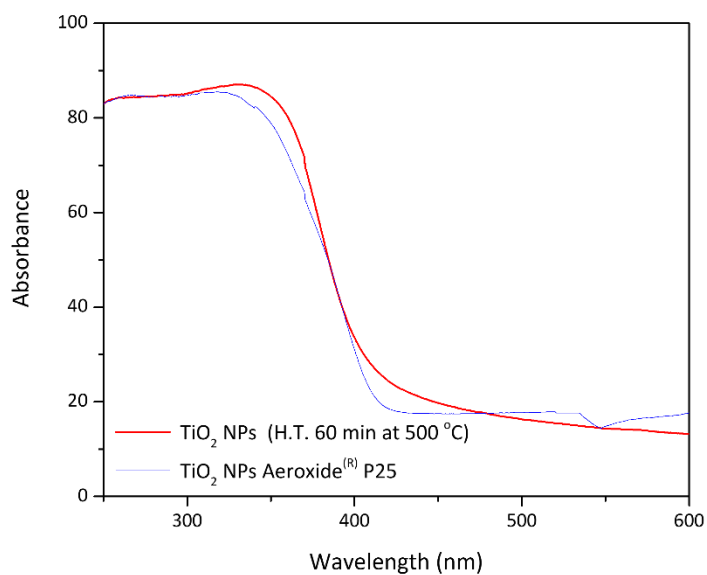


Figure S3. Absorbance spectra for the  $\text{TiO}_2$  NPs synthesized in the present work, after heat treatment at  $500^\circ\text{C}$  for 1h, and for commercially available  $\text{TiO}_2$  NPs Aeroxide<sup>®</sup> P25.

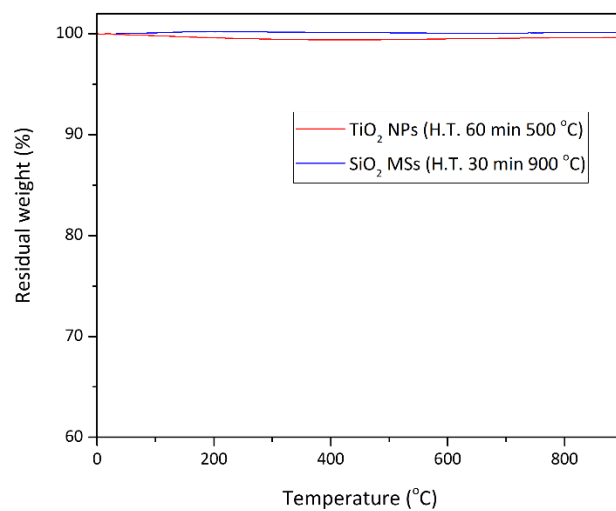


Figure S4. Thermogravimetric curves of the heat treated TiO<sub>2</sub> NPs and SiO<sub>2</sub> MSs, exhibiting their dominant inorganic nature.

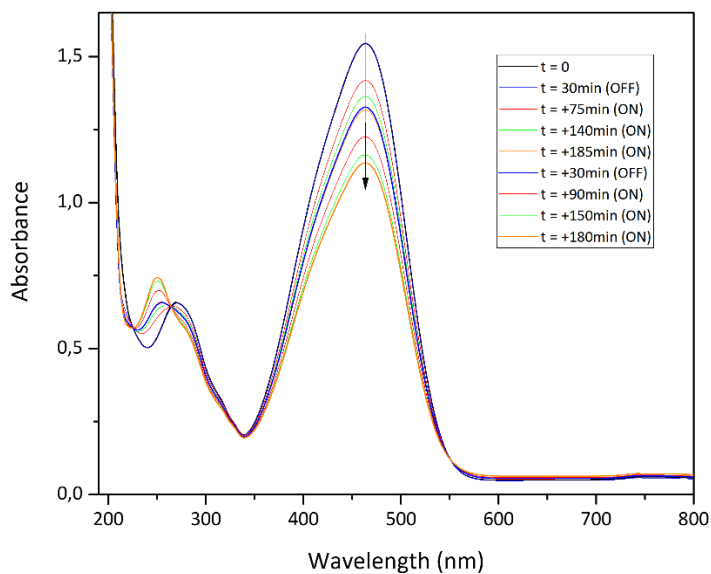


Figure S5. UV-Vis spectra of methyl orange (MO) aqueous solutions at increasing times of solar light exposure. Cycles ON/OFF were done to check for adsorption phenomena. MO degradation does not occur in the dark. Experimental conditions: 25 °C, pH = 7,

$\text{mass}_{(\text{TiO}_2 \text{ NPs})}/\text{mass}_{(\text{MO})} = 25$ , 100 mL of 20 ppm MO aq. solution, 300 mg of  $\text{TiO}_2$  NPs loaded  $\text{SiO}_2$  MSs (66 mg  $\text{TiO}_2$ ), flow = 5 mL/min, irradiance = 1000  $\text{W}/\text{m}^2$  (1 sun).

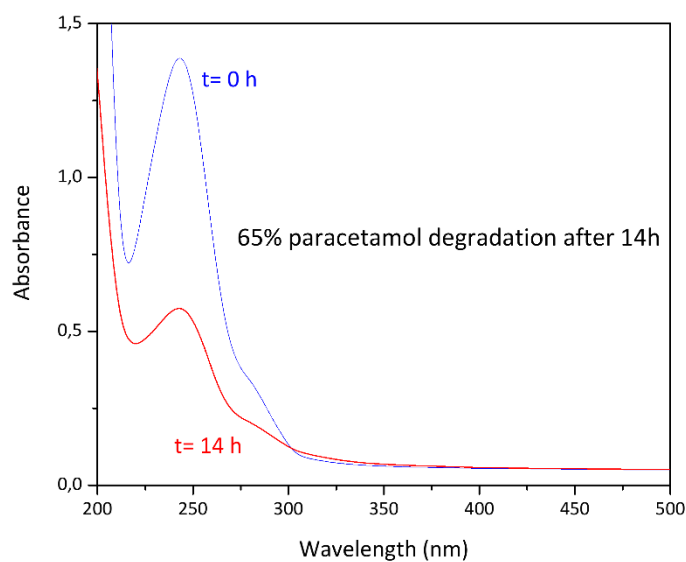


Figure S6. UV-Vis spectra of paracetamol (PCT) aqueous solutions at the beginning and at the end of the photocatalysis test (solar illumination). Experimental conditions: 25 °C, pH = 7,  $\text{mass}_{(\text{TiO}_2 \text{ NPs})}/\text{mass}_{(\text{PCT})} = 26$ , 100 mL of 20 ppm PCT aq. solution, 300 mg of  $\text{TiO}_2$  NPs loaded  $\text{SiO}_2$  MSs (66 mg  $\text{TiO}_2$ ), flow = 5 mL/min, irradiance = 1000  $\text{W}/\text{m}^2$  (1 sun).