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## COMPARATIVE PHOTOCATALYTIC PERFORMANCES OF UNDOPED/N-DOPED TiO<sub>2</sub> UNDER SOLAR IRRADIATION FOR A REACTIVE YELLOW 125 AZO REACTIVE DYE DEGRADATION FROM WATER

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### Abstract

In this study, the comparative photocatalytic activities of undoped and N-doped TiO<sub>2</sub> anatase nanocrystals towards the degradation of Reactive Yellow 125 (RY125) azo reactive dye in aqueous solutions under UV and VIS irradiation ranges were investigated. Both nanocrystals prepared by a fast-hydrothermal method using titanium isopropoxide as precursor were characterized morpho-structurally by X-ray diffraction, SEM/EDX analysis and BET measurements. Also, optical features of the nanocrystals were studied by diffuse reflectance UV-VIS spectroscopy (DRUV-VIS) technique. N-doped TiO<sub>2</sub> catalyst exhibited better adsorption capacity for RY 125 azo dye, adsorption stage being a necessary condition in photocatalysis process. Both catalysts exhibited very good efficiencies for RY 125 azo dye degradation under UV irradiation. Under VIS irradiation range, N-doped TiO<sub>2</sub> catalyst allowed reaching good efficiency for RY125 dye degradation, in comparison with undoped TiO<sub>2</sub>, for which the results were not satisfactory.

*Key words:* fast-hydrothermal, photocatalysis, reactive dye, TiO<sub>2</sub> anatase, wastewater

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