

Supporting Information for

Structural characterization of Ag-doped TiO₂ with enhanced photocatalytic activity

Lidiaine M. Santos¹, Werick A. Machado¹, Marcela D. França¹, Karen A. Borges¹,
Roberto M. Paniago², Antonio O. T. Patrocínio¹, Antonio E. H. Machado^{1*}

¹*Laboratory of Photochemistry and Materials Science – LAFOT-CM
Instituto de Química, Universidade Federal de Uberlândia, 38400-902 Uberlândia,
Minas Gerais, Brasil.*

²*Departamento de Física, Universidade Federal de Minas Gerais 31270-901 Belo
Horizonte, Minas Gerais, Brazil.*

Table S1

Quality scores for the Rietveld refinement of the synthesized photocatalysts

Photocatalyst	χ^2	S *	R _{Bragg} / % ^a	R _{wp} / % ^b	R _{exp} ^c
TiO ₂	1.59	1.20	1.13	11.5	9.57
TiO ₂ -Ag 0.5%	1.60	1.20	2.34	12.1	10.12
TiO ₂ -Ag 2.0%	1.72	1.29	4.46	13.3	10.25
TiO ₂ -Ag 5.0%	1.19	1.09	1.99	8,71	8.00

* Factor S (Godness of Fit) which means quality setting given by the ratio between R_{WP} and R_{Exp} ($S = R_{WP}/R_{Exp}$), adequacy of observed and calculated profiles;

^a R_{Bragg} - Bragg Factor;

^b R_{wp} - Factor Weighted Profile;

^c R_{Exp} - Expected Weighted Profile Factor.

Fig. S1. Particle size distributions determined from transmission of electron microscopy images: (a) bare TiO_2 , (b) $\text{TiO}_2\text{-Ag}$ 0.5%, (c) $\text{TiO}_2\text{-Ag}$ 2.0% and (d) $\text{TiO}_2\text{-Ag}$ 5.0%.

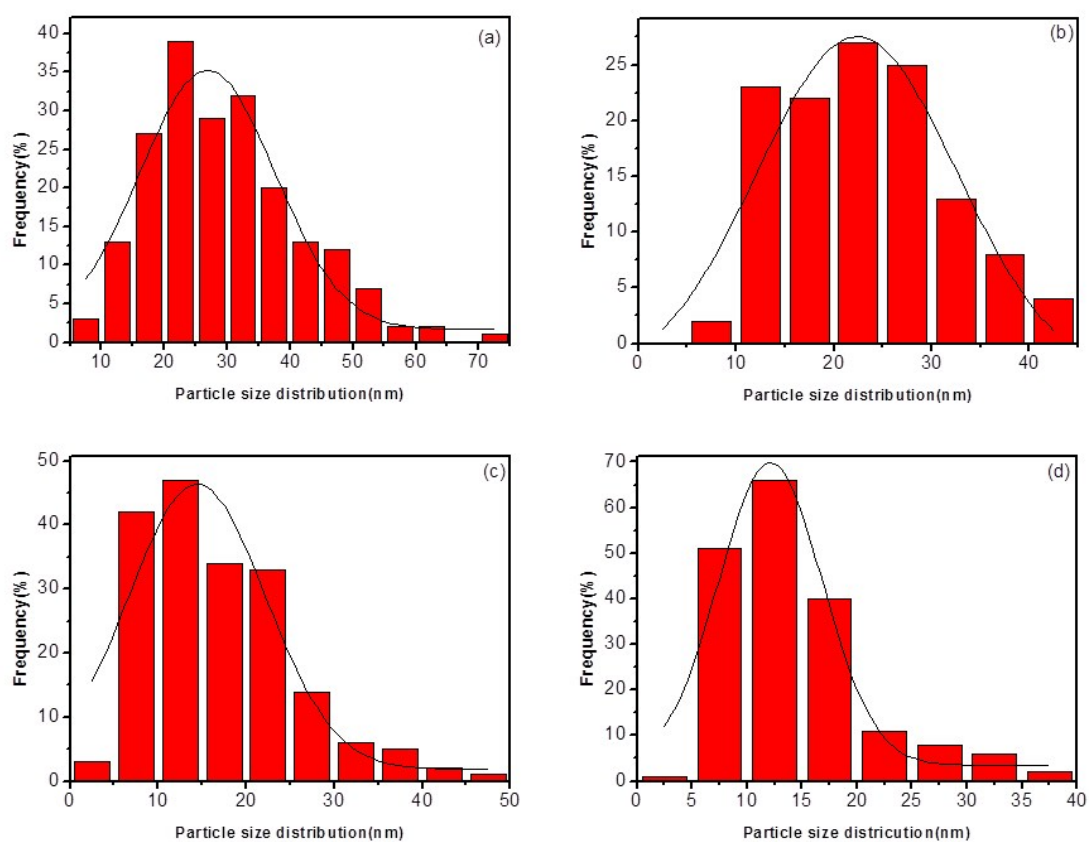


Fig. S2. XRD patterns after structural refinement procedure using the Rietveld method:
(a) bare TiO_2 , (b) $\text{TiO}_2\text{-Ag}$ 0.5%, (c) $\text{TiO}_2\text{-Ag}$ 2.0% and (d) $\text{TiO}_2\text{-Ag}$ 5.0%.

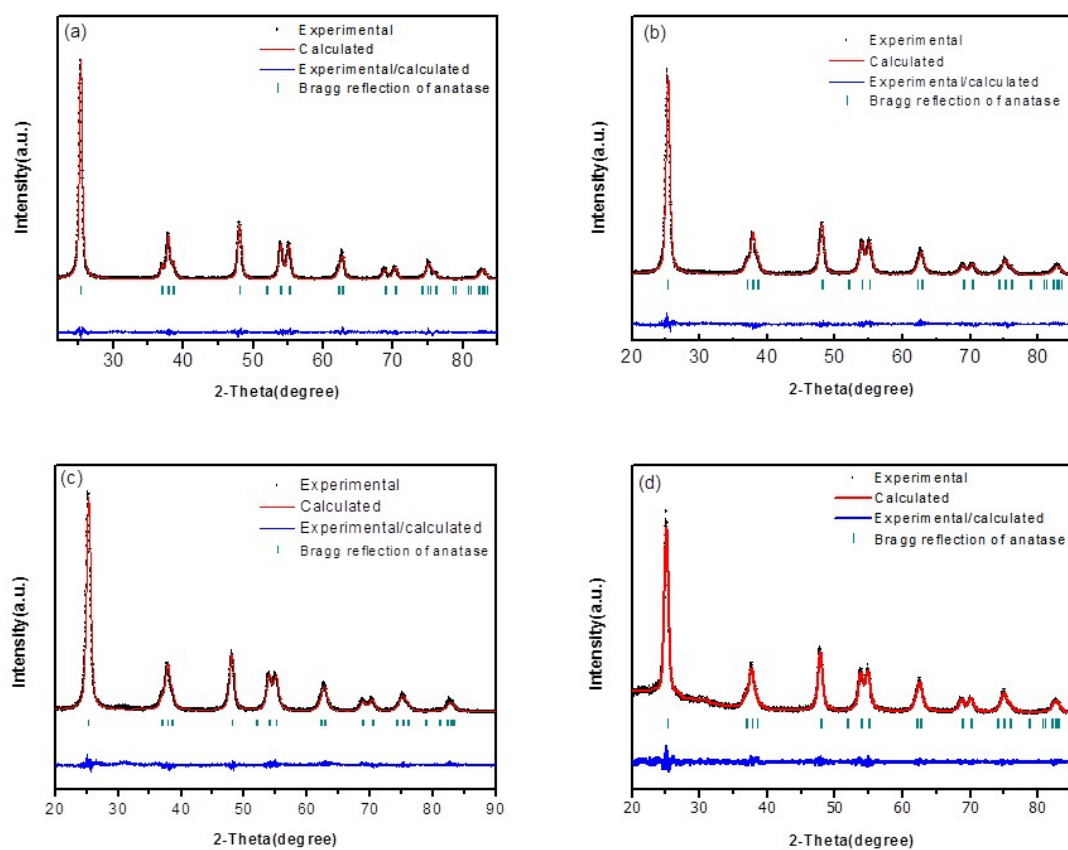


Fig. S3: Variation of the normalized total organic carbon (TOC/TOC_0) and decolorization (Abs/Abs_0) as a function of the photolysis time of a pH 6.9 tartrazine dye aqueous solution in the absence of any catalyst.

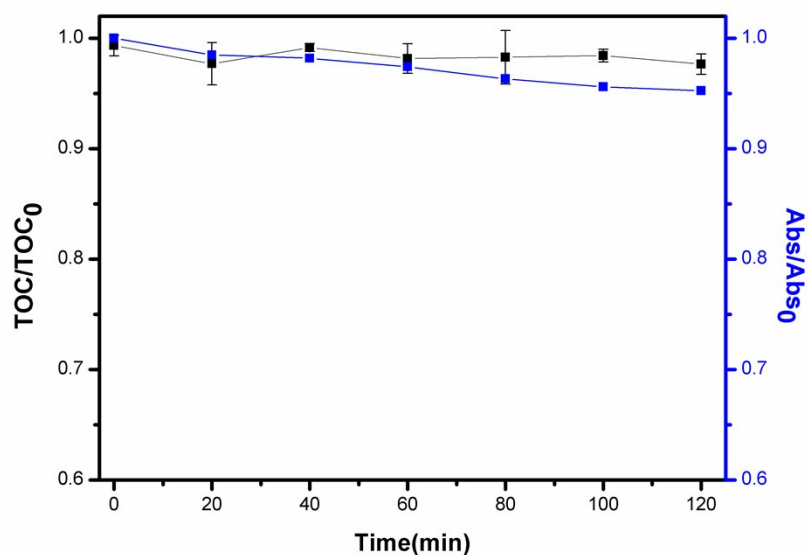


Fig. S4. E102 tartrazine mineralization kinetics in the presence of bare TiO_2 (●), TiO_2 -Ag 0.5% (●), TiO_2 -Ag 2.0% (●) and TiO_2 -Ag 5.0% (●) in different pHs. (a) pH = 3.0; (b) pH = 8.0.

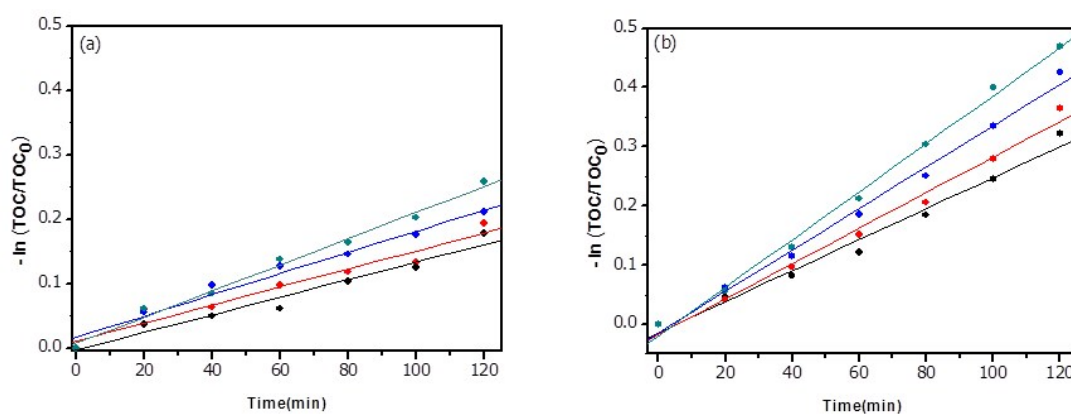


Fig. S5. E102 tartrazine dye decolorization mediated by the recycled $\text{TiO}_2\text{-Ag5.0\%}$ catalyst in aqueous solution at pH 6.9.

