

Supplementary Information

Degradation of Acid Red 8 Dye Using Photo-Fenton Reaction Mediated by Titanium Modified Catalysts

*André C. Bento,^a Elissandro S. Emídio,^{a,b} Peter Hammer^a and Raquel F. P. Nogueira^{*a,b}*

^a*Instituto de Química, Universidade Estadual Paulista (Unesp), 14800-060 Araraquara-SP, Brazil*

^b*Instituto Nacional de Tecnologias Alternativas para Detecção, Avaliação Toxicológica e Remoção de Contaminantes Emergentes e Radioativos (INCT-DATREM), Instituto de Química, Universidade Estadual Paulista (Unesp), CP 355, 14800-060 Araraquara-SP, Brazil*

Table S1. Amounts of reagents used for preparation of catalysts and corresponding nominal Ti/Fe molar ratios

Catalyst	Ti/Fe	Fe ₂ SO ₄ .7H ₂ O / mmol	Fe ₂ (SO ₄) ₃ .8H ₂ O / mmol	H ₂ SO ₄ (0.3 mol L ⁻¹) / mL	Ti[OCH(CH ₃) ₂] ₄ / mmol	CH ₃ CHOHCH ₃ / mL
CAT1	–	4.23	12.7	43.1	0	0
CAT2	0.22	6.59	6.46	36.5	2.93	10
CAT3	0.40	7.76	3.26	33.3	4.43	15
CAT4	0.61	8.82	6.64	30.9	5.74	20

CAT: catalyst.

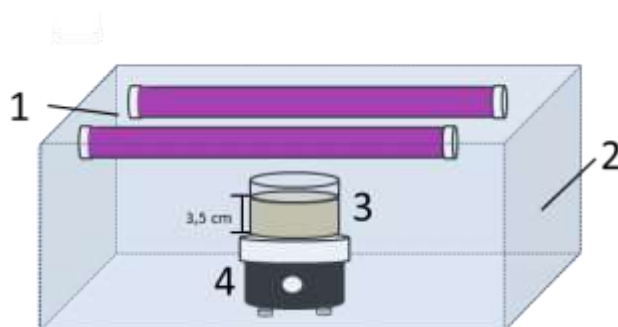


Figure S1. Schematic view of irradiation system with blacklight lamps (1) inside a wooden box (2), above dye solution (3) under magnetic stirring (4).

*e-mail: raquel.pupo@unesp.br

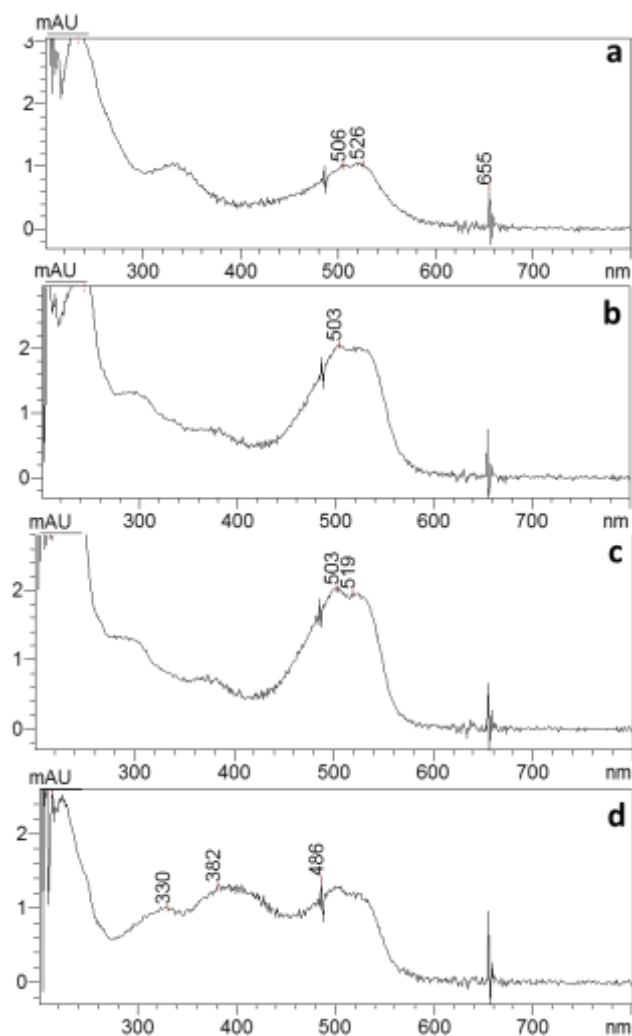


Figure S2. UV-Vis spectra of intermediates detected after 15 min degradation of AR8 obtained with diode array detection (HPLC-DAD) under hydrodynamic conditions. Retention times: (a) 3.7 min; (b) 4.1 min; (c) 4.5 min; (d) 5.5 min. HPLC/DAD conditions: methanol/ammonium acetate 0.02 mol L^{-1} , 28:72 (v/v), 60:40 as mobile phase, C8 column as stationary-phase, oven temperature $40 \text{ }^{\circ}\text{C}$ and 1.0 mL min^{-1} flow rate.

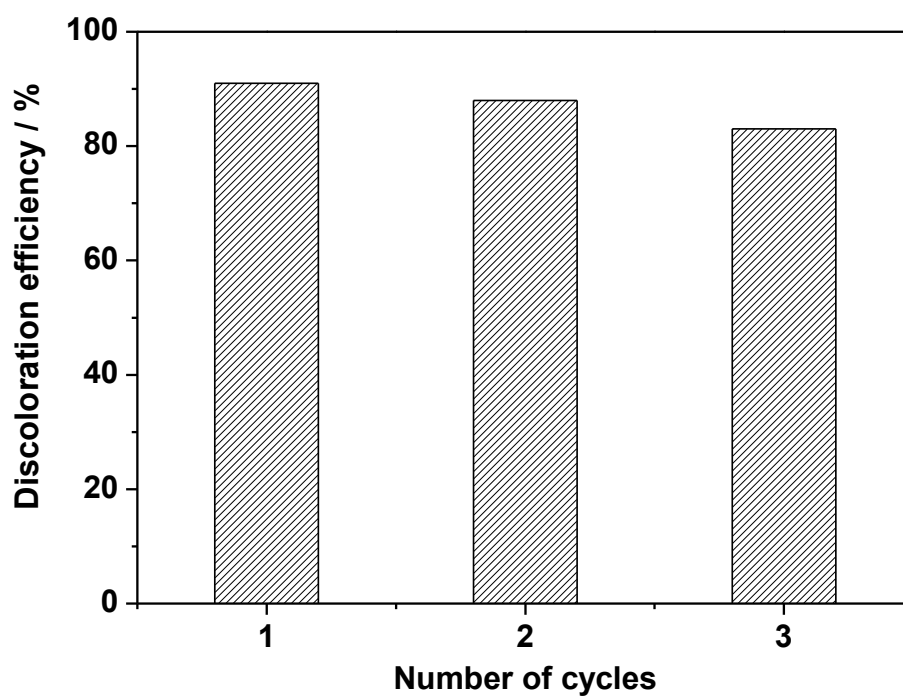


Figure S3. Catalyst reusability of CAT3. Reaction conditions: $C_{ARS} = 25 \text{ mg L}^{-1}$, catalyst dose 1.0 g L^{-1} , $\text{pH} = 5.6$, $\text{H}_2\text{O}_2 = 10 \text{ mmol L}^{-1}$, under UV irradiation, reaction time = 30 min.