

Supplementary Information

Photodegradation of Ciprofloxacin and Levofloxacin by Au@ZnONPs-MoS₂-rGO Nanocomposites

Abniel Machín^{1,*}, Loraine Soto-Vázquez², Diego García³, María C. Cotto⁴, Dayna Ortiz⁴, Pedro J. Berríos-Rolón⁴, Kenneth Fontánez⁵, Edgard Resto², Carmen Morant⁶, Florian Petrescu^{4,7}, and Francisco Márquez^{4,*}

¹ Department of Natural Sciences and Technology, Division of Natural Sciences, Technology and Environment, Universidad Ana G. Méndez-Cupey Campus, 00926PR, United States

² Materials Characterization Center Inc., Molecular Sciences Research Center, University of Puerto Rico, San Juan, PR 00926, USA; loraine.soto@mcc.com.pr (L.S.-V.); resto@mcc.com.pr (E.R.)

³ Department of Biochemistry, School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, 00936PR, United States; diego.garcia13@upr.edu (D.G.)

⁴ Nanomaterials Research Group, Department of Natural Sciences and Technology, Division of Natural Sciences, Technology and Environment, Universidad Ana G. Méndez-Gurabo Campus, 00778PR, United States; mcotto48@uagm.edu (M.C.); ortizd1@uagm.edu (D.O.); berriosp1@uagm.edu (P.B.-R.)

⁵ Department of Chemistry, University of Puerto Rico, Rio Piedras Campus, San Juan, 00925PR, United States; kenneth.fontanez@upr.edu (K.F.)

⁶ Department of Applied Physics, Autonomous University of Madrid, and Instituto de Ciencia de Materiales Nicolás Cabrera, 28049, Madrid, Spain; c.morant@uam.es (C.M.)

⁷ IFToMM-ARoTMM, Bucharest Polytechnic University, 060042, Bucharest, (CE), Romania; florian.petrescu@upb.ro (F.P.)

* Correspondence: machina1@uagm.edu (AM); fmarquez@uagm.edu (FM)
Tel.: +1-787-878-2612 (ext. 220) (A.M.); +1-787-743-7979 (ext. 4250) (F.M.)

Table S1. BET surface area of the synthesized catalysts.

Catalyst	BET surface area (m ² g ⁻¹)
ZnONPs	67
1%Au@ZnONPs-1%MoS ₂ -1%rGO	98
3%Au@ZnONPs-1%MoS ₂ -1%rGO	107
5%Au@ZnONPs-1%MoS ₂ -1%rGO	118
1%Au@ZnONPs-3%MoS ₂ -1%rGO	115
3%Au@ZnONPs-3%MoS ₂ -1%rGO	121
5%Au@ZnONPS-3%MoS ₂ -1%rGO	143
1%Au@ZnONPS-5%MoS ₂ -1%rGO	129
3%Au@ZnONPS-5%MoS ₂ -1%rGO	134
5%Au@ZnONPS-5%MoS ₂ -1%rGO	151

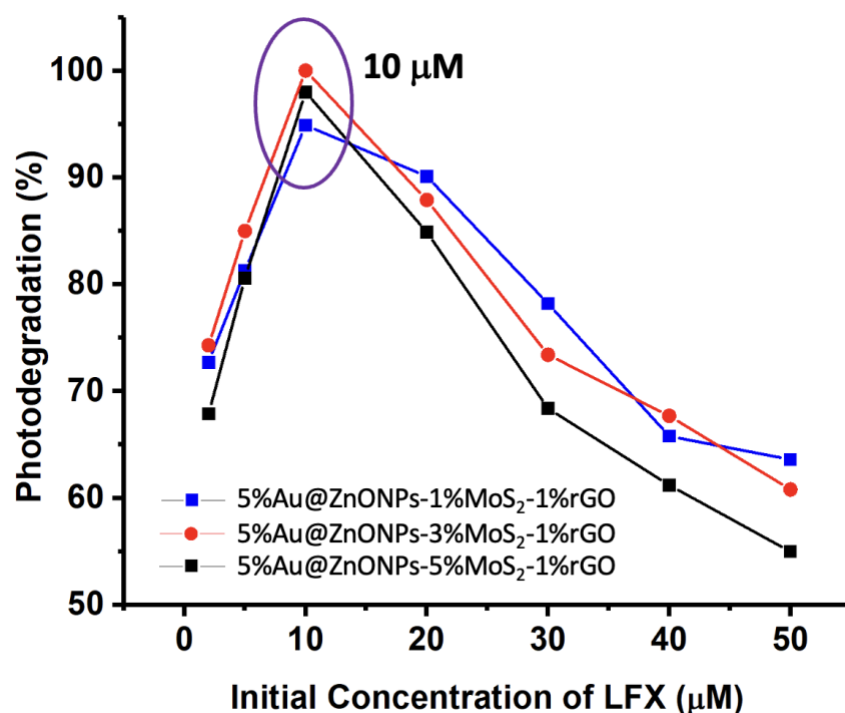


Figure S1. Evaluation of the initial concentration of LFX on the catalytic efficiency of 5% Au@ZnONPs-1% MoS₂-1% rGO, 5% Au@ZnONPs-3% MoS₂-1% rGO, and 5% Au@ZnONPs-5% MoS₂-1% rGO, in the photodegradation reaction.

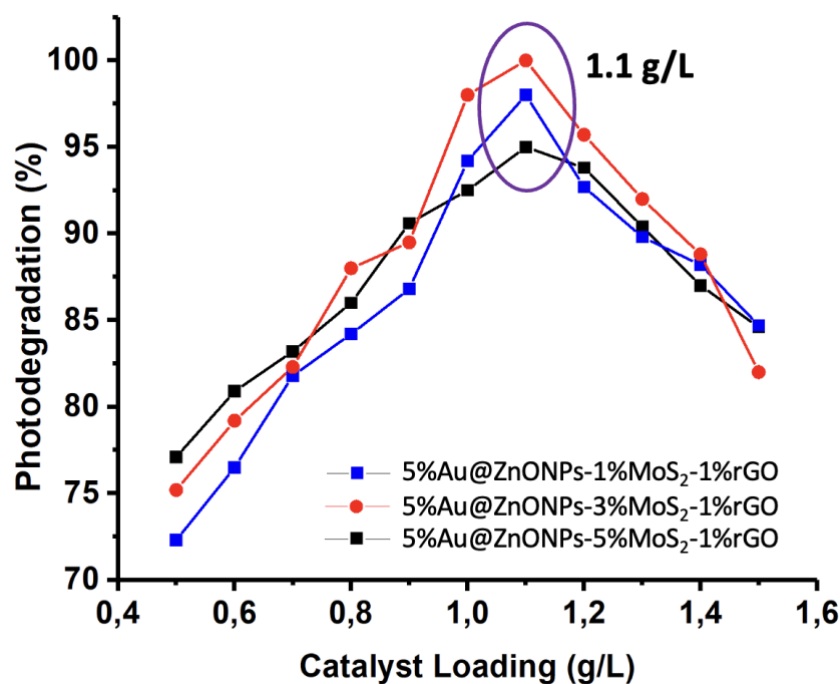


Figure S2. Evaluation of the catalyst loading of 5% Au@ZnONPs-1% MoS₂-1% rGO, 5% Au@ZnONPs-3% MoS₂-1% rGO, and 5% Au@ZnONPs-5% MoS₂-1% rGO on the efficiency of the photodegradation reaction of LFX.

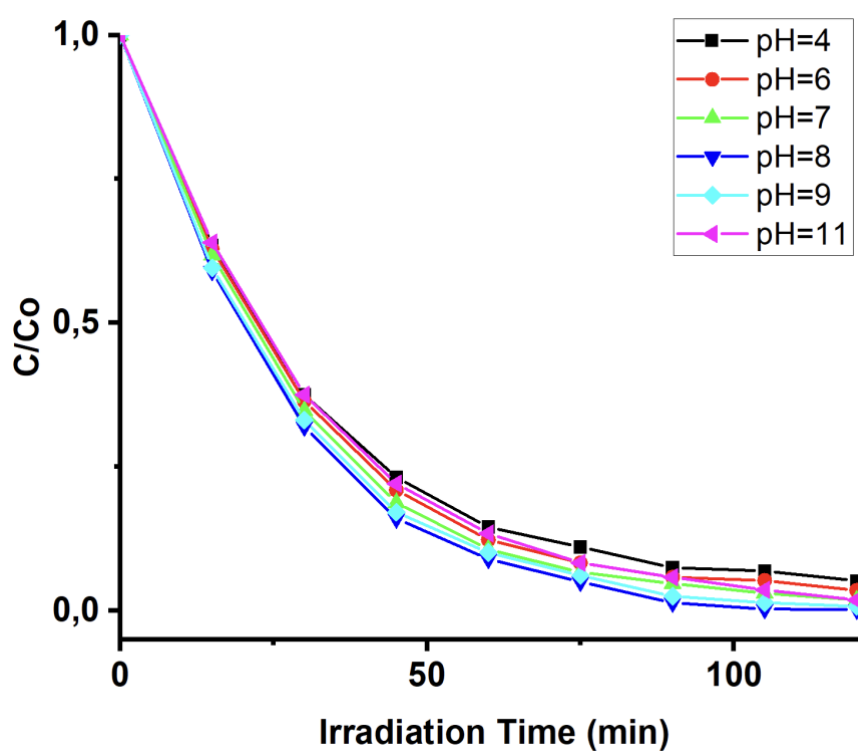


Figure S3. Photocatalytic activity of 5% Au@ZnONPs-3% MoS₂-1% rGO on the degradation of LFX under irradiation at different pH.

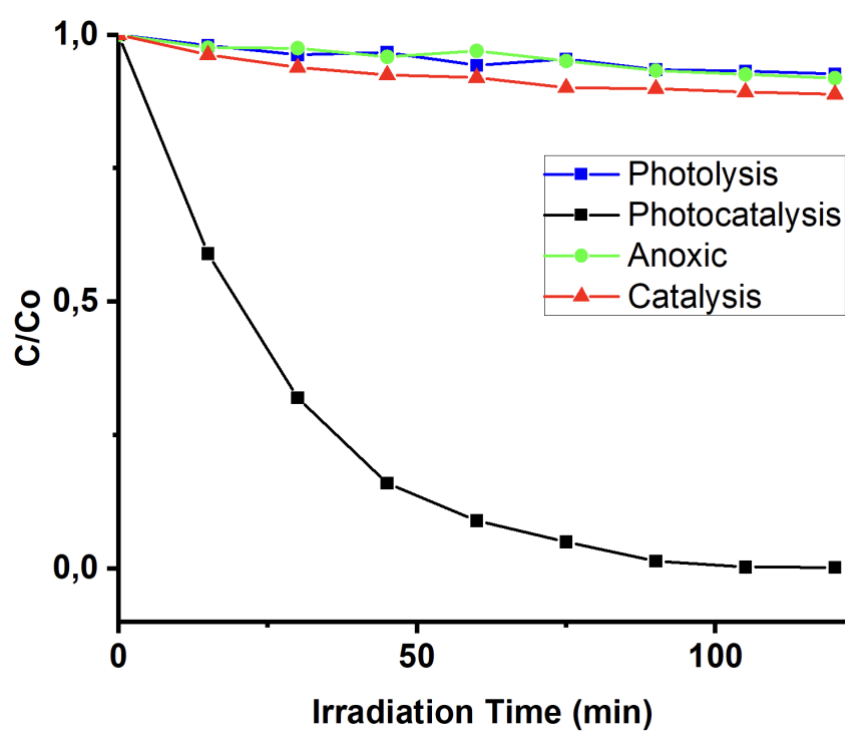


Figure S4. Control experiments for 5% Au@ZnONPs-3% MoS₂-1% rGO with LFX, under irradiation.

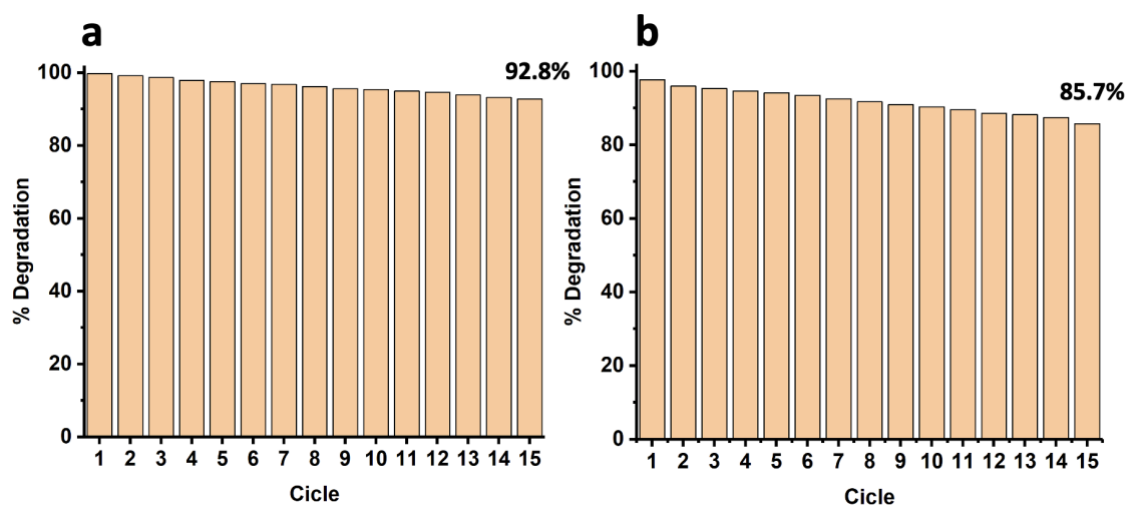


Figure S5. Recyclability tests: 5% Au@ZnONPs-3% MoS₂-1% rGO after 15 consecutive catalytic cycles of photodegradation of LFX (a); and 1% Au@ZnONPs-3% MoS₂-1% rGO after 15 consecutive catalytic cycles of photodegradation of CFX (b).

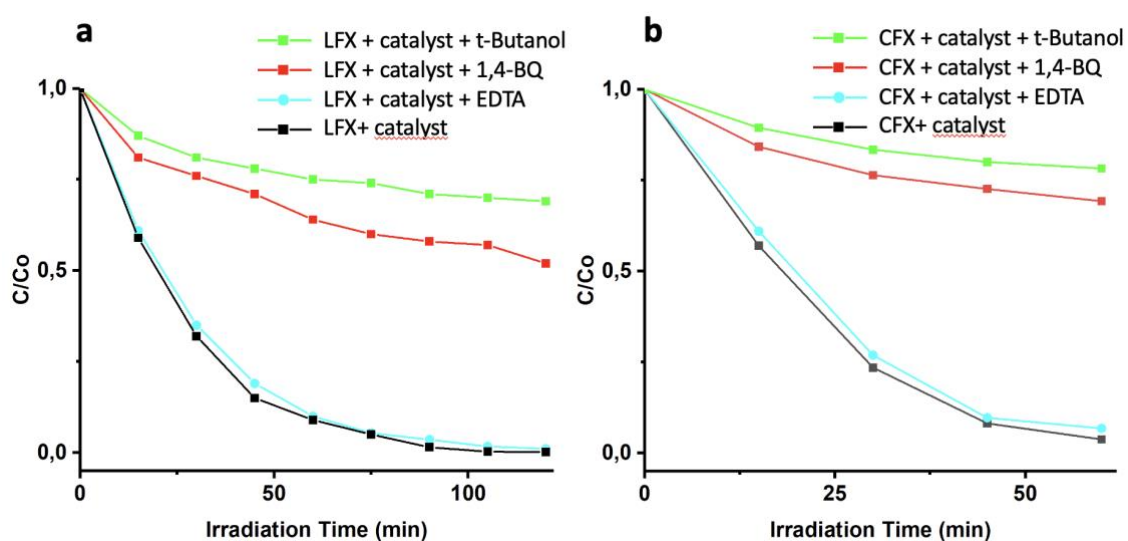


Figure S6. Photocatalytic activity in the presence of different scavengers under irradiation: 5% Au@ZnONPs-3% MoS₂-1% rGO on the degradation of LFX at pH=8 (a); and 1% Au@ZnONPs-3% MoS₂-1% rGO on the degradation of CFX at pH=7 (b).