

† Electronic supplementary information (ESI)

**Nano-sized iron oxides supported on polyester textile to remove
fluoroquinolones in hospital wastewater**

Gnougon Nina COULIBALY^a, Sami RTIMI^b, Aymen Amin ASSADI^a, Khalil

HANNA^{a,c*}

^a *Univ Rennes, École Nationale Supérieure de Chimie de Rennes, CNRS, ISCR – UMR6226, F-35000 Rennes, France.*

^b *Ecole Polytechnique Fédérale de Lausanne, EPFL-STI-LTP, Station 12, CH-1015 Lausanne, Switzerland.*

^c *Institut Universitaire de France (IUF), MESRI, 1 rue Descartes, 75231 Paris, France.*

*Corresponding author: Tel.: +33 2 23 23 80 27; khalil.hanna@ensc-rennes.fr

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Text S1: Potential reactions in the FeOx_3/PMS system under irradiation.

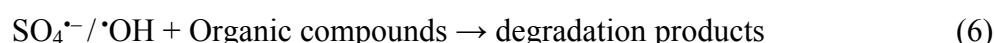


Table S1. Inorganic species and physico-chemical characteristics of SWW and RHW

	SWW	RHW
pH	8.0±0.5	6.8±0.2
Turbidity (NTU)	2±1	196±5
Conductivity ($\mu\text{S cm}^{-1}$)	1250±5	1340±5
TOC (mg L^{-1})	70±5	50±10
Suspended solid (mg L^{-1})	0	20±2
Chloride (mg L^{-1})	450±20	620±10
Nitrate (mg L^{-1})	35±2	7±2
Sulfate (mg L^{-1})	20±2	60±10
Phosphate (mg L^{-1})	150±10	60±10

Synthetic wastewater (SWW) were prepared by adding 400 mg L^{-1} of NaCl , 50 mg L^{-1} of citric acid, 100 mg L^{-1} of sucrose and 230 mg L^{-1} Na_2HPO_4 to tap water (conductivity 408 $\mu\text{S cm}^{-1}$).

Table S2. Reactivity percentage of radicals with species in solution

Radical	Species and concentration	$k'' (M^{-1} s^{-1})$	$k' (s^{-1})$	% of reactivity
HO^\bullet	FLU (5 μM)	1.2×10^{10}	0.6×10^5	2
	t-But (5 mM)	6.0×10^8	3.0×10^6	98
$\text{SO}_4^{\bullet-}$	FLU (5 μM)	1.8×10^9	0.9×10^4	68
	t-But (5 mM)	8.4×10^5	4.2×10^3	32

k'' : second order rate constant and $k' = k'' * [\text{species}]$

% of reactivity indicates the percentage of hydroxyl radicals or sulfate radicals reacted.

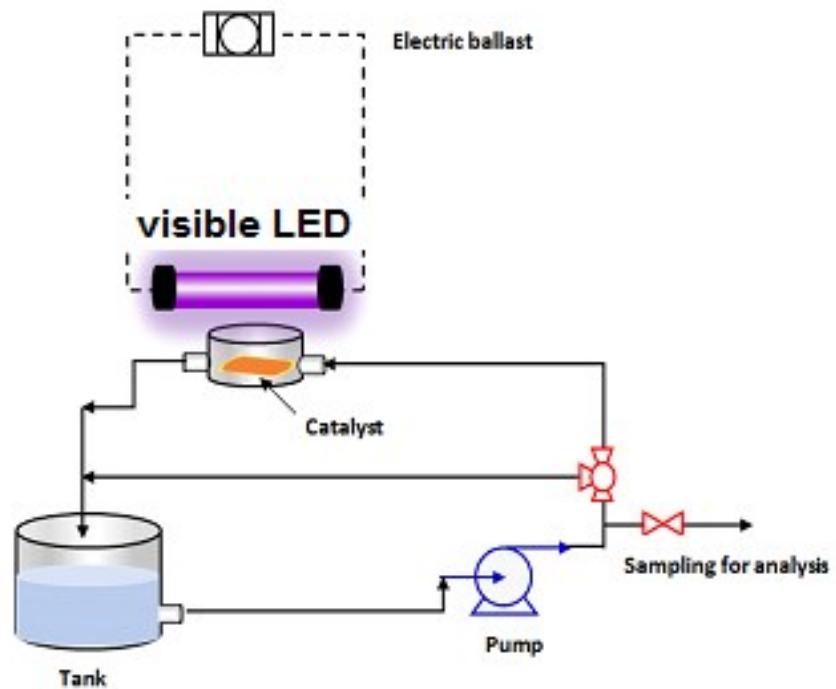


Fig. S1. Schematic diagram of recirculation glass reactor system

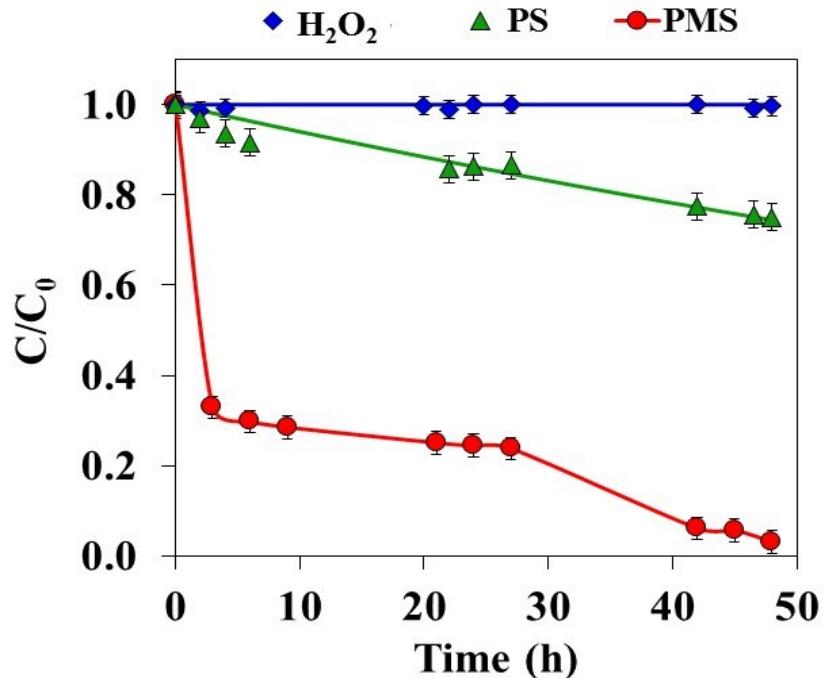


Fig. S2. Effect of oxidant on FLU removal with catalyst FeOx_3 under visible irradiation. Experimental conditions: $[\text{FeOx}_3] = 0.26 \text{ g m}^{-2}$ on PES, $[\text{FLU}]_0 = 5 \mu\text{M}$, visible reaction time = 48 h, $\text{pH}_0 = 7.0 \pm 0.2$, $V = 200 \text{ mL}$, recirculation flow rate = 325 mL min^{-1} , $[\text{H}_2\text{O}_2]_0 = [\text{PS}]_0 = [\text{PMS}]_0 = 0.5 \text{ mM}$. Abbreviations: FLU = flumequine, PS = persulfate, H_2O_2 = hydrogen peroxide, PMS = peroxymonosulfate, FeOx_3 corresponding to 3% O_2 in the sputtering chamber. For PMS, the solid line is only a visual guide.

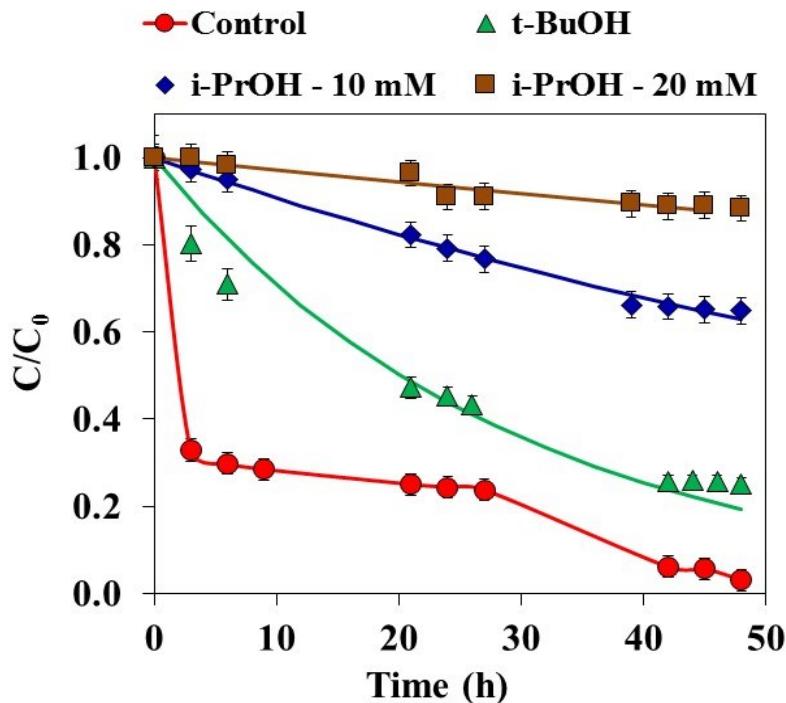


Fig. S3. Effect of radicals scavengers on FLU removal. Experimental conditions: $[FLU]_0 = 5 \mu M$, $[PMS]_0 = 0.5 \text{ mM}$, $[FeOx_3] = 0.26 \text{ g m}^{-2}$ on PES, reaction time = 48 h, $[i\text{-PrOH}]_0 = 10 - 20 \text{ mM}$, $[t\text{-BuOH}]_0 = 5 \text{ mM}$, visible reaction time = 48 h, $pH_0 = 7.0 \pm 0.2$, $V = 200 \text{ mL}$, recirculation flowrate = 325 mL min^{-1} . Abbreviations: FLU = flumequine, PMS = peroxymonosulfate, t-BuOH = tert-Butyl alcohol, i-PrOH= isopropanol, $FeOx_3$ corresponding to 3% O_2 in the sputtering chamber. For the control test, the solid line is only a visual guide.

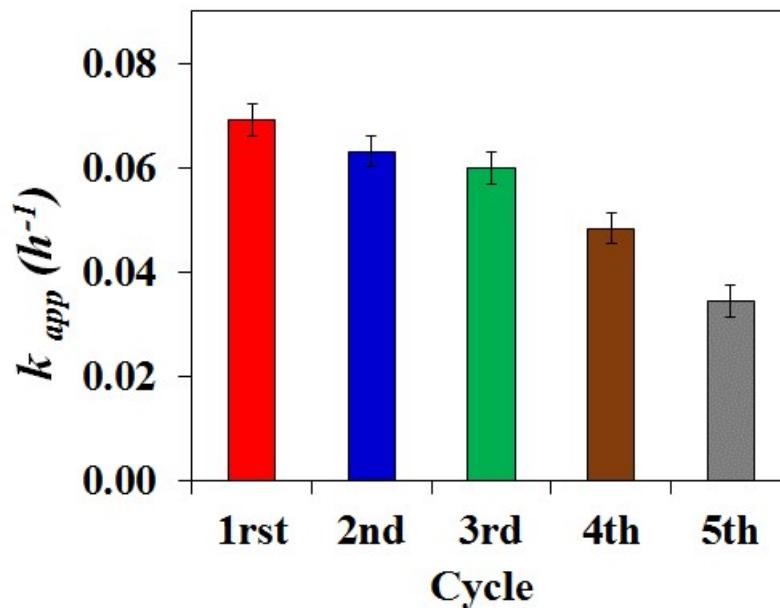


Fig. S4. FLU removal rate constant in RHW using FeOx_3 -PES for five successive oxidation runs. Experimental conditions: $[\text{FLU}]_0 = 5\mu\text{M}$, $[\text{PMS}]_0 = 3\text{ mM}$, $[\text{FeOx}_3] = 0.26\text{ g m}^{-2}$ on PES, $\text{pH}_0 = 7.0 \pm 0.2$, reaction time = 48 h, recirculation flow rate = 325 mL min^{-1} . Abbreviations: FLU = flumequine, PMS = peroxymonosulfate, RHW = Real Hospital Wastewater, FeOx_3 corresponding to 3% O_2 in the sputtering chamber.