

SUPPLEMENTARY MATERIAL

**Photocatalytic Activity of Micron-scale Brass on Emerging Pollutant
Degradation in Water: Mechanism Elucidation and Removal Efficacy
Assessment**

Irwing M. Ramirez-Sanchez ¹, Onur G. Apul ², and Navid B. Saleh* ¹

¹ Department of Civil, Architectural and Environmental Engineering, The University of Texas at
Austin, Austin, TX, 78712, USA

² University of Maine, Orono, ME 04469, USA

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* Corresponding author: Navid B. Saleh, email: navid.saleh@utexas.edu, phone: (512) 471-9175

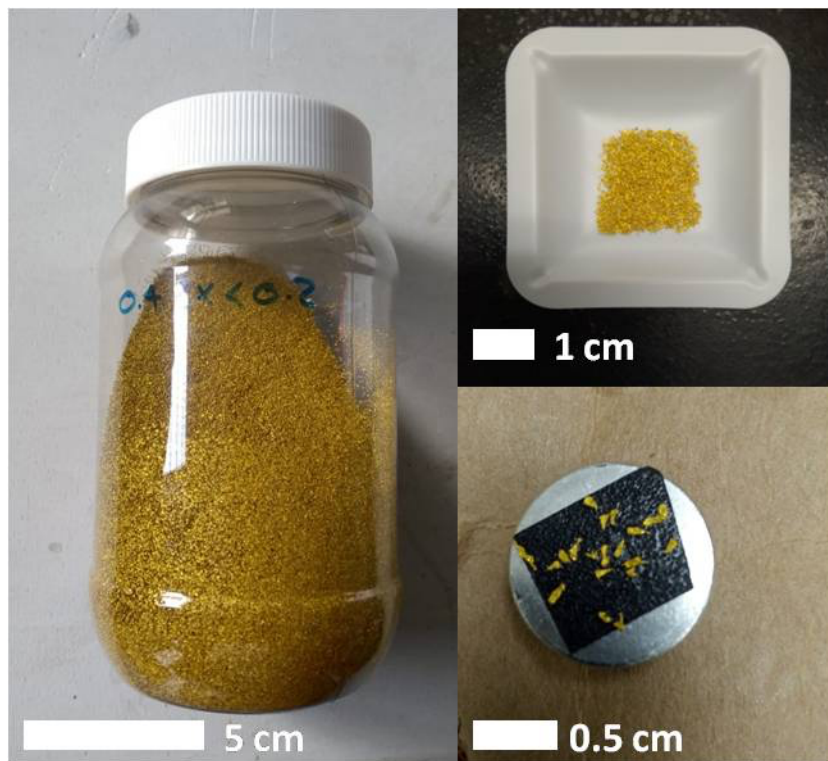


Figure S1. Photographs of KDF[®] 55 (MicroCuZn) as used in characterization and tets.

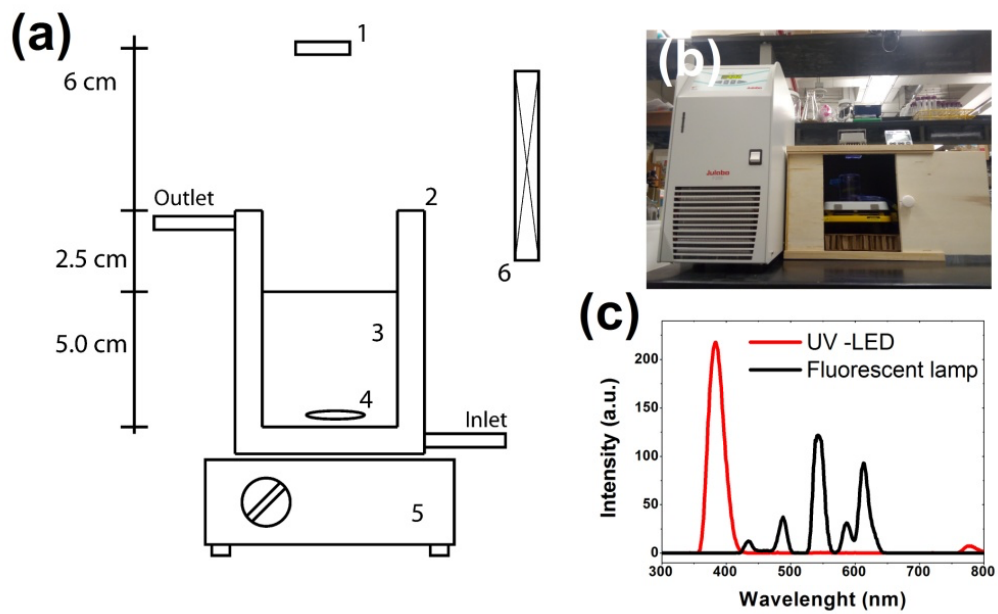


Figure S2. Batch experimental setup. (a) Scheme of photocatalytic reactor: 1. Light Emitting Diode (UV-LED), 2. water-cooled-jacketed glass reactor, 3. testing solution, 4. spin bar, 5. magnetic stirrer, and 6. fan; (b) photograph of the equipment used in the photocatalytic experiments; and (c) diffraction spectrum of lamp.

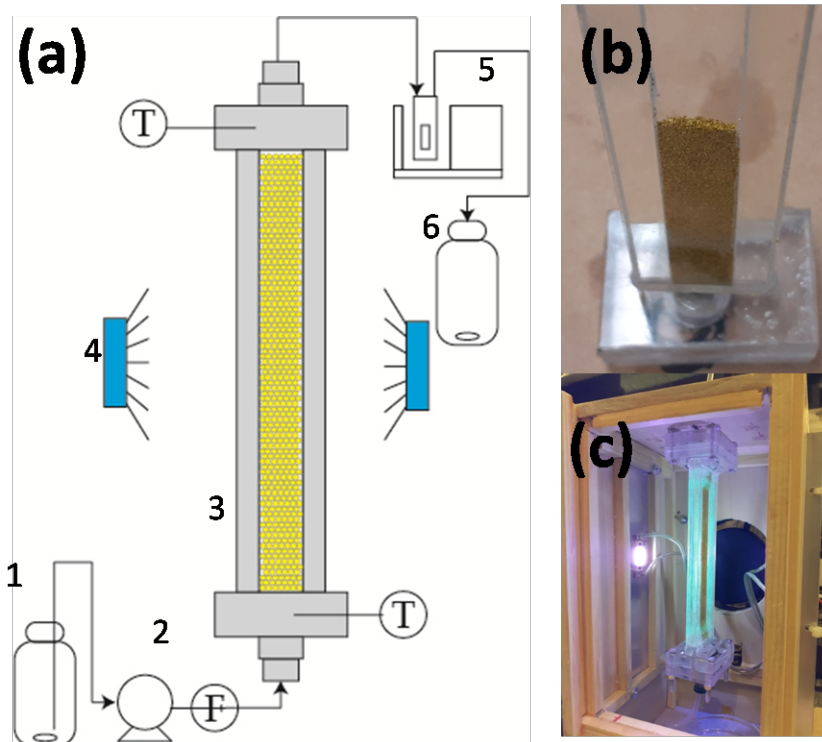


Figure S3. Continuous packed bed photocatalytic reactor. (a) Scheme of the continuous packed bed reactor (1) test solution, (2) peristaltic pump, (3) packed bed reactor, (4) LED light source, (5) continuous-flow quartz cuvette in UV-Vis spectrophotometer, and (6) treated solution; (b) photograph showing catalyst being packed, and (c) laboratory set up photograph.

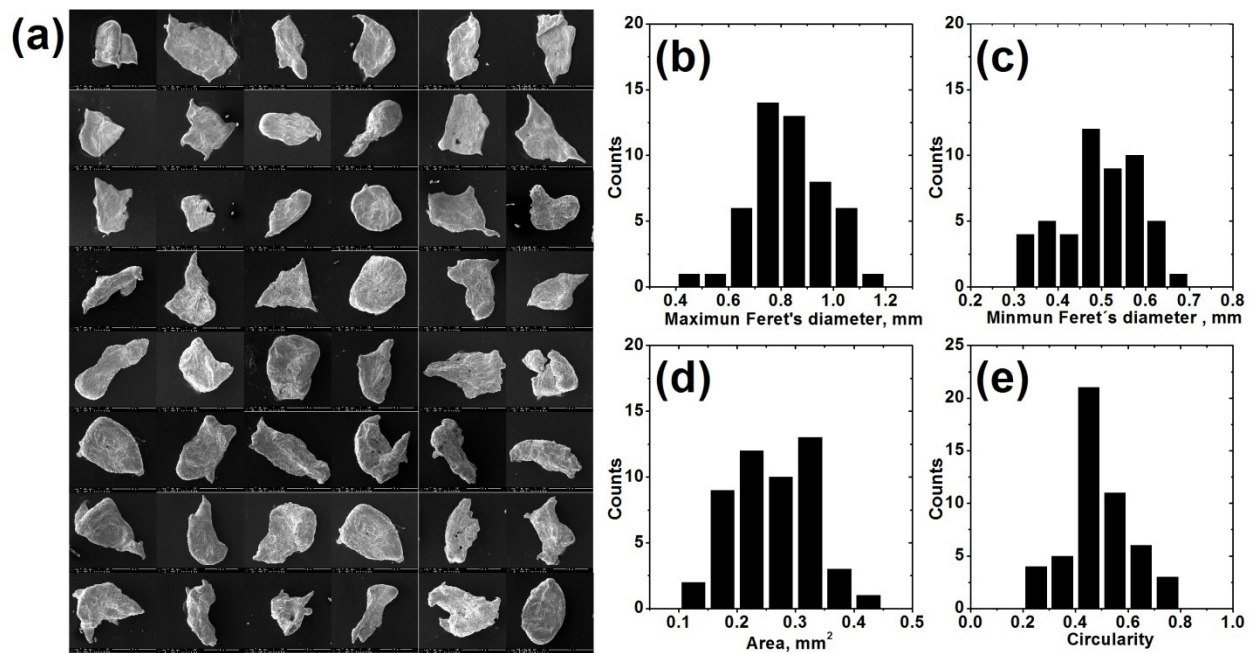


Figure S4. MicroCuZn size and shape characterization of (a) TEM micrographs using random sampling; (b and c) Ferret's diameter distributions; (d) projected area distribution; and (e) circularity distribution.

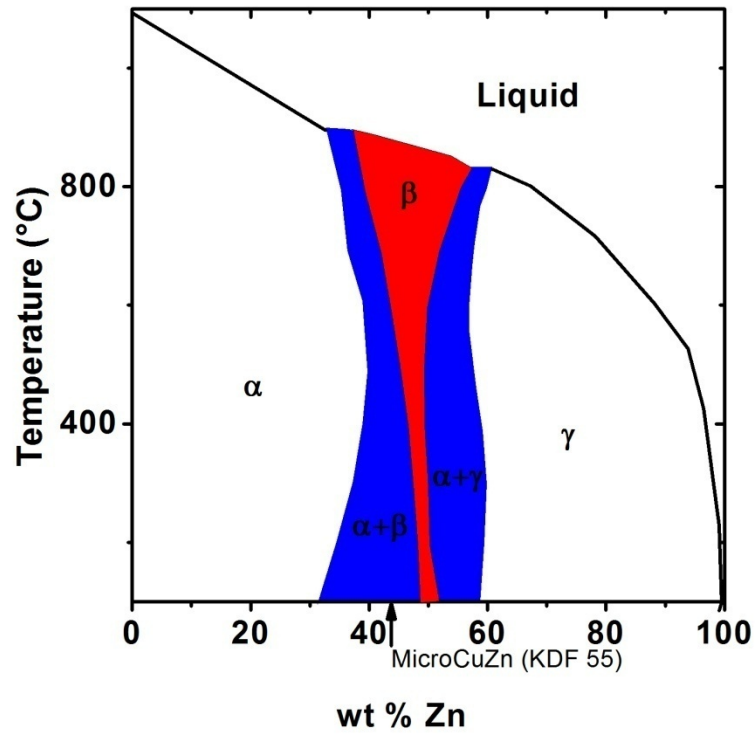


Figure S5. Brass phases modified as per Kaprara et al. ¹²

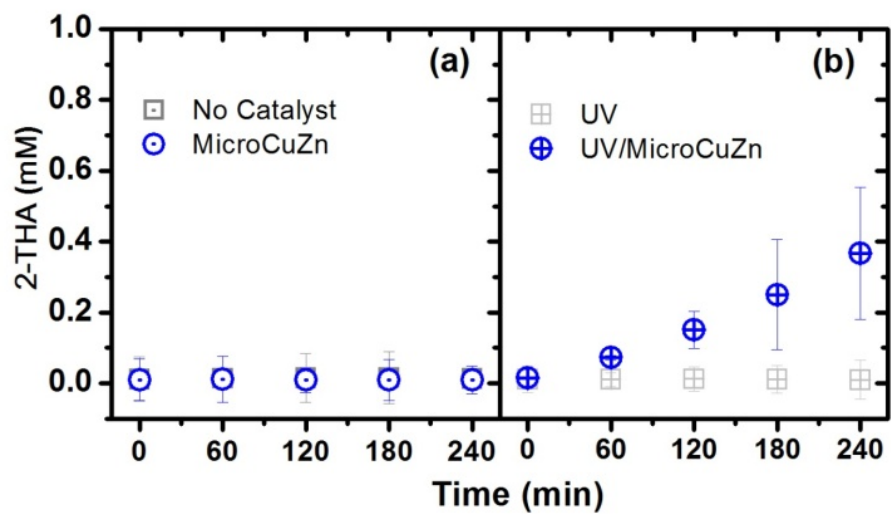


Figure S6. $\cdot\text{OH}$ radicals production of MicroCuZn (10 g L^{-1}) with terephthalic acid (TA, 100 ml, 0.5 mM TA and 2mM NaOH, pH 9). (a) In dark, and (b) under UV irradiation ($9.9 \mu\text{Einstein min}^{-1}$) at $20 \text{ }^\circ\text{C}$.

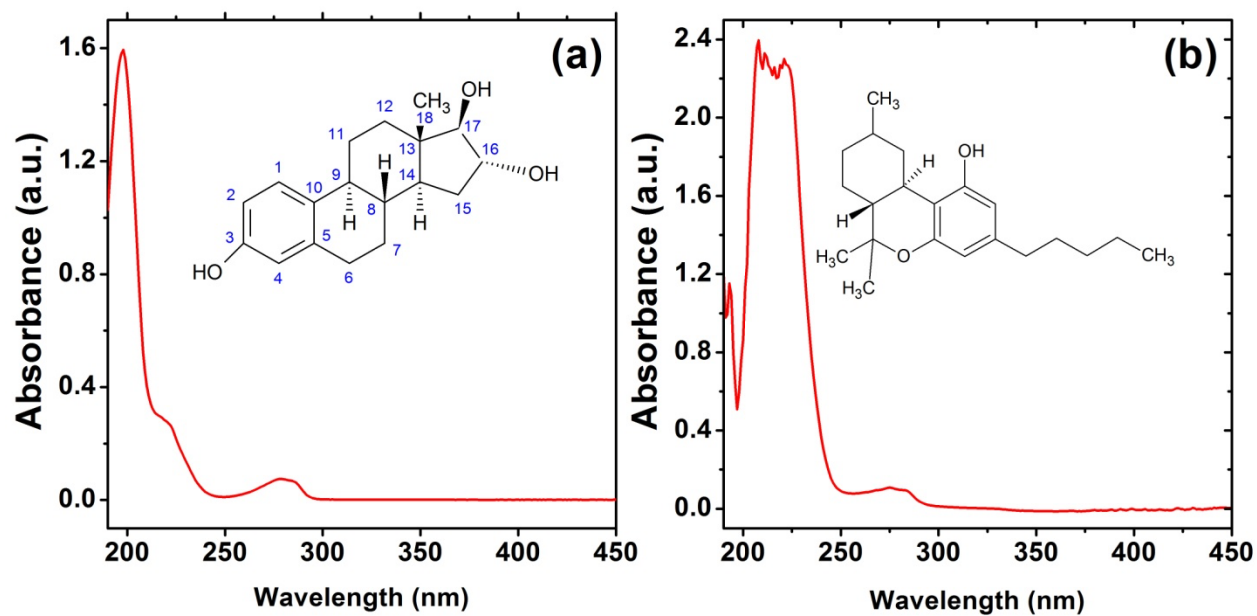


Figure S7. The UV-visible adsorption spectrum and molecule structure of (a) Estriol (E3) and (b) Δ^9 -tetrahydrocannabinol (THC)

Table S1. Elemental composition of MicroCuZn by energy dispersive X-Ray Spectroscopy

Element	[wt.%]	[norm. wt.%]	[norm. at.%]
Copper	47.21	34.17	31.94
Zinc	44.37	32.12	29.17
Zirconium	11.6	8.4	5.47
Thallium	6.7	4.85	1.41
Carbon	3.91	2.83	13.99
Hafnium	3.81	2.76	0.92
Platinum	3.43	2.48	0.76
Gold	2.68	1.94	0.59
Mercury	2.59	1.87	0.55
Oxygen	1.52	1.1	4.09
Tungsten	1.44	1.04	0.34
Sodium	1.32	0.96	2.47
Aluminium	0.92	0.66	1.46
Nickel	0.78	0.57	0.57
Cobalt	0.48	0.35	0.35
Nitrogen	0.44	0.32	1.35
Iron	0.43	0.31	0.33
Boron	0.42	0.3	1.66
Iodine	0.39	0.28	0.13
Silver	0.36	0.26	0.14
Manganese	0.3	0.22	0.23
Fluorine	0.29	0.21	0.65
Antimony	0.26	0.19	0.09
Iridium	0.25	0.18	0.06
Arsenic	0.25	0.18	0.14
Ruthenium	0.25	0.18	0.11
Palladium	0.24	0.17	0.1
Tin	0.19	0.14	0.07
Chromium	0.14	0.1	0.12
Rhodium	0.14	0.1	0.06
Vanadium	0.14	0.1	0.12
Tellurium	0.13	0.1	0.05
Indium	0.13	0.1	0.05
Rhenium	0.11	0.08	0.03
Magnesium	0.1	0.08	0.18
Tantalum	0.1	0.07	0.02
Cadmium	0.09	0.06	0.03
Scandium	0.08	0.06	0.07
Calcium	0.07	0.05	0.08
Technetium	0.03	0.02	0.01
Molybdenum	0.02	0.02	0.01
Sulfur	0.02	0.02	0.03
Potassium	0.02	0.01	0.02

Table S2. pH changes in pNDA bleaching experiments

System	Initial pH	Final pH	ΔpH
Dark/No catalyst	7.07	7.02	0.05
Dark/MicroCuZn	7.11	6.59	0.52
Dark/H ₂ O ₂	7.01	6.83	0.18
H ₂ O ₂ /MicroCuZn	7.06	6.80	0.26
UV/No catalyst	7.01	6.94	0.07
UV/MicroCuZn	7.00	6.80	0.20
UV/H ₂ O ₂	7.03	6.69	0.34
UV/H ₂ O ₂ /MicroCuZn	7.01	6.72	0.29
Mean	7.04	6.80	0.24
Min	7.00	6.59	0.05
Max	7.11	7.02	0.52