

Supplementary Information

Removal of CuO Nanoparticles from water by Conventional Treatment C/F/S: Effects of pH and Natural Organic Matter

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2. Materials and Methods

The removal efficiency of CuO NPs was determined according to the following equation.

$$\alpha = \frac{T_i - T_f}{T_i}$$

Where α is the removal efficiency; T_i and T_f is the initial and final turbidity of solution (NTU).

3. Results and Discussions

Table S1. Physicochemical properties of CuO NPs used in the current study.

Parameter	Unit	Value
Density	g/cm ³	6.372
Vendor-reported size	nm	<50
TEM particle size measured (n=20)	nm	92±12
DLS HDD measured in DI water (n=10)	nm	281±27
BET specific surface area measured (n=3)	m ² /g	29 ± 3
pH _{iep}		8.6
Zeta potential in DI water (pH = 7)	(mV)	+21.3 ± 1.6
Purity by ICP-MS	wt %	98.81
Moisture content by TGA	wt %	1.15

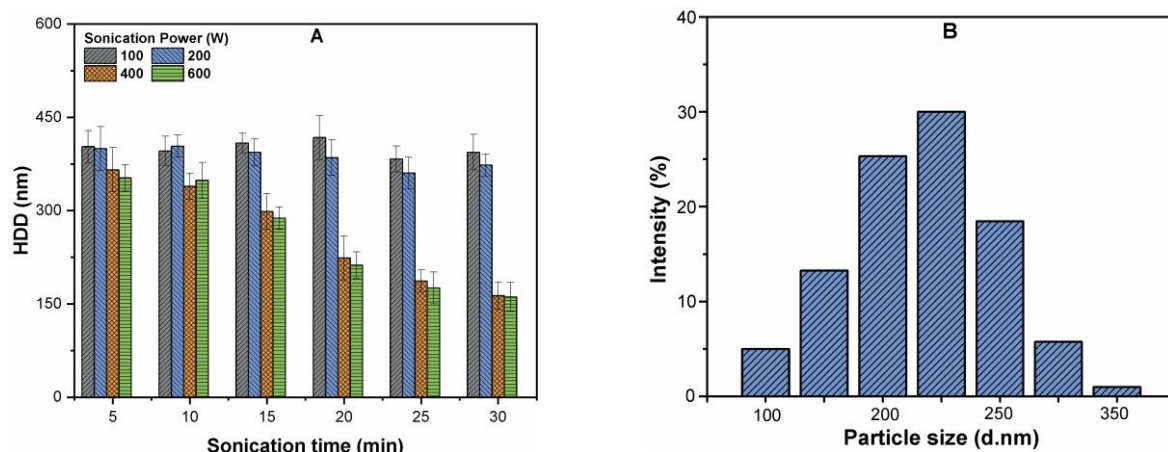


Figure S1. (A) Effects of sonication time (5-30 min) and power (100-600 W) on the dispersion stability of CuO NPs stock (100 mg/L) in DI water; (B) Size distribution by the intensity of CuO NPs in DI water after 30 min sonication with ultrasonic power of 400 W;

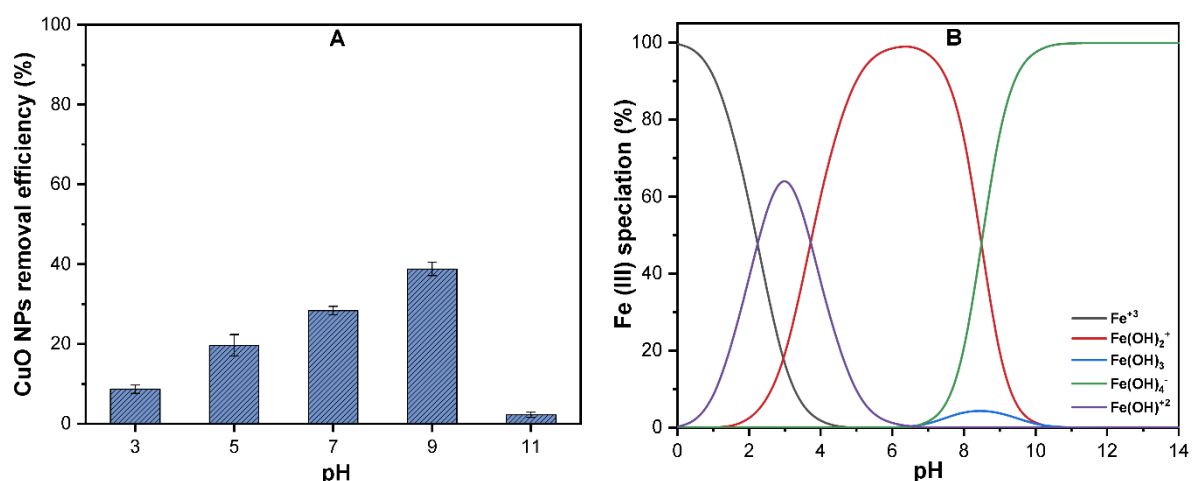


Figure S2. (A) Removal efficiency of CuO NPs (10 mg/L) under control condition at various pH values; (B) speciation of Fe(III) as a function of solution pH.

Table.S2. Dissolution of CuO NPs and the change of suspension pH

Initial solution		7.0			7.0		
pH							
Type of NOM		HA			SA		
NOM							
Concentration		0	10	20	0	10	20
(mg/L)							
Solution pH after	6.90 ±	6.82 ±	6.61 ±	6.90 ±	6.93 ±	8.26 ±	
24-h	0.10	0.05	0.08	0.10	0.07	0.08	
Dissolved Cu^{2+}	0.701 ±	0.912 ±	1.787 ±	0.701 ±	0.819 ±	1.140 ±	
mg/L	0.01	0.01	0.02	0.013	0.02	0.01	