

Overlooked Role of Carbonyls of Natural Organic Matter on the Dissolution of Zinc Oxide Nanoparticles

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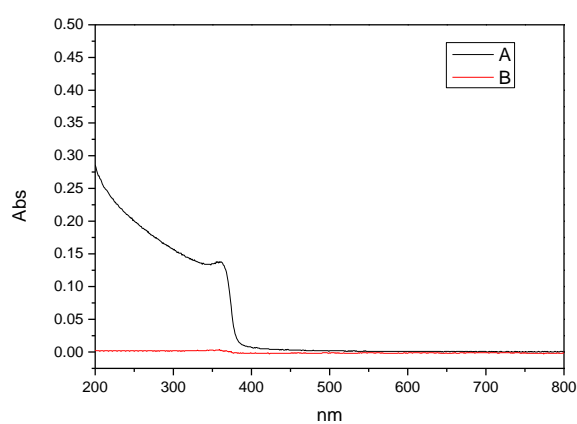


Fig. S1 UV-vis absorption (A: 75 μ M ZnO NPs in Ultrapure water; B: The solution of 75 μ M ZnO NPs in Ultrapure water was centrifuged)

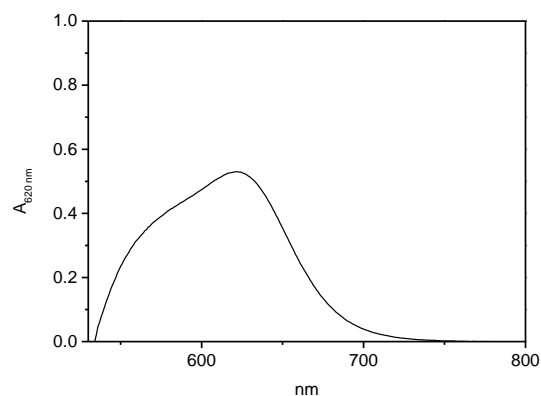


Fig. S2 The absorption of Zn^{2+} reacted with Zincon, Specific absorption peak was generated at 620nm.

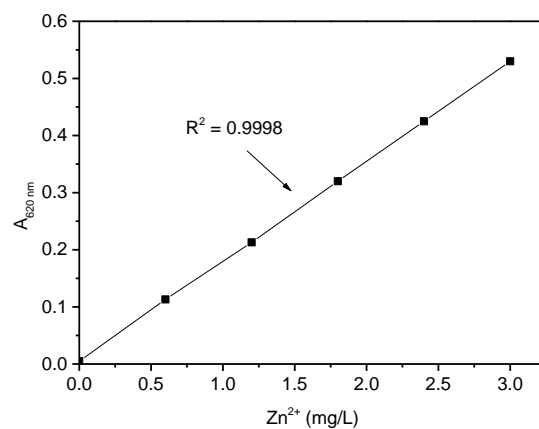


Fig. S3 The concentration of Zn^{2+} standard solutions were measured by zincon (0, 0.6, 1.2, 1.8, 2.4, 3.0 mg/L) ($\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ was quantitatively weighed and dissolved in ultra-pure water to make Zn^{2+} standard solution).

Fig. S3 shows the absorption of Zn^{2+} reacted with Zincon, with a specific absorption peak at 620 nm. We used zincon method to measure the concentration of Zn^{2+} standard solution (0, 0.6, 1.2, 1.8, 2.4, 3.0 mg/L) ($\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ was quantitatively weighed and dissolved in ultra-pure water to make Zn^{2+} standard solution), and the linear correlation $R^2=0.9998$ (Fig. S3).

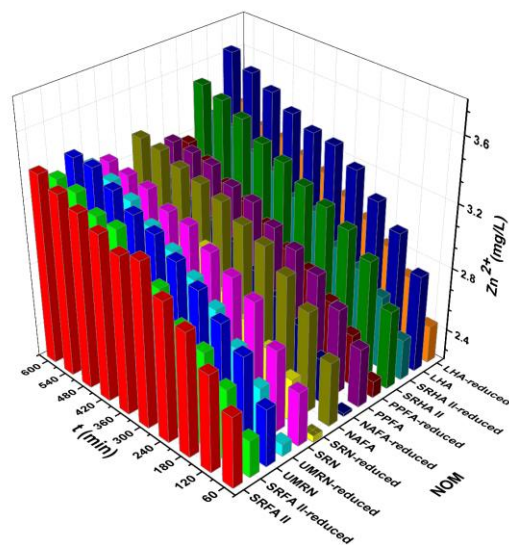


Fig. S4 Dissolution of ZnO NPs to Zn^{2+} versus time with the original NOM and $NaBH_4$ -reduced NOM in the presence of $75 \mu M$ ZnO NPs and 5 mg C/L NOM.

NOM	Statistics Adj. R-Square	NOM-reduced	Statistics Adj. R-Square
SRFA II	0.93131	SRFA II	0.87268
UMRN	0.98571	UMRN	0.93379
SRN	0.95022	SRN	0.96298
NAFA	0.86843	NAFA	0.93
PPFA	0.9192	PPFA	0.96853
SRHA II	0.9892	SRHA II	0.97461
LHA	0.9219	LHA	0.92574

Table S1 The linear correlation of dissolution curves of figure 3