Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Table S3. Fitting model parameters and the calculated parameters for Co released form the citrate-coated $CoFe_2O_4$ NPs in soil solution at different pH levels according to different dissolution kinetic models.

Fitting parameters	pH 5	pH 7	pH 8
	Zero-order		
R^2	0.638	0.358	0.089
R^2 adjusted	0.625	0.335	0.056
Intercept	0.010*	0.004*	0.008*
Slope	$3.307x10^{-5}$*	$2.038x10^{-5}$*	$-1.519x10^{-5}$
k (mM h^{-1})	-3.307×10^{-5}	-2.038×10^{-5}	1.519×10^{-5}
Ms (mM)	0.010	0.004	0.008
	First-order		
R^2	0.570	0.268	0.110
R^2 adjusted	0.554	0.242	0.079
Intercept	-4.637*	-5.584*	-4.883*
Slope	0.003*	0.004*	-0.002
k (mM h^{-1})	-2.886×10^{-3}	$-3.761x\ 10^{-3}$	2.638×10^{-3}
Ms (mM)	0.010	0.004	0.008
	Second-order		
R^2	0.491	0.172	0.122
R^2 adjusted	0.472	0.143	0.090
Intercept	104.136*	277.521*	140.148*
Slope	-0.258*	-0.802*	0.517
k (mM^{-1} h^{-1})	-2.583×10^{-1}	-8.019×10^{-1}	5.169×10^{-1}
Ms (mM)	0.010	0.004	0.007
	Pseudo-first-order		
R^2	0.048	0.176	0.195
R^2 adjusted	0.014	0.146	0.167
Intercept	-1.168*	-1.145*	-1.128*
Slope	$-3.559x10^{-5}$	$1.827x10^{-4}$*	$1.115x10^{-4}$*
k (h^{-1})	3.559×10^{-5}	$-1.827\ 10^{-4}$	$-1.115x10^{-4}$
Ms (mM)	0.311	0.318	0.324
	Pseudo-second-order		
R^2	0.990	0.805	0.865
R^2 adjusted	0.989	0.798	0.861
Intercept	225.889*	1816.980*	-2179.680
Slope	69.793*	138.250*	260.020*
k (L mol^{-1} h)	21.564	10.519	-31.327
Ms (mM)	0.014	0.007	0.004
	One-half-order		
R^2	0.605	0.316	0.101
R^2 adjusted	0.591	0.291	0.069
Intercept	0.099*	0.061*	0.088*
Slope	$1.540x10^{-4}$	$1.363x10^{-4}$*	$-9.859x10^{-5}$
k ($mM^{1/2}$ h)	3.080×10^{-4}	-2.726×10^{-4}	-1.972×10^{-4}
Ms (mM)	0.010	0.004	0.008
	Three-half-order		
R^2	0.531	0.219	0.118
R^2 adjusted	0.515	0.191	0.085
Intercept	10.183*	16.471*	11.655*
Slope	-0.014*	-0.027*	0.018
k ($mM^{-1/2}$ h)	-2.721×10^{-2}	-5.380×10^{-2}	3.639×10^{-2}
Ms (mM)	0.010	0.004	0.006
	Evolich		
R^2	0.641	0.188	0.043
R^2 adjusted	0.628	0.159	0.009
Intercept	0.009*	0.004*	0.007*
Slope	$7.878x10^{-4}$*	$3.507x10^{-4}$*	$2.524x10^{-4}$
α (mM h^{-1})	104.192	20.891	$2.025x10^{8}$

β (L $mmol^{-1}$)	1269.296	2851.499	3961.965
	Higuchi		
R^2	0.746	0.255	0.009
R^2 adjusted	0.737	0.228	-0.027
Intercept	0.009*	0.004*	0.008*
Slope	$4.652x10^{-4}$*	$2.235x10^{-4}$*	$-6.223x10^{-5}$
k (mM $h^{1/2}$)	$4.652x\ 10^{-4}$	$2.235\ x\ 10^{-4}$	$-6.223\ x\ 10^{-5}$
Ms (mM)	0.009	0.004	0.008
	Hixon-Crowell		
R^2	0.048	0.185	0.198
R^2 adjusted	0.014	0.156	0.170
Intercept	0.104*	0.106*	0.108*
Slope	$-3.703x10^{-6}$	$1.981x10^{-5}$*	$1.216x10^{-5}$*
k ($mM^{1/3}\ h^{-1}$)	$-3.703\ x\ 10^{-6}$	$1.981\ x\ 10^{-5}$	$-1.981\ x\ 10^{-5}$
	Korsmeyer-Peppas		
n	0.070	0.075	0.113
R^2	0.664	0.175	0.019
R^2 adjusted	0.652	0.146	-0.016
Intercept	-0.002*	$4.032x10^{-4}$	0.018*
Slope	0.0306*	0.012*	$3.561x10^{-3}$
k (h^{-n})	0.0306	0.012	0.004
	Baker-Lonsdale		
R^2	0.626	0.325	0.093
R^2 adjusted	0.613	0.300	0.060
Intercept	0.003*	0.012*	0.023*
Slope	$1.001x10^{-4}$*	$5.738x10^{-5}$*	$-4.665x10^{-5}$
k (h)	$1.001x10^{-4}$	$5.738x10^{-5}$	$-4.665x10^{-5}$
	Weibull		
R^2	0.625	0.213	0.038
R^2 adjusted	0.611	0.185	0.003
Intercept	-2.034*	-2.439*	-2.192*
Slope	0.071*	0.080*	0.037
a	$9.247\ x\ 10^{-3}$	$3.639\ x\ 10^{-3}$	$6.427x\ 10^{-3}$
b	0.071	0.080	0.037

[M]s; theoretical saturation concentration, *Symbol indicates significance with an α=0.05