

Supplementary material

Kinetic Modeling for Photo-Assisted Penicillin G Degradation of $(\text{Mn}_{0.5}\text{Zn}_{0.5})[\text{Cd}_x\text{Fe}_{2-x}]\text{O}_4$ ($x \leq 0.05$) Nanospinel Ferrites

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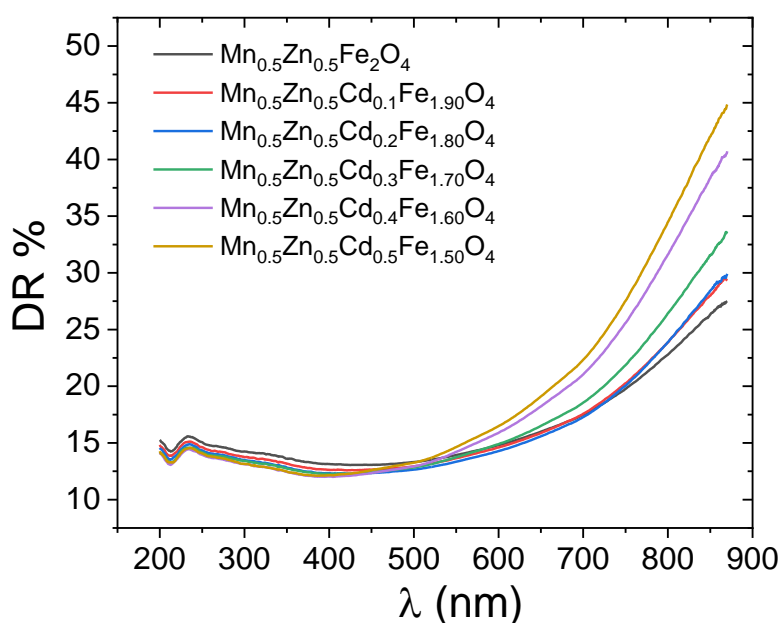


Figure S1. Diffuse reflectance spectra of $(\text{Mn}_{0.5}\text{Zn}_{0.5})[\text{Cd}_x\text{Fe}_{2-x}]\text{O}_4$ ($x \leq 0.05$) NSF.

Table S1. Kinetic parameters obtained from the modified model.

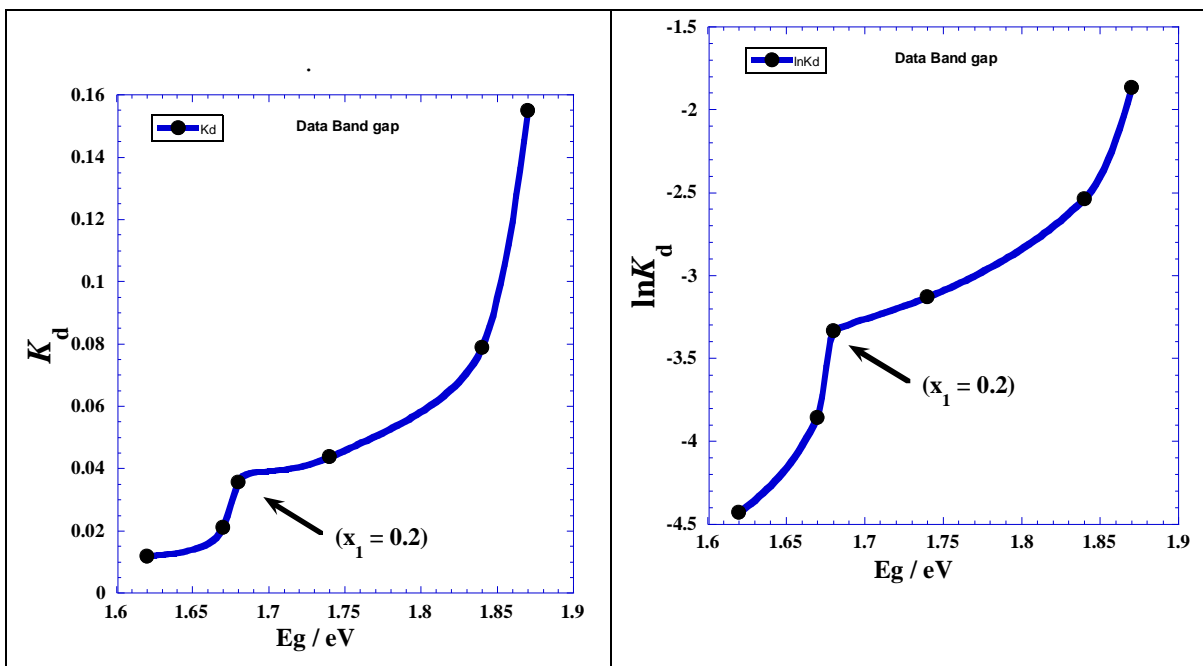
x	a_1 min ⁻¹	a_2 min ⁻²	α min ⁻¹	R -
0.0	0.00178325985	5.48179777e-6	0.0030740	0.977277329
0.1	0.00304330416	8.84868164e-6	0.0029076	0.983512954
0.2	0.00513746906	1.46322904e-5	0.0028482	0.99491514
0.3	0.00603187556	1.62937176e-5	0.0027013	0.988882207
0.4	0.0112121721	3.23336337e-5	0.0028838	0.969279869
0.5	0.0192415392	4.31420301e-5	0.0022421	0.981680533

Table S2. Intra-diffusion rate and corrected τ_d factor vs Cd coordination (x).

x	K_d min ^{-0.5}	R	τ_d Min
0	0.011922	0.9978	7035.6
0.1	0.021109	0.9996	2244.2
0.2	0.035656	0.9972	786.57
0.3	0.043679	0.9982	524.15
0.4	0.078955	0.9943	160.41
0.5	0.154866	0.9911	41.695

Table S3. The boundaries of the three domains characterized by a specific couple (θ, x_0).

Domain	θ	x_0	R
I ($0 < x < 0.18$)	11.565	0	0.99995
II ($0.18 < x < 0.32$)	4.059	-0.3407	0.99990
III ($x > 0.32$)	13.623	+0.1233	0.99995

**Figure S2.** variation of K_d and $\ln K_d$ vs band-gap energy of mixed spinel ferrite catalysts.