



Main components and COD of the electroplating wastewater

Ni^{2+} (mg L^{-1})	pH	Total P (mg L^{-1})	COD (mg L^{-1})
5262.9	3.0	35170.9	30332.2

Figure S1. A raw industrial Ni-electroplating wastewater sample of an electroplating plant in Xiamen, Fujian Province, China.

Table S1. L9-orthogonal test of Ni²⁺ removal efficiency by the BMO composite biosorbent

Run	Factors				Removal rate of Ni ²⁺ (%)
	Temperature (°C)	pH	Adsorption time (min)	Initial concentration (mg L ⁻¹)	
1	30	4	10	10	84.85
2	30	5	30	50	13.21
3	30	6	50	100	5.60
4	40	4	30	100	7.73
5	40	5	50	10	99.61
6	40	6	10	50	20.01
7	50	4	50	50	18.52
8	50	5	10	100	9.18
9	50	6	30	10	100

Table S2. Analysis of variance for selected factorial model.

Factors	Squares	Mean square	df	F value
Temperature	126.58	63.29	2	7.631
pH	38.04	19.02	2	2.293
Time	16.59	8.29	2	1.000
The initial concentration of Ni ²⁺	13736.76	6868.38	2	828.124*

Table S3. Mn (2p_{3/2}) peak parameters for *Pseudomonas* sp. MB04B BMO before and after of Ni²⁺ removal^a.

Peak	B.E (eV)	FWHM (eV)	Percent (%)		Surface species & Comments
			BMO	BMO-Ni	
Mn ²⁺ (2p _{3/2}) parameters			Mn ²⁺ (total)= 14.73 %	Mn ²⁺ (total) = 30.08 %	
Mn ²⁺	639.75	1.25	7.49	8.36	Mn(II)-O Multiplet #1
Mn ²⁺	640.95	1.25	0.00	10.03	Mn(II)-O Multiplet #2
Mn ²⁺	641.75	1.25	6.04	1.11	Mn(II)-O Multiplet #3
Mn ²⁺	642.65	1.25	0.24	9.19	Mn(II)-O Multiplet #4
Mn ²⁺	644.15	1.25	0.00	0.28	Mn(II)-O Multiplet #5
Mn ²⁺	646.40	1.25	0.97	1.11	Mn(II)-O Multiplet #6

Mn ³⁺ (2p _{3/2}) parameters			Mn ³⁺ (total) = 32.61 %	Mn ³⁺ (total) = 22.84 %	
Mn ³⁺	640.65	1.25	23.43	11.98	Mn(III)-O Multiplet #1
Mn ³⁺	641.35	1.25	8.45	5.57	Mn(III)-O Multiplet #2
Mn ³⁺	642.16	1.25	0.72	0.28	Mn(III)-O Multiplet #3
Mn ³⁺	643.18	1.25	0.00	5.01	Mn(III)-O Multiplet #4
Mn ³⁺	644.55	1.25	0.00	0.00	Mn(III)-O Multiplet #5
Mn ⁴⁺ (2p _{3/2}) parameters			Mn ⁴⁺ (total) = 52.66 %	Mn ⁴⁺ (total) = 47.08 %	
Mn ⁴⁺	641.90	1.25	24.15	27.86	Mn(IV)-O Multiplet #1
Mn ⁴⁺	642.92	1.25	14.73	5.29	Mn(IV)-O Multiplet #2
Mn ⁴⁺	643.75	1.25	7.97	7.52	Mn(IV)-O Multiplet #3
Mn ⁴⁺	644.78	1.25	4.59	5.01	Mn(IV)-O Multiplet #4
Mn ⁴⁺	645.80	1.25	1.21	1.39	Mn(IV)-O Multiplet #5

^a Abbreviations: B.E., binding energy; FWHM, full width at half maximum; At., atoms.

Table S4 Ni (2p_{3/2}) peak parameters for *Pseudomonas* sp. MB04B BMO after Ni²⁺ removal ^a.

Peak	B.E (eV)	FWHM (eV)	Percent (%)	Surface species & Comments
Ni ²⁺ (2p _{3/2}) parameters		Ni ²⁺ (Total) = 95.61%		
Ni ²⁺	853.60	1.25	33.78	Ni(II)-O Multiplet #1
Ni ²⁺	854.40	1.25	14.53	Ni(II)-O Multiplet #2
Ni ²⁺	855.50	1.25	13.18	Ni(II)-O Multiplet #3
Ni ²⁺	856.00	1.25	18.24	Ni (II)-O Multiplet #4
Ni ²⁺	857.20	1.25	15.20	Ni (II)-O Multiplet #5
Ni ²⁺	855.60	1.25	0.68	Ni (II)-O Multiplet #6
Ni ³⁺ (2p _{3/2}) parameters		Ni ³⁺ (Total) = 4.39%		
Ni ³⁺	855.8	1.25	0.67	Ni(III)-O Multiplet #1
Ni ³⁺	855.60	1.25	0.34	Ni(III)-O Multiplet #2
Ni ³⁺	852.90	1.25	3.04	Ni(III)-O Multiplet #3
Ni ³⁺	855.4	1.25	0.00	Ni (III)-O Multiplet #4
Ni ³⁺	856.00	1.25	0.34	Ni (III)-O Multiplet #5

^a Abbreviations: B.E., binding energy; FWHM, full width at half maximum; At., atoms.