

Supplementary information

Covalent triazine polymer-Fe₃O₄ nanocomposite for strontium ion removal from seawater

Arunkumar Rengaraj,^{at} Yuvaraj Haldorai,^{bt} Pillaiyar Puthiaraj,^{ct} Seung Kyu Hwang,^a Taegong Ryu,^d Junho Shin,^d Young-Kyu Han,^{b*} Wha-Seung Ahn,^{c*} and Yun Suk Huh^{a*}

^a*Department of Biological Engineering, Biohybrid Systems Research Center (BSRC), Inha University, Incheon 402-751, Republic of Korea.*

^b*Department of Energy and Materials Engineering, Dongguk University-Seoul, Seoul 100-715, Republic of Korea.*

^c*Department of Chemistry and Chemical Engineering, Inha University, Incheon 402-751, Republic of Korea.*

^d*Mineral Resources Research Division, Korea Institute of Geoscience and Mineral Resources, Daejeon 305-350, Republic of Korea.*

Table S1. BBM design for Sr^{2+} adsorption using CTP- Fe_3O_4 composite

(x1)	(x2)	(x3)	(x4)	(x5)	(Response 1)
pH	Temp. (°C)	Adsorbent dosage (mg)	Concentration of Sr^{2+} (ppm)	Reaction time (min)	Adsorption of Sr^{2+} (%)
7	40	0.55	50	50	80.34648
7	40	0.55	125	150	69.87328
7	20	0.55	125	250	57.86274
7	60	0.1	125	150	81.52881
7	40	0.55	125	150	34.31693
11	60	0.55	125	150	77.63555
7	40	0.1	200	150	28.28041
7	40	0.55	200	250	68.99287
7	20	0.55	50	150	35.91072
3	40	0.55	50	150	28.18579
7	20	0.55	125	50	26.55192
7	40	0.55	125	150	75.03194
3	40	0.55	125	50	40.98673
7	40	0.55	125	150	76.98672
7	40	0.55	125	150	75.84364
7	40	0.55	200	50	36.32202
7	40	0.1	50	150	26.07058
7	40	1	125	50	91.01491
11	40	0.55	50	150	97.47435
7	60	1	125	150	86.20497

7	20	0.55	200	150	16.96602
11	40	1	125	150	88.30162
7	40	0.1	125	50	11.32300
3	40	0.55	200	150	13.39290
7	40	0.1	125	250	26.79380
11	40	0.1	125	150	31.15658
3	60	0.55	125	150	4.941233
7	40	1	50	150	95.30693
7	60	0.55	125	50	82.32852
7	40	0.55	50	250	97.75303
3	40	0.55	125	250	10.83599
11	40	0.55	125	50	85.14050
7	60	0.55	125	250	82.39593
7	40	0.55	125	150	75.02595
11	20	0.55	125	150	63.13482
3	20	0.55	125	150	13.58852
11	40	0.55	200	150	73.68211
3	40	0.1	125	150	41.55389
7	20	0.1	125	150	34.48468
7	60	0.55	50	150	97.67949
7	40	1	125	250	80.79433
11	40	0.55	125	250	98.42802
7	20	1	125	150	38.98372
3	40	1	125	150	48.57188
7	60	0.55	200	150	39.31714

7	40	1	200	150	78.47578
7	40	0.55	50	50	80.34648

Table S2. ANOVA for linear model, which showed significance of the variables involved in the adsorption process

Source	SS	DF	MS	F Value	p-value Prob > F	
Model	24,422.25	5	4884.45	13.71	< 0.0001	Significant
pH	10,655.23	1	10,655.23	29.91	< 0.0001	
Temp	4382.62	1	4382.62	12.30	0.0011	
Adsorbent dosage	5846.20	1	5846.20	16.41	0.0002	
Concentration of Sr²⁺	2468.38	1	2468.38	6.93	0.0120	
Reaction time	1069.83	1	1069.83	3.00	0.0908	
Residual	14,251.56	40	356.29			
Lack of Fit	12,872.55	35	367.79	1.33	0.4082	Not significant