

Supporting information

Kinetics and thermodynamic study on novel modified-mesoporous silica MCM-41/polymer matrix nanocomposites: effective adsorbents for trace Cr^{VI} removal

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m-MCM/PVA	kinetic	Time (min)	20	40	60	80	100	120	140	160	180	200	220	240
		C_e (mg L ⁻¹)	6.64	5.21	4.26	3.79	3.25	2.89	2.89	2.54	2.36	2.36	2.36	2.36
		% Removal	33.57	47.86	57.38	62.14	67.50	71.07	71.07	74.64	76.43	76.43	76.43	76.43
		Q (mg L ⁻¹)	3.36	4.79	5.74	6.21	6.75	7.11	7.11	7.46	7.64	7.64	7.64	7.64
		RSD	5.32	3.73	4.75	2.87	5.29	5.03	5.03	2.39	2.34	2.34	4.67	2.34
	isotherm	C_0 (mg L ⁻¹)	0.5	5.0	10.0	18.0	25.0	32.0	40.0					
		C_e (mg L ⁻¹)	0.20	1.00	2.35	6.00	10.00	15.40	21.50					
		% Removal	86.67	80.00	46.50	66.67	60.00	51.88	46.25					
		Q (mg L ⁻¹)	1.30	4.00	7.65	12.00	15.00	16.60	18.50					
		RSD	3.85	2.50	4.58	4.17	3.33	3.61	2.16					
	thermodynamic	T	298	308	318									
		$\ln K_d$	8.08	8.29	8.43									
RSD		0.69	0.75	0.81										
m-MCM/N6	kinetic	Time (min)	20	40	60	80	100	120	140	160	180	200	220	240
		C_e (mg L ⁻¹)	5.93	4.14	3.07	2.89	2.89	2.89	2.89	2.71	2.71	2.71	2.54	2.54
		% Removal	40.71	58.57	69.29	71.07	71.07	71.07	71.07	72.86	72.86	72.86	74.64	74.64
		Q (mg L ⁻¹)	4.07	5.86	7.11	7.11	7.11	7.11	7.11	7.29	7.29	7.29	7.46	7.46
		RSD	8.77	3.05	5.15	5.03	5.03	2.51	5.03	2.45	2.45	4.90	2.39	4.78
	isotherm	C_0 (mg L ⁻¹)	0.5	5.0	10.0	18.0	25.0	32.0	40.0					
		C_e (mg L ⁻¹)	0.20	1.00	2.53	6.40	11.00	16.00	22.10					
		% Removal	86.67	80.00	74.70	64.44	56.00	50.00	44.75					
		Q (mg L ⁻¹)	1.30	4.00	7.47	11.60	14.00	16.00	17.90					
		RSD	3.85	2.50	6.69	3.45	3.75	3.75	3.35					
	thermodynamic	T	298	308	318									
		$\ln K_d$	7.99	8.08	8.21									
RSD		0.66	0.68	0.78										
m-MCM/PS	kinetic	Time (min)	20	40	60	80	10	120	140	160	180	200	220	240
		C_e (mg L ⁻¹)	8.43	7.36	6.46	5.57	5.21	4.86	4.68	4.32	4.14	3.96	3.96	3.96
		% Removal	15.71	26.43	35.36	44.29	47.86	51.43	53.21	56.79	58.57	60.36	60.36	60.36
		Q (mg L ⁻¹)	1.57	2.64	3.54	4.43	4.79	5.14	5.32	5.86	5.86	6.04	6.04	6.04
		RSD	11.36	6.76	5.05	8.06	7.46	3.47	6.71	9.43	6.10	5.92	5.92	8.88
	isotherm	C_0 (mg L ⁻¹)	0.5	5.0	10.0	18.0	25.0	32.0	40.0					