Investigating the Role of Alkyl Chain Length of the Inhibitors on Its Intercalation Inhibiting Mechanism in Sodium Montmorillonite

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Supporting Information

Elemental analysis

Fig. S1 shows the results of the elemental analysis of Na-MMT-inhibitor complexes. Nitrogen is a characteristic element in the Na-MMT- inhibitor complexes. Each inhibitor molecule contains two nitrogen atoms. The nitrogen content of the inhibitor can be quantitatively determined by measuring the Na-MMT- inhibitor complexes, and verifying the results of the isothermal adsorption. Table 4 shows that the proportion of nitrogen was the maximum at a low concentration of the inhibitor (0.5%w/w). The proportion of nitrogen did not change when the concentration of the inhibitor was increased, indicating that the saturated adsorption content of the adsorbed inhibitor was less than 0.5 % (w/w). The proportionate order of nitrogen in the inhibitors are C8 < C7 < C6 < C5 < C4 < C3 < C2, indicating that as the alkyl chain length increases, the nitrogen proportion gradually decreases. The saturated adsorption capacity of the inhibitors of Na-MMT decreased with the increase in the alkyl chain length.

S1 The nitrogen proportion of inhibitor adsorbed on the Na-MMT at different concentrations

Inhibitors	Concentration wt%	N (At%)
C2	0.50	2.84
	1.00	2.83
	1.50	2.85
	2.00	2.86
	2.50	2.83
	3.00	2.84
	3.50	2.85
	4.00	2.86
C3	0.50	2.66
	1.00	2.64
	1.50	2.65
	2.00	2.67
	2.50	2.67
	3.00	2.64
	3.50	2.65
	4.00	2.66
C4	0.50	2.14
	1.00	2.15
	1.50	2.13
	2.00	2.14
	2.50	2.14
	3.00	2.16
	3.50	2.15
	4.00	2.14
C5	0.50	2.05
	1.00	2.06
	1.50	2.04
	2.00	2.05
	2.50	2.06
	3.00	2.04
	3.50	2.07
	4.00	2.05
C6	0.50	1.91
	1.00	1.9
	1.50	1.92
	2.00	1.91
	2.50	1.90
	3.00	1.91
	3.50	1.92
	4.00	1.90

Inhibitors	Concentration wt%	N (At%)
C7	0.50	1.85
	1.00	1.85
	1.50	1.85
	2.00	1.85
	2.50	1.85
	3.00	1.85
	3.50	1.85
	4.00	1.85
C8	0.50	1.81
	1.00	1.80
	1.50	1.81
	2.00	1.82
	2.50	1.82
	3.00	1.80
	3.50	1.81
	4.00	1.82