

# Experimental investigation of the attachment performance between coal particle and bubble

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The equation of Logistic model:

$$y = A_2 + \frac{A_1 - A_2}{1 + \left(\frac{x}{x_0}\right)^p} \quad (1)$$

Table S1. The fitting result of Figure 1

Parameter	Particle density (g·cm <sup>-3</sup> )					
	.-1.3	1.3-1.4	1.4-1.5	1.5-1.6	1.6-1.7	+1.7
$A_1$	99.075	98.787	98.013	83.161	80.621	77.221
$A_2$	-8.405	-6.659	-10.787	-2.064	-4.868	-2.753
$x_0$	45.903	42.431	41.415	36.946	34.366	33.027
$p$	4.635	4.460	3.965	5.456	3.758	4.039
Adj. R-Square	0.996	0.988	0.983	0.994	0.997	0.990

Table S2. The fitting result of Figure 4 (a)

Parameter	Particle size (mm)		
	0.22-0.2	0.15-0.1	0.1-0.074
$A_1$	97.639	99.075	99.876
$A_2$	-11.075	-8.405	-9.368
$x_0$	44.892	45.903	48.258
$p$	4.588	4.635	4.511
Adj. R-Square	0.989	0.996	0.995

Table S3. The fitting result of Figure 4 (b)

Parameter	Particle size (mm)		
	0.22-0.2	0.15-0.1	0.1-0.074
$A_1$	69.053	77.221	82.332
$A_2$	-5.959	-2.753	-6.055
$x_0$	30.144	33.027	42.694
$p$	2.998	4.039	5.167
Adj. R-Square	0.986	0.990	0.991

Table S4. The fitting result of Figure 6 (a)

Parameter	Concentration of SDS (mg·L <sup>-1</sup> )				
	0	10	50	90	130
$A_1$	94.885	86.341	64.844	32.964	25.872
$A_2$	-11.130	-3.455	-1.853	-0.708	-0.430
$x_0$	44.973	38.188	29.952	31.057	29.297
$p$	3.778	5.143	4.815	5.474	5.358
Adj. R-Square	0.999	0.996	0.995	0.978	0.999

Table S5. The fitting result of Figure 6 (c)

Parameter	Concentration of CTAB (mg·L <sup>-1</sup> )				
	0	10	50	90	130
$A_1$	94.885	99.146	95.487	77.208	12.021
$A_2$	-11.130	-12.313	-11.936	-10.164	-1.476
$x_0$	44.973	51.289	48.784	36.712	25.671
$p$	3.778	4.625	4.276	2.966	2.205
Adj. R-Square	0.999	0.999	0.997	0.987	0.989

Table S6. The fitting result of Figure 7 (a)

Parameter	Concentration of SDS (mg·L <sup>-1</sup> )				
	0	10	50	90	130
$A_1$	94.885	94.828	94.667	95.597	93.724
$A_2$	-11.130	-10.135	-6.175	-13.940	-10.365
$x_0$	44.973	43.766	43.483	45.719	42.197
$p$	3.778	4.256	4.066	3.494	3.948
Adj. R-Square	0.999	0.989	0.996	0.998	0.992

Table S7. The fitting result of Figure 7 (c)

Parameter	Concentration of CTAB (mg·L <sup>-1</sup> )				
	0	10	50	90	130
$A_1$	94.885	96.499	95.647	94.460	89.324
$A_2$	-11.130	-7.356	-5.075	-4.286	-5.909
$x_0$	44.973	48.069	45.118	44.458	43.118
$p$	3.778	4.784	5.427	5.554	5.450
Adj. R-Square	0.999	0.999	0.999	0.995	0.995

Table S8. The terminal velocity of coal samples

Particle size (mm)	Particle density (g·cm <sup>-3</sup> )	Mean value of terminal velocity (mm·s <sup>-1</sup> )	Range of terminal velocity (mm·s <sup>-1</sup> )	Variance e
0.22-0.20	-1.3	5.57	3.67-7.47	0.95
	+1.7	13.25	6.61-19.89	3.32
0.15-0.10	-1.3	2.26	1.42-3.10	0.42
	1.3-1.4	2.82	1.89-3.75	0.46
	1.4-1.5	3.10	1.97-4.24	0.57
	1.5-1.6	3.88	2.55-5.20	0.66
	1.6-1.7	4.16	2.56-5.76	0.80
	+1.7	6.18	2.60-10.49	2.07
0.10-0.074	-1.3	1.59	1.03-2.14	0.28
	+1.7	4.66	2.39-6.93	1.14