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**APPENDICES**  
**APPENDIX A**  
**EXPERIMENTAL DATA**

**Table A-1** The experimental data of Ross-Miles test at 30 °C pH = 7, [SDS] = 0.005 M

Foam height (cm)					
time (min.)	$X_{SO}$				
	0.0	0.2	0.4	0.6	0.8
0	19.9	21.3	21.6	21.8	23.1
5	17.6	18.9	19.8	19.9	21.0
10	17.2	18.7	19.6	19.8	20.9
15	17.1	18.6	19.3	19.7	20.8
20	17.0	18.5	19.2	19.5	20.6

**Table A-2** The experimental data of Ross-Miles test at 30 °C pH = 7, [SDS] = 0.01 M

Foam height (cm)					
time (min.)	$X_{SO}$				
	0.0	0.2	0.4	0.6	0.8
0	22.9	24.2	24.2	24.1	24.2
5	19.8	20.5	20.4	20.3	20.3
10	19.5	20.1	20.1	20.1	20.0
15	19.1	19.5	19.6	19.6	19.7
20	18.7	19.4	19.3	19.4	19.5

**Table A-3** The experimental data of Ross-Miles test at 30 °C pH = 7, [SDS] = 0.001 M with calcium

Foam height (cm) at t = 0 min.					
[ Ca <sup>2+</sup> ] (M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	17.8	16.5	16.2	20.4	20.2
0.0001	4.2	3.3	5.2	5.3	11.8
0.0003	5.2	5.2	7.4	6.9	10.5
0.0010	6.0	6.9	10.6	9.8	8.3
0.0020	6.0	6.1	7.0	8.3	9.7
0.0030	6.1	5.3	6.8	7.8	8.3
0.0050	5.2	5.3	5.3	5.9	6.6
0.0100	4.2	5.0	5.1	5.4	7.3
Foam height (cm) at t = 5 min.					
[ Ca <sup>2+</sup> ] (M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	13.4	13.3	11.3	17.6	17.2
0.0001	0.2	0.3	0.3	0.3	2.7
0.0003	0.9	0.8	1.1	1.0	4.1
0.0010	1.7	2.4	2.9	3.0	3.4
0.0020	2.1	1.6	1.9	2.6	5.5
0.0030	1.5	1.0	1.7	1.8	3.4
0.0050	1.6	1.4	1.5	1.2	1.7
0.0100	0.6	0.9	1.0	1.0	0.9

**Table A-4** The experimental data of Ross-Miles test at 30 °C pH = 7, [SDS] = 0.005 M with calcium

Foam height (cm) at t = 0 min.					
[ Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	20.1	21.5	21.7	21.9	23.1
0.0001	21.9	21.8	21.8	21.5	23.2
0.0003	20.6	20.5	19.5	17.6	23.1
0.0010	15.8	14.4	18.8	14.5	23.3
0.0020	12.0	14.5	17.3	14.1	18.6
0.0030	10.6	10.3	13.9	10.0	14.8
0.0050	5.6	5.2	9.0	5.4	9.4
0.0100	4.3	3.7	4.0	3.5	3.0
Foam height (cm) at t = 5 min.					
[ Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	17.7	19.1	19.8	20.0	21.0
0.0001	19.9	19.5	20.2	19.4	21.2
0.0003	17.2	17.4	18.2	15.2	21.0
0.0010	11.4	12.7	16.7	12.5	21.2
0.0020	8.2	11.0	13.3	11.0	15.0
0.0030	4.4	5.6	9.9	5.9	10.9
0.0050	0.6	0.4	4.1	2.8	4.4
0.0100	0.6	0.3	0.3	1.0	2.9

**Table A-5** The experimental data of Ross-Miles test at 30 °C pH = 7, [SDS] = 0.01 M with calcium

Foam height (cm) at t = 0 min.					
[ Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	22.9	24.2	24.2	24.1	24.2
0.0001	22.2	23.5	23.7	24.3	24.9
0.0003	23.3	23.4	24.0	24.4	25.6
0.0010	24.7	26.0	24.2	25.1	25.6
0.0020	24.4	26.0	24.8	26.1	26.1
0.0030	23.0	25.5	23.7	26.2	27.7
0.0050	14.0	11.0	15.0	17.9	27.1
0.0100	10.0	6.2	7.8	4.3	8.2
foam height (cm) at t = 5 min.					
[ Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0000	19.8	20.5	20.4	20.3	20.3
0.0001	20.6	21.2	21.0	21.6	22.1
0.0003	21.1	20.3	21.2	21.5	22.6
0.0010	21.8	22.2	22.7	20.4	22.9
0.0020	21.9	22.2	23.0	22.3	22.4
0.0030	20.1	21.8	20.6	22.3	23.7
0.0050	11.3	9.9	11.3	15.1	23.0
0.0100	1.9	5.9	0.6	3.0	6.6

**Table A-6** The experimental data of supernatant system by Ross-Miles test at  
 $30^{\circ}\text{C}$   $\text{pH} = 7$ ,  $[\text{SDS}] = 0.005\text{ M}$

Foam height (cm) at t = 0 min.					
[Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0010	21.5	20.6	21.2	22.4	23.3
0.0020	19.7	20.7	21.1	22.1	23.1
0.0030	20.5	19.6	19.6	21.3	21.4
0.0050	18.8	18.6	18.7	19.2	19.4
0.0100	16.1	17.1	16.8	15.9	17.5
Foam height (cm) at t = 5 min.					
[Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0010	18.0	17.9	18.5	20.3	20.9
0.0020	17.6	18.7	18.0	20.1	20.8
0.0030	15.9	17.0	17.0	17.9	18.0
0.0050	2.6	7.8	7.8	8.8	10.4
0.0100	1.2	2.5	2.8	4.5	4.5



**Table A-7** The experimental data of supernatant system by Ross-Miles test at  
 $30^{\circ}\text{C}$  pH = 7, [SDS] = 0.01 M

Foam height (cm) at t = 0 min.					
[Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0010	22.9	23.4	23.9	24.2	23.2
0.0020	23.4	23.3	23.6	23.7	23.4
0.0030	21.6	21.6	23.0	24.1	22.7
0.0050	20.5	20.7	21.0	21.8	20.7
0.0100	15.6	14.1	19.1	20.4	19.3
Foam height (cm) at t = 5 min.					
[Ca <sup>2+</sup> ](M)	X <sub>SO</sub>				
	0.0	0.2	0.4	0.6	0.8
0.0010	19.8	21.1	21.5	21.7	20.8
0.0020	20.4	21.3	20.7	20.6	21.1
0.0030	19.4	19.4	19.9	21.3	20.7
0.0050	16.4	16.6	18.6	19.3	18.5
0.0100	0.9	1.2	2.7	15.1	2.2

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