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APPENDICES

Appendix A: Adsorption Isotherms of LAS on Cotton.

A1: Adsorption isotherms varying pH and NaCl concentration.

Sample	Condition							
	pH2, 0.15 M NaCl		pH2, 0.20 M NaCl		pH4, 0.15 M NaCl		pH4, 0.20 M NaCl	
	[LAS] final (μM)	LAS Ads. (μmole/ g cot)	[LAS] final μM	LAS Ads. (μmole/ g cot)	[LAS] final μM	LAS Ads. (μmole/ g cot)	[LAS] final μM	LAS Ads. (μmole/ g cot)
1	24	0.5	15	0.1	40	0.3	32	0.2
2	44	1.1	22	0.4	50	1.1	79	1.5
3	108	3.1	39	1.3	123	2.7	88	2.1
4	248	5.4	95	2.4	221	5.9	142	3.1
5	314	9.2	178	7.0	375	8.0	151	4.2
6	494	9.9	389	13.1	683	7.8	517	9.5
7	1412	14.3	652	12.7	1519	9.9	752	6.2
8	4532	14.5	1594	21.4	4523	9.8	1528	11.7
9	4322	17.0	4669	17.8	4688	12.1	4407	13.5
10			4270	18.1	4785	12.0	4599	15.7

A2: Adsorption isotherms with and without styrene by varying pH and NaCl concentration.

Sample	Condition					
	Without styrene		With styrene 4 μM		With styrene 10 μM	
	[LAS] final (μM)	LAS Ads. (μmole/ g cot)	[LAS] final (μM)	LAS Ads. (μmole/ g cot)	[LAS] final (μM)	LAS Ads. (μmole/ g cot)
1	37	0.3	23	0.3	29	0.4
2	63	0.8	62	0.9	55	0.9
3	112	3.0	139	3.8	82	3.2
4	256	6.9	197	5.4	169	8.4
5	449	8.9	427	8.7	196	11.7
6	692	9.3	603	9.3	381	14.8
7	1238	11.2	920	13.8	659	20.2
8	1742	13.4	1544	13.1	1185	21.6
9	2293	12.0	1825	15.0	1544	23.6
10	4254	13.0	4012	15.9	3500	25.4

Appendix B: Wettability Test by Welhelmy Method.

B1: Bare cotton.

Sample	Initial Force (mg)	Absorbed Water (mg)
1	6.58	1.68
2	7.17	1.43
3	11.52	2.28
4	8.35	1.70
5	6.33	1.45
6	7.89	2.17
7	7.23	1.74
8	9.90	1.14
9	6.17	1.31
10	7.20	0.74
11	7.61	1.55
Average	7.81	1.56
Stand derivation	1.61	0.44

B2: Hydrophobic cotton modified by admicellar polymerization with 1:7 LAS/styrene and 1:1 persulfate initiator/styrene ratio.

Sample	Initial Force (mg)	Absorbed Water (mg)	Contact angle
1	2.15	0.03	74.0
2	1.56	0.04	78.5
3	2.00	0.03	75.2
4	2.18	0.07	73.8
5	1.65	0.03	77.8
6	3.49	0.08	63.5
7	0.15	0.07	88.9
8	2.75	0.06	69.4
9	3.83	0.05	60.7
10	3.07	0.06	66.9
11	0.98	0.00	82.8
12	3.38	0.09	64.4
13	3.62	0.06	62.4
14	3.02	0.06	67.8
15	3.52	0.06	63.2
16	1.84	0.05	76.4
Average	2.45	0.05	71.6
Stand derivation	1.06	0.02	8.1

B3: Admicellar-modified cotton by varying LAS/styrene ratio using 1:10 AIBN/styrene ratio.

Styrene:LAS	Jumping Force (mg)	Water Aborption (mg)	Contact Angle
3:1	6.96 ± 0.64	0.95 ± 0.28	27.2 ± 13.1
4:1	2.38 ± 0.99	0.05 ± 0.02	72.3 ± 7.7
5:1	2.01 ± 0.80	0.05 ± 0.02	75.1 ± 6.1
6:1	1.89 ± 0.72	0.03 ± 0.02	76.0 ± 5.4
7:1	1.81 ± 0.55	0.03 ± 0.01	76.6 ± 4.4

B4: Admicellar-modified cotton by varying AIBN/styrene ratio using 1:5 LAS/styrene ratio.

AIBN:styrene	Jumping Force (mg)	Water Aborption (mg)	Contact Angle
1:1	2.01 ± 0.89	0.06 ± 0.01	75.1 ± 6.8
1:2	2.27 ± 0.83	0.06 ± 0.02	73.12 ± 3.8
1:3	2.28 ± 0.91	0.07 ± 0.03	73.1 ± 5.2
1:5	2.43 ± 1.00	0.06 ± 0.03	71.9 ± 8.0
1:10	2.51 ± 0.90	0.05 ± 0.02	71.3 ± 1.7
1:15	3.94 ± 0.99	0.16 ± 0.05	59.7 ± 8.5
1:20	4.29 ± 1.11	0.51 ± 0.15	56.7 ± 10.0
1:25	4.52 ± 0.88	0.61 ± 0.23	54.7 ± 8.0

Appendix C: Signal Intensity from XPS Analysis.

Sample	C1s signal	O1s signal	O1s/C1s
Cotton	64.06	35.94	0.56
Cotton-Surfactant	64.29	32.18	0.50
Cotton-PS-0%DVB	76.02	23.98	0.31
Cotton-PS-1%DVB	83.29	16.70	0.20
Cotton-PS-2%DVB	83.00	17.00	0.20
Cotton-PS-5%DVB	72.49	27.51	0.38

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