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APPENDICES

Appendix A Visual Appearance Inspection

Code	Immediate after mixing	After 2 hours	After 2days
N1	turbid	C supernatant + S	C supernatant + S
N2	turbid	C supernatant + S	C supernatant + S
N3	turbid	C supernatant + S	C supernatant + S
N4	turbid	T solution	T supernatant + S
N5	turbid	C supernatant + S	C supernatant + S
N6	turbid	T solution	T supernatant + S
N7	turbid	C supernatant + S	C supernatant + S
N8	turbid	T solution + slightly S	C supernatant + S

Remarks: C = clear
T = turbid
S = sedimentation

Appendix B Equilibrium pH of Studied points in phase diagram at 25 ± 0.5 °C

Code	SLES mM	Polymer g/l	NaCl mM	pH at 25 ± 1 °C		Average	SD
				1	2		
N1	1	0.2	20	6.93	7.00	6.97	0.04
N2	12	0.2	20	7.03	6.91	6.97	0.06
N3	30	0.2	20	7.02	6.80	6.97	0.11
N4	1	0.5	20	6.69	6.96	6.83	0.13
N5	30	0.5	20	7.21	7.35	7.28	0.07
N6	1	1.0	20	6.76	6.46	6.61	0.15
N7	30	1.0	20	7.32	7.12	7.22	0.10
N8	60	1.0	20	7.07	6.98	7.03	0.04

Appendix C Correlation Coefficient Test (Pearson's)

Significant level	5% (0.05)	1% (0.01)
Degree of freedom		
2	.950	.990
3	.878	.959
4	.811	.917
5	.754	.875
6	.707	.834
7	.666	.798
8	.632	.765
9	.602	.735
10	.576	.708
11	.553	.684
12	.532	.661
13	.514	.641
14	.497	.623
15	.482	.606
20	.432	.537
30	.349	.449
40	.304	.393
60	.250	.325

Test value = [sample correlation coefficient]
 Degree of freedom : 2 less than sample size

Appendix D Method for hair switch preparation and cleaning

Hair switch preparation for friction measurement by texture analyzer

1. Weight 3.0 grams of hair with 7 inches and 1.5 inches wide dimension.
2. Align hair in parallel and secure an inch of the root with Aluminium clip and cover the edge of root end with glue
3. The remaining tip hair is trimmed out
4. The ready switch is 2.5 grams with 6 inches.

Hair cleaning

1. The switches are wetted under tap water at rate 4 litres/minute, 37C for 5 second
2. 1.25 grams of 14%SLES is applied from a syringe and agitate with gloved fingers for 30 seconds, followed by rinsing for 30 seconds under tap water
3. Another 1.25 grams of 14%SLES is applied for 30 second, followed by rinsing for 30 seconds under tap water
4. The switches are then combed through until the fibres are aligned then were left overnight in temperature and humidity control room (22 C, 50%RH) before treatment

Appendix E 3D Morphology of treat and untreated hair fibre surface by AFM

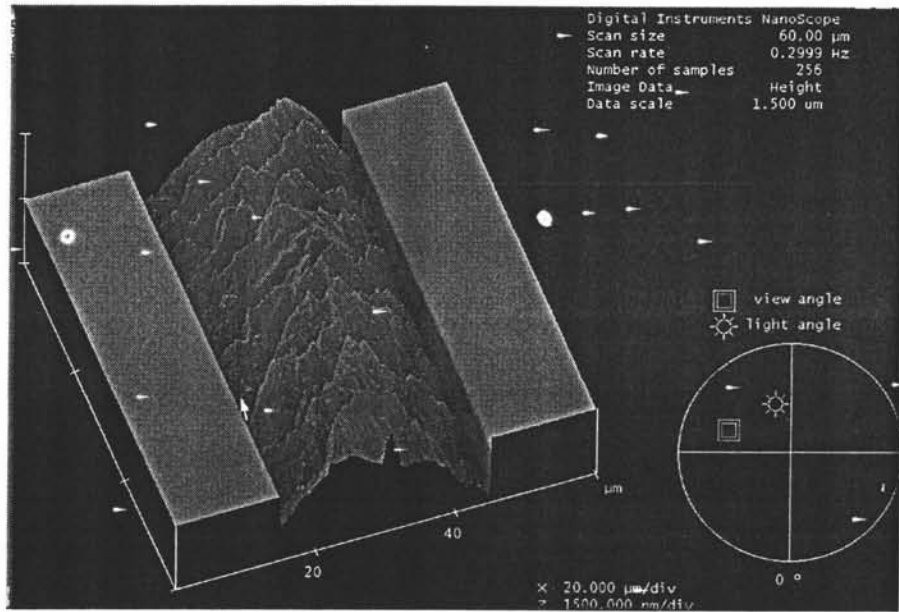


Figure E1 Untreated hair fibre surface

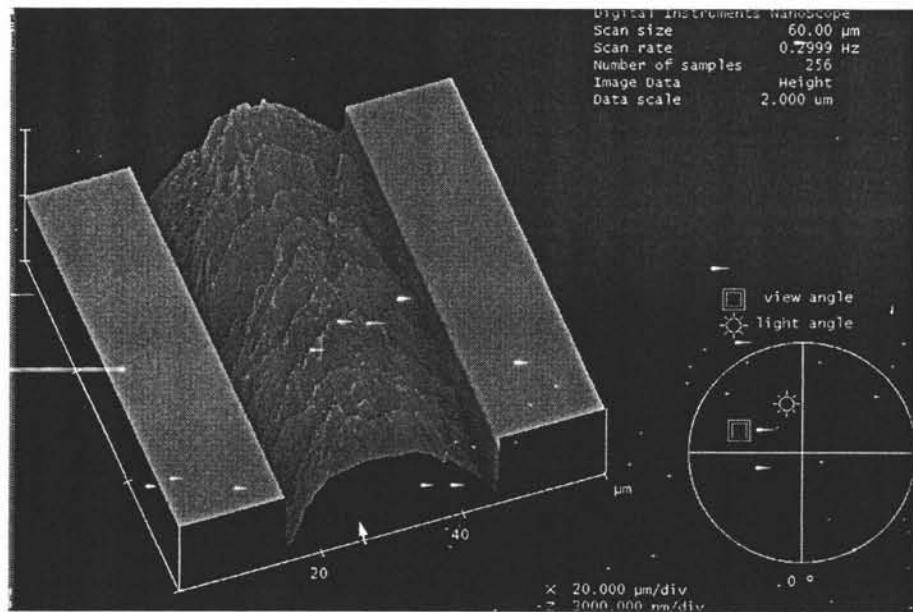


Figure E2 Treated hair fibre surface with 1mM SLES, 0.2g/l Jaguar, 20mM NaCl

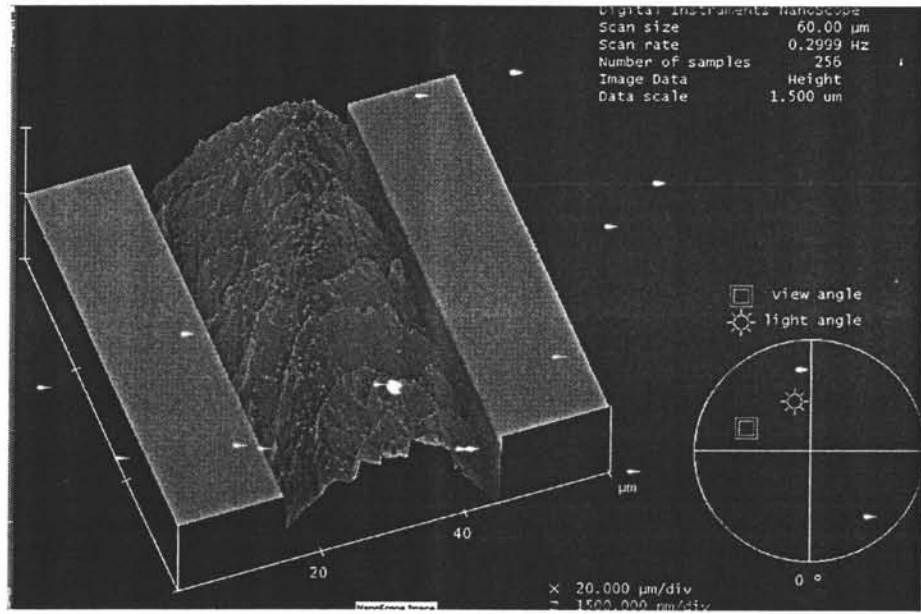


Figure E3 Treated hair fibre surface with 12mM SLES, 0.2g/l Jaguar, 20mM NaCl

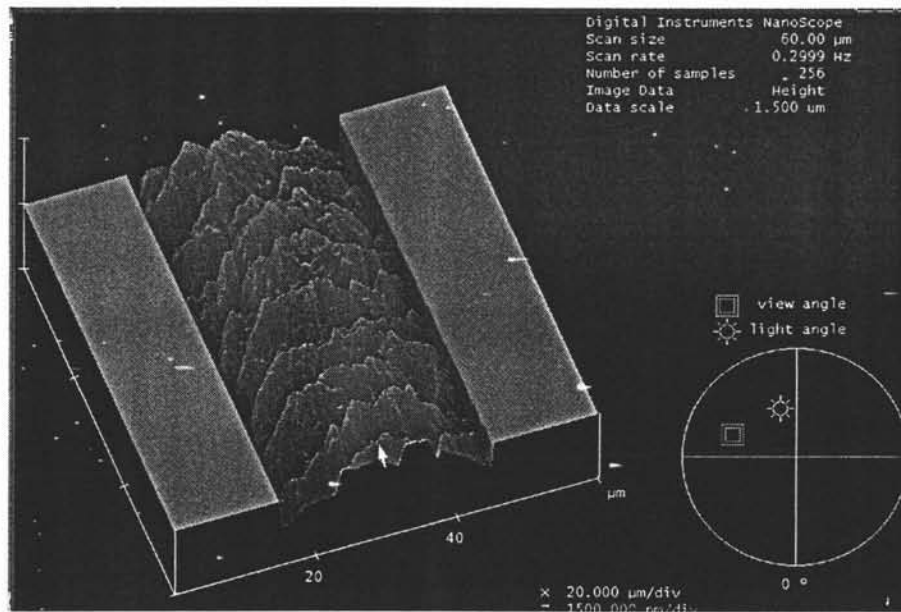


Figure E4 Treated hair fibre surface with 30mM SLES, 0.2g/l Jaguar, 20mM NaCl

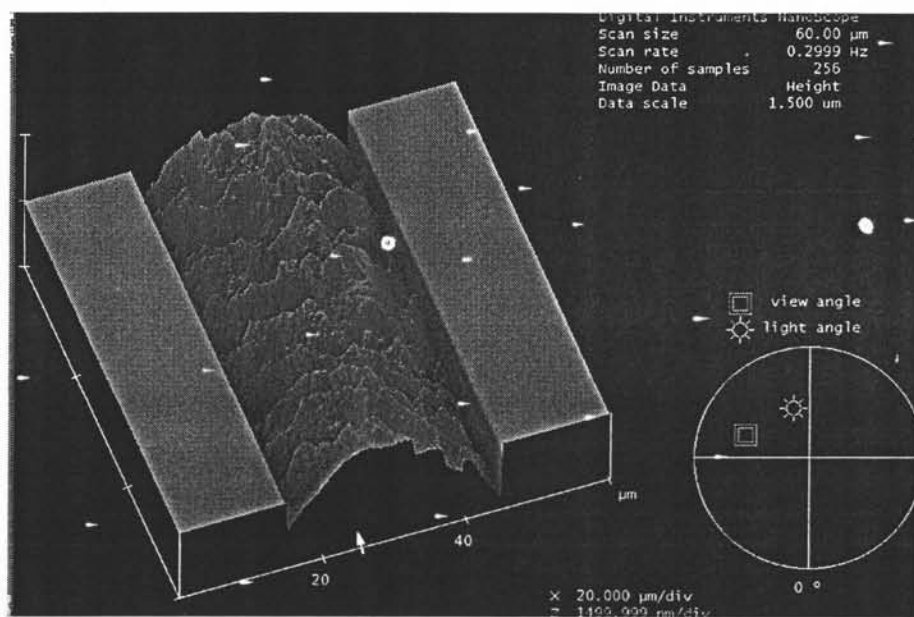


Figure E5 Treated hair fibre surface with 1mM SLES, 0.5g/l Jaguar, 20mM NaCl

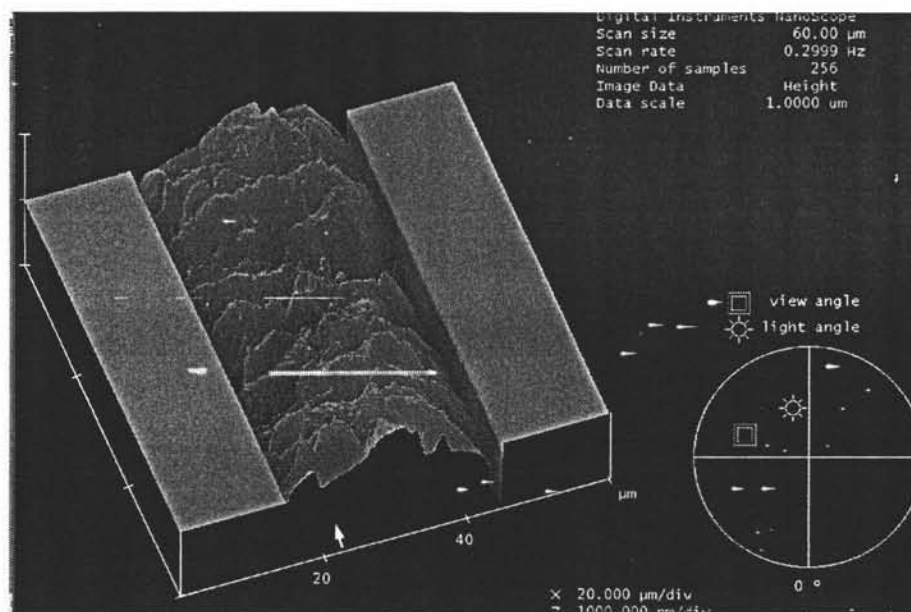


Figure E6 Treated hair fibre surface with 30mM SLES, 0.5g/l Jaguar, 20mM NaCl

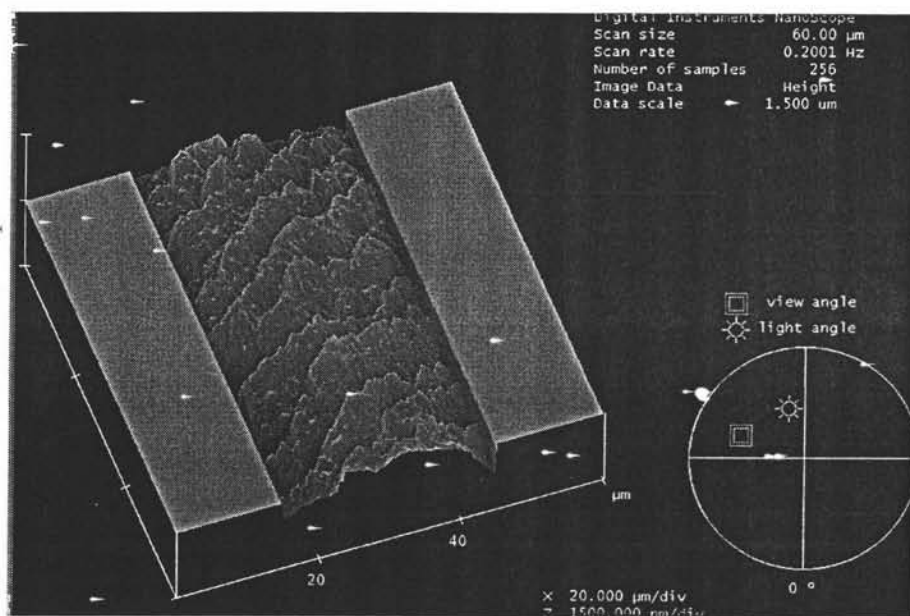


Figure E7 Treated hair fibre surface with 1mM SLES, 1.0g/l Jaguar, 20mM NaCl

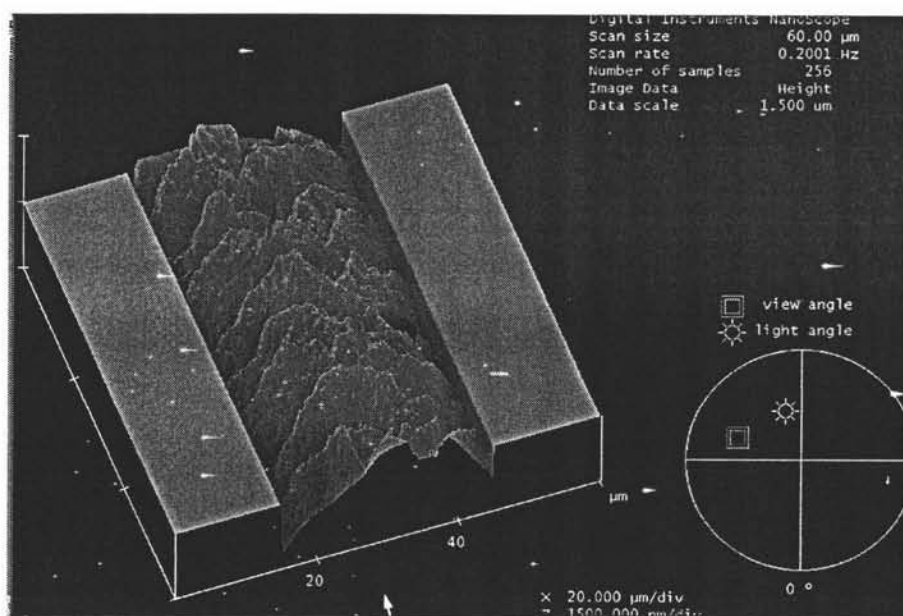


Figure E8 Treated hair fibre surface with 30mM SLES, 1.0g/l Jaguar, 20mM NaCl

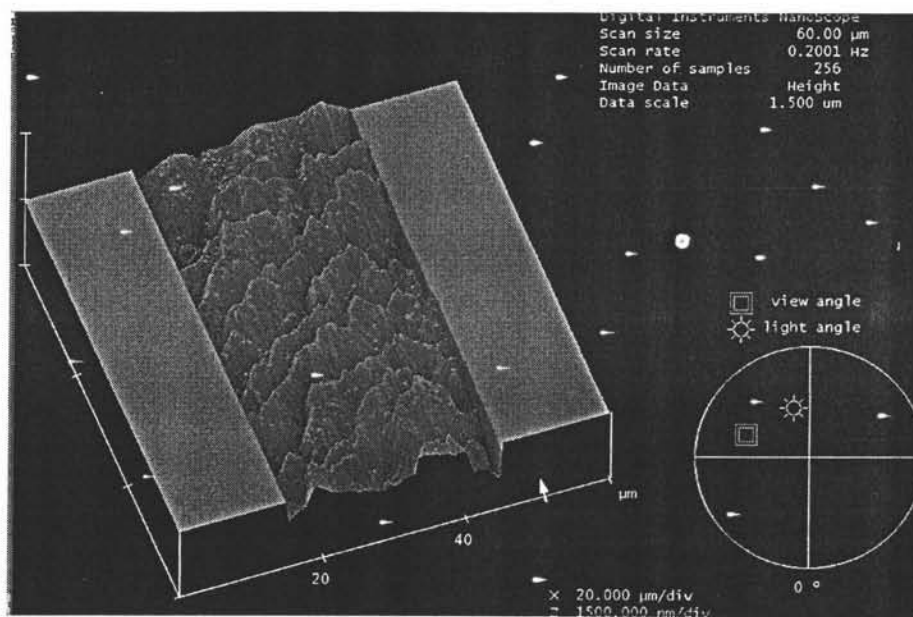


Figure E9 Treated hair fibre surface with 60mM SLES, 1.0g/l Jaguar, 20mM NaCl

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