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APPENDIX A

1. Data of the wall shear stress, the apparent strain rate and viscosity of LLDPE (L1810F); l_C =22.5 mm and d_C = 0.7645 mm at 185°C in figure 3.1(a).

Velocity	Load (Kg)		Strain rate	Stress (N/m²)		Viscosity
(mm/min)	Max	Min	(1/sec)	Max	Min	(Pa.sec)
0.10	10.74		2.71E+00	1.11E+04		4.09E+03
0.30	23.75		8.12E+00	2.45E+04		3.02E+03
0.50	41.57		1.35E+01	4.29E+04		3.17E+03
1.00	66.84		2.71E+01	6.89E+04		2.55E+03
3.00	156.83		8.12E+01	1.62E+05		1.99E+03
5.00	209.72		1.35E+02	2.16E+05		1.60E+03
7.00	259.41		1.89E+02	2.68E+05		1.41E+03
8.00	269.09		2.17E+02	2.78E+05		1.28E+03
10.00	294.34		2.71E+02	3.04E+05		1.12E+03
12.00	318.15		3.25E+02	3.28E+05		1.01E+03
14.00	337.02		3.79E+02	3.48E+05		9.17E+02
16.00	351.96		4.33E+02	3.63E+05		8.38E+02
18.00	364.05		4.87E+02	3.75E+05		7.71E+02
19.60	379.29		5.31E+02	3.91E+05		7.37E+02
25.00	379.57	369.89	6.77E+02	3.91E+05	3.81E+05	5.78E+02
30.00	379.36	370.09	8.12E+02	3.91E+05	3.82E+05	4.82E+02
35.00	375.83	371.37	9.47E+02	3.88E+05	3.83E+05	4.09E+02
40.00	376.44	371.94	1.08E+03	3.88E+05	3.84E+05	3.59E+02
45.00	379.74	374.52	1.22E+03	3.92E+05	3.86E+05	3.21E+02
50.00	382.91	375.33	1.35E+03	3.95E+05	3.87E+05	2.92E+02
59.70	371.52		1.62E+03	3.83E+05		2.37E+02
60.00	388.99		1.62E+03	4.01E+05		2.46E+02
70.00	393.18		1.89E+03	4.06E+05		2.14E+02
80.00	398.85		2.17E+03	4.11E+05		1.90E+02
100.00	433.21		2.71E+03	4.47E+05		1.65E+02
120.00	454.57		3.25E+03	4.69E+05		1.44E+02
140.00	479.98		3.79E+03	4.95E+05		1.31E+02
147.80	470.38	469.75	4.00E+03	4.85E+05	4.84E+05	1.21E+02
160.00	500.07	497.98	4.33E+03	5.16E+05	5.14E+05	1.19E+02
180.00	506.48	503.12	4.87E+03	5.22E+05	5.19E+05	1.07E+02
200.00	514.00	503.43	5.41E+03	5.30E+05	5.19E+05	9.79E+01
220.00	519.12	477.42	5.96E+03	5.35E+05	4.92E+05	8.99E+01
240.00	524.49	475.24	6.50E+03	5.41E+05	4.90E+05	8.33E+01
260.00	536.68	477.62	7.04E+03	5.53E+05	4.93E+05	7.86E+01
280.00	537.99	408.19	7.58E+03	5.55E+05	4.21E+05	7.32E+01

2. Data of the wall shear stress, the apparent strain rate and viscosity of LLDPE (L2009F); l_C =22.5 mm and d_C = 0.7645 mm at 185°C in figure 3.1(b).

Velocity (mm/min)	Load (Kg)		Strain rate (1/sec)	Stress (N/m²)		Viscosity (Pa.sec)
	Max	Min		Max	Min	
0.30	28.12		8.12E+00	2.90E+04		3.57E+03
0.50	53.73		1.35E+01	5.54E+04		4.09E+03
1.00	86.43		2.71E+01	8.91E+04		3.29E+03
5.00	198.91		1.35E+02	2.05E+05		1.52E+03
8.00	264.74		2.17E+02	2.73E+05		1.26E+03
10.00	289.91		2.71E+02	2.99E+05		1.10E+03
12.00	309.59		3.25E+02	3.19E+05		9.83E+02
14.00	327.53		3.79E+02	3.38E+05		8.91E+02
16.00	344.44		4.33E+02	3.55E+05		8.20E+02
18.00	360.56		4.87E+02	3.72E+05		7.63E+02
20.00	339.19		5.41E+02	3.50E+05		6.46E+02
24.00	356.44		6.50E+02	3.68E+05		5.66E+02
25.00	359.05	341.67	6.77E+02	3.70E+05	3.52E+05	5.47E+02
30.00	363.29	342.17	8.12E+02	3.75E+05	3.53E+05	4.61E+02
35.00	364.30	348.45	9.47E+02	3.76E+05	3.59E+05	3.97E+02
40.00	372.01	359.05	1.08E+03	3.84E+05	3.70E+05	3.54E+02
45.00	373.48	364.94	1.22E+03	3.85E+05	3.76E+05	3.16E+02
50.00	375.06	367.58	1.35E+03	3.87E+05	3.79E+05	2.86E+02
55.00	374.36	366.71	1.49E+03	3.86E+05	3.78E+05	2.59E+02
60.00	378.79	361.81	1.62E+03	3.91E+05	3.73E+05	2.41E+02
62.00	380.13	375.23	1.68E+03	3.92E+05	3.87E+05	2.34E+02
63.00	378.28		1.71E+03	3.90E+05		2.29E+02
65.00	376.67		1.76E+03	3.88E+05		2.21E+02
70.00	382.29		1.89E+03	3.94E+05		2.08E+02
80.00	390.19		2.17E+03	4.02E+05		1.86E+02
100.00	411.12		2.71E+03	4.24E+05		1.57E+02
120.00	437.32		3.25E+03	4.51E+05		1.39E+02
140.00	461.87		3.79E+03	4.76E+05		1.26E+02
160.00	475.58		4.33E+03	4.90E+05		1.13E+02
180.00	481.95		4.87E+03	4.97E+05		1.02E+02
200.00	484.93		5.41E+03	5.00E+05		9.24E+01
220.00	488.75		5.96E+03	5.04E+05		8.46E+01
230.00	491.10	459.56	6.23E+03	5.06E+05	4.74E+05	8.13E+01
240.00	493.11	458.63	6.50E+03	5.09E+05	4.73E+05	7.83E+01
260.00	495.54	452.34	7.04E+03	5.11E+05	4.67E+05	7.26E+01
280.00	498.06	499.32	7.58E+03	5.14E+05	5.15E+05	6.78E+01

3. Data of the wall shear stress, the apparent strain rate and viscosity of LLDPE (L2020F); l_C =22.5 mm and d_C = 0.7645 mm at 185°C in figure 3.1(c).

Velocity (mm/min)	Load (Kg) Max	Load (Kg) Min	Strain rate (1/sec)	Stress (N/m^2) Max	Stress (N/m^2) Min	Viscosity (Pa.sec)
0.30	25.70		8.12E+00	2.65E+00		3.26E+03
0.50	32.05		1.35E+01	3.31E+00		2.44E+03
1.00	48.66		2.71E+01	5.02E+00		1.85E+03
5.00	143.24		1.35E+02	1.48E+01		1.09E+03
10.00	217.58		2.71E+02	2.24E+01		8.29E+02
12.00	227.86		3.25E+02	2.35E+01		7.23E+02
14.00	245.99		3.79E+02	2.54E+01		6.69E+02
16.00	263.85		4.33E+02	2.72E+01		6.28E+02
18.00	272.43		4.87E+02	2.81E+01		5.77E+02
20.00	289.81		5.41E+02	2.99E+01		5.52E+02
30.00	336.79		8.12E+02	3.47E+01		4.28E+02
40.00	376.55		1.08E+03	3.88E+01		3.59E+02
45.50	386.12		1.23E+03	3.98E+01		3.23E+02
46.00	386.50	376.24	1.25E+03	3.99E+01	3.88E+01	3.20E+02
48.00	386.33	373.75	1.30E+03	3.98E+01	3.85E+01	3.07E+02
50.00	389.42	380.16	1.35E+03	4.02E+01	3.92E+01	2.97E+02
60.00	387.25	367.58	1.62E+03	3.99E+01	3.79E+01	2.46E+02
70.00	391.03	363.20	1.89E+03	4.03E+01	3.75E+01	2.13E+02
80.00	394.75	359.28	2.17E+03	4.07E+01	3.71E+01	1.88E+02
88.00	391.14	367.51	2.38E+03	4.03E+01	3.79E+01	1.69E+02
88.50	370.60		2.40E+03	3.82E+01		1.60E+02
100.00	388.16		2.71E+03	4.00E+01		1.48E+02
120.00	401.92		3.25E+03	4.15E+01		1.28E+02
140.00	428.35		3.79E+03	4.42E+01		1.17E+02
160.00	455.66		4.33E+03	4.70E+01		1.08E+02
180.00	477.26		4.87E+03	4.92E+01		1.01E+02
200.00	491.39		5.41E+03	5.07E+01		9.36E+01
220.00	520.04		5.96E+03			9.01E+01
240.00	511.86		6.50E+03	5.28E+01		8.13E+01
260.00	513.92		7.04E+03	5.30E+01		7.53E+01
270.00	532.54	486.49	7.31E+03	5.49E+01	5.02E+01	7.51E+01
276.00	539.00	485.56	7.47E+03	5.56E+01	5.01E+01	7.44E+01
280.00	544.51	480.75	7.58E+03	5.62E+01	4.96E+01	7.41E+01
285.00	545.55	483.63	7.72E+03	5.63E+01	4.99E+01	7.29E+01
290.00	545.55	478.18	7.85E+03	5.63E+01	4.93E+01	7.17E+01
295.00	547.06	477.93	7.99E+03	5.64E+01	4.93E+01	7.06E+01

4. Data of the wall shear stress, the apparent strain rate and viscosity of LLDPE (L1810F); l_c =50.9 mm and d_c = 1.2751 mm at 185°C in figure 3.3(b).

Velocity (mm/min)	Load (Kg)		Strain rate (1/sec)	Stress (N/m^2)		Viscosity (Pa.sec)
	Max	Min		Max	Min	
0.30	13.46		1.75E+00	1.18E+00		6.74E+03
0.50	32.69		2.92E+00	2.87E+00		9.82E+03
1.00	42.15		5.84E+00	3.70E+00		6.33E+03
5.00	113.92		2.92E+01	1.00E+01		3.42E+03
10.00	165.57		5.84E+01	1.45E+01		2.49E+03
12.00	191.21		7.01E+01	1.68E+01		2.39E+03
14.00	213.57		8.18E+01	1.87E+01		2.29E+03
16.00	230.06		9.34E+01	2.02E+01		2.16E+03
18.00	244.37		1.05E+02	2.14E+01		2.04E+03
20.00	258.25		1.17E+02	2.27E+01		1.94E+03
30.00	309.76		1.75E+02	2.72E+01		1.55E+03
40.00	343.45		2.34E+02	3.01E+01		1.29E+03
50.00	368.00		2.92E+02	3.23E+01		1.11E+03
60.00	414.96		3.50E+02	3.64E+01		1.04E+03
70.00	431.84		4.09E+02	3.79E+01		9.27E+02
80.00	435.55		4.67E+02	3.82E+01		8.18E+02
90.00	437.98		5.26E+02	3.84E+01		7.31E+02
100.00	439.00		5.84E+02	3.85E+01		6.60E+02
105.00	447.85	418.41	6.13E+02	3.93E+01	3.67E+01	6.41E+02
110.00	449.52	417.21	6.42E+02	3.94E+01	3.66E+01	6.14E+02
120.00	449.25	425.80	7.01E+02	3.94E+01	3.74E+01	5.63E+02
130.00	451.97	430.11	7.59E+02	3.97E+01	3.77E+01	5.22E+02
140.00	454.52	428.85	8.18E+02	3.99E+01	3.76E+01	4.88E+02
150.00	450.33	426.20	8.76E+02	3.95E+01	3.74E+01	4.51E+02
160.00	449.39	421.60	9.34E+02	3.94E+01	3.70E+01	4.22E+02
170.00	445.29	419.55	9.93E+02	3.91E+01	3.68E+01	3.94E+02
180.00	439.51		1.05E+03	3.86E+01		3.67E+02
200.00	431.79		1.17E+03	3.79E+01		3.24E+02
220.00	433.88		1.28E+03	3.81E+01		2.96E+02
240.00	432.58		1.40E+03	3.80E+01		2.71E+02
260.00	451.48		1.52E+03	3.96E+01		2.61E+02
270.00	456.65		1.58E+03	4.01E+01		2.54E+02
280.00	458.97		1.64E+03	4.03E+01		2.46E+02
290.00	468.33		1.69E+03	4.11E+01		2.43E+02
300.00	472.11		1.75E+03	4.14E+01		2.36E+02

5. Data of the slip velocity and the apparent strain rate ($\dot{\gamma}_a$) in the regime III and V of LLDPE (L1810F); l_c =22.5 mm and d_c = 0.7645 mm at 185°C in figure 3.5.

$\dot{\gamma}_a$ (1/sec)	V_s Regime III
6.77E+02	0.60
8.12E+02	0.69
9.48E+02	0.89
1.08E+03	0.89
1.22E+03	1.05
1.35E+03	1.42
1.40E+03	1.48

$\dot{\gamma}_a$ (1/sec)	V_s Regime V
4.33E+03	0.96
4.87E+03	1.71
5.41E+03	5.89
5.96E+03	25.32
6.50E+03	32.15
7.04E+03	41.00
7.58E+03	42.53

6. Data of the slip velocity and $|\dot{\gamma}_a - \dot{\gamma}_{a,c}|^{1/2}$ in the regime II of three LLDPE's ; l_c =22.5 mm and d_c = 0.7645 mm at 185°C in figure 3.6(a).

$\lvert \dot{\gamma}_a - \dot{\gamma}_{a,c} \rvert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L1810F	$\lvert \dot{\gamma}_a - \dot{\gamma}_{a,c} \rvert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L2009F	$\lvert \dot{\gamma}_a - \dot{\gamma}_{a,c} \rvert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L2020F
0.00	0.00	0.00	0.00	0.00	0.00
7.42	0.60	7.35	0.75	7.75	1.29
10.44	0.69	10.39	1.25	10.49	1.32
12.77	0.89	12.73	1.54	12.65	1.53
14.73	1.05	14.70	1.84	14.83	1.61
16.46	1.42	16.43	2.02	16.43	1.75
18.03	1.50	18.00	2.28	18.17	1.87
19.47	1.67	19.47	2.51	19.49	1.88
20.83	1.78	20.23	2.63	20.74	2.57
22.11	1.91	21.45	3.85	22.14	2.97
23.22	1.98	23.60	3.98	23.23	3.21

7. Data of the slip velocity and $|\dot{\gamma}_a - \dot{\gamma}_{a,c}|^{1/2}$ in the third regime of three LLDPE's ; l_C =22.5 mm and d_C = 0.7645 mm at 185°C in figure 3.6(b).

$\vert\dot{\gamma}_a - \dot{\gamma}_{a,c}\vert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L1810F	$\vert\dot{\gamma}_a - \dot{\gamma}_{a,c}\vert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L2009F	$\vert\dot{\gamma}_a - \dot{\gamma}_{a,c}\vert^{1/2}$ $(1/s)^{1/2}$	V_s (mm/sec) L2020F
0.00	0.00	0.00	0.00	0.00	0.00
10.10	0.96	16.43	21.25	13.78	34.94
25.40	1.71	20.98	23.50	15.81	38.07
34.40	5.89	26.65	27.26	17.32	41.12
58.40	25.32	31.30	31.74	18.97	42.90
72.40	32.15	35.36	34.74	20.25	47.74
86.30	41.00	38.99	38.38	25.80	49.30

8. Data of the load wavelength (λ_l) and the apparent strain rate ($\dot{\gamma}_a$) in the regime III and regime V of LLDPE (L1810F); l_C =22.5 mm and d_C = 0.7645 mm at 185°C in figure3.7.

$\dot{\gamma}_a$ (1/sec)	λ_l (mm) Regime III
536.0	398.2
552.3	276.2
703.9	204.9
812.1	163.2
866.3	87.2
1028.7	44.5
1191.1	45.5
1407.7	87.5
1461.9	107.1
1570.1	173.8
1678.4	569.7
1683.8	584.7

$\dot{\gamma}_a$ (1/sec)	λ_l (mm) Regime V
4330.0	208.5
4466.8	380.8
4602.1	333.7
4737.5	208.3
4872.8	272.6
5008.2	207.5
5143.5	217.3
5278.9	189.0
5414.3	206.5
5680.0	207.0
5960.0	199.2
6230.0	188.7

9. Data of the load wavelength (λ_l), the extrudate wavelength (λ_e) and the apparent strain rate ($\dot{\gamma}_a$) in the regime III of LLDPE (L1810F); l_c =22.5 mm and d_c = 0.7645 mm at 185°C in figure 3.8.

$\dot{\gamma}_a$ (1/sec)	λ_l (mm)	λ_e (mm)	Ratio of λ_l / λ_e
536.00	398.20	121.03	3.29
703.90	204.90	76.46	2.68
812.10	87.20	41.72	2.09
1028.70	44.50	26.18	1.70
1191.10	45.50	29.17	1.56
1407.70	87.50	70.56	1.24

10. Data of the storage modulus (G') and the recoverable shear (S_R) of three LLDPE's; parallel plate diameter = 50 mm, temperature were 185 - 115°C in table 3.6.

Materials	**L1810F**	**L2009F**	**L2020F**
τ_w (N/m^2)	3.25E+05	3.29E+05	3.40E+05
G_g (N/m^2)	2.32E+06	2.27E+06	2.43E+06
S_R asymptotic	**0.1400**	**0.1449**	**0.1399**
$\dot{\gamma}_a$ (1/sec)	328	352	758
ω (rad/sec)	148.88	166.58	353.76
G'(ω) (N/m^2)	2.18E+05	2.19E+05	2.19E+05
S_R local	**1.4908**	**1.5023**	**1.5525**

11. Data of the sharkskin wavelength (λ_s), the sharkskin amplitude (ε_s) and the apparent strain rate ($\dot{\gamma}_a$) in the regime II and regime III of three LLDPE's and two HDPE's ; l_c =22.5 mm and d_c = 0.7645 mm at 185°C and 180°C respectively in figures 3.11-3.15.

L1810F Regime II

$\dot{\gamma}_a$ (1/sec)	τ_w (N/m^2)	Raw data of sharkskin amplitude				ε_s (µm)		Raw data of sharkskin wavelength				λ_s (µm)	
		ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
328	3.25E+5	70.0	65.0	64.0	55.4	**63.6**	**6.1**	148.0	170.0	172.0	178.0	**167.0**	**13.1**
433	3.63E+5	65.0	72.0	68.0	60.2	**66.3**	**5.0**	168.0	152.0	172.0	186.4	**169.6**	**14.1**
487	3.75E+5	72.0	73.0	68.0	65.0	**69.5**	**3.7**	175.0	183.0	167.0	155.0	**170.0**	**11.9**
541	3.82E+5	79.0	80.0	75.0	80.0	**79.5**	**2.4**	173.0	182.0	185.0	172.0	**178.0**	**6.5**
596	3.91E+5	80.0	85.0	82.0	71.4	**79.6**	**5.8**	198.0	187.0	195.0	172.8	**188.2**	**11.3**
650	3.93E+5	92.0	85.0	90.0	91.0	**89.5**	**3.1**	195.0	203.0	210.0	228.0	**209.0**	**14.1**

L1810F Regime III

$\dot{\gamma}_a$ (1/sec)	τ_w (N/m^2)	Raw data of sharkskin amplitude				ε_s (µm)		Raw data of sharkskin wavelength				λ_s (µm)	
		ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
531	3.67E+5	42.5	49.3	48.3	55.5	**48.9**	**5.3**	179.0	148.0	202.0	223.0	**188.0**	**32.2**
677	3.91E+5	59.8	62.5	43.2	72.5	**59.5**	**12.2**	220.0	203.0	238.0	289.0	**237.5**	**37.2**
812	3.91E+5	98.2	92.5	83.2	89.7	**90.9**	**6.2**	250.0	273.0	282.0	268.6	**268.7**	**13.5**
1080	3.88E+5	92.3	94.1	82.1	109.9	**94.6**	**11.5**	289.0	202.0	293.0	300.0	**271.0**	**46.2**
1350	3.95E+5	101.8	92.8	105.3	104.5	**108.0**	**5.7**	247.0	298.0	304.0	303.0	**288.8**	**27.5**
1620	3.83E+5	102.4	106.9	107.4	115.3	**110.1**	**5.4**	390.0	245.0	382.0	315.0	**333.0**	**67.6**

L2009F Regime II

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
352	3.29E+5	58.0	62.0	49.0	57.0	**56.5**	**5.4**	1 98	183.0	209.0	210.0	**200.0**	**15.3**
456	3.62E+5	59.0	67.0	45.0	60.2	**57.8**	**9.2**	283.0	167.0	148.0	218.0	**202.0**	**60.4**
563	3.68E+5	60.0	65.0	72.0	45.8	**60.7**	**11.1**	142.0	150.0	205.0	295.0	**198.0**	**70.5**
679	3.70E+5	59.0	75.0	68.0	49.2	**62.8**	**11.2**	148.0	273.0	126.0	249.0	**199.0**	**72.8**
872	3.75E+5	62.5	68.9	79.6	92.6	**75.9**	**13.2**	293.0	205.0	152.0	150.0	**220.0**	**67.0**

L2009F Regime III

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
650	3.68E+5	53.2	49.8	59.7	64.9	**56.9**	**6.7**	251.0	283.0	179.0	202.6	**228.9**	**46.9**
789	3.70E+5	59.8	62.5	55.3	51.2	**57.2**	**5.0**	265.0	185.0	256.0	293.2	**249.8**	**46.0**
983	3.76E+5	59.6	57.9	49.6	68.5	**58.9**	**7.7**	294.0	241.0	256.0	270.2	**265.3**	**22.5**
942	3.76E+5	62.4	66.8	50.9	61.5	**60.4**	**6.7**	298.0	243.0	284.0	273.0	**274.5**	**23.4**
1080	3.84E+5	68.4	66.5	59.8	75.3	**67.5**	**6.4**	288.0	286.0	297.0	306.2	**294.3**	**9.3**

L20020F Regime II

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
758	3.40E+5	39.5	42.8	33.5	34.6	**37.6**	**4.3**	190.3	189.9	192.8	181.0	**188.5**	**5.2**
847	3.48E+5	49.5	52.6	45.9	43.6	**47.9**	**4.0**	208.9	223.4	198.1	176.8	**201.8**	**19.6**
935	3.57E+5	55.6	61.0	49.9	35.3	**50.5**	**11.1**	200.8	210.5	196.4	190.3	**199.5**	**8.5**
1032	3.62E+5	69.2	50.5	49.2	38.4	**51.8**	**12.8**	223.6	207.9	205.3	204.4	**210.3**	**9.0**
1193	3.71E+5	48.9	50.2	46.2	48.0	**48.3**	**1.7**	220.4	206.1	199.3	219.8	**211.4**	**10.4**

L20020F Regime III

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
1220	3.87E+5	32.9	38.7	40.3	30.5	**35.6**	**4.7**	190.0	189.0	201.0	161.6	**185.4**	**16.8**
1350	3.98E+5	45.6	49.7	50.1	43.1	**47.1**	**3.4**	240.0	256.0	222.6	237.4	**239.0**	**13.7**
1587	3.99E+5	49.7	42.3	52.6	47.8	**48.1**	**4.3**	256.0	292.0	208.4	223.6	**245.0**	37.1
2089	3.98E+5	55.9	56.8	49.9	48.6	**52.8**	**4.1**	248.0	262.0	201.5	248.5	**240.0**	**26.5**
2200	4.02E+5	60.9	62.7	56.2	58.2	**59.5**	**2.9**	280.0	261.0	221.7	213.3	**244.0**	**31.8**

H5690S Regime II (Naiyakul, 1997)

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
86.6	2.05E+5	98.6	92.1	89.4	81.8	**90.5**	**7.0**	207.5	240.9	250.9	232.7	**233.0**	**18.6**
109.5	2.12E+5	92.4	96.7	90.8	88.9	**92.2**	**3.3**	264.7	271.8	245.2	218.3	**250.0**	**23.9**
288.4	2.67E+5	96.5	92.3	94.7	98.5	**95.5**	**2.6**	290.7	284.6	299.9	280.8	**289.0**	**8.3**
453.7	2.78E+5	99.7	96.5	91.7	106.5	**98.6**	**6.2**	302.4	298.7	308.4	250.5	**290.0**	**26.6**

H5690S Regime III (Naiyakul, 1997)

$\dot{\gamma}_a$	τ_w	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
(1/sec)	(N/m^2)	ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
298	3.63E+5	66.7	69.5	62.5	60.5	**64.8**	**4.1**	220.9	206.8	198.9	229.4	**214.0**	**13.7**
322	3.65E+5	72.9	76.8	80.6	54.5	**71.2**	**11.6**	236.8	220.9	208.1	194.2	**215.0**	**18.2**
538	3.64E+5	82.9	84.9	62.8	85.0	**78.9**	**10.8**	230.2	208.7	210.5	230.6	**220.0**	**12.0**
935	3.64E+5	89.4	90.2	81.9	92.1	**88.4**	**4.5**	210.8	226.8	203.2	191.2	**208.0**	**14.9**

R1760 Regime II (Polnark, 1997)

$\dot{\gamma}_a$ (1/sec)	τ_w (N/m^2)	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
		ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
406	2.38E+5	40.2	32.9	36.7	33.2	**35.7**	**3.4**	100.6	119.9	120.6	86.9	**107.0**	**16.3**
650	2.42E+5	46.9	35.2	36.9	33.8	**38.2**	**5.9**	189.8	209.7	150.7	129.8	**170.0**	**36.3**
812	2.51E+5	40.9	39.8	45.6	42.9	**42.3**	**2.5**	206.4	201.5	198.6	202.7	**202.3**	**3.2**
920	2.63E+5	50.9	46.8	42.6	48.1	**47.1**	**3.5**	240.6	261.5	208.7	219.2	**232.5**	**23.5**
975	2.69E+5	49.8	52.9	51.7	38.4	**48.2**	**6.7**	259.1	271.9	204.5	218.1	**238.4**	**32.2**

R1760 Regime III (Polnark, 1997)

$\dot{\gamma}_a$ (1/sec)	τ_w (N/m^2)	Raw data of sharkskin amplitude				ε_s (μm)		Raw data of sharkskin wavelength				λ_s (μm)	
		ε_{s1}	ε_{s2}	ε_{s3}	ε_{s4}	average	SD	λ_{s1}	λ_{s2}	λ_{s3}	λ_{s4}	average	SD
1030	3.39E+5	32.5	29.8	36.8	24.5	**30.9**	**5.1**	162.5	149.8	155.4	137.6	**151.3**	**10.5**
1300	3.40E+5	38.3	40.1	35.5	32.1	**36.5**	**3.5**	169.8	170.5	159.3	155.2	**163.7**	**7.6**
1570	3.42E+5	42.9	43.8	38.6	37.1	**40.6**	**3.3**	185.6	178.4	163.2	172.8	**175.0**	**9.5**
1840	3.40E+5	48.9	50.2	41.8	48.7	**47.4**	**3.8**	178.5	176.9	178.1	181.7	**178.8**	**2.0**
2110	3.42E+5	59.8	60.2	48.9	49.1	**54.5**	**6.4**	180.6	179.4	193.2	180.0	**183.3**	**6.6**

12. Data of the Weissenberg number (W_i), recoverable shear (S_R) and the sharkskin normalized length scale (λ_s/ε_s) in the second and the third regimes of the three LLDPE's and the two HDPE's ; l_c =22.5 mm and d_c = 0.7645 mm at 185°C and 180°C respectively in figures 3.17-3.18.

Regime II

Material	L1810F	L2009F	L2020F	H5690S	R1760
τ_w (N/m^2)	3.25E+05	3.29E+05	3.40E+05	2.05E+05	2.38E+05
$\dot{\gamma}_a$ (1/sec)	328	352	758	86.6	406
G_g (N/m^2)	2.32E+06	2.27E+06	2.43E+06	2.51E+06	2.36E+06
η_o (Pa.sec)	3210	3650	2510	2210	2460
λ_s (μm)	167.0	200.0	188.5	233.0	107.0
ε_s (μm)	63.6	56.5	37.6	90.5	35.7
W_i	0.4538	0.566	0.783	0.0762	0.4232
S_R (asymptotic)	0.1401	0.1449	0.1399	0.0817	0.1008
λ_s/ε_s	2.6258	3.5429	5.0173	2.5754	2.9940

Regime III

Material	L1810F	L2009F	L2020F	H5690S	R1760
τ_w (N/m^2)	3.67E+05	3.68E+05	3.87E+05	3.63E+05	3.39E+05
$\dot{\gamma}_a$ (1/sec)	531	650	1220	298	1030
G_g (N/m^2)	2.32E+06	2.27E+06	2.43E+06	2.51E+06	2.36E+06
η_o (Pa.sec)	3210	3650	2510	221	2460
λ_s (μm)	188.0	228.9	185.4	214.0	151.3
ε_s (μm)	48.9	56.9	35.6	64.8	30.9
W_i	0.7347	1.0451	1.6014	0.2624	1.0736
S_R(asymptotic)	0.1582	0.1621	0.1593	0.1446	0.1436
λ_s/ε_s	3.8446	4.0245	5.2087	3.2986	4.8964

APPENDIX B

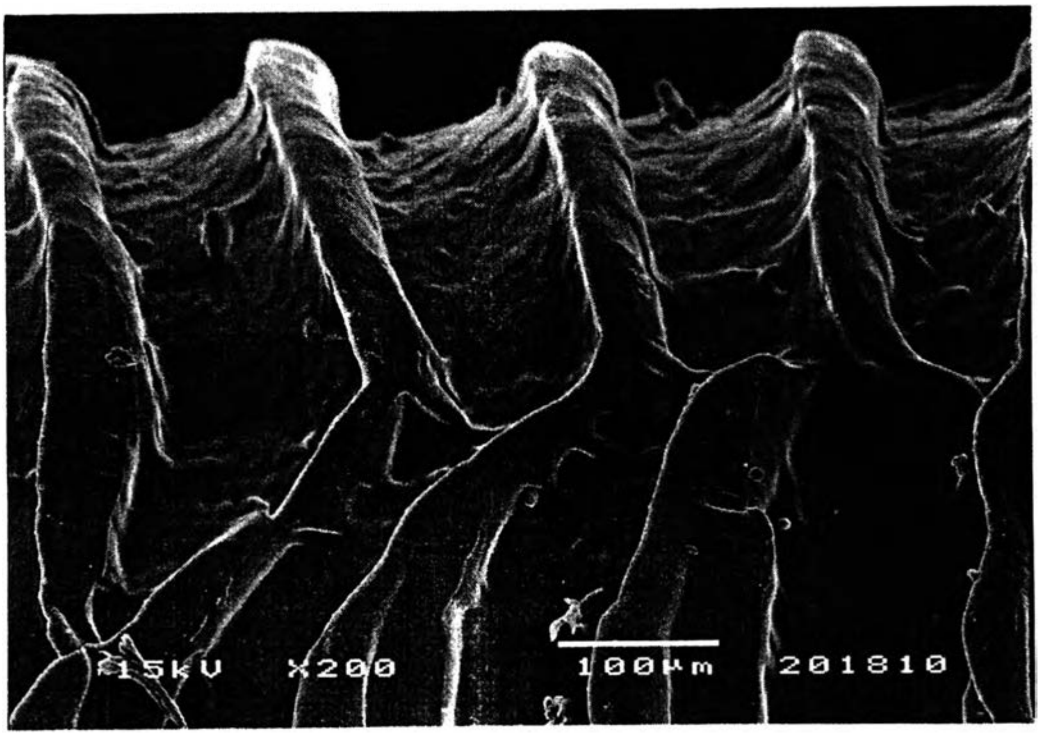

Figure B1 Sharkskin extrudate of LLDPE (L1810F) of regime II at 185°C (200x magnification).

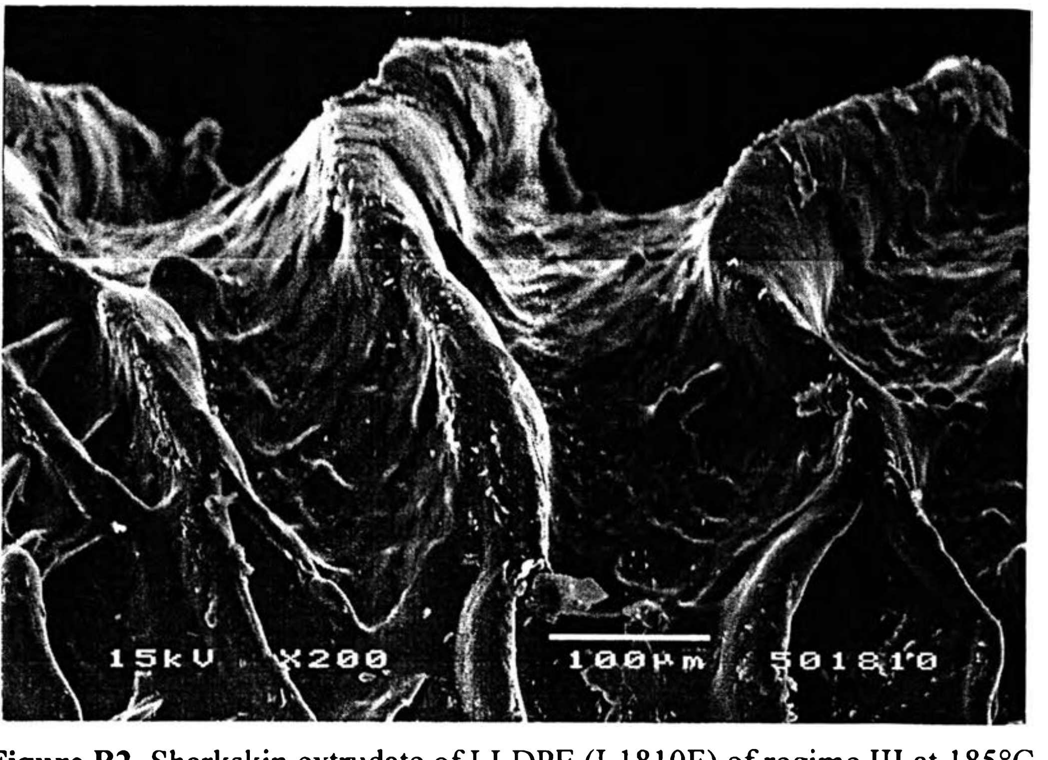

Figure B2 Sharkskin extrudate of LLDPE (L1810F) of regime III at 185°C (200x magnification).

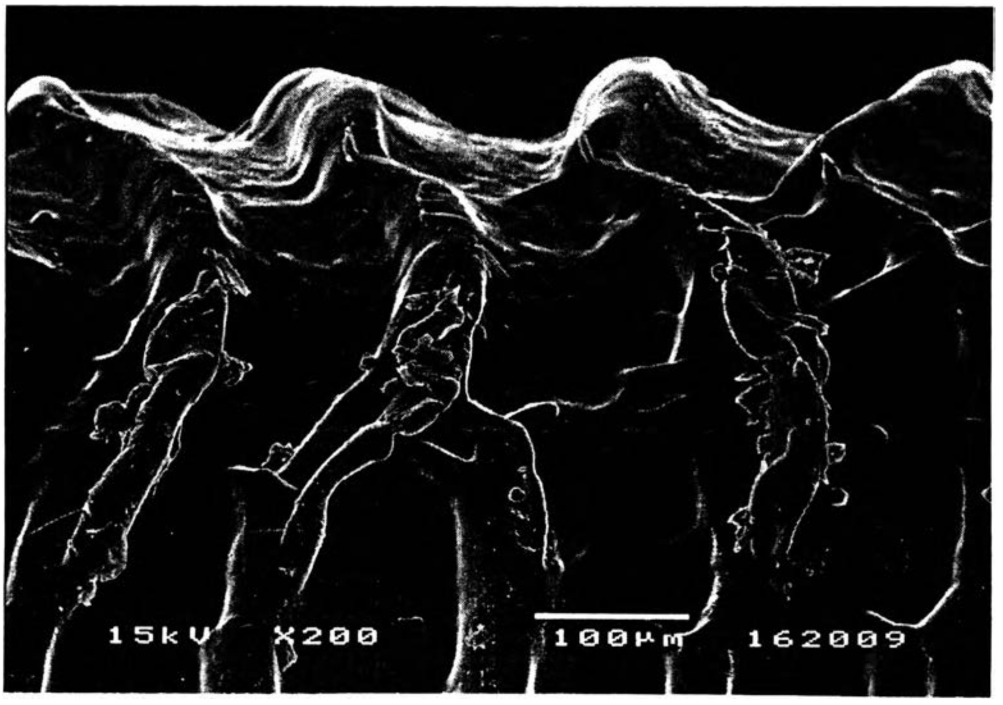

Figure B3 Sharkskin extrudate of LLDPE (L2009F) of regime II at 185°C (200x magnification).

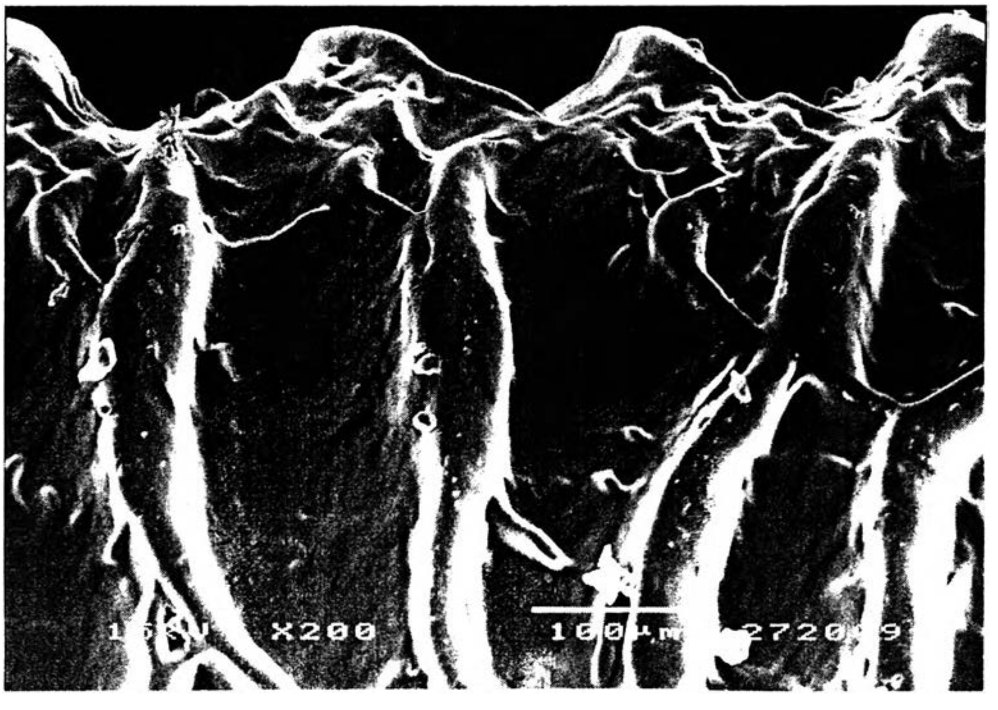

Figure B4 Sharkskin extrudate of LLDPE (L2009F) of regime III at 185°C (200x magnification).

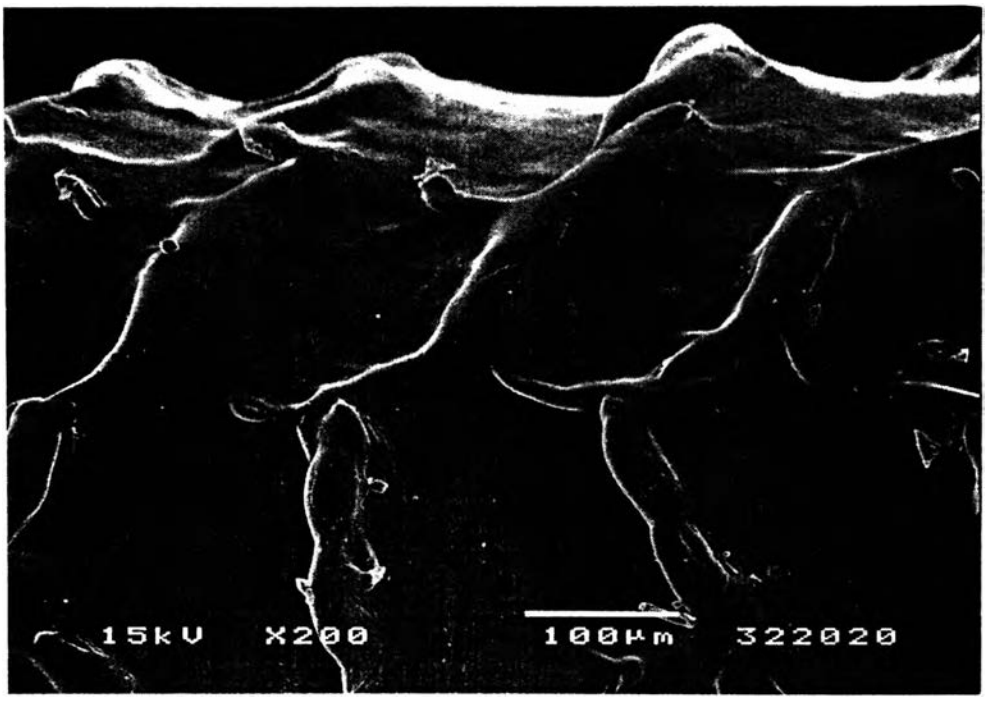

Figure B5 Sharkskin extrudate of LLDPE (L2020F) of regime II at 185°C (200x magnification).

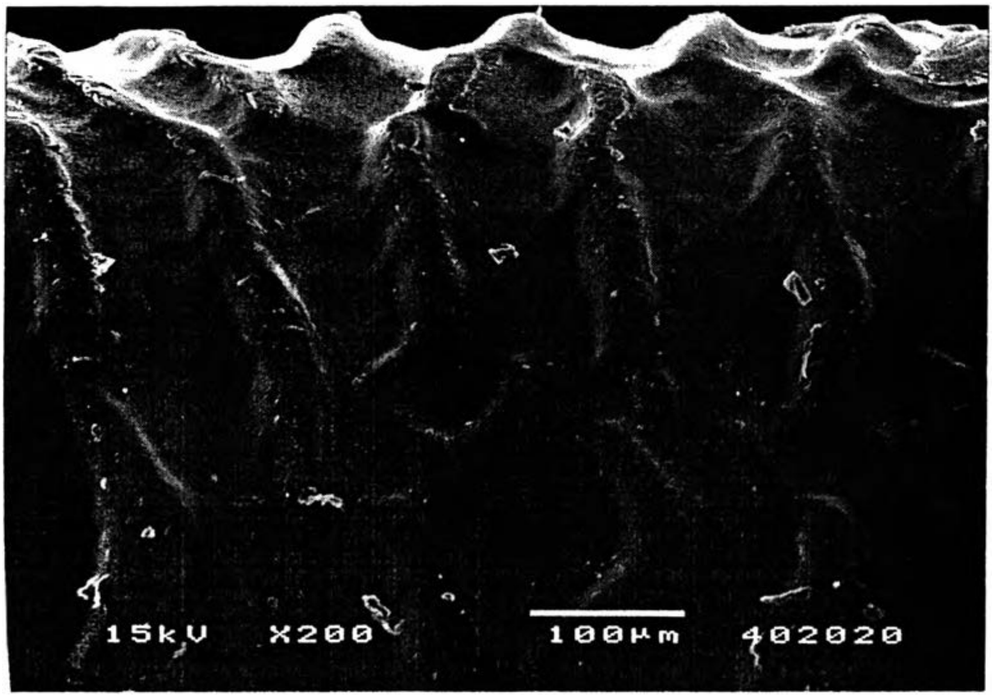

Figure B6 Sharkskin extrudate of LLDPE (L2020F) of regime III at 185°C (200x magnification).

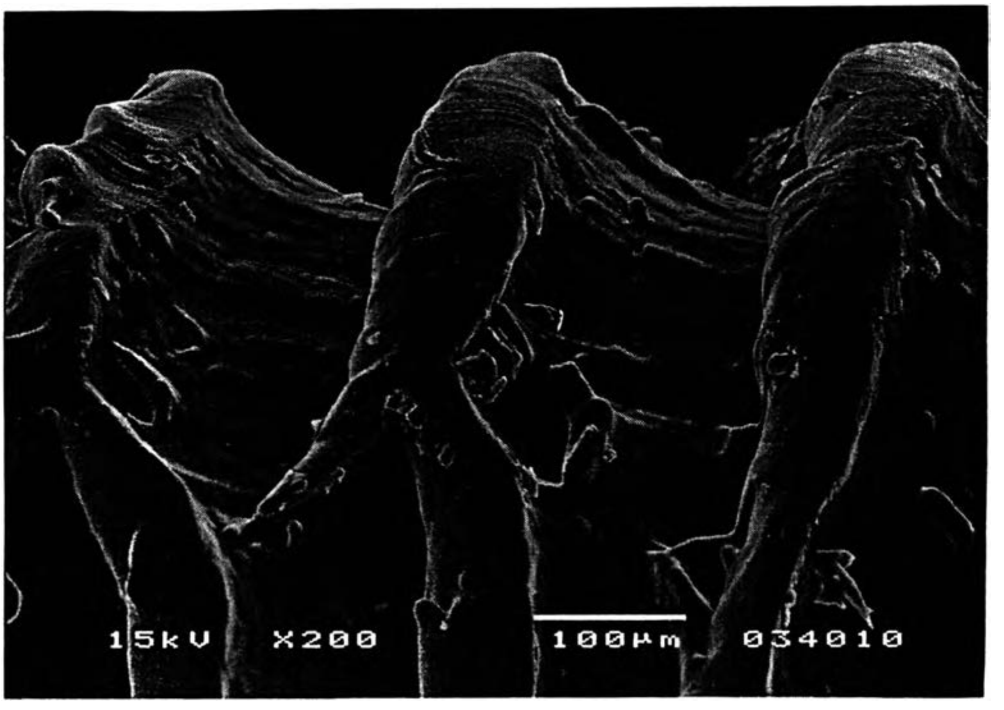

Figure B7 Sharkskin extrudate of HDPE (H5690S) of regime II at 180°C (200x magnification).

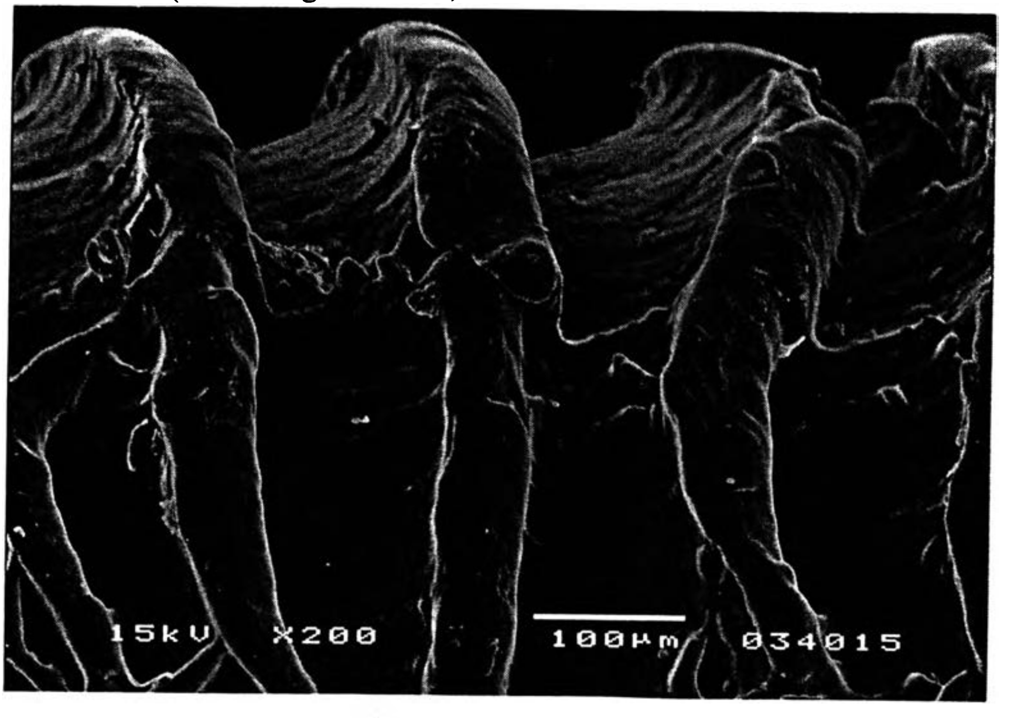

Figure B8 Sharkskin extrudate of HDPE (H5690S) of regime III at 180°C (200x magnification).

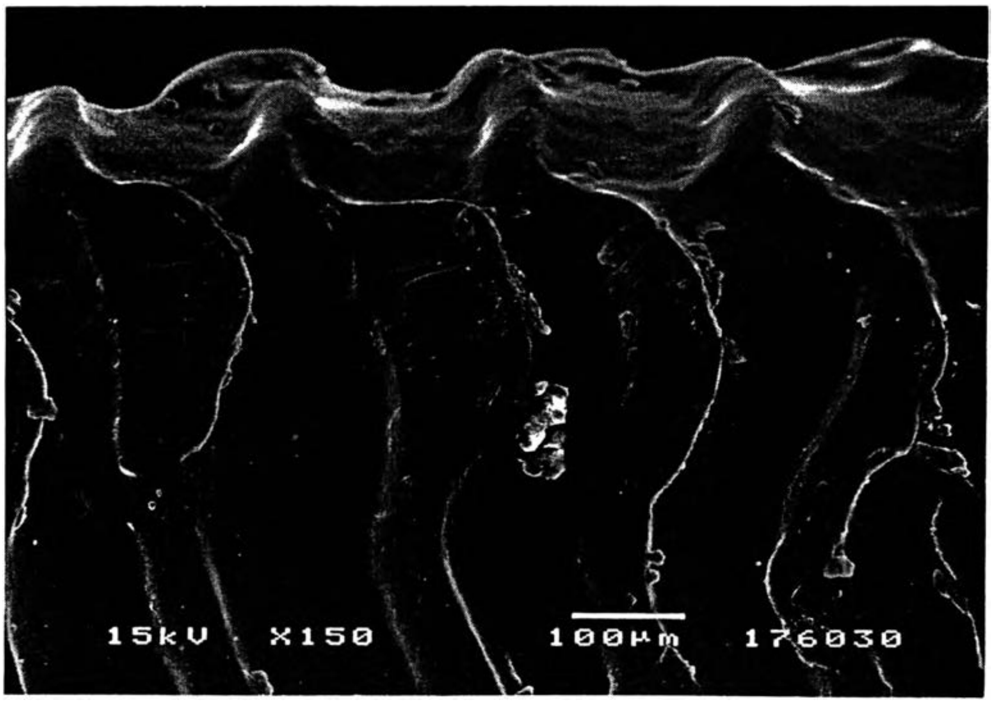

Figure B9 Sharkskin extrudate of HDPE (R1760) of regime II at 180°C (200x magnification).

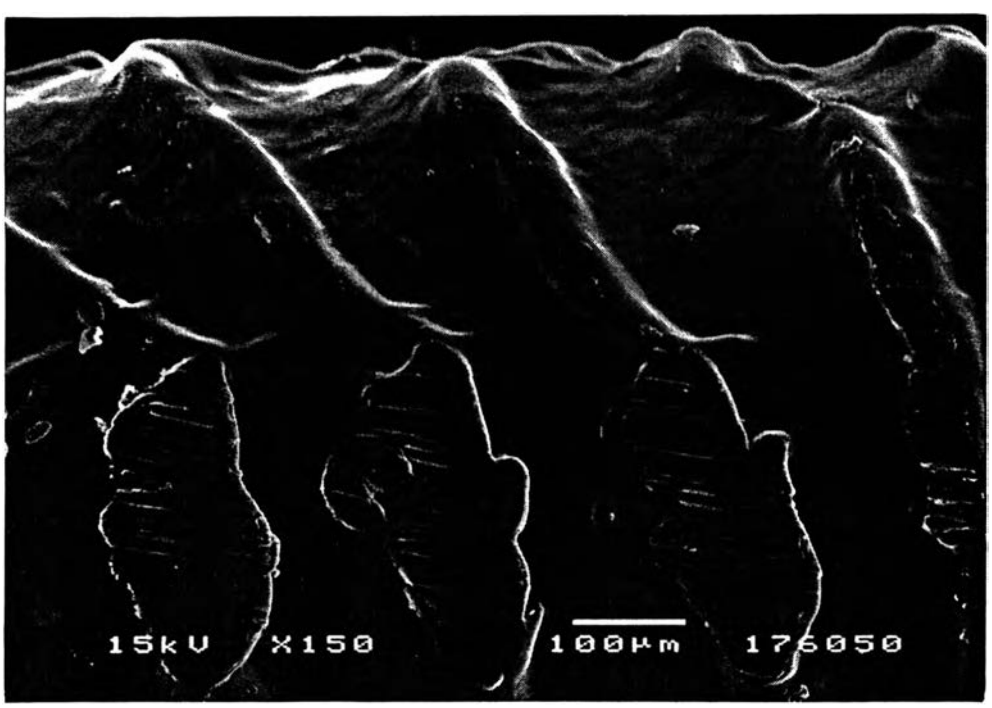

Figure B10 Sharkskin extrudate of HDPE (R1760) of regime III at 180°C (200x magnification).

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