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APPENDICES

Appendix A

Determination of the Dimensions of Couette Devices

R_{OC}-R_{OB} (mm)	R_{IC}/R_{IB}	R_{IC} (mm)	R_{IB} (mm)	R_{OB} (mm)	R_{OC} (mm)	Re (max)	[a]$Re_{(c)}(d/R_{IC})^{1/2}$	$Re_{(c)}$	$Re/Re_{(C)}$
3.0	0.3	5.7	19.0	21.0	24.0	9476.3	118.9	77.8	121.8
3.0	0.4	7.6	19.0	21.0	24.0	10830.0	83.6	68.3	158.6
3.0	0.5	9.5	19.0	21.0	24.0	11281.3	68.2	68.2	165.4
3.0	0.6	11.4	19.0	21.0	24.0	10830.0	58.6	71.7	151.0
3.0	0.7	13.3	19.0	21.0	24.0	9476.3	52.0	79.5	119.2
4.0	0.3	5.4	18.0	20.0	24.0	8505.0	118.9	77.8	109.3
4.0	0.4	7.2	18.0	20.0	24.0	9720.0	83.6	68.3	142.3
4.0	0.5	9.0	18.0	20.0	24.0	10125.0	68.2	68.2	148.5
4.0	0.6	10.8	18.0	20.0	24.0	9720.0	58.6	71.7	135.5
4.0	0.7	12.6	18.0	20.0	24.0	8505.0	52.0	79.5	107.0
5.0	0.3	5.1	17.0	19.0	24.0	7586.3	118.9	77.8	97.5
5.0	0.4	6.8	17.0	19.0	24.0	8670.0	83.6	68.3	127.0
5.0	0.5	8.5	17.0	19.0	24.0	9031.3	68.2	68.2	132.4
5.0	0.6	10.2	17.0	19.0	24.0	8670.0	58.6	71.7	120.9
5.0	0.7	11.9	17.0	19.0	24.0	7586.3	52.0	79.5	95.4

Remark: $d = R_{IB}-R_{IC}$, $Re = \theta' R_{IC}(R_{IB}-R_{IC})/\nu$, $\theta'=100$ rad/sec (maximum rotor speed) and $\nu = 8*10^{-3}$ cm^2/s for water at 30°C. From this table, we chose the dimensions of couette devices at $R_{OC}-R_{OB} = 4.0$ and $R_{IC}/R_{IB} = 0.4$.

$Re_{(c)}$ is a transition from laminar flow to instabilities.

[a] obtained from Prima and Swinney (1985)

Appendix B

Pi-Group Analysis

We can expect that an vicoelastic length scale depends on ε, energy dissipation rate, ν, kinematic viscosity, γ, free energy per unit mass. Let l, v and τ be the smallest length, velocity and time scales, respectively. The six relevant parameters are: l [L], v [L/t], τ [t], ε [L^2/t^3], ν [L^2/t] and γ [L^2/t^2].

We expect that there are 4 Π groups (# of parameter - # of dimension) and choose ε and ν as the recurring parameters. From the Kolmogorov microscale, l, v and τ (Lumley, 1973), we obtain the relation of ε and νamong these microscales: $l = \varepsilon^{-1/4}\nu^{3/4}, v = \varepsilon^{1/4}\nu^{1/4}, \tau = \varepsilon^{-1/2}\nu^{1/2}$.

So $\Pi_1 = l\,\varepsilon^{1/4}\,\nu^{-3/4}$ (B.1)

$\Pi_2 = v\,\varepsilon^{-1/4}\nu^{-1/4}$ (B.2)

$\Pi_3 = \tau\,\varepsilon^{1/2}\nu^{-1/2}$ (B.3)

$\Pi_4 = \gamma^2/\nu\varepsilon$ (B.4)

Π_1, Π_2 and Π_3 are viscous Π group whereas Π_4 is the elastic Π group. We multiply Π_1, Π_2 and Π_3 by $(\Pi_4)^a$ where 'a' is unknown coefficient in order to obtain viscoelastic scale. Clearly 'a=0', we recover the viscous Π group.

$\Pi_1\Pi_4^a = l\varepsilon^{1/4}\nu^{-3/4}\gamma^{2a}\nu^{-a}\varepsilon^{-a}$ (B.5)

$= l\,\varepsilon^{1/4-a}\nu^{-3/4-a}\gamma^{2a}$ (B.6)

$l_{ve} = \varepsilon^{a-1/4}\nu^{a+3/4}\gamma^{-2a}$ (B.7)

$\Pi_2\Pi_4^a = \nu\varepsilon^{-1/4}\nu^{-1/4}\gamma^{2a}\nu^{-a}\varepsilon^{-a}$ (B.8)

$= \nu\varepsilon^{-1/4-a}\nu^{-1/4-a}\gamma^{2a}$ (B.9)

$\nu_{ve} = \varepsilon^{a+1/4}\nu^{a+1/4}\gamma^{-2a}$ (B.10)

$\Pi_3\Pi_4^a = \tau\varepsilon^{1/2}\nu^{-1/2}\nu^{-a}\varepsilon^{-a}\gamma^{2a}$ (B.11)

$= \tau\varepsilon^{1/2-a}\nu^{-1/2-a}\gamma^{2a}$ (B.12)

$\tau_{ve} = \varepsilon^{a-1/2}\nu^{a+1/2}\gamma^{-2a}$ (B.13)

Appendix C

Dynamic Light Scattering Data

(1) PAM-PS-19901 in water at 30°C

Angle (degree)	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p =0.2 g/l					c_p = 0.2 g/l				
80	0.342	0.327	0.346	0.338	0.010	8.90	8.90	8.90	8.90	0
90	0.324	0.326	0.308	0.319	0.010	9.30	9.10	9.30	9.23	0.12
100	0.300	0.375	0.348	0.341	0.038	9.40	9.30	9.40	9.37	0.06
110	0.381	0.369	0.328	0.359	0.028	9.50	9.60	9.50	9.53	0.06
	c_p =0.4 g/l					c_p = 0.4 g/l				
80	0.335	0.337	0.331	0.334	0.003	9.30	9.40	9.30	9.33	0.06
90	0.360	0.329	0.344	0.344	0.016	9.50	9.70	9.60	9.60	0.10
100	0.384	0.324	0.351	0.353	0.030	9.70	9.80	9.90	9.80	0.10
110	0.350	0.323	0.360	0.344	0.019	10.00	10.00	10.10	10.03	0.06
	c_p=0.6 g/l					c_p= 0.6 g/l				
80	0.329	0.342	0.342	0.338	0.008	9.50	9.60	9.60	9.57	0.06
90	0.345	0.342	0.332	0.340	0.007	9.80	9.80	9.70	9.77	0.06
100	0.345	0.361	0.357	0.354	0.008	10.00	10.00	10.10	10.03	0.06
110	0.388	0.367	0.374	0.376	0.011	10.20	10.20	10.20	10.20	0.06
	c_p=0.8 g/l					c_p= 0.8 g/l				
80	0.357	0.356	0.361	0.358	0.003	9.70	9.70	9.70	9.70	0
90	0.342	0.364	0.352	0.353	0.011	10.00	9.90	9.90	9.93	0.06
100	0.358	0.379	0.377	0.371	0.012	10.20	10.20	10.10	10.17	0.06
110	0.357	0.370	0.359	0.362	0.007	10.30	10.30	10.40	10.33	0.06
	c_p=1.0 g/l					c_p= 1.0 g/l				
80	0.344	0.345	0.360	0.350	0.009	9.80	9.90	9.90	9.87	0.1
90	0.344	0.393	0.355	0.364	0.026	10.10	10.0	10.20	10.10	0.06
100	0.360	0.371	0.370	0.367	0.006	10.20	10.30	10.30	10.27	0.06
110	0.376	0.352	0.375	0.368	0.014	10.50	10.50	10.50	10.50	0

(2) PAM-PS-02806 in water at 30°C

Angle (degree)	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p = 0.2 g/l					c_p=0.2 g/l				
70	0.342	0.327	0.346	0.338	0.010	5.50	5.60	5.50	5.53	0.06
80	0.324	0.326	0.308	0.319	0.010	6.00	6.10	5.90	6.00	0.10
90	0.300	0.375	0.348	0.341	0.038	6.40	6.50	6.4	6.43	0.06
100	0.381	0.369	0.328	0.359	0.028	6.60	6.70	6.6	6.63	0.06
	c_p 0.4 g/l					c_p=0.4 g/l				
70	0.335	0.337	0.331	0.334	0.003	5.70	5.80	5.70	5.73	0.06
80	0.360	0.329	0.344	0.344	0.016	6.20	6.10	6.10	6.13	0.06
90	0.384	0.324	0.351	0.353	0.030	6.60	6.50	6.60	6.57	0.06
100	0.350	0.323	0.360	0.344	0.019	6.90	6.90	6.80	6.87	0.06
	c_p = 0.6 g/l					c_p=0.6 g/l				
70	0.329	0.342	0.342	0.338	0.008	5.9	5.9	5.90	5.90	0
80	0.345	0.342	0.332	0.340	0.007	6.3	6.3	6.30	6.30	0
90	0.345	0.361	0.357	0.354	0.008	6.7	6.7	6.80	6.73	0.06
100	0.388	0.367	0.374	0.376	0.011	7.1	7.0	7.00	7.03	0.06
	c_p = 0.8 g/l					c_p=0.8 g/l				
70	0.357	0.356	0.361	0.358	0.003	6.0	5.9	6.0	5.97	0.06
80	0.342	0.364	0.352	0.353	0.011	6.4	6.3	6.4	6.37	0.06
90	0.358	0.379	0.377	0.371	0.012	6.8	6.8	6.7	6.77	0.06
100	0.357	0.370	0.359	0.362	0.007	7.0	7.1	7.1	7.07	0.06
	c_p = 1.0 g/l					c_p=1.0 g/l				
70	0.344	0.345	0.360	0.350	0.009	6.1	6.1	6.0	6.07	0.06
80	0.344	0.393	0.355	0.364	0.026	6.5	6.5	6.6	6.53	0.06
90	0.360	0.371	0.370	0.367	0.006	6.8	6.9	6.8	6.83	0.06
100	0.376	0.352	0.375	0.368	0.014	7.2	7.2	7.1	7.17	0.06

(3) PAM-PS-18522 in water at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
80	0.878	0.793	0.852	0.841	0.044	1.40	1.40	1.80	1.53	0.23
90	0.791	0.774	0.760	0.775	0.016	1.50	1.60	1.50	1.53	0.06
100	0.901	0.906	0.932	0.913	0.017	1.70	1.60	1.40	1.57	0.15
110	0.817	0.760	0.801	0.793	0.029	1.80	1.70	1.60	1.70	0.10

(4) 70 % HPAM in water at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
60	0.824	0.833	0.802	0.820	0.016	2.30	2.4	2.3	2.33	0.06
70	0.866	0.791	0.607	0.755	0.133	2.80	2.6	2.5	2.63	0.15
80	0.612	0.620	0.627	0.620	0.008	3.00	3.1	3.0	3.03	0.06
90	0.613	0.636	0.617	0.622	0.012	3.70	3.5	3.6	3.60	0.10

(5) 70 % HPAM in 0.005 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.670	0.648	0.618	0.645	0.026	3.60	3.70	3.40	3.57	0.15
80	0.646	0.655	0.655	0.652	0.005	3.80	4.30	4.00	4.03	0.25
90	0.593	0.593	0.582	0.589	0.006	4.30	4.20	4.30	4.27	0.06
100	0.617	0.668	0.600	0.628	0.035	4.40	4.40	4.30	4.37	0.06

(6) 70 % HPAM in 0.01 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.619	0.639	0.608	0.622	0.016	3.70	4.00	3.50	3.73	0.25
80	0.680	0.678	0.661	0.673	0.010	4.40	4.40	4.30	4.37	0.106
90	0.681	0.687	0.748	0.705	0.037	4.60	4.70	4.30	4.53	0.21
100	0.706	0.719	0.714	0.713	0.007	4.70	4.70	4.70	4.70	0

(7) 70 % HPAM in 0.02 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.630	0.627	0.614	0.624	0.009	4.80	4.80	4.90	4.83	0.06
80	0.573	0.585	0.600	0.586	0.014	5.30	5.50	5.50	5.43	0.12
90	0.528	0.563	0.532	0.541	0.019	5.80	5.90	6.00	5.96	0.10
100	0.587	0.611	0.560	0.586	0.026	6.10	5.90	6.30	6.10	0.20

(8) 70% HPAM in 0.05 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.596	0.564	0.653	0.604	0.045	5.00	4.60	5.20	4.93	0.31
80	0.599	0.562	0.572	0.578	0.019	5.30	5.40	5.50	5.40	0.10
90	0.594	0.581	0.584	0.586	0.007	5.60	5.60	5.50	5.57	0.06
100	0.559	0.553	0.541	0.551	0.009	6.10	6.20	6.20	6.17	0.06

(9) 70 % HPAM in 0.1 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.540	0.546	0.543	0.543	0.003	5.50	5.40	5.40	5.43	0.06
80	0.512	0.516	0.497	0.508	0.010	5.90	6.00	6.00	5.97	0.06
90	0.522	0.521	0.506	0.516	0.009	6.40	6.50	6.50	6.47	0.06
100	0.498	0.525	0.516	0.513	0.014	6.80	6.70	6.70	6.73	0.06

(10) 70 % HPAM in 0.2 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.537	0.522	0.556	0.538	0.017	6.00	5.80	5.80	5.87	0.12
80	0.511	0.522	0.512	0.515	0.006	6.50	6.40	6.40	6.43	0.06
90	0.505	0.509	0.501	0.505	0.004	6.80	6.70	6.80	6.77	0.06
100	0.538	0.514	0.537	0.530	0.014	7.10	7.10	7.10	7.10	0

(11) 70 % HPAM in 0.5 M NaCl at 30°C

Angle	Polydispersity			Mean	SD	$D_{app}x10^8$ (cm^2/s)			Mean	SD
	c_p=0.1 g/l					c_p=0.1 g/l				
70	0.503	0.551	0.562	0.539	0.031	5.90	6.00	5.90	5.93	0.06
80	0.537	0.473	0.531	0.514	0.035	6.60	6.60	6.70	6.63	0.06
90	0.469	0.508	0.505	0.494	0.022	7.10	6.90	7.00	7.00	0.10
100	0.557	0.464	0.528	0.516	0.048	7.20	7.30	7.10	7.20	0.10

Appendix D

Viscosity Data

(1) PAM-PS-02806 in water at 30°C

c_p (g/l)	ν (mm^2/s)		η_{sp}/c_p (l/g)		Mean	SD
0	0.814	0.814	-	-	-	-
0.2	0.932	0.932	0.725	0.726	0.725	0.001
0.4	1.078	1.071	0.813	0.791	0.802	0.015
0.6	1.216	1.216	0.825	0.825	0.825	0.000
0.8	1.368	1.367	0.852	0.851	0.852	0.001
1.0	1.517	1.514	0.865	0.861	0.863	0.003

(2) PAM-PS-19901 in water at 30°C

c_p (g/l)	ν (mm^2/s)		η_{sp}/c_p (l/g)		Mean	SD
0	0.814	0.814	-	-	-	-
0.2	0.850	0.850	0.224	0.224	0.224	0
0.4	0.891	0.888	0.237	0.229	0.233	0.005
0.6	0.932	0.931	0.243	0.240	0.242	0.002
0.8	0.973	0.973	0.246	0.244	0.245	0.001
1.0	1.015	1.017	0.248	0.251	0.249	0.002
1.5	1.132	1.131	0.2606	0.2605	0.261	0

(3) PAM-PS-18522 in water at 30°C

c_p (g/l)	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.000	0.814	0.814	0.814	-	-	-	-	-
0.020	0.961	0.963	0.961	9.063	9.158	9.063	9.094	0.055
0.030	1.048	1.049	1.049	9.592	9.627	9.647	9.622	0.028
0.040	1.122	1.115	1.104	9.492	9.261	9.415	9.389	0.118
0.050	1.235	1.235	1.237	10.373	10.369	10.410	10.384	0.023
0.060	1.321	1.317	1.325	10.396	10.305	10.476	10.392	0.086
0.070	1.598	1.596	1.604	12.055	12.029	12.140	12.075	0.058

(4) PAM-PS-22581 in 0.1 M NaCl at 30°C

C_p (g/l)	ν (mm^2/s)		η_{sp}/c_p (l/g)		Mean	SD
0	0.814	0.814	-	-	-	-
2.0	0.863	0.864	0.0323	0.0326	0.0324	0.0002
4.0	0.918	0.916	0.0330	0.0325	0.0328	0.0004
6.0	0.968	0.972	0.0323	0.0331	0.0327	0.0006
8.0	1.042	1.042	0.0357	0.0357	0.0357	0
10.0	1.104	1.106	0.0362	0.0364	0.0363	0.0001
12.0	1.166	1.166	0.0365	0.0365	0.0365	0

(5) 70 % HPAM in water at 30°C

c_p	ν (mm^2/s)		η_{sp}/c_p (l/g)		Mean	SD
0	0.814	0.814	-	-	-	-
0.06	1.422	1.397	12.464	11.950	12.207	0.363
0.10	1.579	1.559	9.405	9.160	9.282	0.173
0.16	1.812	1.784	7.672	7.452	7.562	0.155
0.24	2.206	2.196	7.131	7.082	7.107	0.034
0.30	2.524	2.509	6.073	6.016	6.045	0.040
0.40	2.688	2.661	5.760	5.677	5.718	0.059
0.50	3.110	3.110	5.645	5.645	5.645	0
0.60	3.501	3.458	5.506	5.418	5.462	0.062
0.80	4.051	4.036	4.974	4.952	4.963	0.015
1.00	4.543	4.534	4.584	4.574	4.579	0.008
1.20	4.890	4.883	4.176	4.168	4.172	0.005

(6) 70 % HPAM in 0.005 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.818	0.818	0.818	-	-		-	-
0.10	0.954	0.954	0.953	1.658	1.650	1.663	1.657	0.006
0.15	1.032	1.031	1.034	1.740	1.732	1.761	1.745	0.015
0.20	1.114	1.112	1.112	1.811	1.799	1.799	1.803	0.007
0.30	1.305	1.306	1.305	1.986	1.987	1.984	1.985	0.002
0.40	1.496	1.491	1.325	2.151	2.129	2.131	2.137	0.012
0.50	1.679	1.680	1.678	2.174	2.177	2.171	2.174	0.003

(7) 70 % HPAM in 0.01 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.818	0.818	0.814	-	-	-	-	-
0.1	0.894	0.889	0.890	0.932	0.871	0.876	0.893	0.034
0.2	1.140	1.142	1.140	0.979	0.985	0.980	0.982	0.003
0.3	1.368	1.366	1.370	1.087	1.086	1.084	1.086	0.002
0.4	1.590	1.594	1.583	1.068	1.082	1.058	1.070	0.012
0.5	2.039	2.037	2.036	1.124	1.121	1.121	1.122	0.002
0.6	2.554	2.544	2.258	1.179	1.176	1.174	1.176	0.003

(8) 70 % HPAM in 0.02 M NaCl at 30°C

c_p	ν (mm^2/s)		η_{sp}/c_p (l/g)		Mean	SD
0	0.886	0.886	-	-	-	-
0.1	0.945	0.945	0.667	0.667	0.667	0
0.2	1.012	1.012	0.709	0.709	0.709	0
0.3	1.088	1.088	0.759	0.760	0.760	0
0.4	1.157	1.157	0.764	0.764	0.764	0
0.5	1.240	1.243	0.799	0.806	0.802	0.004
0.6	1.317	1.315	0.807	0.810	0.809	0.002

(9) 70 % HPAM in 0.05 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.811	0.811	0.811	-	-		-	-
0.1	0.851	0.851	0.851	0.456	0.456	0.457	0.456	0.001
0.2	0.885	0.886	0.887	0.460	0.463	0.473	0.465	0.007
0.3	0.929	0.933	0.929	0.487	0.489	0.489	0.488	0.001
0.4	0.970	0.969	0.970	0.493	0.490	0.492	0.491	0.002
0.5	1.018	1.017	1.017	0.511	0.509	0.510	0.510	0.001
0.6	1.049	1.050	1.051	0.494	0.489	0.489	0.490	0.003

(10) 70 % HPAM in 0.1 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.815	0.815	0.815	-	-		-	-
0.1	0.843	0.843	0.843	0.342	0.341	0.341	0.342	0.001
0.2	0.872	0.871	0.871	0.348	0.346	0.347	0.347	0.001
0.3	0.905	0.904	0.904	0.369	0.367	0.366	0.367	0.002
0.4	0.934	0.932	0.933	0.365	0.361	0.360	0.362	0.003
0.5	0.967	0.967	0.967	0.375	0.374	0.373	0.374	0.001
0.6	0.996	0.996	0.996	0.371	0.371	0.371	0.371	0

(11) 70 % HPAM in 0.2 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.819	0.819	0.819	-	-		-	-
0.1	0.842	0.841	0.841	0.256	0.244	0.244	0.248	0.007
0.2	0.861	0.864	0.862	0.259	0.272	0.260	0.264	0.007
0.3	0.885	0.885	0.885	0.270	0.267	0.269	0.269	0.001
0.4	0.907	0.906	0.905	0.269	0.277	0.264	0.270	0.007
0.5	0.936	0.936	0.936	0.286	0.285	0.285	0.285	0
0.6	0.952	0.952	0.952	0.271	0.270	0.271	0.271	0

(12) 70 % HPAM in 0.5 M NaCl at 30°C

c_p	ν (mm^2/s)			η_{sp}/c_p (l/g)			Mean	SD
0.00	0.825	0.825	0.825	-	-		-	-
0.15	0.847	0.847	0.847	0.182	0.182	0.182	0.182	0
0.2	0.856	0.856	0.856	0.192	0.192	0.192	0.192	0
0.4	0.889	0.889	0.889	0.194	0.196	0.194	0.195	0.001
0.5	0.931	0.930	0.907	0.197	0.194	0.141	0.177	0.032
0.6	0.958	0.958	0.958	0.198	0.198	0.198	0.198	0
0.7	1.008	1.008	1.008	0.199	0.200	0.198	0.199	0.001

Appendix E

Static Light Scattering Data

(1) PAM-PS-02806 in water at 30°C

Angle/c_p (g/l)	0.2	0.4	0.6	1.0	1.2
75	2.18E-03	2.42E-03	2.69E-03	3.14E-03	3.48E-03
80	2.28E-03	2.52E-03	2.88E-03	3.34E-03	3.63E-03
85	2.47E-03	2.82E-03	2.98E-03	3.55E-03	3.72E-03
90	2.66E-03	2.88E-03	3.12E-03	3.65E-03	3.85E-03
95	2.66E-03	2.95E-03	3.19E-03	3.69E-03	3.89E-03
100	2.93E-03	3.16E-03	3.47E-03	3.92E-03	4.18E-03
105	3.06E-03	3.31E-03	3.58E-03	4.14E-03	4.31E-03
110	3.18E-03	3.43E-03	3.70E-03	4.26E-03	4.43E-03
115	3.38E-03	3.59E-03	3.90E-03	4.38E-03	4.60E-03
120	3.42E-03	3.66E-03	3.97E-03	4.60E-03	4.78E-03

(2) PAM-PS-19901 in water at 30°C

Angle/c_p (g/l)	0.4	0.6	0.8	1.0	1.5
75	3.52E-03	3.71E-03	3.82E-03	4.21E-03	4.95E-03
80	3.67E-03	3.86E-03	4.02E-03	4.27E-03	4.98E-03
85	3.64E-03	3.86E-03	4.00E-03	4.26E-03	5.00E-03
90	3.80E-03	3.96E-03	4.17E-03	4.39E-03	5.03E-03
95	3.84E-03	4.05E-03	4.20E-03	4.47E-03	5.19E-03
100	3.93E-03	4.15E-03	4.36E-03	4.60E-03	5.41E-03
105	4.16E-03	4.24E-03	4.53E-03	4.78E-03	5.52E-03
110	4.19E-03	4.41E-03	4.67E-03	4.88E-03	5.65E-03
115	4.36E-03	4.52E-03	4.71E-03	4.97E-03	5.74E-03
120	4.53E-03	4.67E-03	4.93E-03	5.12E-03	5.91E-03

(3) 70 % HPAM-SPP-377 in 0.02 M NaCl at 30°C

Angle/c_p (g/l)	0.2	0.4	0.6	0.8
75	1.32E-02	1.52E-02	1.82E-02	1.80E-02
80	1.45E-02	1.56E-02	1.84E-02	1.86E-02
85	1.55E-02	1.67E-02	1.97E-02	1.88E-02
90	1.56E-02	1.67E-02	1.98E-02	1.98E-02
95	1.66E-02	1.74E-02	2.08E-02	2.10E-02
100	1.71E-02	1.83E-02	2.11E-02	2.18E-02
105	1.75E-02	1.87E-02	2.18E-02	2.22E-02
110	1.78E-02	1.91E-02	2.28E-02	2.28E-02
115	1.76E-02	1.89E-02	2.26E-02	2.30E-02
120	1.86E-02	2.01E-02	2.29E-02	2.36E-02

Appendix F

Refractive Index Increment Data

(1) PAM-PS-19901 in water at 30°C

c_p	$\Delta nx10^6$		Mean	SD
0.2	35.0	37.0	36.0	1.4
0.4	71.0	62.0	66.5	6.4
0.6	109.0	110.0	109.5	0.7
0.8	143.0	145.0	144.0	1.4
1.0	176.0	177.0	176.5	0.7

(2) PAM-PS-02806 in water at 30°C

c_p	$\Delta nx10^6$		Mean	SD
0.2	44.5	44.0	44.3	0.4
0.4	75.0	76.0	75.5	0.7
0.6	112.0	113.0	112.5	0.7
0.8	147.0	148.0	147.5	0.7
1	188.0	187.0	187.5	0.7

(3) 70 % HPAM in 0.02 M NaCl at 30°C

c_p	$\Delta nx10^6$			Mean	SD
0.2	22.0	14.0	16.0	17.3	4.2
0.4	48.0	55.0	41.0	48.0	7.0
0.6	89.0	81.0	75.0	81.7	7.0
0.8	115.0	117.0	116.0	116.0	1.0
1.0	145.0	146.0	147.0	146.0	1.0

x G

uction Data

$$\frac{R_{IB} - R_{IC})}{\nu} \qquad , \qquad f = \frac{2\tau_{inner}}{\rho(\dot{\theta}R_{IC})^2}$$

t 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0133	0.0134	0.001	0.0022	0.0124	0.0112	0.1489	0.1353	0.939	0.8535	0.8962	0.0605
05.398	0.0177	0.0164	0.0016	0.003	0.0161	0.0134	0.1943	0.162	0.6348	0.5292	0.582	0.0747
146.45	0.024	0.0228	0.0024	0.0034	0.0215	0.0194	0.2595	0.2331	0.4391	0.3944	0.4168	0.0316
03.492	0.0318	0.0289	0.0039	0.0054	0.0279	0.0236	0.3357	0.2837	0.2942	0.2486	0.2714	0.0322
282.75	0.0417	0.0406	0.0056	0.006	0.0361	0.0346	0.4349	0.4164	0.1974	0.1890	0.1932	0.0059
392.88	0.0569	0.0559	0.0068	0.0078	0.0501	0.0481	0.6035	0.579	0.1419	0.1361	0.139	0.0041
45.904	0.0792	0.0775	0.0118	0.0132	0.0675	0.0643	0.8123	0.7741	0.0989	0.0943	0.0966	0.0033
58.531	0.1117	0.1107	0.0174	0.0186	0.0943	0.0922	1.1358	1.1099	0.0716	0.0700	0.0708	0.0012
053.98	0.1609	0.197	0.0257	0.0279	0.1352	0.1690	1.6284	2.0375	0.0532	0.0666	0.0599	0.0095
1464.5	0.2337	0.2358	0.037	0.0392	0.1967	0.1966	2.3691	2.3679	0.0401	0.0401	0.0401	0
034.92	0.3444	0.3465	0.0575	0.0581	0.2869	0.2884	3.4556	3.4728	0.0303	0.0304	0.0304	0.0001
2827.5	0.5166	0.5146	0.0874	0.0861	0.4292	0.4285	5.1691	5.1605	0.0235	0.0234	0.0234	0
3928.8	0.775	0.7719	0.1342	0.1322	0.6408	0.6397	7.7537	7.7407	0.0189	0.0189	0.0189	0
459.04	1.1625	1.1578	0.2091	0.1982	0.9533	0.9596	11.6306	11.6111	0.0136	0.0136	0.0136	0

mg/l PAM-PS02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0173	0.0153	0.0034	0.0057	0.0139	0.0096	0.1678	0.1157	1.0583	0.7296	0.894	0.2324
105.398	0.0227	0.0194	0.0066	0.0057	0.0161	0.0137	0.194	0.1652	0.6336	0.5397	0.5866	0.0665
146.45	0.0298	0.0275	0.0073	0.0068	0.0225	0.0207	0.2715	0.2488	0.4594	0.4209	0.4402	0.0272
203.492	0.0394	0.0365	0.0088	0.0081	0.0306	0.0284	0.368	0.3421	0.3225	0.2998	0.3112	0.0161
282.75	0.0479	0.0466	0.0104	0.0122	0.0375	0.0344	0.4519	0.4148	0.2051	0.1883	0.1967	0.0119
392.88	0.0651	0.0597	0.0193	0.0154	0.0458	0.0443	0.5519	0.5333	0.1297	0.1254	0.1276	0.0031
545.904	0.0862	0.079	0.024	0.0226	0.0622	0.0565	0.7494	0.6802	0.0913	0.0828	0.087	0.006
758.531	0.1353	0.1169	0.034	0.0354	0.1013	0.0815	1.2198	0.9815	0.0769	0.0619	0.0694	0.0106
1053.98	0.1835	0.1671	0.0482	0.0491	0.1353	0.118	1.6296	1.421	0.0532	0.0464	0.0498	0.0048
1464.5	0.2501	0.2368	0.0728	0.0717	0.1773	0.1651	2.1358	1.9889	0.0361	0.0337	0.0349	0.0018
2034.92	0.3485	0.3332	0.1056	0.0997	0.2429	0.2334	2.9259	2.8111	0.0256	0.0246	0.0251	0.0007
2827.5	0.5105	0.4859	0.1568	0.1548	0.3537	0.3311	4.2593	3.9877	0.0193	0.0181	0.0187	0.0009
3928.8	0.7657	0.7288	0.2421	0.2386	0.5237	0.4903	6.3889	5.9815	0.015	0.0141	0.0146	0.0006
5459.04	1.1486	1.0933	0.3631	0.3578	0.7855	0.7354	9.5833	8.9722	0.0117	0.0109	0.0113	0.0006

ng/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.021	0.0084	0.0025	0.0069	0.0181	0.0014	0.2184	0.0174	1.3775	0.1098	0.7437	0.8964
105.398	0.021	0.0121	0.007	0.0084	0.014	0.0036	0.1688	0.044	0.5513	0.1436	0.3475	0.2883
146.45	0.029	0.0191	0.008	0.0094	0.0214	0.0097	0.2572	0.1165	0.4351	0.1972	0.3162	0.1682
203.492	0.041	0.0243	0.0126	0.0129	0.0288	0.0114	0.3469	0.137	0.304	0.1201	0.2121	0.1301
282.75	0.05	0.0353	0.0161	0.0196	0.0343	0.0157	0.4136	0.1889	0.1877	0.0857	0.1367	0.0721
392.88	0.066	0.0508	0.0213	0.0252	0.0442	0.0256	0.5321	0.3086	0.1251	0.0726	0.0988	0.0372
545.904	0.088	0.0729	0.0286	0.0338	0.0591	0.0391	0.7123	0.4704	0.0867	0.0573	0.072	0.0208
758.531	0.118	0.1056	0.0433	0.0452	0.0746	0.0604	0.8988	0.7272	0.0567	0.0459	0.0513	0.0077
1053.98	0.164	0.1548	0.061	0.068	0.103	0.0868	1.2407	1.0457	0.0405	0.0342	0.0373	0.0045
1464.5	0.232	0.2276	0.09	0.0967	0.1417	0.1309	1.7062	1.5765	0.0289	0.0267	0.0278	0.0016
2034.92	0.338	0.3403	0.1374	0.1353	0.2009	0.205	2.4198	2.4691	0.0212	0.0216	0.0214	0.0003
2827.5	0.496	0.5054	0.205	0.204	0.2911	0.3014	3.5062	3.6296	0.0159	0.0165	0.0162	0.0004

g/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0089	0.011	0.0053	0.0034	0.0036	0.0076	0.0437	0.0917	0.2757	0.5786	0.4271	0.2142
05.398	0.0127	0.0139	0.0072	0.0059	0.0055	0.008	0.0668	0.0965	0.2182	0.3154	0.2668	0.0687
46.45	0.0193	0.0195	0.0101	0.0073	0.0092	0.0122	0.1104	0.1467	0.1868	0.2482	0.2175	0.0434
03.492	0.0281	0.0277	0.0145	0.0124	0.0136	0.0153	0.1642	0.184	0.1439	0.1612	0.1526	0.0122
282.75	0.0413	0.0408	0.0208	0.0181	0.0205	0.0227	0.2469	0.2728	0.1121	0.1239	0.118	0.0083
392.88	0.0571	0.057	0.0285	0.0278	0.0286	0.0292	0.3444	0.3519	0.081	0.0827	0.0819	0.0012
45.904	0.0804	0.0815	0.042	0.0417	0.0383	0.0398	0.4617	0.479	0.0562	0.0583	0.0573	0.0015
58.531	0.1169	0.1158	0.063	0.0639	0.0538	0.052	0.6481	0.6259	0.0409	0.0395	0.0402	0.001
053.98	0.1712	0.1702	0.0947	0.0978	0.0765	0.0724	0.921	0.8716	0.0301	0.0285	0.0293	0.0011
464.5	0.2481	0.246	0.1435	0.1466	0.1046	0.0994	1.2593	1.1975	0.0213	0.0203	0.0208	0.0007
034.92	0.3629	0.3629	0.2142	0.2214	0.1486	0.1415	1.7901	1.7037	0.0157	0.0149	0.0153	0.0005
2827.5	0.5382	0.5382	0.3219	0.3332	0.2163	0.205	2.6049	2.4691	0.0118	0.0112	0.0115	0.0004
5928.8	0.8073	0.8073	0.4896	0.5061	0.3177	0.3011	3.9074	3.7037	0.0092	0.0087	0.0090	0.0004
459.04	1.2109	1.2109	0.7265	0.7518	0.4844	0.4591	5.8611	5.5556	0.0071	0.0068	0.0070	0.0002

g/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0079	0.0083	0.0069	0.0069	0.0011	0.0014	0.0127	0.0164	0.0799	0.1033	0.0916	0.0166
05.398	0.0109	0.0114	0.0071	0.0071	0.0038	0.0043	0.0461	0.0518	0.1507	0.1693	0.16	0.0131
46.45	0.0154	0.0153	0.013	0.013	0.0024	0.0023	0.0292	0.0278	0.0495	0.047	0.0483	0.0017
03.492	0.0227	0.0227	0.0179	0.018	0.0047	0.0046	0.0567	0.0558	0.0497	0.0489	0.0493	0.0005
282.75	0.0325	0.0322	0.0248	0.0252	0.0077	0.007	0.0924	0.0839	0.0419	0.0381	0.04	0.0027
392.88	0.0461	0.0468	0.0355	0.0355	0.0106	0.0113	0.1277	0.1365	0.03	0.0321	0.0311	0.0015
45.904	0.0671	0.0671	0.0525	0.0504	0.0146	0.0167	0.1763	0.2017	0.0215	0.0246	0.023	0.0022
58.531	0.0992	0.0987	0.0744	0.0737	0.0248	0.025	0.2988	0.3014	0.0188	0.019	0.0189	0.0001
053.98	0.1464	0.1455	0.1069	0.1077	0.0395	0.0377	0.4756	0.4541	0.0155	0.0148	0.0152	0.0005
464.5	0.2163	0.2135	0.1566	0.1588	0.0597	0.0548	0.7187	0.6594	0.0122	0.0112	0.0117	0.0007
034.92	0.3189	0.3164	0.2365	0.2371	0.0824	0.0793	0.9922	0.9556	0.0087	0.0084	0.0085	0.0002
827.5	0.4751	0.4706	0.3505	0.3619	0.1246	0.1086	1.5009	1.3081	0.0068	0.0059	0.0064	0.0006

ng/l PAM-PS-02806 at 30°C

Re	M(total) gmf.cm		M(outer) gmf.cm		M(inner) gmf.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0139	0.0073	0.0038	0.0069	0.0101	0.0004	0.1211	0.0046	0.7636	0.0291	0.3964	0.5193
105.398	0.0192	0.0105	0.0048	0.0071	0.0144	0.0034	0.1738	0.0405	0.5679	0.1323	0.3501	0.3080
146.450	0.0208	0.0143	0.0079	0.0130	0.0130	0.0013	0.1561	0.0157	0.2642	0.0266	0.1454	0.1680
203.492	0.0252	0.0204	0.0067	0.0179	0.0185	0.0025	0.2231	0.0296	0.1955	0.0259	0.1107	0.1199
282.750	0.0306	0.0292	0.0120	0.0248	0.0186	0.0044	0.2245	0.0531	0.1019	0.0241	0.0630	0.0550
392.880	0.0406	0.0424	0.0171	0.0355	0.0234	0.0069	0.2821	0.0830	0.0663	0.0195	0.0429	0.0331
545.904	0.0541	0.0617	0.0246	0.0525	0.0294	0.0092	0.3547	0.1109	0.0432	0.0135	0.0283	0.0210
758.531	0.0727	0.0908	0.0330	0.0744	0.0396	0.0164	0.4770	0.1972	0.0301	0.0124	0.0213	0.0125
1053.98	0.1038	0.1325	0.0497	0.1069	0.0542	0.0256	0.6525	0.3079	0.0213	0.0101	0.0157	0.0080
1464.50	0.1519	0.1957	0.0720	0.1566	0.0799	0.0391	0.9624	0.4714	0.0163	0.0080	0.0121	0.0059
2034.92	0.2147	0.2883	0.1018	0.2213	0.1129	0.0670	1.3594	0.8073	0.0119	0.0071	0.0095	0.0034
2827.50	0.3177	0.4380	0.1513	0.3211	0.1664	0.1169	2.0045	1.4076	0.0091	0.0064	0.0077	0.0019
3928.80	0.4902	0.6692	0.2238	0.4500	0.2664	0.2191	3.2083	2.6336	0.0075	0.0062	0.0069	0.0009
5459.04	0.7749	1.0281	0.3342	0.6820	0.4408	0.3461	5.3083	4.1678	0.0065	0.0051	0.0058	0.0010

ng/l PAM-PS-02806 at 30°C

Re	M(total) gmf.cm		M(outer) gmf.cm		M(inner) gmf.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0076	0.0079	0.0024	0.0031	0.0052	0.0048	0.0622	0.0581	0.3924	0.2744	0.3334	0.0834
105.398	0.0121	0.0127	0.0036	0.0047	0.0085	0.0081	0.1029	0.0972	0.3361	0.2352	0.2857	0.0714
146.450	0.0141	0.0148	0.0046	0.0060	0.0094	0.0087	0.1133	0.1049	0.1917	0.1344	0.1630	0.0405
203.492	0.0198	0.0207	0.0054	0.0070	0.0143	0.0137	0.1726	0.1649	0.1512	0.1057	0.1285	0.0322
282.750	0.0265	0.0278	0.0084	0.0109	0.0181	0.0169	0.2178	0.2035	0.0989	0.0692	0.0841	0.0210
392.880	0.0327	0.0344	0.0122	0.0159	0.0205	0.0185	0.2474	0.2231	0.0582	0.0495	0.0538	0.0062
545.904	0.0399	0.0419	0.0158	0.0205	0.0242	0.0214	0.2912	0.2582	0.0355	0.0302	0.0328	0.0037
758.531	0.0511	0.0536	0.0234	0.0304	0.0277	0.0232	0.3332	0.2793	0.0210	0.0179	0.0194	0.0022
1053.98	0.0736	0.0773	0.0345	0.0448	0.0392	0.0325	0.4716	0.3913	0.0154	0.0131	0.0142	0.0016
1464.50	0.1067	0.1120	0.0486	0.0631	0.0581	0.0489	0.6998	0.5886	0.0118	0.0100	0.0109	0.0013
2034.92	0.1591	0.1671	0.0683	0.0888	0.0908	0.0783	1.0936	0.9425	0.0096	0.0081	0.0089	0.0010
2827.50	0.2456	0.2578	0.0969	0.1260	0.1487	0.1319	1.7903	1.5881	0.0081	0.0069	0.0075	0.0009

mg/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0095	0.0096	0.0083	0.0088	0.0012	0.0009	0.0146	0.0107	0.0920	0.0676	0.0798	0.0173
105.398	0.0140	0.0141	0.0111	0.0117	0.0028	0.0024	0.0340	0.0290	0.1112	0.0948	0.1030	0.0116
146.450	0.0190	0.0192	0.0148	0.0156	0.0042	0.0036	0.0504	0.0437	0.0852	0.0740	0.0796	0.0079
203.492	0.0276	0.0279	0.0200	0.0210	0.0076	0.0069	0.0917	0.0830	0.0803	0.0727	0.0765	0.0054
282.750	0.0386	0.0389	0.0293	0.0308	0.0092	0.0081	0.1108	0.0978	0.0503	0.0444	0.0473	0.0042
392.880	0.0555	0.0560	0.0420	0.0441	0.0135	0.0119	0.1622	0.1436	0.0381	0.0338	0.0359	0.0031
545.904	0.0794	0.0802	0.0602	0.0632	0.0192	0.0170	0.2315	0.2048	0.0282	0.0249	0.0266	0.0023
758.531	0.1143	0.1155	0.0867	0.0910	0.0277	0.0245	0.3332	0.2948	0.0210	0.0186	0.0198	0.0017
1053.98	0.1664	0.1681	0.1253	0.1316	0.0411	0.0365	0.4954	0.4400	0.0162	0.0144	0.0153	0.0013
1464.50	0.2484	0.2509	0.1810	0.1901	0.0674	0.0608	0.8112	0.7321	0.0137	0.0124	0.0131	0.0009
2034.92	0.3710	0.3747	0.2633	0.2765	0.1077	0.0982	1.2965	1.1826	0.0114	0.0104	0.0109	0.0007
2827.50	0.5443	0.5498	0.3871	0.4064	0.1573	0.1433	1.8939	1.7264	0.0086	0.0078	0.0082	0.0005
3928.80	0.8098	0.8179	0.5738	0.6025	0.2360	0.2154	2.8427	2.5947	0.0067	0.0061	0.0064	0.0004
5459.04	1.2144	1.2266	0.8642	0.9074	0.3502	0.3192	4.2179	3.8438	0.0051	0.0047	0.0049	0.0003

ng/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
75.853	0.0116	0.0114	0.0106	0.0106	0.0010	0.0008	0.0125	0.0097	0.0789	0.0613	0.0701	0.0125
105.398	0.0155	0.0152	0.0152	0.0137	0.0003	0.0015	0.0037	0.0183	0.0121	0.0597	0.0359	0.0336
146.450	0.0224	0.0220	0.0207	0.0209	0.0017	0.0010	0.0204	0.0125	0.0345	0.0212	0.0279	0.0094
203.492	0.0309	0.0303	0.0274	0.0277	0.0035	0.0026	0.0426	0.0319	0.0373	0.0279	0.0326	0.0067
282.750	0.0437	0.0428	0.0381	0.0419	0.0056	0.0009	0.0677	0.0113	0.0307	0.0051	0.0179	0.0181
392.880	0.0620	0.0607	0.0534	0.0588	0.0085	0.0020	0.1029	0.0236	0.0242	0.0055	0.0149	0.0132
545.904	0.0880	0.0862	0.0740	0.0814	0.0140	0.0048	0.1687	0.0584	0.0205	0.0071	0.0138	0.0095
758.531	0.1258	0.1233	0.1046	0.1150	0.0212	0.0082	0.2554	0.0992	0.0161	0.0063	0.0112	0.0070
1053.98	0.1815	0.1779	0.1468	0.1615	0.0347	0.0164	0.4178	0.1972	0.0136	0.0064	0.0100	0.0051
1464.50	0.2671	0.2618	0.2091	0.2300	0.0580	0.0318	0.6986	0.3824	0.0118	0.0065	0.0091	0.0038
2034.92	0.3964	0.3885	0.3007	0.3307	0.0957	0.0577	1.1526	0.6951	0.0101	0.0061	0.0081	0.0028
2827.50	0.5985	0.5865	0.4586	0.5044	0.1399	0.0821	1.6849	0.9885	0.0076	0.0045	0.0061	0.0022

g/l PAM-PS-02806 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		τ_w (dyn/cm^2)		f		Mean	SD
5.853	0.0134	0.0132	0.0121	0.0119	0.0014	0.0012	0.0164	0.0146	0.1032	0.0919	0.0975	0.0079
5.398	0.0168	0.0164	0.0167	0.0150	0.0001	0.0014	0.0011	0.0172	0.0036	0.0561	0.0299	0.0371
6.450	0.0236	0.0232	0.0226	0.0205	0.0011	0.0026	0.0130	0.0317	0.0220	0.0537	0.0378	0.0224
3.492	0.0338	0.0332	0.0307	0.0301	0.0031	0.0031	0.0377	0.0370	0.0331	0.0324	0.0327	0.0005
2.750	0.0478	0.0468	0.0423	0.0418	0.0055	0.0050	0.0663	0.0599	0.0301	0.0272	0.0286	0.0021
2.880	0.0669	0.0656	0.0585	0.0579	0.0084	0.0076	0.1008	0.0917	0.0237	0.0216	0.0226	0.0015
5.904	0.0947	0.0928	0.0823	0.0815	0.0125	0.0114	0.1500	0.1371	0.0183	0.0167	0.0175	0.0011
8.531	0.1349	0.1322	0.1146	0.1203	0.0203	0.0118	0.2441	0.1426	0.0154	0.0090	0.0122	0.0045
53.98	0.1933	0.1895	0.1602	0.1683	0.0331	0.0212	0.3983	0.2553	0.0130	0.0083	0.0107	0.0033
64.50	0.2827	0.2771	0.2279	0.2392	0.0549	0.0378	0.6609	0.4556	0.0112	0.0077	0.0094	0.0025
34.92	0.4145	0.4063	0.3258	0.3421	0.0888	0.0642	1.0690	0.7730	0.0094	0.0068	0.0081	0.0018
27.50	0.6171	0.6047	0.4977	0.5225	0.1194	0.0822	1.4382	0.9899	0.0065	0.0045	0.0055	0.0014
28.80	0.9335	0.9148	0.7255	0.7618	0.2080	0.1531	2.5051	1.8433	0.0059	0.0043	0.0051	0.0011
59.04	1.4093	1.3811	1.0804	1.1344	0.3289	0.2467	3.9613	2.9713	0.0048	0.0036	0.0042	0.0009

mg/l 70 % HPAM in water at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
5.853	0.0175	0.0128	0.0164	0.0108	0.0011	0.0020	0.0135	0.0239	0.0849	0.1505	0.1177	0.0464
05.398	0.0233	0.0177	0.0212	0.0148	0.0021	0.0029	0.0252	0.0352	0.0824	0.1150	0.0987	0.0230
46.450	0.0284	0.0254	0.0282	0.0209	0.0002	0.0045	0.0020	0.0546	0.0035	0.0924	0.0479	0.0629
03.492	0.0412	0.0354	0.0387	0.0293	0.0026	0.0061	0.0308	0.0738	0.0270	0.0647	0.0458	0.0266
82.750	0.0587	0.0529	0.0528	0.0403	0.0059	0.0126	0.0711	0.1513	0.0323	0.0687	0.0505	0.0257
92.880	0.0820	0.0699	0.0750	0.0569	0.0070	0.0129	0.0845	0.1558	0.0199	0.0366	0.0283	0.0119
45.904	0.1169	0.1019	0.1041	0.0814	0.0128	0.0205	0.1537	0.2473	0.0187	0.0301	0.0244	0.0081
58.531	0.1644	0.1490	0.1449	0.1157	0.0195	0.0333	0.2348	0.4012	0.0148	0.0253	0.0201	0.0074
053.98	0.2349	0.2134	0.2039	0.1656	0.0310	0.0478	0.3736	0.5754	0.0122	0.0188	0.0155	0.0047
464.50	0.3364	0.3169	0.2879	0.2376	0.0485	0.0793	0.5842	0.9550	0.0099	0.0162	0.0130	0.0044
034.92	0.4907	0.4499	0.4077	0.3402	0.0830	0.1097	0.9994	1.3216	0.0088	0.0116	0.0102	0.0020
827.50	0.6984	0.6570	0.5800	0.4859	0.1184	0.1711	1.4259	2.0611	0.0065	0.0094	0.0079	0.0020
928.80	1.0159	0.9527	0.8304	0.7208	0.1855	0.2318	2.2342	2.7923	0.0053	0.0066	0.0059	0.0009
459.04	1.4522	1.3906	1.1799	1.0360	0.2723	0.3546	3.2793	4.2702	0.0040	0.0052	0.0046	0.0009

ng/l 70 % HPAM in 0.005 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
5.853	0.0094	0.0094	0.0071	0.0071	0.0023	0.0023	0.0275	0.0275	0.1735	0.1735	0.1735	0
05.398	0.0132	0.0132	0.0087	0.0087	0.0045	0.0045	0.0540	0.0540	0.1764	0.1764	0.1764	0
46.450	0.0172	0.0160	0.0131	0.0153	0.0041	0.0007	0.0489	0.0084	0.0828	0.0143	0.0485	0.0484
03.492	0.0244	0.0226	0.0186	0.0202	0.0059	0.0024	0.0707	0.0291	0.0620	0.0255	0.0438	0.0258
82.750	0.0334	0.0331	0.0265	0.0275	0.0070	0.0055	0.0840	0.0668	0.0381	0.0303	0.0342	0.0055
92.880	0.0479	0.0477	0.0378	0.0390	0.0102	0.0086	0.1223	0.1040	0.0288	0.0245	0.0266	0.0030
45.904	0.0692	0.0696	0.0545	0.0555	0.0147	0.0140	0.1769	0.1687	0.0215	0.0205	0.0210	0.0007
58.531	0.0998	0.1012	0.0788	0.0799	0.0210	0.0213	0.2524	0.2567	0.0159	0.0162	0.0161	0.0002
053.98	0.1483	0.1488	0.1151	0.1152	0.0332	0.0336	0.3999	0.4046	0.0131	0.0132	0.0131	0.0001
464.50	0.2195	0.2174	0.1680	0.1677	0.0515	0.0497	0.6202	0.5988	0.0105	0.0101	0.0103	0.0003
034.92	0.3252	0.3237	0.2461	0.2432	0.0791	0.0805	0.9527	0.9696	0.0083	0.0085	0.0084	0.0001
827.50	0.4831	0.4847	0.3610	0.3569	0.1221	0.1278	1.4703	1.5395	0.0067	0.0070	0.0068	0.0002
928.80	0.7241	0.7300	0.5219	0.5180	0.2022	0.2120	2.4356	2.5538	0.0057	0.0060	0.0059	0.0002
459.04	1.0928	1.1090	0.7525	0.7534	0.3403	0.3555	4.0988	4.2816	0.0050	0.0052	0.0051	0.0002

mg/l 70 % HPAM in 0.01 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0066	0.0079	0.0049	0.0064	0.0017	0.0015	0.0203	0.0185	0.1281	0.1170	0.1225	0.0078
05.398	0.0091	0.0105	0.0078	0.0085	0.0014	0.0020	0.0166	0.0243	0.0543	0.0793	0.0668	0.0177
46.450	0.0133	0.0135	0.0116	0.0122	0.0017	0.0013	0.0206	0.0155	0.0349	0.0262	0.0306	0.0061
03.492	0.0195	0.0209	0.0166	0.0174	0.0029	0.0034	0.0345	0.0413	0.0302	0.0362	0.0332	0.0042
82.750	0.0268	0.0306	0.0241	0.0244	0.0027	0.0062	0.0326	0.0751	0.0148	0.0341	0.0244	0.0136
92.880	0.0427	0.0439	0.0348	0.0347	0.0078	0.0092	0.0941	0.1110	0.0221	0.0261	0.0241	0.0028
45.904	0.0638	0.0643	0.0509	0.0503	0.0128	0.0141	0.1547	0.1694	0.0188	0.0206	0.0197	0.0013
58.531	0.0960	0.0948	0.0744	0.0730	0.0216	0.0217	0.2606	0.2618	0.0164	0.0165	0.0165	0.0001
053.98	0.1443	0.1379	0.1093	0.1062	0.0350	0.0318	0.4211	0.3824	0.0138	0.0125	0.0131	0.0009
464.50	0.2158	0.2089	0.1613	0.1563	0.0545	0.0527	0.6569	0.6344	0.0111	0.0107	0.0109	0.0003
034.92	0.3122	0.3116	0.2387	0.2290	0.0735	0.0826	0.8850	0.9951	0.0078	0.0087	0.0082	0.0007
827.50	0.4671	0.4652	0.3510	0.3376	0.1161	0.1276	1.3983	1.5367	0.0063	0.0070	0.0067	0.0004
928.80	0.7036	0.7022	0.5069	0.4906	0.1967	0.2116	2.3689	2.5489	0.0056	0.0060	0.0058	0.0003
459.04	1.0587	1.0625	0.7323	0.7352	0.3264	0.3273	3.9313	3.9412	0.0048	0.0048	0.0048	0

mg/l 70% HPAM in 0.02 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0089	0.0134	0.0060	0.0052	0.0029	0.0082	0.0353	0.0984	0.2224	0.6209	0.4216	0.2818
05.398	0.0111	0.0078	0.0076	0.0051	0.0035	0.0027	0.0427	0.0330	0.1395	0.1078	0.1237	0.0224
46.450	0.0158	0.0116	0.0115	0.0067	0.0043	0.0049	0.0520	0.0595	0.0880	0.1007	0.0944	0.0090
03.492	0.0213	0.0161	0.0160	0.0087	0.0054	0.0074	0.0647	0.0890	0.0567	0.0780	0.0673	0.0151
82.750	0.0305	0.0240	0.0227	0.0118	0.0079	0.0122	0.0947	0.1470	0.0430	0.0667	0.0549	0.0168
92.880	0.0417	0.0343	0.0339	0.0202	0.0079	0.0141	0.0949	0.1696	0.0223	0.0399	0.0311	0.0124
45.904	0.0634	0.0505	0.0490	0.0242	0.0144	0.0263	0.1737	0.3171	0.0212	0.0386	0.0299	0.0124
58.531	0.0940	0.0739	0.0725	0.0356	0.0215	0.0383	0.2595	0.4611	0.0164	0.0291	0.0227	0.0090
053.98	0.1373	0.1106	0.1055	0.0496	0.0318	0.0610	0.3826	0.7350	0.0125	0.0240	0.0183	0.0081
464.50	0.2031	0.1674	0.1544	0.0694	0.0488	0.0980	0.5875	1.1802	0.0099	0.0200	0.0150	0.0071
034.92	0.3030	0.2482	0.2275	0.1002	0.0755	0.1481	0.9092	1.7835	0.0080	0.0156	0.0118	0.0054
827.50	0.4525	0.3626	0.3368	0.1363	0.1157	0.2263	1.3938	2.7252	0.0063	0.0124	0.0093	0.0043
928.80	0.6832	0.5365	0.4842	0.1888	0.1991	0.3477	2.3973	4.1880	0.0056	0.0098	0.0077	0.0030
459.04	1.0268	0.8085	0.7160	0.2619	0.3108	0.5466	3.7436	6.5832	0.0046	0.0080	0.0063	0.0024

mg/l 70% HPAM in 0.05 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0100	0.0075	0.0058	0.0053	0.0042	0.0023	0.0504	0.0274	0.3182	0.1728	0.2455	0.1028
105.398	0.0101	0.0115	0.0079	0.0076	0.0022	0.0039	0.0269	0.0472	0.0878	0.1540	0.1209	0.0468
146.450	0.0179	0.0156	0.0114	0.0113	0.0064	0.0043	0.0776	0.0521	0.1313	0.0882	0.1098	0.0305
203.492	0.0241	0.0215	0.0156	0.0153	0.0085	0.0062	0.1025	0.0748	0.0899	0.0655	0.0777	0.0172
282.750	0.0317	0.0316	0.0219	0.0222	0.0097	0.0093	0.1170	0.1125	0.0531	0.0511	0.0521	0.0015
392.880	0.0486	0.0450	0.0318	0.0318	0.0168	0.0132	0.2020	0.1589	0.0475	0.0374	0.0424	0.0072
545.904	0.0689	0.0663	0.0468	0.0469	0.0221	0.0194	0.2661	0.2331	0.0324	0.0284	0.0304	0.0028
758.531	0.1007	0.0964	0.0679	0.0672	0.0328	0.0291	0.3944	0.3507	0.0249	0.0221	0.0235	0.0019
1053.98	0.1475	0.1411	0.1000	0.0976	0.0475	0.0435	0.5721	0.5240	0.0187	0.0171	0.0179	0.0011
1464.50	0.2202	0.2077	0.1468	0.1440	0.0734	0.0637	0.8840	0.7670	0.0150	0.0130	0.0140	0.0014
2034.92	0.3217	0.3079	0.2168	0.2109	0.1049	0.0970	1.2633	1.1678	0.0111	0.0102	0.0107	0.0006
2827.50	0.4736	0.4617	0.3210	0.3113	0.1526	0.1504	1.8381	1.8110	0.0083	0.0082	0.0083	0.0001
3928.80	0.7073	0.6932	0.4604	0.4529	0.2469	0.2403	2.9733	2.8935	0.0070	0.0068	0.0069	0.0001
5459.04	1.0537	1.0467	0.7307	0.6988	0.3229	0.3478	3.8893	4.1892	0.0047	0.0051	0.0049	0.0003

mg/l 70 % HPAM in 0.1 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0078	0.0078	0.0053	0.0053	0.0026	0.0026	0.0311	0.0311	0.1959	0.1959	0.1959	0
105.398	0.0099	0.0099	0.0082	0.0082	0.0017	0.0017	0.0199	0.0199	0.0651	0.0651	0.0651	0
146.450	0.0128	0.0129	0.0116	0.0120	0.0012	0.0009	0.0150	0.0112	0.0255	0.0189	0.0222	0.0046
203.492	0.0200	0.0170	0.0161	0.0166	0.0039	0.0004	0.0464	0.0050	0.0406	0.0044	0.0225	0.0257
282.750	0.0290	0.0281	0.0231	0.0236	0.0059	0.0045	0.0710	0.0548	0.0322	0.0249	0.0285	0.0052
392.880	0.0447	0.0413	0.0332	0.0343	0.0115	0.0070	0.1389	0.0838	0.0327	0.0197	0.0262	0.0092
545.904	0.0665	0.0633	0.0473	0.0496	0.0192	0.0138	0.2312	0.1657	0.0282	0.0202	0.0242	0.0056
758.531	0.0983	0.0936	0.0707	0.0715	0.0276	0.0221	0.3326	0.2662	0.0210	0.0168	0.0189	0.0030
1053.98	0.1450	0.1396	0.0999	0.1037	0.0451	0.0359	0.5426	0.4329	0.0177	0.0141	0.0159	0.0025
1464.50	0.2114	0.2076	0.1475	0.1528	0.0640	0.0548	0.7705	0.6596	0.0130	0.0112	0.0121	0.0013
2034.92	0.3140	0.3124	0.2163	0.2246	0.0977	0.0878	1.1769	1.0569	0.0103	0.0093	0.0098	0.0007
2827.50	0.4724	0.4713	0.3179	0.3321	0.1544	0.1392	1.8601	1.6763	0.0084	0.0076	0.0080	0.0006
3928.80	0.7049	0.7077	0.4629	0.4813	0.2419	0.2264	2.9137	2.7272	0.0069	0.0064	0.0066	0.0003
5459.04	1.0590	1.0653	0.6848	0.7082	0.3741	0.3572	4.5059	4.3014	0.0055	0.0052	0.0054	0.0002

mg/l 70 % HPAM in 0.2 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0077	0.0089	0.0060	0.0056	0.0017	0.0033	0.0210	0.0393	0.1326	0.2479	0.1902	0.0815
105.398	0.0112	0.0127	0.0087	0.0070	0.0025	0.0057	0.0296	0.0685	0.0969	0.2237	0.1603	0.0897
146.450	0.0161	0.0173	0.0119	0.0111	0.0042	0.0063	0.0505	0.0754	0.0855	0.1276	0.1065	0.0298
203.492	0.0220	0.0251	0.0165	0.0153	0.0054	0.0098	0.0654	0.1183	0.0573	0.1037	0.0805	0.0328
282.750	0.0328	0.0364	0.0231	0.0226	0.0097	0.0138	0.1171	0.1666	0.0532	0.0756	0.0644	0.0159
392.880	0.0476	0.0516	0.0336	0.0329	0.0140	0.0188	0.1684	0.2260	0.0396	0.0531	0.0464	0.0096
545.904	0.0686	0.0745	0.0483	0.0472	0.0203	0.0273	0.2445	0.3287	0.0298	0.0400	0.0349	0.0073
758.531	0.1005	0.1111	0.0698	0.0696	0.0306	0.0416	0.3691	0.5005	0.0233	0.0316	0.0274	0.0059
1053.98	0.1494	0.1649	0.1019	0.1020	0.0475	0.0629	0.5717	0.7571	0.0187	0.0247	0.0217	0.0043
1464.50	0.2183	0.2436	0.1495	0.1500	0.0688	0.0937	0.8290	1.1281	0.0140	0.0191	0.0166	0.0036
2034.92	0.3200	0.3509	0.2206	0.2207	0.0994	0.1303	1.1967	1.5687	0.0105	0.0137	0.0121	0.0023
2827.50	0.4770	0.5177	0.3242	0.3250	0.1528	0.1927	1.8398	2.3202	0.0084	0.0105	0.0094	0.0015
3928.80	0.7155	0.7696	0.4649	0.4667	0.2506	0.3028	3.0186	3.6470	0.0071	0.0086	0.0078	0.0010
5459.04	1.0634	1.1397	0.7026	0.7045	0.3608	0.4352	4.3452	5.2407	0.0053	0.0064	0.0058	0.0008

ng/l 70 % HPAM in 0.5 M NaCl at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.0105	0.0165	0.0051	0.0051	0.0053	0.0113	0.0644	0.1366	0.4061	0.8619	0.6340	0.3223
105.398	0.0145	0.0205	0.0057	0.0057	0.0087	0.0147	0.1053	0.1776	0.3440	0.5801	0.4620	0.1669
146.450	0.0202	0.0262	0.0041	0.0041	0.0161	0.0221	0.1939	0.2661	0.3280	0.4503	0.3892	0.0865
203.492	0.0287	0.0347	0.0091	0.0091	0.0196	0.0256	0.2359	0.3081	0.2067	0.2701	0.2384	0.0448
282.750	0.0410	0.0470	0.0141	0.0141	0.0269	0.0329	0.3240	0.3962	0.1471	0.1799	0.1635	0.0232
392.880	0.0583	0.0643	0.0220	0.0220	0.0363	0.0423	0.4370	0.5093	0.1027	0.1197	0.1112	0.0120
545.904	0.0827	0.0887	0.0582	0.0352	0.0245	0.0535	0.2954	0.6443	0.0360	0.0785	0.0572	0.0300
758.531	0.1210	0.1270	0.0682	0.0501	0.0527	0.0769	0.6348	0.9258	0.0400	0.0584	0.0492	0.0130
1053.98	0.1743	0.1803	0.0944	0.0745	0.0799	0.1058	0.9624	1.2737	0.0314	0.0416	0.0365	0.0072
1464.50	0.2583	0.2643	0.1305	0.1092	0.1278	0.1551	1.5396	1.8682	0.0261	0.0316	0.0288	0.0039
2034.92	0.3772	0.3832	0.1869	0.1607	0.1903	0.2226	2.2920	2.6805	0.0201	0.0235	0.0218	0.0024
2827.50	0.5597	0.5657	0.2657	0.2426	0.2940	0.3231	3.5411	3.8912	0.0161	0.0177	0.0169	0.0011
3928.80	0.7422	0.7482	0.3726	0.3450	0.3696	0.4031	4.4511	4.8548	0.0105	0.0114	0.0109	0.0007
5459.04	1.0347	1.0407	0.5399	0.5094	0.4948	0.5313	5.9595	6.3988	0.0073	0.0078	0.0075	0.0004

mg/l PAM-PS-22581 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
5.8531	0.0279	0.0266	0.0027	0.0030	0.0252	0.0237	0.3032	0.2849	1.9123	1.7967	1.8545	0.0818
05.398	0.0363	0.0347	0.0047	0.0023	0.0316	0.0324	0.3809	0.3896	1.2443	1.2730	1.2587	0.0202
46.45	0.0406	0.0388	0.0046	0.0030	0.0360	0.0357	0.4335	0.4301	0.7334	0.7278	0.7306	0.0040
03.492	0.0541	0.0516	0.0071	0.0055	0.0470	0.0462	0.5656	0.5558	0.4957	0.4871	0.4914	0.0061
82.75	0.0637	0.0609	0.0077	0.0060	0.0561	0.0549	0.6751	0.6610	0.3065	0.3001	0.3033	0.0045
92.88	0.0833	0.0795	0.0110	0.0106	0.0723	0.0689	0.8706	0.8292	0.2047	0.1950	0.1998	0.0069
45.904	0.1135	0.1083	0.0147	0.0139	0.0988	0.0944	1.1896	1.1373	0.1449	0.1385	0.1417	0.0045
58.531	0.1582	0.1510	0.0213	0.0196	0.1368	0.1314	1.6479	1.5824	0.1039	0.0998	0.1019	0.0029
053.98	0.2168	0.2069	0.0303	0.0298	0.1865	0.1771	2.2462	2.1326	0.0734	0.0697	0.0715	0.0026
464.5	0.3085	0.2945	0.0437	0.0419	0.2648	0.2526	3.1890	3.0419	0.0540	0.0515	0.0527	0.0018
034.92	0.4472	0.4269	0.0632	0.0605	0.3841	0.3665	4.6255	4.4135	0.0405	0.0387	0.0396	0.0013
827.5	0.6535	0.6238	0.0912	0.0878	0.5623	0.5361	6.7719	6.4560	0.0307	0.0293	0.0300	0.0010
928.8	0.7788	0.7703	0.1317	0.1265	0.6471	0.6437	7.7937	7.7529	0.0183	0.0182	0.0183	0.0001
459.04	1.1686	1.2810	0.2328	0.2228	0.9358	1.0582	11.2705	12.7440	0.0137	0.0155	0.0146	0.0013

g/l PAM-PS-19901 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
5.853	0.0072	0.0085	0.0001	0.0020	0.0070	0.0084	0.0846	0.1007	0.5335	0.6349	0.5842	0.0717
05.398	0.0108	0.0113	0.0013	0.0012	0.0096	0.0102	0.1154	0.1224	0.3771	0.4000	0.3885	0.0162
46.450	0.0148	0.0144	0.0022	0.0042	0.0126	0.0124	0.1514	0.1496	0.2562	0.2531	0.2547	0.0022
03.492	0.0207	0.0218	0.0043	0.0051	0.0164	0.0179	0.1975	0.2160	0.1731	0.1893	0.1812	0.0115
82.750	0.0297	0.0310	0.0098	0.0069	0.0199	0.0222	0.2398	0.2670	0.1089	0.1212	0.1150	0.0087
92.880	0.0428	0.0435	0.0174	0.0133	0.0254	0.0279	0.3060	0.3360	0.0719	0.0790	0.0755	0.0050
45.904	0.0616	0.0615	0.0279	0.0203	0.0337	0.0364	0.4059	0.4384	0.0494	0.0534	0.0514	0.0028
58.531	0.0902	0.0894	0.0445	0.0352	0.0457	0.0493	0.5504	0.5938	0.0347	0.0375	0.0361	0.0019
053.98	0.1326	0.1322	0.0645	0.0548	0.0681	0.0742	0.8203	0.8936	0.0268	0.0292	0.0280	0.0017
464.50	0.1968	0.1973	0.1021	0.0801	0.0947	0.1055	1.1411	1.2704	0.0193	0.0215	0.0204	0.0015
034.92	0.2920	0.2968	0.1350	0.1293	0.1570	0.1752	1.8908	2.1106	0.0166	0.0185	0.0175	0.0014
827.50	0.4364	0.4479	0.2042	0.1898	0.2321	0.2641	2.7959	3.1806	0.0127	0.0144	0.0136	0.0012
928.80	0.6525	0.6751	0.3290	0.2826	0.3235	0.3789	3.8960	4.5638	0.0092	0.0107	0.0099	0.0011

mg/l PAM-PS-18522 at 30°C

Re	M(total) dyn.cm		M(outer) dyn.cm		M(inner) dyn.cm		$\tau_{w(inner)}$ (dyn/cm^2)		f		Mean	SD
75.853	0.1396	0.1337	0.1277	0.1268	0.0119	0.0069	0.1429	0.0831	0.9012	0.5242	0.7127	0.2666
105.398	0.1589	0.1530	0.1460	0.1452	0.0129	0.0078	0.1552	0.0934	0.5071	0.3052	0.4062	0.1428
146.450	0.1828	0.1756	0.1681	0.1669	0.0147	0.0087	0.1775	0.1048	0.3003	0.1773	0.2388	0.0870
203.492	0.2111	0.2027	0.1940	0.1929	0.0170	0.0098	0.2053	0.1184	0.1799	0.1037	0.1418	0.0539
282.750	0.2451	0.2352	0.2270	0.2249	0.0181	0.0103	0.2181	0.1243	0.0990	0.0564	0.0777	0.0301
392.880	0.2882	0.2765	0.2678	0.2646	0.0204	0.0119	0.2462	0.1429	0.0579	0.0336	0.0458	0.0172
545.904	0.3440	0.3303	0.3199	0.3150	0.0240	0.0153	0.2894	0.1841	0.0352	0.0224	0.0288	0.0091
758.531	0.4175	0.3997	0.3863	0.3797	0.0312	0.0199	0.3754	0.2403	0.0237	0.0152	0.0194	0.0060
1053.98	0.5116	0.4935	0.4736	0.4642	0.0380	0.0293	0.4572	0.3533	0.0149	0.0115	0.0132	0.0024
1464.50	0.6429	0.6215	0.6022	0.5763	0.0407	0.0452	0.4903	0.5446	0.0083	0.0092	0.0088	0.0006
2034.92	0.8255	0.7978	0.7611	0.7225	0.0644	0.0753	0.7755	0.9069	0.0068	0.0079	0.0074	0.0008
2827.50	1.0716	1.0397	0.9743	0.9259	0.0972	0.1138	1.1711	1.3703	0.0053	0.0062	0.0058	0.0006
3928.80	1.4133	1.3750	1.2984	1.1775	0.1149	0.1976	1.3836	2.3793	0.0033	0.0056	0.0044	0.0017
5459.04	1.8934	1.8883	1.6811	1.5369	0.2124	0.3515	2.5574	4.2330	0.0031	0.0052	0.0041	0.0014

Appendix H
Scaling Data

$n=c_pN_A/M$

$\rho(g/cm^2)=0.99565$

(1) Scaling analysis of PAM at various molecular weights at 30°C

PAM	Re=5460				Re=1050			
	19901	02806	18522	water	19901	02806	18522	Water
τ_w (dyn/cm^2)	5.48	5.31	2.56	11.2	1.27	0.653	0.457	2.04
	6.26	4.17	4.23	11.2	1.36	0.3079	0.353	2.04
u_*(cm/s)	2.35	2.31	1.60	3.35	1.13	0.81	0.68	1.43
	2.51	2.31	2.06	3.35	1.17	0.81	0.60	1.43
$R_h x10^6$(nm)	3.51	6.73	22.17	-	3.51	6.73	22.17	-
n (#chain/cm^3)x10^{-13}	11.05	2.01	0.56	-	11.05	2.01	0.56	-
$\phi=nV_h$	0.0200	0.0257	0.2565					
$\nu=Ktx10^3$(cm^2/s)	8.32	8.73	18.57	8.14	8.32	8.73	18.57	8.14
$l_d x10^3$(cm)	5.01	5.35	16.37	3.43	10.42	15.25	38.76	8.04
	4.69	6.03	12.7	3.43	10.06	22.21	44.10	8.04
Mean	4.85	5.69	14.54	3.43	10.24	18.73	41.43	8.04
SD	0.23	0.48	2.60	0	0.25	4.92	3.78	0
l_d/l_{do}-1	0.46	0.56	3.77	0	0.30	0.90	3.82	0
	0.37	0.56	2.71	0	0.25	0.90	4.49	0
Mean	0.41	0.56	3.24	0	0.27	0.90	4.15	0.00
SD	0.07	0	0.75	0	0.03	0	0.47	0
f	0.0067	0.0065	0.0031	0.0136	0.0268	0.0213	0.0149	0.0666
	0.0076	0.0051	0.0052	0.0136	0.0292	0.0101	0.0115	0.0666
% Drag reduction	50.96	62.50	77.13	-	59.76	84.83	77.63	-
	43.97	52.50	62.13	-	56.16	68.02	82.73	-
Mean	47.46	57.50	69.63	-	57.96	76.42	80.18	-
SD	4.94	7	10.61	-	2.55	11.89	3.61	-

(2) Scaling analysis of 70 % HPAM at various salt concentrations at 30°C

Re=1050									
70 % HPAM in NaCl	0 M	0.005 M	0.01 M	0.02 M	0.05 M	0.1 M	0.2 M	0.5 M	water
$nx10^{-13}$ (#chain/cm^3)	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
ϕ	24.60	1.76	1.16	0.82	0.74	0.57	0.34	0.31	-
$R_h x10^6$ (nm)	25.91	10.72	9.34	8.34	8.04	7.40	6.19	6.01	-
τ_w (dyn/cm^2)	0.37	0.41	0.42	0.38	0.46	0.54	0.57	0.96	2.04
	0.58	0.40	0.38	0.38	0.52	0.43	0.76	1.27	2.04
$\nu x10^3$(cm^2/s)	15.69	9.54	8.89	8.67	8.51	8.43	8.42	8.39	8.14
u_* (cm)	0.61	0.64	0.65	0.62	0.68	0.74	0.76	0.98	1.43
	0.76	0.63	0.62	0.62	0.73	0.66	0.87	1.13	1.43
$l_d x10^3$ (cm)	36.21	21.15	19.34	19.78	17.77	16.14	15.71	12.07	8.04
	29.2	21.28	20.3	19.78	16.6	18.07	13.66	10.51	8.04
Mean	32.71	21.22	19.82	19.78	17.19	17.11	14.69	11.29	8.04
SD	4.96	0.09	0.68	0.00	0.83	1.36	1.45	1.10	0
$(l_d/l_{do}-1)$	3.50	1.63	1.41	1.46	1.21	1.01	0.95	0.50	0
	2.63	1.65	1.53	1.46	1.06	1.25	0.70	0.31	0
Mean	3.07	1.64	1.47	1.46	1.14	1.13	0.83	0.40	0
SD	0.62	0.01	0.08	0.00	0.10	0.17	0.18	0.14	0
f	0.0122	0.0131	0.0138	0.0125	0.0187	0.0177	0.0187	0.0314	0.0519
	0.0188	0.0132	0.0125	0.0240	0.0171	0.0141	0.0247	0.0416	0.0532
% Drag reduction	76.49	74.76	73.41	75.92	63.97	65.90	63.97	39.50	-
	64.66	75.19	76.50	54.89	67.86	73.50	53.57	21.80	-
Mean	70.58	74.97	74.96	65.40	65.91	69.70	58.77	30.65	-
SD	8.37	0.30	2.19	14.87	2.75	5.37	7.35	12.51	-

Re=5460									
70 % HPAM in NaCl	0 M	0.005 M	0.01 M	0.02 M	0.05 M	0.1 M	0.2 M	0.5 M	water
$nx10^{-13}$ (#chain/cm^3)	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
ϕ	24.60	1.76	1.16	0.82	0.74	0.57	0.34	0.31	-
$R_h x10^6$ (nm)	25.91	10.72	9.34	8.34	8.04	7.40	6.19	6.01	-
τ_w (dyn/cm^2)	3.28	3.71	3.93	3.74	3.89	4.51	4.35	5.96	11.2
	4.27	3.55	3.94	3.74	4.19	4.3	5.24	6.4	11.2
$\nu x10^3$(cm^2/s)	15.69	9.54	8.89	8.67	8.51	8.43	8.42	8.39	8.14
u_* (cm)	1.82	1.93	1.99	1.94	1.98	2.13	2.09	2.45	3.35
	2.07	1.89	1.99	1.94	2.05	2.08	2.29	2.54	3.35
$l_d x10^3$ (cm)	12.22	6.99	6.33	6.33	6.09	5.6	5.7	4.85	3.43
	10.72	7.14	6.32	6.33	5.87	5.73	5.19	4.68	3.43
Mean	11.47	7.07	6.33	6.33	5.98	5.67	5.45	4.77	3.43
SD	1.06	0.11	0.01	0.00	0.16	0.09	0.36	0.12	0
$(l_d/l_{do}-1)$	2.56	1.04	0.85	0.85	0.78	0.63	0.66	0.41	0
	2.12	1.08	0.84	0.85	0.71	0.67	0.51	0.36	0
Mean	2.34	1.06	0.84	0.85	0.74	0.65	0.59	0.39	0
SD	0.31	0.03	0	0	0.05	0.03	0.10	0.03	0
f	0.0040	0.0050	0.0048	0.0046	0.0047	0.0055	0.0053	0.0073	0.0136
	0.0052	0.0052	0.0048	0.0080	0.0051	0.0052	0.0064	0.0078	0.0136
% Drag reduction	70.59	63.24	64.71	66.18	65.44	59.56	61.03	46.32	-
	61.76	61.76	64.71	41.18	62.50	61.76	52.94	42.65	-
Mean	66.18	62.50	64.71	53.68	63.97	60.66	56.99	44.49	-
SD	6.24	1.04	0	17.68	2.08	1.56	5.72	2.60	-

(3) Scaling analysis of PAM-PS-02806 at various polymer concentration at 30°C

Re	C_p (mg/l)	2.5	5	10	50	100	200	300	500	600	water
	$\nu \times 10^3$ (cm²/s)	8.15	8.17	8.19	8.19	8.43	8.73	9.35	11.38	12.11	8.14
	τ_w	1.63	1.24	0.92	0.48	0.31	0.47	0.50	0.42	0.40	2.04
	(dyn/cm²)	1.42	1.05	0.87	0.45	0.65	0.39	0.44	0.20	0.26	2.04
		1.28	1.12	0.96	0.69	0.56	0.69	0.71	0.65	0.63	1.43
	u_* (cm/s)	1.19	1.03	0.94	0.68	0.81	0.63	0.66	0.45	0.51	1.43
		9.01	10.35	12.05	16.76	21.43	17.93	18.76	24.83	27.07	8.04
	$l_d \times 10^3$(cm)	9.65	11.24	12.38	17.16	14.72	19.70	19.90	36.16	33.81	8.04
		0.12	0.29	0.50	1.08	1.67	1.23	1.33	2.09	2.37	0
	$(l_d/l_{do}-1)$	0.20	0.40	0.54	1.13	0.83	1.45	1.47	3.50	3.20	0
		0.053	0.041	0.030	0.016	0.010	0.015	0.016	0.014	0.013	0.067
	f	0.046	0.034	0.029	0.015	0.021	0.013	0.014	0.006	0.008	0.067
	% drag	20.12	39.19	54.80	76.73	84.83	77.18	75.68	79.58	80.48	0
1050	reduction	30.33	48.65	57.21	77.78	68.02	80.33	78.38	90.39	87.54	0
	τ_w	9.58	7.89	5.86	4.87	4.17	3.97	4.22	4.56	3.96	11.20
	(dyn/cm²)	8.97	8.17	5.55	4.19	5.31	3.49	3.84	3.05	2.97	11.20
		3.10	2.82	2.43	2.21	2.05	2.00	2.06	2.14	1.99	3.35
	u_* (cm/s)	3.00	2.86	2.36	2.05	2.31	1.87	1.96	1.75	1.73	3.35
		3.72	4.1	4.78	5.24	5.83	6.18	6.42	7.52	8.58	3.43
	$l_d \times 10^3$ (cm)	3.84	4.03	4.91	5.65	5.16	6.6	6.73	9.19	9.91	3.43
		0.08	0.20	0.39	0.53	0.70	0.80	0.87	1.19	1.50	0
	$(l_d/l_{do}-1)$	0.12	0.17	0.43	0.65	0.50	0.92	0.96	1.68	1.89	0
		0.012	0.010	0.007	0.006	0.005	0.005	0.005	0.004	0.005	0.014
	f	0.011	0.010	0.007	0.005	0.006	0.004	0.005	0.006	0.004	0.014
	% drag	13.97	29.34	47.50	56.62	62.50	64.49	62.21	72.79	64.56	0
5460	reduction	19.85	26.84	50.22	62.50	52.50	69.85	65.44	59.19	73.53	0

(4) Scaling analysis of PAM-PS-19901 at various polymer concentration at 30°C

Re	C_p (mg/l)	2.5	5	10	50	100	200	300	500	600	water
	$\nu \times 10^3$ (cm²/s)	8.14	8.15	8.15	8.23	8.32	8.51	8.70	9.10	9.30	8.14
	τ_w	1.19	1.10	0.81	0.65	0.82	0.46	0.54	0.38	0.45	2.04
	(dyn/cm²)	1.14	1.05	0.79	0.73	0.89	0.43	0.35	0.32	0.38	2.04
		1.09	1.05	0.90	0.81	0.91	0.68	0.73	0.62	0.67	1.43
	u_* (cm/s)	1.07	1.03	0.89	0.86	0.95	0.66	0.60	0.57	0.61	1.43
		10.53	10.96	12.76	14.89	12.96	17.71	16.76	20.82	19.61	8.04
	$l_d \times 10^3$ (cm)	10.76	11.22	12.98	13.58	12.41	18.32	20.62	22.66	21.44	8.04
		0.31	0.36	0.59	0.79	0.61	1.20	1.08	1.59	1.44	0
	$(l_d/l_{do}-1)$	0.34	0.39	0.61	0.69	0.54	1.28	1.56	1.82	1.67	0
		0.039	0.034	0.027	0.021	0.027	0.015	0.018	0.012	0.015	0.067
	f	0.037	0.036	0.026	0.024	0.029	0.014	0.012	0.011	0.012	0.067
	% drag	41.74	48.35	60.06	68.02	59.76	77.48	73.72	81.38	77.93	0
1050	reduction	44.29	46.25	61.41	64.11	56.16	78.98	82.58	84.23	81.53	0
	τ_w	9.66	8.60	6.24	5.89	6.51	3.96	4.75	3.77	4.19	11.20
	(dyn/cm²)	8.89	8.50	5.82	6.95	5.48	4.00	3.40	3.72	4.03	11.20
		3.11	2.94	2.50	2.43	2.56	1.99	2.18	1.95	2.05	3.35
	u_* (cm/s)	2.99	2.92	2.42	2.64	2.35	2.00	1.85	1.93	2.01	3.35
		3.70	3.92	4.61	4.78	4.60	6.03	5.63	6.61	6.41	3.43
	$l_d \times 10^3$ (cm)	3.85	3.94	4.77	4.40	5.01	6.00	6.66	6.65	6.54	3.43
		0.08	0.14	0.34	0.39	0.34	0.76	0.64	0.93	0.87	0
	$(l_d/l_{do}-1)$	0.12	0.15	0.39	0.28	0.46	0.75	0.94	0.94	0.91	0
		0.012	0.011	0.008	0.007	0.007	0.005	0.006	0.005	0.005	0.014
	f	0.011	0.010	0.007	0.008	0.008	0.005	0.004	0.005	0.005	0.014
	% drag	13.24	22.79	44.12	47.28	50.96	64.49	57.87	66.25	62.43	0
5460	reduction	20.59	24.26	47.87	37.72	43.97	64.19	69.56	66.69	63.97	0

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