Supplementary Material

A viscosity measurement technique for ultra-low sam- ple volumes.

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I. DETAILS OF LIQUID SAMPLES AND AVAILABLE BLADE SPEEDS

The following tables contain the measured values of surface tension using a goniometer, the various blade speeds available on smearbot, and the measured viscosity from both the smearing technique and the rheometer.

No.	Sample	Concentration	Name	Surface Tension (N/m)
1	S1	7.5%	Opadry 85F	0.045
2	S2	3.5%	Opadry 33G	0.055
3	S3	8%	Aquarius	0.043
4	S3	10%	Aquarius	0.037
5	S3	12%	Aquarius	0.038
6	S3	15%	Aquarius	0.037
7	S4	4%	Sheffcoat TF	0.045
8	S4	10%	Sheffcoat TF	0.050
9	S5	4%	Vivacoat	0.043
10	S6	4%	Opadry 277U	0.039
11	S7	7.5%	Opadry 272A	0.036
12	S8	3%	Opadry 266A	0.049
13	S9	0.44%	Ethyl cellulose + ethanol	0.022
14	S10	1%	HPMC + water	0.040
15	S10	1.5%	HPMC + water	0.042

No.	Sample	Concentration	Name	Surface Tension (N/m)
16	S10	2%	HPMC + water	0.053
17	S11	10%	Ludox solution	0.029
18	S8	1.5%	Opadry 266A (dyed)	0.039
19	S8	1%	Opadry 266A (dyed)	0.0367
20	S8	0.75%	Opadry 266A (dyed)	0.0378
21	S8	0.5%	Opadry 266A (dyed)	0.0361
22	S1	2.5%	Opadry 85F (dyed)	0.042
23	S1	5%	Opadry 85F (dyed)	0.035
24	S1	10%	Opadry 85F (dyed)	0.0382
25	S2	2.5%	Opadry 33G(dyed)	0.040
26	S2	5%	Opadry 33G(dyed)	0.0385
27	S12	20%	Ludox solution	0.030

TABLE S1. Samples used for viscosity measurement. The surface tension was measured on a goniometer.

U_0	U_1	U_2	U_3	U_4	U_5	U_6	U_7
44.4	48.3	55.4	62.4	73.2	90.5	109.3	143.2

TABLE S2. List of eight blade speeds (mm/s) available on Smearbot.

No	**Sample**	**Rheometer** (mPa.s)	**Smearing Technique** (mPa.s)
1	S1_2.5% Opadry 85F (+dye)	2.0	2.2
2	S1_5% Opadry 85F (+dye)	2.8	2.9
3	S1_7.5% Opadry 85F	5.1	4.9
4	S1_10% Opadry 85F (+dye)	6.5	6.4
5	S2_2.5% Opadry 33G (+dye)	2.7	2.6
6	S2_3.5%Opadry 33G	4.7	4.3
7	S2_5% Opadry 33G (+dye)	5.9	5.9
8	S3_8% Aquarius (+dye)	3.1	3.4
9	S3_10% Aquarius	3.9	4.3
10	S3_12%Aquarius	5.5	6.5
11	S3_15% Aquarius	9.8	9.9
12	S4_4% Sheffcoat TF	2.4	2.4
13	S4_10% Sheffcoat TF	6.4	8.1
14	S5_4% Vivacoat	3.1	3.7
15	S6_4% Opadry 277U	3.9	4.3
16	S7_7.5% Opadry 272A	3.9	3.6
17	S8_3% Opadry 266A	7.9	8.2
18	S8_0.5% Opadry 266A (+dye)	2.8	3.1
19	S8_0.75% Opadry 266A (+dye)	4.1	4.3
20	S8_1% Opadry 266A (+dye)	6.1	6.5
21	S8_1.5% Opadry 266A (+dye)	12.5	12.5
22	S9_0.44% Ethyl Cellulose	3.4	3.6
23	S10_1% HPMC + water	3.9	3.4
24	S10_1.5%HPMC+water	4.3	4.2

No	**Sample**	**Rheometer** (mPa.s)	**Smearing Technique** (mPa.s)
25	S10_2% HPMC + water	6.5	6.7
26	10%Ludox	2.5	1.9
27	20%Ludox	3.6	2.9
28	Donor Blood	4.8	4.6
29	Blood plasma	2.3	1.8

TABLE S3. The table lists 28 different viscosity fluids with comparison of viscosity measured on Smearbot with that on Rheometer. The symbol "(+dye)" refers to the addition of a small amount of dye to the samples. Both surface tension and viscosity were measured after addition of dye.