Supporting Information

Online Microfluidic Production of Sustainable Cyrene™-Derived Porous Microparticles

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Table of content

Fluid properties co-monomers M1 and M2 2

Experimental parameters and droplet sizes 3

The size of microparticles in experiments E8, E9, E18, and E19 4

Fluid properties co-monomers M1 and M2

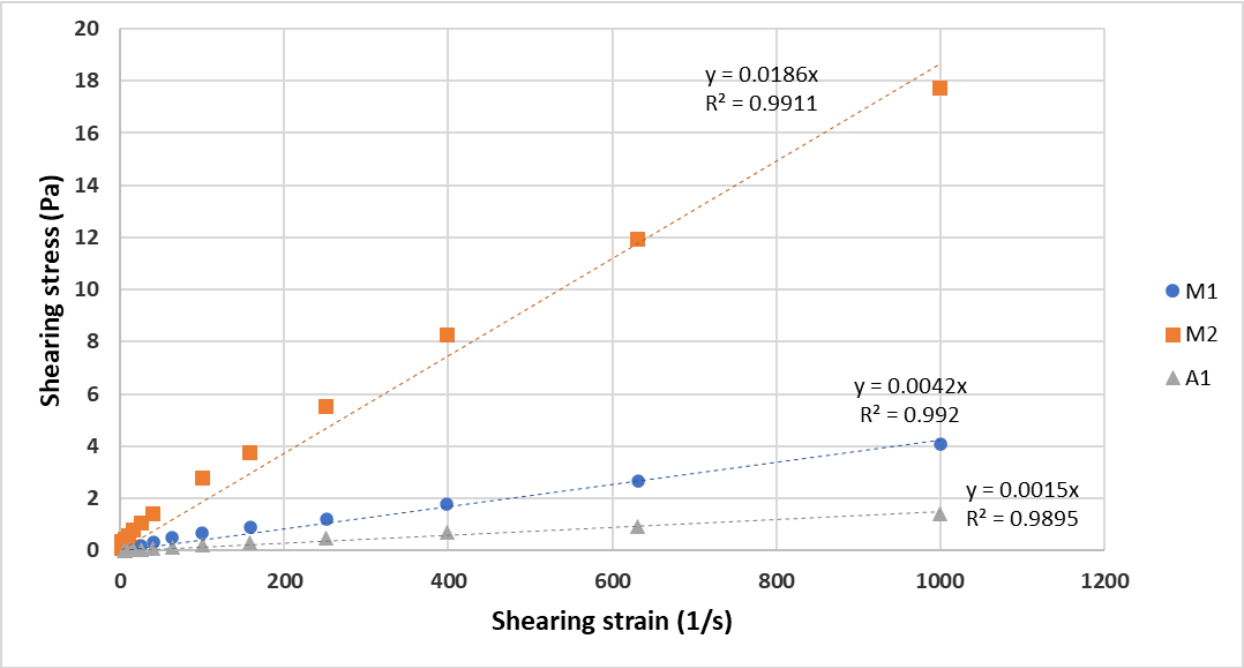


Figure S1: The variation of Shear stress as a function of Shearing strain for comonomers M1 and M2. The viscosity of M1 and M2 are 0.0042 and 0.0186 Pa.s respectively.

Fluid	Viscosity (Pa.s)	Desnity (g.mL^{-1})
M1: m-Cyrene : MAN (1:0.01)	0.0042	1.07
M2: m-Cyrene : MAN (1:12)	0.018	1.02
A1: 1.25 wt.% SDS in water	0.0015	0.998

Table S1: The densities and viscosities of the different fluids.

Experimental parameters and droplet sizes

	Dispersed Phase	Continuous Phase	Q_c (mL/h)	Q_d (mL/h)	$\bar{d}$ (μm)	σ (μm)	CV (%)
E7	M1	A1	1	0.1	493	28	5.7
E8	M1	A1	10	0.1	255	9.3	3.6
E9	M1	A1	20	0.1	166	20	12
E10	M1	A1	50	0.1	125	40	32
E17	M2	A1	1	0.1	580	9.6	1.6
E18	M2	A1	10	0.1	503	9.4	2
E19	M2	A1	20	0.1	450	6.7	1
E20	M2	A1	50	0.1	340	5.3	2
E21	M2	A1	10	0.2	527	12	2
E22	M2	A1	20	0.2	453	7.7	1.7
E23	M2	A1	50	0.2	363	10.9	3
E24	M2	A1	10	0.3	545	15	2.8
E25	M2	A1	20	0.3	478	12.6	2.6
E26	M2	A1	10	0.5	566	24.5	4.3
E27	M2	A1	10	1	641	43.5	6.8
E28	M2	A1	20	1	512	7.07	1.4

Table S2 : The experimental parameters and the size of droplets. σ: the standard deviation, CV: the coefficient of variation. C_p = 1 wt.%, C_s = 1.25 wt.%.

The size of microparticles in experiments E8, E9, E18, and E19

Experiment E8

Microparticle	Major axis (µm)	Minor axis (µm)	d_p (µm)
1	162	157	160
2	173	162	169
3	166	153	161
4	156	147	153
5	175	170	173
6	165	156	162
7	166	161	164
8	160	153	158
9	150	135	145
10	160	153	158

$\overline{d_p}$ = 160 µm
σ = 8
CV = 5%

Table S3 : Calculation details of the average size of microparticles for experiment E8.

Experiment E9

Microparticle	Major axis (µm)	Minor axis (µm)	d_p (µm)
1	110	105	108
2	179	144	166
3	137	123	132
4	117	109	114
5	94	86	92
6	147	134	142
7	145	123	138
8	159	139	152
9	111	97	106
10	145	130	140
11	137	135	136
12	136	126	133
13	108	104	107

$\overline{d_p}$ = 128 µm
σ = 21.3
CV = 17%

Table S4 : Calculation details of the average size of microparticles for experiment E9.

Experiment E17

Microparticle	Major axis (µm)	Minor axis (µm)	d_P (µm)
1	525	484	511
2	516	453	494
3	506	490	500
4	508	485	500
5	511	486	503
6	558	534	550
7	510	494	505
8	511	476	499
9	559	531	550
10	526	521	524
11	548	529	542
12	522	492	512

$\overline{d_p}$ = 516 µm
σ = 20.44
CV = 4%

Table S5 : Calculation details of the average size of microparticles for experiment E17.

Experiment E18

Microparticle	Major axis (µm)	Minor axis (µm)	d_P (µm)
1	349	305	334
2	331	318	327
3	333	311	326
4	359	324	347
5	350	283	326
6	352	304	335
7	356	256	319
8	342	313	332
9	330	298	319
10	340	299	325

$\overline{d_p}$ = 329 µm
σ = 8.4
CV = 2.6%

Table S6 : Calculation details of the average size of microparticles for experiment E18.