SUPPLEMENTAL INFORMATION:

Systematic characterization of effect of flow rates and buffer compositions on double emulsion droplet volumes and stability

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Supplemental Information

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3. Supplemental Tables

1. **Table S1:** Extended interfacial and bulk fluid parameters
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Extended Discussion: Note 1

1. Droplet Generation Protocol

1. Prepare all solutions listed in Table ED1.
2. Prepare syringes and cut tubing listed in Table ED1. Consistency of length and tautness are crucial for tubing, whereas absolute length is not.
3. Screw needle nozzles on syringes and attach tubing to needle.
4. Situate syringes in syringe pumps, being sure to attach them securely.
5. Set flow rates with outlet, inner, and oil phases at flow rates identical to, lower, and higher, respectively, than the target central condition.
6. Fast forward syringe pumps until liquid is at the end of the tubing.
7. Prepare an Eppendorf tube for collection of outlet tubing output.
8. Selectively treat the outlet and outer solution inlet with air plasma for 10 min according to Brower et al[1].
9. Immediately set device on scope, insert outer tubing into outer solution inlet and begin flow of the outer solution to preserve hydrophilicity of the PDMS.
10. Insert tubings from outlet and other syringe pumps into the device
11. Allow droplet generation to stabilize over several minutes. Be patient!
12. Monitor for reflux of the other phase into the inner and oil channels. If reflux occurs, immediately reduce the flow rate of the offending phase and increase the flow rate of the other phase. Extended time in contact with the incorrect phase can permanently change the wettability or hydrophilicity/hydrophobicity of the channel walls, causing problems in subsequent droplet generation.
13. If required, pressing on the device at the inlets or flow focusers can help remove bubbles or reflux, and help instigate consistent flow through all channels. However, be careful, as this can also damage the device if too vigorous.
14. Let setup stabilize for 30 min to allow device and syringes to equilibrate before conducting experiments if accurate and consistent droplet sizes are important.
15. After each change in flow rates, allow droplet production to stabilize for at least 4 minutes. Here, we stabilized for 4 minutes and then switched to a clean vial and collected for 6 minutes.
16. Devices that were plasma treated and filled with outer solution but not used for droplet generation can be prepared for reuse by flowing water through the device through the outer solution inlet and drying the device on a hot plate at 65°C for 20 min or more.

Table ED1:

Solutions	**Details**
Inner solution	PBS + 1% Tween-20
Oil	HFE-7500 + 2.2% ionic Krytox FSH-157
Outer sheath	PBS + 1% Tween-20 + 2% Pluronix-F68
Syringes	
Inner solution	Plasti-pak plastic, 1mL
Oil	Plasti-pak plastic, 5 mL
Outer sheath	Plasti-pak plastic, 10 mL
Tubing	
Inner solution	1st from left. 41cm length (for this study)
Oil	2nd from left. 56cm length (for this study)
Outer sheath	3rd from left. 54.5cm length (for this study)
Outlet	15cm length (for this study)

Extended Discussion: Note 2

2. Hydrophilic Lipophilic balance and Implications on Interfacial and Bulk properties of Biological Solutions

Investigating variation in the physical properties of the solutions involved is important to understanding DE formation regimes and the resulting droplet size and shell thickness. Interfacial tension (IFT) of droplet systems with HFE-7500 oil is typically 1-5 mN/m,[2] but our custom oil has a low baseline IFT with 1% Tween-20 in PBS of 0.319 mN/m.

Measuring the interfacial tension of our solutions revealed a nonlinear dependence on salt, with an initial decrease and a subsequent increase in interfacial tension as salt concentration increased. We hypothesize this stems from changes in the Hydrophylic-Lipophylic balance (HLB) of the surfactant, where variation in salt concentrations physically alter the relative fraction of interface surfactant molecules in the oil versus aqueous phases.[3,4] Surfactant molecules on the interface initially progress from primarily existing in the aqueous phase at zero salt concentration to protruding more into the oil phase as salt concentration increases, thereby decreasing the interfacial tension. This decrease in interfacial tension continues until the surfactant molecules have half their geometric length in each of the oil and aqueous phases, attaining the minimum surface energy and thus the minimum interfacial tension. Consistent with prior reports that the HLB can reduce IFT 10-100x, we see 2- and 20-fold decreases in IFT from MilliQ water to M9 inner (24.3 mM salts) and PBS inner (37.9 mM salts), respectively[4] (**Table S2**). As salt concentrations increase further, the surfactant molecules move further into the oil phase and the interfacial tension increases once again (as for 10x PBS, **Table S1**).[3] Further supporting this hypothesis, combining these buffers with HFE-7500 in the absence of surfactant gives much higher IFT values (**Table S2**). The outer phase has an increased total amount of surfactant with the addition of Pluronix F-68; likely via speeding the decrease to the minimum IFT, this results in lower measured interfacial tension, including a 20-fold IFT decrease at intermediate salt concentrations from M9 inner to M9 outer.

The viscosities of the tested solutions are comparable to water (0.890 mPa s). The only exceptions to this are solutions with Polyethylene glycol (PEG), a known viscosity modifier[5], which increases the viscosity of the solutions to 3.43 mPa s. The effect of PEG is enhanced in the outer solution, nearly doubling to viscosity 6.40 mPa s, likely due to the cooperative formation of larger polymeric structures (e.g. mixed micelles) with Pluronix molecules.[5]

Extended Discussion: Note 3

3. Instability types

A dual-flow focusing device geometry allows for a dripping-dripping droplet generation regime where DE droplets are formed in 2 stages: W/O generation in FF1 and W/O/W shell formation in FF2. In this regime, monodisperse droplet generation requires matching the periodicity of droplet pinch-off at each flow focuser.

The ideal time needed to generate each DE is then t/N, where t is the flow time and N is the number of droplets generated during time t (**Fig. S11**). The volume of the inner droplet is given as Q1 * t/N, where Q1 is the flow rate of the inner solution. Under the same assumptions, the volume ratio of the core to total outer droplet is given by

$$\frac{V_c}{V_t} = \frac{Q_1 \cdot t/N}{Q_1 \cdot t/N + Q_2 \cdot t/N} = \frac{Q_1}{Q_1 + Q_2}$$

where Q2 is the flow rate of the middle phase, V_c is volume of the core (inner droplet) and V_t is volume of the total droplet. The ideal mass conservation expression we see here is approached by Model B in Section 6 as prefactor and flow rate ratio exponent both are very close to 1.

Two possible deviations from an exact dependence on flow rate ratios can alter droplet size and shell thickness.[6–8] In the first case, droplet formation may be periodically slowed down, resulting in clogging of inner droplets and some portion of the ideal inner droplet volume contributing to its preceding droplet. We attribute this to a large Ca_m, small Ca_i, or a small Ca_o, and represent it as follows:

$$\frac{V_c}{V_t} < \left(\frac{V_c}{V_t}\right)_{ideal} = \frac{Q_1}{Q_1 + Q_2}$$

In the second case, the middle phase fluid is pinched off faster than expected, resulting in satellite droplets that consist only of the middle phase. We attribute this to a small Ca_m, large Ca_i, or large Ca_o, and represent it as follows:

$$\frac{V_c}{V_t} > \left(\frac{V_c}{V_t}\right)_{ideal} = \frac{Q_1}{Q_1 + Q_2}$$

Extended Discussion: Note 4

4. Inner core volume size scaling law

Conversely to the volume ratio models discussed in section 6 (**Figs. 4, S9, Tables S8, S9**), capillary numbers become more influential in modelling inner droplet volume directly. Following prior work from Garstecki et al and Liu and Zhang,[9,10] we use the scaling model

$$\frac{V_c}{h \times w \times w} = \left(0.270 + 0.760 \times \left(\frac{Q_1}{Q_2}\right)\right) \times \ {Ca_m}^{-0.0672}$$

The two terms in the bracket represent contributions from the blocking and squeezing phases during droplet formation. The two scalar parameters empirically account for the fact that the droplet length in the resistor is not exactly identical to the channel width, and that in the squeezing regime some of the middle phase fluid bypasses the inner phase fluid.[9] We also include a power-law relation with the capillary number of the middle phase.[11] Note that we have nondimensionalized V_c by the dimensions of the oil inlet. Because this model is derived from a T-junction regime for single emulsion generation rather than a dual-flow focuser, it makes no explicit assumption about Q3 as in the volume ratio model. This model accurately predicts inner droplet volumes within a 31% margin with a less optimal fit than our prior model (R^2: 0.70, RSME: 0.14)(**Fig S9, Table S9**). Similarly, the model has worse performance with high salt buffers, with biased residuals in these cases (**Fig. S9**). However, this unbiased approach to inner core volume may prove useful for end users wishing to modulate Q3 explicitly and within buffers of low Ca_m (e.g., PBS, PBS-Tween, etc).

References:

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(11) Xu, J. H.; Li, S. W.; Tan, J.; Luo, G. S. Correlations of Droplet Formation in T-Junction Microfluidic Devices: From Squeezing to Dripping. *Microfluid. Nanofluidics* **2008**, *5* (6), 711–717. https://doi.org/10.1007/s10404-008-0306-4.

Figure S1: Dropception DE generation device.

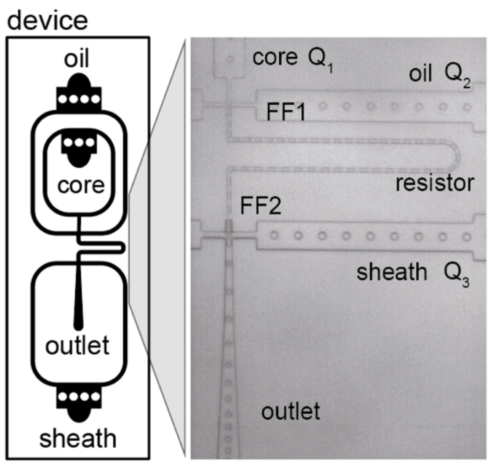

Figure S1: Dropception DE generation device. Single inner aqueous in oil emulsions are formed at flow focuser 1 (FF1), which then travel through the resistor. These are wrapped in outer aqueous sheath at flow focuser 2 (FF2) to become double emulsions and flow out the outlet channel.

Figure S2: DE systematic characterization design and absolute flow rates.

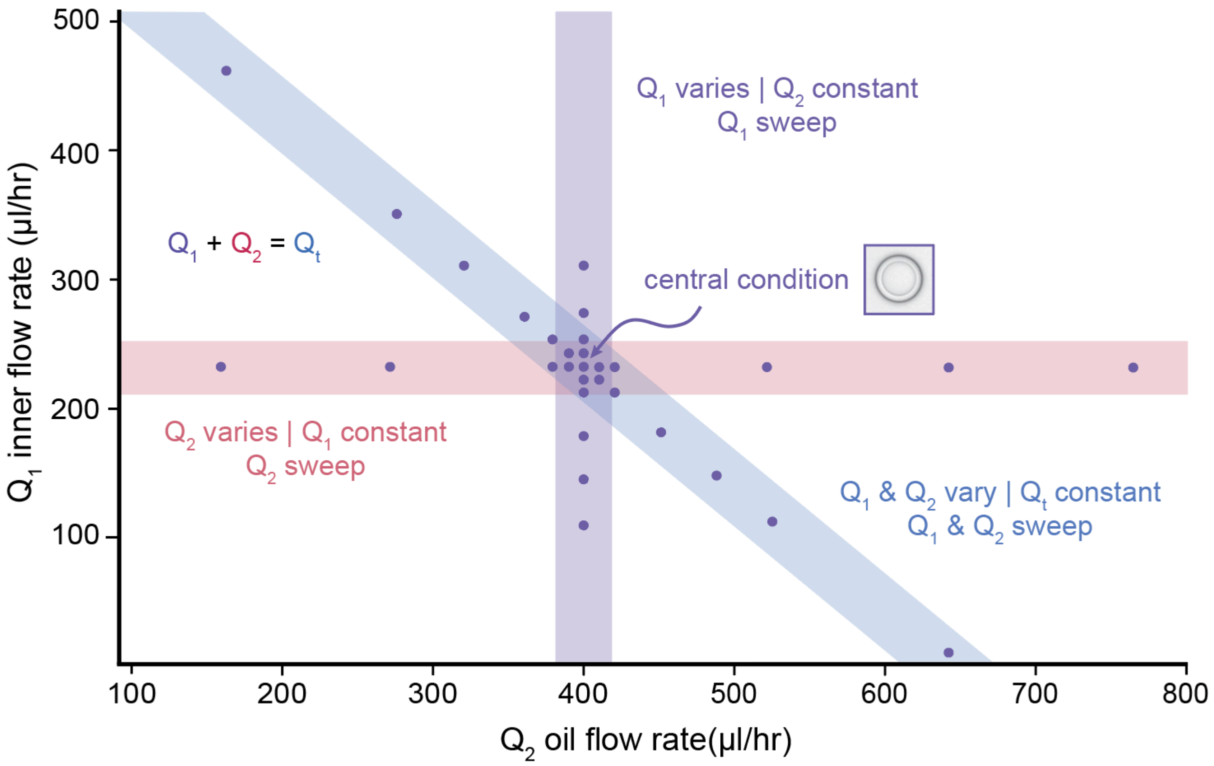

Figure S2: DE systematic characterization design and absolute flow rates. Q1 inner absolute flow rates *vs.* Q2 oil flow rates measured in this study in μl /hr. Red band indicates flow rates used to vary Q2 while keeping Q1 constant, purple band indicates flow rates used to vary Q1 while keeping Q2 constant, and blue band indicates flow rates used to vary both simultaneously while holding Qt = Q1 + Q2 constant. Central condition marks initial flow rate condition of ~0.60 core volume: shell volume. Flow rates shown here are for PBS + 1% Tween-20 buffer.

Figure S3: Replicate experiment measuring DE diameters for PBS + 1% Tween-20.

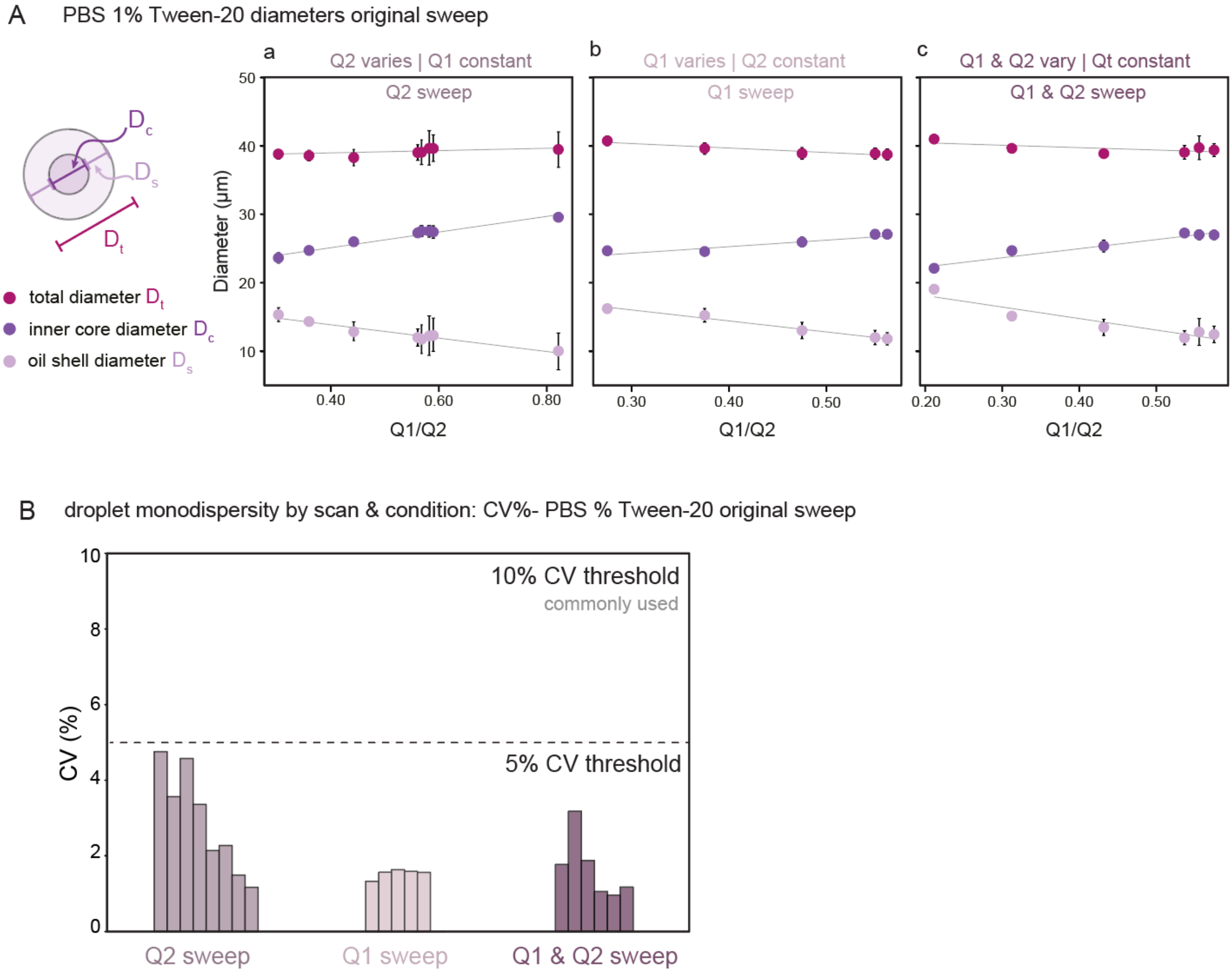

Figure S3: Replicate experiment measuring DE diameters for PBS + 1% Tween-20 (performed using a new device in a different laboratory)**. (A)** Measured inner core (dark purple), oil shell (light purple), and total (magenta) diameters for flow conditions varying oil flow rate (Q2) only (left), inner aqueous flow rate (Q1) only (middle), or simultaneously varying Q1 and Q2 (right). Markers indicate mean, error bars represent standard deviation, and solid lines show a linear regression. **(B)** Measured diameter coefficient of variation (CV) (%) across droplets from each flow condition (droplet numbers for each condition are provided in Table S5).

Figure S4: Measured DE droplet diameters and volumes with 6 inner aqueous buffers

A. Droplet Diameter vs. Q1/Q2

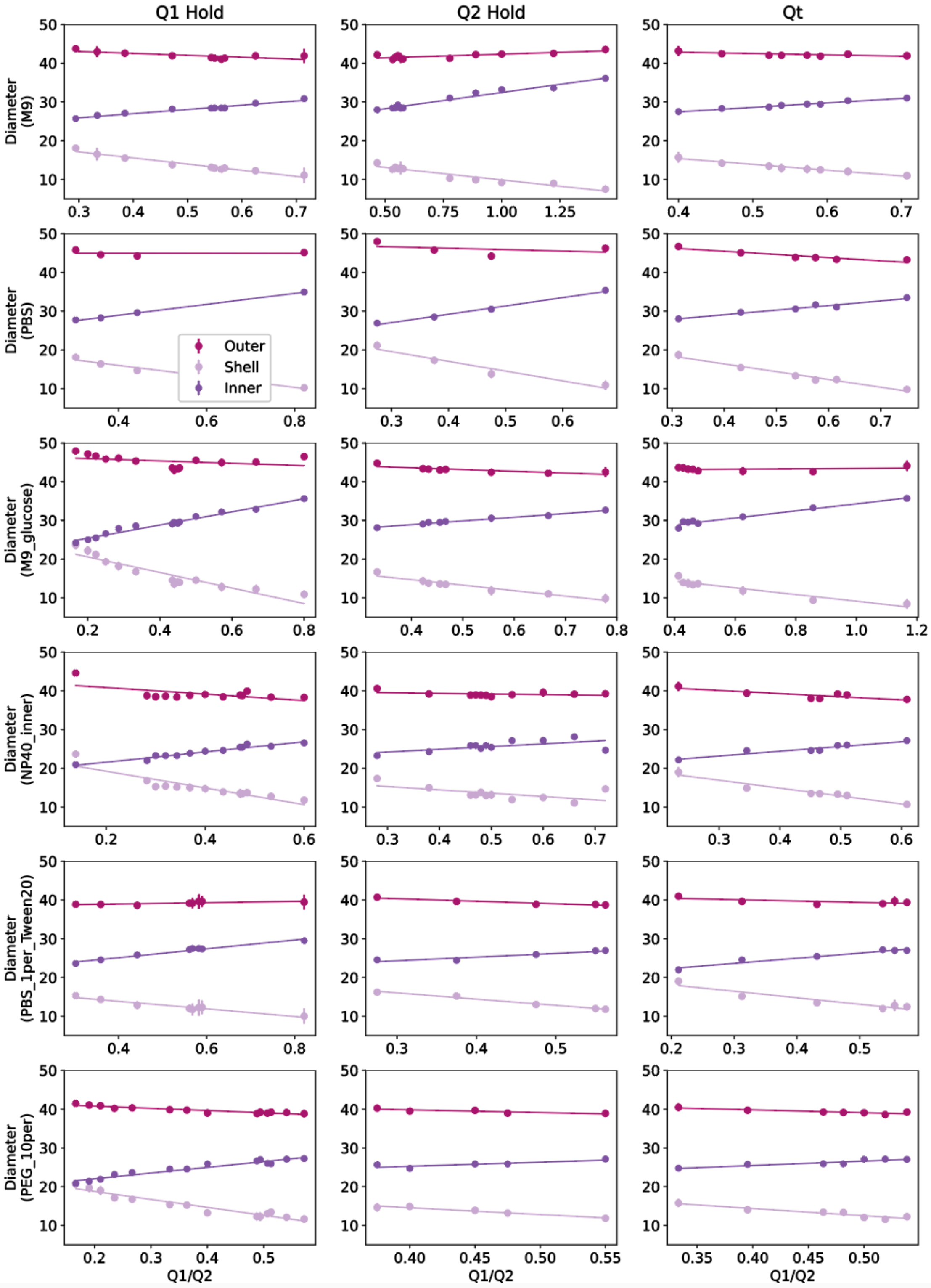

Figure S4: B. Droplet Volume vs. Q1/Q2

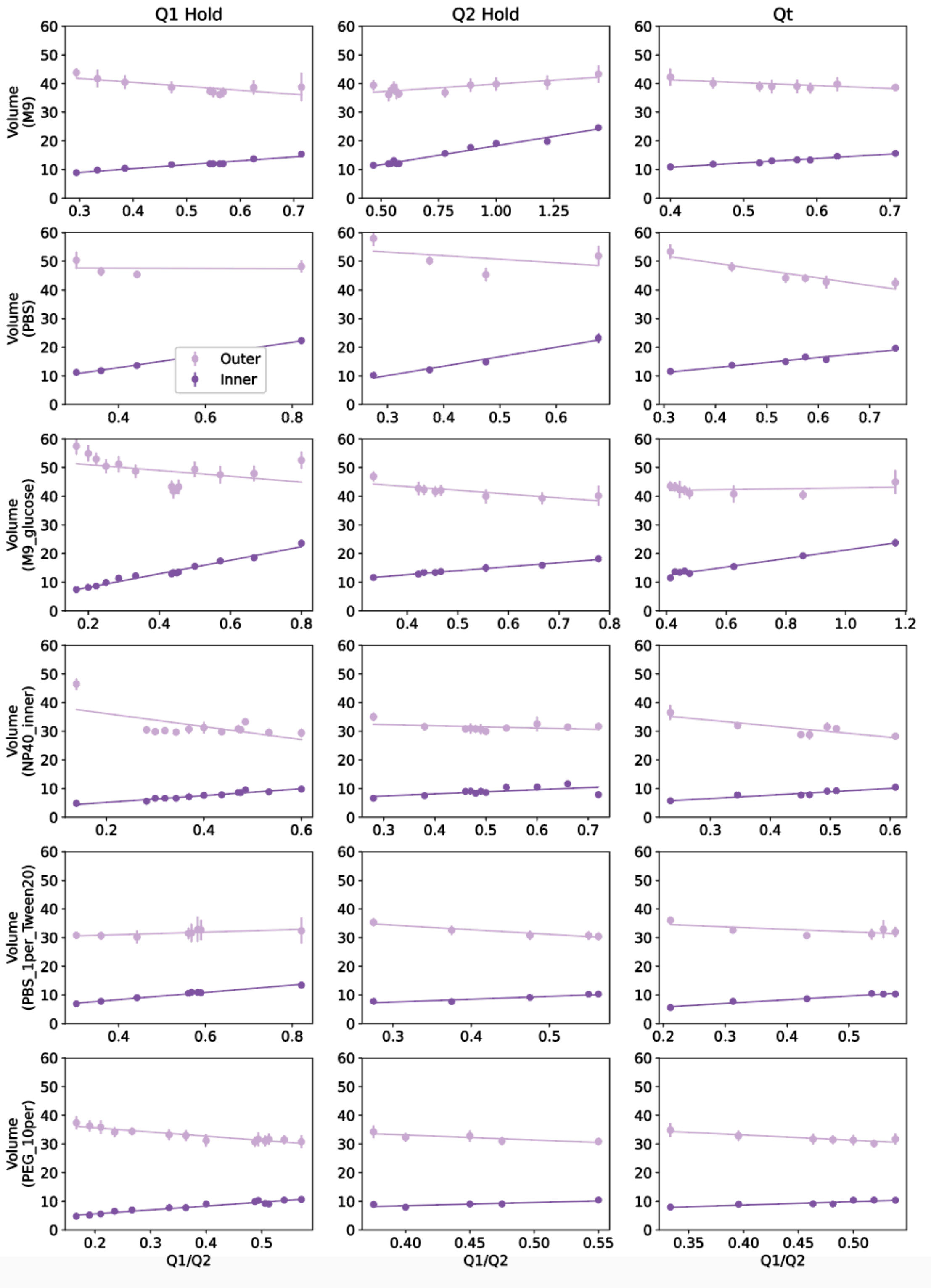

Figure S4: C. Droplet Diameter vs. Q1/(Q1+Q2)

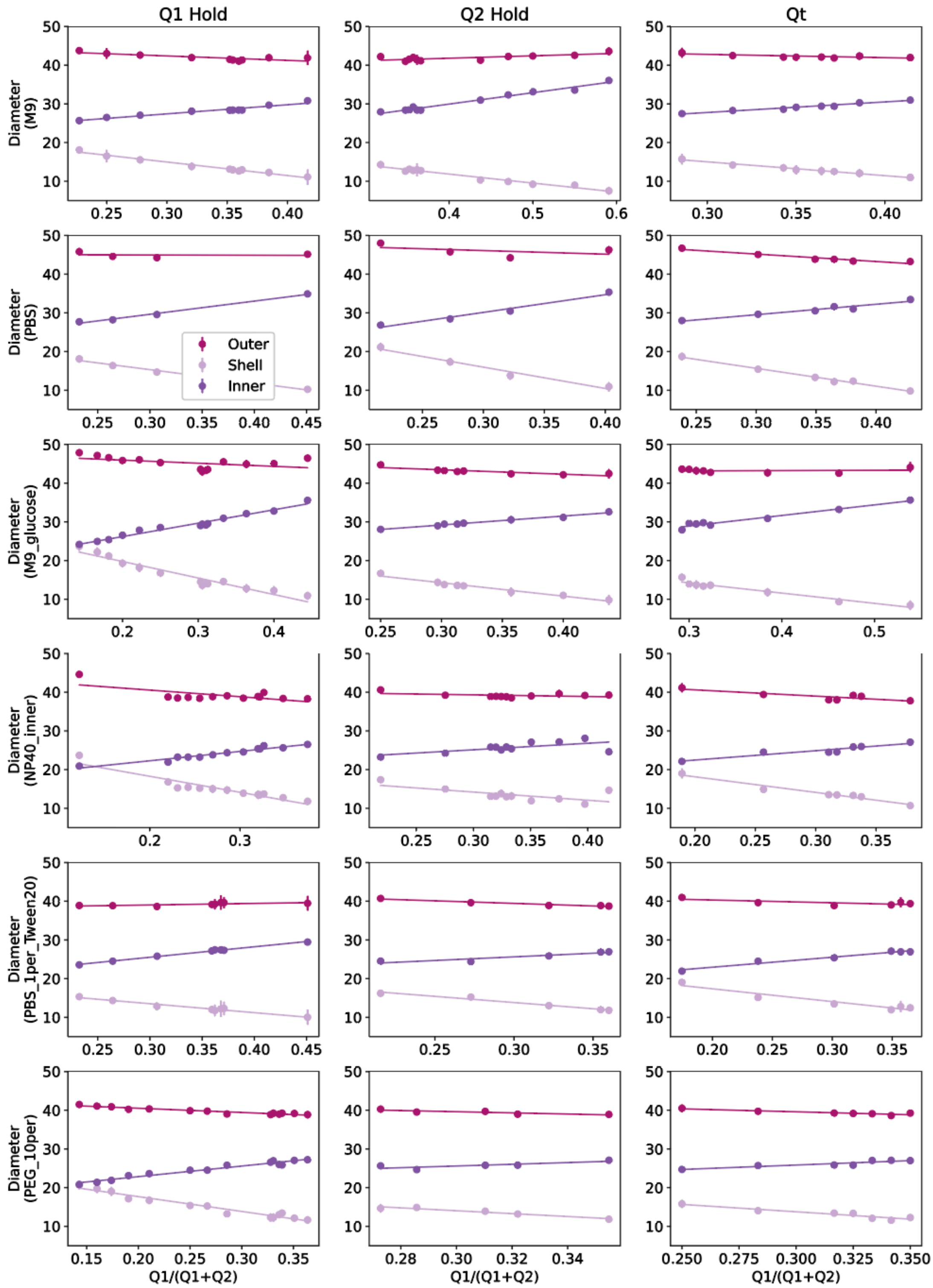

Figure S4: D. Droplet Volume vs. Q1/(Q1+Q2)

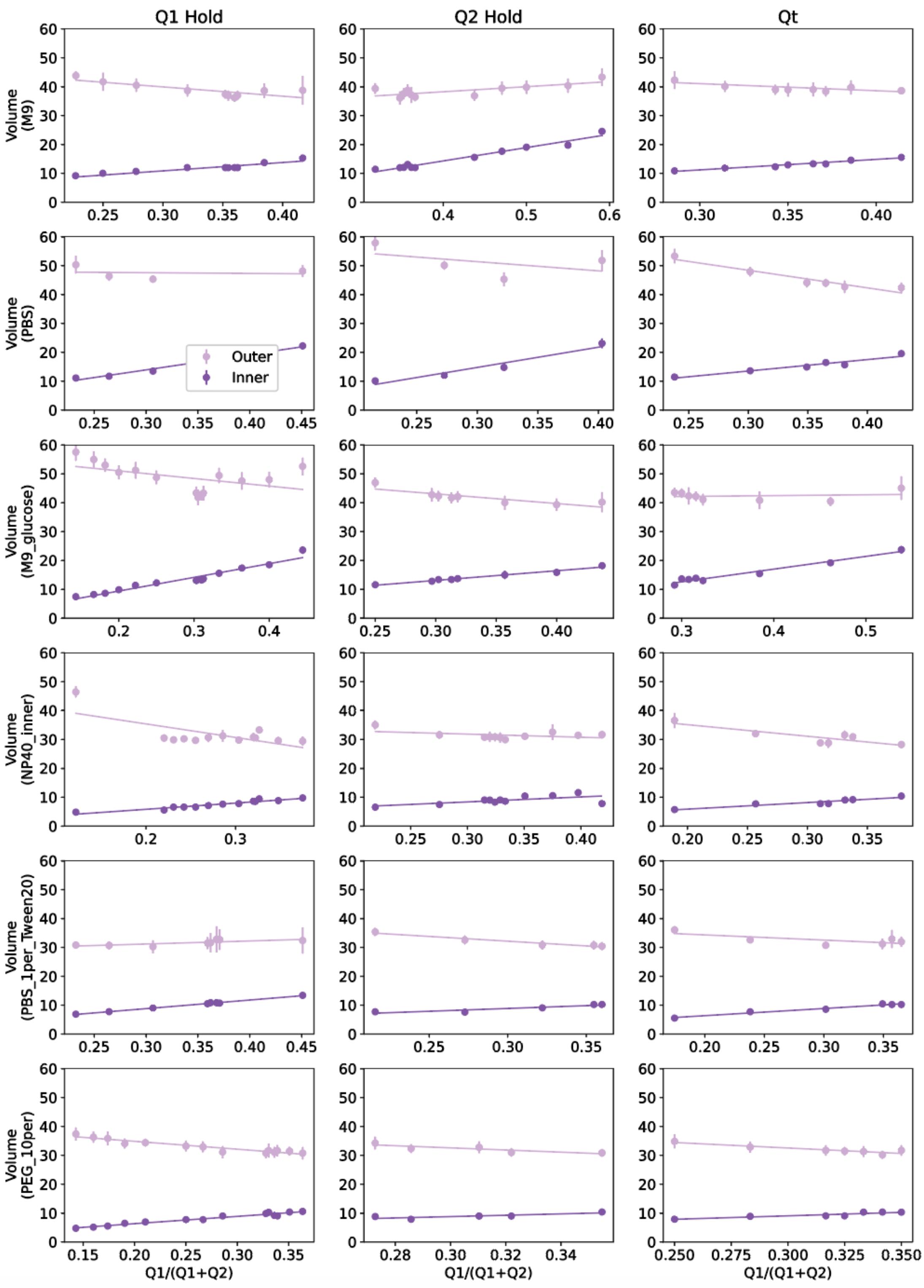

Figure S4: Measured DE droplet diameters and volumes with 6 inner aqueous buffers. Measured diameters/volumes for flow conditions varying oil flow rate (Q2) only (left), inner aqueous flow rate (Q1) only (middle), or simultaneously varying Q1 and Q2 with Qt = Q1+Q2 constant (right). Markers indicate mean, error bars represent standard deviation, and solid lines show a linear regression. **(A)** Measured inner core (dark purple), oil shell (light purple), and total (magenta) diameter vs. Q1/Q2 flow rate ratio **(B)** Measured inner core (dark purple), and total outer (magenta) volume vs. Q1/Q2 flow rate ratio. **(C)** Measured inner core (dark purple), oil shell (light purple), and total (magenta) diameter vs. Q1/(Q1+Q2) flow rate ratio **(D)** Measured inner core (dark purple), and total outer (magenta) volume vs. Q1/(Q1+Q2) flow rate ratio.

Figure S5: Measured Diameter Coefficient of variation CV% across flow rates and solutions

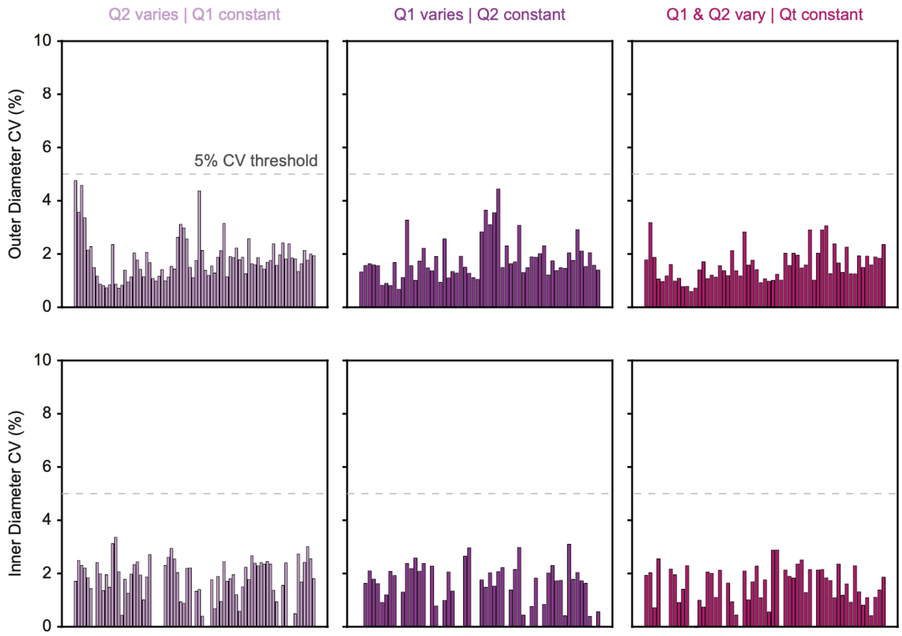

Figure S5: Measured Diameter Coefficient of variation CV% across flow rates and solutions. Coefficient of variation (CV) (%) of outer total diameters (top) and inner diameters (bottom) for 138 unique flow rate conditions containing 6 different inner buffers, for flow conditions varying oil flow rate (Q2) only (left), inner aqueous flow rate (Q1) only (middle), or simultaneously varying Q1 and Q2 (right) while holding Qt = Q1+Q2 constant. Each line represents CV% for one flow rate and solution composition combination; the number of droplets measured for each condition is given in Table S5.

Figure S6 Schematic illustrating Hydrophilic Lipophilic Balance (HLB) and potential impact on interfacial tension (IFT)

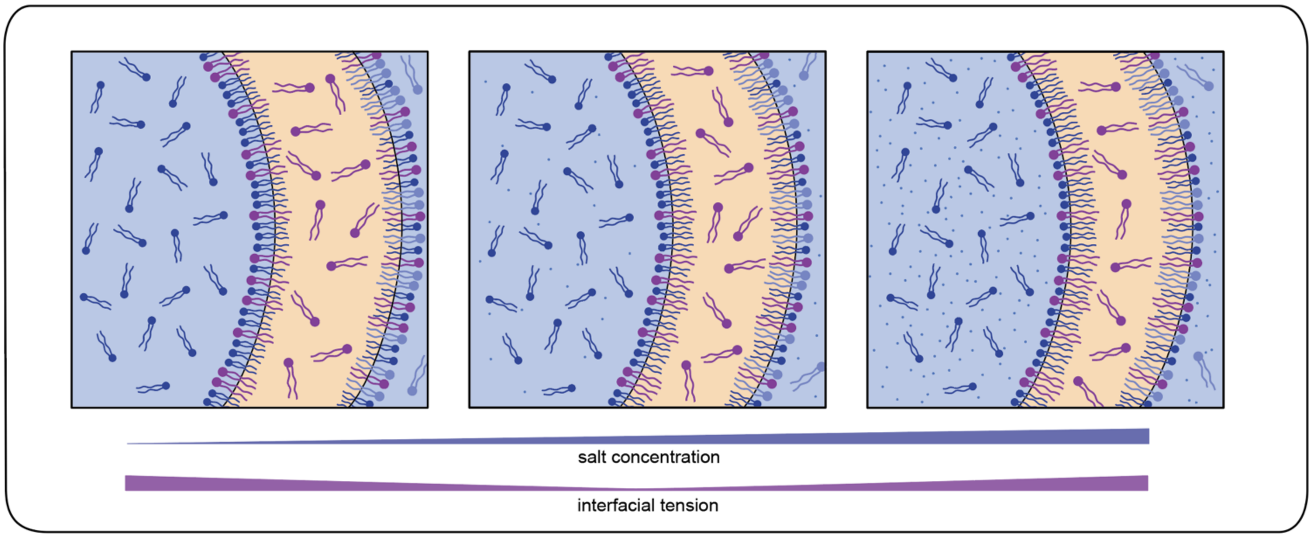

Figure S6: Schematic illustrating Hydrophilic Lipophilic Balance (HLB) and potential impact on interfacial tension (IFT) resulting in nonlinear changes in IFT as a function of salt concentration. Relative fraction of interface surfactant molecules in aqueous (blue) vs. oil (yellow) phase varies with increasing salt concentration. Low salt concentration (left) with interface surfactant molecules primarily in the aqueous phase and high IFT, intermediate salt concentration (center) with balanced surfactant molecules leading to minimum IFT, and high salt concentration (right) with surfactant molecules primarily in the oil phase and high IFT.

Figure S7: Pendant drop method to measure interfacial tension (IFT).

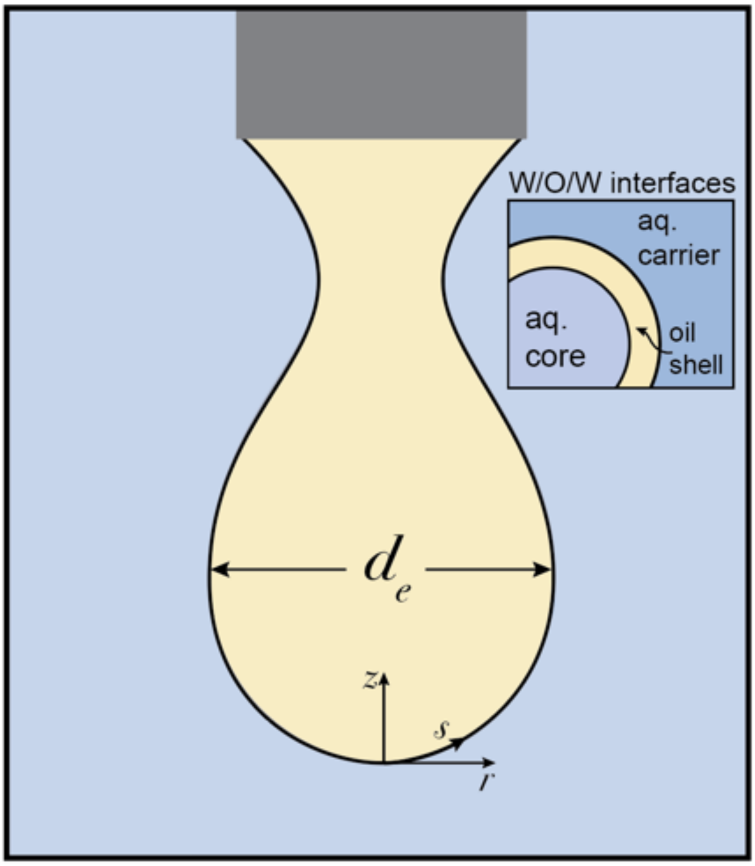

Figure S7: Pendant drop method to measure interfacial tension (IFT). Reverse phase pendant drop method was used, suspending an oil drop within an inner core aqueous solution and using drop shape analysis to calculate IFT. Here z, s, and r mark coordinate system.

Figure S8: Example images showing how varying flow rates alter droplet morphology and stability

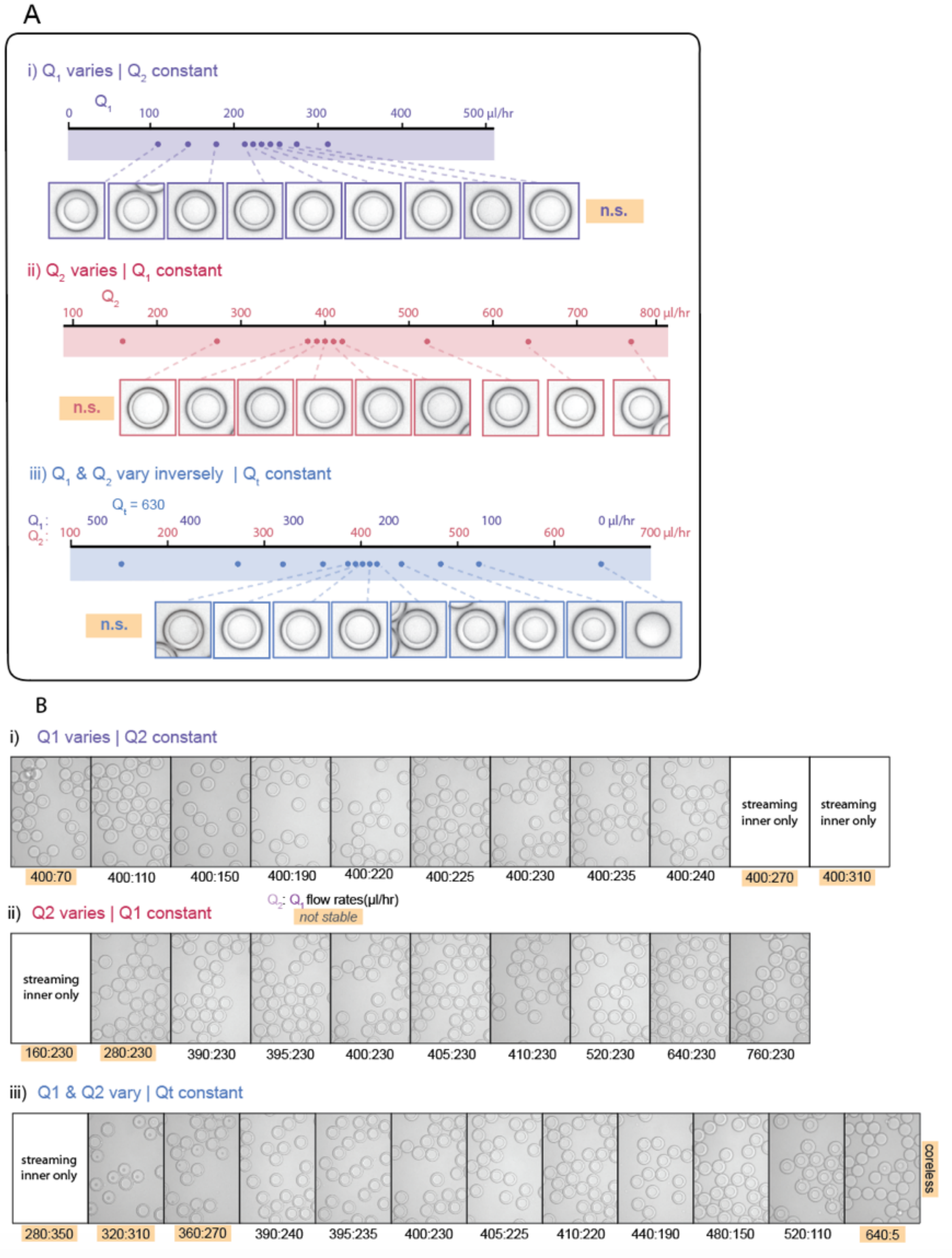

Figure S8: Example images showing how varying flow rates alter droplet morphology and stability. (A) Flow rates collected for flow conditions varying oil flow rate (Q2) only (top, purple), inner aqueous flow rate (Q1) only (middle, red), or simultaneously varying Q1 and Q2 with Qt=Q1+Q2 constant (bottom, blue), with representative images of a single droplet for stable conditions. Flow rates & images shown here are for PBS + 1% Tween-20 buffer droplets. **(B)** Representative microscopy images showing stability and morphology for flow conditions varying oil flow rate (Q2) only (top), inner aqueous flow rate (Q1) only (middle), or simultaneously varying Q1 and Q2 with Qt=Q1+Q2 constant (bottom). Flow rate conditions marked in orange result in non-ideal flow behavior and thus are classified as instabilities; flow rates and images here are PBS + 0.9% np40 inner buffer droplets.

Figure S9: Additional possible size scaling laws and comparisons between predictions and measurements

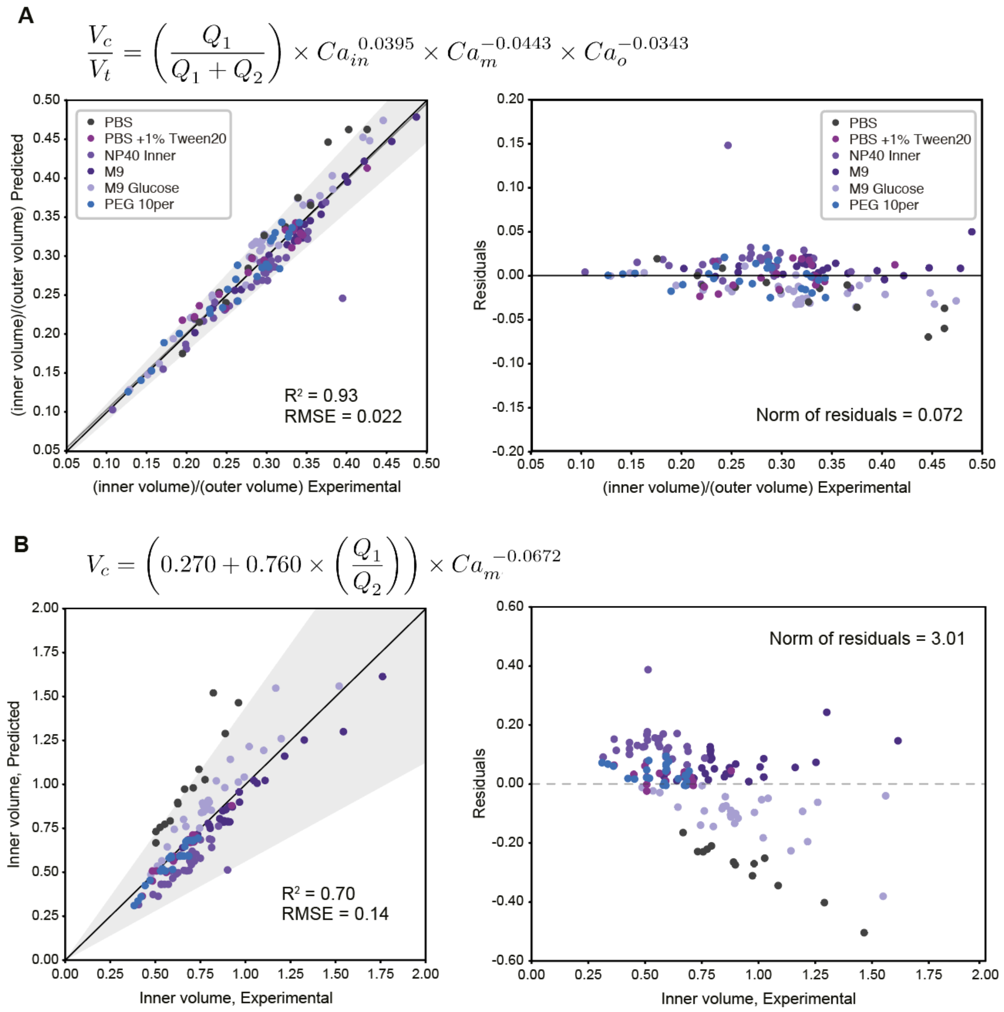

Figure S9: Additional possible size scaling laws and comparisons between predictions and measurements, (Left) Predicted vs experimental core volume: total volume ratio for 196 droplet conditions, separated by buffer composition. Dark line indicates 1:1 line; light line indicates linear regression; grey shading indicates confidence interval; R^2 and RMSE and model equation used are indicated. **(Right)** Calculated residuals of experimental results from model as a function of volume**. (A) Model C.** Droplet Core (inner): total (outer) volume ratio modelled with relevant solution properties (in the form of capillary numbers) and without an initial scalar explains 95% of observations within a 10.7% interval. **(B) Inner volume Model.** Droplet inner volume modelled with capillary numbers explains 95% of observations within a 31% interval.

Figure S10: Goodness of Fit for simplified mass conservation size scaling law

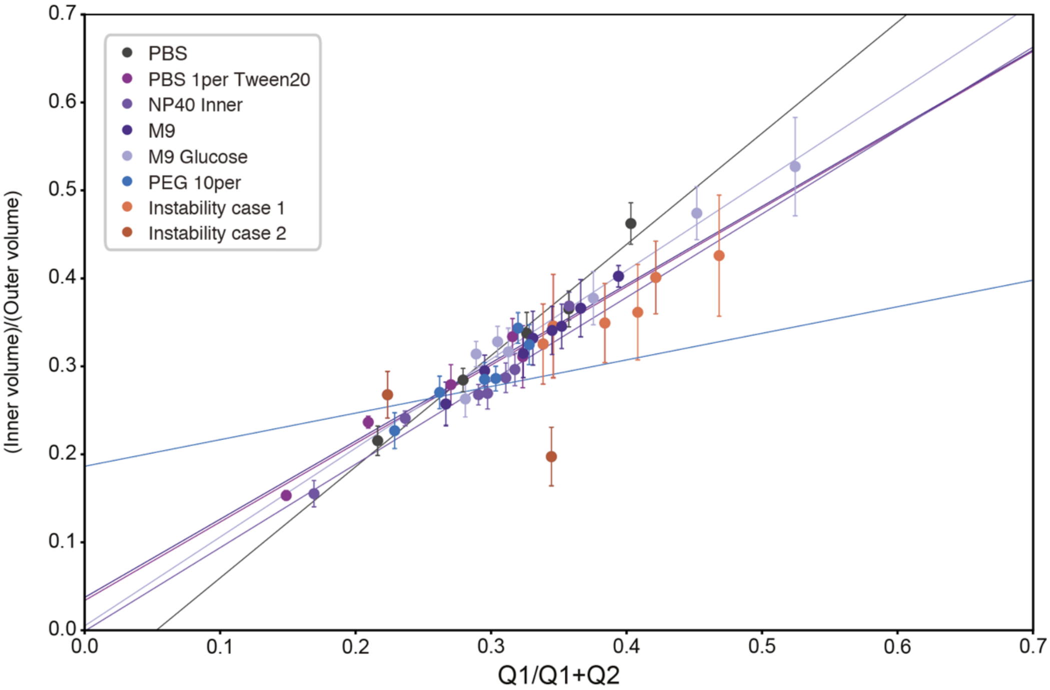

Figure S10: Goodness of Fit for simplified mass conservation size scaling law. Measured volume ratio vs ideal volume term (mass conservation only), showing deviation from the simplified size scaling model. Only Qt hold conditions are plotted. The two instability types are included in orange and red. Larger distance from model fit line indicates worse model fit. Markers indicate mean, error bars represent standard deviation, and solid lines show model fit for each buffer composition.

Table S8: Goodness of fit comparison between volume ratio models (core volume: total volume V_c:V_t)

Model	Slope	R^2	RMSE	% deviation for 95% confidence	Residual norm
A (volume ratio)	0.937	0.931	0.0209490	+/- 10.7	0.0667069
B (volume ratio)	0.924	0.924	0.0219914	+/- 11.6	0.0735105
C (volume ratio)	0.943	0.925	0.0218094	+/- 10.7	0.0722985

Table S9: Goodness of fit for each trial

Model	Trial	R^2	RMSE	% deviation for 95% confidence	Residual norm
A (volume ratio)	PBS_1per_Tween20	0.944	0.0139596	+/- 10.7	0.0037025
A (volume ratio)	PBS	0.903	0.0283926	+/- 17.2	0.0112860
A (volume ratio)	NP40_inner	0.669	0.0328502	+/- 11.3	0.0334532
A (volume ratio)	PEG_10per	0.948	0.0141316	+/- 9.60	0.0051923
A (volume ratio)	M9	0.981	0.0102821	+/- 5.00	0.0033831
A (volume ratio)	M9_glucose	0.934	0.0234474	+/- 12.3	0.0164934
B (volume ratio)	PBS_1per_Tween20	0.944	0.0139596	+/- 10.7	0.0037025
B (volume ratio)	PBS	0.903	0.0283926	+/- 17.2	0.0112860
B (volume ratio)	NP40_inner	0.669	0.0328502	+/- 11.3	0.0334532
B (volume ratio)	PEG_10per	0.948	0.0141316	+/- 9.60	0.0051923
B (volume ratio)	M9	0.981	0.0102821	+/- 5.00	0.0033831
B (volume ratio)	M9_glucose	0.934	0.0234474	+/- 12.3	0.0164934
C (volume ratio)	PBS_1per_Tween20	0.949	0.0132644	+/- 12.2	0.0033429
C (volume ratio)	PBS	0.883	0.0310915	+/- 18.6	0.0135336
C (volume ratio)	NP40_inner	0.692	0.0316759	+/- 10.7	0.0311043
C (volume ratio)	PEG_10per	0.948	0.0141471	+/- 10.1	0.0052037
C (volume ratio)	M9	0.968	0.0135780	+/- 6.30	0.0058996
C (volume ratio)	M9_glucose	0.947	0.0209877	+/- 11.4	0.0132145
Inner volume	PBS_1per_Tween20	0.925	0.0321632	+/- 14.9	0.0196549
Inner volume	PBS	-0.734	0.3410208	+/- 85.2	1.6281327
Inner volume	NP40_inner	-0.976	0.1428169	+/- 29.5	0.6322966
Inner volume	PEG_10per	0.820	0.0463829	+/- 16.8	0.0559598
Inner volume	M9	0.849	0.0805129	+/- 13.9	0.2074346
Inner volume	M9_glucose	0.746	0.1247599	+/- 24.8	0.4669510

Figure S11: Stability and instability types in DE droplet formation

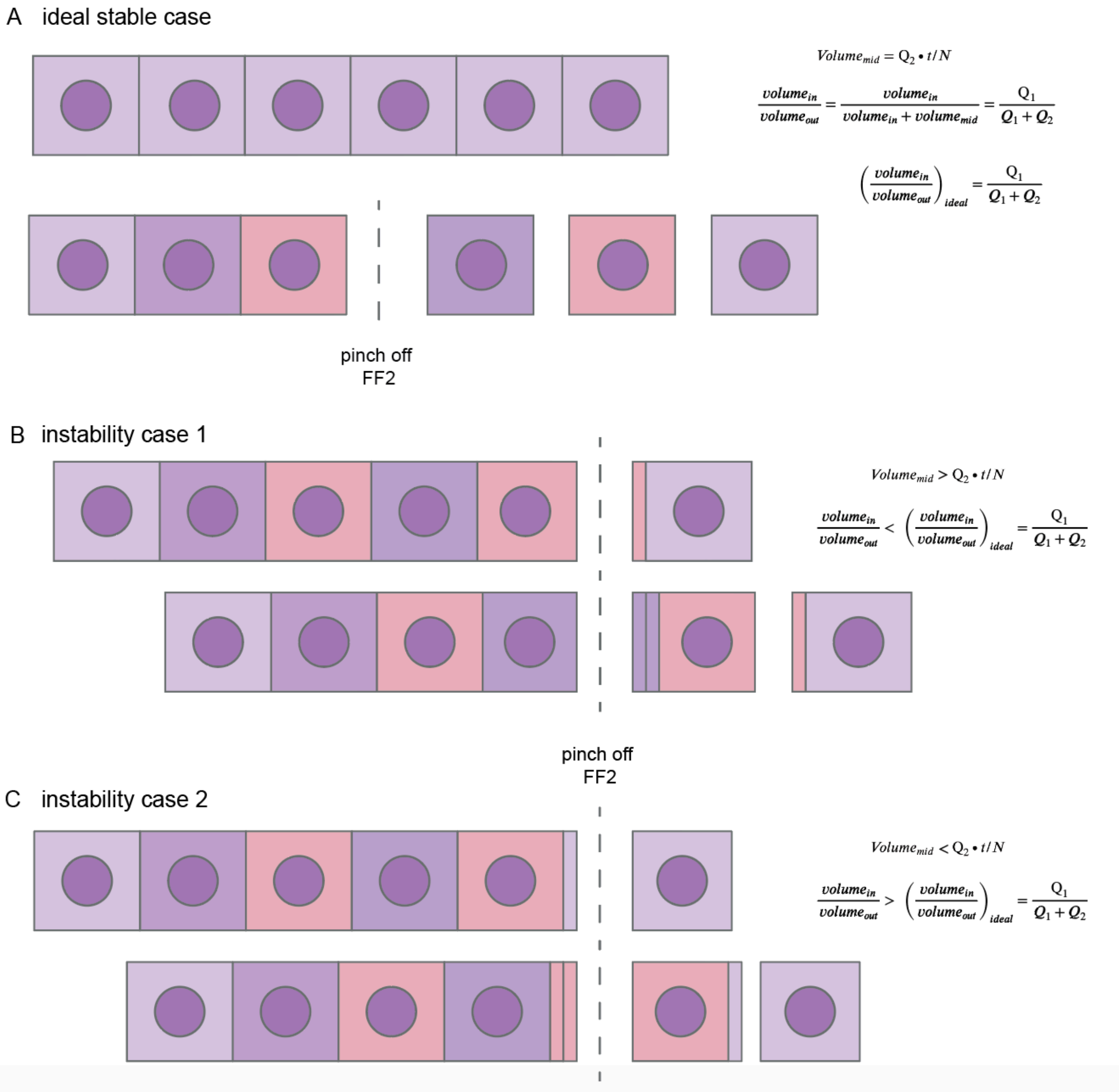

Figure S11: Stability and instability types in DE droplet formation. (A) Ideal stable case of droplet formation, where FF2 pinch off occurs with equal spacing so that $volume_{mid}$ equals time / number of droplets. Matching periodicity of oil and inner phases with outer sheath phase regulates FF2 pinch off and generates stable droplets, with inner:total volume ratio equal to Q1/Q1+Q2, as expected by mass conservation**. (B**) Case 1 type of droplet formation instability, where FF2 pinch off is later and $volume_{mid}$ is larger than the ideal case, resulting in double core droplets. **(C)** Case 2 type of droplet formation instability, where FF2 pinch off is earlier and $volume_{mid}$ is smaller than the ideal case resulting in a subpopulation of coreless droplets.

Figure S12: Representative microscopy images of DE droplets containing fluorescent E. coli.

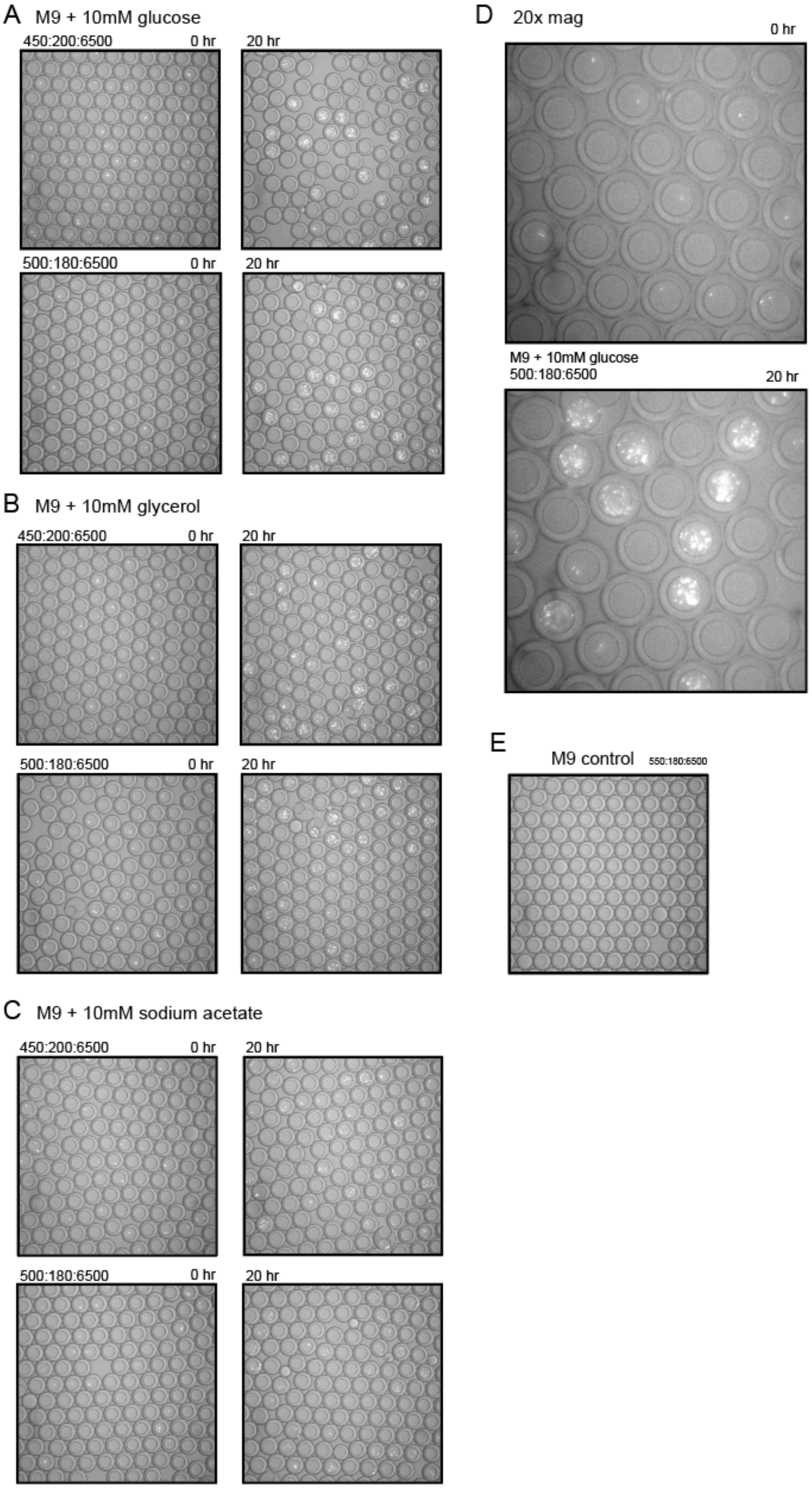

Figure S12: Representative microscopy images of DE droplets containing fluorescent E. coli. (A-C) Representative 10x microscopy images of E. coli growth in droplets at 0hr (left) and 20 hr (right) for two flow rate conditions (450:200:6500 top, 500:180:6500 bottom, Q2:Q1:Q3) for each of 3 carbon sources: **(A)** M9 + 10mM glucose, **(B)** M9 + 10mM glycerol, and **(C)** M9 + 10mM sodium acetate. **(D)** Representative microscopy images at 20x of E coli growth at 0hr and 20 hr for one flow rate and carbon source combination. **(E)** Microscopy image of control empty droplets.

Table S1: Extended interfacial and bulk fluid parameters

Surfactant System	Phase	Components	Application	Density (kg/m³)	Dynamic viscosity (mPa s)	Interfacial tension with Oil (mN/m)
PBS	Inner	PBS	Control	1005.58	0.931	0.543
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	PBS + 1% Tween-20 + 2% Pluronix-F68		1007.97	1.303	0.318
PBS + 1% Tween-20	Inner	PBS + 1% Tween-20	Cell lysis buffer	1006.48	0.988	0.319
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	PBS + 1% Tween-20 + 2% Pluronix-F68		1007.97	1.303	0.318
PBS + 0.9% NP40	Inner	PBS + 0.9% NP40 inner	Cell lysis buffer	1006.07	1.003	1.41
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	PBS + 1% Tween-20 + 2% Pluronix-F68		1007.97	1.303	0.318
M9 bacterial media	Inner	M9 salts	Bacterial growth media	1013.0	0.861	12.84
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	M9 salts + 2% Pluronix-F68		1013.4	1.412	0.5220
M9 + 25mM glucose	Inner	M9 salts + 25mM glucose	Bacterial growth media with Carbon source	1017.5	0.967	11.600
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	M9 salts + 25mM glucose + 2% Pluronix-F68		1017.9	1.563	0.4580
PBS + 10% PEG 6000 mw	Inner	PBS + 10% PEG 6000 mw	Polymer	1013.7	3.431	0.4613
	Middle	HFE-7500 + 2.2% ionic Krytox	Oxygen permeability	1619.72	1.613	n/a
	Outer	PBS + 10% PEG 6000 mw + 2% Pluronix-F68		1014.1	6.395	0.4550
Benchmarks:						
MilliQ H20 in custom oil		MilliQ H20				17.567
MilliQ H20 in HFE-7500		MilliQ H20				38.620
M9 Inner in HFE-7500		M9 salts				44.799
PBS in HFE-7500		PBS				40.587
Salt concentration sweep					**Salt concentration mM**	**IFT w/ custom oil**
PBS 0.03125x		PBS, MilliQ H20	Salt concentration sweep		1.18	4.832
PBS 0.125x		PBS, MilliQ H20	Salt concentration sweep		4.74	4.199
PBS 0.25x		PBS, MilliQ H20	Salt concentration sweep		9.48	2.576
PBS 0.5x		PBS, MilliQ H20	Salt concentration sweep		18.95	0.907
PBS		PBS	Salt concentration sweep		37.9	0.543
PBS 5x		PBS 10x, MilliQ H20	Salt concentration sweep		189.5	0.682

PBS 10x		PBS 10x	Salt concentration sweep		379	11.477
M9 inner		M9 salts	Salt concentration sweep		24.27	12.556
E coli solutions						
M9 + 10mM glucose	Inner	M9 salts, glucose				12.454
M9 + 10mM sodium acetate	Inner	M9 salts, sodium acetate				13.869
M9 + 10mM glycerol	Inner	M9 salts, glycerol				10.604

Table S2: Salt concentration sweep

Salt concentration sweep		Components	Application		Salt concentration mM	IFT w/ custom oil
PBS 0.03125x		PBS, MilliQ H20	Salt concentration sweep		1.18	4.832
PBS 0.125x		PBS, MilliQ H20	Salt concentration sweep		4.74	4.199
PBS 0.25x		PBS, MilliQ H20	Salt concentration sweep		9.48	2.576
PBS 0.5x		PBS, MilliQ H20	Salt concentration sweep		18.95	0.907
PBS		PBS	Salt concentration sweep		37.9	0.543
PBS 5x		PBS 10x, MilliQ H20	Salt concentration sweep		189.5	0.682
PBS 10x		PBS 10x	Salt concentration sweep		379	11.477
M9 inner		M9 salts	Salt concentration sweep		24.27	12.556

Table S3: E. coli solutions

E coli solutions	Phase	Components				Interfacial tension with Oil (mN/m)
M9 + 10mM glucose	Inner	M9 salts, glucose				12.454
M9 + 10mM sodium acetate	Inner	M9 salts, sodium acetate				13.869
M9 + 10mM glycerol	Inner	M9 salts, glycerol				10.604

Table S4: PBS + 1% Tween-20 Original and replicate

condition_num	trial	rho_in	sigma_in_oil	mu_in	rho_oil	mu_oil	rho_out	sigma_out_oil	mu_out	sweep_condition	Q1	Q2	Qt	Q3	outer_diam_mean	outer_diam_std	inner_diam_mean	inner_diam_std	shell_diam_mean	shell_diam_std	outer_vol_mean	outer_vol_std	inner_vol_mean	inner_vol_std	shell_vol_mean	shell_vol_std	core_total_ratio	shell_total_ratio	core_shell_ratio	n_droplets
1	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	280	510	6500	39.461	1.877	29.44	0.503	10.021	1.945	32.382	4.528	13.371	0.666	19.011	4.591	0.413	0.587	0.703	28
2	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	390	620	6500	39.617	1.413	27.314	0.679	12.303	1.76	32.681	3.513	10.69	0.8	21.991	3.849	0.327	0.673	0.486	92
3	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	395	625	6500	39.639	1.814	27.42	0.632	12.219	2.085	32.814	4.438	10.812	0.755	22.002	4.701	0.329	0.671	0.491	86
4	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	110	400	510	6500	40.715	0.54	24.51	0	16.205	0	35.357	1.4	7.71	0	27.648	0	0.218	0.782	0.279	89
5	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	150	400	550	6500	39.614	0.622	24.376	0.398	15.238	0.736	32.573	1.581	7.589	0.356	24.983	1.618	0.233	0.767	0.304	48
6	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	190	400	590	6500	38.885	0.636	25.867	0.542	13.018	0.881	30.81	1.514	9.074	0.574	21.735	1.682	0.295	0.705	0.417	96
7	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	220	400	620	6500	38.865	0.619	26.877	0.481	11.988	0.779	30.762	1.485	10.176	0.529	20.586	1.57	0.331	0.669	0.494	97
8	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	225	400	625	6500	38.725	0.606	26.923	0.436	11.802	0.665	30.429	1.372	10.226	0.479	20.203	1.356	0.336	0.664	0.506	85
9	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	230	400	630	6500	39.371	0.699	26.923	0.519	12.448	0.887	31.985	1.718	10.229	0.58	21.756	1.833	0.32	0.68	0.47	85
10	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	225	405	630	6500	39.716	1.264	26.924	0.546	12.793	1.426	32.901	3.173	10.231	0.612	22.67	3.287	0.311	0.689	0.451	93

11	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	405	635	6500	39.189	1.318	27.442	0.606	11.748	1.521	31.621	3.257	10.836	0.729	20.785	3.425	0.343	0.657	0.521	99
12	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	220	410	630	6500	39.041	0.732	27.09	0.194	11.951	0.756	31.191	1.813	10.411	0.225	20.78	1.826	0.334	0.666	0.501	89
13	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	410	640	6500	39.157	0.839	27.155	0.5	12.002	0.925	31.48	2.059	10.495	0.586	20.984	2.06	0.333	0.667	0.5	99
14	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	190	440	630	6500	38.858	0.412	25.384	0.648	13.475	0.872	30.732	0.983	8.58	0.644	22.152	1.337	0.279	0.721	0.387	127
15	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	150	480	630	6500	39.629	0.382	24.51	0	15.119	0	32.595	0.937	7.71	0	24.885	0	0.237	0.763	0.31	100
16	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	110	520	630	6500	40.98	0.482	21.93	0	19.05	0	36.049	1.258	5.522	0	30.527	0	0.153	0.847	0.181	86
17	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	520	750	6500	38.628	0.879	25.785	0.37	12.843	1.008	30.227	2.226	8.982	0.385	21.245	2.313	0.297	0.703	0.423	86
18	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	640	870	6500	38.837	0.58	24.51	0	14.327	0	30.691	1.382	7.71	0	22.982	0	0.251	0.749	0.335	90
19	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	760	990	6500	38.891	0.455	23.555	0.568	15.336	0.749	30.813	1.087	6.855	0.509	23.958	1.227	0.222	0.778	0.286	104
20	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Central condition	230	400	630	6500	40.221	0.315	28.783	0.602	11.438	0.613	34.075	0.805	12.502	0.796	21.573	0.997	0.367	0.633	0.58	80
21	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	220	400	620	6500	40.231	0.332	28.326	0.26	11.905	0.389	34.102	0.845	11.903	0.314	22.199	0.855	0.349	0.651	0.536	72
22	PBS_1per_Tween20_replicate	1006.	0.000320	0.009875	1619	0.016135	1007	0.000328	0.013034	Q2 hold	225	400	625	65	40.162	0.361	28.372	0.34	11.79	0.471	33.928	0.922	11.963	0.43	21.964	0.979	0.353	0.647	0.545	159

		478			.72		.97							00															
23	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	235	400	635	6500	40.228	0.329	28.776	0.599	11.452	0.646	34.093	0.837	12.492	0.793	21.601	1.08	0.366	0.634	0.578	75
24	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	240	400	640	6500	40.184	0.675	28.688	0.552	11.496	0.786	34.004	1.734	12.377	0.731	21.627	1.747	0.364	0.636	0.572	138
25	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	390	620	6500	40.238	0.351	28.711	0.571	11.527	0.697	34.12	0.892	12.406	0.755	21.714	1.221	0.364	0.636	0.571	39
26	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	395	625	6500	40.242	0.329	28.506	0.387	11.736	0.507	34.129	0.839	12.136	0.513	21.994	0.981	0.356	0.644	0.552	51
27	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	405	635	6500	40.47	0.295	29.326	0.573	11.144	0.525	34.71	0.752	13.22	0.759	21.49	0.818	0.381	0.619	0.615	105
28	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	410	640	6500	40.106	0.338	28.321	0.419	11.785	0.549	33.785	0.856	11.902	0.522	21.883	1.021	0.352	0.648	0.544	66
29	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	150	400	550	6500	40.605	0.274	25.8	0	14.805	0	35.06	0.709	8.992	0	26.068	0	0.256	0.744	0.345	160
30	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	190	400	590	6500	40.446	0.453	27.195	0.354	13.252	0.583	34.658	1.157	10.536	0.427	24.122	1.245	0.304	0.696	0.437	160
31	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	270	400	670	6500	40.887	1.339	30.524	0.726	10.363	1.266	35.902	3.49	14.915	1.066	20.986	3.267	0.415	0.585	0.711	68
32	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	280	510	6500	40.265	0.948	30.751	0.961	9.514	0.583	34.237	2.42	15.27	1.441	18.967	1.529	0.446	0.554	0.805	68
33	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	520	750	6500	40	0.348	26.364	0.886	13.635	1.124	33.517	0.886	9.627	0.943	23.89	1.618	0.287	0.713	0.403	64

34	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	640	870	6500	40.015	0.285	25.532	0.527	14.483	0.624	33.553	0.719	8.726	0.524	24.828	0.93	0.26	0.74	0.351	77
35	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	760	990	6500	39.784	0.329	24.501	0.106	15.283	0.334	32.977	0.812	7.702	0.095	25.275	0.807	0.234	0.766	0.305	147
36	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	240	390	630	6500	40.482	0.649	29.167	0.632	11.315	0.885	34.764	1.632	13.01	0.836	21.753	1.796	0.374	0.626	0.598	118
37	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	235	395	630	6500	40.568	0.398	28.698	0.56	11.87	0.56	34.968	1.033	12.389	0.741	22.579	1.035	0.354	0.646	0.549	65
38	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	225	405	630	6500	40.444	0.441	28.434	0.26	12.01	0.476	34.652	1.105	12.04	0.344	22.612	1.105	0.347	0.653	0.532	119
39	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	220	410	630	6500	40.501	0.315	28.366	0.4	12.135	0.489	34.792	0.808	11.958	0.505	22.834	0.916	0.344	0.656	0.524	188
40	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	150	480	630	6500	41.515	0.325	24.848	0.57	16.668	0.669	37.472	0.882	8.045	0.566	29.427	1.071	0.215	0.785	0.273	107
41	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	110	520	630	6500	42.537	0.252	23.22	0	19.317	0	40.304	0.714	6.555	0	33.749	0	0.163	0.837	0.194	59

Table S5: All trials no replicates with fluid property parameters

condition_num	trial	rho_in	sigma_in_oil	mu_in	rho_oil	mu_oil	rho_out	sigma_out_oil	mu_out	sweep_condition	Q1	Q2	Qt	Q3	outer_diam_mean	outer_diam_std	inner_diam_mean	inner_diam_std	shell_diam_mean	shell_diam_std	outer_vol_mean	outer_vol_std	inner_vol_mean	inner_vol_std	shell_vol_mean	shell_vol_std	core_total_ratio	shell_total_ratio	core_shell_ratio	n_droplets
1	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	280	510	6500	39.461	1.877	29.44	0.503	10.021	1.945	32.382	4.528	13.371	0.666	19.011	4.591	0.413	0.587	0.703	28
2	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	390	620	6500	39.617	1.413	27.314	0.679	12.303	1.76	32.681	3.513	10.69	0.8	21.991	3.849	0.327	0.673	0.486	92
3	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	395	625	6500	39.639	1.814	27.42	0.632	12.219	2.085	32.814	4.438	10.812	0.755	22.002	4.701	0.329	0.671	0.491	86
4	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	110	400	510	6500	40.715	0.54	24.51	0	16.205	0	35.357	1.4	7.71	0	27.648	0	0.218	0.782	0.279	89
5	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	150	400	550	6500	39.614	0.622	24.376	0.398	15.238	0.736	32.573	1.581	7.589	0.356	24.983	1.618	0.233	0.767	0.304	48
6	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	190	400	590	6500	38.885	0.636	25.867	0.542	13.018	0.881	30.81	1.514	9.074	0.574	21.735	1.682	0.295	0.705	0.417	96
7	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	220	400	620	6500	38.865	0.619	26.877	0.481	11.988	0.779	30.762	1.485	10.176	0.529	20.586	1.57	0.331	0.669	0.494	97
8	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q2 hold	225	400	625	6500	38.725	0.606	26.923	0.436	11.802	0.665	30.429	1.372	10.226	0.479	20.203	1.356	0.336	0.664	0.506	85
9	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	230	400	630	6500	39.371	0.699	26.923	0.519	12.448	0.887	31.985	1.718	10.229	0.58	21.756	1.833	0.32	0.68	0.47	85

10	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	225	405	630	6500	39.716	1.264	26.924	0.546	12.793	1.426	32.901	3.173	10.231	0.612	22.67	3.287	0.311	0.689	0.451	93
11	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	405	635	6500	39.189	1.318	27.442	0.606	11.748	1.521	31.621	3.257	10.836	0.729	20.785	3.425	0.343	0.657	0.521	99
12	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	220	410	630	6500	39.041	0.732	27.09	0.194	11.951	0.756	31.191	1.813	10.411	0.225	20.78	1.826	0.334	0.666	0.501	89
13	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	410	640	6500	39.157	0.839	27.155	0.5	12.002	0.925	31.48	2.059	10.495	0.586	20.984	2.06	0.333	0.667	0.5	99
14	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	190	440	630	6500	38.858	0.412	25.384	0.648	13.475	0.872	30.732	0.983	8.58	0.644	22.152	1.337	0.279	0.721	0.387	127
15	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	150	480	630	6500	39.629	0.382	24.51	0	15.119	0	32.595	0.937	7.71	0	24.885	0	0.237	0.763	0.31	100
16	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Qt	110	520	630	6500	40.98	0.482	21.93	0	19.05	0	36.049	1.258	5.522	0	30.527	0	0.153	0.847	0.181	86
17	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	520	750	6500	38.628	0.879	25.785	0.37	12.843	1.008	30.227	2.226	8.982	0.385	21.245	2.313	0.297	0.703	0.423	86
18	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	640	870	6500	38.837	0.58	24.51	0	14.327	0	30.691	1.382	7.71	0	22.982	0	0.251	0.749	0.335	90
19	PBS_1per_Tween20	1006.478	0.000303	0.009875	1619.72	0.016135	1007.97	0.000322	0.013034	Q1 hold	230	760	990	6500	38.891	0.455	23.555	0.568	15.336	0.749	30.813	1.087	6.855	0.509	23.958	1.227	0.222	0.778	0.286	104
20	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	230	280	510	6500	45.136	0.628	34.9	0.623	10.236	0.765	48.173	2.024	22.278	1.197	25.895	2.075	0.462	0.538	0.86	111
21	PBS	1005.58	0.000543	0.009311	1619	0.016135	1007	0.000318	0.013034	Qt	270	360	630	65	43.252	0.607	33.448	0.334	9.804	0.673	42.39	1.785	19.599	0.568	22.791	1.839	0.462	0.538	0.86	84

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22	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	240	390	630	6500	43.359	0.739	31.002	0.23	12.357	0.8	42.717	2.174	15.604	0.362	27.113	2.244	0.365	0.635	0.576	92
23	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	110	400	510	6500	47.996	0.751	26.854	0.587	21.142	1.043	57.934	2.632	10.154	0.656	47.78	2.844	0.175	0.825	0.213	142
24	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	150	400	550	6500	45.754	0.462	28.435	0.735	17.319	0.946	50.168	1.521	12.063	0.934	38.105	1.944	0.24	0.76	0.317	93
25	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	190	400	590	6500	44.22	0.765	30.451	0.635	13.77	1.06	45.316	2.382	14.803	0.916	30.513	2.665	0.327	0.673	0.485	76
26	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	230	400	630	6500	43.813	0.471	31.587	0.649	12.227	0.923	44.052	1.42	16.521	1.019	27.531	2.011	0.375	0.625	0.6	70
27	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	270	400	670	6500	46.246	1.024	35.337	0.839	10.908	1.229	51.861	3.434	23.143	1.654	28.717	3.591	0.446	0.554	0.806	89
28	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	220	410	630	6500	43.846	0.528	30.525	0.613	13.321	0.858	44.155	1.605	14.911	0.885	29.244	1.929	0.338	0.662	0.51	95
29	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	190	440	630	6500	45.071	0.509	29.643	0.326	15.429	0.6	47.958	1.613	13.643	0.446	34.315	1.672	0.284	0.716	0.398	94
30	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	150	480	630	6500	46.699	0.729	27.992	0.594	18.707	0.982	53.362	2.48	11.499	0.718	41.863	2.64	0.215	0.785	0.275	113
31	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	230	520	750	6500	44.248	0.42	29.554	0.371	14.694	0.625	45.372	1.286	13.522	0.491	31.85	1.486	0.298	0.702	0.425	100
32	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	230	640	870	6500	44.577	0.509	28.206	0.557	16.371	0.856	46.399	1.587	11.763	0.686	34.636	1.906	0.254	0.746	0.34	89

33	PBS	1005.58	0.000543	0.009311	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	230	760	990	6500	45.795	0.935	27.69	0.647	18.105	0.953	50.349	3.031	11.135	0.782	39.214	2.88	0.221	0.779	0.284	101
34	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	400	640	6500	38.29	0.678	26.497	0.646	11.792	0.878	29.421	1.573	9.758	0.71	19.663	1.644	0.332	0.668	0.496	111
35	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	450	690	6500	38.366	0.547	25.627	0.497	12.739	0.696	29.587	1.29	8.822	0.501	20.765	1.327	0.298	0.702	0.425	127
36	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	280	460	740	6500	37.776	0.519	27.09	0	10.686	0	28.242	1.216	10.409	0	17.833	0	0.369	0.631	0.584	106
37	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	250	490	740	6500	38.939	0.464	25.959	0.426	12.98	0.66	30.927	1.098	9.167	0.468	21.76	1.235	0.296	0.704	0.421	178
38	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	140	500	640	6500	40.587	0.6	23.22	0	17.367	0	35.03	1.491	6.555	0	28.474	0	0.187	0.813	0.23	134
39	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	190	500	690	6500	39.207	0.537	24.235	0.553	14.972	0.793	31.574	1.298	7.464	0.498	24.109	1.416	0.236	0.764	0.31	136
40	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	245	500	745	6500	38.823	0.741	25.832	0.201	12.991	0.773	30.672	1.766	9.027	0.22	21.645	1.786	0.294	0.706	0.417	122
41	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	270	500	770	6500	39.012	0.365	27.09	0	11.922	0	31.095	0.869	10.409	0	20.686	0	0.335	0.665	0.503	89
42	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	300	500	800	6500	39.584	1.017	27.146	0.269	12.438	0.864	32.539	2.603	10.477	0.325	22.062	2.395	0.322	0.678	0.475	23
43	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q2 hold	330	500	830	6500	39.152	0.432	28.076	0.578	11.076	0.729	31.436	1.05	11.602	0.703	19.834	1.278	0.369	0.631	0.585	106
44	NP40_inner	1006.07	0.00141	0.010028	1619	0.016135	1007	0.000318	0.013034	Q2 hold	360	500	860	65	39.255	0.528	24.6	0.33	14.655	0.638	31.689	1.28	7.799	0.328	23.89	1.338	0.246	0.754	0.326	143

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45	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	235	505	740	6500	38.007	0.808	24.552	0.229	13.455	0.827	28.784	1.695	7.751	0.228	21.033	1.696	0.269	0.731	0.369	154
46	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	230	510	740	6500	38.032	0.522	24.519	0.108	13.513	0.564	28.82	1.18	7.718	0.107	21.101	1.215	0.268	0.732	0.366	144
47	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	190	550	740	6500	39.388	0.463	24.51	0	14.878	0	32.008	1.125	7.71	0	24.299	0	0.241	0.759	0.317	132
48	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	550	790	6500	38.454	0.441	24.559	0.248	13.895	0.563	29.785	1.036	7.758	0.247	22.027	1.129	0.26	0.74	0.352	79
49	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Qt	140	600	740	6500	41.145	1.164	22.124	0.463	19.021	1.272	36.551	2.58	5.677	0.371	30.874	2.629	0.155	0.845	0.184	100
50	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	600	840	6500	39.065	0.805	24.356	0.455	14.709	0.995	31.254	1.969	7.573	0.411	23.681	2.085	0.242	0.758	0.32	109
51	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	650	890	6500	38.835	0.651	23.821	0.646	15.014	1.011	30.692	1.55	7.093	0.578	23.599	1.765	0.231	0.769	0.301	118
52	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	700	940	6500	38.413	0.414	23.22	0	15.193	0	29.689	0.956	6.555	0	23.134	0	0.221	0.779	0.283	99
53	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	750	990	6500	38.64	0.379	23.22	0	15.42	0	30.215	0.89	6.555	0	23.659	0	0.217	0.783	0.277	32
54	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	800	1040	6500	38.493	0.447	23.22	0	15.273	0	29.876	1.037	6.555	0	23.32	0	0.219	0.781	0.281	162
55	NP40_inner	1006.07	0.00141	0.010028	1619.72	0.016135	1007.97	0.000318	0.013034	Q1 hold	240	850	1090	6500	38.751	0.549	21.93	0	16.821	0	30.486	1.287	5.522	0	24.964	0	0.181	0.819	0.221	38

56	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	240	495	735	6500	39.907	0.396	26.197	0.603	13.71	0.793	33.288	0.993	9.428	0.663	23.859	1.311	0.283	0.717	0.395	39
57	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	245	495	740	6500	39.189	0.623	25.855	0.262	13.334	0.702	31.537	1.543	9.052	0.288	22.485	1.6	0.287	0.713	0.403	94
58	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	230	500	730	6500	38.874	0.498	25.8	0	13.074	0	30.775	1.192	8.992	0	21.783	0	0.292	0.708	0.413	78
59	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	235	500	735	6500	38.928	0.745	25.8	0	13.128	0	30.92	1.784	8.992	0	21.928	0	0.291	0.709	0.41	105
60	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	240	500	740	6500	38.877	0.585	25.077	0.665	13.8	0.994	30.786	1.397	8.275	0.665	22.512	1.694	0.269	0.731	0.368	116
61	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	250	500	750	6500	38.519	0.491	25.37	0.752	13.149	1.027	29.938	1.15	8.572	0.765	21.366	1.575	0.286	0.714	0.401	54
62	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	240	505	745	6500	38.778	0.439	25.304	0.66	13.474	0.919	30.544	1.045	8.5	0.66	22.043	1.428	0.278	0.722	0.386	91
63	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	240	510	750	6500	38.879	0.598	25.395	0.747	13.484	1.13	30.793	1.428	8.597	0.761	22.195	1.866	0.279	0.721	0.387	86
64	NP40_inner	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	90	650	740	6500	44.592	0.639	20.913	0.532	23.679	0.821	46.454	1.969	4.798	0.379	41.656	1.996	0.103	0.897	0.115	52
65	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	350	600	6500	41.897	1.831	30.796	0.431	11.101	1.949	38.725	4.921	15.301	0.623	23.424	5.06	0.395	0.605	0.653	157
66	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	400	650	6500	41.919	0.893	29.659	0.118	12.26	0.901	38.621	2.476	13.661	0.157	24.96	2.481	0.354	0.646	0.547	119
67	M9	1013	0.01284	0.008615	1619	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	440	690	65	41.334	0.571	28.38	0	12.954	0	36.997	1.611	11.968	0	25.029	0	0.323	0.677	0.478	103

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68	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	290	410	700	6500	41.929	0.428	30.96	0	10.969	0	38.609	1.181	15.538	0	23.07	0	0.402	0.598	0.674	105
69	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	270	430	700	6500	42.33	0.86	30.28	0.646	12.05	1.025	39.763	2.45	14.557	0.933	25.207	2.536	0.366	0.634	0.577	148
70	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	260	440	700	6500	41.838	0.657	29.356	0.556	12.482	0.893	38.374	1.821	13.26	0.736	25.114	2.021	0.346	0.654	0.528	115
71	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	445	695	6500	41.025	0.491	28.38	0	12.645	0	36.168	1.296	11.968	0	24.2	0	0.331	0.669	0.495	140
72	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	255	445	700	6500	42.066	0.854	29.386	0.537	12.68	1.095	39.023	2.34	13.3	0.711	25.723	2.579	0.341	0.659	0.517	109
73	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	210	450	660	6500	42.196	0.631	27.919	0.621	14.277	0.919	39.363	1.807	11.411	0.75	27.953	2.009	0.29	0.71	0.408	123
74	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	240	450	690	6500	40.979	0.945	28.38	0	12.599	0	36.088	2.25	11.968	0	24.119	0	0.332	0.668	0.496	118
75	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	245	450	695	6500	41.547	0.68	28.448	0.393	13.099	0.827	37.58	1.874	12.061	0.51	25.518	2.001	0.321	0.679	0.473	95
76	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	250	450	700	6500	41.972	0.714	29.185	0.628	12.787	0.865	38.748	1.971	13.034	0.831	25.714	2.003	0.336	0.664	0.507	117
77	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	255	450	705	6500	41.357	1.274	28.393	0.846	12.964	1.63	37.133	2.708	12.016	1.072	25.117	3.094	0.324	0.676	0.478	101
78	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q2 hold	260	450	710	6500	41.127	0.536	28.368	0.126	12.76	0.569	36.442	1.425	11.953	0.153	24.489	1.456	0.328	0.672	0.488	104

79	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q2 hold	350	450	800	6500	41.276	0.611	30.96	0	10.316	0	36.846	1.644	15.538	0	21.307	0	0.422	0.578	0.729	134
80	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q2 hold	400	450	850	6500	42.227	0.799	32.298	0.246	9.929	0.77	39.467	2.308	17.645	0.418	21.822	2.226	0.447	0.553	0.809	107
81	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q2 hold	450	450	900	6500	42.353	0.795	33.125	0.605	9.228	0.903	39.821	2.3	19.051	1.029	20.771	2.332	0.478	0.522	0.917	112
82	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q2 hold	550	450	1000	6500	42.532	0.857	33.54	0	8.992	0	40.335	2.472	19.755	0	20.579	0	0.49	0.51	0.96	108
83	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q2 hold	650	450	1100	6500	43.553	1.002	36.046	0.301	7.507	1.013	43.324	2.993	24.528	0.595	18.796	2.992	0.566	0.434	1.305	105
84	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Qt	245	455	700	6500	42.036	0.821	29.102	0.686	12.935	1.11	38.937	2.337	12.926	0.908	26.012	2.571	0.332	0.668	0.497	118
85	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q1 hold	250	455	705	6500	41.309	0.64	28.38	0.501	12.929	0.76	36.935	1.722	11.979	0.635	24.956	1.747	0.324	0.676	0.48	107
86	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Qt	240	460	700	6500	42.048	0.62	28.589	0.718	13.459	0.984	38.95	1.725	12.258	0.924	26.693	2.01	0.315	0.685	0.459	105
87	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Q1 hold	250	460	710	6500	41.473	0.534	28.351	0.192	13.122	0.582	37.368	1.454	11.933	0.232	25.435	1.49	0.319	0.681	0.469	133
88	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Qt	220	480	700	6500	42.458	0.675	28.268	0.364	14.19	0.719	40.106	1.889	11.833	0.44	28.273	1.875	0.295	0.705	0.419	104
89	M9	1013	0.01284	0.0008615	1619.72	0.0016135	1013.4	0.000522	0.0014117	Qt	200	500	700	6500	43.175	1.254	27.469	0.59	15.707	1.338	42.239	2.986	10.867	0.713	31.372	3.005	0.257	0.743	0.346	109
90	M9	1013	0.01284	0.0008615	1619	0.0016135	1013.4	0.000522	0.0014117	Q1 hold	250	530	780	65	41.932	0.787	28.105	0.531	13.826	0.988	38.643	2.095	11.636	0.641	27.007	2.257	0.301	0.699	0.431	108

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91	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	650	900	6500	42.589	0.905	27.059	0.257	15.53	0.874	40.5	2.343	10.377	0.289	30.123	2.297	0.256	0.744	0.344	125
92	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	750	1000	6500	42.991	1.352	26.481	0.647	16.51	1.575	41.715	3.099	9.74	0.711	31.975	3.279	0.233	0.767	0.305	108
93	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Q1 hold	250	850	1100	6500	43.739	0.501	25.662	0.437	18.077	0.772	43.831	1.505	8.856	0.438	34.975	1.709	0.202	0.798	0.253	112
94	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	290	410	700	6500	41.929	0.428	30.96	0	10.969	0	38.609	1.181	15.538	0	23.07	0	0.402	0.598	0.674	105
95	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	270	430	700	6500	42.33	0.86	30.28	0.646	12.05	1.025	39.763	2.45	14.557	0.933	25.207	2.536	0.366	0.634	0.577	148
96	M9	1013	0.01284	0.008615	1619.72	0.016135	1013.4	0.000522	0.014117	Qt	200	500	700	6500	43.175	1.254	27.469	0.59	15.707	1.338	42.239	2.986	10.867	0.713	31.372	3.005	0.257	0.743	0.346	109
97	M9_glucose	1017.5	0.0116	0.009668	1619.72	0.016135	1017.9	0.000458	0.015630	Q1 hold	200	250	450	6500	46.456	0.883	35.55	0.644	10.907	1	52.553	3.024	23.547	1.273	29.006	3.074	0.448	0.552	0.812	95
98	M9_glucose	1017.5	0.0116	0.009668	1619.72	0.016135	1017.9	0.000458	0.015630	Q1 hold	200	300	500	6500	45.053	0.842	32.798	0.641	12.255	1.103	47.93	2.699	18.494	1.089	29.437	3.005	0.386	0.614	0.628	106
99	M9_glucose	1017.5	0.0116	0.009668	1619.72	0.016135	1017.9	0.000458	0.015630	Qt	350	300	650	6500	44.091	1.349	35.636	0.655	8.455	1.243	45.004	4.103	23.72	1.289	21.284	3.789	0.527	0.473	1.114	96
100	M9_glucose	1017.5	0.0116	0.009668	1619.72	0.016135	1017.9	0.000458	0.015630	Q1 hold	200	350	550	6500	44.914	0.998	32.124	0.387	12.79	1.098	47.507	3	17.364	0.608	30.143	3.108	0.366	0.634	0.576	51
101	M9_glucose	1017.5	0.0116	0.009668	1619.72	0.016135	1017.9	0.000458	0.015630	Qt	300	350	650	6500	42.573	0.536	33.192	0.576	9.382	0.588	40.422	1.533	19.163	0.978	21.259	1.41	0.474	0.526	0.901	100

102	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	400	600	6500	45.504	0.812	30.935	0.179	14.569	0.884	49.381	2.672	15.502	0.258	33.879	2.763	0.314	0.686	0.458	103
103	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	250	400	650	6500	42.69	1.016	30.866	0.337	11.824	1.095	40.807	3.009	15.403	0.486	25.404	3.082	0.377	0.623	0.606	110
104	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	440	640	6500	43.543	0.817	29.528	0.442	14.015	0.865	43.272	2.478	13.489	0.59	29.783	2.452	0.312	0.688	0.453	109
105	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	210	440	650	6500	42.781	0.713	29.146	0.687	13.634	0.917	41.03	2.064	12.986	0.9	28.044	2.125	0.316	0.684	0.463	101
106	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	445	645	6500	43.284	0.546	29.186	0.653	14.098	0.895	42.481	1.648	13.037	0.859	29.444	1.933	0.307	0.693	0.443	104
107	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	205	445	650	6500	43.171	0.566	29.774	0.353	13.397	0.617	42.149	1.612	13.826	0.509	28.323	1.609	0.328	0.672	0.488	124
108	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	150	450	600	6500	44.747	0.543	28.051	0.566	16.697	0.853	46.934	1.709	11.57	0.683	35.364	1.952	0.247	0.753	0.327	94
109	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	190	450	640	6500	43.356	0.757	28.989	0.667	14.367	0.994	42.711	2.313	12.776	0.879	29.935	2.445	0.299	0.701	0.427	127
110	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	195	450	645	6500	43.213	0.595	29.427	0.507	13.786	0.807	42.275	1.773	13.354	0.671	28.921	1.937	0.316	0.684	0.462	122
111	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	200	450	650	6500	43.211	0.977	29.464	0.475	13.747	1.119	42.312	2.922	13.403	0.628	28.908	3.033	0.317	0.683	0.464	119
112	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	205	450	655	6500	42.996	0.637	29.419	0.513	13.577	0.874	41.645	1.874	13.343	0.679	28.302	2.087	0.32	0.68	0.471	113
113	M9_glucose	1017.5	0.0116	0.0009668	1619	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	210	450	660	65	43.134	0.63	29.658	0.122	13.475	0.643	42.046	1.873	13.661	0.161	28.386	1.881	0.325	0.675	0.481	112

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114	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	250	450	700	6500	42.413	0.867	30.54	0.945	11.873	1.168	39.996	2.387	14.957	1.407	25.039	2.528	0.374	0.626	0.597	172
115	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	300	450	750	6500	42.165	0.741	31.149	0.554	11.016	0.828	39.287	2.099	15.839	0.863	23.448	2.101	0.403	0.597	0.676	205
116	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q2 hold	350	450	800	6500	42.445	1.237	32.598	0.664	9.847	1.269	40.138	3.432	18.16	1.115	21.979	3.397	0.452	0.548	0.826	63
117	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	195	455	650	6500	43.56	0.547	29.61	0.273	13.95	0.609	43.298	1.616	13.596	0.361	29.701	1.652	0.314	0.686	0.458	129
118	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	455	655	6500	43.031	1.107	29.406	0.522	13.625	1.132	41.798	2.639	13.327	0.691	28.471	2.603	0.319	0.681	0.468	132
119	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Qt	190	460	650	6500	43.62	0.546	27.935	0.64	15.685	0.937	43.478	1.633	11.432	0.777	32.046	1.971	0.263	0.737	0.357	113
120	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	460	660	6500	43.562	0.713	29.035	0.774	14.527	1.04	43.319	2.17	12.843	1.005	30.476	2.373	0.296	0.704	0.421	130
121	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	600	800	6500	45.305	0.722	28.534	0.681	16.77	0.965	48.726	2.35	12.185	0.875	36.54	2.461	0.25	0.75	0.333	117
122	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	700	900	6500	46.05	0.86	27.849	0.638	18.201	1.106	51.184	2.87	11.326	0.771	39.857	3.022	0.221	0.779	0.284	119
123	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	800	1000	6500	45.843	0.715	26.542	0.64	19.302	0.969	50.483	2.357	9.807	0.704	40.676	2.469	0.194	0.806	0.241	120
124	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	900	1100	6500	46.585	0.666	25.405	0.597	21.18	0.947	52.967	2.268	8.599	0.594	44.368	2.414	0.162	0.838	0.194	111

125	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	1000	1200	6500	47.149	0.797	24.944	0.612	22.205	1.155	54.926	2.775	8.141	0.609	46.785	3.029	0.148	0.852	0.174	113
126	M9_glucose	1017.5	0.0116	0.0009668	1619.72	0.0016135	1017.9	0.000458	0.0015630	Q1 hold	200	1200	1400	6500	47.868	0.839	24.177	0.568	23.691	1.145	57.481	3.062	7.411	0.508	50.07	3.25	0.129	0.871	0.148	89
127	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	350	550	6500	38.849	0.926	27.208	0.373	11.641	0.95	30.753	2.191	10.552	0.451	20.2	2.17	0.343	0.657	0.522	142
128	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	370	570	6500	39.155	0.616	27.039	0.253	12.116	0.69	31.455	1.494	10.353	0.278	21.102	1.548	0.329	0.671	0.491	126
129	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	390	590	6500	39.229	0.772	25.8	0	13.429	0	31.647	1.915	8.992	0	22.655	0	0.284	0.716	0.397	118
130	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	210	390	600	6500	39.253	0.757	26.984	0.355	12.269	0.92	31.702	1.863	10.293	0.39	21.409	2.004	0.325	0.675	0.481	122
131	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	205	395	600	6500	38.618	0.578	27.052	0.22	11.566	0.662	30.176	1.344	10.367	0.242	19.809	1.418	0.344	0.656	0.523	101
132	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q2 hold	150	400	550	6500	40.273	0.851	25.626	0.442	14.647	1.07	34.247	2.171	8.819	0.44	25.428	2.341	0.258	0.742	0.347	126
133	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q2 hold	160	400	560	6500	39.52	0.604	24.65	0.402	14.87	0.759	32.341	1.482	7.849	0.4	24.492	1.574	0.243	0.757	0.32	166
134	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q2 hold	180	400	580	6500	39.696	0.812	25.792	0.101	13.904	0.828	32.792	2.011	8.984	0.101	23.808	2.023	0.274	0.726	0.377	162
135	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q2 hold	190	400	590	6500	38.973	0.614	25.8	0	13.173	0	31.019	1.467	8.992	0	22.027	0	0.29	0.71	0.408	92
136	PEG_10per	1013.7	0.000461	0.003431	1619	0.0016135	1014.1	0.000455	0.006395	Qt	200	400	600	65	39.086	0.75	27.019	0.296	12.067	0.829	31.3	1.848	10.331	0.325	20.969	1.902	0.33	0.67	0.493	127

					.72									00																
137	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q2 hold	220	400	620	6500	38.909	0.544	27.071	0.154	11.838	0.59	30.861	1.295	10.389	0.169	20.472	1.334	0.337	0.663	0.507	139
138	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	195	405	600	6500	39.154	0.623	25.809	0.108	13.345	0.63	31.453	1.494	9.002	0.119	22.451	1.496	0.286	0.714	0.401	142
139	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	405	605	6500	39.223	0.949	26.937	0.419	12.286	1.069	31.651	2.371	10.241	0.46	21.41	2.449	0.324	0.676	0.478	118
140	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	190	410	600	6500	39.253	0.742	25.846	0.285	13.407	0.735	31.701	1.821	9.043	0.309	22.658	1.779	0.285	0.715	0.399	141
141	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	410	610	6500	38.859	0.705	26.564	0.637	12.295	1.061	30.755	1.673	9.831	0.7	20.923	1.968	0.32	0.68	0.47	103
142	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	170	430	600	6500	39.727	0.731	25.694	0.355	14.033	0.89	32.861	1.848	8.887	0.353	23.975	1.968	0.27	0.73	0.371	134
143	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Qt	150	450	600	6500	40.495	0.952	24.702	0.461	15.792	1.037	34.825	2.36	7.901	0.458	26.924	2.384	0.227	0.773	0.293	141
144	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	500	700	6500	39.026	0.93	25.8	0	13.226	0	31.174	2.079	8.992	0	22.182	0	0.288	0.712	0.405	162
145	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	550	750	6500	39.756	0.735	24.51	0	15.246	0	32.935	1.848	7.71	0	25.226	0	0.234	0.766	0.306	120
146	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	600	800	6500	39.866	0.725	24.499	0.119	15.367	0.736	33.207	1.832	7.7	0.107	25.507	1.836	0.232	0.768	0.302	117
147	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	750	950	6500	40.335	0.542	23.611	0.645	16.725	0.959	34.379	1.384	6.907	0.572	27.472	1.652	0.201	0.799	0.251	109

148	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	850	1050	6500	40.22	0.658	23.091	0.389	17.129	0.84	34.094	1.684	6.452	0.311	27.642	1.784	0.189	0.811	0.233	120
149	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	950	1150	6500	40.889	0.872	21.875	0.529	19.013	1.14	35.843	2.321	5.491	0.396	30.353	2.457	0.153	0.847	0.181	142
150	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	1050	1250	6500	41.069	0.726	21.363	0.643	19.706	1.107	36.302	1.946	5.118	0.458	31.184	2.133	0.141	0.859	0.164	116
151	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	1200	1400	6500	41.477	0.829	20.807	0.532	20.67	1.099	37.406	2.256	4.726	0.371	32.68	2.382	0.126	0.874	0.145	108
152	PEG_10per	1013.7	0.000461	0.003431	1619.72	0.0016135	1014.1	0.000455	0.006395	Q1 hold	200	395	595	6500	38.984	0.756	25.968	0.469	13.016	0.773	31.056	1.832	9.178	0.511	21.878	1.757	0.296	0.704	0.42	115

Table S6: Replicate sweeps with fluid property parameters

condition_num	trial	rho_in	sigma_in_oil	mu_in	rho_oil	mu_oil	rho_out	sigma_out_oil	mu_out	sweep_condition	Q1	Q2	Qt	Q3	outer_diam_mean	outer_diam_std	inner_diam_mean	inner_diam_std	shell_diam_mean	shell_diam_std	outer_vol_mean	outer_vol_std	inner_vol_mean	inner_vol_std	shell_vol_mean	shell_vol_std	core_total_ratio	shell_total_ratio	core_shell_ratio	n_droplets
1	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Central condition	230	400	630	6500	40.221	0.315	28.783	0.602	11.438	0.613	34.075	0.805	12.502	0.796	21.573	0.997	0.367	0.633	0.58	80
2	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	220	400	620	6500	40.231	0.332	28.326	0.26	11.905	0.389	34.102	0.845	11.903	0.314	22.199	0.855	0.349	0.651	0.536	72
3	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	225	400	625	6500	40.162	0.361	28.372	0.34	11.79	0.471	33.928	0.922	11.963	0.43	21.964	0.979	0.353	0.647	0.545	159
4	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	235	400	635	6500	40.228	0.329	28.776	0.599	11.452	0.646	34.093	0.837	12.492	0.793	21.601	1.08	0.366	0.634	0.578	75
5	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	240	400	640	6500	40.184	0.675	28.688	0.552	11.496	0.786	34.004	1.734	12.377	0.731	21.627	1.747	0.364	0.636	0.572	138
6	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	390	620	6500	40.238	0.351	28.711	0.571	11.527	0.697	34.12	0.892	12.406	0.755	21.714	1.221	0.364	0.636	0.571	39
7	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	395	625	6500	40.242	0.329	28.506	0.387	11.736	0.507	34.129	0.839	12.136	0.513	21.994	0.981	0.356	0.644	0.552	51
8	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	405	635	6500	40.47	0.295	29.326	0.573	11.144	0.525	34.71	0.752	13.22	0.759	21.49	0.818	0.381	0.619	0.615	105
9	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	410	640	6500	40.106	0.338	28.321	0.419	11.785	0.549	33.785	0.856	11.902	0.522	21.883	1.021	0.352	0.648	0.544	66
10	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	150	400	550	6500	40.605	0.274	25.8	0	14.805	0	35.06	0.709	8.992	0	26.068	0	0.256	0.744	0.345	160

11	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	190	400	590	6500	40.446	0.453	27.195	0.354	13.252	0.583	34.658	1.157	10.536	0.427	24.122	1.245	0.304	0.696	0.437	160
12	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q2 hold	270	400	670	6500	40.887	1.339	30.524	0.726	10.363	1.266	35.902	3.49	14.915	1.066	20.986	3.267	0.415	0.585	0.711	68
13	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	280	510	6500	40.265	0.948	30.751	0.961	9.514	0.583	34.237	2.42	15.27	1.441	18.967	1.529	0.446	0.554	0.805	68
14	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	520	750	6500	40	0.348	26.364	0.886	13.635	1.124	33.517	0.886	9.627	0.943	23.89	1.618	0.287	0.713	0.403	64
15	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	640	870	6500	40.015	0.285	25.532	0.527	14.483	0.624	33.553	0.719	8.726	0.524	24.828	0.93	0.26	0.74	0.351	77
16	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Q1 hold	230	760	990	6500	39.784	0.329	24.501	0.106	15.283	0.334	32.977	0.812	7.702	0.095	25.275	0.807	0.234	0.766	0.305	147
17	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	240	390	630	6500	40.482	0.649	29.167	0.632	11.315	0.885	34.764	1.632	13.01	0.836	21.753	1.796	0.374	0.626	0.598	118
18	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	235	395	630	6500	40.568	0.398	28.698	0.56	11.87	0.56	34.968	1.033	12.389	0.741	22.579	1.035	0.354	0.646	0.549	65
19	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	225	405	630	6500	40.444	0.441	28.434	0.26	12.01	0.476	34.652	1.105	12.04	0.344	22.612	1.105	0.347	0.653	0.532	119
20	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	220	410	630	6500	40.501	0.315	28.366	0.4	12.135	0.489	34.792	0.808	11.958	0.505	22.834	0.916	0.344	0.656	0.524	188
21	PBS_1per_Tween20_replicate	1006.478	0.000320	0.009875	1619.72	0.016135	1007.97	0.000328	0.013034	Qt	150	480	630	6500	41.515	0.325	24.848	0.57	16.668	0.669	37.472	0.882	8.045	0.566	29.427	1.071	0.215	0.785	0.273	107
22	PBS_1per_Tween20_replicate	1006.	0.000320	0.009875	1619	0.016135	1007	0.000328	0.013034	Qt	110	520	630	65	42.537	0.252	23.22	0	19.317	0	40.304	0.714	6.555	0	33.749	0	0.163	0.837	0.194	59

		478			.72		.97							00																
23	PBS_1per_Tween20_replicate	1006.478	0.000320	0.0009875	1619.72	0.0016135	1007.97	0.000328	0.0013034	Qt	190	440	630	6500	40.732	0.294	27.09	0	13.642	0	35.39	0.769	10.409	0	24.981	0	0.294	0.706	0.417	53
24	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	390	620	6500	39.947	1.05	26.796	0.544	13.151	1.307	33.444	2.603	10.086	0.598	23.359	2.822	0.302	0.698	0.432	92
25	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	240	390	630	6500	38.399	0.679	26.906	0.454	11.493	0.897	29.673	1.585	10.207	0.499	19.466	1.763	0.344	0.656	0.524	98
26	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	395	625	6500	39.43	1.228	27.039	0.253	12.391	1.296	32.19	2.998	10.353	0.278	21.837	3.059	0.322	0.678	0.474	101
27	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	235	395	630	6500	38.502	0.543	26.189	0.596	12.313	0.726	29.903	1.285	9.419	0.655	20.484	1.322	0.315	0.685	0.46	73
28	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	110	400	510	6500	41.252	0.457	23.22	0	18.032	0	36.769	1.217	6.555	0	30.214	0	0.178	0.822	0.217	114
29	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	150	400	550	6500	39.793	0.417	24.51	0	15.283	0	33.004	1.037	7.71	0	25.295	0	0.234	0.766	0.305	118
30	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	220	400	620	6500	39.628	1.122	26.885	0.474	12.743	1.338	32.661	2.749	10.184	0.521	22.477	2.942	0.312	0.688	0.453	107
31	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	225	400	625	6500	39.453	1.439	27.013	0.401	12.44	1.575	32.282	3.55	10.328	0.45	21.954	3.672	0.32	0.68	0.47	101
32	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	230	400	630	6500	39.866	1.236	27.09	0.548	12.776	1.458	33.269	3.057	10.422	0.633	22.847	3.256	0.313	0.687	0.456	123
33	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	235	400	635	6500	39.187	1.392	27.172	0.415	12.015	1.566	31.627	3.396	10.512	0.492	21.115	3.573	0.332	0.668	0.498	94

34	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q2 hold	240	400	640	6500	39.691	1.761	27.423	0.568	12.268	1.938	32.93	4.351	10.812	0.686	22.119	4.51	0.328	0.672	0.489	93
35	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	225	405	630	6500	38.194	0.353	25.837	0.28	12.357	0.479	29.18	0.81	9.034	0.302	20.147	0.901	0.31	0.69	0.448	105
36	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	405	635	6500	39.358	1.172	27.045	0.237	12.312	1.232	32.006	2.849	10.36	0.261	21.646	2.9	0.324	0.676	0.479	115
37	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	220	410	630	6500	38.257	0.41	25.618	0.452	12.639	0.627	29.328	0.943	8.811	0.449	20.517	1.068	0.3	0.7	0.429	92
38	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	410	640	6500	39.597	1.016	26.721	0.586	12.876	1.213	32.571	2.493	10.004	0.644	22.567	2.62	0.307	0.693	0.443	91
39	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	190	440	630	6500	38.098	0.372	24.496	0.136	13.602	0.417	28.962	0.848	7.697	0.122	21.265	0.878	0.266	0.734	0.362	90
40	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	150	480	630	6500	39.133	0.395	22.565	0.65	16.568	0.842	31.388	0.954	6.031	0.52	25.357	1.197	0.192	0.808	0.238	67
41	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Qt	110	520	630	6500	42.833	0.532	21.059	0.607	21.774	0.762	41.167	1.531	4.902	0.432	36.264	1.544	0.119	0.881	0.135	120
42	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	520	750	6500	39.649	0.594	26.154	0.578	13.496	0.818	32.659	1.459	9.381	0.635	23.278	1.576	0.287	0.713	0.403	124
43	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	640	870	6500	39.878	0.445	24.51	0	15.368	0	33.216	1.114	7.71	0	25.506	0	0.232	0.768	0.302	86
44	NP40_inner_replicate	1006.07	0.00141	0.0010028	1619.72	0.0016135	1007.97	0.000318	0.0013034	Q1 hold	230	760	990	6500	40.515	0.71	23.265	0.31	17.25	0.578	34.854	1.947	6.597	0.289	28.257	1.773	0.189	0.811	0.233	86

Table S7: Instability conditions

condition_num	trial	sweep_condition	Q1	Q2	Qt	Q3	flags	outer_diam_mean	outer_diam_std	inner_diam_mean	inner_diam_std	shell_diam_mean	shell_diam_std	outer_vol_mean	outer_vol_std	inner_vol_mean	inner_vol_std	shell_vol_mean	shell_vol_std	core_total_ratio	shell_total_ratio	core_shell_ratio	n_droplets
1	PBS_1per_Tween20	Qt	240	390	630	6500	instability case 1	39.47	2.095	27.765	0.648	11.705	2.416	32.463	5.047	11.225	0.783	21.238	5.387	0.346	0.654	0.529	86
2	PBS_1per_Tween20	Qt	235	395	630	6500	instability case 1	40.173	1.65	27.66	0.674	12.513	1.987	34.114	4.08	11.1	0.81	23.015	4.425	0.325	0.675	0.482	86
3	PBS_1per_Tween20	Q2 hold	235	400	635	6500	instability case 1	39.262	1.802	27.524	0.729	11.738	2.171	31.886	4.331	10.941	0.866	20.945	4.705	0.343	0.657	0.522	107
4	PBS_1per_Tween20	Q2 hold	240	400	640	6500	instability case 1	39.474	1.936	27.728	0.724	11.746	2.273	32.436	4.732	11.185	0.88	21.25	5.073	0.345	0.655	0.526	97
5	PBS_1per_Tween20_replicate	Q2 hold	110	400	510	6500	pull case 2	39.641	2.199	24.412	0.344	15.229	2.247	32.908	5.177	7.622	0.308	25.286	5.206	0.232	0.768	0.301	66
7	NP40_inner	Q1 hold	240	220	460	6500	pull case 1	38.979	1.03	30.686	0.862	8.293	1.637	31.074	2.478	15.165	1.243	15.91	3.287	0.488	0.512	0.953	66
8	NP40_inner	Q1 hold	240	320	560	6500	instability case 1	40.101	1.423	29.007	0.684	11.094	1.475	33.889	3.534	12.8	0.9	21.089	3.501	0.378	0.622	0.607	72
9	NP40_inner	Q1 hold	240	350	590	6500	pull case 1	38.807	1.721	27.041	0.561	11.766	1.949	30.778	3.997	10.366	0.643	20.411	4.215	0.337	0.663	0.508	132
10	NP40_inner	Qt	300	440	740	6500	instability case 1	38.624	1.503	27.232	0.497	11.391	1.66	30.305	3.518	10.585	0.59	19.72	3.664	0.349	0.651	0.537	163

11	M9	Qt	310	390	700	6500	instability case 1	41.933	1.438	30.96	0	10.973	0	38.742	3.981	15.538	0	23.204	0	0.401	0.599	0.67	124
12	M9	Q2 hold	170	450	620	6500	pull case 2	39.853	1.379	28.103	0.532	11.75	1.431	33.253	2.925	11.633	0.643	21.62	2.916	0.35	0.65	0.538	121
13	M9	Qt	170	530	700	6500	pull case 2	40.87	0.676	26.328	0.762	14.542	1.103	35.772	1.775	9.578	0.822	26.194	2.081	0.268	0.732	0.366	22
14	PEG_10per	Q2 hold	100	400	500	6500	pull case 2	39.311	0.926	23.2	0.16	16.111	1.02	31.861	2.333	6.539	0.128	25.322	2.407	0.205	0.795	0.258	65
15	PEG_10per	Q2 hold	230	400	630	6500	pull case 2	37.553	1.497	28.144	0.501	9.409	1.746	27.862	3.48	11.684	0.605	16.178	3.759	0.419	0.581	0.722	104
16	NP40_inner_replicate	Q1 hold	230	280	510	6500	instability case 2	40.275	1.411	29.553	0.373	10.722	1.473	34.331	3.617	13.521	0.493	20.81	3.666	0.394	0.606	0.65	99
17	NP40_inner_replicate	Qt	310	320	630	6500	pull case 1	39.548	2.035	29.822	0.528	9.726	2.183	32.635	4.974	13.899	0.75	18.736	5.145	0.426	0.574	0.742	34
18	NP40_inner_replicate	Q2 hold	70	400	470	6500	pull case 2	39.068	0.44	21.93	0	17.138	0	31.233	1.047	5.522	0	25.711	0	0.177	0.823	0.215	74
19	NP40_inner_replicate	Qt	270	360	630	6500	instability case 1	39.722	1.817	28.341	0.624	11.382	2.137	33.02	4.448	11.936	0.787	21.084	4.81	0.361	0.639	0.566	99