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Supplementary material for Mechanisms and control of single-step microfluidic generation of multi-core double emulsion droplets

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Mechanisms and control of single-step microfluidic generation of multi-core double emulsion droplets

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Supplemental material S1

This section provides information about the movies (all scale bars are 300 μm):

Movie 1. Formation of double emulsion drops with four inner drops at $Q_1=2.4$ mL/h, $Q_2=2$ mL/h, and $Q_3=12$ mL/h.

Movie 2. Formation of double emulsion drops with three inner drops at $Q_1=2$ mL/h, $Q_2=0.8$ mL/h, and $Q_3=6$ mL/h.

Movie 3. Formation of double emulsion drops with six inner drops ($Q_1=2$ mL/h, $Q_2=1.2$ mL/h, $Q_3=6$ mL/h).

Movie 4. Formation of a stable middle phase jet ($Q_1=2.2$ mL/h, $Q_2=2$ mL/h, $Q_3=9$ mL/h).

Supplemental material S2

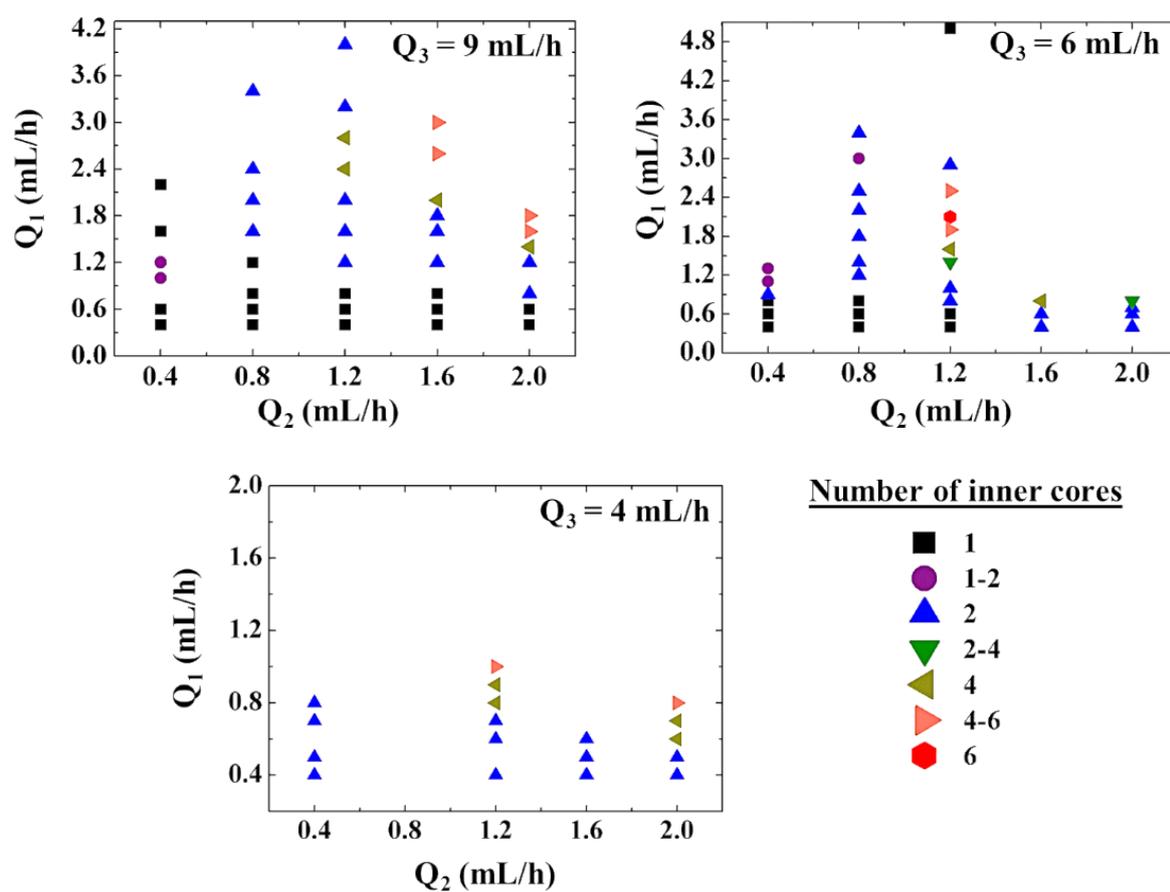


Figure s.2. The experimental data used for mapping out phase diagrams in Figures 4a.1-c.1.

Supplemental material S3

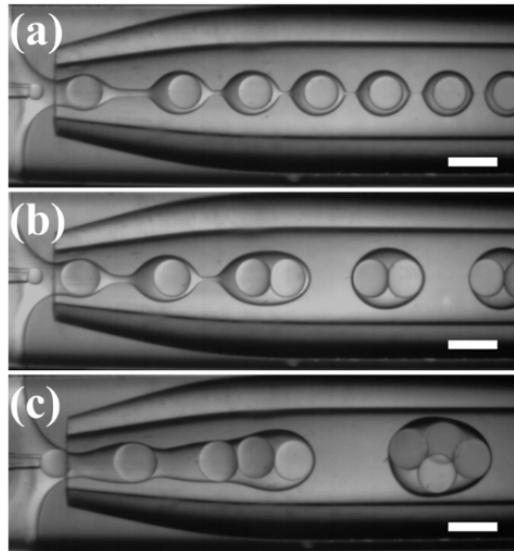


Figure s.3. The effect of outer phase capillary number, Ca_3 , on the number of inner drops: (a) $Ca_3=6.9\times 10^{-3}$ ($Q_3=9$ mL/h), $D_1=208$ μm , and $N_D=1$; (b) $Ca_3=4.6\times 10^{-3}$ ($Q_3=6$ mL/h), $D_1=237$ μm , and $N_D=2$; (c) $Ca_3=3.1\times 10^{-3}$ ($Q_3=4$ mL/h), $D_1=273$ μm , and $N_D=6$. The constant parameters: $Ca_1=0.42$ ($Q_1=0.8$ mL/h) and $Ca_2=2.9\times 10^{-4}$ ($Q_2=1.2$ mL/h). The scale bars are 300 μm .