Electronic Supplementary material

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Collective Generation of Milliemulsions by Step-Emulsification

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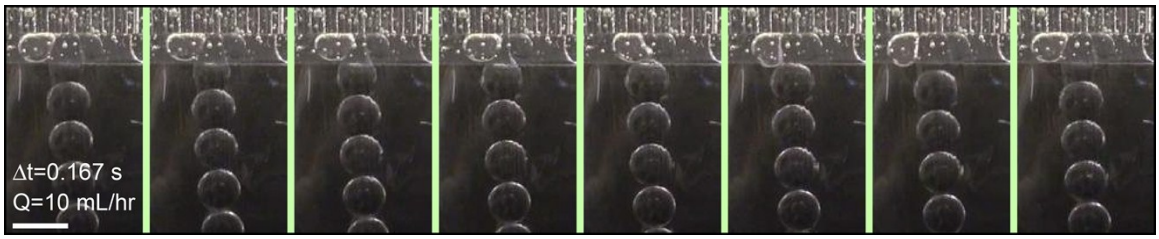

Figure S1 Process of step-emulsification by a single channel. An air bubble stuck at the left move synchronously back and forth as the droplet grows and breaks. The scale bar is 3 mm.

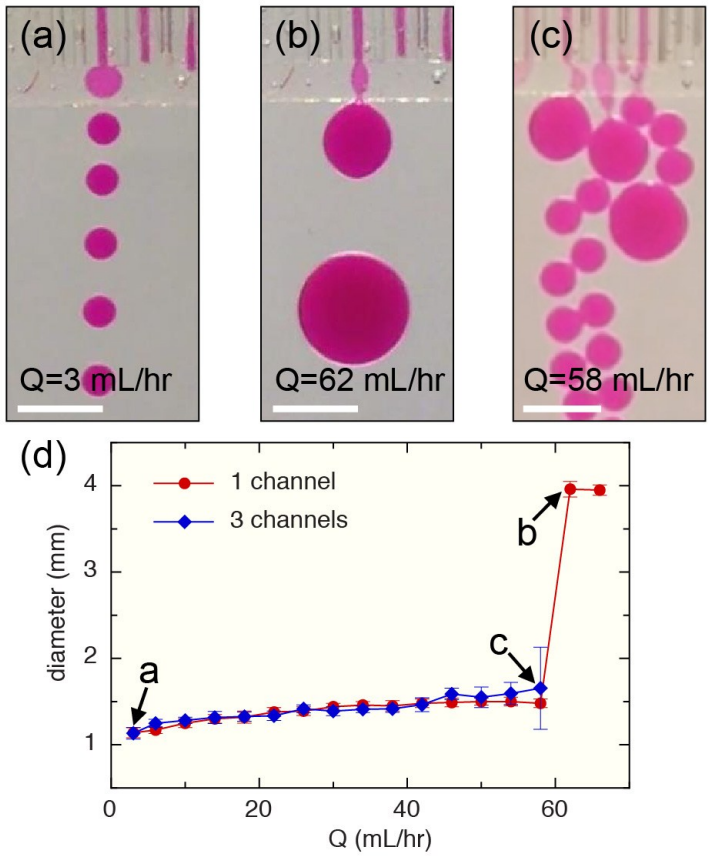

Figure S2 (a) Generation of monodisperse small droplets at low flow rate, Q = 3 mL/hr, in the dripping regime. **(b)** Generation of monodisperse large droplets at large flow rate, Q = 62 mL/hr, in the continuous outflow regime. **(c)** Mixture of small and large droplets generated by three channels at Q = 58 mL/hr. **(d)** The dependence of droplet size generated by one channel (red curve) and three channel (blue curve) on the flow rate of

the dispersed phase. The scale bars are 3 mm in **(a)**, **(b)** and **(c)**.

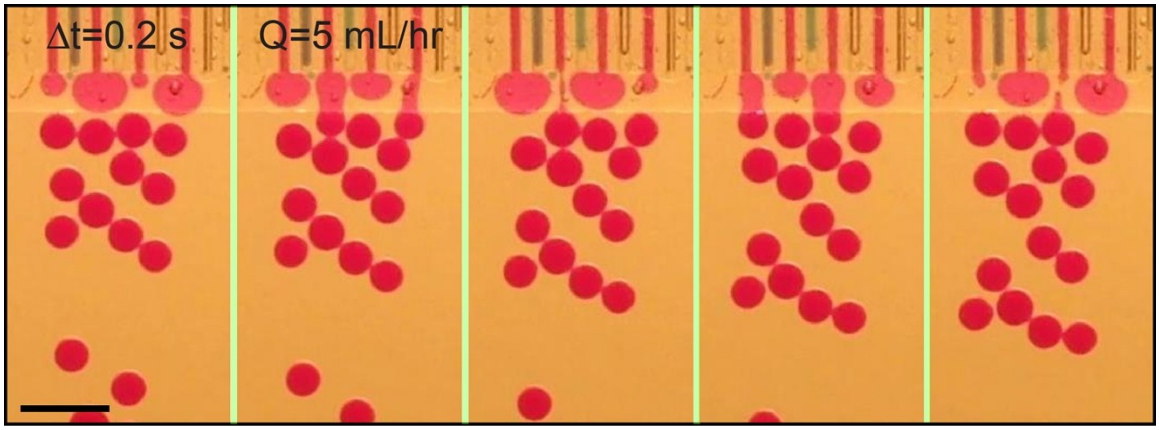

Figure S3 Time sequences showing four channels runs simultaneously. Neighboring channels are roughly 180 degree out of phase and alternative channels are in phase. The scale bar is 3 mm.

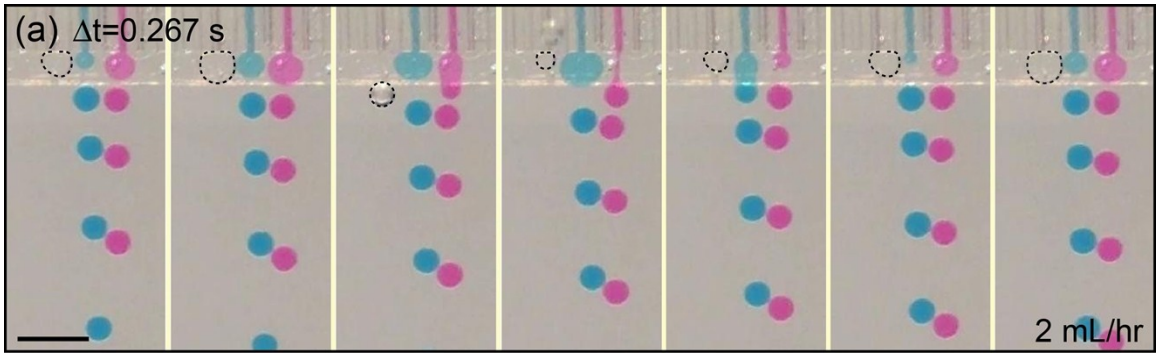

Figure S4 Time sequences showing three synchronized channel while the left channel is air bubble. The edge of air bubble is outlined by black dashed line for clarity.