Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplementary information

High throughput and versatile production of biocompatible microparticles with controlled physiochemical properties using a robust microfluidic platform

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Supplementary table

Supplementary Table S1. Fluid properties and maximum operable flow rates of different PEGda concentration solutions. Capillary numbers of the dispersed and continuous liquid phases and the Weber number of the dispersed liquid phase is calculated at the maximum operable flow rates.

PEGda Concentration	ρ_d (g mm^{-3})	μ_d (mPa.s)	γ (mN mm^{-1})	$Q_d max$ (μL hr^{-1})	Ca_d	Ca_c	We_d
20%	1.024	2.18	1.69	3000	0.54	6.2	5.3
40%	1.048	4.80	1.30	800	0.41	2.2	0.5
80%	1.096	29.00	1.15	400	1.41	1.2	0.15

Supplementary figures

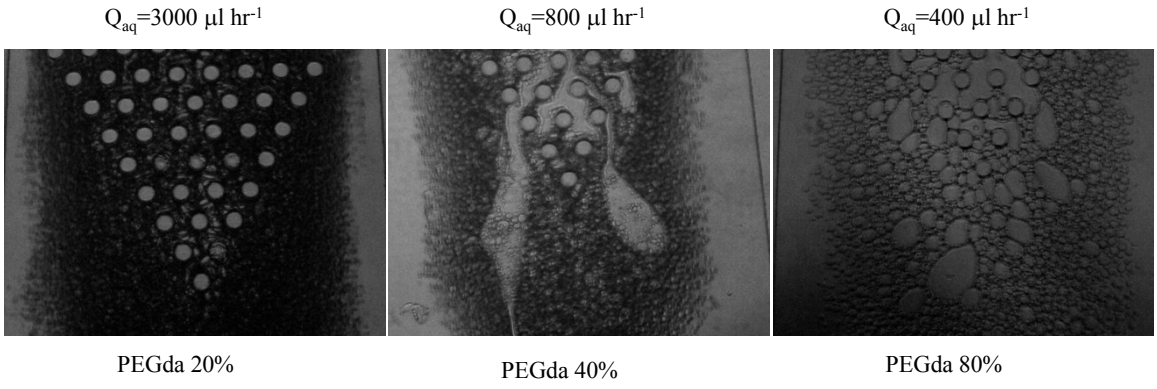

Figure S1. Higher PEG concentration solutions with higher viscosity and density jet at lower aqueous flow rates.

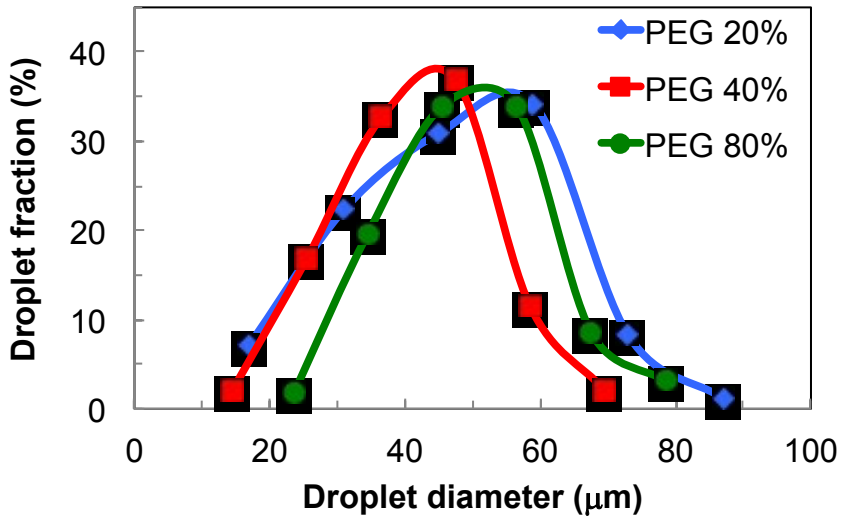

Figure S2. Size distribution of the microdroplets generated from different PEGda concentrations using a device with pillar geometry of D_p = 50 µm, S_p = 50 µm and at flow rates of Q_{aq} = 50 µL hr^{-1}, Q_o = 100 µL hr^{-1}.

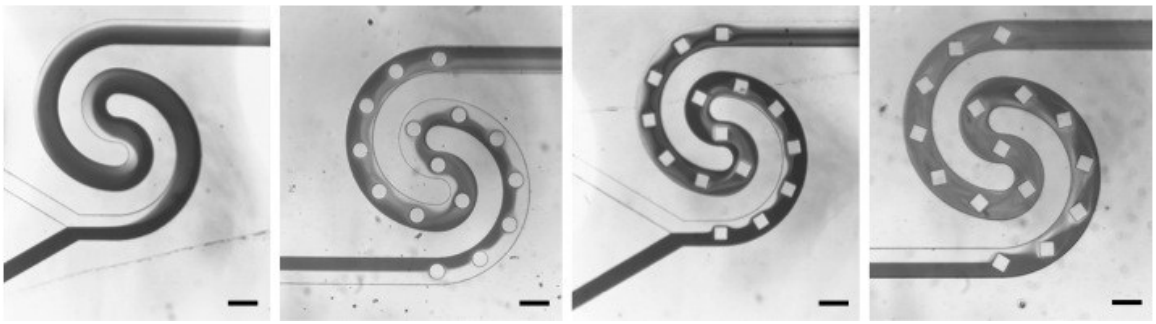

Figure S3. Mixing efficiency of spiral mixers with various micropost geometries embedded inside their microchannel. Adding the microposts further perturbs the flow and enhances the mixing. The mixer with embedded square microposts, which are asymmetrically aligned with the flow path, has the best mixing efficiency. Channel width is 150 μm and the microposts diameter or length is 80 μm. Both solutions are water; one with added ink to clarify the mixing and the operating flow rate is 6 ml hr^{-1}. Scale bar is 200 μm.

References

[1] F. Hansen, G. Rødsrud, Journal of colloid and interface science 1991, 141, 1.