

Supporting Information

Generation of controlled monodisperse porous polymer particles by dipped inkjet injection

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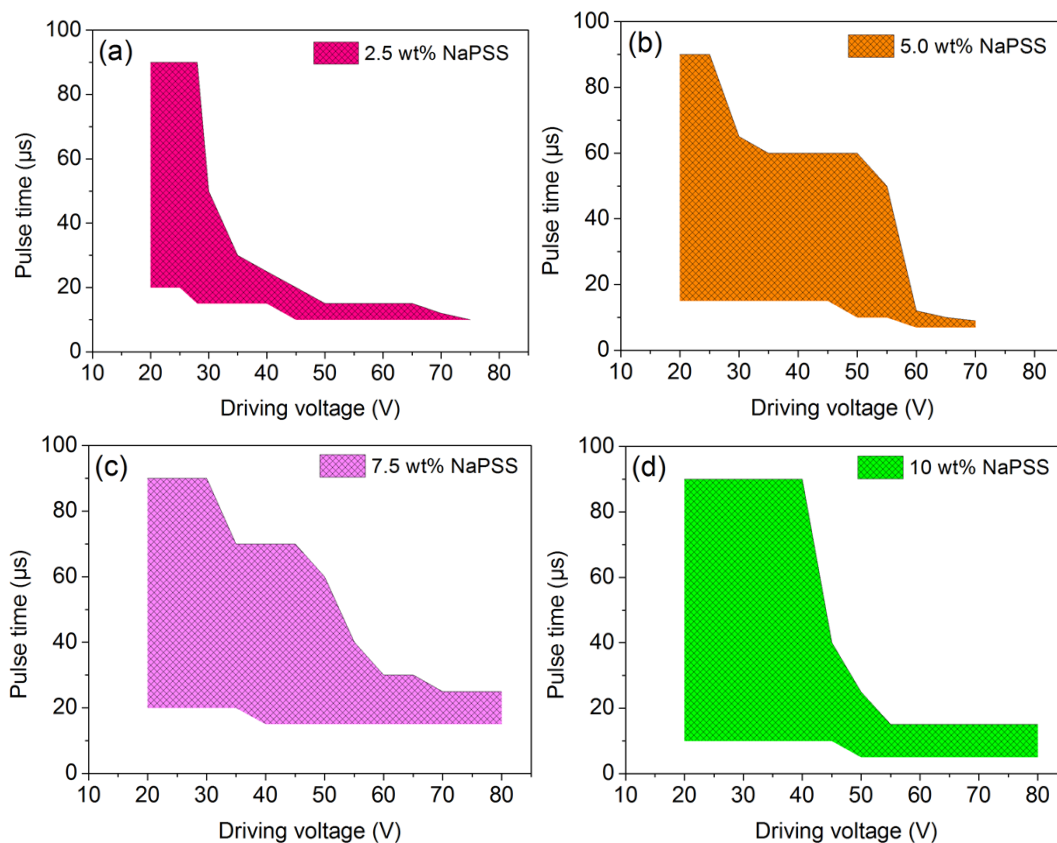


Figure S1. Scope of droplet formation by inkjet injection for generating monodisperse polymer droplets in 1-butanol. The concentration of NaPSS was (a) 2.5 wt%, (b) 5 wt%, (c) 7.5 wt%, and (d) 10 wt% (10 mM SDS). Colored regions show the possible scopes for monodisperse droplet generation. The sizes of droplet were ranging from 80 μm to 260 μm.

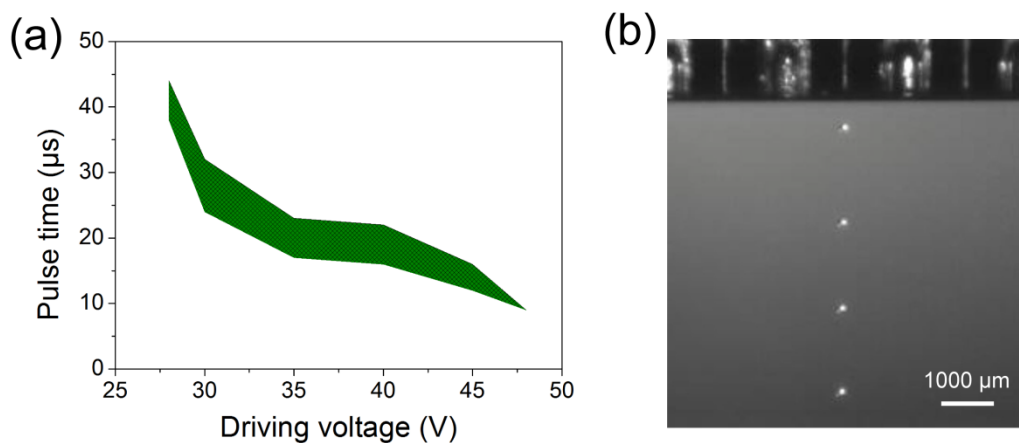


Figure S2. (a) Scope of droplet formation by inkjet injection for generating monodisperse polymer droplets in air. Colored regions show the possible scopes for monodisperse droplet generation. The sizes of droplet were ranging from 160 μm to 205 μm. (b) Serial photo of aqueous polymer solution droplet ejected in air, driving waveform; 40 V—17 μs, droplet size \approx 175 μm. The concentration of NaPSS 15 wt% (10 mM SDS).

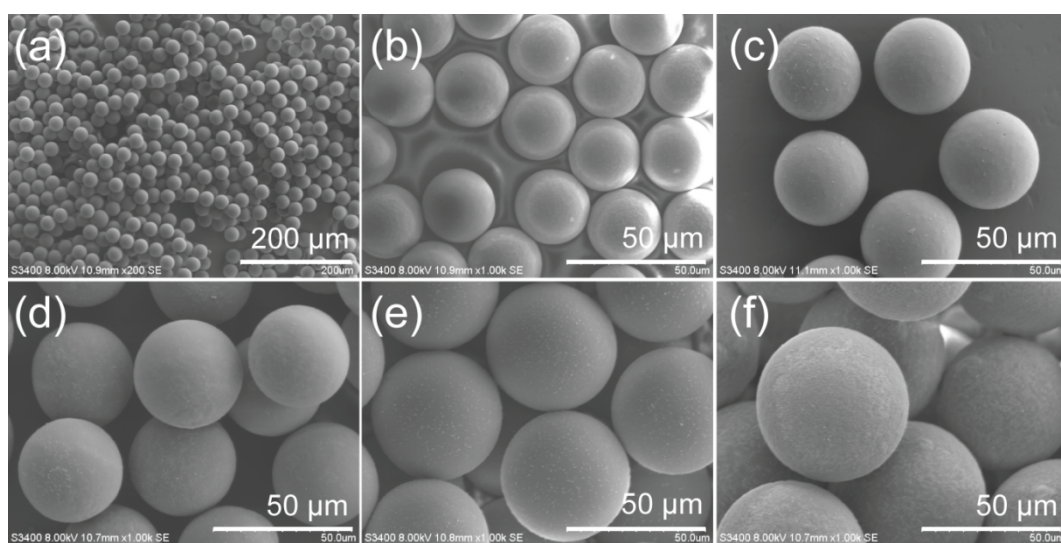


Figure S3. SEM images of polymer particles with mean diameters of (a,b) 26 μm , (c) 35 μm , (d) 38 μm , (e) 48 μm , and (f) 55 μm . The concentration of NaPSS was 15 wt% (10 mM SDS).

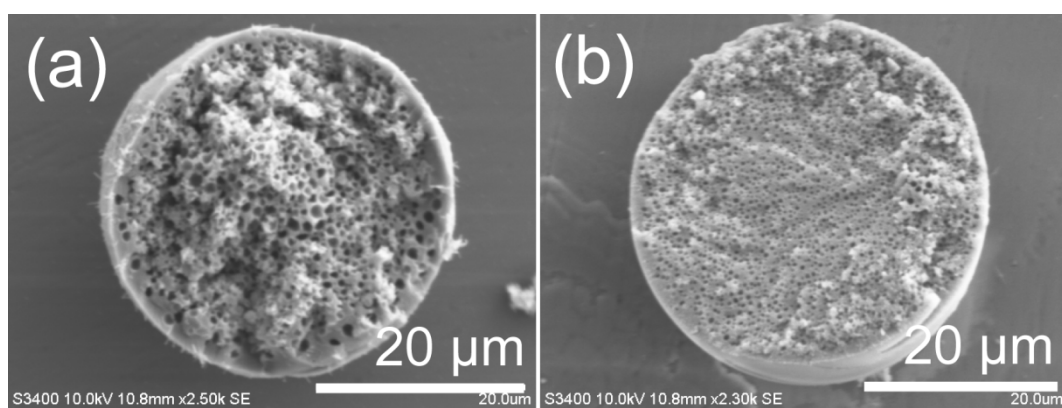


Figure S4. SEM images of the interior structure of a polymer particle prepared using a concentration of NaPSS of (a) 7.5 wt% and (b) 10 wt%.

Table S1. Density, viscosity and surface tension of each polymer solutions and 1-butanol.¹

Solution	Density (g/mL)	Viscosity (mPa s)	Surface tension (mN/m)
2.5 wt% NaPSS	1.009	1.690	36.77
5.0 wt% NaPSS	1.021	2.369	35.26
7.5 wt% NaPSS	1.033	3.221	34.05
10 wt% NaPSS	1.045	4.485	33.79
15 wt% NaPSS	1.071	6.822	33.59
1-Butanol	0.8098	2.581	27.97

¹ All polymer solutions were containing 10 mM SDS, and the measurement temperature control at 25 °C.

Table S2. Resulting particle diameters under injection setting conditions and corresponding droplet sizes.

Injection condition	Droplet size		Particle diameter	
	Mean \pm SD (μm)	CV (%)	Mean \pm SD (μm)	CV (%)
20 V—20 μs	87.4 \pm 4.96	5.67	21.3 \pm 0.59	2.78
30 V—20 μs	96.8 \pm 3.69	3.81	24.5 \pm 1.19	4.85
30 V—30 μs	123.4 \pm 4.03	3.27	29.2 \pm 1.19	4.07
40 V—30 μs	141.8 \pm 4.92	3.47	34.9 \pm 1.28	3.65
40 V—40 μs	170.8 \pm 3.87	2.26	41.8 \pm 1.42	3.39
40 V—50 μs	187.6 \pm 5.69	3.03	45.2 \pm 1.88	4.16
50 V—40 μs	206.4 \pm 6.24	3.02	49.8 \pm 2.31	4.62