Acrylic acid photografting

PDMS substrates for UV grafting were immersed for 1 min in a 10% wt benzophenone solution in water:acetone 35:65 w/w. After the immersion, samples were rinsed with methanol and dried over N_2. The grafting solutions contained 10% wt acrylic acid, 0.5 mM NaIO4 and 0.5% wt benzyl alcohol. A UVA lamp (BLAK-RAY NON-UV semiconductor inspection lamp, model B 100AP) was used for the grafting. Exposure time was 30 minutes. Distance from the light source to the sample was determined by the lamp. Sample temperature was held at 25°C during exposure. For the grafting, 200 µl of the solution were placed on the sample, a film photomask (JD Phototools) was placed on top of the solution and a quartz slide was placed on top of the photomask (Fig S1).
After the photografting samples were rinsed in deionized water and incubated overnight in sodium phosphate buffer (0.093 M Na_2HPO_4, 0.007 M NaH_2PO_4). After incubation samples were washed with deionized water and dried with N_2.

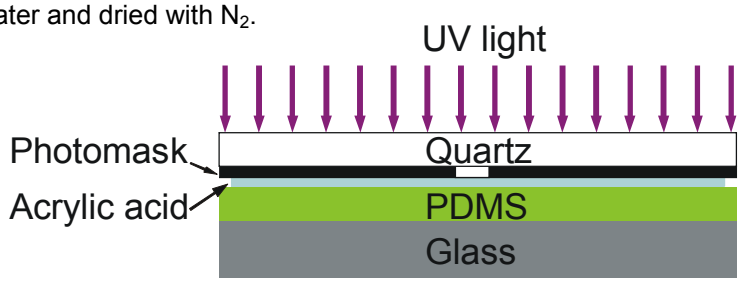

Figure S1 Scheme of acrylic acid photografting

Microfluidic experiments

All chemicals were obtained from Sigma–Aldrich. Oil phases used were 30% wt solutions of 1H,1H,2H,2H-perfluoro-1-octanol in Fluorinert FC-77. Aqueous solutions of $Fe(NO)_3$ (0.067 M) and KSCN (0.2 M) were used in Figures 4. Black aqueous phase in Figure 2 was black food dye. Flow rates in Figure 2 were 105 µl/h for the oil phase and 6 µl/h for each aqueous phase. Flow rates in Figure 4 were 300 µl/h for the oil phase and 30 µl/h for the aqueous phase at each flow focusing device.

Channel dimensions

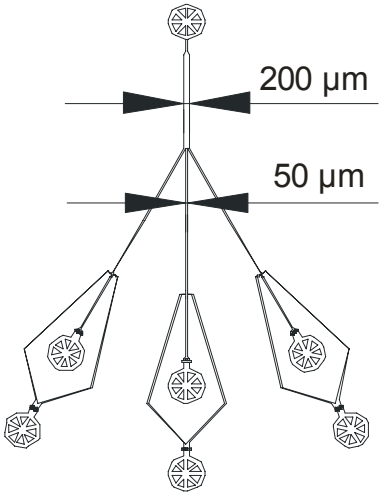

Figure S2 Design of device used in experiments depicted in Figure 4