Electronic Supplementary Material (ESI) for Analyst.
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Supporting information of 'A precise and accurate microfluidic droplet dilutor'

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Dimensions of geometry of hydrodynamic traps in a simple dilution system

In the array of 16 traps the cross section of the main channel was 400x400 μm, the depth of the bypasses was 150 μm, the height of the opening above the barrier in the main channel was 150 μm, the length of the traps was 2000 μm; in the sample metering trap the depth of the main channel was 360 μm, the width of the channel was 600 μm, the depth of the bypasses was 150 μm, the height of the opening above the barrier in the main channel was 135 μm, the length of the sample metering trap was 3000 μm, alternatively 2580 μm for the experiment with smaller droplet of sample.

Dimensions of geometry of hydrodynamic traps in *2fold* dilution system

Metering trap: the cross section of the main channel was 580x580 μm; the depth of the bypasses was 190 μm; the height of the opening above the barrier in the main channel was 190 μm, the length of the trap was 2670 μm.

Merging trap: the cross section of the main channel was 870x870 μm; the depth of the bypasses was 280 μm; the height of the opening above the barrier in the main channel was 290 μm, the width of the slit in barrier was 240 μm, the length of the trap was 1850 μm.

Dimensions of geometry of hydrodynamic traps in *2fold+* dilution system

Metering trap: the cross section of the main channel was 400x400 μm; the depth of the bypasses was 150 μm; the height of the opening above the barrier in the main channel was 150 μm, the length of the trap was 2320 μm.

Merging trap: the cross section of the main channel was 600x600 μm; the depth of the bypasses was 190 μm; the height of the opening above the barrier in the main channel was 190 μm, the width of the slit in barrier was 240 μm, the length of the trap was 2540 μm.

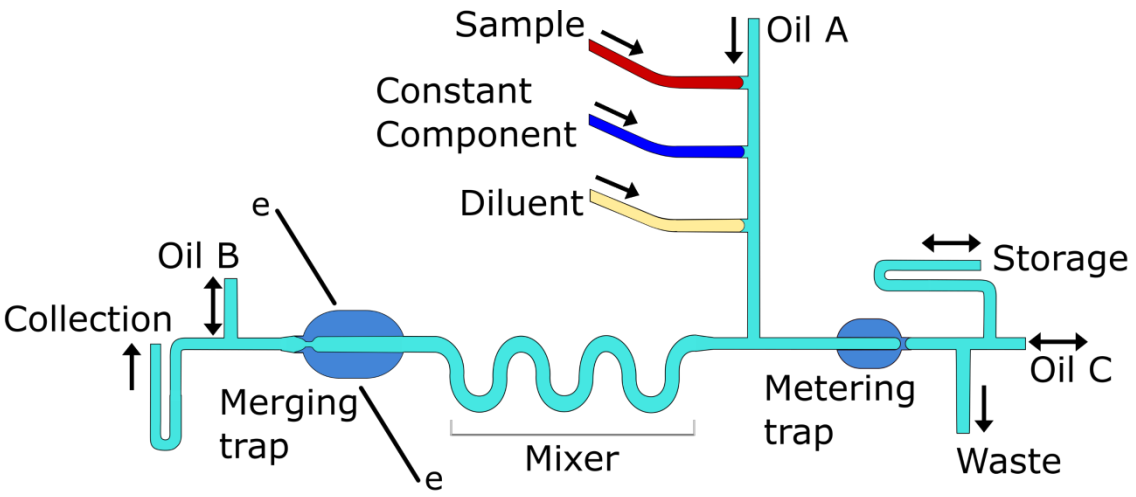

Fig. S1 Schematics of the *2fold+* dilution system. e – electrodes. Arrows indicate the direction of flow of fluids through inlets and outlets during the execution of the protocol.

Supplementary movie S1

'Supplementary Movie S1' is a video recording of execution of protocol of the simple dilutor with the electric field applied. The protocol is described in the article text. Dispersed phase dyed with blue ink represents sample that is diluted in the system. Red-dyed dispersed phase represents the diluent. The recording is presented in real time.

Supplementary movie S2

'Supplementary Movie S2' is a video recording of execution of protocol of the *2fold* dilutor. The protocol is described in the article text. Dispersed phase dyed with blue ink represents sample that is diluted in the system. Yellow-dyed dispersed phase represents the diluent. The recording is presented in real time.

Supplementary movie S3

'Supplementary Movie S3' is a video recording of execution of protocol *2fold+* dilutor. The protocol is described in the article text. Dispersed phase dyed with blue ink represents sample that is diluted in the system. Transparent dispersed phase represents the diluent. Dispersed phase dyed with green dye represents the component that is maintained at the same concentration throughout the serial dilution of the sample. The presented recording is sped up 4 times in comparison to real time.