Electronic Supplementary Information

Video 1:

The video of formation and driving of a 10 cSt 2:1 W/O droplet containing 25 nL water and 12.5 nL silicone oil. The video is played at a 5X speed. Captured images are shown in Fig. 3.

Video 2:

The video of generation, encapsulation, rinsing, and emersion of a 10 cSt 10:1 W/O droplet. The video is played at a 10X speed. Captured images are shown in Fig. 4.

Video 3:

The video of a 1000 cSt 2:1 W/O droplet breaking during transportation when the switching time was 32 s. The video is played at a 10X speed. Captured images are shown in Fig. 5.

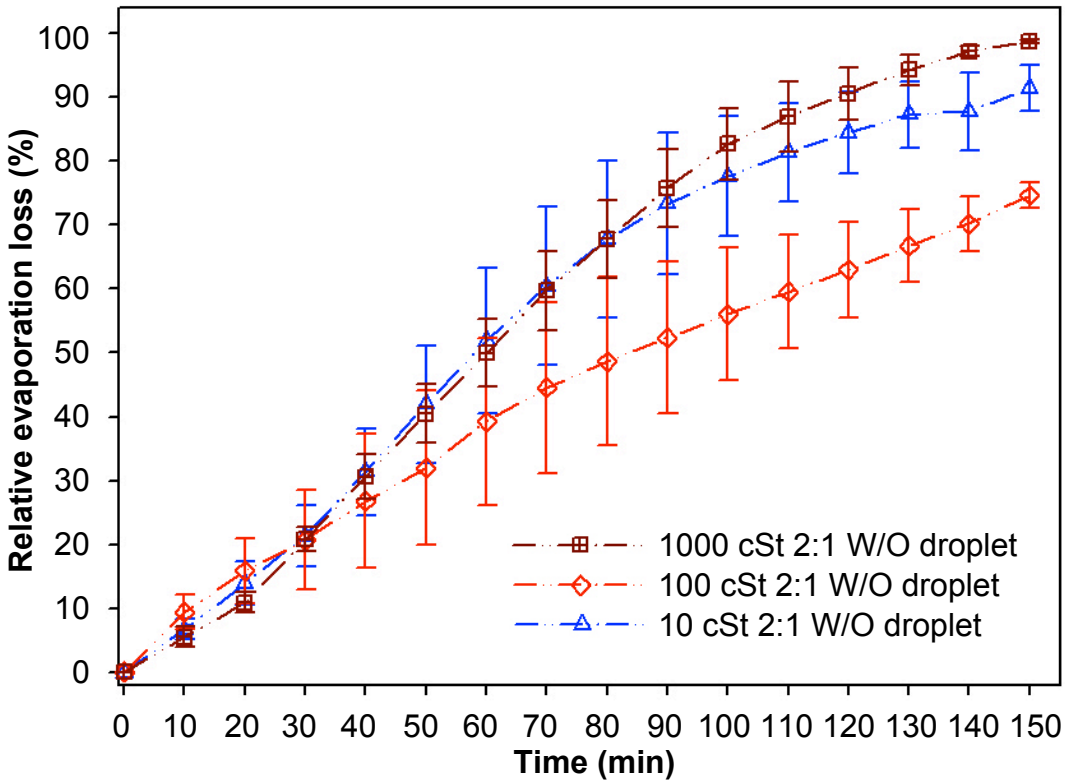
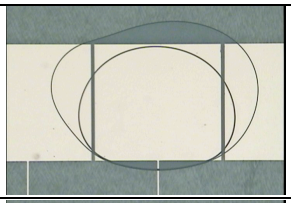
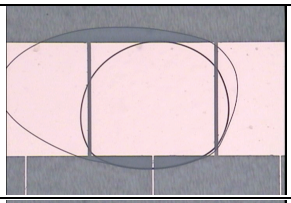
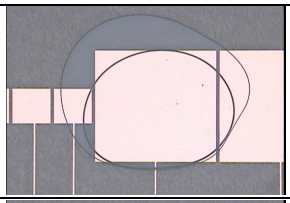
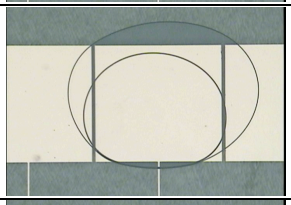
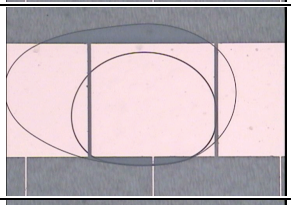
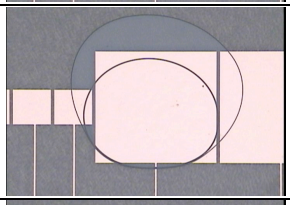
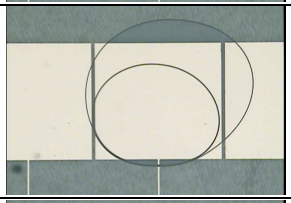
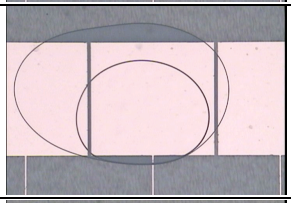
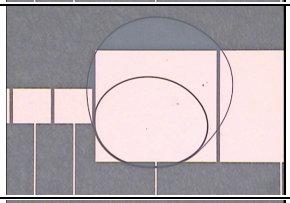
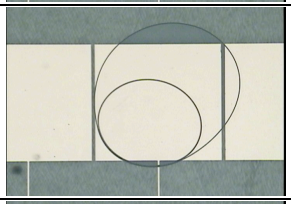
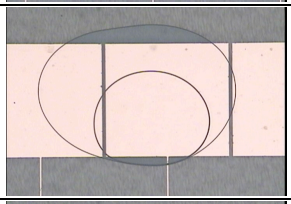
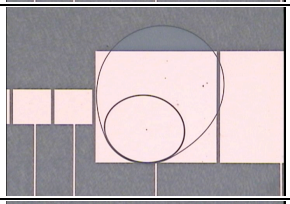
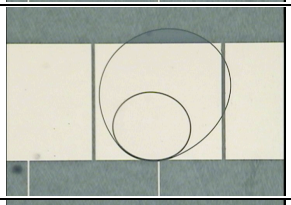
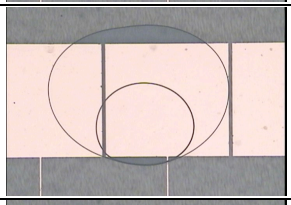
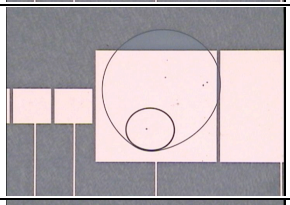


Fig. s1 Static evaporation of the 2:1 W/O droplets whose core water droplets were not carefully randomly positioned at the center, causing notable diviations among the experiments. The captured images of one of the three experiements are shown in Table s1.

Table s1 Static evaporation of 2:1 W/O droplets under the temperature of 20 ± 1 ^{o}C and the relative humidity 60 ± 3%. EWOD electrode size was 1 mm × 1mm. The curves of their relative evaporation loss are plotted in Fig. s1.

Elapsed time (min)	10 cSt	100 cSt	1000 cSt
0			
30			
60			
90			
120			
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