Supplmentary Information for

Micro-object manipulation by decanol liquid lenses

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■ **Supplementary Fig. S1-S3**

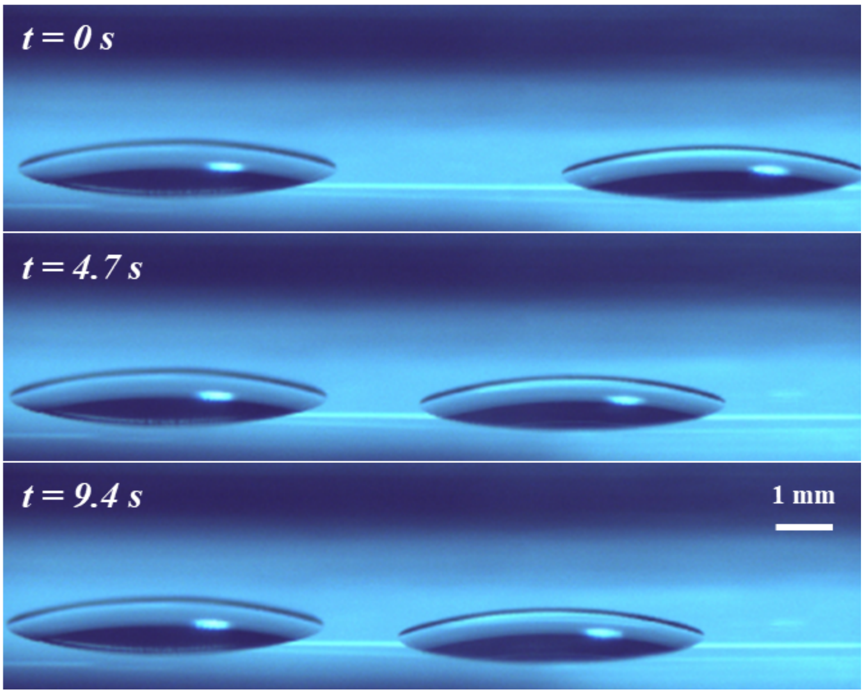
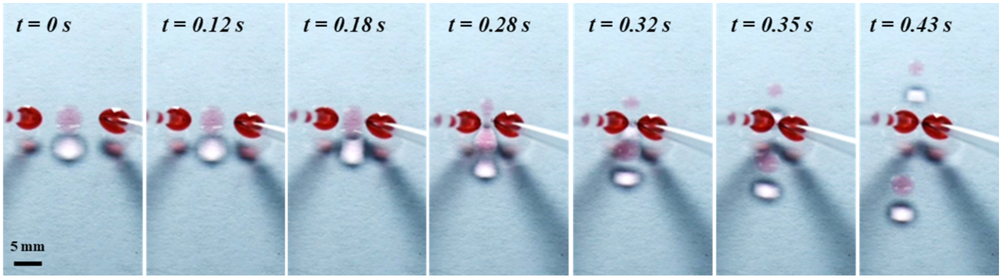
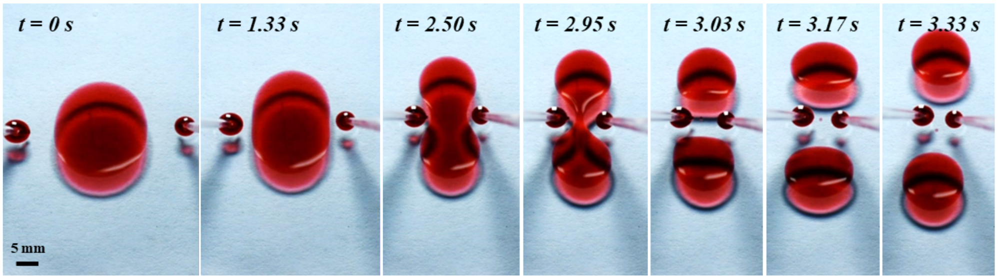


Fig. S1 Captured interfacial phenomena when two decanol liquid lenses were brought in close contact. A small amount of nano iron powders was added into the two decanol liquid lenses (dyed with red, 10 μL) and their positions were controlled by magnets.

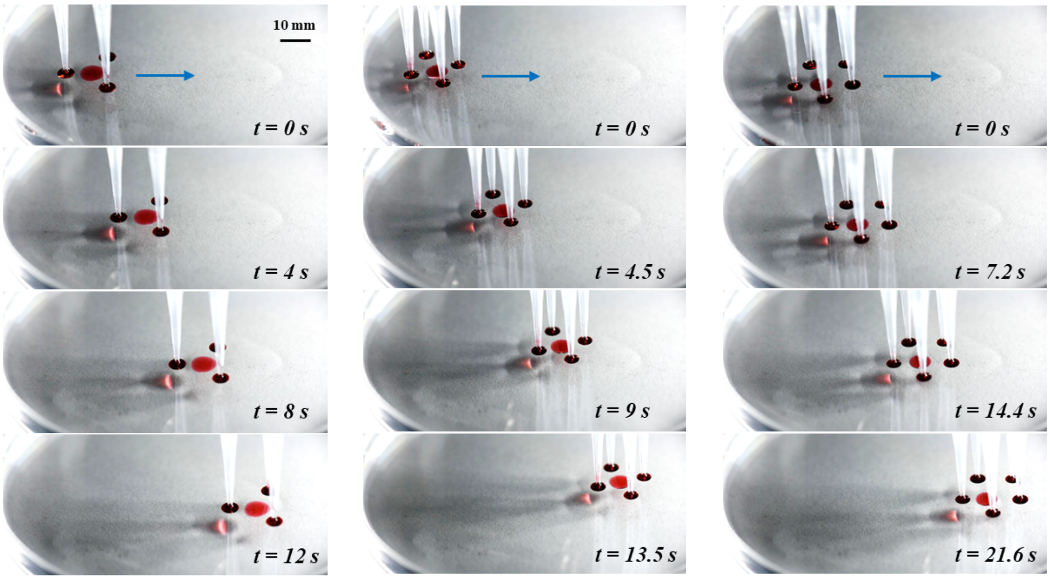


(a)



(b)

Fig. S2 Splitting of target droplet in response to its volume range: (a) The target droplet volume: 3 μL, (b) The target droplet volume: 150 μL.



(a) (b) (c)

Fig. S3 Demonstrations of the droplet transportation using (a) three, (b) four and (c) five paw-like liquid lenses.

■ Determination of Reynolds number

The Reynolds number is calculated by $Re(v) = \rho_m dv/\eta$, where $\rho_m = 1\ g/cm^3$ is the density of the aqueous solution, $d = 2.7$mm is the diameter of the droplet, $\eta = 1\ mPa \cdot s$ is the viscosity of the aqueous solution, and v is the velocity around the liquid lens and ranges from 0.1 mm/s to 0.8 mm/s (Fig. S4), which is determined by a microparticle image velocimetry (μPIV, FlowMaster, LaVision, Germany). Reynolds number can then be determined, which ranges from 0.27 to 2.16. Therefore, the Bernoulli equation can be used to demonstrate the pressure difference.

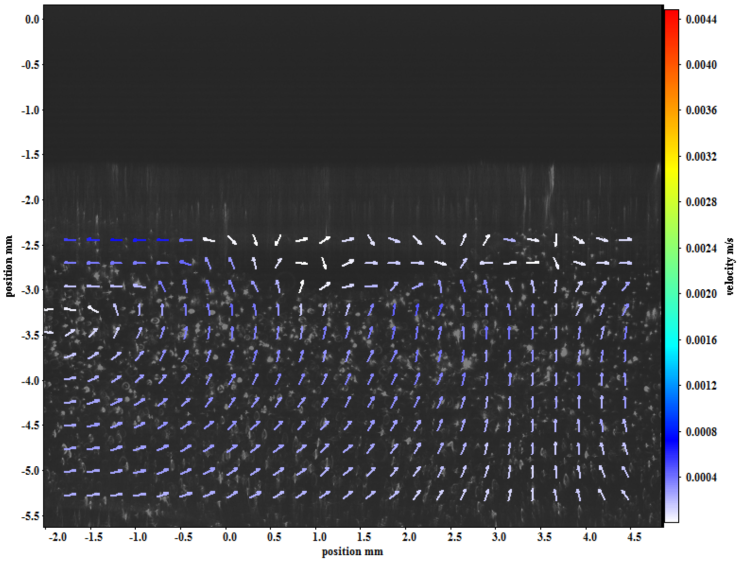


Fig. S4 Velocity distribution around the decanol lens.

■ Preparation of liquid marble

In this study, the liquid marble was prepared by making a small aqueous $K_3[Fe(CN)_6]$ solution droplet (Volume: 3 μL, Concentration: 0.1 M) roll in nano-hydrophobic silica powders for 1 minute. The grains could then spontaneously coat the droplet surface, forming a liquid marble. The prepared liquid marble was eventually transferred to the pool. It was observed that the liquid marble floated on the free surface.