

1 Optical motion control of liquid crystalline droplets by host-guest 2 molecular interaction

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9 Video information

10 Movie S1 A movie of the motion of the BHAB-doped 5CB droplet during the on-off
11 irradiation of a UV light. The UV light was irradiated from the right side with an intensity of 58
12 mW/cm². The diameter of the droplet was 110 μm, and the concentration of SDS was 0.3 wt%.
13 The file name is S1_BHAB_doped_5CB_motion.wmv

14

15 Movie S2 A movie of the motion of the BMAB-doped 5CB droplet during the on-off
16 irradiation of a UV light. The UV light was irradiated from the right side with an intensity of 58
17 mW/cm². The diameter of the droplet was 110 μm, and the concentration of SDS was 0.3 wt%.
18 S2_The file name is BMAB_doped_5CB_motion.wmv

19

20 Movie S3 A movie of the convective flow inside the LC droplet when the UV light was
21 irradiated from the right side. The UV light intensity was 32 mW/cm². The diameter of the droplet
22 was 400 μm, and the concentration of SDS was 1 wt%. The file name is
23 S3_BHAB_doped_5CB_convective_flow.wmv

24

25 Movie S4 A movie of the convective flow inside the LC droplet when the UV light was
26 irradiated from the right side. The UV light intensity was 32 mW/cm². The diameter of the droplet
27 was 430 μm, and the concentration of SDS was 1 wt%. The file name is
28 S4_BMAB_doped_5CB_convective_flow.wmv

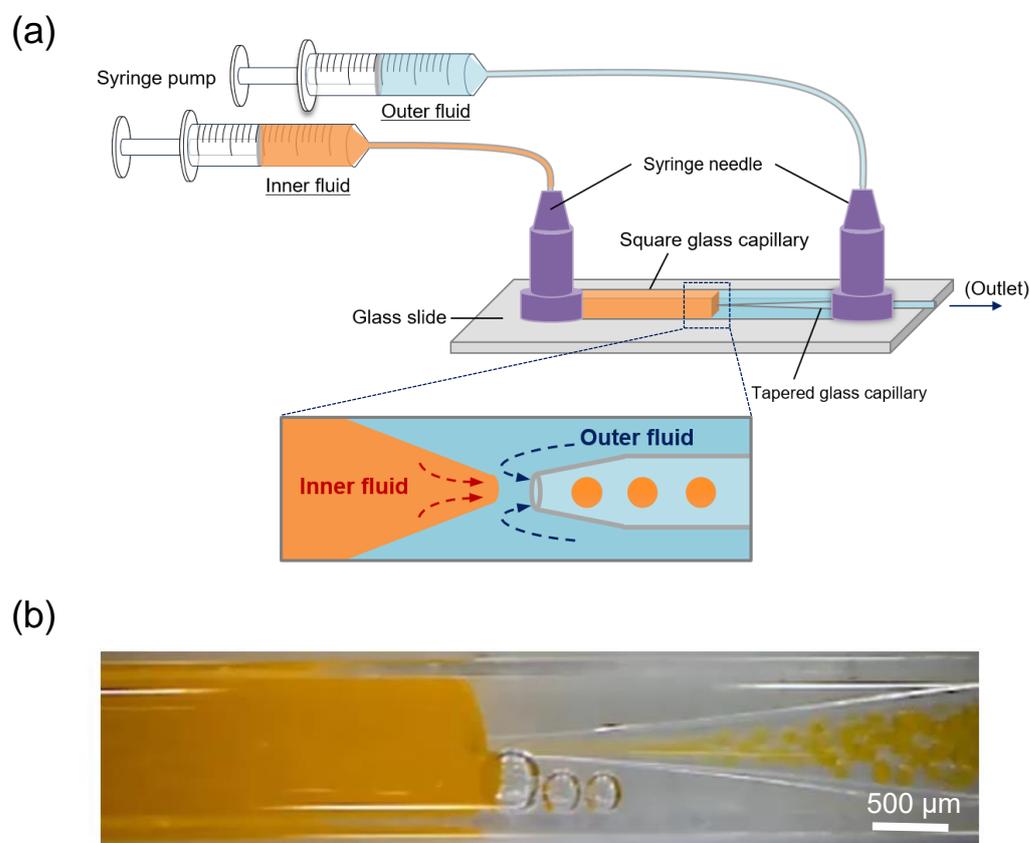
29

30 Movie S5 A movie of the behavior of an isotropic droplet doped with BHAB (2 wt%)
31 when the UV light was irradiated from the right side. The UV light intensity was 104 mW/cm².
32 The diameter of the droplet was 90 μm, and the concentration of SDS was 0.3 wt%. At first the
33 nematic droplet was gradually heated and the droplet changed into the isotropic phase, which was
34 recognized by the pattern change. The file name is S5_BHAB_doped_isotropic_5CB.wmv.

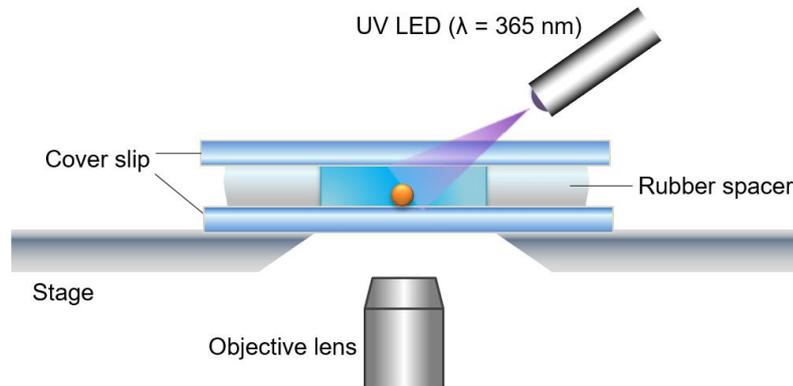
35

36 Movie S6 A movie of the behavior of toluene droplet doped with BHAB (2 wt%) when
37 the UV light was irradiated from the right side. The UV light intensity was 58 mW/cm². The
38 diameter of the droplet was 100 μm and the concentration of SDS was 0.3 wt%. The file name is
39 S6_BHAB_doped_toluene.wmv

40



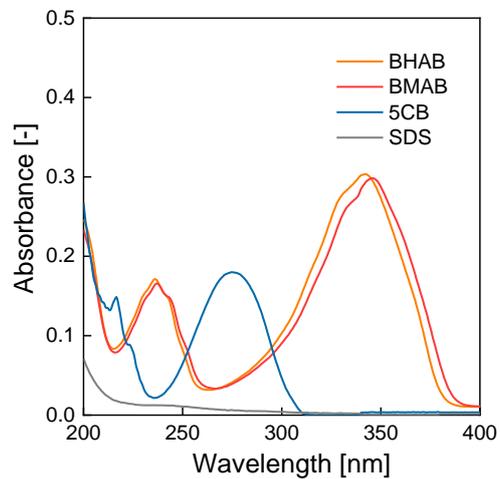
43 Fig.S1. (a) The schematic diagram of the microfluidic setup consisted of a glass capillary for the
 44 formation of LC particles, and the geometry of micro-capillaries and the formation mechanism of a
 45 single emulsion is shown. A square glass capillary (inner diameter: $0.90 \times 0.90 \text{ mm}^2$) was attached on
 46 a glass slide, and a tapered cylindrical capillary was inserted into it. The tapered capillary was prepared
 47 by tapering a tip of cylindrical glass capillary (inner diameter: $0.70 \times 0.70 \text{ mm}^2$, outer diameter: 0.87
 48 $\times 0.87 \text{ mm}^2$) using a micropipette puller (P-1000, Sutter Instrument). The tip diameter was $50 \mu\text{m}$.
 49 Syringe needles were connected to the syringe pump via a micro-tube, and the two types of liquids
 50 (inner fluid and outer fluid) were introduced. The inner fluid was sheared by the outer fluid in the inlet
 51 of the tapered cylindrical capillary, and droplets were formed. The droplets were collected from the
 52 tapered capillary on the right side. The hydrophilic treatment was applied for the tapered capillary by
 53 plasma cleaner (PDC-32G, Harrick Plasma). The microfluidic device was operated at room
 54 temperature ($25 \text{ }^\circ\text{C}$). (b) A microscopic image during the formation of photo-responsive LC particles
 55 is shown.



58 Fig.S2. A schematic drawing of the observation setup is shown. A rubber spacer (thickness: 0.2 mm)
59 with an open space was sandwiched with two coverslips (thickness: 0.12~0.17 mm), and an SDS
60 solution including LC droplets was pipetted into the open space. The cell was placed on an inverted
61 optical microscope (IX71, OLYMPUS), and the behavior of the LC droplets under light illumination
62 was observed. A UV-LED was illuminated from the top side at an oblique angle of 40 degrees.

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66 Fig.S3. UV/Vis absorption spectra for BHAB, BMAB, 5CB and SDS are shown. BHAB, BMAB and
67 5CB were solved in cyclohexane with the concentrations 7.9×10^{-5} , 7.5×10^{-5} and 3.3×10^{-5} mol/L,
68 respectively. The solven for SDS was water and its concentration was 3.5×10^{-2} mol/L.

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