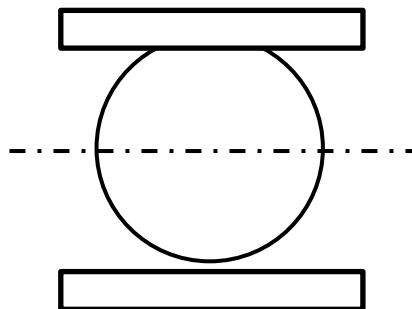
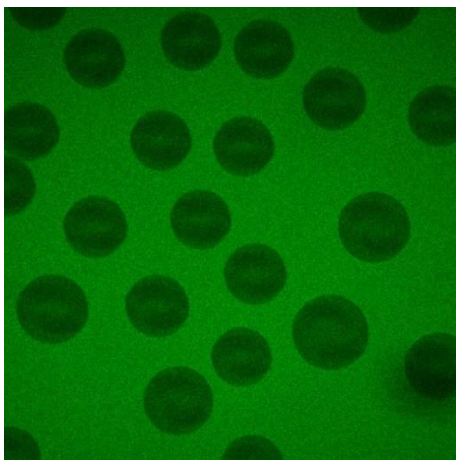
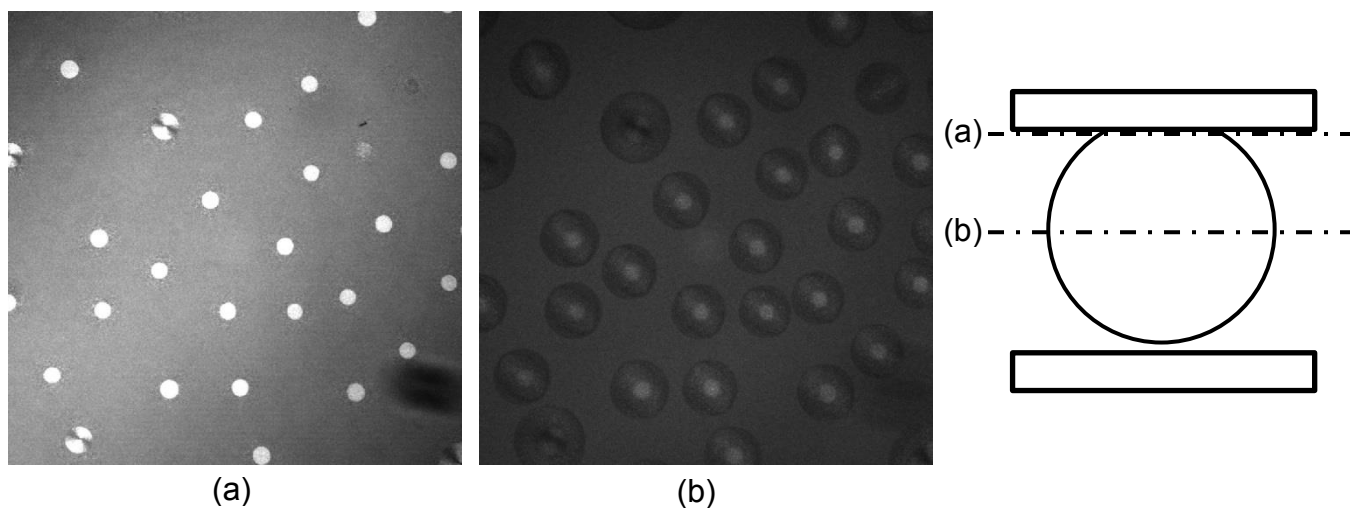


Supplementary information 1. Temperature and R811 concentration dependence of helical pitch length. (a) Temperature dependence. The data is obtained with 2wt.% R811 concentration, and the transition from the Ch to the I+Ch phase occurs when the temperature is 54  $^{\circ}\text{C}$ . As the temperature increases, helical pitch length  $P_0$  increases, while becomes almost constant near the Ch-I+Ch transition temperature. (b) R811 concentration  $c$  dependence. The temperature was set to be 53  $^{\circ}\text{C}$ . The data was well fit with  $P_0 = \beta/c$ , where  $\beta = 10.0\mu\text{m}/\text{wt.}\%$ .



Supplementary information 2. Confocal fluorescence microscope image of rugby-type droplets. In the sample, the concentration of R811 was 0.2wt.% and fluorescent dye Rhodamine 6G was dispersed with the concentration 0.1wt.%. We used Nikon C2 confocal microscope system for the confocal fluorescence microscopy. The NA of the objective lens was 0.95, which made the focal depth about  $0.5\mu\text{m}$ . As shown by the broken line in the right-hand schematic image, the image was obtained near the droplet center. Since the rugby-type droplets are observed with circular shape, it is confirmed the droplets have the spherical shape.



Supplementary information 3. Confocal reflection microscope images of rugby-type and cross-type droplets (a) near cell substrate and (b) droplet center. The concentration of R811 was 0.2wt.%. The NA of the objective lens was 0.95, which made the focal depth about  $0.5\mu\text{m}$ . At the glass substrate, the strong reflection due to the interface between the droplet and the substrate is observed with circular shape. The size of these circles is much smaller than the droplet size as shown in (b). Thus, we concluded the droplets show almost spherical shape, while they are partially wetting to the glass substrate as shown in the right-side schematic image.

Supplementary information 4. Structural transitions from rugby-type to striped (S4(a).wmv), from rugby to CC-type (S4(b).wmv) and from cross-type to striped droplets (S4(c).wmv). The movies are obtained 3 times faster than real time. In these movies, the transitions occur continuously.