

Supplementary Information

Formation of Topological Defects at Liquid / Liquid Crystal Interfaces in Micro-Wells Controlled by Surfactants and Light

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This files include:

Figs. S1 to S4
Movies S1 to S3



Fig. S1.

The POM images of liquid-5CB Interfaces in micro-well arrays with varied diameters for 5 μm depth are shown. The polarizing optical microscope (POM) images for each liquid/5CB interface

for micro-wells whose diameters (**d**) were 30-120 μm . The depths (**h**) of the micro-well were 5 μm . Water, SDS and PVA solutions were used as the liquid phase for (a), (b), and (c), respectively.

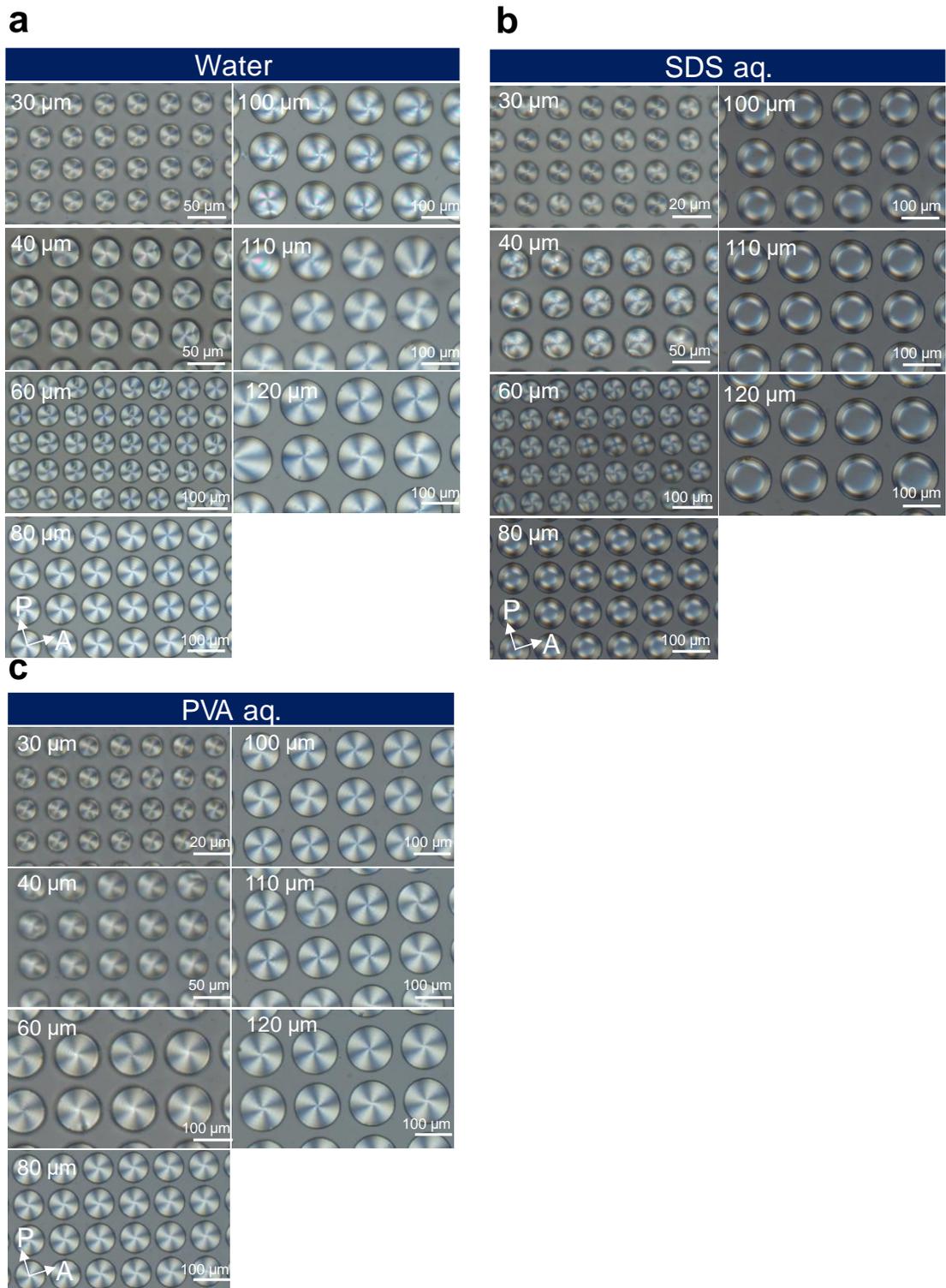


Fig. S2.

The POM images of liquid-5CB Interfaces in micro-well arrays with varied diameters for 30 μm depth are shown. The polarizing optical microscope (POM) images for each liquid/5CB interface for micro-wells whose diameters (**d**) were 30-120 μm . The depths (**h**) of the micro-well were 30 μm . Water, SDS and PVA solutions were used as the liquid phase for (a), (b), and (c), respectively.

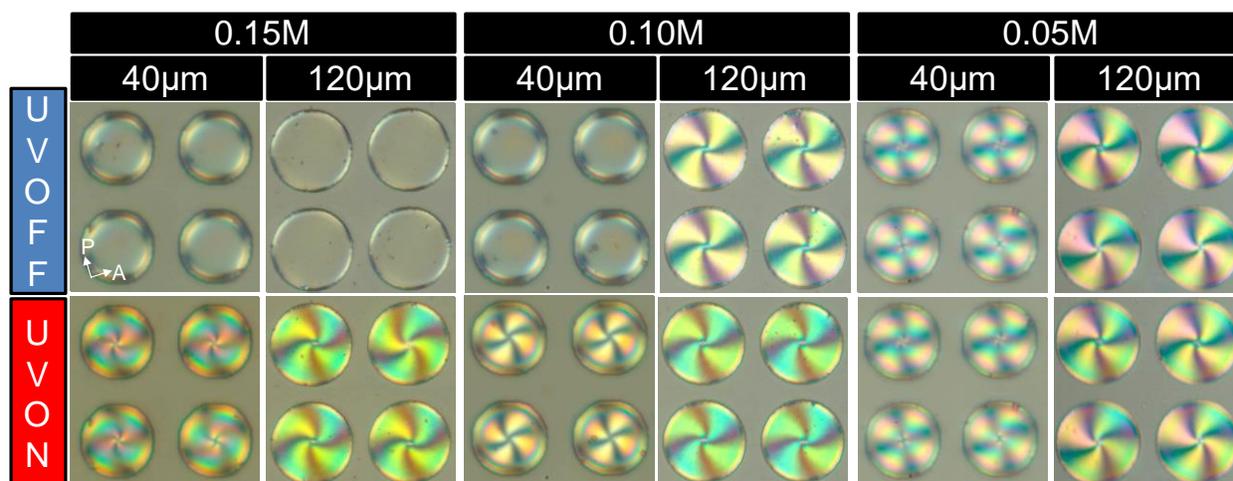


Fig. S3.

BHAB concentration dependence of photoresponse of POM images in micro-well arrays filled with 7CB covered with water is shown. The BHAB concentration dependence of the POM images of the micro-wells filled with 7CB covered with water before (top) and after (bottom) the UV light irradiation. The BHAB concentrations were 0.05, 0.10, 0.15 M, respectively. The micro-wells were 40 and 120 μ m in diameter (**d**) and 10 μ m in depth (**h**).

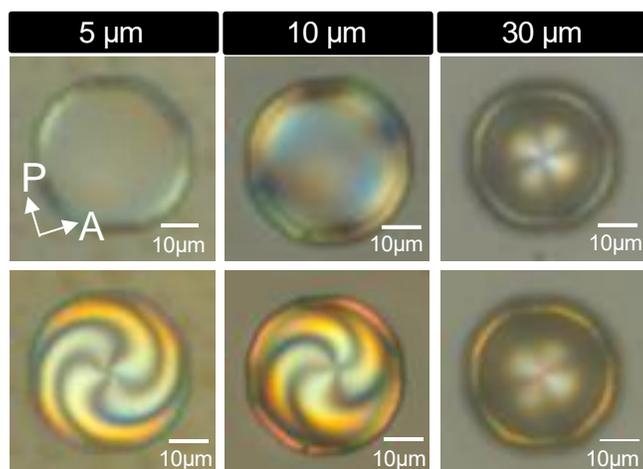


Fig. S4.

Micro-well depth dependence of photoresponse of POM images in micro-well arrays filled with 7CB covered with water is shown. The micro-well depth dependence of the POM images of the micro-wells filled with 7CB covered with water before (top) and after (bottom) the UV light irradiation. The depths (**h**) of micro-wells were 5, 10, and 30 μm, respectively. The micro-wells were 30 μm in diameter (**d**).

Movie S1.

A movie shows the sample injection process to the microfluidic device. First, an LC was injected using a micropipette, after that, aqueous surfactant solutions were introduced to make a liquid / LC interface.

Movie S2.

A movie for the photo-induced topological defect formation observed with POM. The sample was 7CB/water in micro-wells. The LC includes 0.1 M BHAB.

Movie S3.

A movie for the photo-induced topological defect formation observed with POM. The sample was 7CB/water in micro-wells. The LC includes 0.1 M PAP.