

Balanced electro-optical property and off-axis haze performance in polymer dispersed liquid crystal film via refractive index matching

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1. Influence of UV light intensity

The influence of UV light intensity is studied by curing six samples at different UV intensity and comparing their properties. The compositions and curing conditions are listed in **Table S1**.

Table S1. Compositions of samples A1-A6 cured at different UV intensity.

Sample	Composition	Weight Ratio	UV Intensity
A1	IBOA/HA/BDDA/GXP-6019	4/12/4/80	1 mW·cm ⁻²
A2	IBOA/HA/BDDA/GXP-6019	4/12/4/80	4 mW·cm ⁻²
A3	IBOA/HA/BDDA/GXP-6019	4/12/4/80	8 mW·cm ⁻²
A4	IBOA/HA/BDDA/GXP-6019	4/12/4/80	14 mW·cm ⁻²
A5	IBOA/HA/BDDA/GXP-6019	4/12/4/80	20 mW·cm ⁻²
A6	IBOA/HA/BDDA/GXP-6019	4/12/4/80	30 mW·cm ⁻²

Then, the micro morphology of the polymer matrix is characterized by SEM and images are exhibited in **Figure S1**. The size of polymer voids shows an obvious declining trend with the increase of UV intensity.

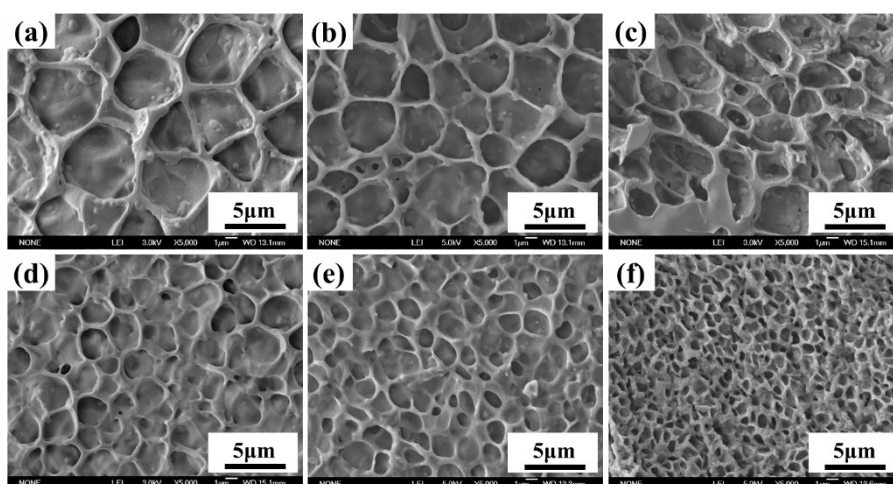


Figure S1. SEM images of samples cured at different UV light intensity.

Subsequently, the electro-optical response is measured and parameters are shown in **Figure S2**. As shown in Figure S2(a-b), the V-T curve shifts rightwards and the

saturation voltage increases when the intensity of UV light increases, corresponding to the SEM morphology in Figure S1. While the contrast ratio climbs dramatically to the peak value in sample A4 and then decreases slightly, as indicated in Figure S2(c). Therefore, the same UV intensity of $14 \text{ mW}\cdot\text{cm}^{-2}$ as in sample A4 is selected and applied in the following experiments.

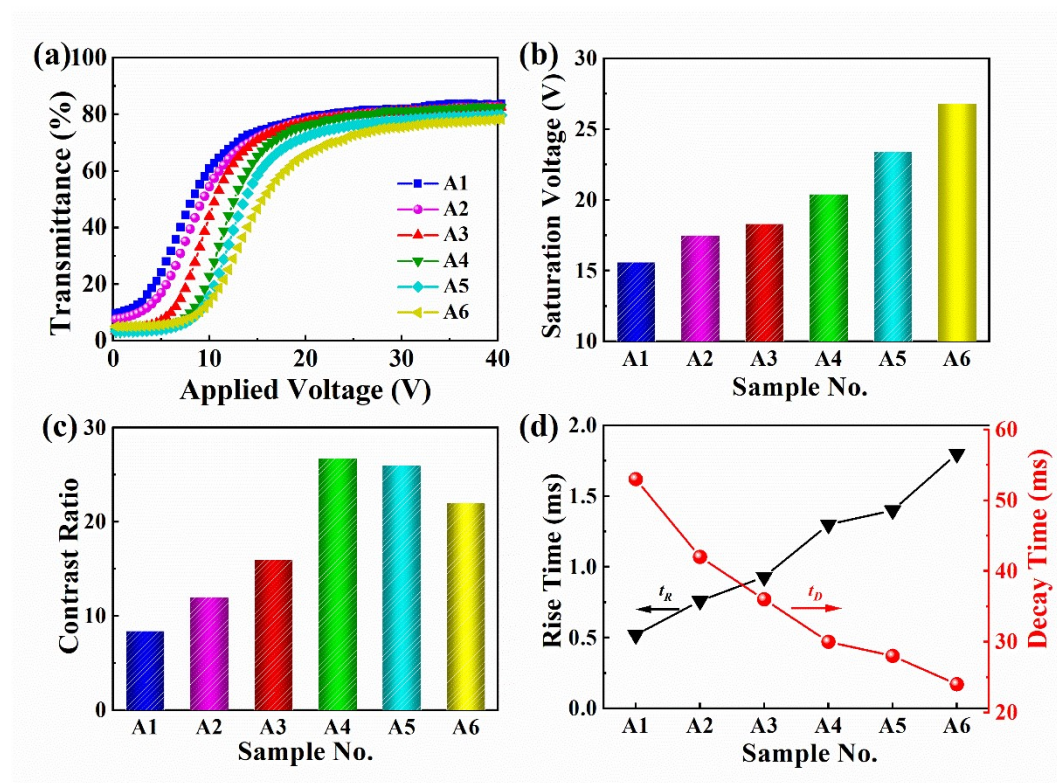


Figure S2. of samples cured at different UV light intensity.

2. Variation of mesh size along the cell thickness direction

Figure S3 shows the cross section of two PDLC samples observed under SEM. It can be found that the mesh size is uniform along the cell thickness direction and no obvious effect of the attenuated UV light intensity can be observed. This might be contributed by the high UV light intensity that irradiated on the samples. Although the UV light might be partially absorbed, the attenuation is relatively low since the thickness is in micrometer level. Thereby, the remaining UV light intensity is high

enough to keep the mesh size uniform.

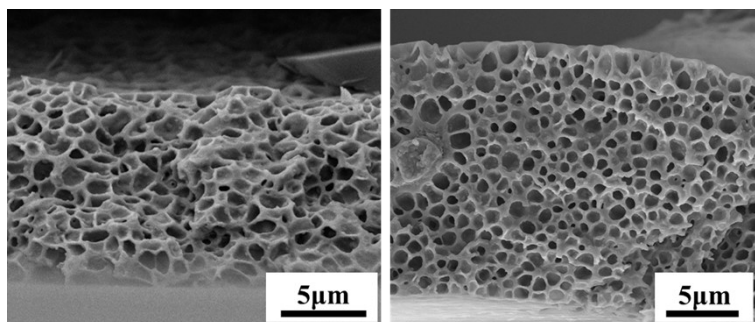


Figure S3. SEM images showing the cross section of two PDLC samples.