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Photoisomerization-induced Stable Liquid Crystalline Cubic Blue Phase

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For further understanding the temperature range of LC phase, thermal behavior was investigated using differential scanning calorimetry (DSC) equipped with a UV spot-cure system. Thermal flow was checked during heating process (1.5^{o}C/min). The UV light (40 mW/cm^{2}) was impulsively irradiated to the sample pan at 90 ^{o}C during 10 min. After that, the UV light was gradually ceased. Fig. S1 shows the DSC data before and after the UV irradiation at 90 ^{o}C in mixtures of host LC and 20 wt% S811 during the heating process. As can be seen from Fig. S1(a), cubic BP transition from N* was not clearly observed on heating process before UV irradiation because the transition peaks from N* to cubic BP and from cubic BP to Iso are very small and moreover overlapped. However, photoinduced cubic BP according to the UV irradiation at 90 ^{o}C was maintained until 116 ^{o}C on heating process. (Fig. S1(b)) These DSC results are consistent to POM results.

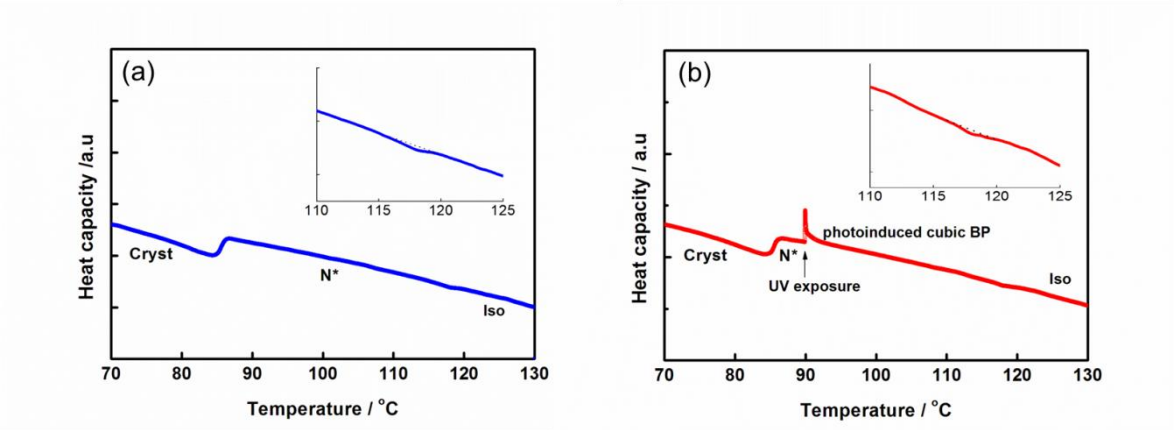

Fig. S1 DSC data of a mixture blended with 20 wt% of the chiral dopant (a) before and (b) after the UV irradiation at 90 °C during heating process.