

## Electronic Supplementary Information

### **Dual-responsive deformation of crosslinked liquid crystal polymer film with complex molecular alignment**

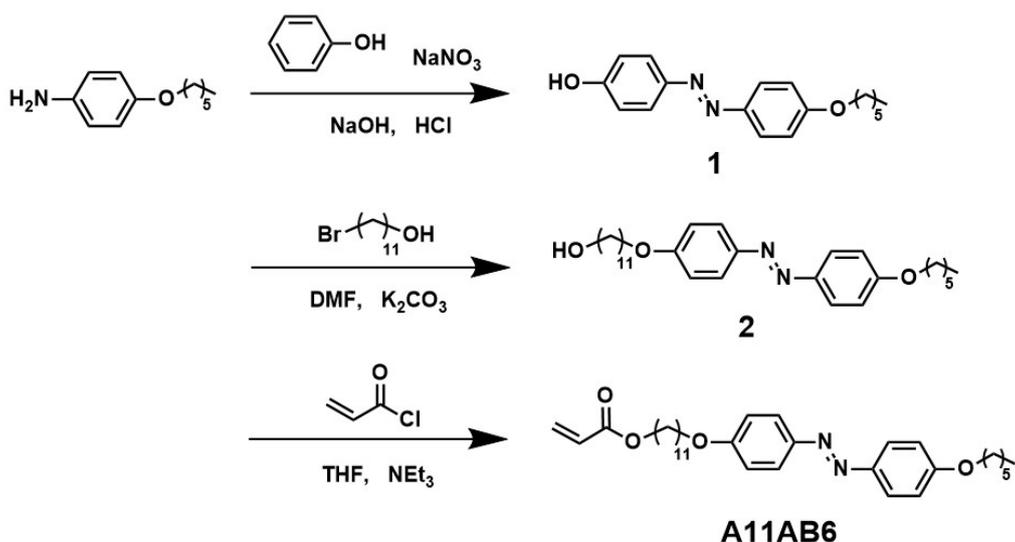
Quan Liu,<sup>a</sup> Yuanyuan Zhan,<sup>a</sup> Jia Wei,<sup>a</sup> Wei Ji,<sup>b</sup> Wei Hu<sup>b</sup> and Yanlei Yu<sup>a\*</sup>

---

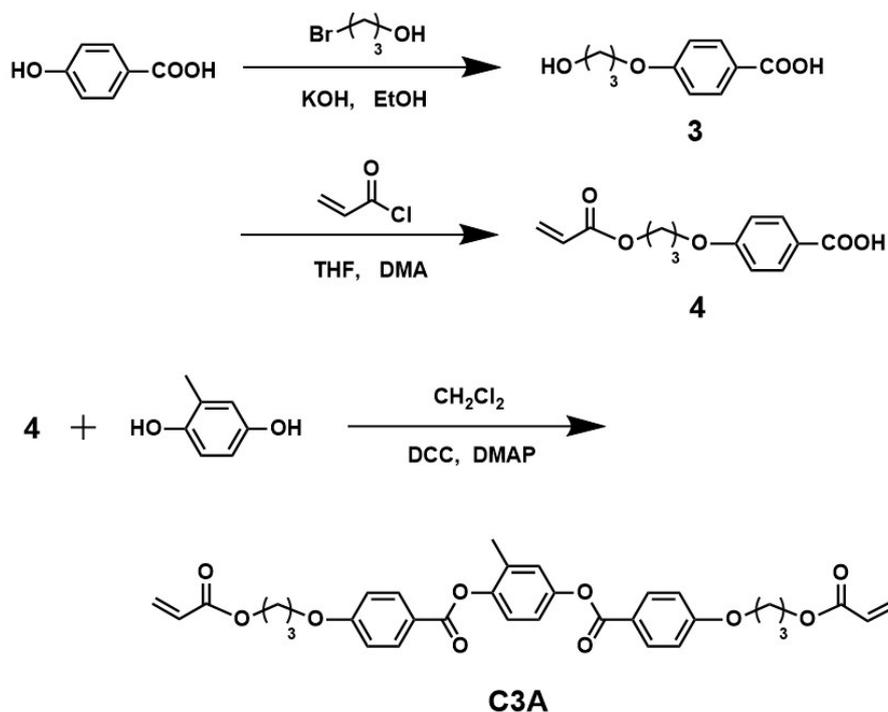
*a. Department of Materials Science, State Key Laboratory of Molecular Engineering of Polymers, Fudan University, 220 Handan Road, Shanghai, 200433, China. E-mail:*

*[ylyu@fudan.edu.cn](mailto:ylyu@fudan.edu.cn)*

*b. National Laboratory of Solid State Microstructures, College of Engineering and Applied Sciences, and Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, 210093, China.*



**Scheme S1.** Synthetic route of liquid crystal monomer A11AB6.



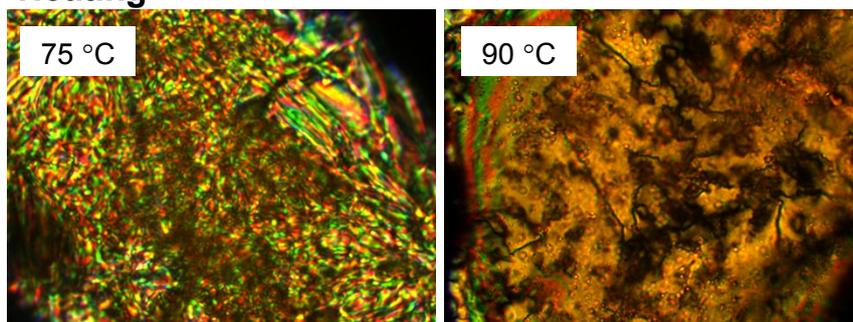
**Scheme S2.** Synthetic route of crosslinker C3A.

**Table S1.** Phase transition temperatures of A11AB6, C3A and the mixture of them.

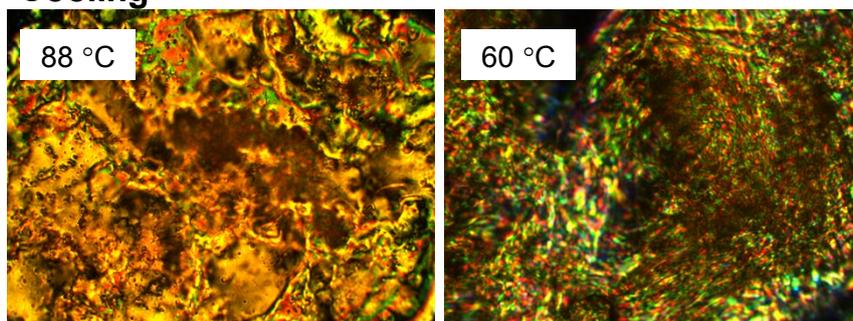
Liquid Crystals	Phase Transition Temperatures
A11AB6	K <sup>a</sup> 68 S <sup>b</sup> 85 N <sup>c</sup> 96 I <sup>d</sup> K 56 S 75 N 94 I
C3A	K 76 N 125 I K 73 N 129 I
A11AB6/C3A (mol/mol = 6/4)	K 62 S 82 N 93 I K 58 S 67 N 92 I

<sup>a</sup>K: Crystal phase; <sup>b</sup>S: Smectic phase; <sup>c</sup>N: Nematic phase; <sup>d</sup>I: Isotropic phase.

### Heating



### Cooling



**Figure S1.** POM pictures of the mixture in heating and cooling.

**Movie S1.** UV-induced deformation and recovery of the CLCP film with complex molecular alignment. The SD1 side is exposed to the light source.

**Movie S2.** Blue light-induced deformation and over-recovery of the CLCP film with complex molecular alignment. The SD1 side is exposed to the light source.

**Movie S3.** Heat-induced deformation and over-recovery of the CLCP film with complex molecular alignment. The PI side is in contact with the hot stage.