

Multi-Pitch Liquid Crystal Filters with Single Layer Polymer Template

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Abstract: Multi-reflective peak and bandwidth scalable liquid crystal (LC) filters were investigated. By refilling a cholesteric LC (CLC) whose chiral pitch is different to the target template into a blue phase LC (BPLC) template, a multi-reflective peak single layer LC filter can be fabricated. With multiple templating and refilling processes, the number of reflective peaks can be further increased. Moreover, by refilling the CLCs of designed chiral pitch into a CLC template sequentially, a bandwidth scalable single layer CLC filter can be fabricated. The LC filters show great potential applications in optical communication, display, and LC lasing.

Keywords: polymer template; single layer; liquid crystal filter

Supplementary Materials

Figure S1 shows the molecular structures of LC cell and a procedure for preparing the templates. Figure S1(a) shows molecular structure and Figure S1(b) shows the chiral polymer network chain in cell after UV irradiation. Figure S1(c) shows the polymer network after wash-out process.

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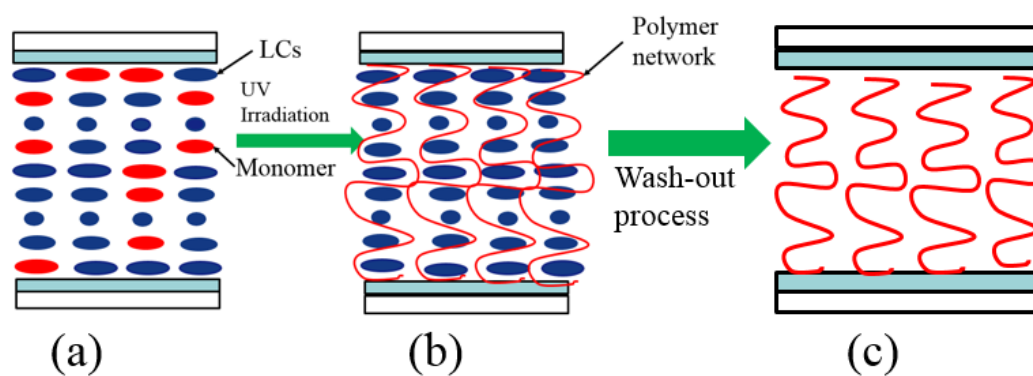


Figure S1. The molecular structures of templates and procedure for preparing templates.

The chemical structure of materials used in our experiment are shown in Figure S2.

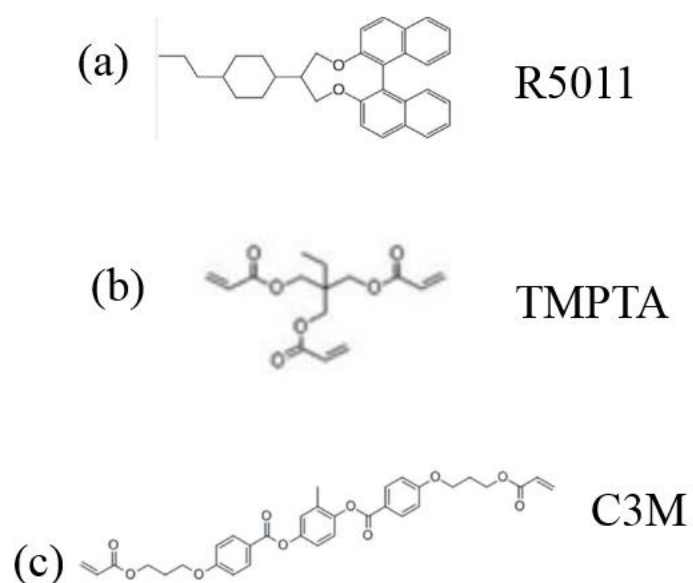


Figure S2. The chemical structure of materials.