

## Supporting information

Monodisperse liquid crystal network particles synthesized via precipitation polymerization

Xiaohong Liu,<sup>1,4</sup> Yifei Xu,<sup>2,4</sup> Johan P.A. Heuts,<sup>3,4</sup> Michael G. Debije,<sup>1</sup> Albert P.H.J. Schenning<sup>1,4,\*</sup>

<sup>1</sup> Stimuli-Responsive Functional Materials and Devices, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands

<sup>2</sup>Laboratory of Materials and Interface Chemistry and Center for Multiscale Electron Microscopy, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands

<sup>3</sup>Supramolecular Polymer Chemistry group, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands

<sup>4</sup>Institute for Complex Molecular Systems, Eindhoven University of Technology, PO Box 513, 5600 MB, Eindhoven, The Netherlands

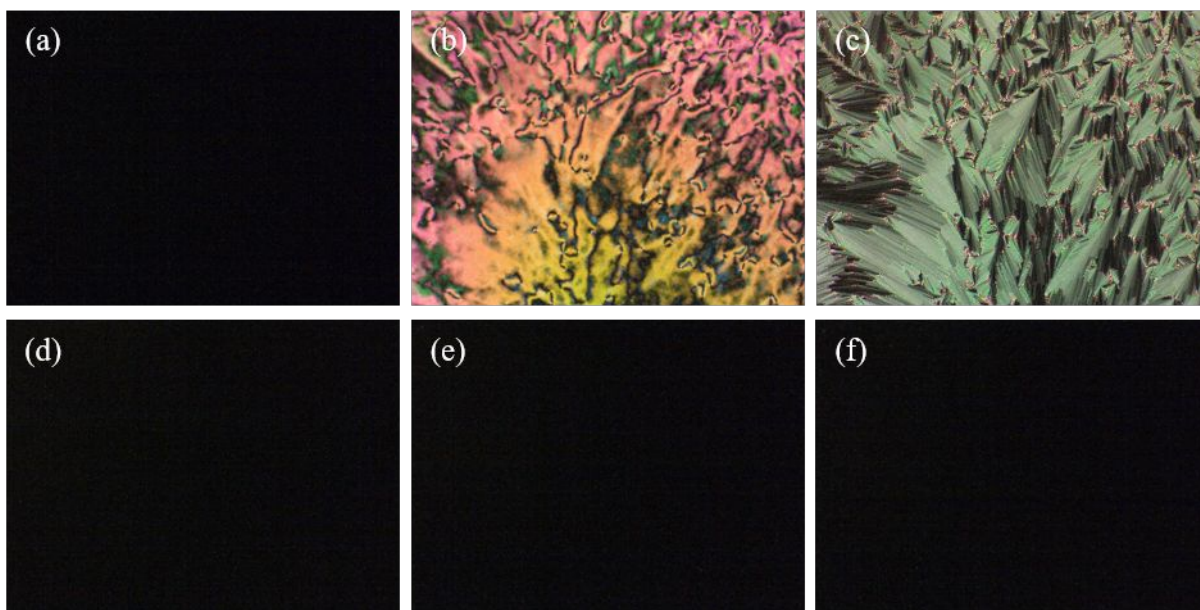


Figure S1. Optical image of the monomer LC mixture under POM (a) to (c), planar alignment) and ((d) to (f), homeotropic alignment). Temperature is 120 °C (a) and (d), 115 °C (b) and (e), and 105 °C (c) and (f), respectively.

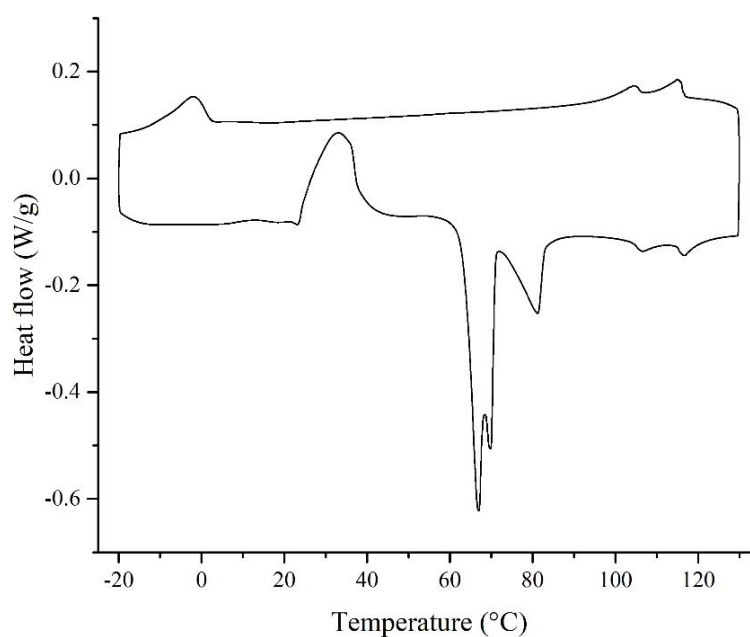


Figure S2. DSC curve of the monomer LC mixture. Isotropic to nematic transition is around 115 °C. Nematic to smectic transition is around 105 °C.

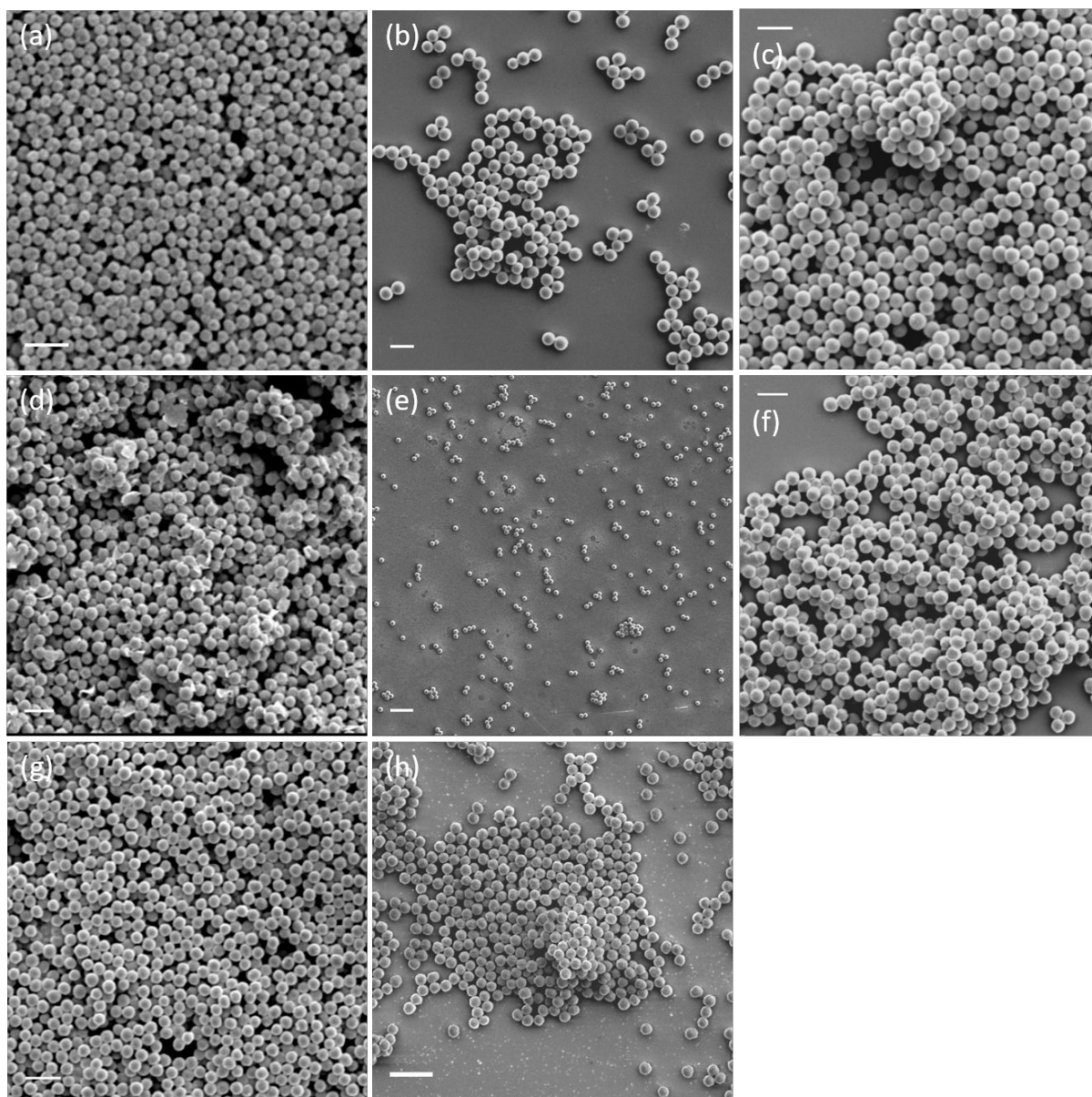


Figure S3. SEM images of LC polymer particles synthesized in run 1 to run 9 (except run 4, shown in the main text). Scale bar = 2  $\mu\text{m}$ , except (e) and (h), scale bar = 5  $\mu\text{m}$ .

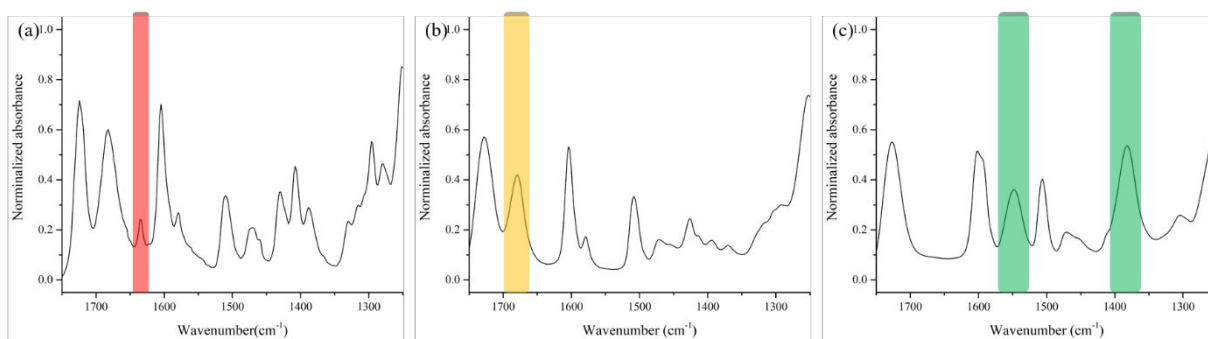


Figure S4. IR spectrum of (a) the monomer LC mixture, (b) pristine polymer particles, and (c) particles after KOH treatment. Peaks corresponding to the acrylate groups, benzoic acid groups and potassium benzoate groups are indicated in red, yellow and green, respectively.

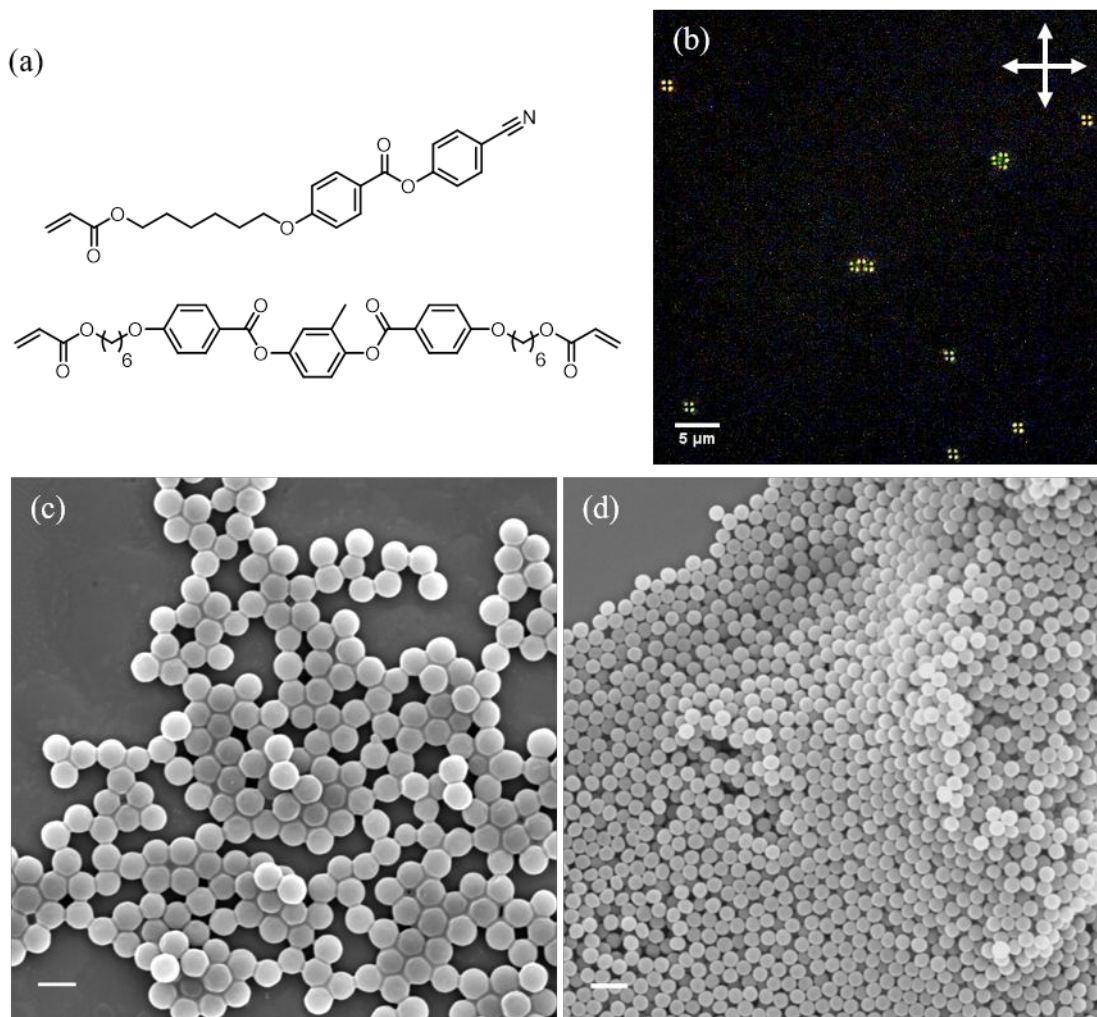


Figure S5. (a) The chemical structure of monomers of the nematic LC mixture. (b) and (c) POM and SEM image of particles synthesized by precipitation polymerization using the mixture shown in (a) in a 1/1 w/w ratio. The polymerization conditions are the same as entry 9 in Table 1. Scale bar = 2  $\mu\text{m}$ . (d) SEM image of particles synthesized by precipitation polymerization using the mixture shown in Figure 1(a) in a 9/1 w/w ratio. Scale bar = 2  $\mu\text{m}$ .