Electronic Supplementary Material (ESI) for Soft Matter.

Electronic Supplementary Information

Chameleon Skin-Inspired Polymeric Particles for Detection of Toluene Vapor

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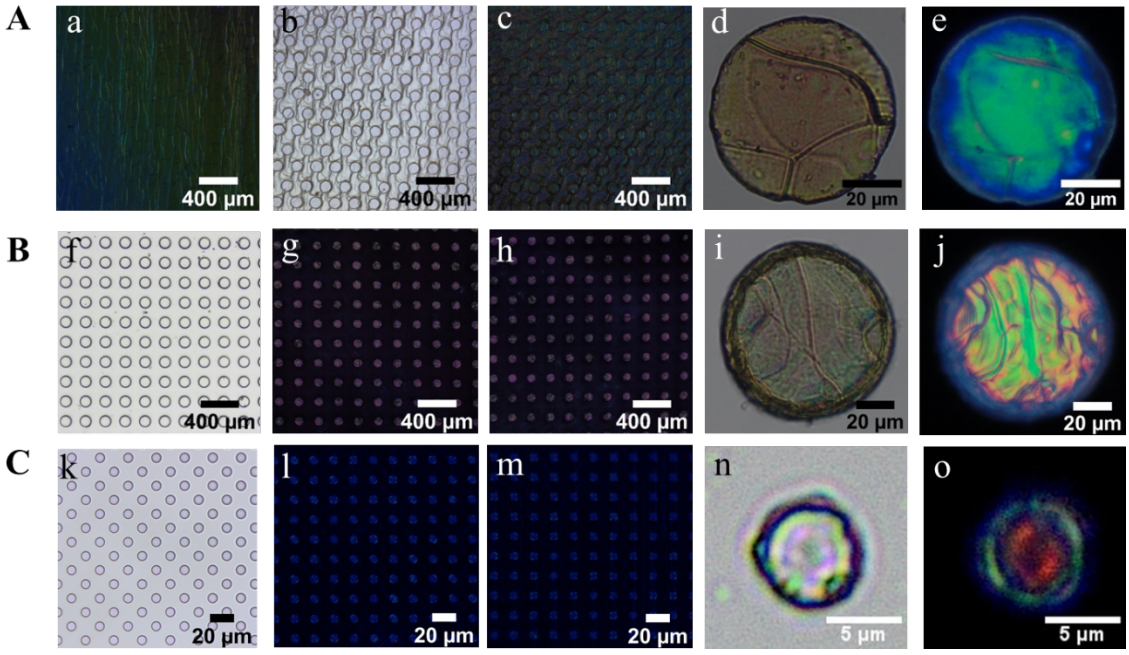

Figure S1. Micrographs collected from the synthesis of 100 μm particles using mask lithography (a) before polymerization, (b,c) after polymerization, and (d,e) after extraction. Micrographs collected from the synthesis of 100 μm particles using soft lithography (f) before polymerization, (g,h) after polymerization, and (i,j) after extraction. Micrographs collected from the synthesis of 7 μm particles using soft lithography (k) before polymerization, (l,m) after polymerization, and (n,o) after extraction. Particles were synthesized from 20% RM257, 72% E7, and 8% wt S811.

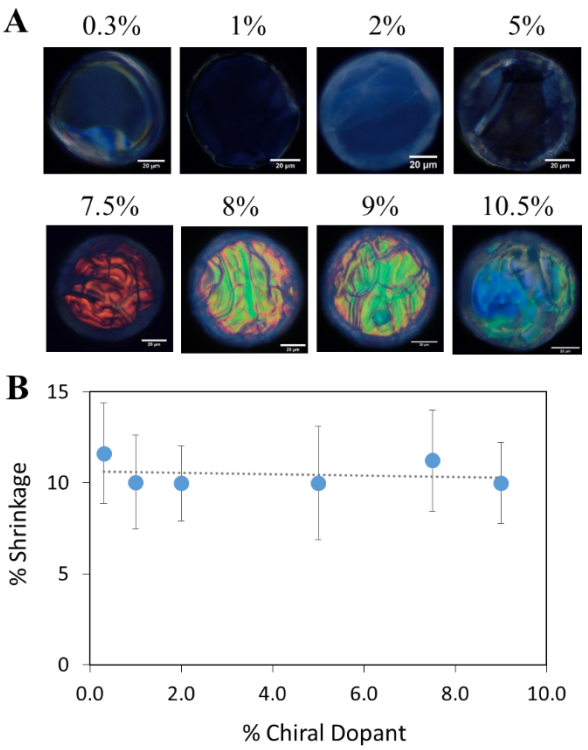

Figure S2. (A) Reflection mode polarized micrographs of the particles synthesized from mixtures containing 20% wt RM257 and balance E7. (B) Plot of shrinkage observed after extraction of the unreacted mesogens as a function of the chiral dopant concentration.

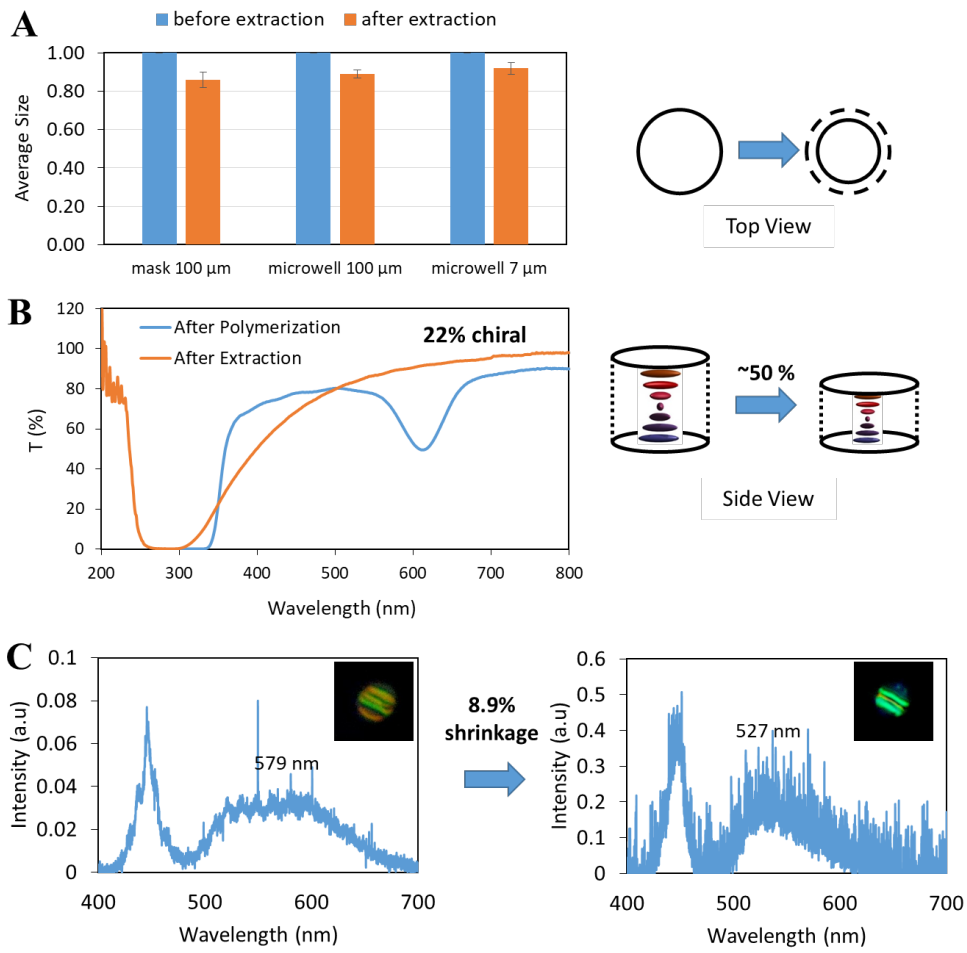

Figure S3. Characterizations done for the shrinkage of the particles. (A) Shrinkage amounts of the particles in the radial direction determined from optical micrographs. (B) UV-Vis spectra of the 100 μm sized particles before and after extraction that was used to determine the shrinkage parallel to the cylindrical axis. (C) Reflected light spectra of the 7 μm sized particles before and after extraction that was used to determine the shrinkage parallel to the cylindrical axis.

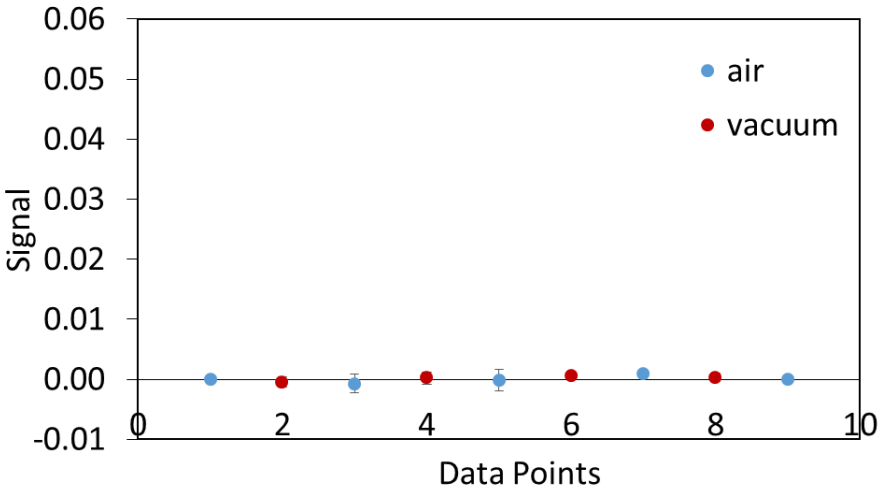

Figure S4. The response of the polymeric particles alternating in the open air and the vacuum.

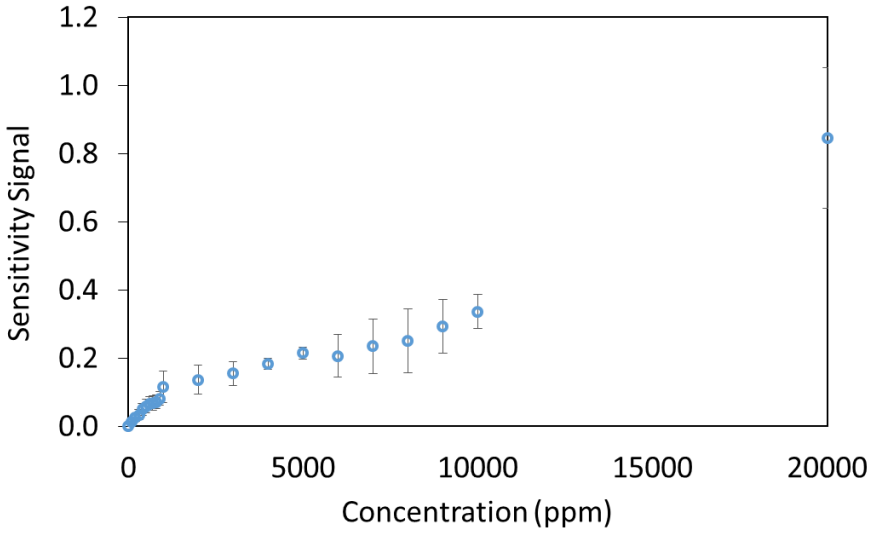

Figure S5. Response curve of extracted CLC particles that were produced by mask lithography (100 μm)

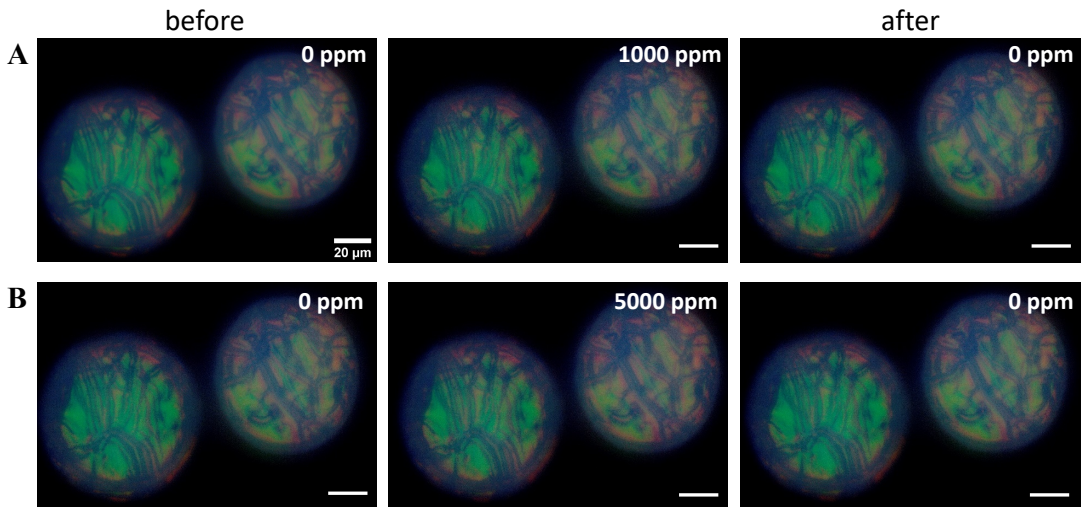

Figure S6. Reflection mode polarized optical micrographs of the particles before, during and after the exposure to toluene. The particles were exposed to (A) 1000 ppm and (B) 5000 ppm toluene. The images in the right column were taken after the system was evacuated from toluene. The particles were synthesized from mixtures of 20% RM257, 72% E7, and 8% wt S811. Scale bars: 20 μm.

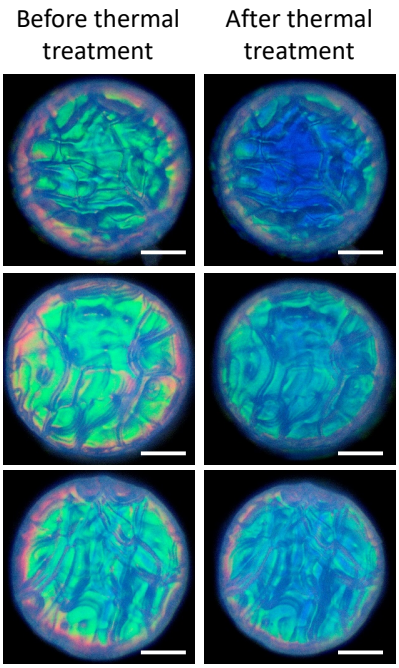

Figure S7. Reflection mode polarized optical micrographs of three representative particles before and after thermal treatment showing the blue shift of the reflected coloring. The particles were annealed at 150ºC (above T_g) overnight. The images were taken at room temperature. The particles were synthesized from mixtures of 20% RM257, 72% E7, and 8% wt S811. Scale bars: 20 μm.