

Abstract Submitted
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Cholesteric networks for creation of Liquid Crystalline Nose (LCN).¹ PETR SHIBAEV, XIAOYURUI WANG, Fordham Univ, VIOLET GUZMAN, LEE VIGILIA, WILLIAM CHARLES, DANIEL CARROZZI, Fordham Uni — Novel cholesteric siloxane polymers with mesogenic pendant groups were synthesized and studied for the detection of volatile organic compounds (ethanol, toluene, cyclohexane, and acetic acid). Cholesteric polymers have numerous advantages over low molar mass liquid crystals since they can be prepared as thin films and be very useful for fast visual detection of volatile organic compounds (VOCs). Interaction of VOCs with chiral polymers lead to changes of order parameter, twisting power of chiral dopants, and swelling of the polymer matrix. These effects result in a spectral shift of the selective reflection band of cholesteric polymers. The magnitude and direction of the spectral shift depend on the chemical structure of the VOC and the composition of cholesteric matrix. These effects are analyzed and discussed for different chemical structures of the matrix. The selectivity of response to different VOCs makes the creation of “liquid crystalline nose” (LC nose) not a distant possibility.

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