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Phase behavior of chromonic liquid crystal mixtures of Sunset Yellow and Disodium Cromoglycate[1] AKIHIRO YAMAGUCHI, GREGORY SMITH, YOUNGWOO YI, CHARLES XU, Liquid Crystal Materials Research Center, University of Colorado, Boulder (CO) U.S.A., SILVIA BIFFI, La Sapienza - University of Rome, Rome, Italy, FRANCESCA SERRA, TOMMASO BELLINI, Dipartimento di Chimica, Biochimica e Biotecnologie per la Medicina, Università degli Studi di Milano, Italy, NOEL CLARK, Liquid Crystal Materials Research Center, University of Colorado, Boulder (CO) U.S.A. — Chromonic liquid crystals (CLCs) are formed when planar molecules dissolved in water stack into rod-like aggregates that can order as liquid crystals. Isotropic, nematic, and M-phases can be observed depending on the degree of molecular orientational and positional order by variation of the CLC concentration. We focused on mixtures of two well-known CLCs, Sunset Yellow, a food dye, and disodium cromoglycate (DSCG), an asthma medication. In order to study the phase behaviors of these mixtures, we observed their textures in glass cells and capillaries using polarized light microscopy. We report here a ternary phase diagram describing the complete phase behavior of the CLC mixtures. We observed a variety of phase behaviors depending on species ratio and concentration. In the isotropic phase, no clear phase separation of the two dyes was observed, while separation did occur in many nematic and M-phase combinations. We will also describe phase observations made using a light spectroscopy and bulk centrifugal partitioning.

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