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Effects of Multivalent Salts and Polyamines on Lyotropic Chromonic Liquid Crystals[1] L. TORTORA, H.S. PARK, Liquid Crystal Institute and Chemical Physics Interdisciplinary Program, Kent State university, D. FINOTELLO, Department of Physics, Kent State University, O.D. LAVRENTOVICH, Liquid Crystal Institute and Chemical Physics Interdisciplinary Program, Kent State university — Multivalent salts and polyamines cause significant structural and phase changes in lyotropic chromonic liquid crystals (LCLCs) such as water solutions of sunset yellow (also known as Edicol), disodium chromoglycate, and blue 27. Using polarizing microscopy, rheoscopy, retardance mapping, and preliminary small-angle neutron scattering data, we demonstrate that multivalent additives cause significant shifts of phase boundaries in the temperature-concentration coordinates, formation of aggregate bundles, as well as induce phase separation of a homogeneous nematic phase into hexagonal columnar and isotropic phases. The multivalent phenomena are discussed within the framework of the strong coupling model of polyelectrolyte interactions and hydration effects.

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