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Aggregates in Chromonic Liquid Crystal Phases of Aqueous Solutions of Sunset Yellow* LEELA JOSHI, SHIN-WOONG KANG, DENA MAE AGRA-KOOIJMAN, SATYENDRA KUMAR, Department of Physics, Kent State University — Molecules of dye Sunset Yellow consist of flat poly-aromatic core and hydrophilic groups at the periphery. In aqueous environments, they self-organize into columnar aggregates mainly via $\pi - \pi$ interactions between aromatic cores. At high concentrations, dye aggregates develop orientational and positional orders to form the nematic (N) and columnar (C) mesophases. Synchrotron x-ray scattering and optical polarizing microscopy were used to better understand the growth of aggregates and mesophase formation. Average column height and their spatial organization strongly depend on concentration, temperature, and pH value of the solution. The aggregate size decreases with temperature exhibiting an Arrhenius behavior with mesophase dependent activation energy. A dramatic decrease in the aggregate size upon addition of *HCl* highlights their sensitivity to electrostatic interactions. *Work supported by grant NSF/DMR-086991.

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