

Abstract Submitted
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Aggregation Properties of the Chromonic Liquid Crystal Benzopurpurin 4B CHRISTOPHER MCKITTERICK, PETER COLLINGS, Swarthmore College — Benzopurpurin 4B (BPP) is a textile dye very similar to the common indicator Congo Red. As is true for all chromonics, the absorption spectrum is concentration dependent at low concentrations. If this dependence is used to estimate a free energy change for aggregation, it is higher than has been determined for other systems. Unlike other recently investigated chromonic liquid crystals, BPP forms a liquid crystal phase at extremely low concentrations, about 0.5 wt%. Also unlike these other chromonic liquid crystals, the aggregation kinetics are exceedingly slow. X-ray diffraction and light scattering measurements indicate that the aggregates of BPP are much larger than for chromonic systems that form liquid crystals at higher concentrations. BPP aggregates can be imaged using confocal microscopy, revealing a length distribution centered at 3 μm for a solution forced through a 0.2 μm filter. Over days the aggregates lengthen to well over 10 μm . The diameter of the aggregate images is slightly greater than the diffraction limit of the microscope, placing an upper limit on the diameter of 0.14 μm . These dimensions are consistent with the light scattering results.

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