Title:	Triphenylene-Based Room-Temperature Discotic Liquid Crystals: A New Class of Blue-Light-Emitting Materials with Long-Range Columnar Self-Assembly
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Keywords:	Triphenylene Liquid crystals Blue luminescence Columnar mesophases
Issue Date:	2016
Publisher:	American Chemical Society
Citation:	Langmuir, 32(4), pp. 1120–1126
Abstract:	A straightforward synthesis of multialkynylbenzene-bridged triphenylene-based dyad systems (via flexible alkyl spacers) that self-organize into room-temperature columnar structures over a long range is reported. The compounds with spacer lengths (n) of 8 and 10 exhibit a columnar rectangular mesophase whereas a compound with n = 6 shows a columnar rectangular plastic phase. Interestingly, the later compound (n = 6) shows the formation of well-nucleated spherulites of about several hundred micrometers that suggest the existence of a long-range uniform self-assembly of columns. All of these compounds show blue luminescence in solution and in the thin-film state under long-wavelength (365 nm) UV light. These compounds fulfill the described demands such as long-range columnar self-assembly at room temperature, a good yield with high purity, and blue-light emitters under the neat condition for possible potential applications in semiconductor devices. They also match the criteria of facile processing from the isotropic state because of their low isotropization temperature. This new class of materials is promising, considering the emissive nature and stabilization of the columnar mesophase at ambient temperature.
URI:	https://pubs.acs.org/doi/10.1021/acs.langmuir.5b03353 (https://pubs.acs.org/doi/10.1021/acs.langmuir.5b03353) http://hdl.handle.net/123456789/2473 (http://hdl.handle.net/123456789/2473)
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