

## Alignment control of hexaalkoxytriphenylene-based discotic liquid crystal with wavelength tunable CO<sub>2</sub> laser irradiation

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Recently, in a series of experiments for hexagonal columnar (Col<sub>h</sub>) mesophase of a well-known discotic liquid crystal, 2,3,6,7,10,11-hexahexyloxytriphenylene (C6OTP; Figure 1) (Crystal 69 °C Col<sub>h</sub> 99 °C Iso) by use of a free electron laser (FEL), we found that the homeotropic domain where the columnar axis aligns perpendicular to the substrate could be changed to a domain with a homogeneous planar alignment of columns by the excitation of C-C stretching vibration of triphenylene [1-3]. In this study, infrared induced alignment change of columnar liquid crystal domains was investigated for C6OTP with wavelength tunable CO<sub>2</sub> laser irradiation. A uniformly aligned alignment change of domains was observed when a chopped linearly polarized infrared laser light corresponding to the wavelength of the aromatic C-O-C stretching vibration band (1036 cm<sup>-1</sup>, 9.65μm) was irradiated [4]. These results strongly imply that the infrared irradiation of columnar liquid crystal is a possible technique for device fabrication by use of DLC semiconductors.

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- (3) H. Monobe, K. Awazu, Y. Shimizu, *Adv. Mater.* **2006**, *15*, 607.
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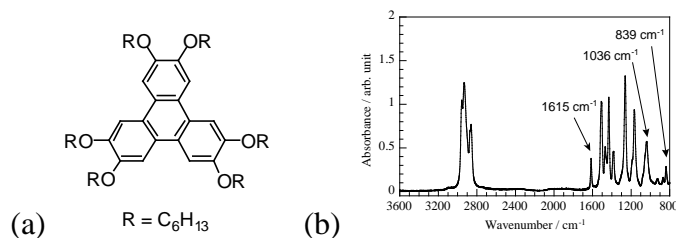


Fig. 1 (a) The chemical structure, (b) IR absorption spectrum of C6OTP.