Electronic Supplementary Information for

Polymer encapsulation and stabilization of molecular gel-based chiroptical information for strong, tunable circularly polarized luminescence film

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Materials and Methods

The N^2 , N^3 -didodecyl-L-glutamide (**G**) was purchased from Tokyo Chemical Industry Co., Ltd. N^1 -4carboxybutanoyl- N^2 , N^3 -didodecyl-L-glutamide (**G**-ca) was synthesized according to our previous reports [1]. The fluorescent dyes, NK-77 (Hayashibara Biochemical Laboratories, Inc.), basic red 5 (BR-5, Tokyo Chemical Industry Co., Ltd.) and acriflavine (AC, Tokyo Chemical Industry Co., Ltd.) were purchased from chemical suppliers, and were used as received without further purification.

[1] H. Ihara, M. Yoshitake, M. Takafuji, T. Yamada, T. Sagawa, C. Hirayama and H. Hachisako, *Liq. Cryst.*, 1999, **26**, 1021.

Measurements

UV-visible absorption (UV-vis) spectra, circular dichroism (CD) and fluorescence (FL) spectra were measured using a JASCO V-560, a JASCO J-725 and a JASCO FP-6500 spectrometers (JASCO Co. Ltd., Tokyo, Japan), respectively. Circularly polarized luminescence (CPL) spectra were recorded using a JASCO CPL-200 and a JASCO CPL-300 spectrophotometers. Confocal microscopic images were captured by a Leica TCS 8SP confocal microscope (Leica Microsystems GmbH, Wetzlar, Germany). Transmission microscopic (TEM) images were obtained using a JEOL JEM-1400 Plus (JEOL Ltd., Tokyo, Japan).



Figure S1 Confocal microscopy of the dye-containing polystyrene films. **G-ca**: 2 wt% in film. The molar ratio of **G-ca** : Dye = 20 : 1. Excitation at 488 nm.

Figure S2





Figure S3



Figure S3 CD spectra of the dye-containing polystyrene films. **G-ca**: 2 wt% in film. The molar ratio of **G-ca**: Dye(s) = (a) 20 : 1; (b) 20 : 1; (c) 20 : 1 : 1.