Supporting Information

Right-/Left-helical G-quartet nanostructures with full-color and energy transfer circularly polarized luminescence

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Experimental Section

Materials:

Guanosine 5'-monophosphate (GMP, ≥99), thioflavin T (ThT, 65-75%), thiazole orange (TO, ~90%), pyronin Y (PY, 50%) and meso-tetrakis(4-(N-methylpyridiumyl)) porphyrin (TMPyP4) were purchased from Sigma-Aldrich and used without further purification. $Sr(NO_3)_2$ and KCl were purchased from aladin and used without further purification. The extinction coefficients of ThT, TO, PY and TMPyP4 are 36000 M^{-1} cm^{-1} at 412 nm, 63 000 M^{-1} cm^{-1} at 500 nm, 103 000 M^{-1} cm^{-1} at 545 nm and 226000 M^{-1} cm^{-1} at 422 nm, respectively. All aqueous solutions were prepared using ultra-pure water (18.2 MΩ, Milli-Q, Millipore).

Methods:

Preparation of GMP/Sr^{2+} nanofibers and GMP/Sr^{2+}-dyes nanofibers:

GMP (50 mM) and dyes with different concentrations were dissolved in pure water (1 mL). Then $Sr(NO_3)_2$ solution (8 mM) was added to the mixture under slight shake. After 24 hours' incubation at 4 ^oC, solid products formed. The mixture was centrifuged and purified three times to remove free small molecules.

Preparation of GMP/Sr^{2+}/K^+ nanofibers and GMP/Sr^{2+}/K^+-dyes nanofibers:

GMP (50 mM), KCl (4.5 mM) and dyes with different concentrations were dissolved in pure water (1 mL). Then $Sr(NO_3)_2$ solution (8 mM) was added to the mixture under slight shake. After 24 hours' incubation at 4 ^oC, solid products were formed. The mixture is centrifuged and purified three times to remove free small molecules.

Measurements:

CD spectra were measured at 20 ^oC on a JASCO J-1500 spectrometer attached with a temperature controller. CPL spectra were carried out on a JASCO CPL-300 spectrometer at 20 ^oC. Fluorescence experiments were carried out on an Edinburgh instrument FS5 spectrofluorometer. Absorbance measurements were made on a LAMBDA 750 spectrophotometer. All spectra were measured using a quartz cuvette with 1.0 mm path length. Each spectrum was an average of three measurements. Scanning electron microscopy (SEM) was conducted on a GEMINI 300 field emission scanning microscope. Fourier transform infrared (FTIR) analyses were carried out on a Thermo Fisher Scientific NICOLET iS50 FT-IR spectrometer.

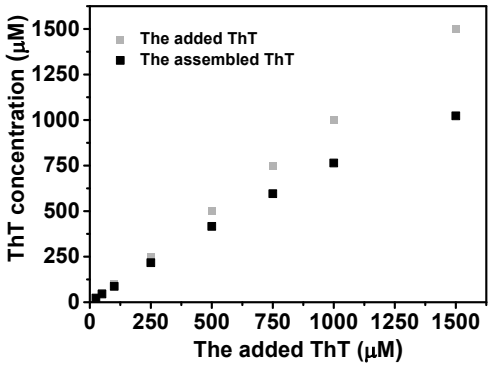

Figure S1 The amount of the assembled ThT in g-nanofibers under different ThT concentrations.

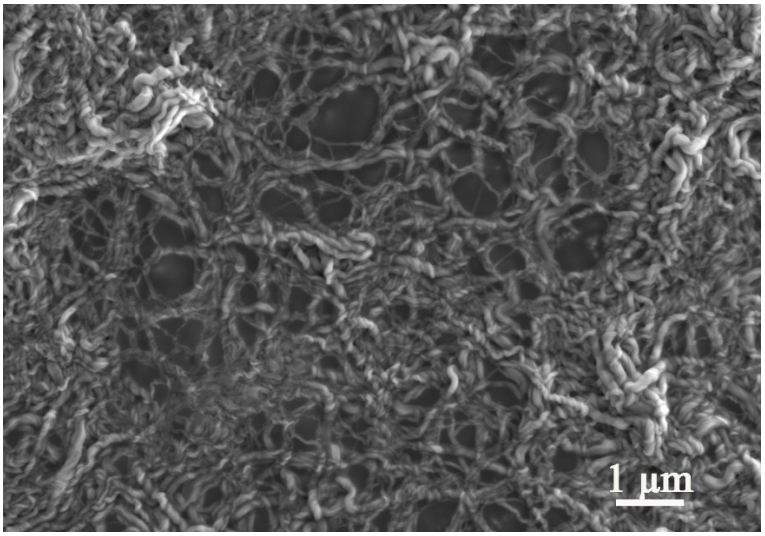

Figure S2 SEM image of the complex of g-nanofibers and dyes.

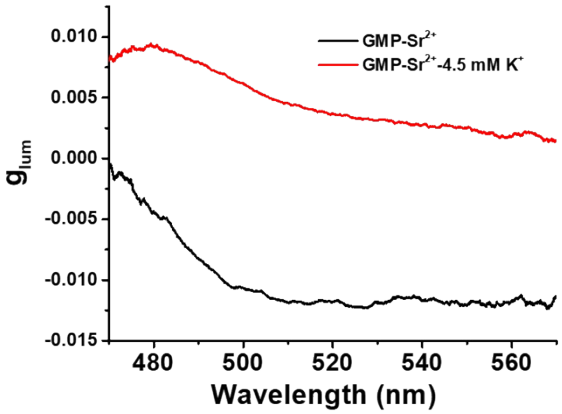

Figure S3 g_{lum} of GMP/Sr^{2+}-ThT nanofibers and GMP/Sr^{2+}/K^{+}-ThT nanofibers.

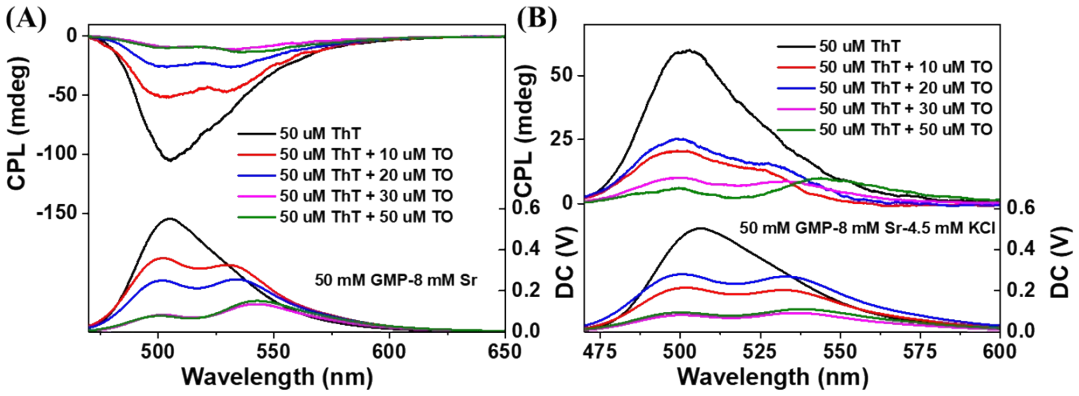

Figure S4 CPL spectra of different ratios of ThT/ TO when assembled in GMP/Sr^{2+} nanofibers (A) and GMP/Sr^{2+}/K^{+} nanofibers (B).