Supporting information

## Large dipole moment to promote gelation for 4-nitrophenylacrylonitrile derivatives with gelation-induced emission enhancement property

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Fig. S1 The stimulated absorption spectrum of C1CNPA by density functional theory calculations at the B3LYP/6-31G(d) level.



Fig. S2 The dipole moments of C1CNPA (a) C1CPA (b) and the HOMO and LUMO density of C1CPA.



Fig. S3 The photo of gels under natural light.



**Fig. S4** Absorption spectra of **C8CNPA** in ethanol (a, 3.0 mM) and DMSO (b, 20 mM) at different temperatures. The optical paths are 0.2 mm and 0.1 mm for ethanol and DMSO systems, respectively.



Fig. S5 Absorption spectra of C8CNPA in ethanol (a) and DMSO (b) at room temperature.



Fig. S6 Normalized absorption spectra of C12CNPA (a) and C16CNPA (b) in hot ethanol sol (80 °C) and ethanol gel.



Fig. S7 Normalized absorption spectra of C12CNPA (a) and C16CPNA in ethanol.



Fig. S8 Low-angle XRD patterns of xerogels from DMSO.



## Table S1 Crystal data of C4CNPA.

Formula sum	C <sub>25</sub> H <sub>21</sub> N <sub>3</sub> O <sub>2</sub>
Formula weight	395.45
Crystal system	monoclinic
Space group	P 121/c1 (no. 14)
Unit cell dimensions	a = 15.7738(7) Å
	b = 7.7296(4) Å
	c = 17.0325(7) Å
	$\beta = 104.22(0)^{\circ}$
Cell volume	2013.10(16) Å <sup>3</sup>
Ζ	4
Density, calculated	1.305 g/cm <sup>3</sup>
R <sub>All</sub>	0.085
Pearson code	mP204
Formula type	N2O3P21Q25
Wyckoff sequence	e51



Fig. S9 Normalized absorption spectra of C4CNPA in toluene solution and crystal sate.



Fig. 10 Temperature-dependent fluorescence spectra of C8CNPA in ethanol (3 mM) and DMSO (30 mM)



Fig. S11 Plots of  $T_{gel}$  versus the concentrations of C8CNPA (black), C12CNPA (red) and C16CNPA (blue) in ethanol