

### Supporting Information

#### Terpyridine-functionalized chemically cross-linked polyacrylamide hydrogel for white emission and multistimuli-responsive behaviour

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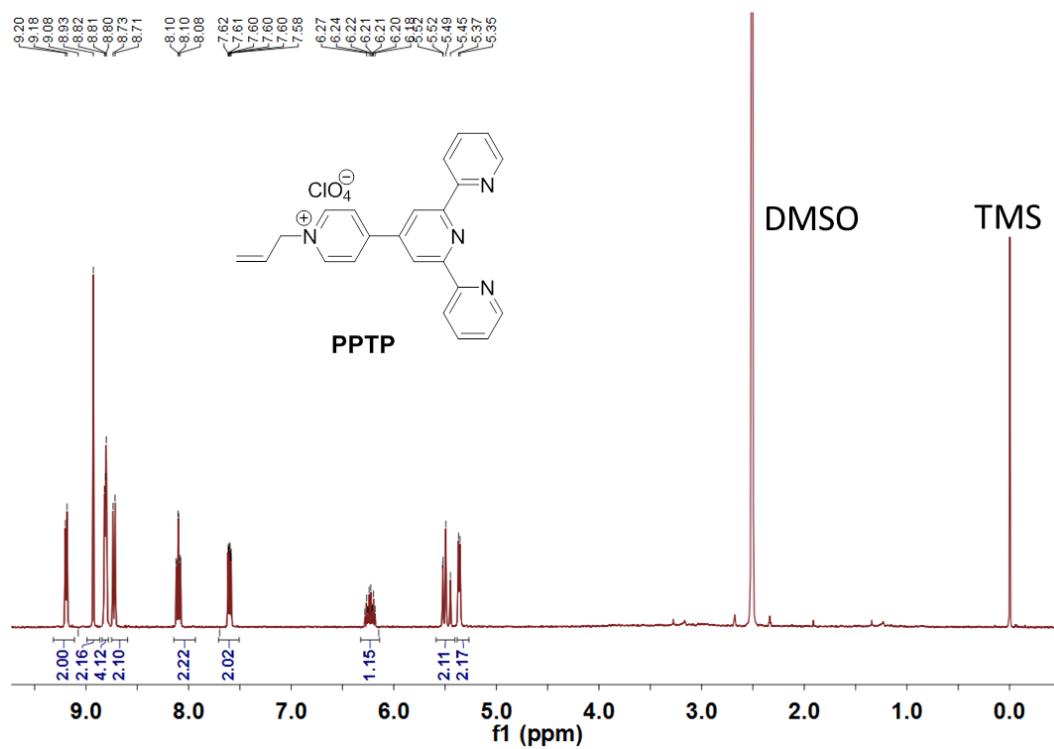


Fig. S1  $^1\text{H}$  NMR spectrum (400 MHz, DMSO- $d_6$ , 298 K) of compound PPTP.

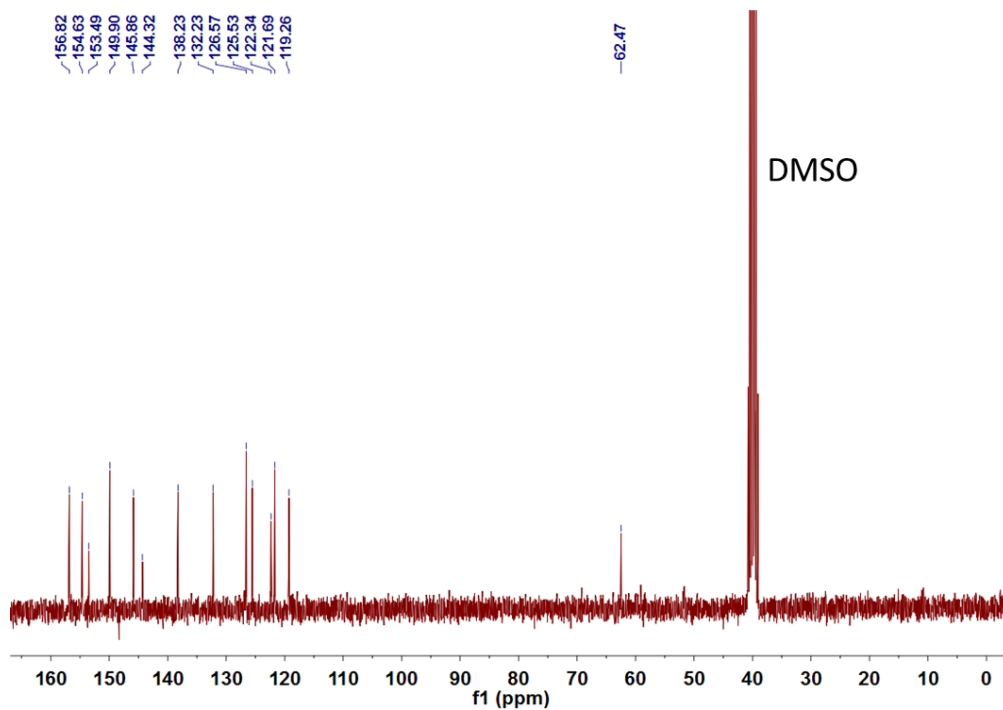
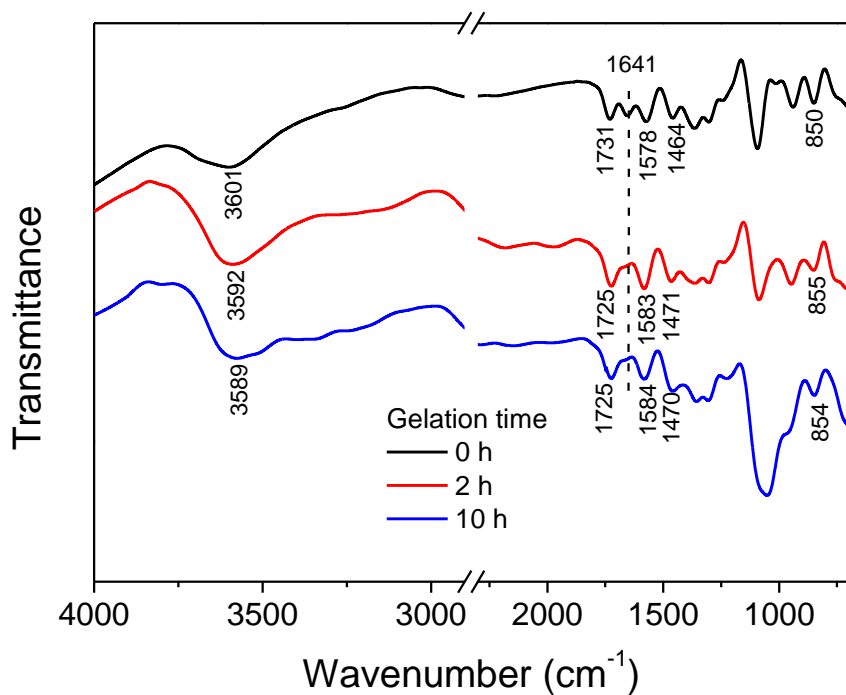
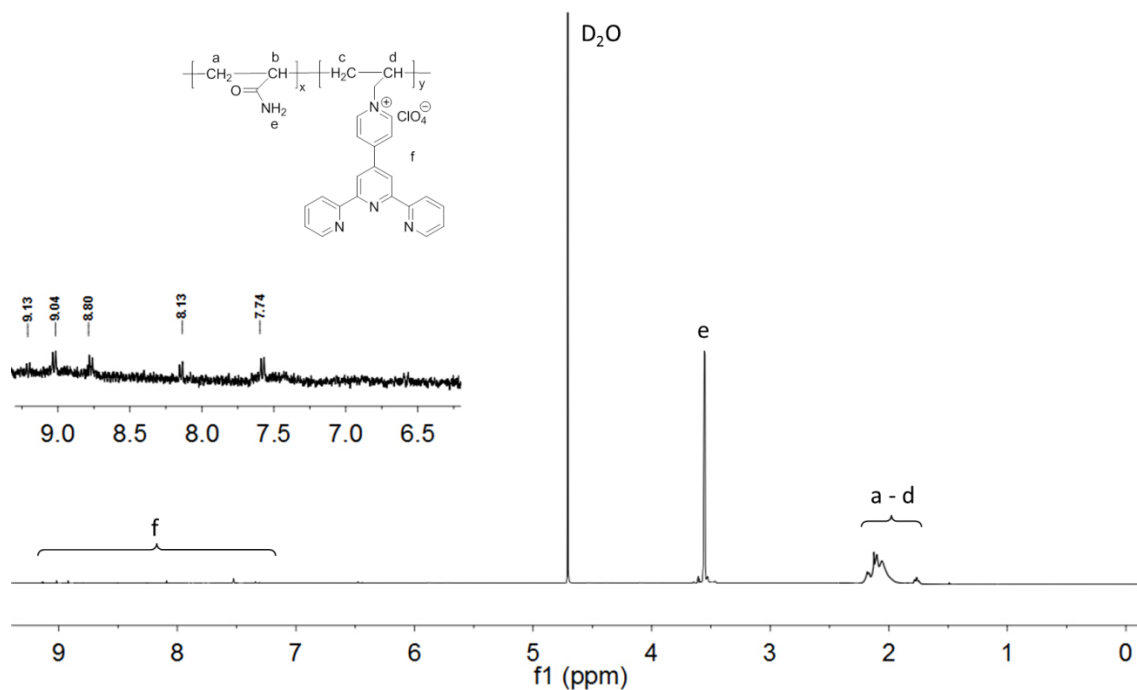


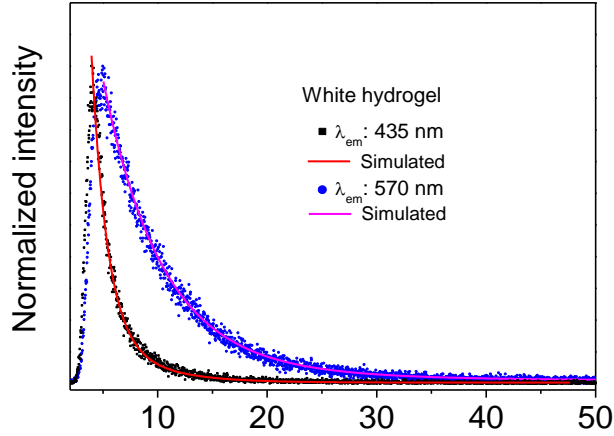
Fig. S2  $^{13}\text{C}$  NMR spectrum (400 MHz, DMSO- $d_6$ , 298 K) of compound PPTP.



**Fig. S3** Fourier transform infrared (FTIR) spectra of the precursor solution and hydrogel after polymerization at 60 °C for 2 h and 12 h.



**Fig. S4** <sup>1</sup>H NMR spectra (400 MHz, D<sub>2</sub>O, 298 K) of the polyacrylamide-co-poly (PPTP)



**Fig. S5** Fluorescence decay curves of the white fluorescent hydrogel. The monitoring wavelengths are shown in the figures. All the fluorescence decays can be fitted by single-exponential curve, as shown in the figure.

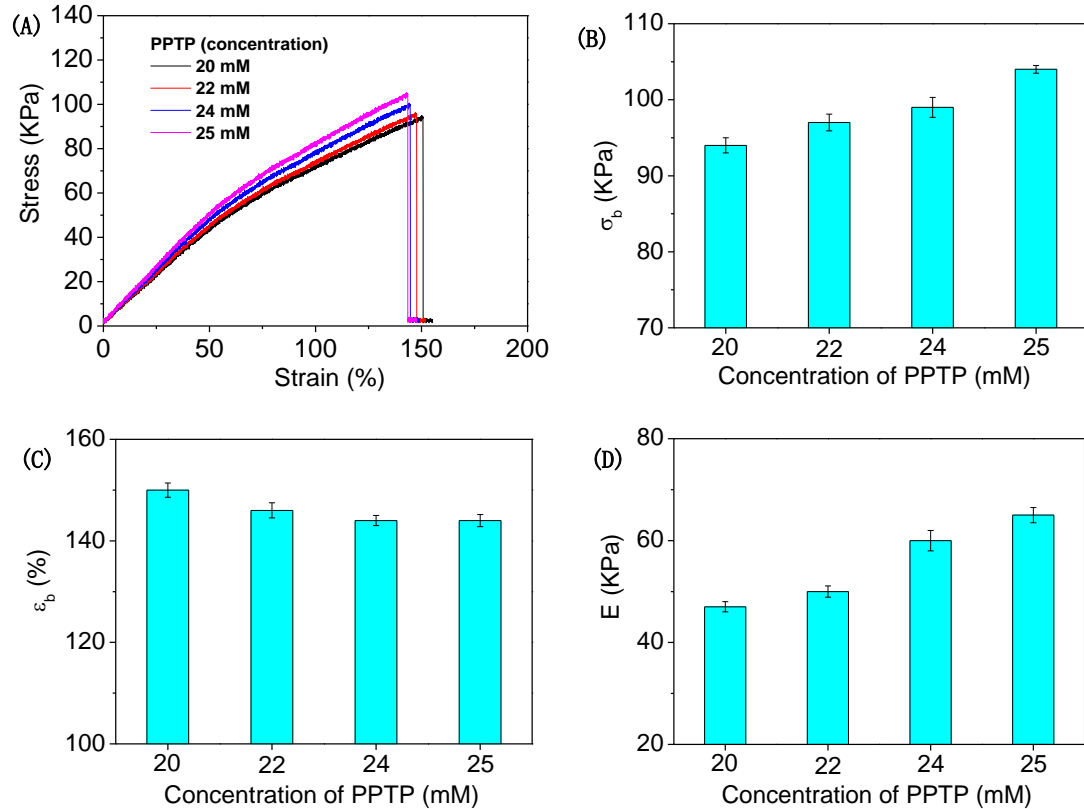
**Table S1.** Photophysical parameters of the white hydrogel

$\lambda_1^a$ (nm)	$\lambda_2^a$ (nm)	$\tau_1^b$ (ns)	$\tau_2^b$ (ns)	$\Phi^c$ (%)
435	570	2.6	6.7	4.2

<sup>a</sup> Wavelength number of high- and low-energy emission peaks.

<sup>b</sup> Fluorescent lifetime of high- and low-energy emission peaks.

<sup>c</sup> Quantum yield.



**Fig. S6** (A) Tensile stress–strain curves, (B) tensile breaking stress  $\sigma_b$ , (C) breaking strain  $\epsilon_b$ , and (D) Young's modulus E of the white fluorescent hydrogel at different concentration of PPTP.