Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Polyacrylic esters with “One-is-enough” effect and investigation of their AIEE behaviours and cyanide detection in aqueous solution

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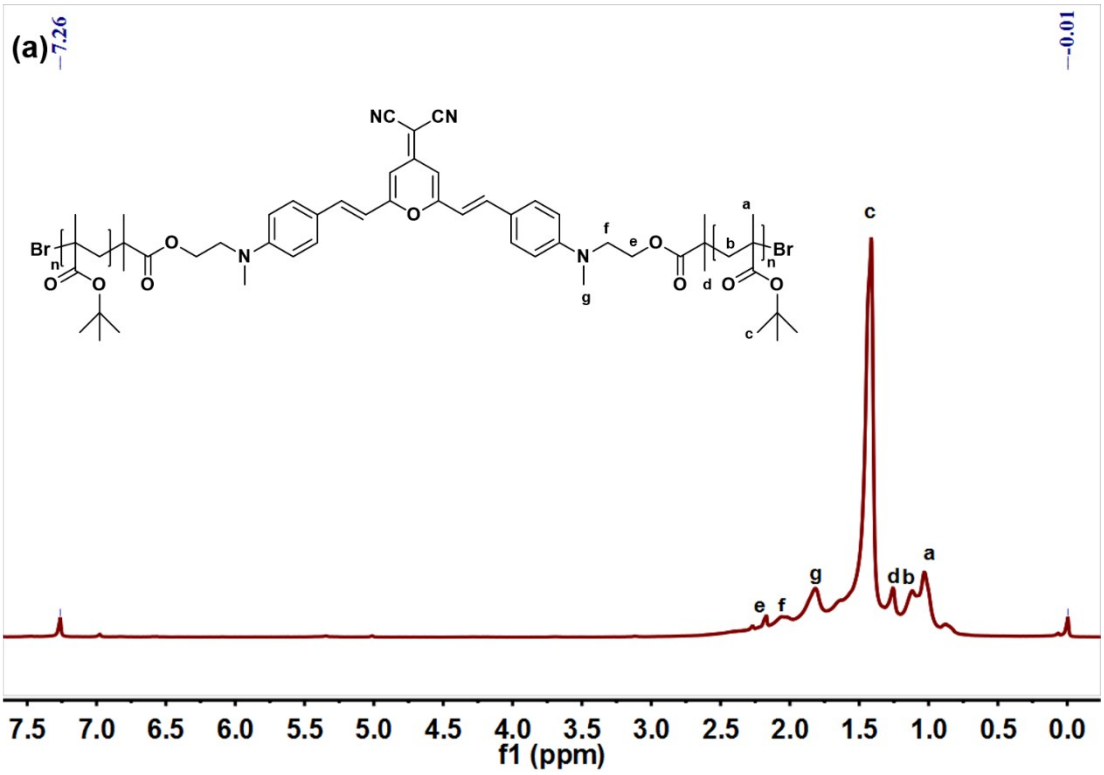
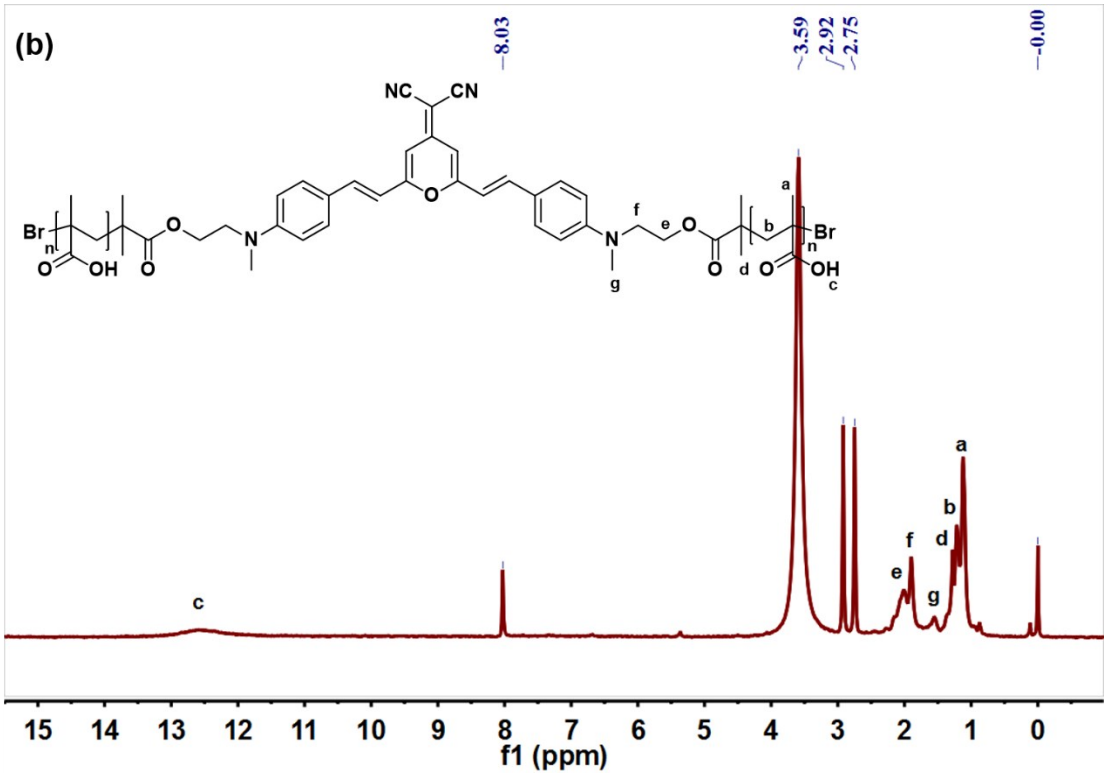
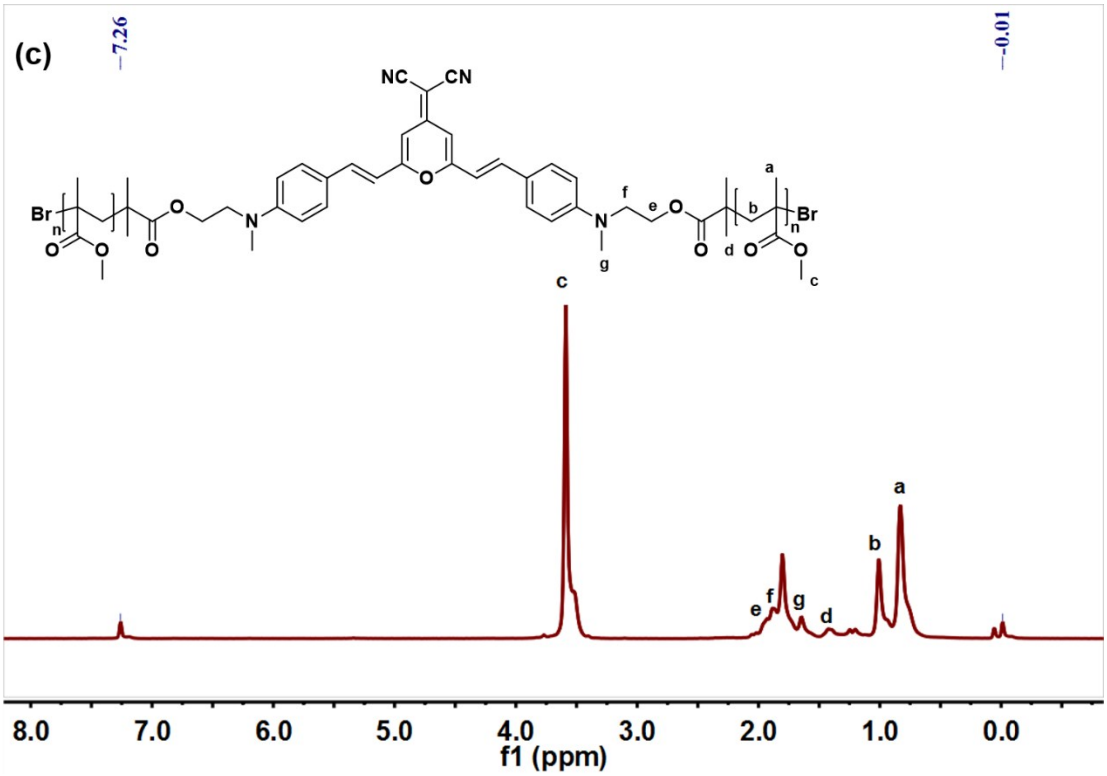



(b)
8.03
3.59
2.92
2.75
0.00
NC
CN
Br
OH
a
b
c
d
e
f
g
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
f1 (ppm)


(c)
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0.01
NC
CN
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d
e
f
g
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f1 (ppm)

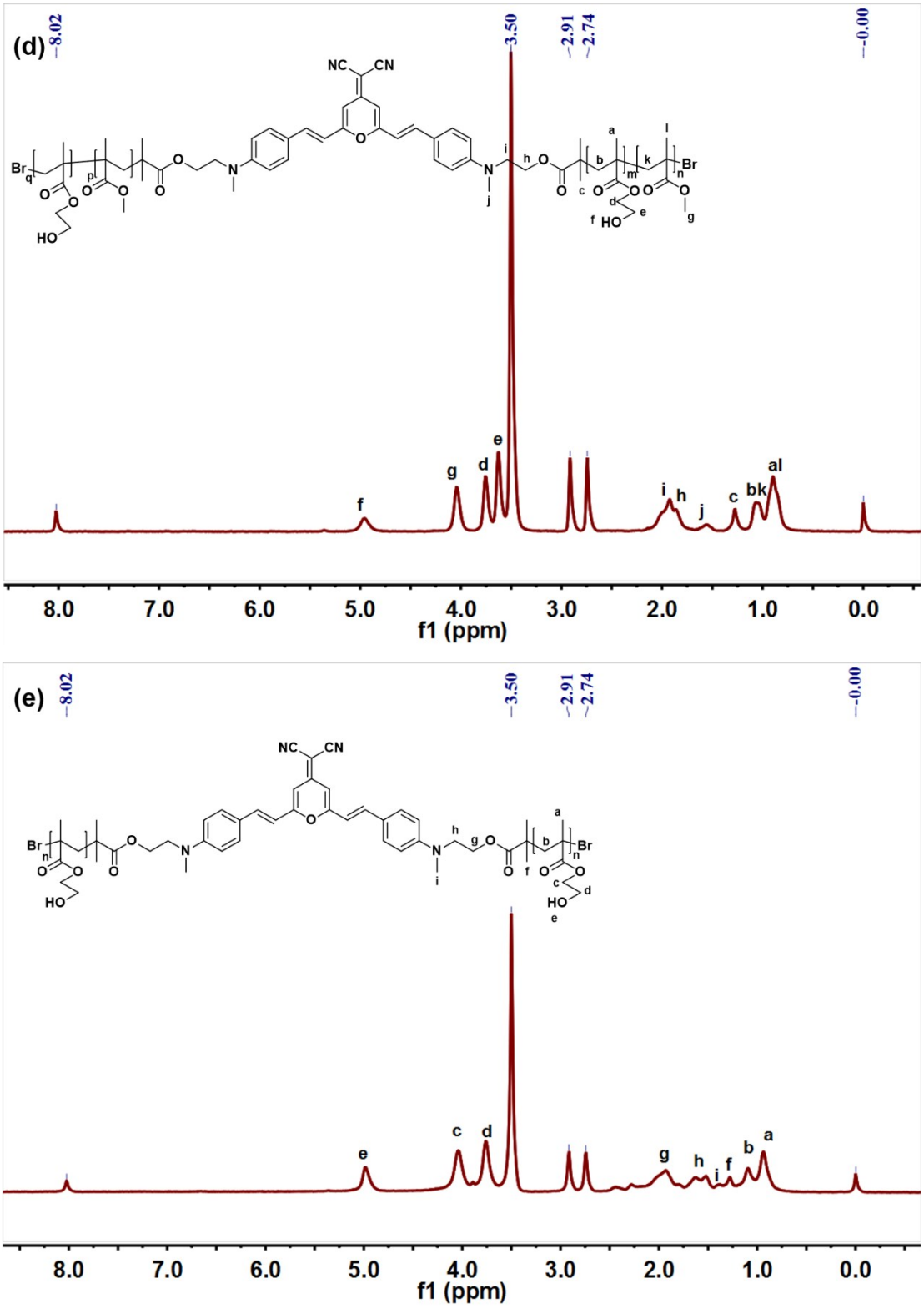

Fig. S1 ^{1}H NMR spectra of polymers, (a) PtBA-E($CDCl_3$), (b) PtBAA-E(DMF-d_7), (c) PMMA-E($CDCl_3$), (d) P(HEMA-co-MMA)-E(DMF-d_7) and (e) PHEMA-E(DMF-d_7).

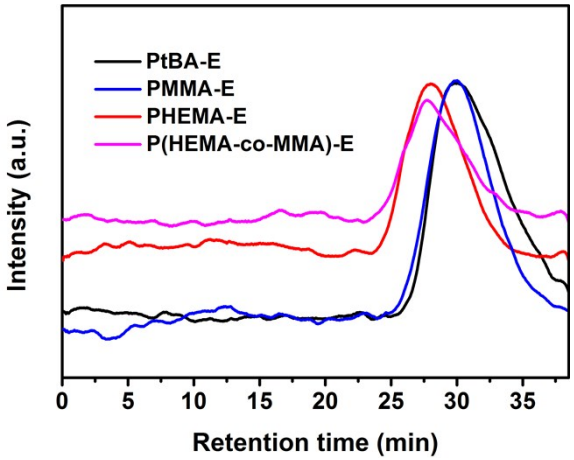

Fig. S2 GPC analysis of the polymers with DMF as a mobile phase at a flow rate of 1 mL min^{-1} and with column temperature of 30 °C

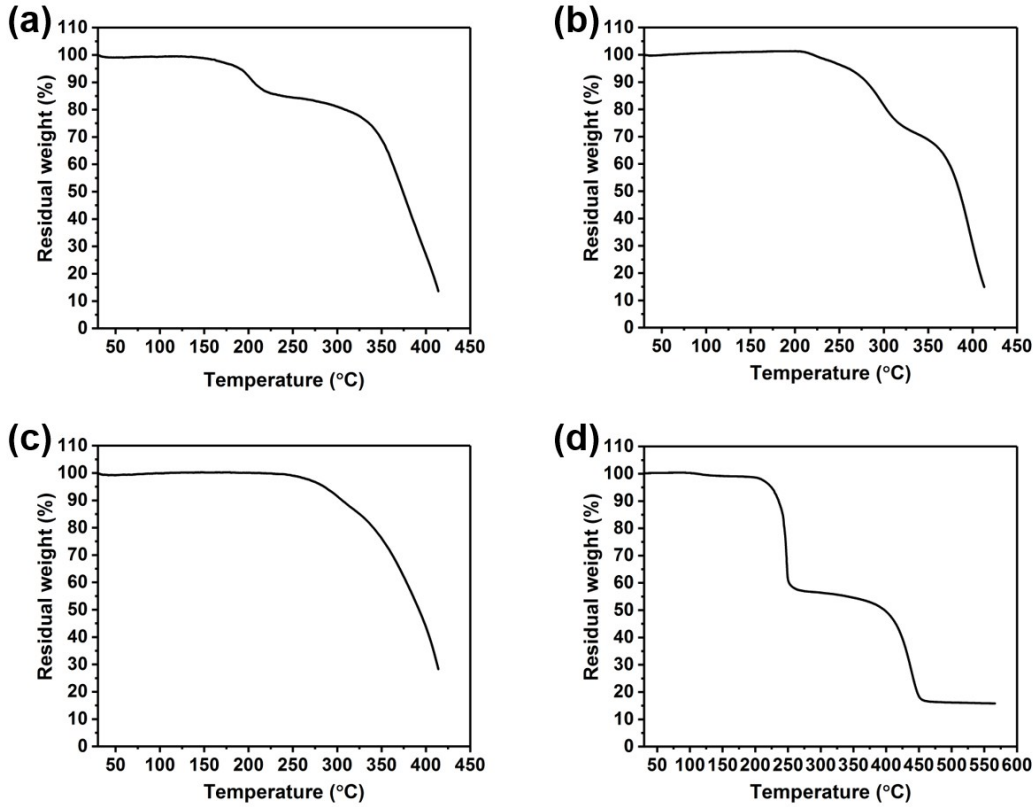

Fig. S3 TGA thermograms of (a) PHEMA-E, (b)PMMA-E, (c) P(HEMA-co-MMA)-E and (d) PtBA-E recorded under N_2 at a heating rate of 10 °C /min, respectively.

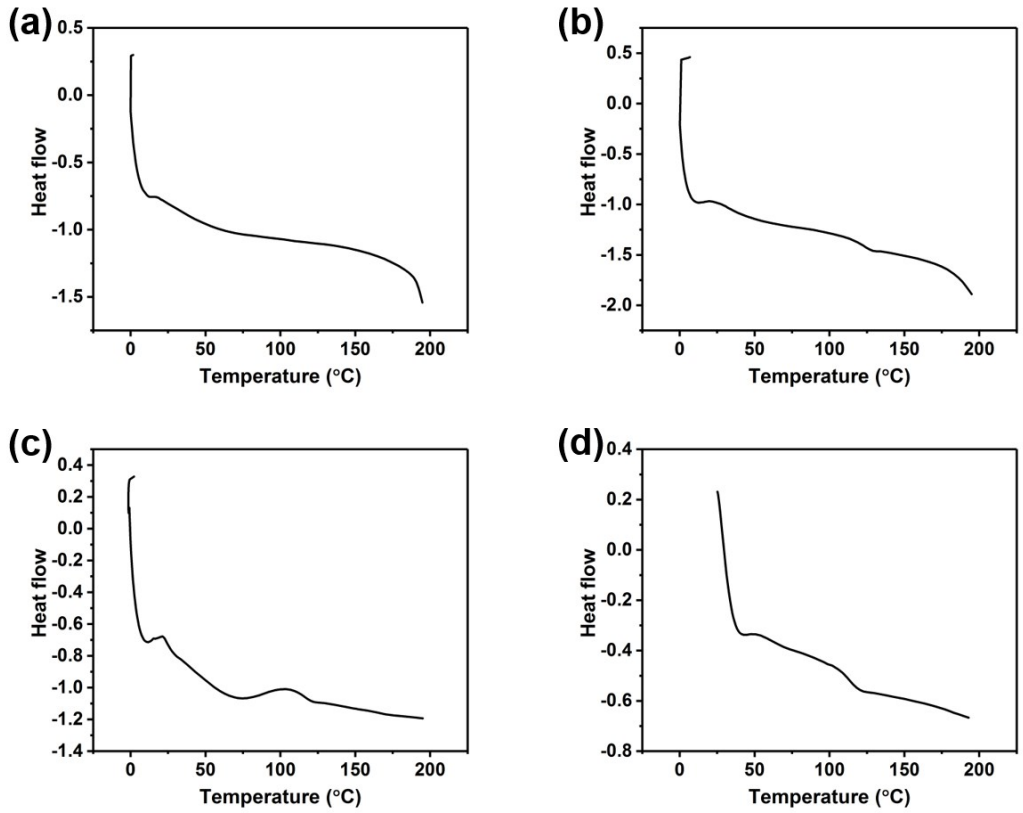

Fig. S4 DSC thermograms of (a) PHEMA-E, (b)PMMA-E, (c) P(HEMA-co-MMA)-E and (d) PtBA-E recorded under N_2 at a heating rate of 10 °C /min, respectively.

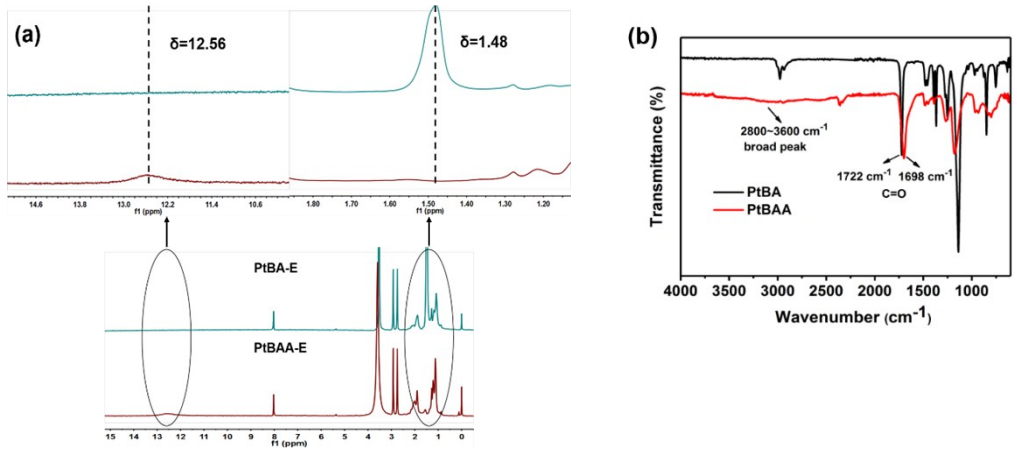

Fig. S5 (a) The ^{1}H NMR spectra of PtBA-E and PtBAA-E in DMF-d_7 and (b) FT-IR spectra of PtBA-E and PtBAA-E.

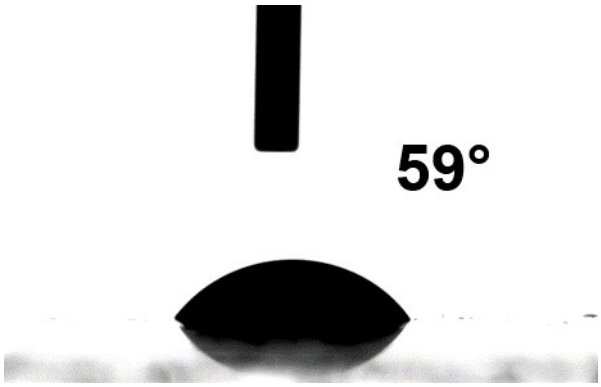

Fig. S6 The contact angle of PHEMA-E.

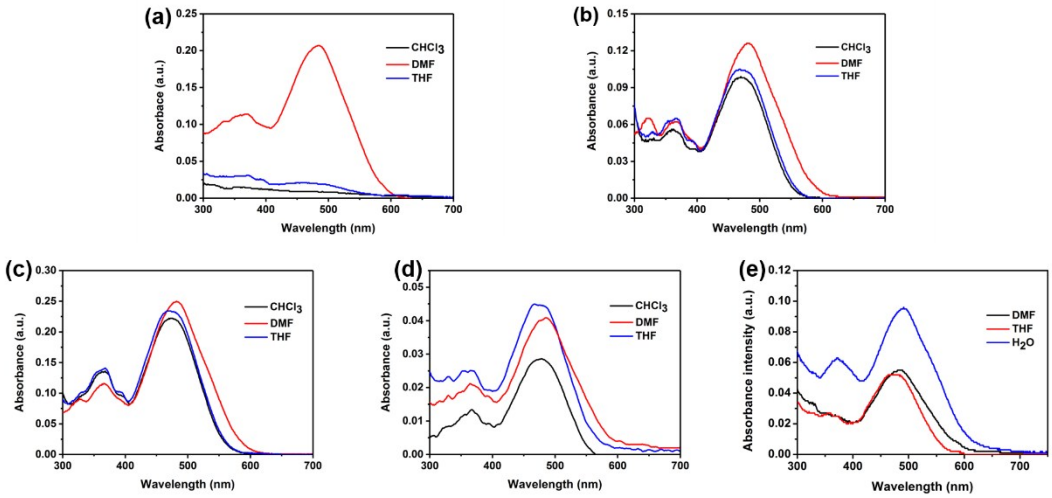

Fig. S7 Uv-vis absorbance intensity spectra of (a) PHEMA-E, (b) PMMA-E, (c) P(HEMA-co-MMA)-E, (d) PtBA-E and (e) PtBAA-E in different solvents. Concentration: 10 μM.

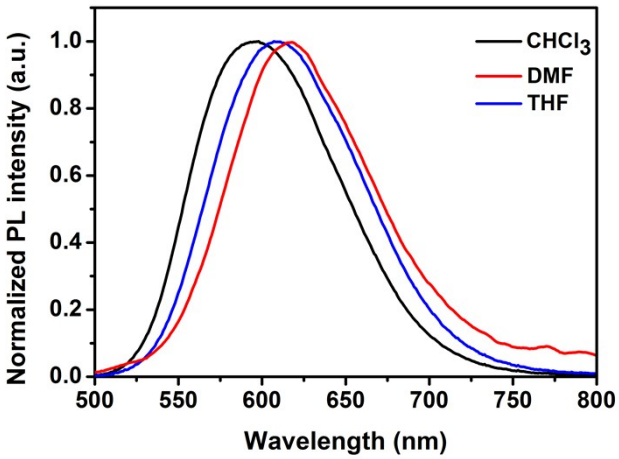

Fig. S8 Emission spectral of P(HEMA-co-MMA)-E in different polar solvents. Concentration: 10 μM. Excitation wavelength: 480 nm.

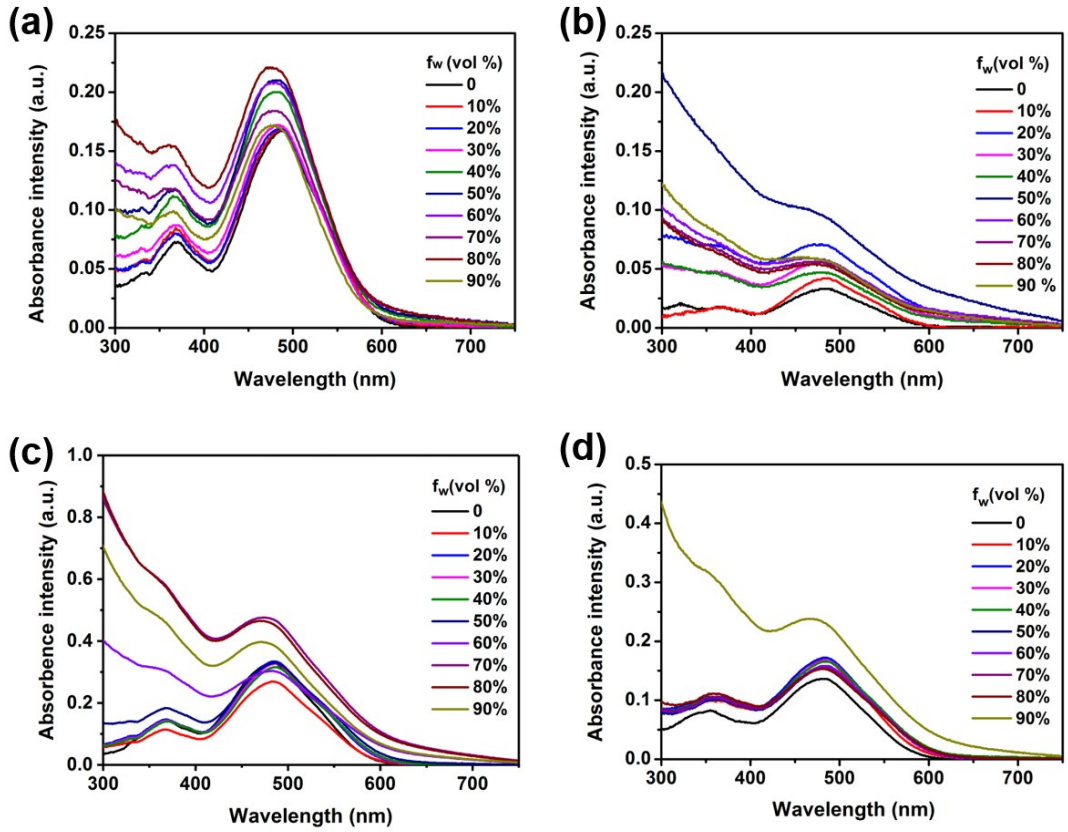

Fig. S9 Absorbance spectra of polymers in DMF/water with different water fraction. (a) PtBA-E, (b) PMMA-E, (c) P(HEMA-co-MMA)-E and (d) PHEMA-E. Concentration: 10 μM.

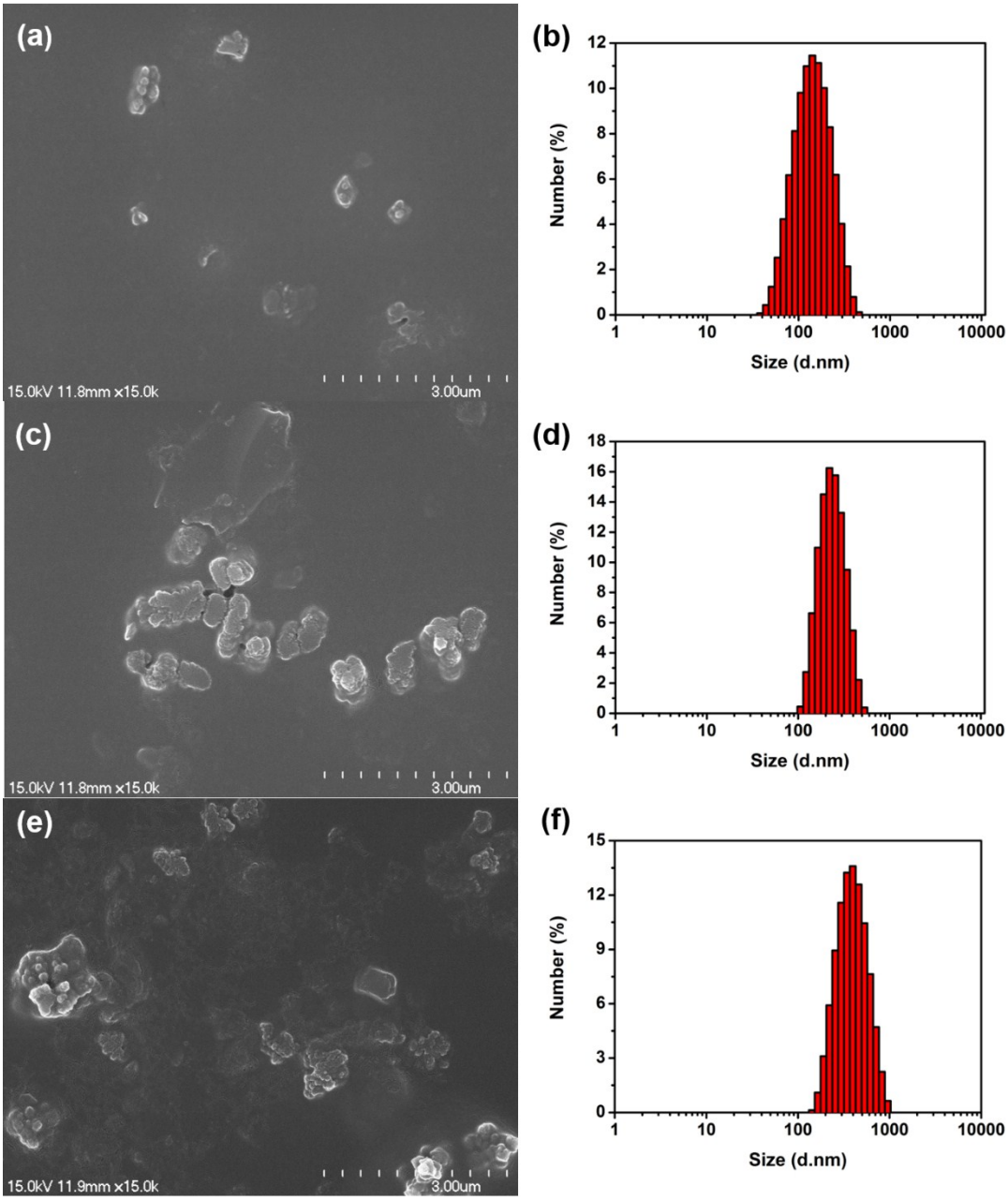

Fig. S10 SEM image of nanoparticles and size distribution of particles measured by DLS analysis in 90% DMF/water mixture solution. (a)/(b) PHEMA-E, (c)/(d) PtBAA-E, (e)/(f) P(HEMA-co-MMA)-E. Scale bar: 3 μm. Concentration: 10 μM.

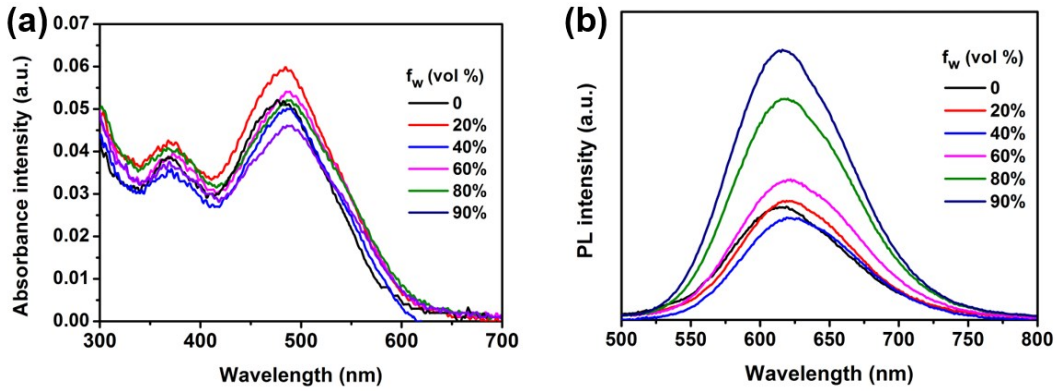

Fig. S11 (a) Absorbance and (b) emission spectra of PtBAA-E in different water fraction DMF/water mixture solution. Concentration:10 μM. Excitation wavelength: 480 nm.

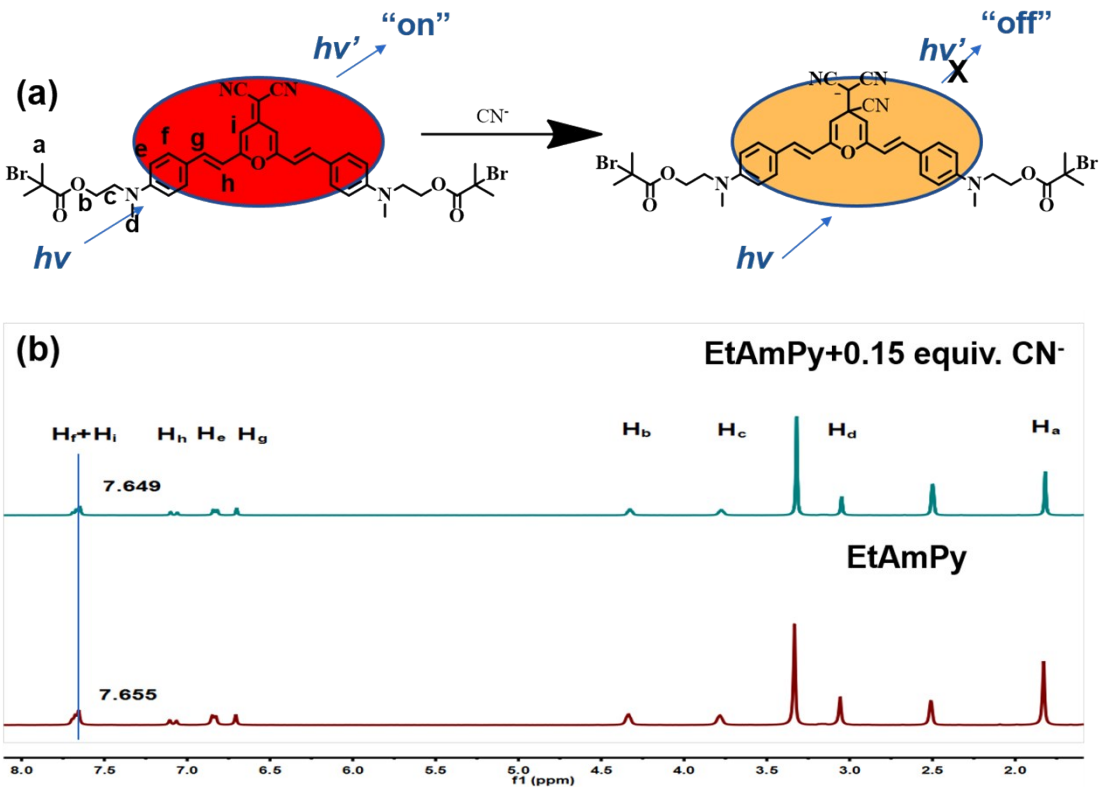

Fig. S12 (a) Possible detection mechanism of the initiator, (b) ^{1}H NMR spectral changes upon the addition of 0.15 equiv. cyanide ion to the initiator in DMSO-d_6.

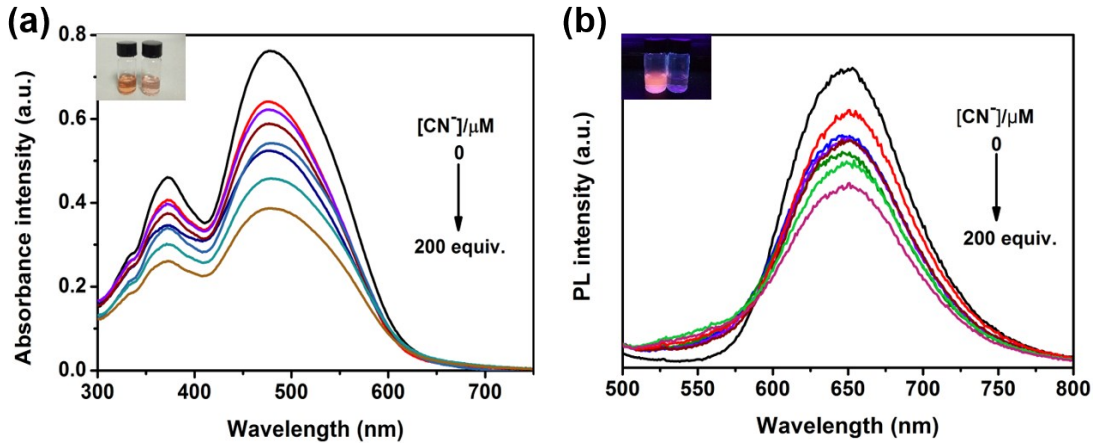

Fig. S13 (a) Uv-vis absorbance intensity change and (b) PL intensity change of EtAmPy with the addition of cyanide ions (0,10,20,30,40,50,100,200 equiv.) in DMSO/water (1/1, v/v) mixture solution. Concentration: 10 μM. Excitation wavelength: 480 nm.

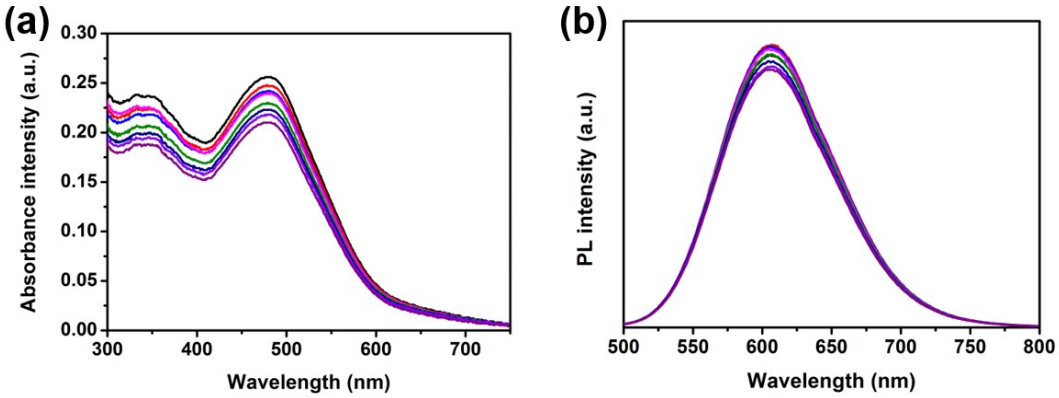

Fig. S14 (a) Uv-vis absorbance intensity change and (b) PL intensity change of PtBAA-E with the addition of an appropriate aliquot of water as blank samples in water. Concentration: 10 μM. Excitation wavelength: 490 nm.

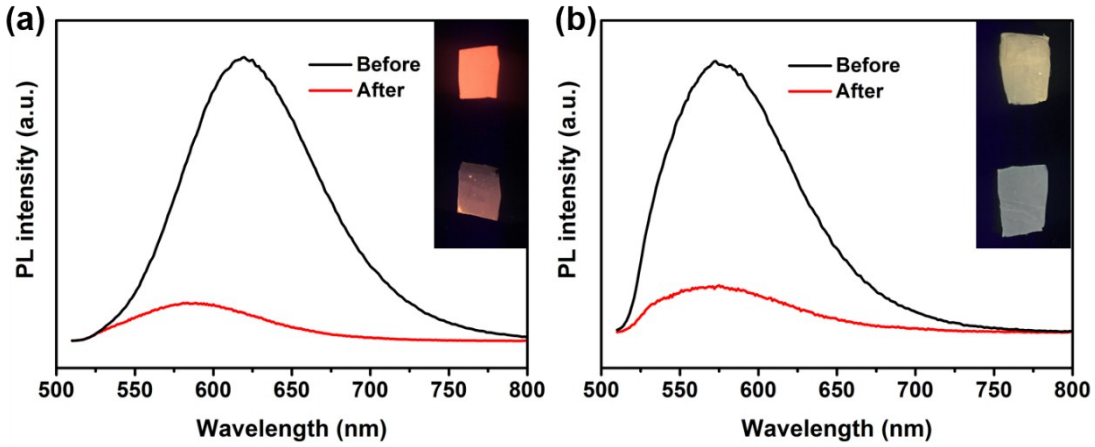

Fig. S15 The solid fluorescent spectra and the corresponding images (from top to bottom) under the Uv light at 365 nm of the polymer fibers before and after reacted

with CN^- in water, (a) PHEMA-E and (b) PtBA-E. Excitation wavelength:480 nm.

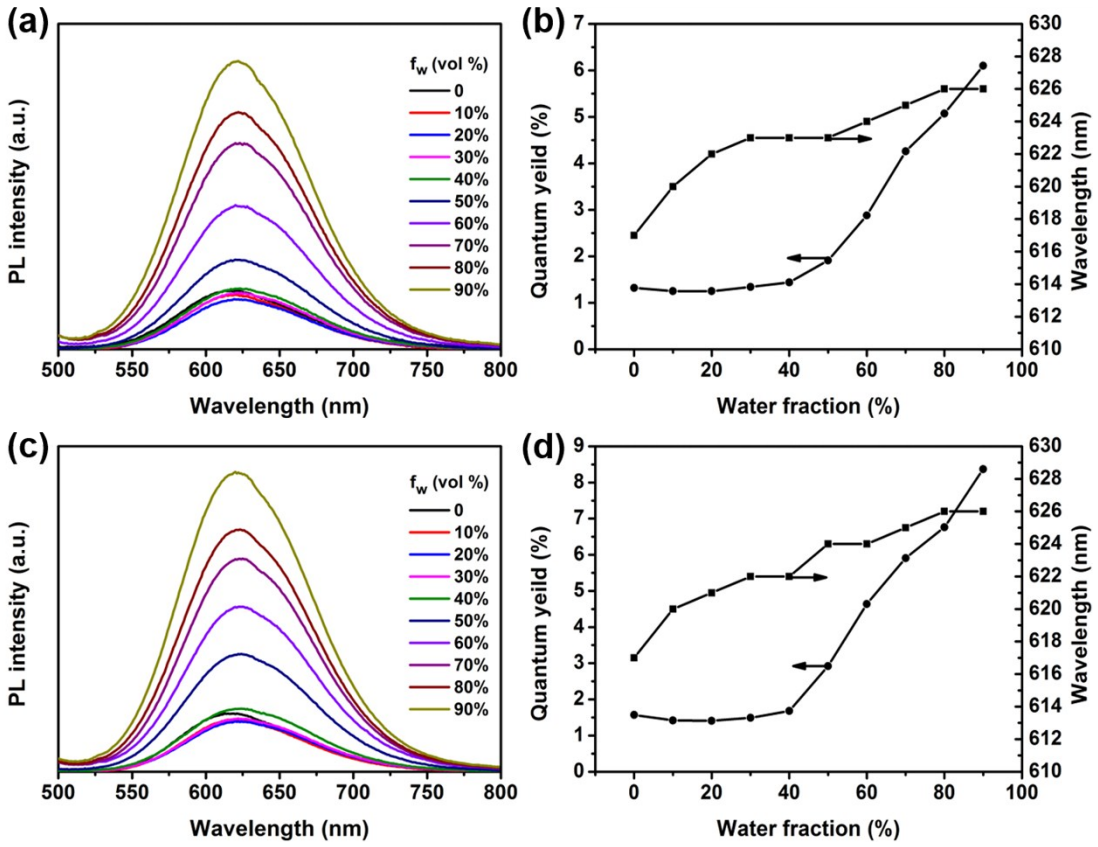

Fig. S16 Emission spectra and plots of quantum yield and maximum wavelength of P(HEMA-MMA)-E in the DMF/water mixtures at different concentrations, (a)/(b) 20 μM, (c)/(d) 60 μM. Excitation wavelength:480 nm.