Supporting Information (SI)

Multi-stimuli Responsive and Intrinsically Luminescent Polymer Metallogel through Ring Opening Copolymerization Coupled with Thiol-ene Click Chemistry

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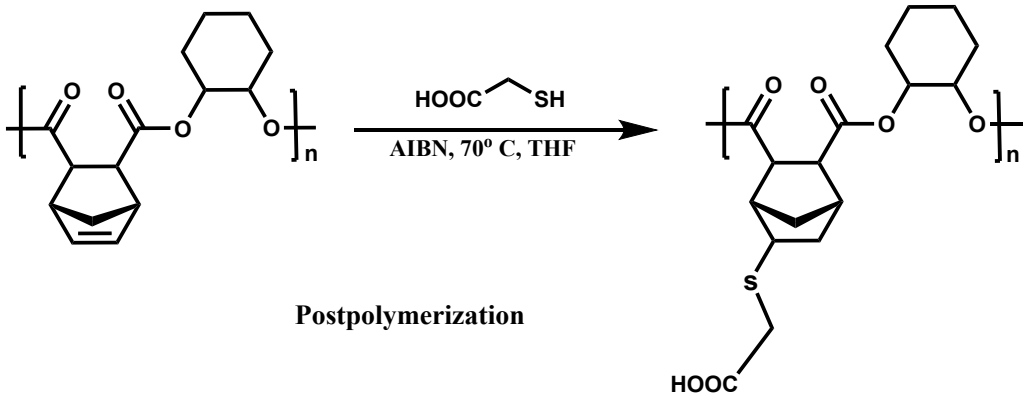

Scheme S1: Synthesis of carboxylate functionalized poly(norbornene-alt-cyclohexene oxide).

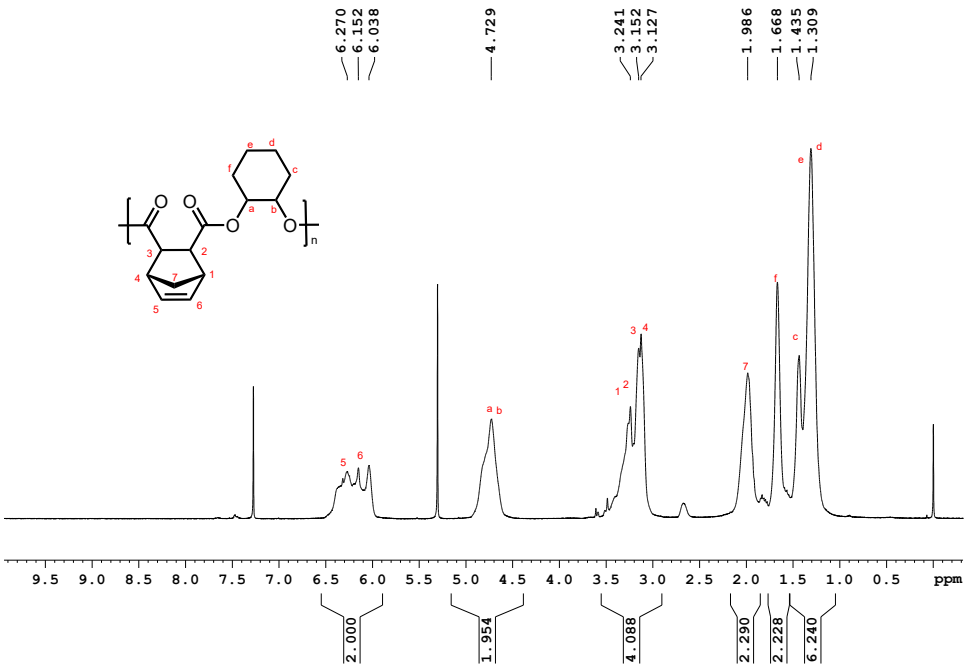

Figure S1.[1]H NMR spectrum of(400 MHz, $CDCl_3$) of poly (norbornene anhydride-alt-cyclohexene oxide).

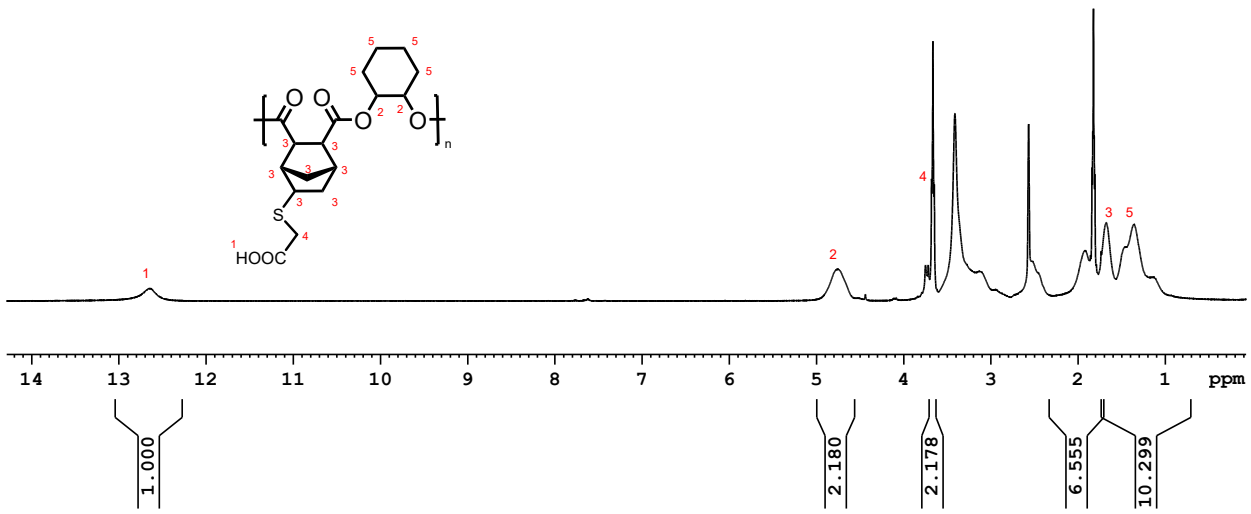

Figure S2.[1]H NMRs spectrum of(400 MHz, DMSO-D6) of Carboxylic acid-functionalized poly (NA-alt-CHO).

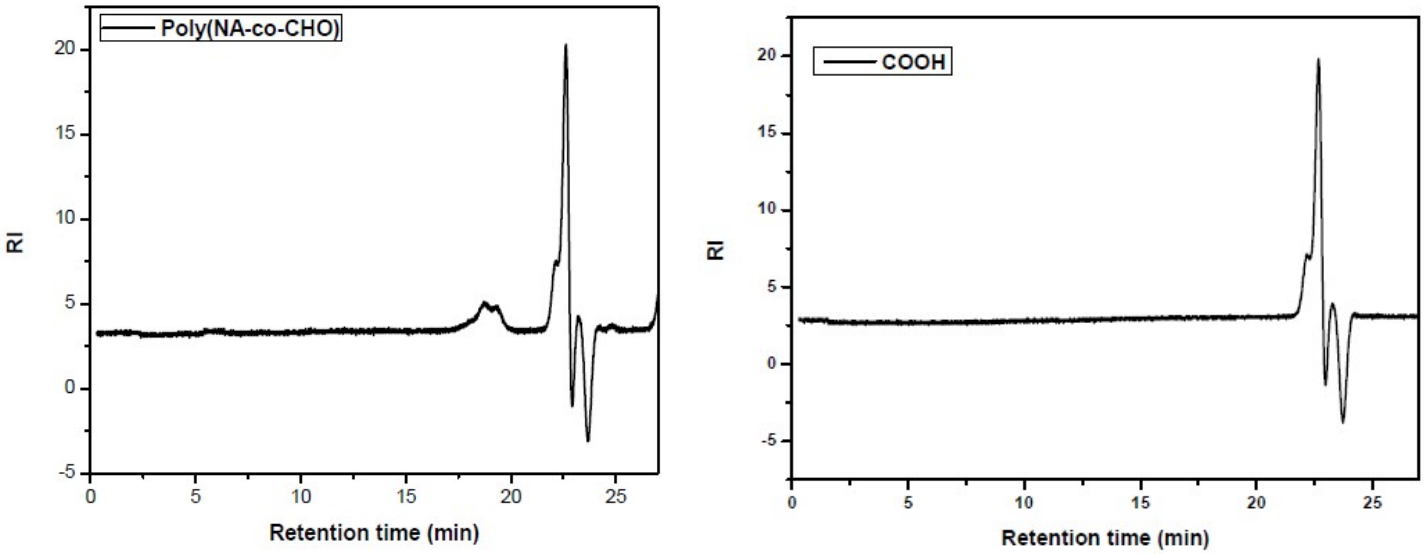

Figure S3. Gel permeation chromatography of poly (NA-alt-CHO) Mn - 15920 Da(left) and functionalized poly(NA-alt-CHO) (right).

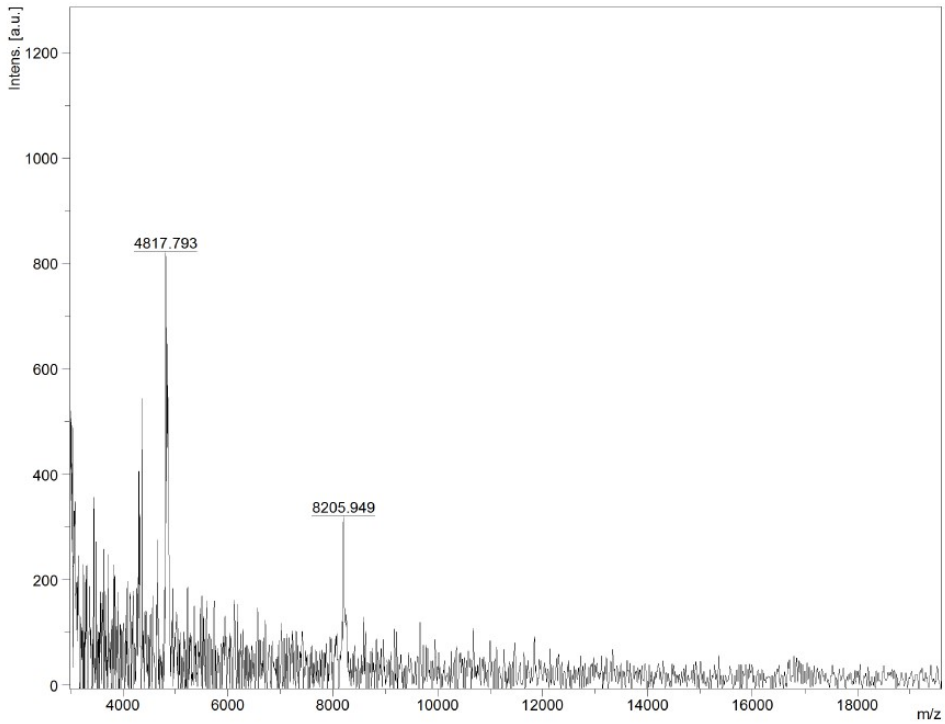

Figure S4. MALDI-TOF plot of functionalized polyester. (MALDI-TOF were recorded using 2,5-Dihydroxybenzoic acid matrix with positive ion ToF detection method).

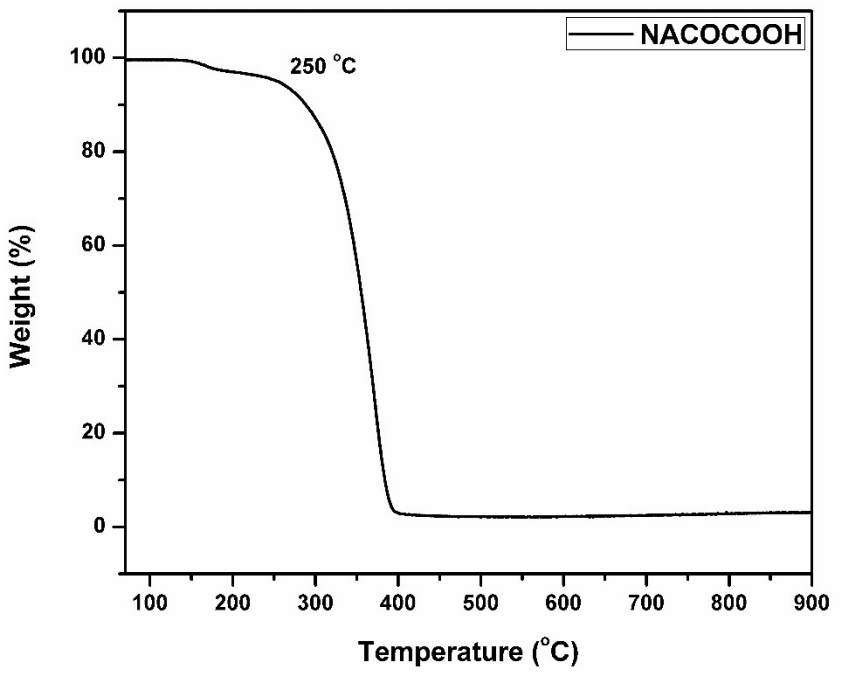

Figure S5. TGA plot of carboxyl functionalized poly(NA-alt-CHO).

Solvent	Phase (Critical Gelation Concentration)
$CHCl_3$	Insoluble
DCM	Insoluble
Hexane	Insoluble
Ethyl Acetate	Partial Soluble
Toluene	Partial Soluble
Ethanol	Insoluble
THF	Soluble
Acetonitrile	Insoluble
DMF	Gel(2mg)
DMSO	Partial Gel
MeOH	Insoluble

Table S1: Gelation ability of bicomponent System (Polyester + $Ln(OAc)_3$ in various solvents).

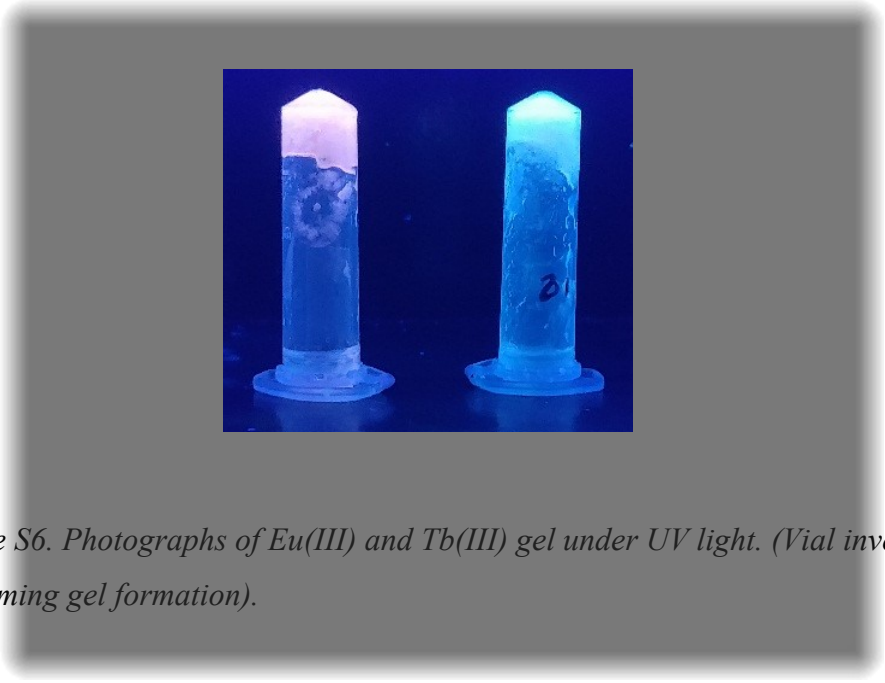

Figure S6. Photographs of Eu(III) and Tb(III) gel under UV light. (Vial inversion test for confirming gel formation).

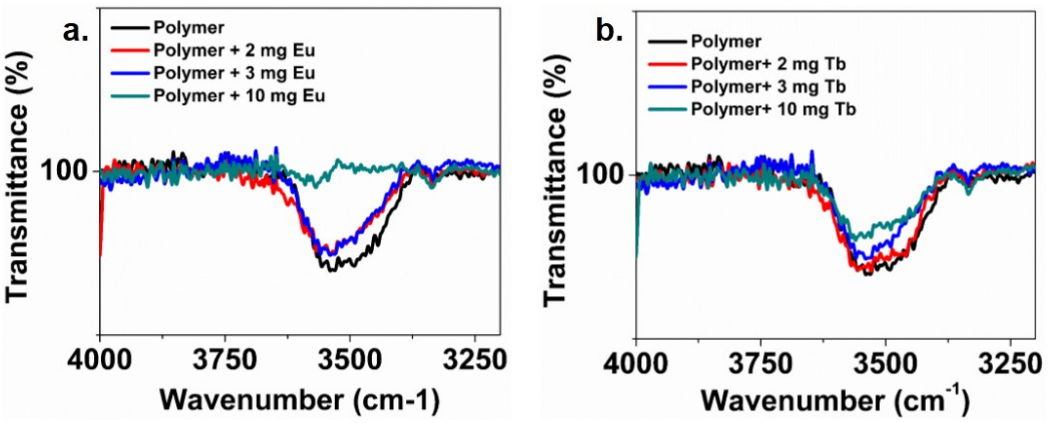

Figure S7. FTIR Spectra polymer (black line) with increase in concentration of (a)$Eu(OAc)_3$ and (b)$Tb(OAc)_3$.

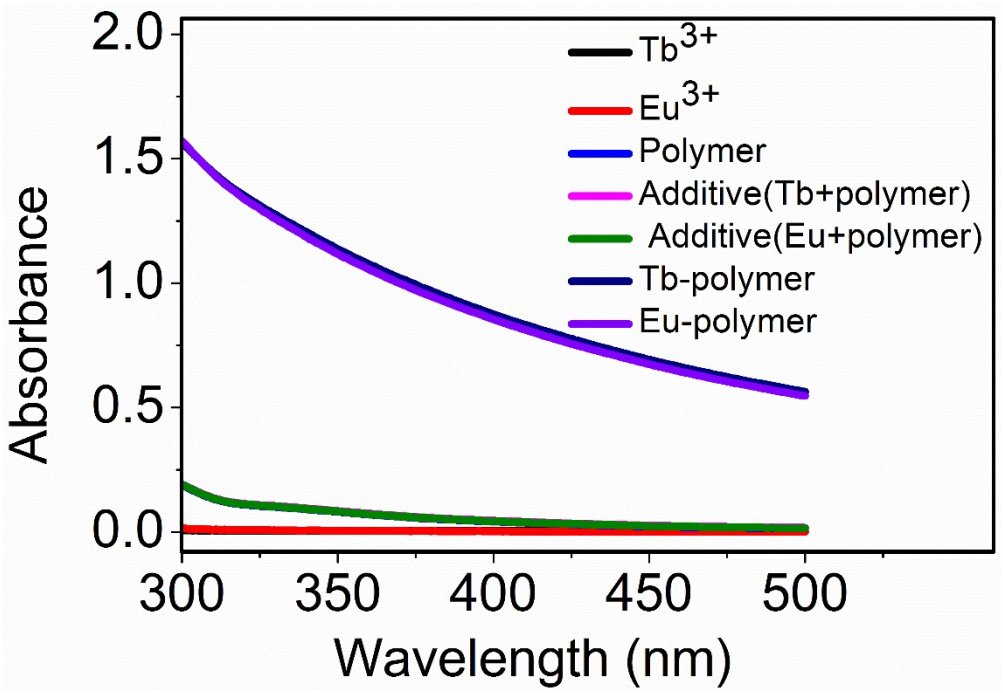

Figure S8. Comparison of additive absorption spectrum with the individual spectrum of polymer, lanthanides and the polymer-lanthanide complex.

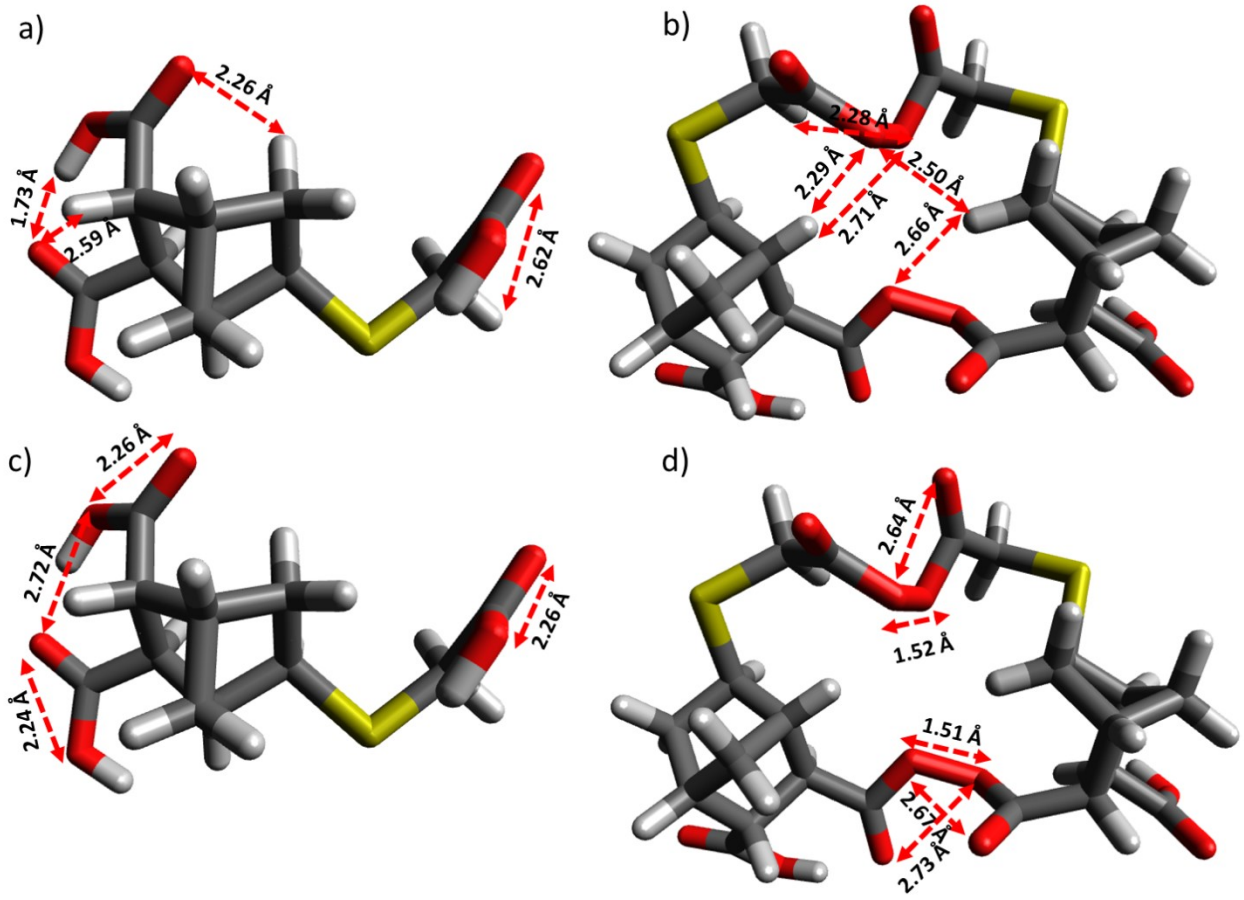

Figure S9. Optimized structure of the single (a, c) and double unit (b, d) of the polymer obtained using B3LYP/3-21G level of density functional theory. a), b) depict all the intramolecular and intermolecular H bonding distances respectively. c), d) depicts all the possible intramolecular and intermolecular O---O electronic interactions respectively.

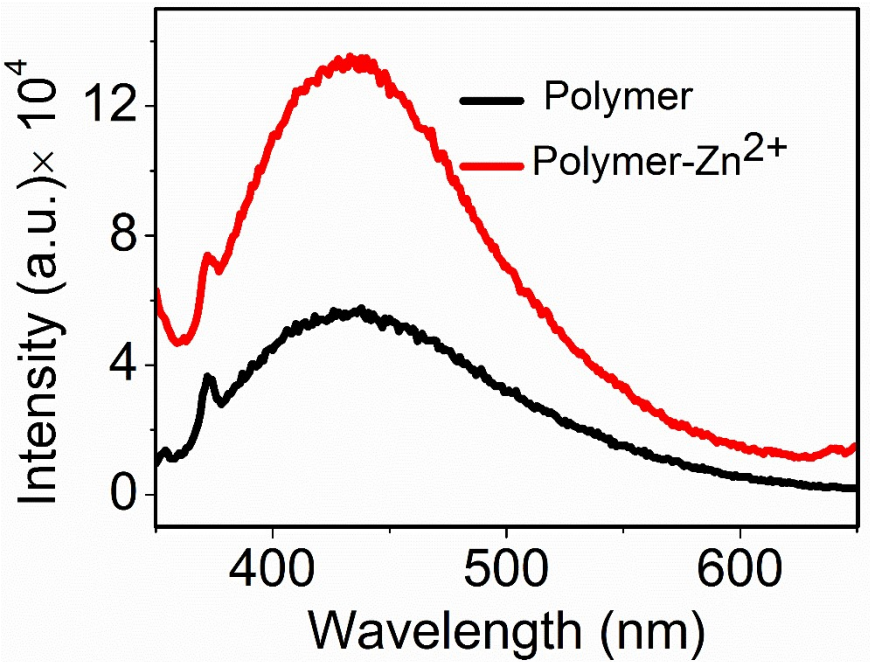

Figure S10. Control emission experiment for the clustering triggered emission.

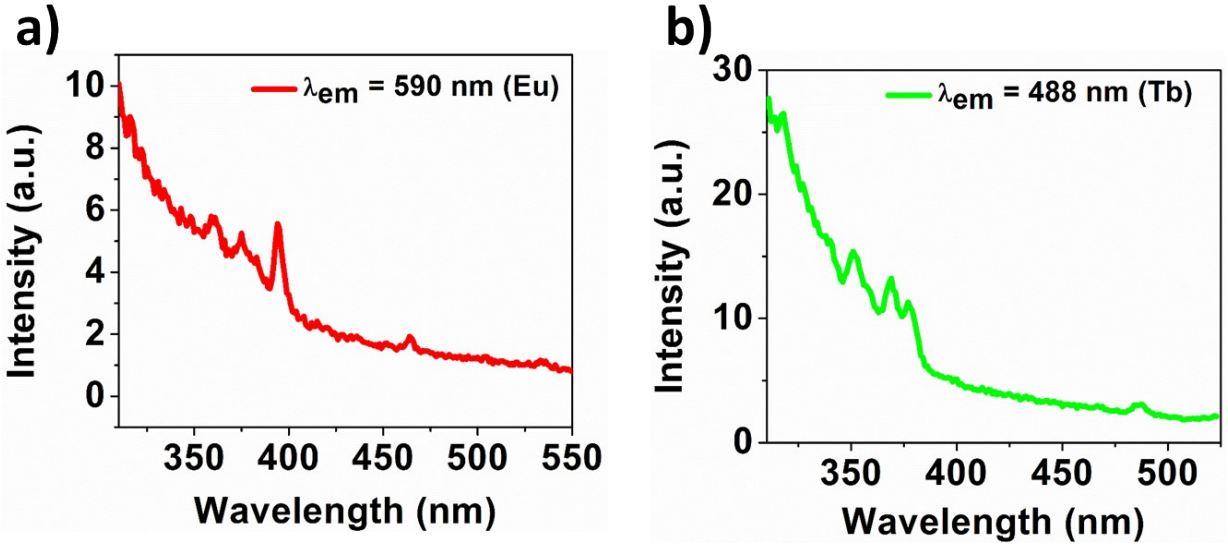

Figure S11. Excitation spectra of a) Eu gel (λ_{em} = 590 nm) and b) Tb gel (λ_{em} = 488 nm).

Sample	Quantum yield (%)
Polymer	2.7
Polymer+ Eu	2.6
Polymer+Tb	2.9
Polymer+Tb+Eu	2.4

Table S2: Results of relative quantum yield measurements of the polymer and metallopolymers. (9,10 diphenylanthracene was used as reference in ethanol)

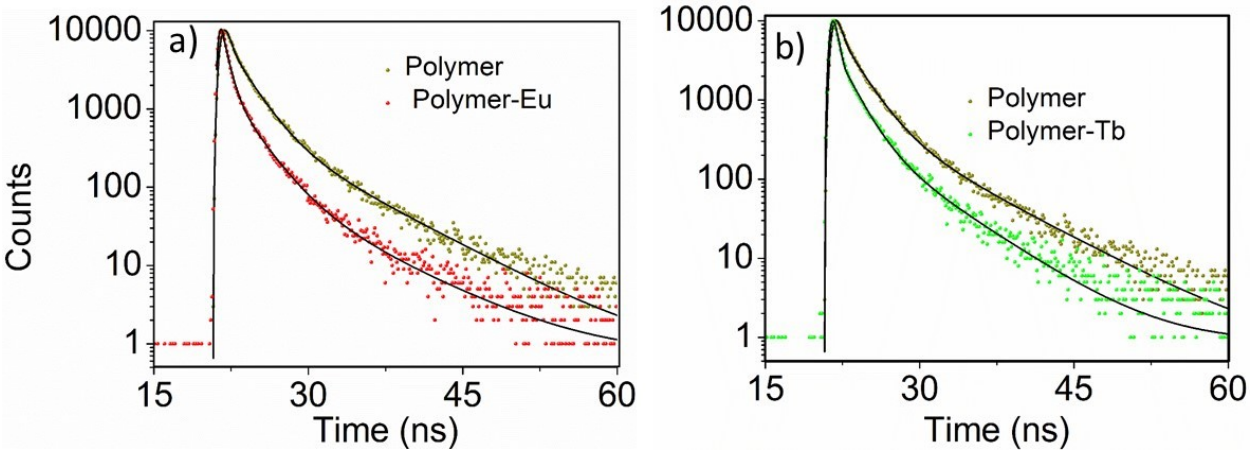

Figure S12. Time resolve decay spectra of the polymers and corresponding metallopolymer (excitation wavelength 340 nm).

Sample	τ_1,ns (B_1)	τ_2,ns (B_2)	τ_3,ns (B_3)	τ_{avg}, ns
Polymer	0.34 (23)	1.88 (59)	6.29 (18)	3.98
Polymer+Tb	0.09 (48)	1.58 (38)	5.1 (14)	3.38
Polymer+Eu	0.14 (37)	1.68 (48)	5.55 (15)	3.53

Table S3: The time constant value for the time resolved decay spectra obtained by mono-exponential fitting.

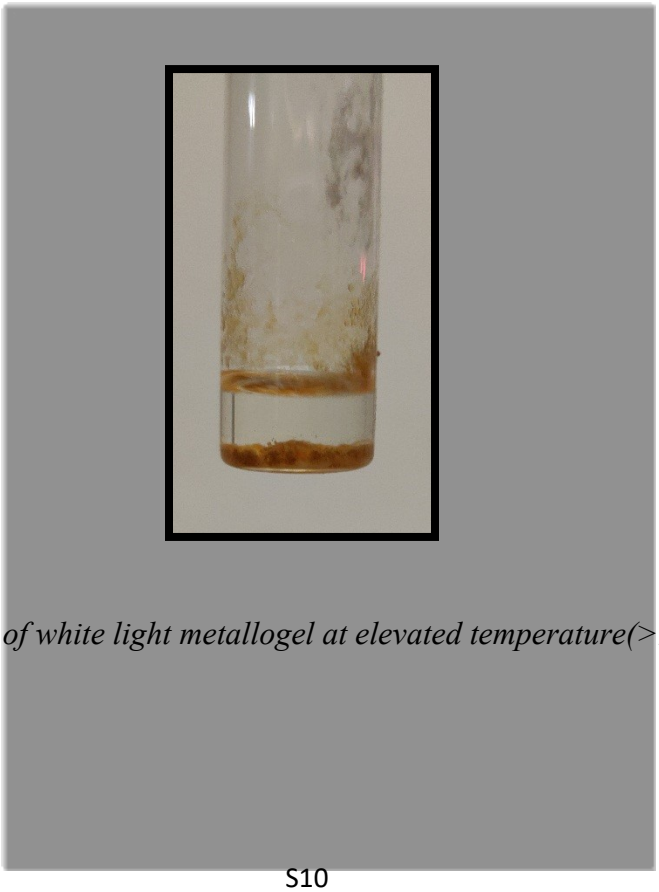

Figure S13. Photograph of white light metallogel at elevated temperature(>90 ^{o}C).