# Supplementary Information

# for

# Adhesion Enhancement via Synergistic Effect of Metal–ligand Coordination and Supramolecular Host–guest Interaction in Luminescent Hydrogels

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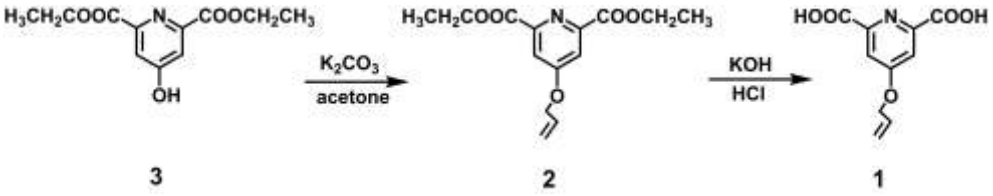


**Figure S1.** Synthetic pathway for **1**.

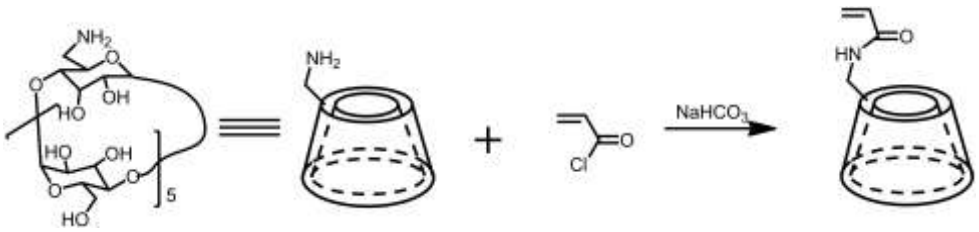


**Figure S2.** Synthetic pathway for αCD-AAm.

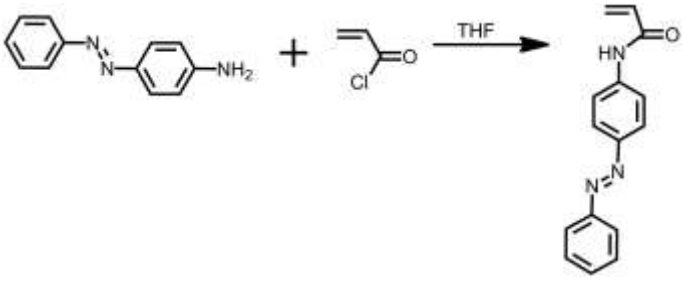


**Figure S3.** Synthetic pathway for Azo-AAm.

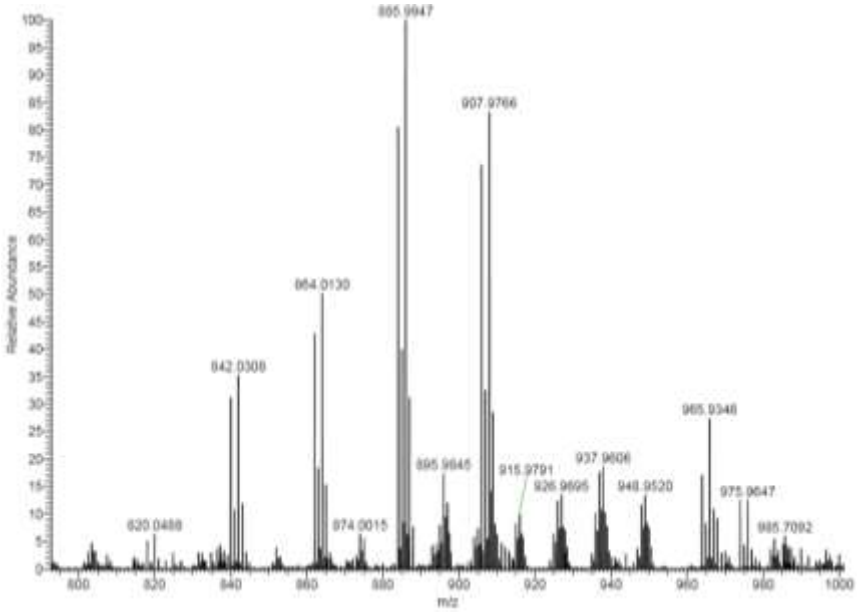


**Figure S4.** HRMS spectrum of Eu·**1**$_3$.

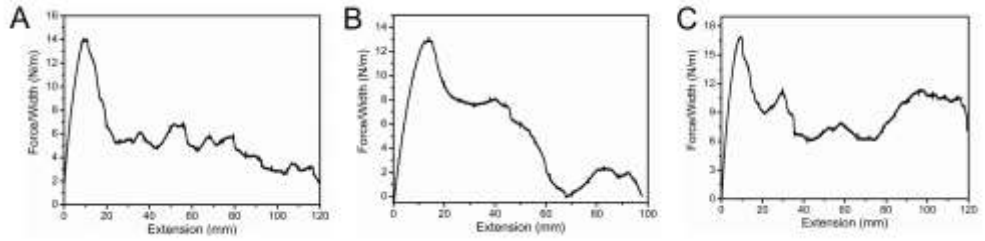


**Figure S5.** Adhesion energy between two pieces of PAAm hydrogels (A) heated and then compressed. (B) compressed and then heated. (C) compressed while heated.

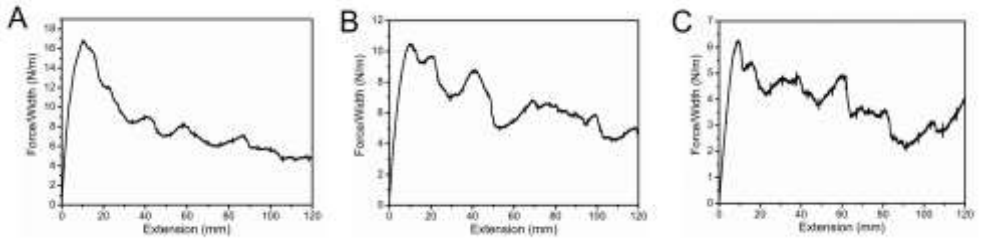


**Figure S6.** Adhesion energy when (A) 500 μL, (B) 400 μL, (C) 350 μL stock solution was added onto the surface of PAAm hydrogel.

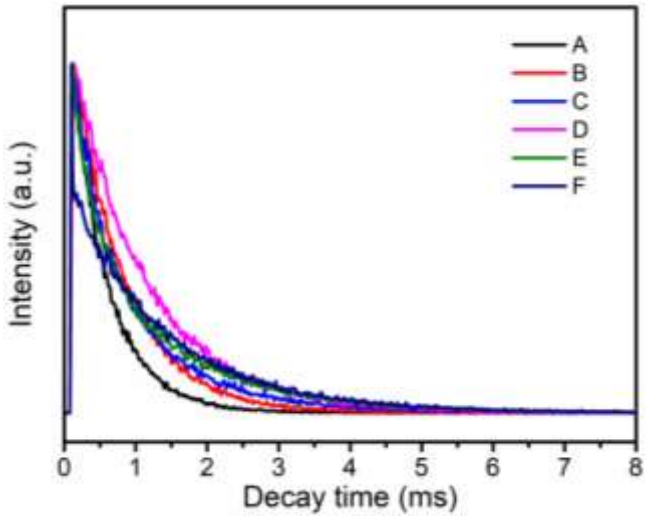


**Figure S7.** The decay curves of Eu·$\mathbf{1}_3$ (A) and Tb·$\mathbf{1}_3$ (B) aqueous solution, Eu-containing (C) and Tb-containing (D) hydrogel, Eu·$\mathbf{1}_3$ (E) and Tb·$\mathbf{1}_3$ (F) powder, (excited at 280 nm and monitored at 615 nm for Eu·$\mathbf{1}_3$, 544 nm for Tb·$\mathbf{1}_3$).

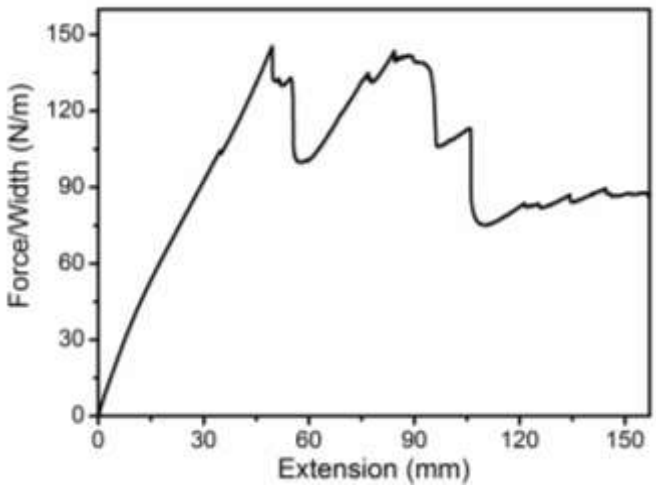


**Figure S8.** Adhesion between two pieces of PAAm hydrogels penetrated by stock solution and spread by stitching solution, then irradiated with 365 nm UV light about 2 h.

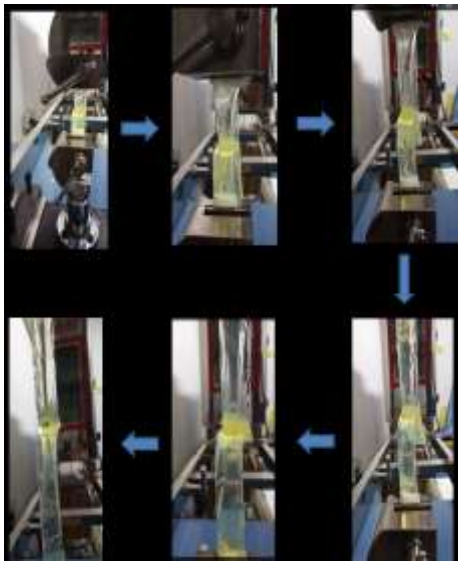

**Figure S9.** Digital images during T peeling test under daylight.

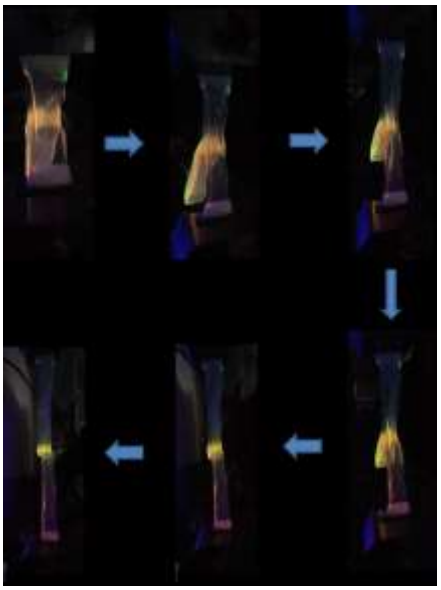

**Figure S10.** Digital images during T peeling test under 254 nm UV lamp illumination.

**Table S1.** Luminescence lifetime (τ) to Ln. ($C$(Ln·**1**$_3$) = 1.0 × $10^{-2}$ M)

| Sample | $\tau_H$ (ms) |
|---|---|
| Eu·**1**$_3$ aqueous solution | 0.51 |
| Tb·**1**$_3$ aqueous solution | 0.73 |
| Eu-containing hydrogel | 0.75 |
| Tb-containing hydrogel | 1.03 |
| Eu·**1**$_3$ powder | 0.96 |
| Tb·**1**$_3$ powder | 1.31 |