Electronic Supplementary Information (ESI)

Cu^{2+} Triggered Shrinkage of a Natural Betulin-Derived Supramolecular Gel to Fabricate Moldable Self-Supporting Gel

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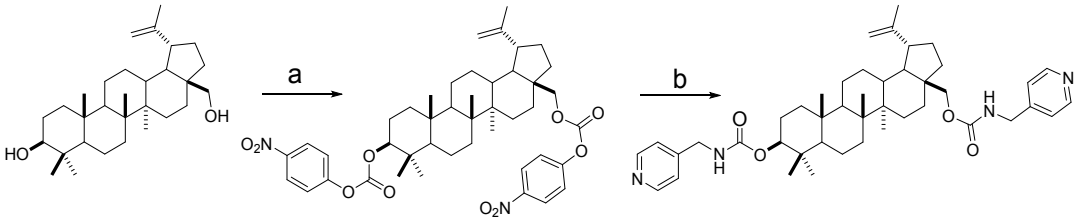
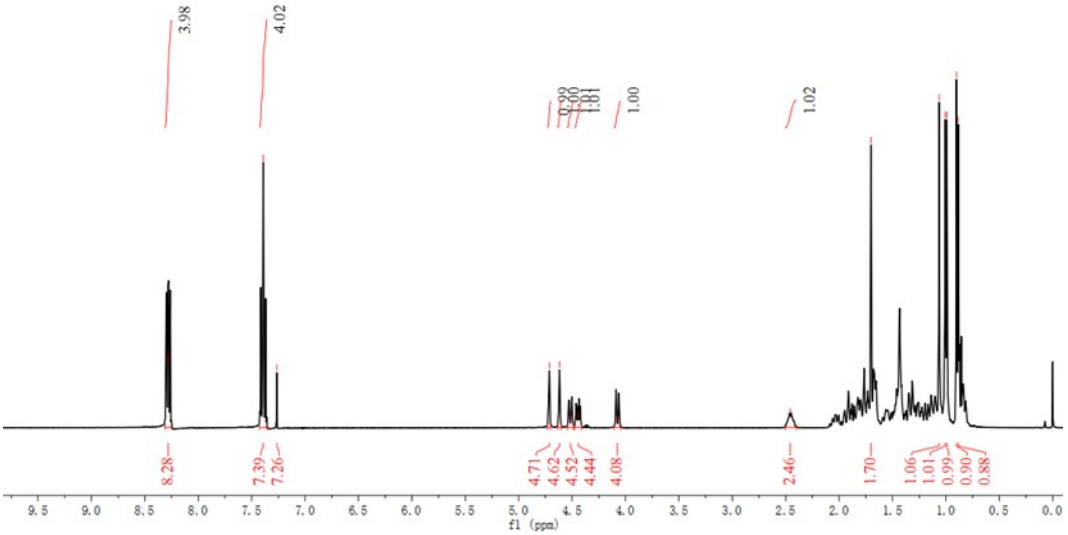
Content

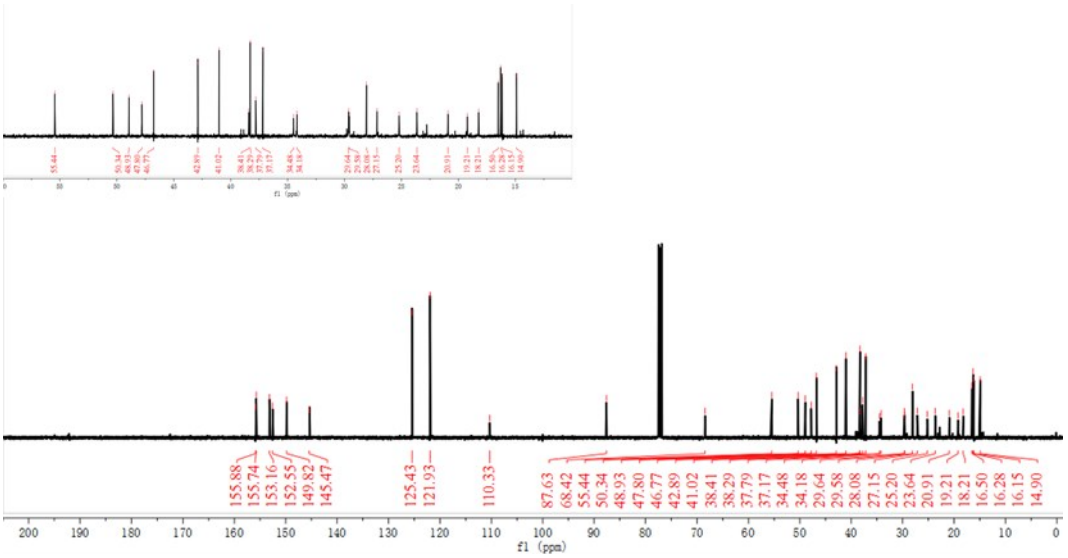
1. Synthesis and characterization of Ph-BL and Py-BL



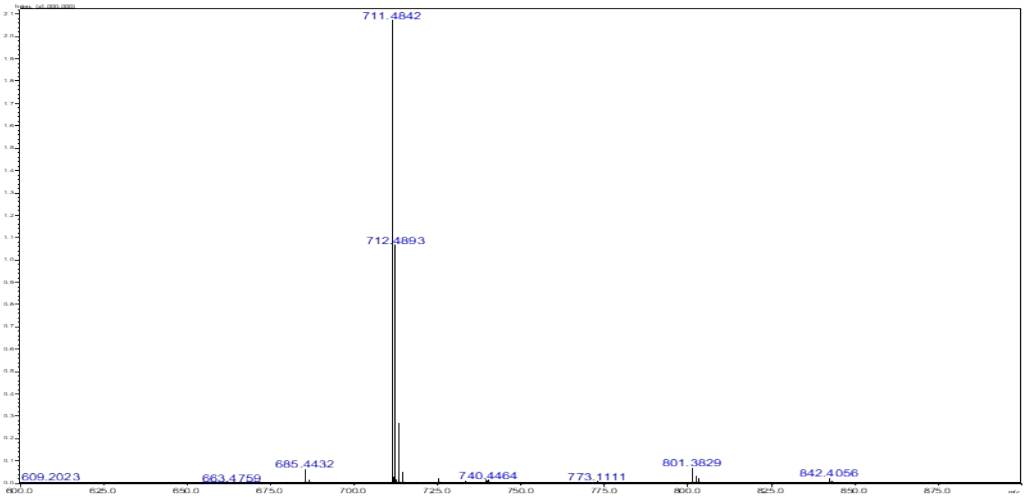
Scheme S1. Synthetic route of **Ph-BL** and **Py-BL**. (a) 4-Nitrophenyl chloroformate, dry pyridine and THF, rt, 12 h; (b) 4-Pyridinemethaneamine, DCM, Et_3N, 40 °C, 48 h.



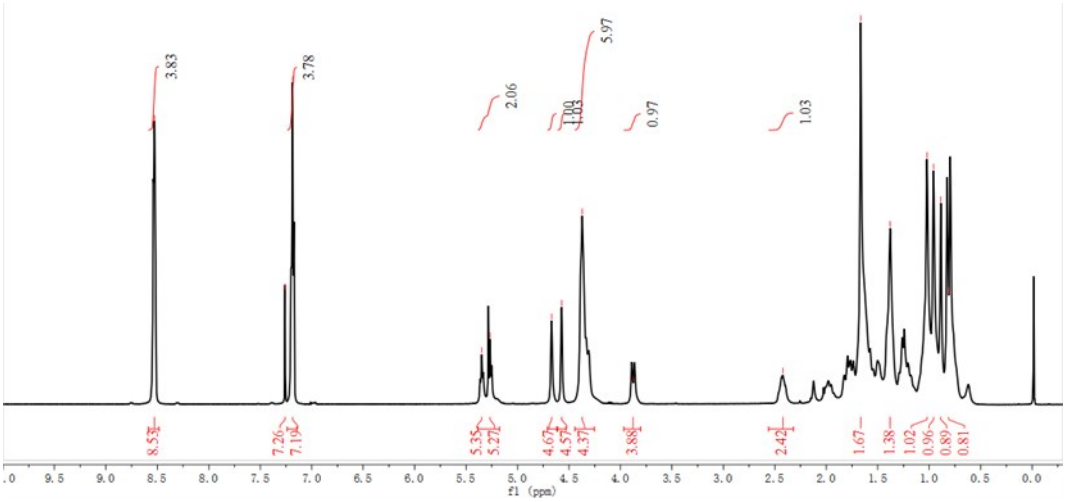
^{1}H NMR spectrum of **Ph-BL** (400 MHz, $CDCl_3$, ppm)



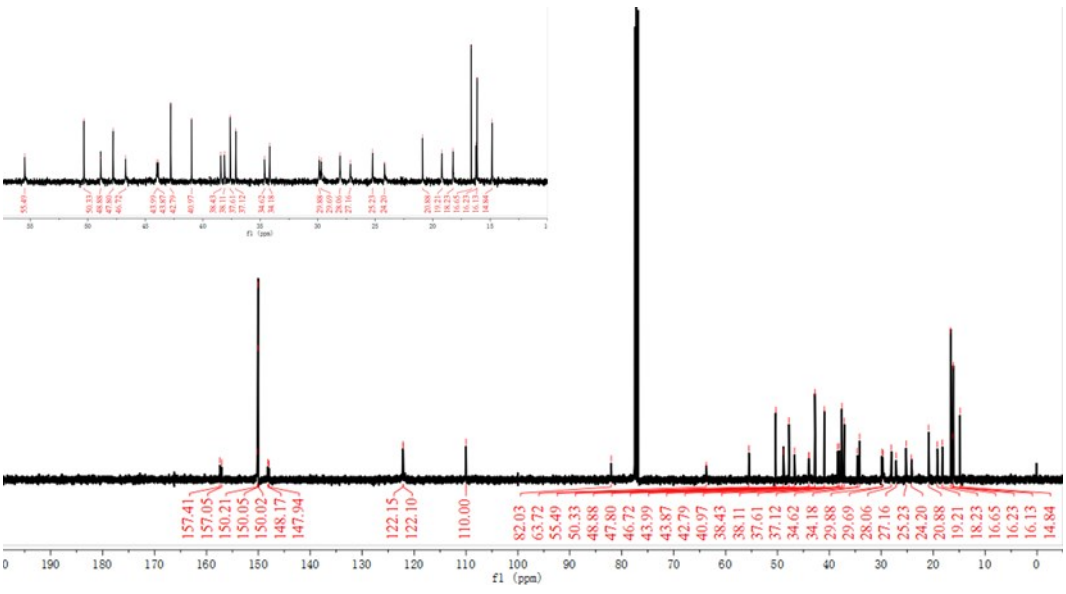
^{13}C NMR spectrum of **Ph-BL** (100 MHz, $CDCl_3$, ppm)



ESI-MS (+) spectrum of **Py-BL**



^{1}H NMR spectrum of **Py-BL** (400 MHz, $CDCl_3$, ppm)



^{13}C NMR spectrum of **Py-BL** (100 MHz, $CDCl_3$, ppm)

2. CD spectra of Py-BL shrunken gel containing 0.6-1.0 eq. Cu^{2+}

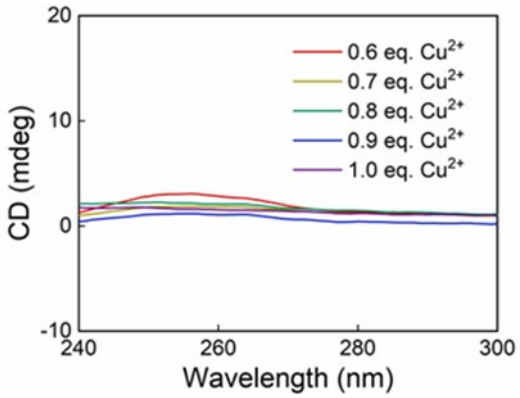


Figure S1. CD spectra of **Py-BL** (1.4 mM) shrunken gel containing 0.6-1.0 eq. Cu^{2+}.

3. TEM images of Py-BL shrunken gel at different Cu^{2+}/Py-BL molar ratios

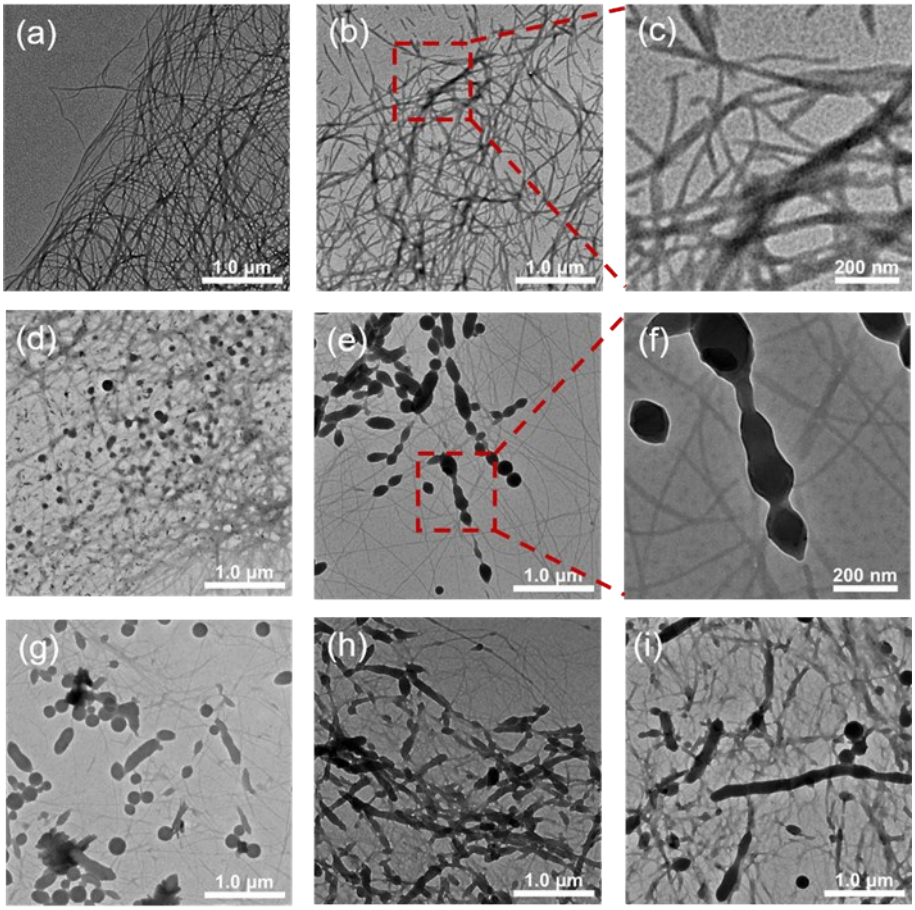


Figure S2. TEM images of **Py-BL** shrunken gel (1.4 mM) at different Cu^{2+}/**Py-BL** molar ratios: (a) 0.2, (b) 0.3, (c) enlarged area of (b), (d) 0.4, (e) 0.6, (f) enlarged area of (e), (g) 0.7 (h) 0.8 and (i) 0.9.

4. TEM images of Py-BL/Fe^{3+} sol and Py-BL/Al^{3+} sol

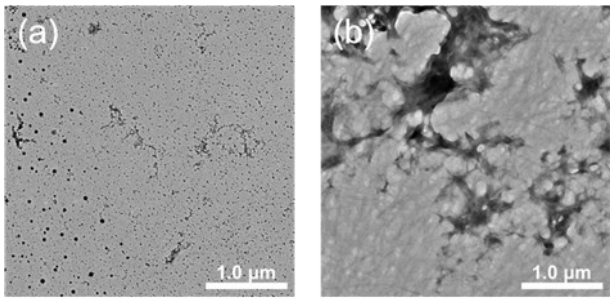


Figure S3. TEM images of (a) **Py-BL**/Fe^{3+} and (b) **Py-BL**/Al^{3+} sol at a molar ratio of 1:1

5. TEM images of Py-BL gel with other metal ions

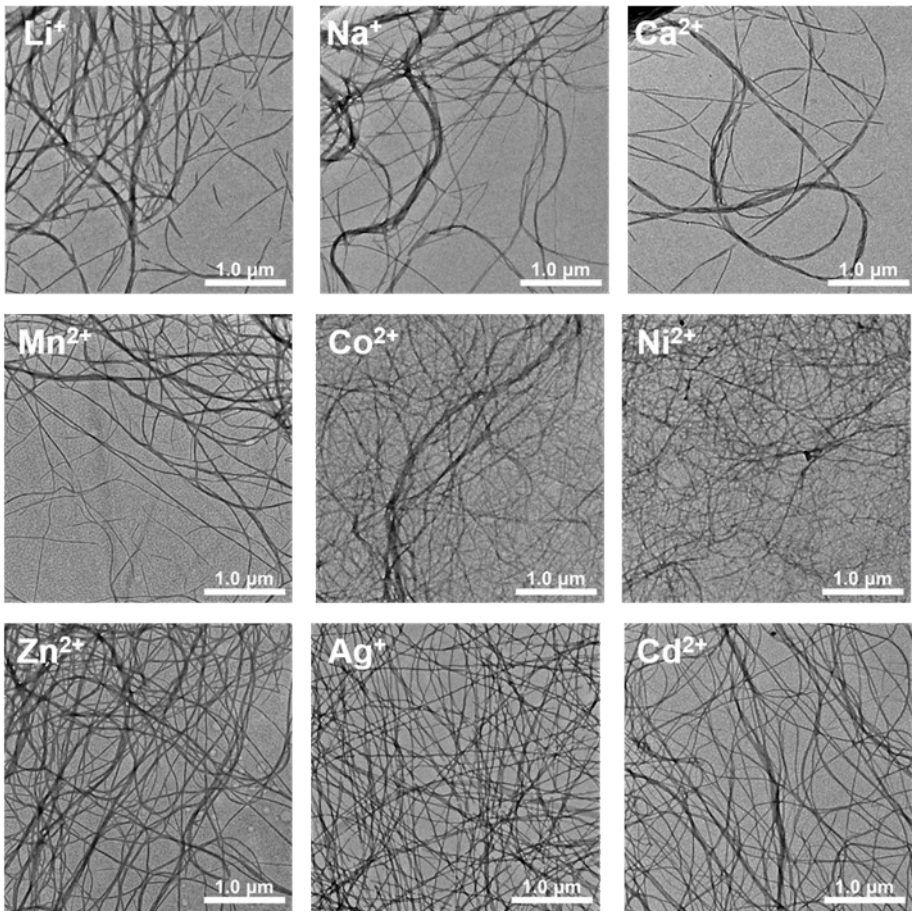


Figure S4. TEM images of **Py-BL** gel with various metal ions at a molar ratio of 1:1

6. ANS binding fluorescence assay of shrunken gel

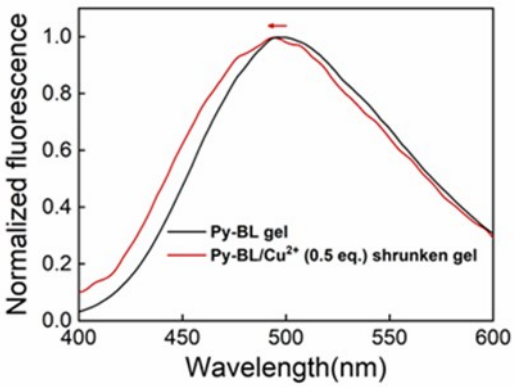


Figure S5. ANS binding fluorescence assay showed a blue shift of fluorescent emission, indicating an increased hydrophobicity of the shrunken gel

7. FT-IR spectra of powder of Py-BL, xerogels of Py-BL and Py-BL/Cu^{2+}

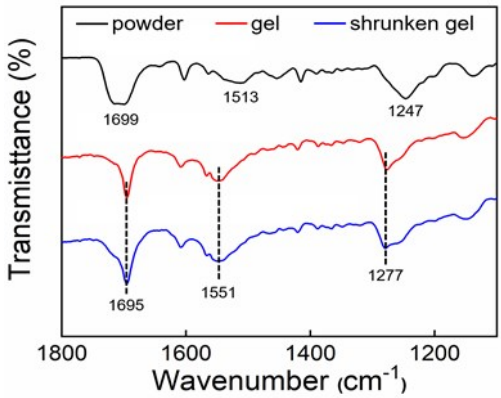


Figure S6. FT-IR spectra of **Py-BL** powder, **Py-BL** gel and **Py-BL**/Cu^{2+} (0.5 eq.) shrunken gel

8. Insulation property of Py-BL gel

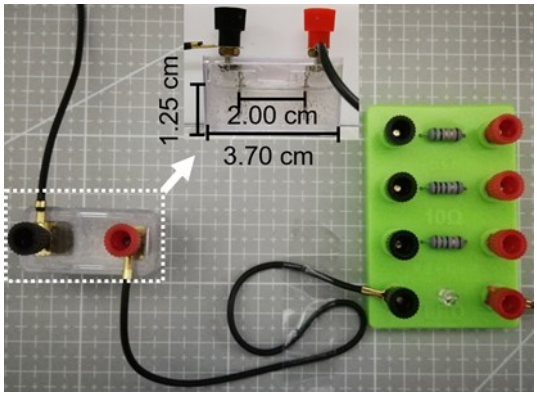


Figure S7. Photograph implying that LED bulb could not be lit when **Py-BL** gel was connected in the circuit