Supporting Information

Dynamic Covalent C=C Bond, Cross-Linked, Injectable, and Self-Healable Hydrogels via Knoevenagel Condensation

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Figure S1. ¹H NMR spectrum of methyl cyanoacetate.







Figure S3. ¹H NMR spectrum of the mixture of methyl cyanoacetate and benzaldehyde (1:1).



Figure S4. ¹H NMR spectrum of methyl α-cyanocinnamate (* residual solvent).



Figure S5. ¹H NMR spectrum of methyl α -cyanocinnamate added with TEA and H₂O (* residual solvent).

Percent of hydrolsis (%)

$$= \frac{Peak \text{ area of } Hb}{Peak \text{ area of } Hb + Peak \text{ area of } He} \times 100\%$$

$$= \frac{0.12}{0.12 + 0.88} \times 100\% = 12\%$$

Formula S1. Formula for calculating the percent of hydrolysis of methyl α -cyanocinnamate.





Figure S7. (A) Synthesis route of VA. (B) 1 H NMR spectrum of VA (* residual solvent).



Figure S8. ¹H NMR spectrum of P(DMA-VA).



Figure S9. Photographs with (A) 10%, (B) 20%, and (C) 30% precursor (PEG2000 + P(DMA-VA) in H₂O) concentration, and after 3 h the photographs with (D) 10%, (E) 20%, and (F) 30% precursor concentration.



Figure S10. (A) Synthesis route of hydrogel precursor P(DMA-VA-DMAPMA). (B) ¹H NMR spectrum of P(DMA-VA-DMAPMA). (C) GPC curve of P(DMA-VA-DMAPMA).



Figure S12. DLS of ZIF-8 in H₂O solution.



Figure S13. SEM image of ZIF-8.



Figure S14. XRD spectrum of ZIF-8.



Figure S15. (A) The double-syringe for mixing the gel precursor solutions to form hydrogel. (B) Image of the injectable hydrogel that can be extruded from a double-syringe.