Electronic Supplementary Information for

Self-assembled Nanohelix from a Bolaamphiphilic Diacetylene via Hydrogelation and Selective Responsiveness Towards Amino Acids and Nucleobases

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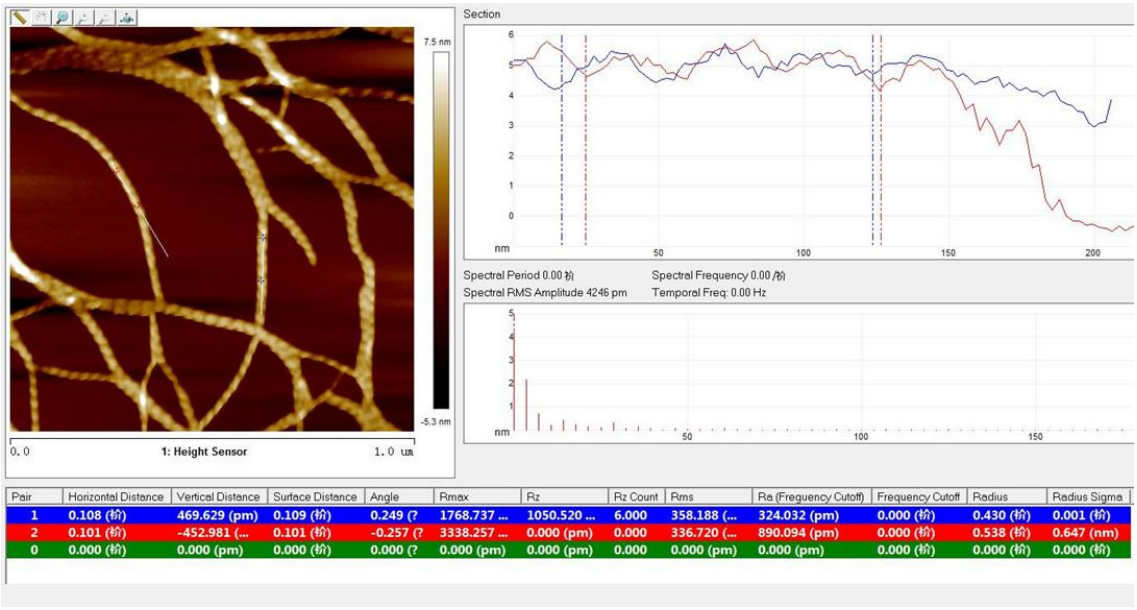
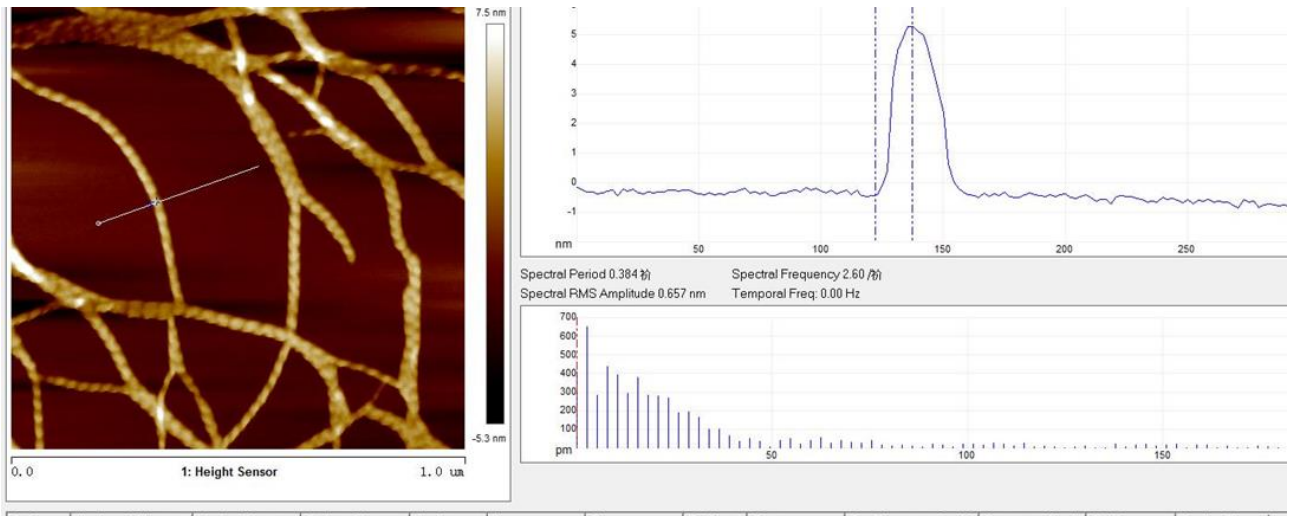


Pair	Horizontal Distance	Vertical Distance	Surface Distance	Angle	Rmax	Rz	Rz Count	Rms	Ra (Frequency Cutoff)	Frequency Cutoff	Radius	Radius Sigma
1	0.108 ()	469.629 (pm)	0.109 ()	0.249 (?	1768.737 ...	1050.520 ...	6.000	358.188 (...	324.032 (pm)	0.000 ()	0.430 ()	0.001 ()
2	0.101 ()	-452.981 (...	0.101 ()	-0.257 (?	3338.257 ...	0.000 (pm)	0.000	336.720 (...	890.094 (pm)	0.000 ()	0.538 ()	0.647 (nm)
0	0.000 ()	0.000 (pm)	0.000 ()	0.000 (?	0.000 (pm)	0.000 (pm)	0.000	0.000 (pm)	0.000 (pm)	0.000 ()	0.000 ()	0.000 ()

Figure S1 The pitch length of nanohelix: three pitches are about 101-108nm, which means the average length of every pitch is around 34-36 nm.



Pair	Horizontal Distance	Vertical Distance	Surface Distance	Angle	Rmax	Rz	Rz Count	Rms	Ra (Frequency Cutoff)	Frequency Cutoff	Radius	Radius Sigma
1	0.015 ()	5.670 (nm)	0.017 ()	21.196 (?	5.743 (nm)	0.000 (nm)	0.000	0.064 (nm)	3.083 (nm)	2.602 ()	0.010 ()	0.895 (nm)
2	0.000 ()	0.000 (nm)	0.000 ()	0.000 (?	0.000 (nm)	0.000 (nm)	0.000	0.000 (nm)	0.000 (nm)	0.000 ()	0.000 ()	0.000 ()
3	0.000 ()	0.000 (nm)	0.000 ()	0.000 (?	0.000 (nm)	0.000 (nm)	0.000	0.000 (nm)	0.000 (nm)	0.000 ()	0.000 ()	0.000 ()

Figure S2 The height of nanohelix, which is about 5.7 nm.

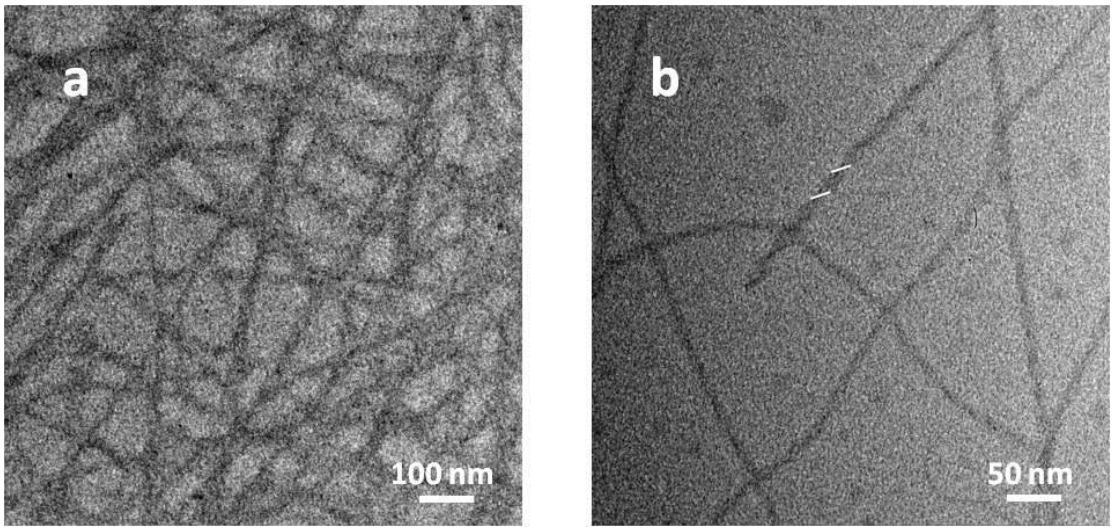


Figure S3 TEM image of a) L-DGA and b) D-DGA hydrogel.

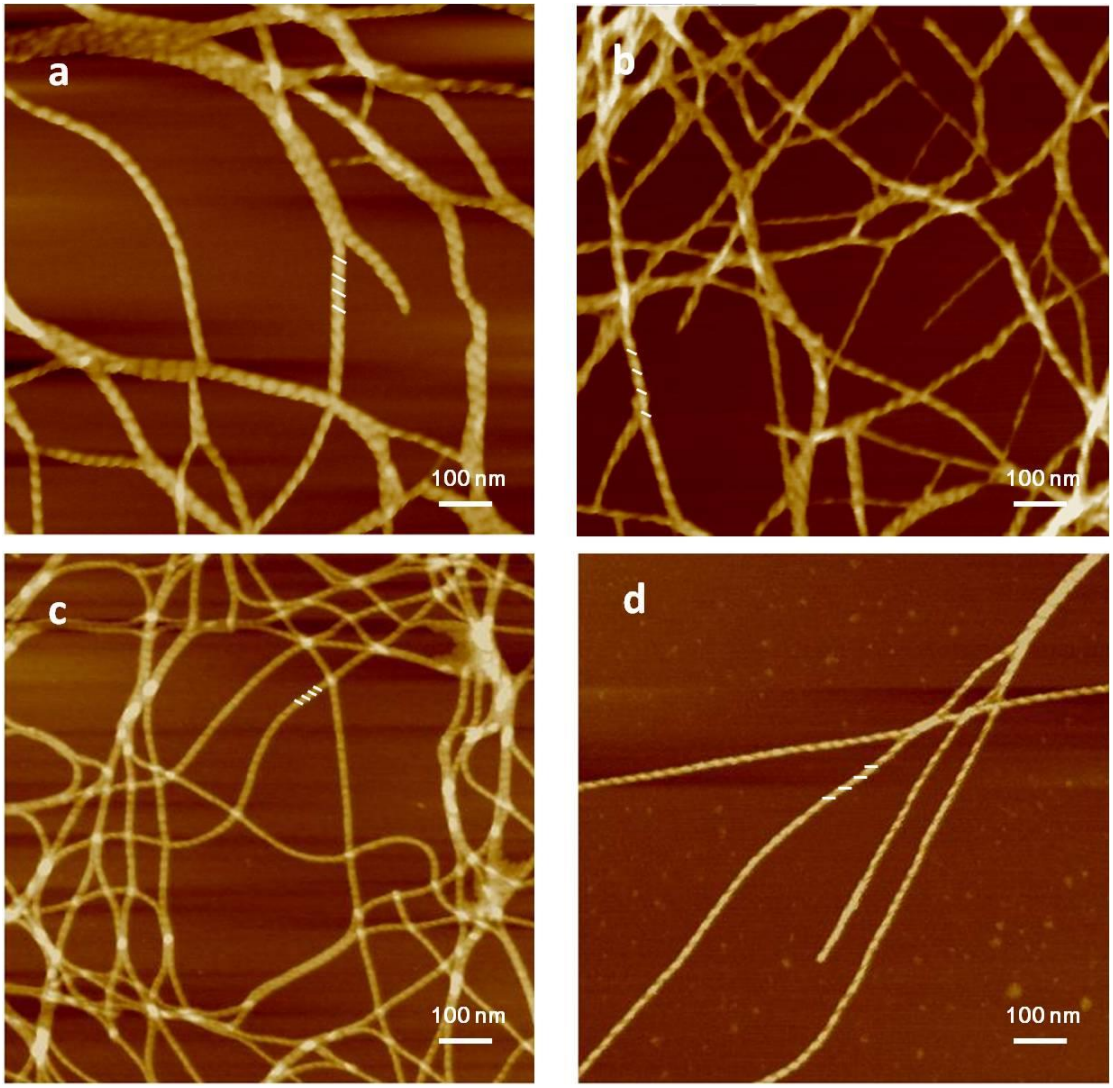


Figure S4 AFM images of L-DGA before a) and after b) polymerization; D-DGA before a) and after b) polymerization. Directions of helix shown in white lines.

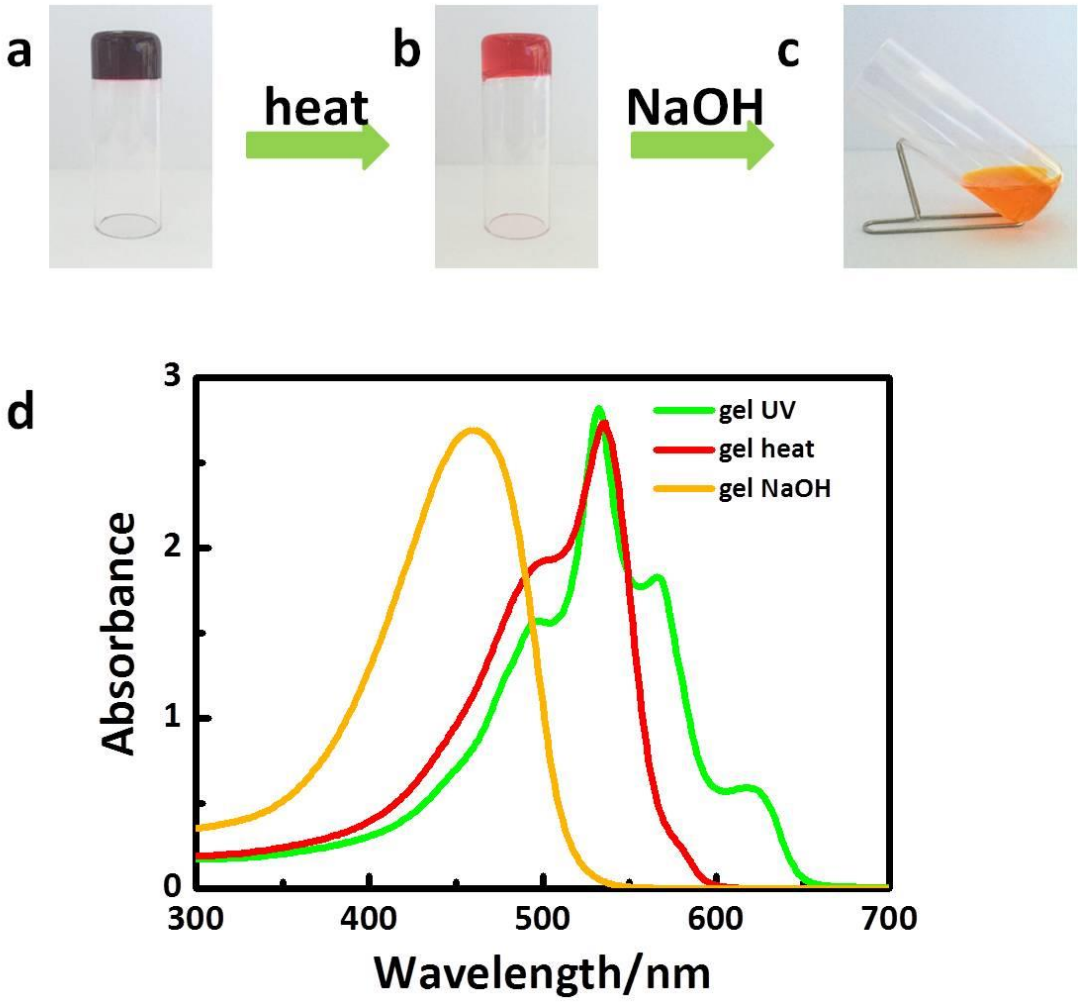


Figure S5 a) DGA hydrogel, b) After heating, turned into red gel, c) Addtion of NaOH caused the gel into yellow aqueous solution. d) UV-Vis spectra in three states.

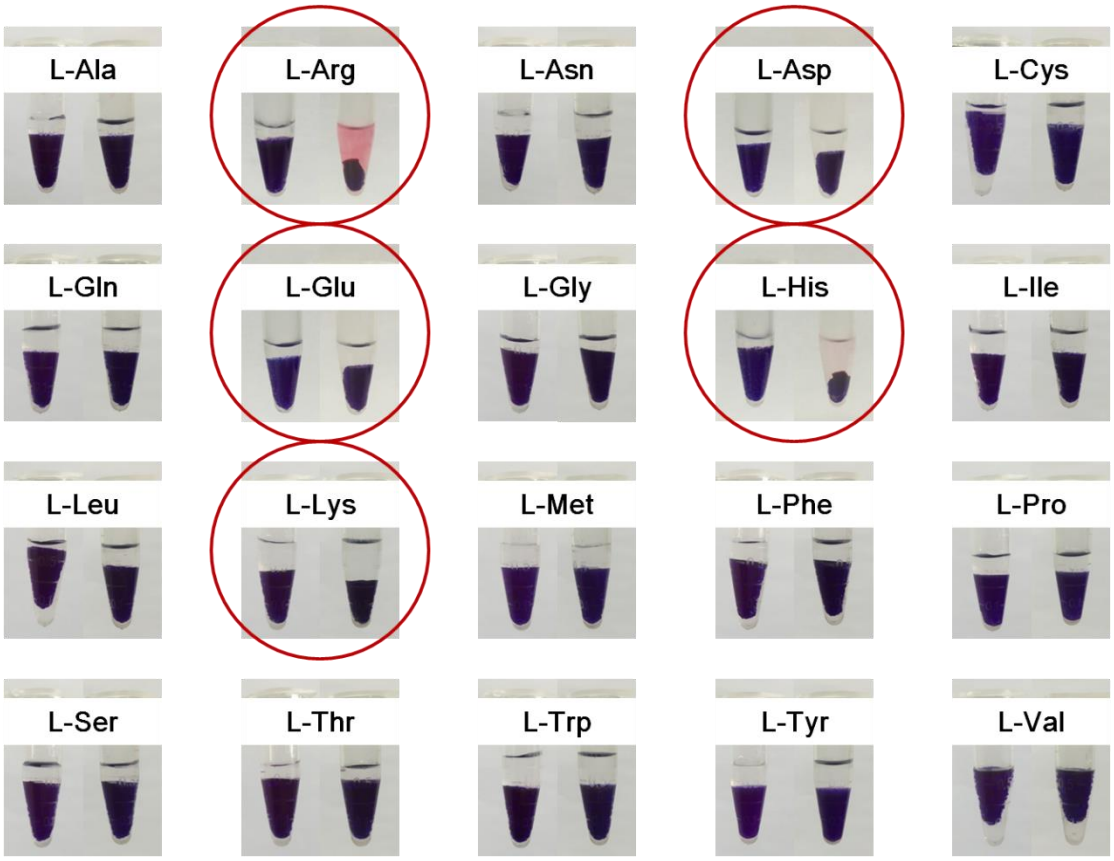


Figure S6 changes between hydrogels dipped in amino acids solutions.

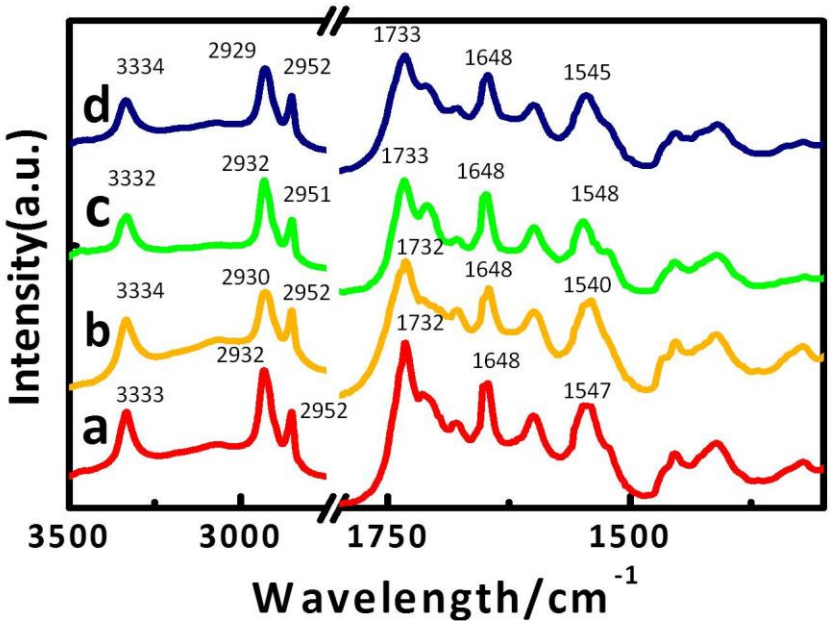
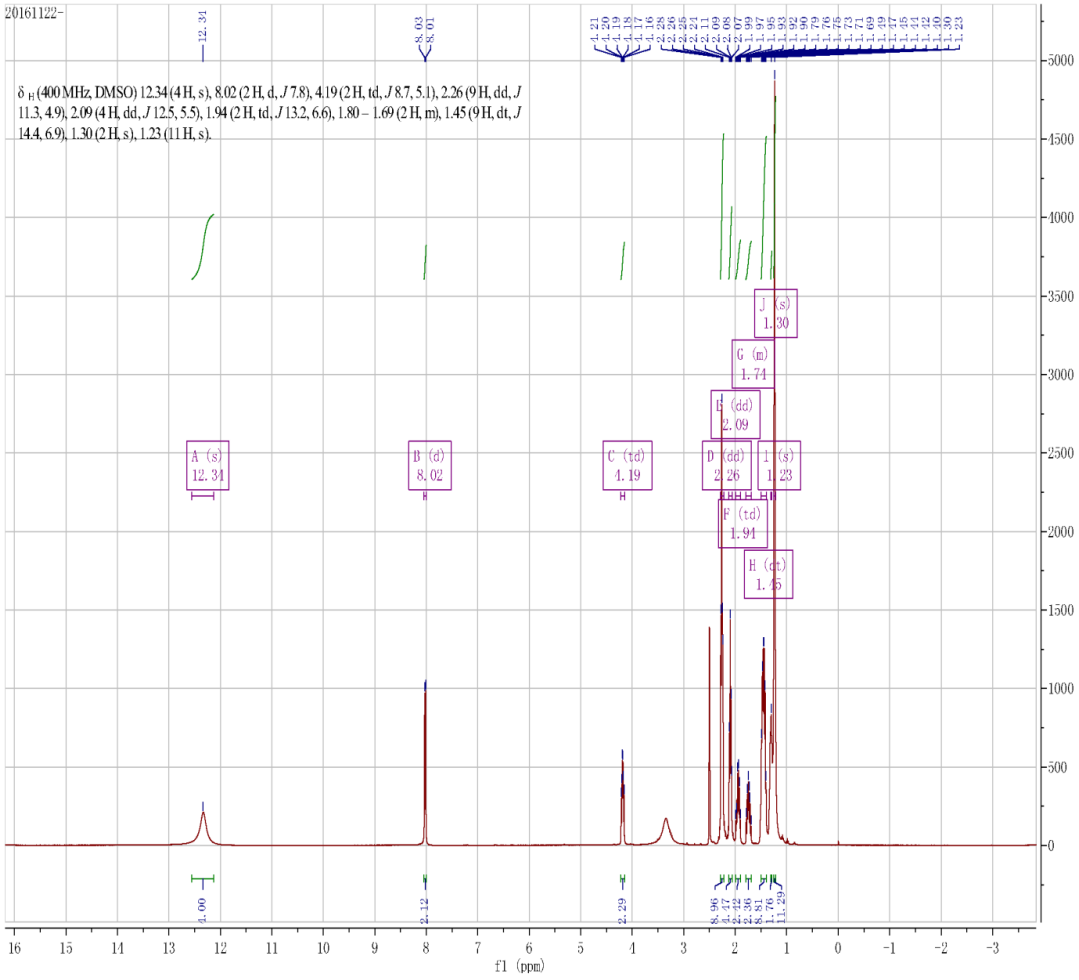


Figure S7 FT-IR spectra of hydrogel a) before and b) after polymerization; precipitation c) before and d) after polymerization.

^{1}H NMR spectra of **DGA**



^{13}C NMR spectra of **DGA**