Supplementary Materials

Synthesis and self-assembling properties of peracetylated β-triazolyl alkyl D-glucosides and D-galactosides

Pooja Sharma, Anji Chen, Dan Wang, Guijun Wang*

Department of Chemistry and Biochemistry, Old Dominion University, Norfolk, VA 23529, USA

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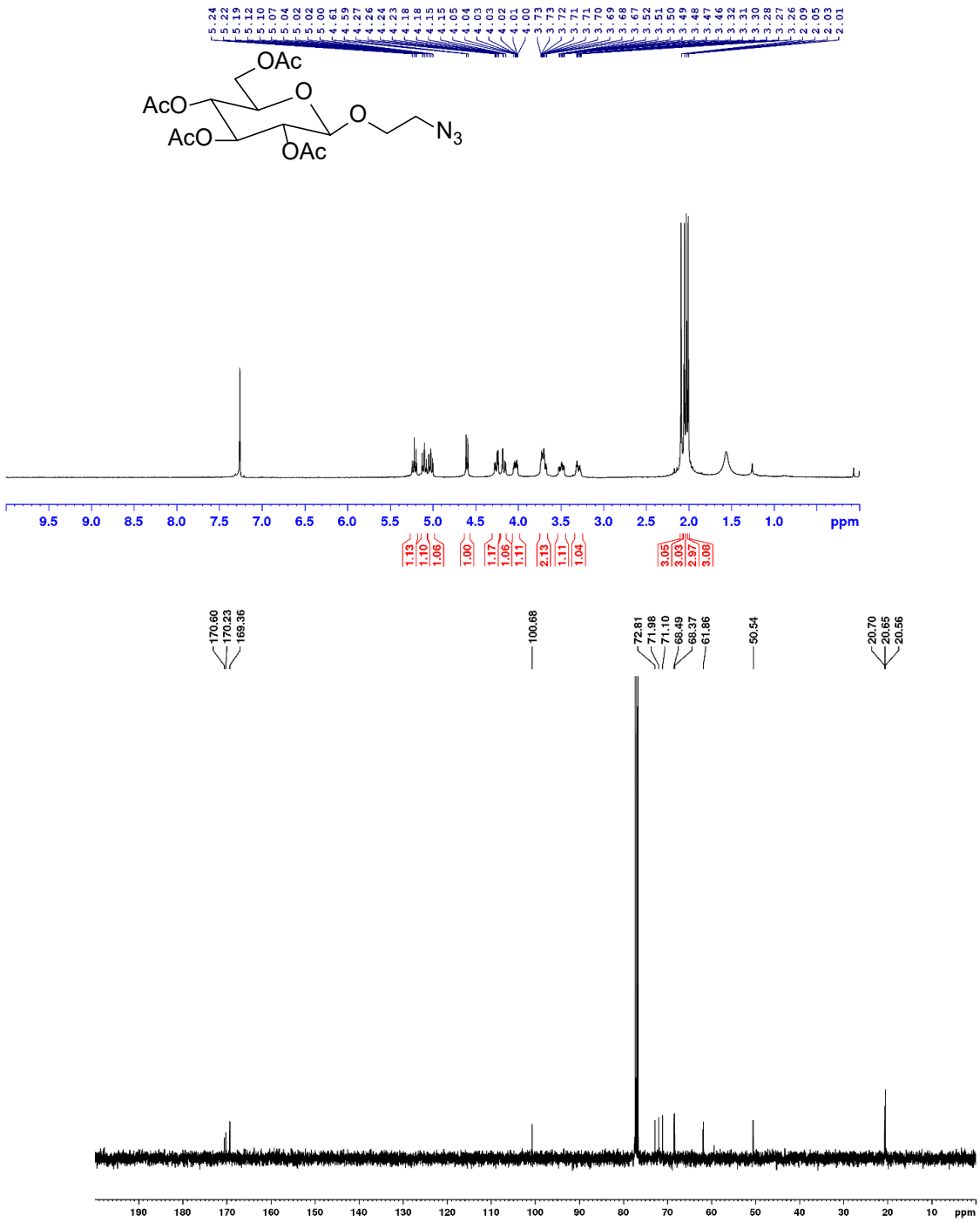
Part I.

General procedure for the synthesis of triazoles:

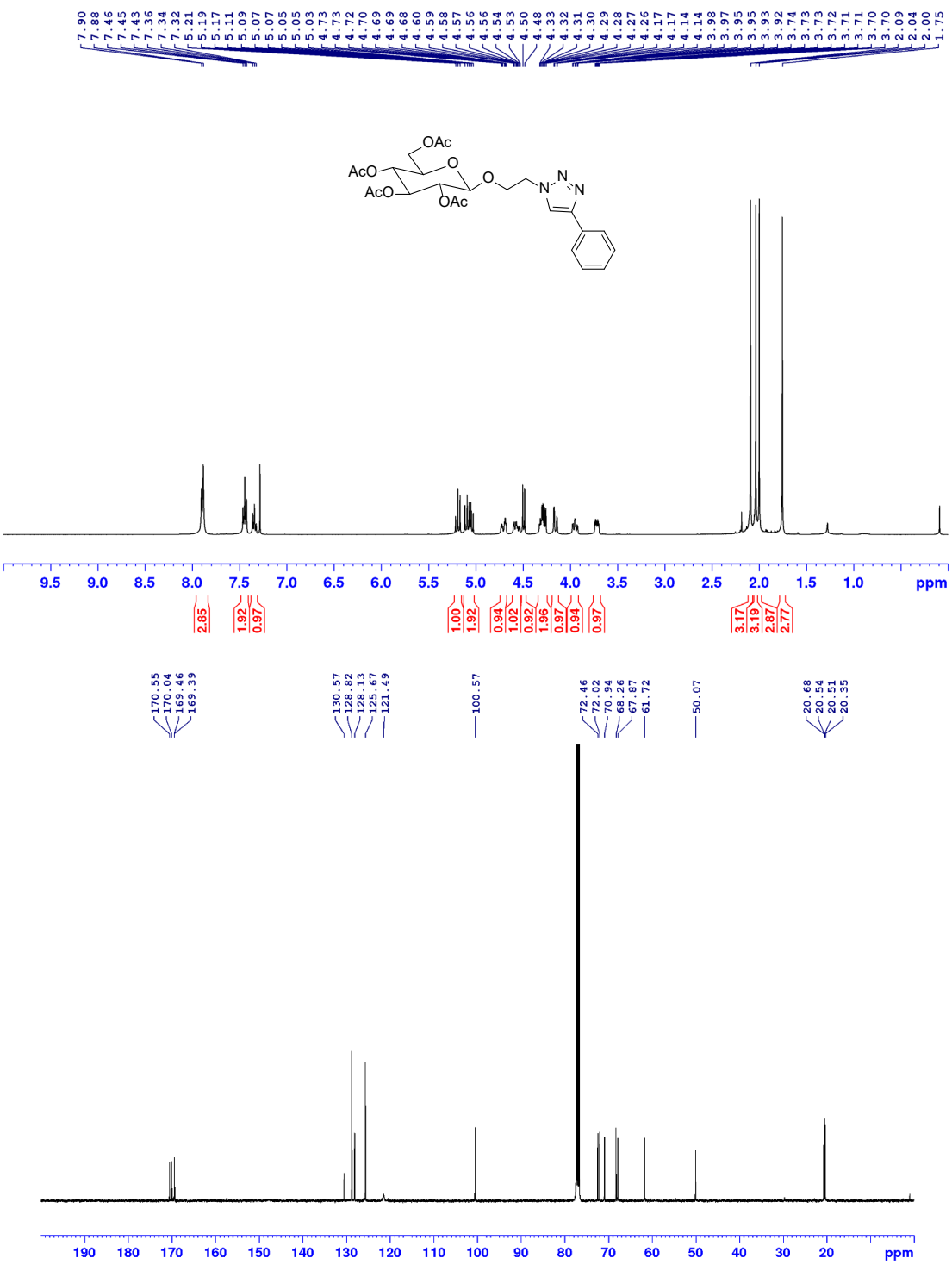
Method A: To a 50 mL of round bottom flask (RBF), the azide (1.0 eq.) and alkyne (1.2 eq.) were dissolved in *t*-BuOH:THF:water (v/v/v = 1:1:1) (3.0 mL) or EtOH:H_2O (v/v = 1:1) (3.0 mL). To this solution copper (II) sulfate pentahydrate (0.2 eq.) and L-ascorbic sodium salt (0.4 eq.) were added in the given order. Reaction was stirred at 30 °C for 8-12 h. Progress of the reaction was monitored using ^{1}H NMR. After completion of the reaction, the solvent was removed from the mixture. The crude product was purified using flash column chromatography using ethyl acetate/hexanes (15-30%) or methanol/DCM (0-5%) gradient to afford pure product. The following compounds were synthesized using method A: **4a, 4b, 4e, 7a, 7g, 7j, 7k, 11b, 11d, 11j**.

Method B: To a 50 mL RBF, azide (1.0 eq.) and alkyne (1.2 eq.) were dissolved in acetonitrile (3 mL). To this solution copper iodide (0.2 eq.) and DIEA (1.2-2.0 eq.) were added in the given order. Reaction was stirred at 30 °C for 8-12 h. Progress of the reaction was monitored using ^{1}H NMR. The product was purified using column chromatography with ethyl acetate/hexanes (30-50%) or methanol/DCM (0-5%) gradient to afford pure product. The following compounds were synthesized using method B: **4d, 4i, 7b-7f, 7h-7i, 11a, 11e, 11i, 14a-14h.**

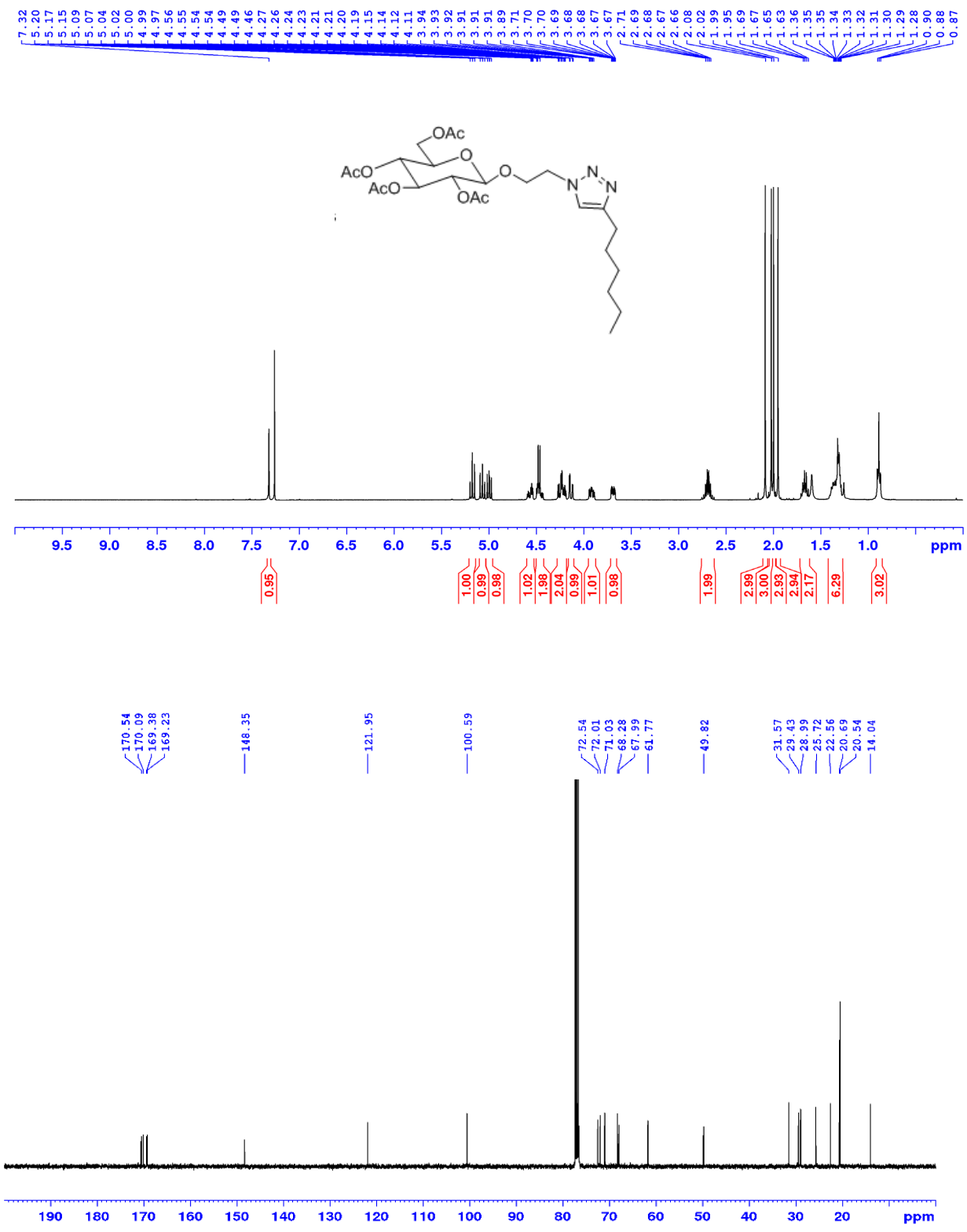
^{1}H and ^{13}C NMR spectra of azide and triazole derivatives



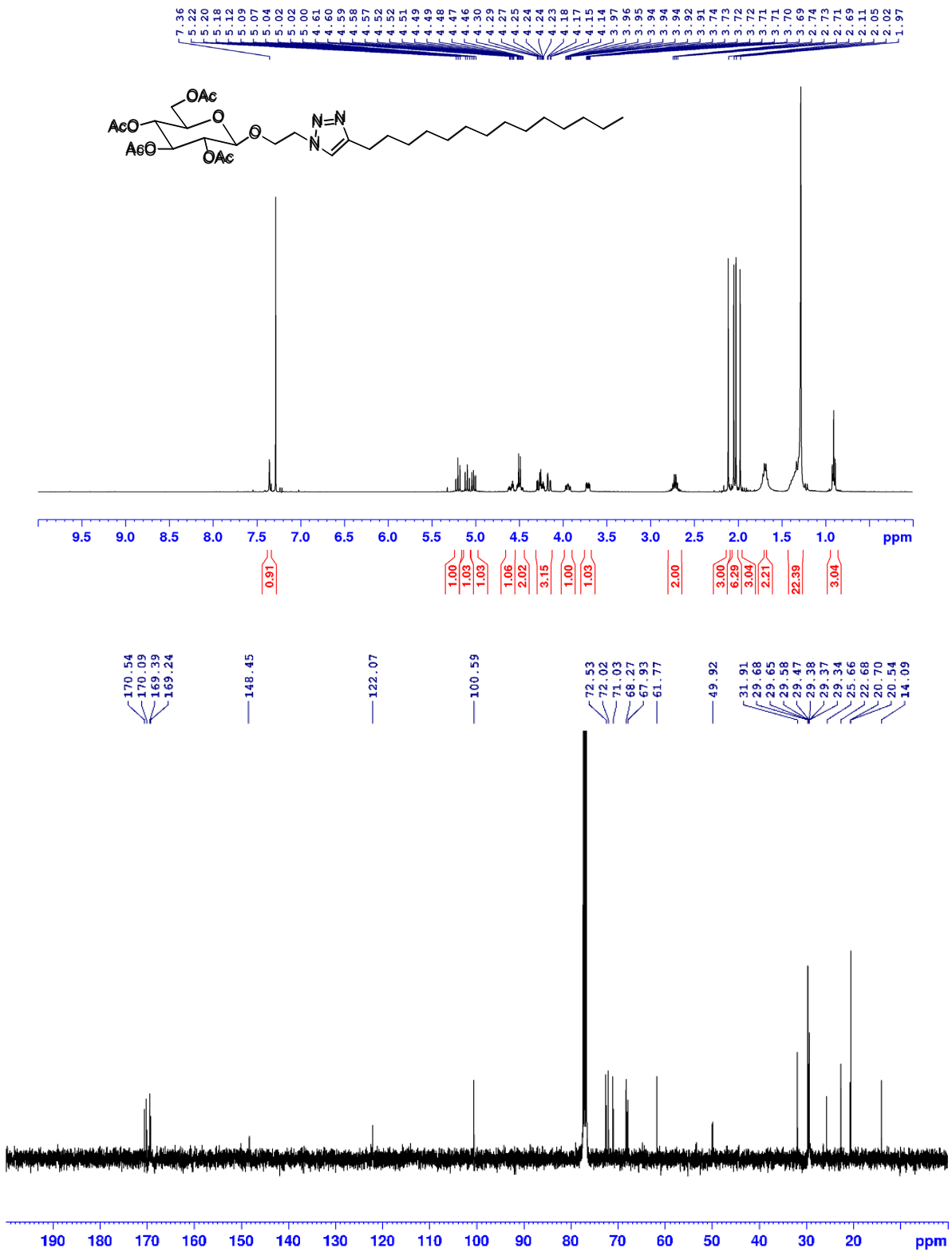
^{1}H NMR and ^{13}C NMR spectra for compound **3** in $CDCl_3$



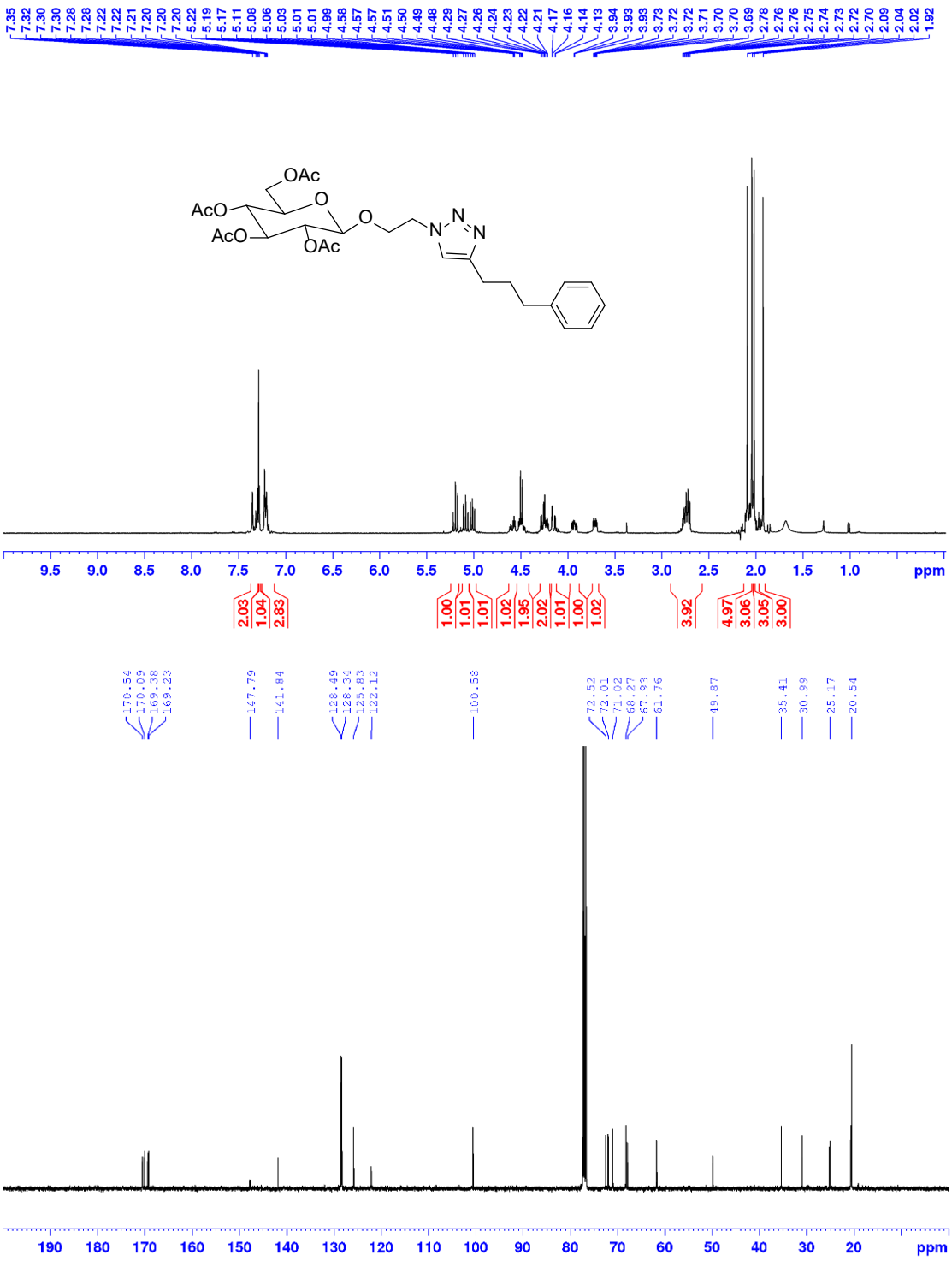
^{1}H NMR and ^{13}C NMR spectra for compound **4a** in $CDCl_3$



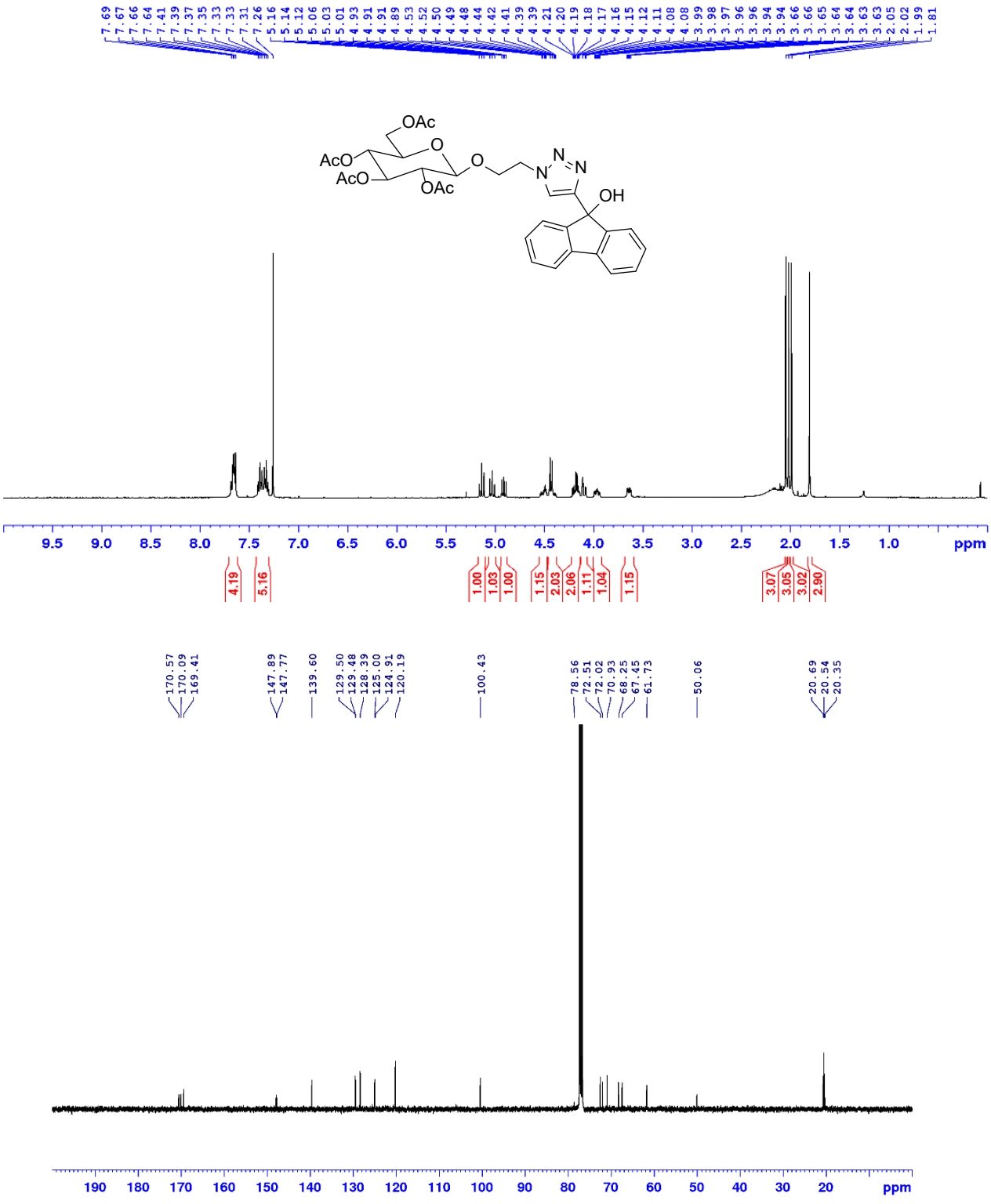
^{1}H NMR and ^{13}C NMR spectra for compound **4b** in $CDCl_3$



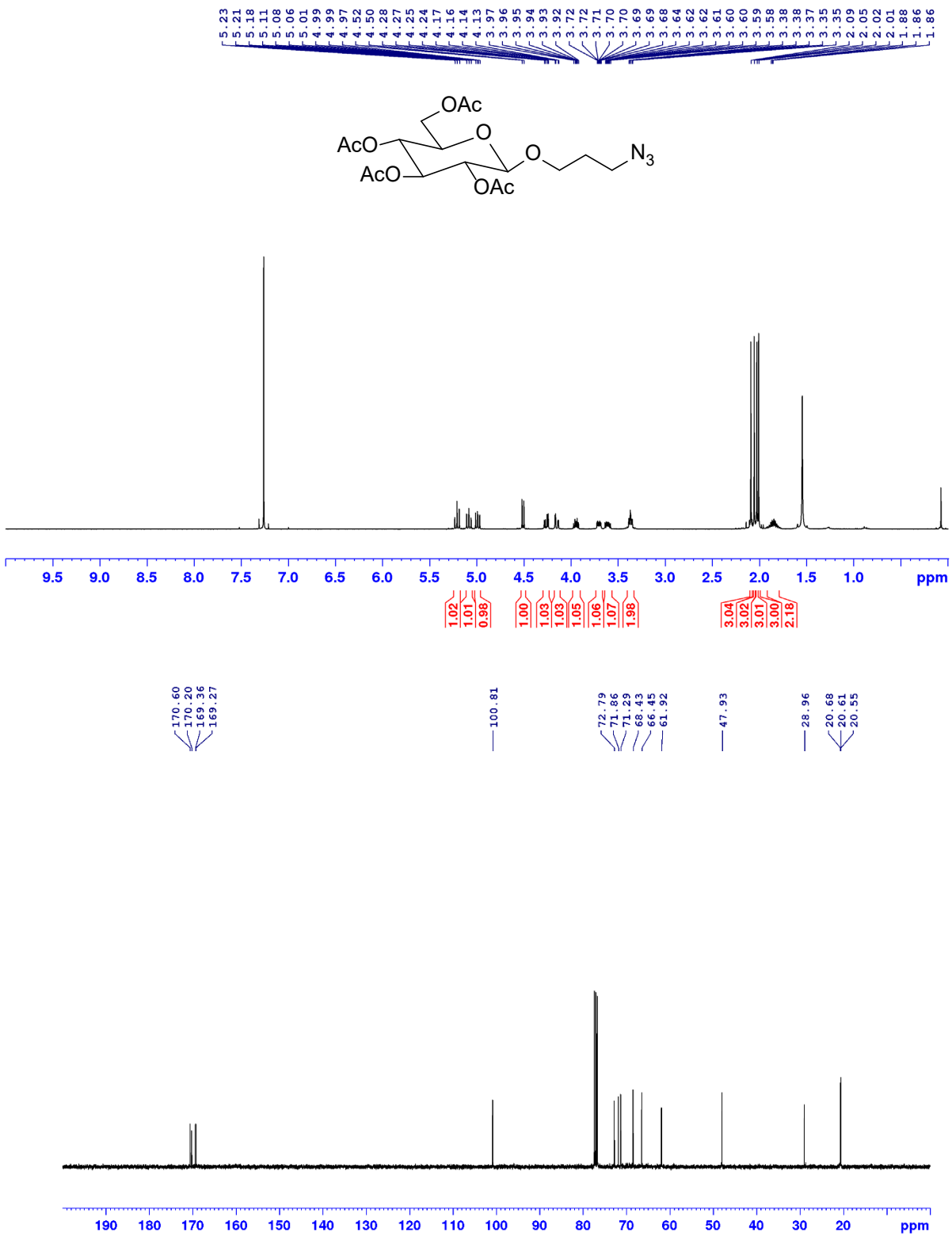
^{1}H NMR and ^{13}C NMR spectra for compound **4d** in $CDCl_3$



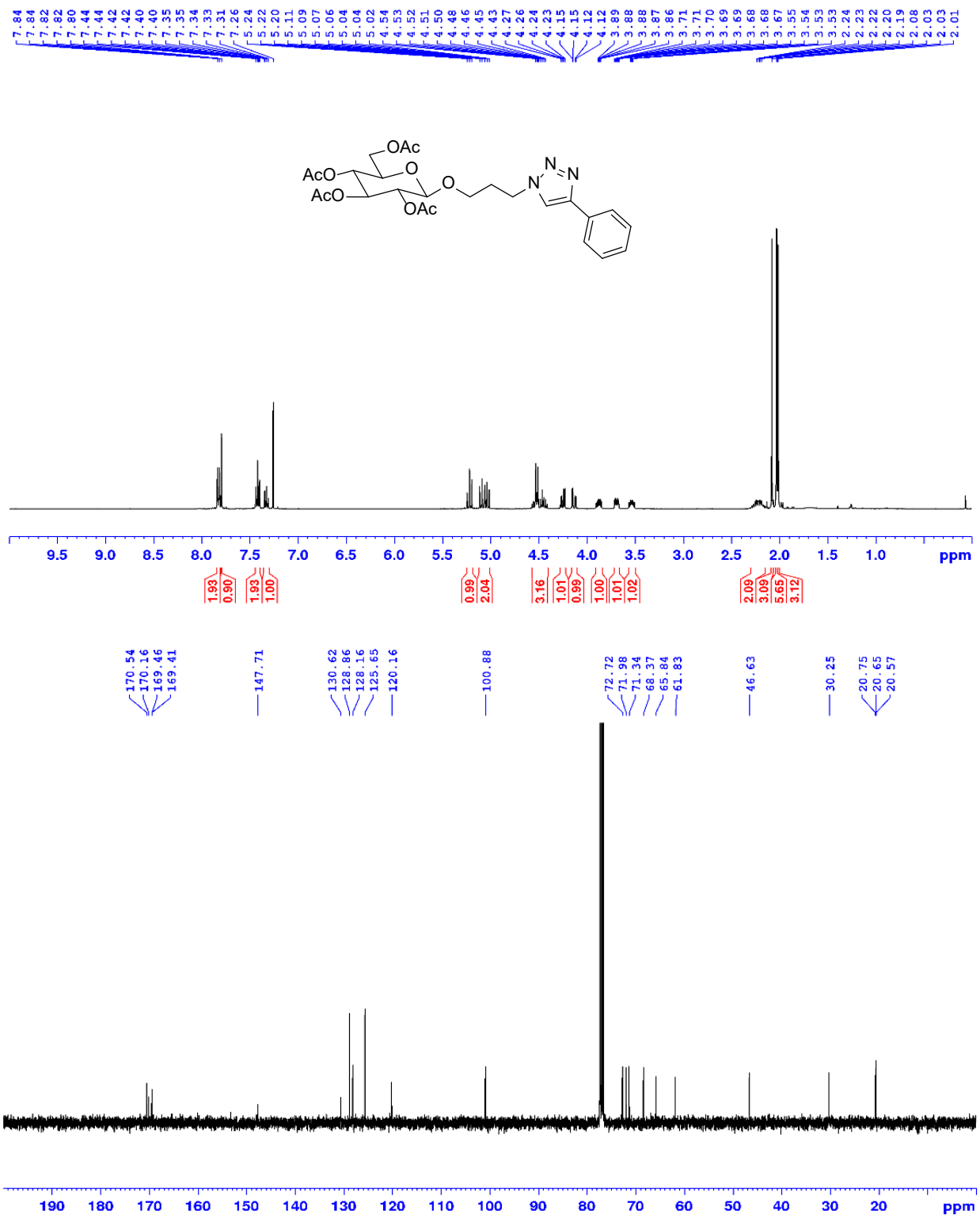
^{1}H NMR and ^{13}C NMR spectra for compound **4e** in $CDCl_3$



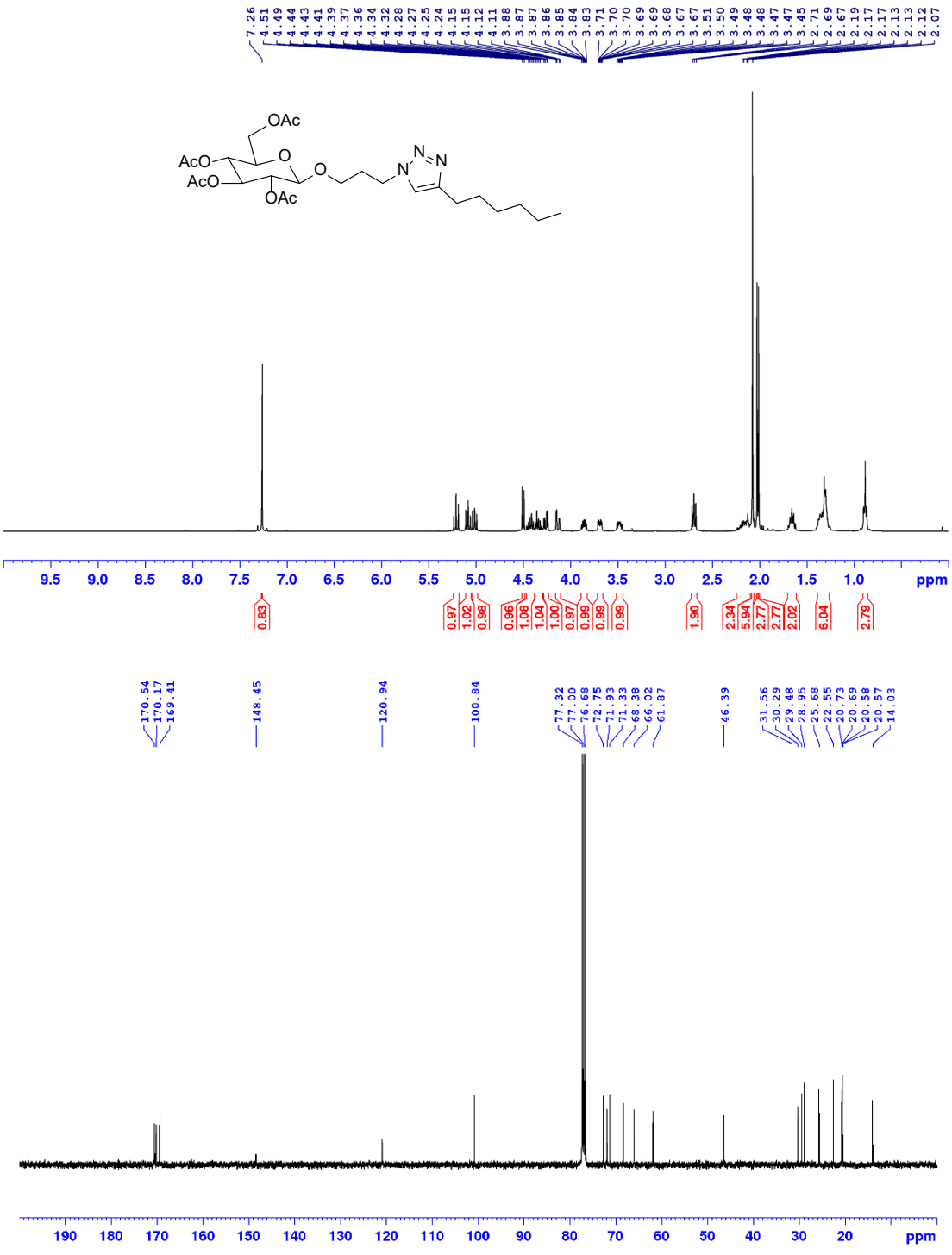
^{1}H NMR and ^{13}C NMR spectra for compound **4i** in $CDCl_3$



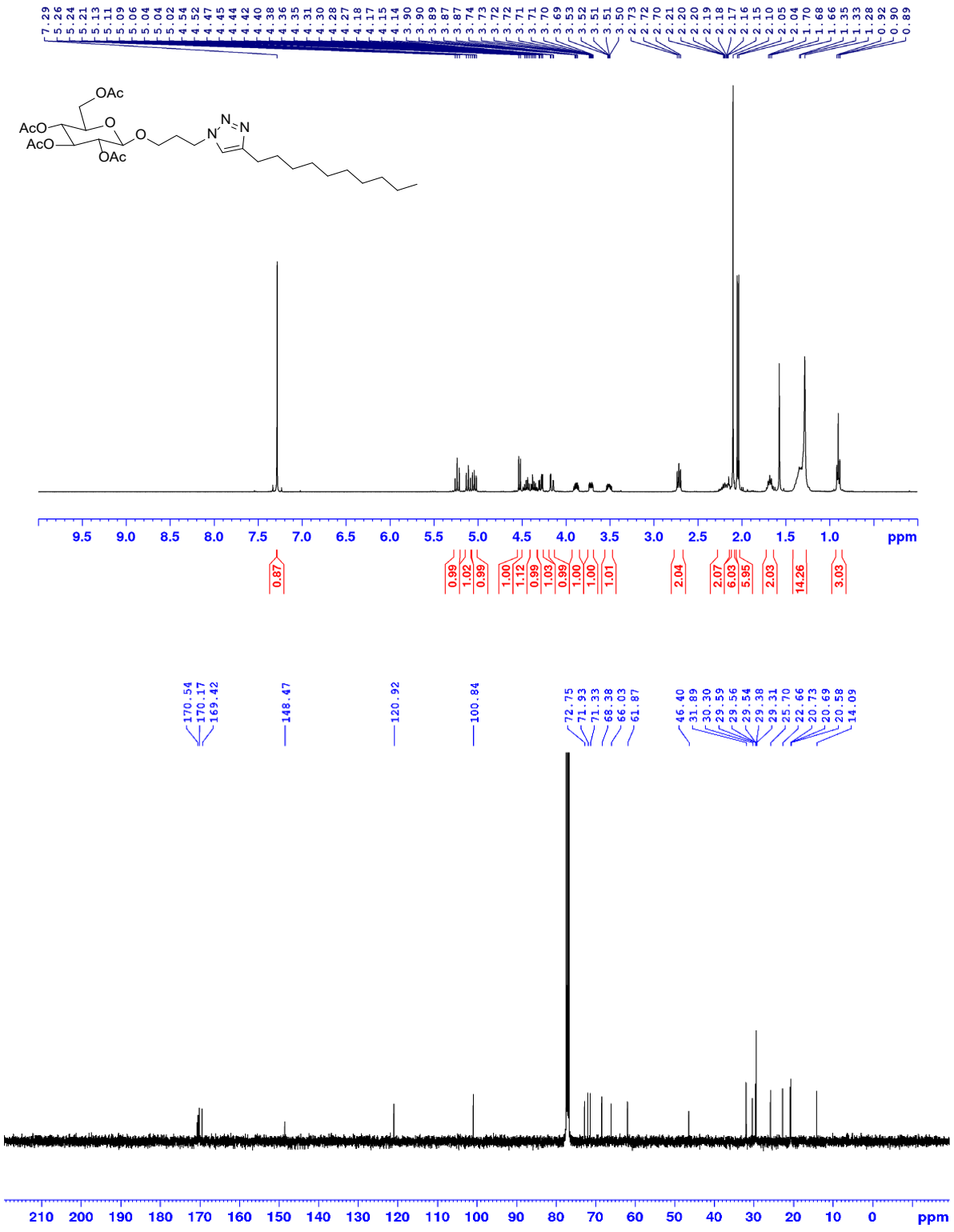
^{1}H NMR and ^{13}C NMR spectra for compound **6** in $CDCl_3$



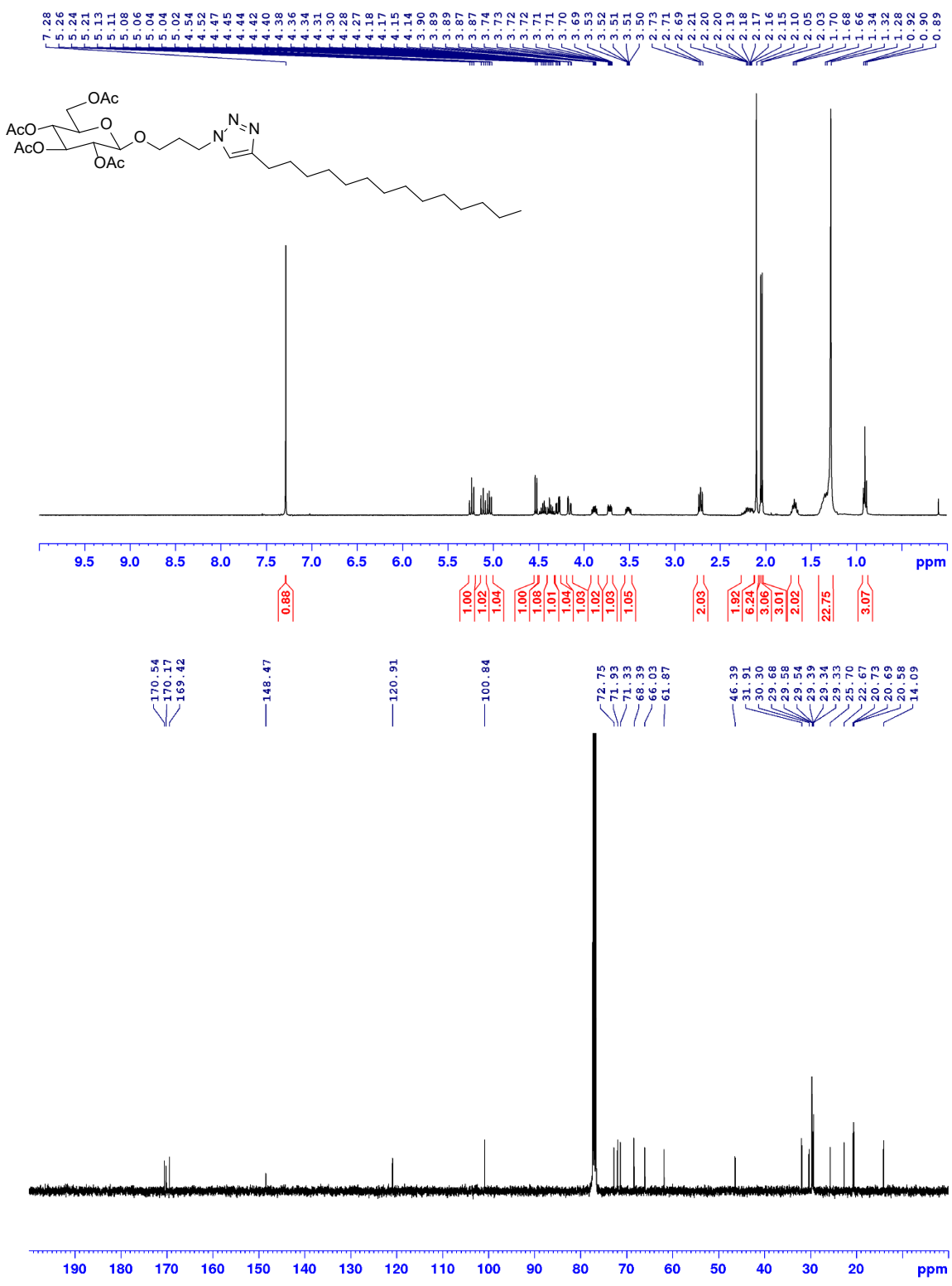
^{1}H NMR and ^{13}C NMR spectra for compound **7a** in $CDCl_3$



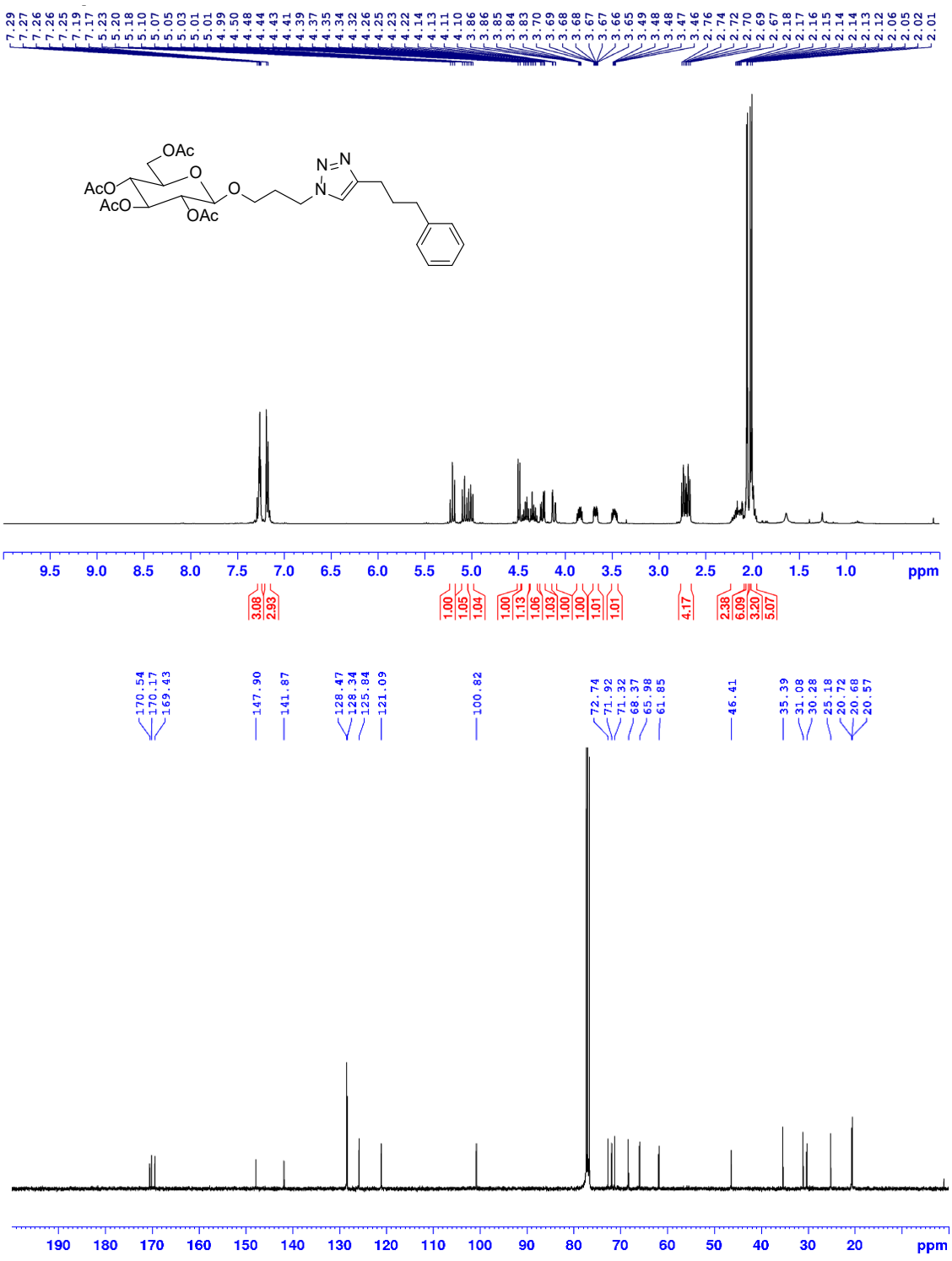
^{1}H NMR and ^{13}C NMR spectra for compound **7b** in $CDCl_3$



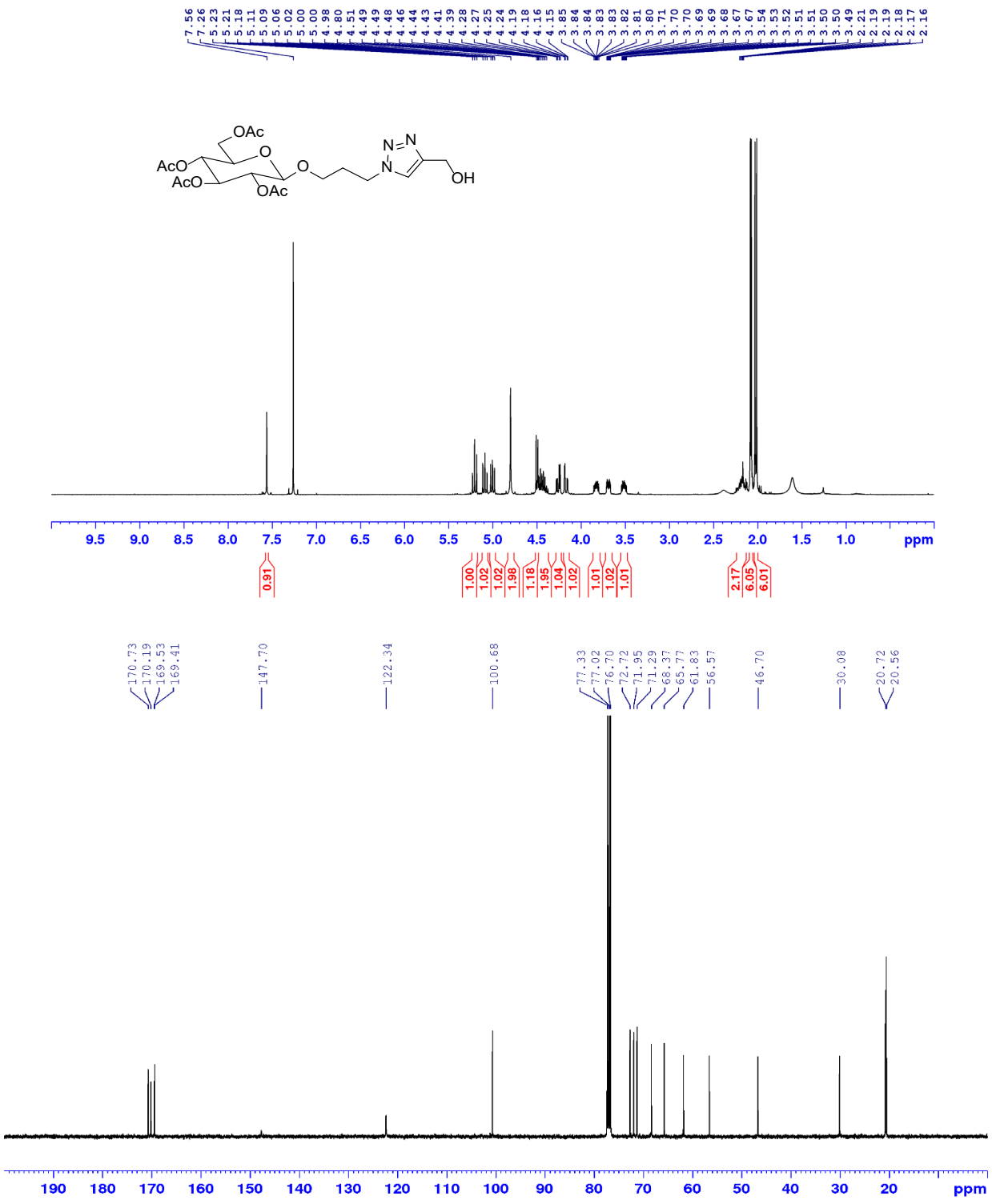
^{1}H NMR and ^{13}C NMR spectra for compound **7c** in $CDCl_3$



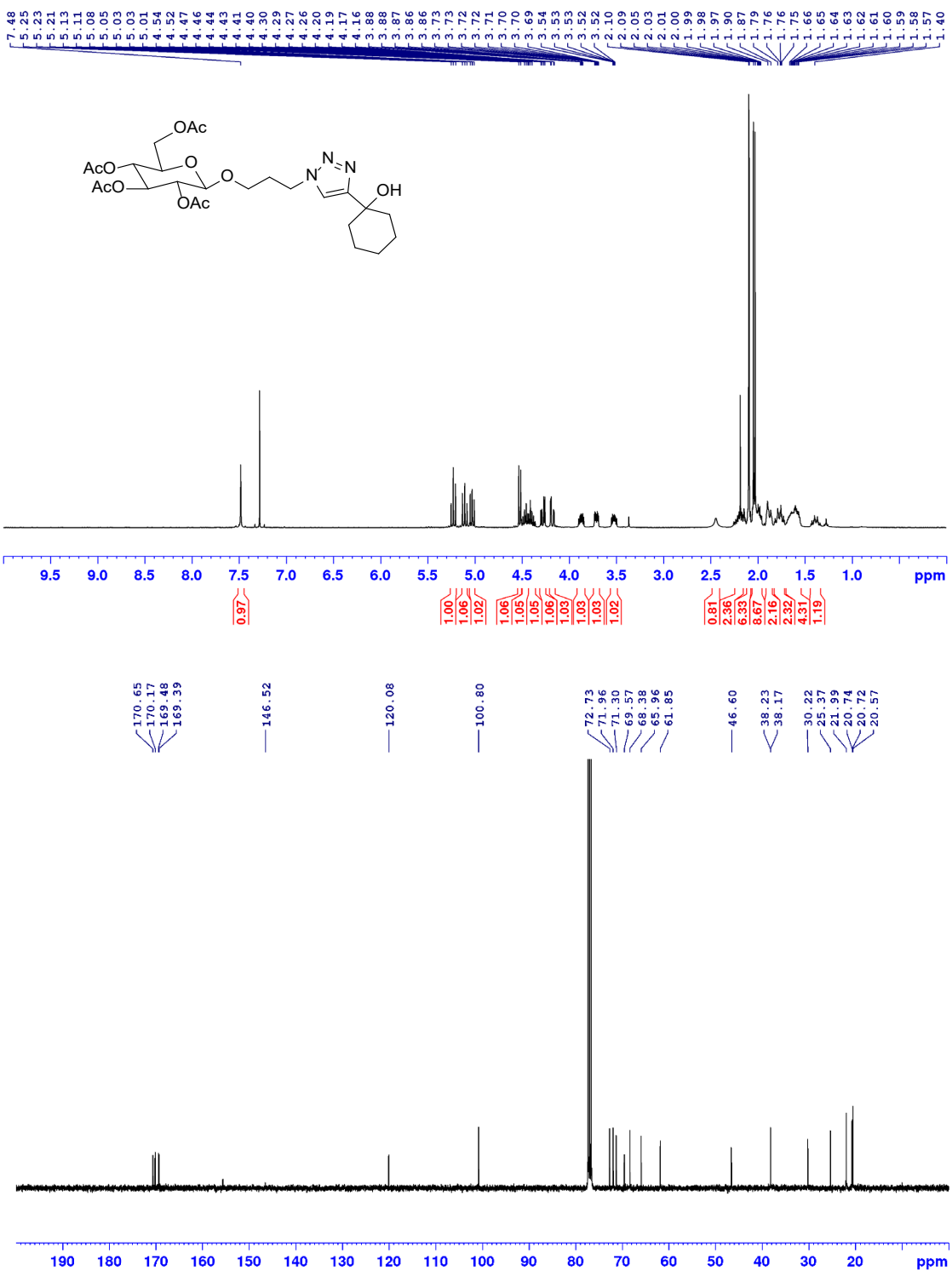
^{1}H NMR and ^{13}C NMR spectra for compound **7d** in $CDCl_3$



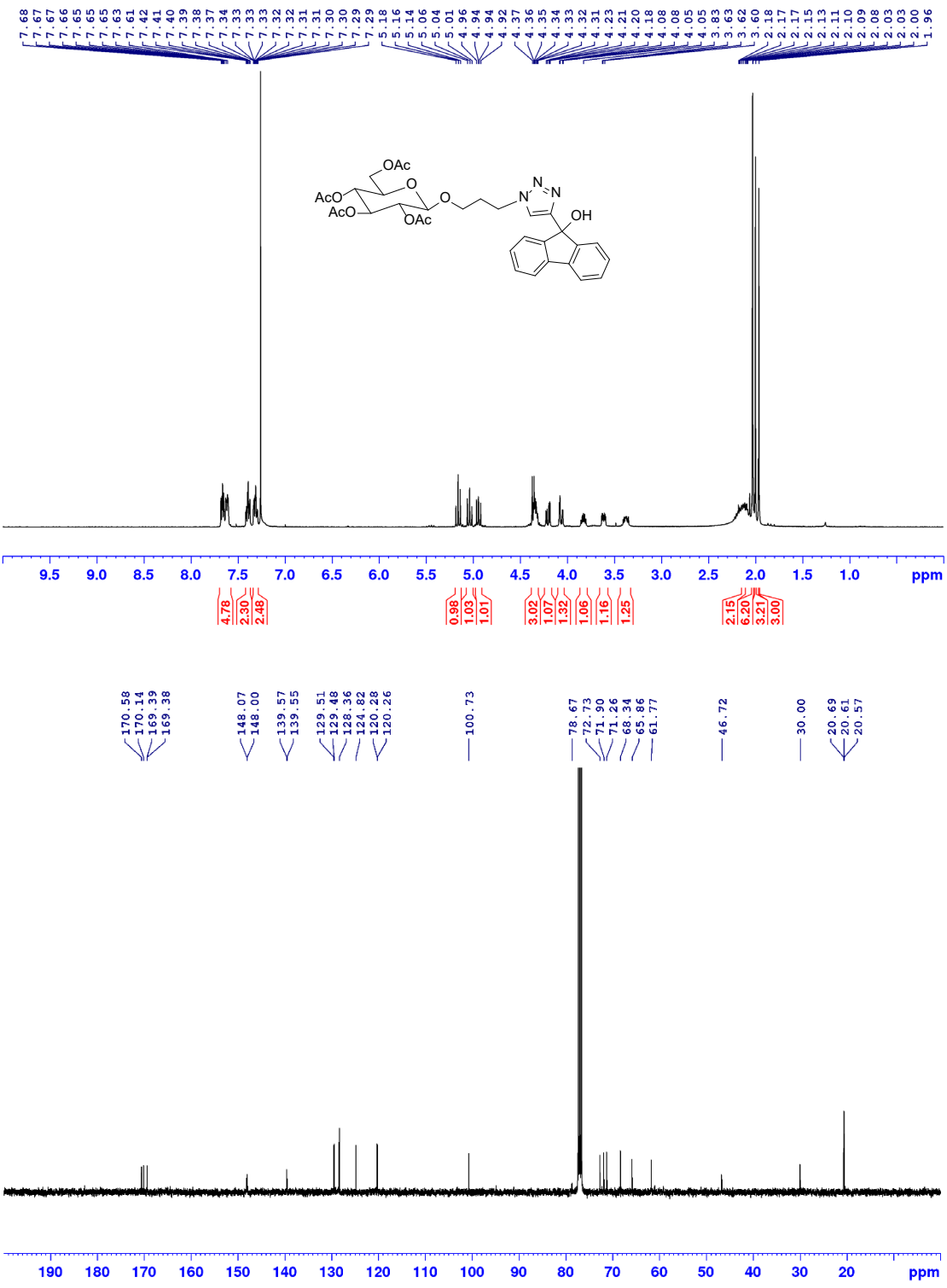
^{1}H NMR and ^{13}C NMR spectra for compound **7e** in $CDCl_3$



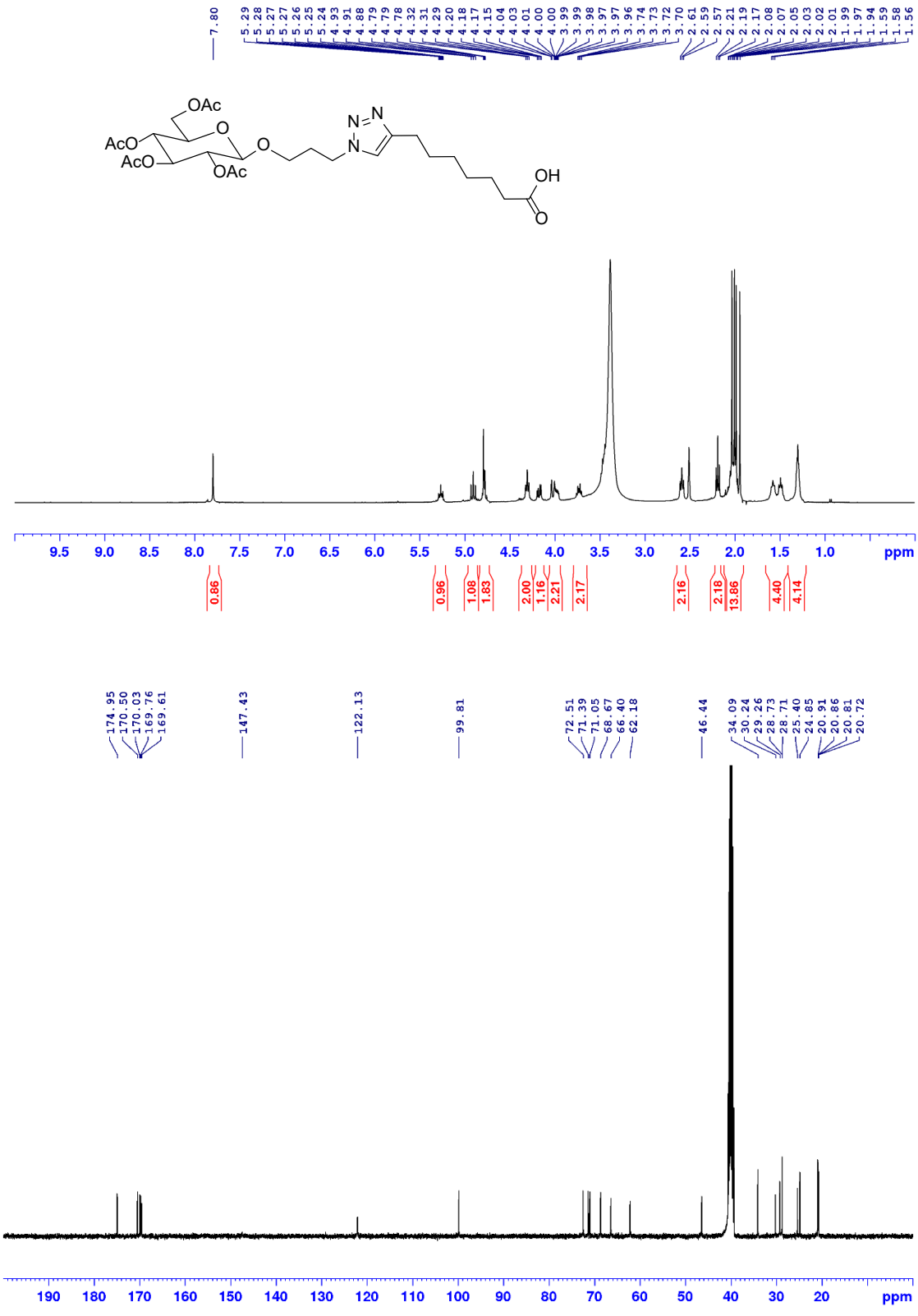
^{1}H NMR and ^{13}C NMR spectra for compound **7f** in $CDCl_3$



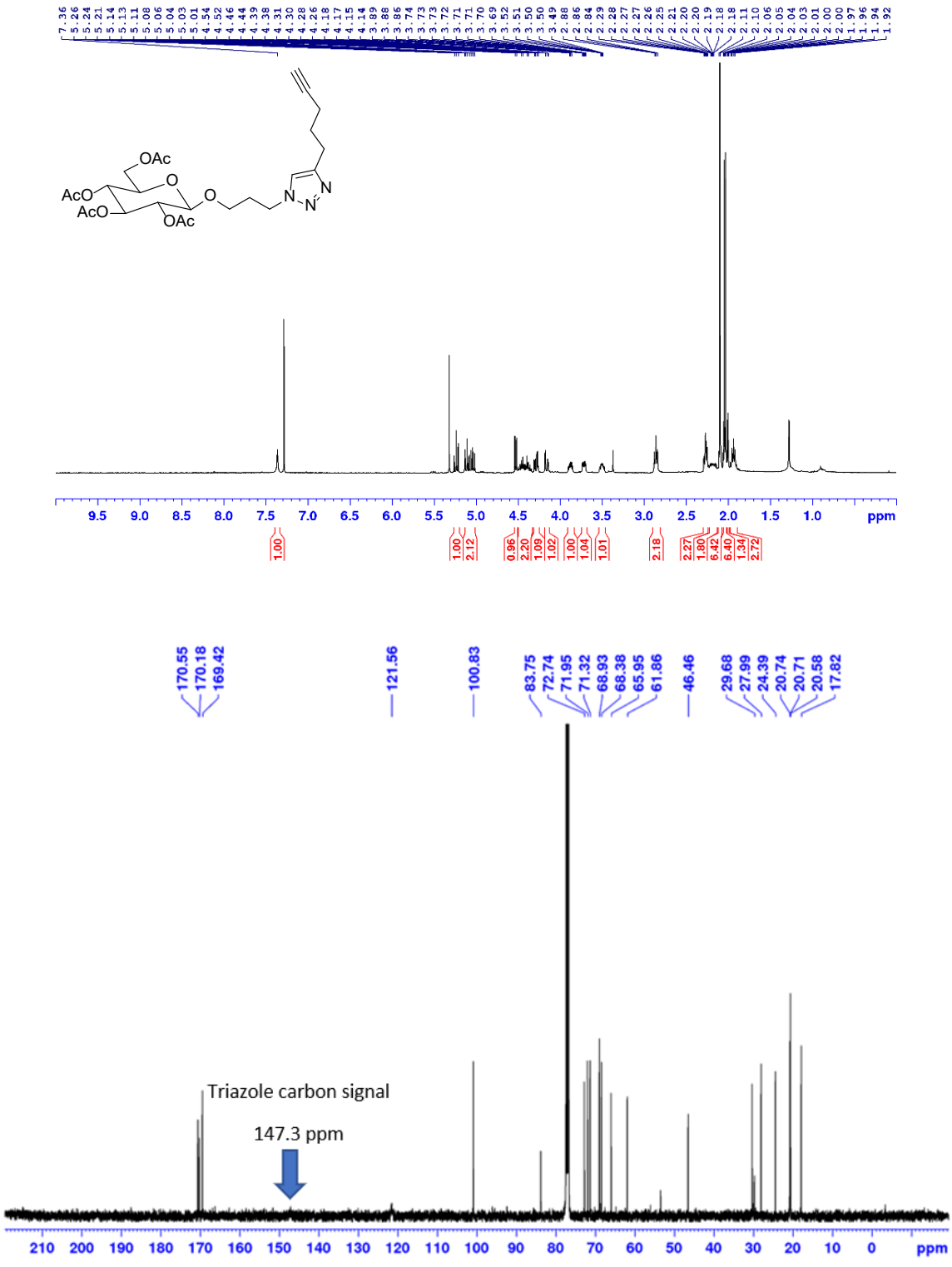
^{1}H NMR and ^{13}C NMR spectra for compound **7h** in $CDCl_3$



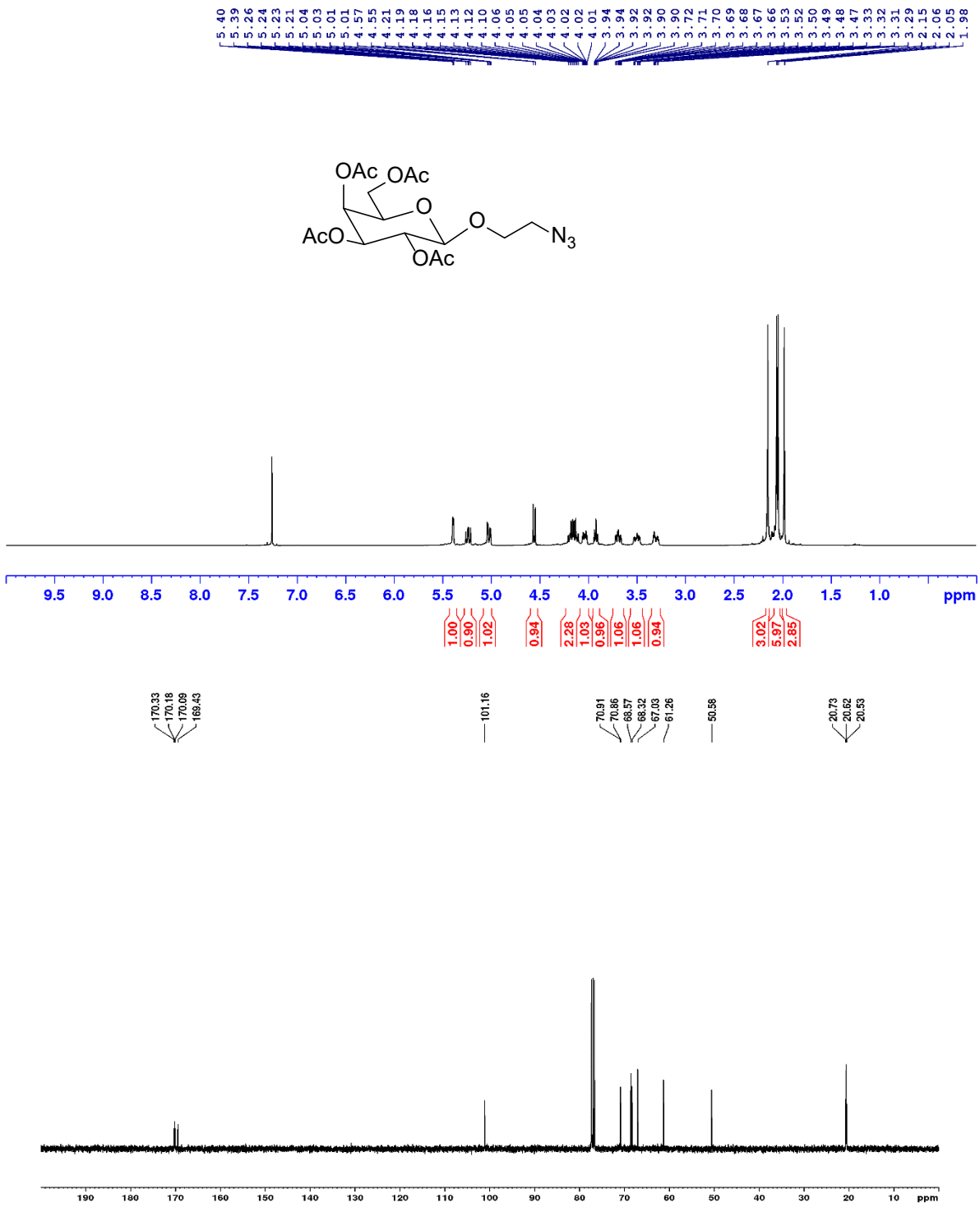
^{1}H NMR and ^{13}C NMR spectra for compound **7i** in $CDCl_3$



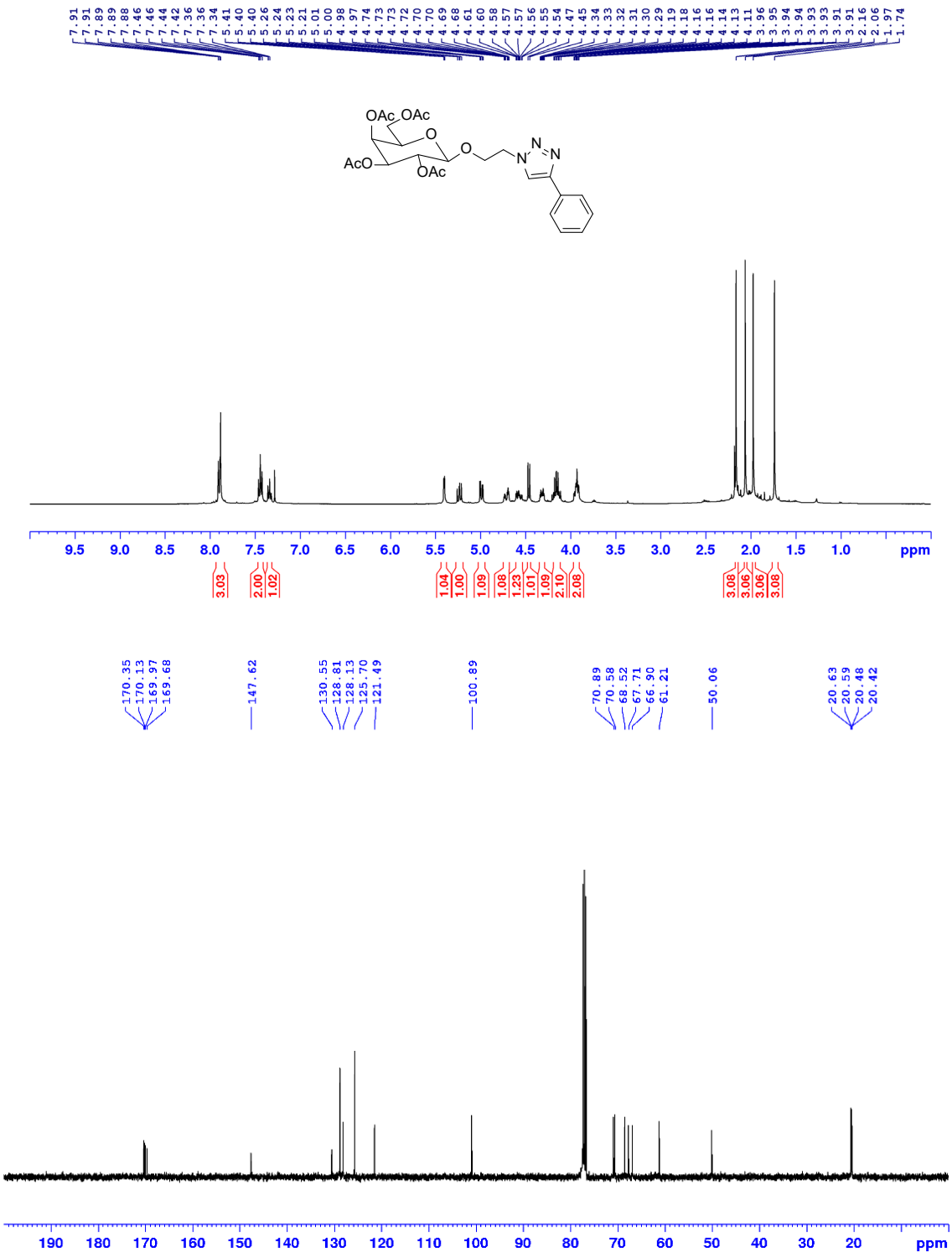
^{1}H NMR and ^{13}C NMR spectra for compound **7j** in DMSO-d_6



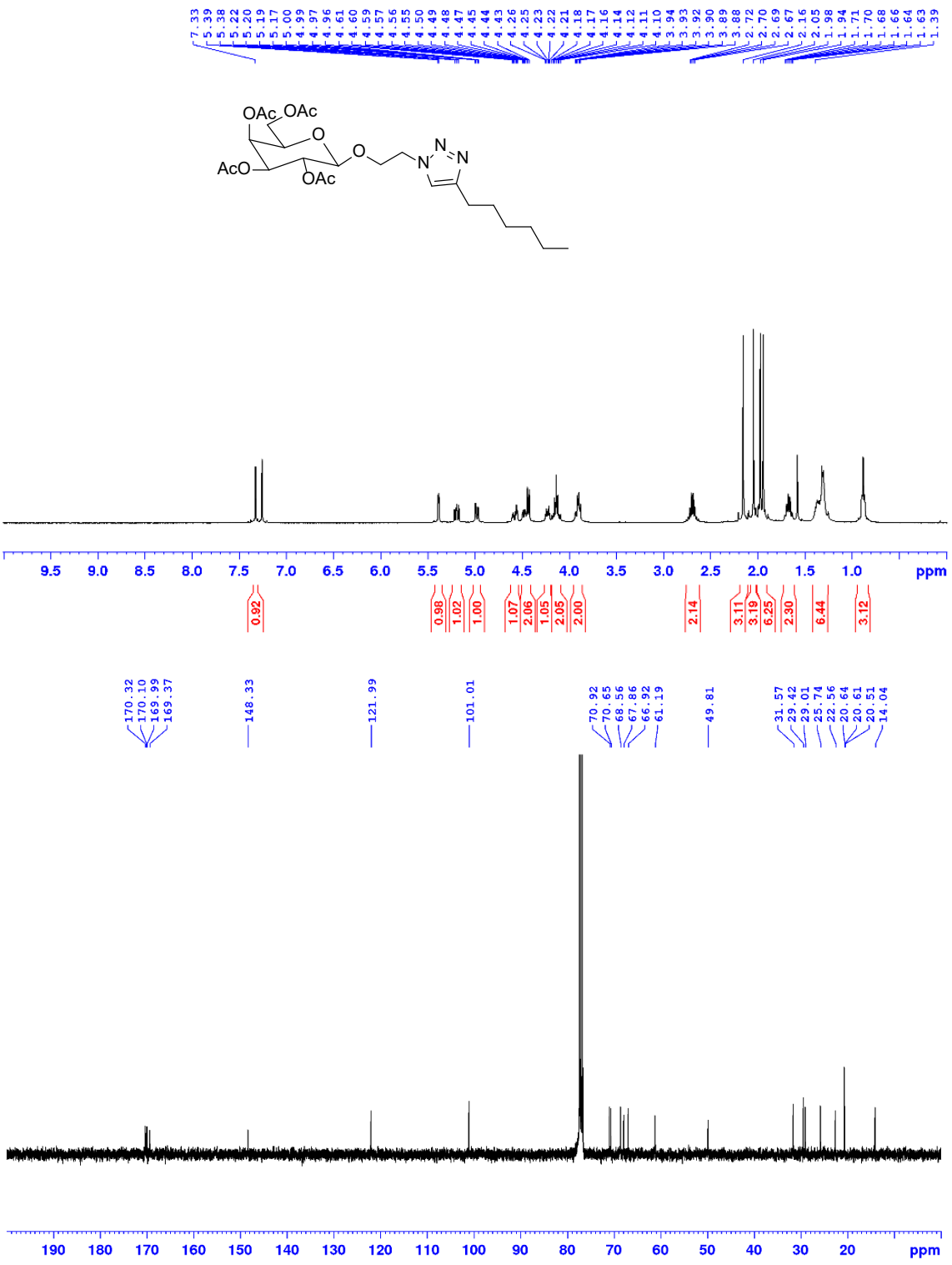
^{1}H NMR and ^{13}C NMR spectra for compound **7k** in $CDCl_3$



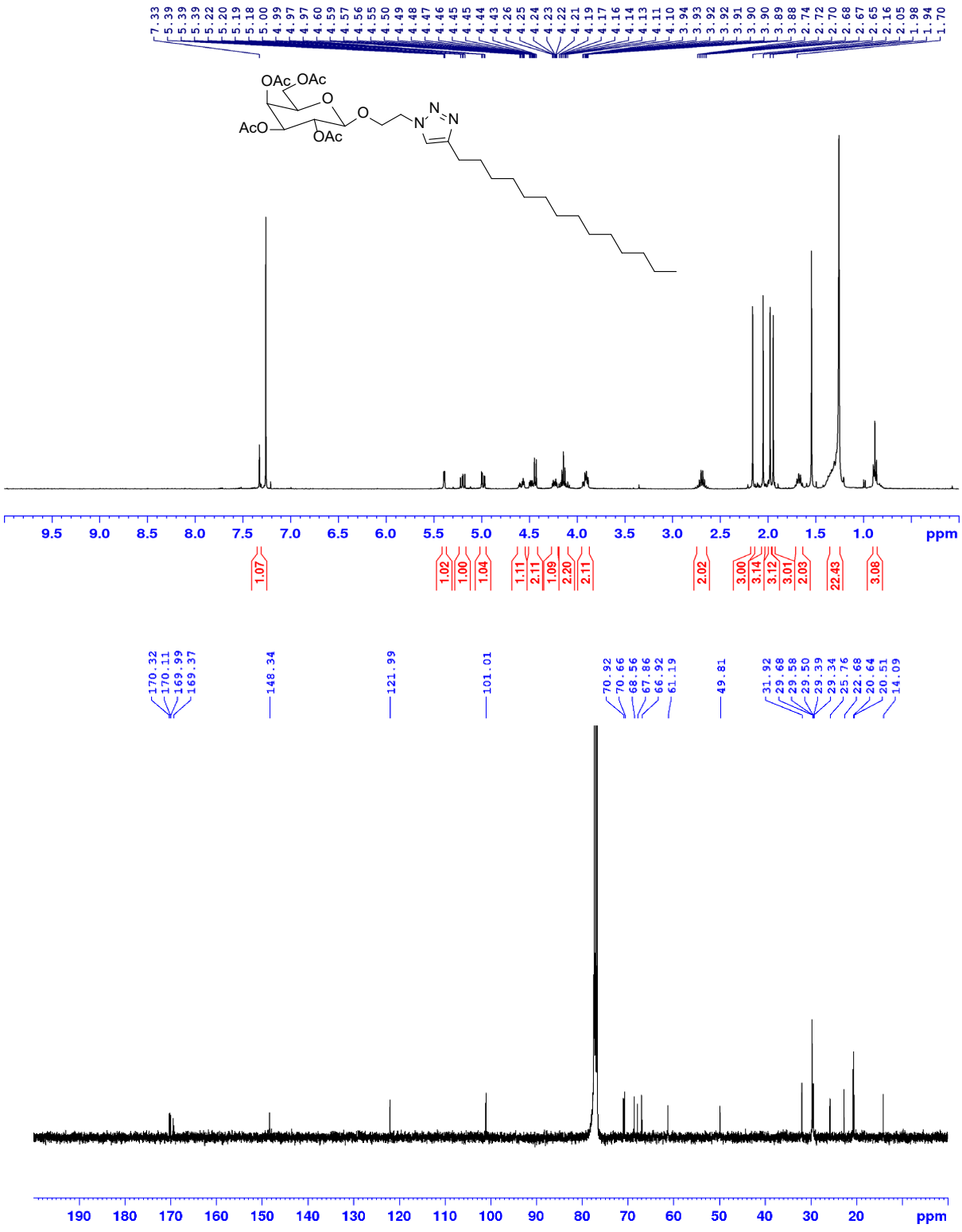
^{1}H NMR and ^{13}C NMR spectra for compound **10** in $CDCl_3$



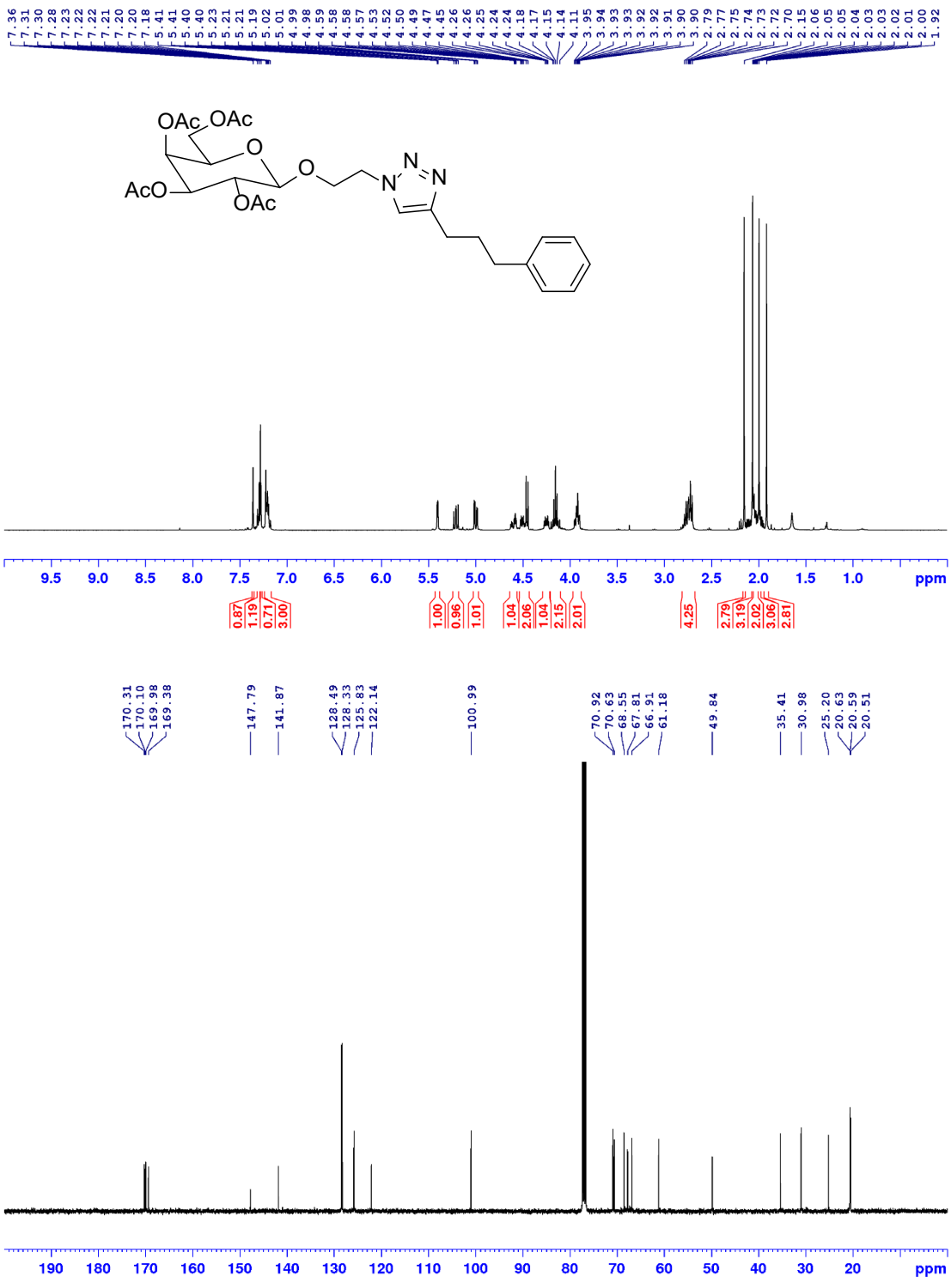
^{1}H NMR and ^{13}C NMR spectra for compound **11a** in $CDCl_3$



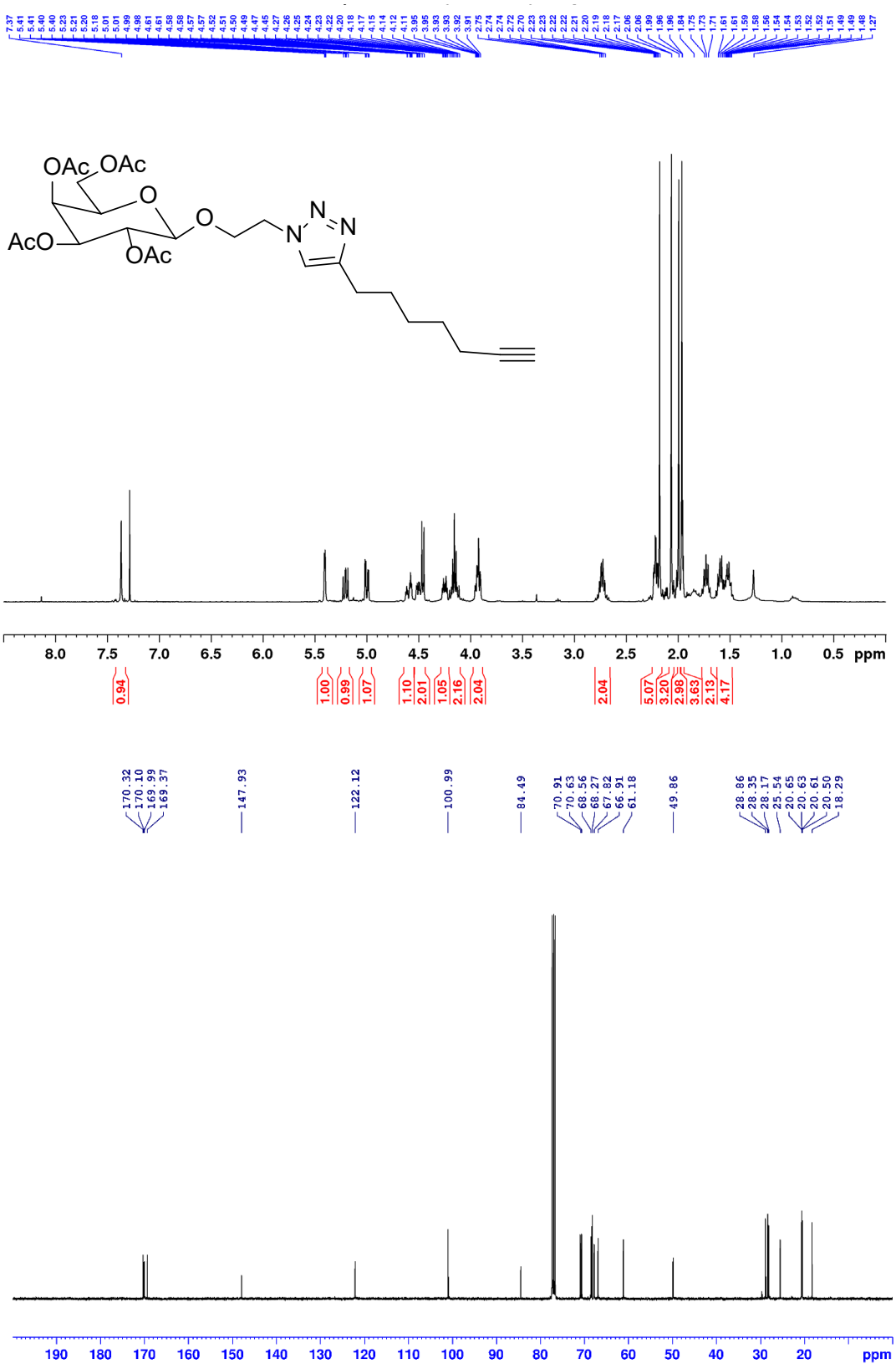
^{1}H NMR and ^{13}C NMR spectra for compound **11b** in $CDCl_3$



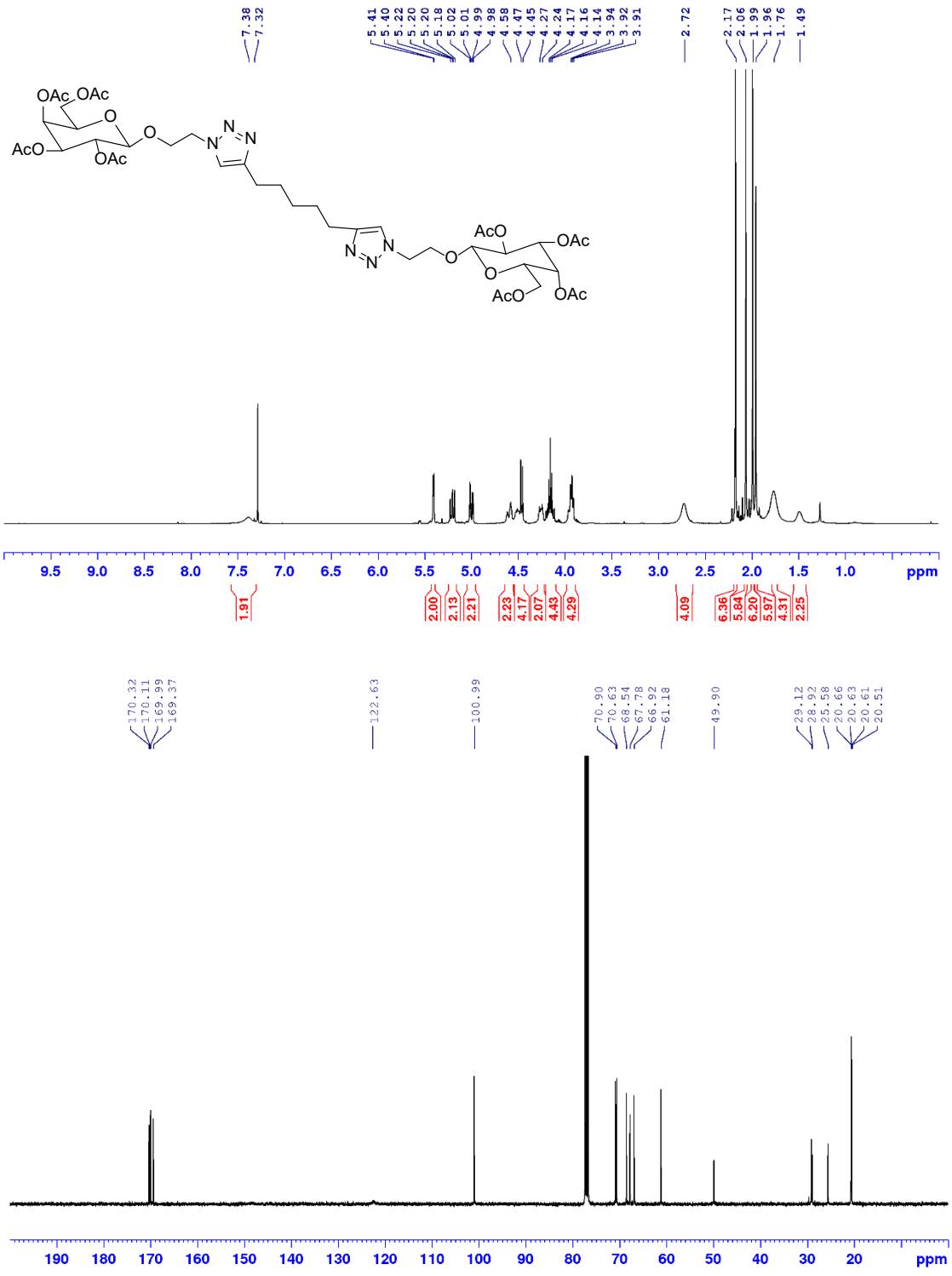
^{1}H NMR and ^{13}C NMR spectra for compound **11d** in $CDCl_3$



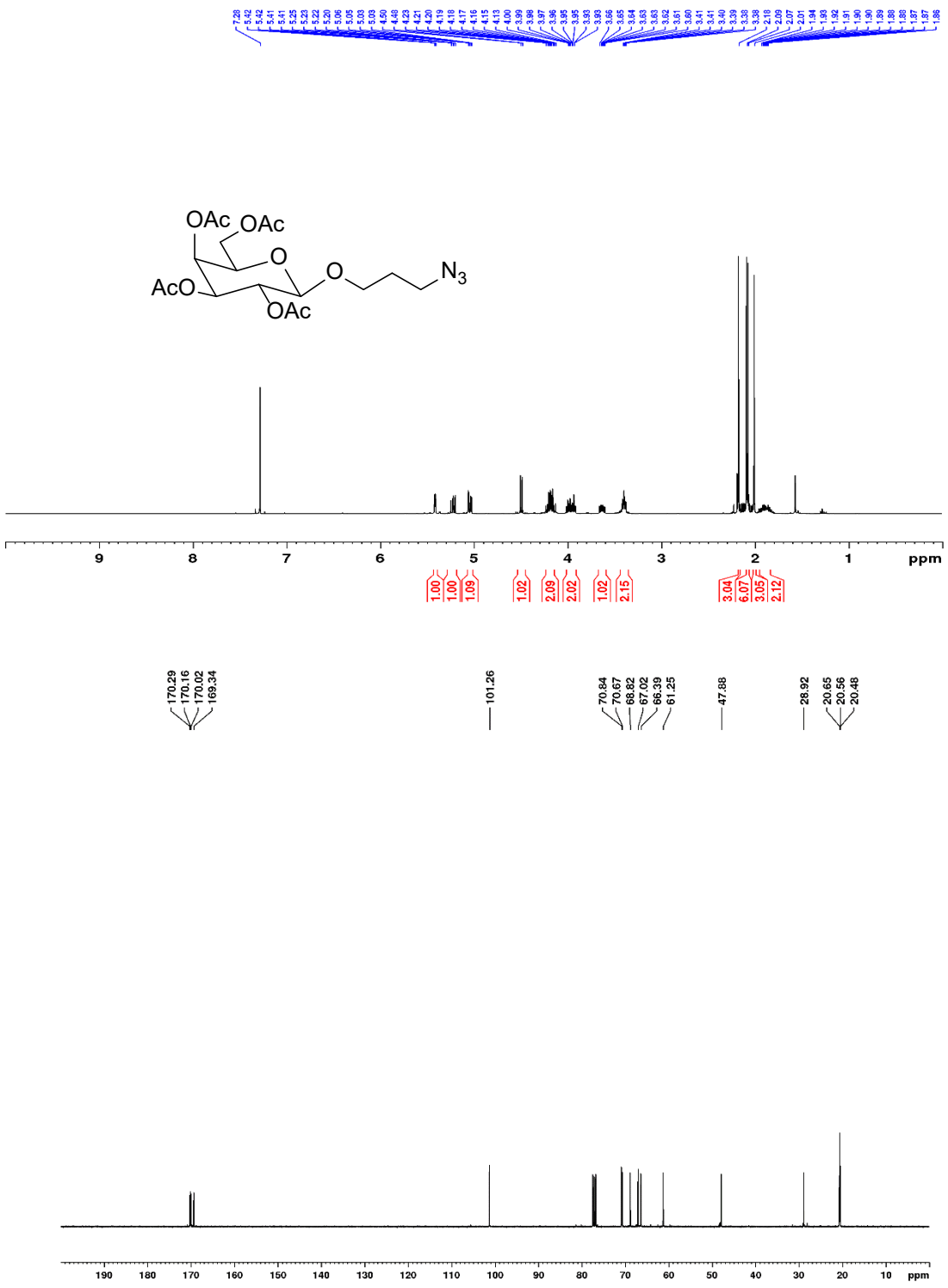
^{1}H NMR and ^{13}C NMR spectra for compound **11e** in $CDCl_3$



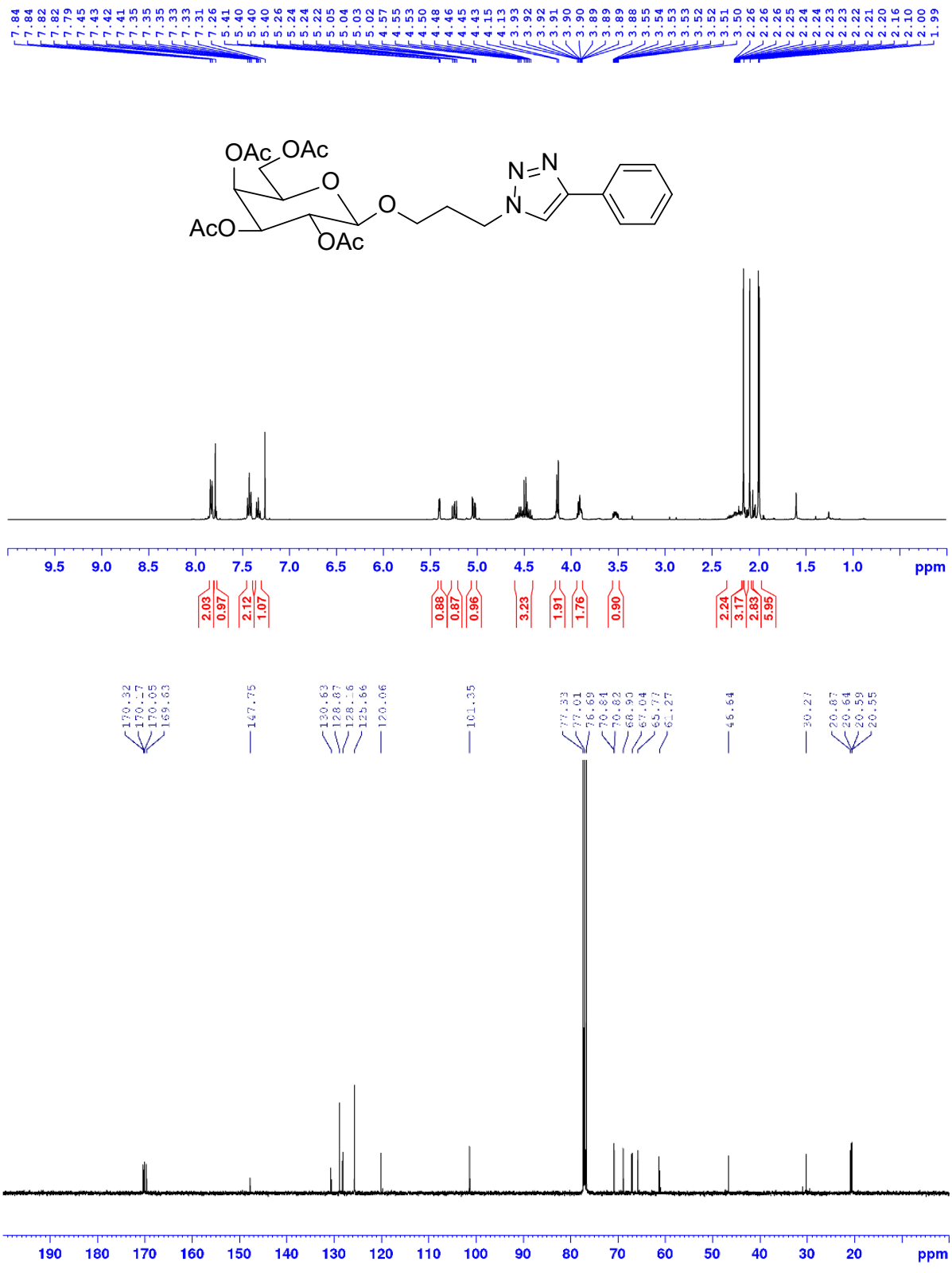
^{1}H NMR and ^{13}C NMR spectra for compound **11i** in $CDCl_3$



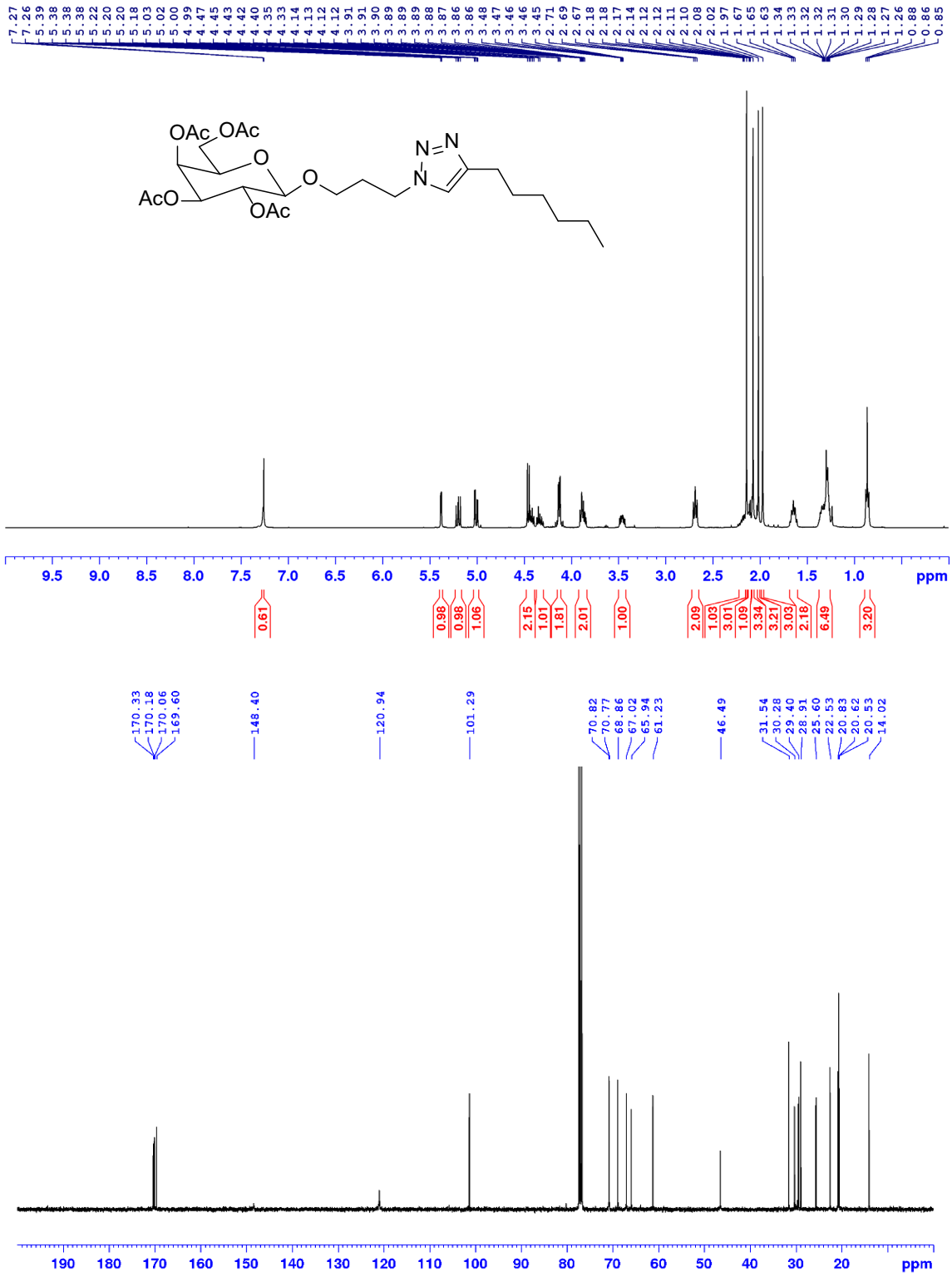
^{1}H NMR and ^{13}C NMR spectra for compound **11j** in $CDCl_3$



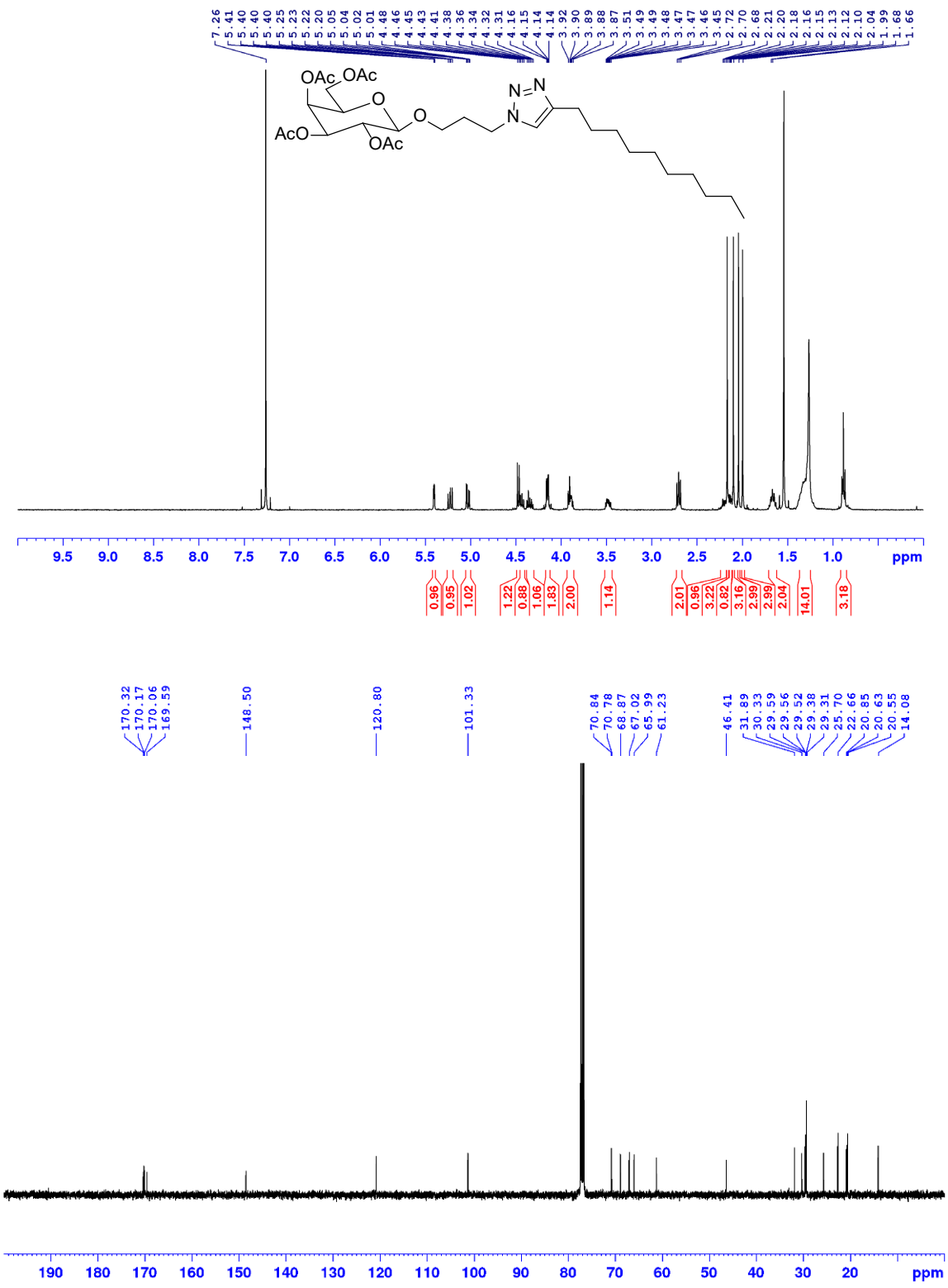
^{1}H NMR and ^{13}C NMR spectra for compound **13** in $CDCl_3$



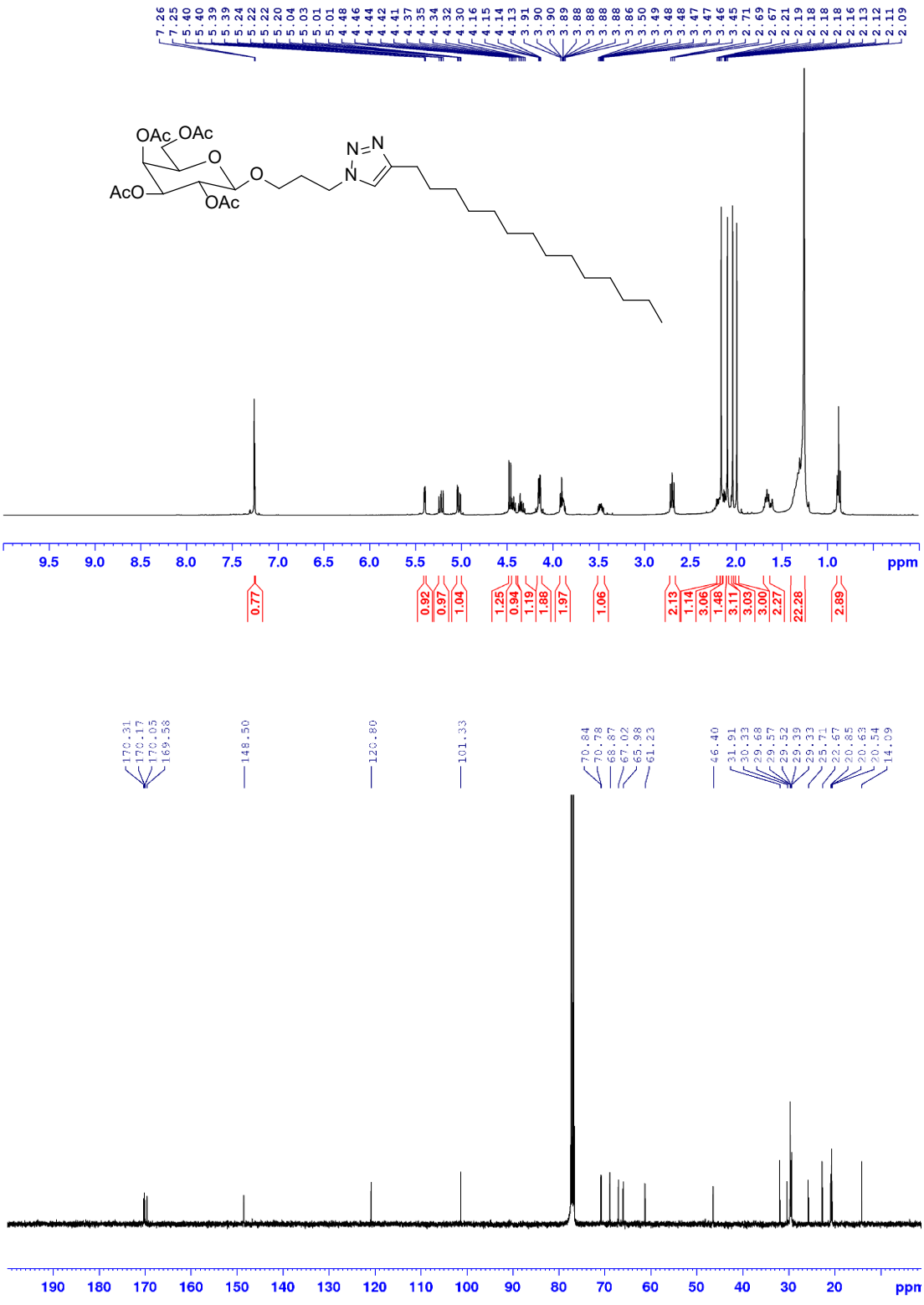
^{1}H NMR and ^{13}C NMR spectra for compound **14a** in $CDCl_3$



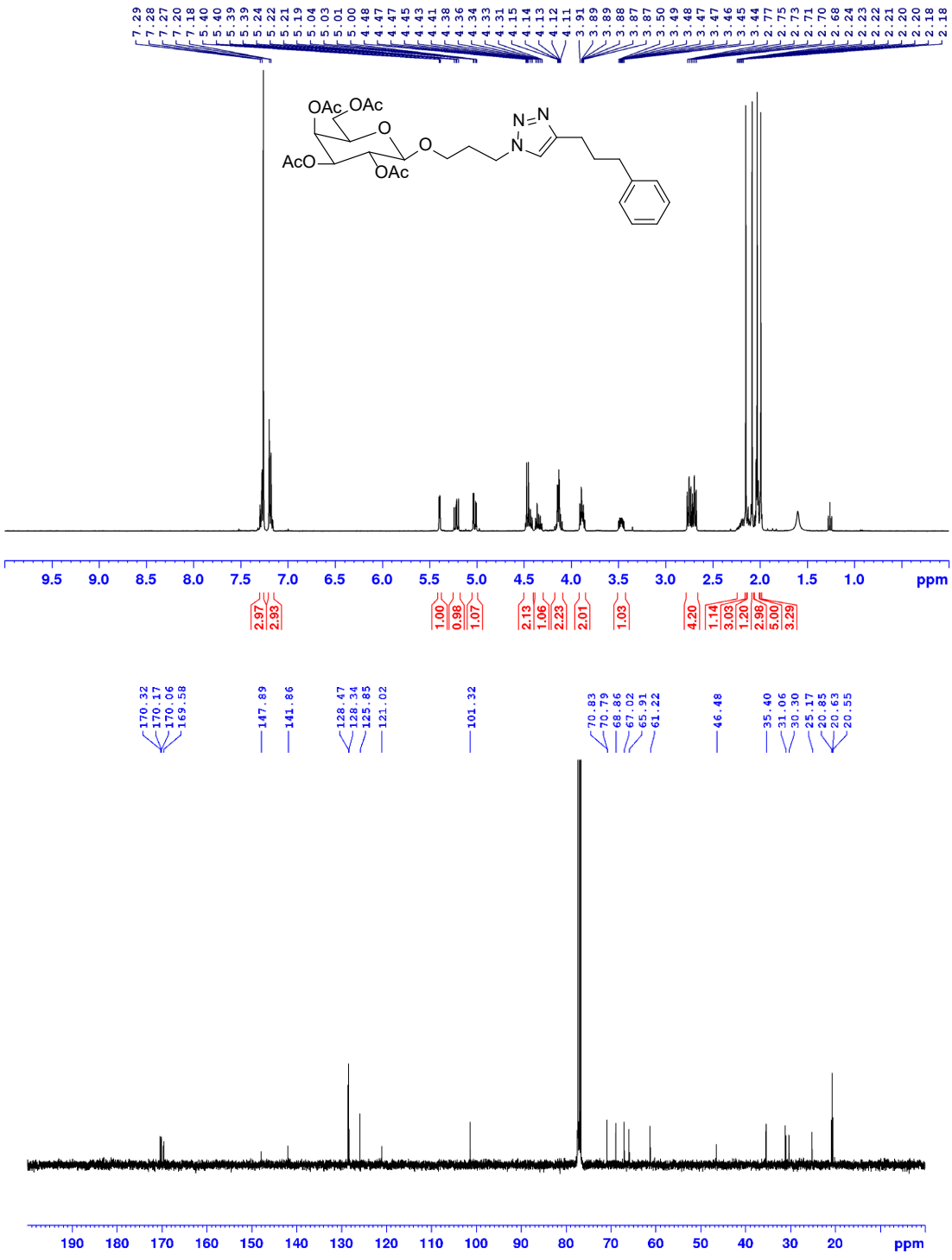
^{1}H NMR and ^{13}C NMR spectra for compound **14b** in $CDCl_3$



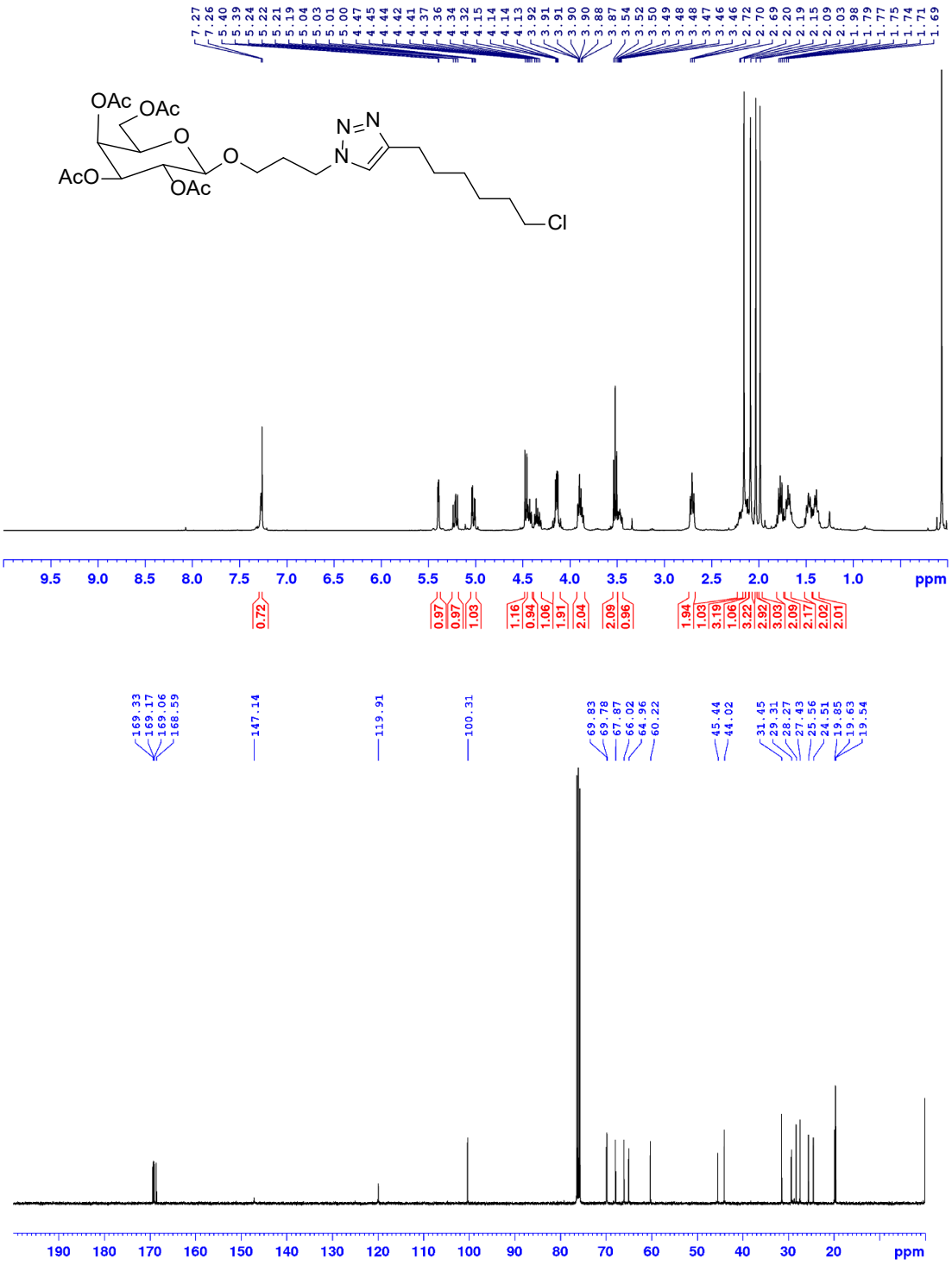
^{1}H NMR and ^{13}C NMR spectra for compound **14c** in $CDCl_3$



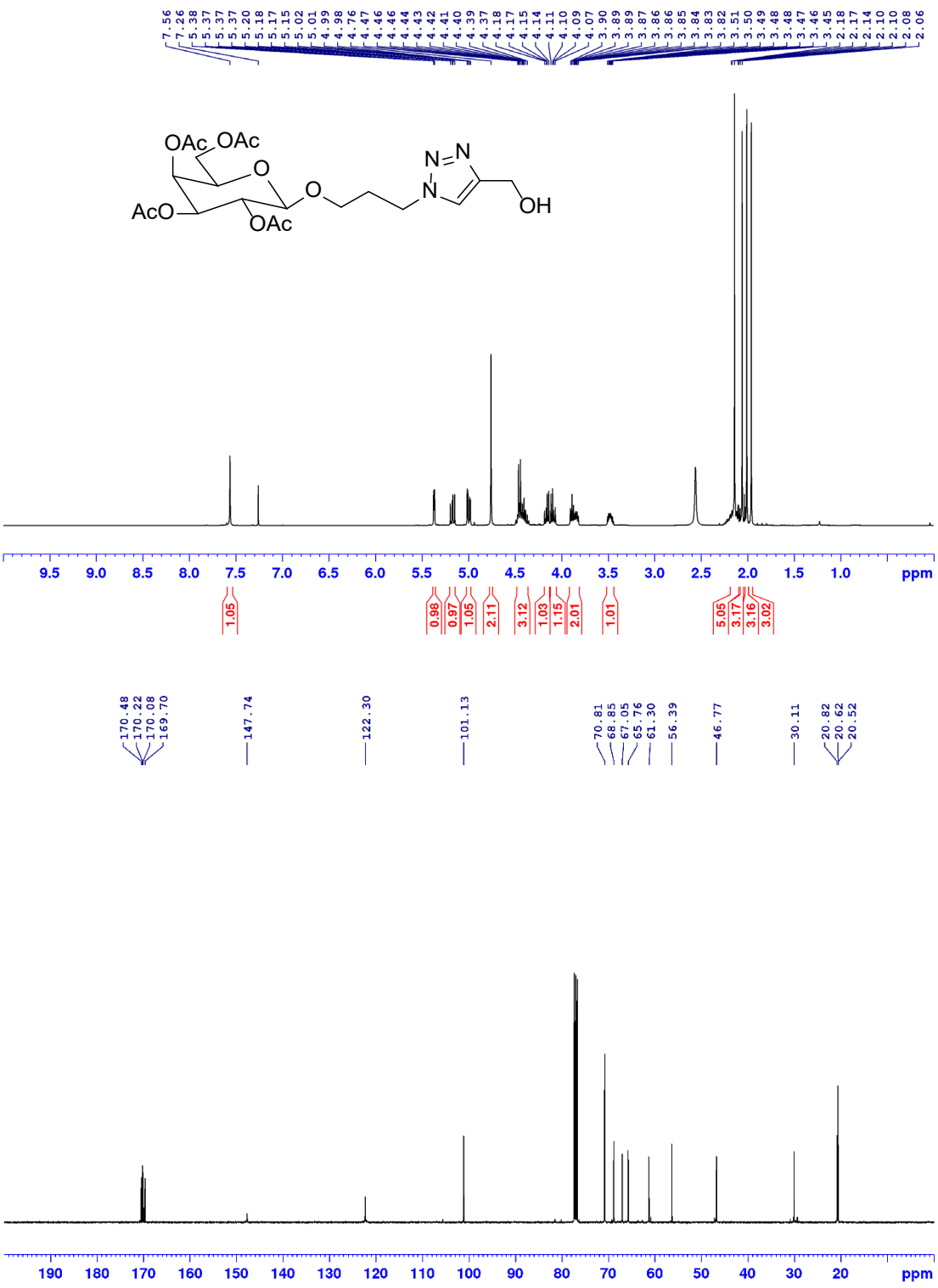
^{1}H NMR and ^{13}C NMR spectra for compound **14d** in $CDCl_3$



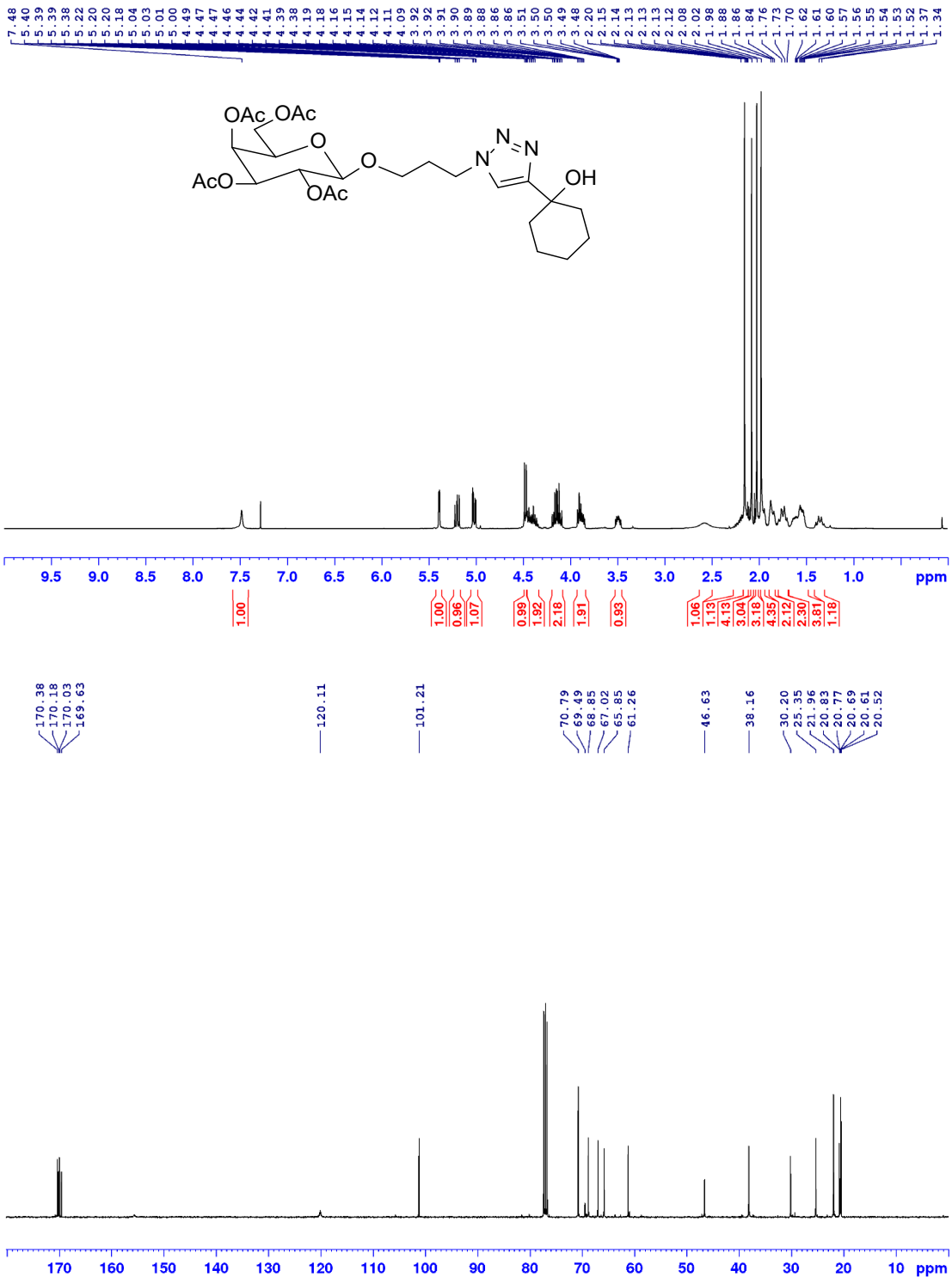
^{1}H NMR and ^{13}C NMR spectra for compound **14e** in $CDCl_3$



^{1}H NMR and ^{13}C NMR spectra for compound **14f** in $CDCl_3$

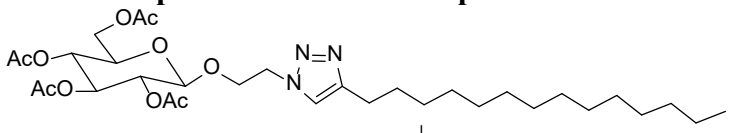


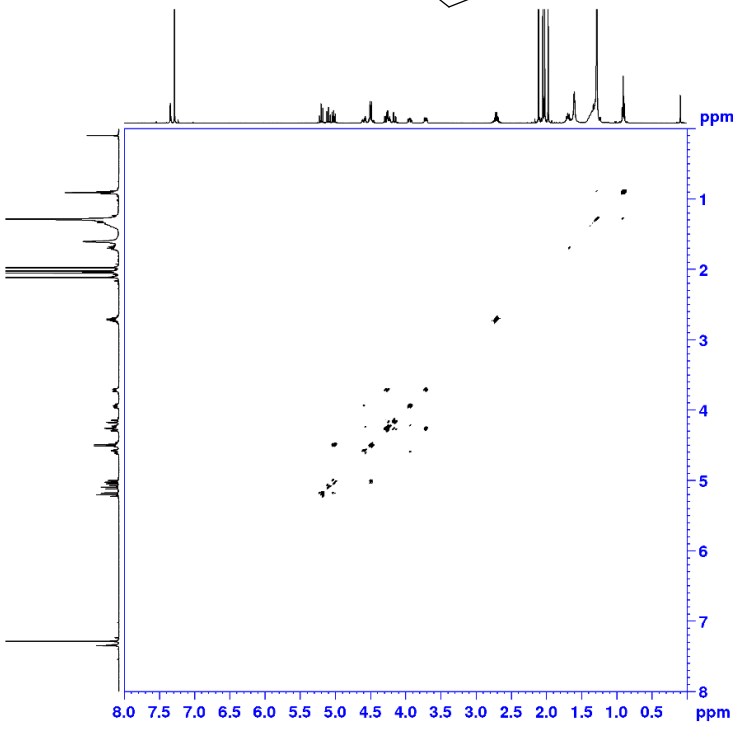
^{1}H NMR and ^{13}C NMR spectra for compound **14g** in $CDCl_3$

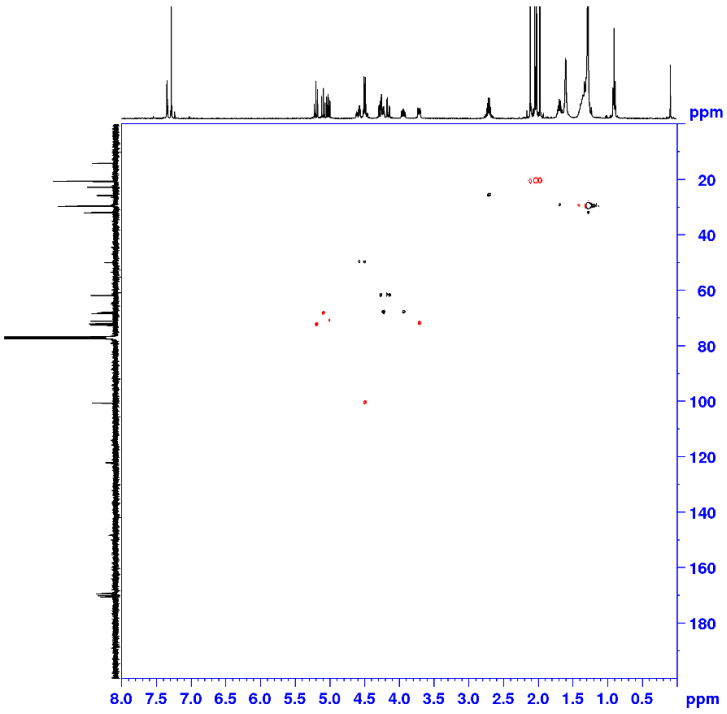


^{1}H NMR and ^{13}C NMR spectra for compound **14h** in $CDCl_3$

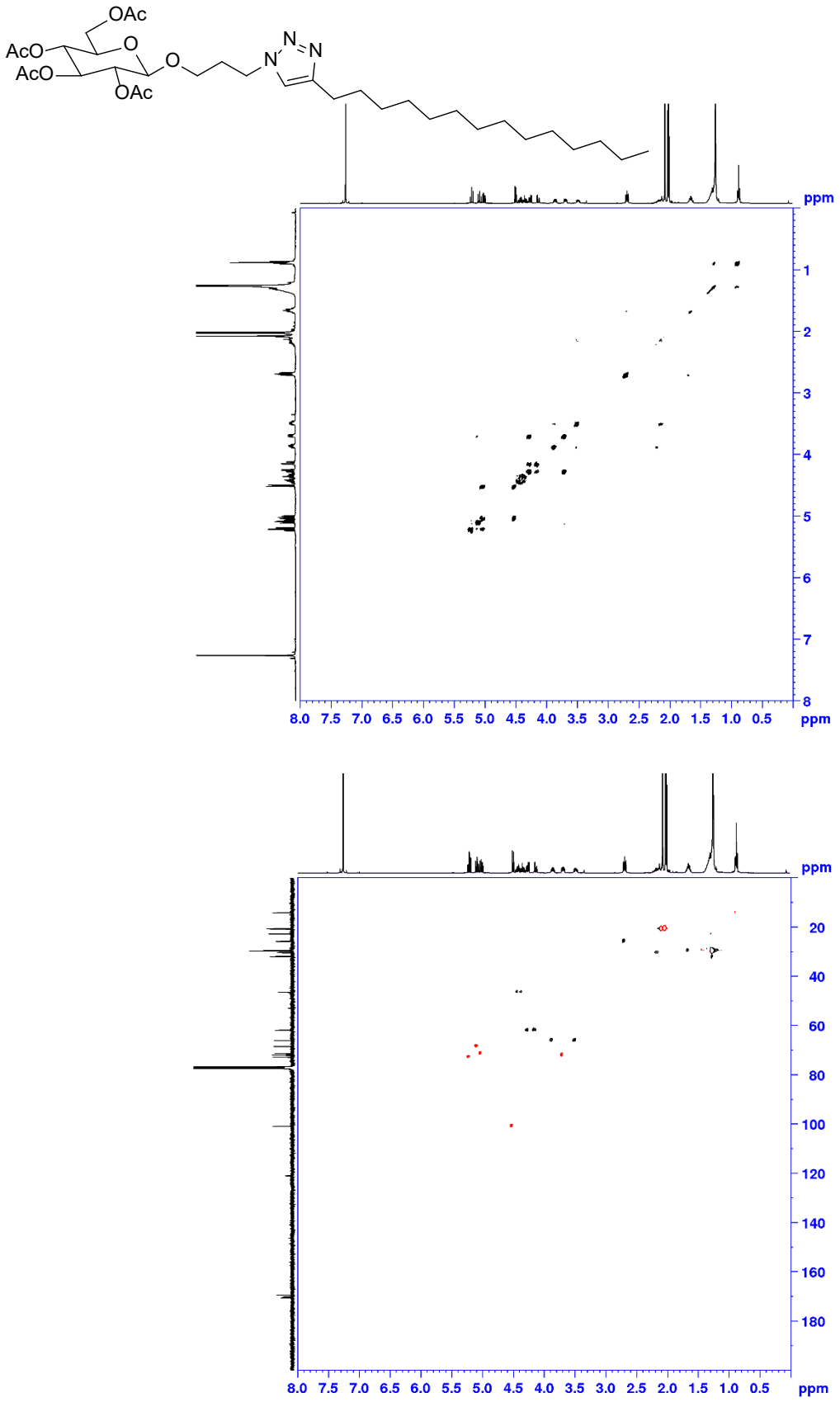
2-D NMR spectra of selected compounds



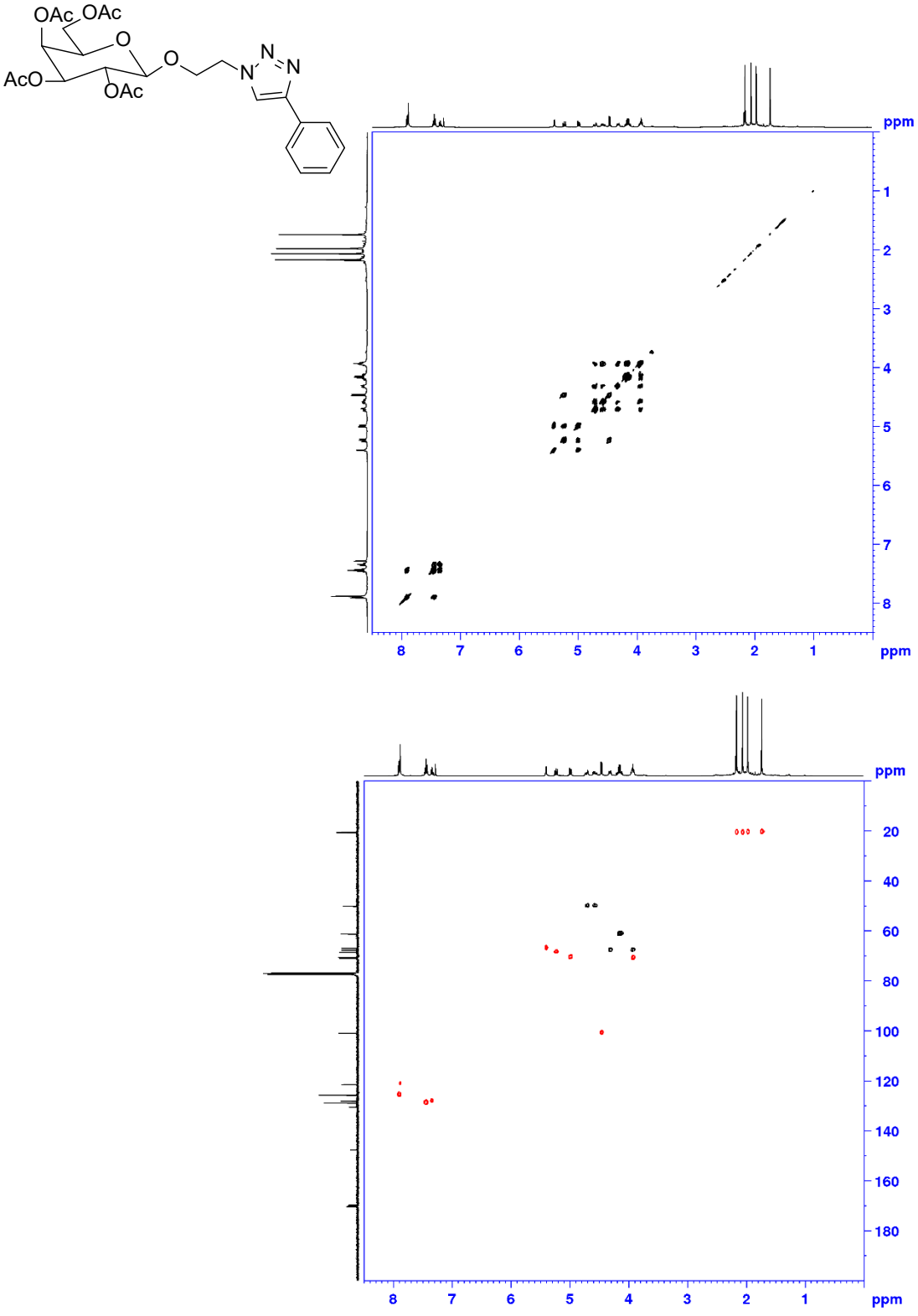




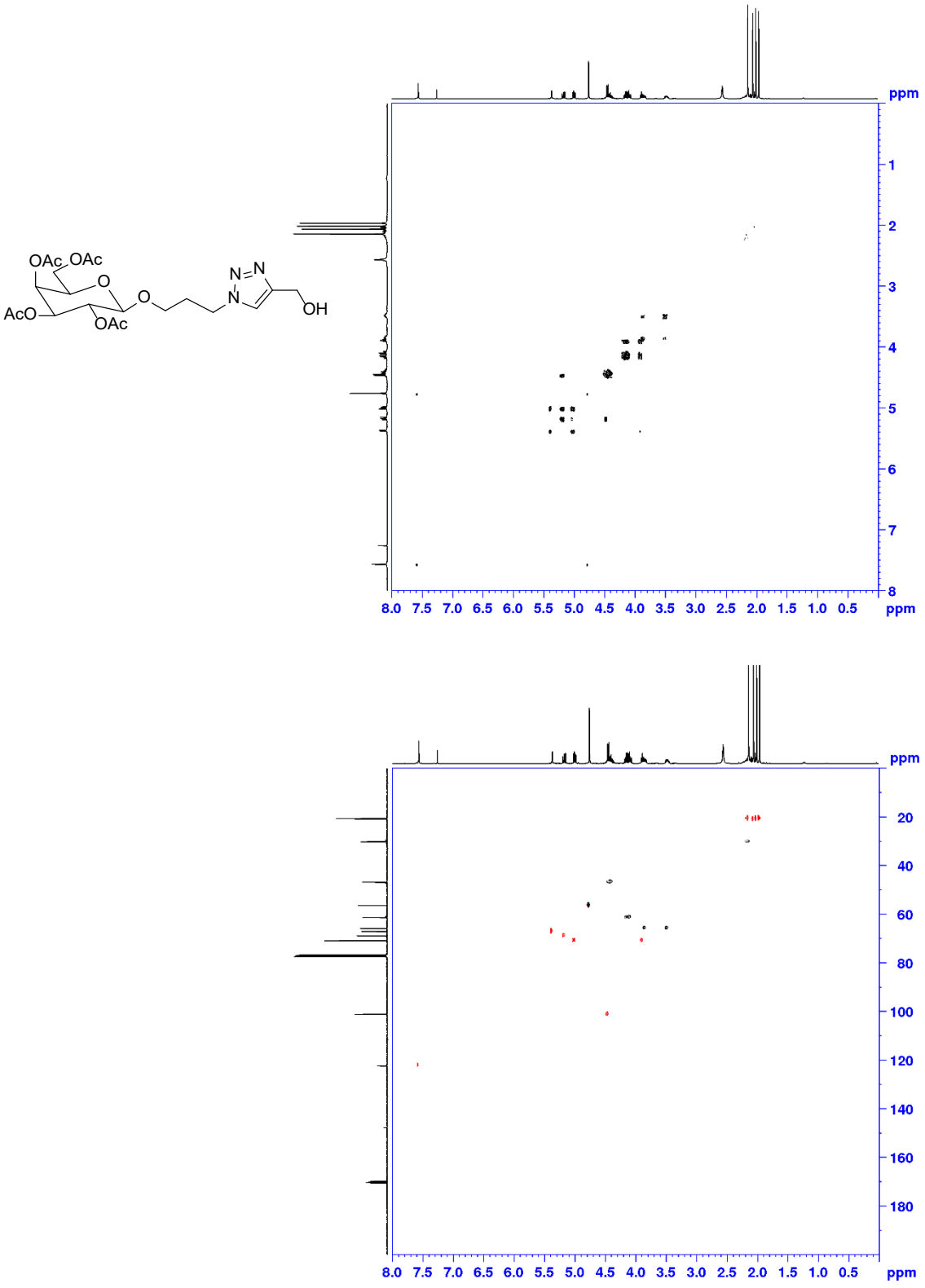
COSY and HSQC NMR spectra for compound **4d** in $CDCl_3$



COSY and HSQC NMR spectra for compound **7d** in $CDCl_3$



COSY and HSQC NMR spectra for compound **11a** in $CDCl_3$



COSY and HSQC NMR spectra for compound **14g** in $CDCl_3$

Part II Further characterizations and application studies for the gelators

1. Additional gelation test results

Table S1. Gelation properties for two and three carbon spacer glucoside series

Cpd.	*i*-PrOH	EtOH:H_2O (1:1)	EtOH:H_2O (1:2)	DMSO:H_2O (1:1)	DMSO:H_2O (1:2)	Glycerol	Ethylene Glycol	H_2O
4e	S	P	P	S	S	S	S	P
4i	S	S	I	S	I	S	S	I
7e	S	S	S	S	S	S	S	S
7f	S	S	S	S	S	S	S	S
7h	S	S	S	S	S	S	S	S
7i	S	S	S	S	S	S	S	I
7j	S	S	S	S	S	S	S	S
7k	S	S	S	S	S	S	S	S

Table S2. Gelation properties for two and three carbon spacer galactoside series

Cpd.	*i*-PrOH	EtOH:H_2O (1:1)	EtOH:H_2O (1:2)	DMSO:H_2O (1:1)	DMSO:H_2O (1:2)	Glycerol	Ethylene Glycol	H_2O
11a	S	S	I	S	I	S	S	I
11b	S	S	P	P	P	S	S	I
11d	S	P	I	P	I	S	P	I
11e	S	P	S	P	P	S	S	P
11i	S	S	I	P	I	S	S	I
11j	S	S	S	S	S	S	S	S
14a	S	S	P	P	P	P	S	P
14b	S	S	S	S	S	S	S	S
14c	S	S	S	G* 20.0_O	I	S	S	S
14d	S	P	P	P	P	S	G 6.6_O	S
14e	S	S	S	S	I	G* 20.0_O	S	S
14f	S	S	S	S	I	S	S	I
14g	S	S	S	S	S	S	S	S
14h	S	S	S	S	S	S	S	S

Gelation test in DMSO and water mixtures at different ratios

In one dram vial, 2.0 mg of the gelator was dissolved in 0.1 mL DMSO by heating. DI water was added to the mixture in 0.1 mL increments. After each addition, the mixture was analyzed for instant gelation. If it was not observed, the mixture was heated and allowed to cool. This process was repeated until the mixture no longer forms a gel. The study was performed for compounds **7a** and **7c**. MGC for compound **7a** in DMSO:H_2O (1:5) was 3.3 mg/mL and 6.7 mg/mL for **7c** in DMSO:H_2O (1:3) .

Table S3. Gelation properties for compound **7a**

Volume of water	**Total volume with DMSO**	**Concentration**
0.1 mL	0.2 mL	Gel 10.0 mg/mL
0.2 mL	0.3 mL	Gel 6.7 mg/mL
0.3 mL	0.4 mL	Gel 5.0 mg/mL
0.4 mL	0.5 mL	Gel 4.0 mg/mL
0.5 mL	0.6 mL	Gel 3.3 mg/mL
0.6 mL	0.7 mL	Unstable gel

Table S4. Gelation properties for compound **7c**

Volume of water	**Total volume with DMSO**	**Concentration**
0.1 mL	0.2 mL	Gel 10.0 mg/mL
0.2 mL	0.3 mL	Gel 6.7 mg/mL
0.3 mL	0.4 mL	Unstable gel

Amounts of metal salts used for metallogel formation

The amount of the metal salts used are listed in the following table.

Table S5. Table for the amounts of metal salts used

Metal salt	Amount for 1.0 eq. metal salt 0.0056 mmol	Amount for 1.5 eq. metal salt 0.0084 mmol
Mercury (II) acetate	1.8 mg	2.7 mg
Zinc (II) acetate dihydrate	1.2 mg	1.8 mg
Nickel (II) acetate tetrahydrate	1.4 mg	1.9 mg
Lead (IV) acetate	1.8 mg	2.7 mg
Copper (II) acetate monohydrate	1.1 mg	1.7 mg
$Cu(SO_4).5H_2O$	1.4 mg	2.1 mg
$CuCl_2$	0.8 mg	1.2 mg

2. Rheology Properties

The rheological measurement of the gels formed by various compounds obtained between 0.1 and 100% strain.

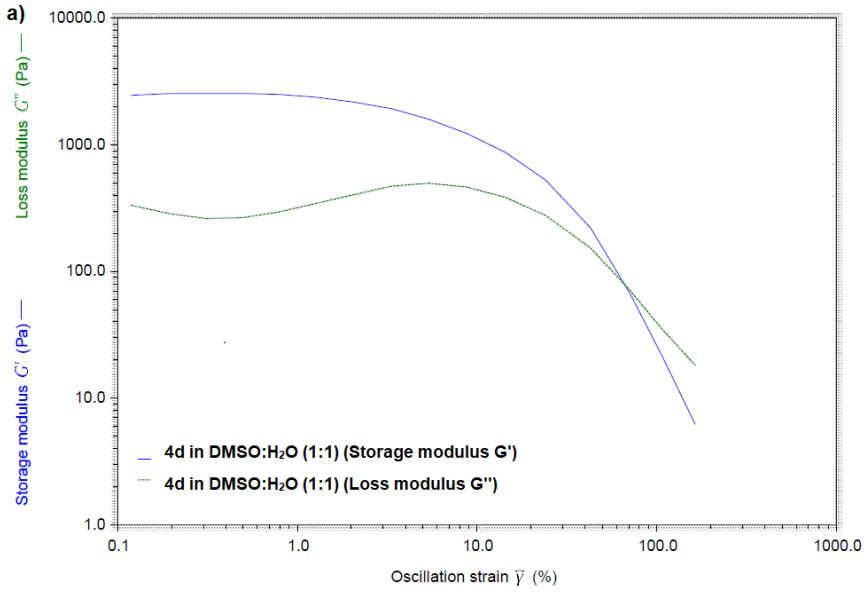


Figure S1a. Amplitude sweep of compound **4d** (DMSO:H_2O (1:1) at 10.0 mg/mL).

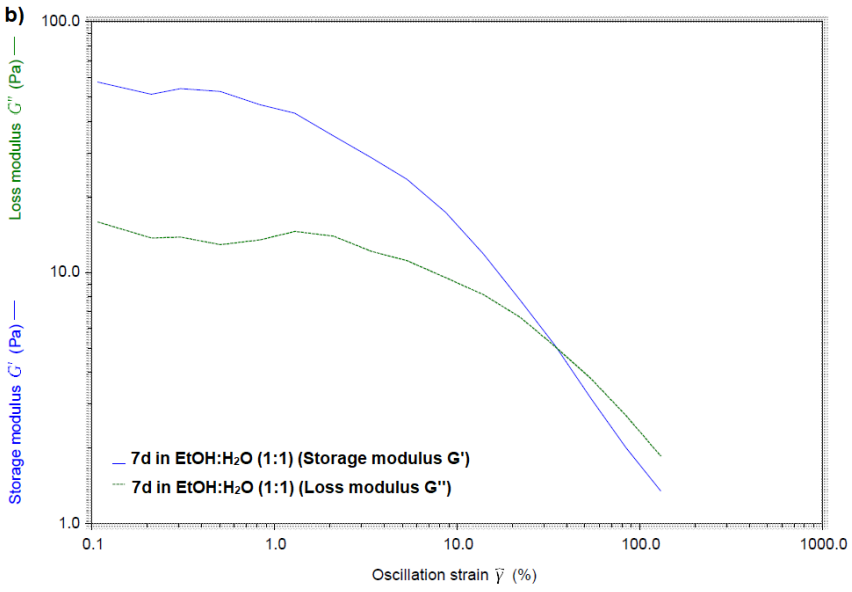


Figure S1b. Amplitude sweep of compound **7d** (EtOH:H_2O (1:1) at 3.3 mg/mL).

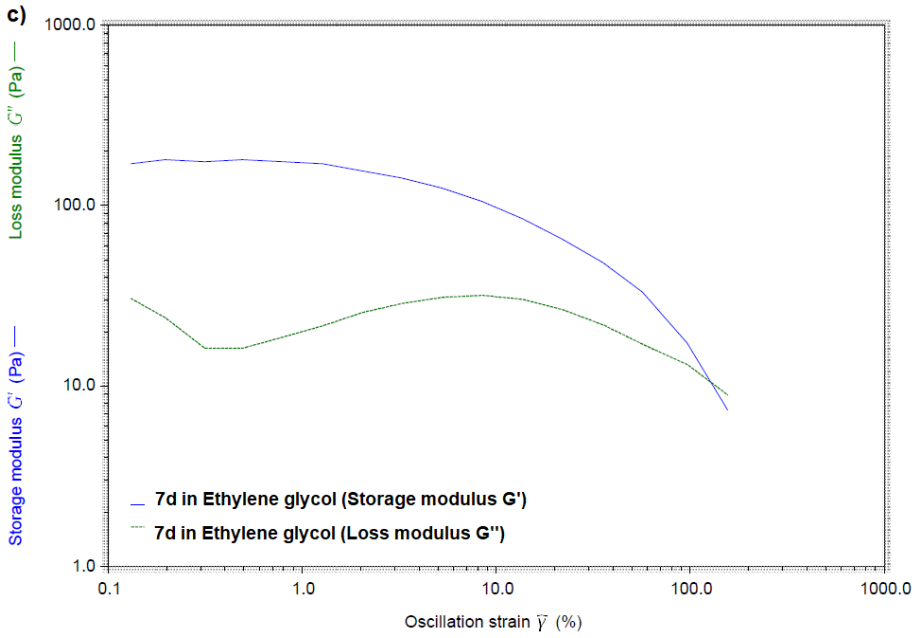


Figure S1c. Amplitude sweep of compound **7d** (Ethylene glycol at 10.0 mg/mL).

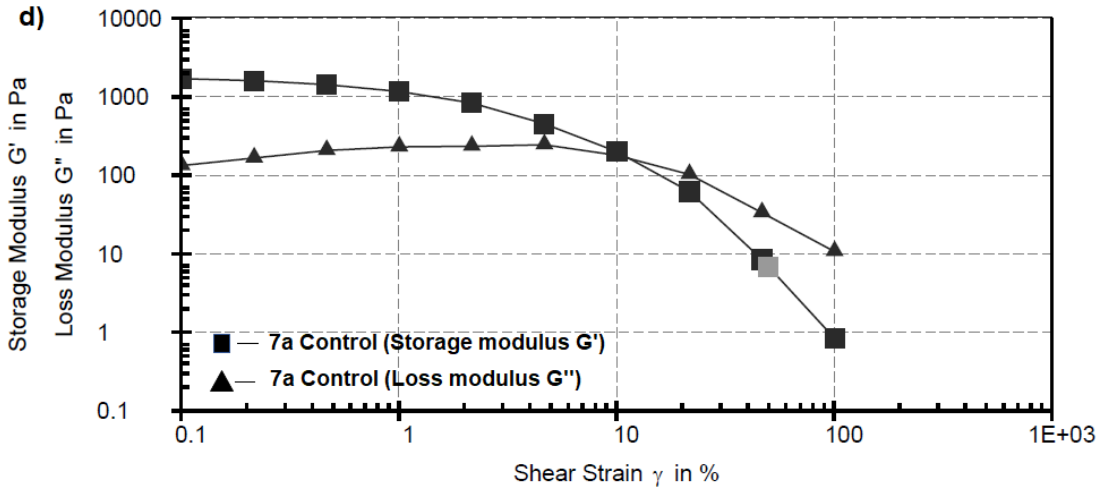


Figure S1d. Amplitude sweep of compound **7a** (DMSO:H_2O (1:5) at 6.0 mg/mL).

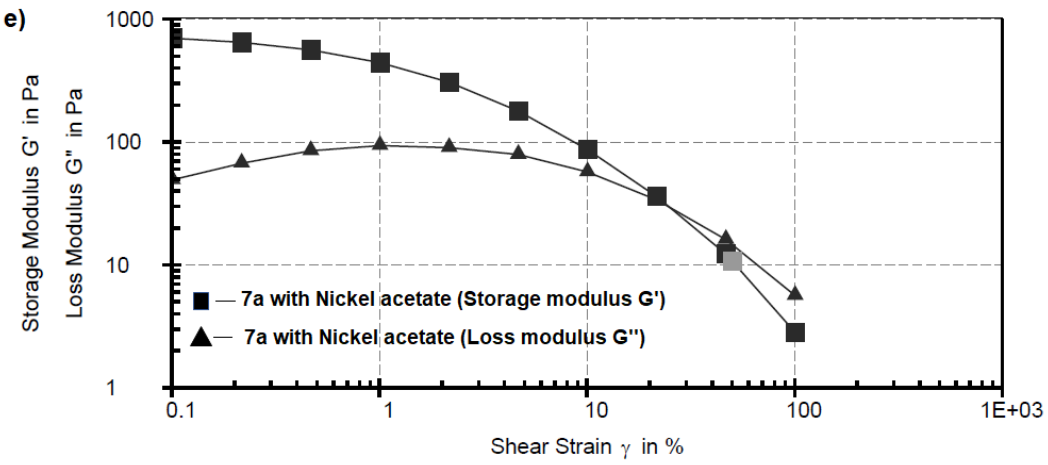


Figure S1e. Amplitude sweep of compound **7a** with 1.5 equiv of $Ni(OAc)_2 \cdot 4H_2O$ (DMSO:H_2O (1:5) at 6.0 mg/mL).

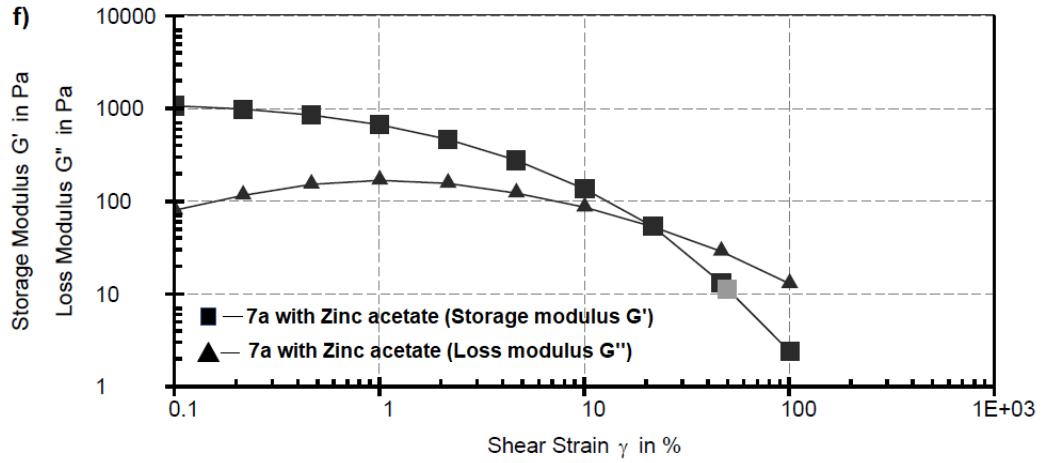


Figure S1f. Amplitude sweep of compound **7a** with 1.5 equiv of $Zn(OAc)_2 \cdot 2H_2O$ (DMSO:H_2O (1:5) at 6.0 mg/mL).

Table S6. Gel formed by compound **4d** in DMSO:H_2O (1:1) 10.0 mg/mL

Angular frequency	Storage modulus G'	Loss modulus G"	G'/G"
rad/s	Pa	Pa	
0.1	2233.89	691.44	3.23
0.15849	2419.49	624.55	3.87
0.251189	2483.02	573.83	4.33
0.398107	2533.64	525.79	4.82
0.630957	2576.99	470.50	5.48
1	2644.08	432.20	6.12
1.5849	2698.93	403.52	6.69
2.51189	2754.22	388.09	7.10
3.98105	2811.99	366.49	7.67
6.30957	2836.48	350.51	8.09
10.0001	2885.58	334.15	8.64
15.849	2853.41	332.45	8.58
25.1188	2926.59	326.17	8.97
39.8105	2980.62	314.84	9.47
63.0957	3020.95	309.59	9.76
100	3108.54	308.41	10.08
			Average = 7.06

Table S7. Gel formed by compound **7d** in ethylene glycol 10.0 mg/mL

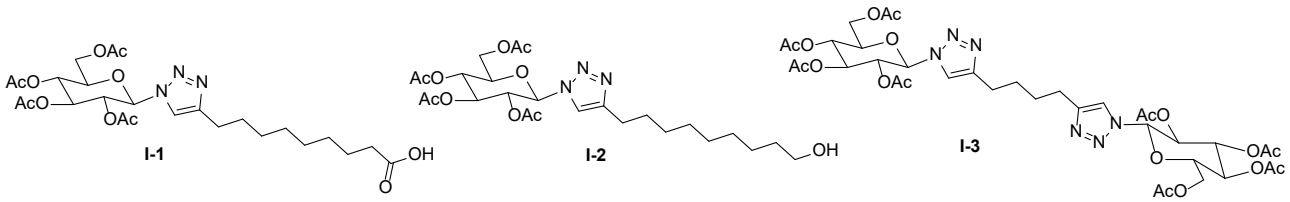
Angular frequency	Storage modulus G'	Loss modulus G"	G'/G"
rad/s	Pa	Pa	
0.1	86.61	15.44	5.61
0.15849	92.05	14.61	6.30
0.251189	92.58	13.42	6.90
0.398107	97.33	12.39	7.86
0.630957	99.37	11.62	8.55
1	100.31	11.80	8.50
1.5849	102.56	12.77	8.03
2.51189	102.90	9.92	10.38
3.98105	108.03	11.24	9.61
6.30957	109.63	12.08	9.08
10.0001	113.02	11.82	9.56
15.849	116.20	13.52	8.59
25.1188	120.53	15.11	7.97

39.8105	128.85	17.40	7.40
63.0957	144.58	19.26	7.51
100	178.17	22.27	8.00
			Average = 8.12

Table S8. Gel formed by compound **7d** in EtOH:H_2O (1:1) 3.3 mg/mL

Angular frequency	Storage modulus G'	Loss modulus G"	G'/G"
rad/s	Pa	Pa	
0.1	191.14	97.50	1.96
0.15849	210.46	127.19	1.65
0.251189	224.96	106.74	2.11
0.398107	281.61	106.88	2.63
0.630957	276.85	102.48	2.70
1	305.97	112.95	2.71
1.5849	310.59	110.77	2.80
2.51189	318.78	111.12	2.87
3.98105	360.94	117.30	3.08
6.30957	367.08	125.99	2.91
10.0001	386.99	130.99	2.95
15.849	394.71	139.88	2.82
25.1188	423.64	149.72	2.83
39.8105	438.09	164.37	2.67
63.0957	474.12	179.07	2.65
100	519.48	196.09	2.65
			Average = 2.62

Table S9. Rheological data for the gels formed by Glucose derivative I in reference 30 in the maintext.



	Glu-0-Compound **I-1** DMSO:H_2O (1:2) 2.5 mg/mL			Glu-0-Compound **I-2** DMSO:H_2O (1:2) 2.5 mg/mL			Glu-0-Compound **I-3** EtOH:H_2O (1:2) 5.0 mg/mL		
Angular frequency	Storage modulus G'	Loss modulus G"	G'/G"	Storage modulus G'	Loss modulus G"	G'/G"	Storage modulus G'	Loss modulus G"	G'/G"
rad/s	Pa	Pa		Pa	Pa		Pa	Pa	
100.00	1935.56	579.03	3.34	2394.21	1422.35	1.68	3696.41	2146.53	1.72
63.10	1923.19	536.44	3.59	3470.45	1826.25	1.90	9863.67	4232.95	2.33
39.81	1855.00	495.87	3.74	3033.22	1584.26	1.91	7325.54	3062.6	2.39
25.12	1819.18	461.12	3.95	3087.04	1552.93	1.99	8671.38	3789.43	2.29
15.85	1793.15	432.12	4.15	2990.03	1471.19	2.03	9309.96	3687.93	2.52
10.00	1777.38	412.14	4.31	2935.35	1417.60	2.07	10169	3654.15	2.78
6.31	1758.68	399.11	4.41	2885.79	1372.62	2.10	10698.5	3610.56	2.96
3.98	1750.50	392.67	4.46	2806.49	1324.44	2.12	11210.2	3565.53	3.14
2.51	1734.88	389.22	4.46	2732.42	1271.94	2.15	11518.4	3523.63	3.27
1.58	1721.17	392.47	4.39	2696.01	1245.57	2.16	11902.5	3519.54	3.38
1.00	1728.68	400.32	4.32	2605.82	1229.14	2.12	12299.9	3552.67	3.46
0.63	1747.11	410.90	4.25	2585.87	1194.00	2.17	12710.4	3638.22	3.49
0.40	1789.33	426.40	4.20	2529.59	1187.63	2.13	13351.1	3899.8	3.42
0.25	1855.36	443.95	4.18	2521.81	1185.07	2.13	14170.4	4134.74	3.43
0.16	1949.73	464.18	4.20	2500.96	1172.41	2.13	15180.5	4396.13	3.45
0.10	2085.21	483.34	4.31	2494.45	1163.31	2.14	16738.8	4778.58	3.5
Average G'/G"			4.14			2.06			2.97

Table S10. Rheological data for the gel formed by compound **7a** in DMSO:H_2O (1:5) 6.0 mg/mL and its corresponding metallogels with 1.5 equiv of $Ni(OAc)_2 \cdot 4H_2O$ and $Zn(OAc)_2 \cdot 2H_2O$. These were acquired using Anton Parr Rheometer

	7a- Gel Control			**7a** metallogel with 1.5 eq. nickel acetate			**7a** metallogel with zinc acetate		
Angular frequency	Storage modulus G'	Loss modulus G"	G'/G"	Storage modulus G'	Loss modulus G"	G'/G"	Storage modulus G'	Loss modulus G"	G'/G"
rad/s	Pa	Pa		Pa	Pa		Pa	Pa	
100	817.76	519	1.57	116.09	106.06	1.09	514.86	192.22	2.68
46.4	788.83	449.63	1.75	141.35	48.537	2.91	555.2	142.41	3.90
21.5	734.84	431.04	1.70	144.46	43.217	3.34	555.3	141.26	3.93
10	684.88	424.14	1.61	142.87	42.332	3.37	547.55	144.34	3.79
4.64	650.51	417.56	1.56	140.88	42.859	3.29	538.11	149.4	3.60
2.15	625.78	413.06	1.51	139.19	43.853	3.17	529.99	155.51	3.41
1	609.54	412.84	1.47	138.6	45.38	3.05	525.01	162.62	3.23
0.464	600.38	414.69	1.44	138.83	47.389	2.93	521.13	169.45	3.08
0.215	591.24	417.55	1.41	138.51	49.832	2.78	514.91	175.7	2.93
0.1	576.08	419.68	1.37	137.5	52.957	2.60	506.12	184.74	2.74
Average (G'/G")			1.54			2.85			3.33

3. Additional AFM images of selected gels

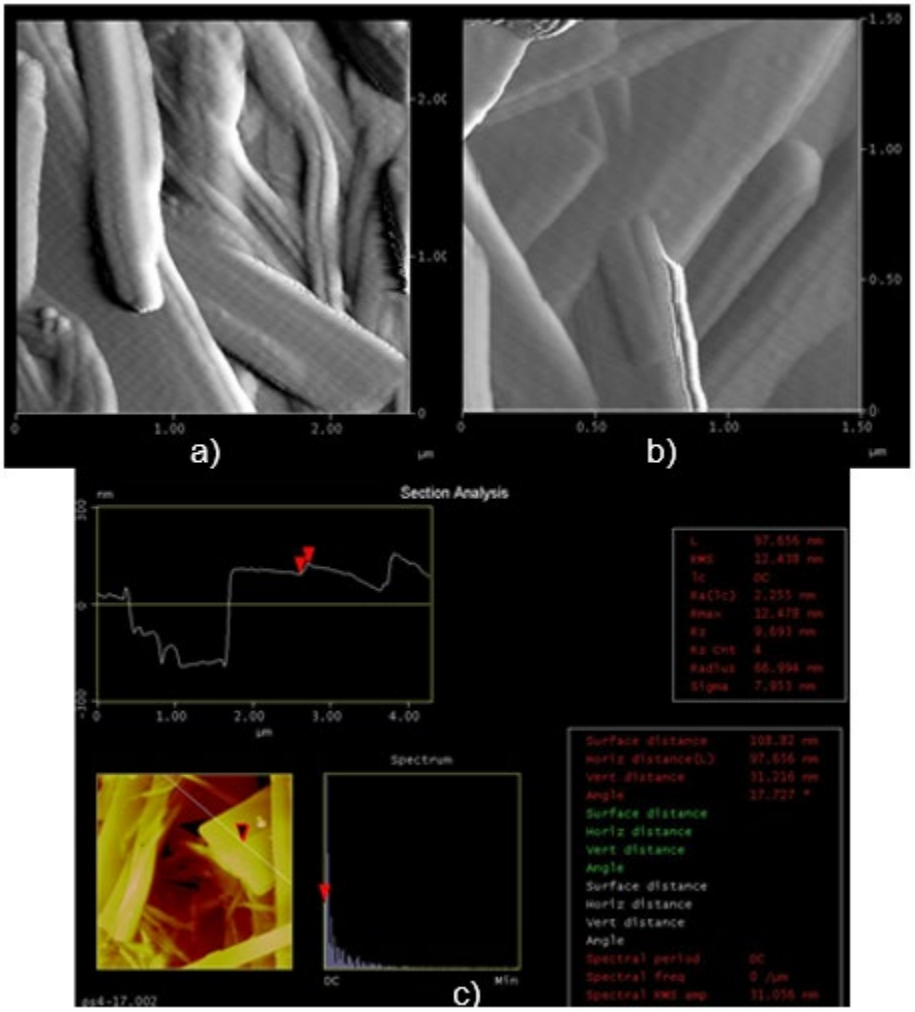


Figure S2. a) Atomic Force Microscope images gel formed by **7c** in EtOH:H_2O (1:1) at 2.8 mg/mL; b) Atomic Force Microscope images gel formed by **7a** in water at 4.0 mg/mL; c) Atomic Force Microscope image of gel formed by **7c** in EtOH:H_2O (1:1) at 2.8 mg/mL including section analysis of a fiber.

4. UV-Vis and Fluorescence spectra of compounds 7a and 7i

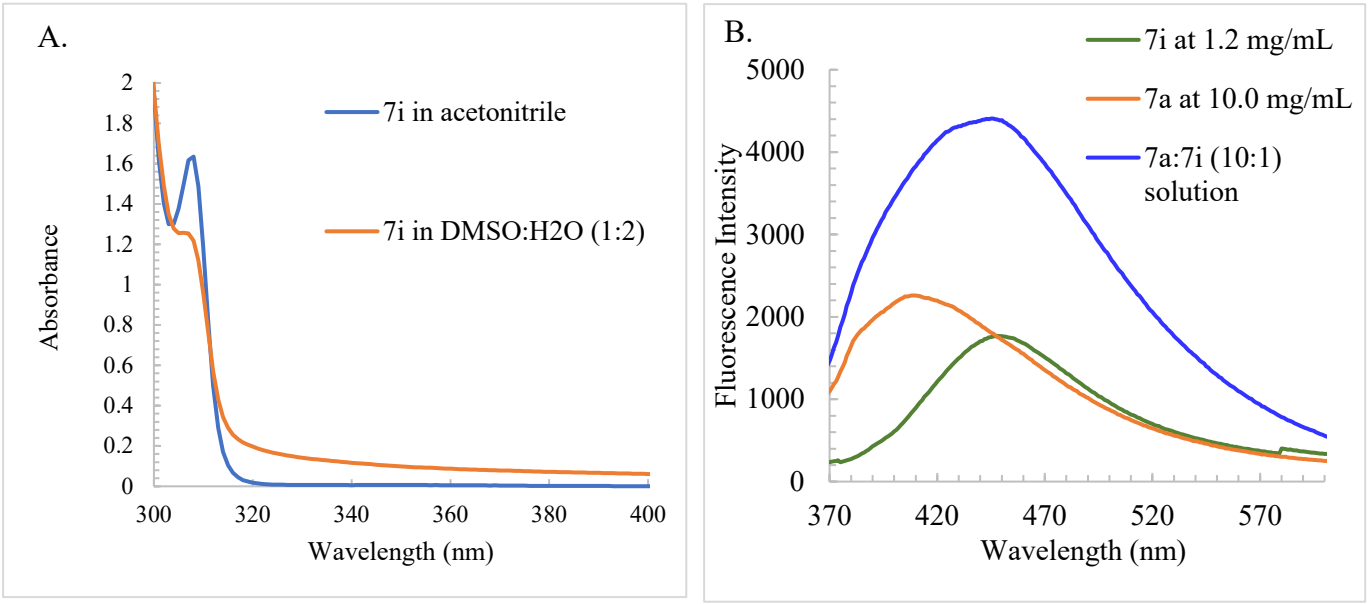
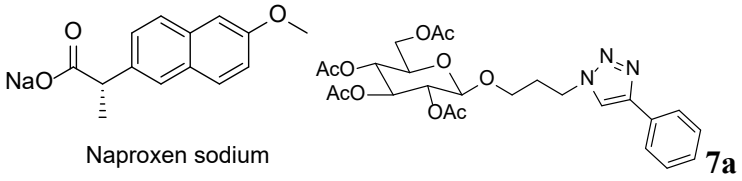


Figure S3. A. UV-Vis spectra of compound **7i** at 0.6 mg/mL in acetonitrile and DMSO:H_2O (1:2). B. Fluorescence spectra of compound **7i** at 1.2 mg/mL and **7a** at 10.0 mg/mL in acetonitrile and solution of **7a** (10.0 mg, 0.019 mmol, 10.0 eq.) and compound **7i** (1.2 mg, 0.0019 mmol, 1.0 eq.) in 1.0 mL acetonitrile. The excitation wavelength used for obtaining the fluorescence spectrum is 350 nm. The λmax for 7a: 409 nm, 7i: 448 nm, and the mixture at 446 nm.

5. Naproxen Release Study

A gel was prepared in a 1 dram vial using compound **7a** (16.0 mg) and 0.5 mg of naproxen sodium, and 2.0 mL of DMSO/H_2O (v/v 1:5). After a stable gel formed and the gel was left undisturbed for 15 min, 2.0 mL of water at pH 7.0 was added to the top of the gel carefully. Naproxen release from the gel was monitored by UV absorption at intervals by transferring the supernatant with a pipet to a cuvette, and after each measurement, the aqueous phase was carefully transferred back to the vial and placed on top of the gel again until the next measurement. The UV spectra of the pure naproxen (0.5 mg) in 4.0 mL DMSO/H_2O (v/v 1:5) was also recorded as standard.



Naproxen sodium **7a**

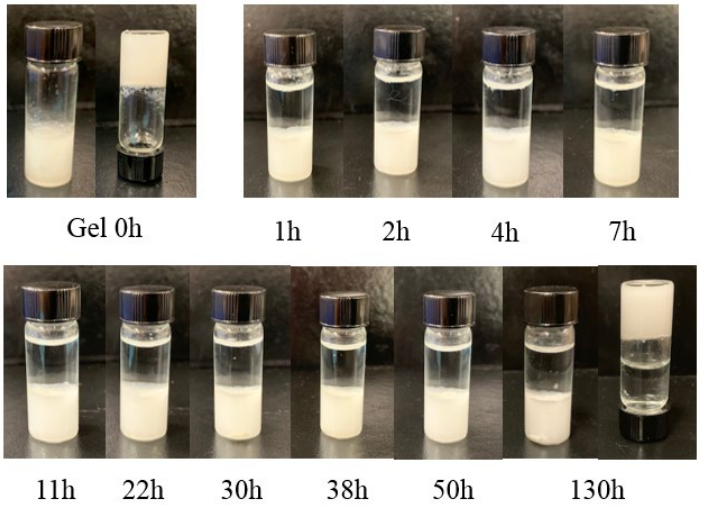
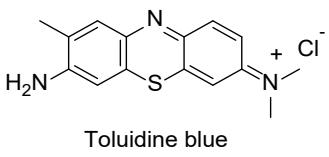


Figure S4. Images of co-gels formed by **7a** and naproxen sodium for drug release study at various time intervals.

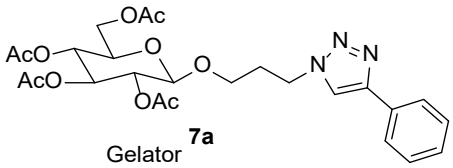
6. Dye Diffusion and Absorption Studies

6.1 Toluidine blue dye absorption

A gel was prepared in a 1 dram vial using 16.0 mg of compound **7a** in 2.0 mL of a DMSO:H_2O mixture (v/v 1:5). After a stable gel was formed and the gel was left at rt for 15 min, 2.0 mL of a toluidine blue aqueous solution (0.04 mM) was added dropwise onto the top of the gel. The adsorption of toluidine blue from aqueous solution to the gel at different time intervals was monitored by UV−Vis spectroscopy. Toluidine Blue dye solution (0.04 mM) was added on top of the gel prepared by compound **7a** as shown in Figure S4. The UV-Vis spectra and its corresponding graph for % release at different time intervals are shown in Figure S5.



Toluidine blue



Gelator **7a**

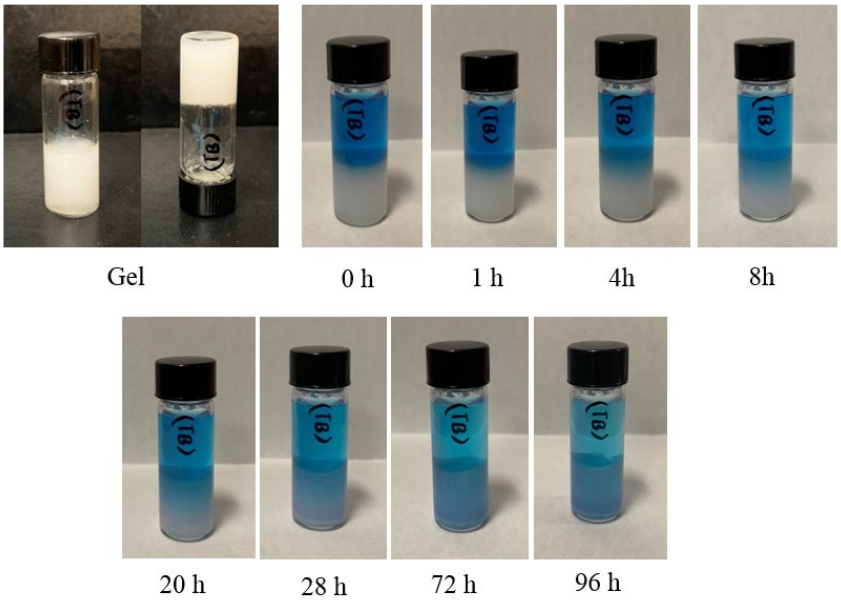
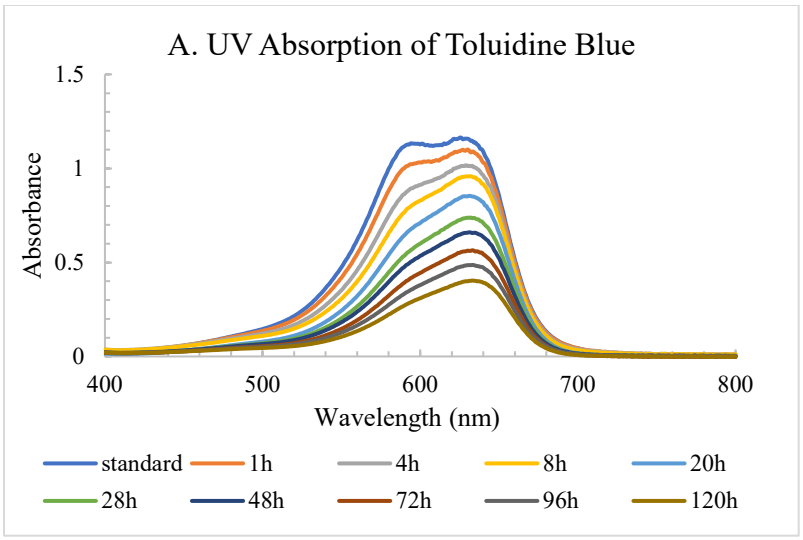


Figure S5. Images of gel formed by **7a** with toluidine dye solution on top for dye removal study at various time intervals.



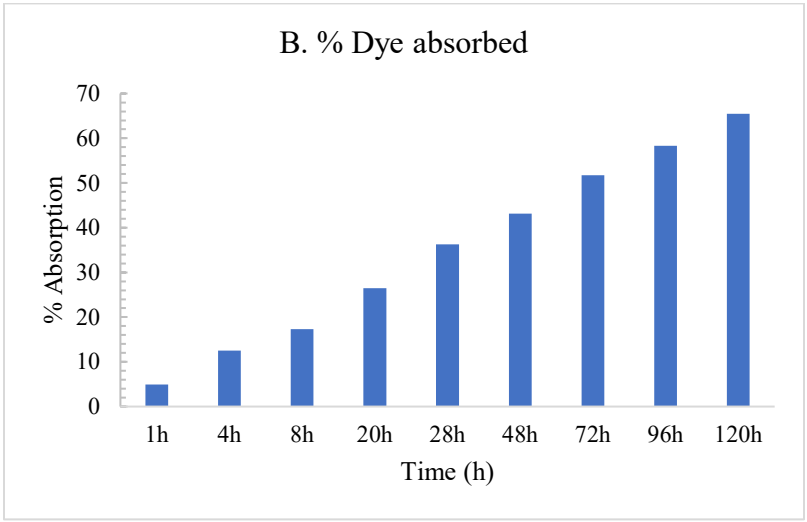


Figure S6. A. UV spectra of toluidine blue from the aqueous phase at different times. B. The percent absorption of the dye by the gel, the standard solution of 0.04 mM toluidine blue was used. The absorption at 632 nm was used to calculate the percentage of dye absorbed.

Formula used: % Dye absorbed = 100 - $[A_{solution}/A_{standard}]*100$

6.2 Dye absorption of mixture of methyl orange and toluidine blue.

A gel was prepared similarly as above for **7a** in 2.0 mL of a DMSO:H_2O mixture (v/v 1:5) with a gelator concentration of 8.0 mg/mL. After a stable gel was formed and the gel was left at room temperature for 15 min, a mixture of dyes prepared by using toluidine blue (0.04 mM, 1.0 mL) and methyl orange (0.024 mM, 1.0 mL) in a total volume of 2.0 mL was added dropwise on the top of the gel. The adsorption of dyes from aqueous solution to the gel at different time intervals was monitored by UV−vis spectroscopy.

Standard dye solution was prepared as follows: Toluidine blue solution (1.0 mL of 0.04 mM solution plus 1.0 mL DI water), total volume 2.0 mL. Methyl Orange solution (1.0 mL of 0.024 mM solution plus 1.0 mL DI water), total volume 2.0 mL.

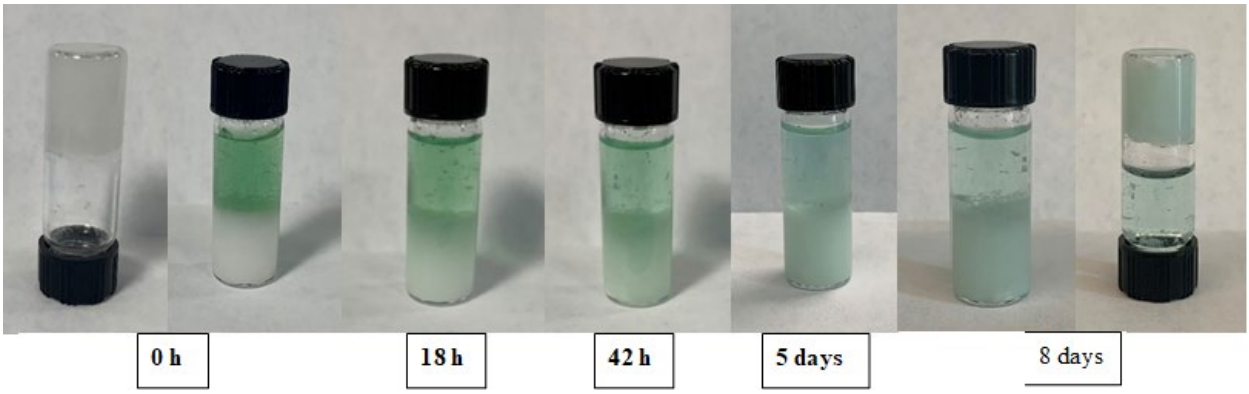
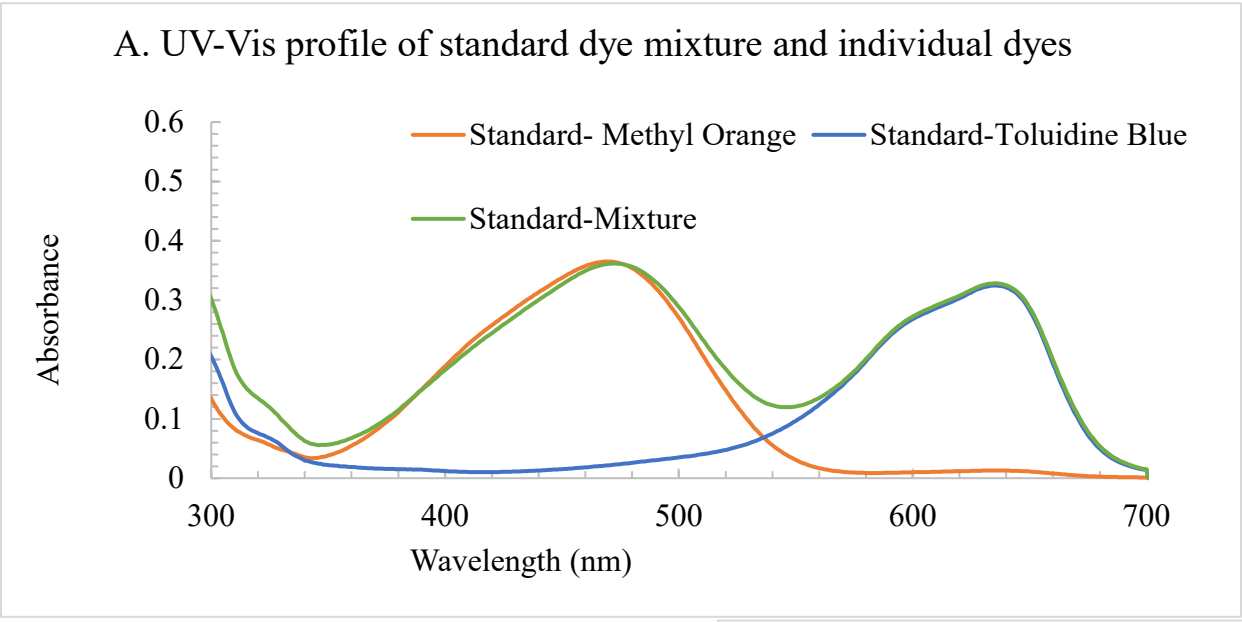
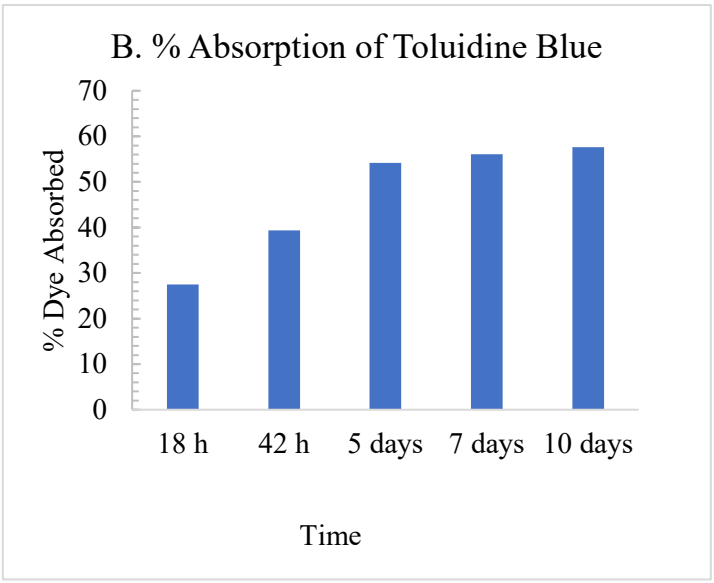


Figure S7. Images of gel formed by **7a** with mixture of toluidine blue and methyl orange dyes solution on top for dye removal study at various time intervals.





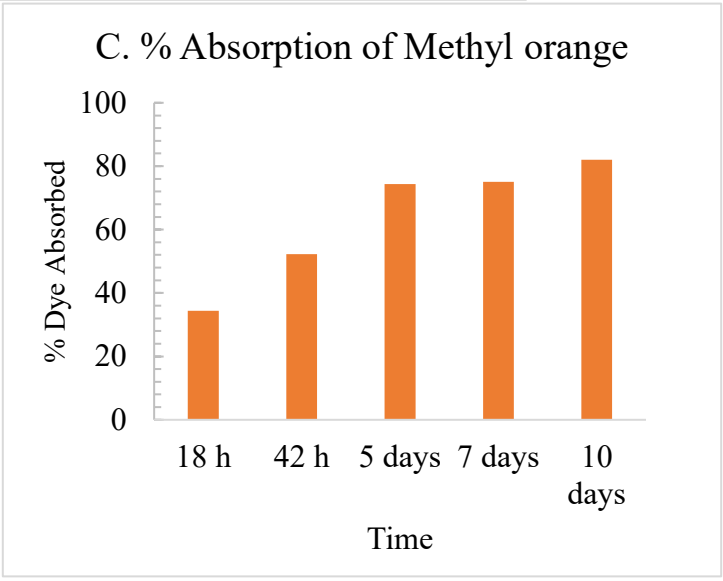
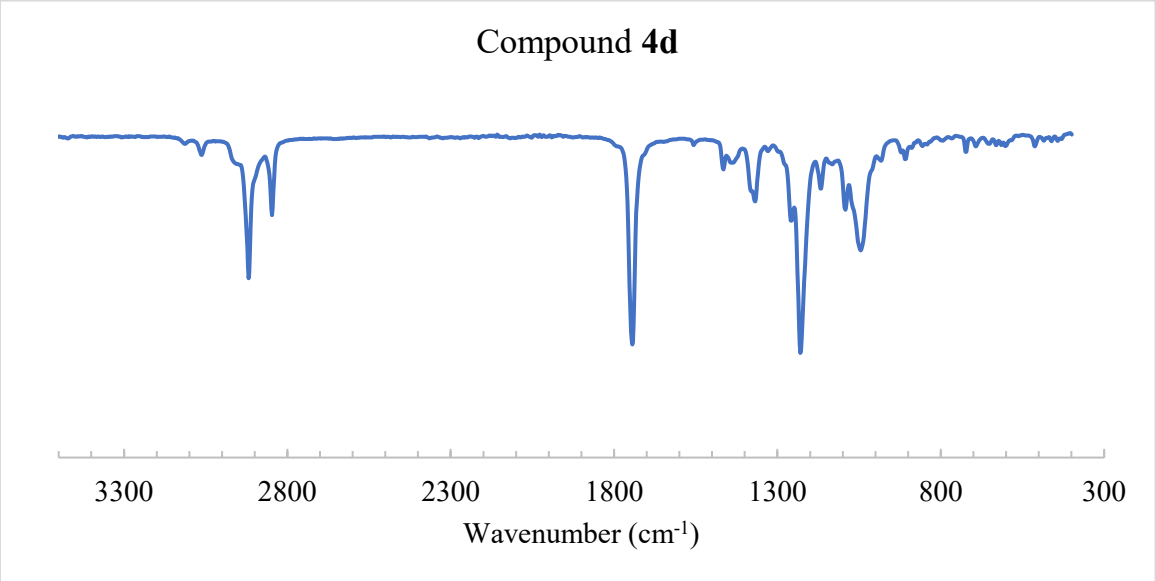


Figure S8. A) UV spectra of standard dyes, toluidine blue (0.04 mM solution diluted in 2.0 mL water), methyl Orange (0.024 mM solution diluted in 2.0 mL water) and mixture of the dyes used. B and C) A bar graph for the percent absorption of toluidine blue dye, the standard solution of 0.02 mM toluidine blue was used. Formula used: % Dye absorbed = 100 - $[(A_{solution})/A_{standard}]*100$ C. B) The absorption at 635 nm was used to calculate the percentage of dye absorbed and for C) The absorption at 465 nm was used to calculate the percentage of dye absorbed.

7. Additional FTIR spectra



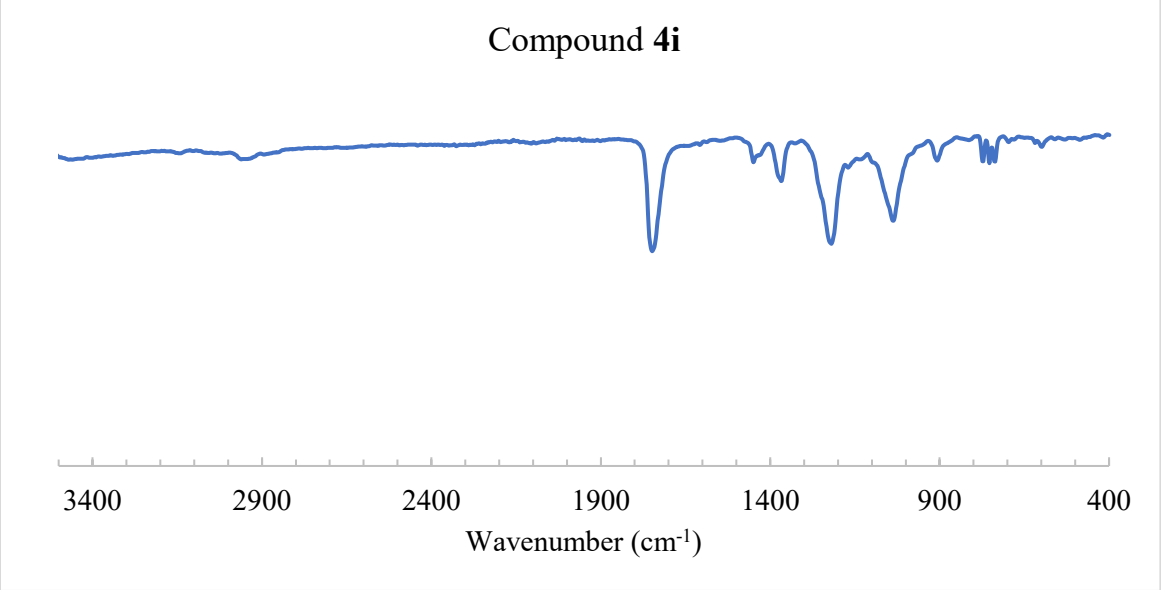


Figure S9-A. FTIR spectra of compounds **4d** and **4i**.

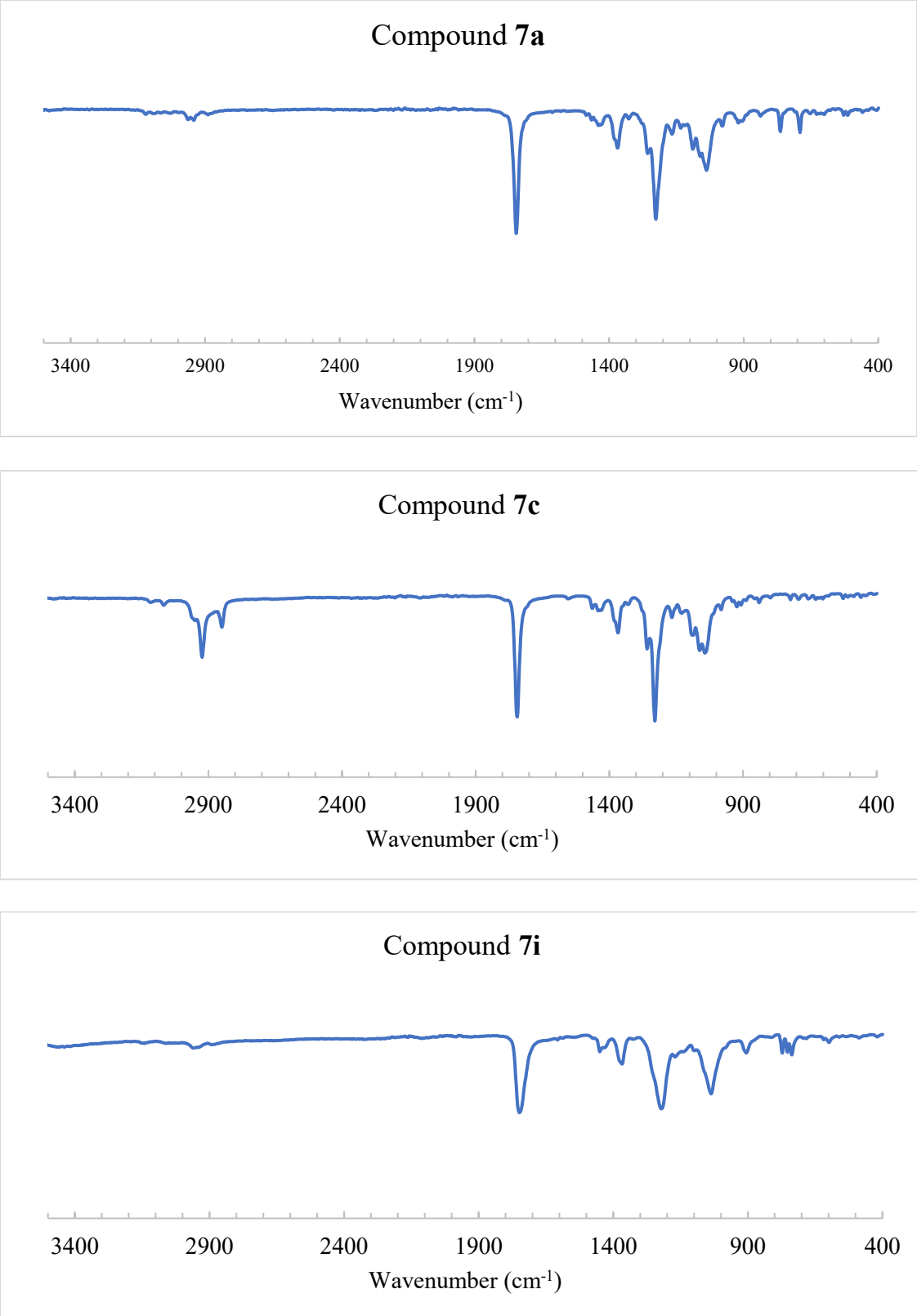


Figure S9-B. FTIR spectra of compounds **7a**, **7c** and **7i**.

8. PXRD data

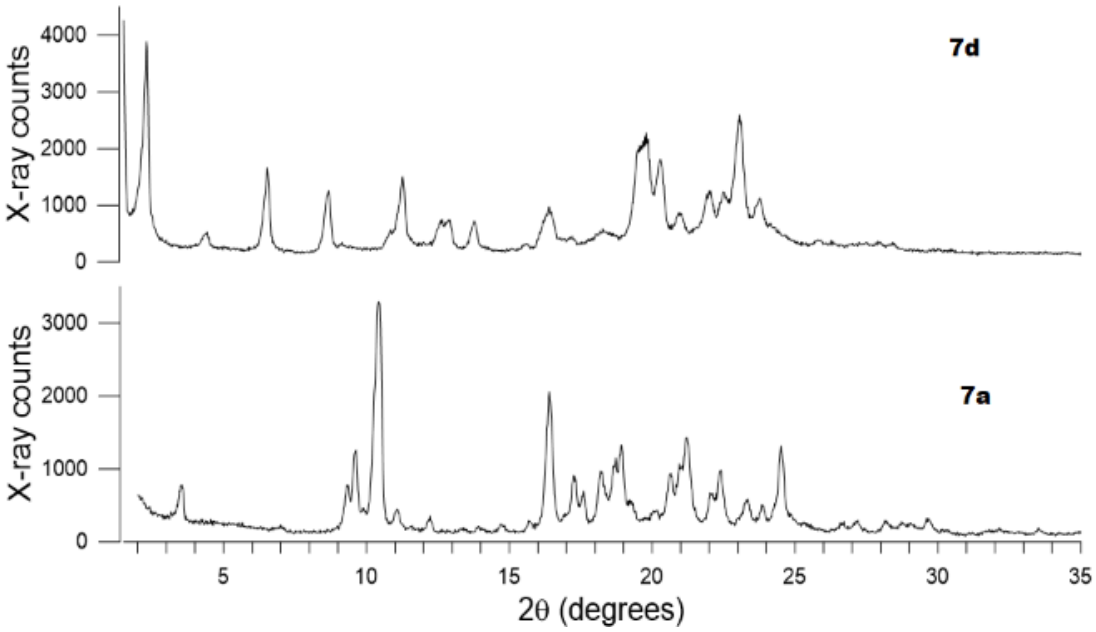


Figure S10. PXRD spectrum of compounds **7a** and **7d** in solid forms.

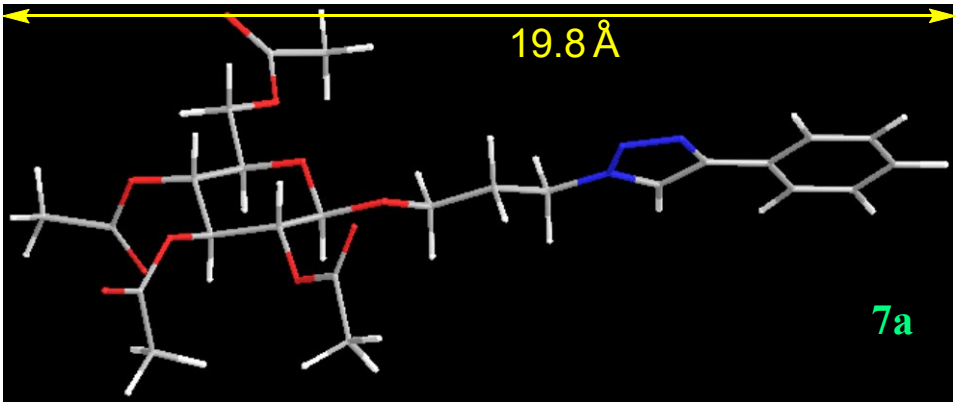


Figure S11. Molecular structure of compound **7a**, this is obtained using Chem3D through MM2 energy minimization.

Table S11. PXRD data for compounds **7a** and **7d**

Compound 7a			**Compound 7d**		
2Θ (degrees)	**sinΘ**	**d (Å)**	**2Θ (degrees)**	**sinΘ**	**d (Å)**
3.53293	0.0308	25.02922	2.29787	0.020051	38.44629
9.63798	0.08400811	9.176495	4.42137	0.038574	19.98488
10.41387	0.09075312	8.494474	6.52445	0.056906	13.54695
16.39641	0.14259793	5.406109	8.66836	0.075574	10.20065
17.25397	0.15000101	5.139299	11.26147	0.098117	7.856966
17.60108	0.15299515	5.038722	12.64991	0.110167	6.997544
18.27489	0.15880335	4.854432	12.91535	0.112469	6.85432
18.72409	0.16267238	4.738973	13.81375	0.120256	6.410493
18.90785	0.16425442	4.693329	16.38645	0.142512	5.409373
20.6434	0.17917484	4.302501	19.85754	0.172424	4.470962
21.05176	0.18267963	4.219956	20.28633	0.176108	4.377418
21.21511	0.18408096	4.187831	21.02138	0.182419	4.225986
22.11351	0.19178126	4.019684	22.04229	0.191171	4.03251
22.39937	0.19422896	3.969027	22.49149	0.195017	3.952979
23.3386	0.20226258	3.811382	23.0632	0.199908	3.856267
23.8899	0.20697179	3.724662	23.77784	0.206015	3.741961
24.50244	0.21219848	3.63292			

Table S12. PXRD data for xerogels formed by compounds **7a** and **7d**

7a- Xerogel			**7d- Xerogel**		
2Θ	**sinΘ**	**d (Å)**	**2Θ**	**sinΘ**	**d (Å)**
9.19923	0.08019223	9.613151	2.52247	0.022011	35.02351
9.89345	0.08622942	8.940104	7.60661	0.066331	11.62194
10.22014	0.08906935	8.655054	9.77094	0.085164	9.05192
11.22064	0.09776216	7.885464	10.15889	0.088537	8.707098
11.58816	0.1009535	7.636189	11.1798	0.097407	7.914178
13.44622	0.11707132	6.584875	12.77242	0.11123	6.9307
13.9771	0.12167099	6.335939	16.50896	0.14357	5.369506
16.28435	0.14162994	5.443058	19.16332	0.166453	4.631334
16.61105	0.14445162	5.336735	20.18424	0.175231	4.399328
17.30527	0.15044361	5.124179	21.20515	0.183996	4.189776
18.40785	0.15994881	4.819667	22.53233	0.195367	3.945906
18.95914	0.16469591	4.680748	23.92077	0.207235	3.719925
19.75545	0.1715461	4.493836			
20.73553	0.17996575	4.283593			
21.2664	0.18452088	4.177847			
22.18522	0.1923954	4.006853			
22.59359	0.19589129	3.935346			
23.30822	0.20200294	3.816281			
24.22704	0.20984928	3.673589			

7. Base triggering studies for the gels of compound 7c at different pHs

Two gels were prepared by using 3.3 mg of compound **7c** in 1.0 mL DMSO:H_2O (1:1) solution. The gels were treated with basic solution of pH 10 and 12 prepared by using NaOH. The solution was allowed to stand for 40 min to form a gel, after that 1.0 mL of pH 10 (or 12) solution prepared with NaOH was added on top. The gel was allowed to stand and the stability of the gel was tested at different time intervals by inverting the vial. The gels remain stable under pH 10 conditions for up to 72 h, however, the gels decompose within 4 h under pH 12 conditions.

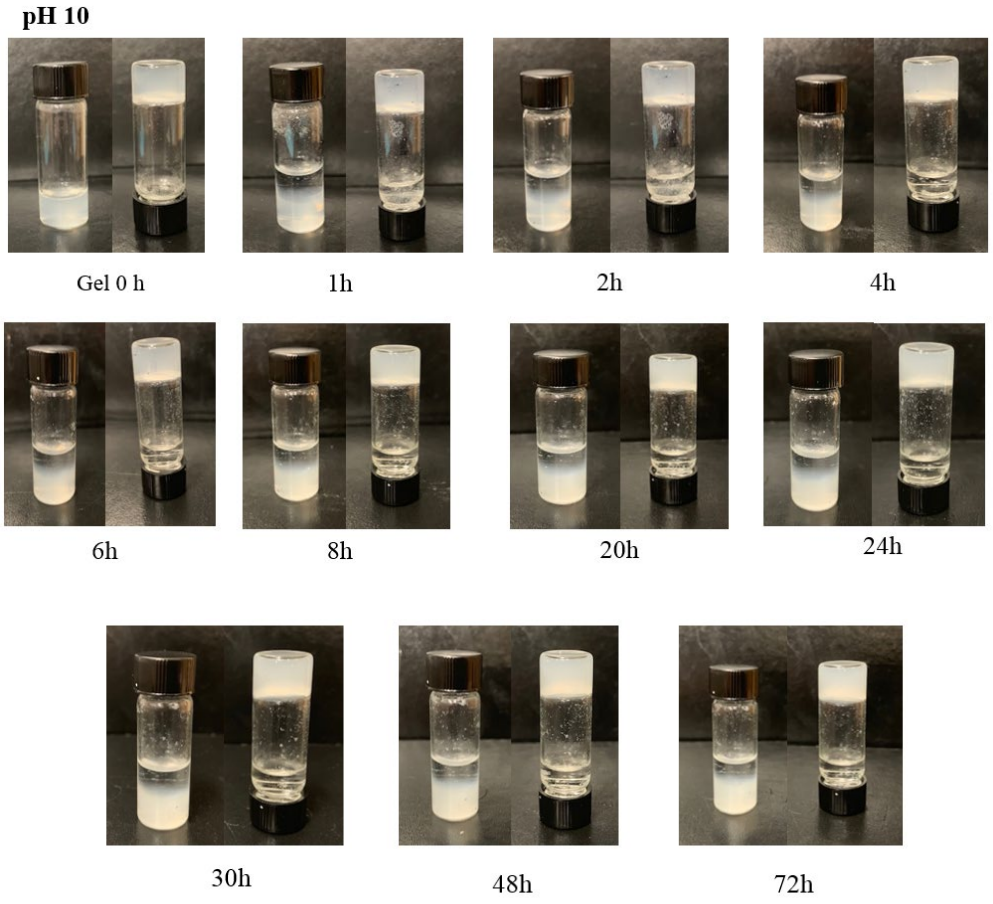


Figure S12. Photos of the gel formed by **7c** at different time under pH 10 conditions

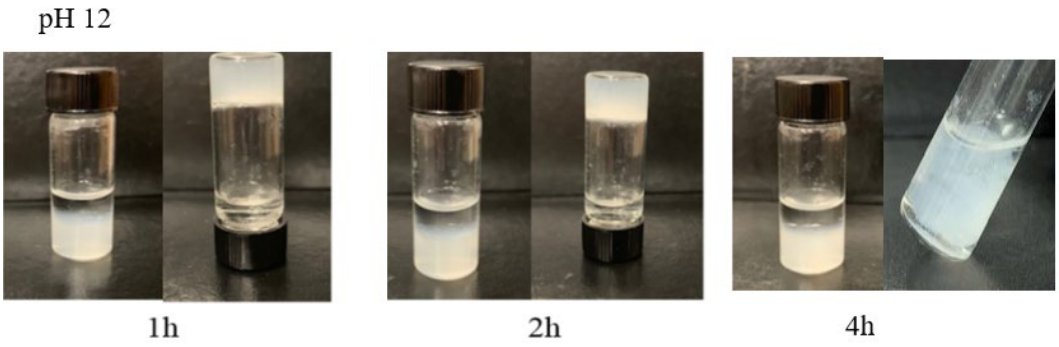


Figure S13. Photos of the gel formed by **7c** at different time under pH 12 conditions

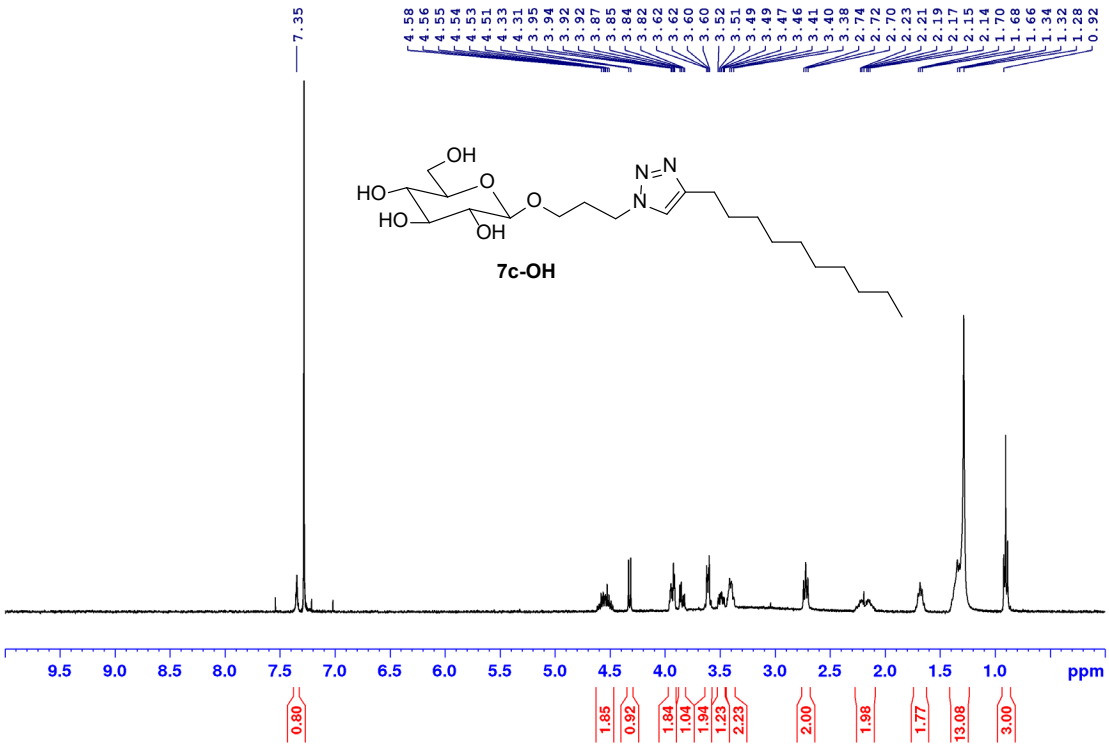
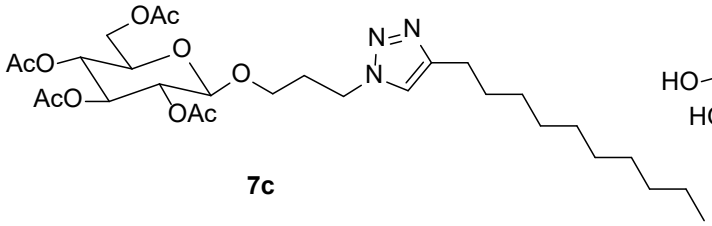
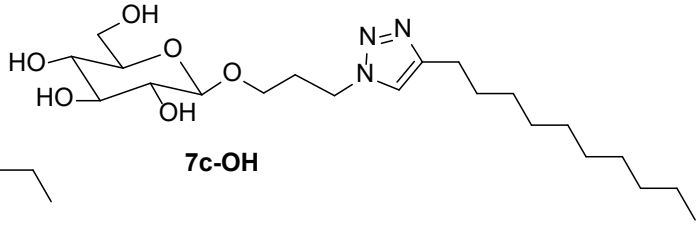


Figure S14. ^{1}H NMR of compound **7c-OH** taken in $CDCL_3$ at 400 MHz after treating with base

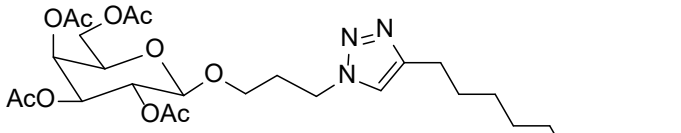
Beside compound **7c**, compound **14c** was also deprotected using NaOMe and the deacetylated compound **14c-OH** was obtained. The two compounds were tested in several solvents and they are soluble in most of the polar solvents.



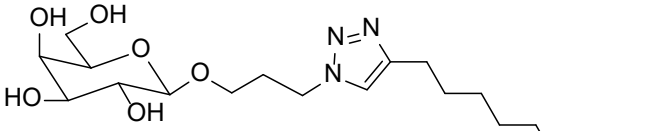
7c



7c-OH



14c



14c-OH

Table S13. Gelation test table at 20 mg/mL

Comp	EtOH	H_2O	DMSO: H_2O (1:1)	DMSO: H_2O (1:2)	EtOH: H_2O (1:1)	EtOH: H_2O (1:2)
7c-OH	S	S	S	S	S	S
14c-OH	S	S	S	S	S	S