Electronic Supplementary Material (ESI) for New Journal of Chemistry.

- Supporting Information -

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Atom N°	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Aromatic distances	1,414	1,413	1,405	1,405	1,402	1,403	1,401	1,404	1,401	1,403	1,410	1,404	1,408	1,404	1,404	Ar_1-Ar_2
	1,394	1,390	1,395	1,396	1,397	1,394	1,398	1,396	1,399	1,398	1,398	1,396	1,391	1,398	1,397	Ar_2-Ar_3
	1,414	1,413	1,406	1,405	1,401	1,404	1,401	1,404	1,401	1,403	1,408	1,404	1,407	1,403	1,403	Ar_3-Ar_4
	1,414	1,403	1,405	1,405	1,406	1,403	1,406	1,404	1,405	1,404	1,404	1,403	1,399	1,405	1,404	Ar_4-Ar_5
	1,394	1,399	1,395	1,396	1,395	1,398	1,396	1,399	1,394	1,396	1,402	1,398	1,402	1,397	1,397	Ar_5-Ar_6
	1,414	1,403	1,406	1,405	1,406	1,403	1,406	1,404	1,406	1,404	1,404	1,403	1,400	1,405	1,403	Ar_6-Ar_1
	1,523	1,511	1,510	1,512	1,511	1,515	1,515	1,519	1,518	1,516	1,521	1,517	1,522	1,517	1,521	Ar_1-Ch_1
Aliphatic distances	1,607	1,593	1,584	1,576	1,568	1,560	1,558	1,553	1,553	1,554	1,563	1,551	1,541	1,556	1,546	Ch_1-Ch_2
	1,584	1,583	1,570	1,562	1,558	1,552	1,554	1,544	1,544	1,540	1,547	1,539	1,553	1,541	1,537	Ch_2-Ch_3
	1,607	1,583	1,576	1,557	1,552	1,549	1,543	1,547	1,545	1,544	1,548	1,546	1,548	1,547	1,541	Ch_3-Ch_4
	1,523	1,593	1,570	1,557	1,551	1,549	1,545	1,547	1,546	1,545	1,544	1,545	1,544	1,546	1,544	Ch_4-Ch_5
	-	1,511	1,584	1,562	1,552	1,541	1,548	1,545	1,548	1,541	1,547	1,540	1,545	1,542	1,539	Ch_5-Ch_6
	-	-	1,510	1,576	1,561	1,550	1,539	1,546	1,549	1,545	1,546	1,542	1,544	1,543	1,539	Ch_6-Ch_7
	-	-	-	1,512	1,570	1,554	1,545	1,540	1,544	1,545	1,543	1,543	1,541	1,551	1,540	Ch_7-Ch_8
	-	-	-	-	1,511	1,564	1,551	1,547	1,539	1,544	1,546	1,539	1,546	1,549	1,542	Ch_8-Ch_9
	-	-	-	-	-	1,512	1,559	1,549	1,542	1,542	1,546	1,540	1,547	1,548	1,547	Ch_9-Ch_{10}
	-	-	-	-	-	-	1,514	1,557	1,544	1,547	1,546	1,542	1,541	1,544	1,542	Ch_{10}-Ch_{11}
	-	-	-	-	-	-	-	1,518	1,552	1,552	1,545	1,539	1,542	1,542	1,540	Ch_{11}-Ch_{12}
	-	-	-	-	-	-	-	-	1,517	1,557	1,549	1,546	1,538	1,539	1,539	Ch_{12}-Ch_{13}
	-	-	-	-	-	-	-	-	-	1,516	1,554	1,547	1,549	1,540	1,539	Ch_{13}-Ch_{14}
	-	-	-	-	-	-	-	-	-	-	1,517	1,554	1,557	1,545	1,544	Ch_{14}-Ch_{15}
	-	-	-	-	-	-	-	-	-	-	-	1,521	1,554	1,549	1,541	Ch_{15}-Ch_{16}
	-	-	-	-	-	-	-	-	-	-	-	-	1,516	1,555	1,537	Ch_{16}-Ch_{17}
	-	-	-	-	-	-	-	-	-	-	-	-	-	1,517	1,546	Ch_{17}-Ch_{18}
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,521	Ch_{18}-Ch_{19}
TAC	Ch_5 = Ar_4	Ch_6 = Ar_4	Ch_7 = Ar_4	Ch_8 = Ar_4	Ch_9 = Ar_4	Ch_{10} = Ar_4	Ch_{11} = Ar_4	Ch_{12} = Ar_4	Ch_{13} = Ar_4	Ch_{14} = Ar_4	Ch_{15} = Ar_4	Ch_{16} = Ar_4	Ch_{17} = Ar_4	Ch_{18} = Ar_4	Ch_{19} = Ar_4	

Table S1. Bond Distances for the cyclophanes family, in Angstrom.

Atom N°	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Aromatic angles	150,11	156,58	161,79	164,37	168,94	172,71	175,41	178,04	177,64	177,24	178,39	179,85	178,05	178,22	179,53	D_ω-$D\alpha$-Ar_1
	150,11	156,58	161,79	164,37	167,97	172,47	175,17	177,70	177,37	177,21	178,28	179,80	177,75	178,24	179,53	$D\alpha$-D_ω-Ar_4
	141,42	150,59	158,50	161,17	166,91	171,87	174,41	178,43	178,96	177,10	178,78	178,99	176,55	178,60	178,01	$D\alpha$-Ar_1-Ch_1
	141,42	150,59	158,50	161,17	167,97	171,84	175,08	178,54	178,18	176,21	179,31	176,42	178,17	177,85	178,01	D_ω-Ar_4-Ch_ω
Aliphatic angles	1,539	106,35	107,37	107,03	108,64	110,19	111,69	113,09	115,68	112,71	115,52	114,92	117,85	114,01	115,92	Ar_1-Ch_1-Ch_2
	106,90	106,35	107,37	107,03	110,50	112,23	113,52	115,62	115,19	112,06	115,50	117,93	114,79	112,90	115,92	Ar_4-Ch_ω-$Ch_{\omega-1}$
	122,67	121,15	117,40	116,33	115,73	114,54	114,49	113,73	116,36	113,88	116,52	114,20	112,35	114,08	114,43	Ch_1-Ch_2-Ch_3
	122,67	119,38	117,01	116,28	114,97	115,08	113,34	114,55	118,16	114,40	117,16	113,48	114,07	113,69	113,02	Ch_2-Ch_3-Ch_4
	-	121,15	117,01	117,81	115,94	115,95	115,12	114,13	114,71	115,20	116,03	114,79	116,18	114,01	114,14	Ch_3-Ch_4-Ch_5
	-	-	117,40	116,28	115,89	114,43	115,79	113,61	114,05	114,09	113,52	113,19	115,51	112,65	113,45	Ch_4-Ch_5-Ch_6
	-	-	-	116,33	113,64	114,68	114,46	114,72	117,51	114,59	115,73	114,75	113,27	116,36	114,60	Ch_5-Ch_6-Ch_7
	-	-	-	-	116,40	113,87	114,03	112,13	116,56	115,37	113,70	115,73	114,83	116,03	111,88	Ch_6-Ch_7-Ch_8
	-	-	-	-	-	115,52	113,85	115,24	115,38	115,28	114,28	114,23	114,36	117,51	115,90	Ch_7-Ch_8-Ch_9
	-	-	-	-	-	-	115,21	112,92	112,92	114,77	115,54	113,12	115,57	115,45	115,62	Ch_8-Ch_9-Ch_10
	-	-	-	-	-	-	-	114,83	116,00	112,54	115,44	114,33	114,54	116,83	115,62	Ch_9-Ch_10-Ch_{11}
	-	-	-	-	-	-	-	-	116,52	114,60	113,95	114,16	114,50	113,51	115,90	Ch_{10}-Ch_{11}-Ch_{12}
	-	-	-	-	-	-	-	-	-	114,88	114,87	115,73	115,68	115,03	111,88	Ch_{11}-Ch_{12}-Ch_{13}
	-	-	-	-	-	-	-	-	-	-	115,76	117,91	113,86	115,72	114,60	Ch_{12}-Ch_{13}-Ch_{14}
	-	-	-	-	-	-	-	-	-	-	-	117,68	116,05	112,17	113,45	Ch_{13}-Ch_{14}-Ch_{15}
	-	-	-	-	-	-	-	-	-	-	-	-	116,48	114,36	114,14	Ch_{14}-Ch_{15}-Ch_{16}
	-	-	-	-	-	-	-	-	-	-	-	-	-	114,33	113,02	Ch_{15}-Ch_{16}-Ch_{17}
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114,43	Ch_{16}-Ch_{17}-Ch_{18}
TAC	Ch_ω = Ch_4 $Ch_{\omega-1}$ = Ch_3	Ch_ω = Ch_5 $Ch_{\omega-1}$ = Ch_4	Ch_ω = Ch_6 $Ch_{\omega-1}$ = Ch_5	Ch_ω = Ch_7 $Ch_{\omega-1}$ = Ch_6	Ch_ω = Ch_8 $Ch_{\omega-1}$ = Ch_7	Ch_ω = Ch_9 $Ch_{\omega-1}$ = Ch_8	Ch_ω = Ch_{10} $Ch_{\omega-1}$ = Ch_9	Ch_ω = Ch_{11} $Ch_{\omega-1}$ = Ch_{10}	Ch_ω = Ch_{12} $Ch_{\omega-1}$ = Ch_{11}	Ch_ω = Ch_{13} $Ch_{\omega-1}$ = Ch_{12}	Ch_ω = Ch_{14} $Ch_{\omega-1}$ = Ch_{13}	Ch_ω = Ch_{15} $Ch_{\omega-1}$ = Ch_{14}	Ch_ω = Ch_{16} $Ch_{\omega-1}$ = Ch_{15}	Ch_ω = Ch_{17} $Ch_{\omega-1}$ = Ch_{16}	Ch_ω = Ch_{18} $Ch_{\omega-1}$ = Ch_{17}	

Table S2. Bond Angles for the cyclophane family, in degree.

Atom Nº	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Aromatic distances	1,408	1,397	1,393	1,397	1,397	1,397	1,396	1,398	1,398	1,398	1,400	1,401	1,401	1,401	1,401	Ar_1-Ar_2
	1,399	1,400	1,402	1,398	1,397	1,395	1,398	1,397	1,398	1,399	1,393	1,395	1,393	1,393	1,394	Ar_2-Ar_3
	1,406	1,397	1,397	1,397	1,396	1,396	1,396	1,397	1,394	1,395	1,401	1,397	1,399	1,398	1,399	Ar_3-Ar_4
	1,408	1,402	1,400	1,397	1,397	1,397	1,398	1,398	1,399	1,399	1,399	1,400	1,399	1,400	1,400	Ar_4-Ar_5
	1,399	1,396	1,394	1,398	1,397	1,398	1,396	1,397	1,395	1,394	1,399	1,398	1,400	1,399	1,399	Ar_5-Ar_6
	1,406	1,402	1,402	1,397	1,396	1,397	1,398	1,397	1,401	1,400	1,394	1,397	1,395	1,396	1,395	Ar_6-Ar_1
	1,446	1,425	1,419	1,416	1,409	1,410	1,413	1,407	1,402	1,403	1,405	1,404	1,407	1,403	1,403	Ar_1-Ch_1
Aliphatic distances	1,539	1,529	1,507	1,515	1,497	1,494	1,501	1,483	1,472	1,472	1,473	1,470	1,472	1,470	1,468	Ch_1-Ch_2
	1,567	1,575	1,557	1,555	1,544	1,545	1,532	1,536	1,530	1,530	1,532	1,535	1,529	1,546	1,530	Ch_2-Ch_3
	1,539	1,575	1,580	1,561	1,563	1,551	1,544	1,545	1,540	1,538	1,541	1,539	1,541	1,541	1,544	Ch_3-Ch_4
	1,446	1,529	1,558	1,561	1,552	1,549	1,552	1,538	1,538	1,540	1,539	1,545	1,543	1,541	1,546	Ch_4-Ch_5
	-	1,425	1,530	1,555	1,563	1,543	1,548	1,546	1,545	1,545	1,544	1,545	1,546	1,545	1,549	Ch_5-Ch_6
	-	-	1,421	1,515	1,544	1,554	1,545	1,546	1,552	1,550	1,544	1,540	1,552	1,544	1,549	Ch_6-Ch_7
	-	-	-	1,416	1,497	1,541	1,563	1,538	1,544	1,545	1,539	1,544	1,551	1,540	1,546	Ch_7-Ch_8
	-	-	-	-	1,409	1,496	1,541	1,545	1,538	1,539	1,543	1,547	1,545	1,548	1,542	Ch_8-Ch_9
	-	-	-	-	-	1,409	1,490	1,536	1,547	1,538	1,542	1,544	1,541	1,550	1,545	Ch_9-Ch_{10}
	-	-	-	-	-	-	1,408	1,483	1,536	1,545	1,540	1,542	1,544	1,552	1,547	Ch_{10}-Ch_{11}
	-	-	-	-	-	-	-	1,407	1,484	1,543	1,542	1,539	1,542	1,543	1,539	Ch_{11}-Ch_{12}
	-	-	-	-	-	-	-	-	1,409	1,480	1,532	1,544	1,538	1,540	1,542	Ch_{12}-Ch_{13}
	-	-	-	-	-	-	-	-	-	1,409	1,469	1,533	1,544	1,540	1,543	Ch_{13}-Ch_{14}
	-	-	-	-	-	-	-	-	-	-	1,397	1,472	1,531	1,542	1,550	Ch_{14}-Ch_{15}
	-	-	-	-	-	-	-	-	-	-	-	1,399	1,471	1,529	1,546	Ch_{15}-Ch_{16}
	-	-	-	-	-	-	-	-	-	-	-	-	1,398	1,464	1,527	Ch_{16}-Ch_{17}
	-	-	-	-	-	-	-	-	-	-	-	-	-	1,397	1,464	Ch_{17}-Ch_{18}
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,398	Ch_{18}-Ch_{19}
TAC	Ch_5 = Ar_4	Ch_6 = Ar_4	Ch_7 = Ar_4	Ch_8 = Ar_4	Ch_9 = Ar_4	Ch_{10} = Ar_4	Ch_{11} = Ar_4	Ch_{12} = Ar_4	Ch_{13} = Ar_4	Ch_{14} = Ar_4	Ch_{15} = Ar_4	Ch_{16} = Ar_4	Ch_{17} = Ar_4	Ch_{18} = Ar_4	Ch_{19} = Ar_4	

Table S3. Bond Distances for the dioxacyclophane family, in Angstrom.

Atom Nº	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Aromatic angles	148,75	154,91	157,74	162,36	168,62	170,91	171,29	175,56	176,57	177,17	176,92	177,98	177,81	178,12	177,59	D_ω-D_6-Ar_1
	148,75	154,91	157,83	162,36	168,62	170,57	171,27	175,56	176,66	177,34	177,08	177,47	177,58	177,88	177,44	D_ω-D_ω-Ar_4
	142,63	153,52	161,62	165,30	174,25	175,76	174,25	178,03	175,62	175,49	176,18	176,27	176,45	175,79	176,14	D_ω-Ar_1-Ch_1
	148,75	153,52	158,95	165,30	174,25	175,41	177,65	178,03	177,65	177,53	174,60	175,56	175,31	174,99	175,02	D_ω-Ar_4-Ch_ω
Aliphatic angles	107,54	106,95	107,89	108,29	113,54	112,45	111,64	117,45	120,84	120,71	120,21	118,44	118,17	119,58	119,42	Ar_1-Ch_1-Ch_2
	107,54	106,95	106,58	108,29	113,54	114,02	114,96	117,45	117,78	116,63	122,90	121,43	121,50	120,99	120,57	Ar_4-Ch_ω-$Ch_{\omega-1}$
	122,13	121,27	120,37	115,20	115,24	113,44	111,51	113,45	112,54	112,30	113,47	112,29	112,17	113,34	112,69	Ch_1-Ch_2-Ch_3
	122,13	122,40	130,00	117,52	116,21	115,25	117,54	115,19	115,35	114,45	115,67	112,71	112,42	114,04	112,35	Ch_2-Ch_3-Ch_4
	-	121,27	124,21	121,03	114,91	116,86	118,13	113,05	113,16	114,43	113,17	114,62	114,30	114,87	115,81	Ch_3-Ch_4-Ch_5
	-	-	115,12	117,52	114,91	114,86	119,60	114,96	114,70	112,22	114,17	115,72	117,13	116,04	116,84	Ch_4-Ch_5-Ch_6
	-	-	-	115,20	116,21	114,10	118,63	116,17	114,27	113,88	116,09	114,75	115,14	116,52	118,55	Ch_5-Ch_6-Ch_7
	-	-	-	-	115,24	115,60	112,29	114,96	114,50	114,58	114,41	114,69	116,40	114,85	116,90	Ch_6-Ch_7-Ch_8
	-	-	-	-	-	114,76	117,41	113,05	113,09	112,71	114,49	114,04	115,61	115,69	115,95	Ch_7-Ch_8-Ch_9
	-	-	-	-	-	-	114,35	115,19	114,04	114,71	114,49	114,94	115,49	115,82	114,84	Ch_8-Ch_9-Ch_{10}
	-	-	-	-	-	-	-	113,45	114,61	112,97	112,59	112,98	114,44	117,44	115,65	Ch_9-Ch_{10}-Ch_{11}
	-	-	-	-	-	-	-	-	113,54	114,11	115,89	113,72	113,10	115,52	113,79	Ch_{10}-Ch_{11}-Ch_{12}
	-	-	-	-	-	-	-	-	-	112,99	115,44	115,19	113,75	115,50	115,27	Ch_{11}-Ch_{12}-Ch_{13}
	-	-	-	-	-	-	-	-	-	-	109,34	115,09	115,04	112,37	114,73	Ch_{12}-Ch_{13}-Ch_{14}
	-	-	-	-	-	-	-	-	-	-	-	109,31	114,93	115,67	113,78	Ch_{13}-Ch_{14}-Ch_{15}
	-	-	-	-	-	-	-	-	-	-	-	-	108,90	114,53	116,56	Ch_{14}-Ch_{15}-Ch_{16}
	-	-	-	-	-	-	-	-	-	-	-	-	-	107,40	116,97	Ch_{15}-Ch_{16}-Ch_{17}
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107,78	Ch_{16}-Ch_{17}-Ch_{18}
TAC	Ch_ω = Ch_4 $Ch_{\omega-1}$ = Ch_3	Ch_ω = Ch_5 $Ch_{\omega-1}$ = Ch_4	Ch_ω = Ch_6 $Ch_{\omega-1}$ = Ch_5	Ch_ω = Ch_7 $Ch_{\omega-1}$ = Ch_6	Ch_ω = Ch_8 $Ch_{\omega-1}$ = Ch_7	Ch_ω = Ch_9 $Ch_{\omega-1}$ = Ch_8	Ch_ω = Ch_{10} $Ch_{\omega-1}$ = Ch_9	Ch_ω = Ch_{11} $Ch_{\omega-1}$ = Ch_{10}	Ch_ω = Ch_{12} $Ch_{\omega-1}$ = Ch_{11}	Ch_ω = Ch_{13} $Ch_{\omega-1}$ = Ch_{12}	Ch_ω = Ch_{14} $Ch_{\omega-1}$ = Ch_{13}	Ch_ω = Ch_{15} $Ch_{\omega-1}$ = Ch_{14}	Ch_ω = Ch_{16} $Ch_{\omega-1}$ = Ch_{15}	Ch_ω = Ch_{17} $Ch_{\omega-1}$ = Ch_{16}	Ch_ω = Ch_{18} $Ch_{\omega-1}$ = Ch_{17}	

Table S4. Bond Angles for the dioxacyclophane family, in degree.

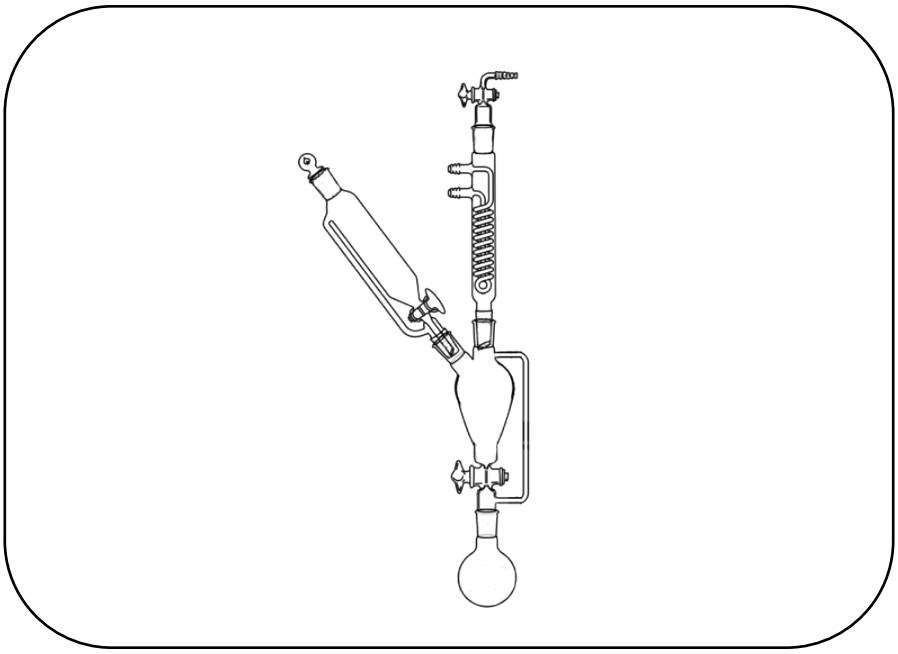
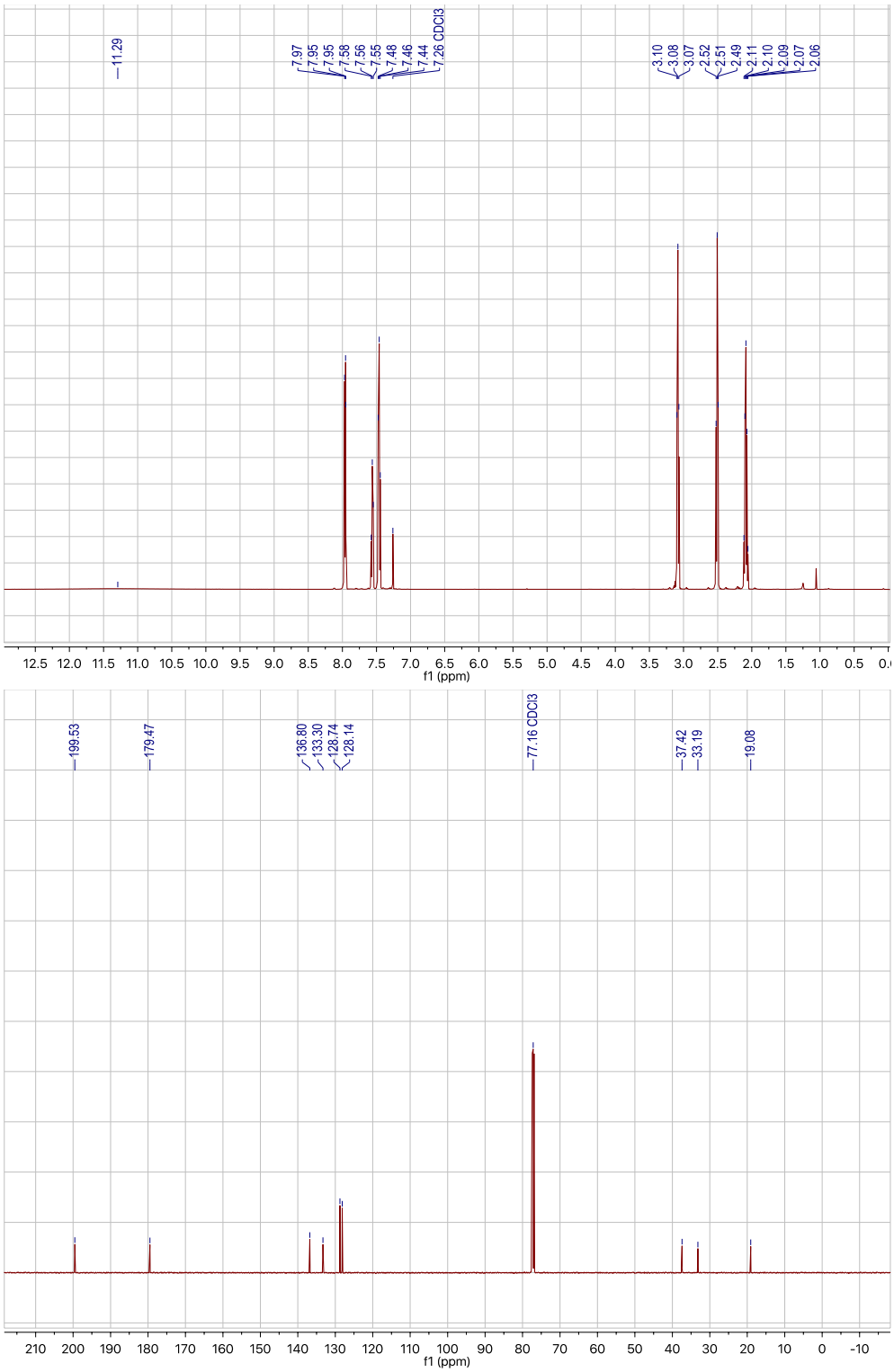
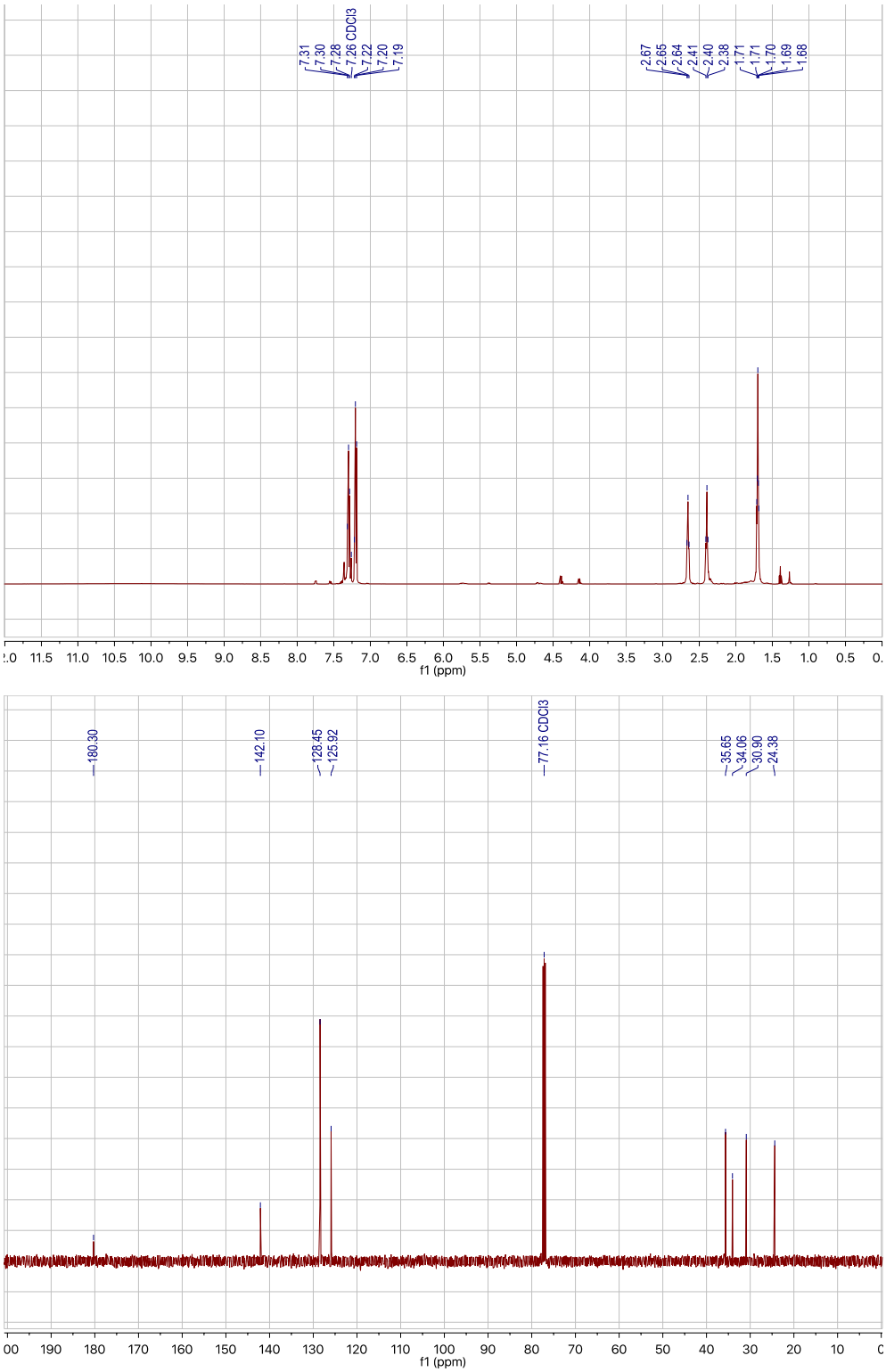


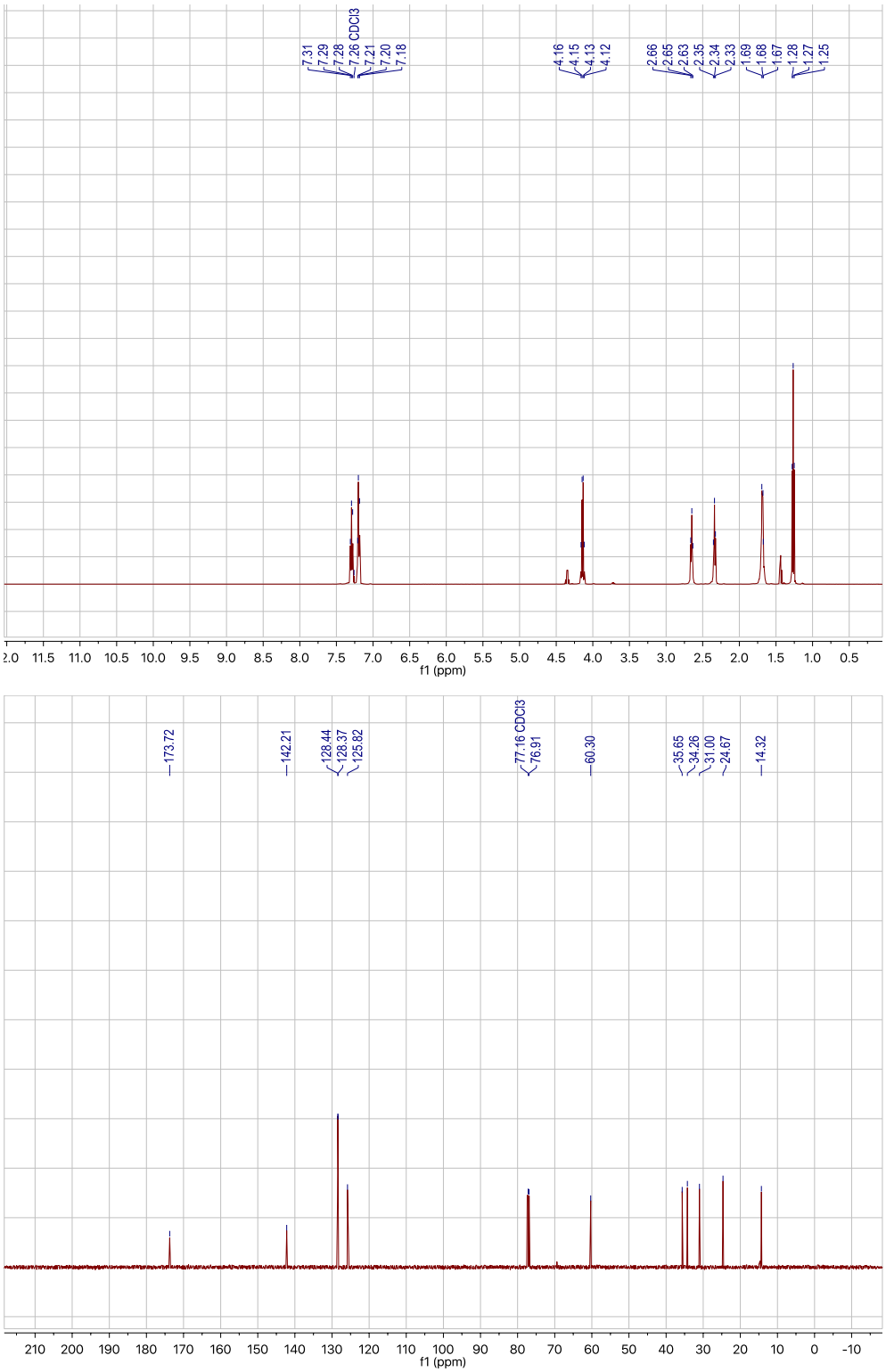
Figure S01. High dilution system used in the acyloin condensation.



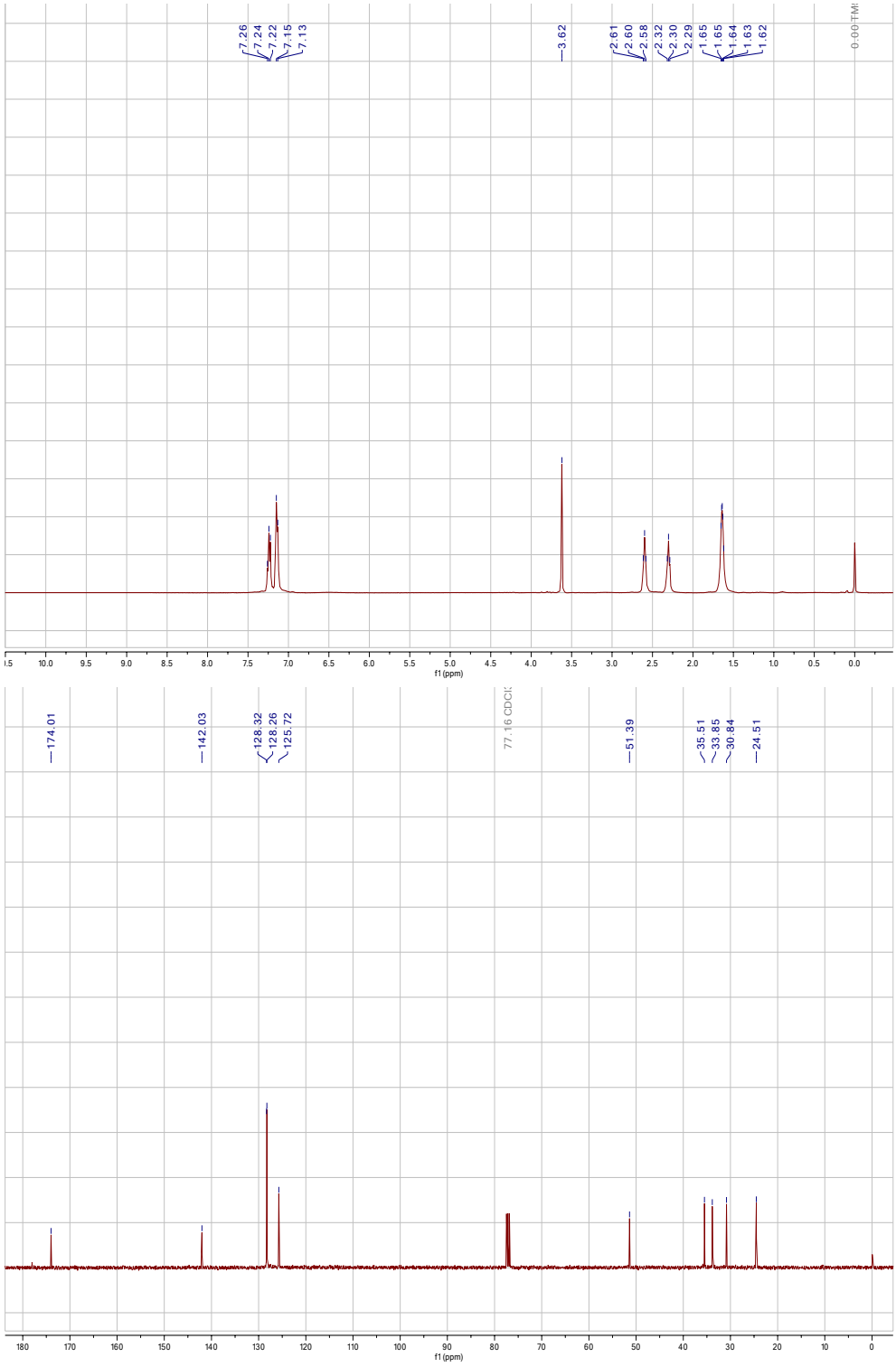
^{1}H and ^{13}C NMR spectra for 5-oxo-5-phenyl pentanoic acid (**P1**).



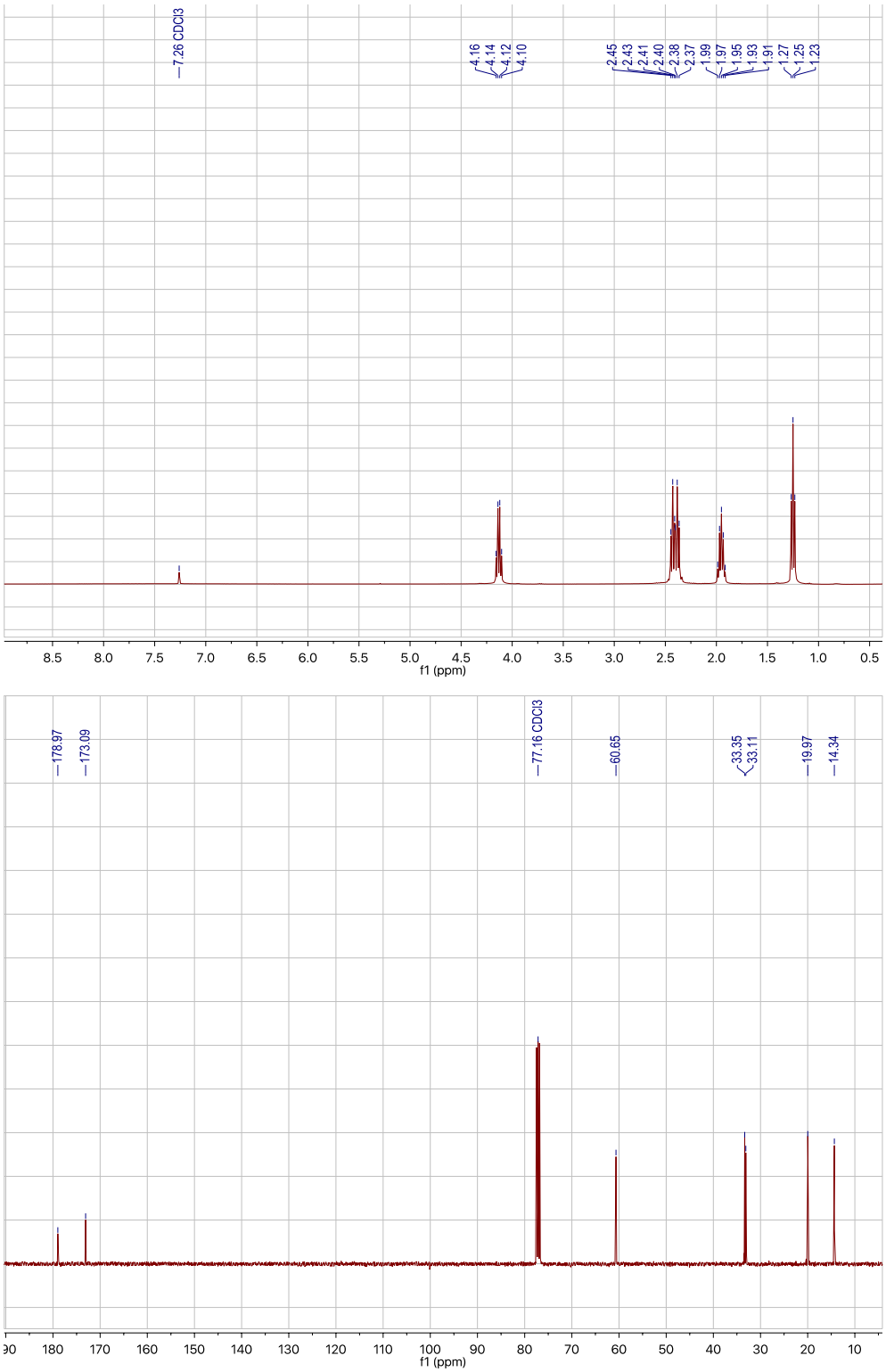
^{1}H and ^{13}C NMR spectra for 5-phenyl pentanoic acid (**P2**).



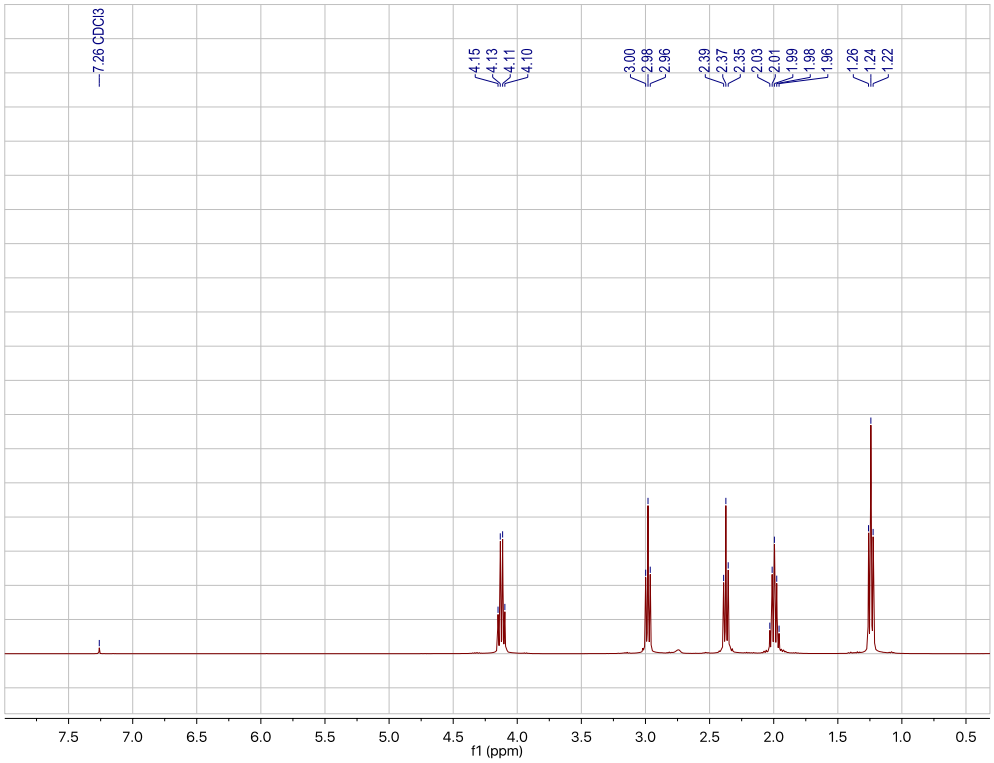
^{1}H and ^{13}C NMR spectra for ethyl 5-phenyl pentanoate (**P3a**).

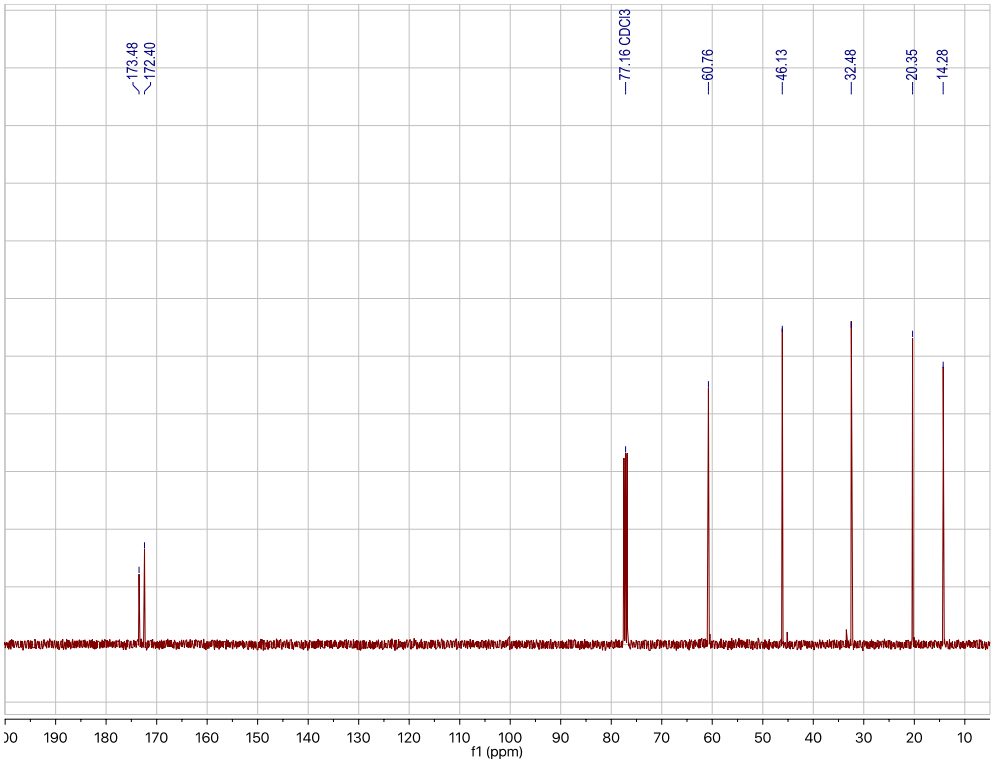


^{1}H and ^{13}C NMR spectra for methyl 5-phenyl pentanoate (**P3b**).

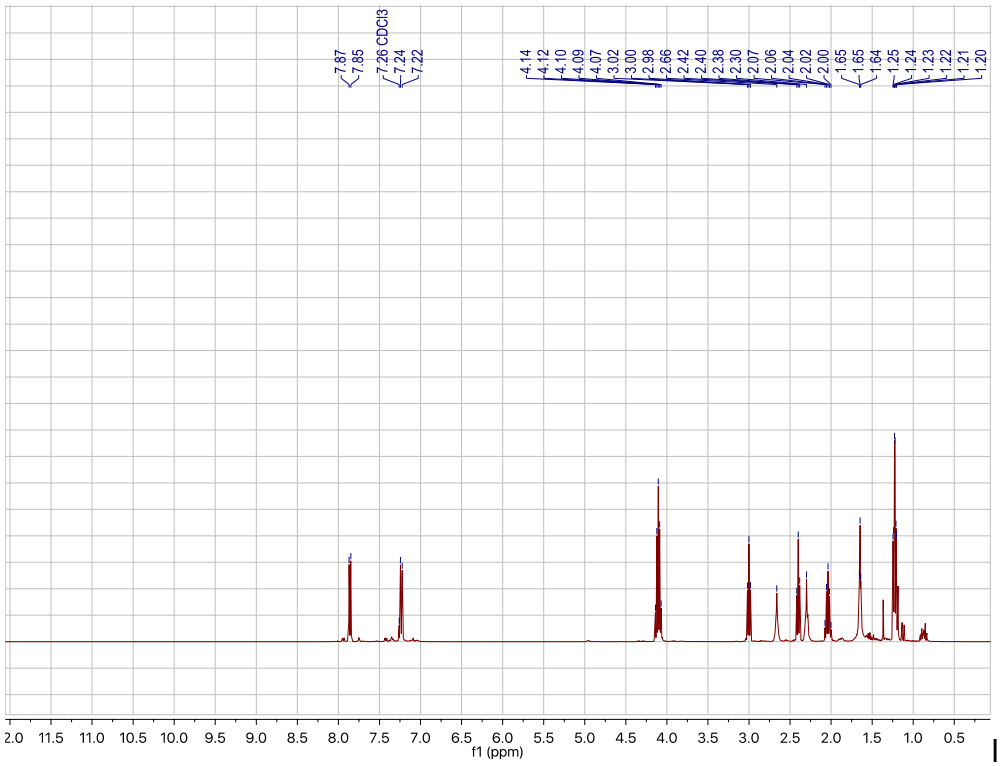


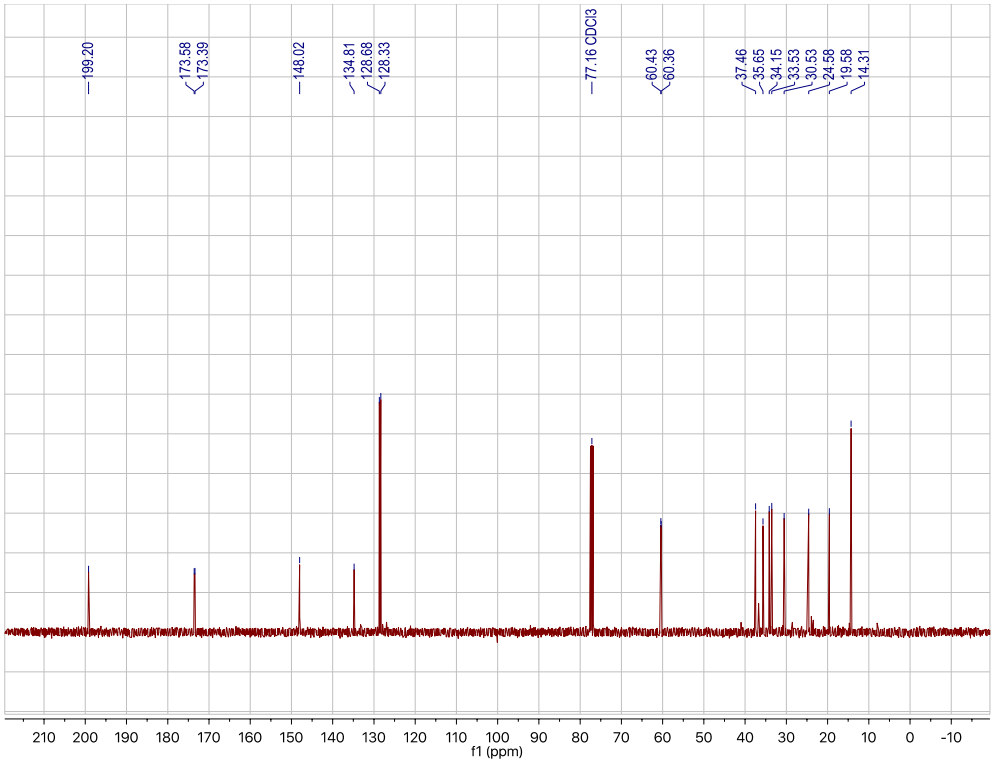
^{1}H and ^{13}C NMR spectra for 5-ethoxycarbonyl pentanoic acid (**P4a**).



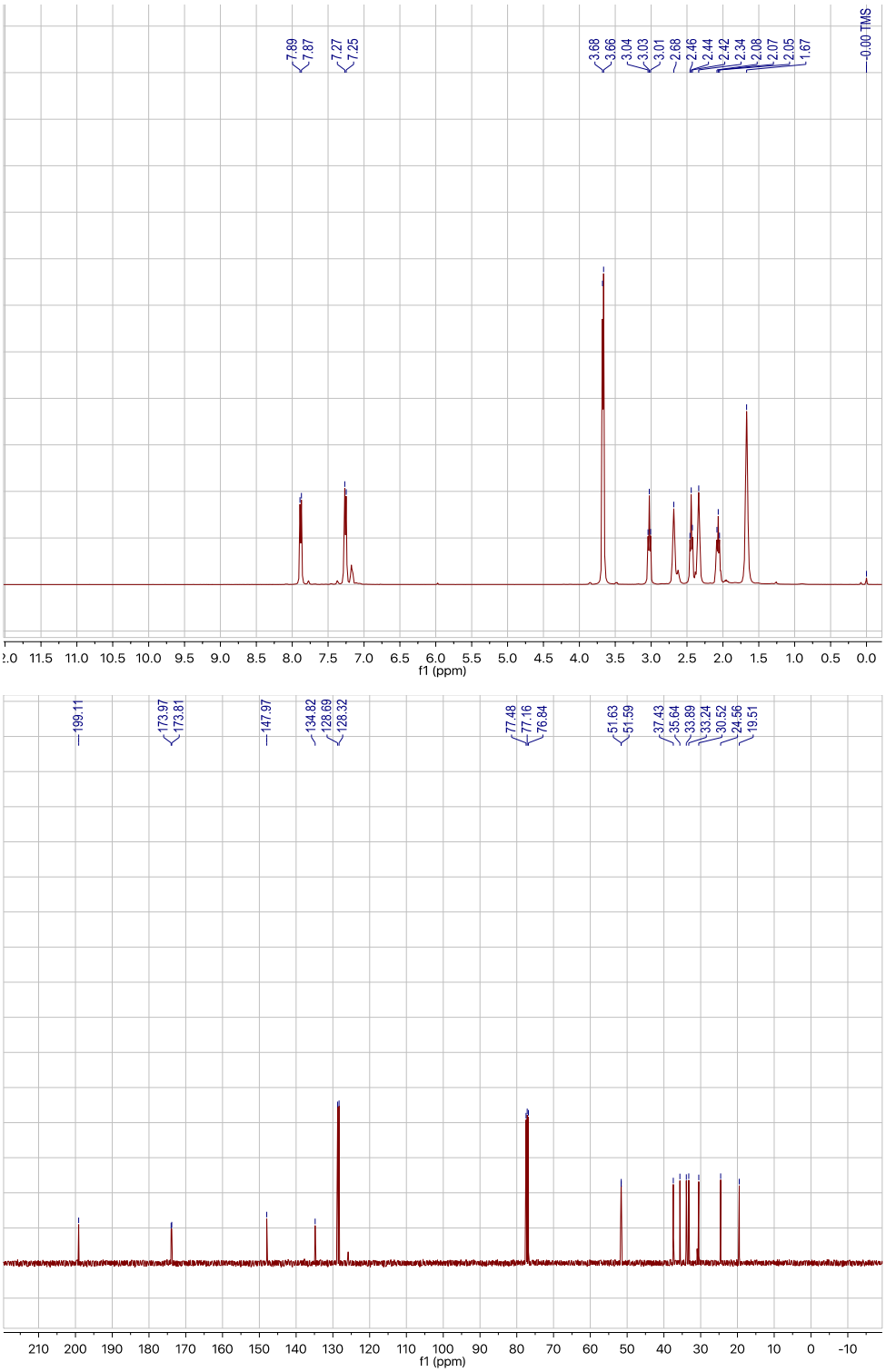


^{1}H and ^{13}C NMR spectra for 5-ethoxycarbonyl pentanoyl chloride **(P5a).**

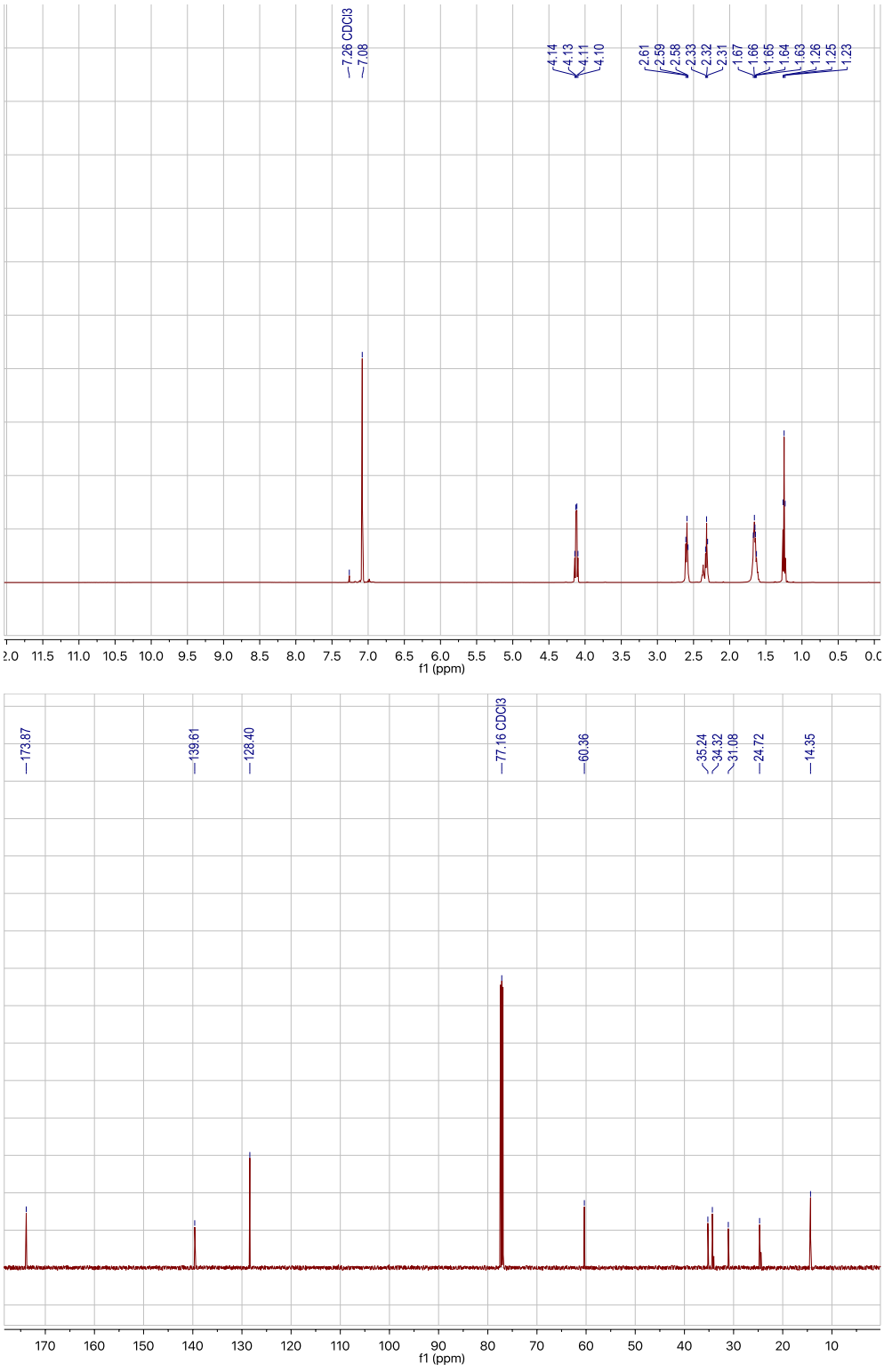




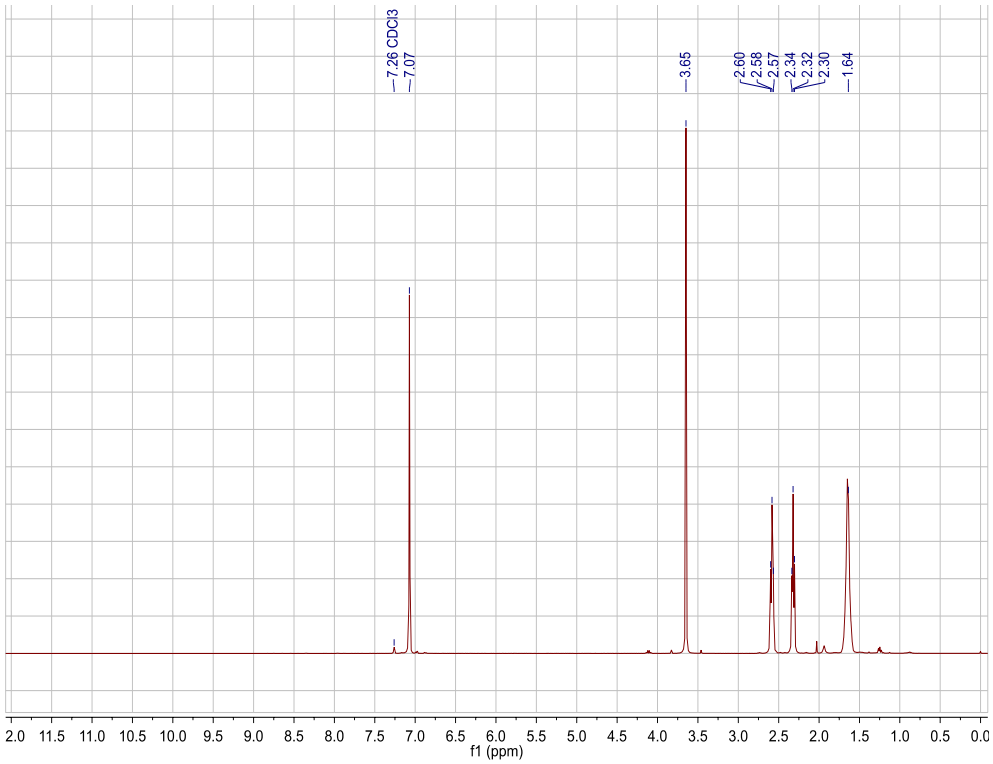
^{1}H and ^{13}C NMR spectra for ethyl 5-(4-(4-ethoxycarbonyl)phenyl)-5-oxo-pentanoate **(P6a).**

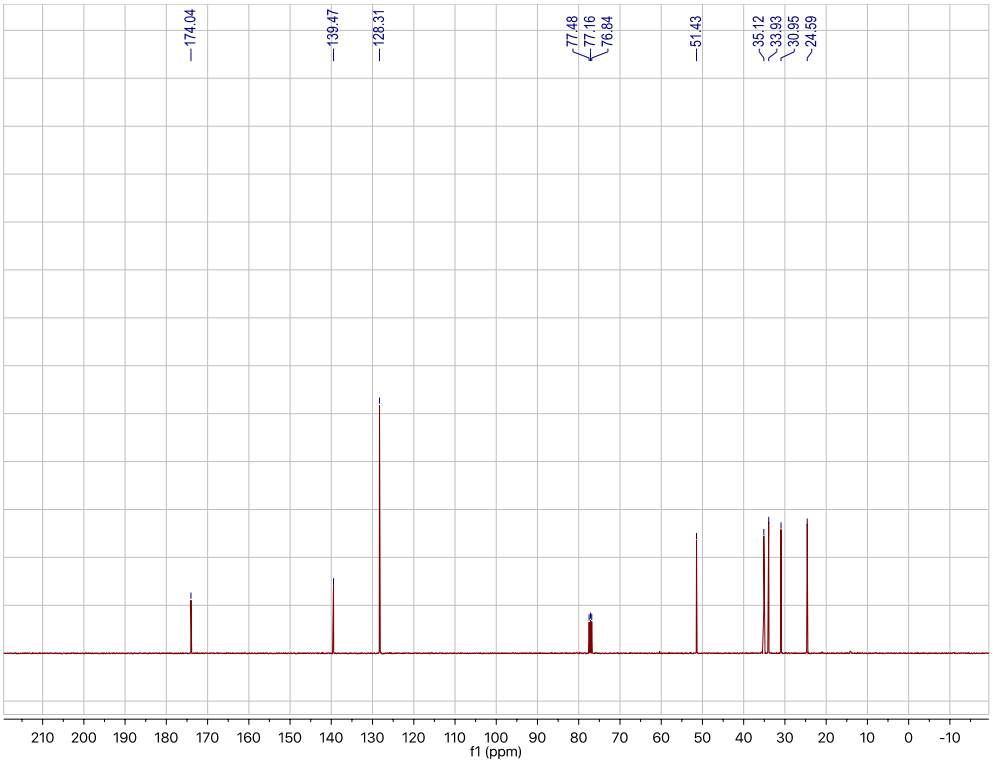


^{1}H and ^{13}C NMR spectra for methyl 5-(4-(4-methoxycarbonyl)phenyl)-5-oxo-pentanoate **(P6b).**

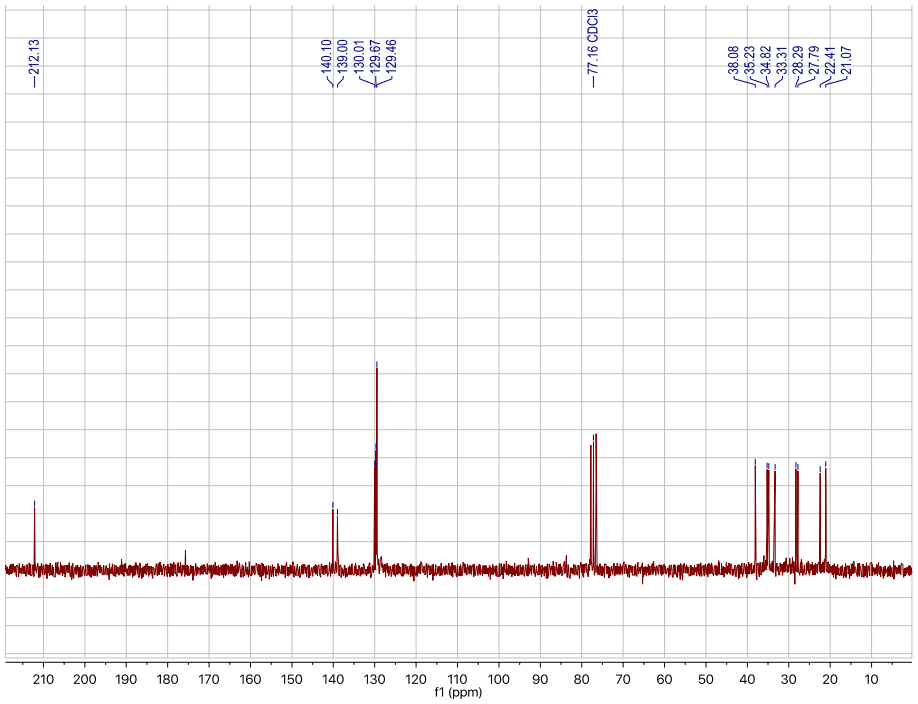


^{1}H and ^{13}C NMR spectra for diethyl 5,5'-(1,4-phenylene)dipentanoate (**P7a**).

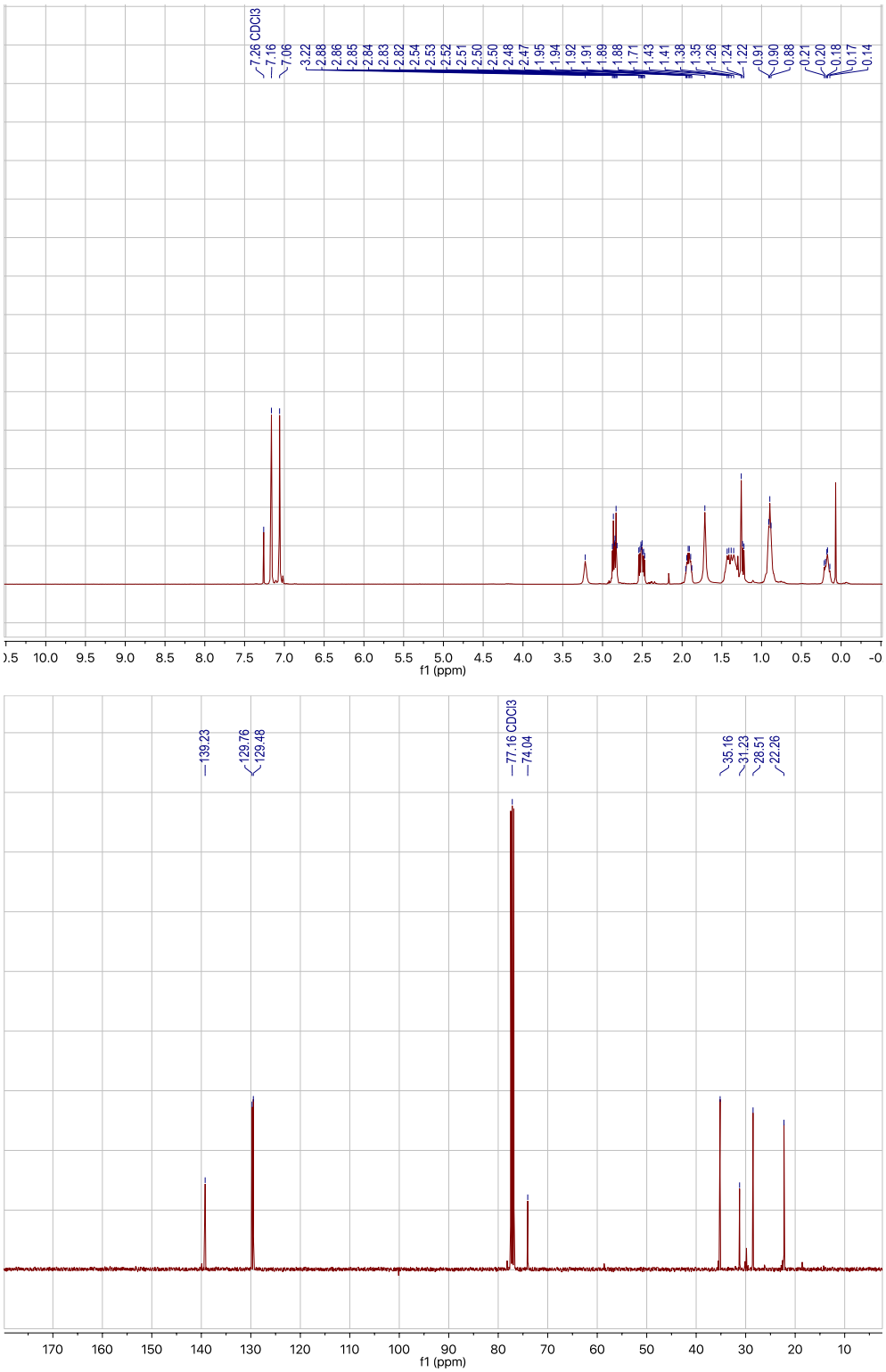




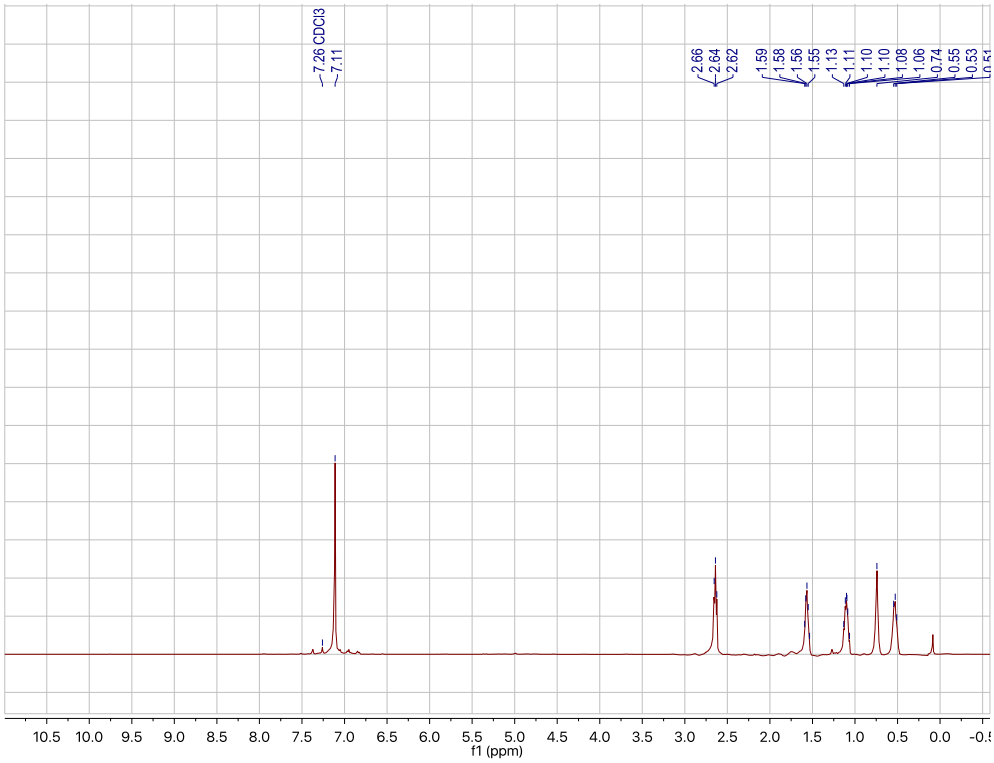
^{1}H and ^{13}C NMR spectra for dimethyl 5,5'-(1,4-phenylene)dipentanoate (**P7b**).

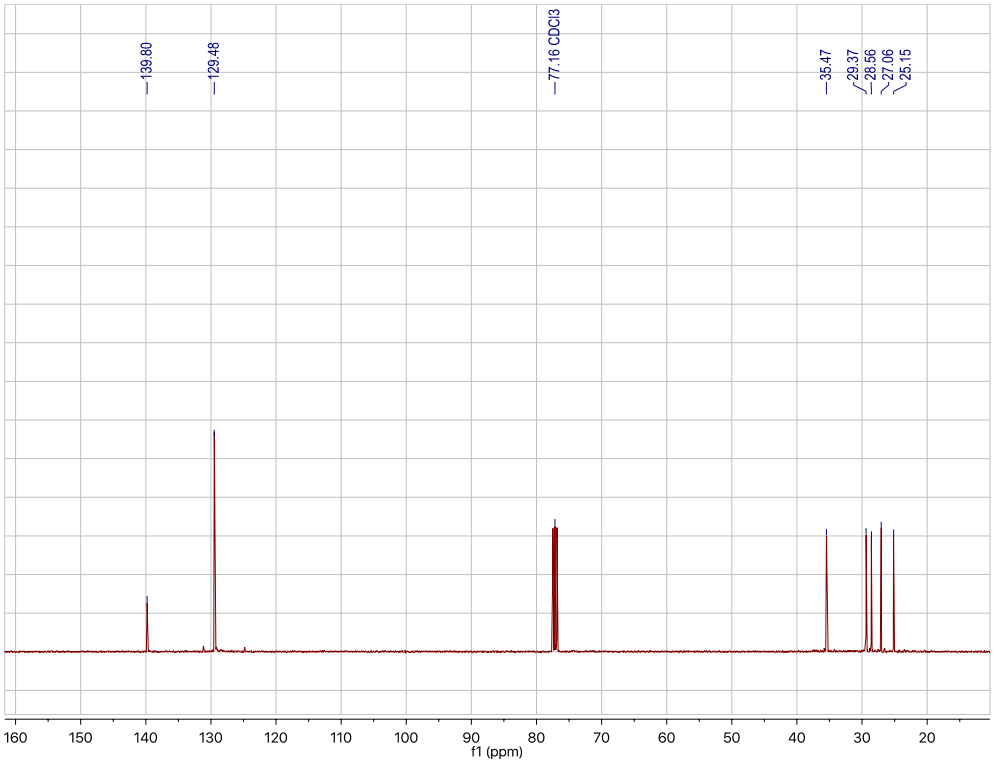


^{13}C NMR spectra for 7-hydroxy-1(1,4)-benzenecycloundecaphan-6-one (**P8**) and 1(1,4)-benceneocycloundecaphan-6,7-diol (**P9**) mixture.

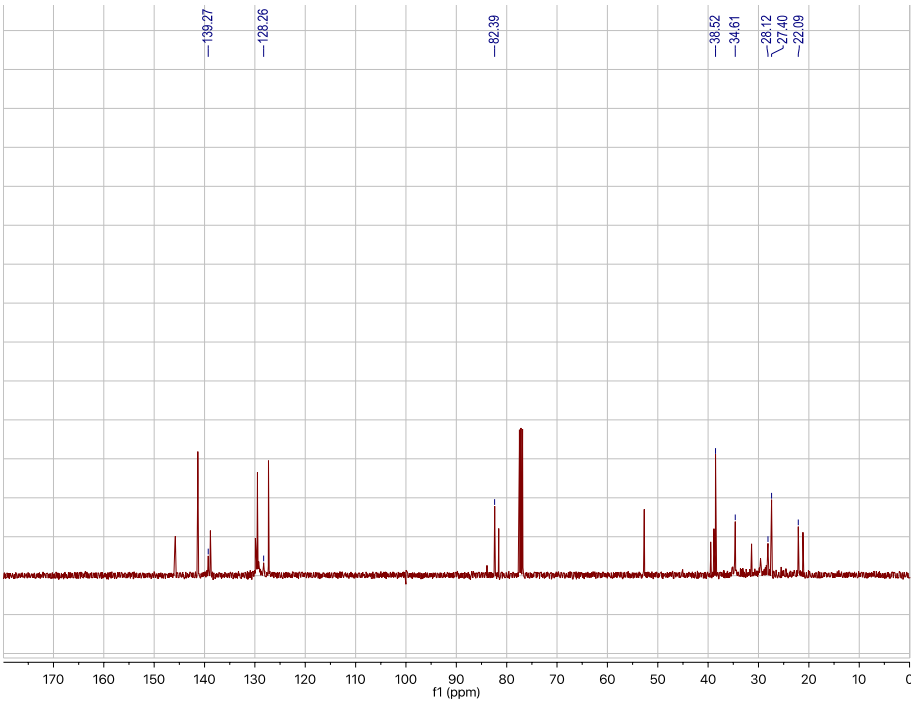


^{1}H and ^{13}C NMR spectra for 1(1,4)-benzenecycloundecaphan-6,7-diol (**P9**).

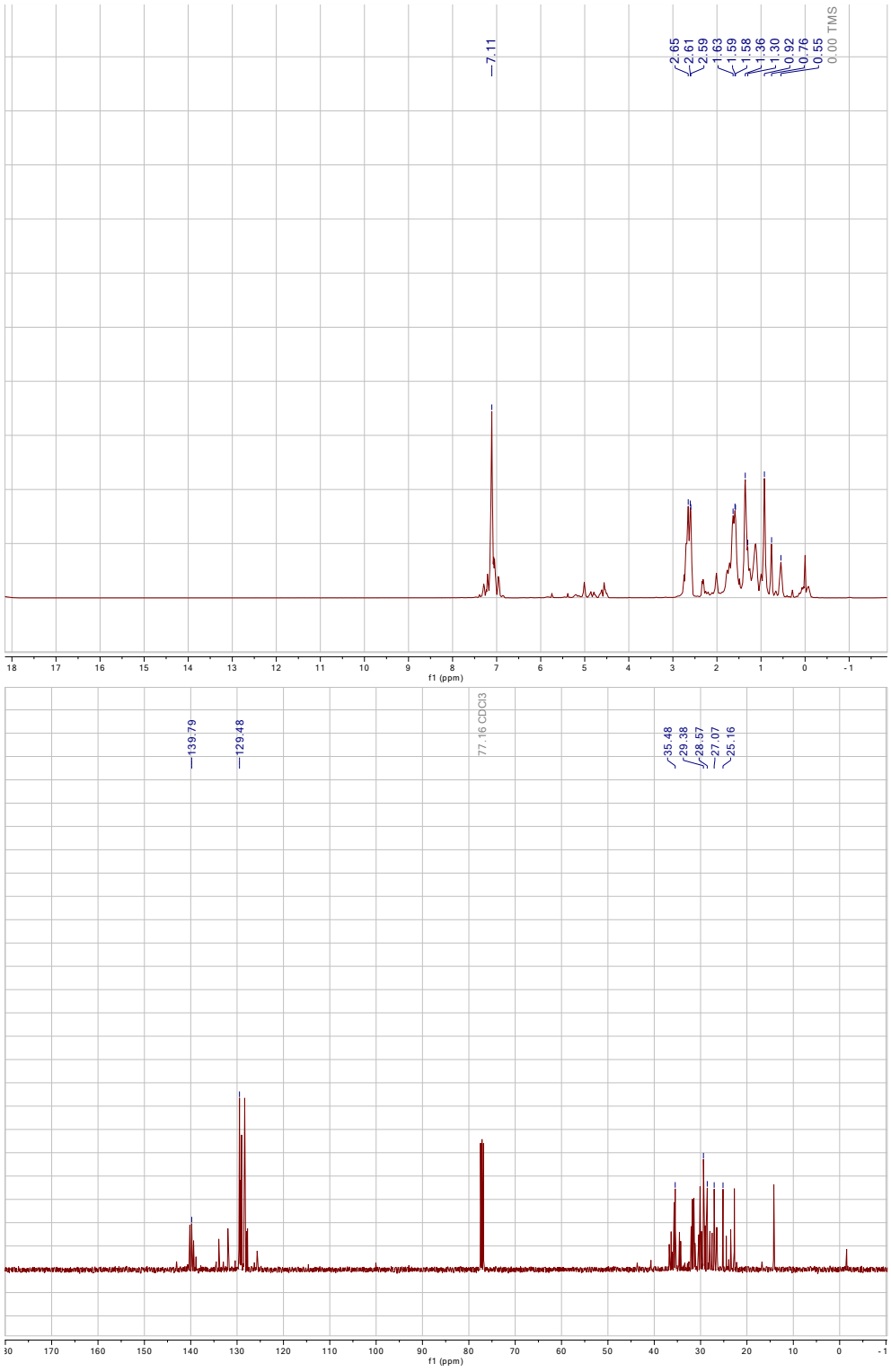




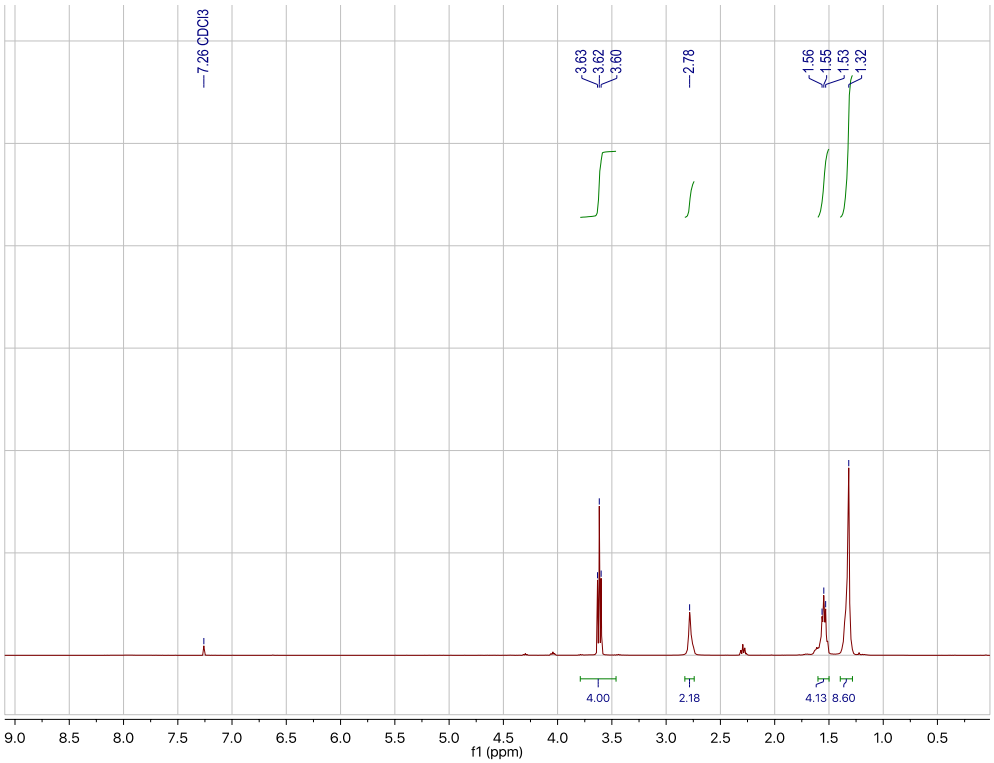
^{1}H and ^{13}C NMR spectra for 1(1,4)-benzenecycloundecaphane (**P10**).

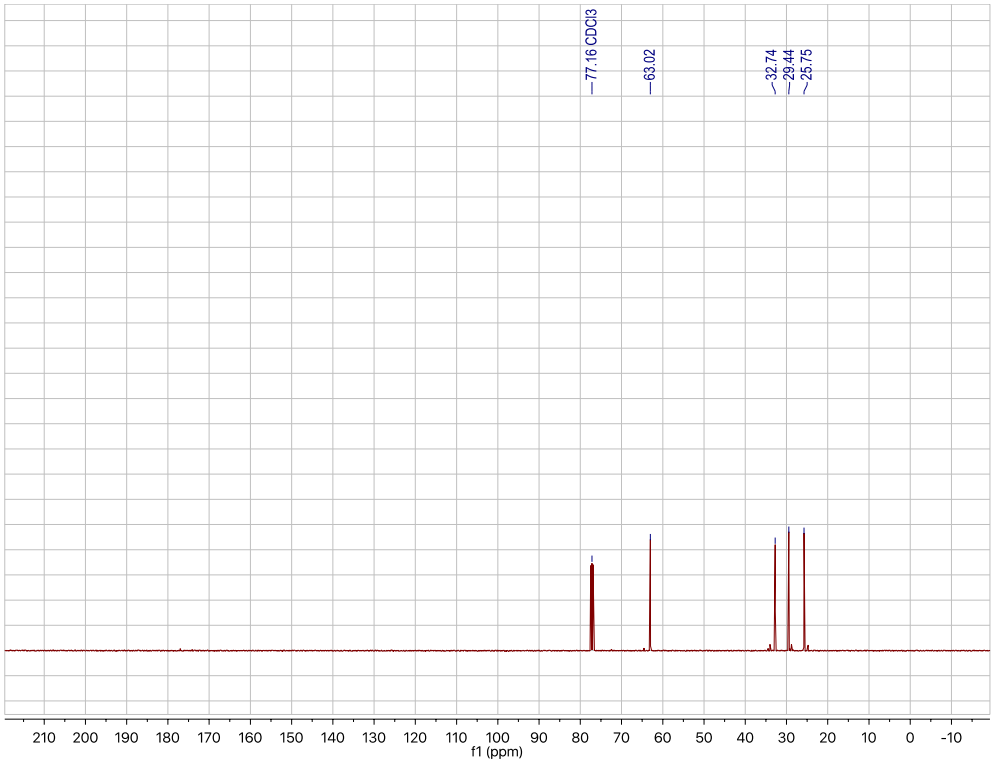


^{13}C NMR spectra for 1(1,4)-benzenecycloundecaphan-6,7-diyl dimethanesulfonate (**P11**).

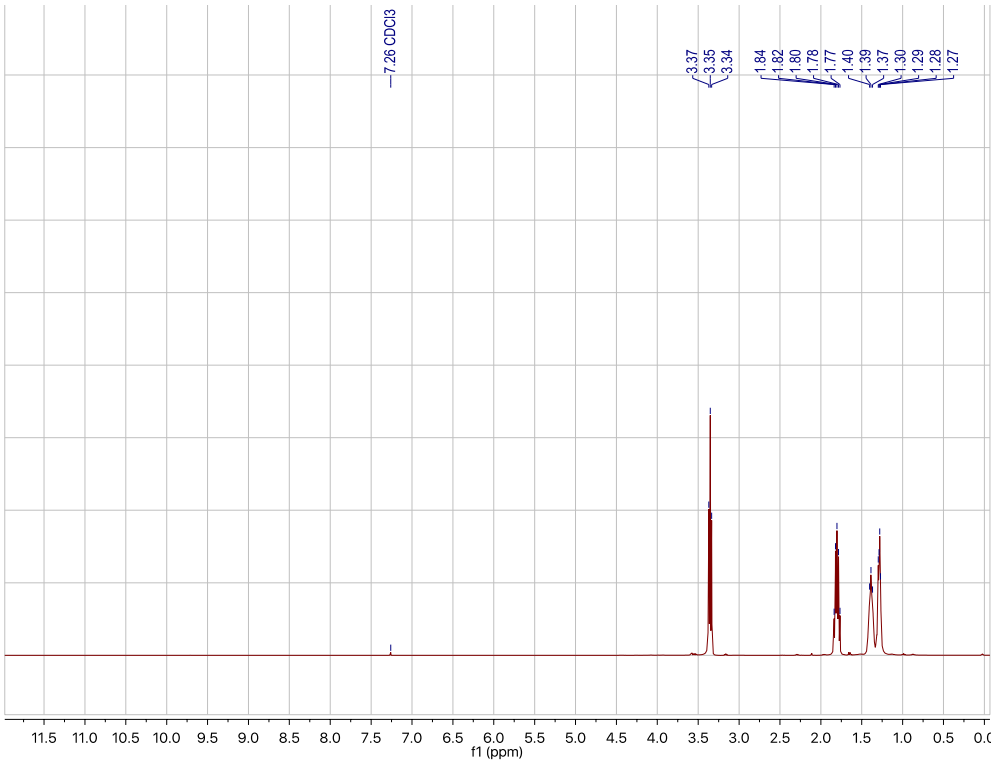


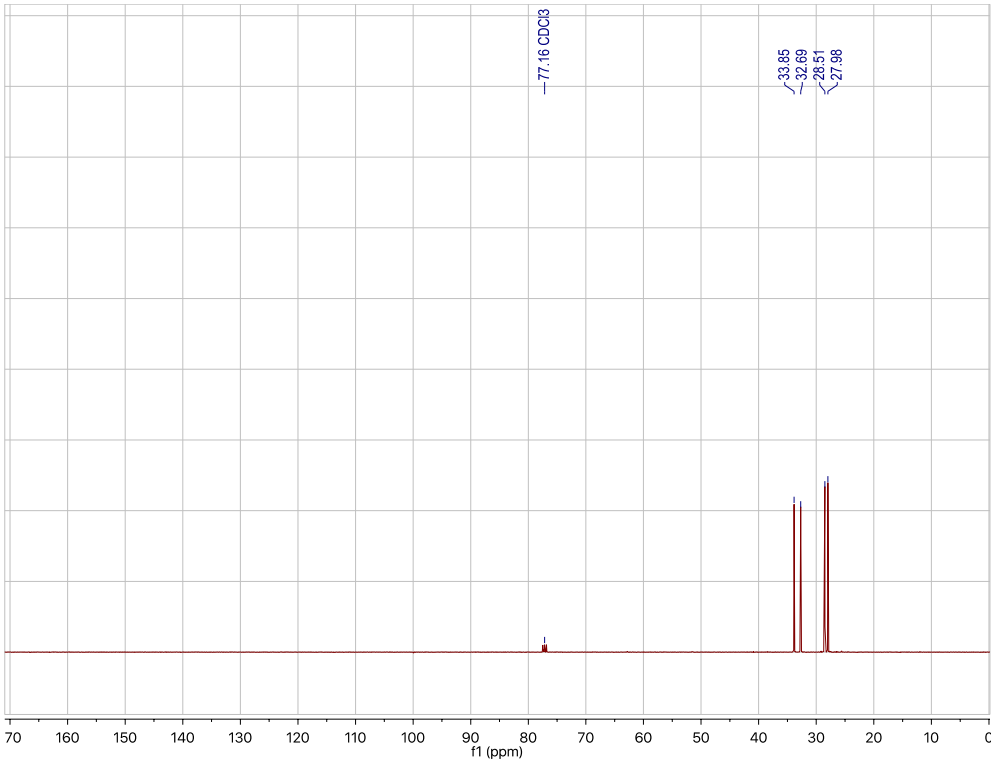
^{1}H and ^{13}C NMR spectra for 1(1,4)-benzenecycloundecaphane (**P10**) starting from (**P11**).



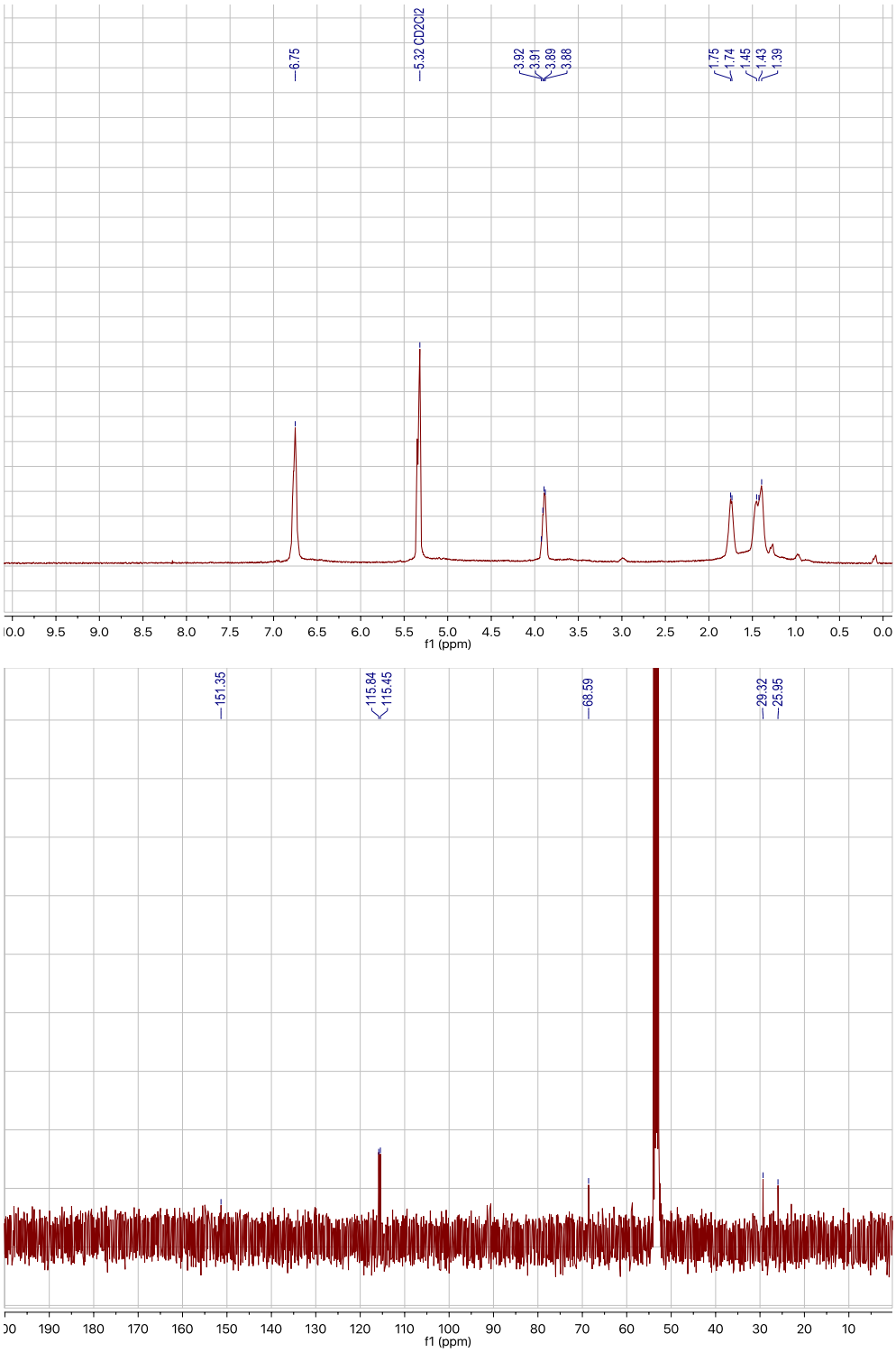


^{1}H and ^{13}C NMR spectra for 1,8-octanediol (**P12**).

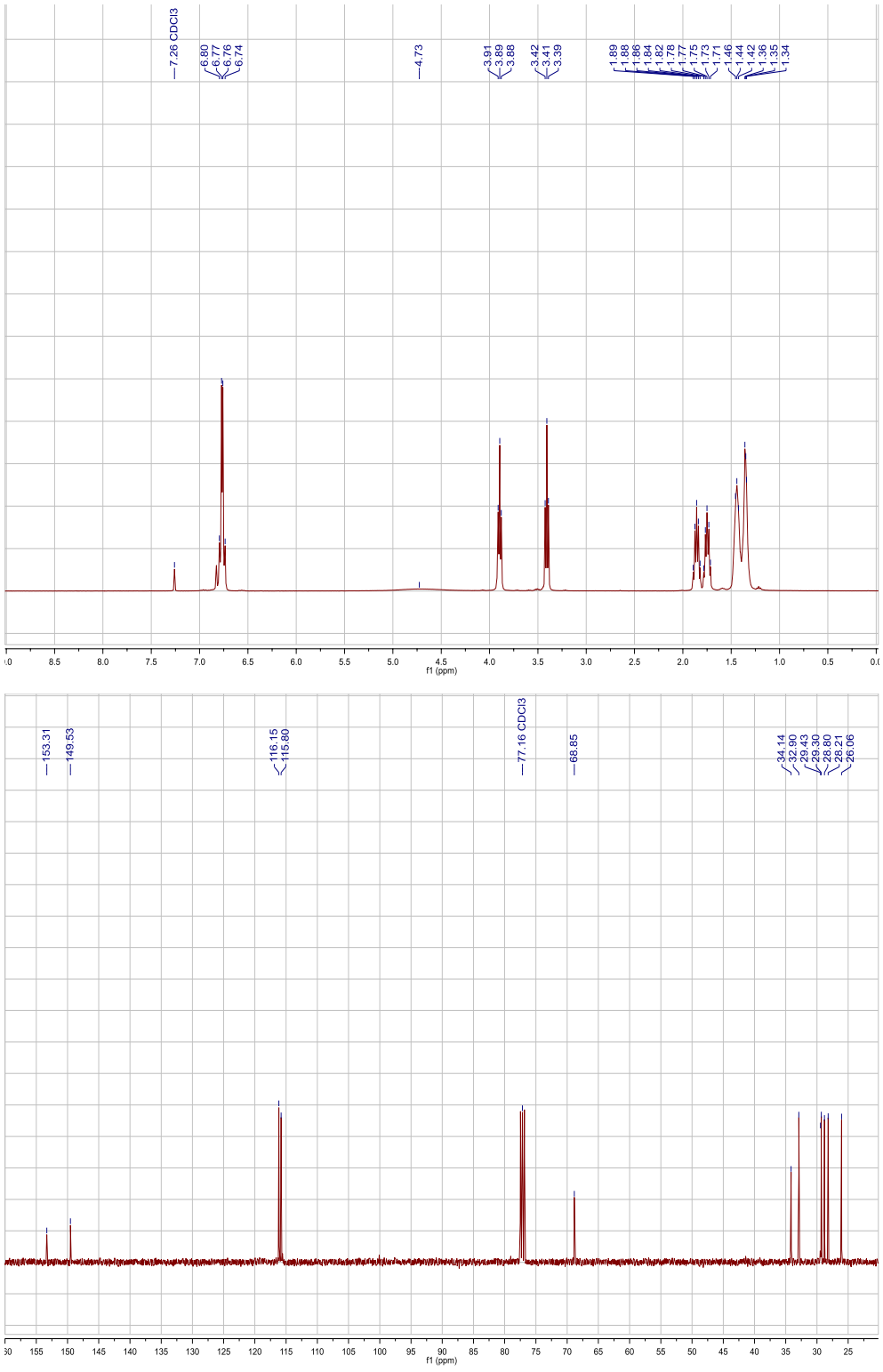




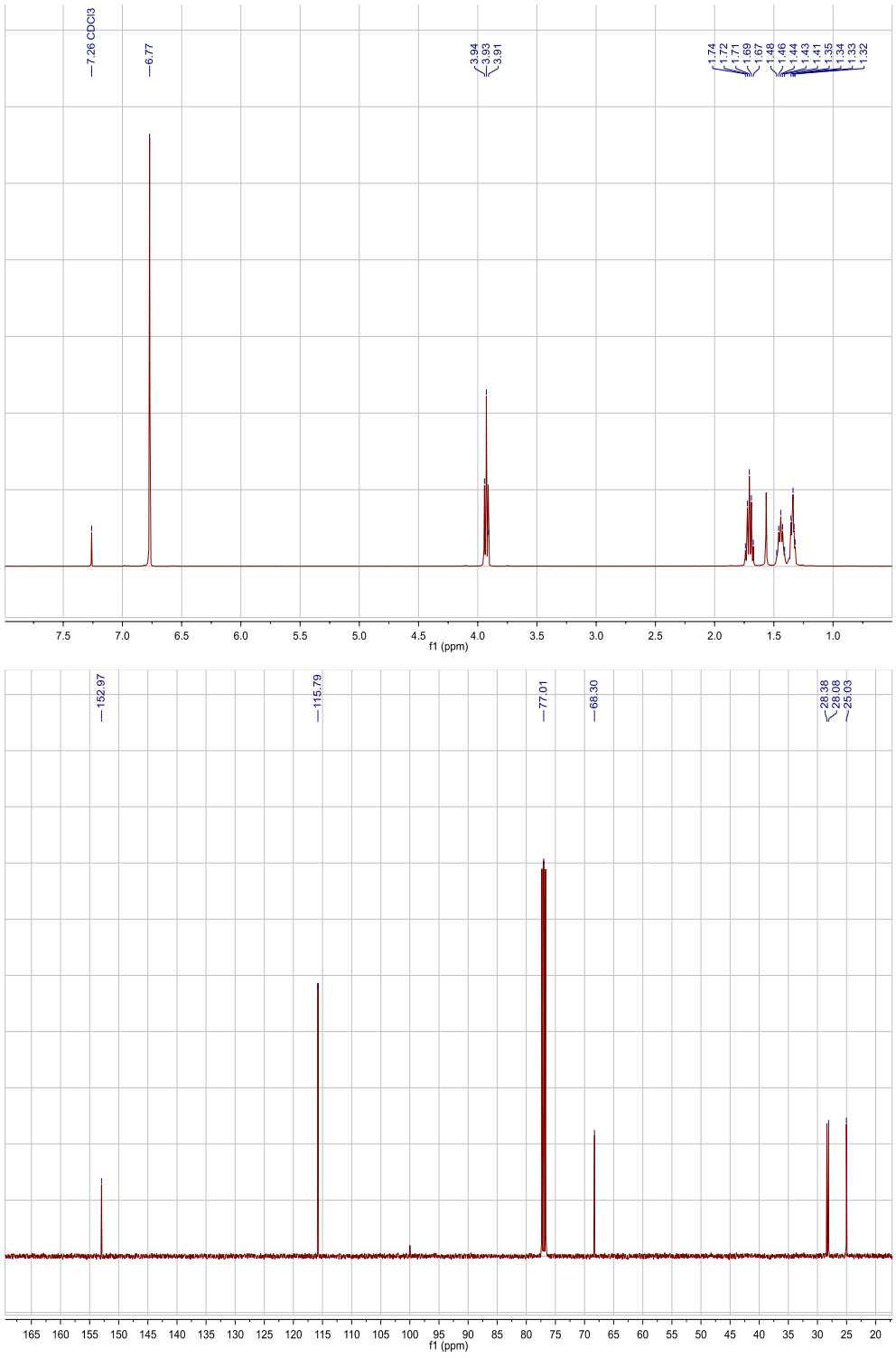
^{1}H and ^{13}C NMR spectra for 1,8-dibromooctane (**P13**).



^{1}H and ^{13}C NMR spectra for 2,11-dioxa-1(1,4)-benzenecycloundecaphane (**P15**) in one step.



^{1}H and ^{13}C NMR spectra for *p*-hydroxyphenyl-8-bromooctyl ether **(P14).**



^{1}H and ^{13}C NMR spectra for 2,11-dioxa-1(1,4)-benzenecycloundecaphane (**P15**) in two steps.