

Supporting Information

TITLE: 6-Endo Or Not 6-Endo: That is the Question

AUTHOR: John Tamine and Chenbo Wang

Contents:

(1) Cartesian coordinates from 6-31G* optimization, Hartree-Fock 6-31G* energy in a.u. (Hartrees), and MP2/6-31G* energy in a.u. (Hartrees), for:

each conformation of compound 6,

beginning with conformation C, (minima)
followed by the seven intermediate conformations for the first ring inversion,
followed by conformation A. (minima)
followed by the seven intermediate conformations for the second ring inversion,
followed by conformation B. (minima)
finally the data for conformation D. (minima)

(barriers to conformation D were not determined due to its high relative energy)

(2) ¹H and ¹³C NMR, and HRMS spectra of synthesized compounds.

C-A-B_PROF.1 (6-C)

		Cartesian Coordinates (Angstroms)		
Atom	Label	X	Y	Z
O	O2	-2.1086202	-1.5417334	-2.0895777
C	C1	-1.4539528	-0.9895998	-1.2863928
C	C6	-0.0791656	-1.4982815	-0.8067395
C	C2	0.8988588	-0.3301696	-0.6423896
H	H1	1.8146171	-0.6983178	-0.2005730
C	C4	0.3305260	0.8546231	0.1761810
C1	C11	0.6244717	2.3764760	-0.7787648
C	C5	1.0212659	1.0225921	1.5267698
H	H6	2.0765027	1.2206394	1.3905707
H	H7	0.9112319	0.1167282	2.1123545
H	H8	0.5900696	1.8490602	2.0792189
C	C3	-1.1774960	0.7091258	0.3767554
H	H3	-1.3727552	0.0856232	1.2371253
H	H4	-1.6372802	1.6687320	0.5376344
O	O1	-1.8310157	0.1636699	-0.7518651
H	H5	1.1347182	0.0014803	-1.6422464
C1	C12	0.5907822	-2.6378612	-1.9817151
C1	C13	-0.3327585	-2.3727867	0.7436544

E(HF) = -1759.4457851 a.u.
E(MP2) = -1760.9715055 a.u.

C-A-B_PROF.2

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1198870	-1.6755632	-1.9640275
C	C1	-1.4466433	-1.0543751	-1.2296722
C	C6	-0.0417379	-1.4894922	-0.7770052
C	C2	0.8831527	-0.2710152	-0.7017315
H	H1	1.8603440	-0.5807843	-0.3576317
C	C4	0.3344715	0.8794127	0.1732615
Cl	Cl1	0.7338058	2.4373823	-0.6735422
C	C5	0.9962849	0.9205135	1.5496641
H	H6	2.0611513	1.0868124	1.4503425
H	H7	0.8372341	-0.0150713	2.0693576
H	H8	0.5846733	1.7251322	2.1486222
C	C3	-1.1899034	0.7702520	0.3186880
H	H3	-1.4359146	0.2756016	1.2483547
H	H4	-1.6329207	1.7508091	0.3524354
O	O1	-1.8298423	0.1259369	-0.7631041
H	H5	0.9930126	0.0712609	-1.7210111
Cl	Cl2	0.6382123	-2.6445893	-1.9313201
Cl	Cl3	-0.2254933	-2.3122230	0.8083200

E(HF) = -1759.4447073 a.u.

E(MP2) = -1760.9704675 a.u.

C-A-B_PROF.3

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1286909	-1.7792391	-1.8492831
C	C1	-1.4419368	-1.1103572	-1.1710834
C	C6	-0.0074959	-1.4849125	-0.7698592
C	C2	0.8715675	-0.2308915	-0.7360481
H	H1	1.8798060	-0.5006807	-0.4540761
C	C4	0.3357905	0.8929606	0.1769827
Cl	Cl1	0.8161137	2.4681376	-0.5898363
C	C5	0.9731554	0.8481726	1.5662721
H	H6	2.0468565	0.9620961	1.4901000
H	H7	0.7553642	-0.0901269	2.0544691
H	H8	0.5942989	1.6550543	2.1837521
C	C3	-1.2006439	0.8222452	0.2789414
H	H3	-1.4917160	0.4753992	1.2617342
H	H4	-1.6183016	1.8088915	0.1730222
O	O1	-1.8448837	0.0712846	-0.7289419
H	H5	0.9047720	0.1217391	-1.7578110
Cl	Cl2	0.6762130	-2.6167473	-1.9460630
Cl	Cl3	-0.1202688	-2.3130256	0.8177284

E(HF) = -1759.4419032 a.u.

E(MP2) = -1760.9675999 a.u.

C-A-B_PROF.4

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1617909	-1.9519914	-1.5682424
C	C1	-1.4383050	-1.1924869	-1.0394305
C	C6	0.0482359	-1.4821928	-0.7809800
C	C2	0.8645523	-0.1873845	-0.7734008
H	H1	1.9013675	-0.4102681	-0.5637915
C	C4	0.3431365	0.8960635	0.1873473
Cl	Cl1	0.9483646	2.4816198	-0.4696323
C	C5	0.9088931	0.7675883	1.6029084
H	H6	1.9910863	0.7587464	1.5791688
H	H7	0.5625789	-0.1378573	2.0766821
H	H8	0.5933842	1.6111030	2.2060296
C	C3	-1.2026553	0.9145338	0.2042693
H	H3	-1.5648480	0.7708282	1.2134557
H	H4	-1.5628735	1.8756858	-0.1183364
O	O1	-1.8551733	0.0048395	-0.6623957
H	H5	0.8121791	0.1902289	-1.7858399
Cl	Cl2	0.6814092	-2.5221982	-2.0705542
Cl	Cl3	0.1304586	-2.3868578	0.7627428

E(HF) = -1759.4381871 a.u.

E(MP2) = -1760.9635797 a.u.

C-A-B_PROF.5

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1645712	-1.8897275	-1.5859943
C	C1	-1.4370532	-1.2192265	-0.9524113
C	C6	0.0680062	-1.4930971	-0.8210699
C	C2	0.8628776	-0.1892571	-0.7889988
H	H1	1.9069253	-0.4012688	-0.6050103
C	C4	0.3456252	0.8572497	0.2068644
Cl	Cl1	0.9982435	2.4575989	-0.4031050
C	C5	0.8733229	0.7429617	1.6371791
H	H6	1.9530236	0.6660139	1.6429332
H	H7	0.4618277	-0.1272476	2.1306185
H	H8	0.5897277	1.6222696	2.2005651
C	C3	-1.1920686	0.9746648	0.1761036
H	H3	-1.5664266	1.1374993	1.1737220
H	H4	-1.5173970	1.7595976	-0.4849508
O	O1	-1.8830131	-0.2095830	-0.2232349
H	H5	0.7878885	0.2235946	-1.7866384
Cl	Cl2	0.6378366	-2.4575244	-2.1932063
Cl	Cl3	0.2752251	-2.4545179	0.6766343

E(HF) = -1759.4377441 a.u.

E(MP2) = -1760.9625838 a.u.

C-A-B_PROF.6

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1983263	-1.8908812	-1.4405751
C	C1	-1.4320591	-1.2322920	-0.8432557
C	C6	0.0852676	-1.4819215	-0.8384077
C	C2	0.8711301	-0.1695119	-0.8005932
H	H1	1.9192974	-0.3773788	-0.6363239
C	C4	0.3546285	0.8590321	0.2138129
Cl	Cl1	1.0354649	2.4660237	-0.3414324
C	C5	0.8249712	0.7074637	1.6587980
H	H6	1.9001852	0.5906470	1.7042121
H	H7	0.3644475	-0.1550841	2.1227924
H	H8	0.5501704	1.5883145	2.2234234
C	C3	-1.1698046	0.9993111	0.1202541
H	H3	-1.5744180	1.3466923	1.0561816
H	H4	-1.4707437	1.6321149	-0.6995592
O	O1	-1.8216326	-0.2643995	-0.0208750
H	H5	0.7775717	0.2615312	-1.7889553
Cl	Cl2	0.5658780	-2.3802866	-2.2881166
Cl	Cl3	0.4179719	-2.4993748	0.5986197

E(HF) = -1759.4414988 a.u.

E(MP2) = -1760.9663351 a.u.

C-A-B_PROF.7

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.2116665	-1.9609326	-1.2237806
C	C1	-1.4232397	-1.2486328	-0.7262984
C	C6	0.0998797	-1.4559155	-0.8445988
C	C2	0.8814890	-0.1369574	-0.8135114
H	H1	1.9323923	-0.3437459	-0.6666797
C	C4	0.3662917	0.8782350	0.2147280
Cl	Cl1	1.0753783	2.4853743	-0.2731472
C	C5	0.7727442	0.6559147	1.6688157
H	H6	1.8411417	0.5022638	1.7523064
H	H7	0.2665442	-0.2073851	2.0794466
H	H8	0.5029265	1.5229983	2.2572736
C	C3	-1.1457684	1.0213604	0.0612185
H	H3	-1.5766853	1.5237765	0.9112793
H	H4	-1.4092011	1.5308100	-0.8545632
O	O1	-1.7795116	-0.2548949	0.0846167
H	H5	0.7717574	0.3049471	-1.7953242
Cl	Cl2	0.4816111	-2.2985114	-2.3575520
Cl	Cl3	0.5539166	-2.5187044	0.5257709

E(HF) = -1759.4450123 a.u.

E(MP2) = -1760.9702929 a.u.

C-A-B_PROF.8 (6-A)

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.2013718	-2.0414329	-0.9889147
C	C1	-1.4124895	-1.2598165	-0.6109570
C	C6	0.1079245	-1.4252410	-0.8454642
C	C2	0.8944570	-0.1043203	-0.8194286
H	H1	1.9448842	-0.3164654	-0.6777746
C	C4	0.3758261	0.9019373	0.2164011
Cl	Cl1	1.1080955	2.5062956	-0.2064058
C	C5	0.7250711	0.6037469	1.6713268
H	H6	1.7879937	0.4328693	1.7849741
H	H7	0.1945911	-0.2703433	2.0212975
H	H8	0.4444934	1.4441982	2.2934065
C	C3	-1.1256833	1.0390857	0.0051196
H	H3	-1.5779987	1.6757736	0.7477710
H	H4	-1.3428307	1.4373753	-0.9777096
O	O1	-1.7584734	-0.2229375	0.1506743
H	H5	0.7822009	0.3451227	-1.7970380
Cl	Cl2	0.3814847	-2.2115505	-2.4136459
Cl	Cl3	0.6718253	-2.5342968	0.4463678

E(HF) = -1759.4463559 a.u.

E(MP2) = -1760.9723128 a.u.

C-A-B_PROF.9

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.1393268	-2.1740156	-0.6258256
C	C1	-1.3933820	-1.2806604	-0.4726292
C	C6	0.1059097	-1.4027969	-0.8549849
C	C2	0.9248516	-0.0957058	-0.8123800
H	H1	1.9551355	-0.3296314	-0.5876390
C	C4	0.3791037	0.9127548	0.2048898
Cl	Cl1	1.1554328	2.5078140	-0.1590583
C	C5	0.6626190	0.5744914	1.6652283
H	H6	1.7241394	0.4344909	1.8250878
H	H7	0.1493282	-0.3318548	1.9576154
H	H8	0.3221654	1.3791021	2.3048745
C	C3	-1.1068942	1.0798444	-0.0687865
H	H3	-1.5686969	1.7625815	0.6256407
H	H4	-1.2756504	1.4365850	-1.0767439
O	O1	-1.7792531	-0.1544337	0.1134570
H	H5	0.8814476	0.3574957	-1.7915411
Cl	Cl2	0.1905457	-2.0655027	-2.5085986
Cl	Cl3	0.8125248	-2.6105583	0.2613939

E(HF) = -1759.4454179 a.u.

E(MP2) = -1760.9717095 a.u.

C-A-B_PROF.10

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.0052168	-2.2540713	-0.1868741
C	C1	-1.3383605	-1.2948333	-0.3095535
C	C6	0.1093871	-1.3882455	-0.8662771
C	C2	0.9630754	-0.0972010	-0.7903419
H	H1	1.9739730	-0.3510626	-0.5096897
C	C4	0.3812184	0.9163705	0.1967397
Cl	Cl1	1.1983230	2.5011049	-0.1058230
C	C5	0.5863154	0.5482651	1.6633904
H	H6	1.6416801	0.4464061	1.8816321
H	H7	0.0994235	-0.3891629	1.9031865
H	H8	0.1745161	1.3164281	2.3058247
C	C3	-1.0844993	1.1077653	-0.1595097
H	H3	-1.5634714	1.8275427	0.4842317
H	H4	-1.1901870	1.4291440	-1.1875355
O	O1	-1.7962469	-0.1010126	0.0332067
H	H5	0.9873423	0.3568791	-1.7685444
Cl	Cl2	-0.0671637	-1.8628624	-2.5850785
Cl	Cl3	0.9298913	-2.7114543	0.0010159

E(HF) = -1759.4439532 a.u.

E(MP2) = -1760.9704582 a.u.

C-A-B_PROF.11

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-1.8588614	-2.2799324	0.1330380
C	C1	-1.2761184	-1.3124547	-0.1898866
C	C6	0.0992825	-1.3786657	-0.9054277
C	C2	1.0071649	-0.1273479	-0.7372740
H	H1	1.9788649	-0.4297250	-0.3779505
C	C4	0.3816308	0.9131075	0.1931026
Cl	Cl1	1.2049195	2.4939710	-0.1072314
C	C5	0.5316757	0.5726743	1.6738453
H	H6	1.5798379	0.5240133	1.9397469
H	H7	0.0812709	-0.3857002	1.9056473
H	H8	0.0549498	1.3259504	2.2884335
C	C3	-1.0708549	1.0888549	-0.2263700
H	H3	-1.5682232	1.8443974	0.3597303
H	H4	-1.1389345	1.3515608	-1.2738911
O	O1	-1.7875213	-0.1083144	0.0140307
H	H5	1.1485025	0.3200505	-1.7082714
Cl	Cl2	-0.3182121	-1.5830264	-2.6412235
Cl	Cl3	0.9506266	-2.8294134	-0.3400484

E(HF) = -1759.4435542 a.u.

E(MP2) = -1760.9700600 a.u.

C-A-B_PROF.12

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-1.7594601	-2.3189409	0.2548275
C	C1	-1.2366785	-1.3457677	-0.1443727
C	C6	0.0808933	-1.3692889	-0.9568452
C	C2	1.0382348	-0.1772839	-0.6732564
H	H1	1.9381652	-0.5437034	-0.2029791
C	C4	0.3794026	0.9090489	0.1860058
Cl	Cl1	1.1845759	2.4873177	-0.1725605
C	C5	0.5133950	0.6386757	1.6833668
H	H6	1.5580360	0.6287046	1.9670842
H	H7	0.0826573	-0.3204965	1.9477263
H	H8	0.0080084	1.4050231	2.2575807
C	C3	-1.0739622	1.0480306	-0.2475063
H	H3	-1.5804255	1.8214528	0.3062923
H	H4	-1.1460759	1.2635237	-1.3046432
O	O1	-1.7698460	-0.1489338	0.0527127
H	H5	1.3296419	0.2431680	-1.6226369
Cl	Cl2	-0.4608156	-1.3180529	-2.6719734
Cl	Cl3	0.9142534	-2.9024773	-0.6588222

E(HF) = -1759.4443639 a.u.

E(MP2) = -1760.9709573 a.u.

C-A-B_PROF.13

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-1.7164921	-2.3814173	0.2359568
C	C1	-1.2215094	-1.3909725	-0.1561028
C	C6	0.0644566	-1.3611837	-1.0104831
C	C2	1.0524769	-0.2377991	-0.6056906
H	H1	1.8404821	-0.6708638	-0.0074309
C	C4	0.3743628	0.9050529	0.1749032
Cl	Cl1	1.1467825	2.4743357	-0.2842740
C	C5	0.5257318	0.7281315	1.6849552
H	H6	1.5729332	0.7343169	1.9597392
H	H7	0.0951069	-0.2141638	2.0052844
H	H8	0.0259017	1.5277464	2.2170705
C	C3	-1.0910897	1.0050078	-0.2311635
H	H3	-1.5987416	1.7724364	0.3297767
H	H4	-1.1967108	1.2103412	-1.2857063
O	O1	-1.7526241	-0.2040988	0.1018708
H	H5	1.5097439	0.1362477	-1.5078516
Cl	Cl2	-0.5068006	-1.1027954	-2.6979099
Cl	Cl3	0.8759901	-2.9303221	-0.9229440

E(HF) = -1759.4452271 a.u.

E(MP2) = -1760.9717444 a.u.

C-A-B_PROF.14

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-1.7574838	-2.4830057	0.0126471
C	C1	-1.2380713	-1.4631402	-0.2511612
C	C6	0.0530959	-1.3506844	-1.0873249
C	C2	1.0422216	-0.3257681	-0.4986139
H	H1	1.6396129	-0.8453859	0.2375203
C	C4	0.3629754	0.8945949	0.1698515
Cl	Cl1	1.0650498	2.4288905	-0.4873187
C	C5	0.5872706	0.8831301	1.6809423
H	H6	1.6459567	0.8826802	1.9086081
H	H7	0.1406779	-0.0059216	2.1137681
H	H8	0.1372664	1.7530462	2.1427719
C	C3	-1.1272868	0.9332823	-0.1588183
H	H3	-1.6330565	1.6676788	0.4464557
H	H4	-1.3013342	1.1581212	-1.1981355
O	O1	-1.7247339	-0.3071334	0.1802213
H	H5	1.7124407	-0.0203546	-1.2866450
Cl	Cl2	-0.4519076	-0.8706314	-2.7436002
Cl	Cl3	0.8473065	-2.9293991	-1.1811686

E(HF) = -1759.4457210 a.u.

E(MP2) = -1760.9718143 a.u.

C-A-B_PROF.15 (6B)

Atom Label		Cartesian Coordinates (Angstroms)		
		X	Y	Z
O	O2	-2.2282889	-2.2247642	-0.1655259
C	C1	-1.4613394	-1.3506078	-0.3264654
C	C6	-0.0231930	-1.5507035	-0.8464950
C	C2	0.9487057	-0.6448719	-0.0816511
C	C4	0.4801755	0.8225514	0.0619807
Cl	Cl1	1.5096384	1.9205192	-0.9474046
C	C5	0.6018258	1.2739332	1.5158391
H	H6	1.6101460	1.1250898	1.8830637
H	H7	-0.0810358	0.6960323	2.1304578
H	H8	0.3529449	2.3227234	1.6142860
C	C3	-0.9556121	0.9876502	-0.4445025
H	H3	-1.4112310	1.8685148	-0.0222912
H	H4	-0.9926379	1.0598005	-1.5183734
O	O1	-1.7599146	-0.0954852	-0.0078712
H	H2	1.9246925	-0.7049903	-0.5379785
H	H9	1.0310879	-1.0726911	0.9099561
Cl	Cl2	-0.0178595	-1.1979575	-2.6032580
Cl	Cl3	0.4718957	-3.2347430	-0.6137663

E(HF) = -1759.4461836 a.u.

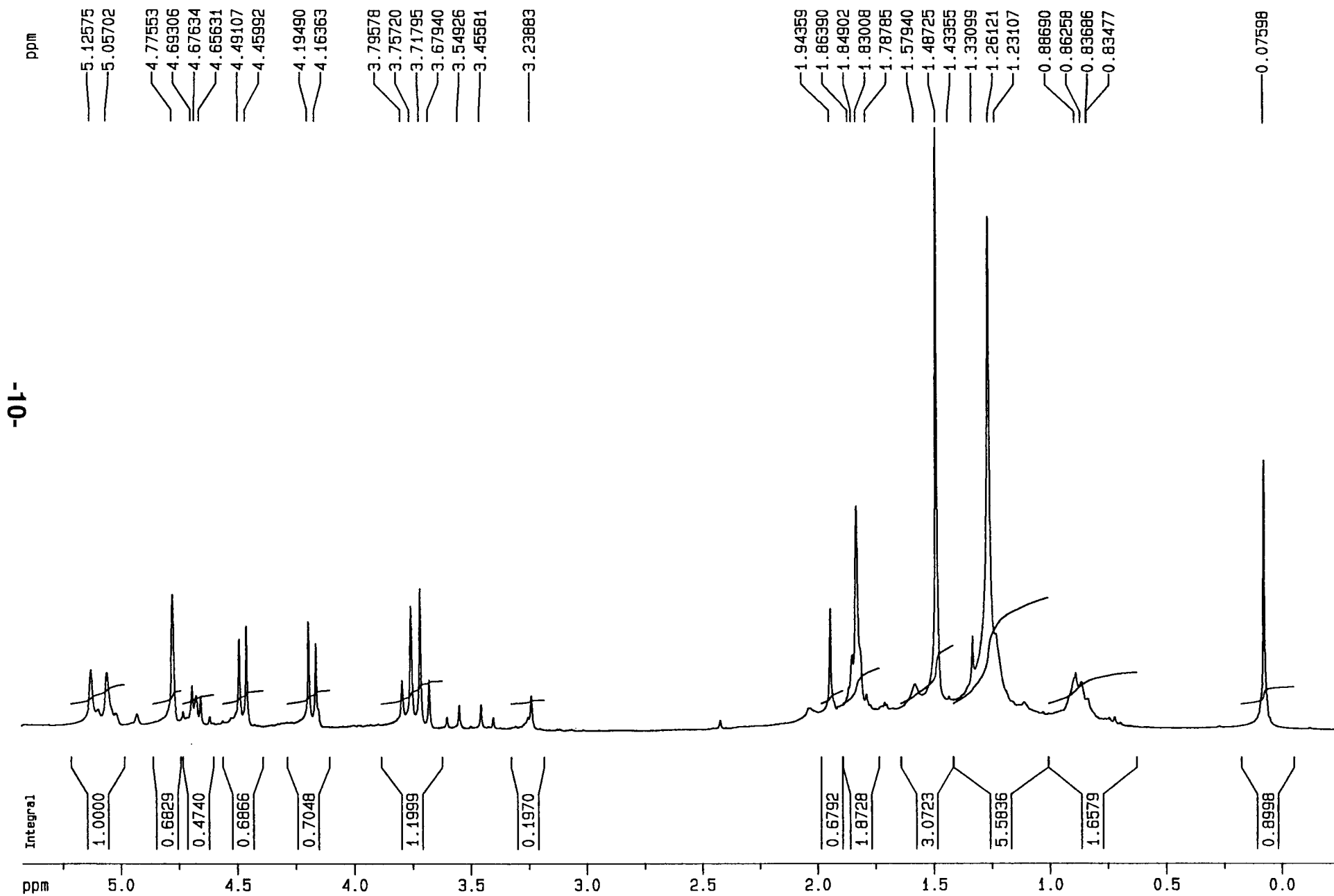
E(MP2) = -1760.9721983 a.u.

6D

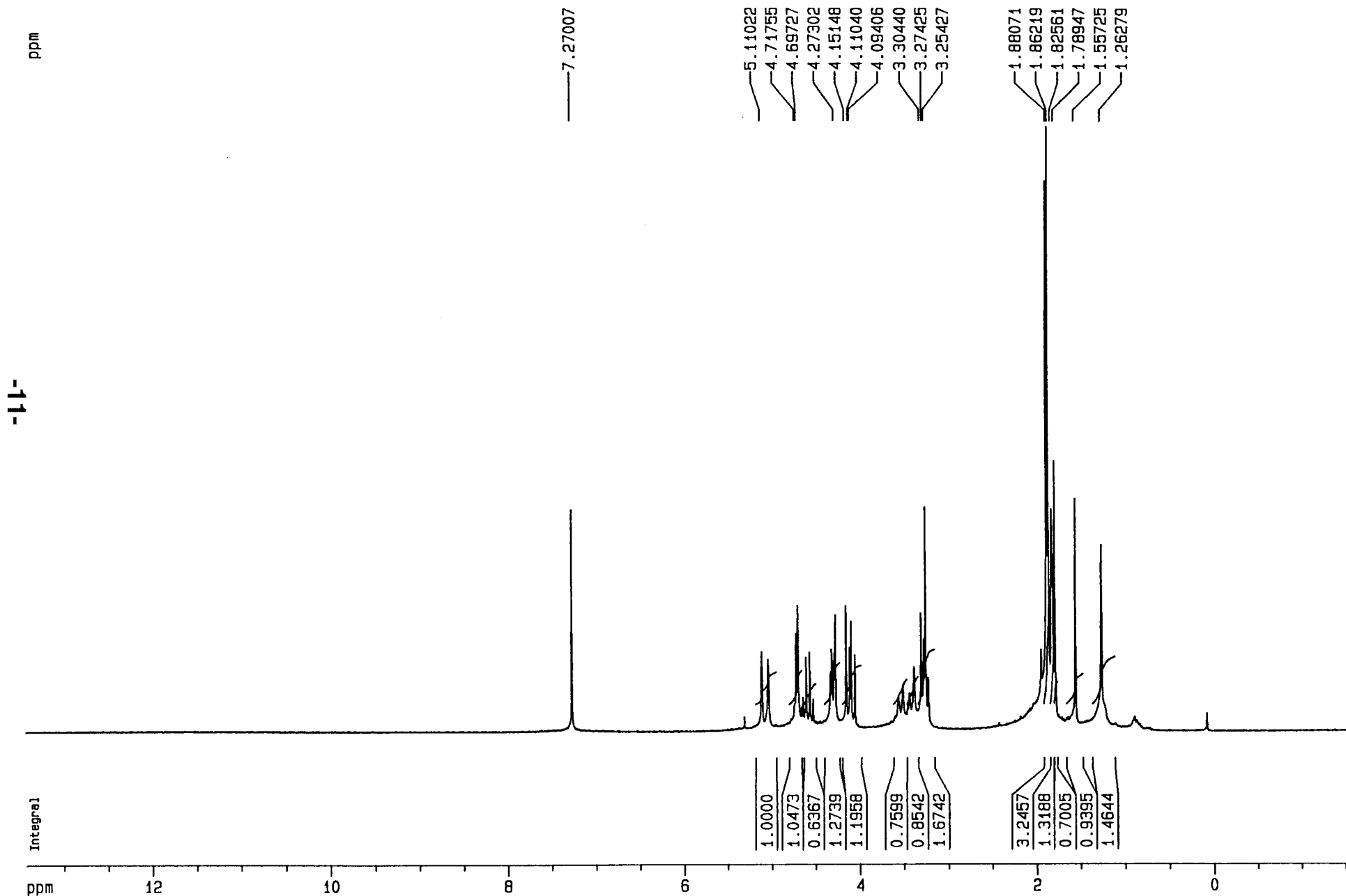
		Cartesian Coordinates (Angstroms)		
Atom	Label	X	Y	Z
O	O2	-2.0128113	-2.6749503	0.0132847
C	C1	-1.3467625	-1.7198489	-0.1335853
C	C6	0.1915696	-1.7968213	-0.2776293
C	C5	0.9284333	-0.4908276	0.0632851
H	H5	1.0576560	-0.4798881	1.1394904
H	H6	1.9138673	-0.5108340	-0.3800448
C	C4	0.1804831	0.7980241	-0.2846212
C	C3	-1.2556280	0.6554530	0.1891579
H	H3	-1.2680041	0.6402137	1.2743172
H	H4	-1.8686937	1.4729567	-0.1520418
O	O1	-1.8842362	-0.5137513	-0.2906890
Cl	Cl1	0.1806519	1.1165314	-2.0641874
C	C2	0.8457838	1.9952831	0.3921278
H	H1	1.8701844	2.0976957	0.0574824
H	H2	0.8466964	1.8678049	1.4699611
H	H10	0.3188580	2.9104900	0.1520549
Cl	Cl2	0.4927042	-2.2927883	-1.9668380
Cl	Cl3	0.8092481	-3.0747426	0.7984750

E(HF) = -1759.4433497 a.u.
E(MP2) = -1760.9689031 a.u.

Chenbo 06-02-04 Cyclization of Allyl trichloroacetate 2nd pot
five-membered ring CDCl₃



Chenbo 06-02-04 Cyclization of Allyl trichloroacetate 2nd pot
six-membered ring mixture CDCl₃ 7a + 7b



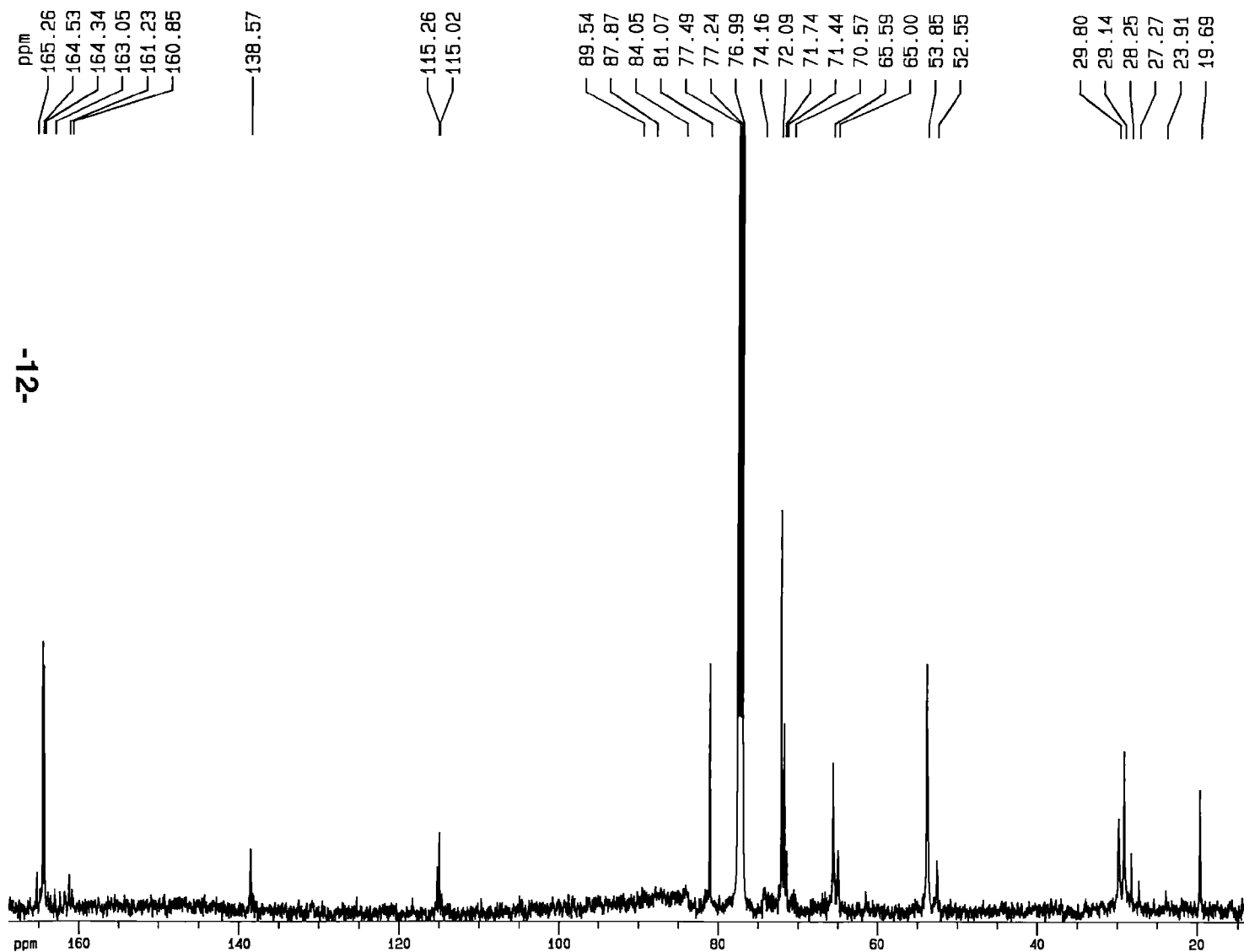
Chenbo 090904, 125 MHz, C13, cdc13, rt

Current Data Parameters
NAME Chenbo090904
EXPNO 2
PROCNO 1

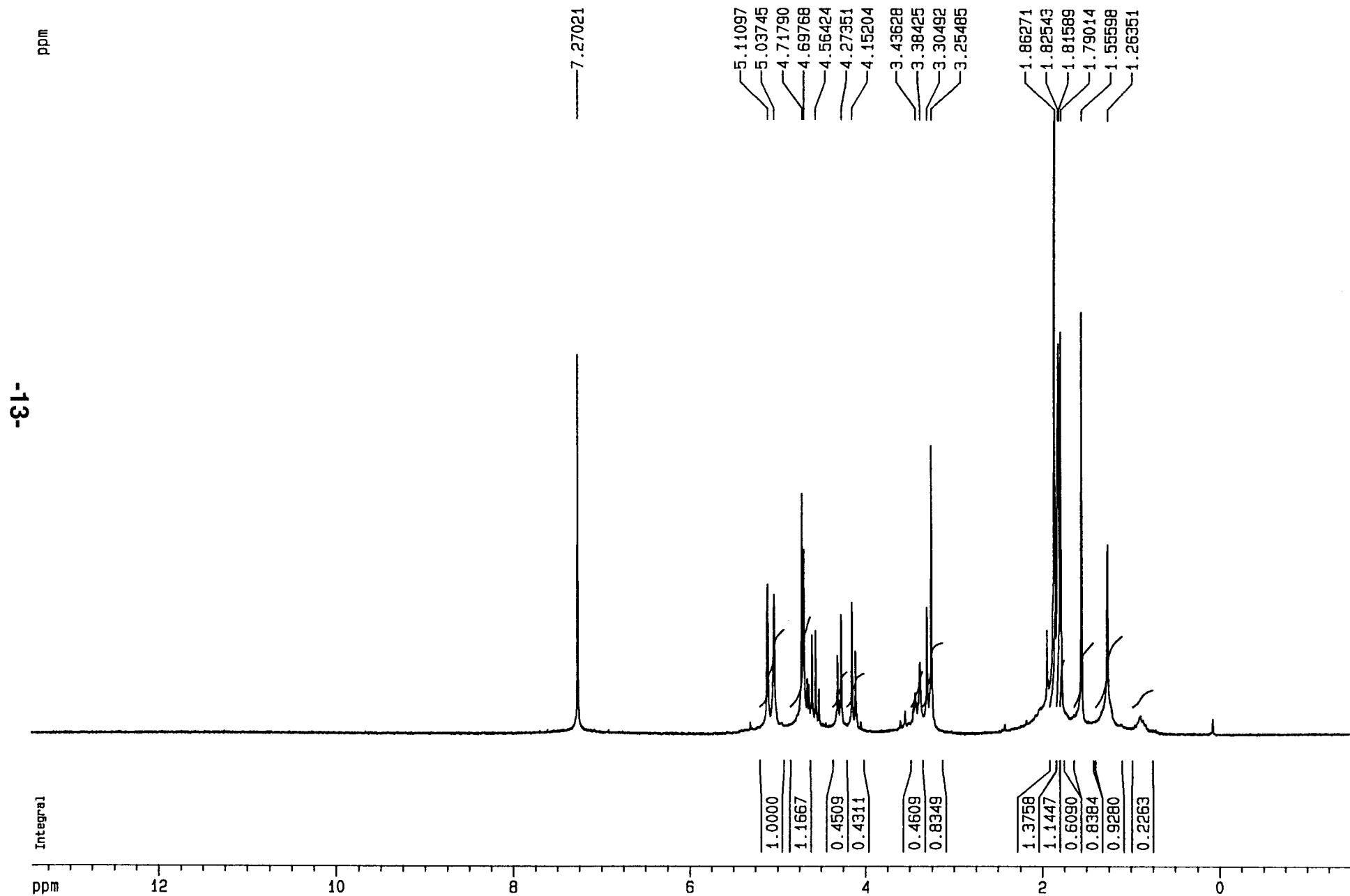
F2 - Acquisition Parameters
Date_ 500000
Time 15.17
INSTRUM spect
PROBHD 5 mm TXI 13C
PULPROG c13wznoe
TD 32768
SOLVENT CDC13
NS 6282
DS 2
SWH 32679.738 Hz
FIDRES 0.997306 Hz
AQ 0.5014004 sec
RG 32768
DW 15.300 usec
DE 6.00 usec
TE 290.0 K
D3 0.00100000 sec
PL12 6.00 dB
D1 10.00000000 sec
CPDPRG2 waltz16
PCPD2 100.00 usec
SF02 500.1330008 MHz
NUC2 1H
PL2 120.00 dB
P1 17.00 usec
DE 6.00 usec
SF01 125.7715724 MHz
NUC1 13C
PL1 0.00 dB

F2 - Processing parameters
SI 8192
SF 125.7577671 MHz
WDW EM
SSB 0
LB 4.00 Hz
GB 0
PC 1.00

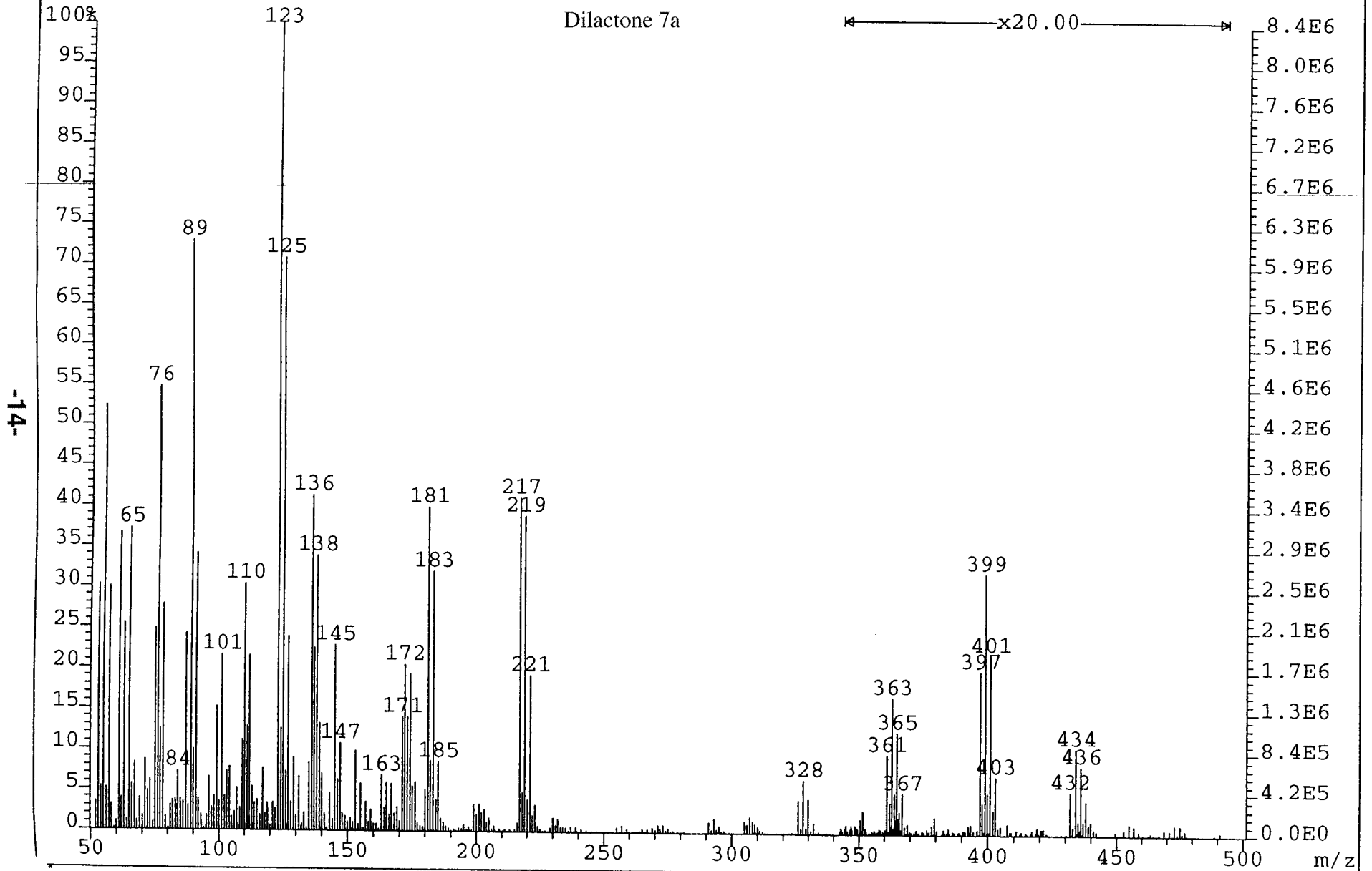
1D NMR plot parameters
CX 20.00 cm
F1P 168.836 ppm
F1 21232.43 Hz
F2P 12.861 ppm
F2 1617.43 Hz
PPMCM 7.79872 ppm/cm
HZCM 980.75006 Hz/cm



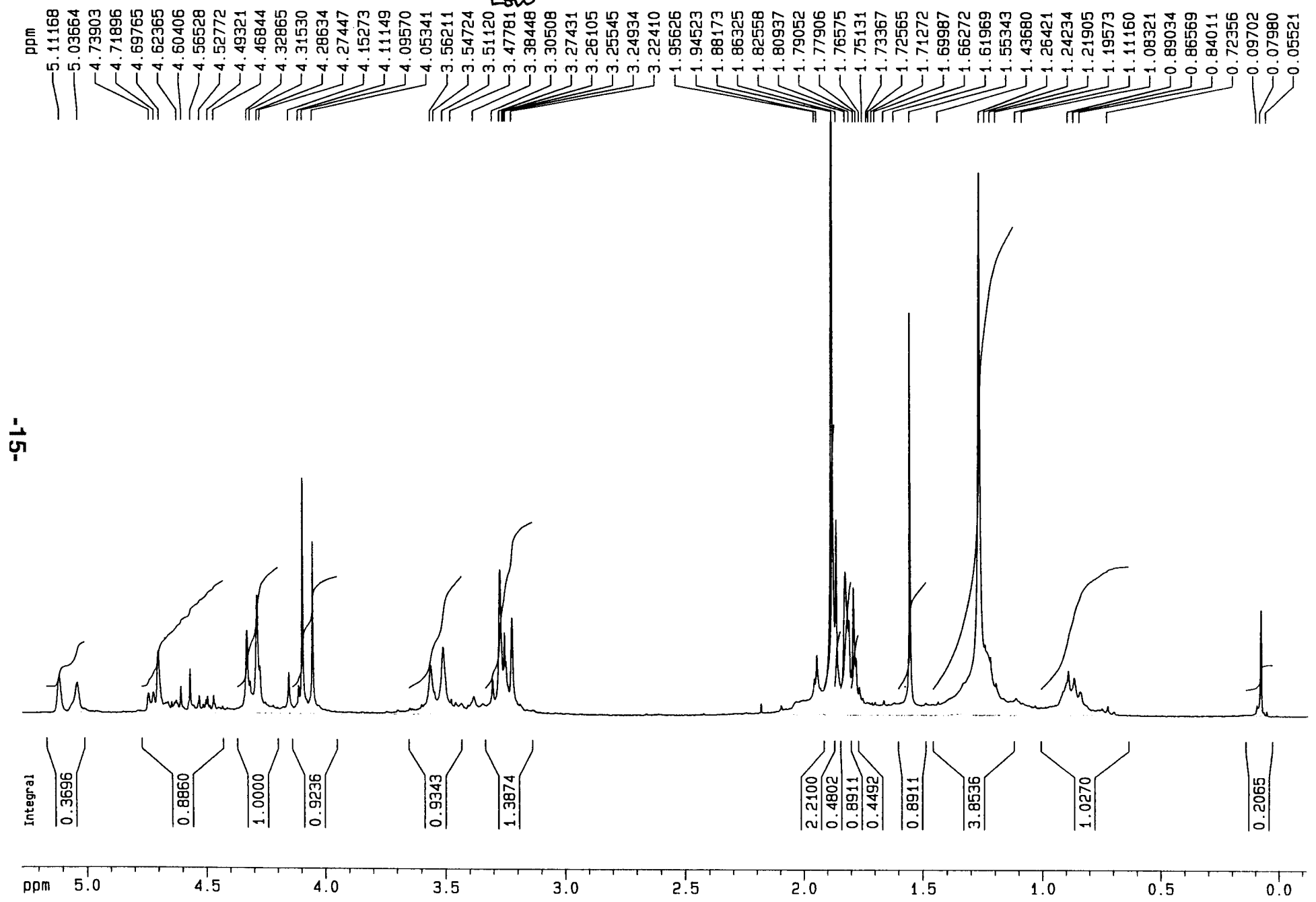
Chenbo 06-02-04 Cyclization of Allyl trichloroacetate 2nd pot
six-membered ring high Rf CDC13 *7a*



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File Text:WANG/WIPF CW51B



Chenbo 06-03-04 Cyclization of Allyl trichloroacetate 2nd pot 7b
12-membered ring ~~11.8~~ Rf in CDCl3



File:041405 Ident:14 Acq: 8-JUN-2004 14:05:07 +1:08 Cal:PFKJUN082004MS750_1

AutoSpecE EI+ Magnet BpI:9700237 TIC:69216624 Flags:HALL

File Text:WANG/WIPF CW51A

