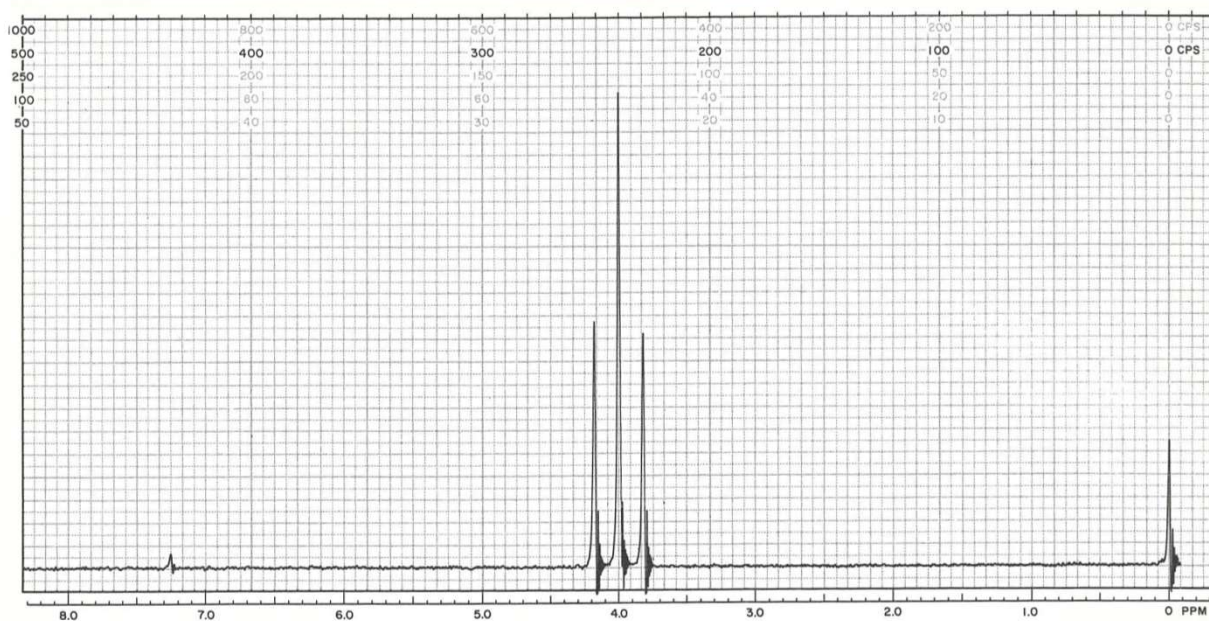


Esercizio 1

Un composto di formula $C_2H_2Cl_2F_2$ dà il seguente spettro 1H -NMR, proporre una struttura per il composto e giustificare la molteplicità del segnale.

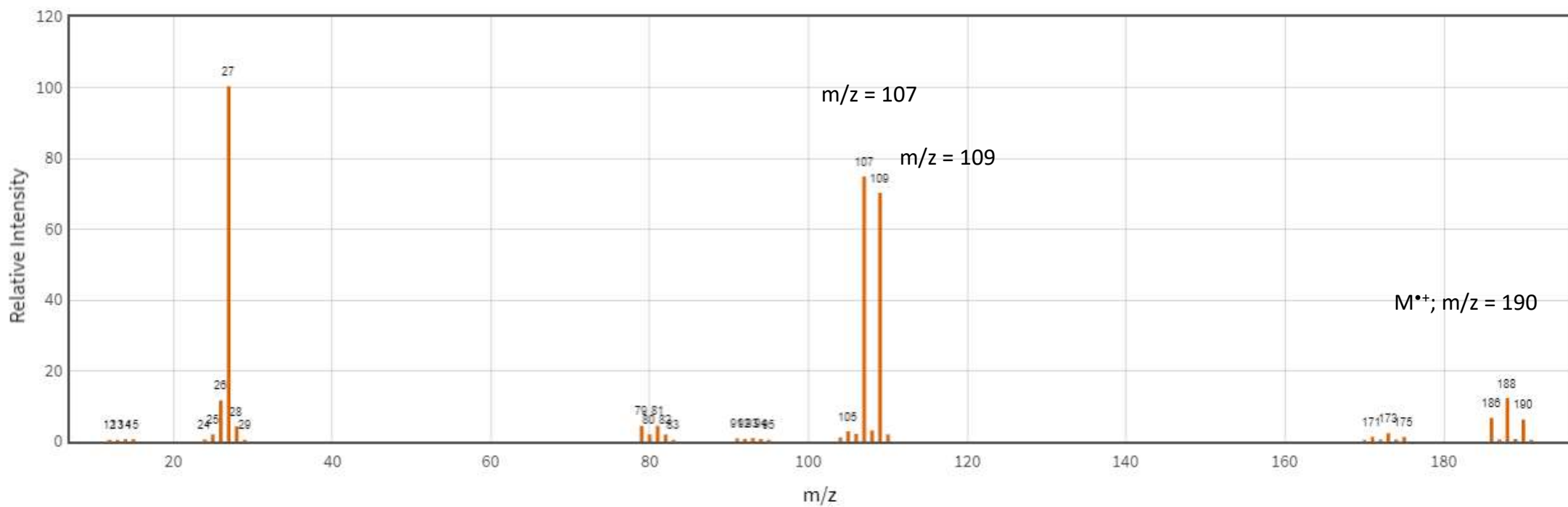


1H -NMR: 60 MHz, $CDCl_3$

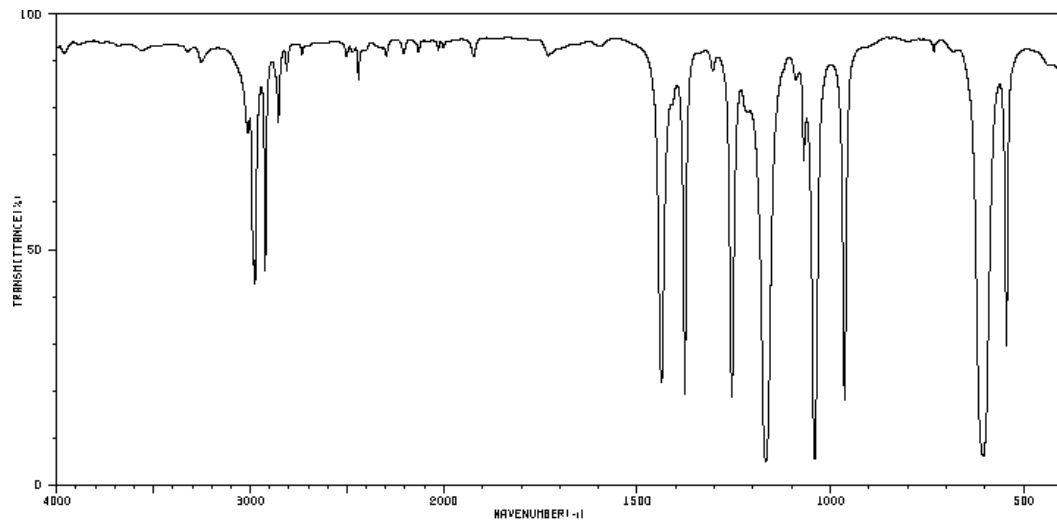
4.0 ppm: tripletto

Esercizio 2

I seguenti dati spettrali si riferiscono ad un composto con due atomi di carbonio. Determinarne la struttura



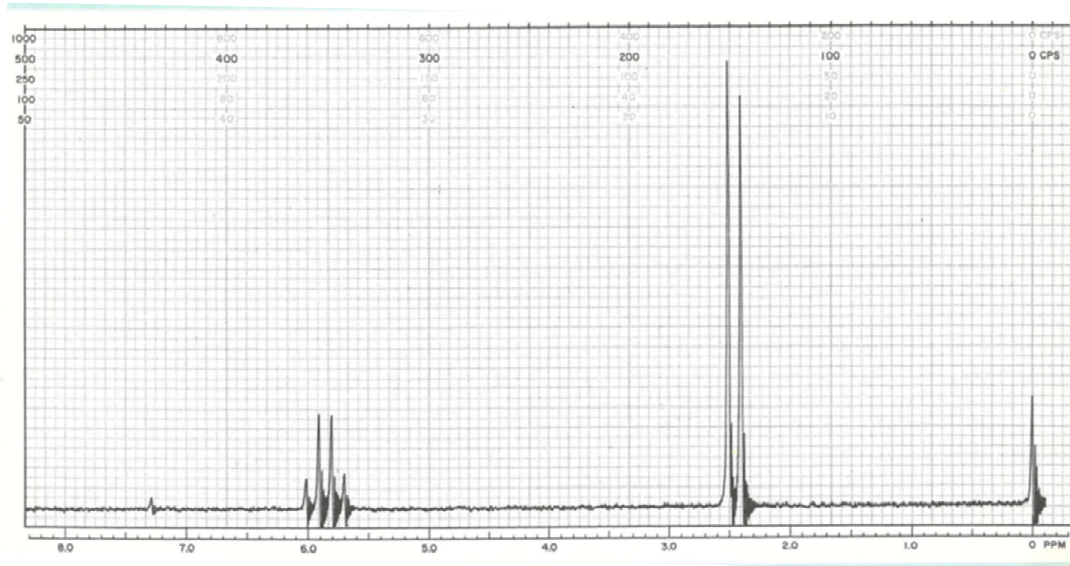
Esercizio 2



IR: film liquido

Assorbimenti rilevanti

2976, 2923, 1168, 606 cm⁻¹



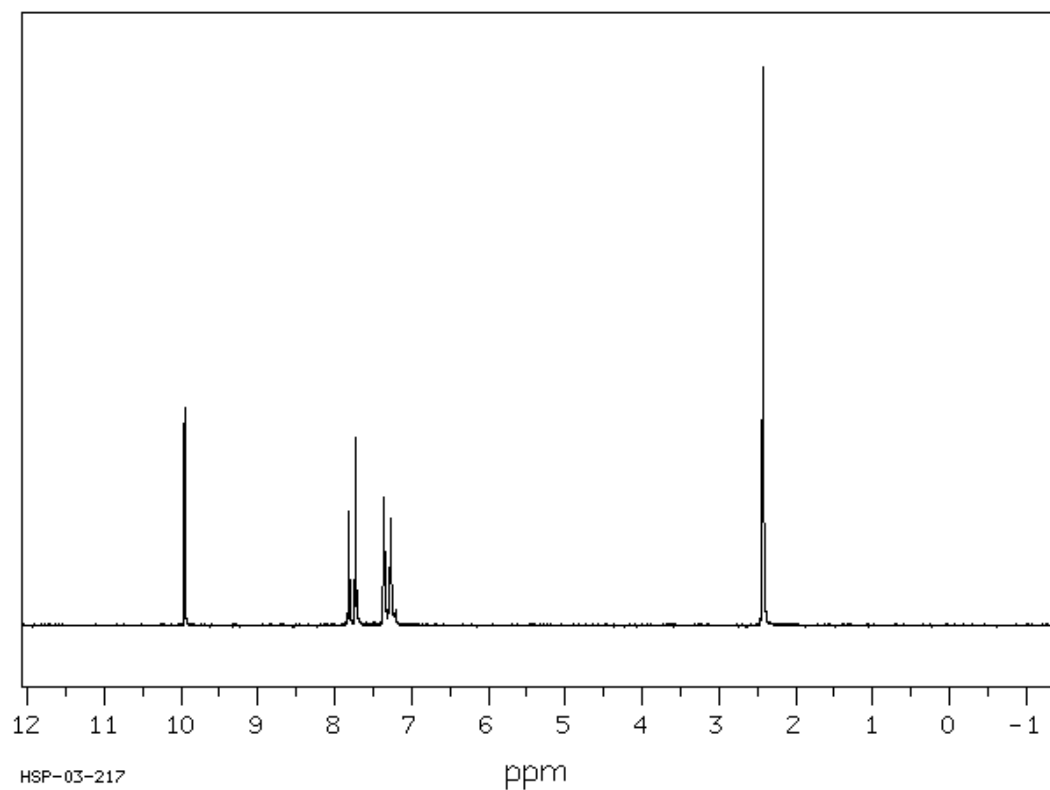
¹H-NMR: 60 MHz, CDCl₃

5.86 ppm: quartetto di area 1

2.47 ppm: quartetto di area 3

Esercizio 3

I seguenti dati spettrali si riferiscono ad un composto di formula C_8H_8O . Determinarne la struttura.



1H -NMR: 90 MHz, $CDCl_3$

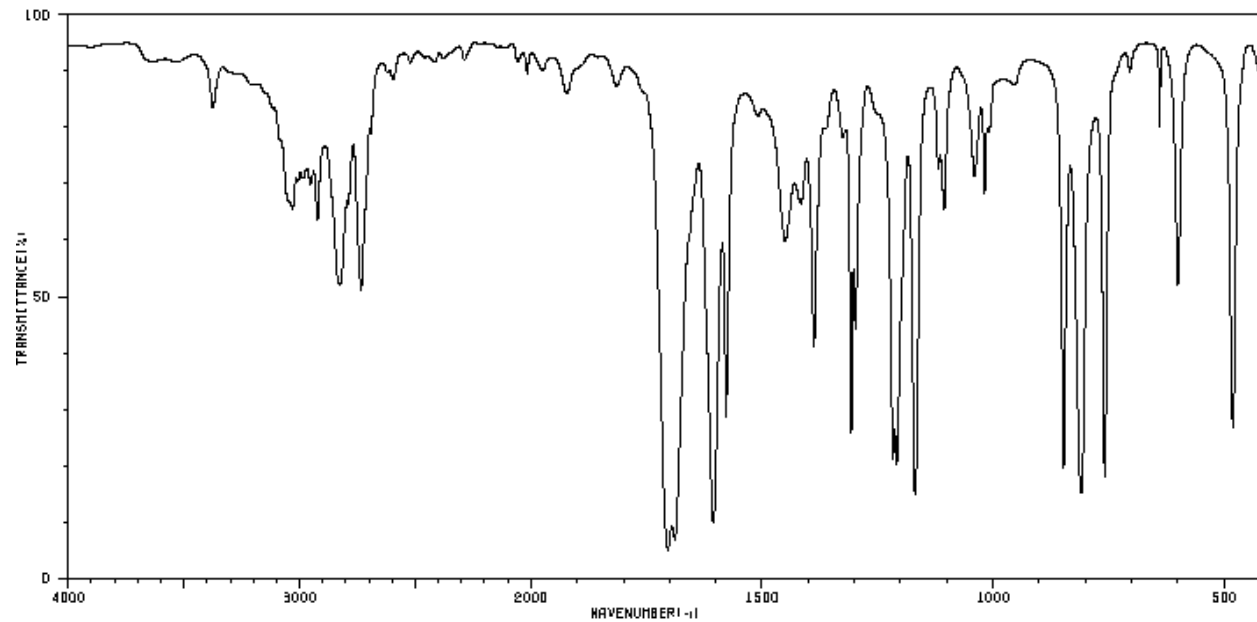
9.95 ppm: s, area 1

7.76 ppm: d, area 2

7.32 ppm: d, area 2

2.43 ppm: s, area 3

Esercizio 3

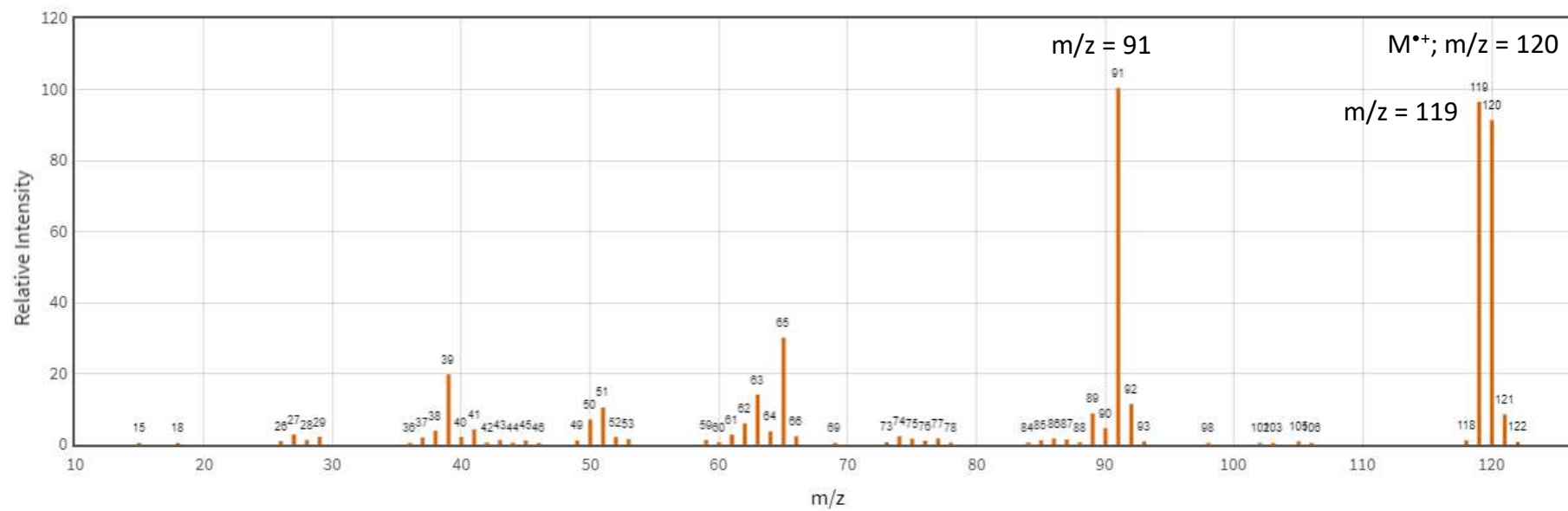


IR: film liquido

Assorbimenti rilevanti

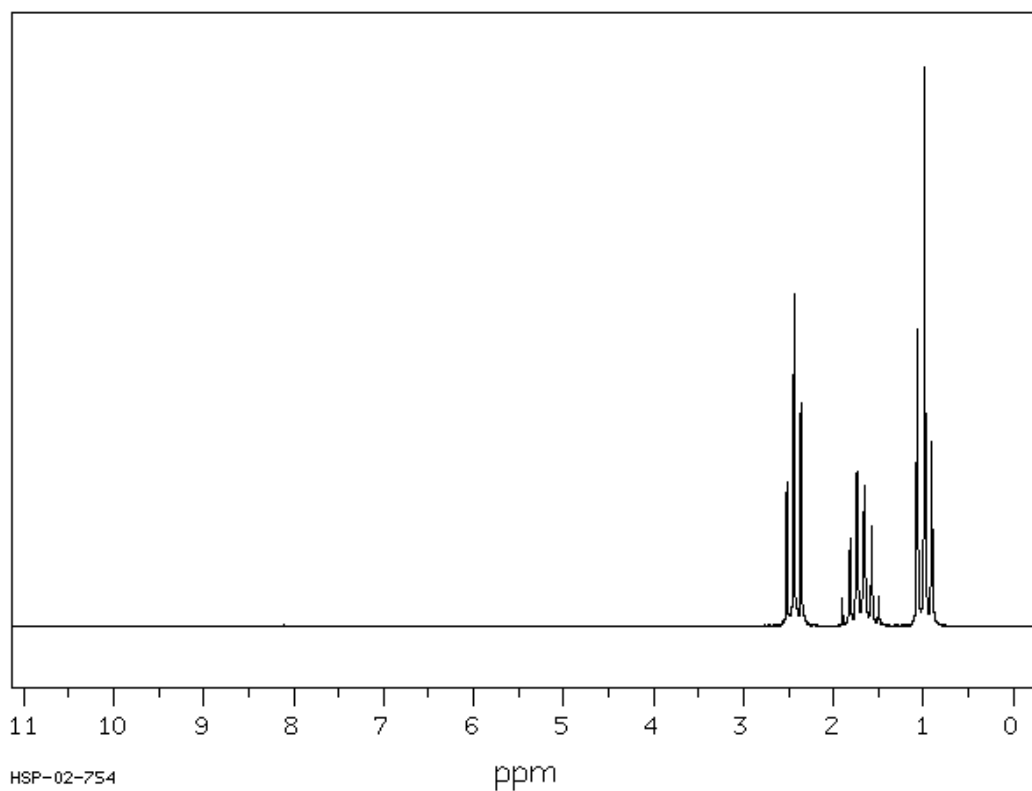
3044, 3031, 2827, 2734, 1740 cm^{-1}

Esercizio 3



Esercizio 4

I seguenti dati spettrali si riferiscono ad un composto di formula $C_8H_{14}O_3$. Determinarne la struttura.



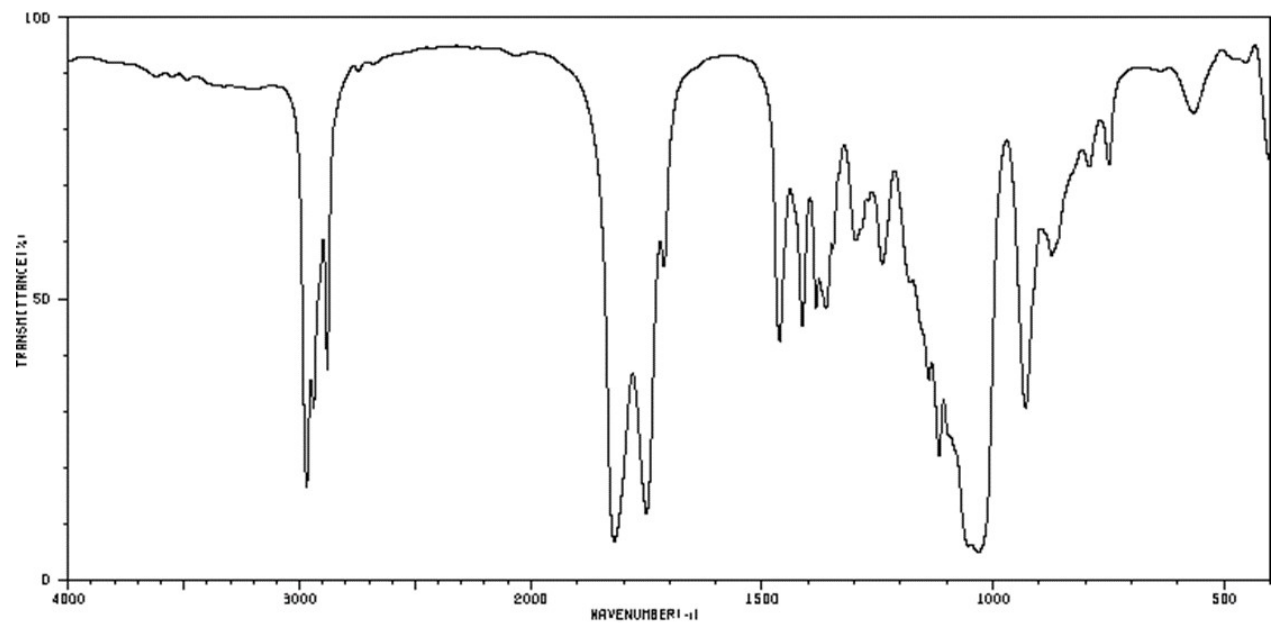
1H -NMR: 90 MHz, $CDCl_3$

2.43 ppm: t, area 2

1.69 ppm: sest, area 2

1.00 ppm: t, area 3

Esercizio 4

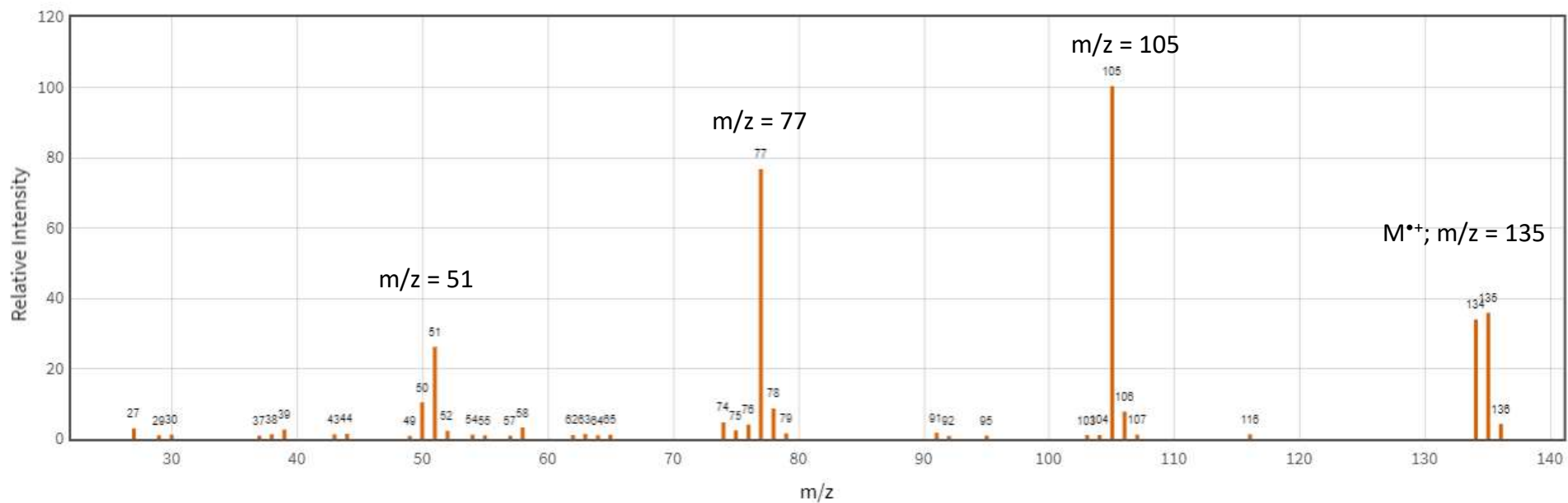


IR: film liquido

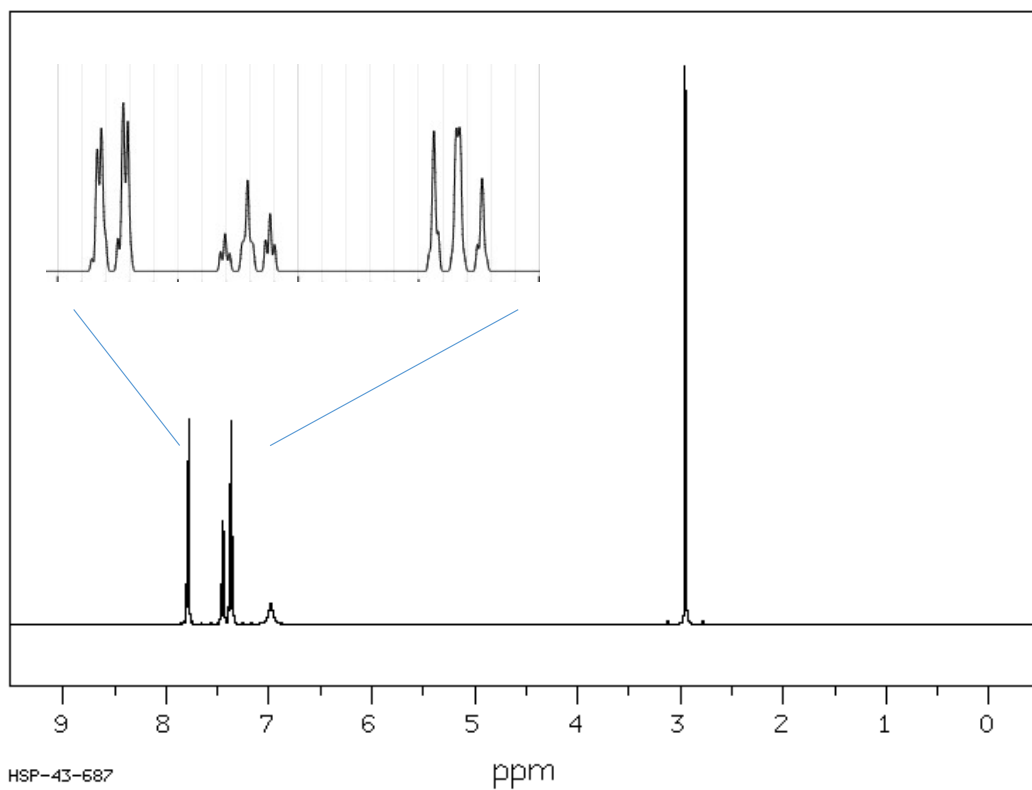
2970	16	1413	49	1116	21	666	79
2940	29	1383	46	1039	5		
2860	36	1362	46	1031	4		
1819	6	1297	68	929	29		
1750	11	1287	60	874	55		
1712	53	1240	59	792	70		
1461	41	1140	34	749	70		

Esercizio 5

I seguenti dati spettrali si riferiscono ad un composto di formula C_8H_9NO . Determinarne la struttura.



Esercizio 5



$^1\text{H-NMR}$: 400 MHz, CDCl_3

7.79 ppm: d, area 2

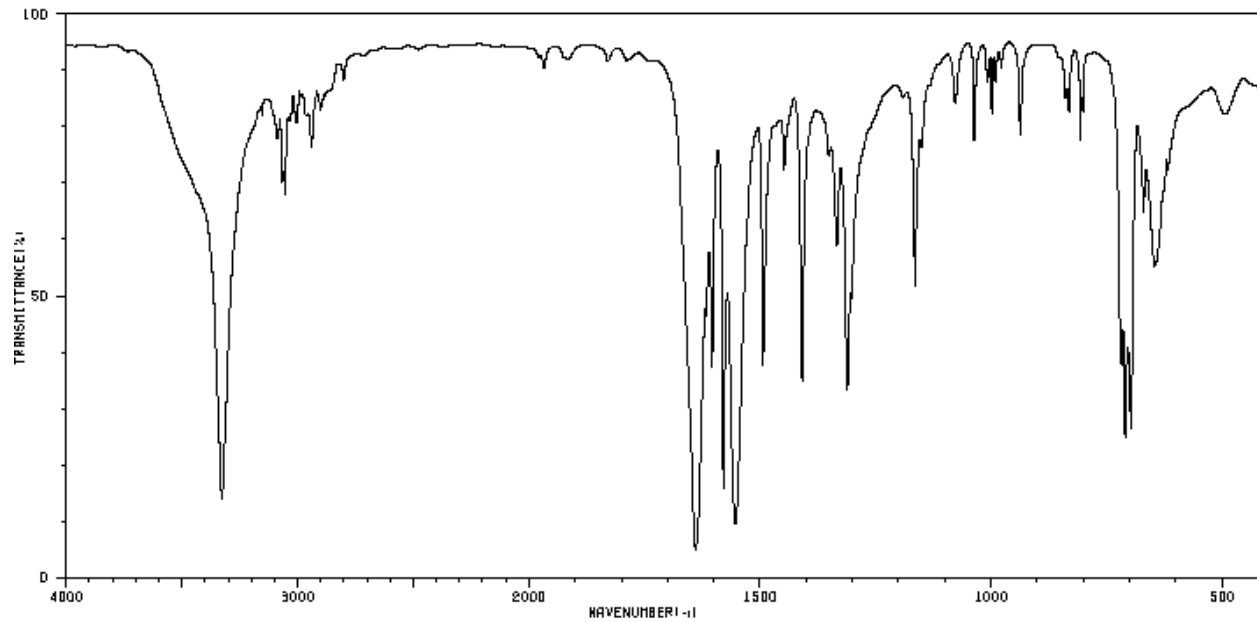
7.44 ppm: t, area 1

7.37 ppm: t, area 2

6.98 ppm: s, area 1

2.95 ppm: s, area 3

Esercizio 5

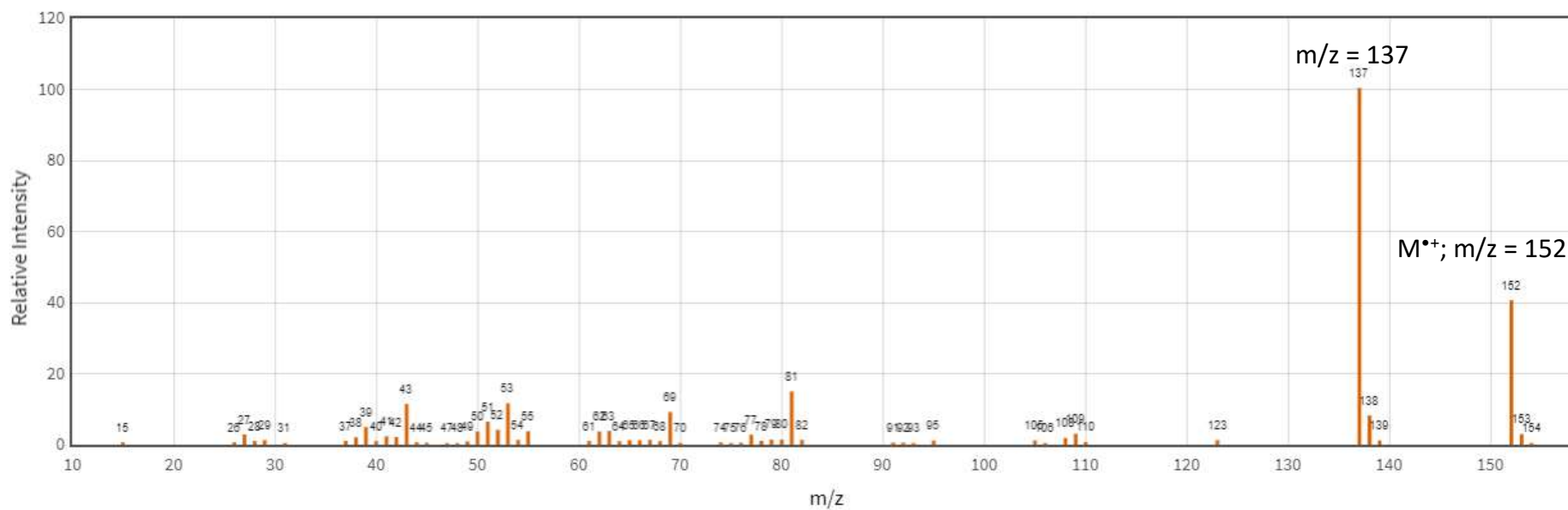


IR: film liquido

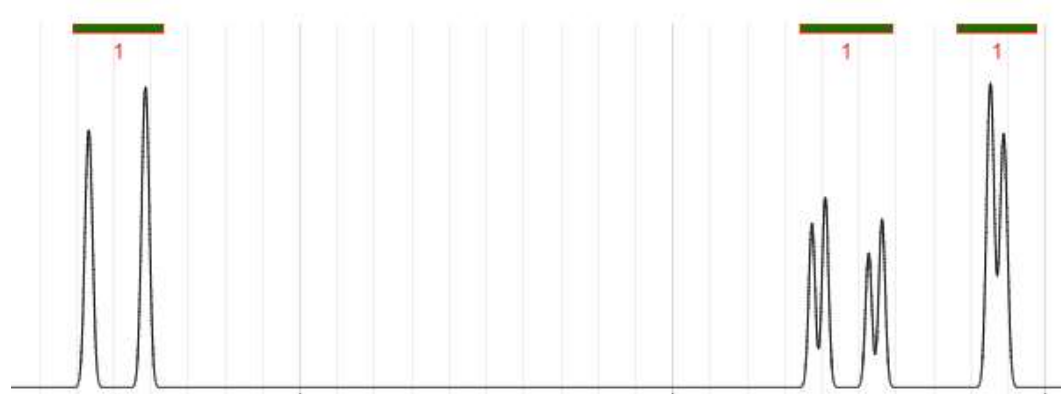
3328	13	2940	72	1494	36	1155	50	801	79
3156	79	2902	79	1448	70	1151	74	718	36
3087	74	1639	4	1409	33	1036	74	710	23
3066	68	1617	44	1362	72	999	79	698	26
3054	66	1604	36	1334	57	937	74	671	62
3004	77	1579	15	1311	32	831	79	646	53
2962	79	1554	8	1303	47	807	74	617	70

Esercizio 6

I seguenti dati spettrali si riferiscono ad un composto di formula $C_8H_8O_3$. Determinarne la struttura.

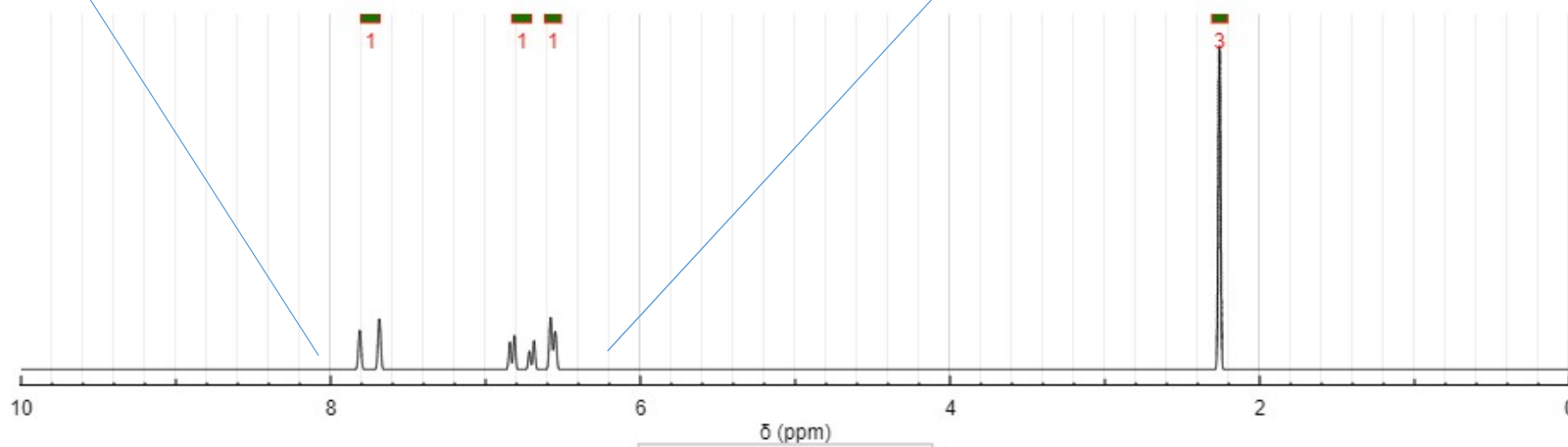


Esercizio 6

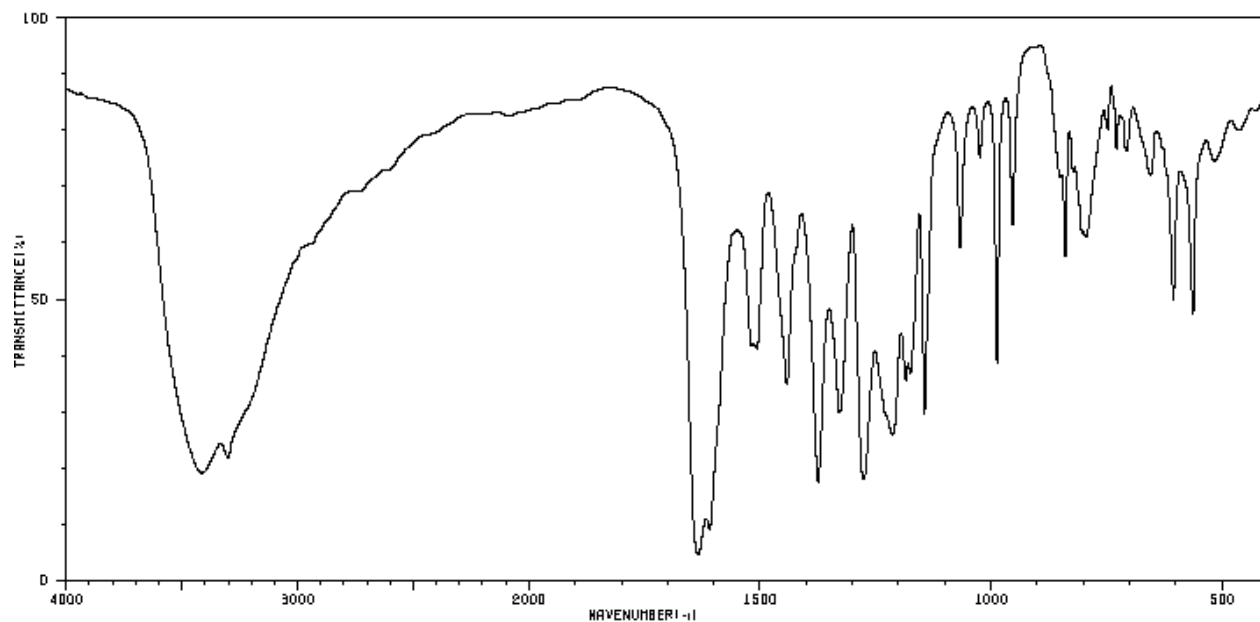


$^1\text{H-NMR}$: 400 MHz, CDCl_3

$^1\text{H NMR}$: δ 2.26 (3H, s), 6.57 (1H, dd, $J = 1.8, 0.5$ Hz), 6.77 (1H, dd, $J = 7.6, 1.8$ Hz), 7.74 (1H, dd, $J = 7.6, 0.5$ Hz).



Esercizio 6

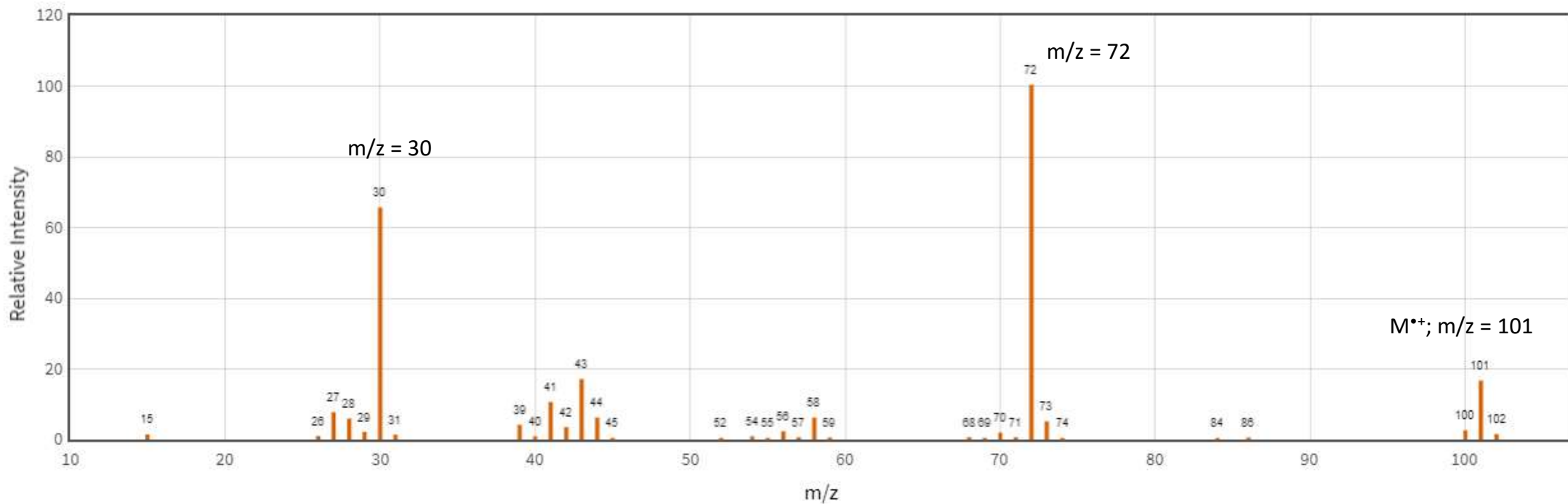


IR: pastiglia KBr

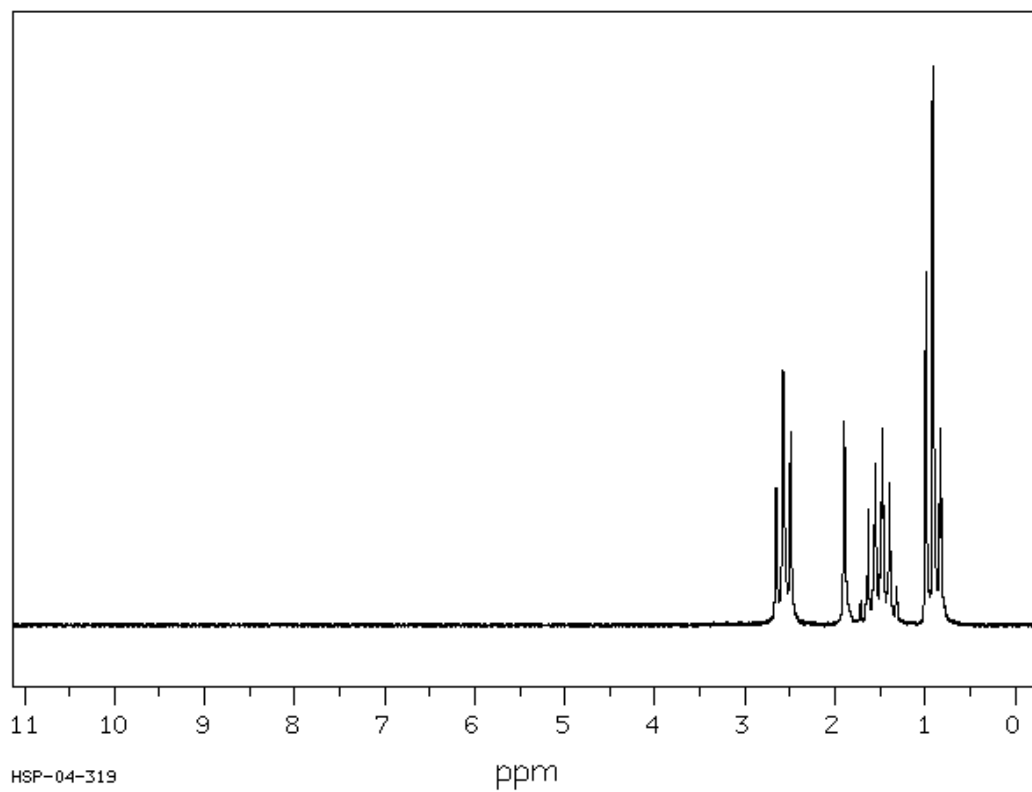
3414	19	1442	34	1144	29	803	60	666	70
3301	21	1375	17	1067	57	793	58	605	49
1634	4	1328	29	1024	72	748	77	563	46
1609	9	1276	18	987	38	729	74	514	72
1518	41	1213	26	954	62	715	79	485	77
1512	41	1185	35	850	70	707	74		
1507	41	1176	36	839	67	663	72		

Esercizio 7

I seguenti dati spettrali si riferiscono ad un composto di formula $C_6H_{15}N$. Determinarne la struttura.



Esercizio 7



¹H-NMR: 90 MHz, CDCl₃

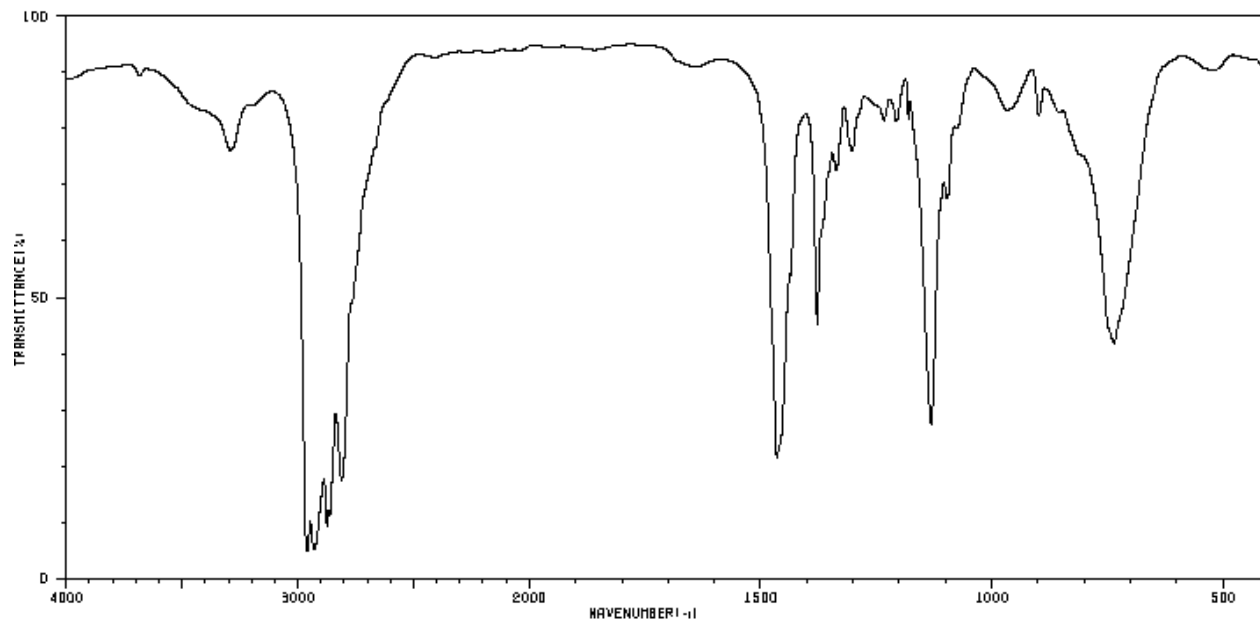
2.56 ppm: t, area 2

1.90 ppm: s, area 1

1.50 ppm: sest, area 2

0.91 ppm: t, area 3

Esercizio 7

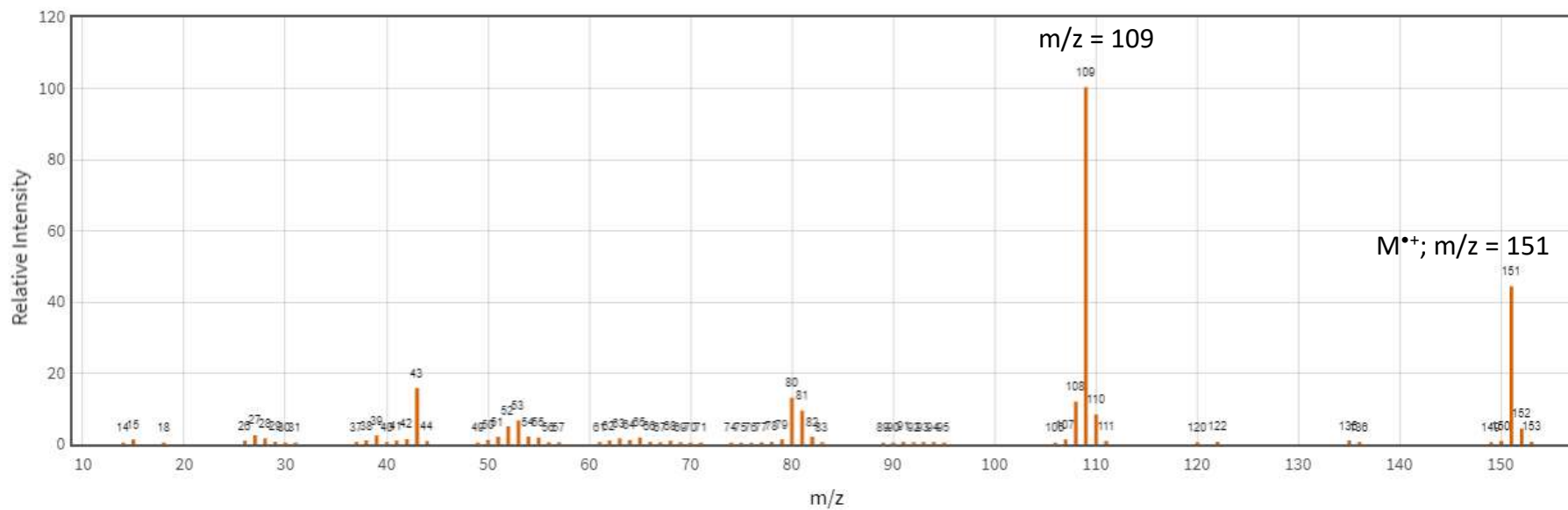


IR: film liquido

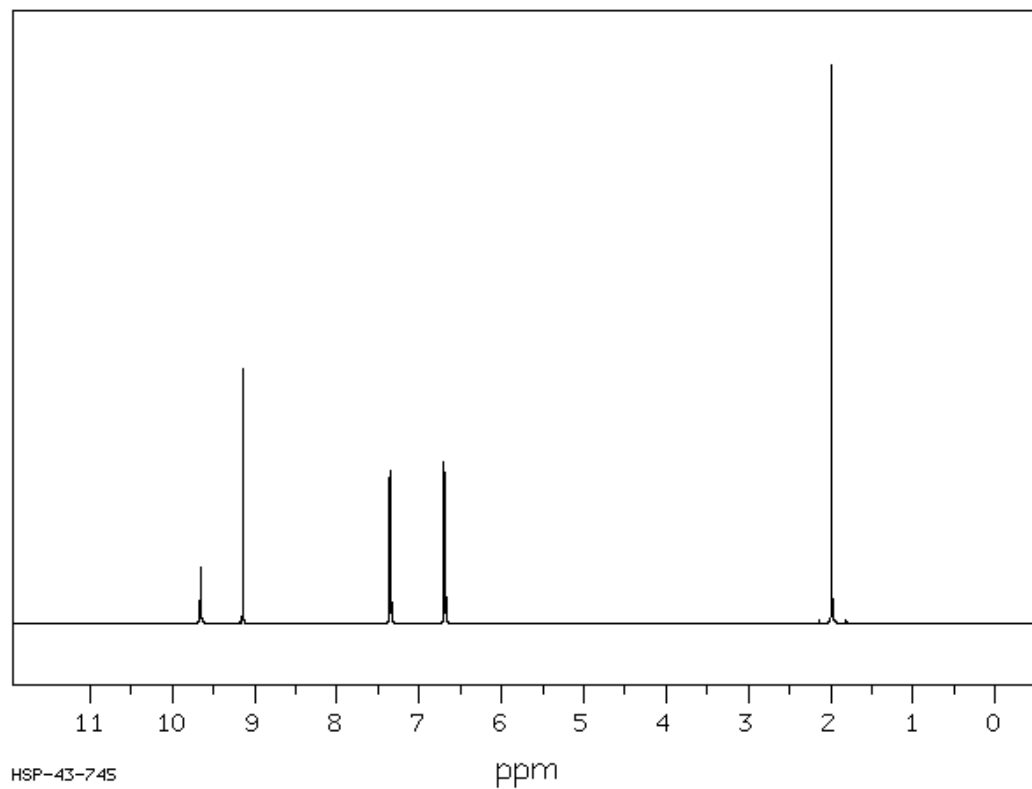
3684	86	1455	20	1181	79
3290	72	1378	43	1131	26
2959	4	1338	70	1096	84
2929	5	1302	72	966	79
2874	9	1245	81	961	81
2862	10	1234	79	896	79
2810	16	1206	79	736	41

Esercizio 8

I seguenti dati spettrali si riferiscono ad un composto di formula $C_8H_9NO_2$. Determinarne la struttura.



Esercizio 8



¹H-NMR: 400 MHz, CDCl₃

9.66 ppm: s, area 1

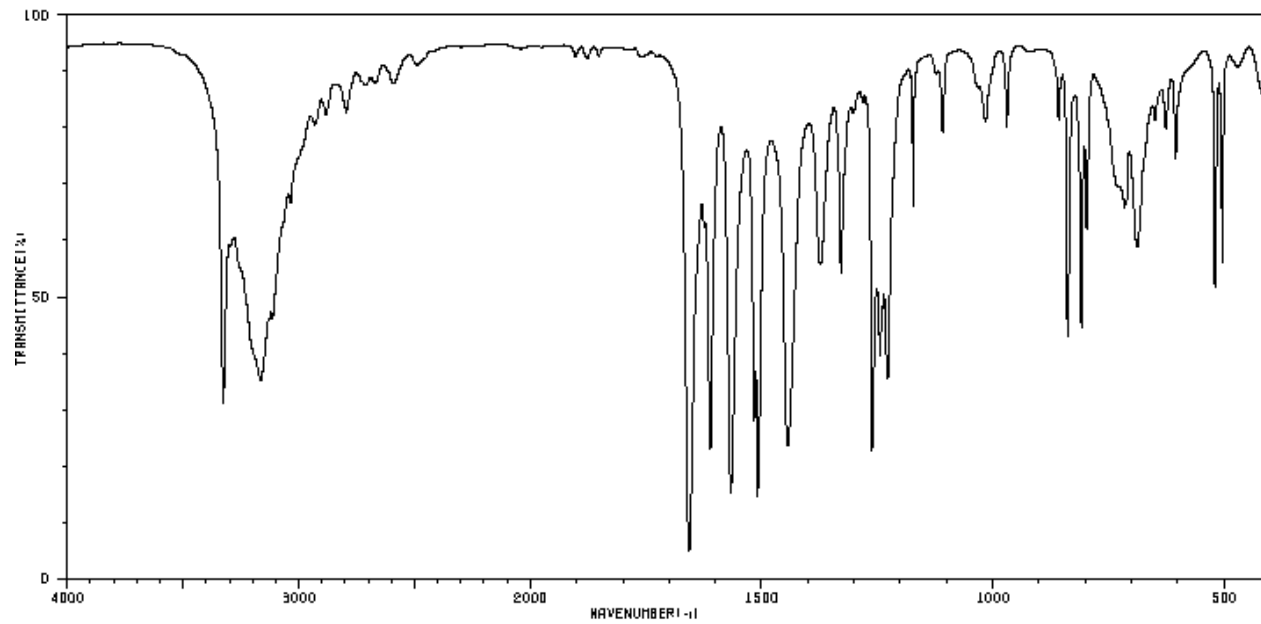
9.14 ppm: s, area 1

7.35 ppm: d, area 2

6.69 ppm: d, area 2

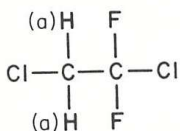
1.99 ppm: s, area 3

Esercizio 8



3326	30	1667	4	1373	63	1108	77	716	62
3165	33	1624	60	1329	52	970	77	689	57
3149	37	1611	21	1261	21	858	79	650	79
3114	44	1567	14	1244	37	839	41	626	77
3036	64	1516	26	1238	46	809	42	605	72
2930	77	1509	19	1228	34	797	60	521	49
2796	79	1444	22	1173	64	729	66	504	63

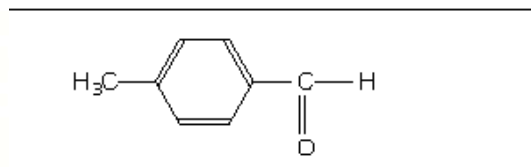
Esercizio 1



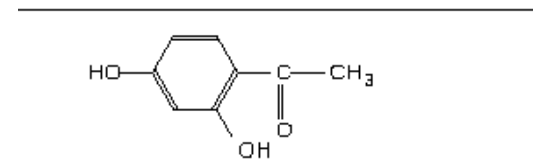
ASSIGNMENTS

Sweep offset:	—	ppm	a	4.00	e
Freq. response:	2	cps	b		f
Sweep time:	250	sec	c		g
Sample temp:	* *	°c	d		h

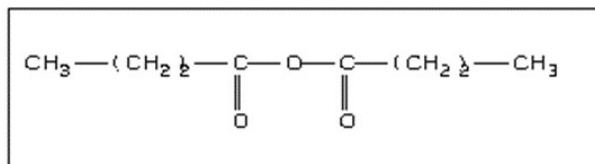
Esercizio 3



Esercizio 6

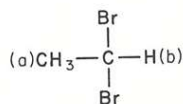


Esercizio 4



Esercizio 2

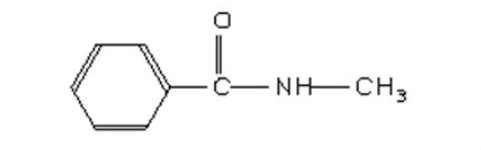
370
C₂H₄Br₂ 1,1-dibromoethane



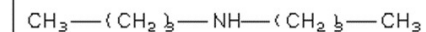
ASSIGNMENTS

Sweep offset:	—	ppm	a	2.47	e
Freq. response:	4	cps	b	5.86	f
Sweep time:	250	sec	c		g
Sample temp:	* *	°c	d		h

Esercizio 5



Esercizio 7



Esercizio 8

