Supporting Information

Dolabellane Diterpenoids from the Xisha Soft Coral Clavularia viridis

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[#]*Y. Gao and Y. Q. Du contributed equally to this work*

List of Supporting Information

Figure **S1**. ^{1}H NMR spectrum of **1** (500MHz, $CDCl_3$).

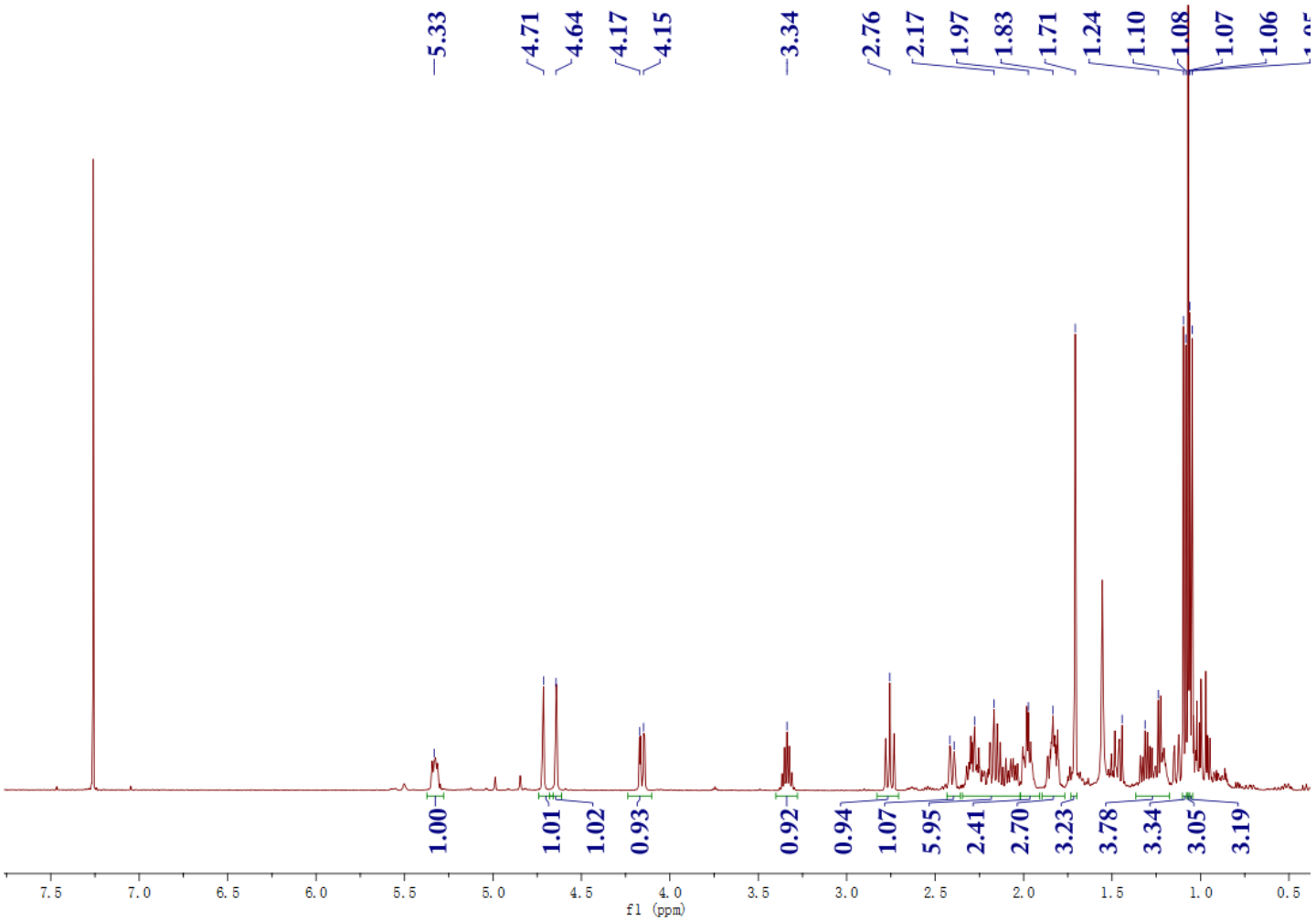

Figure **S2**. ^{13}C NMR spectrum of 1 (125 MHz, $CDCl_3$).

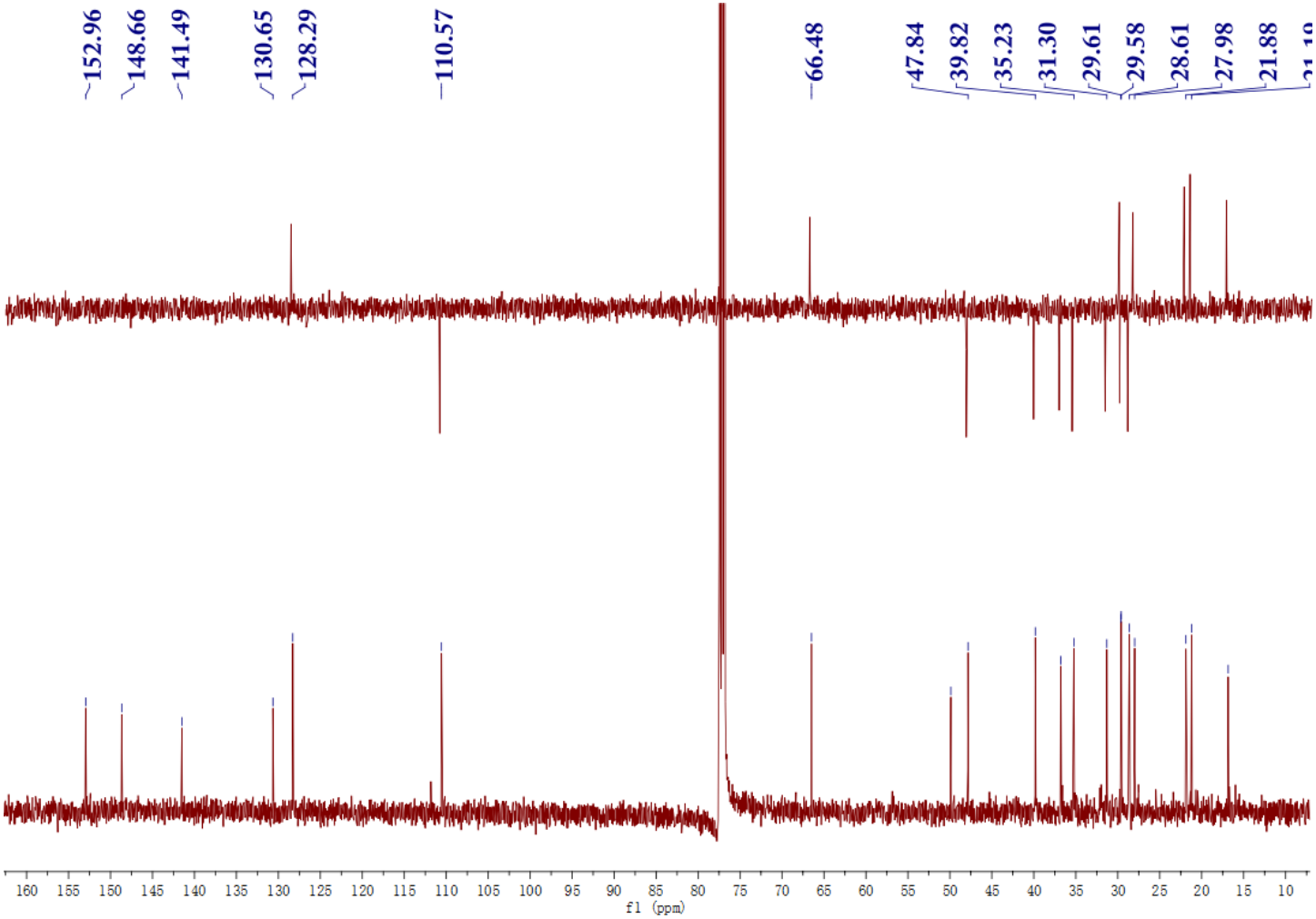

Figure **S3**. ^{1}H-^{1}H COSY spectrum of **1** (500 MHz, $CDCl_3$).

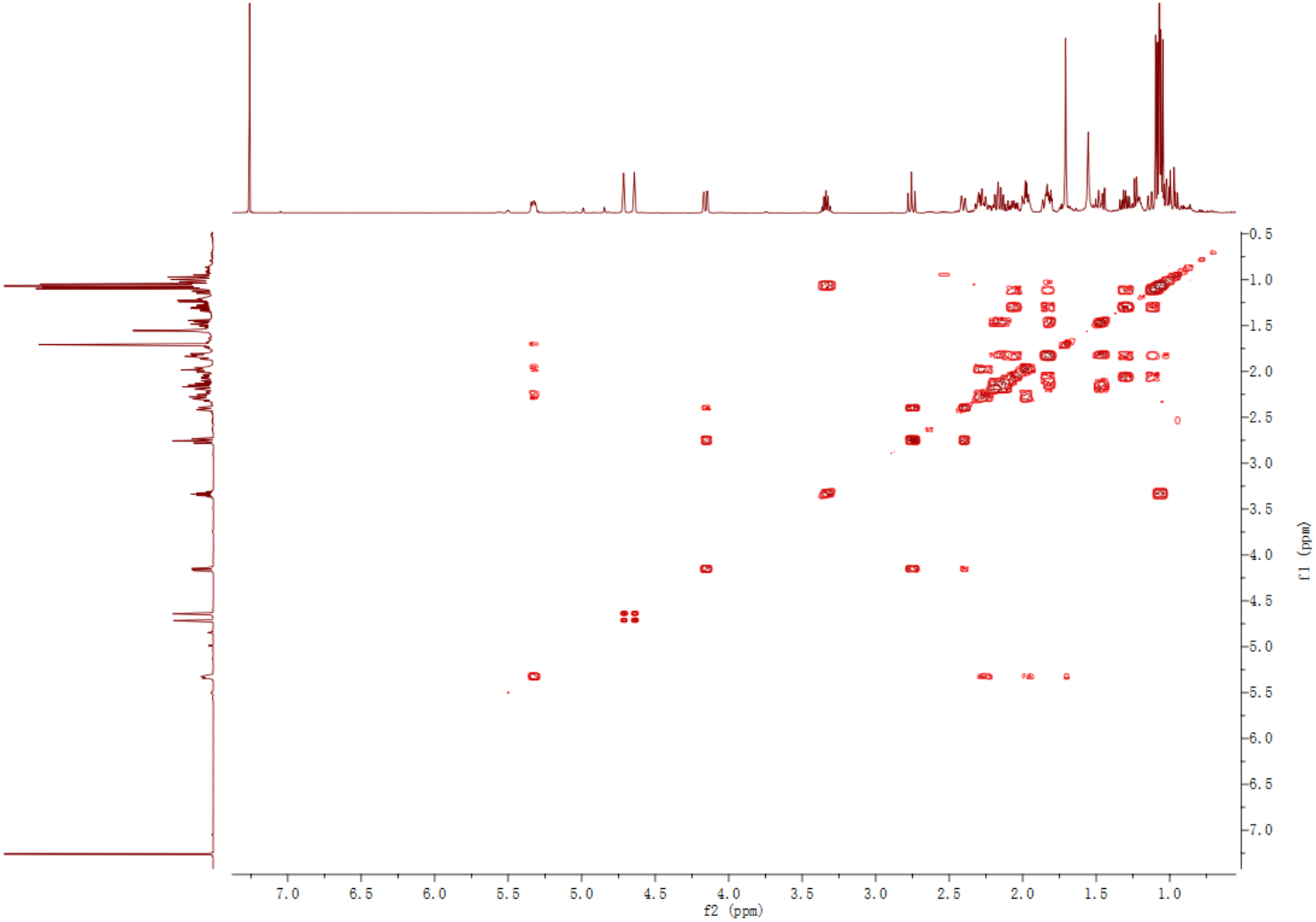

Figure **S4**. HSQC spectrum of **1** (500 MHz, $CDCl_3$).

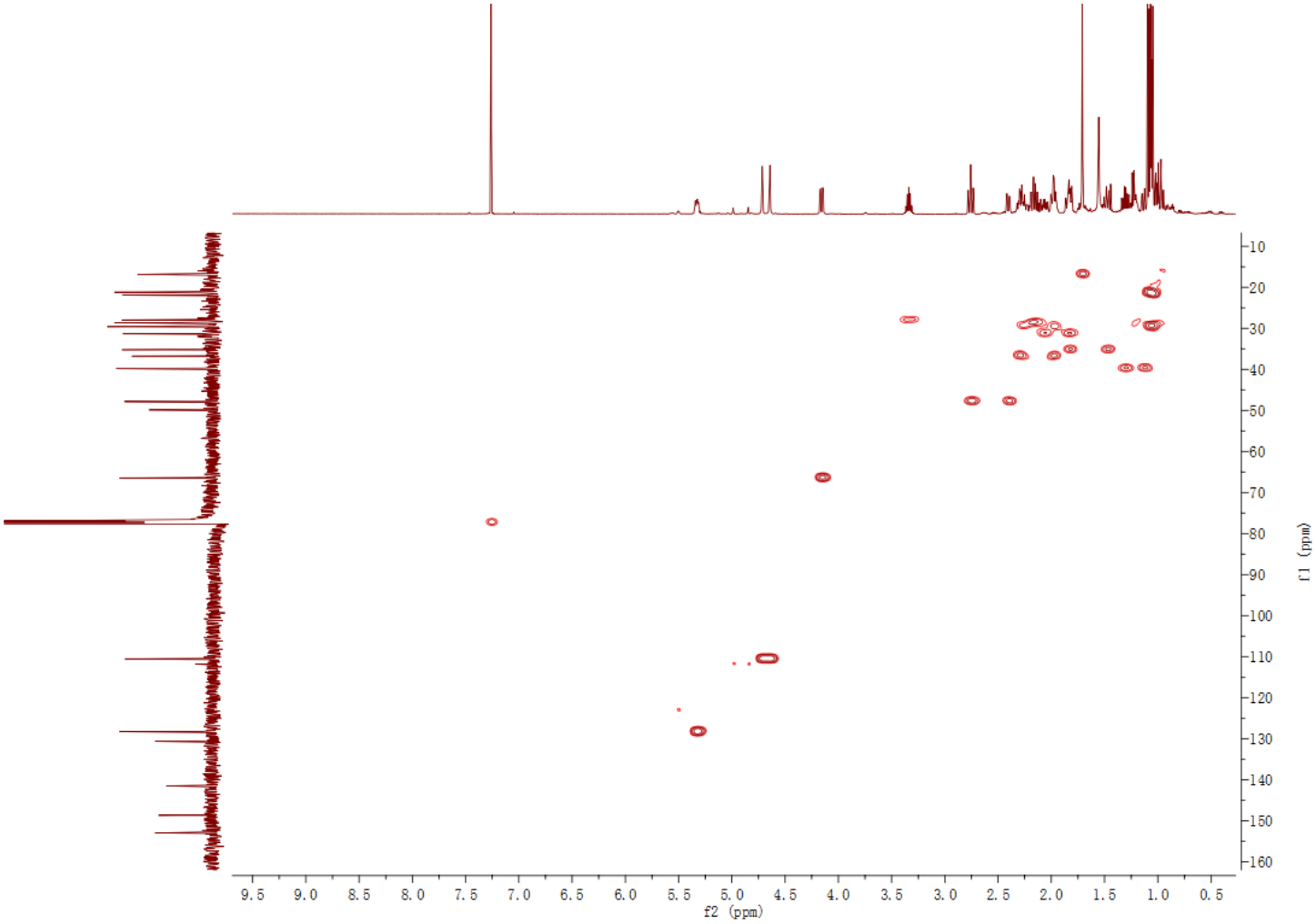

Figure **S5**. HMBC spectrum of **1** (500 MHz, $CDCl_3$).

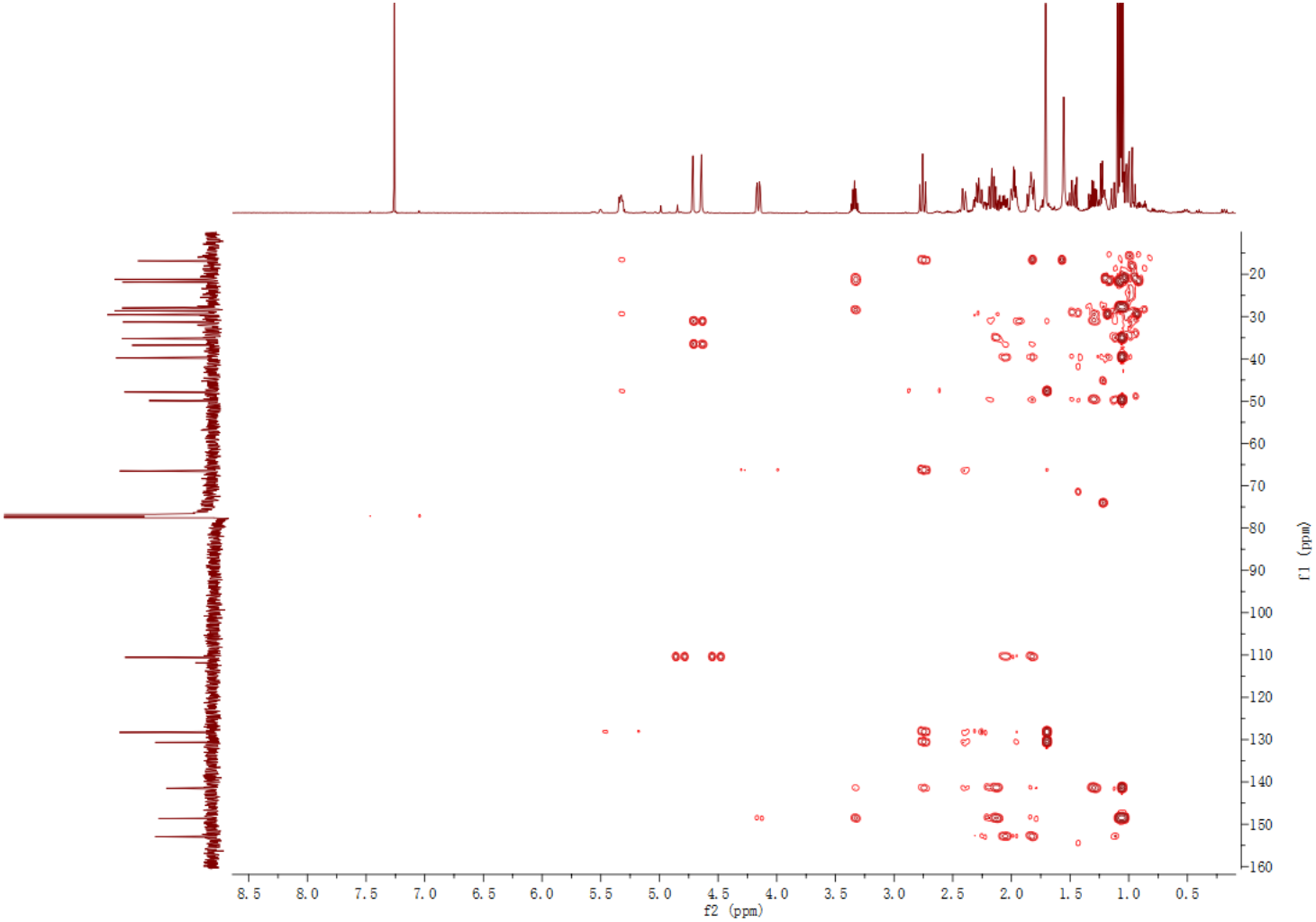

Figure **S6**. NOESY spectrum of **1** (500 MHz, $CDCl_3$).

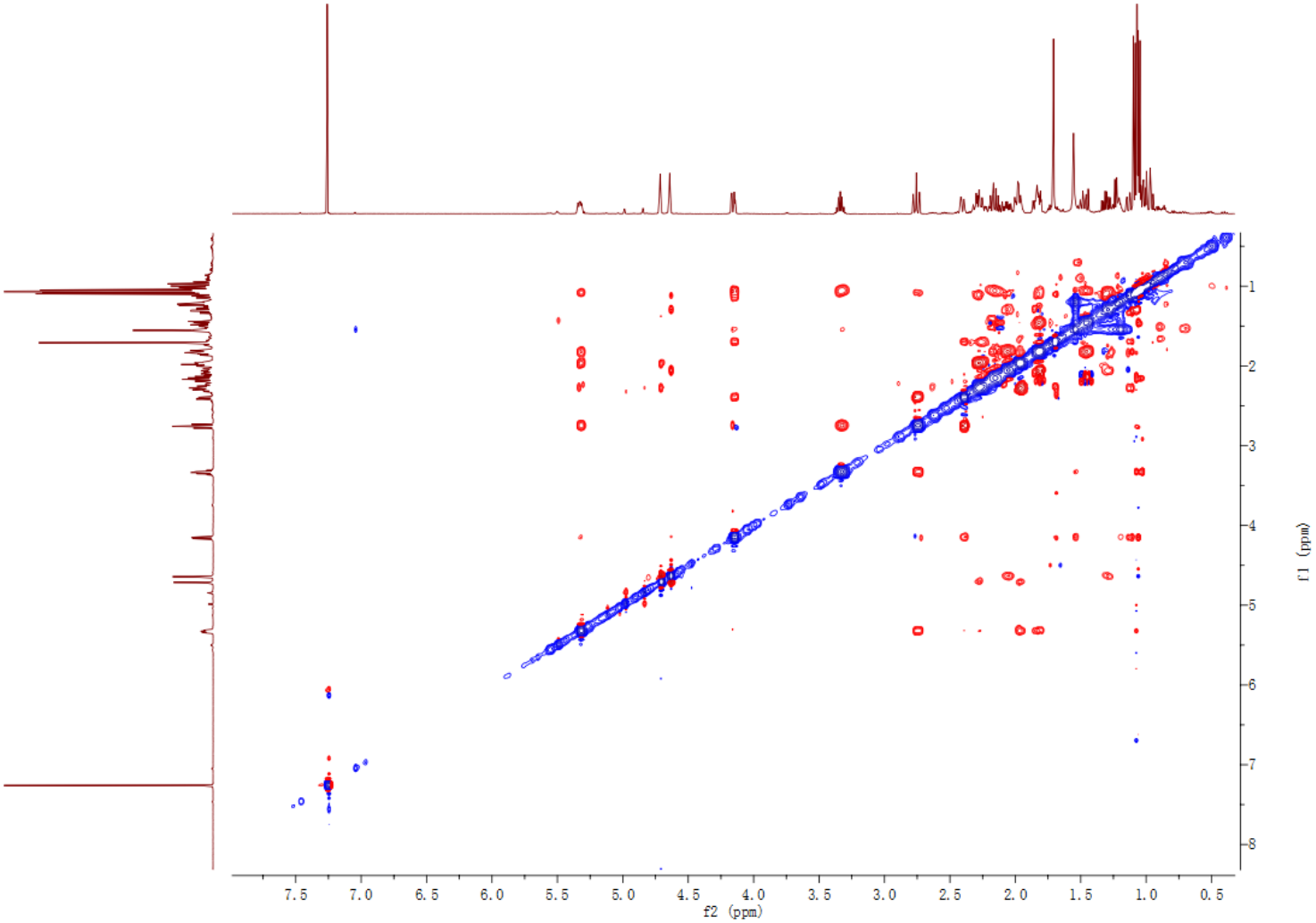

Figure **S7**. IR spectrum of **1**.

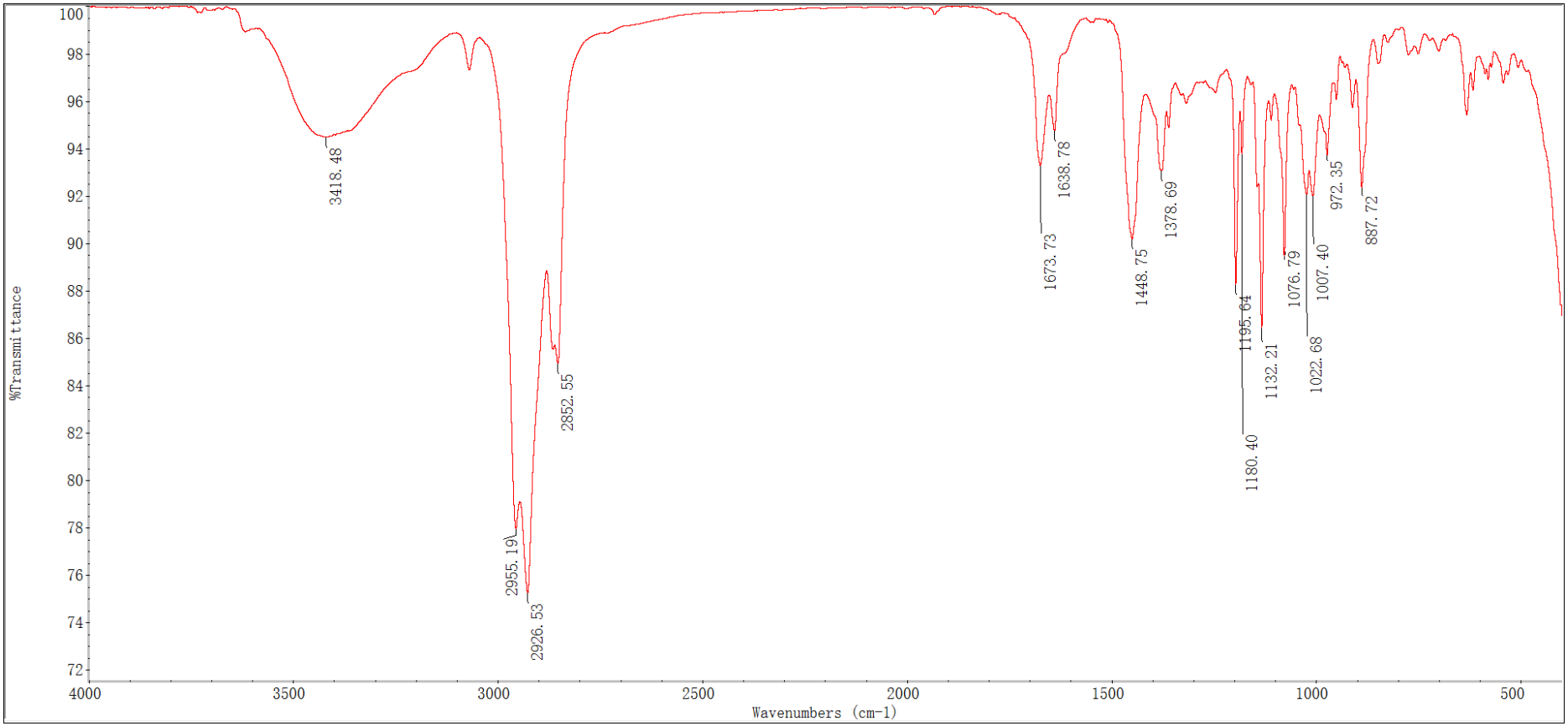

Figure **S8**. HREIMS spectrum of **1**

```
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Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                   Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                 Inlet :
Limt: (   0 )     .     .
    : ( 381 ) C22.H100.O
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

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139.1132	*	6439	2.32	0.04	-0.9	2.5	C9.H15.O
143.0862	*	9334	3.36	0.06	-0.2	6.5	C11.H11
144.0899	*	6026	2.17	0.04			
145.1019	*	24578	8.85	0.15	-0.2	5.5	C11.H13
146.1074	*	6321	2.28	0.04	2.2	5.0	C11.H14
147.0801	*	4549	1.64	0.03	0.9	5.5	C10.H11.O
147.1157	*	21387	7.70	0.13	1.7	4.5	C11.H15
149.0230	*	28063	10.10	0.17			
149.0956	*	20028	7.21	0.12	1.0	4.5	C10.H13.O
149.1318	*	19201	6.91	0.12	1.2	3.5	C11.H17
150.1035	*	24164	8.70	0.15	0.9	4.0	C10.H14.O
151.1116	*	277802	100.00	1.70	0.7	3.5	C10.H15.O
152.1160	*	32435	11.68	0.20			
153.1272	*	31963	11.51	0.20	0.8	2.5	C10.H17.O
157.1015	*	12466	4.49	0.08	0.2	6.5	C12.H13
158.9886	*	4785	1.72	0.03			
159.1173	*	30308	10.91	0.18	0.0	5.5	C12.H15
161.0970	*	4017	1.45	0.02	-0.3	5.5	C11.H13.O
161.1328	*	19378	6.98	0.12	0.3	4.5	C12.H17
162.1401	*	8507	3.06	0.05	0.7	4.0	C12.H18
163.1117	*	13470	4.85	0.08	0.6	4.5	C11.H15.O
163.1490	*	19792	7.12	0.12	-0.3	3.5	C12.H19
164.1181	*	4962	1.79	0.03	2.0	4.0	C11.H16.O
167.1066	*	4608	1.66	0.03			
171.1196	*	7326	2.64	0.04	-2.3	6.5	C13.H15
173.1335	*	7207	2.59	0.04	-0.4	5.5	C13.H17
175.1124	*	10575	3.81	0.06	-0.1	5.5	C12.H15.O
175.1483	*	8862	3.19	0.05	0.4	4.5	C13.H19
176.1191	*	4135	1.49	0.03	1.0	5.0	C12.H16.O
176.1556	*	3958	1.42	0.02	0.9	4.0	C13.H20
177.1290	*	15479	5.57	0.09	-1.1	4.5	C12.H17.O
185.1313	*	5908	2.13	0.04	1.7	6.5	C14.H17
187.1479	*	13647	4.91	0.08	0.7	5.5	C14.H19
188.1512	*	4135	1.49	0.03			
189.1268	*	5553	2.00	0.03	1.1	5.5	C13.H17.O
189.1620	*	9157	3.30	0.06	2.4	4.5	C14.H21
190.1691	*	6380	2.30	0.04			
191.1436	*	10339	3.72	0.06	0.0	4.5	C13.H19.O
199.1514	*	4076	1.47	0.02	-2.8	6.5	C15.H19
201.1640	*	4431	1.60	0.03	0.4	5.5	C15.H21
202.1702	*	6262	2.25	0.04	2.0	5.0	C15.H22
203.1435	*	4017	1.45	0.02	0.0	5.5	C14.H19.O
205.1588	*	14534	5.23	0.09	0.5	4.5	C14.H21.O
206.1657	*	6380	2.30	0.04	1.4	4.0	C14.H22.O
218.1655	*	4608	1.66	0.03	1.5	5.0	C15.H22.O
220.1830	*	4312	1.55	0.03	-0.2	4.0	C15.H24.O
227.1798	*	31667	11.40	0.19	0.2	6.5	C17.H23
228.1850	*	4194	1.51	0.03	2.8	6.0	C17.H24
243.1730	*	5140	1.85	0.03	1.8	6.5	C17.H23.O
245.1911	*	64989	23.39	0.40	-0.6	5.5	C17.H25.O
246.1942	*	8625	3.10	0.05			
255.9880	*	5199	1.87	0.03			
270.2335	*	3958	1.42	0.02	1.3	6.0	C20.H30
273.2218	*	4903	1.76	0.03	0.1	5.5	C19.H29.O
286.0820	*	5671	2.04	0.03			
288.2463	*	5671	2.04	0.03	-1.0	5.0	C20.H32.O

Figure **S9**. ^{1}H NMR spectrum of **2** (500MHz, $CDCl_3$).

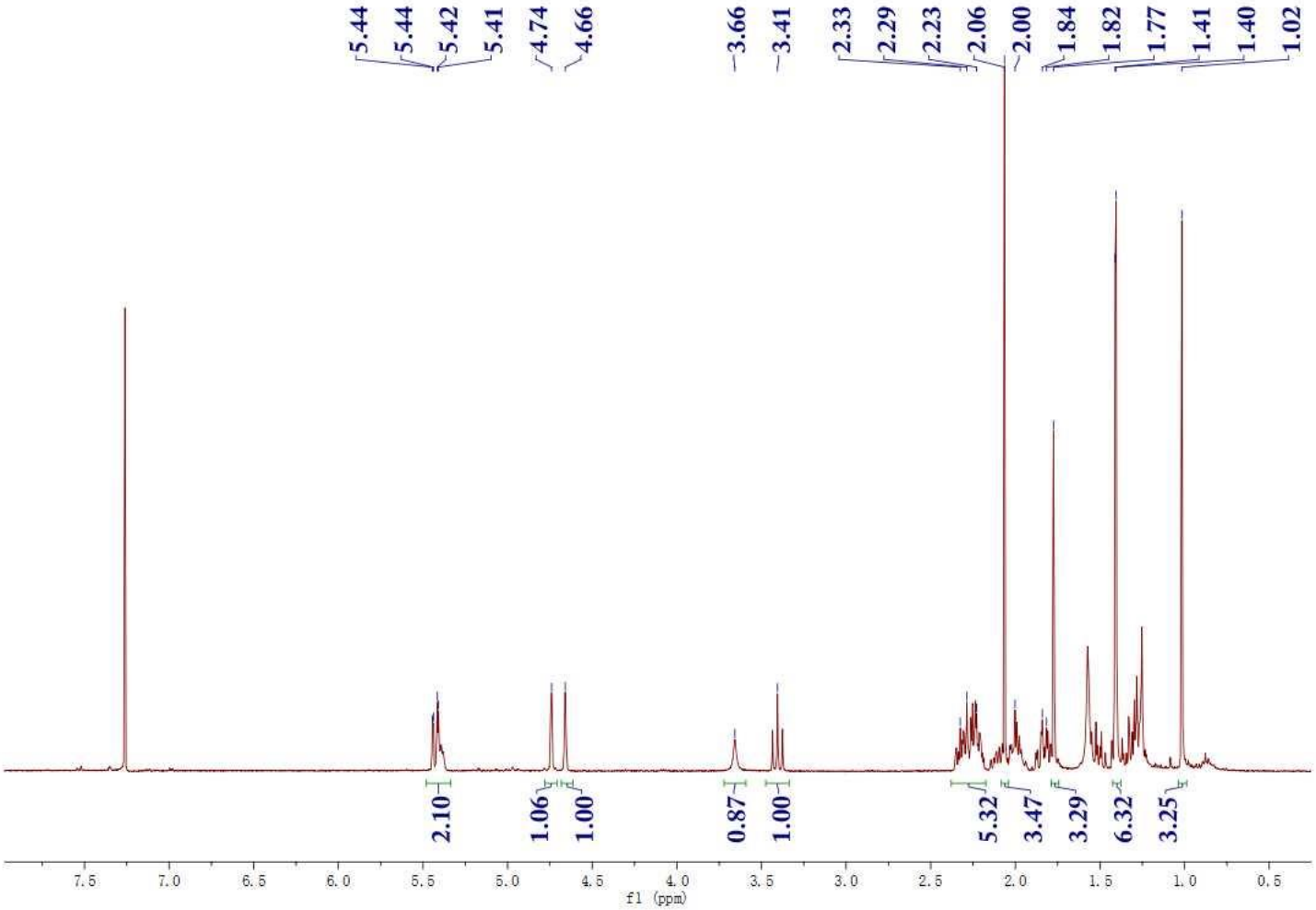

Figure **S10**. ^{13}C NMR spectrum of **2** (125 MHz, $CDCl_3$).

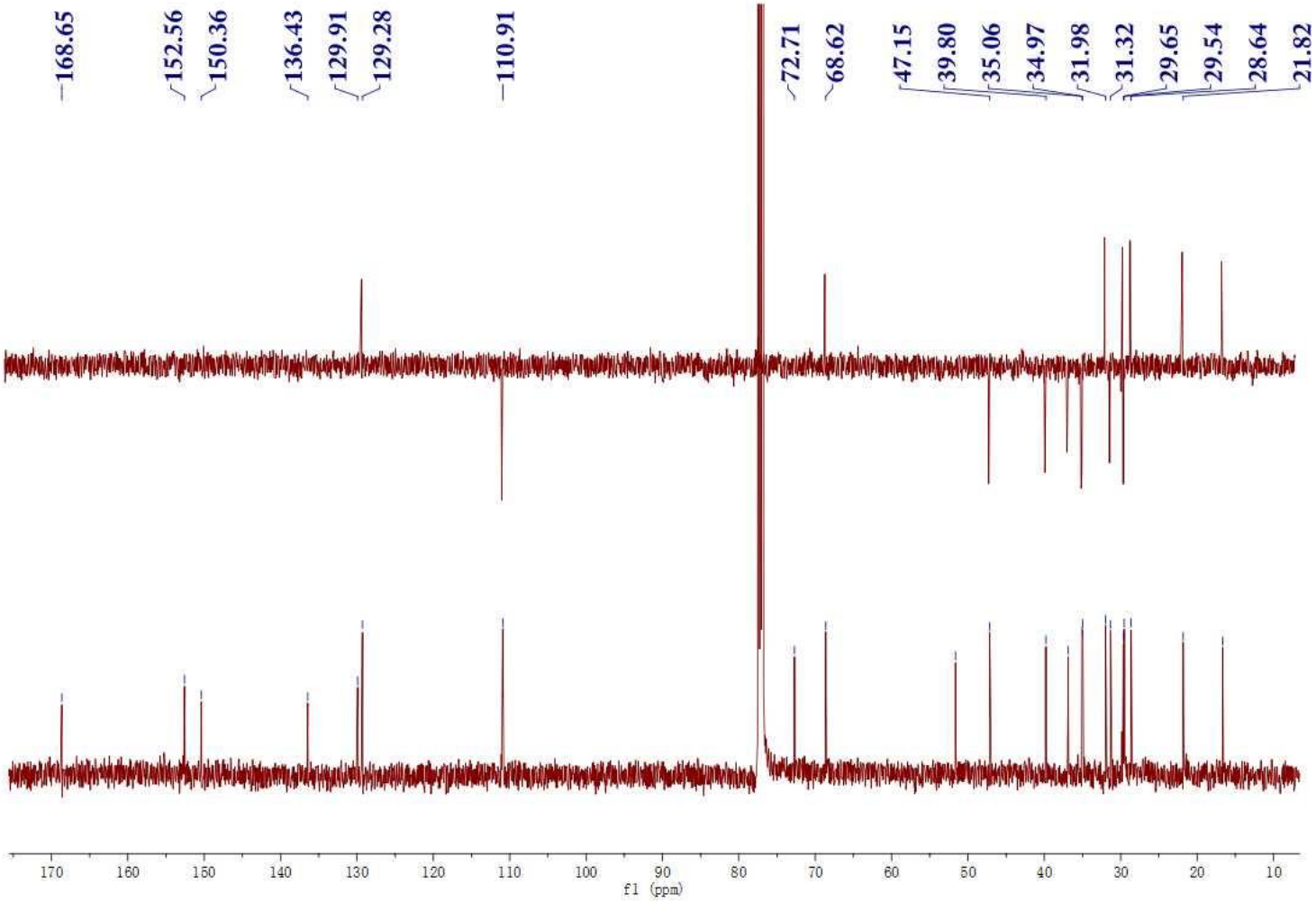

Figure **S11**. ^{1}H-^{1}H COSY spectrum of **2** (500 MHz, $CDCl_3$).

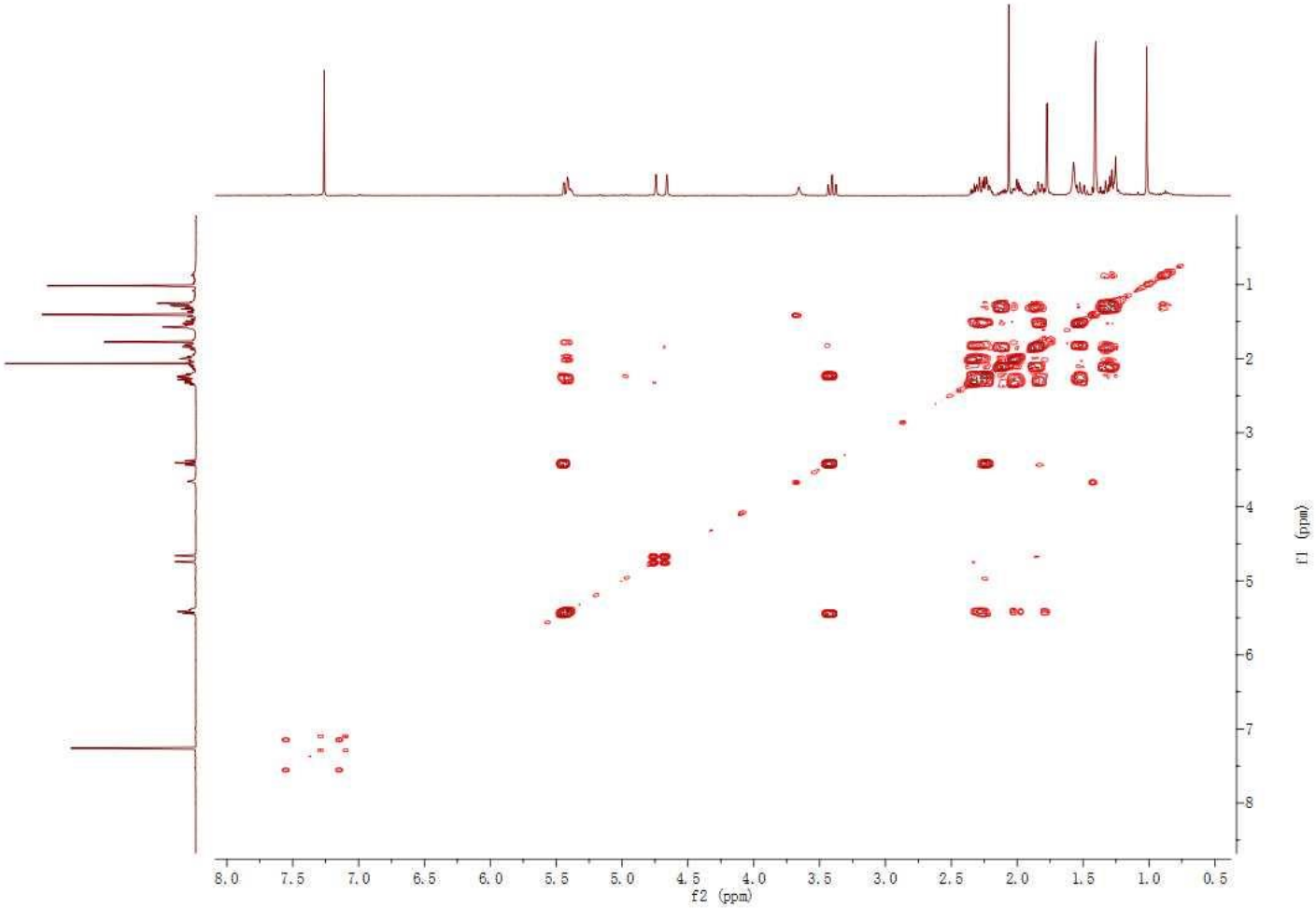

Figure **S12**. HSQC spectrum of **2** (500 MHz, $CDCl_3$).

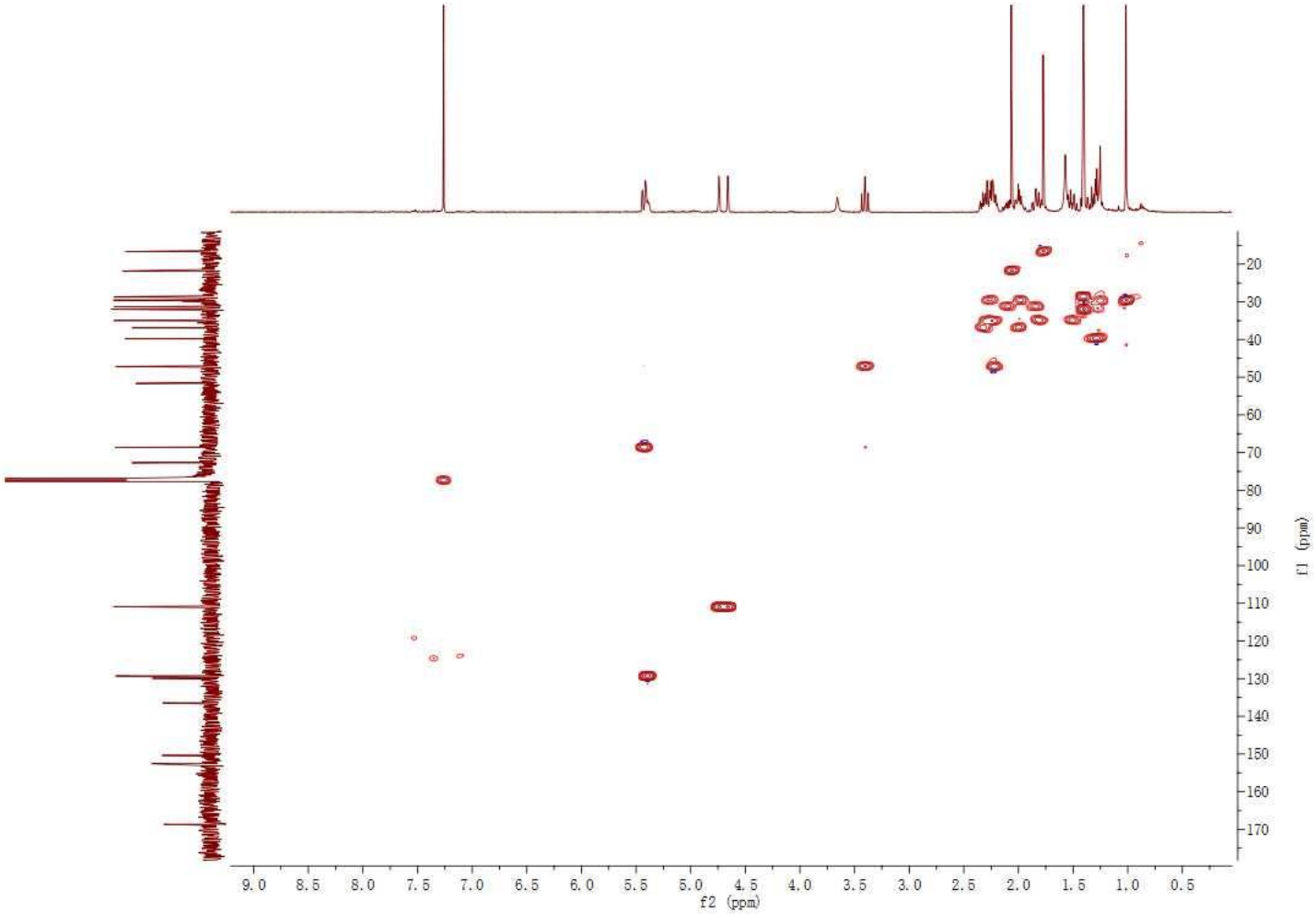

Figure **S13**. HMBC spectrum of **2** (500 MHz, $CDCl_3$).

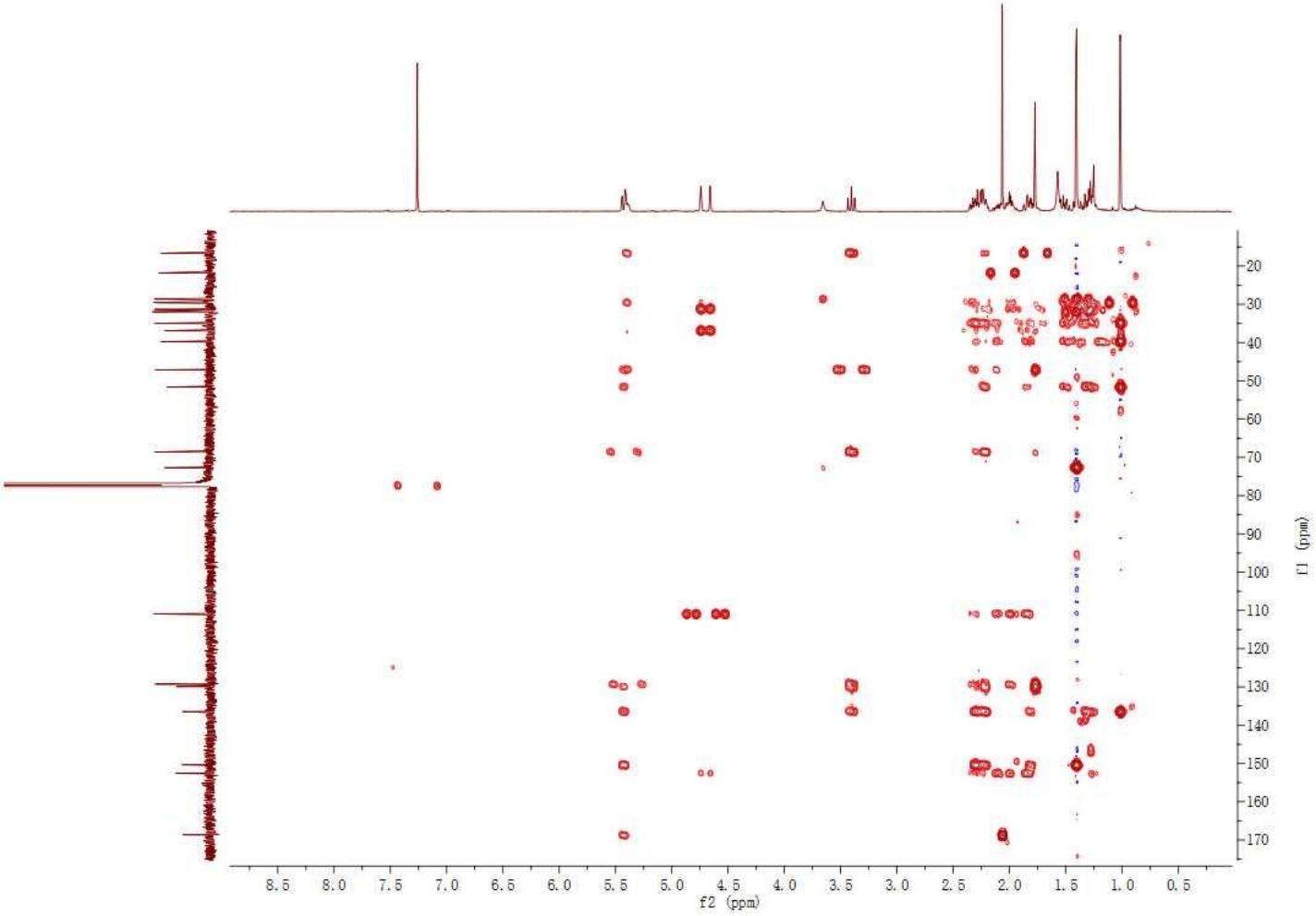

Figure **S14**. NOESY spectrum of **2** (500 MHz, $CDCl_3$).

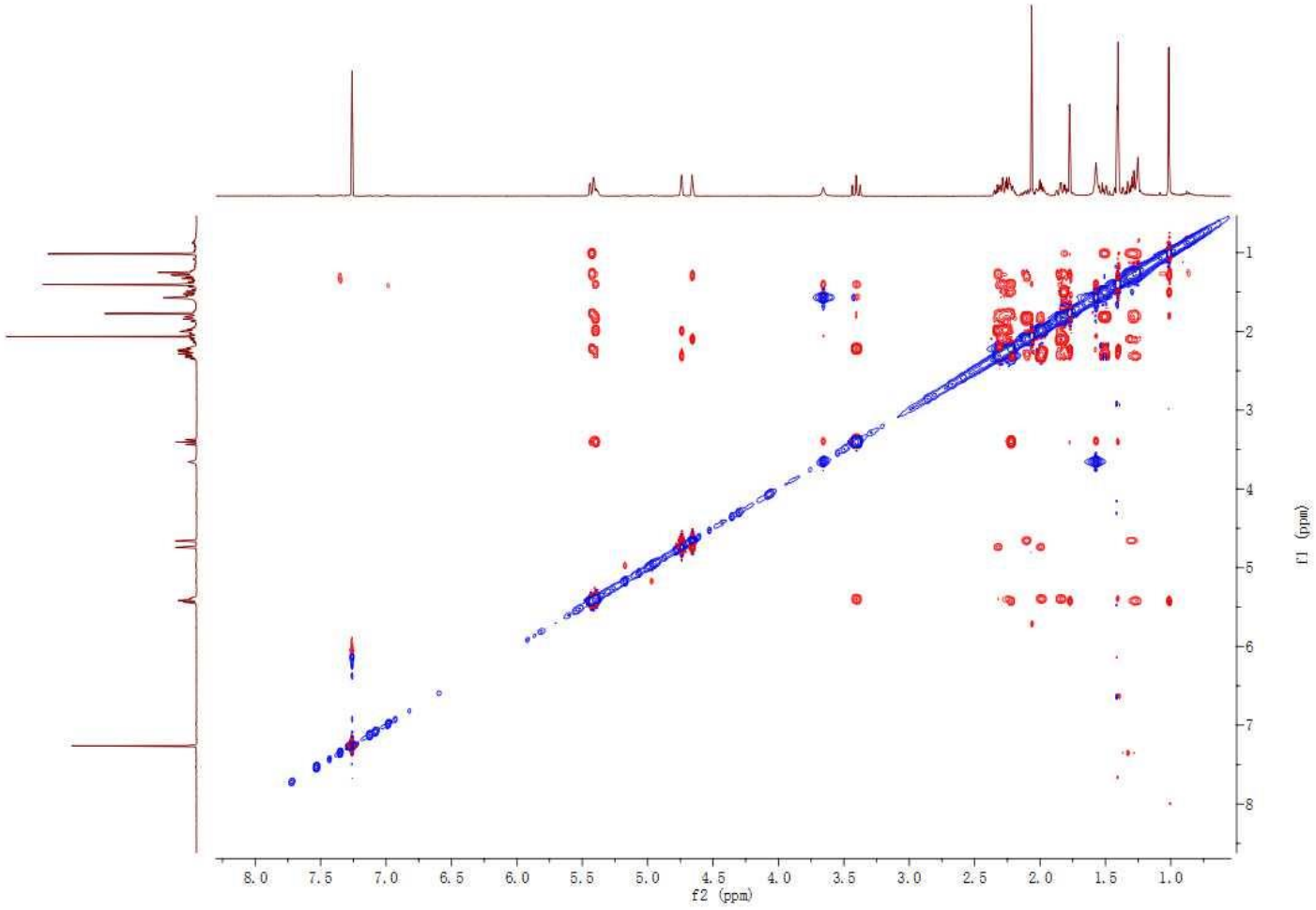

Figure **S15**. IR spectrum of **2**.

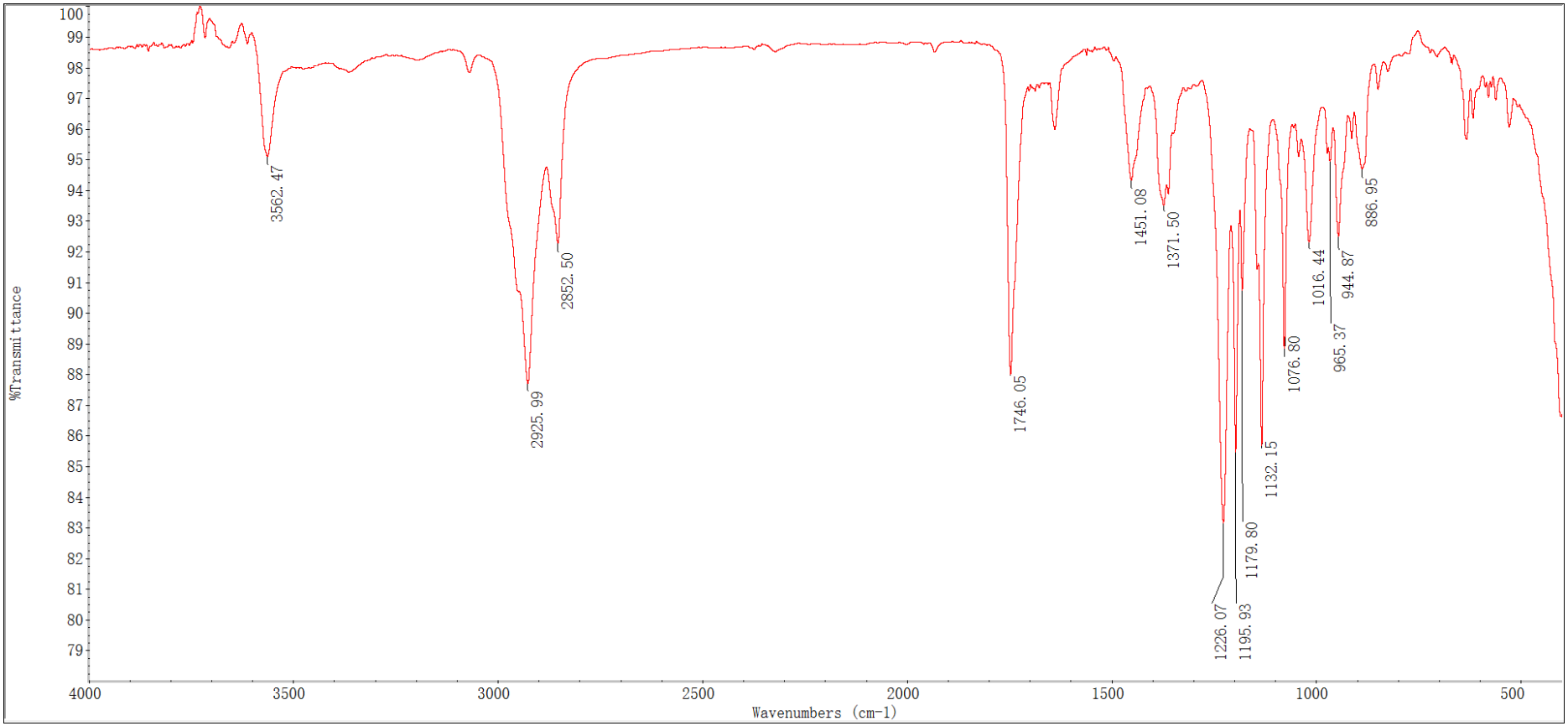

Figure **S16**. HREIMS spectrum of **2**.

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Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                 Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS     Client:  S/N: PT001263                Inlet :
Limt:  (   0 )    .    .
     : ( 437 ) C24.H100.O3
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
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Mass		Intensity	%RA	%RIC	(mmu) Delta	R+D	Composition
		1280					
243.1746	*	52962	4.76	0.12	0.2	6.5	C17.H23.O
243.2105	*	119486	10.73	0.27	0.8	5.5	C18.H27
244.1788	*	13918	1.25	0.03			
244.2165	*	24268	2.18	0.05	2.6	5.0	C18.H28
245.1475	*	1998	0.18	0.00			
245.1899	*	92576	8.31	0.21	0.6	5.5	C17.H25.O
246.1956	*	21841	1.96	0.05	2.8	5.0	C17.H26.O
247.1658	*	1356	0.12	0.00			
247.2002	*	1784	0.16	0.00			
247.2413	*	2069	0.19	0.00	1.3	3.5	C18.H31
251.1797	*	4782	0.43	0.01	0.3	8.5	C19.H23
252.1920	*	1284	0.12	0.00			
253.1955	*	355174	31.90	0.80	0.1	7.5	C19.H25
253.2859	*	1356	0.12	0.00			
254.1986	*	66166	5.94	0.15			
255.1716	*	3211	0.29	0.01			
255.2082	*	12491	1.12	0.03			
256.1820	*	2926	0.26	0.01	0.7	7.0	C18.H24.O
256.2149	*	2783	0.25	0.01			
257.1886	*	13561	1.22	0.03	1.9	6.5	C18.H25.O
257.2261	*	111634	10.02	0.25	0.8	5.5	C19.H29
258.1979	*	108493	9.74	0.25	0.5	6.0	C18.H26.O
258.2333	*	25910	2.33	0.06	1.4	5.0	C19.H30
259.1937	*	7209	0.65	0.02			
259.2075	*	8351	0.75	0.02	-1.3	5.5	C18.H27.O
259.2396	*	3711	0.33	0.01			
260.1859	*	6566	0.59	0.01			
261.1819	*	2284	0.21	0.01			
261.9790	*	4068	0.37	0.01			
266.2043	*	8279	0.74	0.02	-0.8	8.0	C20.H26
267.2118	*	5567	0.50	0.01	-0.6	7.5	C20.H27
268.2192	*	501998	45.08	1.13	-0.1	7.0	C20.H28
269.2236	*	134832	12.11	0.30			
270.1910	*	2569	0.23	0.01			
270.2242	*	19628	1.76	0.04			
271.2067	*	531548	47.73	1.20	-0.5	6.5	C19.H27.O
272.2103	*	87723	7.88	0.20			
273.2137	*	8351	0.75	0.02			
284.2188	*	3640	0.33	0.01			
285.1887	*	2426	0.22	0.01			
285.2218	*	17915	1.61	0.04	0.1	6.5	C20.H29.O
286.2309	*	514560	46.21	1.16	-1.2	6.0	C20.H30.O
286.2676	*	3854	0.35	0.01	-1.6	5.0	C21.H34
287.2351	*	100356	9.01	0.23	2.4	5.5	C20.H31.O
288.2372	*	9778	0.88	0.02			
291.2022	*	2355	0.21	0.01			
302.2900	*	1356	0.12	0.00			
308.9723	*	1998	0.18	0.00			
311.9729	*	2141	0.19	0.00			
313.2164	*	3497	0.31	0.01	0.3	7.5	C21.H29.O2
316.3128	*	2569	0.23	0.01	0.2	4.0	C23.H40
317.3228	*	1356	0.12	0.00	-1.9	3.5	C23.H41
323.3671	*	1427	0.13	0.00	0.7	0.5	C23.H47
328.2391	*	13704	1.23	0.03	1.1	7.0	C22.H32.O2
329.2433	*	3925	0.35	0.01			
331.2298	*	1284	0.12	0.00	-2.5	6.5	C21.H31.O3
346.2506	*	1284	0.12	0.00	0.2	6.0	C22.H34.O3

Figure **S17**. ^{1}H NMR spectrum of **3** (500MHz, $CDCl_3$).

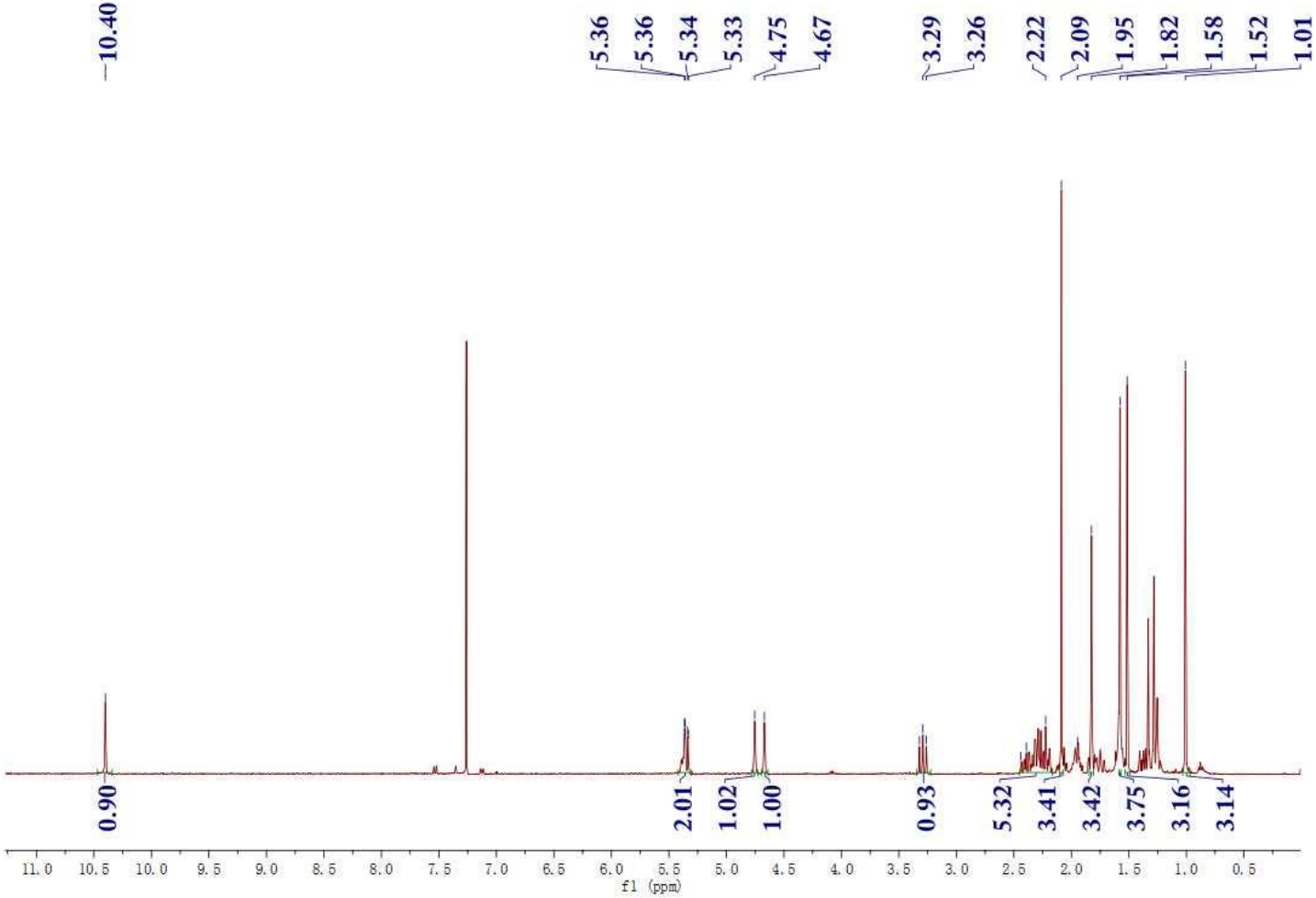

Figure **S18**. ^{13}C NMR spectrum of **3** (125 MHz, $CDCl_3$).

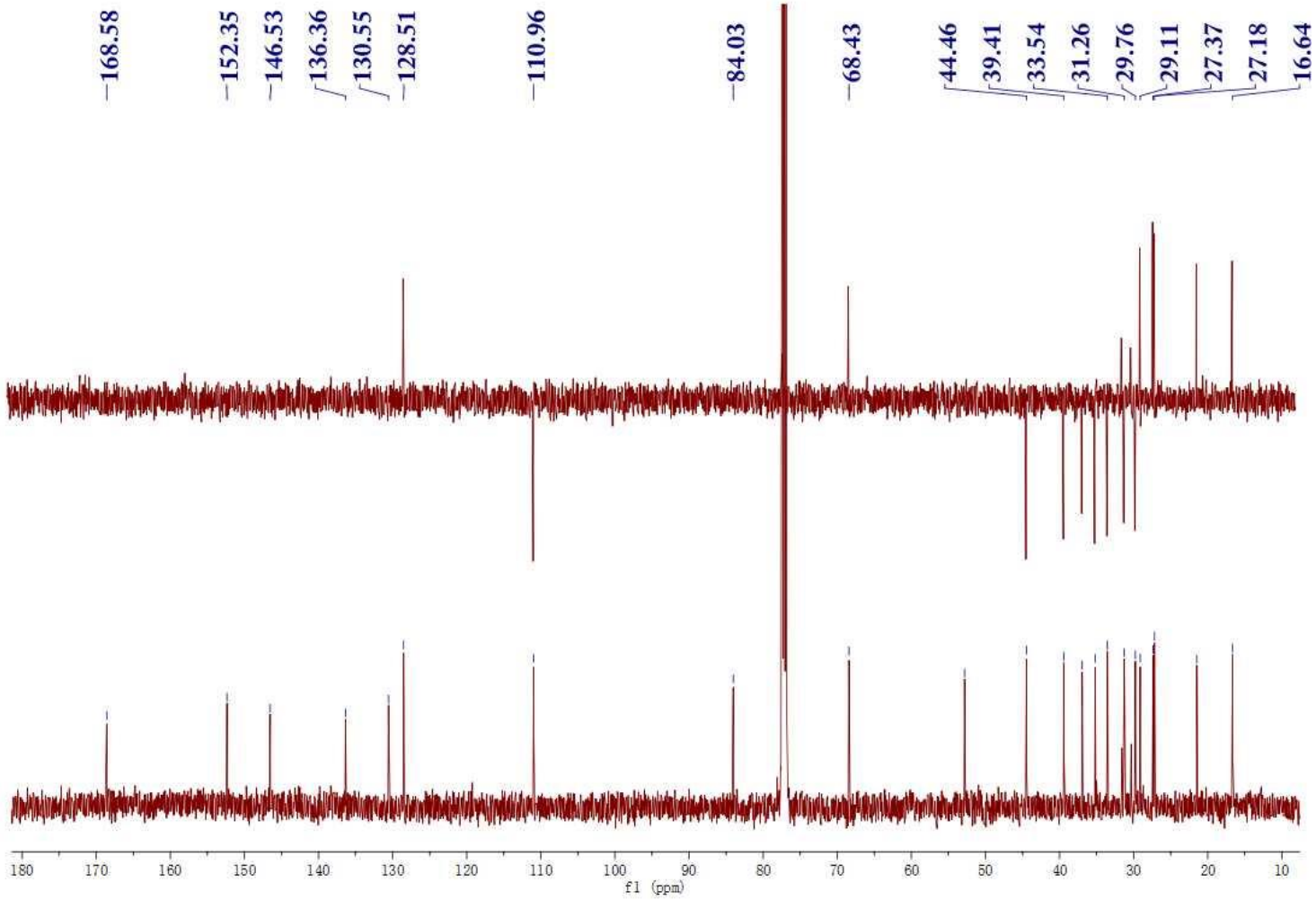

Figure **S19**. ^{1}H-^{1}H COSY spectrum of **3** (500 MHz, $CDCl_3$).

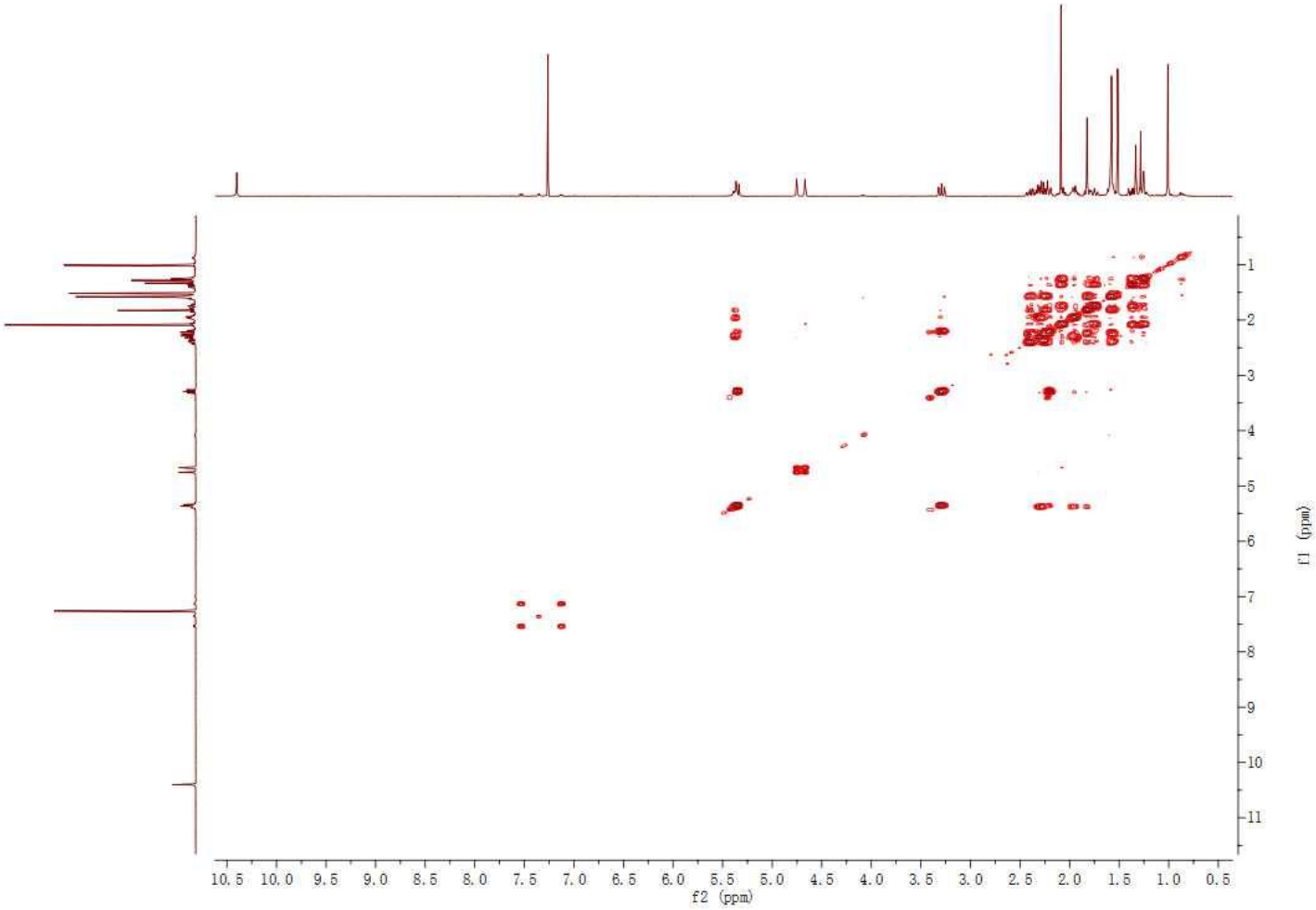

Figure **S20**. HSQC spectrum of **3** (500 MHz, $CDCl_3$).

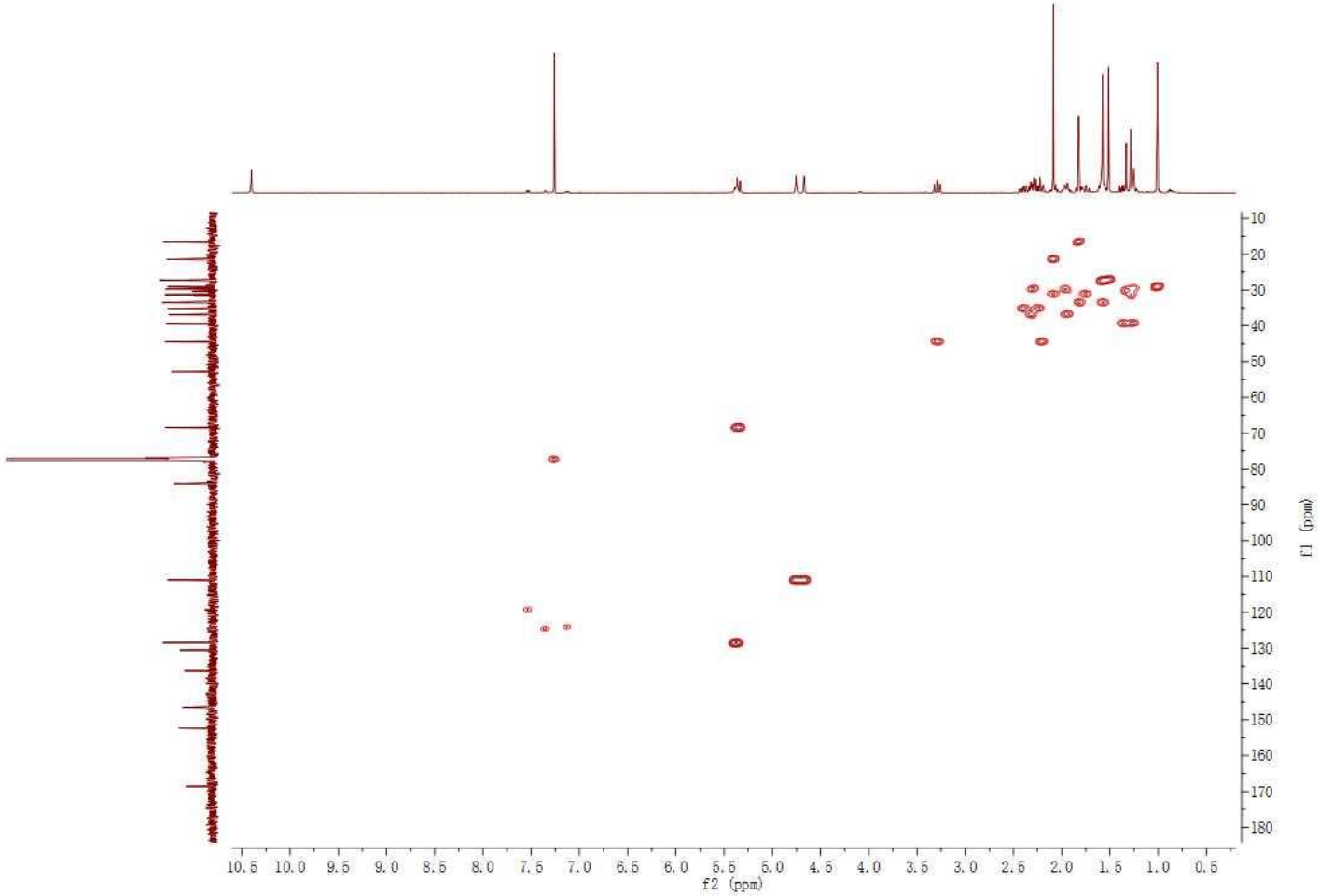

Figure **S21**. HMBC spectrum of **3** (500 MHz, $CDCl_3$).

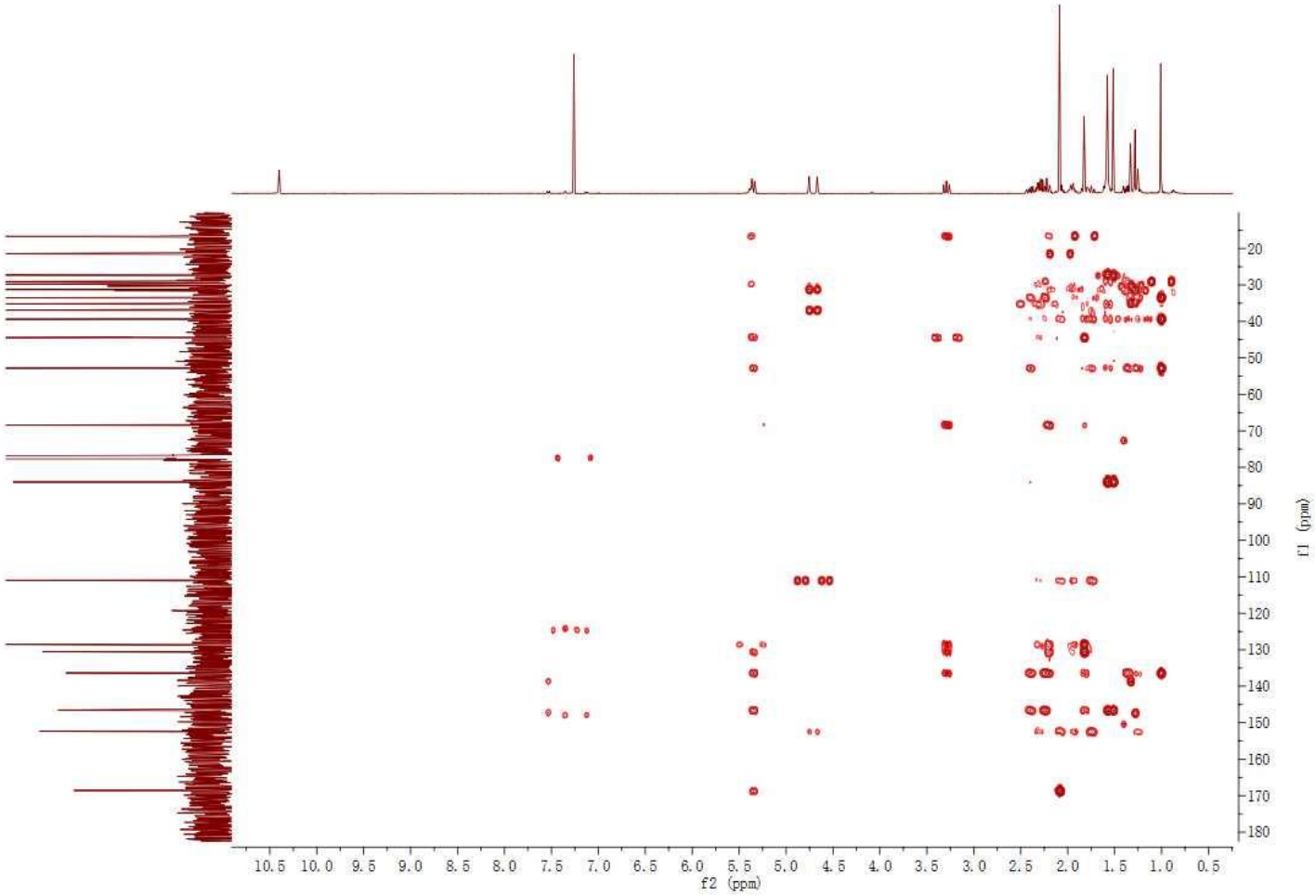

Figure **S22**. NOESY spectrum of **3** (500 MHz, $CDCl_3$).

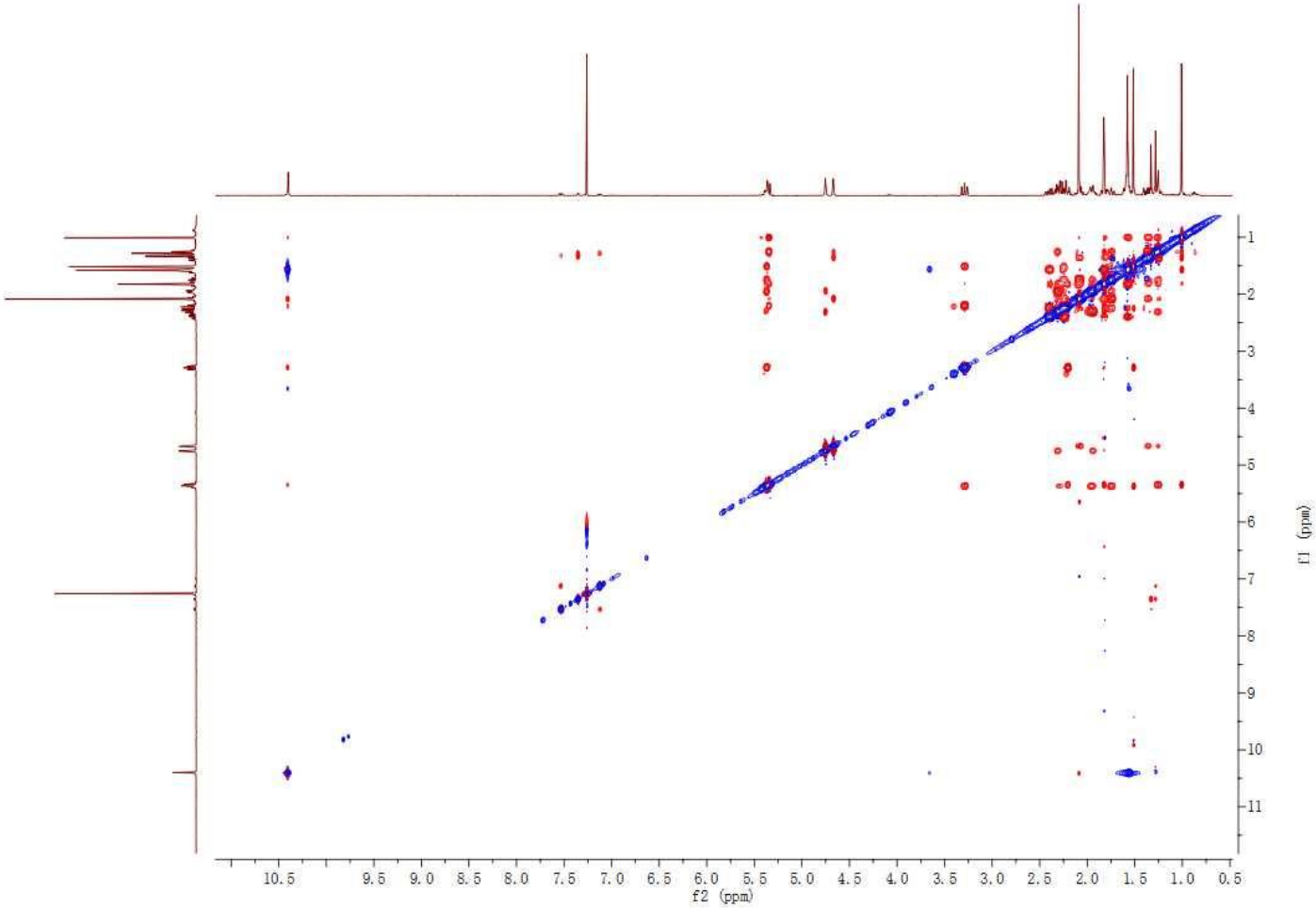

Figure **S23**. IR spectrum of **3**.

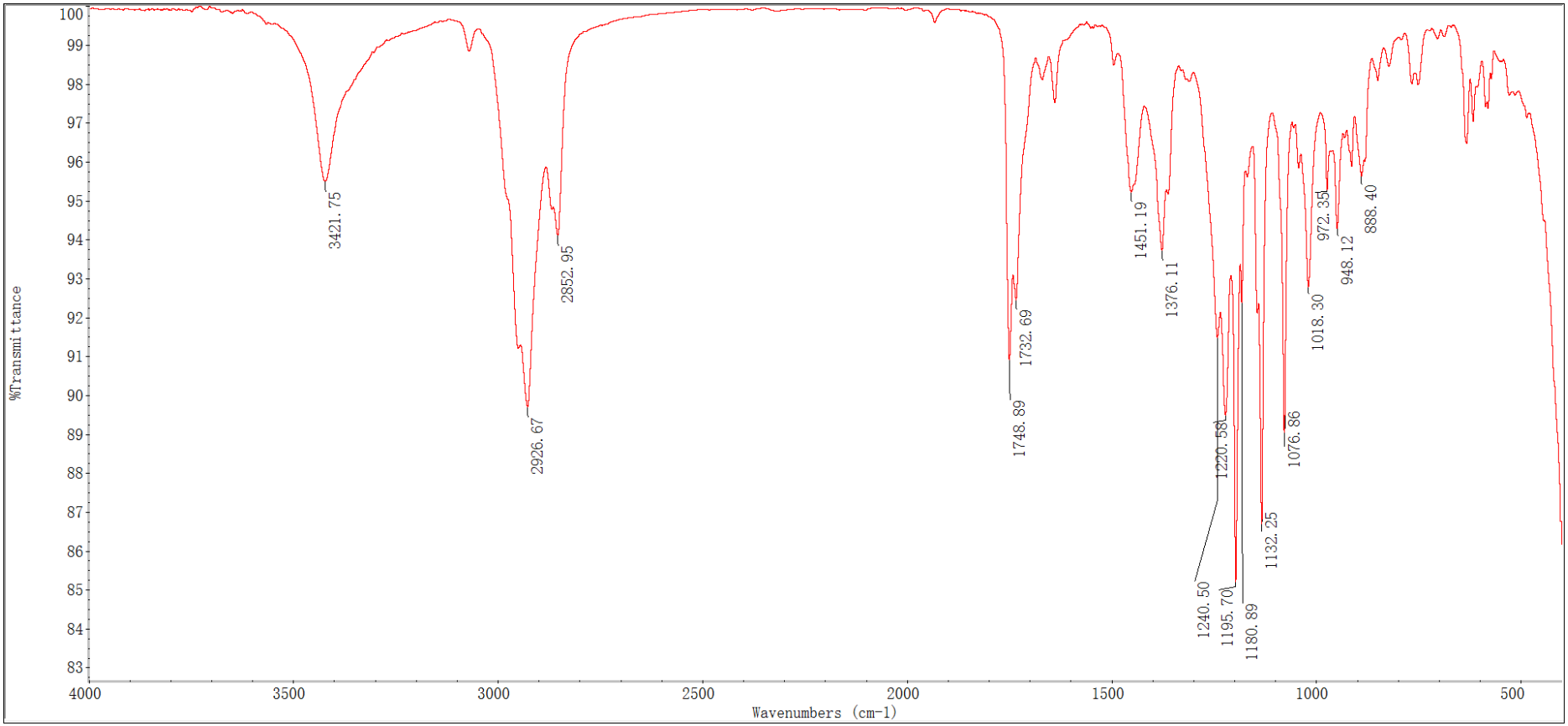

Figure **S24**. HRESIMS spectrum of **3**.

Qualitative Analysis Report

Data Filename	20160920_ESIH_GYW_GY_161504.d	**Sample Name**	21-G2d1
Sample Type	Sample	**Position**	P1-D1
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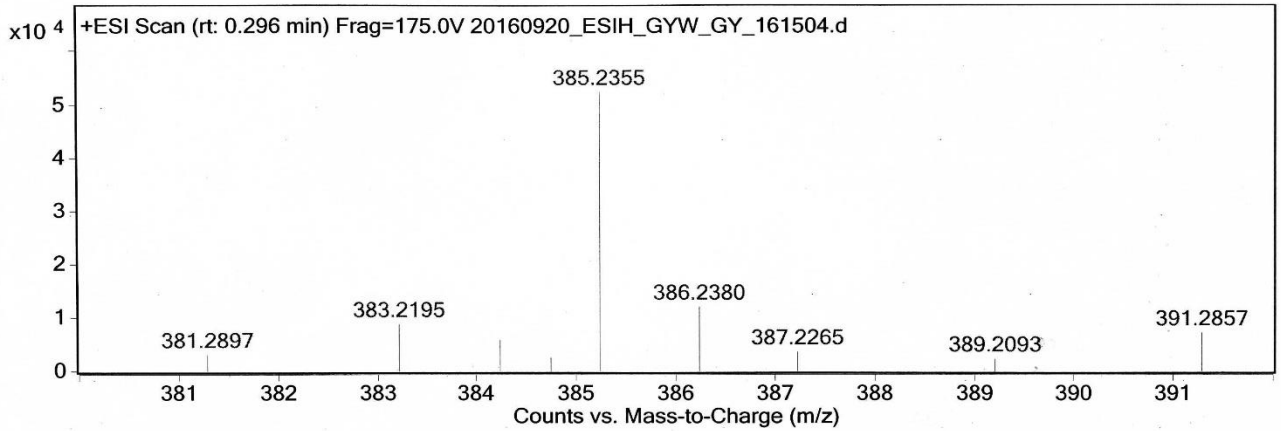
Acquired Time	9/20/2016 2:18:48 PM	**IRM Calibration Status**	Success
DA Method	small molecular data analysis method.m	**Comment**	ESIH

User Spectra

Spectrum Source	Fragmentor Voltage	Collision Energy	Ionization Mode
	175	0	ESI



Formula Calculator Results

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--- End Of Report ---

Agilent Technologies

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Printed at: 2:27 PM on: 9/20/2016

Figure **S25**. ^{1}H NMR spectrum of **4** (500MHz, $CDCl_3$).

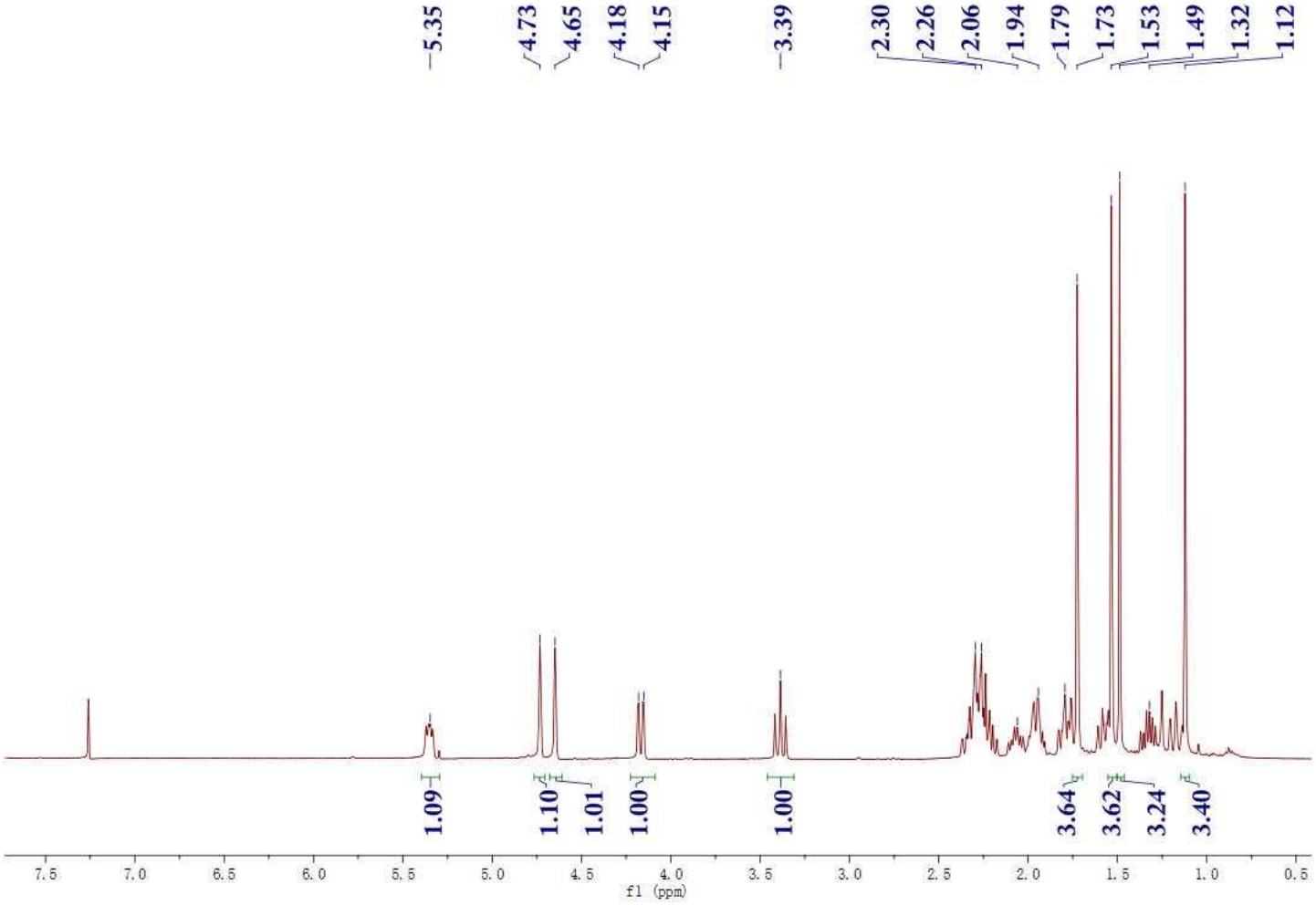

Figure **S26**. ^{13}C NMR spectrum of **4** (125 MHz, $CDCl_3$).

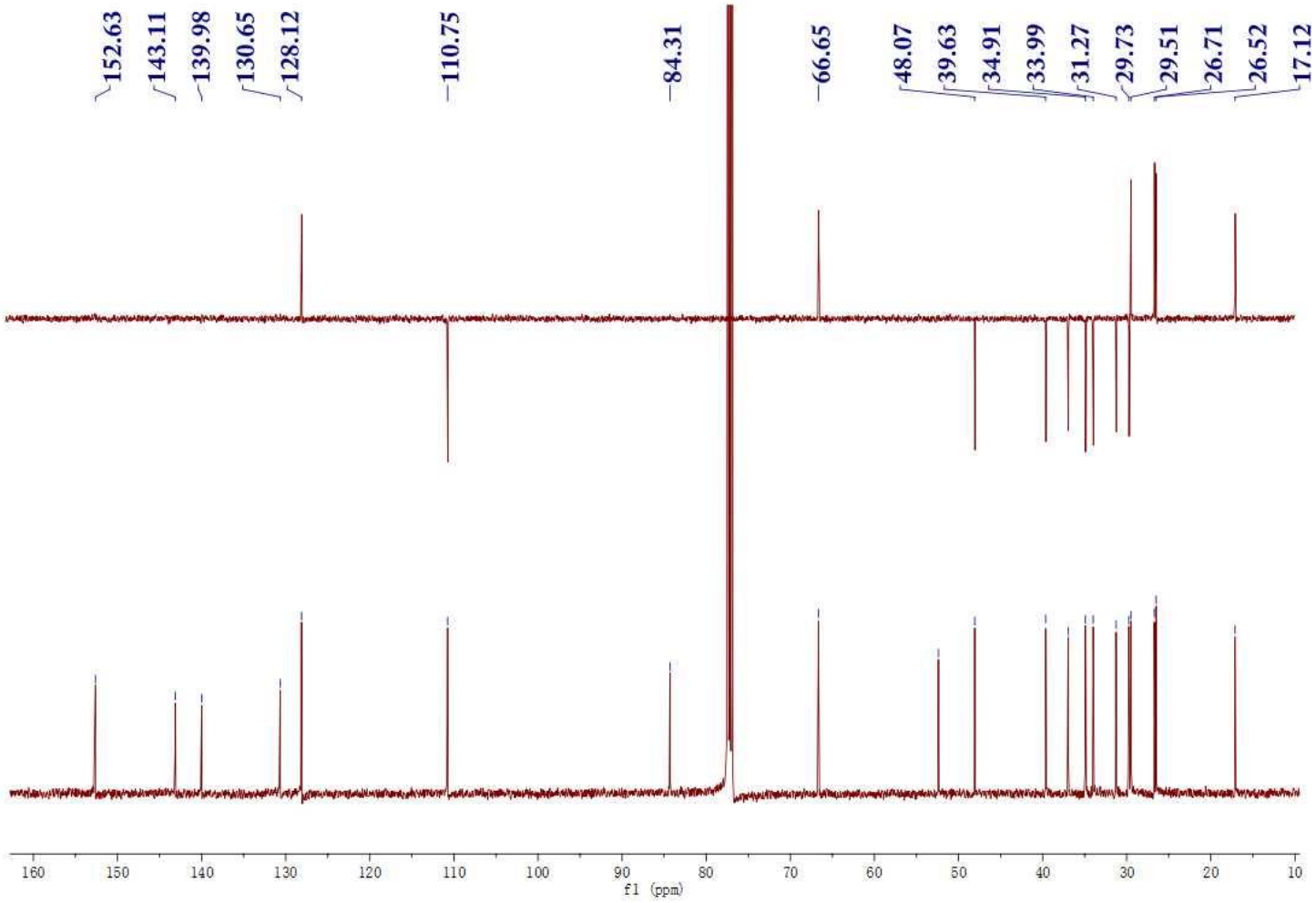

Figure **S27**. ^{1}H-^{1}H COSY spectrum of **4** (500 MHz, $CDCl_3$).

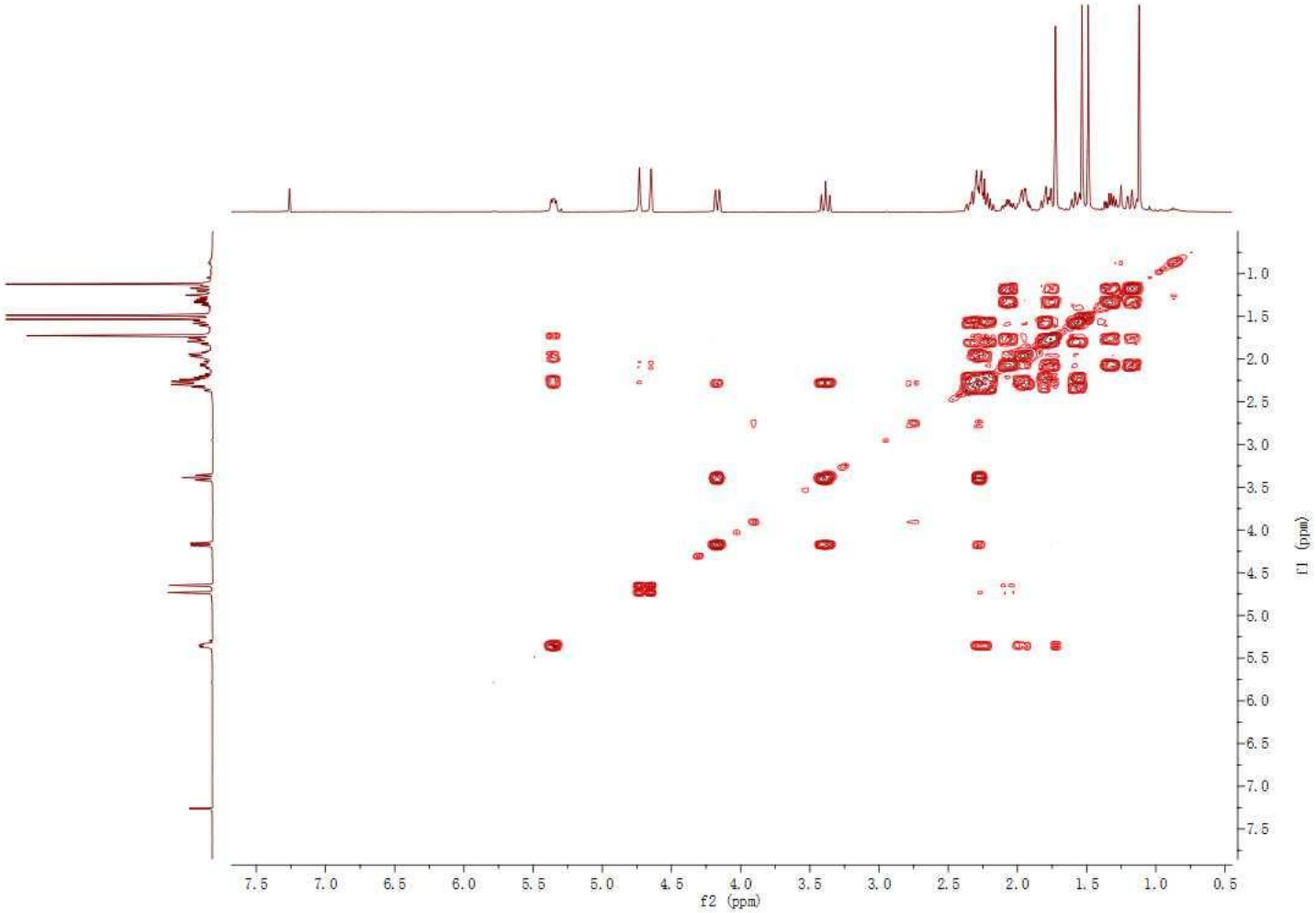

Figure **S28**. HSQC spectrum of **4** (500 MHz, $CDCl_3$).

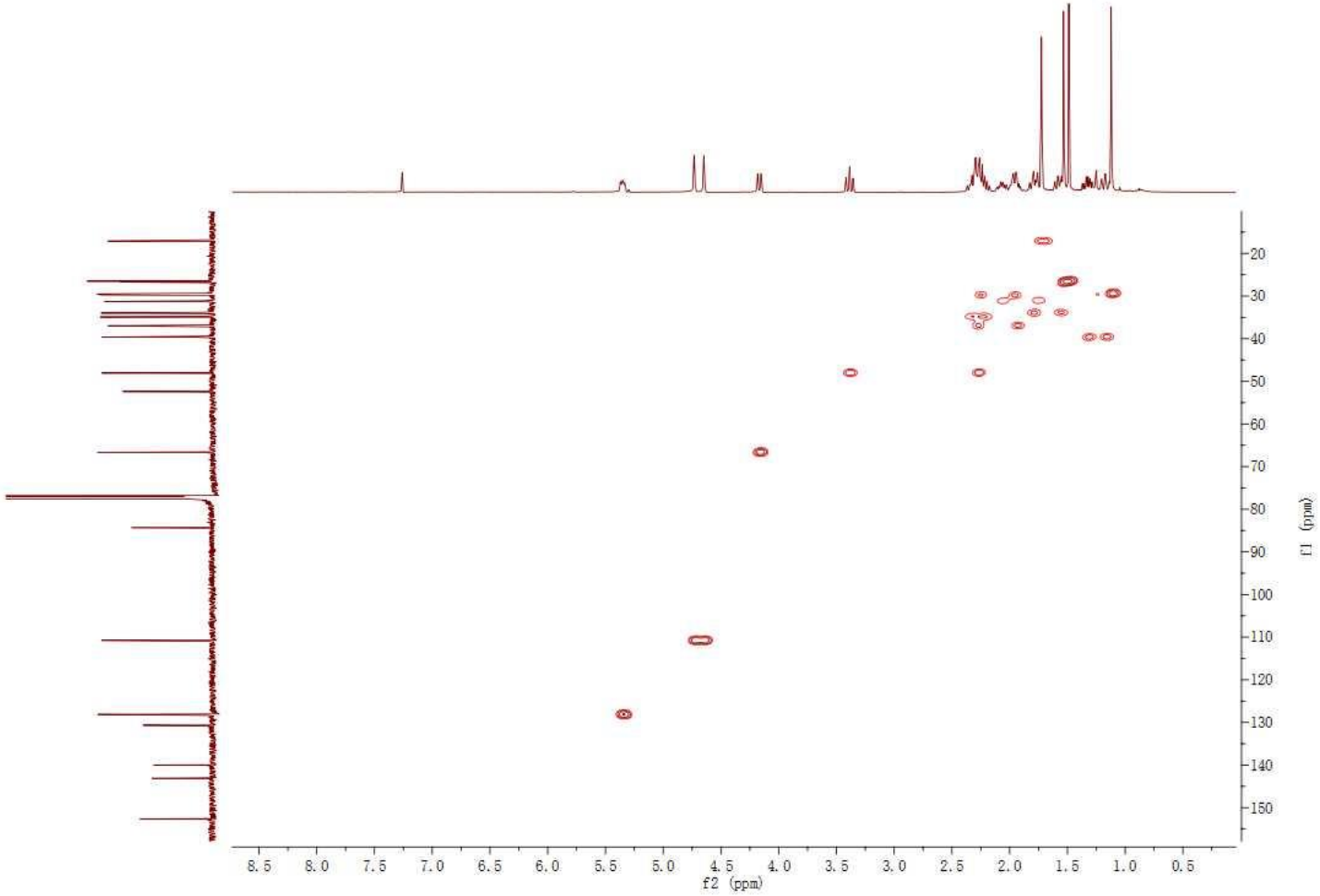

Figure **S29**. HMBC spectrum of **4** (500 MHz, $CDCl_3$).

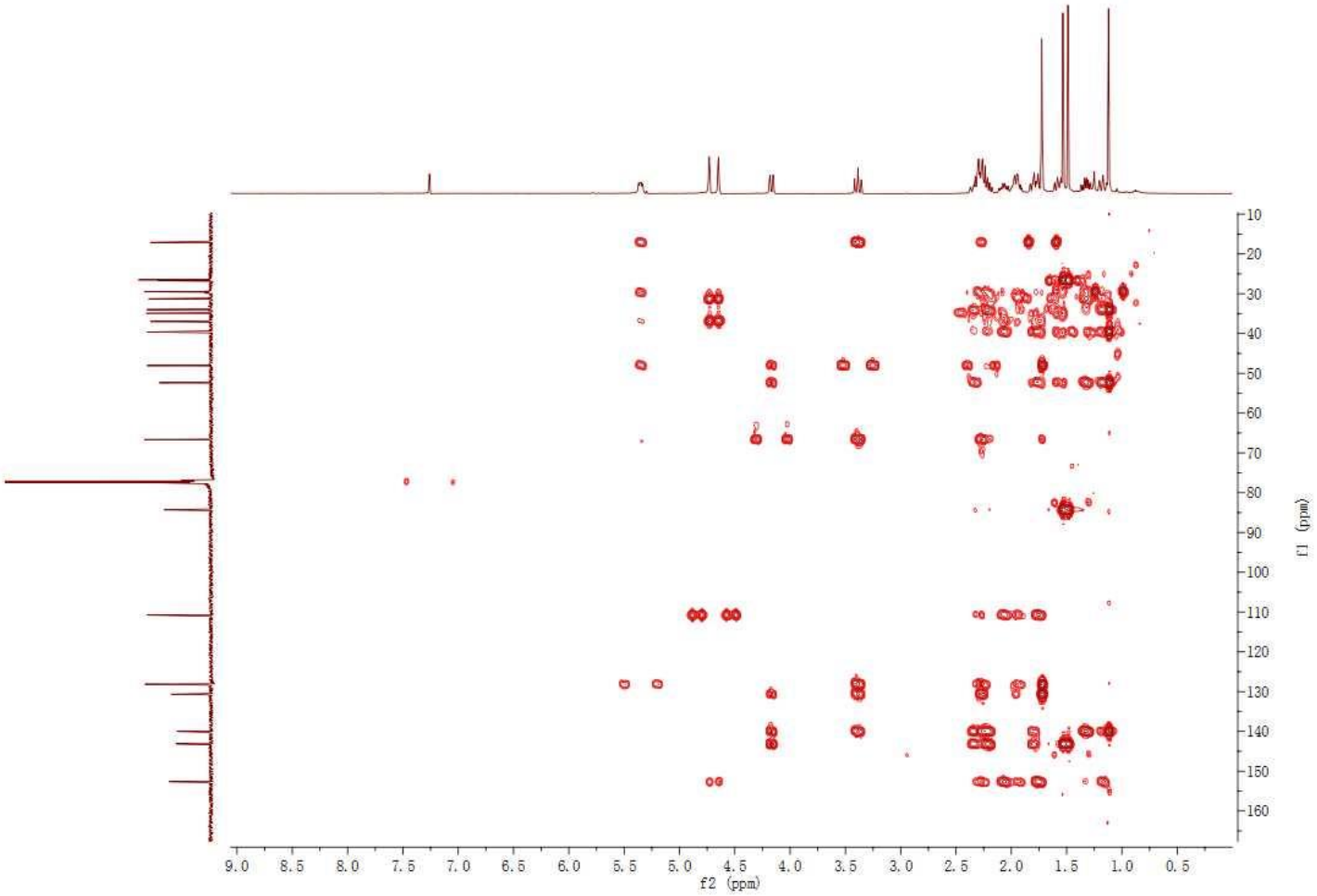

Figure **S30**. NOESY spectrum of **4** (500 MHz, $CDCl_3$).

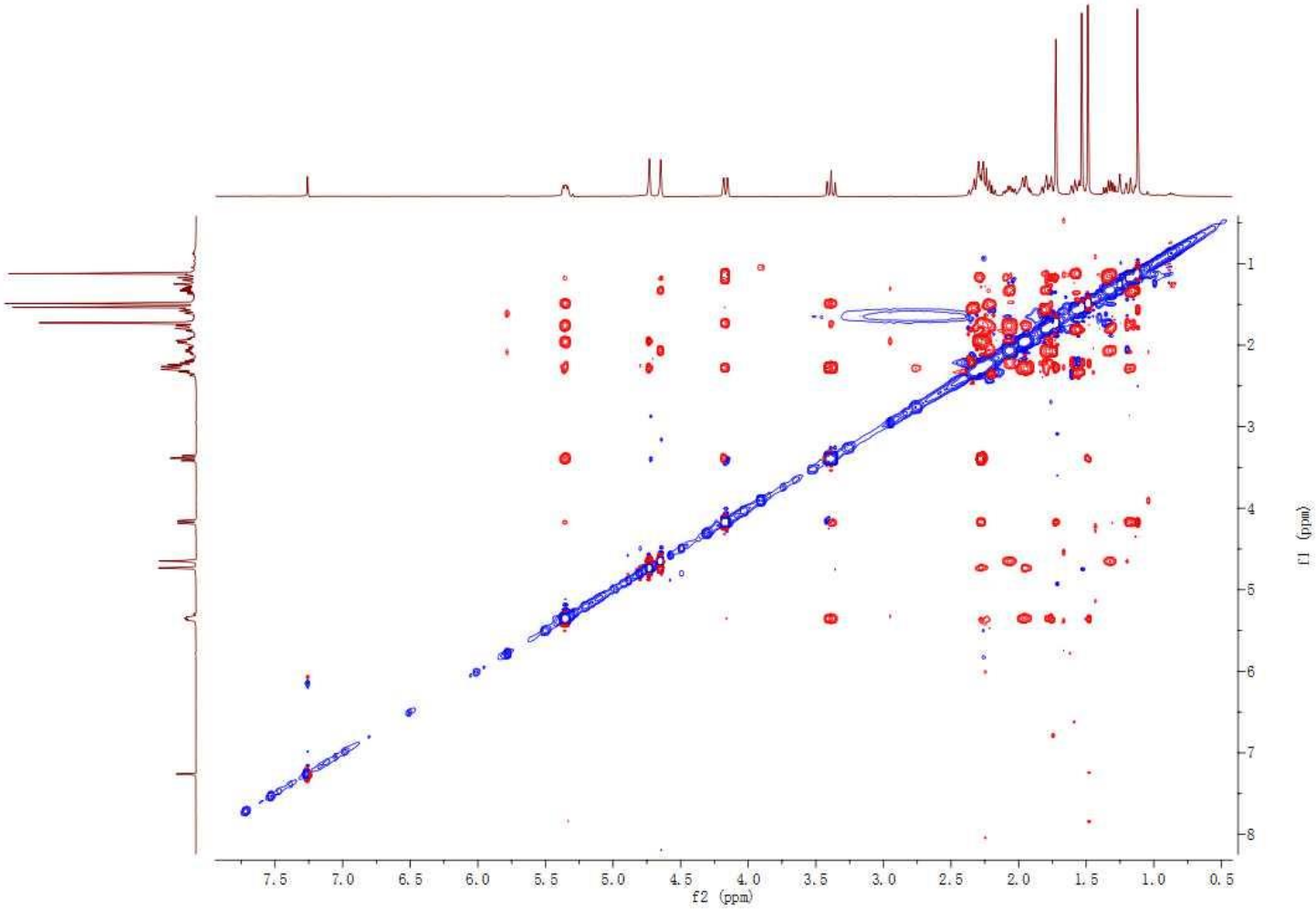

Figure **S31**. IR spectrum of **4**.

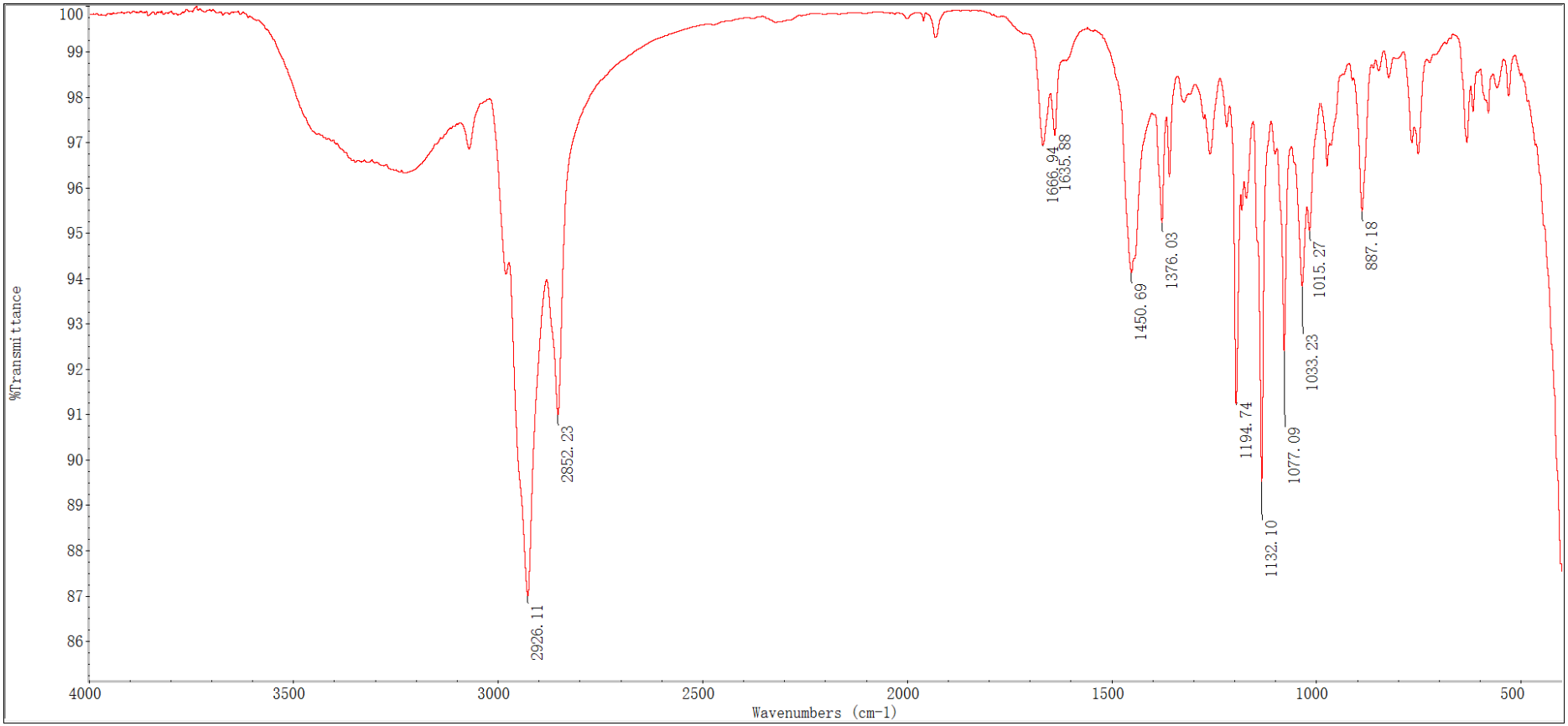

Figure **S32**. HREIMS spectrum of **4**.

```
LIST:  h16272-c1                                  13-Jul-16  Elapse:  06:42.3      3:
Samp:  SF3c2a1a                                              Start :  15:42:26     4C
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                    Study :  S/N: PT200712-0
Oper:  SIMM.CAS      Client:  S/N: PT001263                  Inlet :
Limt:  (   0 )      .      .
    :  ( 397 ) C22.H100.O2
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

		20200			(mmu)		
Mass		Intensity	%RA	%RIC	Delta	R+D	Composition
177.1274	*	190088	13.97	0.50	0.6	4.5	C12.H17.O
178.1324	*	24213	1.78	0.06			
183.1120	*	82085	6.03	0.21			
185.1316	*	143435	10.54	0.37	1.4	6.5	C14.H17
186.1373	*	31456	2.31	0.08			
187.1112	*	42604	3.13	0.11	1.1	6.5	C13.H15.O
187.1475	*	112689	8.28	0.29	1.2	5.5	C14.H19
188.1537	*	76333	5.61	0.20	2.8	5.0	C14.H20
189.1260	*	65895	4.84	0.17	1.9	5.5	C13.H17.O
189.1628	*	259107	19.04	0.68	1.5	4.5	C14.H21
190.1672	*	55457	4.07	0.14			
191.1422	*	51693	3.80	0.14	1.4	4.5	C13.H19.O
195.1167	*	20592	1.51	0.05	0.7	8.5	C15.H15
197.1314	*	46368	3.41	0.12	1.6	7.5	C15.H17
199.1469	*	82227	6.04	0.21	1.8	6.5	C15.H19
200.1553	*	32805	2.41	0.09	1.2	6.0	C15.H20
201.1279	*	82440	6.06	0.22	0.0	6.5	C14.H17.O
201.1648	*	107363	7.89	0.28	-0.5	5.5	C15.H21
202.1344	*	35006	2.57	0.09	1.4	6.0	C14.H18.O
202.1708	*	40332	2.96	0.11	1.4	5.0	C15.H22
203.1429	*	369382	27.14	0.96	0.6	5.5	C14.H19.O
204.1488	*	76262	5.60	0.20	2.6	5.0	C14.H20.O
205.1578	*	42178	3.10	0.11	1.5	4.5	C14.H21.O
211.1477	*	40403	2.97	0.11	1.0	7.5	C16.H19
213.1624	*	57729	4.24	0.15	1.9	6.5	C16.H21
215.1427	*	61208	4.50	0.16	0.9	6.5	C15.H19.O
215.1784	*	20450	1.50	0.05	1.5	5.5	C16.H23
216.1507	*	65753	4.83	0.17	0.7	6.0	C15.H20.O
217.1588	*	134772	9.90	0.35	0.5	5.5	C15.H21.O
218.1652	*	72072	5.29	0.19	1.8	5.0	C15.H22.O
219.1731	*	24994	1.84	0.07	1.8	4.5	C15.H23.O
225.1620	*	36924	2.71	0.10	2.3	7.5	C17.H21
226.1715	*	20450	1.50	0.05	0.7	7.0	C17.H22
227.1789	*	81801	6.01	0.21	1.1	6.5	C17.H23
228.1846	*	31456	2.31	0.08			
229.1596	*	72072	5.29	0.19	-0.3	6.5	C16.H21.O
230.1654	*	23290	1.71	0.06	1.7	6.0	C16.H22.O
241.1935	*	42817	3.15	0.11	2.1	6.5	C18.H25
243.1739	*	40900	3.00	0.11	1.0	6.5	C17.H23.O
243.2114	*	20379	1.50	0.05	-0.1	5.5	C18.H27
244.1836	*	24355	1.79	0.06	-0.8	6.0	C17.H24.O
245.1900	*	63907	4.70	0.17	0.6	5.5	C17.H25.O
253.1954	*	33444	2.46	0.09	0.3	7.5	C19.H25
255.2108	*	23290	1.71	0.06	0.4	6.5	C19.H27
257.2245	*	51125	3.76	0.13	2.4	5.5	C19.H29
258.0646	*	30959	2.27	0.08			
258.2314	*	20805	1.53	0.05			
268.2174	*	38557	2.83	0.10	1.7	7.0	C20.H28
269.1916	*	237592	17.46	0.62	-1.1	7.5	C19.H25.O
269.2288	*	39764	2.92	0.10	-1.9	6.5	C20.H29
270.1954	*	60285	4.43	0.16			
271.2063	*	101115	7.43	0.26	-0.1	6.5	C19.H27.O
284.2141	*	58794	4.32	0.15	-0.1	7.0	C20.H28.O
285.2181	*	22793	1.67	0.06			
286.2286	*	59007	4.34	0.15	1.1	6.0	C20.H30.O
287.2040	*	20308	1.49	0.05	-2.9	6.5	C19.H27.O2
302.2248	*	20237	1.49	0.05	-0.2	6.0	C20.H30.O2

Figure **S33**. ^{1}H NMR spectrum of **5** (500MHz, $CDCl_3$).

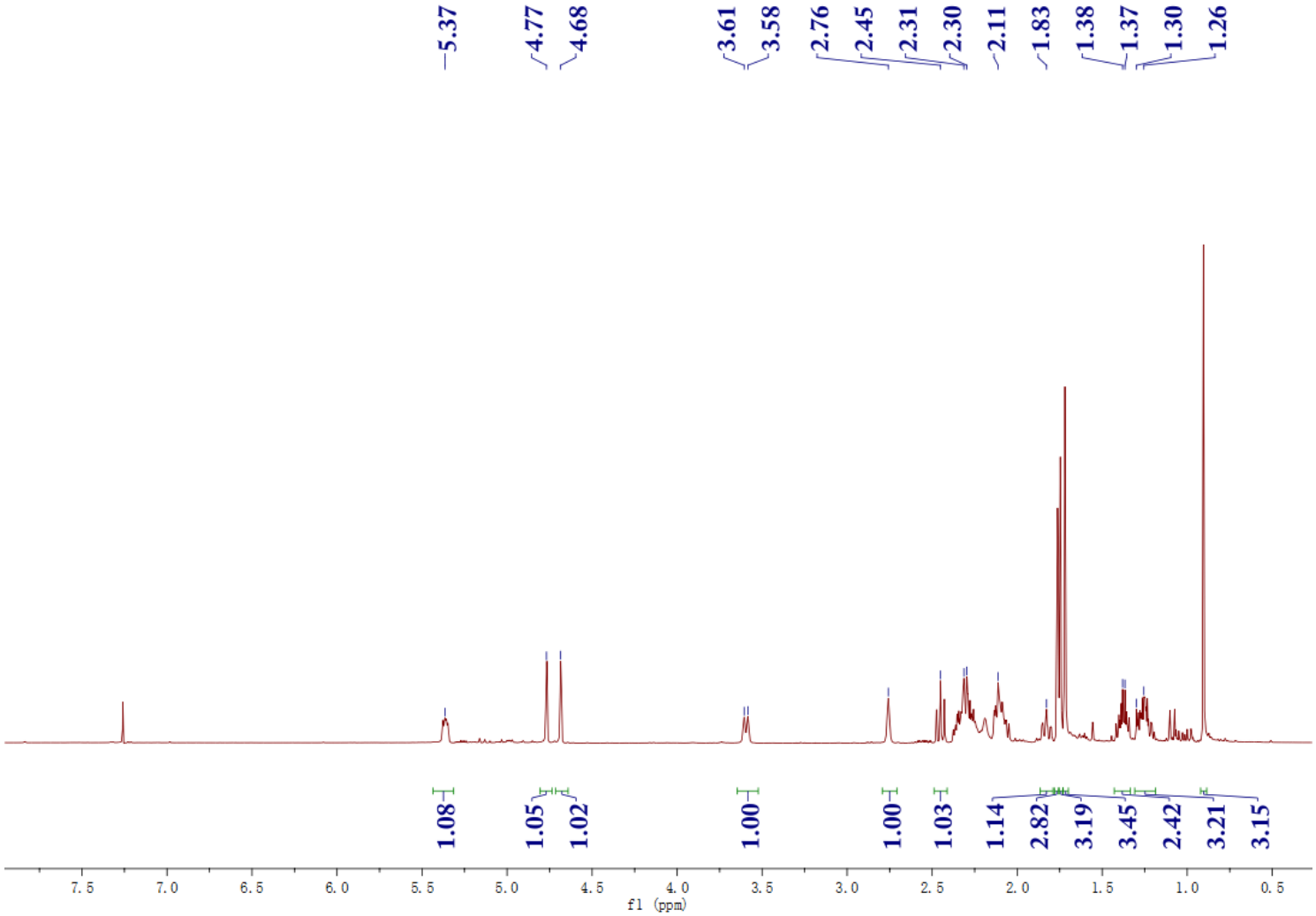

Figure **S34**. ^{13}C NMR spectrum of **5** (125 MHz, $CDCl_3$).

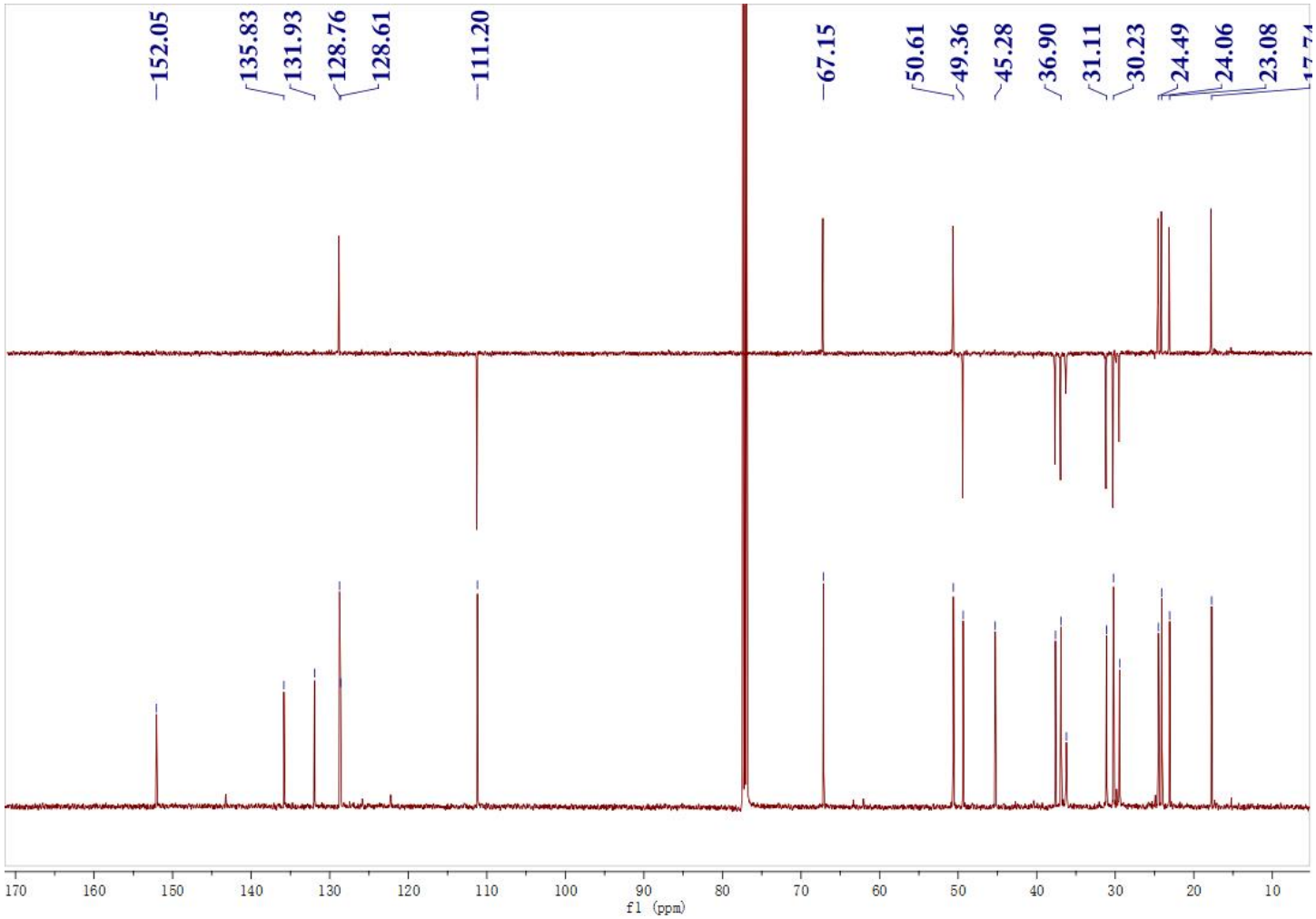

Figure **S35**. ^{1}H-^{1}H COSY spectrum of **5** (500 MHz, $CDCl_3$).

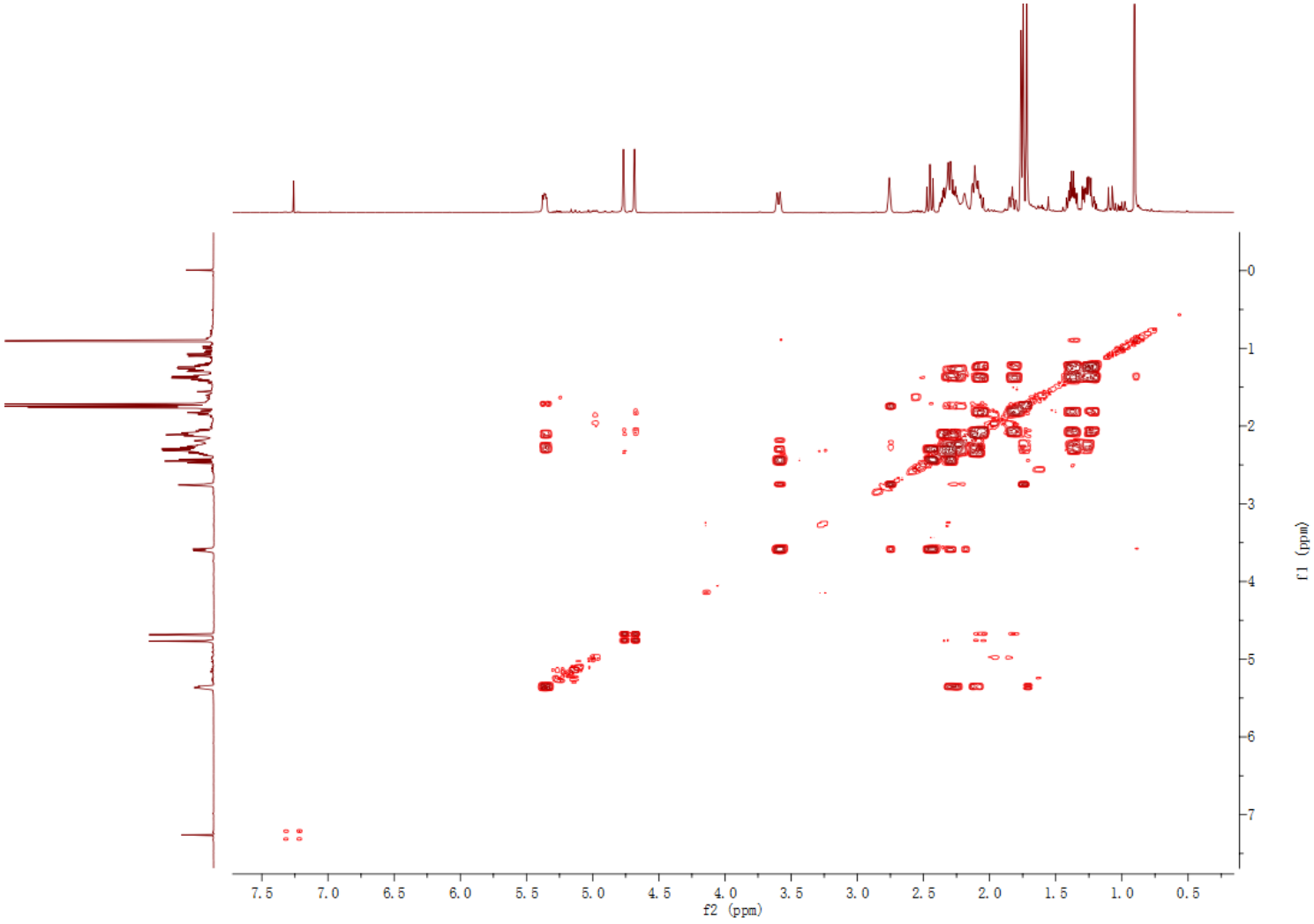

Figure **S36**. HSQC spectrum of **5** (500 MHz, $CDCl_3$).

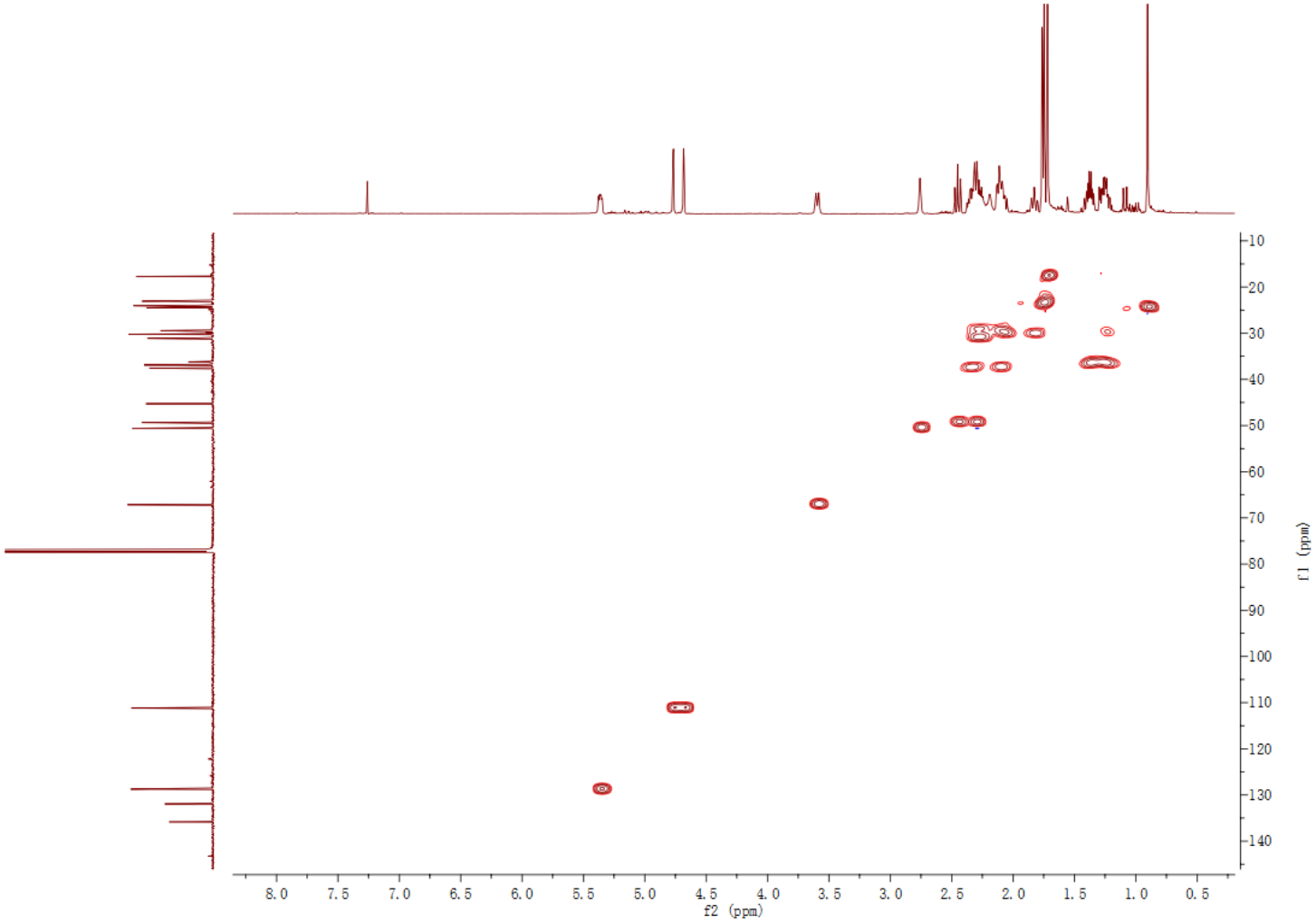

Figure **S37**. HMBC spectrum of **5** (500 MHz, $CDCl_3$).

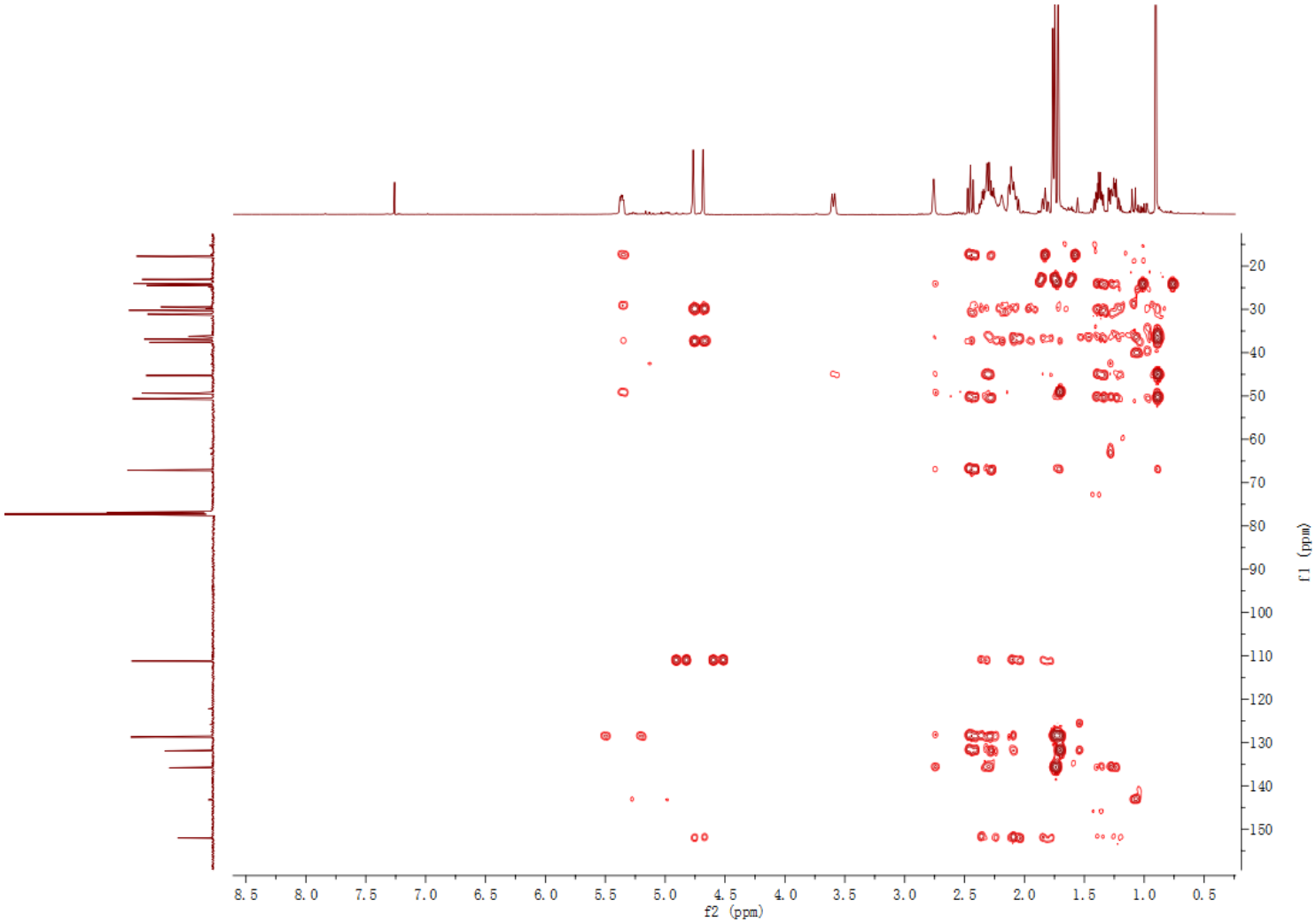

Figure **S38**. NOESY spectrum of **5** (500 MHz, $CDCl_3$).

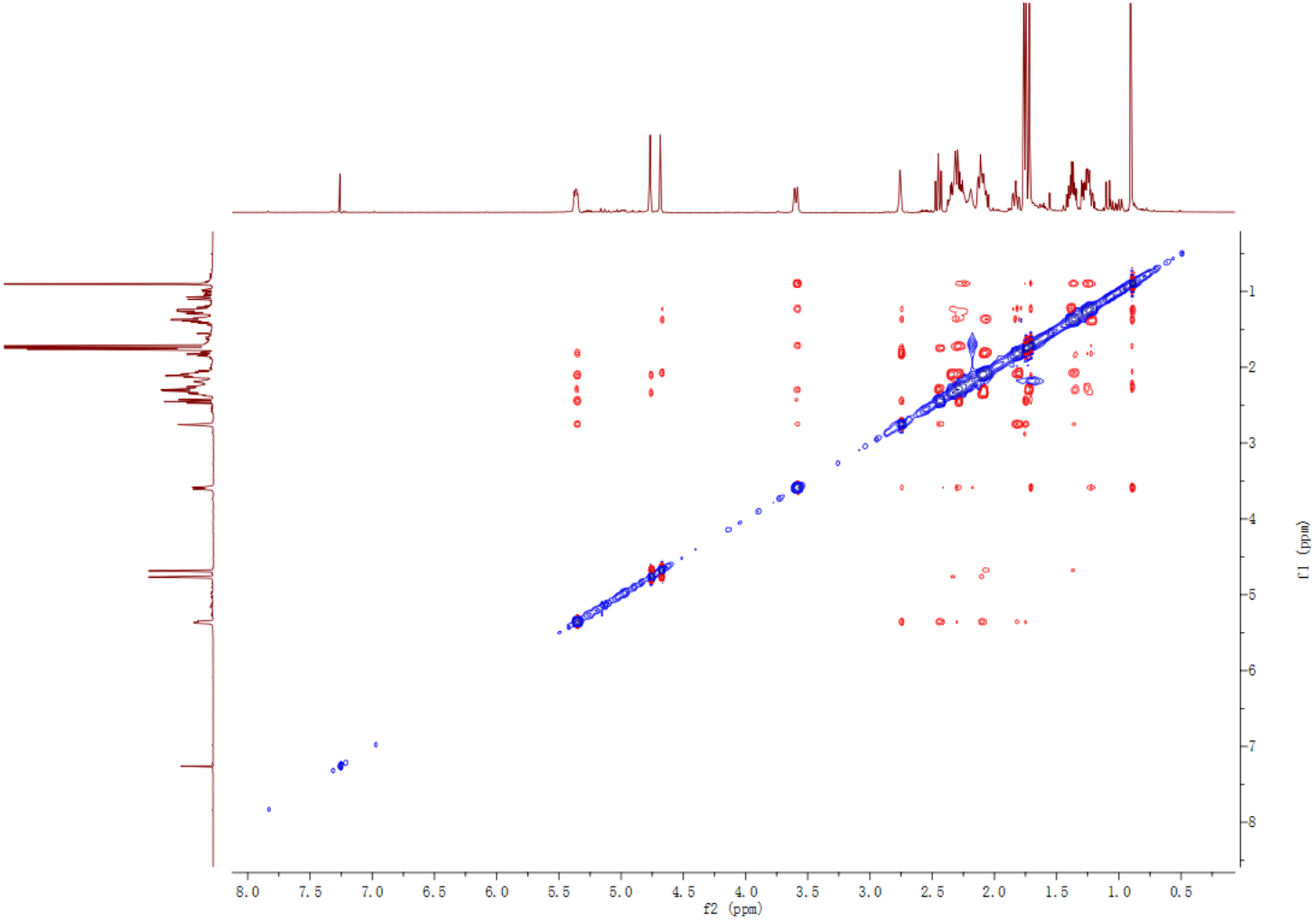

Figure **S39**. IR spectrum of **5**.

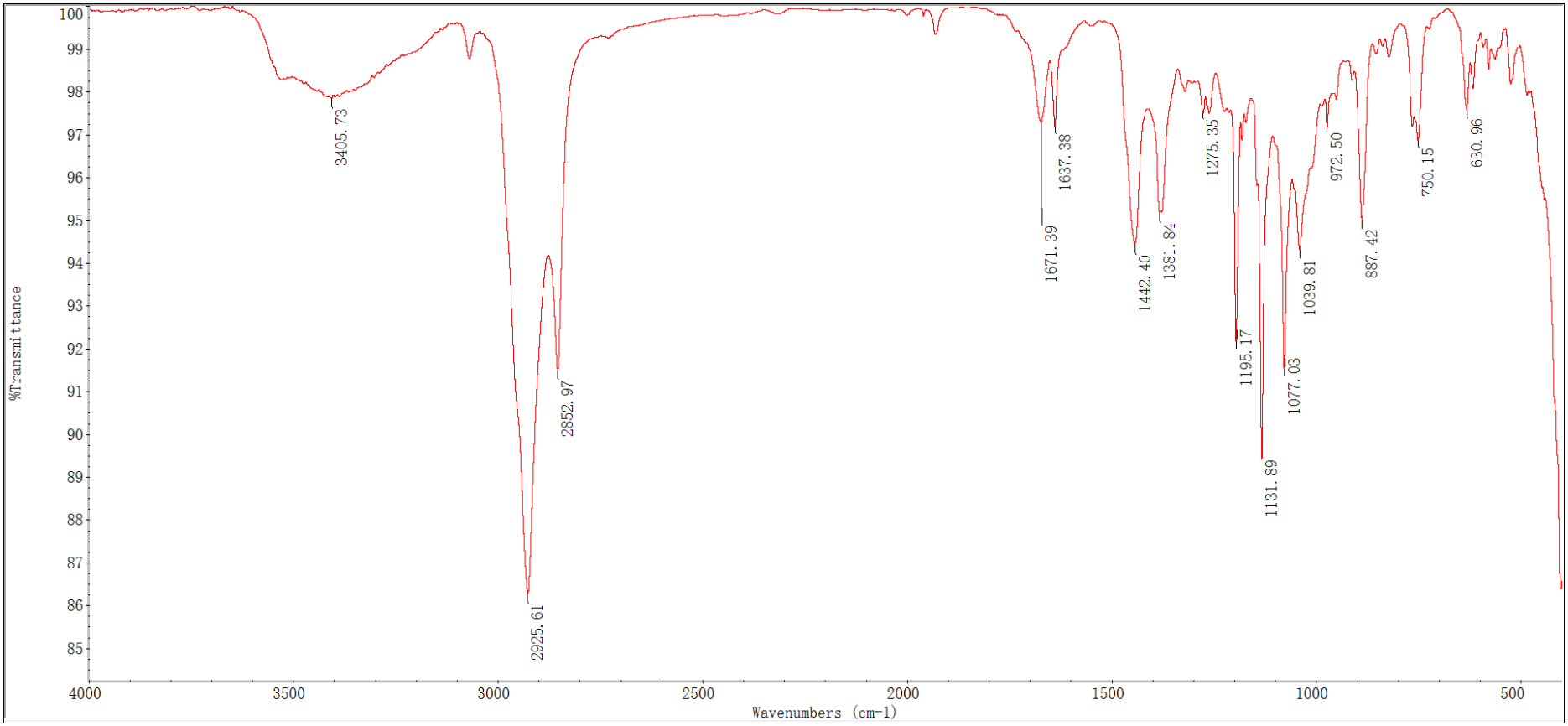

Figure **S40**. HREIMS spectrum of **5**.

```
LIST:  h150533-c1                          31-Dec-15  Elapse:  03:46.1      17
Samp:  c2g2                                           Start :  15:50:20     19
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM             Study :  S/N: PT200712-01
Oper:  SIMM.CAS      Client:  S/N: PT001263           Inlet :
Limt: (   0 )     .     .
    : ( 381 ) C22.H100.O
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		Intensity (102920)	%RA	%RIC	Delta (mmu)	R+D	Composition
119.0862	*	874292	16.29	1.23	-0.1	4.5	C9.H11
120.0929	*	371092	6.91	0.52	1.0	4.0	C9.H12
121.1017	*	4766719	88.79	6.68	0.0	3.5	C9.H13
122.1086	*	2698324	50.26	3.78	0.9	3.0	C9.H14
123.0807	*	318214	5.93	0.45	0.3	3.5	C8.H11.O
123.1168	*	5368527	100.00	7.53	0.6	2.5	C9.H15
124.1196	*	487720	9.08	0.68			
131.0861	*	284360	5.30	0.40	0.0	5.5	C10.H11
132.0932	*	128443	2.39	0.18	0.7	5.0	C10.H12
133.1012	*	1014316	18.89	1.42	0.5	4.5	C10.H13
134.1082	*	476199	8.87	0.67	1.4	4.0	C10.H14
135.0806	*	153967	2.87	0.22	0.4	4.5	C9.H11.O
135.1175	*	2195952	40.90	3.08	-0.1	3.5	C10.H15
136.1239	*	780943	14.55	1.09	1.3	3.0	C10.H16
137.0960	*	202414	3.77	0.28	0.6	3.5	C9.H13.O
137.1311	*	241053	4.49	0.34	1.9	2.5	C10.H17
139.1125	*	171514	3.19	0.24	-0.2	2.5	C9.H15.O
145.1013	*	338893	6.31	0.48	0.4	5.5	C11.H13
146.1082	*	119995	2.24	0.17	1.3	5.0	C11.H14
147.1163	*	567067	10.56	0.79	1.1	4.5	C11.H15
148.1233	*	146345	2.73	0.21	1.9	4.0	C11.H16
149.0955	*	778816	14.51	1.09	1.1	4.5	C10.H13.O
149.1317	*	378123	7.04	0.53	1.3	3.5	C11.H17
150.1043	*	1364494	25.42	1.91	0.2	4.0	C10.H14.O
151.1113	*	4056379	75.56	5.69	0.9	3.5	C10.H15.O
152.1173	*	607597	11.32	0.85	2.8	3.0	C10.H16.O
153.1256	*	197392	3.68	0.28	2.3	2.5	C10.H17.O
159.1171	*	325363	6.06	0.46	0.3	5.5	C12.H15
161.1332	*	362762	6.76	0.51	-0.2	4.5	C12.H17
163.1118	*	176418	3.29	0.25	0.5	4.5	C11.H15.O
163.1482	*	133879	2.49	0.19	0.5	3.5	C12.H19
164.1191	*	103865	1.93	0.15	1.0	4.0	C11.H16.O
167.1070	*	251806	4.69	0.35			
173.1327	*	184985	3.45	0.26	0.4	5.5	C13.H17
175.1481	*	604111	11.25	0.85	0.6	4.5	C13.H19
176.1544	*	157453	2.93	0.22	2.1	4.0	C13.H20
177.1272	*	225042	4.19	0.32	0.7	4.5	C12.H17.O
177.1633	*	147409	2.75	0.21	1.1	3.5	C13.H21
187.1491	*	232250	4.33	0.33	-0.4	5.5	C14.H19
189.1652	*	595190	11.09	0.83	-0.9	4.5	C14.H21
190.1715	*	247907	4.62	0.35	0.6	4.0	C14.H22
191.1800	*	412804	7.69	0.58	0.0	3.5	C14.H23
201.1639	*	178840	3.33	0.25	0.5	5.5	C15.H21
203.1440	*	182680	3.40	0.26	-0.4	5.5	C14.H19.O
205.1592	*	251865	4.69	0.35	0.0	4.5	C14.H21.O
206.1657	*	207554	3.87	0.29	1.3	4.0	C14.H22.O
217.1949	*	161411	3.01	0.23	0.7	4.5	C16.H25
218.1662	*	125726	2.34	0.18	0.9	5.0	C15.H22.O
220.1821	*	127203	2.37	0.18	0.6	4.0	C15.H24.O
227.1800	*	126198	2.35	0.18	0.0	6.5	C17.H23
245.1902	*	264686	4.93	0.37	0.4	5.5	C17.H25.O
270.2346	*	102920	1.92	0.14	0.1	6.0	C20.H30
271.2055	*	109537	2.04	0.15	0.7	6.5	C19.H27.O
273.2214	*	426216	7.94	0.60	0.4	5.5	C19.H29.O
286.2299	*	130748	2.44	0.18	-0.2	6.0	C20.H30.O
288.2444	*	920789	17.15	1.29	0.9	5.0	C20.H32.O
289.2456	*	217952	4.06	0.31			

Figure **S41**. ^{1}H NMR spectrum of **6** (500MHz, $CDCl_3$).

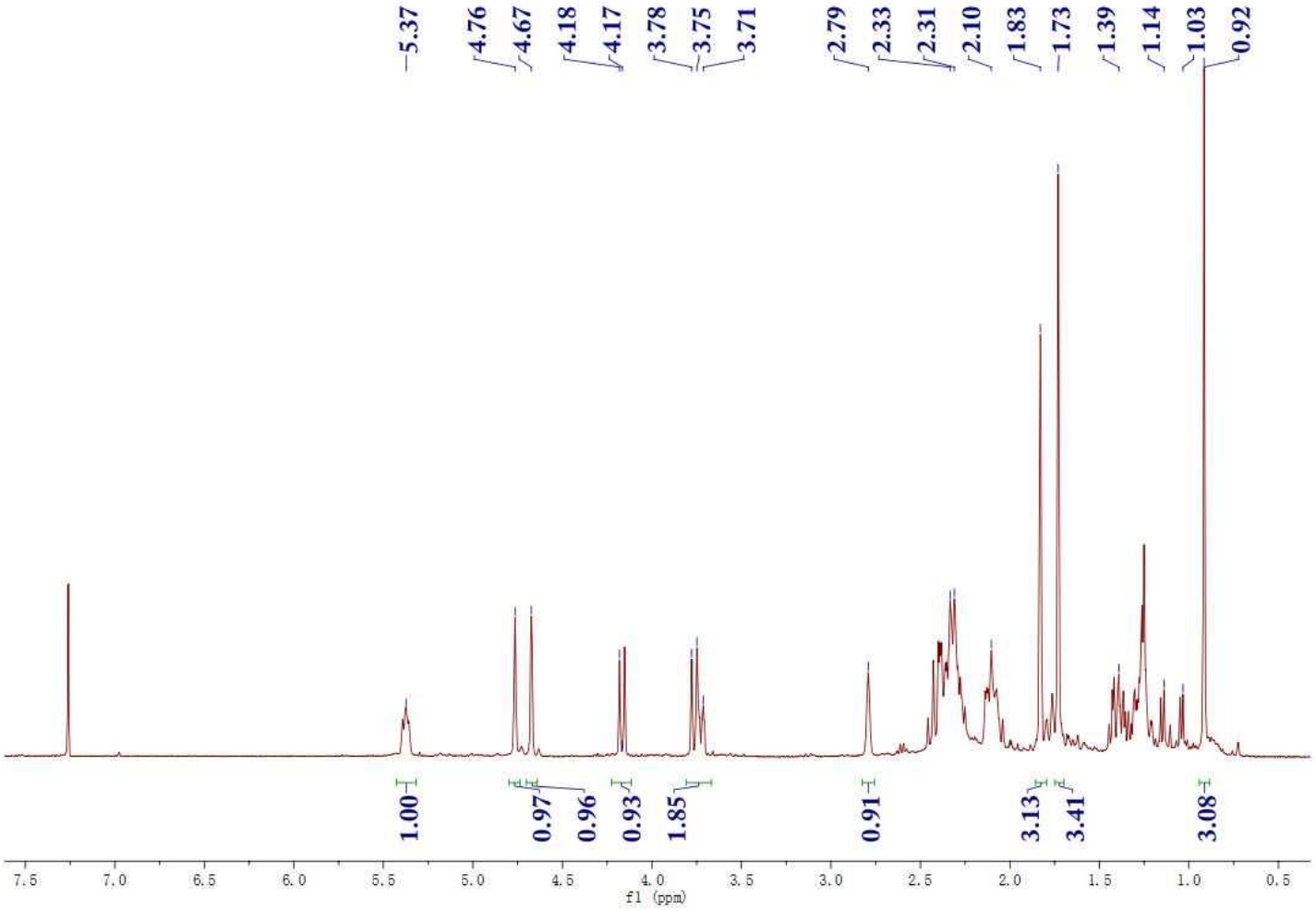

Figure **S42**. ^{13}C NMR spectrum of **6** (125 MHz, $CDCl_3$).

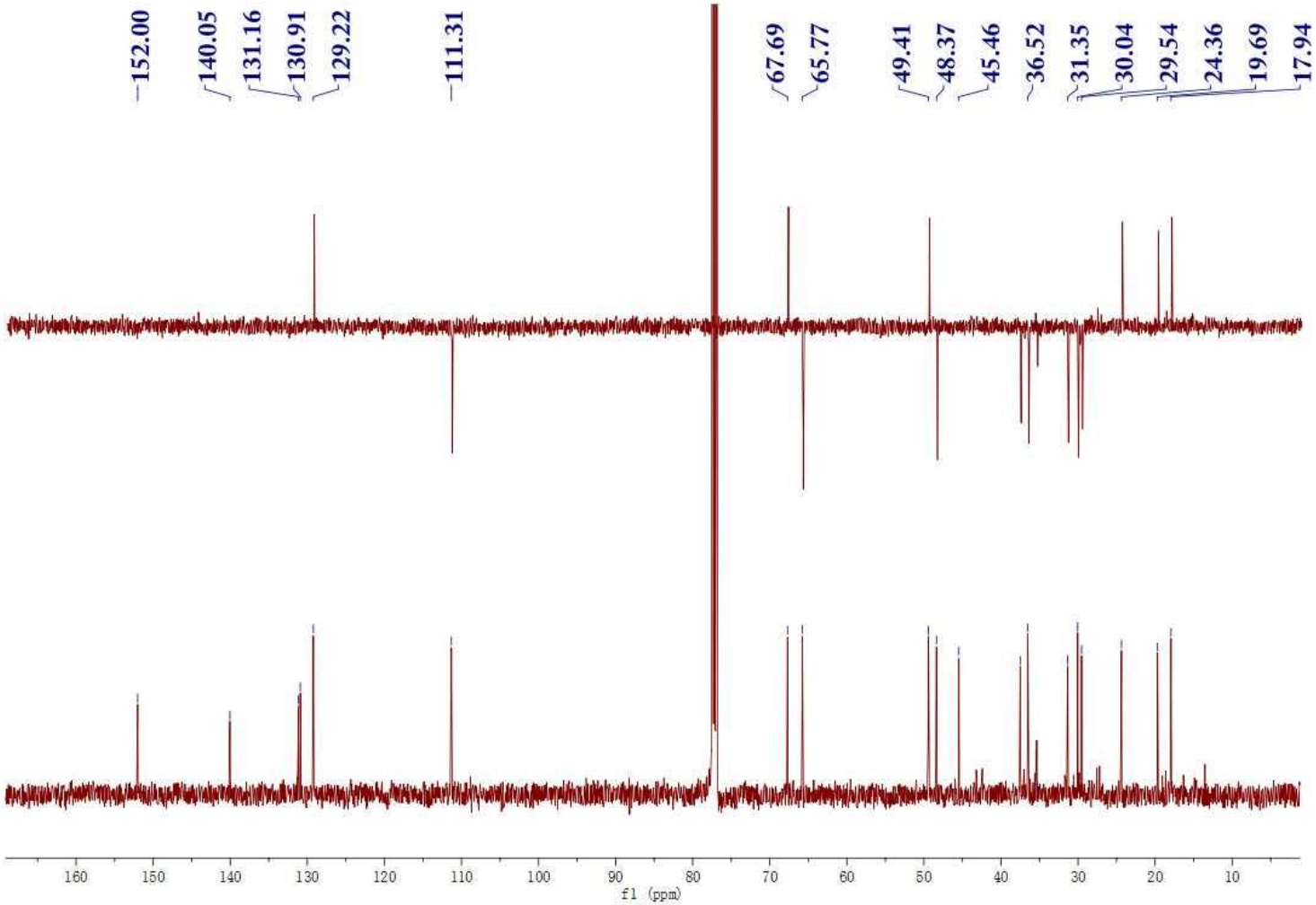

Figure **S43**. ^{1}H-^{1}H COSY spectrum of **6** (500 MHz, $CDCl_3$).

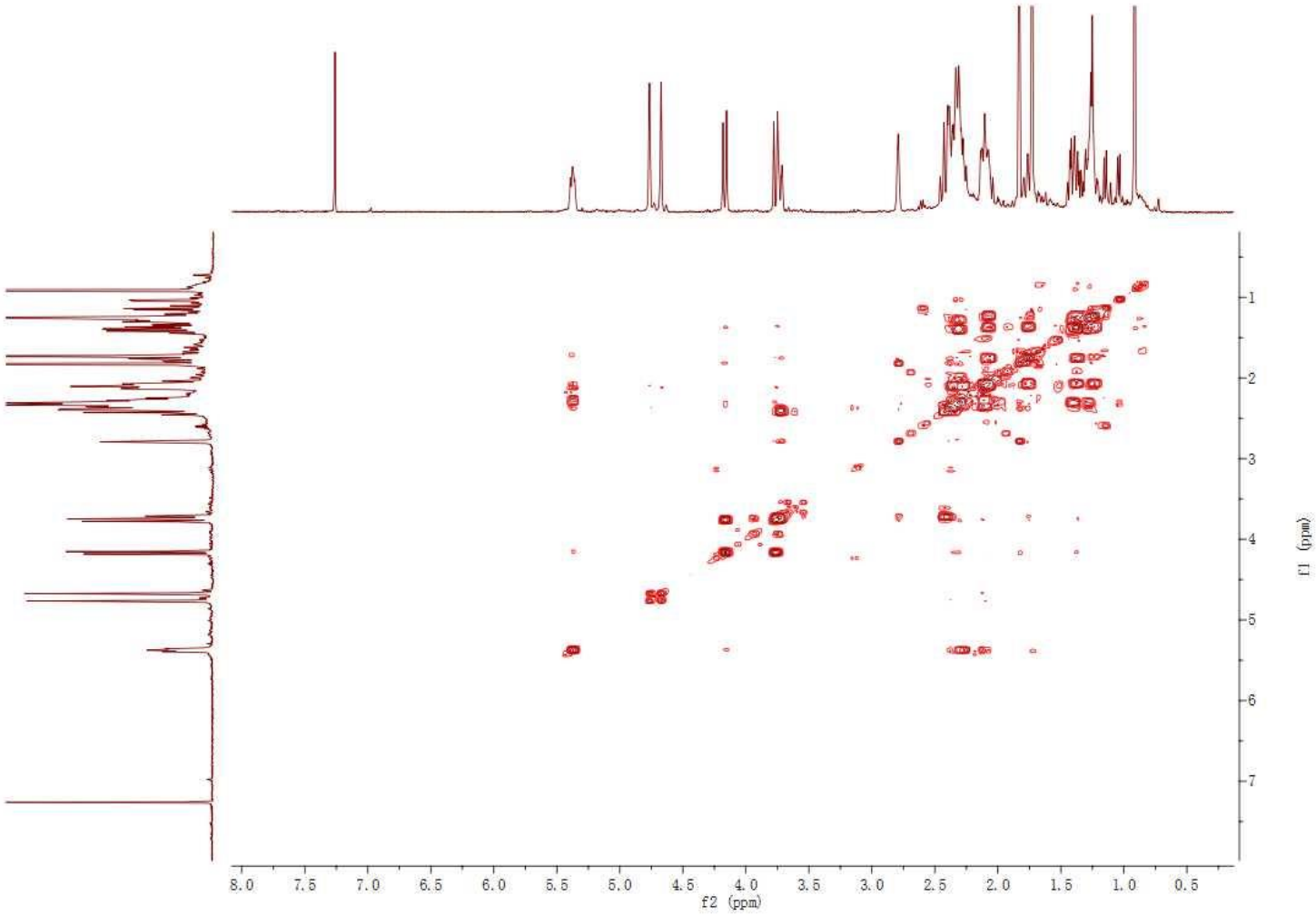

Figure **S44**. HSQC spectrum of **6** (500 MHz, $CDCl_3$).

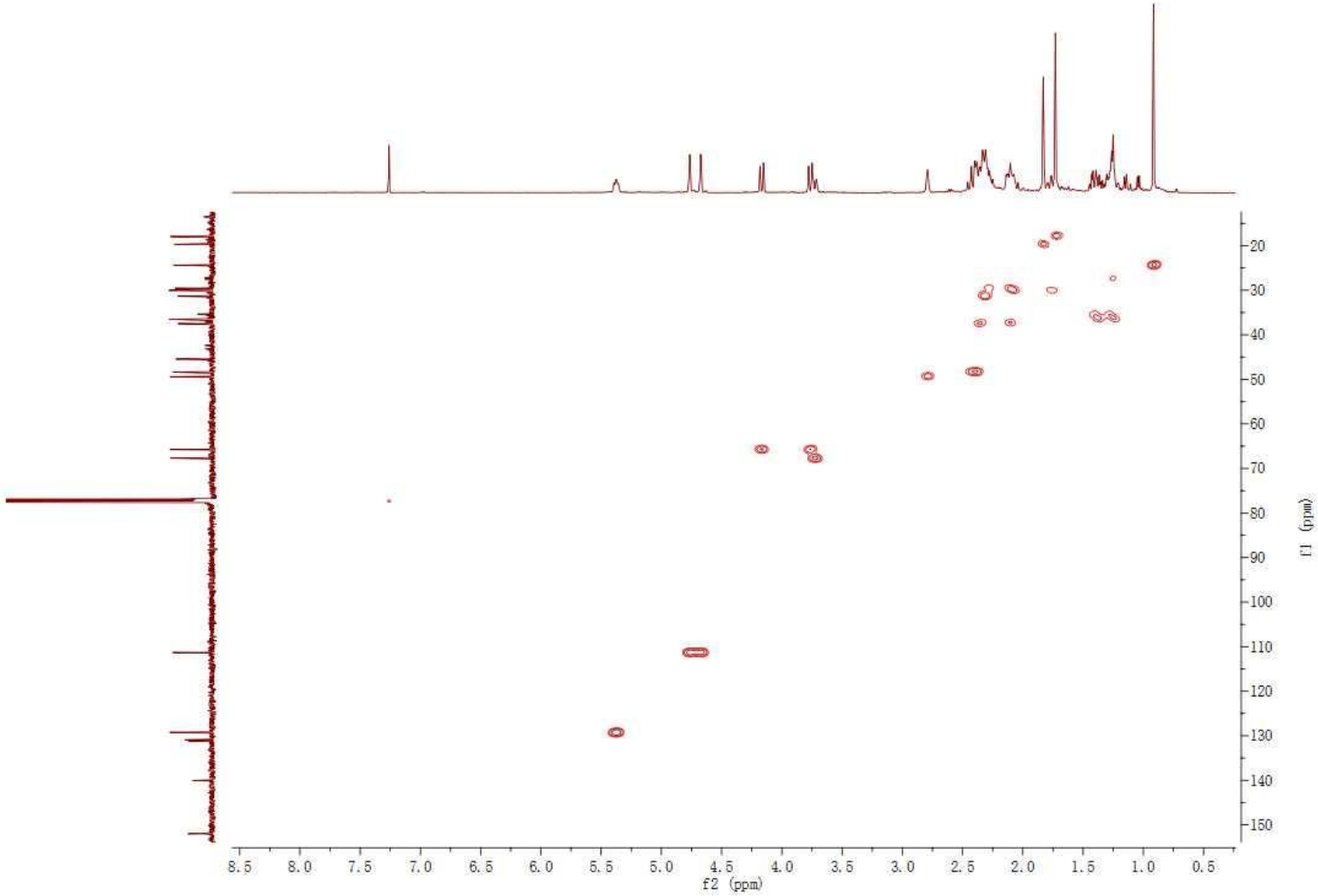

Figure **S45**. HMBC spectrum of **6** (500 MHz, $CDCl_3$).

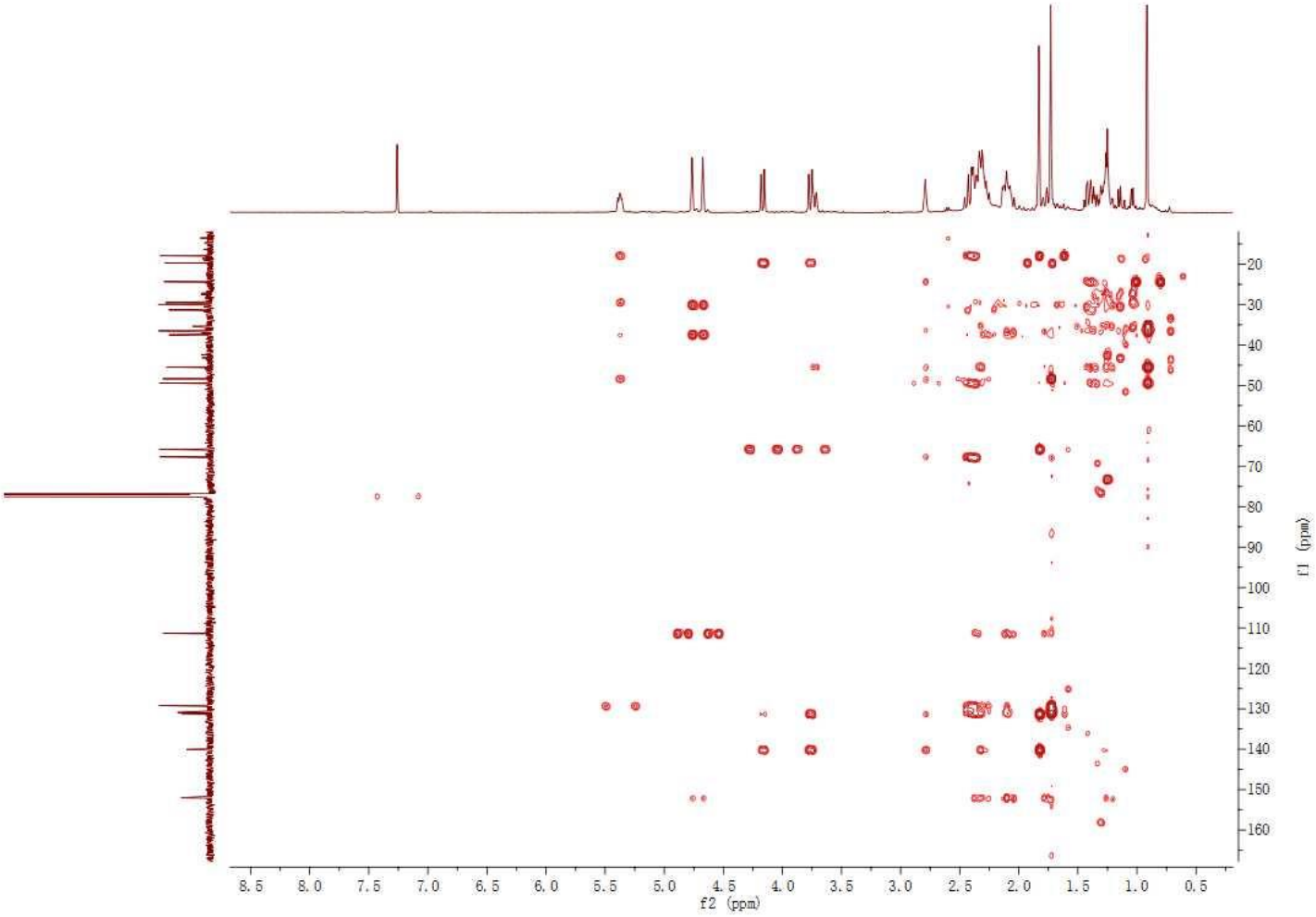

Figure **S46**. NOESY spectrum of **6** (500 MHz, $CDCl_3$).

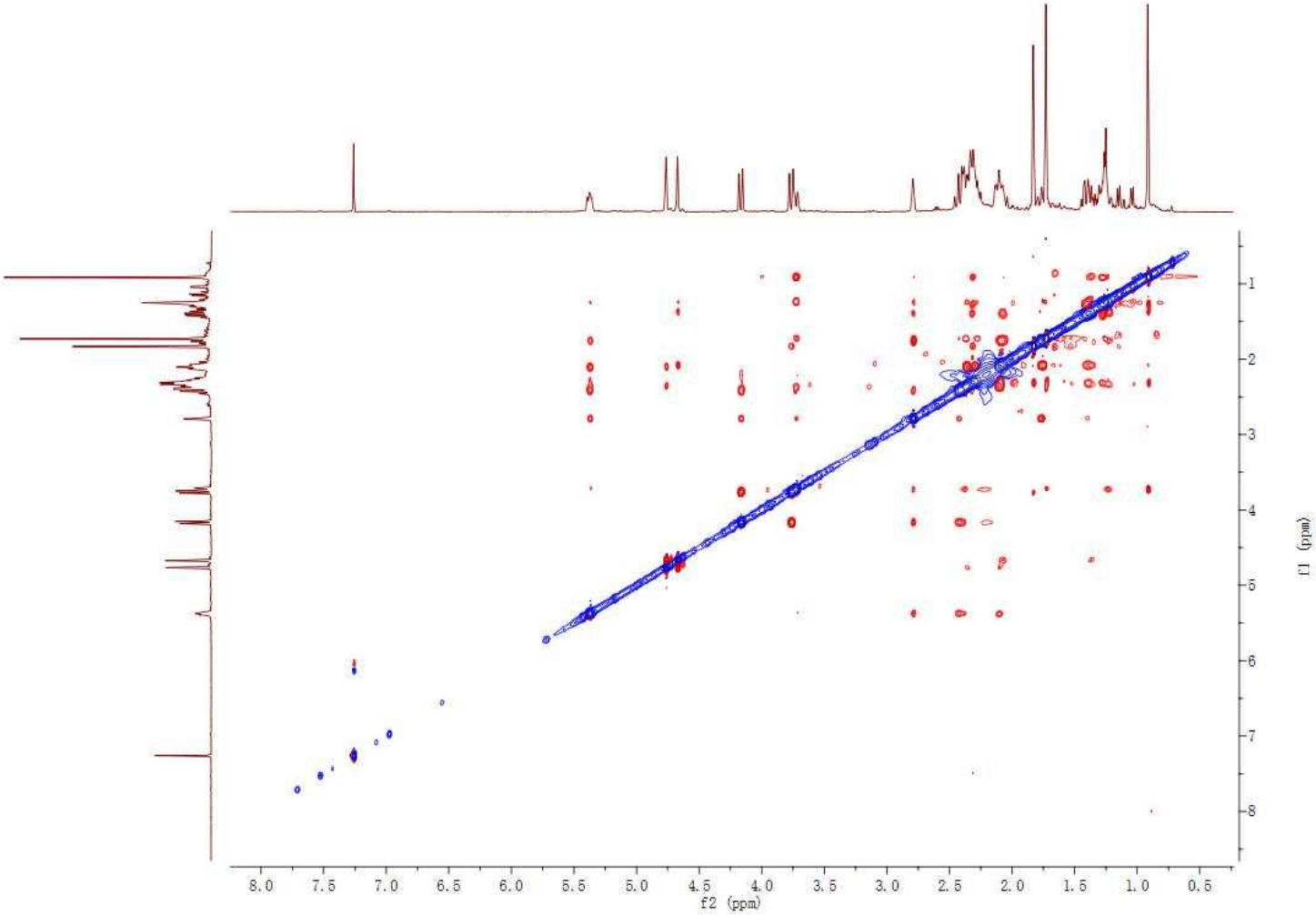

Figure **S47**. IR spectrum of **6**.

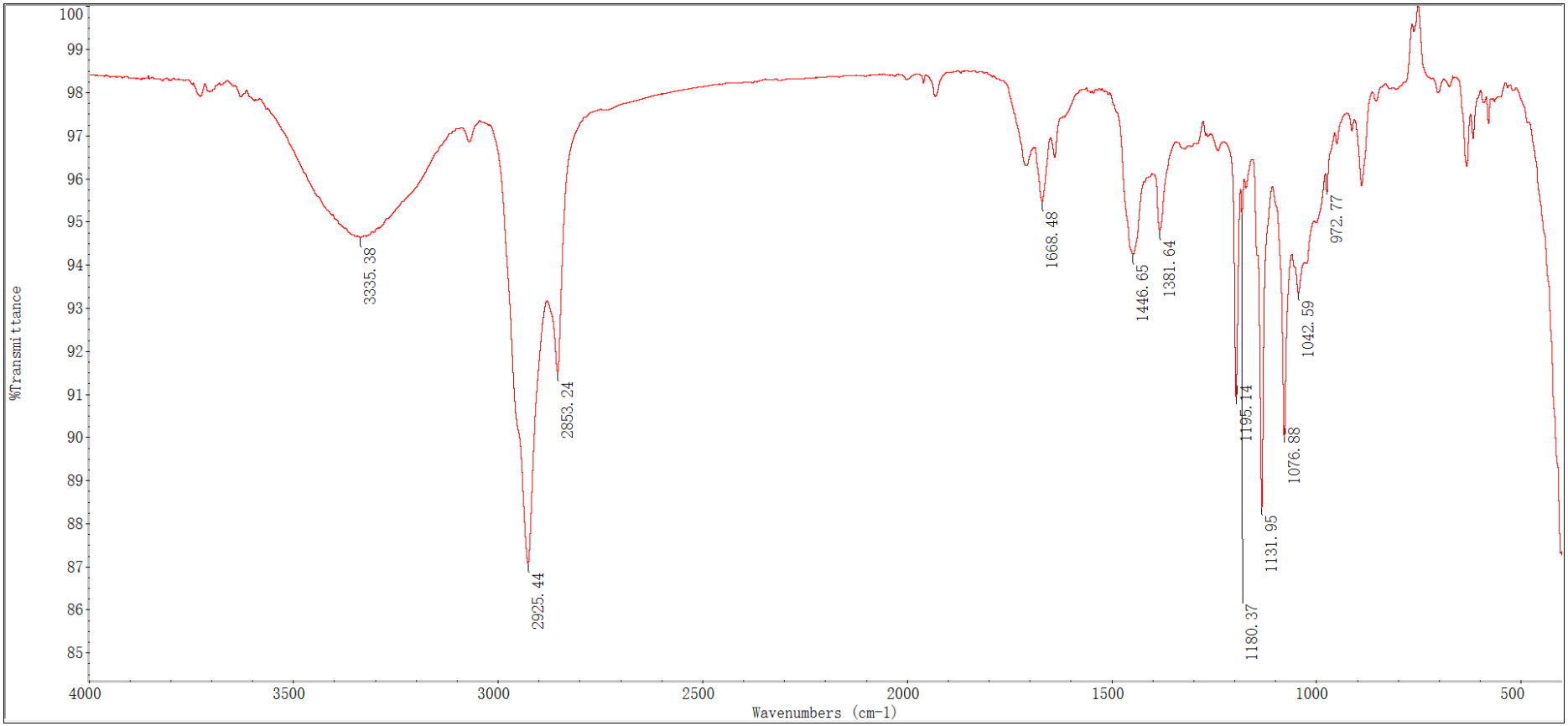

Figure **S48**. HREIMS spectrum of **6**.

```
LIST:  h16238-c1                                  03-Jun-16  Elapse:  04:03.1      19
Samp:  SE3f3d2                                               Start :  10:53:40     19
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                    Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                  Inlet :
Limt:  (   0 )      .     .
    : ( 397 ) C22.H100.O2
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		Intensity	%RA	%RIC	(mmu) Delta	R+D	Composition
227.1804	*	2485	1.18	0.02	-0.5	6.5	C17.H23
228.1814	*	426	0.20	0.00			
229.1625	*	1775	0.84	0.01			
229.1943	*	1491	0.71	0.01	1.3	5.5	C17.H25
229.9998	*	568	0.27	0.00			
230.1668	*	1349	0.64	0.01	0.3	6.0	C16.H22.O
231.1710	*	568	0.27	0.00			
231.2005	*	426	0.20	0.00			
232.1423	*	497	0.24	0.00			
232.9892	*	781	0.37	0.01			
236.9893	*	3692	1.76	0.03			
239.1799	*	497	0.24	0.00	0.1	7.5	C18.H23
240.1800	*	923	0.44	0.01			
241.9993	*	284	0.14	0.00			
243.1754	*	1988	0.95	0.01	-0.5	6.5	C17.H23.O
243.2088	*	4473	2.13	0.03	2.4	5.5	C18.H27
244.1791	*	781	0.37	0.01			
249.9754	*	923	0.44	0.01			
249.9911	*	1207	0.57	0.01			
251.1760	*	355	0.17	0.00			
253.1956	*	4757	2.26	0.03	0.1	7.5	C19.H25
253.2832	*	355	0.17	0.00			
254.1939	*	710	0.34	0.00			
255.2122	*	994	0.47	0.01	-0.9	6.5	C19.H27
256.1995	*	497	0.24	0.00			
256.9802	*	355	0.17	0.00			
257.1931	*	497	0.24	0.00	-2.5	6.5	C18.H25.O
257.2260	*	3124	1.49	0.02	0.9	5.5	C19.H29
258.1975	*	852	0.41	0.01	0.9	6.0	C18.H26.O
258.2293	*	2130	1.01	0.01			
258.9755	*	2698	1.28	0.02			
262.9858	*	497	0.24	0.00			
267.1824	*	497	0.24	0.00			
268.2112	*	3195	1.52	0.02			
269.9925	*	1775	0.84	0.01			
270.1992	*	568	0.27	0.00	-0.8	7.0	C19.H26.O
270.9777	*	994	0.47	0.01			
271.2069	*	14059	6.69	0.10	-0.8	6.5	C19.H27.O
271.9814	*	1207	0.57	0.01			
272.2184	*	1562	0.74	0.01			
273.2153	*	426	0.20	0.00			
281.0457	*	852	0.41	0.01			
284.2111	*	2201	1.05	0.02	2.9	7.0	C20.H28.O
285.2180	*	3621	1.72	0.03			
286.2281	*	21089	10.03	0.15	1.6	6.0	C20.H30.O
287.2349	*	3195	1.52	0.02	2.6	5.5	C20.H31.O
288.2443	*	497	0.24	0.00	1.0	5.0	C20.H32.O
289.2097	*	426	0.20	0.00			
291.9907	*	923	0.44	0.01			
292.8955	*	426	0.20	0.00			
294.9773	*	284	0.14	0.00			
296.9730	*	1633	0.78	0.01			
298.9750	*	1420	0.68	0.01			
303.2220	*	497	0.24	0.00			
304.2420	*	497	0.24	0.00	-1.8	5.0	C20.H32.O2
308.9769	*	3408	1.62	0.02			
309.9759	*	3905	1.86	0.03			

Figure **S49**. ^{1}H NMR spectrum of **7** (500MHz, $CDCl_3$).

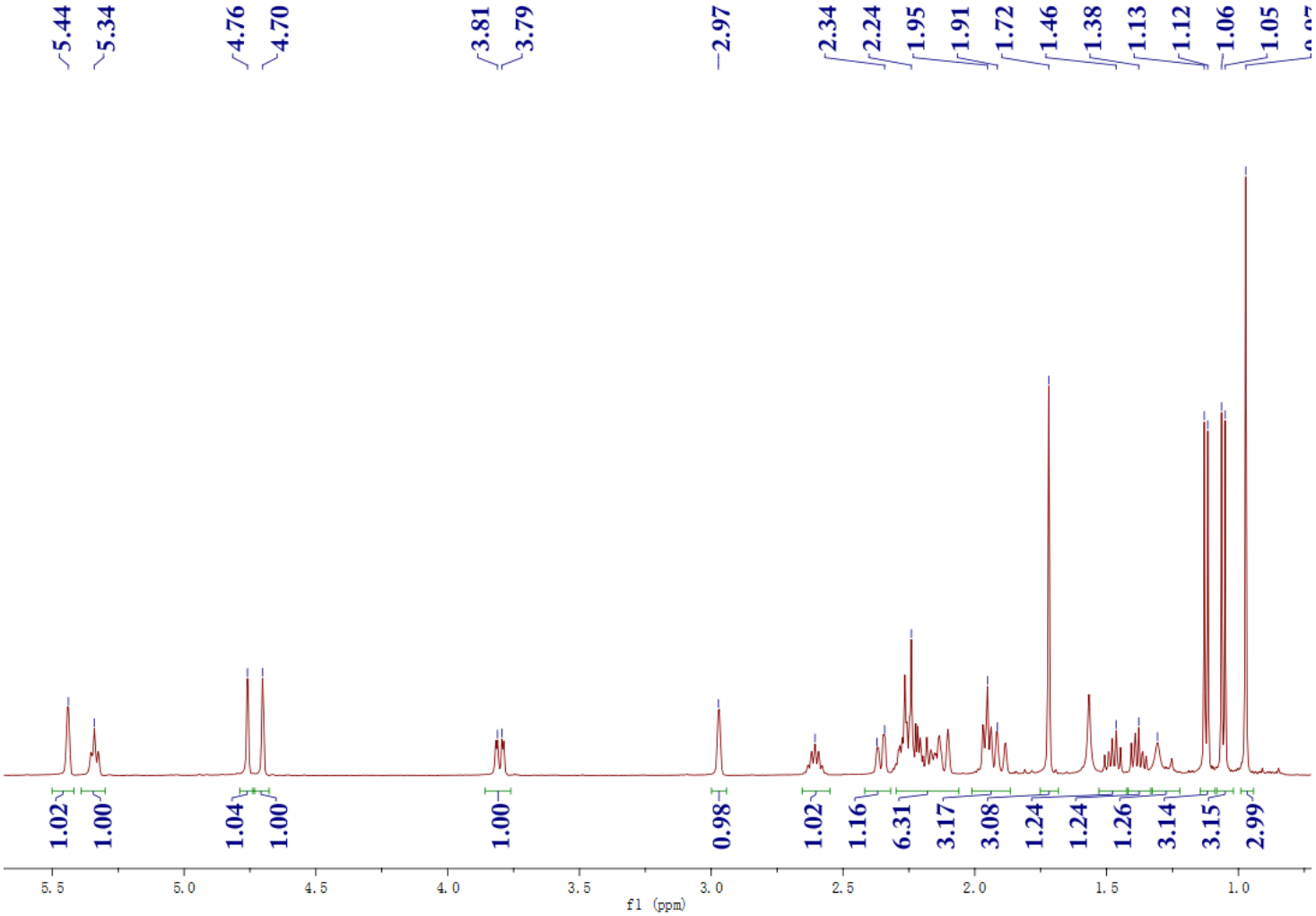

Figure **S50**. ^{13}C NMR spectrum of **7** (125 MHz, $CDCl_3$).

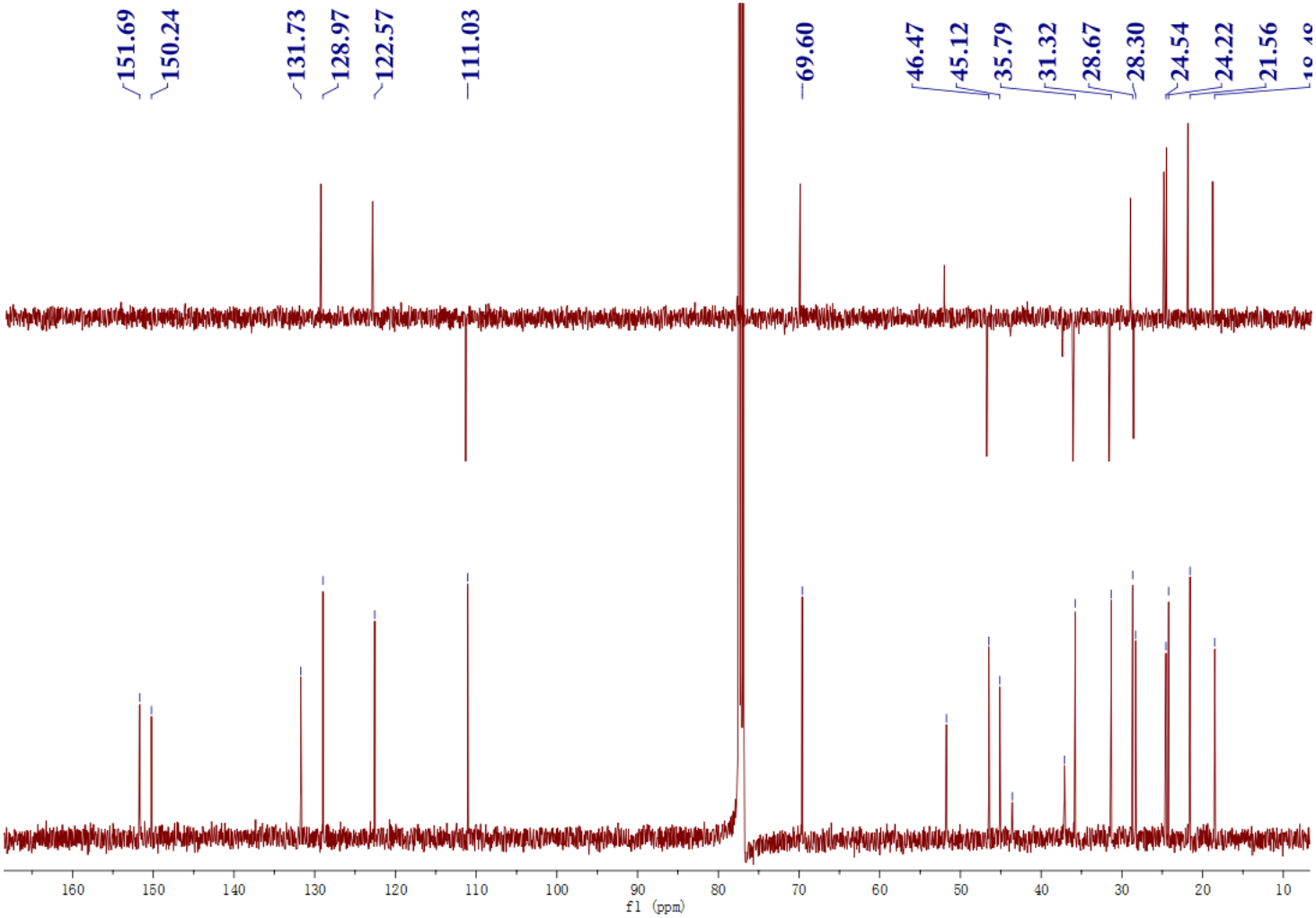

Figure **S51**. ^{1}H-^{1}H COSY spectrum of **7** (500 MHz, $CDCl_3$).

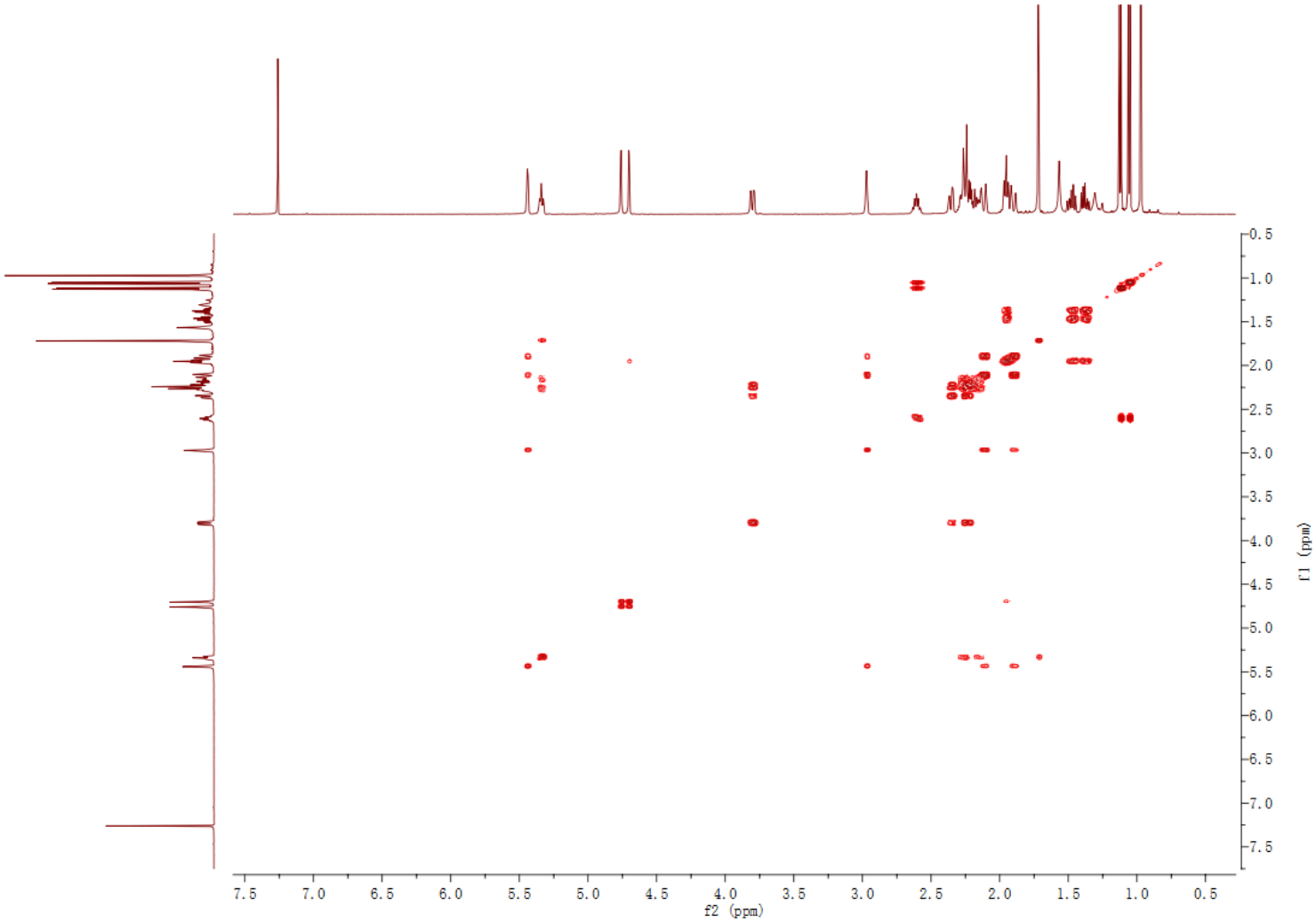

Figure **S52**. HSQC spectrum of **7** (500 MHz, $CDCl_3$).

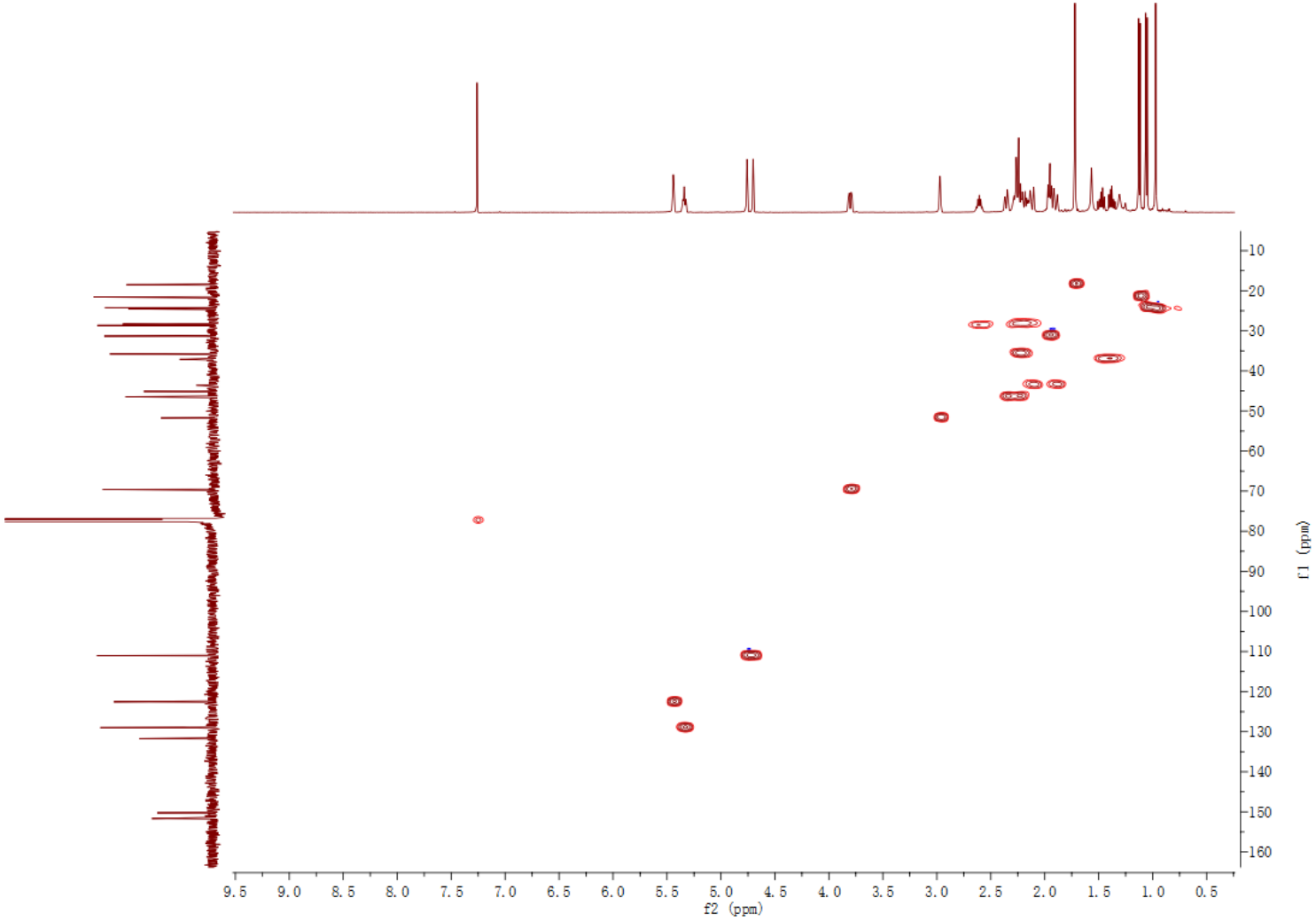

Figure **S53**. HMBC spectrum of **7** (500 MHz, $CDCl_3$).

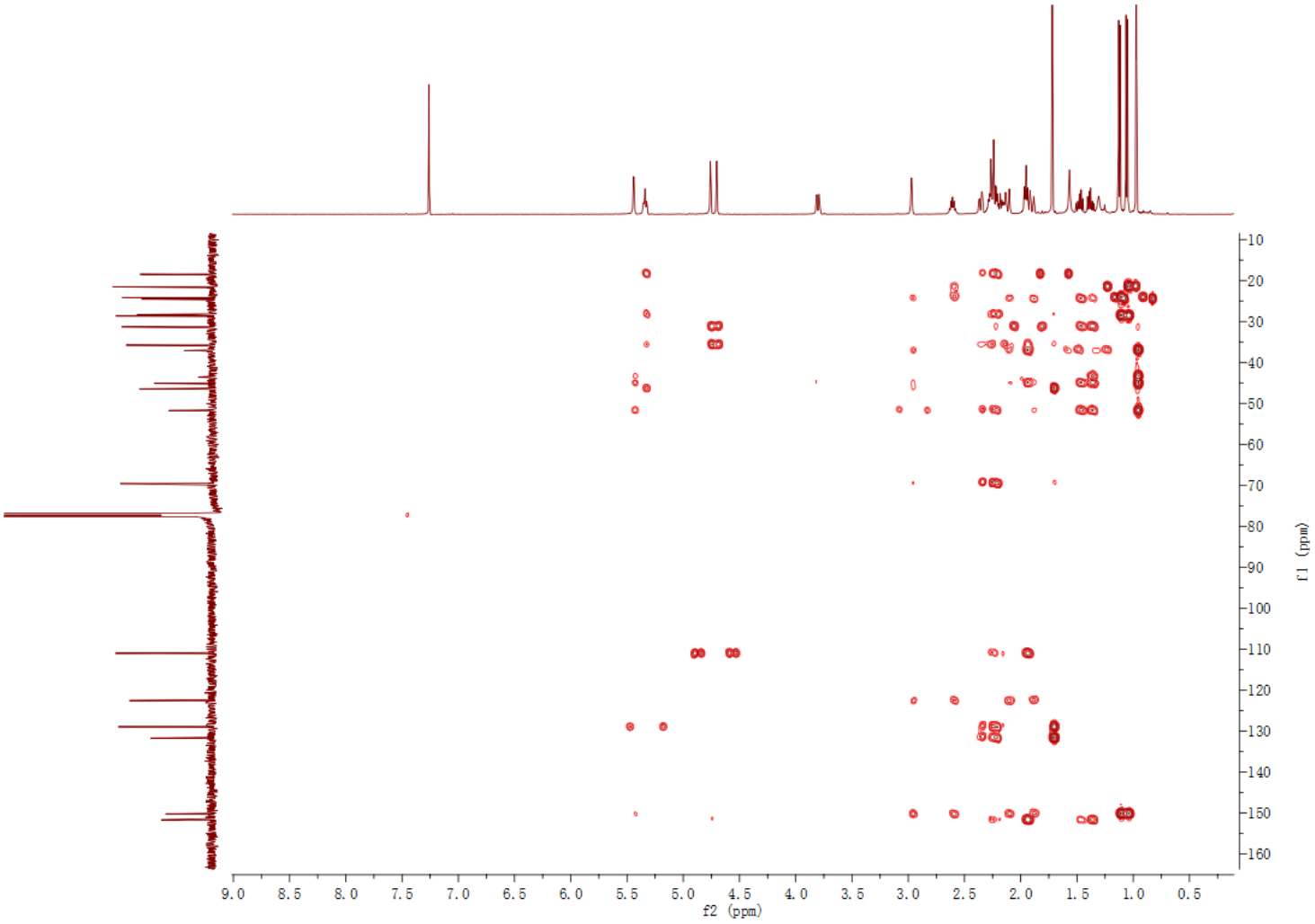

Figure **S54**. NOESY spectrum of **7** (500 MHz, $CDCl_3$).

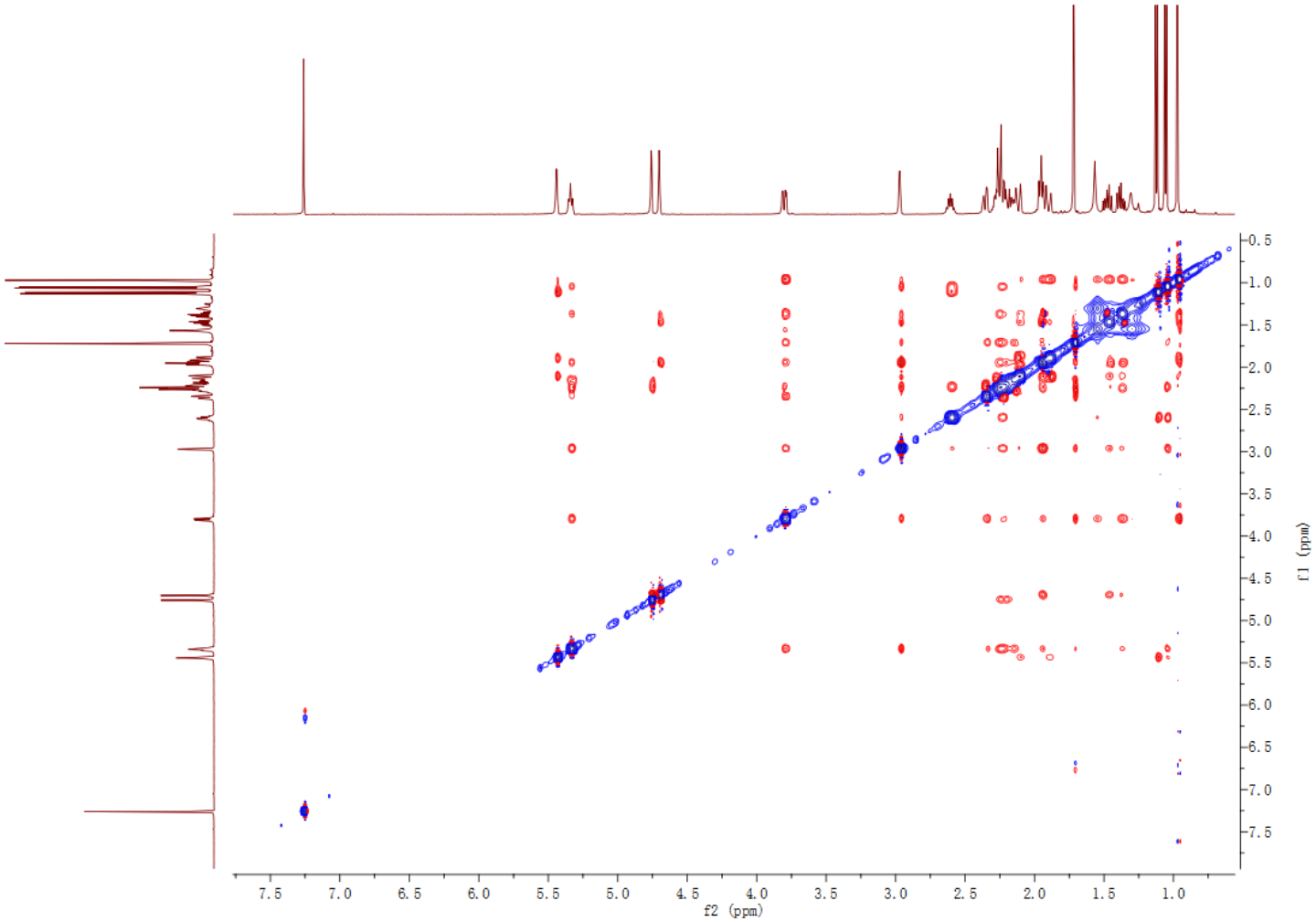

Figure **S55**. IR spectrum of **7**.

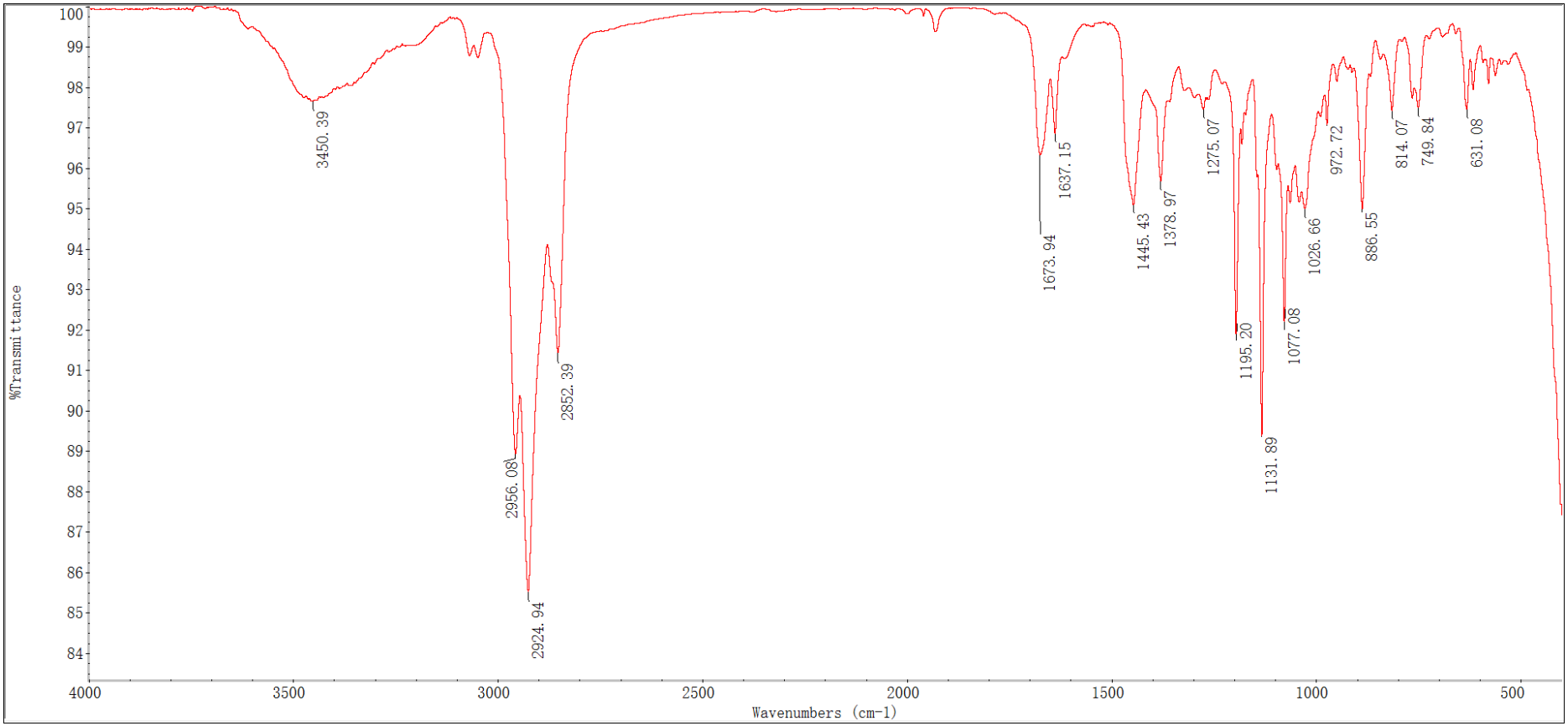

Figure **S56**. HREIMS spectrum of **7**.

```
LIST:  h150531-c1                                31-Dec-15   Elapse:  07:58.7      38
Samp:  e2a5d1                                                Start :  15:10:13     46
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                    Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                  Inlet :
Limt:  (   0 )     .     .
    :  ( 381 ) C22.H100.O
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		4960 Intensity	%RA	%RIC	(mmu) Delta	R+D	Composition
162.1388	*	6380	3.14	0.04	2.0	4.0	C12.H18
163.0749	*	7739	3.81	0.05			
163.1115	*	32613	16.06	0.19	0.8	4.5	C11.H15.O
163.1486	*	10102	4.97	0.06	0.1	3.5	C12.H19
164.0835	*	5849	2.88	0.03			
164.1193	*	8625	4.25	0.05	0.8	4.0	C11.H16.O
165.0918	*	23278	11.46	0.14			
165.1258	*	9512	4.68	0.06	2.1	3.5	C11.H17.O
166.0990	*	48328	23.80	0.28			
167.1053	*	30427	14.98	0.18			
169.1026	*	5849	2.88	0.03	-0.9	7.5	C13.H13
170.1086	*	5021	2.47	0.03	1.0	7.0	C13.H14
171.1174	*	14711	7.24	0.09	-0.1	6.5	C13.H15
173.0971	*	7030	3.46	0.04	-0.4	6.5	C12.H13.O
173.1325	*	29954	14.75	0.18	0.5	5.5	C13.H17
174.1379	*	7030	3.46	0.04	3.0	5.0	C13.H18
175.1118	*	14711	7.24	0.09	0.5	5.5	C12.H15.O
175.1482	*	31963	15.74	0.19	0.5	4.5	C13.H19
176.1188	*	5967	2.94	0.04	1.3	5.0	C12.H16.O
176.1553	*	6676	3.29	0.04	1.2	4.0	C13.H20
177.1253	*	14415	7.10	0.08	2.7	4.5	C12.H17.O
177.1611	*	7562	3.72	0.04			
179.1062	*	12820	6.31	0.08			
183.1156	*	5849	2.88	0.03	1.7	7.5	C14.H15
185.1321	*	12820	6.31	0.08	0.9	6.5	C14.H17
187.1117	*	11520	5.67	0.07	0.6	6.5	C13.H15.O
187.1474	*	19378	9.54	0.11	1.3	5.5	C14.H19
188.1545	*	11284	5.56	0.07	2.0	5.0	C14.H20
189.1279	*	15124	7.45	0.09	0.0	5.5	C13.H17.O
189.1648	*	23750	11.70	0.14	-0.5	4.5	C14.H21
190.1704	*	7562	3.72	0.04	1.8	4.0	C14.H22
191.1436	*	15361	7.56	0.09	0.0	4.5	C13.H19.O
191.1774	*	8980	4.42	0.05	2.6	3.5	C14.H23
192.1495	*	5494	2.71	0.03	2.0	4.0	C13.H20.O
197.1344	*	5790	2.85	0.03	-1.4	7.5	C15.H17
199.1102	*	5317	2.62	0.03	2.0	7.5	C14.H15.O
199.1485	*	9748	4.80	0.06	0.1	6.5	C15.H19
201.1266	*	5317	2.62	0.03	1.3	6.5	C14.H17.O
201.1645	*	9216	4.54	0.05	-0.2	5.5	C15.H21
203.1428	*	10339	5.09	0.06	0.8	5.5	C14.H19.O
204.1500	*	5967	2.94	0.04	1.4	5.0	C14.H20.O
205.1236	*	5849	2.88	0.03			
205.1586	*	10221	5.03	0.06	0.6	4.5	C14.H21.O
207.0294	*	6439	3.17	0.04			
207.1714	*	5849	2.88	0.03			
211.1474	*	7916	3.90	0.05	1.3	7.5	C16.H19
215.1424	*	8448	4.16	0.05	1.2	6.5	C15.H19.O
217.1583	*	7680	3.78	0.05	0.9	5.5	C15.H21.O
227.1790	*	5140	2.53	0.03	0.9	6.5	C17.H23
229.1937	*	5908	2.91	0.03	1.9	5.5	C17.H25
233.1536	*	4962	2.44	0.03			
241.1581	*	5140	2.53	0.03	1.1	7.5	C17.H21.O
243.1743	*	5376	2.65	0.03	0.6	6.5	C17.H23.O
245.1926	*	5317	2.62	0.03	-2.0	5.5	C17.H25.O
271.2070	*	4962	2.44	0.03	-0.8	6.5	C19.H27.O
273.2210	*	5612	2.76	0.03	0.8	5.5	C19.H29.O
288.2443	*	6262	3.08	0.04	1.0	5.0	C20.H32.O

Figure **S57**. ^{1}H NMR spectrum of **8** (500MHz, $CDCl_3$).

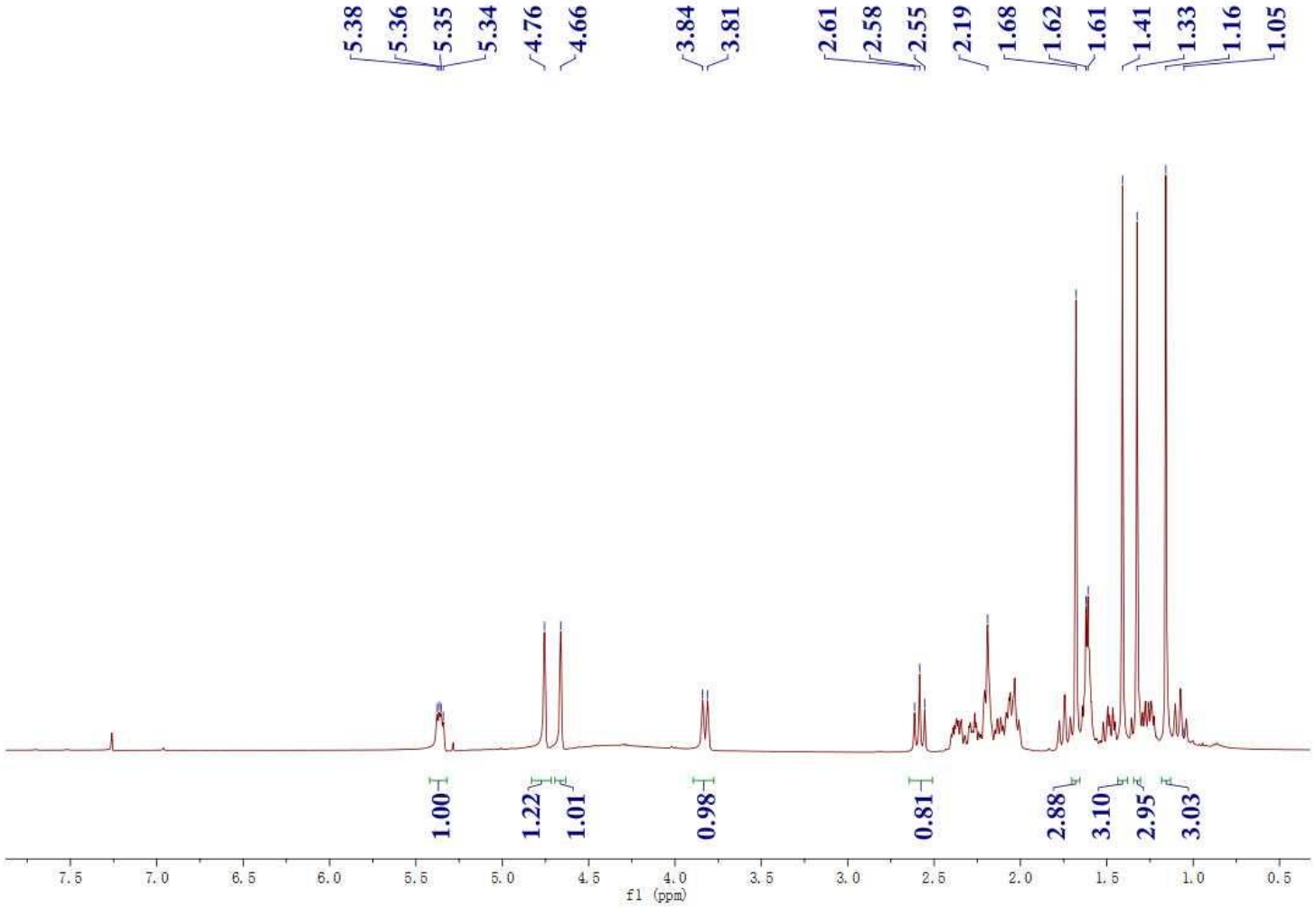

Figure **S58**. ^{13}C NMR spectrum of **8** (125 MHz, $CDCl_3$).

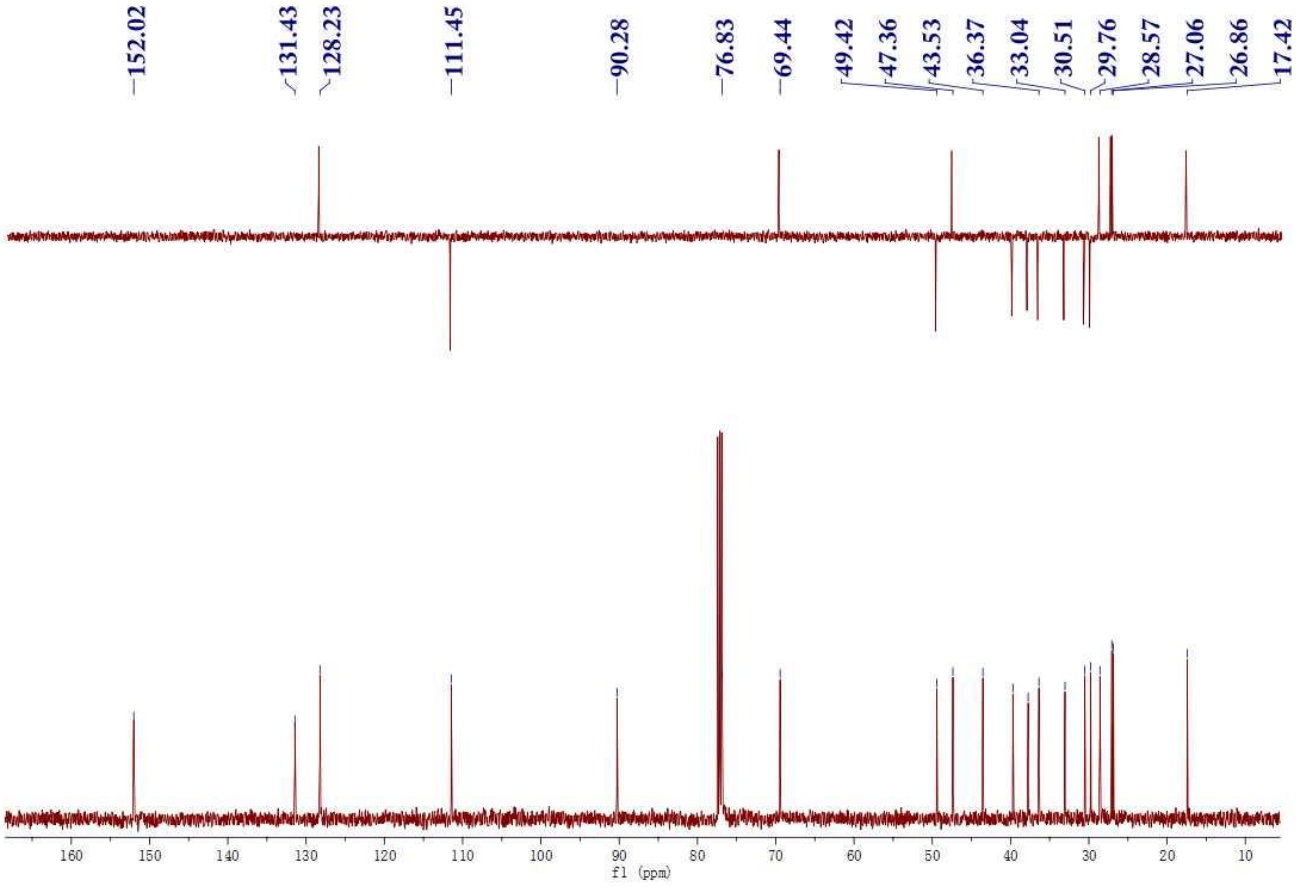

Figure **S59**. ^{1}H-^{1}H COSY spectrum of **8** (500 MHz, $CDCl_3$).

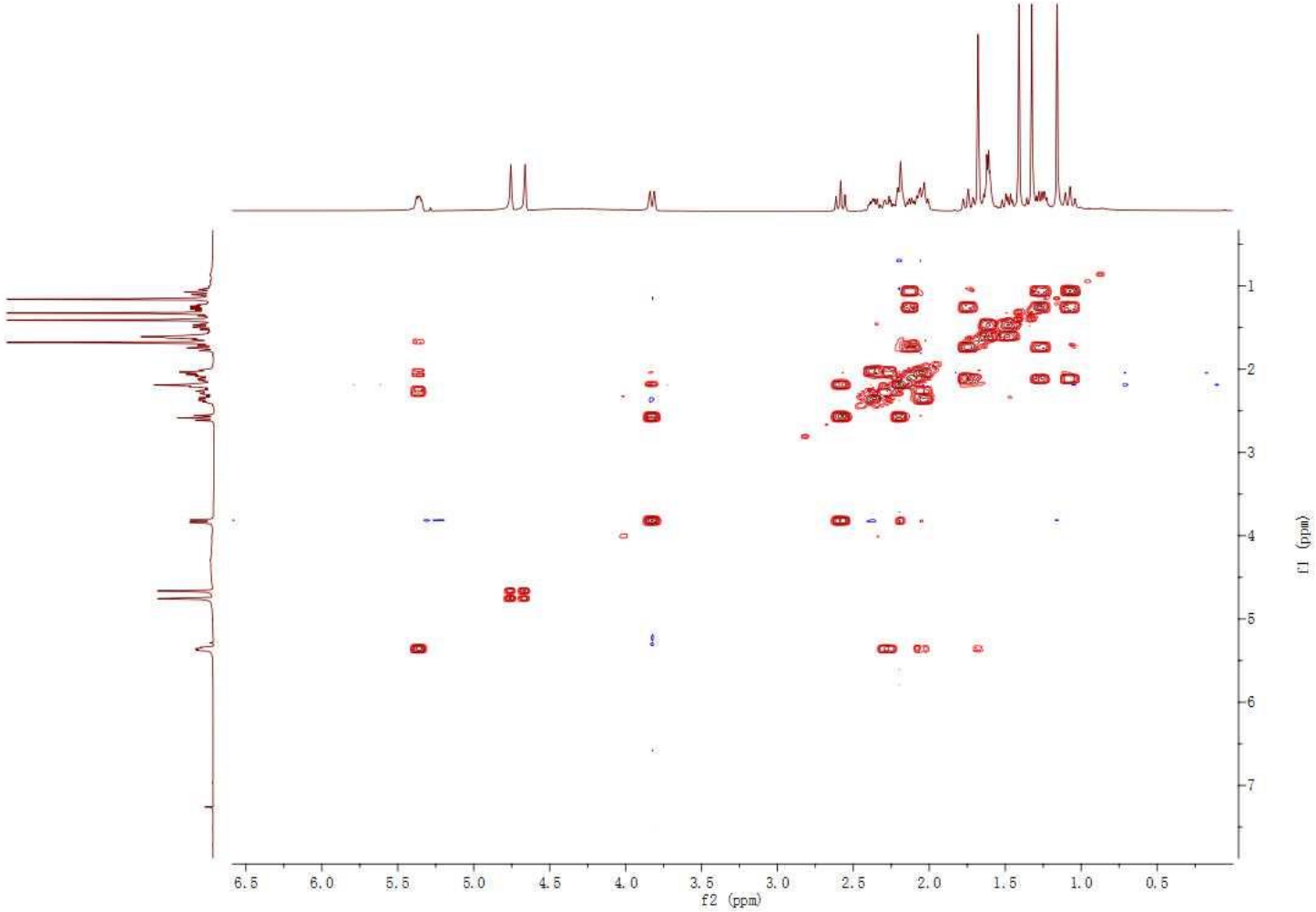

Figure **S60**. HSQC spectrum of **8** (500 MHz, $CDCl_3$).

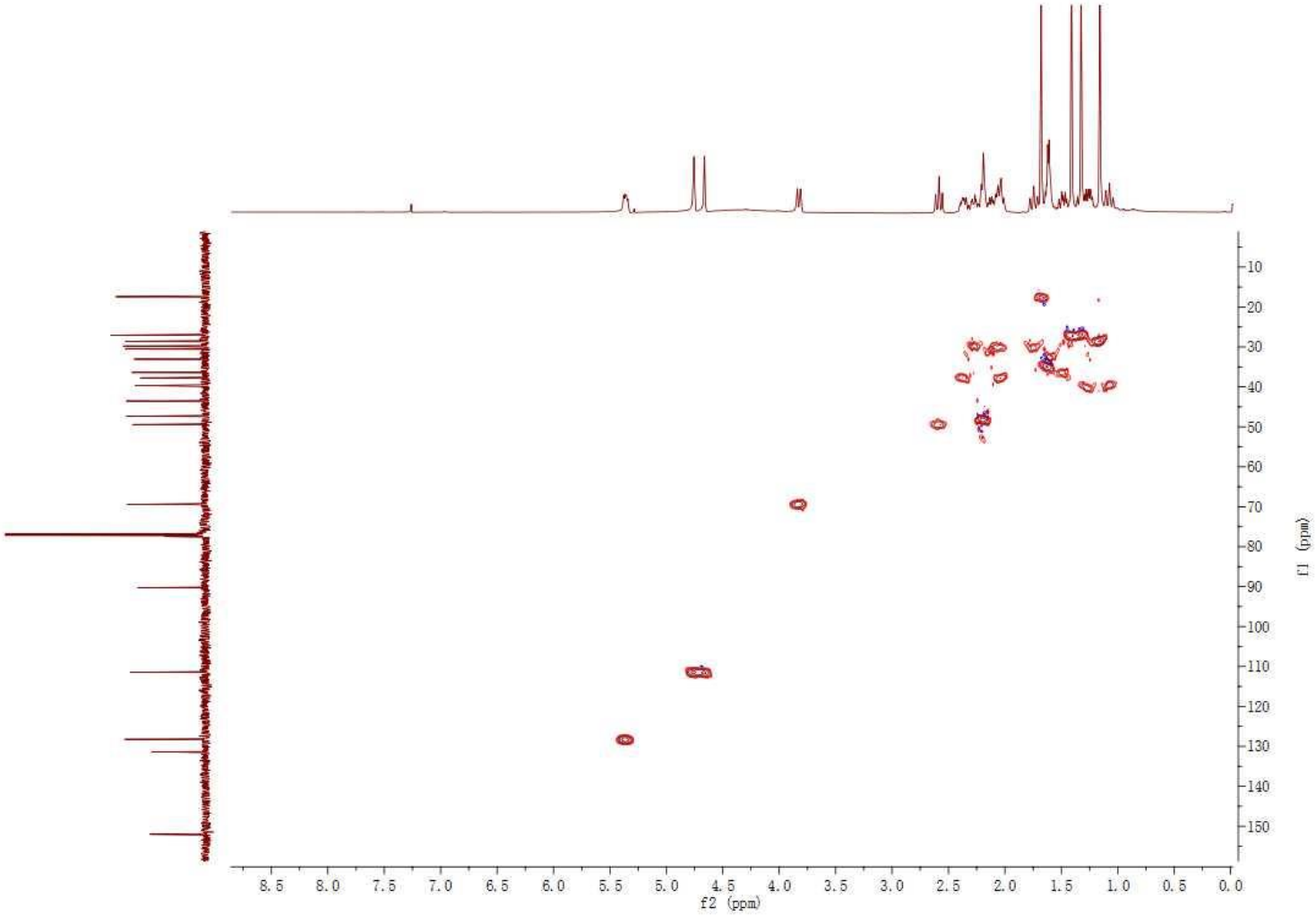

Figure **S61**. HMBC spectrum of **8** (500 MHz, $CDCl_3$).

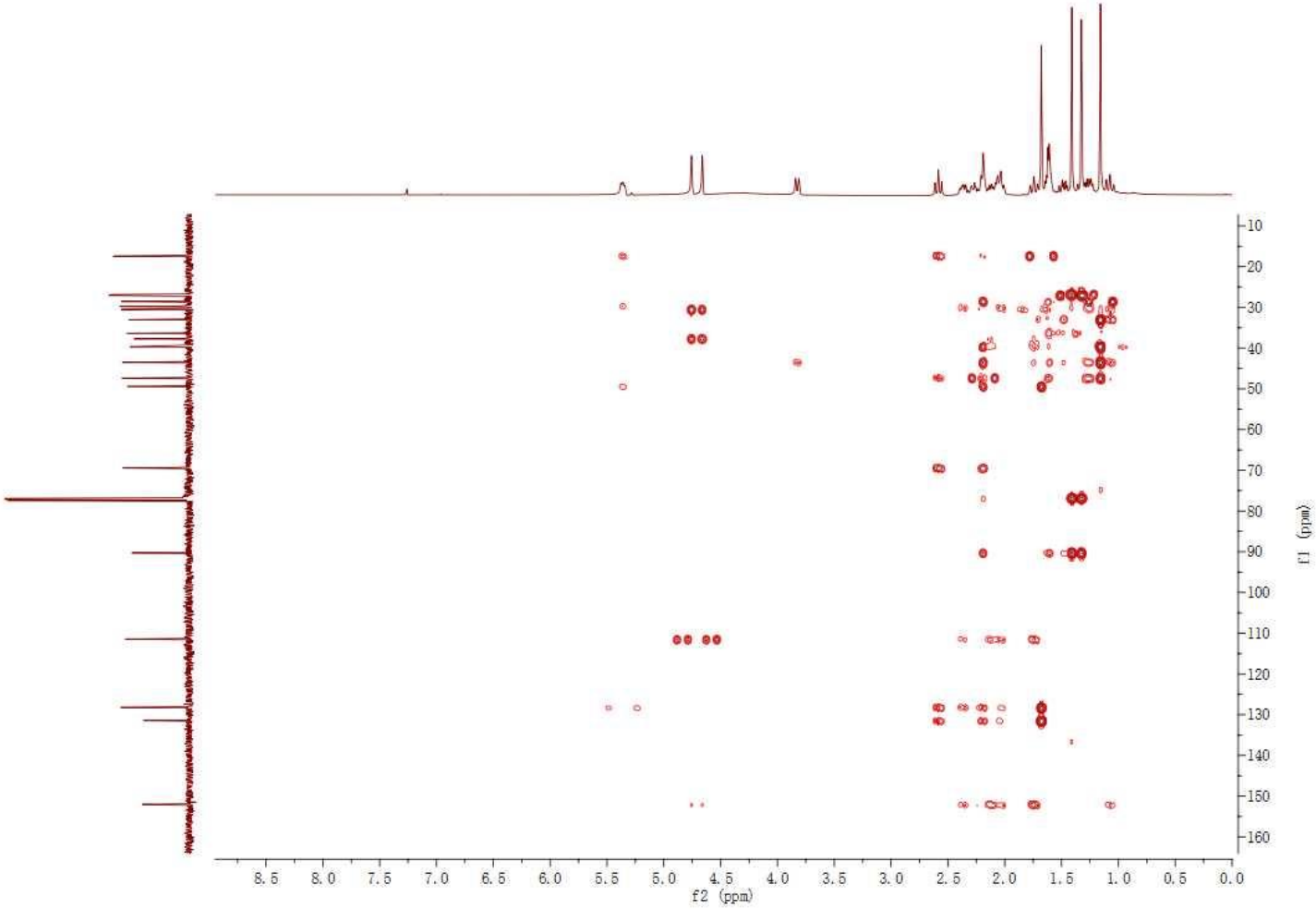

Figure **S62**. NOESY spectrum of **8** (500 MHz, $CDCl_3$).

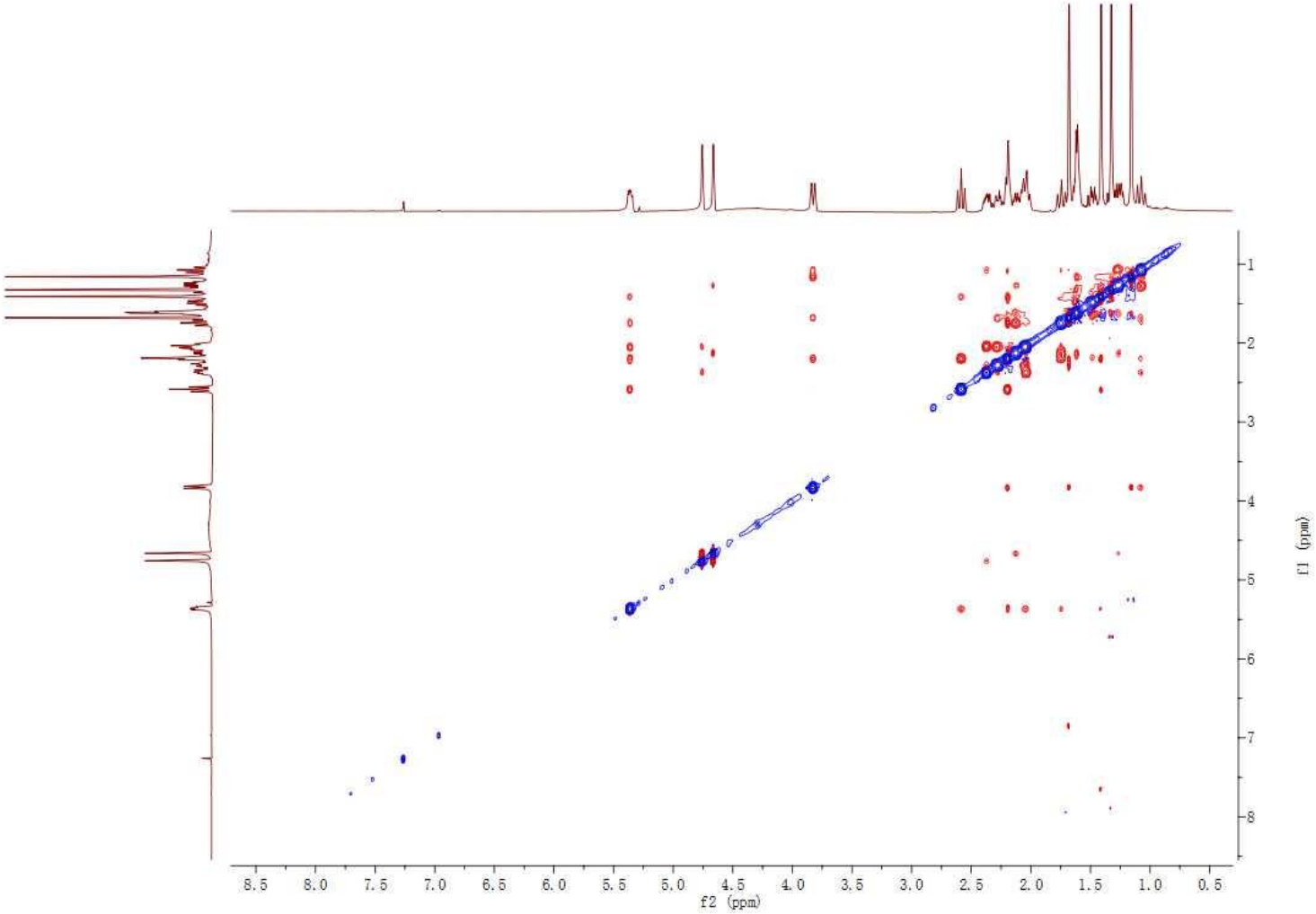

Figure **S63**. IR spectrum of **8**.

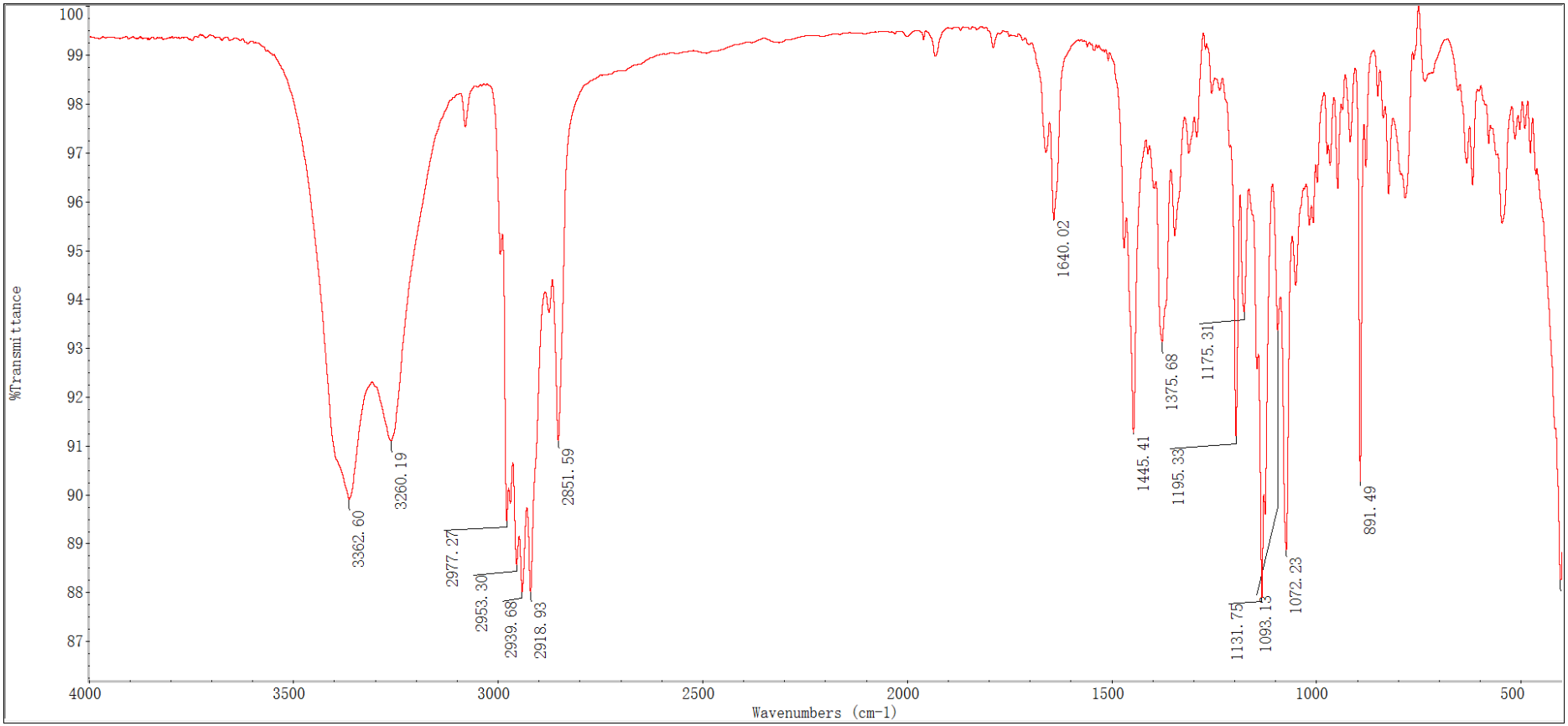

Figure **S64**. HREIMS spectrum of **8**.

```
LIST:  h16239-c1                                  03-Jun-16  Elapse:  02:19.6      10
Samp:  SE2h3+4e6                                             Start :  11:08:23     20
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                    Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                  Inlet :
Limt:  (   0 )     .     .
    :  ( 413 ) C22.H100.O3
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		1560 Intensity	%RA	%RIC	(mmu) Delta	R+D	Composition
214.1701	*	1562	0.61	0.01	2.0	6.0	C16.H22
215.1429	*	7171	2.80	0.04	0.7	6.5	C15.H19.O
215.1812	*	11148	4.35	0.07	-1.2	5.5	C16.H23
216.1488	*	3479	1.36	0.02	2.6	6.0	C15.H20.O
216.1841	*	2343	0.91	0.01			
217.1596	*	13846	5.40	0.08	-0.4	5.5	C15.H21.O
217.1950	*	4757	1.86	0.03	0.7	4.5	C16.H25
218.1661	*	10580	4.13	0.06	1.0	5.0	C15.H22.O
219.1671	*	1633	0.64	0.01			
219.9828	*	2130	0.83	0.01			
219.9950	*	2272	0.89	0.01	-0.1	18.0	C17.O
221.1550	*	14414	5.62	0.08	-0.9	4.5	C14.H21.O2
222.1605	*	11219	4.38	0.07	1.5	4.0	C14.H22.O2
223.1700	*	1633	0.64	0.01	-0.2	3.5	C14.H23.O2
225.1664	*	4331	1.69	0.03	-2.0	7.5	C17.H21
227.1787	*	65256	25.45	0.38	1.3	6.5	C17.H23
228.1841	*	20237	7.89	0.12			
229.1585	*	5183	2.02	0.03	0.7	6.5	C16.H21.O
229.1933	*	3195	1.25	0.02	2.3	5.5	C17.H25
230.1708	*	6532	2.55	0.04			
231.1754	*	15621	6.09	0.09	-0.5	5.5	C16.H23.O
232.1839	*	1988	0.78	0.01	-1.1	5.0	C16.H24.O
233.1529	*	1846	0.72	0.01	1.2	5.5	C15.H21.O2
234.1599	*	6319	2.46	0.04	2.1	5.0	C15.H22.O2
235.1651	*	7810	3.05	0.05			
235.1813	*	2911	1.14	0.02			
241.1982	*	2059	0.80	0.01	-2.6	6.5	C18.H25
243.1736	*	23219	9.06	0.14	1.3	6.5	C17.H23.O
243.2104	*	17396	6.78	0.10	0.8	5.5	C18.H27
244.1811	*	7881	3.07	0.05	1.6	6.0	C17.H24.O
245.1899	*	131648	51.34	0.77	0.7	5.5	C17.H25.O
246.1939	*	31669	12.35	0.19			
247.1710	*	2201	0.86	0.01	-1.2	5.5	C16.H23.O2
247.2038	*	1775	0.69	0.01	2.4	4.5	C17.H27.O
249.0001	*	1775	0.69	0.01	-2.4	18.5	C18.H.O2
253.1959	*	6958	2.71	0.04	-0.3	7.5	C19.H25
257.2261	*	2911	1.14	0.02	0.8	5.5	C19.H29
258.2327	*	3976	1.55	0.02	2.1	5.0	C19.H30
258.9821	*	1633	0.64	0.01			
261.1867	*	2698	1.05	0.02	-1.3	5.5	C17.H25.O2
261.2207	*	3976	1.55	0.02	1.1	4.5	C18.H29.O
262.2153	*	1704	0.66	0.01			
263.2003	*	20521	8.00	0.12	0.8	4.5	C17.H27.O2
264.2029	*	3337	1.30	0.02			
268.2190	*	4544	1.77	0.03	0.1	7.0	C20.H28
269.2251	*	1562	0.61	0.01	1.9	6.5	C20.H29
271.2069	*	41681	16.26	0.25	-0.7	6.5	C19.H27.O
272.2087	*	9160	3.57	0.05			
286.2290	*	50557	19.72	0.30	0.7	6.0	C20.H30.O
287.2314	*	11219	4.38	0.07			
289.2172	*	16260	6.34	0.10	-0.4	5.5	C19.H29.O2
304.2398	*	7668	2.99	0.05	0.5	5.0	C20.H32.O2
305.2419	*	1562	0.61	0.01			
308.9744	*	3053	1.19	0.02			
309.9780	*	3408	1.33	0.02			
317.9904	*	2201	0.86	0.01			
322.2510	*	1562	0.61	0.01	-0.2	4.0	C20.H34.O3

Figure **S65**. ^{1}H NMR spectrum of **9** (500MHz, $CDCl_3$).

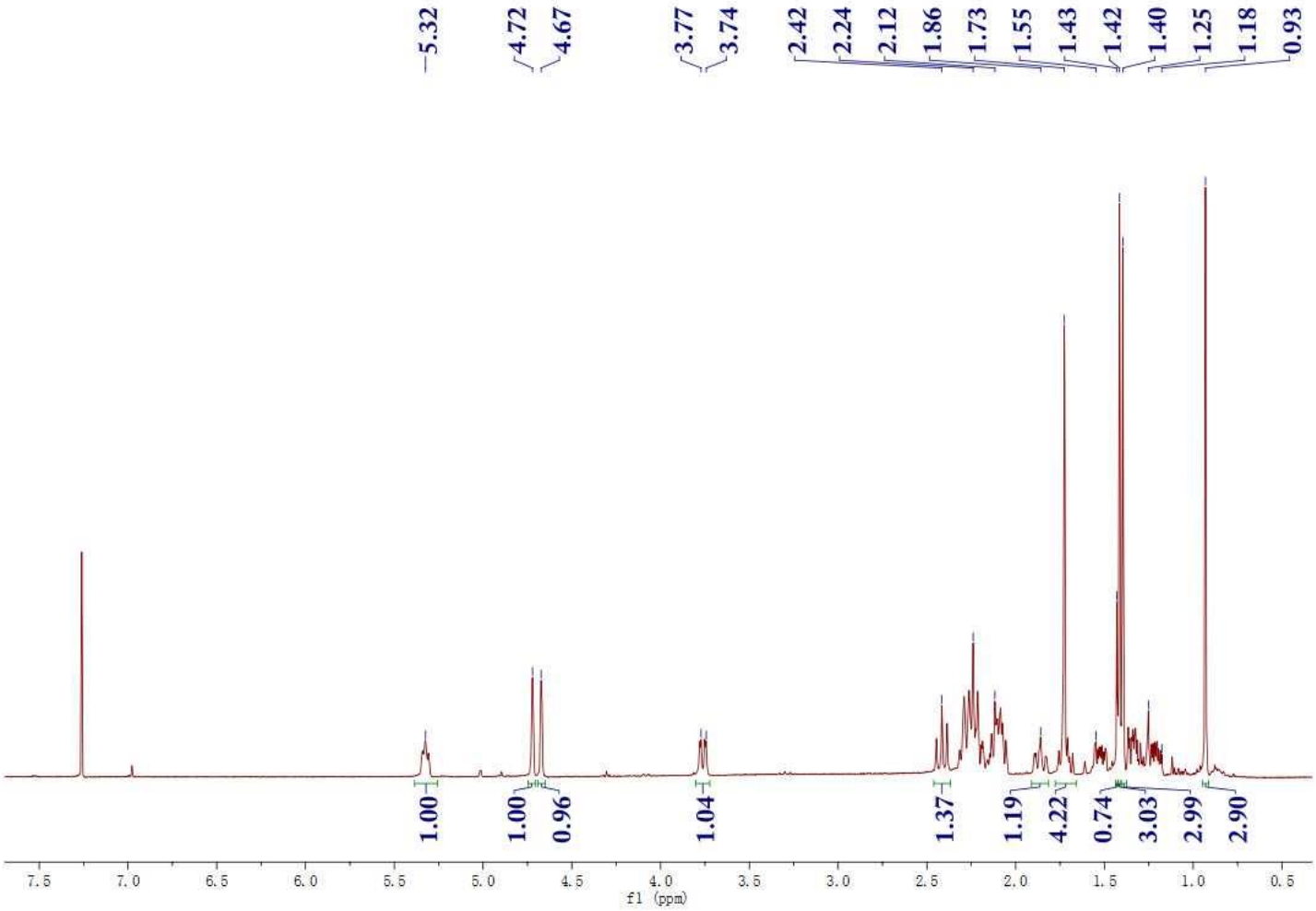

Figure **S66**. ^{13}C NMR spectrum of **9** (125 MHz, $CDCl_3$).

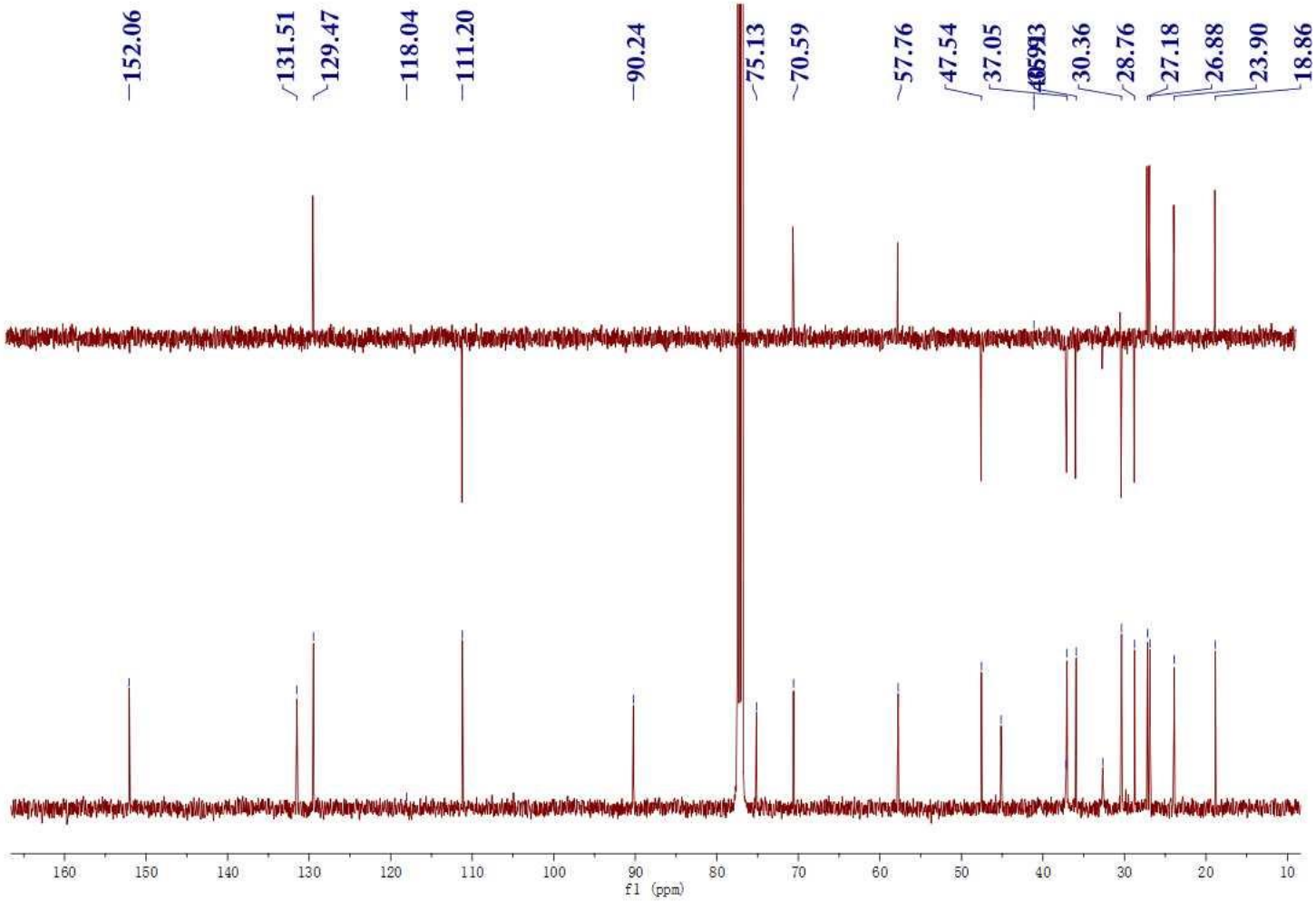

Figure **S67**. ^{1}H-^{1}H COSY spectrum of **9** (500 MHz, $CDCl_3$).

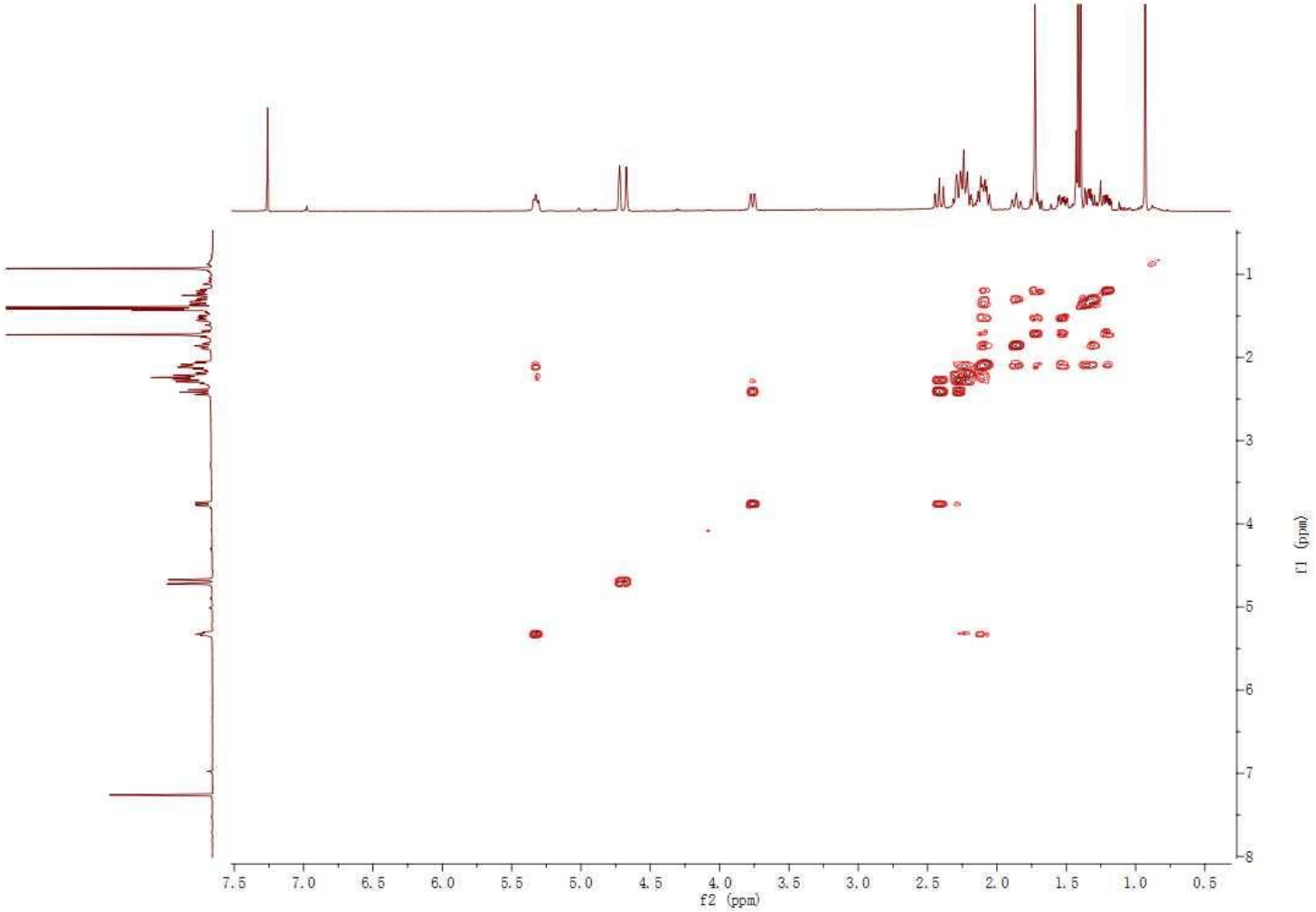

Figure **S68**. HSQC spectrum of **9** (500 MHz, $CDCl_3$).

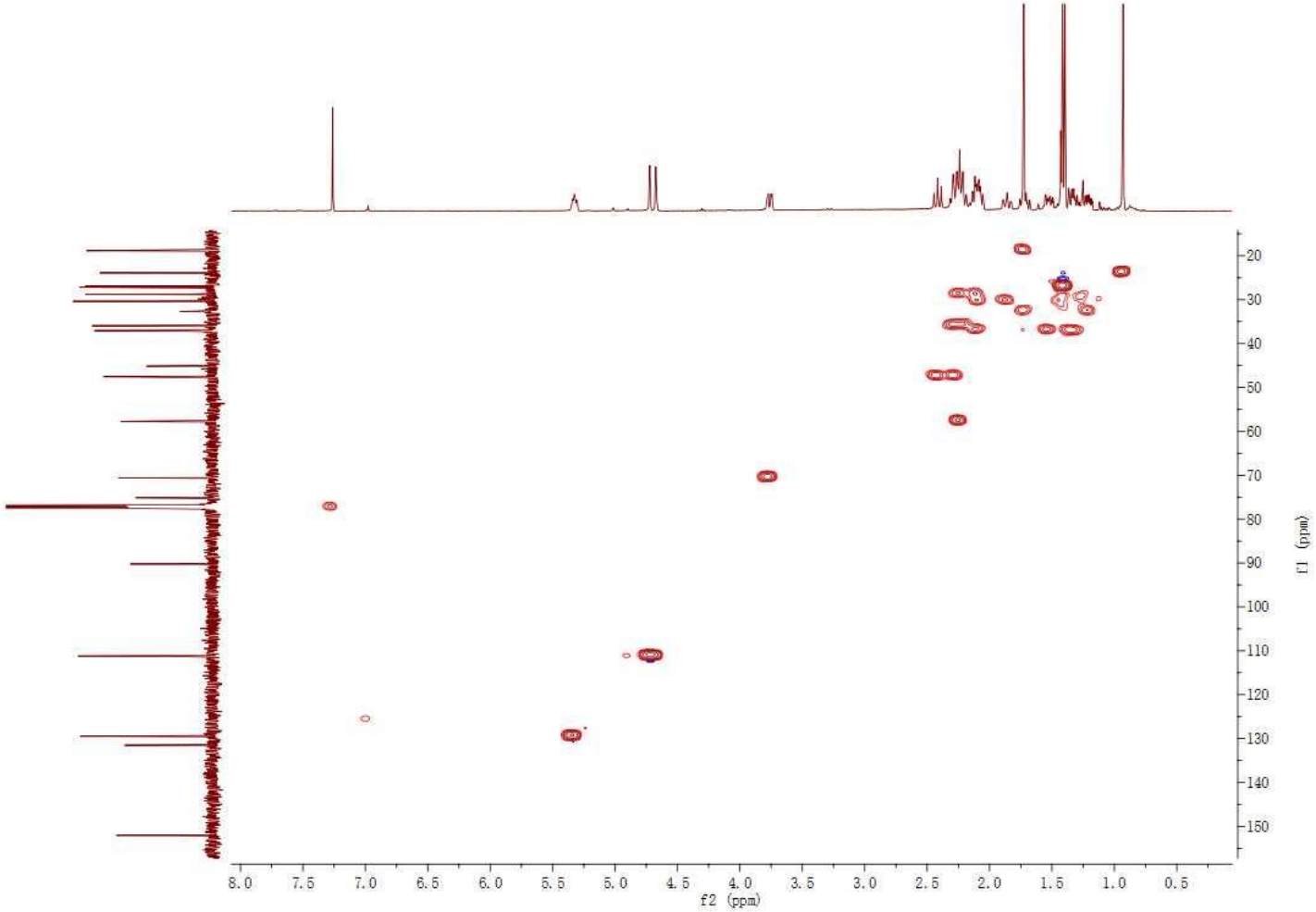

Figure **S69**. HMBC spectrum of **9** (500 MHz, $CDCl_3$).

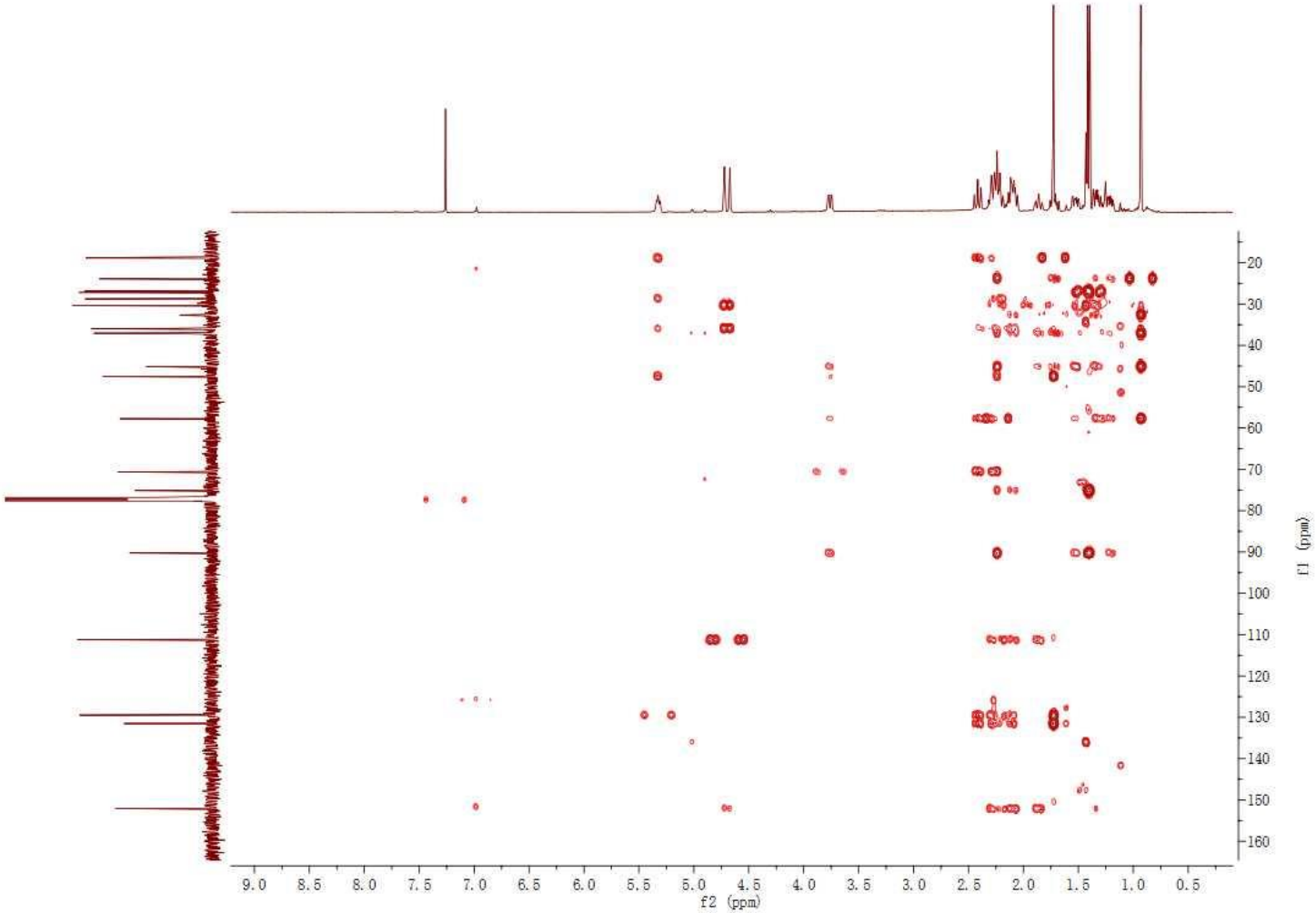

Figure **S70**. NOESY spectrum of **9** (500 MHz, $CDCl_3$).

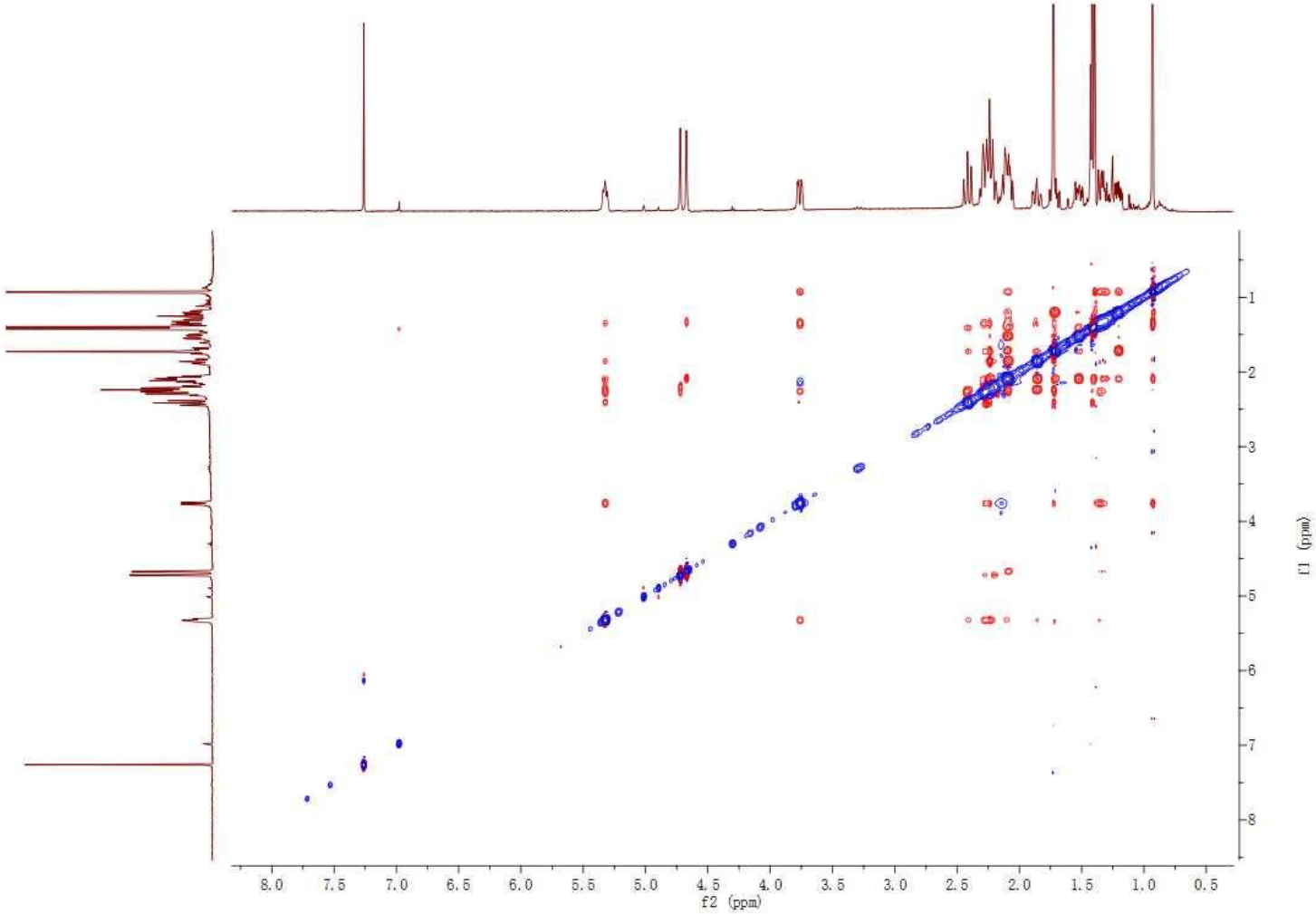

Figure **S71**. IR spectrum of **9**.

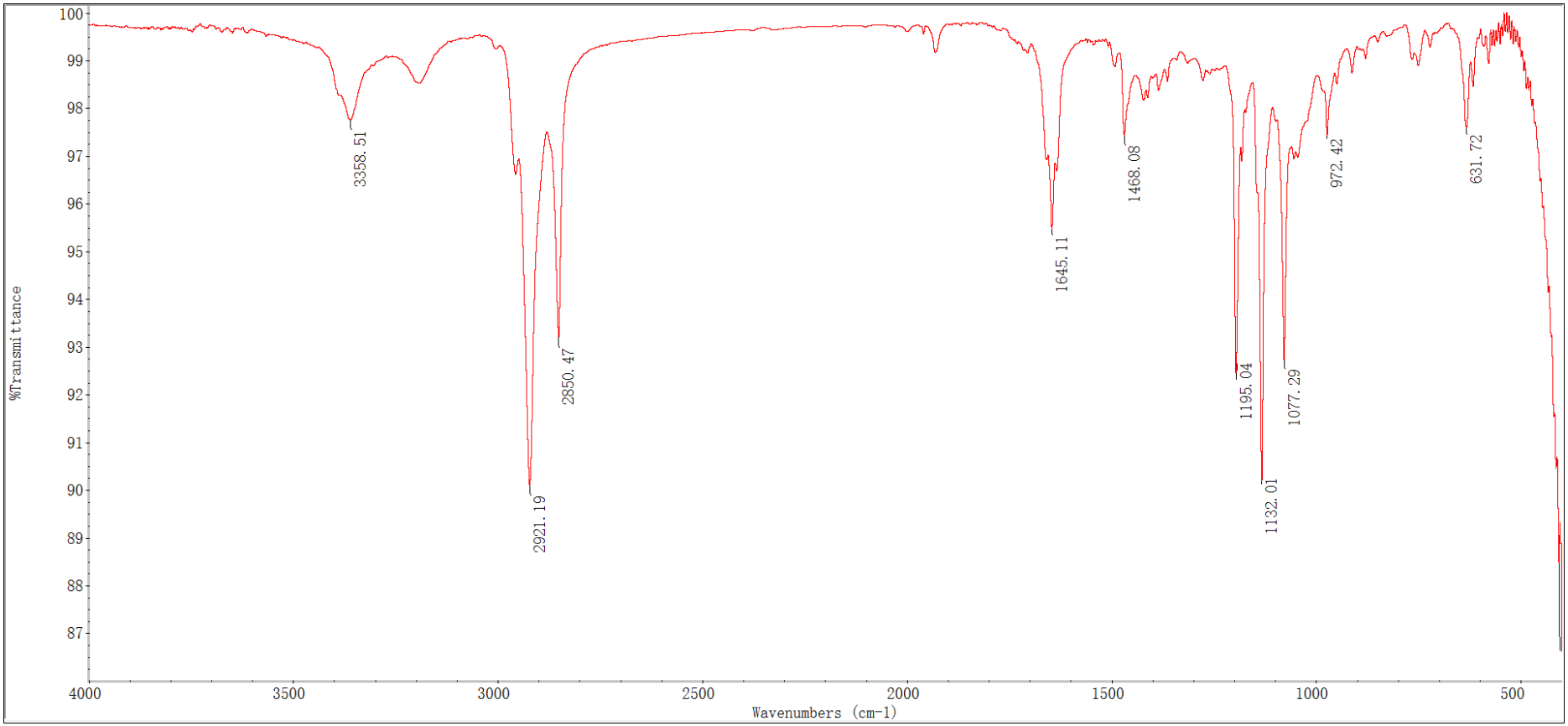

Figure **S72**. HREIMS spectrum of **9**.

LIST: h16527-c1 27-Dec-16 Elapse: 01:33.7 6
Samp: 21-J3b3a Start : 14:17:28 11
Comm: Finnigan/MAT95/70eV/R:10000
Mode: EI +VE +LMR BSCAN (EXP) UP HR NRM Study : S/N: PT200712-01-01
Oper: SIMM.CAS Client: S/N: PT001263 Inlet :
Limt: (0)
: (397) C22.H100.O2
Peak: 1000.00 mmu R+D: -2.0 > 60.0
Data: CMASS : converted

Mass		Intensity (4100)	%RA	%RIC	Delta (mmu)	R+D	Composition
148.1236	*	12536	7.49	0.16	1.6	4.0	C11.H16
149.0236	*	4487	2.68	0.06			
149.0970	*	58766	35.12	0.77	-0.4	4.5	C10.H13.O
149.1332	*	12608	7.54	0.16	-0.2	3.5	C11.H17
150.1044	*	36969	22.09	0.48	0.0	4.0	C10.H14.O
151.1122	*	45161	26.99	0.59	0.1	3.5	C10.H15.O
152.1173	*	6197	3.70	0.08	2.8	3.0	C10.H16.O
157.1007	*	12608	7.54	0.16	1.0	6.5	C12.H13
159.1174	*	30131	18.01	0.39	0.0	5.5	C12.H15
160.1241	*	9616	5.75	0.13	1.1	5.0	C12.H16
161.0970	*	9402	5.62	0.12	-0.4	5.5	C11.H13.O
161.1325	*	21797	13.03	0.28	0.5	4.5	C12.H17
162.1384	*	6980	4.17	0.09	2.4	4.0	C12.H18
163.1120	*	22438	13.41	0.29	0.3	4.5	C11.H15.O
163.1477	*	8120	4.85	0.11	0.9	3.5	C12.H19
164.1189	*	4558	2.72	0.06	1.2	4.0	C11.H16.O
165.0904	*	7408	4.43	0.10	1.2	4.5	C10.H13.O2
167.1066	*	106278	63.52	1.39	0.6	3.5	C10.H15.O2
168.1115	*	9473	5.66	0.12			
171.1163	*	9188	5.49	0.12	1.0	6.5	C13.H15
173.1319	*	16169	9.66	0.21	1.2	5.5	C13.H17
174.1391	*	4345	2.60	0.06	1.8	5.0	C13.H18
175.1113	*	8547	5.11	0.11	1.0	5.5	C12.H15.O
175.1490	*	20301	12.13	0.27	-0.3	4.5	C13.H19
176.1198	*	4487	2.68	0.06	0.4	5.0	C12.H16.O
176.1526	*	5057	3.02	0.07			
177.1275	*	25928	15.50	0.34	0.4	4.5	C12.H17.O
178.1347	*	7194	4.30	0.09	1.1	4.0	C12.H18.O
185.1332	*	16810	10.05	0.22	-0.1	6.5	C14.H17
187.1483	*	22010	13.15	0.29	0.3	5.5	C14.H19
188.1561	*	5983	3.58	0.08	0.4	5.0	C14.H20
189.1280	*	7479	4.47	0.10	0.0	5.5	C13.H17.O
189.1637	*	32553	19.45	0.43	0.6	4.5	C14.H21
190.1708	*	8476	5.07	0.11	1.3	4.0	C14.H22
199.1499	*	8619	5.15	0.11	-1.2	6.5	C15.H19
201.1649	*	8476	5.07	0.11	-0.6	5.5	C15.H21
203.1457	*	30416	18.18	0.40	-2.1	5.5	C14.H19.O
204.1509	*	7621	4.55	0.10	0.5	5.0	C14.H20.O
205.1607	*	7194	4.30	0.09	-1.5	4.5	C14.H21.O
213.1644	*	6125	3.66	0.08	-0.1	6.5	C16.H21
215.1804	*	4487	2.68	0.06	-0.5	5.5	C16.H23
217.1591	*	12750	7.62	0.17	0.2	5.5	C15.H21.O
218.1668	*	7835	4.68	0.10	0.3	5.0	C15.H22.O
225.1644	*	4131	2.47	0.05	0.0	7.5	C17.H21
227.1795	*	7265	4.34	0.09	0.5	6.5	C17.H23
228.1864	*	5983	3.58	0.08	1.4	6.0	C17.H24
231.1749	*	14175	8.47	0.19	0.0	5.5	C16.H23.O
243.1744	*	6909	4.13	0.09	0.5	6.5	C17.H23.O
243.2102	*	7123	4.26	0.09	1.1	5.5	C18.H27
245.1911	*	13534	8.09	0.18	-0.6	5.5	C17.H25.O
246.1990	*	6553	3.92	0.09	-0.6	5.0	C17.H26.O
253.1963	*	6909	4.13	0.09	-0.7	7.5	C19.H25
263.2021	*	4131	2.47	0.05	-1.0	4.5	C17.H27.O2
268.2196	*	6553	3.92	0.09	-0.5	7.0	C20.H28
271.2070	*	12394	7.41	0.16	-0.9	6.5	C19.H27.O
286.2309	*	12323	7.36	0.16	-1.2	6.0	C20.H30.O
304.2401	*	4131	2.47	0.05	0.1	5.0	C20.H32.O2

Figure **S73**. ^{1}H NMR spectrum of **10** (500MHz, $CDCl_3$).

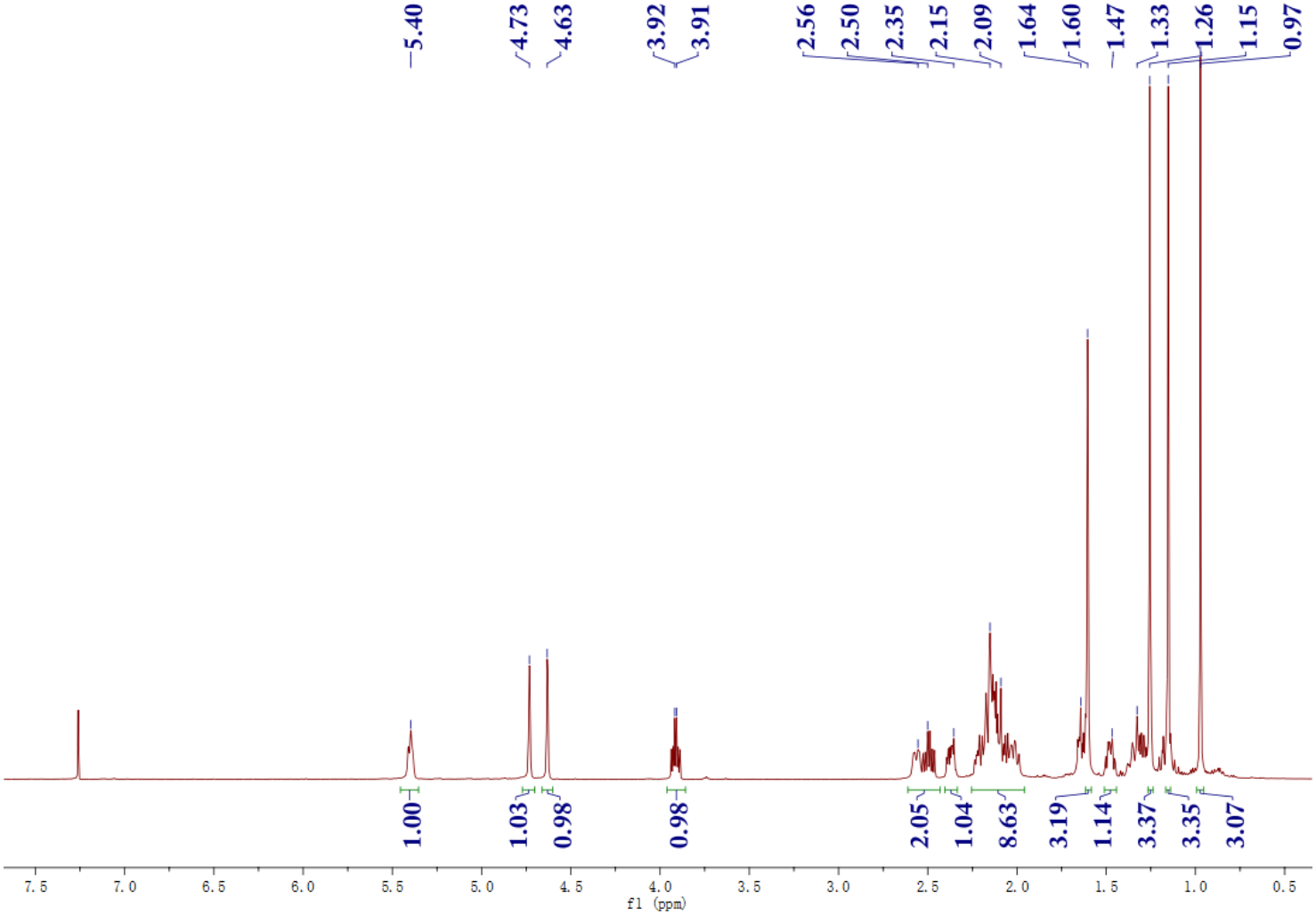

Figure **S74**. ^{13}C NMR spectrum of **10** (125 MHz, $CDCl_3$).

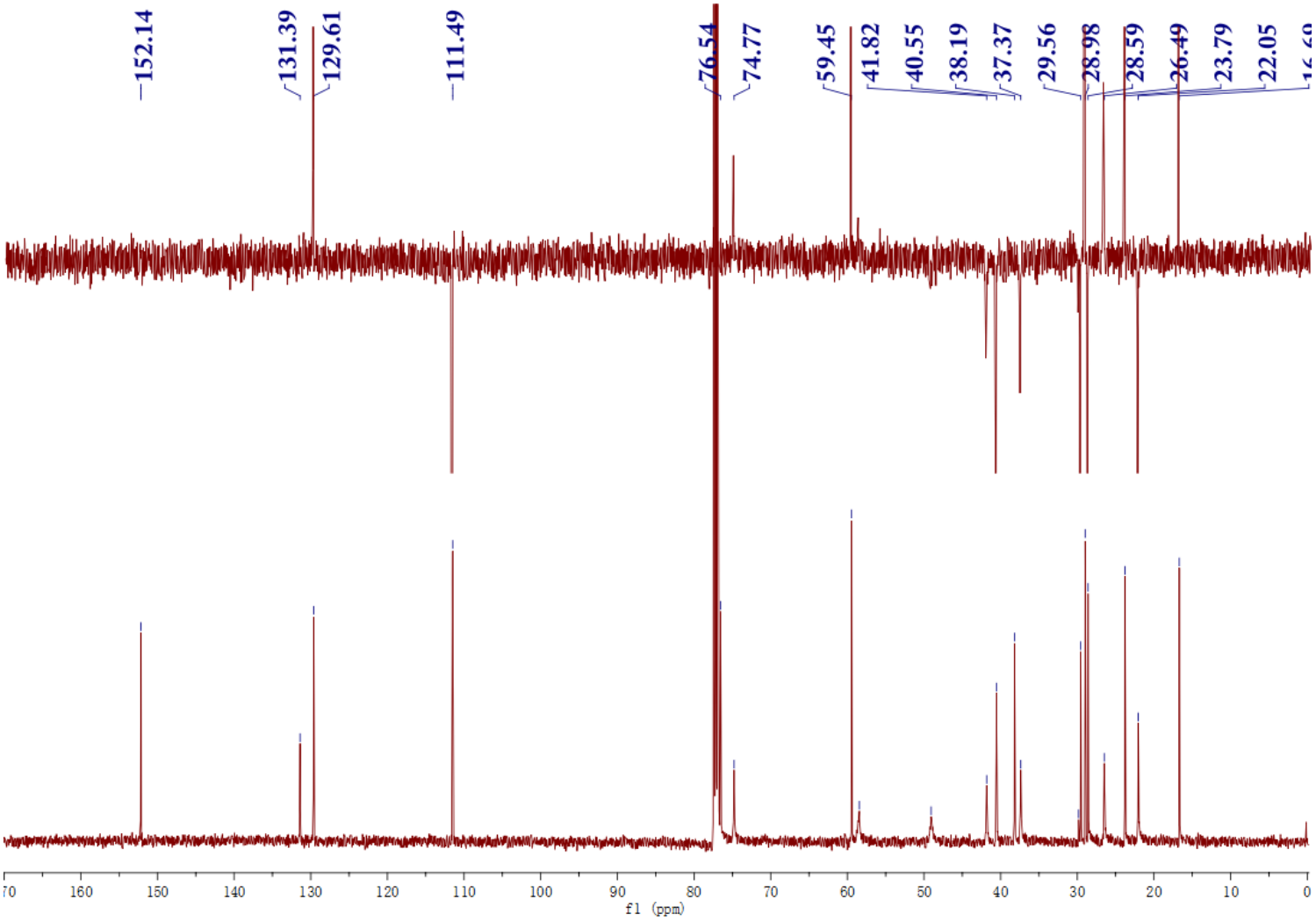

Figure **S75**. ^{1}H-^{1}H COSY spectrum of **10** (500 MHz, $CDCl_3$).

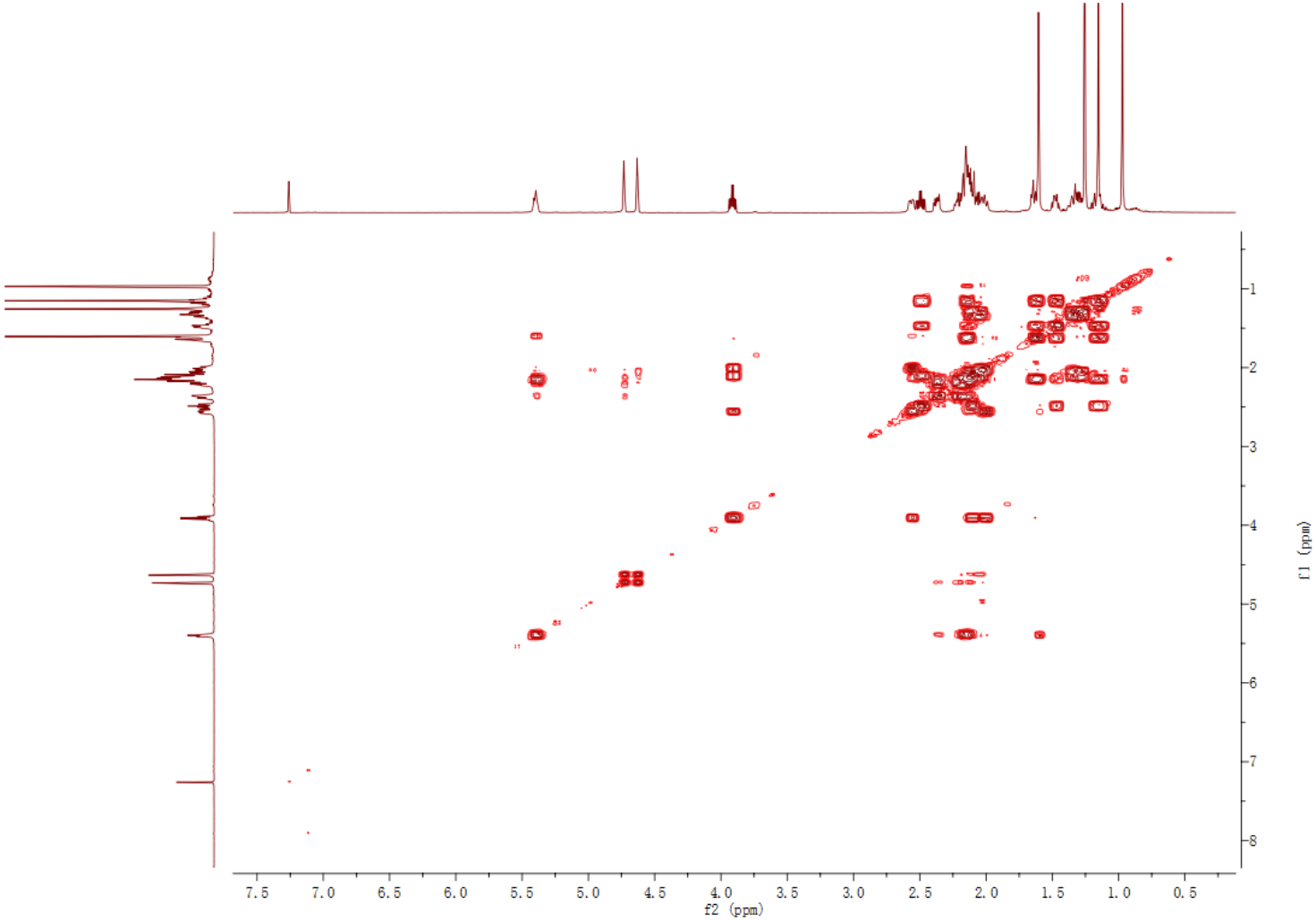

Figure **S76**. HSQC spectrum of **10** (500 MHz, $CDCl_3$).

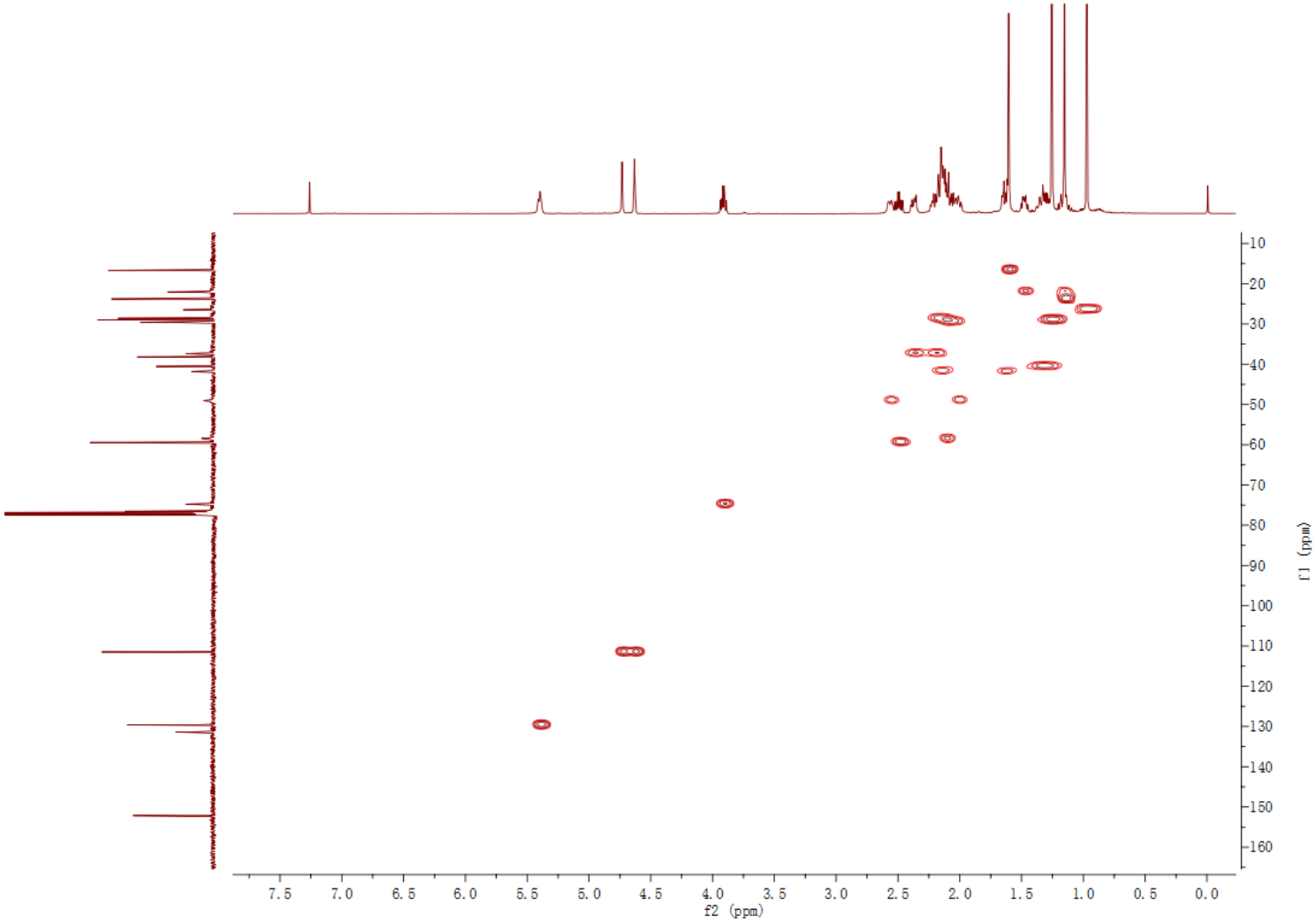

Figure **S77**. HMBC spectrum of **10** (500 MHz, $CDCl_3$).

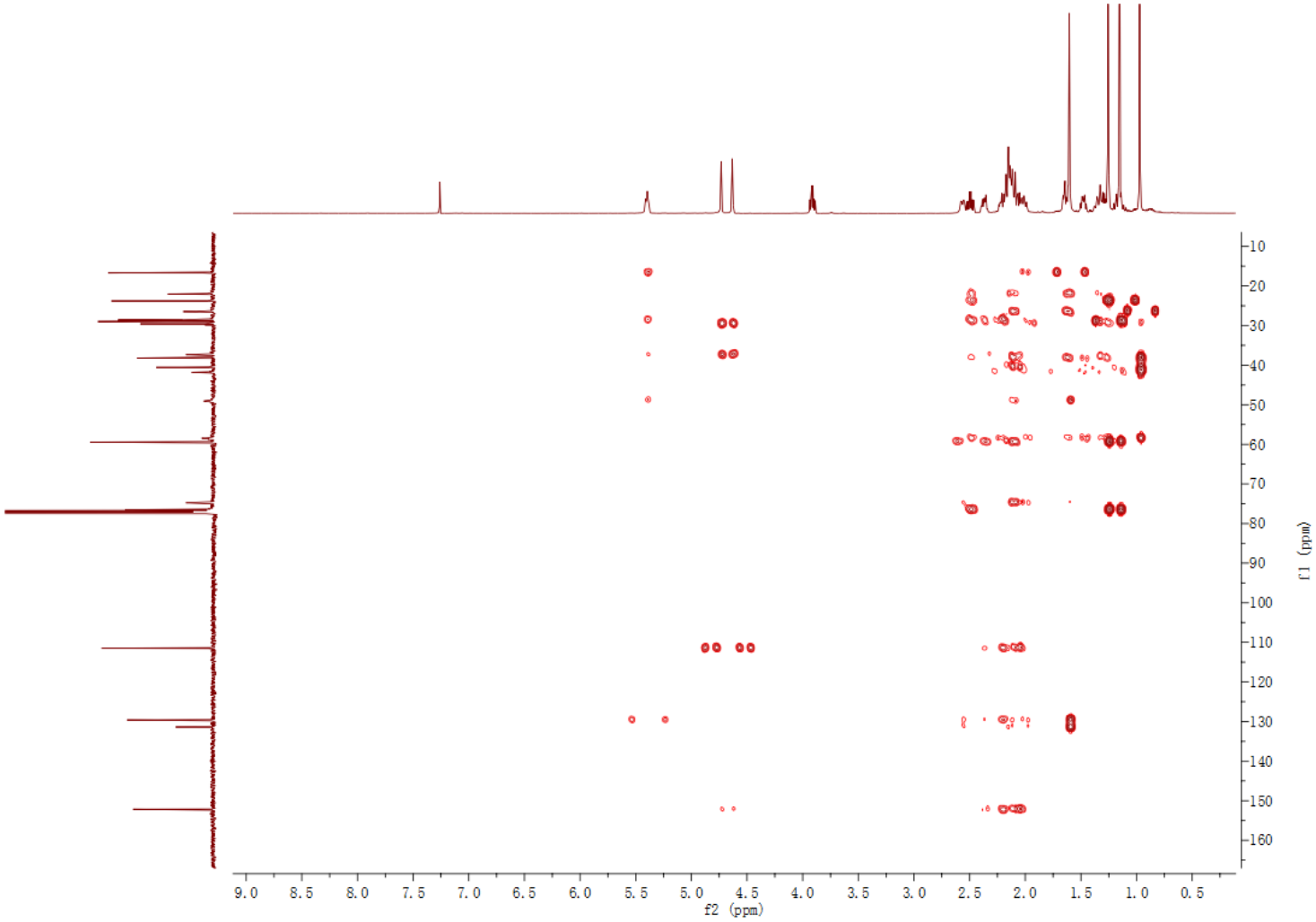

Figure **S78**. NOESY spectrum of **10** (500 MHz, $CDCl_3$).

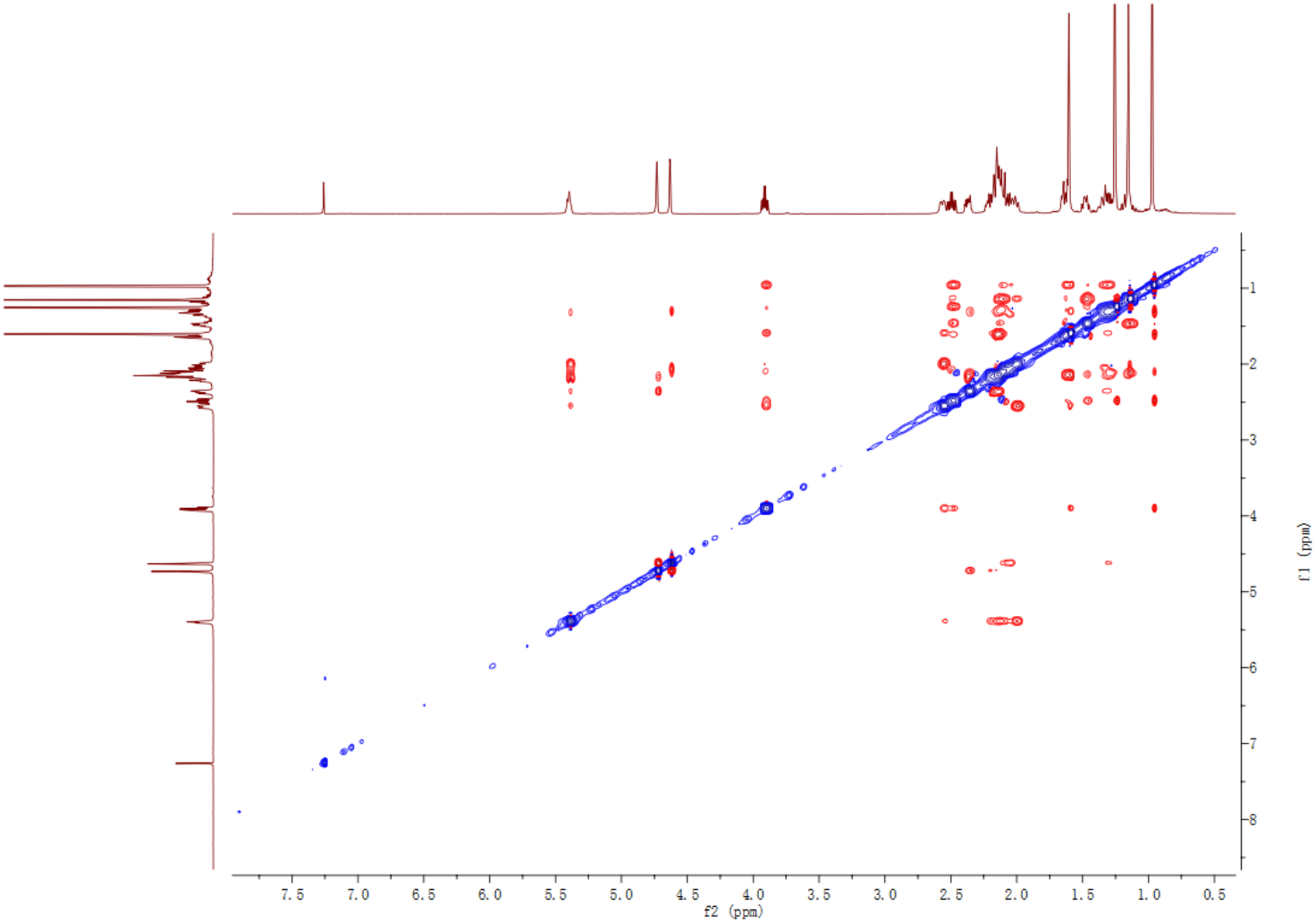

Figure **S79**. IR spectrum of **10**.

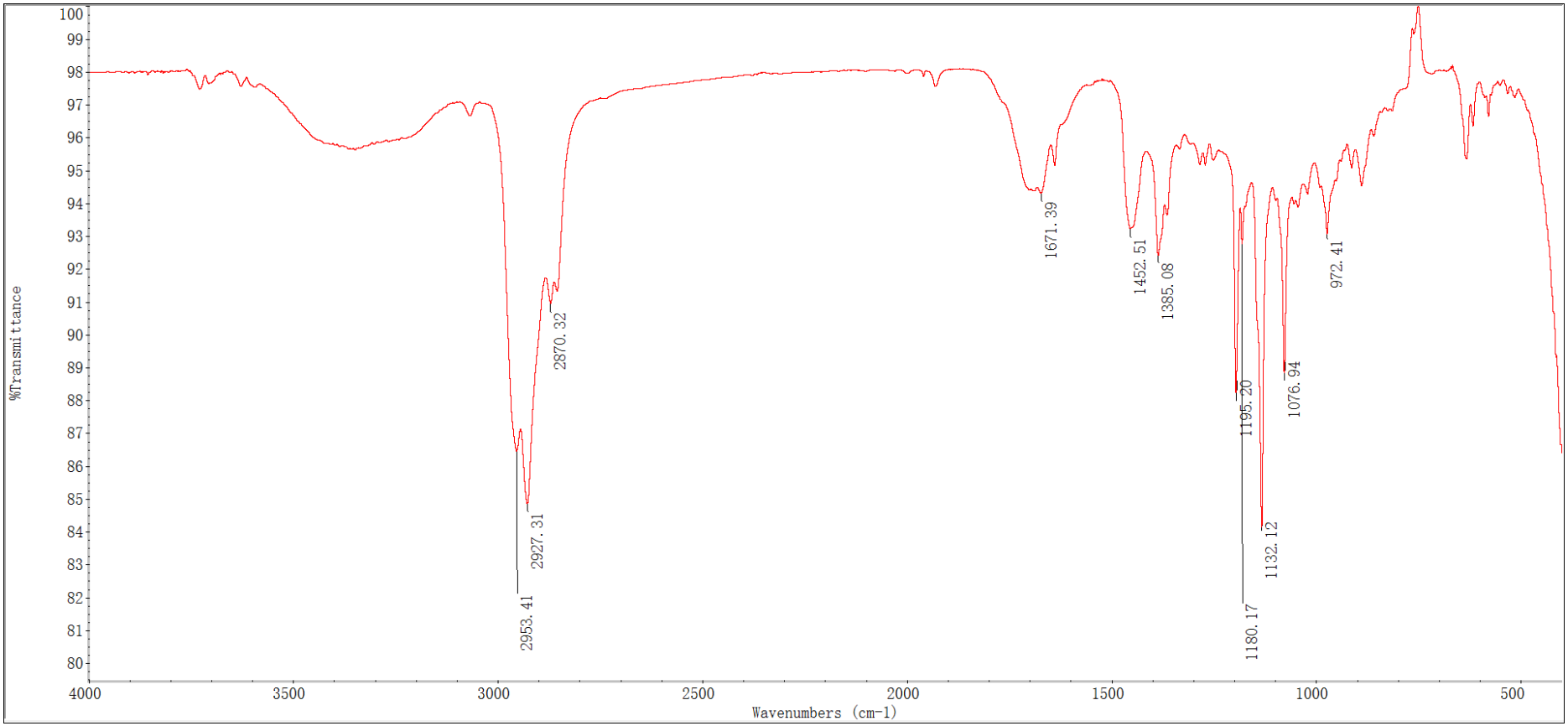

Figure **S80**. HREIMS spectrum of **10**.

```
LIST:  h150532-c1                                31-Dec-15  Elapse:  05:27.5      26
Samp:  c2g3                                                 Start :  15:39:04     34
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                   Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                 Inlet :
Limt:  (   0 )    .    .
    :  ( 381 ) C22.H100.O
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		Intensity (15590)	%RA	%RIC	Delta (mmu)	R+D	Composition
149.0230	*	26173	3.20	0.12			
149.0955	*	211512	25.90	0.98	1.2	4.5	C10.H13.O
149.1316	*	85609	10.48	0.40	1.4	3.5	C11.H17
150.1035	*	211335	25.88	0.98	1.0	4.0	C10.H14.O
151.0755	*	18256	2.24	0.08			
151.1112	*	816687	100.00	3.78	1.1	3.5	C10.H15.O
152.1167	*	116568	14.27	0.54			
153.0913	*	18315	2.24	0.08			
153.1265	*	41061	5.03	0.19	1.5	2.5	C10.H17.O
157.1012	*	36985	4.53	0.17	0.6	6.5	C12.H13
159.1180	*	88799	10.87	0.41	-0.6	5.5	C12.H15
160.1226	*	24459	2.99	0.11	2.6	5.0	C12.H16
161.0959	*	41002	5.02	0.19	0.7	5.5	C11.H13.O
161.1326	*	119167	14.59	0.55	0.5	4.5	C12.H17
162.1387	*	30486	3.73	0.14	2.2	4.0	C12.H18
163.1120	*	60204	7.37	0.28	0.3	4.5	C11.H15.O
163.1477	*	26468	3.24	0.12	1.0	3.5	C12.H19
164.1192	*	24046	2.94	0.11	0.9	4.0	C11.H16.O
165.0909	*	45492	5.57	0.21			
165.1265	*	34326	4.20	0.16	1.4	3.5	C11.H17.O
166.0984	*	27354	3.35	0.13			
167.1071	*	56954	6.97	0.26			
171.1182	*	31845	3.90	0.15	-0.8	6.5	C13.H15
173.1334	*	61445	7.52	0.28	-0.4	5.5	C13.H17
174.1390	*	25346	3.10	0.12	1.9	5.0	C13.H18
175.1117	*	34031	4.17	0.16	0.6	5.5	C12.H15.O
175.1485	*	85077	10.42	0.39	0.2	4.5	C13.H19
176.1554	*	28477	3.49	0.13	1.1	4.0	C13.H20
177.1279	*	54709	6.70	0.25	0.1	4.5	C12.H17.O
177.1641	*	39230	4.80	0.18	0.2	3.5	C13.H21
178.1339	*	17074	2.09	0.08	1.9	4.0	C12.H18.O
179.1076	*	16897	2.07	0.08			
185.1318	*	25936	3.18	0.12	1.2	6.5	C14.H17
187.1473	*	56423	6.91	0.26	1.4	5.5	C14.H19
188.1541	*	24578	3.01	0.11	2.4	5.0	C14.H20
189.1275	*	31608	3.87	0.15	0.5	5.5	C13.H17.O
189.1635	*	72079	8.83	0.33	0.9	4.5	C14.H21
190.1690	*	24637	3.02	0.11			
191.1435	*	46851	5.74	0.22	0.1	4.5	C13.H19.O
191.1802	*	35744	4.38	0.17	-0.2	3.5	C14.H23
192.1487	*	16483	2.02	0.08	2.7	4.0	C13.H20.O
193.1222	*	17606	2.16	0.08			
199.1483	*	24282	2.97	0.11	0.4	6.5	C15.H19
201.1629	*	29422	3.60	0.14	1.4	5.5	C15.H21
203.1429	*	36158	4.43	0.17	0.7	5.5	C14.H19.O
203.1800	*	15597	1.91	0.07	0.0	4.5	C15.H23
205.1595	*	64340	7.88	0.30	-0.3	4.5	C14.H21.O
206.1658	*	33735	4.13	0.16	1.2	4.0	C14.H22.O
207.1398	*	24696	3.02	0.11			
217.1582	*	28063	3.44	0.13	1.0	5.5	C15.H21.O
219.1756	*	29718	3.64	0.14	-0.7	4.5	C15.H23.O
221.1546	*	20737	2.54	0.10			
235.1694	*	33912	4.15	0.16			
245.1906	*	19615	2.40	0.09	-0.1	5.5	C17.H25.O
271.2066	*	15597	1.91	0.07	-0.4	6.5	C19.H27.O
273.2207	*	22982	2.81	0.11	1.1	5.5	C19.H29.O
288.2459	*	48092	5.89	0.22	-0.6	5.0	C20.H32.O

Figure **S81**. ^{1}H NMR spectrum of **11** (500MHz, $CDCl_3$).

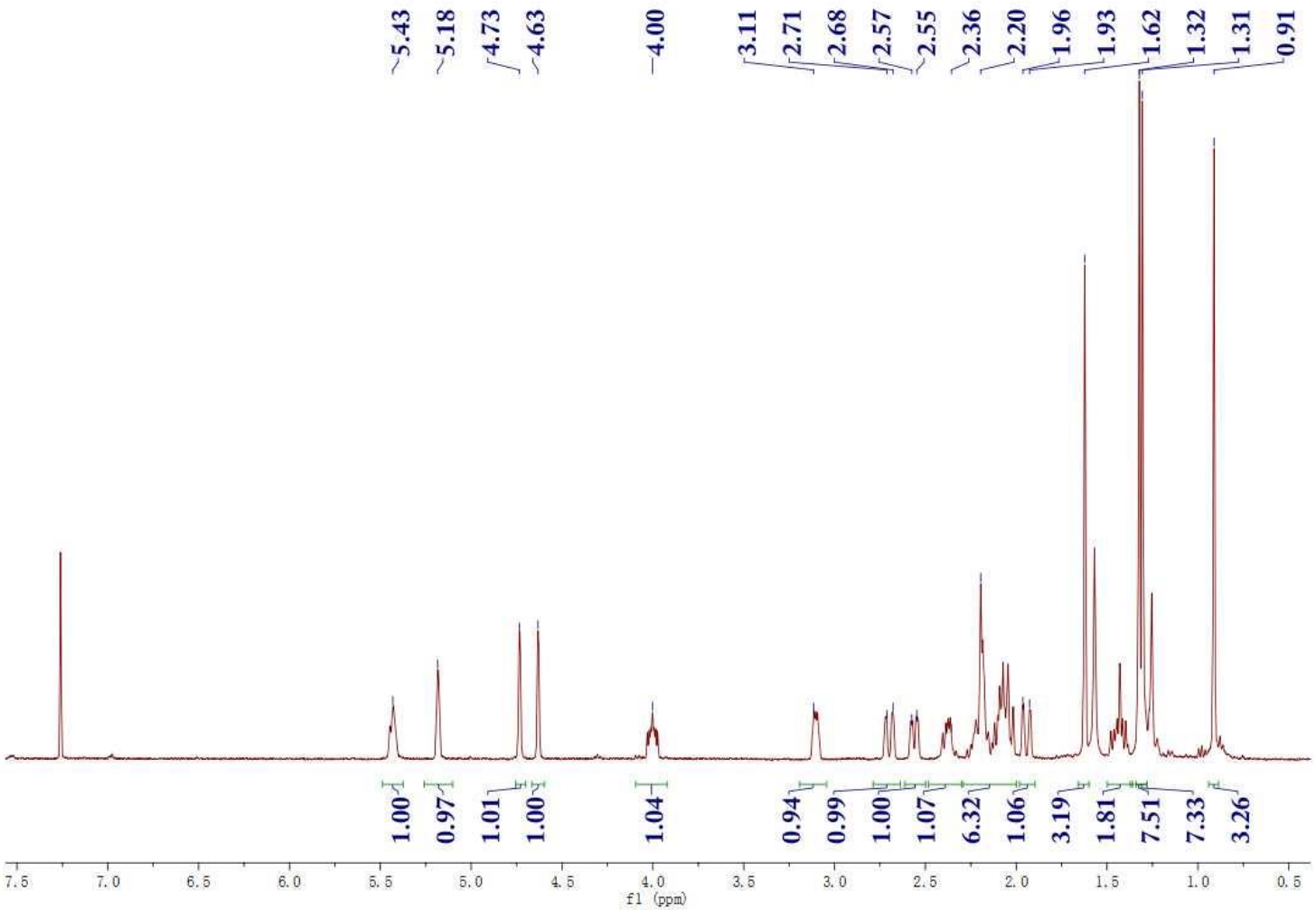

Figure **S82**. ^{13}C NMR spectrum of **11** (125 MHz, $CDCl_3$).

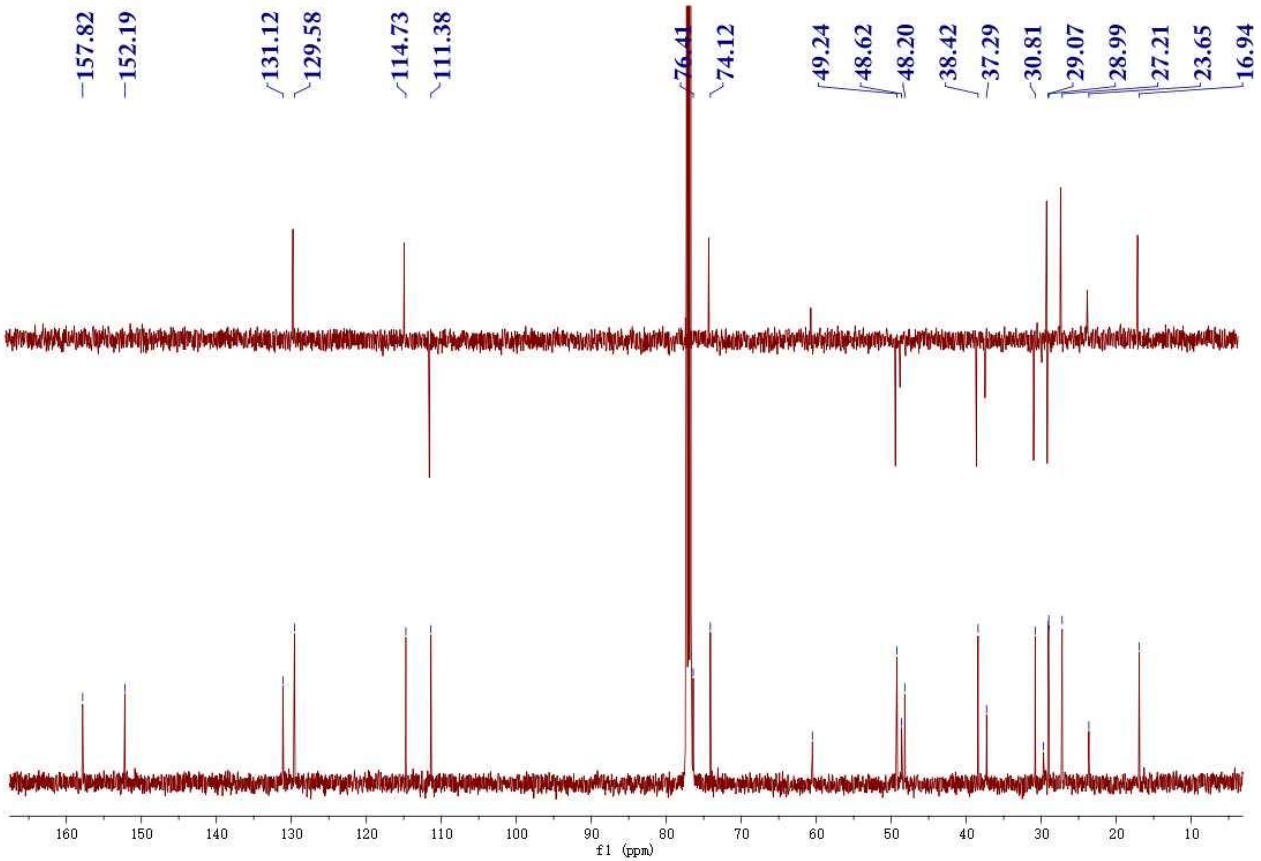

Figure **S83**. ^{1}H-^{1}H COSY spectrum of **11** (500 MHz, $CDCl_3$).

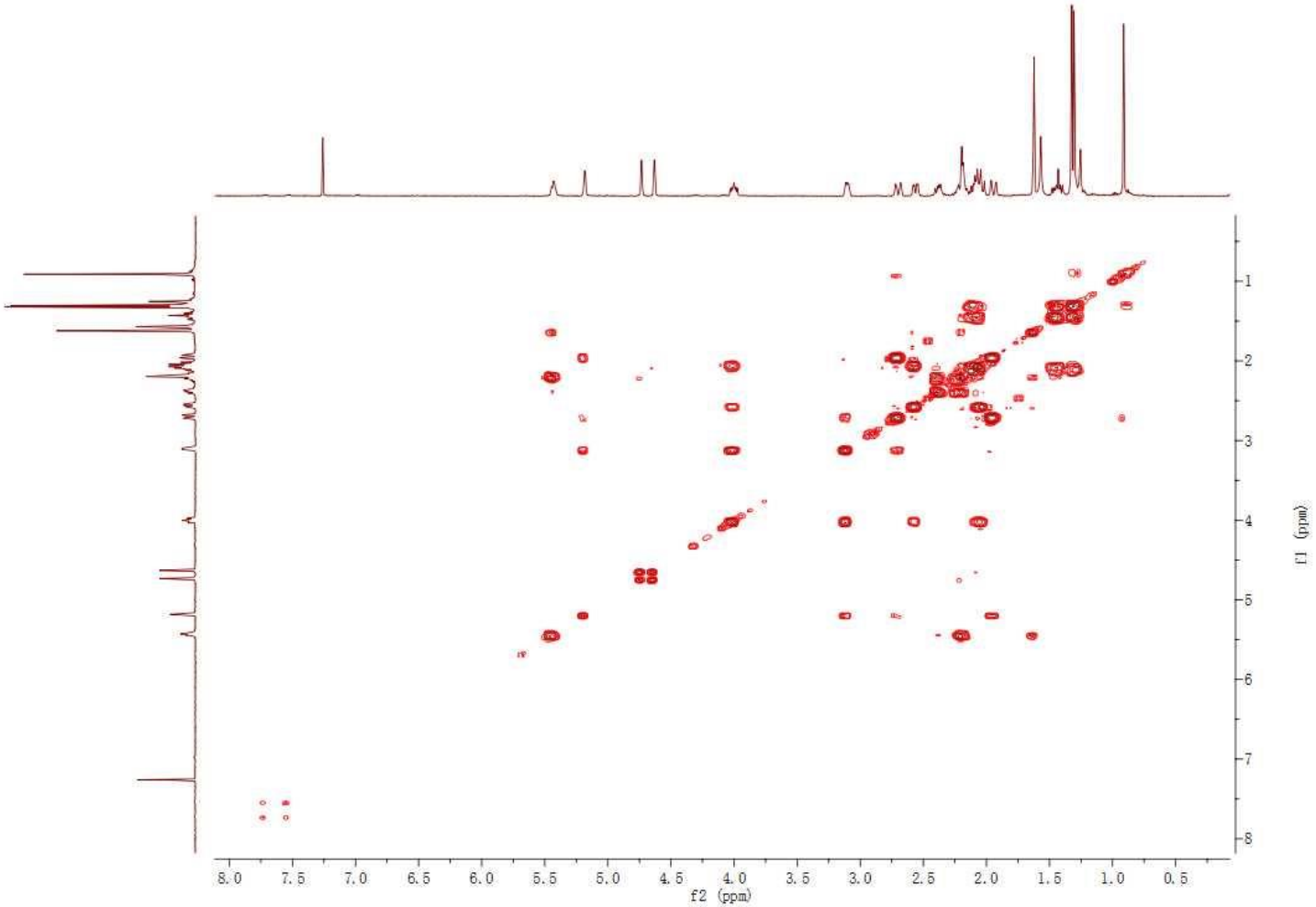

Figure **S84**. HSQC spectrum of **11** (500 MHz, $CDCl_3$).

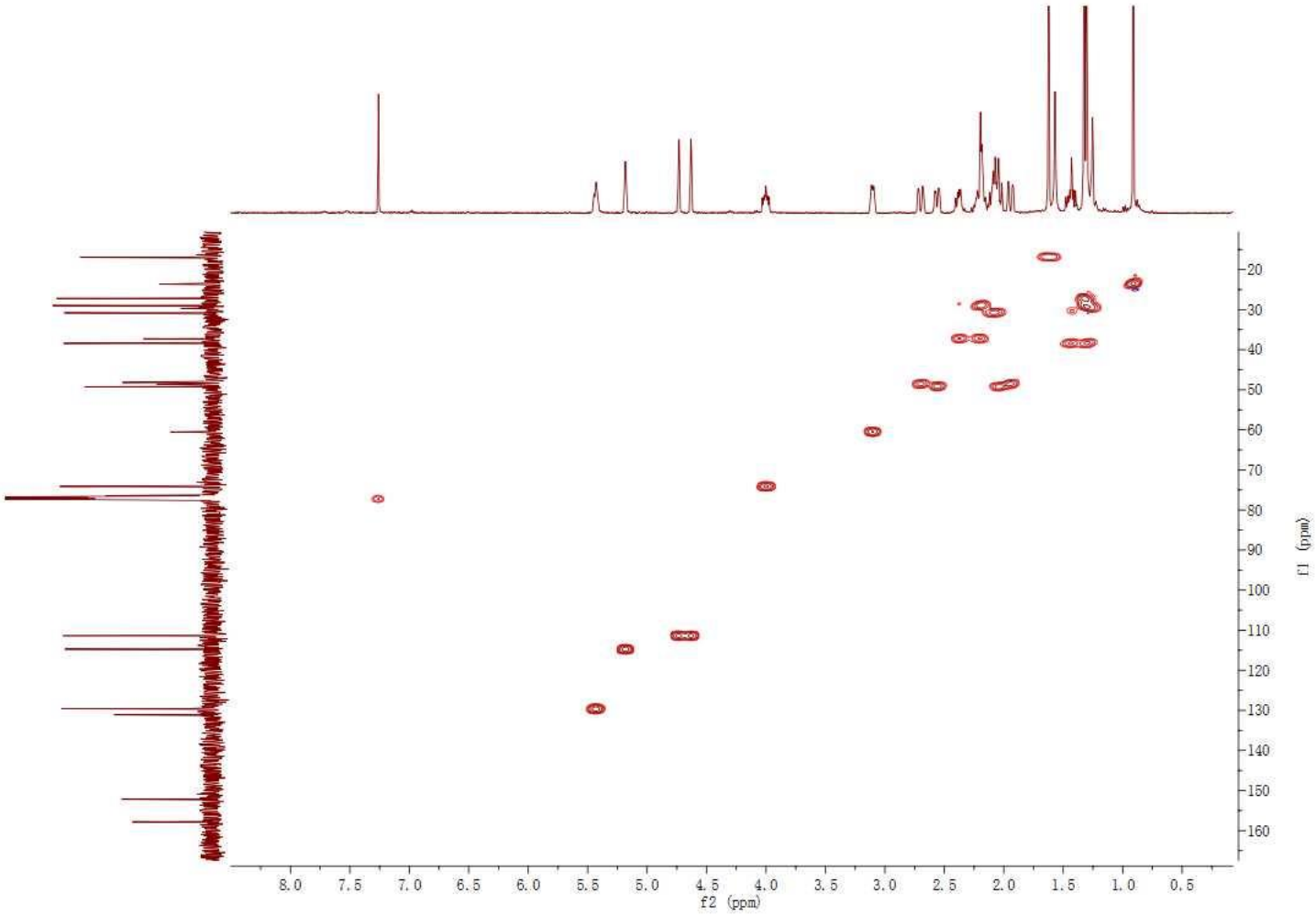

Figure **S85**. HMBC spectrum of **11** (500 MHz, $CDCl_3$).

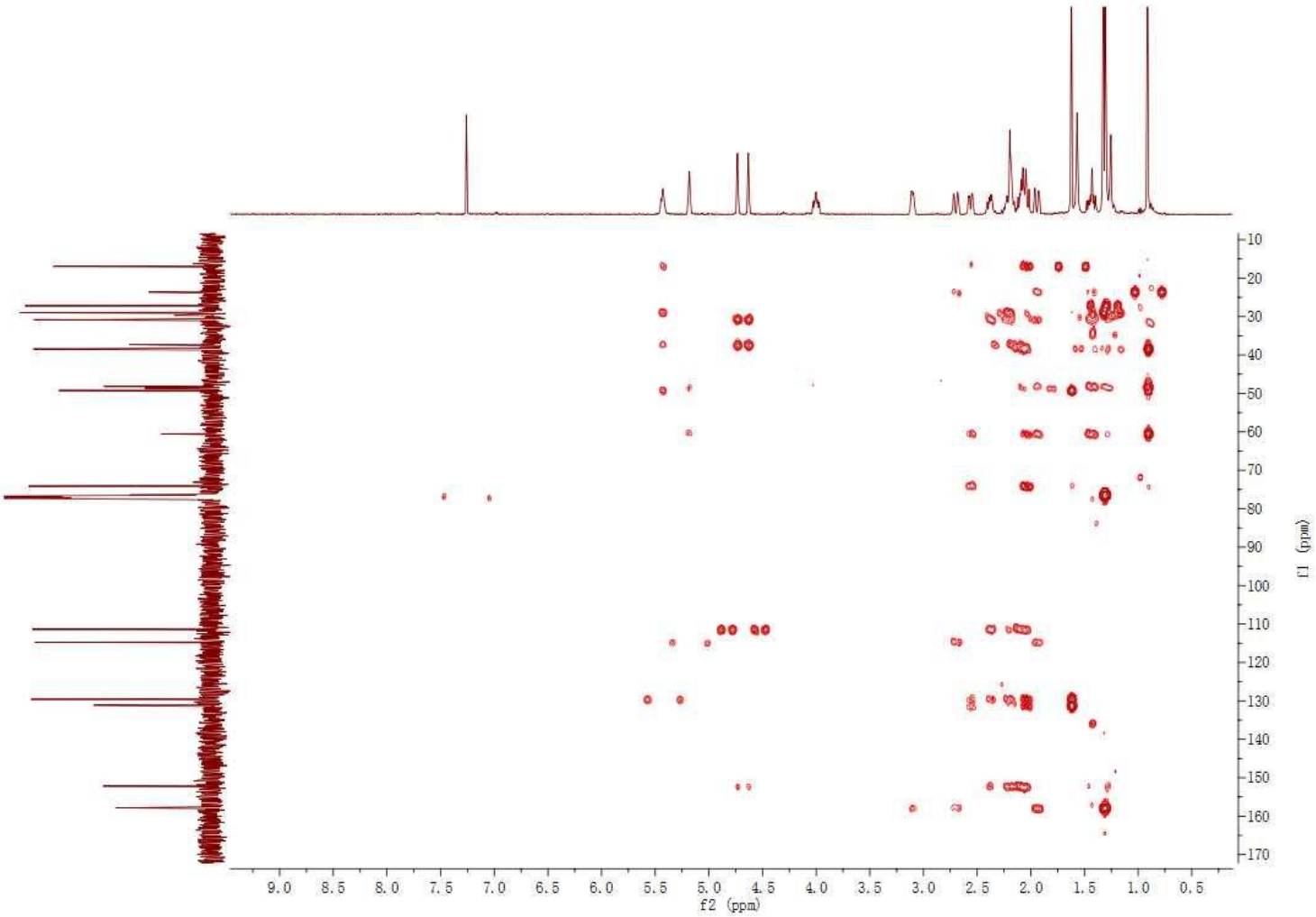

Figure **S86**. NOESY spectrum of **11** (500 MHz, $CDCl_3$).

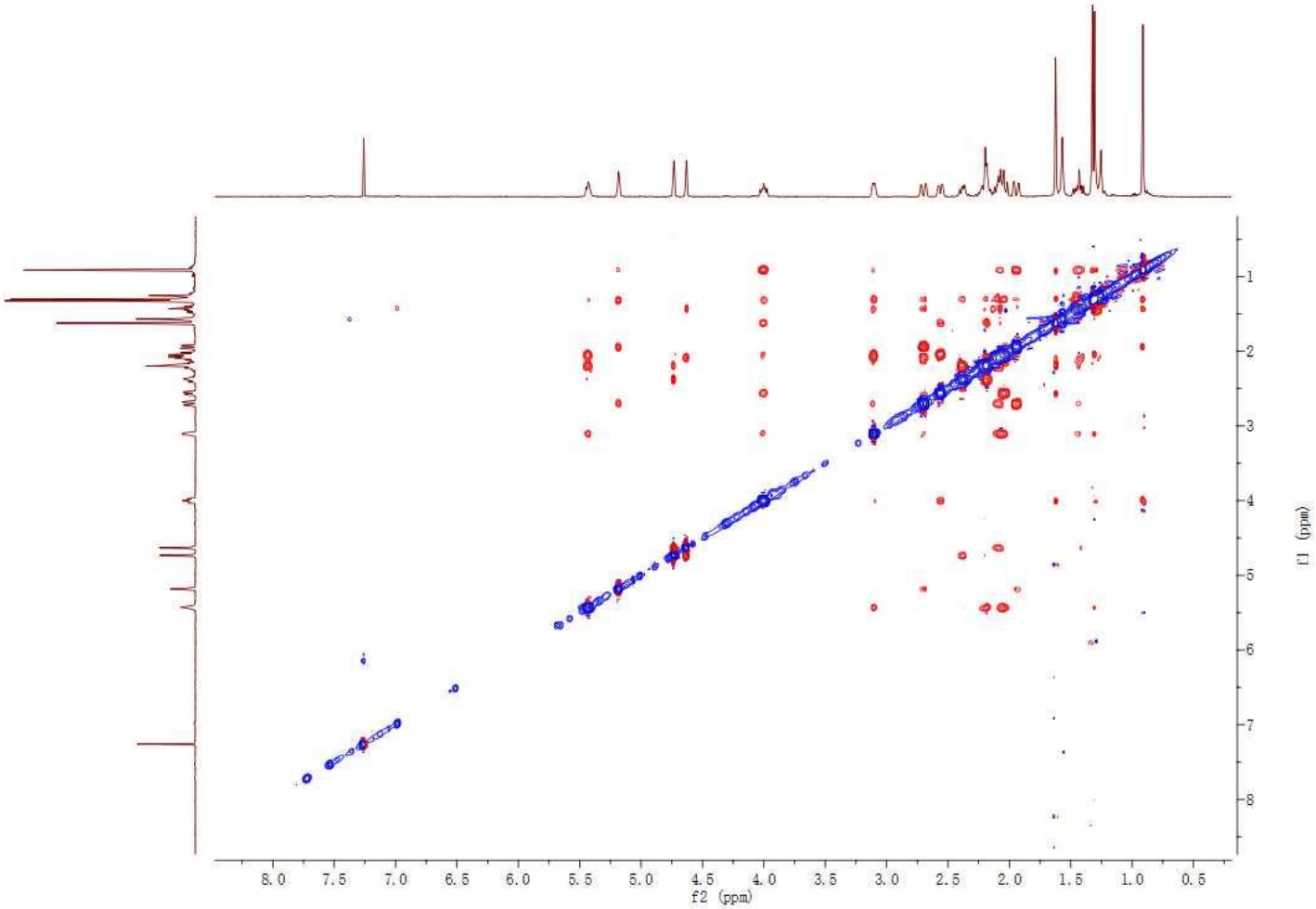

Figure **S87**. IR spectrum of **11**.

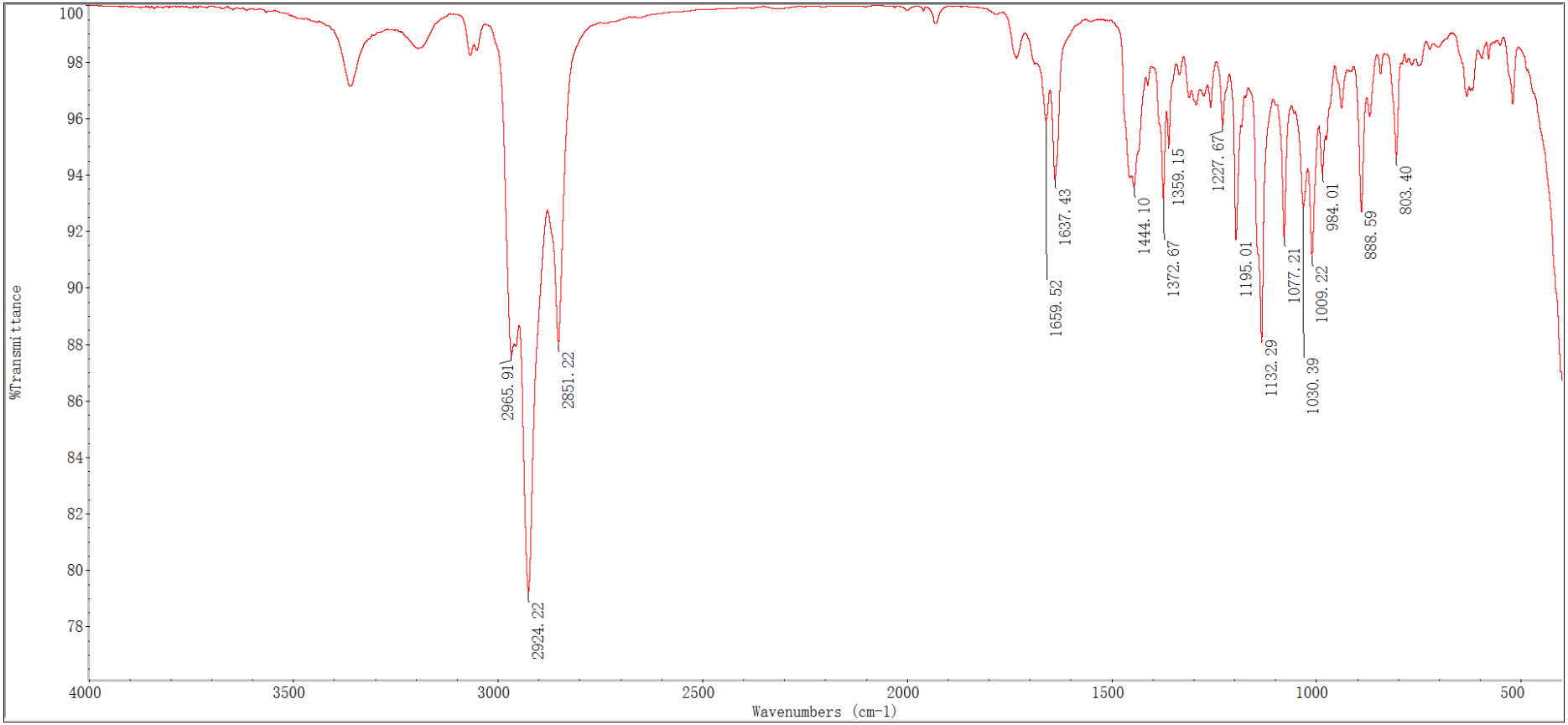

Figure **S88**. HREIMS spectrum of **11**.

```
LIST:  h16270-c3                                13-Jul-16  Elapse:  02:22.5      10
Samp:  SF2d3c1                                             Start :  16:04:55     17
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                  Study :  S/N: PT200712-01-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                Inlet :
Limt:  (   0 )      .     .
    :  ( 397 )  C22.H100.O2
Peak:  1000.00  mmu    R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		Intensity (66030)	%RA	%RIC	Delta (mmu)	R+D	Composition
53.04097	*	150323	22.57	0.62	-1.8	2.5	C4.H5
55.05658	*	600371	90.15	2.50	-1.8	1.5	C4.H7
56.06364	*	143861	21.60	0.60	-1.0	1.0	C4.H8
57.07217	*	665982	100.00	2.77	-1.7	0.5	C4.H9
65.04276	*	88901	13.35	0.37			
67.05803	*	271889	40.83	1.13			
68.06516	*	84925	12.75	0.35	-2.6	2.0	C5.H8
69.07038	*	482995	72.52	2.01	0.0	1.5	C5.H9
70.07796	*	149187	22.40	0.62	0.3	1.0	C5.H10
71.08647	*	316979	47.60	1.32	-0.4	0.5	C5.H11
77.04080	*	222893	33.47	0.93	-1.7	4.5	C6.H5
79.05595	*	303416	45.56	1.26	-1.2	3.5	C6.H7
81.07039	*	388412	58.32	1.61	0.0	2.5	C6.H9
82.07724	*	132287	19.86	0.55	1.0	2.0	C6.H10
83.08598	*	330115	49.57	1.37	0.1	1.5	C6.H11
84.09268	*	79386	11.92	0.33	1.2	1.0	C6.H12
85.10068	*	222467	33.40	0.92	1.0	0.5	C6.H13
91.05489	*	368601	55.35	1.53	-0.1	4.5	C7.H7
93.07018	*	288078	43.26	1.20	0.2	3.5	C7.H9
95.08622	*	316695	47.55	1.32	-0.1	2.5	C7.H11
96.09376	*	109423	16.43	0.45	0.1	2.0	C7.H12
97.10180	*	307322	46.15	1.28	-0.1	1.5	C7.H13
99.11754	*	71220	10.69	0.30	-0.2	0.5	C7.H15
105.0705	*	414685	62.27	1.72	0.0	4.5	C8.H9
106.0762	*	86984	13.06	0.36	2.1	4.0	C8.H10
107.0861	*	286090	42.96	1.19	0.0	3.5	C8.H11
109.0657	*	205567	30.87	0.85	-0.4	3.5	C7.H9.O
109.1023	*	201236	30.22	0.84	-0.6	2.5	C8.H13
111.1177	*	159128	23.89	0.66	-0.3	1.5	C8.H15
117.0703	*	75339	11.31	0.31	0.1	5.5	C9.H9
119.0859	*	315061	47.31	1.31	0.2	4.5	C9.H11
120.0924	*	106937	16.06	0.44	1.5	4.0	C9.H12
121.1011	*	660302	99.15	2.75	0.6	3.5	C9.H13
122.1074	*	167010	25.08	0.69	2.1	3.0	C9.H14
123.1158	*	162394	24.38	0.68	1.6	2.5	C9.H15
125.1323	*	89966	13.51	0.37	0.7	1.5	C9.H17
131.0857	*	95789	14.38	0.40	0.3	5.5	C10.H11
133.1008	*	556062	83.50	2.31	1.0	4.5	C10.H13
134.1084	*	131577	19.76	0.55	1.1	4.0	C10.H14
135.1168	*	178158	26.75	0.74	0.6	3.5	C10.H15
136.1234	*	78818	11.83	0.33	1.8	3.0	C10.H16
137.1325	*	67599	10.15	0.28	0.6	2.5	C10.H17
145.1021	*	113825	17.09	0.47	-0.3	5.5	C11.H13
147.0801	*	68238	10.25	0.28	0.9	5.5	C10.H11.O
147.1165	*	105446	15.83	0.44	0.9	4.5	C11.H15
149.0232	*	454450	68.24	1.89			
149.0956	*	228077	34.25	0.95	1.0	4.5	C10.H13.O
150.1032	*	126251	18.96	0.52	1.3	4.0	C10.H14.O
159.1173	*	74913	11.25	0.31	0.1	5.5	C12.H15
173.1335	*	68309	10.26	0.28	-0.5	5.5	C13.H17
175.1479	*	66605	10.00	0.28	0.7	4.5	C13.H19
177.1277	*	177448	26.64	0.74	0.2	4.5	C12.H17.O
189.1629	*	294469	44.22	1.22	1.5	4.5	C14.H21
218.1681	*	134843	20.25	0.56	-1.0	5.0	C15.H22.O
286.2300	*	119577	17.95	0.50	-0.3	6.0	C20.H30.O

Figure **S89**. ^{1}H NMR spectrum of **12** (500MHz, $CDCl_3$).

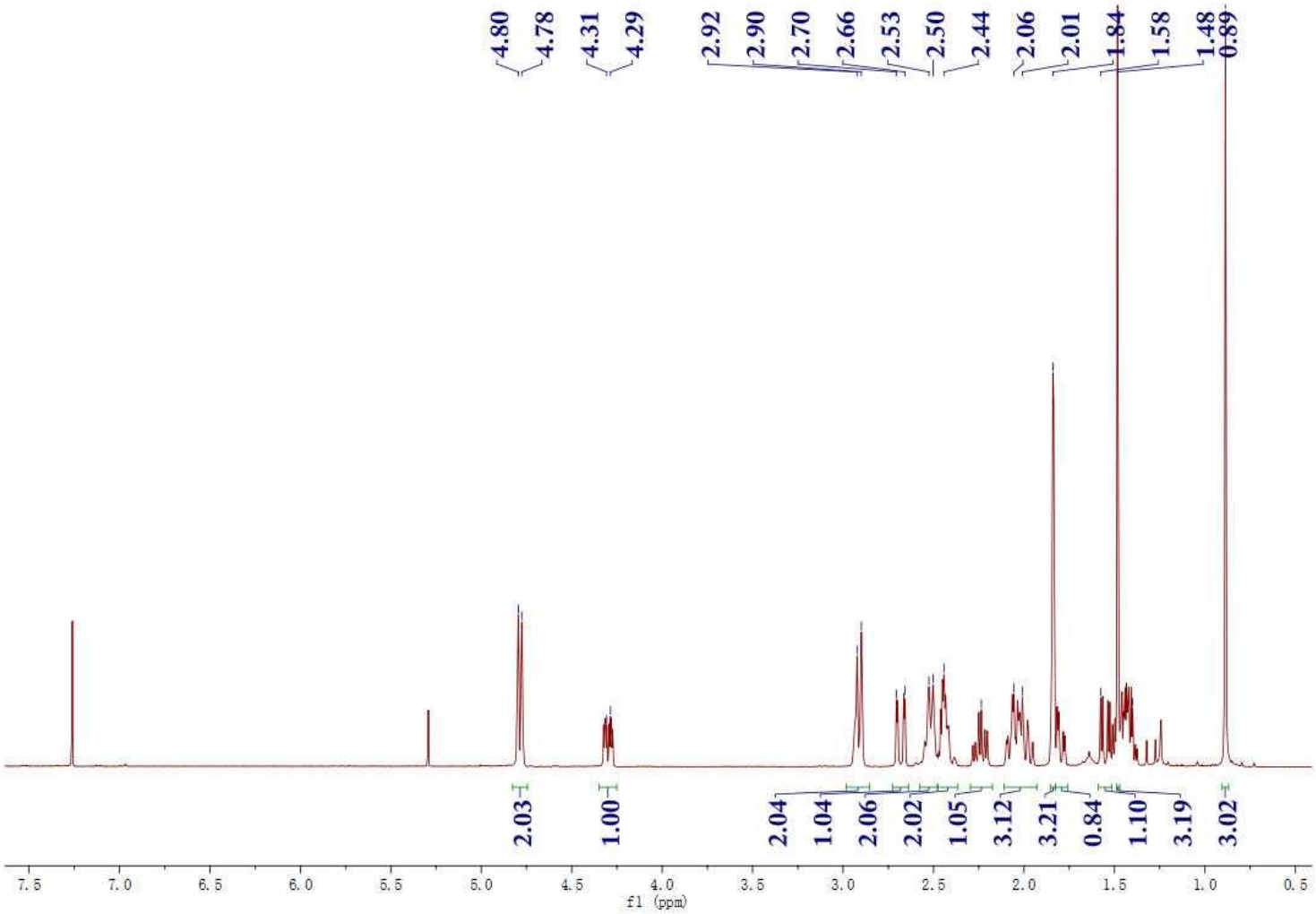

Figure **S90**. ^{13}C NMR spectrum of **12** (125 MHz, $CDCl_3$).

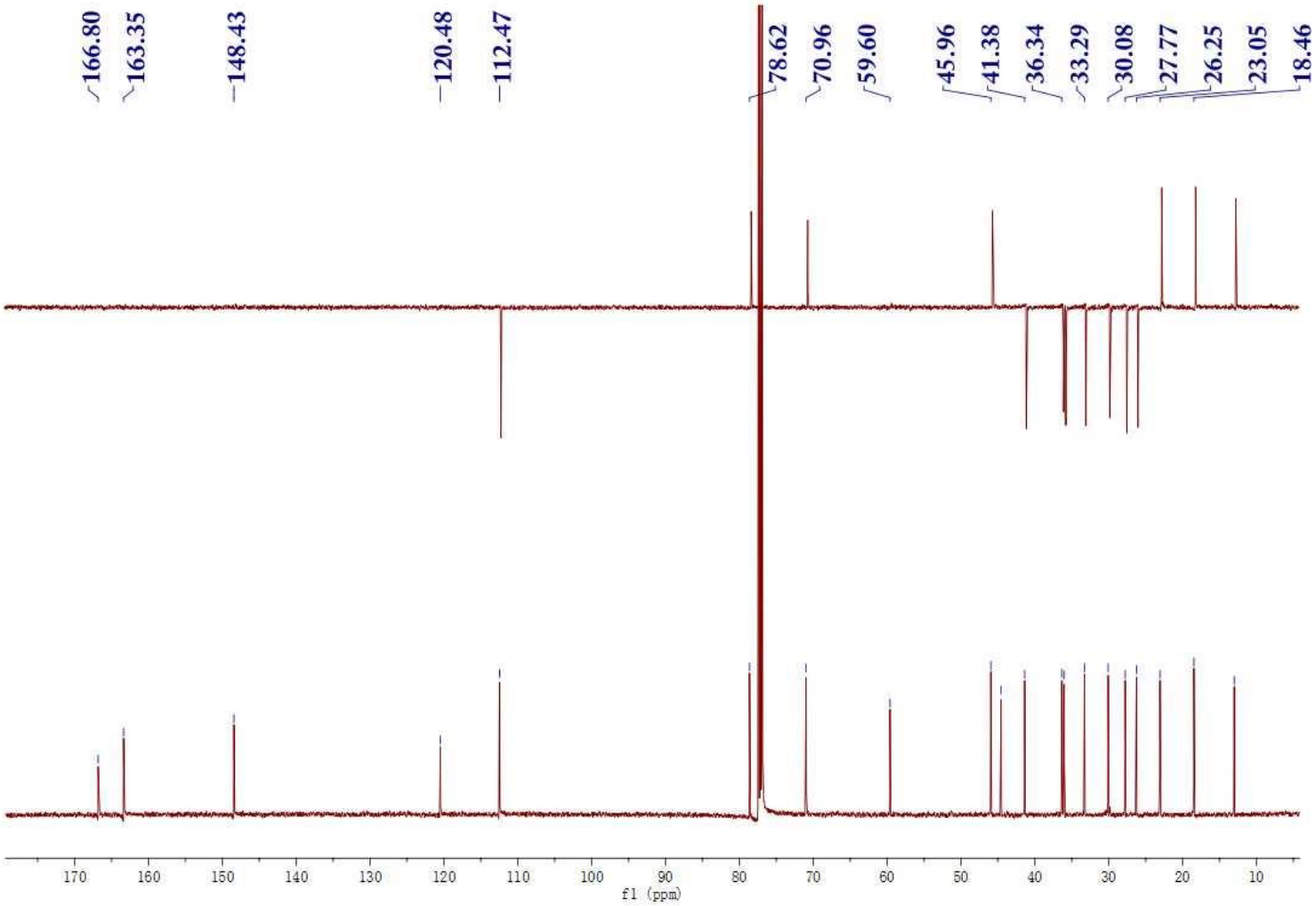

Figure **S91**. ^{1}H-^{1}H COSY spectrum of **12** (500 MHz, $CDCl_3$).

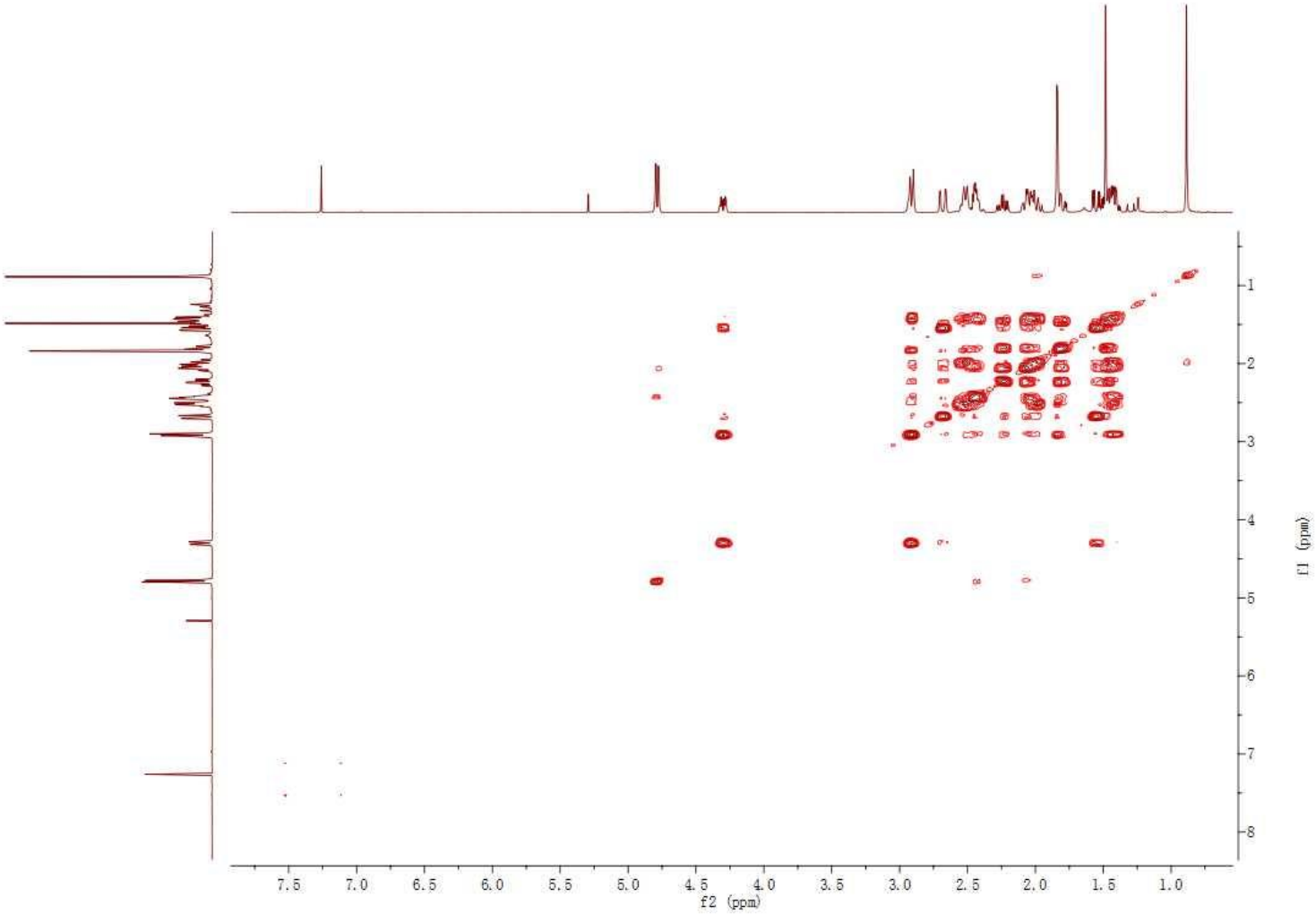

Figure **S92**. HSQC spectrum of **12** (500 MHz, $CDCl_3$).

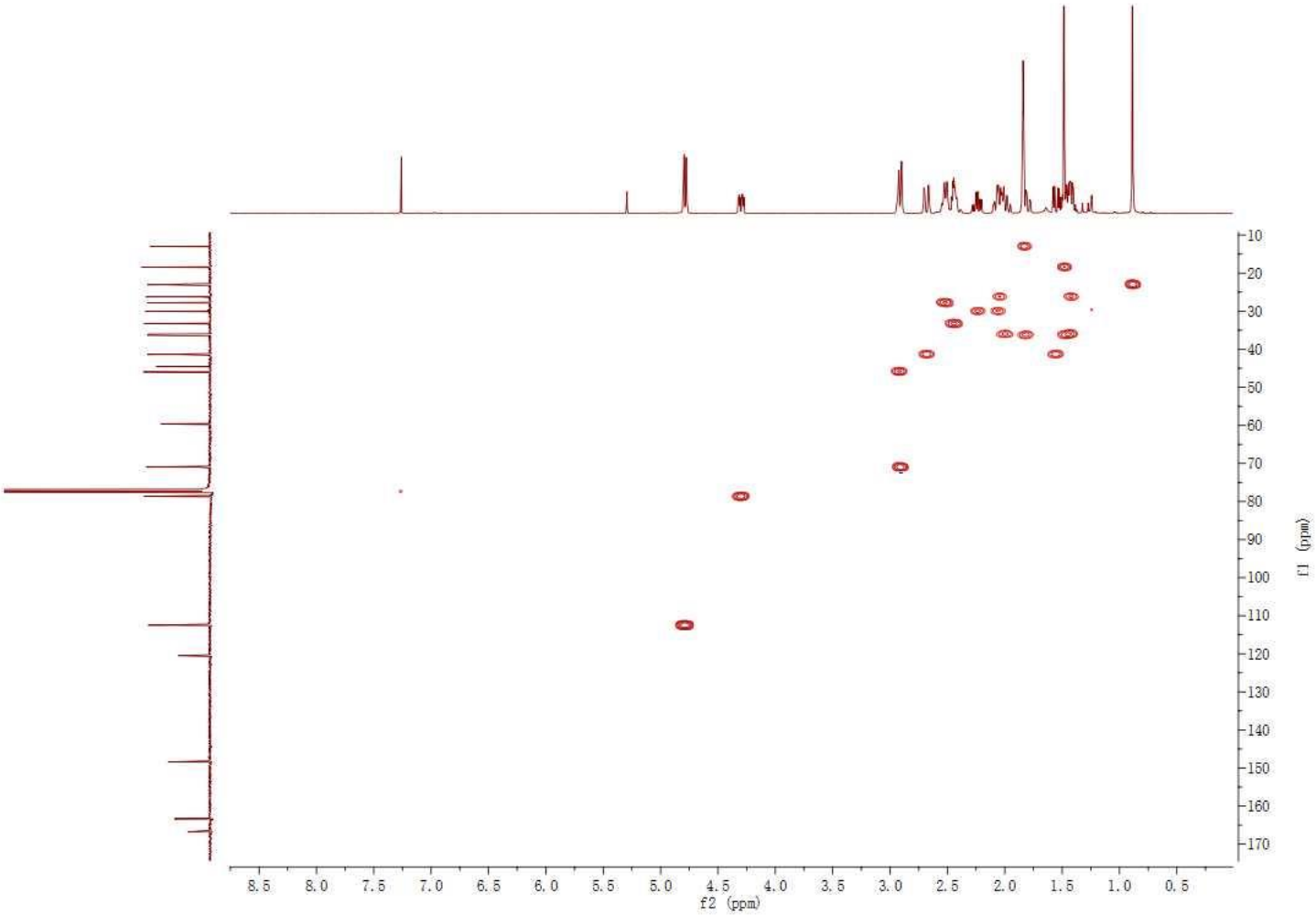

Figure **S93**. HMBC spectrum of **12** (500 MHz, $CDCl_3$).

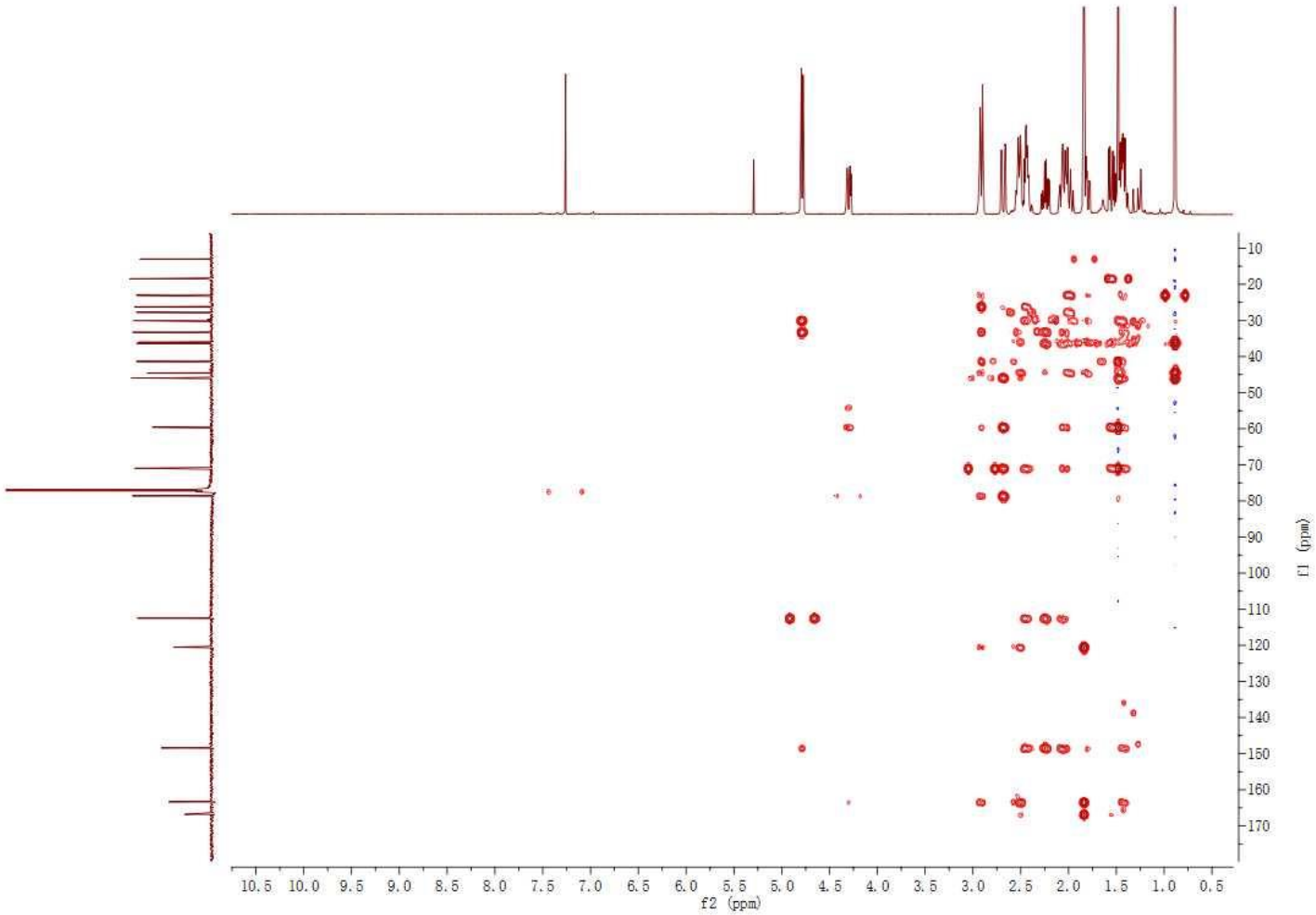

Figure **S94**. NOESY spectrum of **12** (500 MHz, $CDCl_3$).

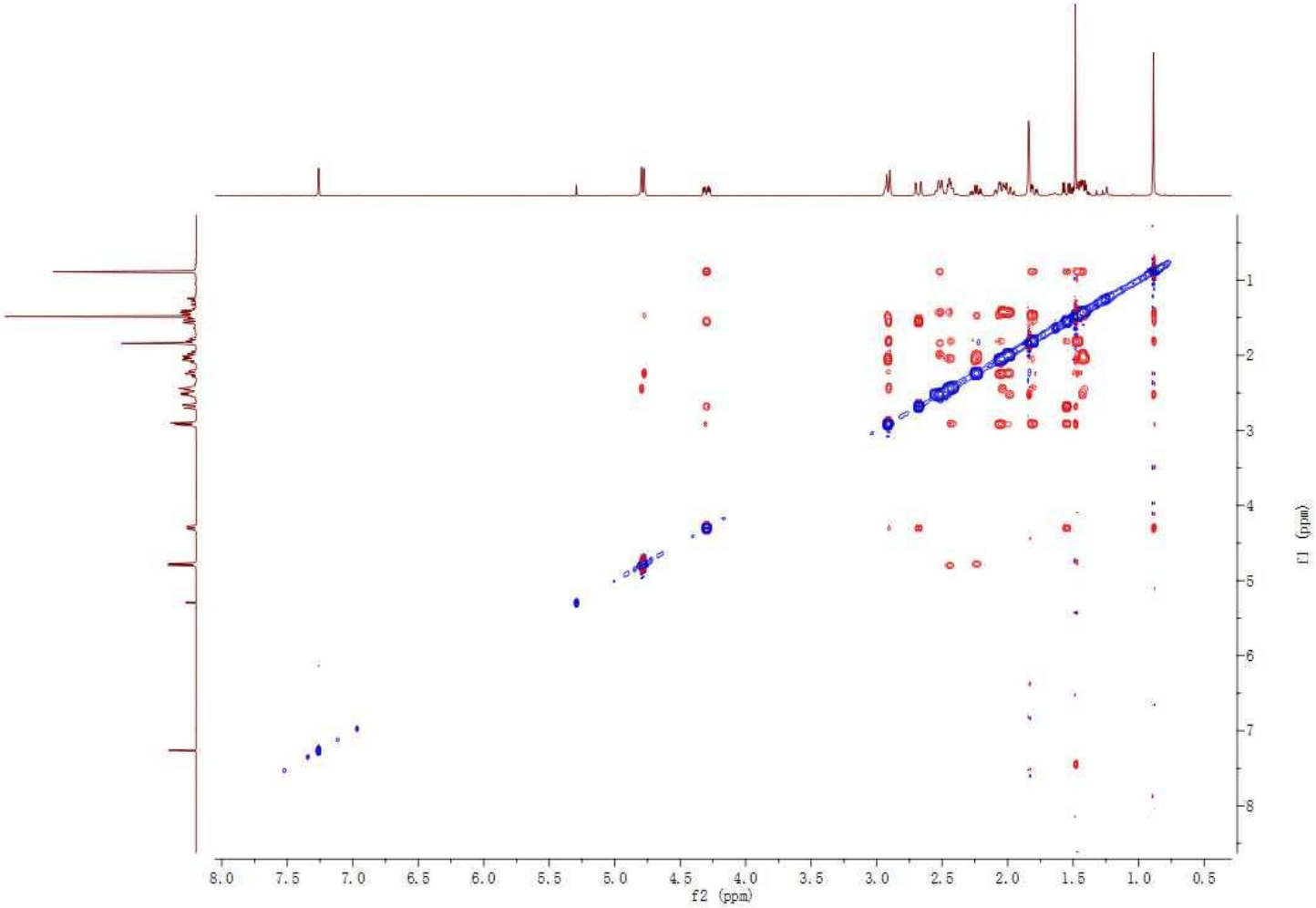

Figure **S95**. IR spectrum of **12**.

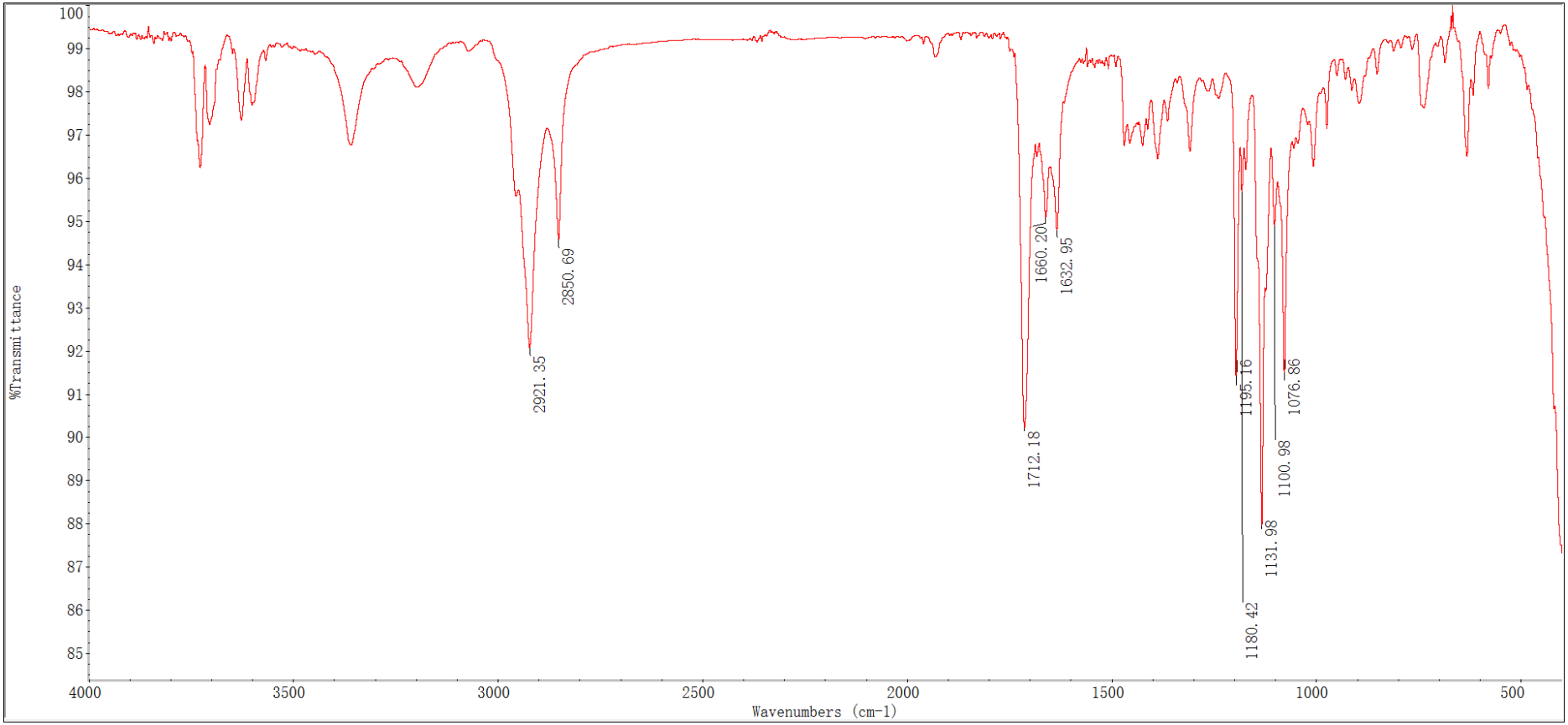

Figure **S96**. HREIMS spectrum of **12**.

```
LIST:  h16452-c1                                11-Nov-16  Elapse:  08:13.1      40
Samp:  21-H2h2a                                            Start :  15:16:55     41
Comm:  Finnigan/MAT95/70eV/R:10000
Mode:  EI +VE +LMR  BSCAN (EXP) UP HR NRM                  Study :  S/N: PT200712-01
Oper:  SIMM.CAS      Client:  S/N: PT001263                Inlet :
Limt:  (   0 )     .     .
    :  ( 413 )  C22.H100.O3
Peak:  1000.00  mmu     R+D:  -2.0 > 60.0
Data:  CMASS : converted
```

Mass		Intensity (51000)	%RA	%RIC	Delta (mmu)	R+D	Composition
55.06495	*	199752	7.48	1.05			
65.03870	*	77590	2.91	0.41	0.4	3.5	C5.H5
67.05405	*	194863	7.30	1.03	0.7	2.5	C5.H7
69.07026	*	60372	2.26	0.32	0.2	1.5	C5.H9
77.03723	*	196351	7.35	1.03	1.9	4.5	C6.H5
79.05185	*	364713	13.66	1.92	2.9	3.5	C6.H7
81.06721	*	169141	6.34	0.89			
91.05430	*	413818	15.50	2.18	0.5	4.5	C7.H7
92.05998	*	58175	2.18	0.31	2.6	4.0	C7.H8
93.07026	*	309584	11.60	1.63	0.2	3.5	C7.H9
95.04958	*	125917	4.72	0.66	0.1	3.5	C6.H7.O
95.08622	*	146891	5.50	0.77	-0.1	2.5	C7.H11
96.05609	*	53853	2.02	0.28	1.4	3.0	C6.H8.O
97.06503	*	97998	3.67	0.52	0.3	2.5	C6.H9.O
105.0682	*	233694	8.75	1.23	2.3	4.5	C8.H9
106.0749	*	56049	2.10	0.30			
107.0836	*	356776	13.36	1.88	2.5	3.5	C8.H11
108.0890	*	54774	2.05	0.29			
109.0628	*	56333	2.11	0.30	2.6	3.5	C7.H9.O
109.0992	*	70859	2.65	0.37	2.5	2.5	C8.H13
117.0701	*	62143	2.33	0.33	0.3	5.5	C9.H9
119.0864	*	195430	7.32	1.03	-0.4	4.5	C9.H11
121.1023	*	132932	4.98	0.70	-0.5	3.5	C9.H13
124.0516	*	317379	11.89	1.67	0.8	4.0	C7.H8.O2
125.0955	*	108414	4.06	0.57	1.1	2.5	C8.H13.O
131.0860	*	75819	2.84	0.40	0.1	5.5	C10.H11
133.1009	*	121240	4.54	0.64	0.8	4.5	C10.H13
135.0808	*	721489	27.03	3.80	0.2	4.5	C9.H11.O
135.1172	*	109052	4.08	0.57	0.2	3.5	C10.H15
136.0859	*	74898	2.81	0.39	3.0	4.0	C9.H12.O
137.0967	*	85172	3.19	0.45	-0.1	3.5	C9.H13.O
145.1024	*	91692	3.43	0.48	-0.7	5.5	C11.H13
147.0809	*	73339	2.75	0.39	0.1	5.5	C10.H11.O
148.0876	*	55270	2.07	0.29	1.2	5.0	C10.H12.O
149.0962	*	71071	2.66	0.37	0.4	4.5	C10.H13.O
159.1176	*	85102	3.19	0.45	-0.2	5.5	C12.H15
161.0966	*	137041	5.13	0.72	0.0	5.5	C11.H13.O
162.0676	*	55482	2.08	0.29	0.5	6.0	C10.H10.O2
163.0759	*	2669697	100.00	14.07	0.0	5.5	C10.H11.O2
164.0814	*	614138	23.00	3.24	2.4	5.0	C10.H12.O2
165.0897	*	234331	8.78	1.24	1.8	4.5	C10.H13.O2
176.0840	*	77165	2.89	0.41	-0.3	6.0	C11.H12.O2
177.0924	*	171337	6.42	0.90	-0.9	5.5	C11.H13.O2
178.0987	*	51656	1.93	0.27	0.7	5.0	C11.H14.O2
179.1074	*	65119	2.44	0.34	-0.2	4.5	C11.H15.O2
185.1328	*	55057	2.06	0.29	0.2	6.5	C14.H17
187.1112	*	61931	2.32	0.33	1.1	6.5	C13.H15.O
215.1432	*	53498	2.00	0.28	0.4	6.5	C15.H19.O
217.1228	*	82055	3.07	0.43	0.0	6.5	C14.H17.O2
218.1288	*	57183	2.14	0.30	1.9	6.0	C14.H18.O2
231.1745	*	55624	2.08	0.29	0.4	5.5	C16.H23.O
243.1395	*	60017	2.25	0.32	-1.0	7.5	C16.H19.O2
259.1683	*	92471	3.46	0.49	1.5	6.5	C17.H23.O2
316.2043	*	51089	1.91	0.27	-0.4	7.0	C20.H28.O3

Figure **S97**. ^{1}H NMR spectrum of (*S*)- and (*R*)-MTPA esters of **1** (400MHz, C_5D_5N).

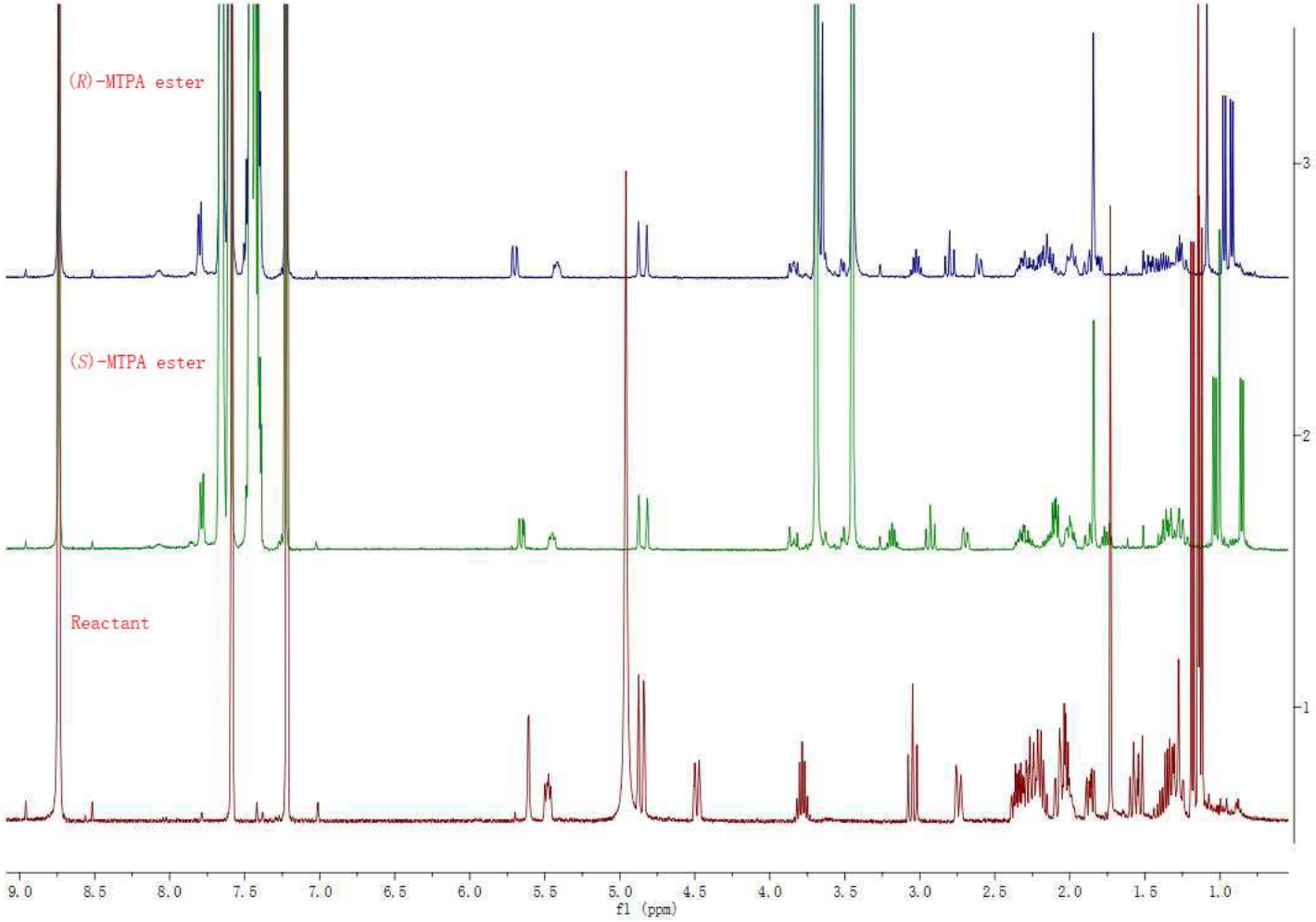

Figure **S98**. ^{1}H NMR spectrum of (*S*)- and (*R*)-MTPA esters of **5** (400MHz, C_5D_5N).

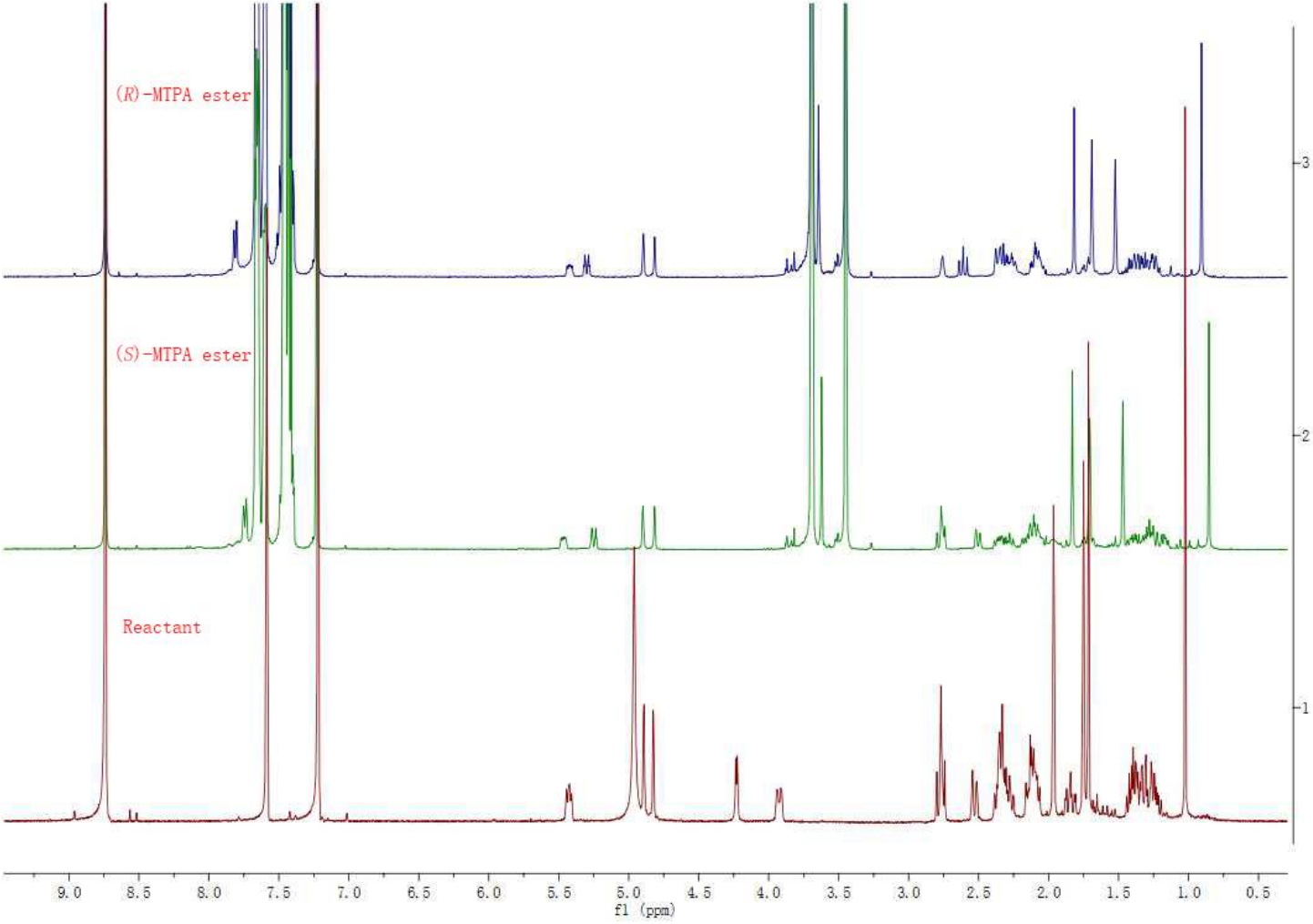

Table S1 ^{1}H NMR spectroscopic data for compounds **1–6** in $CDCl_3$ (δ in ppm, J in Hz).

NO.	**1**	**2**	**3**	**4**	**5**	**6**
1						
2a	1.31 m	1.29 m	1.36 m	1.31 m	1.38 m	1.37 m
2b	1.12 m	1.29 m	1.27 m	1.16 m	1.23 m	1.24 m
3a	2.06 m	2.10 m	2.09 m	2.06 m	2.07 m	2.08 m
3b	1.83 m	1.84 m	1.75 m	1.75 m	1.83 m	1.76 m
4						
5a	2.30 m	2.32 m	2.32 m	2.27 m	2.35 m	2.36 m
5b	1.98 m	2.00 m	1.95 m	1.93 m	2.11 m	2.10 m
6a	2.28 m	2.26 m	2.30 m	2.25 m	2.29 m	2.29 m
6b	1.97 m	1.98 m	1.96 m	1.95 m	2.10 m	2.10 m
7	5.33 m	5.39 m	5.37 m	5.35 dd (9.3 5.7)	5.36 dd (9.2 5.0)	5.37 t (7.0)
8						
9a	2.40 d (11.7)	2.22 m	2.21 m	2.27 m	2.31 m	2.40 m
9b	2.76 t (11.9)	3.41 t (11.8)	3.29 t (12.0)	3.39 t (12.1)	2.45 t (11.6)	2.43 m
10	4.16 dd (11.8 3.0)	5.43 dd (11.6 2.6)	5.35 dd (11.4 1.9)	4.17 d (9.9)	3.59 d (11.0)	3.73 d (8.3)
11					2.76 (s)	2.79 s
12						
13a	2.18 m	2.30 m	2.24 m	2.32 m	2.28 m	2.31 m
13b	2.18 m	2.21 m	2.40 m	2.23 m	2.28 m	2.31 m
14a	1.47 m	1.81 m	1.57 m	1.56 m	1.27 m	1.28 m

14b	1.83 m	1.51 m	1.81 m	1.79 m	1.37 m	1.40 m
15	1.07 s	1.02 s	1.01 s	1.12 s	0.90 s	0.91 s
16a	4.64 s	4.74 s	4.67 s	4.65 s	4.68 s	4.67 s
16b	4.71 s	4.66 s	4.75 s	4.73 s	4.77 s	4.76 s
17	1.71 s	1.77 s	1.82 s	1.73 s	1.72 s	1.73 s
18	3.34 hept (6.8)					
19	1.09 d (6.9)	1.41 s	1.52 s	1.49 s	1.75 s	1.83 s
20	1.05 d (6.9)	1.40 s	1.58 s	1.53 s	1.76 s	3.76 d (11.7) 4.17 d (11.4)
10-OAc		2.06 s	2.09 s	-	-	

Table S2 ^{1}H NMR spectroscopic data for compounds **7–12** in $CDCl_3$ (δ in ppm, J in Hz)

NO.	**7**	**8**	**9**	**10**	**11**	**12**
1						
2a	1.47 m	1.07 m	1.33 m	1.31 m	1.30 m	1.81 m
2b	1.37 m	1.27 m	1.33 m	1.31 m	1.43 m	1.46 m
3a	1.95 m	2.21 m	2.09 m	2.07 m	2.08 m	2.06 m
3b	1.95 m	1.75 m	1.86 m	2.07 m	2.08 m	2.24 td (13.3 5.5)
4						
5a	2.23 m	2.37 m	2.28 m	2.37 m	2.38 m	2.44 m
5b	2.23 m	2.04 m	2.21 m	2.19 m	2.20 m	
6a	2.20 m	2.27 m	2.24 m	2.18 m	2.19 m	2.04 m
6b	2.20 m	2.04 m	2.10 m	2.18 m	2.19 m	1.42 m

7	5.34 t (7.0)	5.35 dd (9.1 5.1)	5.32 m	5.40 d (7.2)	5.44 d (6.8)	2.91 m
8						
9a	2.24 m	2.56 t (11.8)	2.28 m	2.57 m	2.56 d (7.9)	1.55 dd (16.1 4.5)
9b	2.36 d (9.7)	2.20 m	2.42 t (12.0)	2.01 m	2.04 m	2.68 dd (16.0 2.5)
10	3.80 dd (11.9 3.3)	3.83 d (11.4)	3.76 dd (11.4 3.1)	3.91 m	4.00 m	4.30 ddd (12.5 4.5 2.6)
11	2.97 d (1.4)	2.20 m	2.24 m	2.11 m	3.10 m	2.91 d (9.7)
12				2.49 td (12.9 6.3)		
13a	5.44 d (1.5)	1.50 m	1.52 m	1.48 m	5.18 br s	2.52 m
13b		1.50 m	2.10 m	1.16 m		2.52 m
14a	1.89 m	1.60 m	1.72 m	1.62 m	1.94 d (12.8)	1.44 m
14b	2.10 m	1.60 m	1.20 m	2.15 m	2.70 d (15.1)	2.00 m
15	0.97 s	1.16 s	0.93 s	0.97 s	0.91 s	0.89 s
16a	4.70 s	4.66 s	4.67 s	4.63 s	4.63 s	4.78 s
16b	4.76 s	4.76 s	4.72 s	4.73 s	4.73 s	4.80 s
17	1.72 s	1.68 s	1.73 s	1.60 s	1.62 s	1.48 s
18	2.61 dt (13.2 6.6)					
19	1.12 d (6.8)	1.33 s	1.40 s	1.15 s	1.32 s	1.84 s
20	1.06 d (6.8)	1.41 s	1.42 s	1.26 s	1.31 s	
10-OAc		2.06 s	2.09 s			