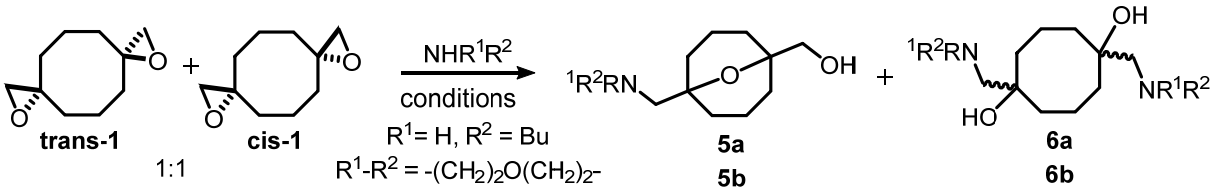
Straightforward synthetic approach to aminoalcohols with 9-oxabicyclo[3.3.1]nonane or cyclooctane core *via* nucleophilic ring-opening of spirocyclic bis(oxiranes)

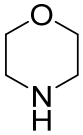
Olga V. Ryzhikova, Daiana V. Savchenkova, Sergey V. Kositov, Yuri K. Grishin, Olga A. Maloshitskaya, Kseniya N. Sedenkova and Elena B. Averina*

Supplementary information

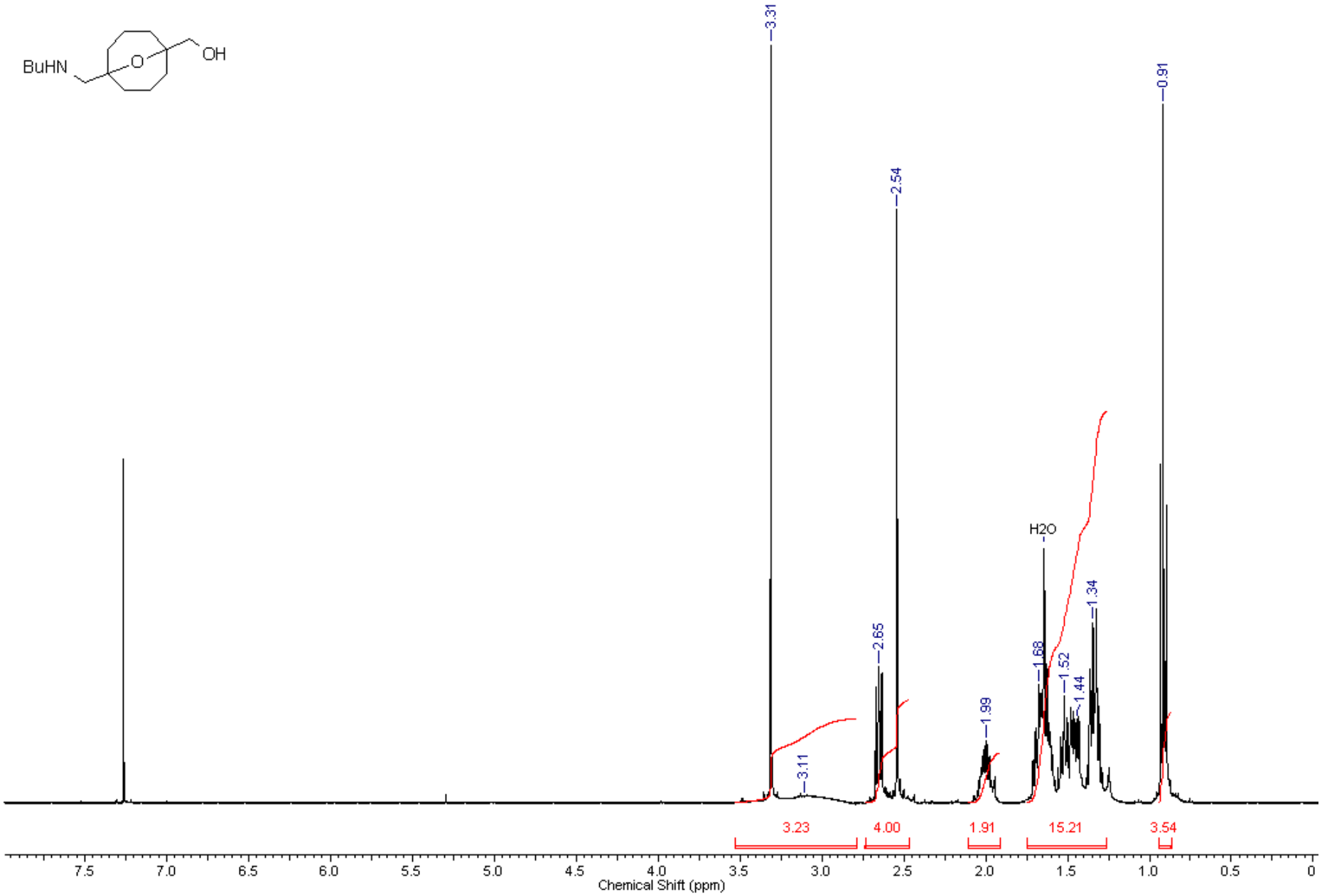
1. Optimization of ring-opening conditions 2
2. Copies of NMR spectra 3

Table S1. Optimization of ring-opening conditions

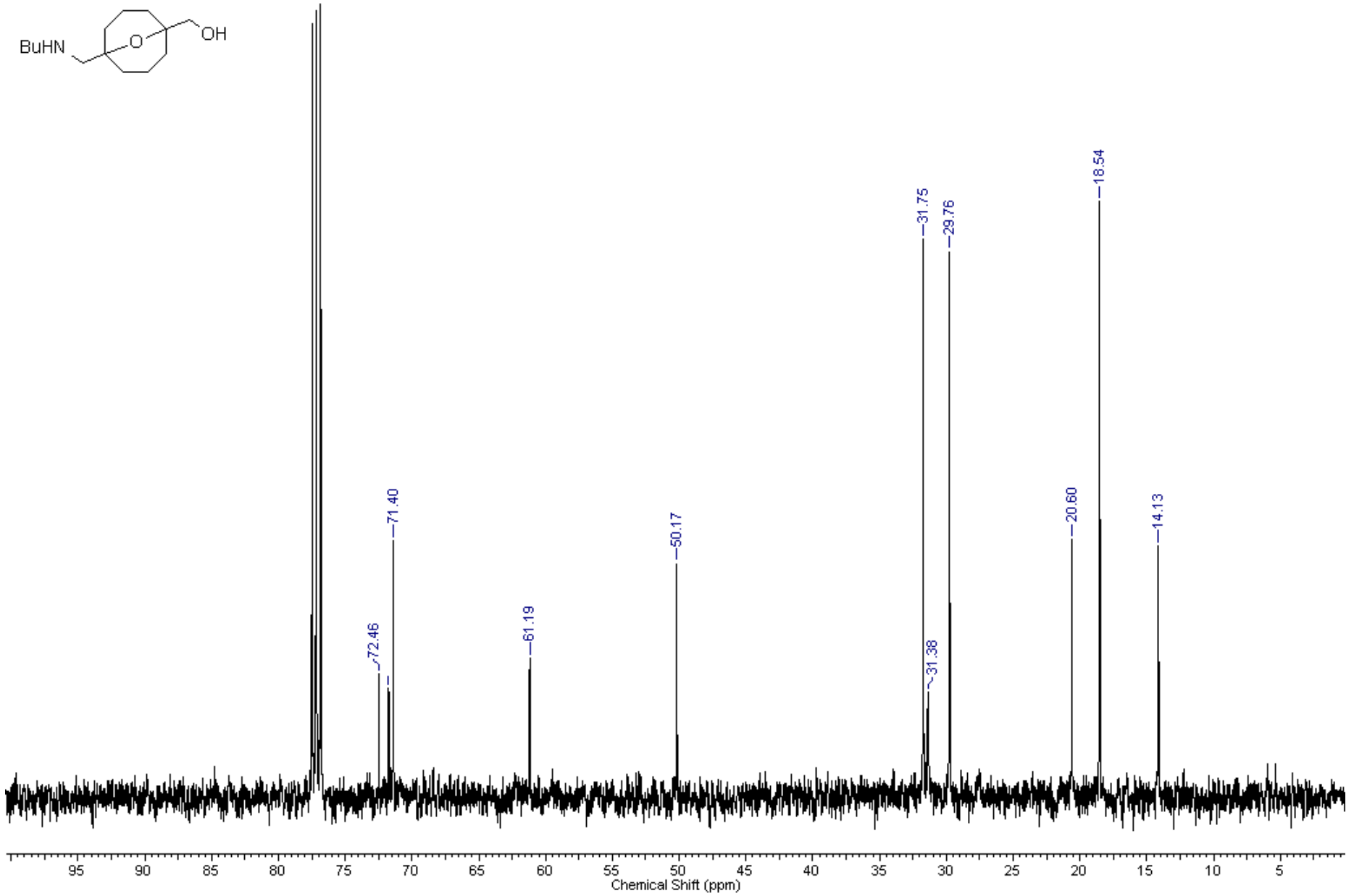


NHR^1R^2	**trans-1** : **cis-1**	equiv. NHR^1R^2	additive	equiv. additive	solvent	T, ˚C	t, h	conversion of **trans-1** and **cis-1**, %	products ratio, **5**:**6**
	1:1.0	2.2	-	-	toluene	48	27	20	1:0.9
	1:0.9	2.2	-	-	CH_3CN	80	5 10	9 16	1:1.2 1:1.3
	1:1.1	2.2	K_2CO_3	2	CH_3CN	80	24	decomposed	-
	1:0.9	2.2	$LiClO_4$	20	Et_2O	20	1 20	0 decomposed	- -
	1:1.2	2.2	$LiClO_4$	5	CH_3CN	20	5 10 72	29 47 91	1:1.0 1:1.1 1:1.4
	1:1.2	2.2	$LiClO_4$	1.2	CH_3CN	80	2 5 10	23 41 91	1:1.5 1:1.2 1:1.2
	1:1.2	2.2	$LiClO_4$	1.8	CH_3CN	80	2 5 10	9 88 100	1:1.1 1:1.1 1:1.4
	1:1.2	**2.2**	**$LiClO_4$**	**2.4**	**CH_3CN**	**80**	**5**	**100**	1:1.3
	1:1.2	2.2	$LiClO_4$	5	CH_3CN	80	10 22	100 decomposed	1:1.2 -
	1:0.8	2.2	$LiClO_4$	10	CH_3CN	80	24	100	1:0.6
	1:0.8	20	$LiClO_4$	20	CH_3CN	80	24	100	1:0.9
NH_2Bu	1:0.6	1.1*2	$LiClO_4$	5	CH_3CN	80	5	20	1:0.2
	1:0.6	1.1*2	$LiClO_4$	10	CH_3CN	80	5	65	1:0.4
	1:0.8	**1.1*2**	**$LiClO_4$**	**20**	**CH_3CN**	**80**	**5**	**100**	1:0.6

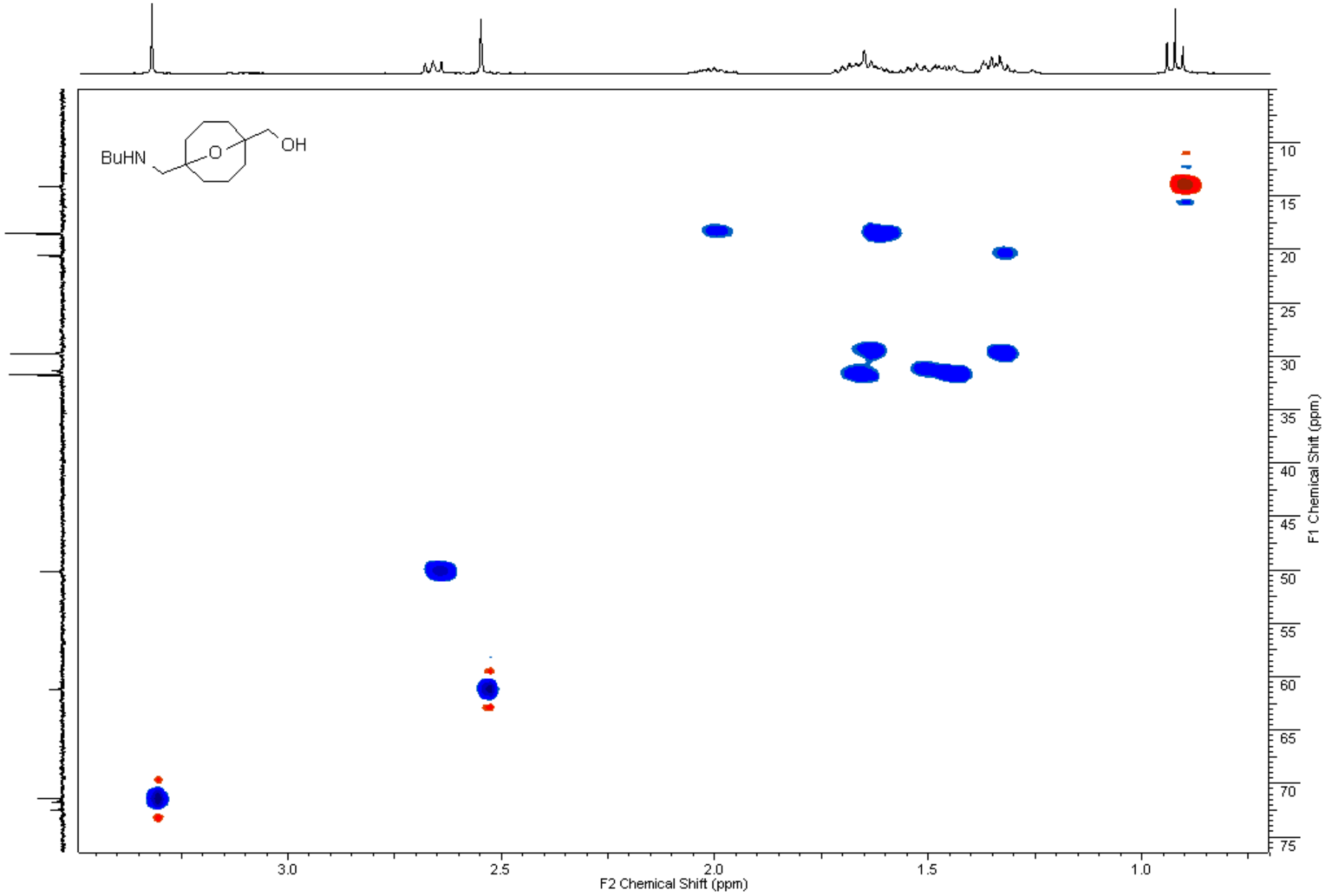
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5a**



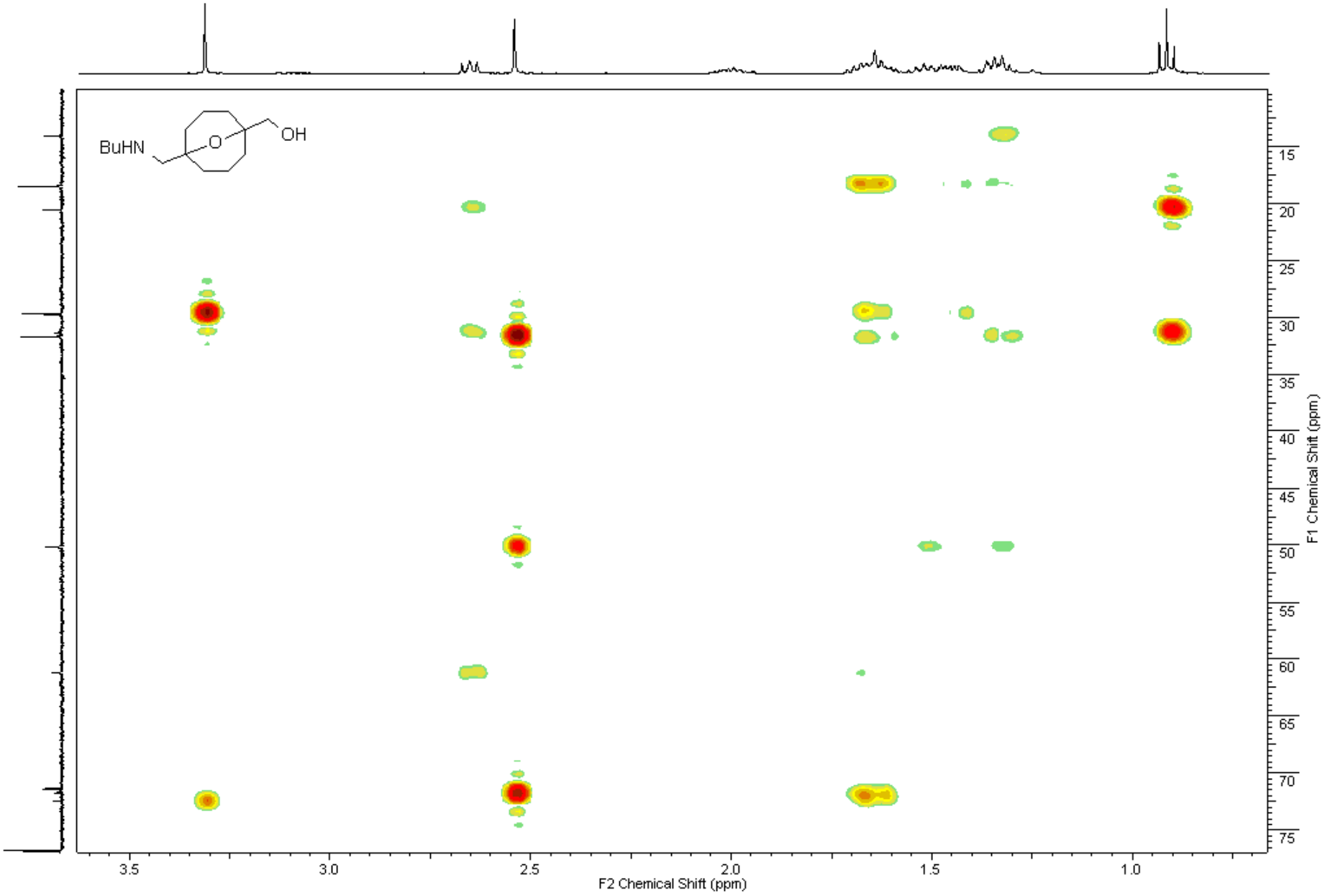
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5a**



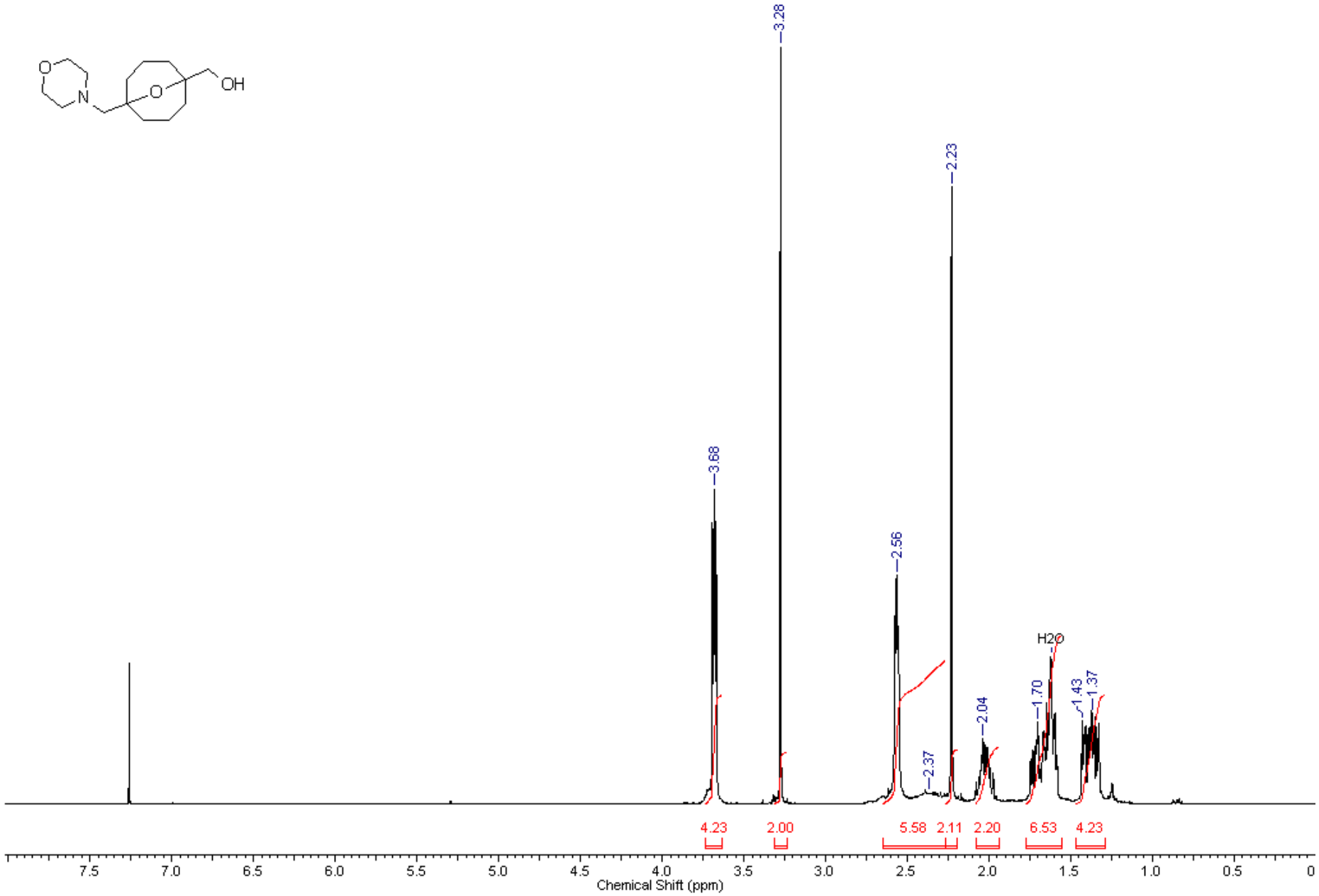
HSQC NMR spectrum of compound **5a**



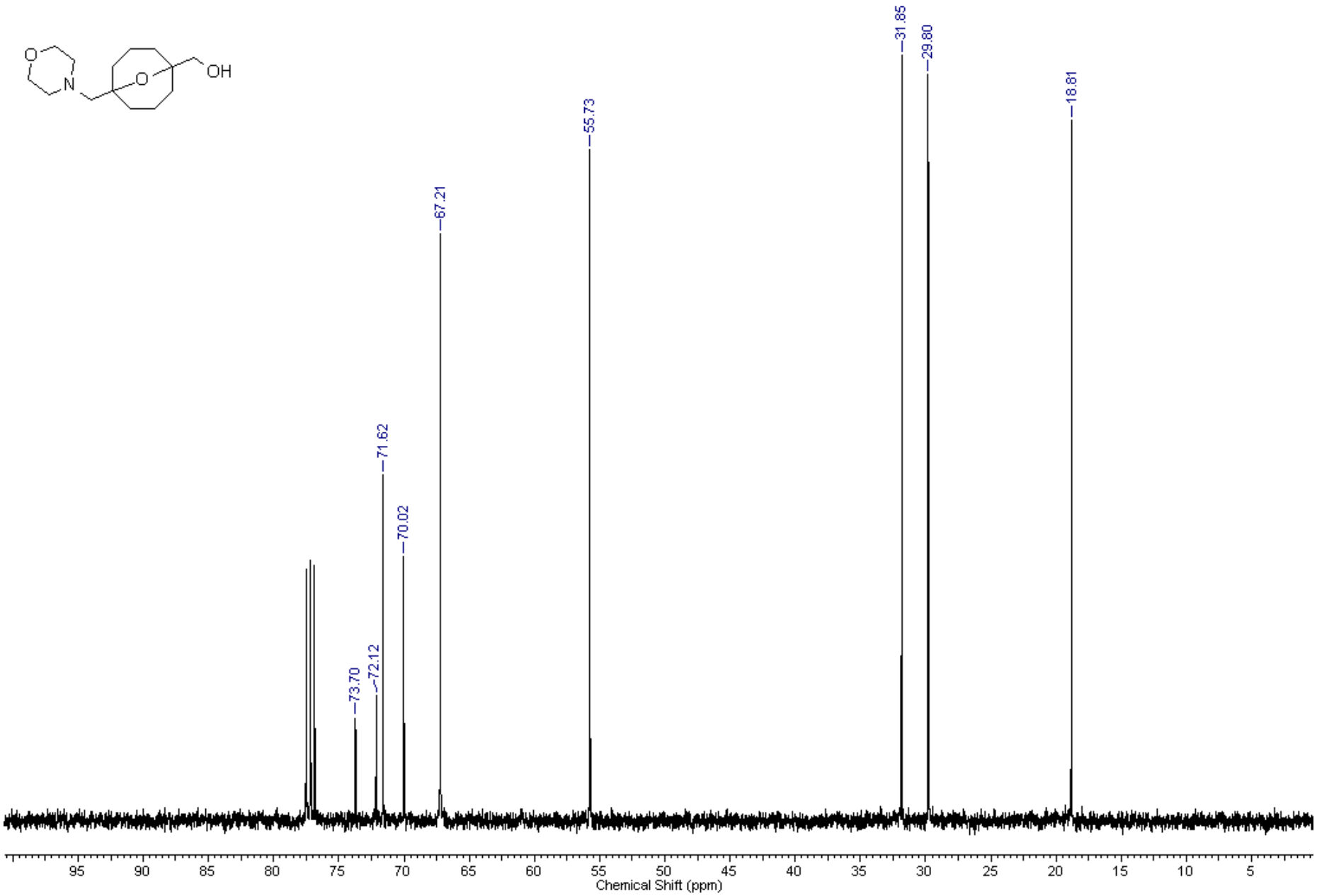
HMBC NMR spectrum of compound **5a**



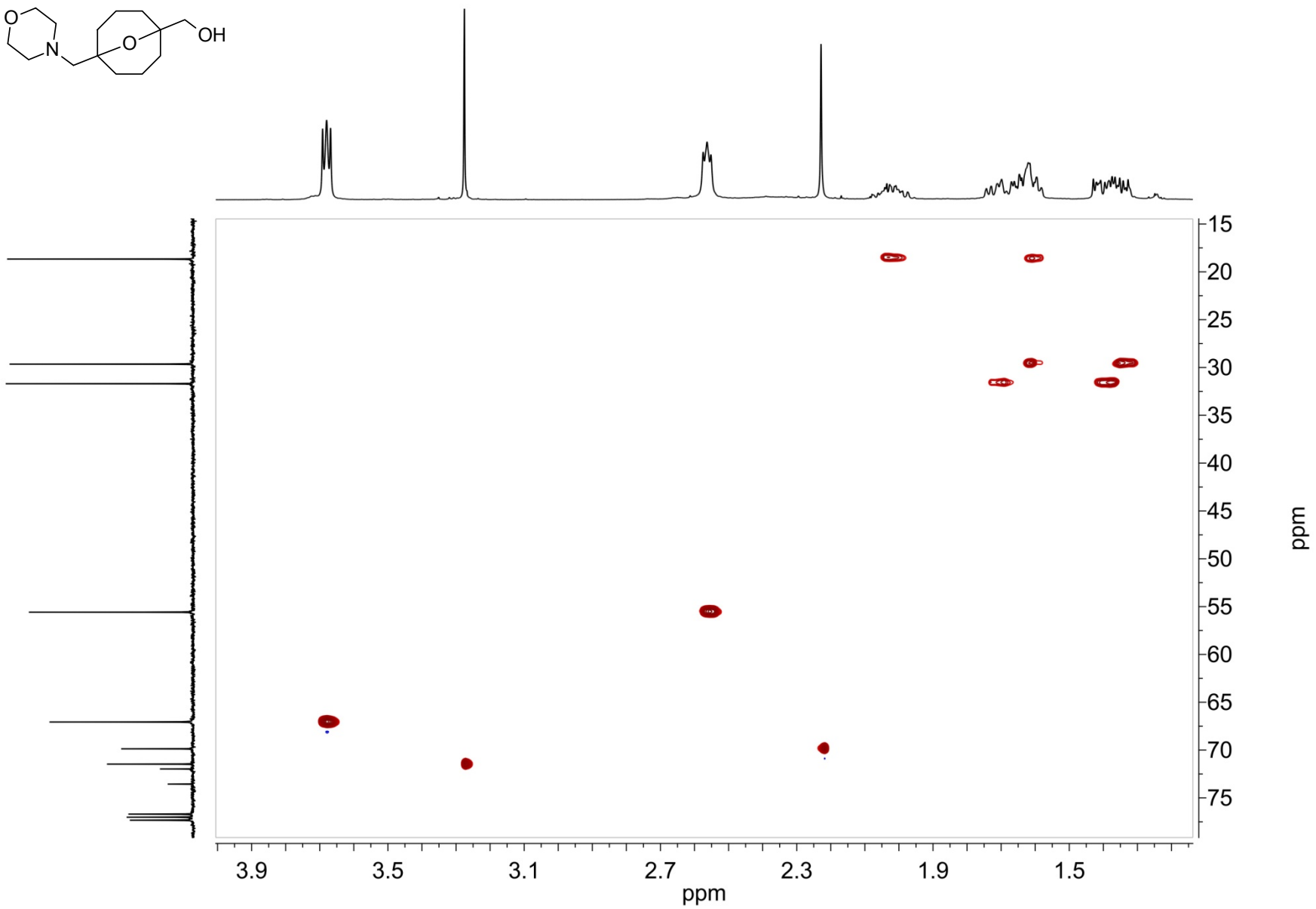
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5b**



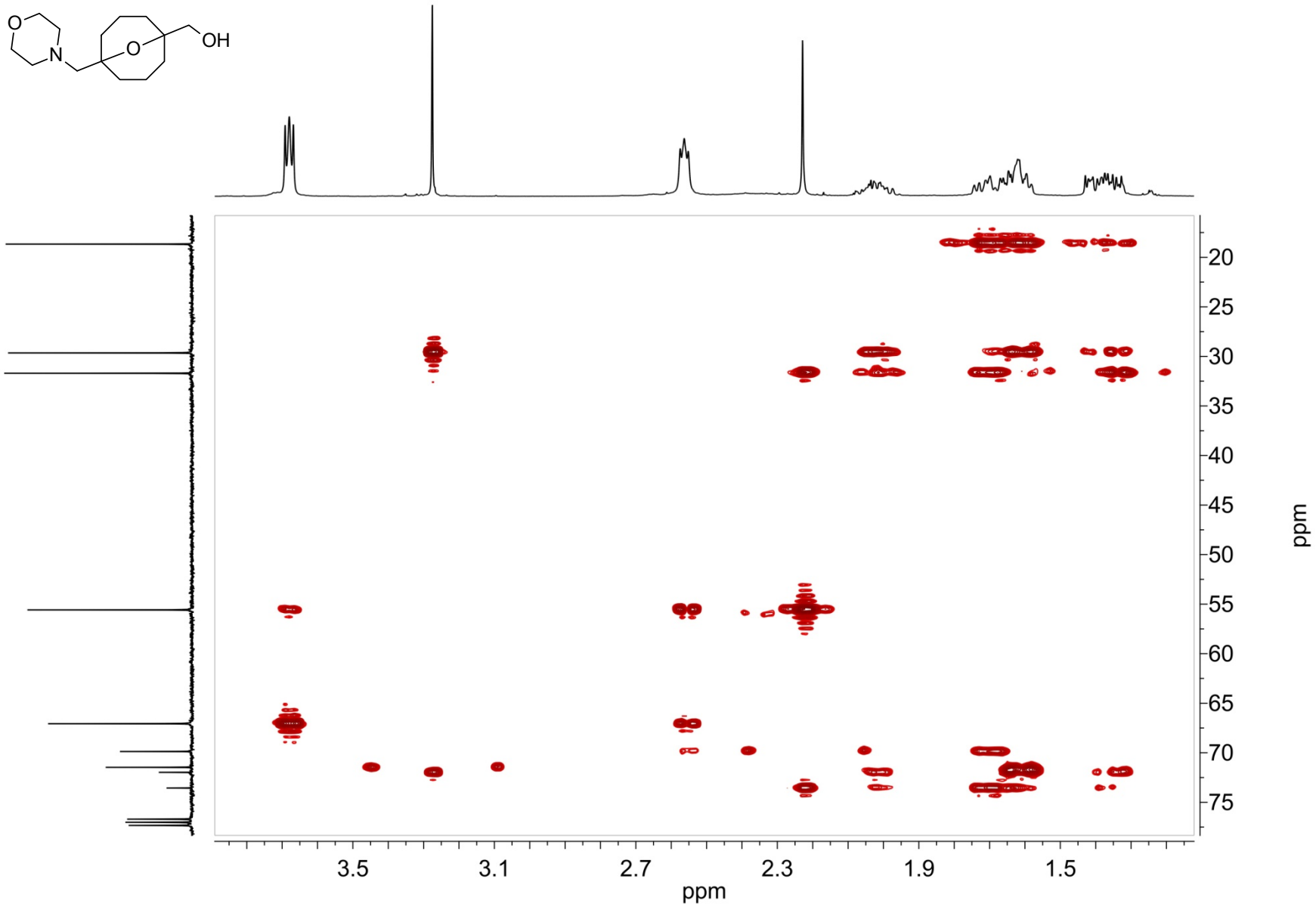
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5b**



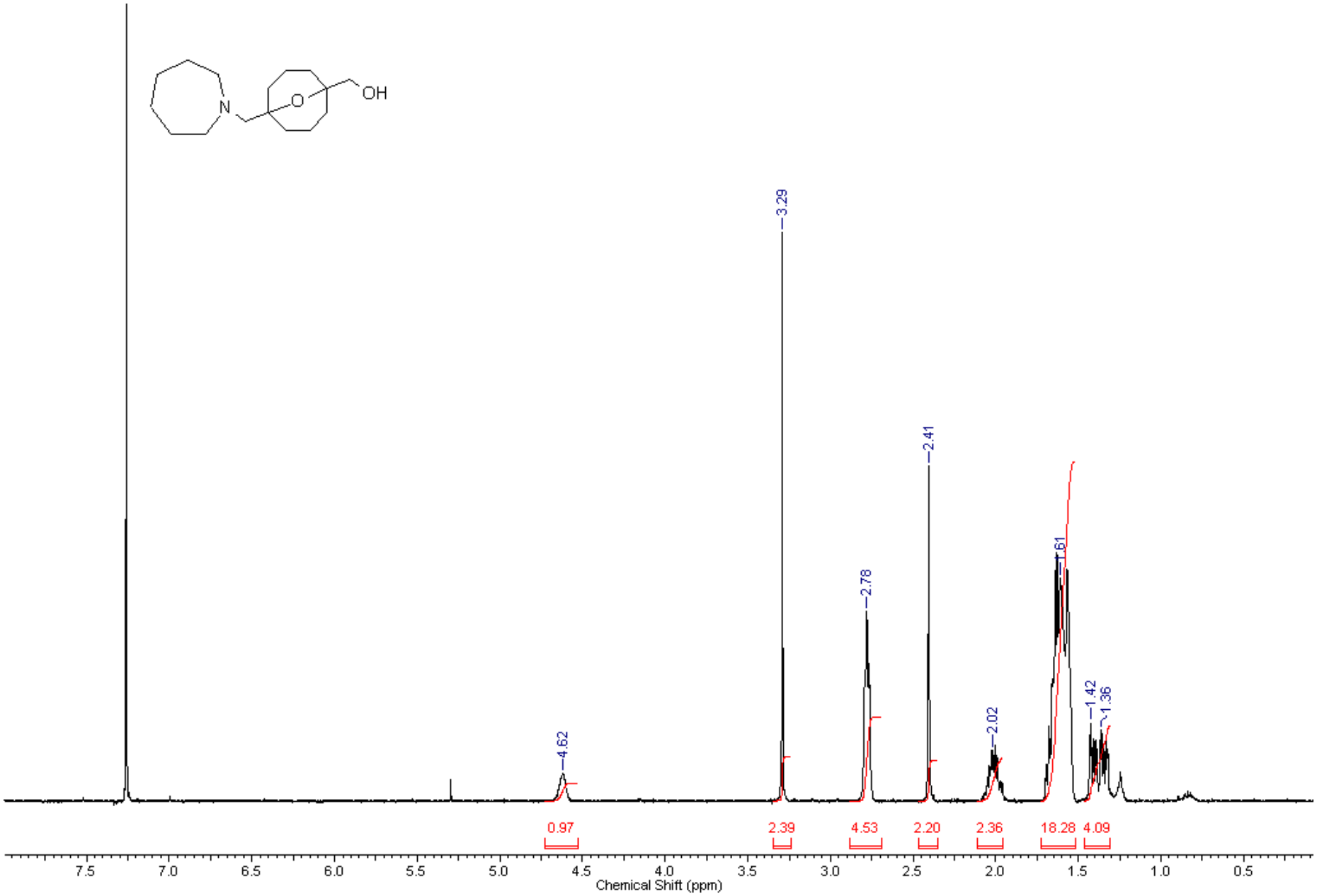
HSQC NMR spectrum of compound **5b**



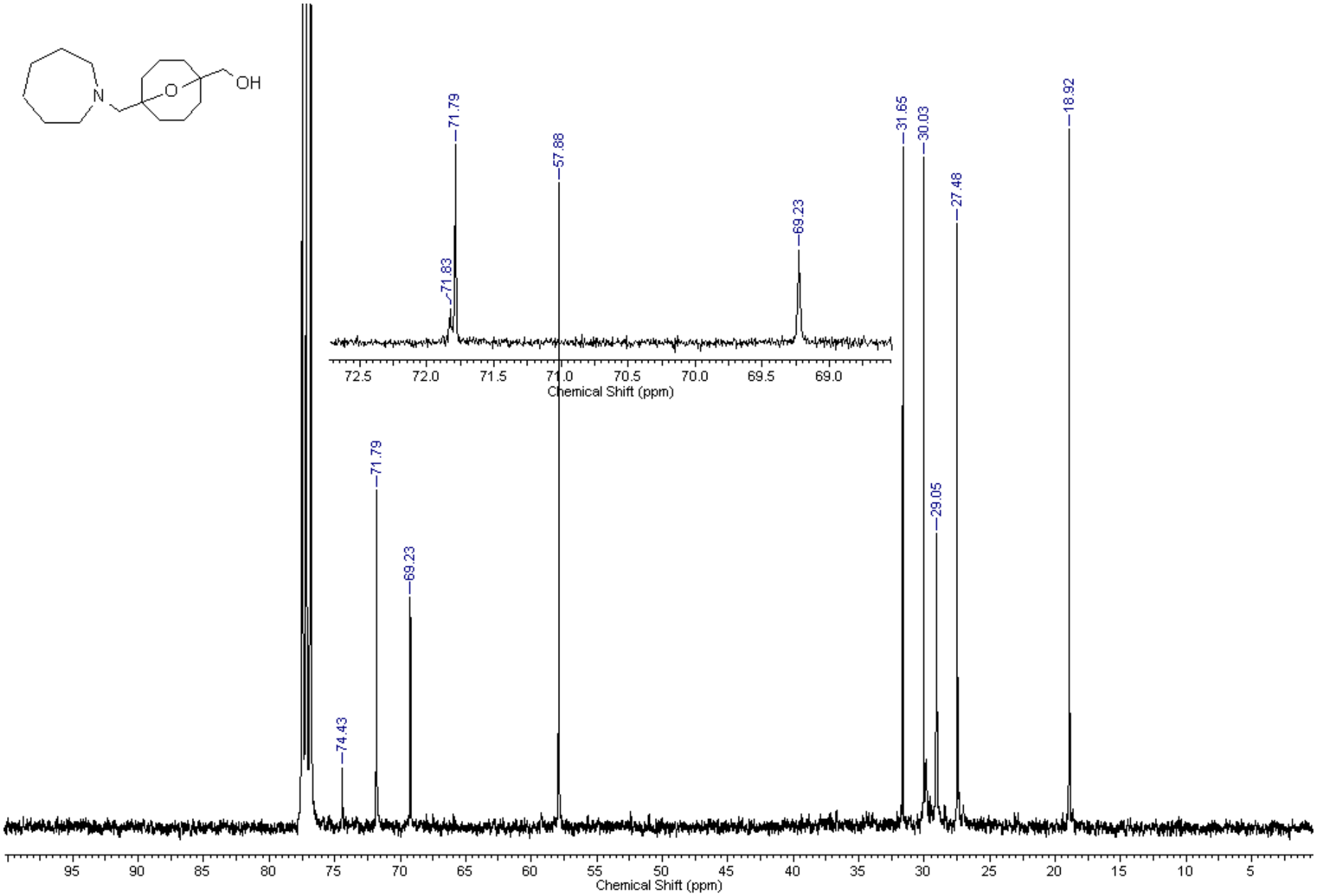
HMBC NMR spectrum of compound **5b**



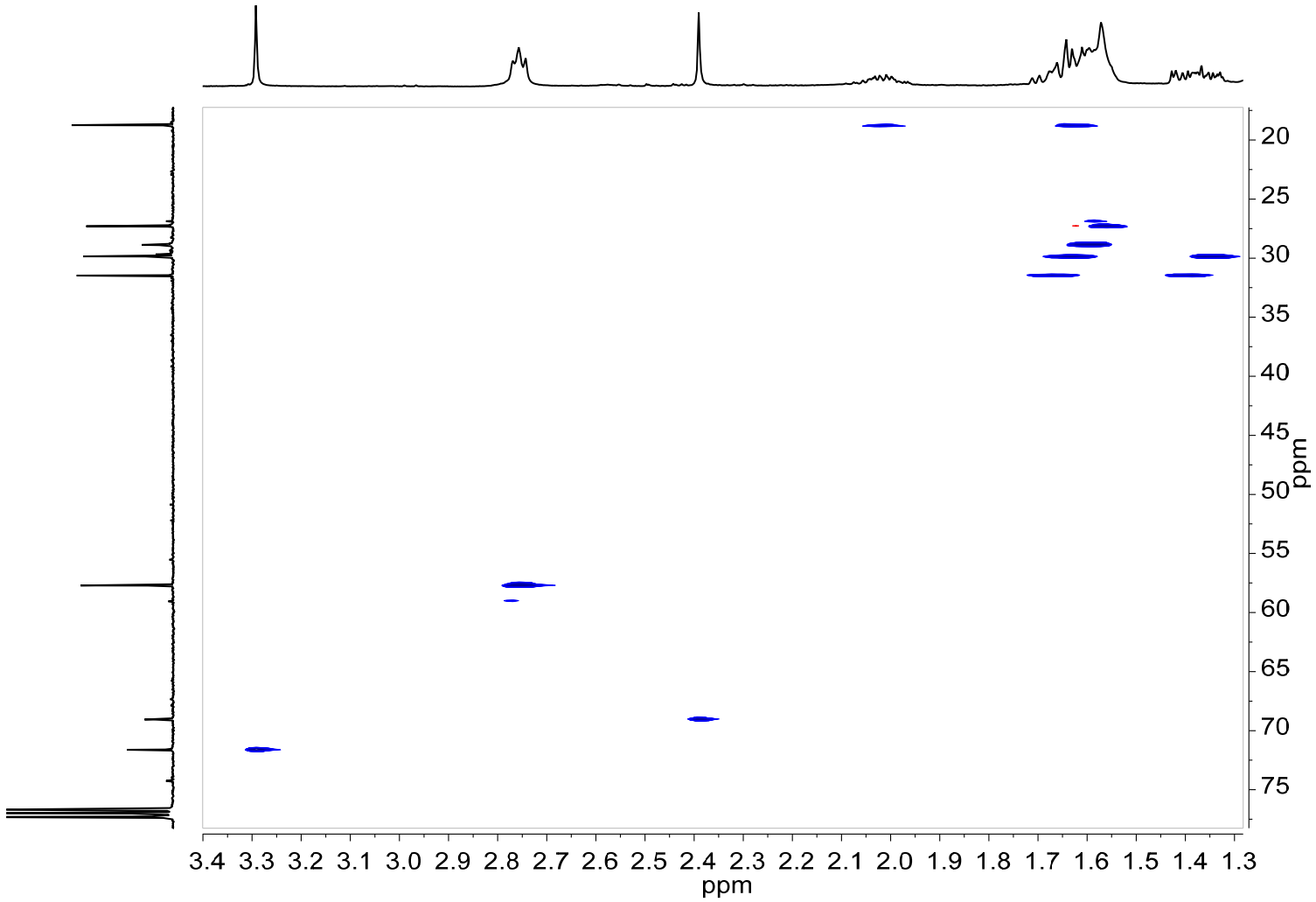
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5c**



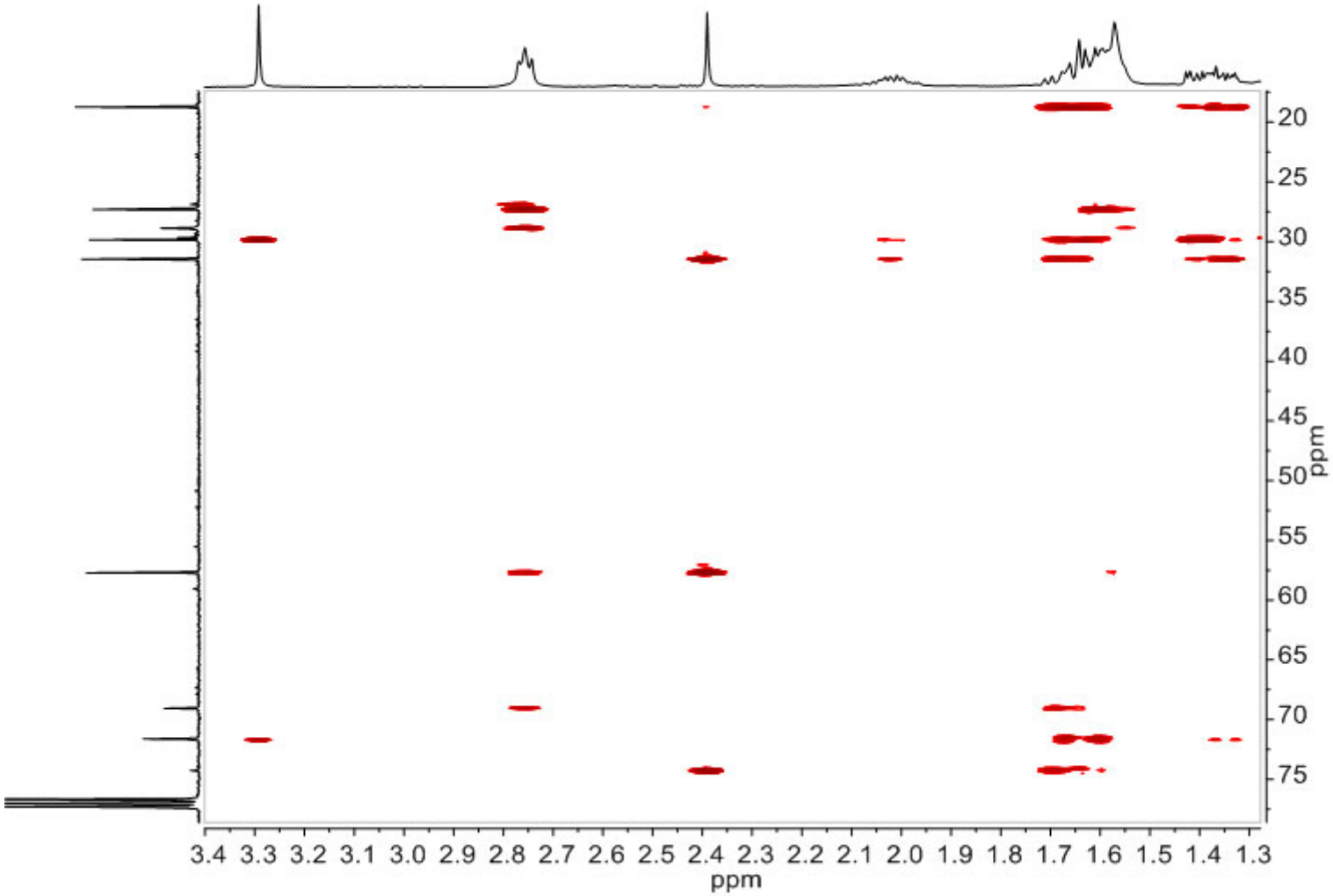
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5c**



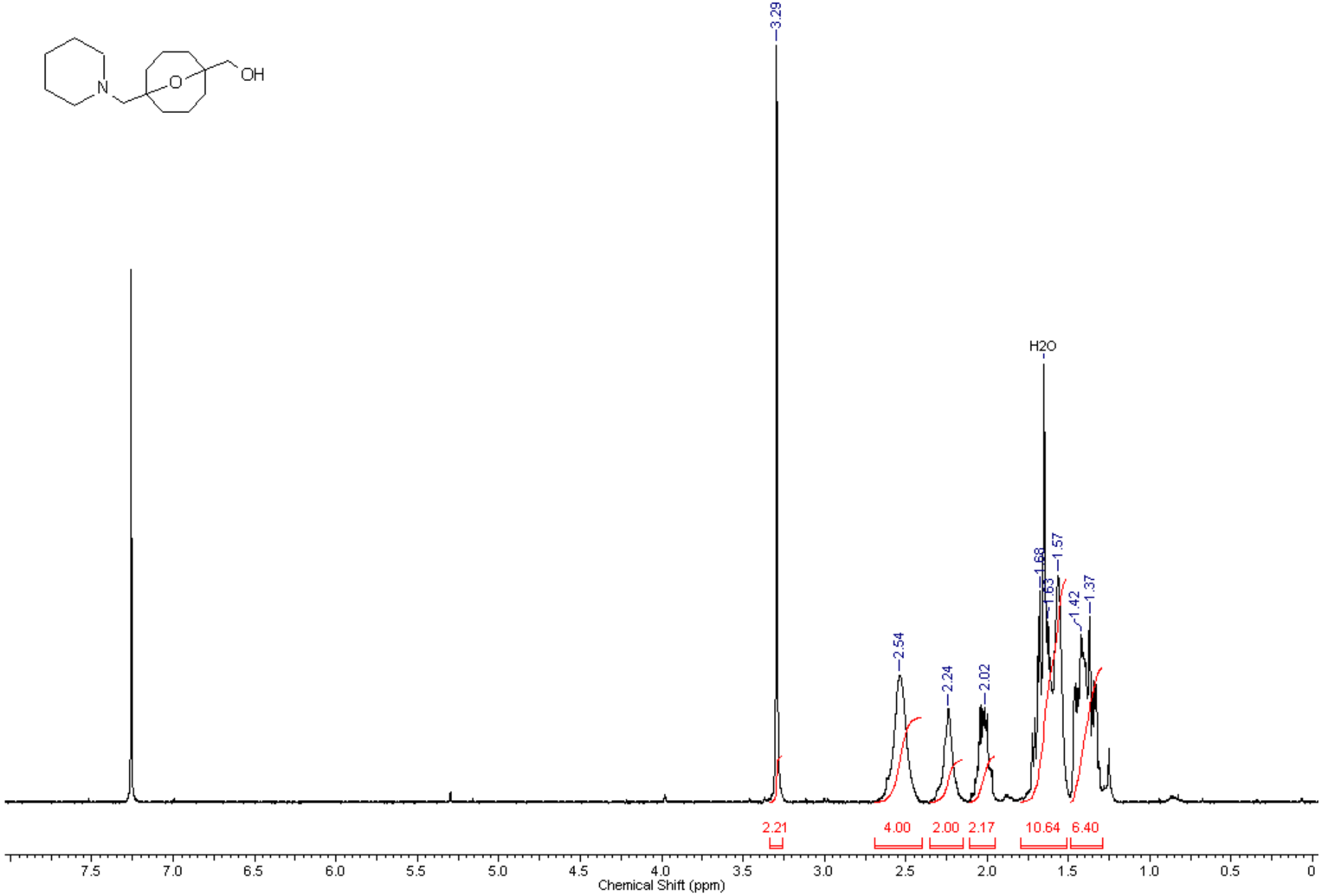
HSQC NMR spectrum of compound **5c**



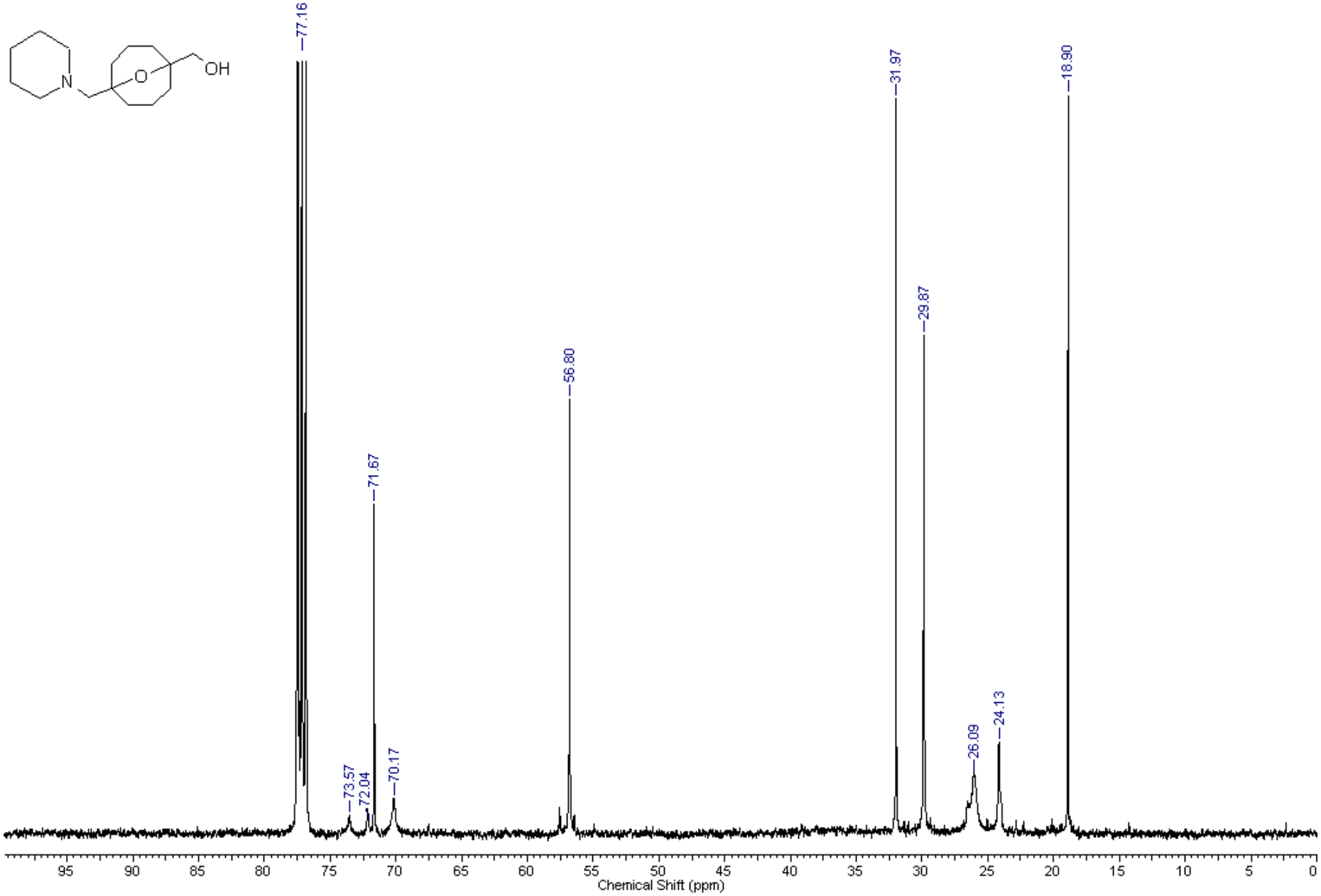
HMBC NMR spectrum of compound **5c**



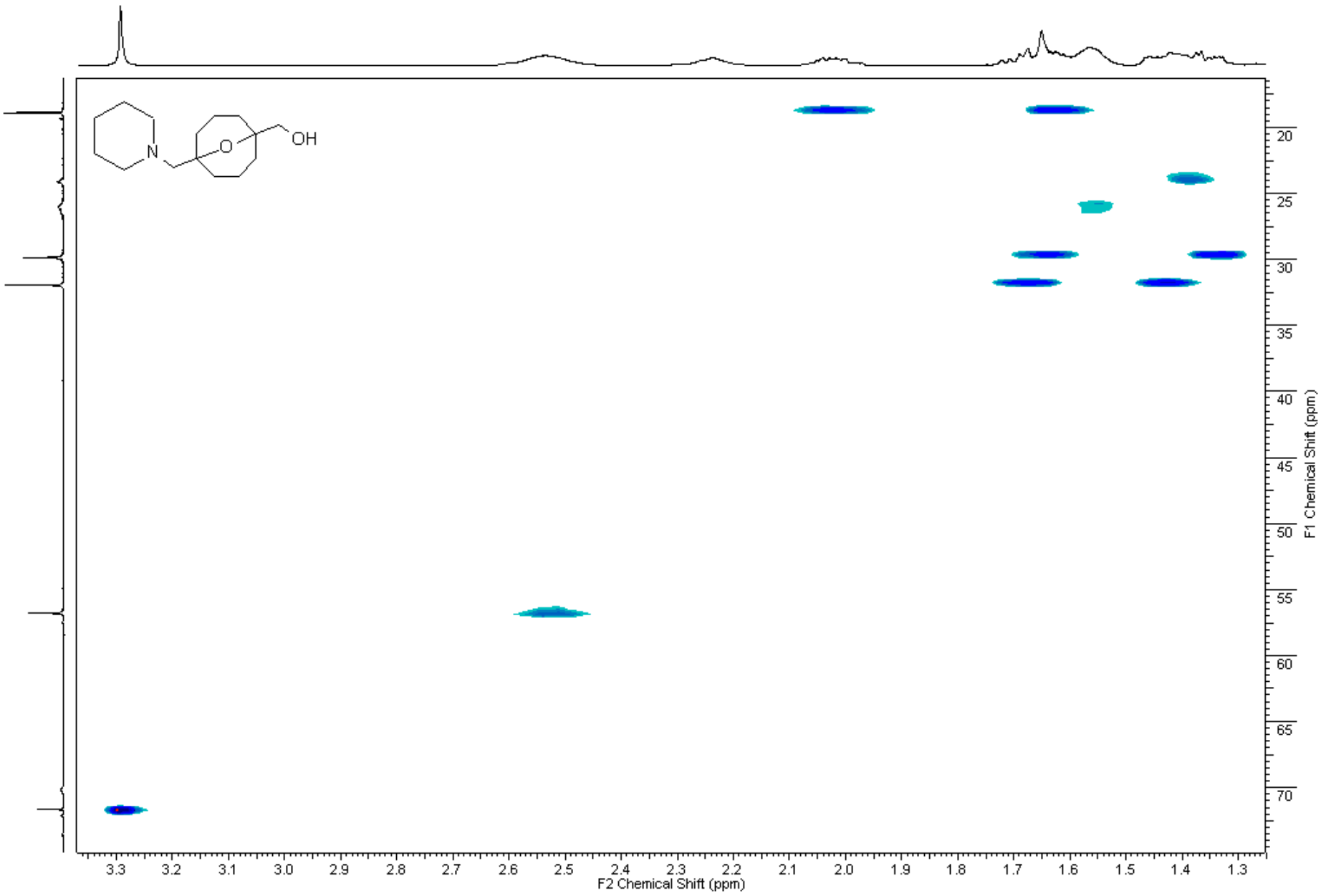
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5d**



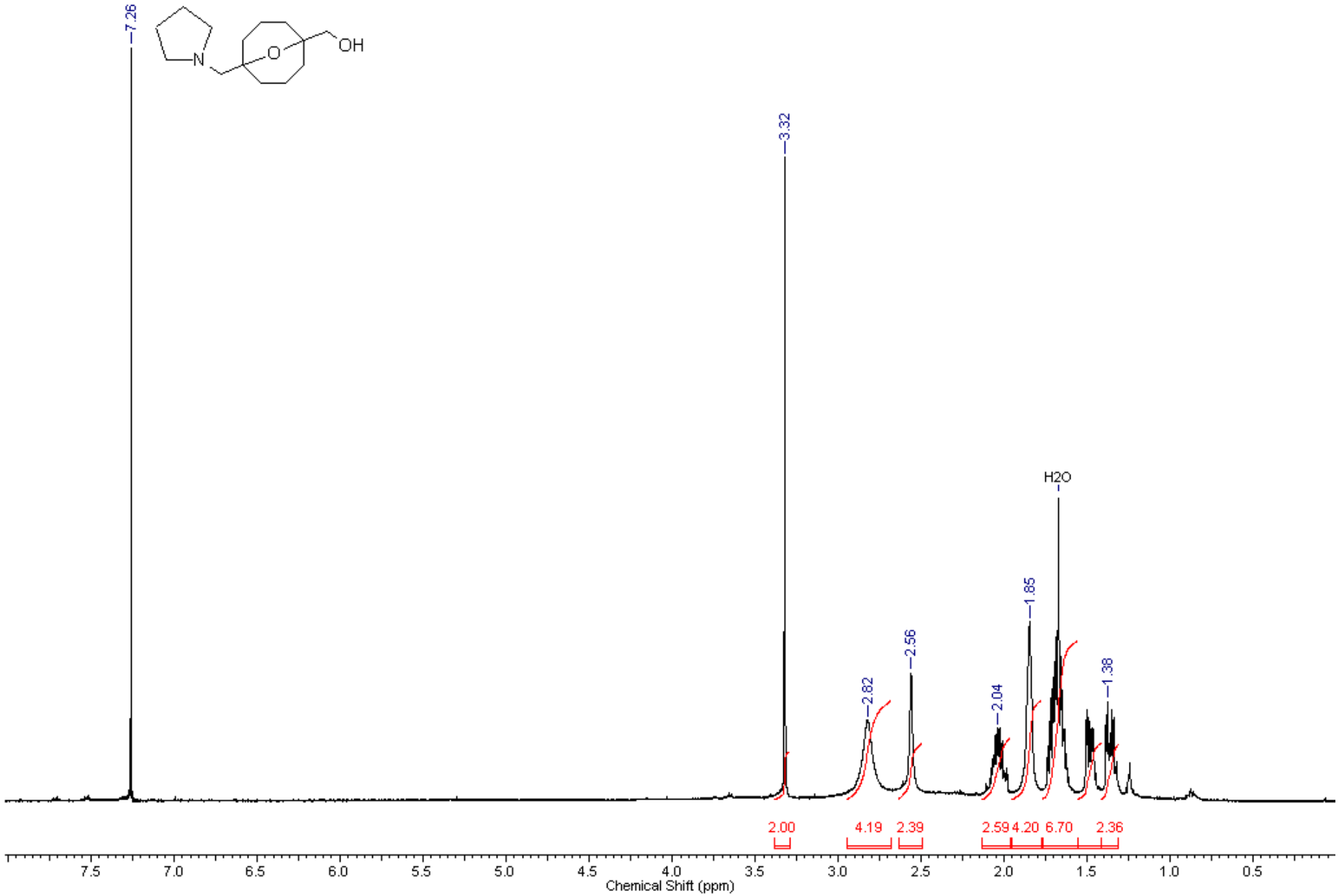
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5d**



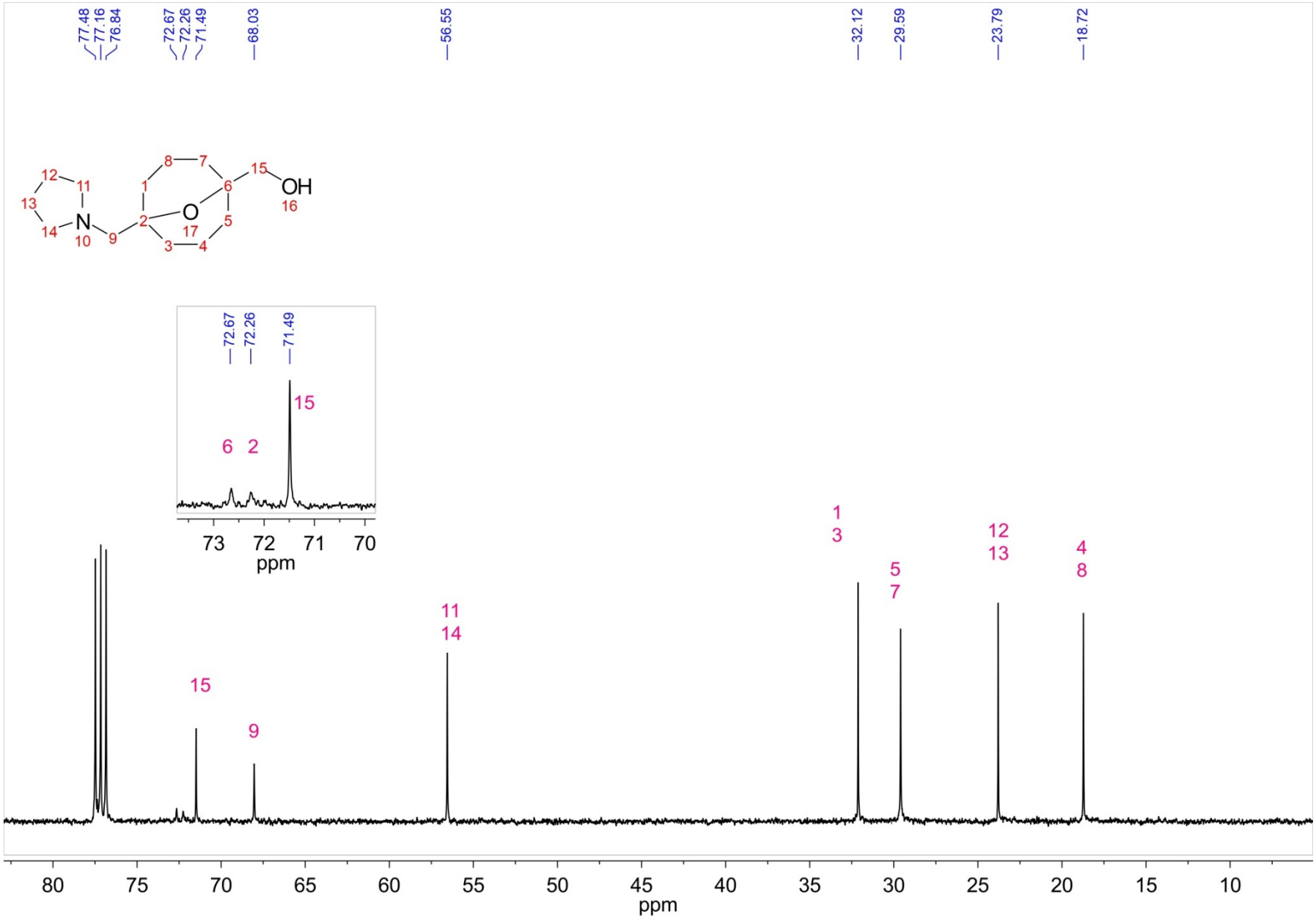
HSQC NMR spectrum of compound **5d**



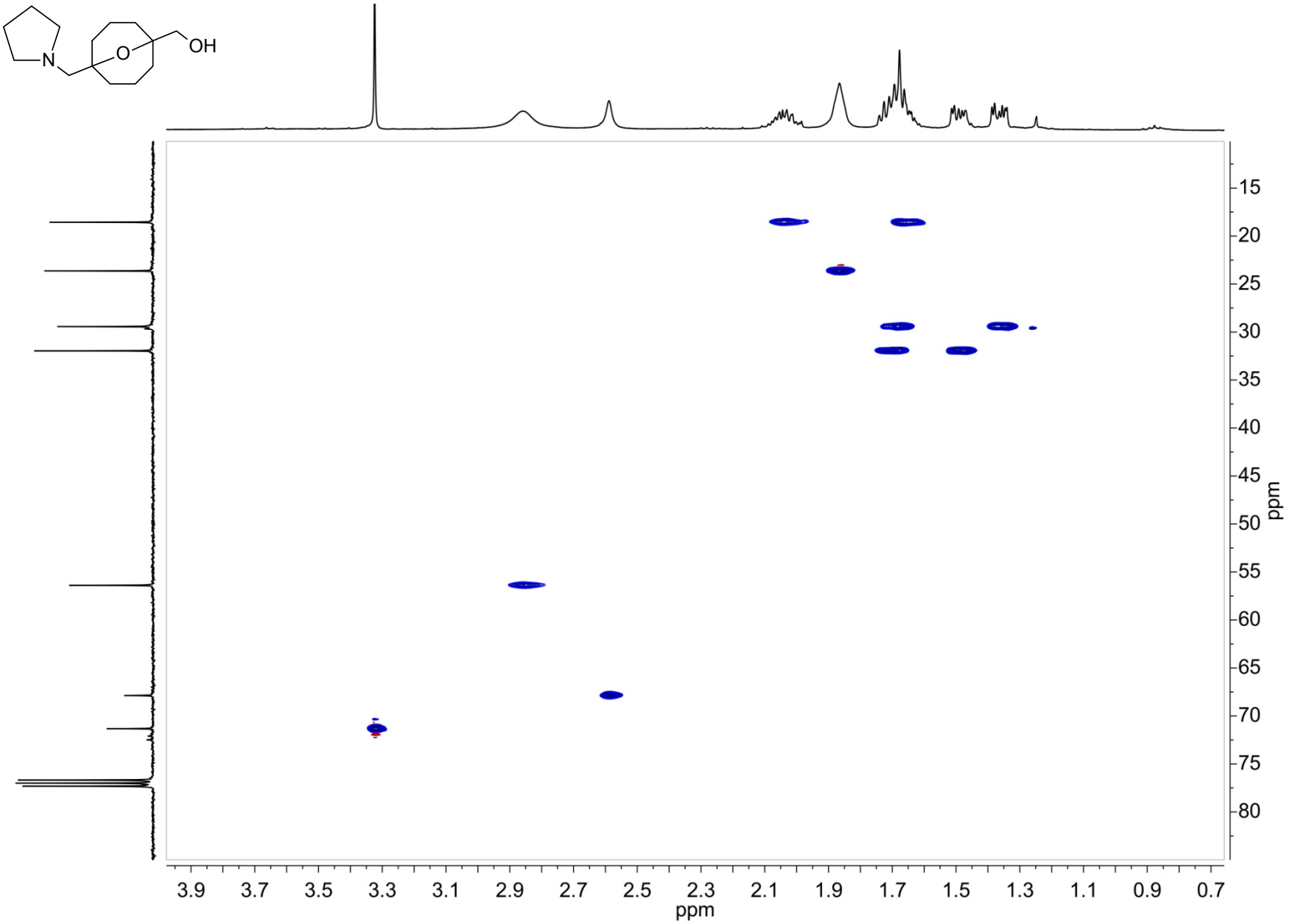
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5e**



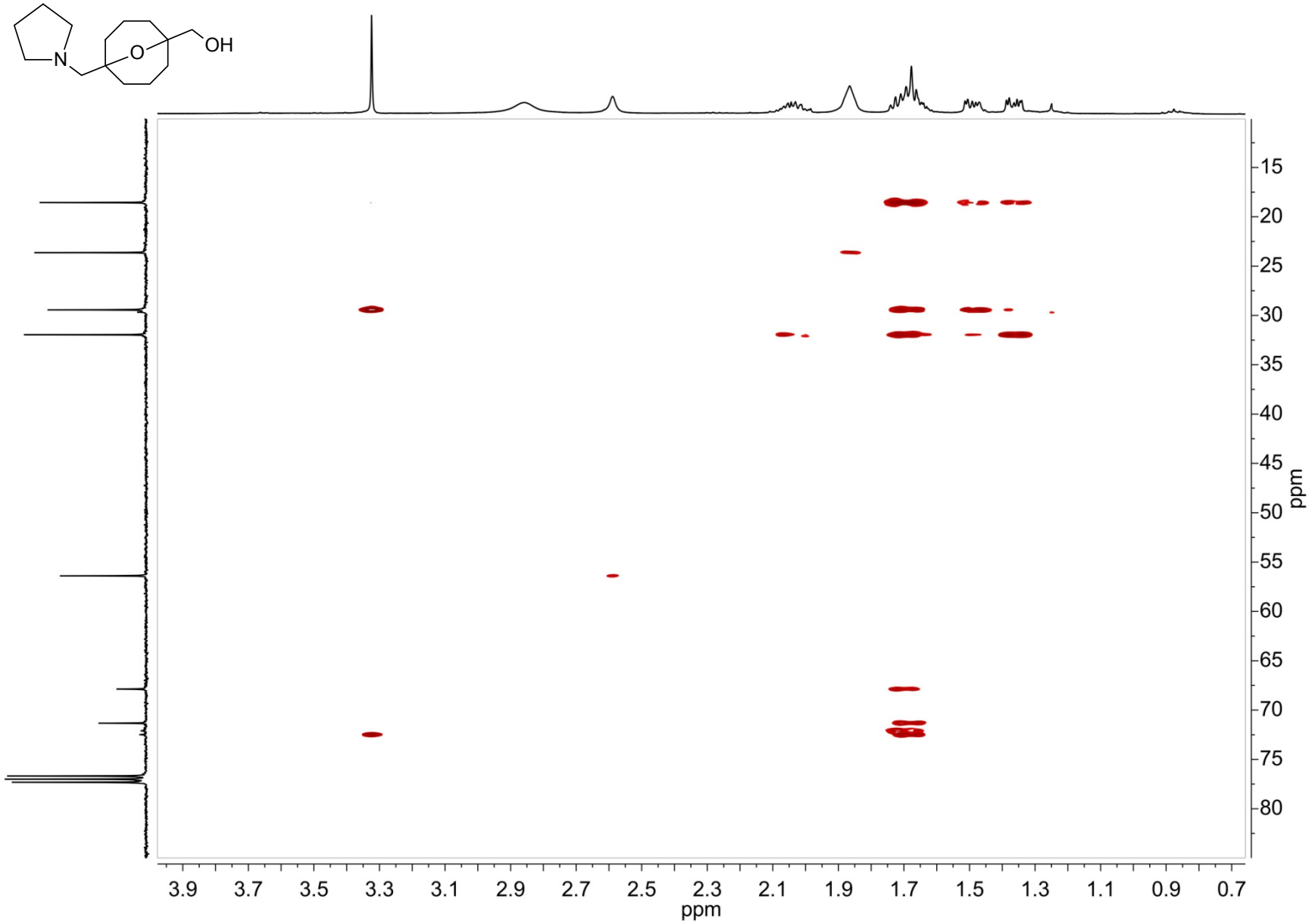
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5e**



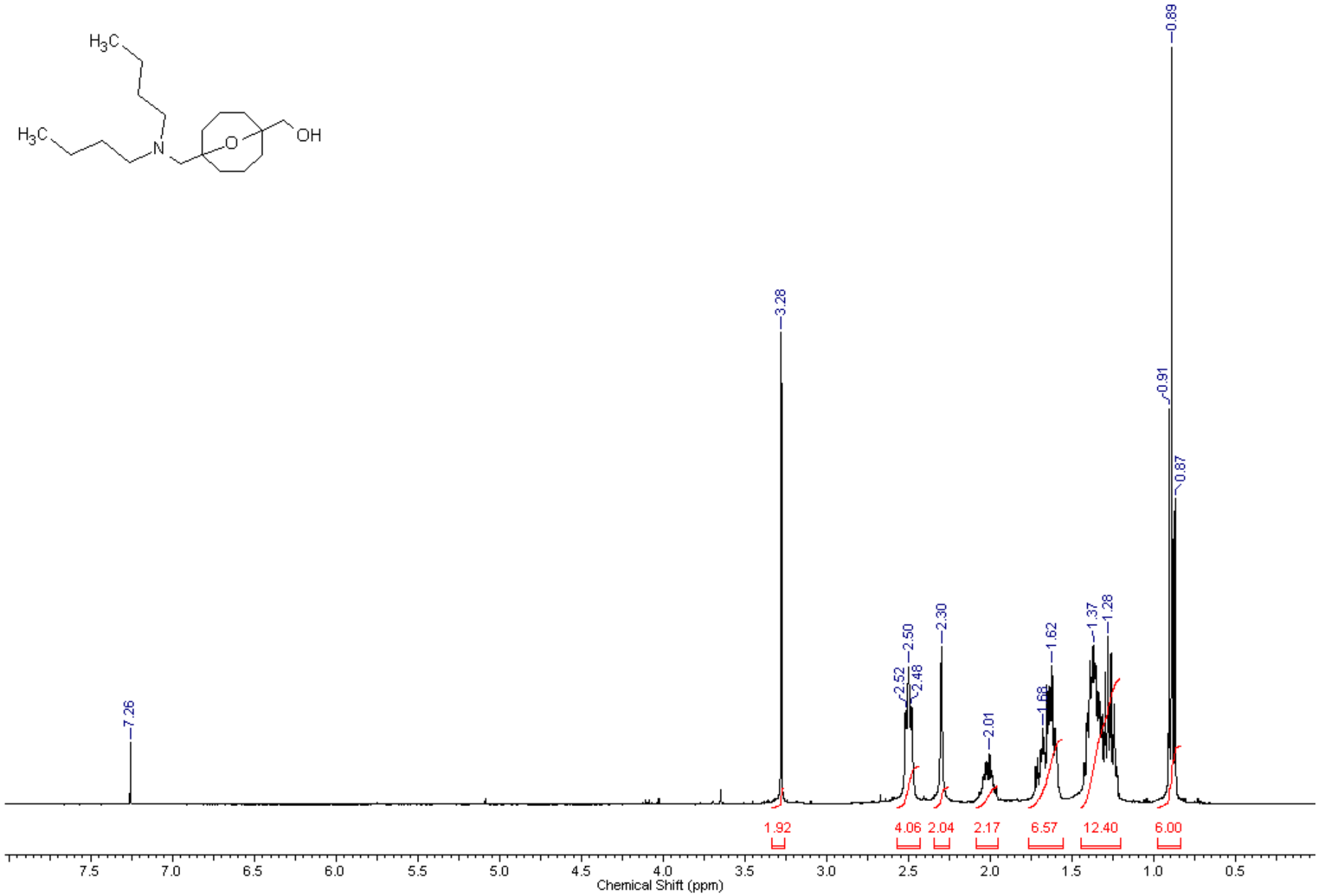
HSQC NMR spectrum of compound **5e**



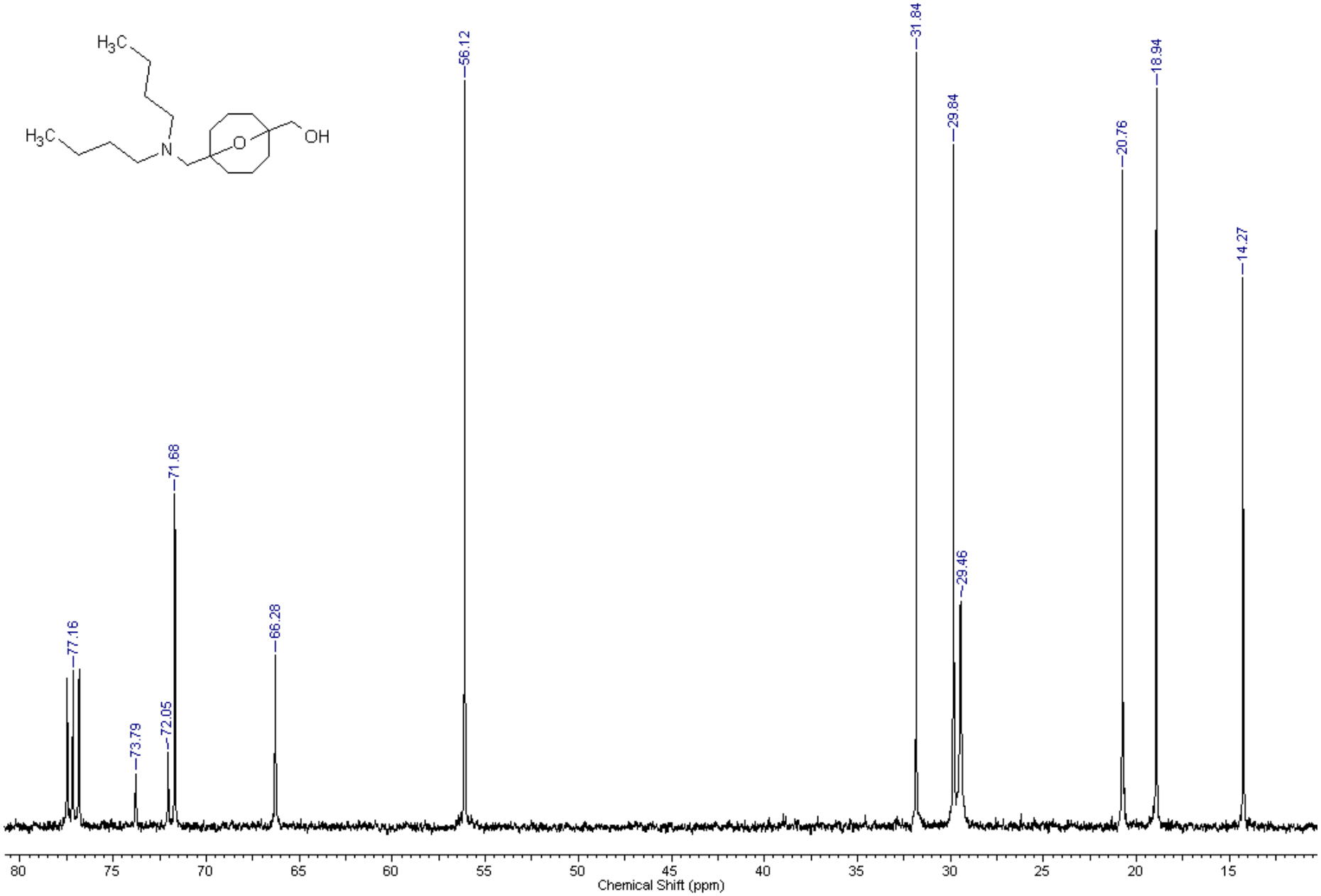
HMBC NMR spectrum of compound **5e**



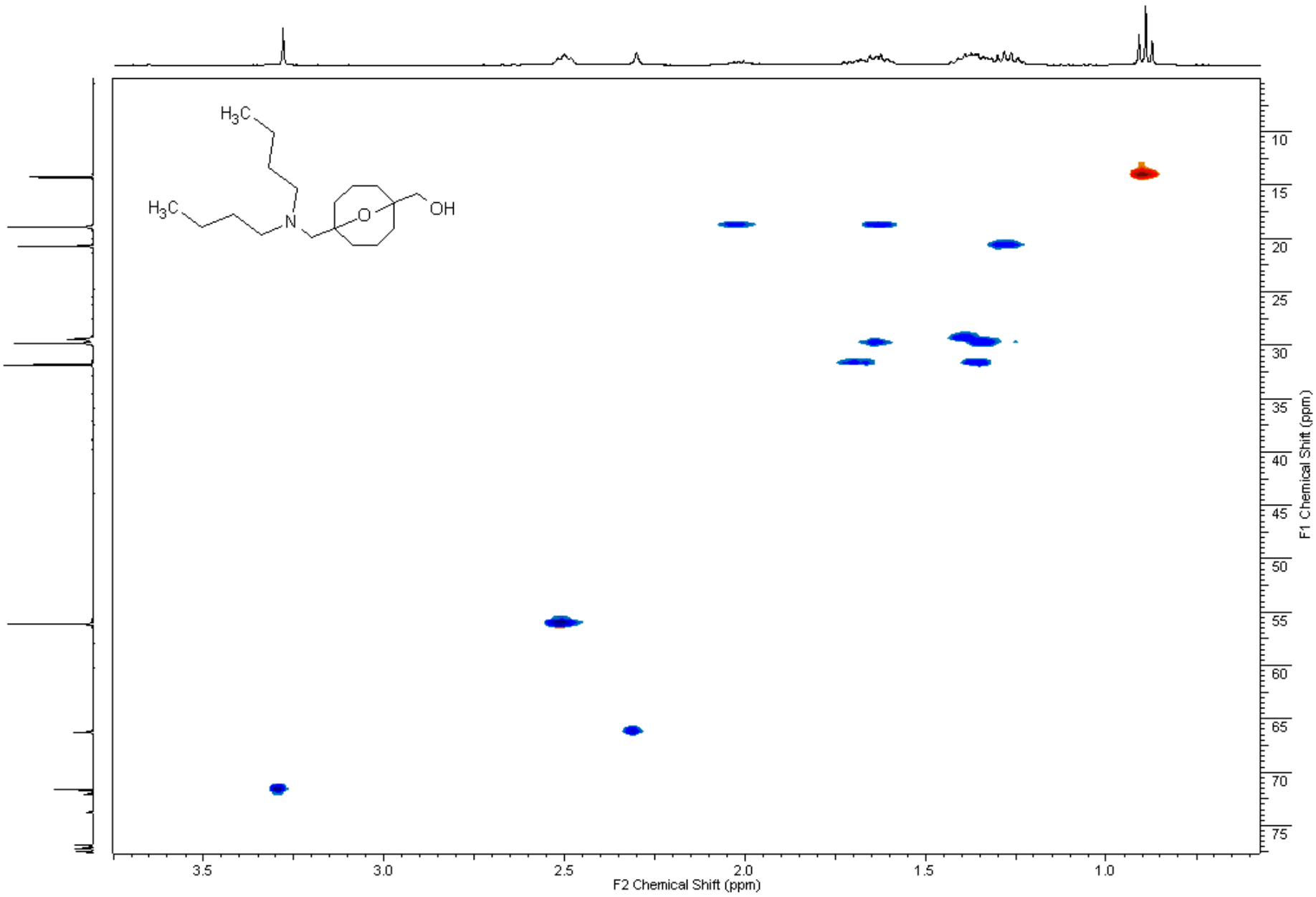
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5f**



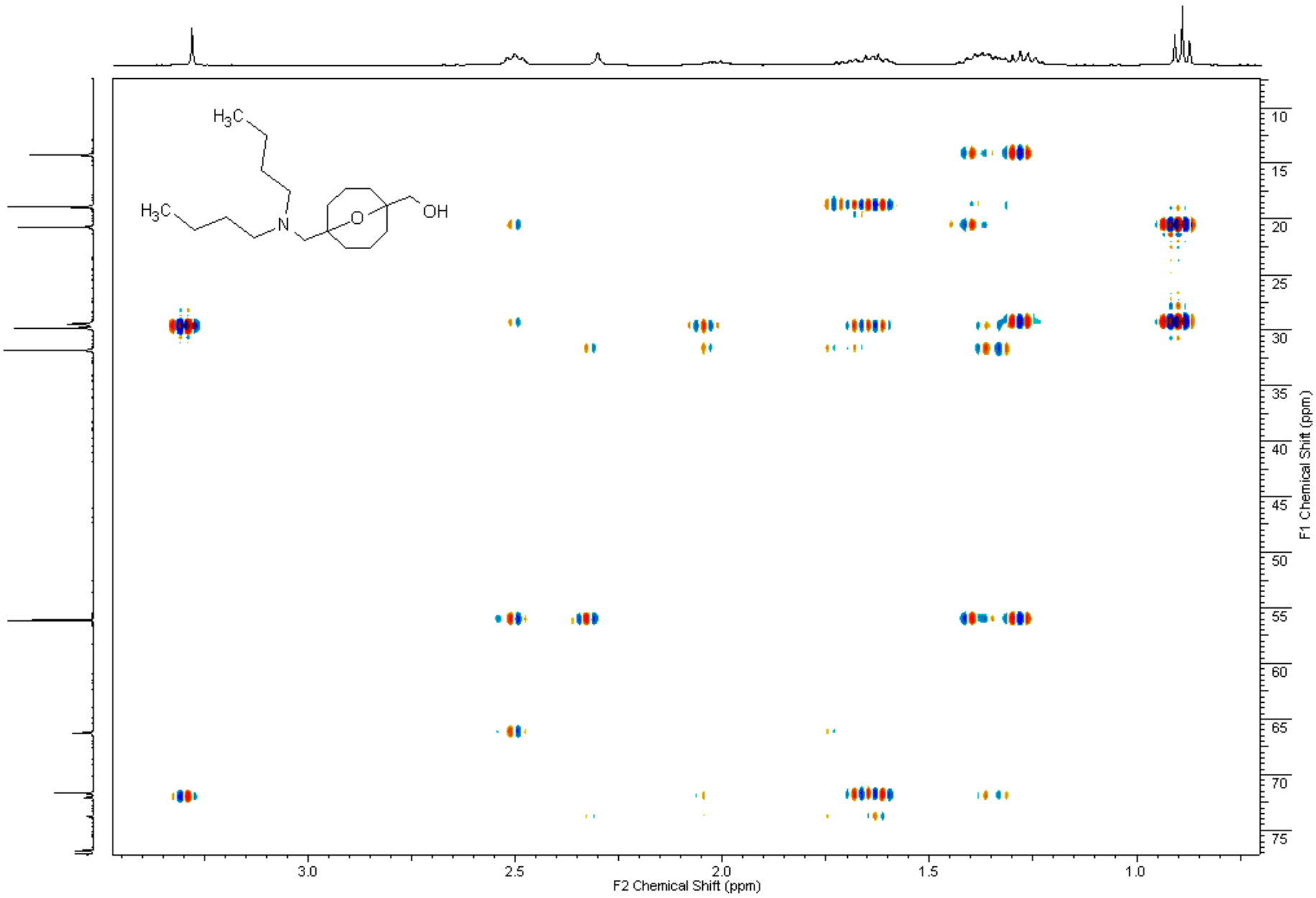
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5f**

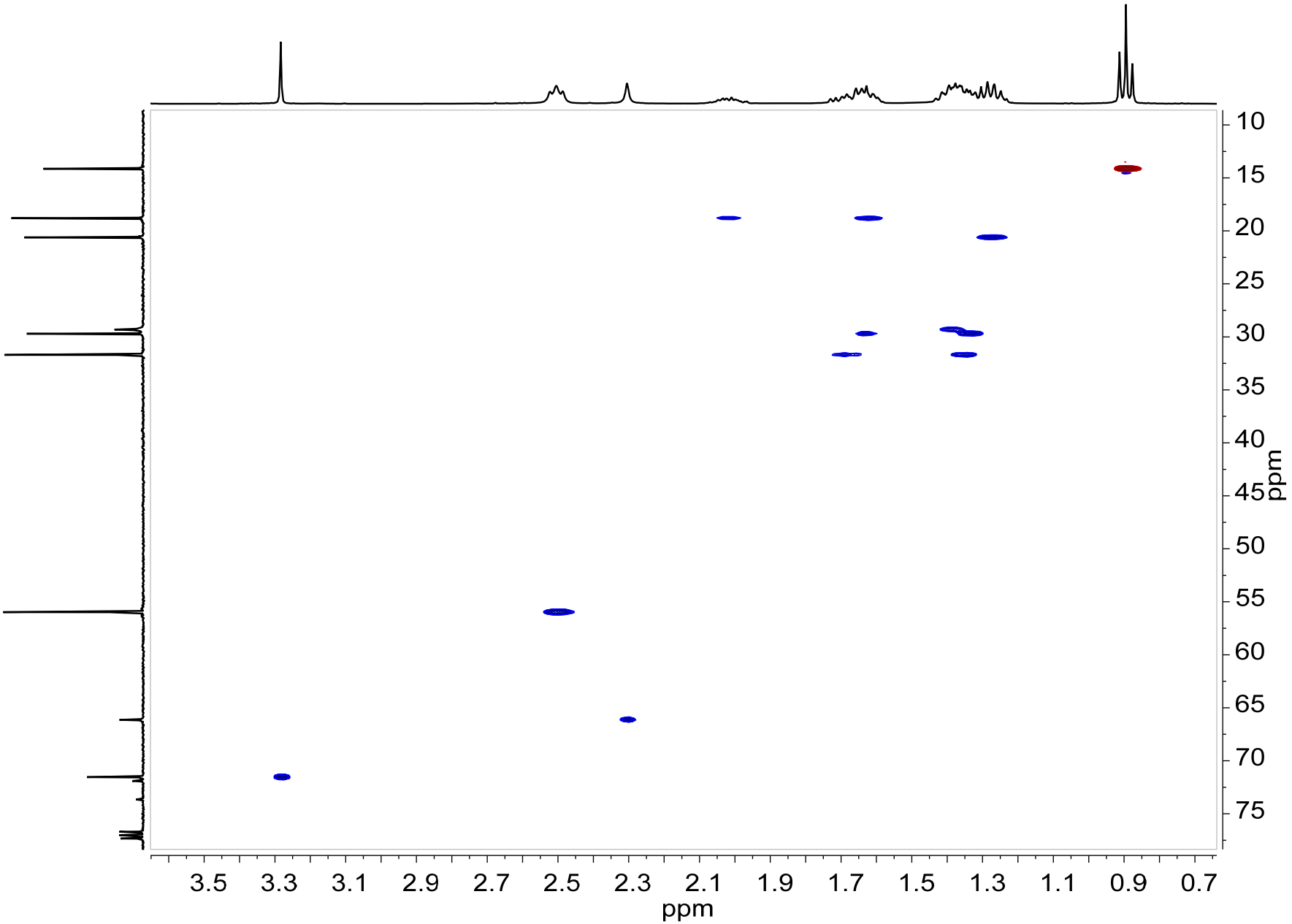


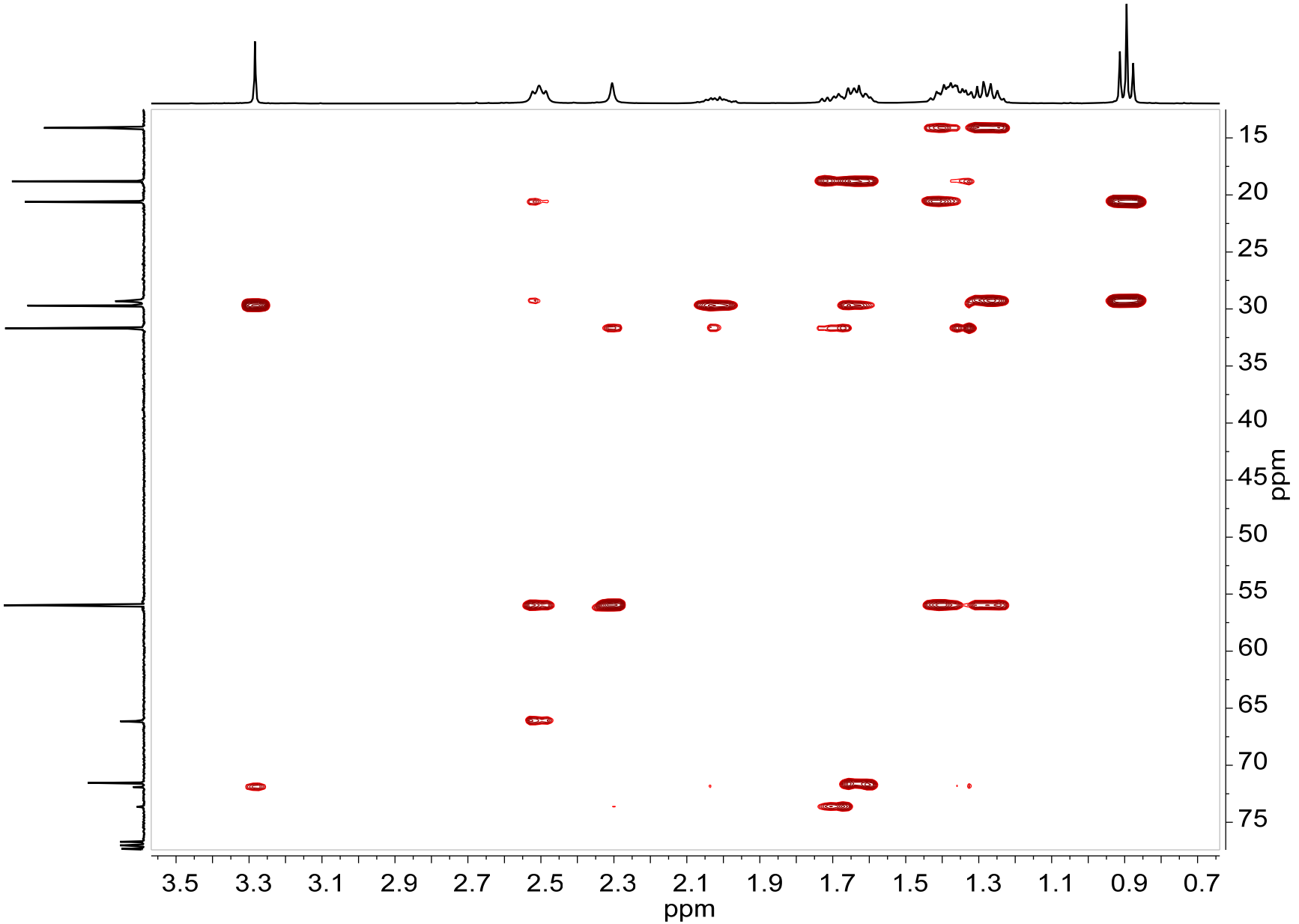
HSQC NMR spectrum ($CDCl_3$) of compound **5f**



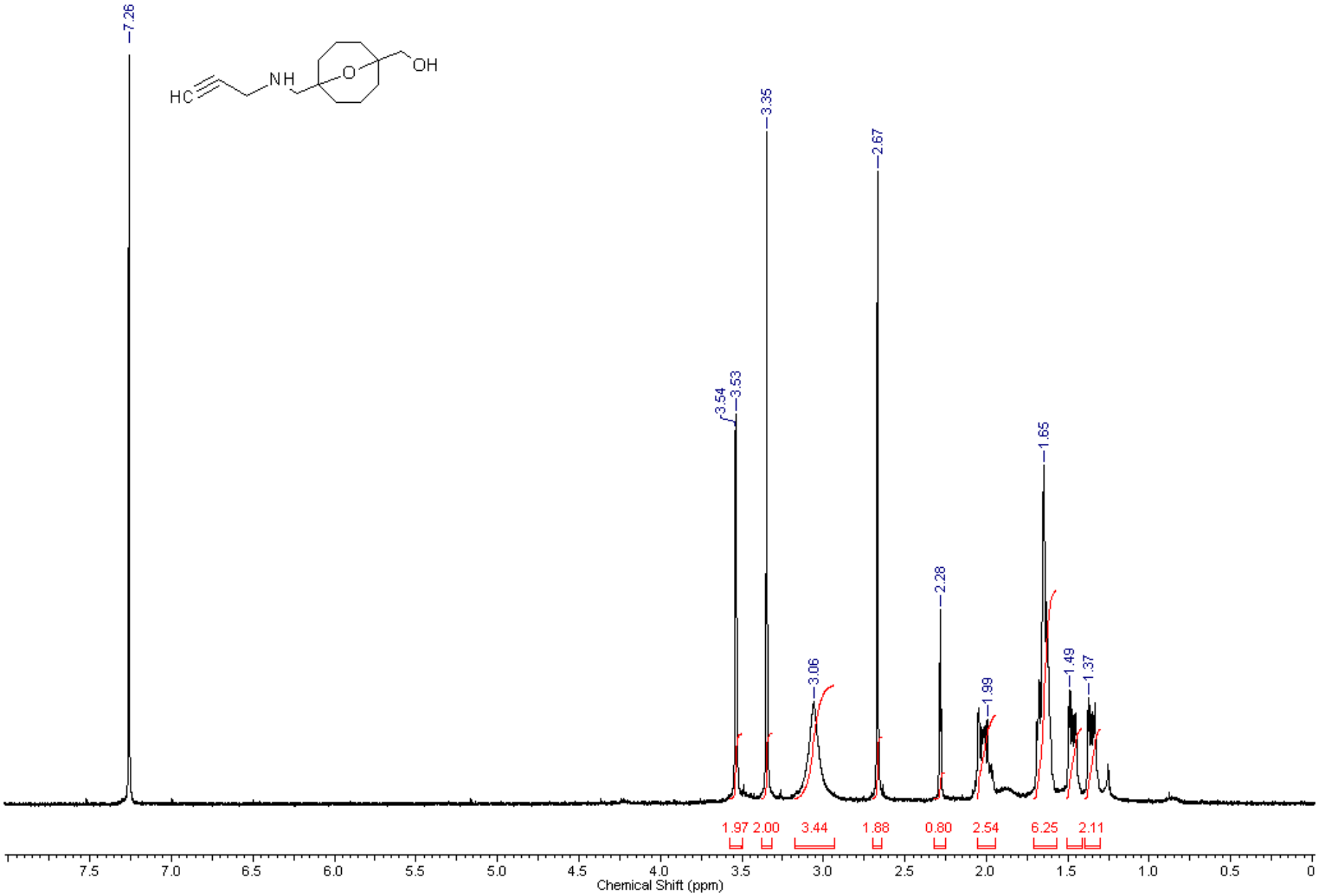
HMBC NMR spectrum ($CDCl_3$) of compound **5f**



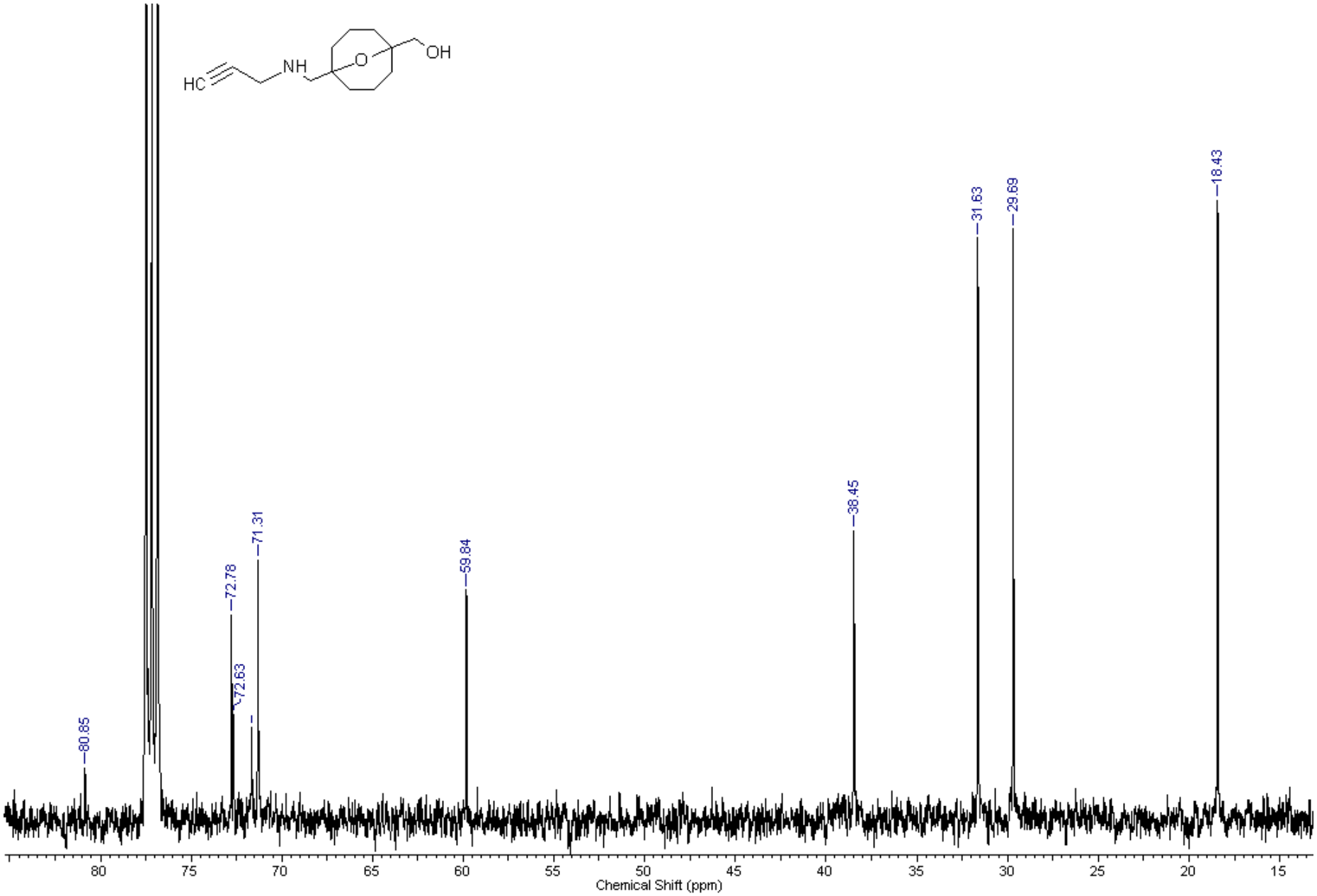

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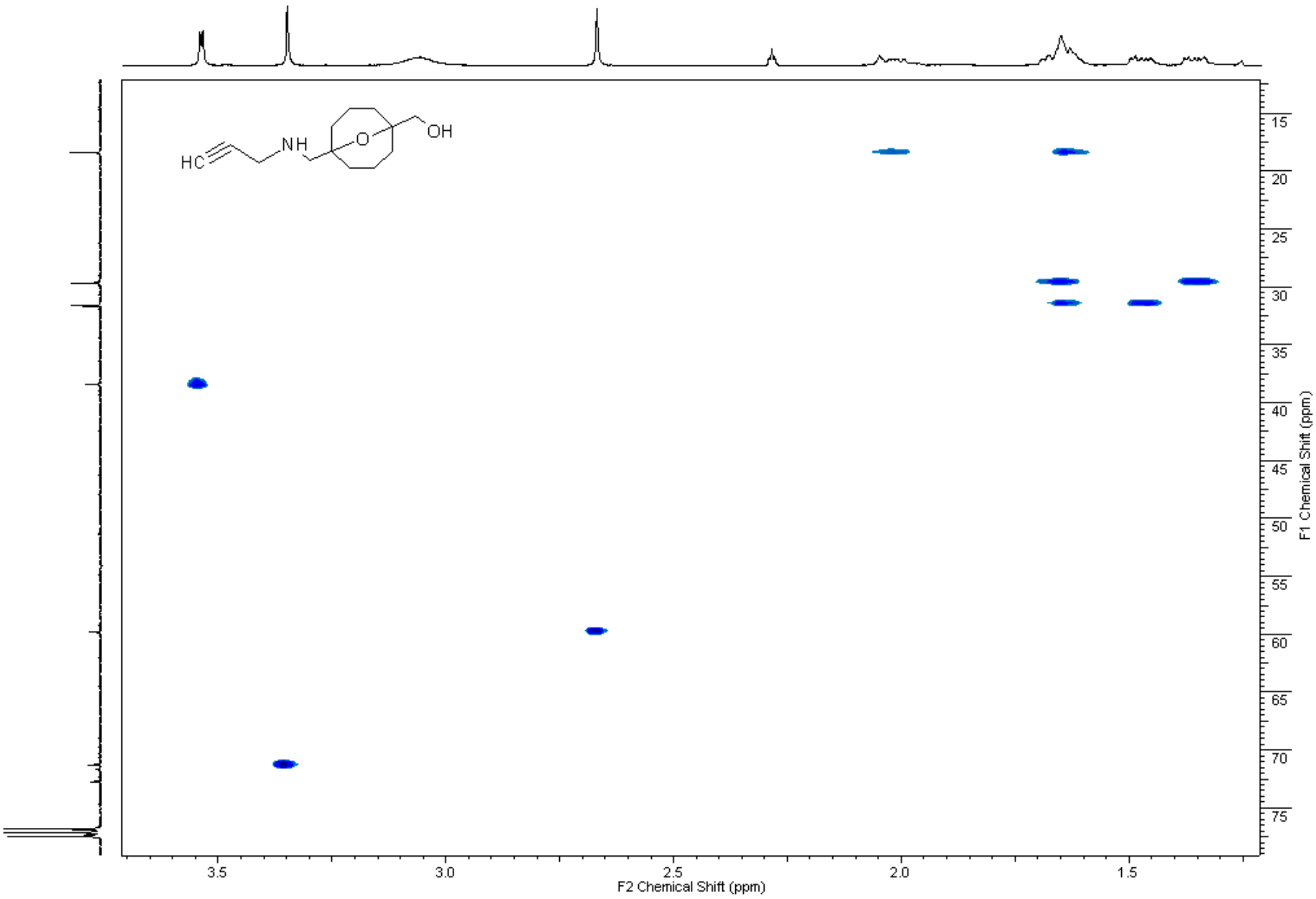
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5g**



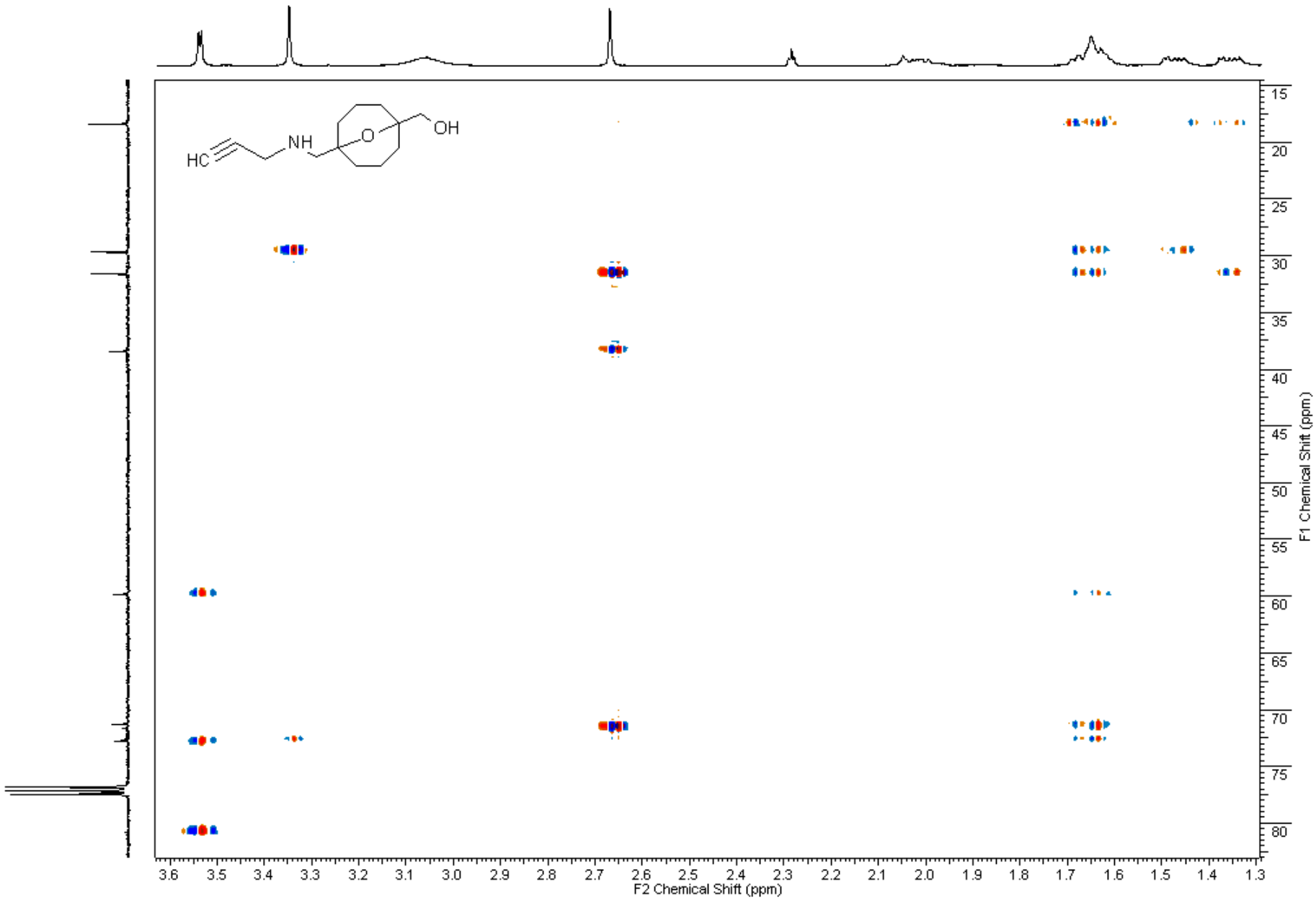
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5g**



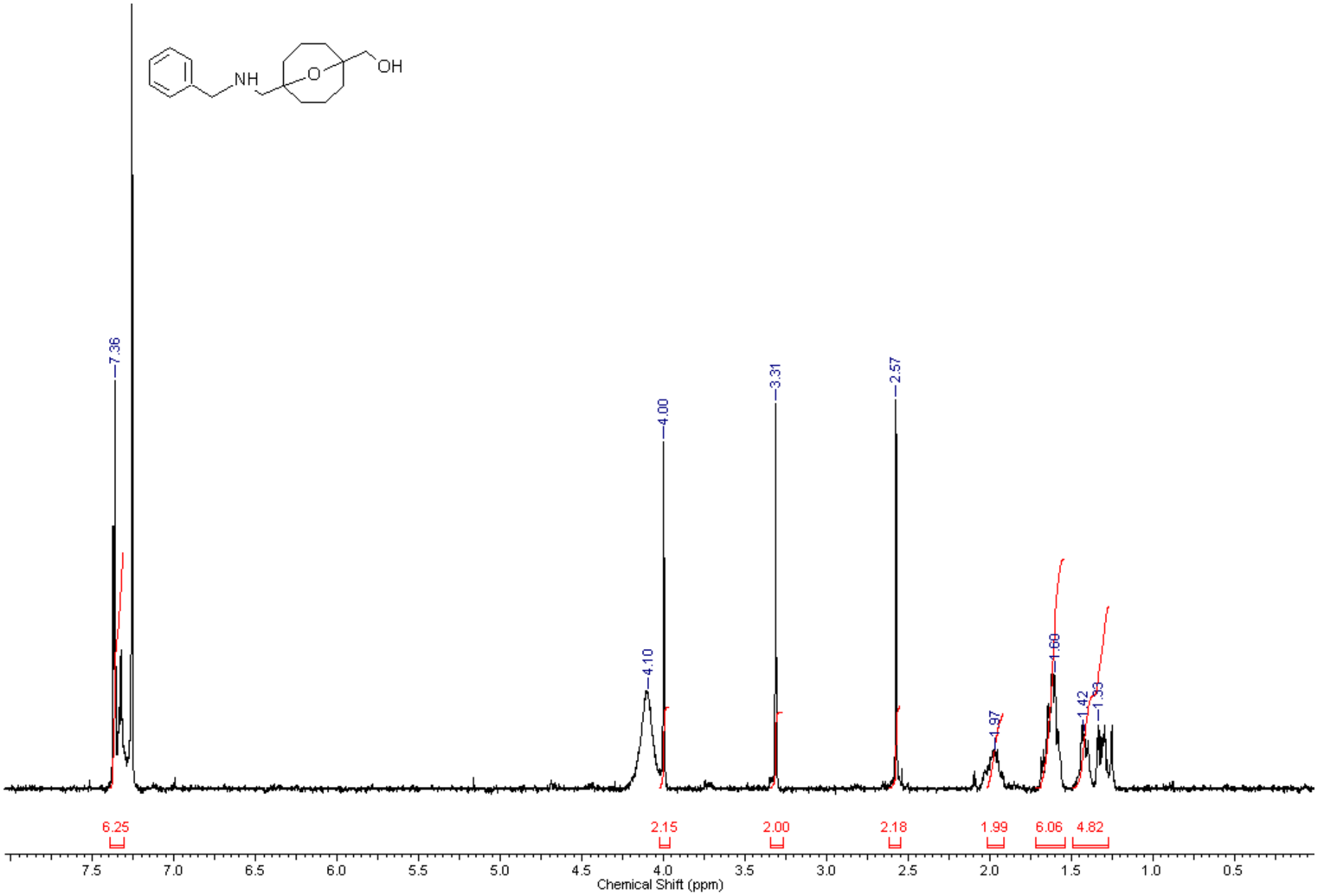
HSQC NMR spectrum of compound **5g**



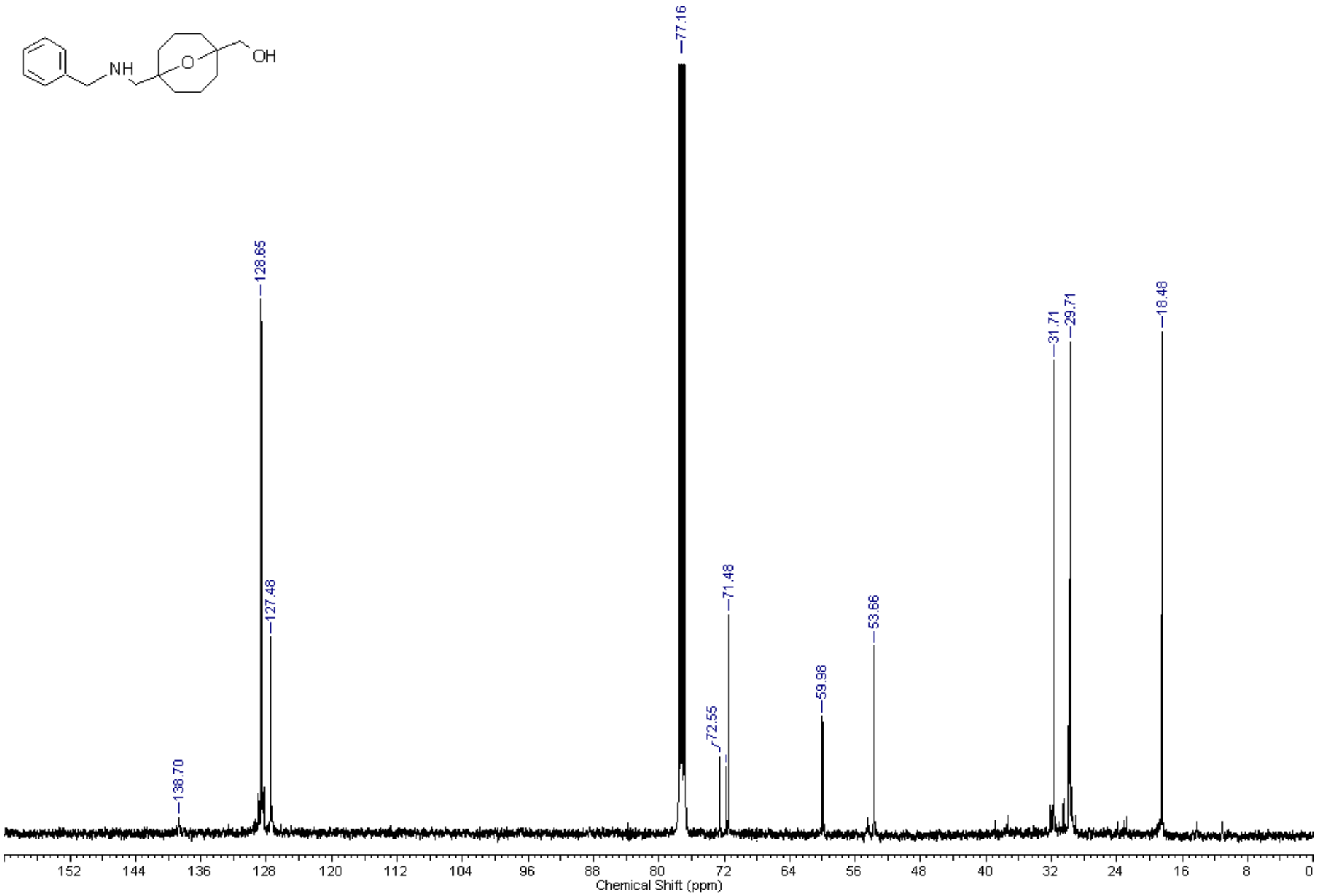
HMBC NMR spectrum of compound **5g**



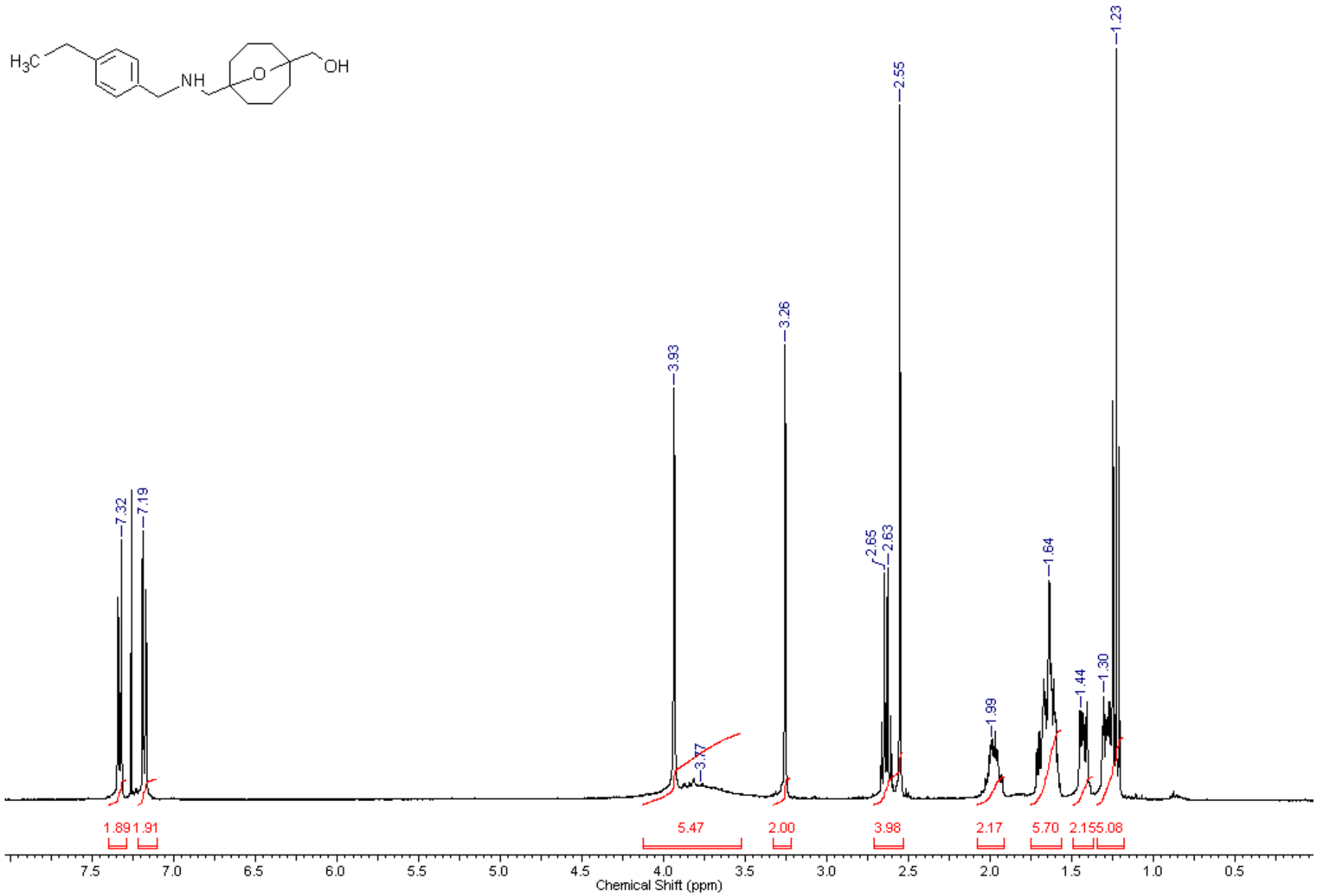
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5h**



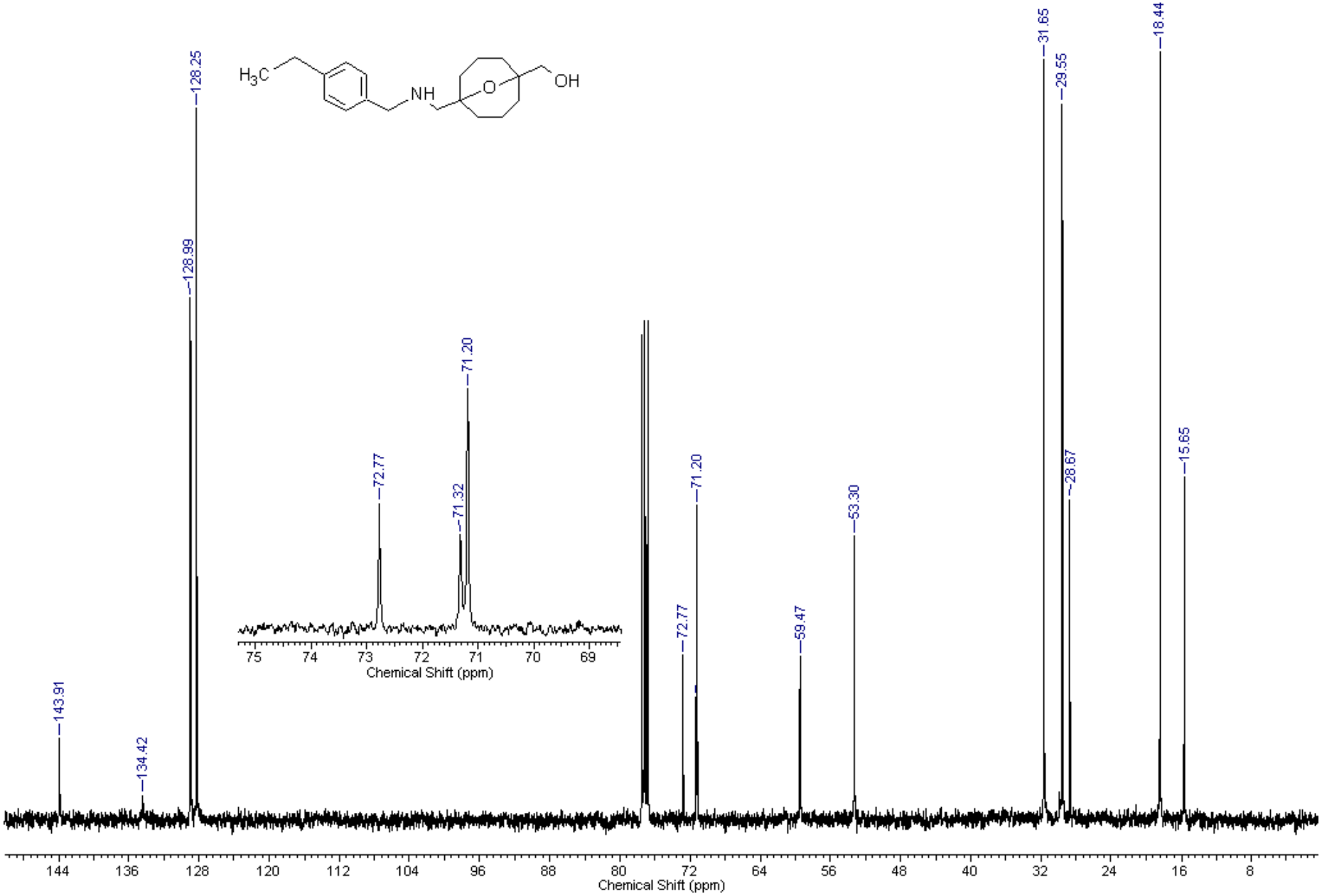
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5h**



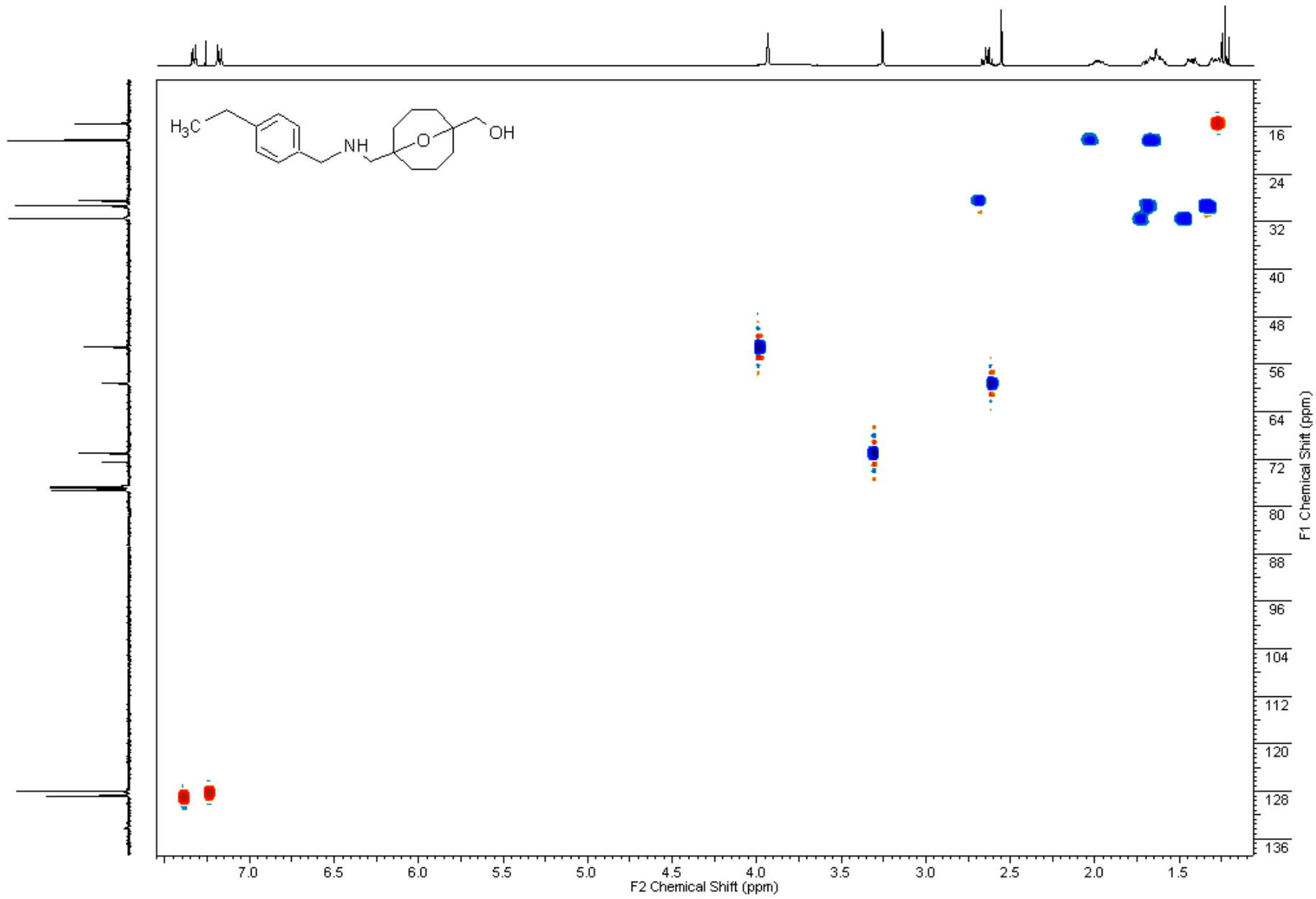
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5i**



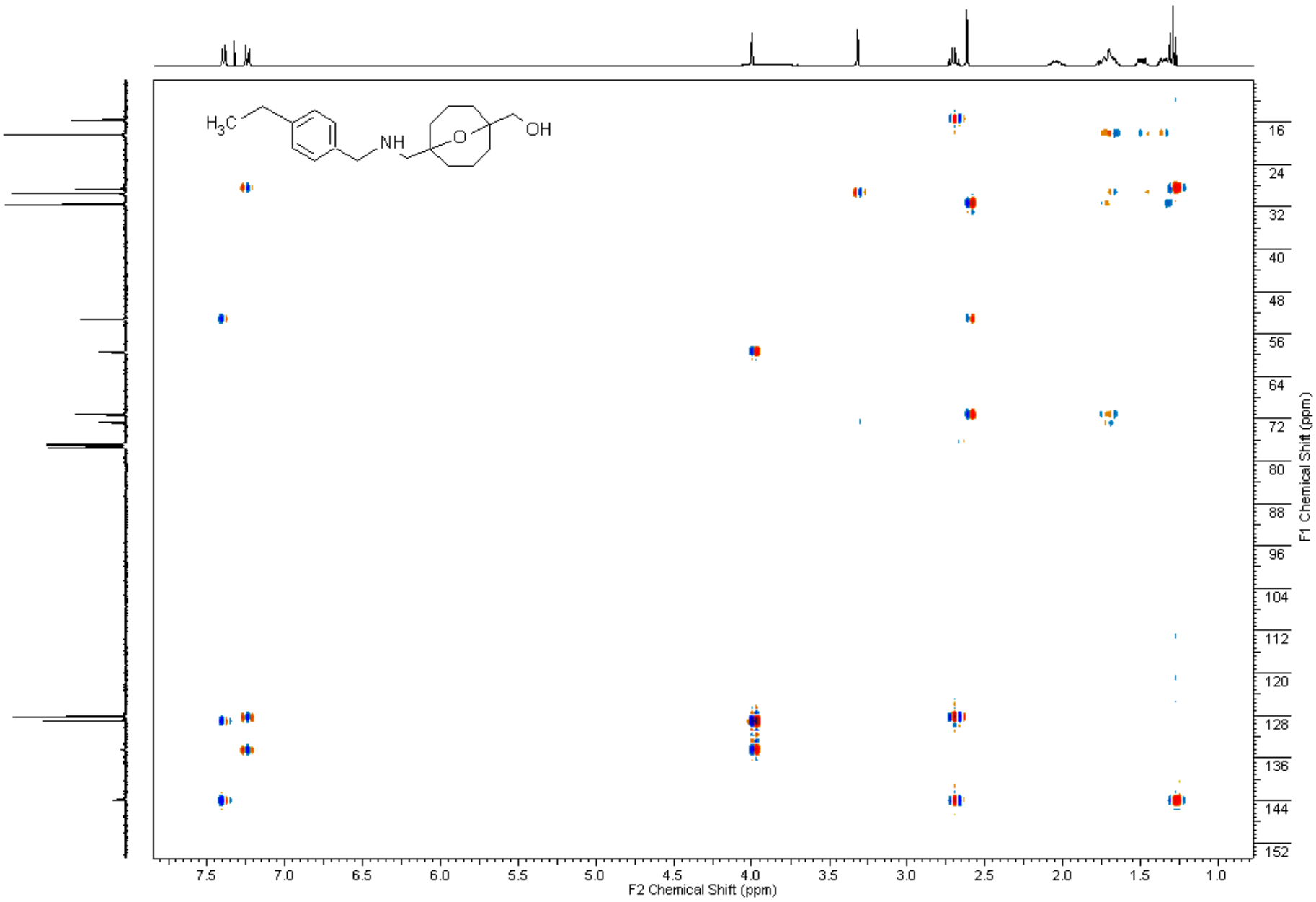
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5i**



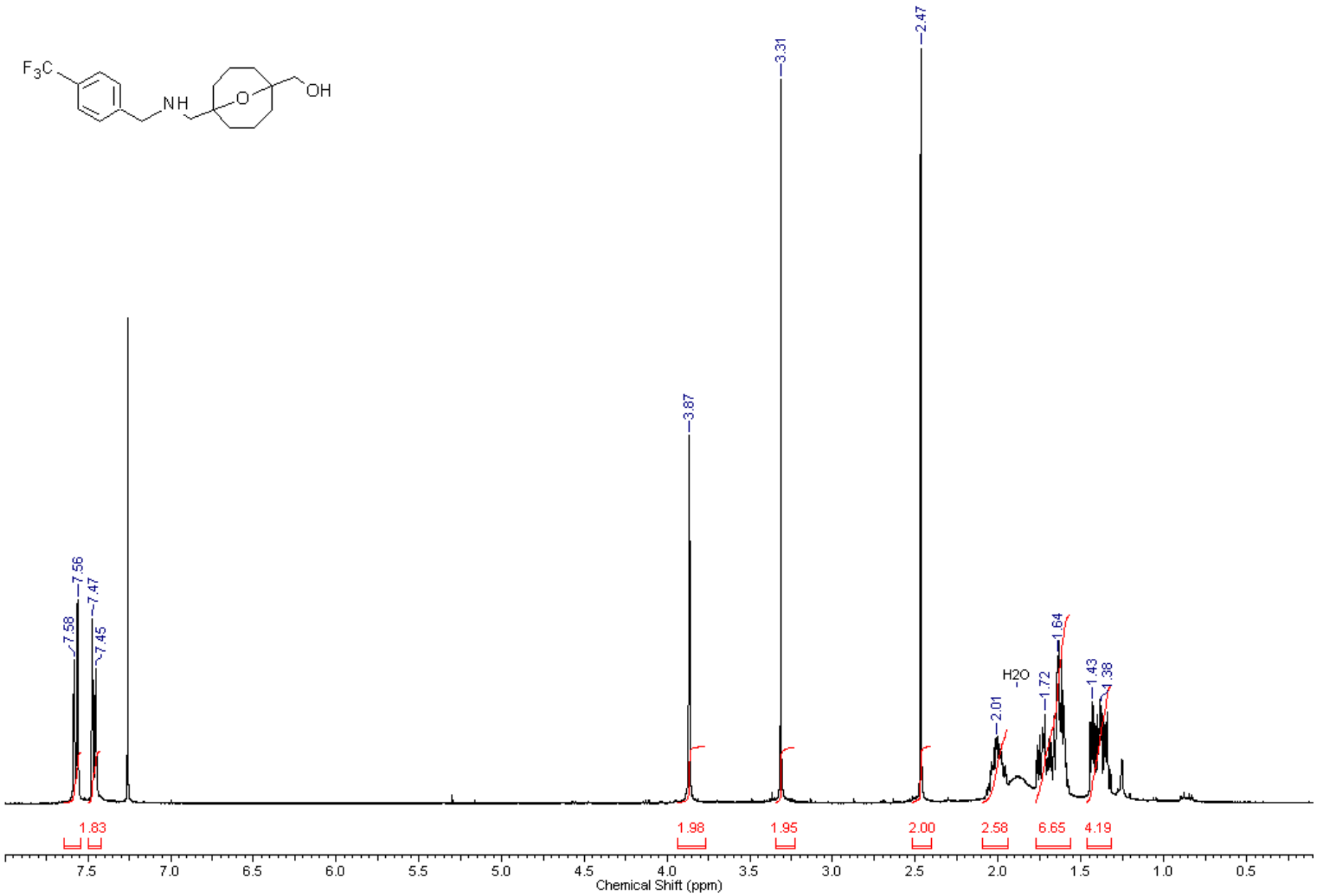
HSQC NMR spectrum of compound **5i**



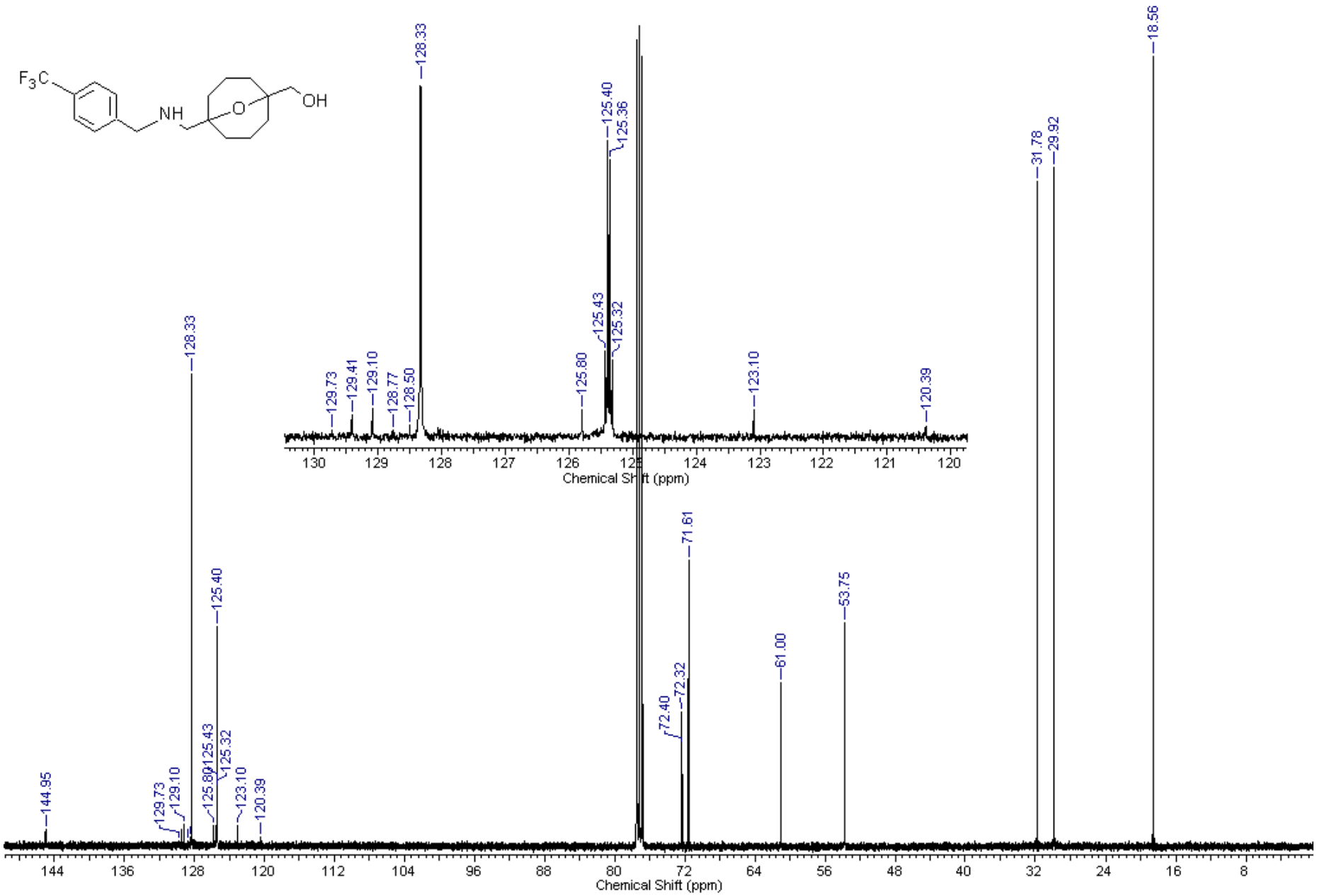
HMBC NMR spectrum of compound **5i**



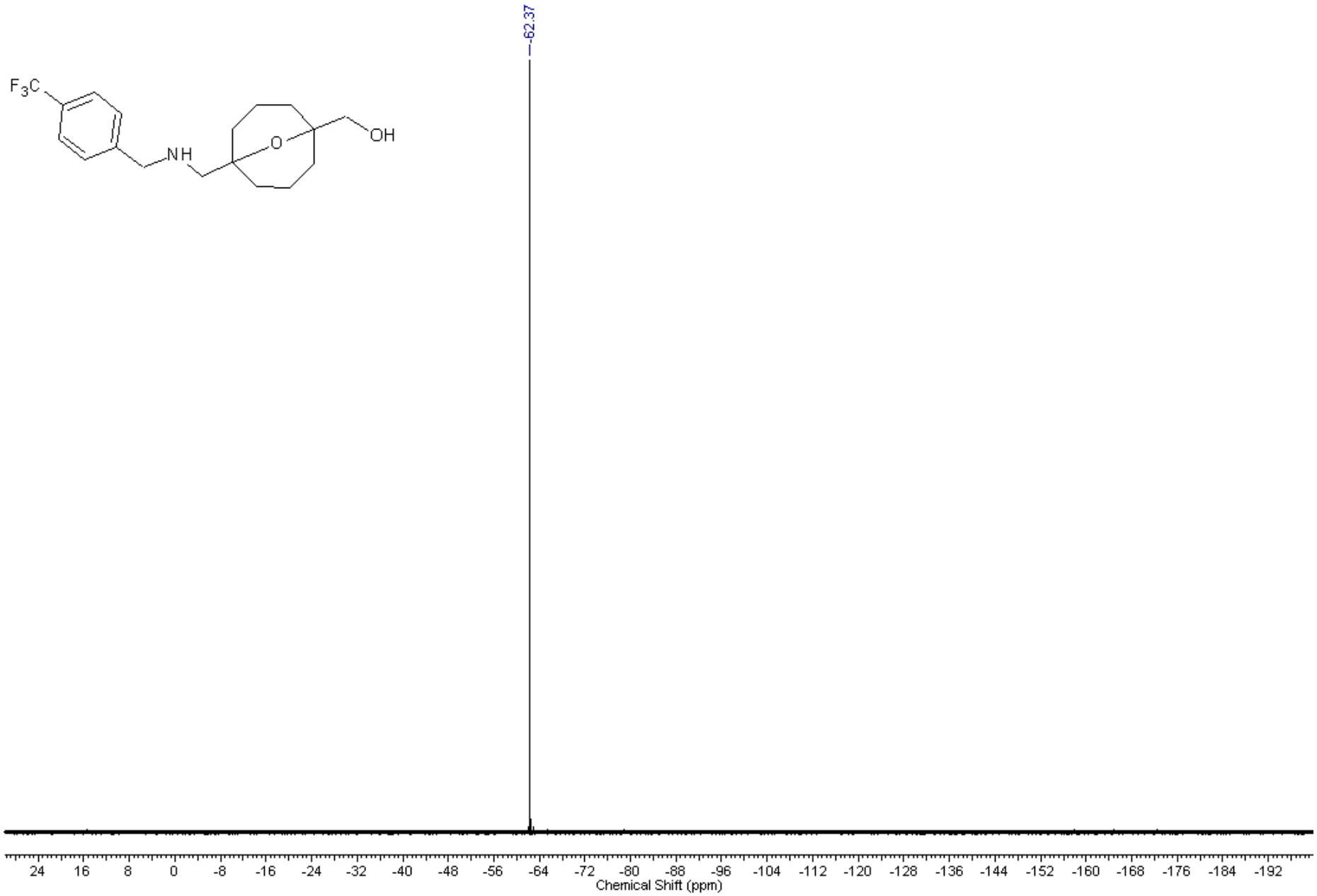
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5j**



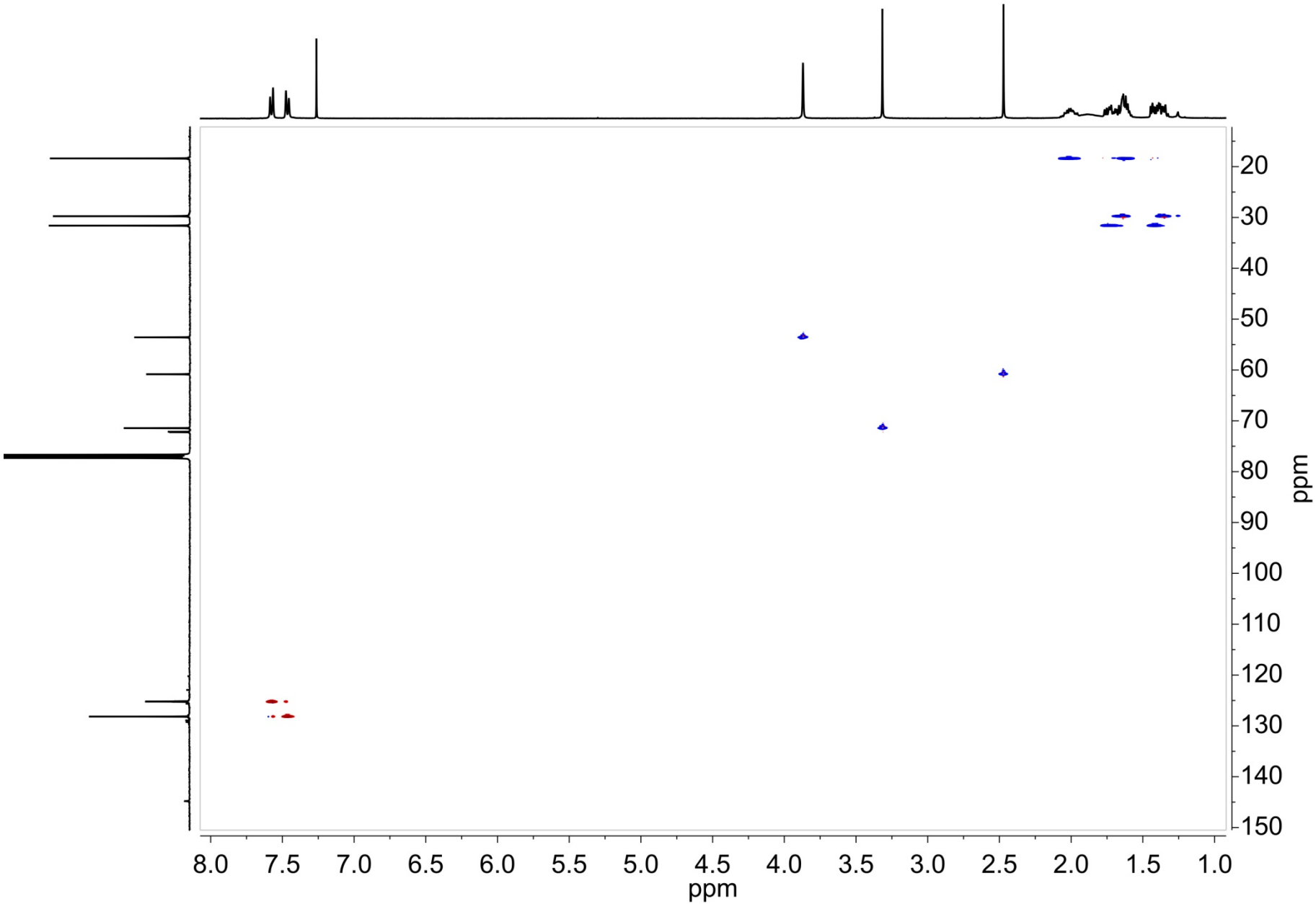
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5j**



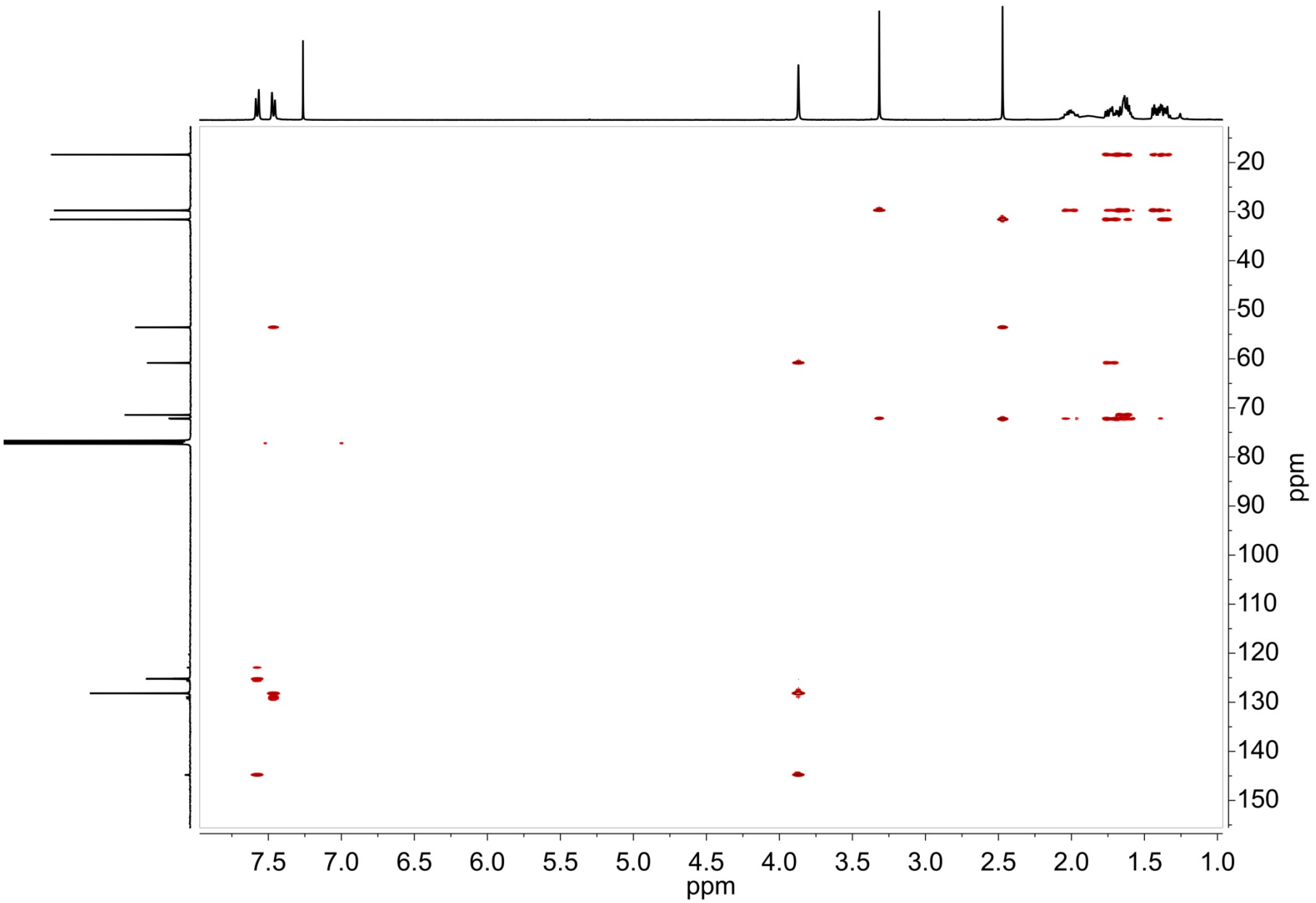
^{19}F NMR spectrum (376 MHz, $CDCl_3$) of compound **5j**



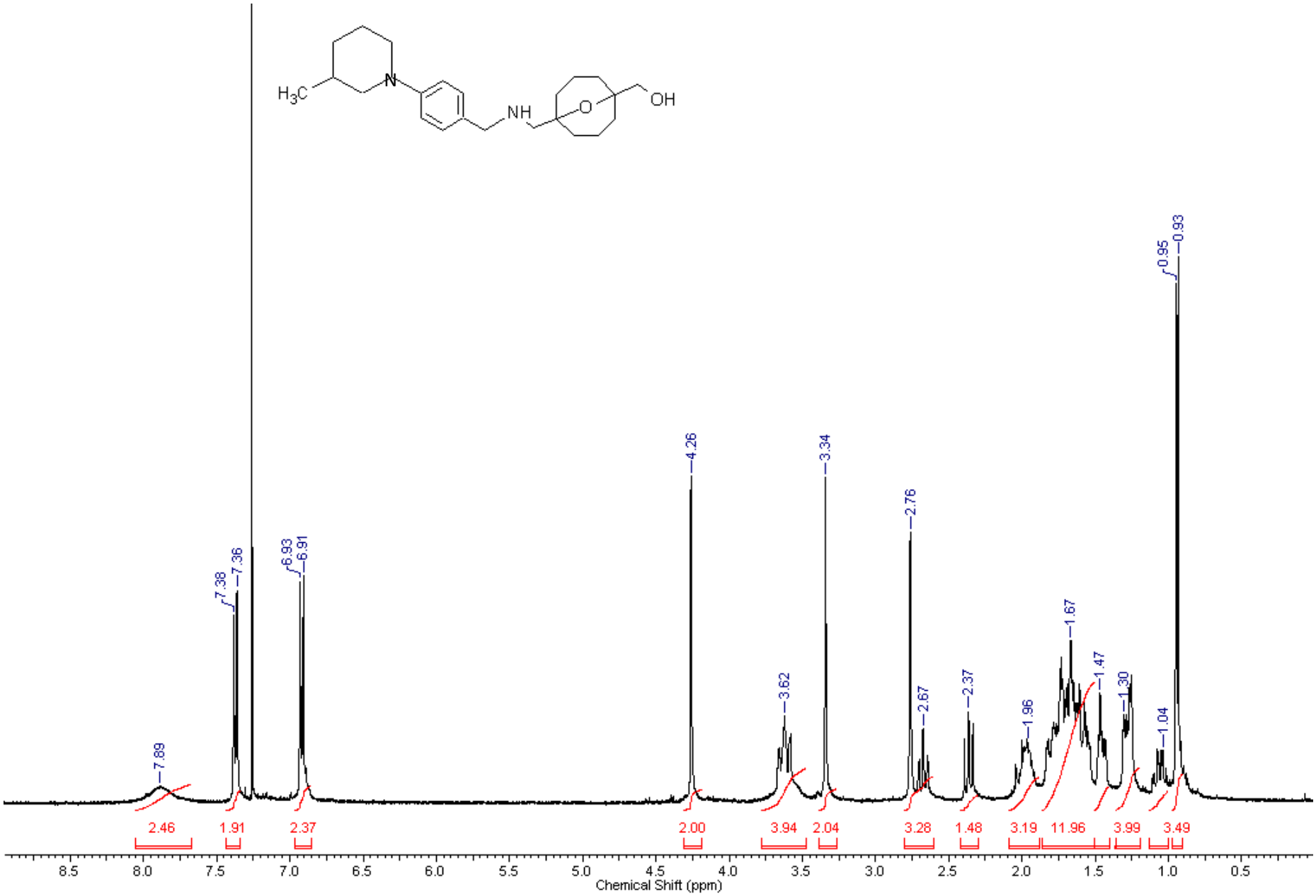
HSQC NMR spectrum ($CDCl_3$) of compound **5j**



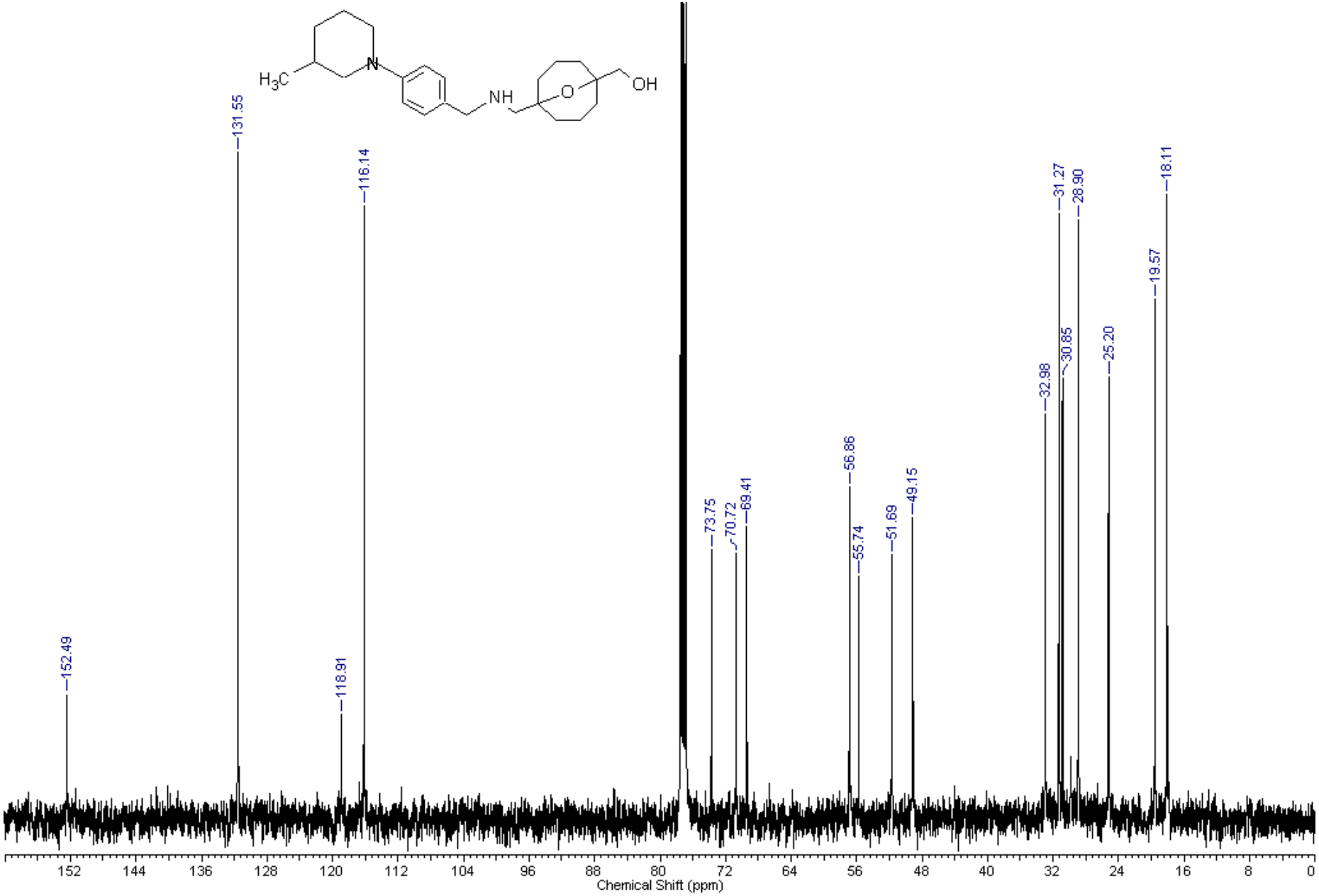
HMBC NMR spectrum ($CDCl_3$) of compound **5j**



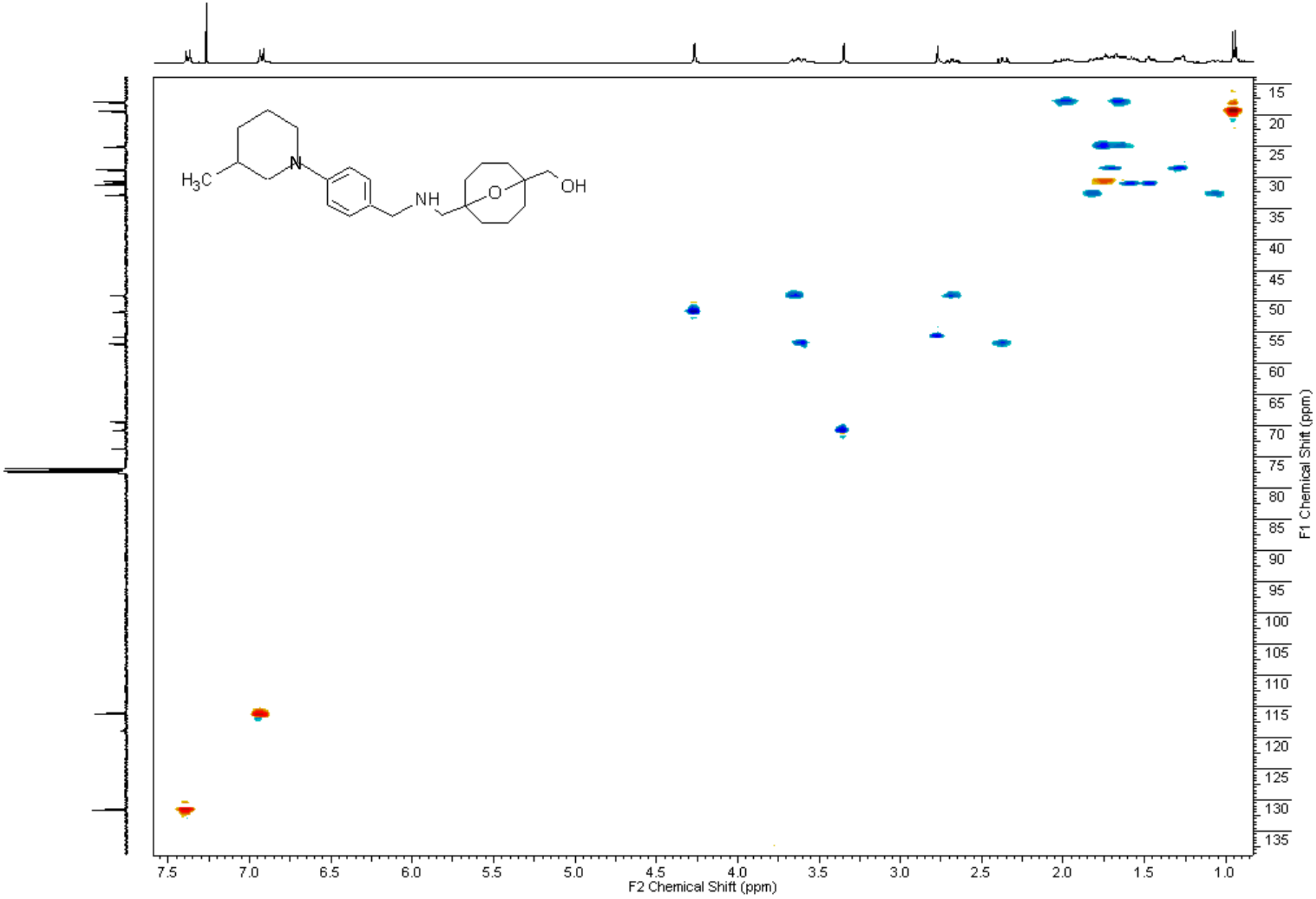
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5k**



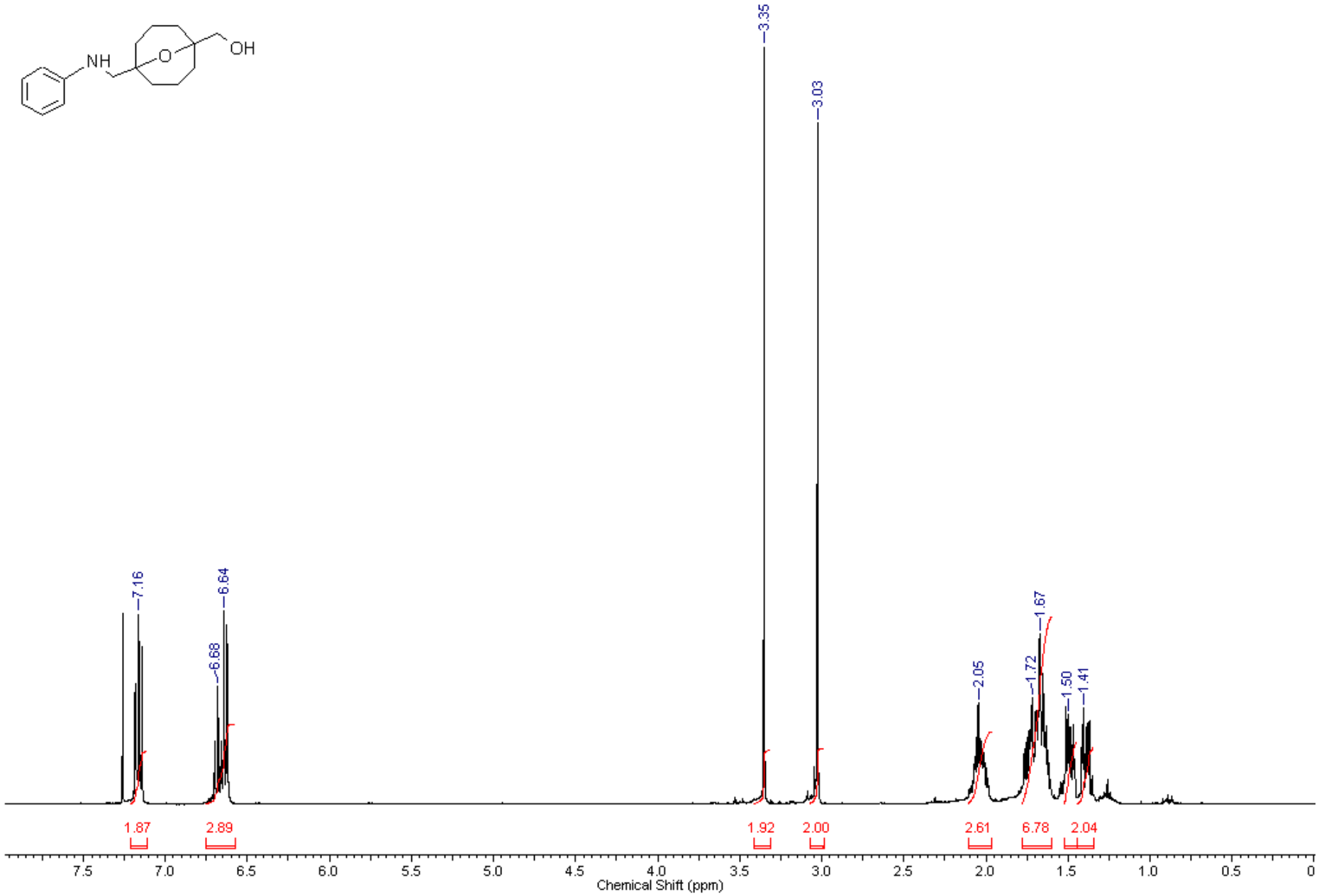
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5k**



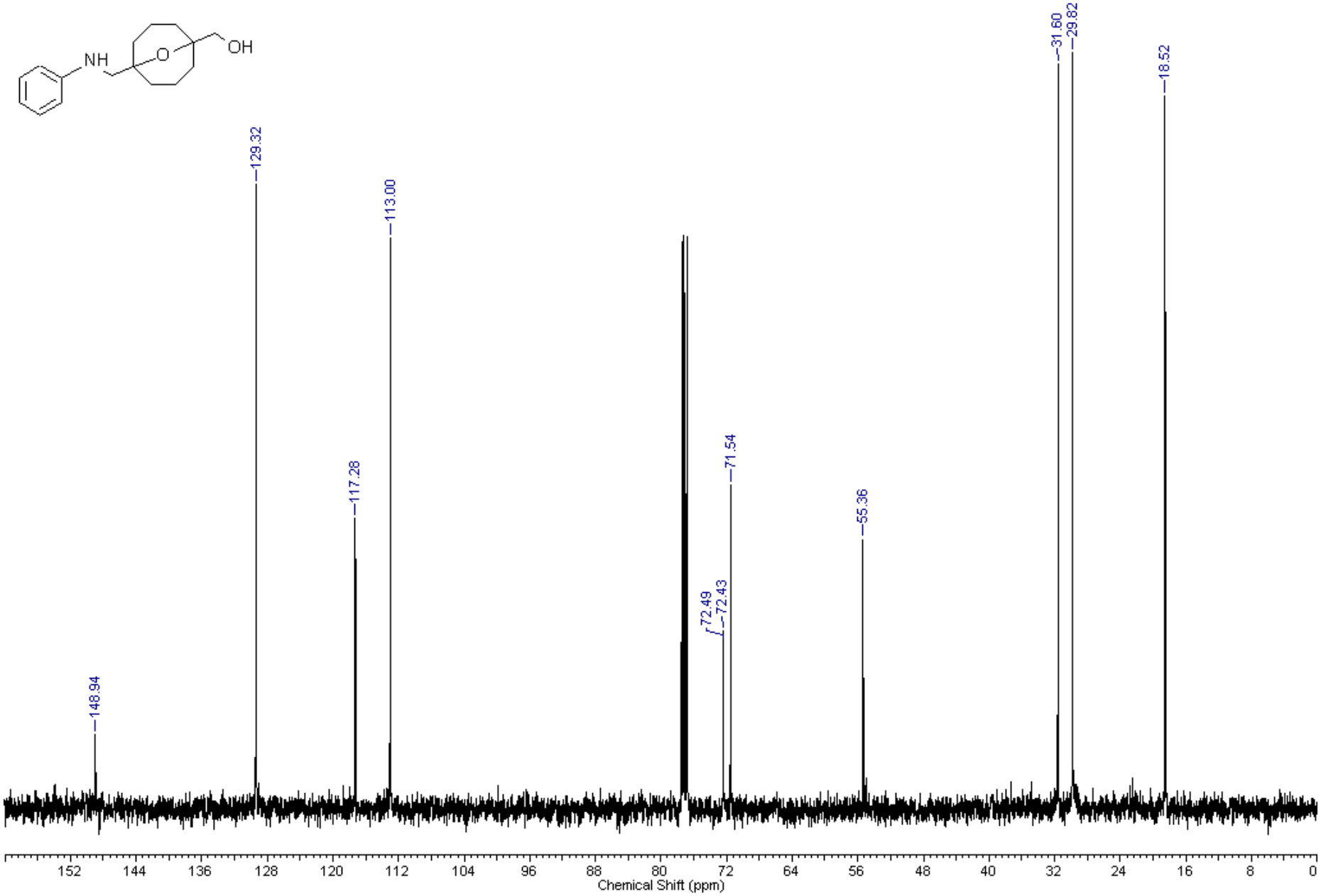
HSQC NMR spectrum of compound **5k**



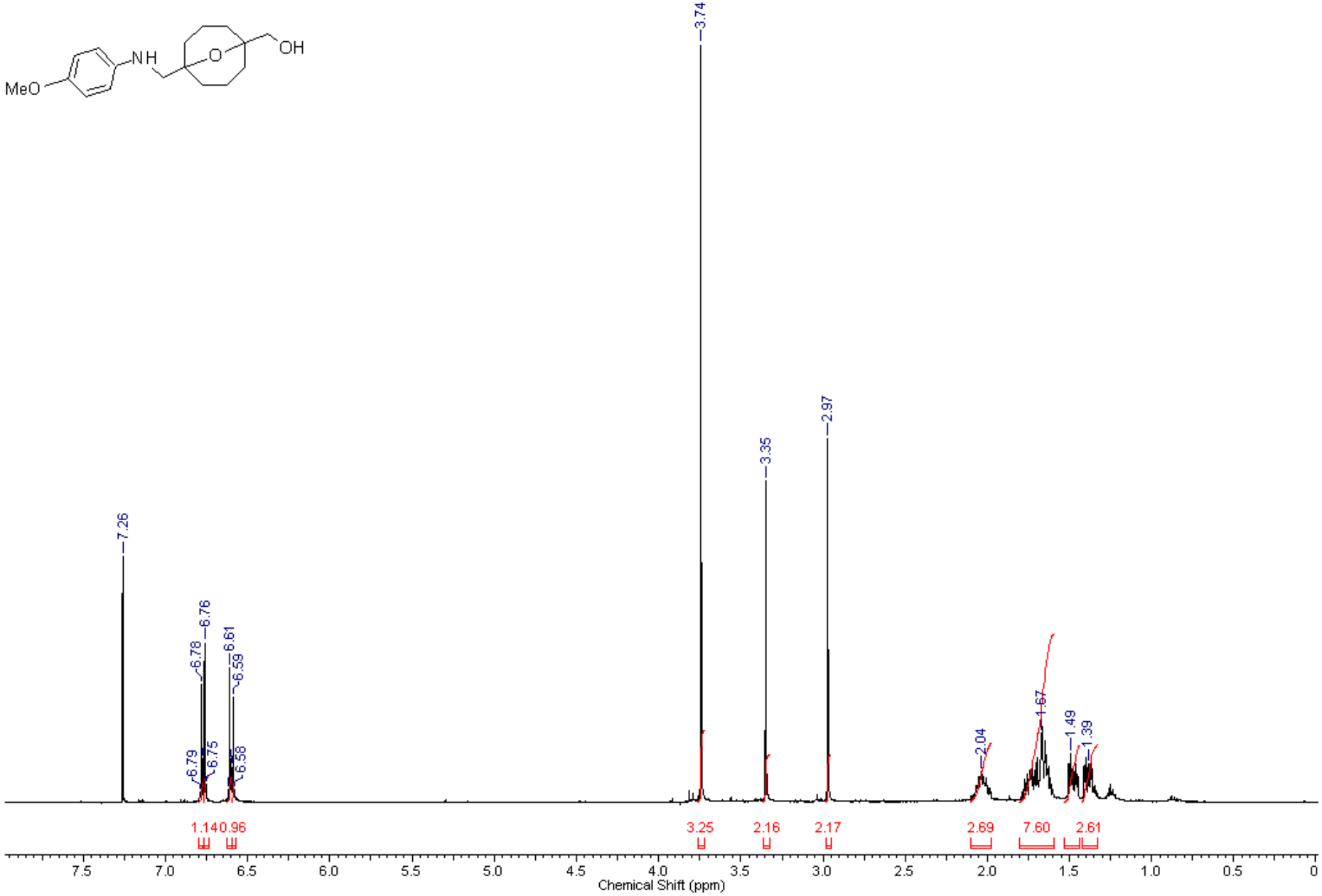
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5l**



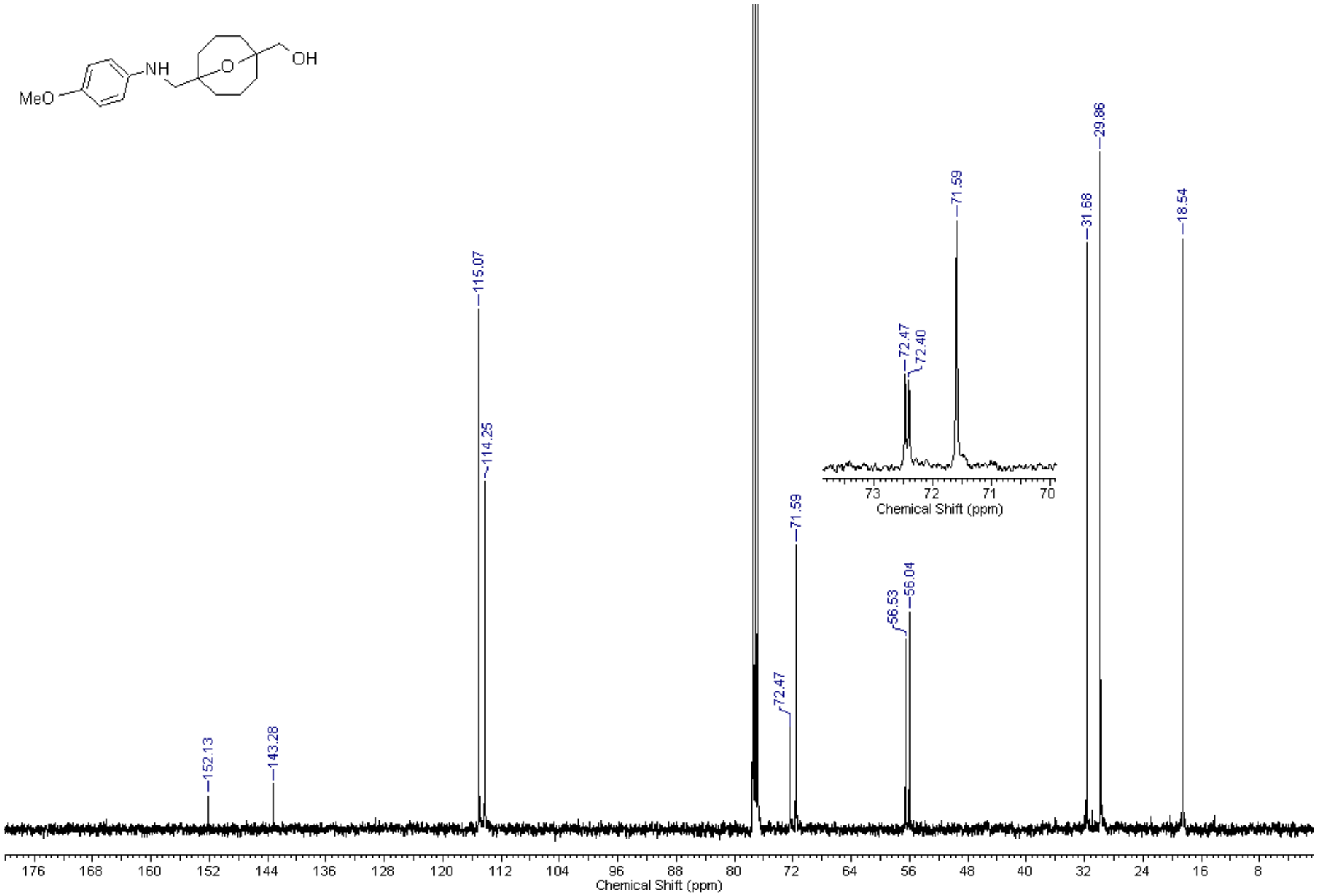
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5l**



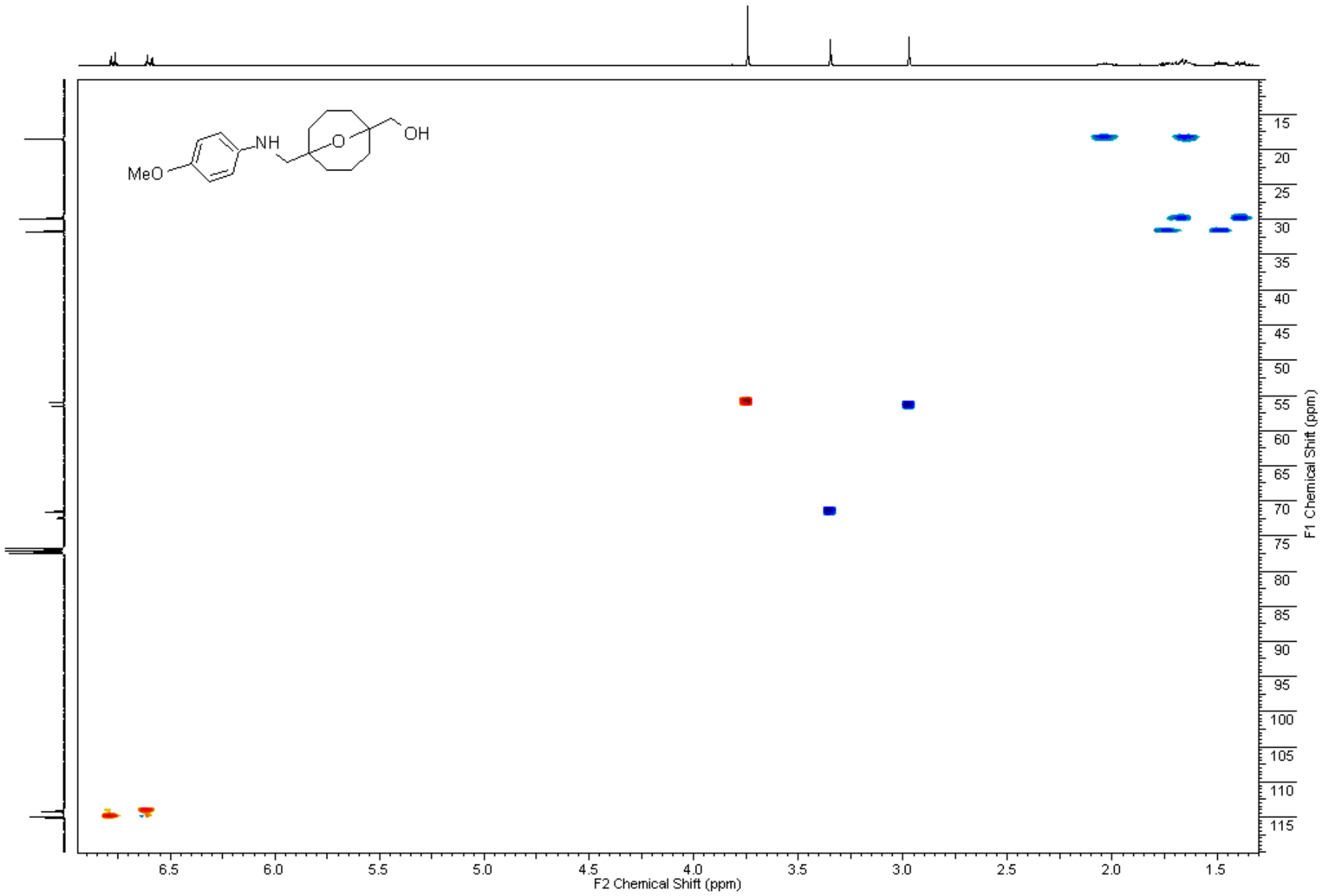
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5m**



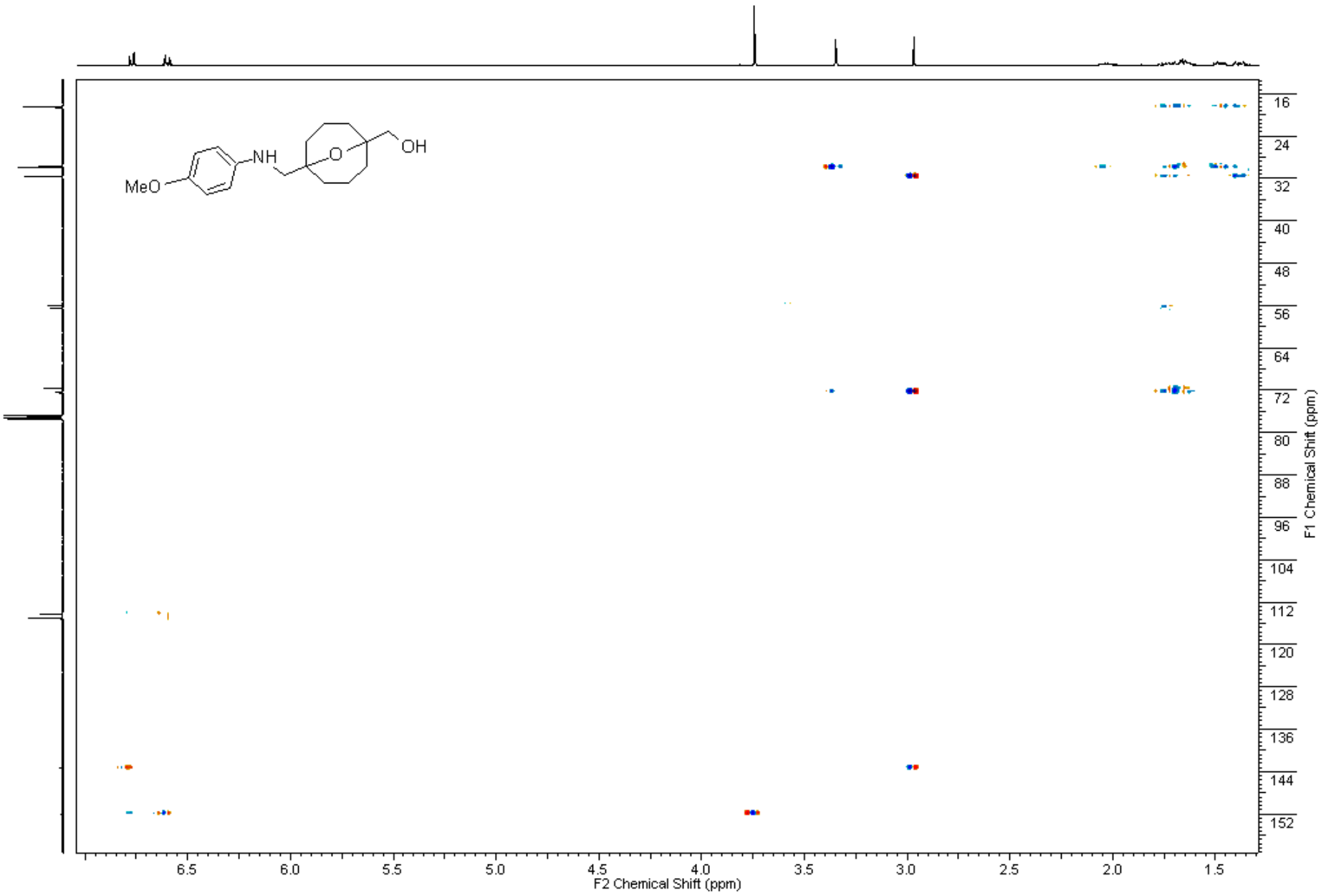
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5m**



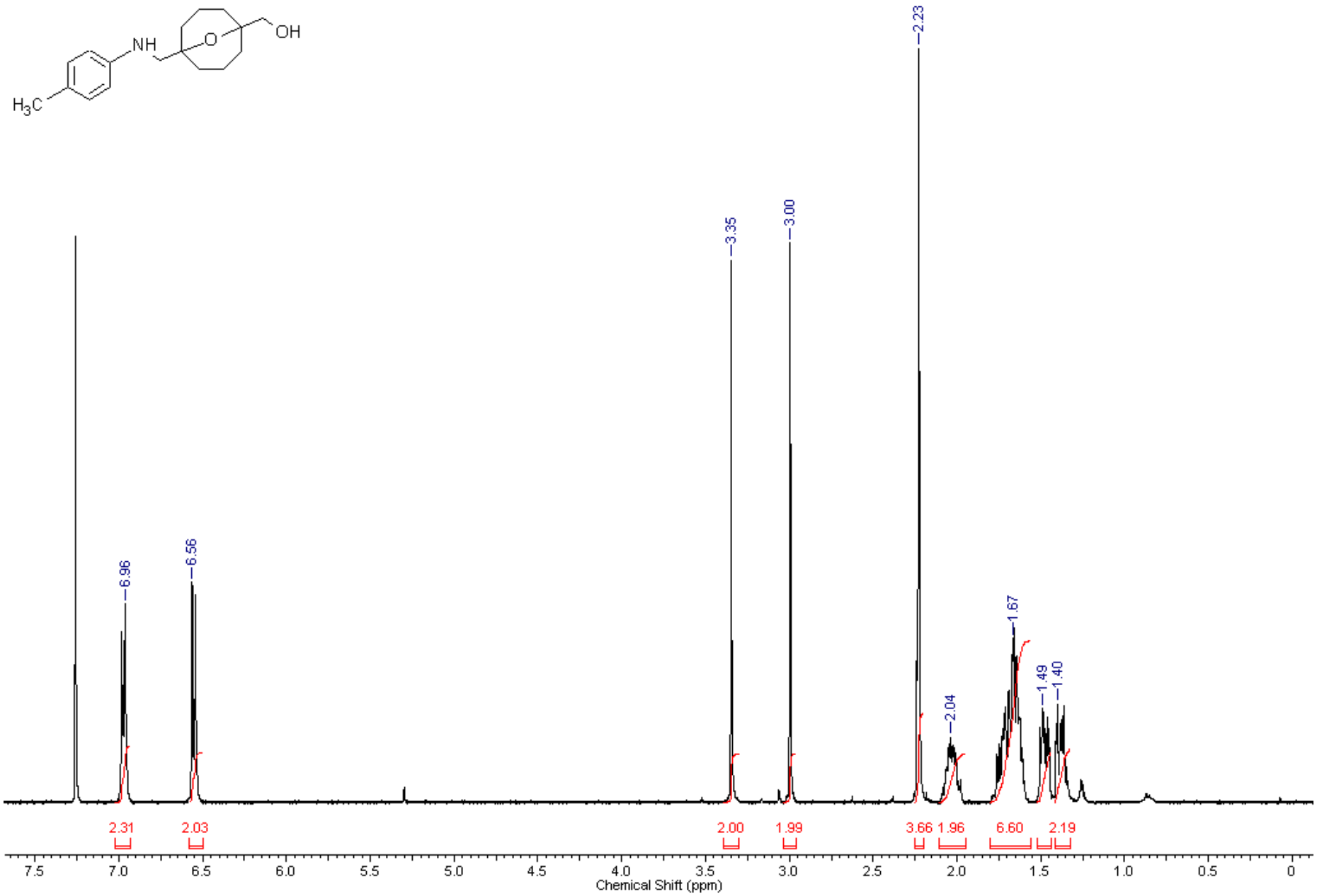
HSQC NMR spectrum of compound **5m**



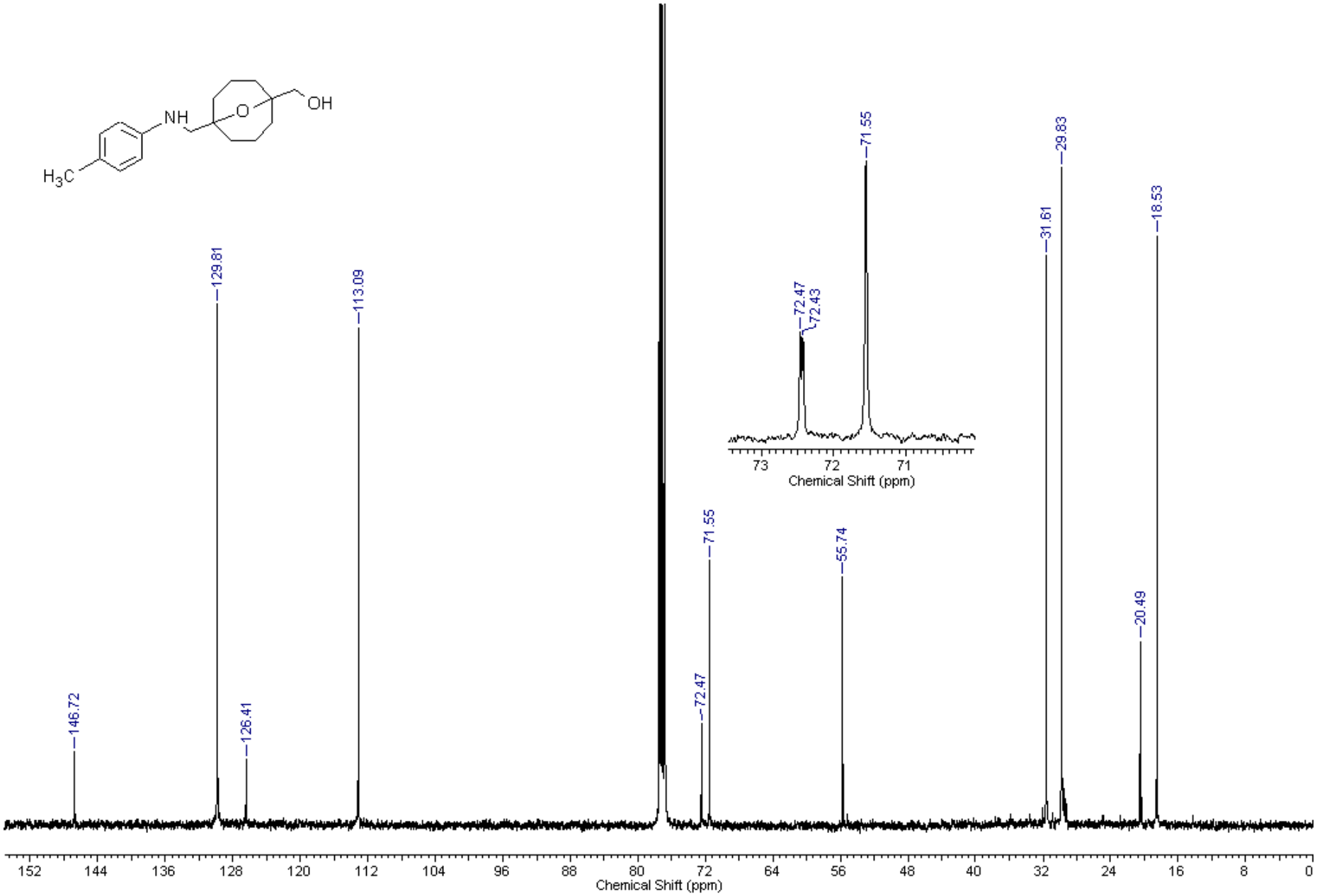
HMBC NMR spectrum of compound **5m**



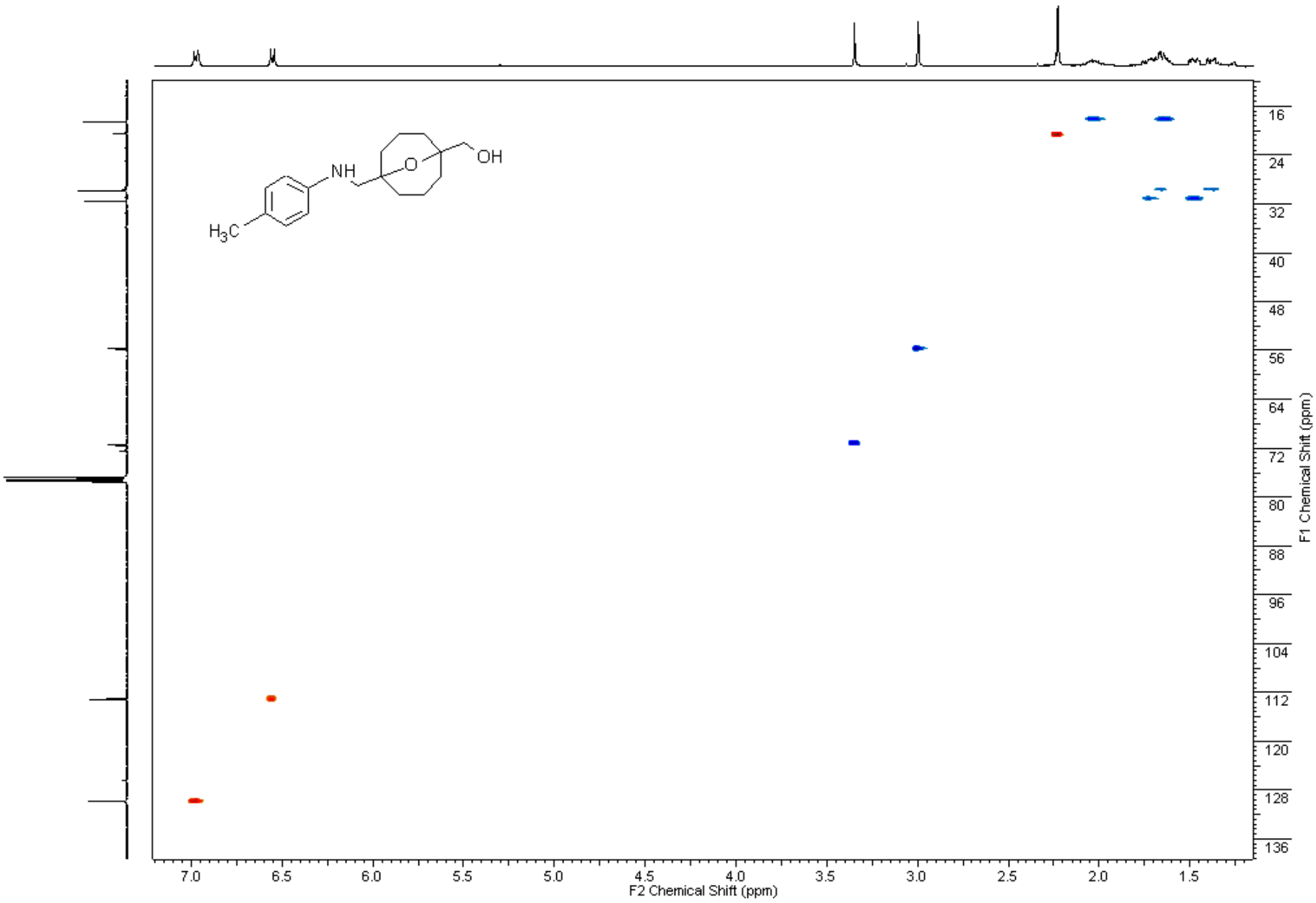
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5n**



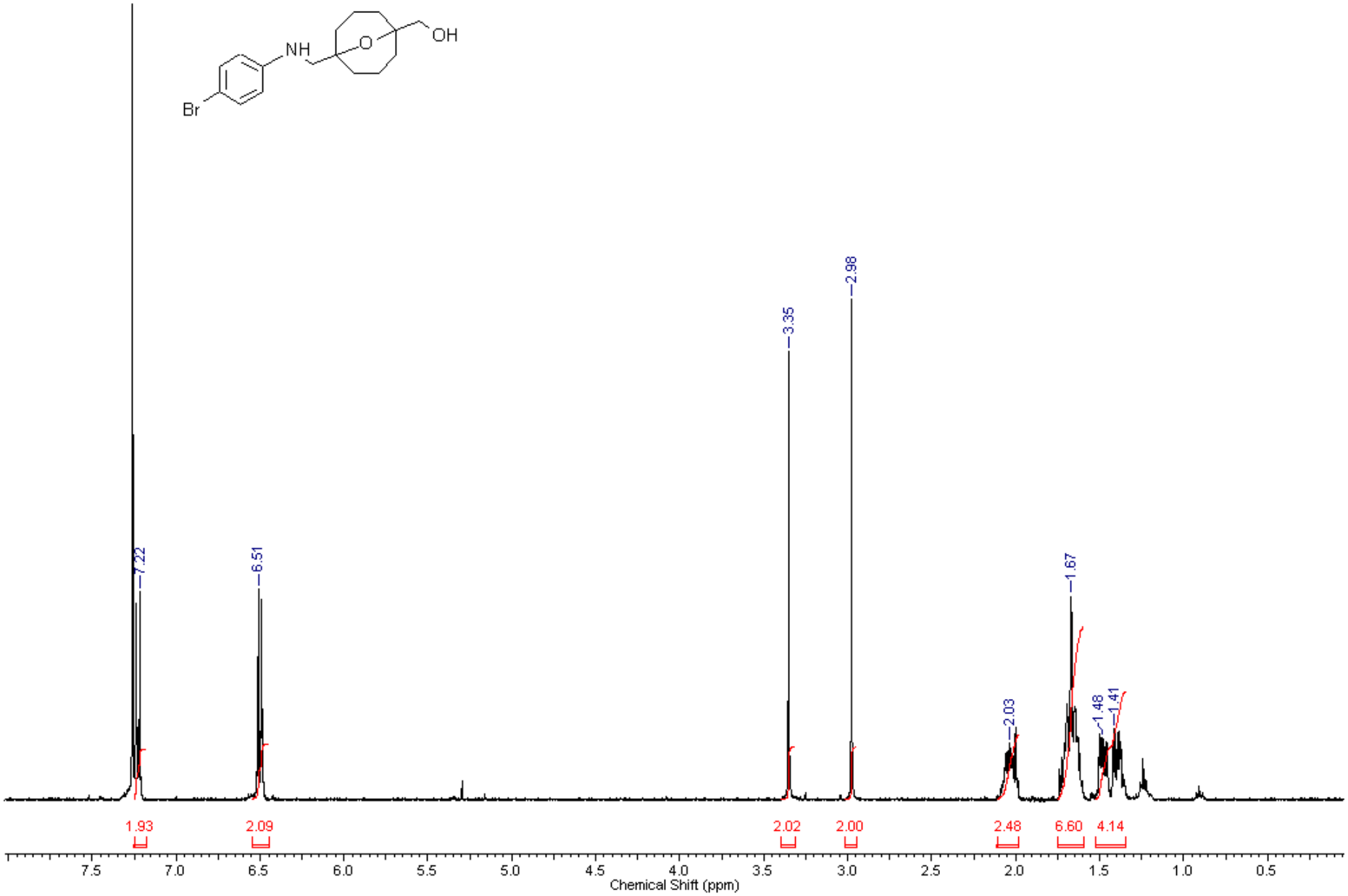
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5n**



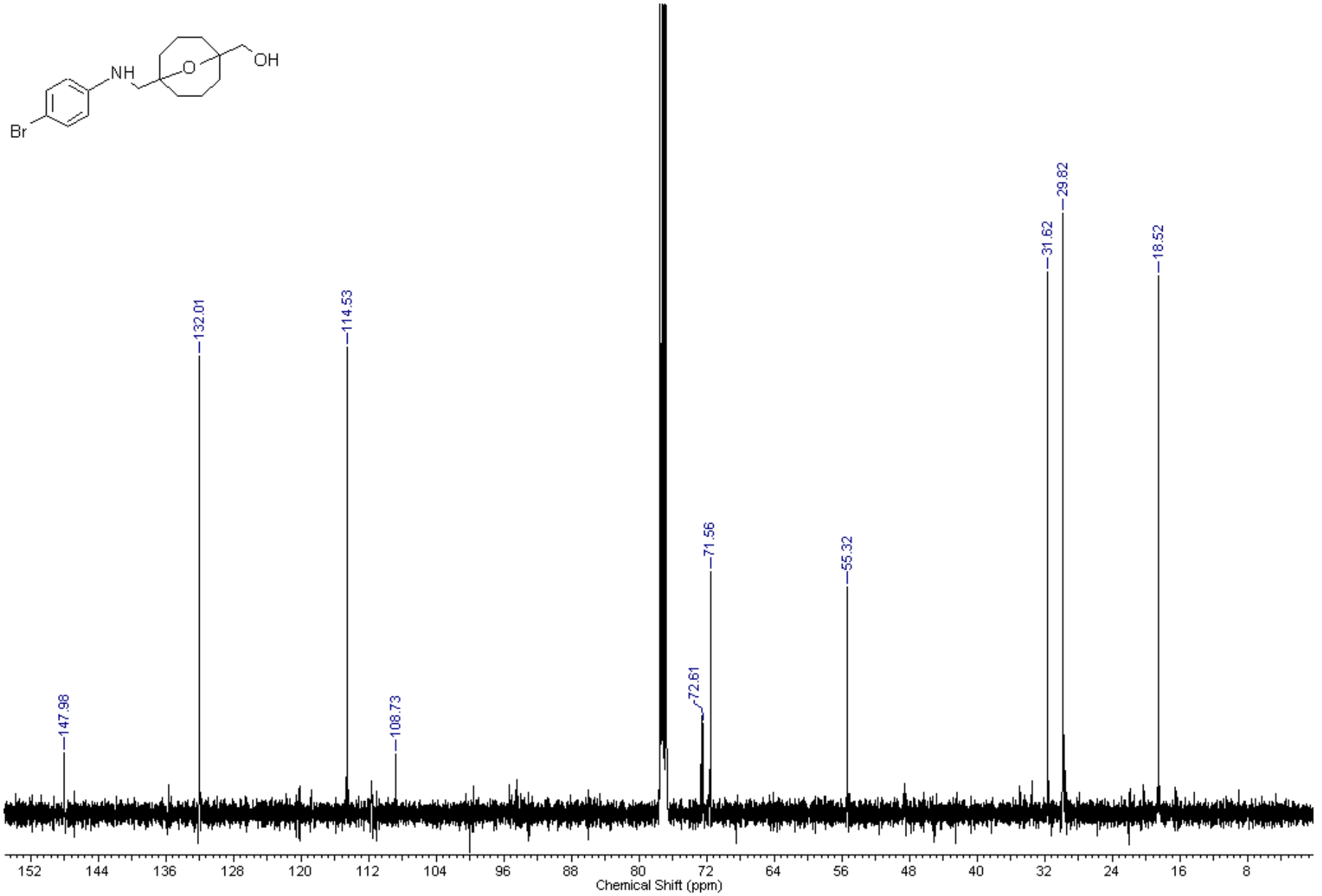
HSQC NMR spectrum of compound **5n**



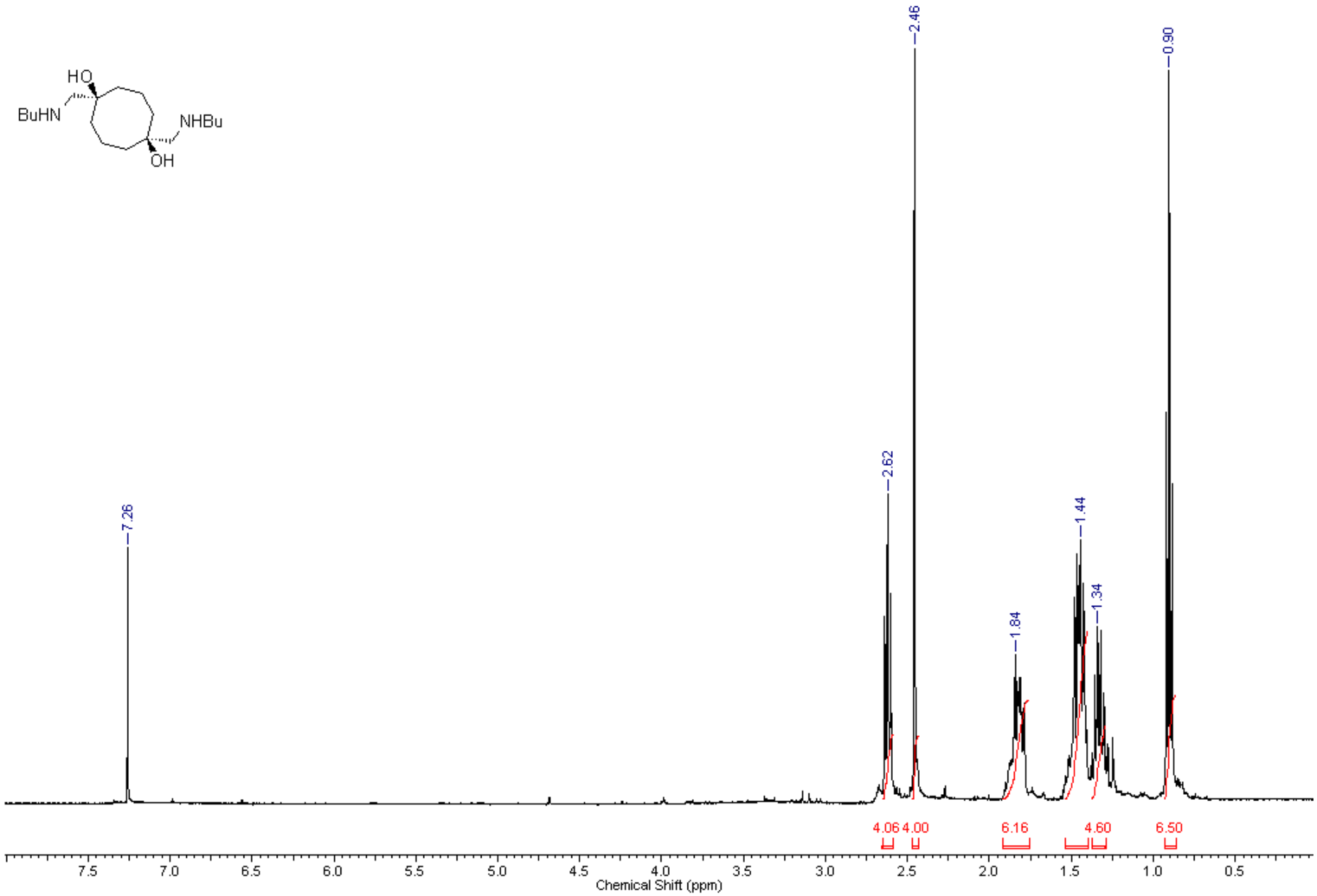
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **5o**



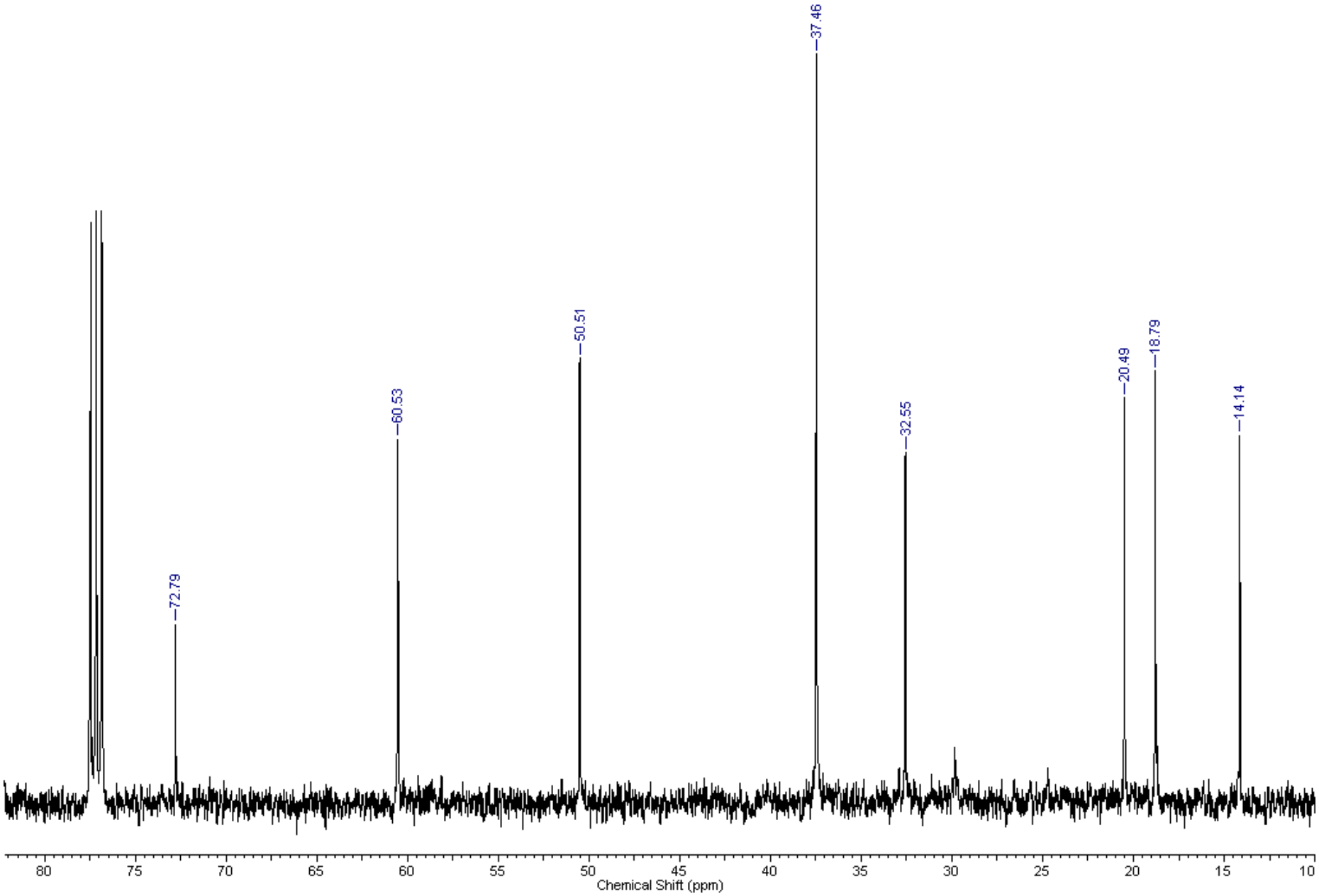
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **5o**



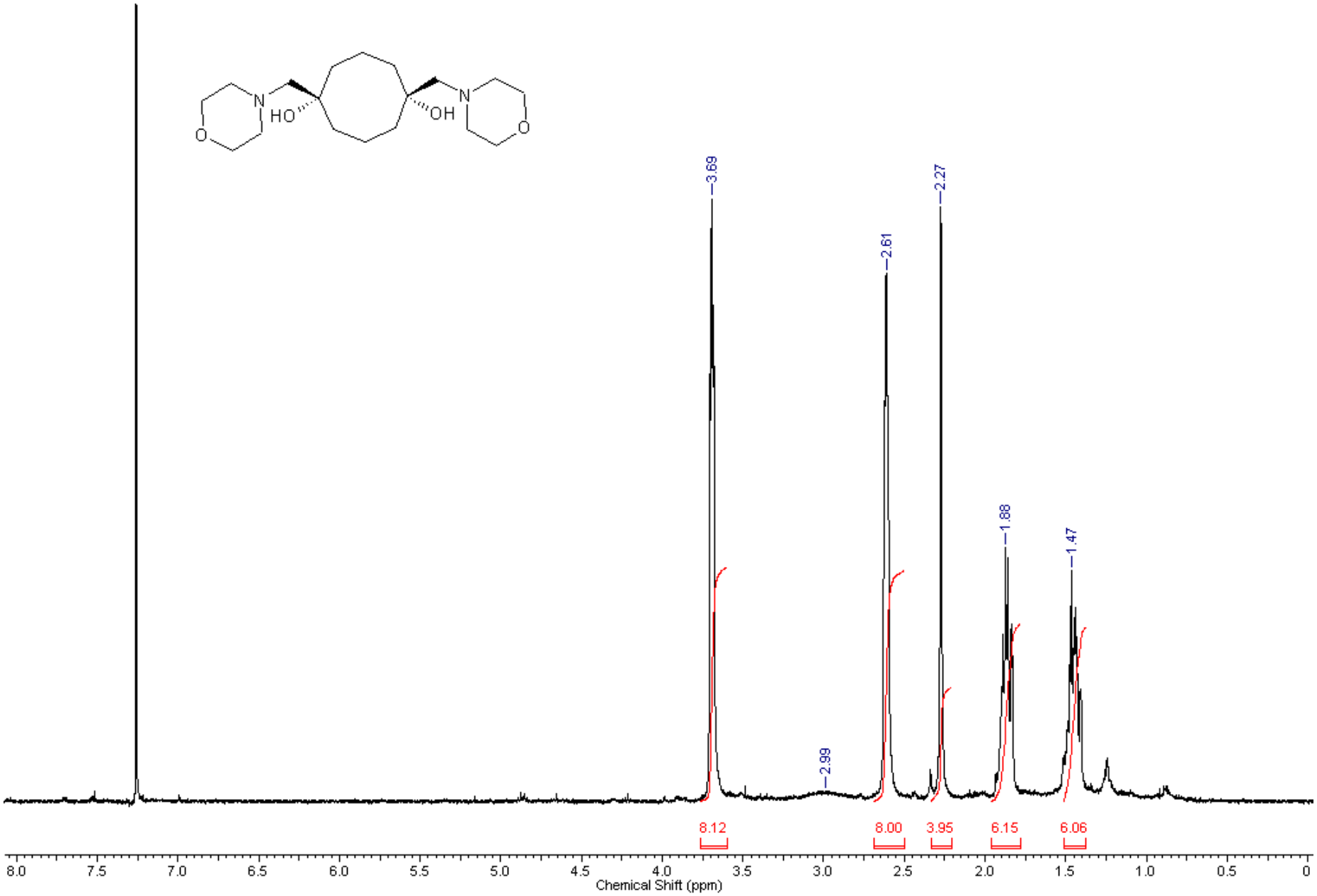
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6a**



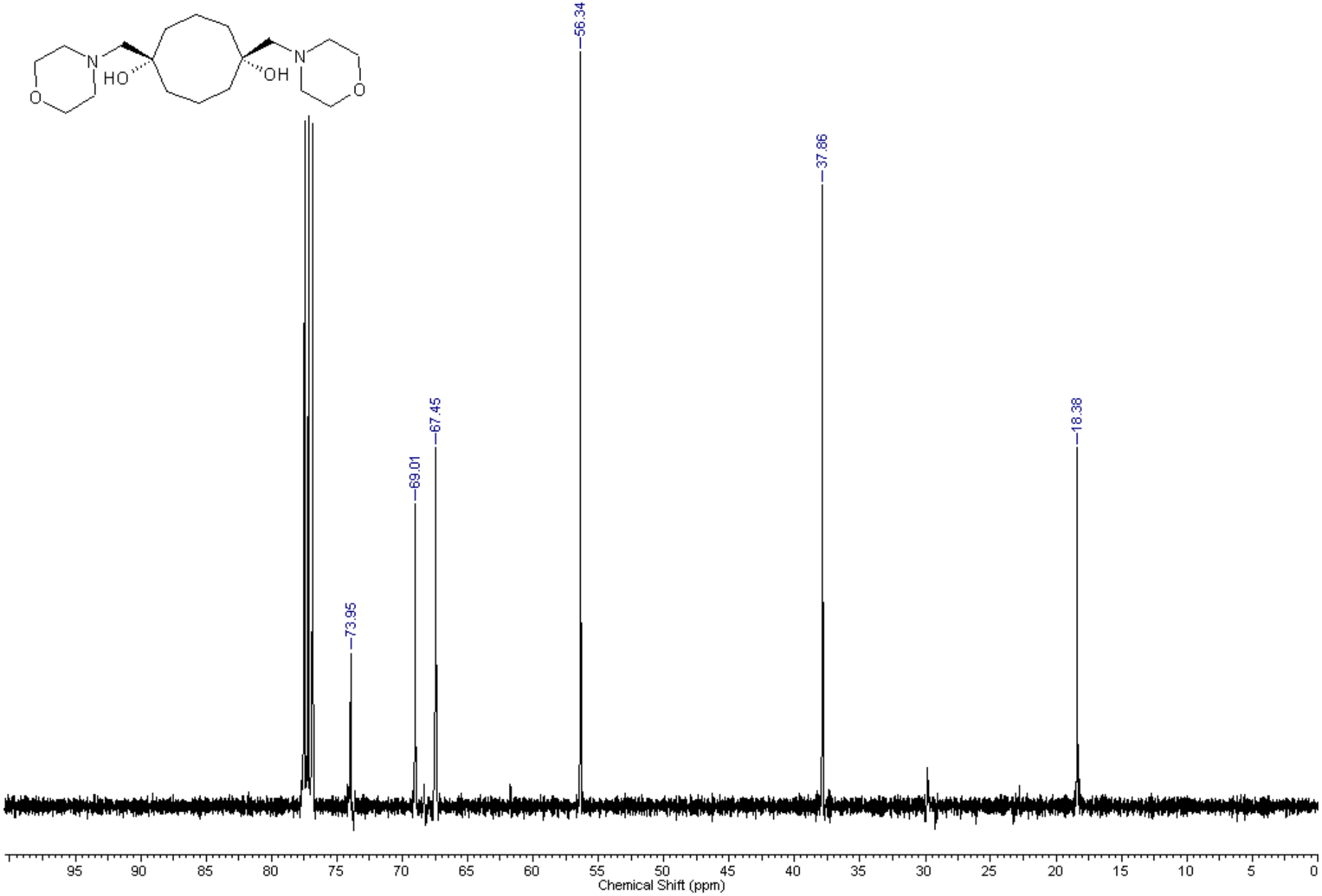
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6a**



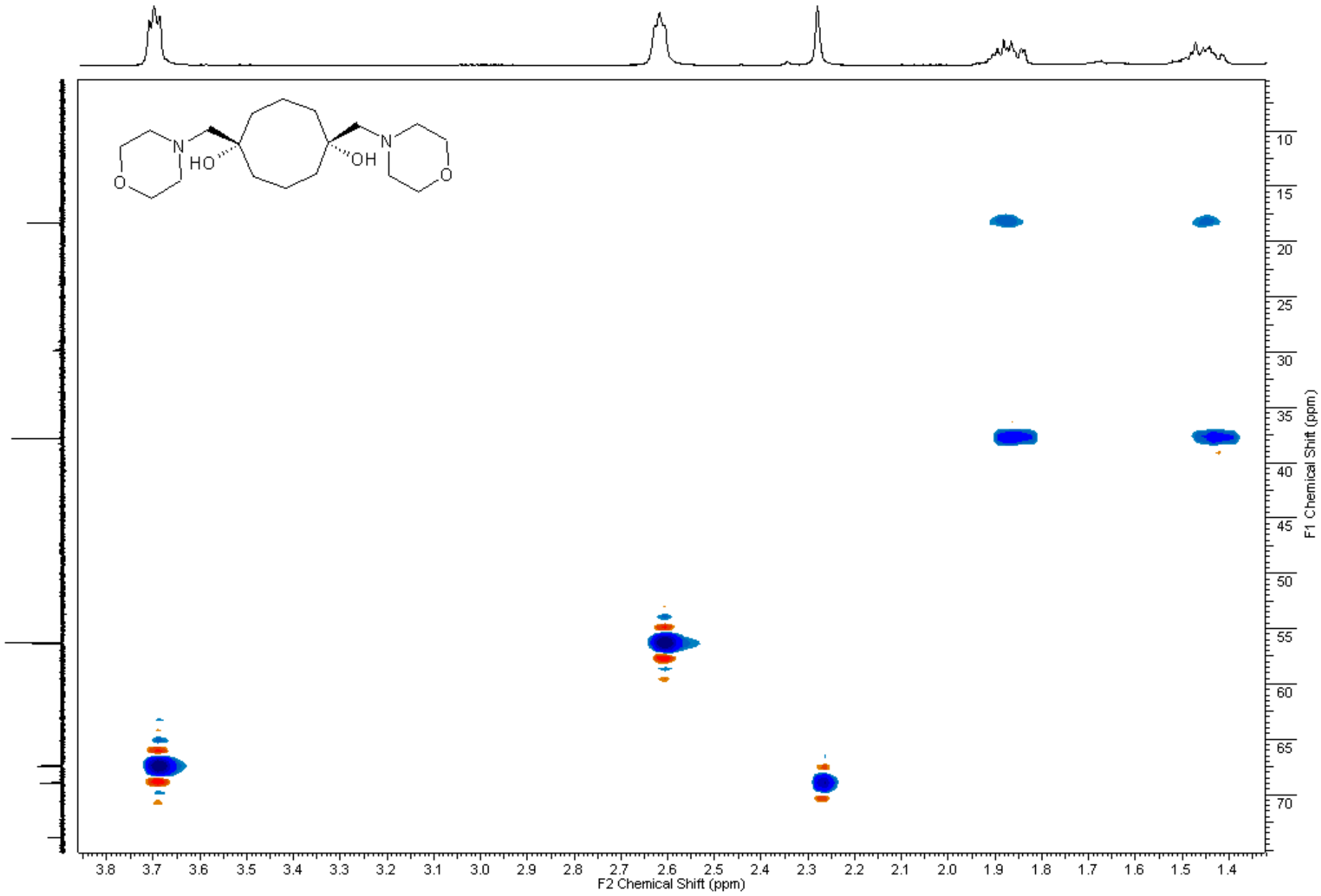
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6b**



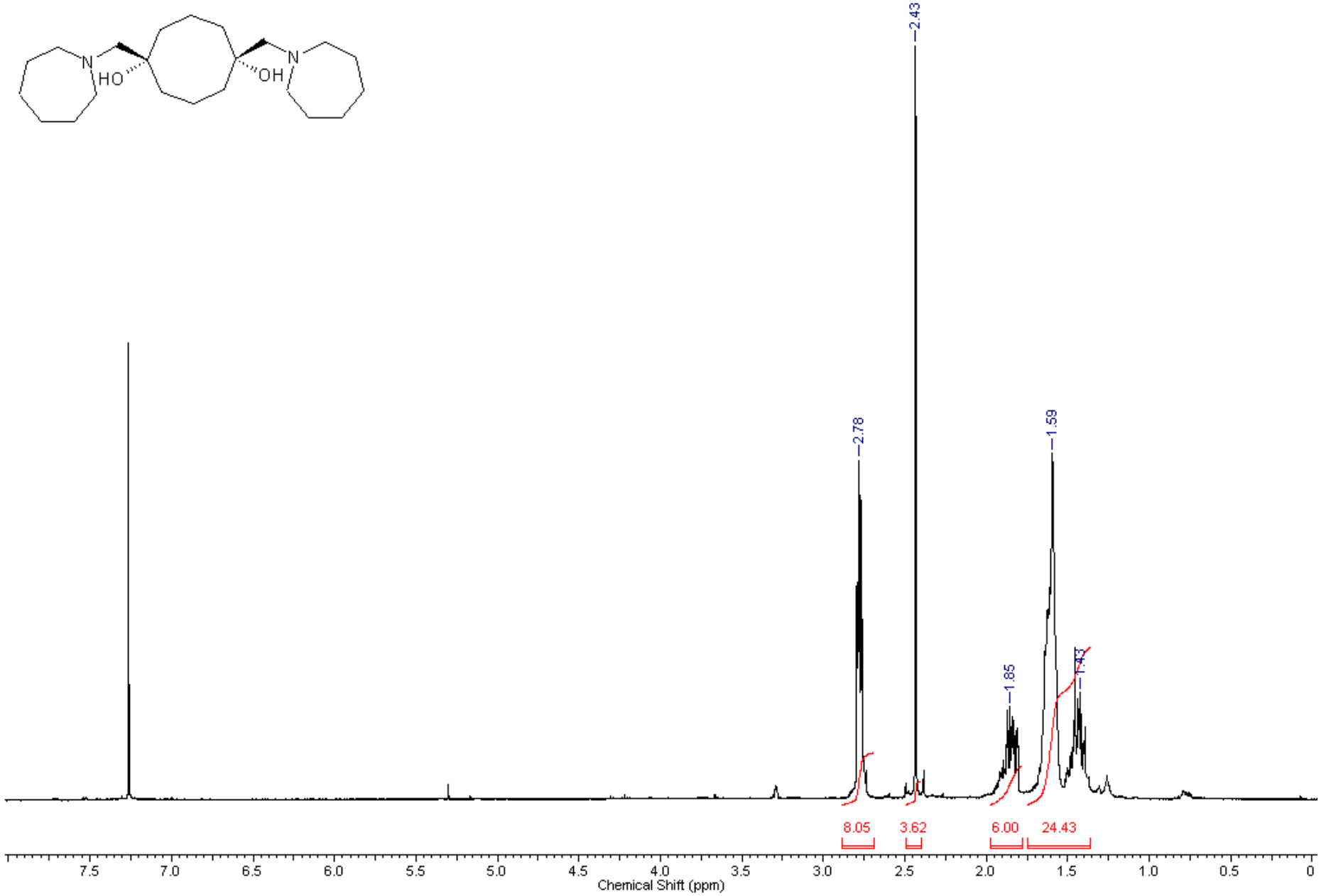
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6b**



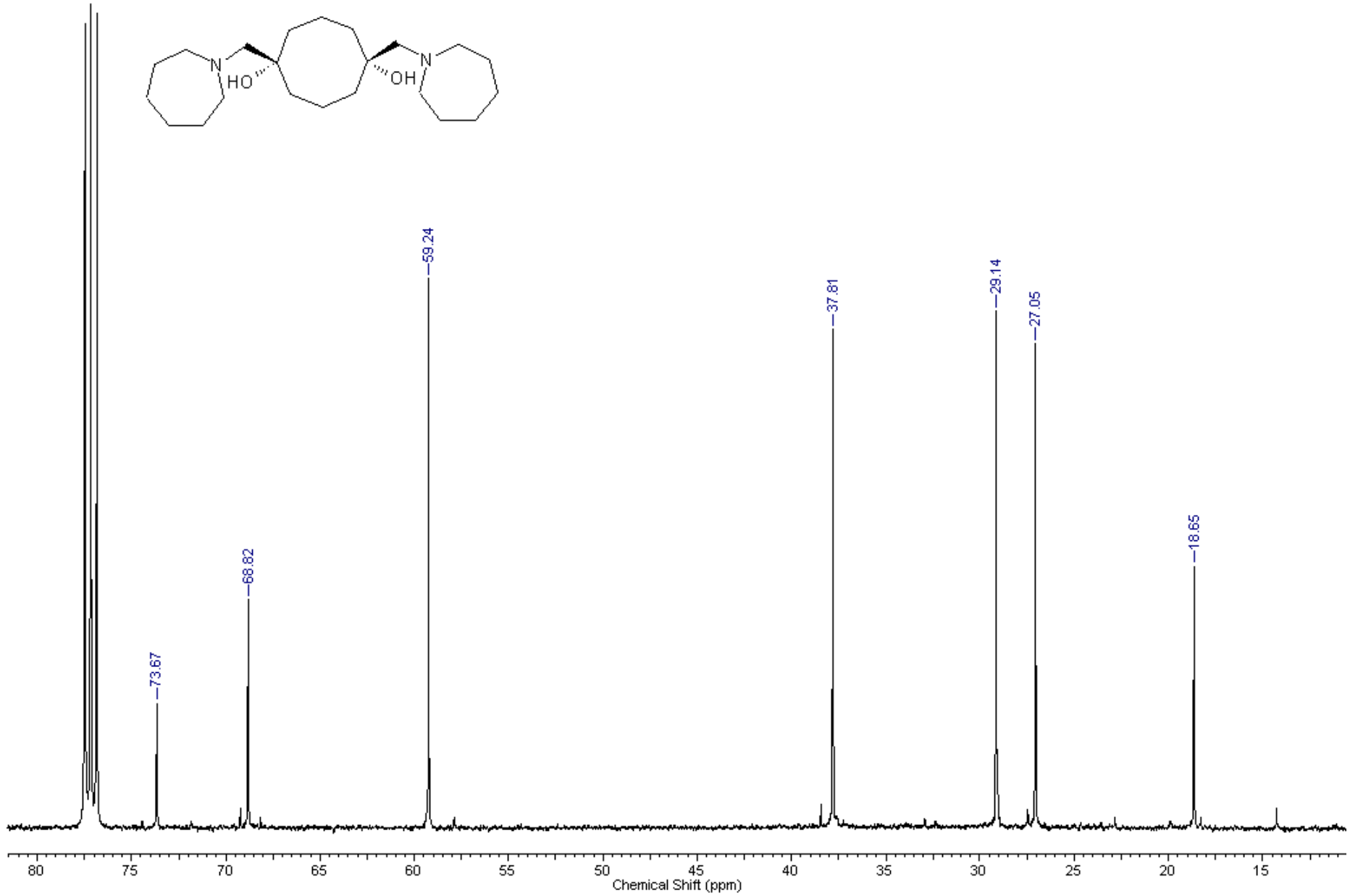
HSQC NMR spectrum of compound **6b**



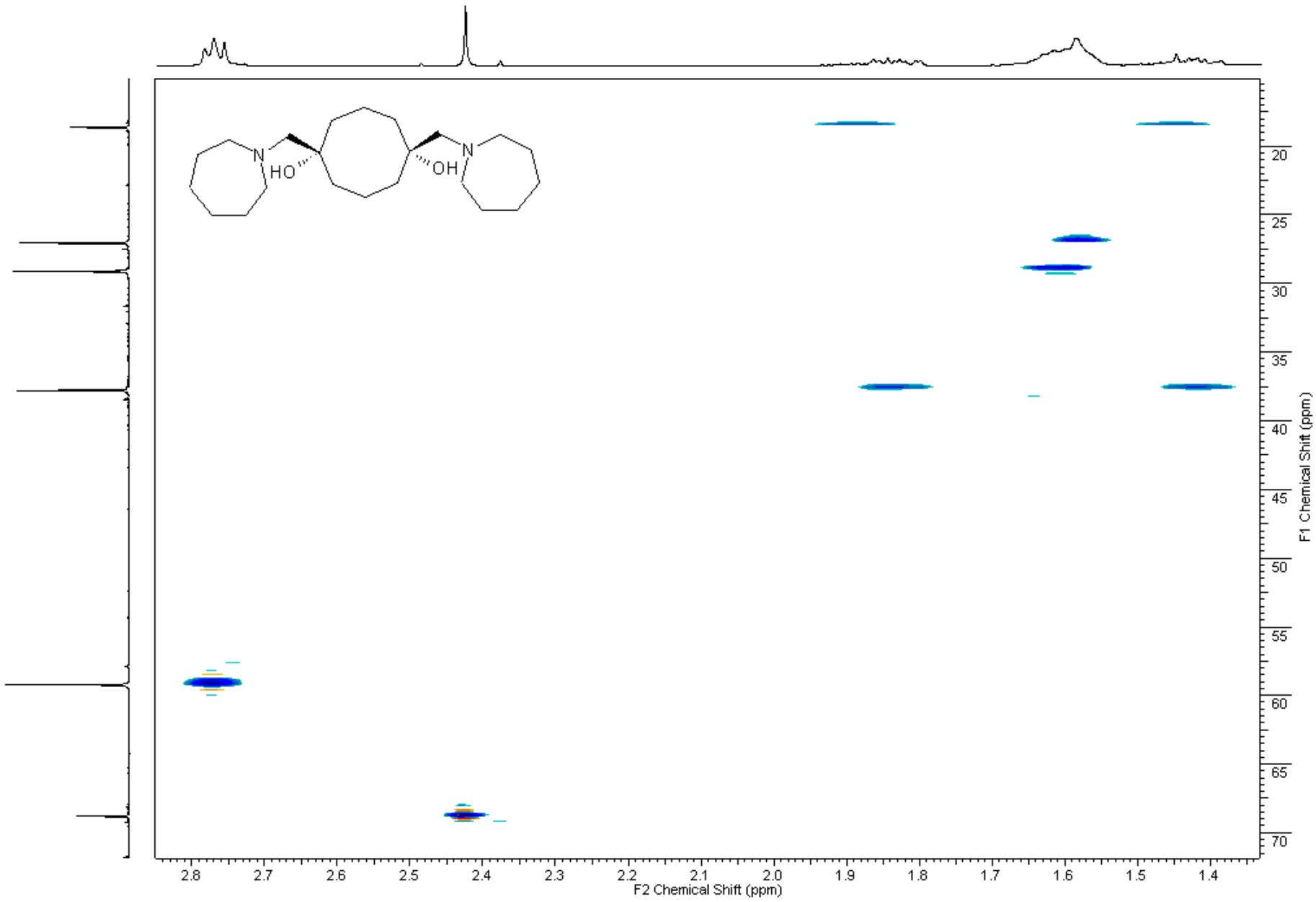
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6c**



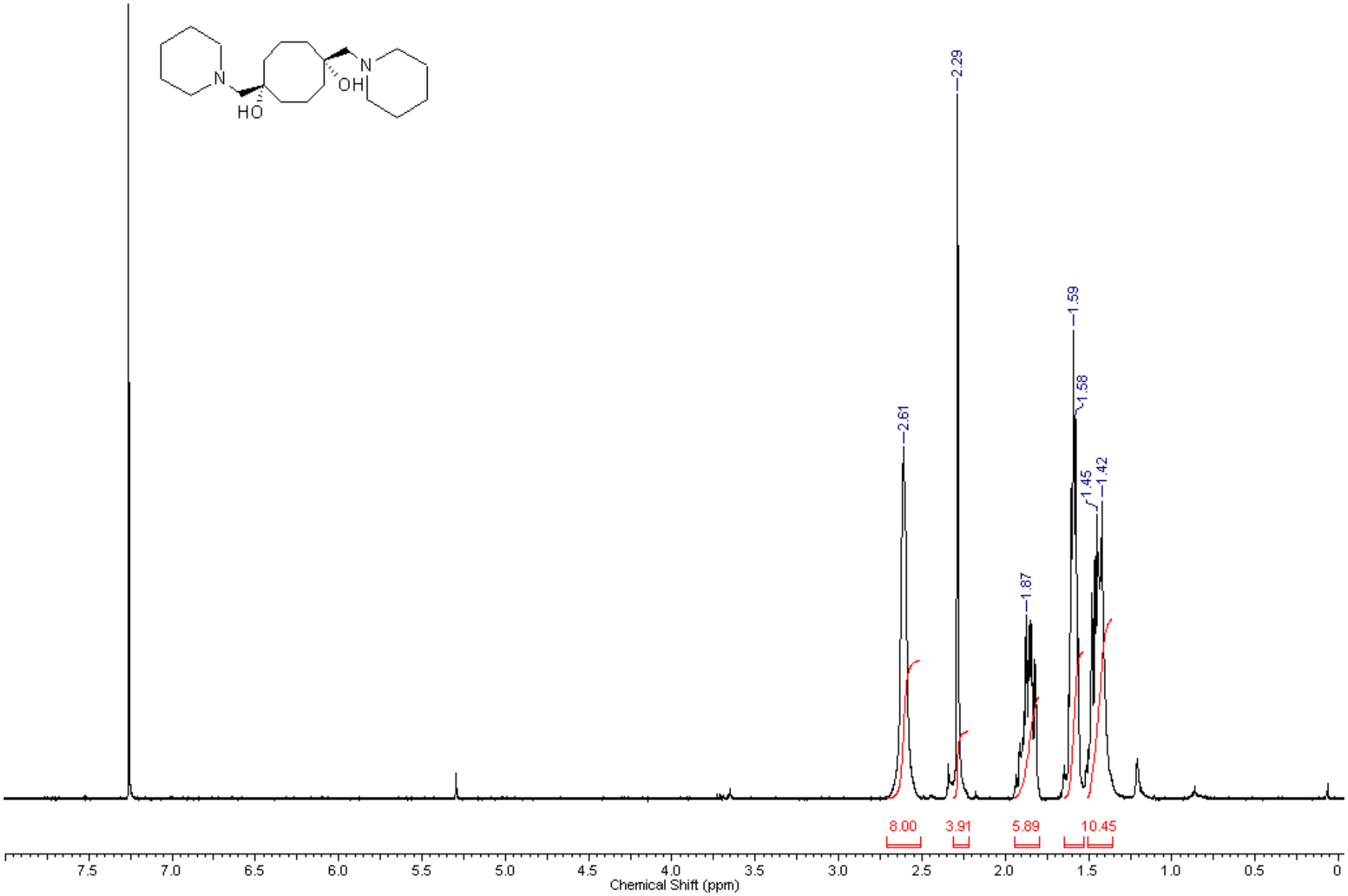
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6c**



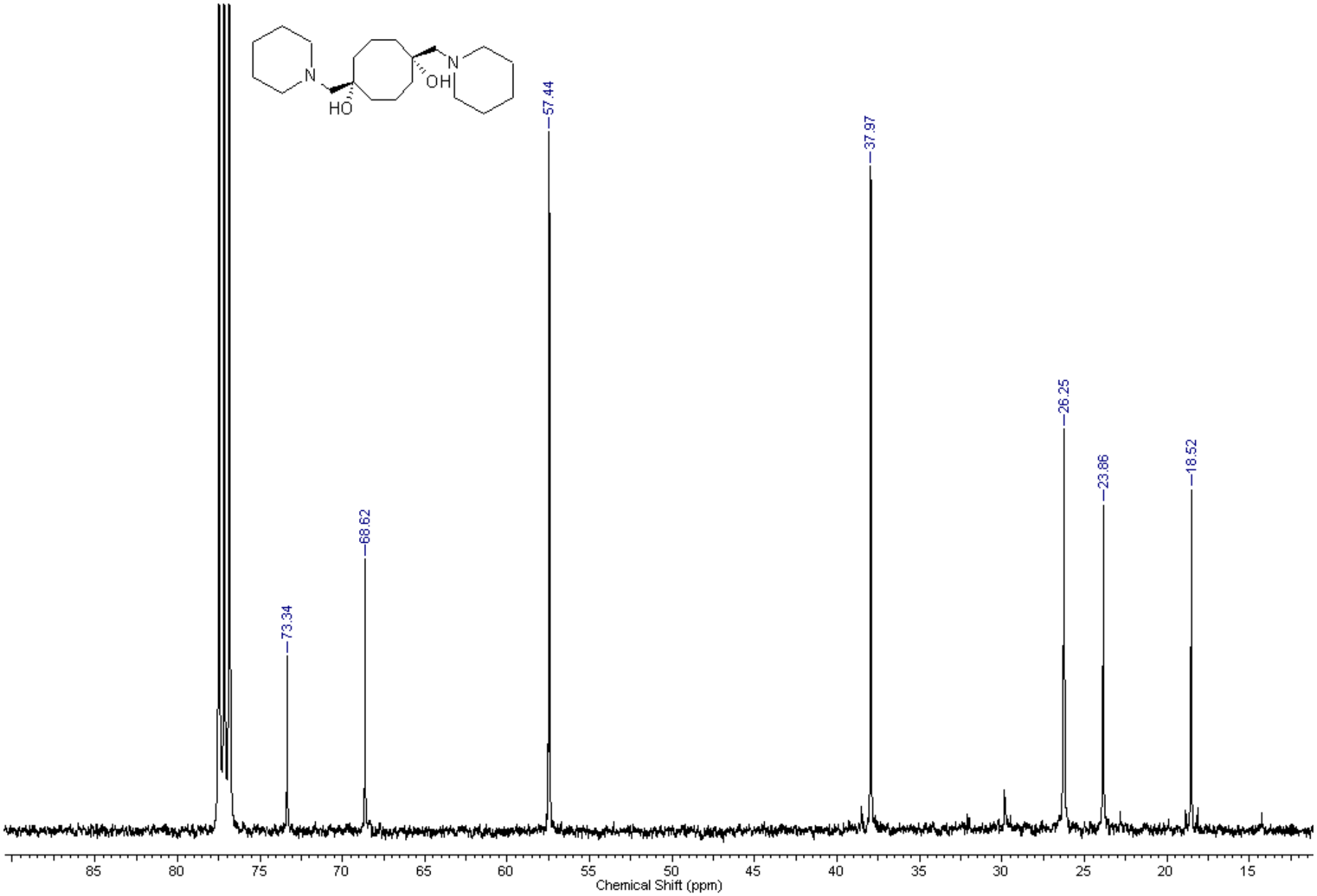
HSQC NMR spectrum of compound **6c**



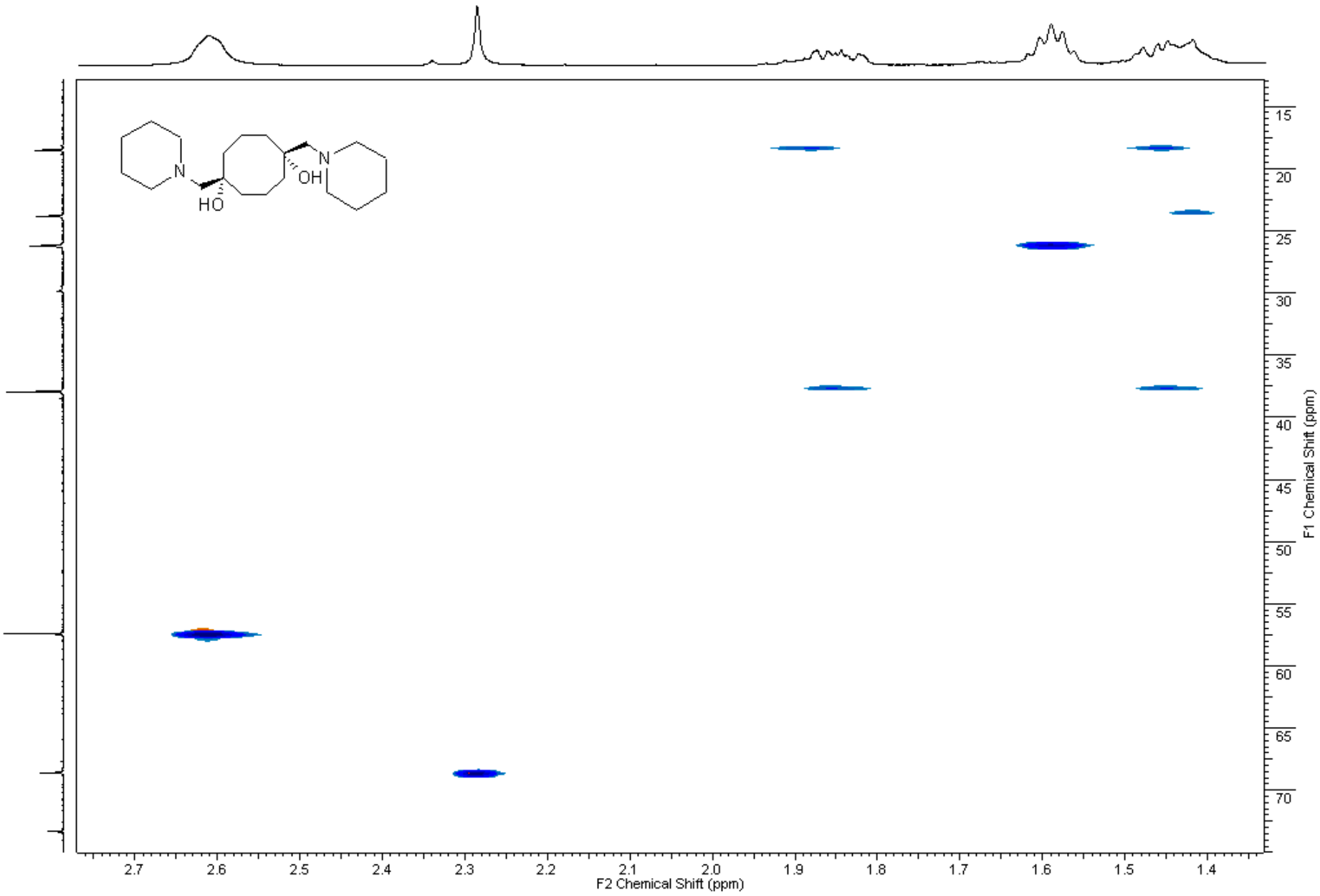
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6d**



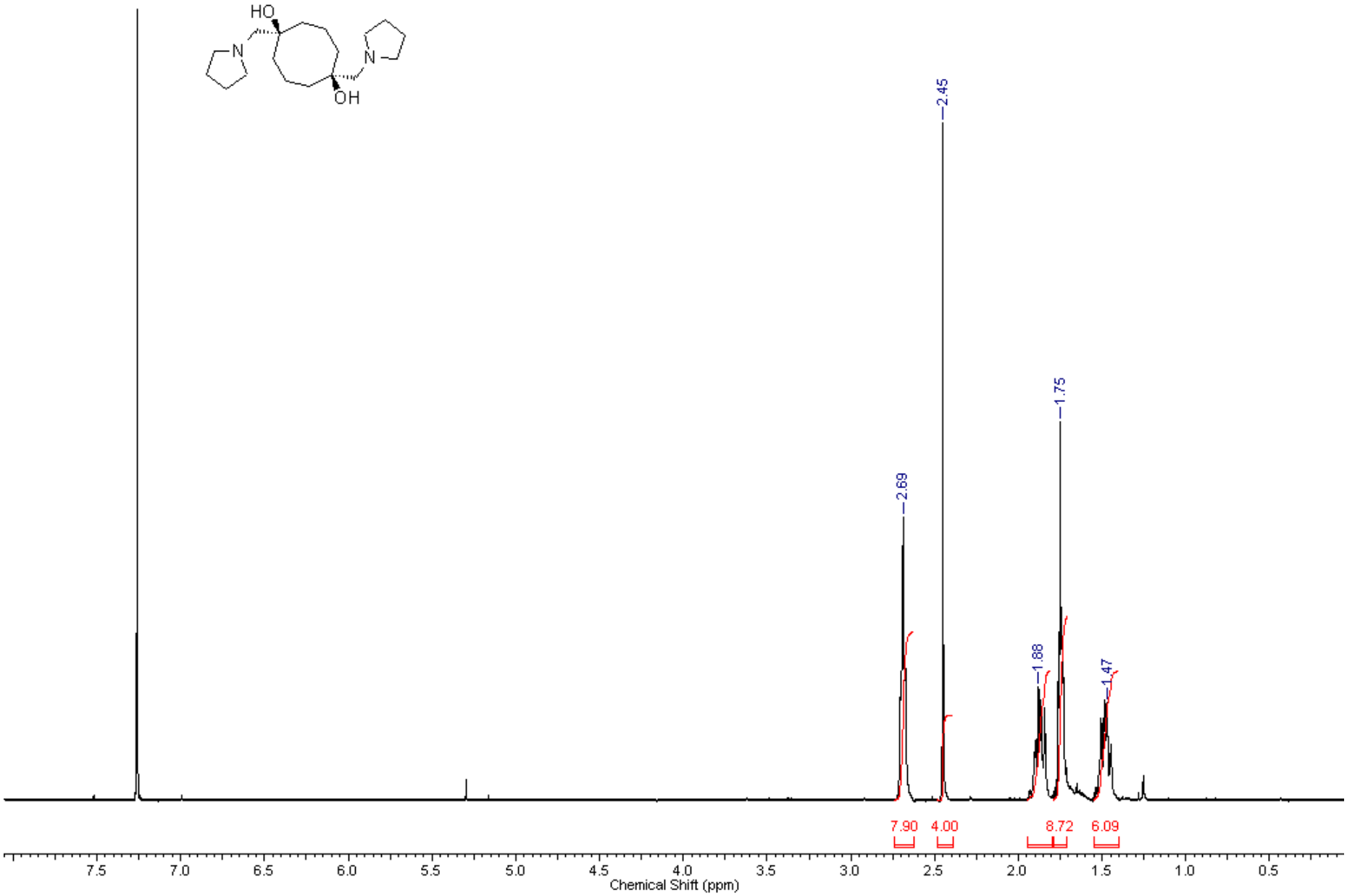
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6d**



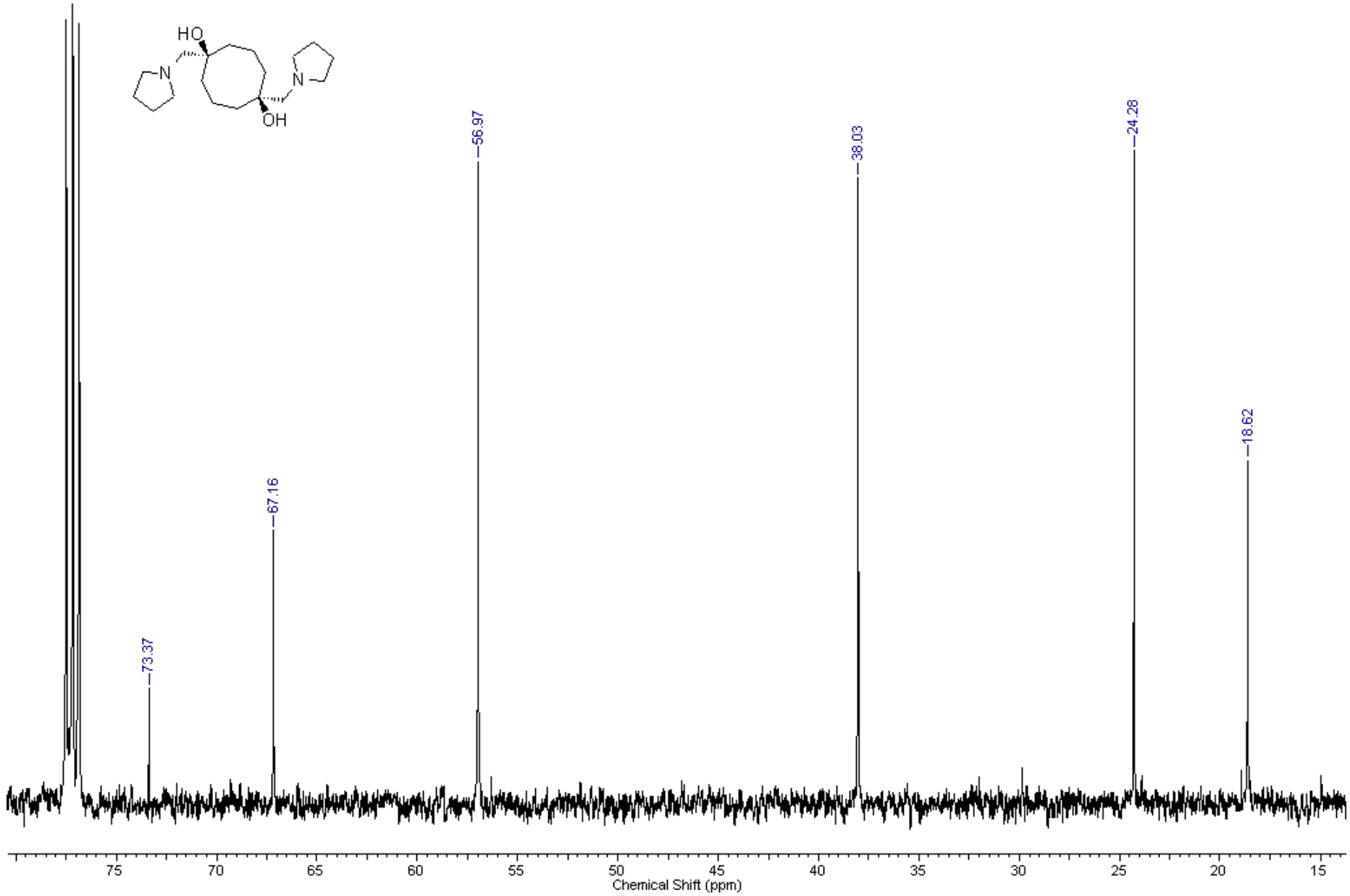
HSQC NMR spectrum of compound **6d**



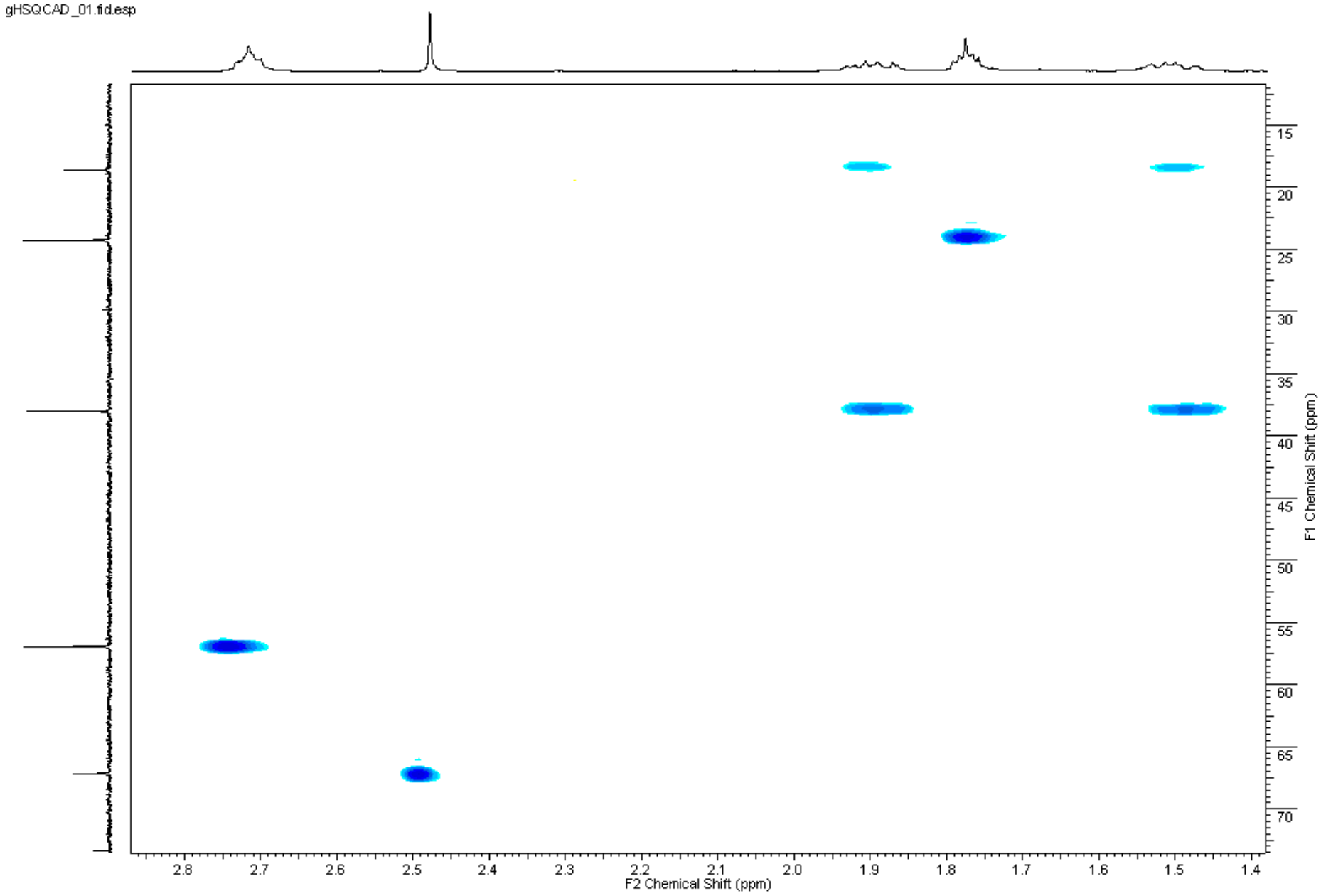
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6e**



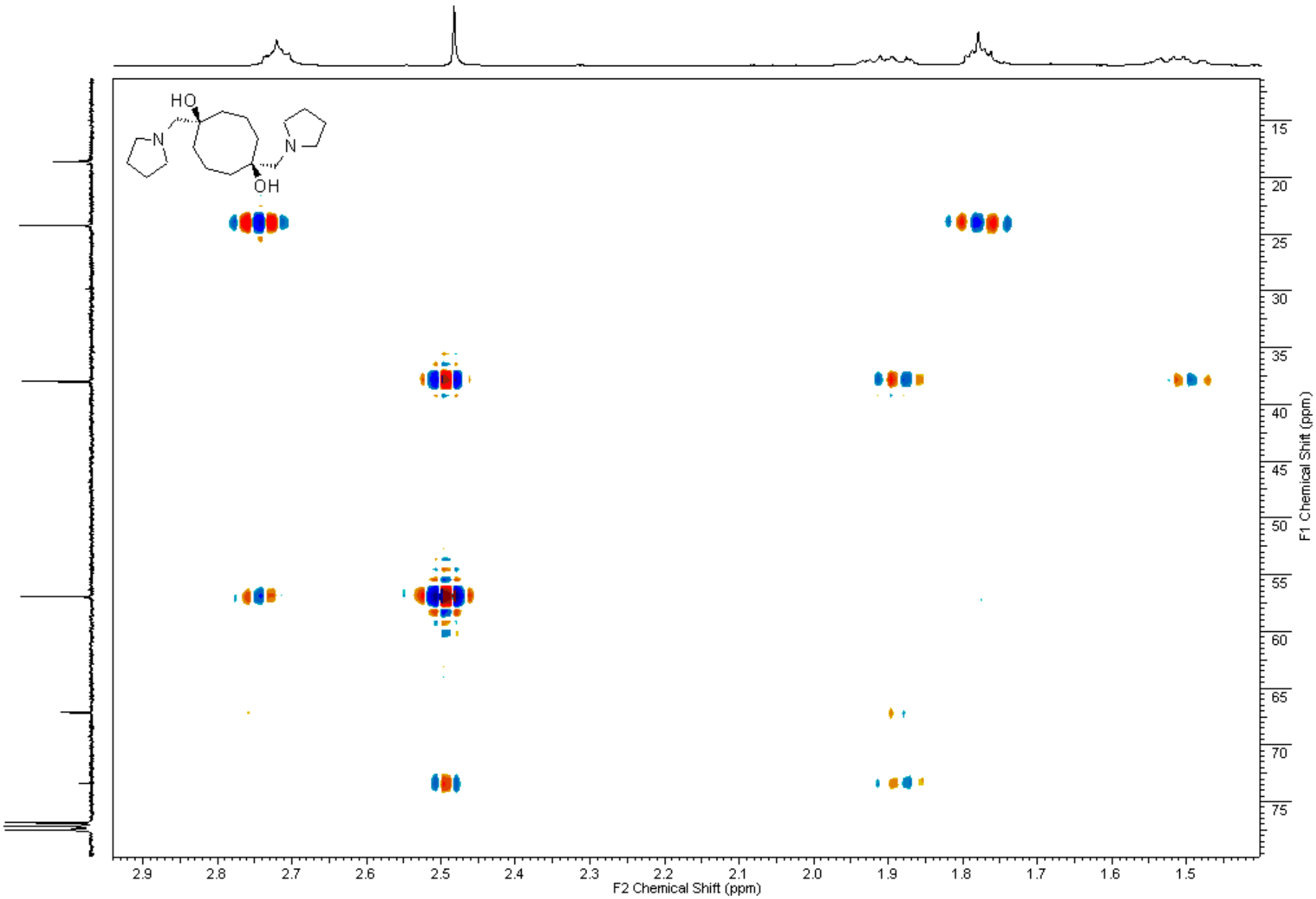
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6e**



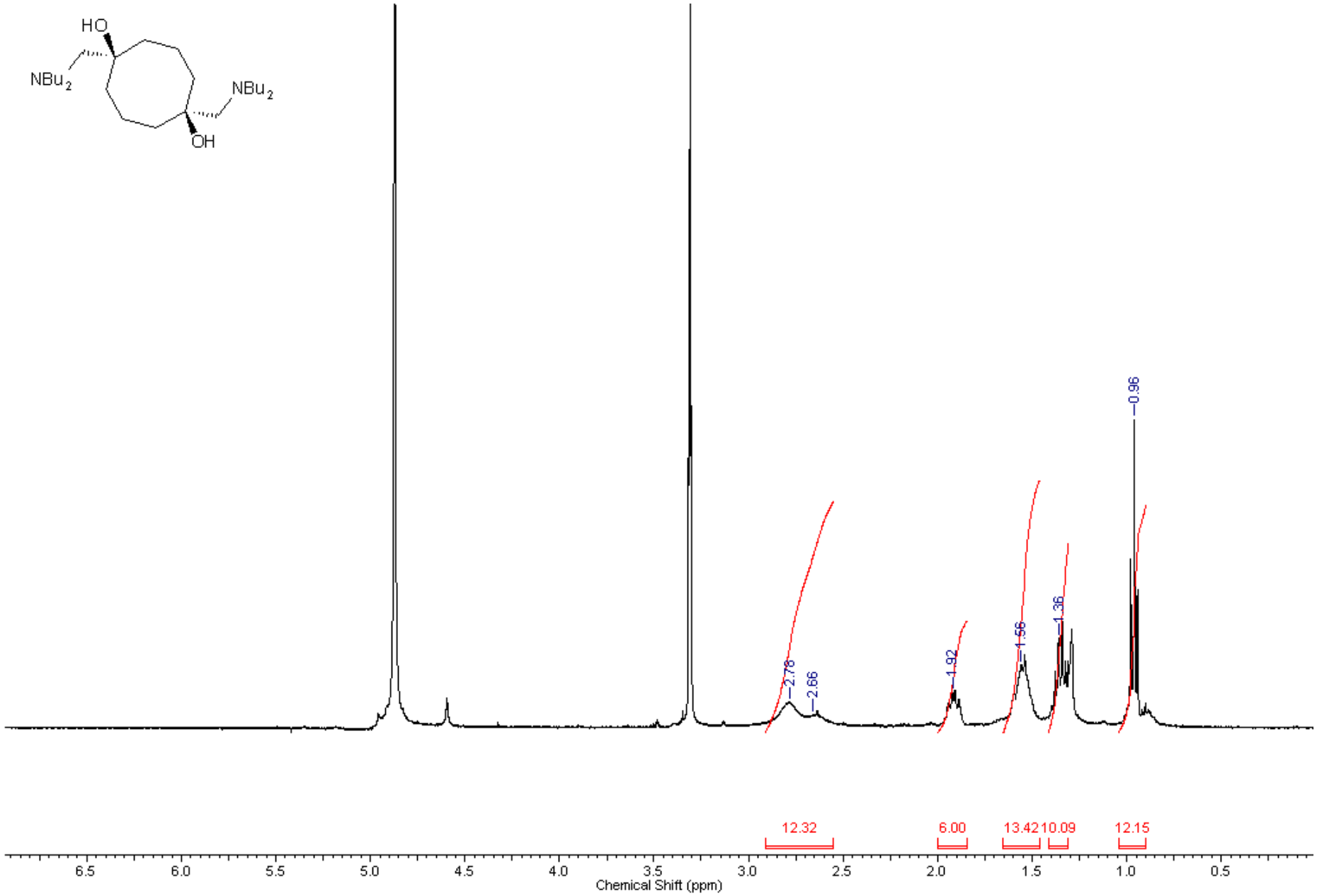
HSQC NMR spectrum of compound **6e**



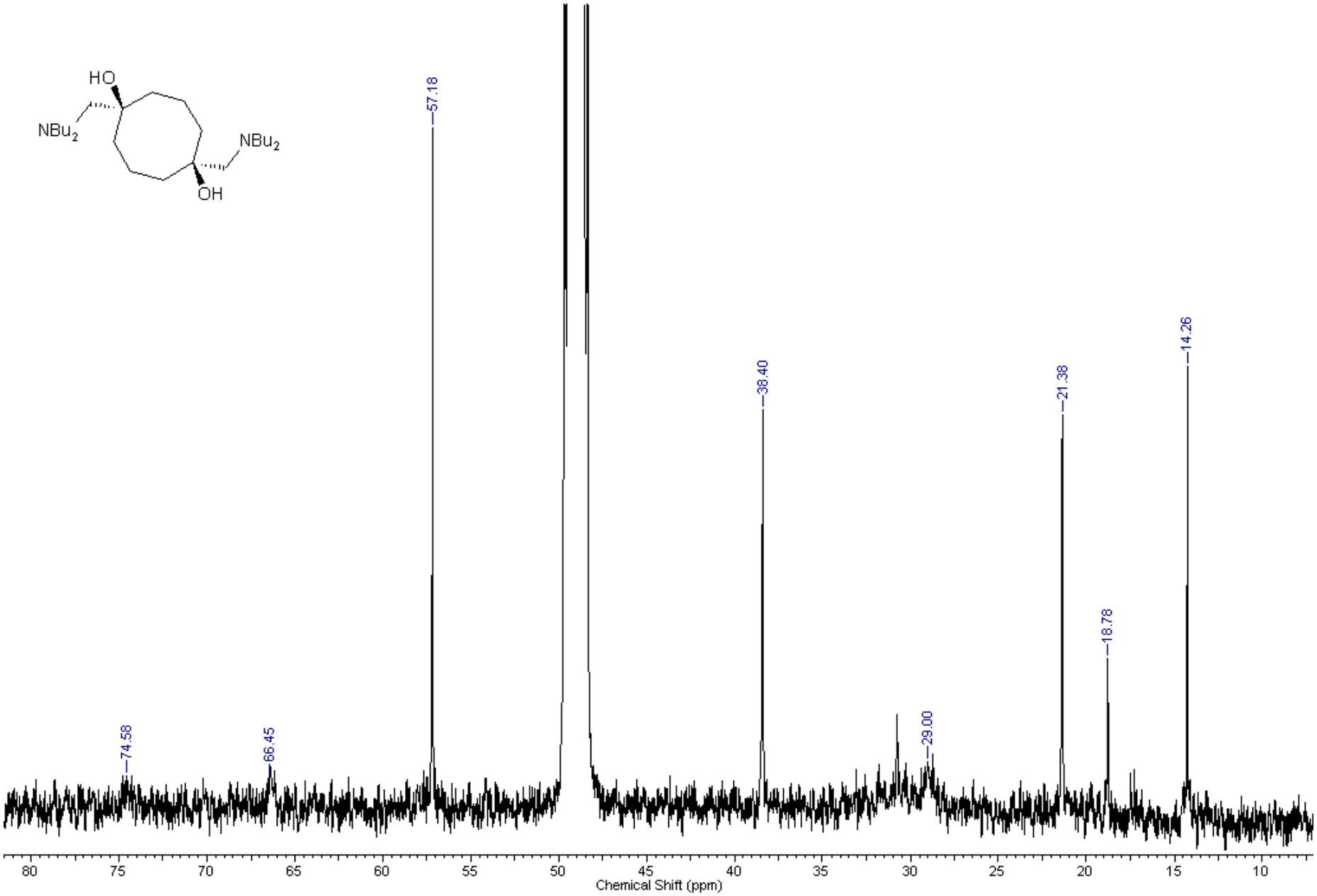
HMBC NMR spectrum of compound **6e**



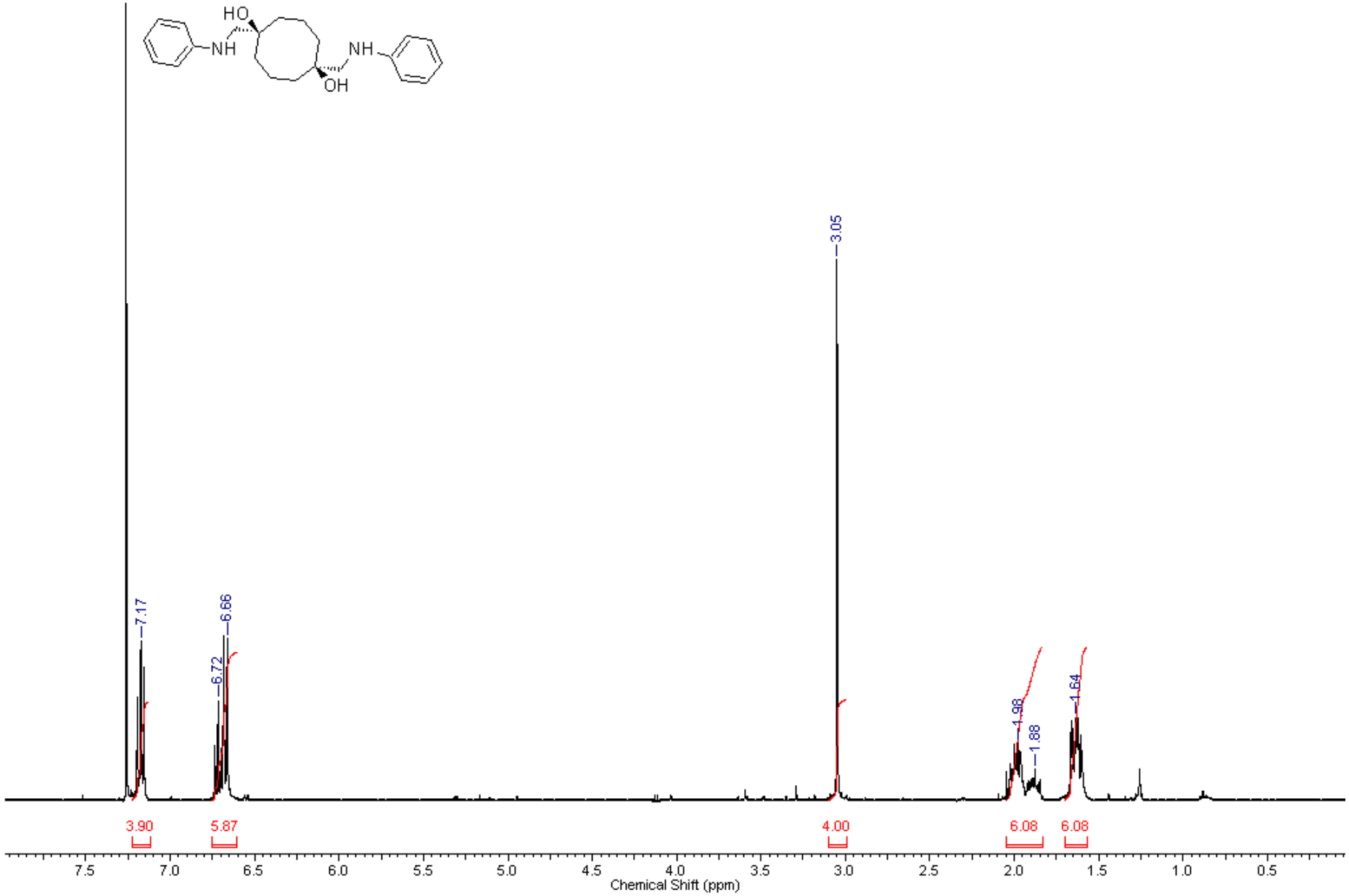
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6f**



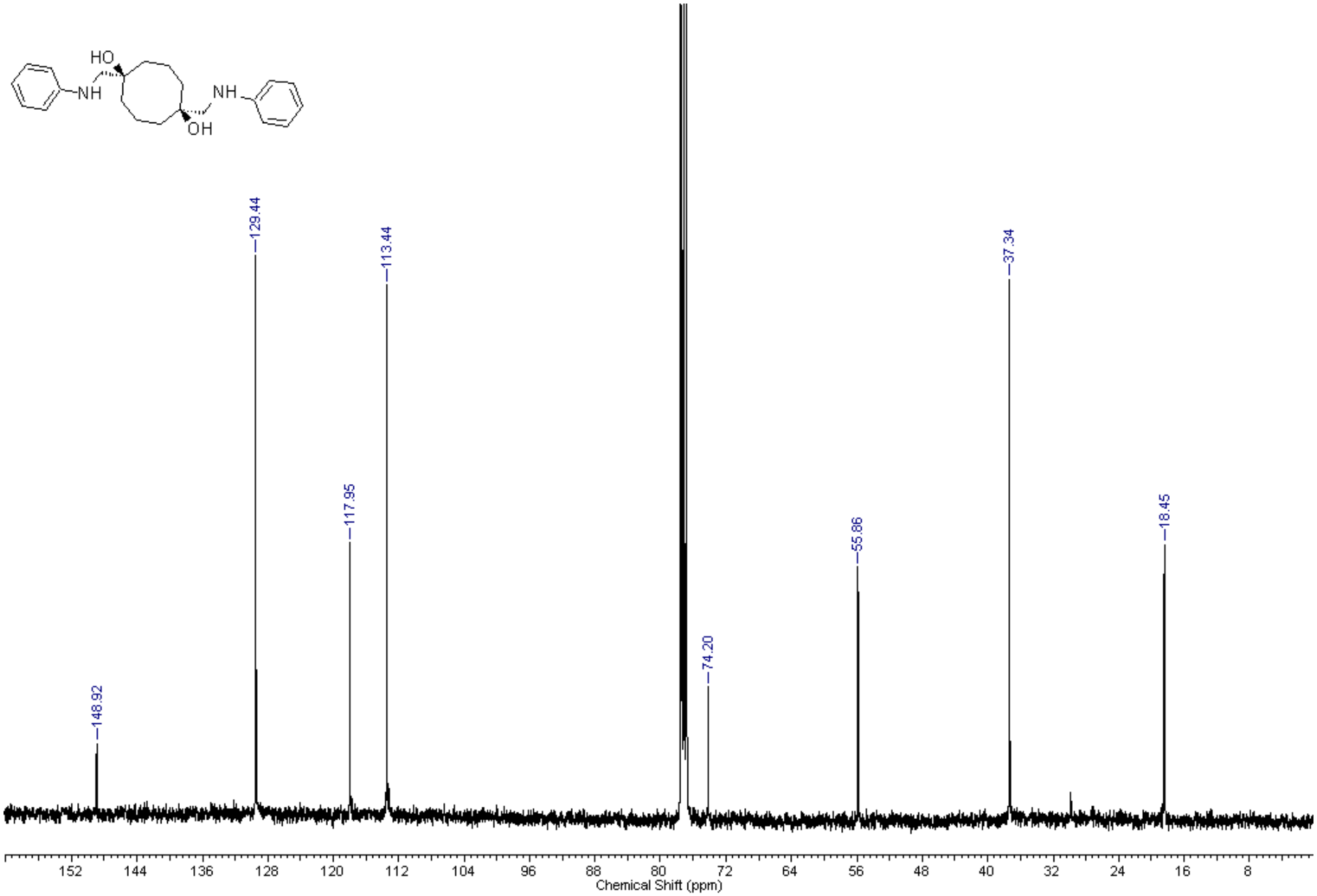
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6f**



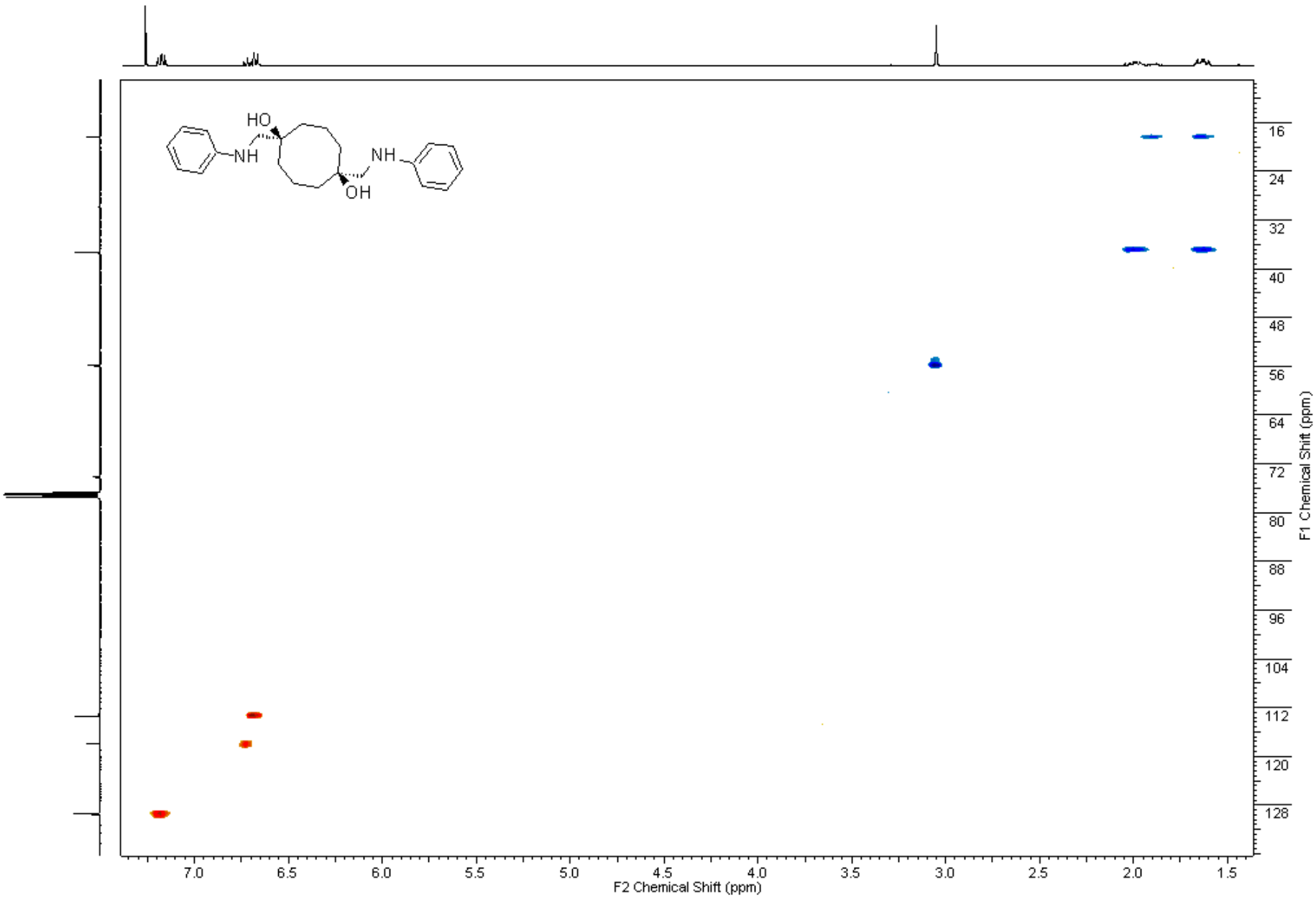
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6l**



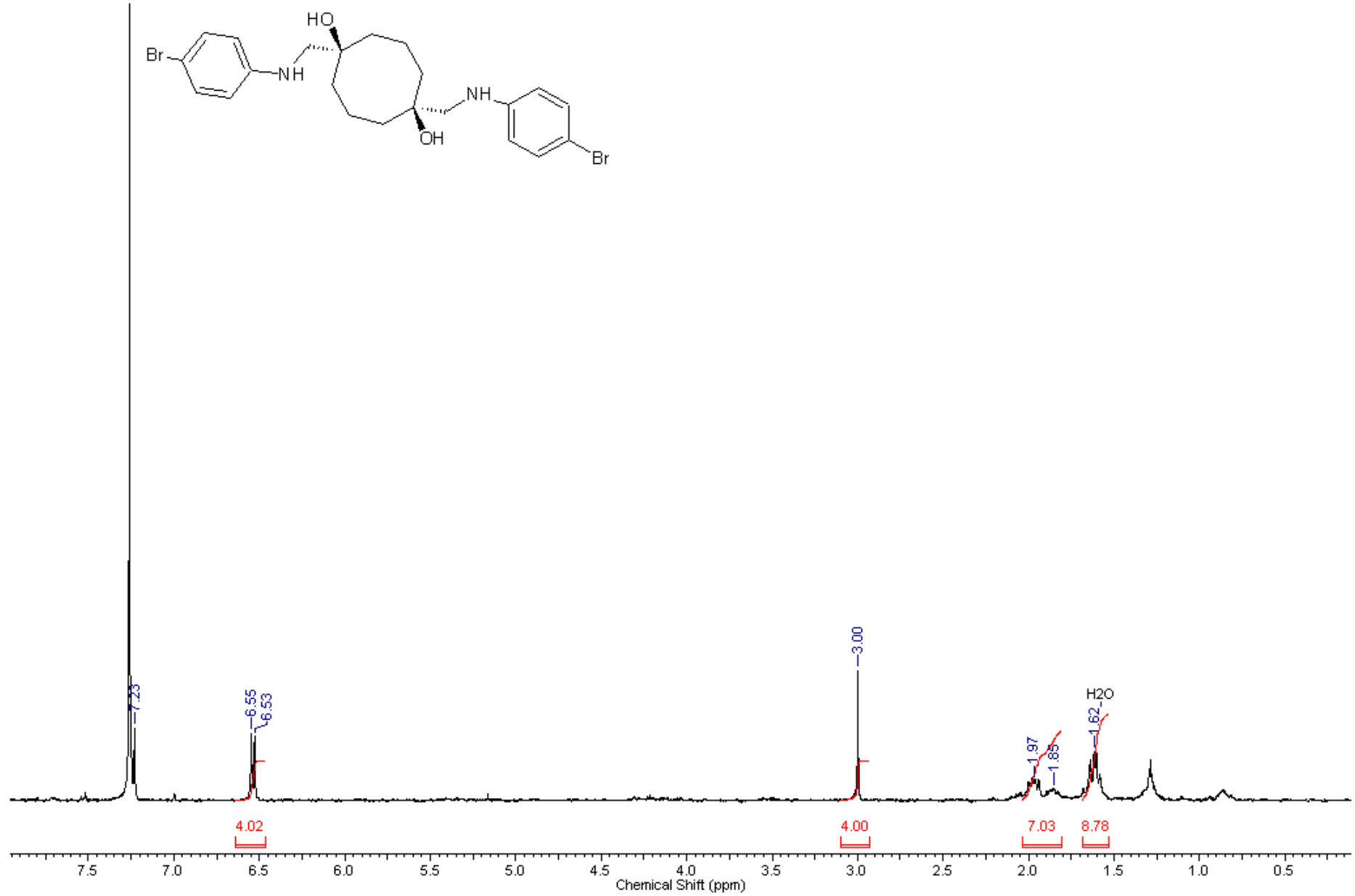
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6l**



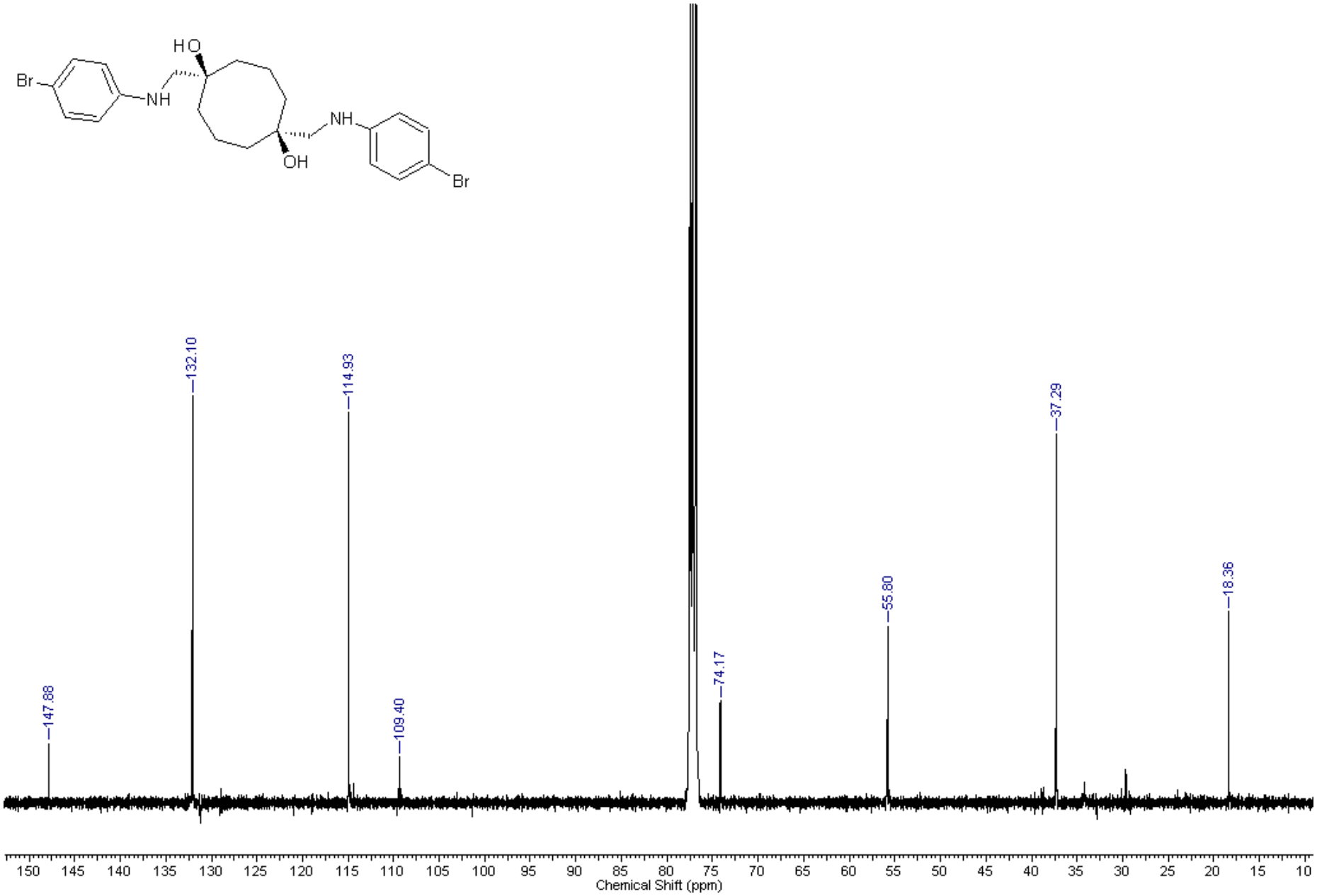
HSQC NMR spectrum of compound **6l**



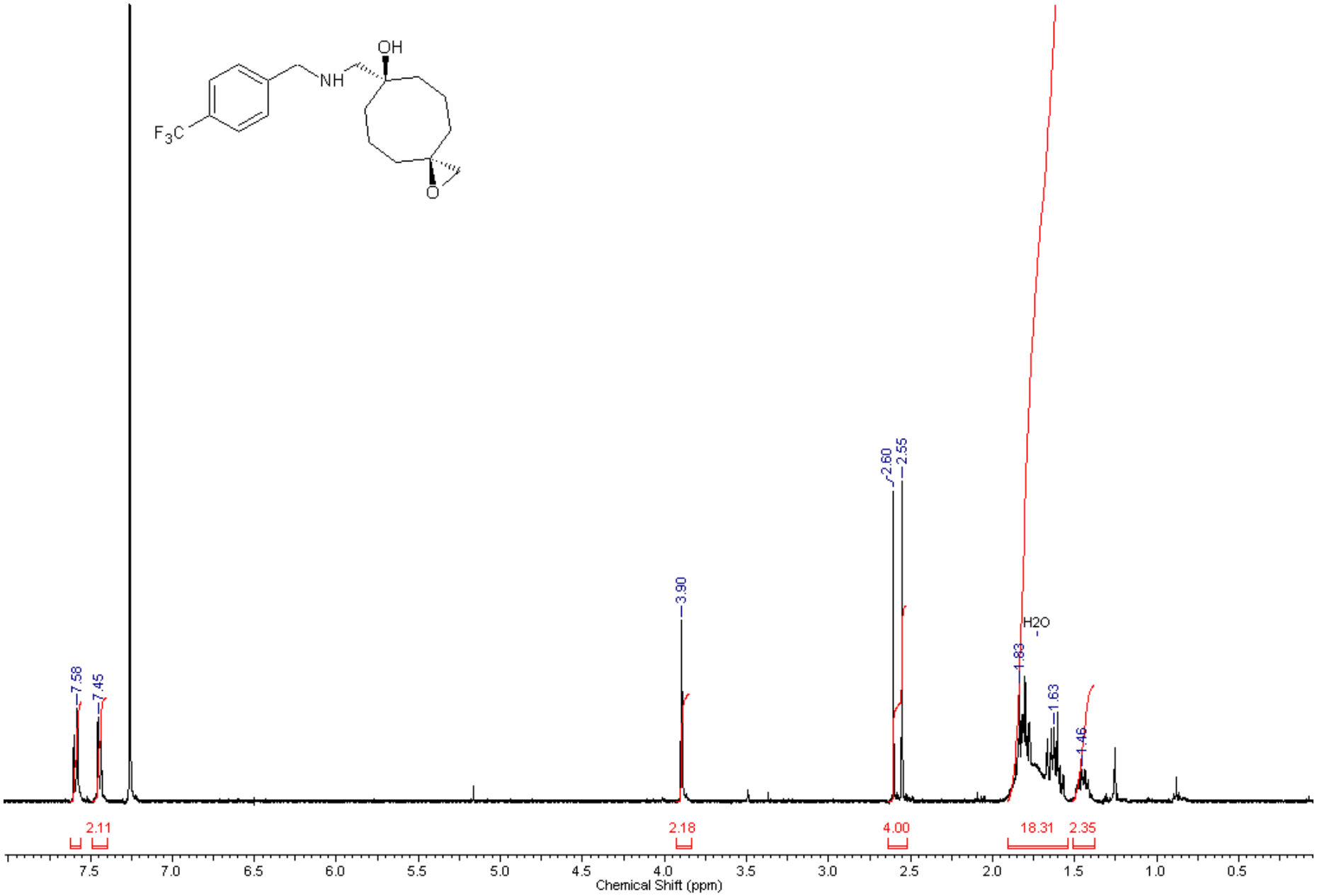
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **6o**



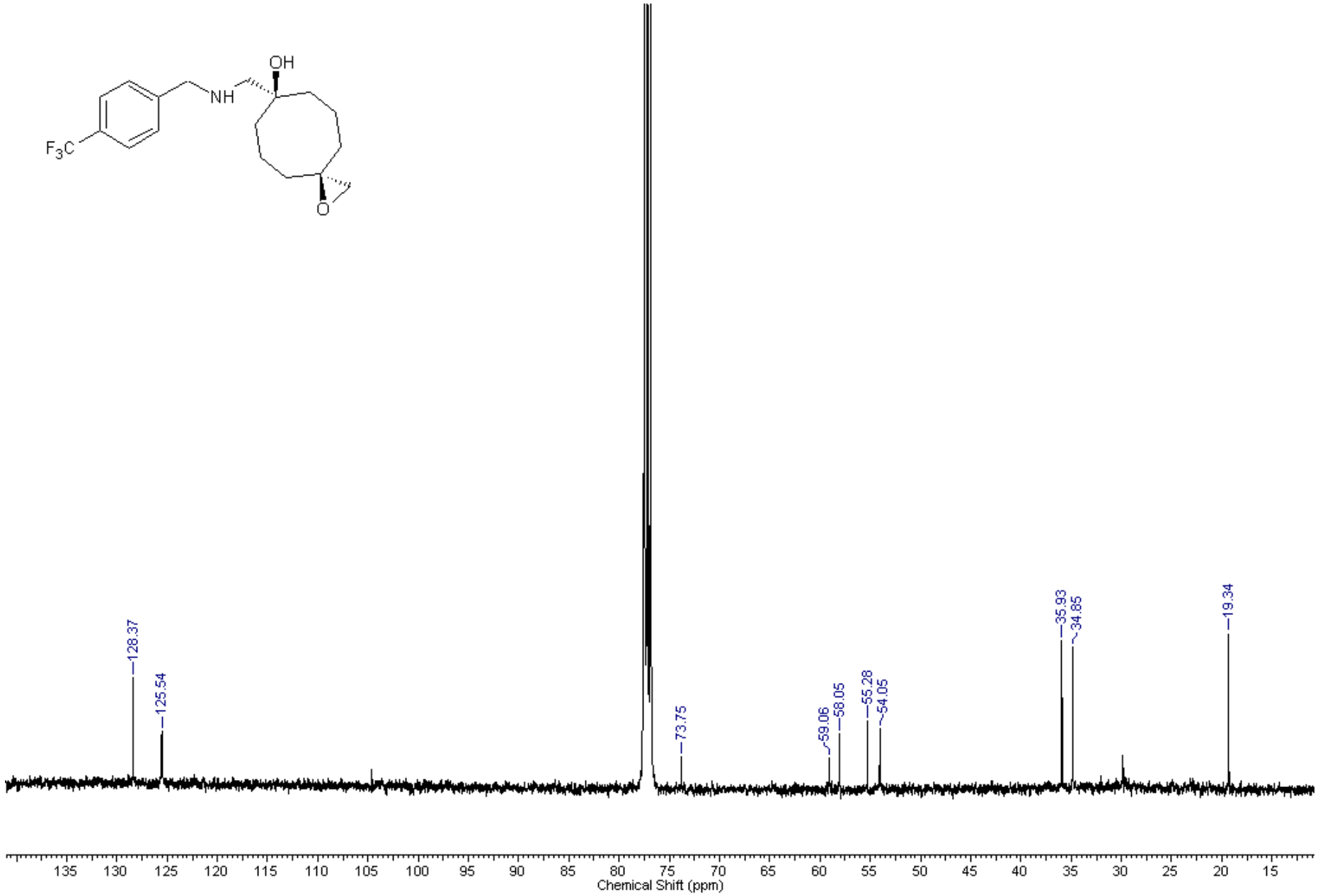
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **6o**



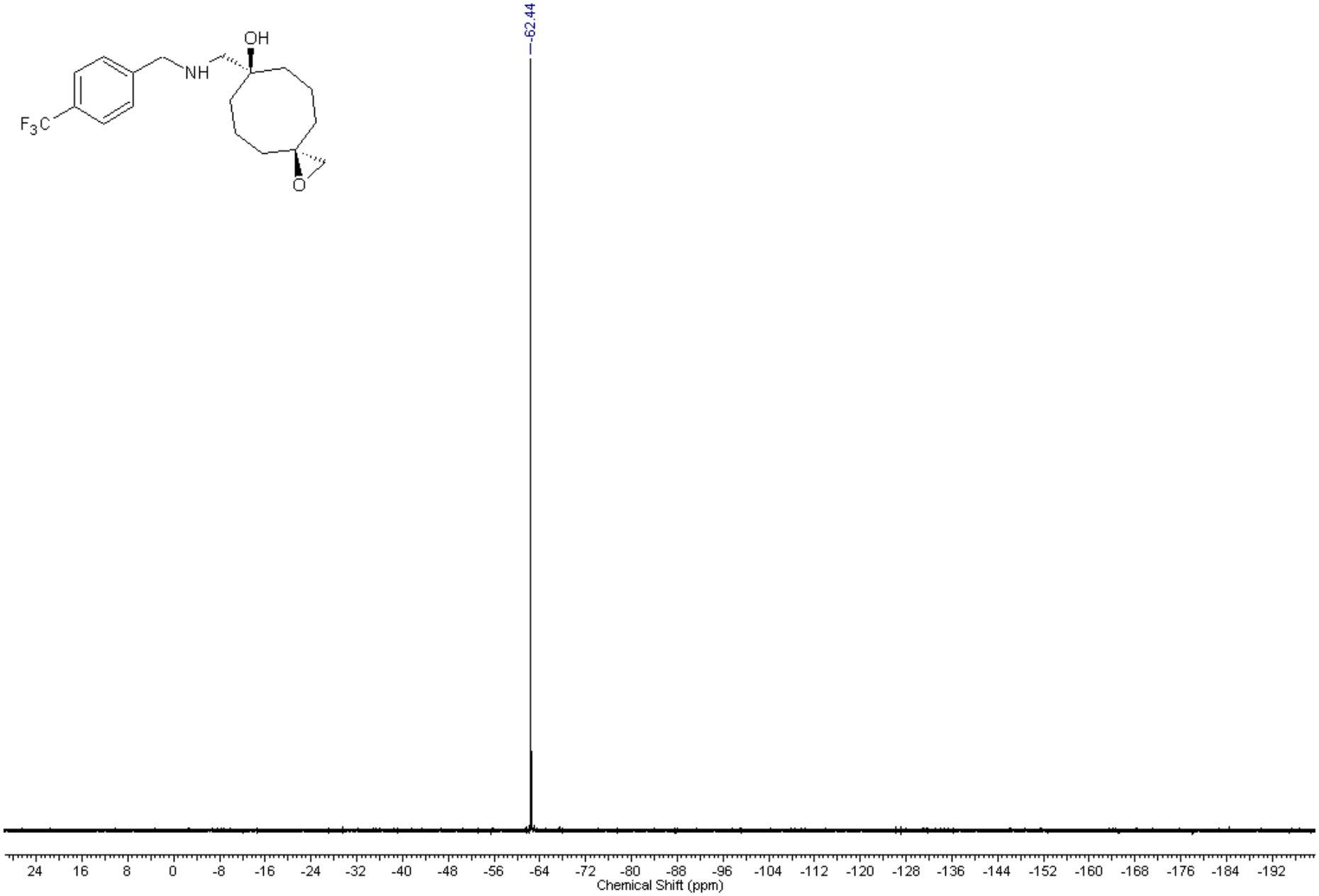
^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **7j**



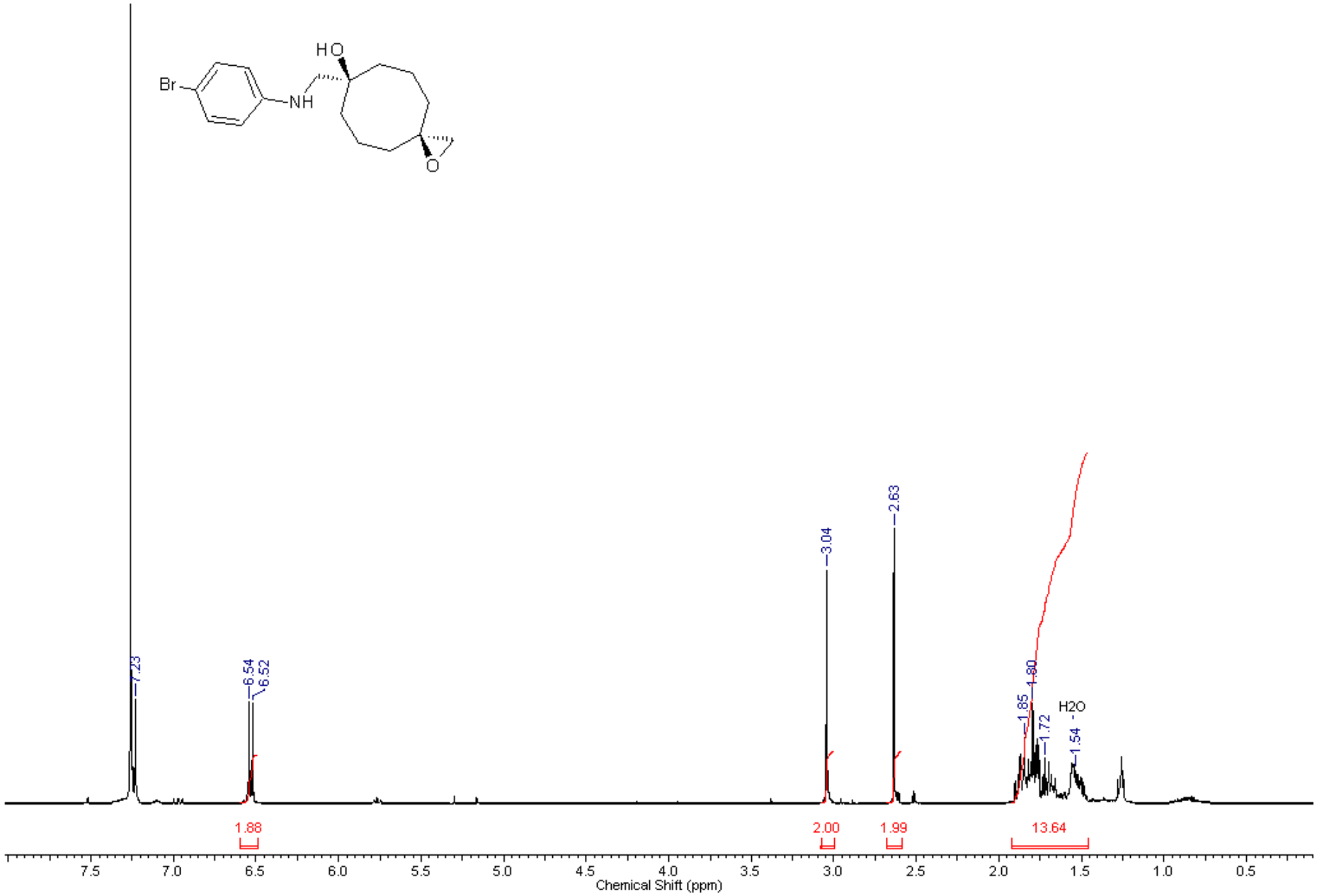
^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **7j**



^{19}F NMR spectrum (376 MHz, $CDCl_3$) of compound **7j**



^{1}H NMR spectrum (400 MHz, $CDCl_3$) of compound **7o**



^{13}C NMR spectrum (101 MHz, $CDCl_3$) of compound **7o**

