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APPENDIX

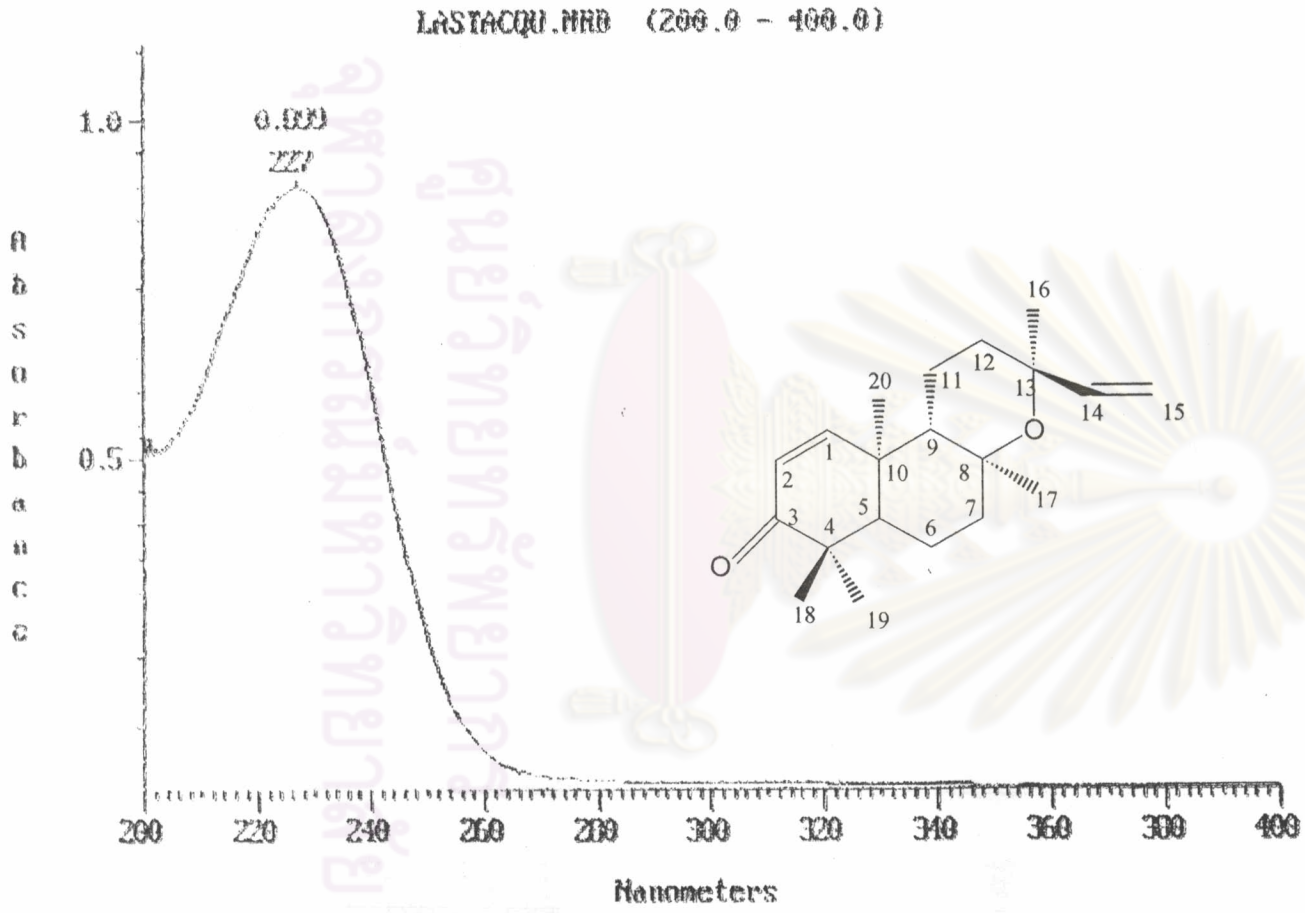


Figure 10: The UV spectrum of compound C-1 (in MeOH)

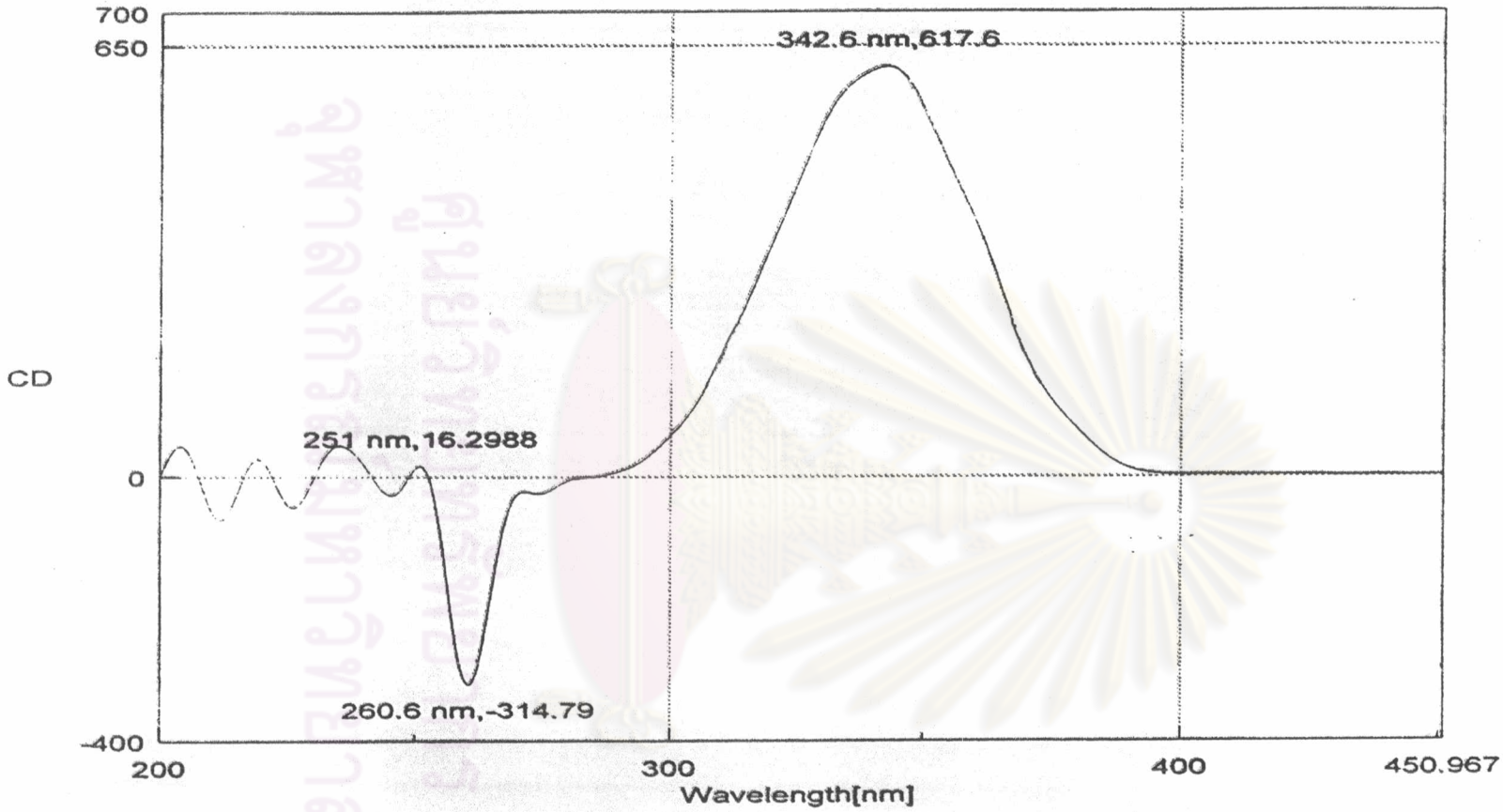


Figure 11: The CD spectrum of compound C-1

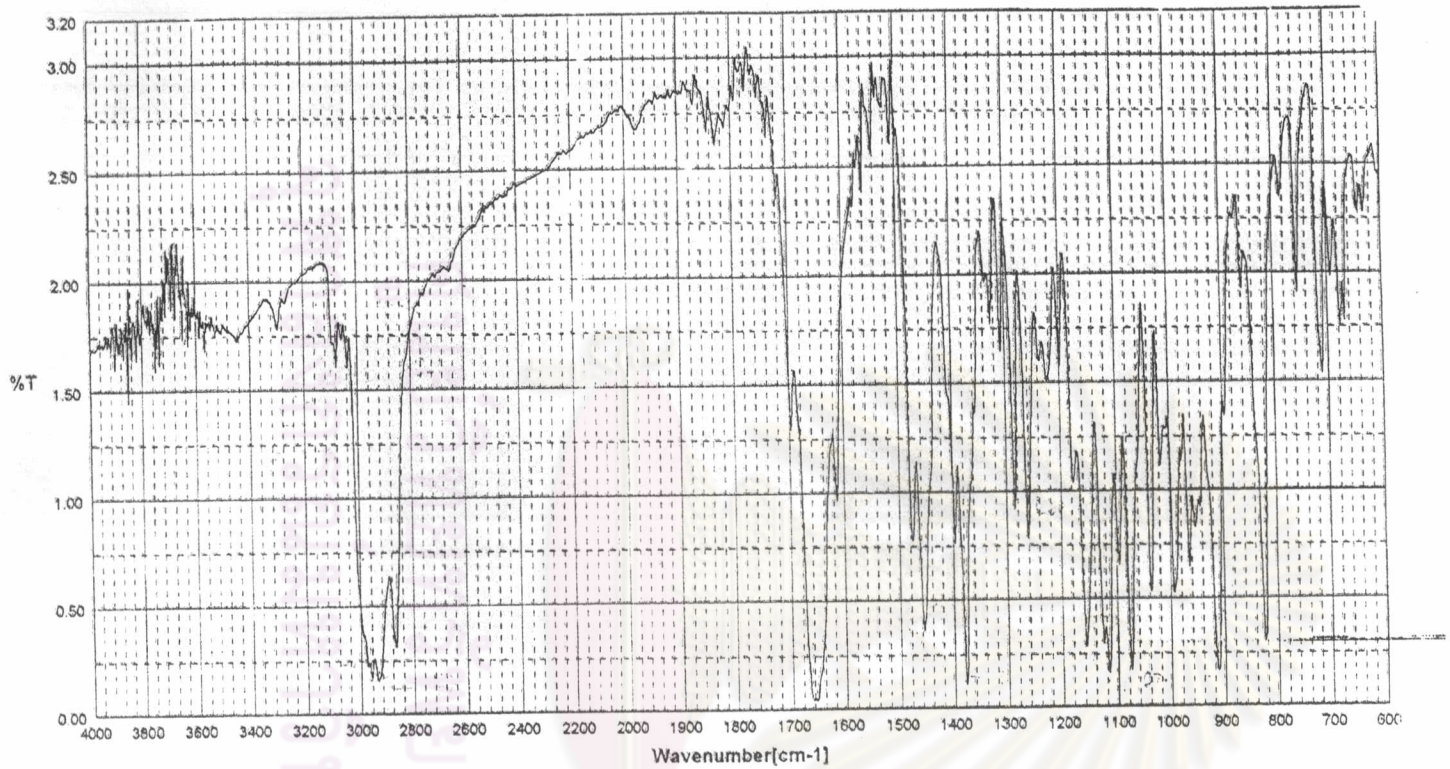


Figure 12: The IR spectrum of compound C-1 (KBr disc)

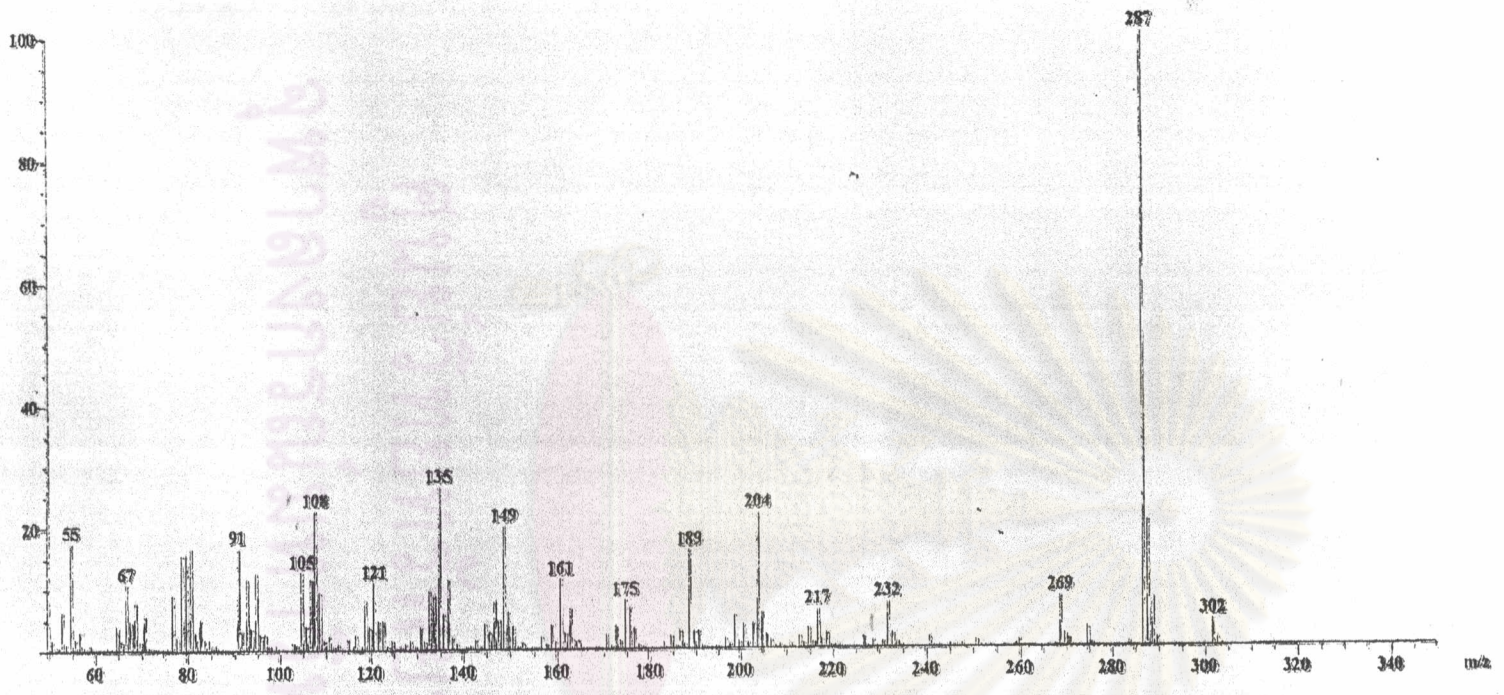


Figure 13: The EIMS spectrum of compound C-1

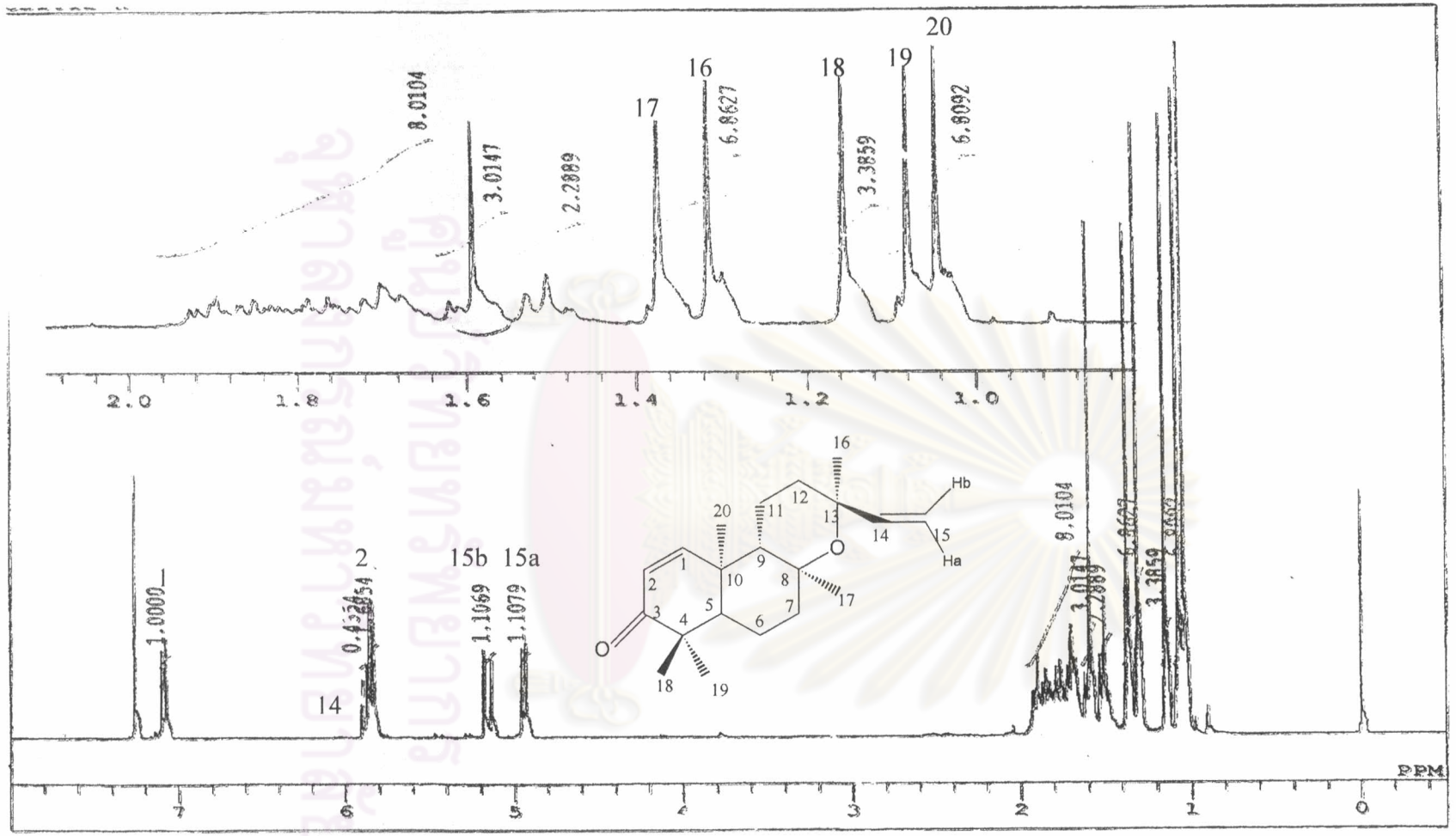


Figure 14: The 400MHz ^{1}H-NMR spectrum of compound C- 1 (in $CDCl_3$)

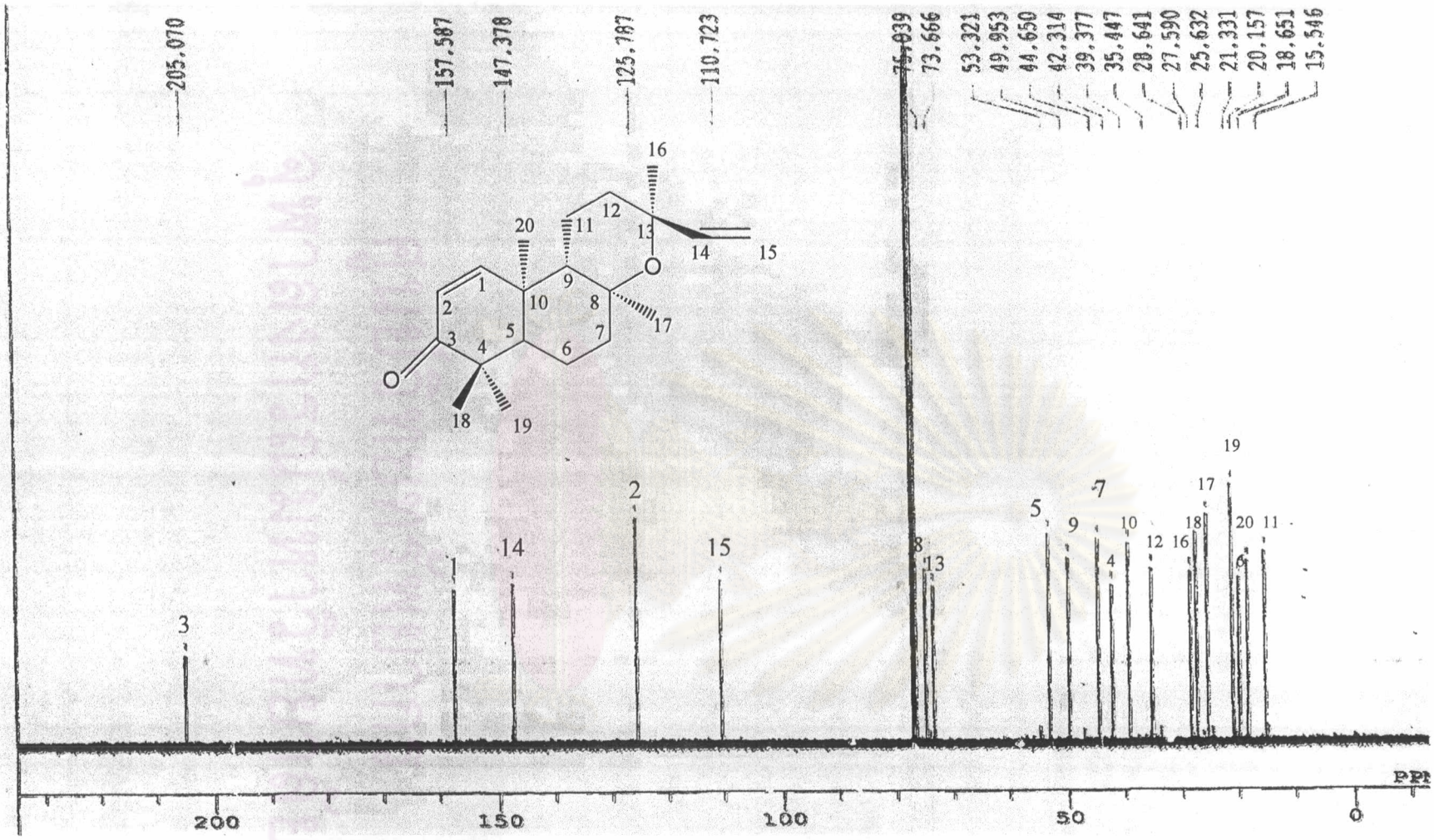


Figure 15: The 100MHz ^{13}C-NMR spectrum of compound C-1 (in $CDCl_3$)

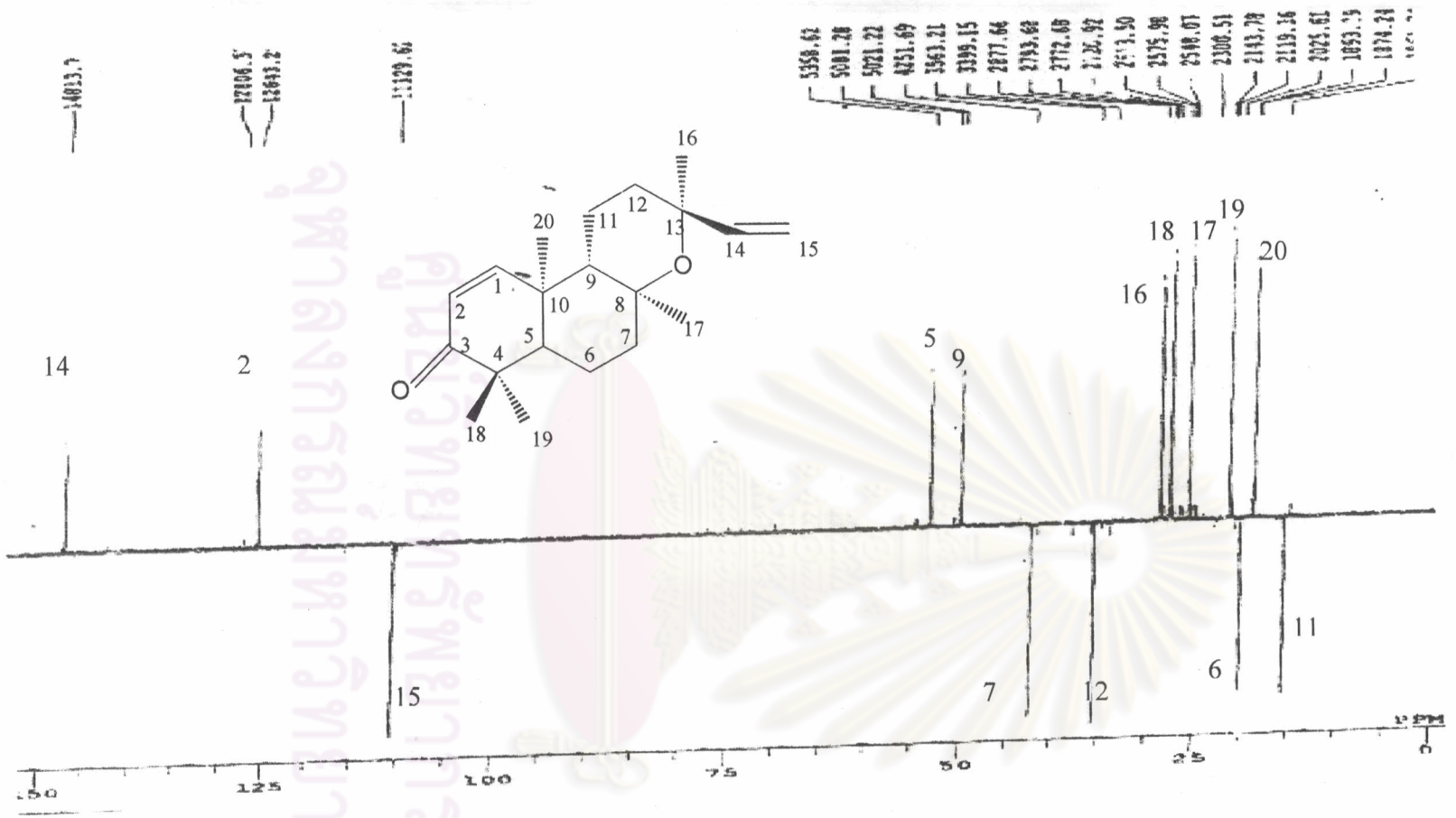


Figure 16: The DEPT-135 spectrum of compound C- 1 (in $CDCl_3$)

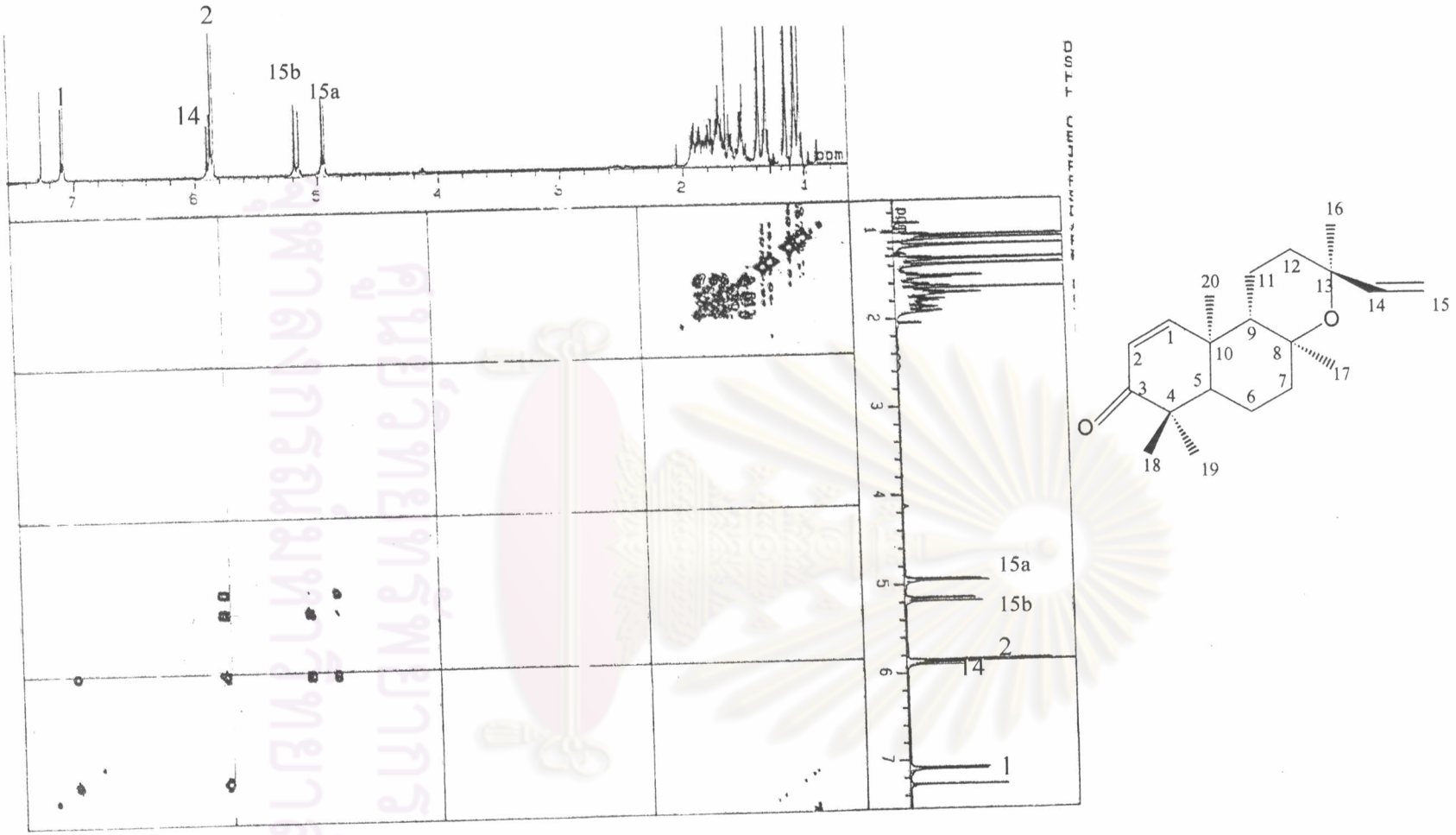
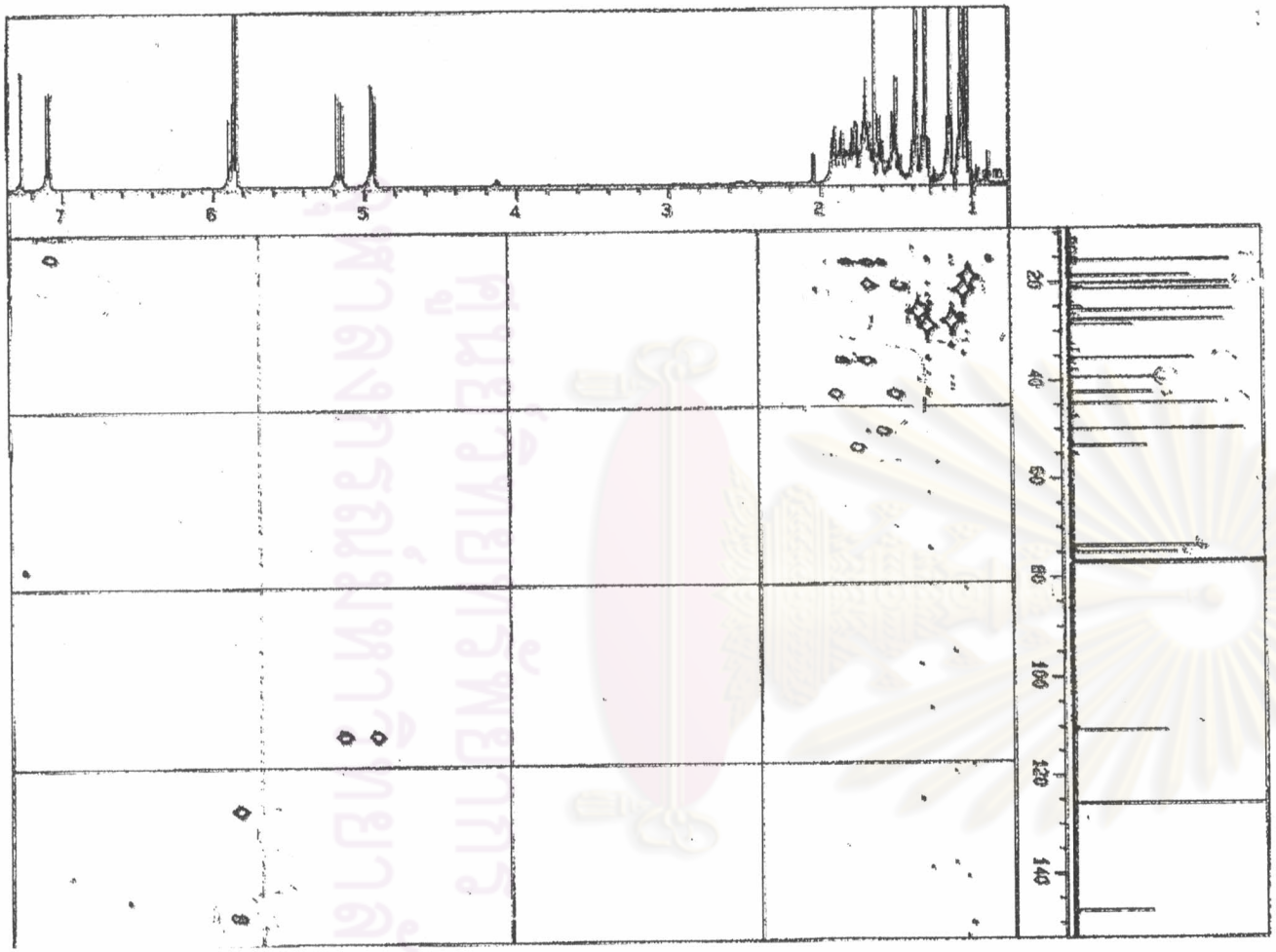


Figure 17: The 500MHz ^{1}H-^{1}H COSY spectrum of compound C- 1 (in $CDCl_3$)



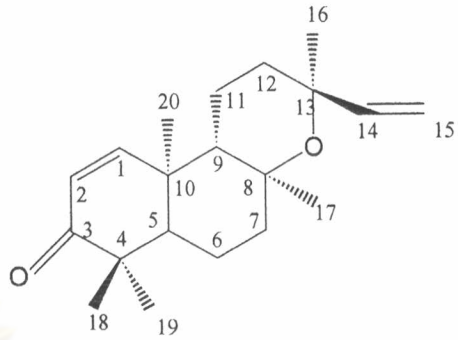


Figure 18: The 500MHz HMQC spectrum of compound C-1 (in $CDCl_3$)

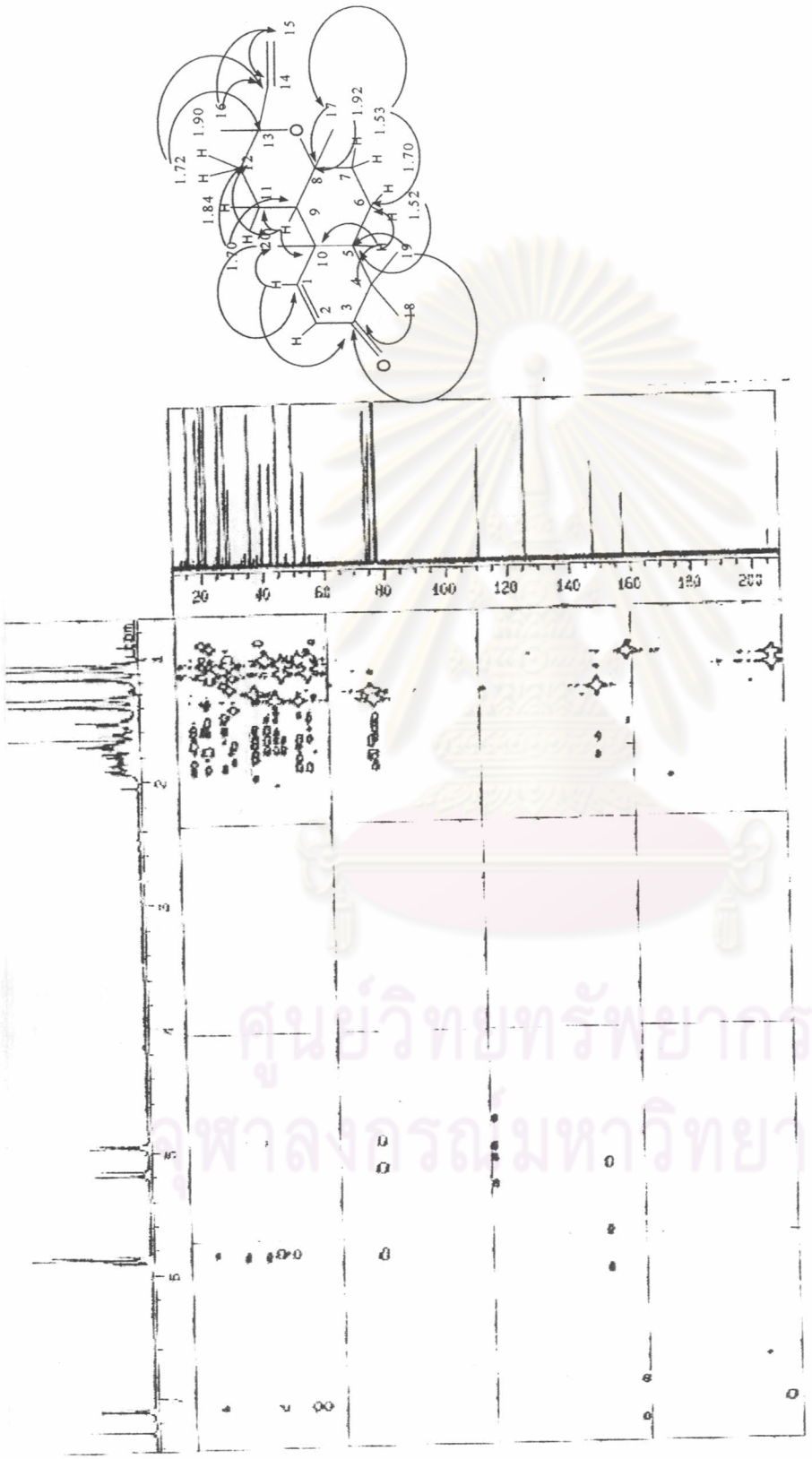


Figure 19: The 500MHz HMBC spectrum of compound C-1 (in $CDCl_3$)

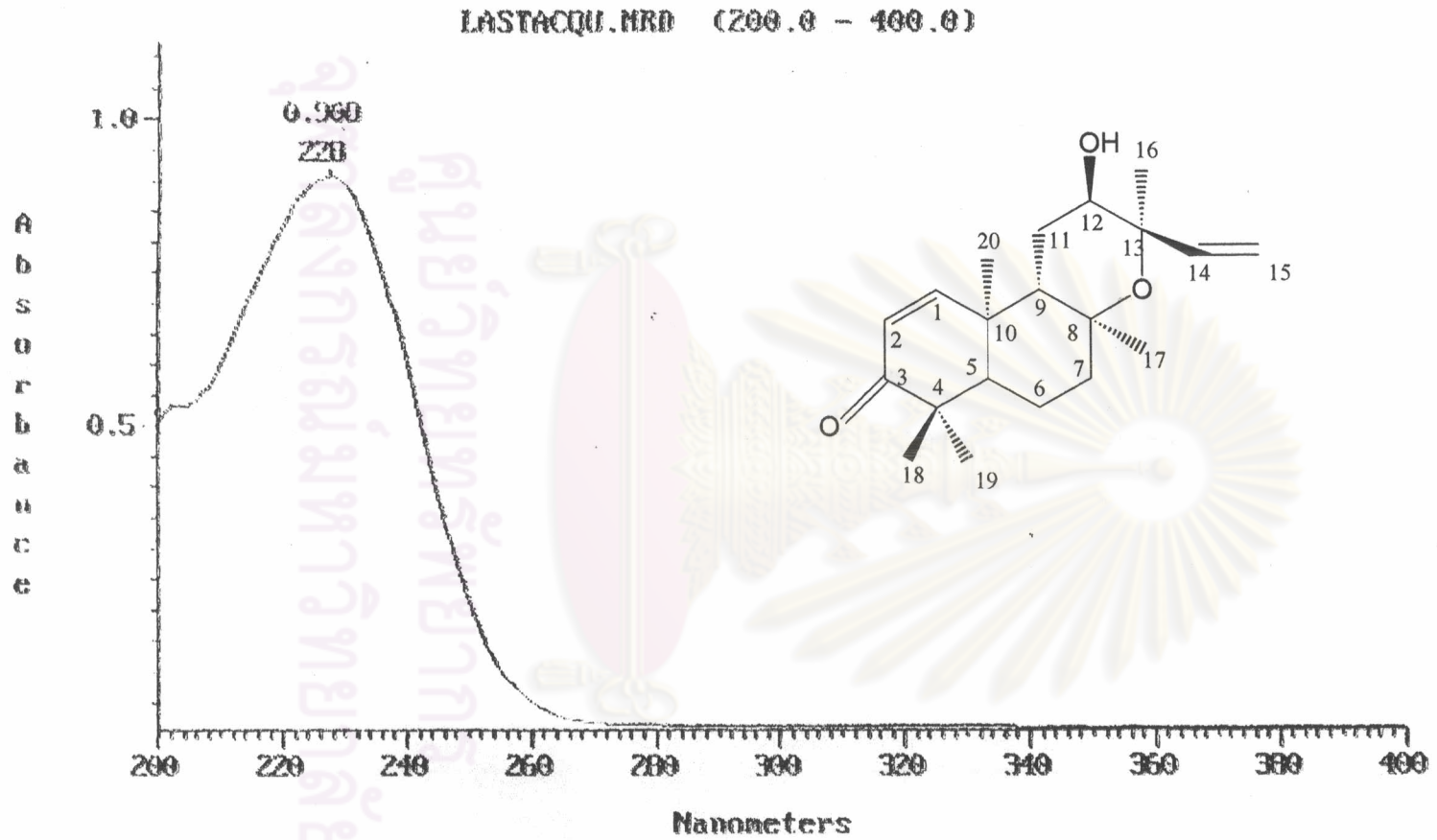


Figure 20: The UV spectrum of compound C-2 (in MeOH)

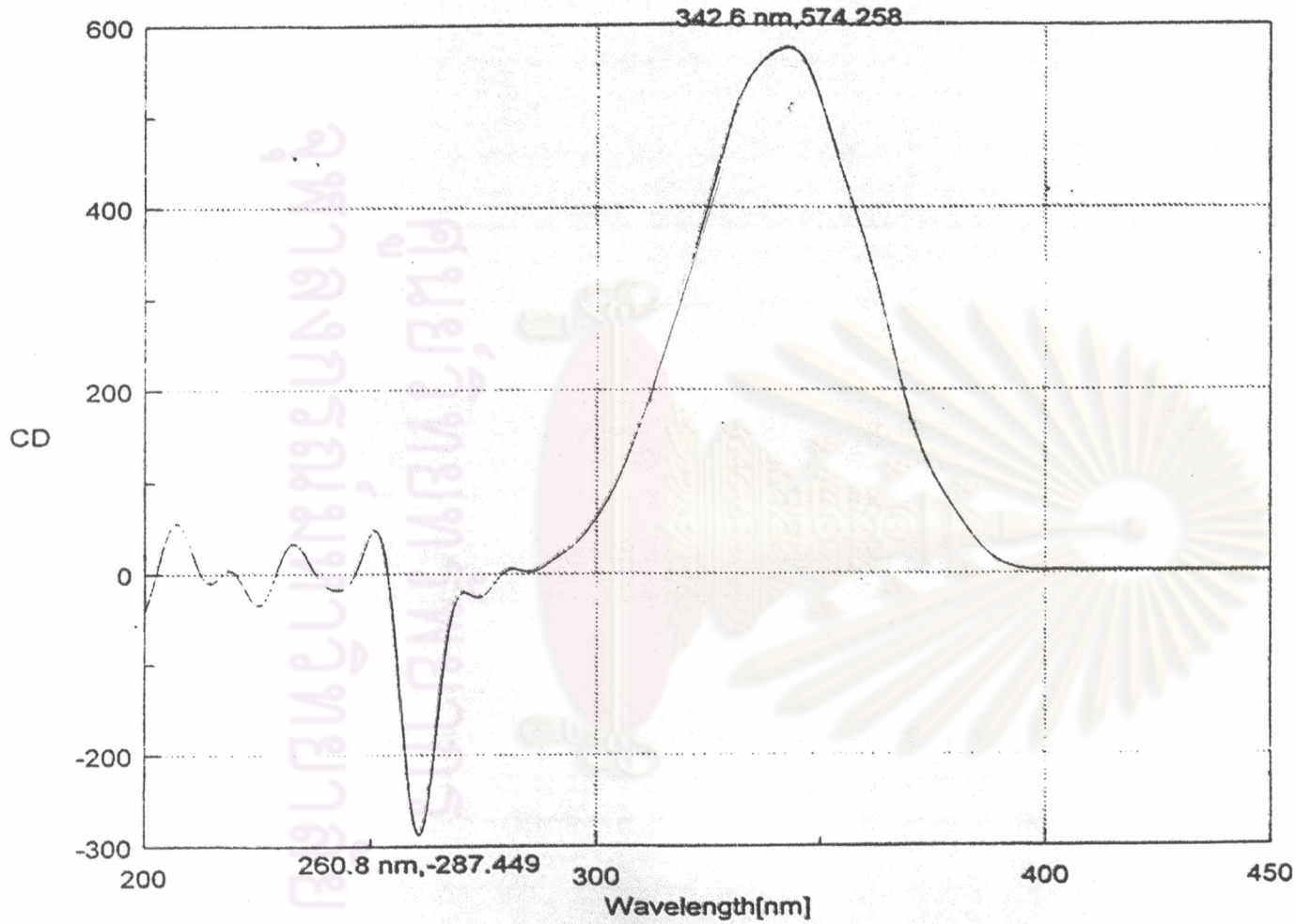


Figure 21: The CD spectrum of compound C-2

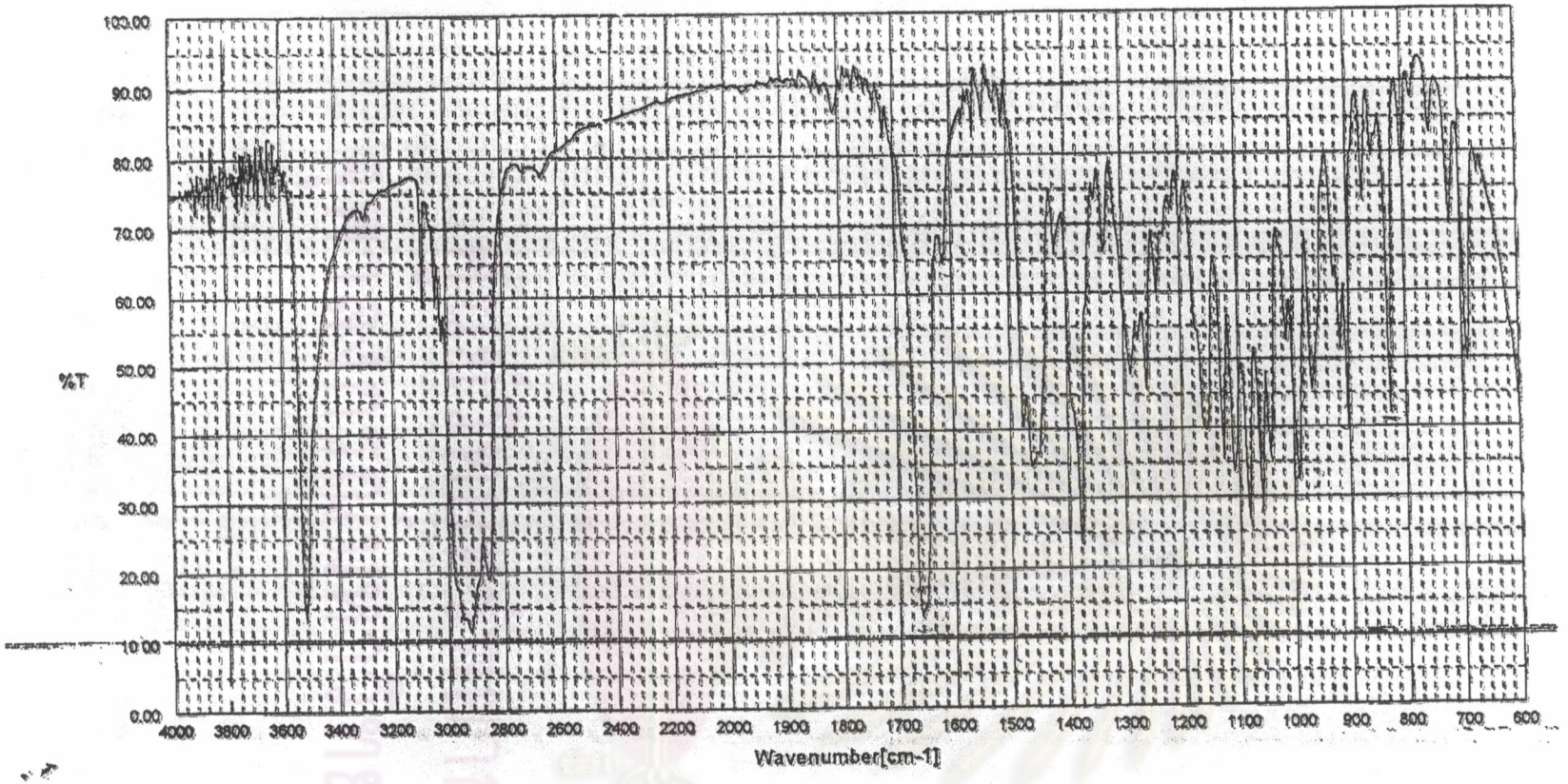


Figure 22: The IR spectrum of compound C-2 (KBr disc)

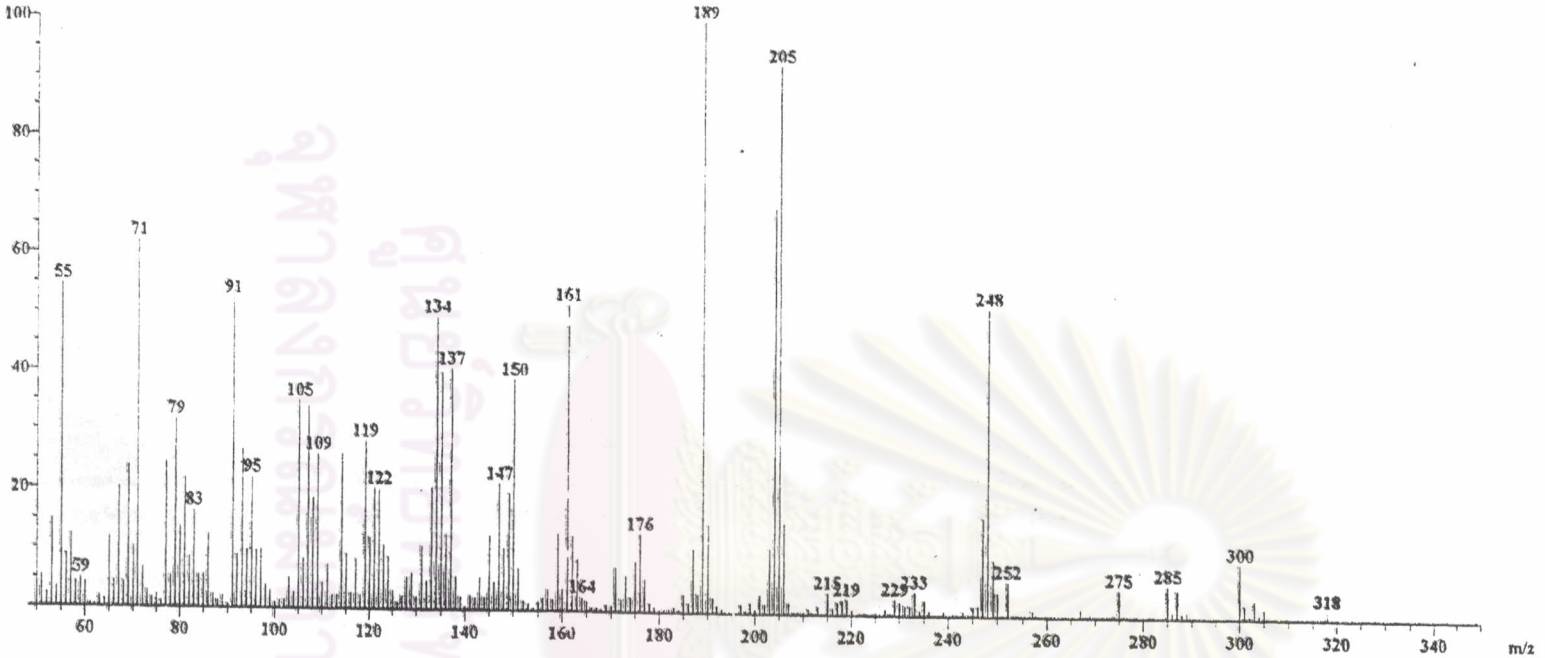


Figure 23: The EIMS spectrum of compound C-2

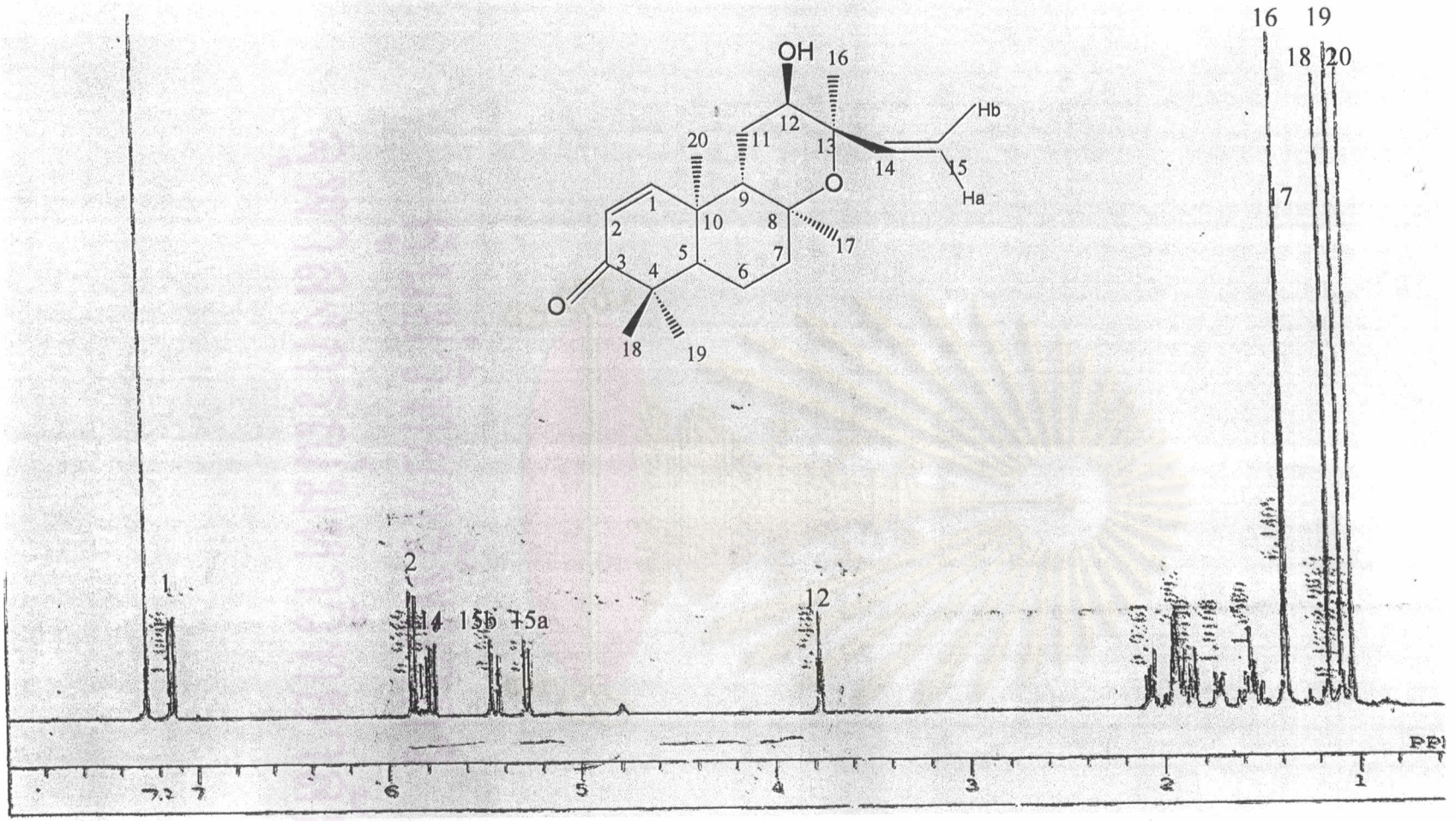


Figure 24a: The 400MHz ^{1}H-NMR spectrum of compound C-2 (in $CDCl_3$)

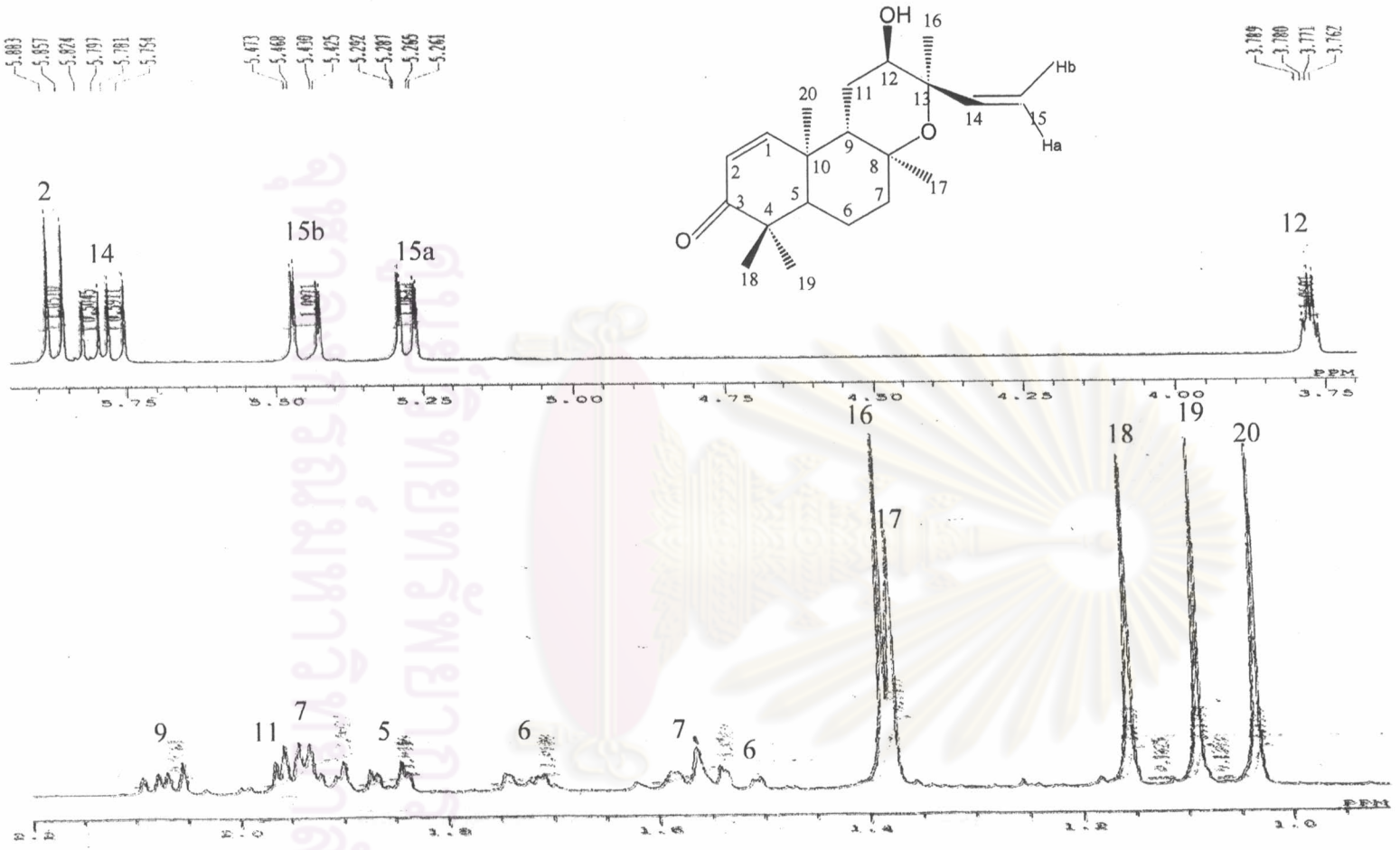


Figure24b : The expanded 400MHz ^{1}H-NMR spectrum of compound C- 2 (in $CDCl_3$)

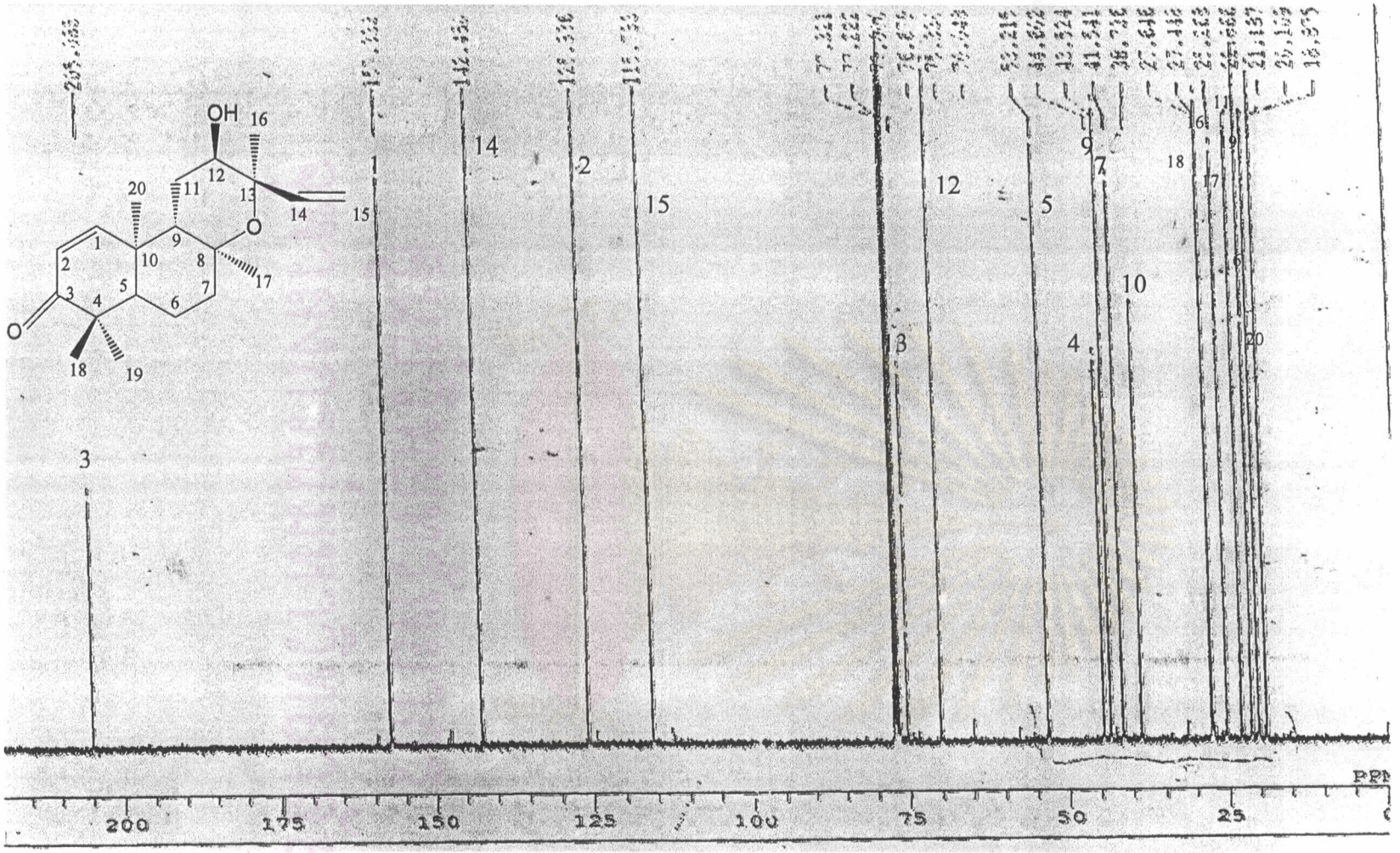


Figure 25: The 400MHz ^{13}C-NMR spectrum of compound C-2 (in $CDCl_3$)

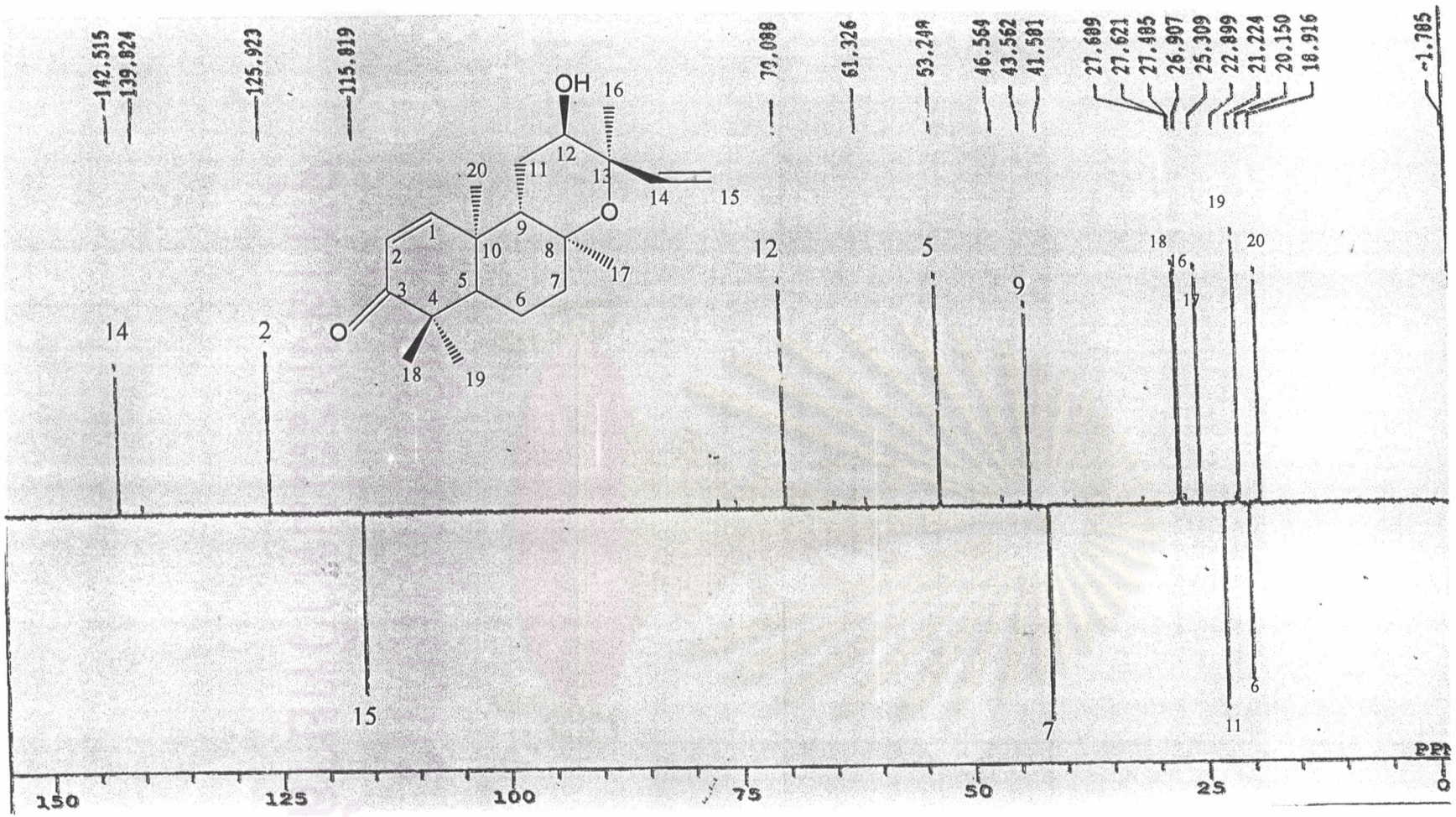


Figure 26: The DEPT-135 spectrum of compound C-2 (in $CDCl_3$)

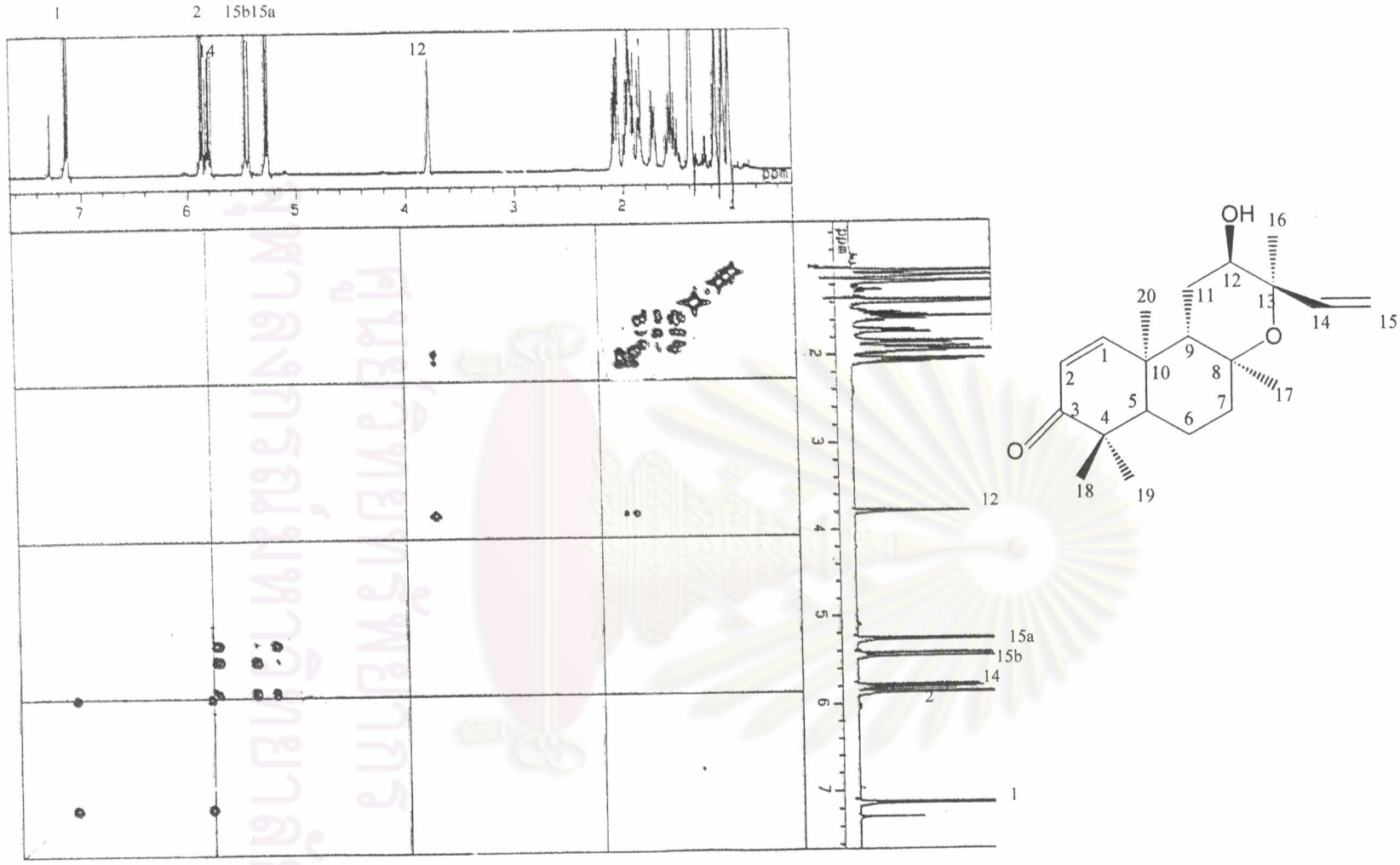


Figure 27: The 500MHz ^{1}H-^{1}H COSY spectrum of compound C-2 (in $CDCl_3$)

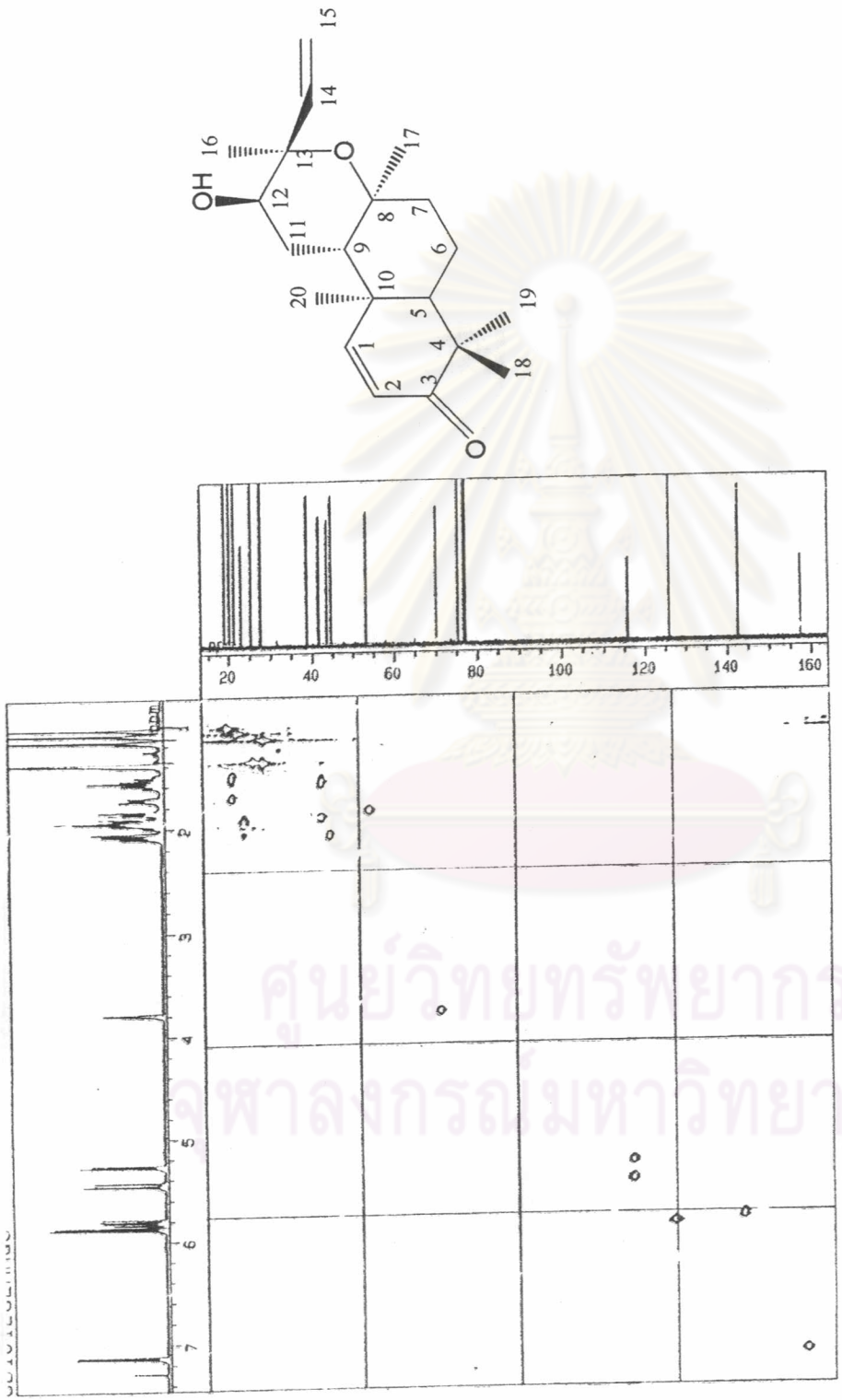


Figure 28: The 500MHz HMQC spectrum of compound C-2 (in $CDCl_3$)

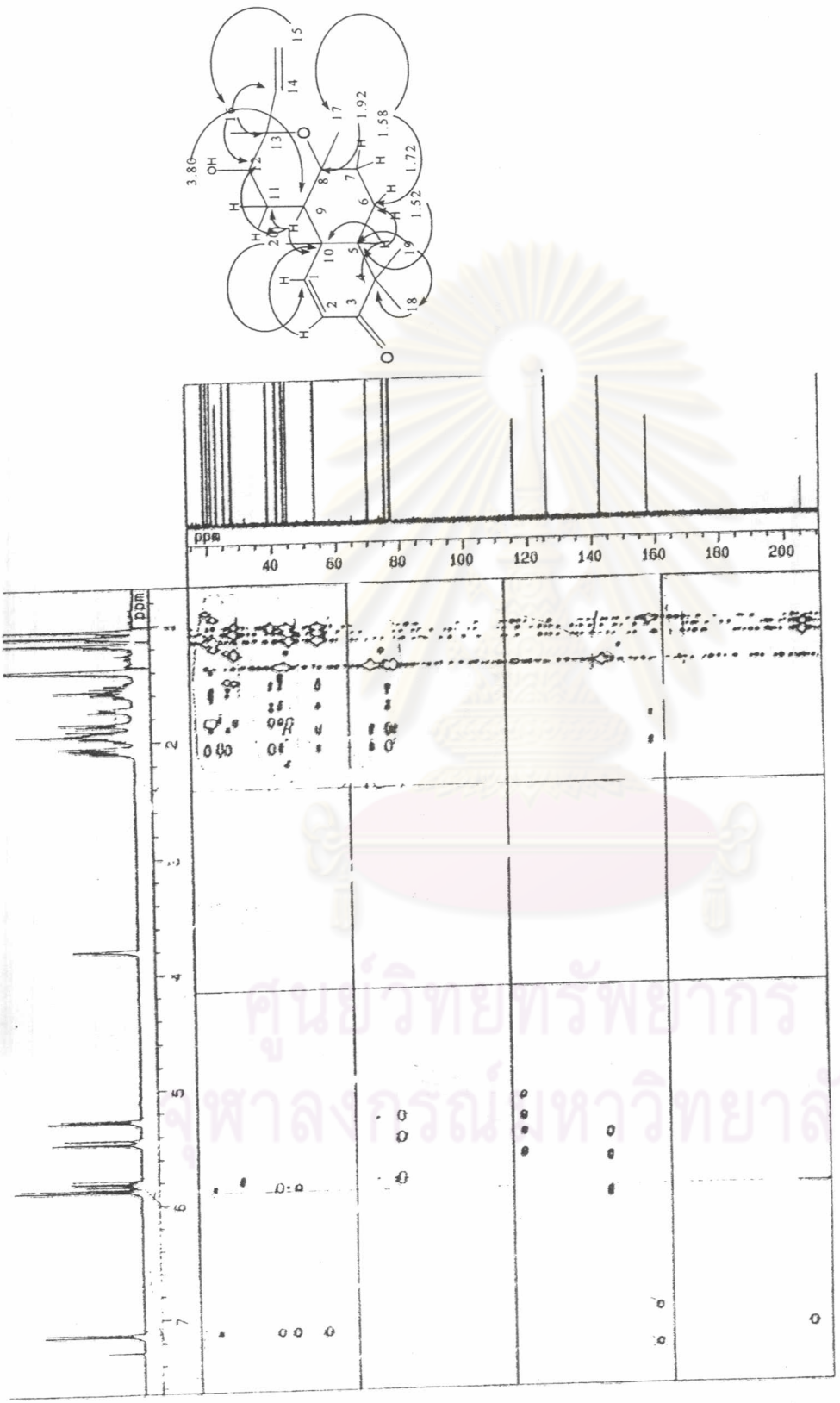


Figure 29: The 500MHz HMBC spectrum of compound C-2 (in $CDCl_3$)

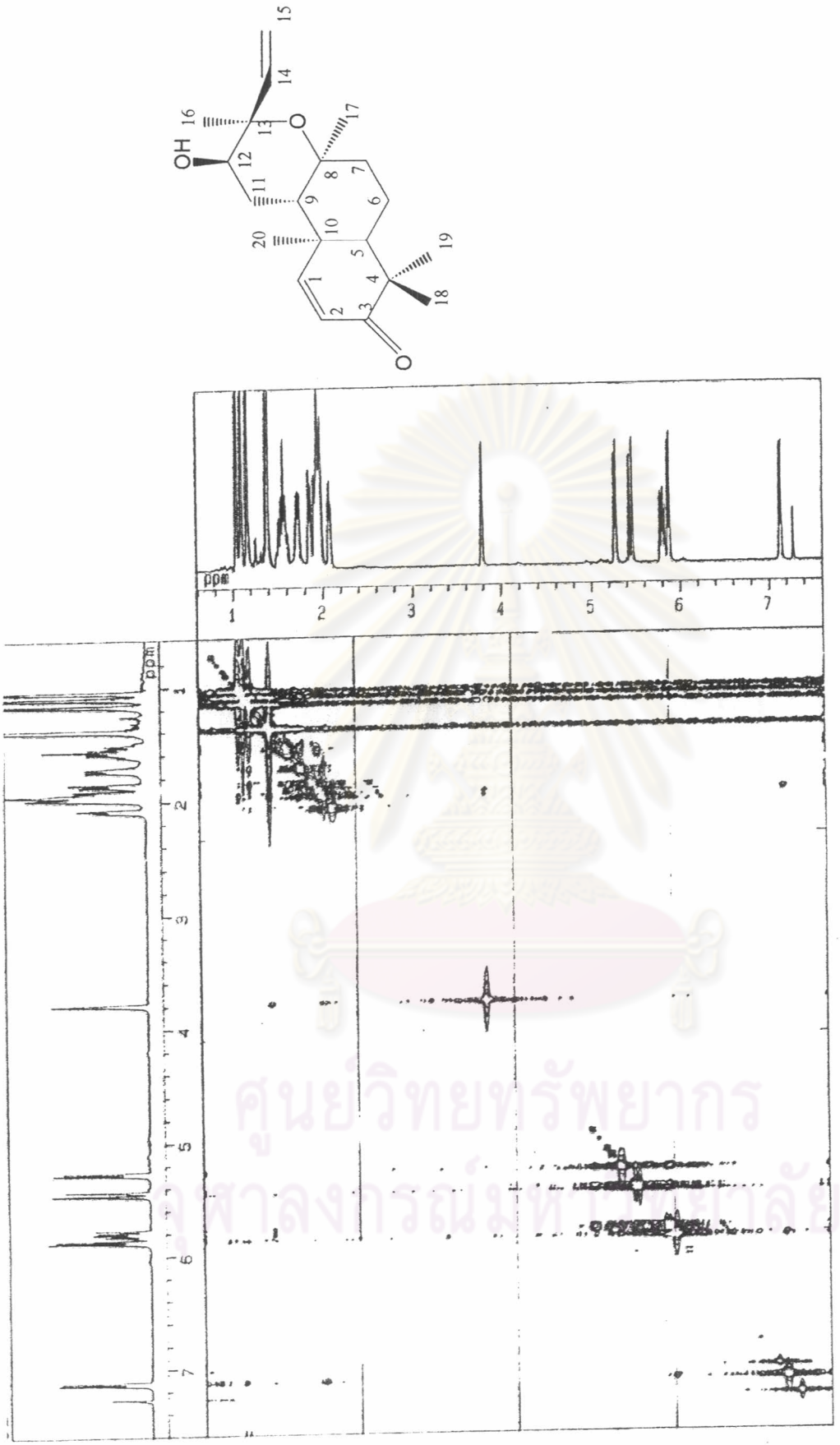


Figure 30: The 500MHz NOESY spectrum of compound C- 2 (in $CDCl_3$)

Crystal data and structure fefinement for Compound C-1

Empirical formula	$C_{20}H_{30}O_2$	
Formula weight	302.43	
Temperature	293(2) K	
Wavelength	0.71073 A	
Crytal system, space group	orthorhombic, P212121	
Unit cell dimensions	a = 6.3271(4) A	alpha = 90 deg.
	b = 11.4575(7) A	beta = 90 deg.
	c = 24.6115 (15) A	gamma = 90 deg.
Volume	1784.16(19) A^3	
Z, Calculated density	4, 1.122 Mg/m^3	
Absorption coefficient	0.070 mm^{-1}	
F(000)	660	
Theta range for data collection	8.20 to 24.71 deg.	
Limiting indices	$-7 \leq h \leq 7, -13 \leq K \leq 8, -28 \leq 1 \leq 28$	
Reflection collected / unique	8749/ 2920 [R(int) = 0.0348]	
Completeness to theta = 24.71	95.1%	
Refinement method	Full-matrix least squares on F^2	
Data / restraints / parameters	2920/ 7/ 257	
Goodness –of –fit on F^2	1.063	
Final R indices [I > 2 sigma (I)]	R1 = 0.0593, wR2 = 0.1354	
R indices (all data)	R1 = 0.0774, wR2 = 0.1462	
Absolute structure parameter	0 (3)	
Largest diff. peak and hole	0.171 and -0.127 $e.A^{-3}$	

Table13. Atomic coordinates(x 10^4) and equivalent isotropic displacement parameters (A^2 x 10^3) for compound C-1

U(eq) is defined as one third of the trace of the orthogonalized Uij tensor.

	x	y	z	U(eq)
C(1)	2182(5)	8481(3)	7817(1)	67(1)
C(2)	1135(6)	9398(3)	7632(2)	73(1)
C(3)	1431(5)	10560(3)	7858(2)	80(1)
C(4)	2482(5)	10706(3)	8411(1)	68(1)
C(5)	2984(5)	9504(3)	8668(1)	58(1)
C(6)	4357(7)	9559(3)	9182(1)	70(1)
C(7)	4413(7)	8382(3)	9471(1)	72(1)
C(8)	5196(5)	7409(3)	9108(1)	62(1)
C(9)	3838(5)	7380(2)	8588(1)	55(1)
C(10)	3793(4)	8558(2)	8267(1)	53(1)
C(11)	4317(7)	6282(3)	8261(2)	71(1)
C(12)	3755(8)	5233(3)	8610(2)	87(1)
C(13)	4899(7)	5225(3)	9158(2)	84(1)
C(14)	3732(12)	4439(5)	9545(3)	143(2)
C(15)	3890(40)	3377(11)	9800(7)	194(8)
C(15a)	3300(20)	4180(20)	9868(7)	199(9)
C(16)	7189(9)	4809(4)	9107(3)	119(2)
C(17)	7591(5)	7529(3)	9027(2)	79(1)
C(18)	841(8)	11346(4)	8769(2)	106(1)
C(19)	4407(6)	11511(3)	8348(2)	85(1)
C(20)	5917(5)	8841(3)	7992(1)	63(1)
O(1)	856(6)	11411(3)	7598(1)	125(1)
O(2)	4745(4)	6347(2)	9415(1)	77(1)

Table 14. Bond lengths [°A] for compound C-1

	Bond lengths [A]
C(1)-C(2)	1.323(5)
C(1)-C(10)	1.507(4)
C(2)-C(3)	1.456(5)
C(3)-O(1)	1.222(4)
C(3)-C(4)	1.523(5)
C(4)-C(19)	1.536(5)
C(4)-C(18)	1.547(5)
C(4)-C(5)	1.548(4)
C(5)-C(6)	1.535(5)
C(5)-C(10)	1.553(4)
C(6)-C(7)	1.526(5)
C(7)-C(8)	1.513(5)
C(8)-O(2)	1.460(4)
C(8)-C(17)	1.535(5)
C(8)-C(9)	1.542(4)
C(9)- C(11)	1.523(4)
C(9)- C(10)	1.563(4)
C(10)- C(20)	1.539(4)
C(11)- C(12)	1.520(5)
C(12)- C(13)	1.529(6)
C(13)-O(2)	1.436(4)
C(13)- C(14)	1.506(9)
C(13)- C(16)	1.530(7)
C(14)- C(15)	1.378(12)

Crystal data and structure fefinement for Compound C-2

Empirical formula	$C_{20}H_{30}O_3$	
Formula weight	318.44	
Temperature	293(2) K	
Wavelength	0.71073 A	
Crytal system, space group	orthorhombic, P(21) (21) (21)	
Unit cell dimensions	a = 6.1692(3) A	alpha = 90 deg.
	b = 14.2262(2) A	beta = 90 deg.
	c = 20.4812 (3) A	gamma = 90 deg.
Volume	1797.52 (9) A^3	
Z, Calculated density	4, 1.177 Mg/m^3	
Absorption coefficient	0.077 mm^{-1}	
F(000)	696	
Theta range for data collection	1.74 to 30.51 deg.	
Limiting indices	$-8 \leq h \leq 8, -18 \leq K \leq 19, -28 \leq 1 \leq 24$	
Reflection collected / unique	13405/ 5107 [R(int) = 0.0221]	
Completeness to theta = 24.71	96.1%	
Refinement method	Full-matrix least squares on F^2	
Data / restraints / parameters	5107/ 0/ 268	
Goodness –of –fit on F^2	1.100	
Final R indices [I > 2 sigma (I)]	R1 = 0.0699, wR2 = 0.1998	
R indices (all data)	R1 = 0.0823, wR2 = 0.2147	
Absolute structure parameter	-0.1(16)	
Largest diff. peak and hole	0.948 and -0.383e.A^{-3}	

Table 15. Atomic coordinates(x 10^4) and equivalent isotropic displacement parameters (A^2 x 10^3) for compound C-2

U(eq) is defined as one third of the trace of the orthogonalized Uij tensor.

	x	y	z	U(eq)
C(1)	8040(5)	5720(3)	12241(1)	57(1)
C(2)	8937(7)	6303(3)	12666(2)	76(1)
C(3)	8729(7)	7325(3)	12617(2)	81(1)
C(4)	7657(6)	7768(2)	12018(2)	61(1)
C(5)	7547(4)	7030(2)	11466(1)	40(1)
C(6)	6463(5)	7376(2)	10839(1)	43(1)
C(7)	7033(4)	6718(2)	10270(1)	39(1)
C(8)	6331(3)	5709(1)	10405(1)	32(1)
C(9)	6738(4)	6036(2)	11661(1)	36(1)
C(10)	7268(3)	5382(1)	11069(1)	31(1)
C(11)	6785(4)	4326(2)	11150(1)	39(1)
C(12)	8001(4)	3787(2)	10620(1)	40(1)
C(13)	7472(4)	4160(1)	9931(1)	38(1)
C(14)	9198(5)	3885(2)	9448(1)	57(1)
C(15)	9993(9)	4342(4)	8999(2)	94(1)
C(16)	5309(5)	3724(2)	9704(2)	54 (1)
C(17)	3852(4)	5642(2)	10326(1)	43(1)
C(18)	9094(8)	8600(3)	11797(2)	89(1)
C(19)	5403(8)	8166(4)	12229(3)	105(2)
C(20)	4328(5)	5977(2)	11869(2)	51(1)
O(1)	7419(3)	5177(1)	9903(1)	37(1)
O(2)	9455(9)	7811(3)	13059(2)	143(2)
O(3)	10283(3)	3837(1)	10729(1)	48(1)

Table16. Bond lengths [°A] for compound C-2

	Bond lengths [A]
C(1)-C(2)	1.324(5)
C(1)-C(9)	1.501(3)
C(2)-C(3)	1.463(7)
C(3)-O(2)	1.223(4)
C(3)-C(4)	1.529(5)
C(4)-C(5)	1.545(3)
C(4)-C(18)	1.547(5)
C(4)-C(19)	1.562(5)
C(5)-C(6)	1.529(4)
C(5)-C(9)	1.552(3)
C(6)-C(7)	1.534(3)
C(7)-C(8)	1.525(3)
C(8)-O(1)	1.443(2)
C(8)-C(17)	1.541(3)
C(8)-C(10)	1.549(3)
C(9)- C(20)	1.549(3)
C(9)- C(10)	1.563(3)
C(10)- C(11)	1.541(3)
C(11)- C(12)	1.525(3)
C(12)- O(3)	1.427(3)
C(12)-C(13)	1.542(3)
C(13)- O(1)	1.448(2)
C(13)- C(14)	1.506(4)
C(13)- C(16)	1.543(4)
C(14)- C(15)	1.229(6)

VITA

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