

Construction of the Tricyclic Furanochroman Skeleton of Phomactin A via the Prins/Conia-Ene Cascade Cyclization Approach

Shuangping Huang, Guangyan Du and Chi-Sing Lee*

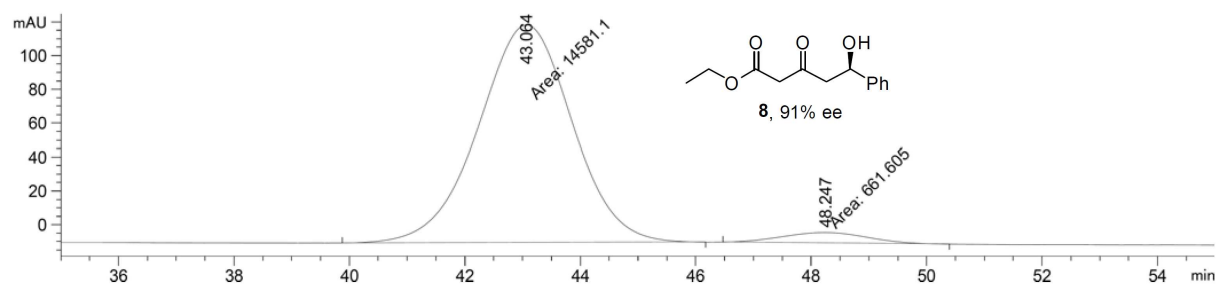
Laboratory of Chemical Genomics, School of Chemical Biology and Biotechnology, Peking University Shenzhen Graduate School, Shenzhen University Town, Xili, Shenzhen 518055, China

E-mail: lizc@szpku.edu.cn

Table of contents

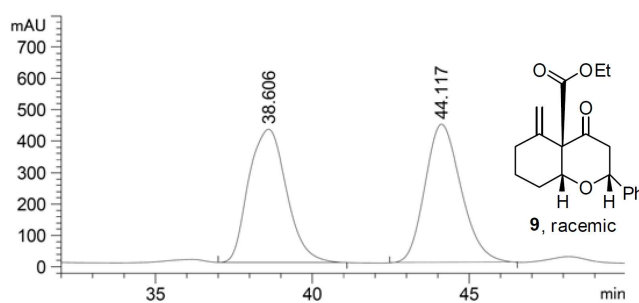
S2-S4	HPLC analysis of (<i>R</i>)- 8 , ($\pm$)- and (+)- 9 under selected conditions in Table 1.
S5-S40	¹ H, ¹³ C NMR and IR spectra of new compounds: (+)- 9 , ($\pm$)- 2-4 , 26 , 31 , and 6 , 30 , 32-33 .
S41	NOESY spectrum of ($\pm$)- 2 .

(*R*)-**8** (91% ee, AD, 0.35 mL/min, hexanes: *i*PrOH = 92:8, 254 nm *hν*)



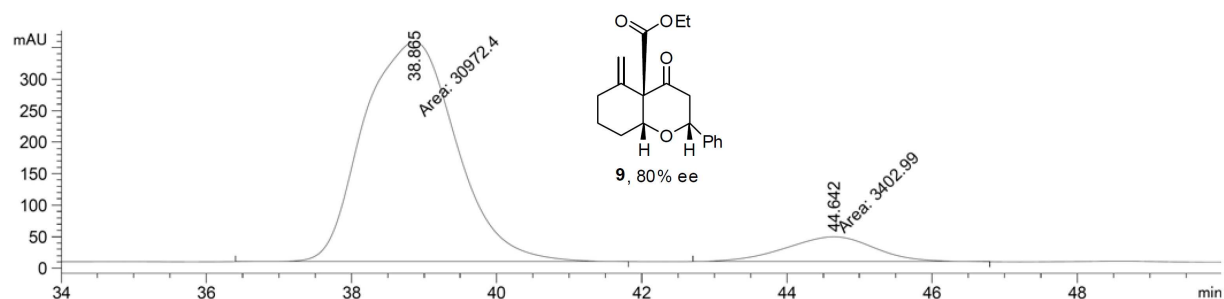
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	43.064	1.8854	1.45811e4	128.89366	95.6595
2	48.247	1.7420	661.60468	6.33006	4.3405

(±)-**9** (OD-H, 0.3 mL/min, hexanes: *i*PrOH = 98:2, 220 nm *hν*)



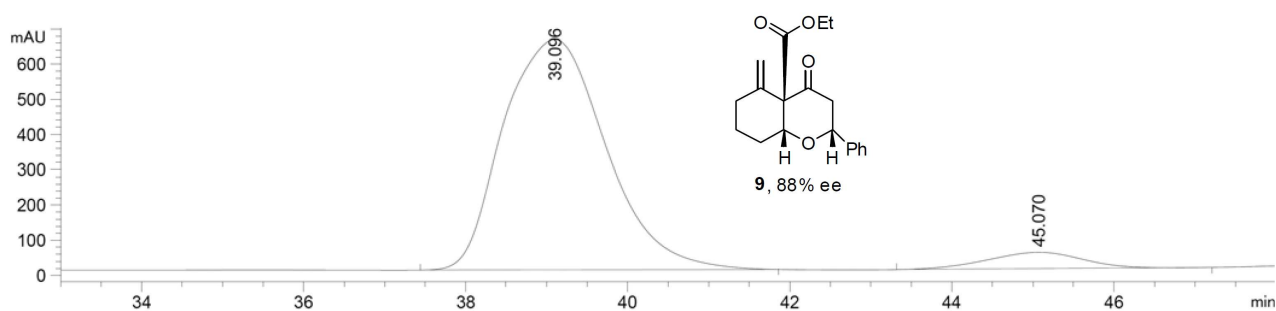
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	38.606	1.3576	3.57156e4	424.50339	50.1901
2	44.117	1.2321	3.54450e4	440.78772	49.8099

(+)-**9** (80% ee) obtained from InCl₃, CH₂Cl₂, 40 °C (entry 1, Table 1)



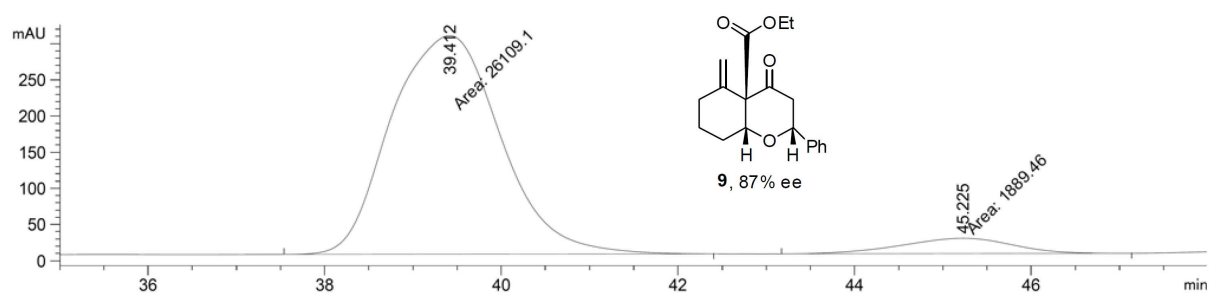
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	38.865	1.4799	3.09724e4	348.81451	90.1005
2	44.642	1.4363	3402.98950	39.48714	9.8995

(+)-**9** (88% ee) obtained from InBr₃, CH₂Cl₂, 0 to 40 °C (entry 3, Table 1)



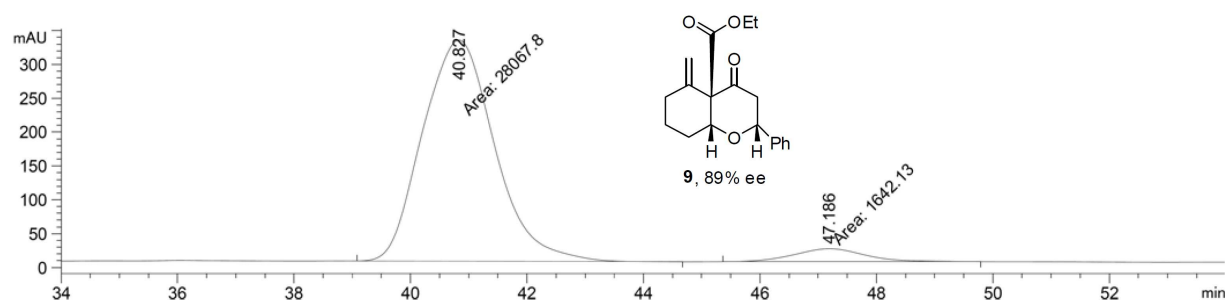
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	39.096	1.4153	5.76964e4	655.26282	93.8171
2	45.070	1.2319	3802.43164	46.60519	6.1829

(+)-**9** (87% ee) obtained from In(OTf)₃, CH₂Cl₂, 0 to 40 °C (entry 4, Table 1)



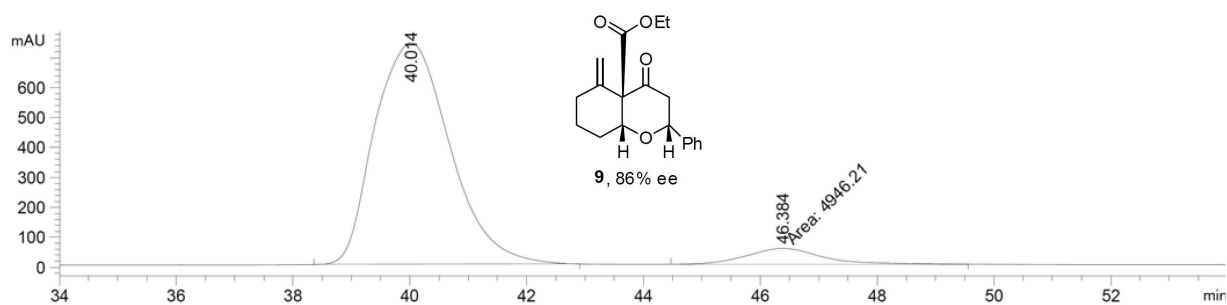
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	39.412	1.4387	2.61091e4	302.46176	93.2516
2	45.225	1.4777	1889.46387	21.31147	6.7484

(+)-**9** (89% ee) obtained from SnCl₄, CH₂Cl₂, 0 to 40 °C (entry 6, Table 1)



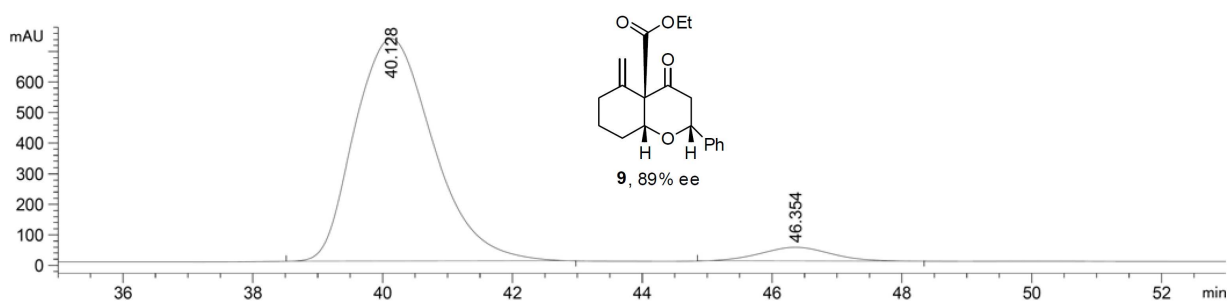
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	40.827	1.4309	2.80678e4	326.91574	94.4728
2	47.186	1.4293	1642.13428	19.14889	5.5272

(+)-**9** (86% ee) obtained from In(OTf)₃, toluene, 0 to 110 °C (entry 8, Table 1)

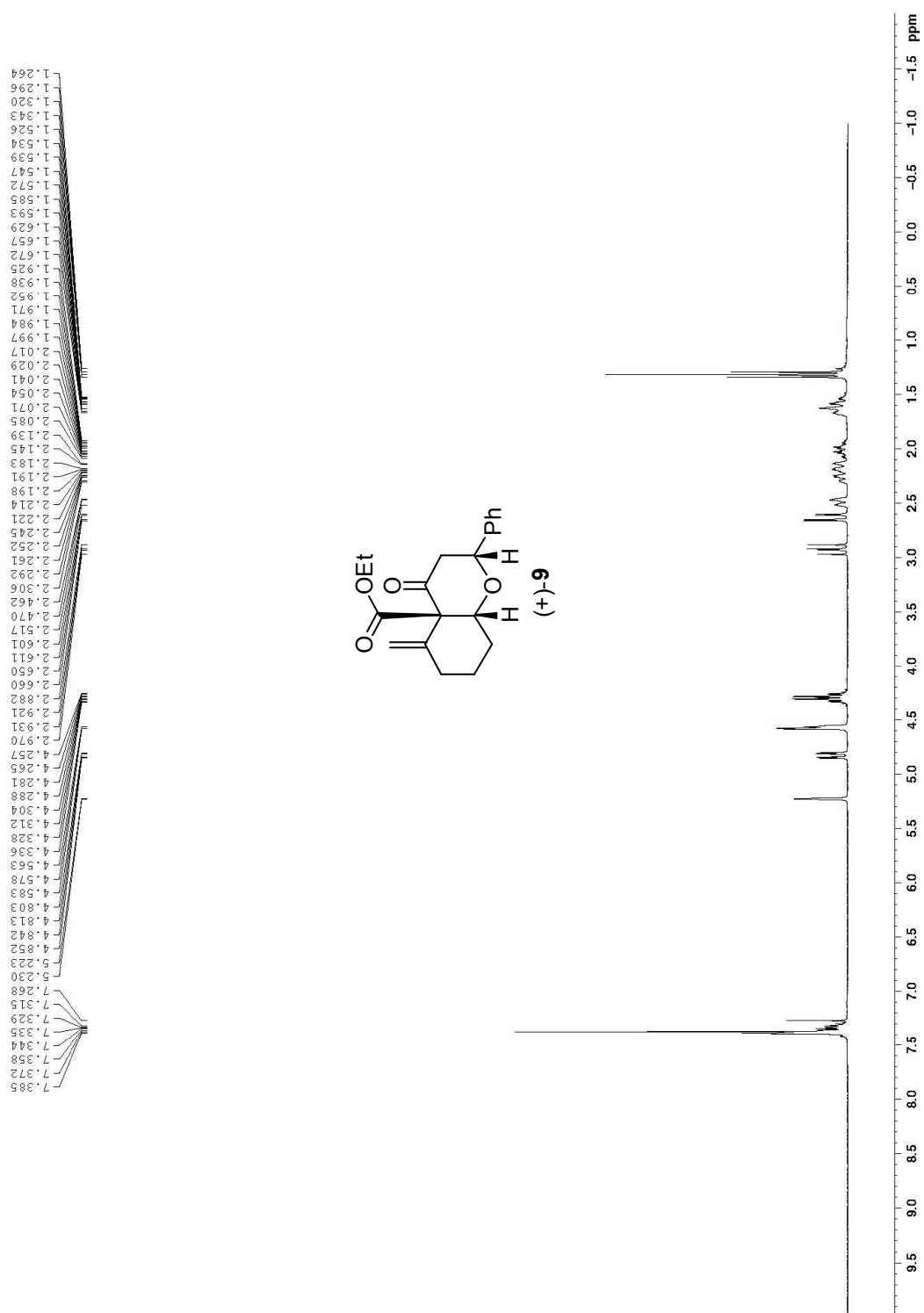


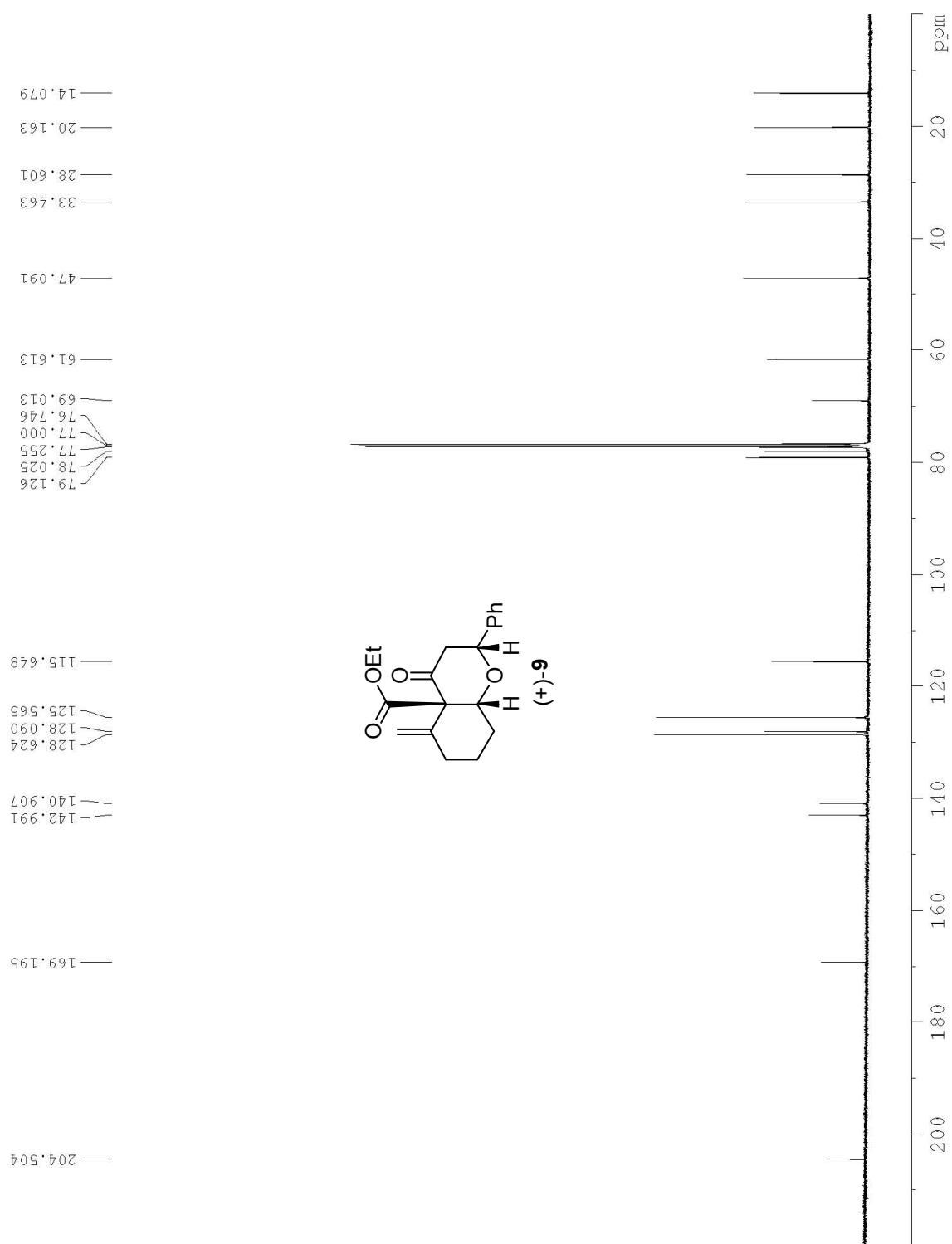
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	40.014	1.4326	6.64240e4	741.84833	93.0696
2	46.384	1.5357	4946.21387	53.68016	6.9304

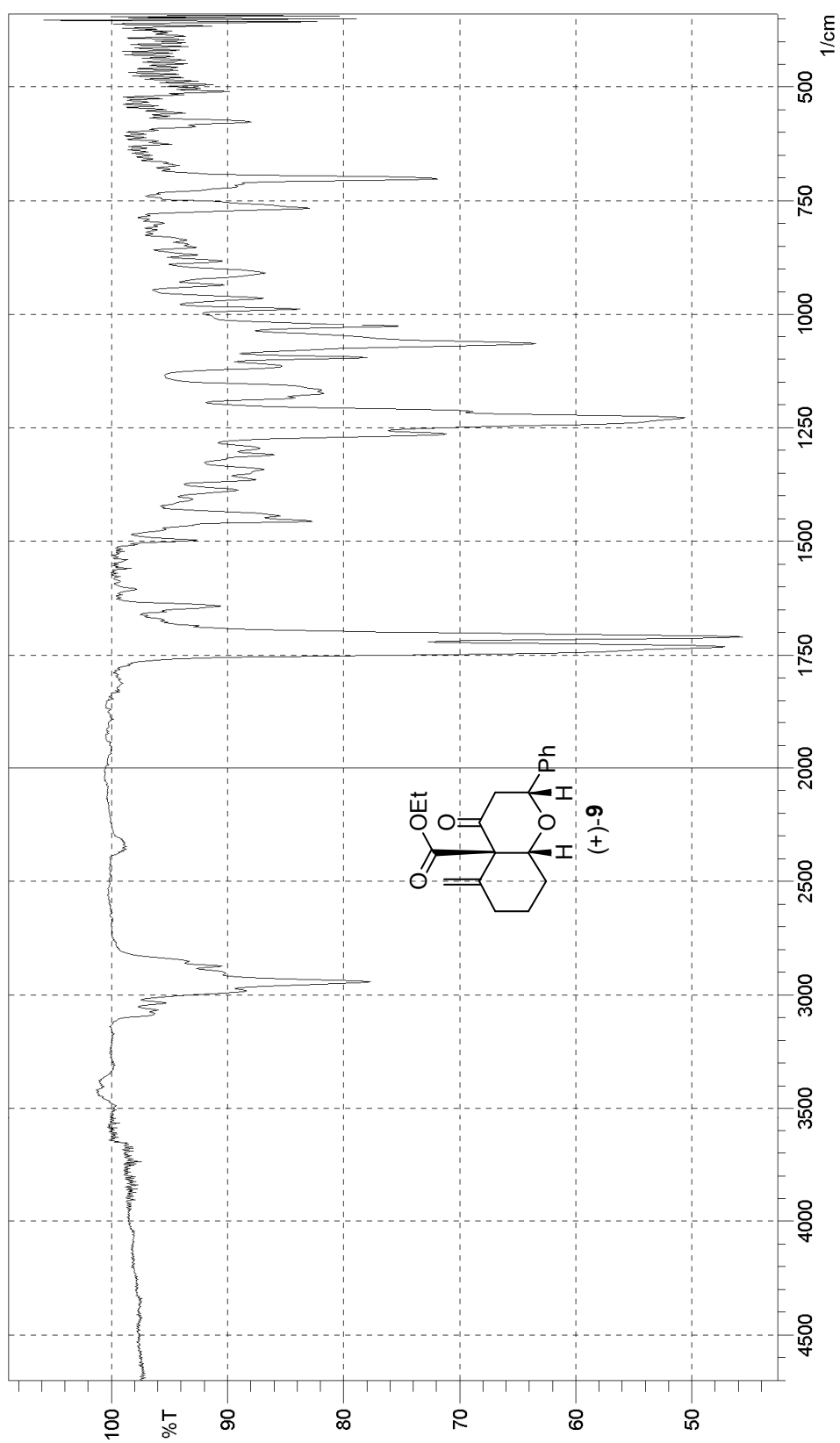
(+)-**9** (89% ee) obtained from In(OTf)₃, CH₃CN, 0 to 70 °C (entry 9, Table 1)

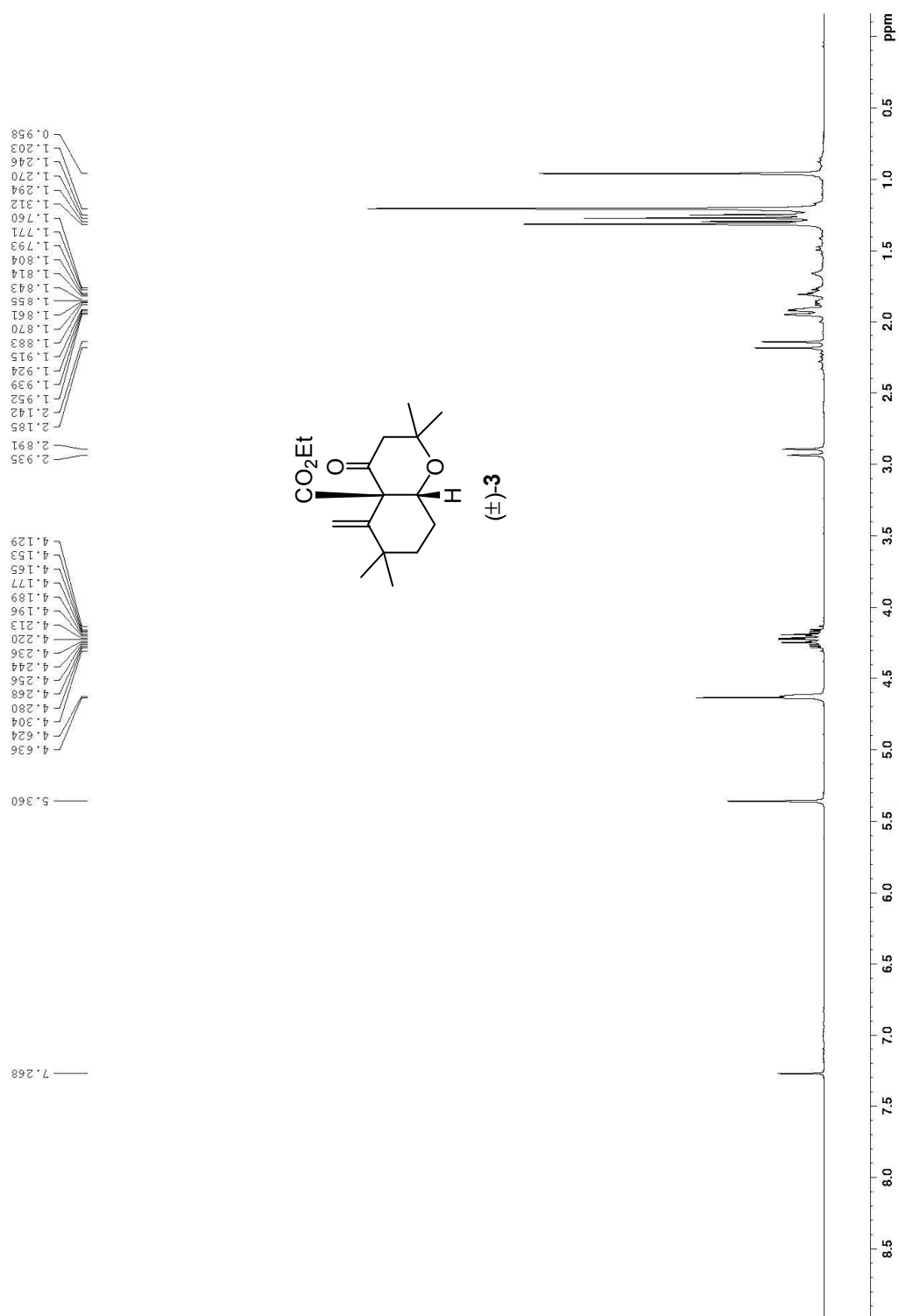


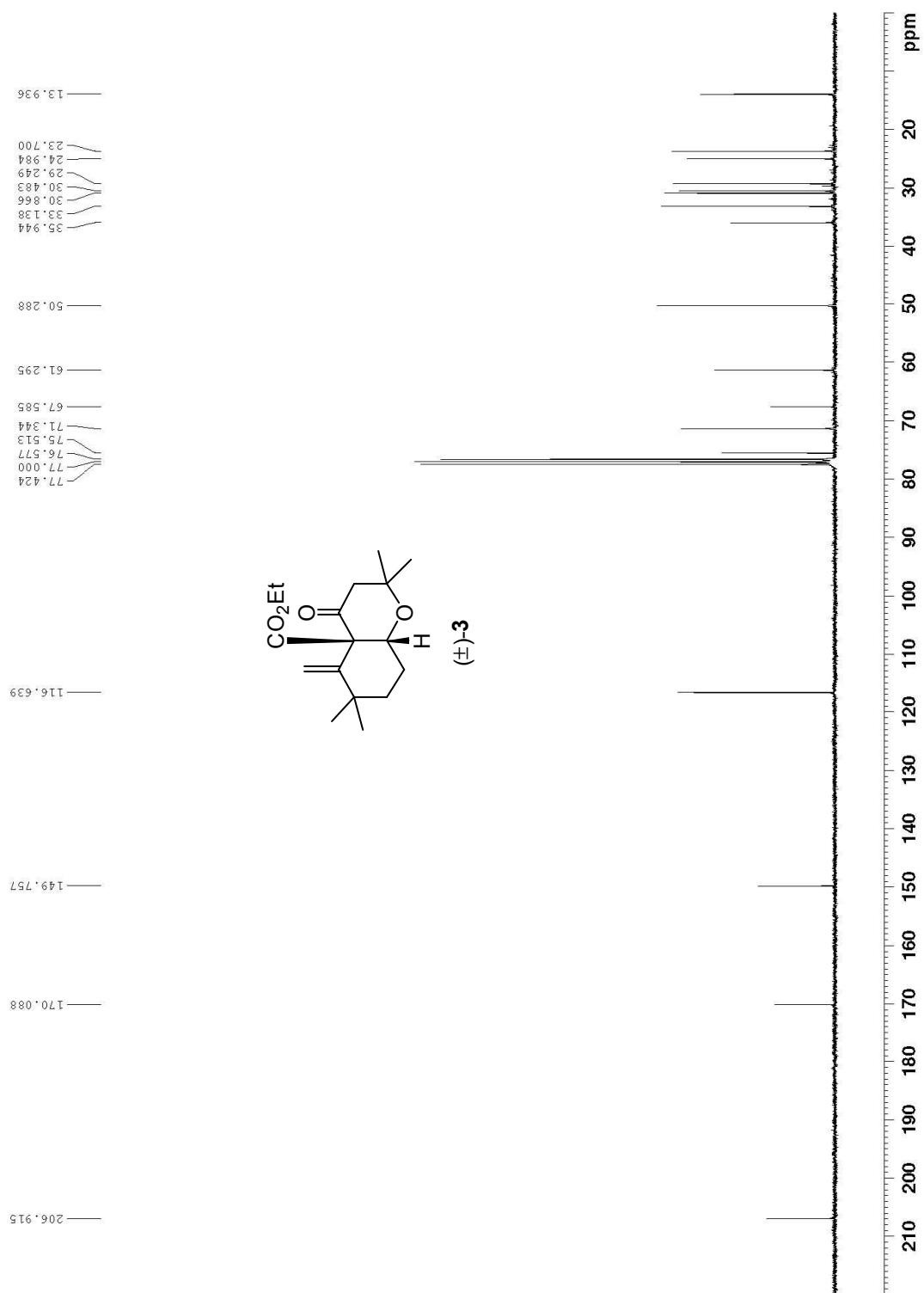
Peak#	Ret. Time[min]	Width[min]	Area[mAU*s]	Height[mAU]	Area%
1	40.128	1.3483	6.13435e4	730.06396	94.5843
2	46.354	1.1590	3512.39624	45.68454	5.4157

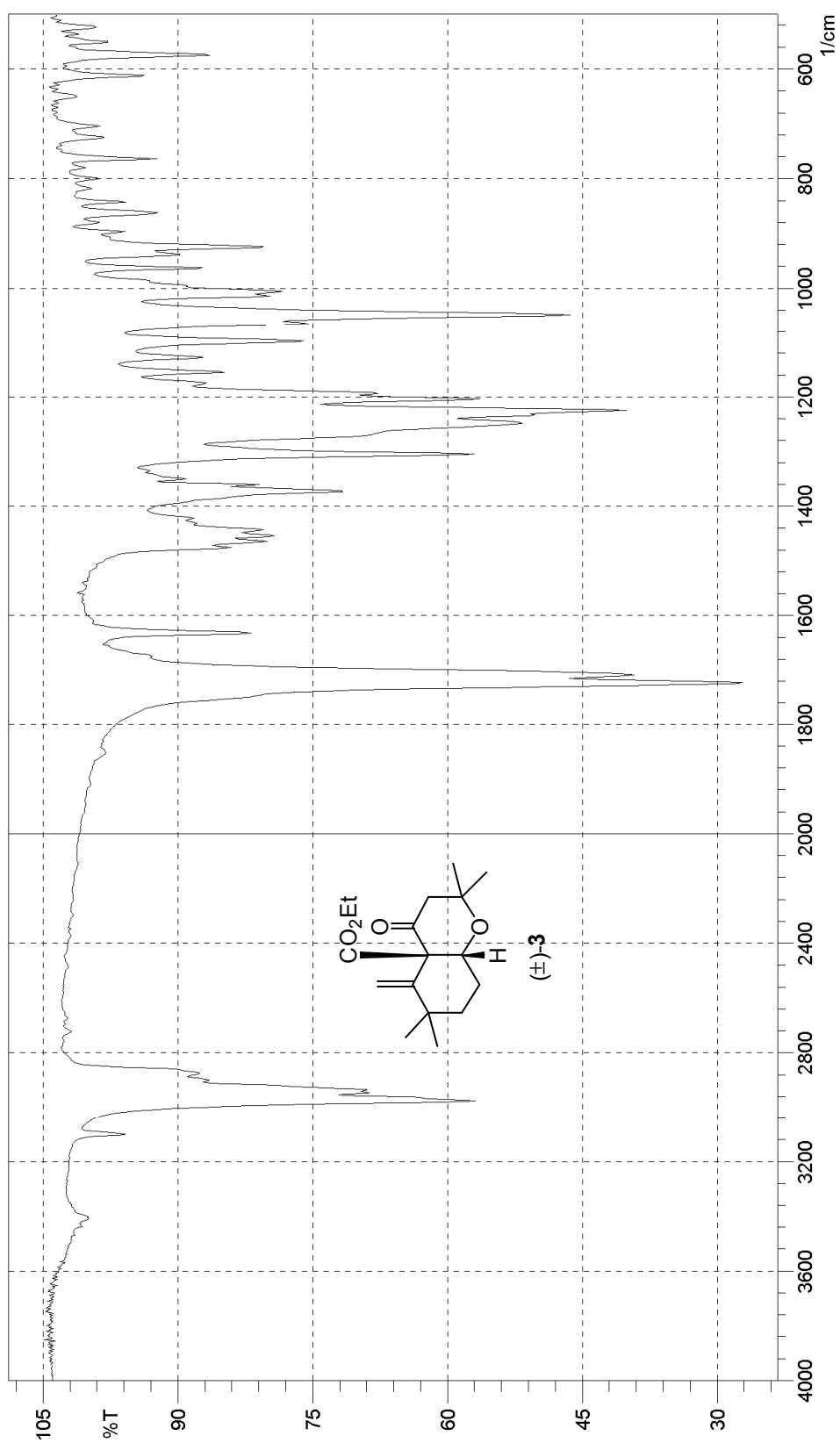


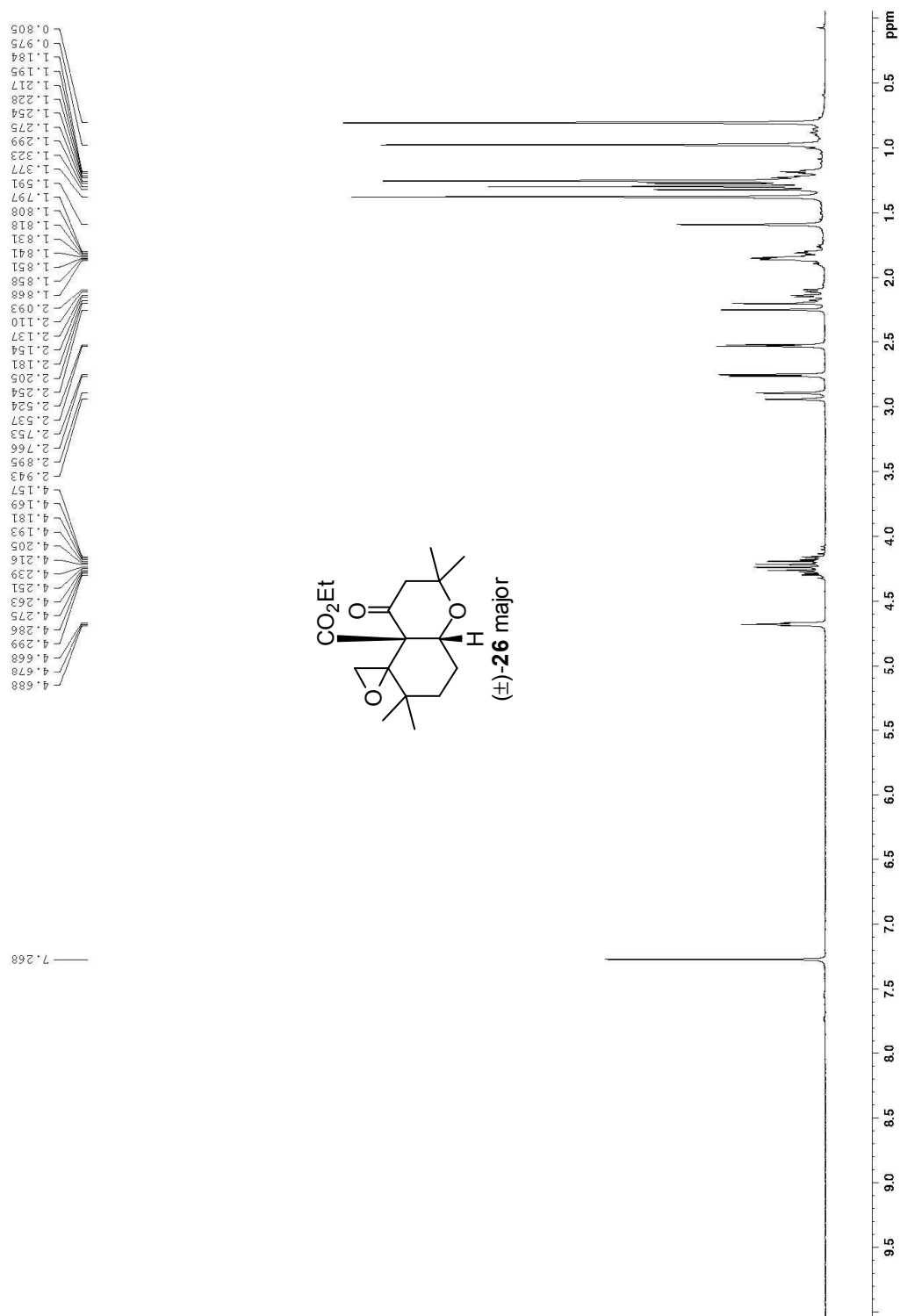


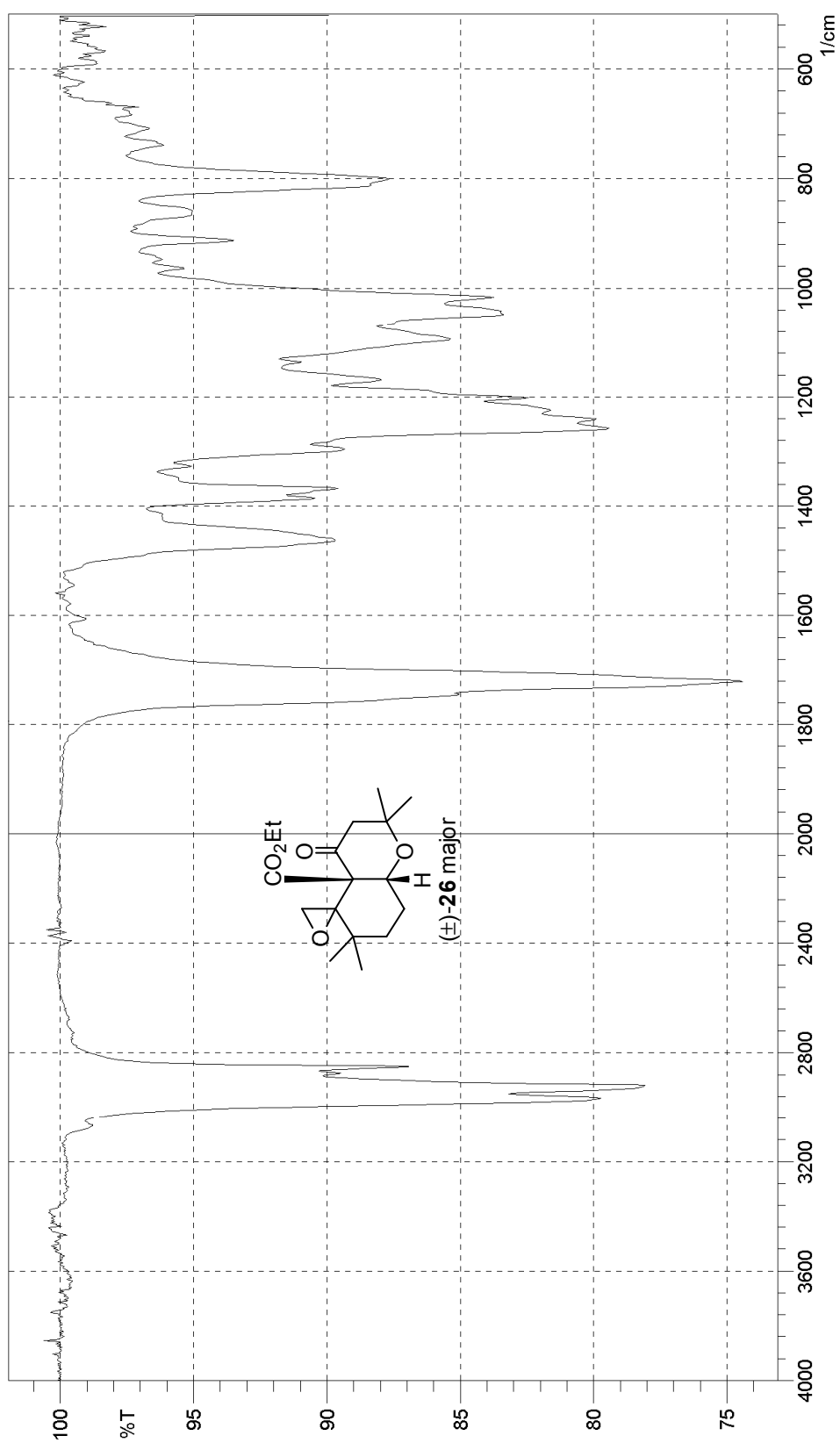


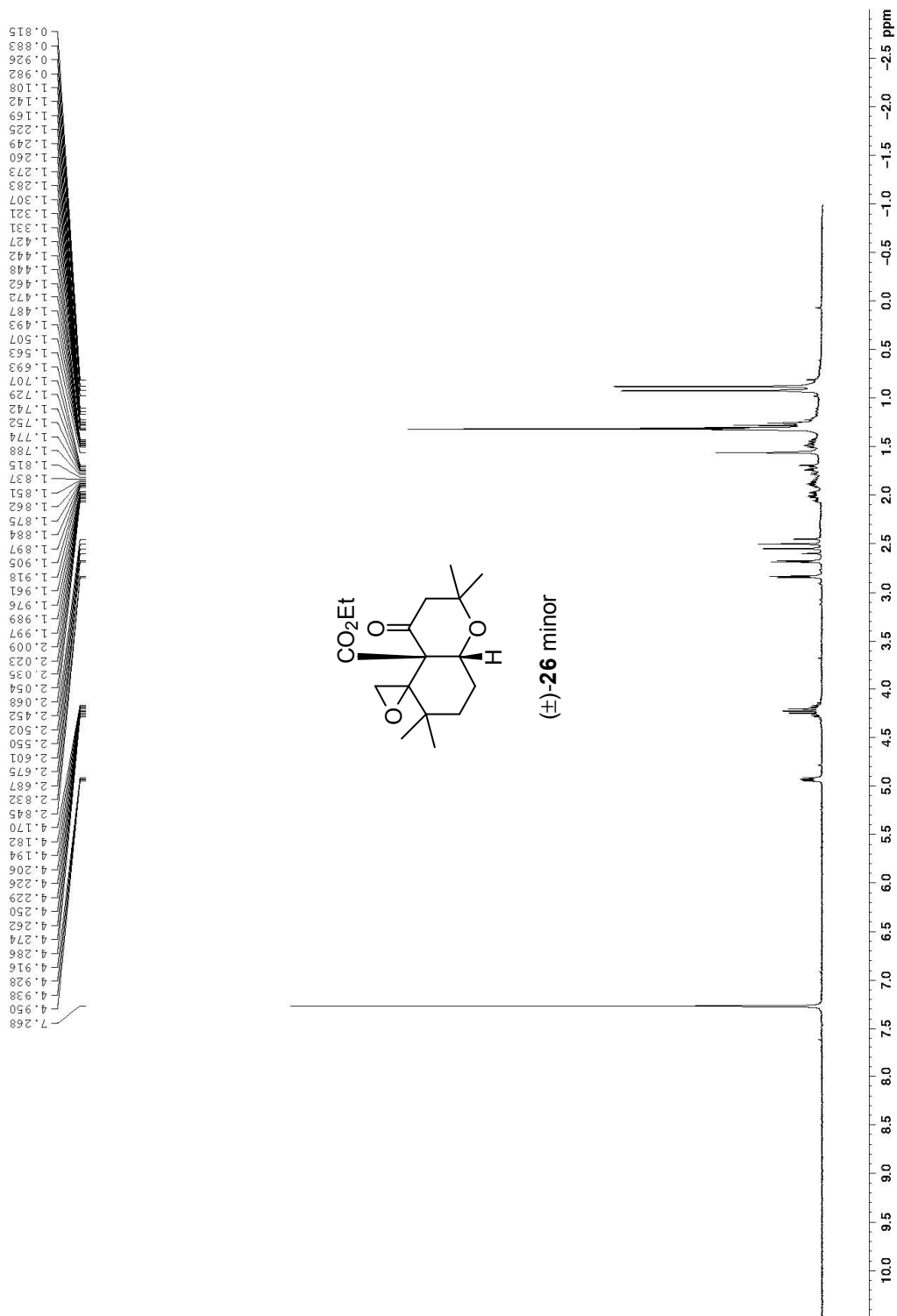


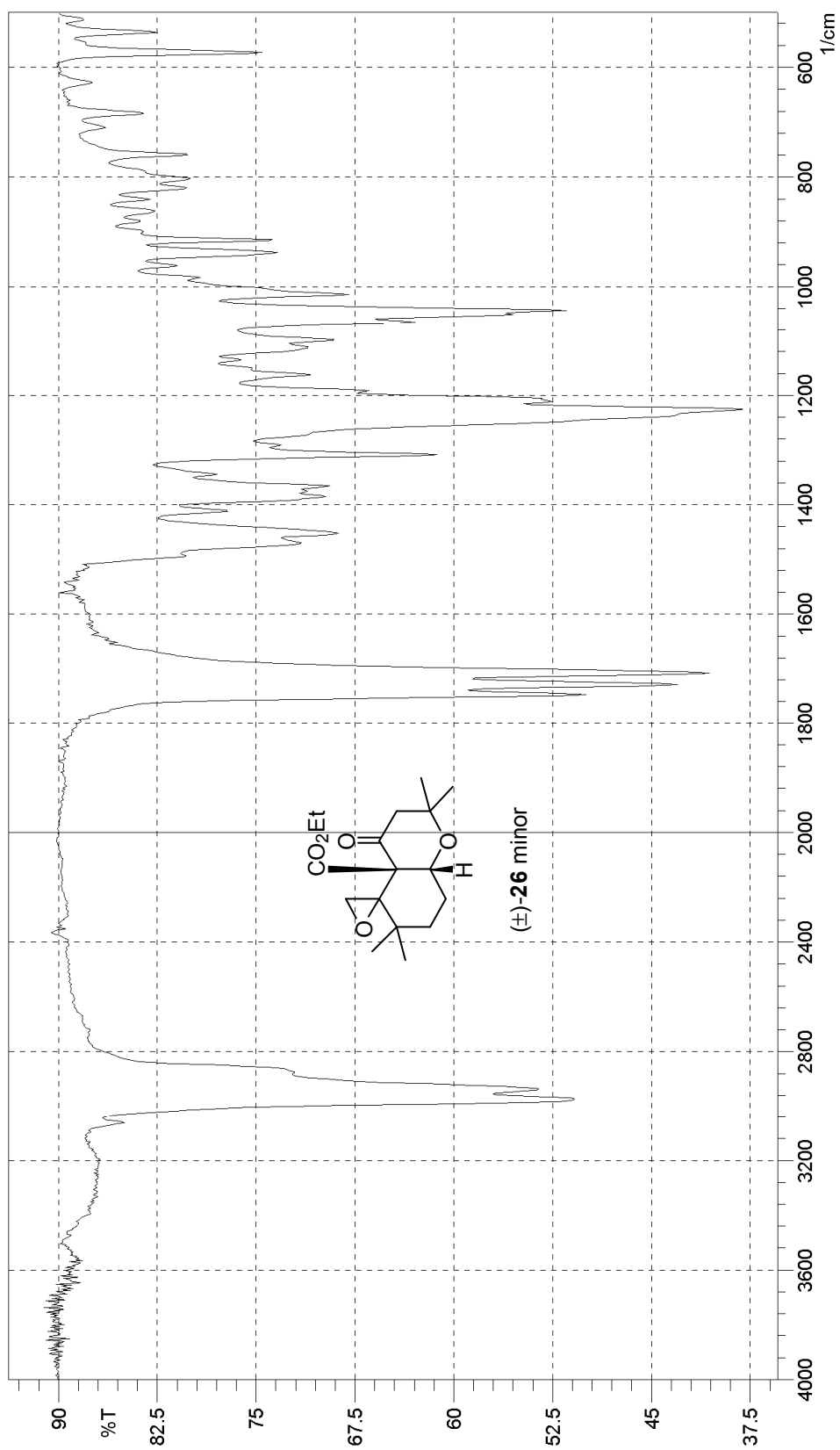


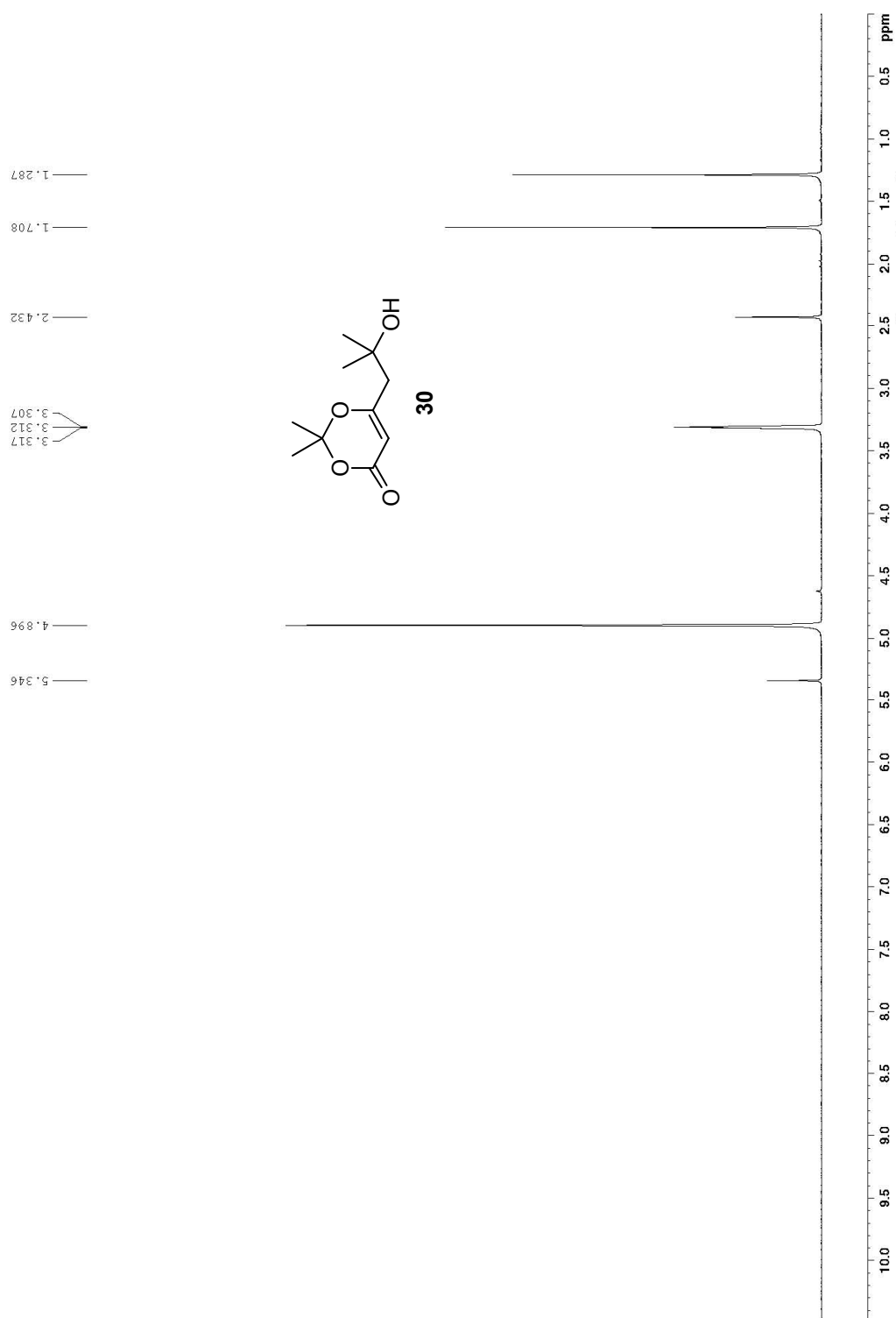


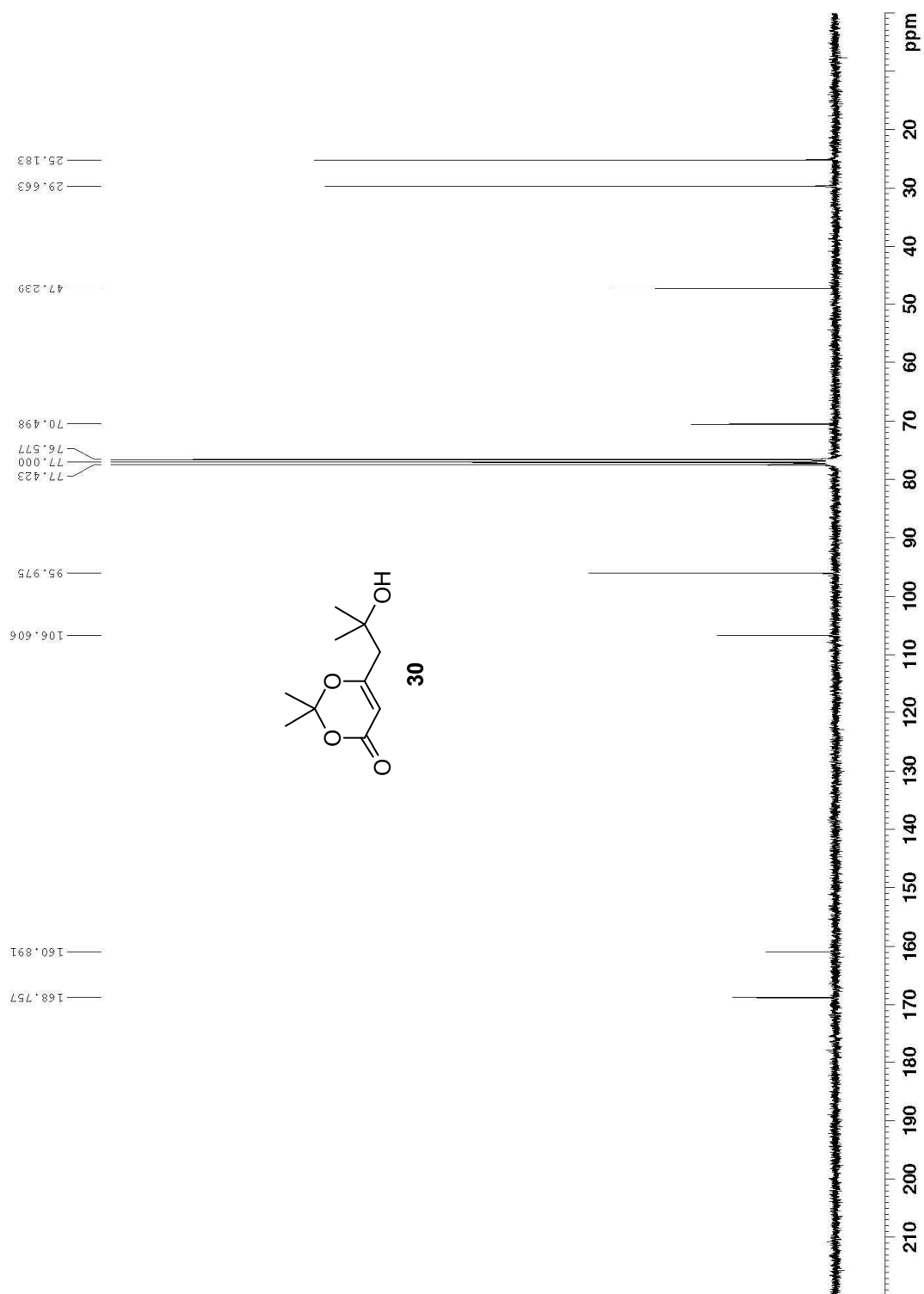


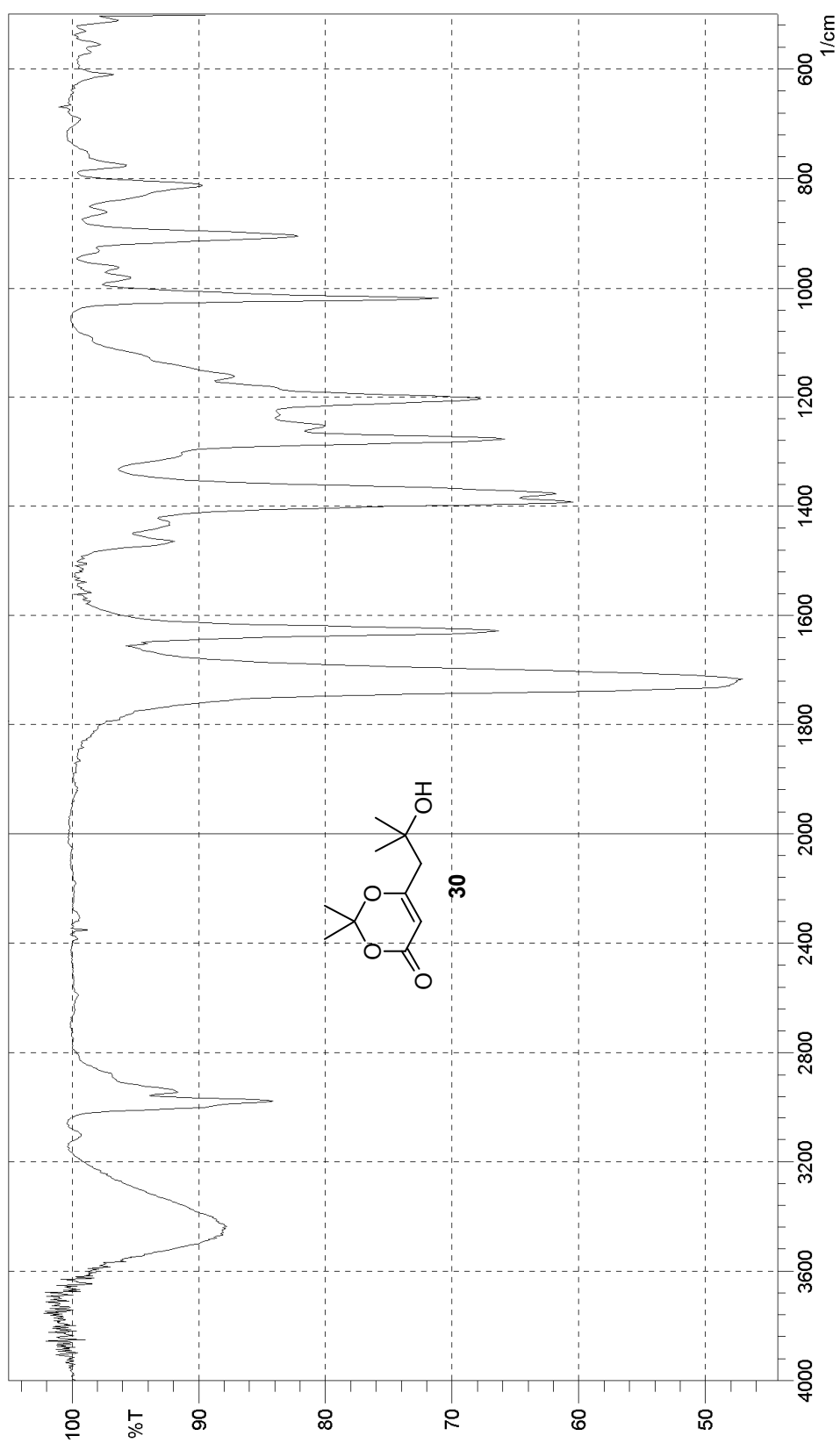


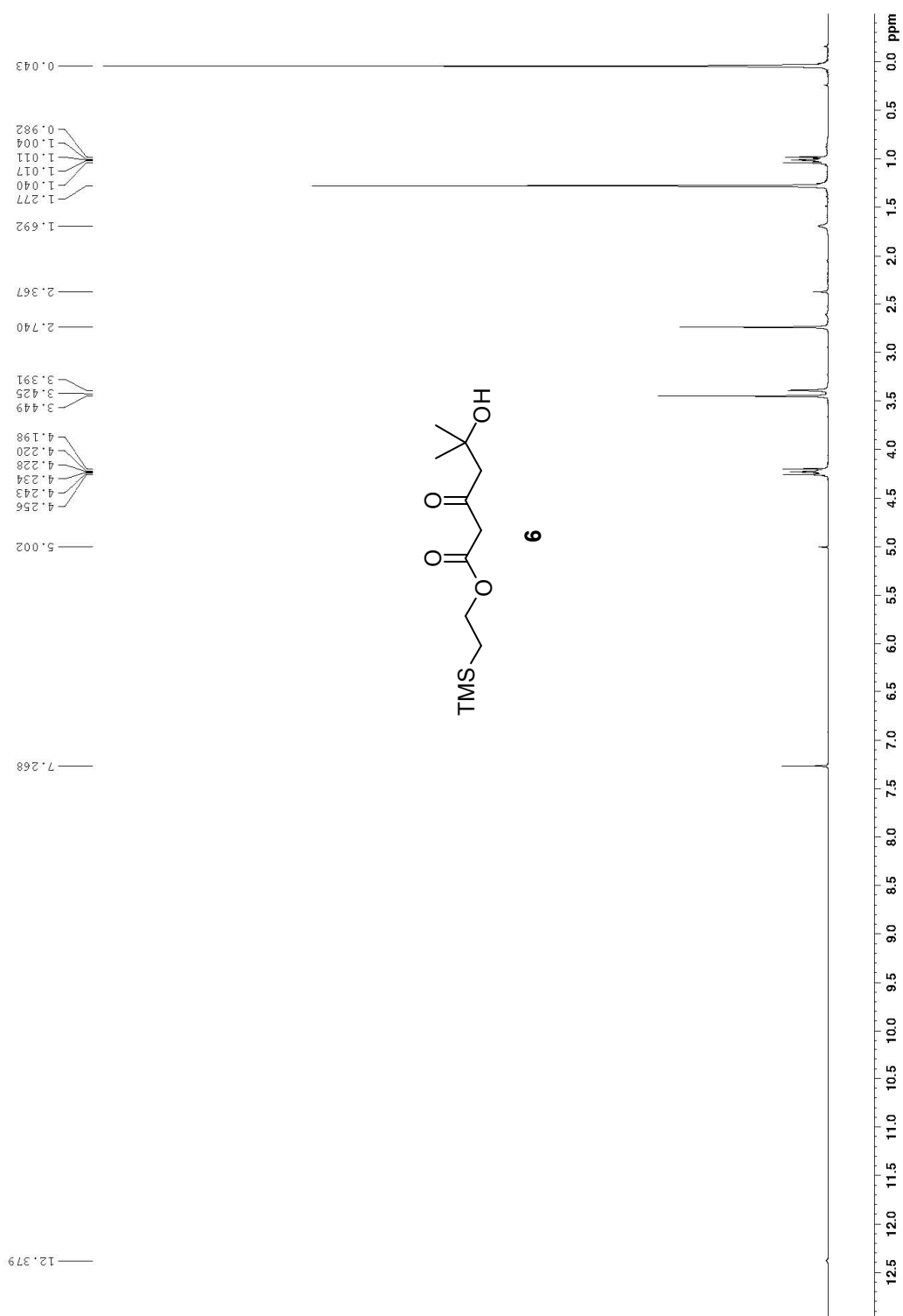


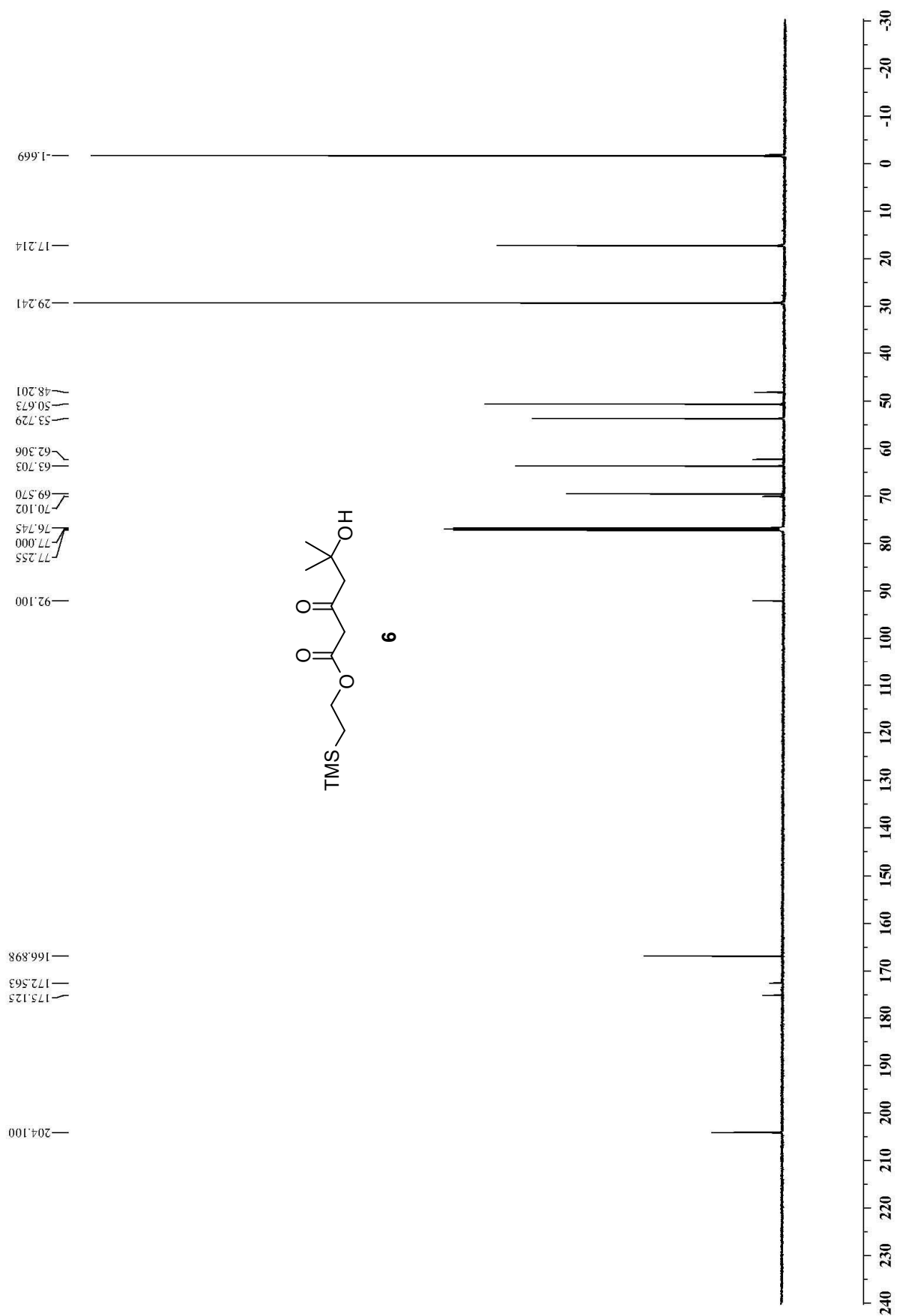


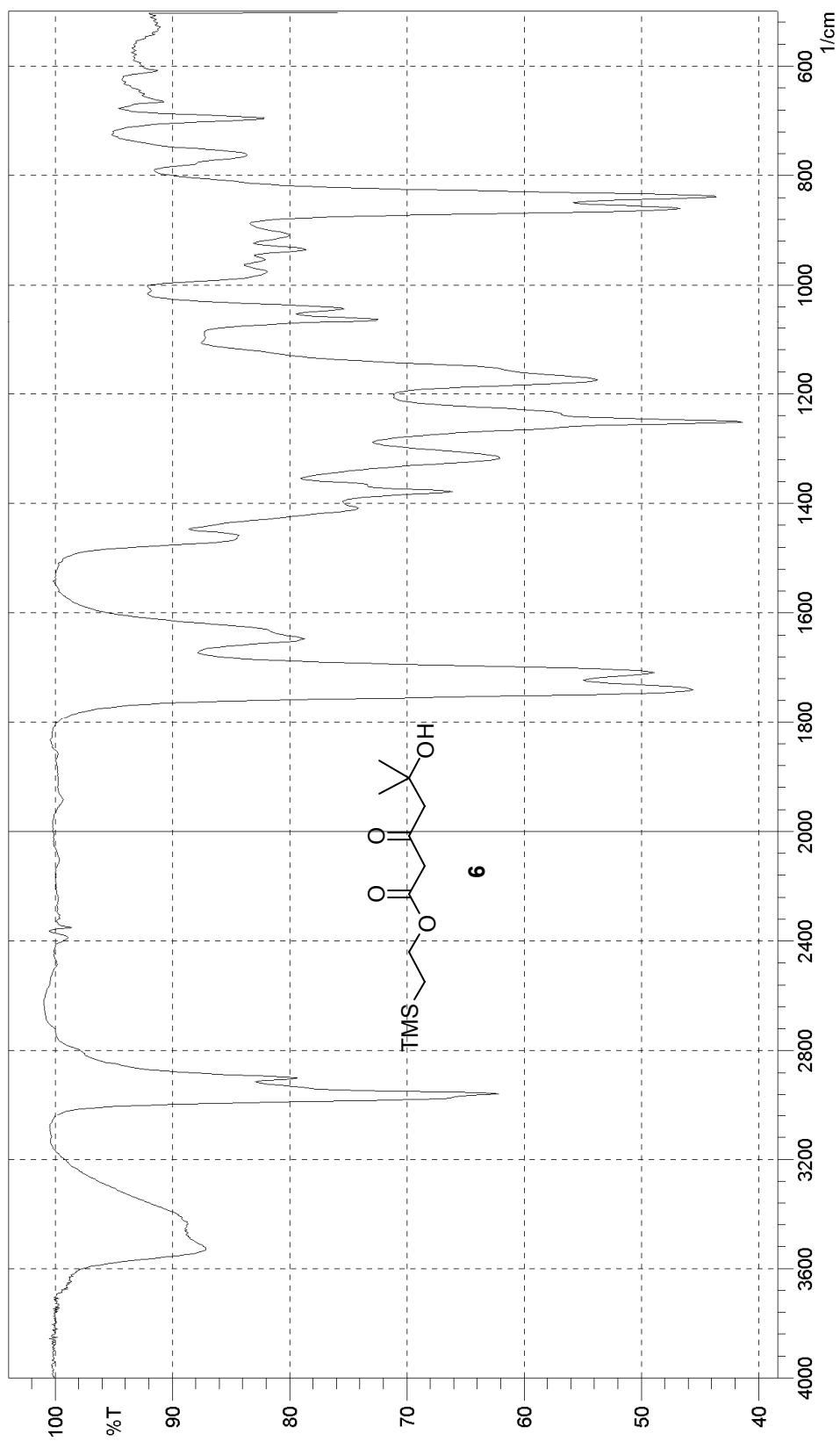


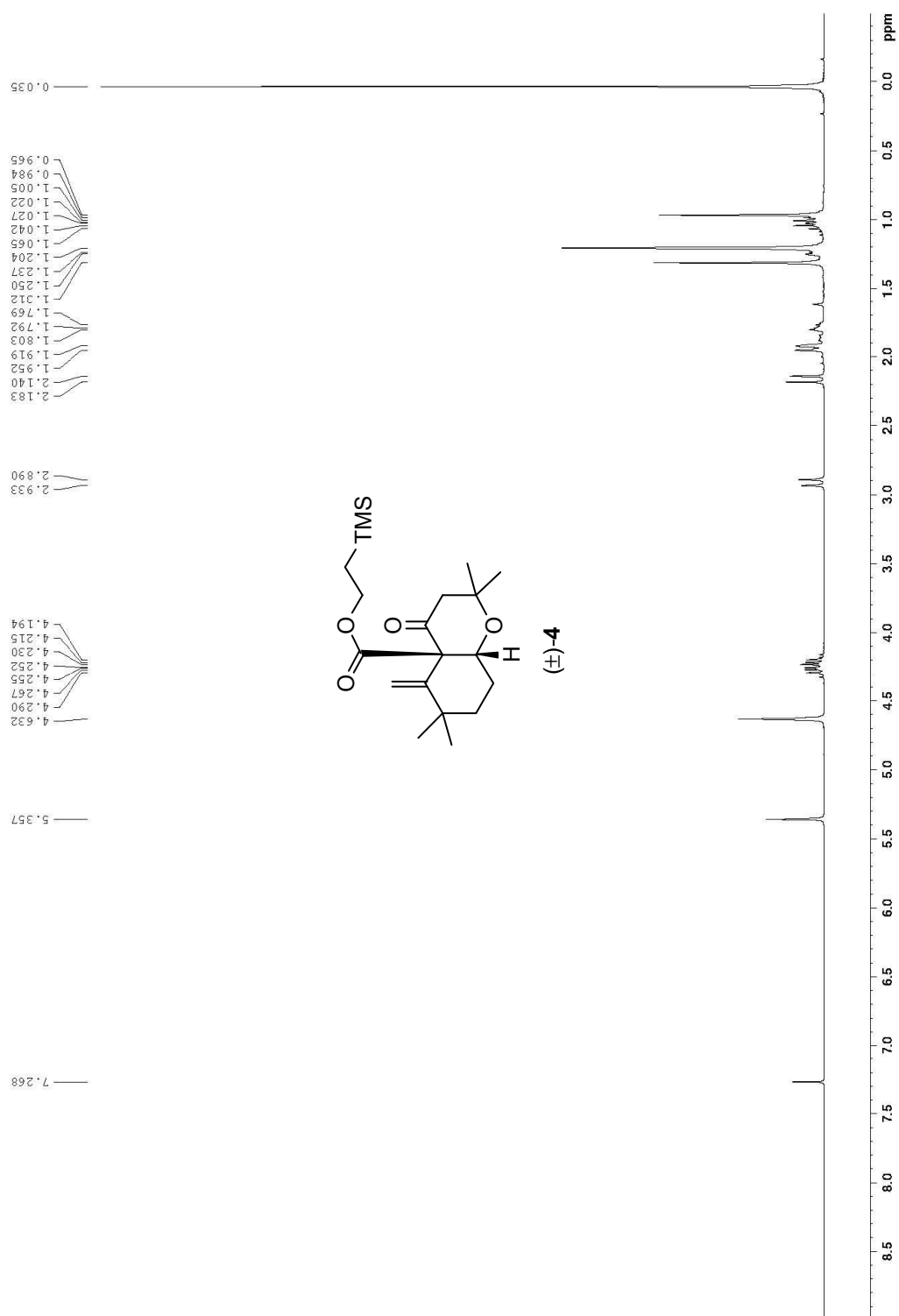


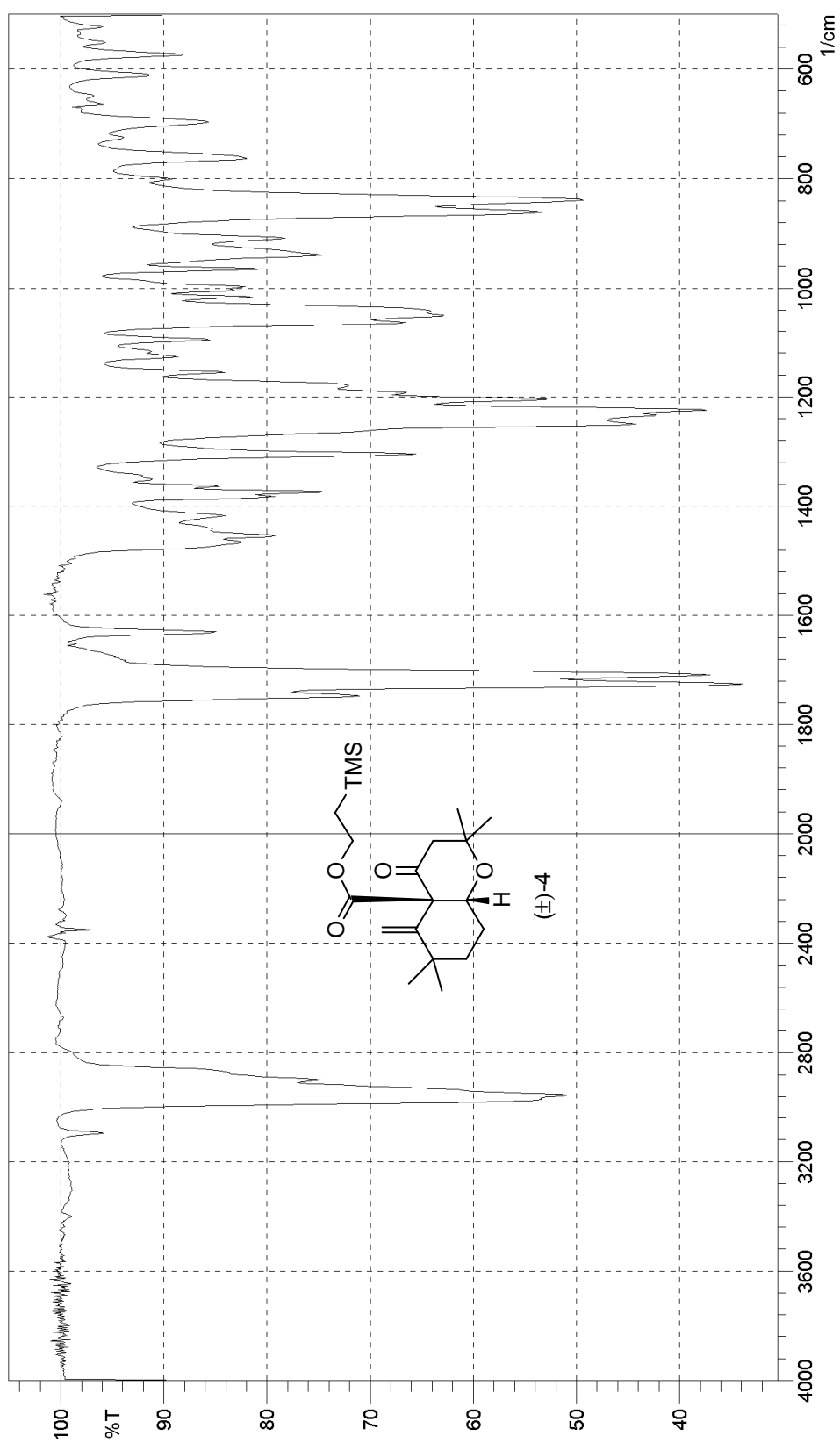


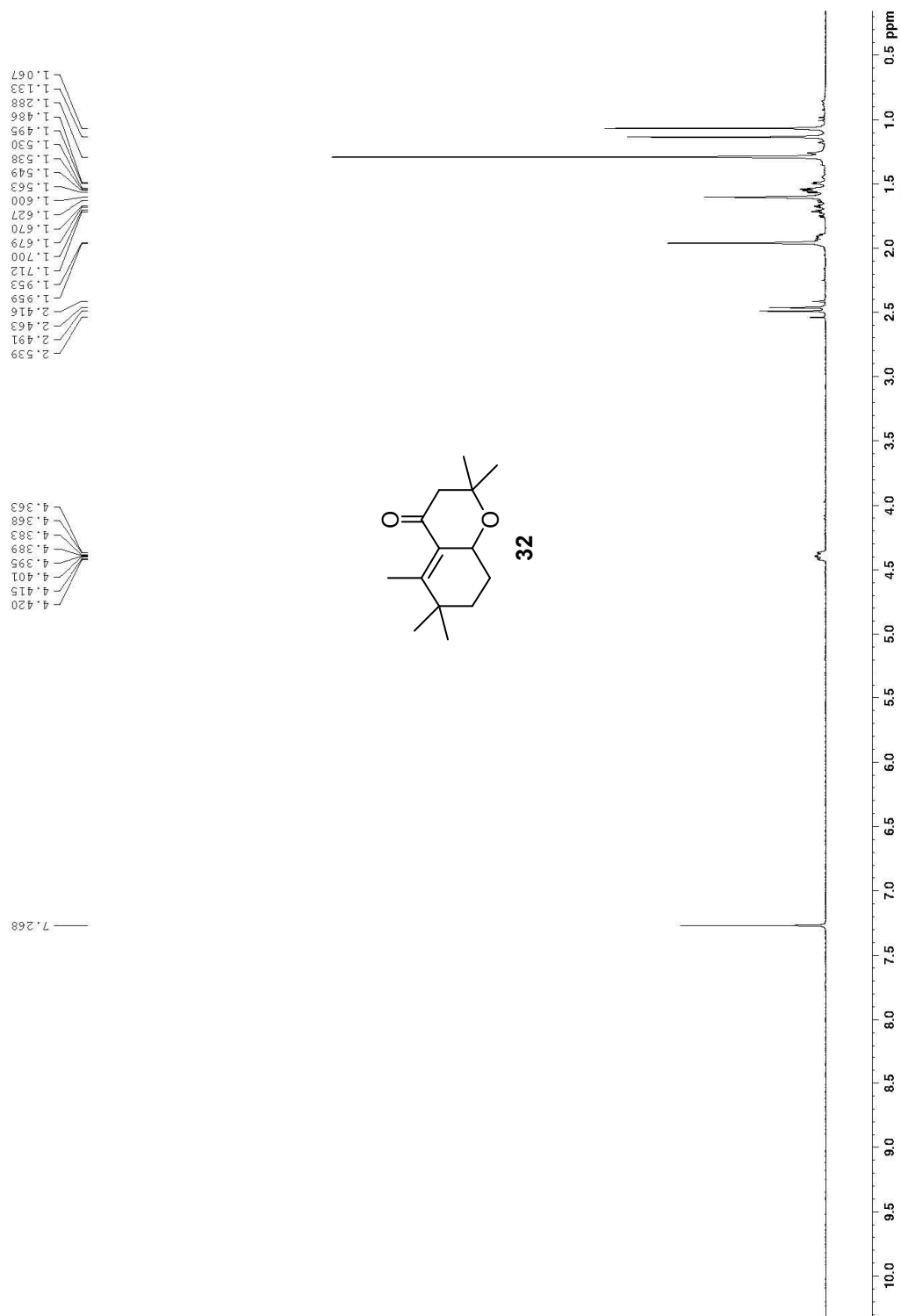


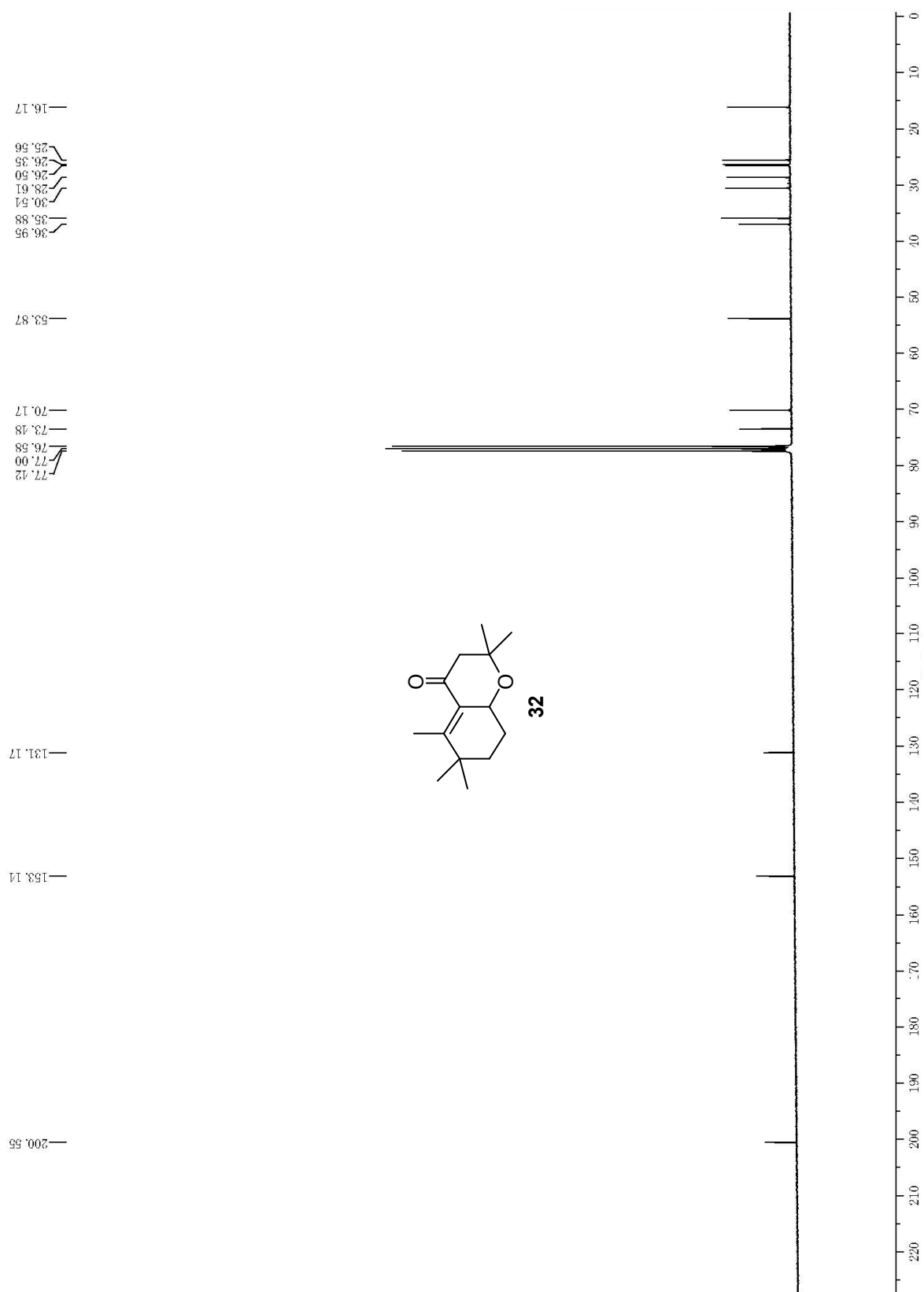


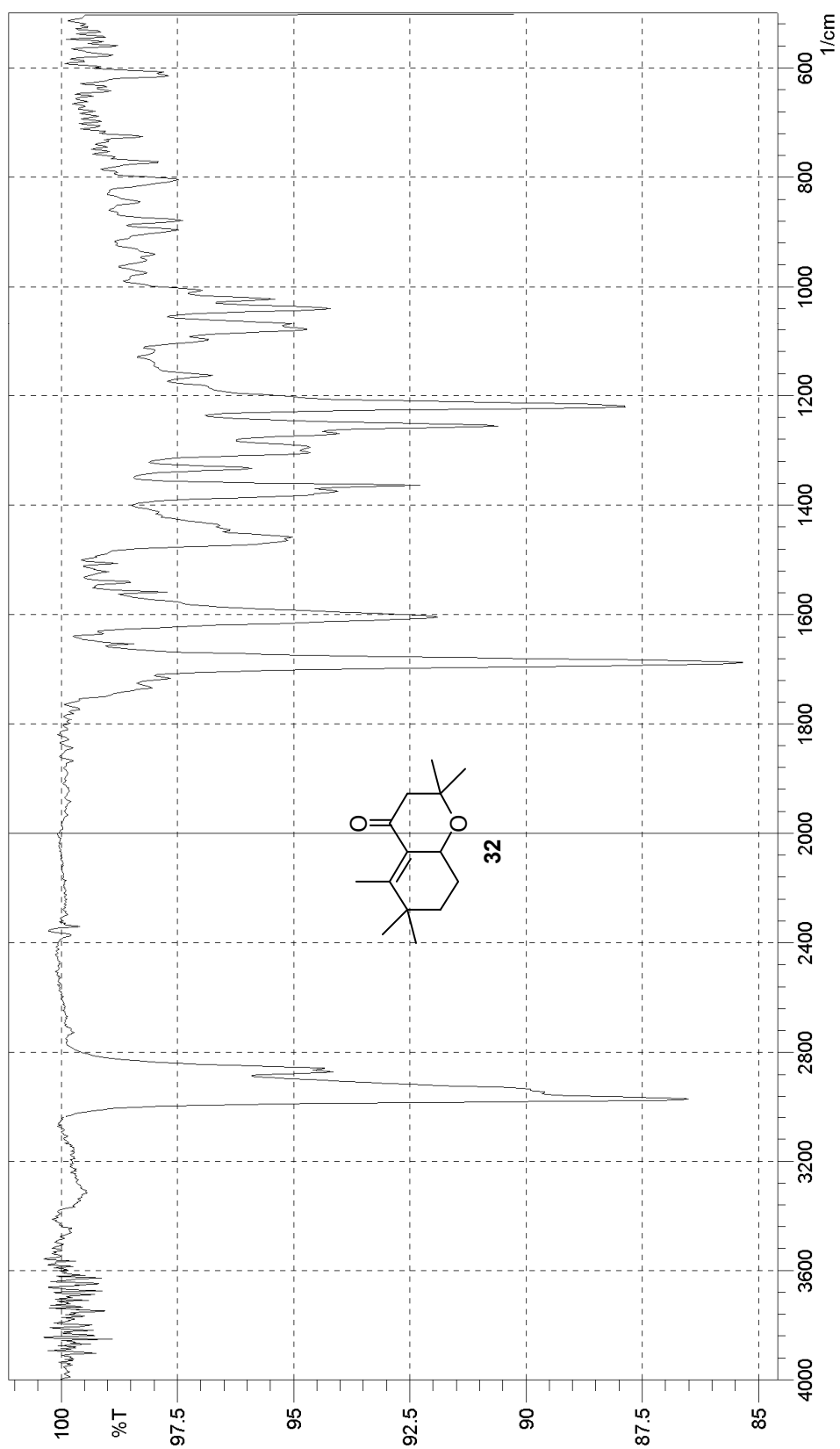


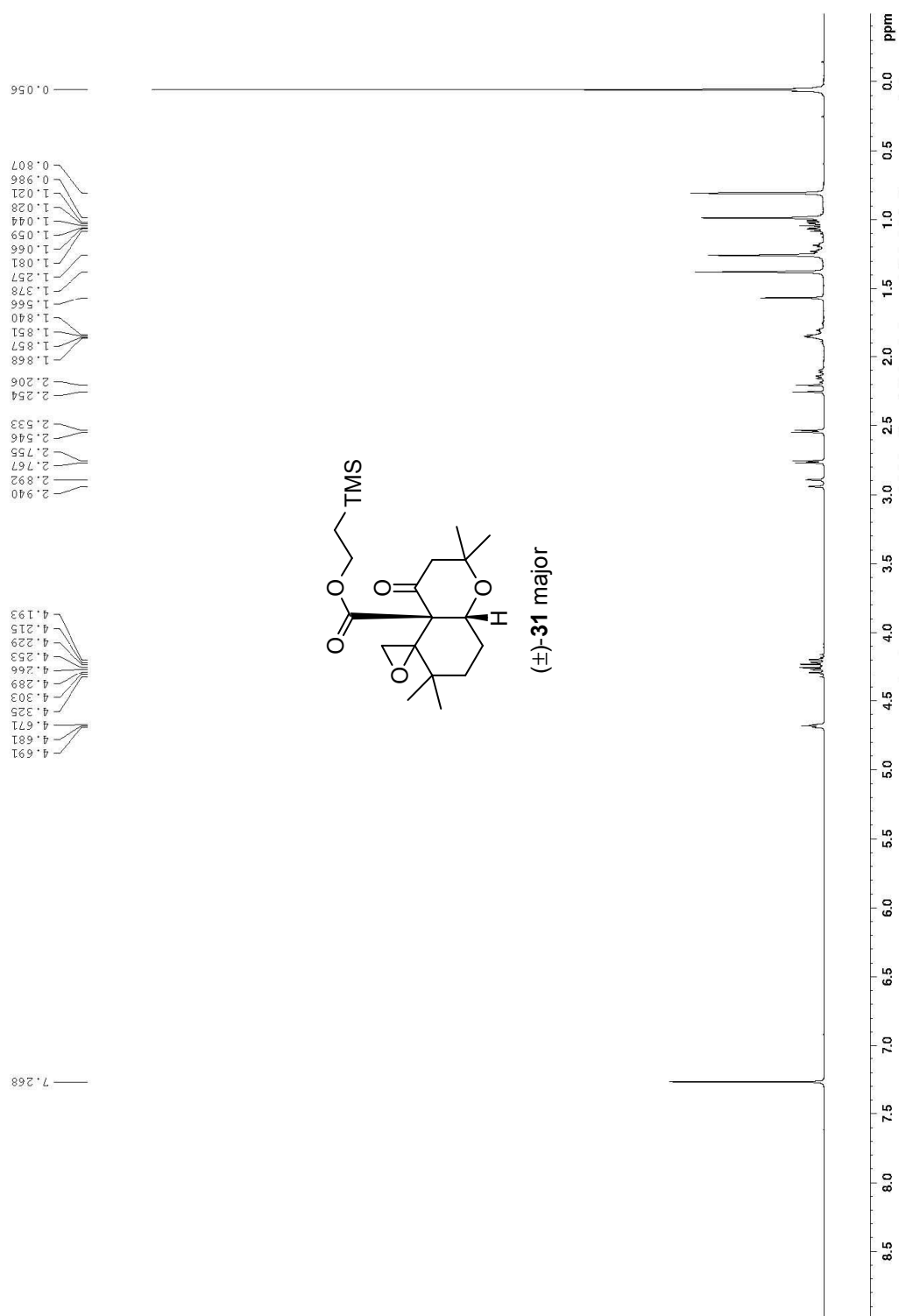


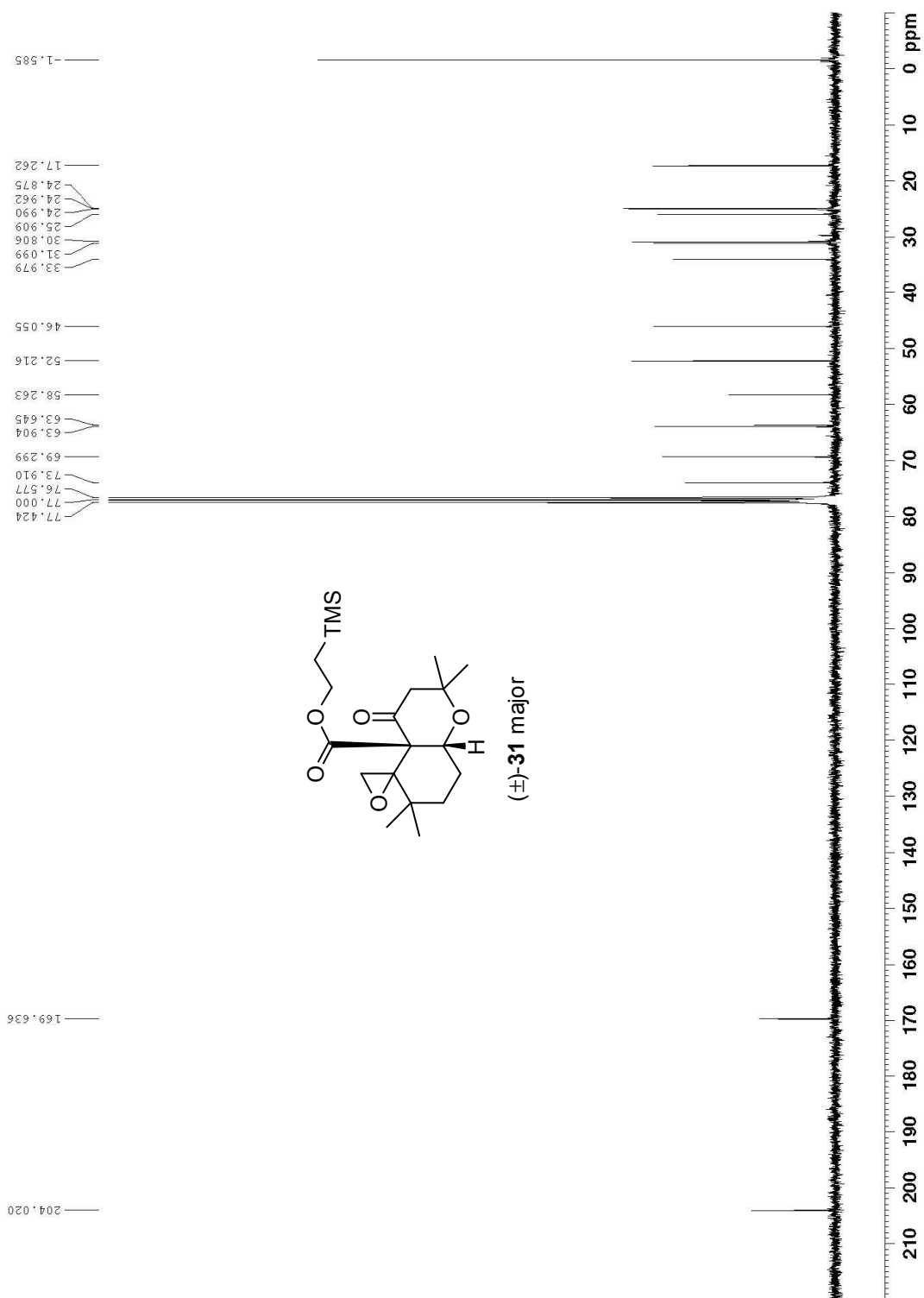


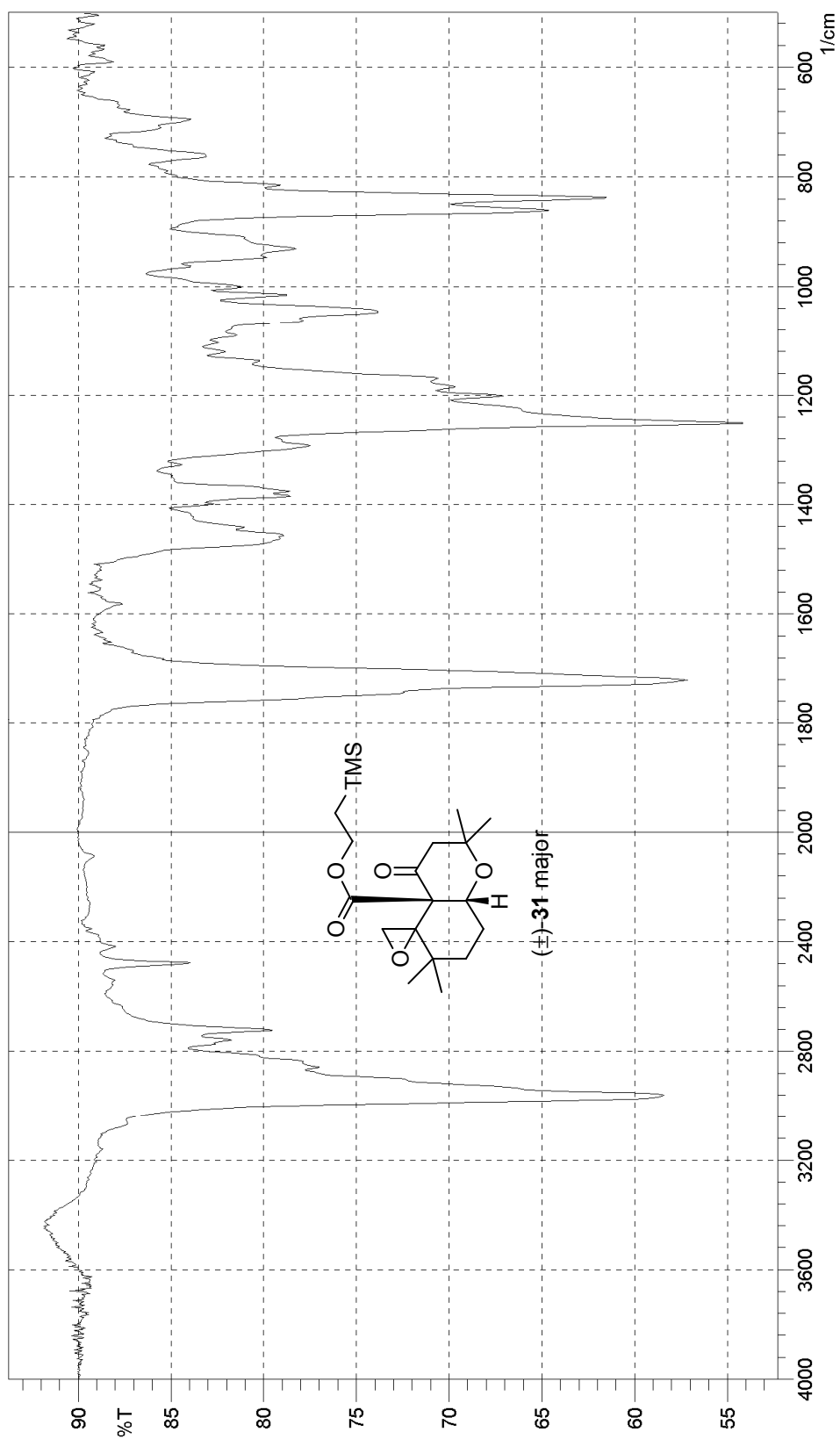




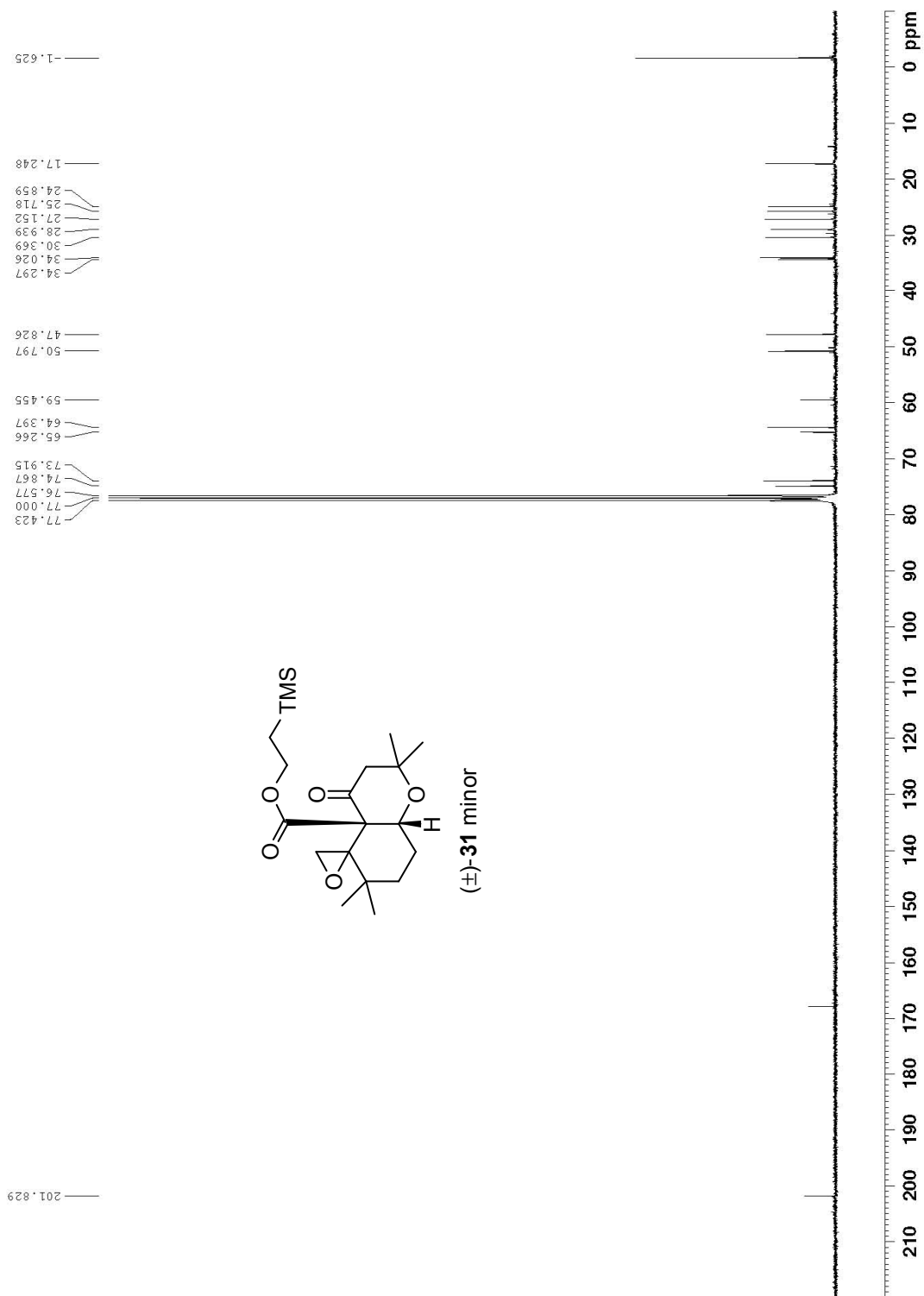


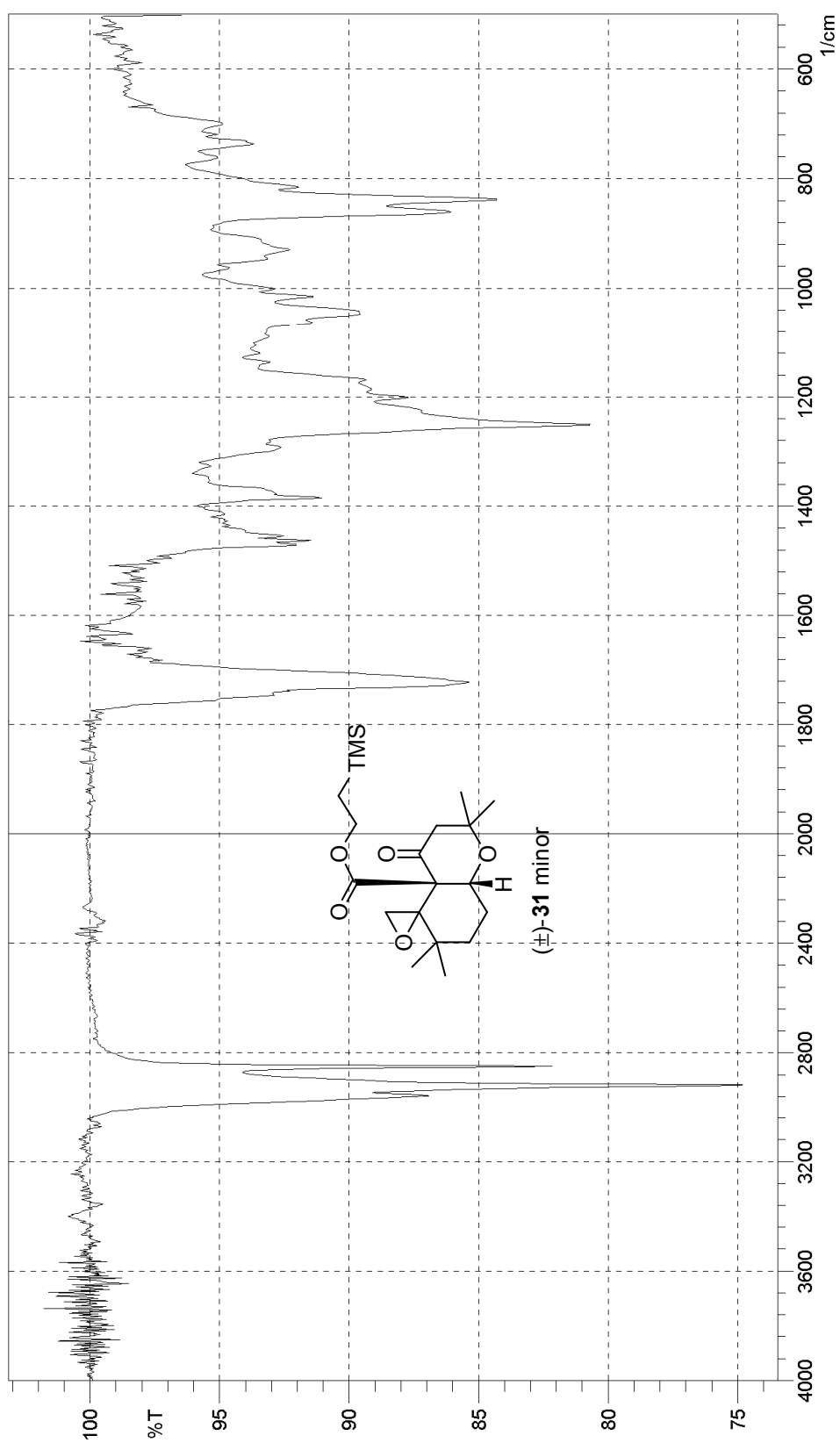


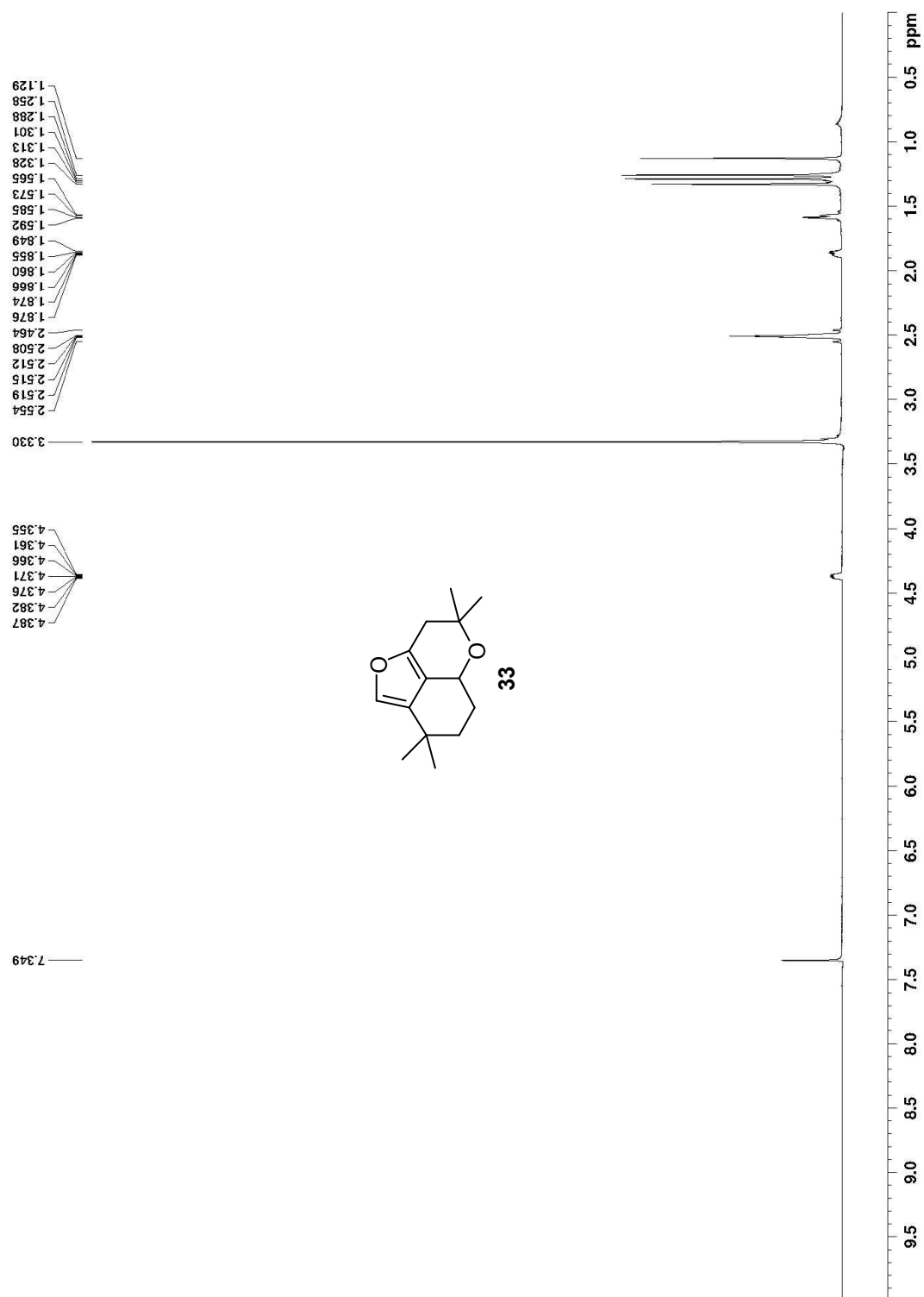


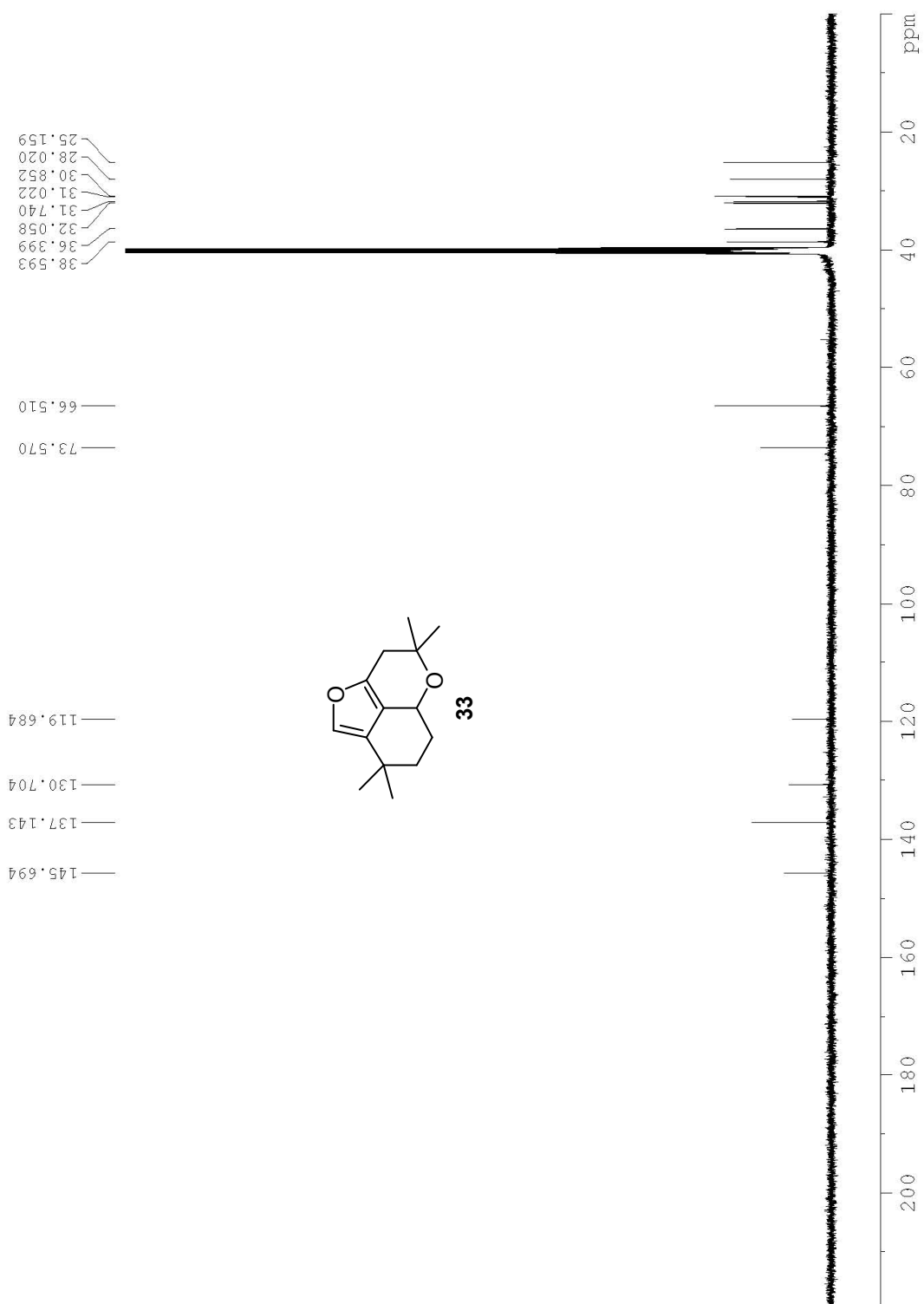


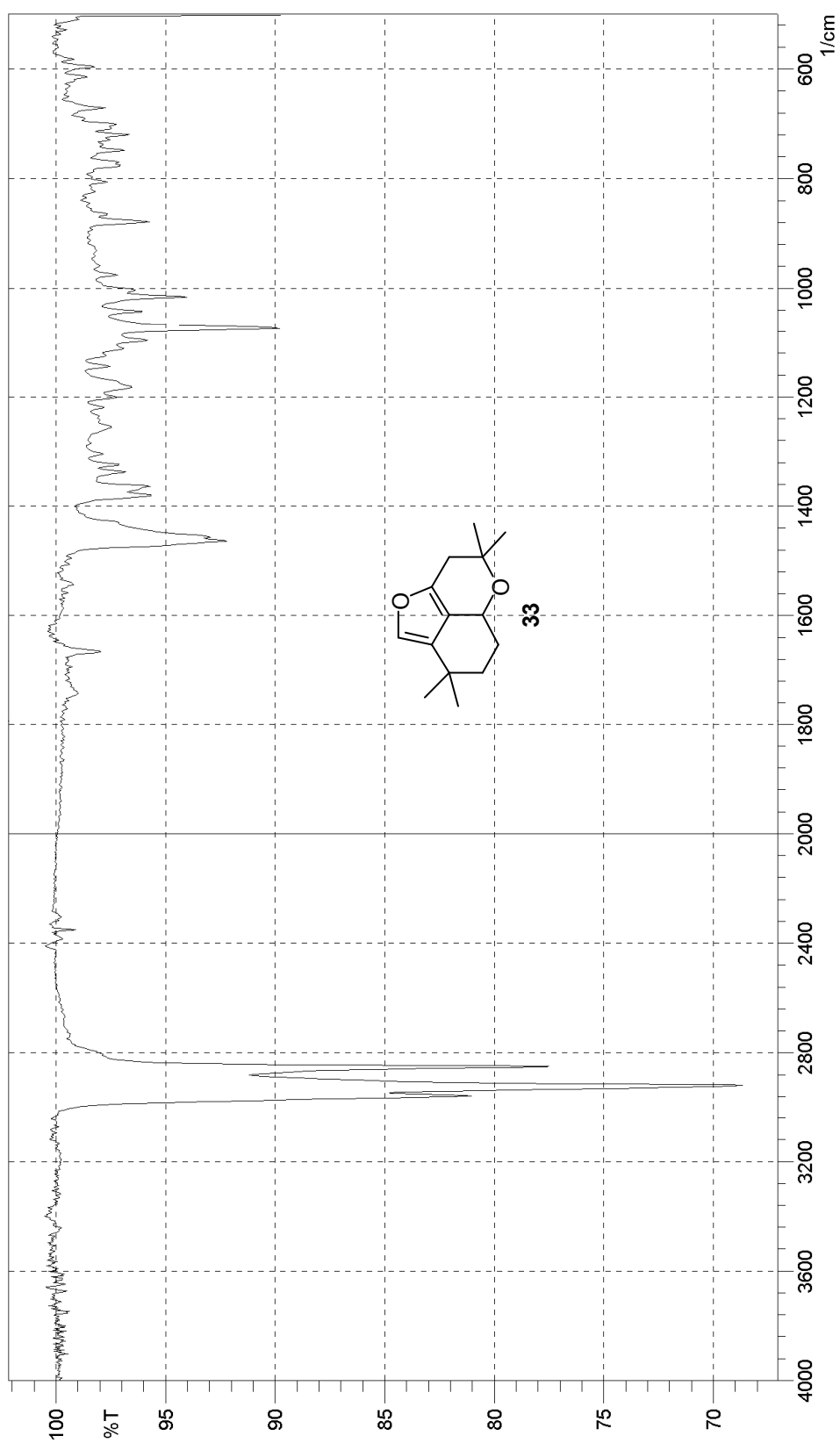
DGY-1-104-side product-2

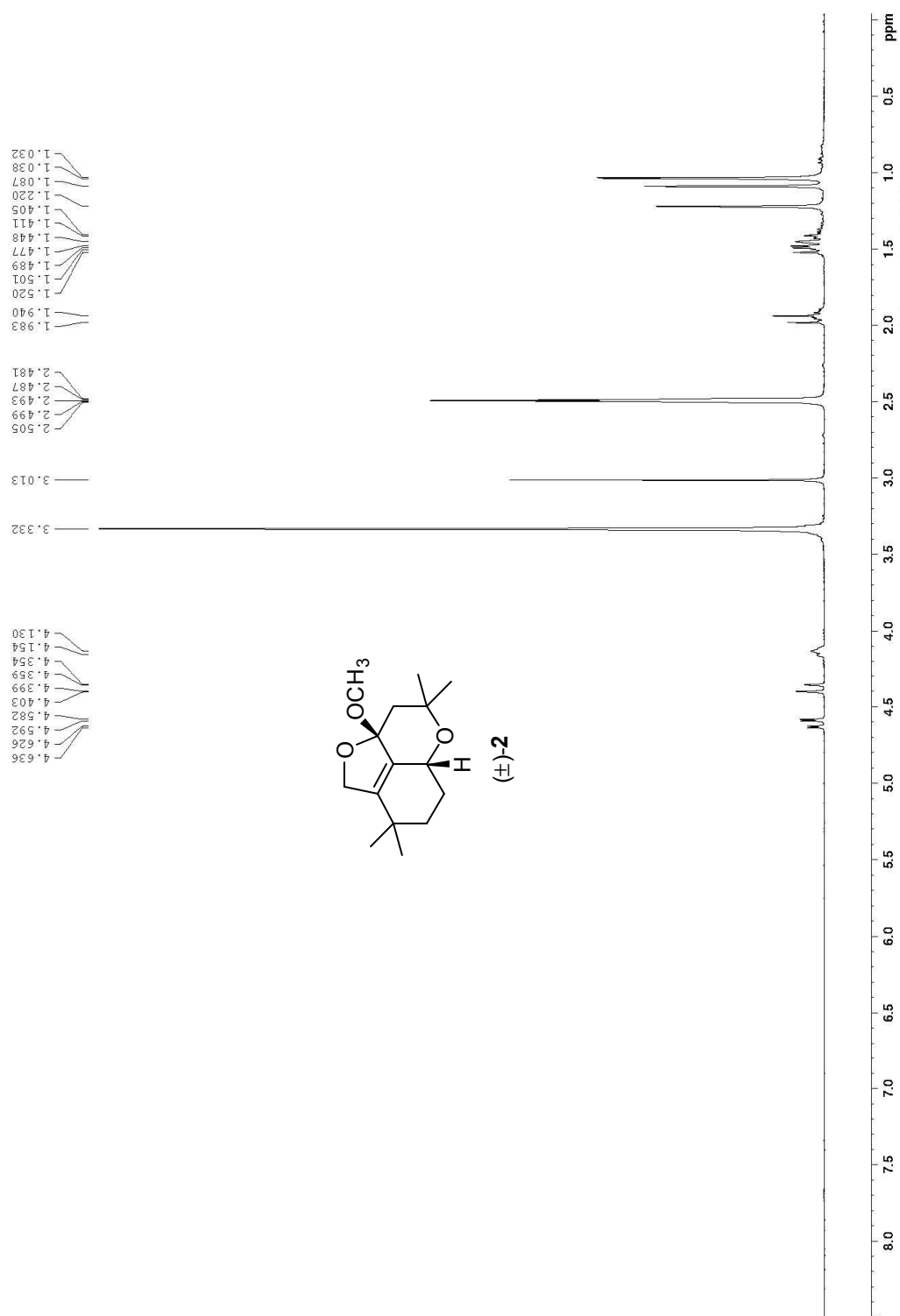


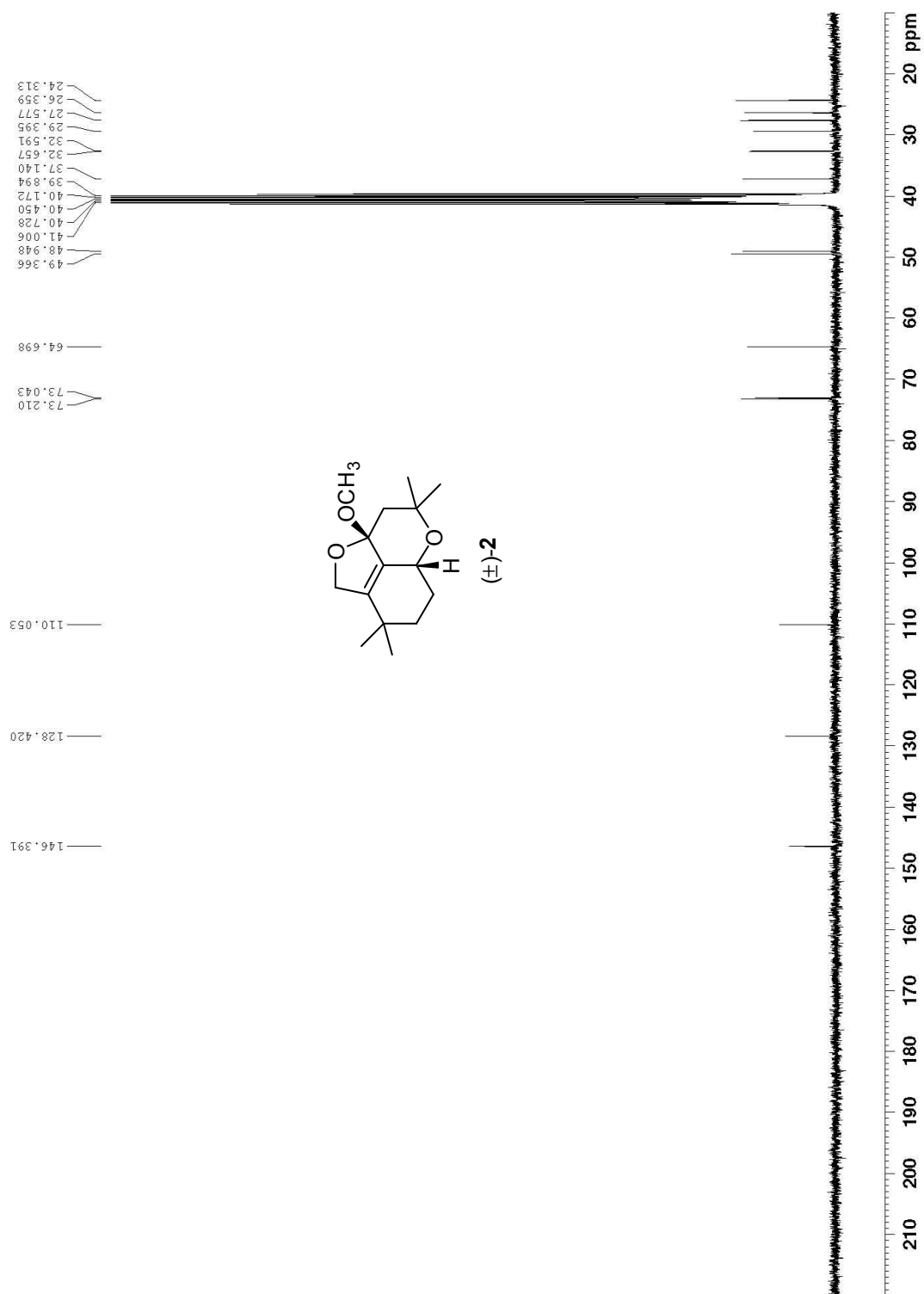


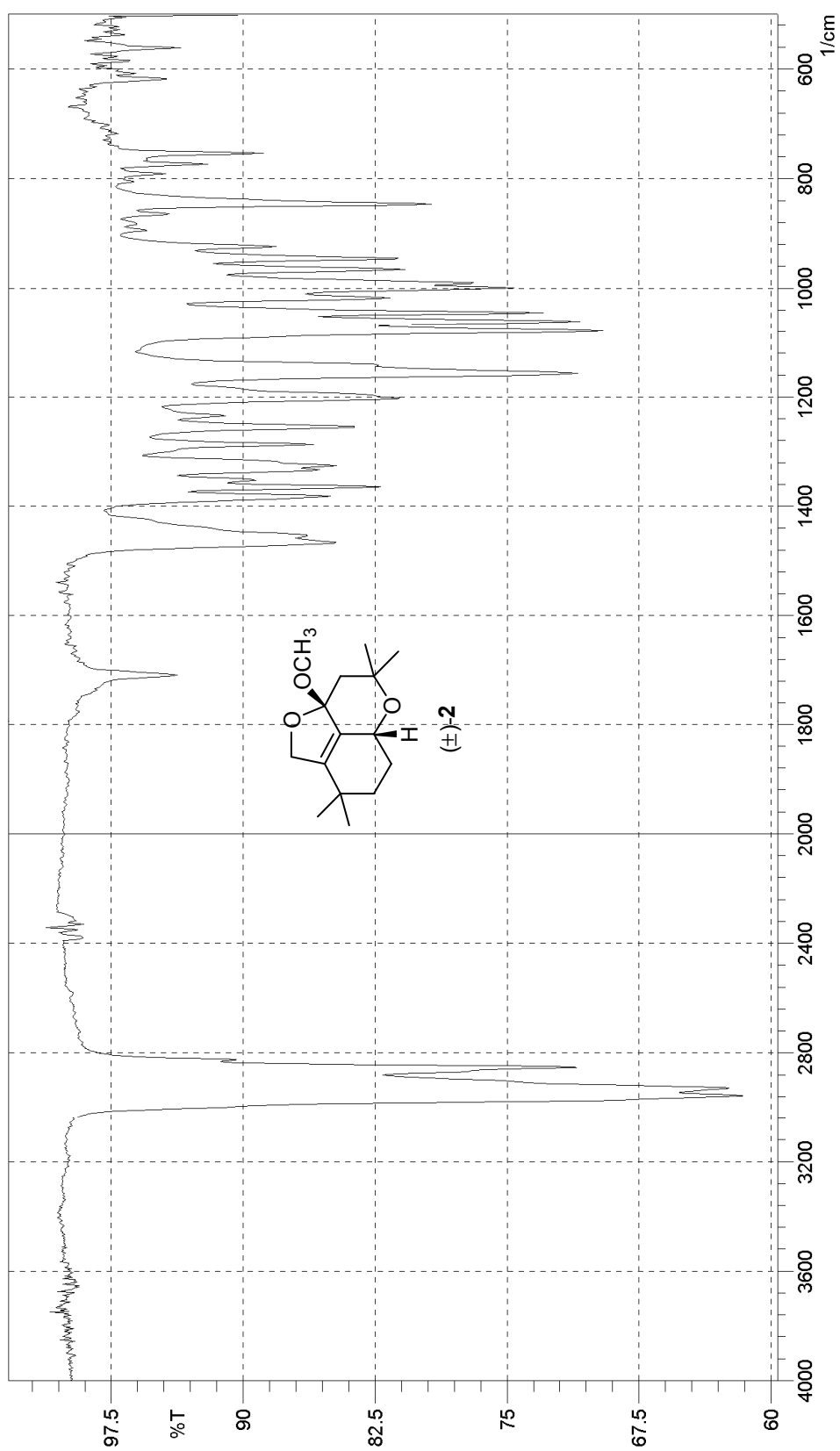












NOESY spectrum of (±)-2:

