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APPENDICES

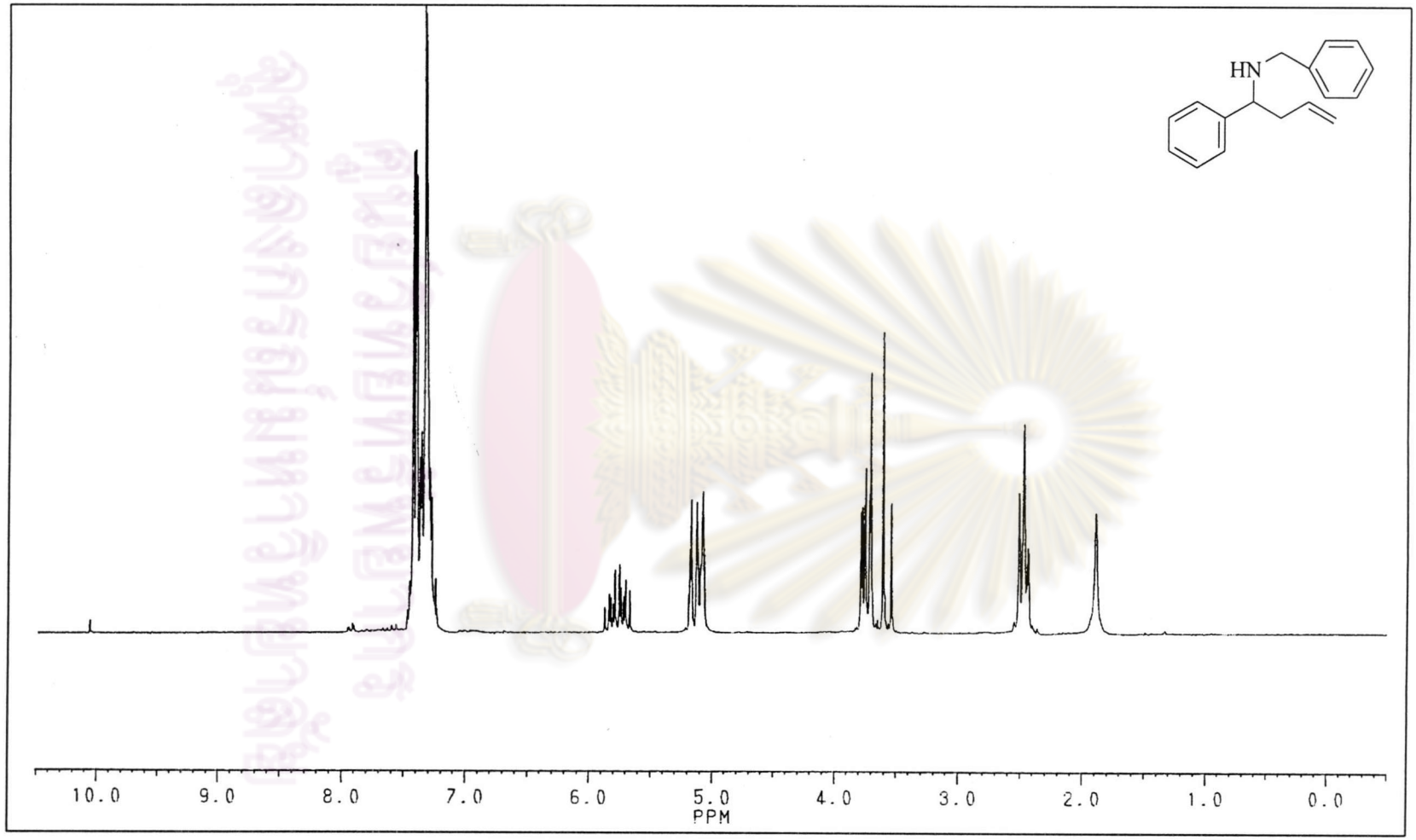


Figure 1 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-benzyl-1-phenylbut-3-enamine (**II-1**)

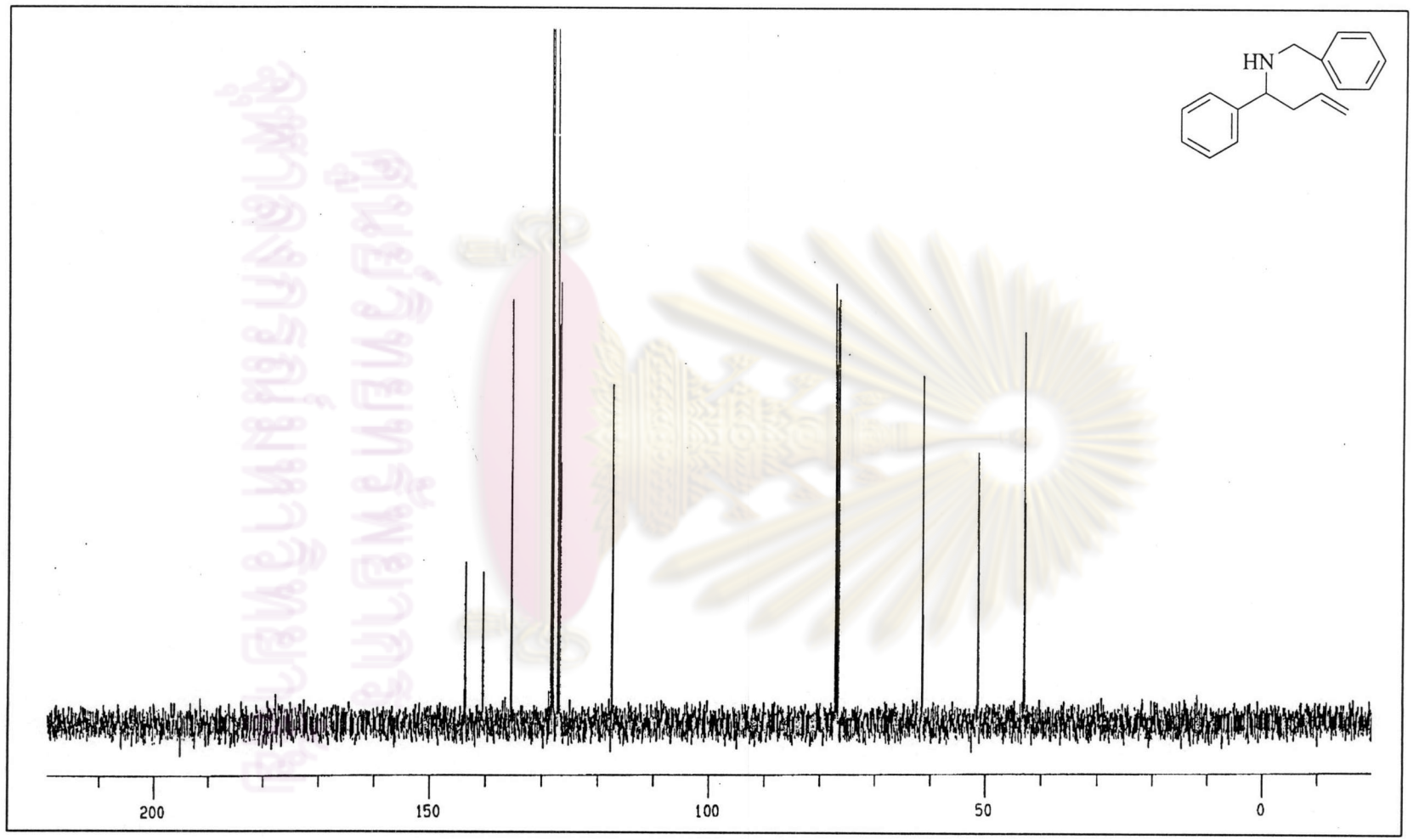


Figure 2 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-benzyl-1-phenylbut-3-enamine (**II-1**)

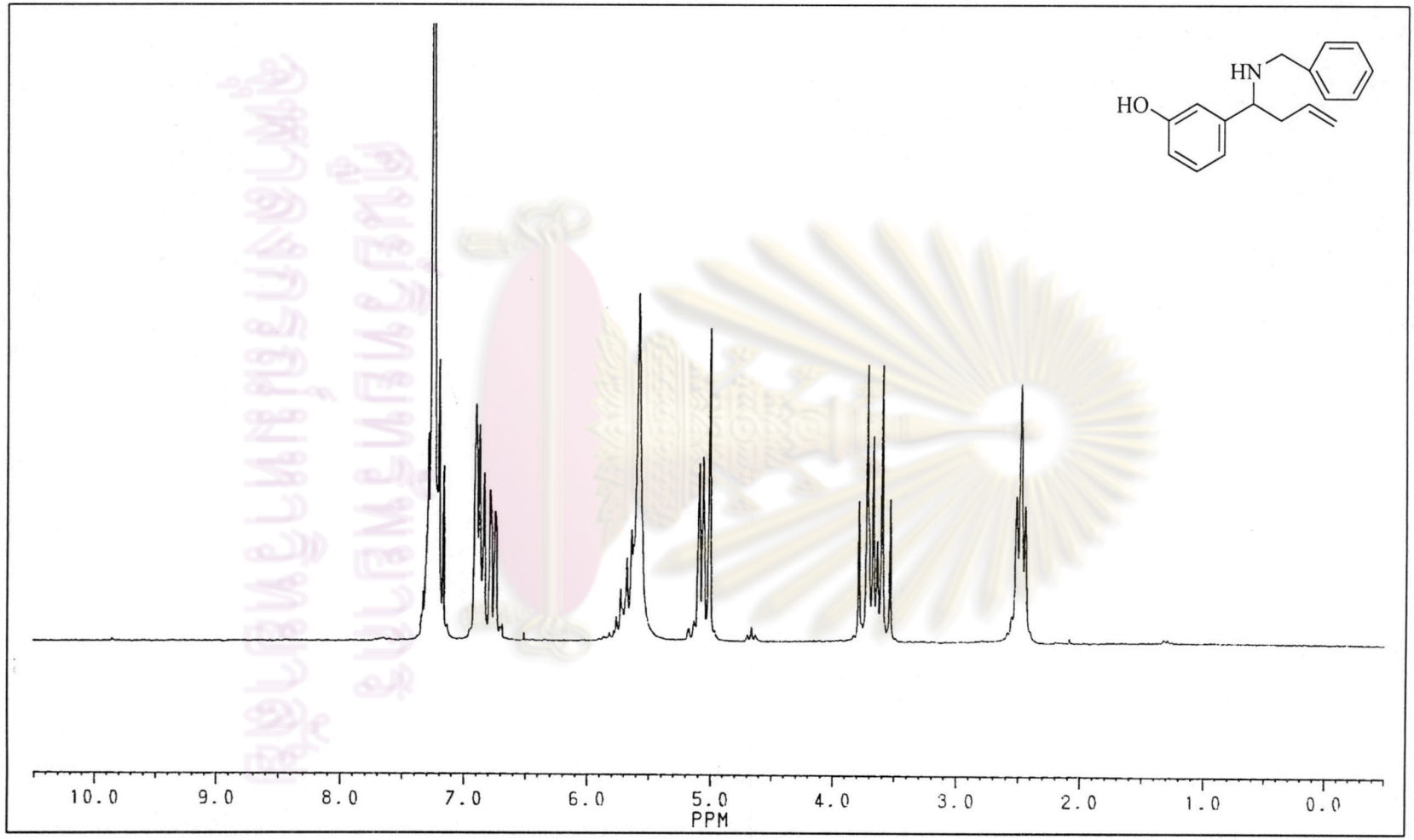
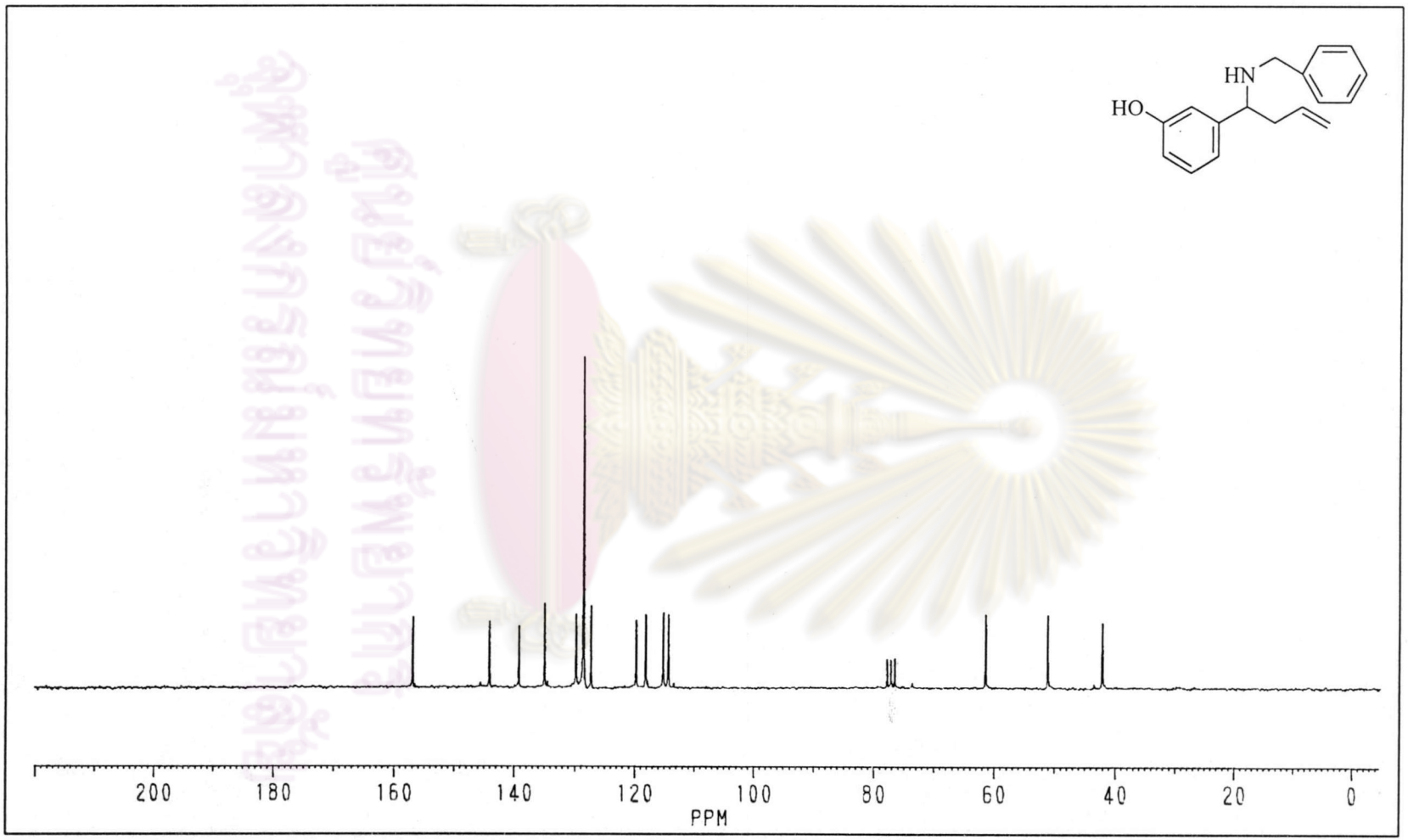


Figure 3 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-benzyl-1-(3′-hydroxyphenyl)but-3-enamine (**II-2**)



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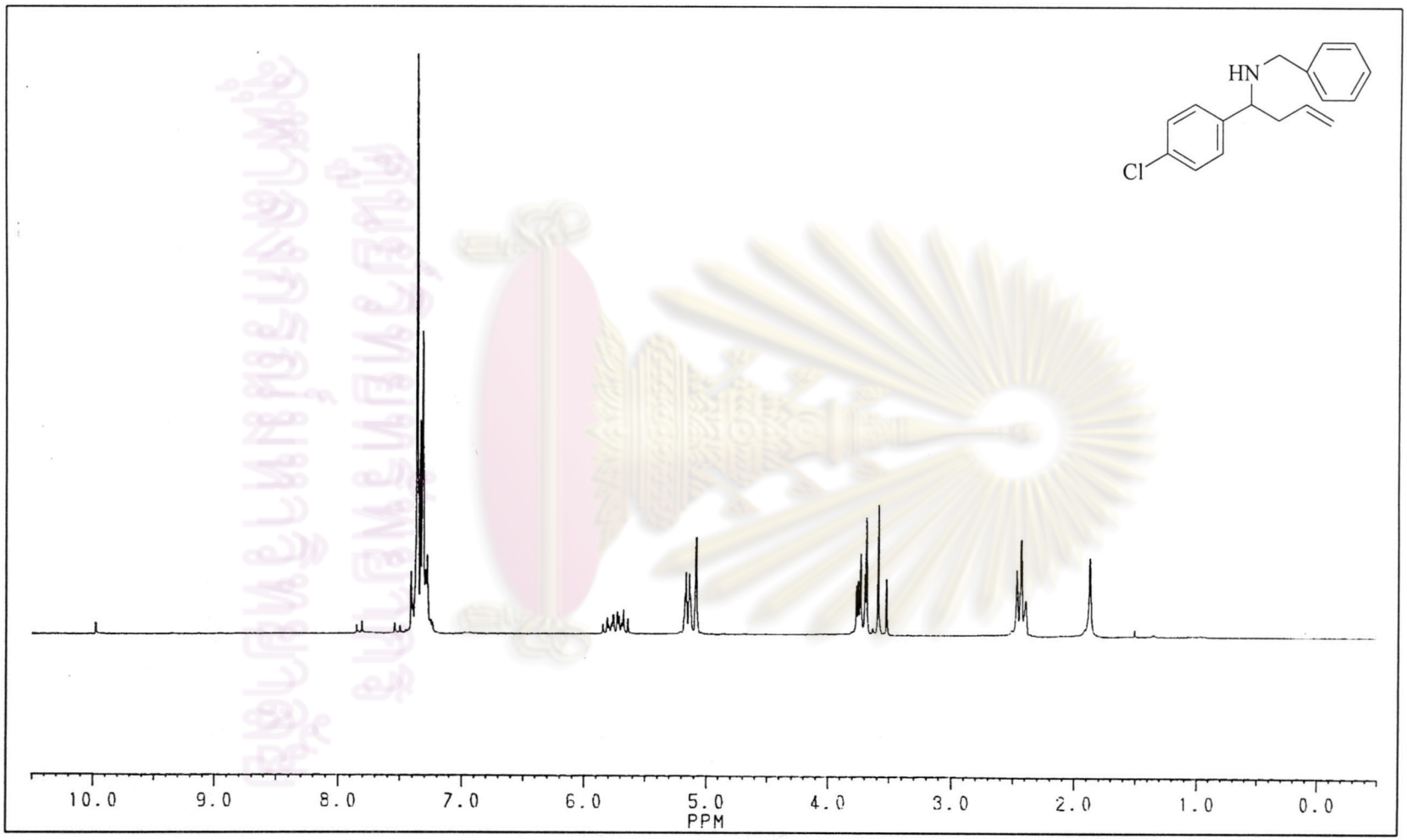

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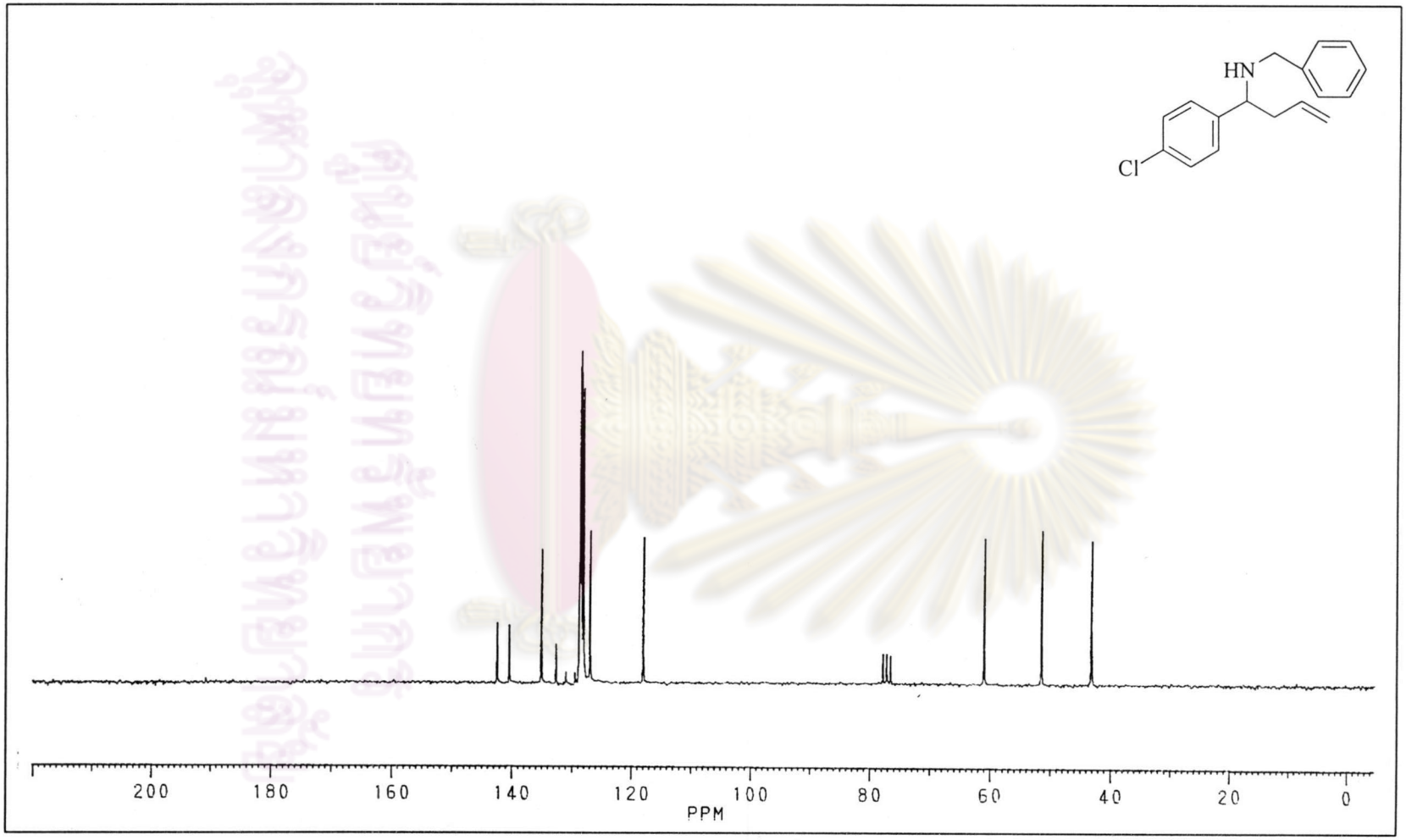

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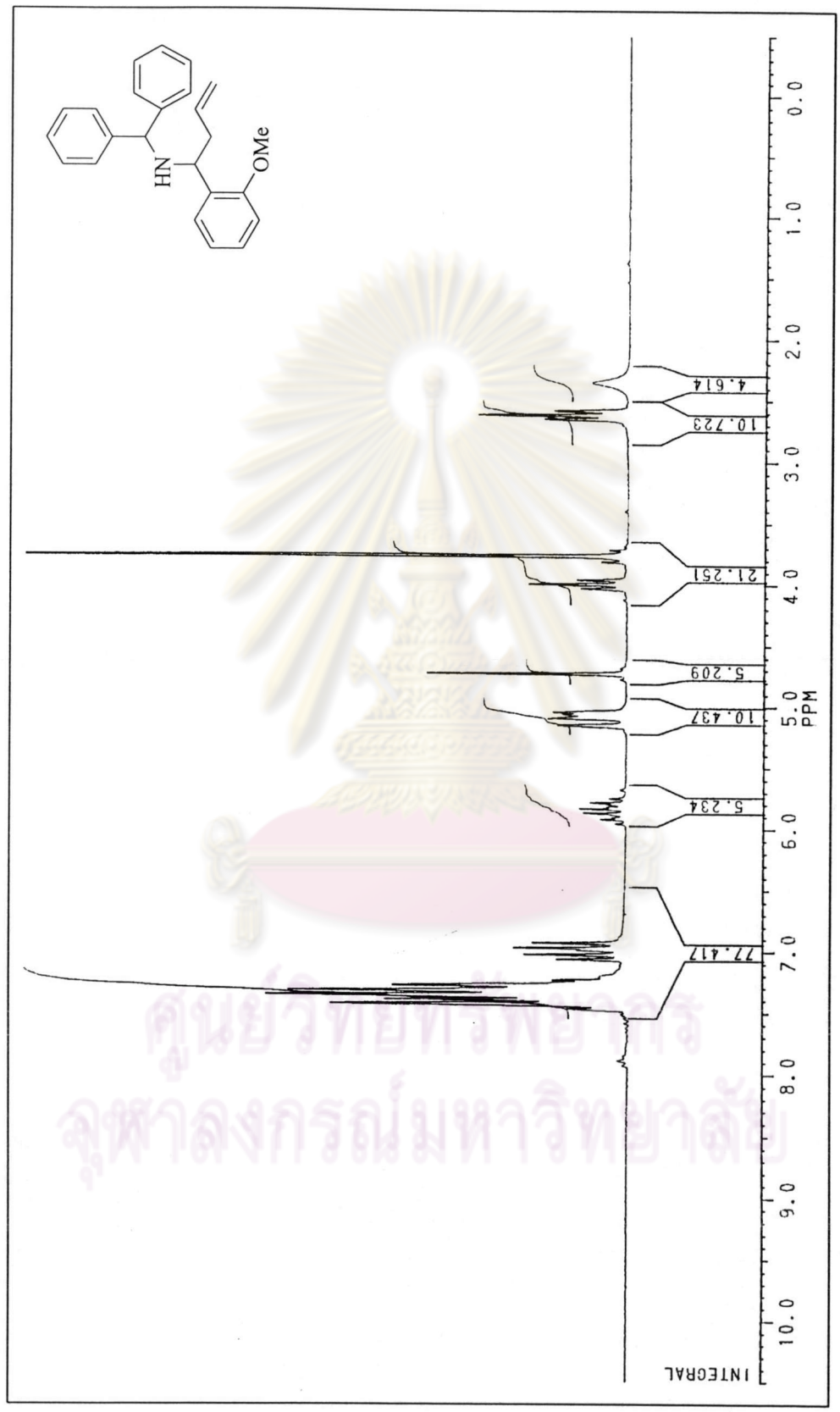


Figure 7 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-(2′-methoxyphenyl)but-3-enamine (**II-6**)

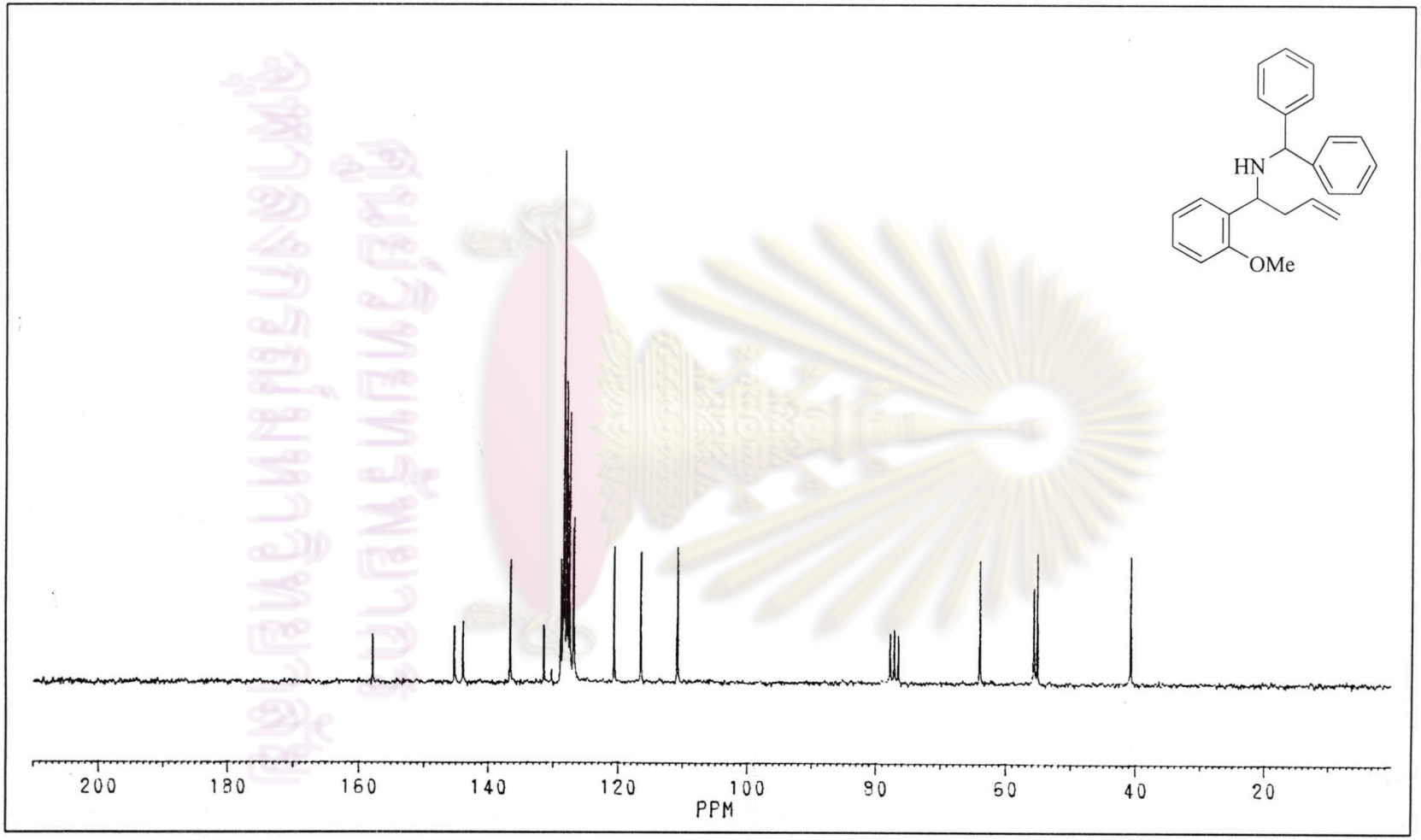


Figure 8 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-(2′-methoxyphenyl)but-3-enamine (**II-6**)

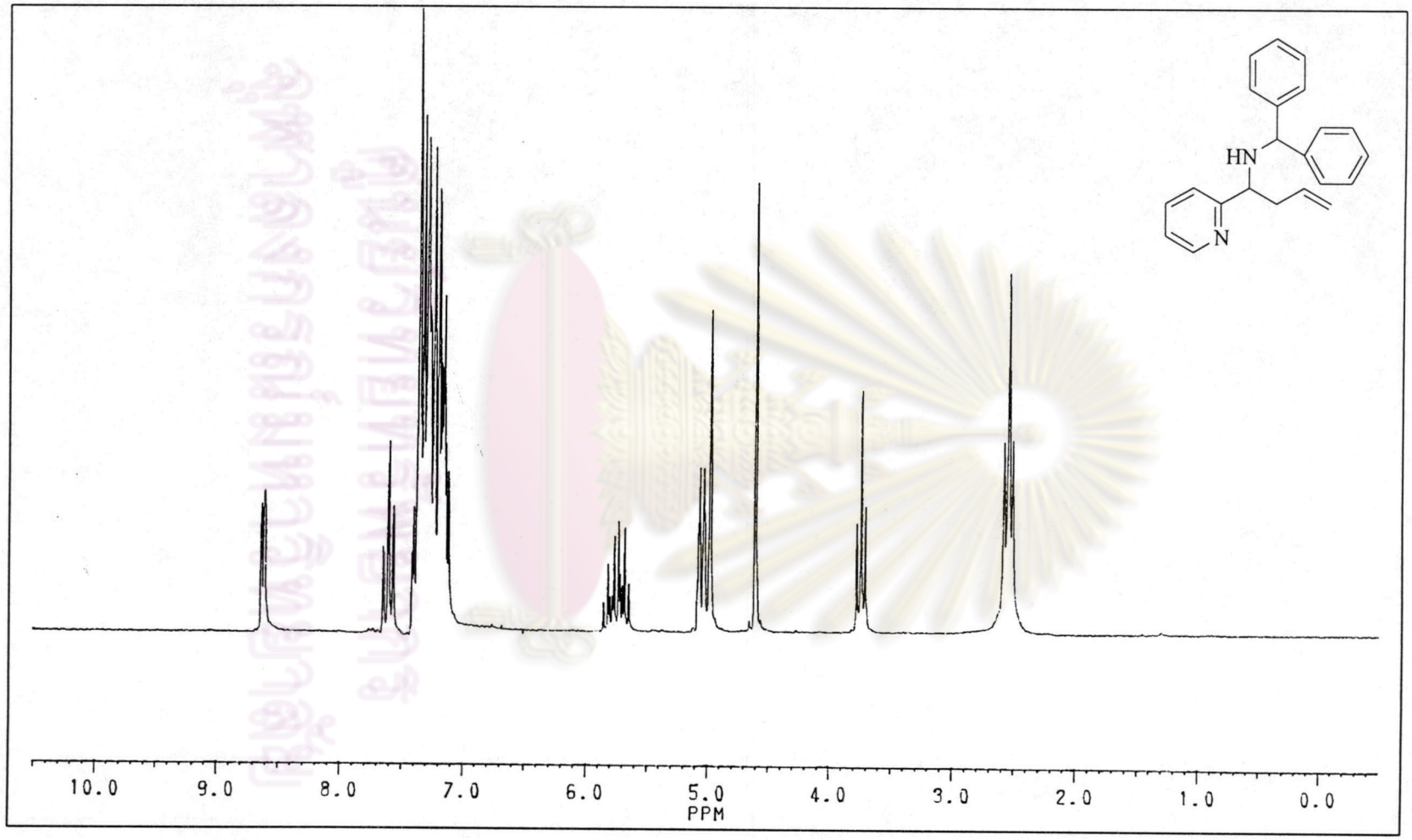
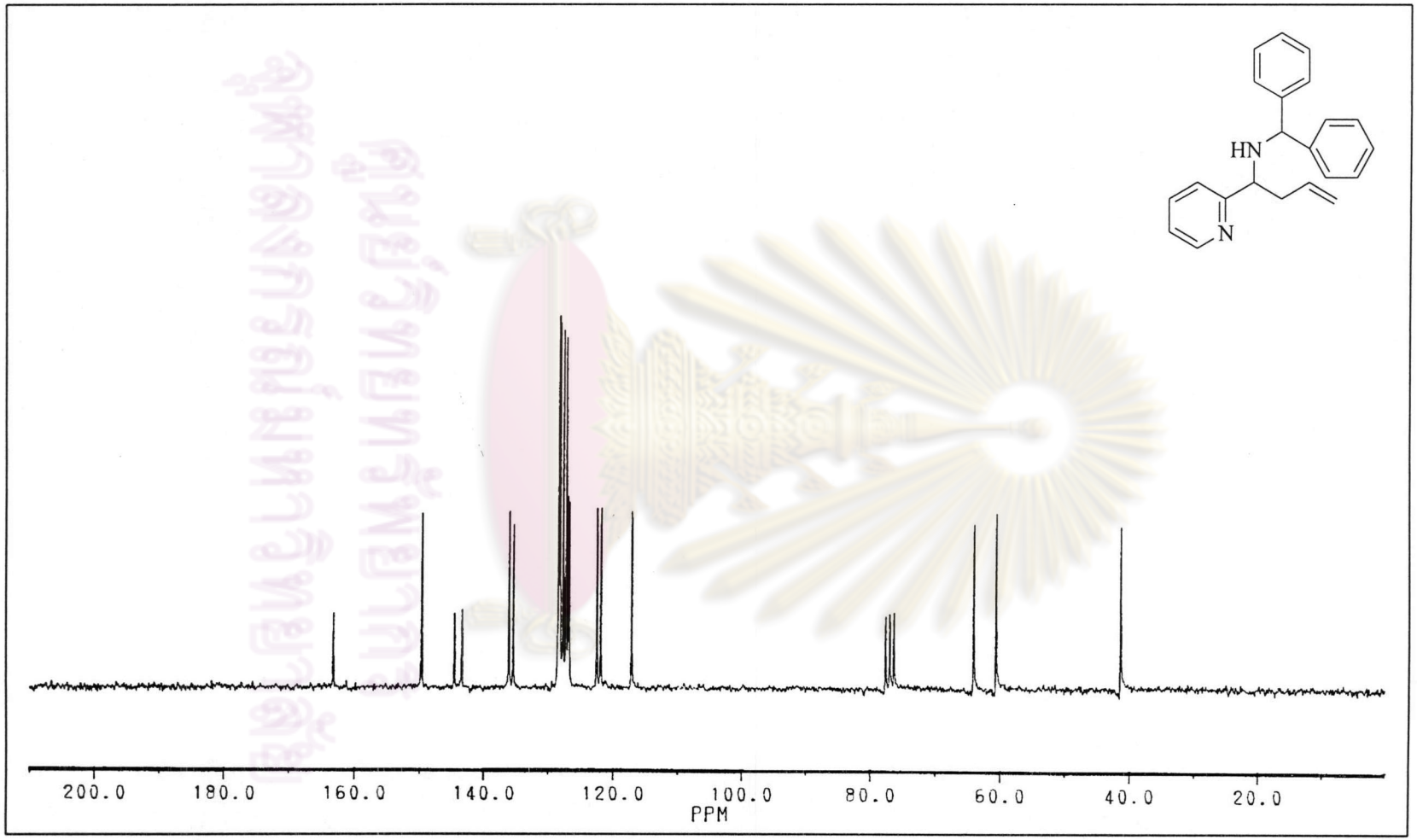


Figure 9 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-(2′-pyridyl)but-3-enamine (**II-7**)



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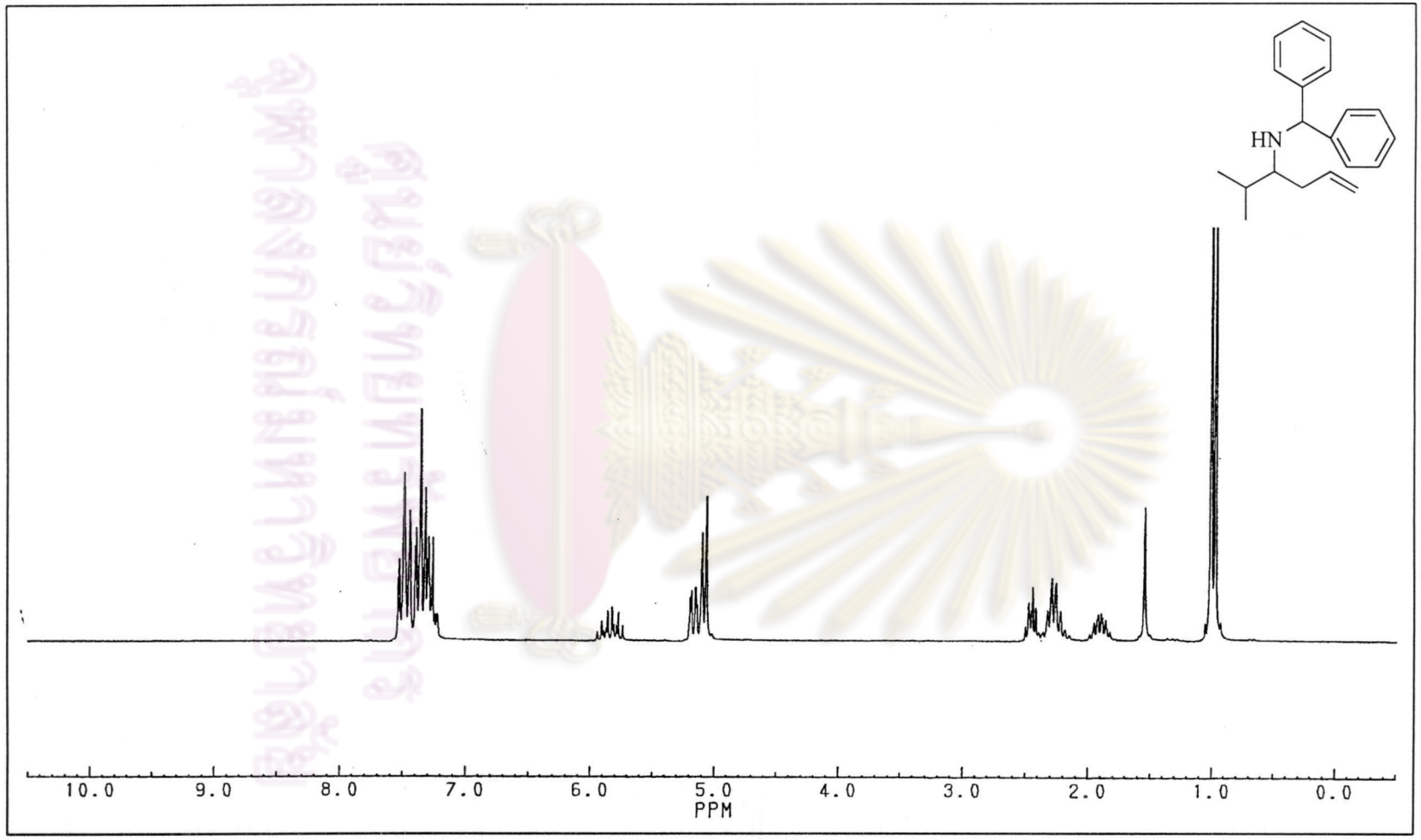


Figure 11 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-isopropylbut-3-enamine (**II-8**)

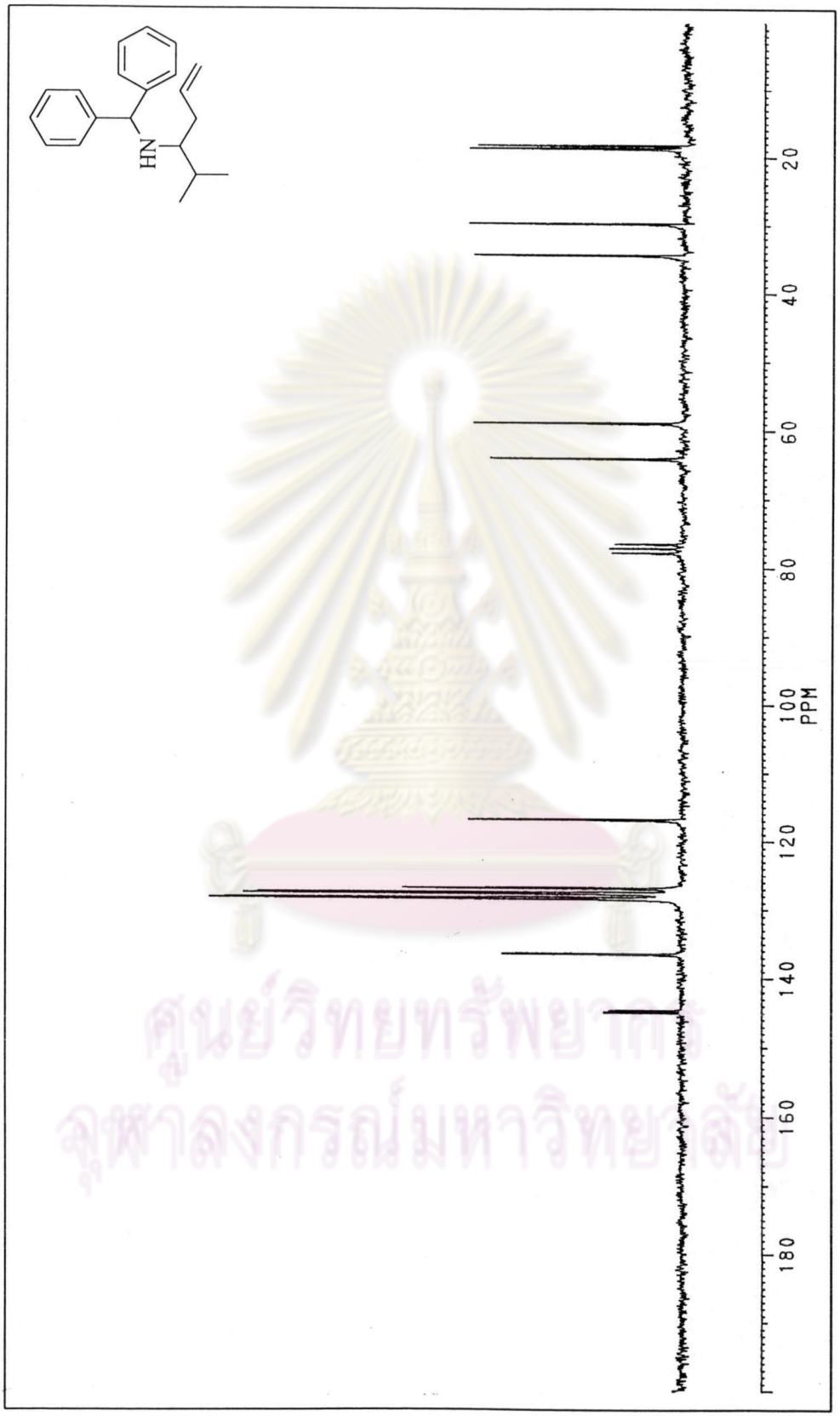
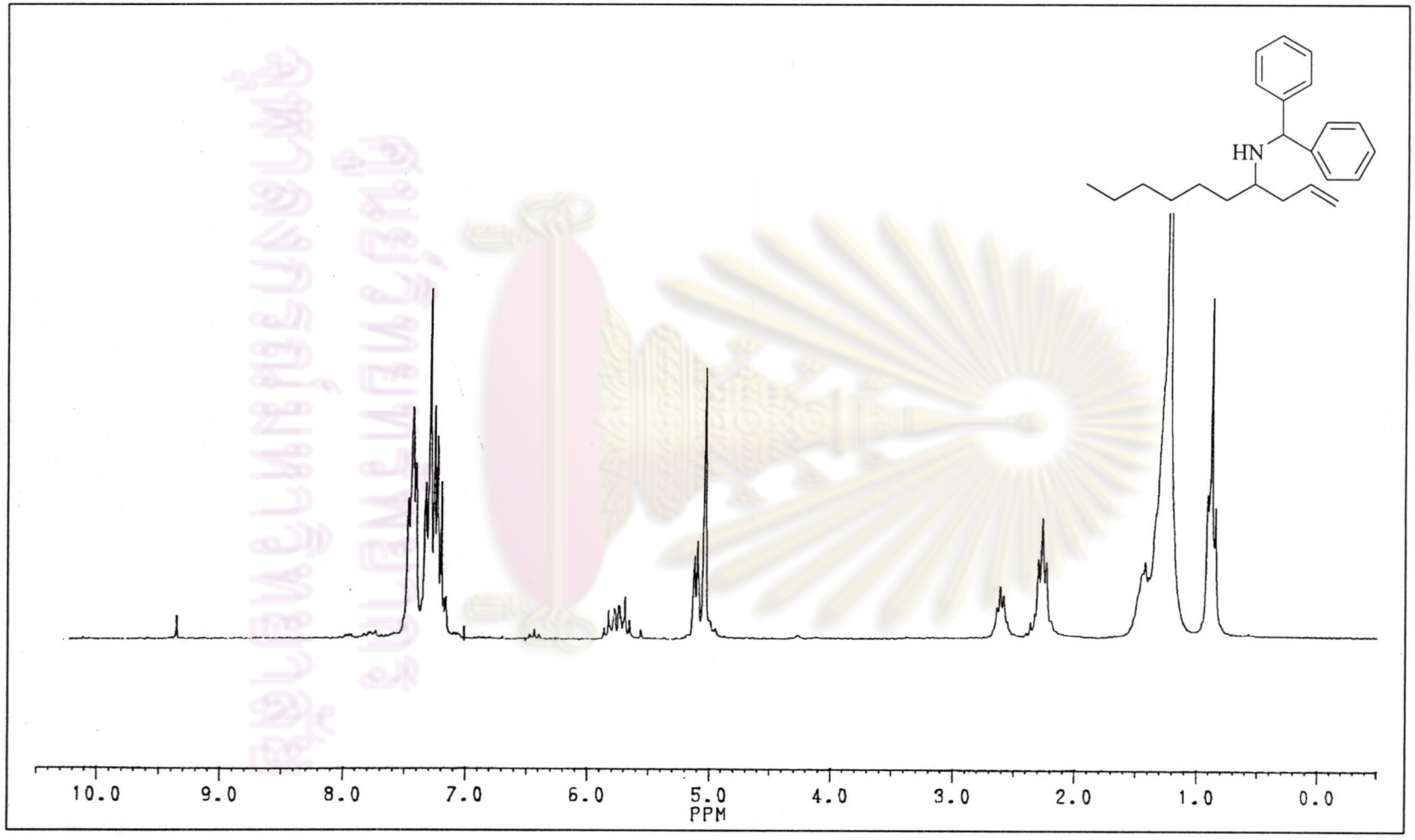


Figure 12 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-isopropylbut-3-enamine (**II-8**)



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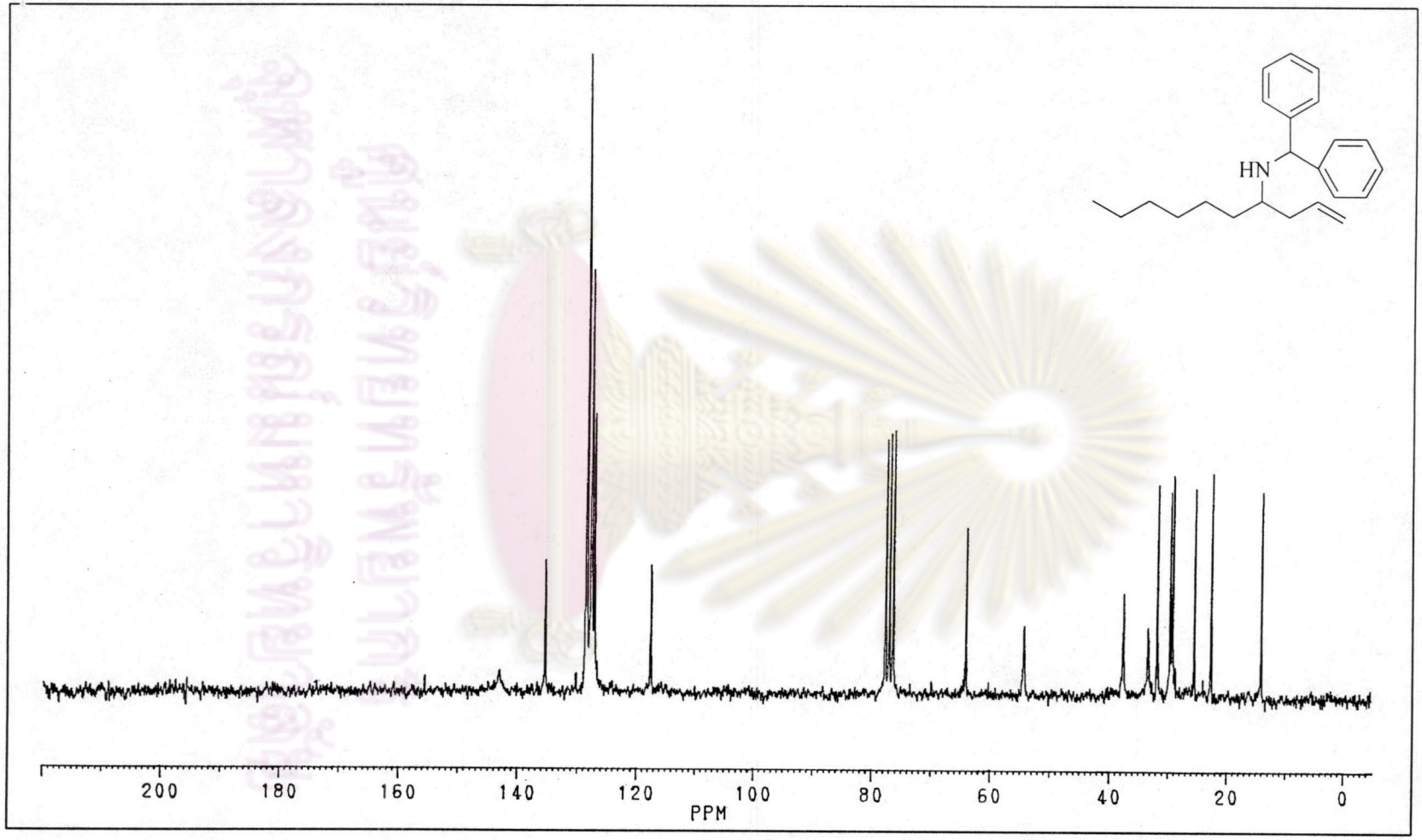

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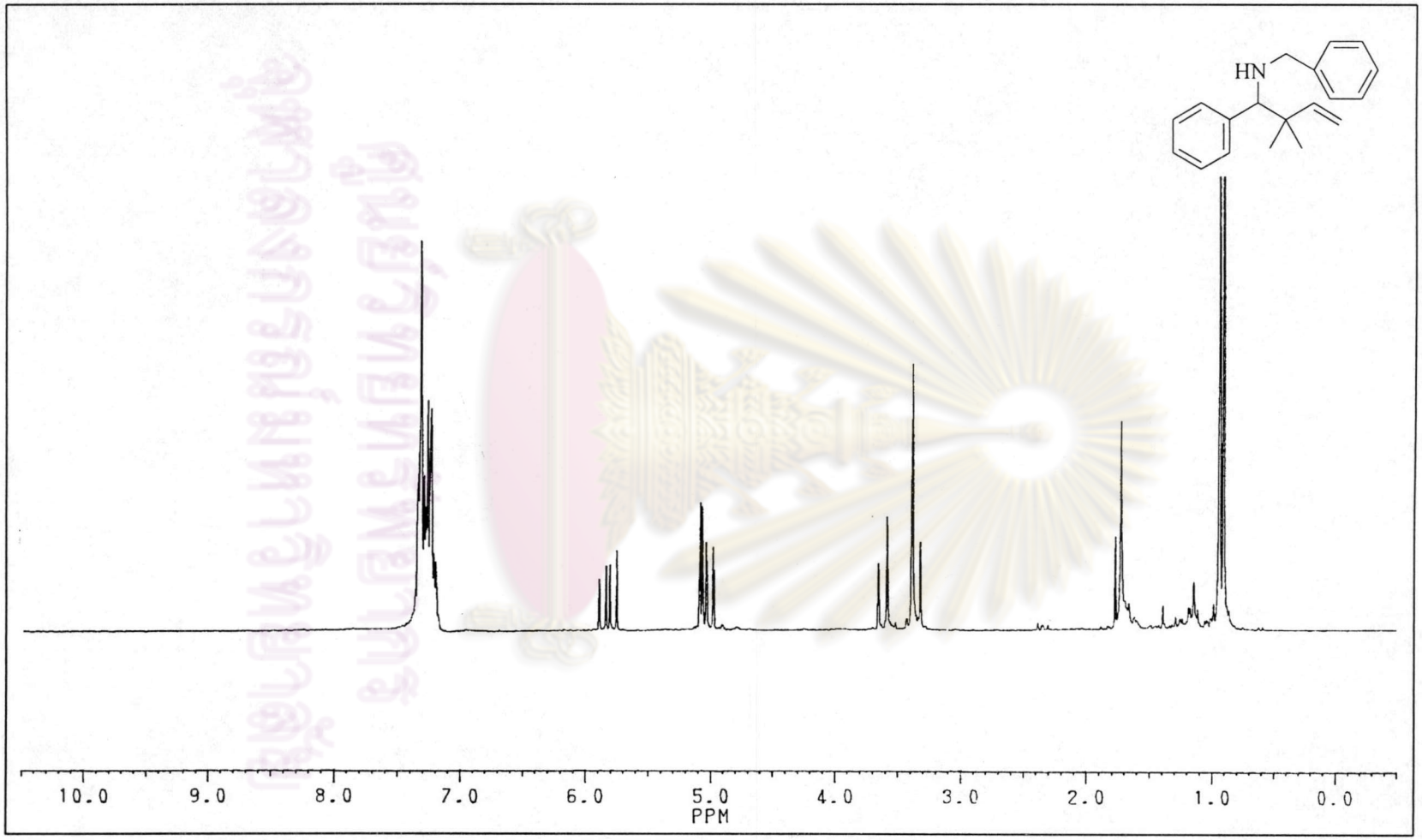
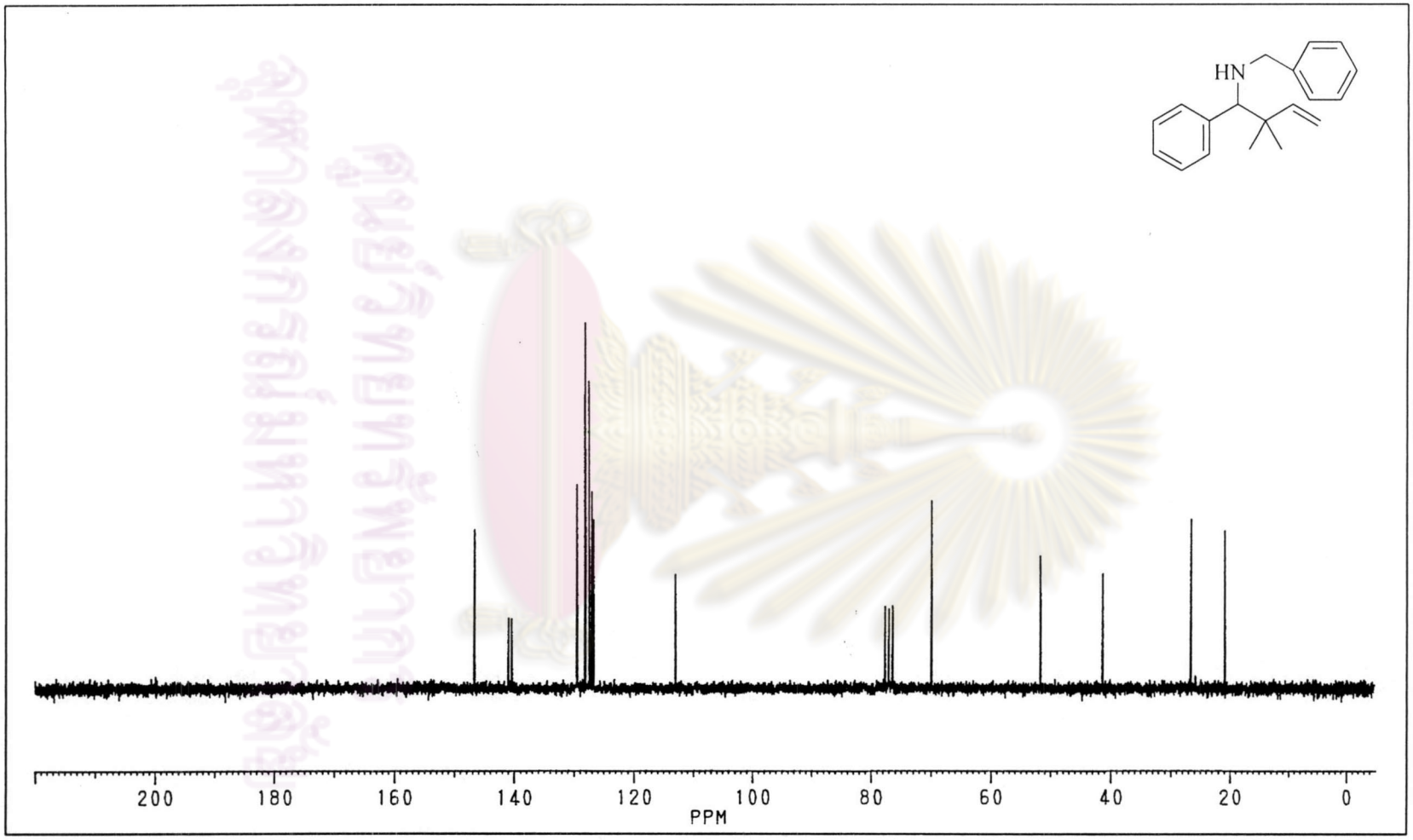


Figure 15 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-benzyl-1-phenyl-2,2-dimethylbut-3-enamine (**II-10**)



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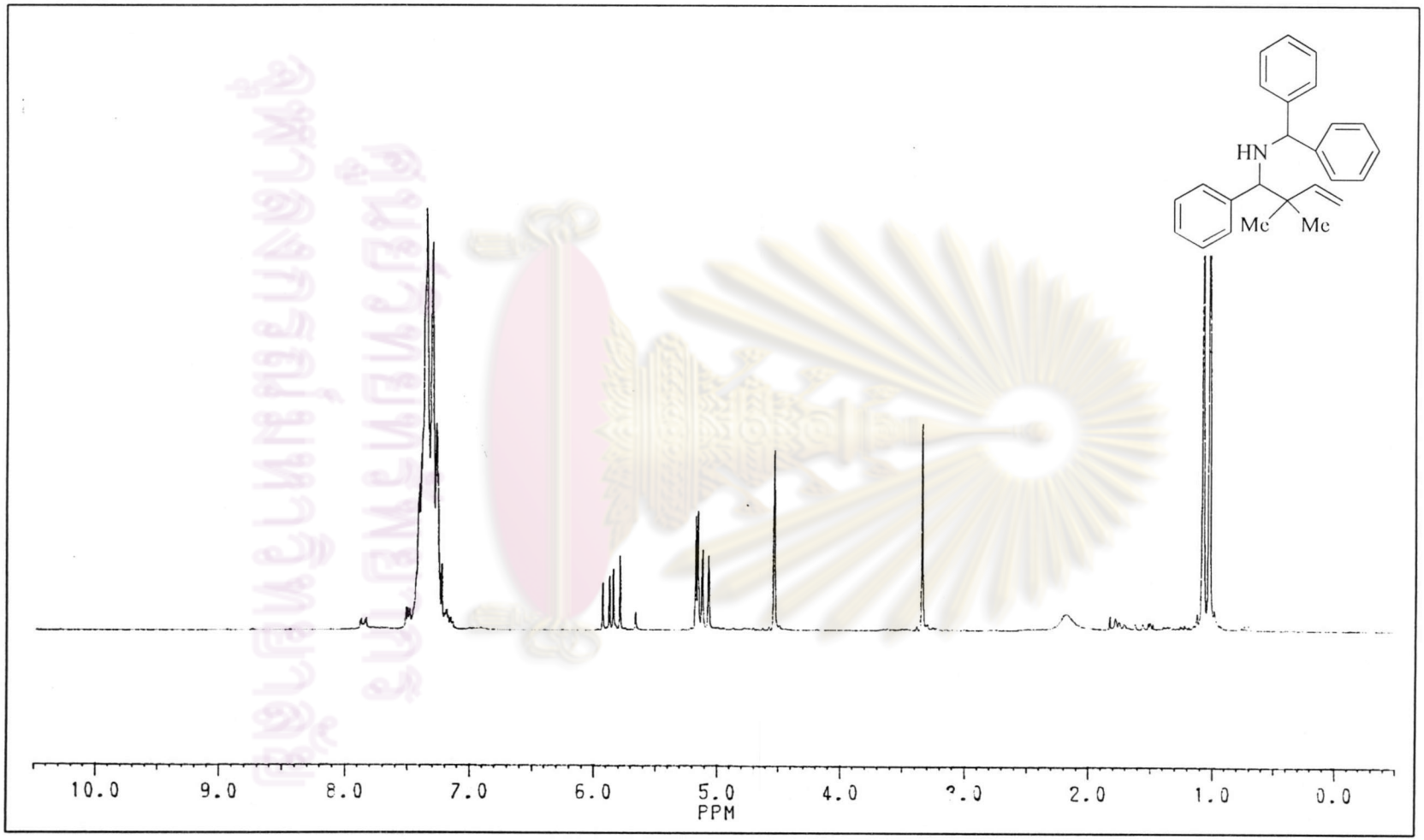

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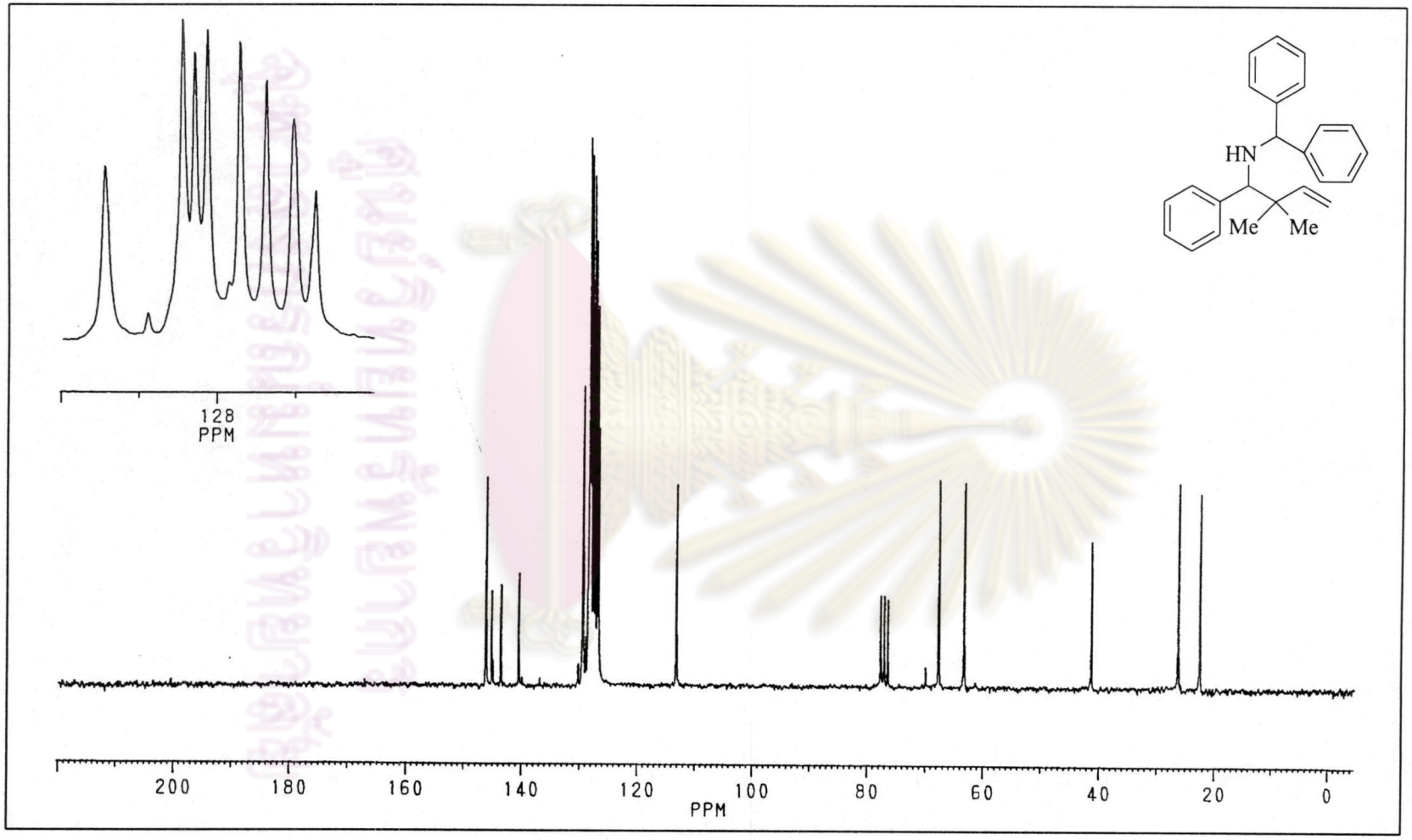


Figure 18 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-diphenylmethyl-1-phenyl-2,2-dimethylbut-3-enamine (**II-11**)

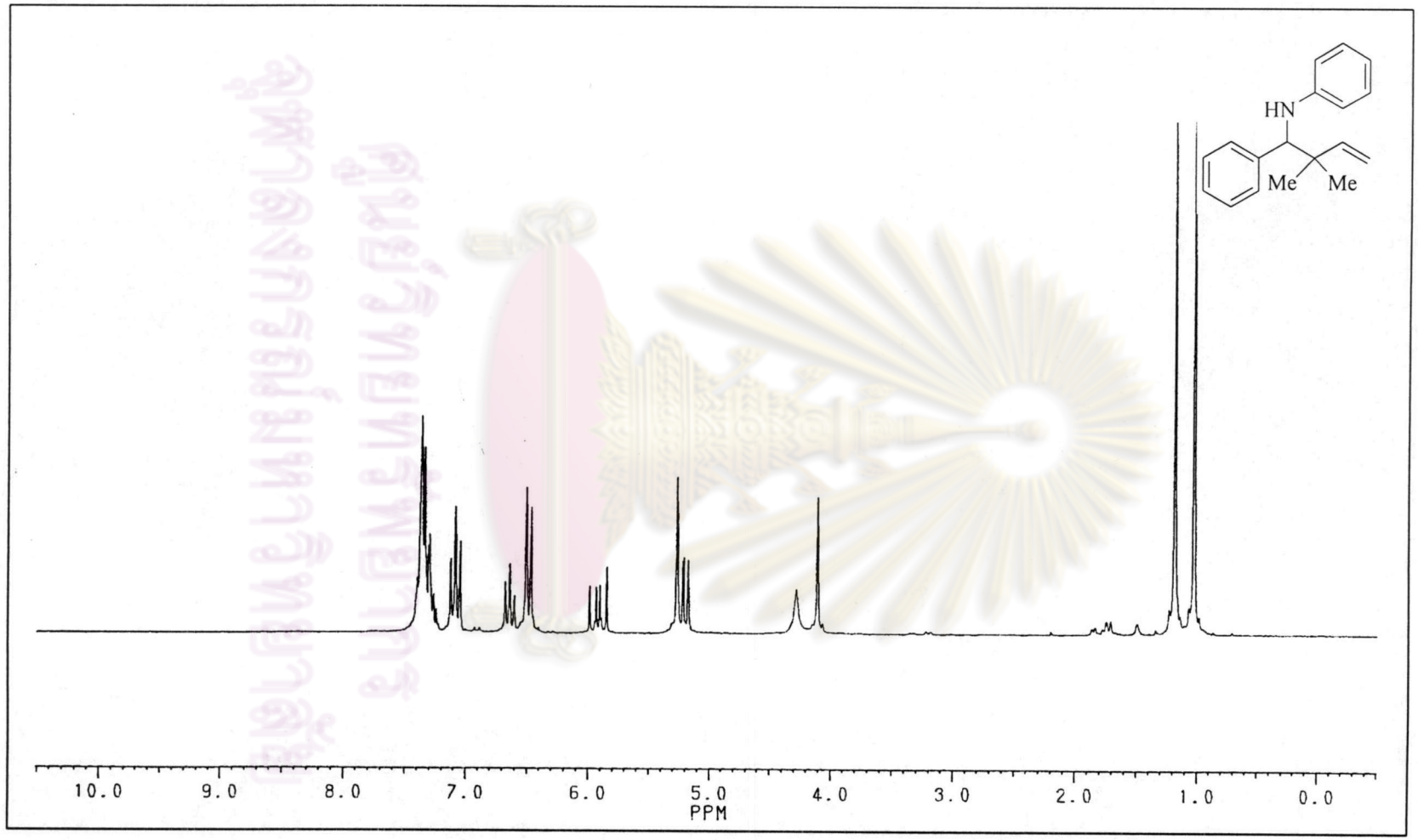
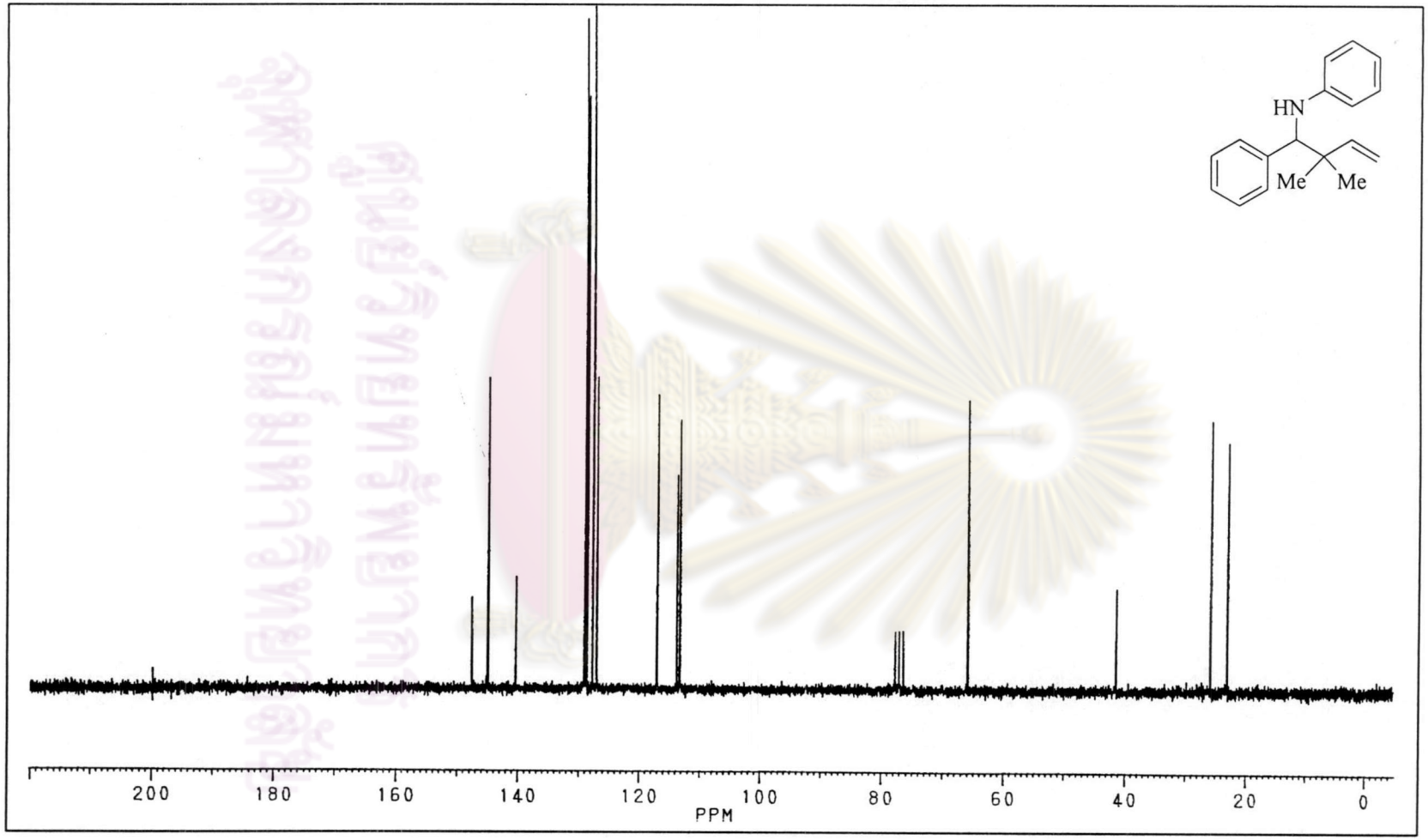


Figure 19 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-phenyl-1-phenyl-2,2-dimethylbut-3-enamine (**II-12**)



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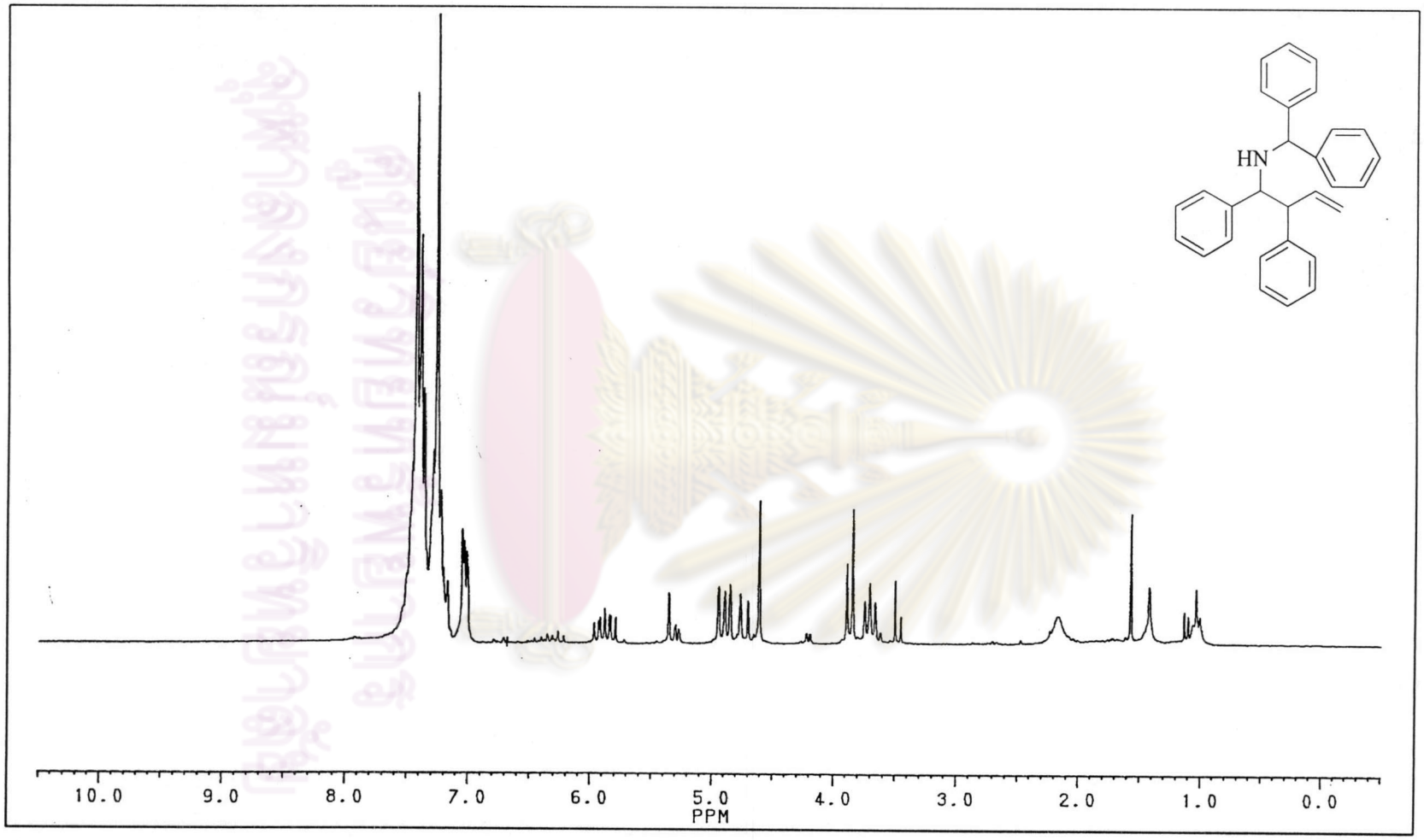

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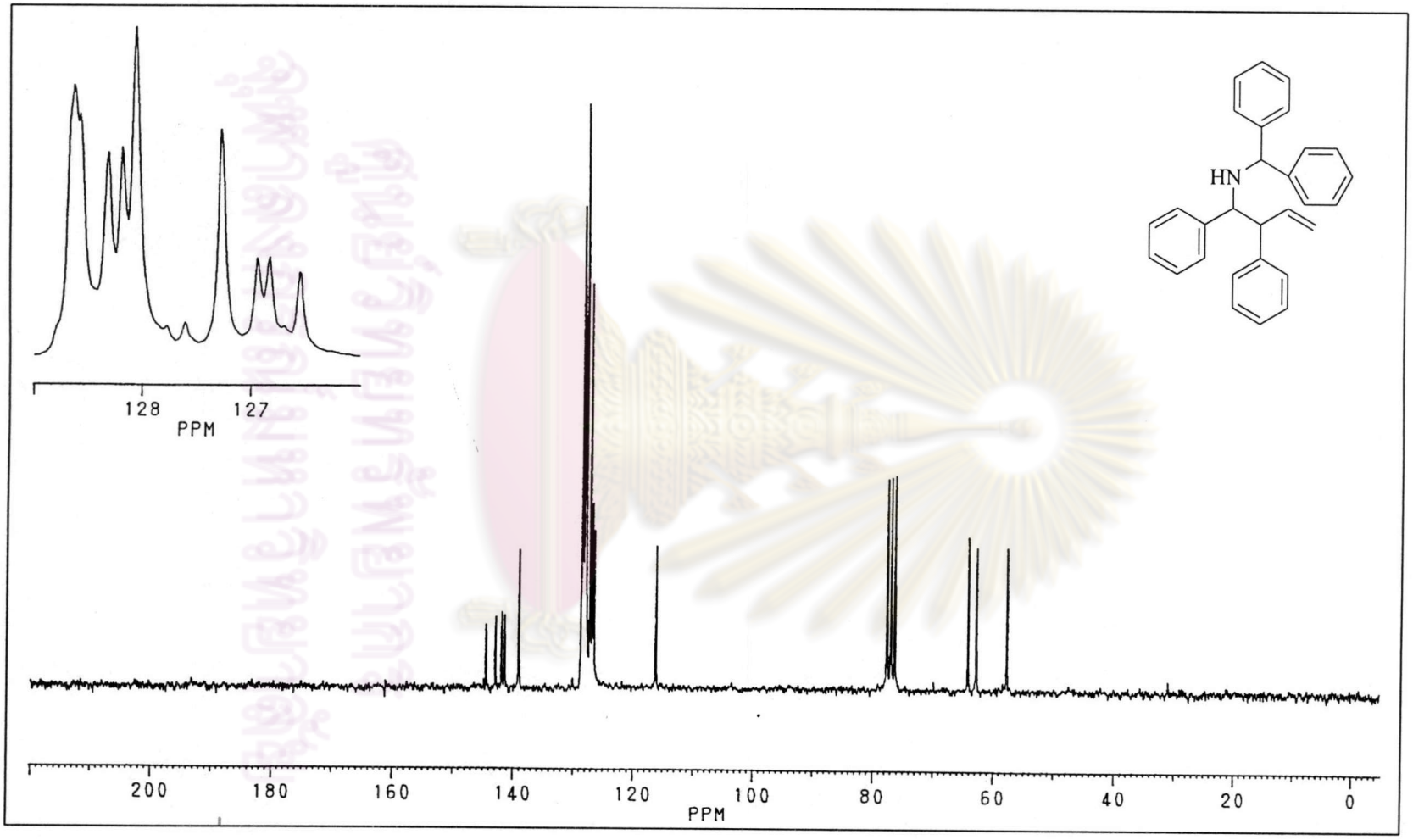

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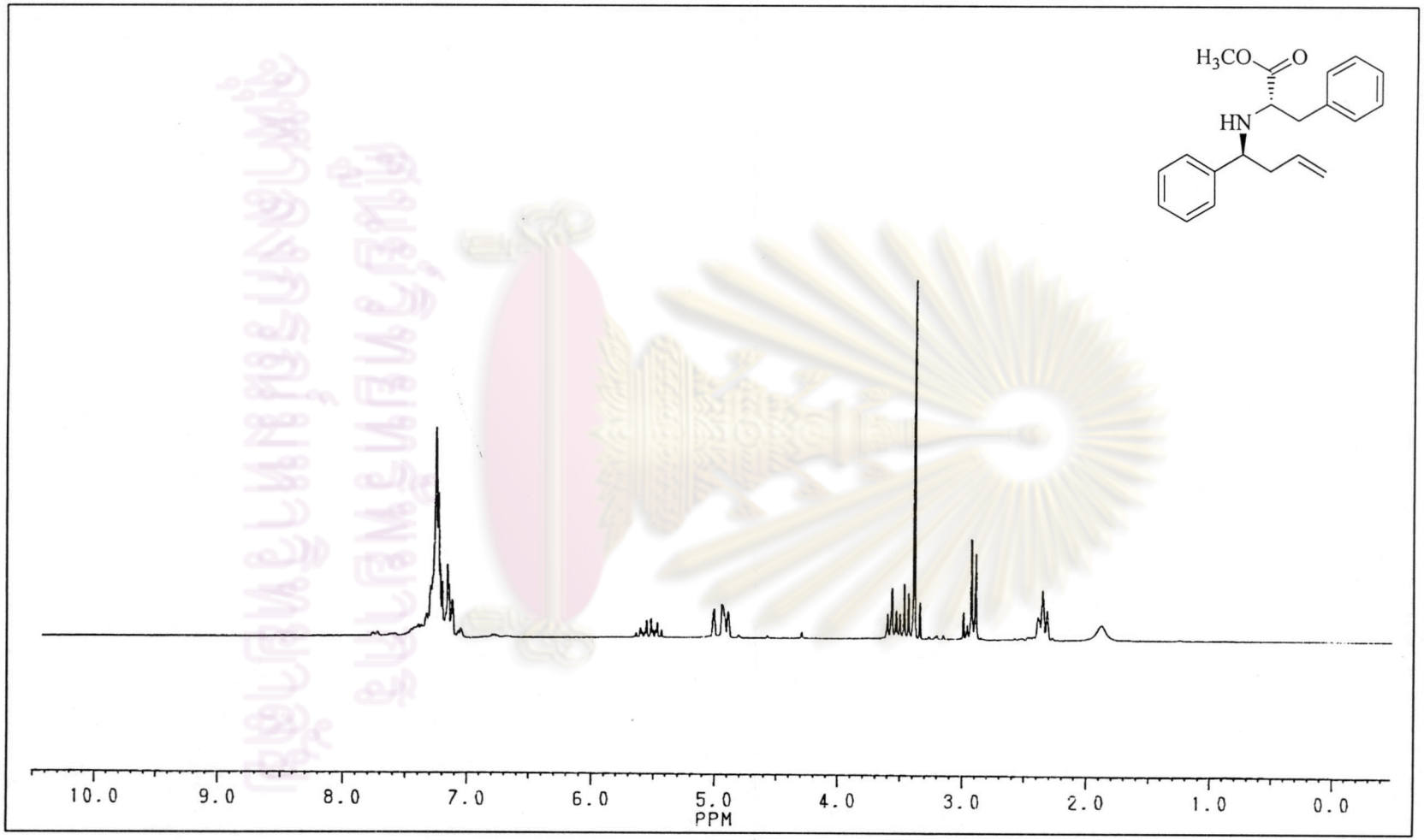
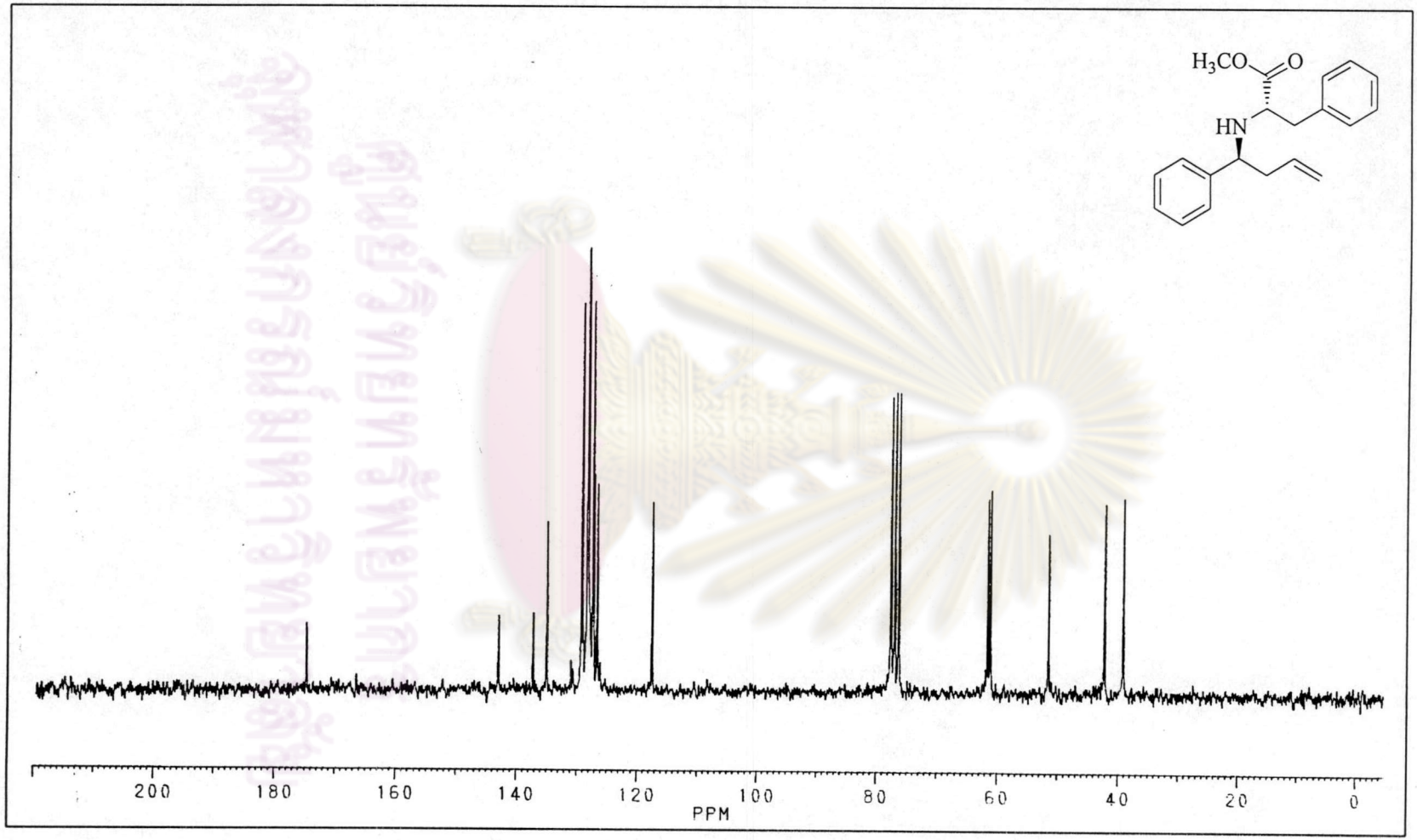


Figure 23 ^{1}H-NMR spectrum ($CDCl_3$) of Methyl-2-benzyl-2-(1′-phenylbut-3′-enylamino)acetate (**II-15**)



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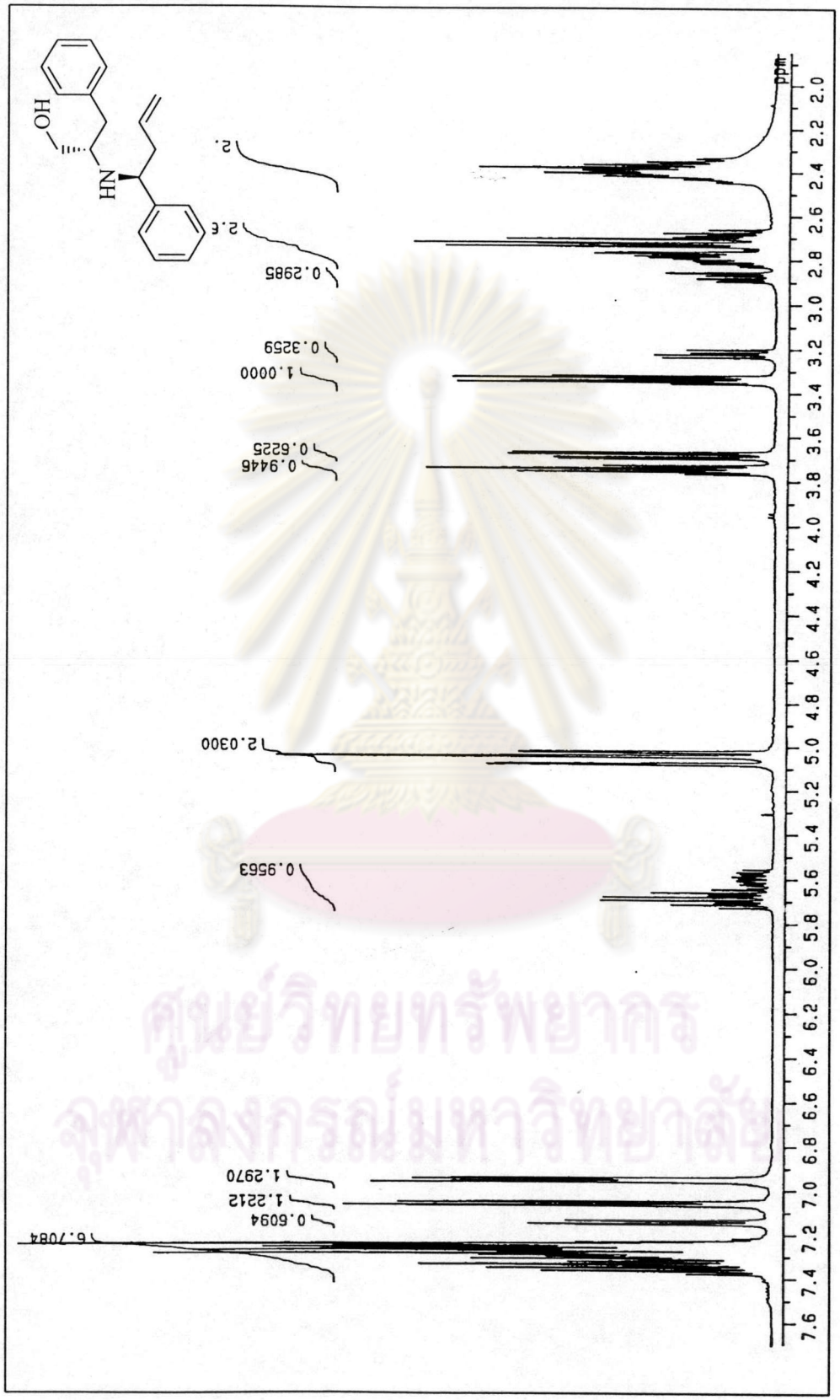

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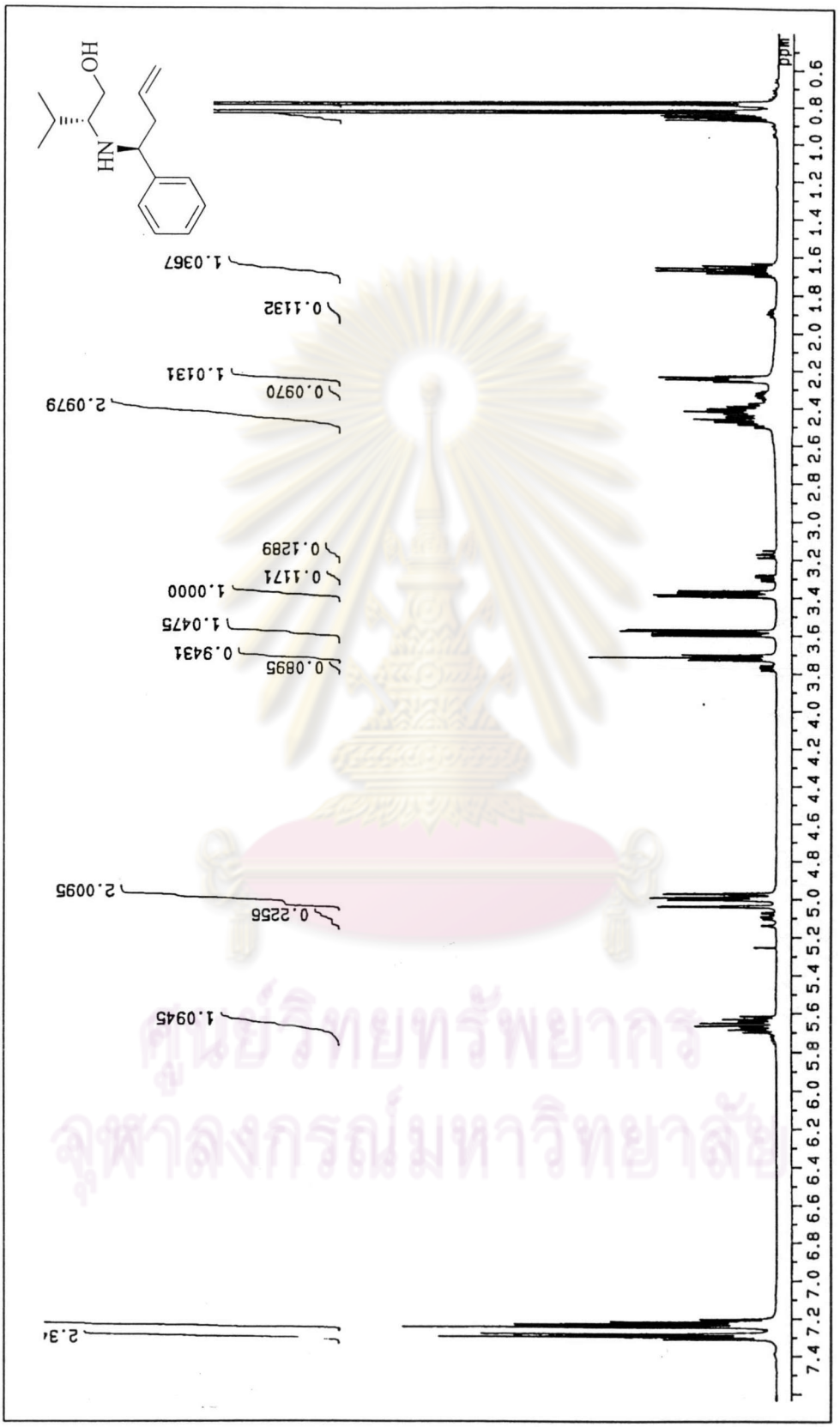

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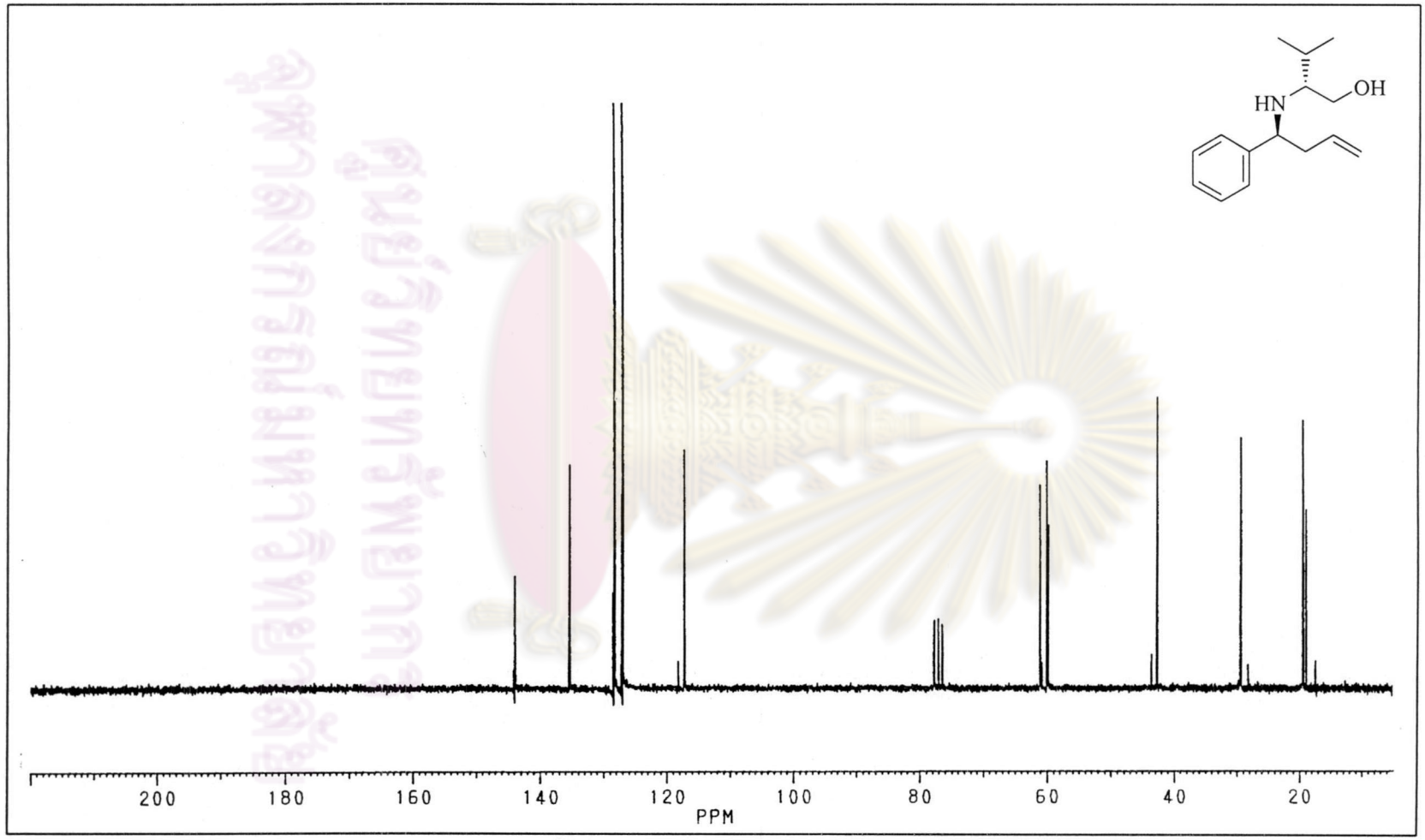

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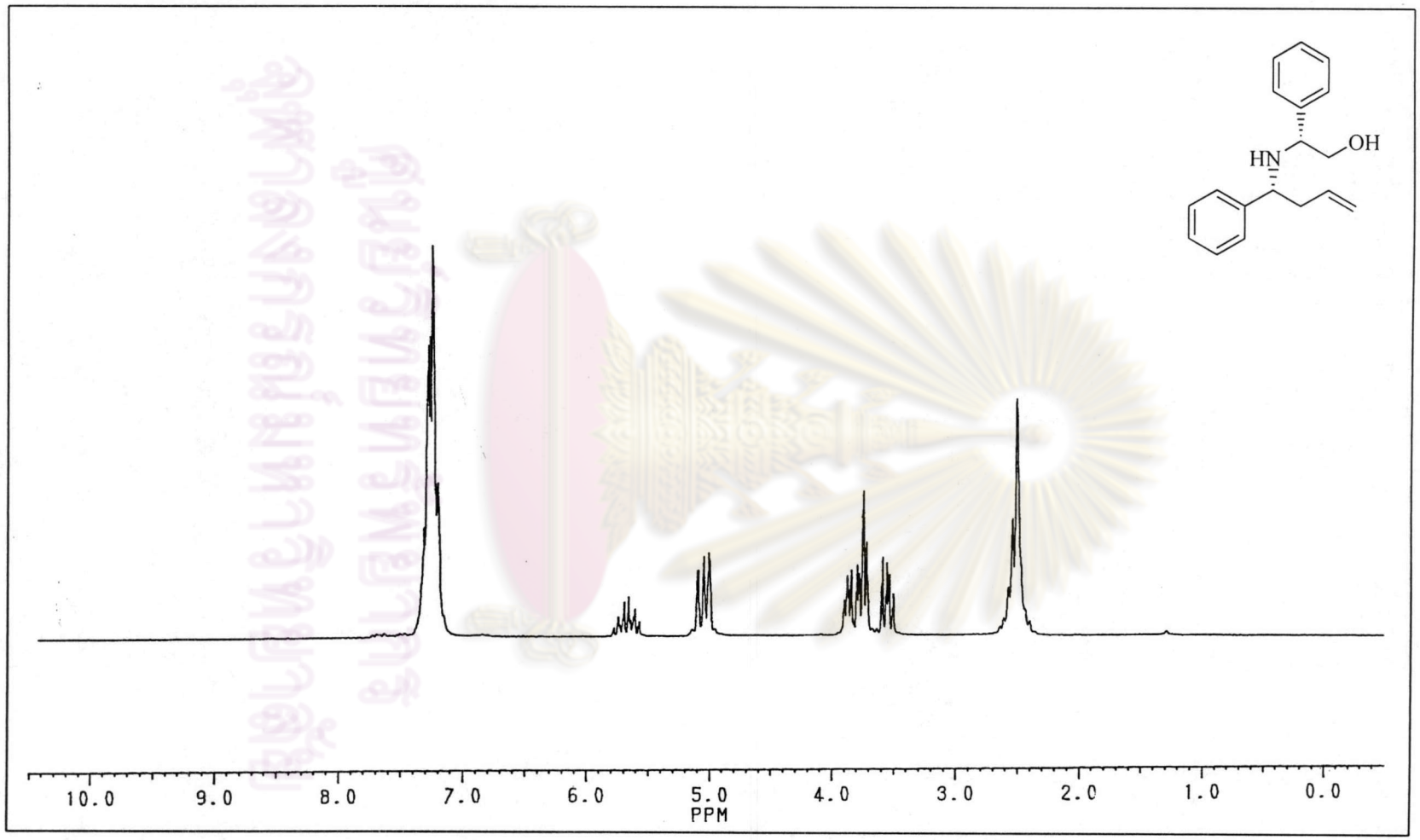


Figure 28 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-phenylbut-3-enylamino]ethanol (**II-19**)

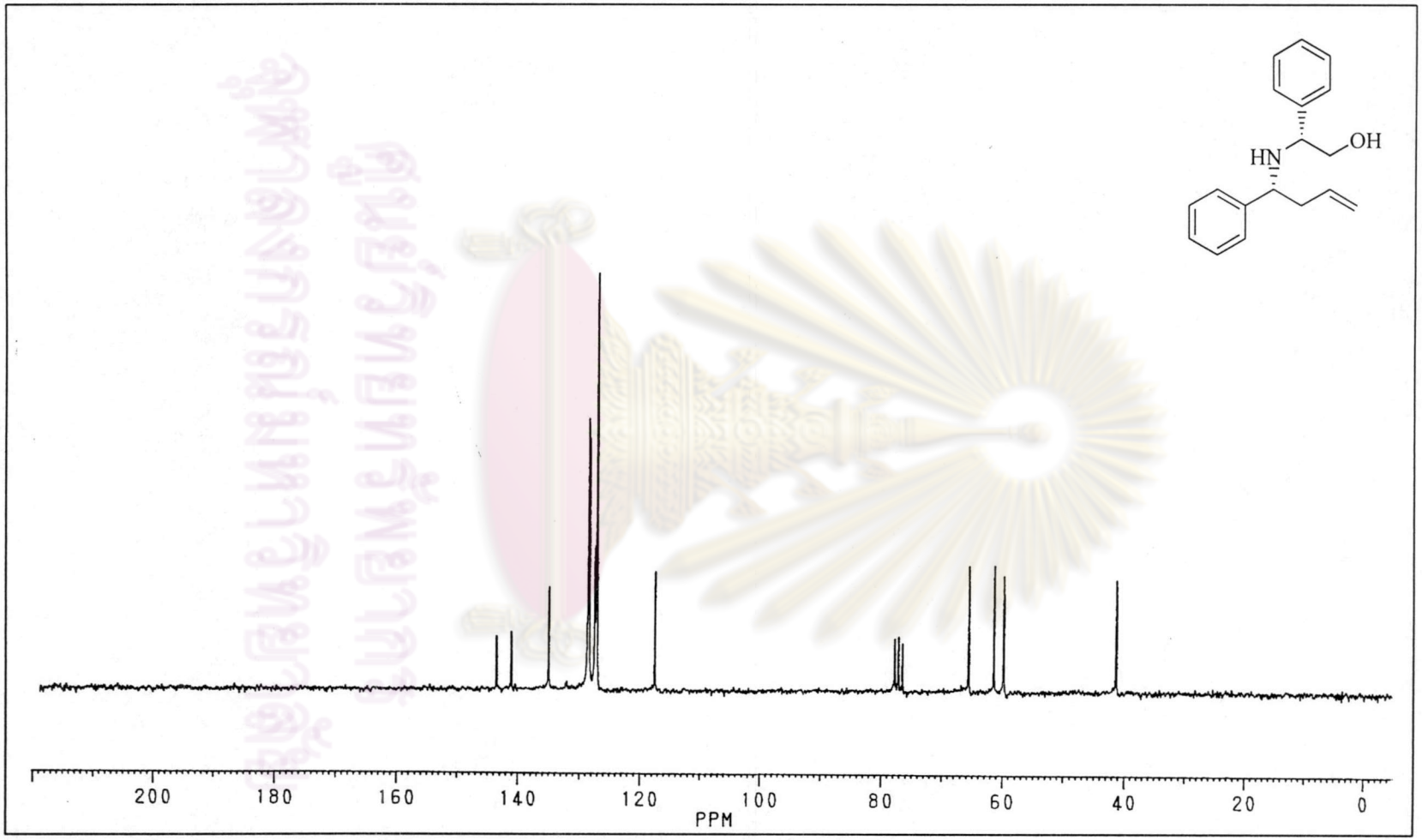


Figure 29 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-phenylbut-3-enylamino]ethanol (**II-19**)

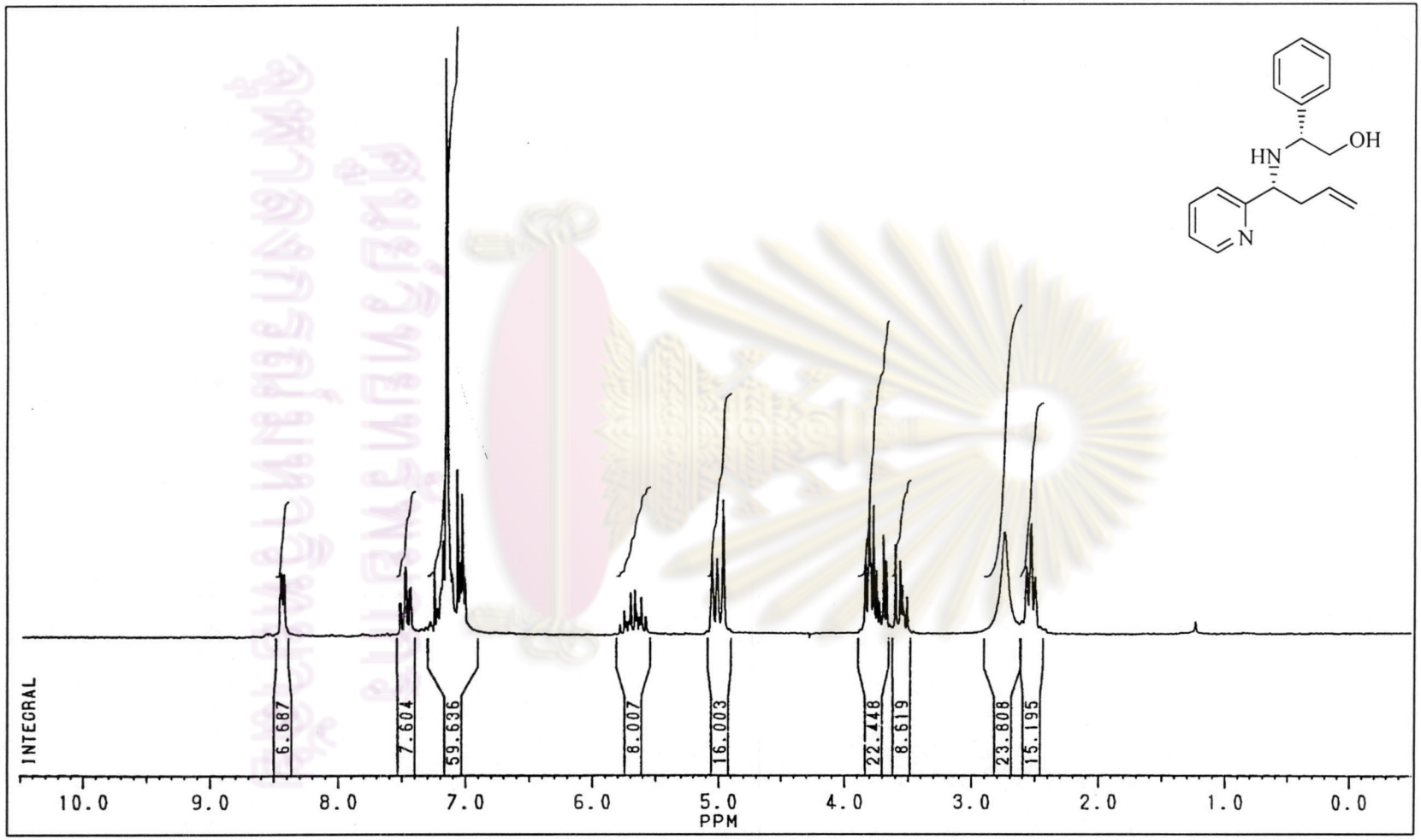


Figure 30 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-pyridyl)but-3-enylamino]ethanol (**II-21**)

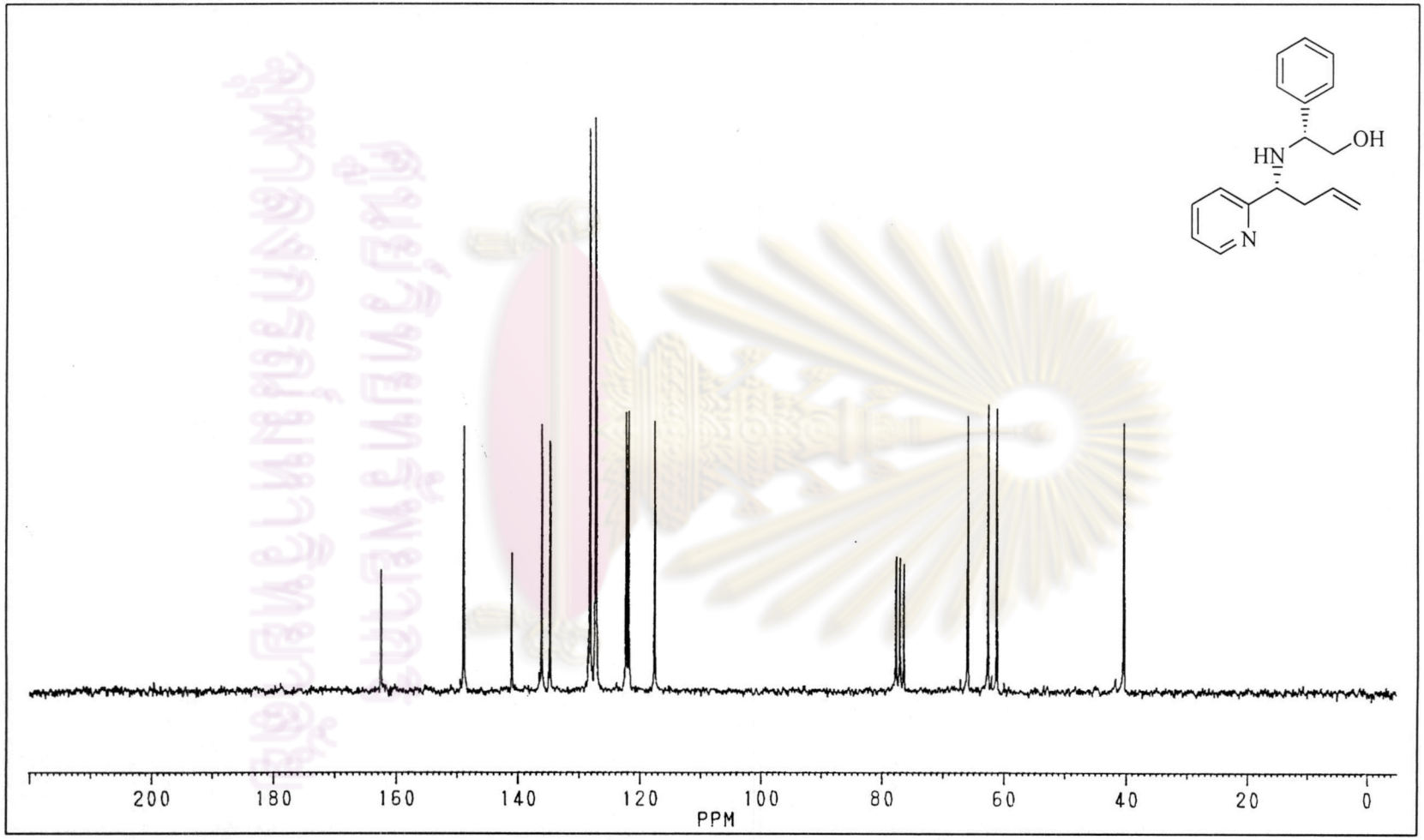


Figure 31 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-pyridyl)but-3-enylamino]ethanol (**II-21**)

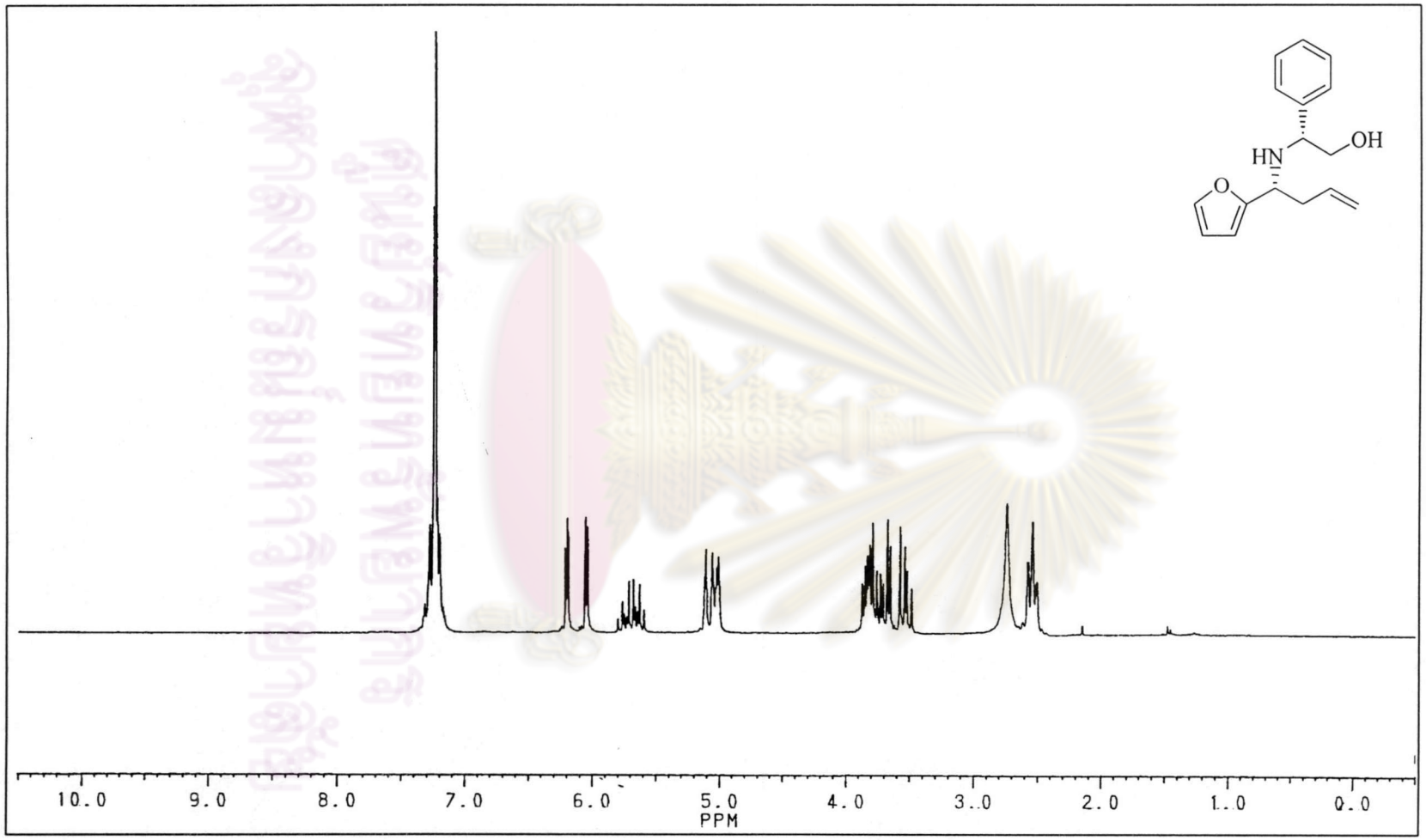


Figure 32 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-furyl)but-3-enylamino]ethanol (**II-22**)

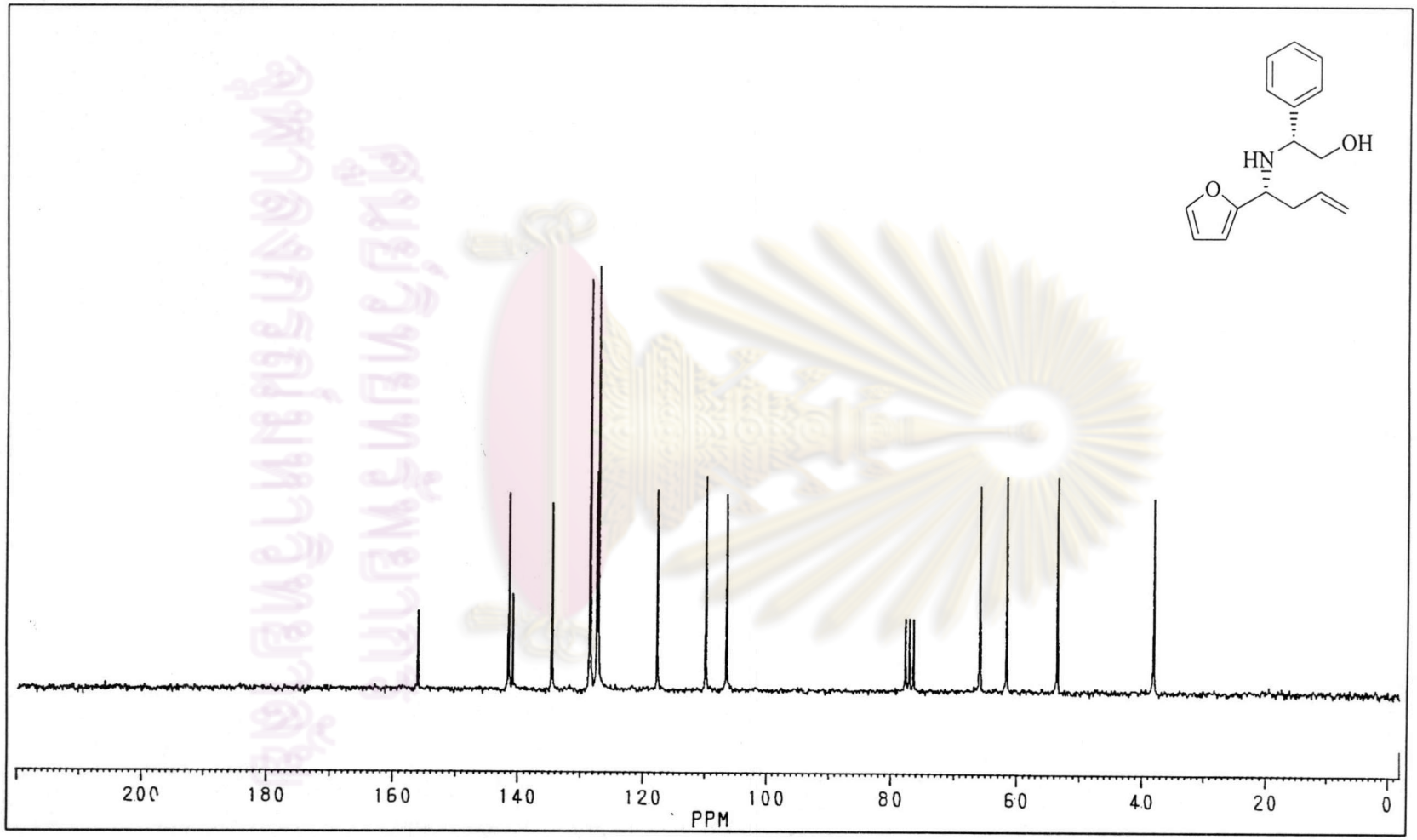


Figure 33 ^{13}C-NMR spectrum ($CDCl_3$) of of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-furyl)but-3-enylamino]ethanol (**II-22**)

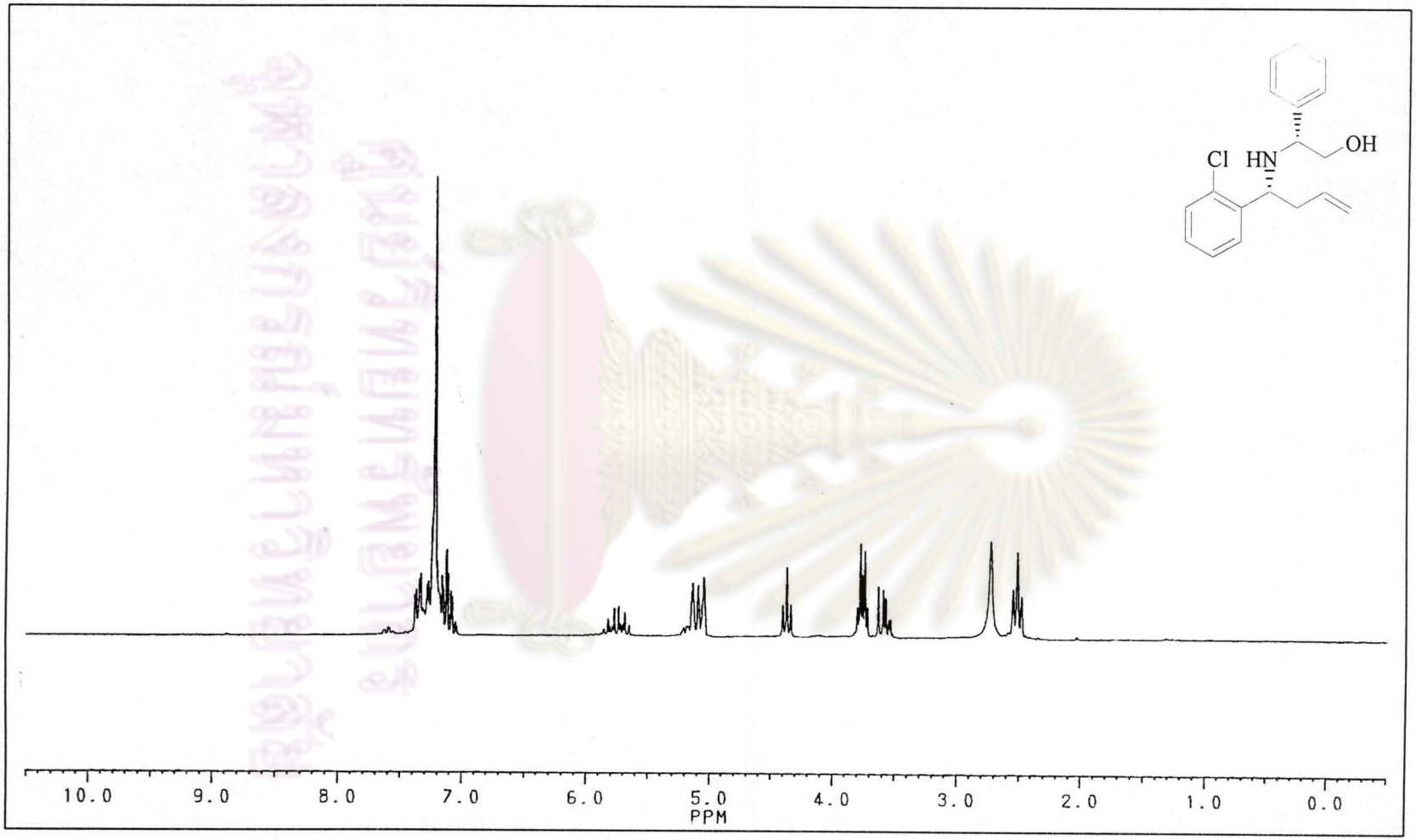


Figure 34 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(2″-chlorophenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(2″-chlorophenyl)but-3′-enylamino]ethanol (**II-23**)

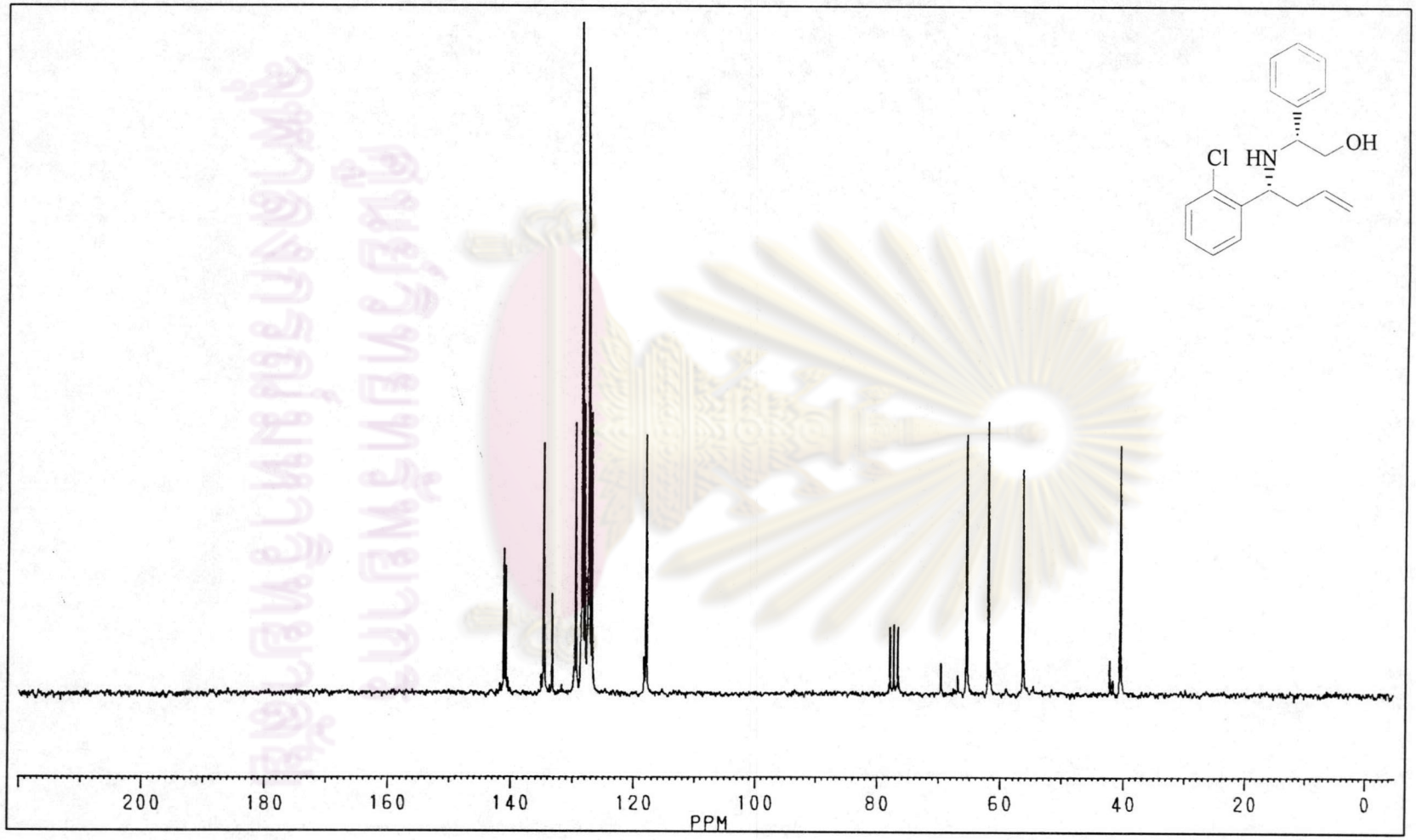


Figure 35 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(2″-chlorophenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(2″-chlorophenyl)but-3′-enylamino]ethanol (**II-23**)

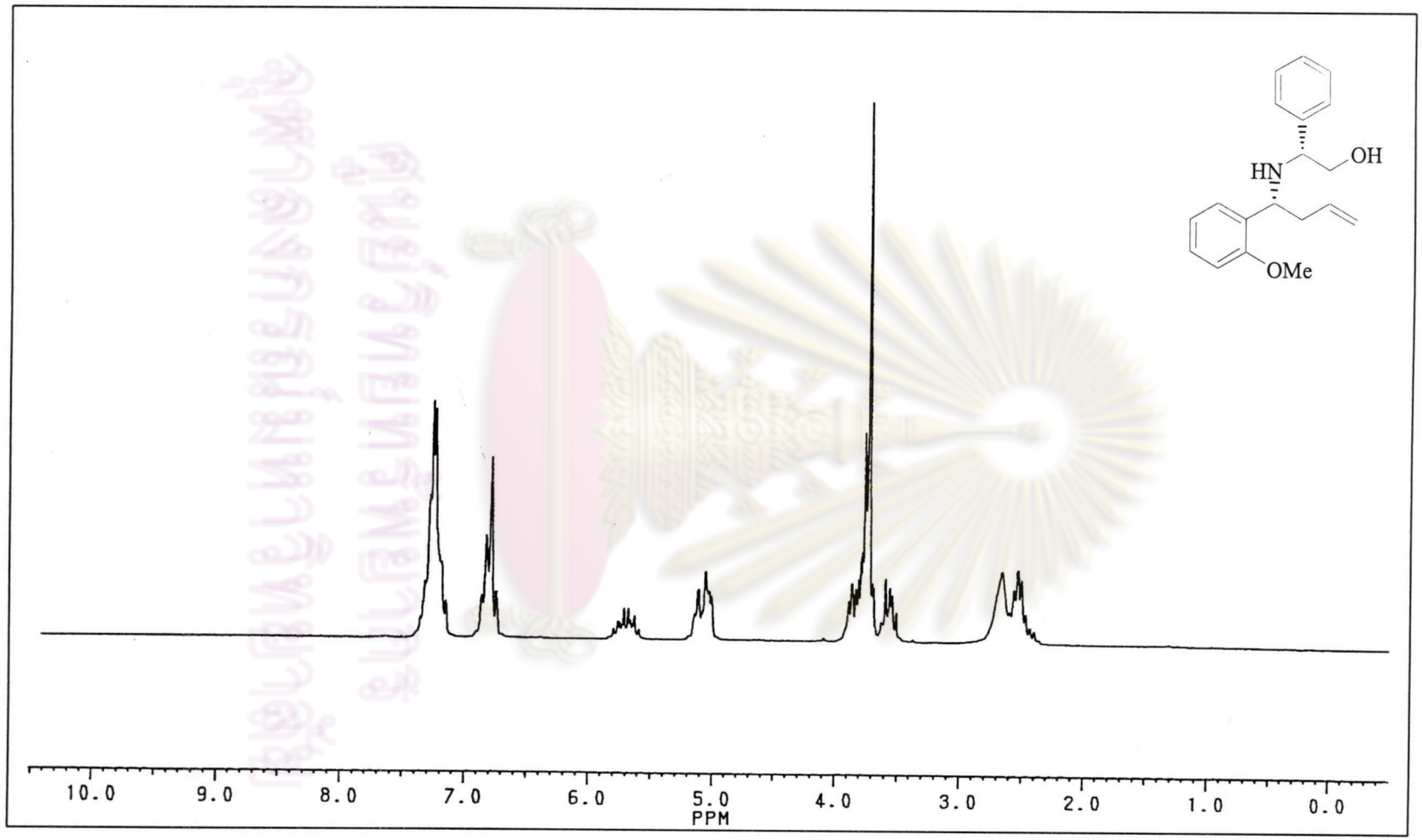


Figure 36 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(2″-methoxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(2″-methoxyphenyl)but-3′-enylamino]ethanol **(II-24)**

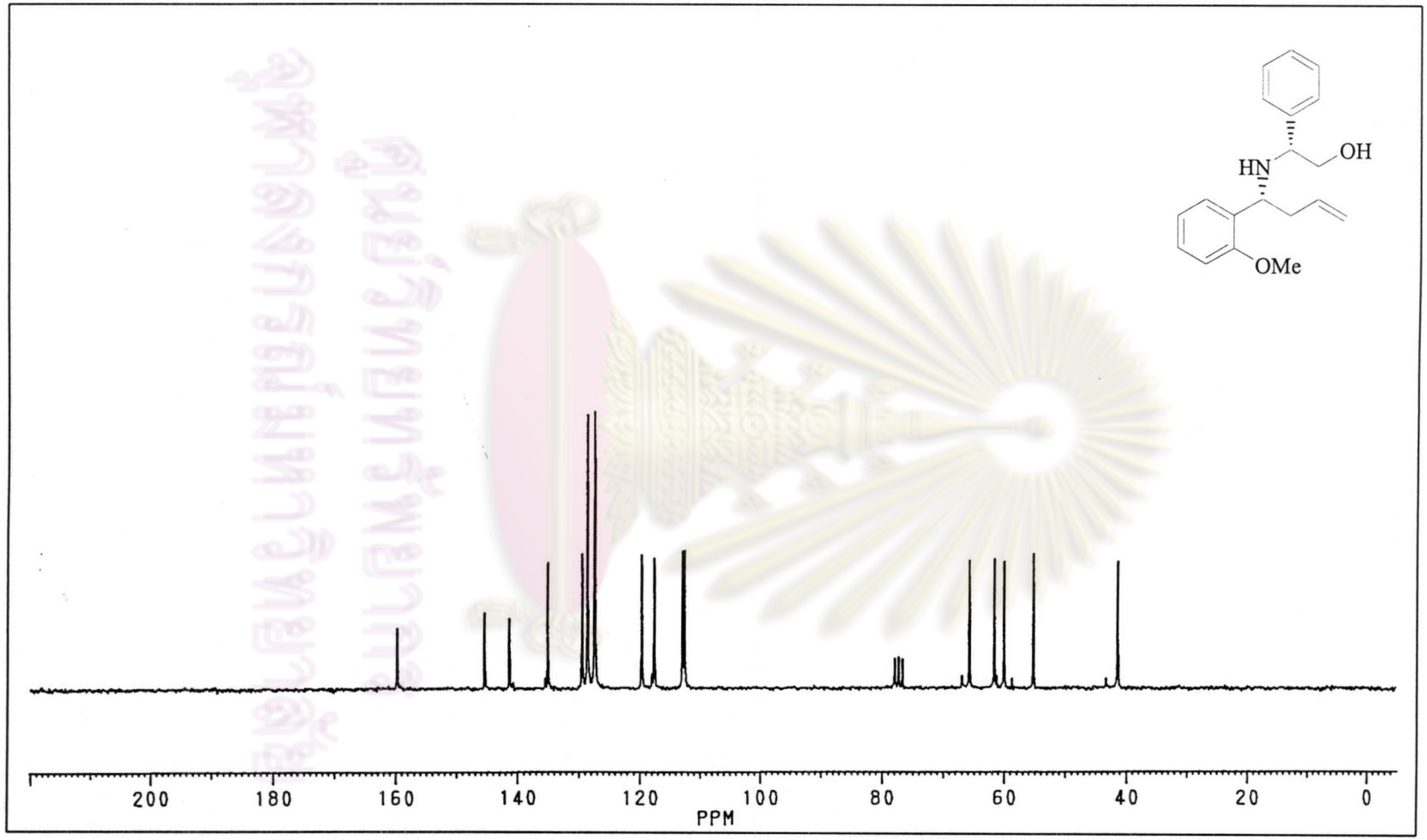


Figure 37 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(2″-methoxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(2″-methoxyphenyl)but-3′-enylamino]ethanol (**II-24**)

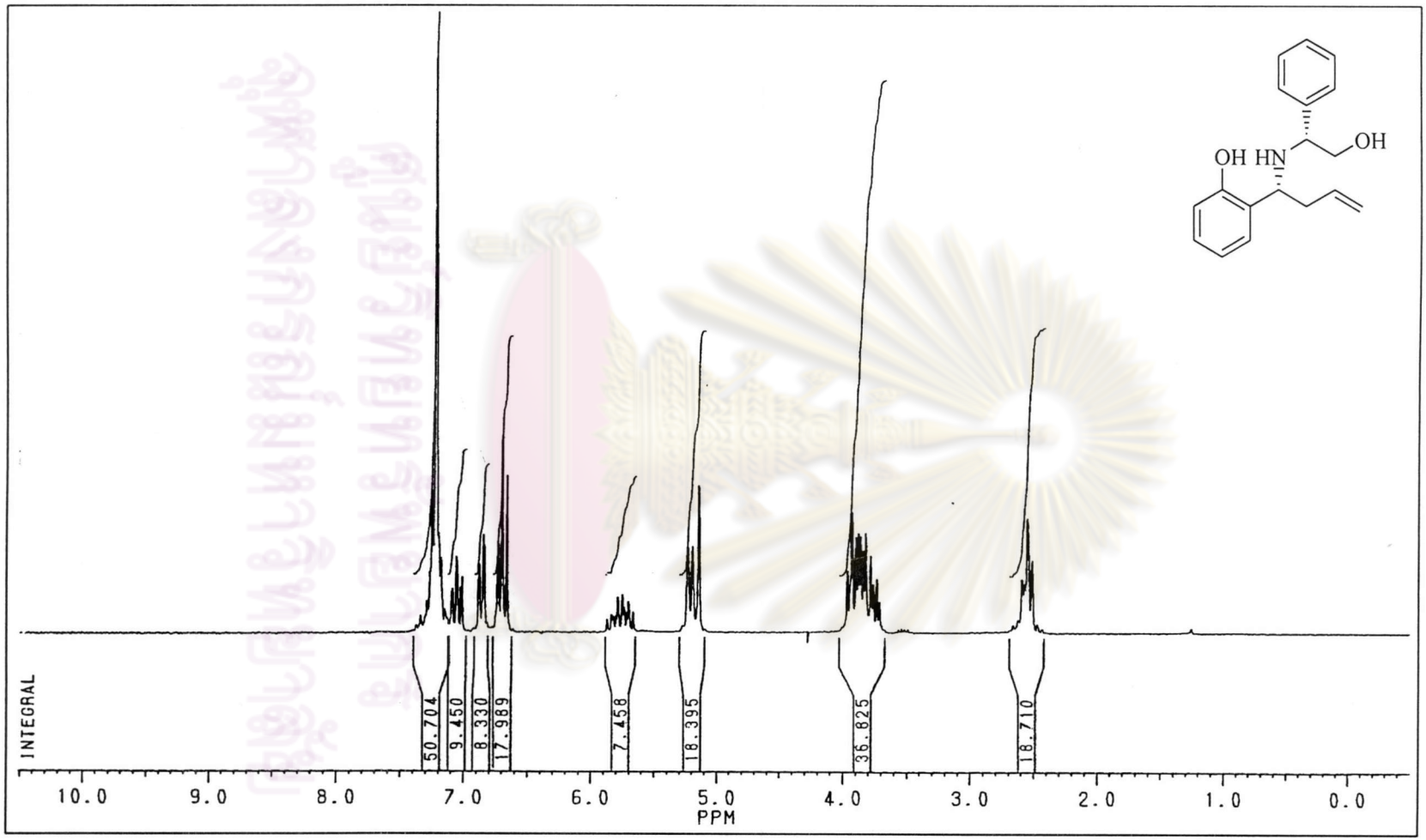


Figure 38 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-hydroxyphenyl)but-3-enylamino]ethanol (**II-25**)

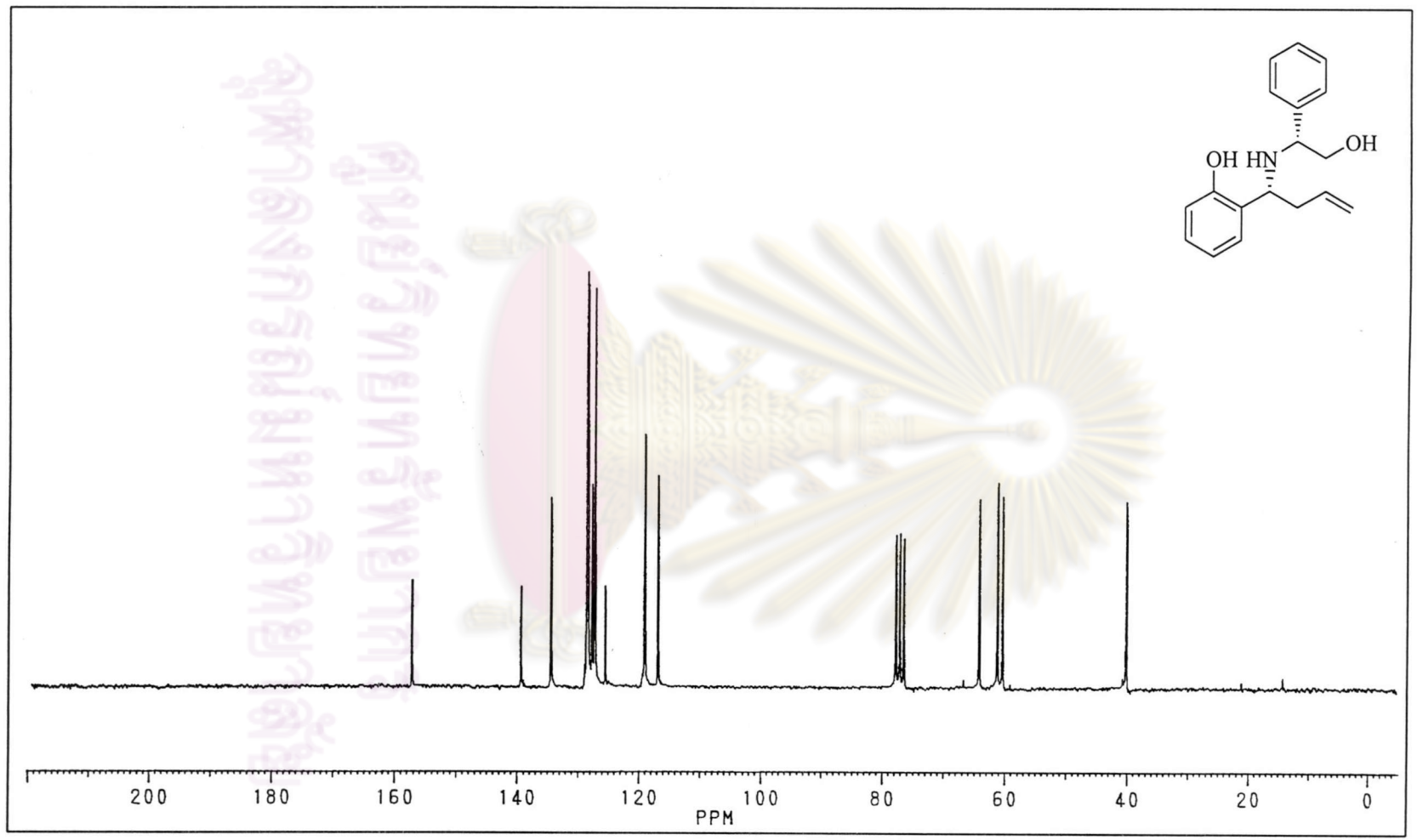


Figure 39 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-hydroxyphenyl)but-3-enylamino]ethanol (**II-25**)

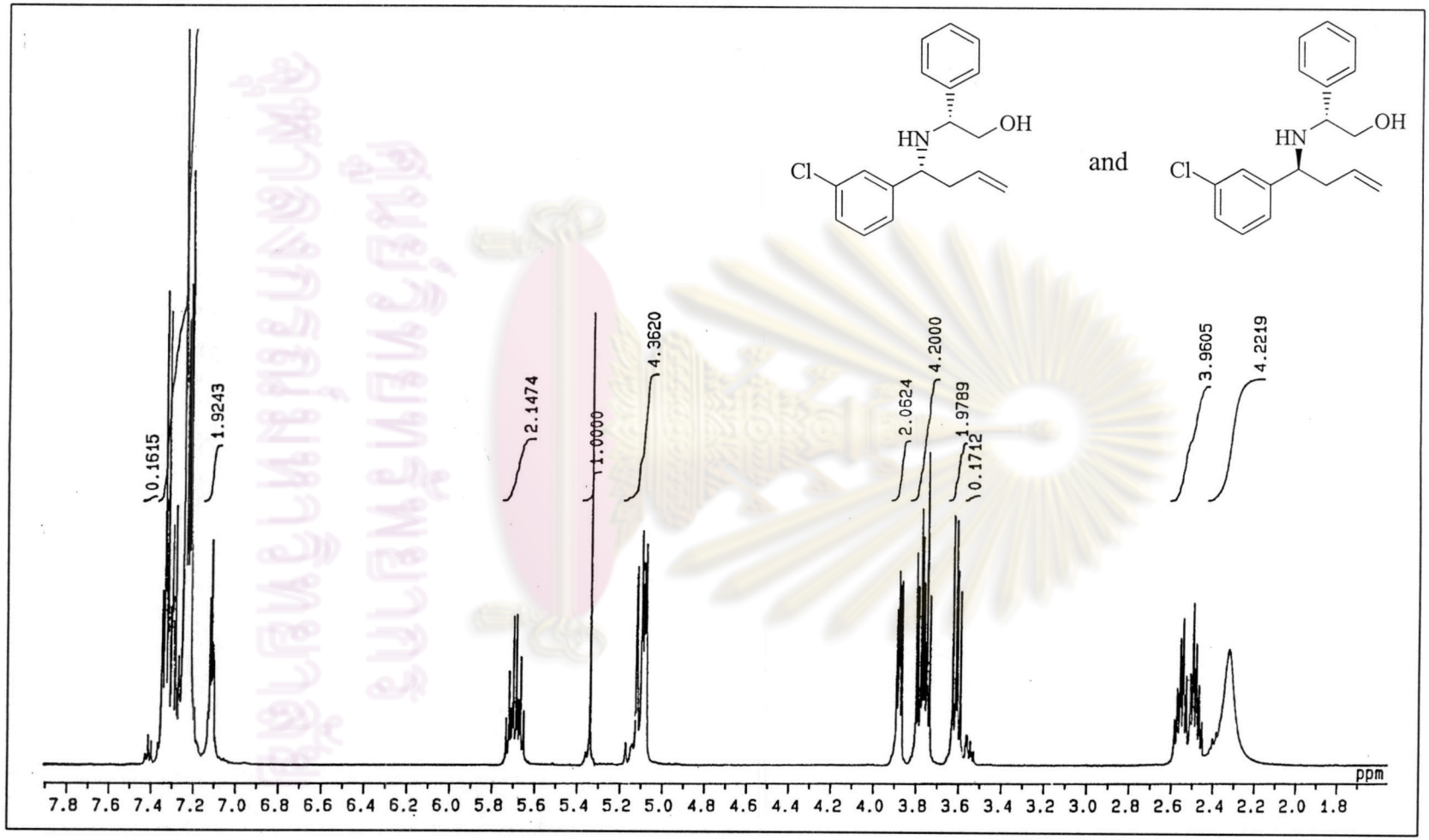


Figure 40 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3′-chlorophenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-chlorophenyl)but-3′-enylamino]ethanol (**II-26**)

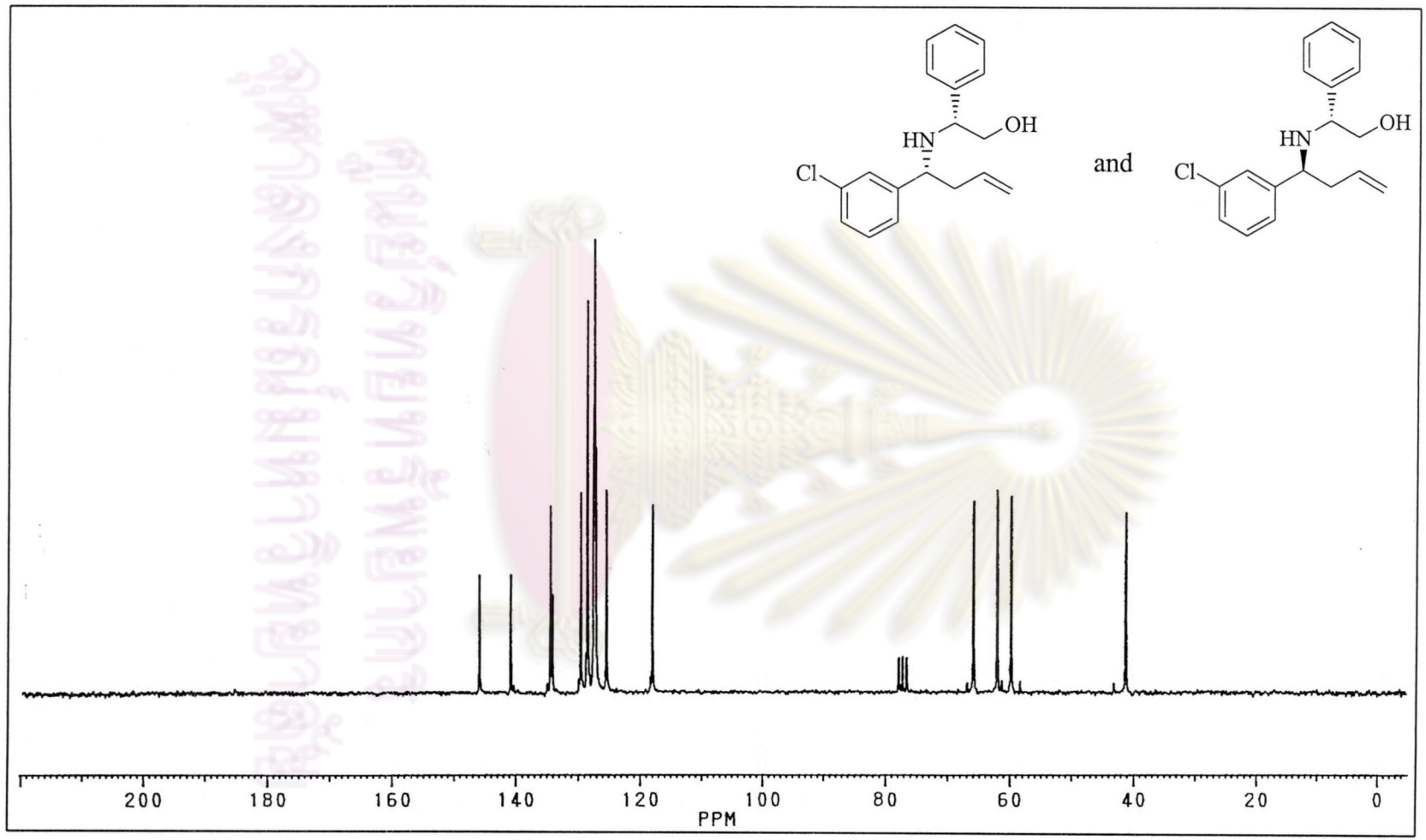


Figure 41 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3′-chlorophenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-chlorophenyl)but-3′-enylamino]ethanol (**II-26**)

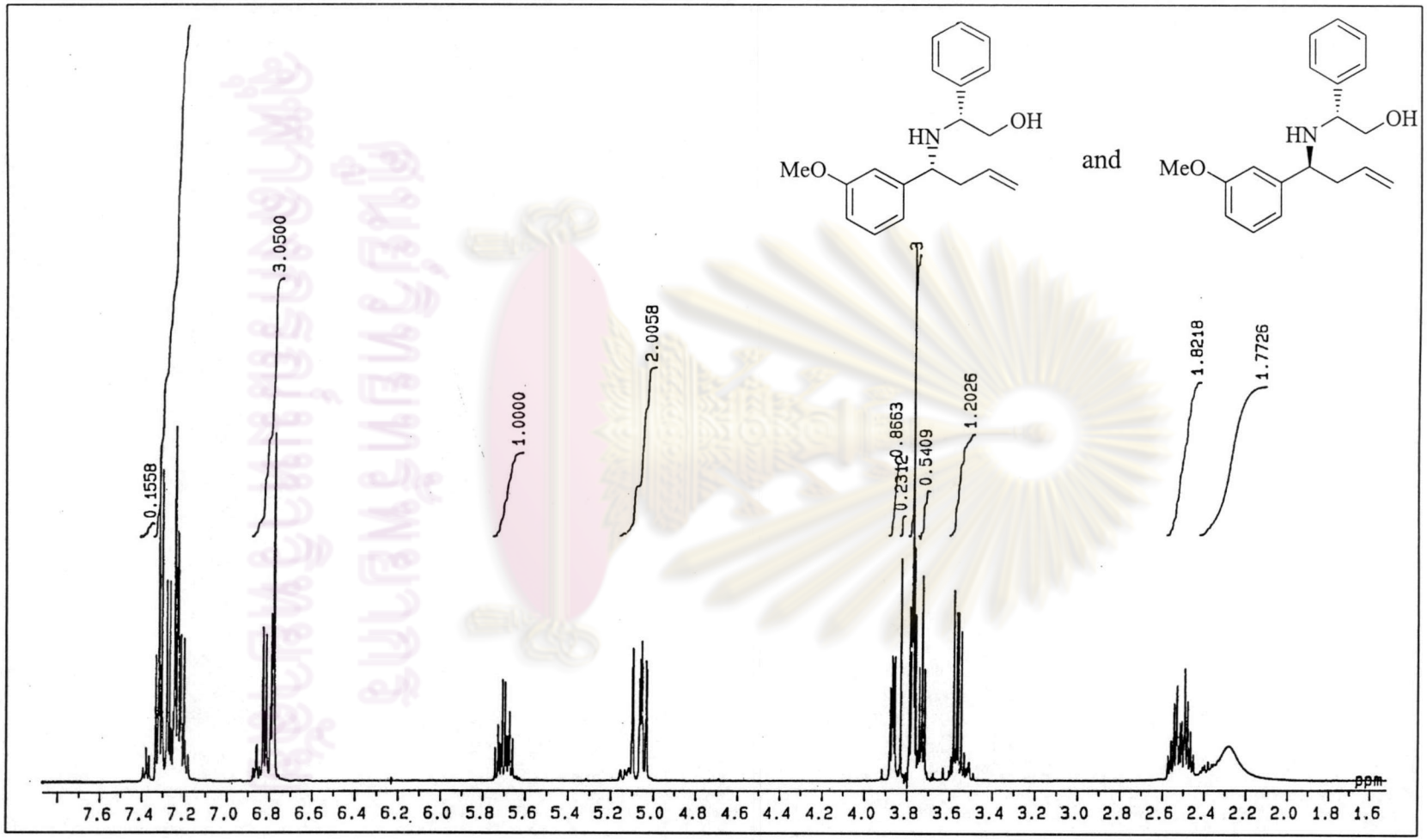


Figure 42 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3″-methoxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-methoxyphenyl)but-3′-enylamino]ethanol (**II-27**)

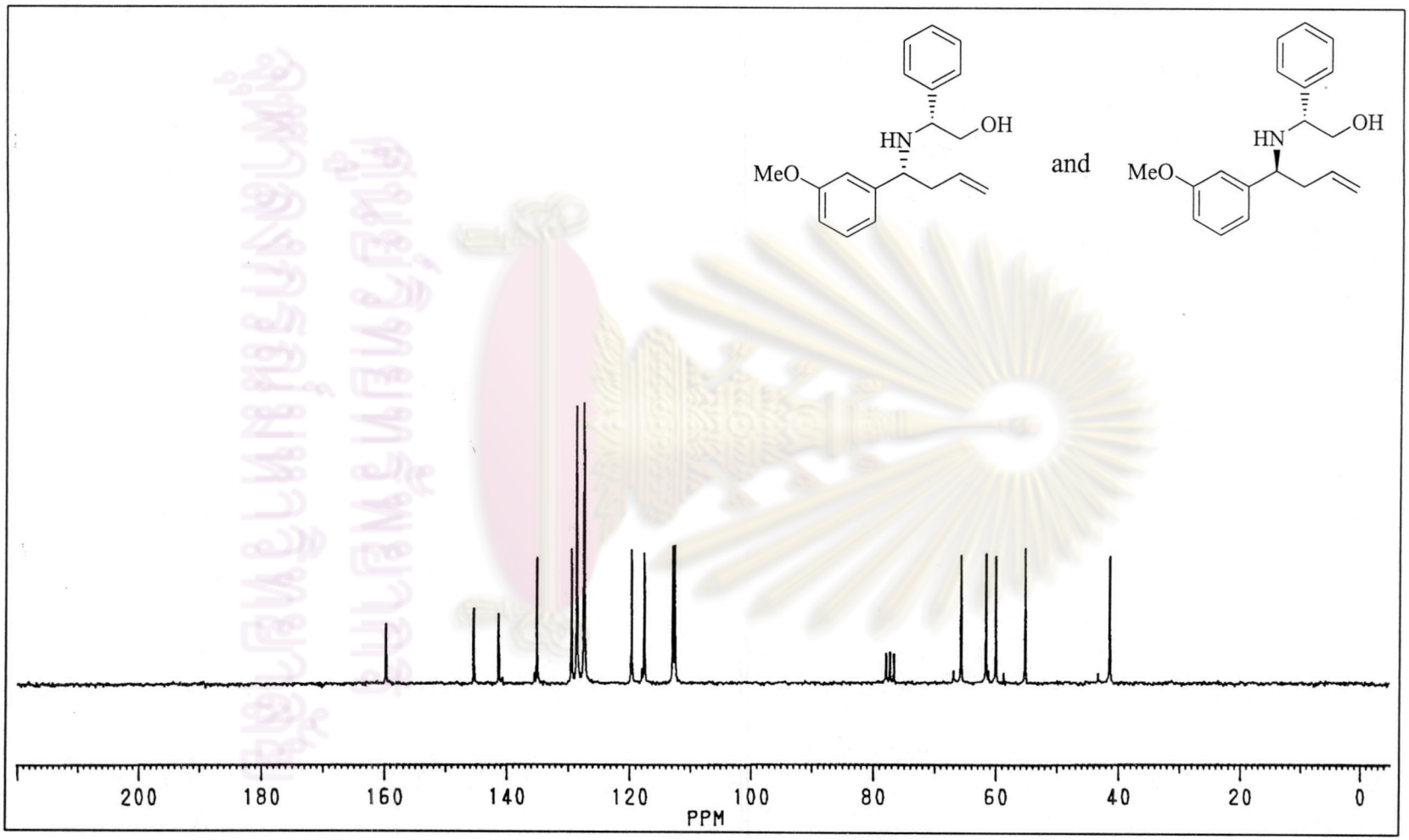


Figure 43 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3″-methoxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-methoxyphenyl)but-3′-enylamino]ethanol (**II-27**)

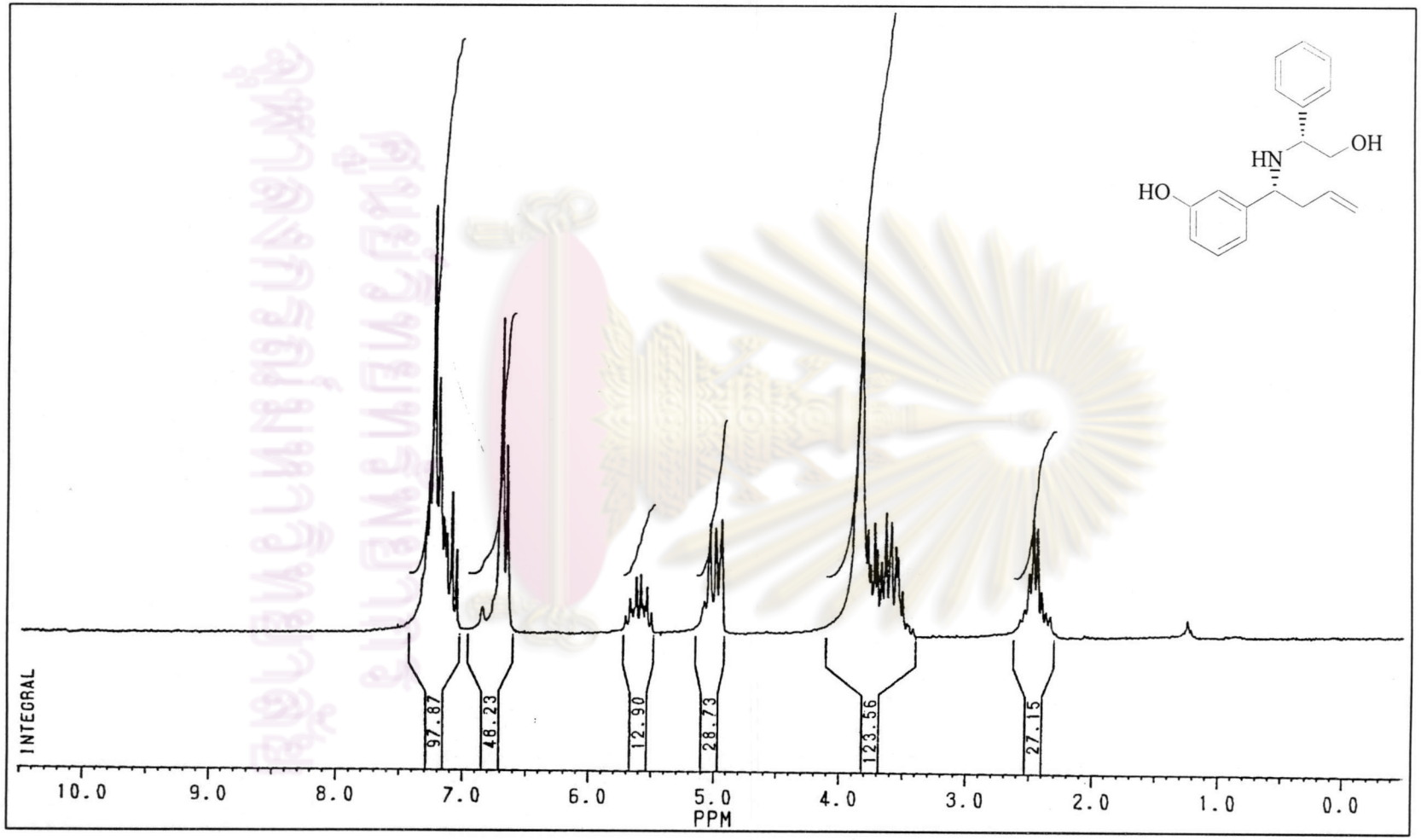


Figure 44 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3″-hydroxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-hydroxyphenyl)but-3′-enylamino]ethanol (**II-28**)

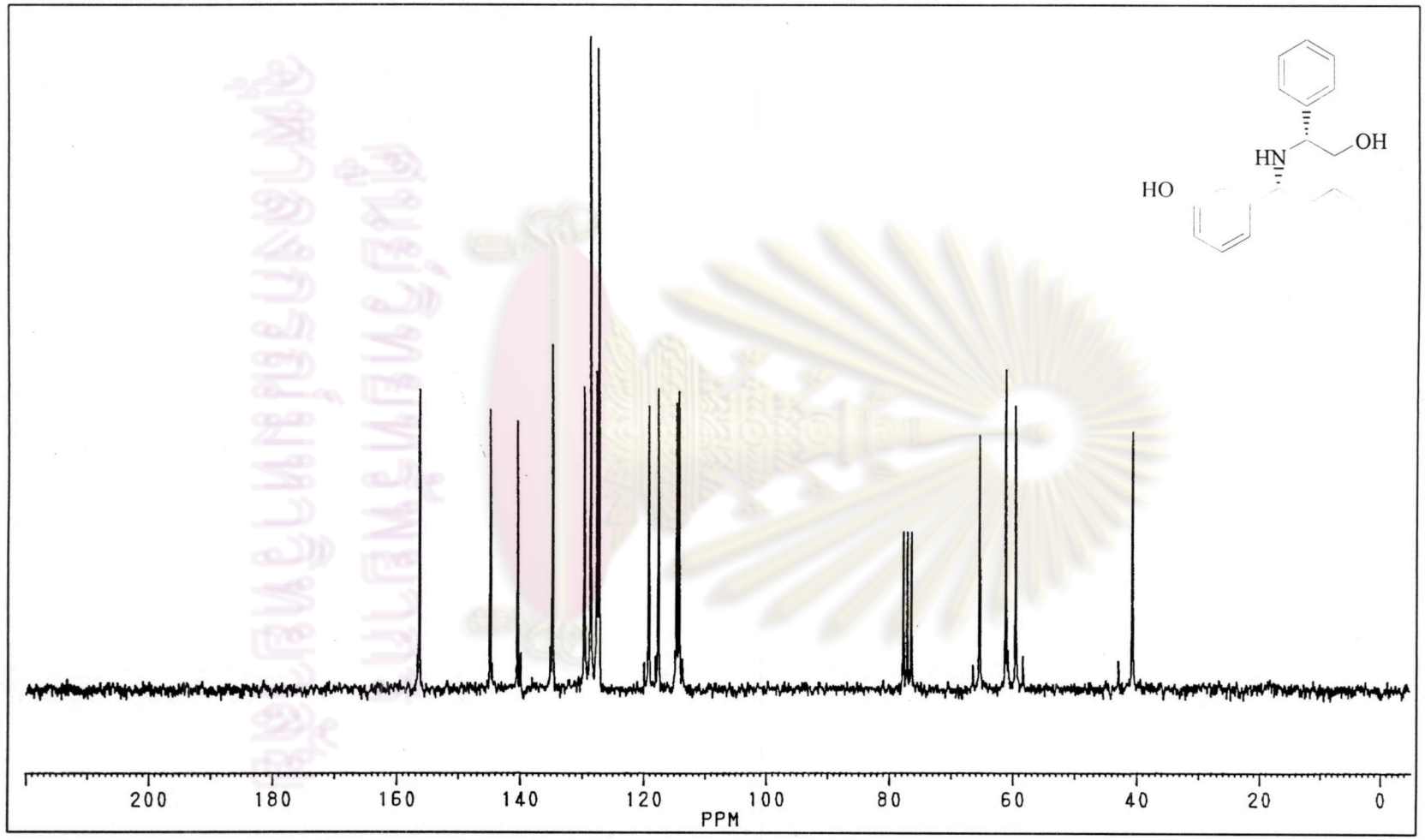


Figure 45 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1′*R*)-1′-(3″-hydroxyphenyl)but-3′-enylamino]ethanol and (2*R*)-2-phenyl-2-[(1′*S*)-1′-(3″-hydroxyphenyl)but-3′-enylamino]ethanol (**II-28**)

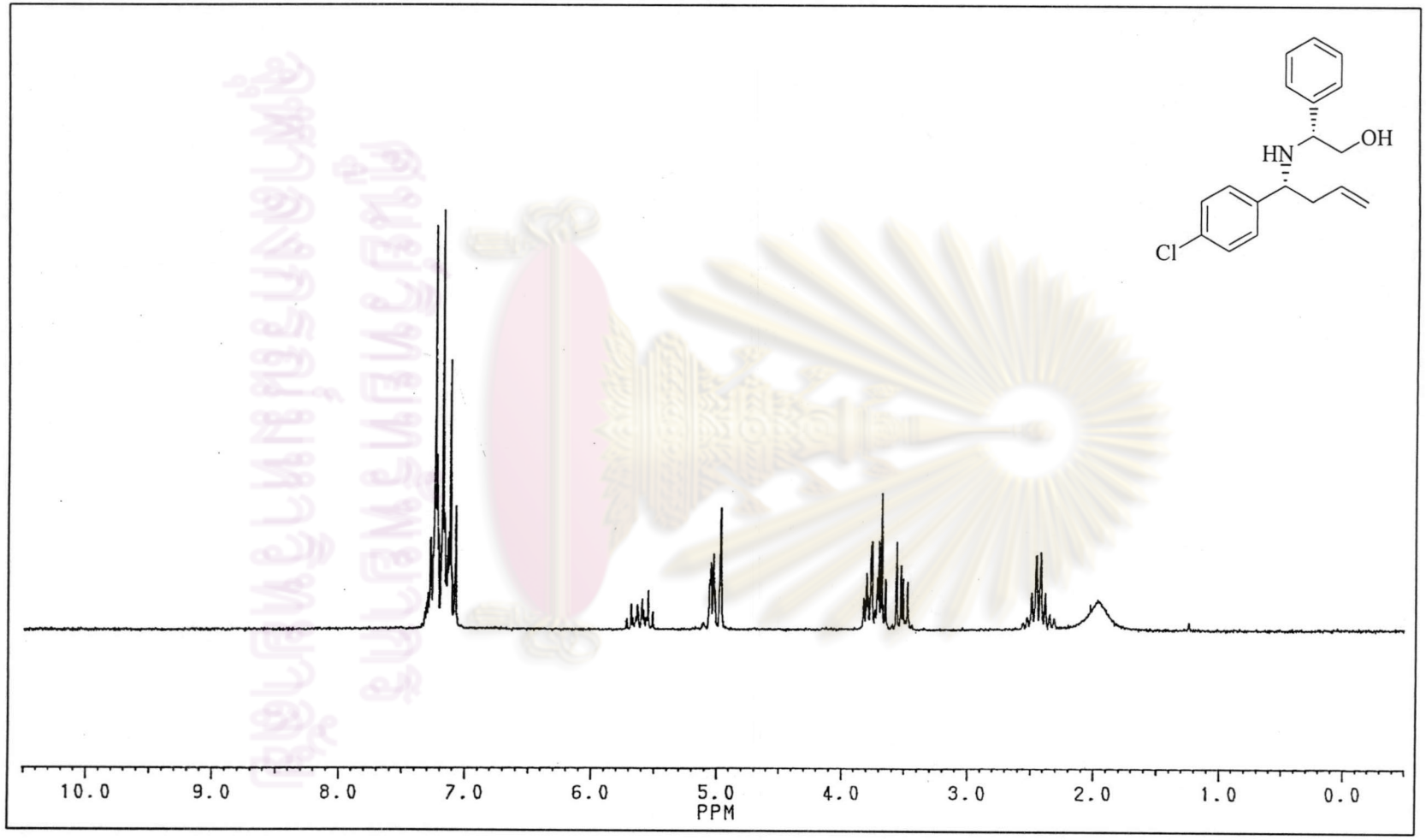


Figure 46 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(4′-chlorophenyl)but-3-enylamino]ethanol (**II-29**)

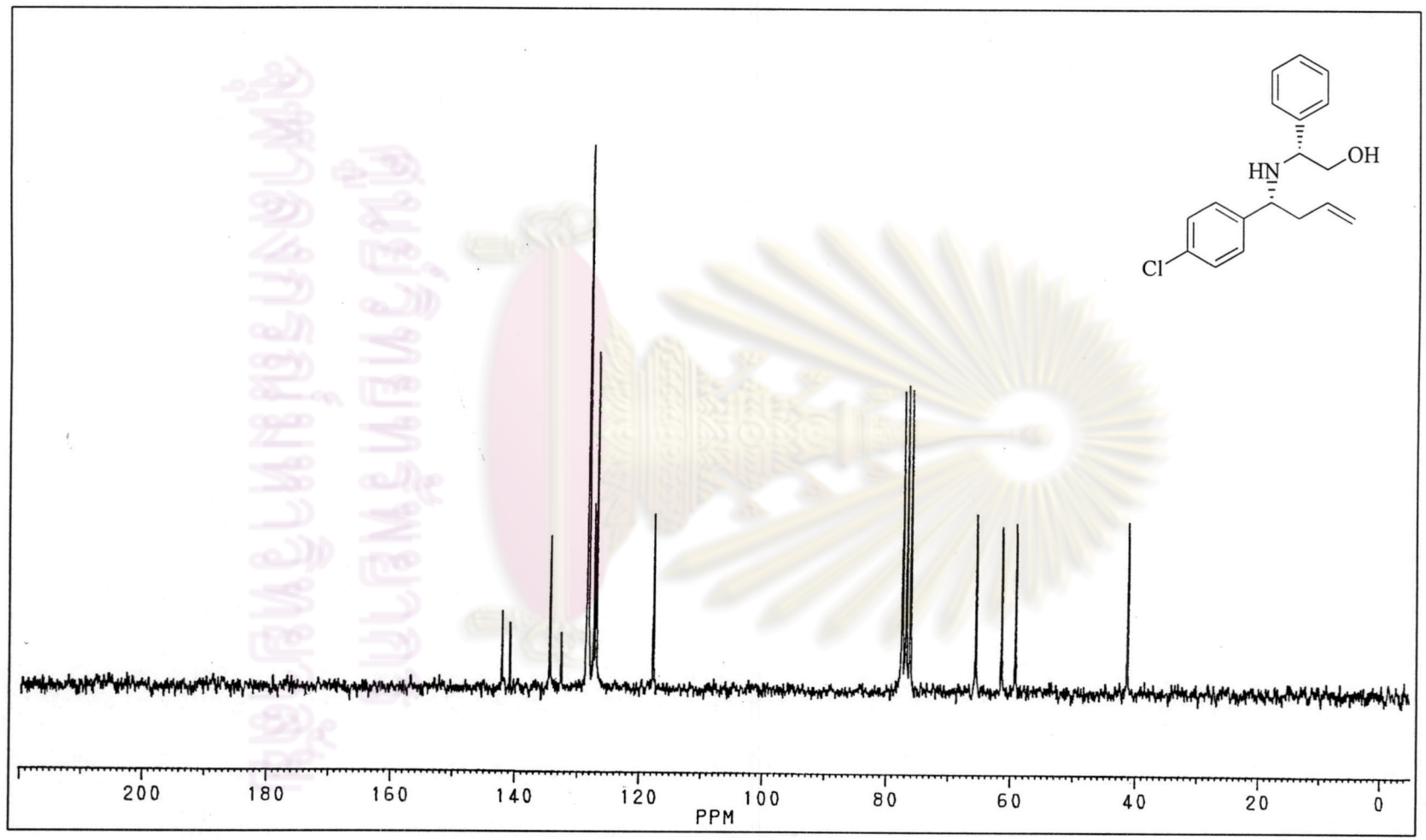


Figure 47 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(4′-chlorophenyl)but-3-enylamino]ethanol (**II-29**)

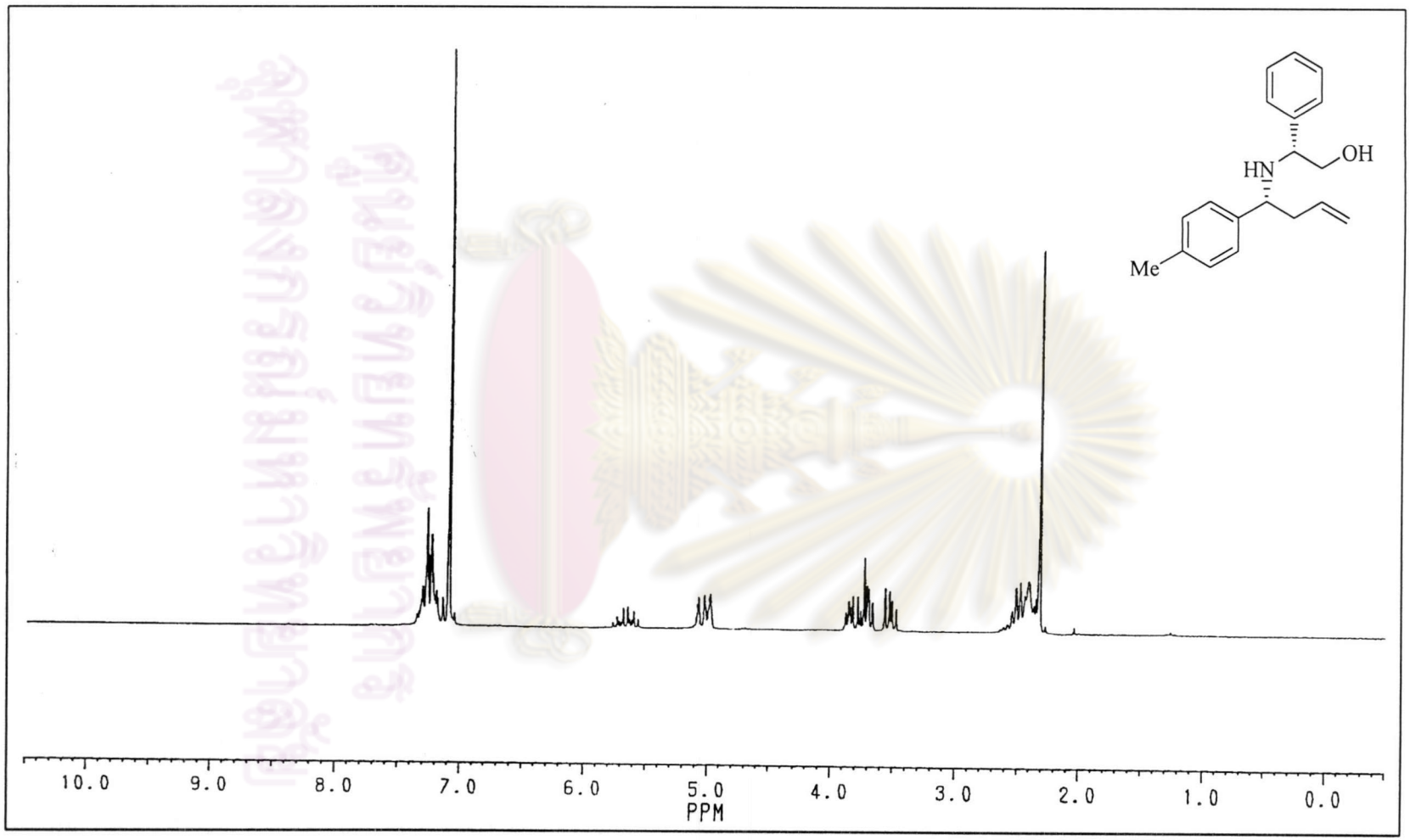


Figure 48 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(4′-methylphenyl)but-3-enylamino]ethanol (**II-30**)

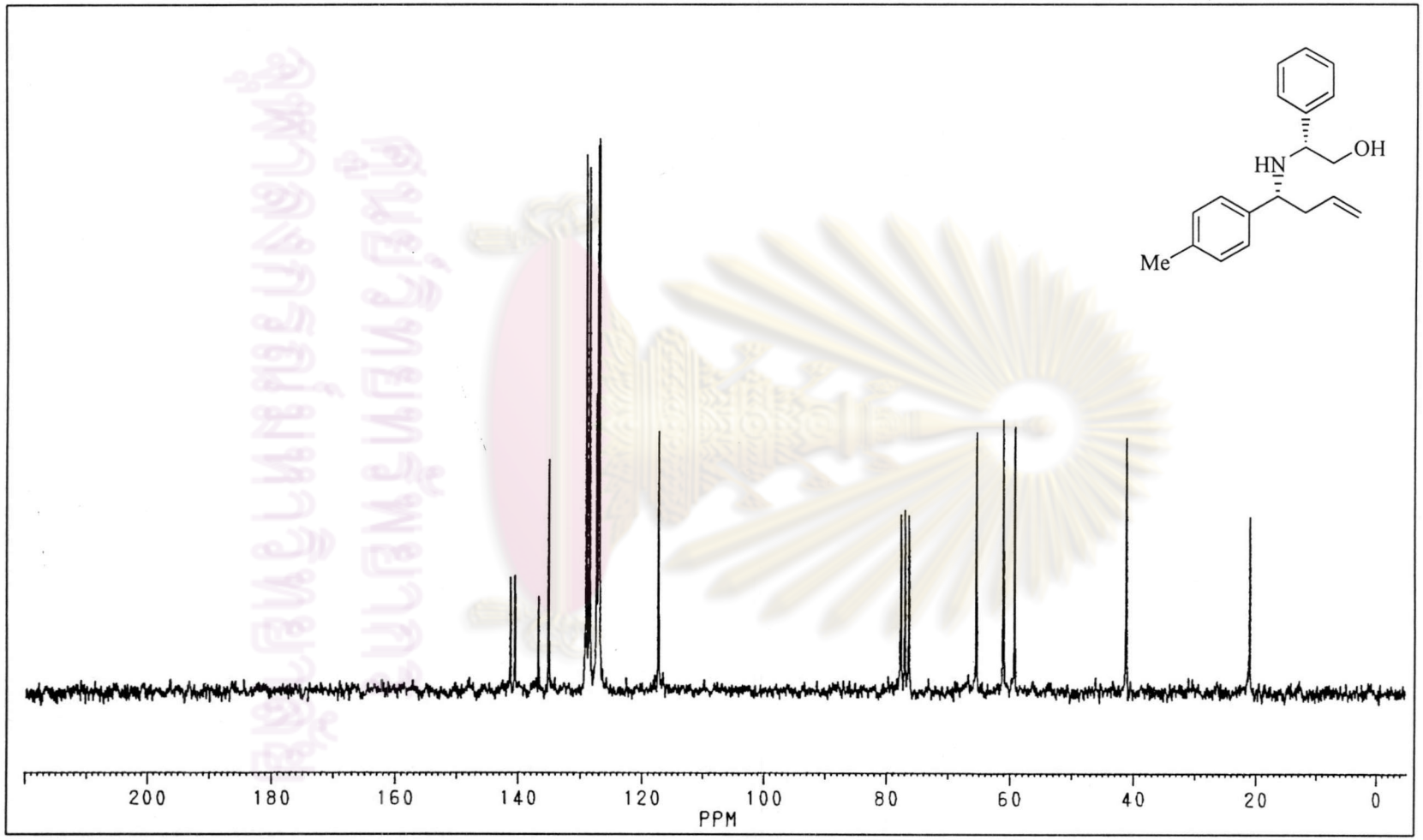


Figure 49 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(4′-methylphenyl)but-3-enylamino]ethanol (**II-30**)

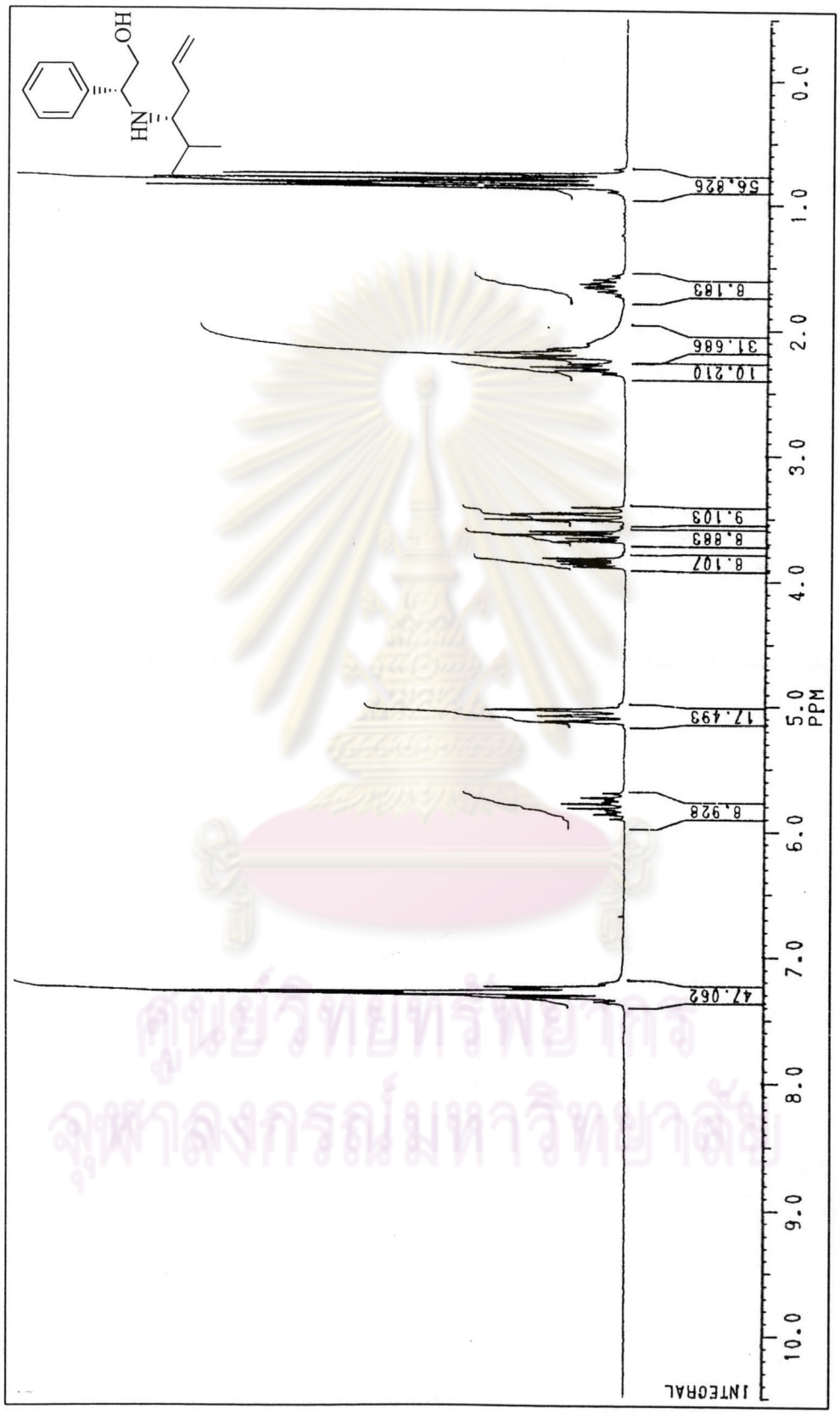


Figure 50 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-isopropylbut-3-enylamino]ethanol (**II-31**)

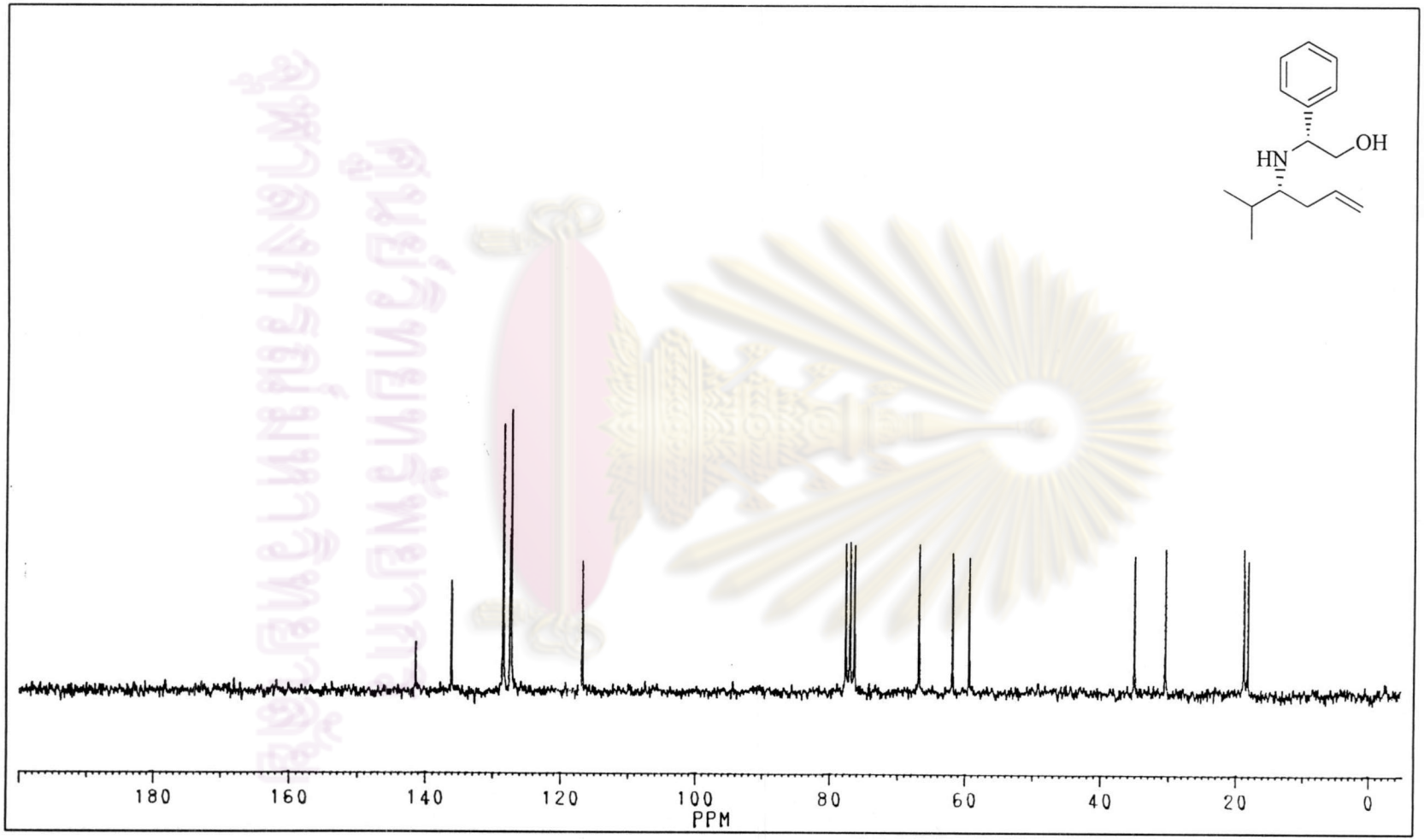


Figure 51 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-isopropylbut-3-enylamino]ethanol (**II-31**)

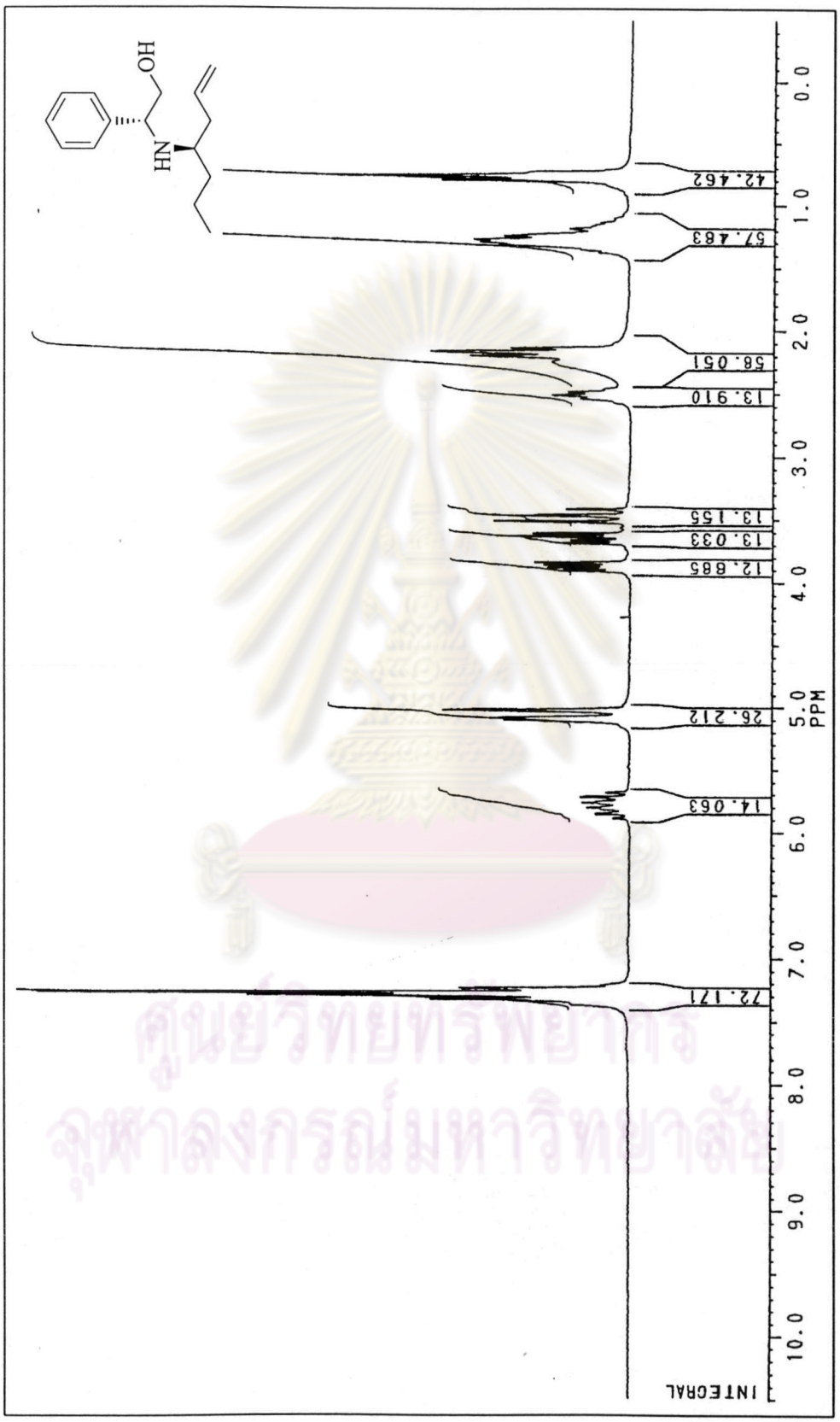


Figure 52 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-*n*-propylbut-3-enylamino]ethanol (**II-32**)

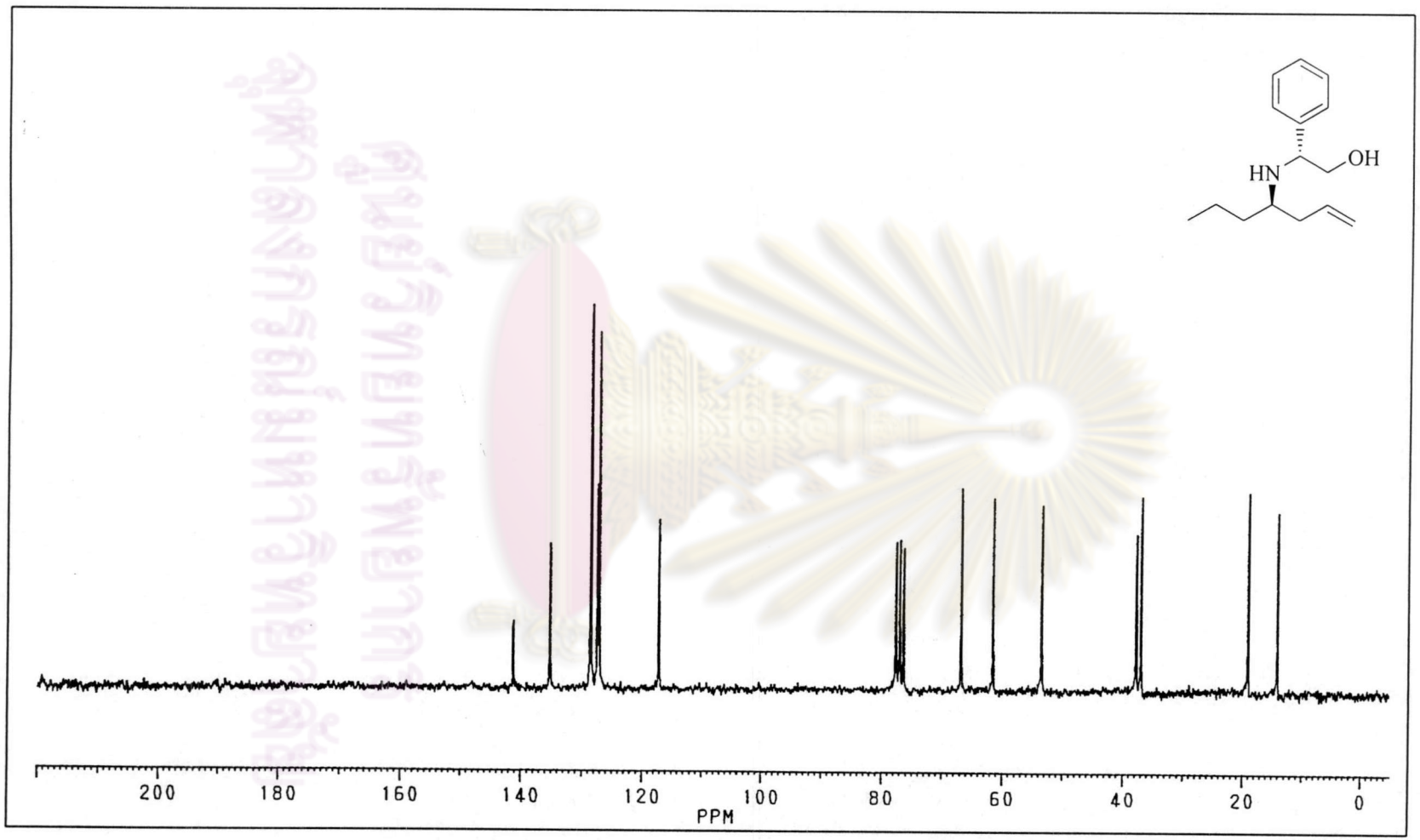


Figure 53 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-*n*-propylbut-3-enylamino]ethanol (**II-32**)

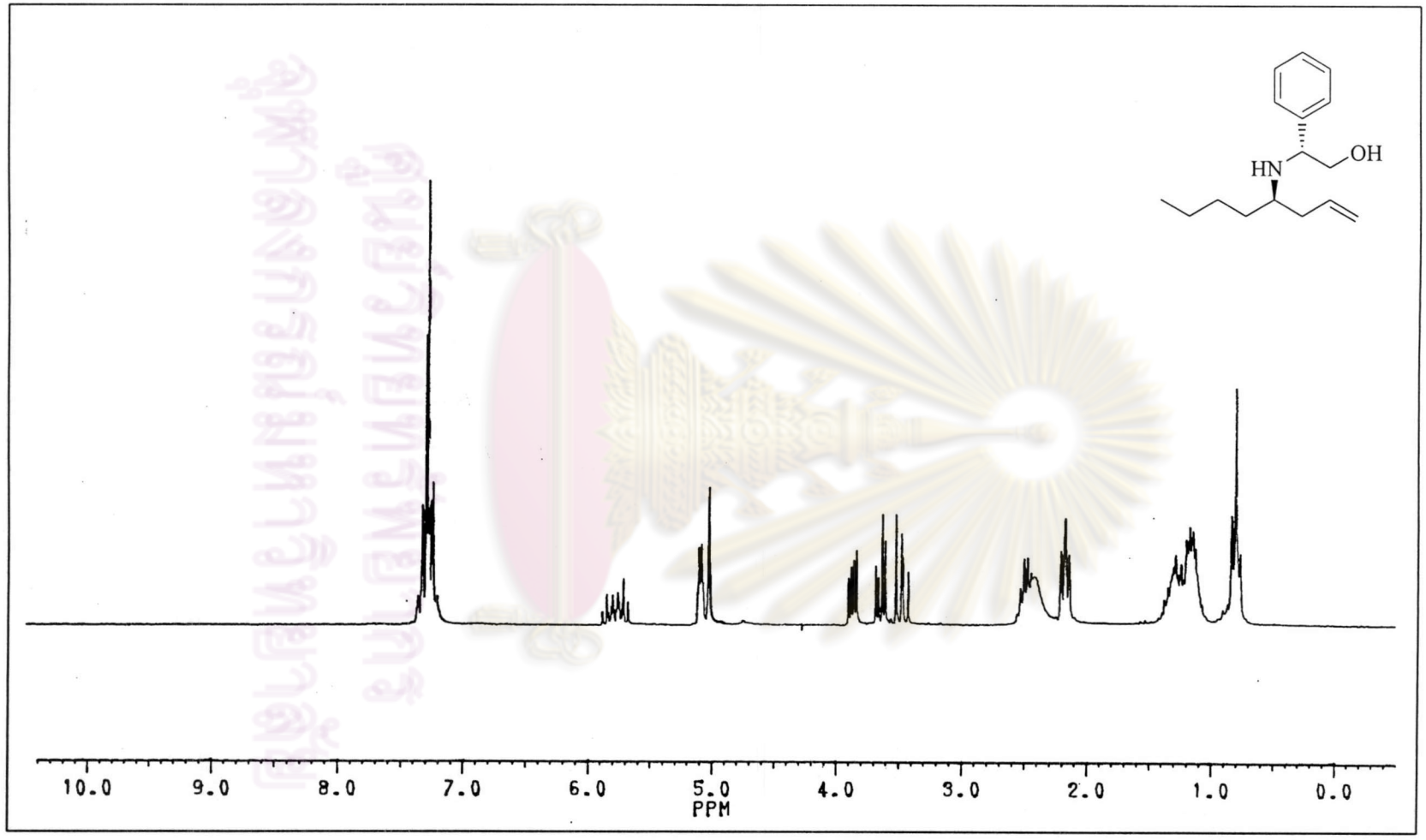


Figure 54 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-*n*-butylbut-3-enylamino]ethanol (**II-33**)

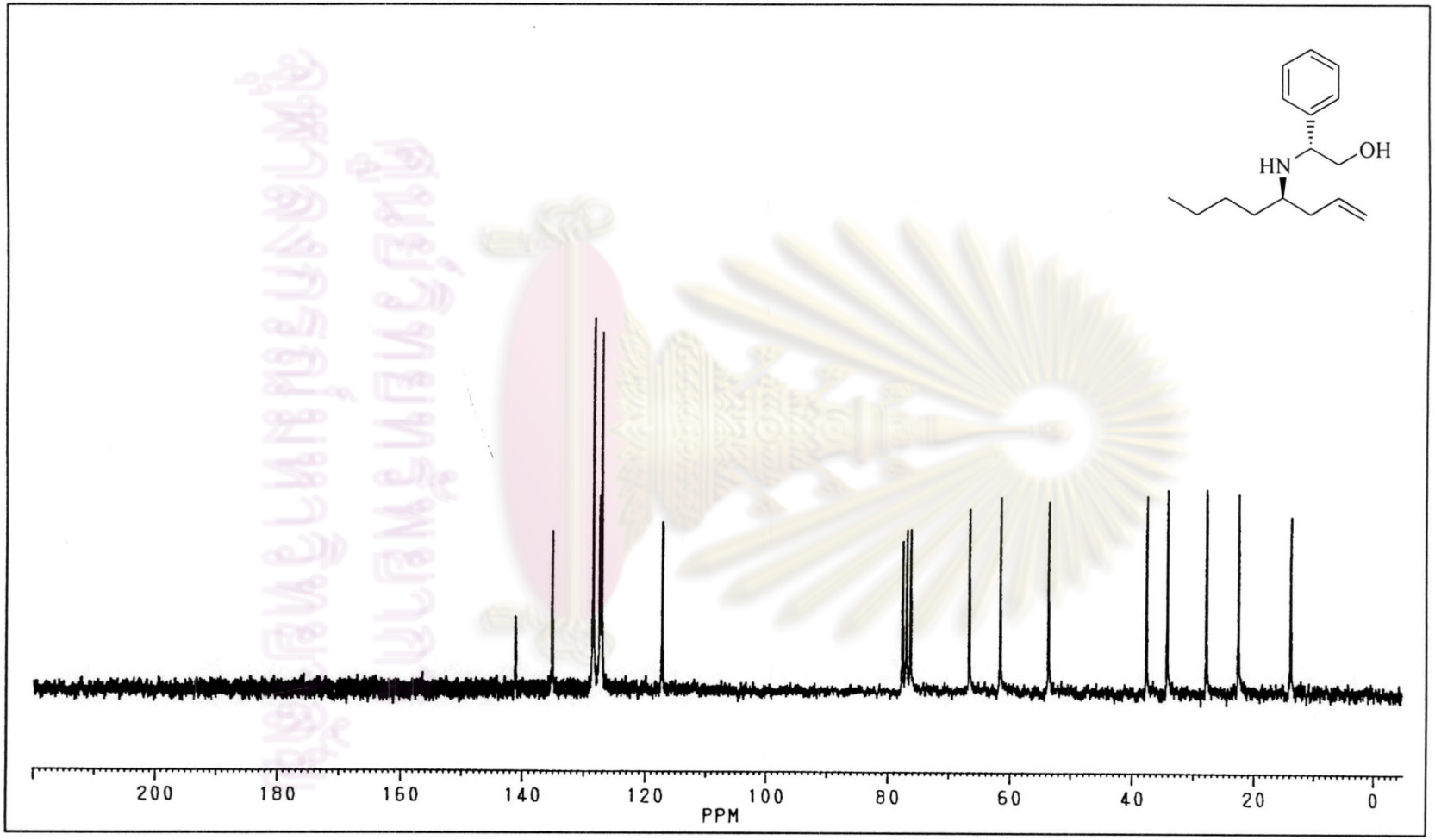


Figure 55 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-*n*-butylbut 3-enylamino]ethanol (**II-33**)

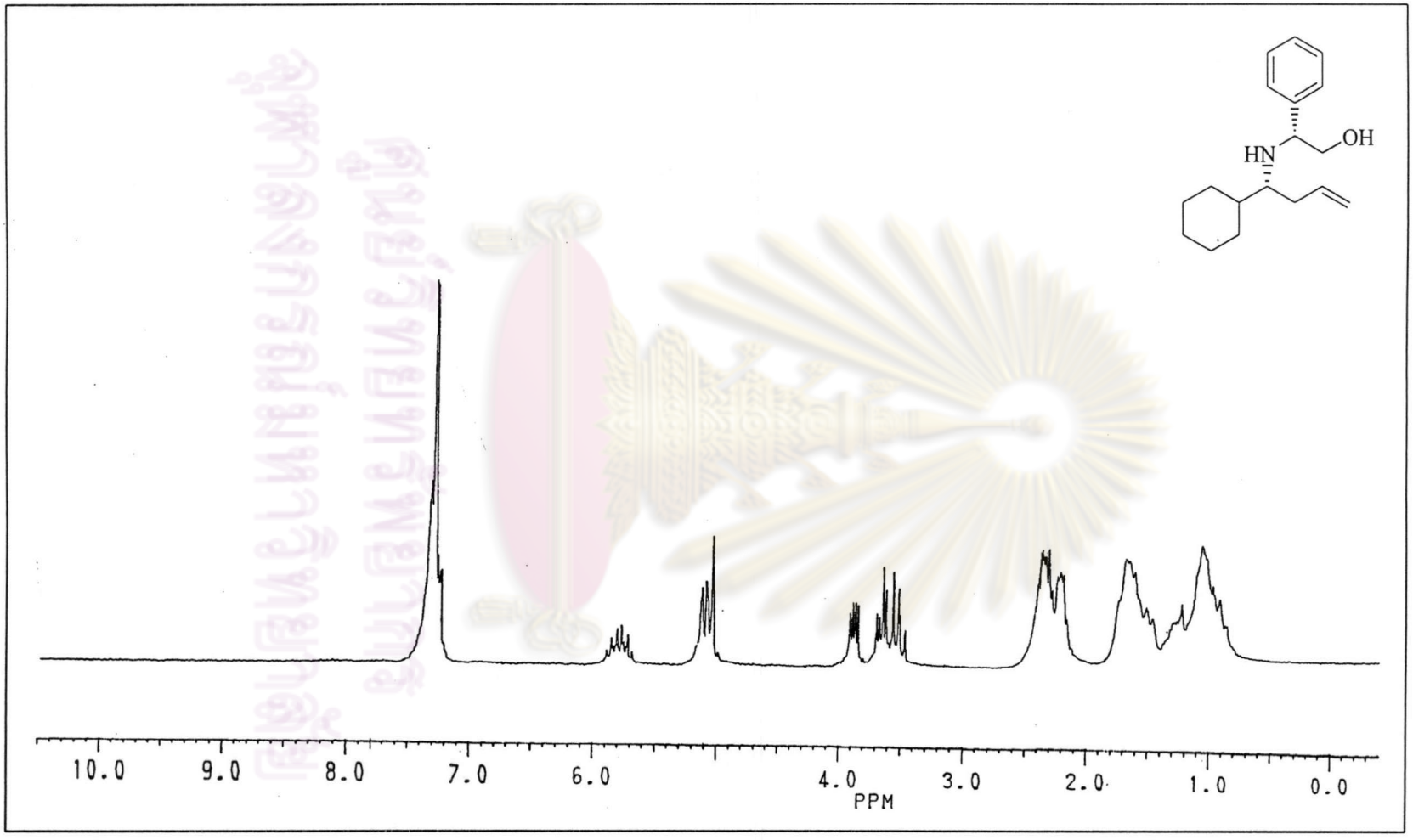


Figure 56 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-cyclohexylbut-3-enylamino]ethanol (**II-34**)

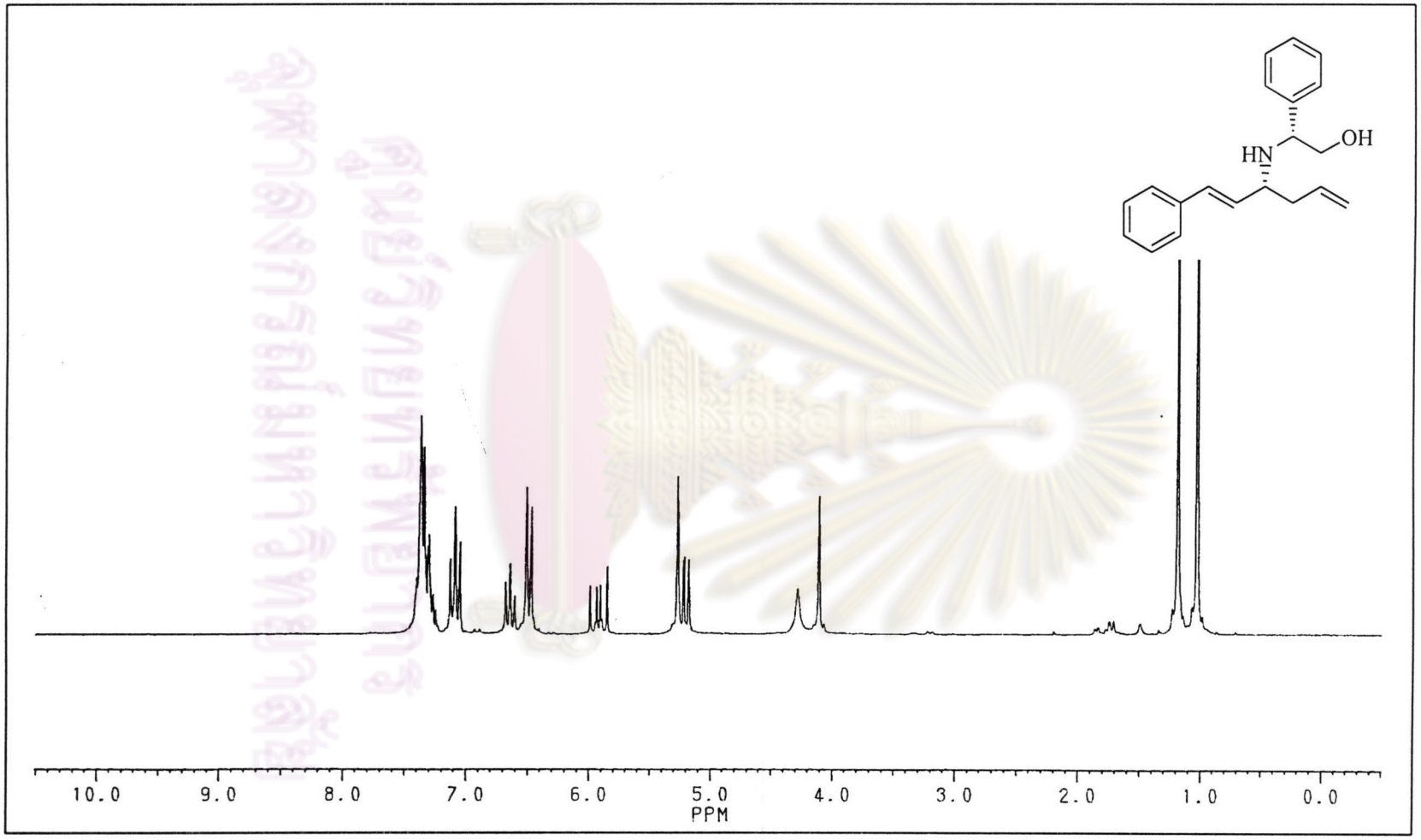


Figure 57 ^{1}H-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-phenylethenyl)but-3-enylamino]ethanol (**II-35**)

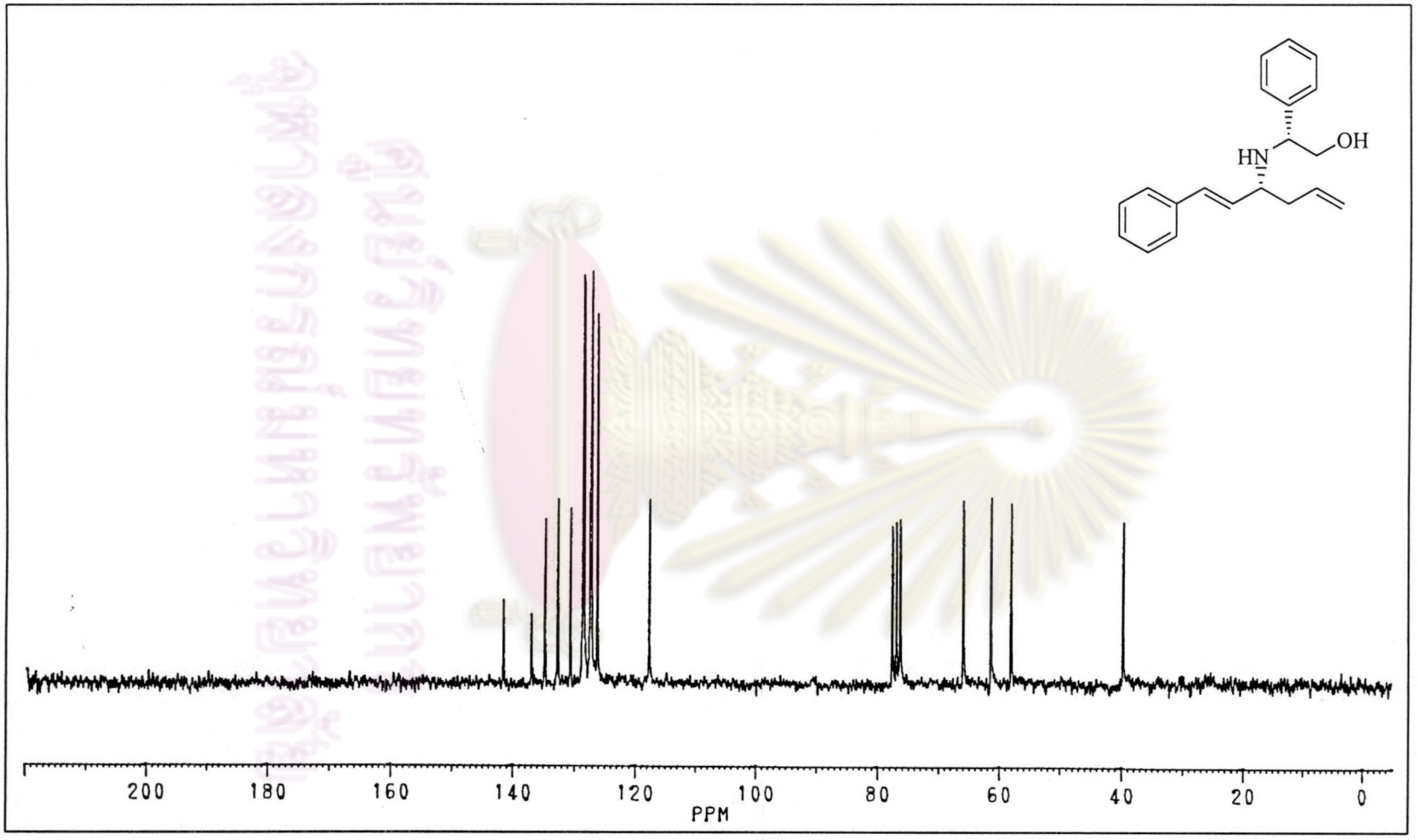


Figure 58 ^{13}C-NMR spectrum ($CDCl_3$) of (2*R*)-2-phenyl-2-[(1*R*)-1-(2′-phenylethenyl)but-3-enylamino]ethanol (**II-35**)

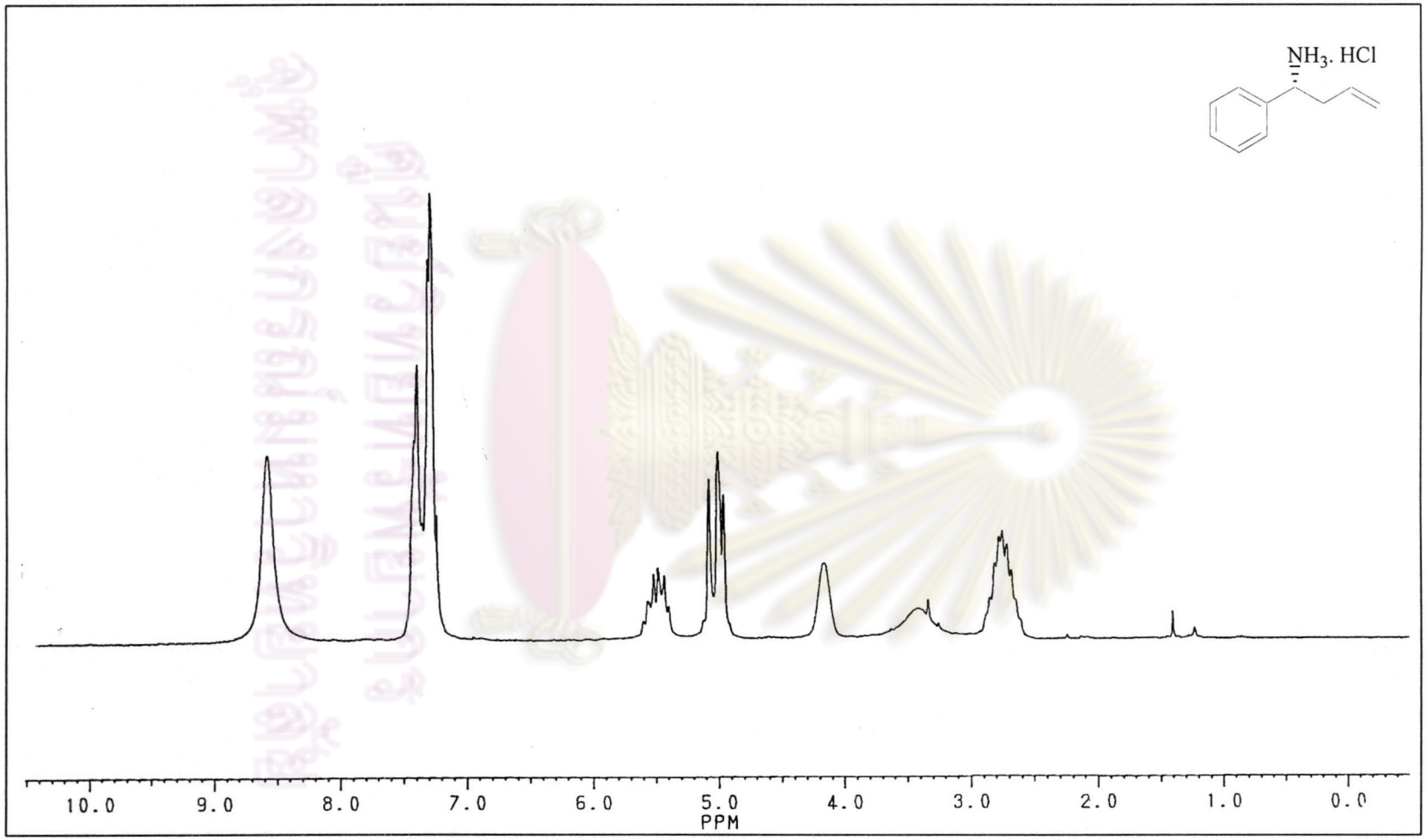


Figure 59 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-phenyl-but-3-enamine hydrochloride (**V-6**)

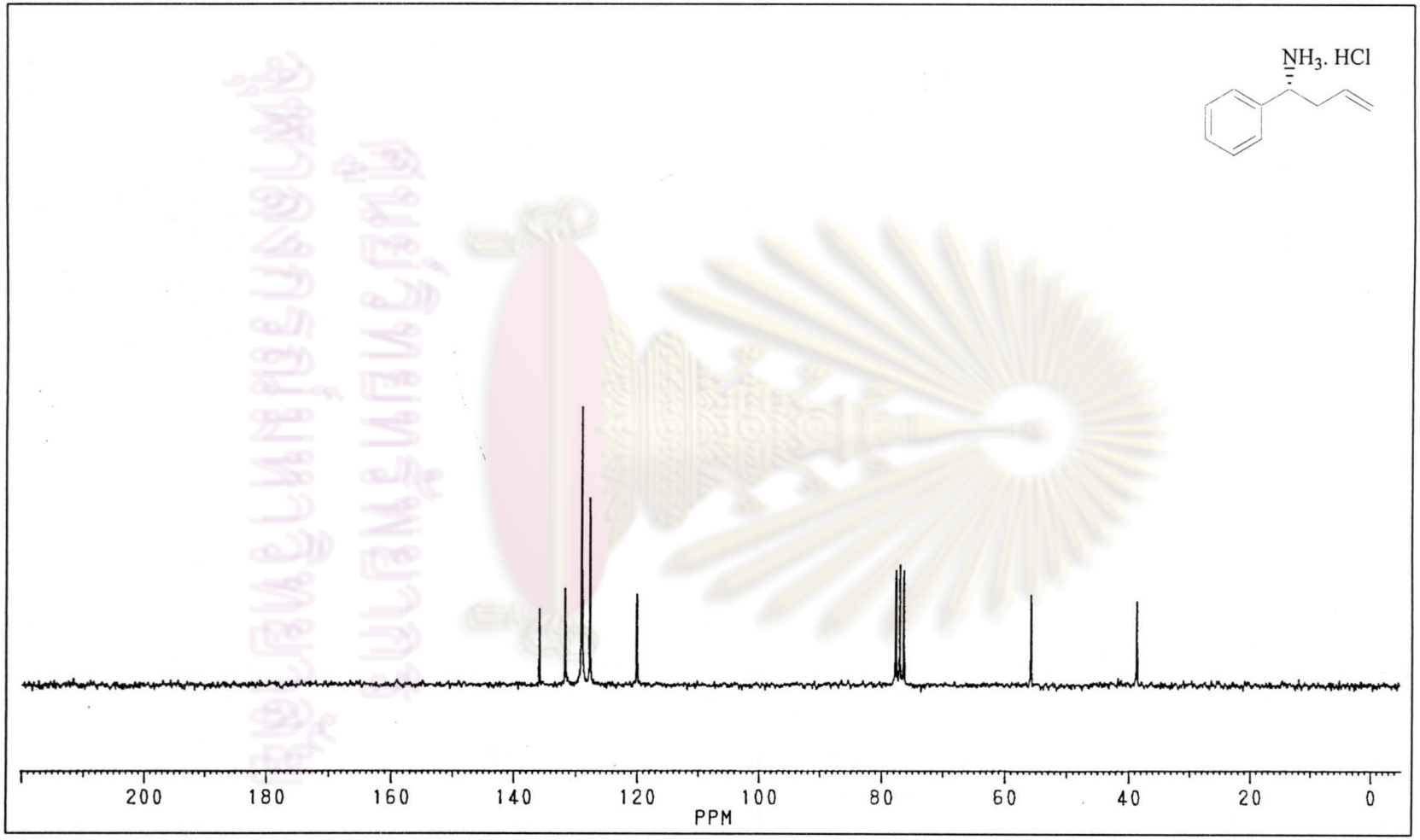


Figure 60 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-phenyl-but-3-enamine hydrochloride (**V-6**)

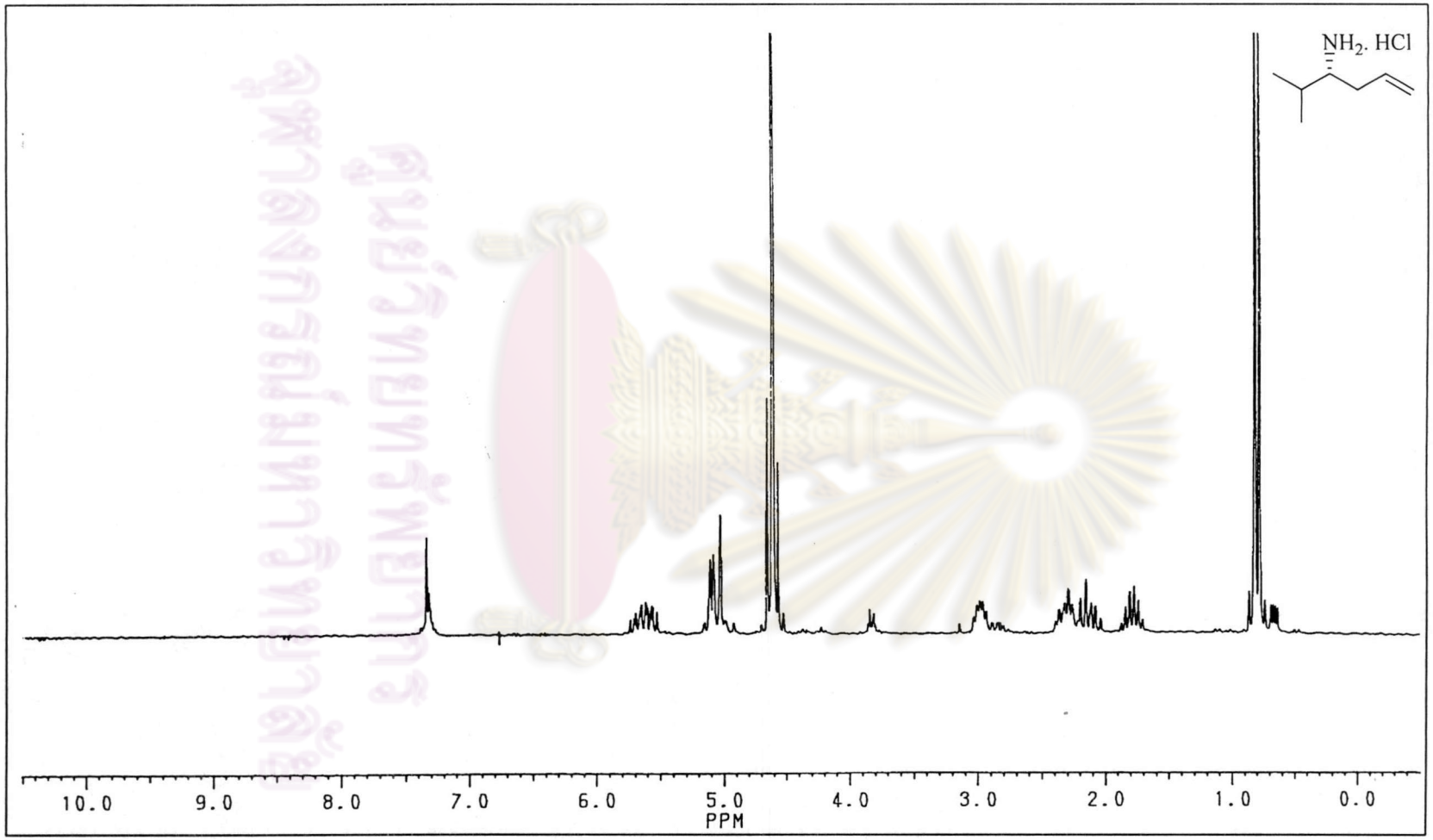


Figure 61 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-isopropyl-but-3-enamine hydrochloride (**V-7**)

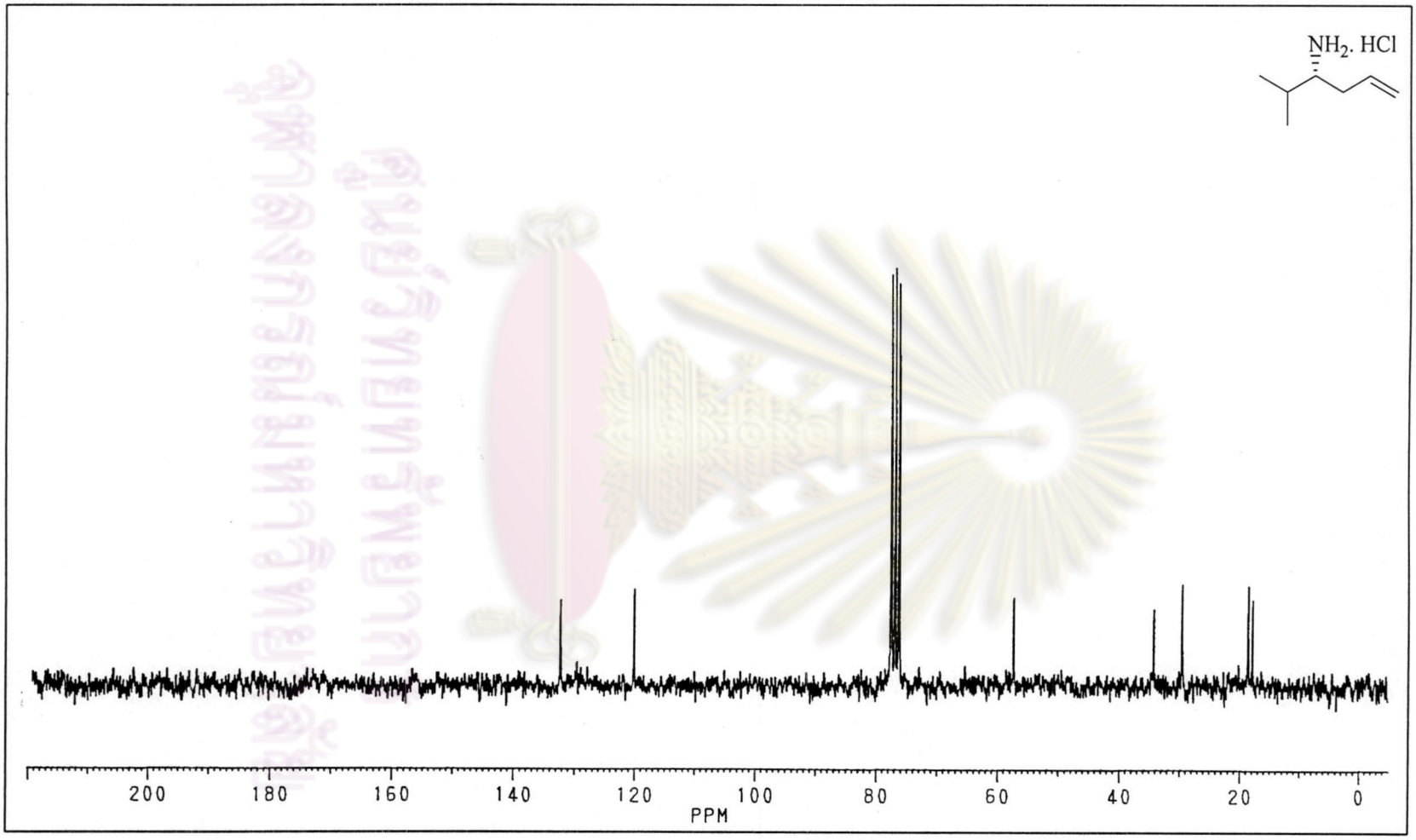


Figure 62 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-isopropyl-but-3-enamine hydrochloride (**V-7**)

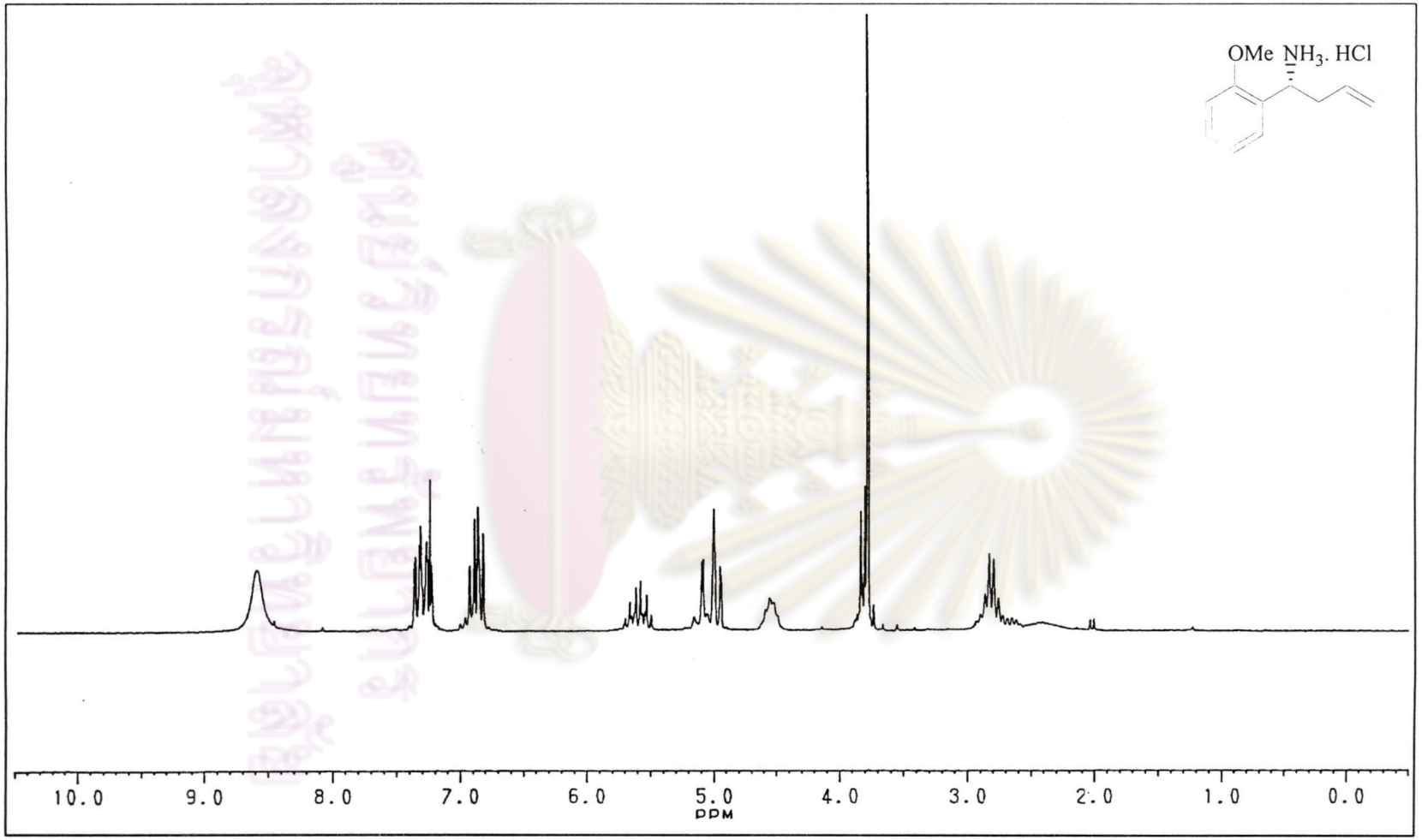


Figure 63 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-(2′-methoxyphenyl)but-3-enamine hydrochloride (**V-8**)

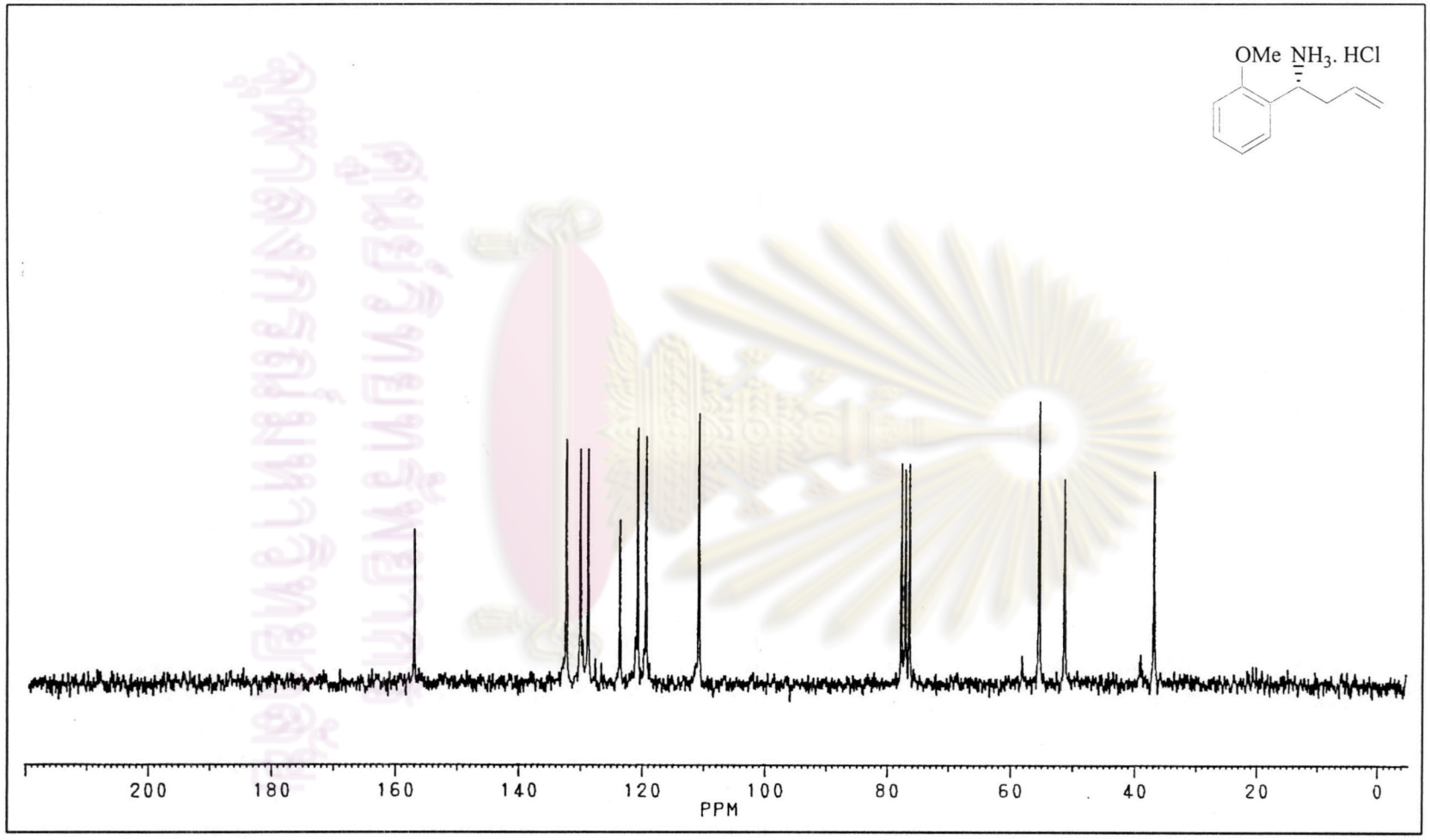


Figure 64 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-(2′-methoxyphenyl)but-3-enamine hydrochloride (**V-8**)

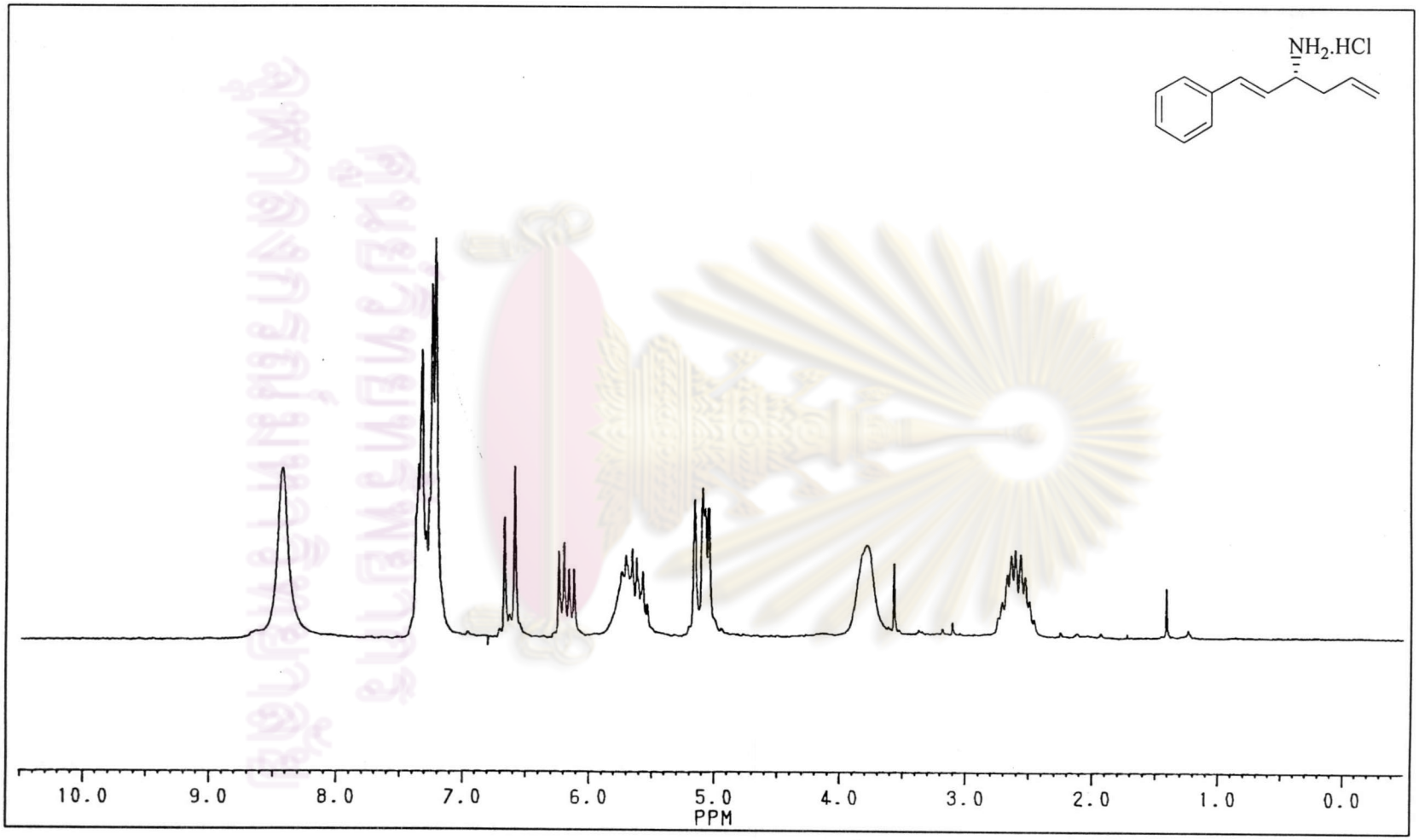


Figure 65 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-(2′-phenylethenyl)but-3-enamine hydrochloride (**V-9**)

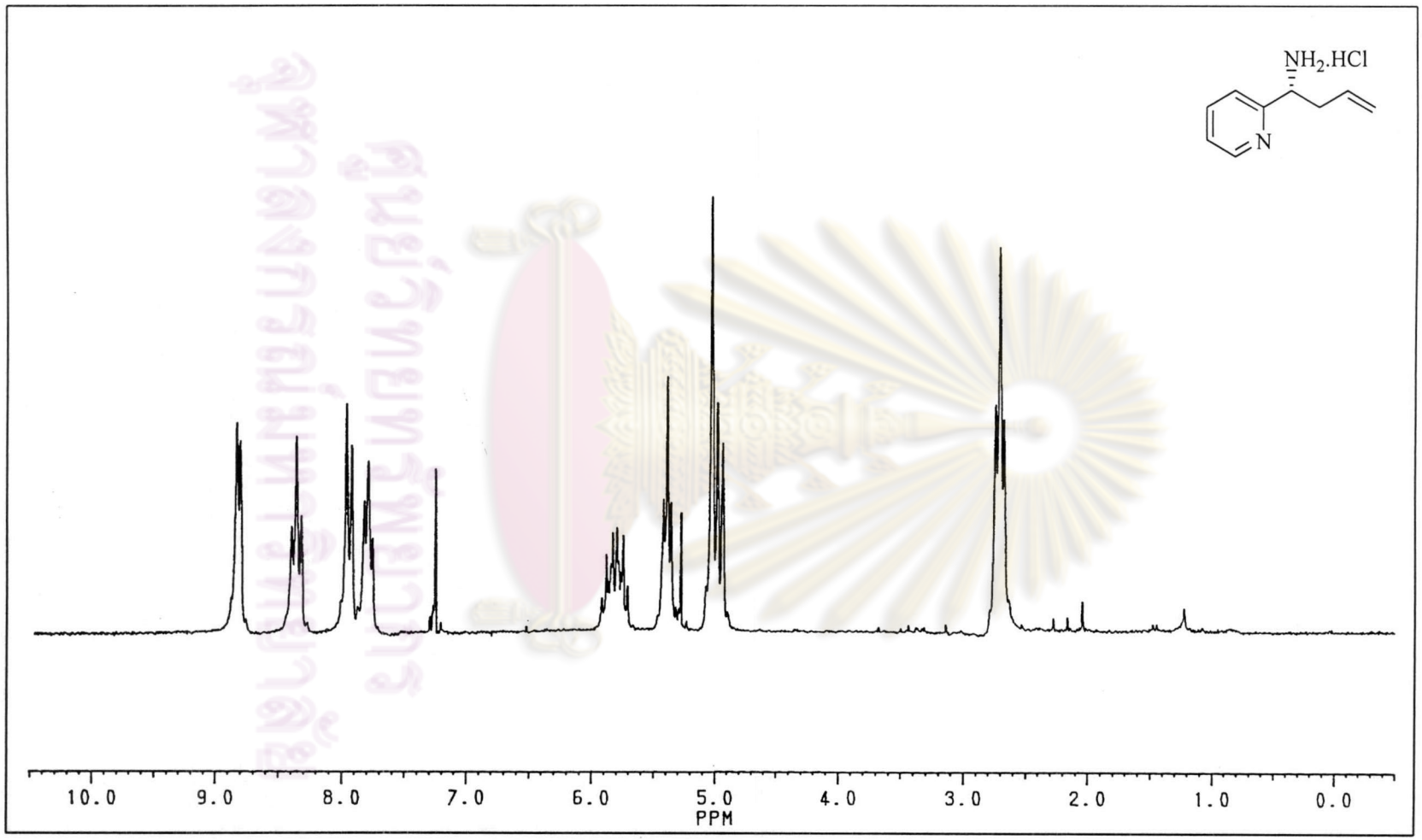


Figure 66 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-(2′-pyridyl)but-3-enylamine hydrochloride (**V-10**)

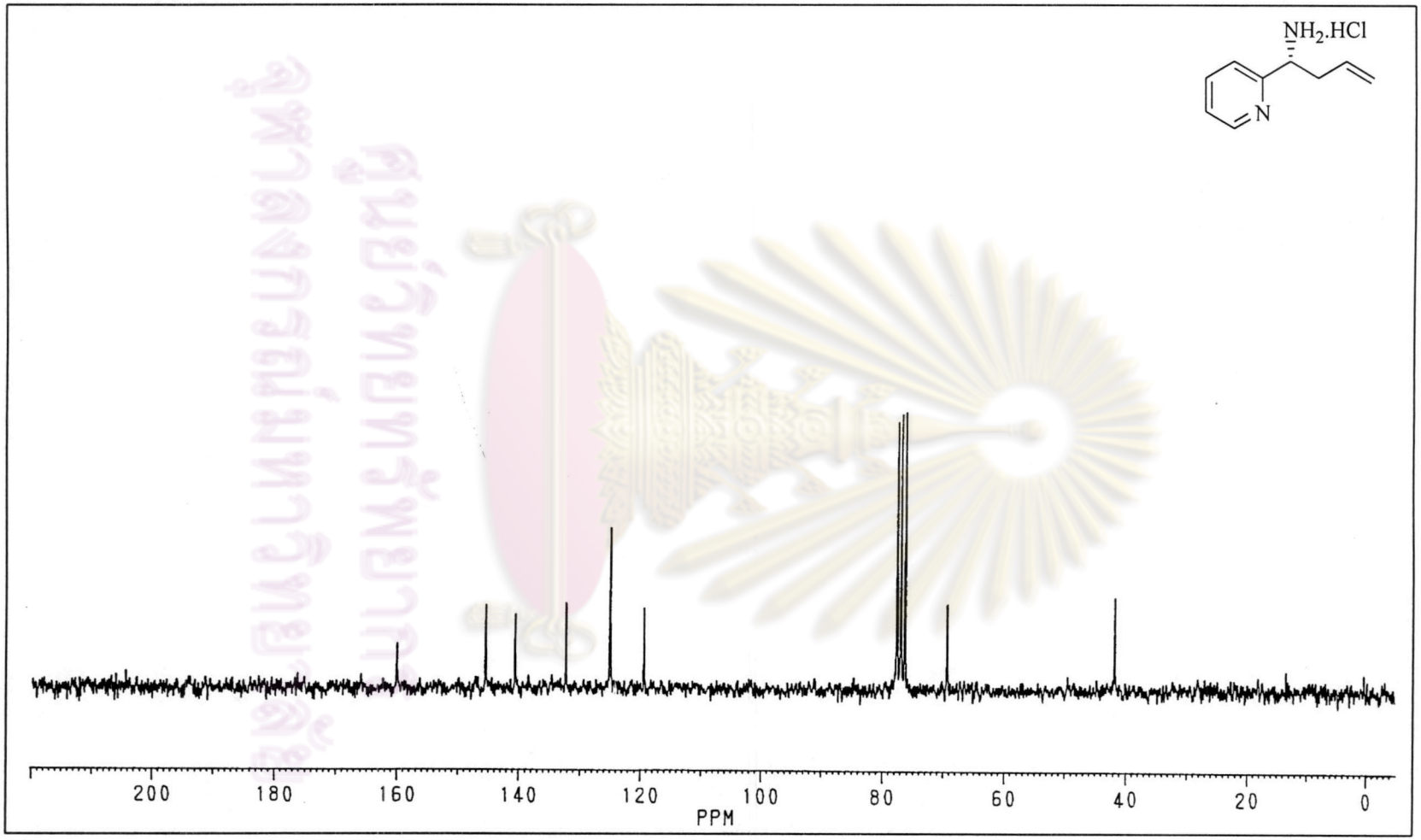


Figure 67 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-(2′-pyridyl)but-3-enylamine hydrochloride (**V-10**)

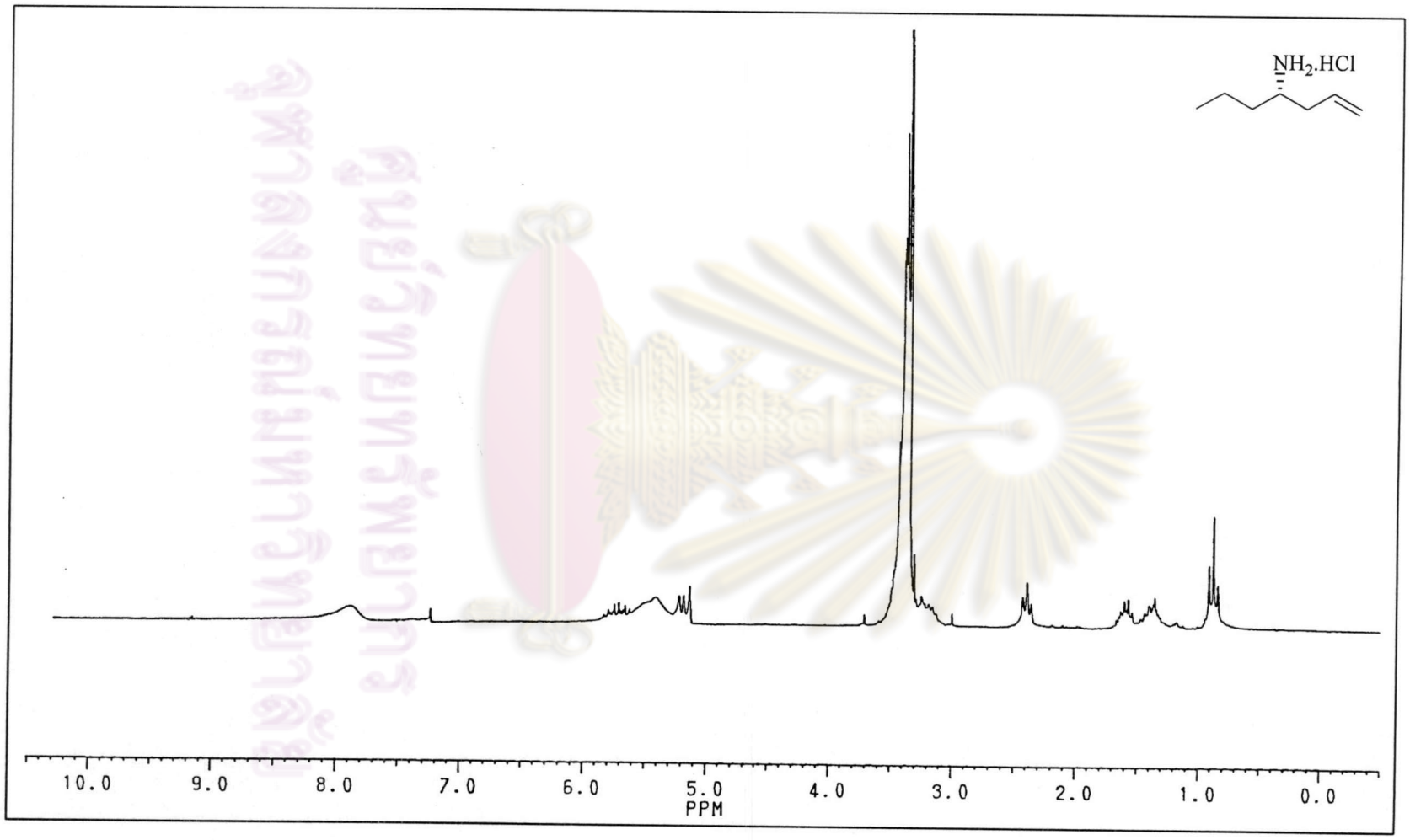


Figure 68 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-propyl-but-3-enamine hydrochloride (**V-11**)

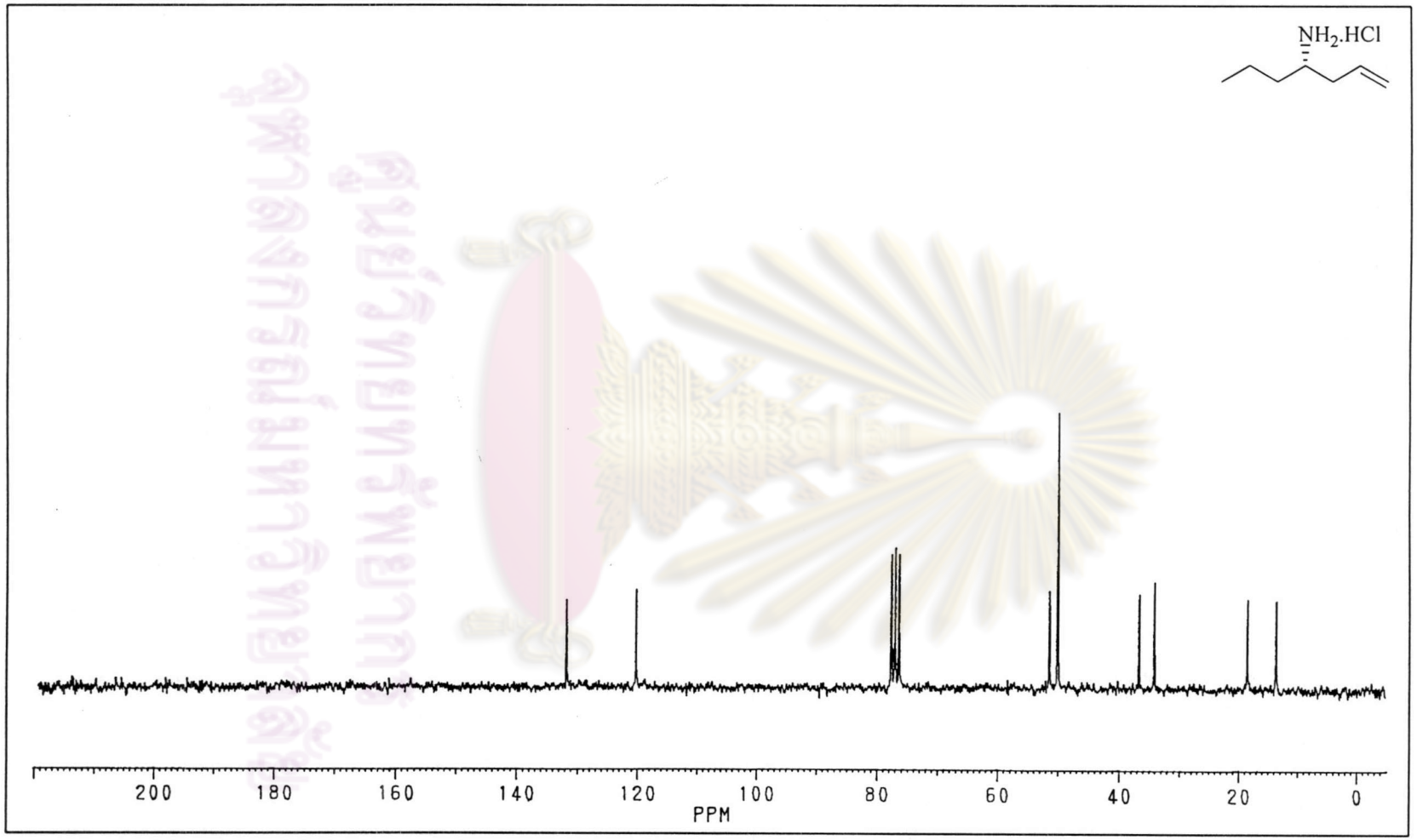


Figure 69 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-propyl-but-3-enamine hydrochloride (**V-11**)

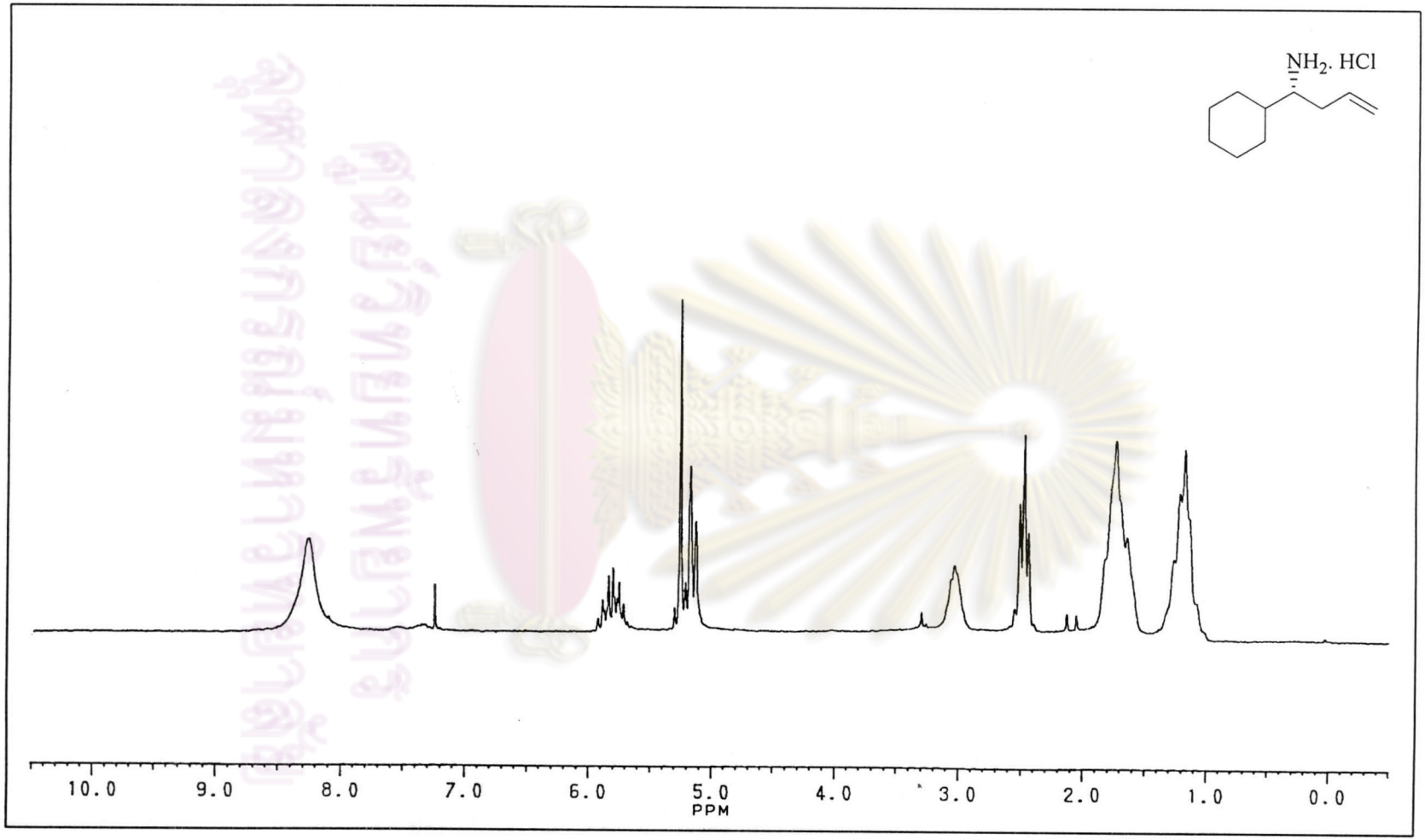


Figure 70 ^{1}H-NMR spectrum ($CDCl_3$) of (*R*)-1-cyclohexyl-but-3-enamine hydrochloride (**V-12**)

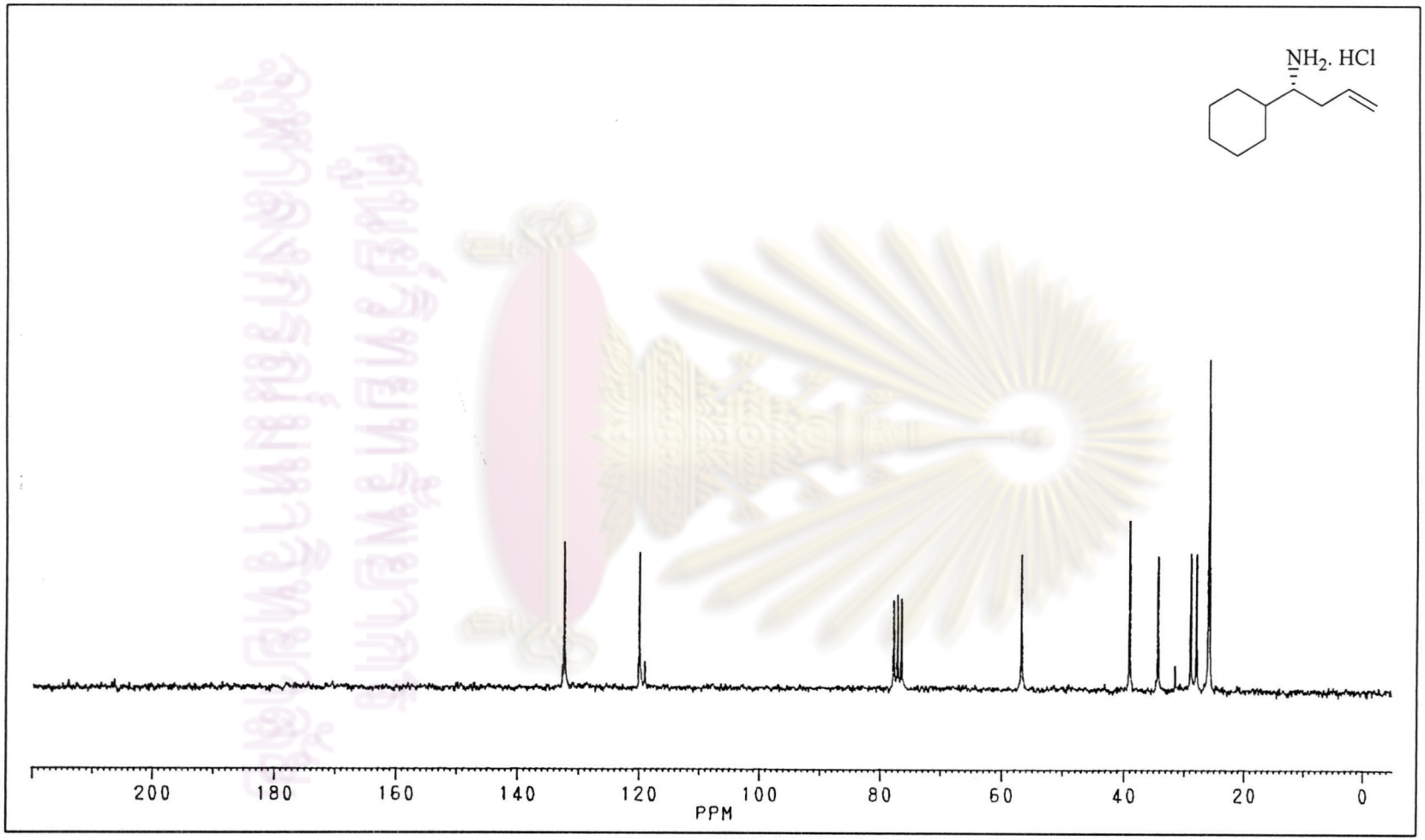


Figure 71 ^{13}C-NMR spectrum ($CDCl_3$) of (*R*)-1-cyclohexyl-but-3-enamine hydrochloride (**V-12**)

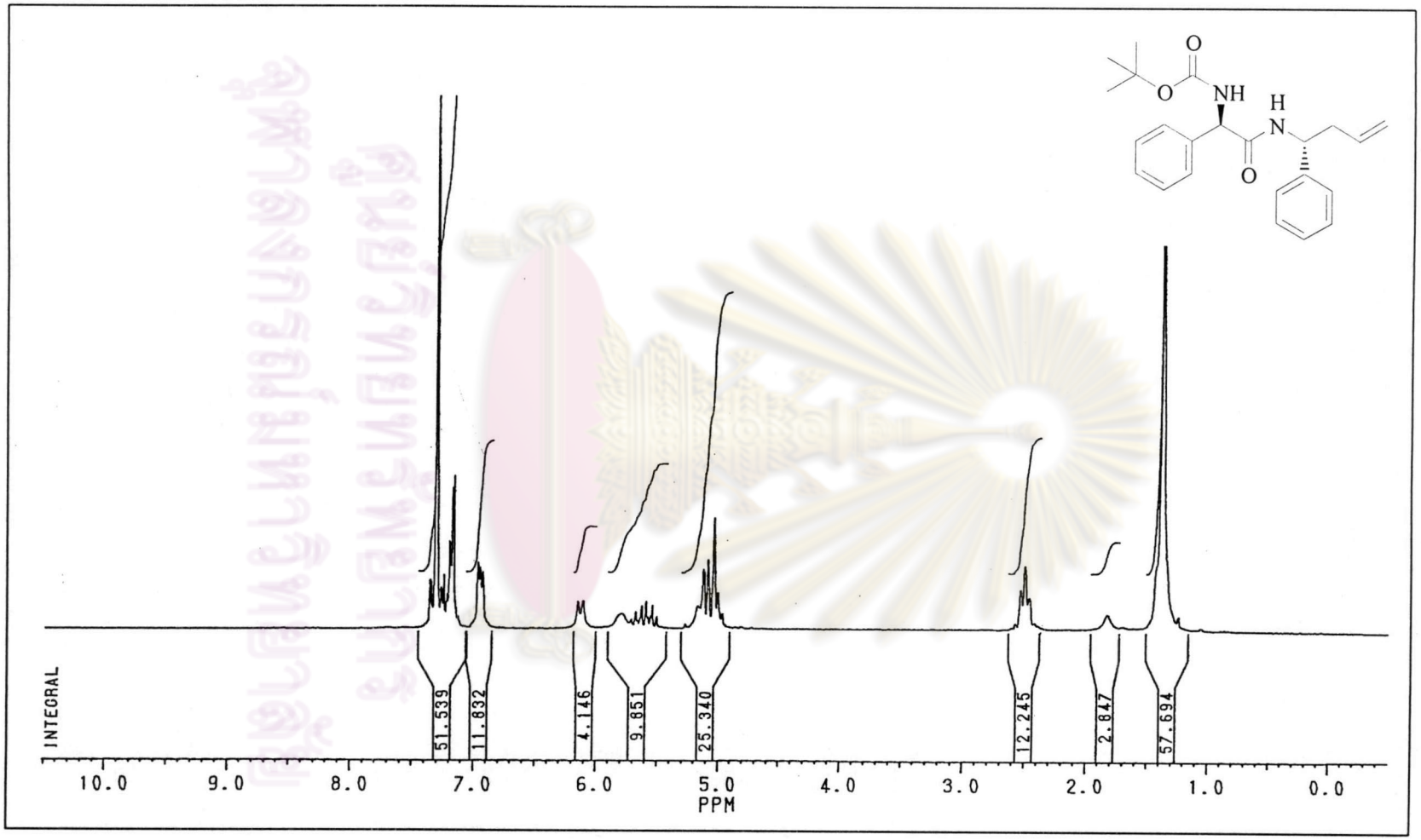


Figure 72 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine [(*R*,*R*)-**XI-1**]

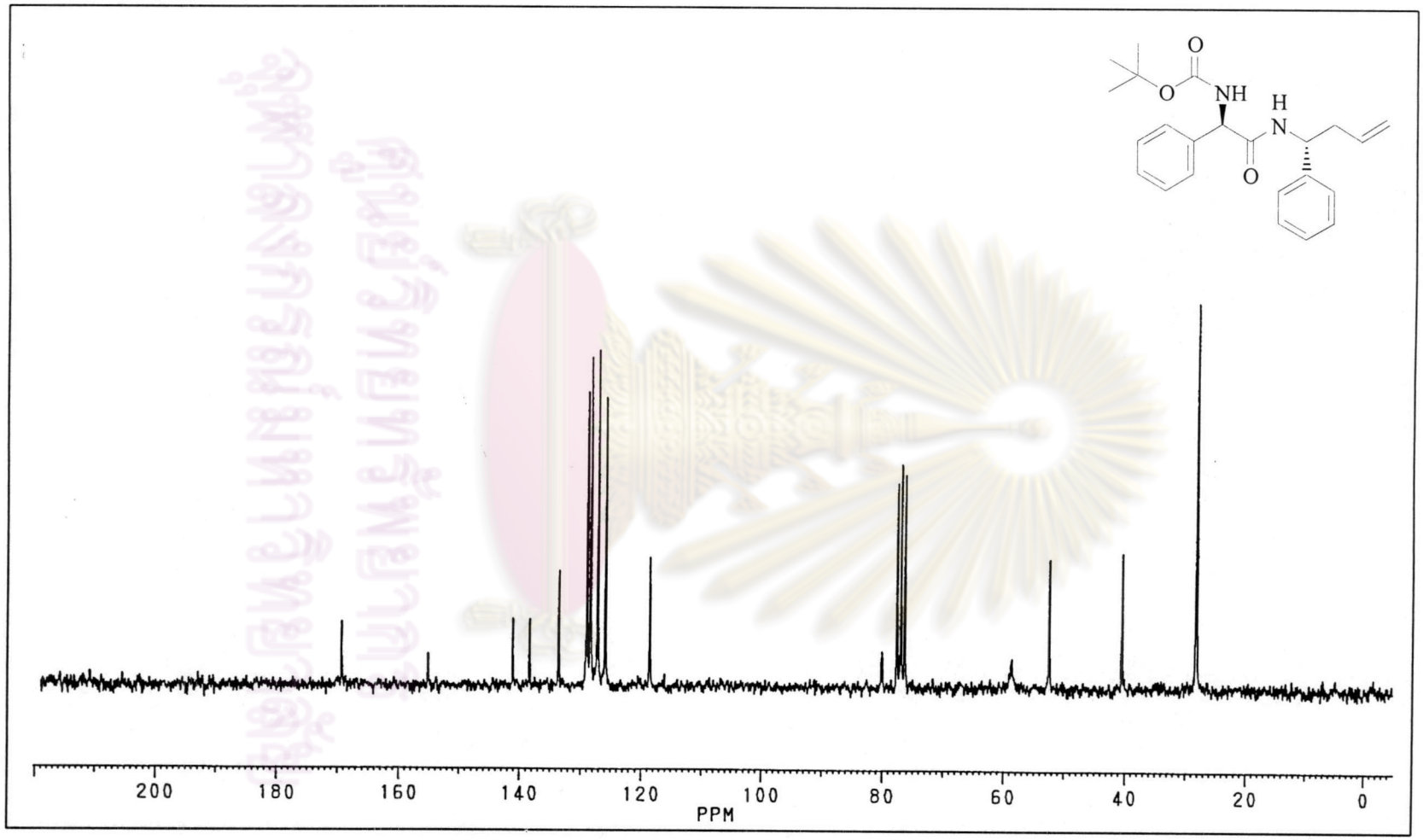


Figure 73 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine [(*R,R*)-**XI-1**]

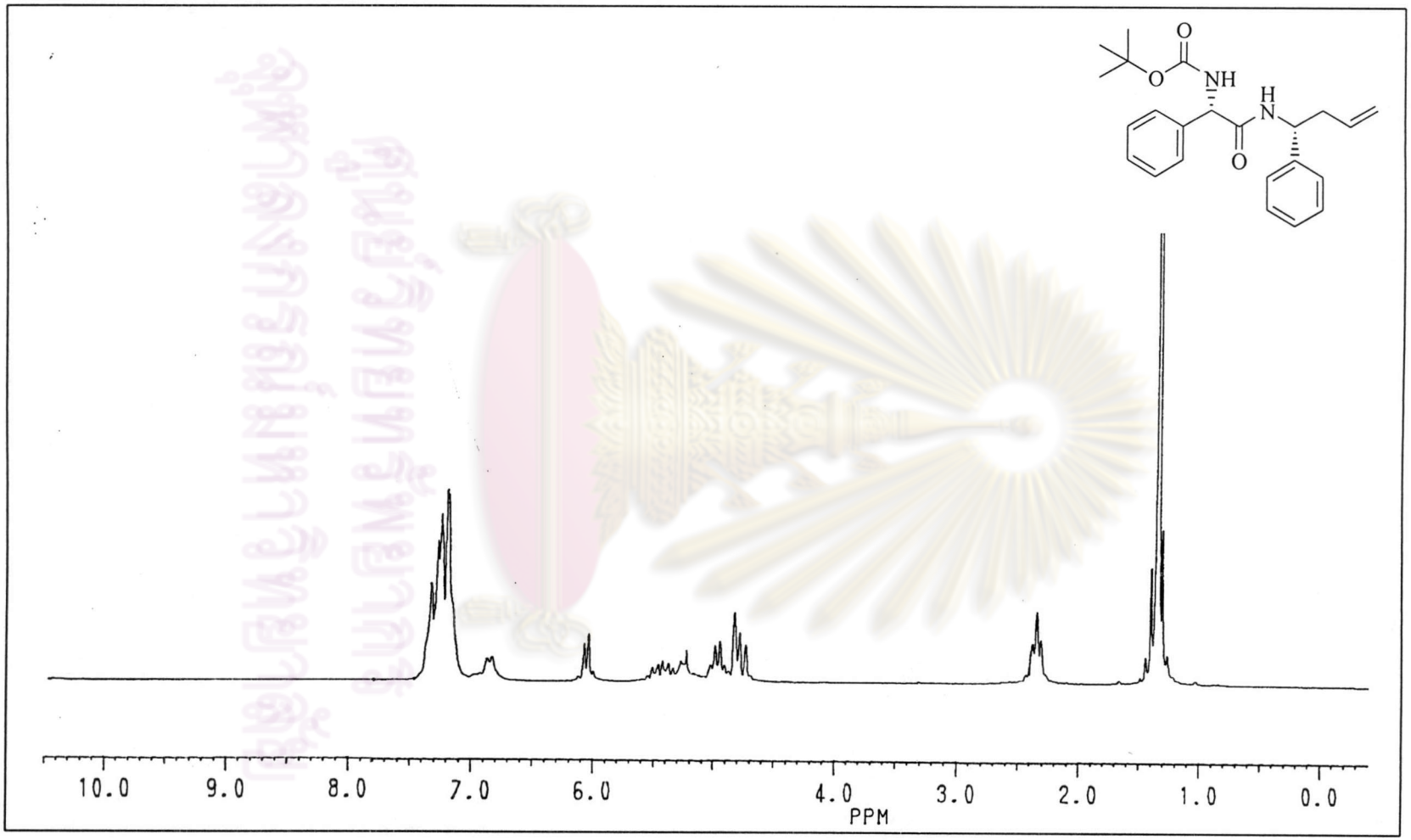


Figure 74 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine [(*S,R*)-**XI-1**]

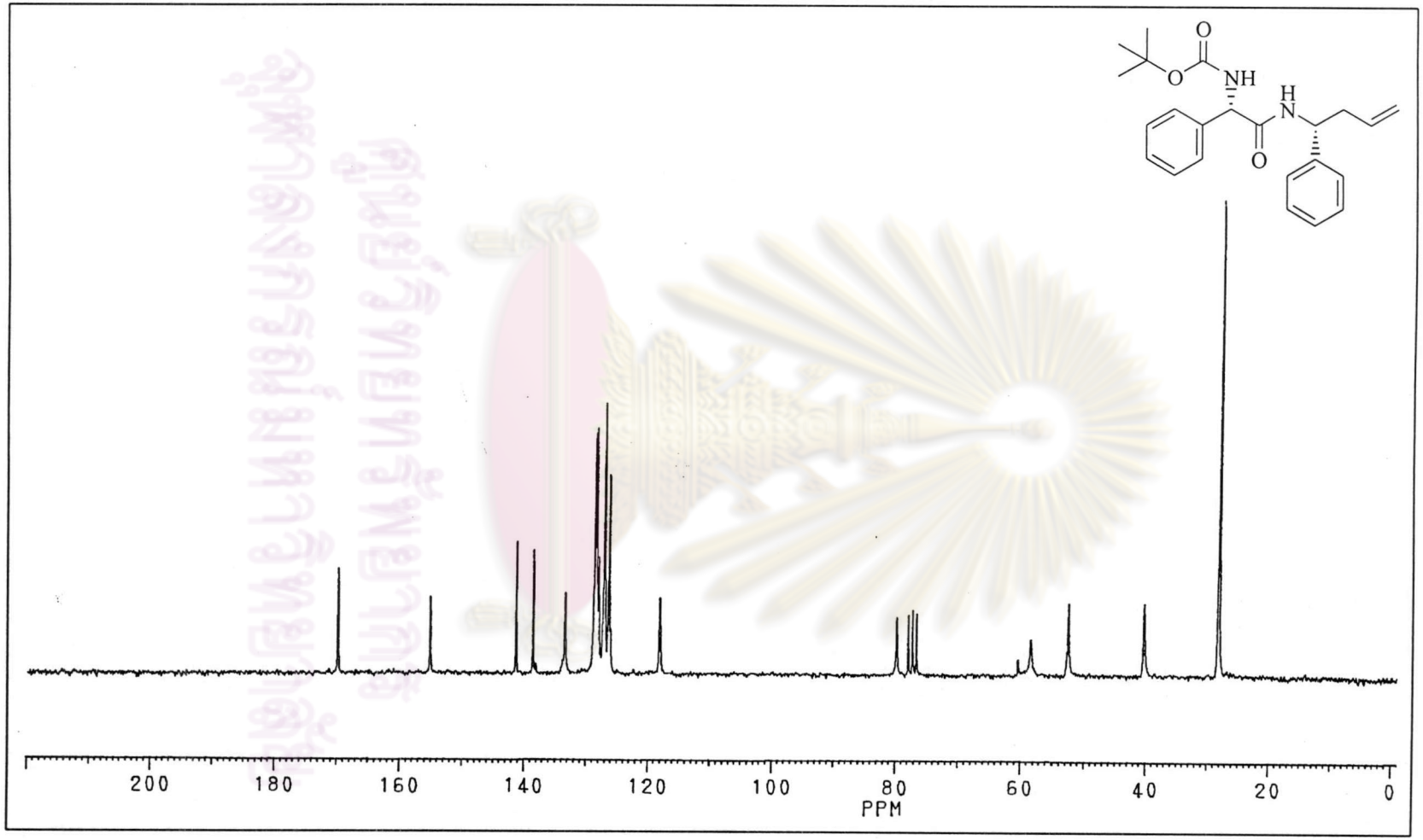


Figure 75 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine [(*S,R*)-**XI-1**]

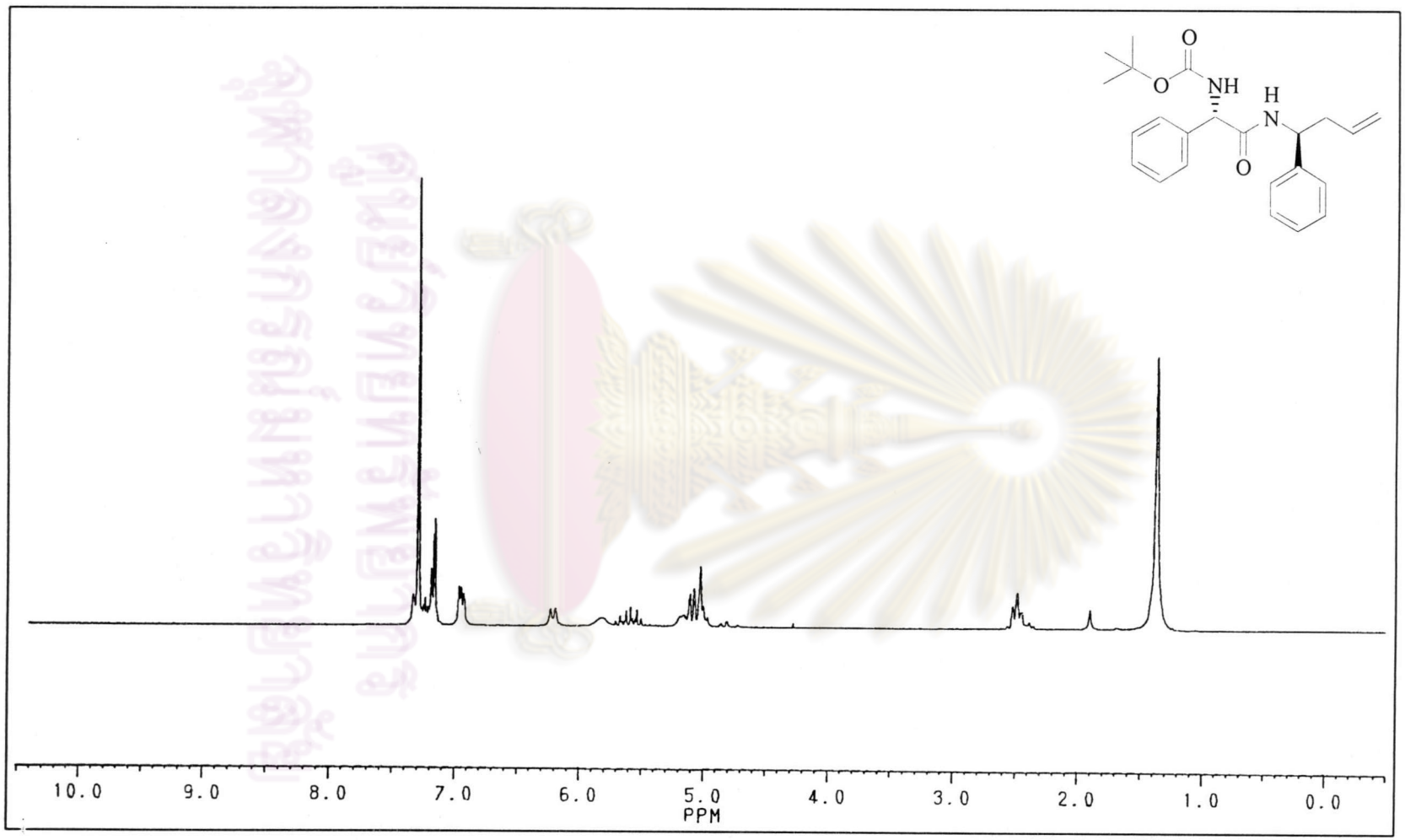


Figure 76 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*S*)-1-phenylbut-3-enamine [(*S,S*)-**XI-1**]

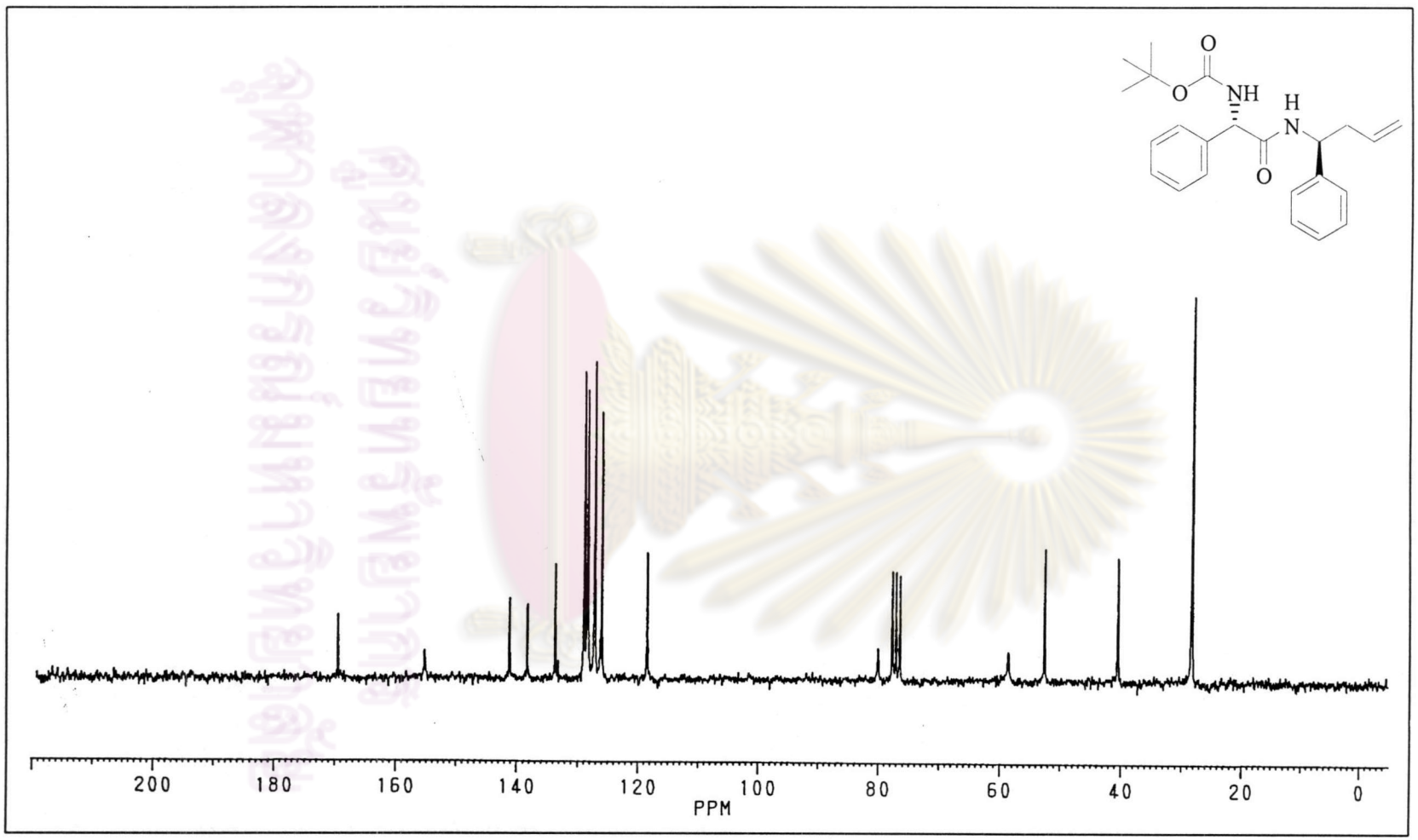


Figure 77 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*S*)-1-phenylbut-3-enamine [(*S*,*S*)-**XI-1**]

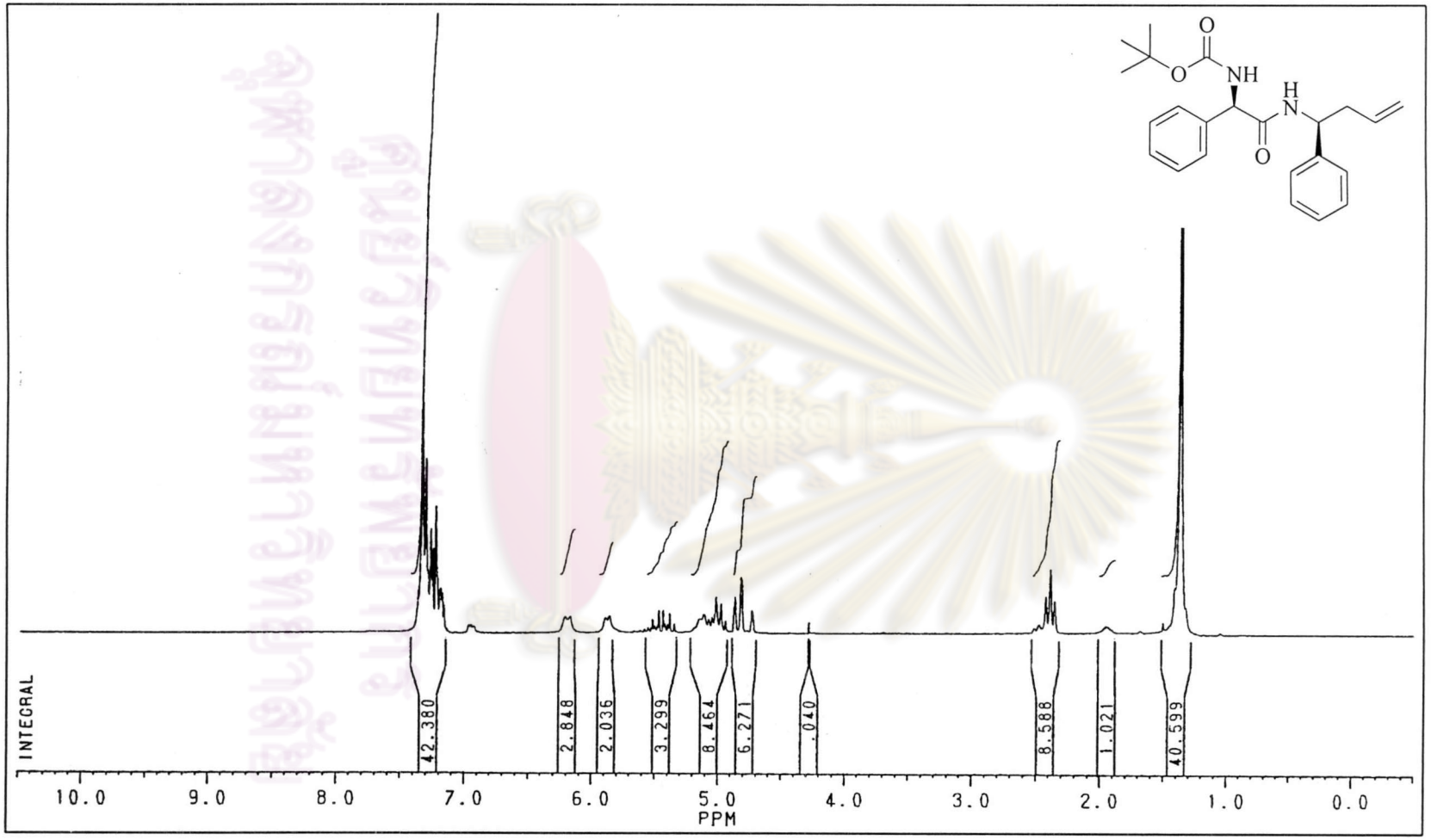


Figure 78 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*S*)-1-phenylbut-3-enamine [(*R*,*S*)-**XI-1**]

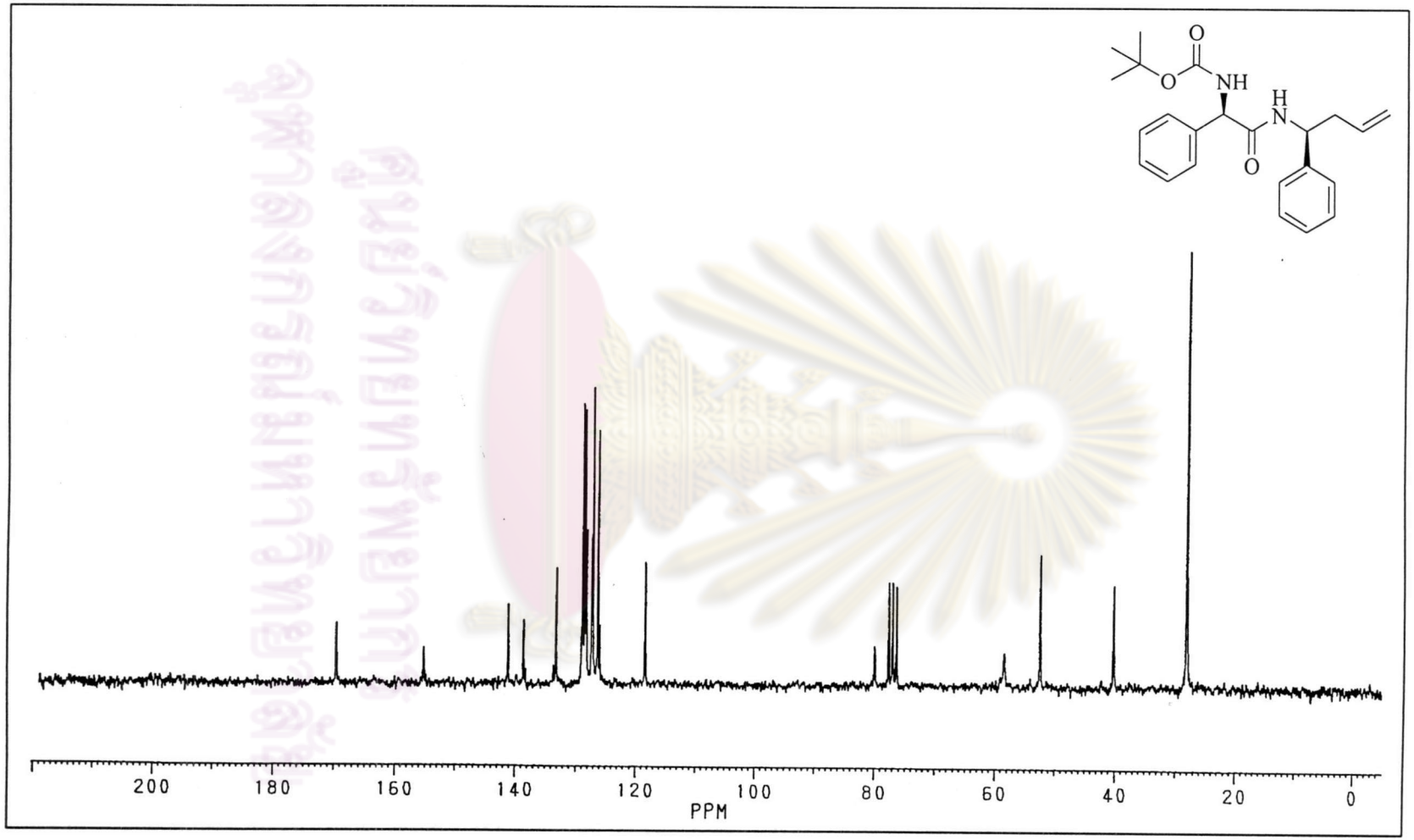


Figure 79 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*S*)-1-phenylbut-3-enamine [(*R*,*S*)-**XI-1**]

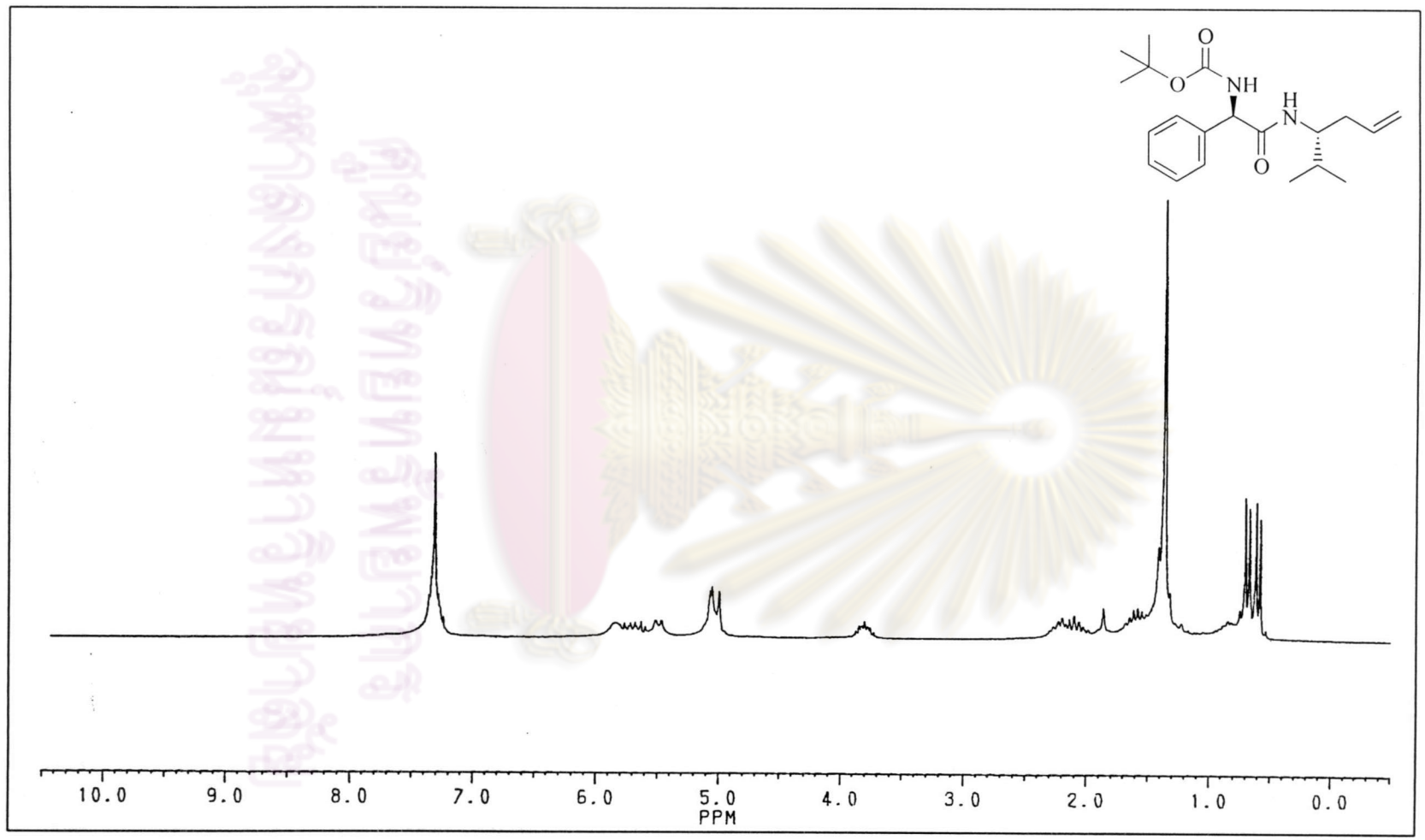


Figure 80 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine [(*R,R*)-**XI-2**]

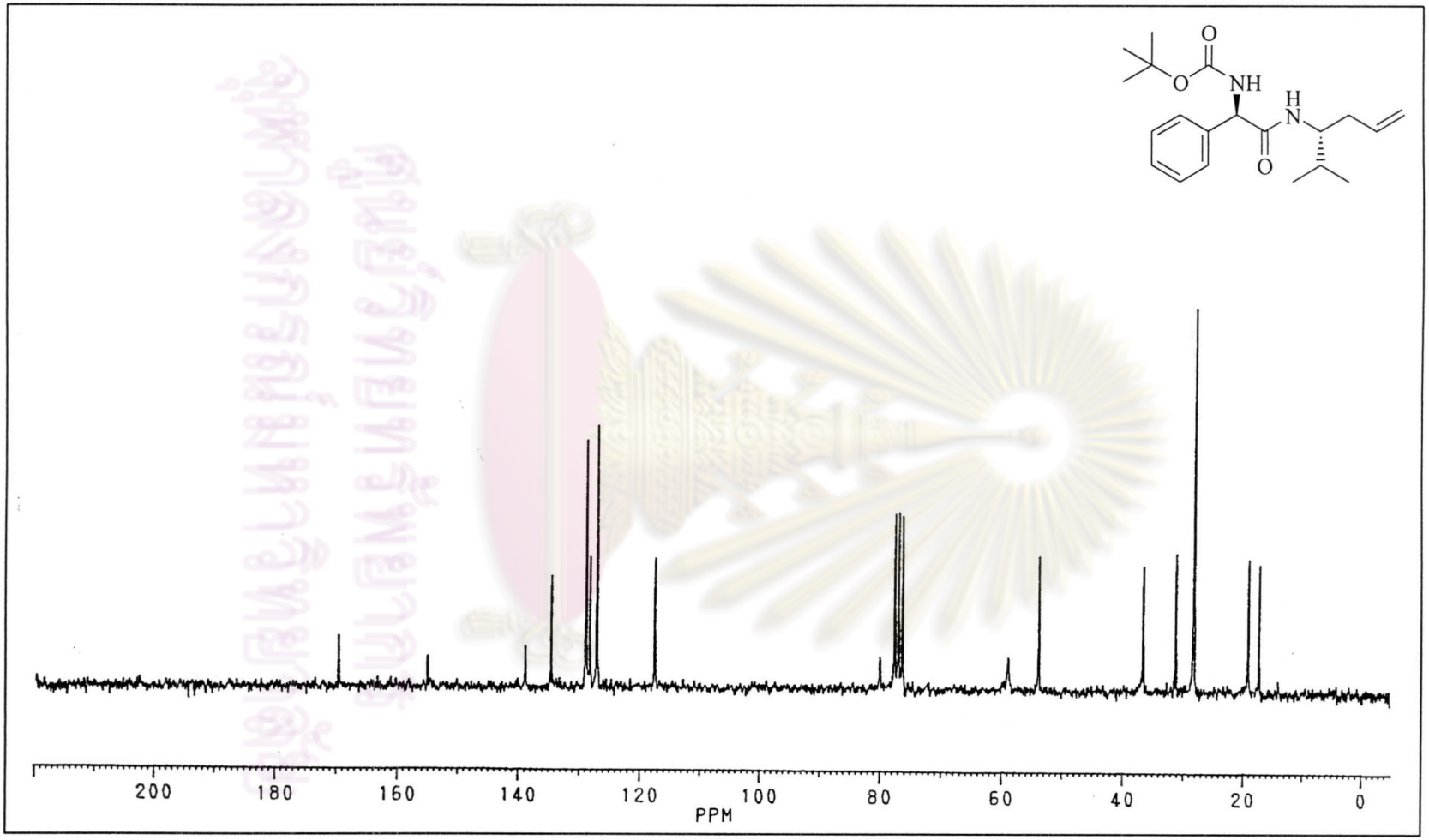


Figure 81 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine [(*R,R*)-**XI-2**]

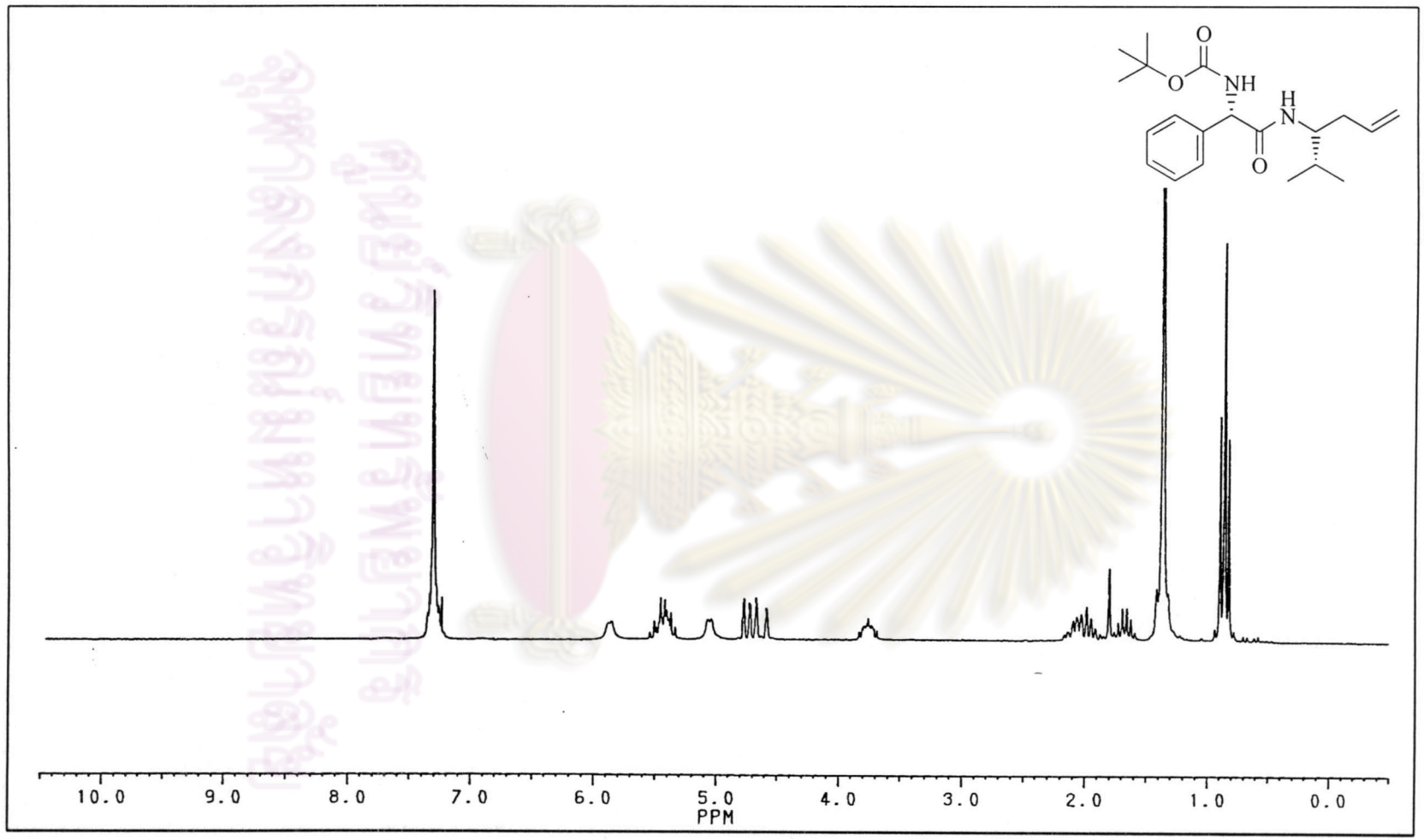


Figure 82 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine [(*S,R*)-**XI-2**]

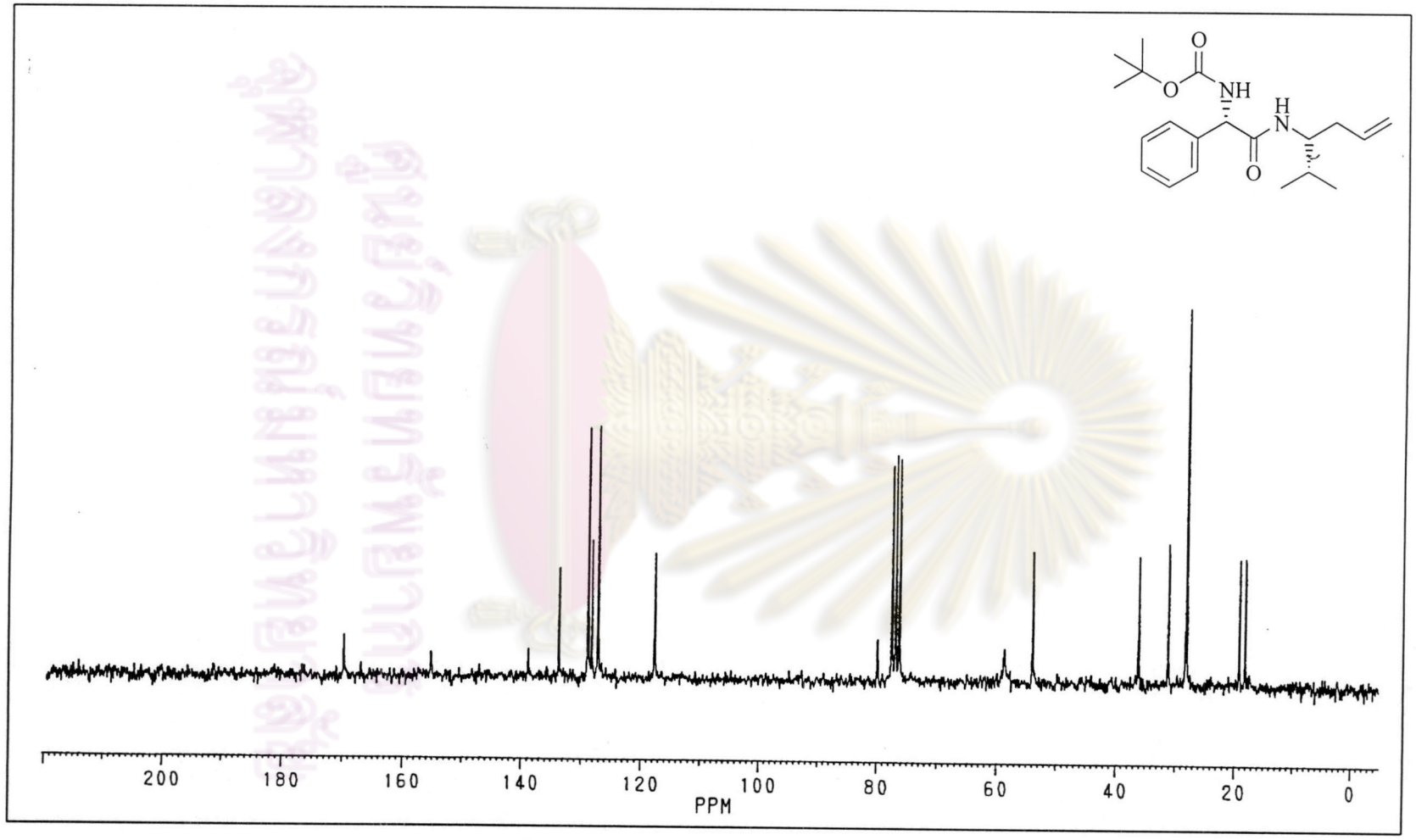


Figure 83 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine [(*S,R*)-**XI-2**]

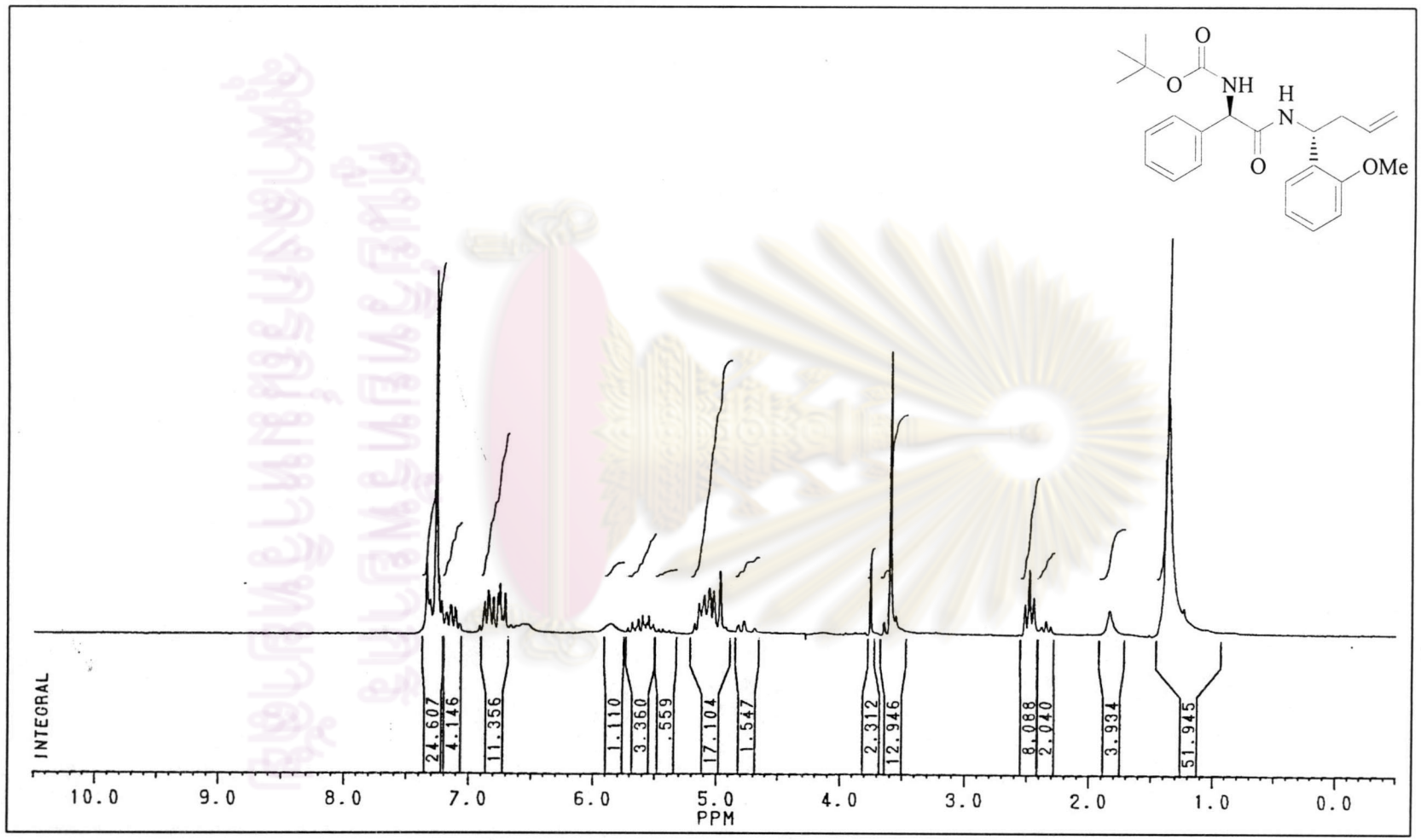


Figure 84 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-methoxyphenyl)but-3-enamine [(*R,R*)-**XI-3**]

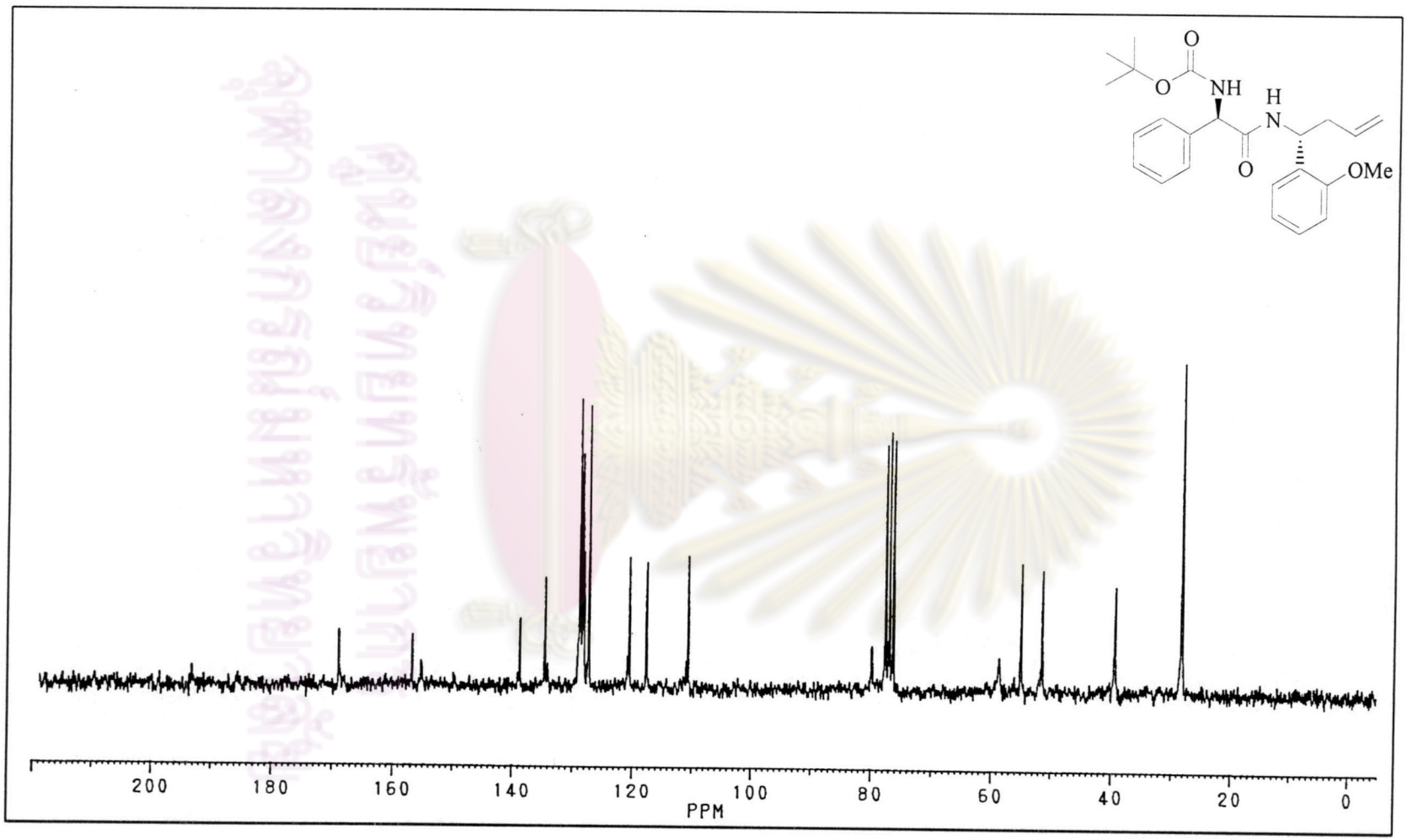


Figure 85 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-methoxyphenyl)but-3-enamine [(*R,R*)-**XI-3**]

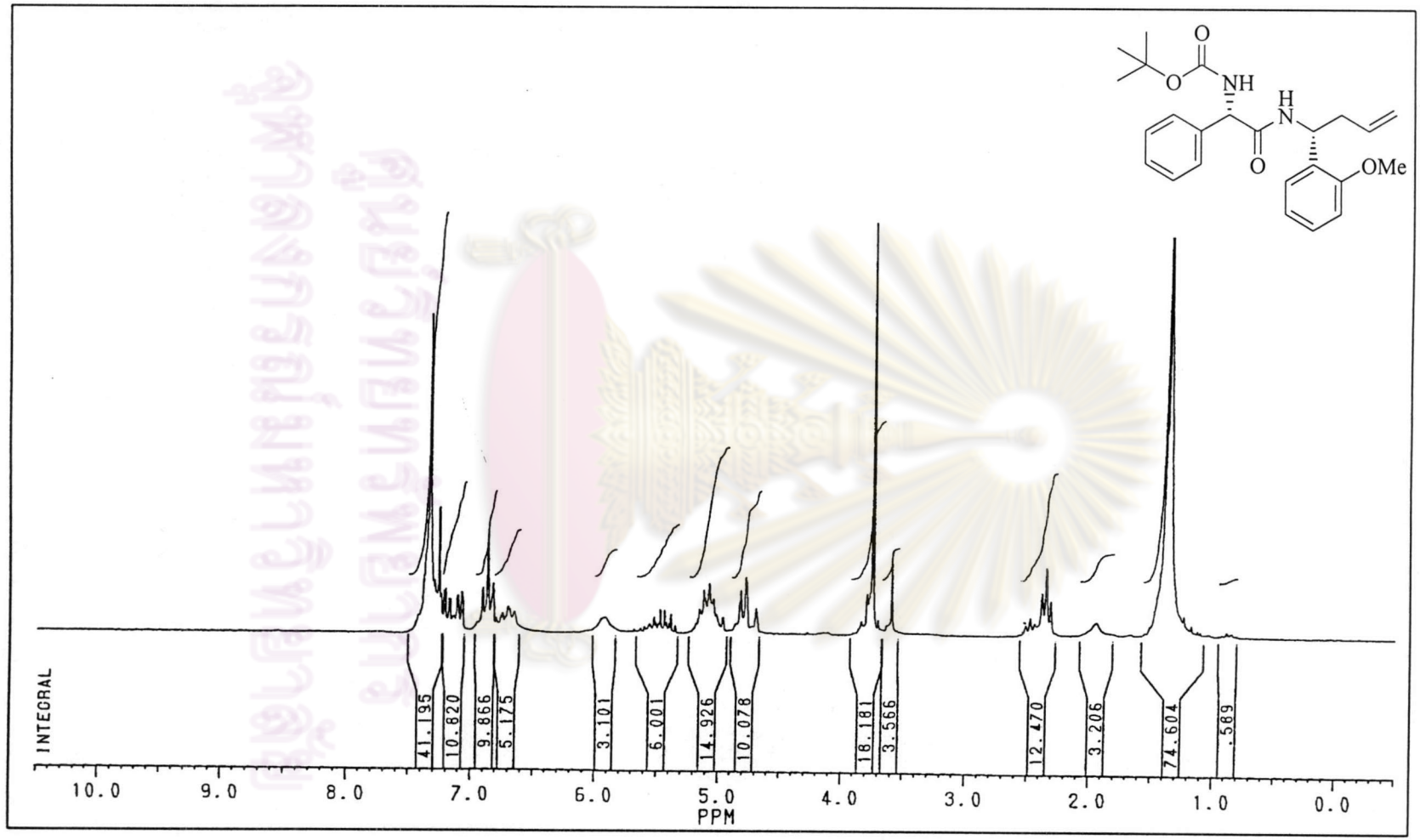


Figure 86 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-(2′-methoxyphenyl)but-3-enamine [(*S,R*)-**XI-3**]

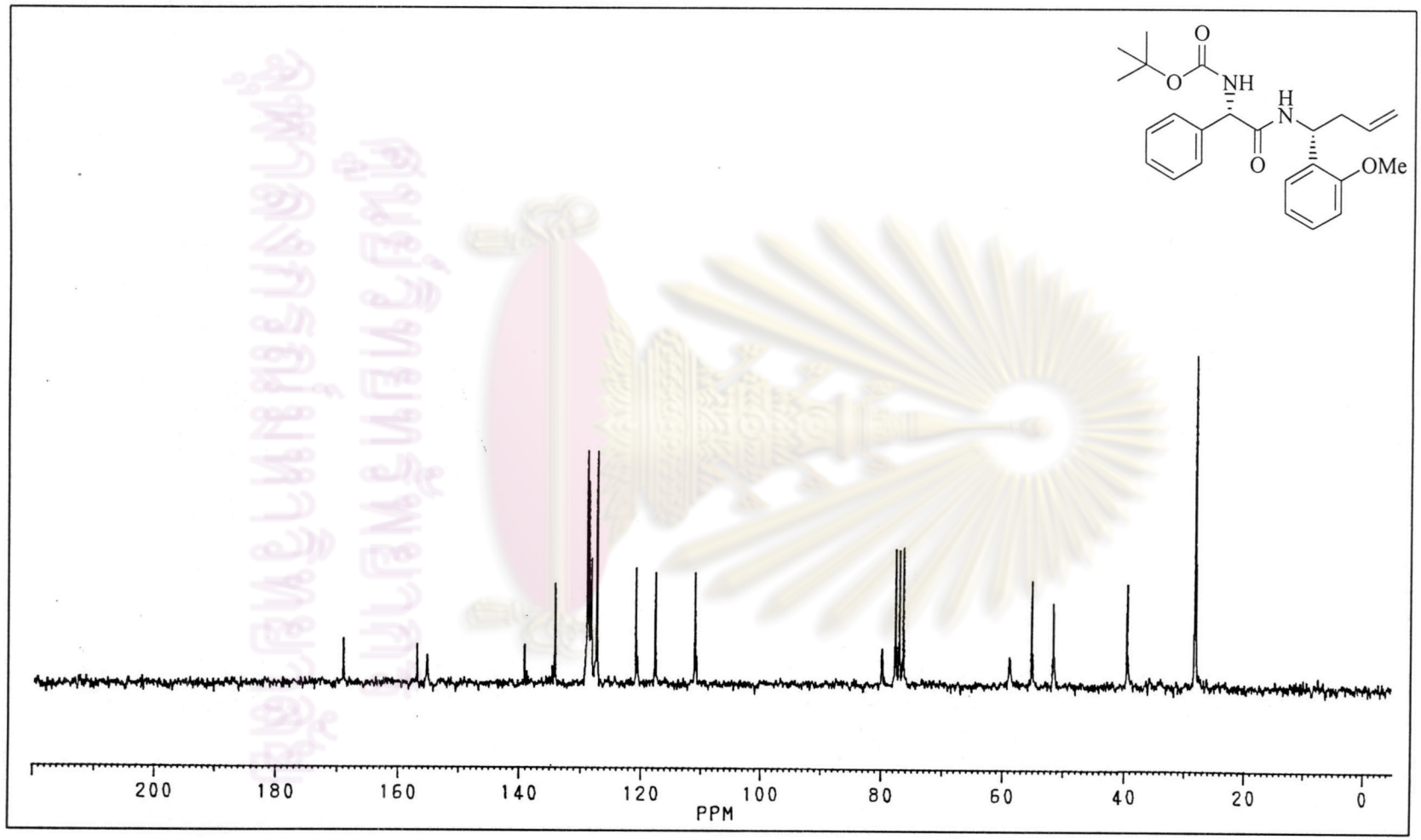


Figure 87 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-(2′-methoxyphenyl)but-3-enamine [(*S,R*)-**XI-3**]

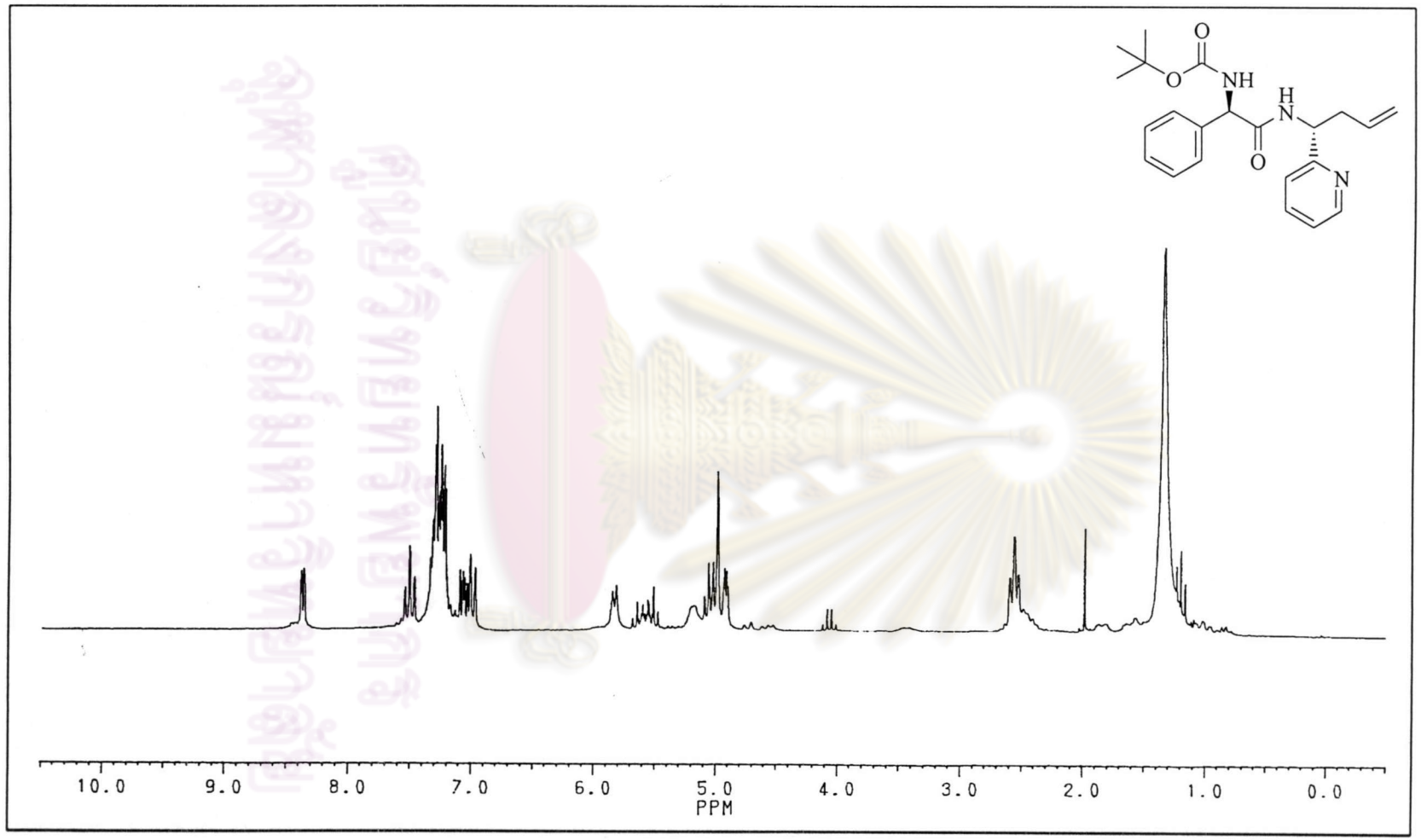


Figure 88 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-pyridyl)but-3-enamine[(*R,R*)-**XI-4**]

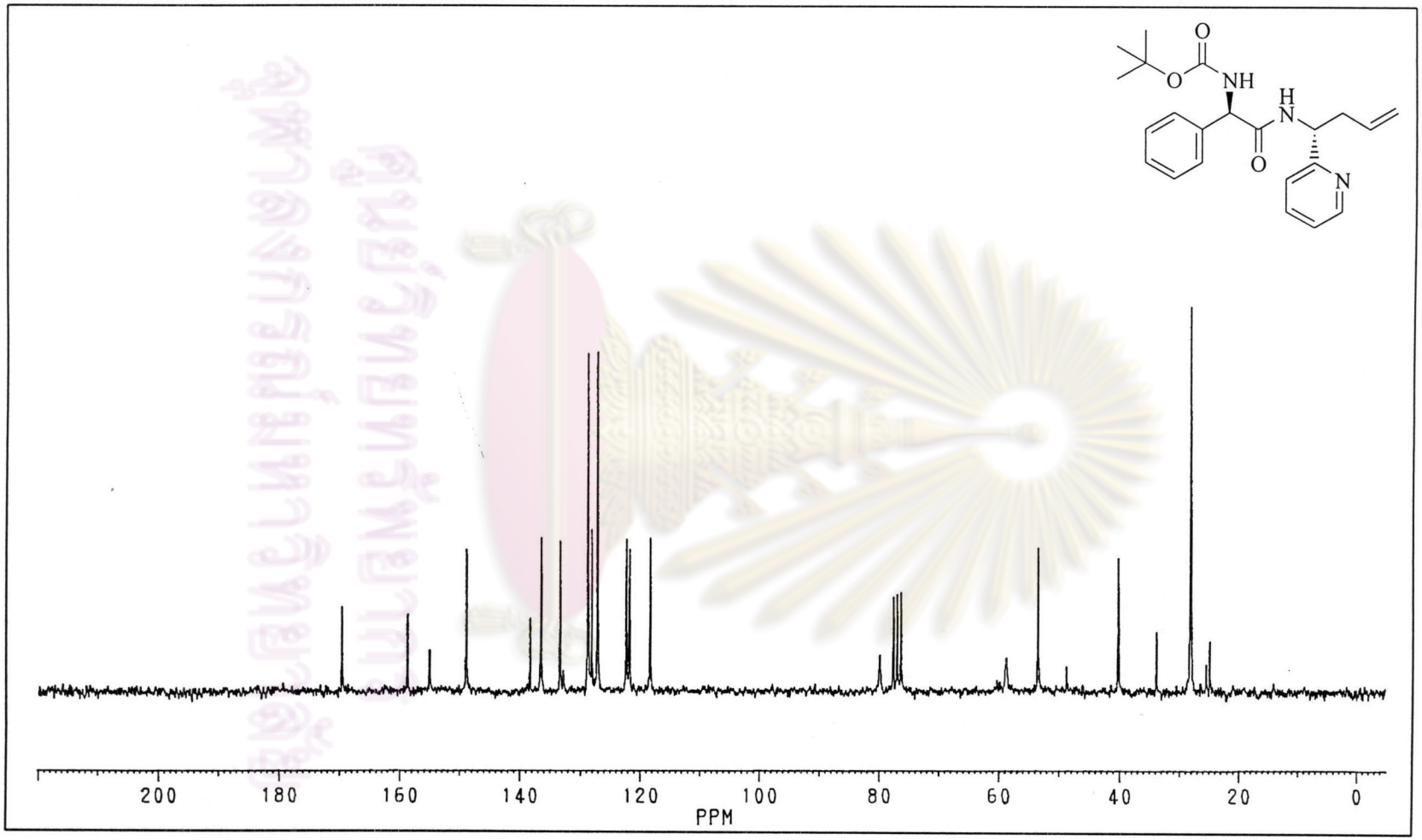


Figure 89 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-pyridyl)but-3-enamine[(*R,R*)-**XI-4**]

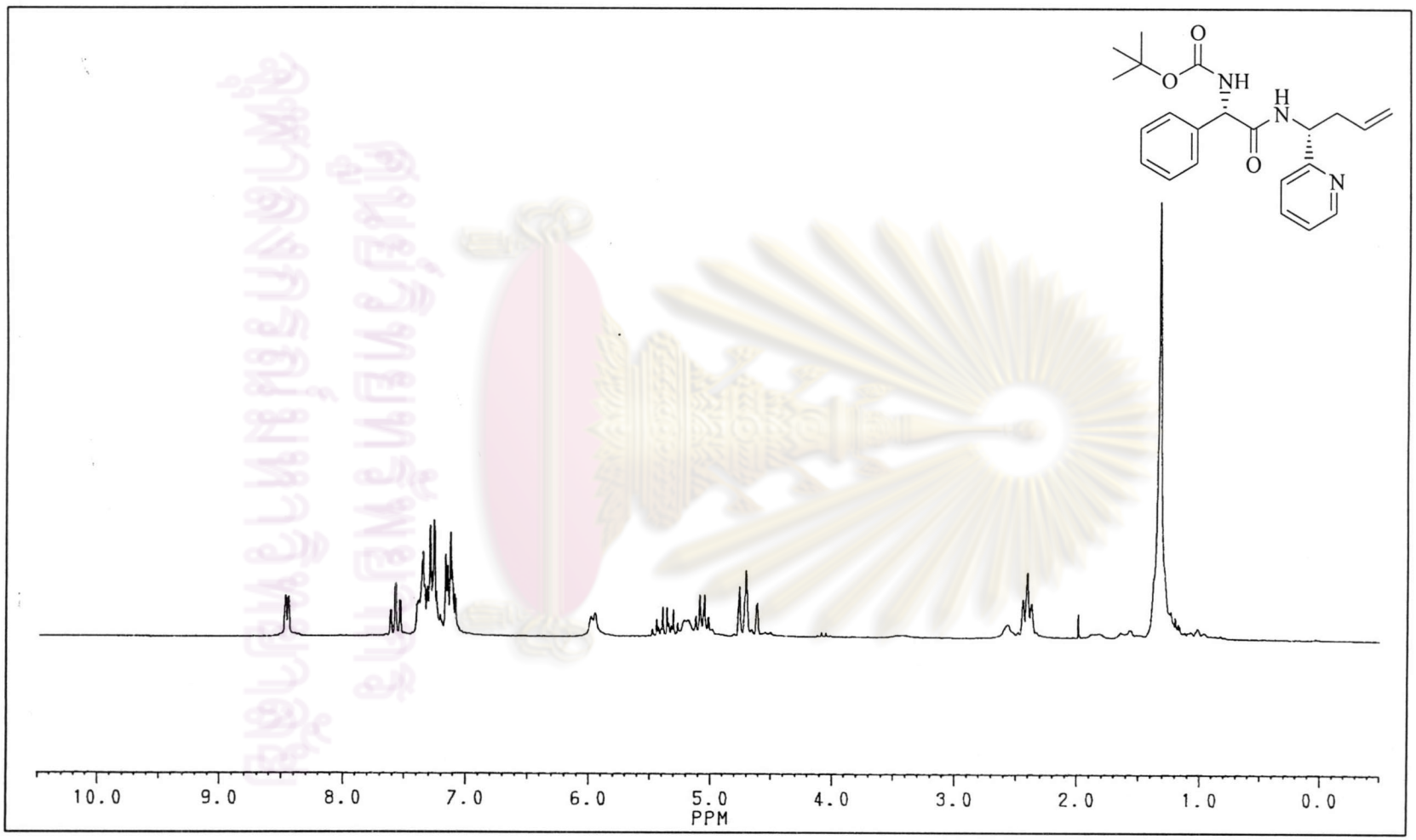


Figure 90 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-(2′-pyridyl)but-3-enamine [(*S,R*)-**XI-4**]

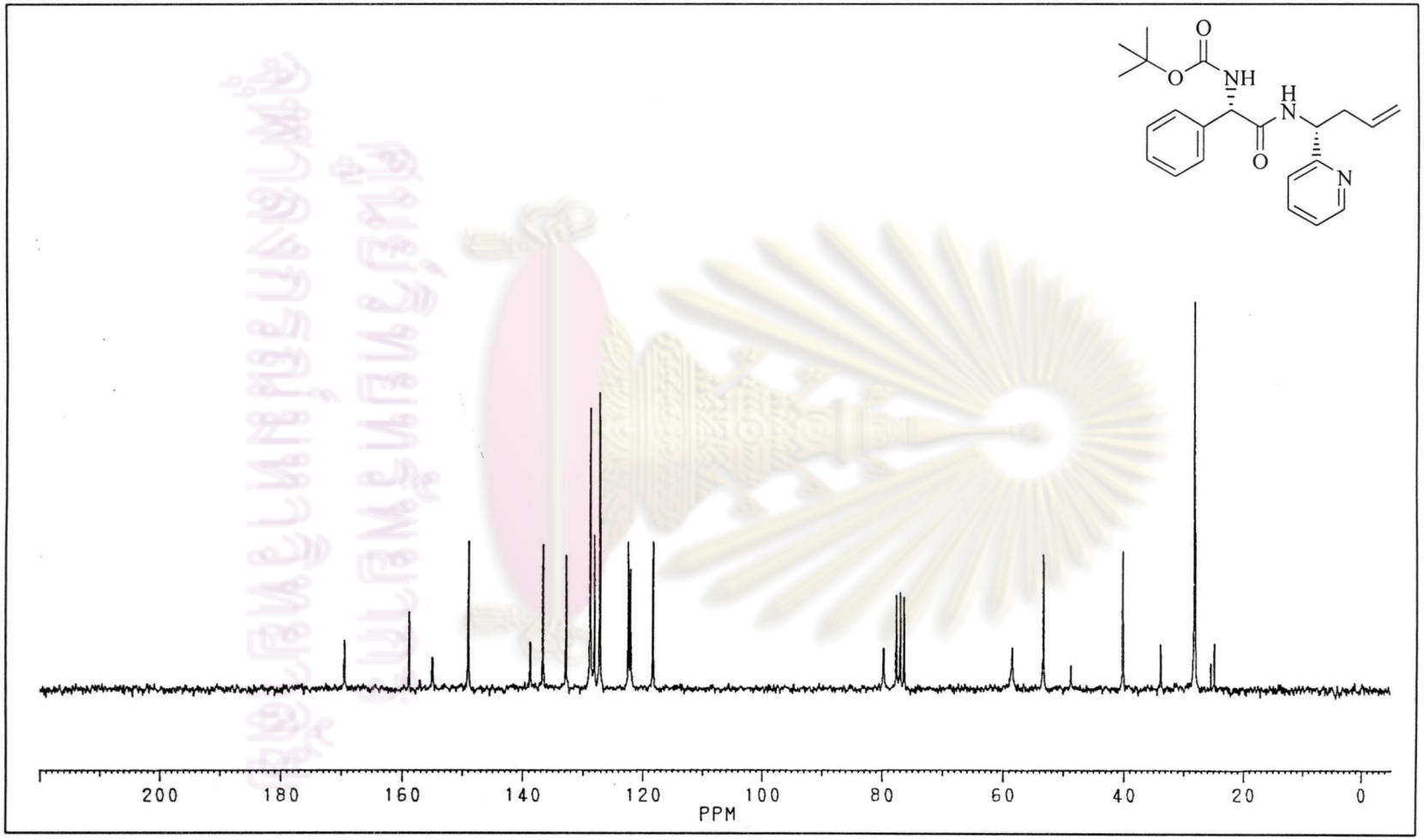


Figure 91 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-(2′-pyridyl)but-3-enamine[(*S,R*)-**XI-4**]

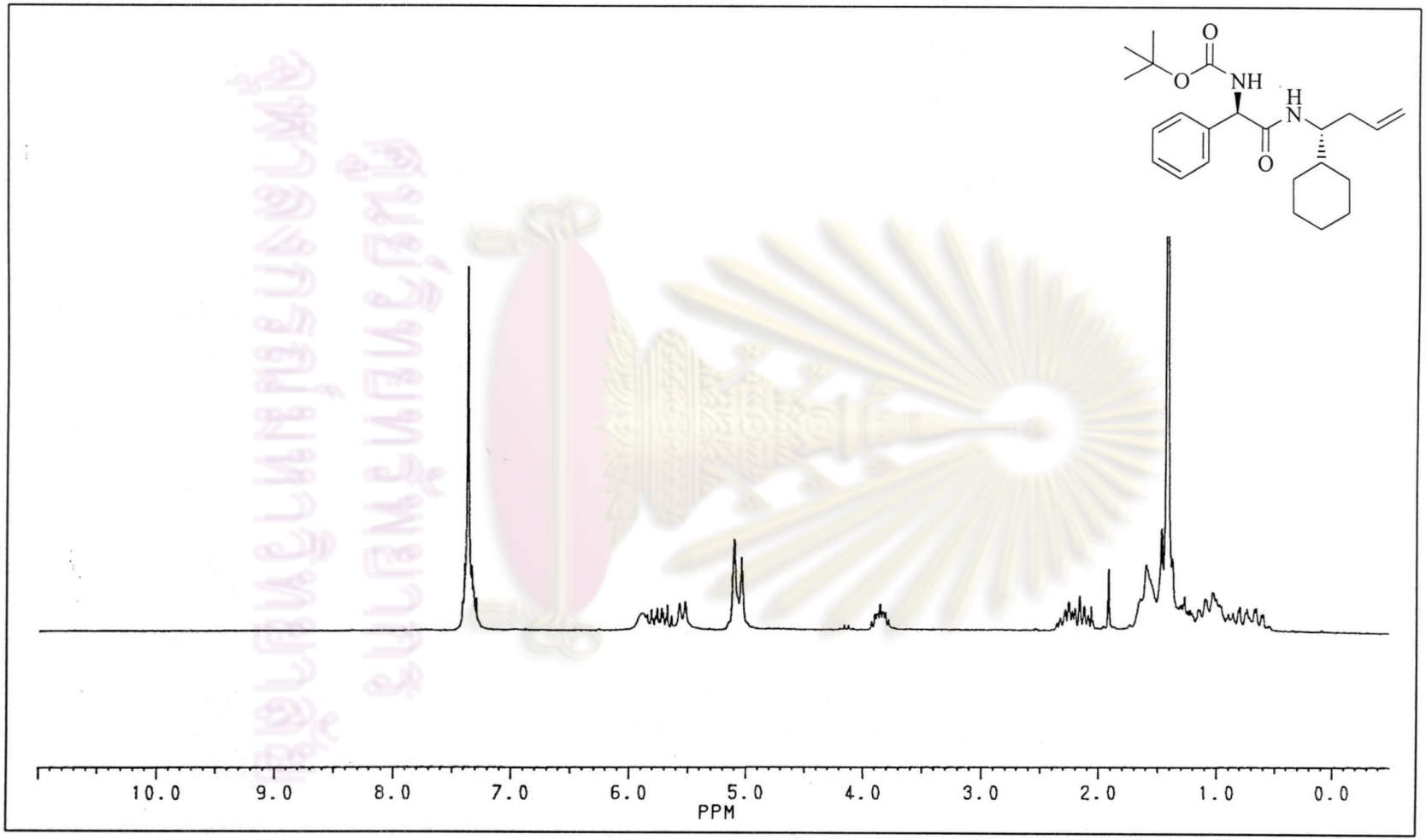


Figure 92 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-cyclohexylbut-3-enamine[(*R,R*)-**XI-5**]

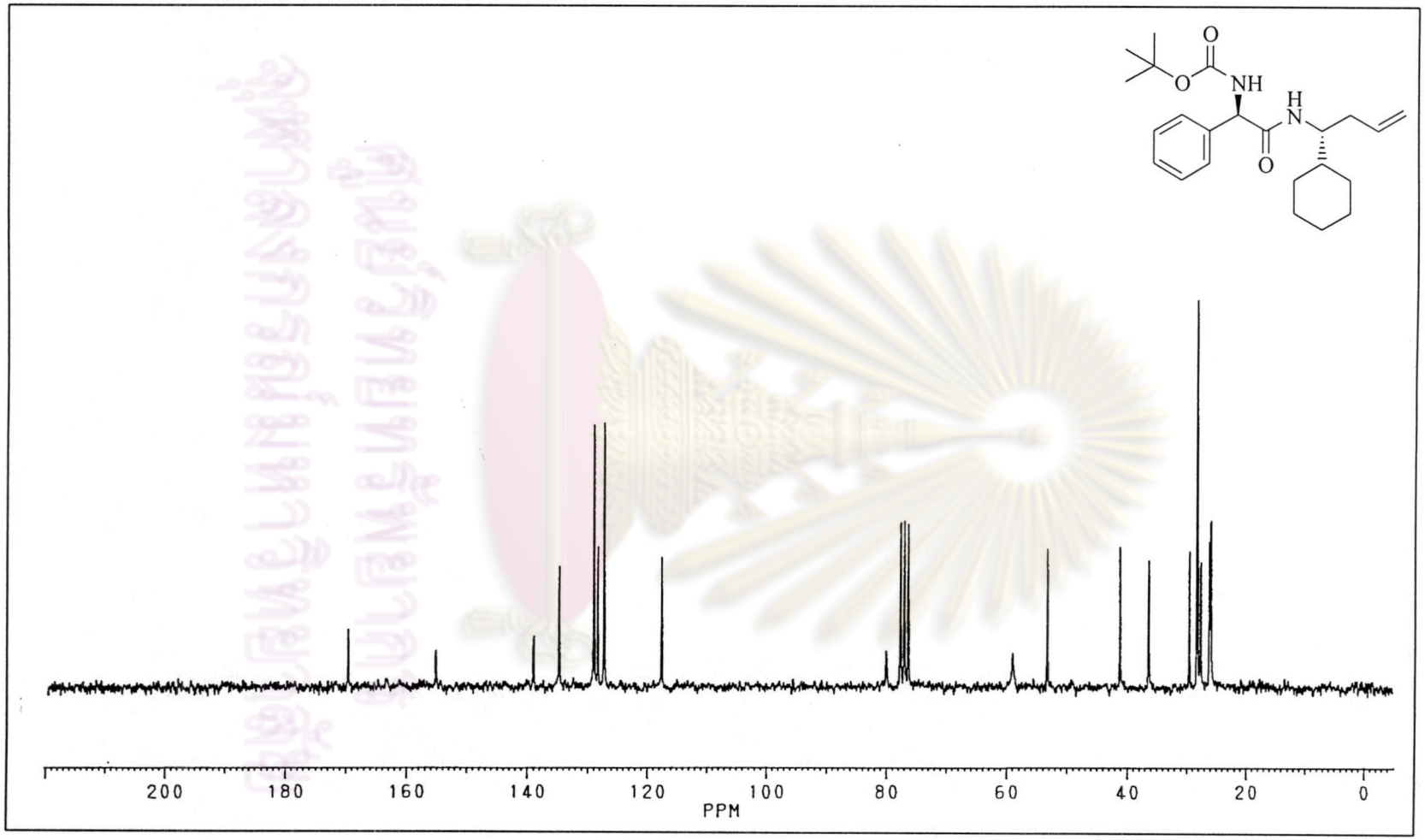


Figure 93 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-cyclohexylbut-3-enamine[(*R,R*)-**XI-5**]

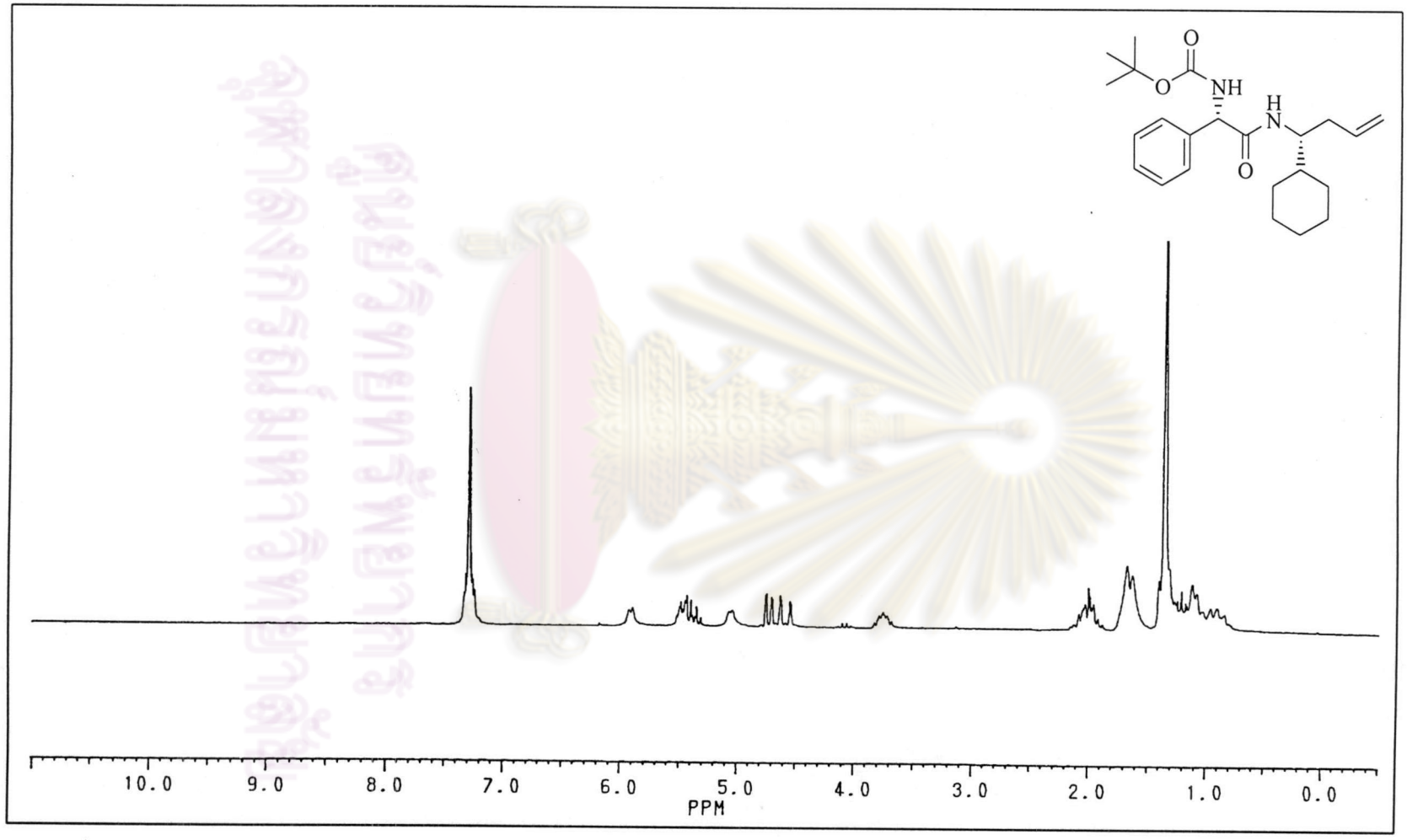


Figure 94 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-cyclohexylbut-3-enamine[(*S,R*)-**XI-5**]

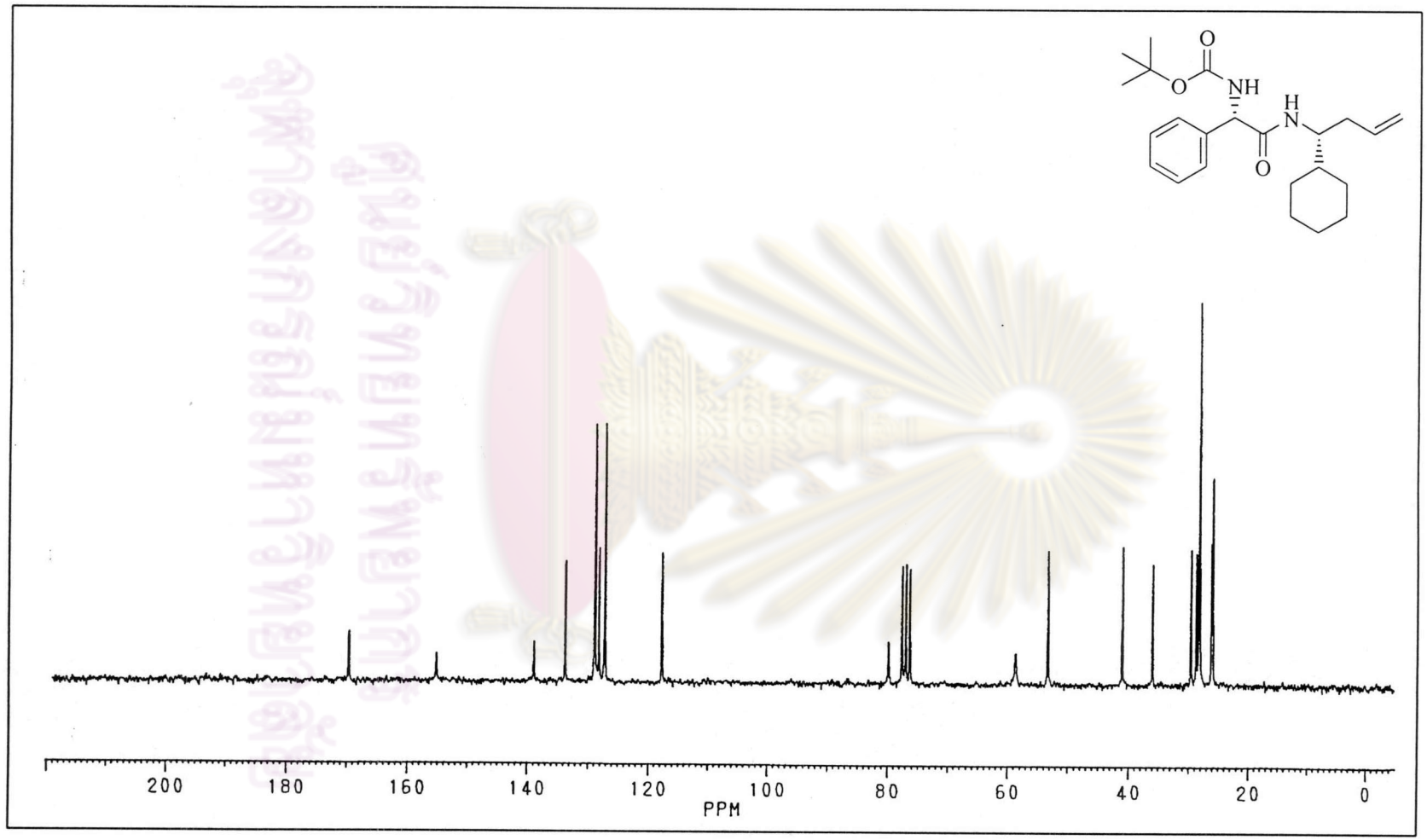


Figure 95 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-cyclohexylbut-3-enamine[(*S,R*)-**XI-5**]

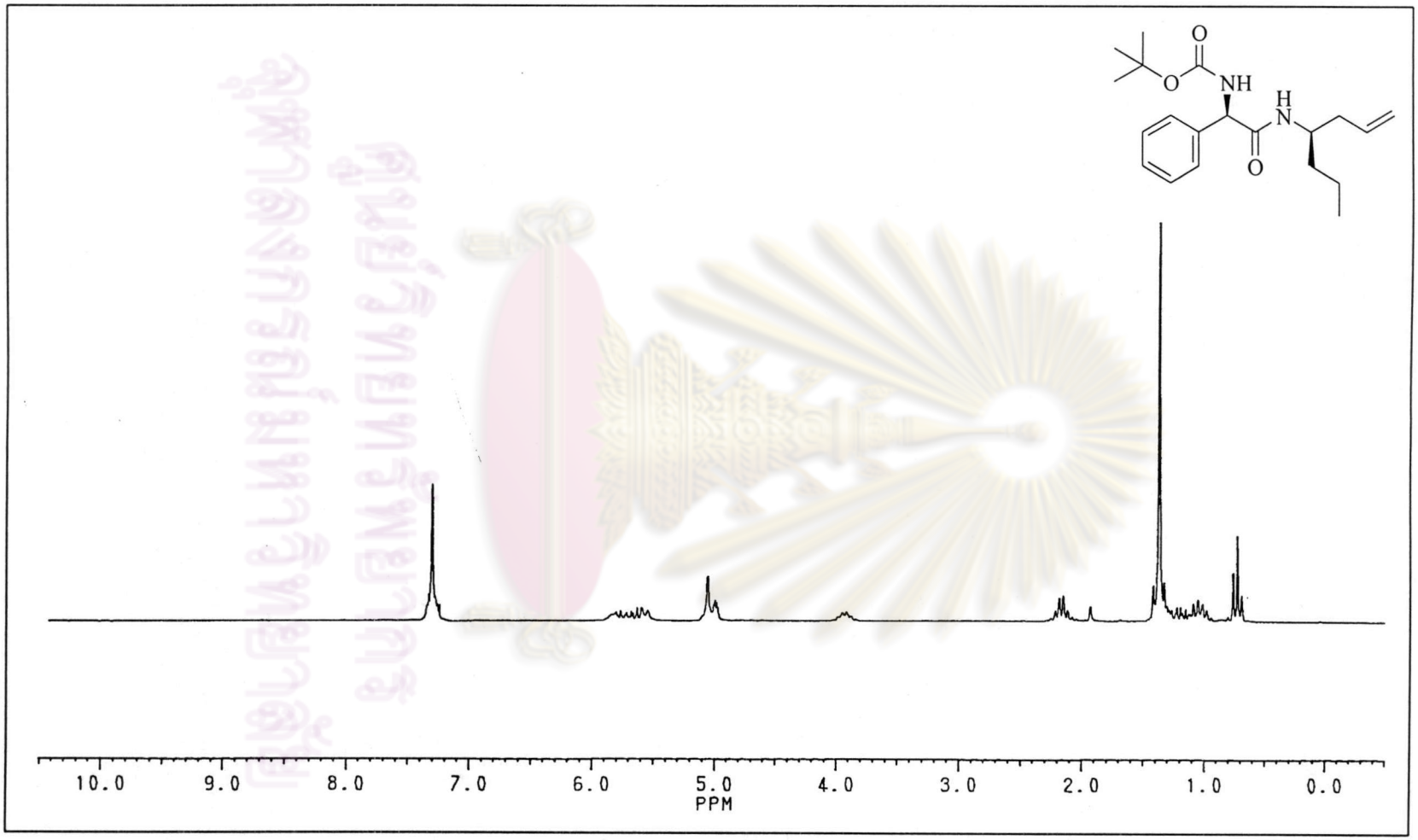


Figure 96 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-*n*-propylbut-3-enamine [(*R,R*)-**XI-6**]

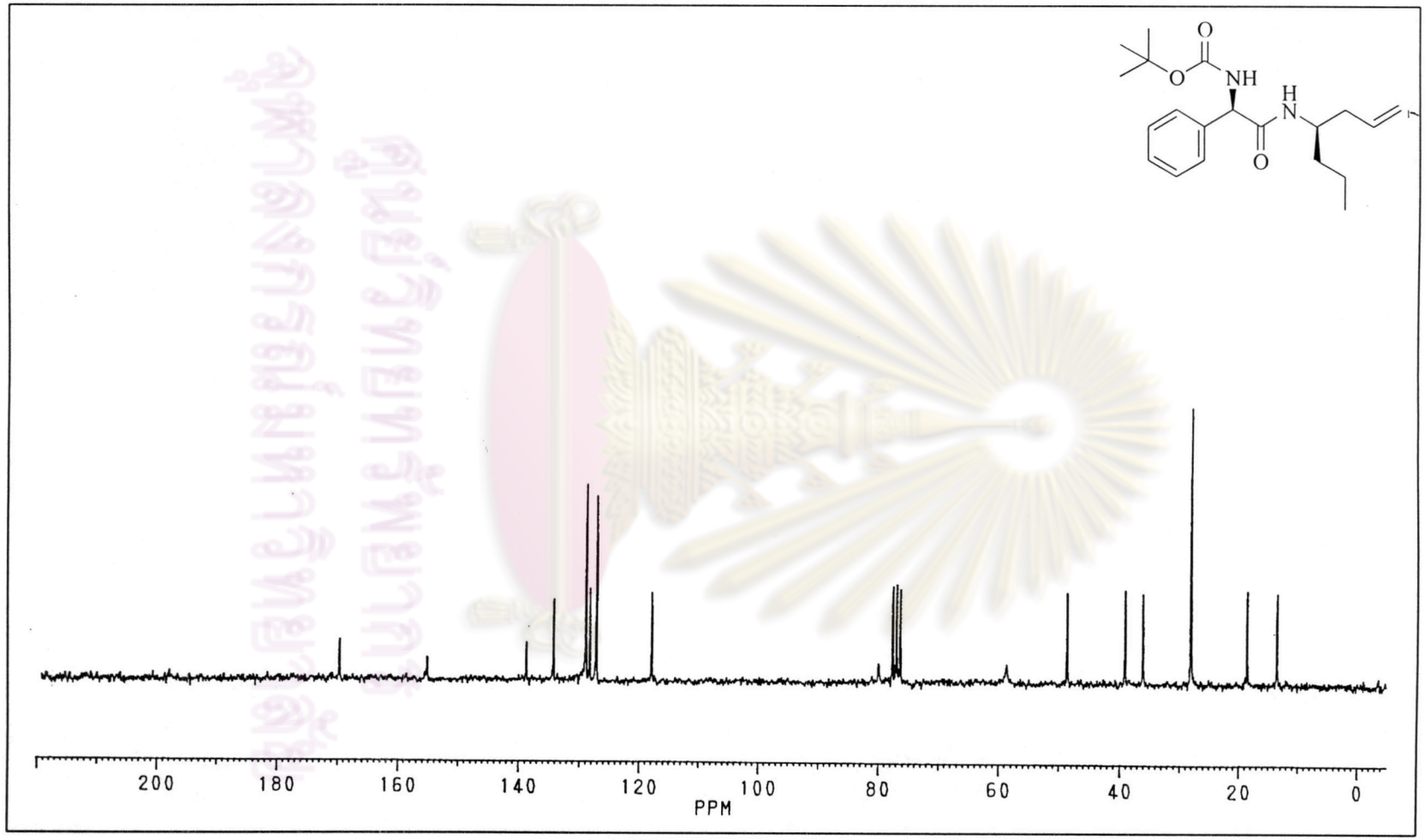


Figure 97 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-*n*-propylbut-3-enamine [(*R,R*)-**XI-6**]

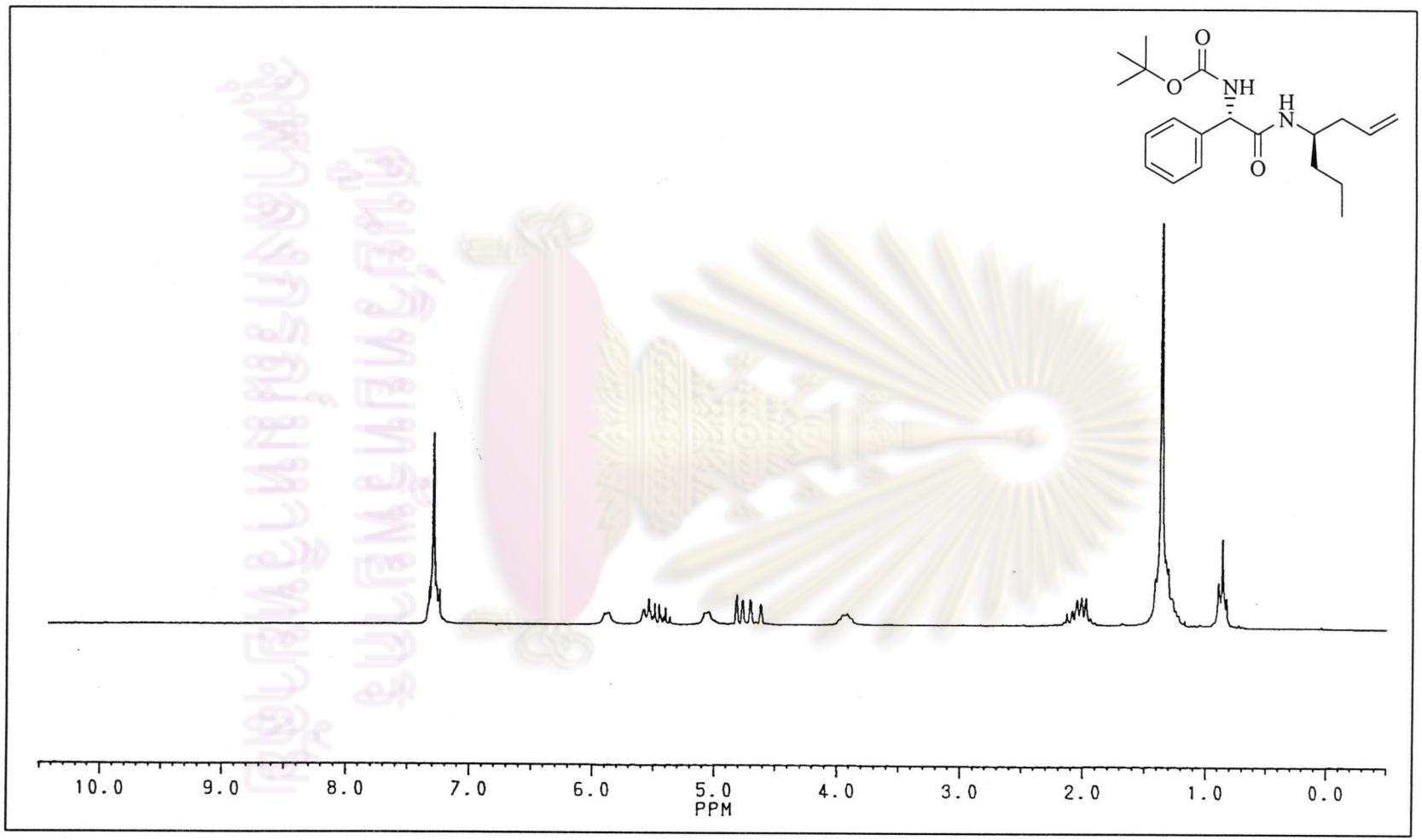


Figure 98 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-*n*-propylbut-3-enamine [(*S,R*)-**XI-6**]

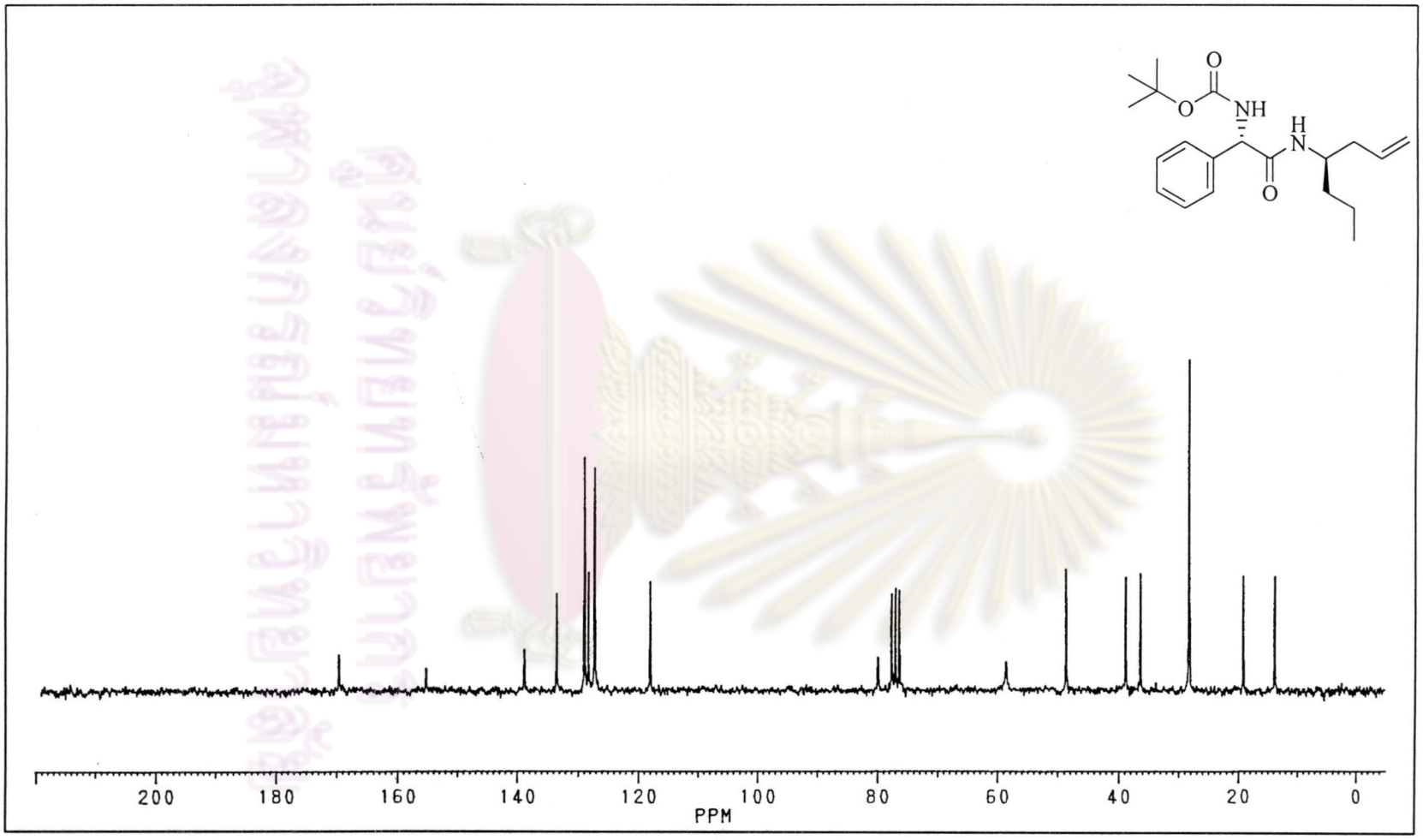


Figure 99 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*S*)-phenylglycyl]-(*R*)-1-*n*-propylbut-3-enamine [(*S,R*)-**XI-6**]

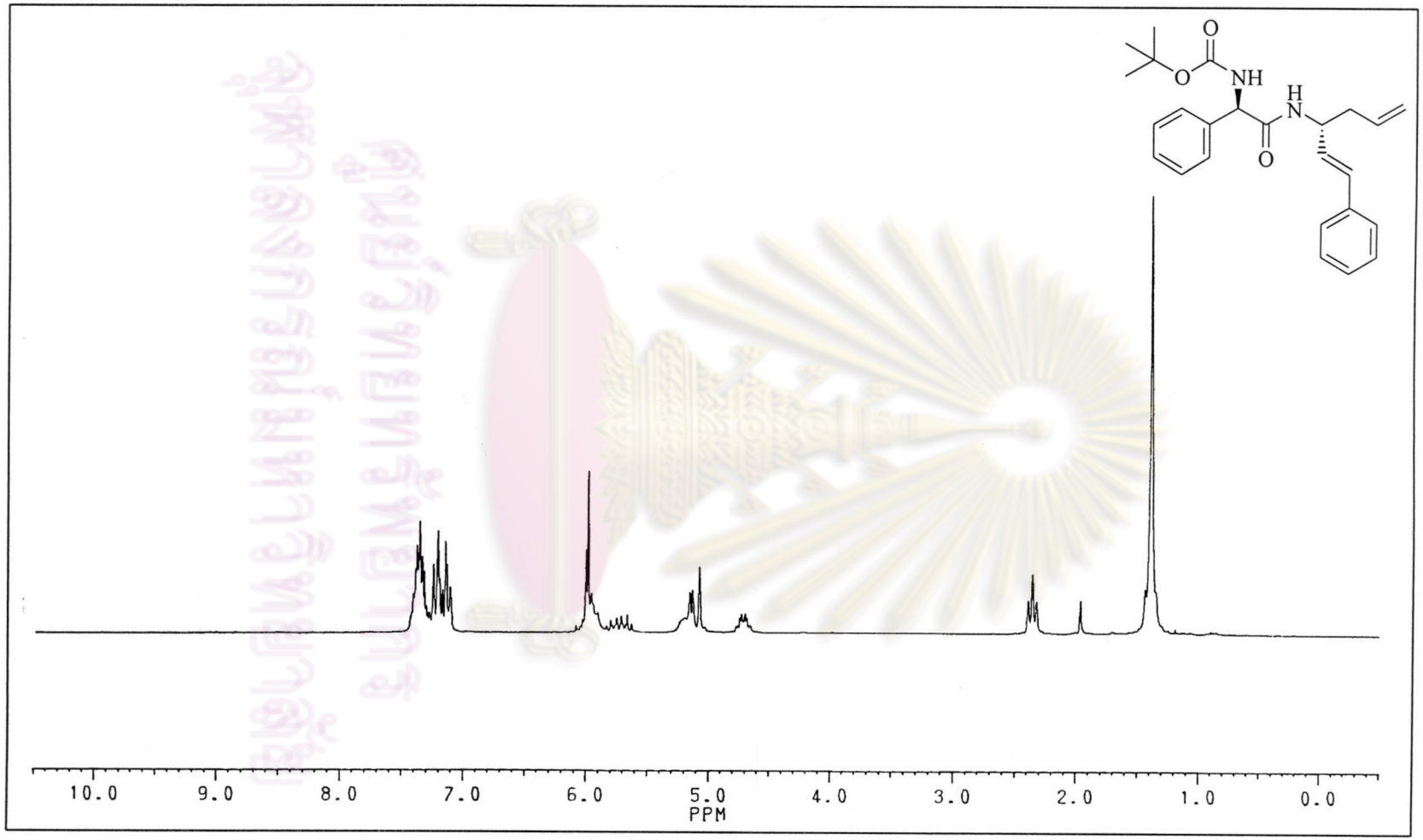


Figure 100 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-phenylethenyl)but-3-enamine [(*R*,*R*)-**XI-7**]

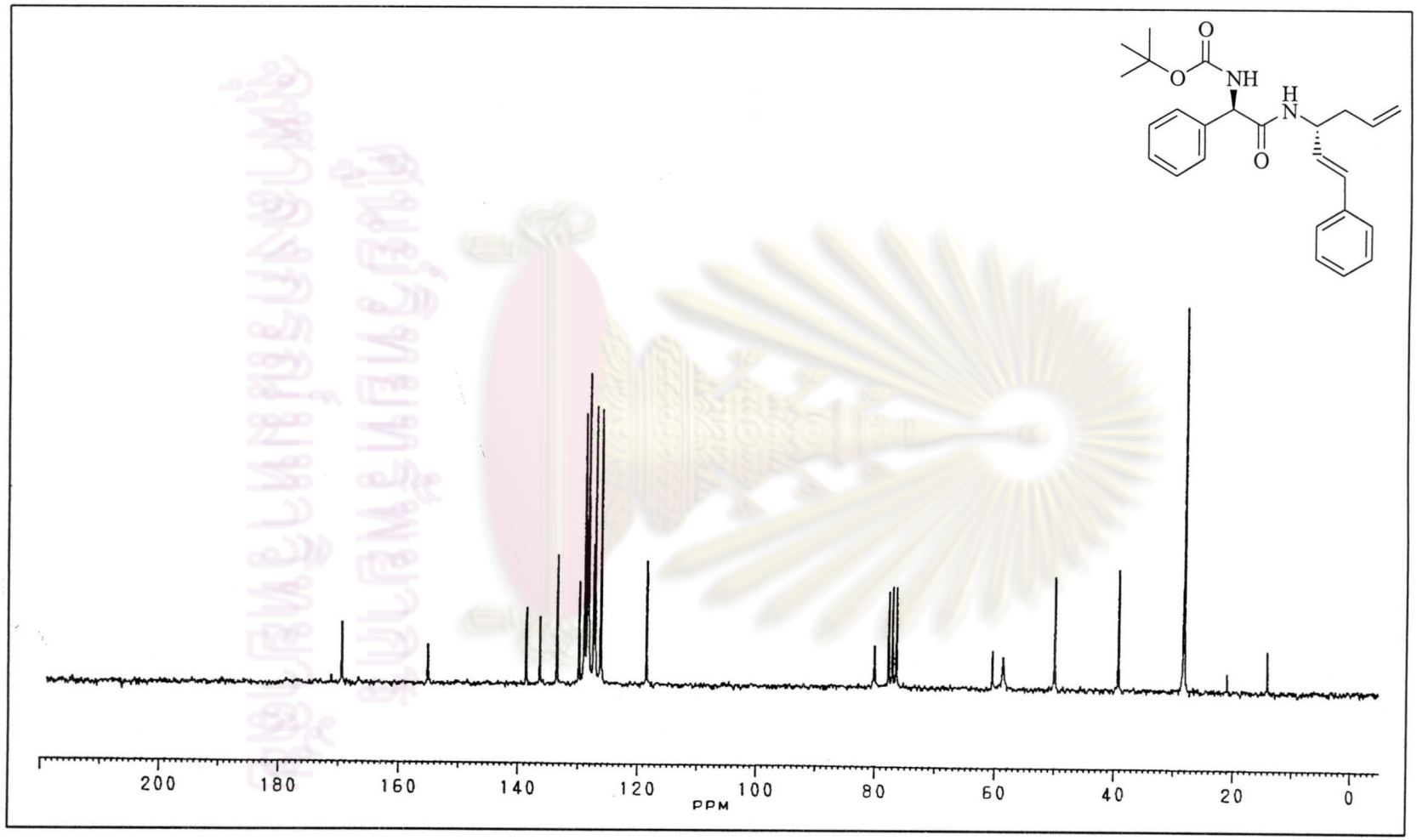


Figure 101 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-phenylethenyl)but-3-enamine [(*R,R*)-**XI-7**]

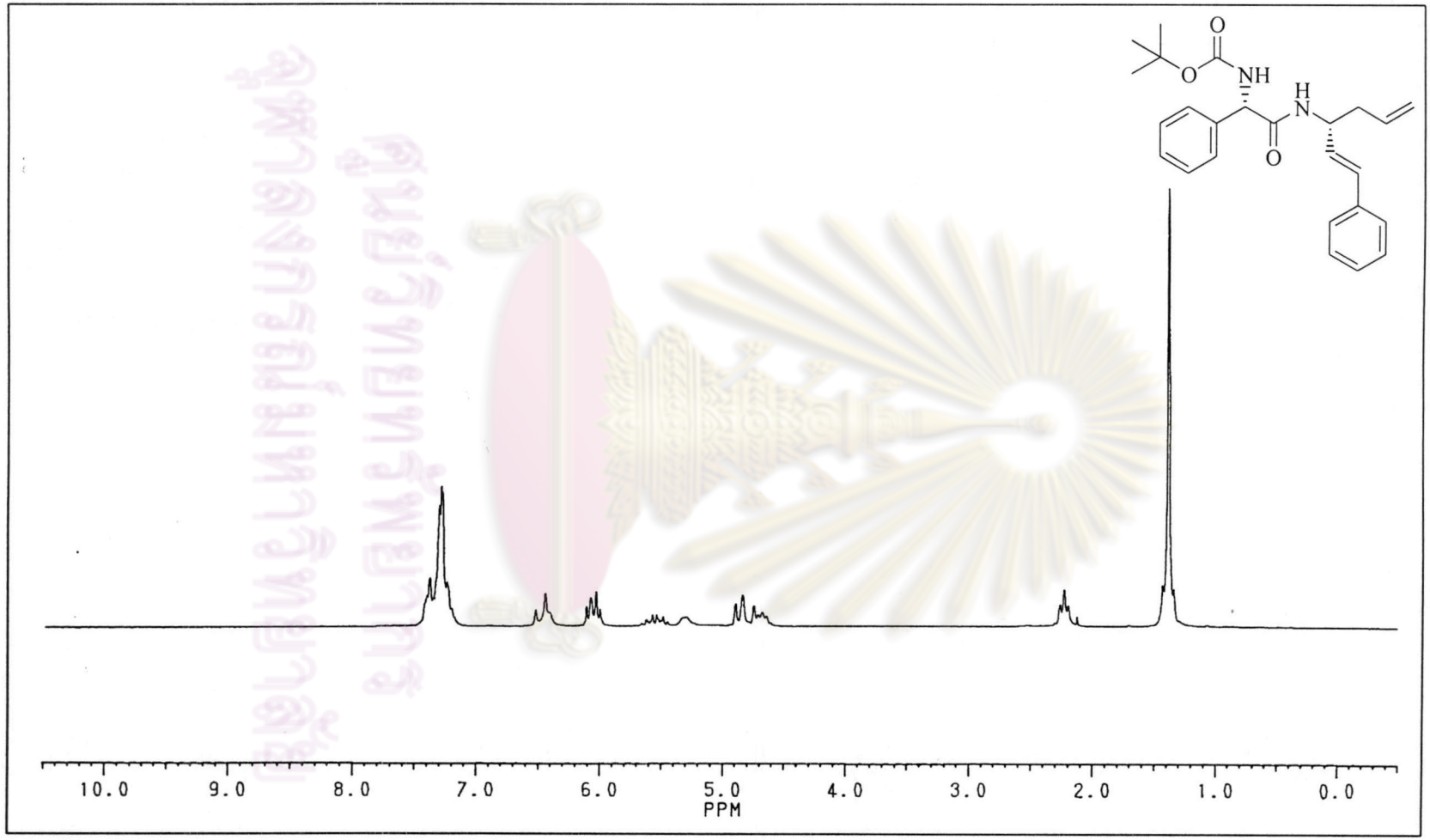


Figure 102 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-phenylethenyl)but-3-enamine [(*S,R*)-**XI-7**]

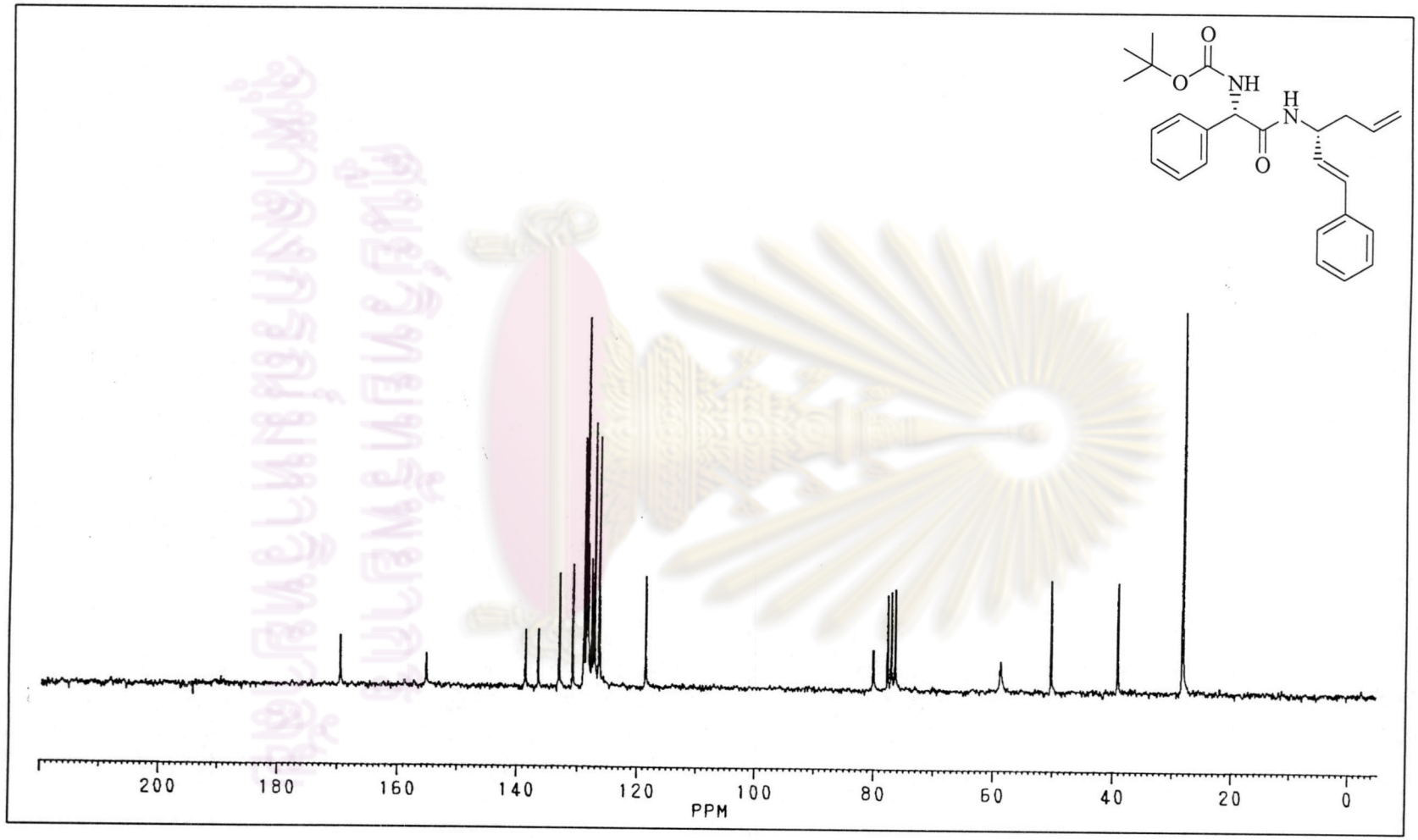


Figure 103 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-(2′-phenylethenyl)but-3-enamine [(*S,R*)-**XI-7**]

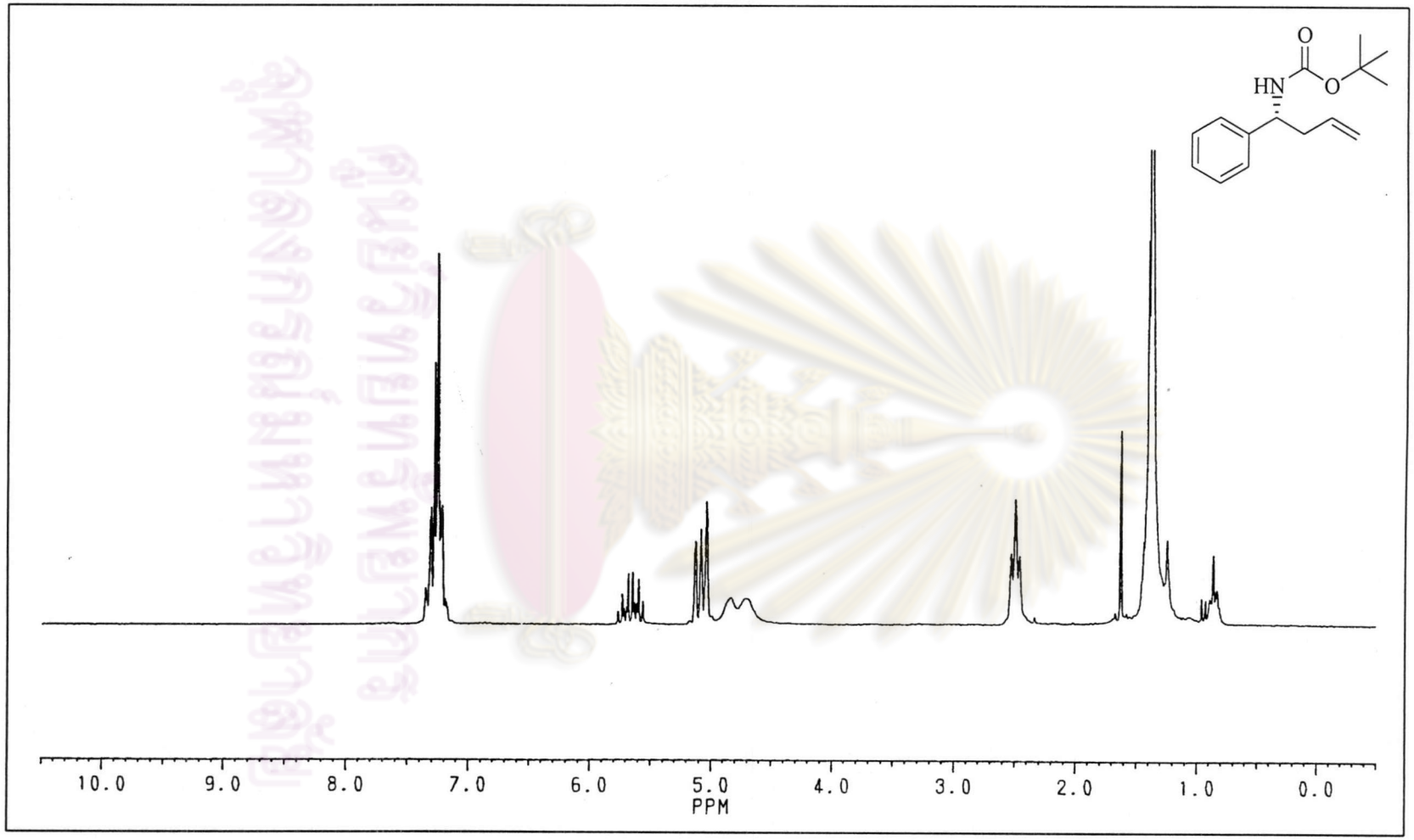


Figure 104 ^{1}H-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-phenylbut-3-enamine (**X-6**)

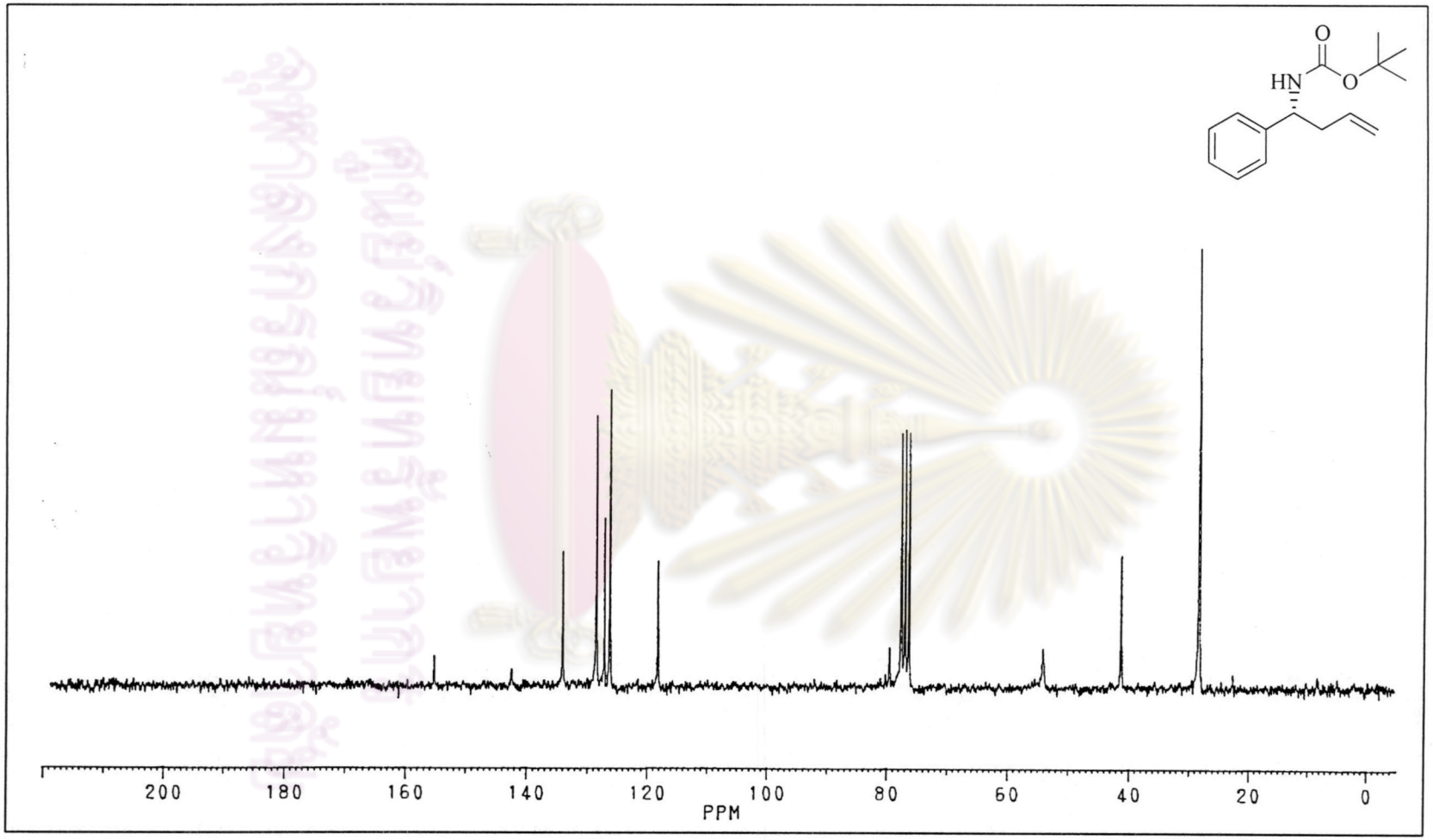


Figure 105 ^{13}C-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-phenylbut-3-enamine (**X-6**)

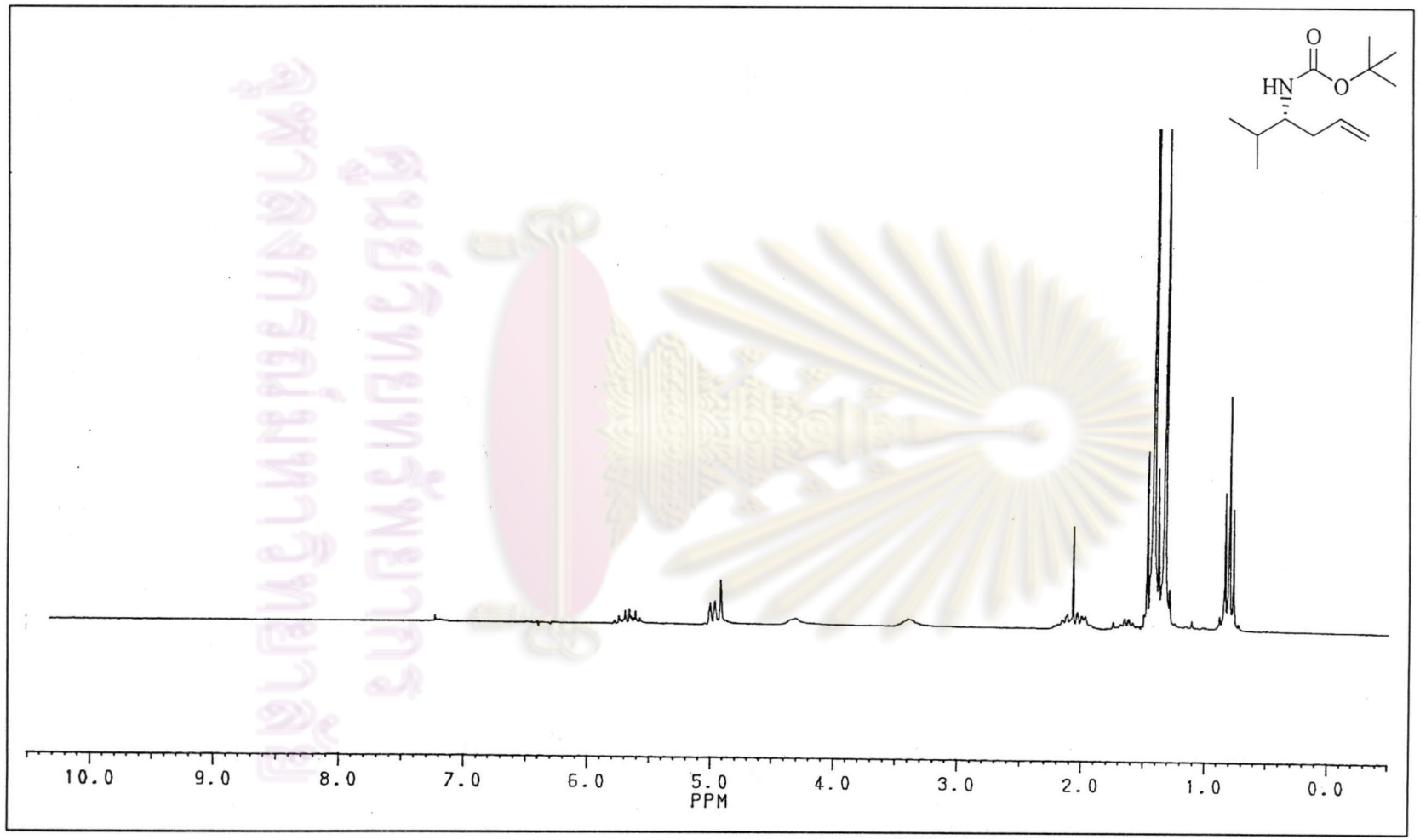


Figure 106 ^{1}H-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-isopropylbut-3-enamine (**X-7**)

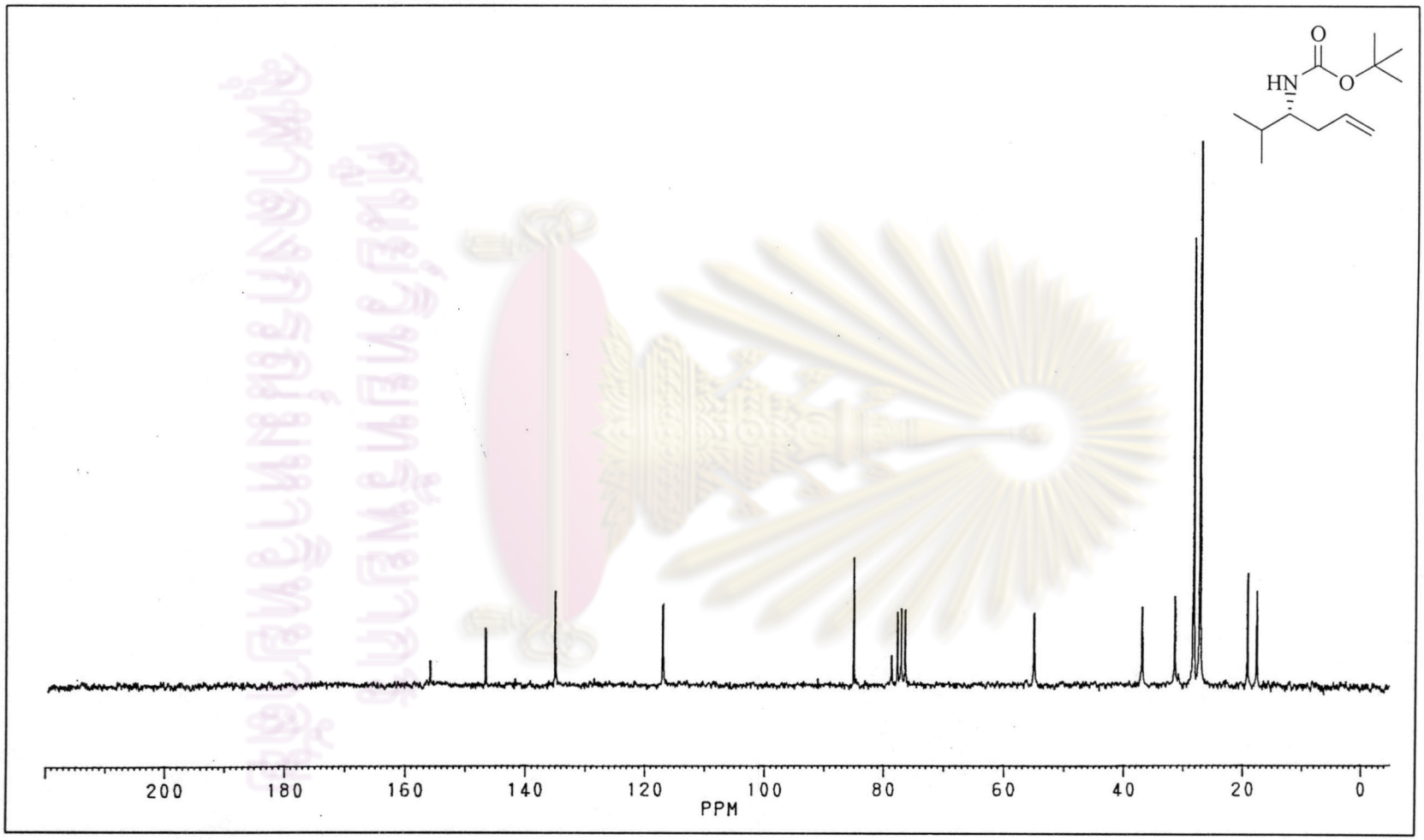


Figure 107 ^{13}C-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-isopropylbut-3-enamine (**X-7**)

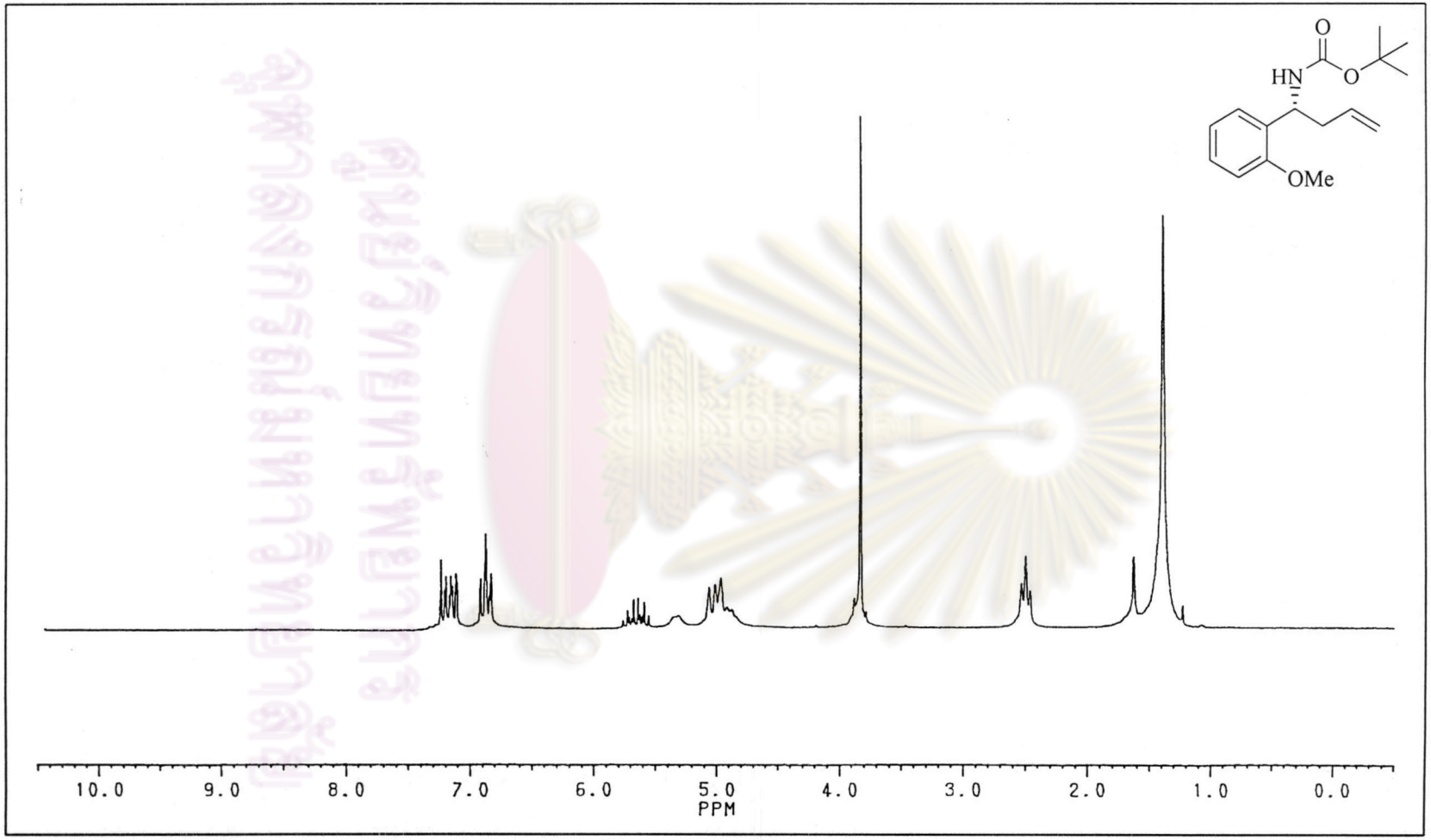


Figure 108 ^{1}H-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-(2′-Methoxyphenyl)but-3-enamine (**X-8**)

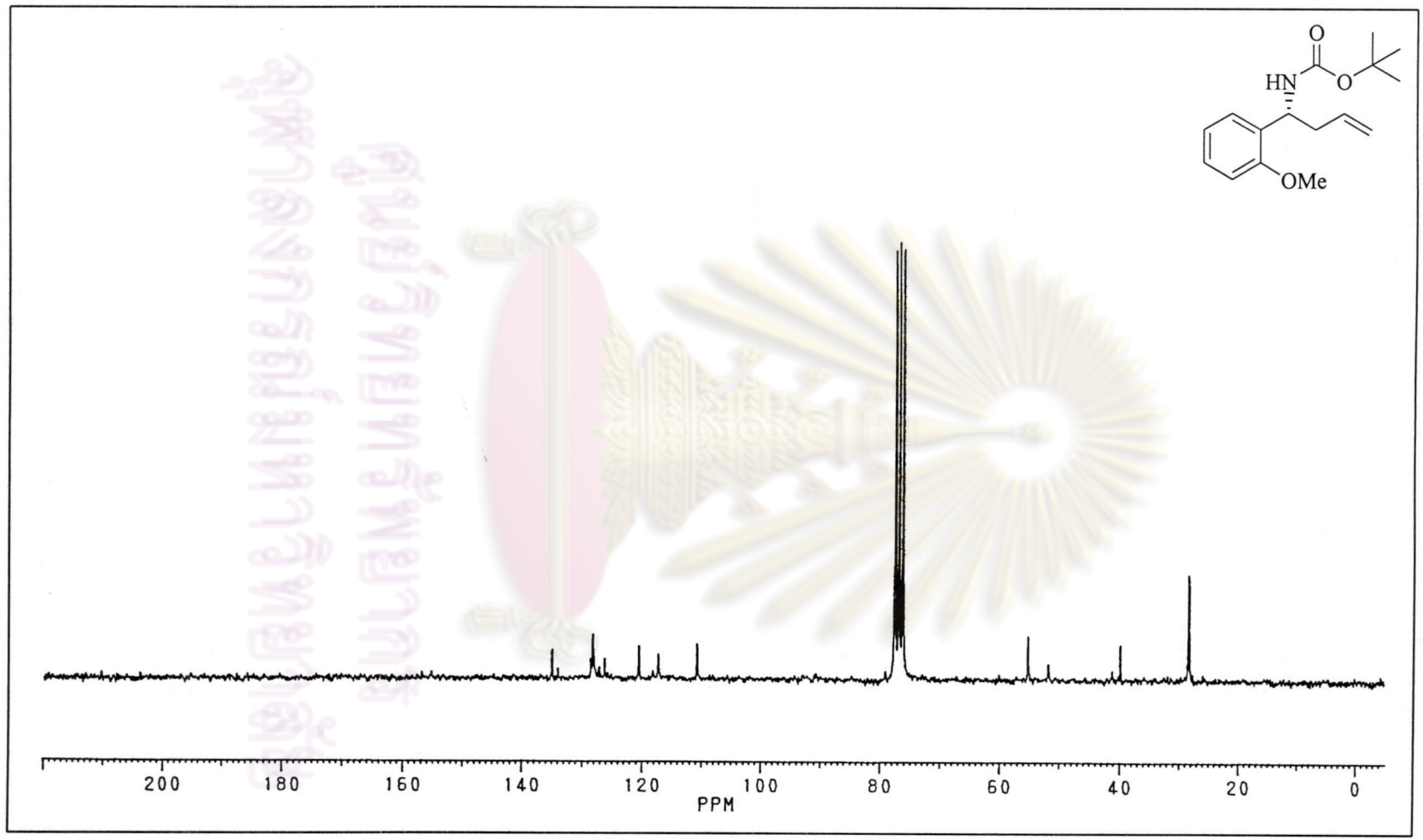


Figure 109 ^{13}C-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-(2′-Methoxyphenyl)but-3-enamine (**X-8**)

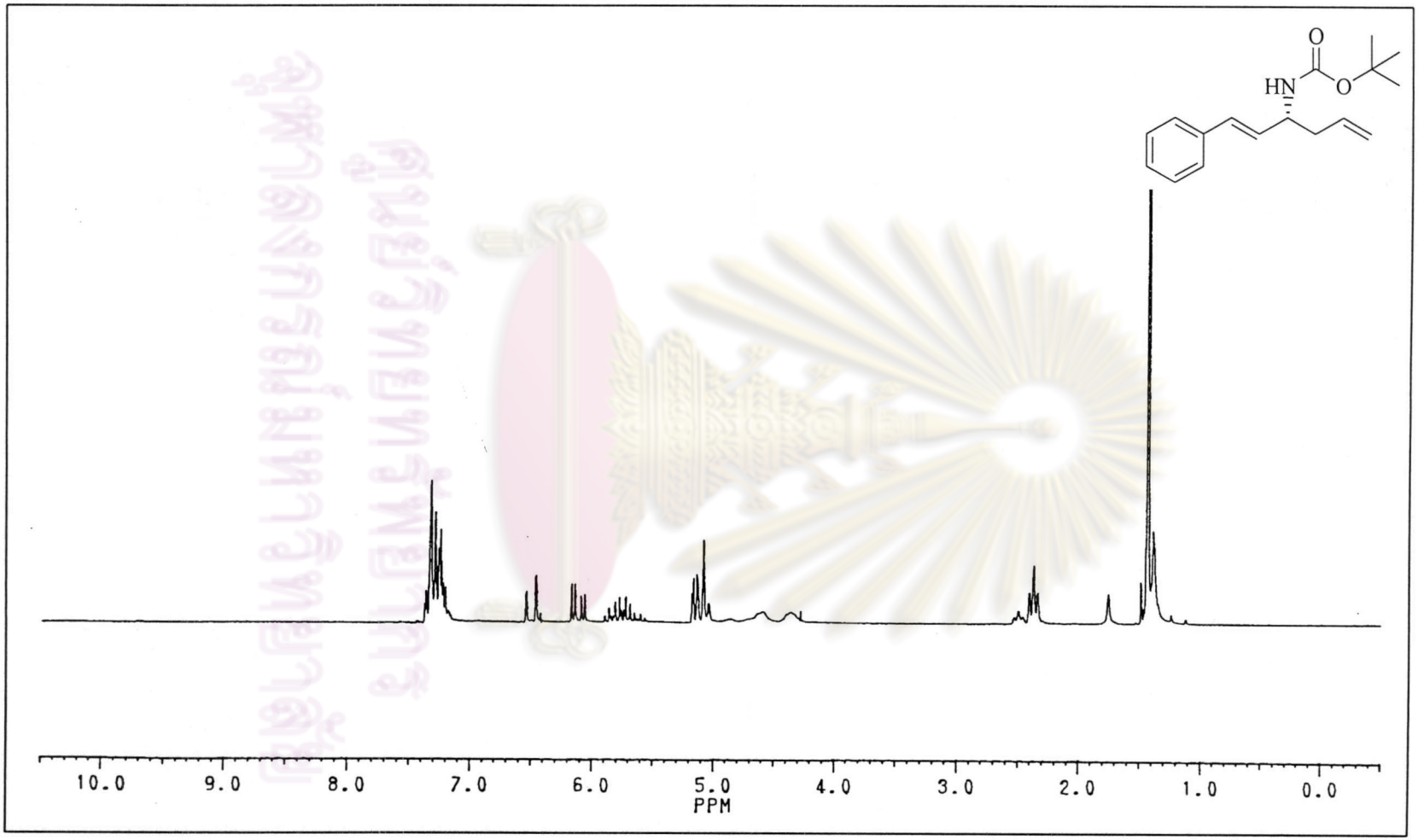


Figure 110 ^{1}H-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-(2′-phenylethenyl)-but-3-enamine (**X-9**)

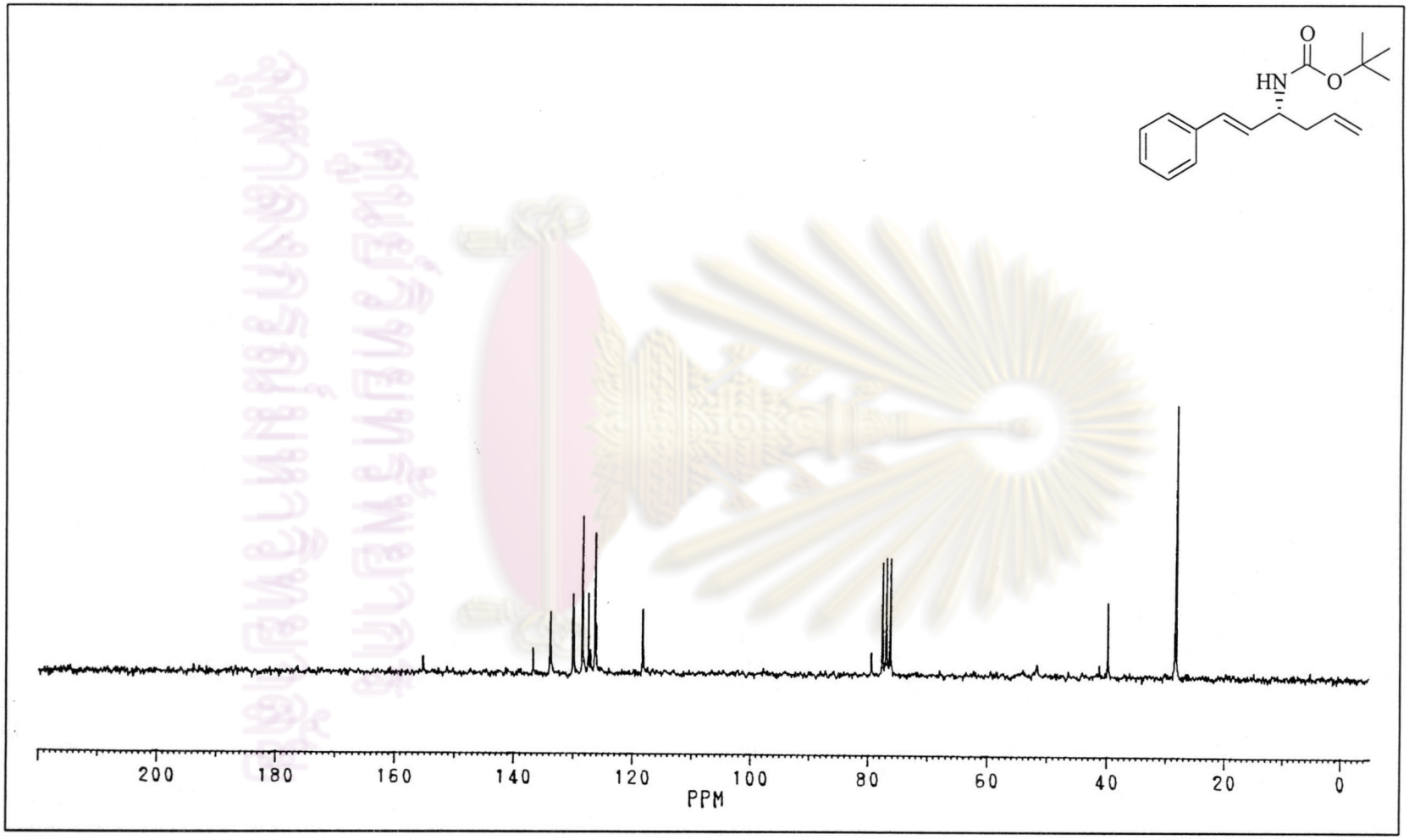


Figure 111 ^{13}C-NMR spectrum ($CDCl_3$) of *N-tert*-butoxycarbonyl-(*R*)-1-(2′-phenylethenyl)-but-3-enamine (**X-9**)

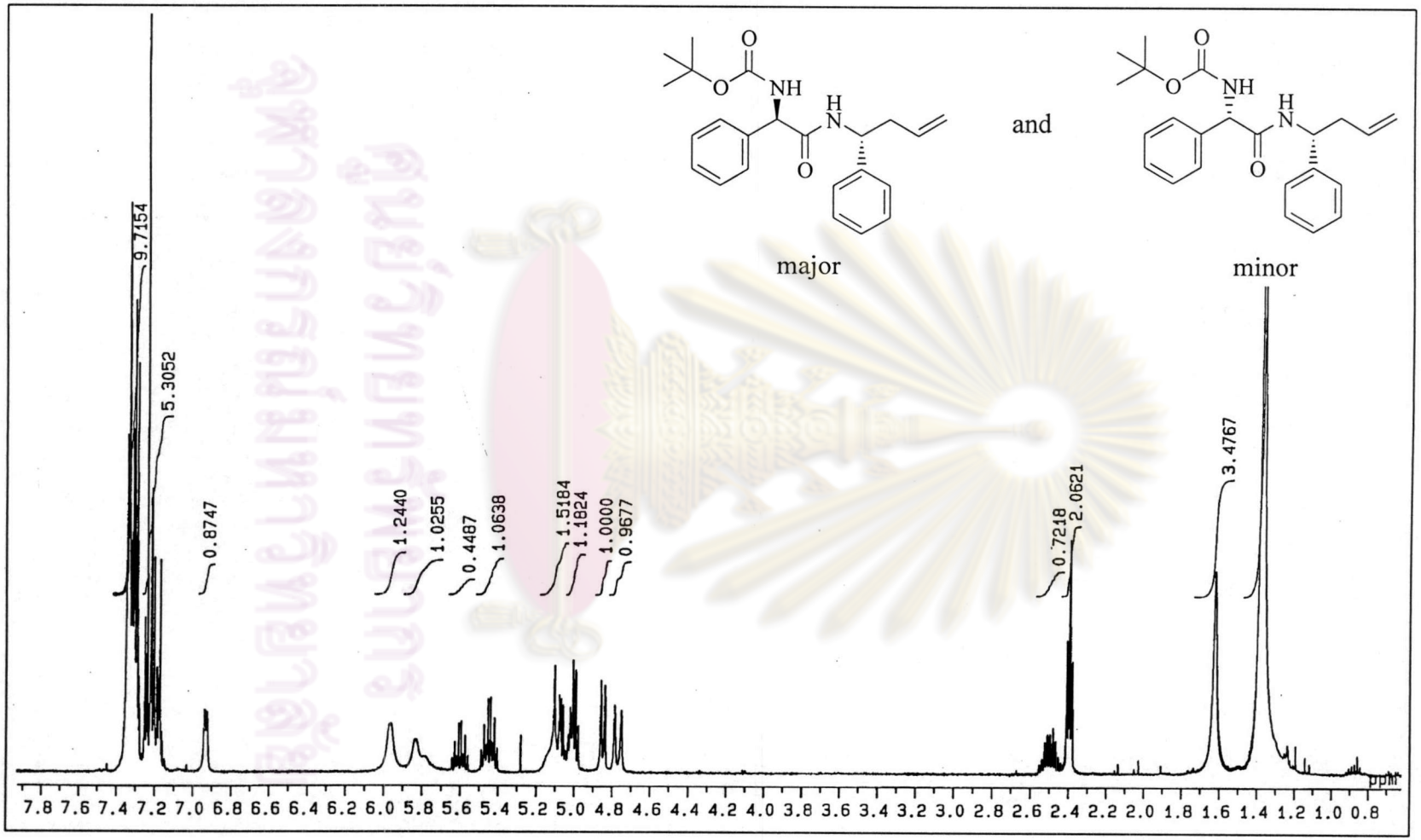


Figure 112 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine (from acid hydrolysis) **(XI-1)**

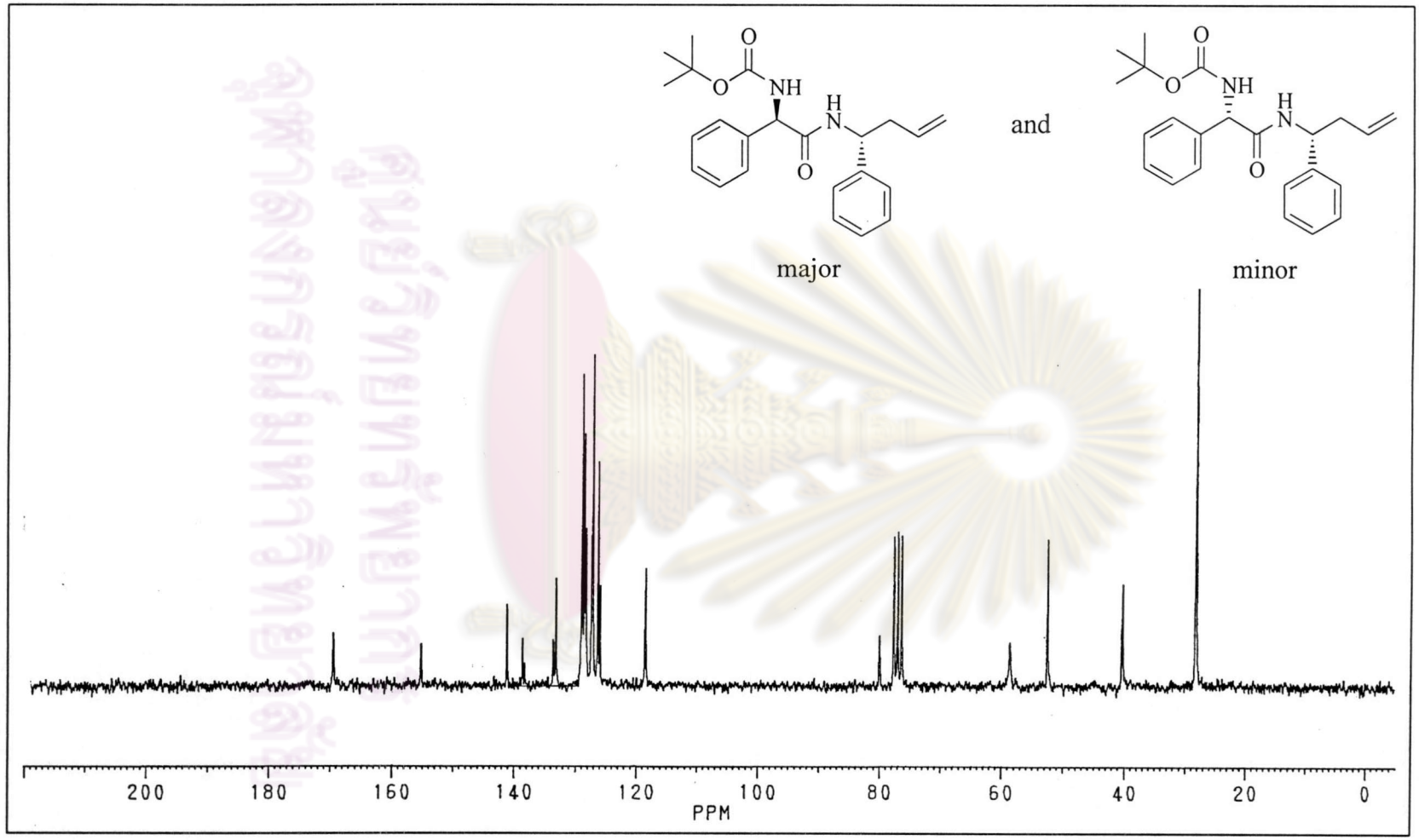


Figure 113 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-phenylbut-3-enamine (from acid hydrolysis) **(XI-1)**

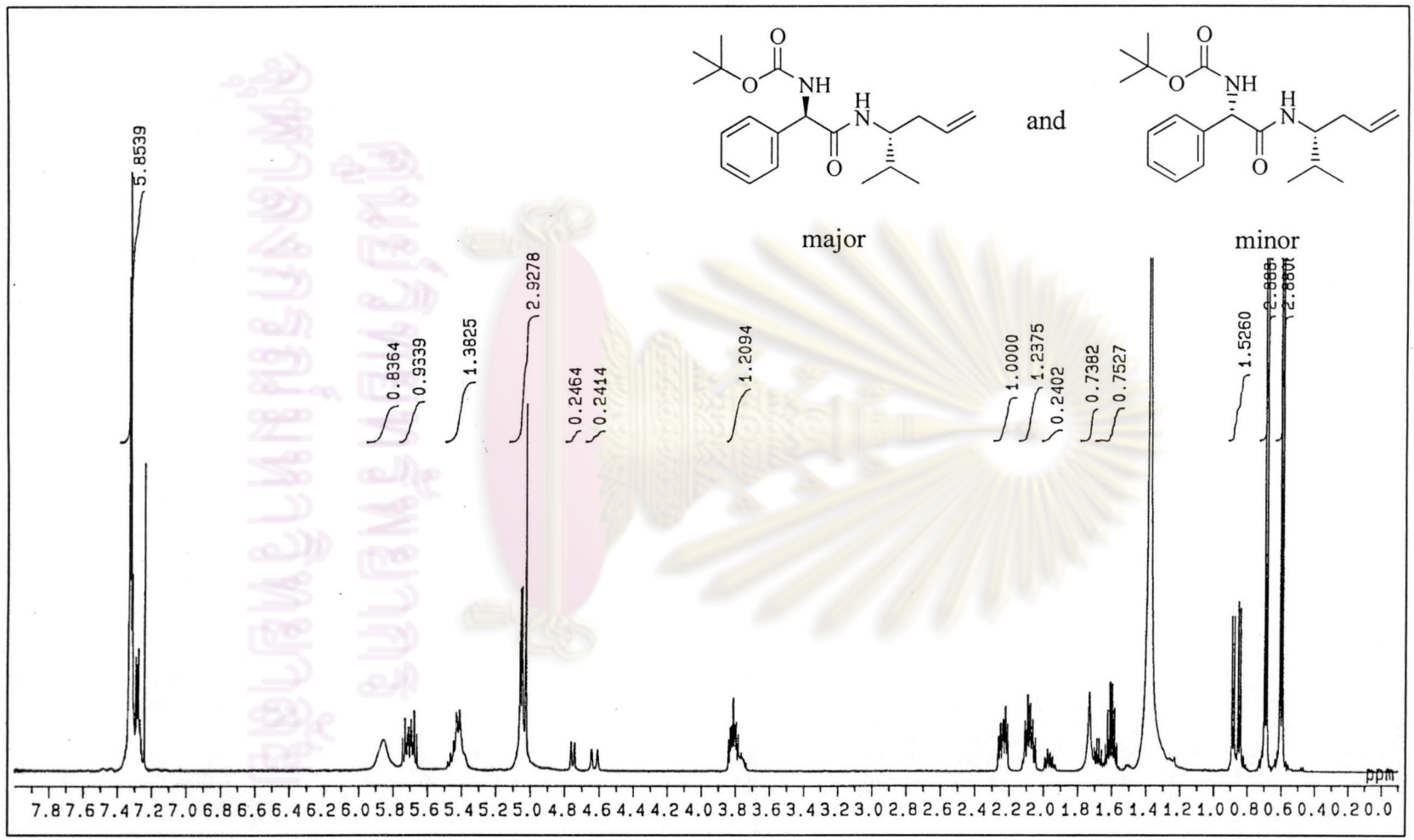


Figure 114 ^{1}H-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine (from acid hydrolysis) (**XI-2**)

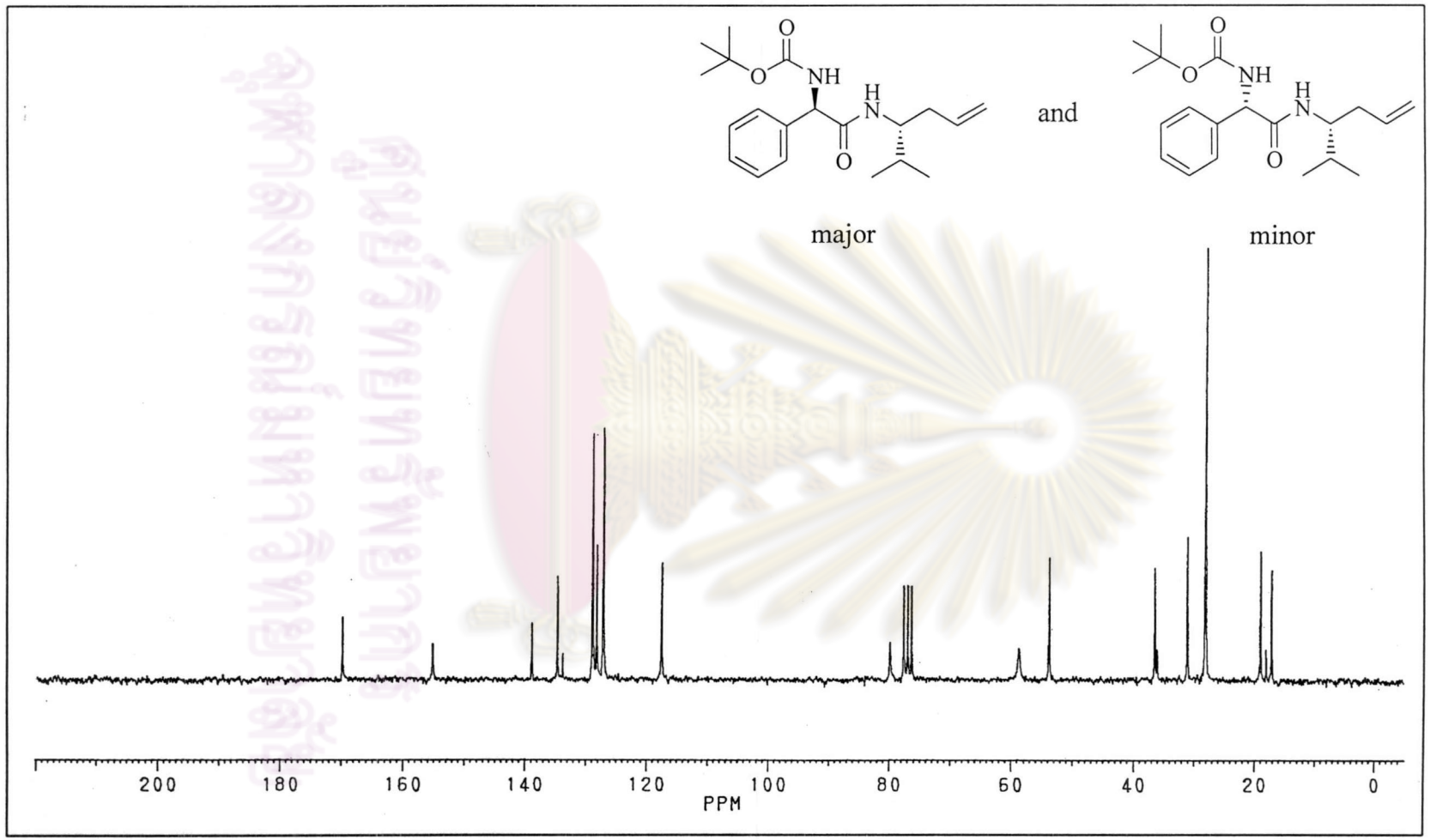
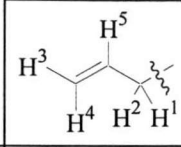
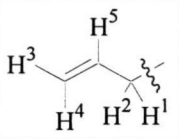


Figure 115 ^{13}C-NMR spectrum ($CDCl_3$) of *N*-[1-*N*-(*tert*-butoxycarbonyl)-(*R*)-phenylglycyl]-(*R*)-1-isopropylbut-3-enamine (from acid hydrolysis) **(XI-2)**

Table 3.12 The absolute configuration of the homoallylic amines R=Phenyl

R	H	δ-(*S*)-BPG		δ-(*R*)-BPG		Config.
						
Ph From (*R*)- phenylglycinol	1, 2 3, 4 5	2.37 4.73 5.43	7.16	2.45 5.10 5.58	6.92	***R***

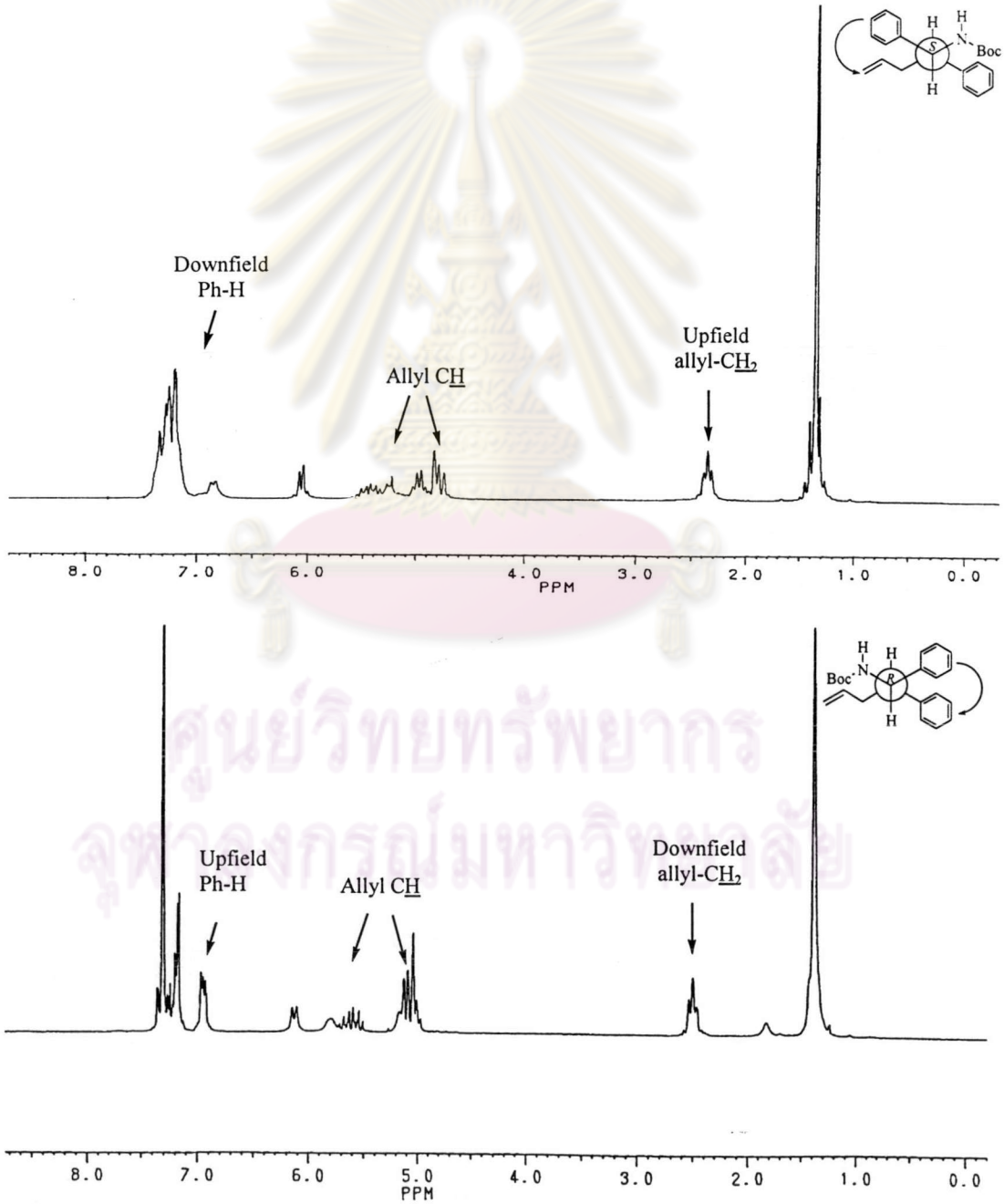
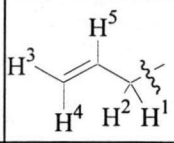
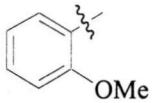
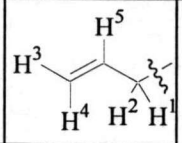
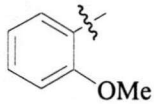
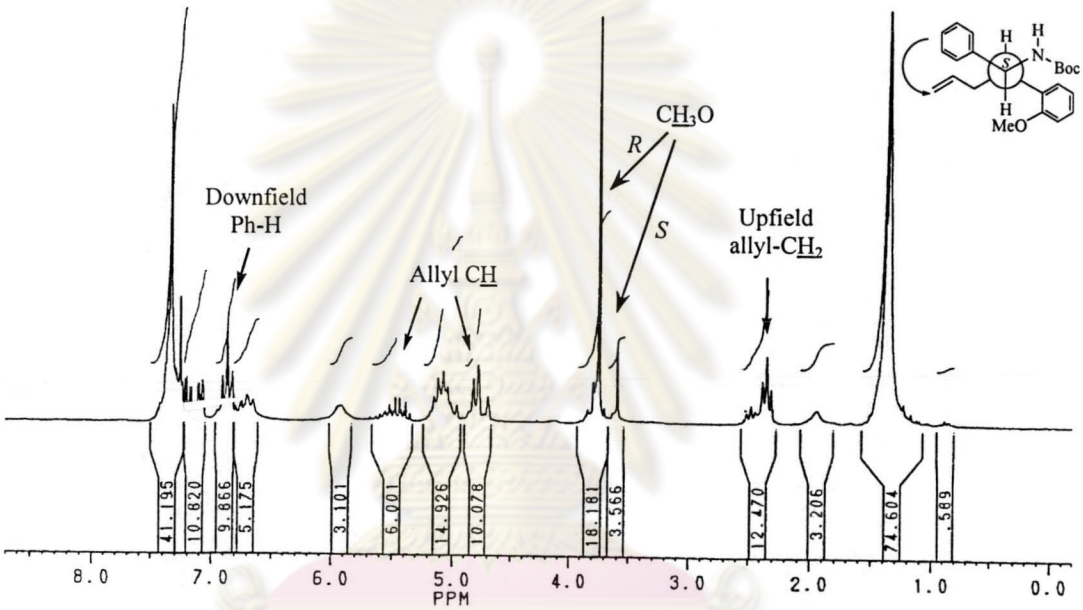


Table 3.13 The absolute configuration of the homoallylic amines R=2-MeOC$_6$H$_4$

R	H	δ-(*S*)-BPG			δ-(*R*)-BPG			Config.
								
2-MeOC$_6$H$_4$ From (*R*)-phenylglycinol	1, 2	1.95	OC<u>H</u>$_3$	3.75	2.48	OC<u>H</u>$_3$	3.59	***R***
	3, 4	4.78			4.78			
	5	5.44	C$_6$<u>H</u>$_4$	6.91	5.60	C$_6$<u>H</u>$_4$	6.72	



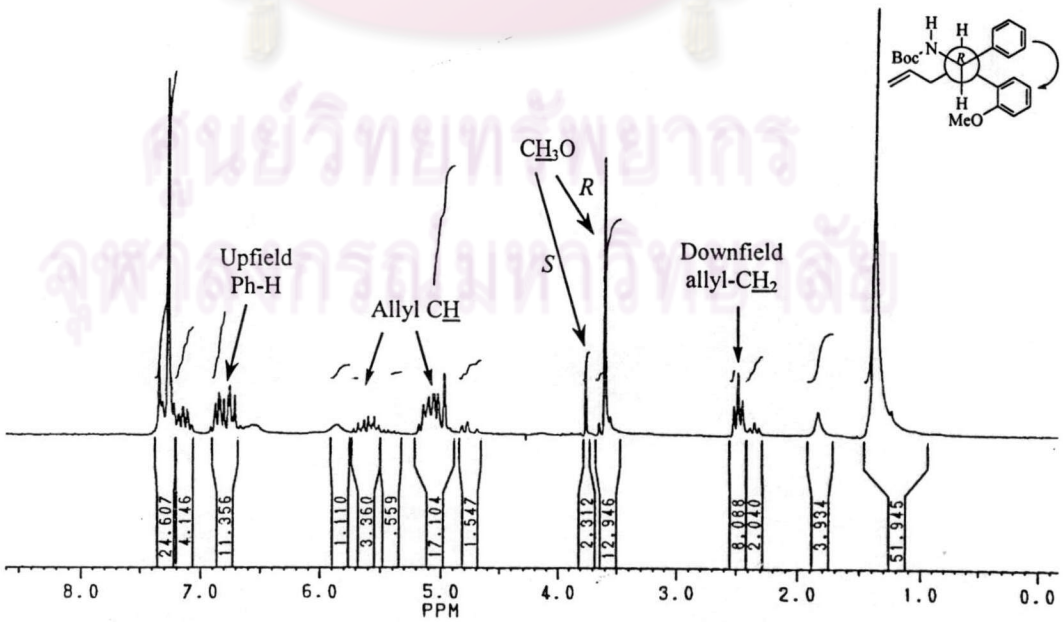
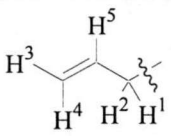
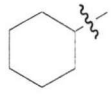
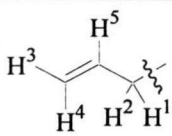
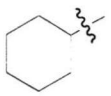
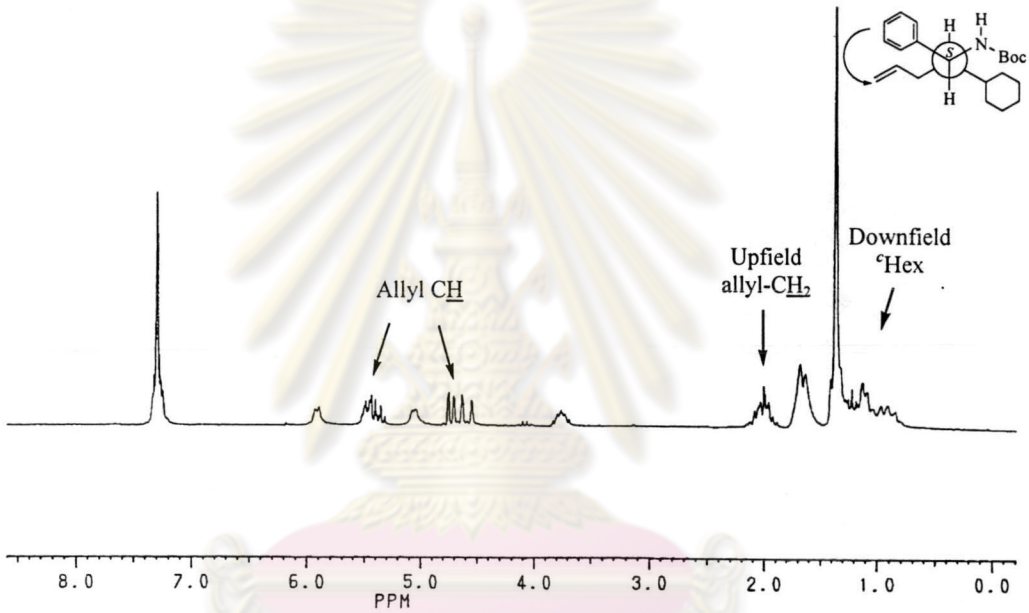


Table 3.14 The absolute configuration of the homoallylic amines R = Cyclohexyl

R	H	δ-(*S*)-BPG		δ-(*R*)-BPG		Config.
						
^{c}Hex From (*R*)-phenylglycinol	1, 2 3, 4 5	2. 4.70, 4.75 5.44	2.00	2.20 5.09 5.74	0.66	***R***



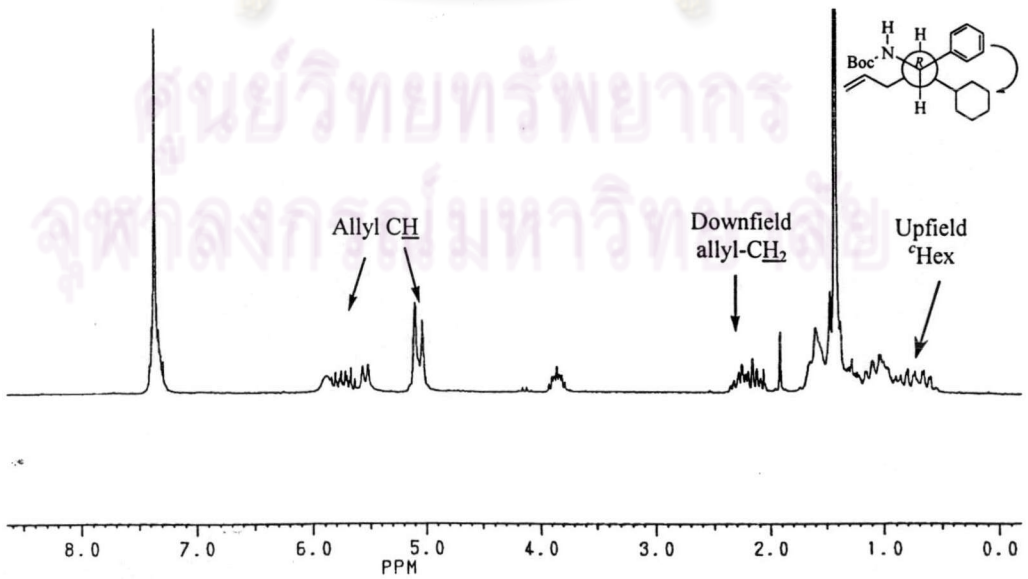
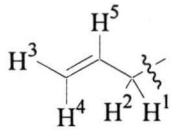
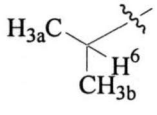
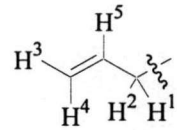
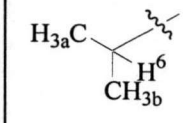
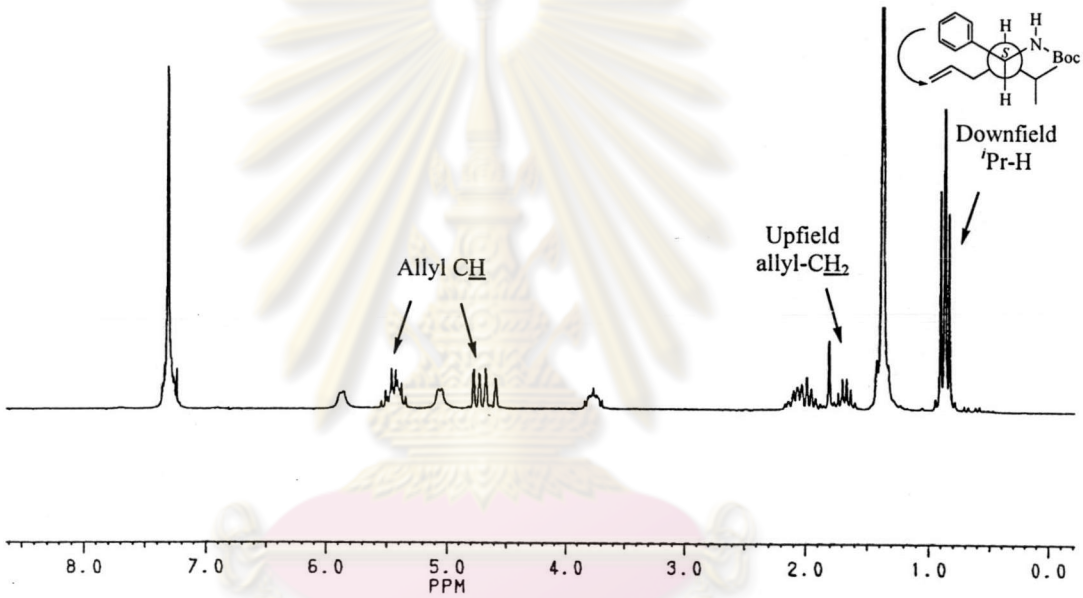


Table 3.15 The absolute configuration of the homoallylic amines R = Isopropyl

R	δ-(*S*)-BPG				δ-(*R*)-BPG				Config.
									
^{i}Pr From (*R*)-phenylglycinol	H_1, H_2 H_3, H_4 H_5	2.1.99 4.65, 4.72 5.41	CH_{3a} CH_{3b} H_6	0.86 1.67	H_1, H_2 H_3, H_4 H_5	2.15 5.05 5.68	CH_{3a} CH_{3b} H_6	0.66 1.58	***R***



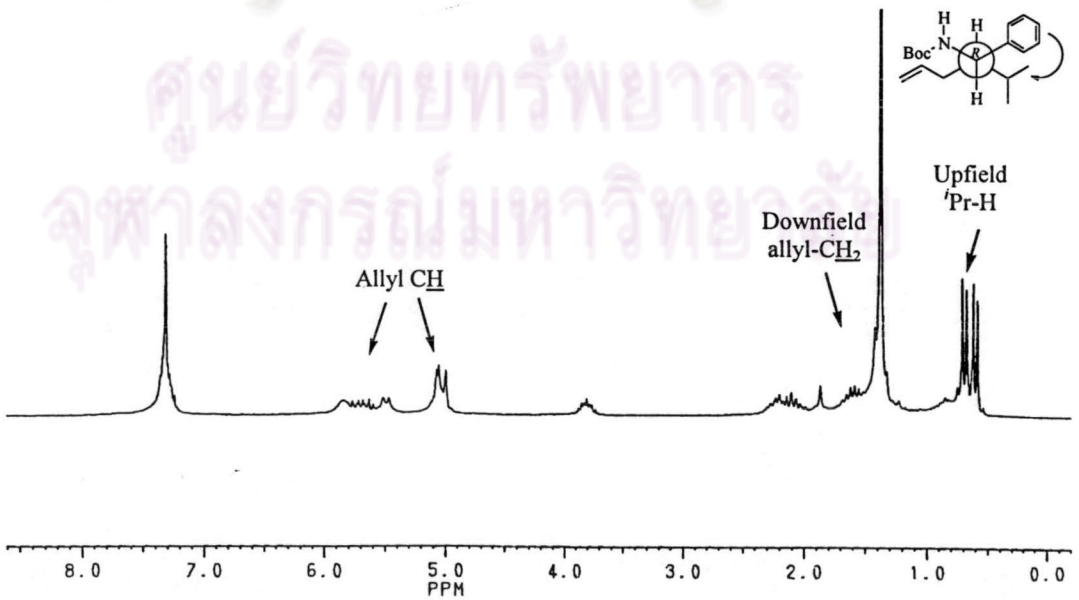
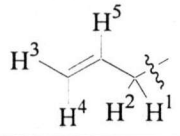
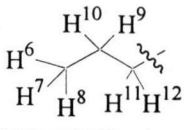
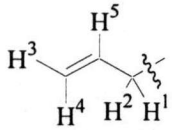
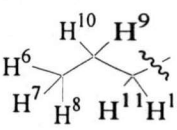
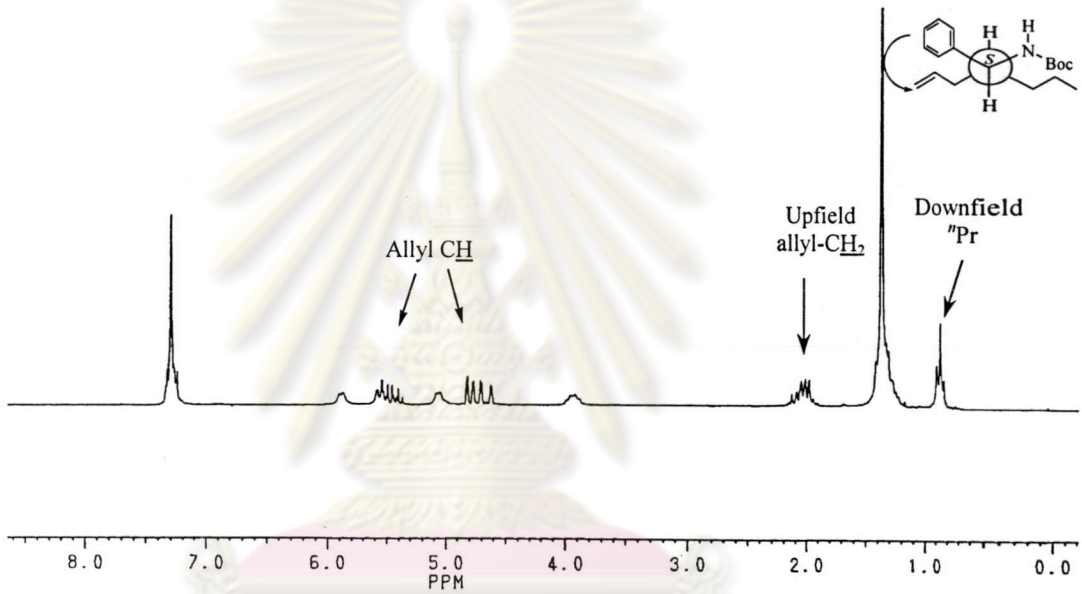


Table 3.16 The absolute configuration of the homoallylic amines R = *n*-Propyl

R	δ-(*S*)-BPG				δ-(*R*)-BPG				Config.
									
^{n}Pr From (*R*)-phenyl glycinol	H_1, H_2 H_3, H_4 H_5	2.05 4.69, 4.76 5.50	H_6,H_7,H_8 H_9,H_{10} H_{11},H_{12}	0.86 1.25 1.31	H_1, H_2 H_3, H_4 H_5	2.15 5.00 5.68	H_6,H_7,H_8 H_9,H_{10} H_{11},H_{12}	0.73 1.05 1.23	***R***



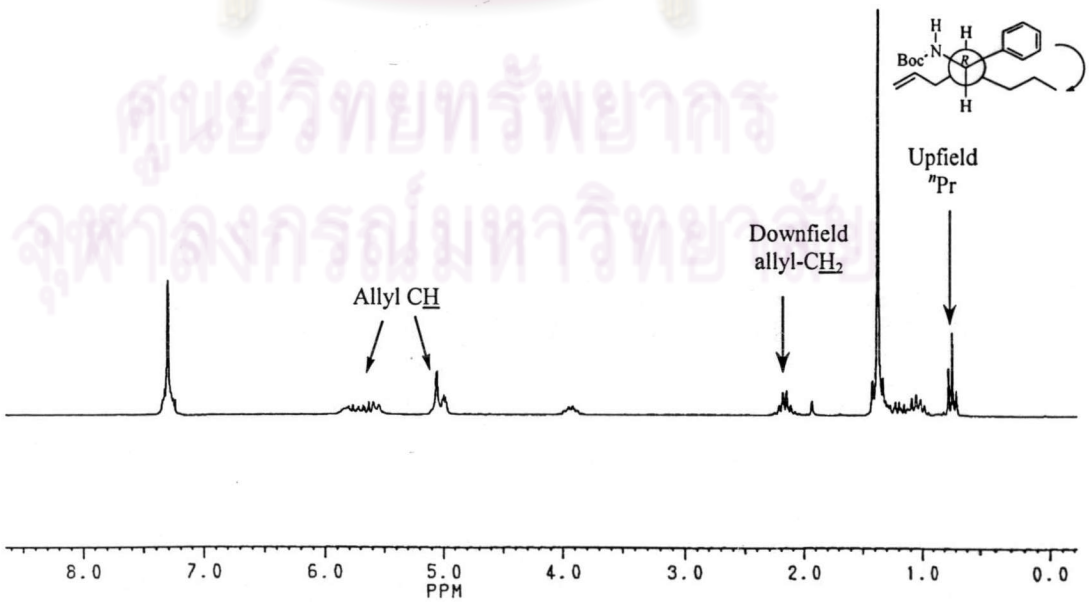
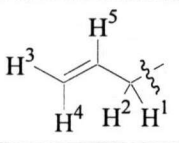
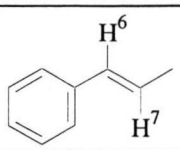
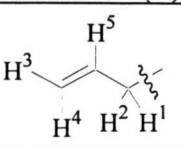
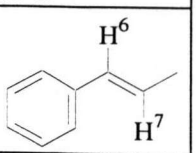
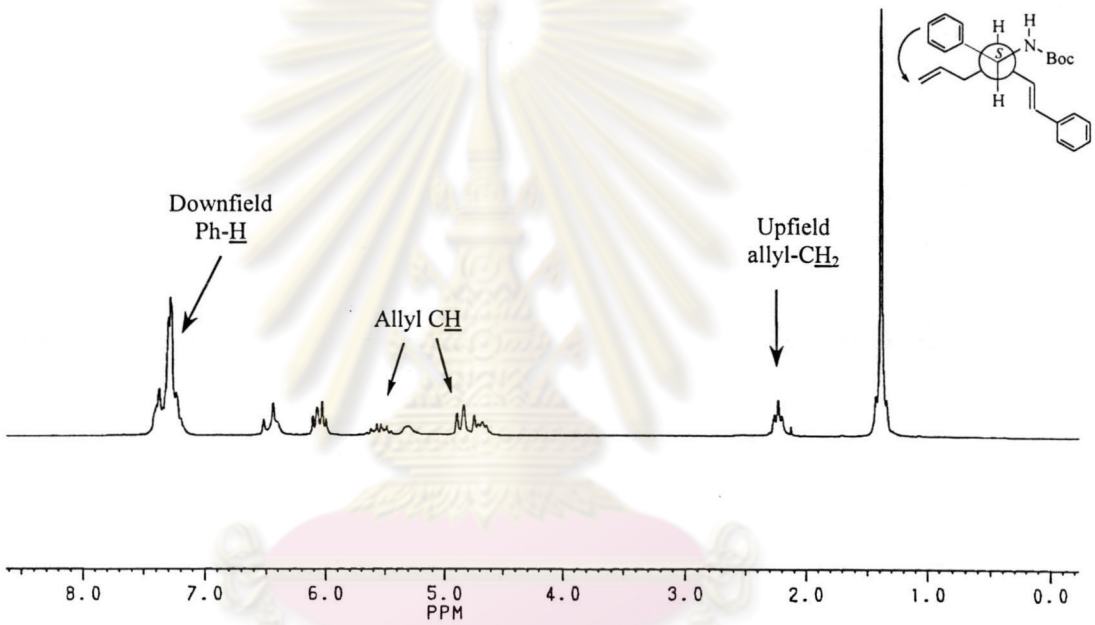
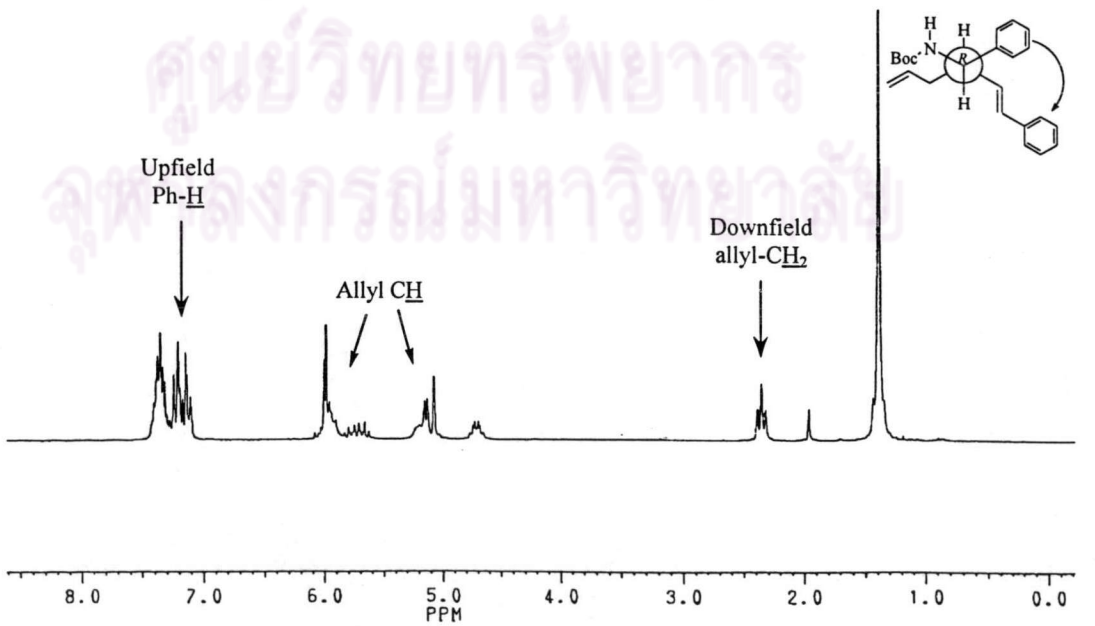


Table 3.17 The absolute configuration of the homoallylic amines R = Cinnamyl

R	δ-(*S*)-BPG				δ-(*R*)-BPG				Config.
									
Cinnamyl From (*R*)-phenylglycinol	H_1, H_2 H_3, H_4 H_5	2.23 4.70, 4.85 5.50	H_6 H_7 $C_6\underline{H}_5$	6.07 6.44 7.19	H_1, H_2 H_3, H_4 H_5	2.48 4.78 5.60	H_6 H_7 $C_6\underline{H}_5$	5.79 5.87 7.12	***R***





VITAE

Miss Chutima Winotapan was born on January 14th, 1977 in Chonburi, Thailand. She received a Bachelor Degree of Science, majoring in Chemistry from Chulalongkorn University in 1999. Since 1999, she has been a graduate student studying Organic Chemistry as her major at Chulalongkorn University. During her study towards the Master's degree, she was awarded a teaching assistant scholarship by the Faculty of Science during 1999-2002 and was supported by research grant for her Master degree's thesis from the Graduate School, Chulalongkorn University.

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