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APPENDICES

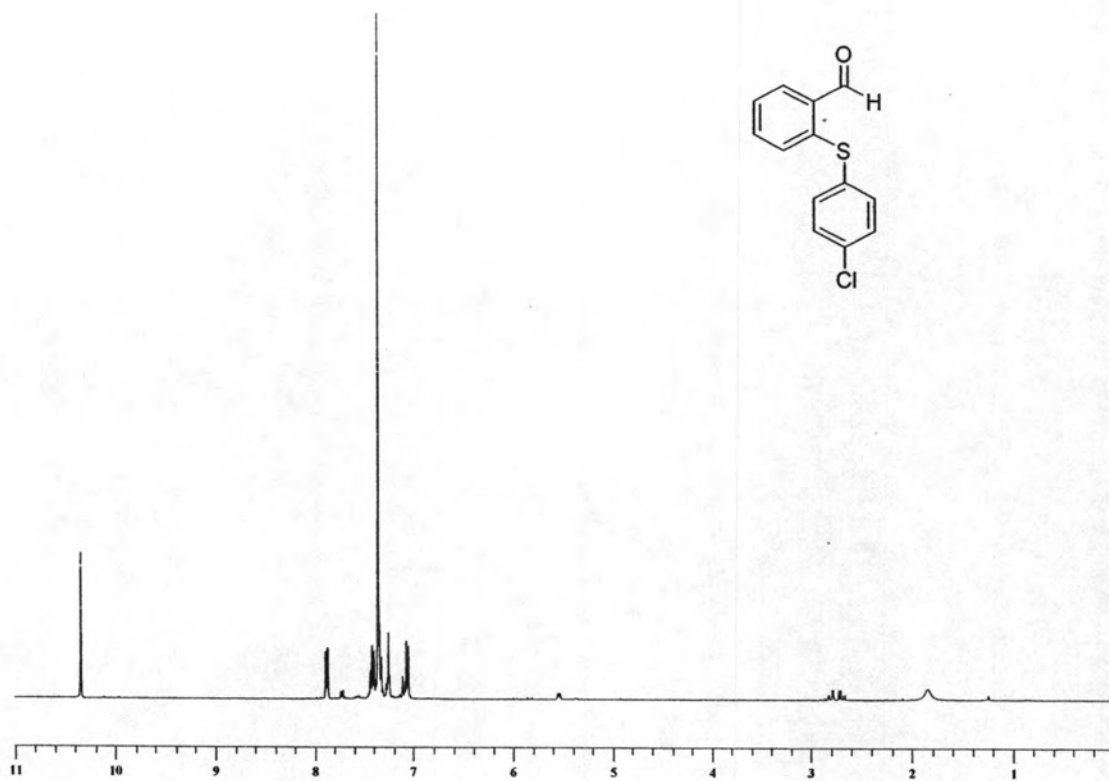


Figure 1 The ^1H NMR spectrum of 71a

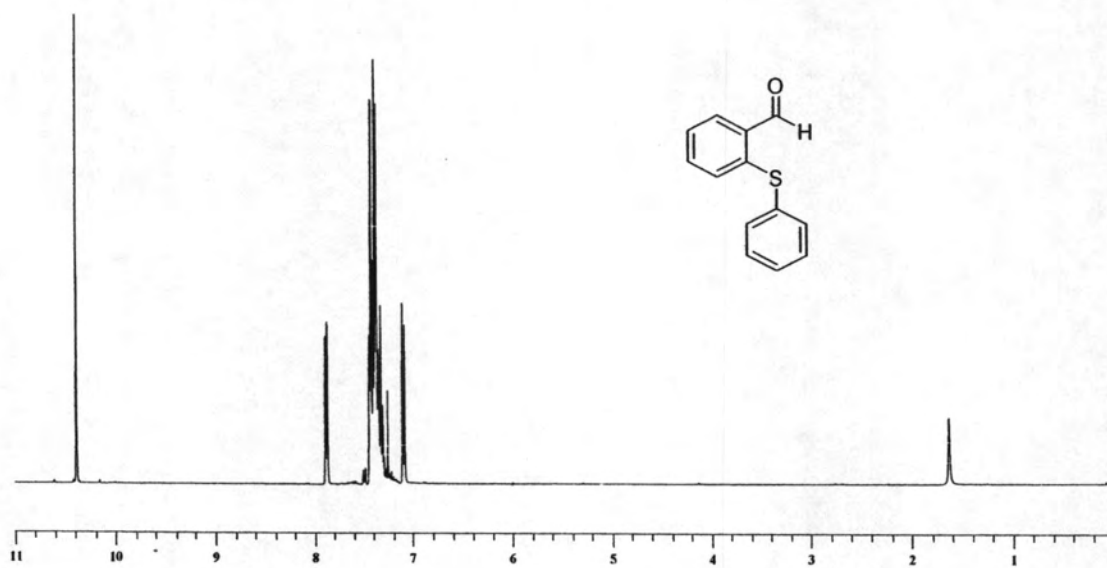


Figure 2 The ^1H NMR spectrum of 71b

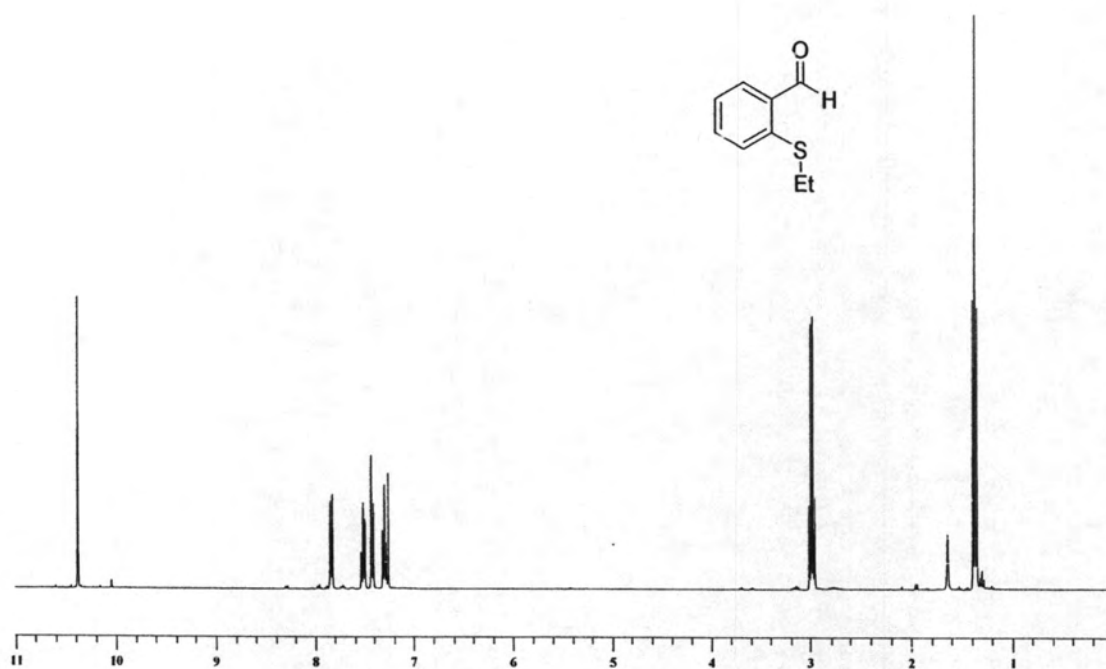


Figure 3 The ¹H NMR spectrum of 71c

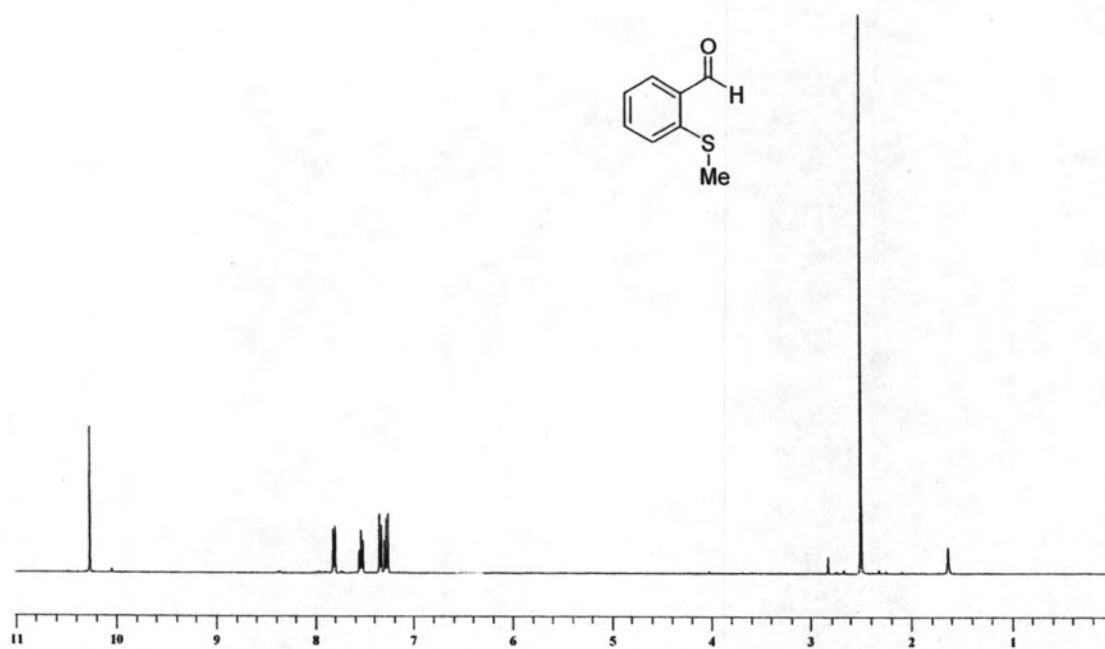


Figure 4 The ¹H NMR spectrum of 71d

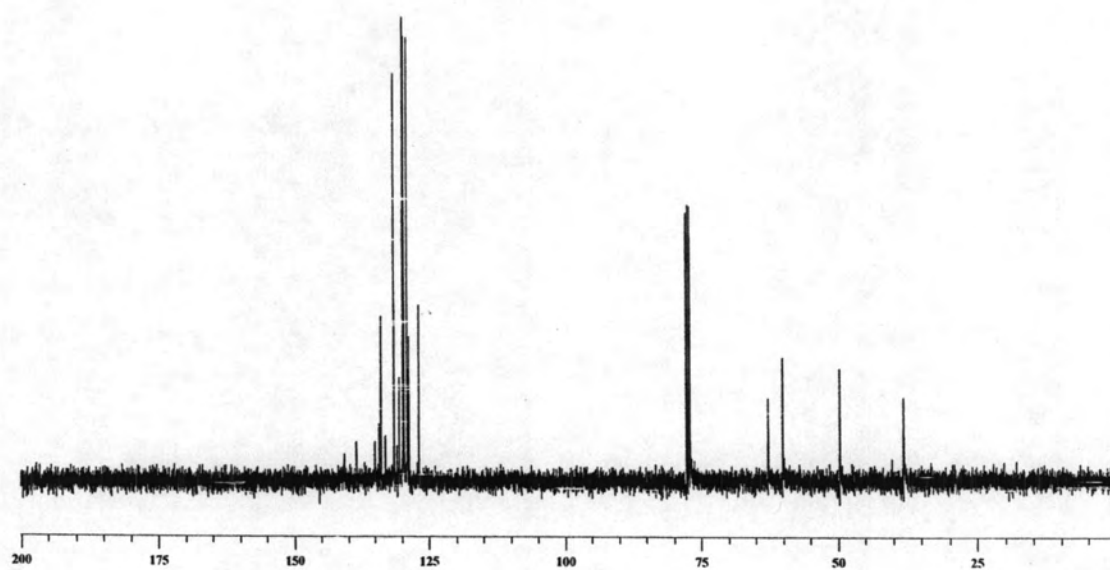
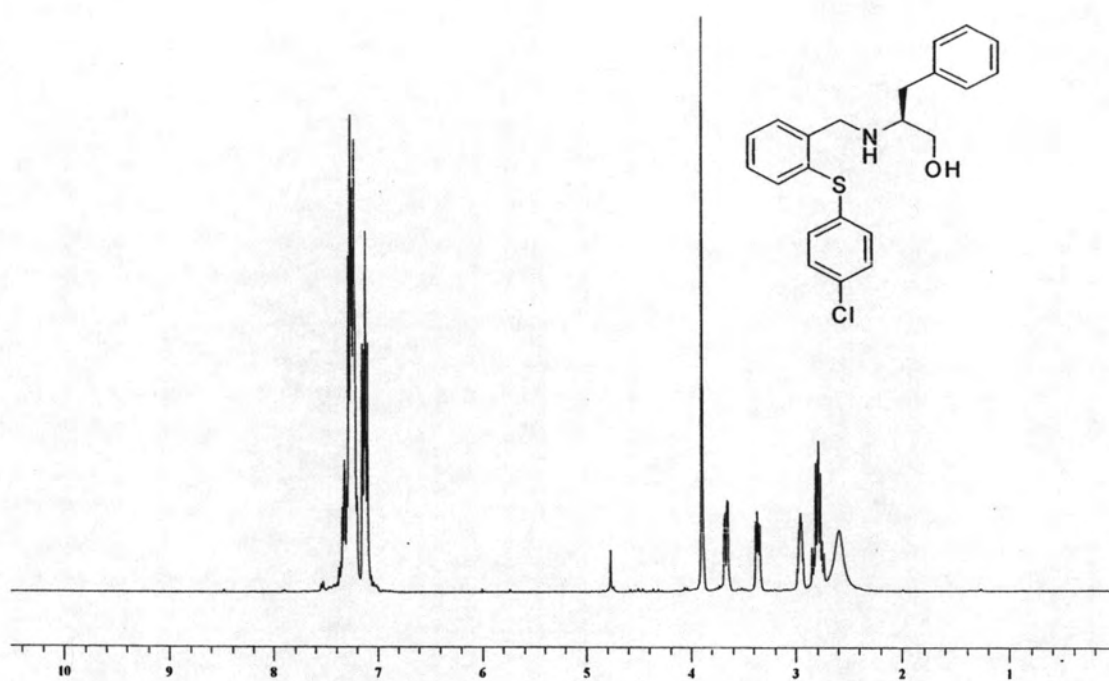


Figure 5 The ^1H NMR and ^{13}C NMR spectra of (S)-69a

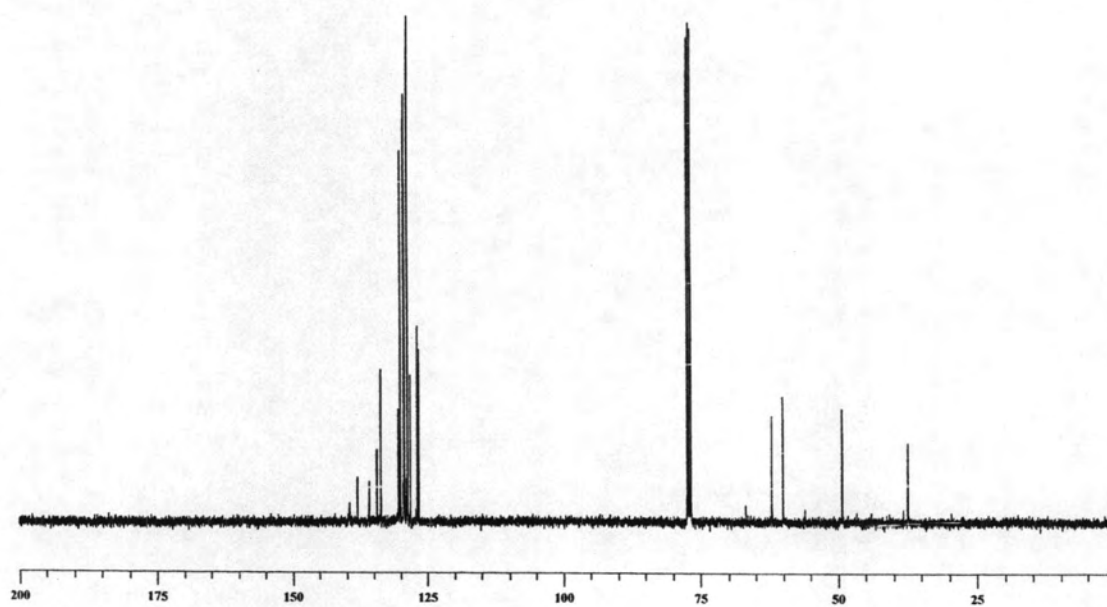
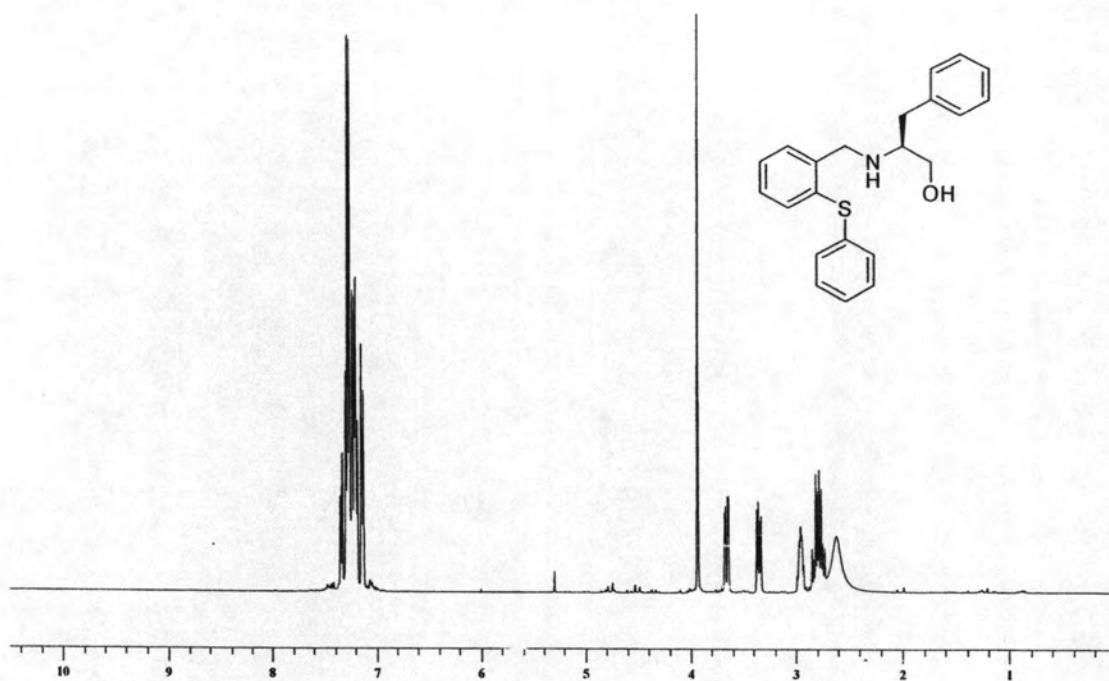


Figure 6 The ^1H NMR and ^{13}C NMR spectra of (S)-69b

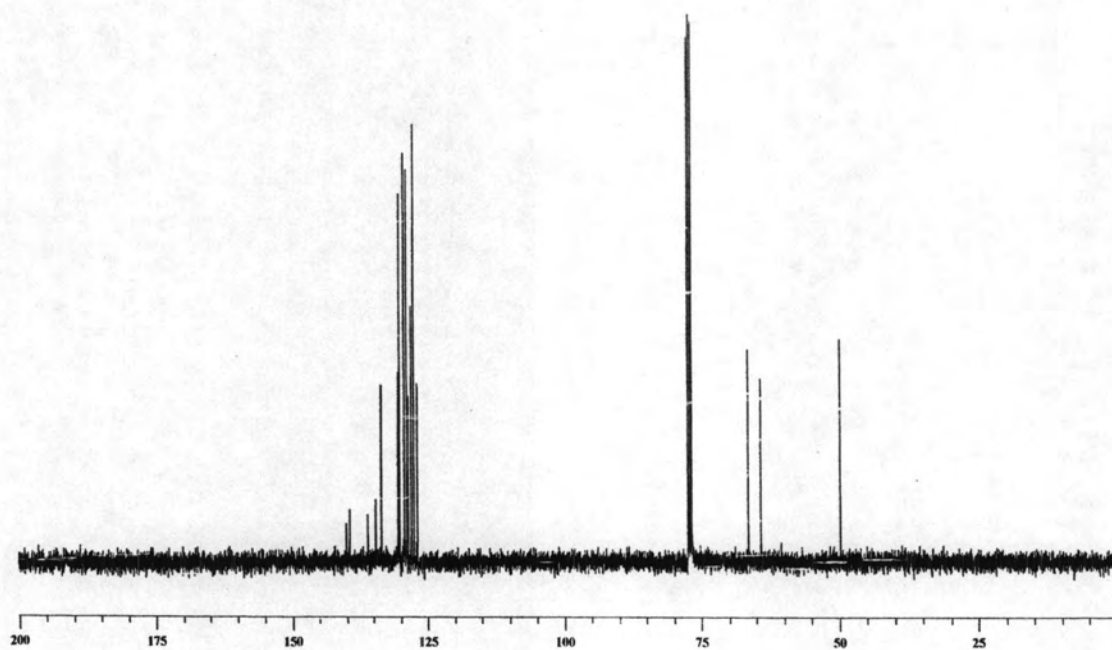
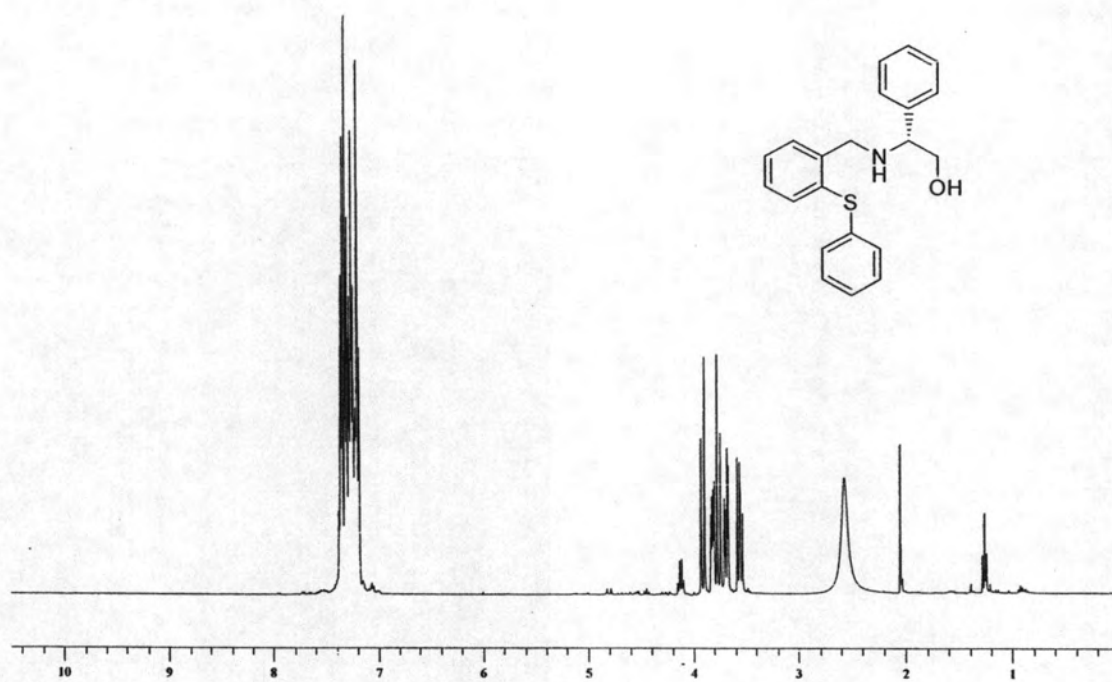


Figure 7 The ^1H NMR and ^{13}C NMR spectra of (R) -69c

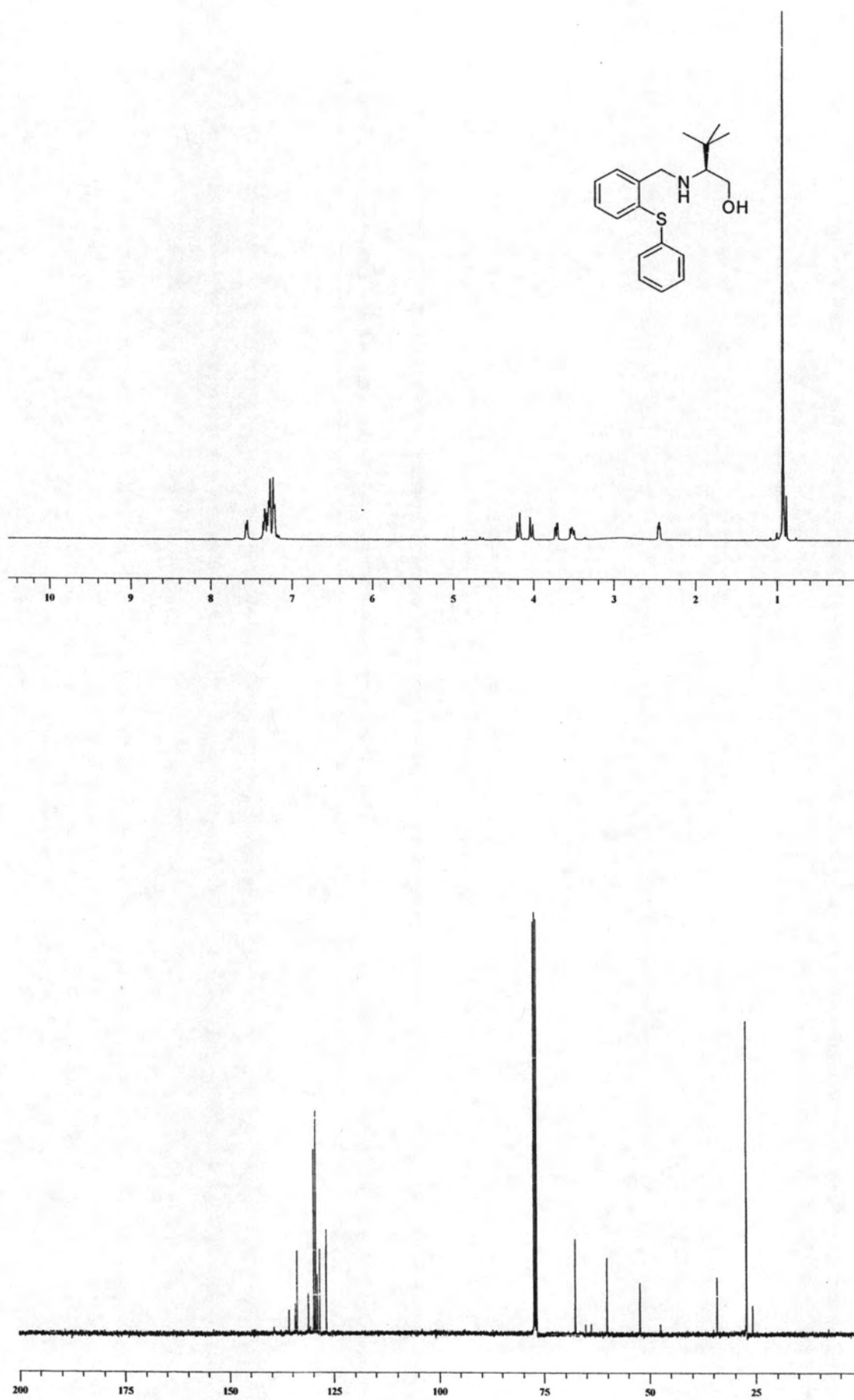


Figure 8 The ^1H NMR and ^{13}C NMR spectra of (S)-69d

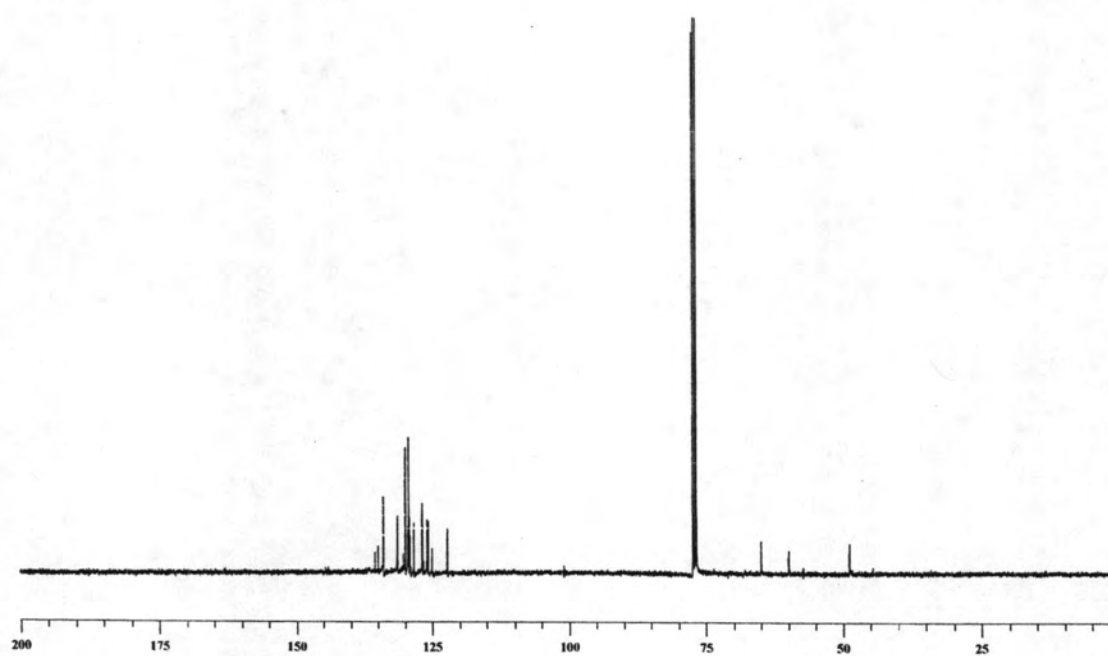
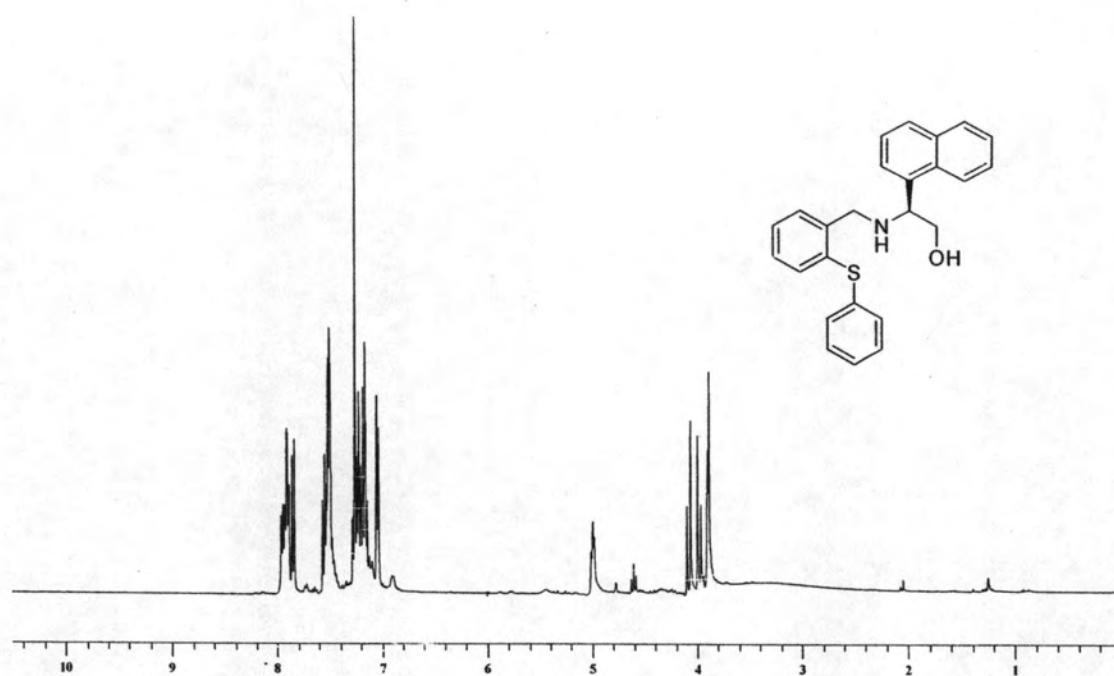


Figure 9 The ^1H NMR and ^{13}C NMR spectra of (S)-69e

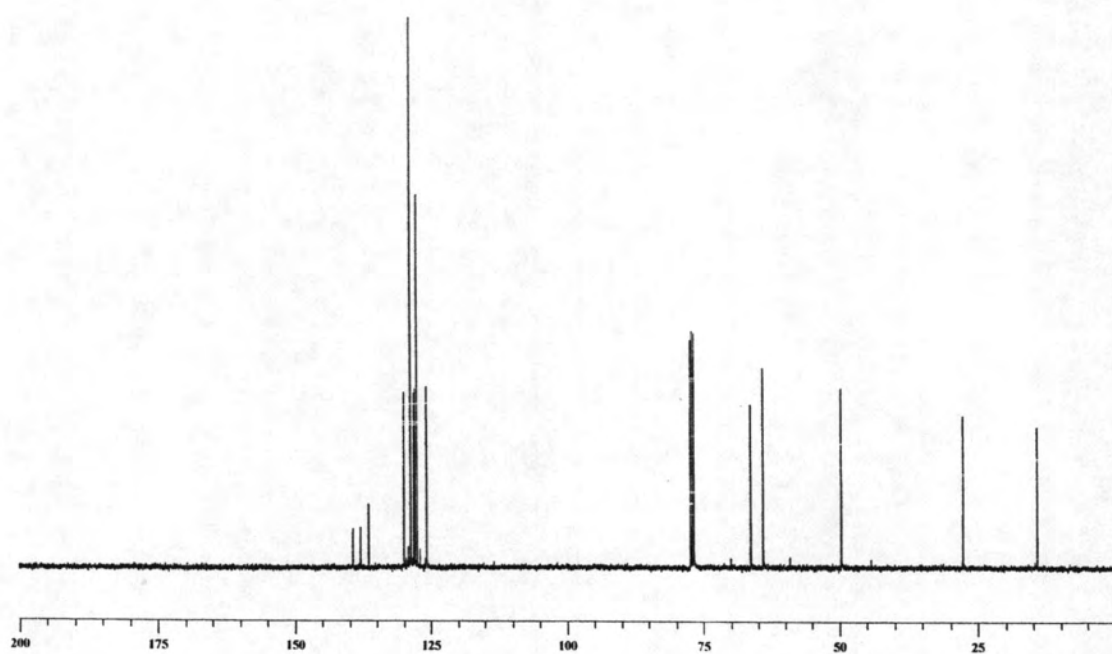
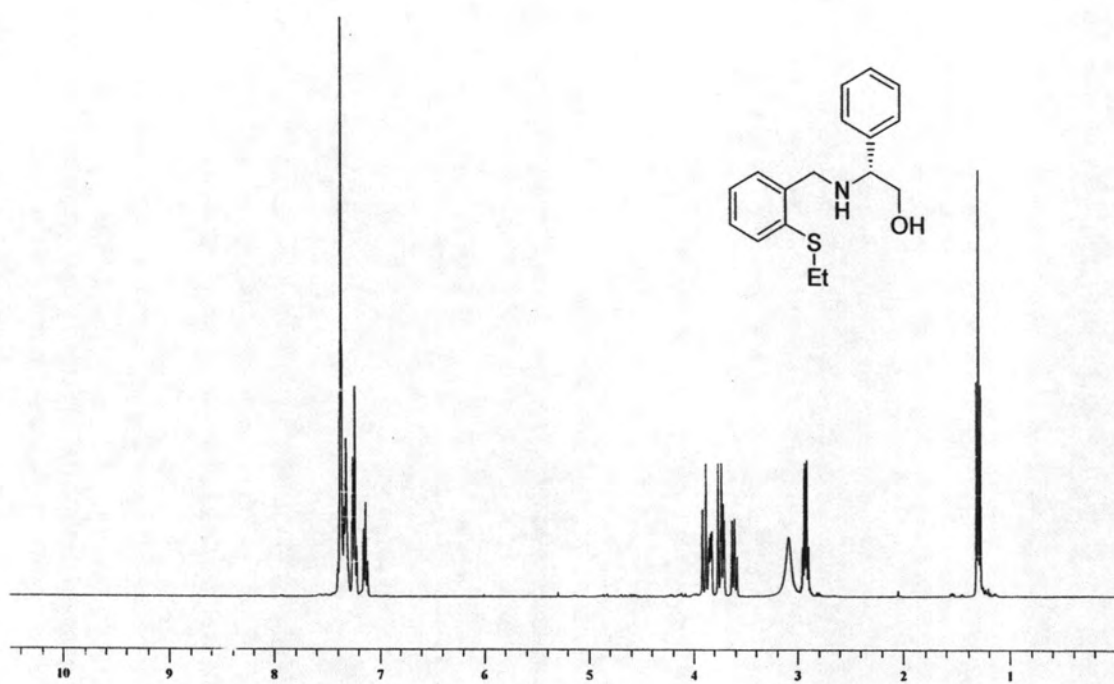


Figure 10 The ^1H NMR and ^{13}C NMR spectra of (R)-69f

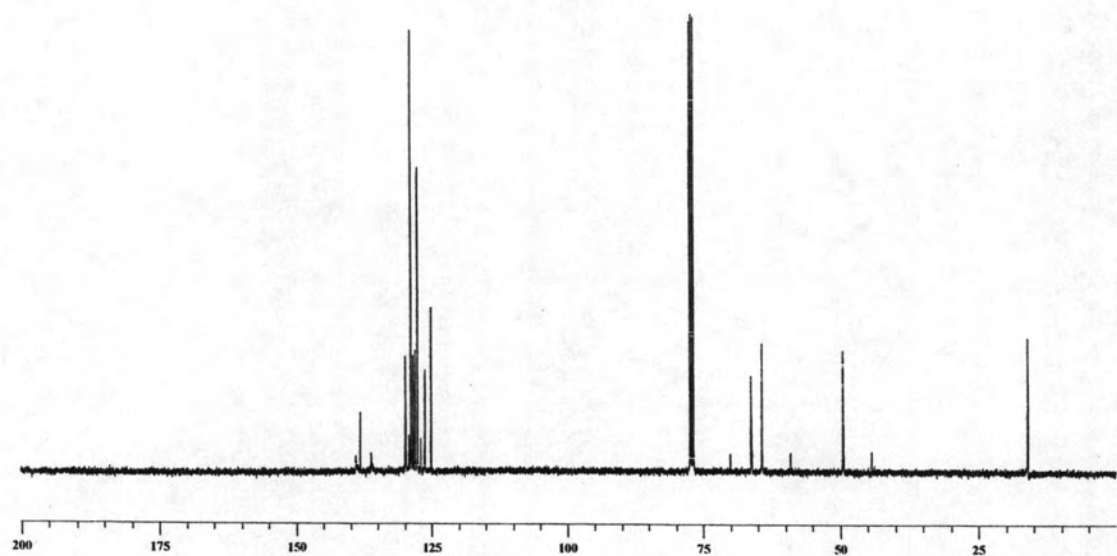
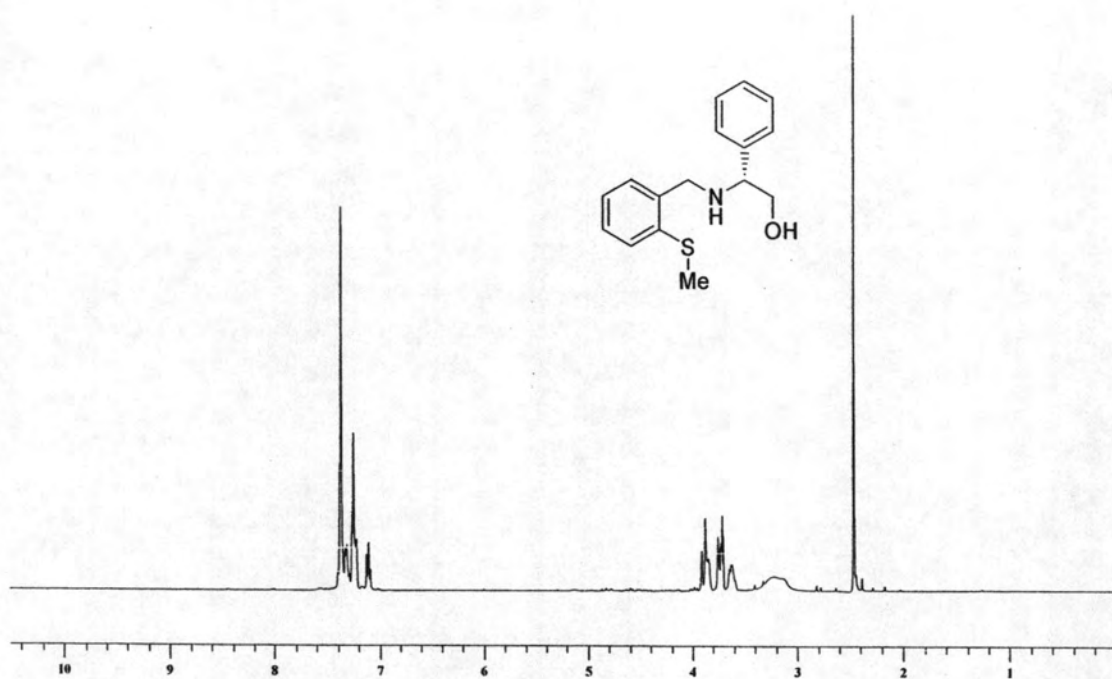


Figure 11 The ^1H NMR and ^{13}C NMR spectra of (R) -69g

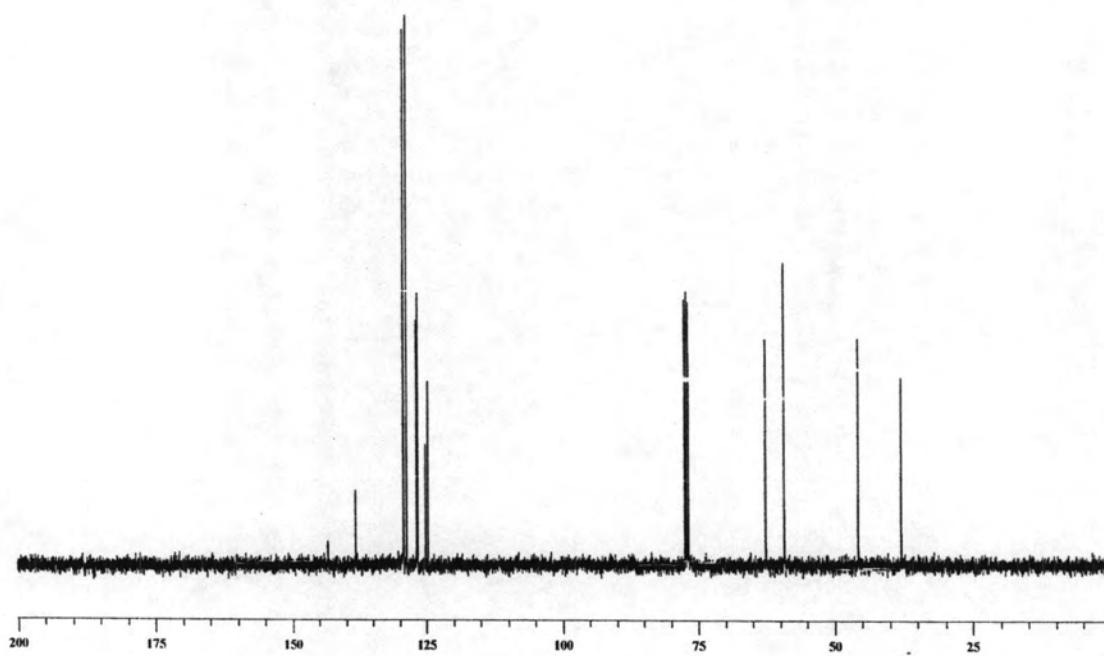
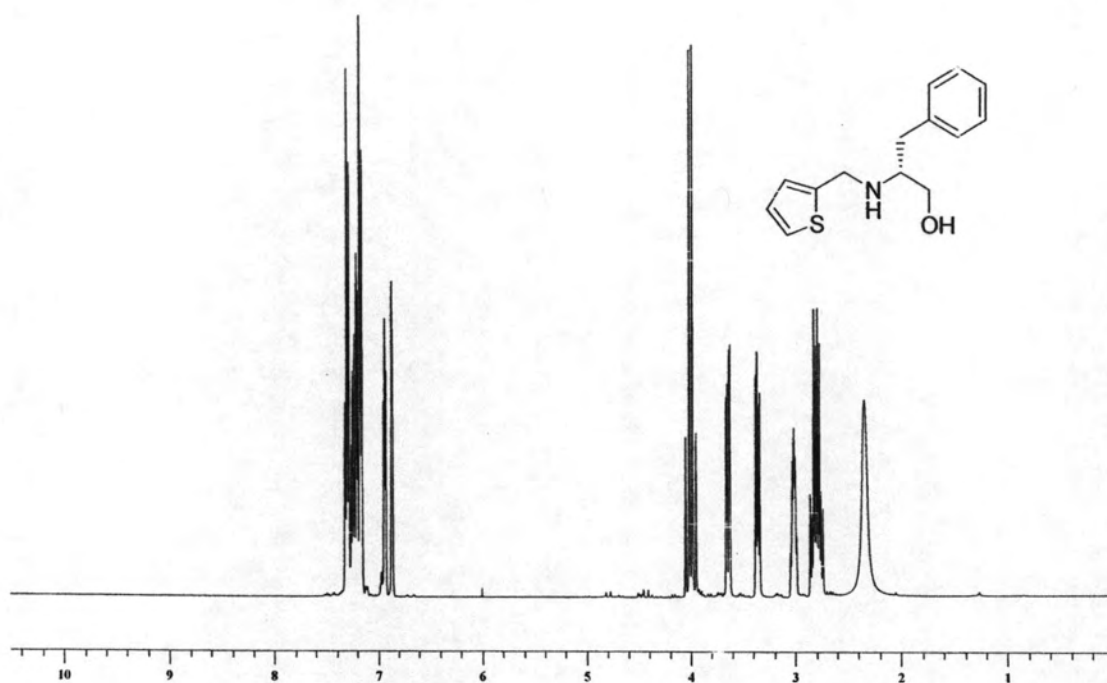


Figure 12 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70a

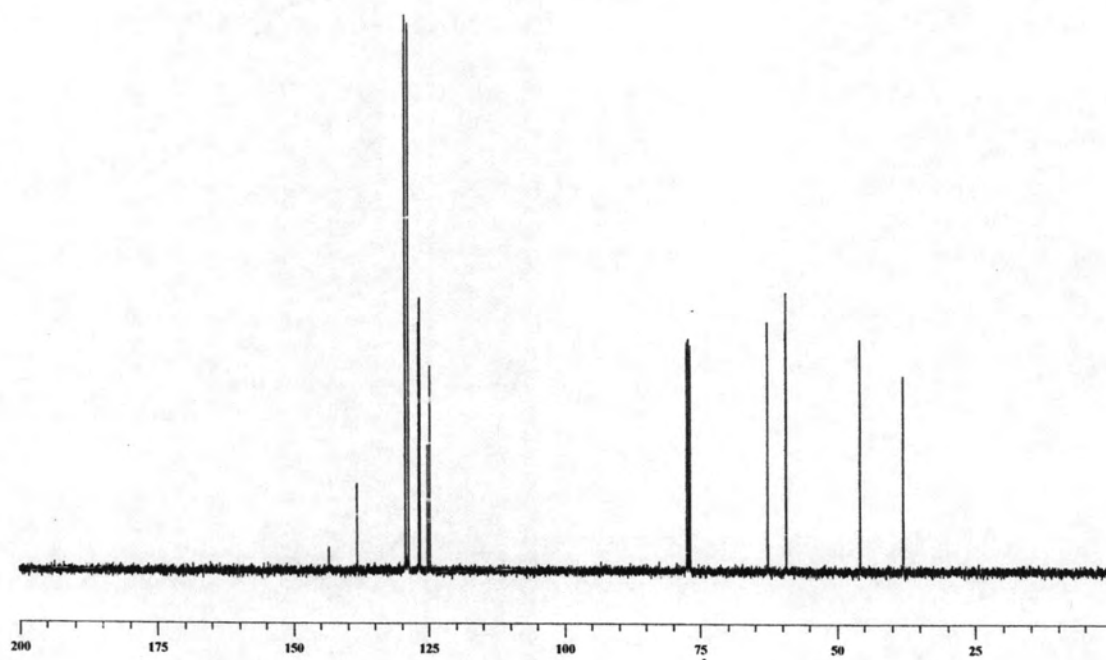
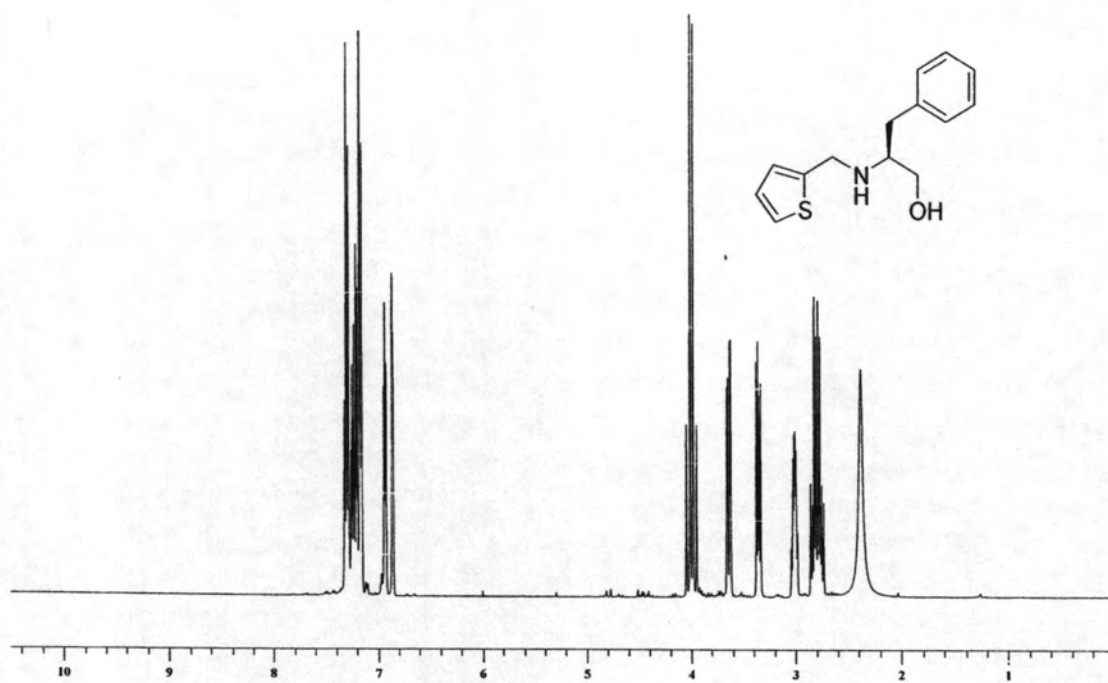


Figure 13 The ^1H NMR and ^{13}C NMR spectra of (S)-70a

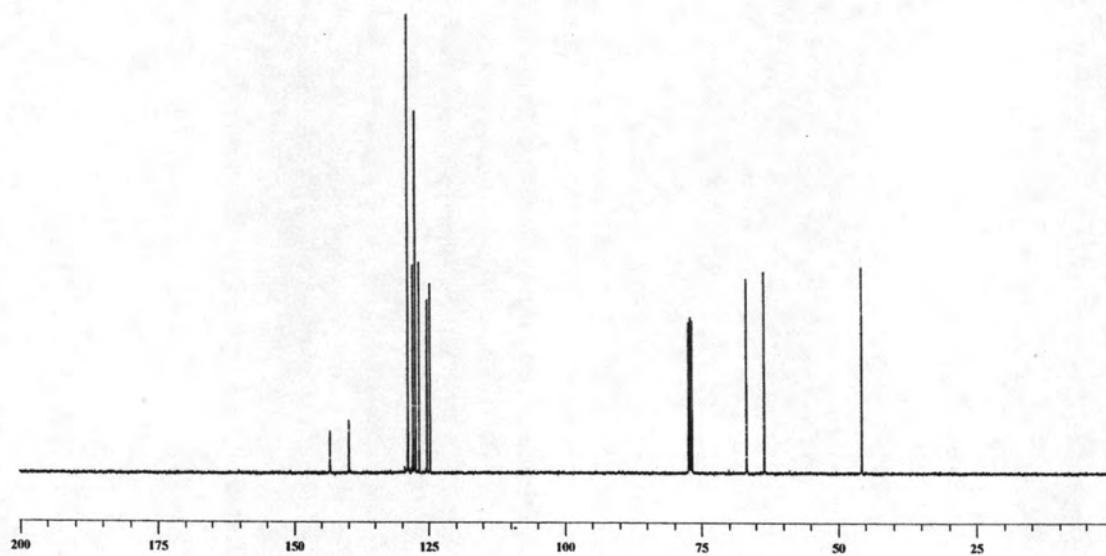
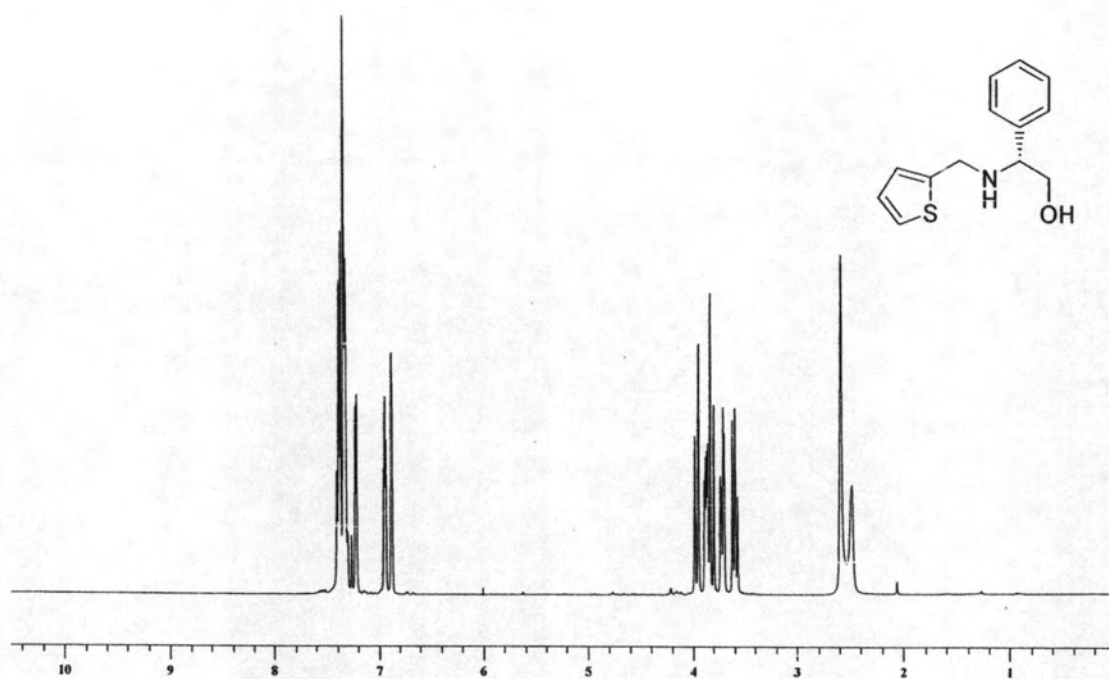


Figure 14 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70b

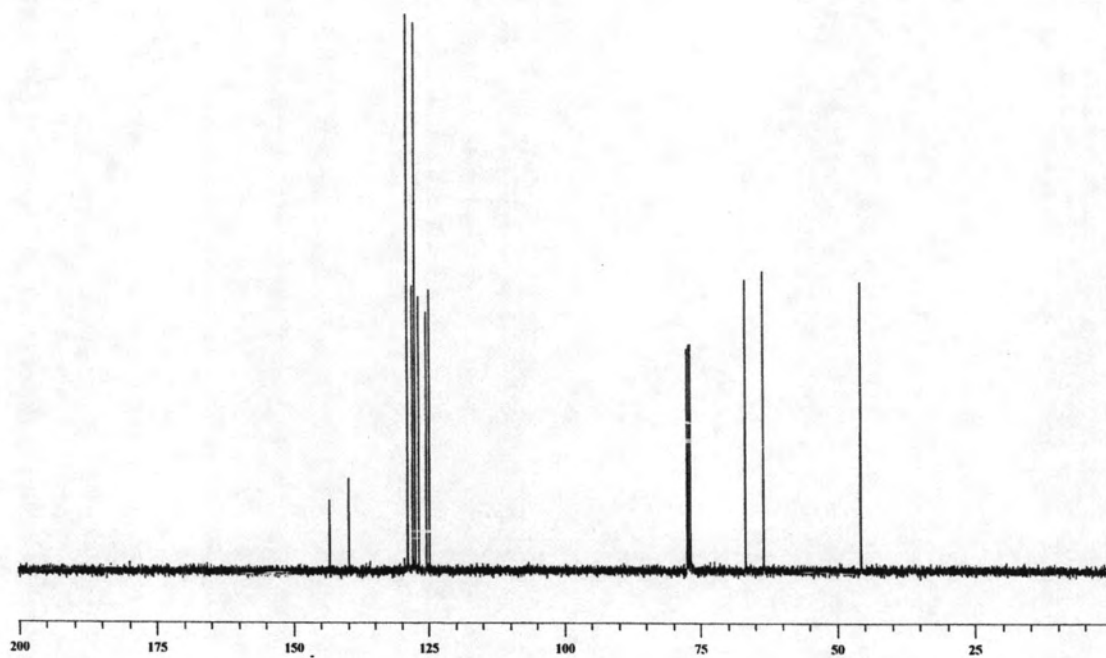
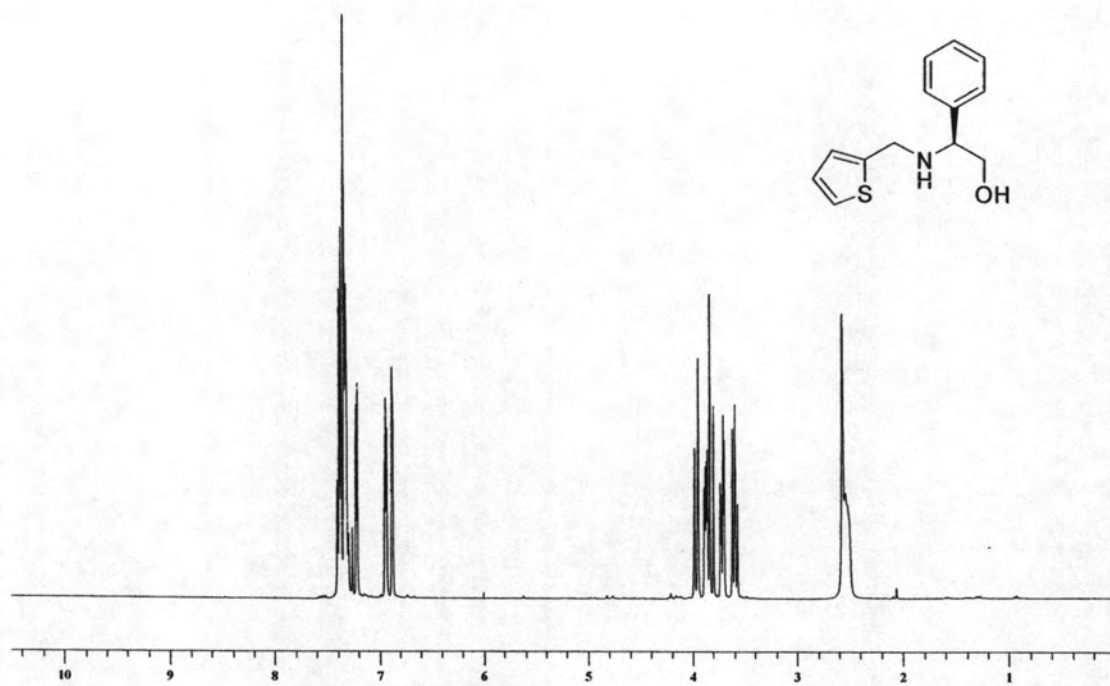


Figure 15 The ^1H NMR and ^{13}C NMR spectra of (*S*)-70b

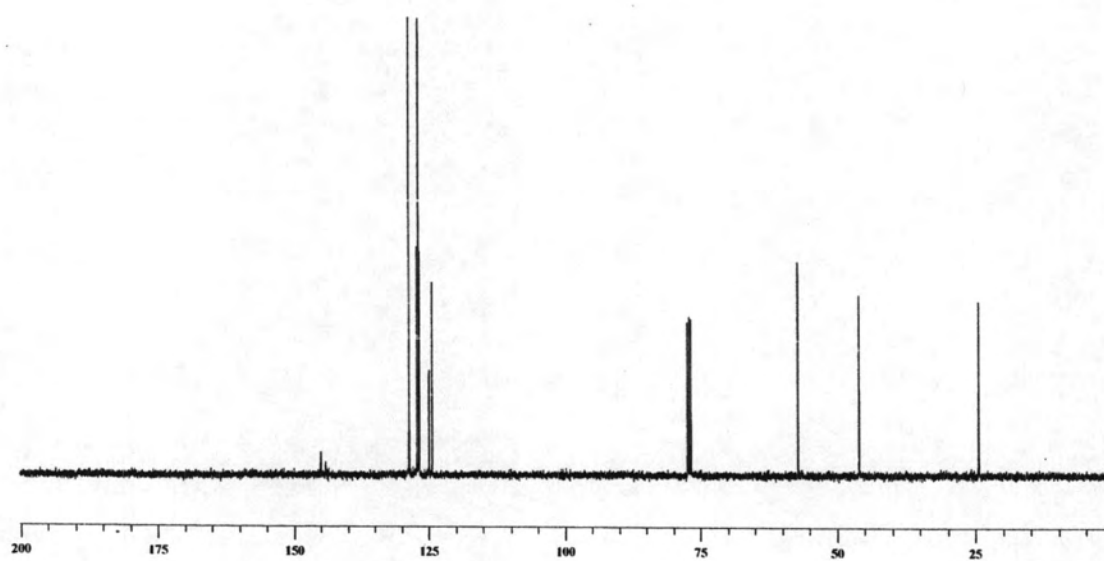
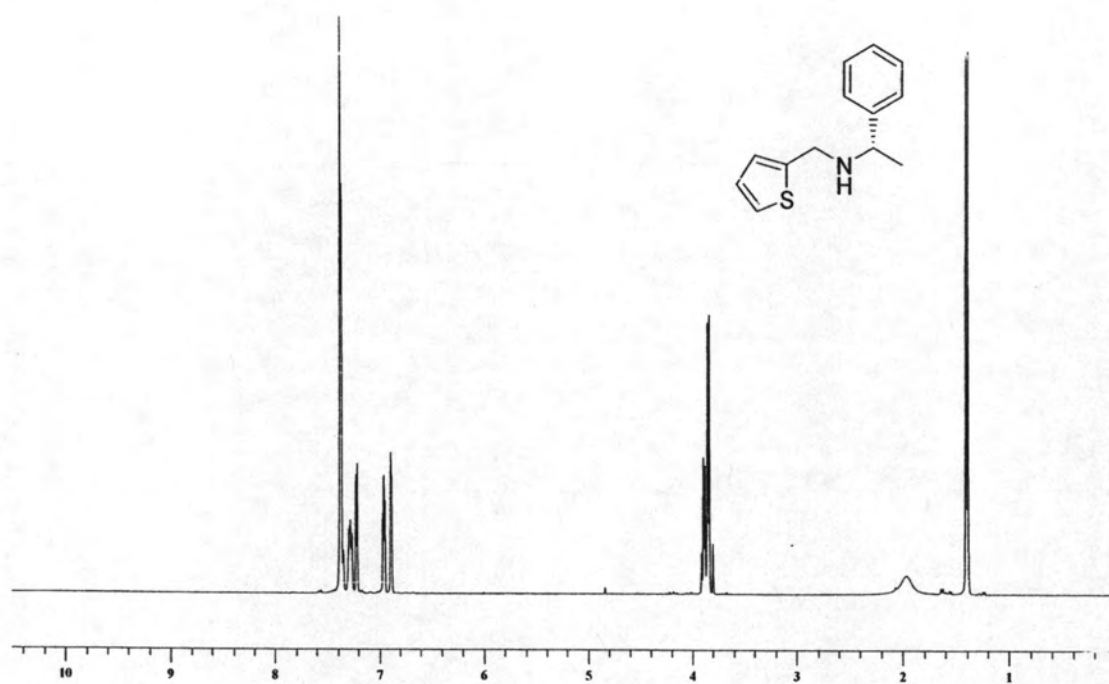


Figure 16 The ^1H NMR and ^{13}C NMR spectra of (*S*)-70c

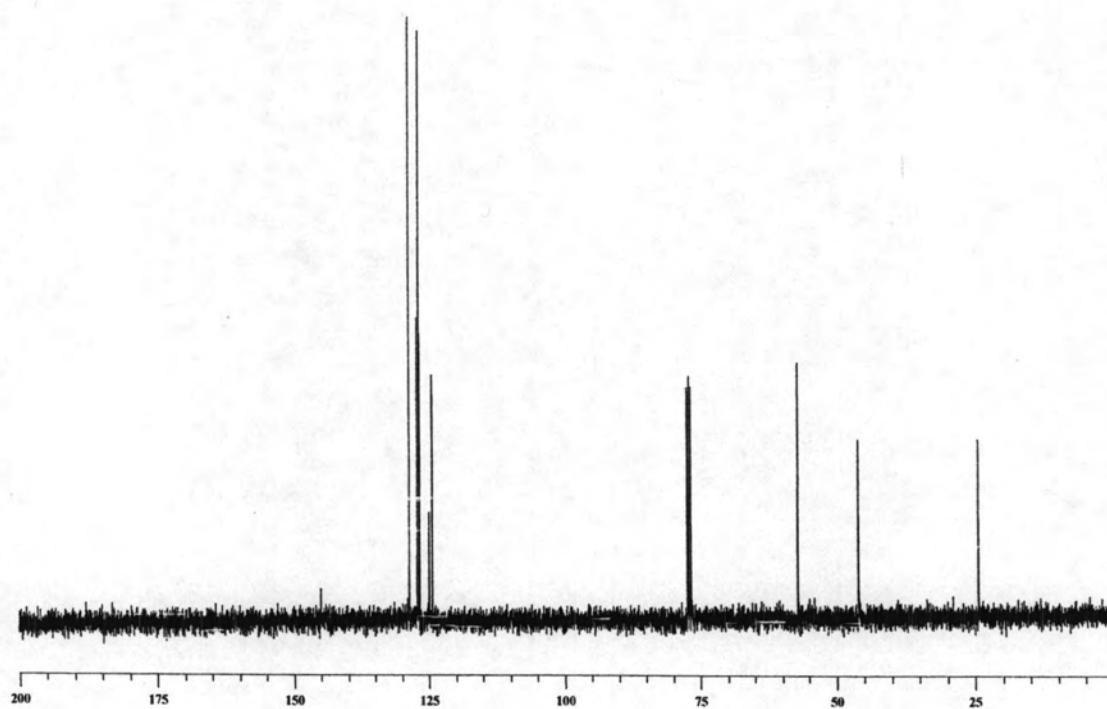
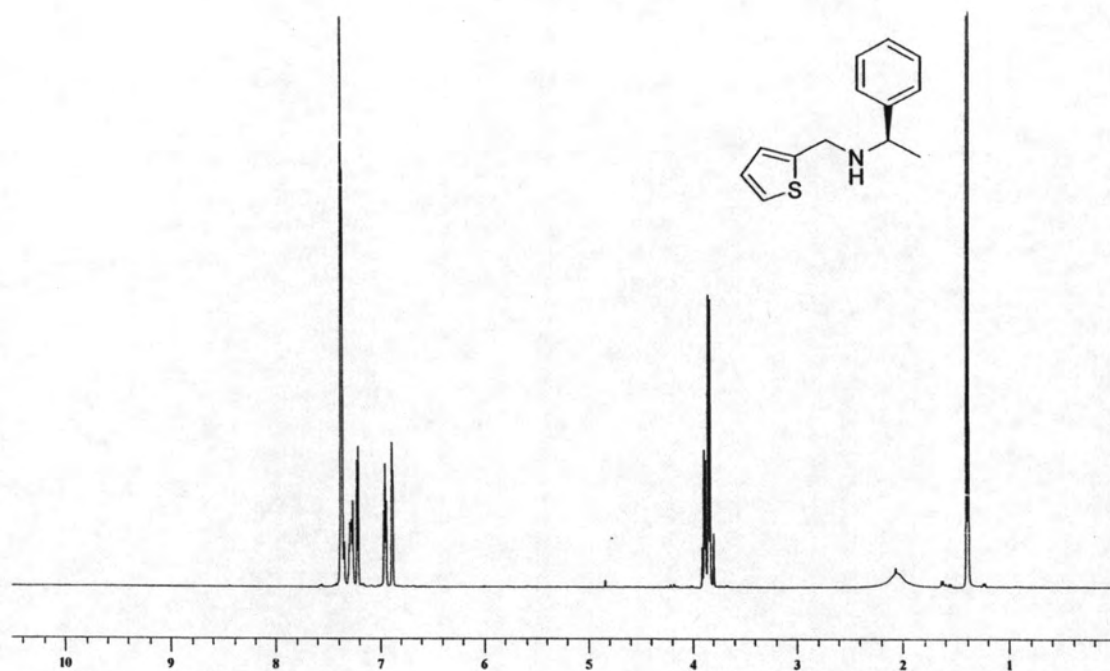


Figure 17 The ^1H NMR and ^{13}C NMR spectra of (R) -70c

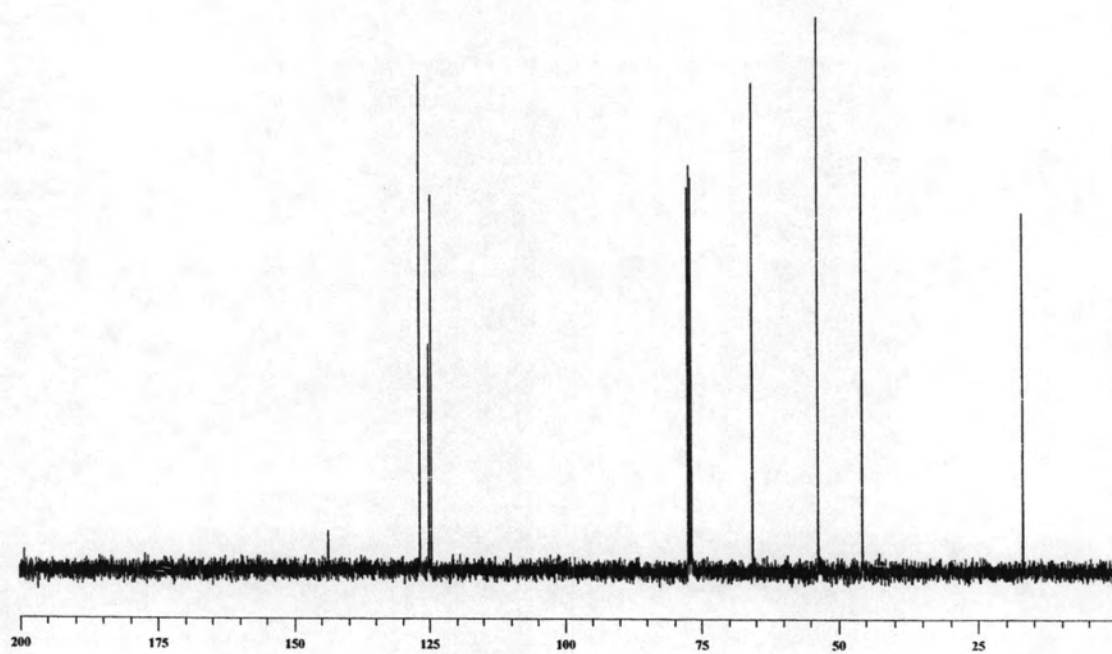
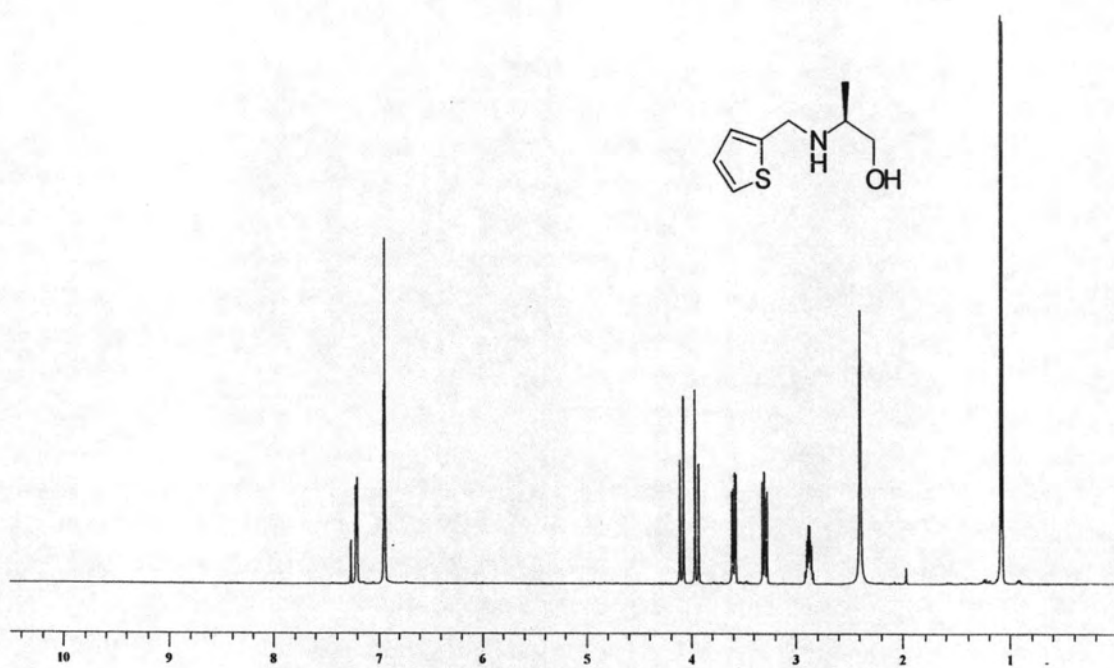


Figure 18 The ^1H NMR and ^{13}C NMR spectra of (S)-70d

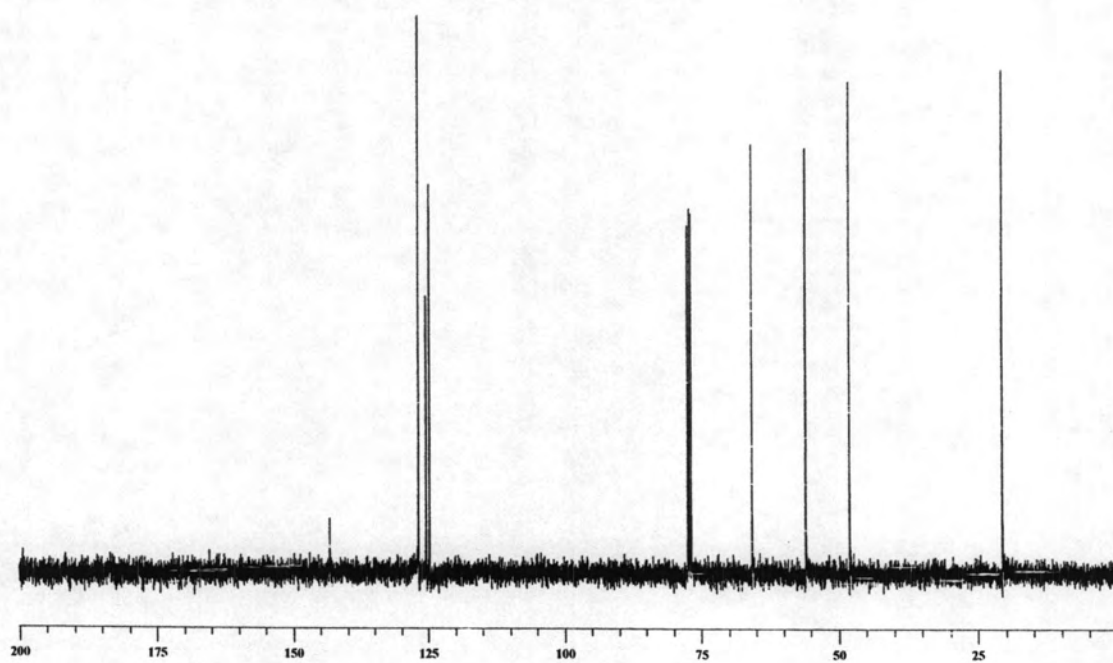
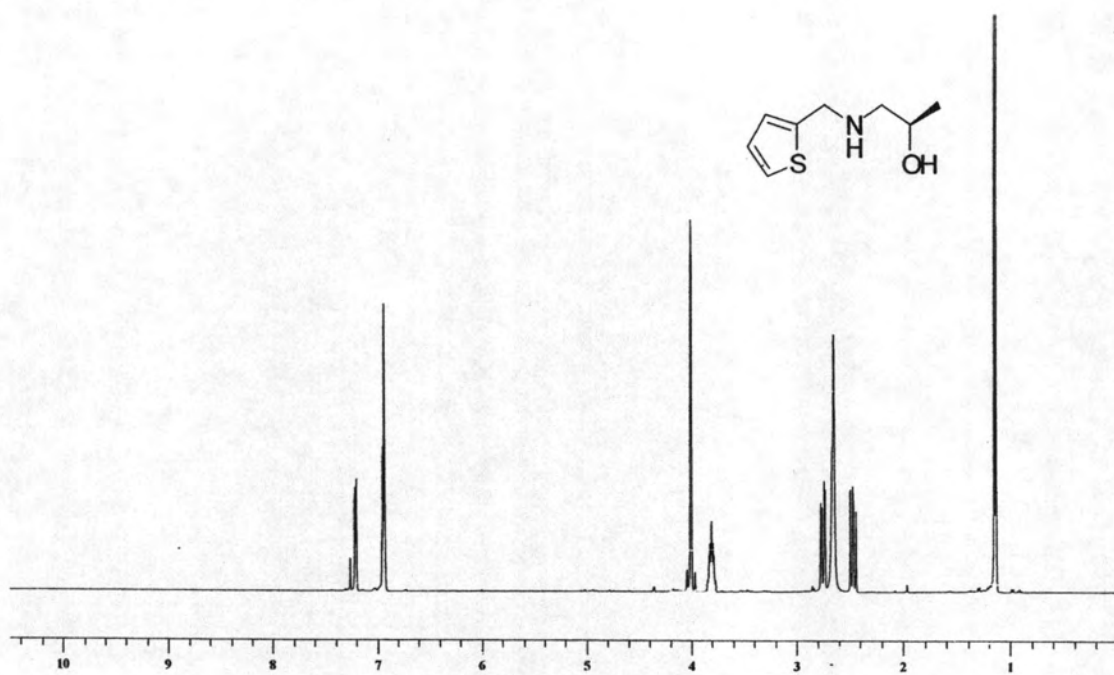


Figure 19 The ^1H NMR and ^{13}C NMR spectra of (R)-70e

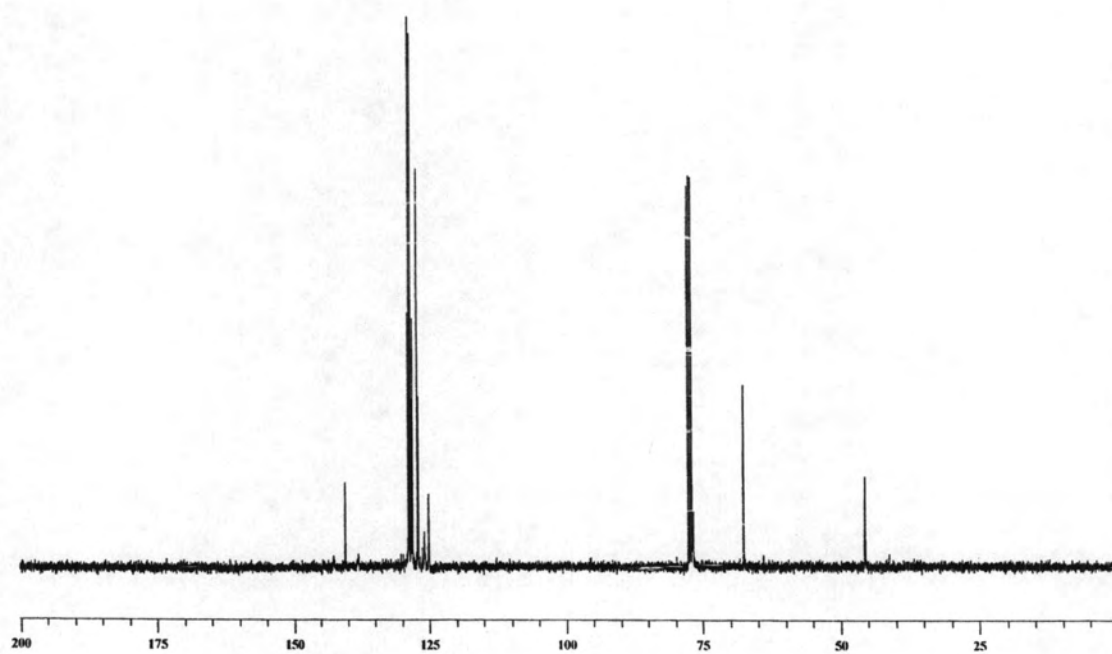
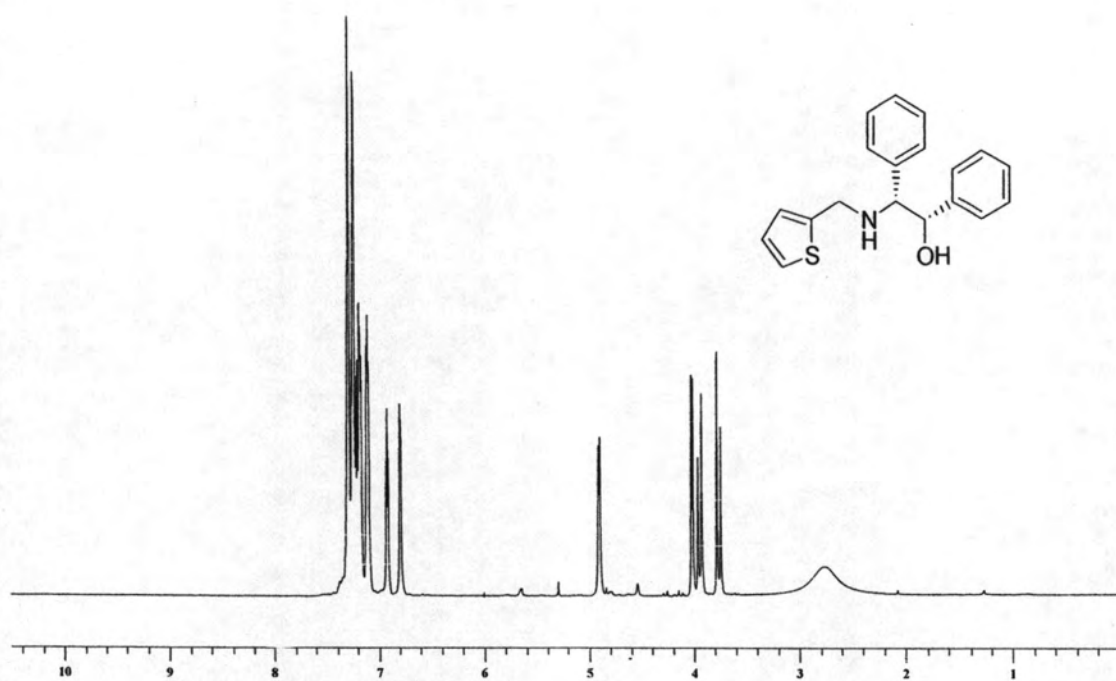


Figure 20 The ^1H NMR and ^{13}C NMR spectra of (1*S*,2*R*)-70f

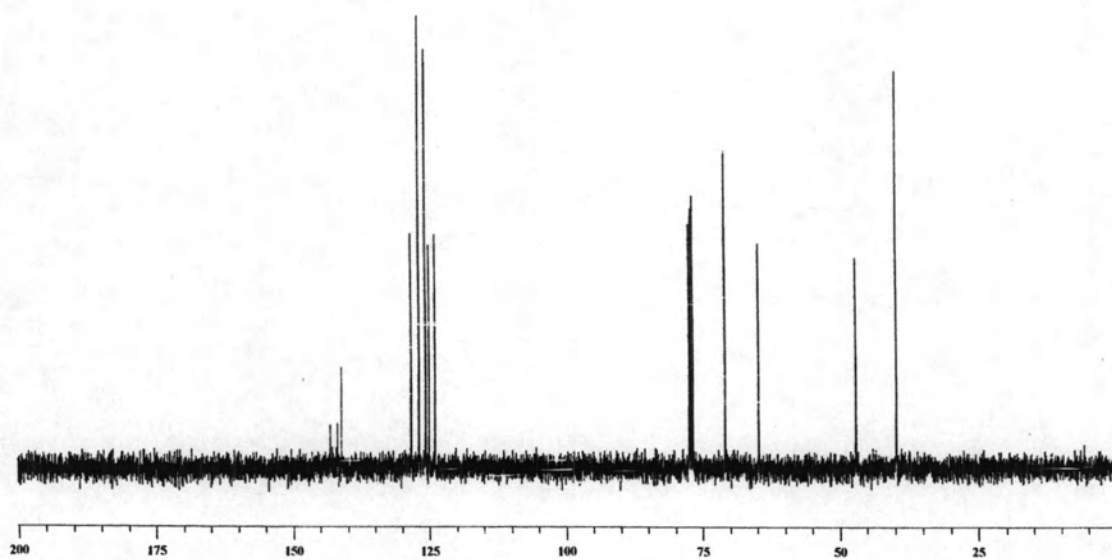
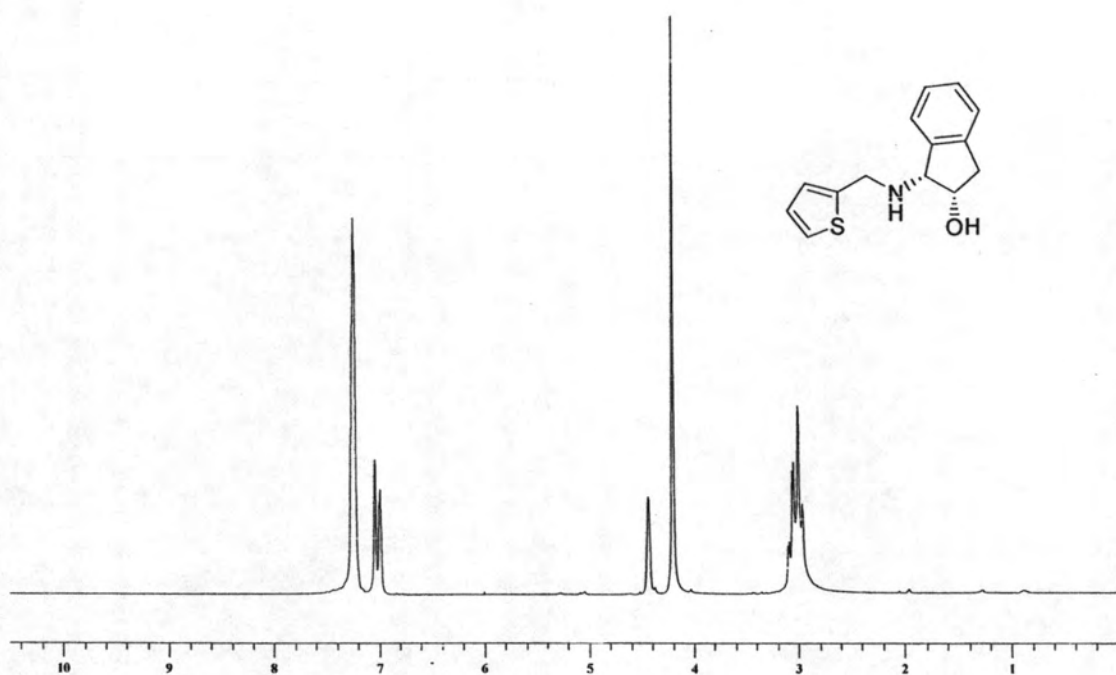


Figure 21 The ^1H NMR and ^{13}C NMR spectra of (1R,2S)-70g

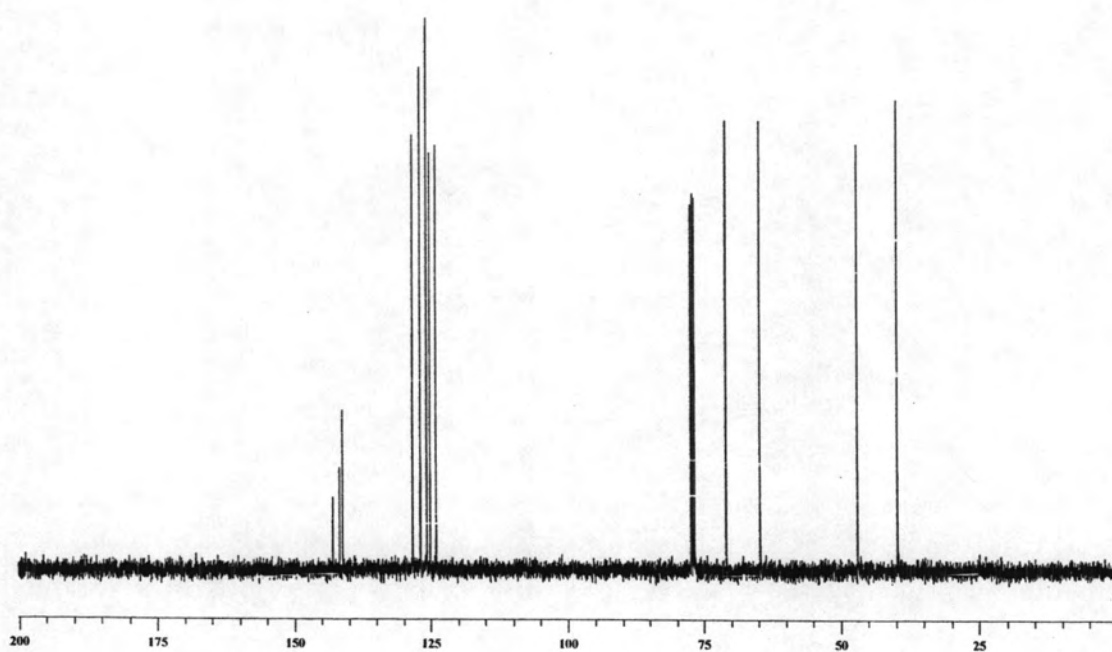
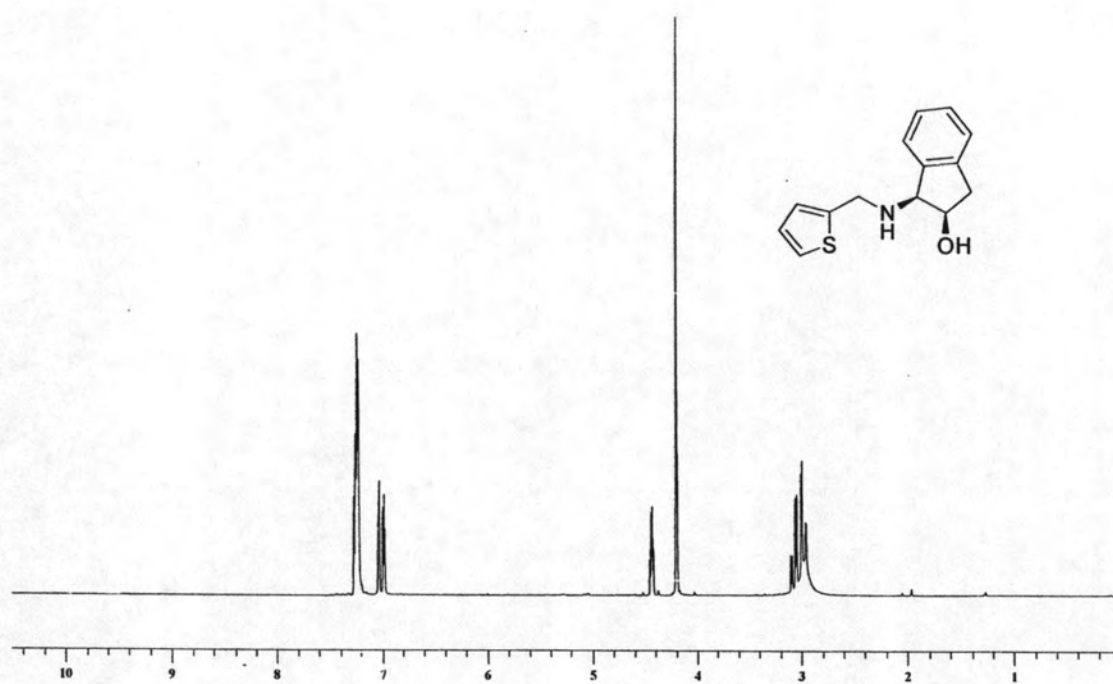


Figure 22 The ^1H NMR and ^{13}C NMR spectra of (1*S*,2*R*)-70h

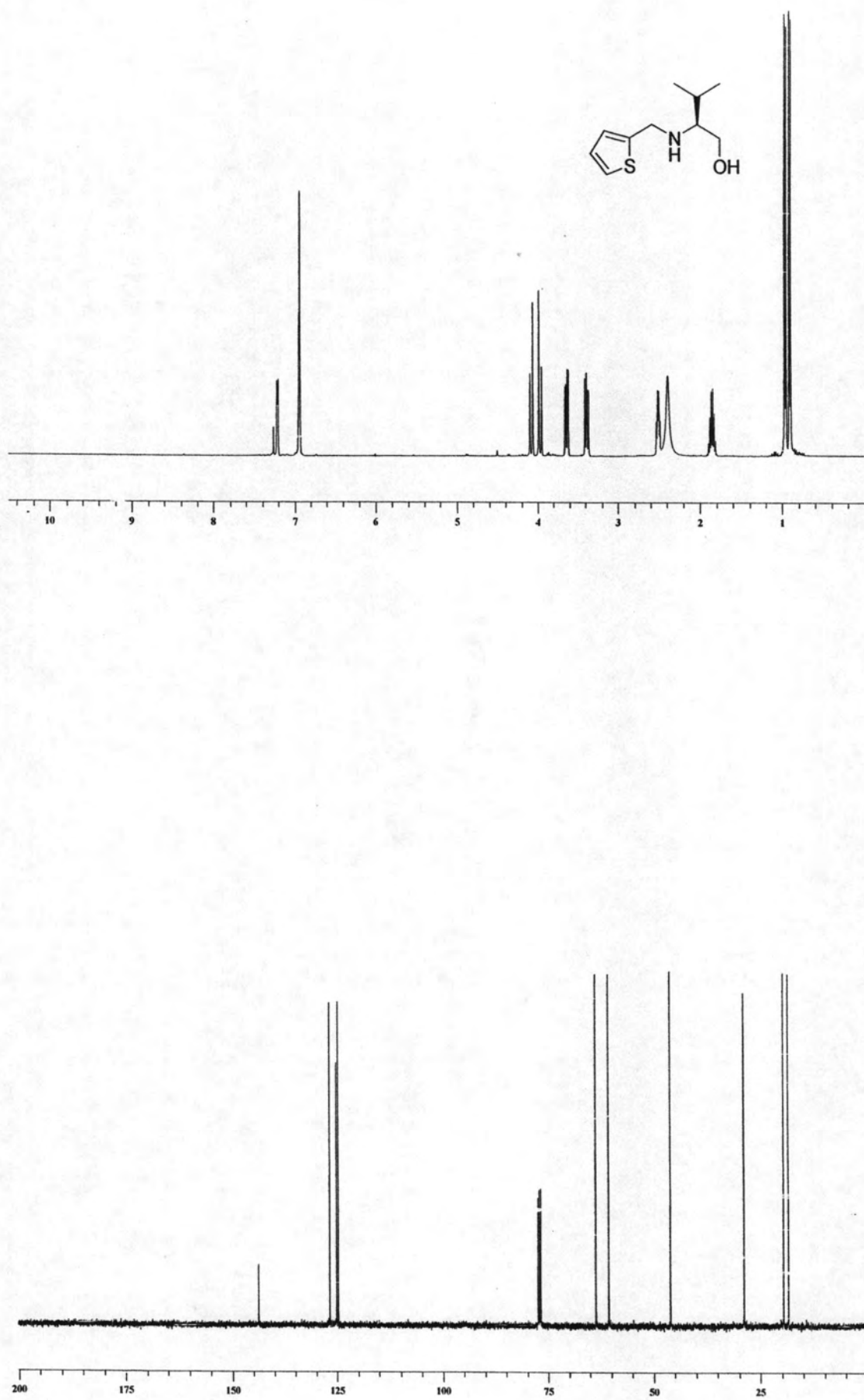


Figure 23 The ^1H NMR and ^{13}C NMR spectra of (S)-70i

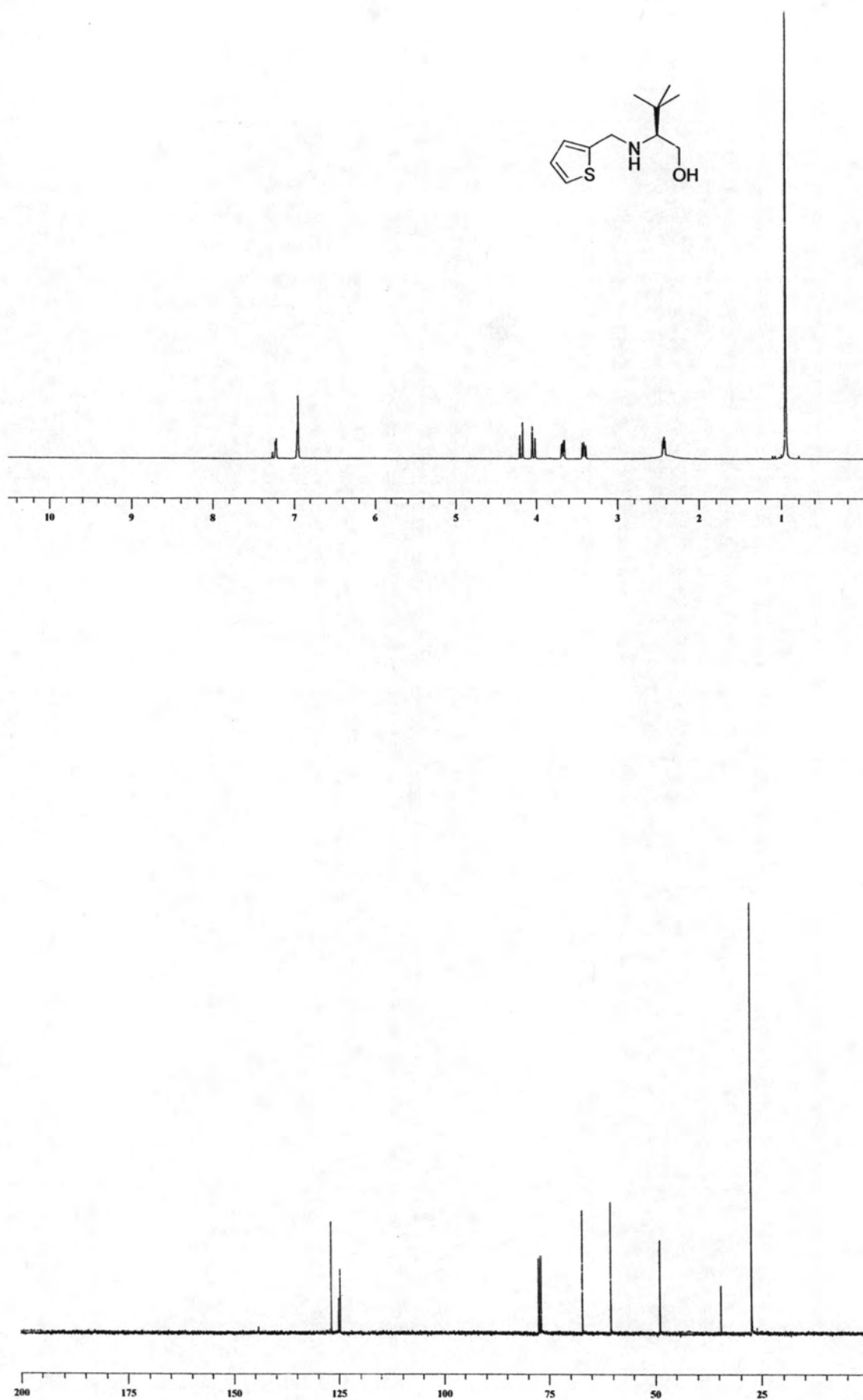


Figure 24 The ^1H NMR and ^{13}C NMR spectra of (S)-70j

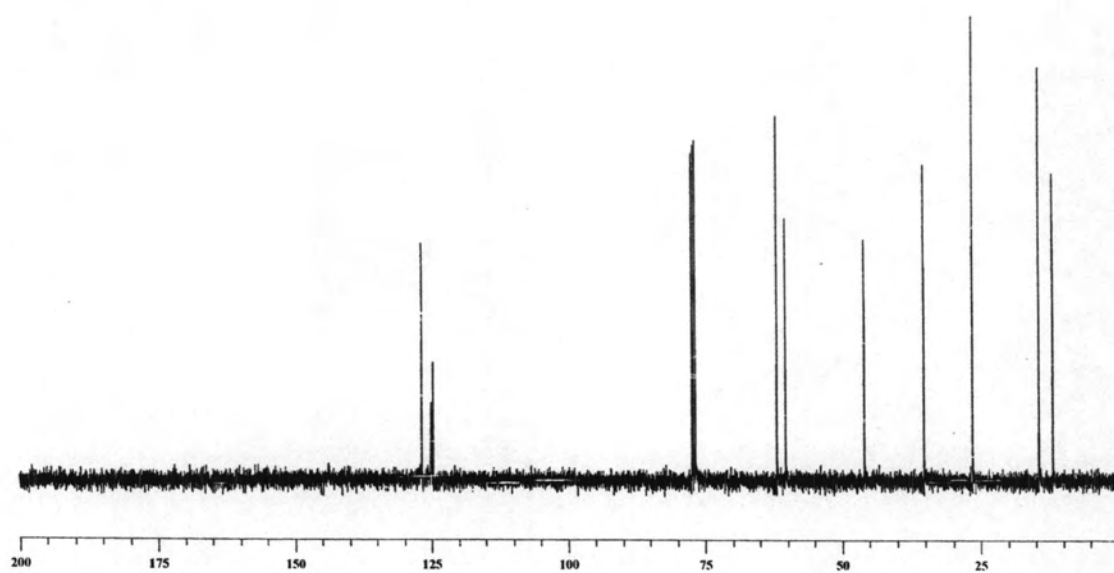
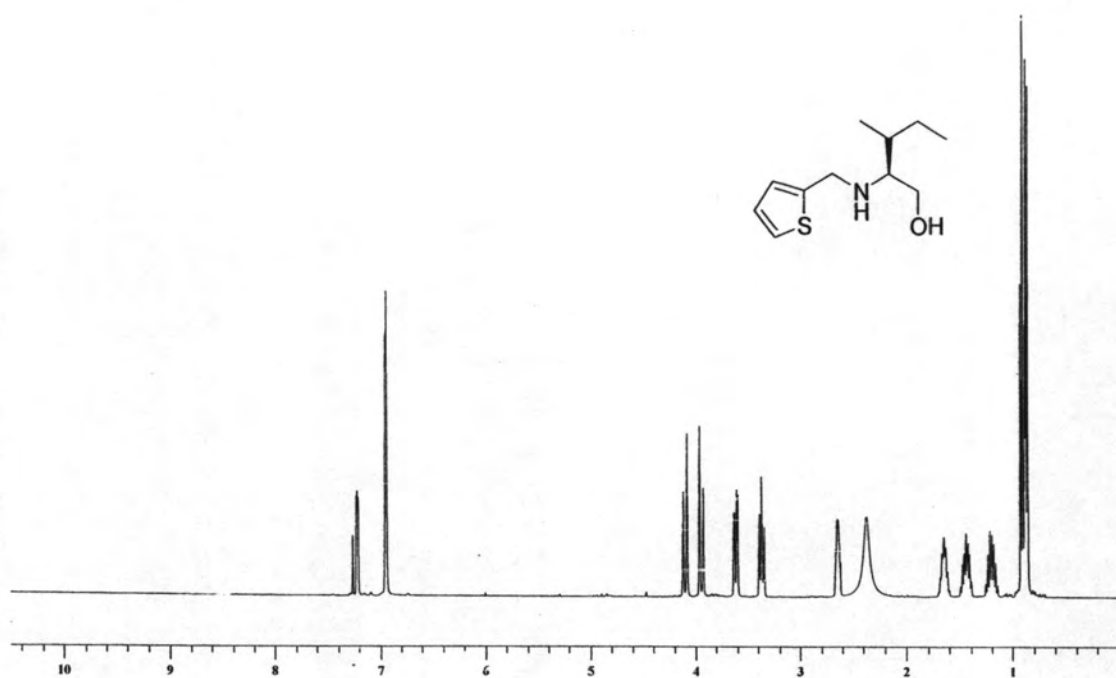


Figure 25 The ^1H NMR and ^{13}C NMR spectra of (S,S)-70k

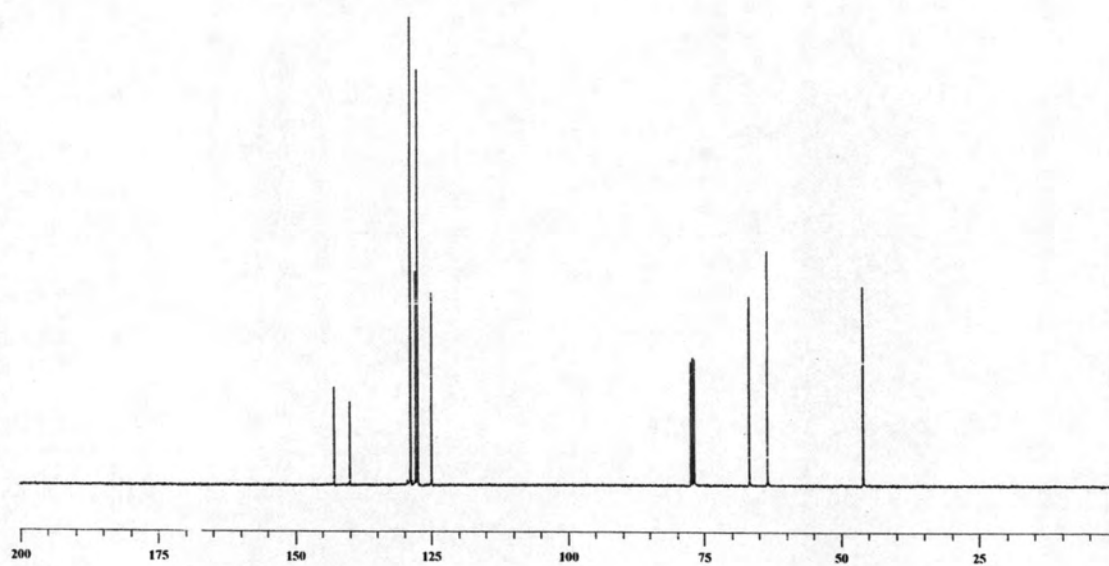
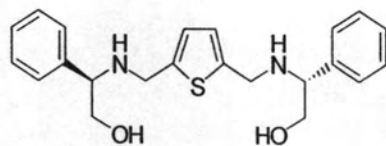
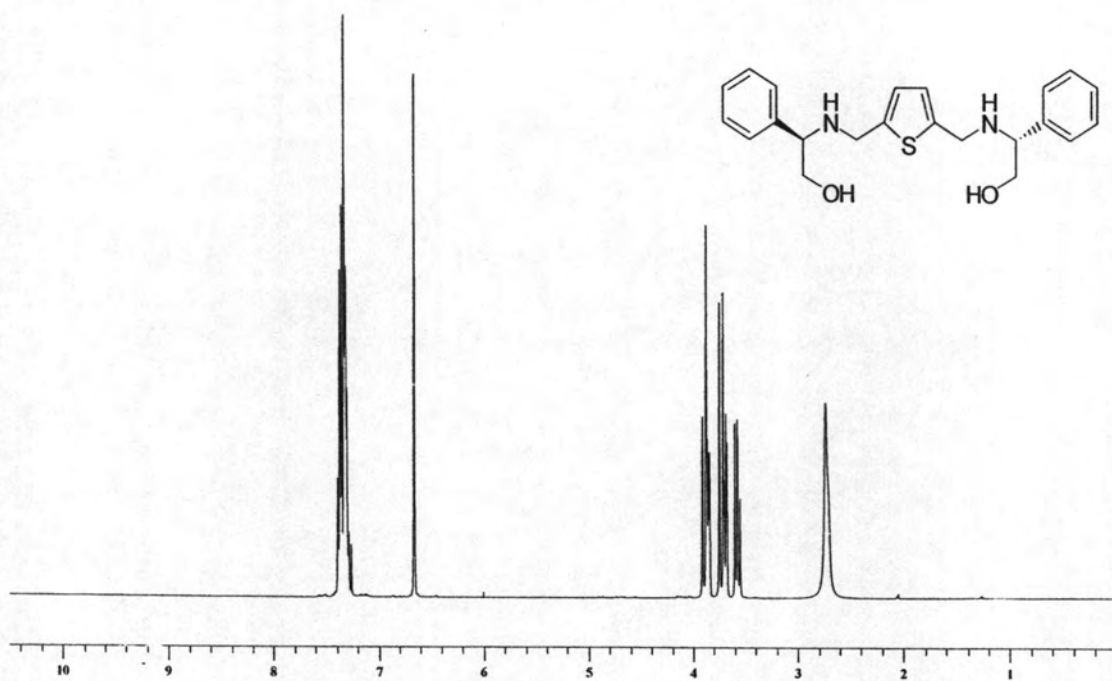


Figure 26 The ^1H NMR and ^{13}C NMR spectra of (R)-701

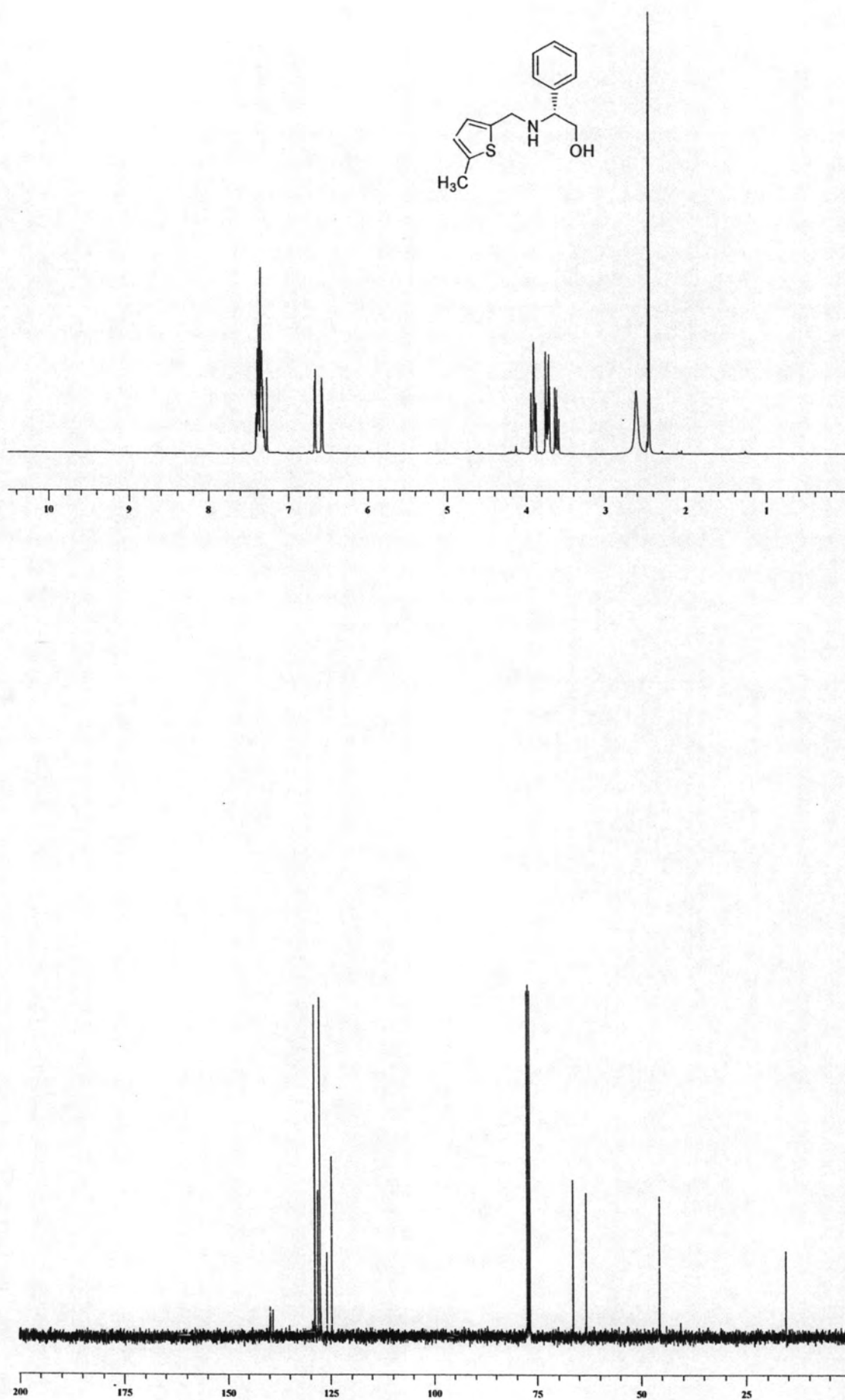


Figure 27 The ¹H NMR and ¹³C NMR spectra of (R)-70m

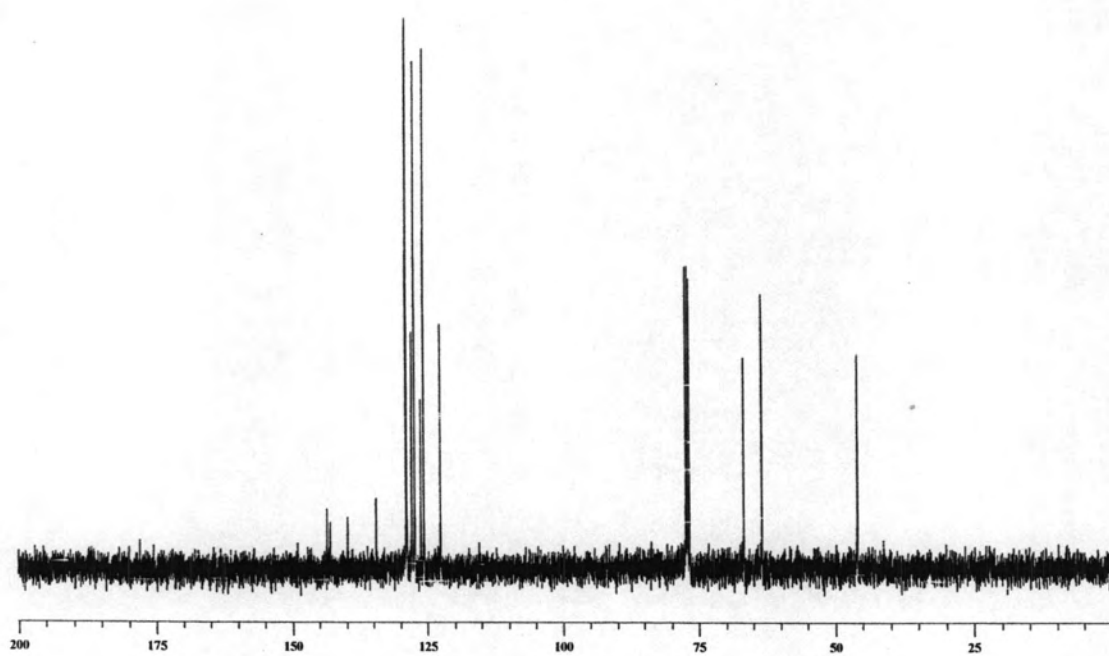
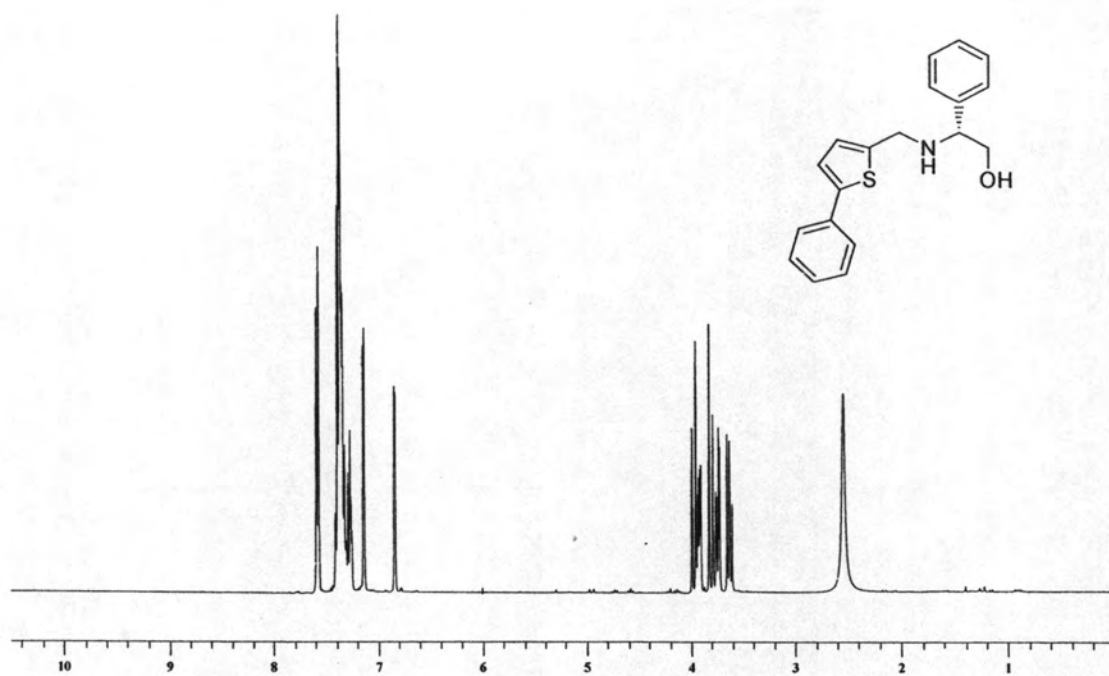


Figure 28 The ^1H NMR and ^{13}C NMR spectra of *(R)*-70n

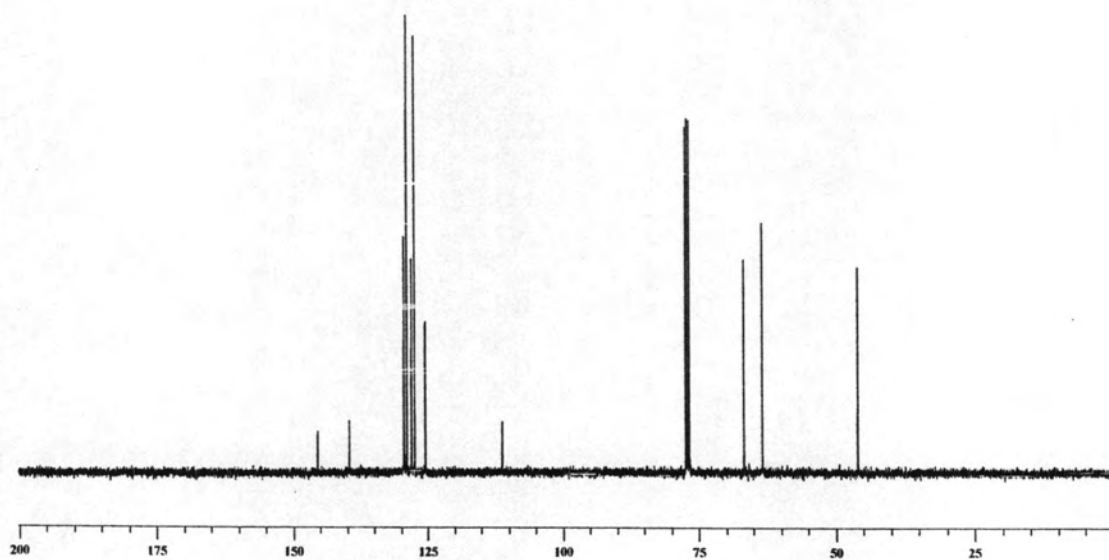
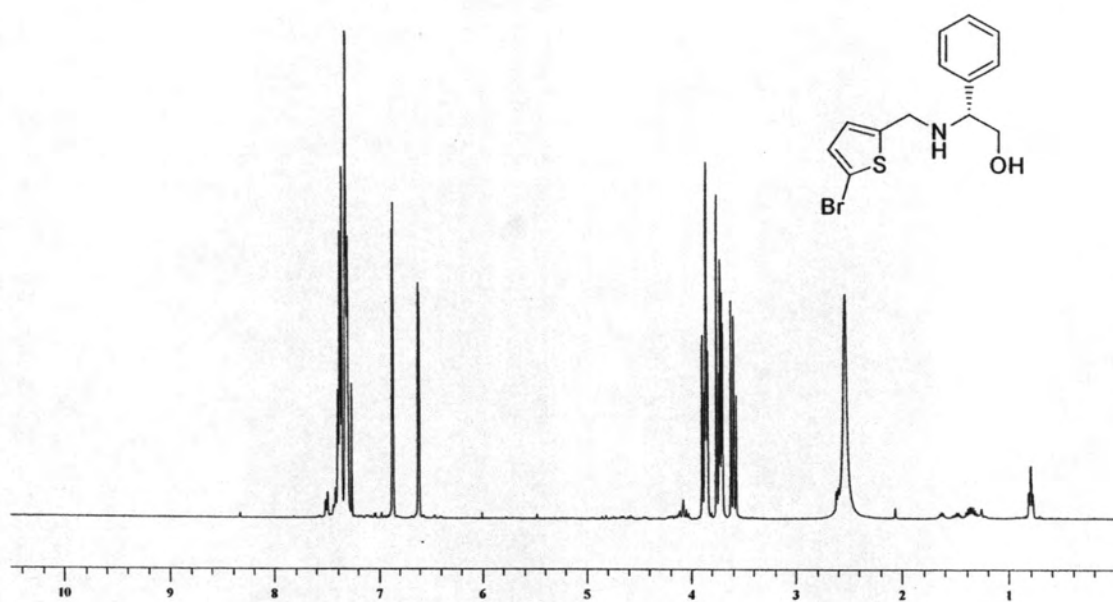


Figure 29 The ^1H NMR and ^{13}C NMR spectra of *(R)*-70o

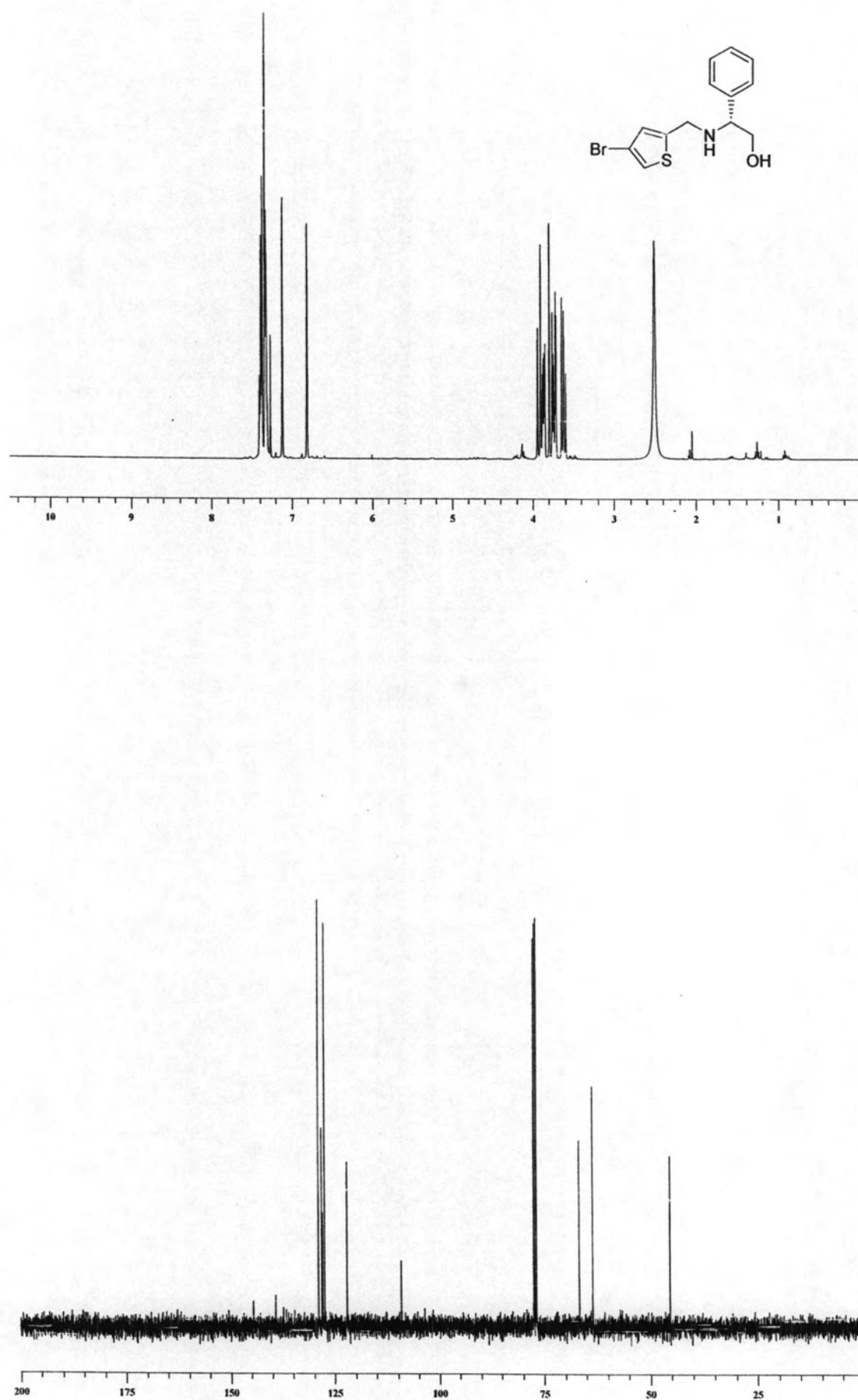


Figure 30 The ^1H NMR and ^{13}C NMR spectra of (R)-70p

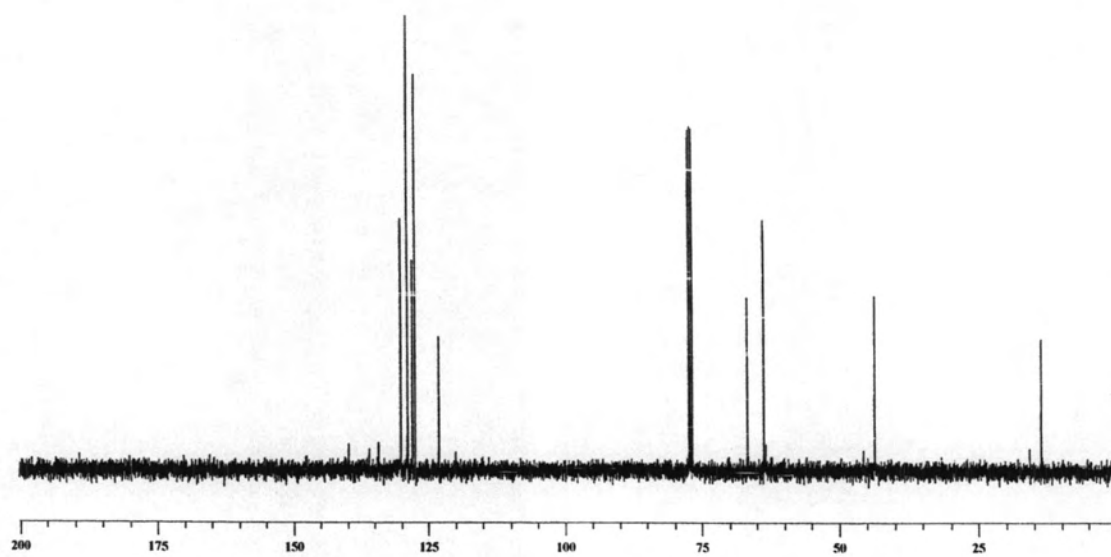
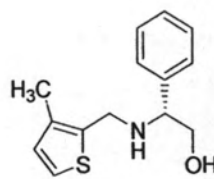
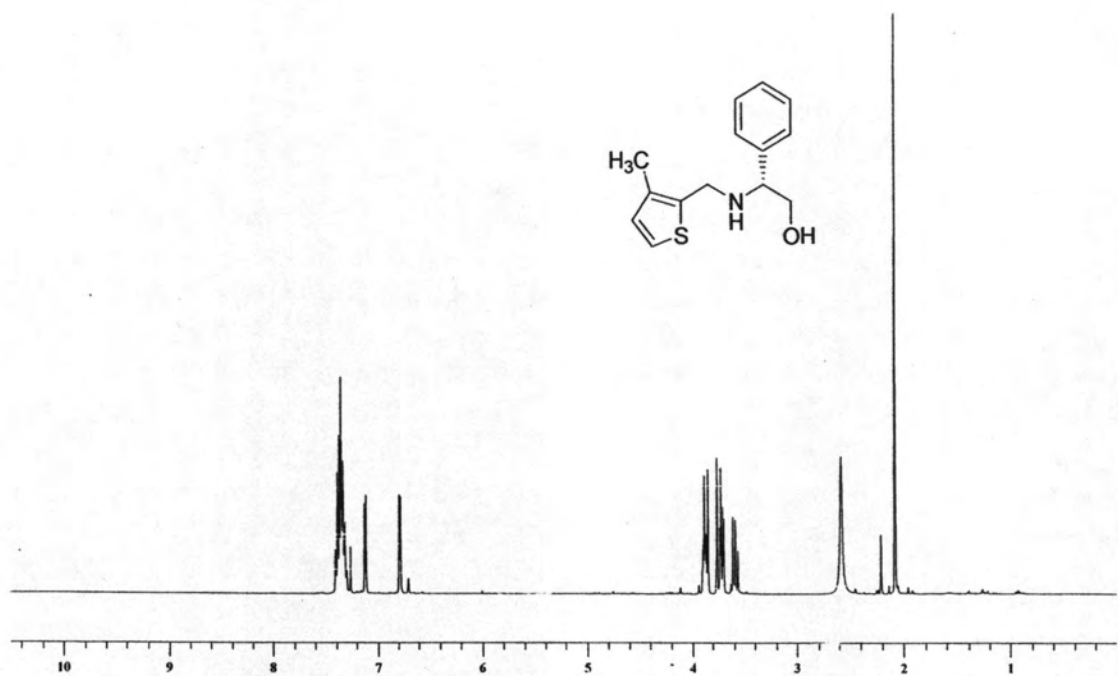


Figure 31 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70q

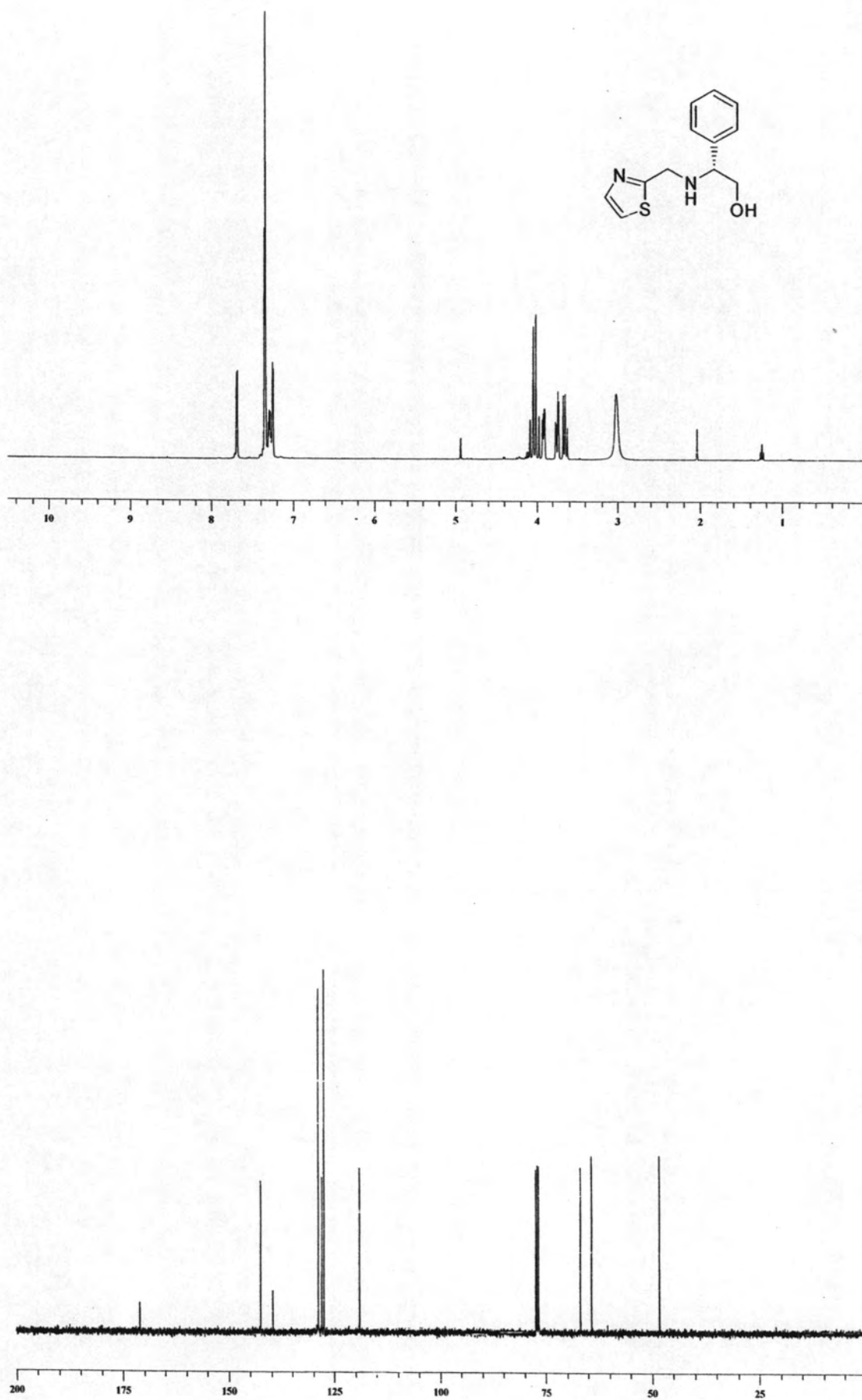


Figure 32 The ^1H NMR and ^{13}C NMR spectra of (R)-70r

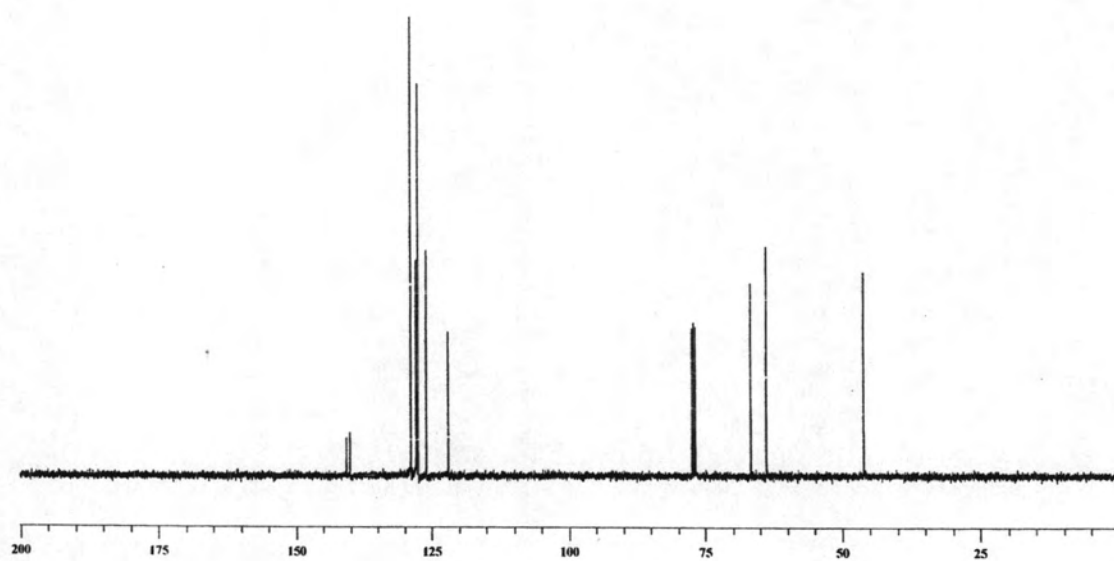
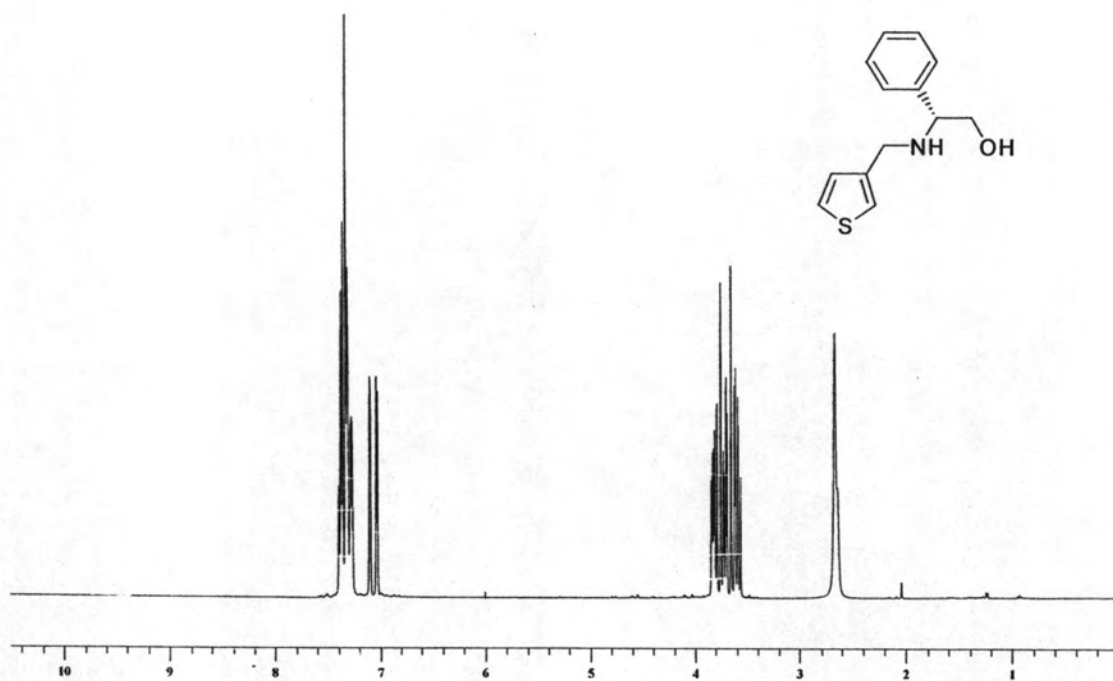


Figure 33 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70s

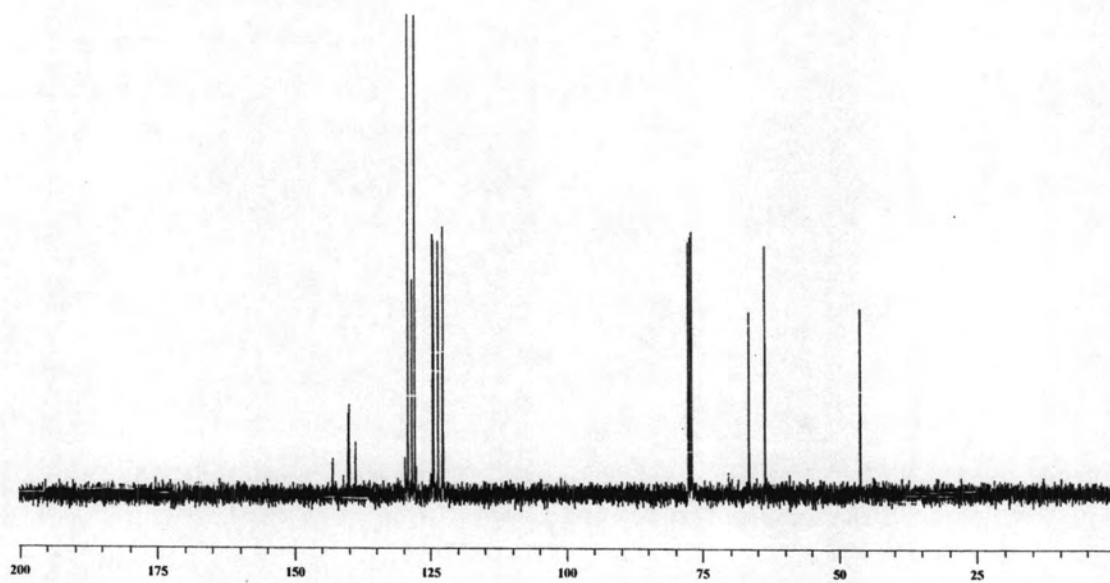
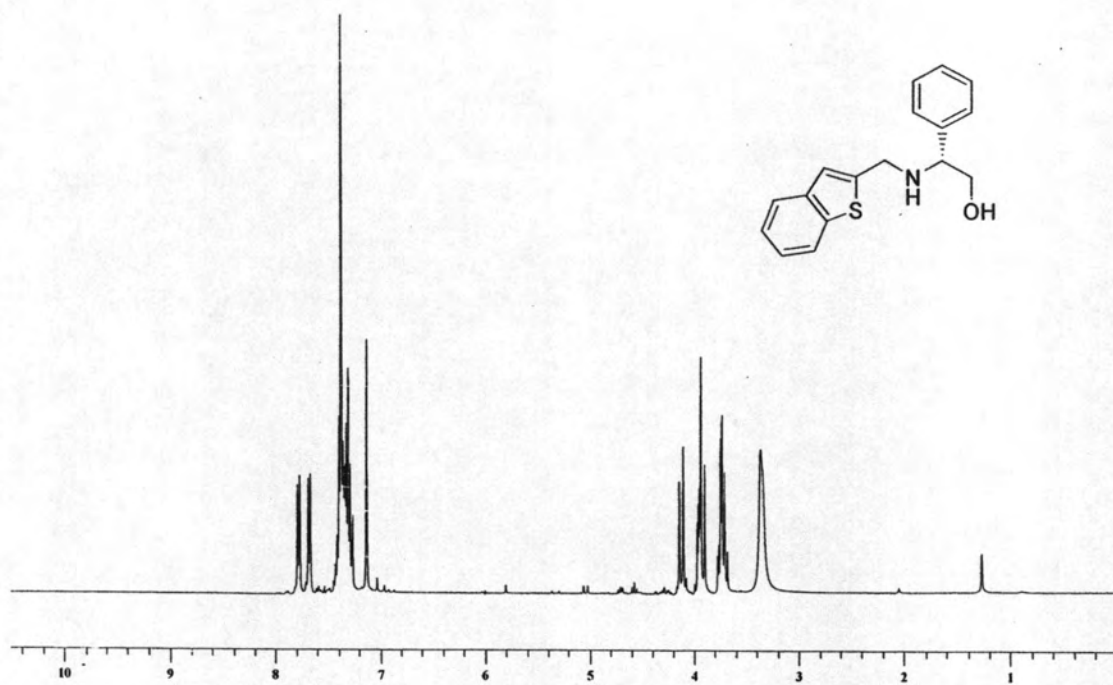


Figure 34 The ^1H NMR and ^{13}C NMR spectra of (R)-70t

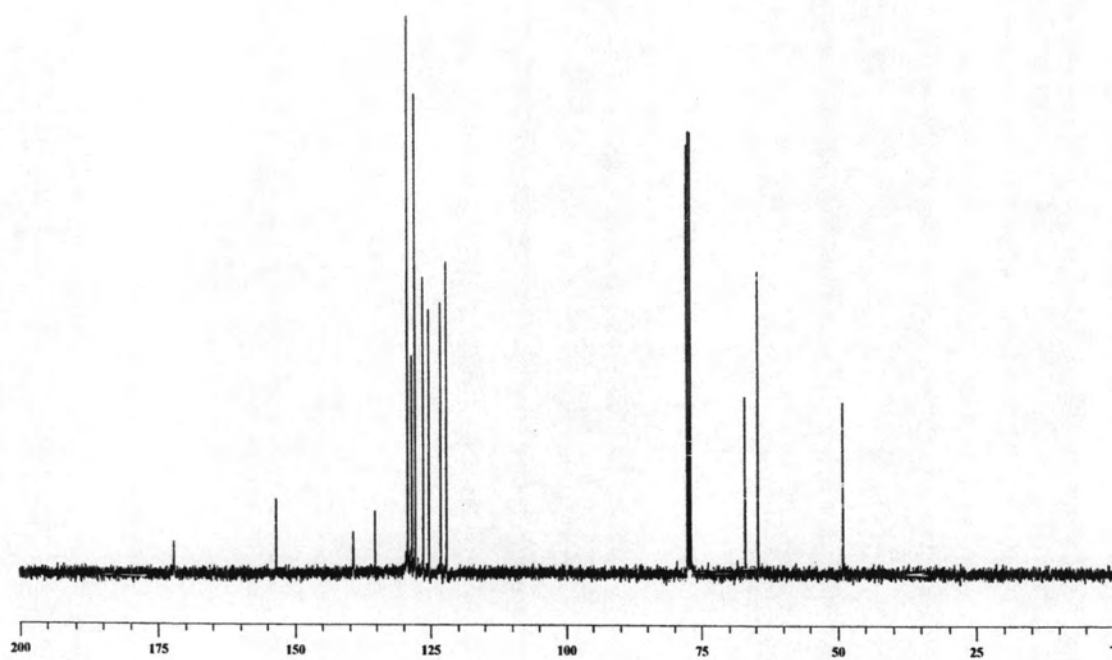
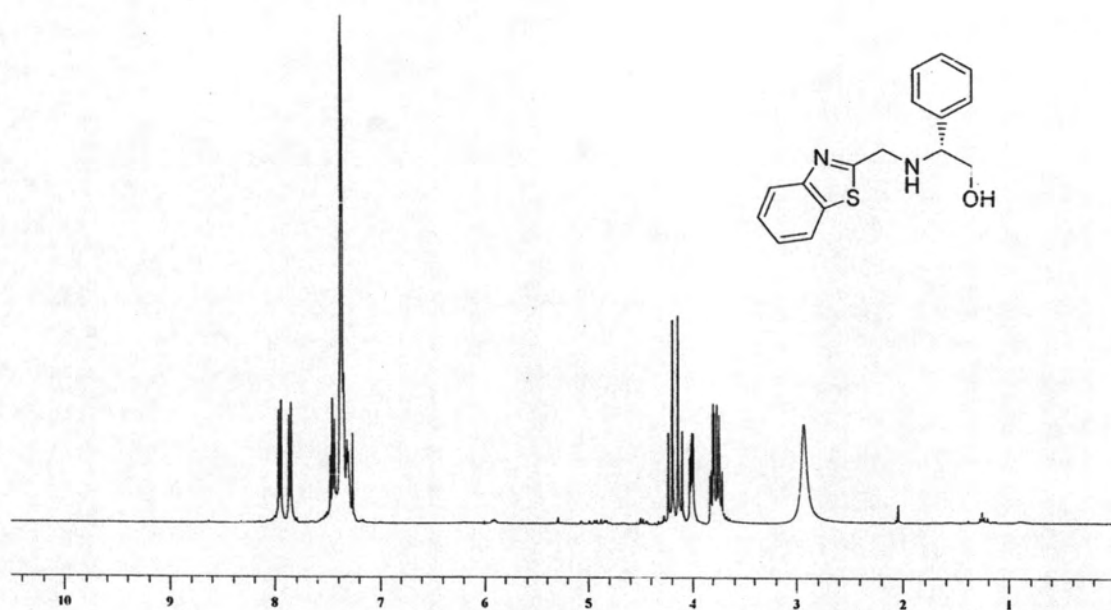


Figure 35 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70u

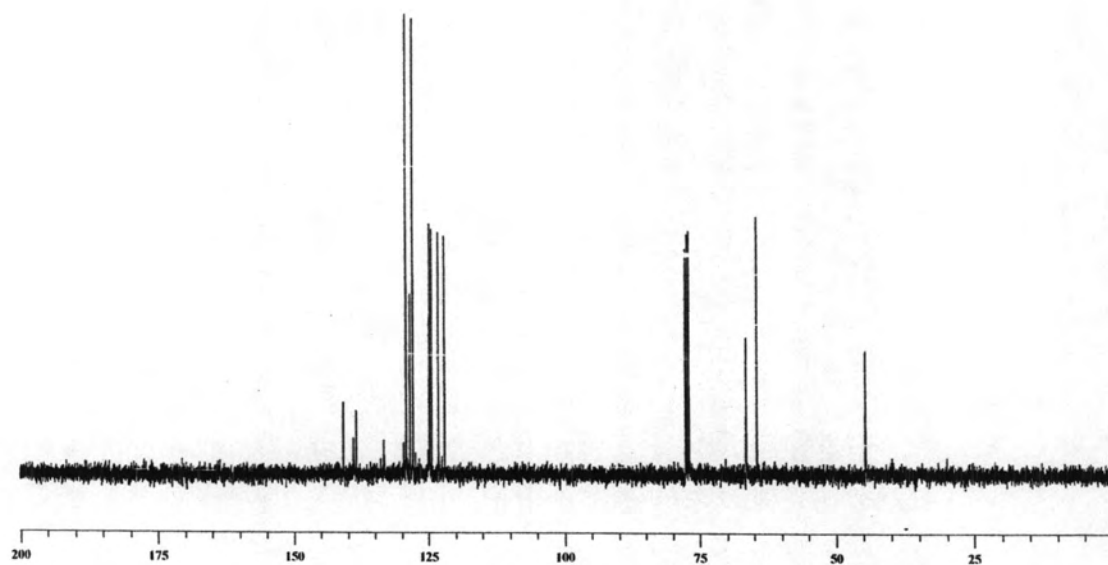
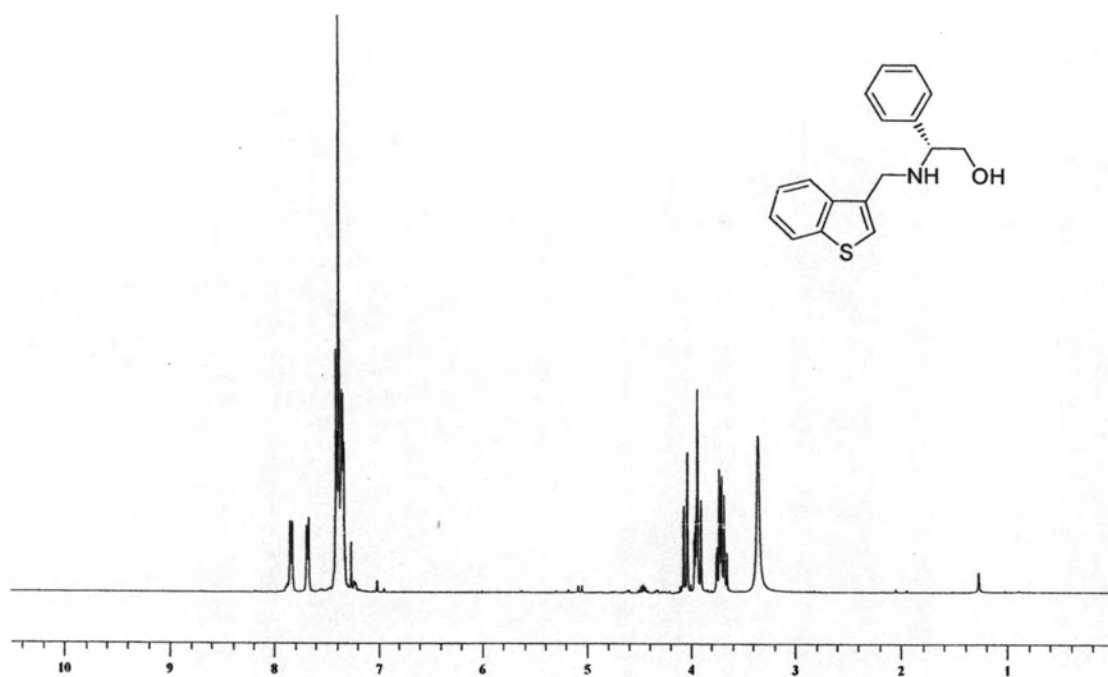


Figure 36 The ^1H NMR and ^{13}C NMR spectra of (*R*)-70v

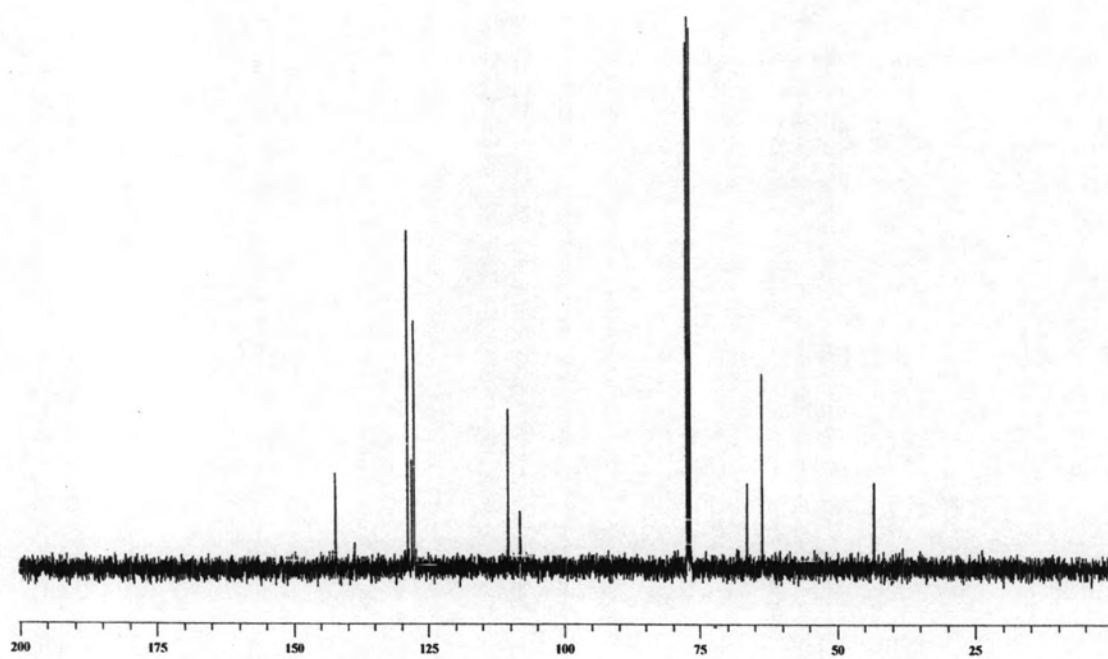
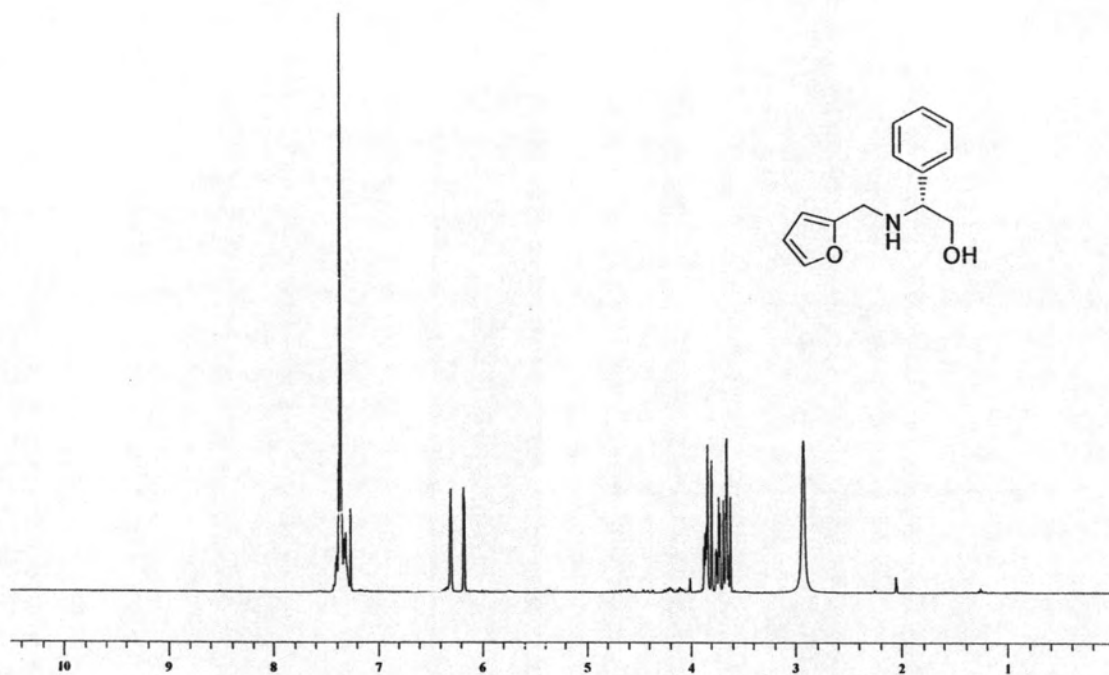


Figure 37 The ^1H NMR and ^{13}C NMR spectra of (R)-72a

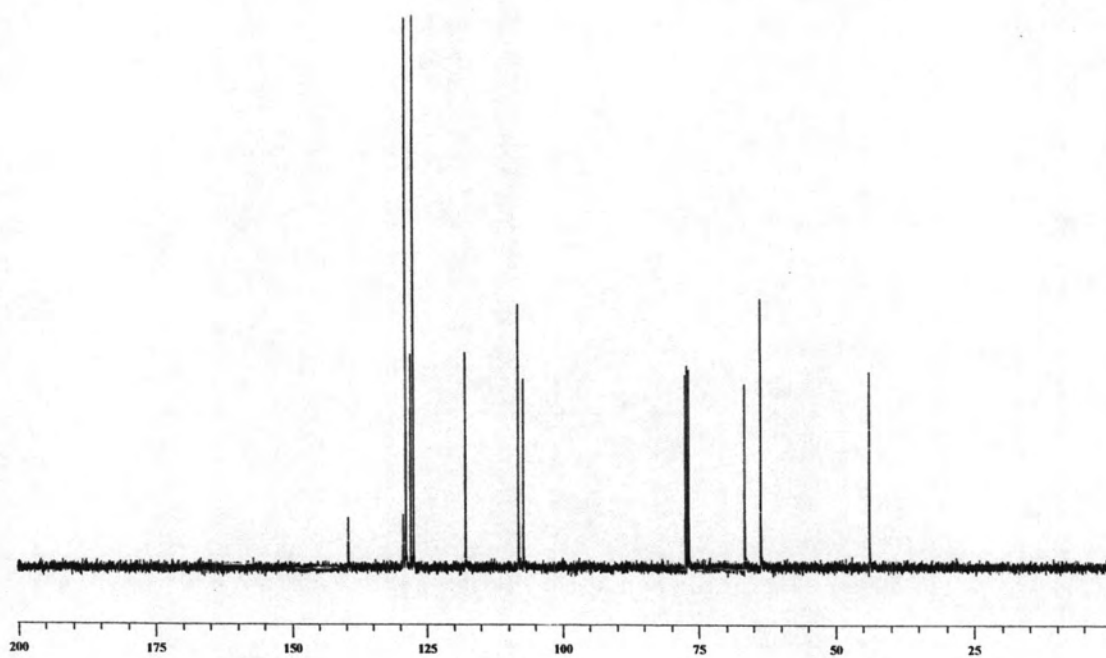
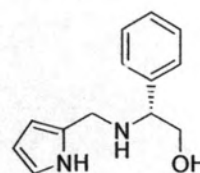
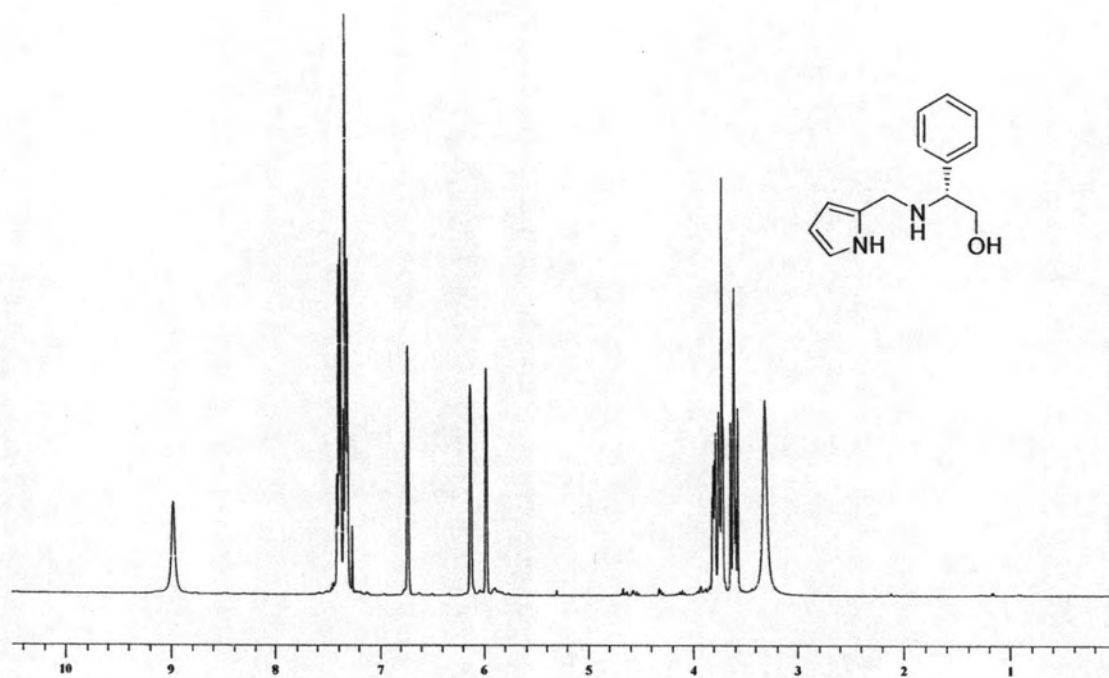


Figure 38 The ^1H NMR and ^{13}C NMR spectra of (R)-72b

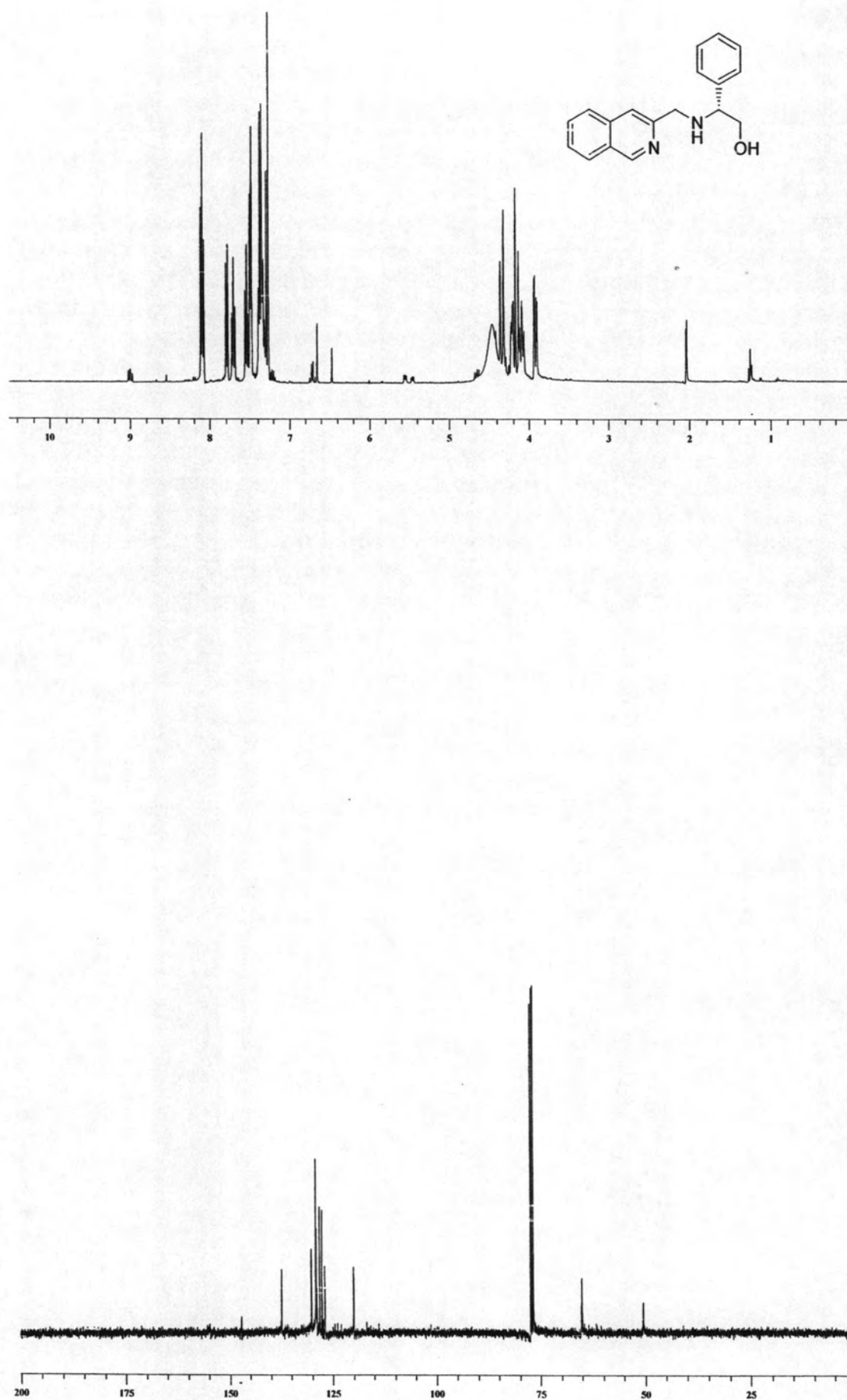


Figure 39 The ^1H NMR and ^{13}C NMR spectra of (R)-72c

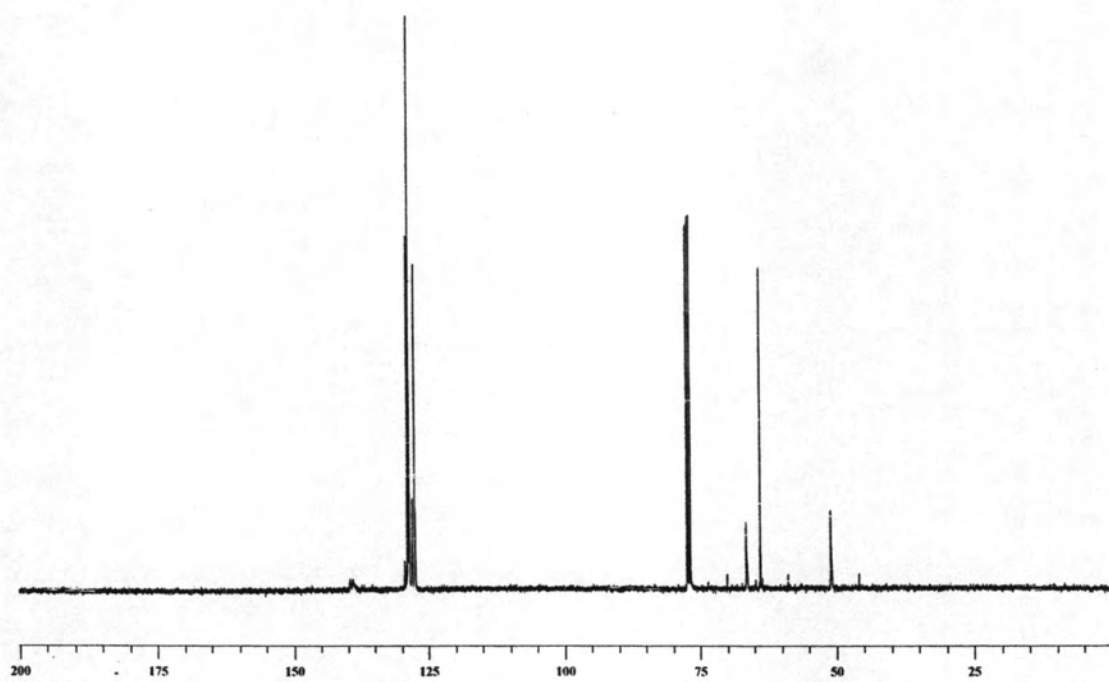
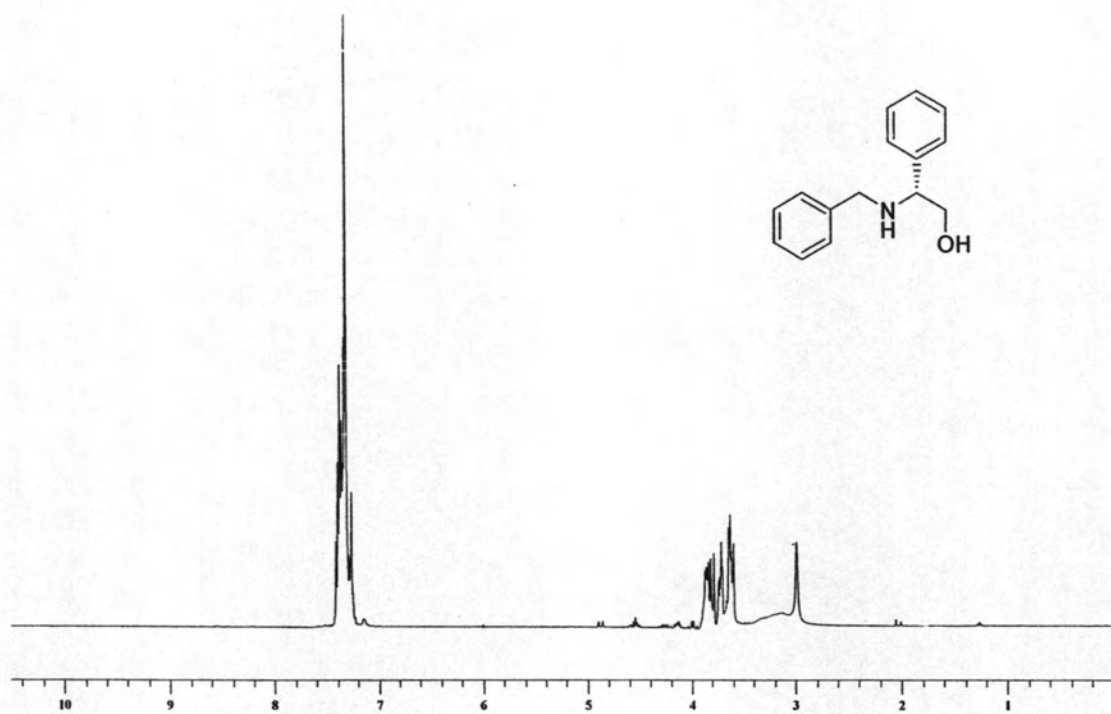


Figure 40 The ^1H NMR and ^{13}C NMR spectra of (R)-73a

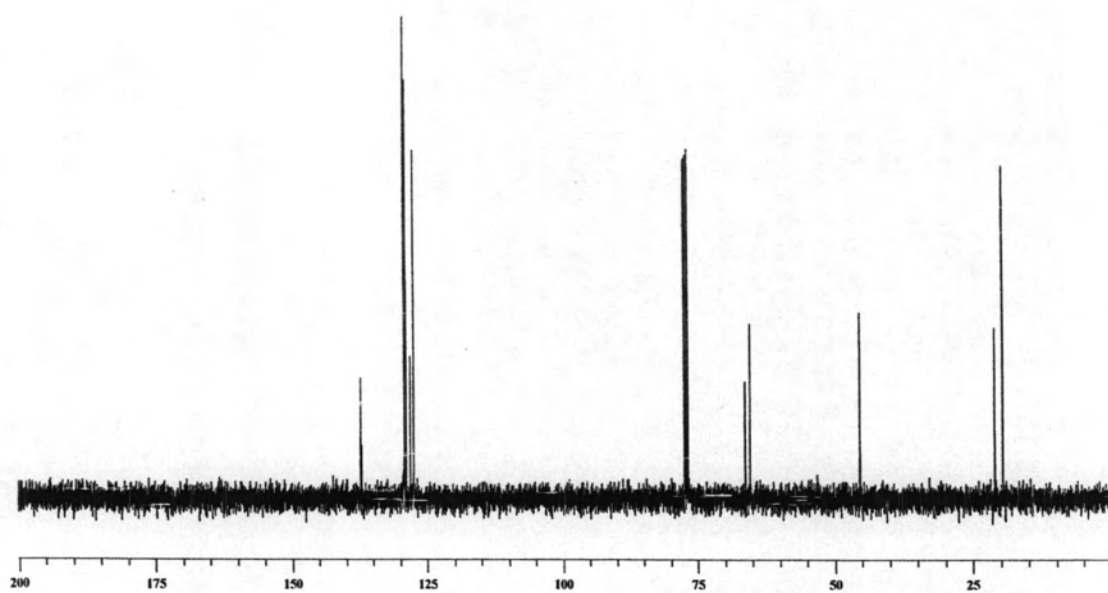
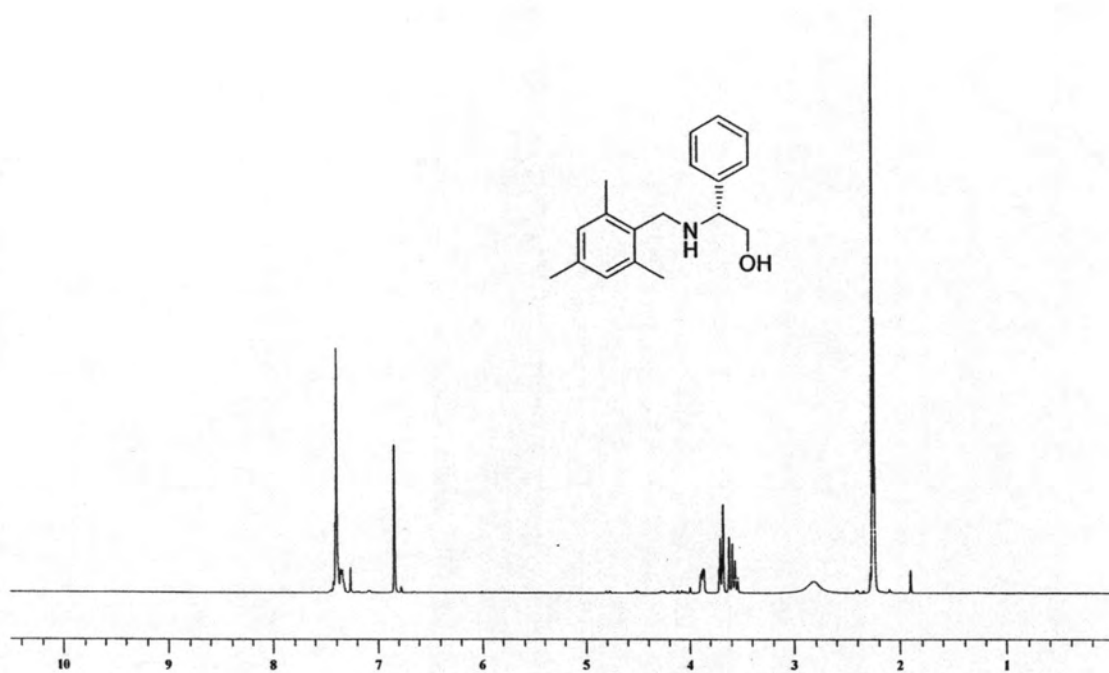


Figure 41 The ¹H NMR and ¹³C NMR spectra of (*R*)-73b

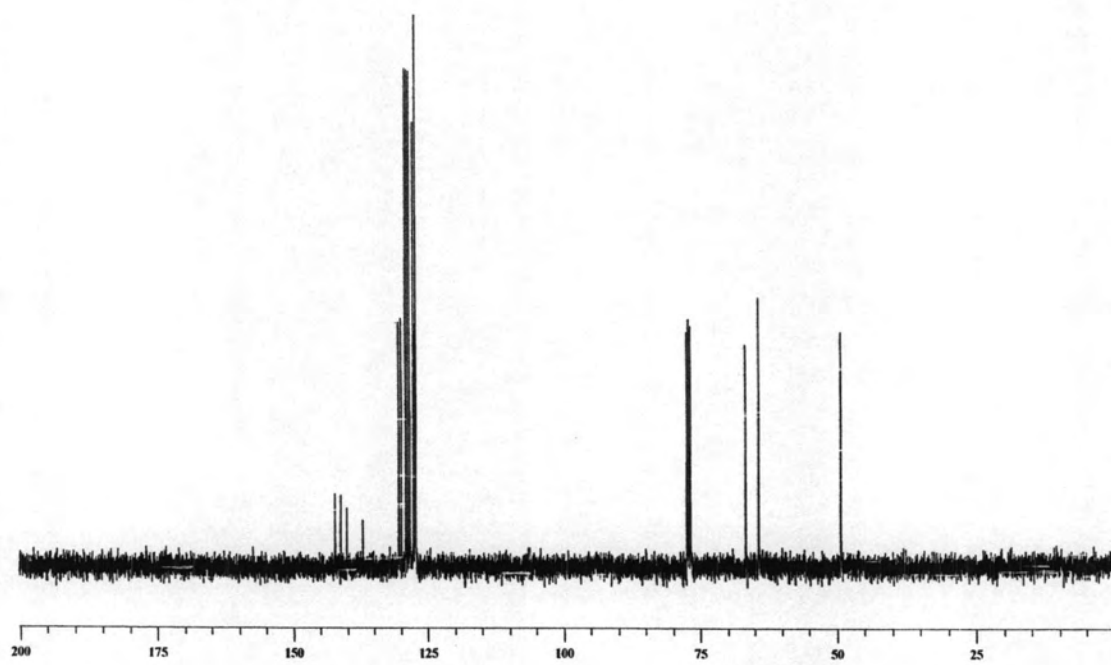
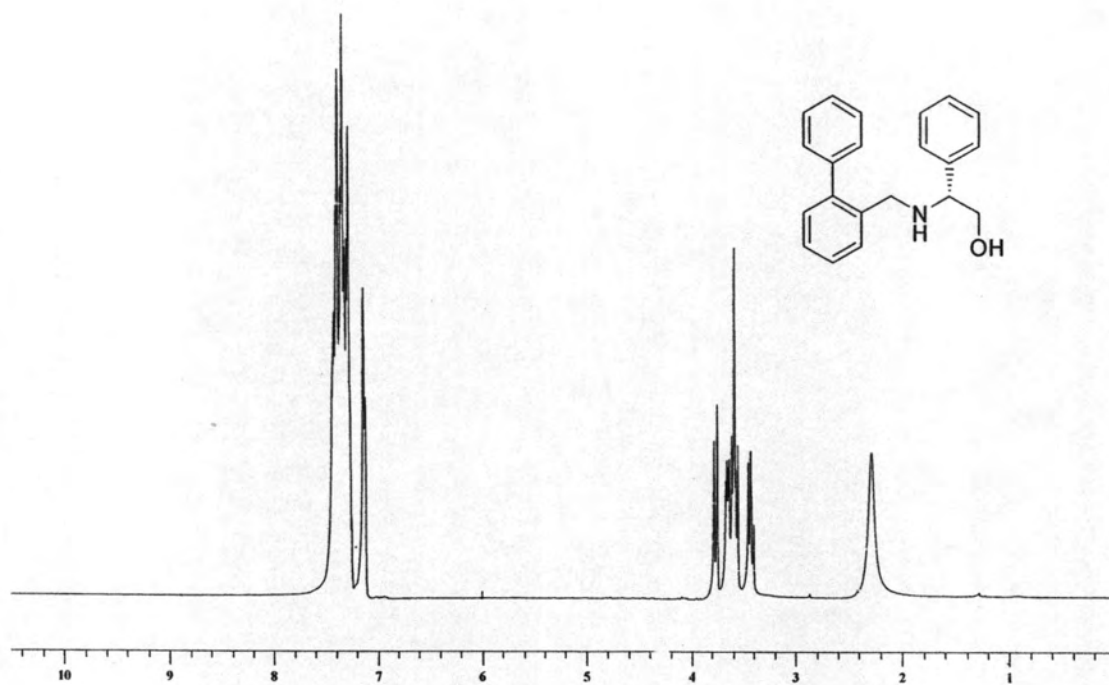


Figure 42 The ^1H NMR and ^{13}C NMR spectra of (R)-73c

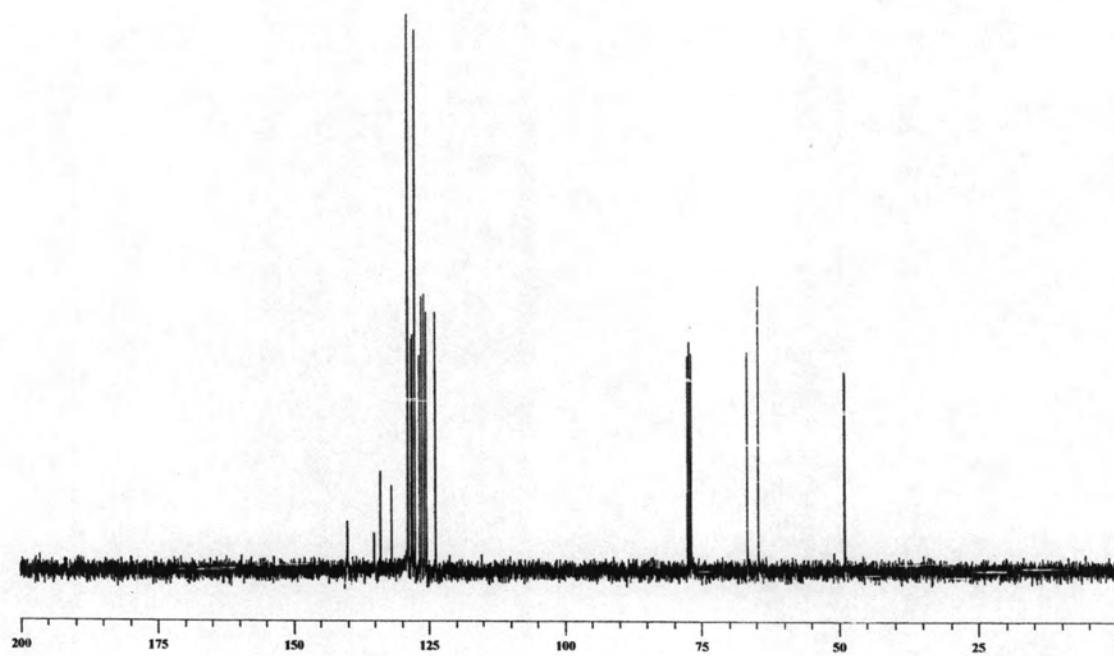
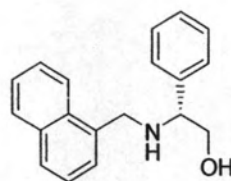
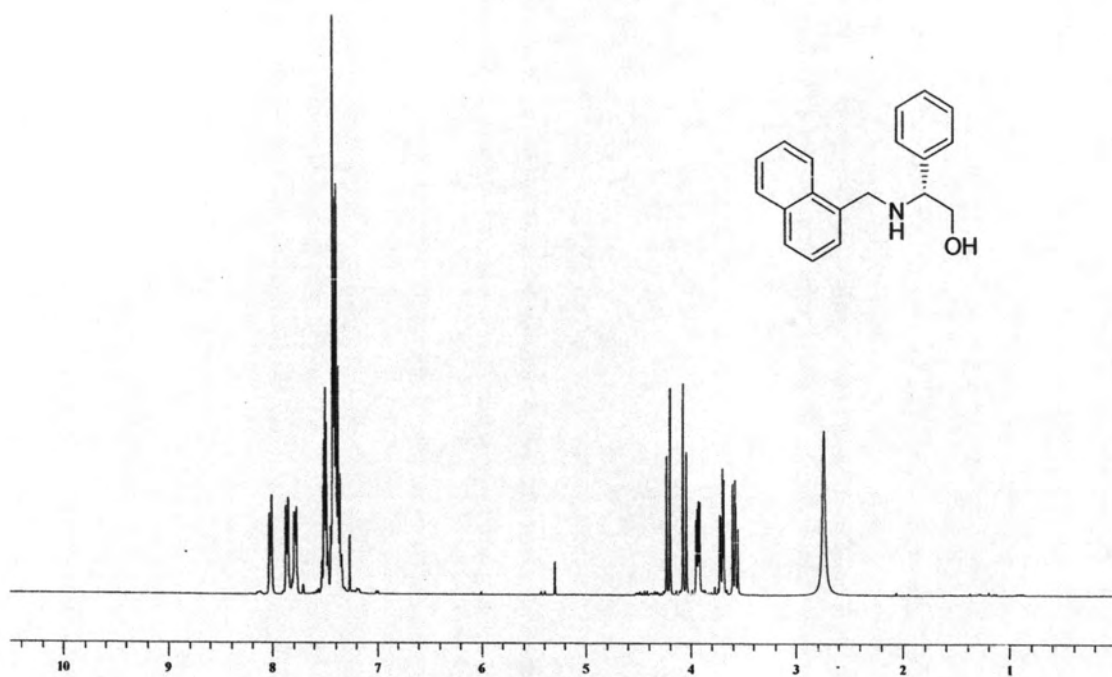


Figure 43 The ^1H NMR and ^{13}C NMR spectra of (*R*)-73d

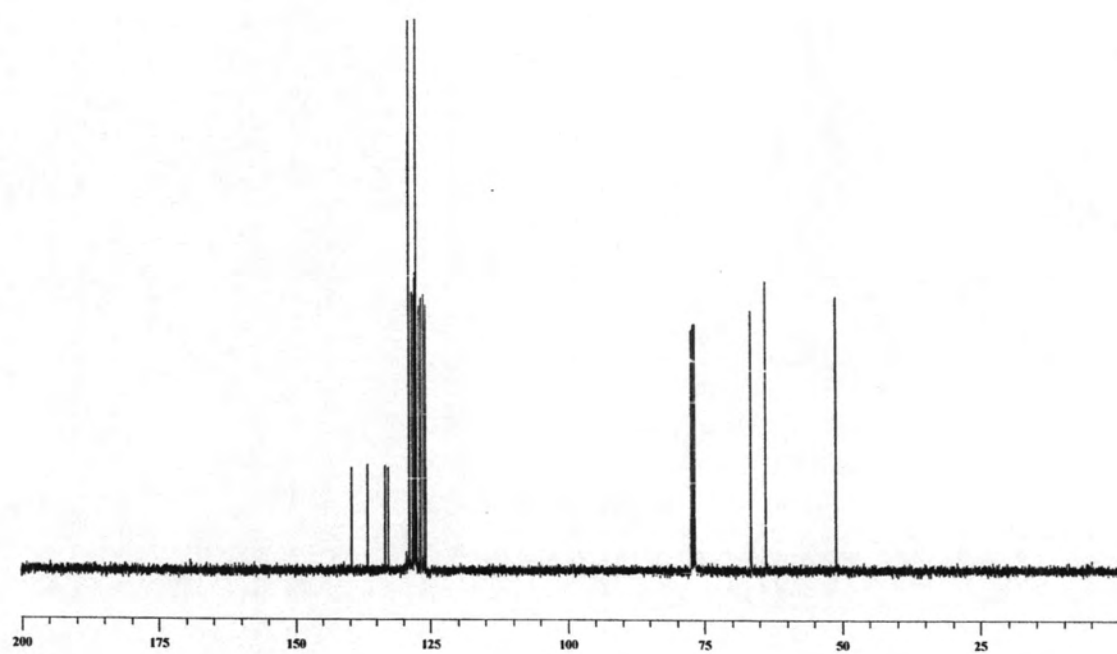
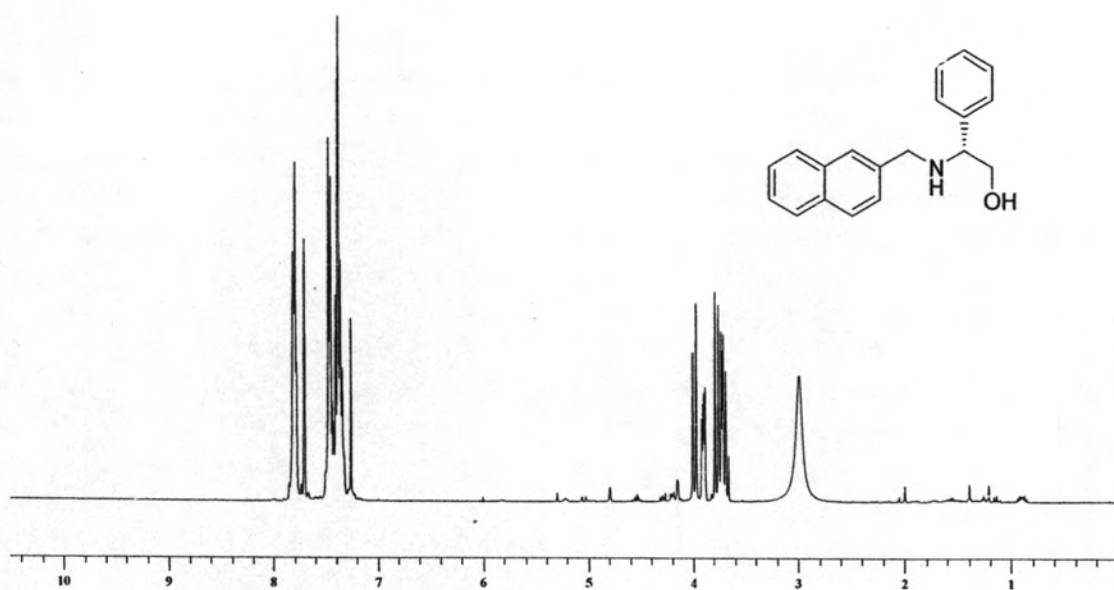


Figure 44 The ^1H NMR and ^{13}C NMR spectra of *(R)*-73e

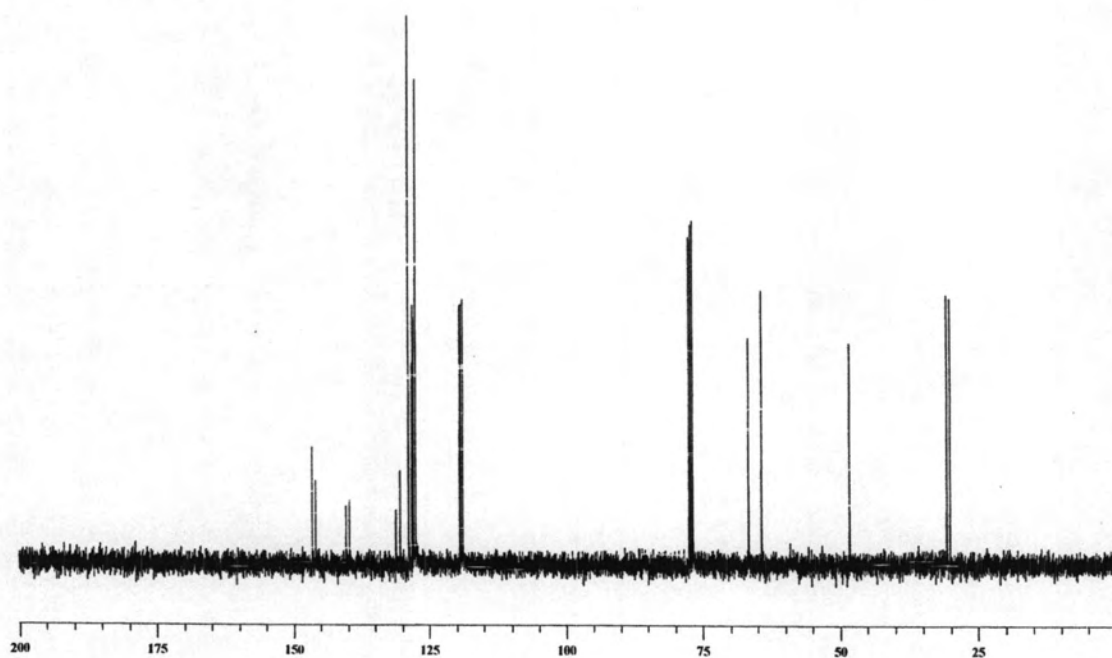
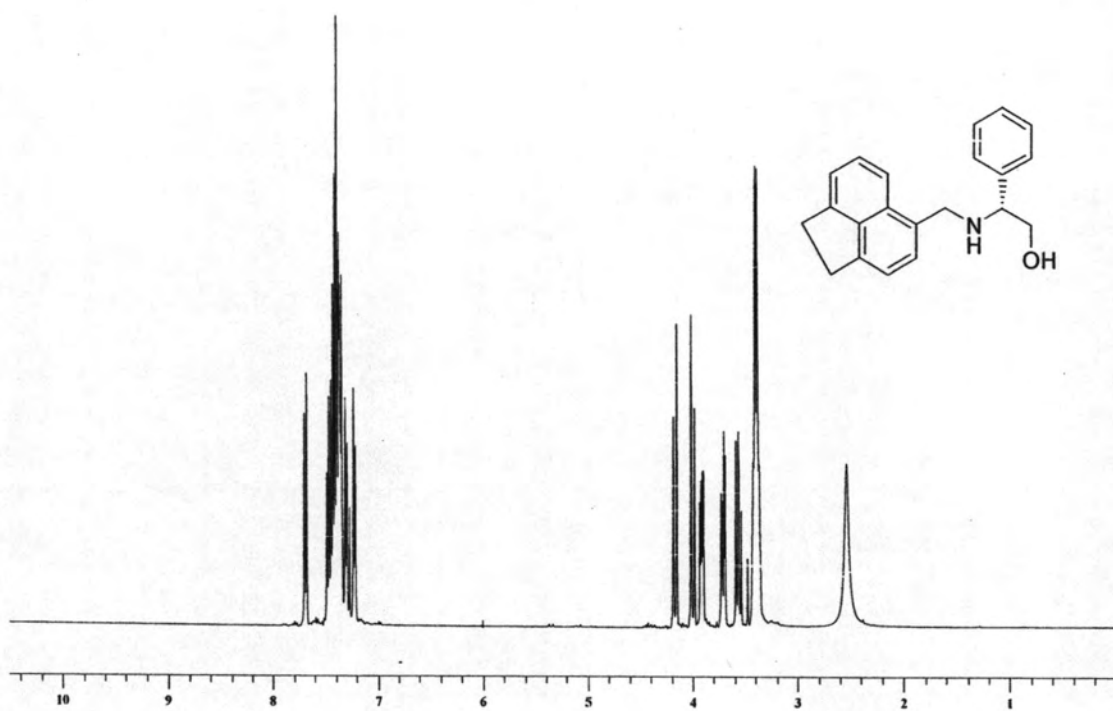


Figure 45 The ^1H NMR and ^{13}C NMR spectra of *(R)*-73f

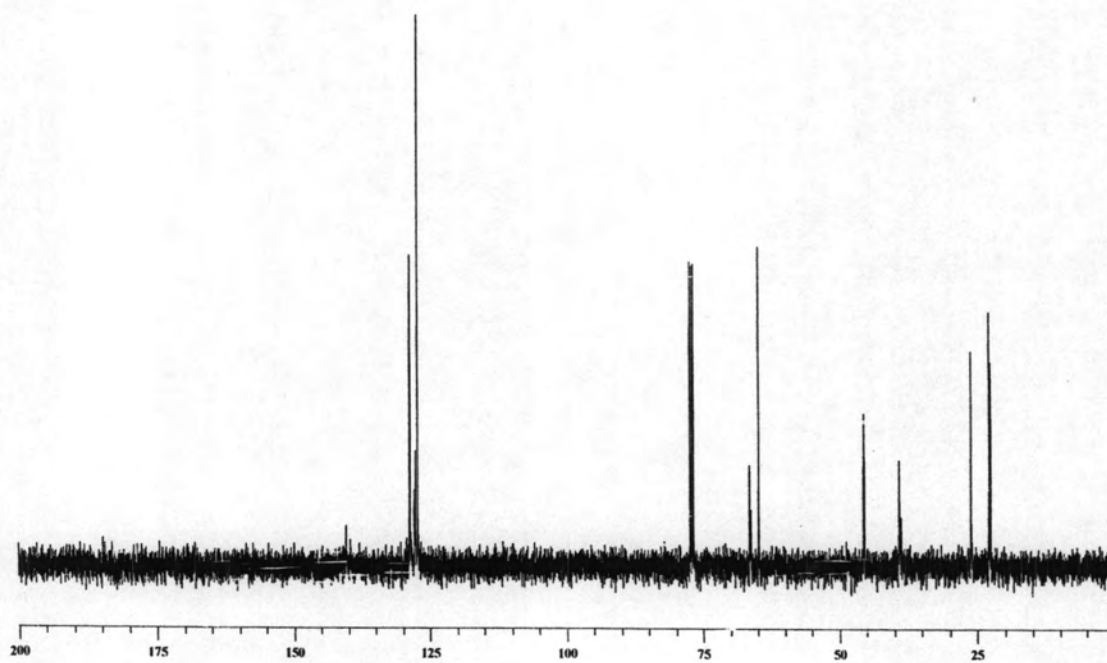
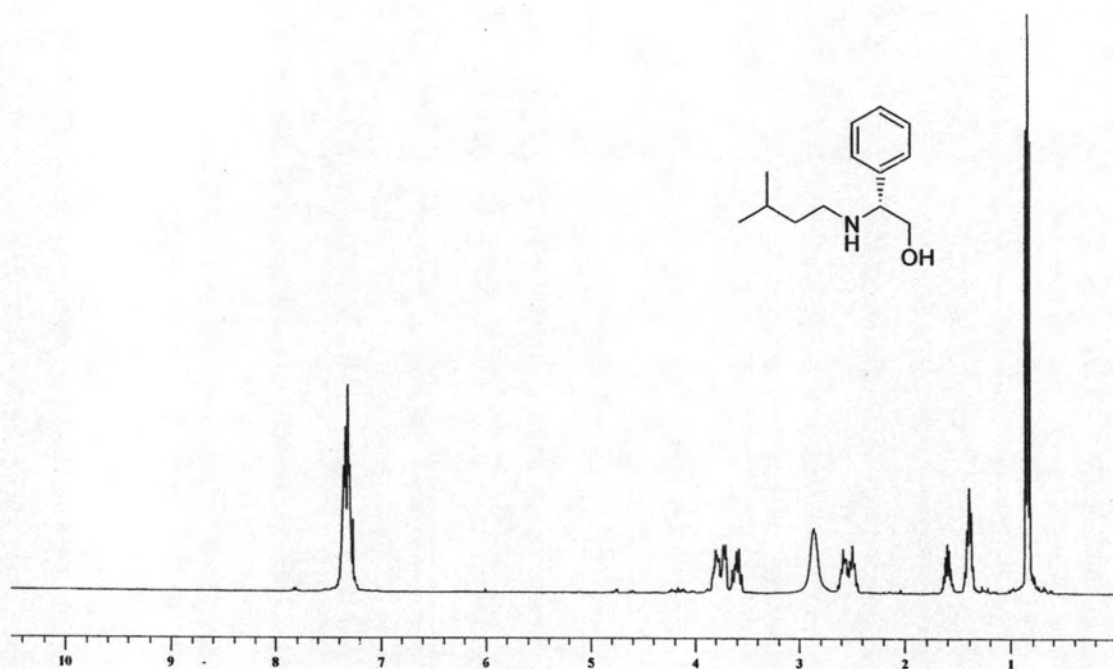


Figure 46 The ^1H NMR and ^{13}C NMR spectra of *(R)*-73g

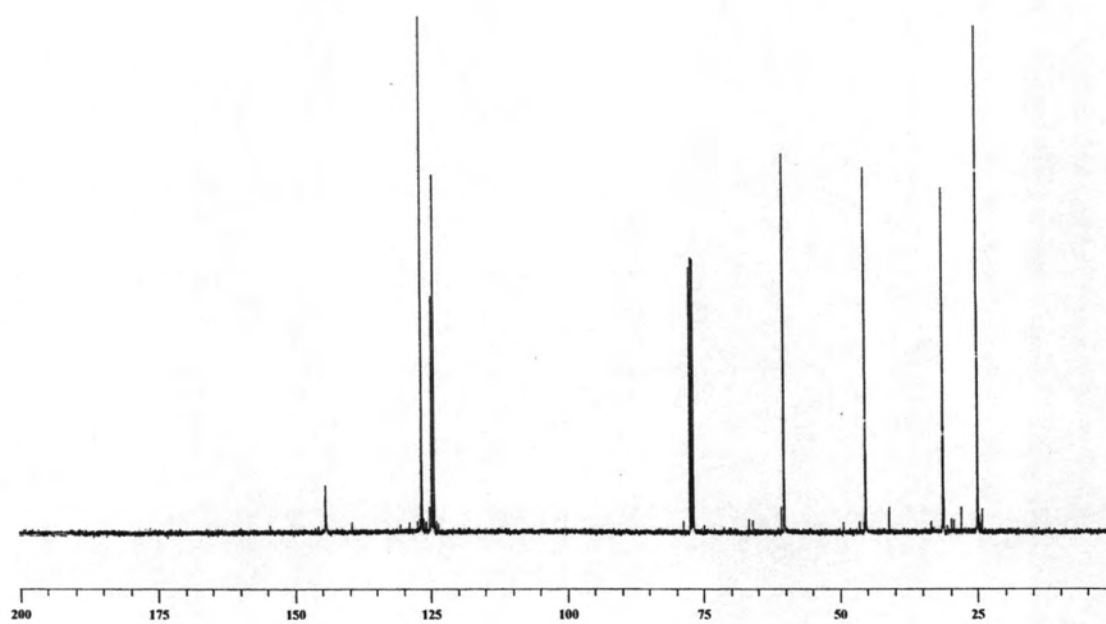
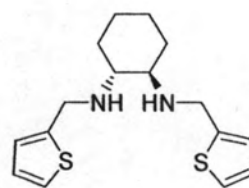
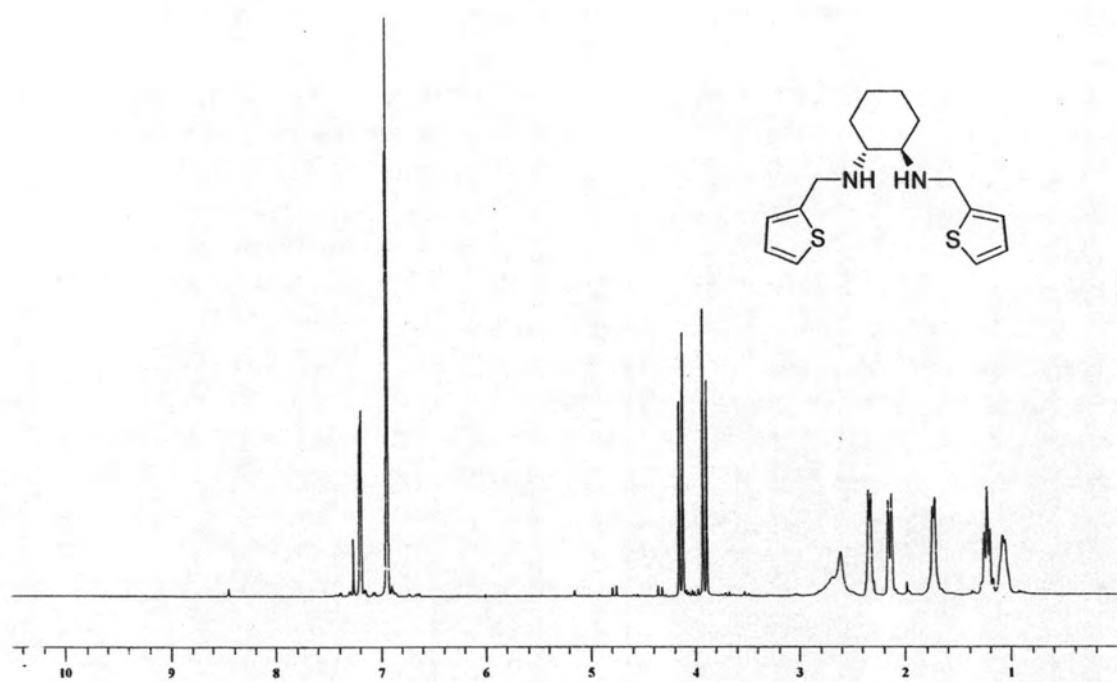


Figure 47 The ^1H NMR and ^{13}C NMR spectra of 49a

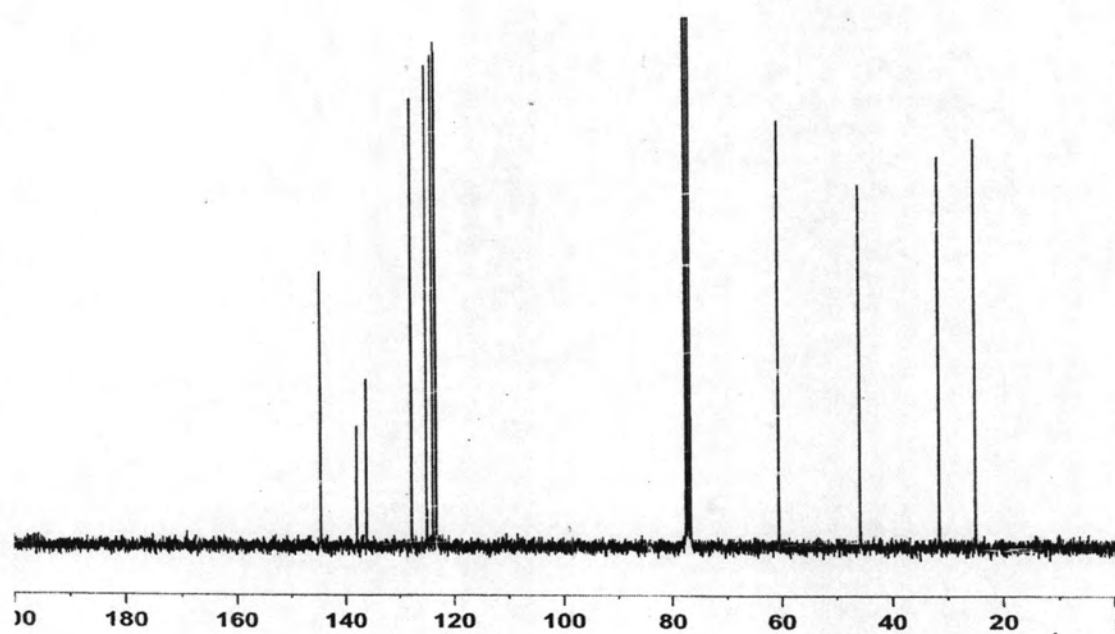
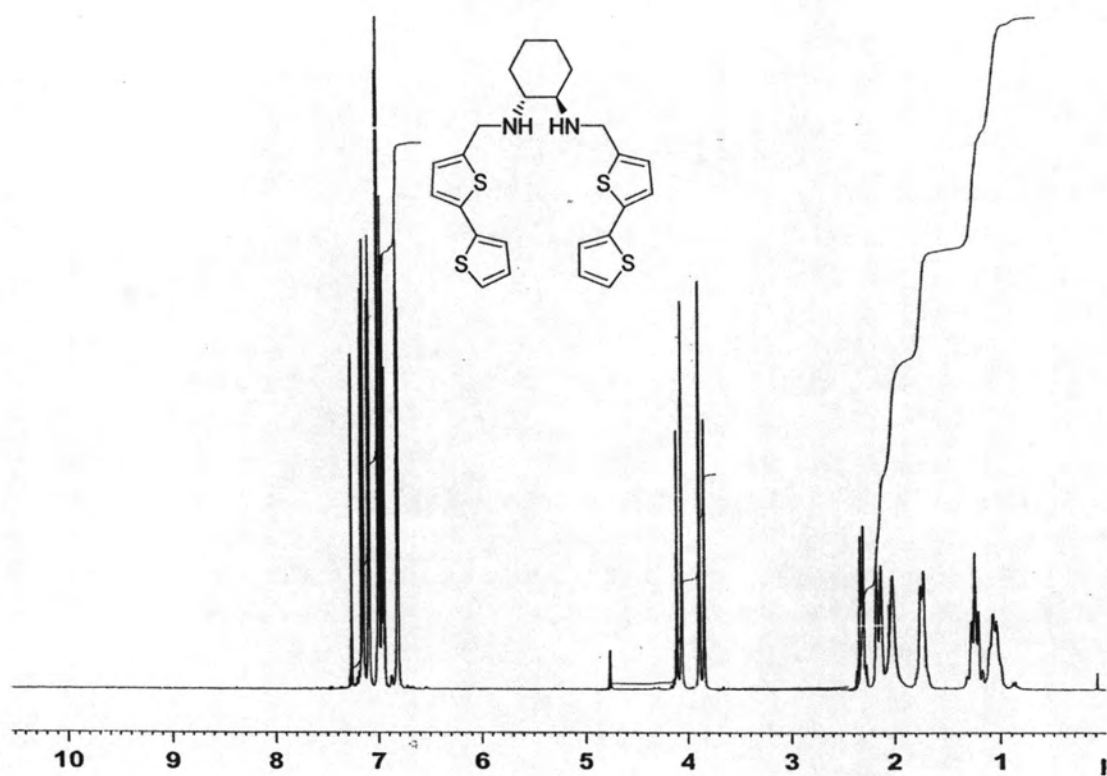


Figure 48 The ^1H NMR and ^{13}C NMR spectra of 49b

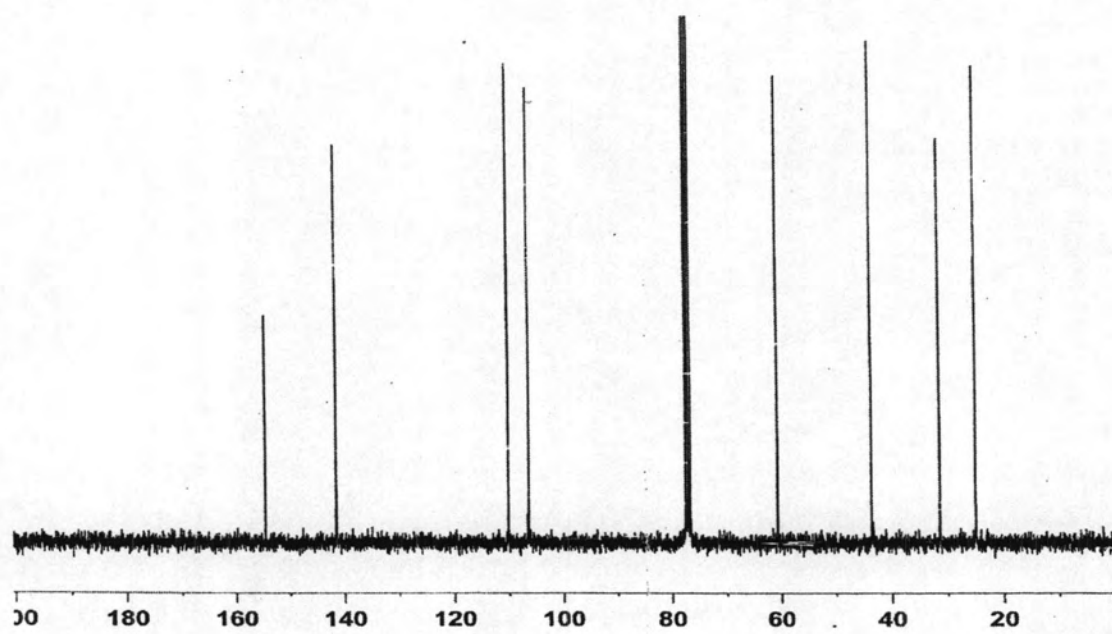
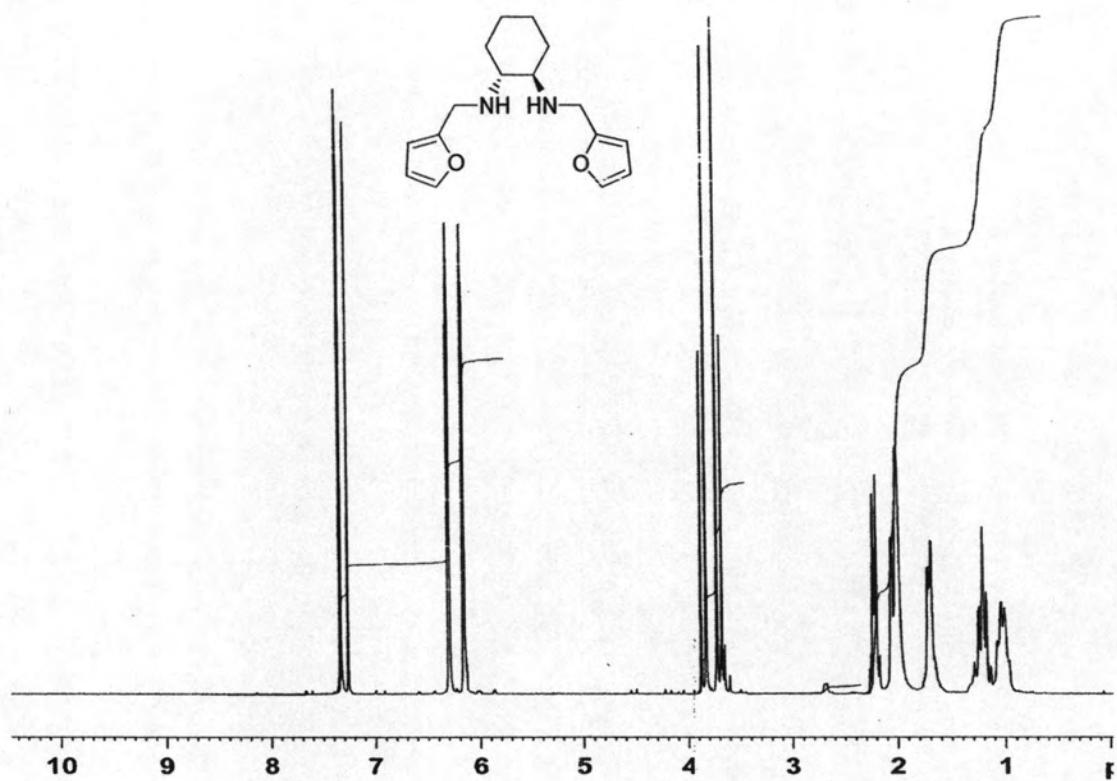


Figure 49 The ^1H NMR and ^{13}C NMR spectra of 49c

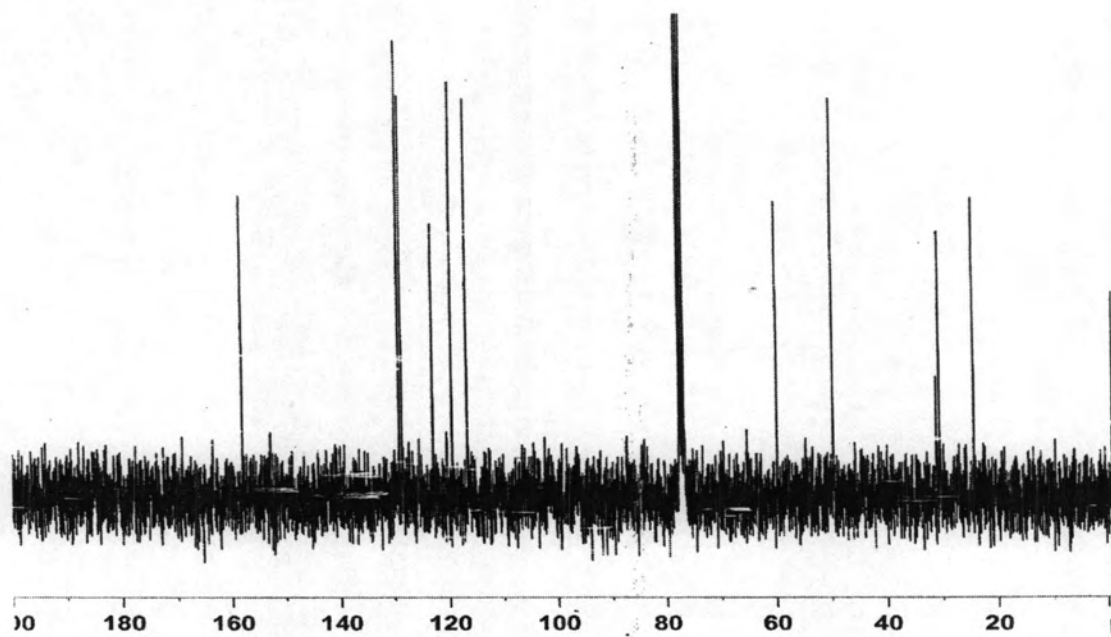
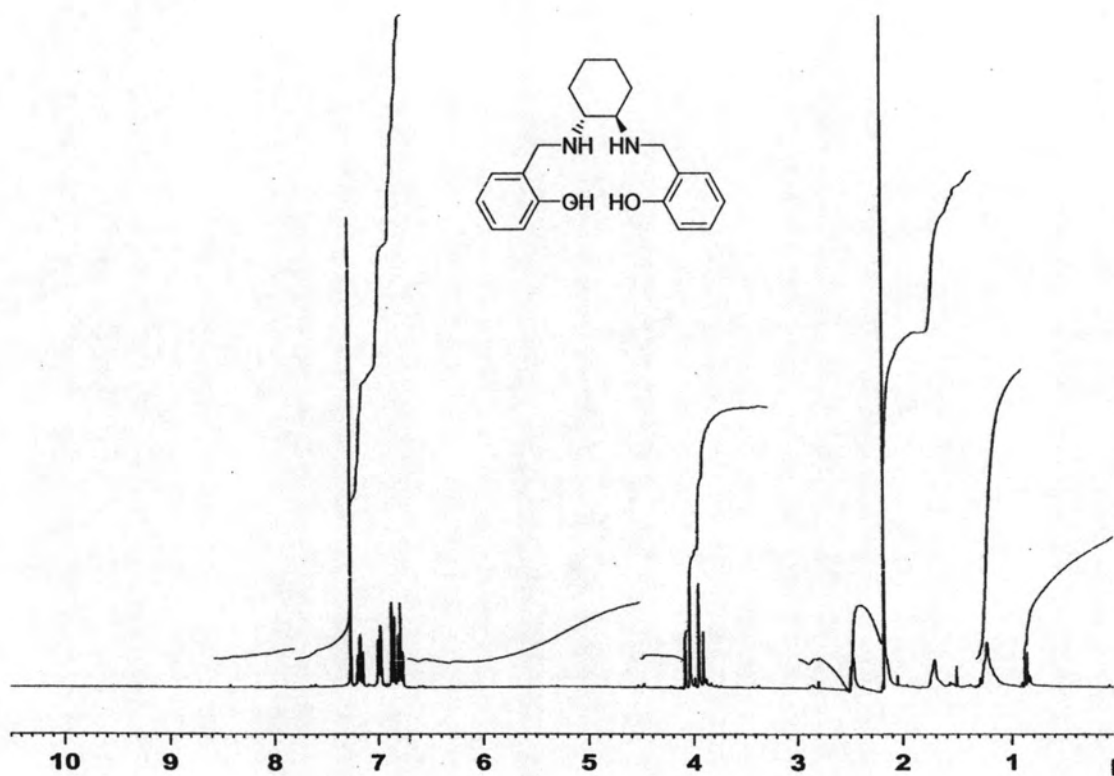


Figure 50 The ^1H NMR and ^{13}C NMR spectra of 49d

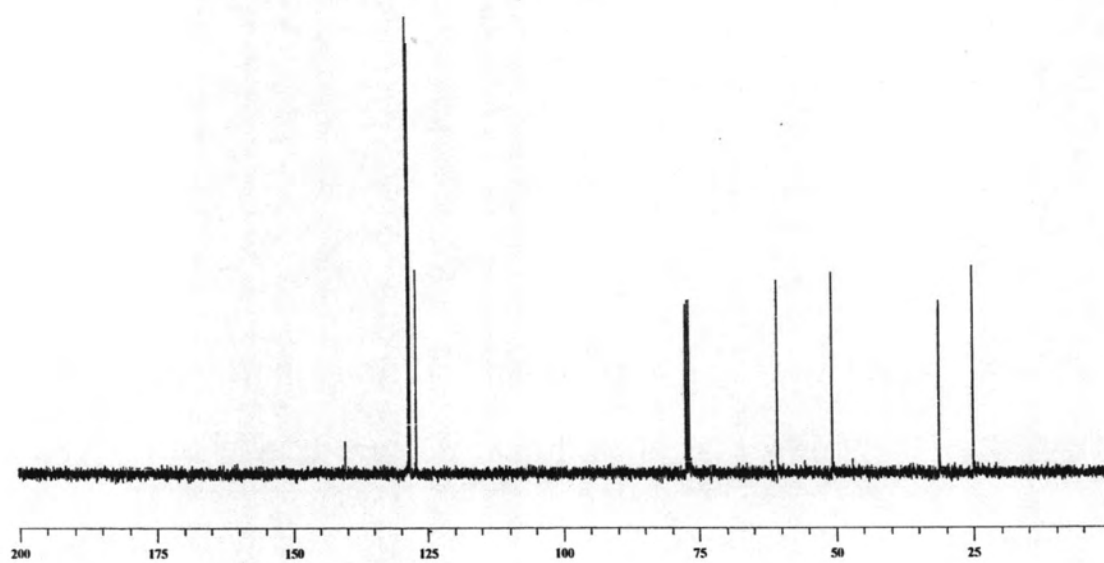
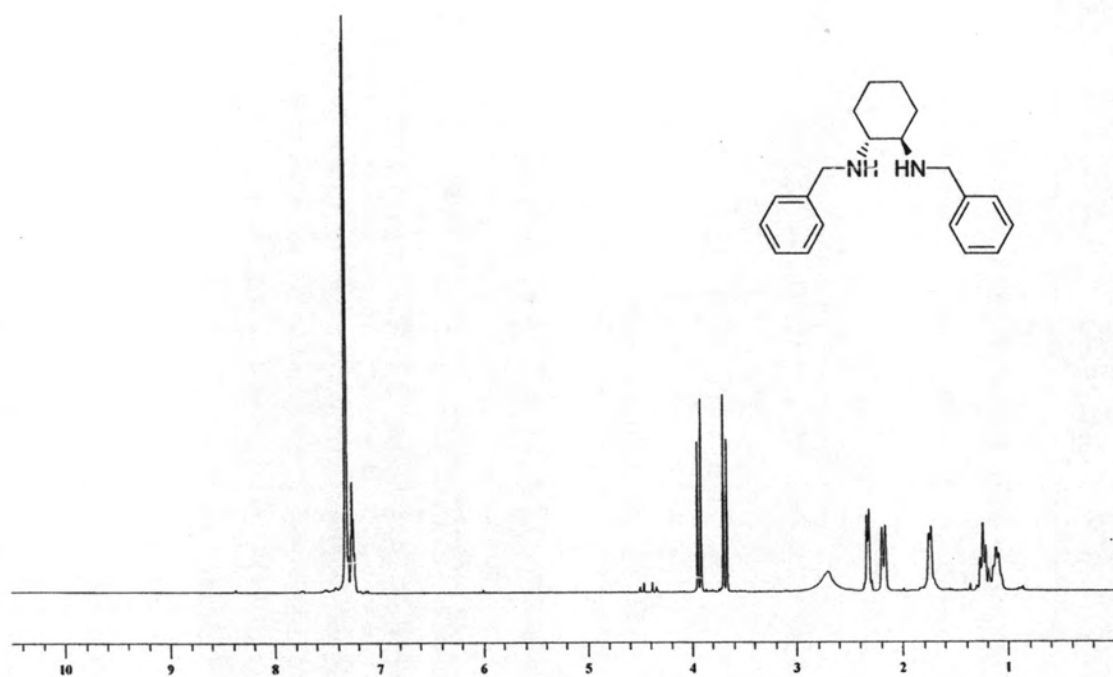


Figure 51 The ^1H NMR and ^{13}C NMR spectra of **49e**

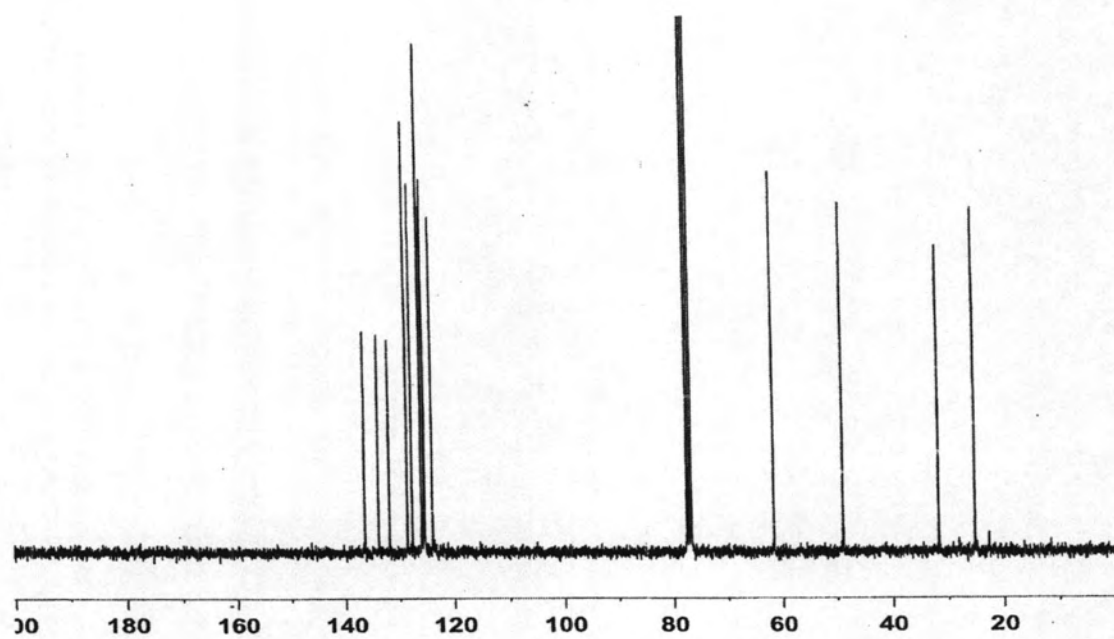
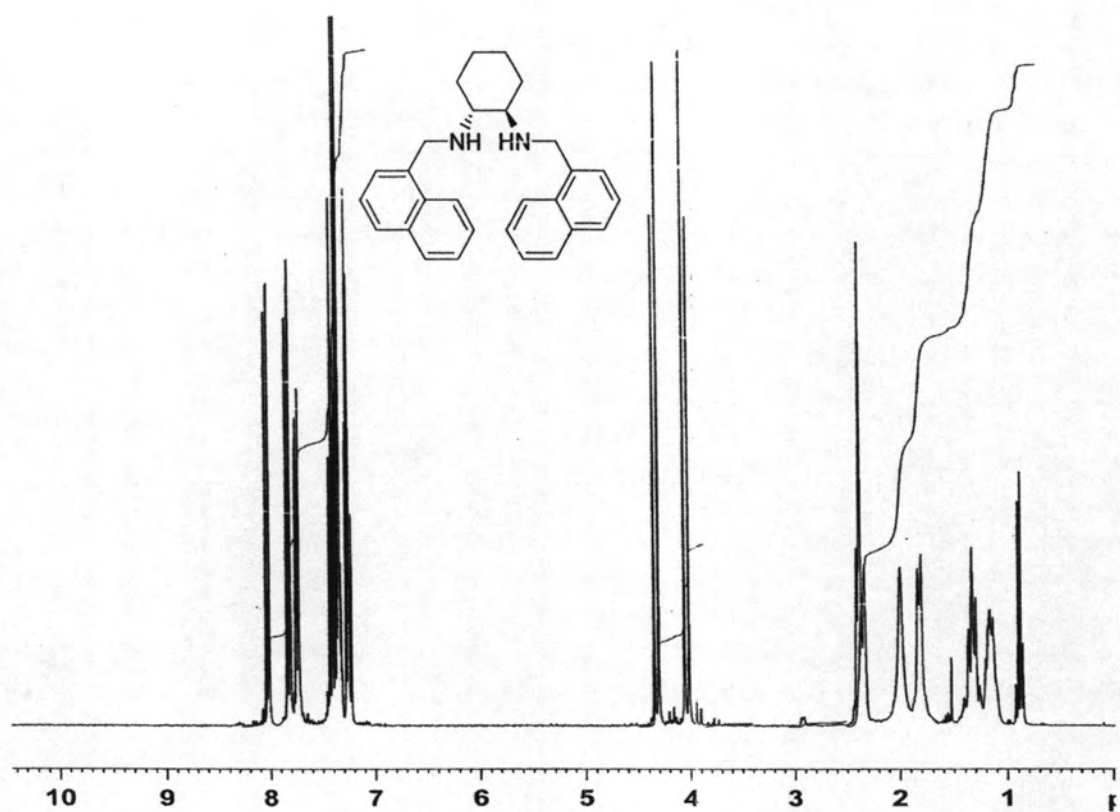


Figure 52 The ^1H NMR and ^{13}C NMR spectra of 49f

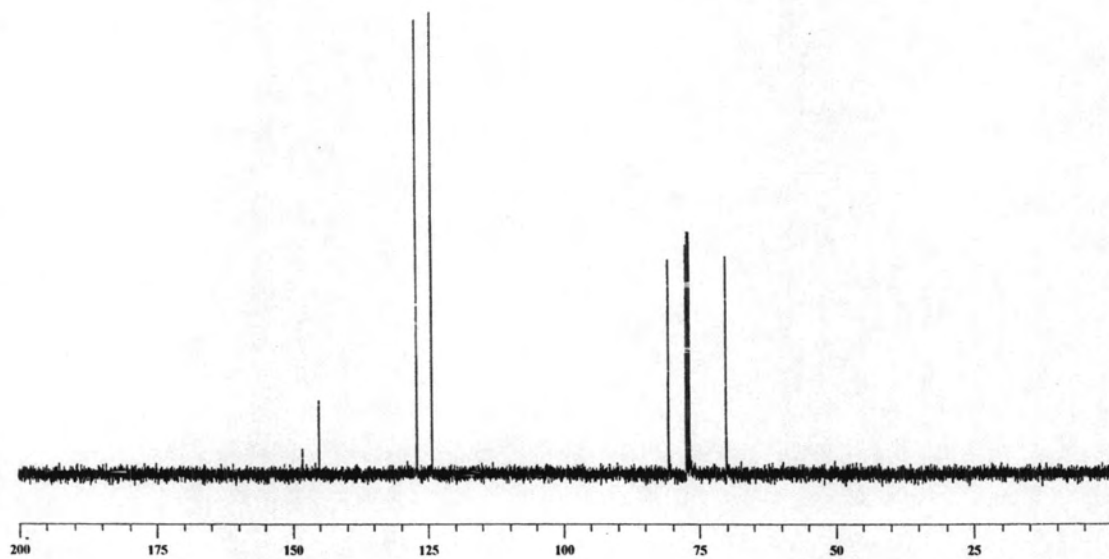
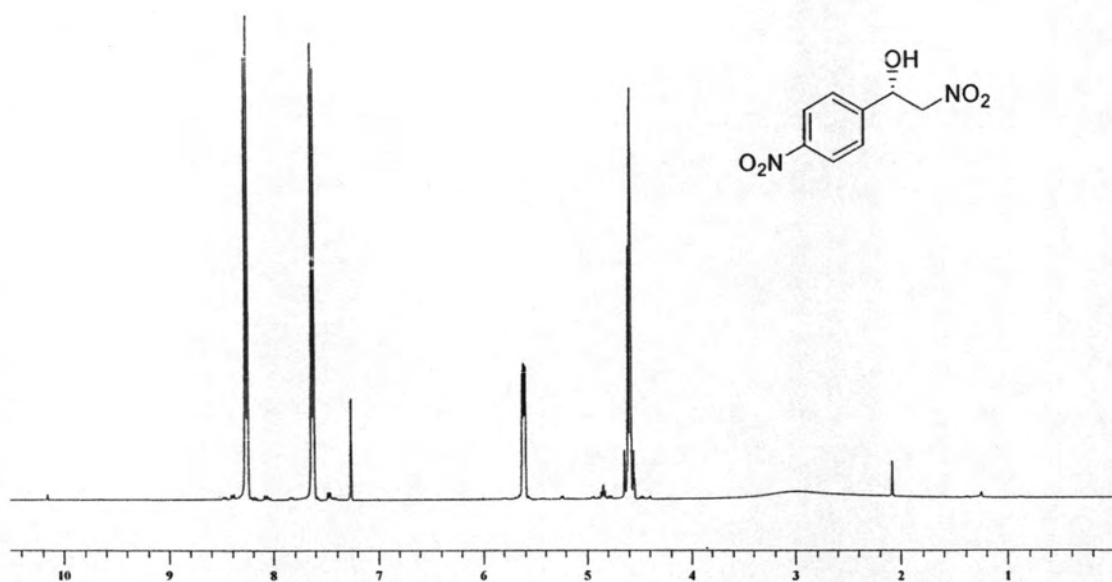


Figure 53 The ^1H NMR and ^{13}C NMR spectra of (S)-74a

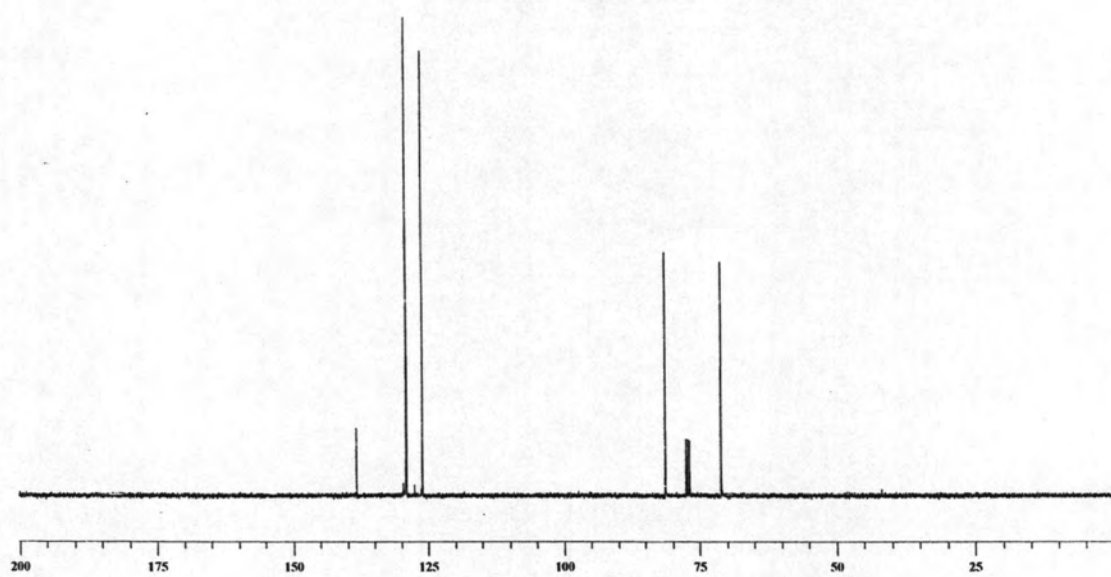
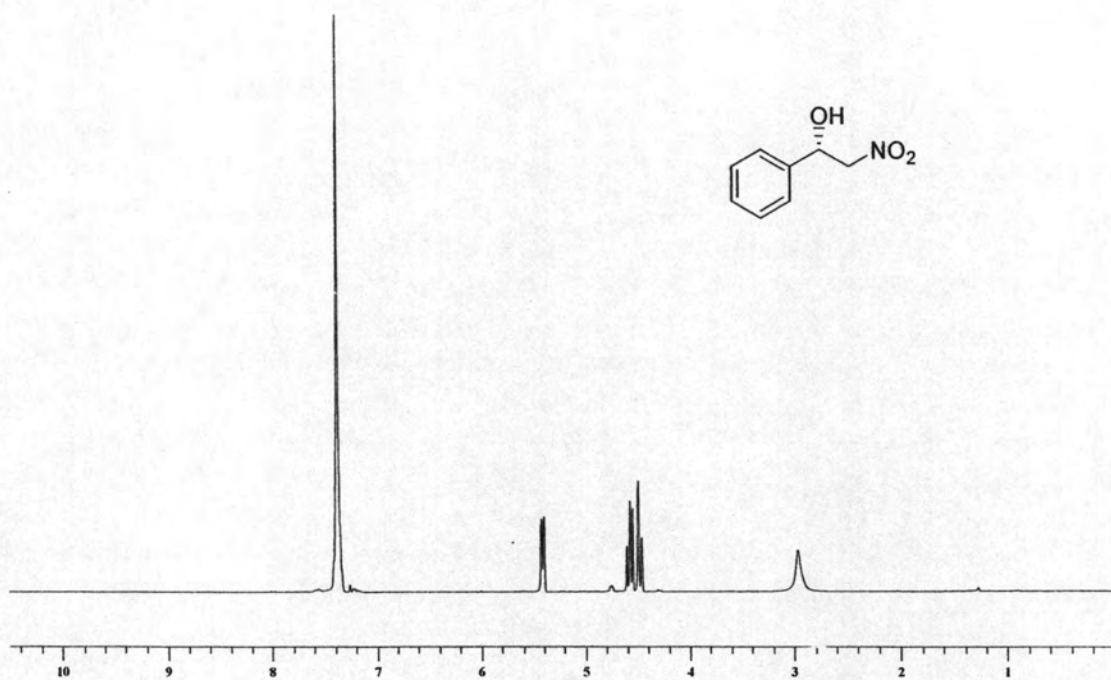


Figure 54 The ^1H NMR and ^{13}C NMR spectra of (*S*)-74b

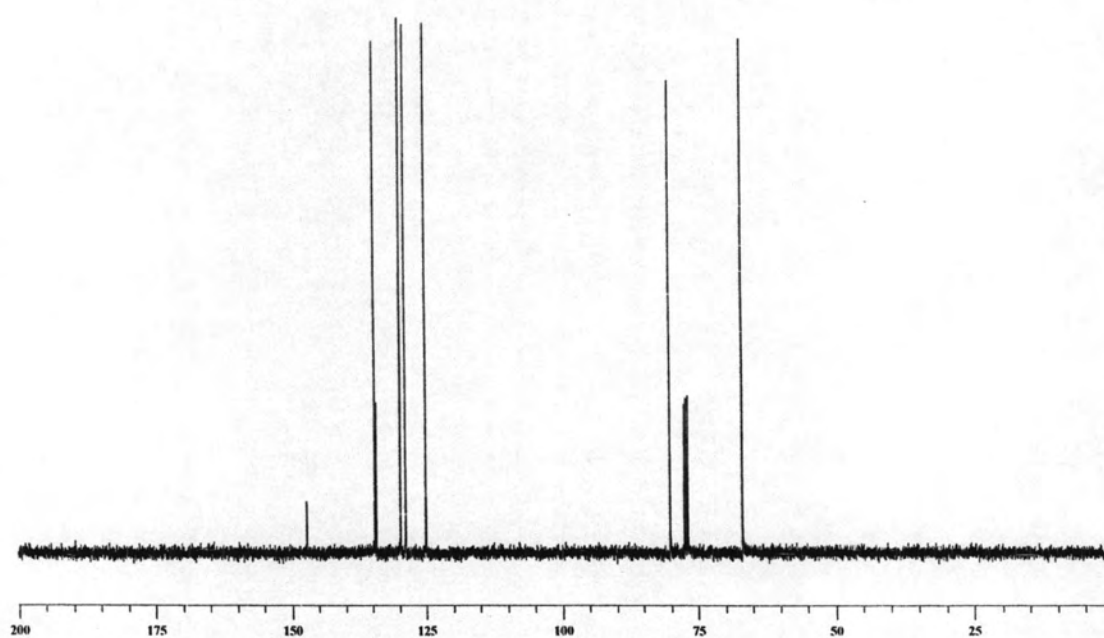
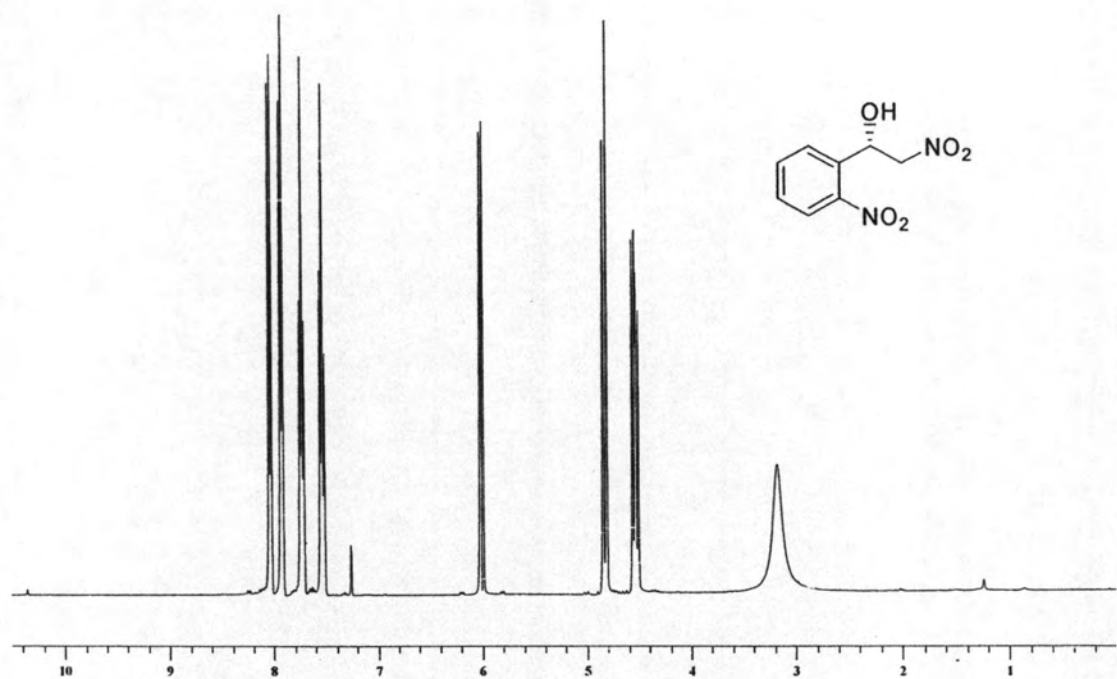


Figure 55 The ^1H NMR and ^{13}C NMR spectra of (*S*)-74c

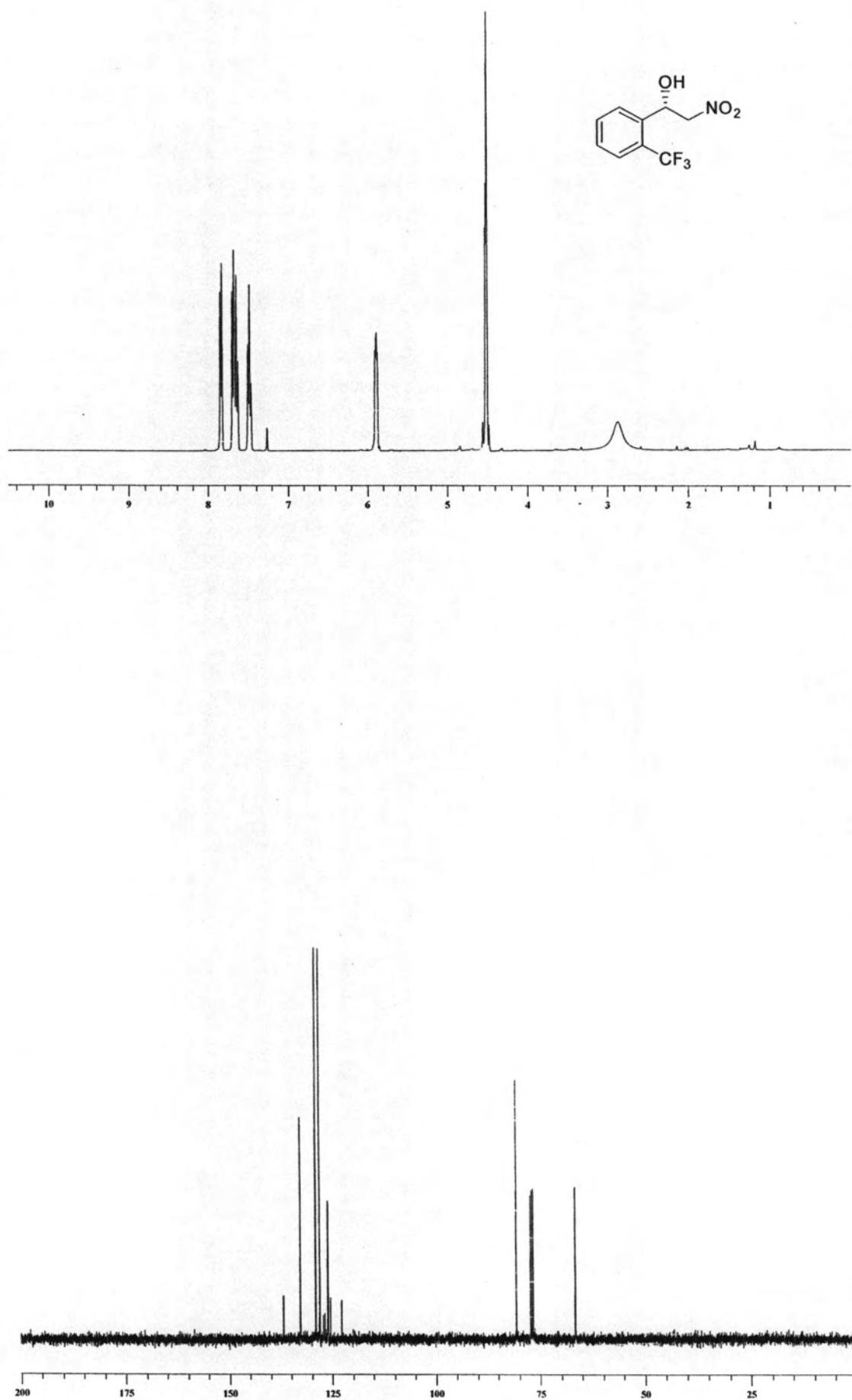


Figure 56 The ^1H NMR and ^{13}C NMR spectra of (S)-74d

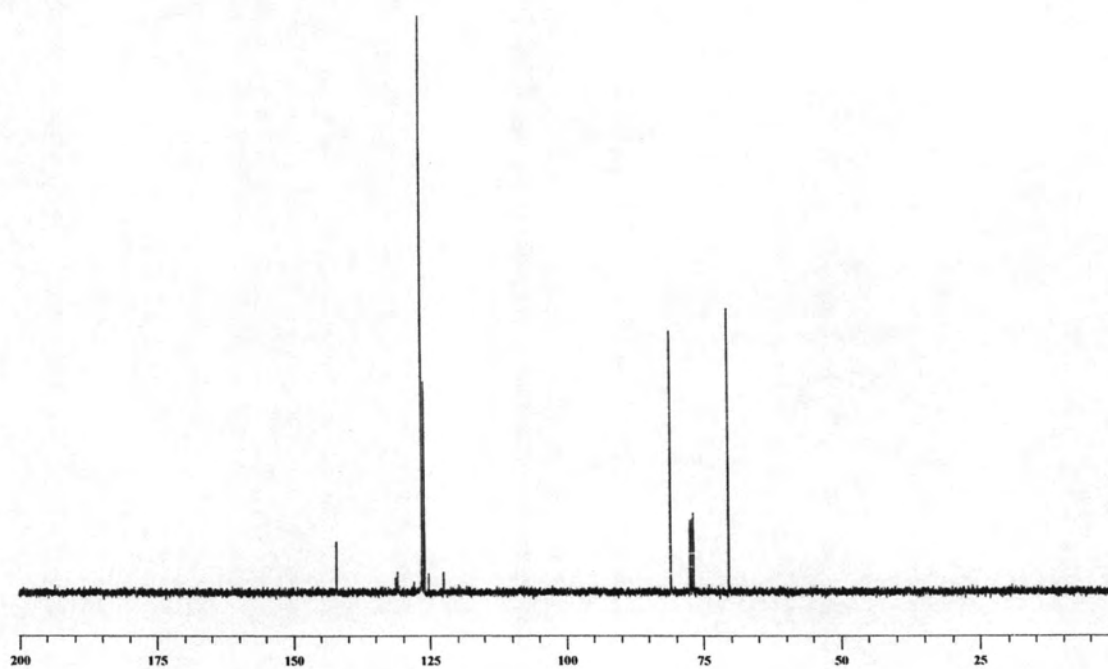
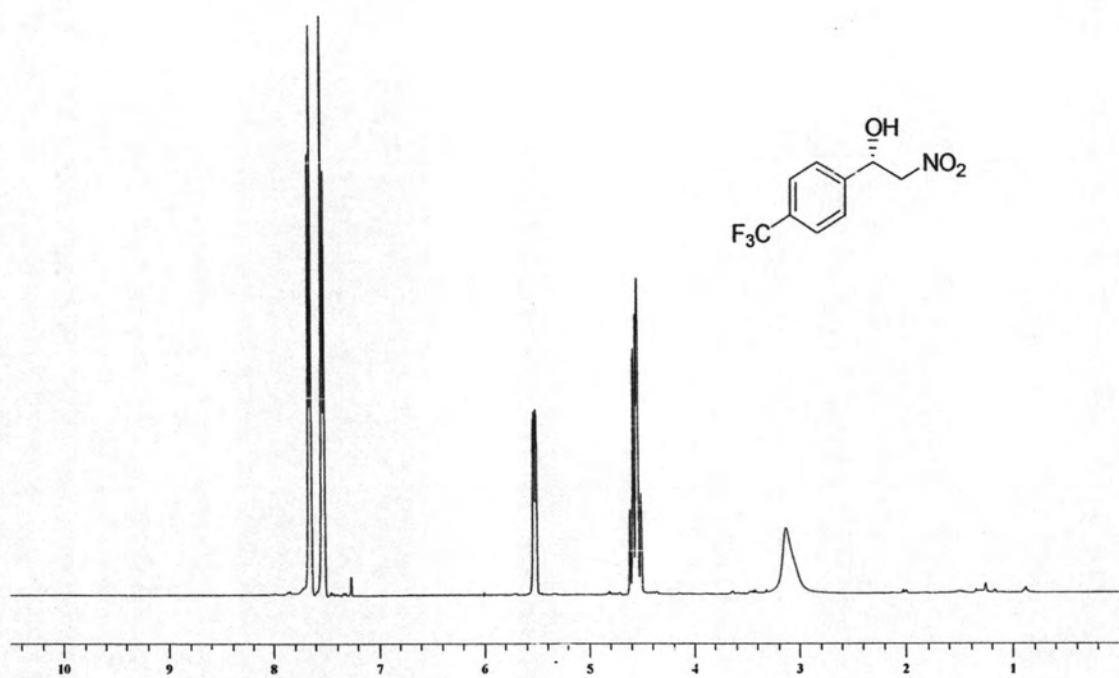


Figure 57 The ^1H NMR and ^{13}C NMR spectra of (S)-74e

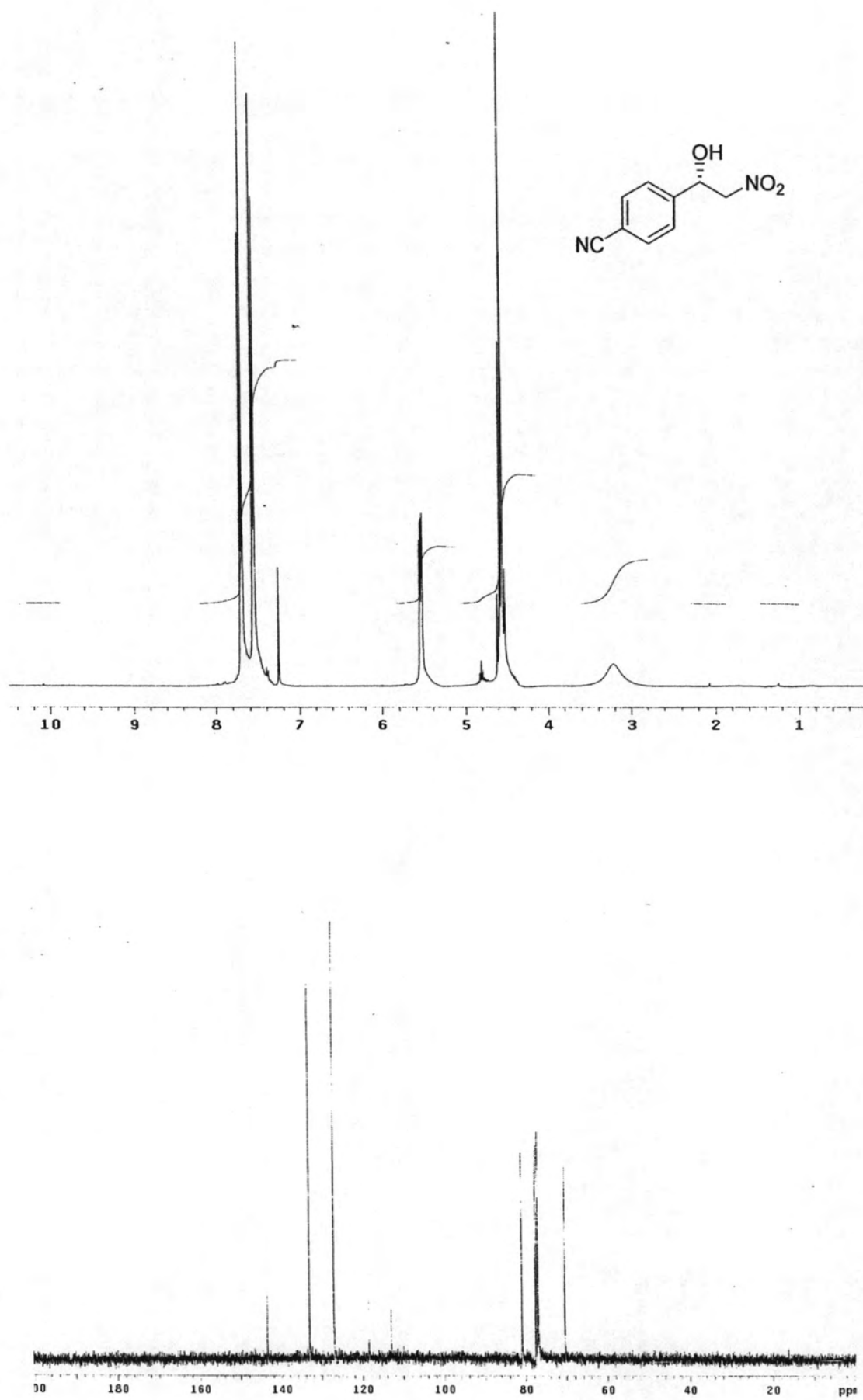


Figure 58 The ^1H NMR and ^{13}C NMR spectra of (S)-74f

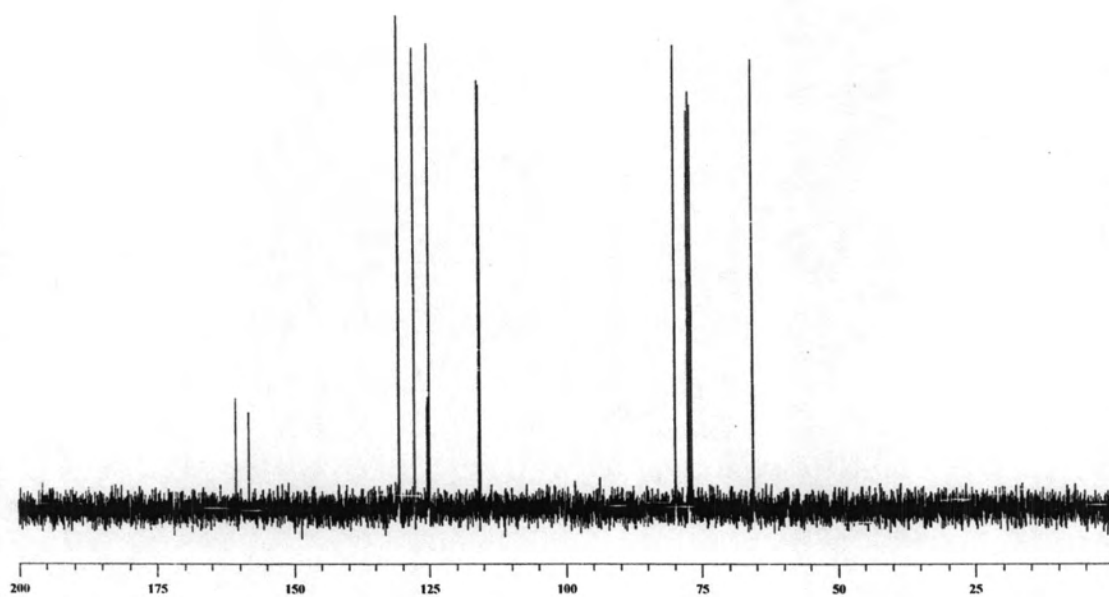
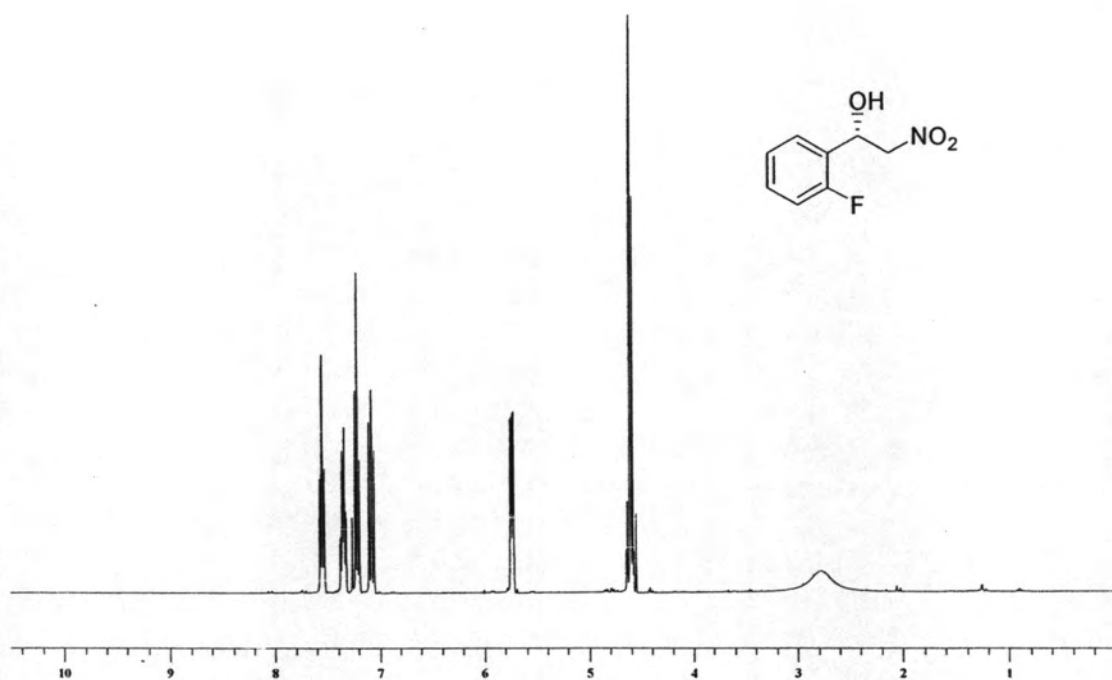


Figure 59 The ^1H NMR and ^{13}C NMR spectra of (*S*)-74g

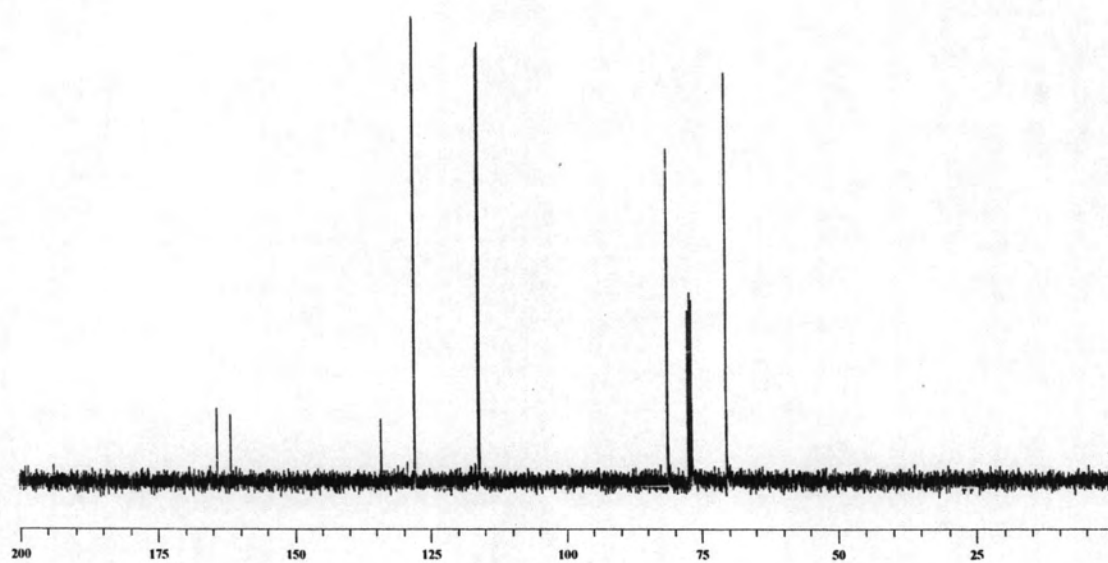
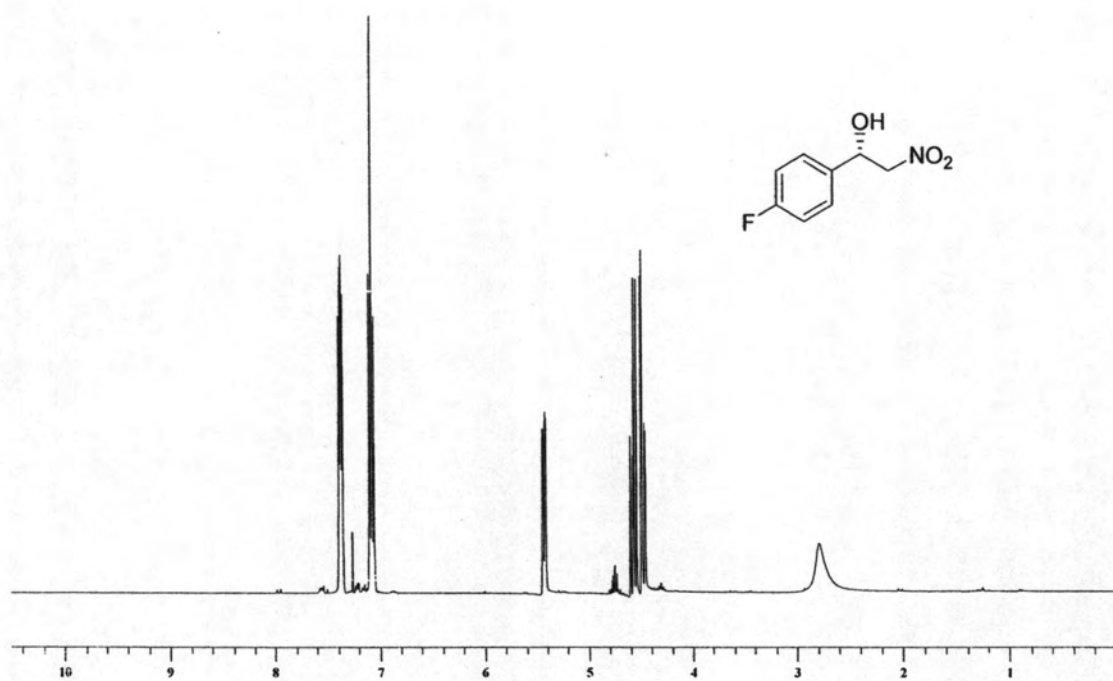


Figure 60 The ^1H NMR and ^{13}C NMR spectra of (*S*)-74h

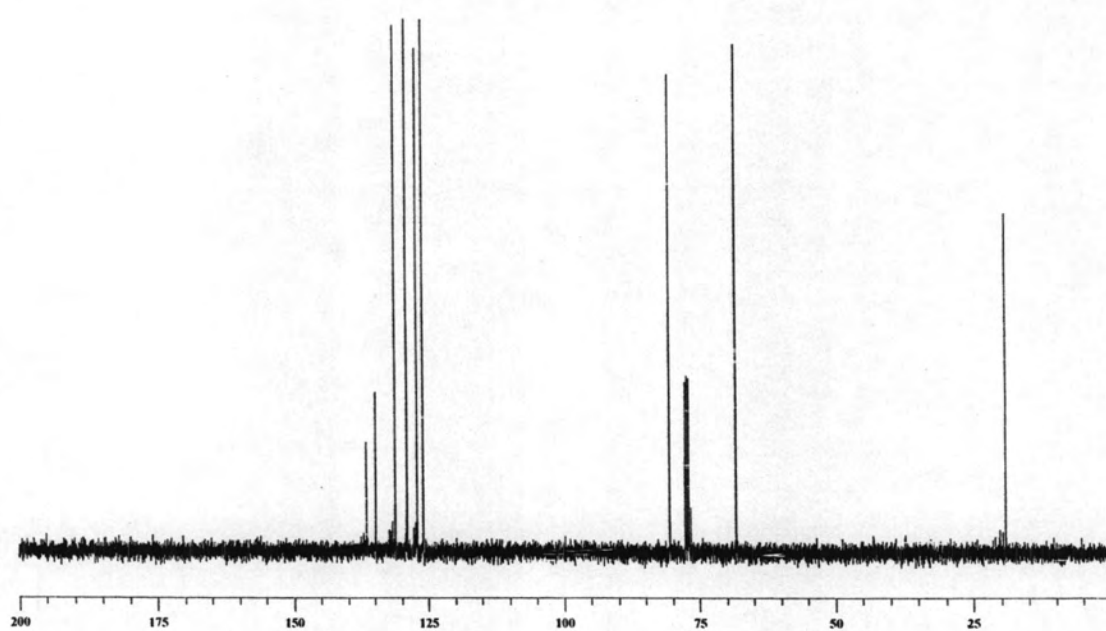
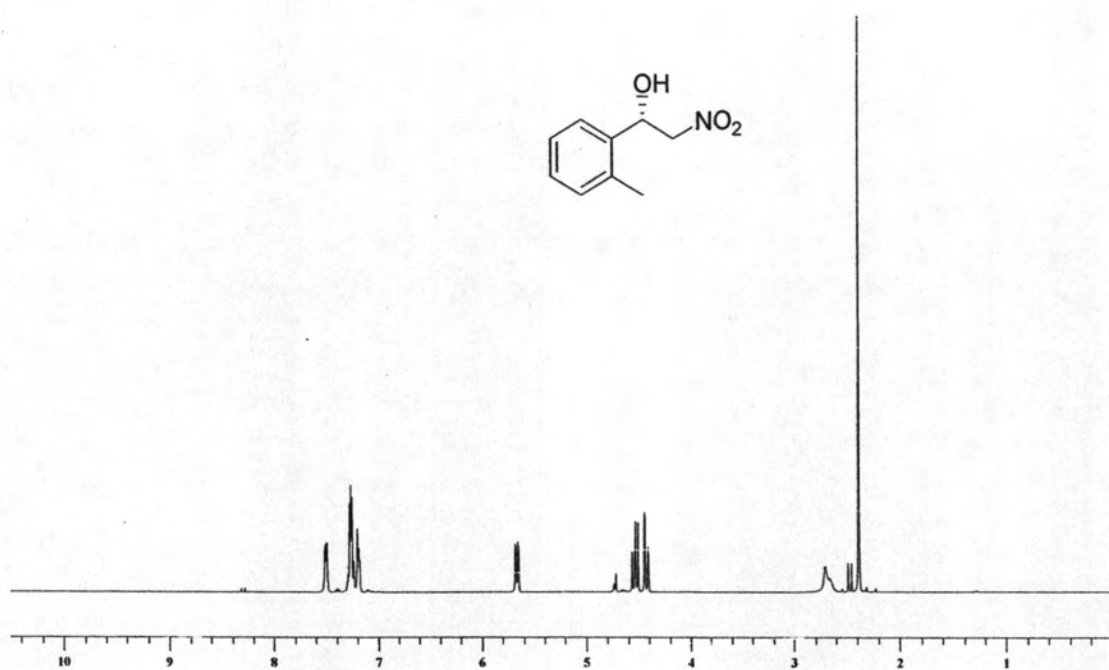


Figure 61 The ^1H NMR and ^{13}C NMR spectra of (S)-74i

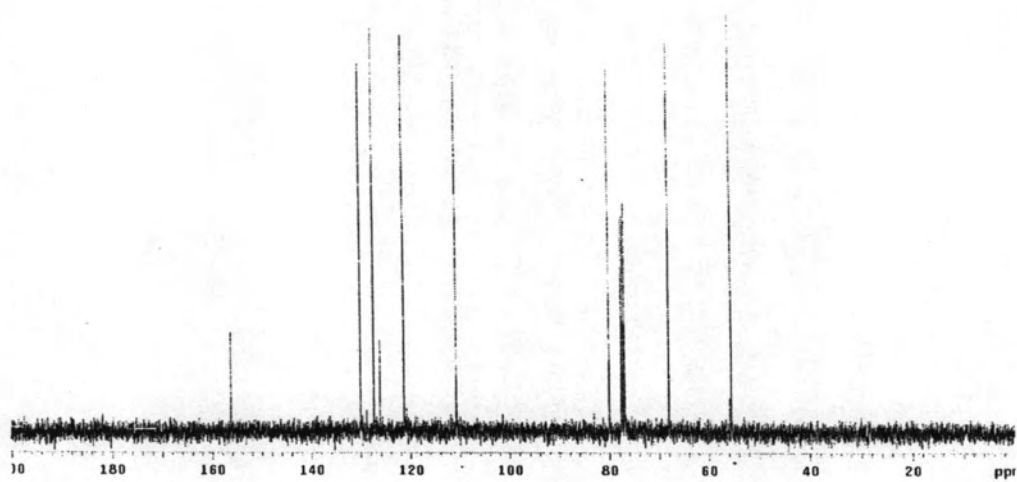
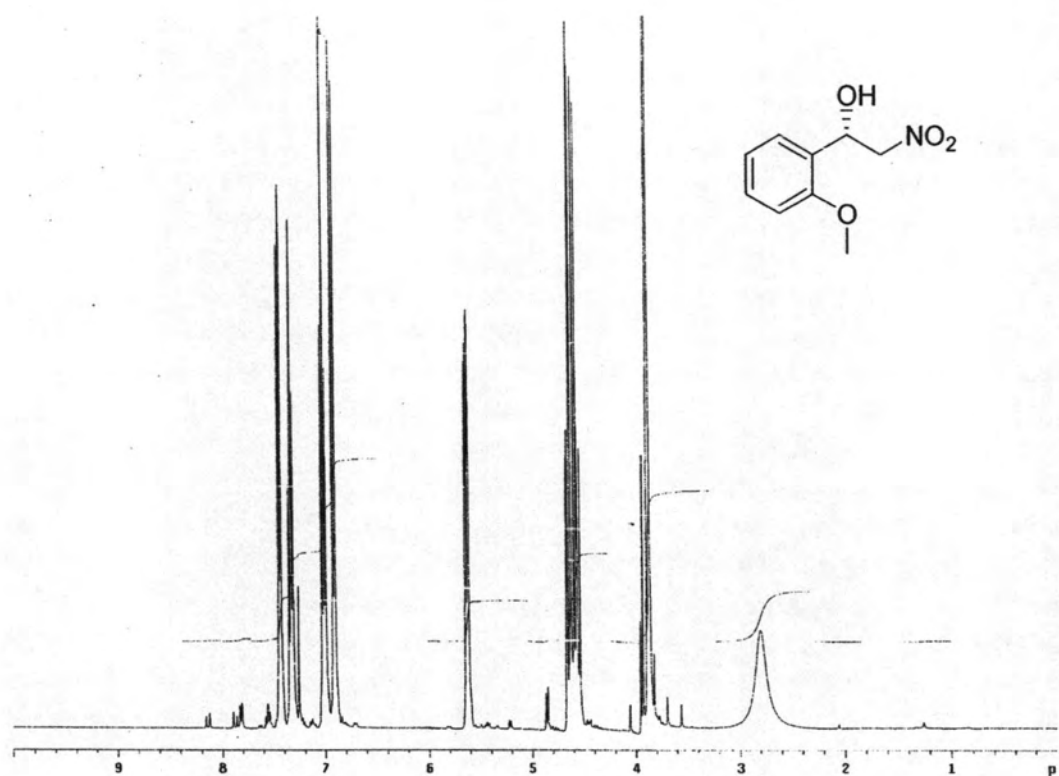


Figure 62 The ^1H NMR and ^{13}C NMR spectra of (*S*)-74j

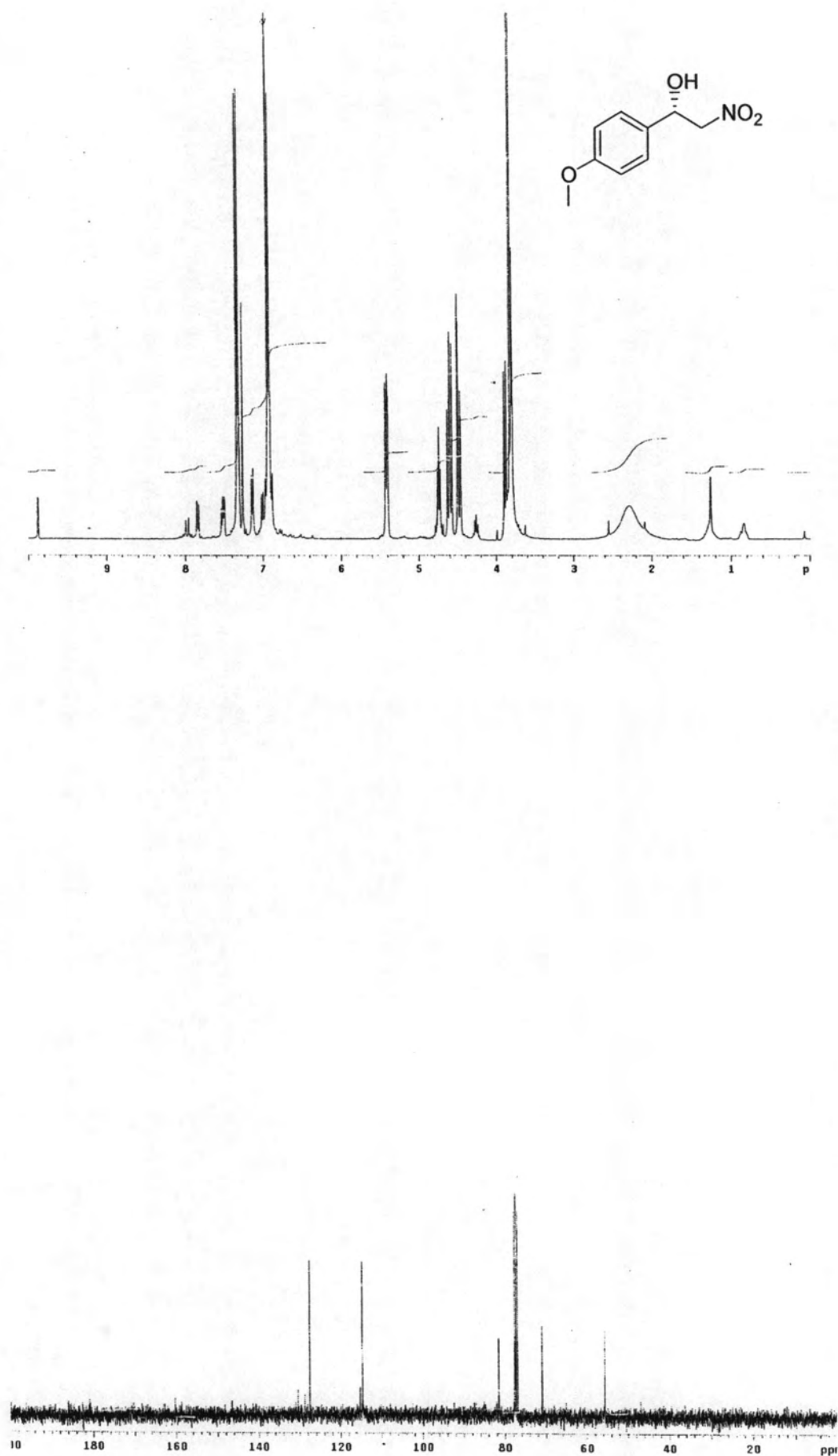


Figure 63 The ^1H NMR and ^{13}C NMR spectra of (S)-74k

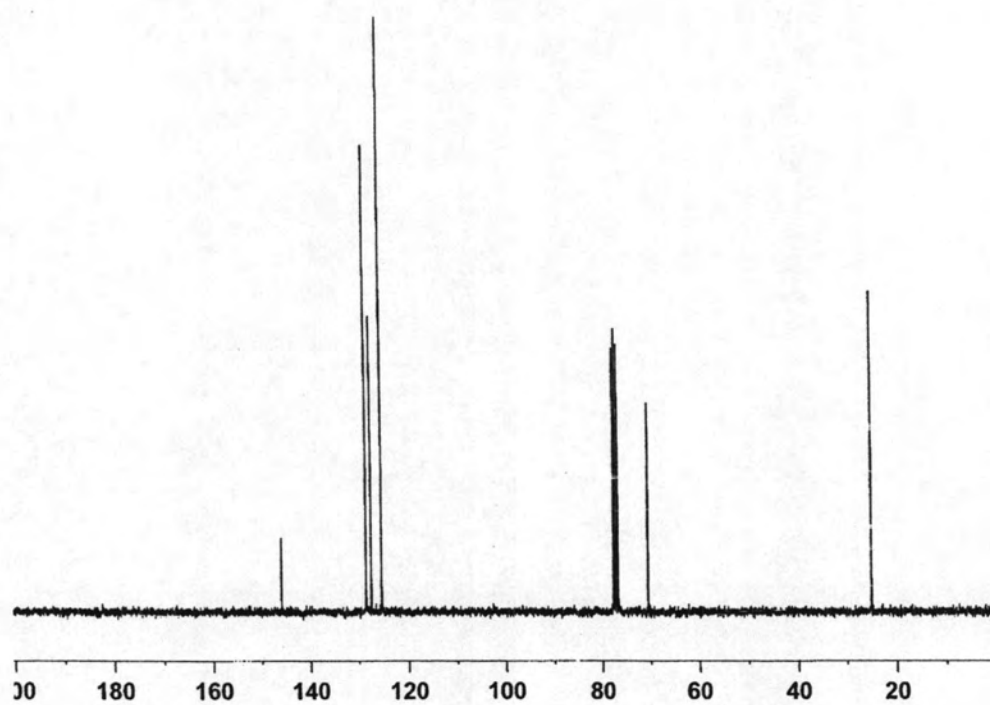
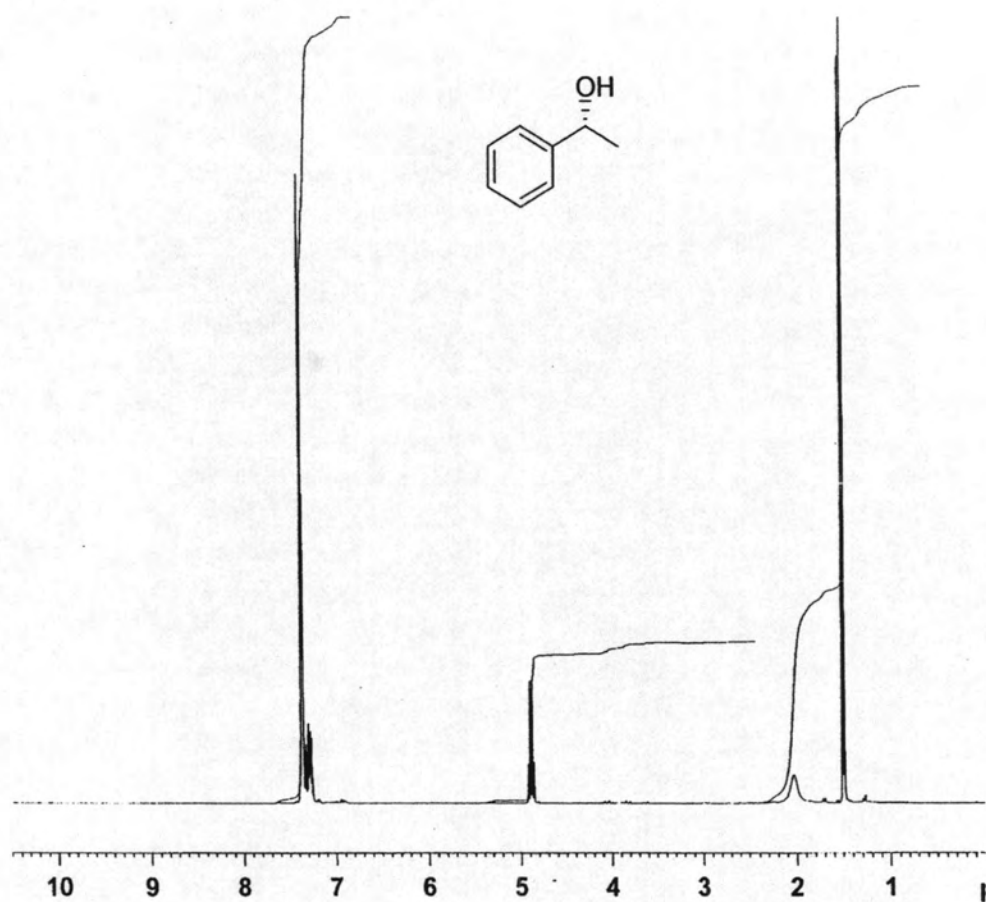


Figure 64 The ^1H NMR and ^{13}C NMR spectra of (R) -1-phenylethanol

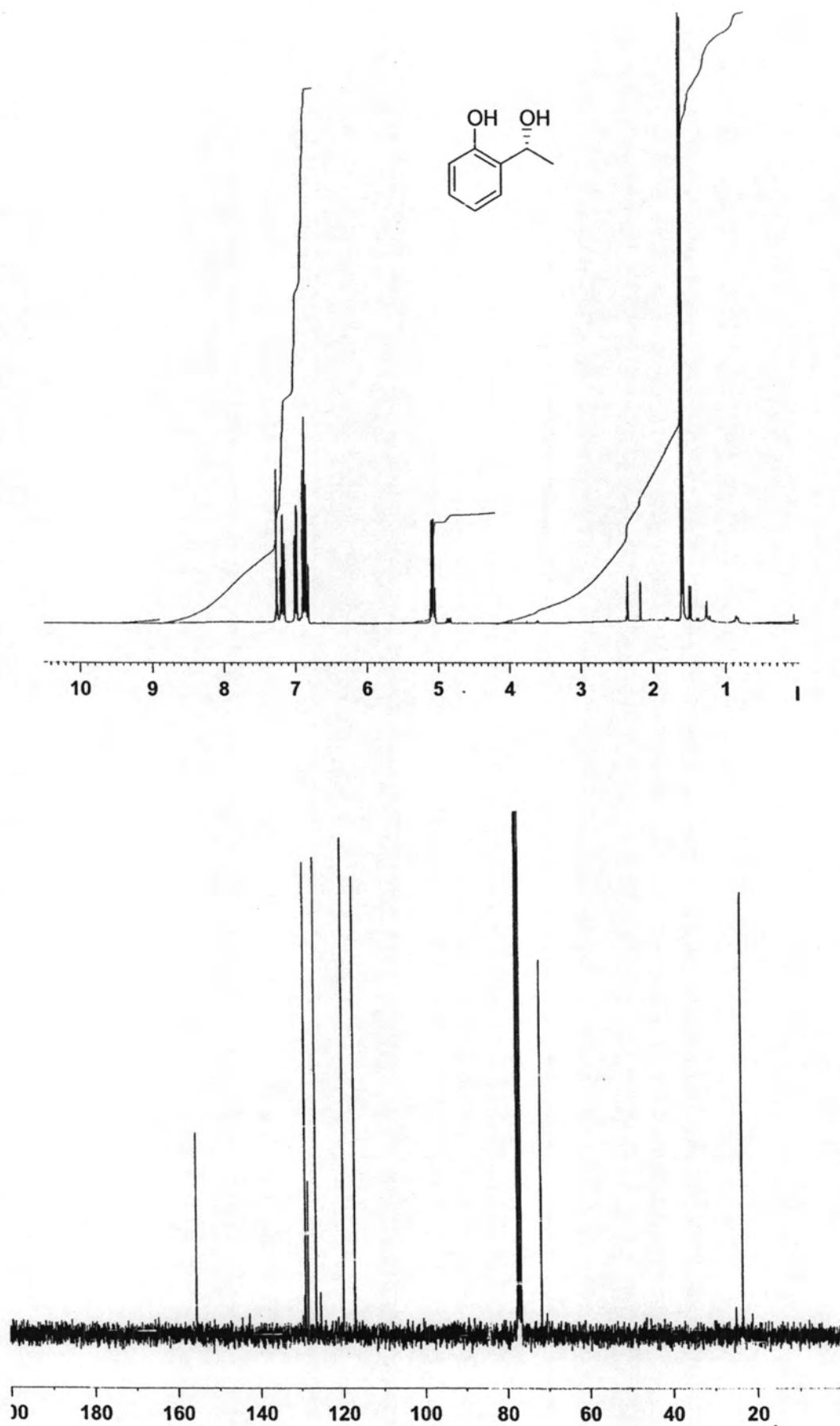


Figure 65 The ¹H NMR and ¹³C NMR spectra of *(R)*-1-(2'-hydroxyphenyl)ethanol

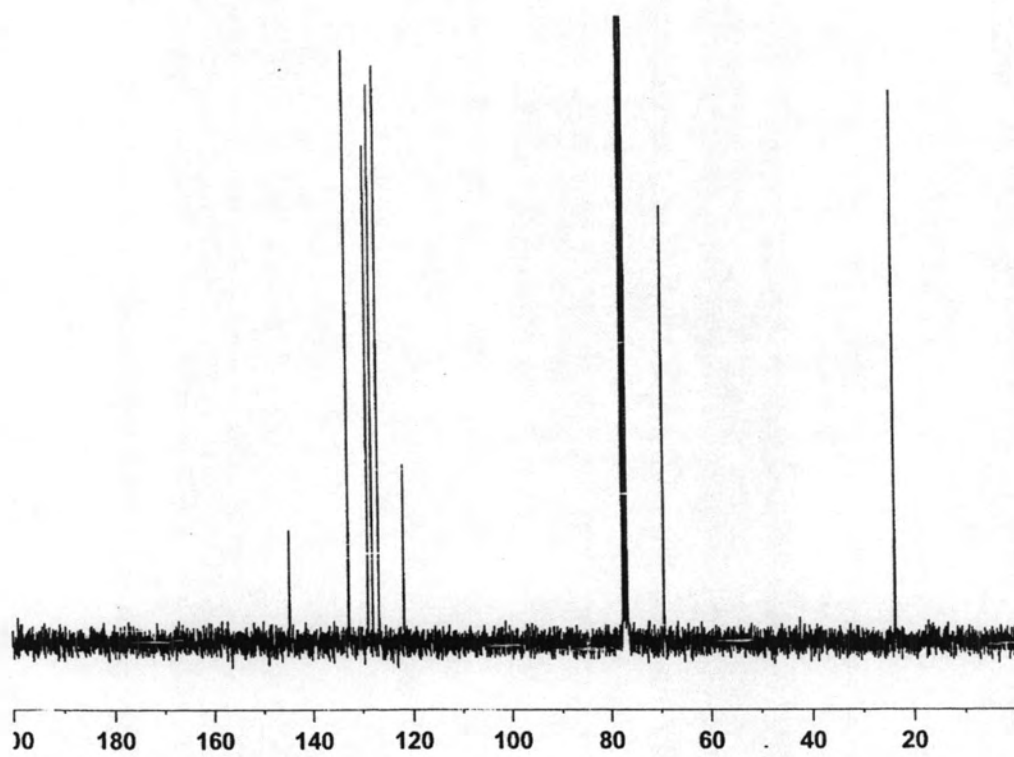
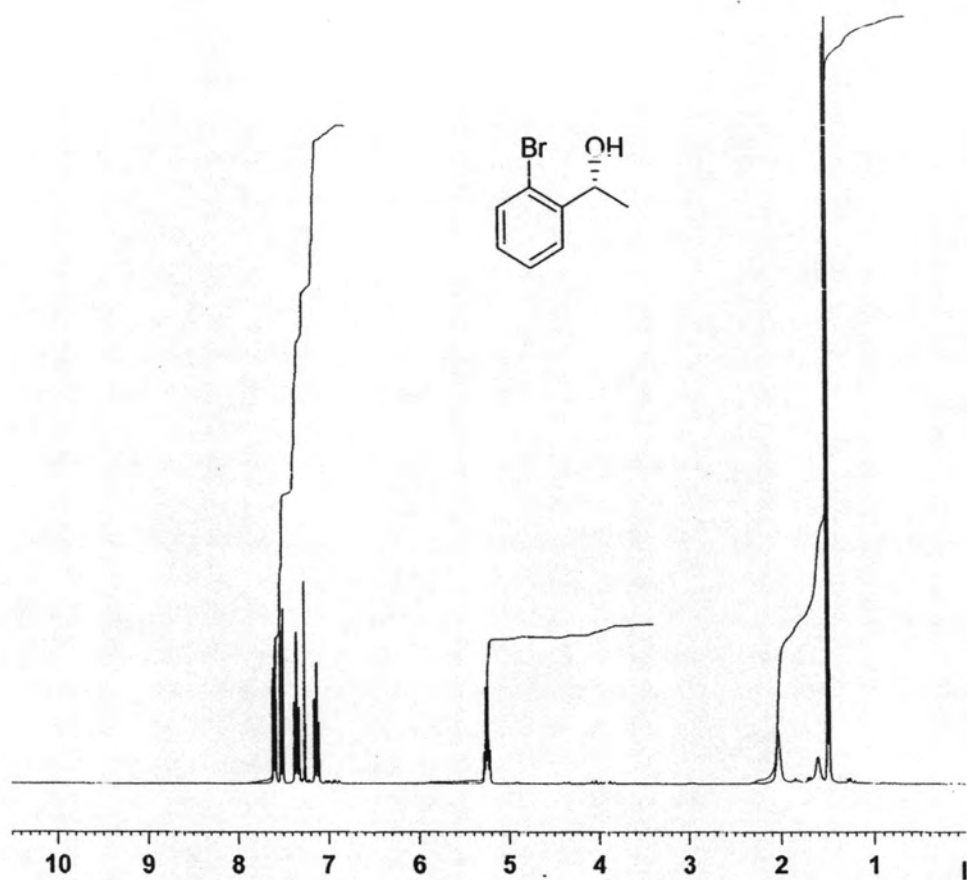


Figure 66 The ^1H NMR and ^{13}C NMR spectra of (R) -1-(2'-bromophenyl)ethanol

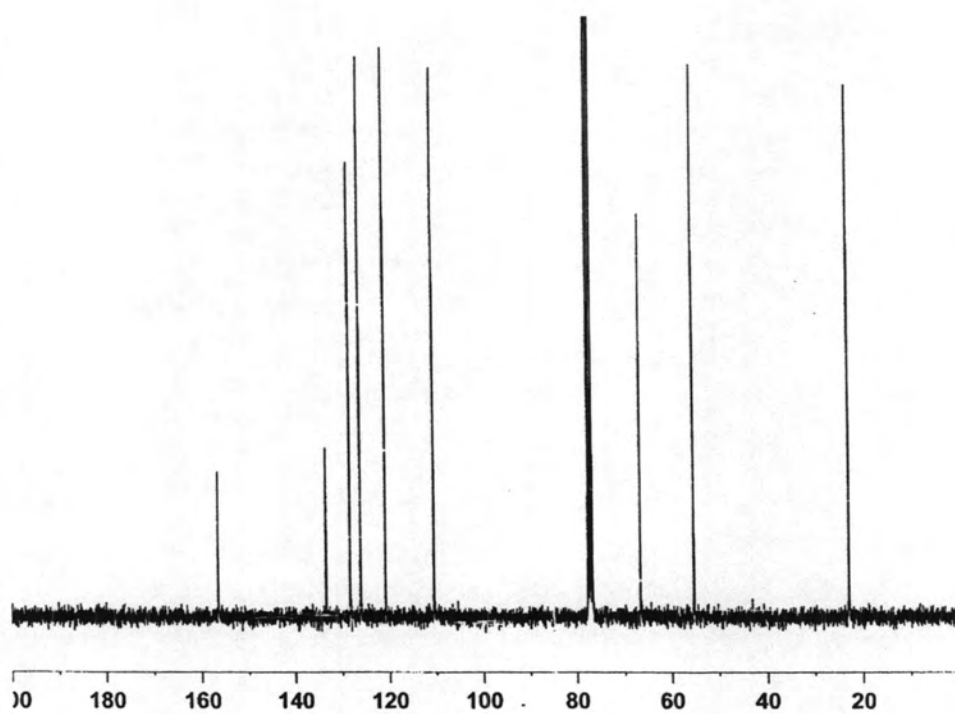
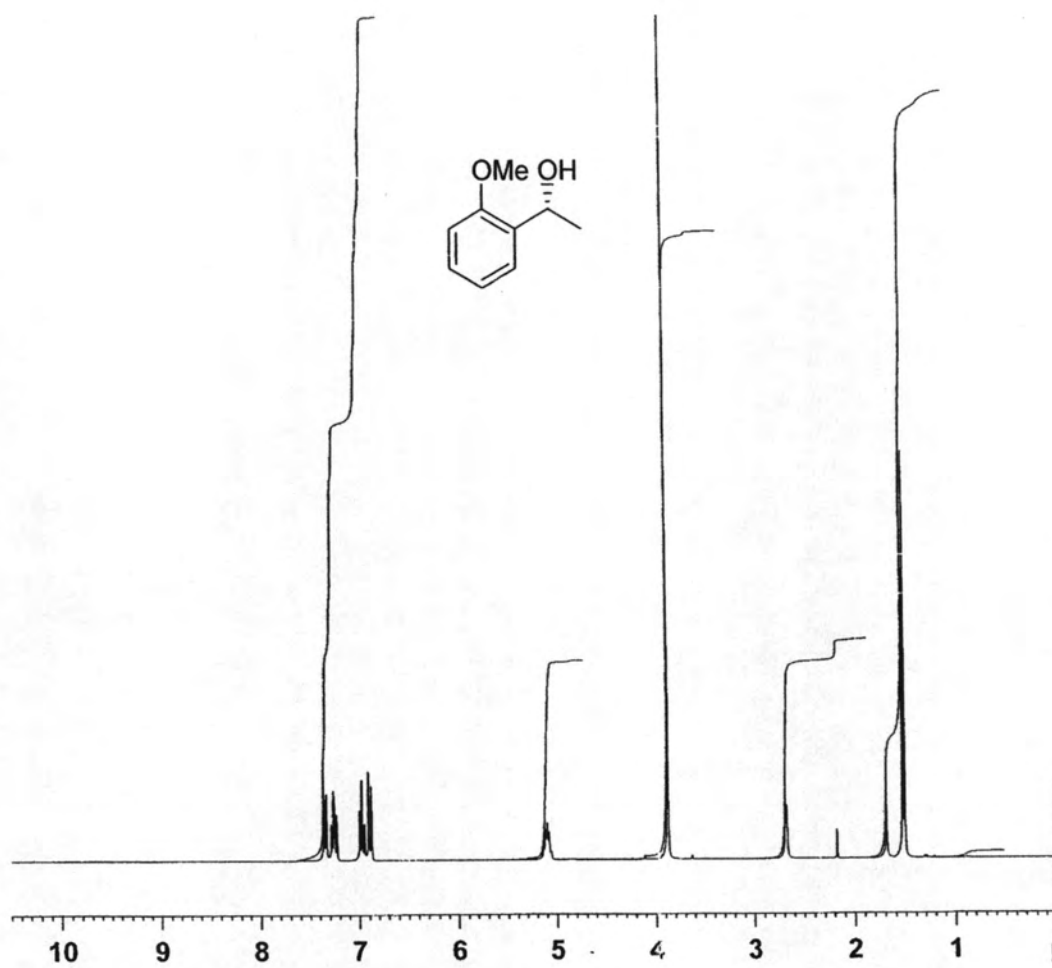


Figure 67 The ^1H NMR and ^{13}C NMR spectra of (R) -1-(2'-methoxyphenyl)ethanol

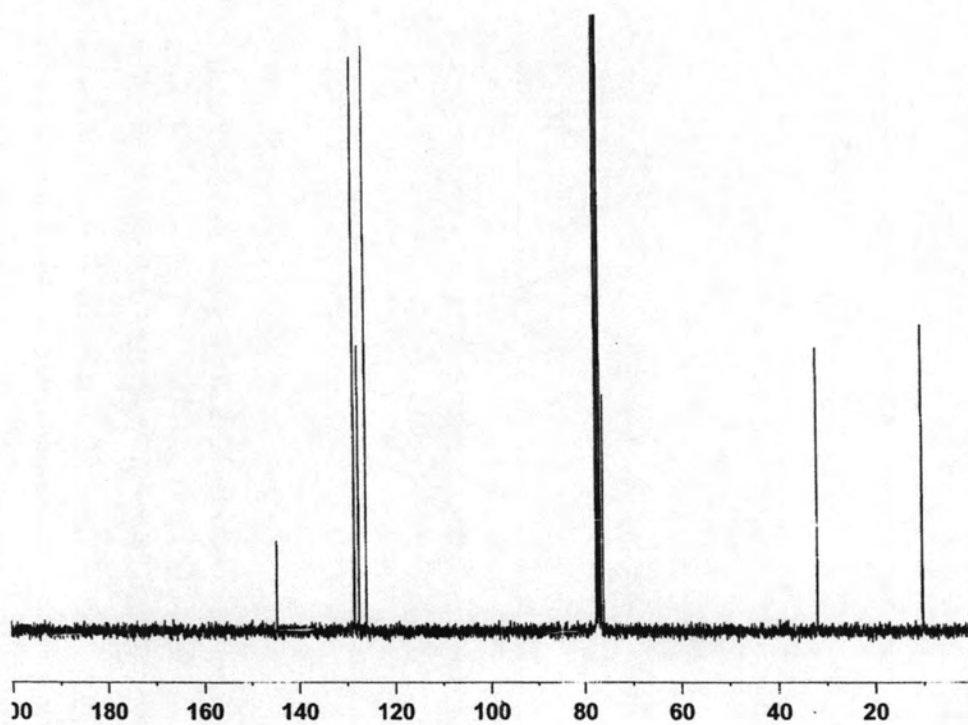
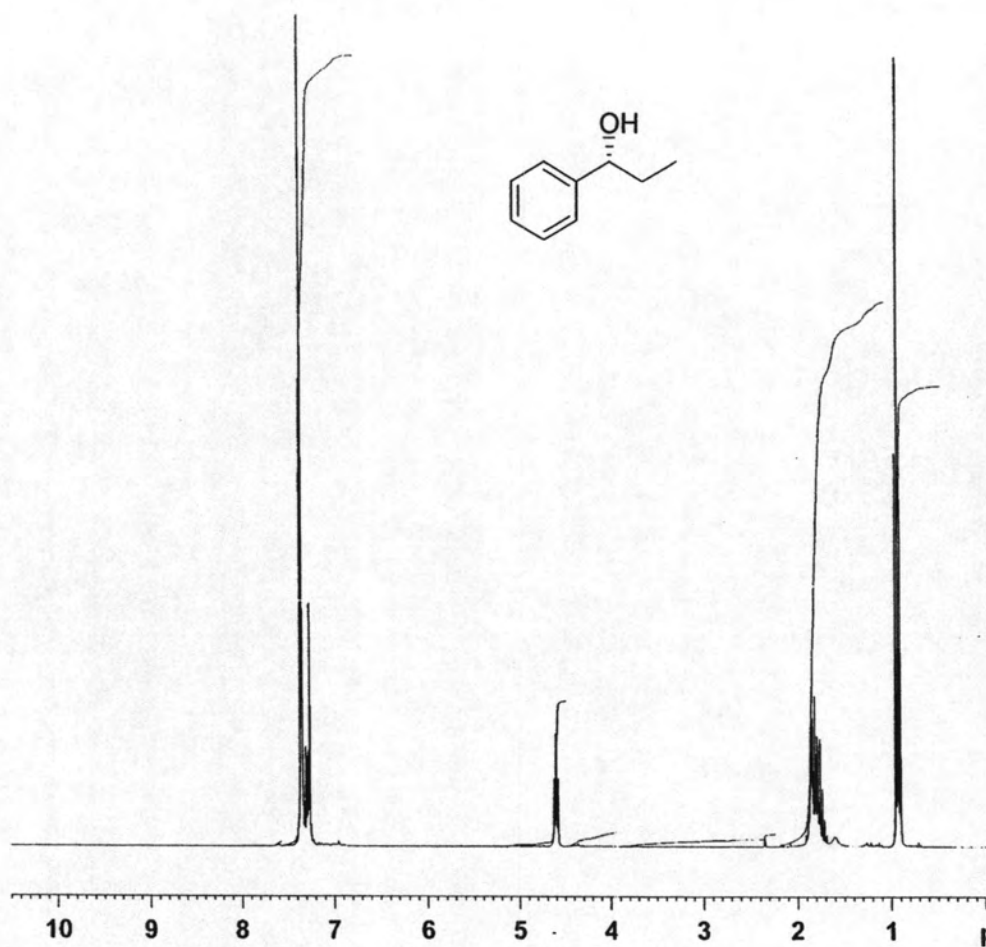


Figure 68 The ^1H NMR and ^{13}C NMR spectra of (R) -1-phenylpropanol

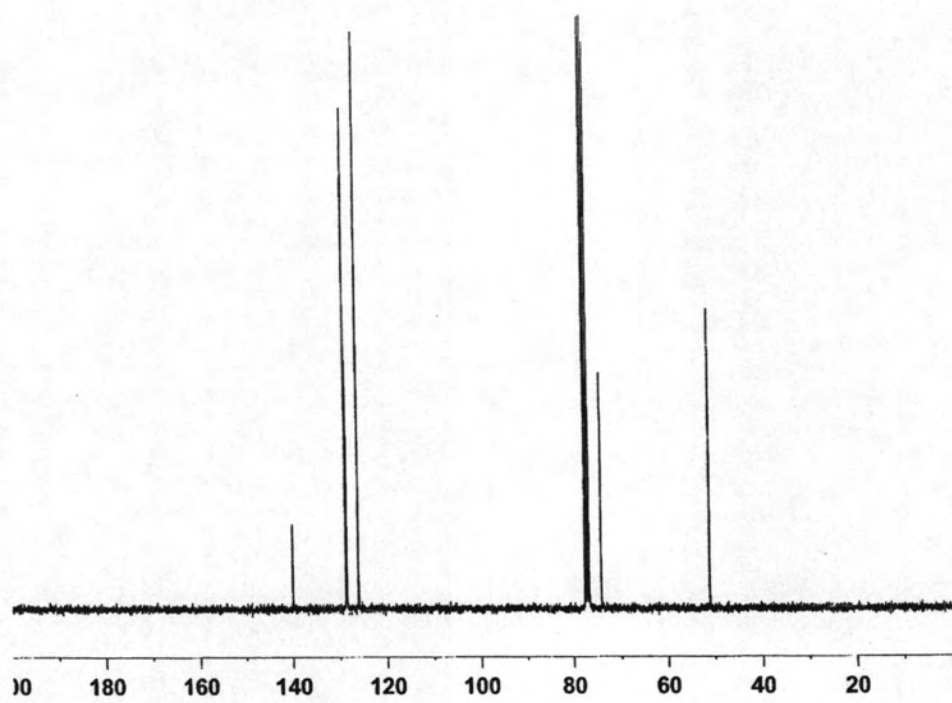
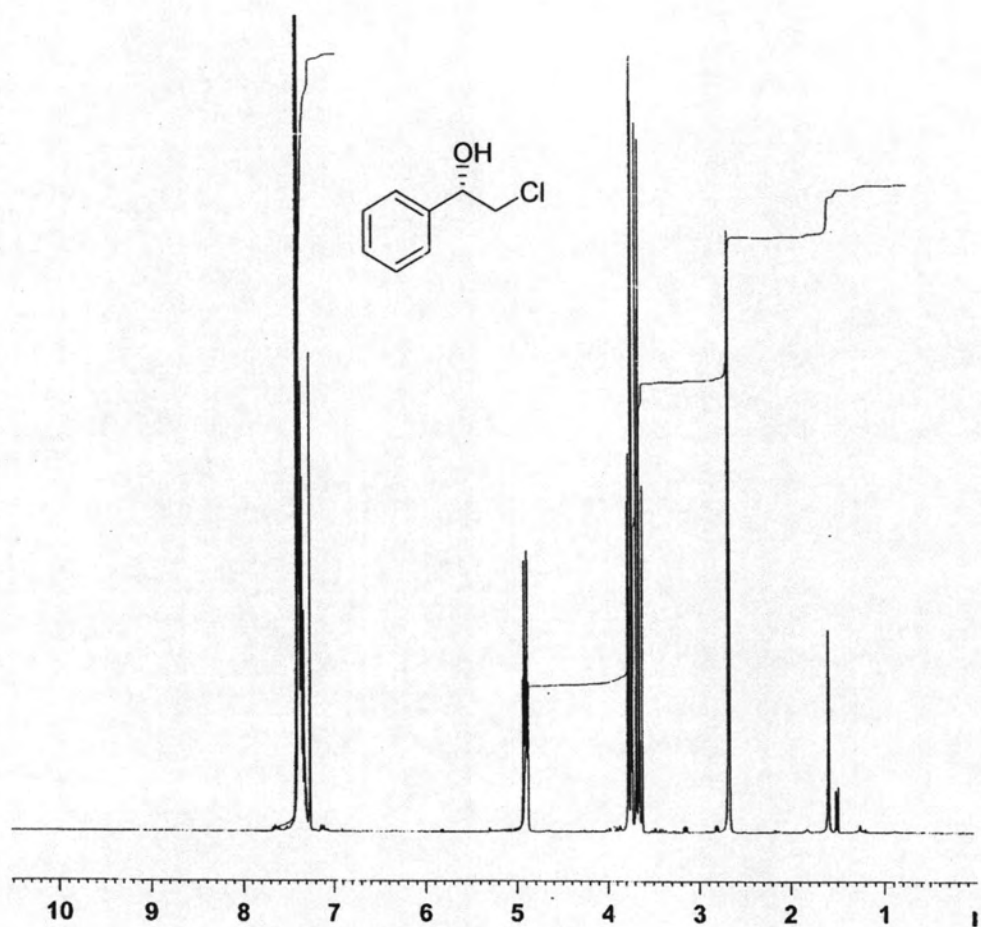


Figure 69 The ^1H NMR and ^{13}C NMR spectra of (R) -2-chloro-1-phenylethanol

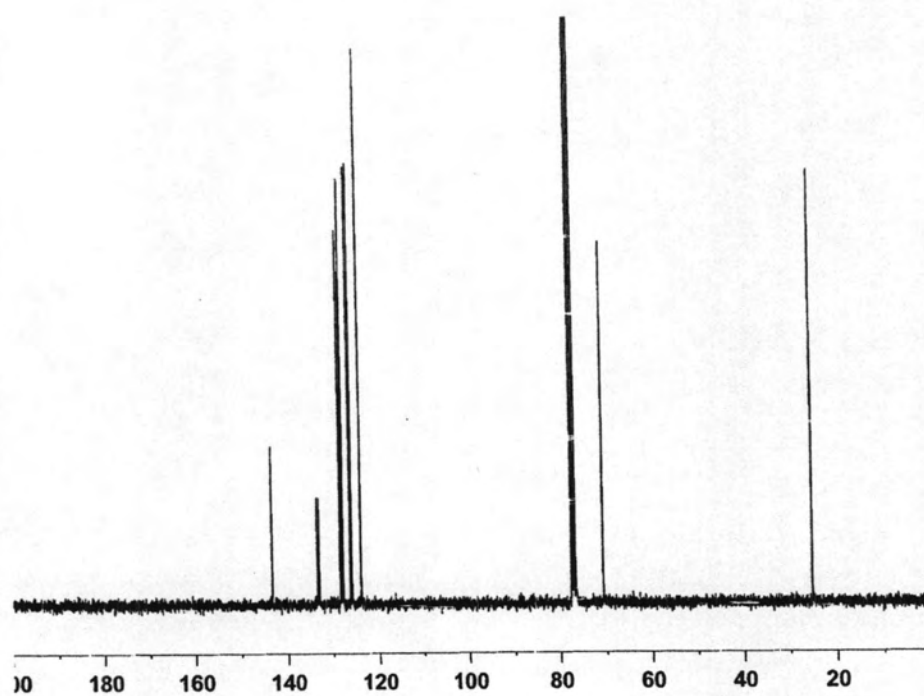
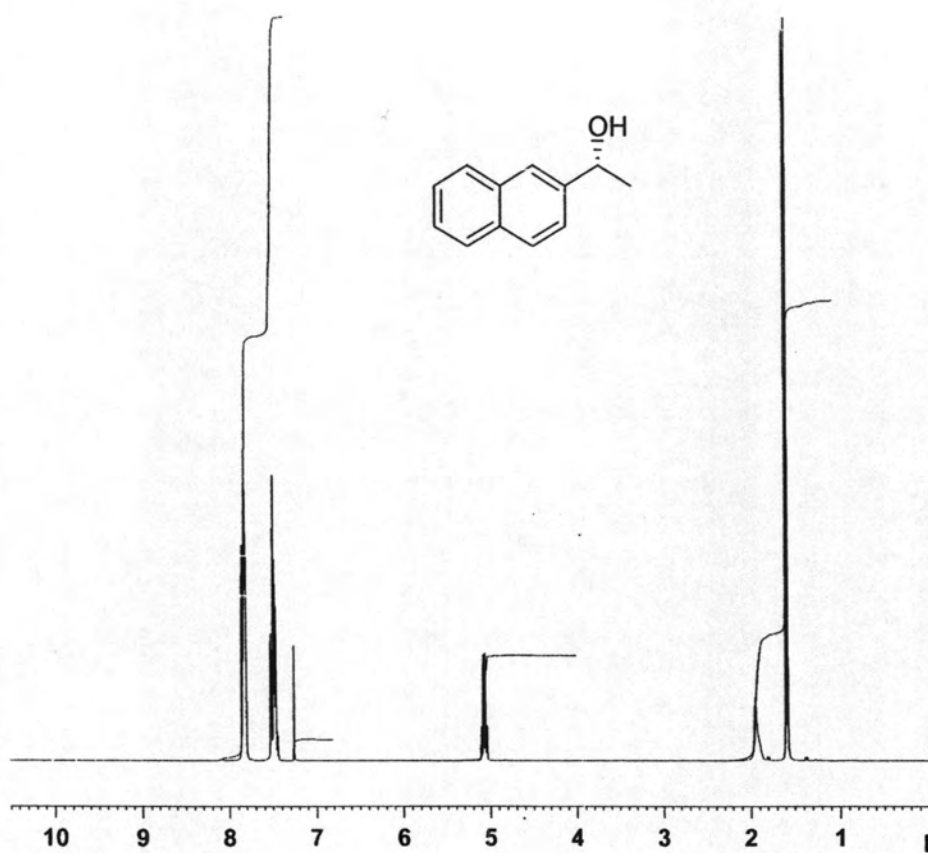


Figure 70 The ^1H NMR and ^{13}C NMR spectra of (R) -1-(2'-naphthyl)ethanol

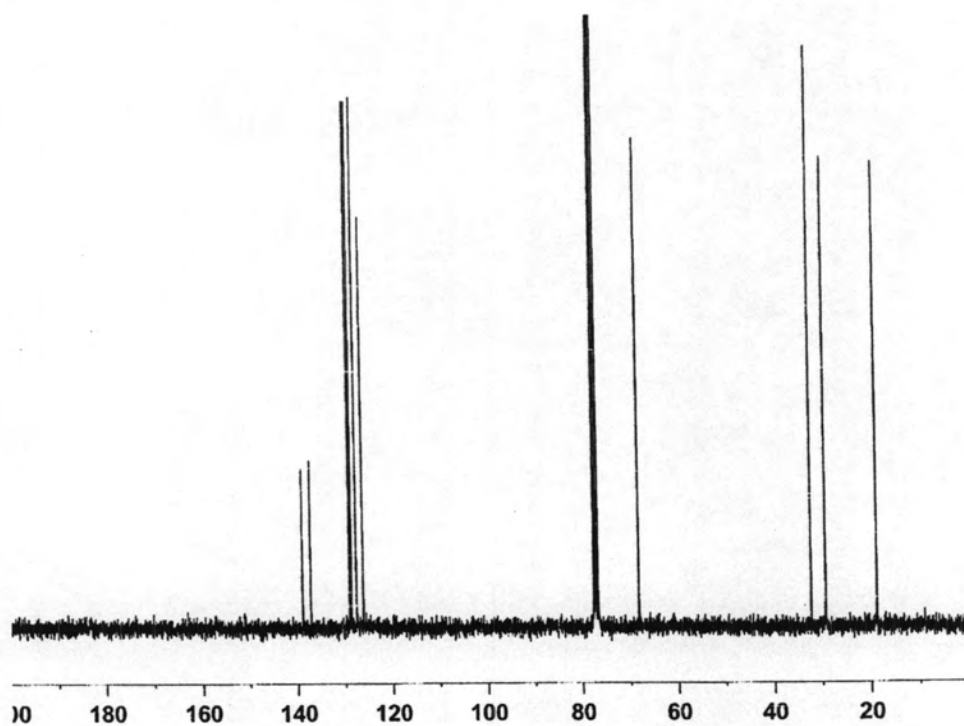
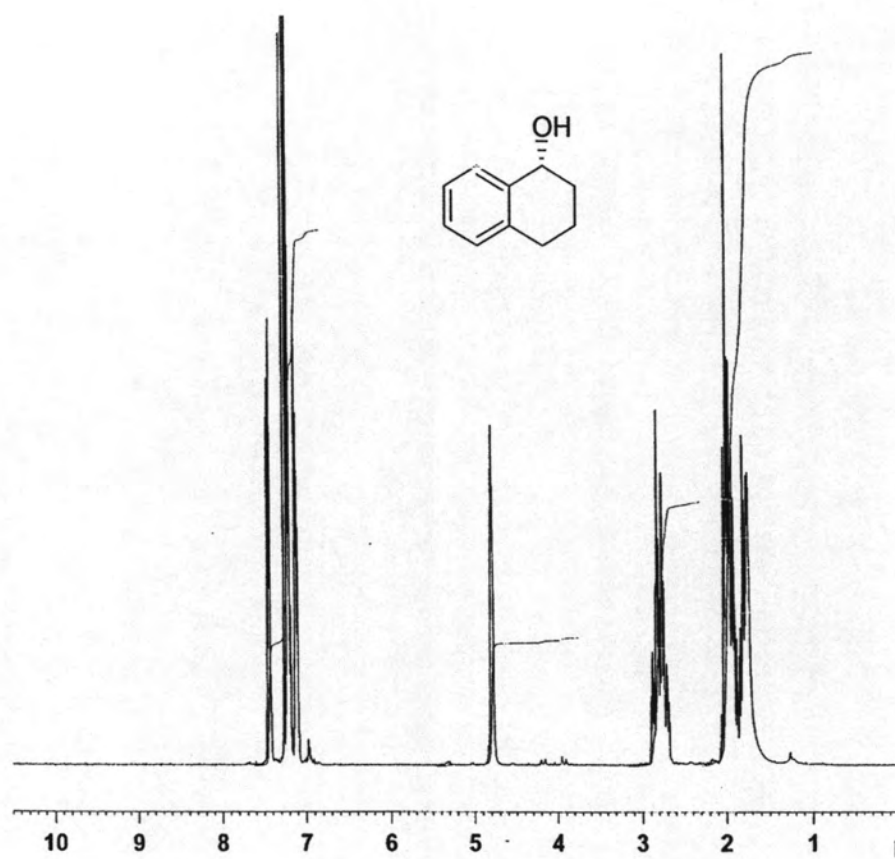


Figure 71 The ^1H NMR and ^{13}C NMR spectra of (R) -1,2,3,4-tetrahydro-1-naphthol

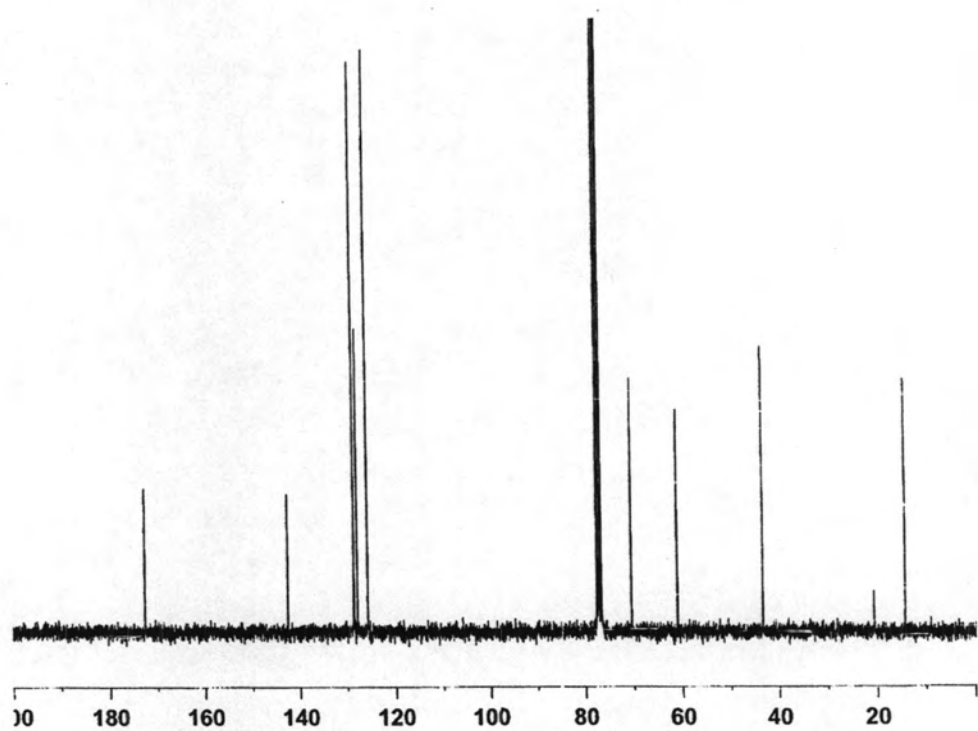
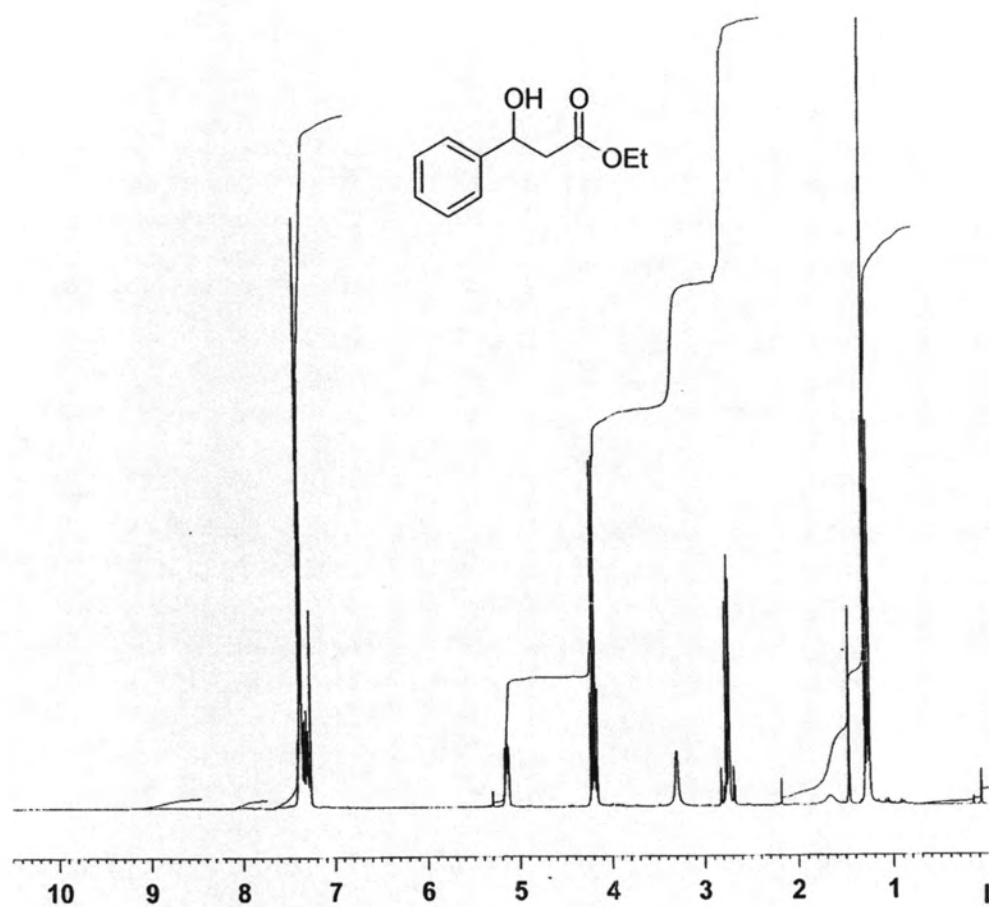


Figure 72 The ^1H NMR and ^{13}C NMR spectra of ethyl 3-hydroxy-3-phenylpropanoate

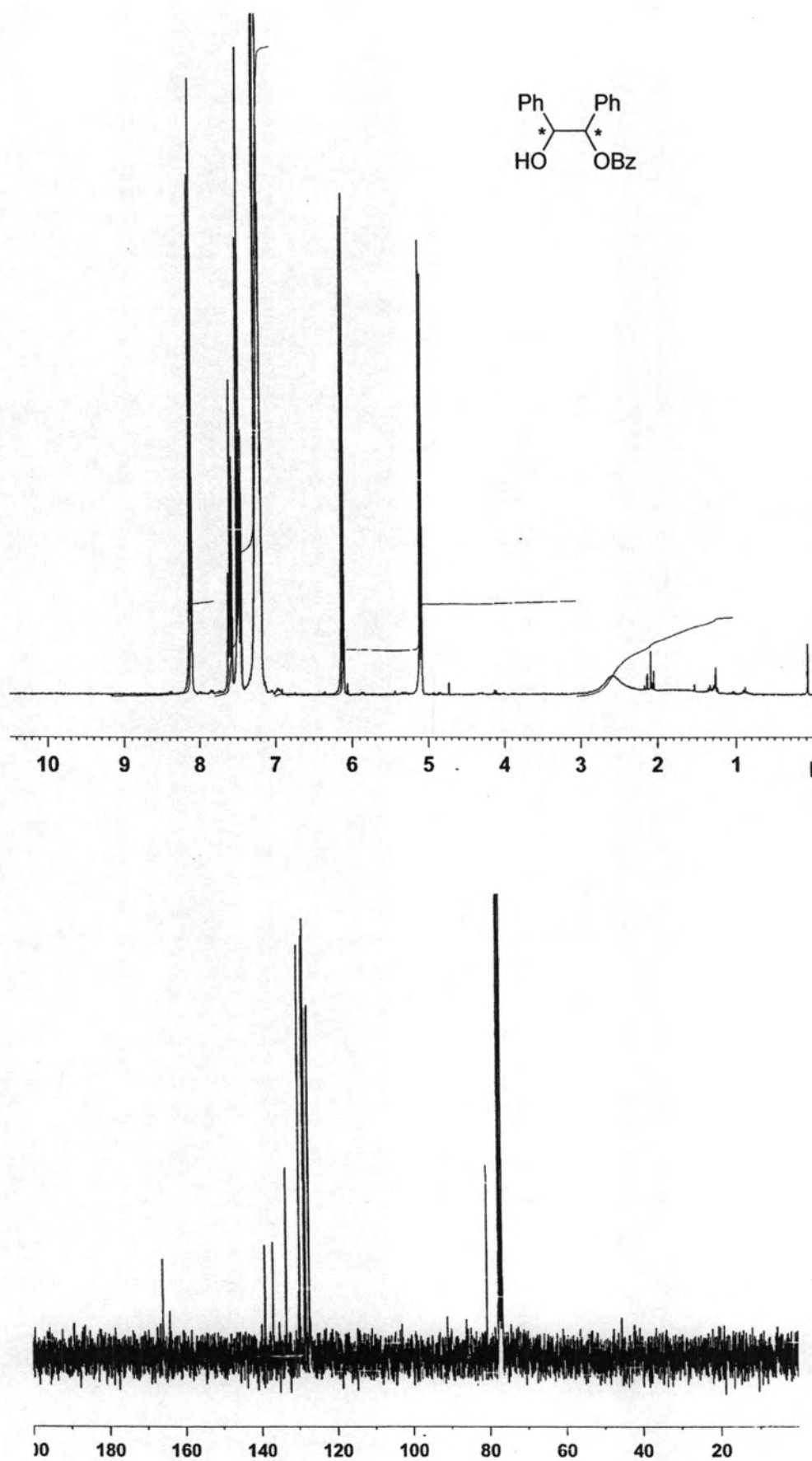


Figure 73 The ^1H NMR and ^{13}C NMR spectra of benzoic acid 2-hydroxy-1,2-diphenyl-ethyl ester (75)

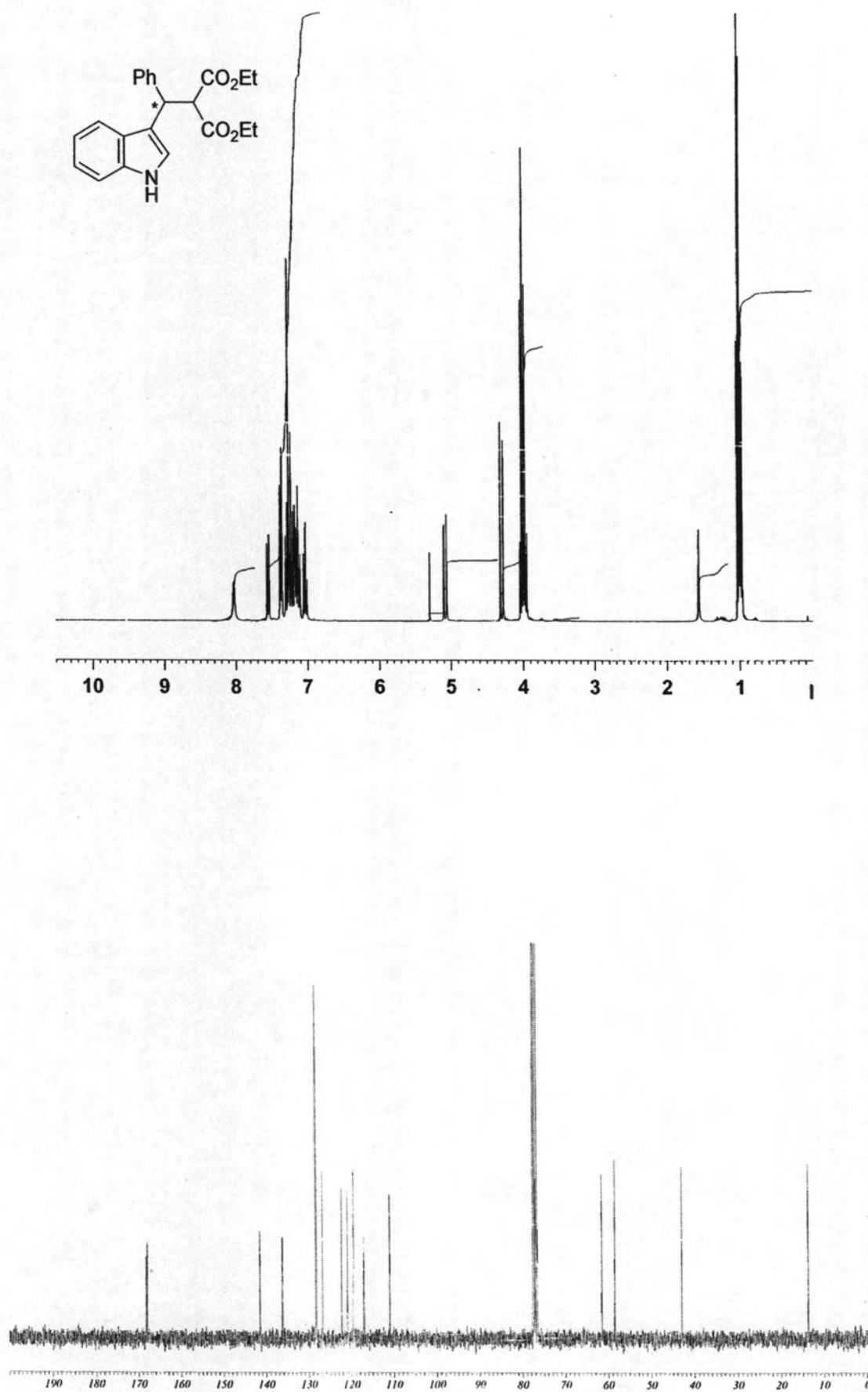


Figure 74 The ^1H NMR and ^{13}C NMR spectra of ethyl 2-ethoxycarbonyl-3-(3-indolyl)-3-phenyl propanoate (76)

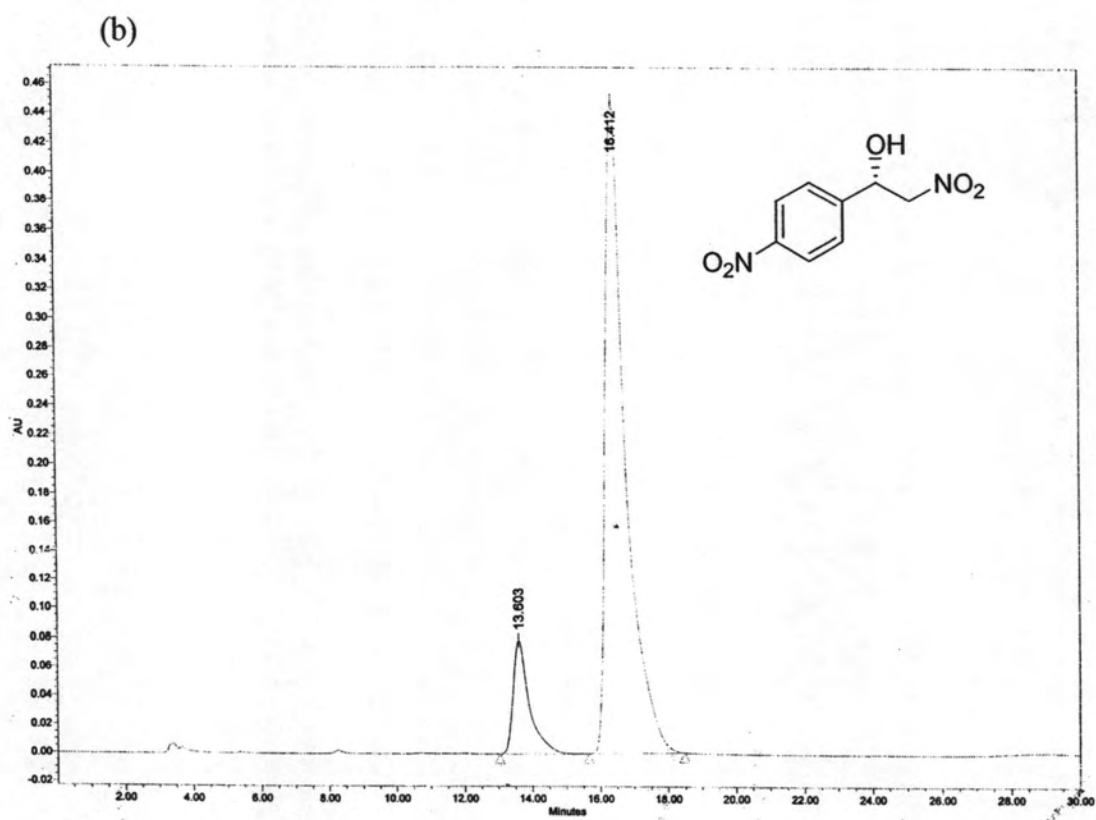
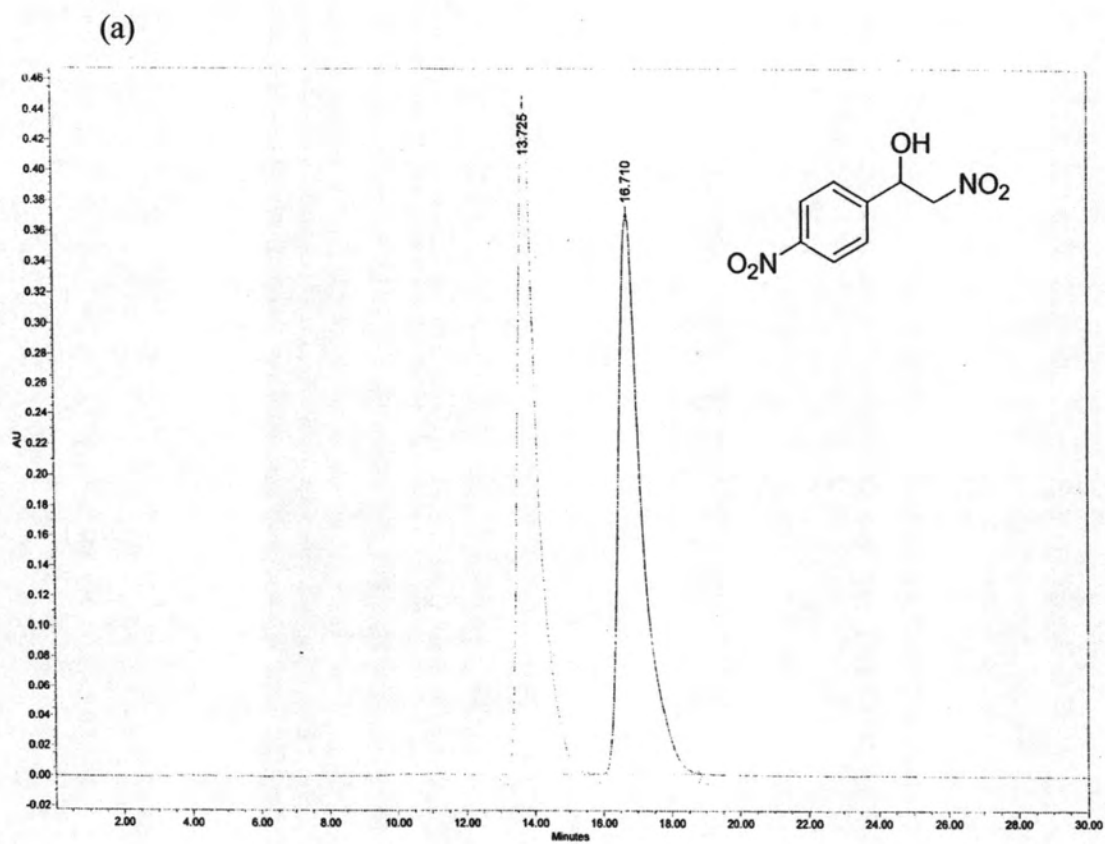


Figure 75 The HPLC chromatograms of (a) racemic 74a; (b) optically active (S)-74a

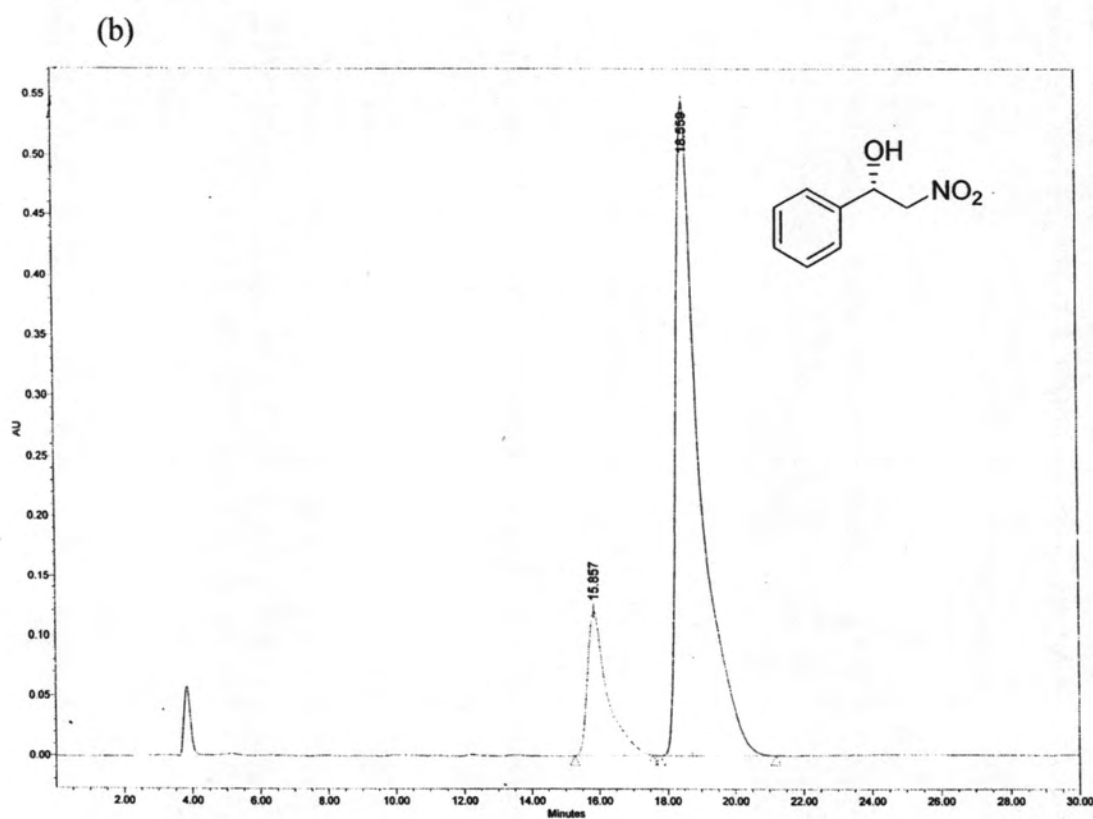
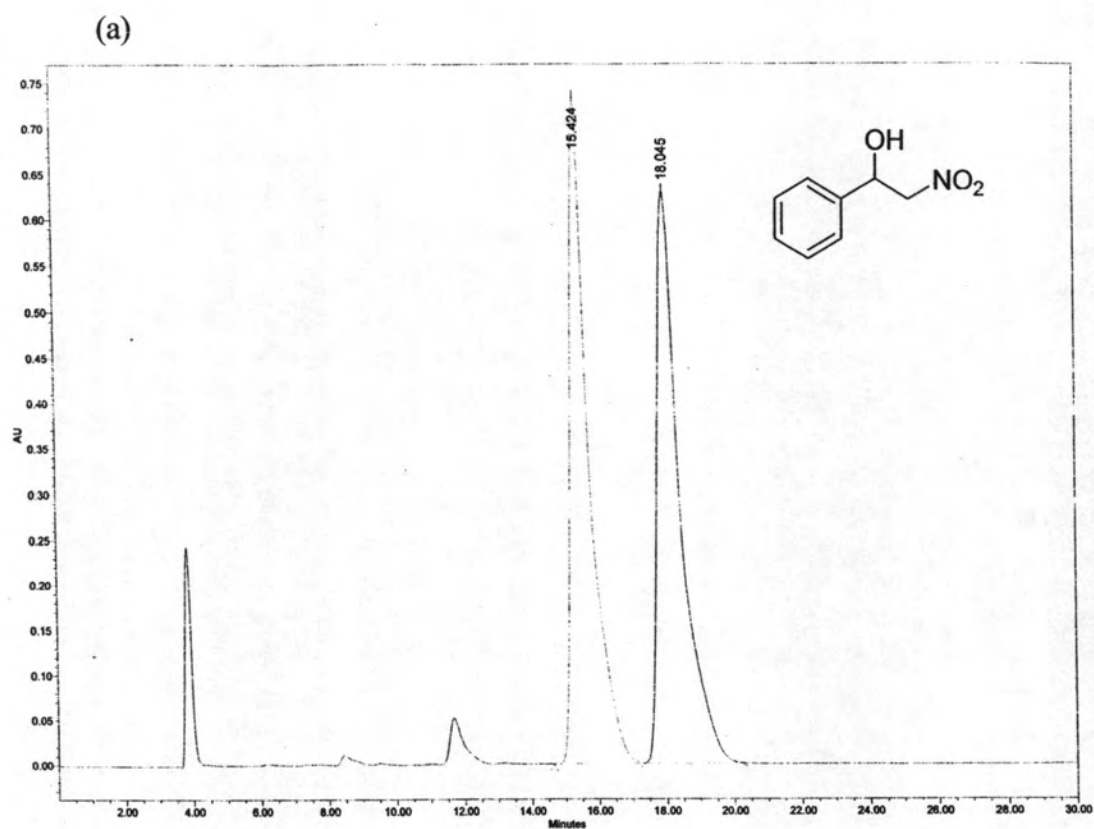


Figure 76 The HPLC chromatograms of (a) racemic **74b**; (b) optically active (*S*)-**74b**

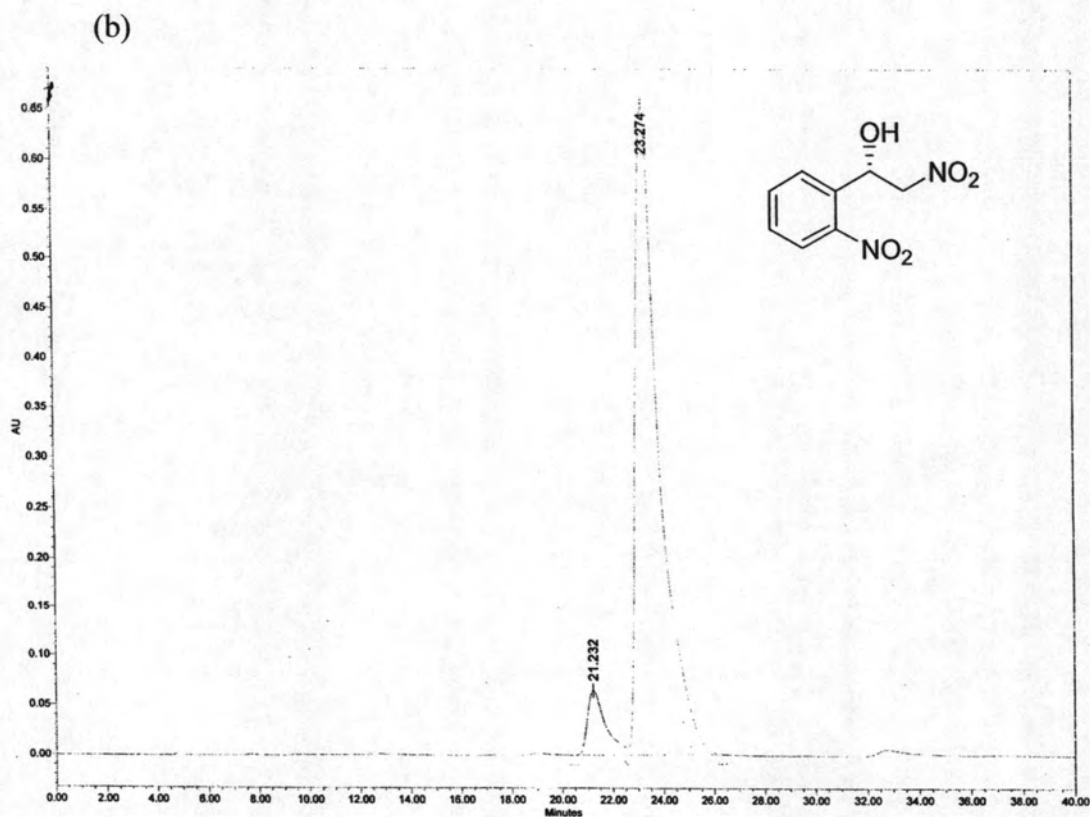
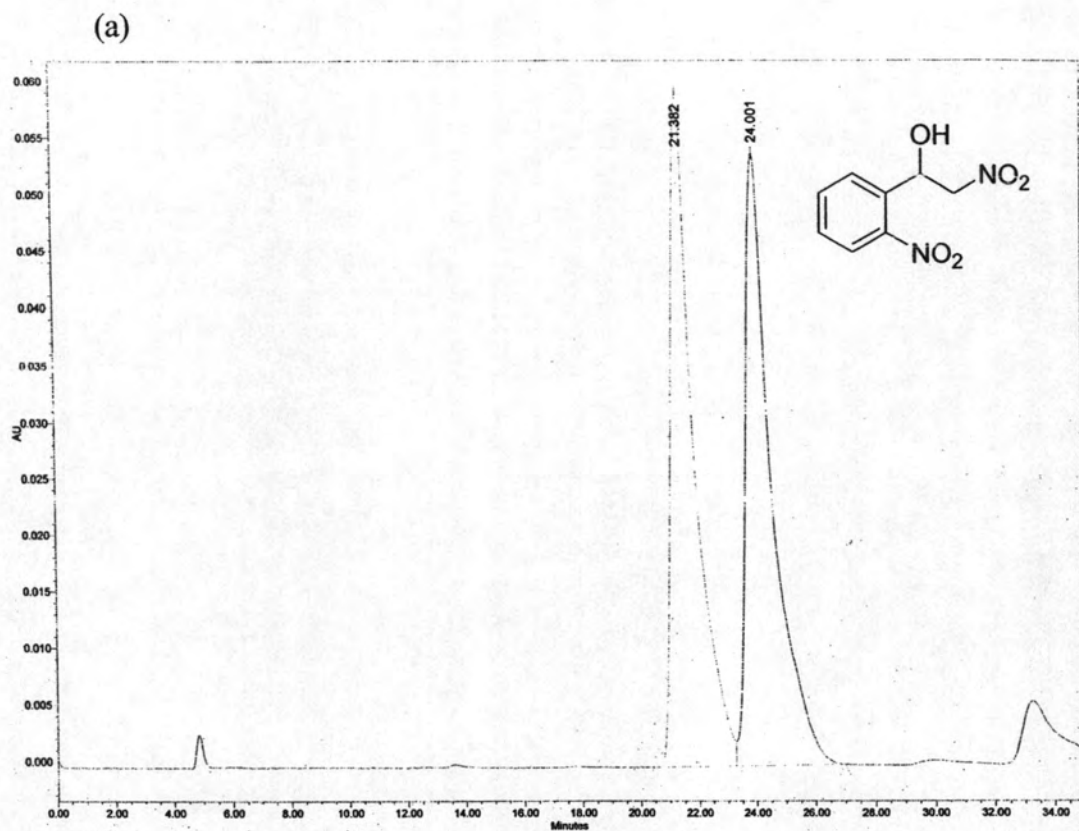


Figure 77 The HPLC chromatograms of (a) racemic 74c; (b) optically active (*S*)-74c

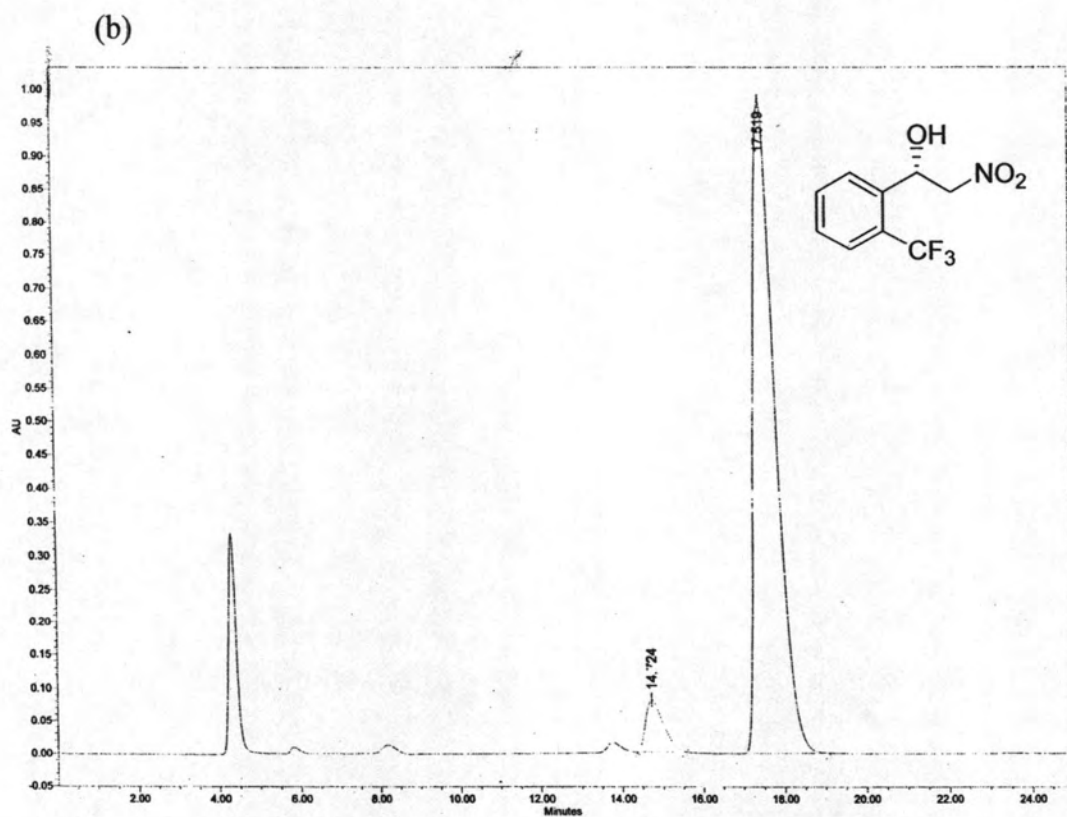
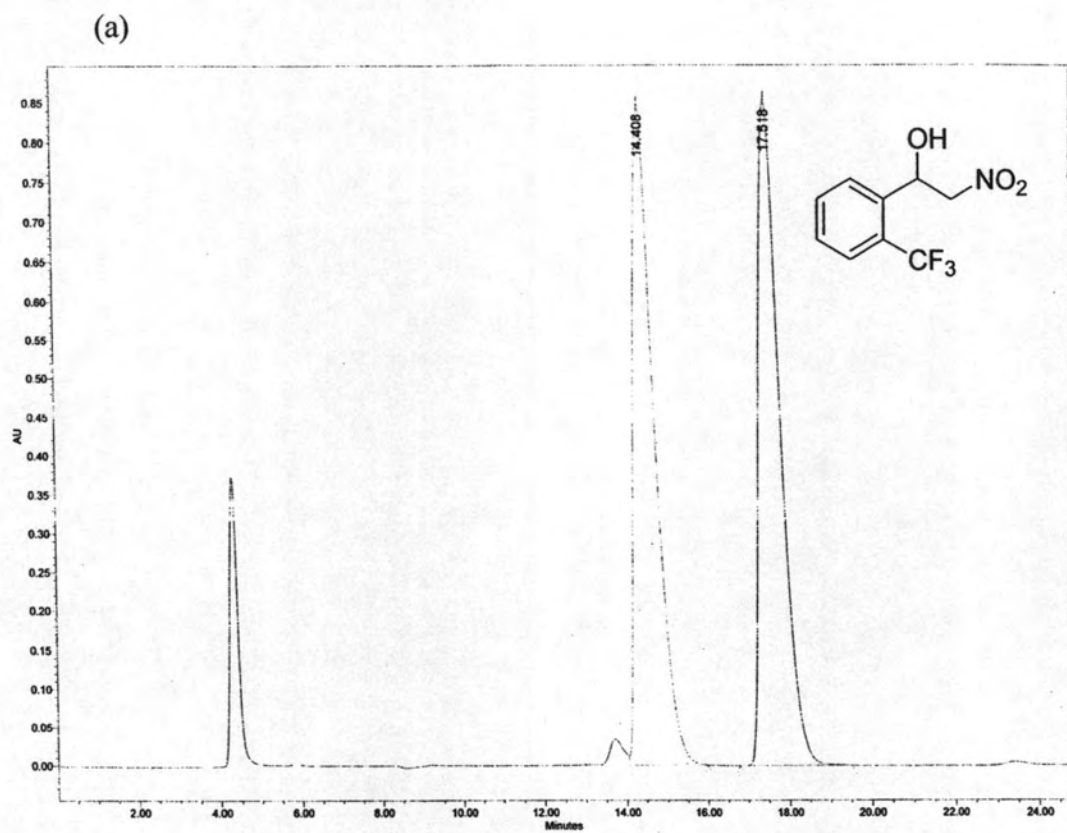


Figure 78 The HPLC chromatograms of (a) racemic **74d**; (b) optically active (*S*)-**74d**

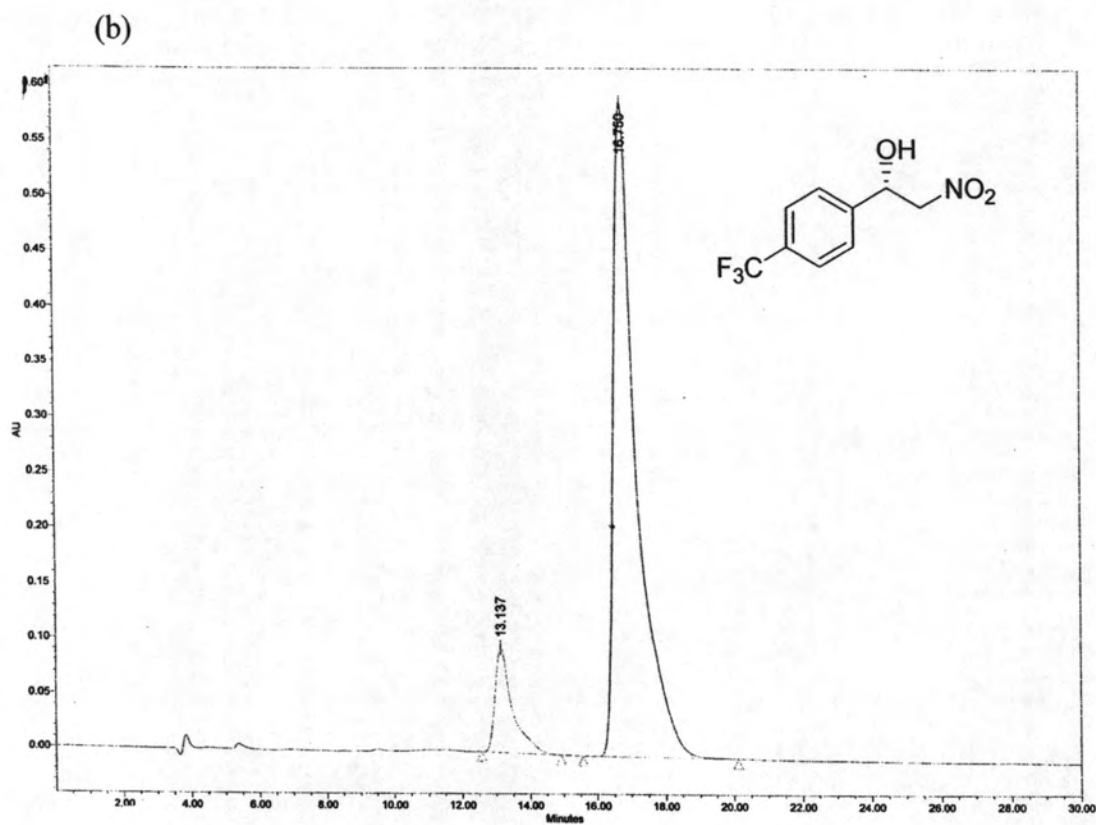
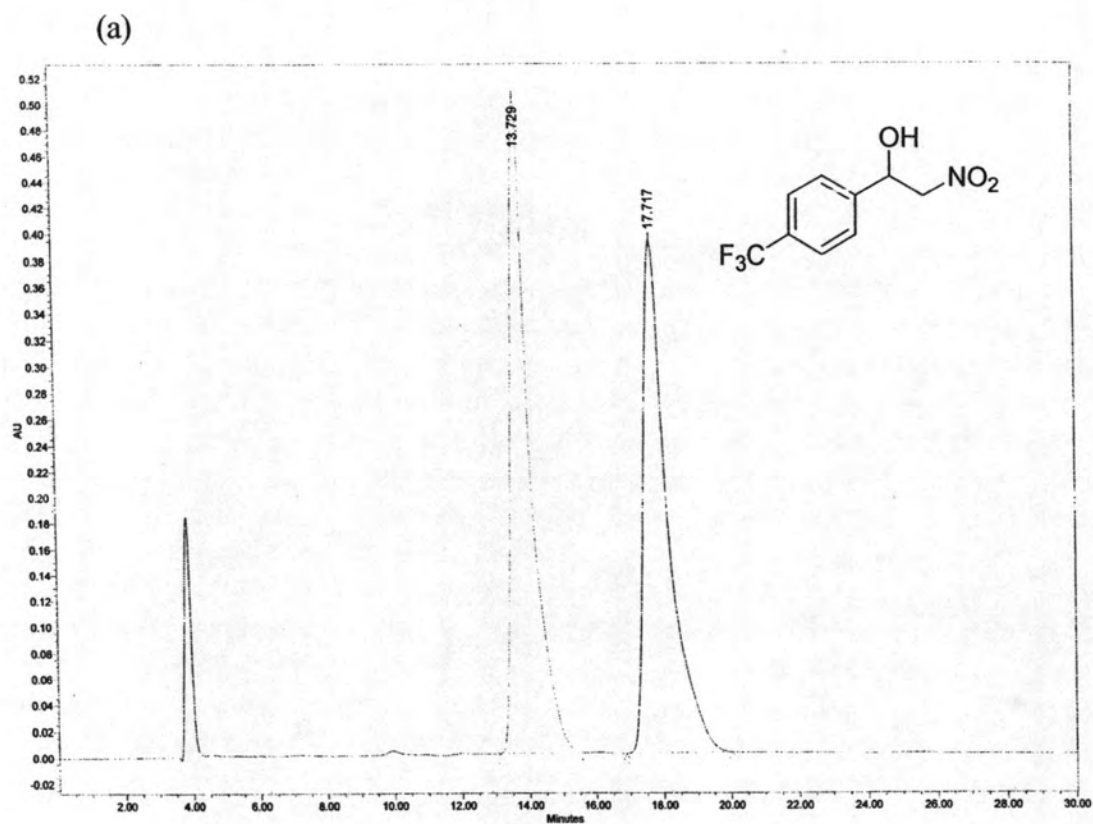


Figure 79 The HPLC chromatograms of (a) racemic **74e**; (b) optically active (*S*)-**74e**

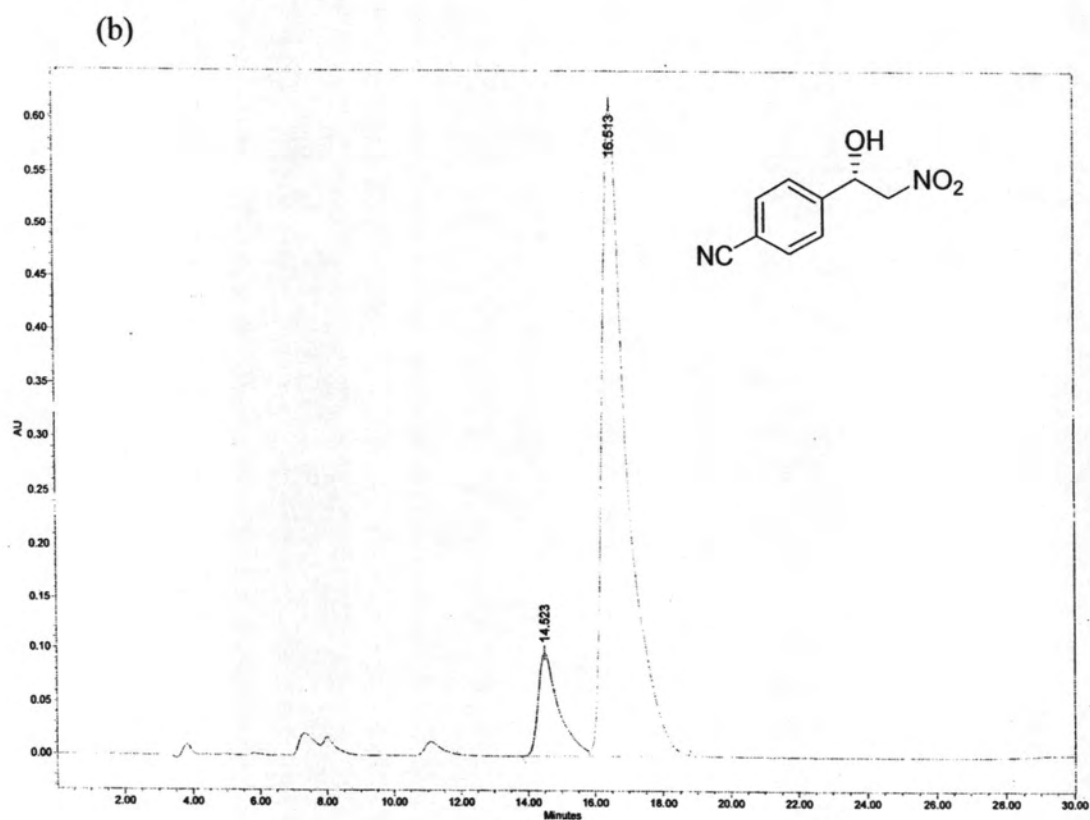
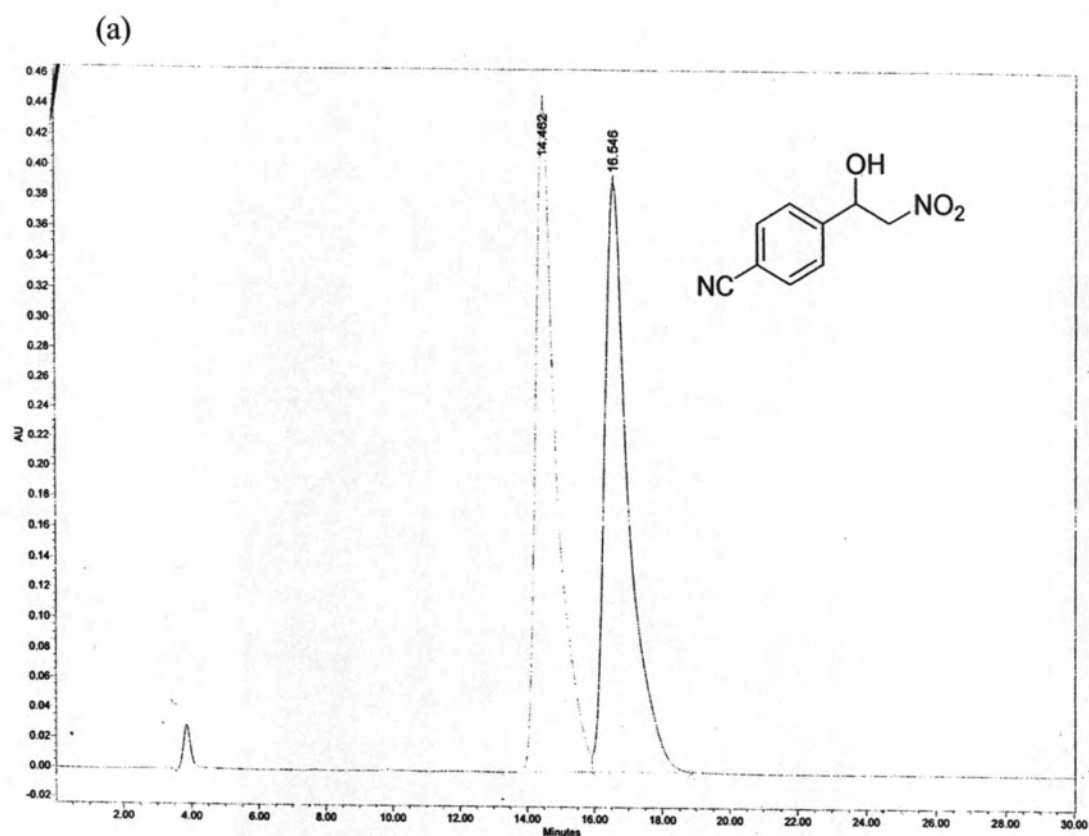


Figure 80 The HPLC chromatograms of (a) racemic **74f**; (b) optically active (*S*)-**74f**

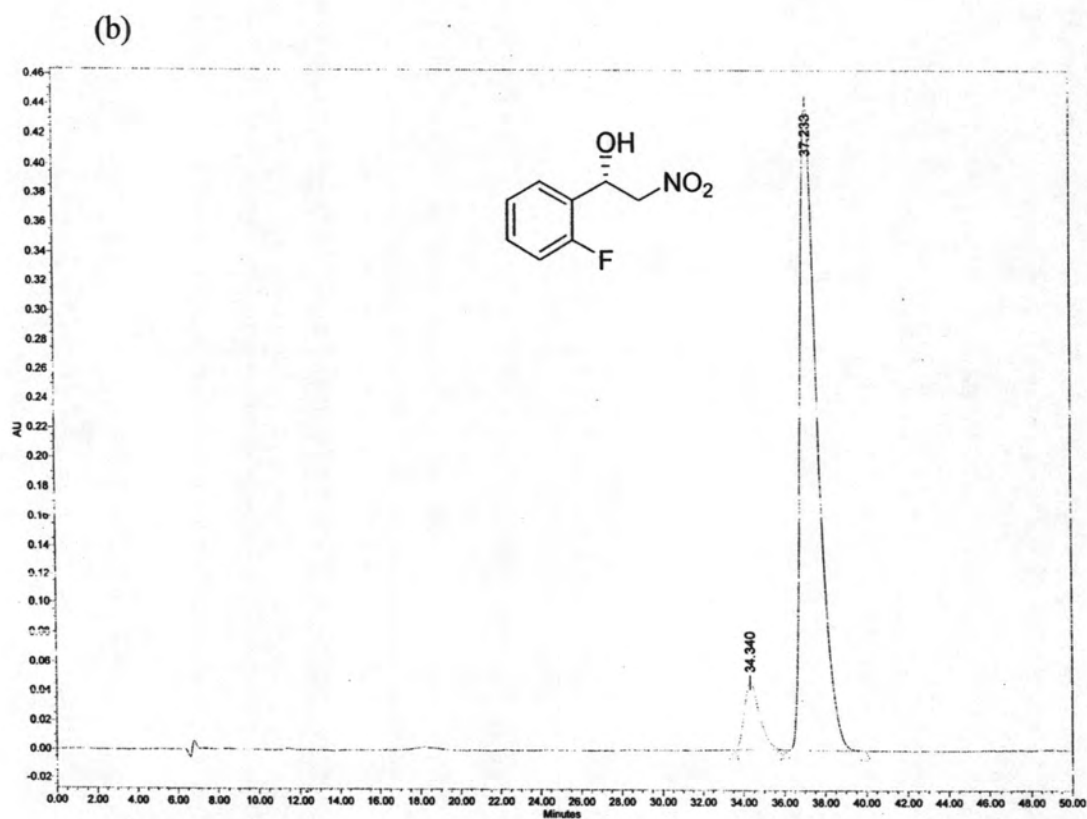
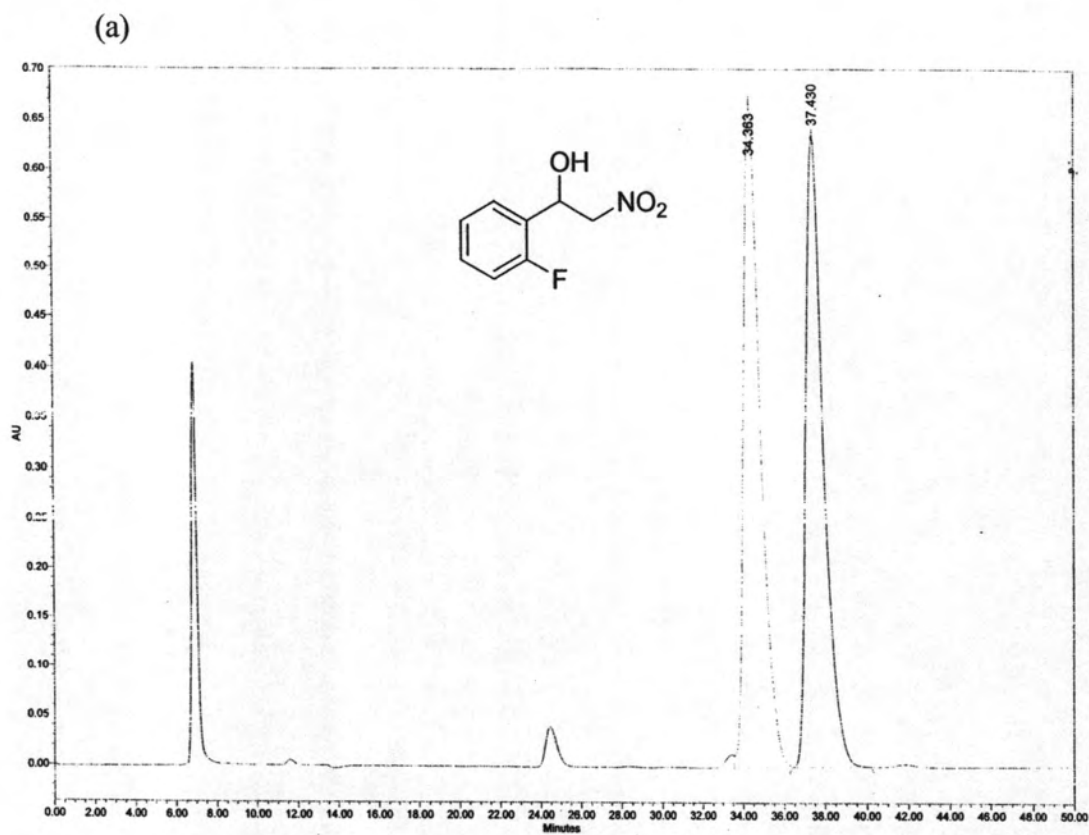


Figure 81 The HPLC chromatograms of (a) racemic 74g; (b) optically active (*S*)-74g

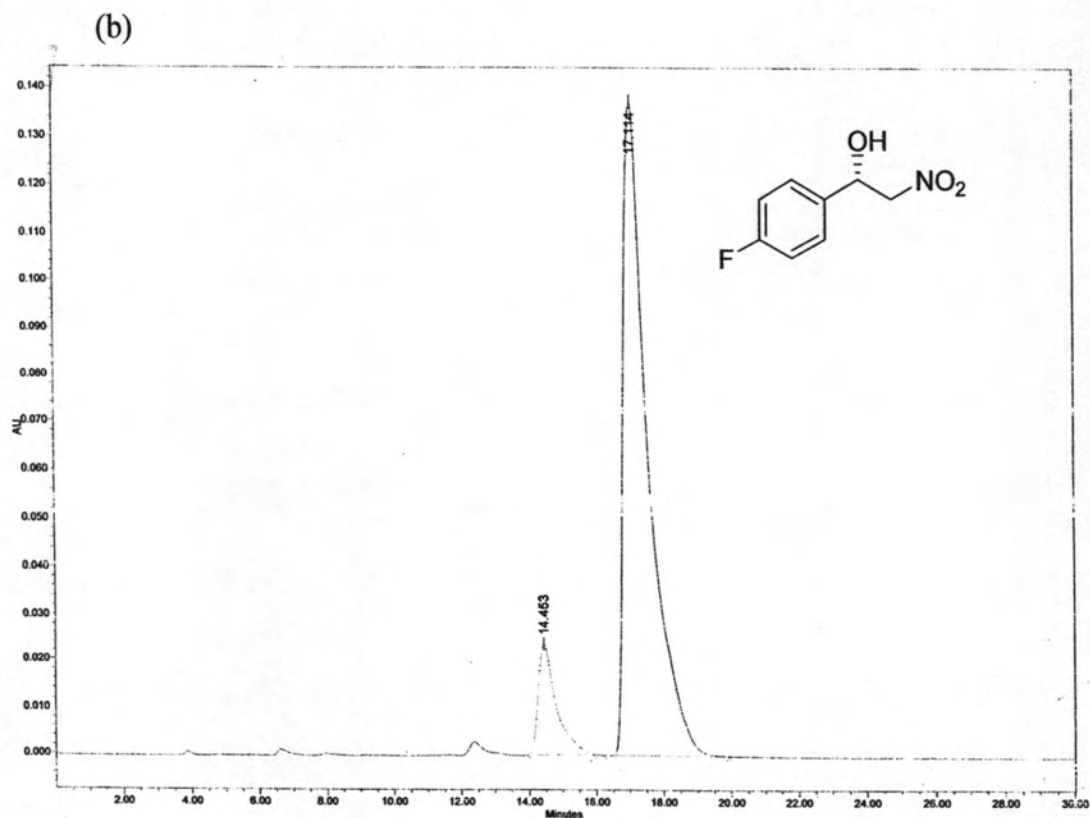
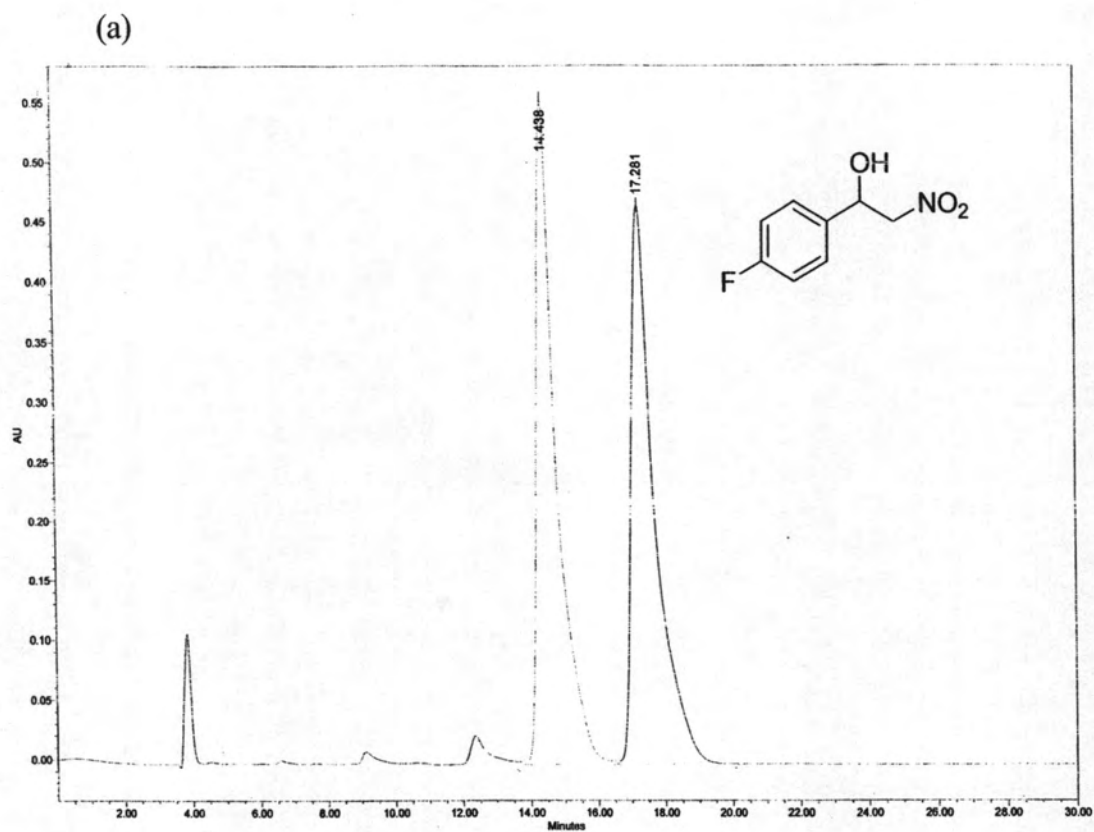


Figure 82 The HPLC chromatograms of (a) racemic **74h**; (b) optically active (*S*)-**74h**

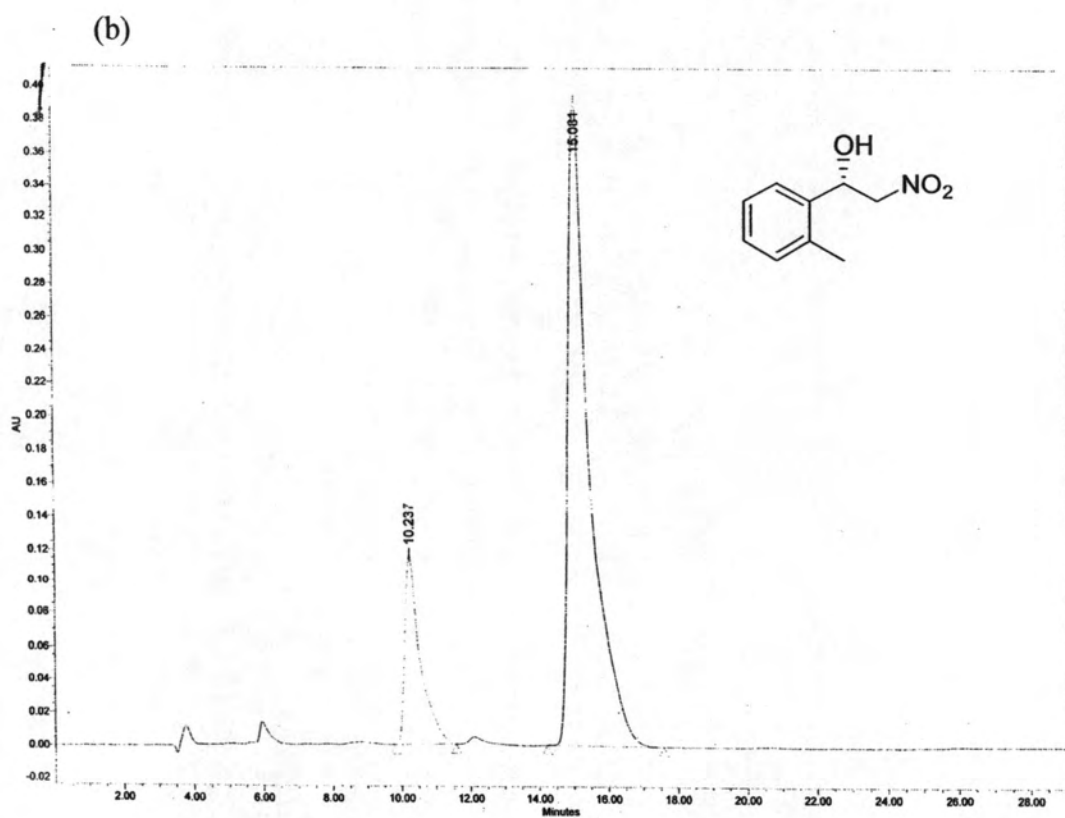
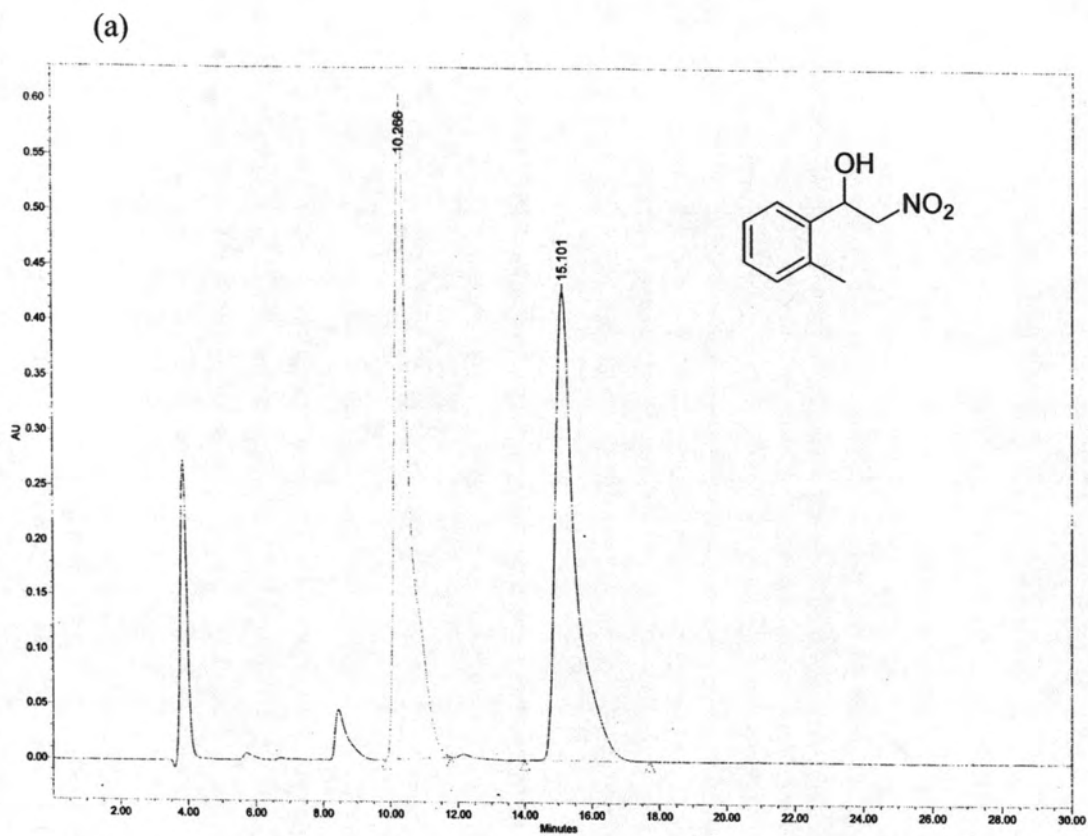


Figure 83 The HPLC chromatograms of (a) racemic 74i; (b) optically active (*S*)-74i

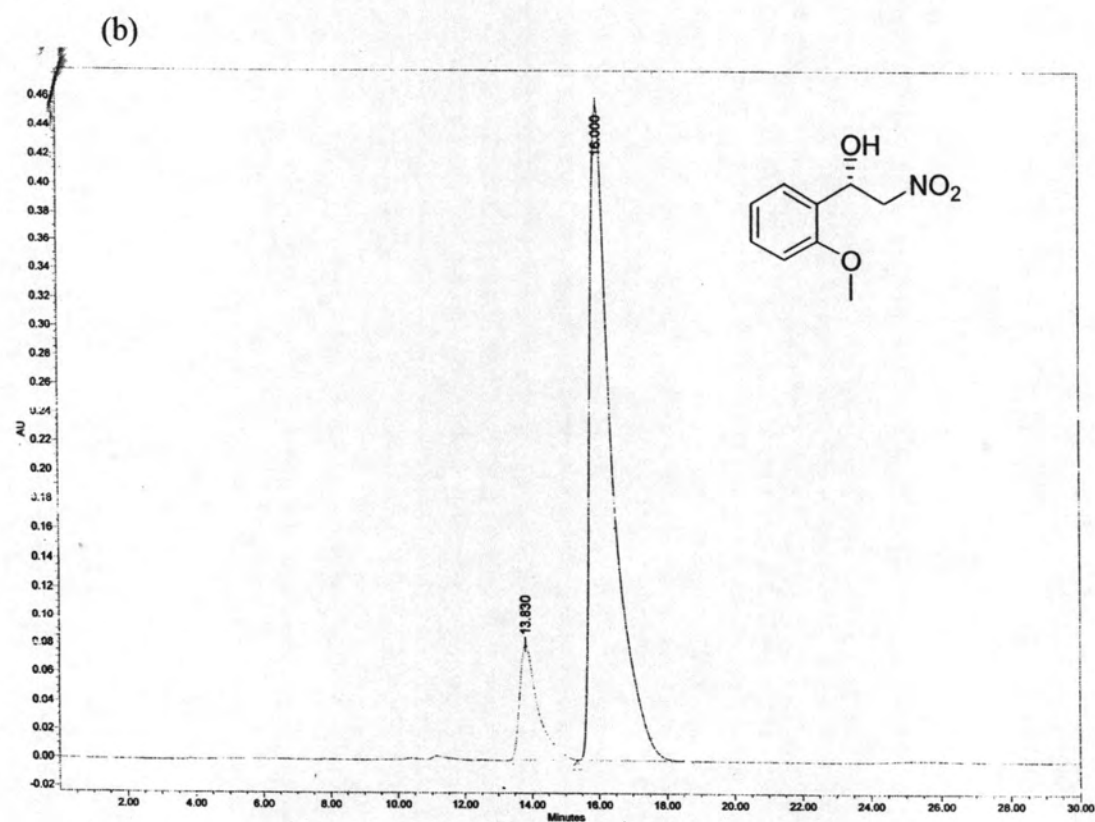
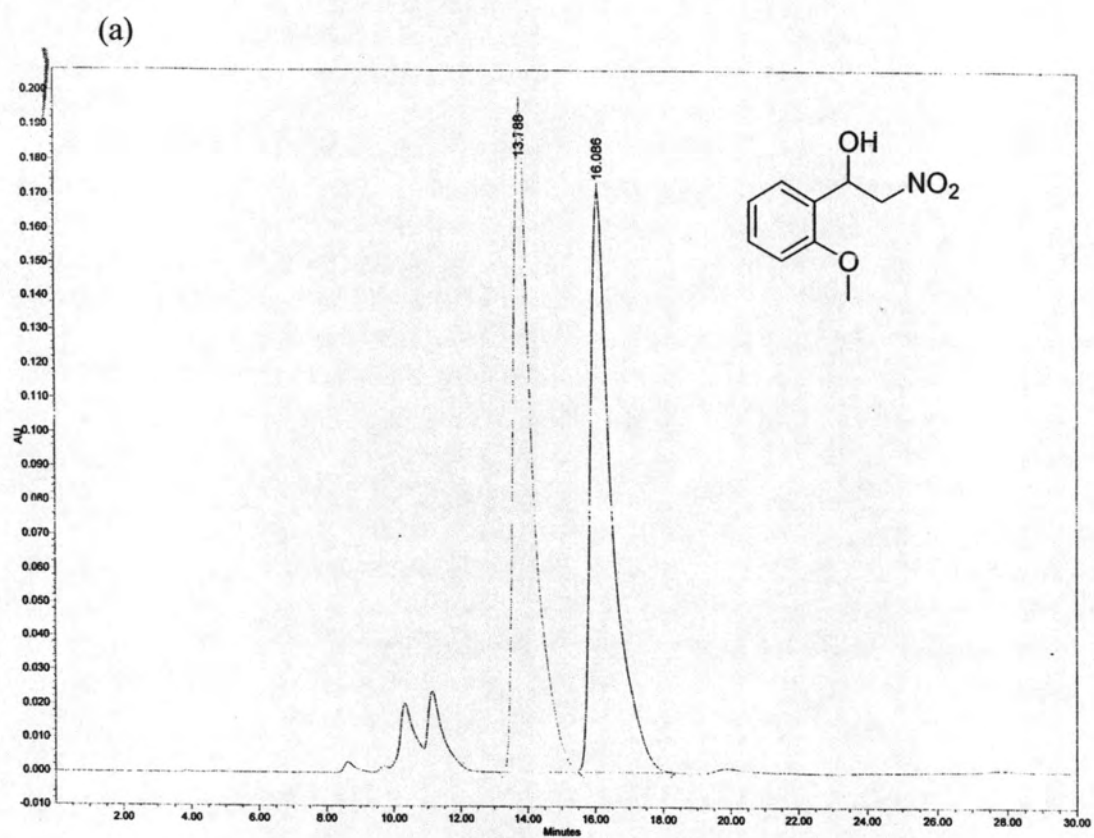


Figure 84 The HPLC chromatograms of (a) racemic **74j**; (b) optically active (*S*)-**74j**

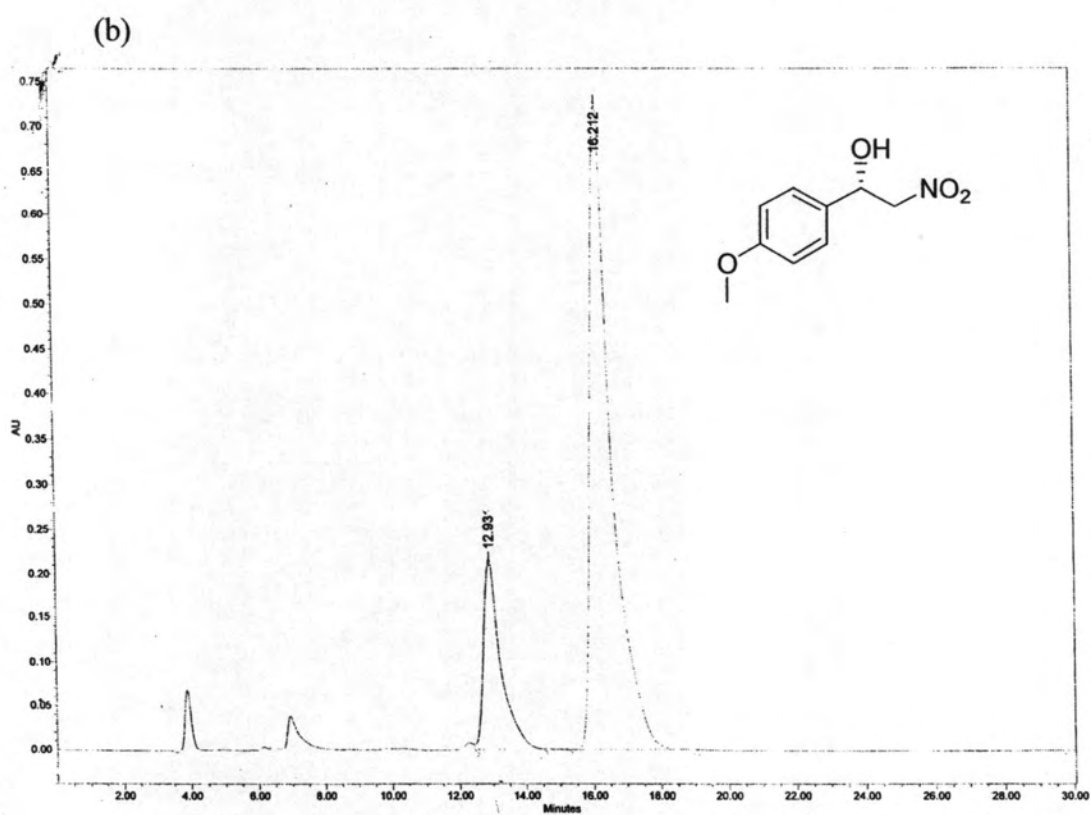
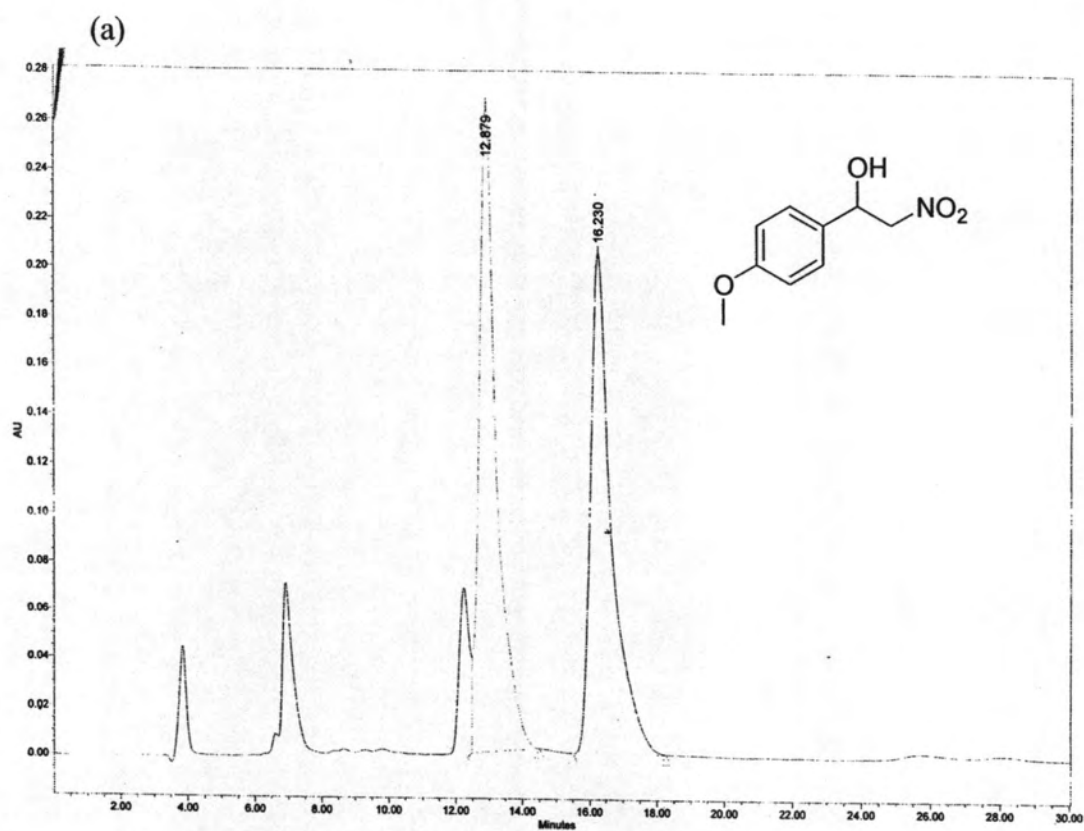


Figure 85 The HPLC chromatograms of (a) racemic **74k**; (b) optically active (*S*)-**74k**

VITAE

Miss Woraluk Mansawat was born on June 14th, 1976 in Phitsanulok, Thailand. She received a Bachelor Degree of Science, majoring in Chemistry from Chulalongkorn University in 1998. Since 1998, she has been a graduate student studying Organic Chemistry as her major course at Chulalongkorn University. During her studies towards the Master's degree, she was awarded a teaching assistant scholarship by the Faculty of Science during 1998-2001 and was supported by a research grant for her Master degree's thesis from the Graduate School, Chulalongkorn University. During her studies towards the Ph.D. program, she has been awarded the Royal Golden Jubilee Scholarship by Thai government during 2005-2008. She has collaborated with Professor Oliver Reiser as visiting scholar at Universität Regensburg, Germany during 2007-2008.

Her present address is 231 Moo 5, Sanamchai District, Muang, Suphanburi, Thailand 72000, Tel. (035)-569065.