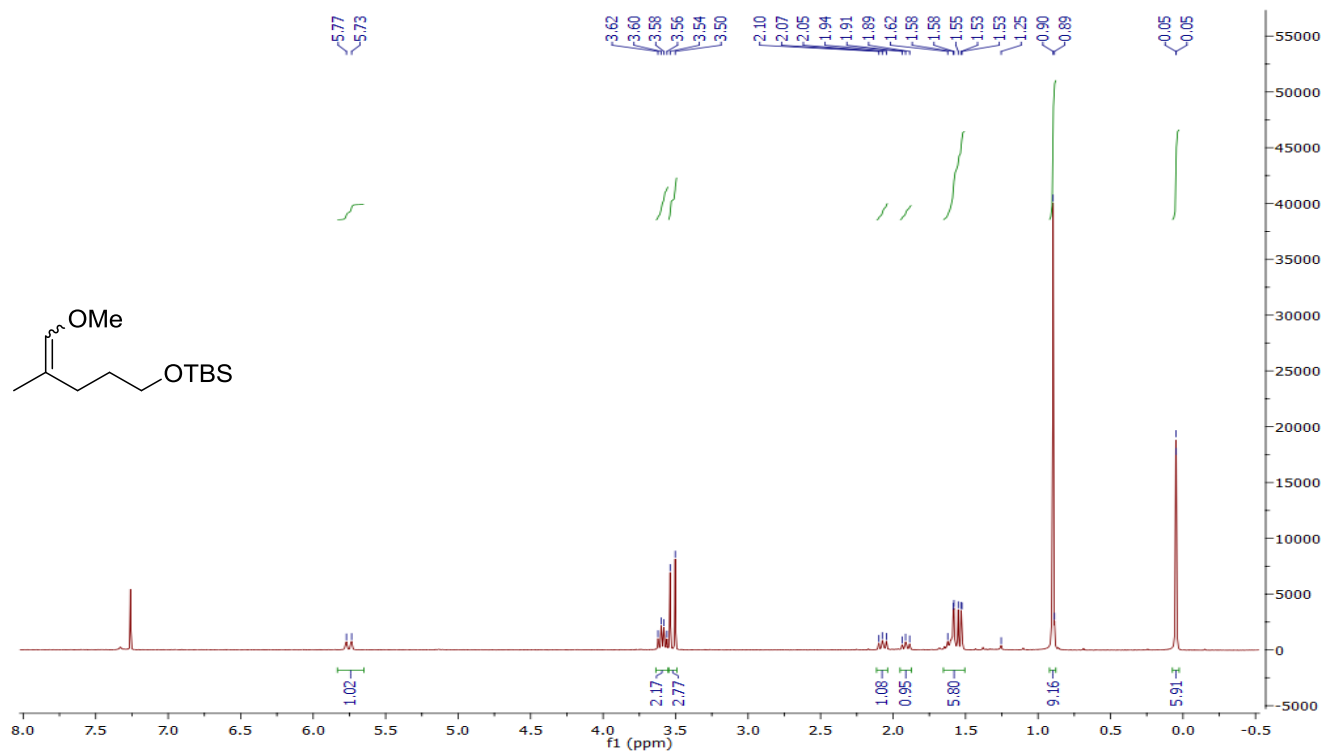


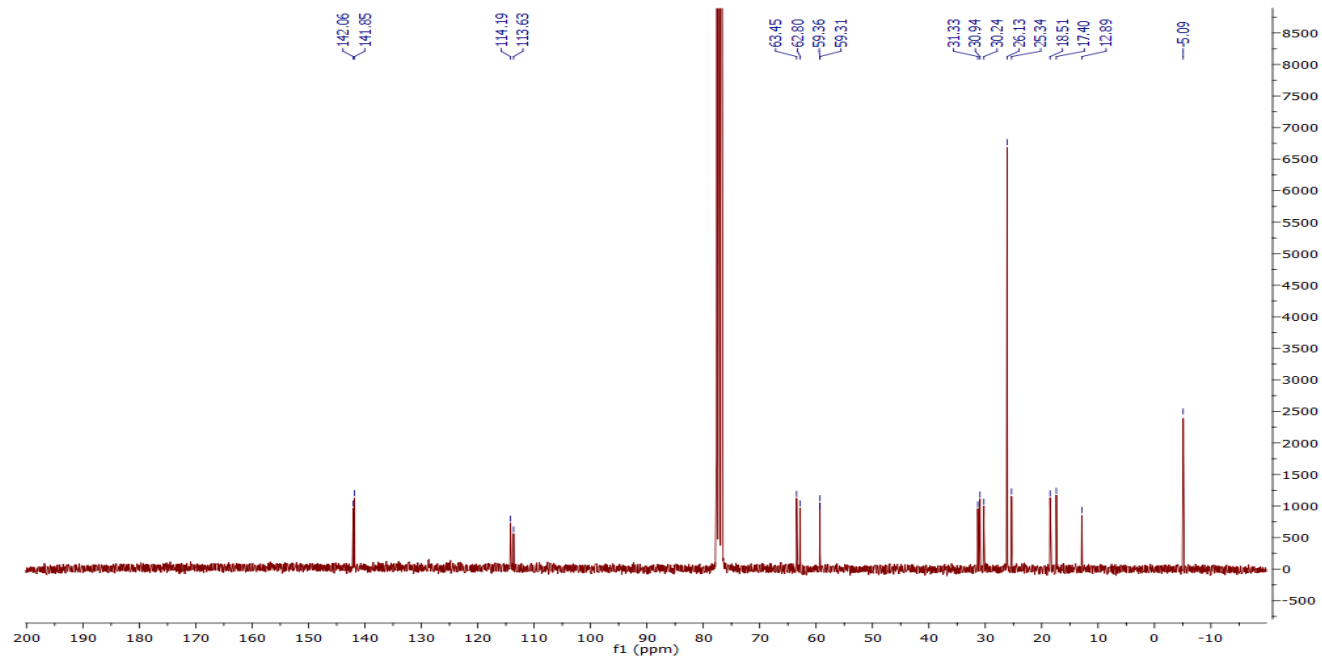
ANNEXE 2 : SPECTRES DE RÉSONANCE MAGNÉTIQUE NUCLÉAIRE DES PROTONS ET DES
CARBONES

***tert*-Butyl((5-methoxy-4-methylpent-4-en-1-yl)oxy)dimethylsilane (1-11)**

¹H-NMR spectrum

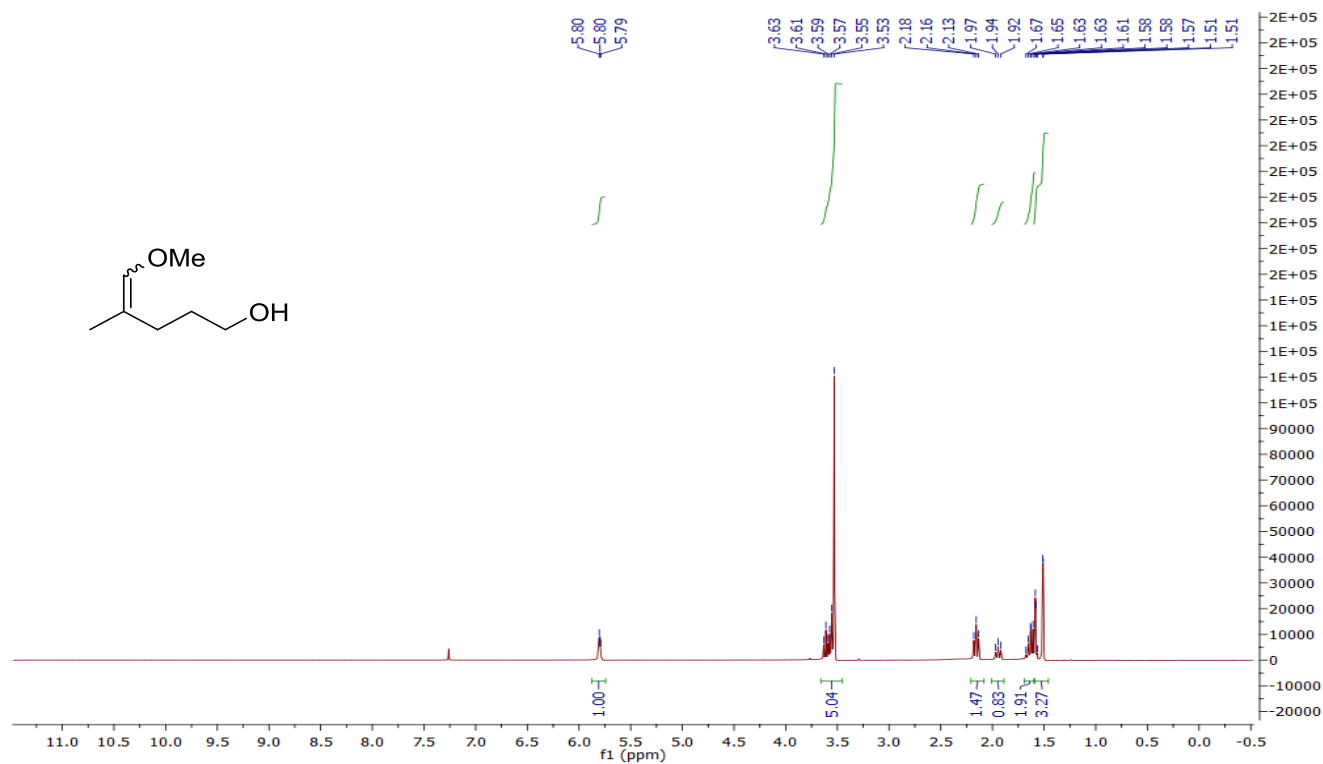


¹³C-NMR spectrum

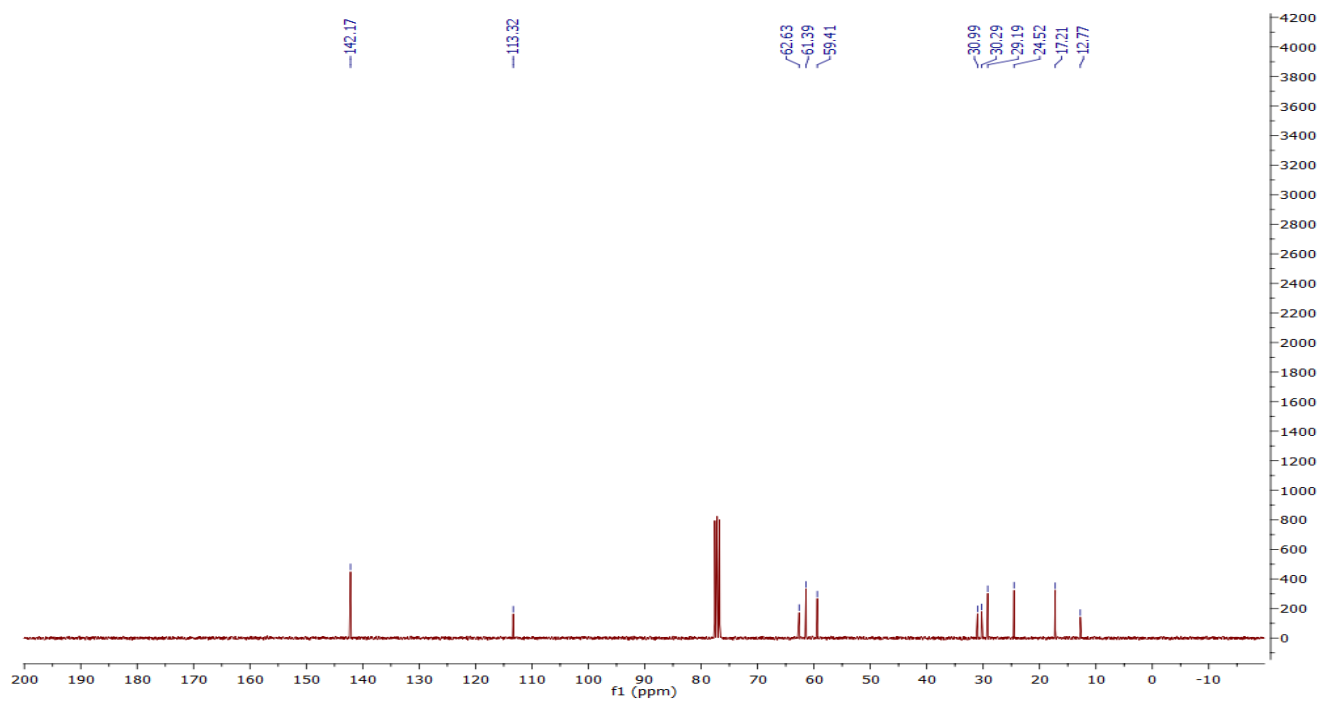


5-Methoxy-4-methylpent-4-en-1-ol (1-12)

¹H-NMR spectrum

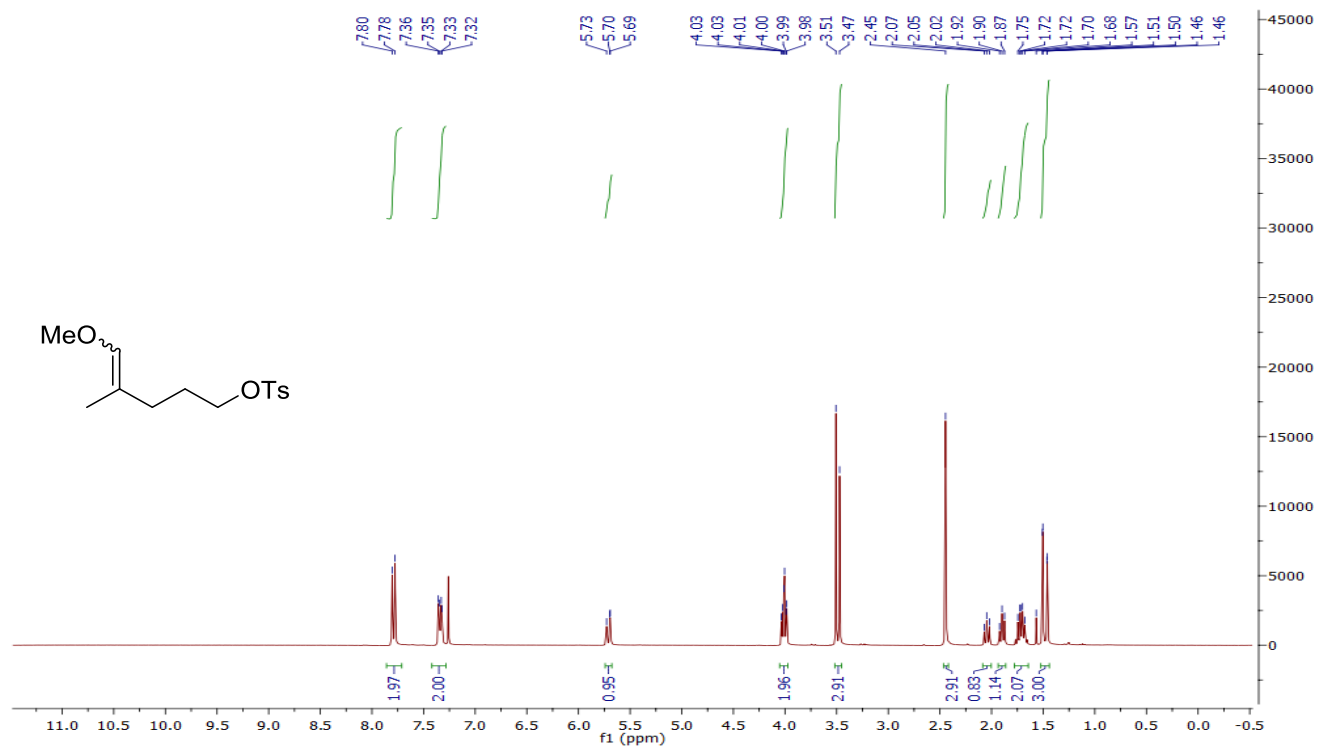


¹³C-NMR spectrum

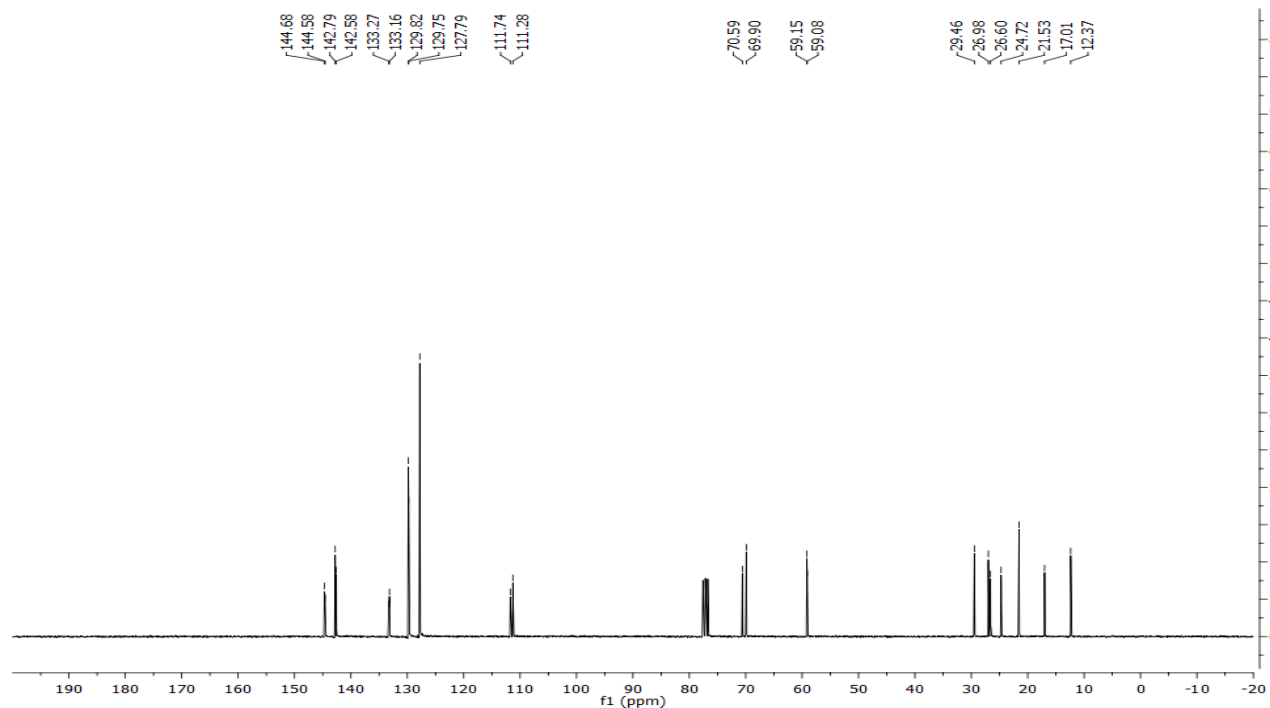


5-Methoxy-4-methylpent-4-en-1-yl 4-methylbenzenesulfonate (1-13)

¹H-NMR spectrum

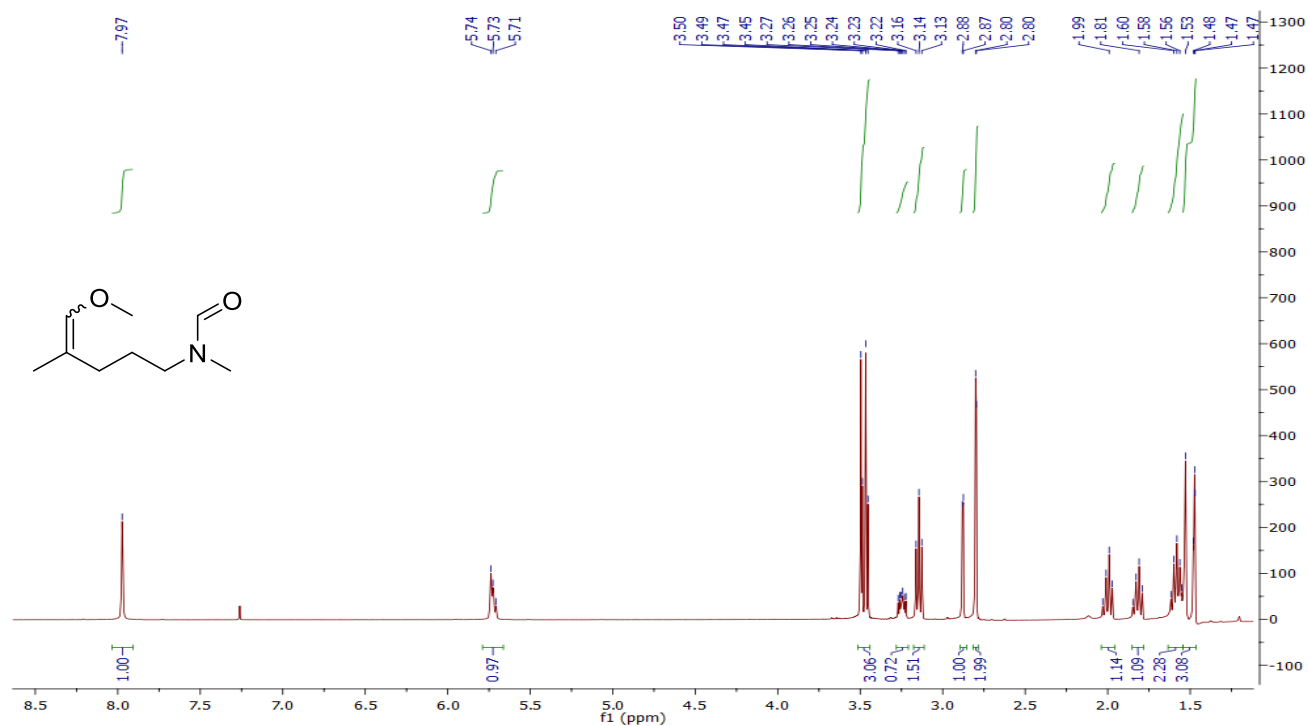


¹³C-NMR spectrum

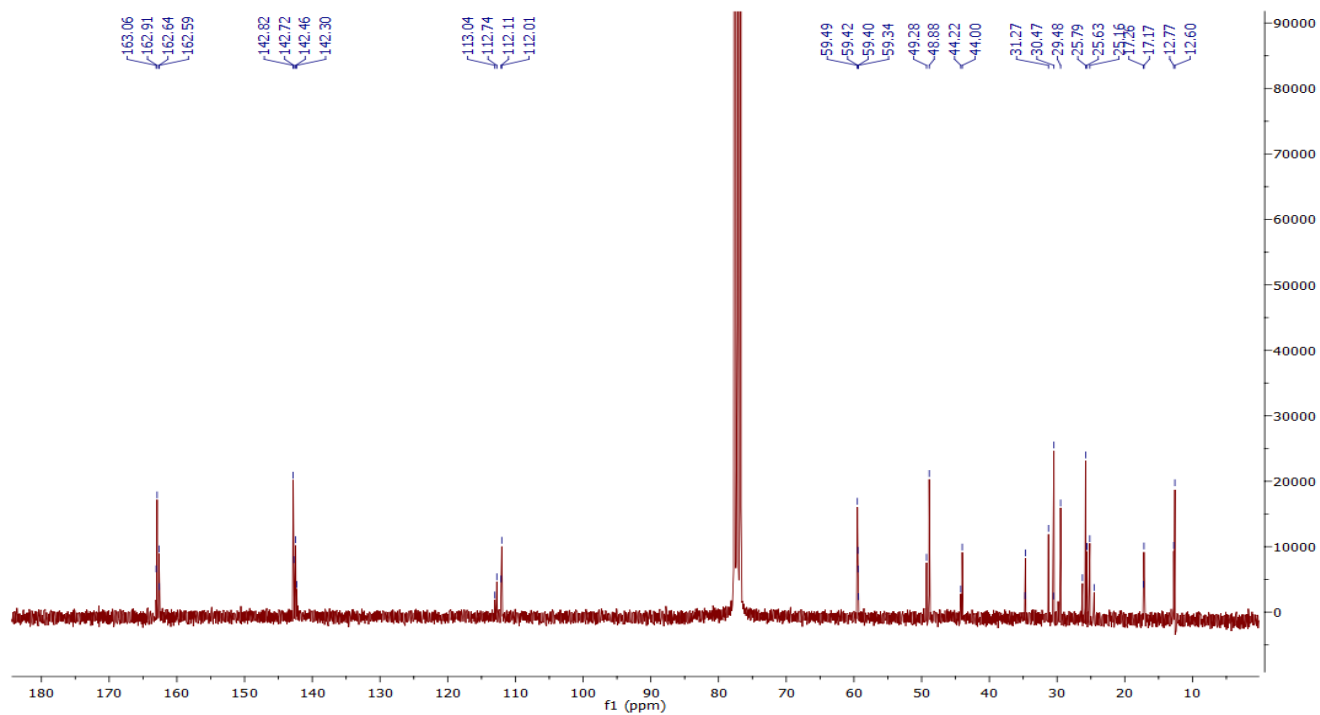


N-(5-Methoxy-4-methylpent-4-en-1-yl)-*N*-methylformamide (1-14)

¹H-NMR spectrum

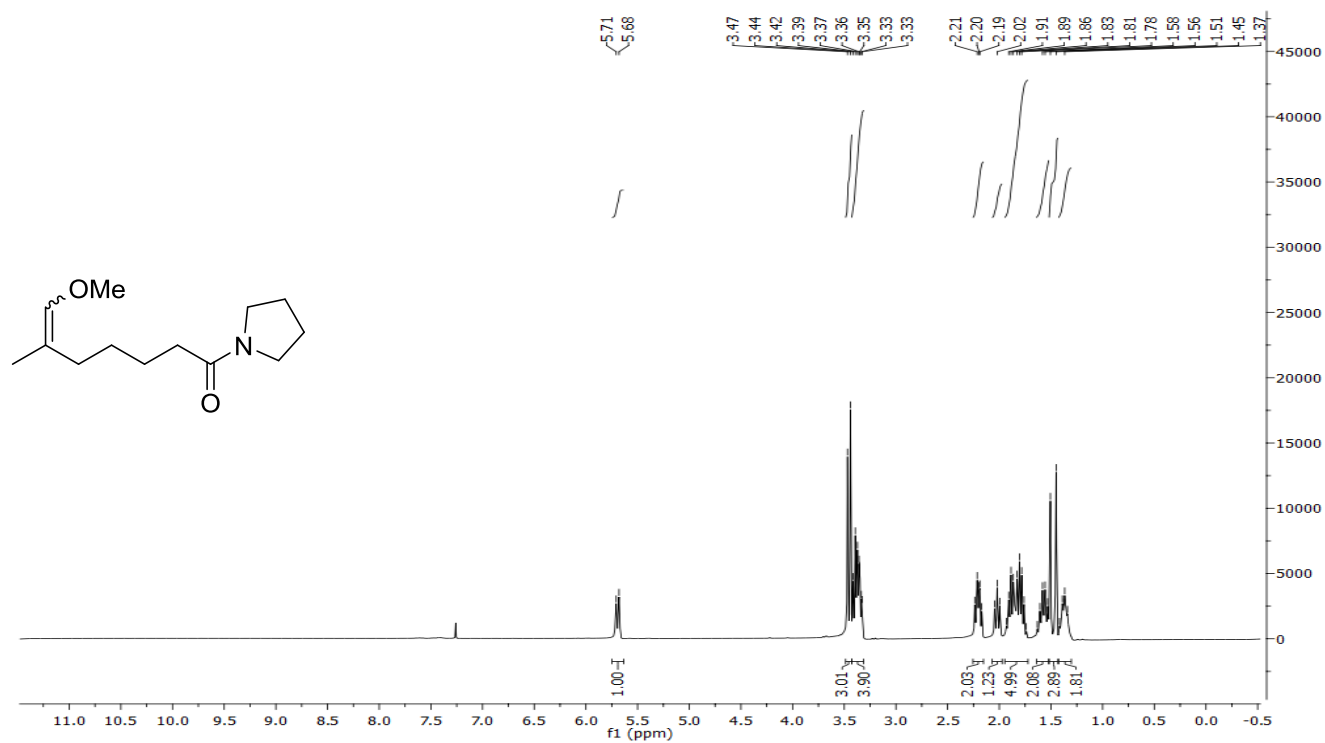


¹³C-NMR spectrum

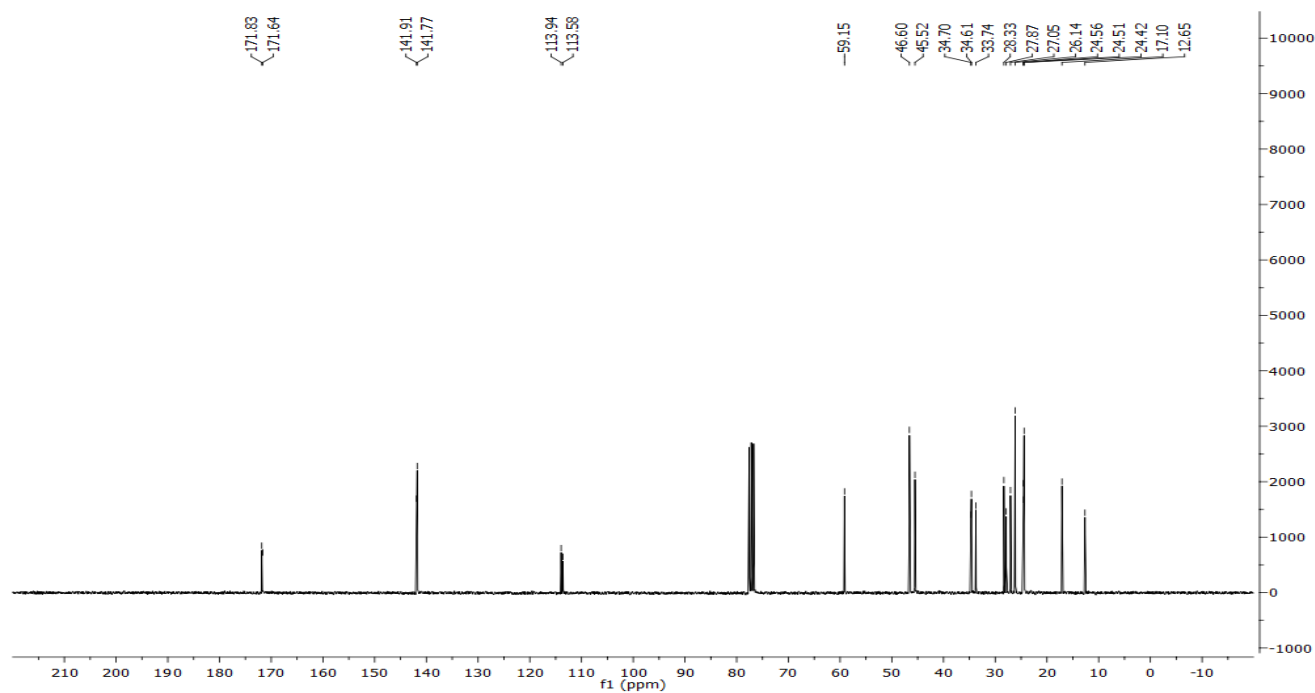


7-Methoxy-6-methyl-1-(pyrrolidin-1-yl)hept-6-en-1-one (1-18)

¹H-NMR spectrum

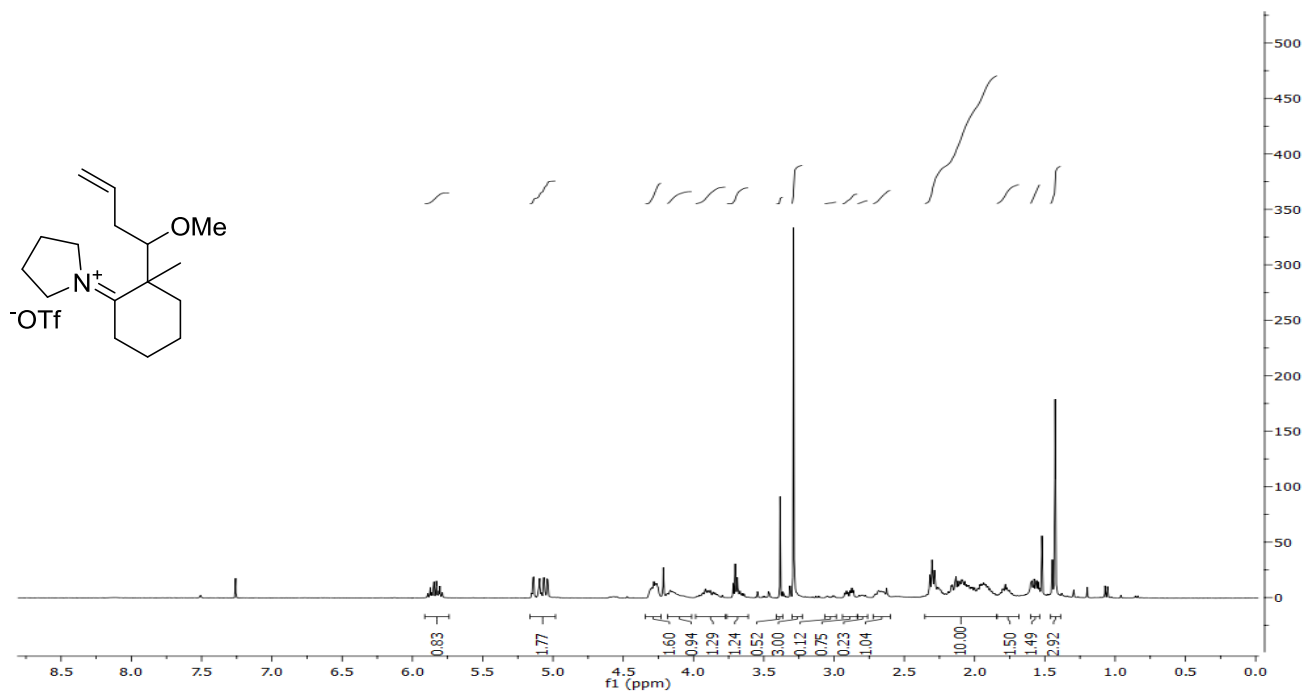


¹³C-NMR spectrum

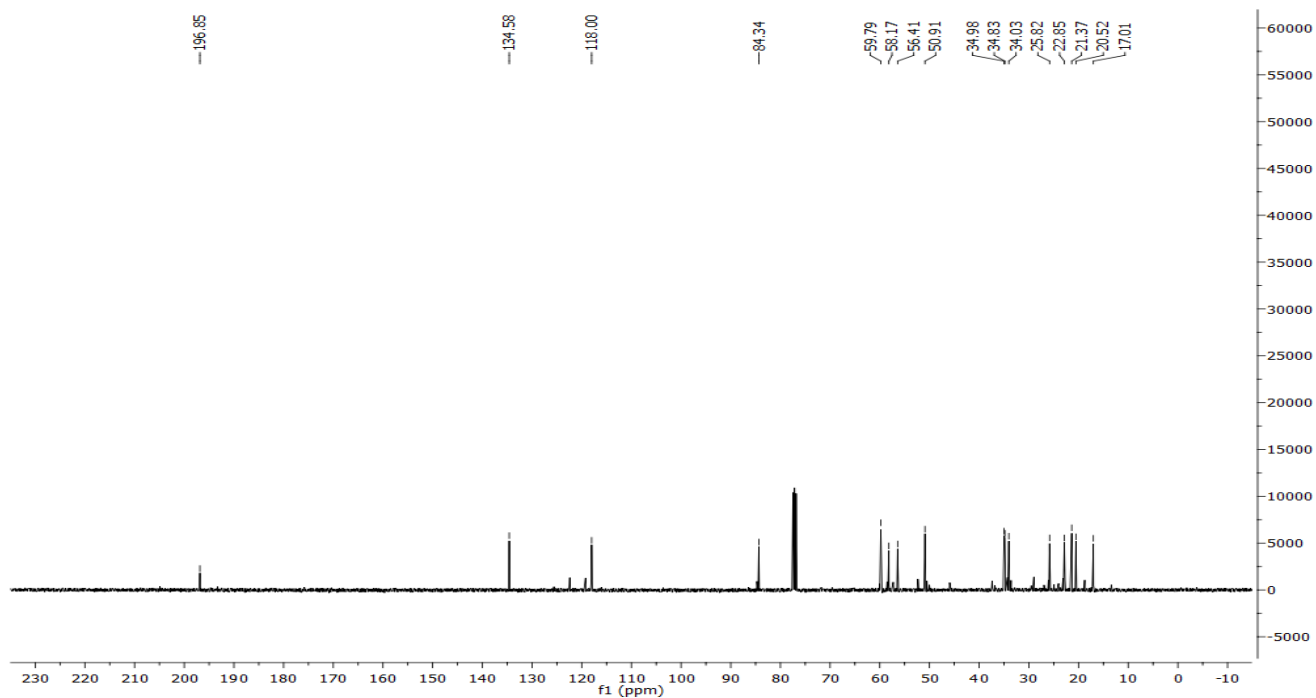


1-(2-(1-Methoxybut-3-en-1-yl)-2-methylcyclohexylidene)pyrrolidin-1-ium Triflate (1-19)

¹H-NMR spectrum

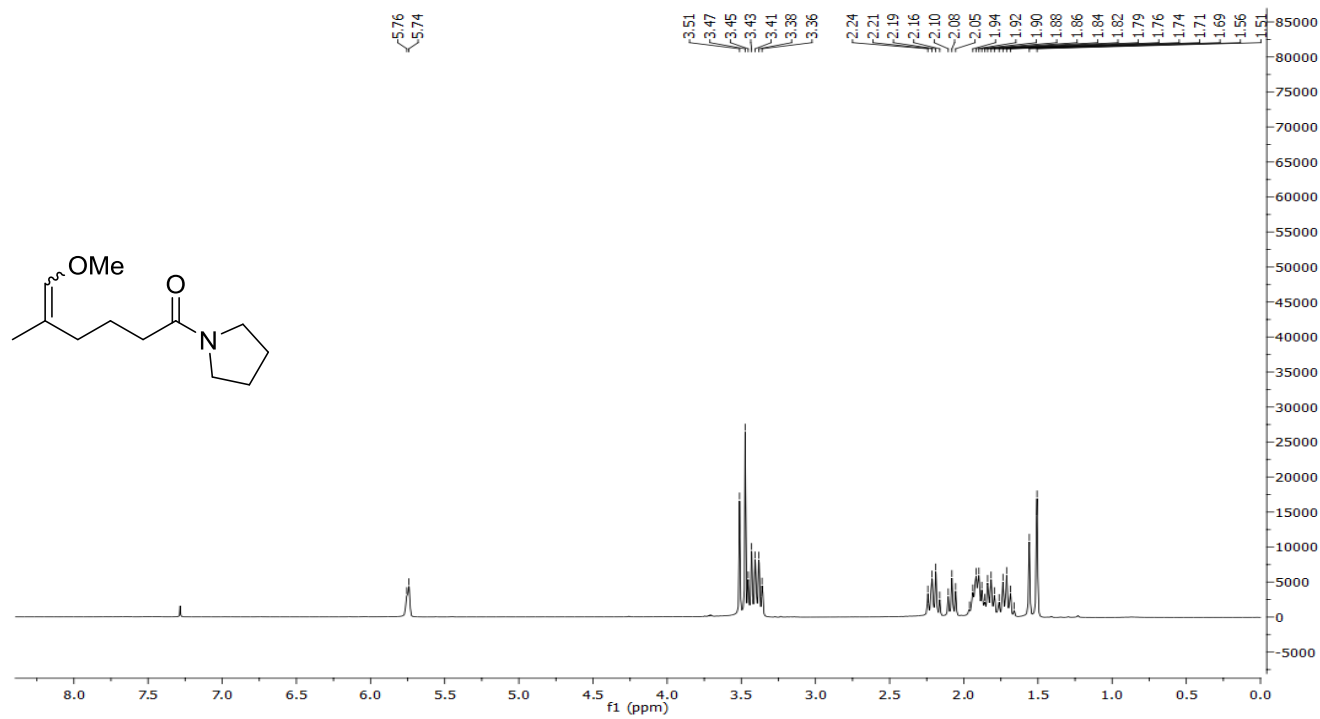


¹³C-NMR spectrum

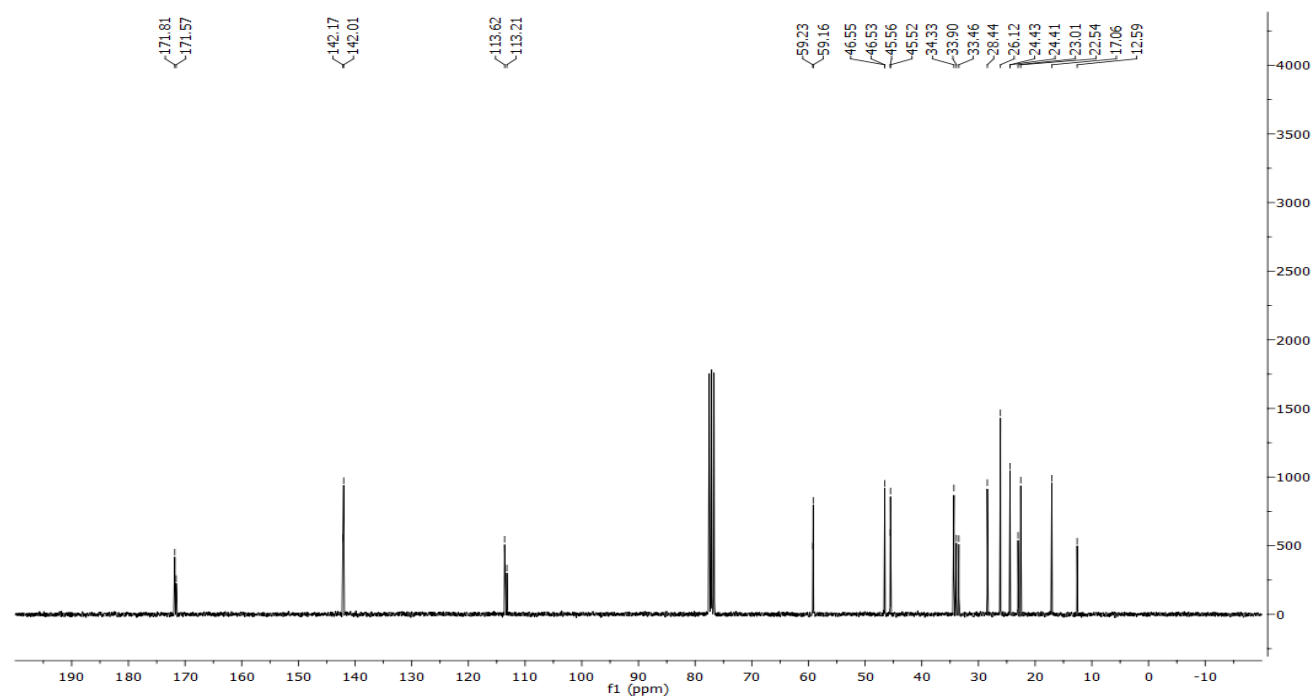


6-Methoxy-5-methyl-1-(pyrrolidin-1-yl)hex-5-en-1-one (1-21)

¹H-NMR spectrum

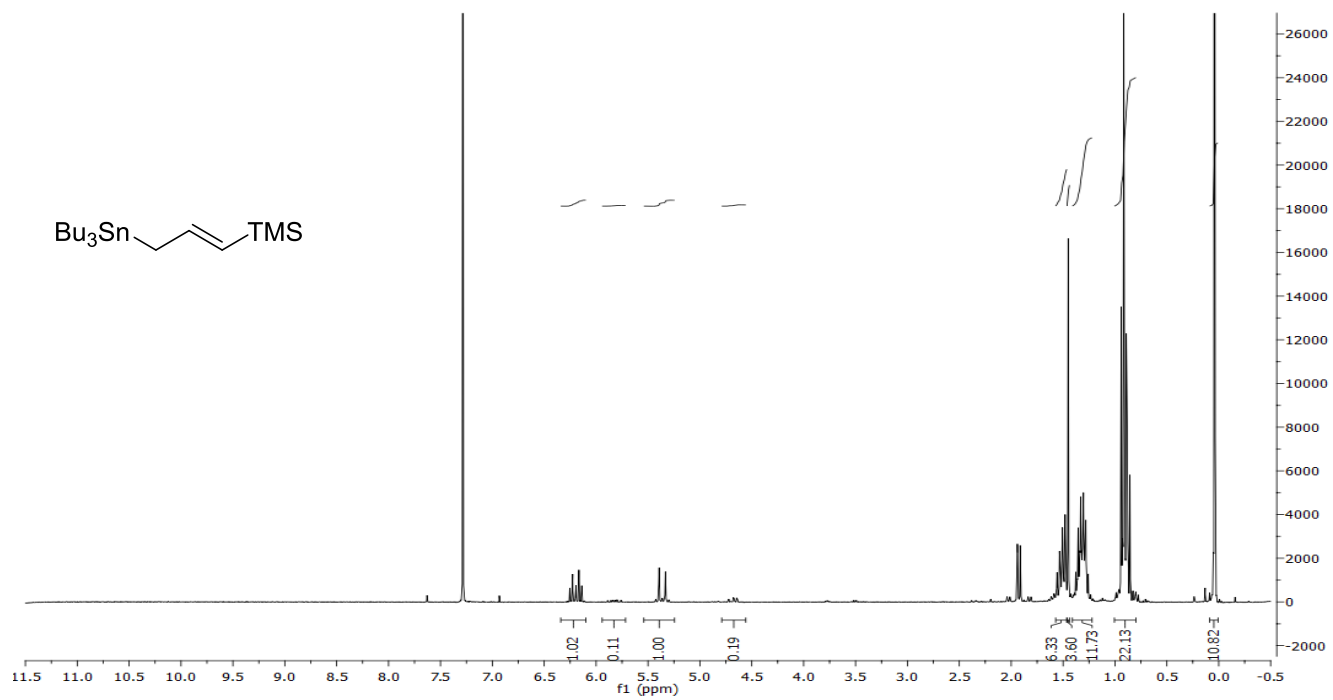


¹³C-NMR spectrum

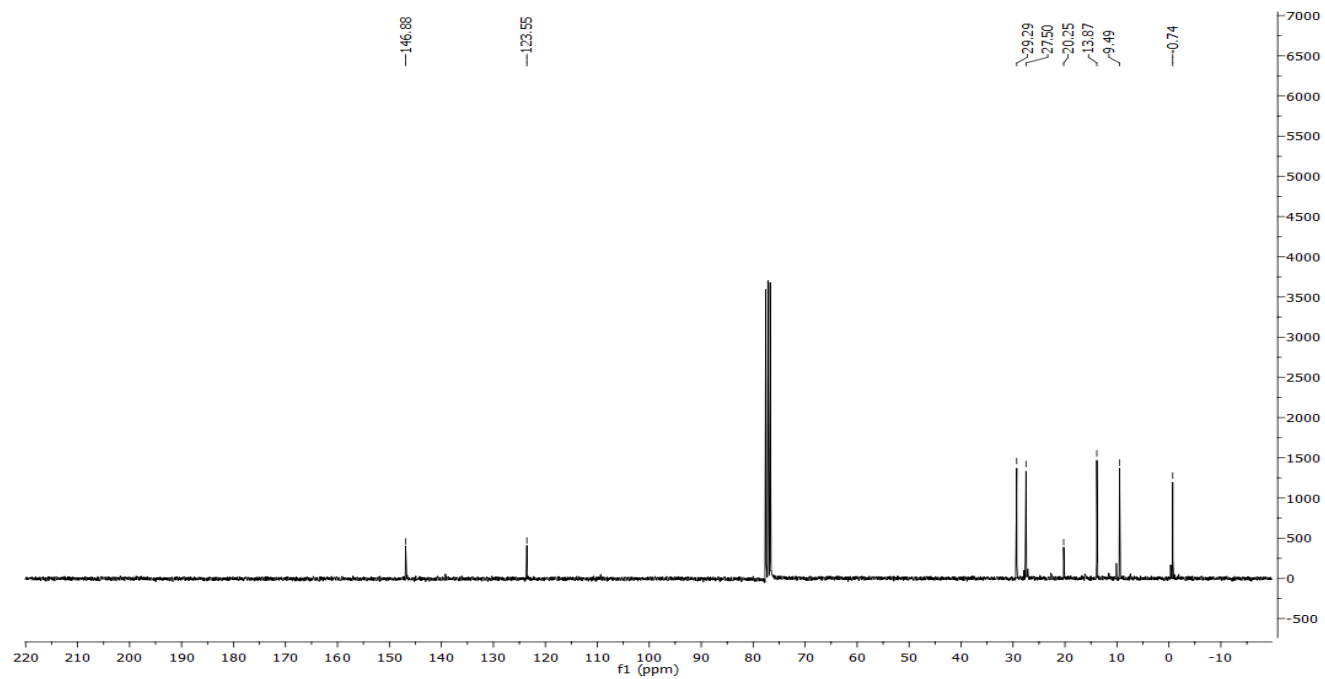


Trimethyl(3-(tributylstannyl)prop-1-en-1-yl)silane (1-46)

¹H-NMR spectrum

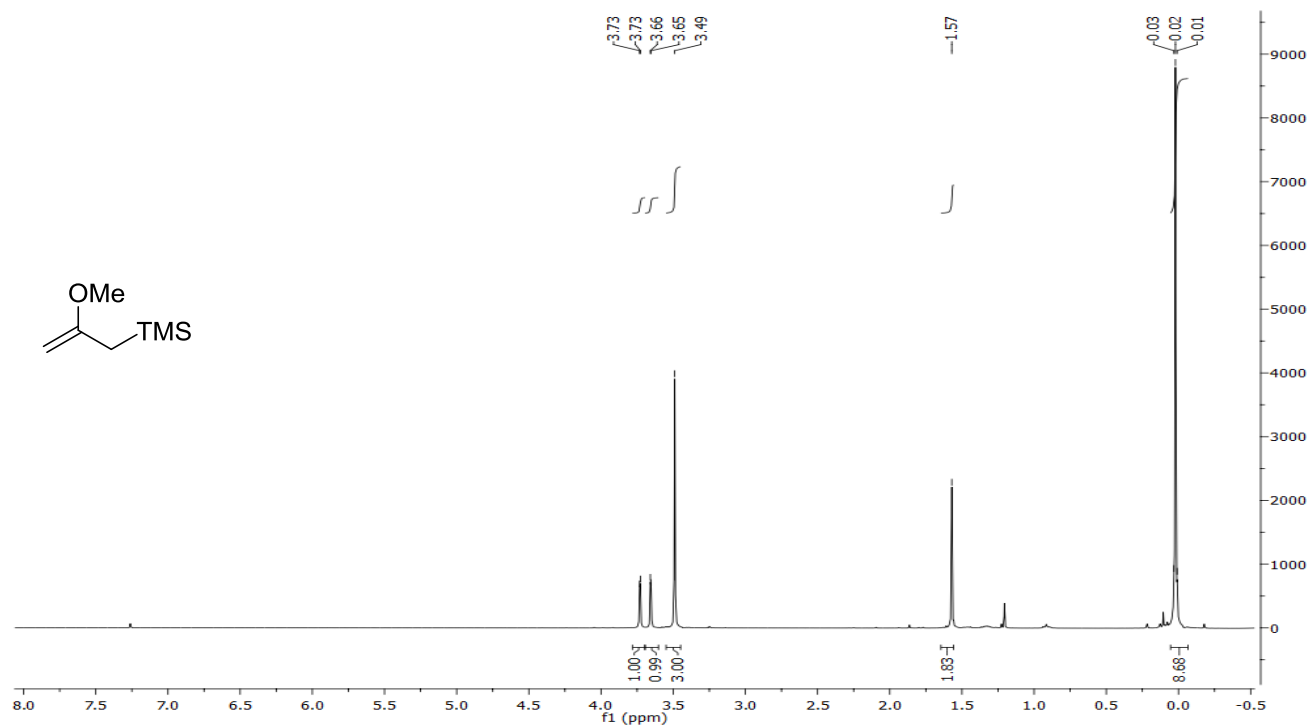


¹³C-NMR spectrum

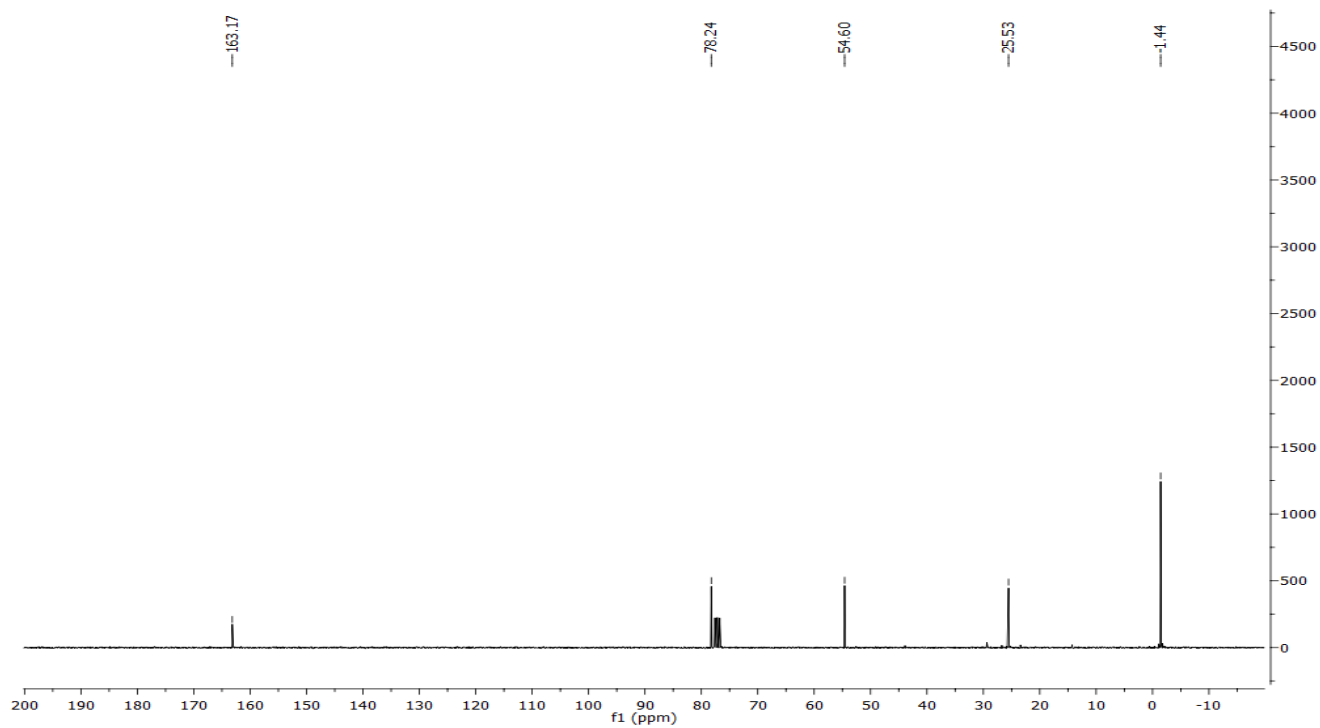


(2-Methoxyallyl)trimethylsilane (1-54)

¹H-NMR spectrum

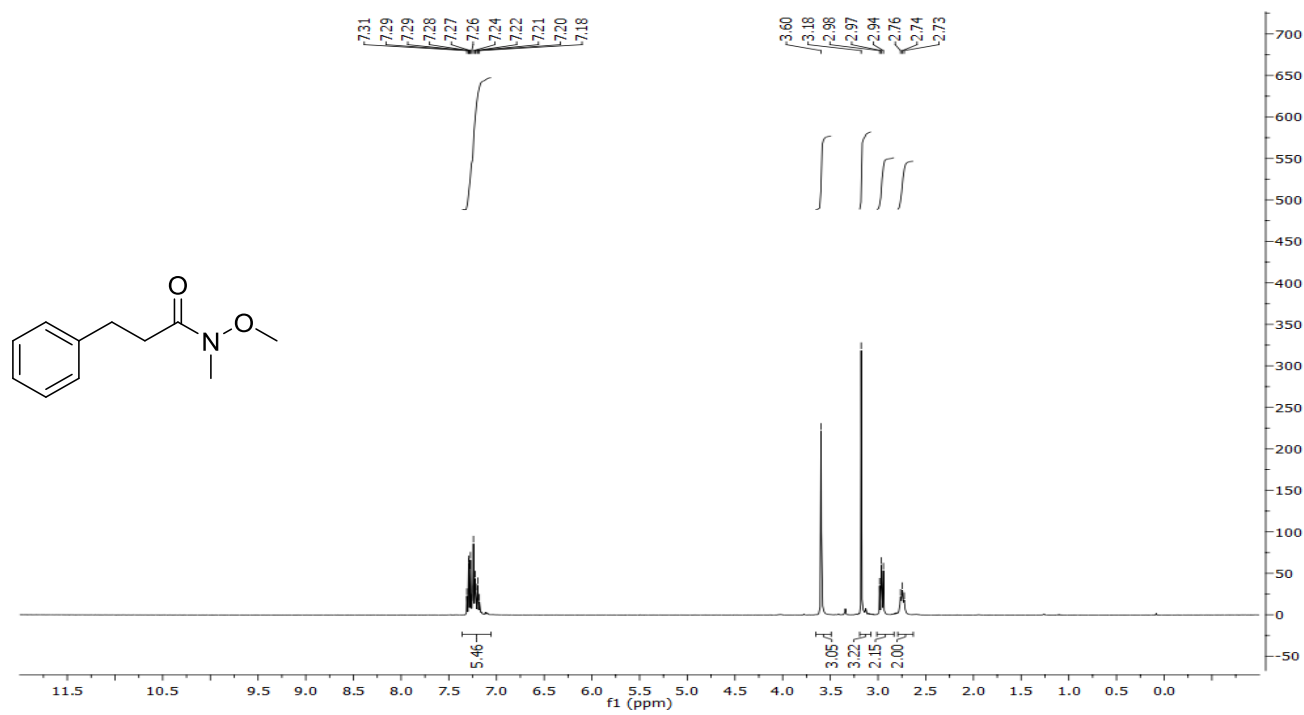


¹³C-NMR spectrum

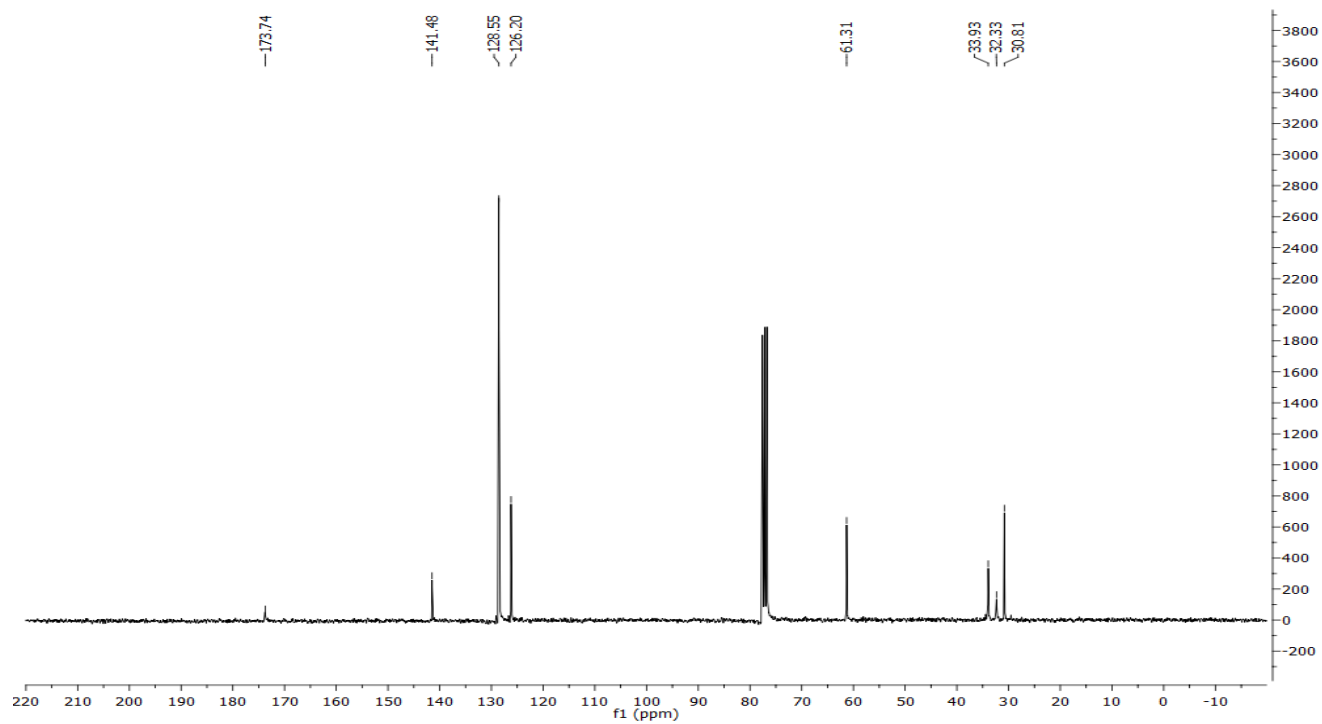


N-Methoxy-*N*-methyl-3-phenylpropanamide (2-5)

¹H-NMR spectrum

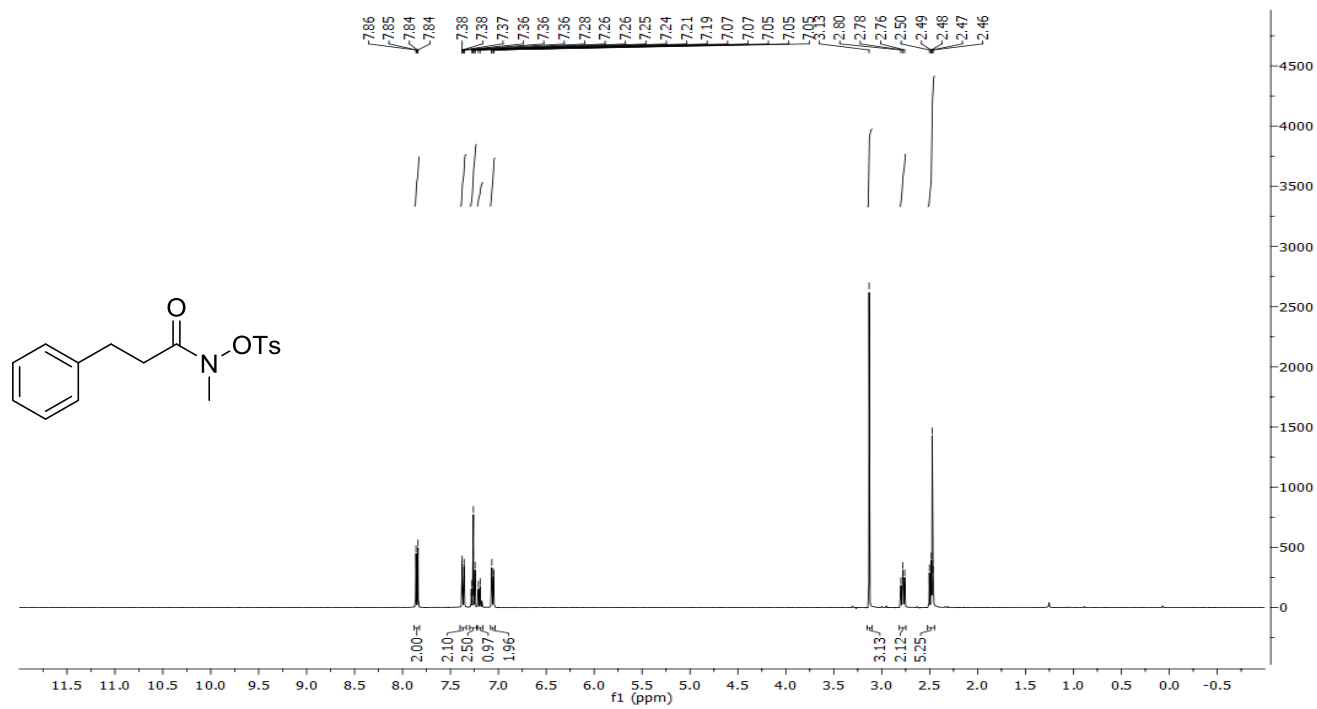


¹³C-NMR spectrum

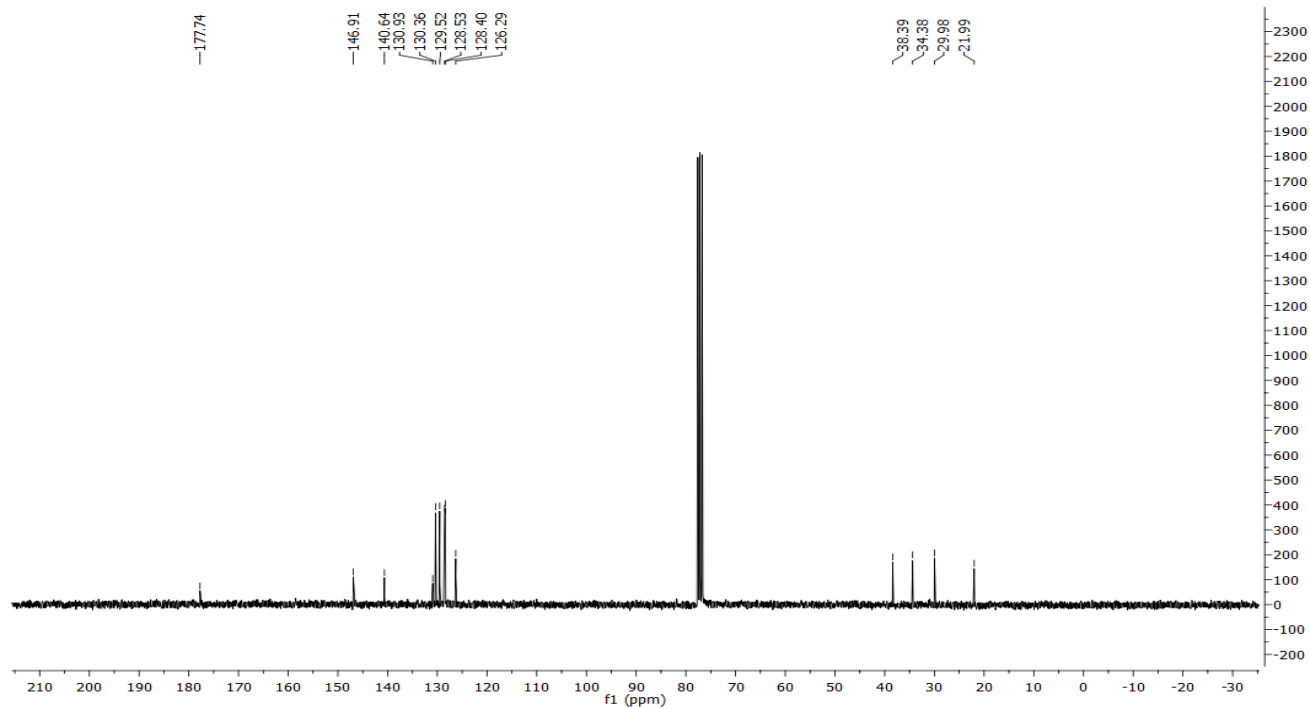


N-Methyl-3-phenyl-N-(tosyloxy)propanamide (2-7)

¹H-NMR spectrum

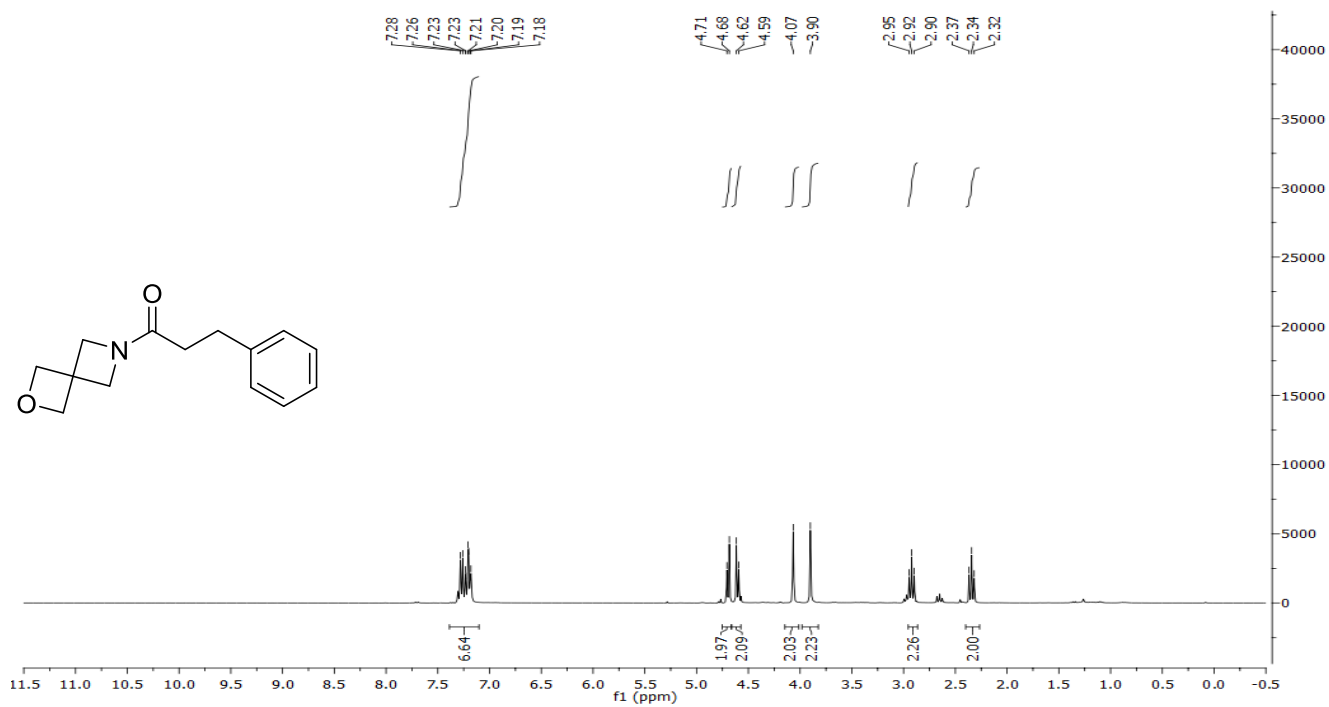


¹³C-NMR spectrum

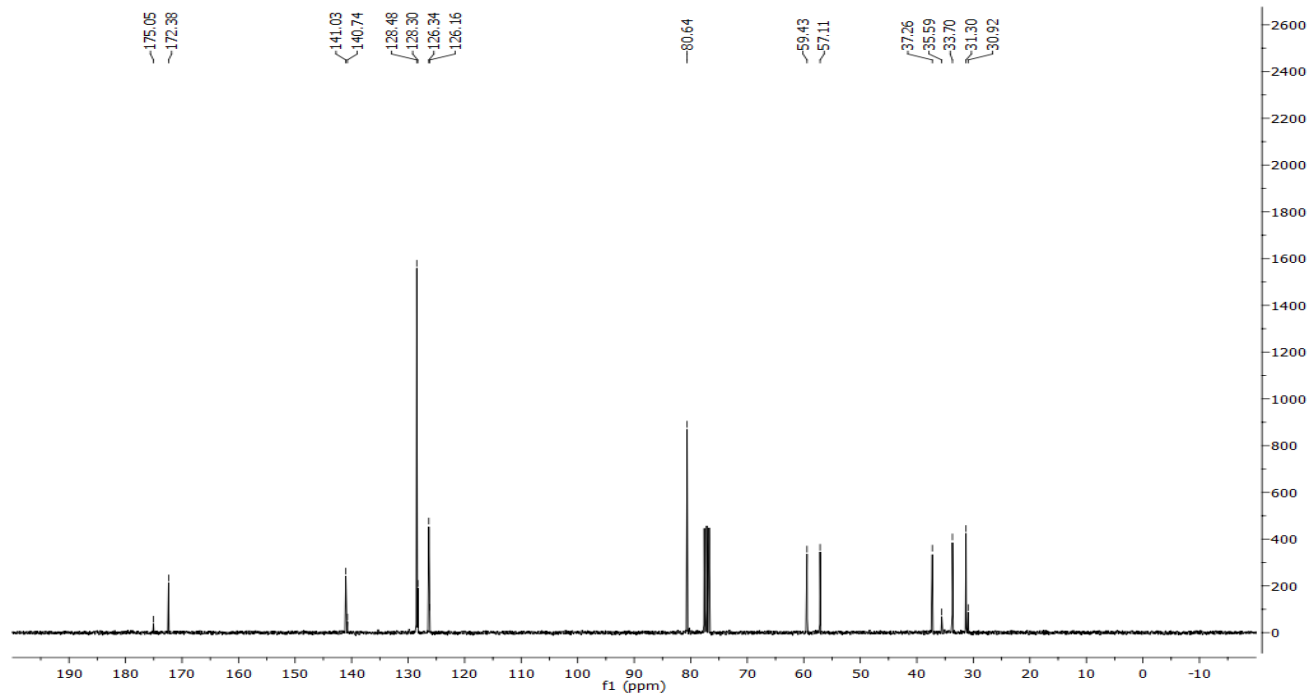


3-Phenyl-1-(2-oxa-6-azaspiro[3.3]heptan-6-yl)propan-1-one (2-18)

¹H-NMR spectrum

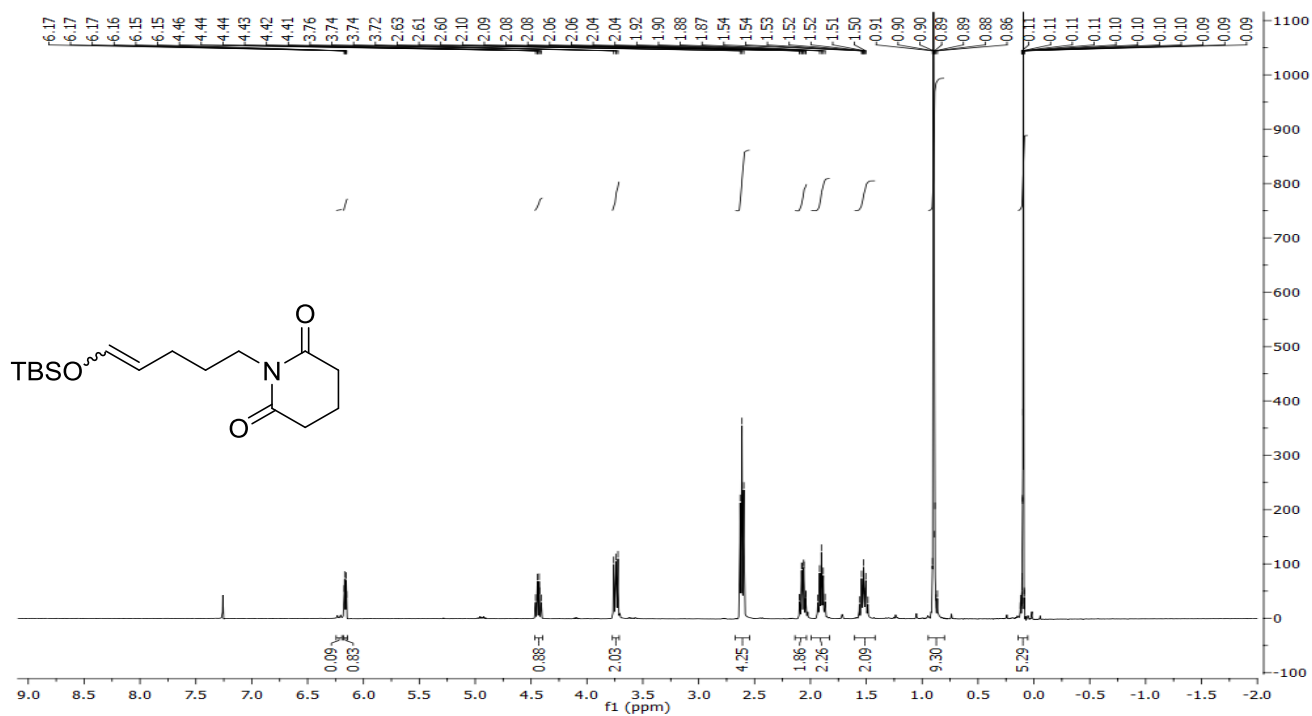


¹³C-NMR spectrum

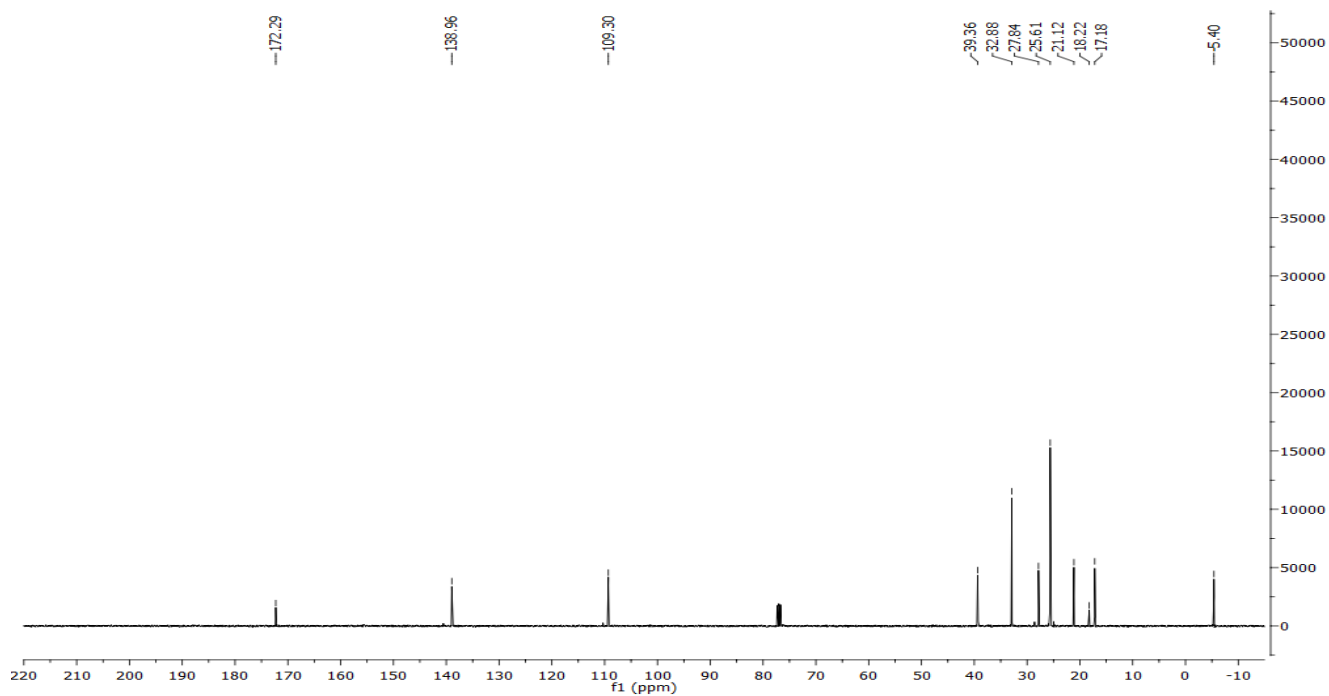


1-(5-((*tert*-Butyldimethylsilyl)oxy)pent-4-en-1-yl)piperidine-2,6-dione (2-28)

¹H-NMR spectrum

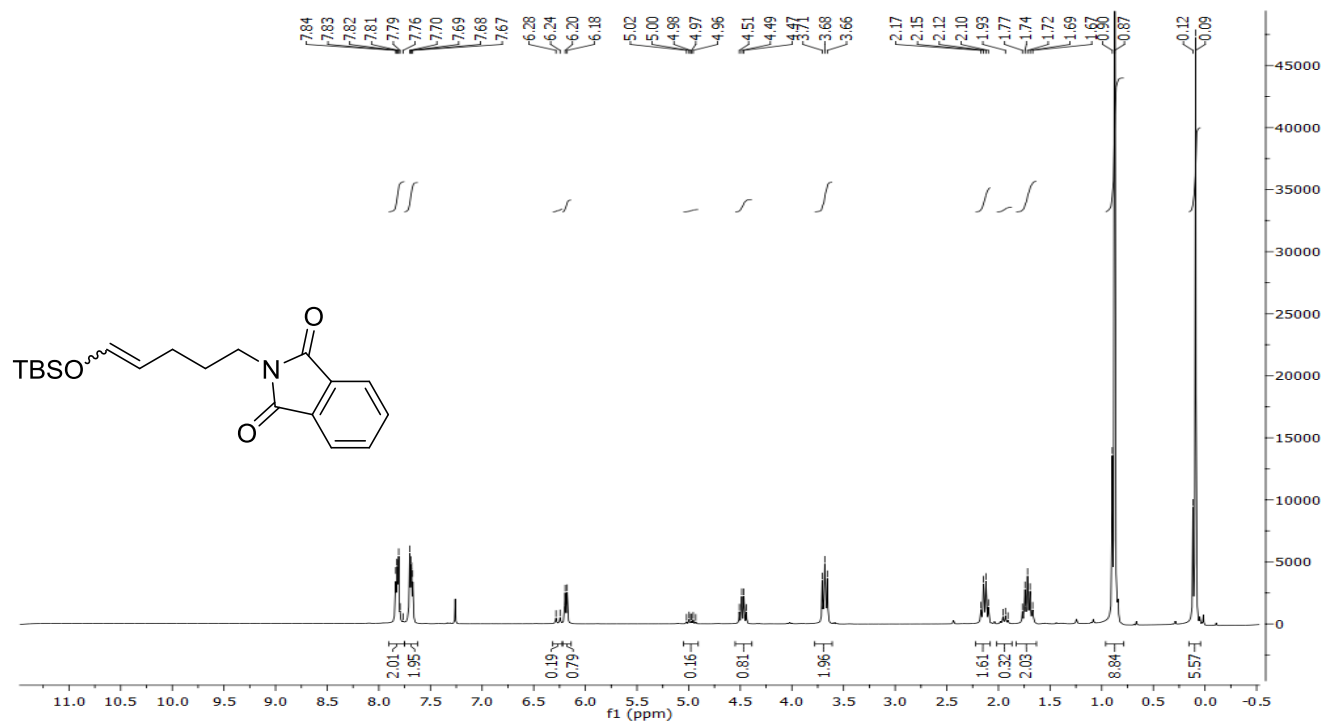


¹³C-NMR spectrum

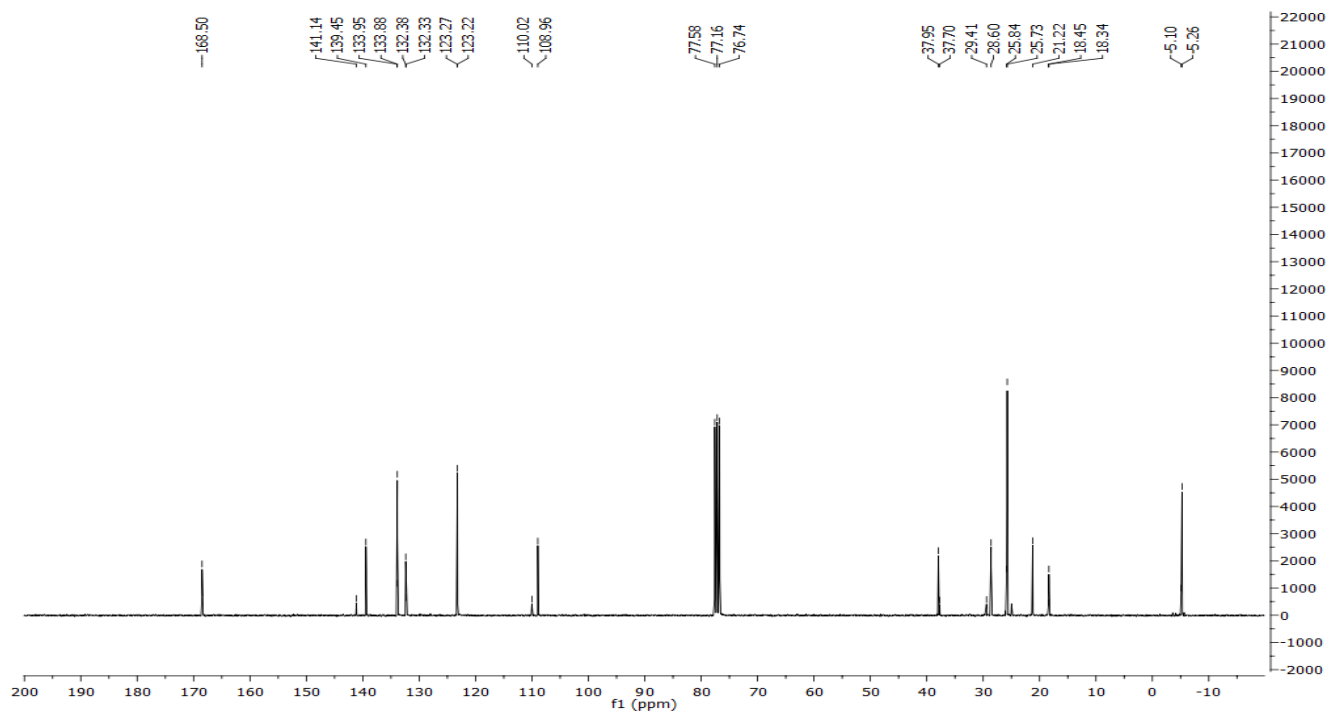


1-(3-Methylbut-3-en-1-yl)piperidine-2,6-dione (2-29)

¹H-NMR spectrum

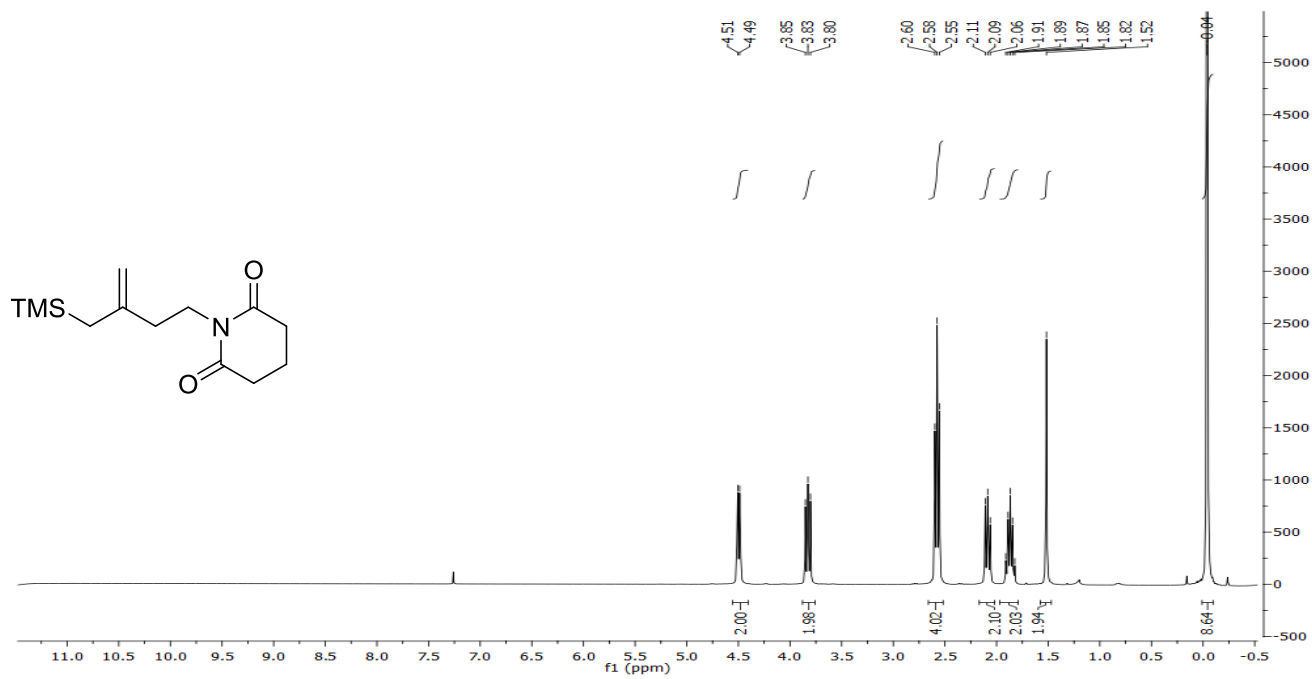


¹³C-NMR spectrum

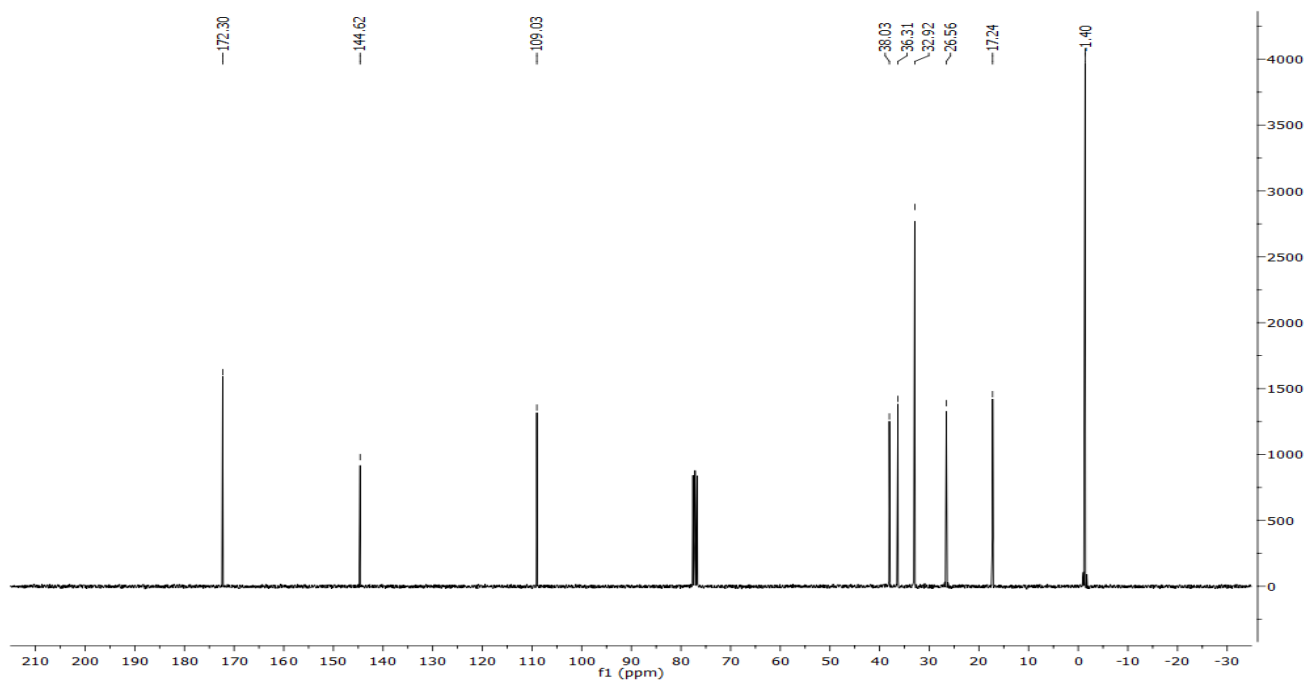


1-(3-((Trimethylsilyl)methyl)but-3-en-1-yl)piperidine-2,6-dione (2-30)

¹H-NMR spectrum

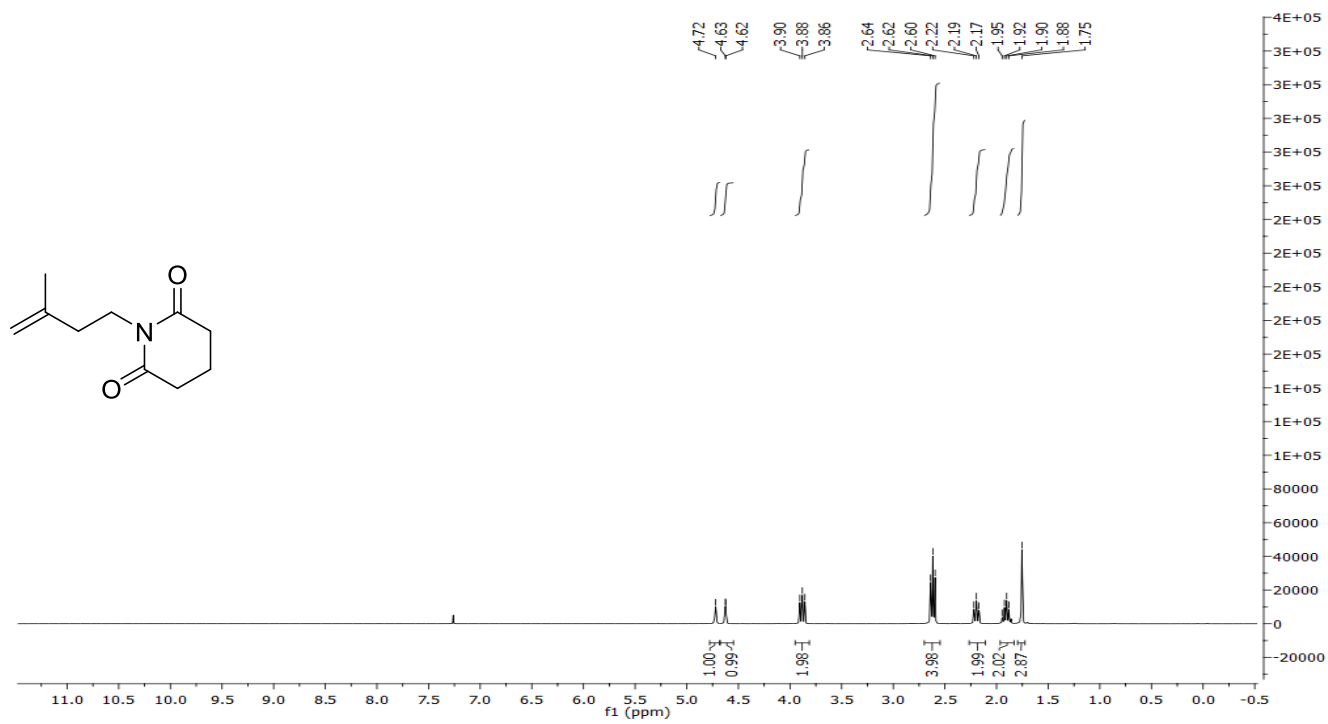


¹³C-NMR spectrum

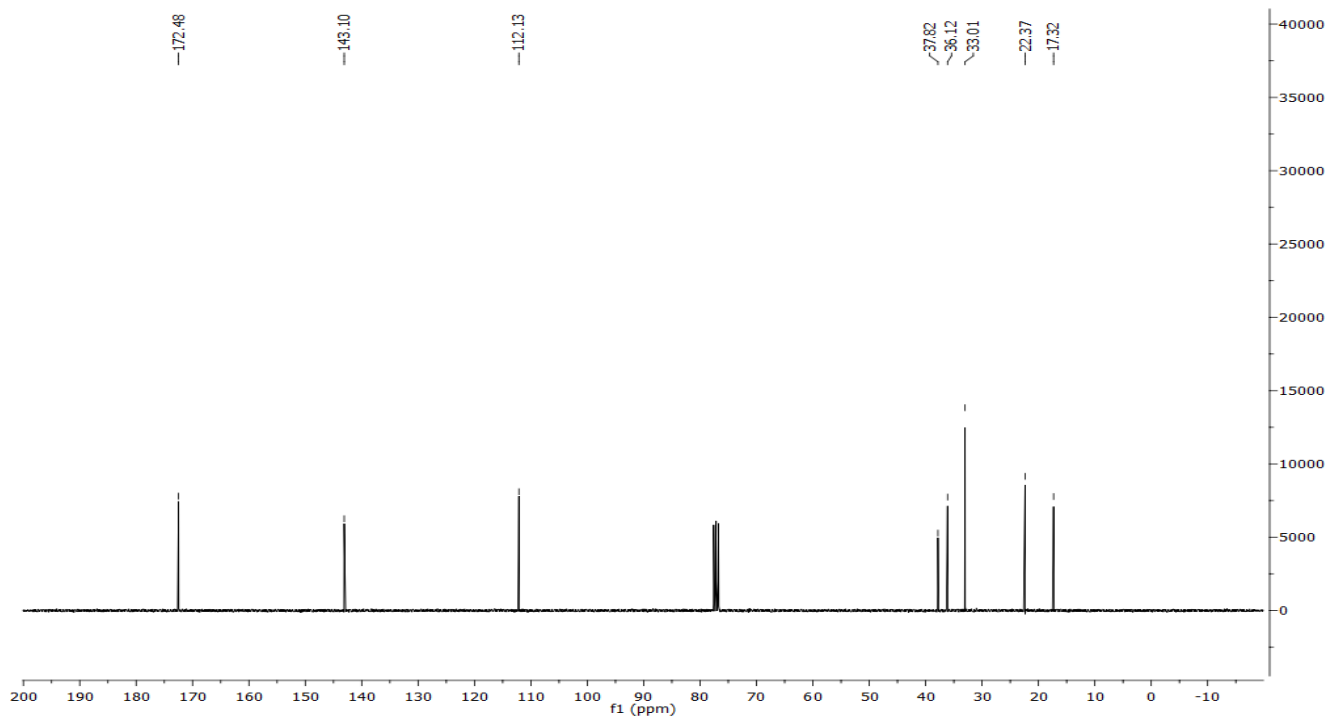


1-(3-Methylbut-3-en-1-yl)piperidine-2,6-dione (2-31)

¹H-NMR spectrum

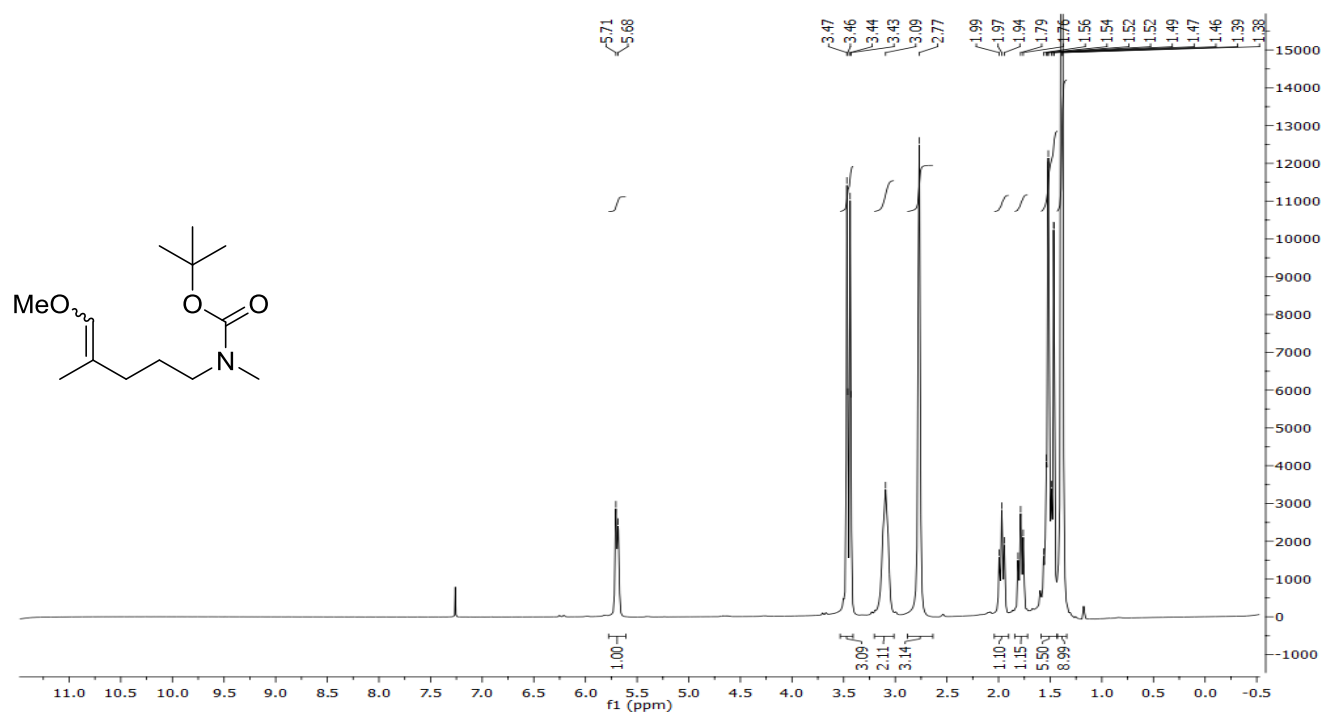


¹³C-NMR spectrum

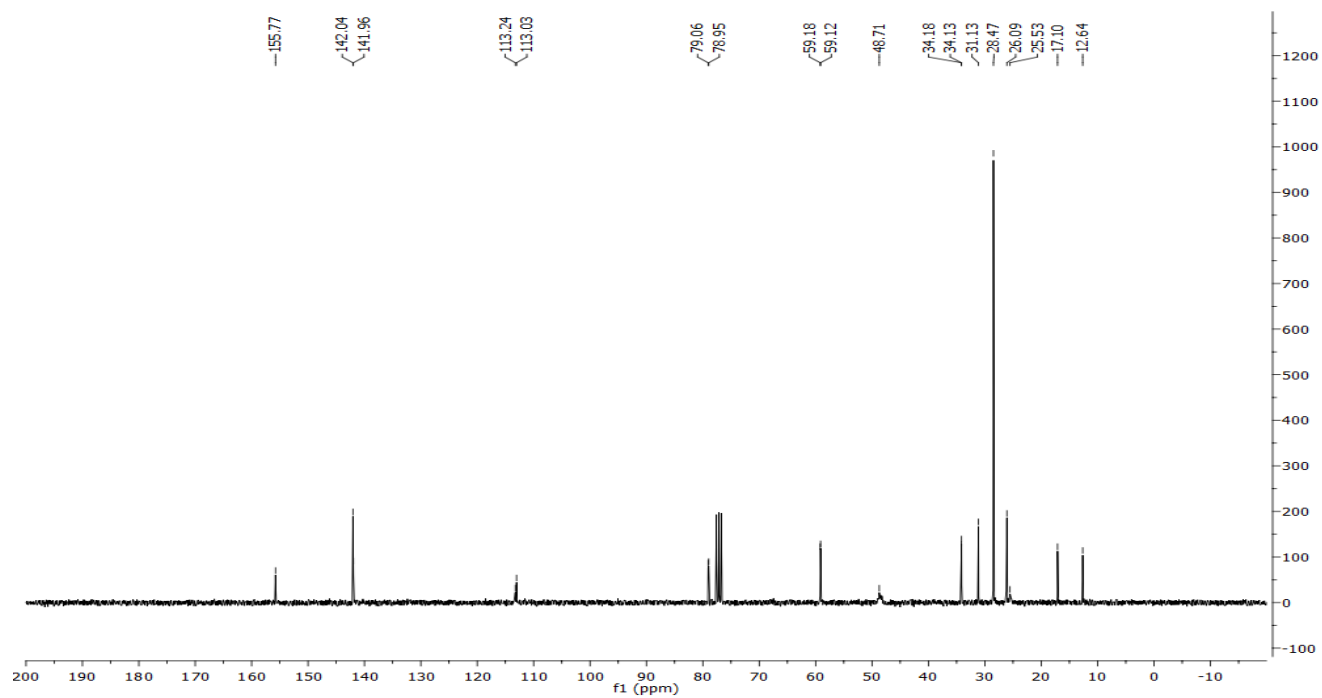


***tert*-Butyl *N*-(5-methoxy-4-methylpent-4-en-1-yl)-*N*-methylcarbamate (2-58)**

¹H-NMR spectrum

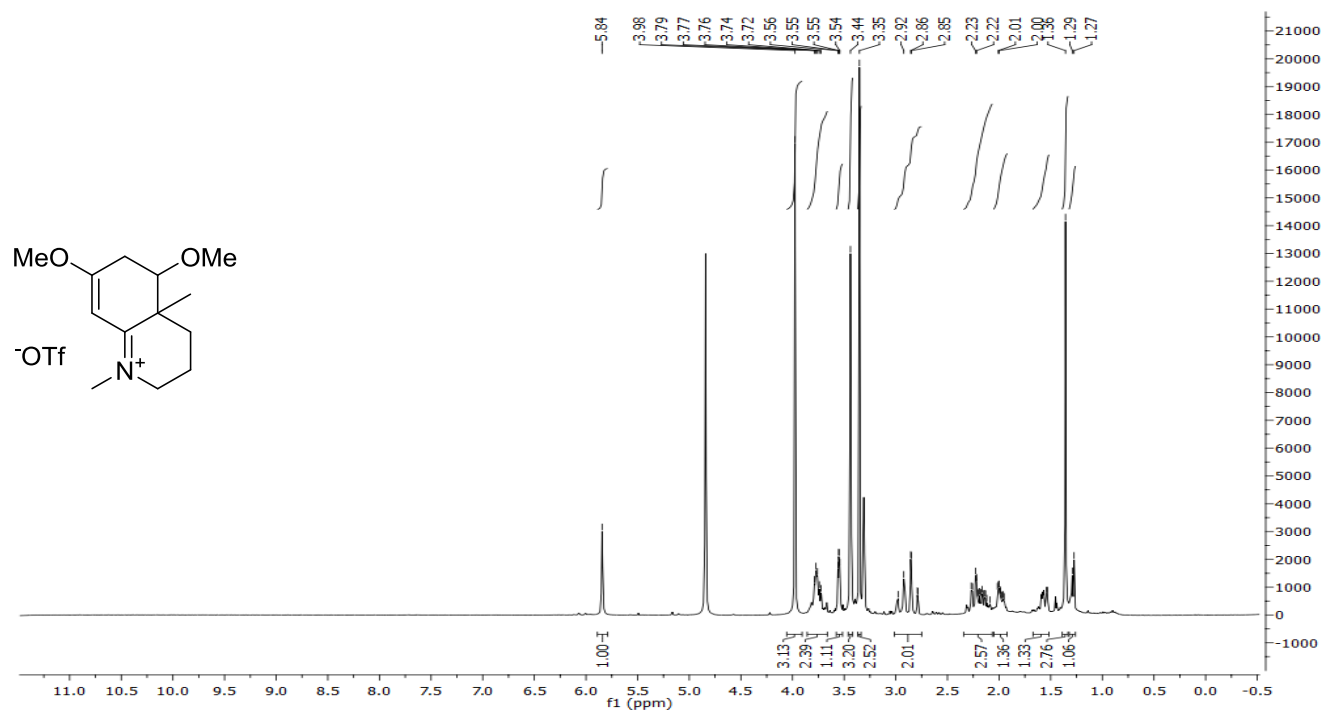


¹³C-NMR spectrum

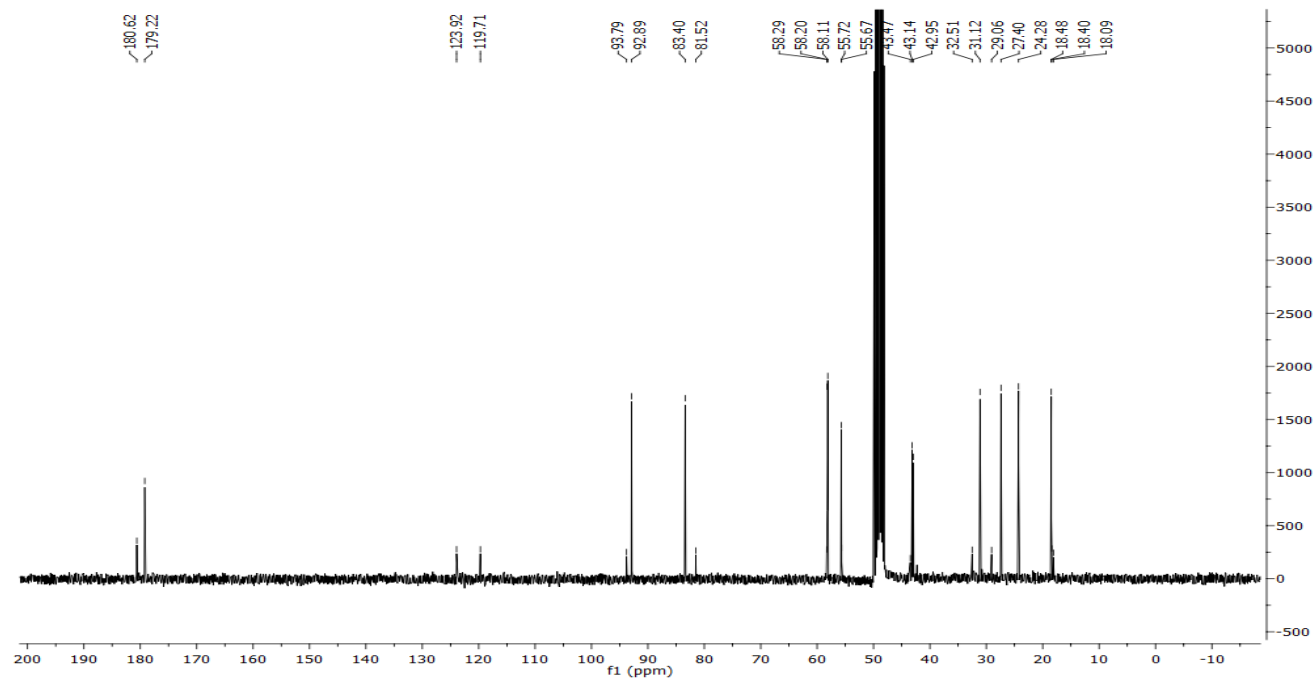


5,7-Dimethoxy-1,4a-dimethyl-2,3,4,4a,5,6-hexahydroquinolin-1-ium Triflate (2-66)

¹H-NMR spectrum

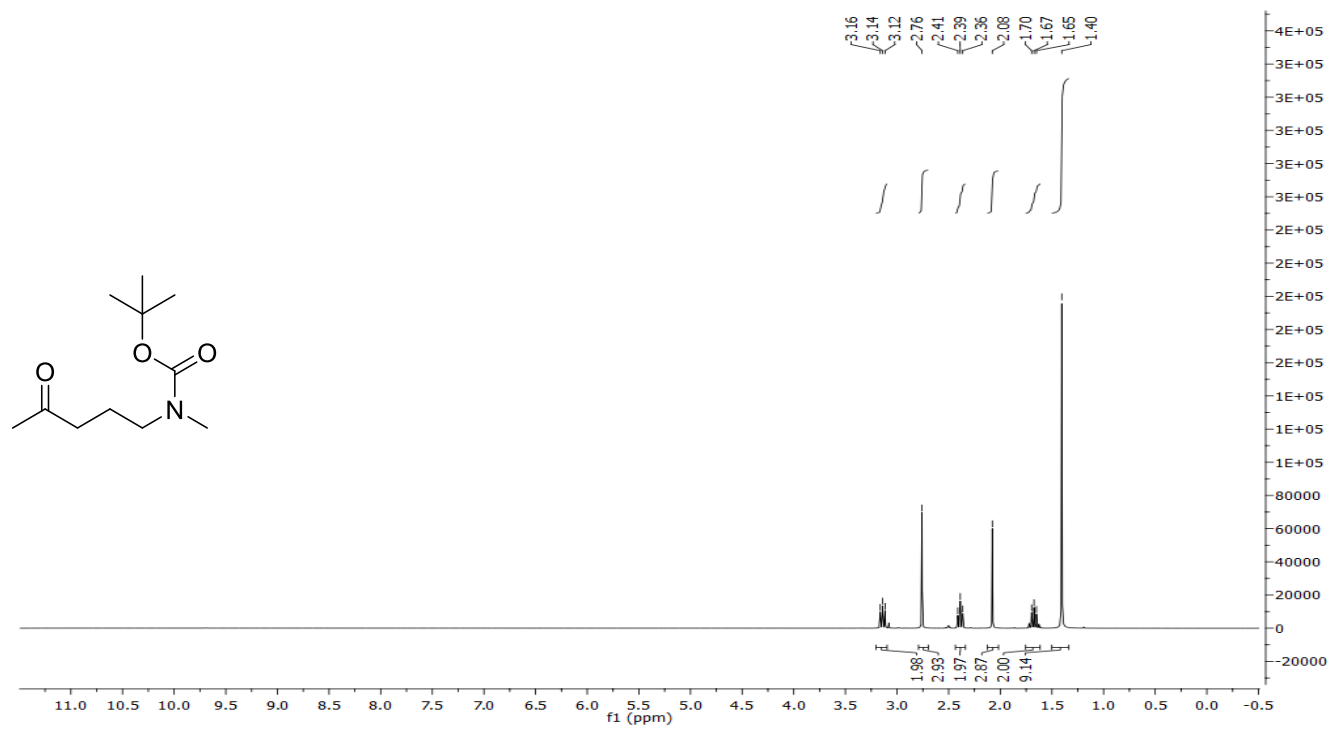


¹³C-NMR spectrum

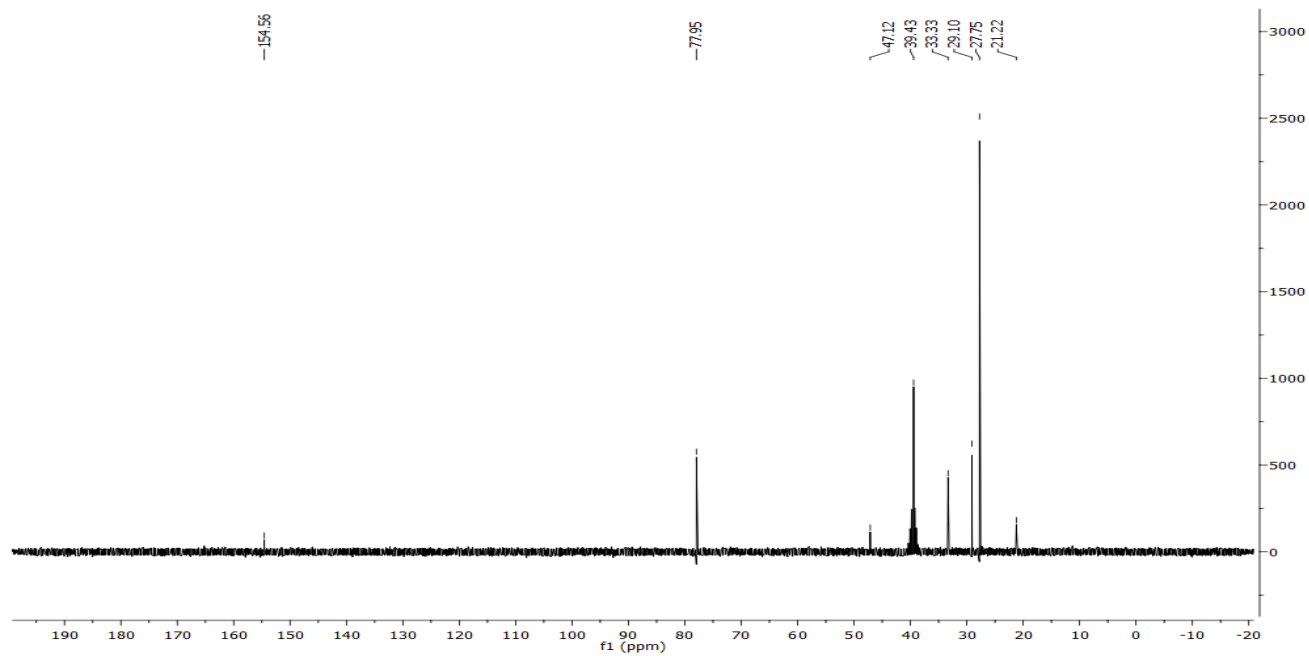


***tert*-Butyl *N*-methyl-*N*-(4-oxopentyl)carbamate (2-76)**

¹H-NMR spectrum

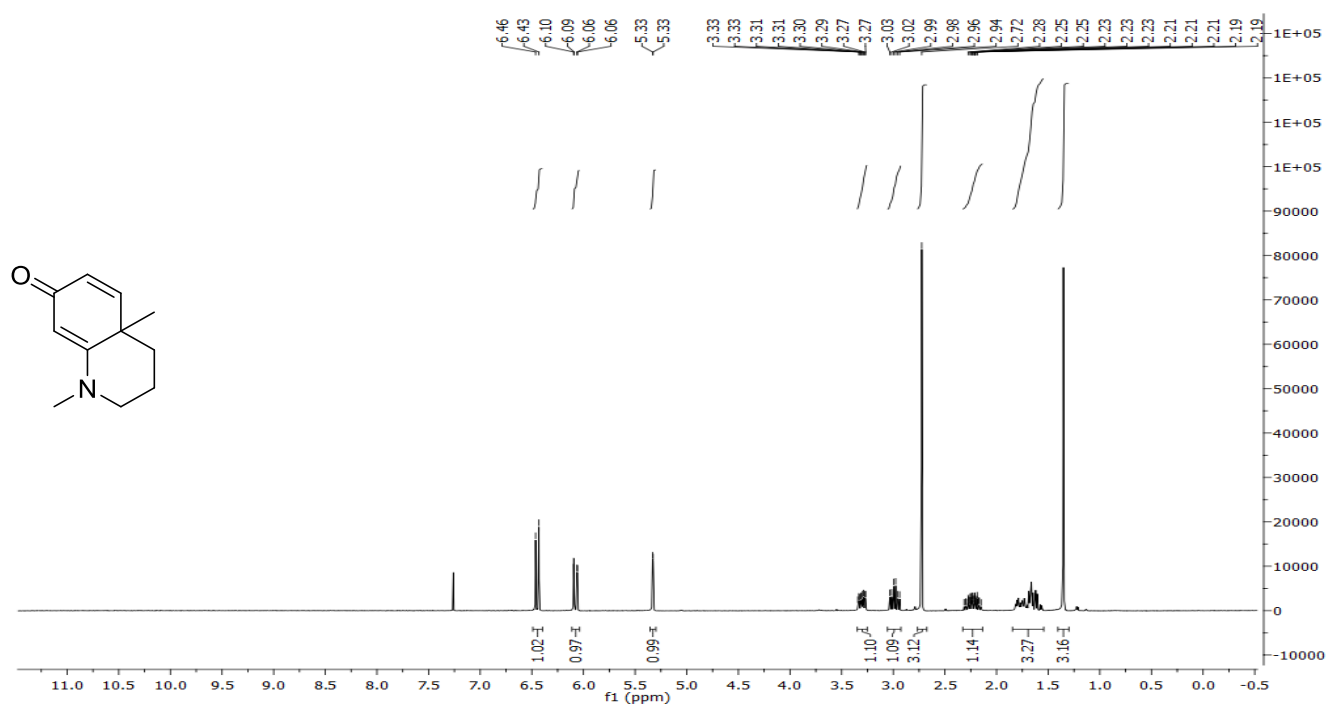


¹³C-NMR spectrum

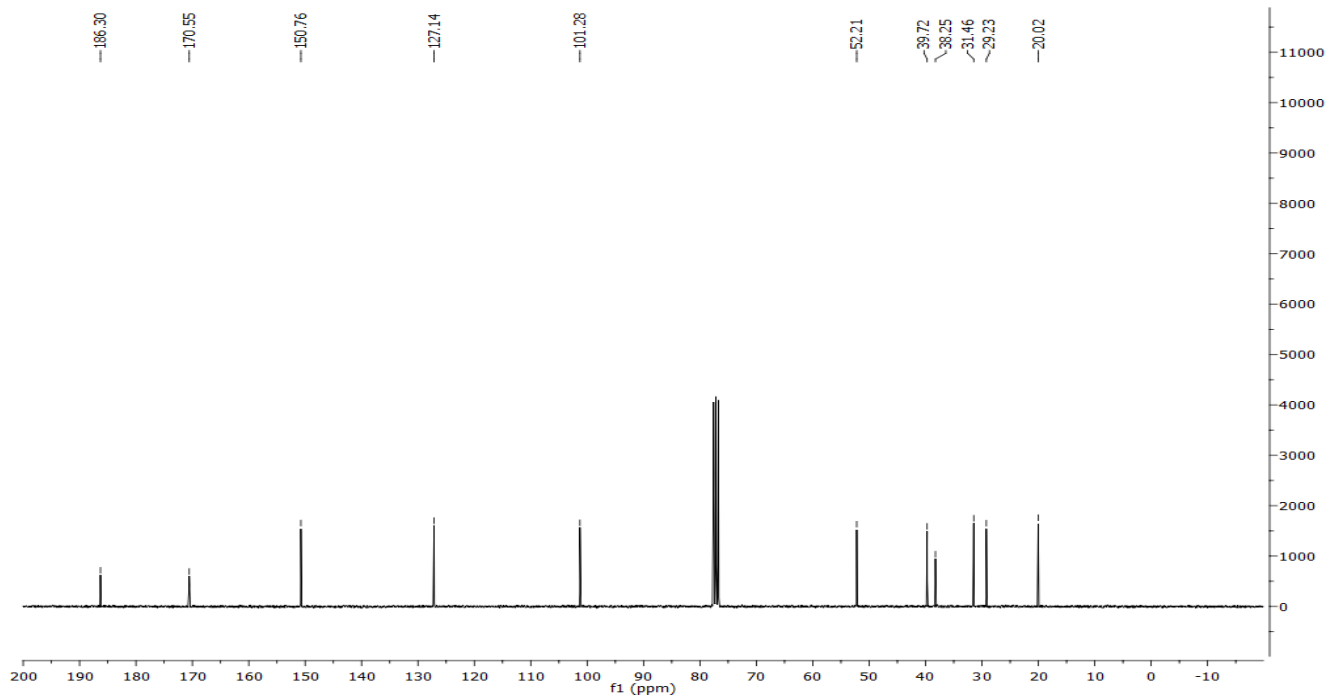


1,4a-Dimethyl-2,3,4,4a-tetrahydroquinolin-7(1H)-one (2-81)

¹H-NMR spectrum

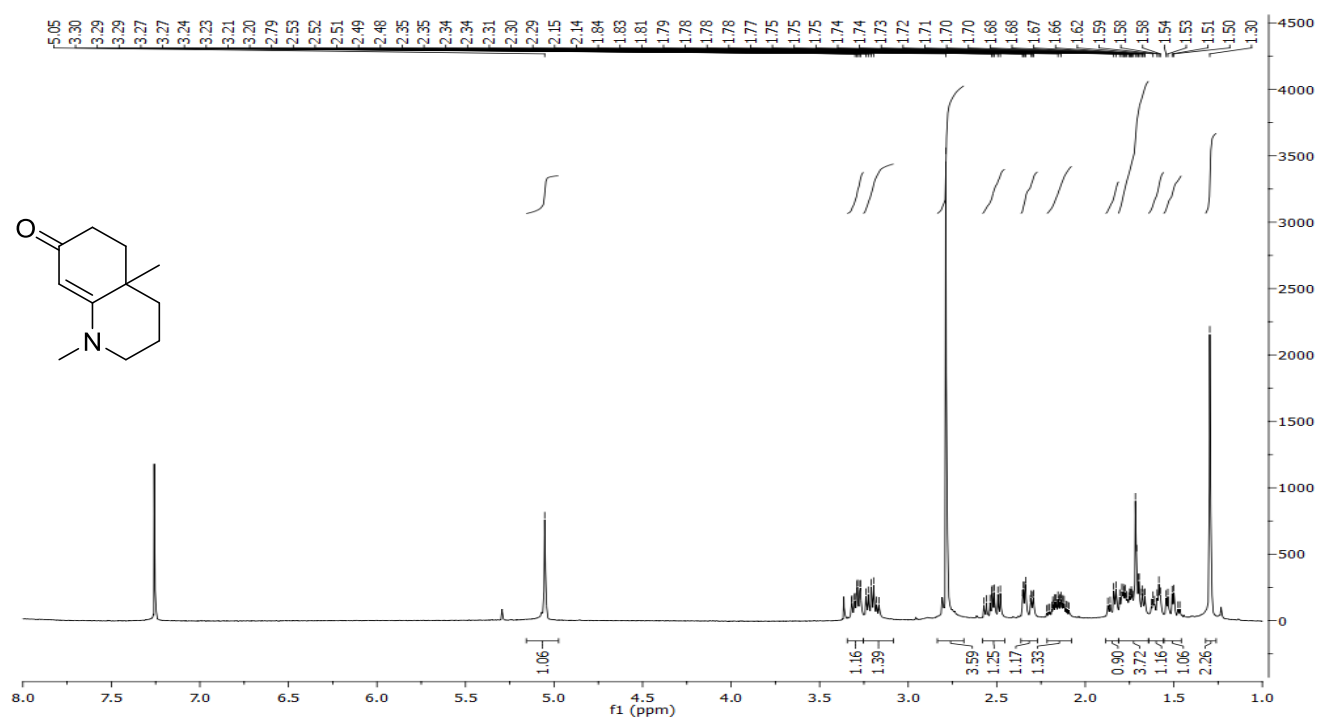


¹³C-NMR spectrum

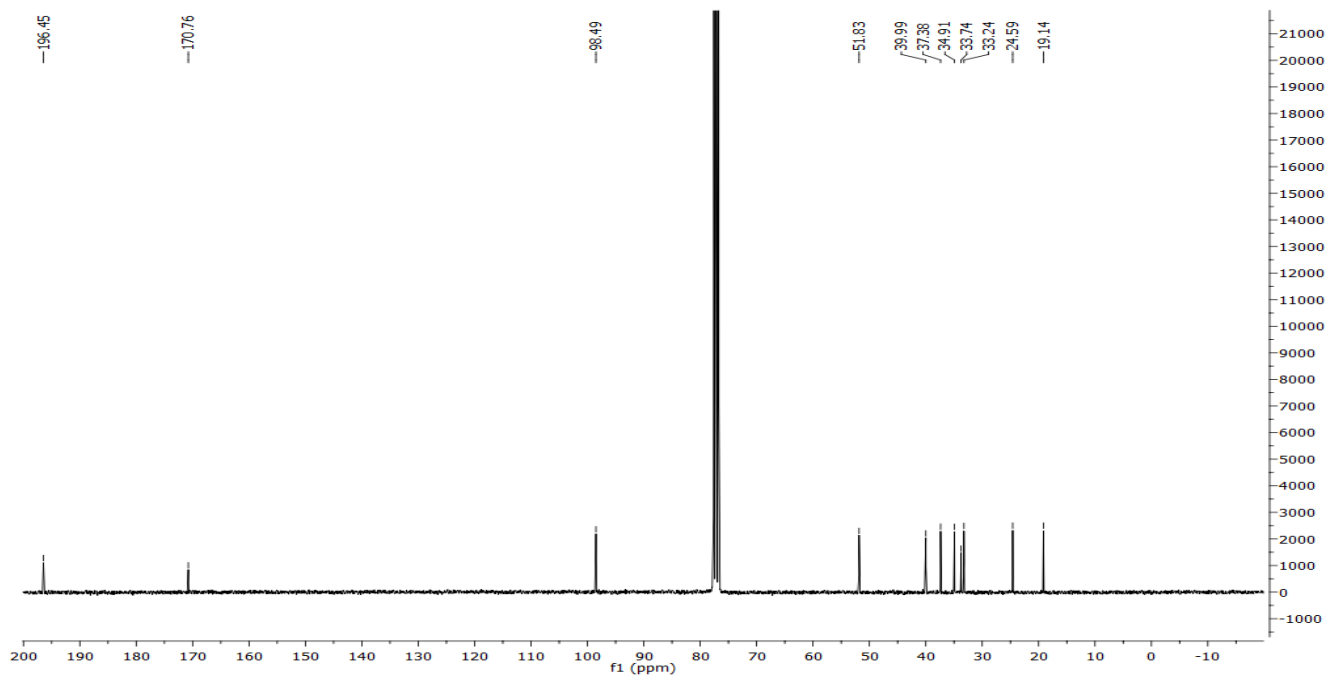


1,4a-Dimethyl-2,3,4,4a,5,6-hexahydroquinolin-7(1H)-one (2-94)

¹H-NMR spectrum

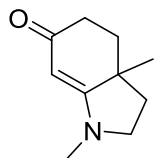
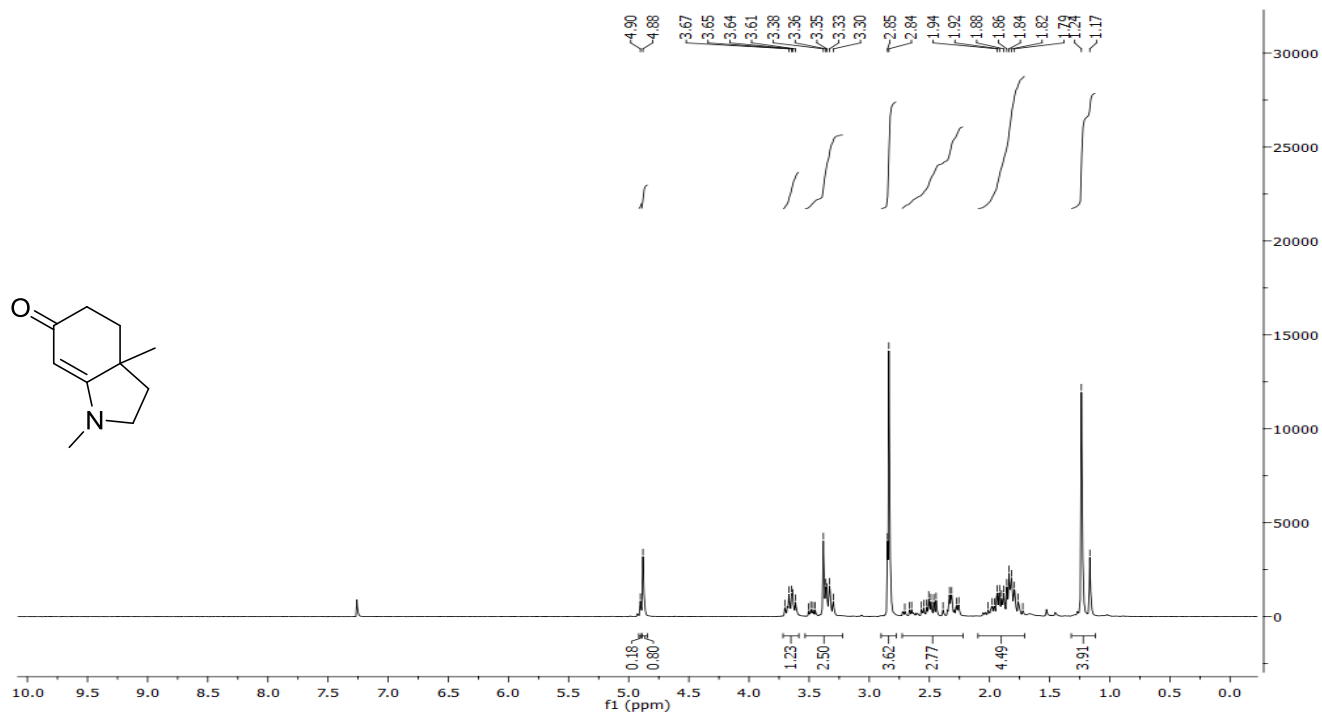


¹³C-NMR spectrum

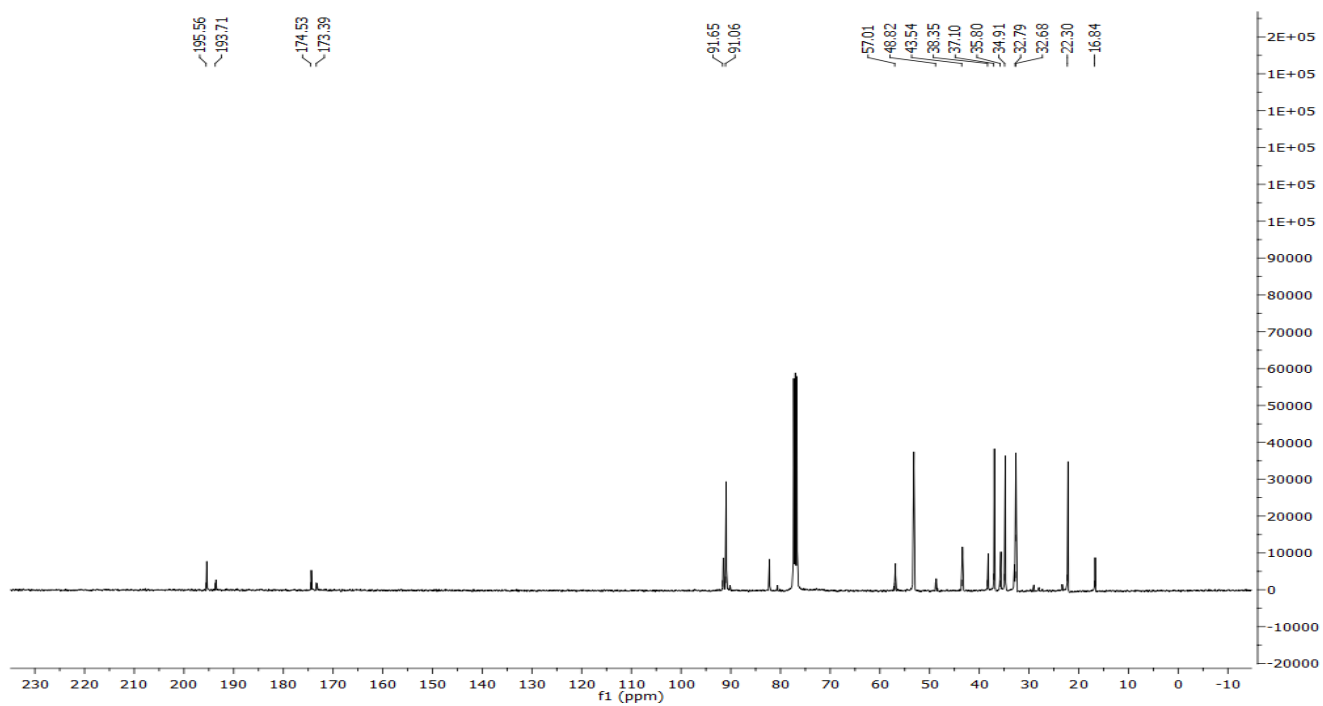


1,3a-Dimethyl-1,2,3,3a,4,5-hexahydro-6H-indol-6-one (3-57)

¹H-NMR spectrum

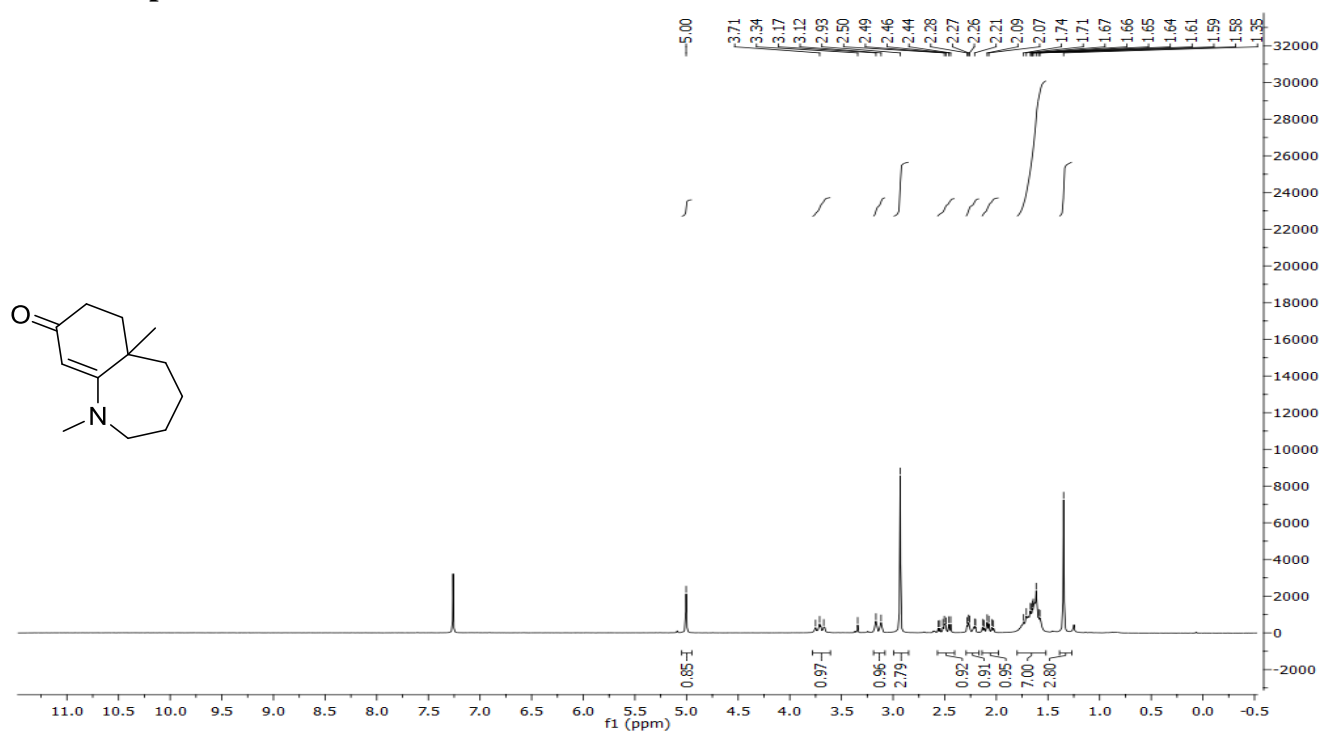


¹³C-NMR spectrum

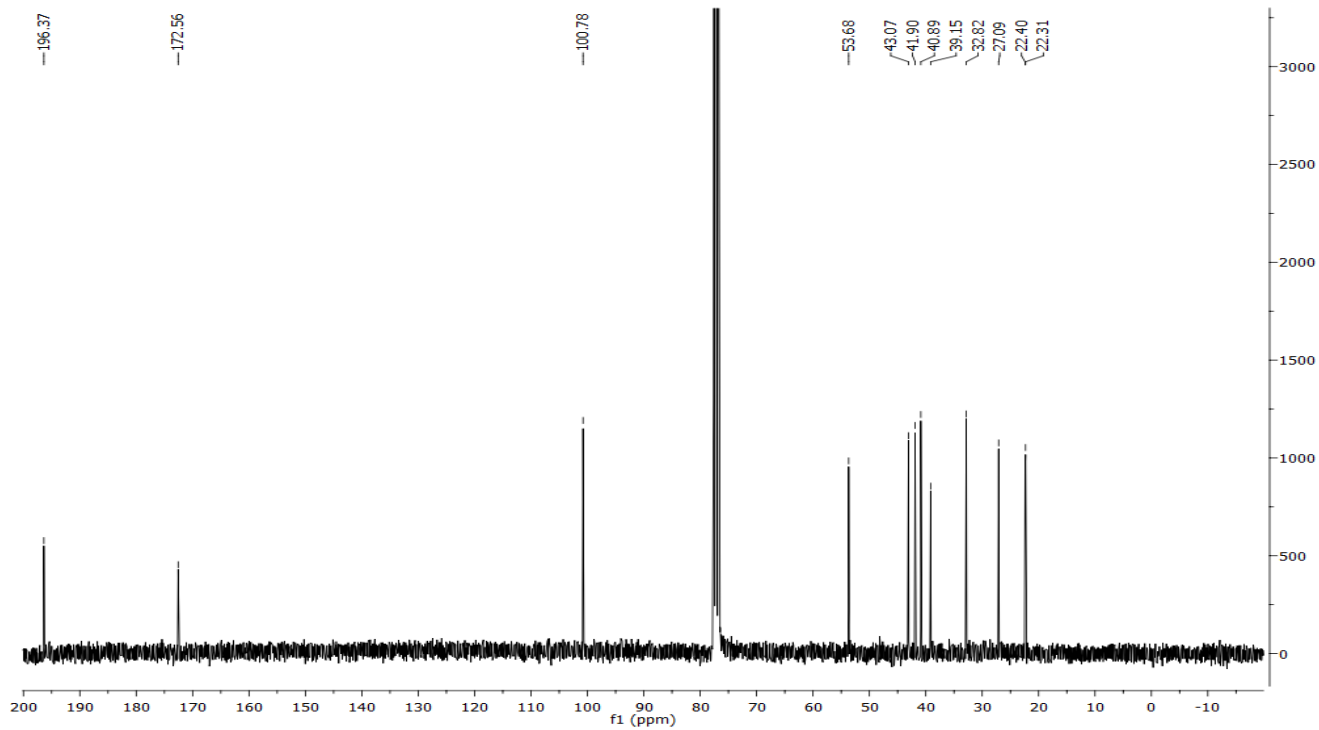


1,5a-Dimethyl-3,4,5,5a,6,7-hexahydro-1H-benzo[b]azepin-8(2H)-one (3-58)

¹H-NMR spectrum

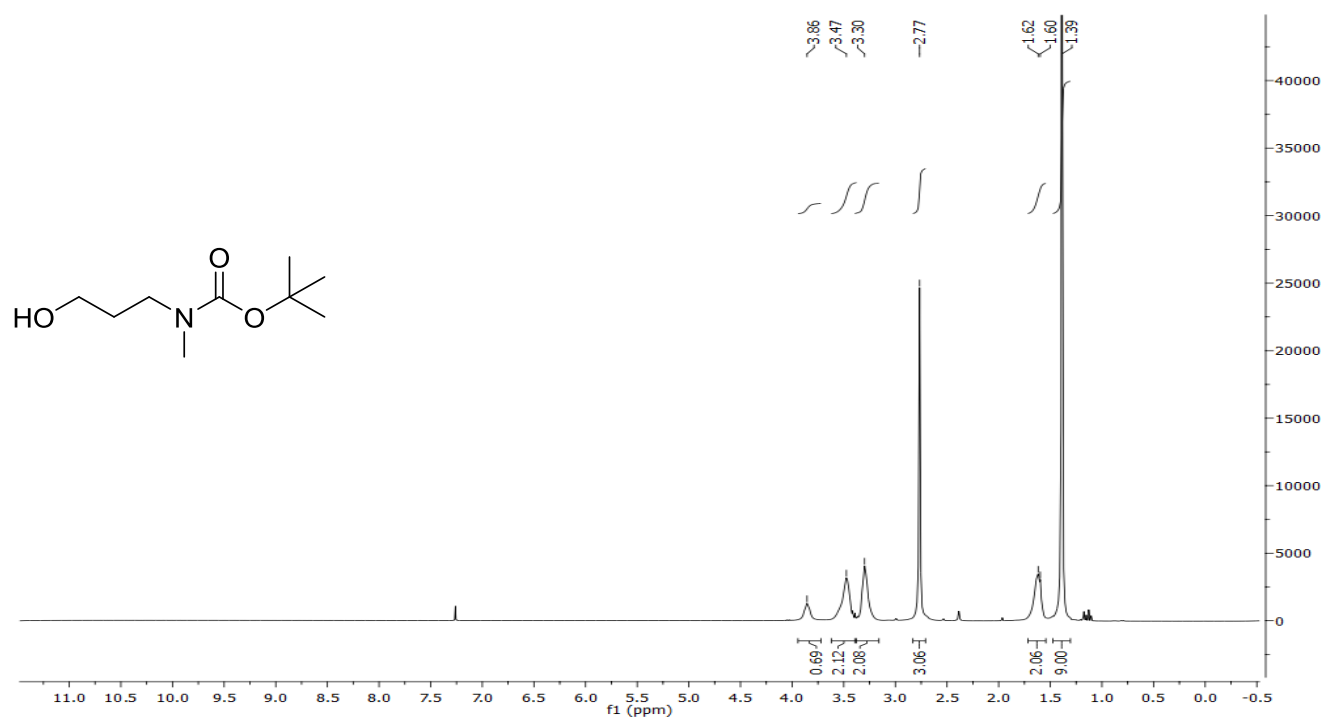


¹³C-NMR spectrum

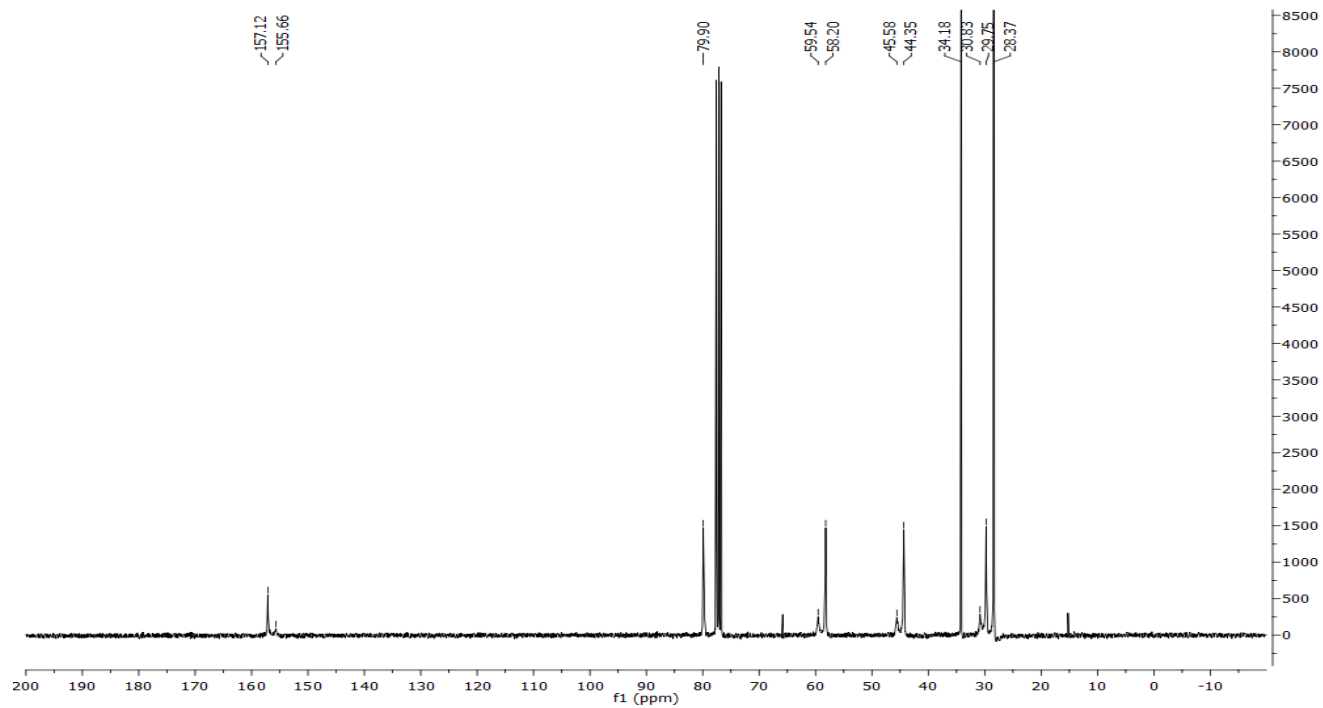


***tert*-Butyl *N*-(3-hydroxypropyl)-*N*-methylcarbamate (3-63)**

¹H-NMR spectrum

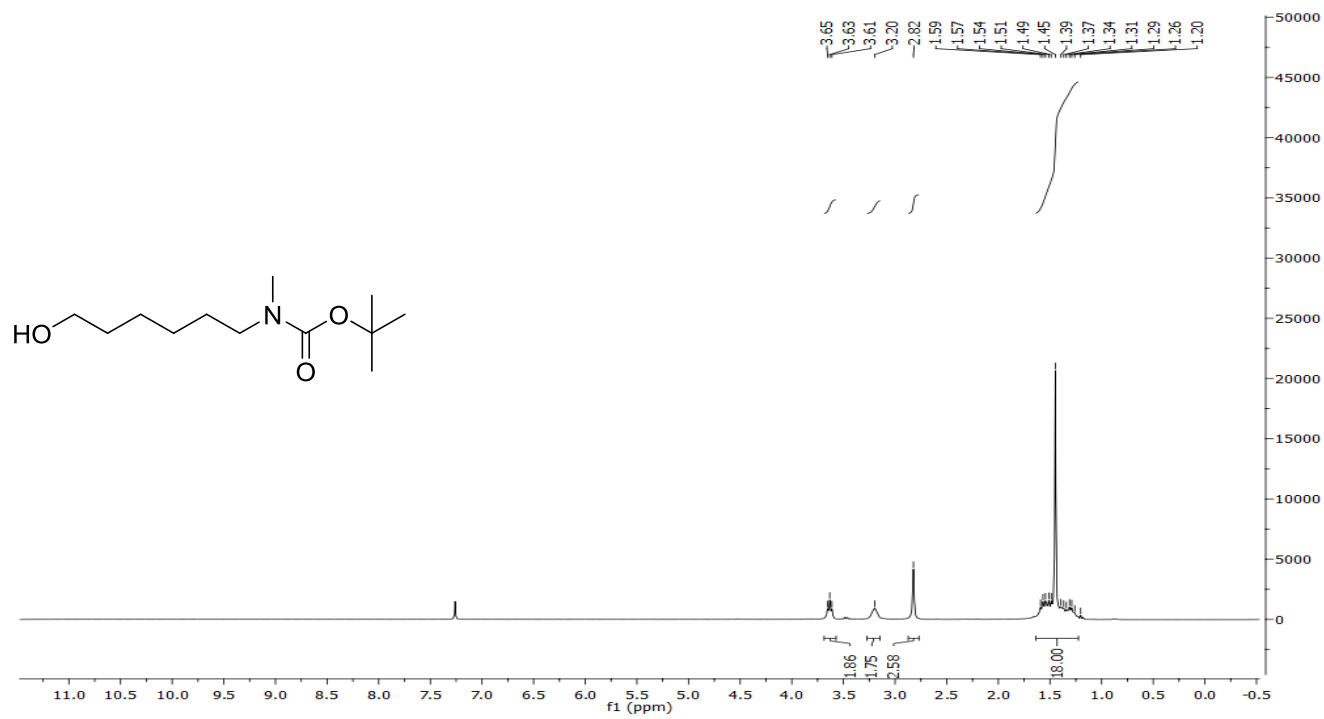


¹³C-NMR spectrum

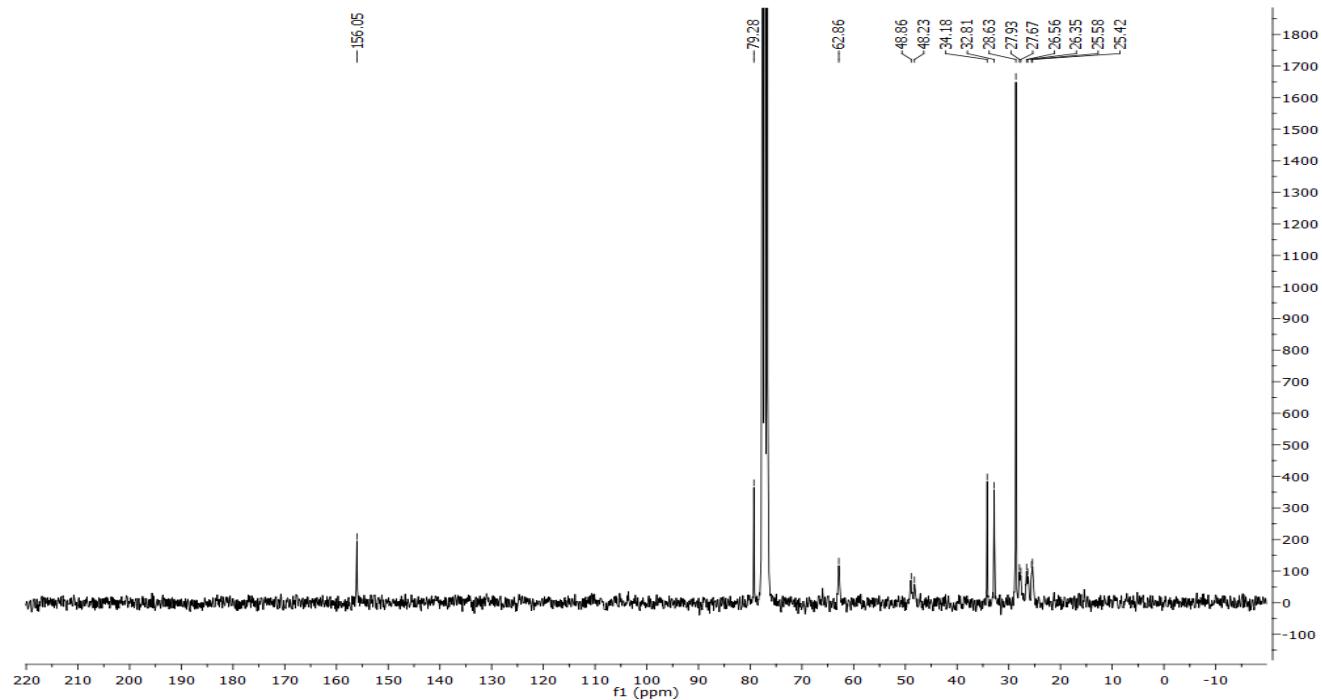


***tert*-Butyl *N*-(6-hydroxyhexyl)-*N*-methylcarbamate (3-65)**

¹H-NMR spectrum

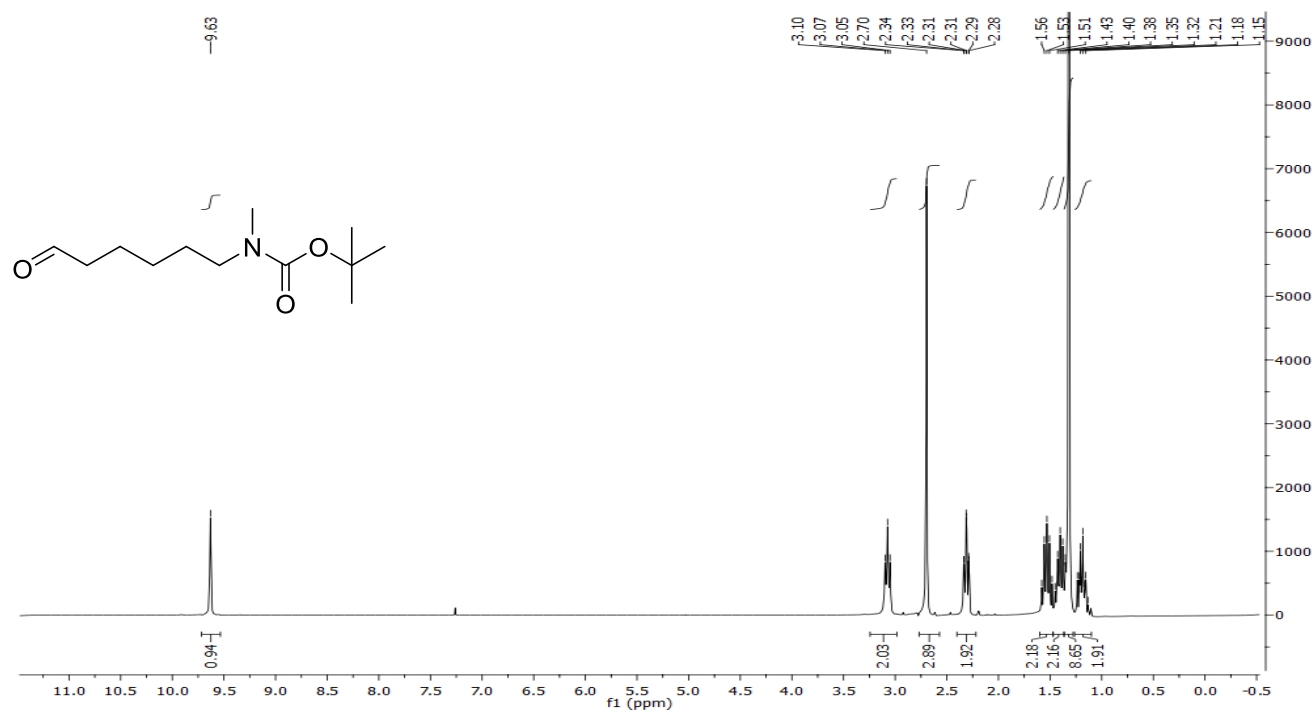


¹³C-NMR spectrum

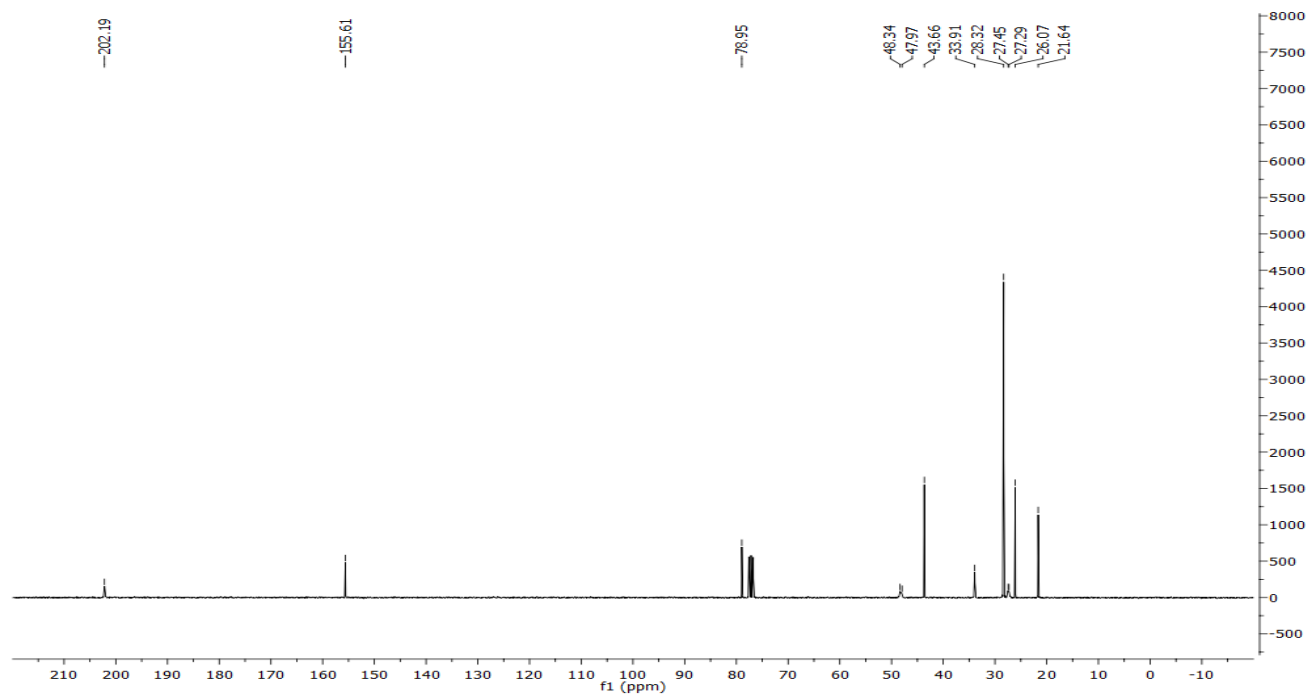


tert-Butyl N-methyl-N-(6-oxohexyl)carbamate (3-68)

¹H-NMR spectrum

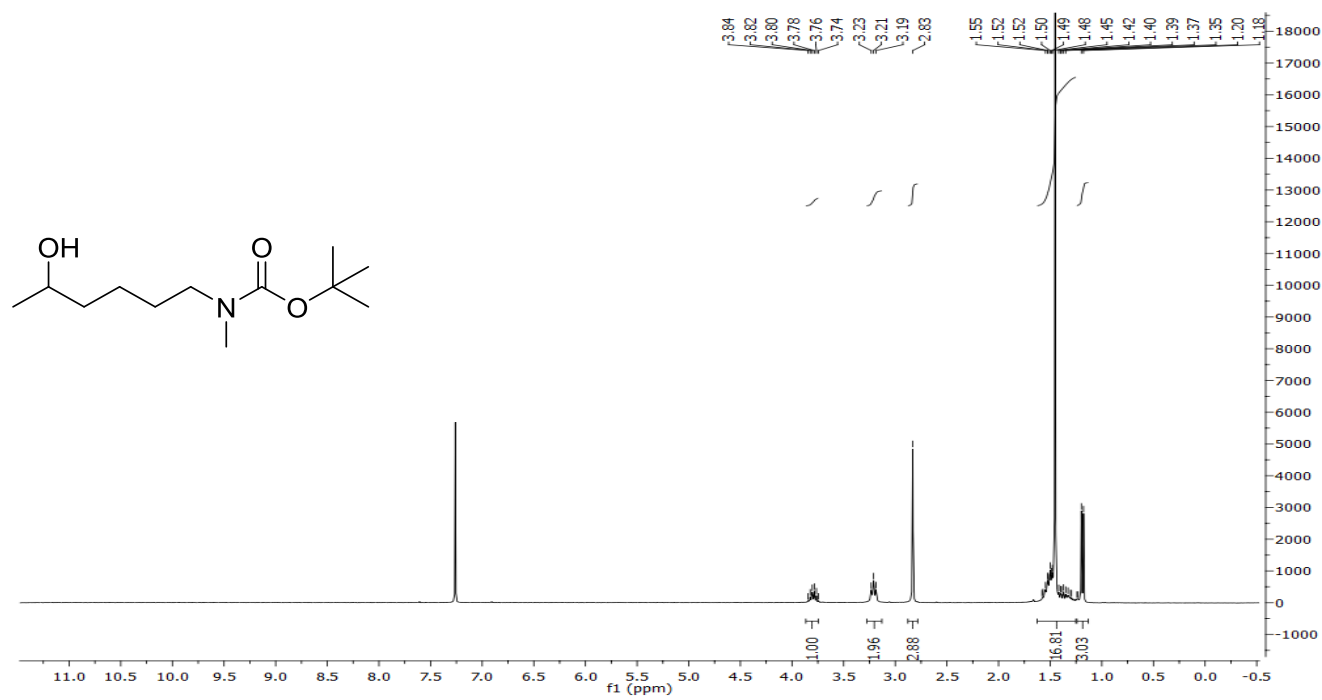


¹³C-NMR spectrum

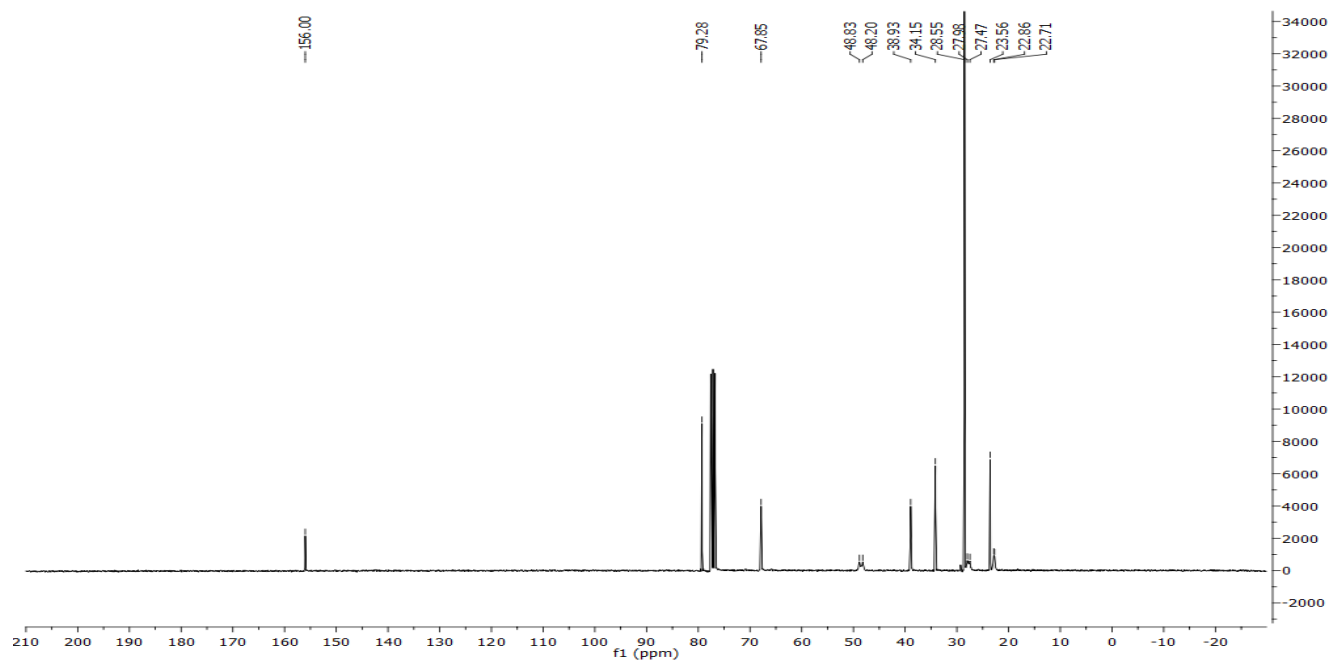


***tert*-Butyl *N*-(5-hydroxyhexyl)-*N*-methylcarbamate (3-70)**

¹H-NMR spectrum

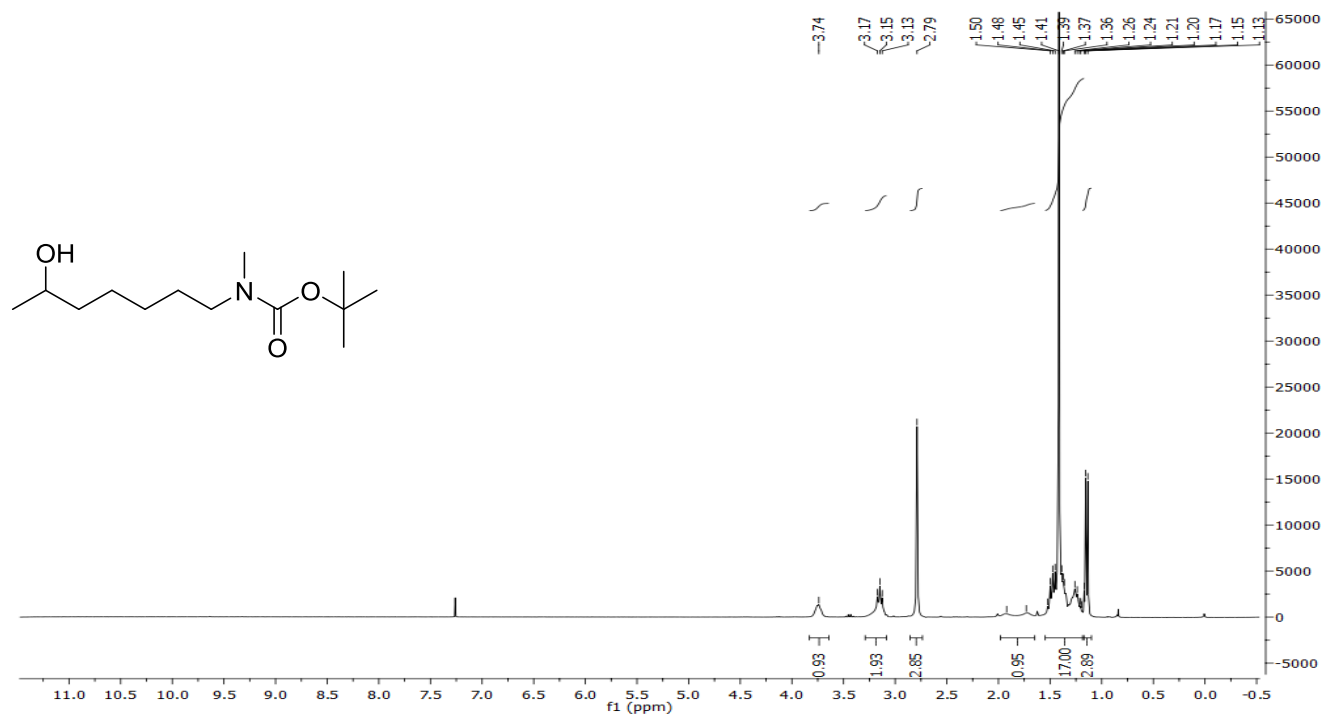


¹³C-NMR spectrum

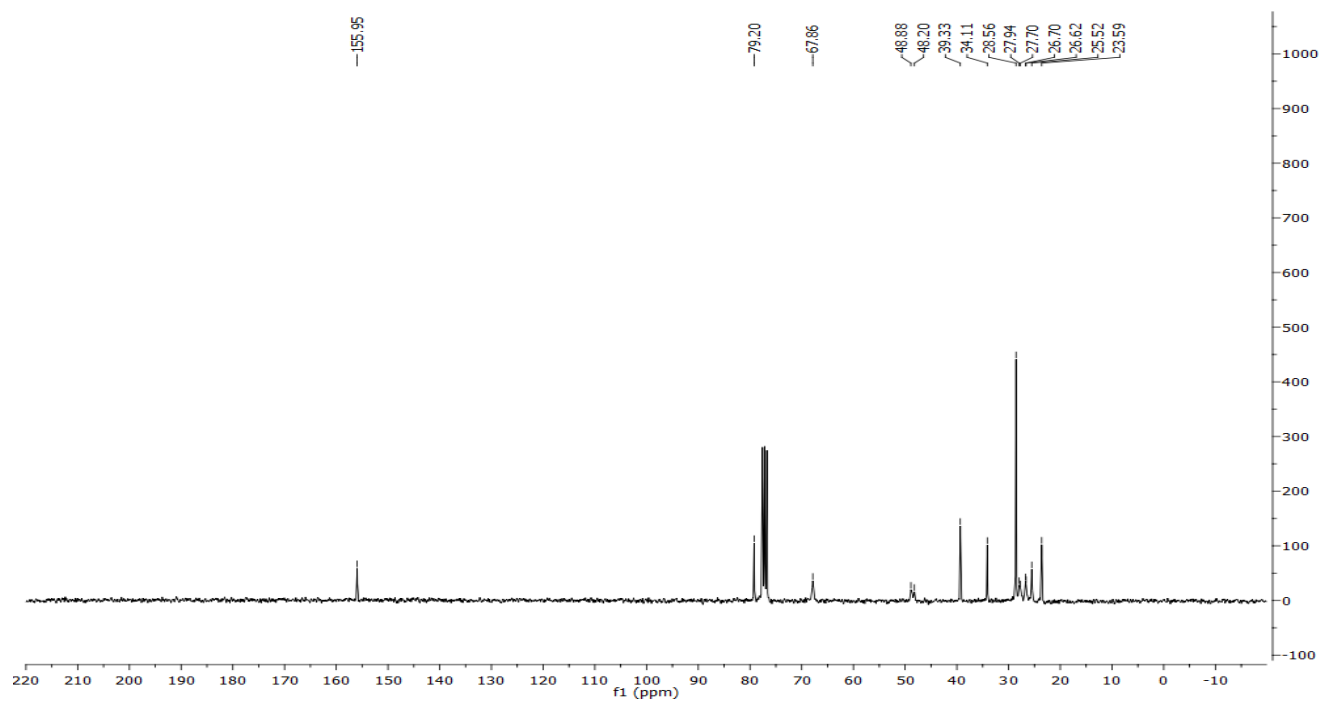


***tert*-Butyl *N*-(6-hydroxyheptyl)-*N*-methylcarbamate (3-71)**

¹H-NMR spectrum

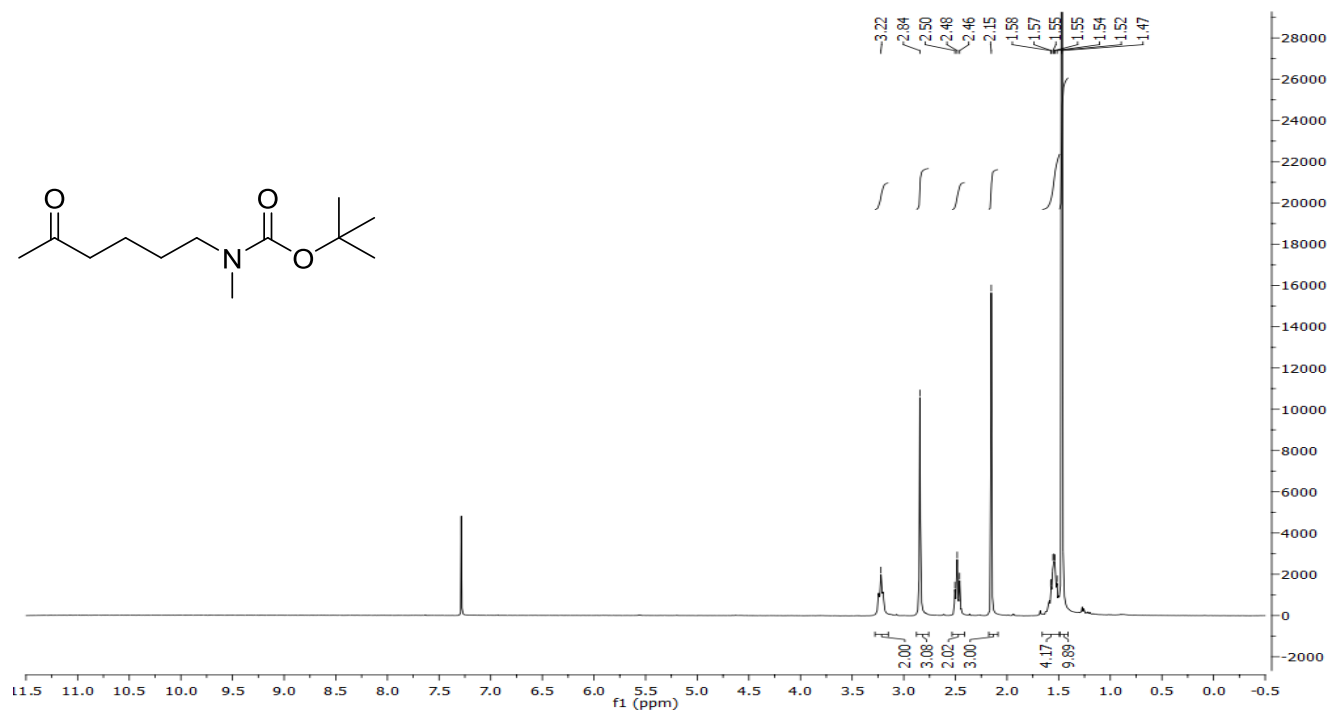


¹³C-NMR spectrum

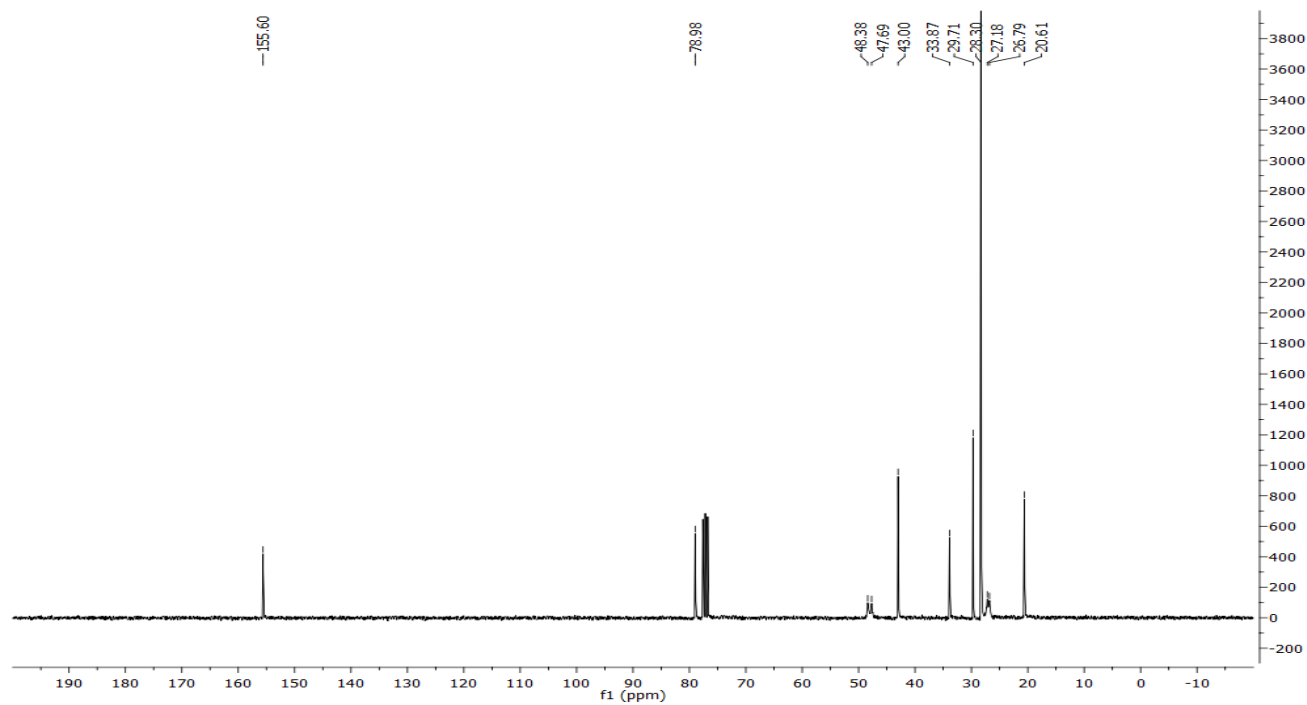


***tert*-Butyl *N*-methyl-*N*-(5-oxohexyl)carbamate (3-73)**

¹H-NMR spectrum

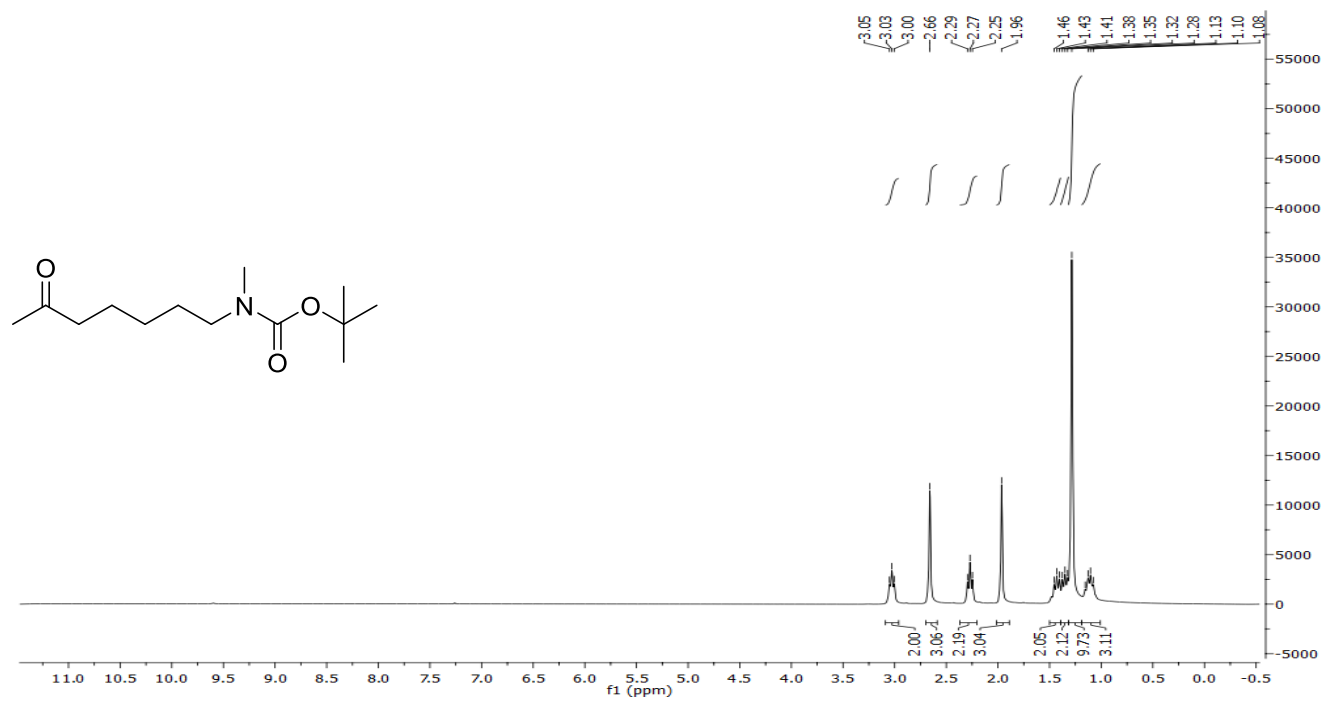


¹³C-NMR spectrum

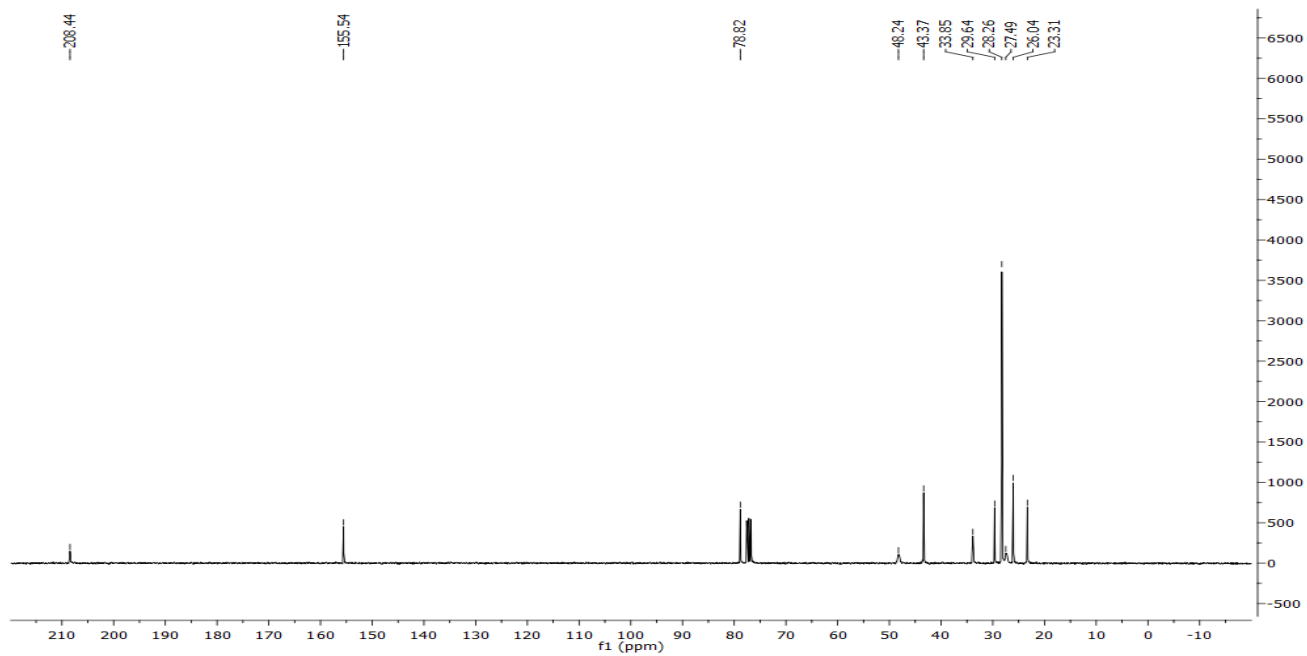


***tert*-Butyl *N*-methyl-*N*-(6-oxoheptyl)carbamate (3-74)**

¹H-NMR spectrum

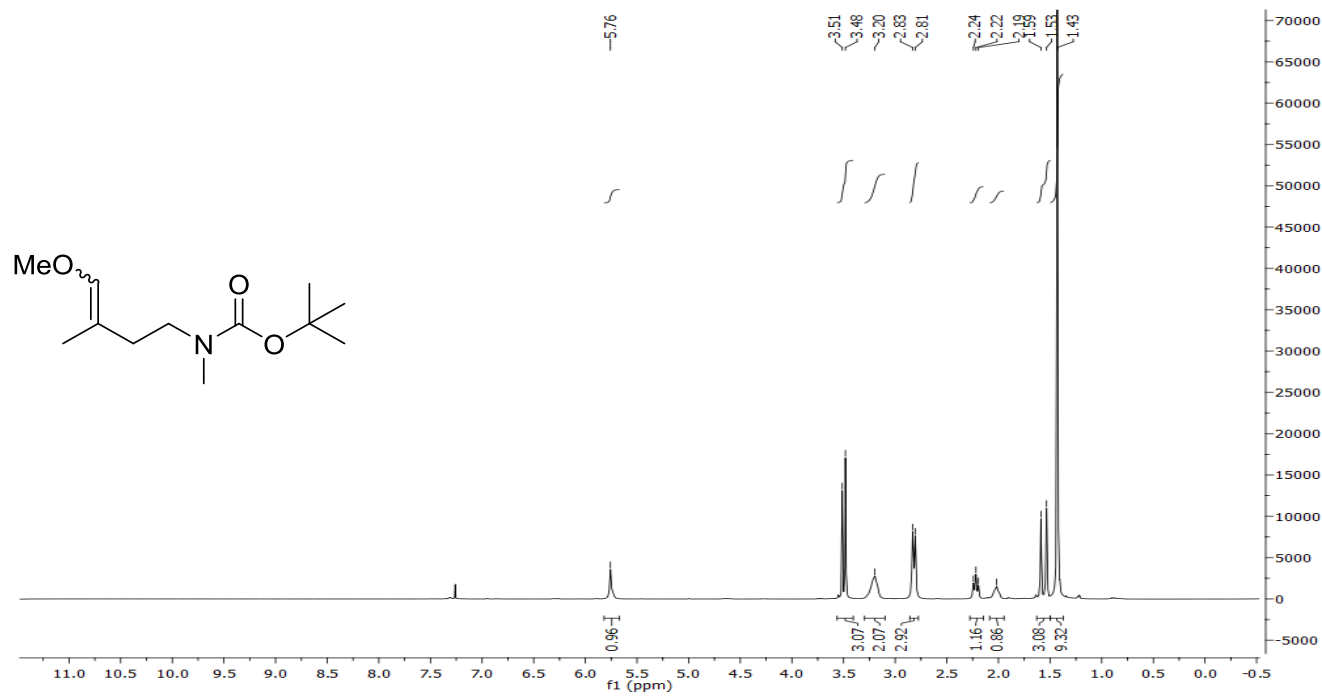


¹³C-NMR spectrum

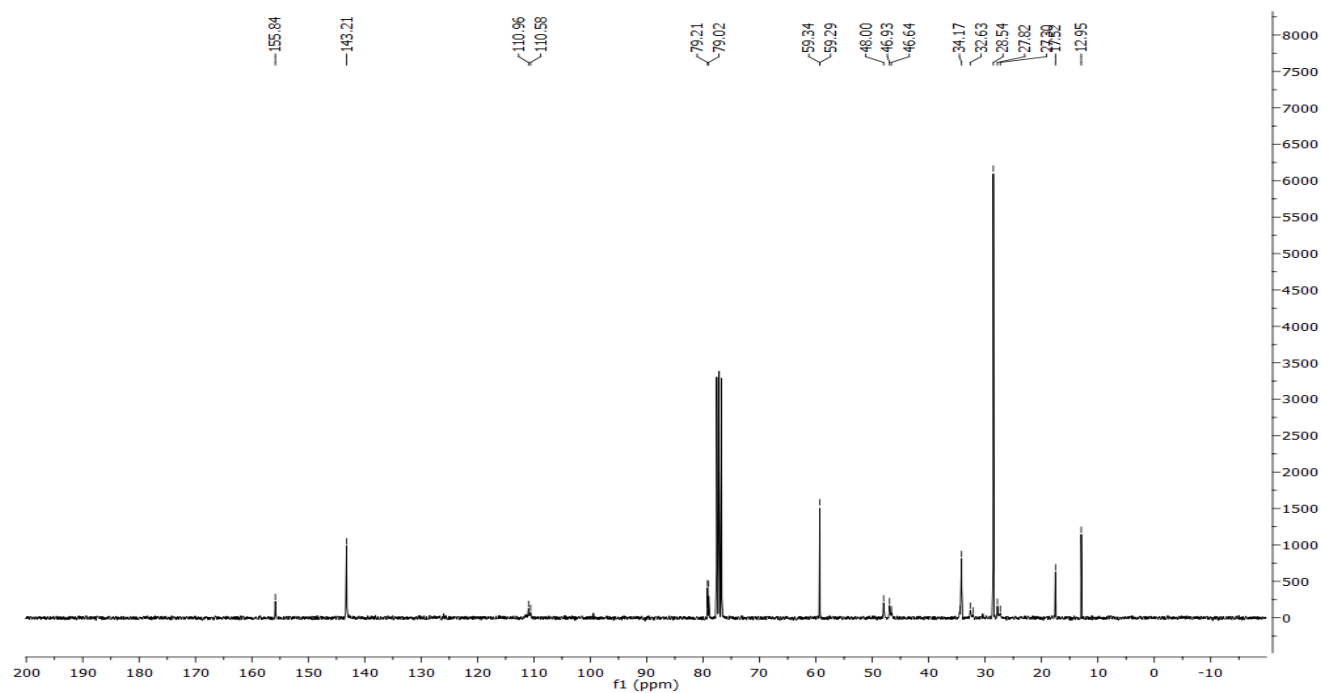


***tert*-Butyl *N*-(4-methoxy-3-methylbut-3-en-1-yl)-*N*-methylcarbamate (3-75)**

¹H-NMR spectrum

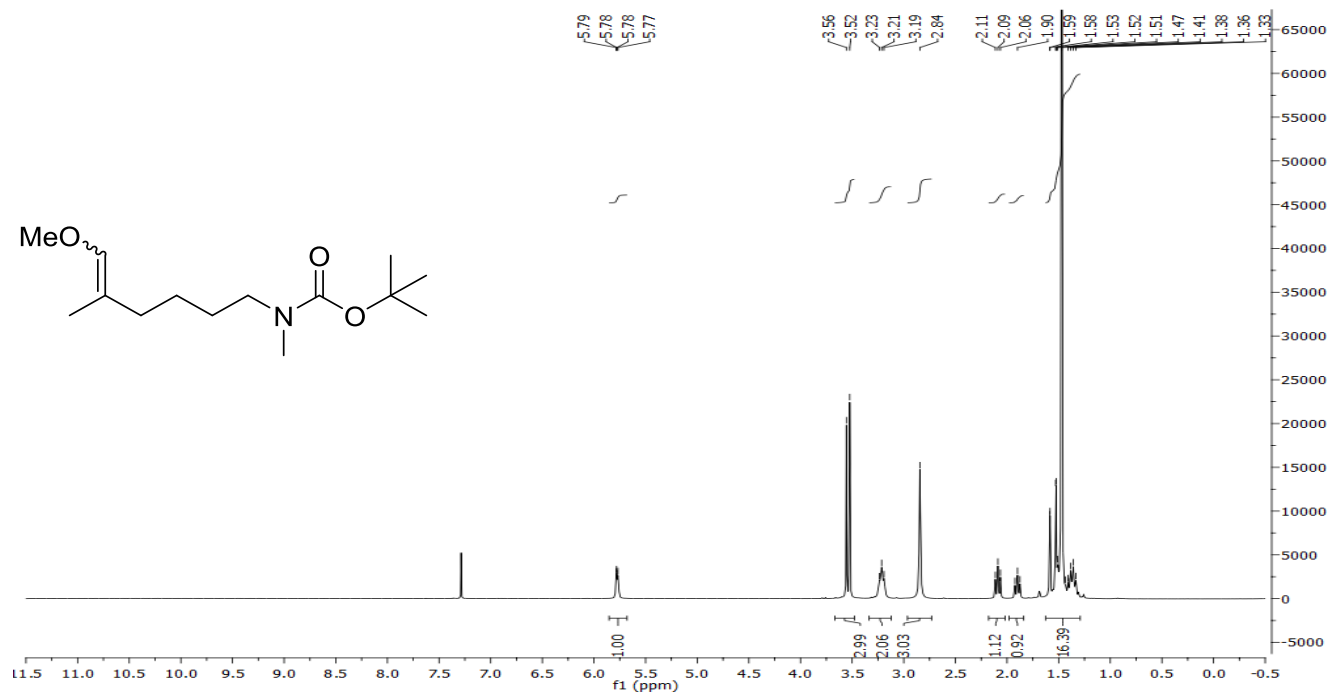


¹³C-NMR spectrum

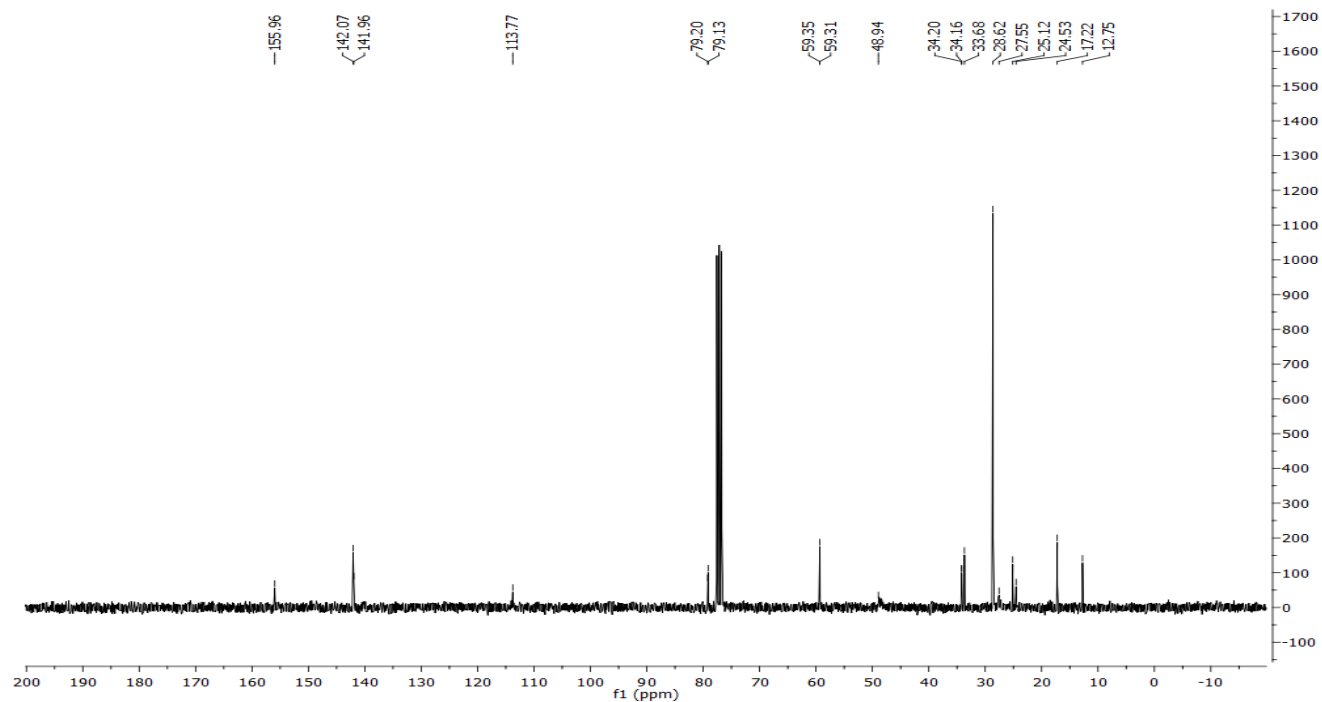


tert-Butyl *N*-(6-methoxy-5-methylhex-5-en-1-yl)-*N*-methylcarbamate (3-76)

¹H-NMR spectrum

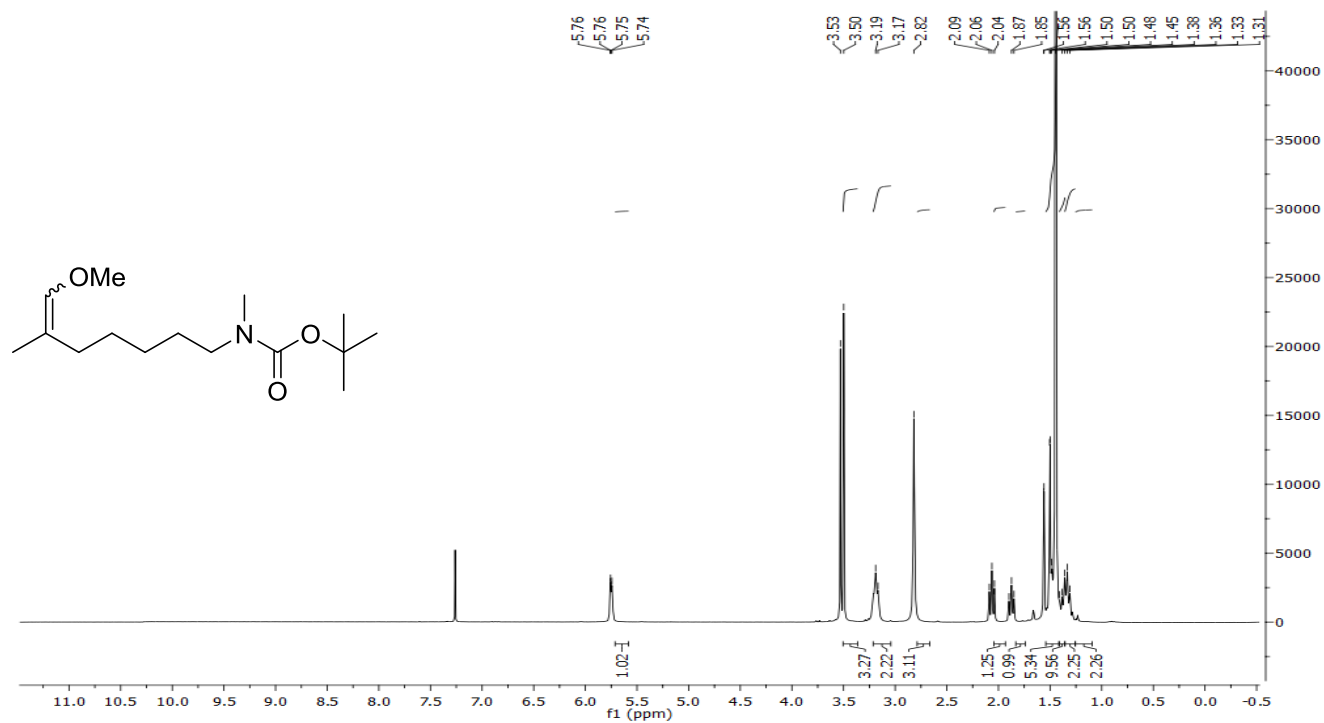


¹³C-NMR spectrum

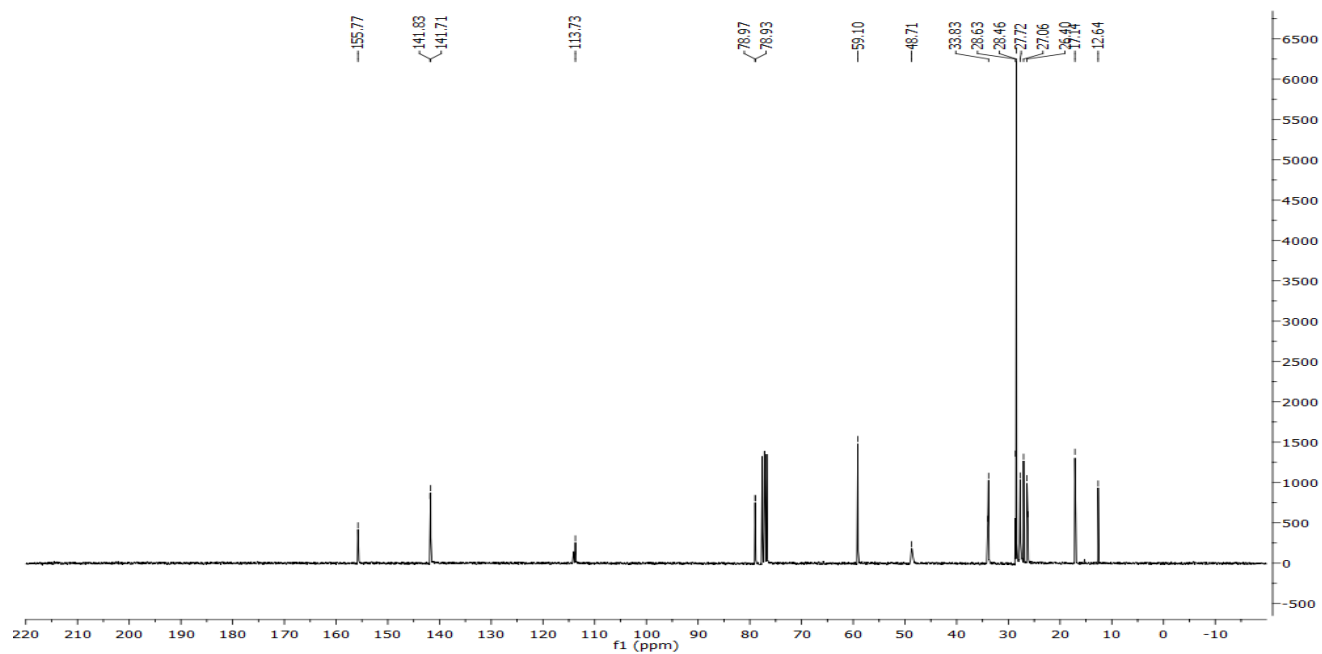


***tert*-Butyl *N*-(7-methoxy-6-methylhept-6-en-1-yl)-*N*-methylcarbamate (3-77)**

¹H-NMR spectrum

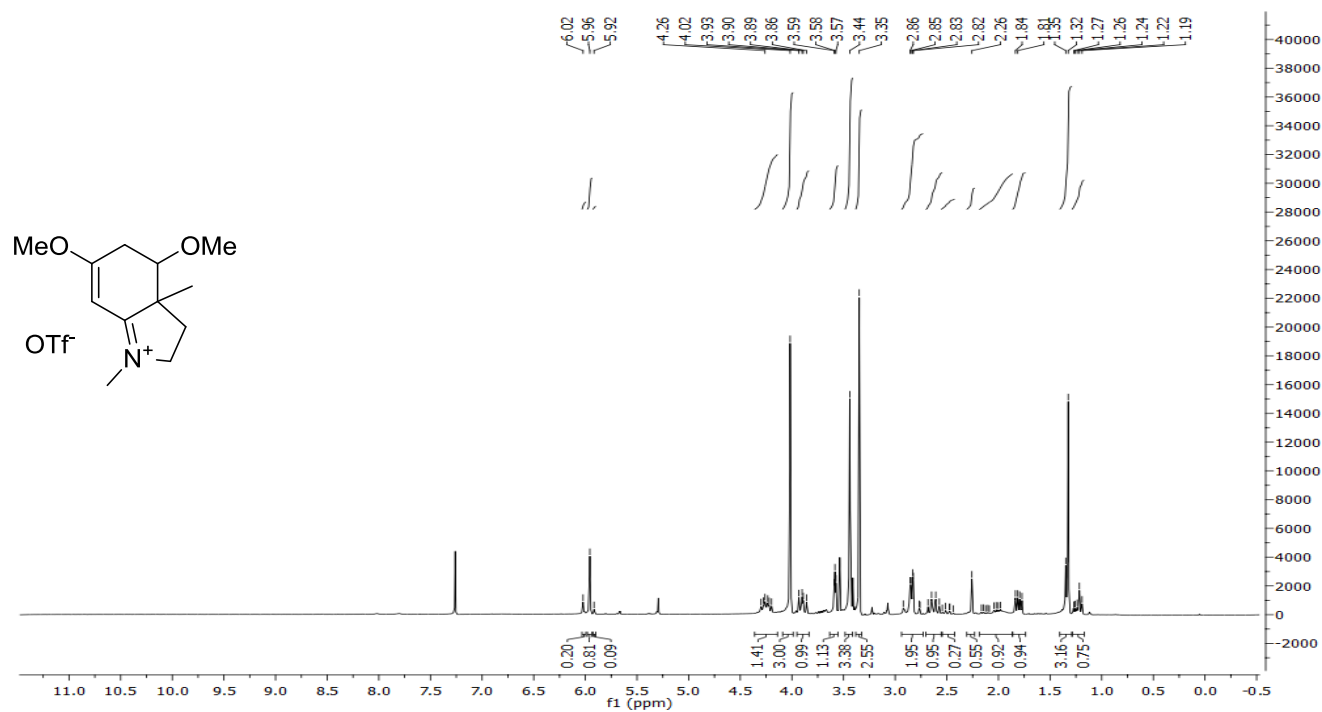


¹³C-NMR spectrum

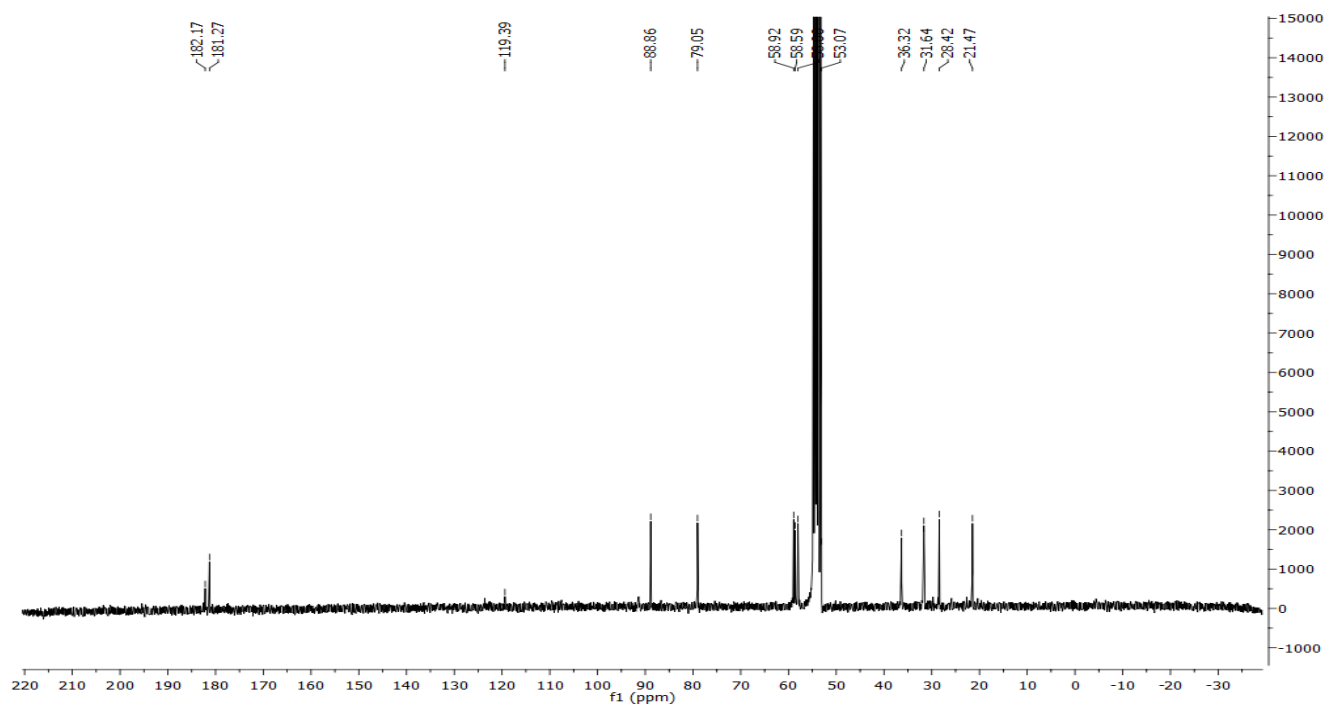


4,6-Dimethoxy-1,3a-dimethyl-3,3a,4,5-tetrahydro-2H-indol-1-ium Triflate (3-78)

¹H-NMR spectrum

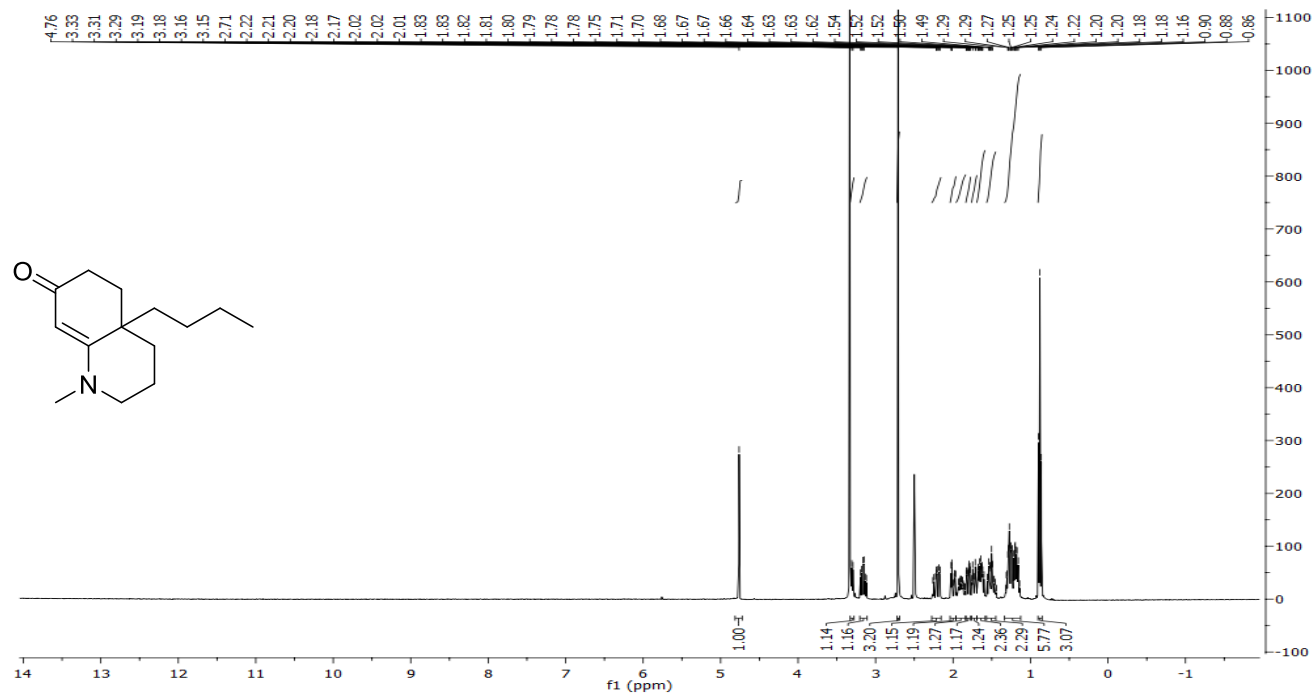


¹³C-NMR spectrum

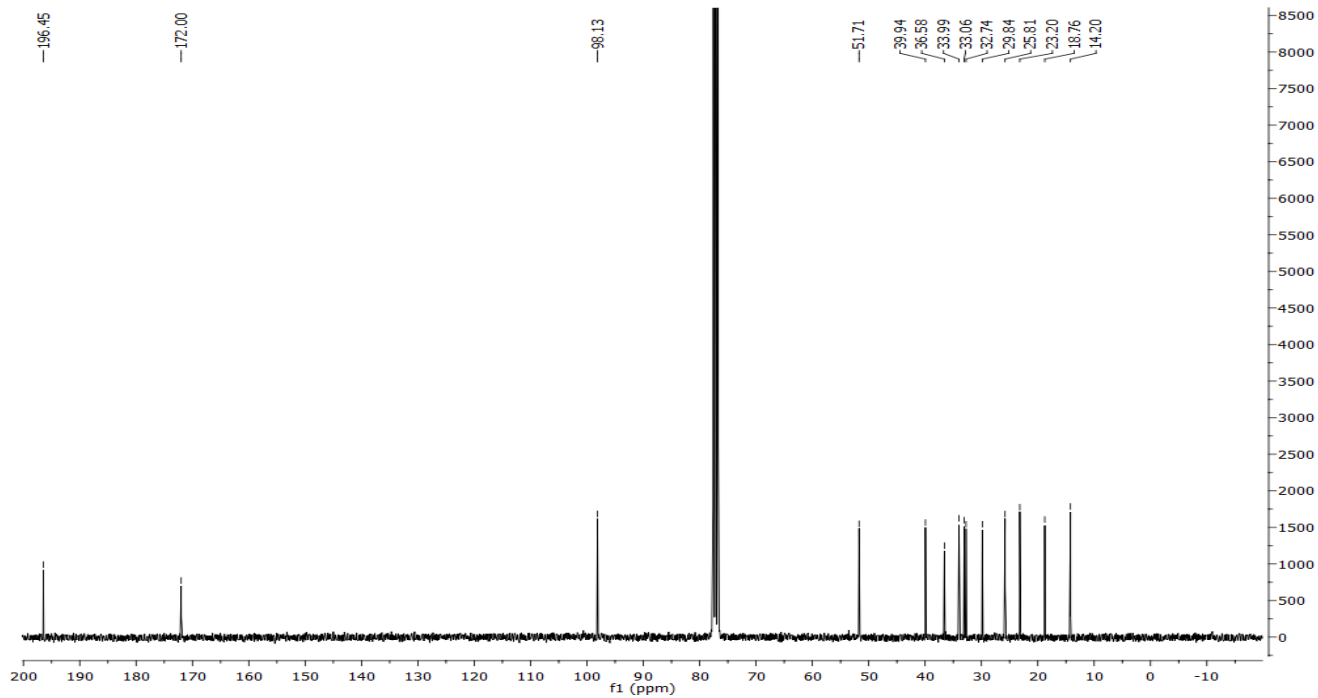


4a-Butyl-1-methyl-2,3,4,4a,5,6-hexahydroquinolin-7(1H)-one (3-83)

¹H-NMR spectrum

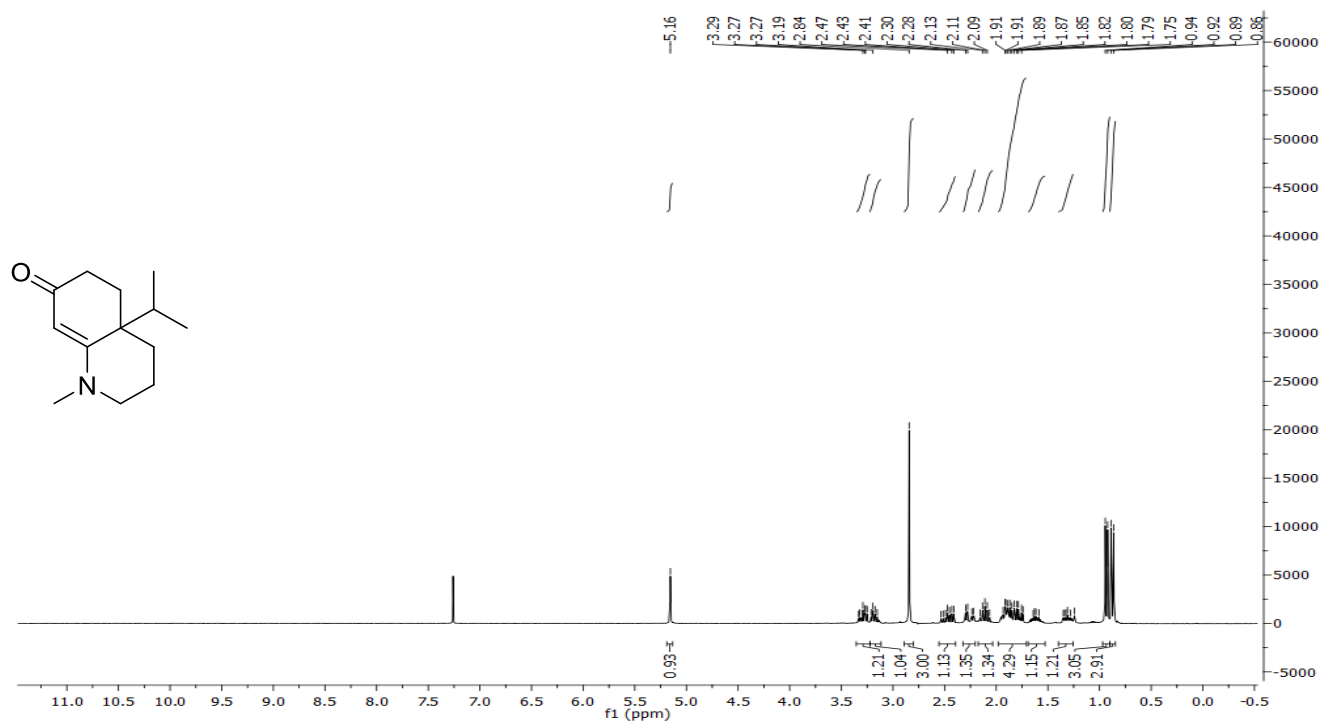


¹³C-NMR spectrum

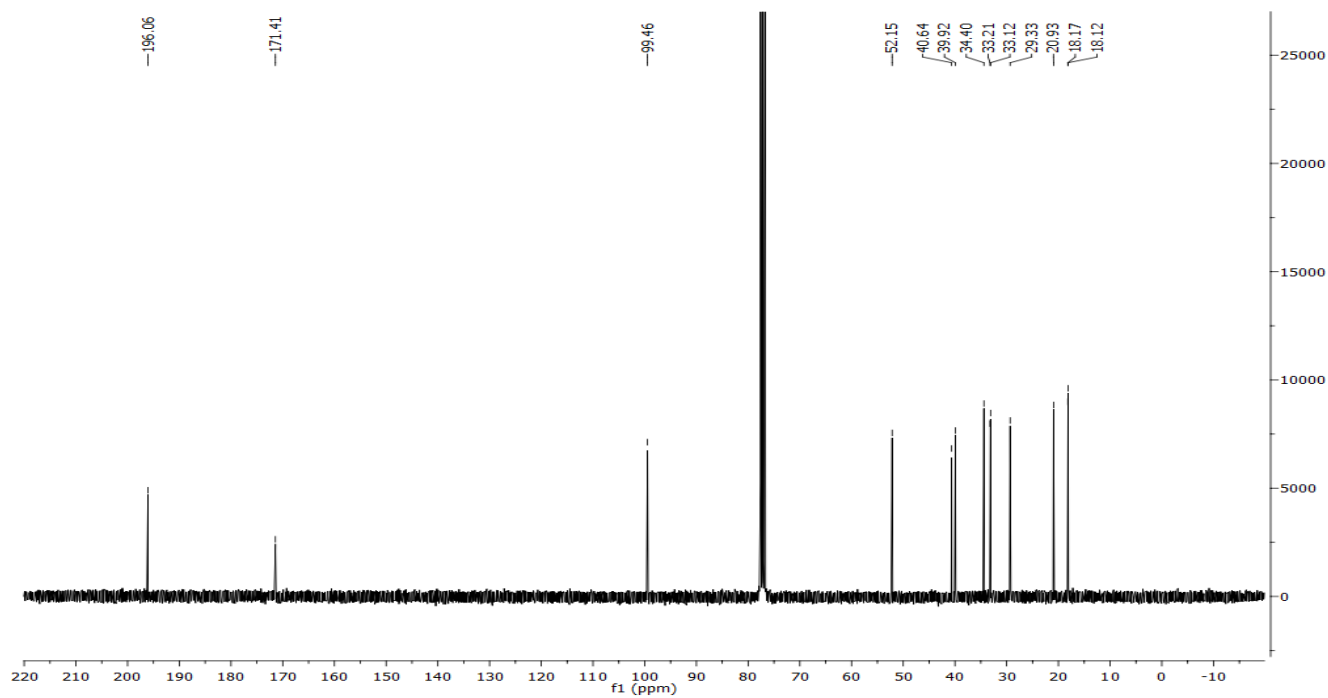


4a-Isopropyl-1-methyl-2,3,4,4a,5,6-hexahydroquinolin-7(1H)-one (3-85)

¹H-NMR spectrum

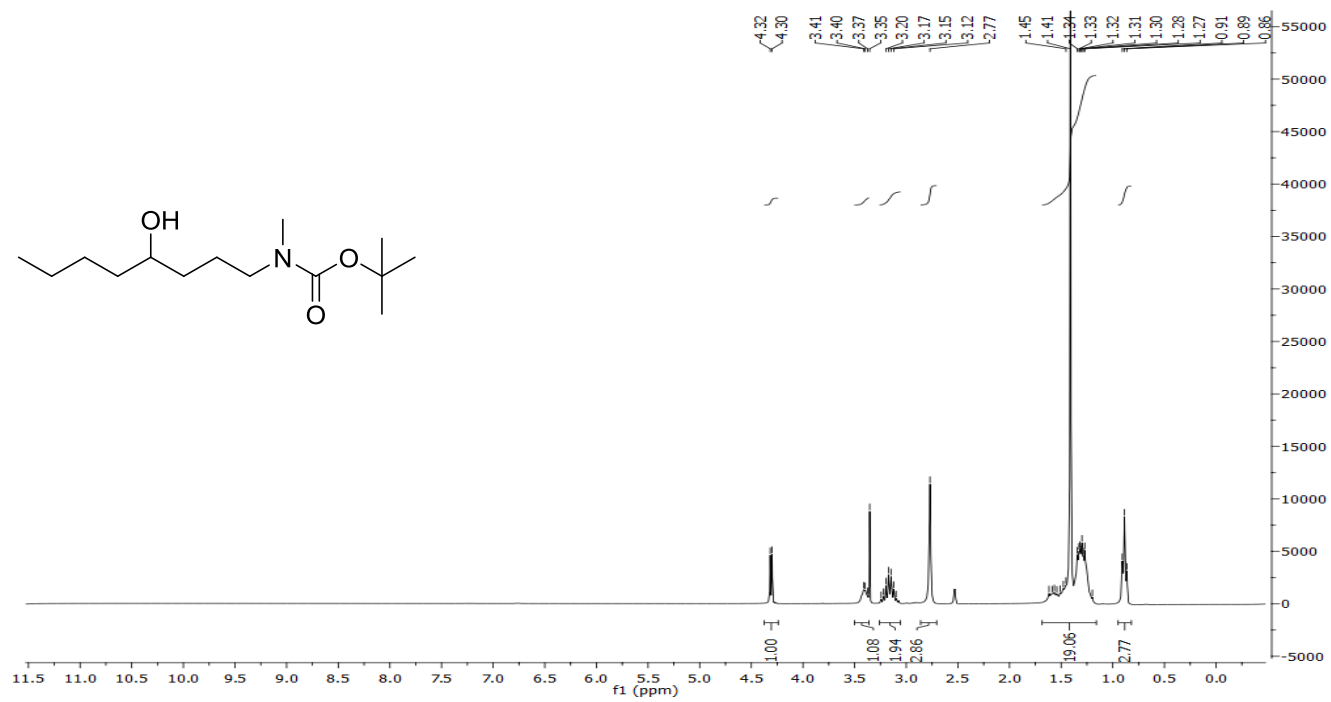


¹³C-NMR spectrum

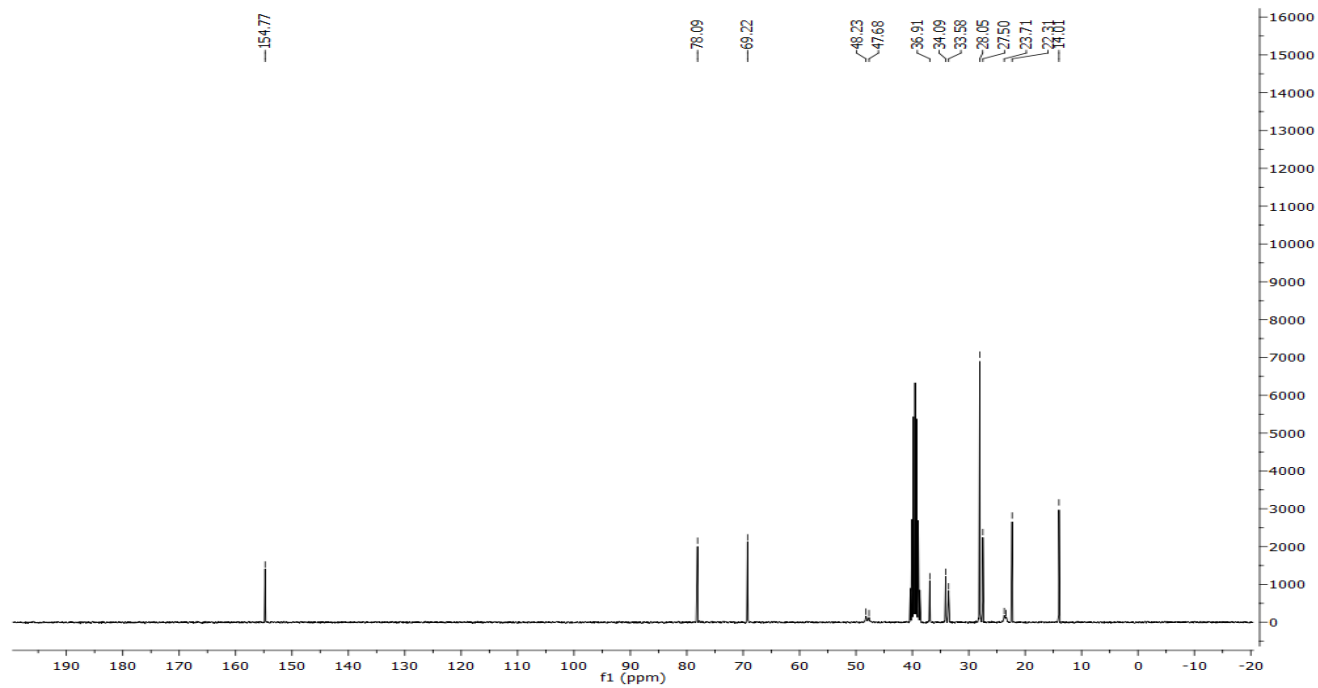


***tert*-Butyl *N*-(4-hydroxyoctyl)-*N*-methylcarbamate (3-87)**

¹H-NMR spectrum

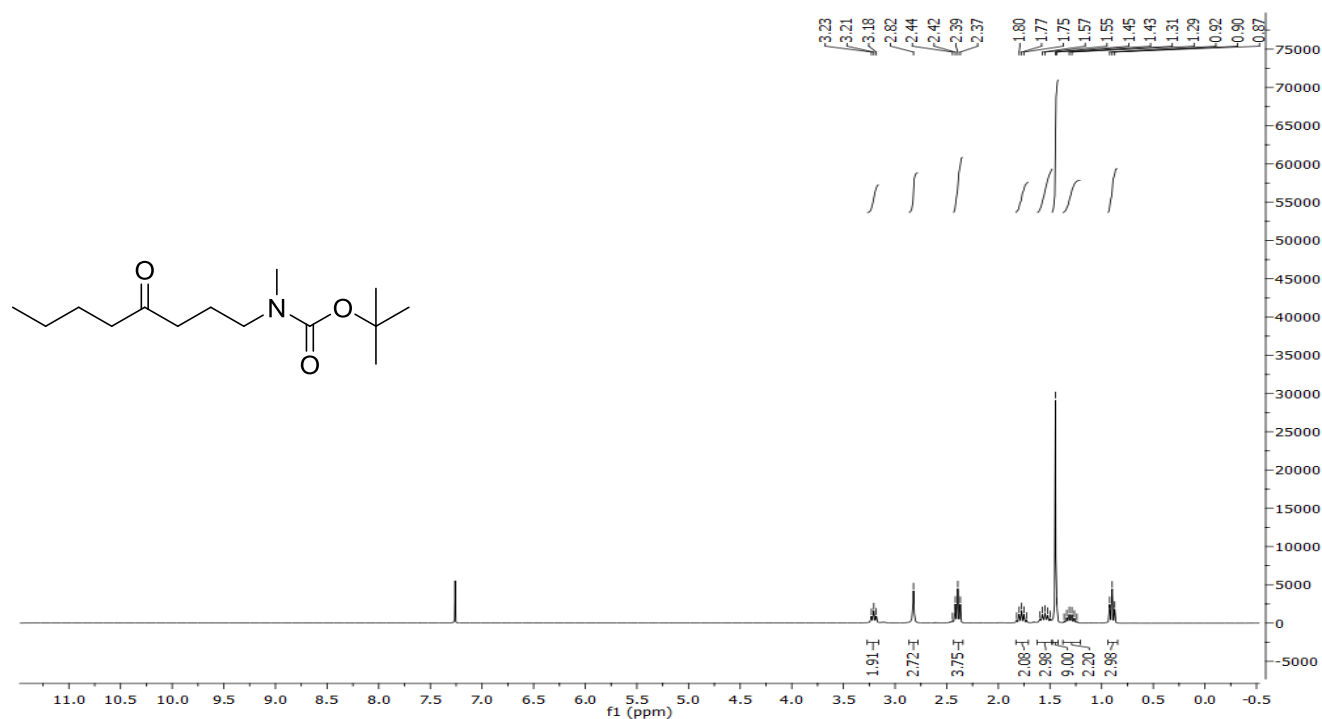


¹³C-NMR spectrum

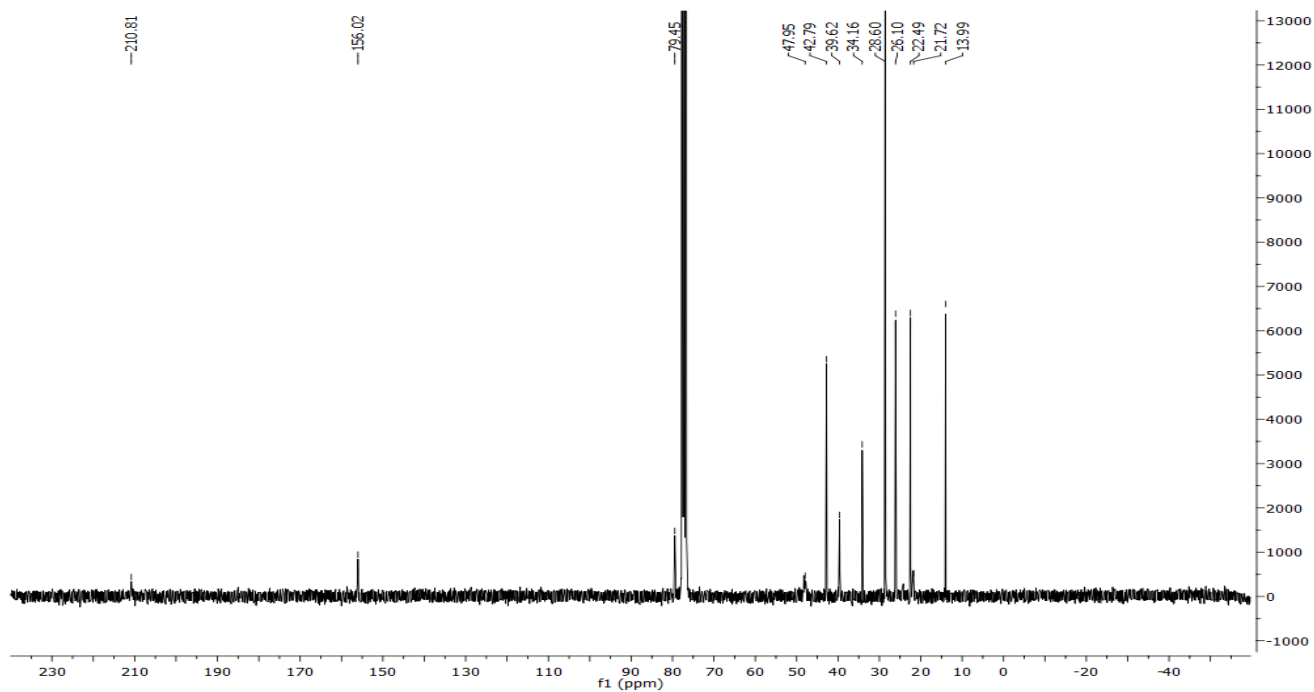


tert-Butyl N-methyl-N-(4-oxooctyl)carbamate (3-88)

¹H-NMR spectrum

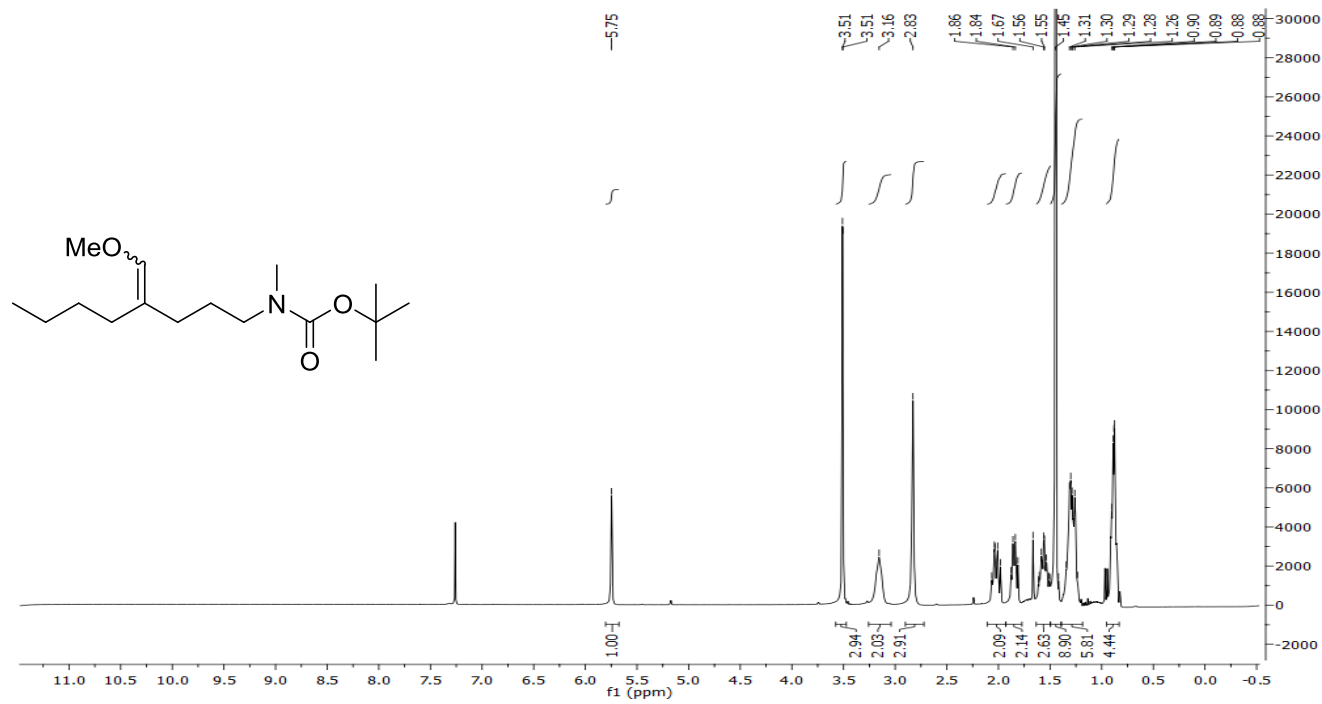


¹³C-NMR spectrum

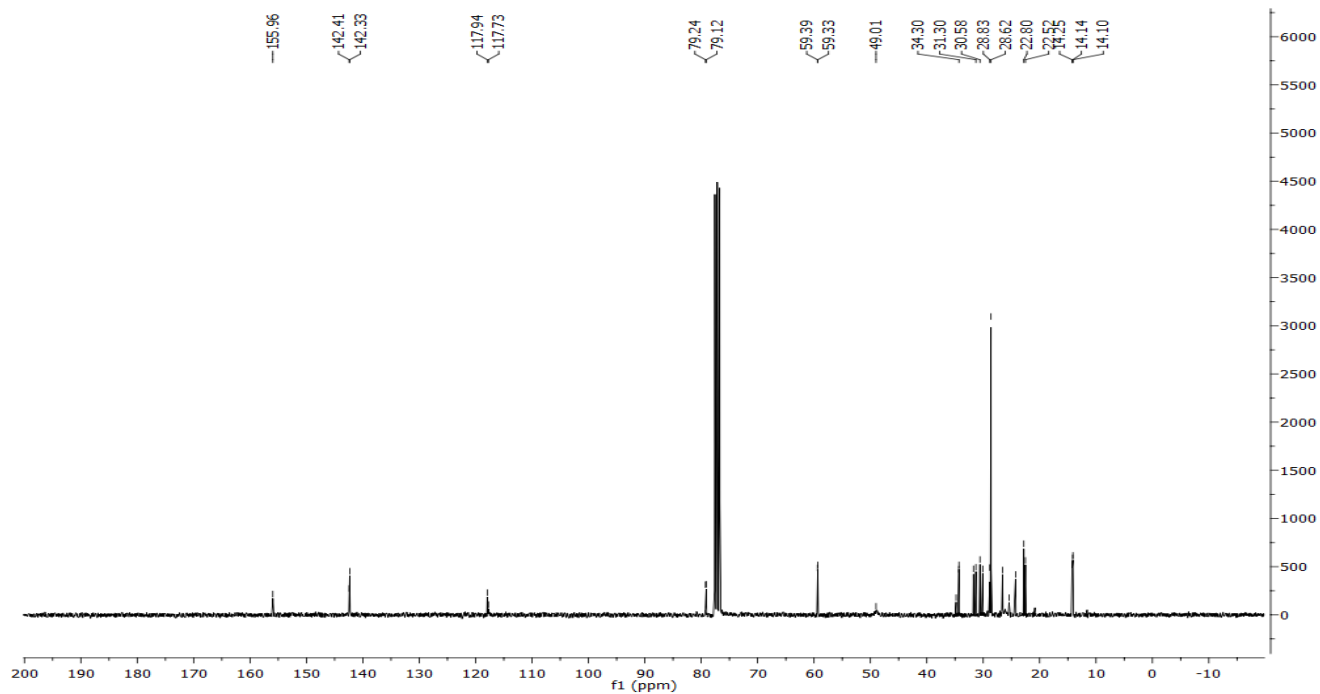


***tert*-Butyl *N*-(4-(methoxymethylene)octyl)-*N*-methylcarbamate (3-89)**

¹H-NMR spectrum

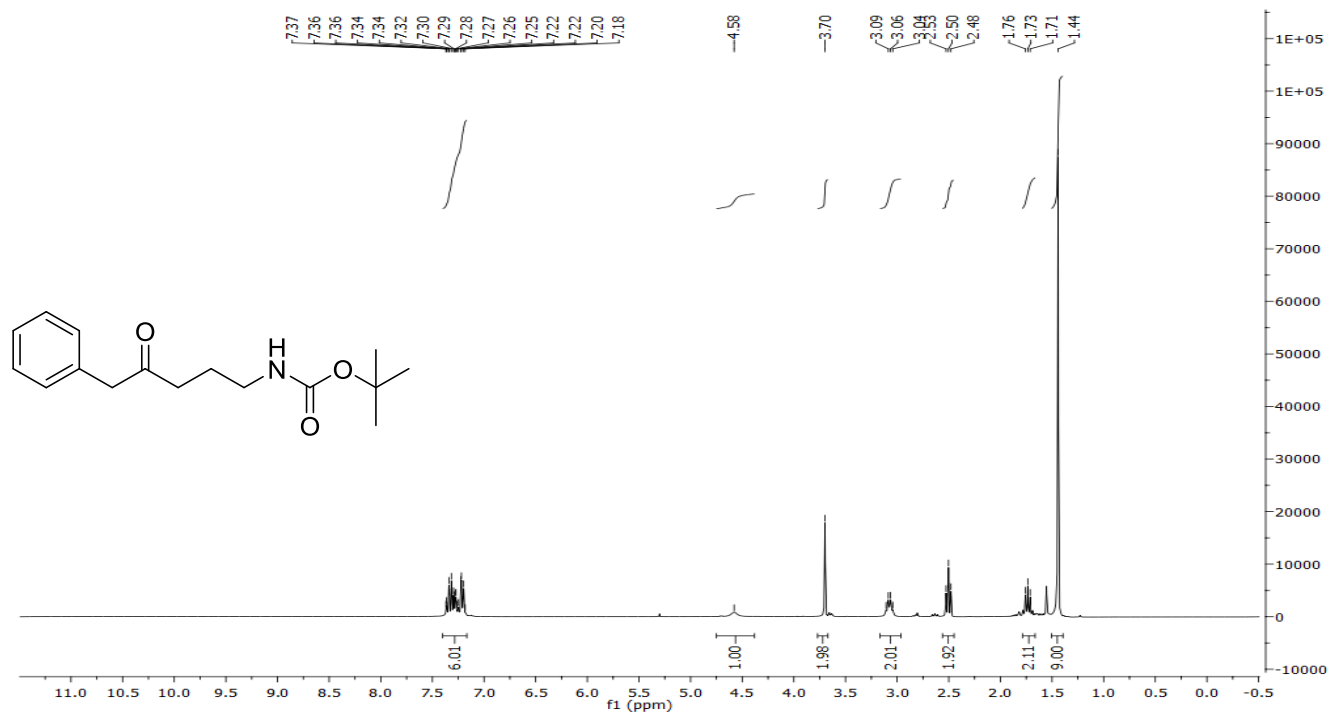


¹³C-NMR spectrum

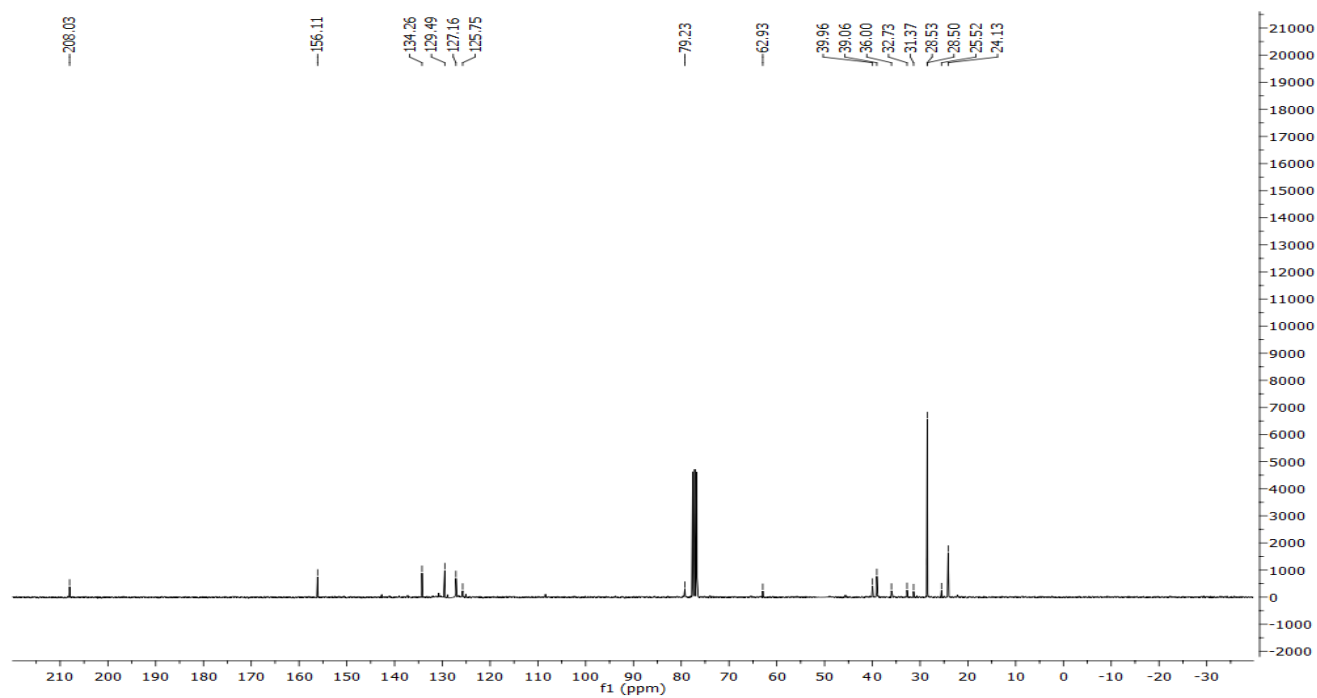


***tert*-Butyl *N*-(4-oxo-5-phenylpentyl)carbamate (3-90)**

¹H-NMR spectrum

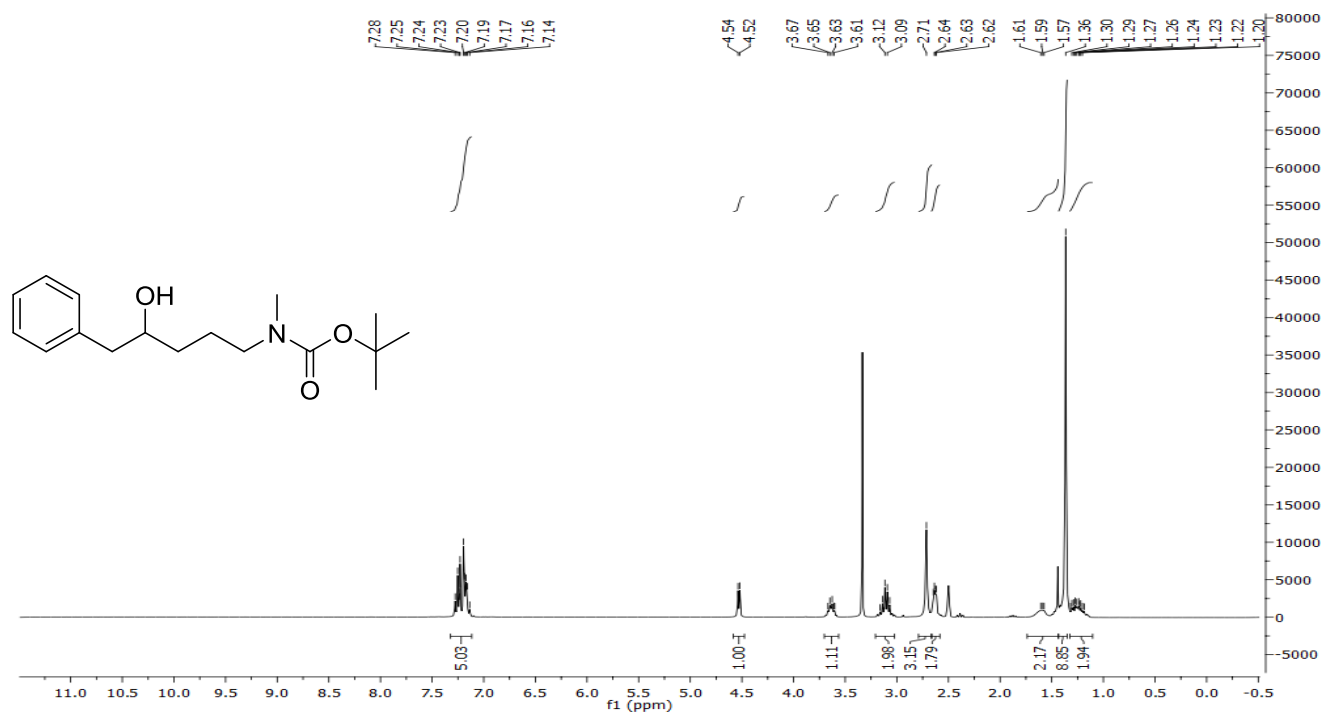


¹³C-NMR spectrum

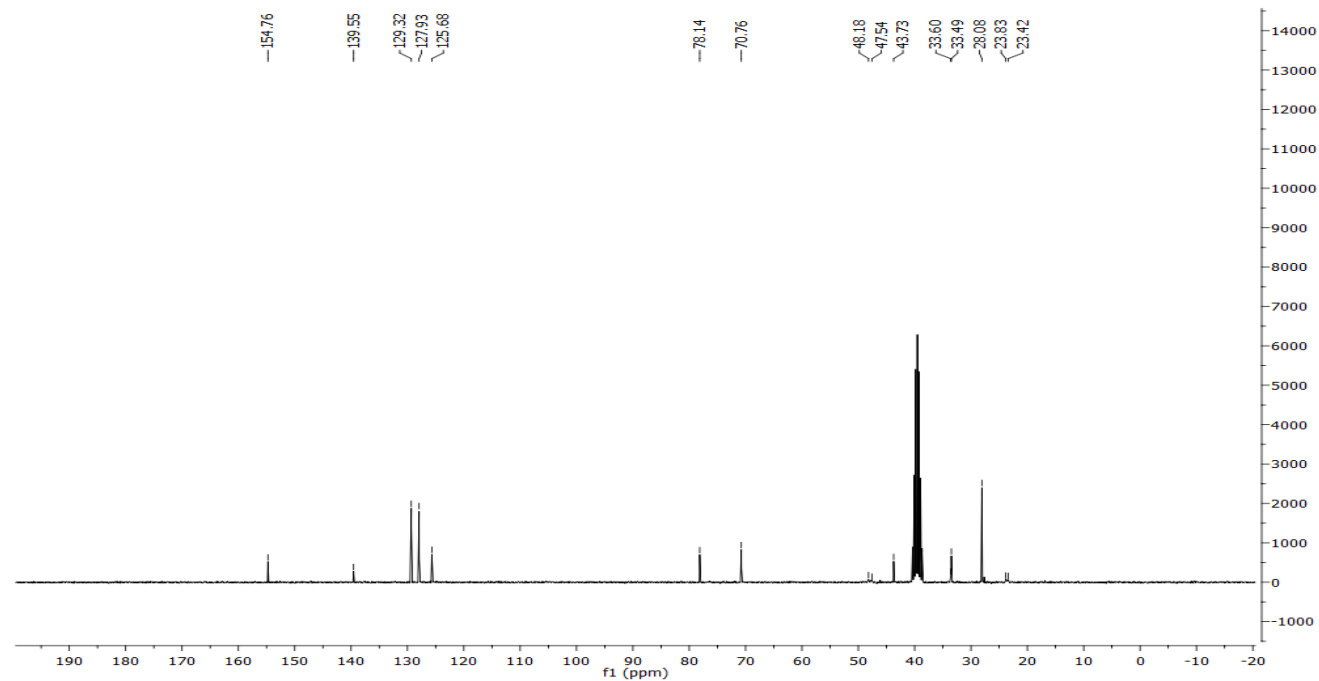


***tert*-Butyl *N*-(4-hydroxy-5-phenylpentyl)-*N*-methylcarbamate (3-91)**

¹H-NMR spectrum

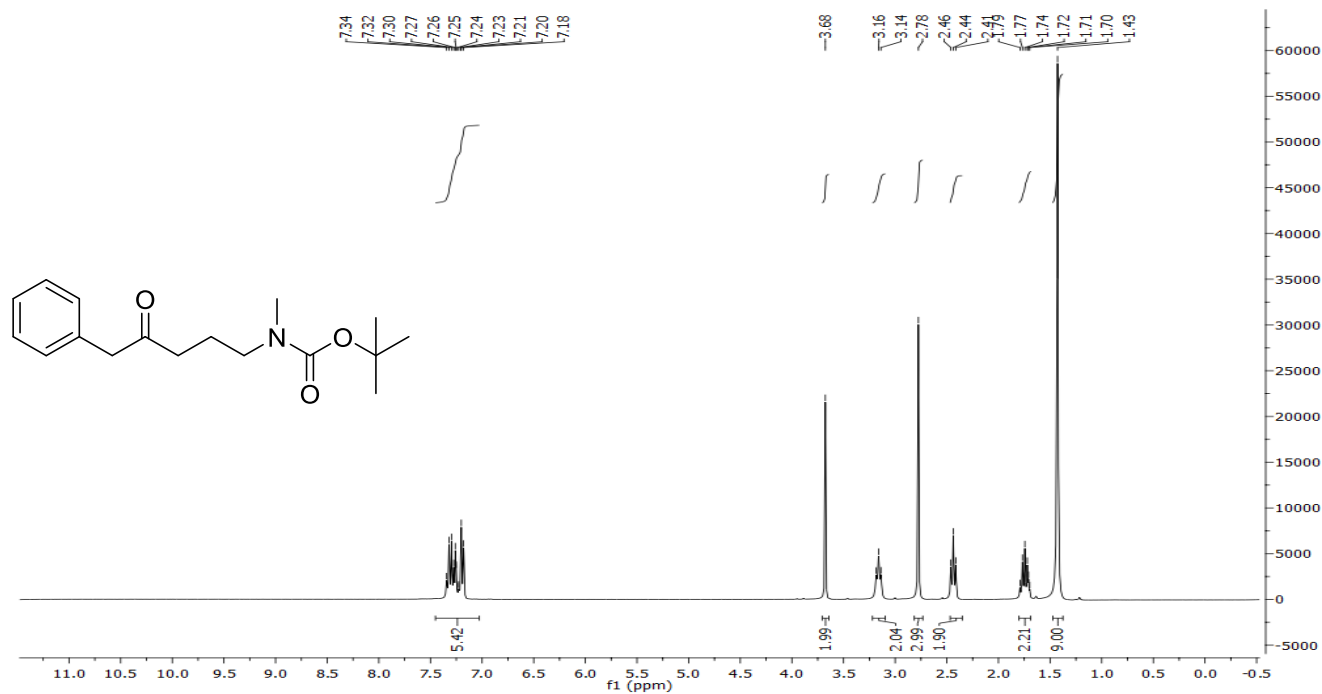


¹³C-NMR spectrum

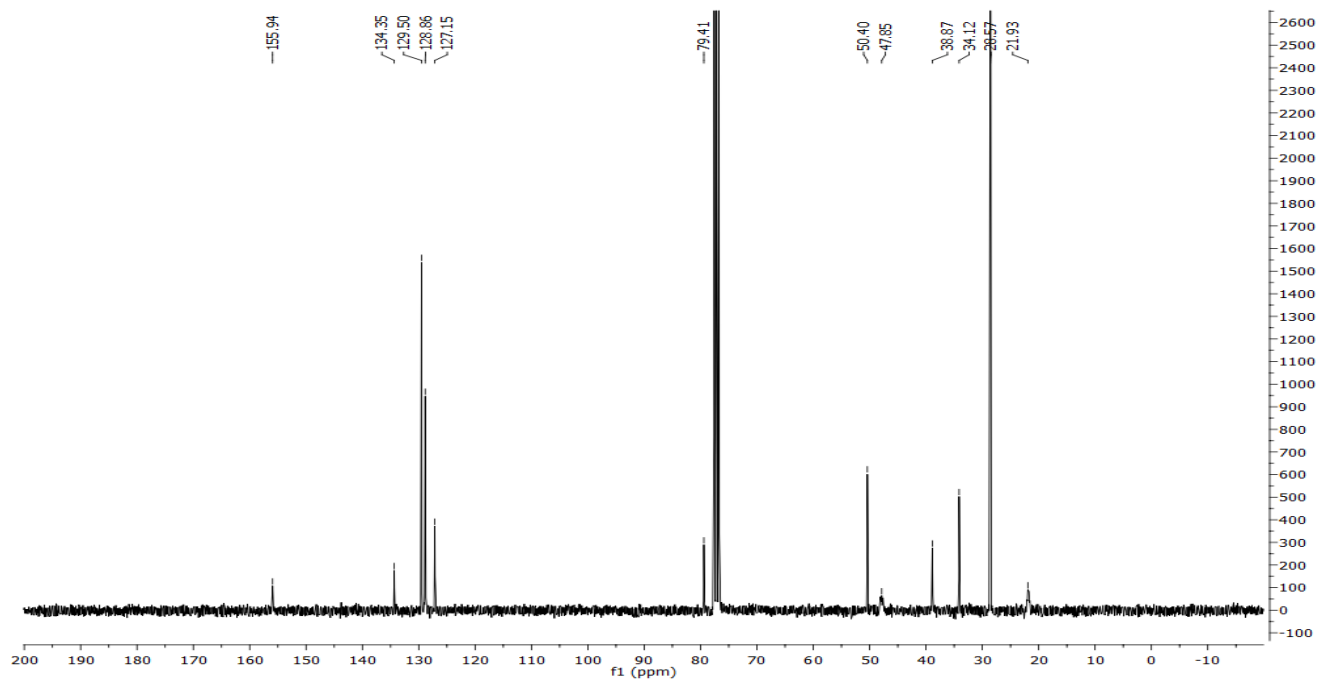


***tert*-Butyl *N*-methyl-*N*-(4-oxo-5-phenylpentyl)carbamate (3-92)**

¹H-NMR spectrum

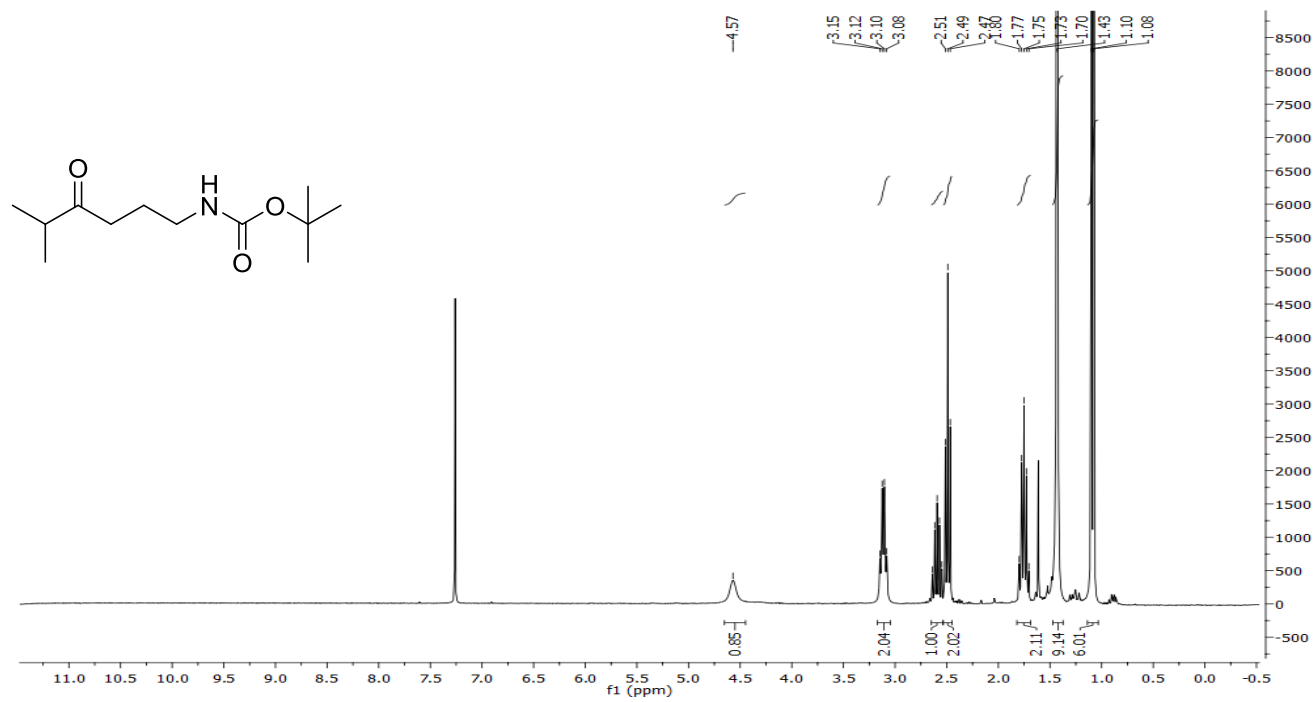


¹³C-NMR spectrum

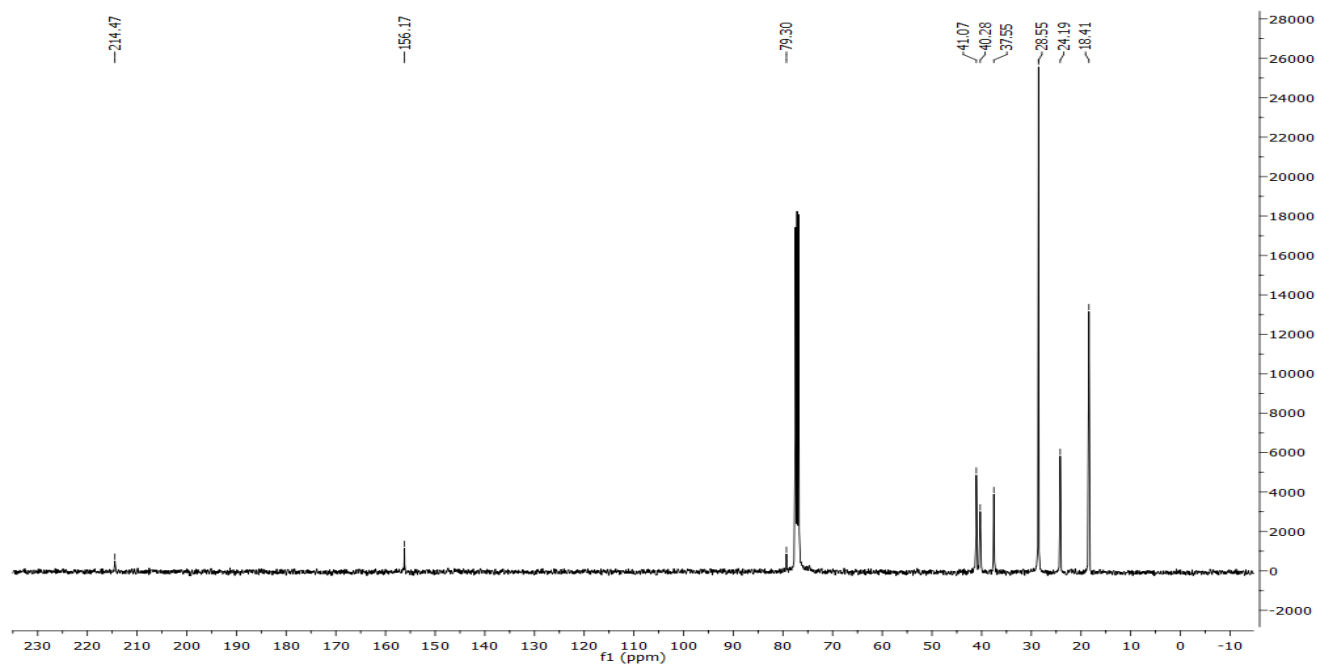


***tert*-Butyl *N*-(5-methyl-4-oxohexyl)carbamate (3-94)**

¹H-NMR spectrum

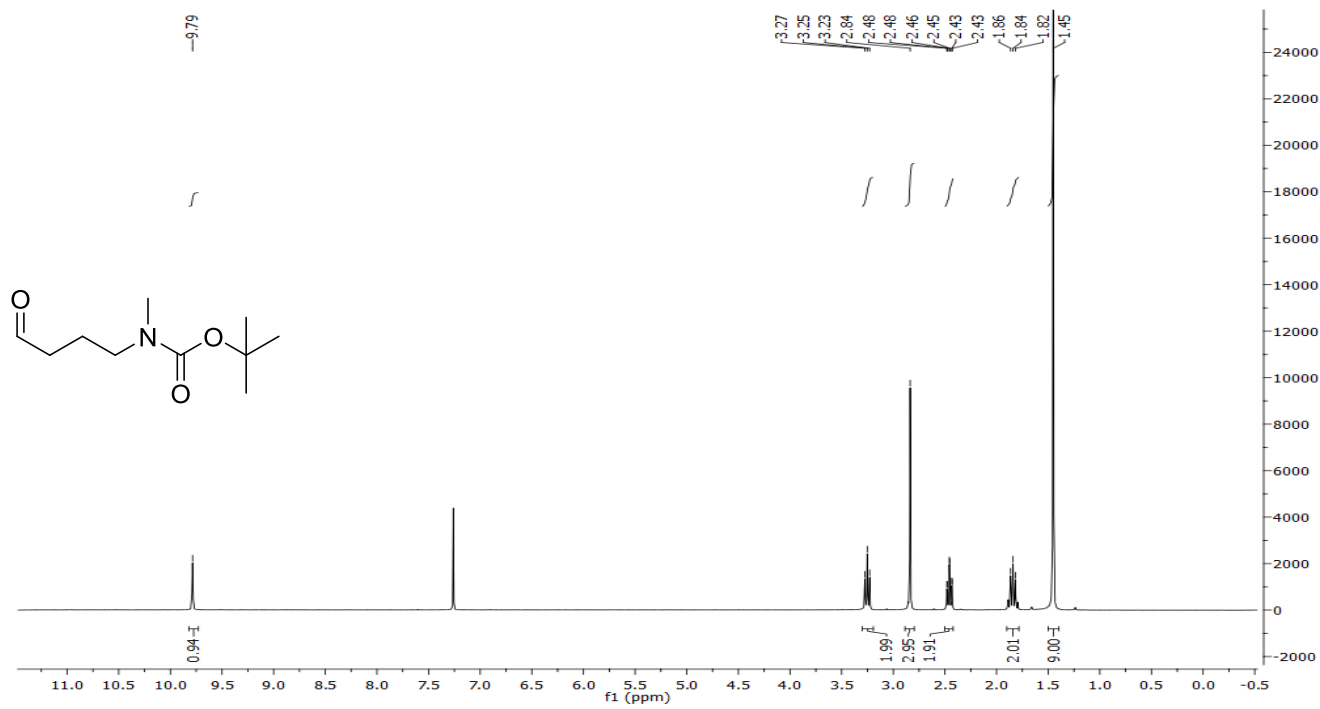


¹³C-NMR spectrum

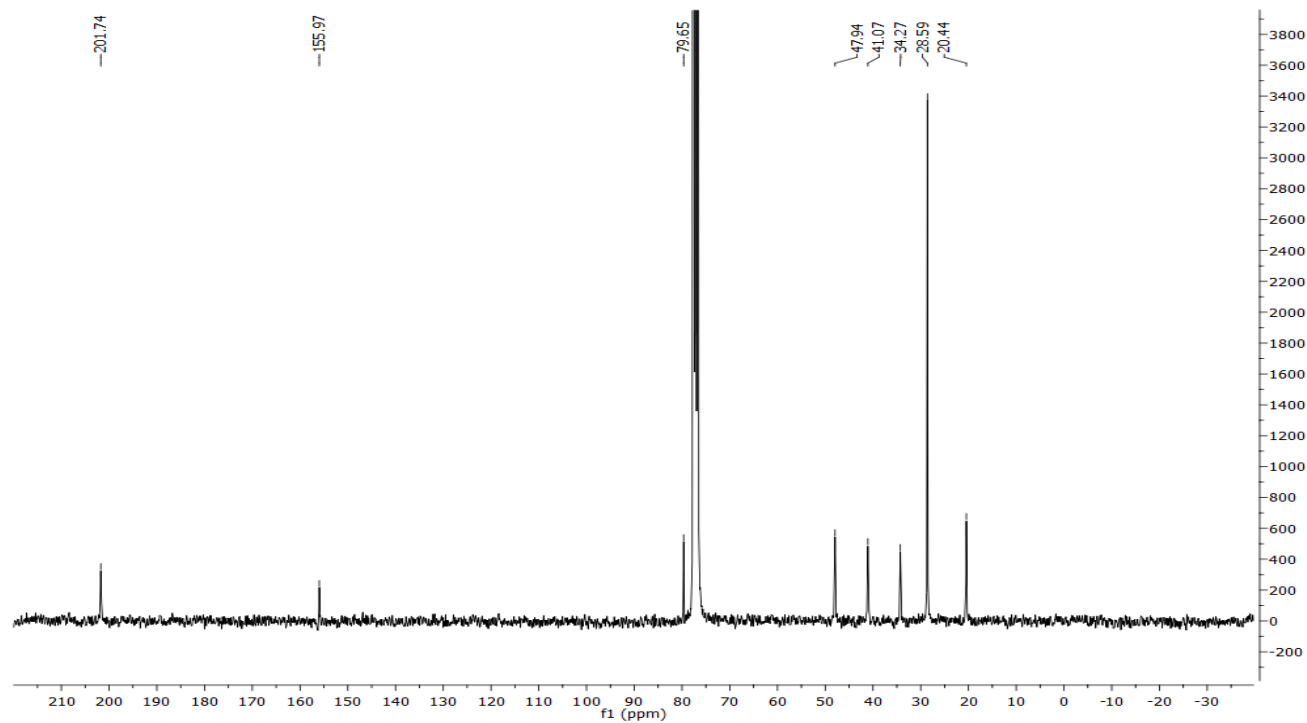


tert-Butyl N-methyl-N-(4-oxobutyl)carbamate (3-97)

¹H-NMR spectrum

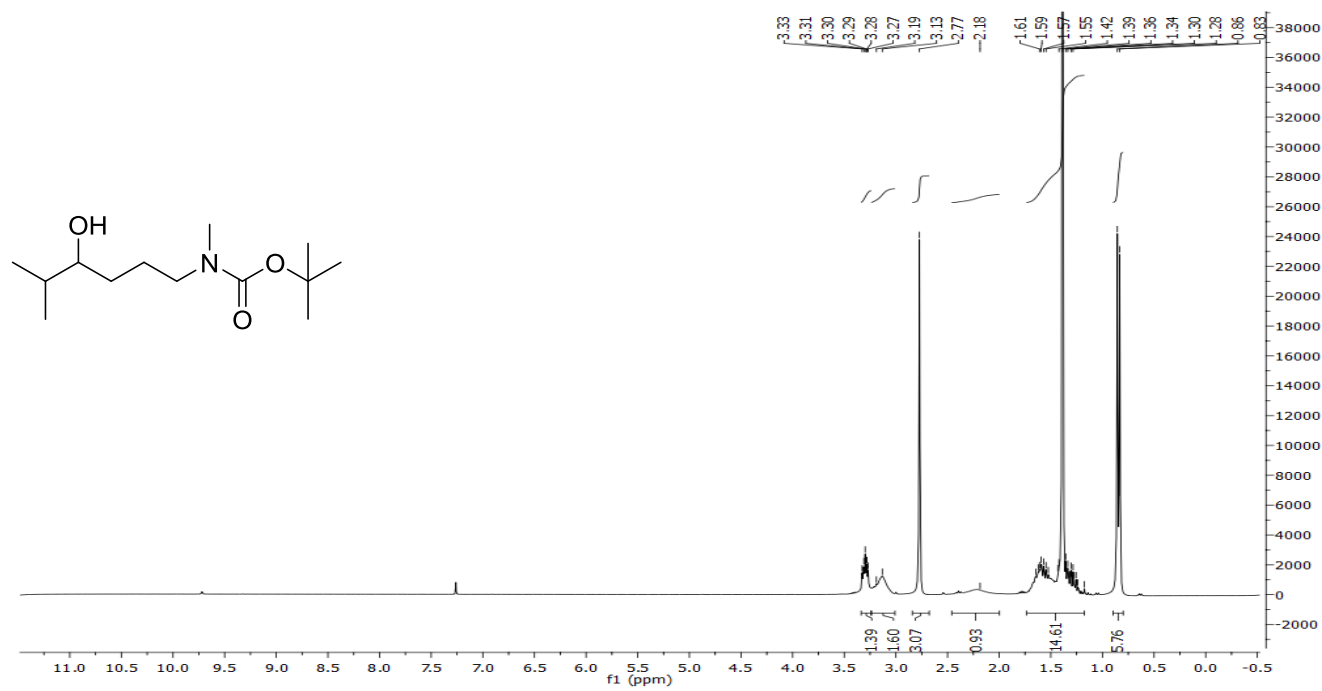


¹³C-NMR spectrum

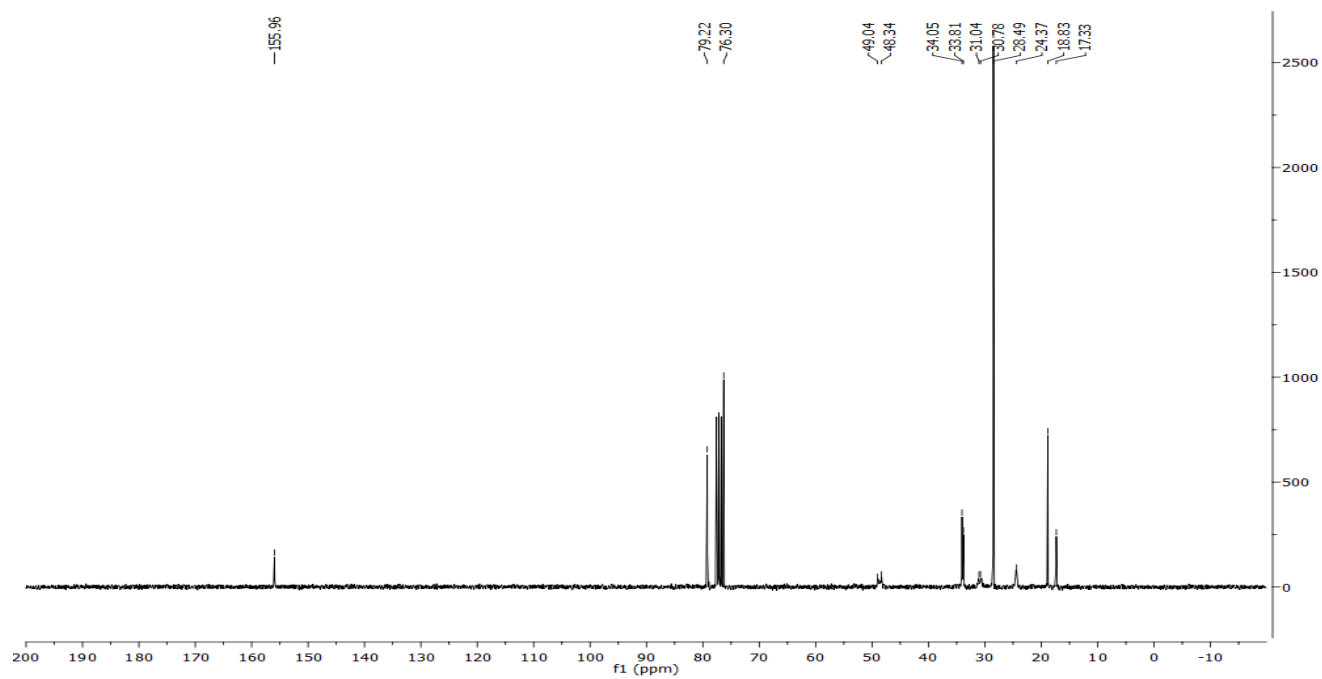


***tert*-Butyl *N*-(4-hydroxy-5-methylhexyl)-*N*-methylcarbamate (3-98)**

¹H-NMR spectrum

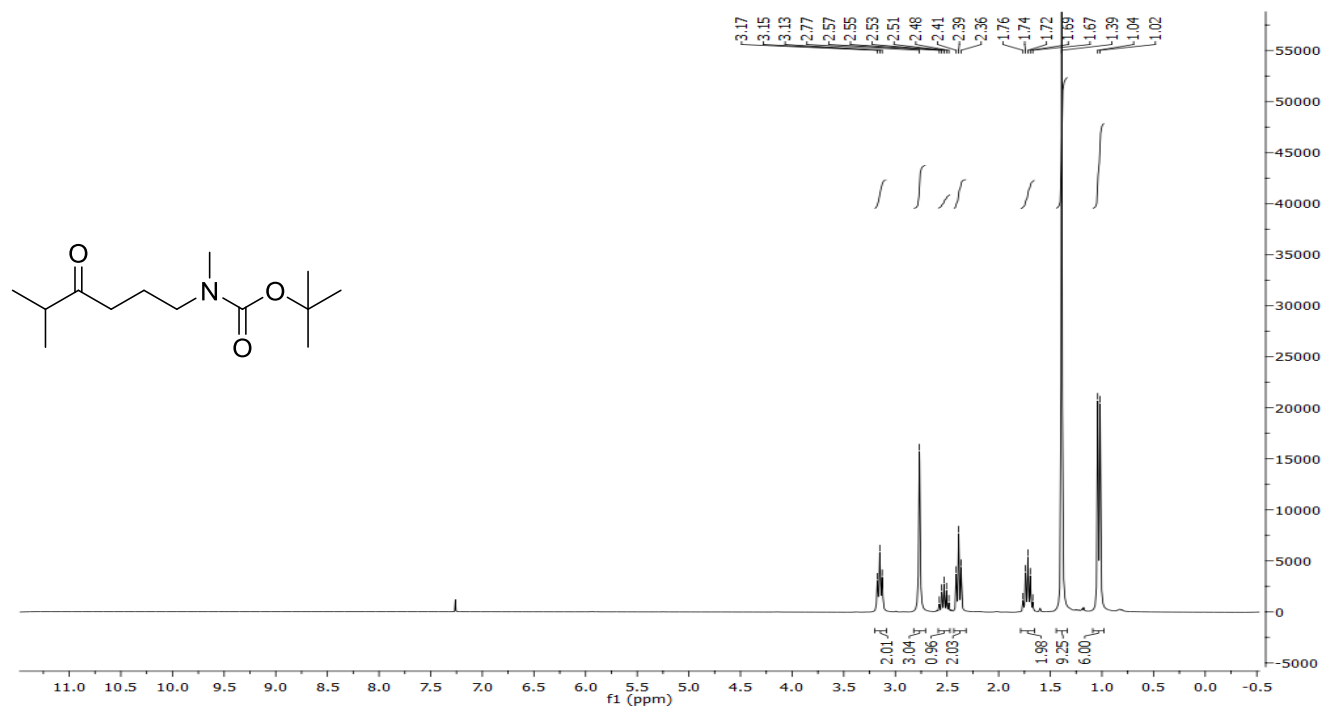


¹³C-NMR spectrum

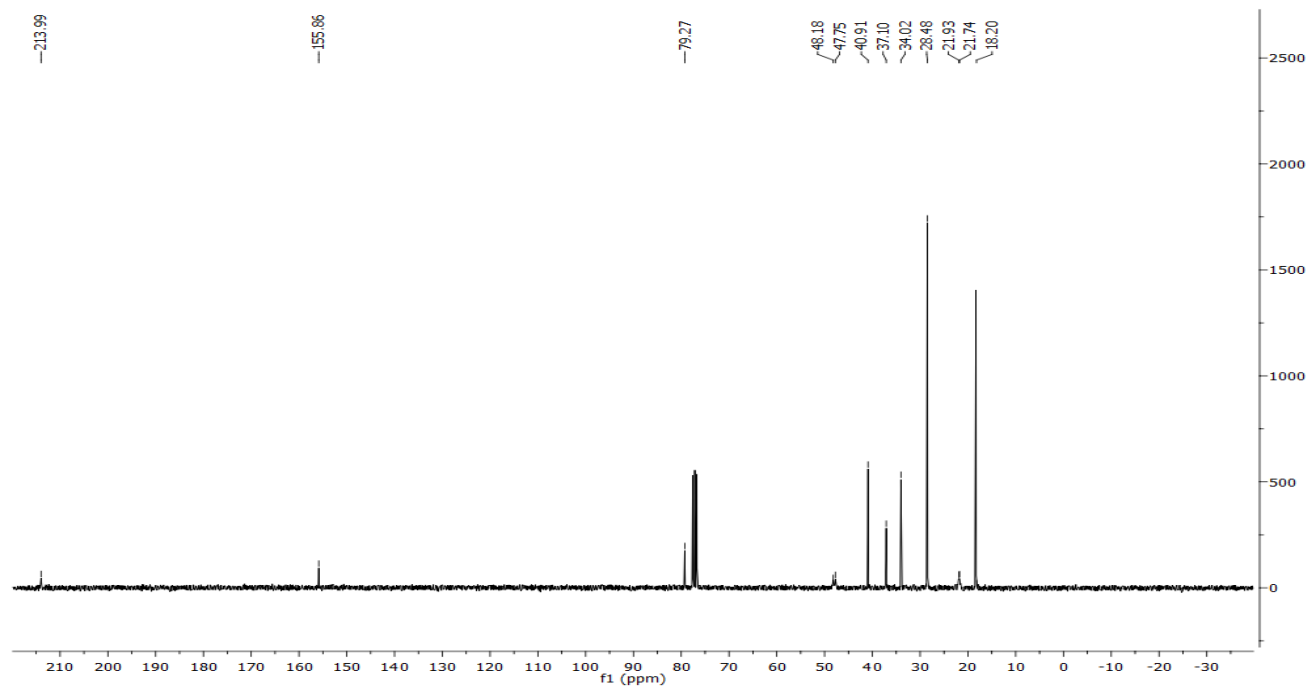


***tert*-Butyl *N*-methyl-*N*-(5-methyl-4-oxohexyl)carbamate (3-99)**

¹H-NMR spectrum

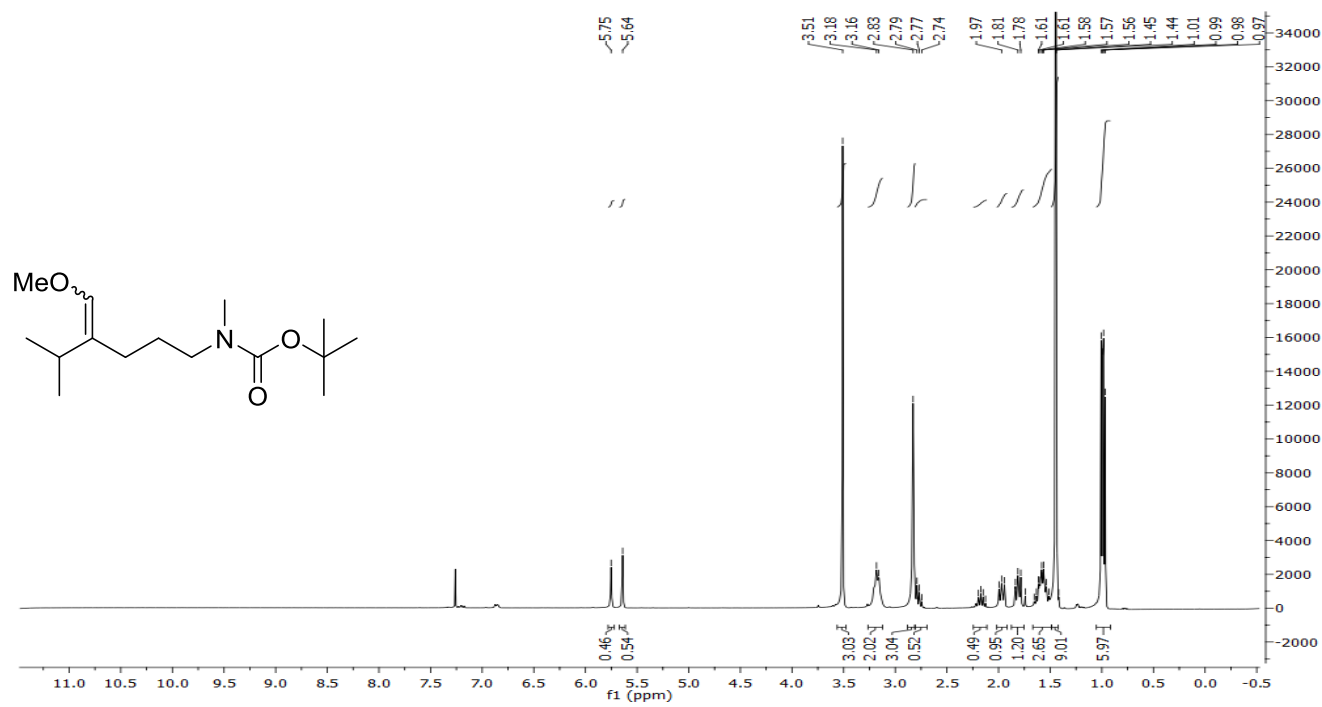


¹³C-NMR spectrum

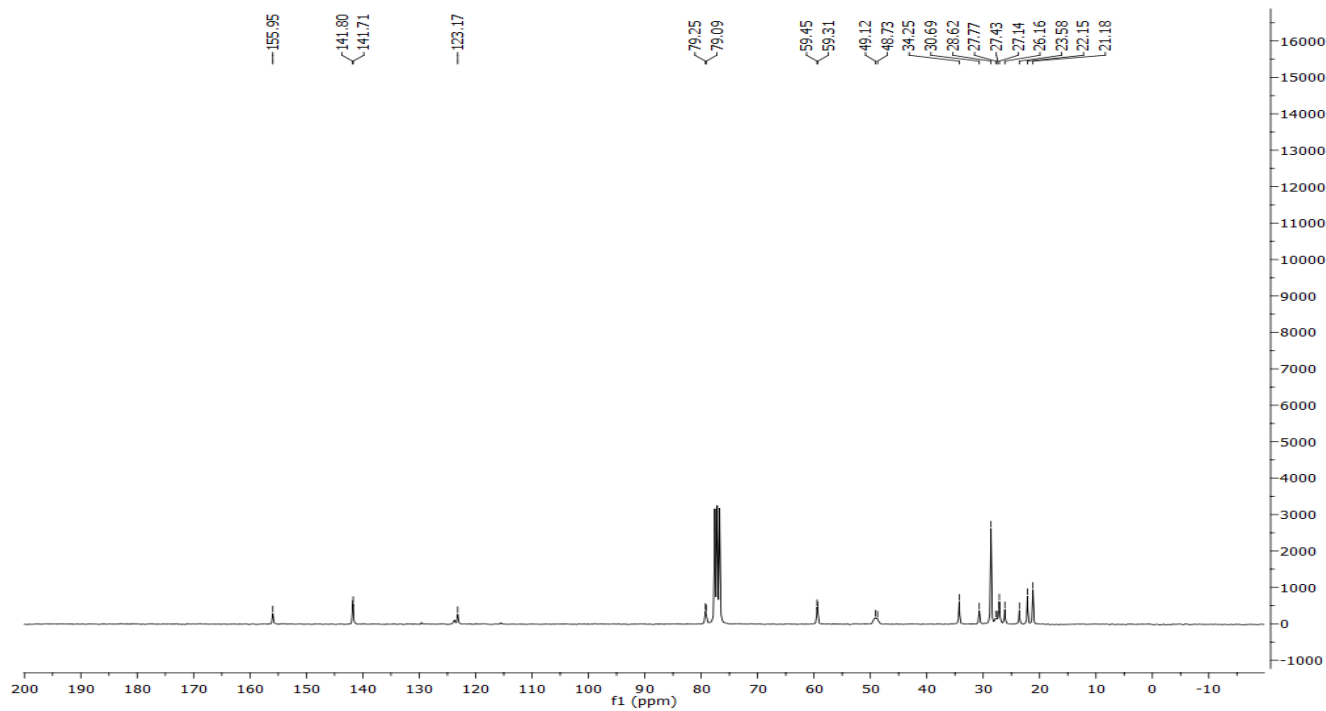


tert-Butyl N-(4-(methoxymethylene)-5-methylhexyl)-N-methylcarbamate (3-100)

¹H-NMR spectrum

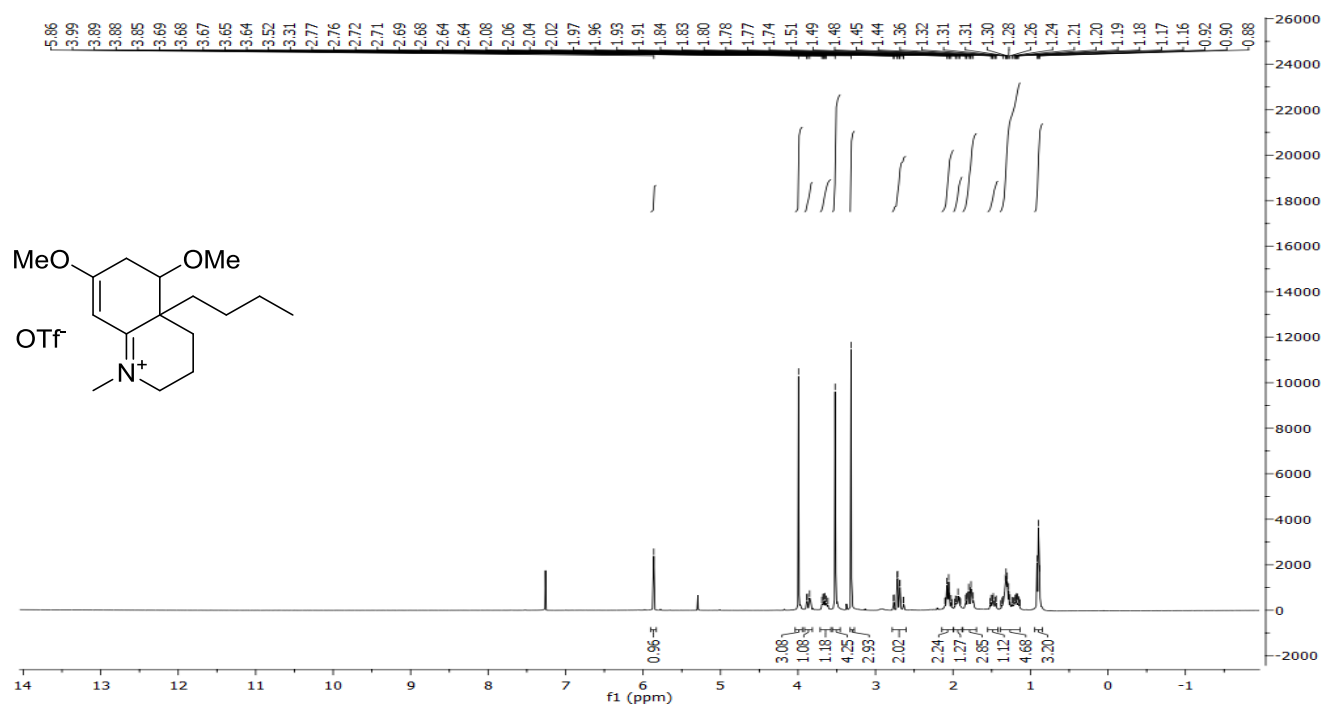


¹³C-NMR spectrum

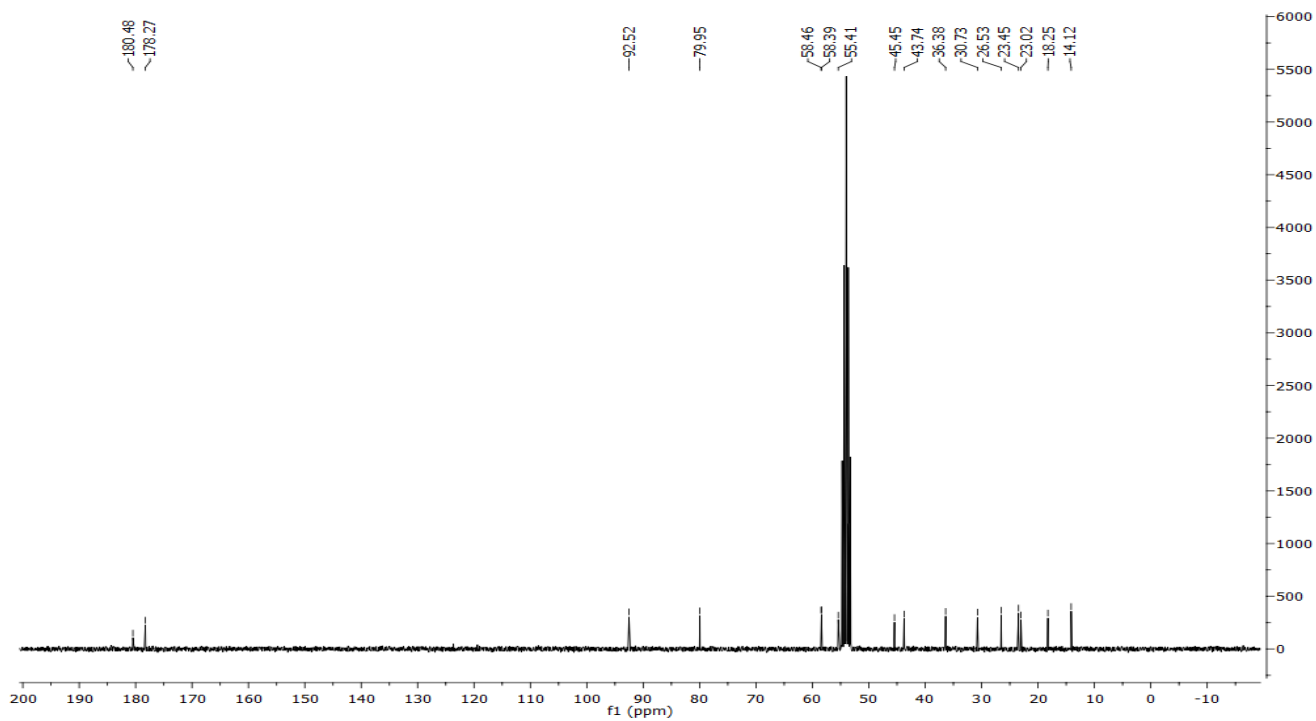


4a-Butyl-5,7-dimethoxy-1-methyl-2,3,4,4a,5,6-hexahydroquinolin-1-ium Triflate (3-101)

¹H-NMR spectrum

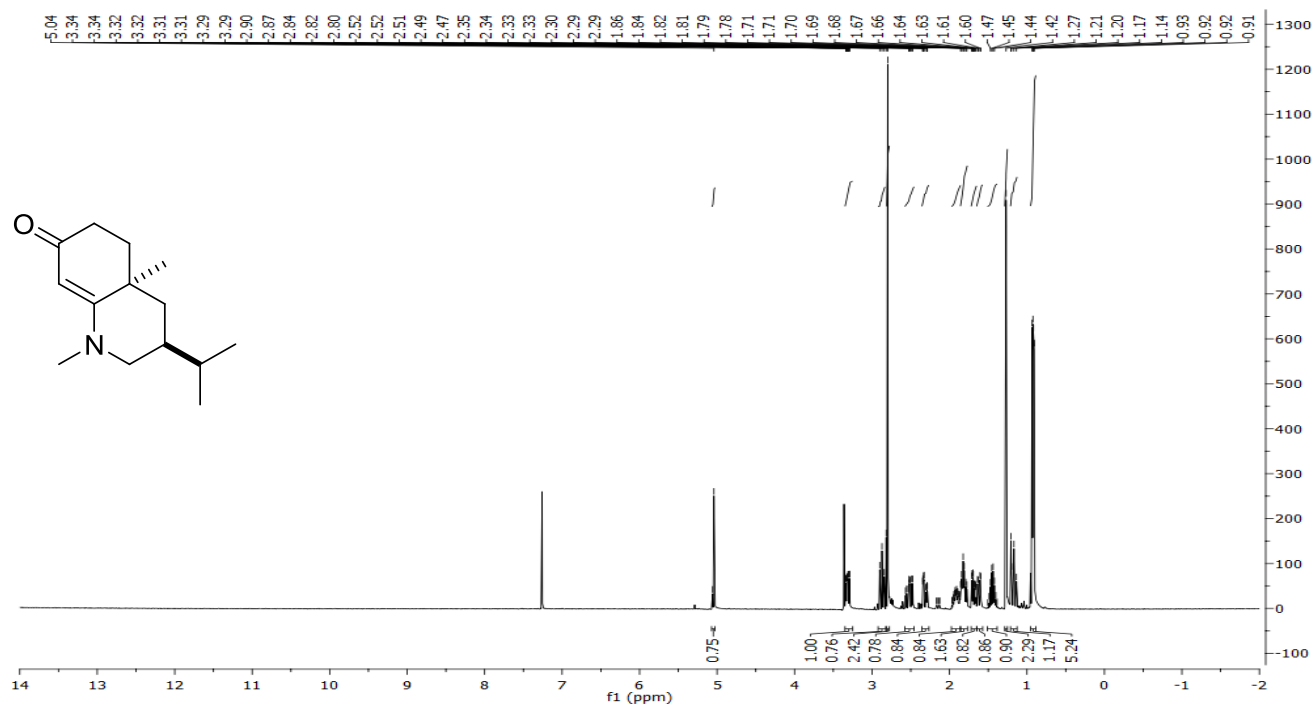


¹³C-NMR spectrum

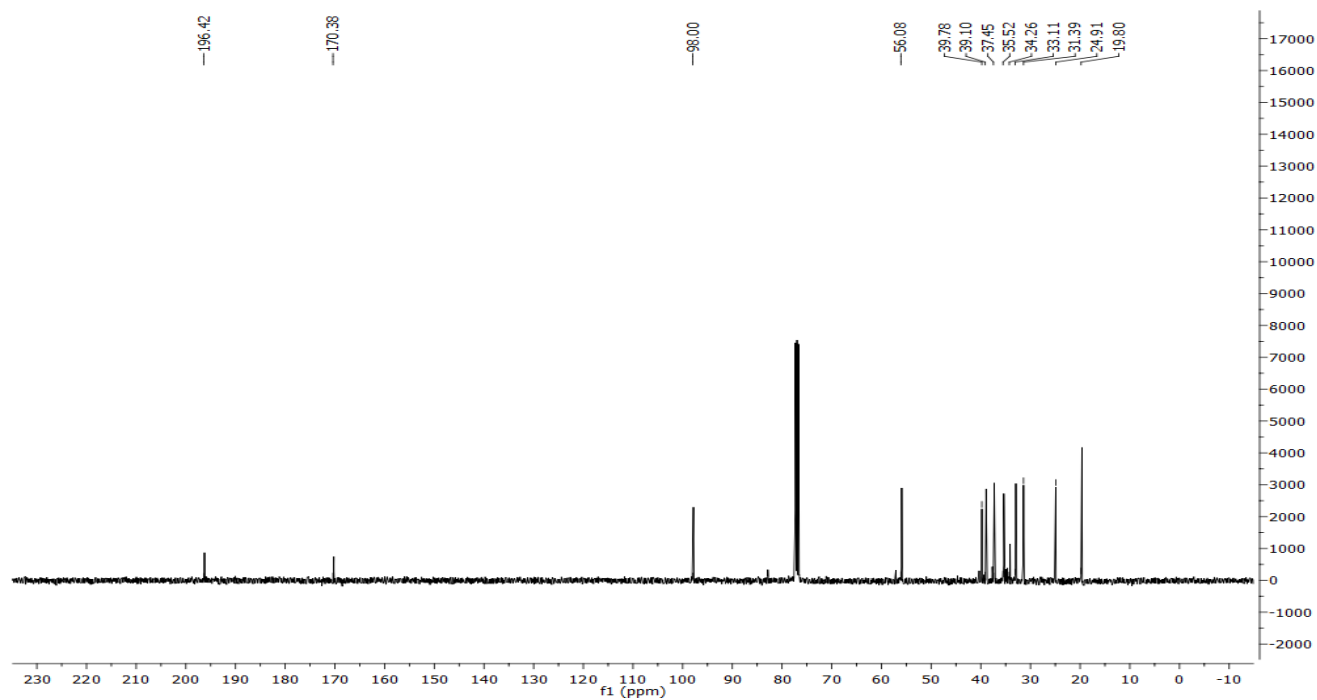


***trans*-3-Isopropyl-1,4a-dimethyl-2,3,4,4a,5,6-hexahydroquinolin-7(1*H*)-one (3-106)**

¹H-NMR spectrum

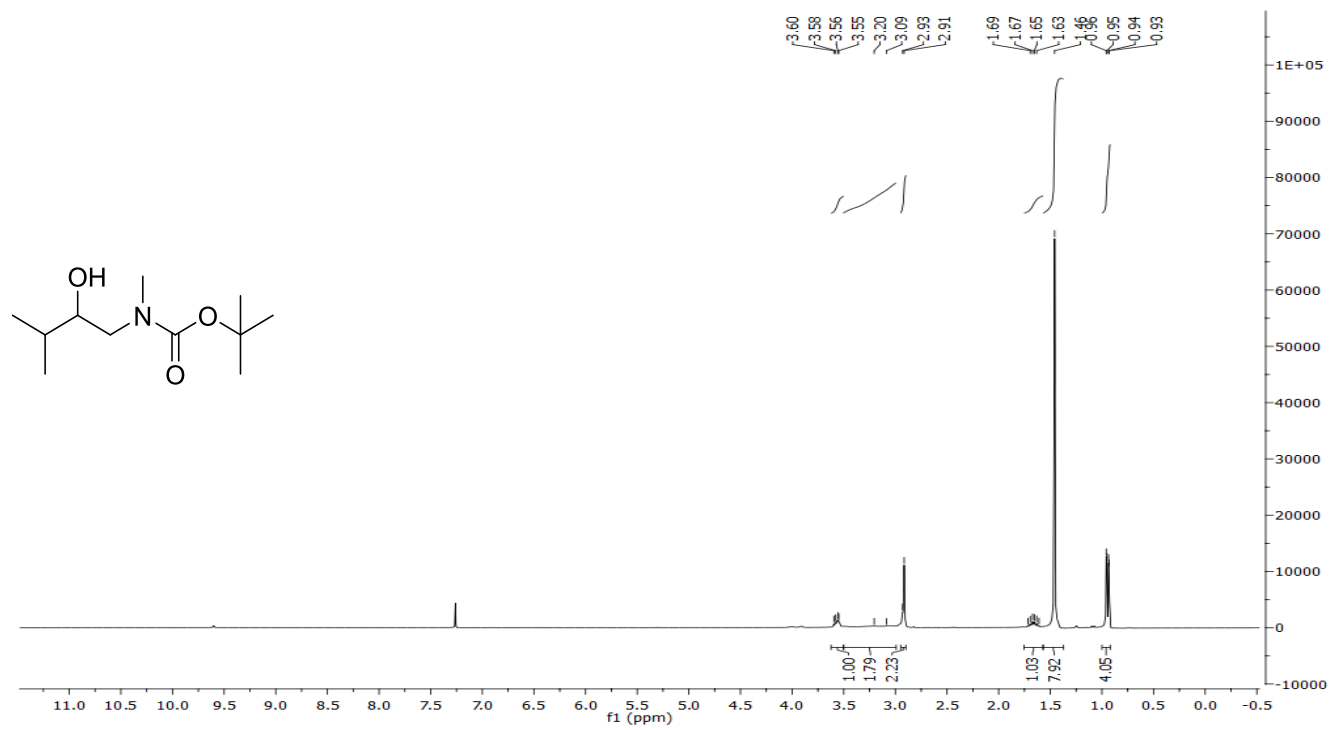


¹³C-NMR spectrum

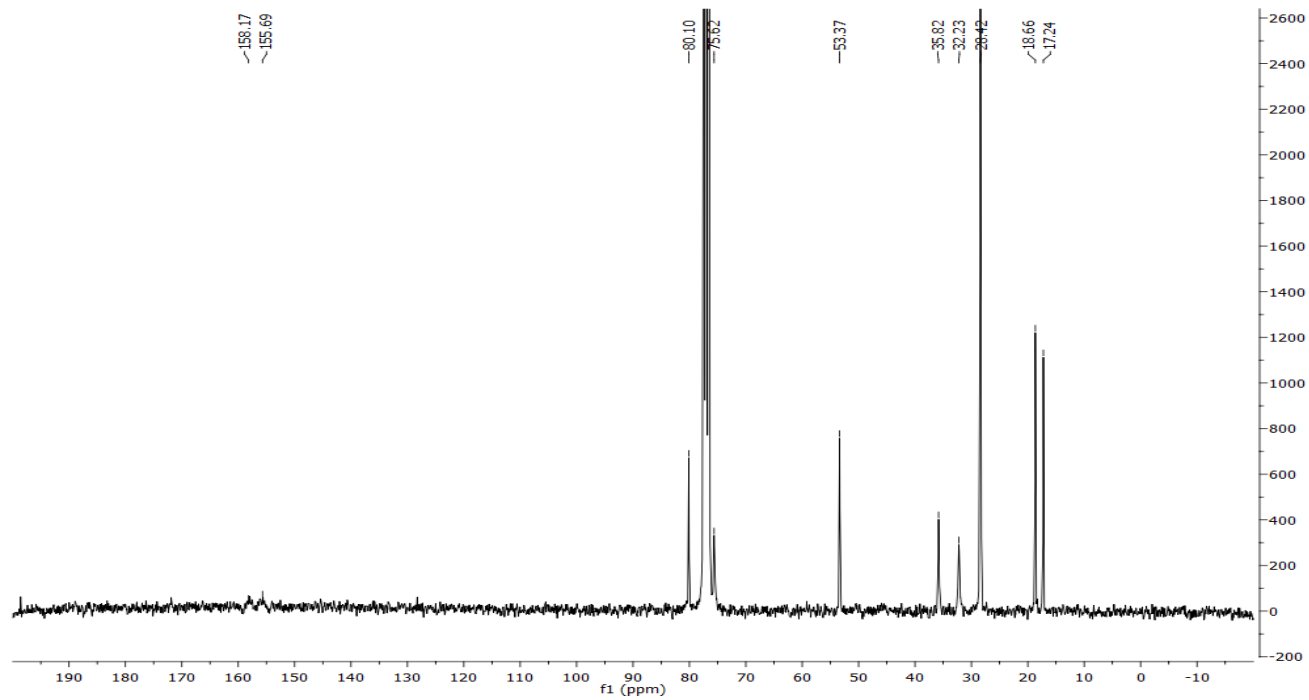


***tert*-Butyl *N*-(2-hydroxy-3-methylbutyl)-*N*-methylcarbamate (3-117)**

¹H-NMR spectrum

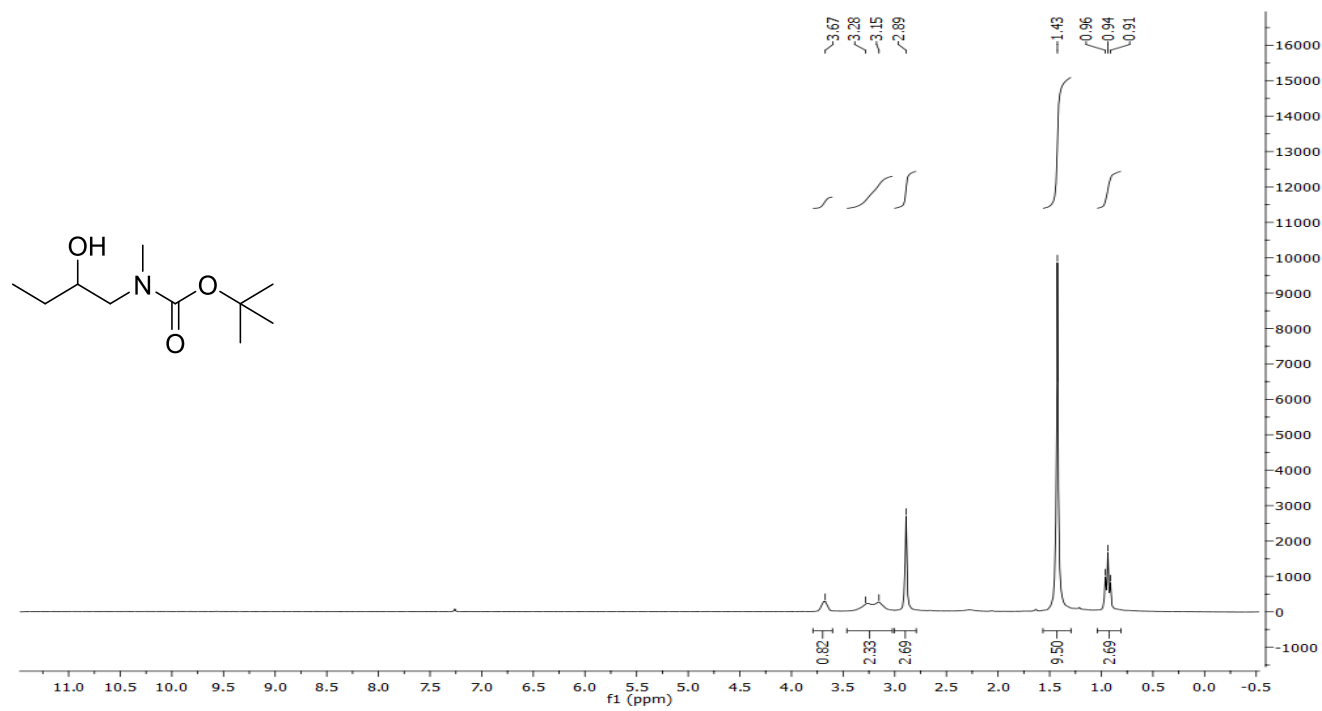


¹³C-NMR spectrum

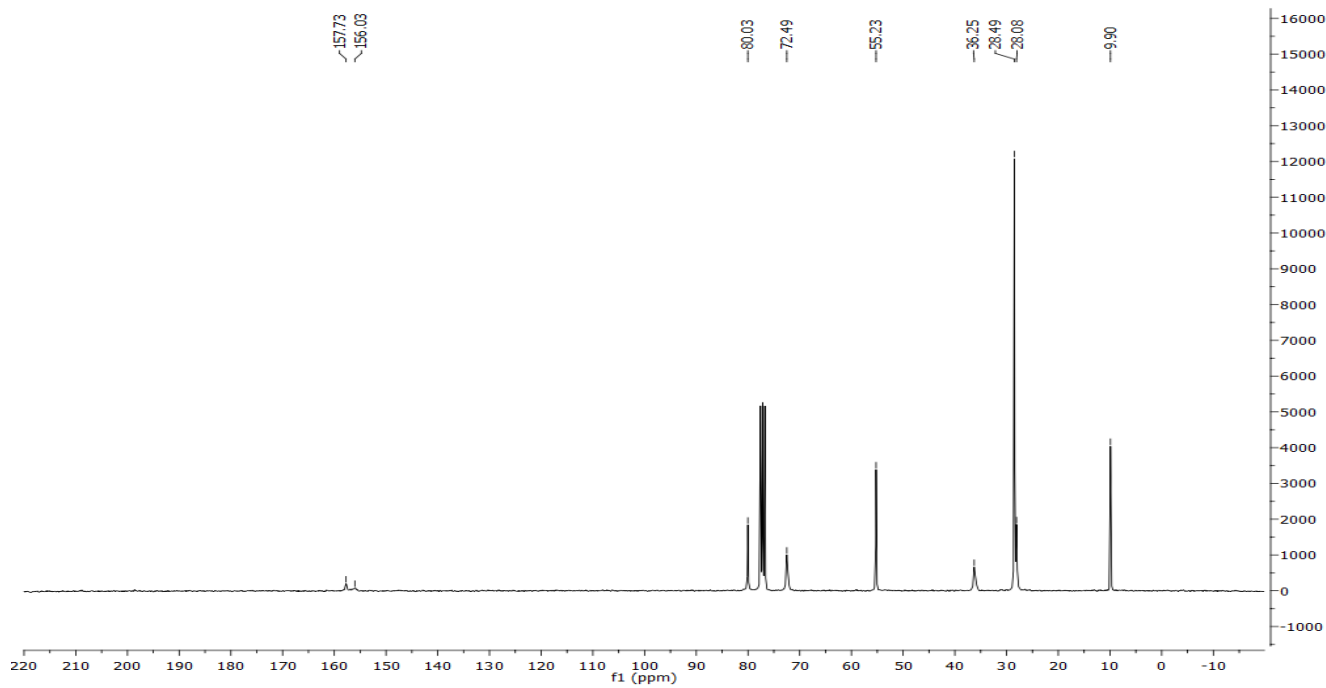


tert-Butyl N-(2-hydroxybutyl)-N-methylcarbamate (3-118)

¹H-NMR spectrum

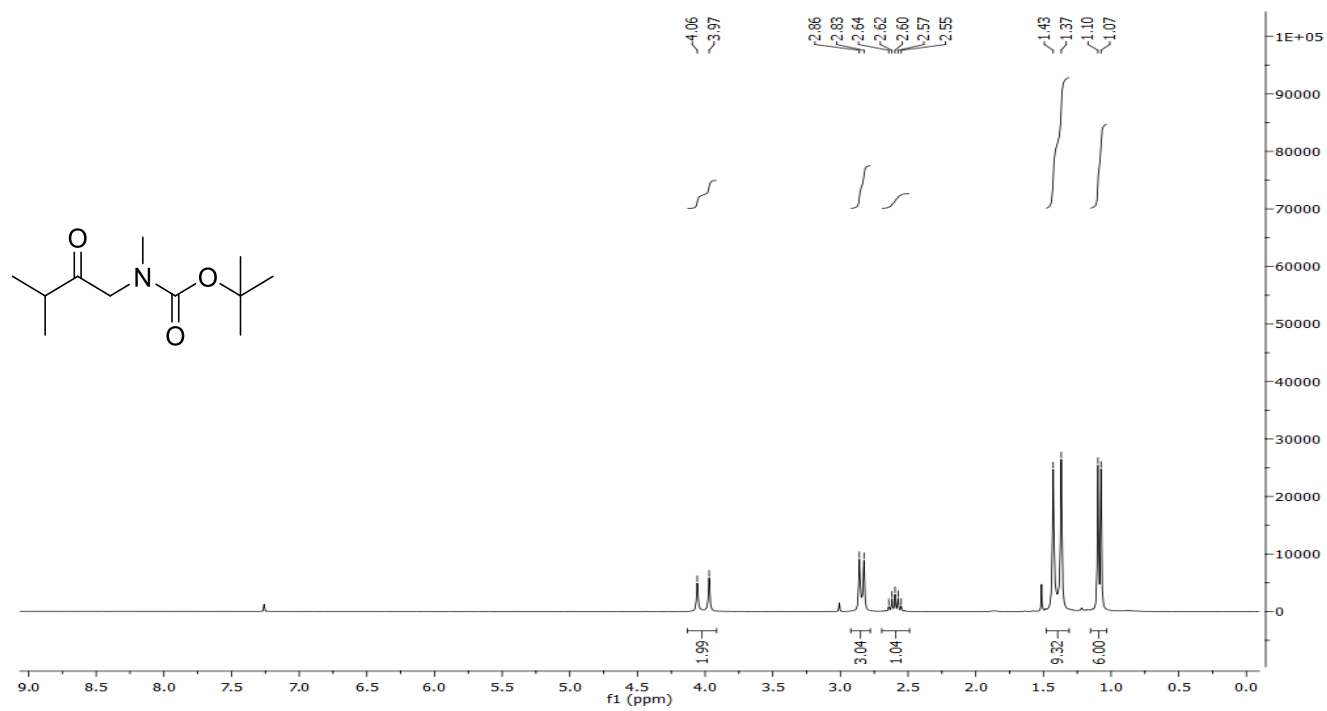


¹³C-NMR spectrum

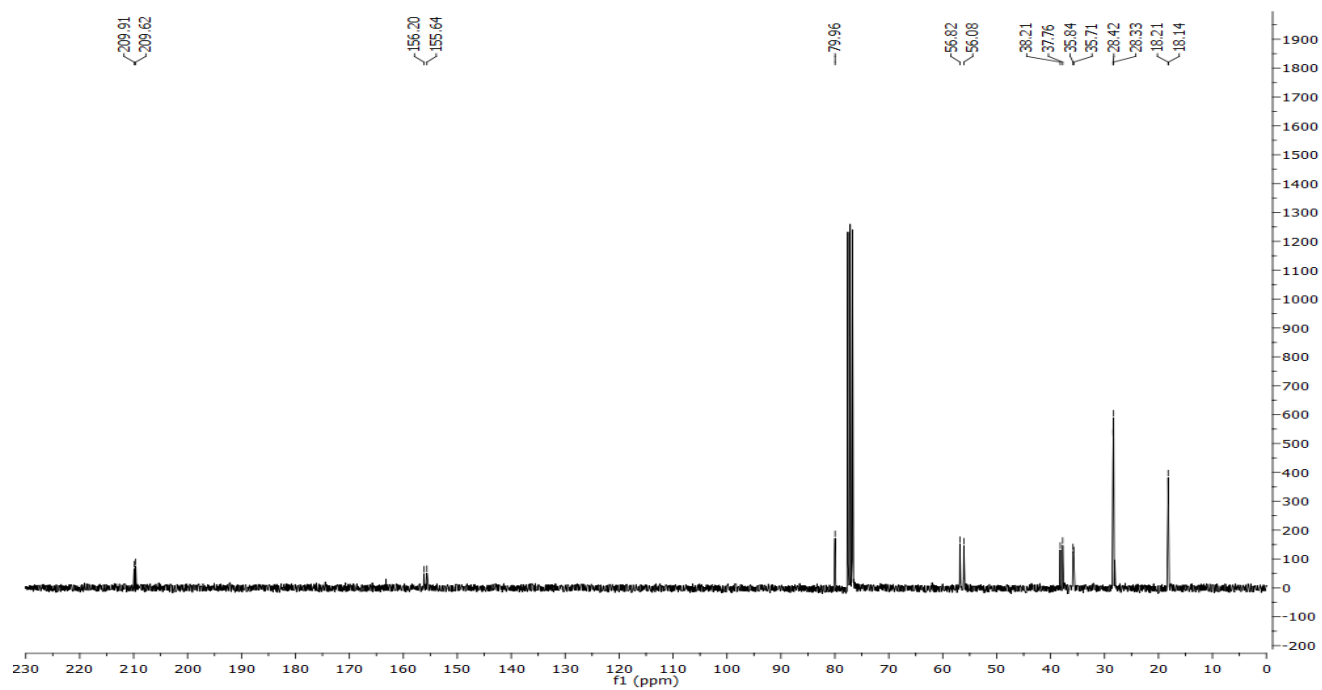


tert-Butyl N-methyl-N-(3-methyl-2-oxobutyl)carbamate (3-119)

¹H-NMR spectrum

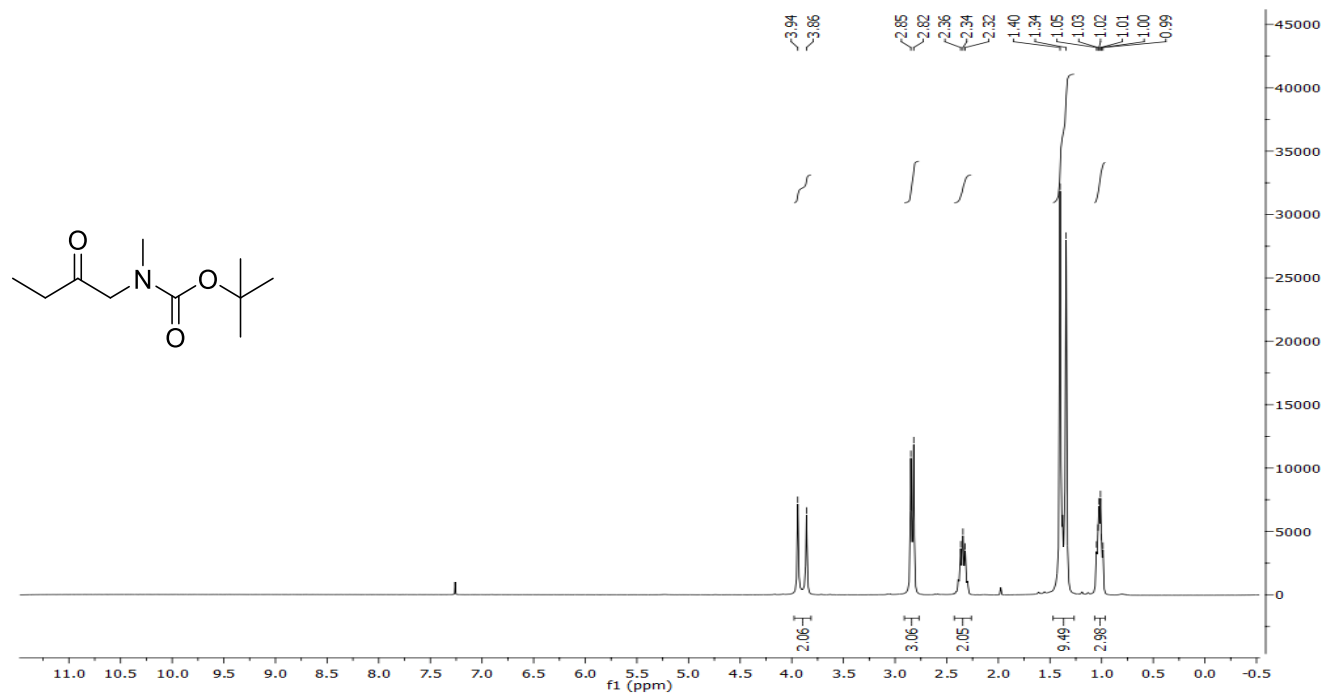


¹³C-NMR spectrum

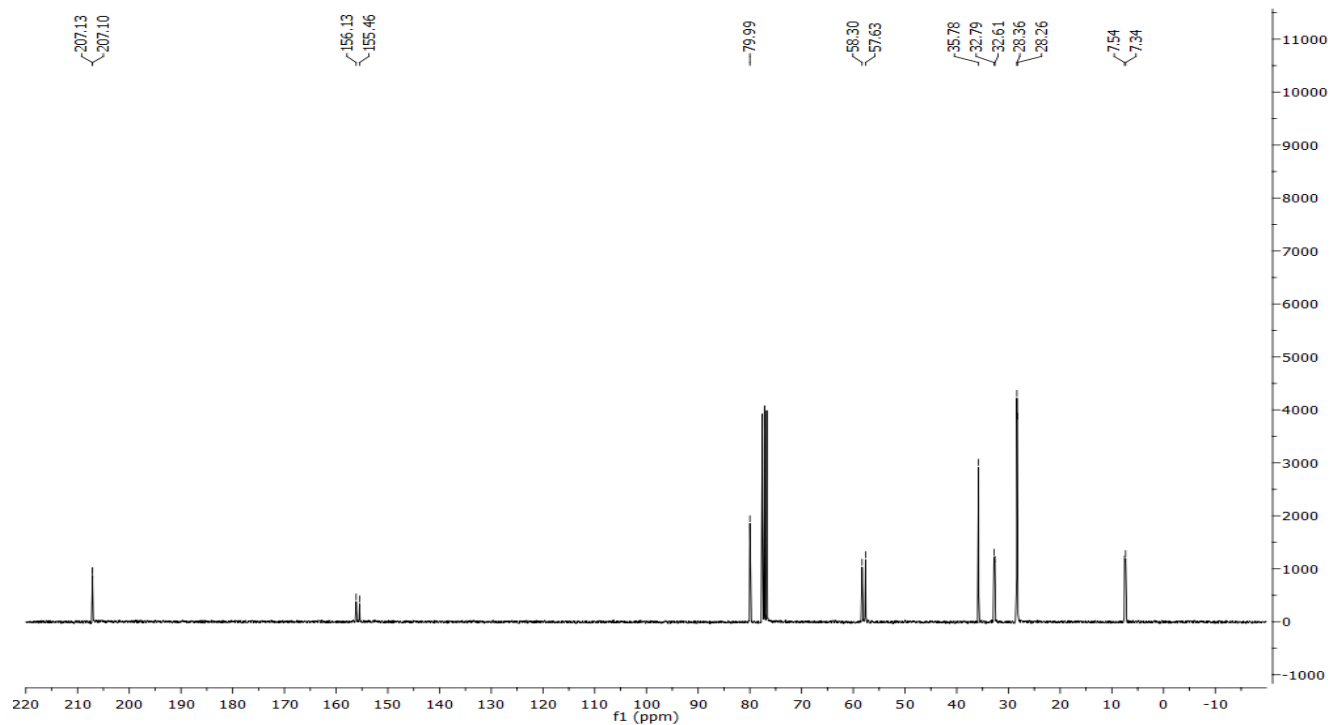


tert-Butyl N-methyl-N-(2-oxobutyl)carbamate (3-120)

¹H-NMR spectrum

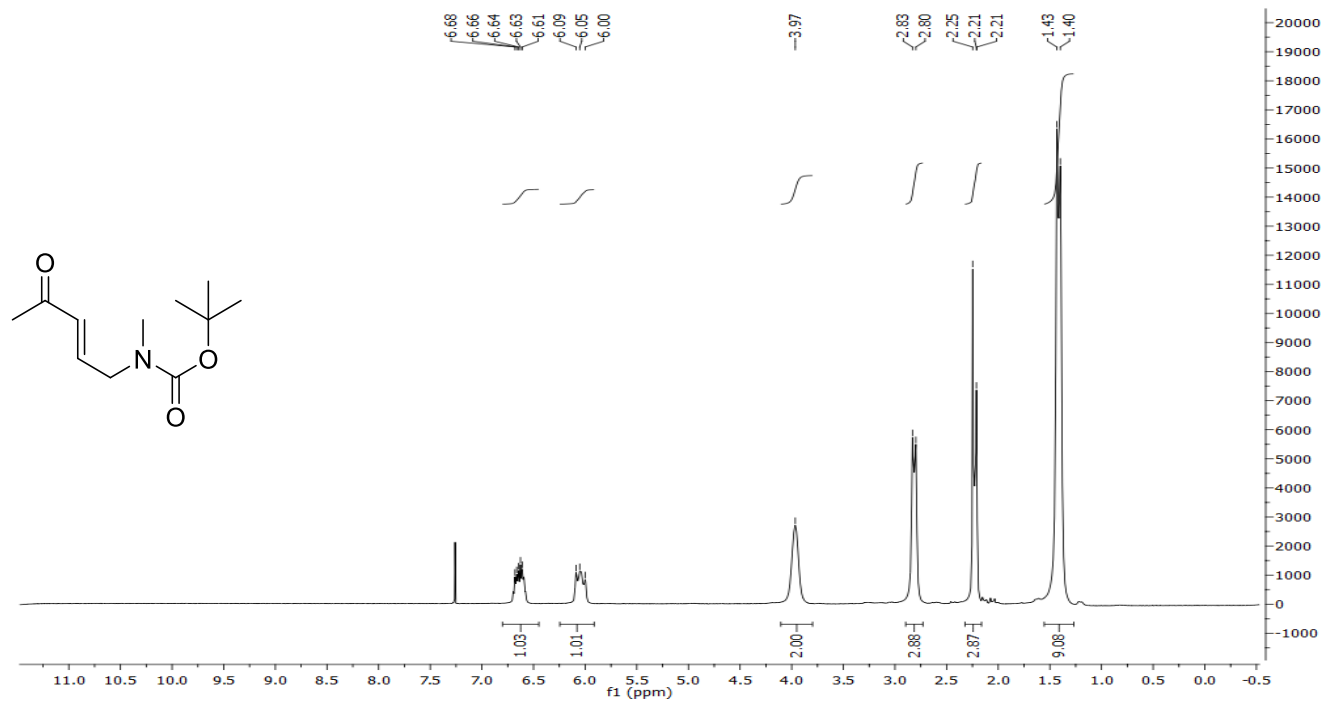


¹³C-NMR spectrum

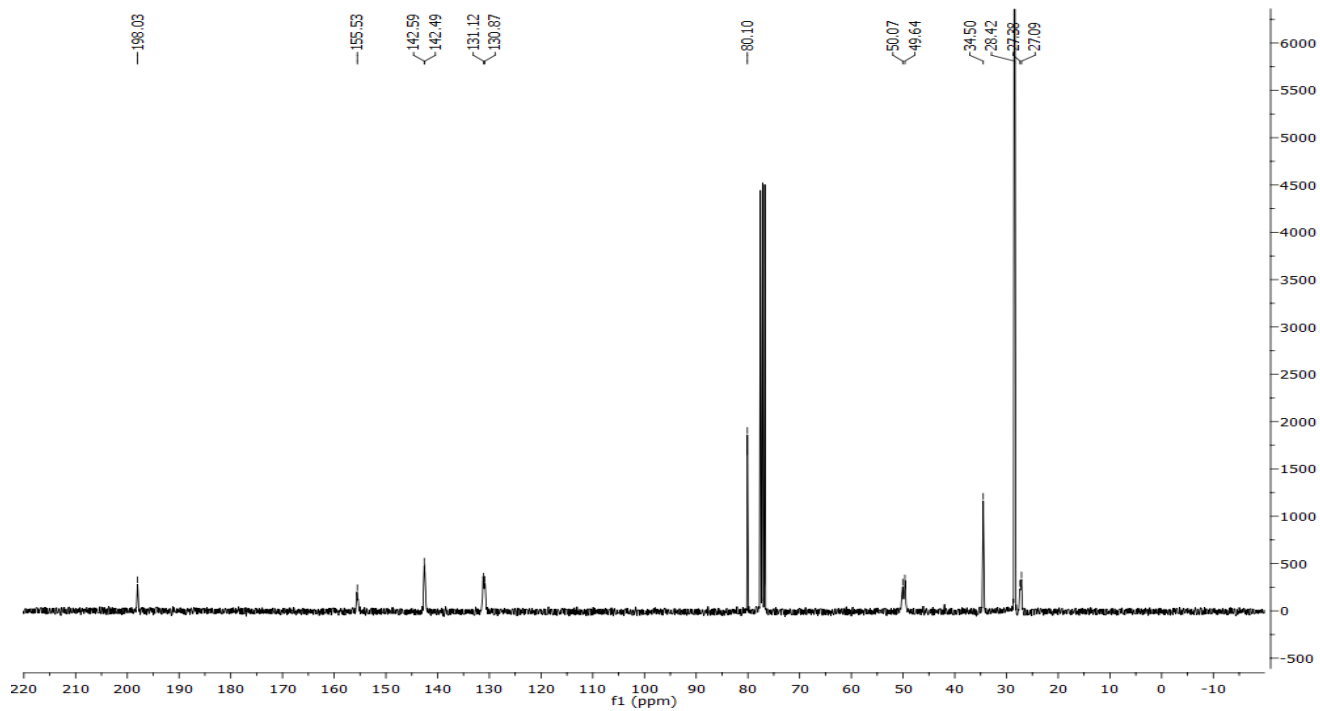


***tert*-Butyl (*E*)-*N*-methyl-*N*-(4-oxopent-2-en-1-yl)carbamate (3-122)**

¹H-NMR spectrum

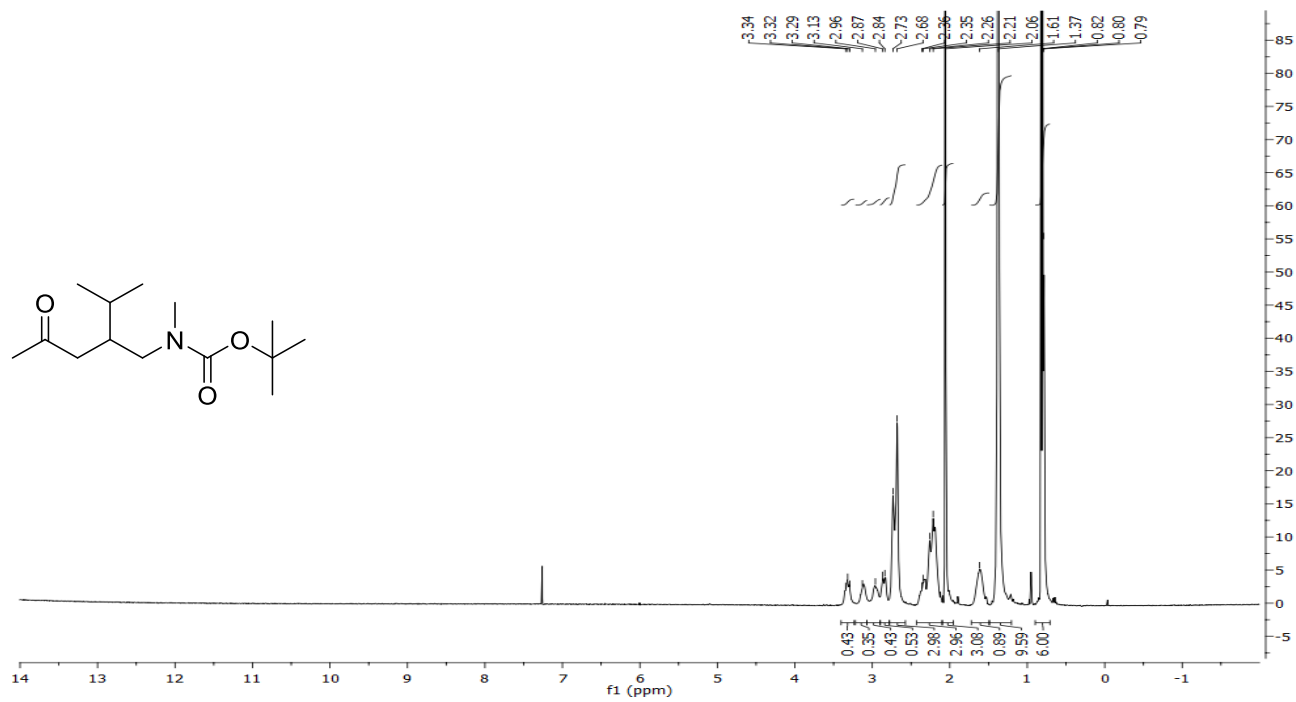


¹³C-NMR spectrum

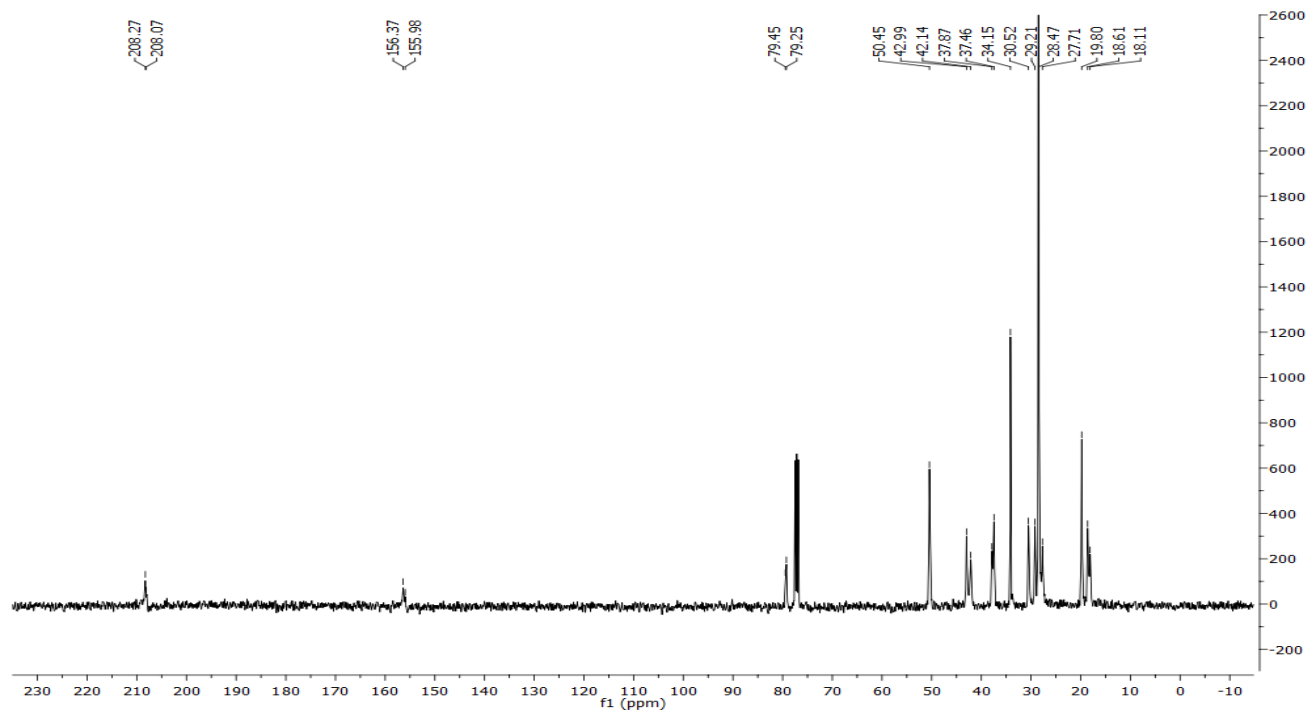


***tert*-Butyl *N*-(2-isopropyl-4-oxopentyl)-*N*-methylcarbamate (3-123)**

¹H-NMR spectrum

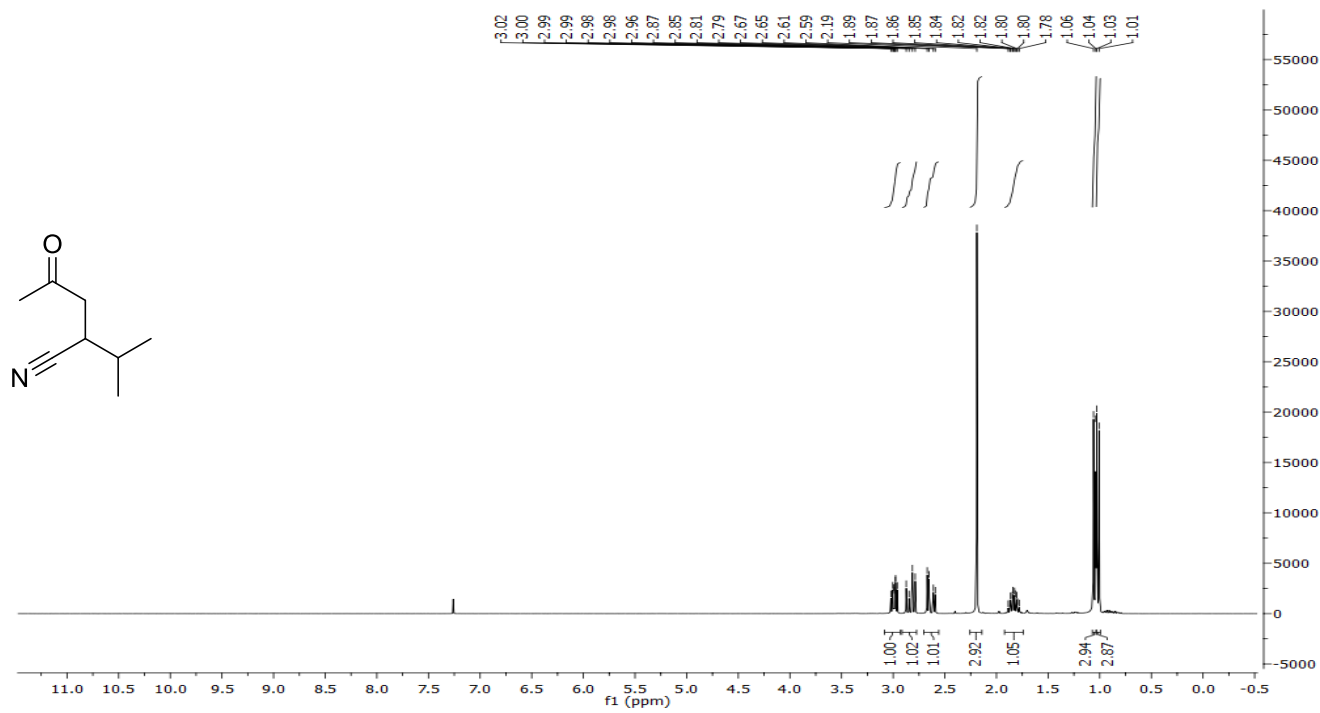


¹³C-NMR spectrum

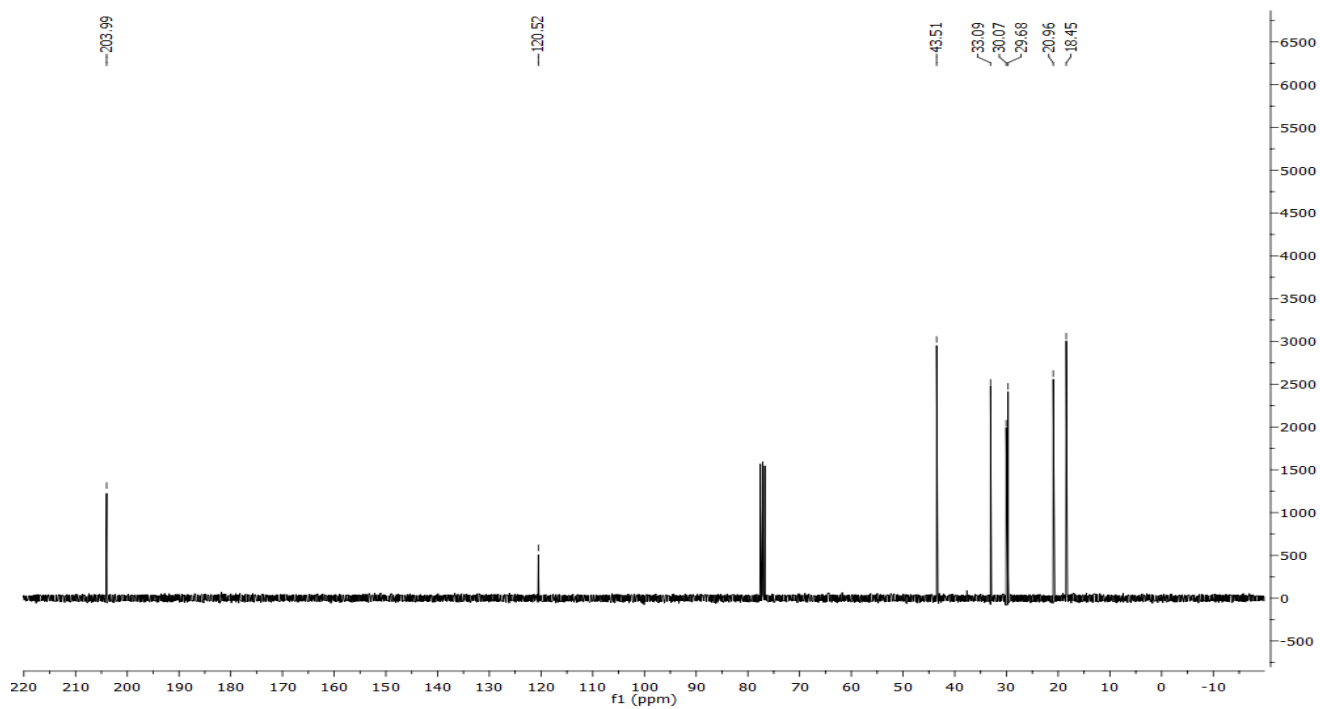


2-Isopropyl-4-oxopentanitrile (3-126)

$^1\text{H-NMR}$ spectrum

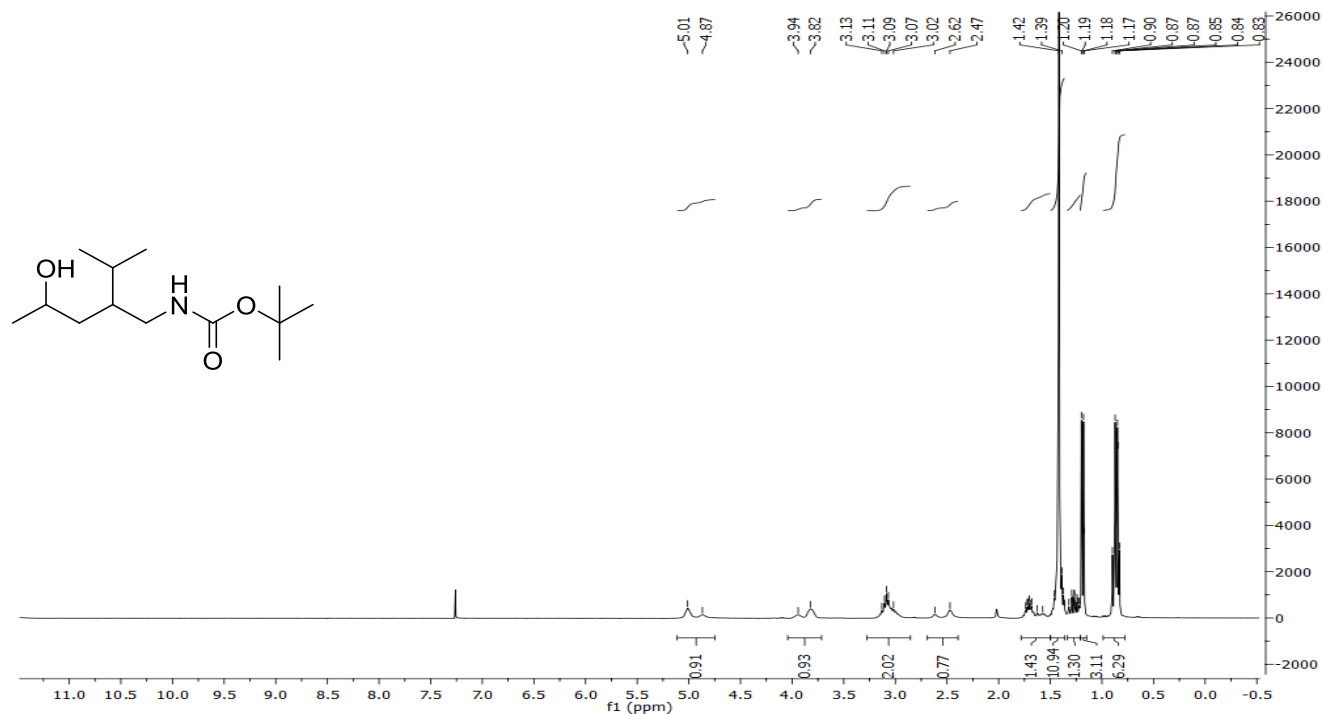


$^{13}\text{C-NMR}$ spectrum

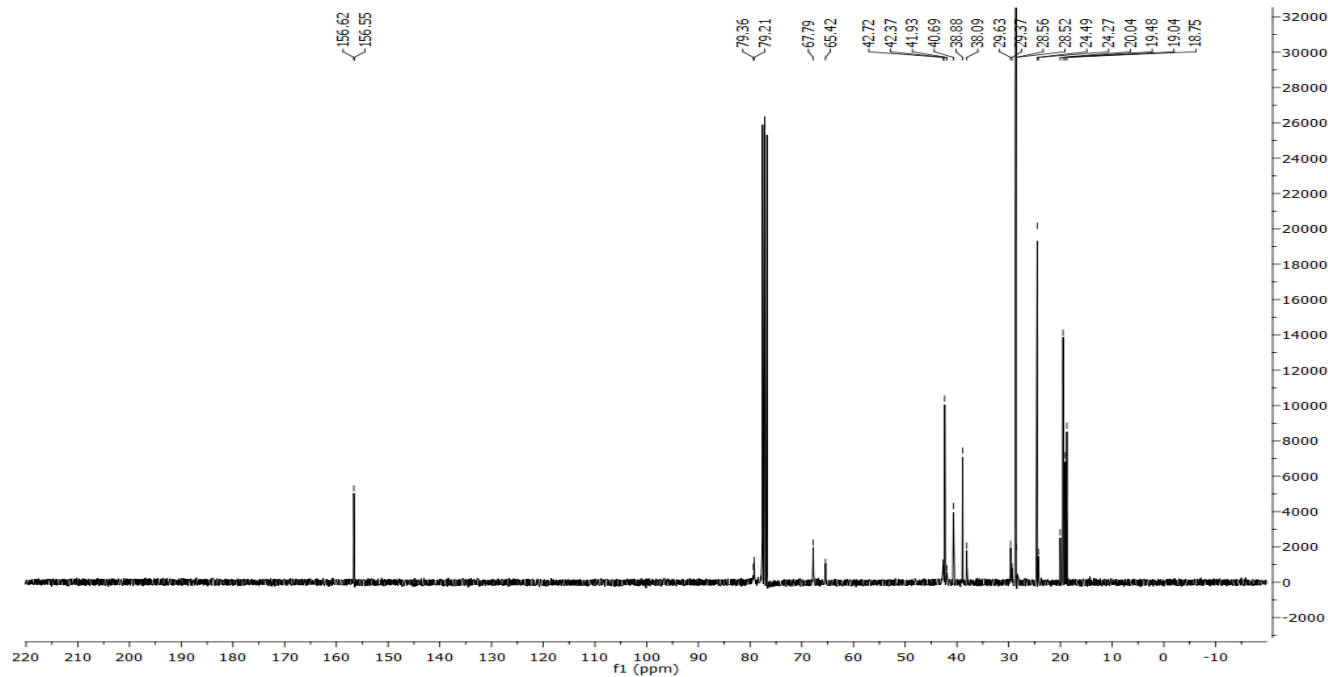


***tert*-Butyl *N*-(4-hydroxy-2-isopropylpentyl)carbamate (3-127)**

¹H-NMR spectrum

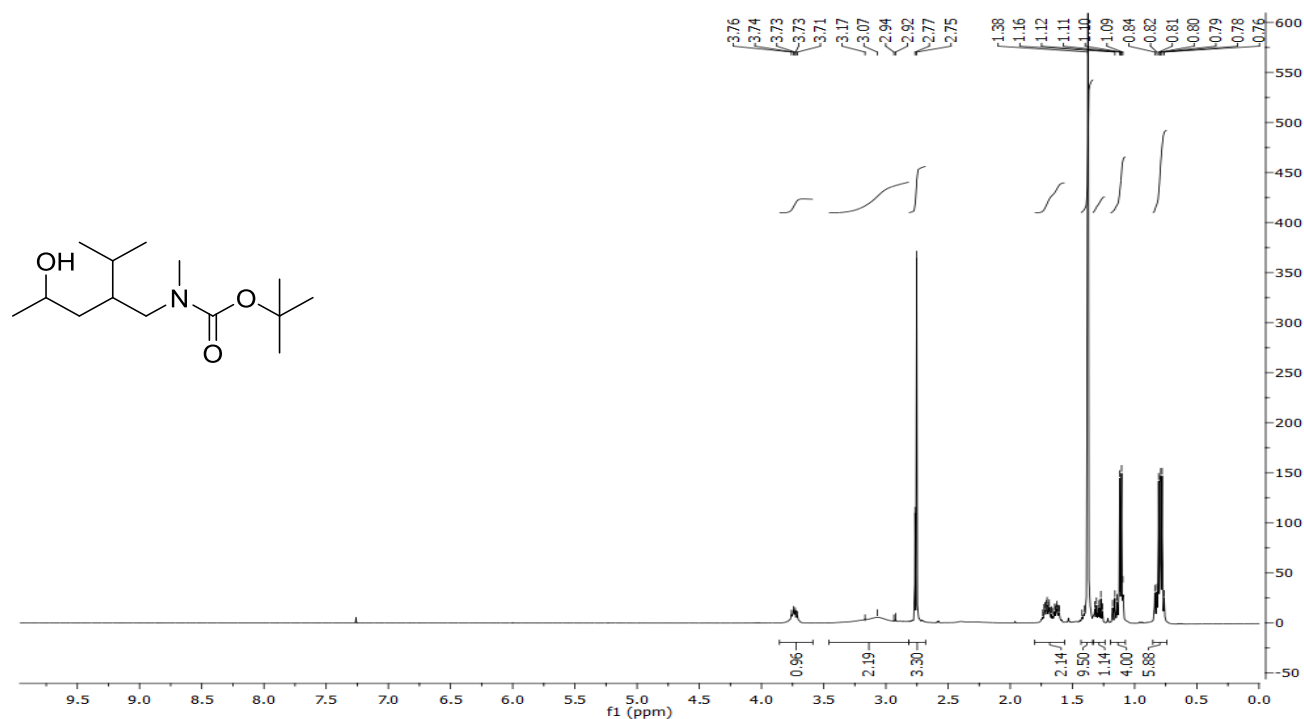


¹³C-NMR spectrum

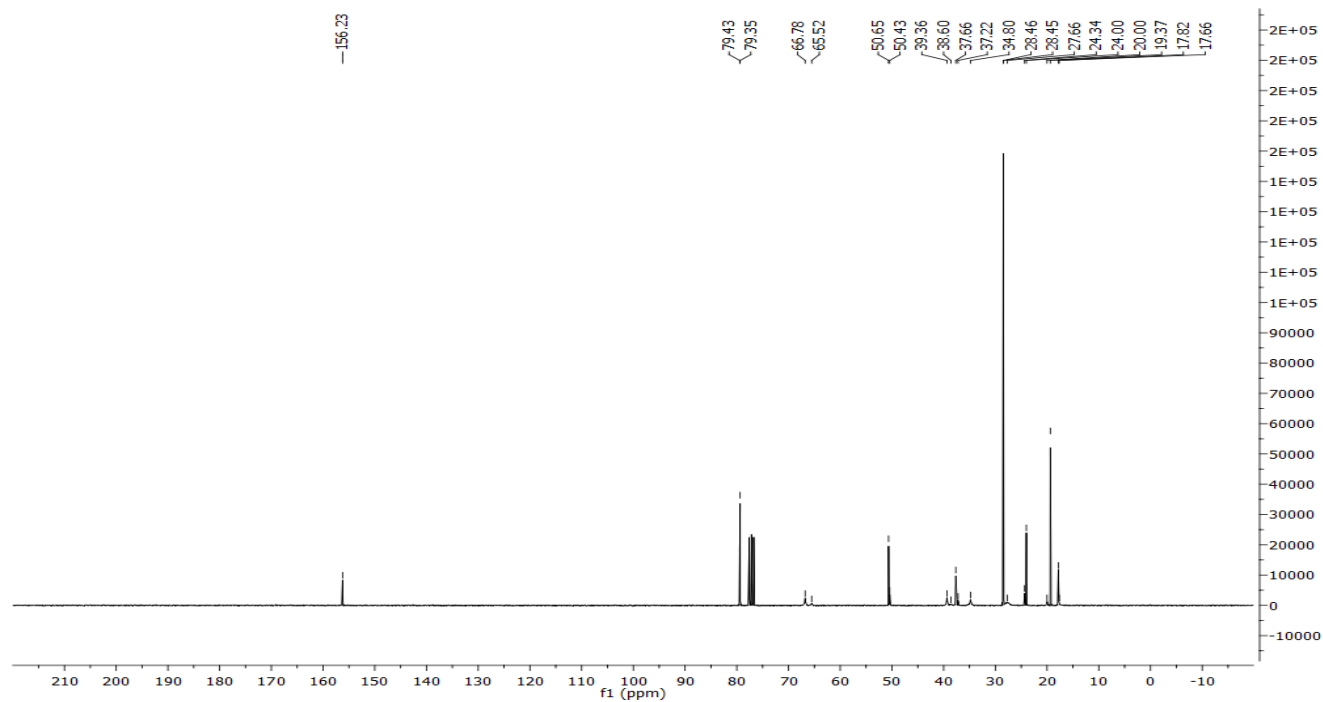


***tert*-Butyl *N*-(4-hydroxy-2-isopropylpentyl)-*N*-methylcarbamate (3-128)**

¹H-NMR spectrum

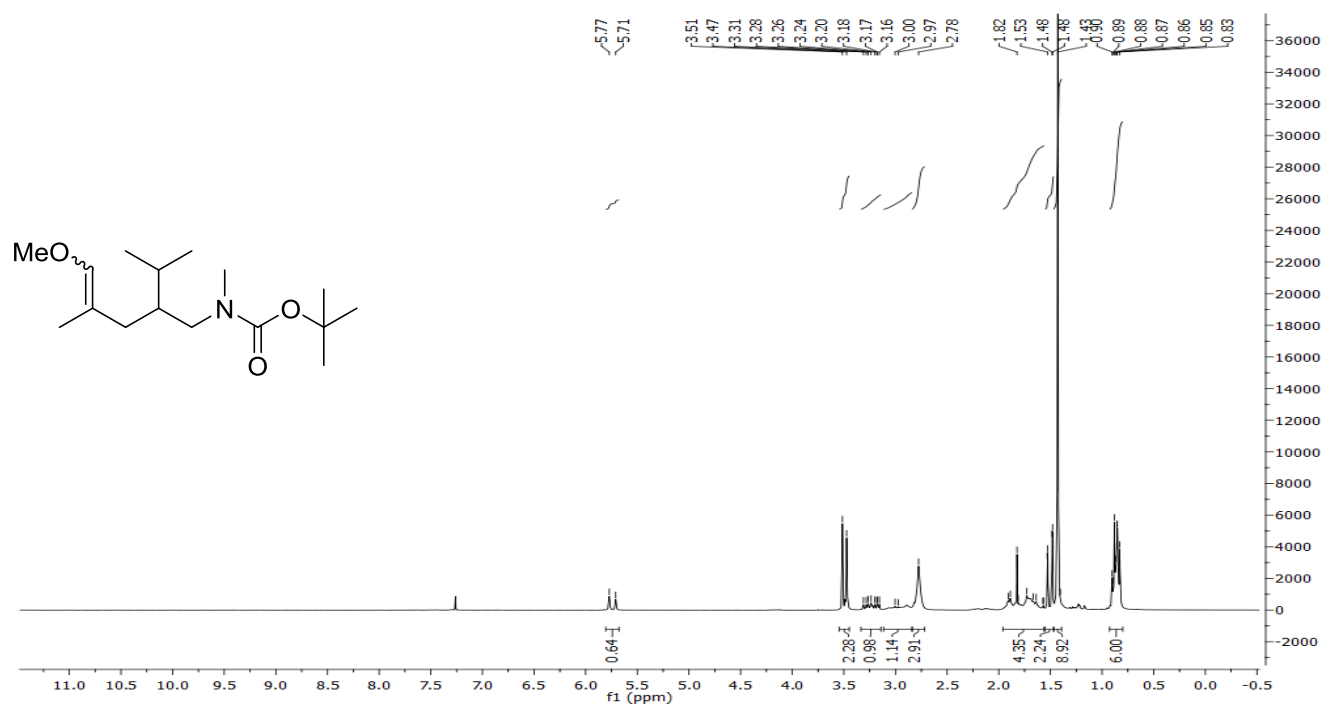


¹³C-NMR spectrum

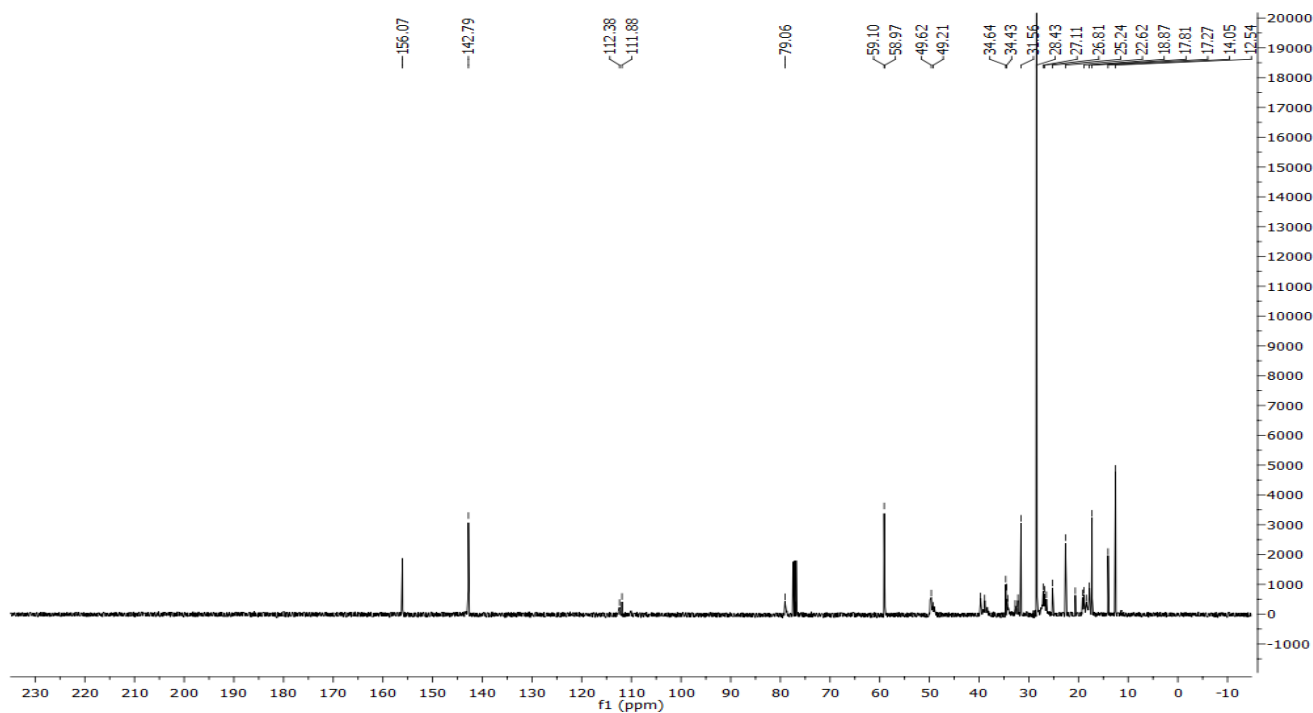


tert-Butyl *N*-(2-isopropyl-5-methoxy-4-methylpent-4-en-1-yl)-*N*-methylcarbamate (3-129)

¹H-NMR spectrum

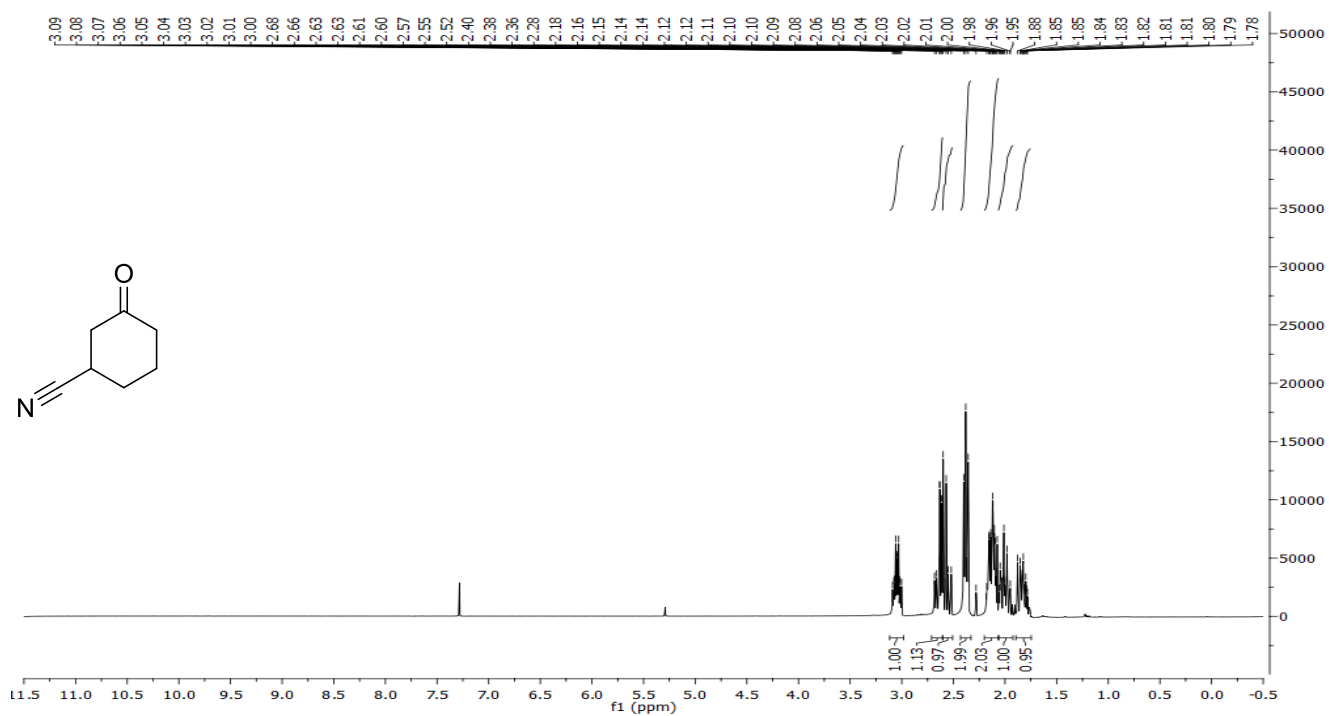


¹³C-NMR spectrum

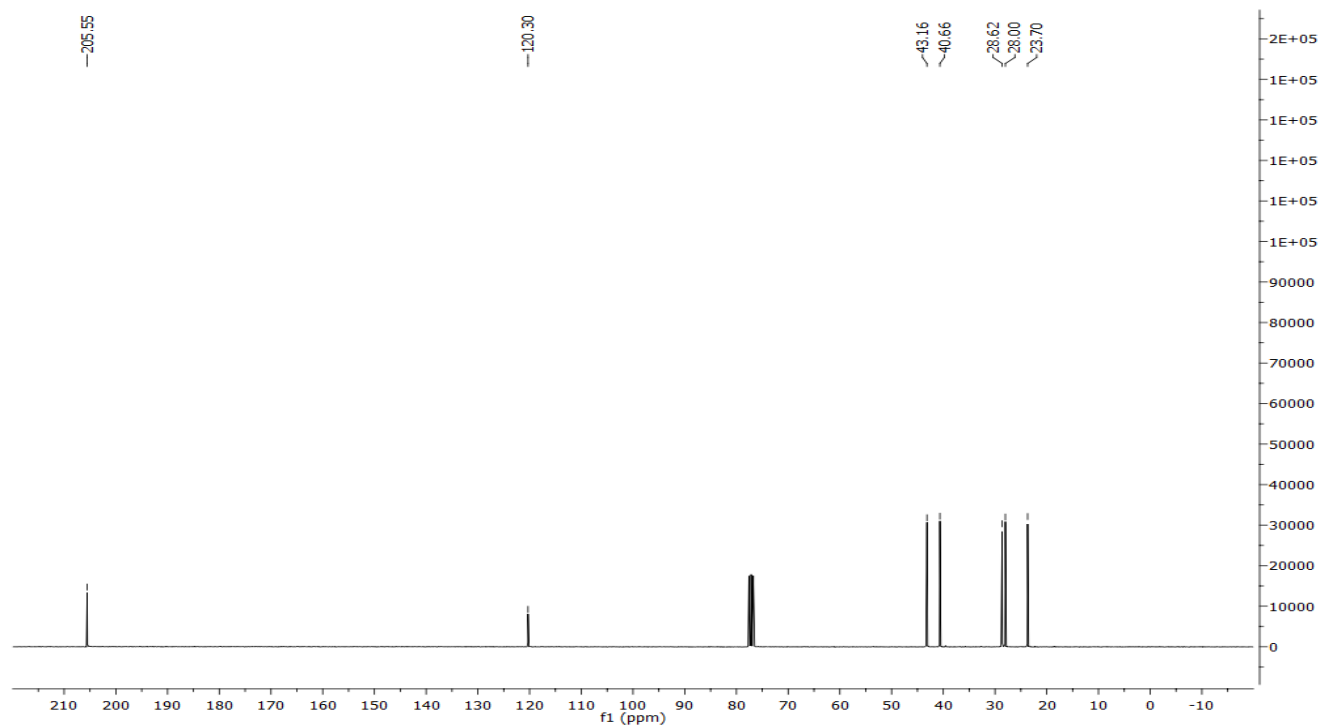


3-Oxocyclohexane-1-carbonitrile (3-131)

¹H-NMR spectrum

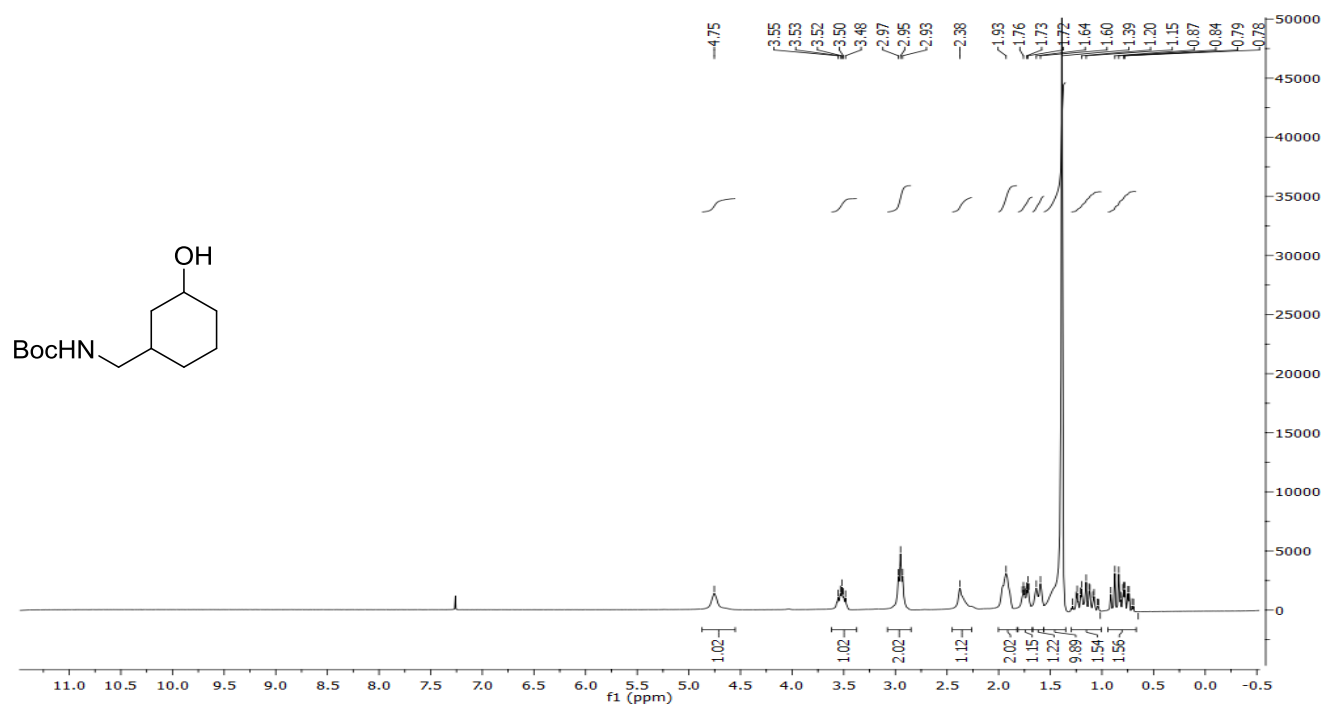


¹³C-NMR spectrum

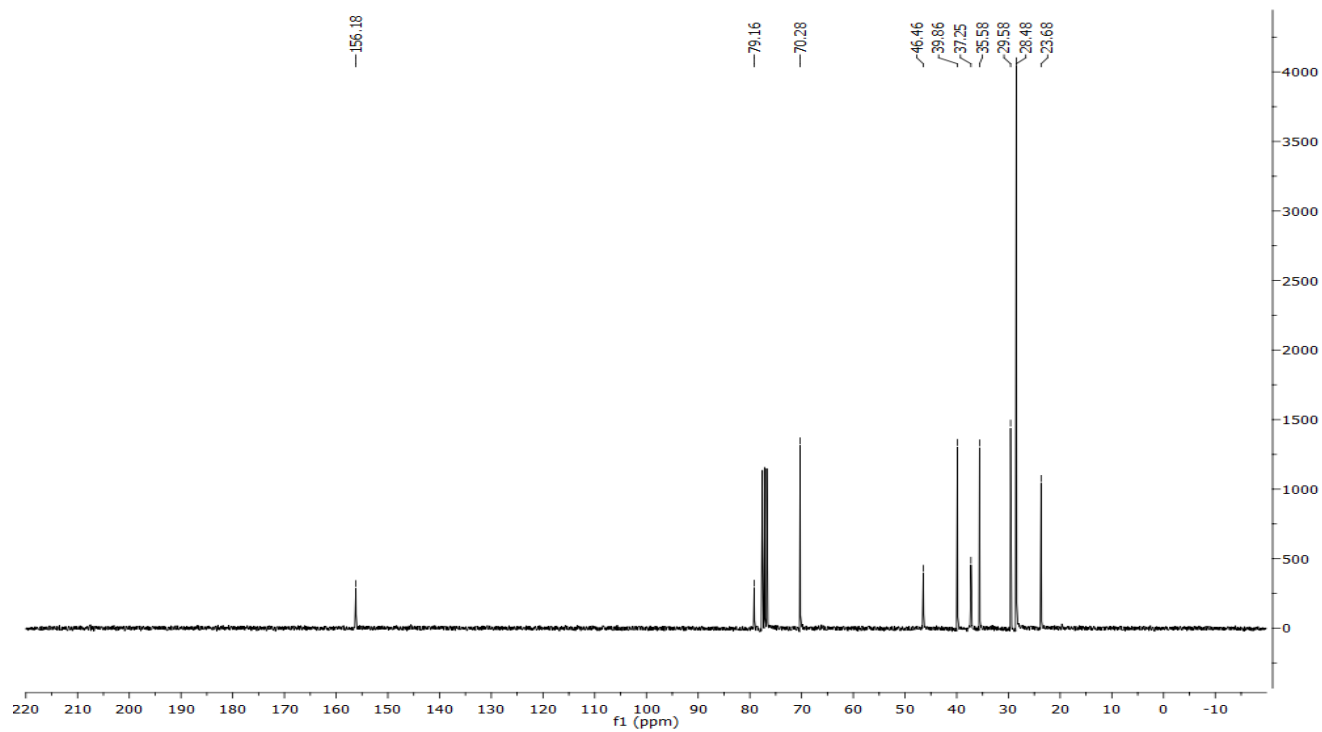


***tert*-Butyl *N*-((3-hydroxycyclohexyl)methyl)carbamate (3-132)**

¹H-NMR spectrum

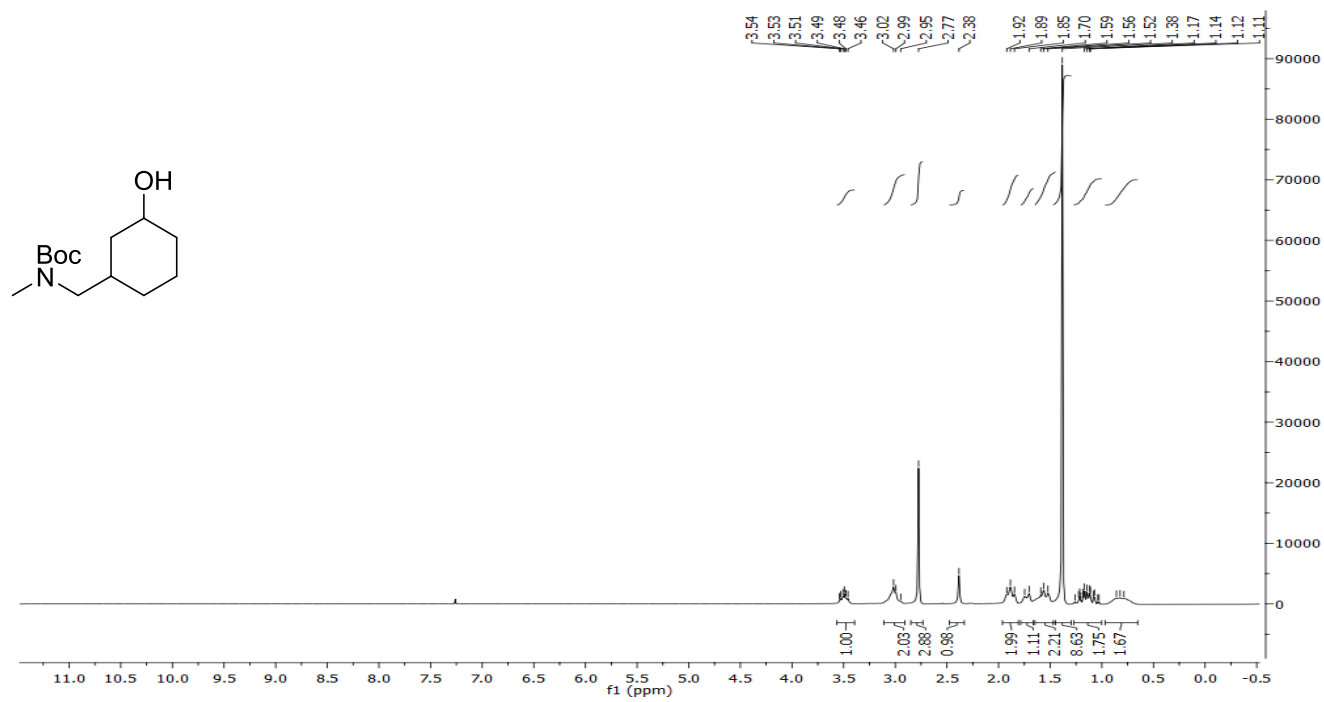


¹³C-NMR spectrum

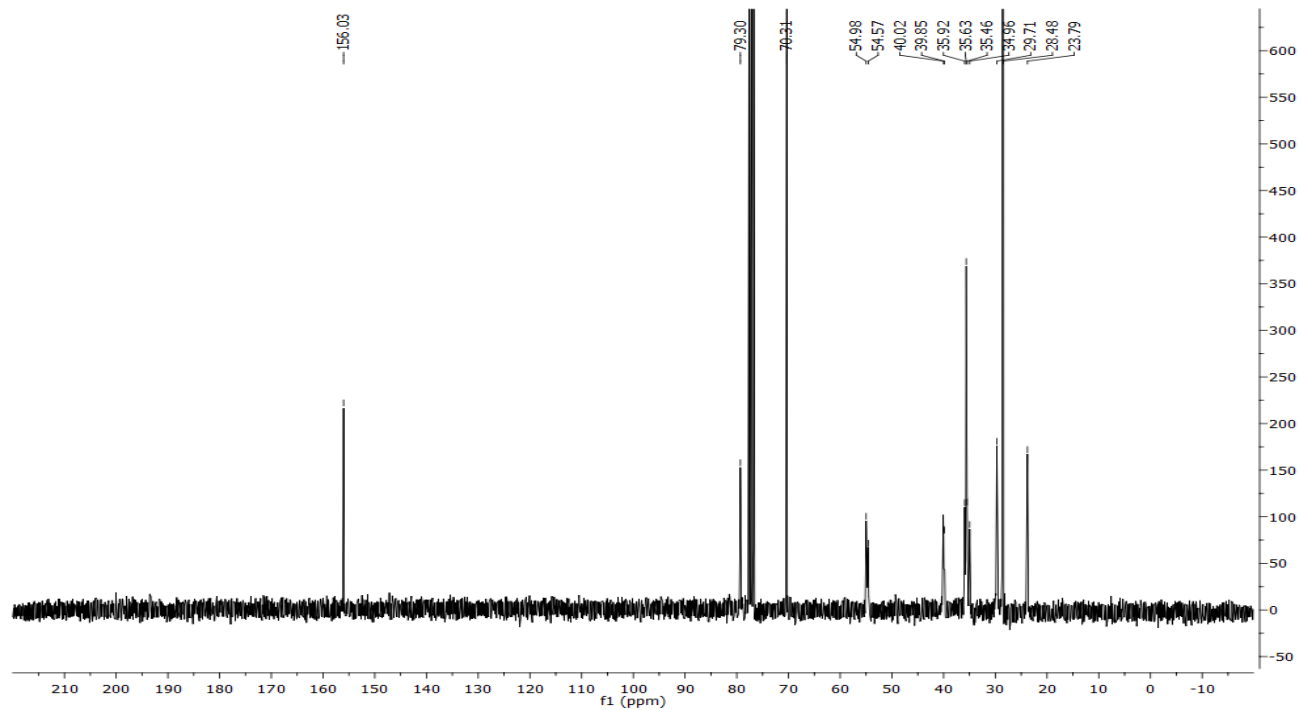


***tert*-Butyl *N*-((3-hydroxycyclohexyl)methyl)-*N*-methylcarbamate (3-133)**

¹H-NMR spectrum

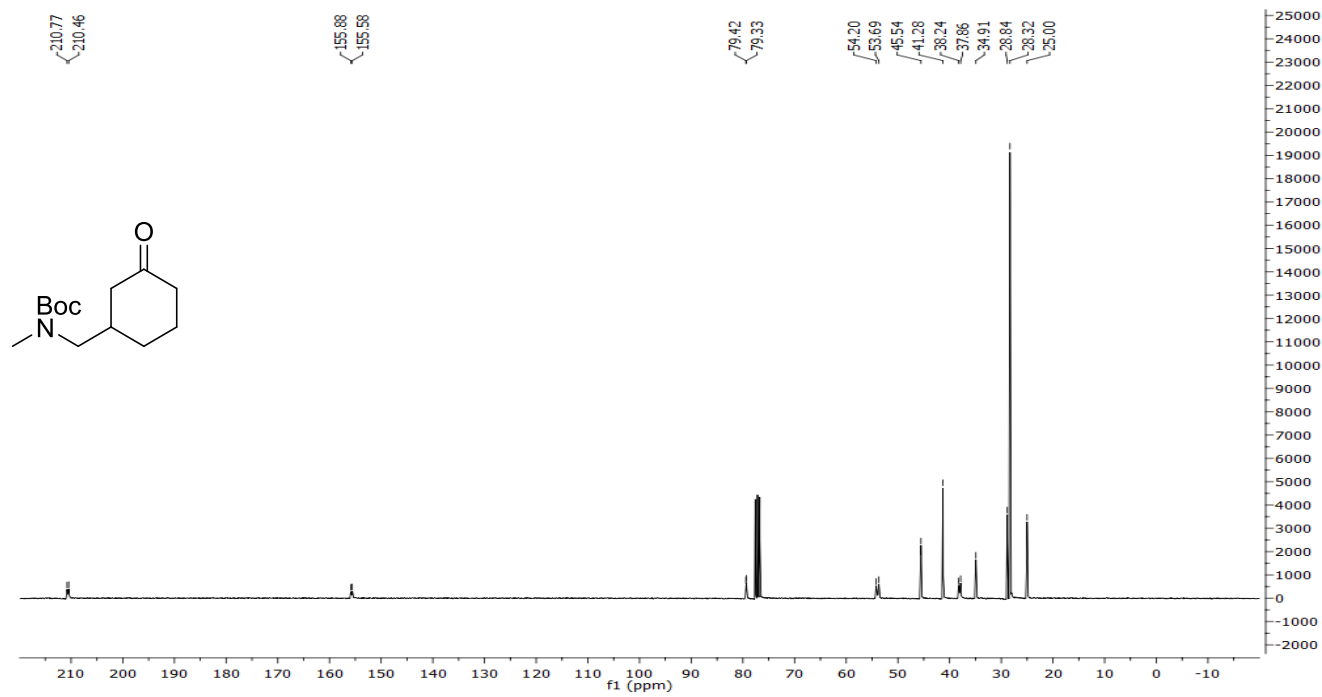


¹³C-NMR spectrum

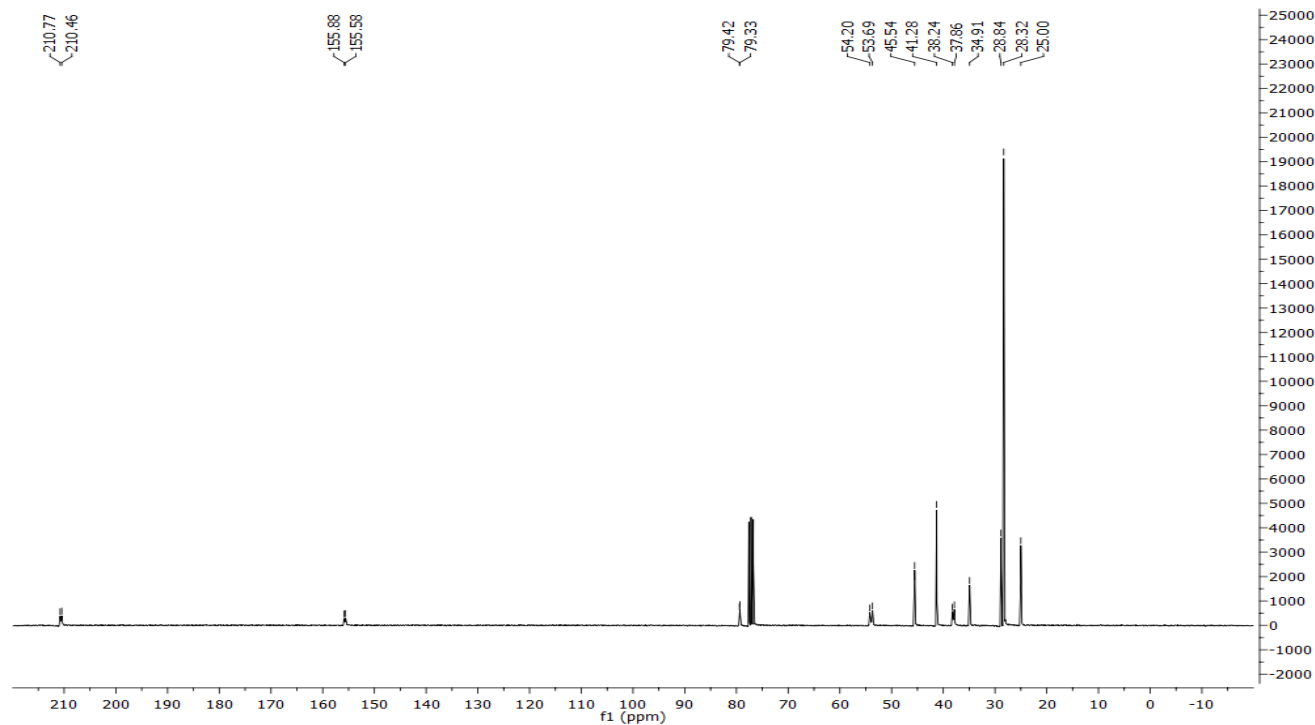


***tert*-Butyl *N*-methyl-*N*-((3-oxocyclohexyl)methyl)carbamate (3-134)**

¹H-NMR spectrum

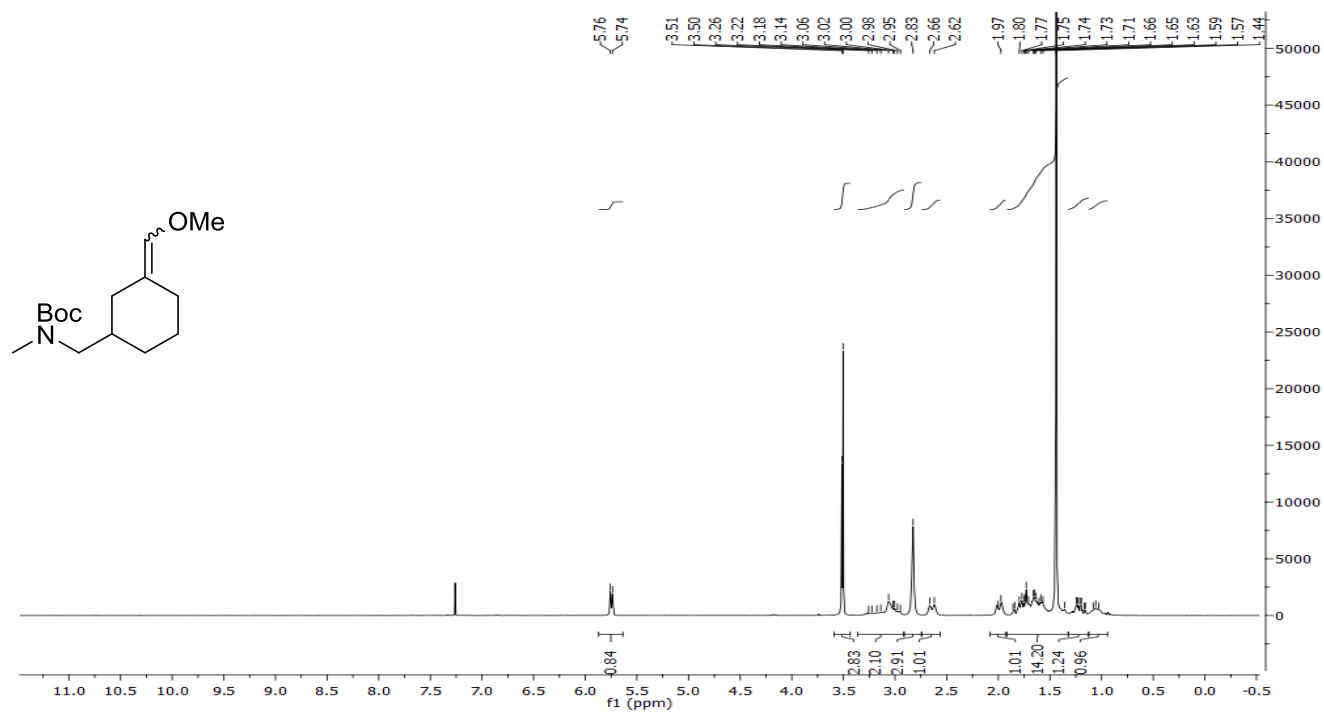


¹³C-NMR spectrum

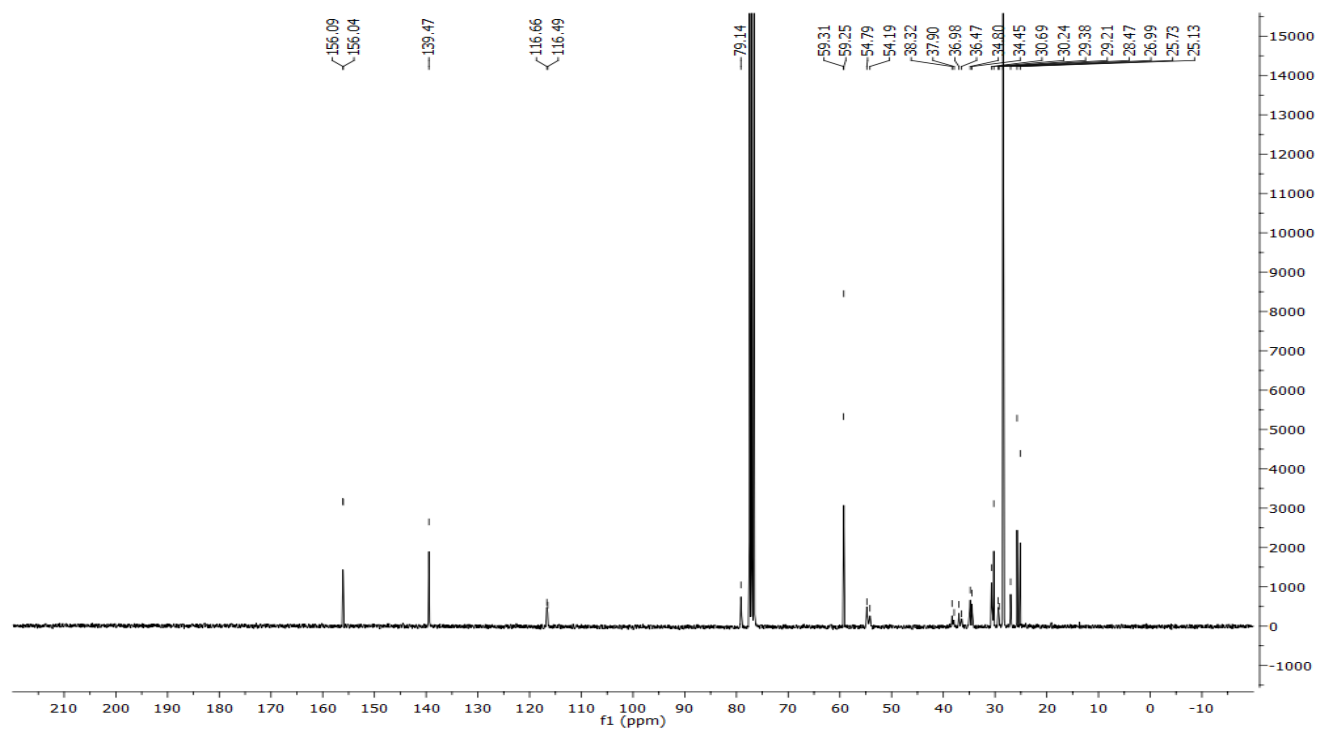


***tert*-Butyl *N*-((3-(methoxymethylene)cyclohexyl)methyl)-*N*-methylcarbamate (3-135)**

¹H-NMR spectrum

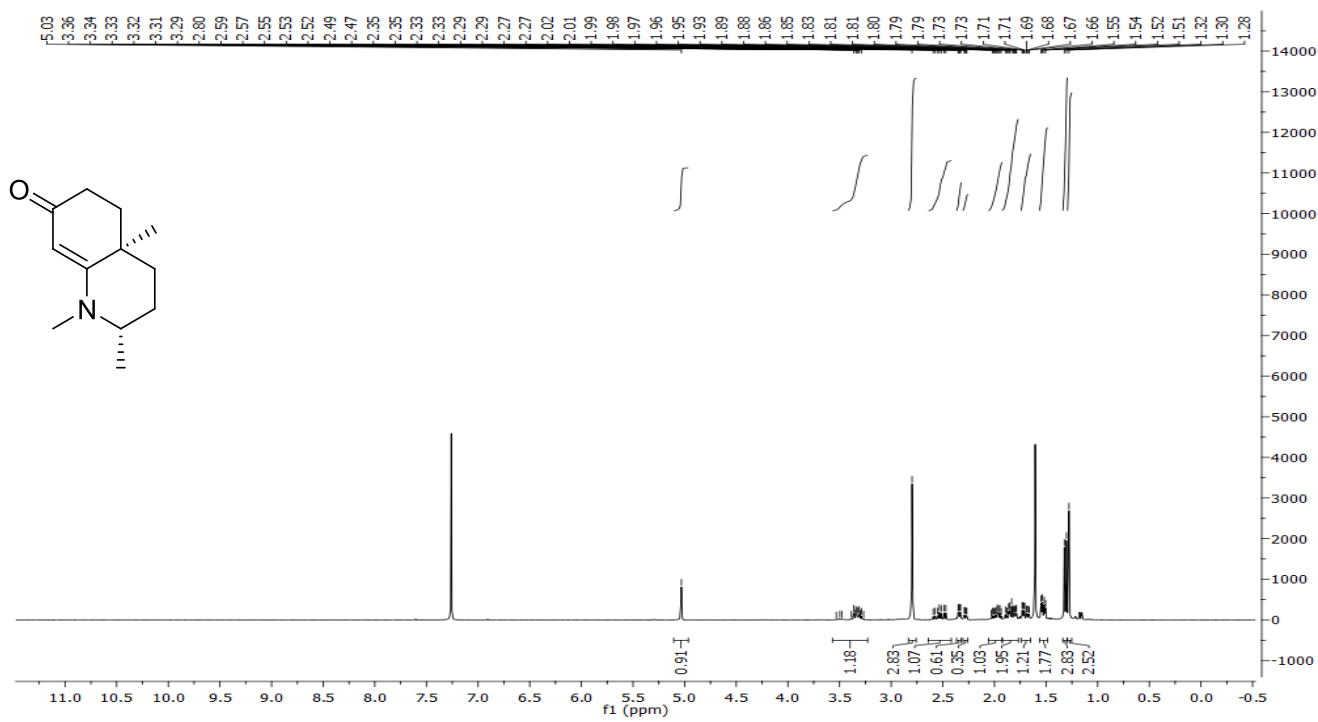


¹³C-NMR spectrum

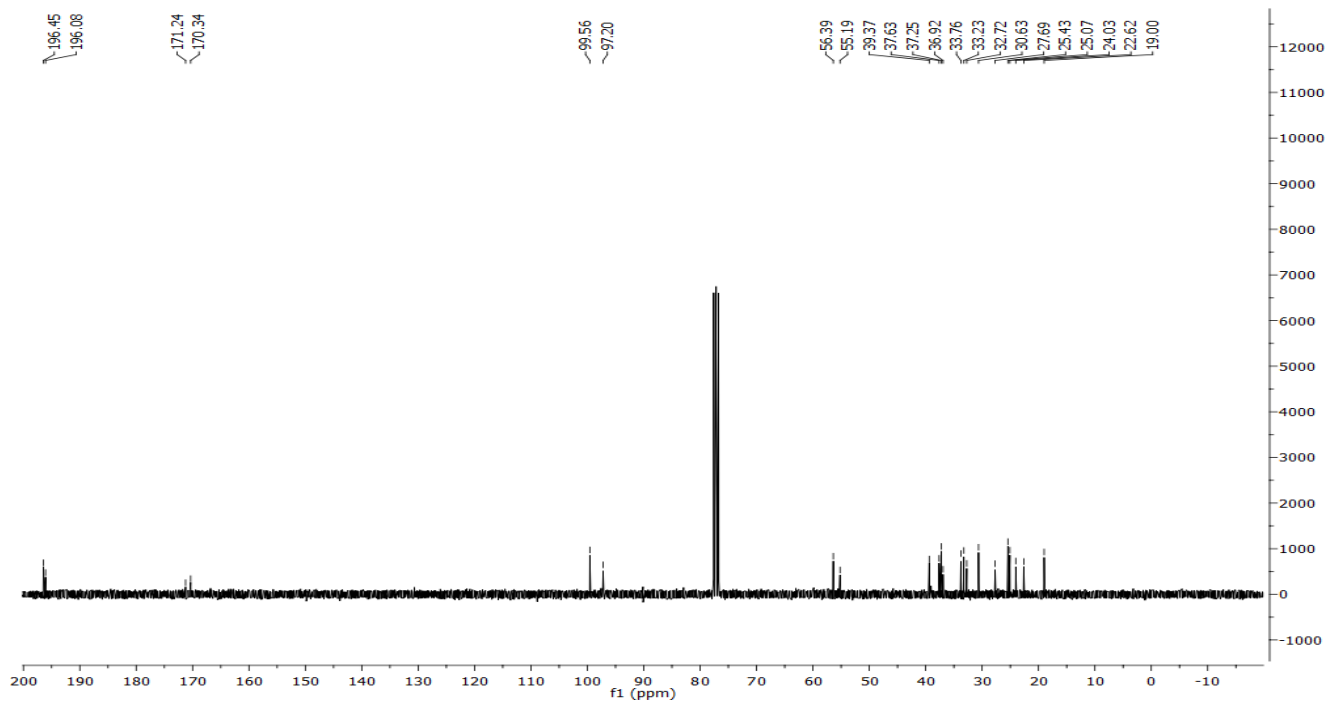


(2*S*,4*aR*)-1,2,4*a*-Trimethyl-2,3,4,4*a*,5,6-hexahydroquinolin-7(1*H*)-one (3-141)

¹H-NMR spectrum

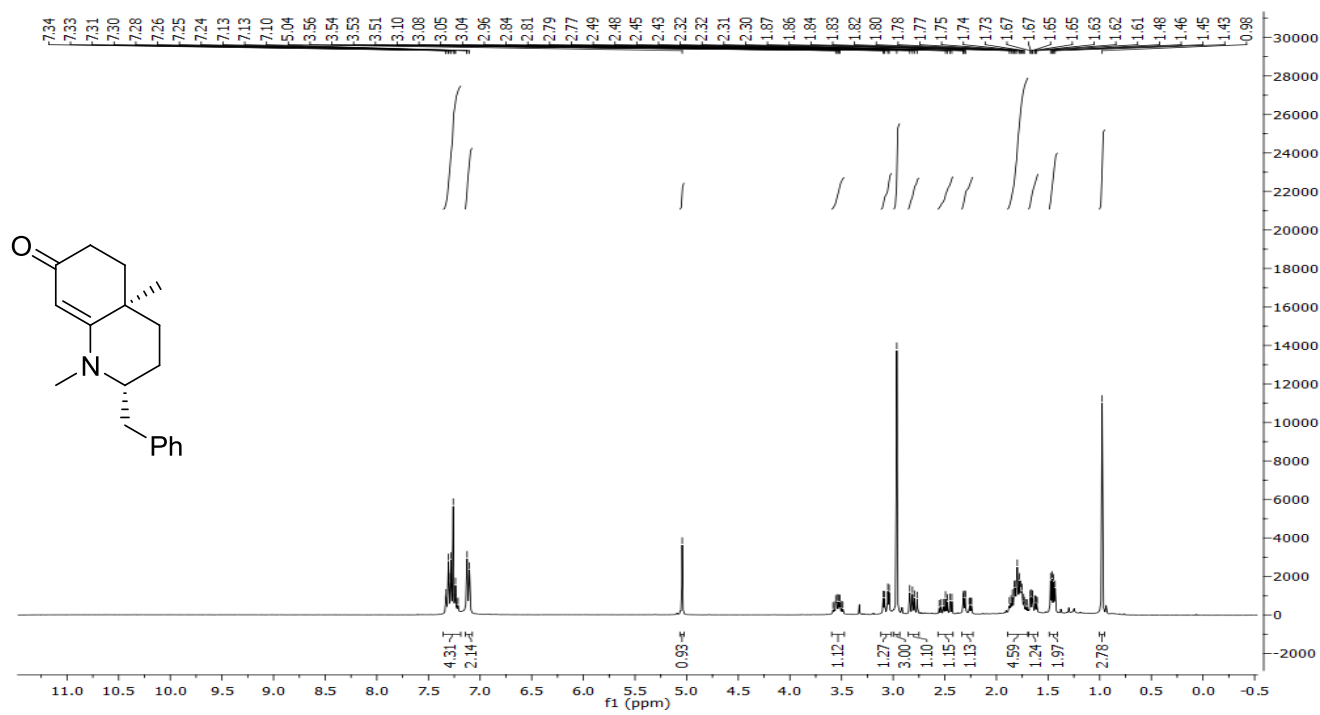


¹³C-NMR spectrum

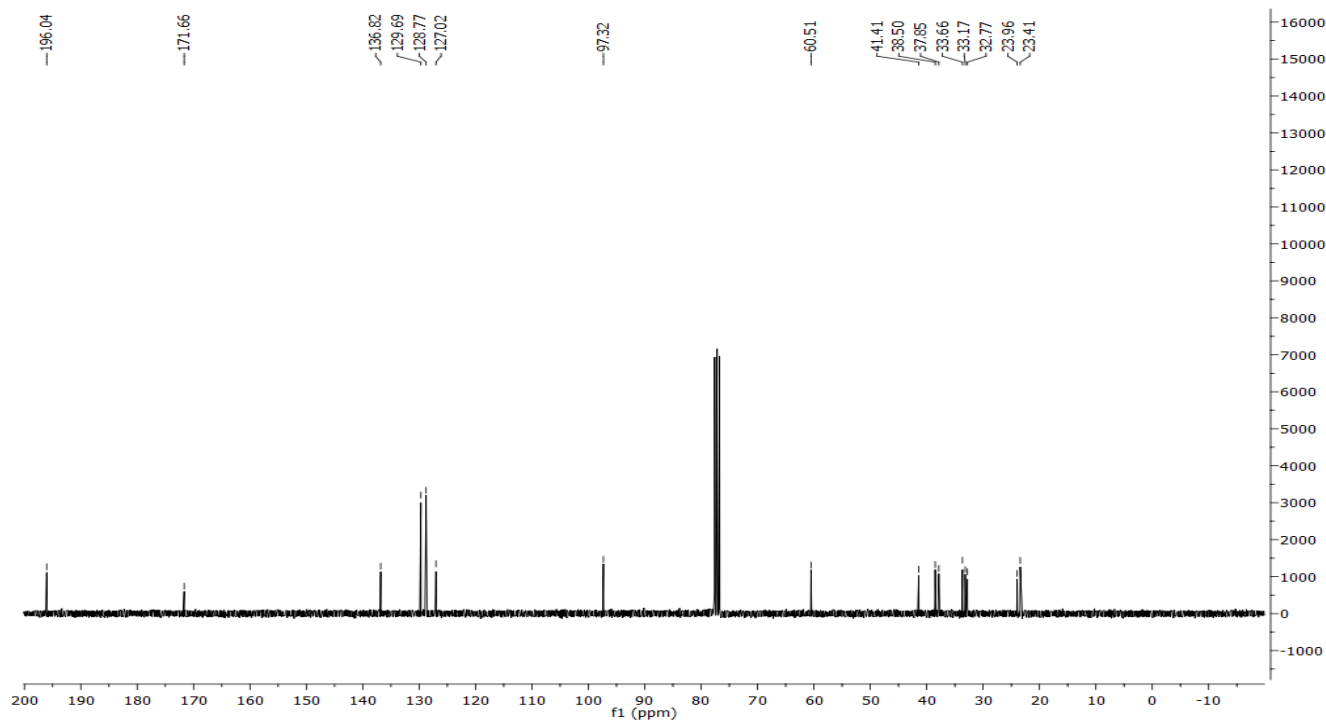


(2*R*,4*aR*)-2-Benzyl-1,4a-dimethyl-2,3,4,4a,5,6-hexahydroquinolin-7(1*H*)-one (3-142)

¹H-NMR spectrum

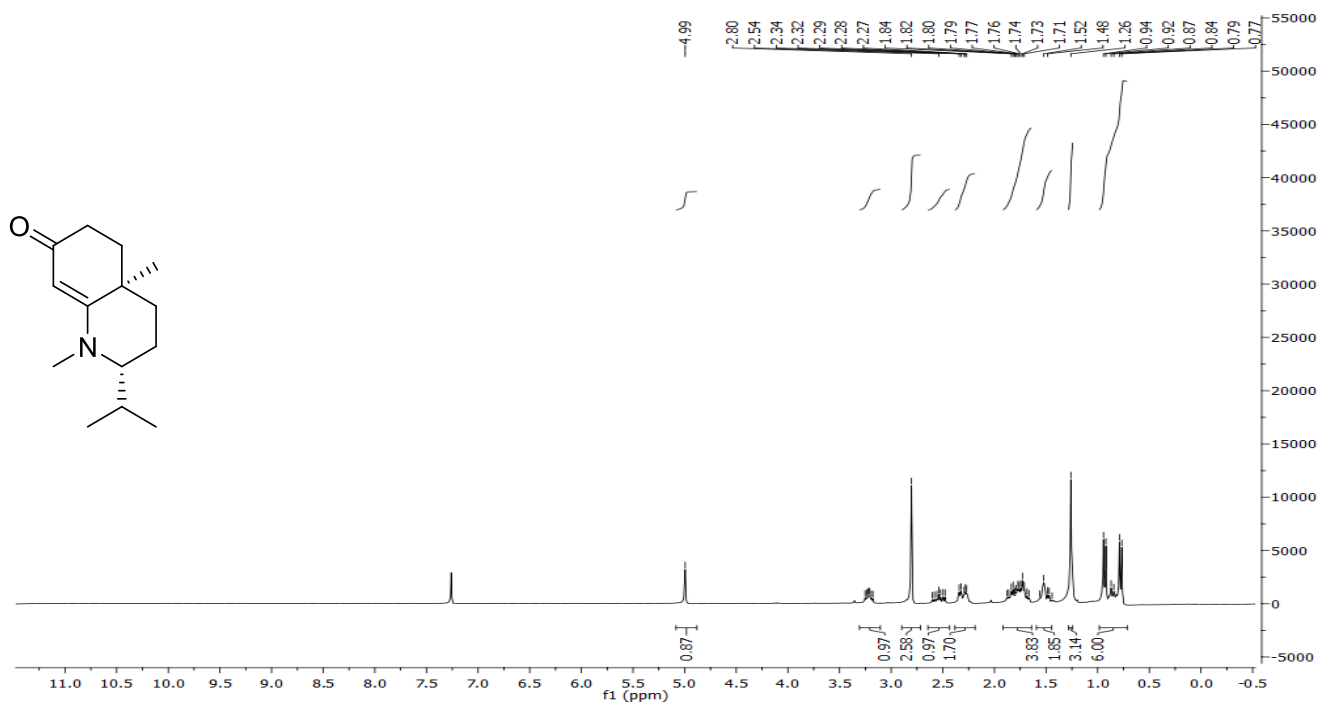


¹³C-NMR spectrum

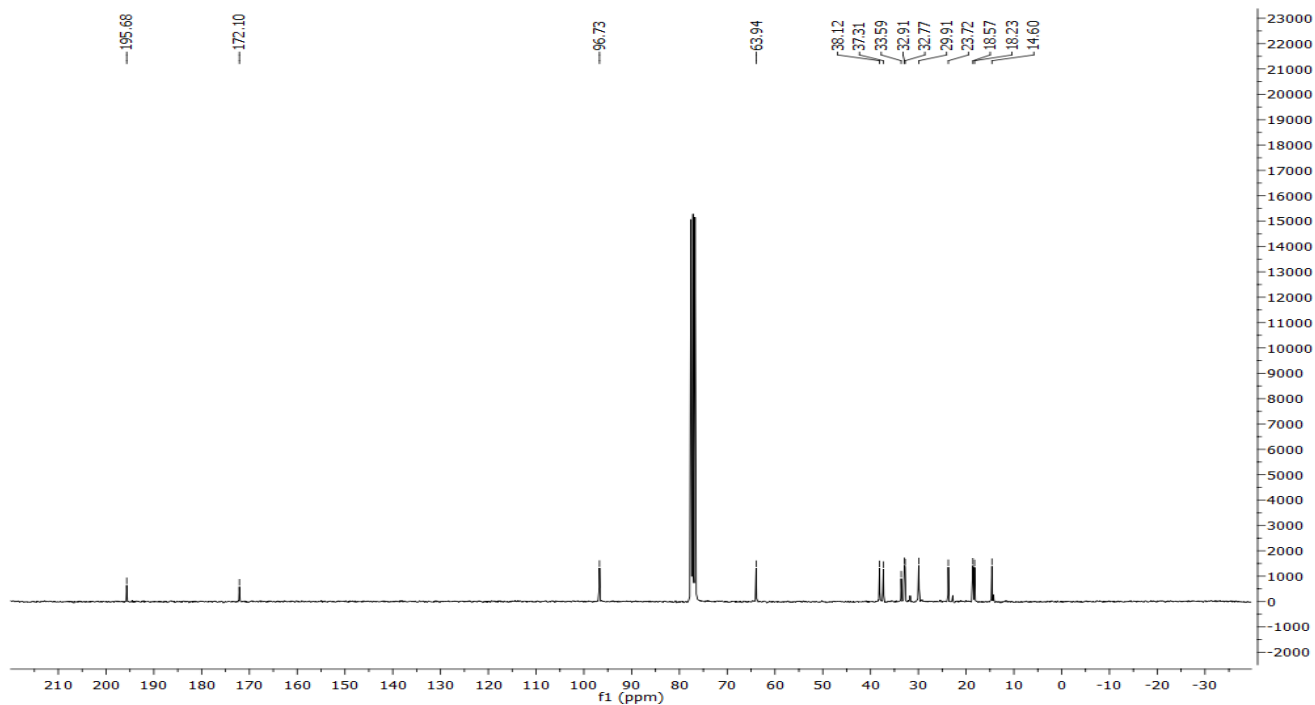


(2*R*,4*aR*)-2-Isopropyl-1,4*a*-dimethyl-2,3,4,4*a*,5,6-hexahydroquinolin-7(1*H*)-one (3-143)

¹H-NMR spectrum

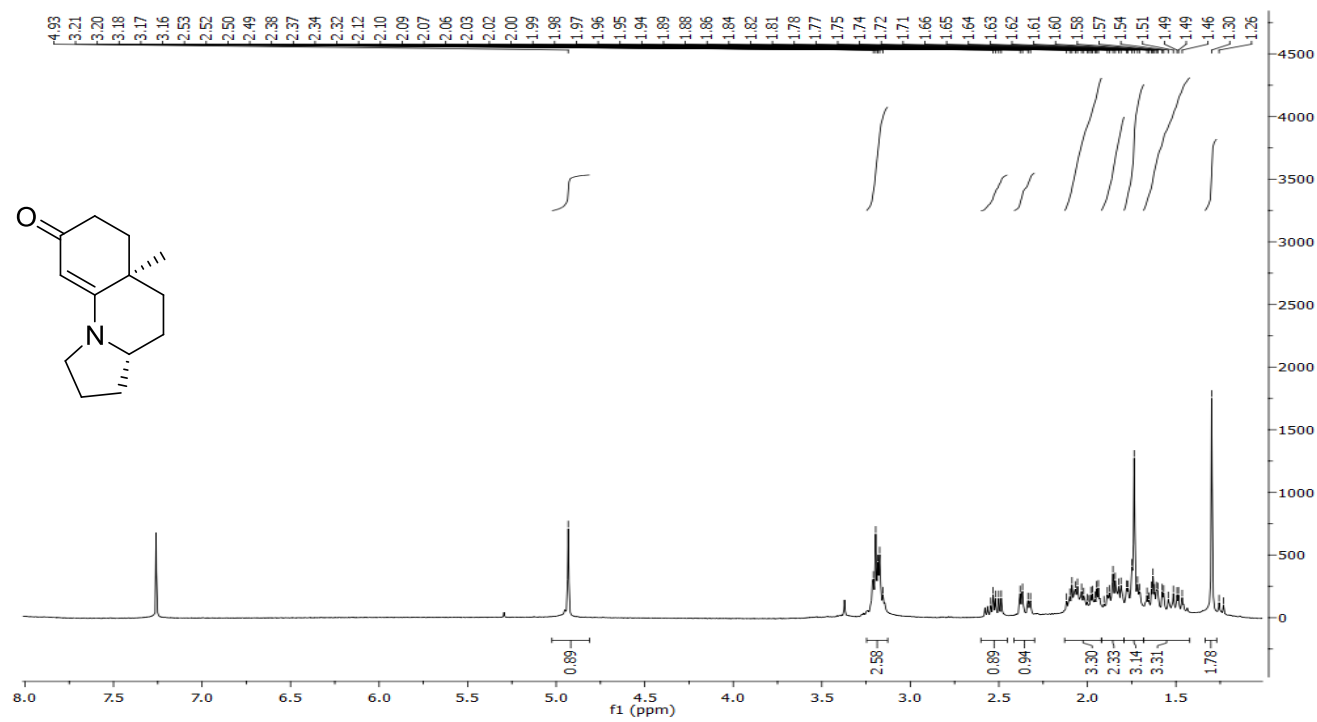


¹³C-NMR spectrum

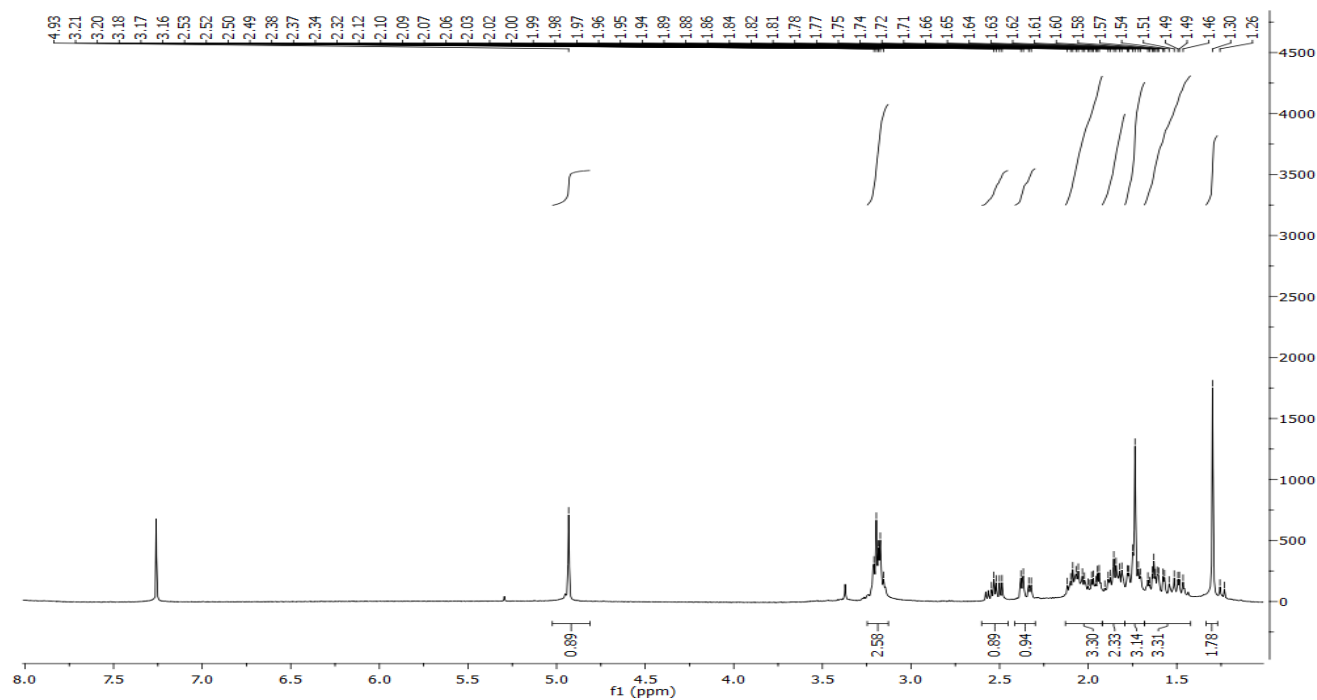


(3*R*,5*aR*)-5*a*-Methyl-2,3,3*a*,4,5,5*a*,6,7-octahydropyrrolo[1,2-*a*]quinolin-8(1*H*)-one (3-144)

¹H-NMR spectrum

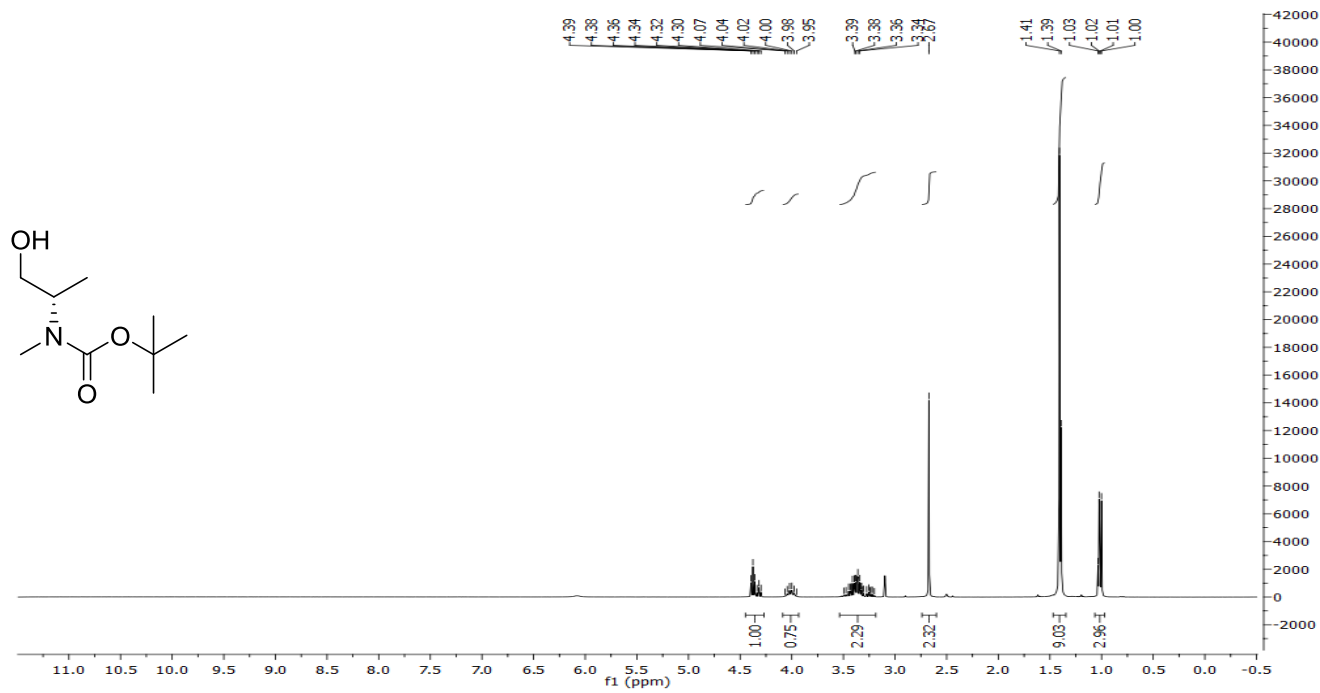


¹³C-NMR spectrum

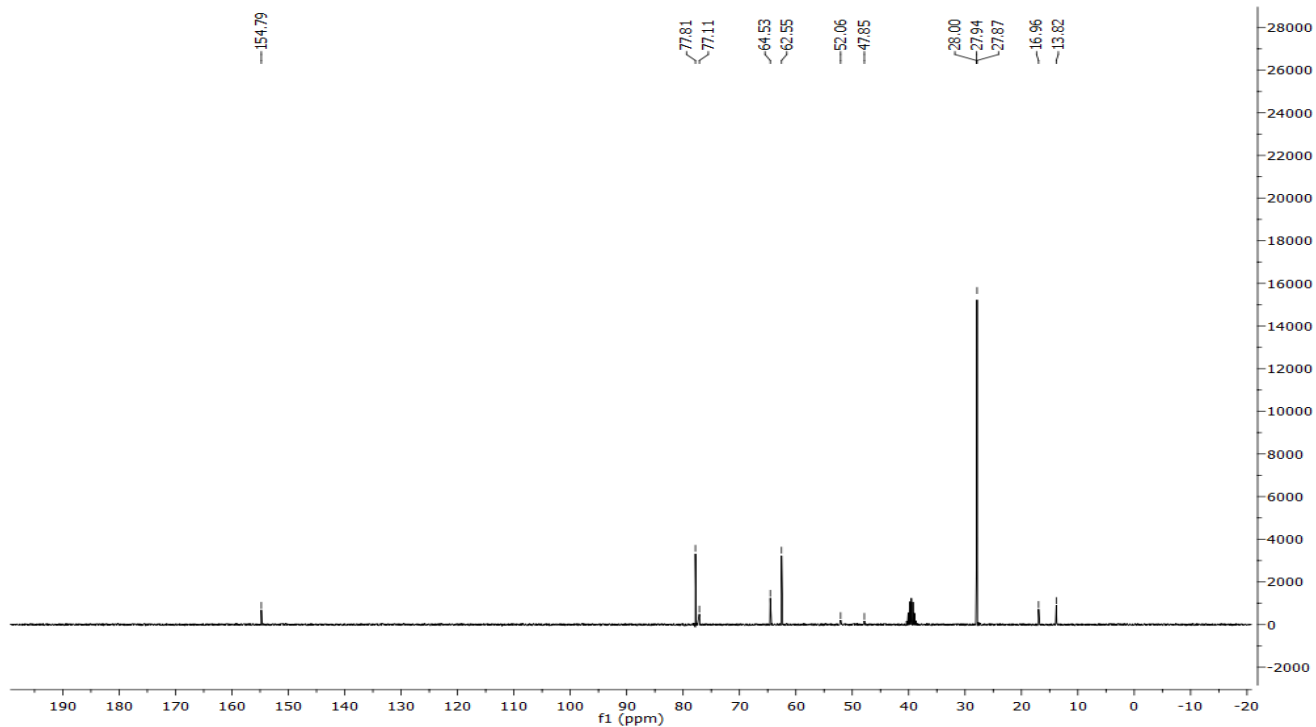


tert-Butyl (S)-N-(1-hydroxypropan-2-yl)-N-methylcarbamate (3-148)

¹H-NMR spectrum

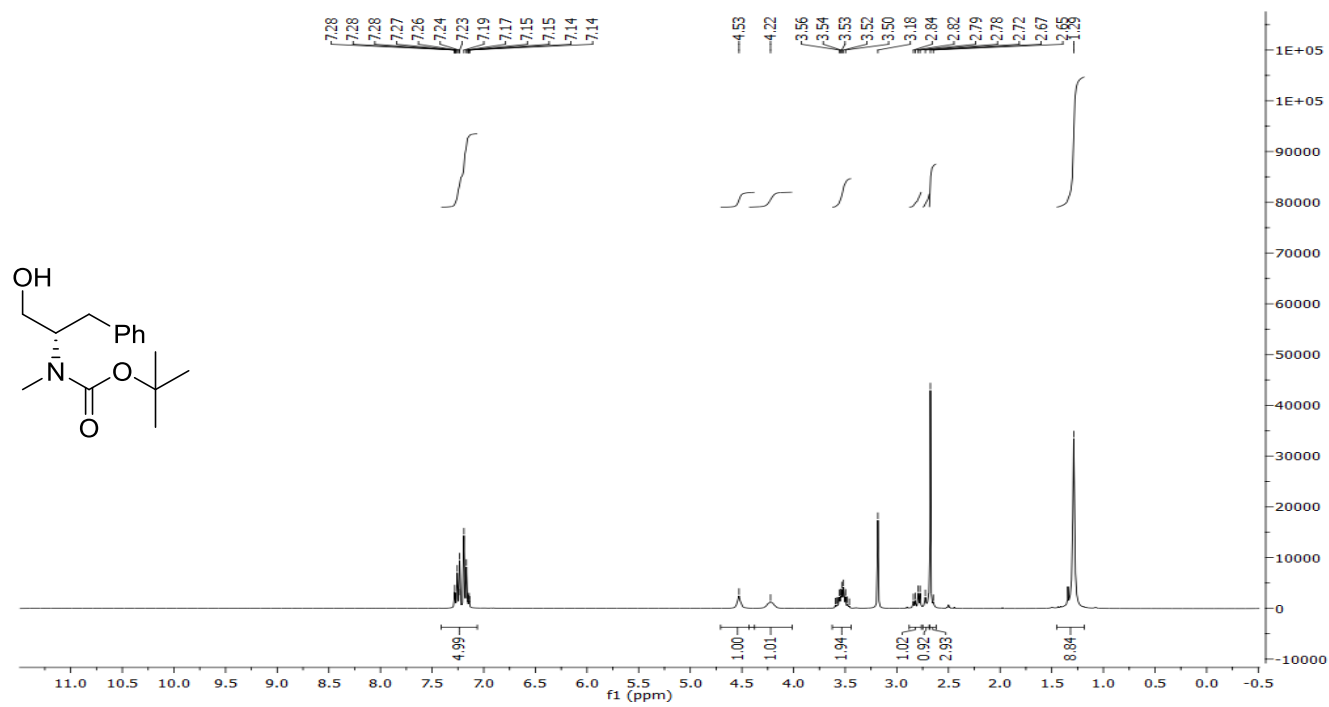


¹³C-NMR spectrum

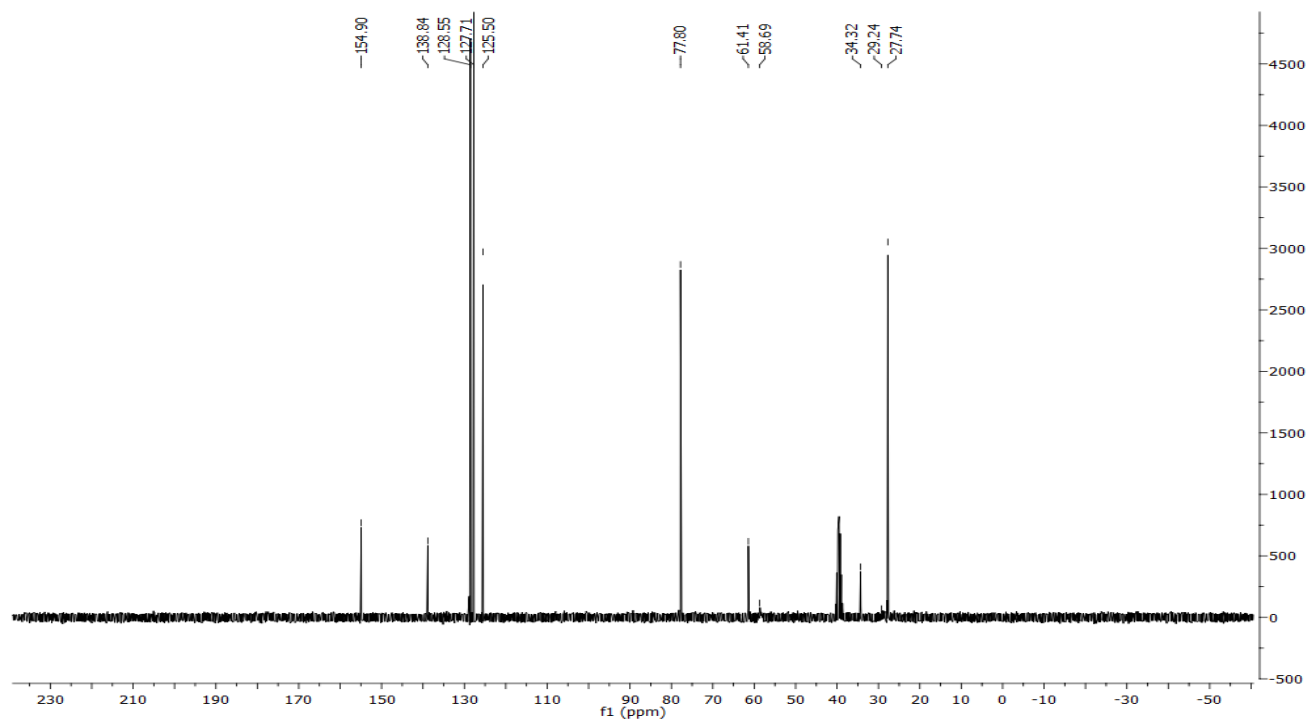


***tert*-Butyl (*S*)-*N*-(1-hydroxy-3-phenylpropan-2-yl)-*N*-methylcarbamate (3-149)**

¹H-NMR spectrum

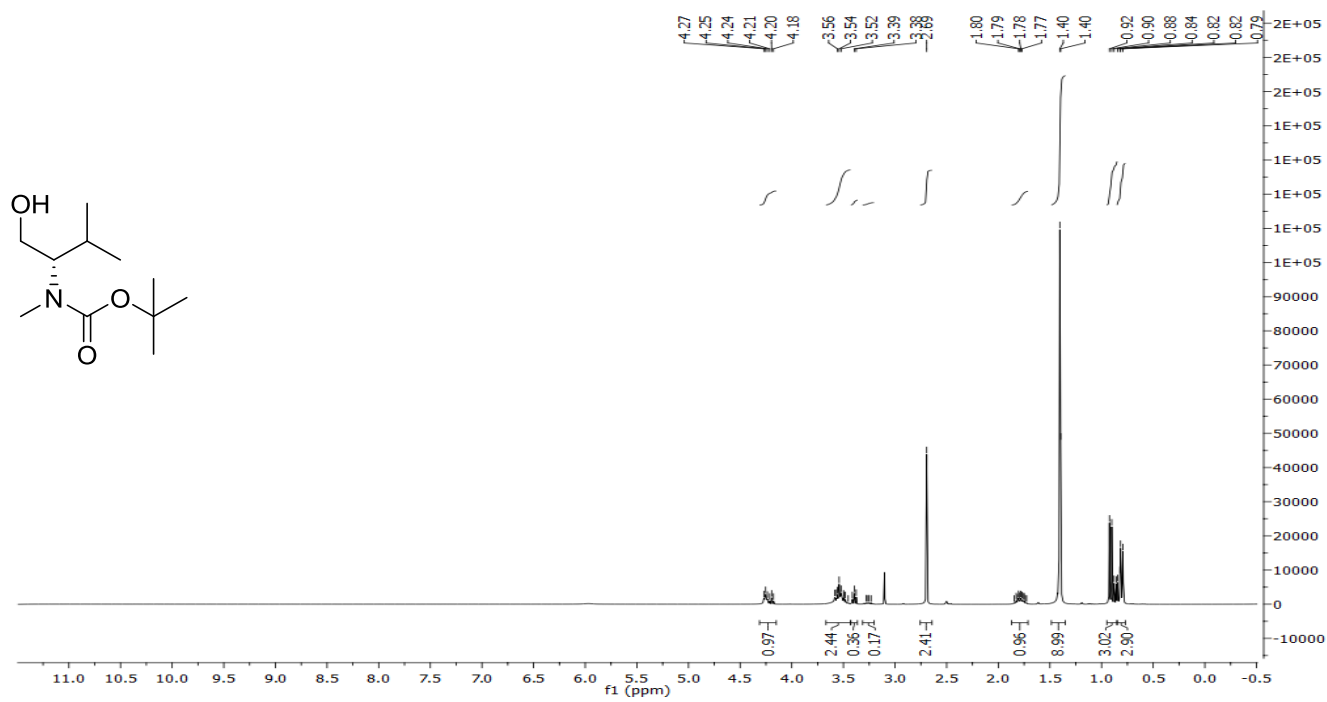


¹³C-NMR spectrum

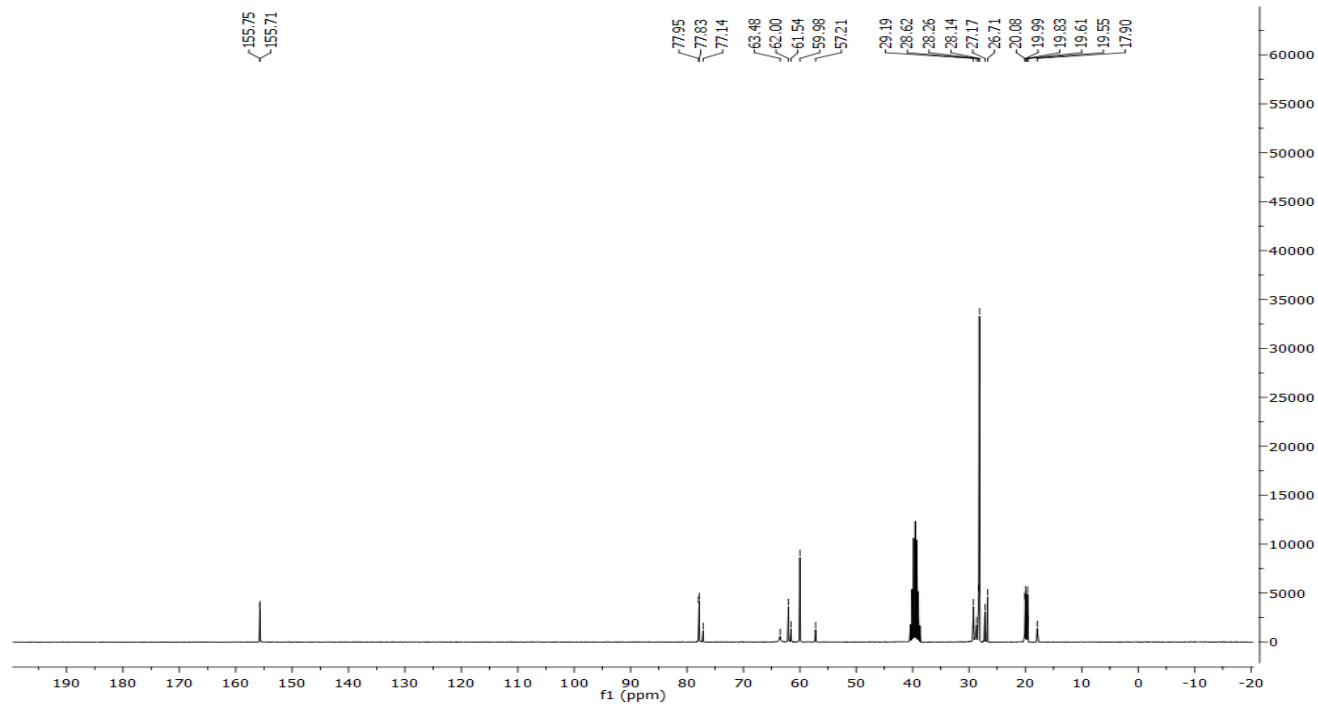


***tert*-Butyl (*S*)-*N*-(1-hydroxy-3-methylbutan-2-yl)-*N*-methylcarbamate (3-150)**

¹H-NMR spectrum

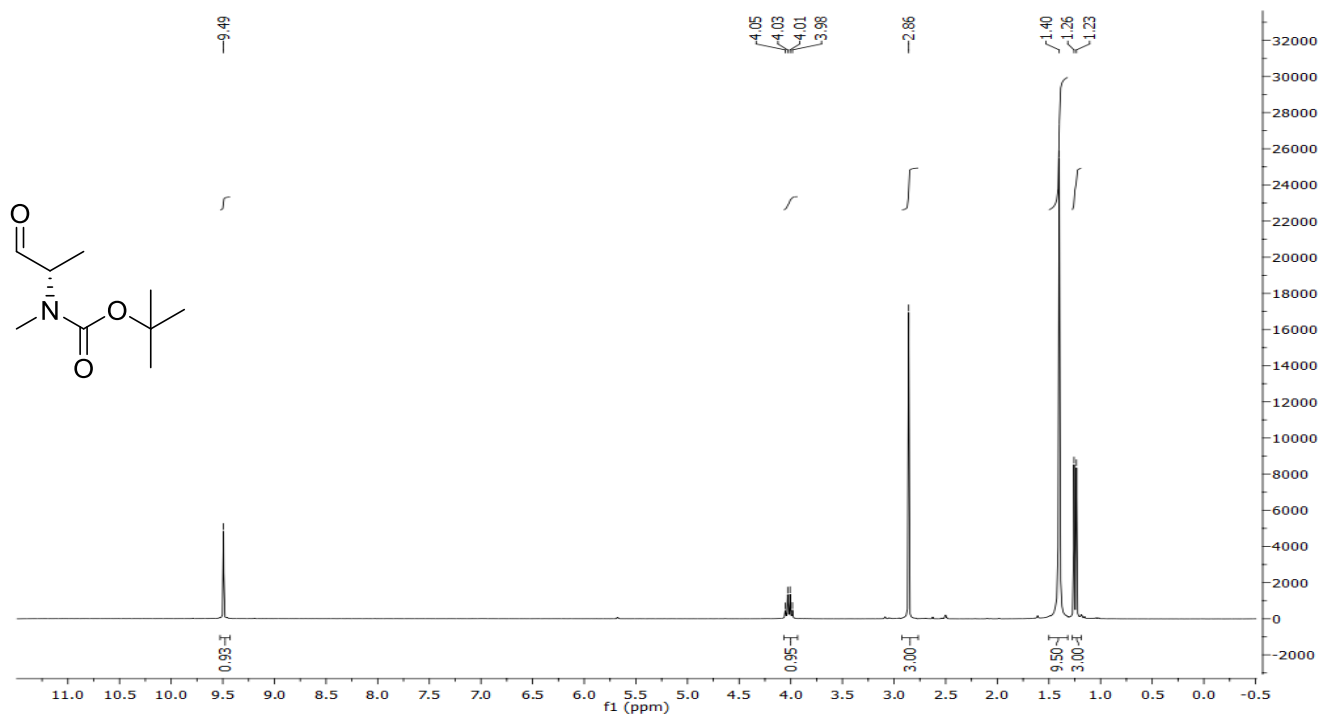


¹³C-NMR spectrum

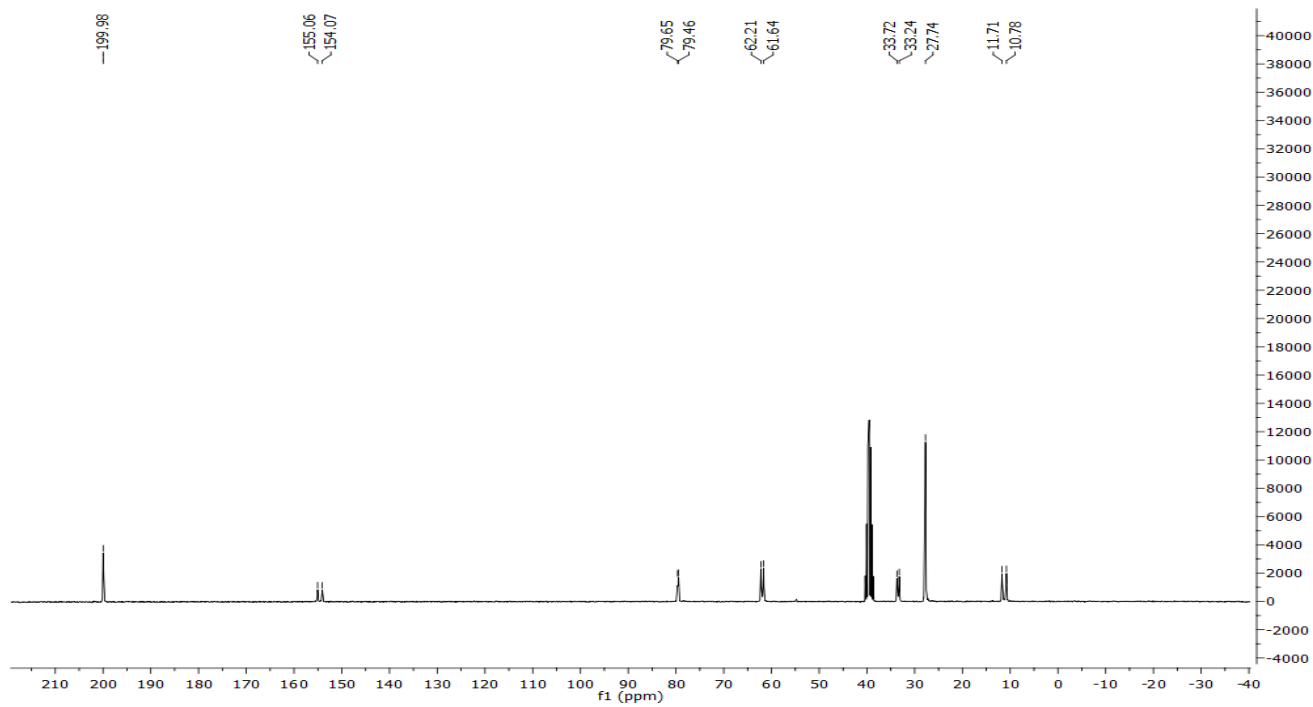


***tert*-Butyl (*S*)-*N*-methyl-*N*-(1-oxopropan-2-yl)carbamate (3-151)**

¹H-NMR spectrum

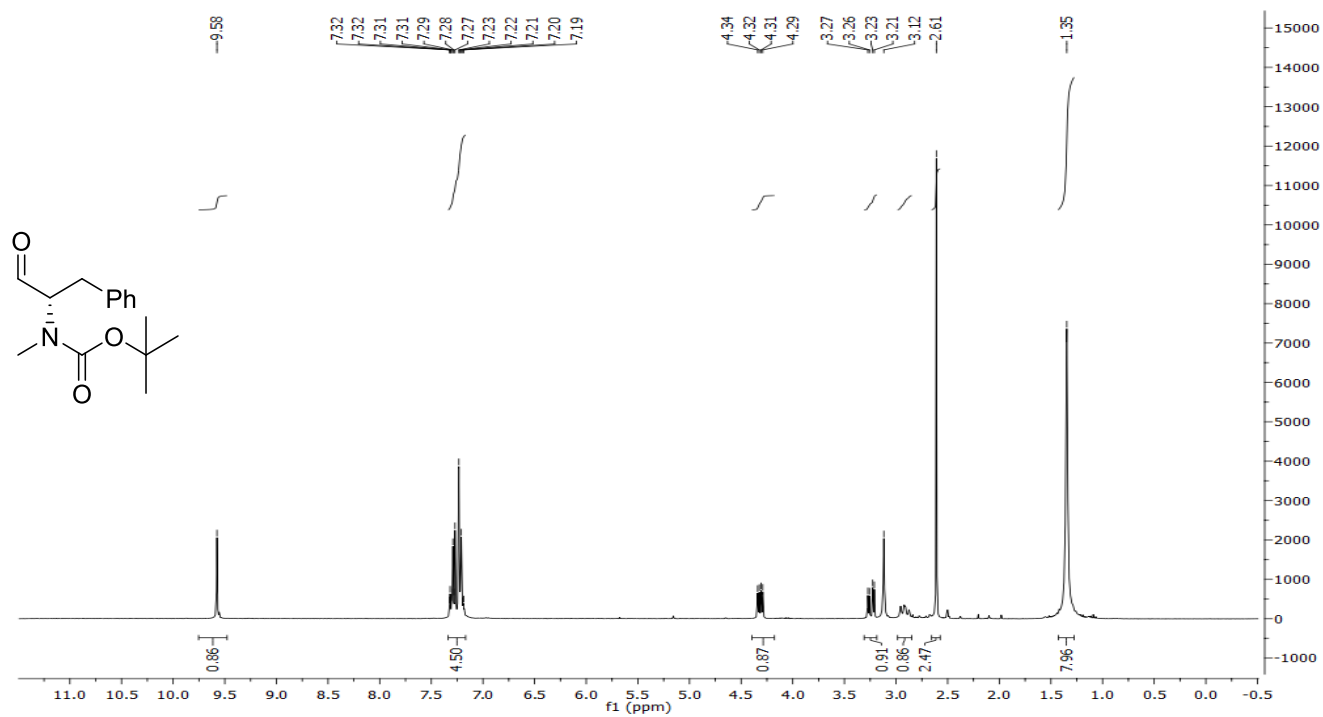


¹³C-NMR spectrum

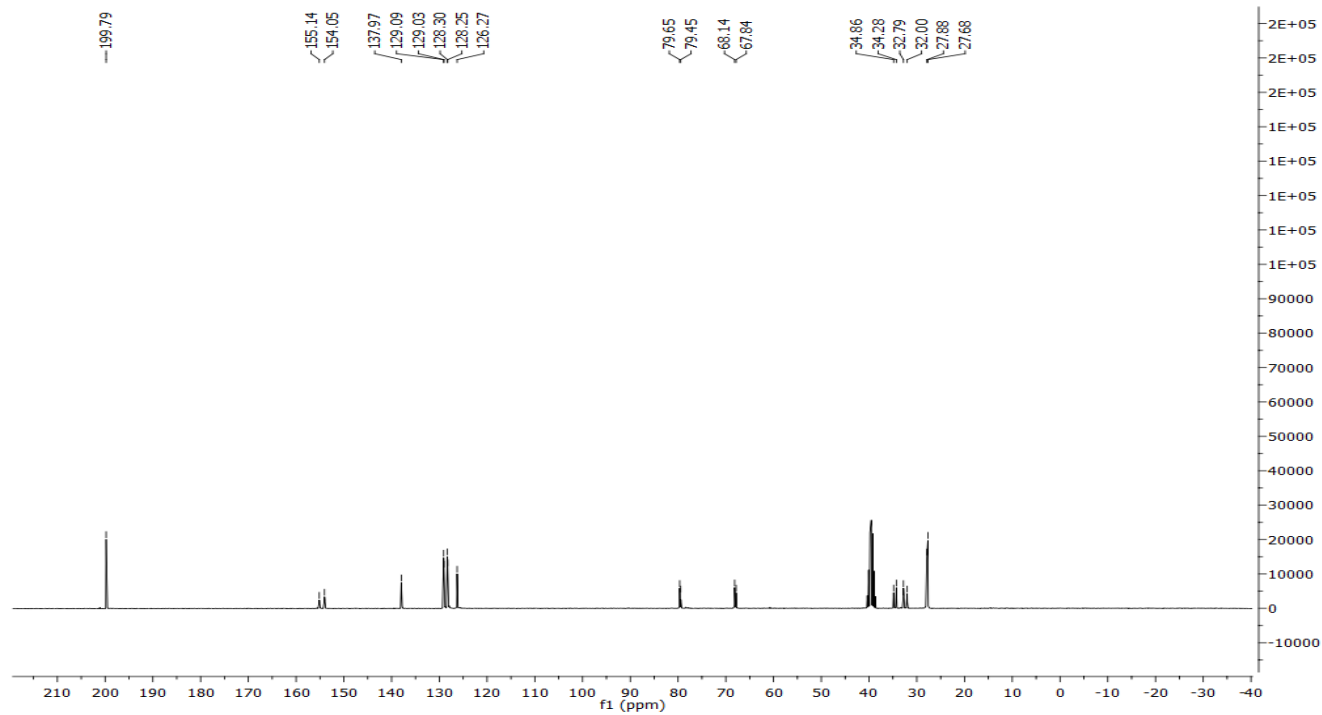


***tert*-Butyl (*S*)-*N*-methyl-*N*-(1-oxo-3-phenylpropan-2-yl)carbamate (3-152)**

¹H-NMR spectrum

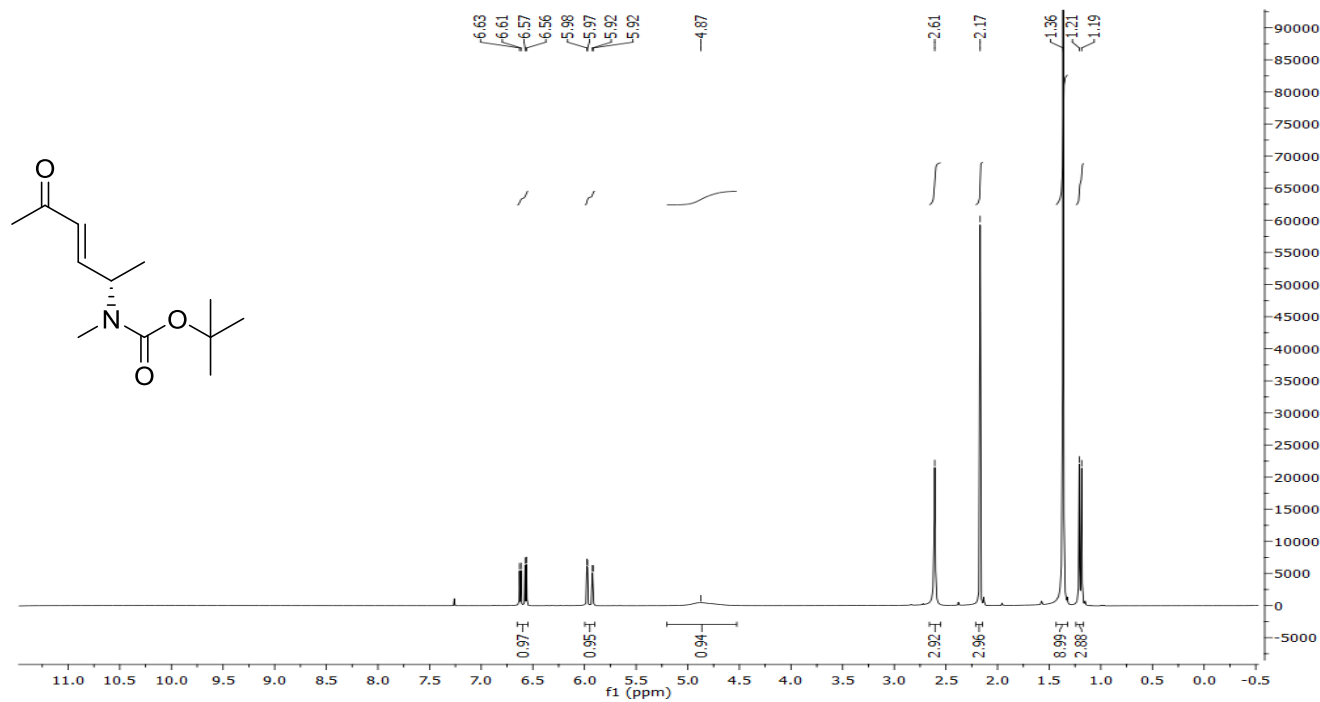


¹³C-NMR spectrum

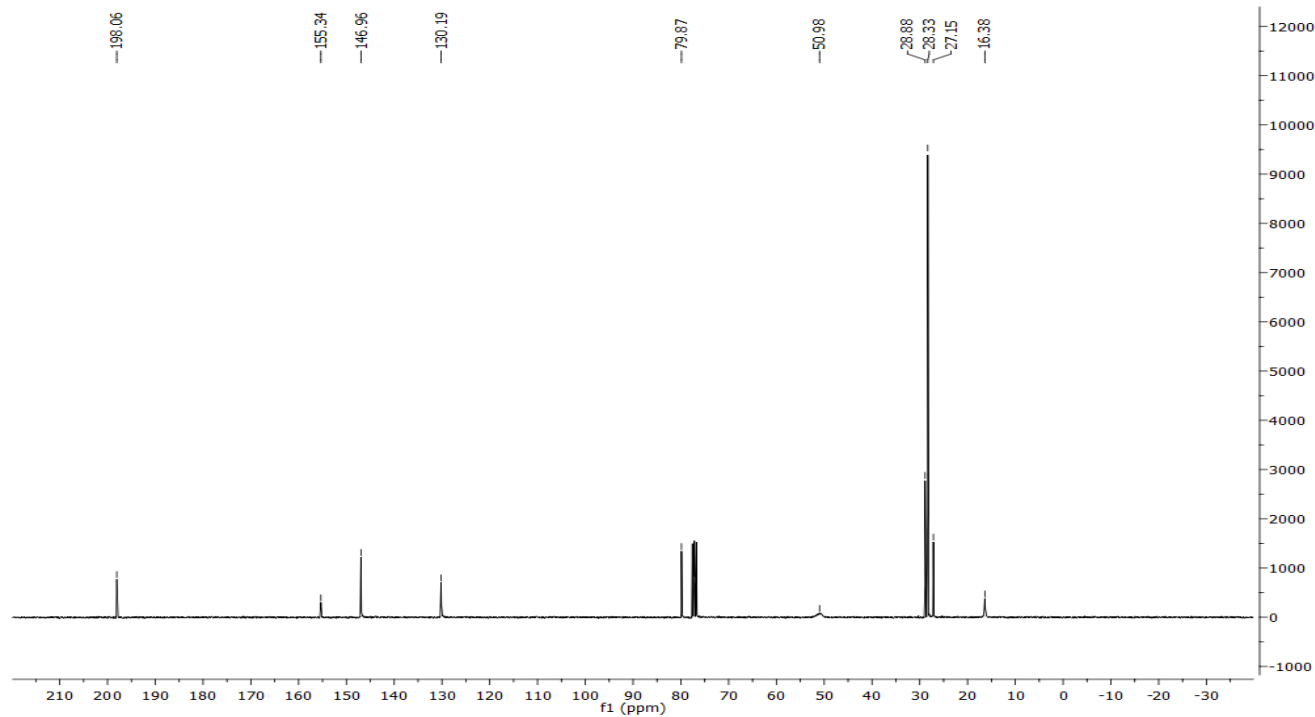


***tert*-Butyl (*S,E*)-*N*-methyl-*N*-(5-oxohex-3-en-2-yl)carbamate (3-154 *E*)**

¹H-NMR spectrum

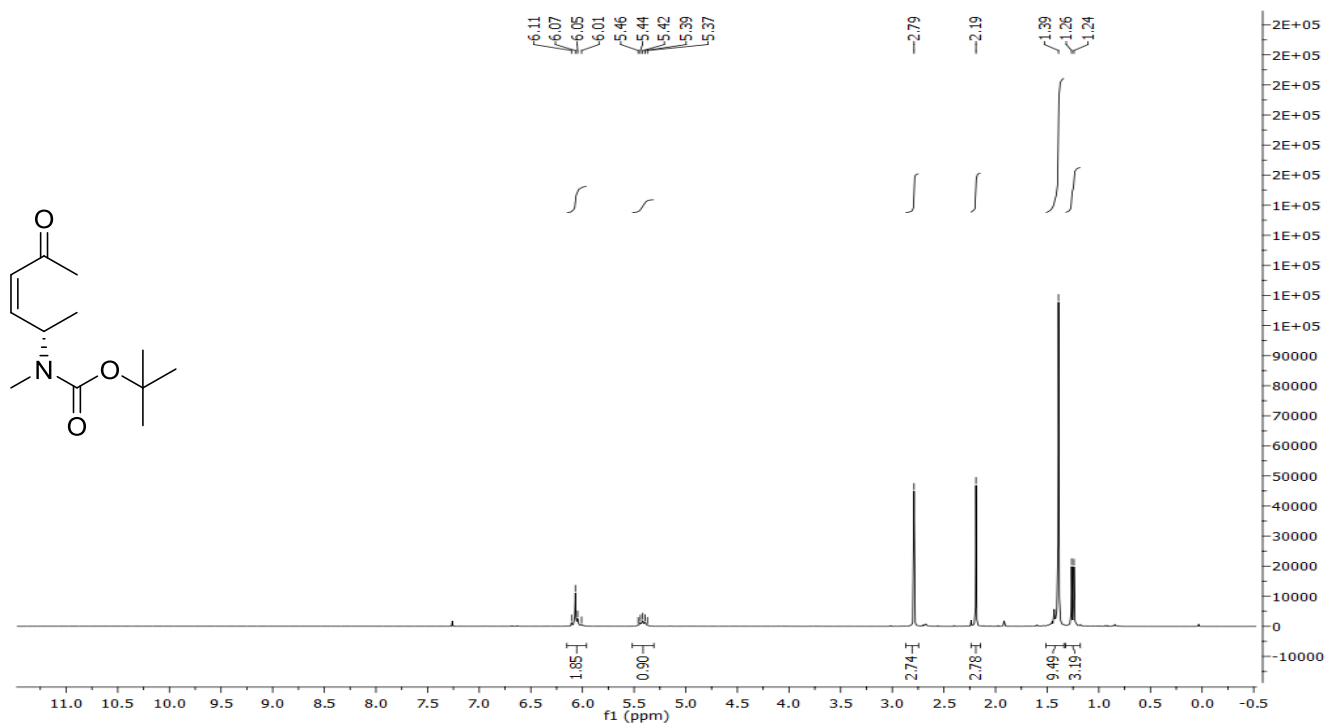


¹³C-NMR spectrum

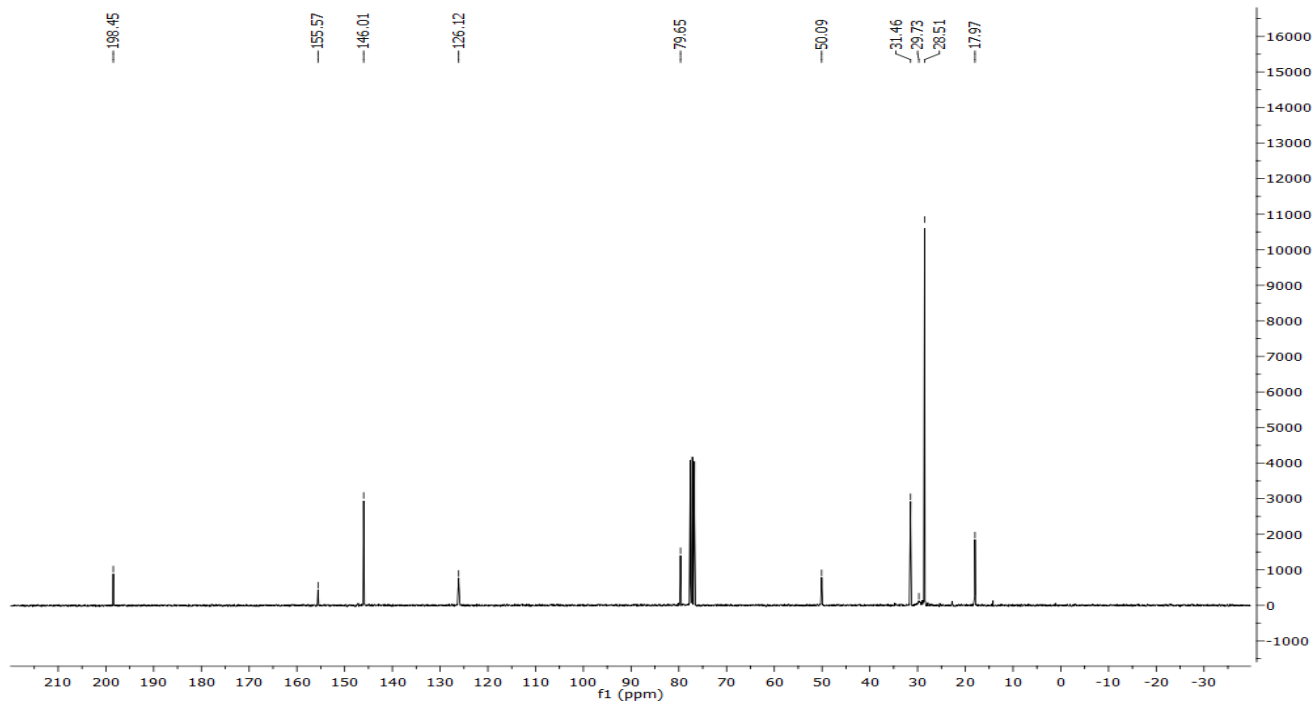


***tert*-Butyl (*S,Z*)-*N*-methyl-*N*-(5-methyl-4-oxohexyl)carbamate (3-154 *Z*)**

¹H-NMR spectrum

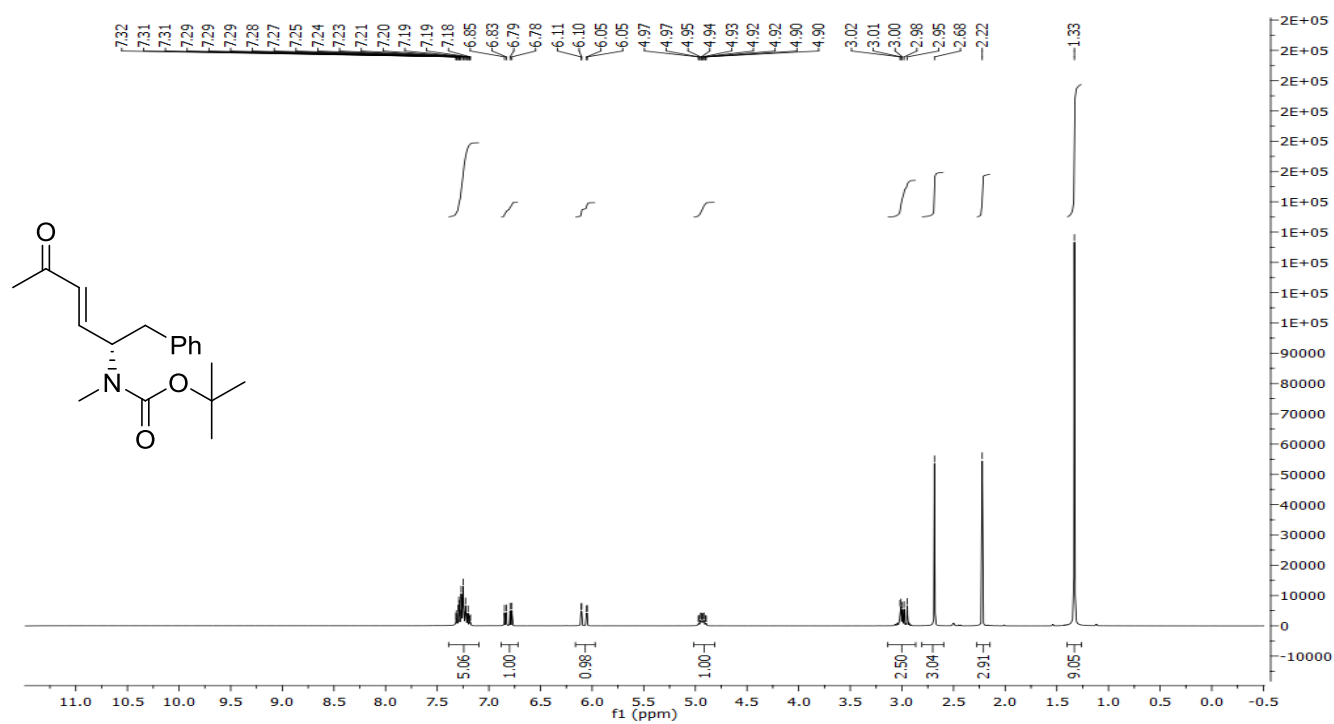


¹³C-NMR spectrum

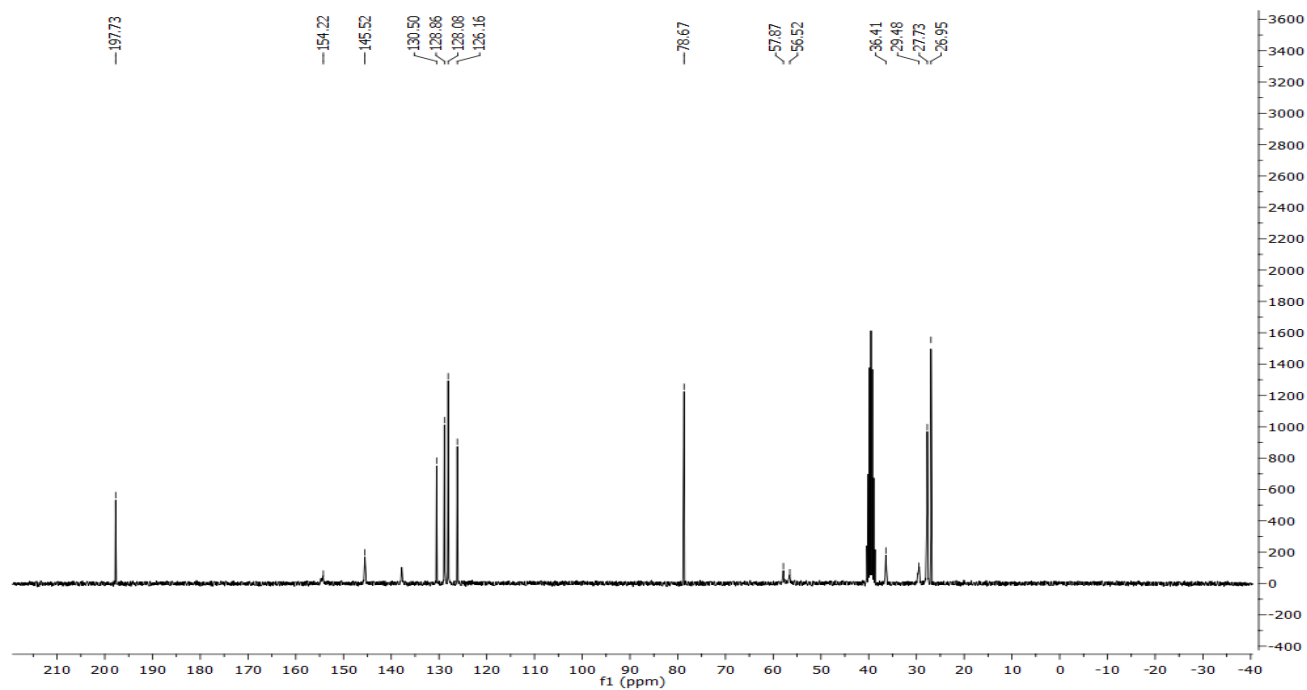


tert-Butyl (S,E)-N-methyl-N-(5-oxo-1-phenylhex-3-en-2-yl)carbamate (3-155)

¹H-NMR spectrum

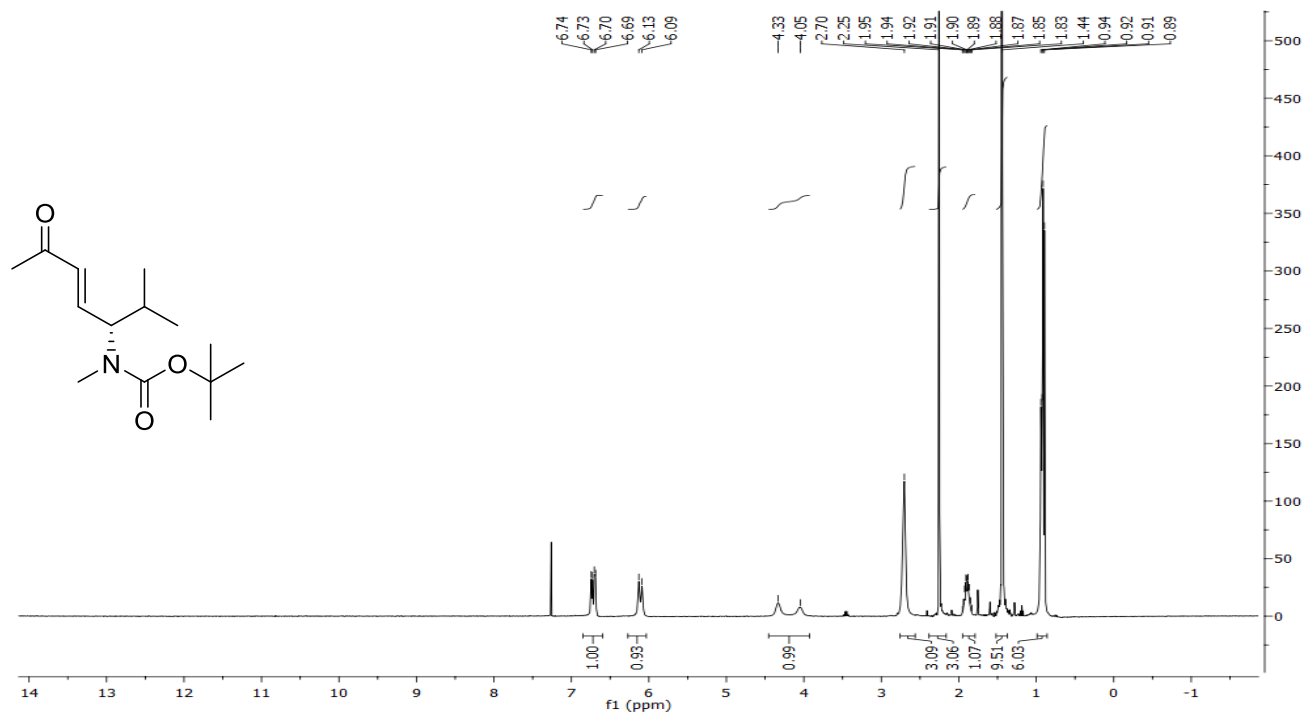


¹³C-NMR spectrum

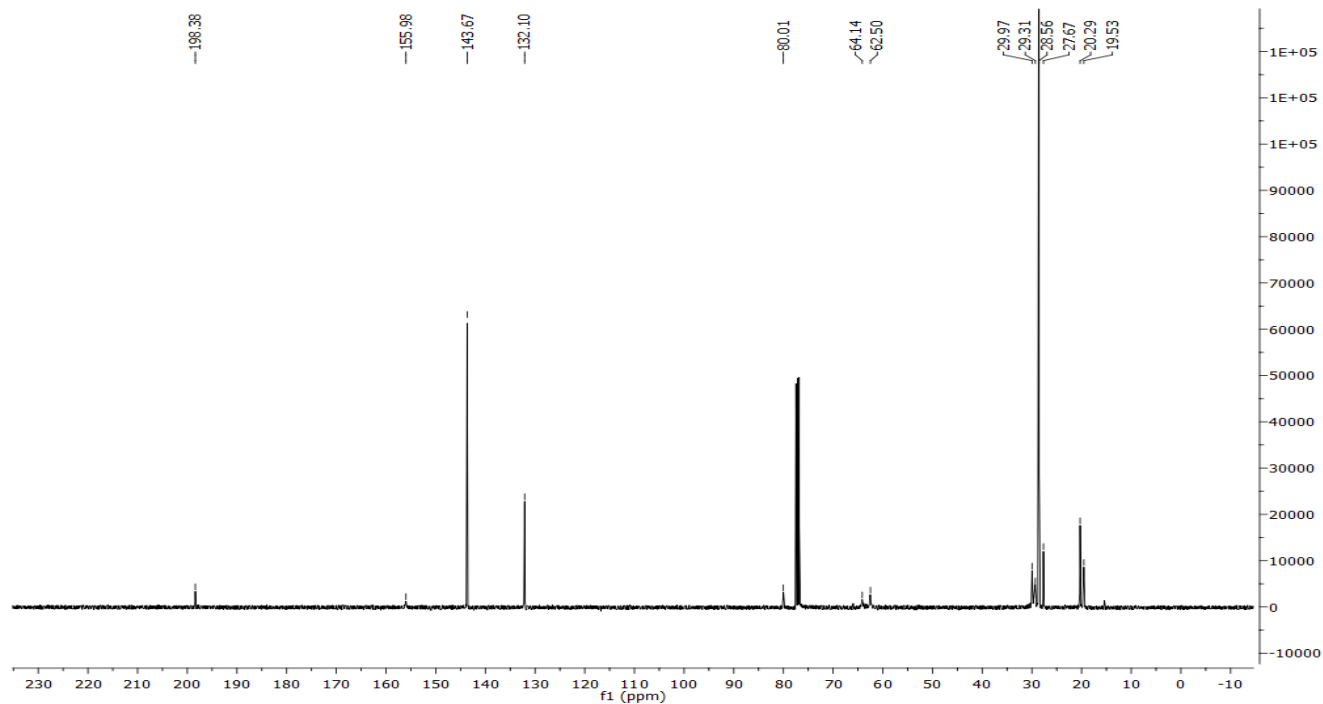


***tert*-Butyl (*S,E*)-*N*-methyl-*N*-(2-methyl-6-oxohept-4-en-3-yl)carbamate (3-156)**

¹H-NMR spectrum

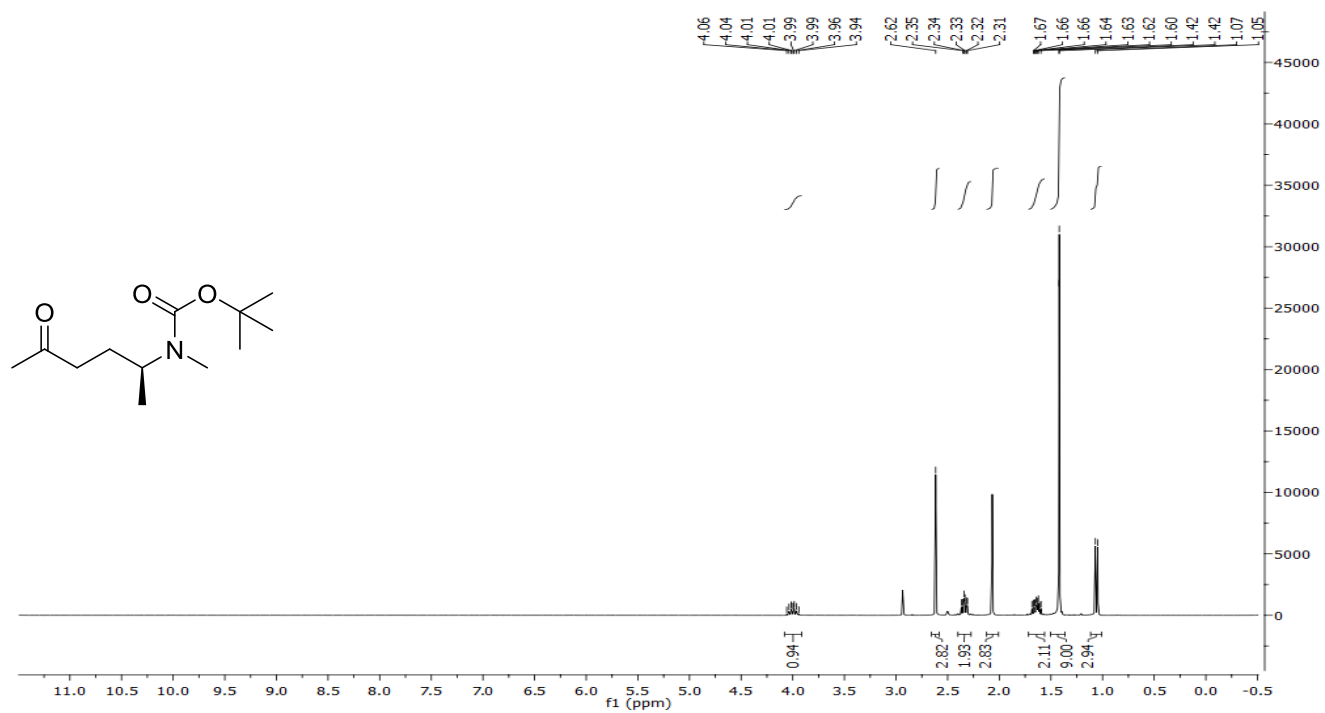


¹³C-NMR spectrum

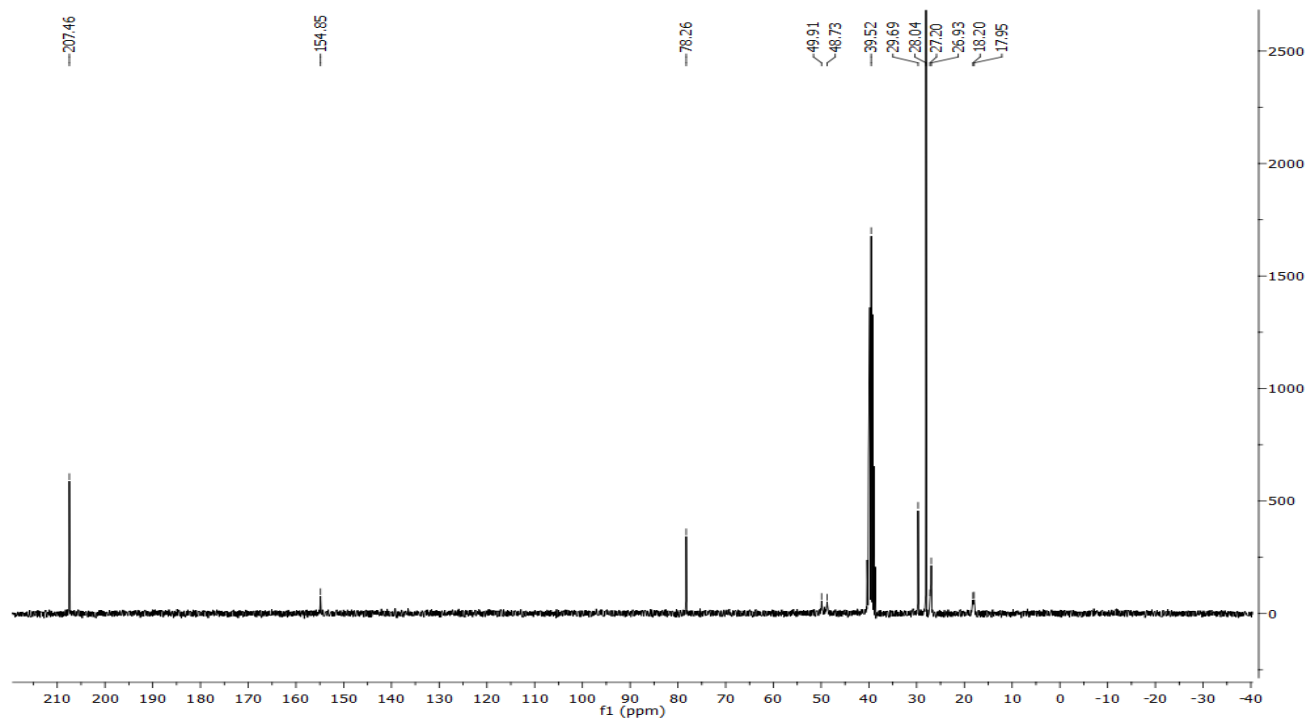


***tert*-Butyl (*S*)-*N*-methyl-*N*-(5-oxohexan-2-yl)carbamate (3-157)**

¹H-NMR spectrum

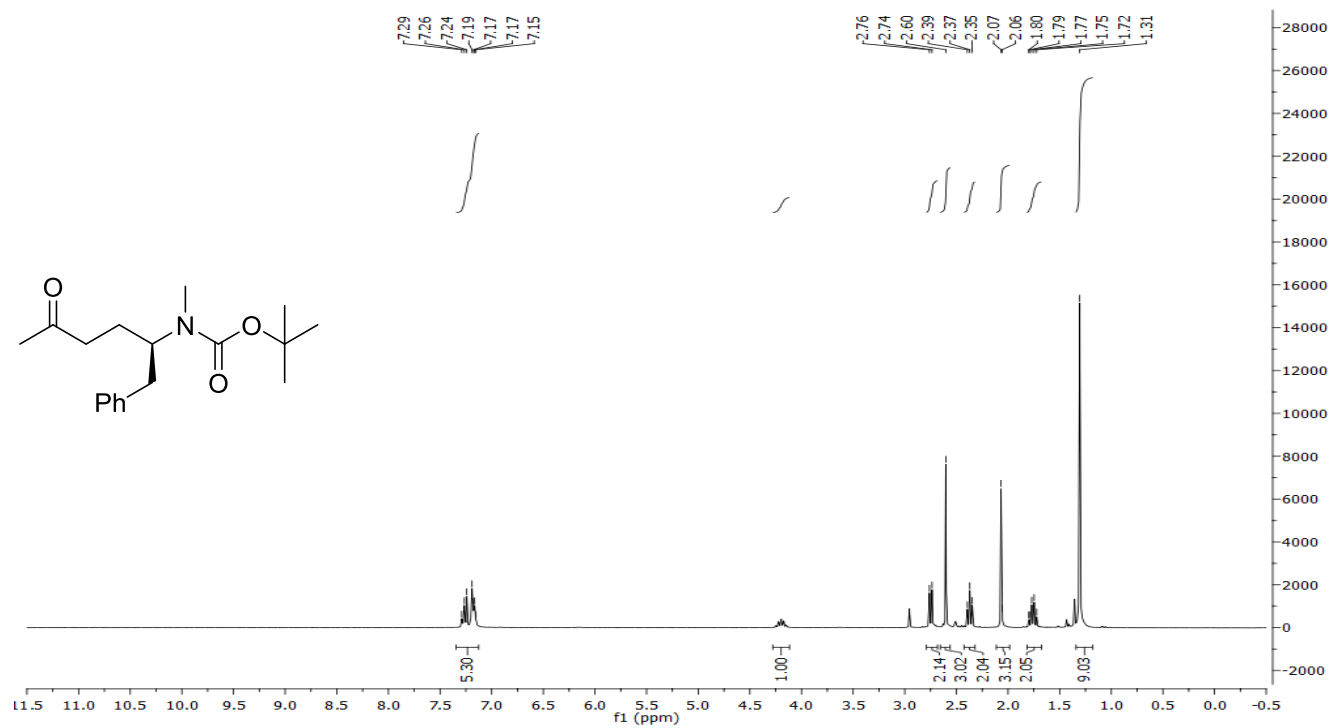


¹³C-NMR spectrum

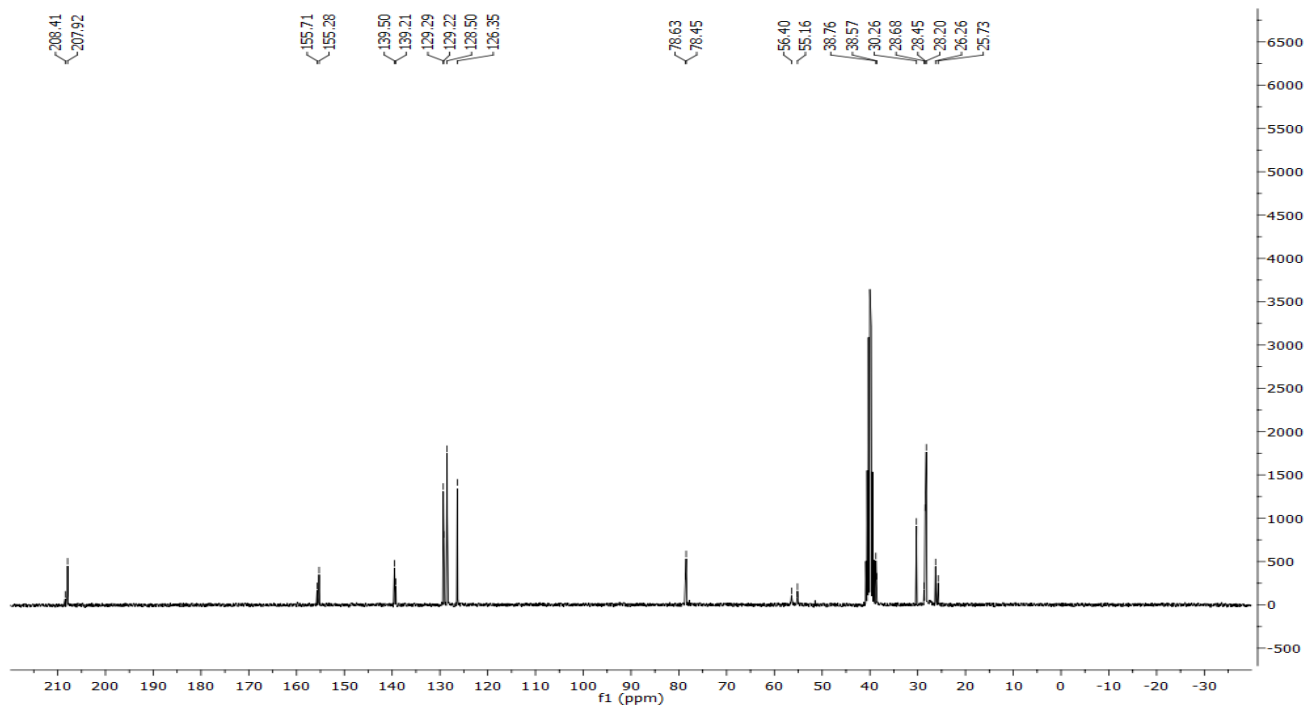


***tert*-Butyl (*R*)-*N*-methyl-*N*-(5-oxo-1-phenylhexan-2-yl)carbamate (3-158)**

¹H-NMR spectrum

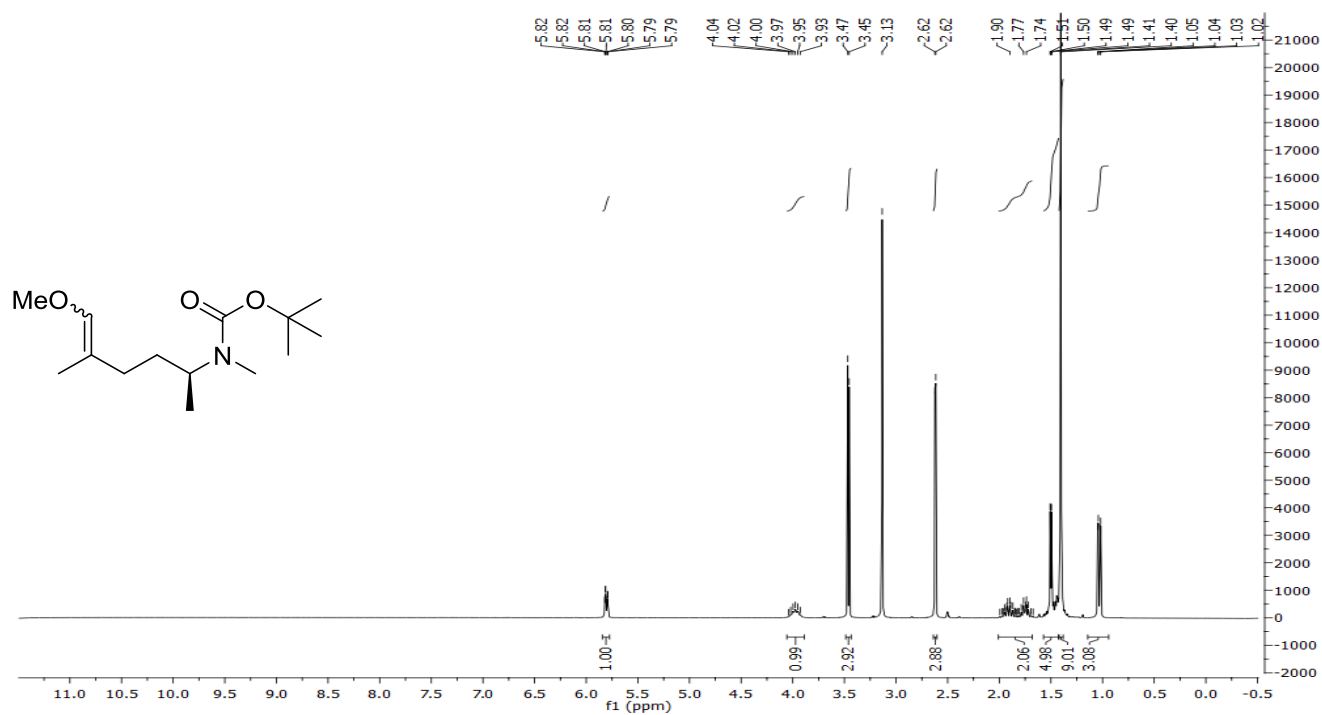


¹³C-NMR spectrum

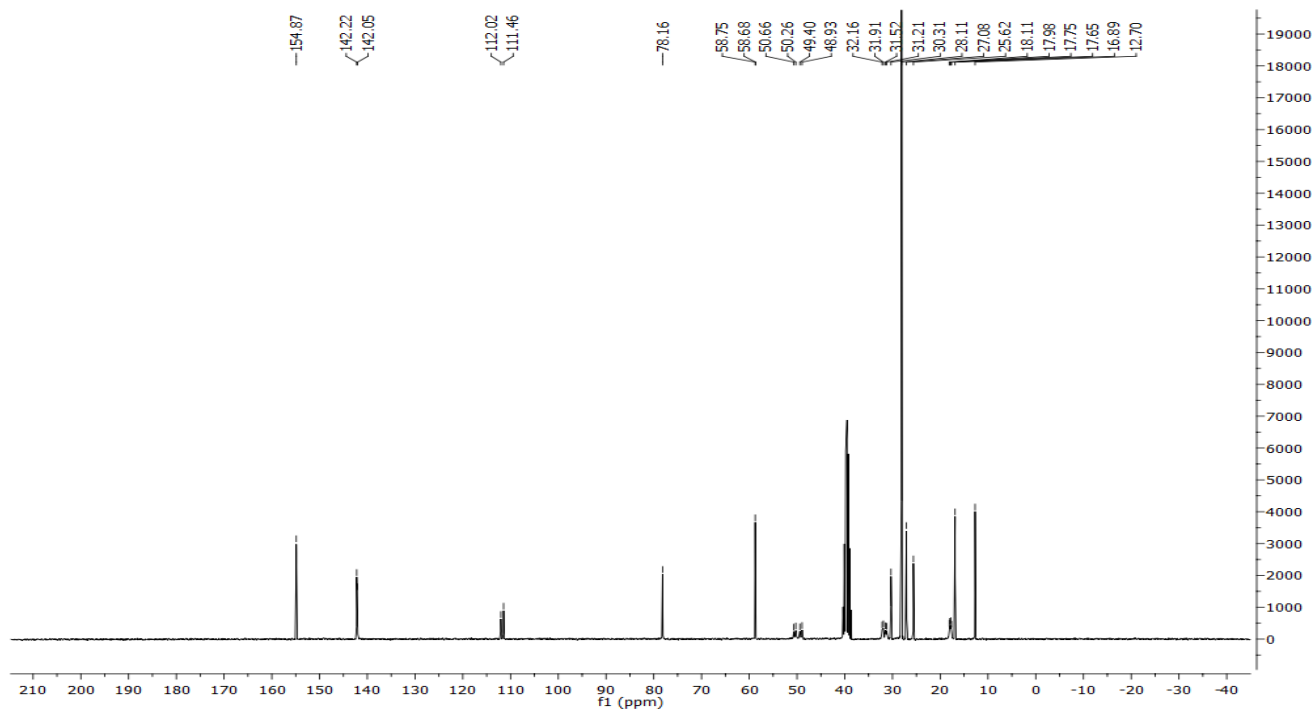


tert-Butyl (S)-N-(6-methoxy-5-methylhex-5-en-2-yl)-N-methylcarbamate (3-160)

¹H-NMR spectrum

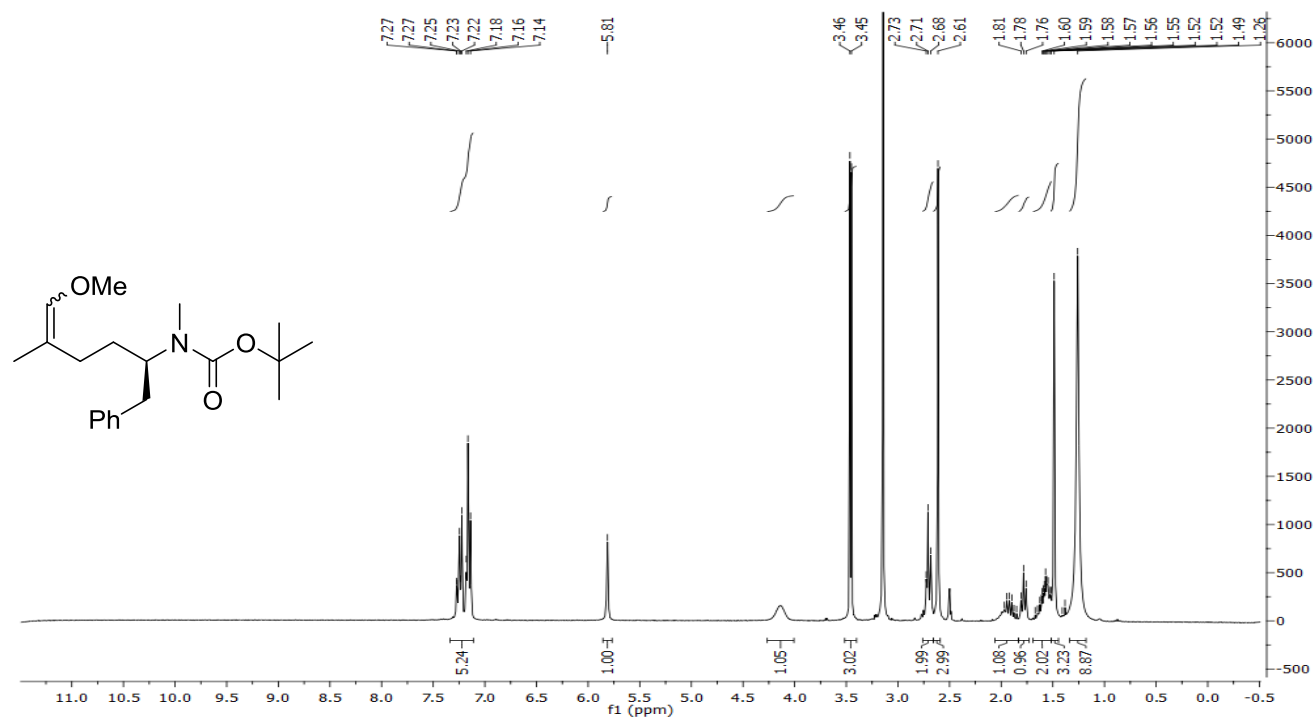


¹³C-NMR spectrum

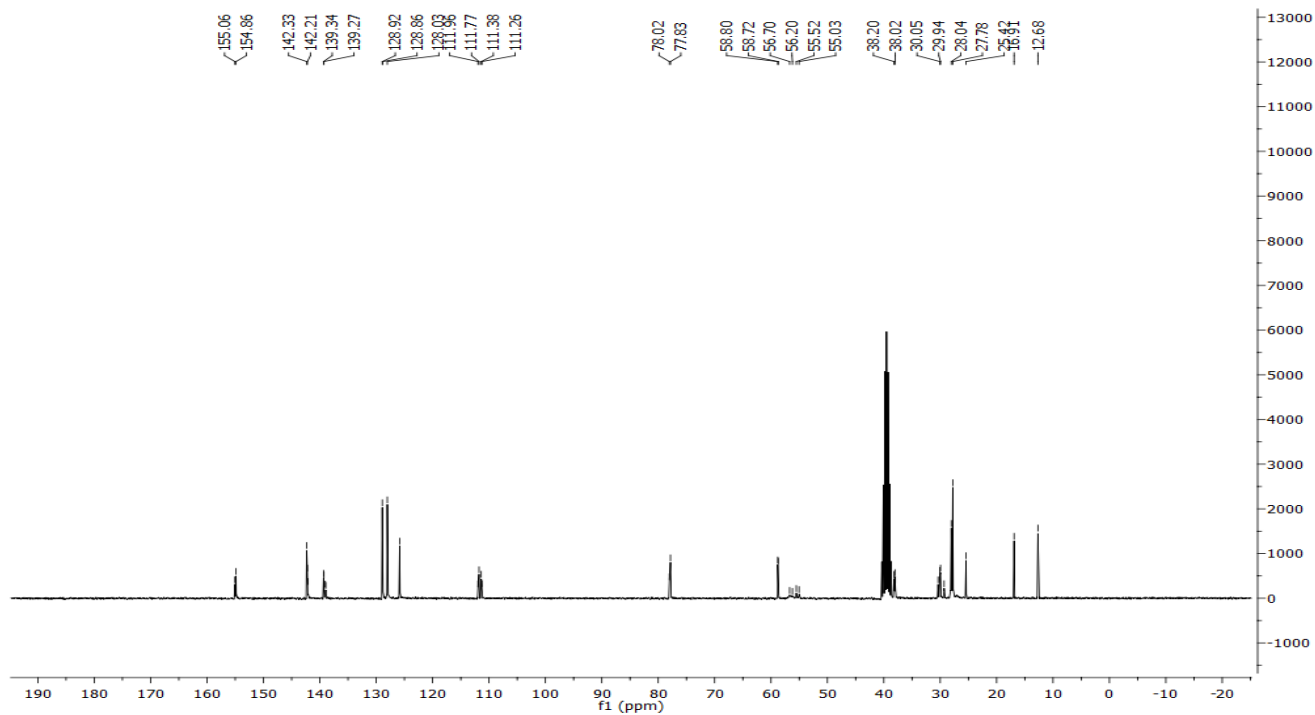


tert-Butyl (*R*)-*N*-(6-methoxy-5-methyl-1-phenylhex-5-en-2-yl)-*N*-methylcarbamate (3-161)

¹H-NMR spectrum

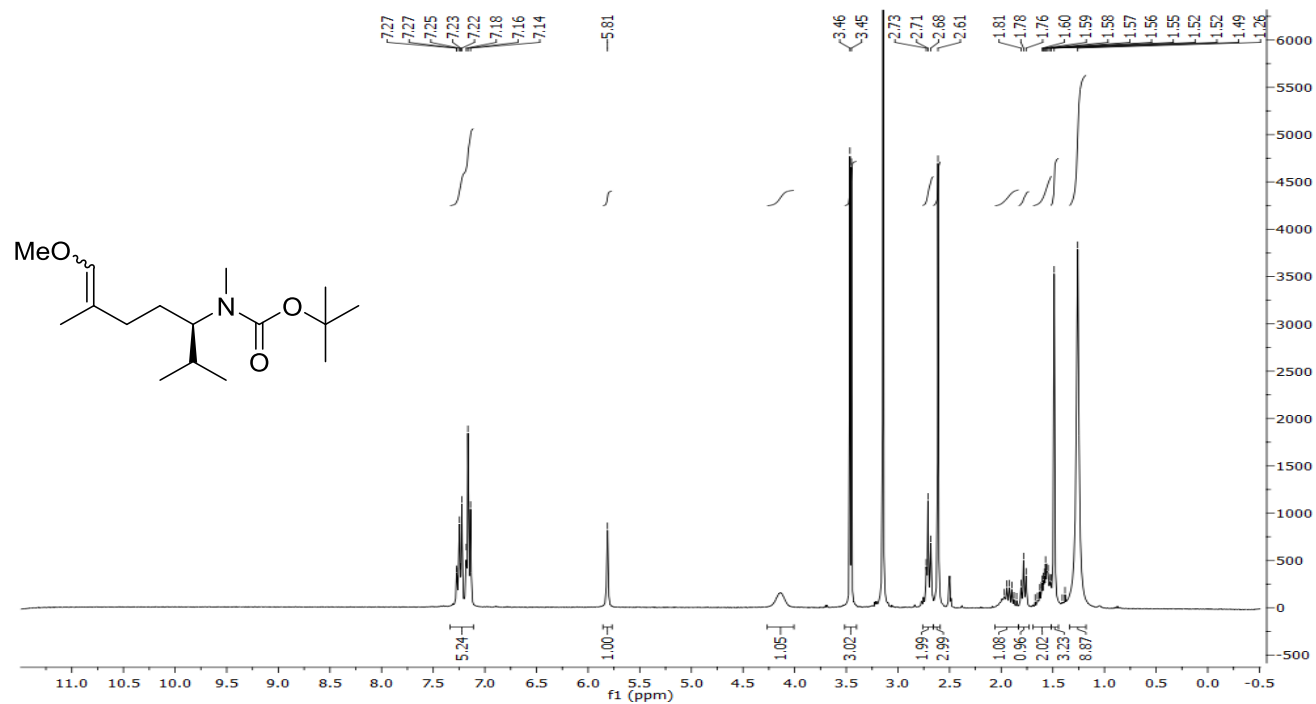


¹³C-NMR spectrum

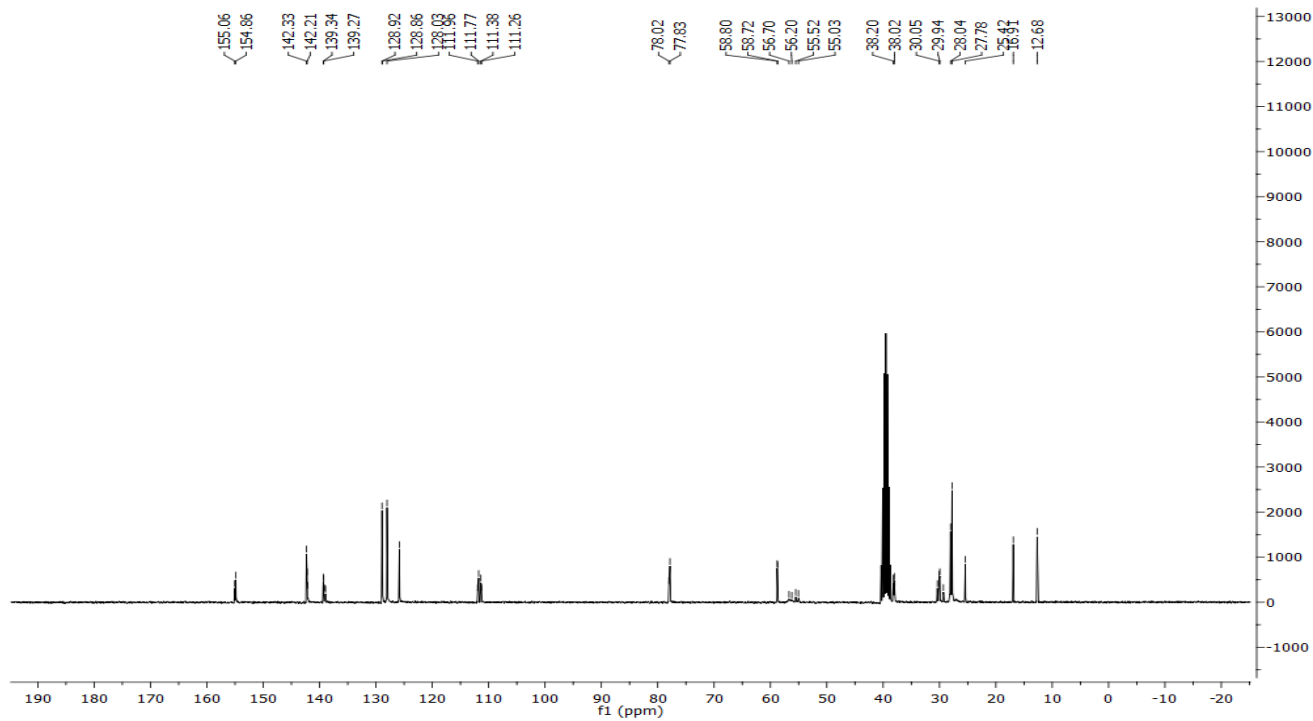


***tert*-Butyl (*R*)-*N*-(7-methoxy-2,6-dimethylhept-6-en-3-yl)-*N*-methylcarbamate (3-162)**

¹H-NMR spectrum

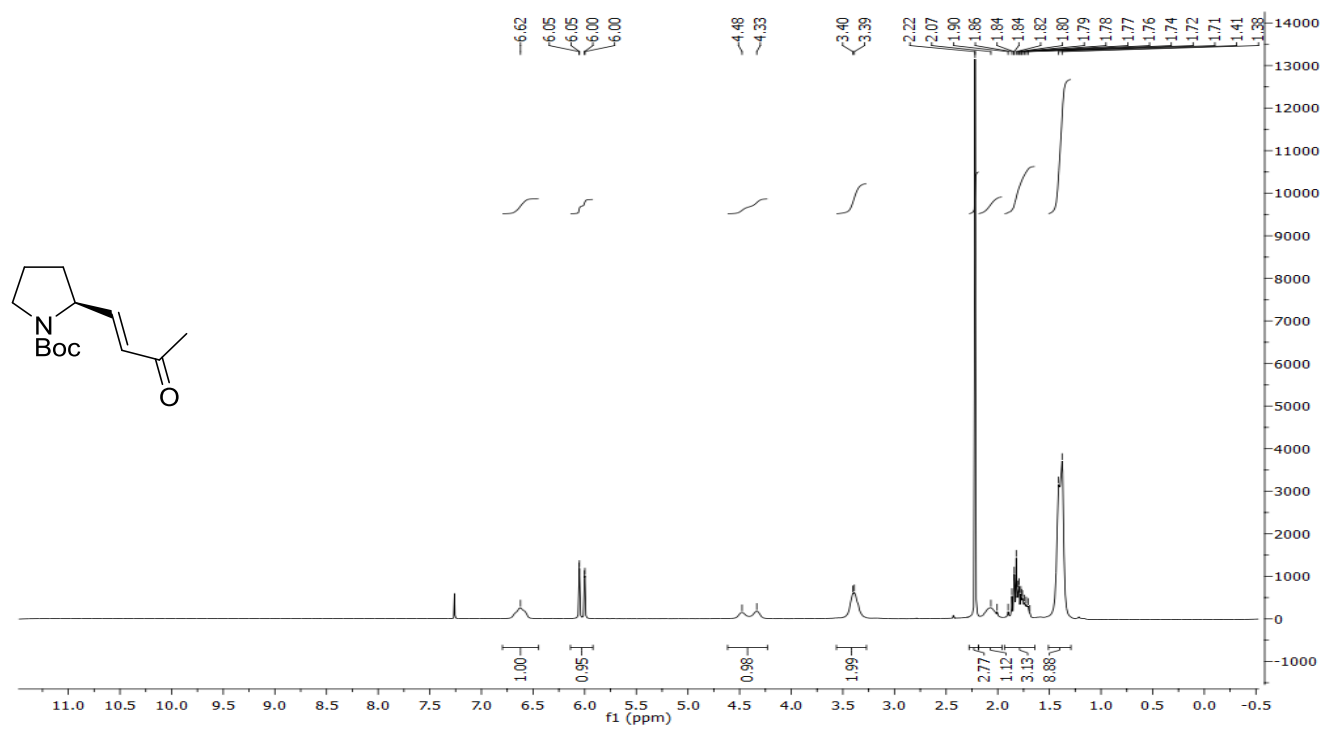


¹³C-NMR spectrum

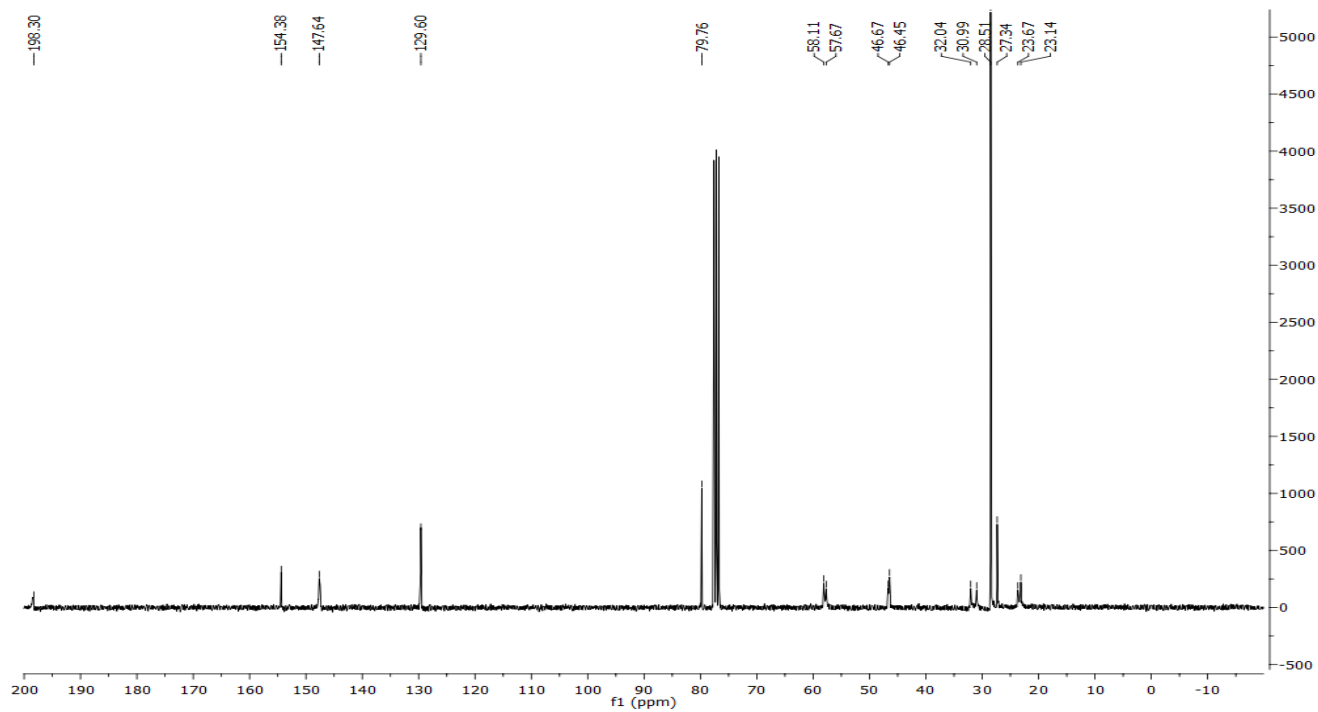


***tert*-Butyl (*S,E*)-2-(3-oxobut-1-en-1-yl)pyrrolidine-1-carboxylate (3-165)**

¹H-NMR spectrum

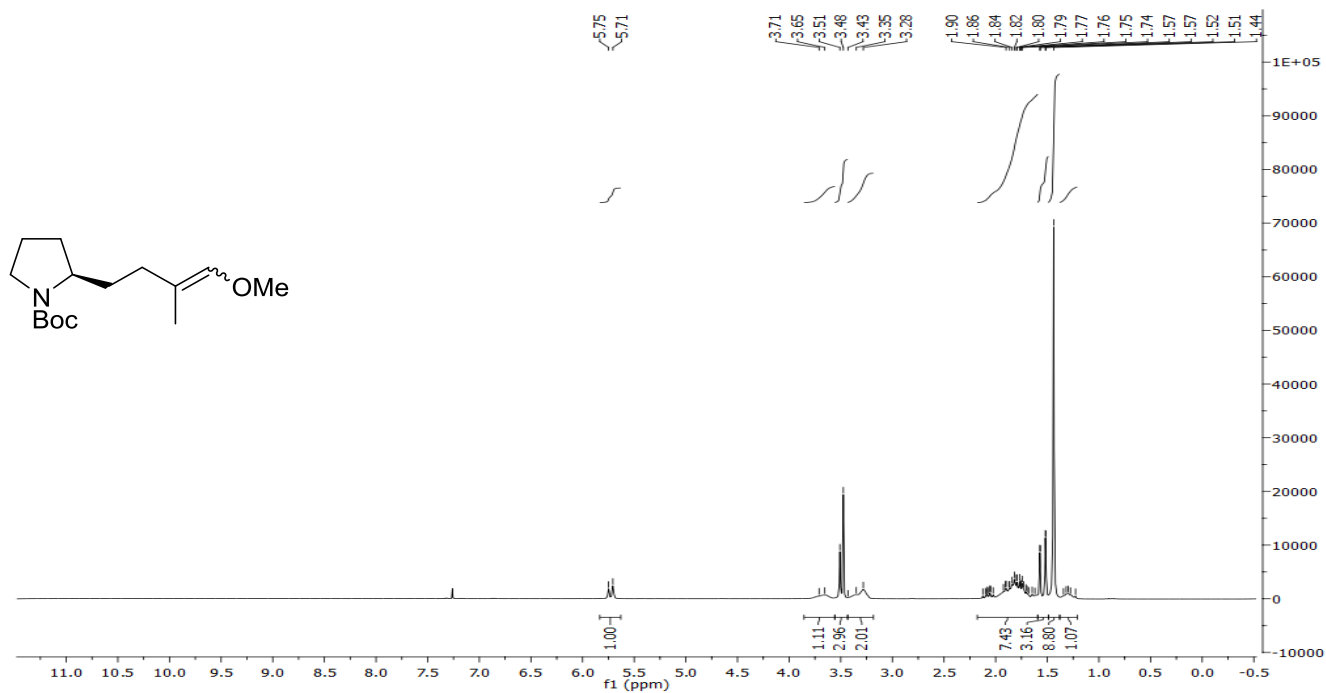


¹³C-NMR spectrum

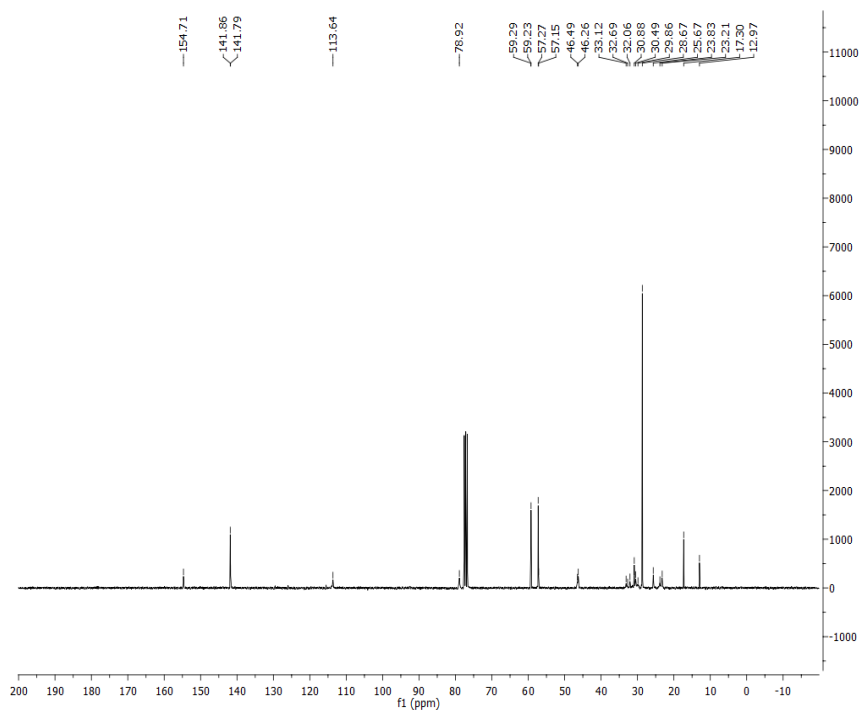


***tert*-Butyl (*R*)-2-(4-methoxy-3-methylbut-3-en-1-yl)pyrrolidine-1-carboxylate (3-167)**

¹H-NMR spectrum

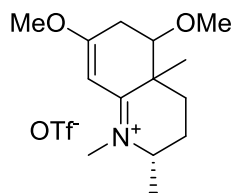
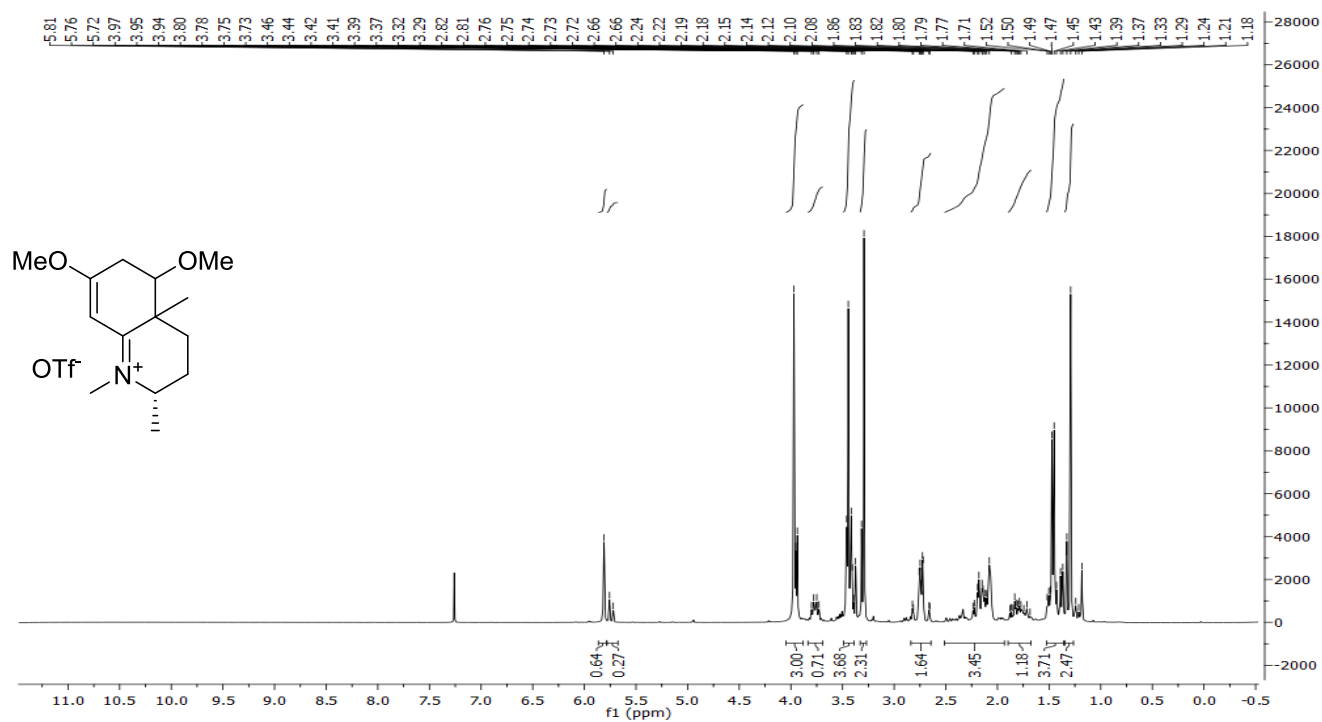


¹³C-NMR spectrum

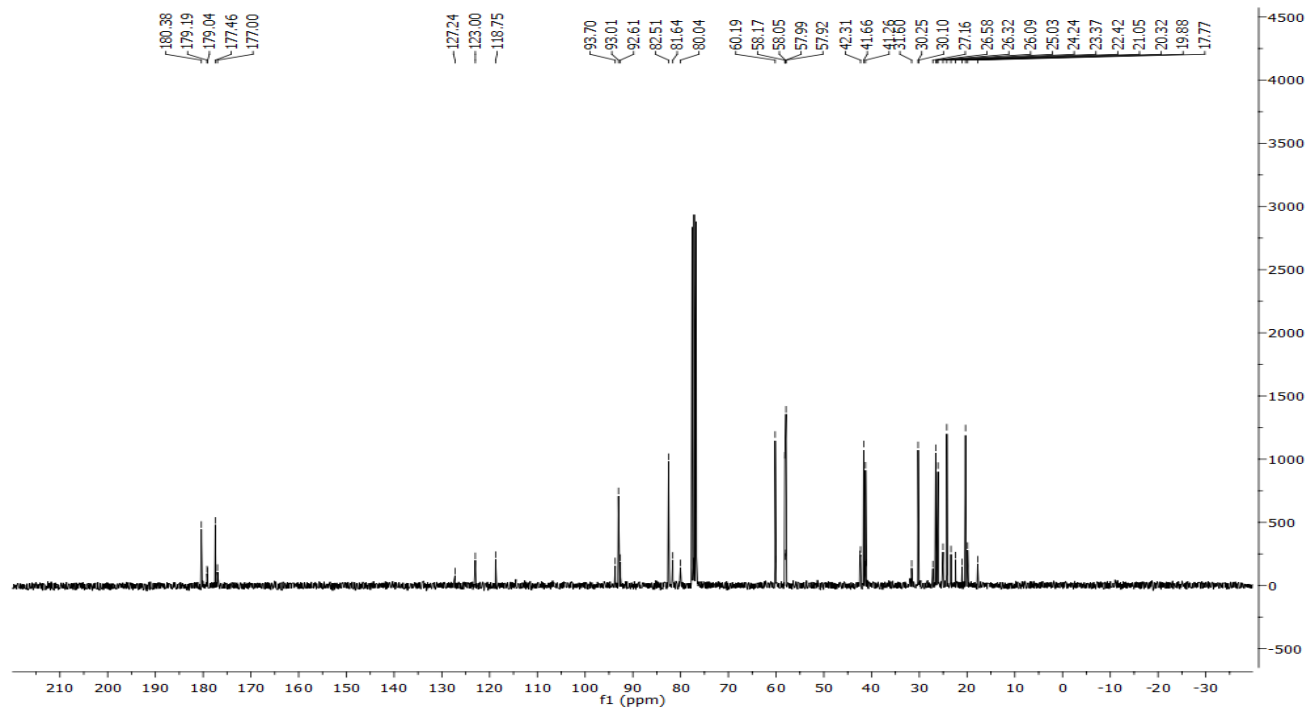


(2S)-5,7-Dimethoxy-1,2,4a-trimethyl-2,3,4,4a,5,6-hexahydroquinolin-1-ium Triflate (3-168)

¹H-NMR spectrum

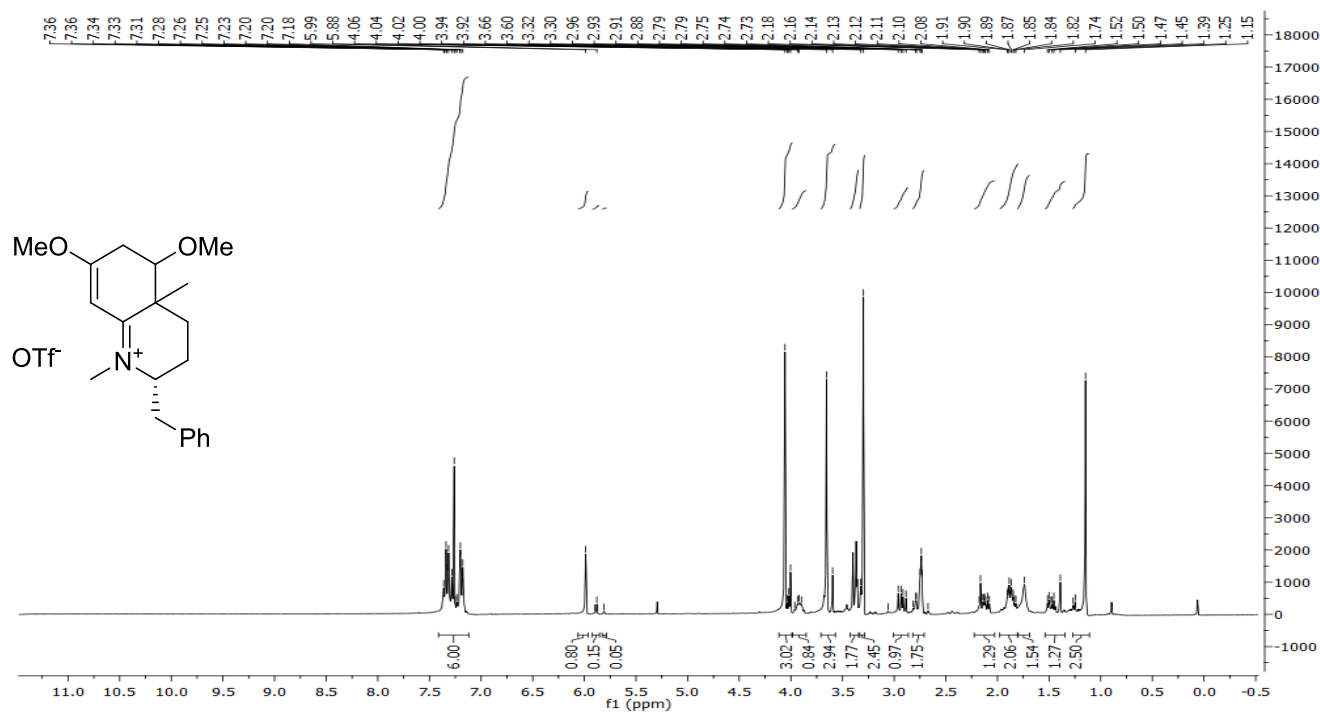


¹³C-NMR spectrum

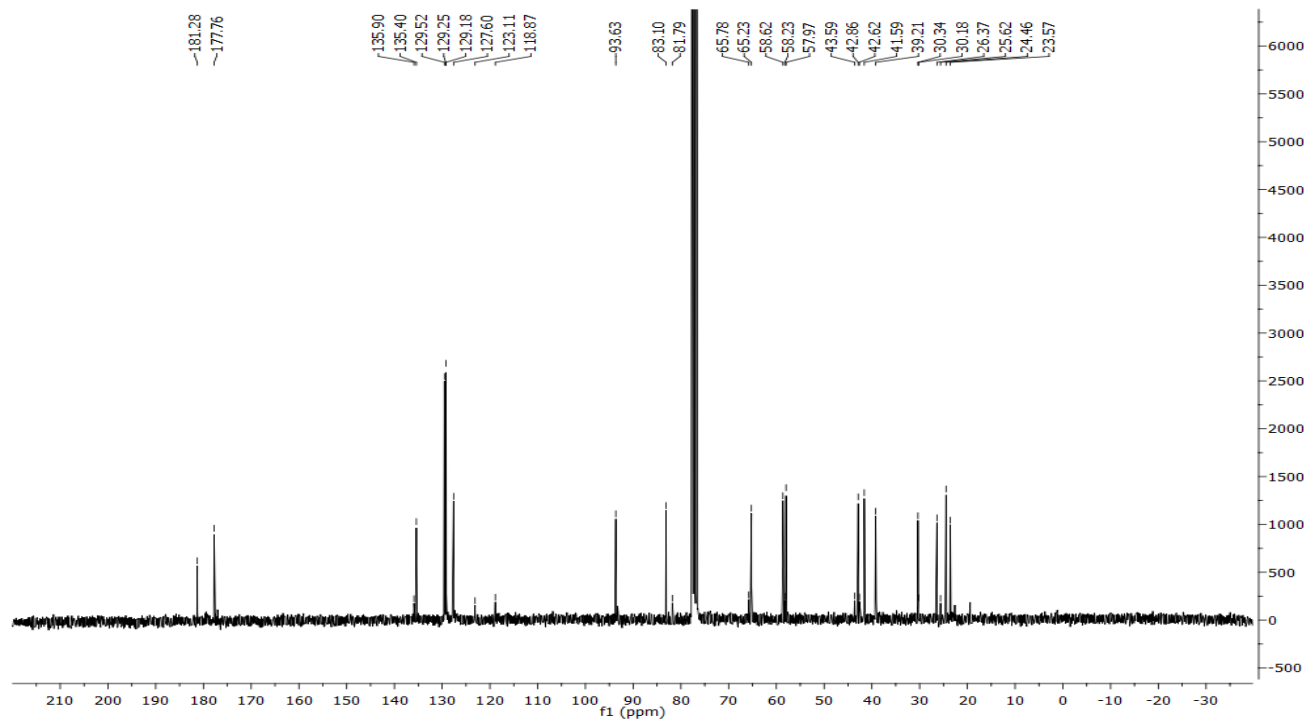


(2R)-2-Benzyl-5,7-dimethoxy-1,4a-dimethyl-2,3,4,4a,5,6-hexahydroquinolin-1-ium Triflate (3-169)

¹H-NMR spectrum

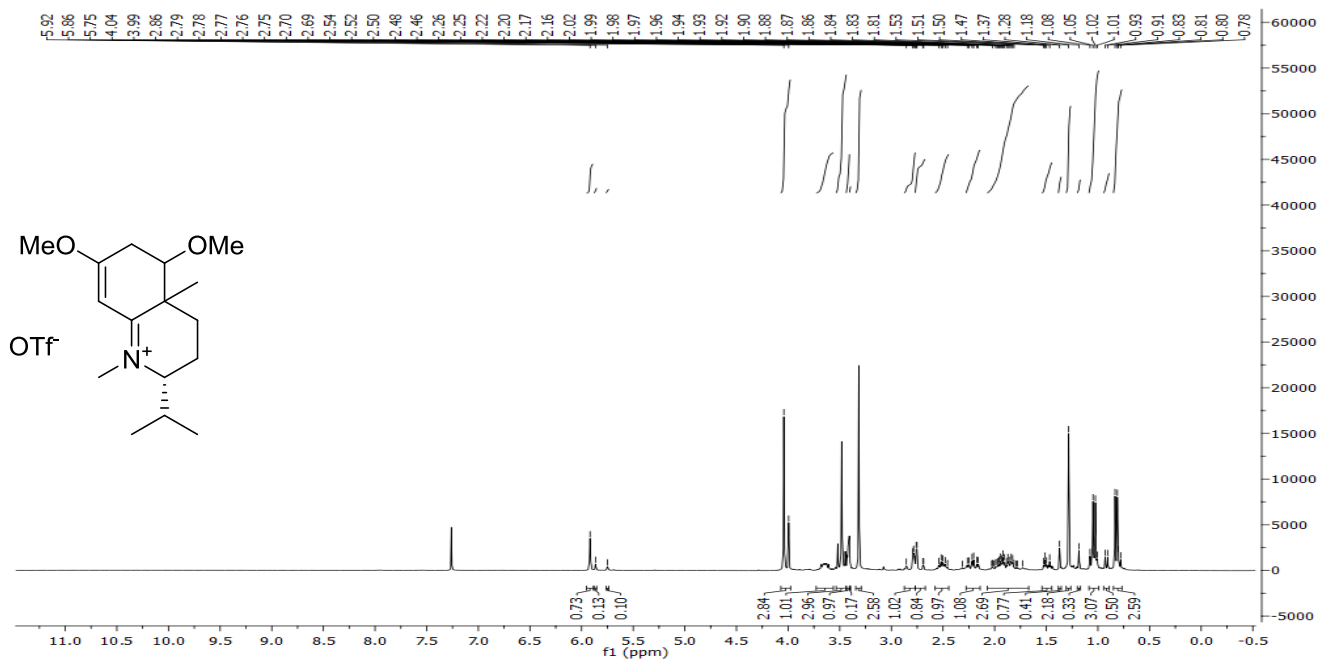


¹³C-NMR spectrum

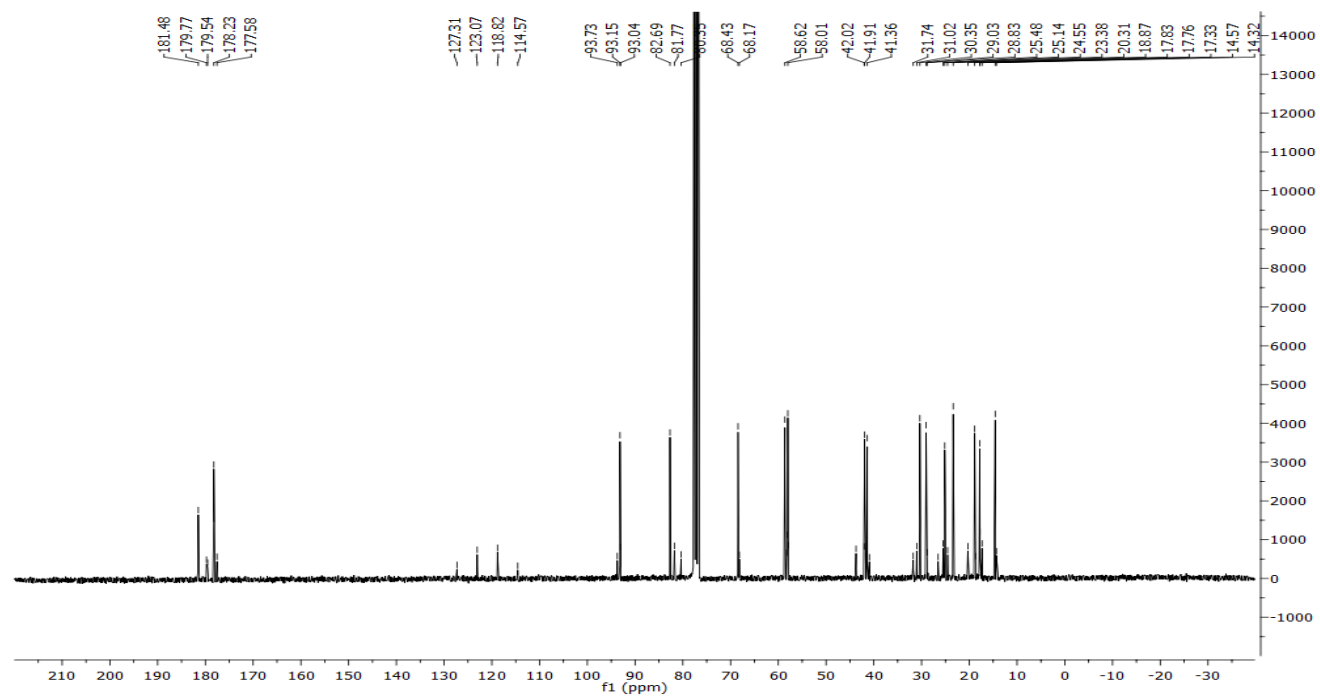


(2R)-2-Isopropyl-5,7-dimethoxy-1,4a-dimethyl-2,3,4,4a,5,6-hexahydroquinolin-1-ium Triflate (3-170)

¹H-NMR spectrum

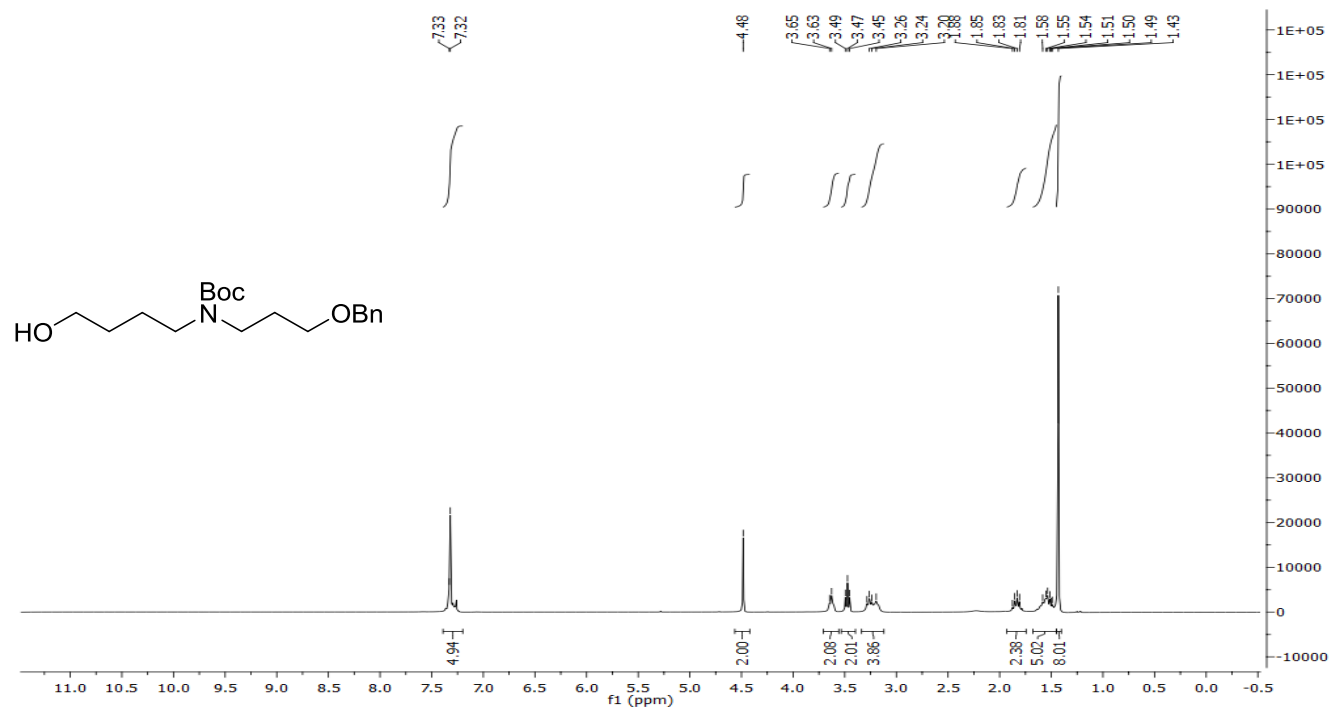


¹³C-NMR spectrum

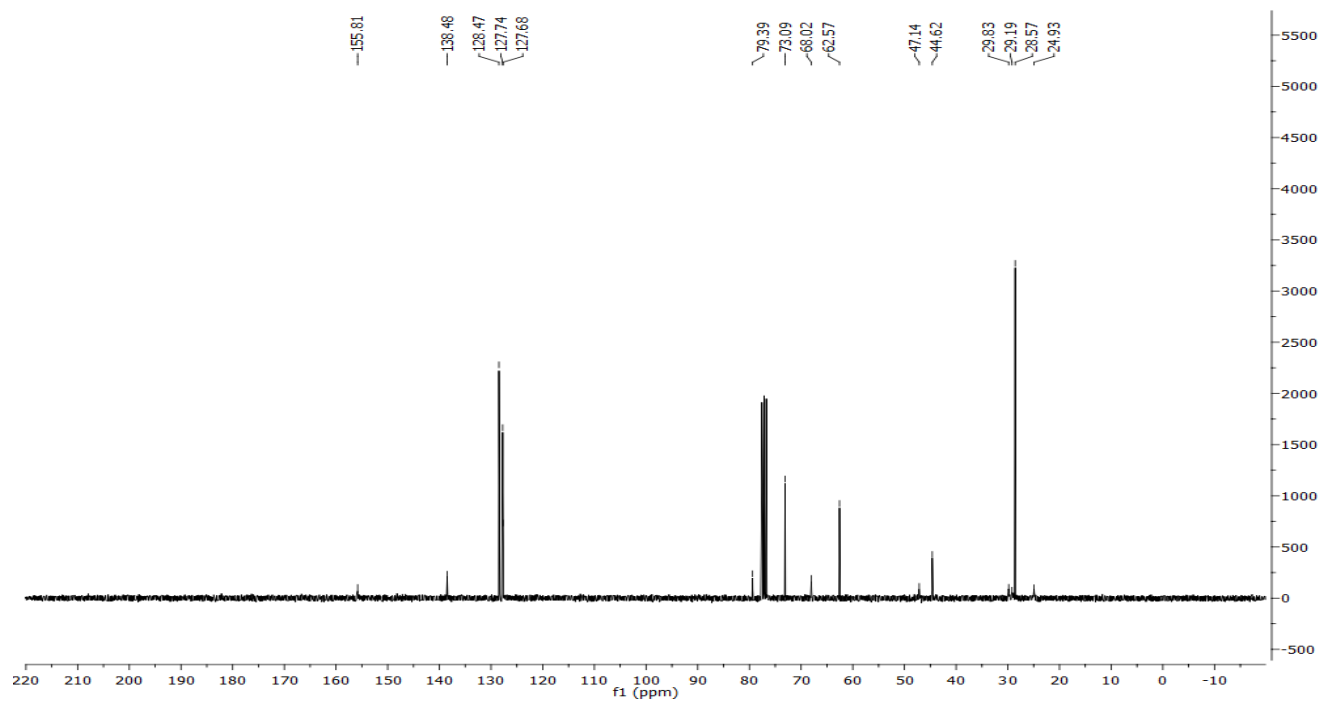


***tert*-Butyl *N*-(3-(benzyloxy)propyl)-*N*-(4-hydroxybutyl)carbamate (3-183)**

¹H-NMR spectrum

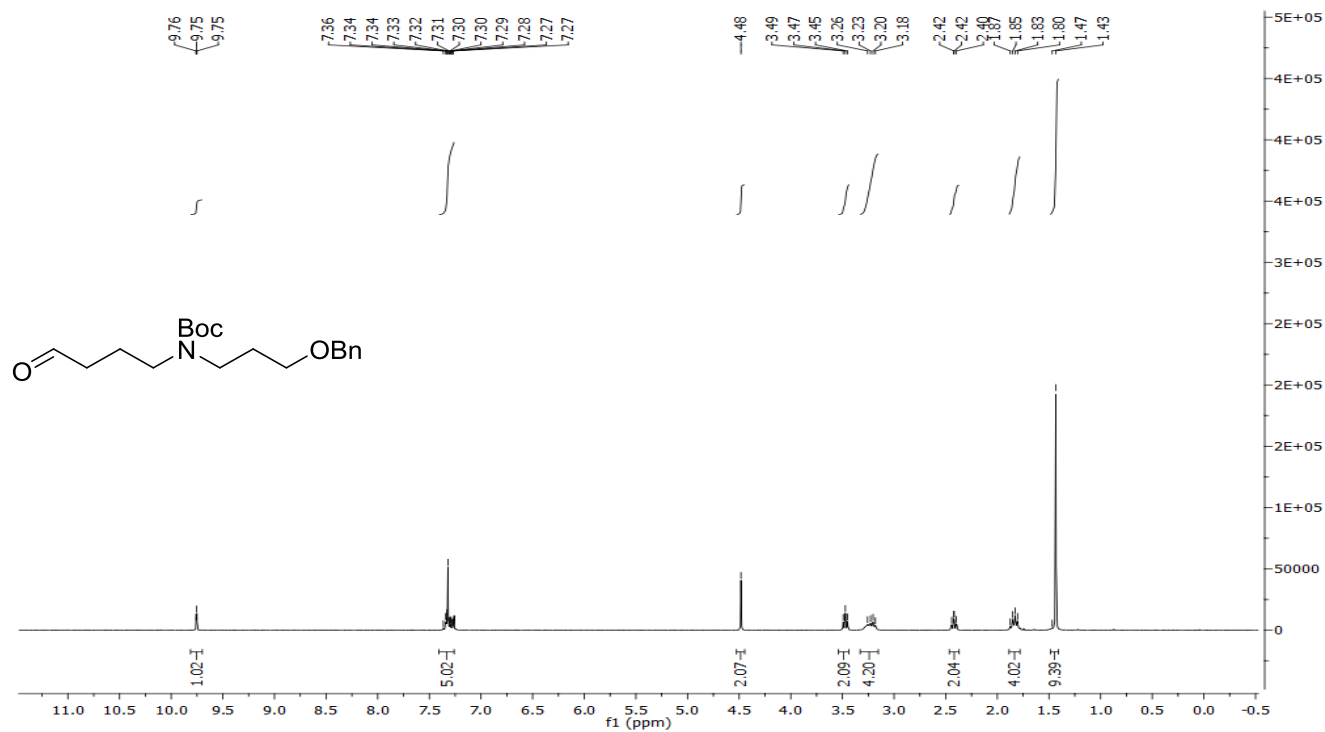


¹³C-NMR spectrum

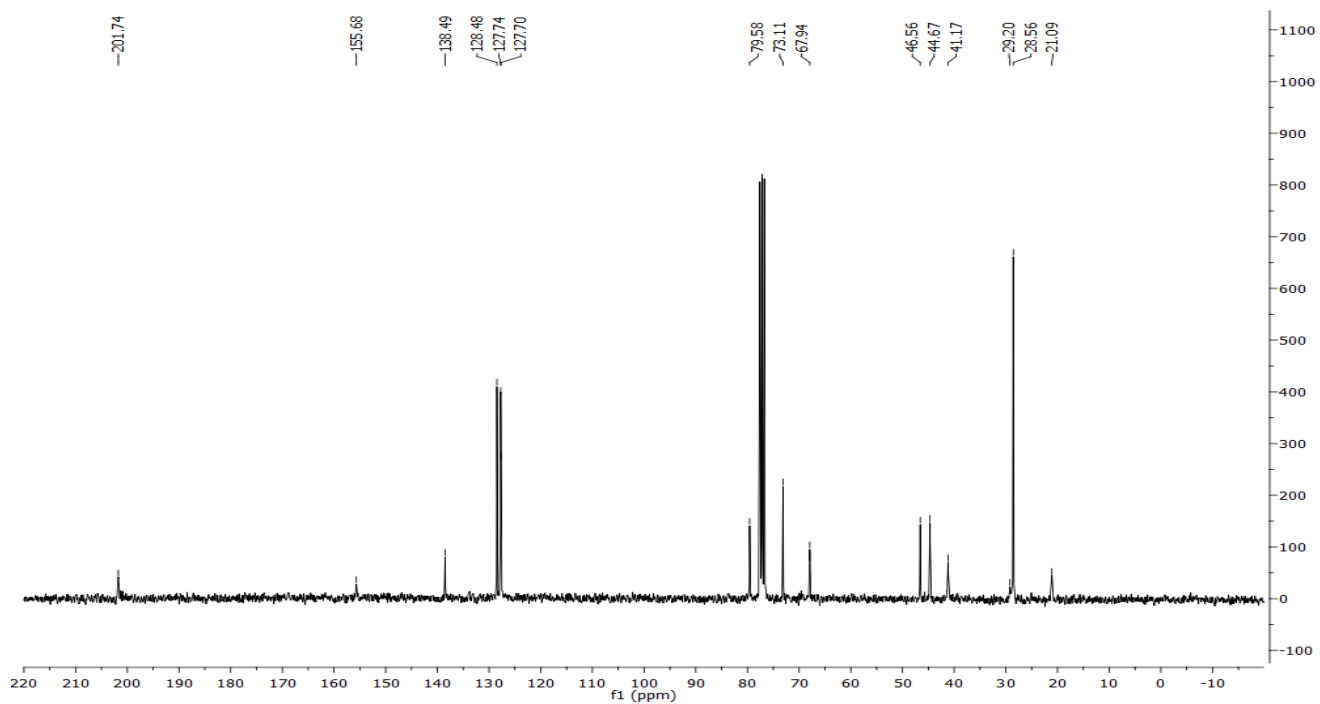


tert-Butyl N-(3-(benzyloxy)propyl)-N-(4-oxobutyl)carbamate (3-184)

¹H-NMR spectrum

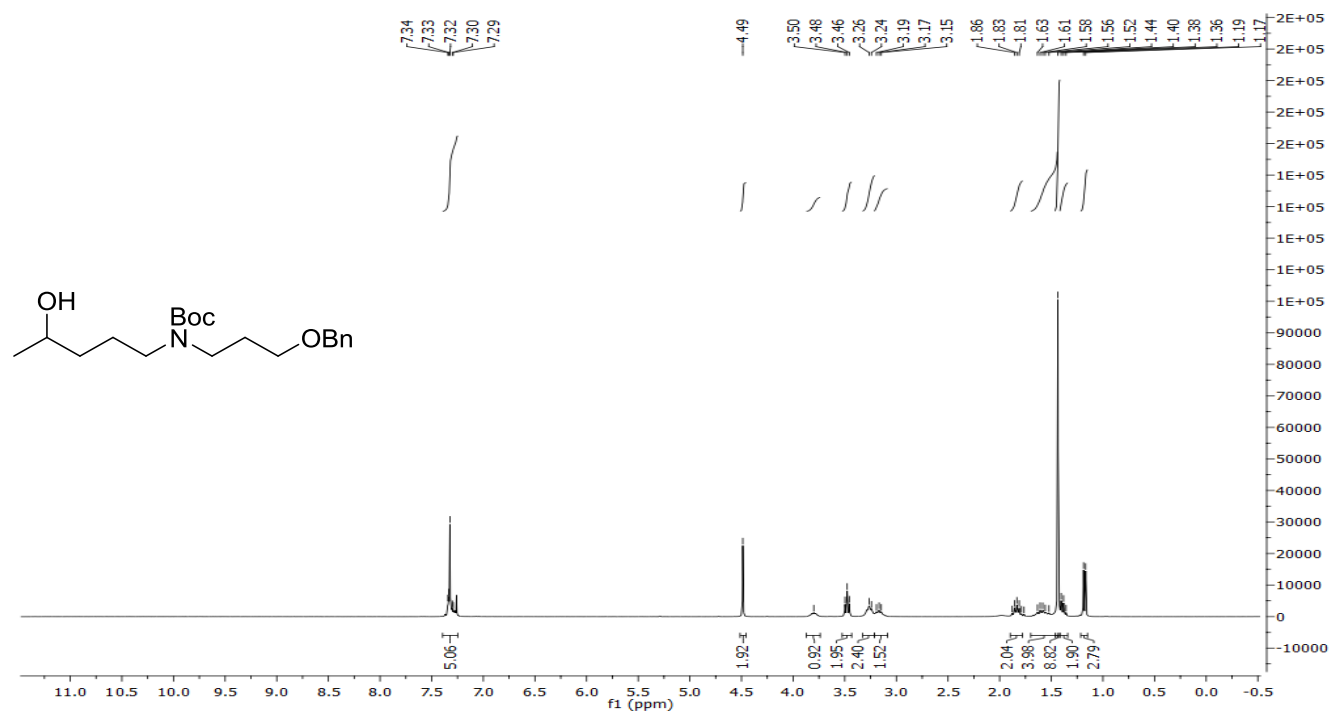


¹³C-NMR spectrum

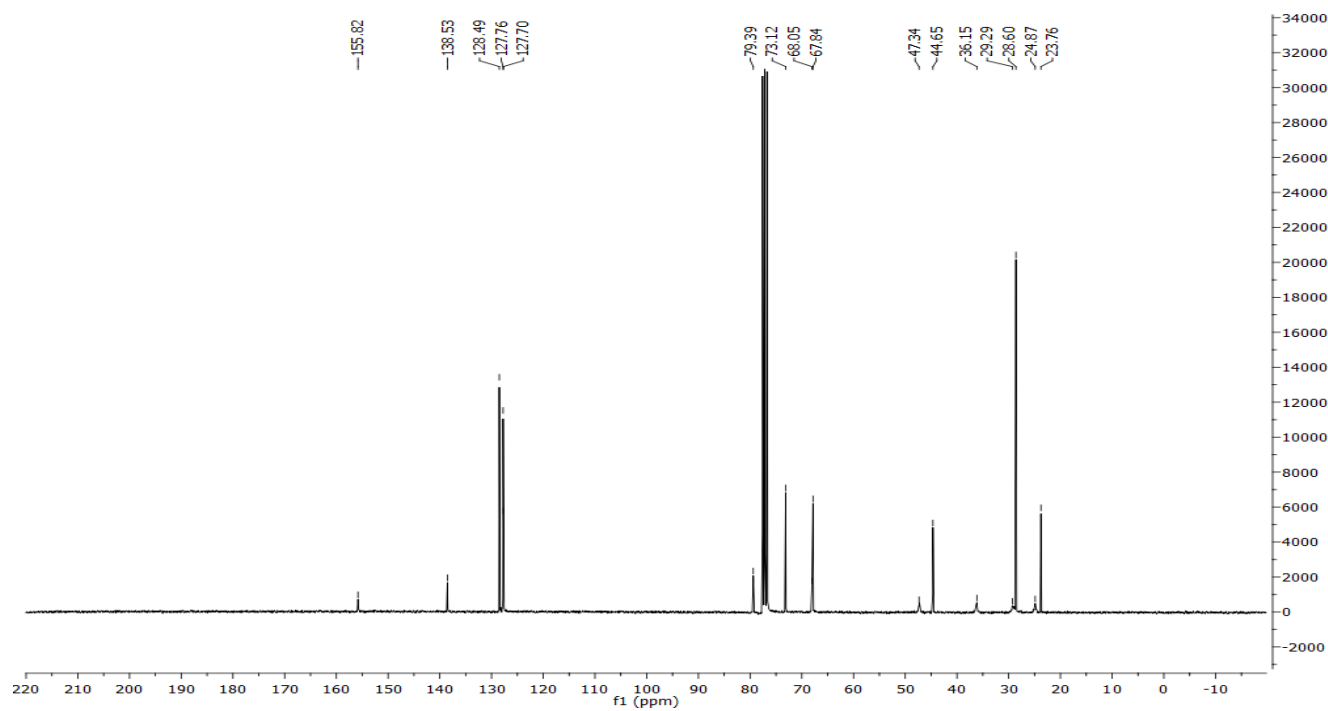


***tert*-Butyl *N*-(3-(benzyloxy)propyl)-*N*-(4-hydroxypentyl)carbamate (3-185)**

¹H-NMR spectrum

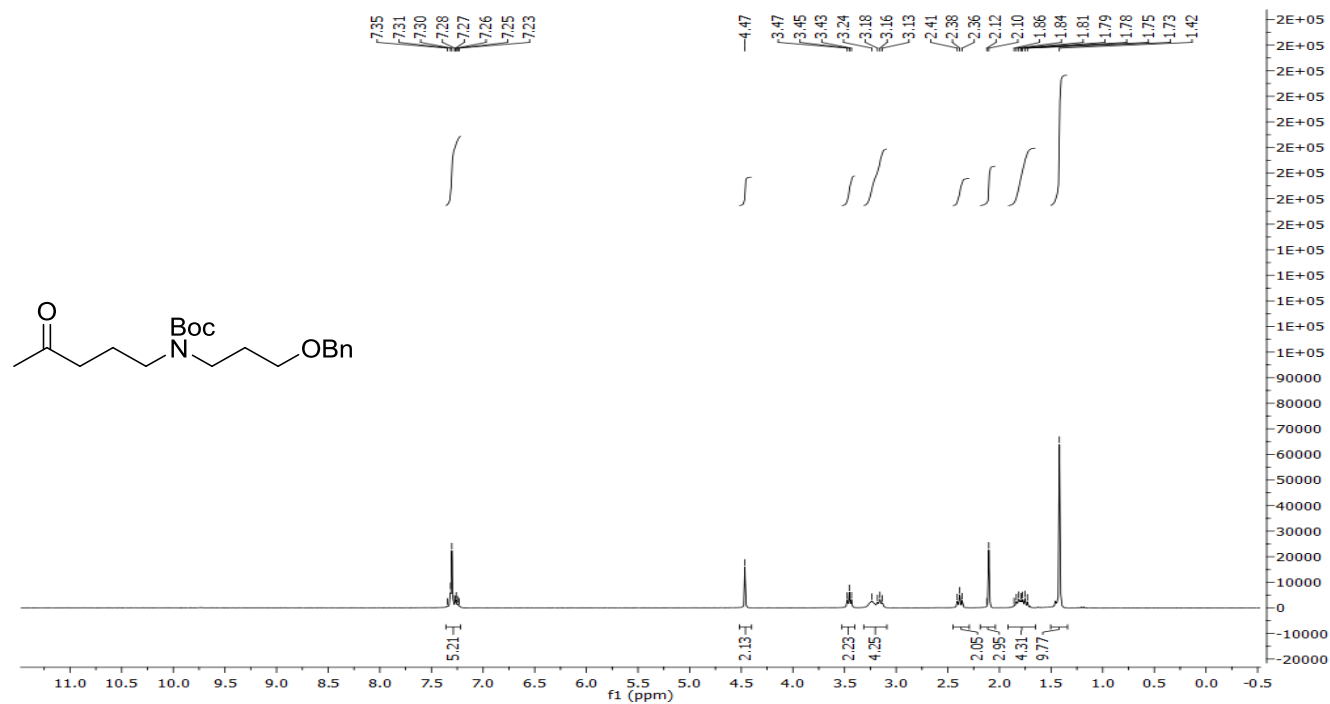


¹³C-NMR spectrum

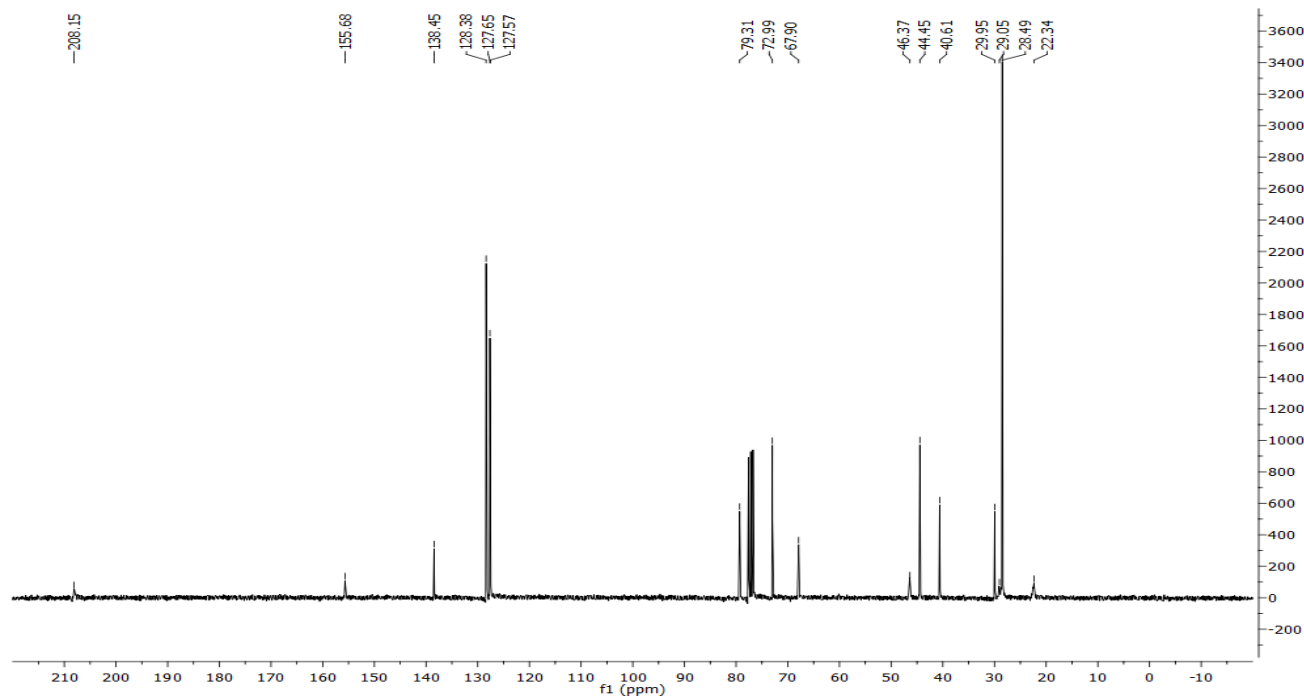


***tert*-Butyl *N*-(3-(benzyloxy)propyl)-*N*-(4-oxopentyl)carbamate (3-186)**

¹H-NMR spectrum

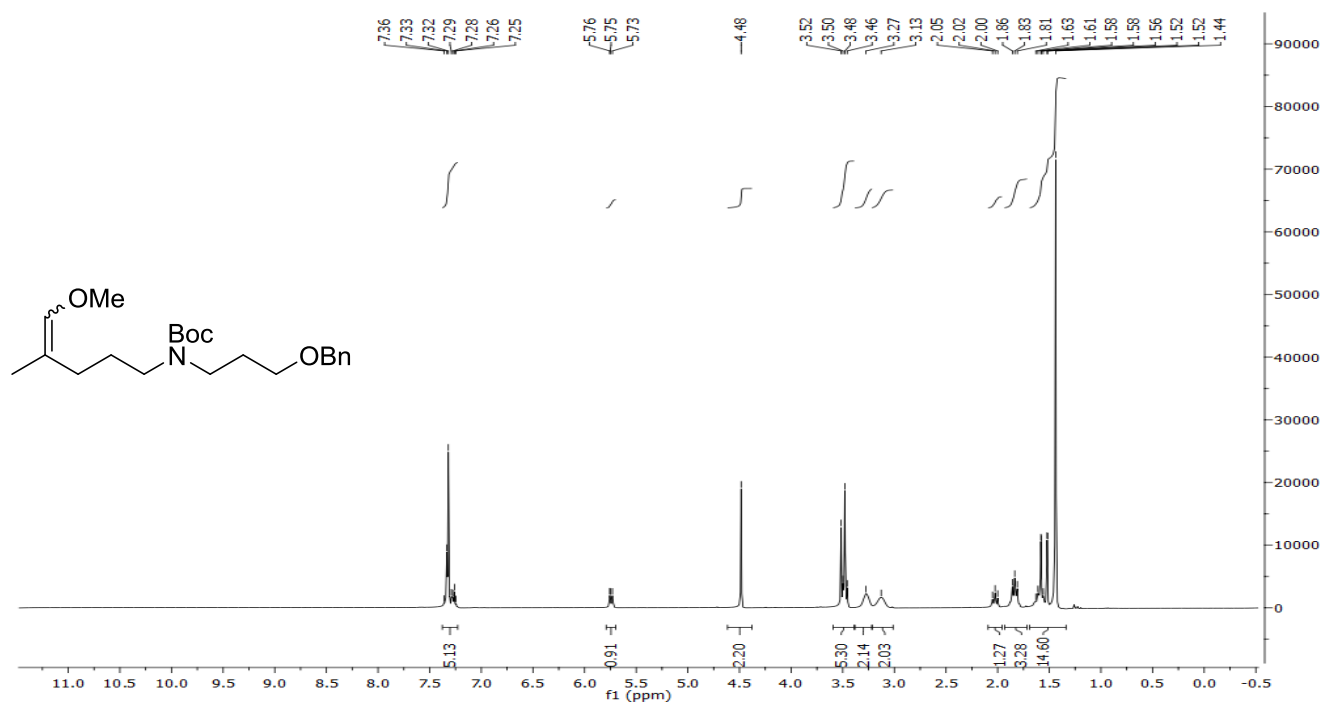


¹³C-NMR spectrum

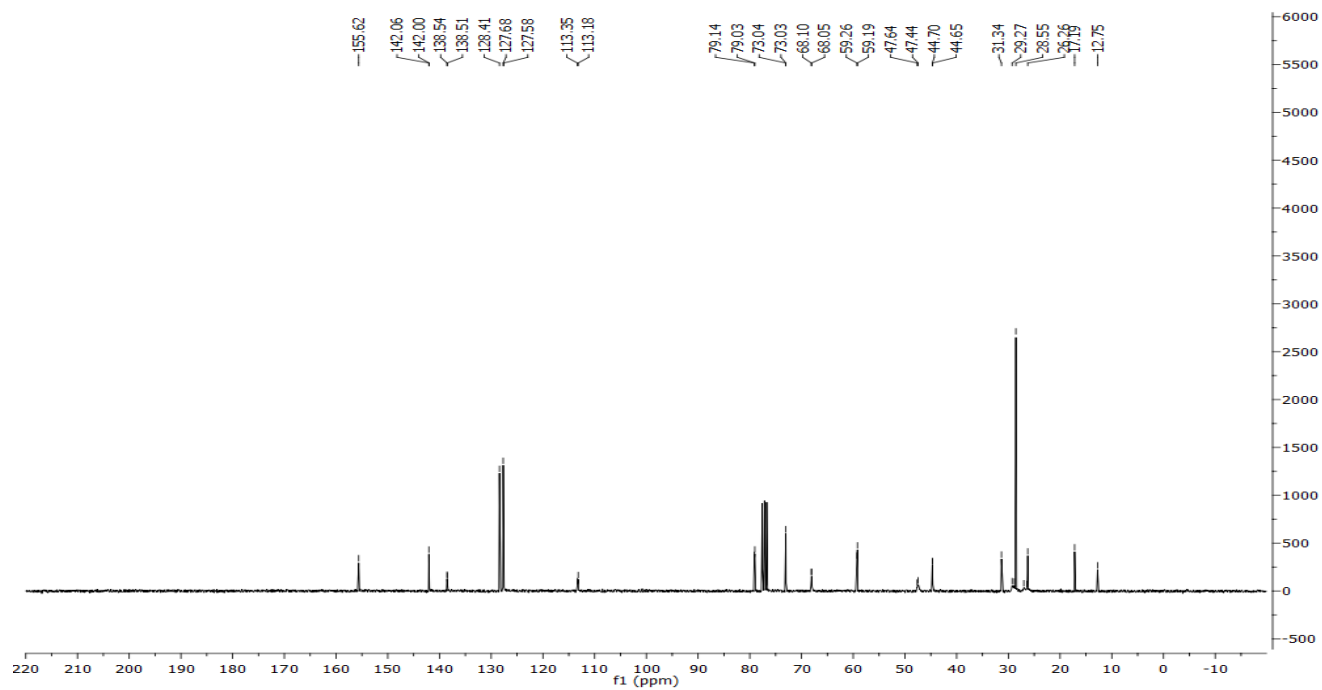


***tert*-Butyl *N*-(3-(benzyloxy)propyl)-*N*-(5-methoxy-4-methylpent-4-en-1-yl)carbamate (3-187)**

¹H-NMR spectrum

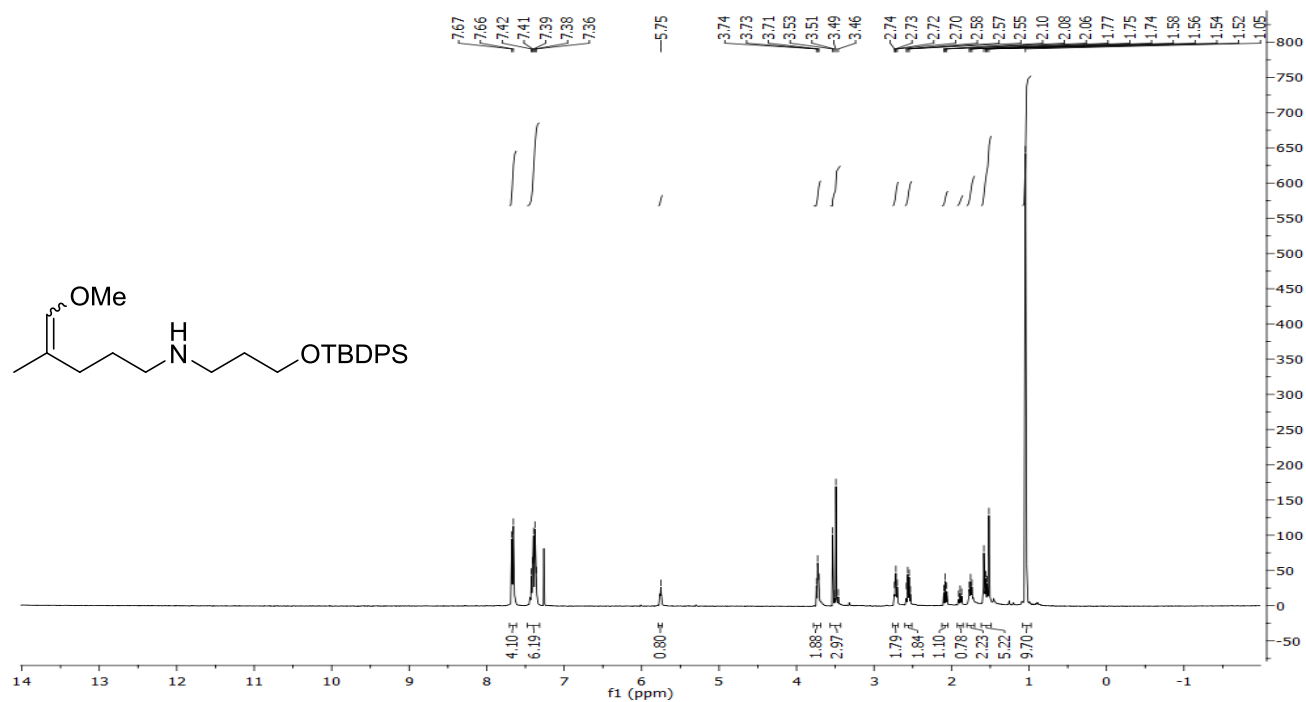


¹³C-NMR spectrum

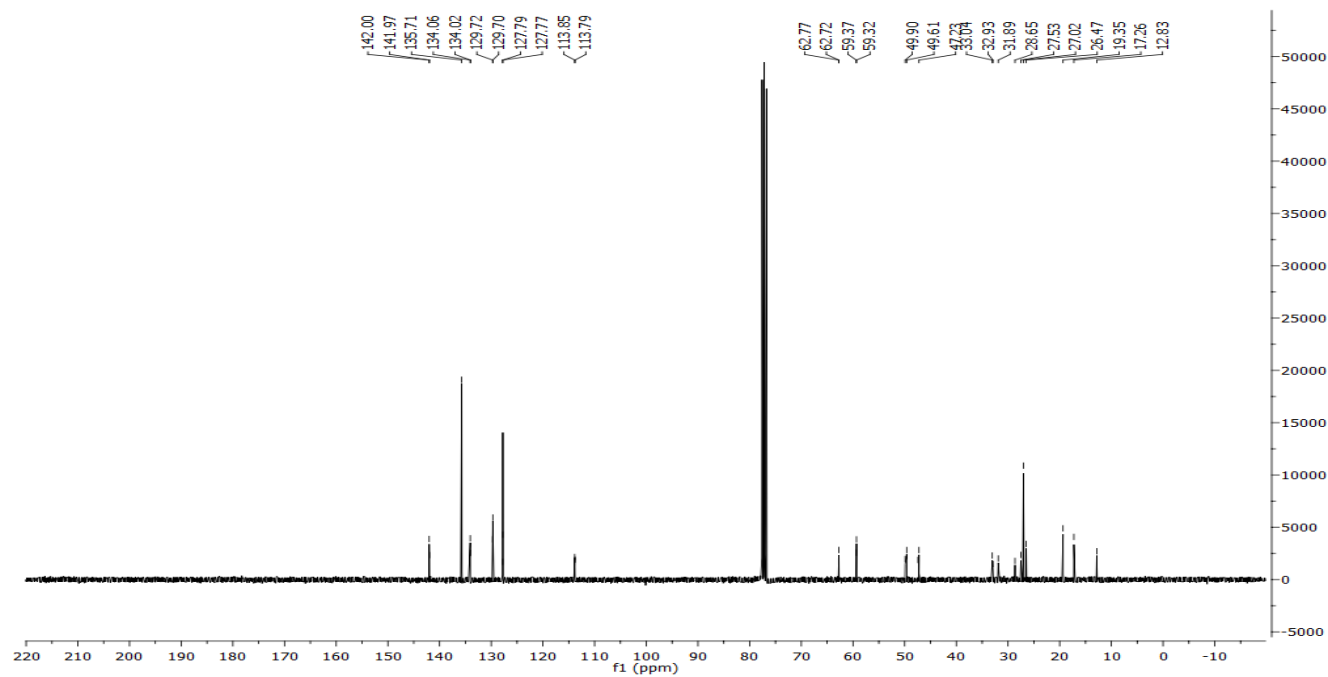


N-(3-((*tert*-Butyldiphenylsilyloxy)propyl)-5-methoxy-4-methylpent-4-en-1-amine (3-191)

¹H-NMR spectrum

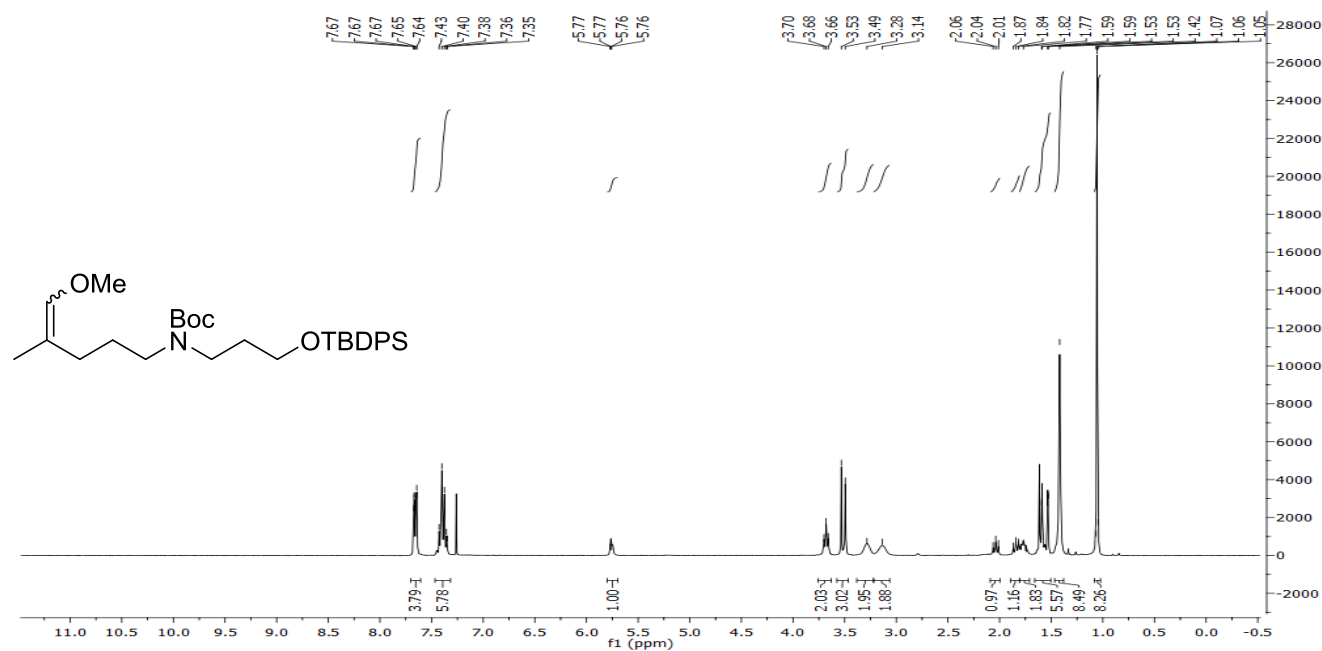


¹³C-NMR spectrum

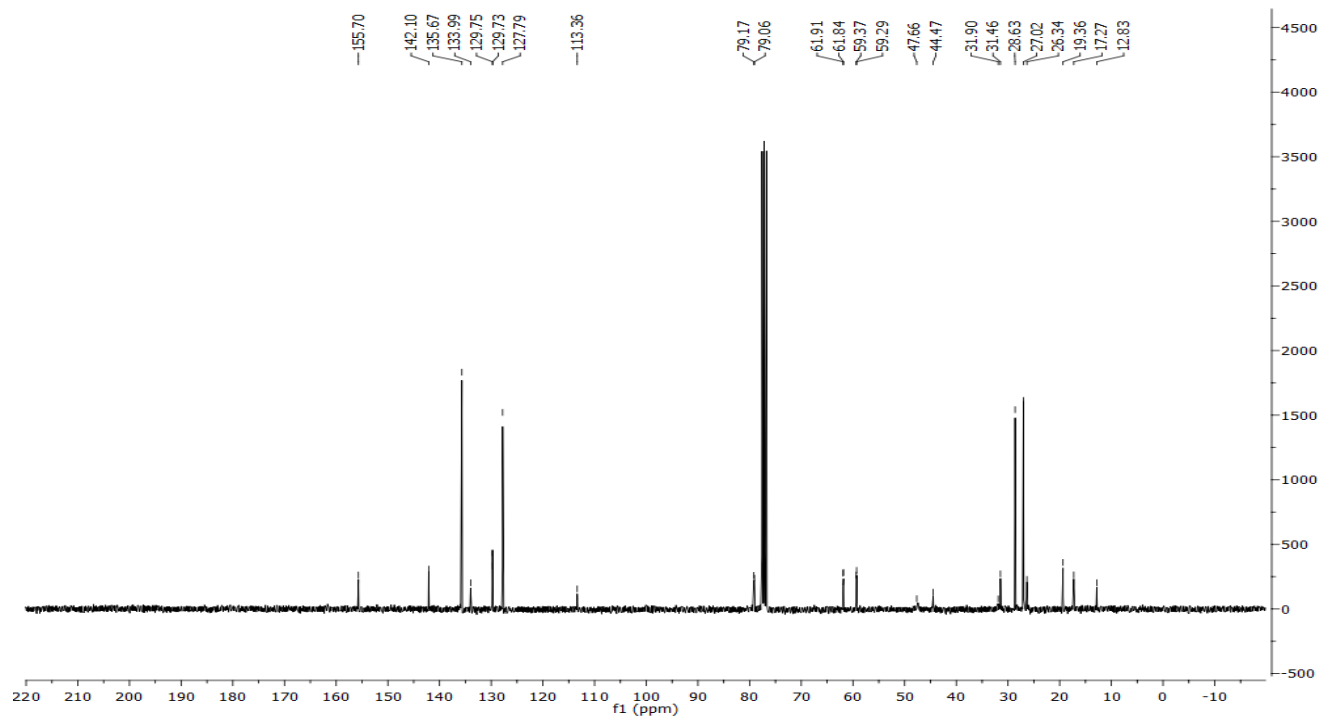


tert-Butyl N-(3-((tert-butyldiphenylsilyloxy)propyl)-N-(5-methoxy-4-methylpent-4-en-1-yl)carbamate (3-192)

$^1\text{H-NMR}$ spectrum

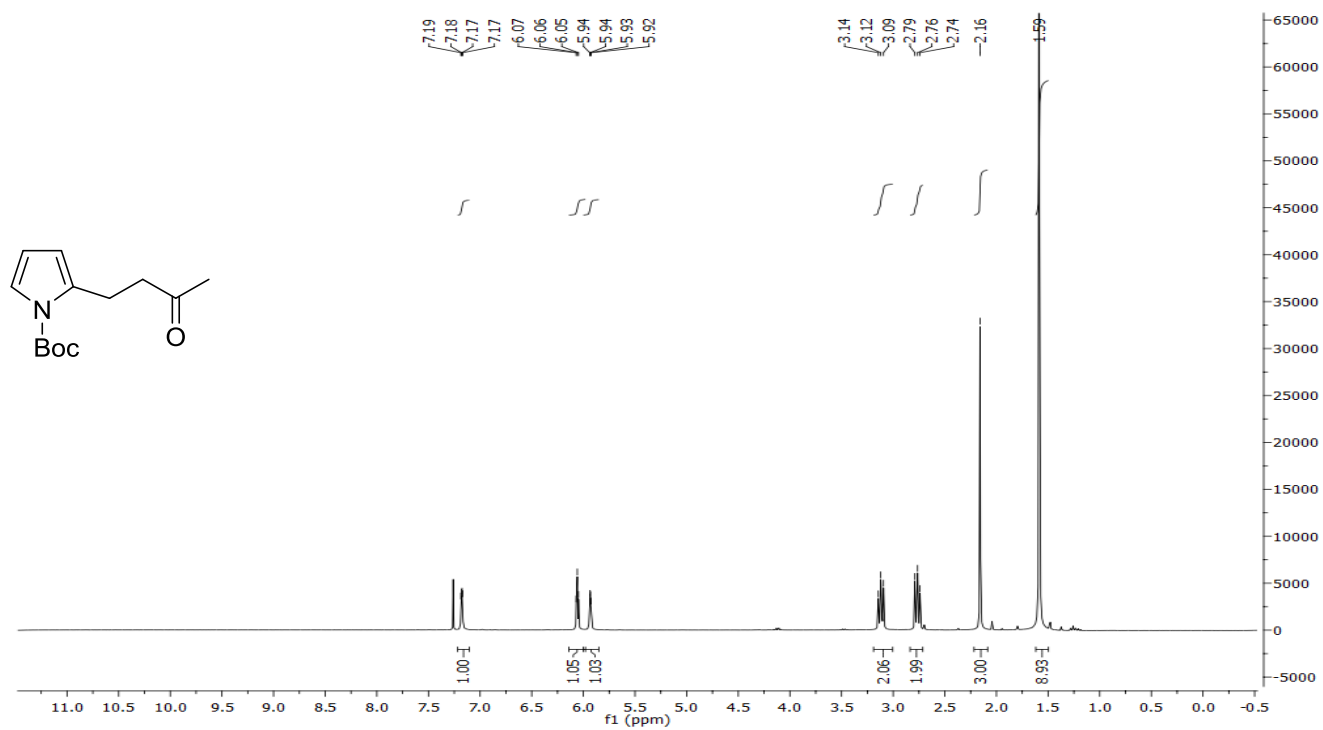


$^{13}\text{C-NMR}$ spectrum

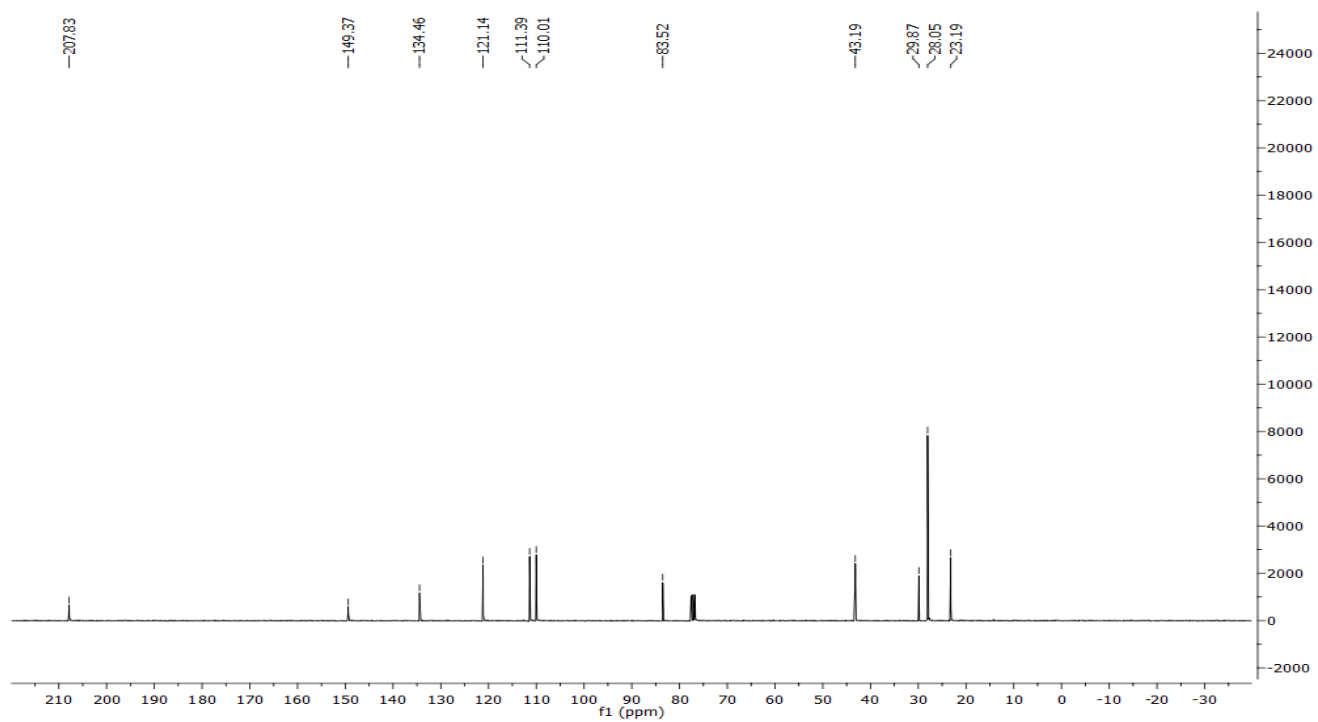


tert-Butyl 2-(3-oxobutyl)-1*H*-pyrrole-1-carboxylate (4-3)

¹H-NMR spectrum

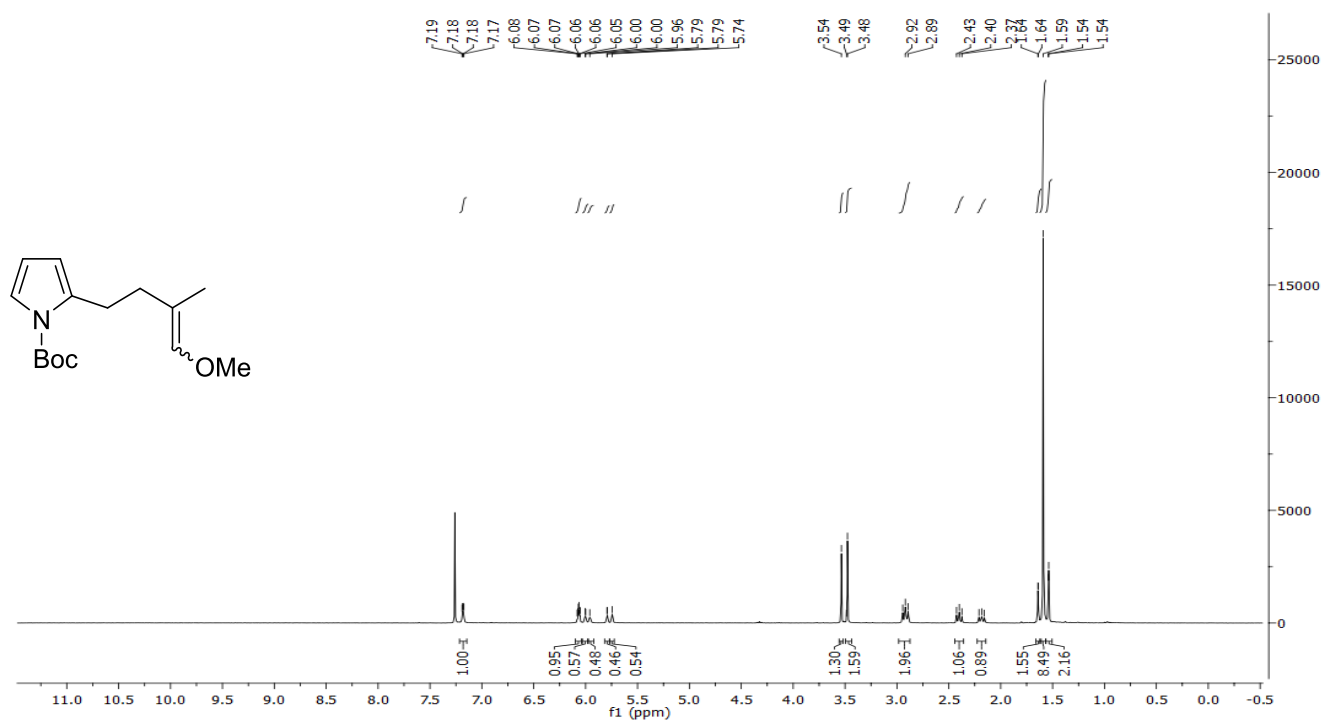


¹³C-NMR spectrum

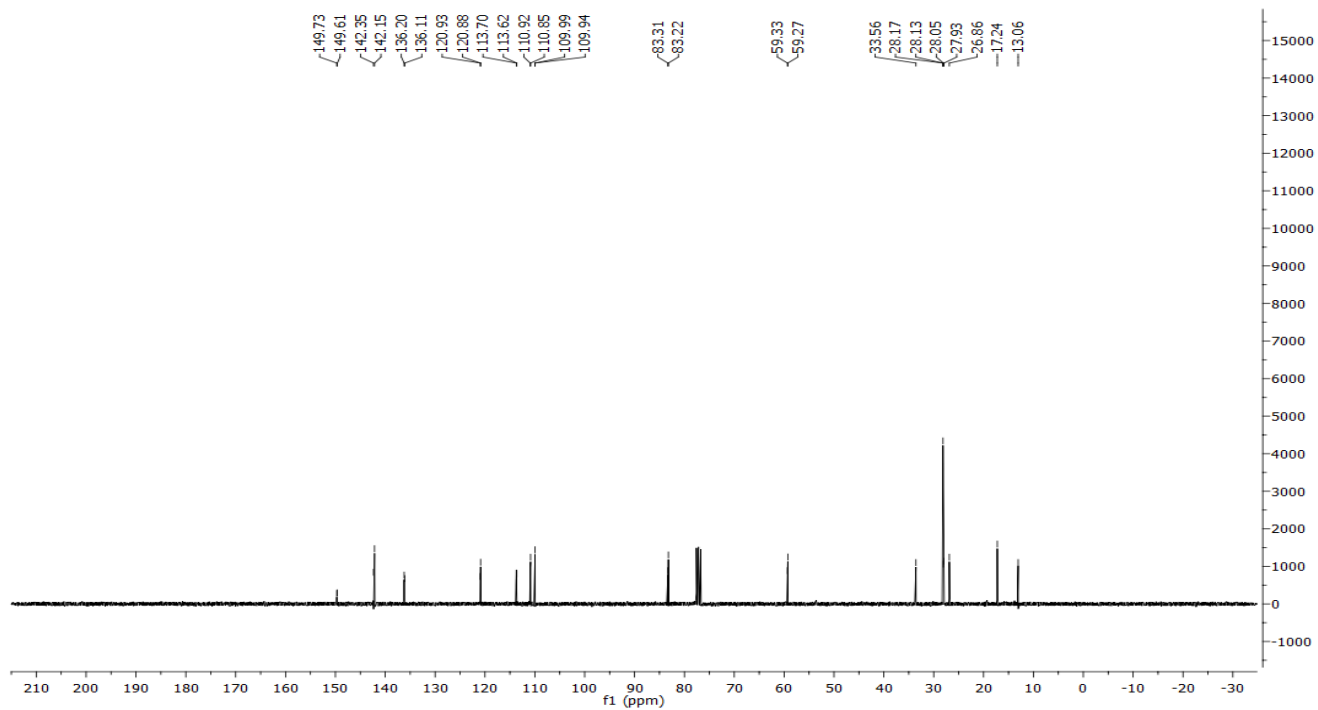


tert-Butyl 2-(4-methoxy-3-methylbut-3-en-1-yl)-1*H*-pyrrole-1-carboxylate (4-4)

¹H-NMR spectrum

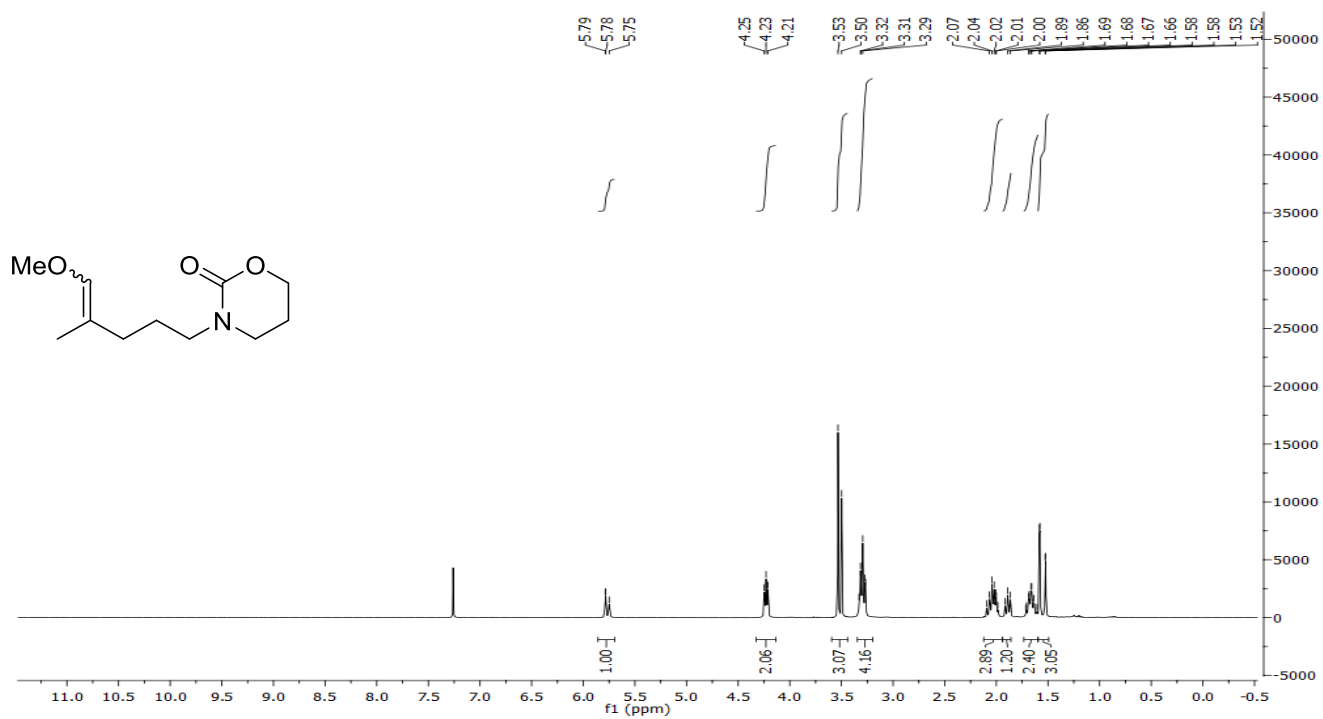


¹³C-NMR spectrum

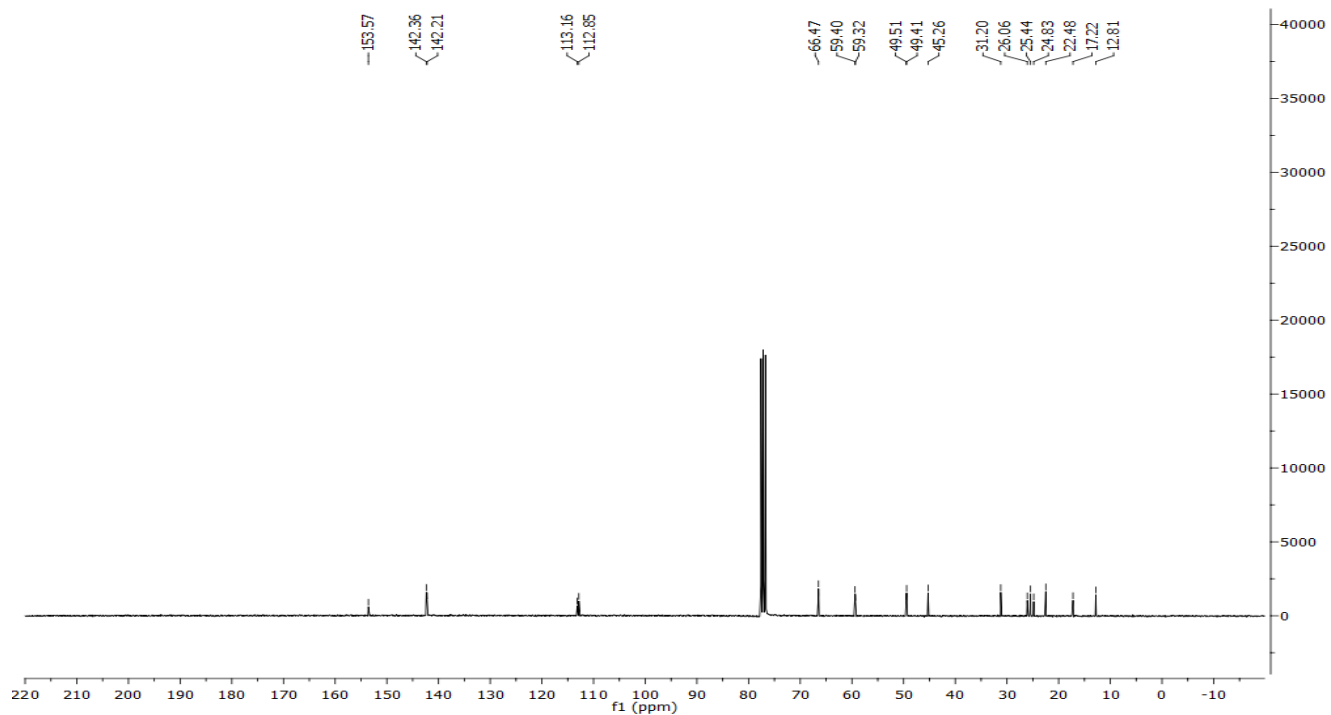


3-(5-Methoxy-4-methylpent-4-en-1-yl)-1,3-oxazinan-2-one (4-10)

¹H-NMR spectrum

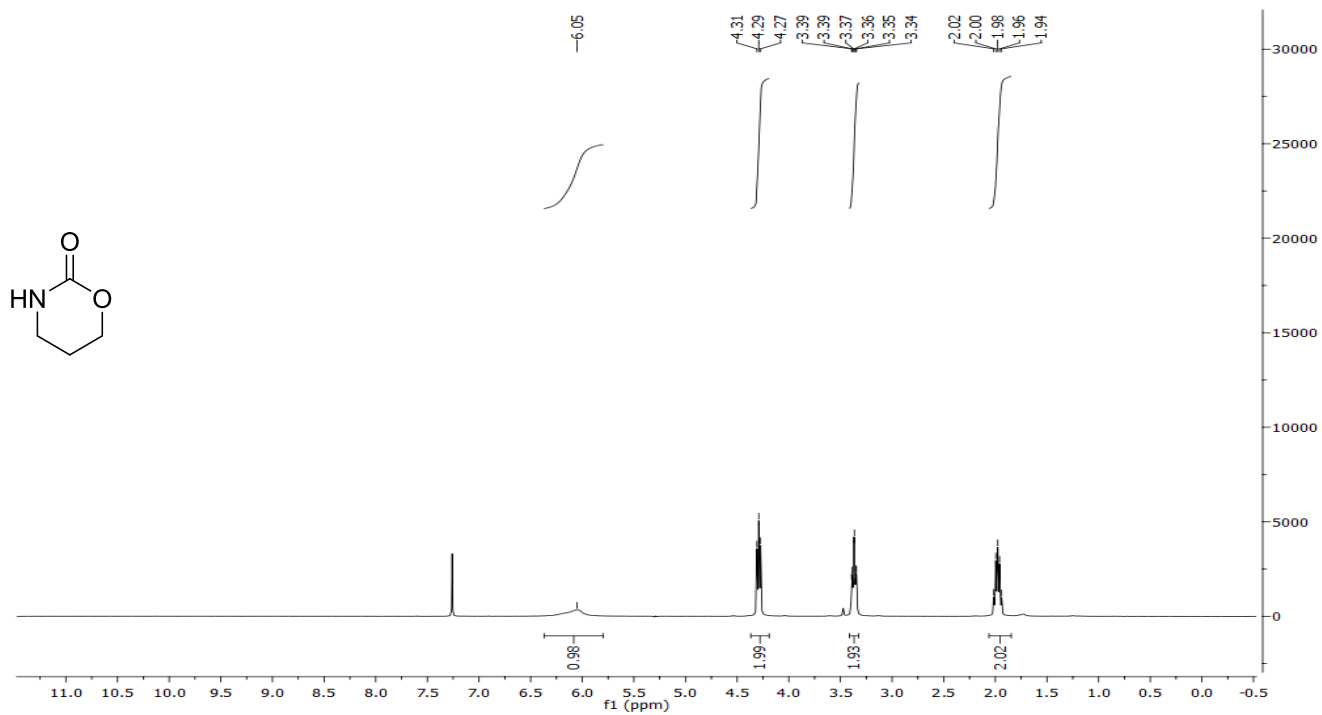


¹³C-NMR spectrum

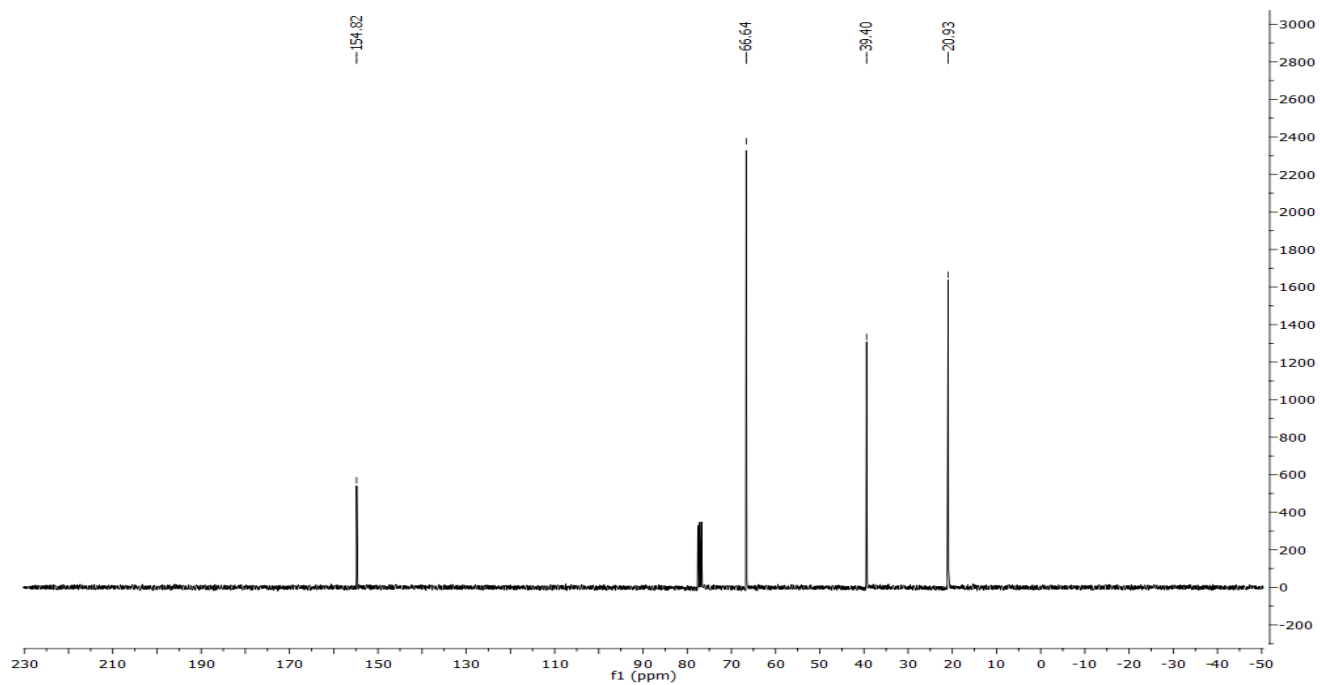


1,3-Oxazinan-2-one (4-15)

¹H-NMR spectrum

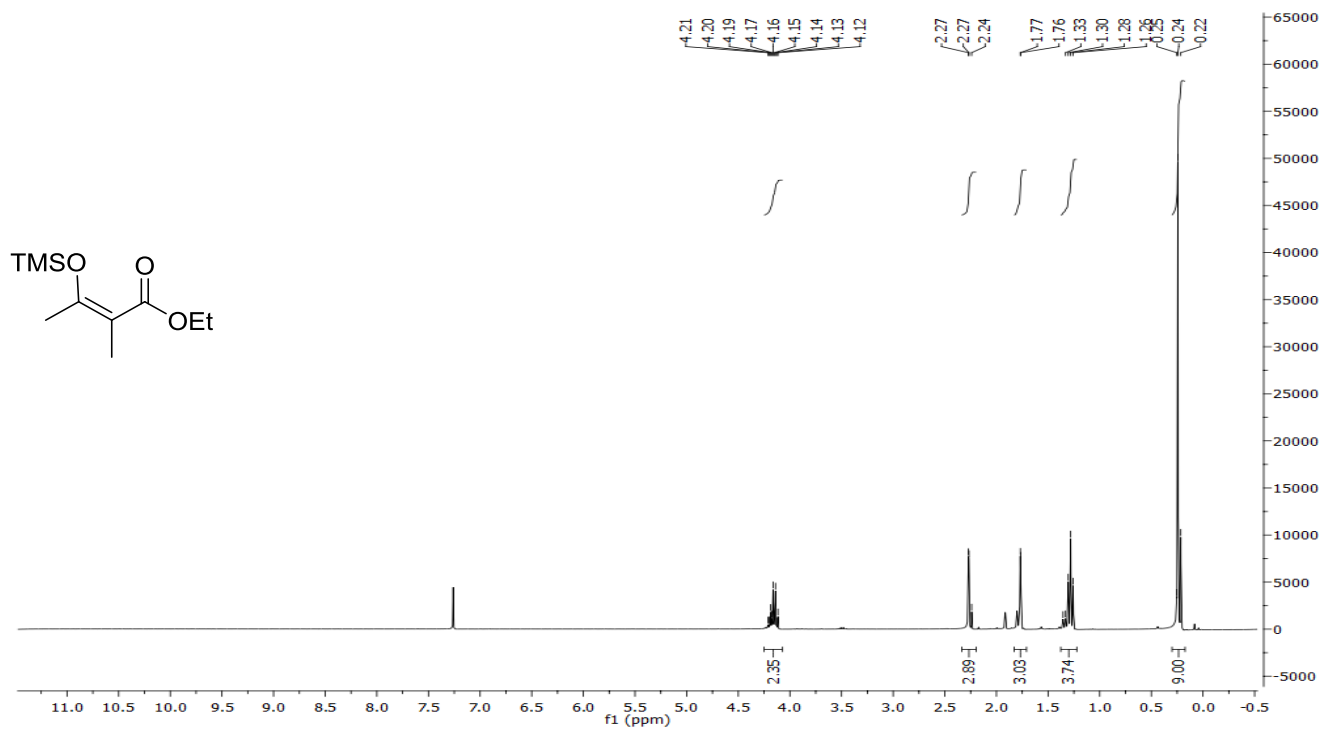


¹³C-NMR spectrum

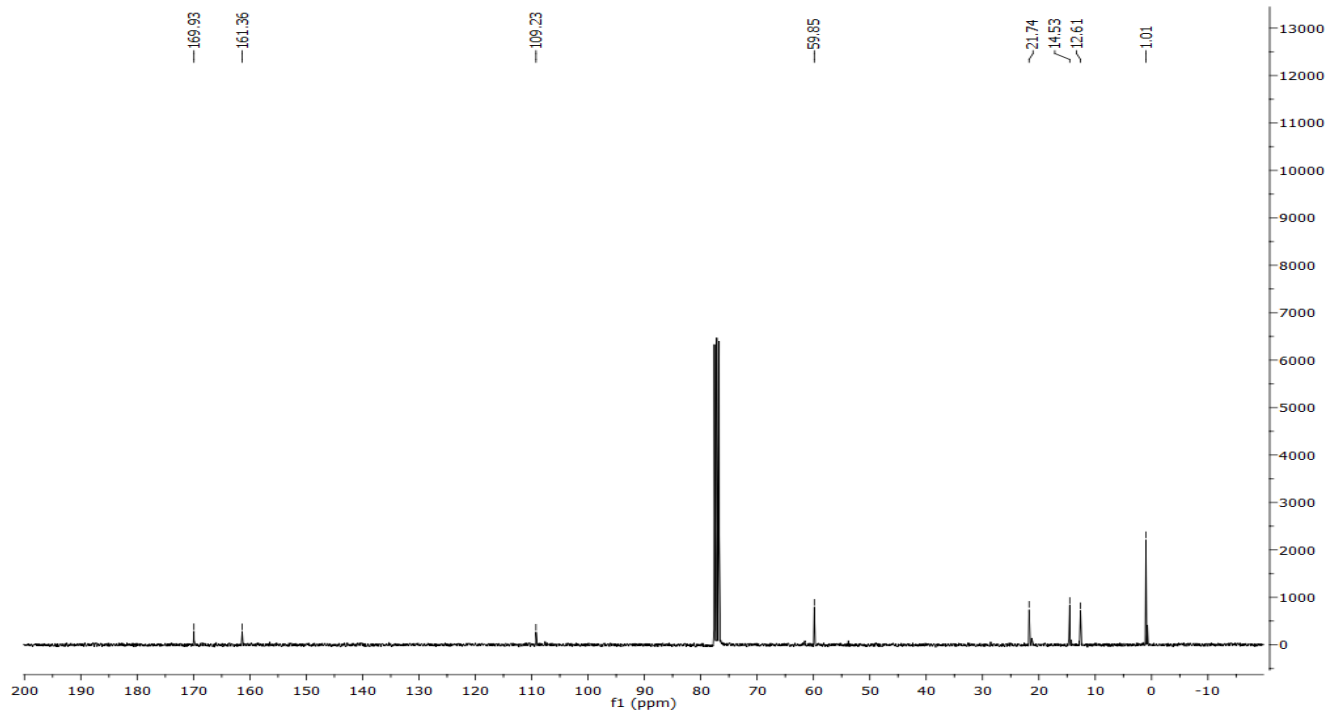


Ethyl (Z)-2-methyl-3-((trimethylsilyl)oxy)but-2-enoate (4-24)

¹H-NMR spectrum

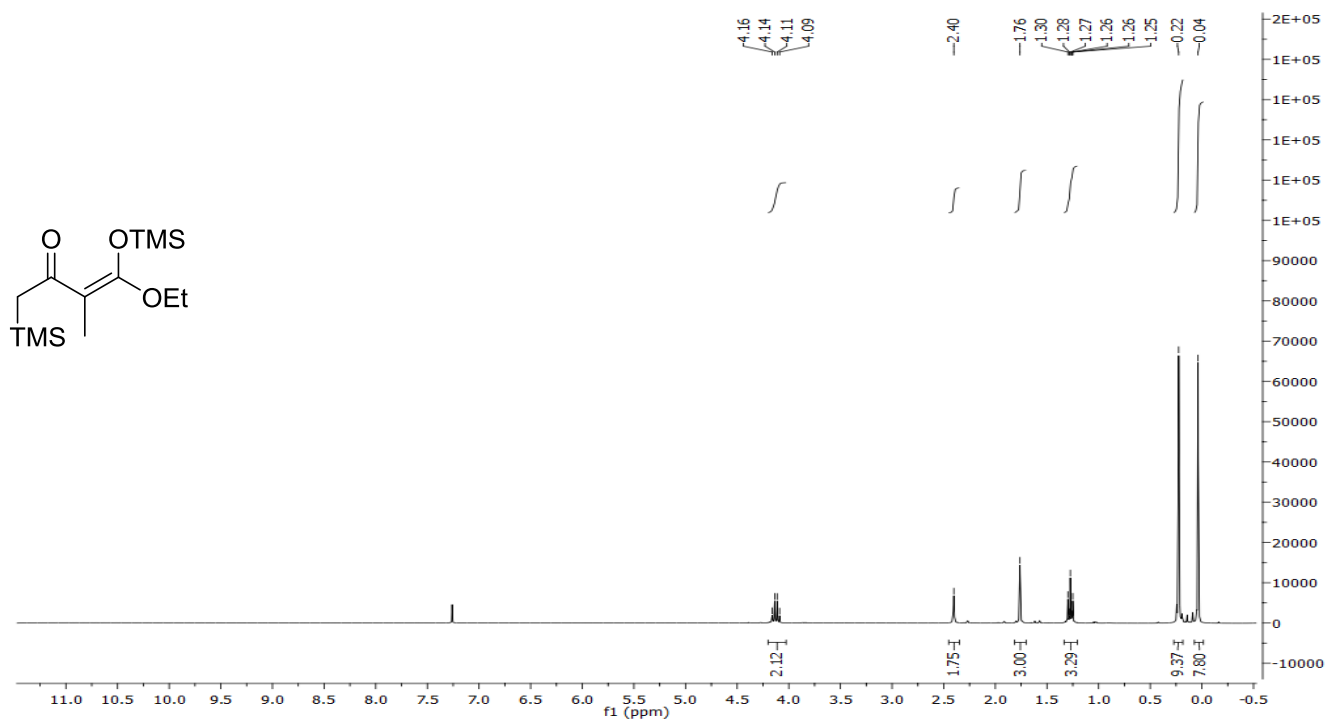


¹³C-NMR spectrum

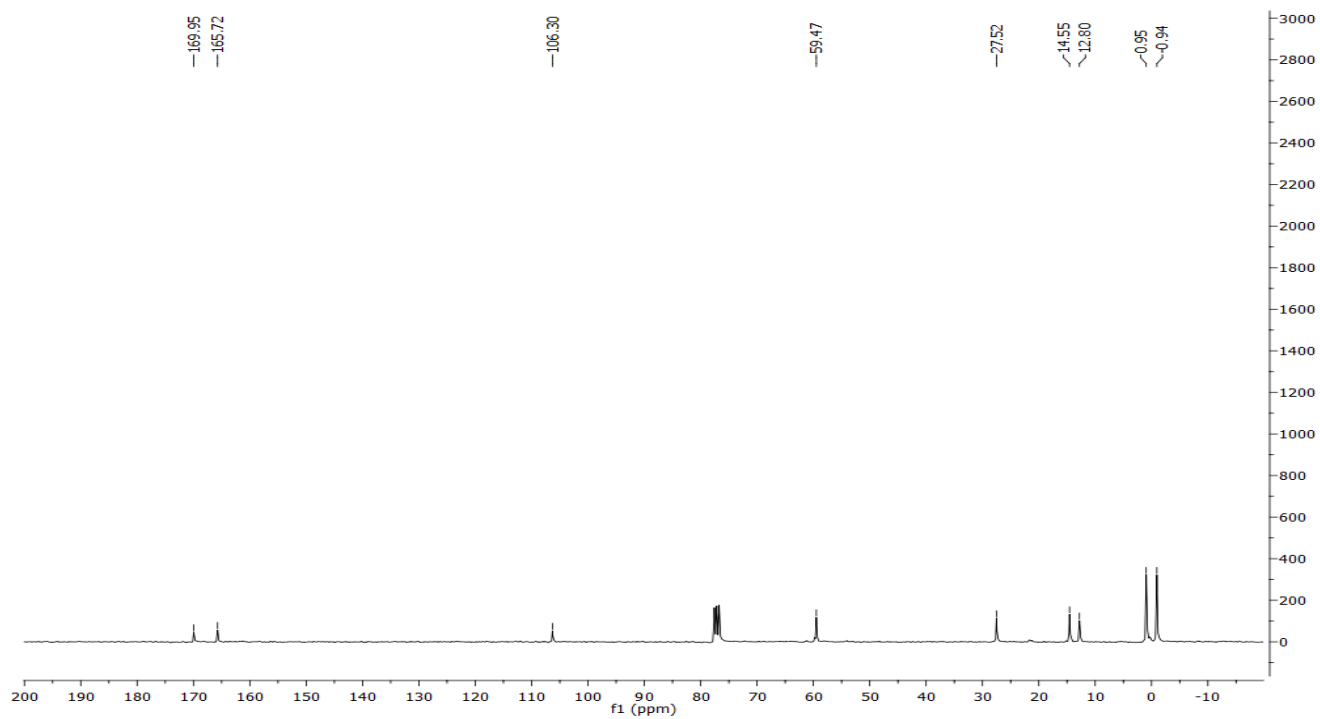


(Z)-4-Ethoxy-3-methyl-1-(trimethylsilyl)-4-((trimethylsilyl)oxy)but-3-en-2-one (4-27)

¹H-NMR spectrum

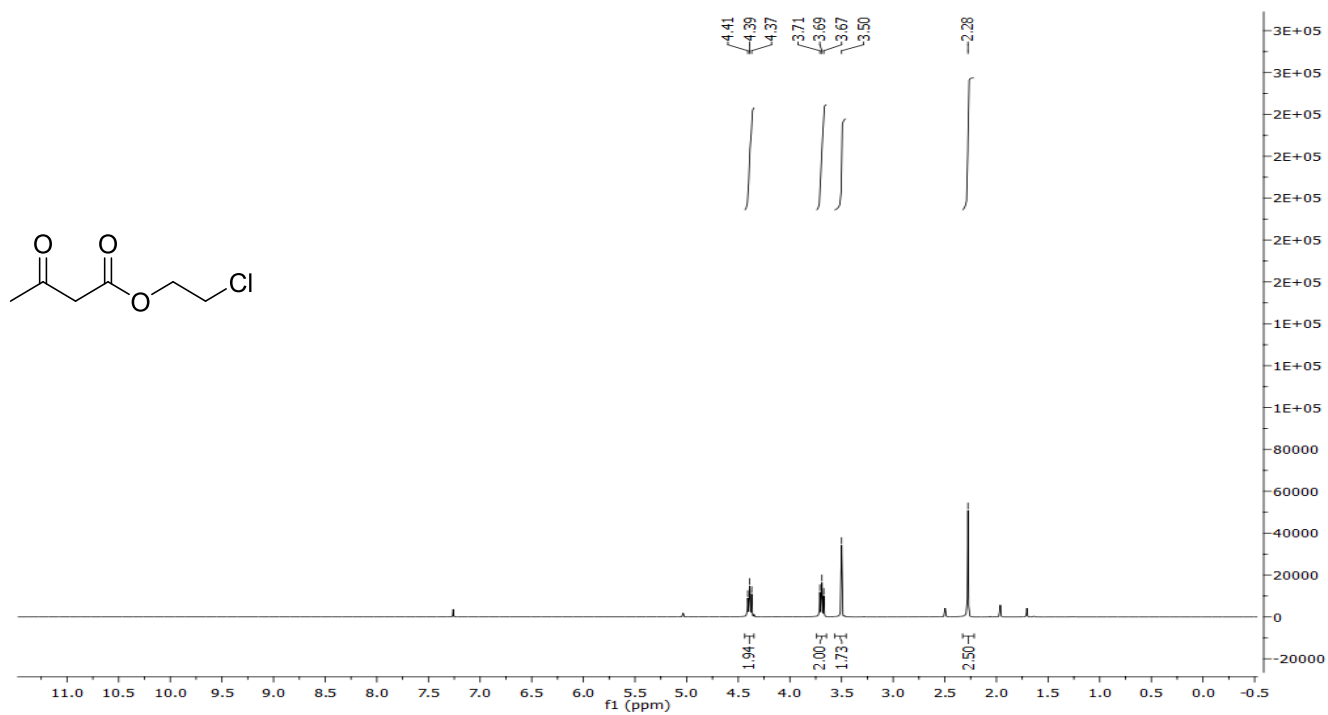


¹³C-NMR spectrum

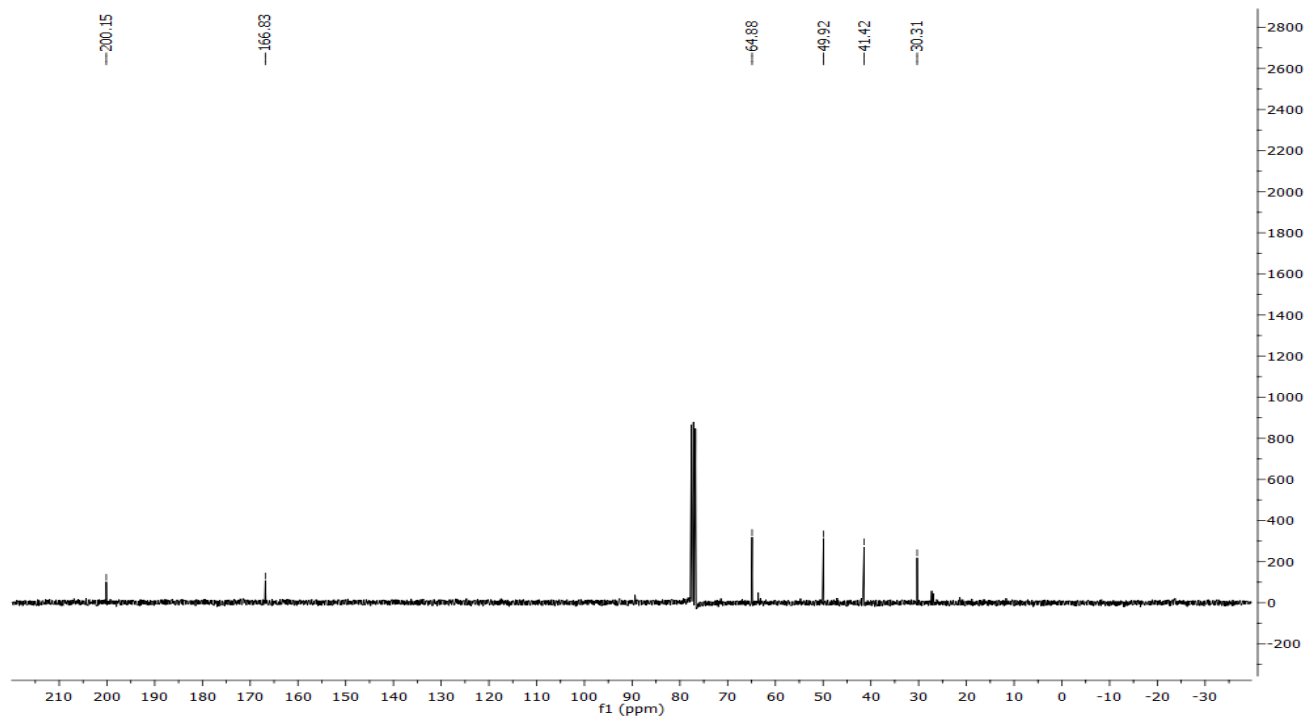


2-Chloroethyl 3-oxobutanoate (4-29)

$^1\text{H-NMR}$ spectrum

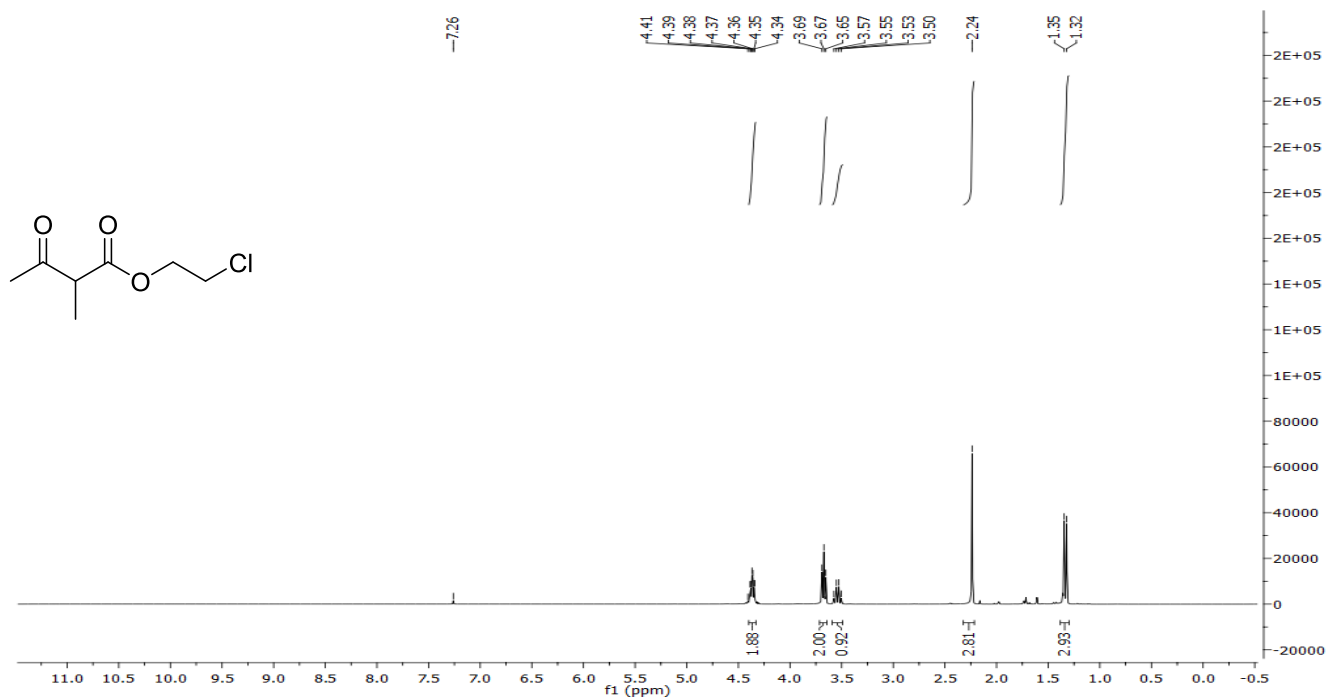


$^{13}\text{C-NMR}$ spectrum

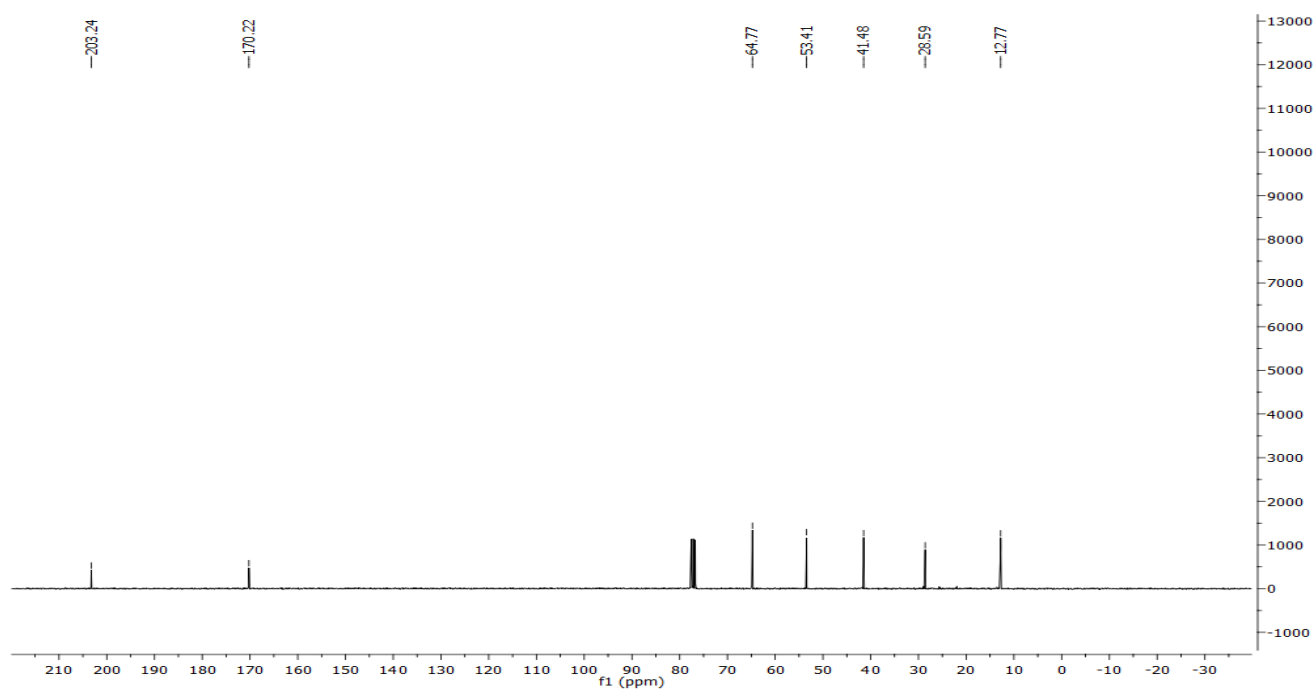


2-Chloroethyl 2-methyl-3-oxobutanoate (4-30)

$^1\text{H-NMR}$ spectrum

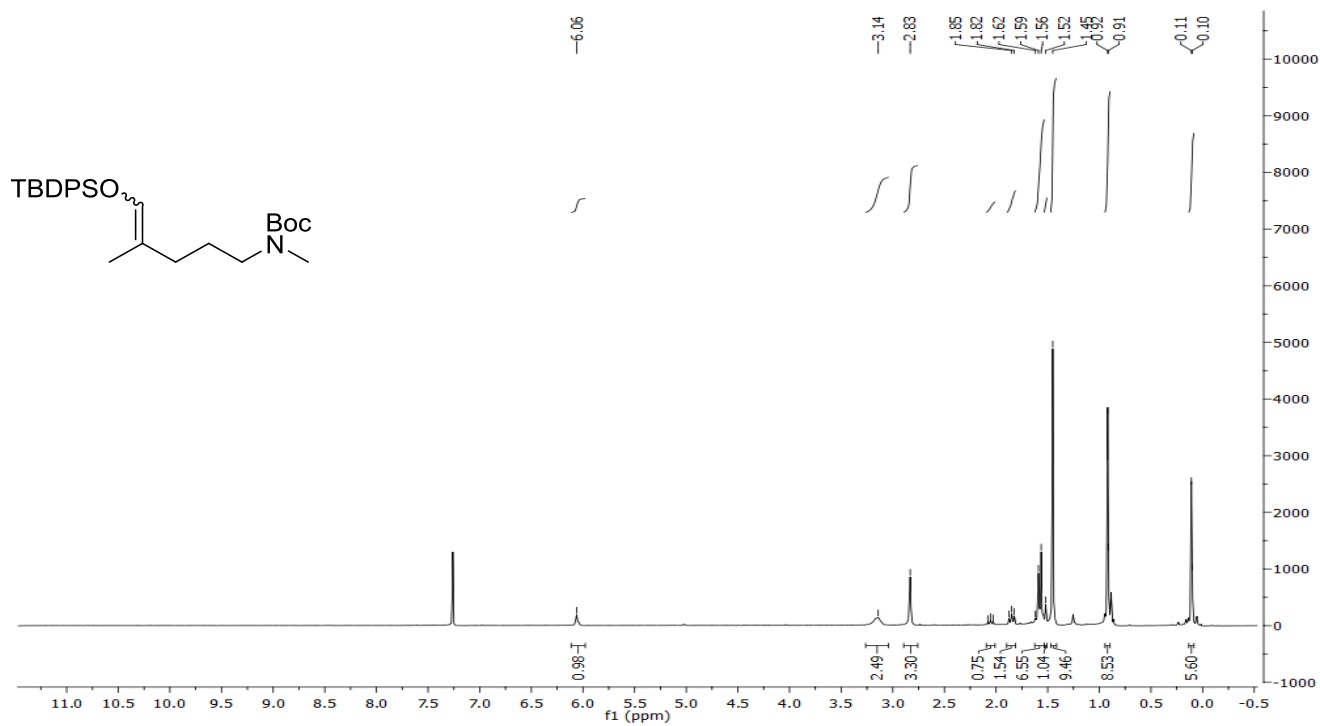


$^{13}\text{C-NMR}$ spectrum

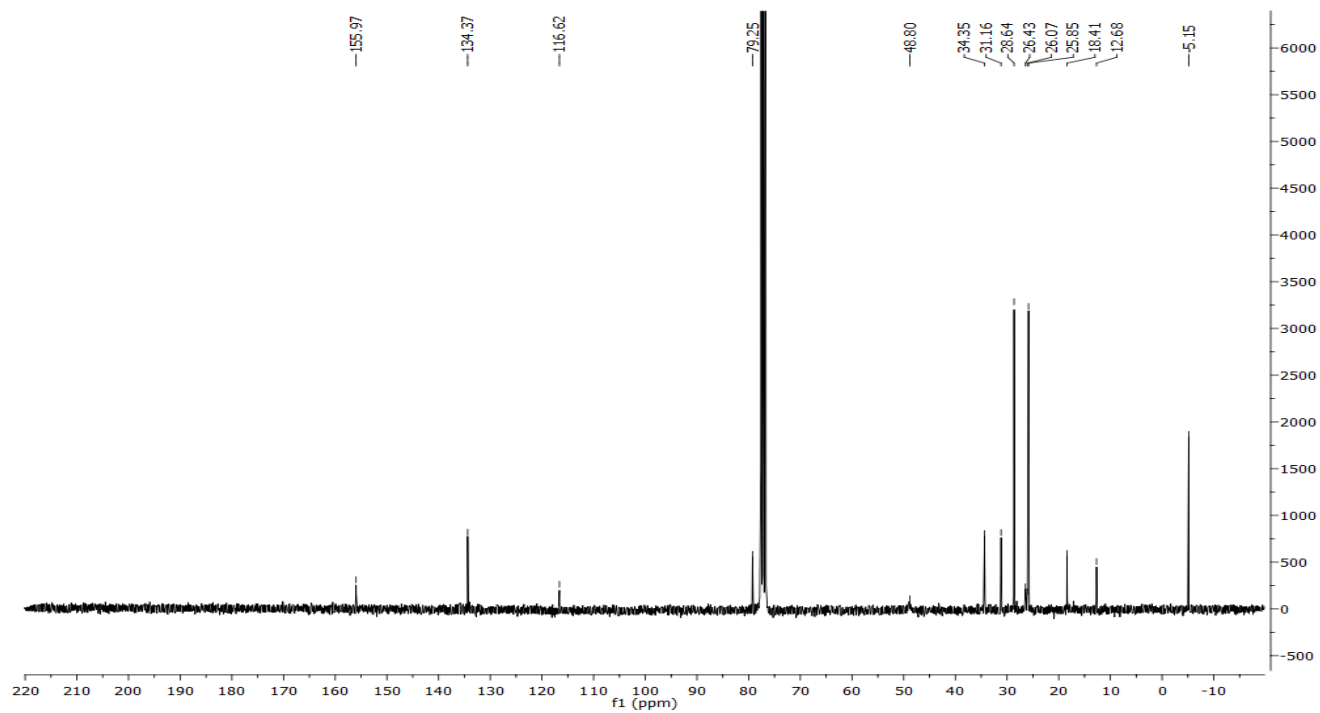


***tert*-Butyl *N*-(5-((*tert*-butyldiphenylsilyl)oxy)-4-methylpent-4-en-1-yl)-*N*-methylcarbamate (4-33)**

¹H-NMR spectrum

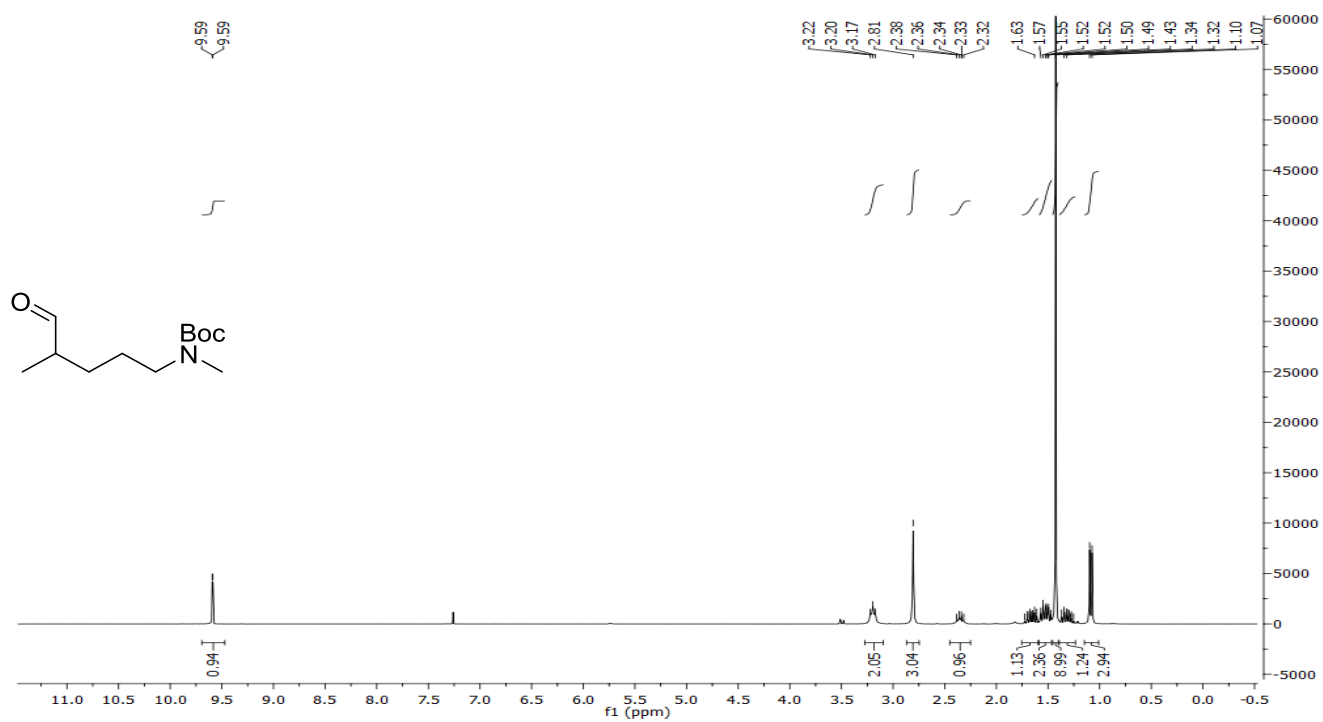


¹³C-NMR spectrum

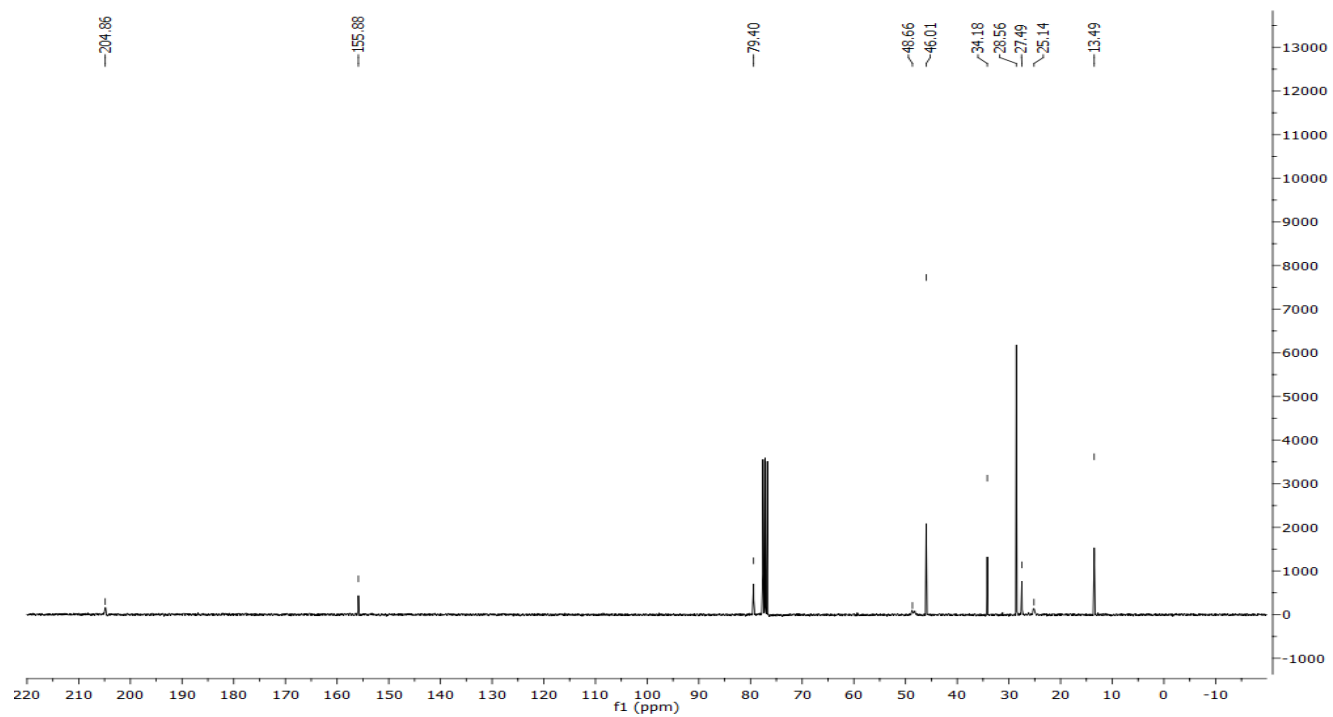


tert-Butyl N-methyl-N-(4-methyl-5-oxopentyl)carbamate (4-44)

¹H-NMR spectrum

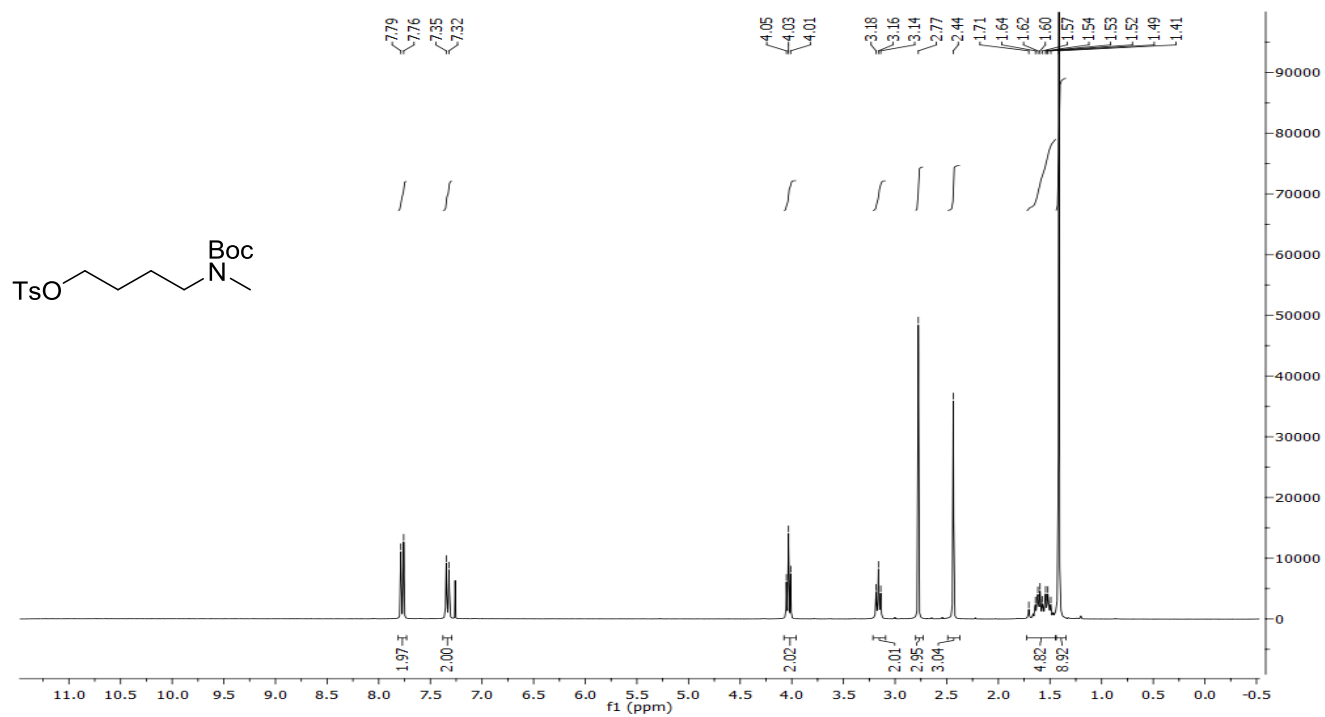


¹³C-NMR spectrum

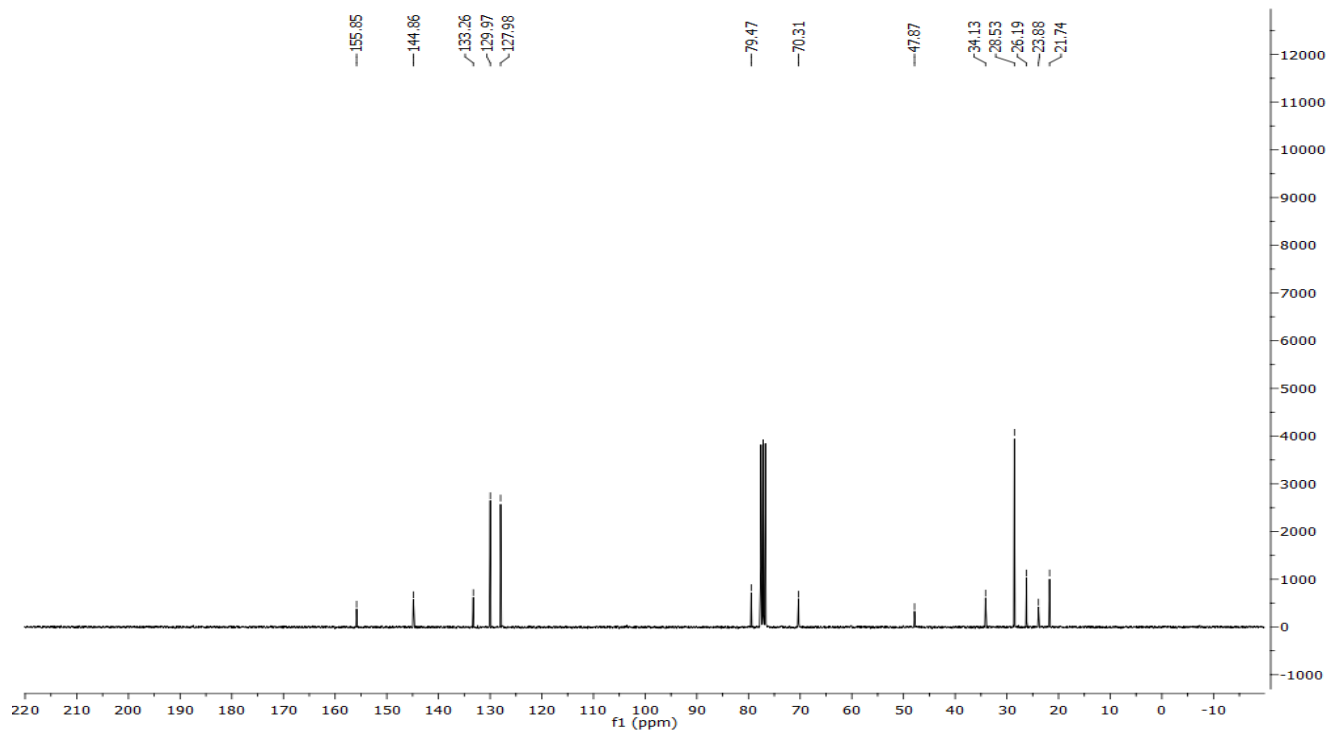


4-((*tert*-Butoxycarbonyl)(methyl)amino)butyl 4-methylbenzenesulfonate (4-54)

¹H-NMR spectrum

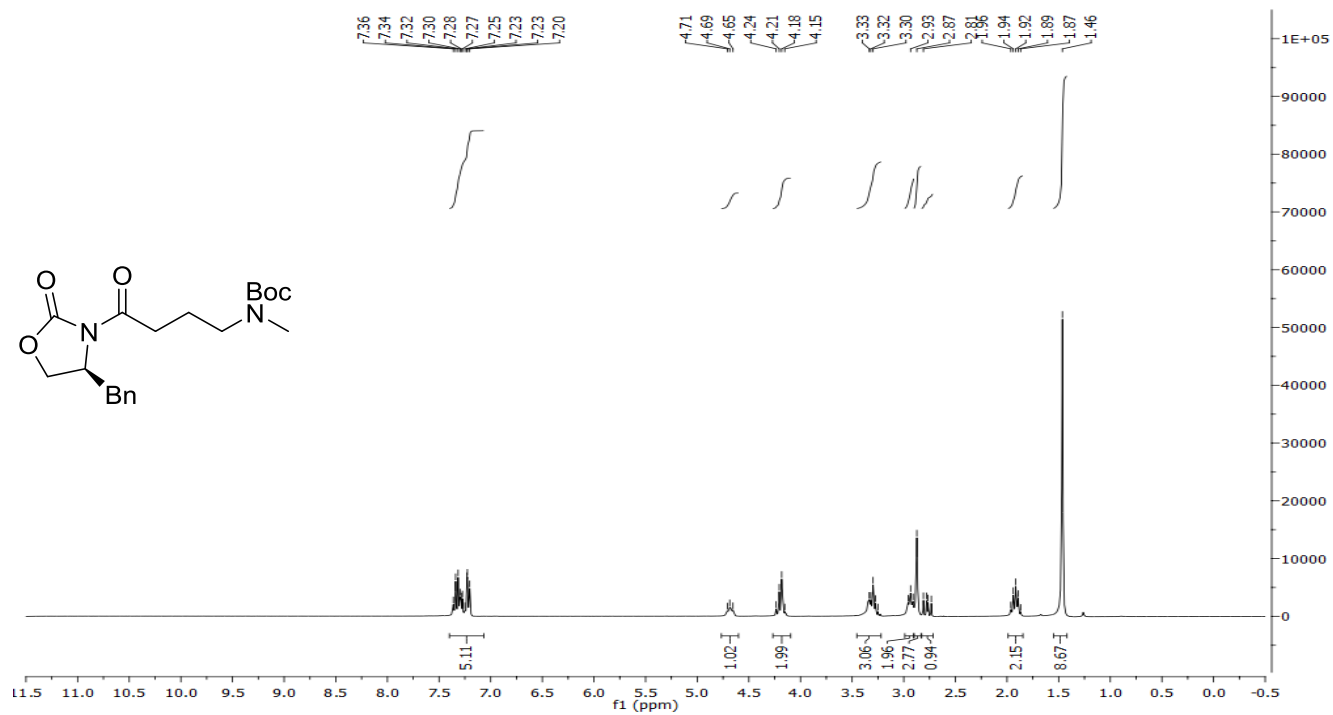


¹³C-NMR spectrum

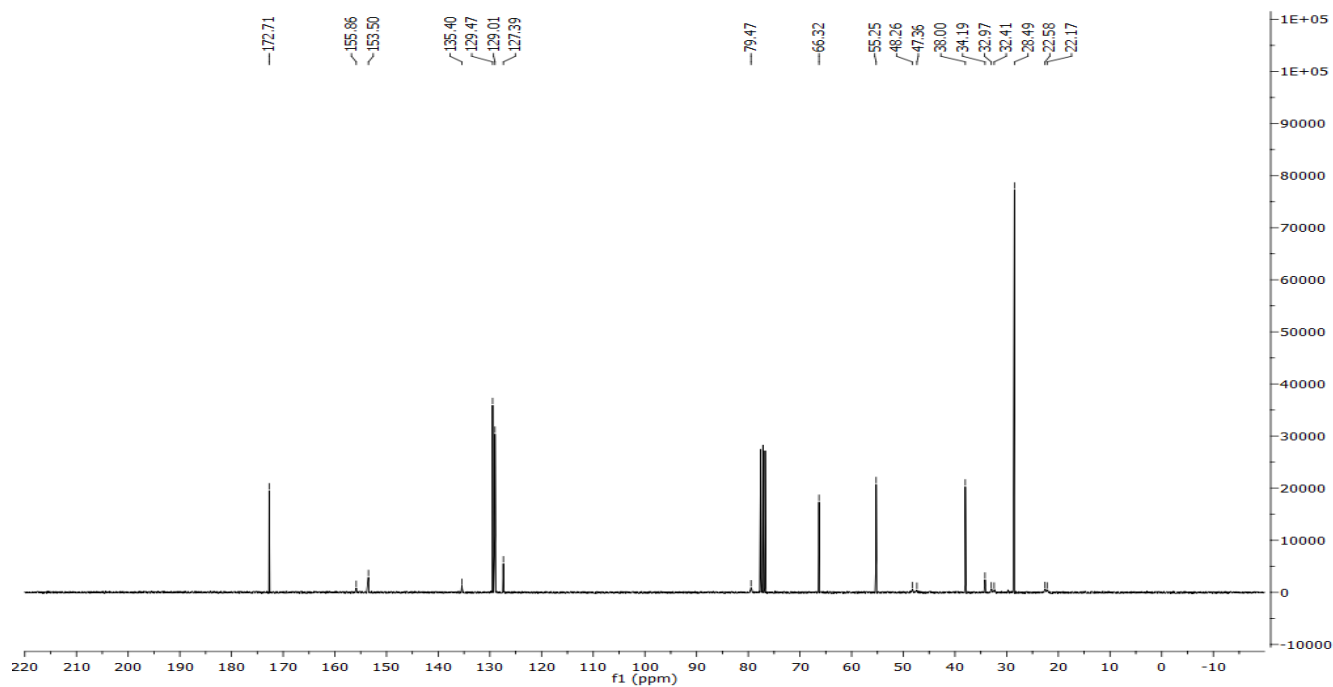


***tert*-Butyl (*S*)-*N*-(4-(4-benzyl-2-oxooxazolidin-3-yl)-4-oxobutyl)-*N*-methylcarbamate (4-62)**

¹H-NMR spectrum

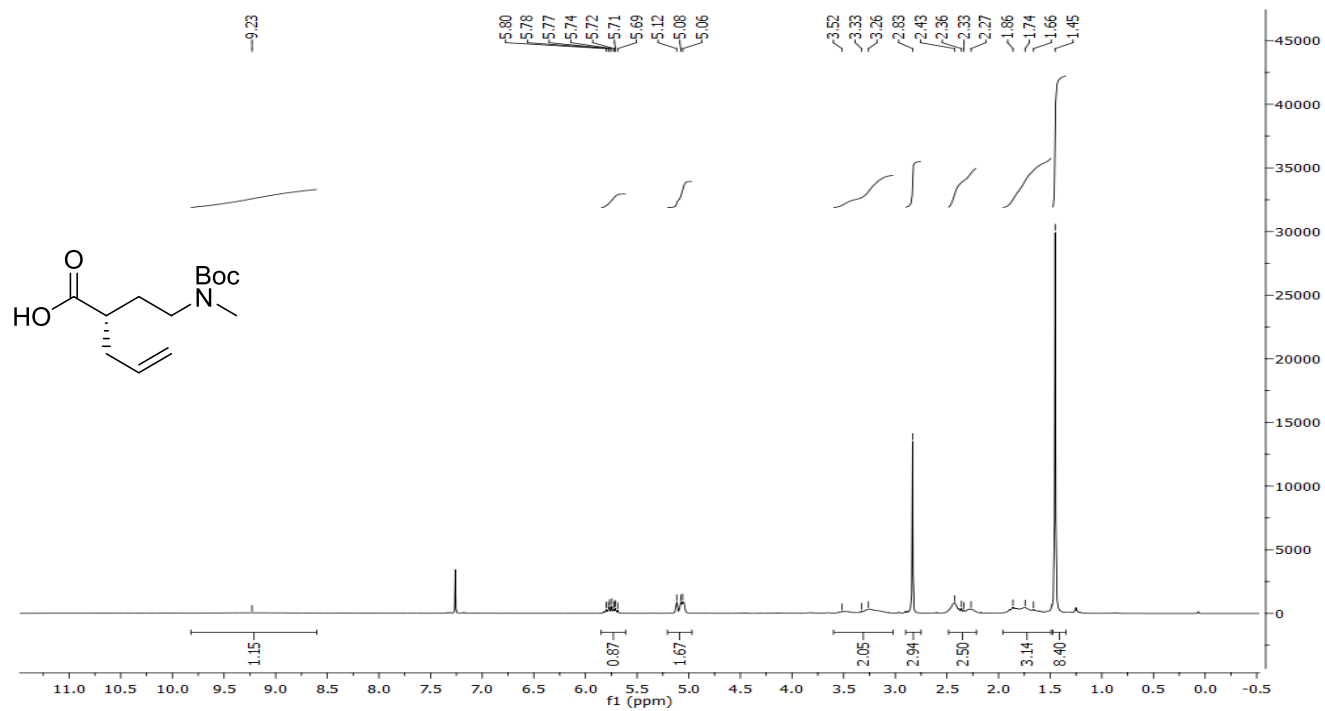


¹³C-NMR spectrum

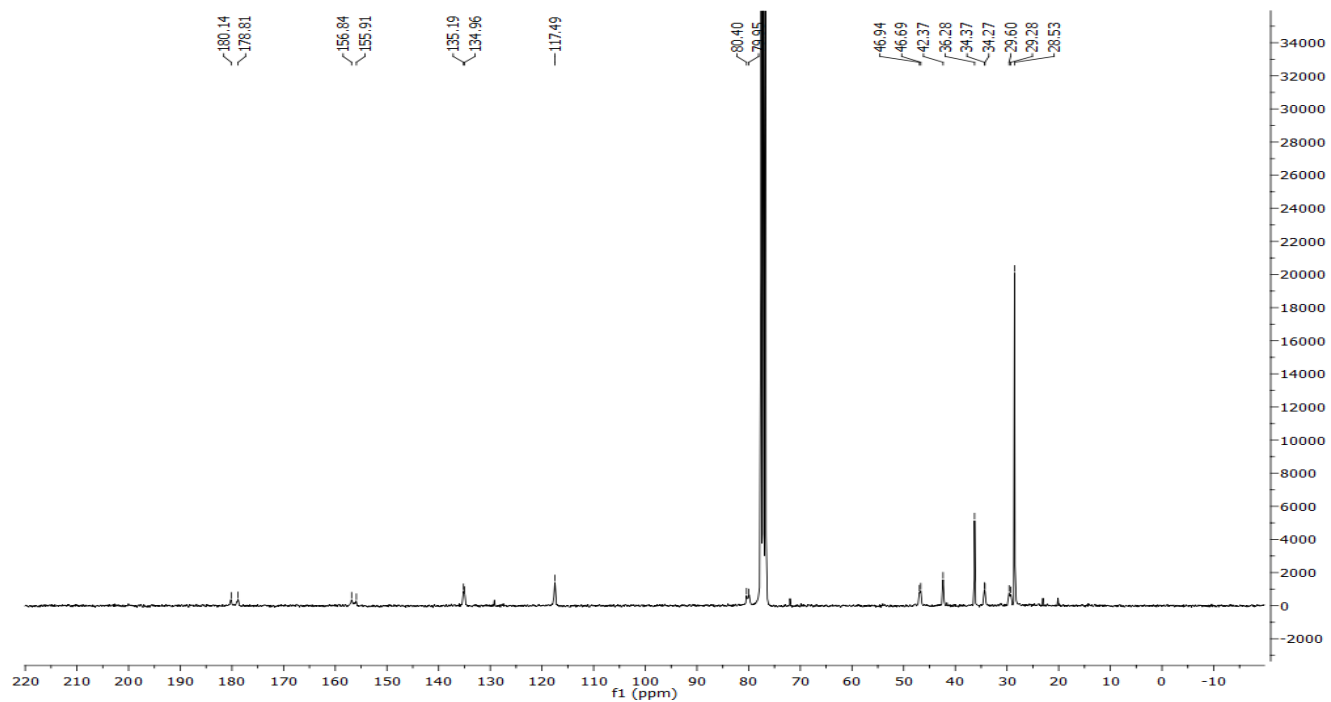


(S)-2-(2-((*tert*-Butoxycarbonyl)(methyl)amino)ethyl)pent-4-enoic acid (4-70)

¹H-NMR spectrum

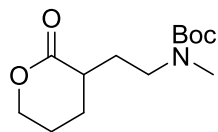
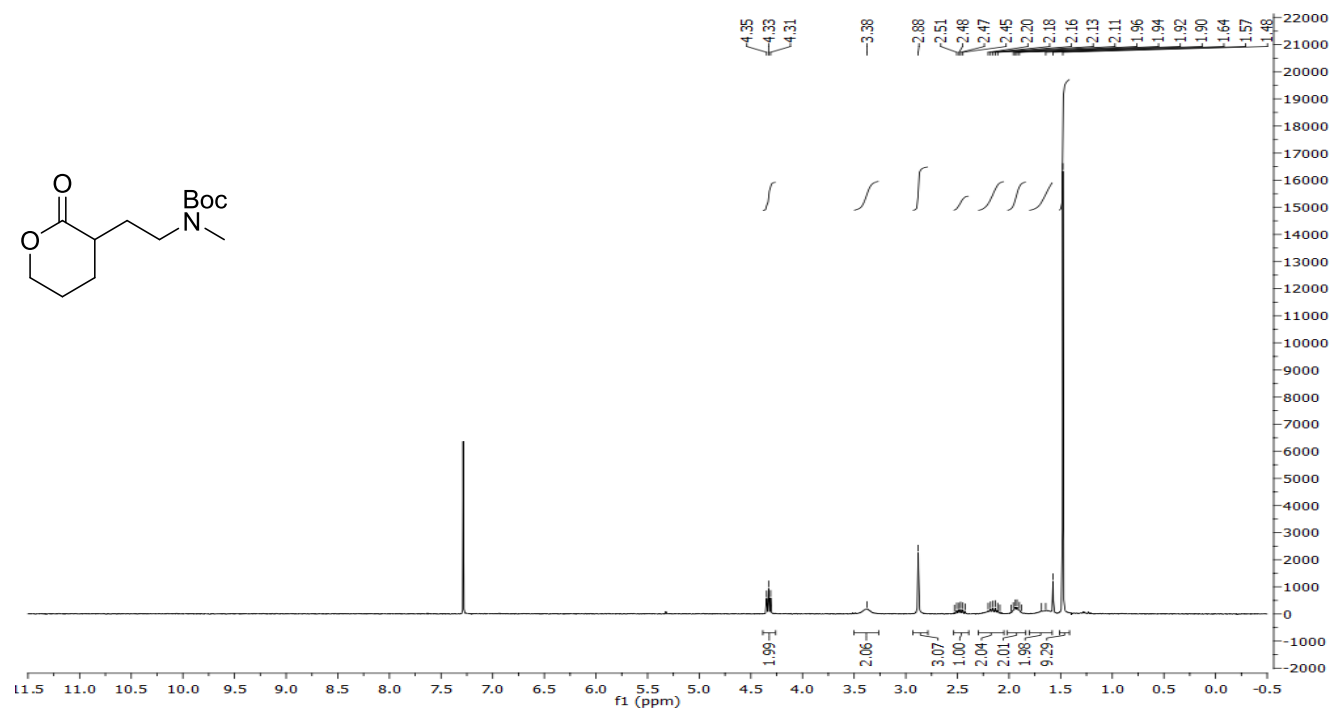


¹³C-NMR spectrum



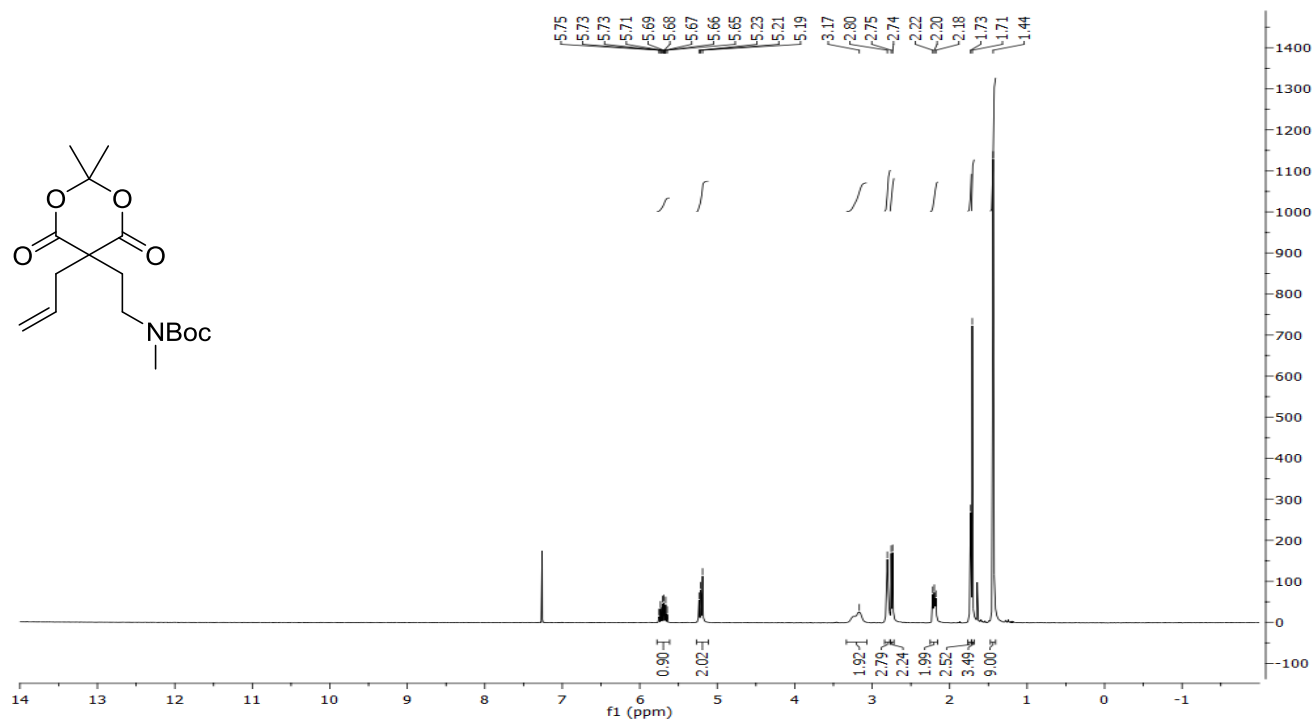
***tert*-Butyl *N*-methyl-*N*-(2-(2-oxotetrahydro-2H-pyran-3-yl)ethyl)carbamate (4-71)**

¹H-NMR spectrum

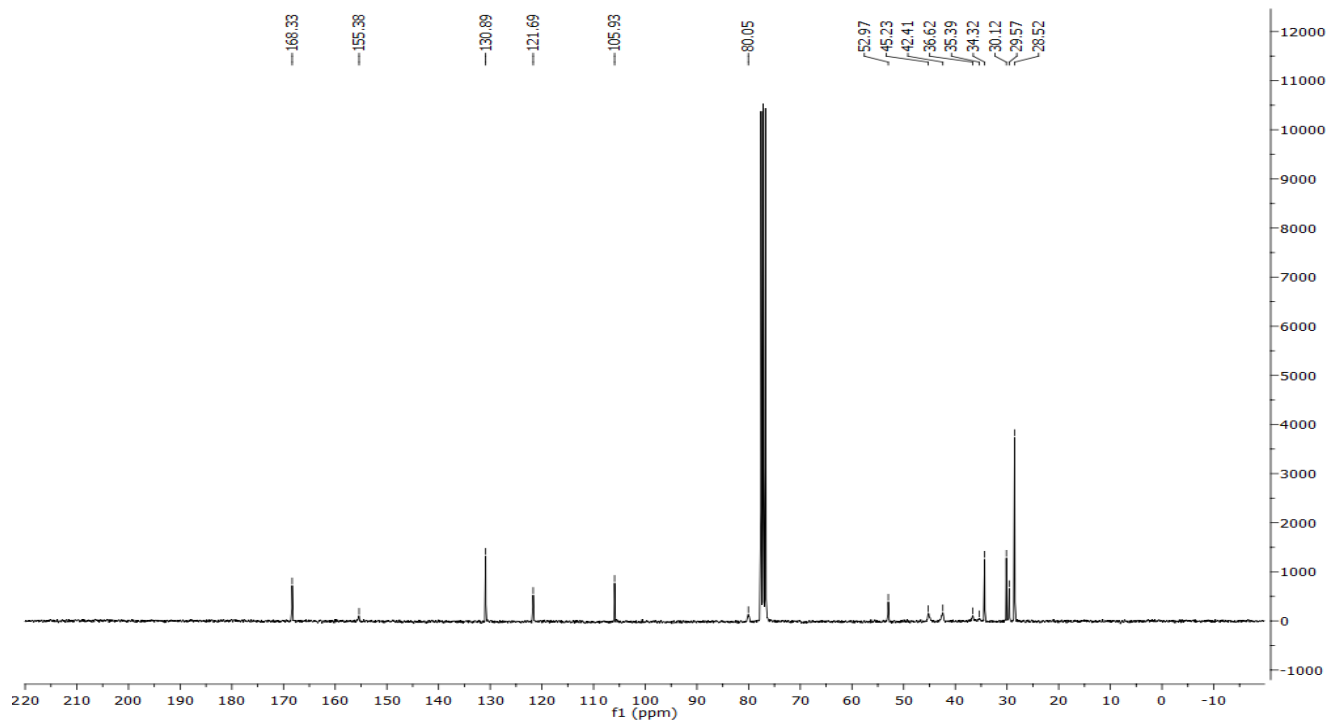


***tert*-Butyl *N*-(2-(5-allyl-2,2-dimethyl-4,6-dioxo-1,3-dioxan-5-yl)ethyl)-*N*-methylcarbamate (4-78)**

¹H-NMR spectrum

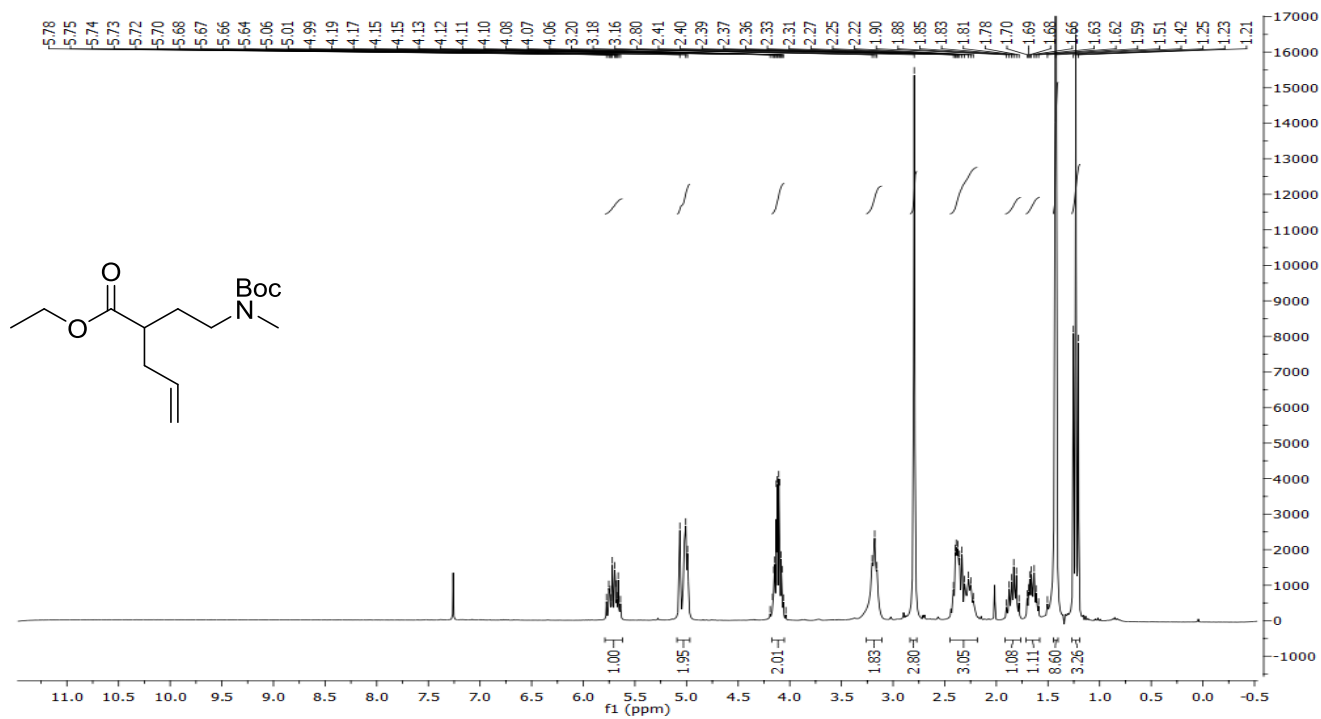


¹³C-NMR spectrum

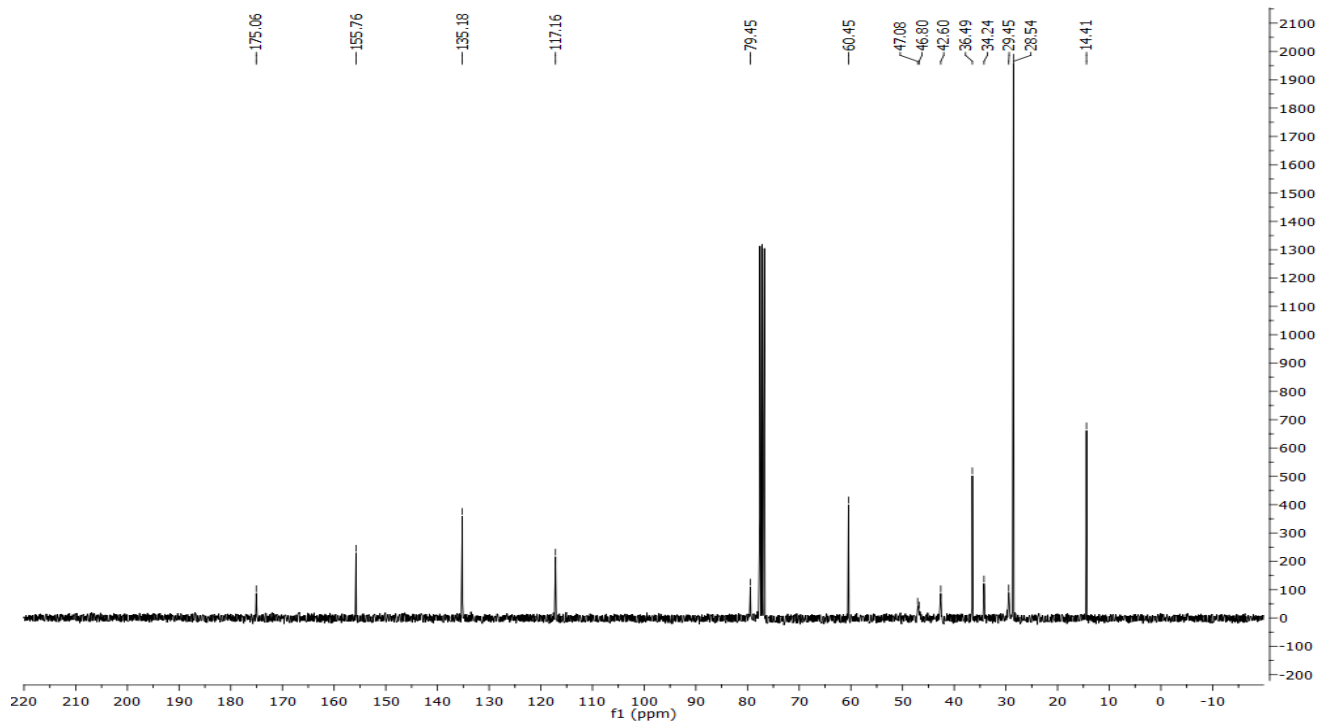


Ethyl 2-((*tert*-butoxycarbonyl)(methyl)amino)ethylpent-4-enoate (4-81)

¹H-NMR spectrum

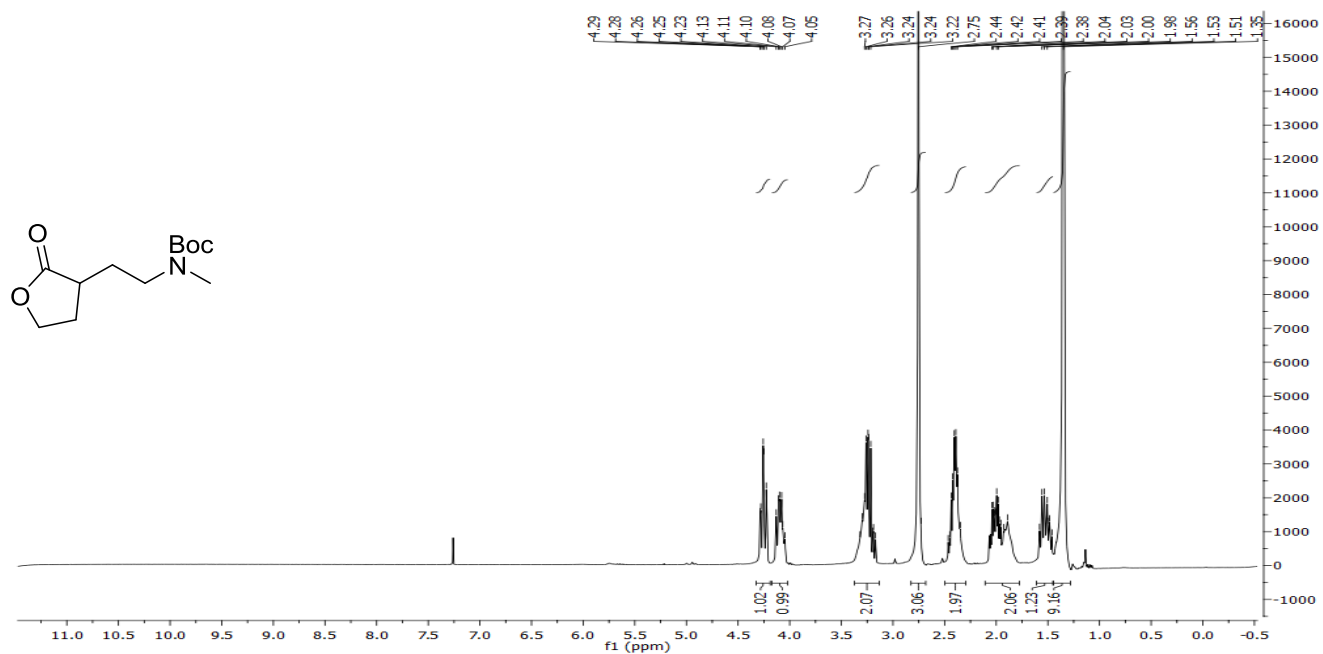


¹³C-NMR spectrum

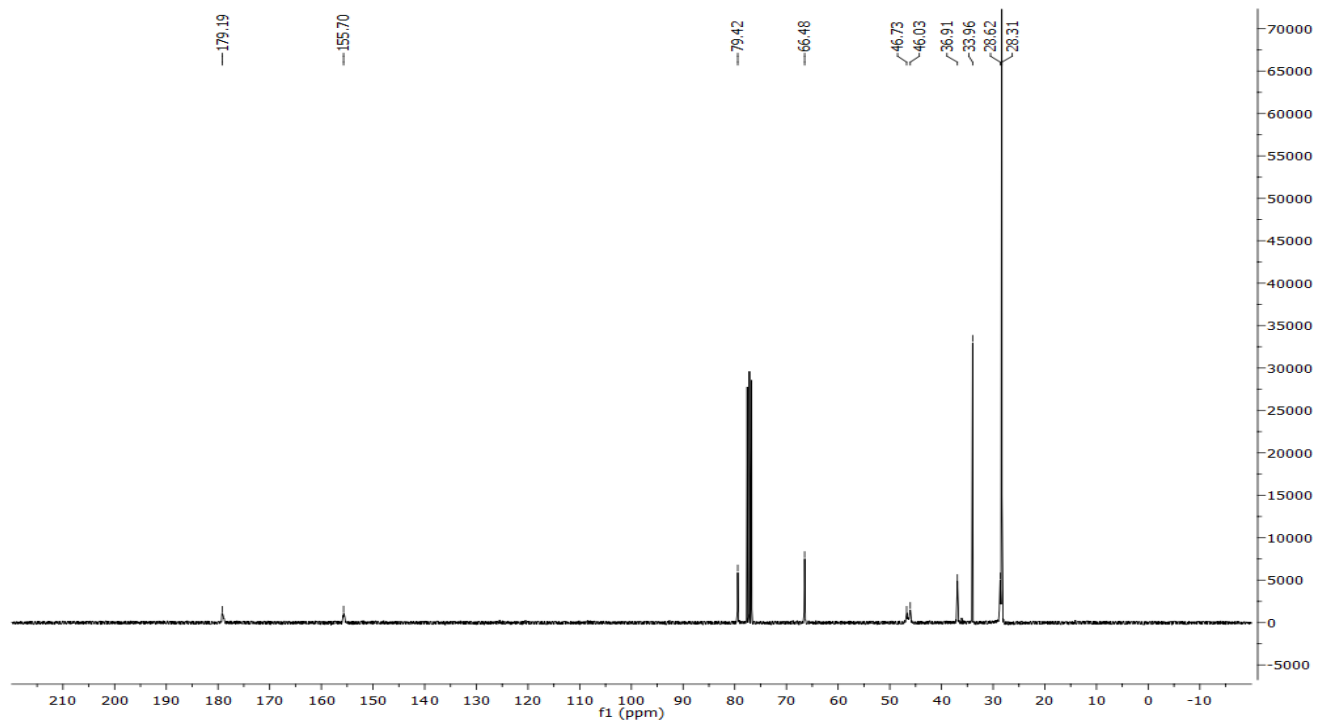


***tert*-Butyl *N*-methyl-*N*-(2-(2-oxotetrahydrofuran-3-yl)ethyl)carbamate (4-92)**

¹H-NMR spectrum

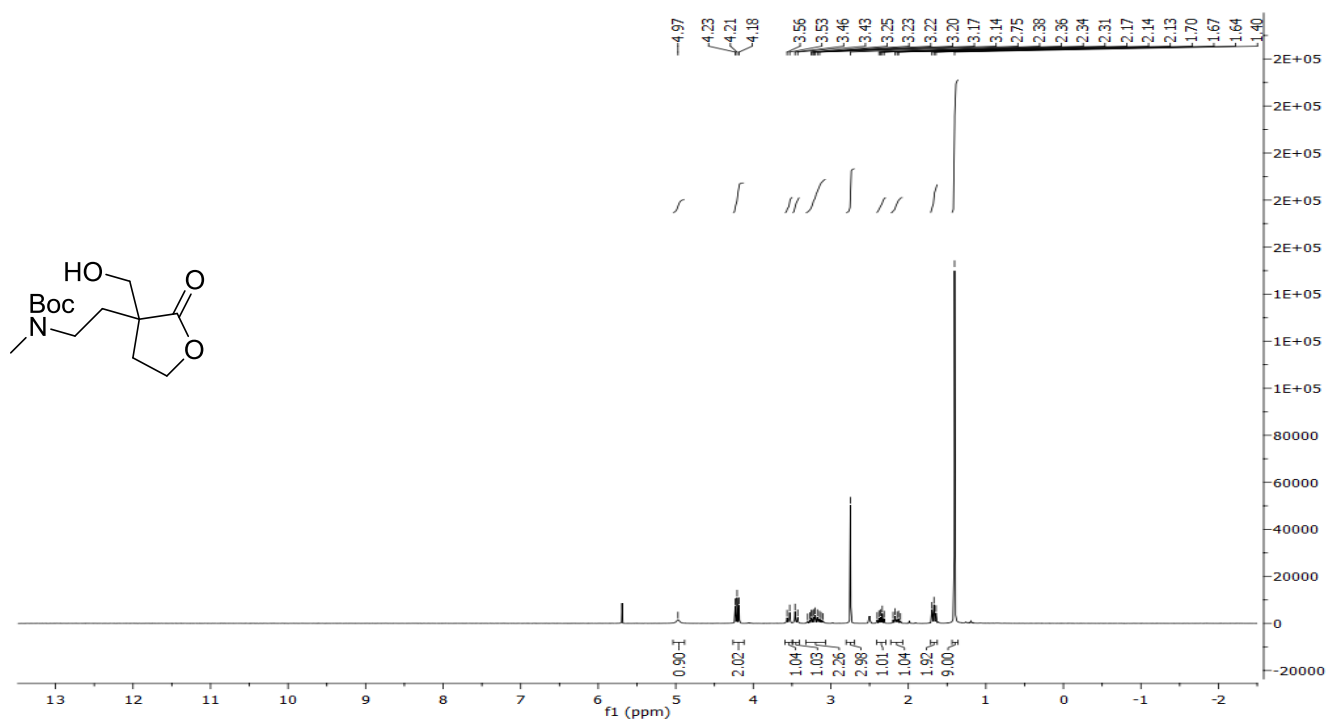


¹³C-NMR spectrum

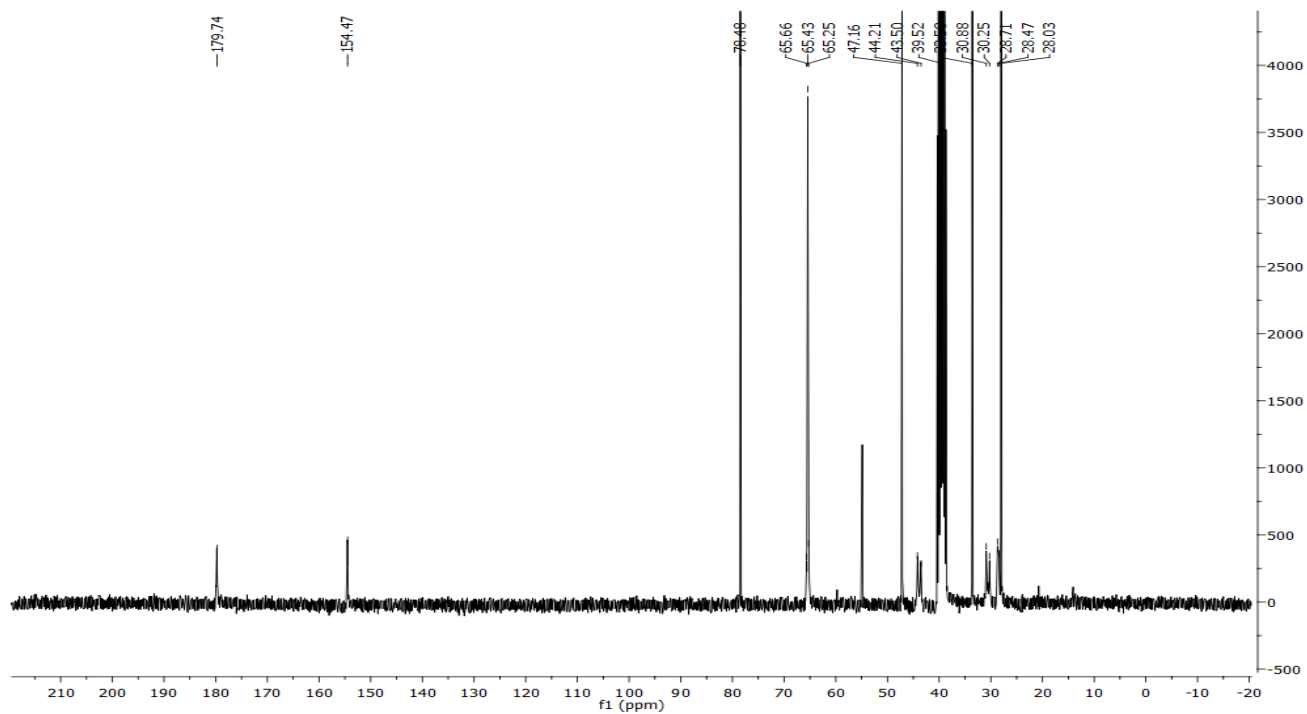


***tert*-Butyl *N*-(2-(3-(hydroxymethyl)-2-oxotetrahydrofuran-3-yl)ethyl)-*N*-methylcarbamate (4-95)**

¹H-NMR spectrum

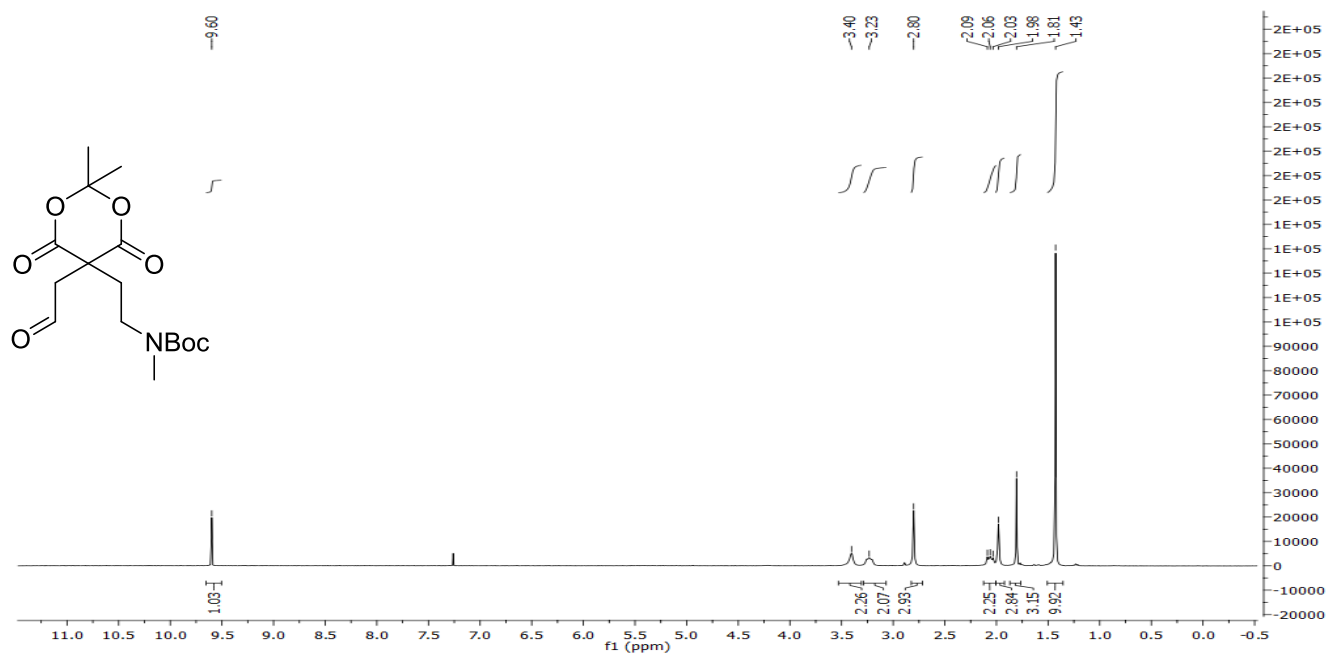


¹³C-NMR spectrum

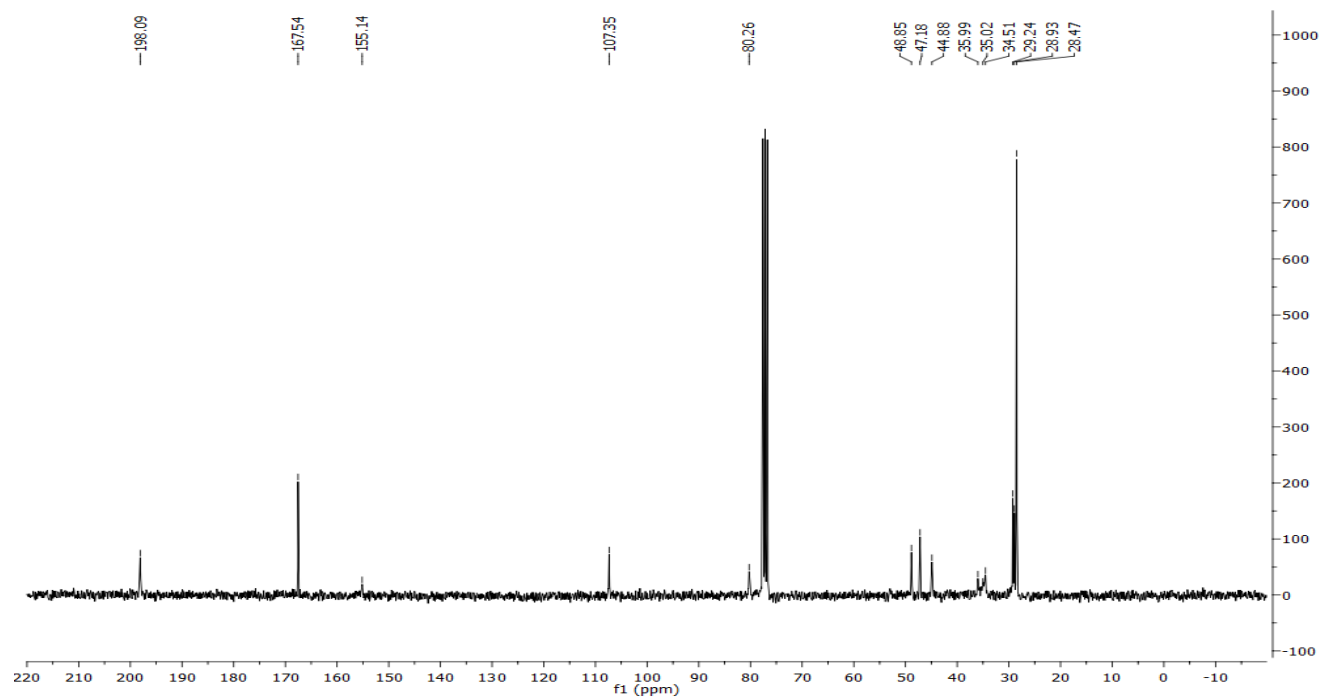


***tert*-Butyl *N*-(2-(2,2-dimethyl-4,6-dioxo-5-(2-oxoethyl)-1,3-dioxan-5-yl)ethyl)-*N*-methylcarbamate (4-96)**

¹H-NMR spectrum

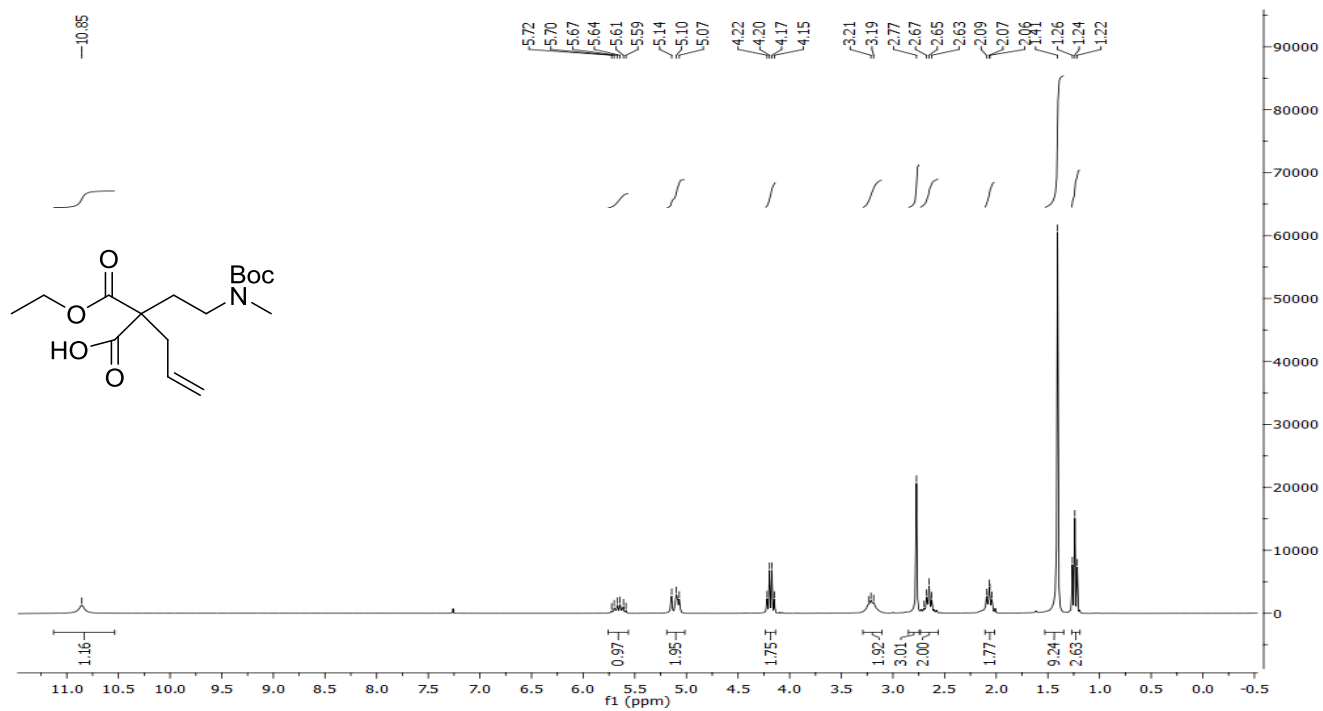


¹³C-NMR spectrum

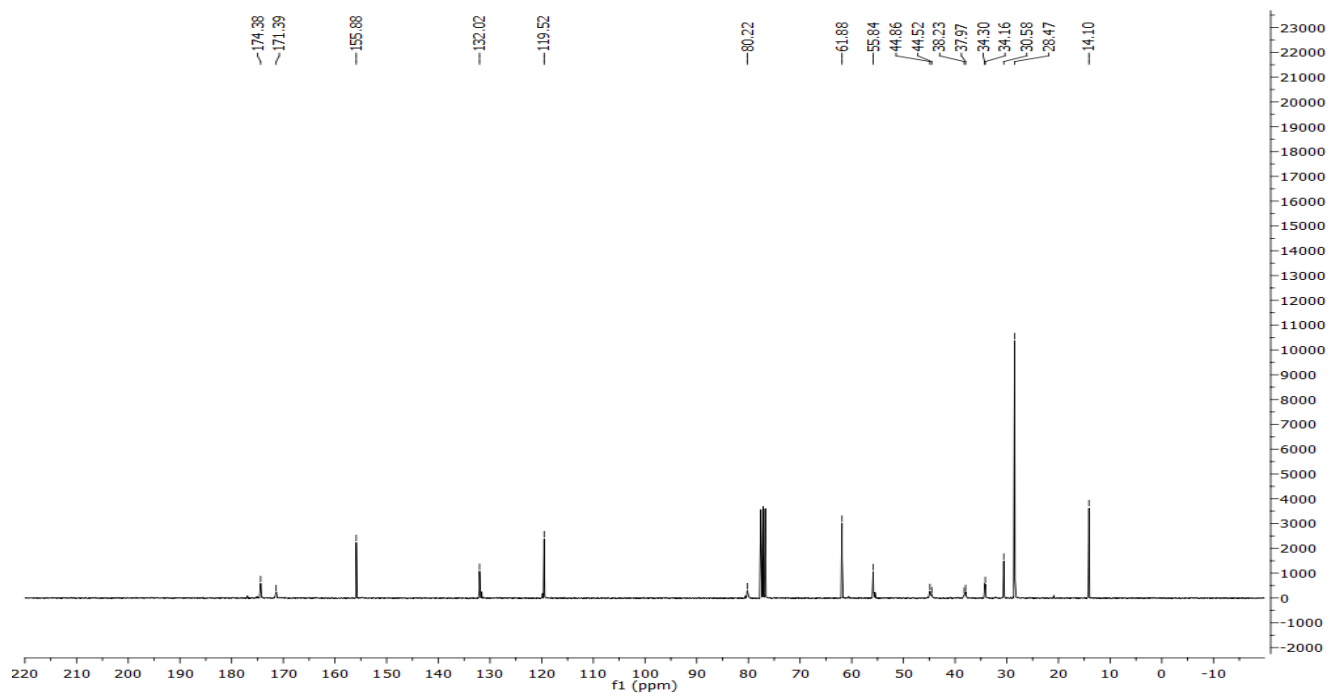


2-(2-((*tert*-Butoxycarbonyl)(methyl)amino)ethyl)-2-(ethoxycarbonyl)pent-4-enoic acid (4-101)

¹H-NMR spectrum

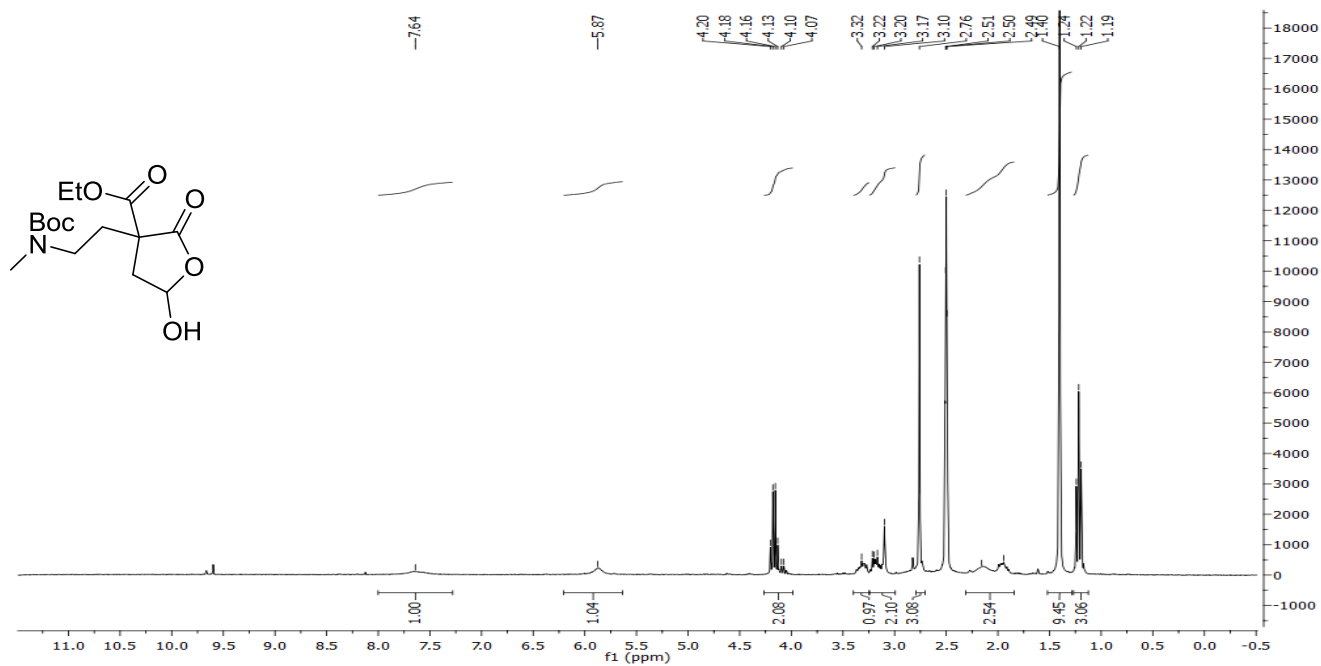


¹³C-NMR spectrum

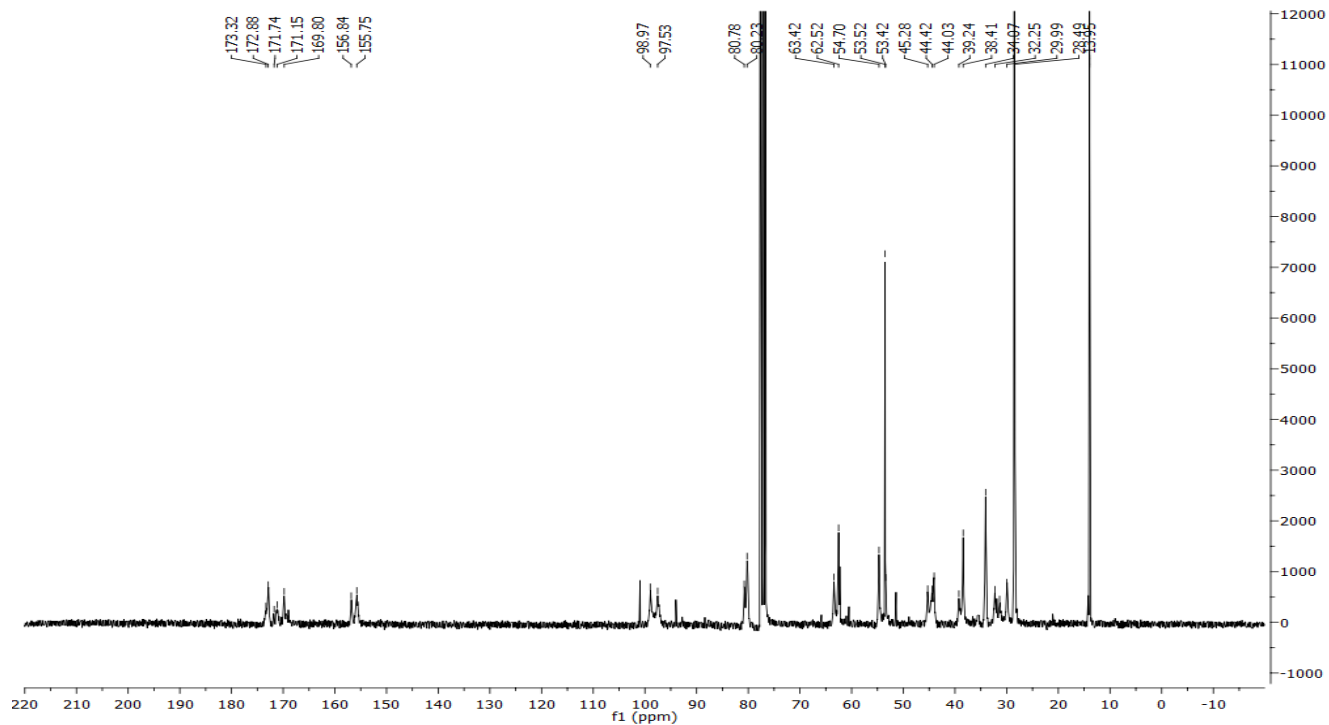


Ethyl 3-(2-((*tert*-butoxycarbonyl)(methyl)amino)ethyl)-5-hydroxy-2-oxotetrahydrofuran-3-carboxylate (4-102)

¹H-NMR spectrum

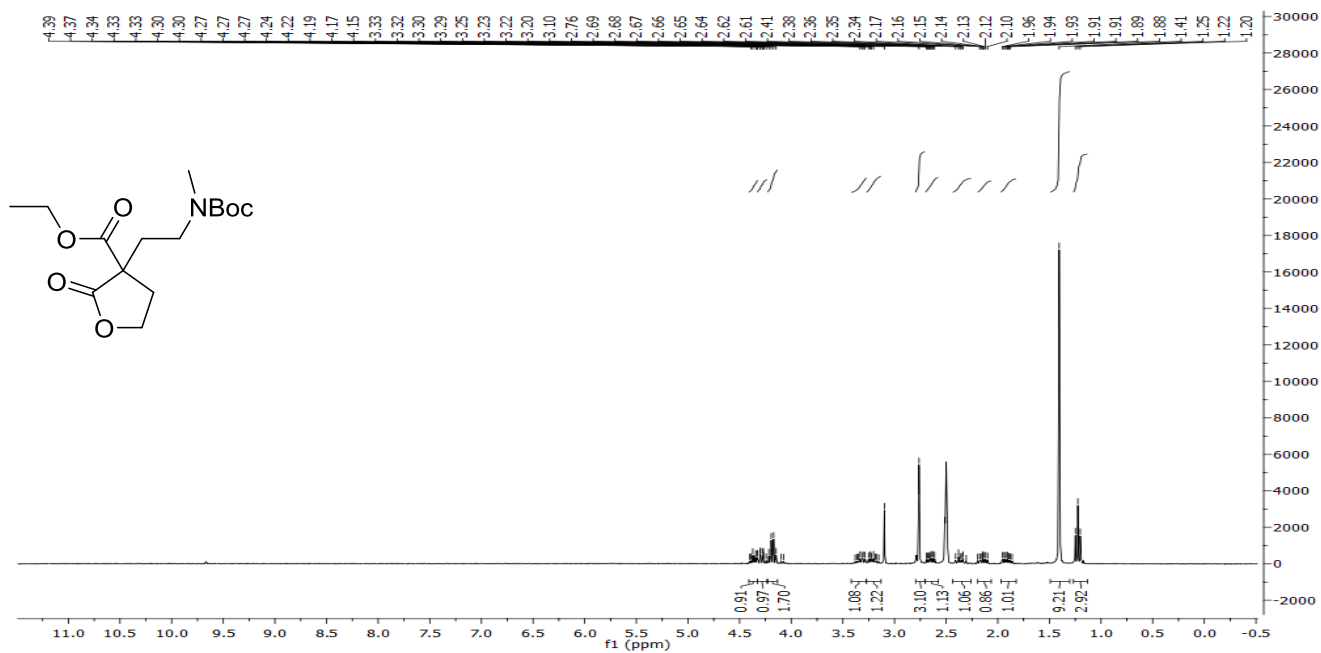


¹³C-NMR spectrum

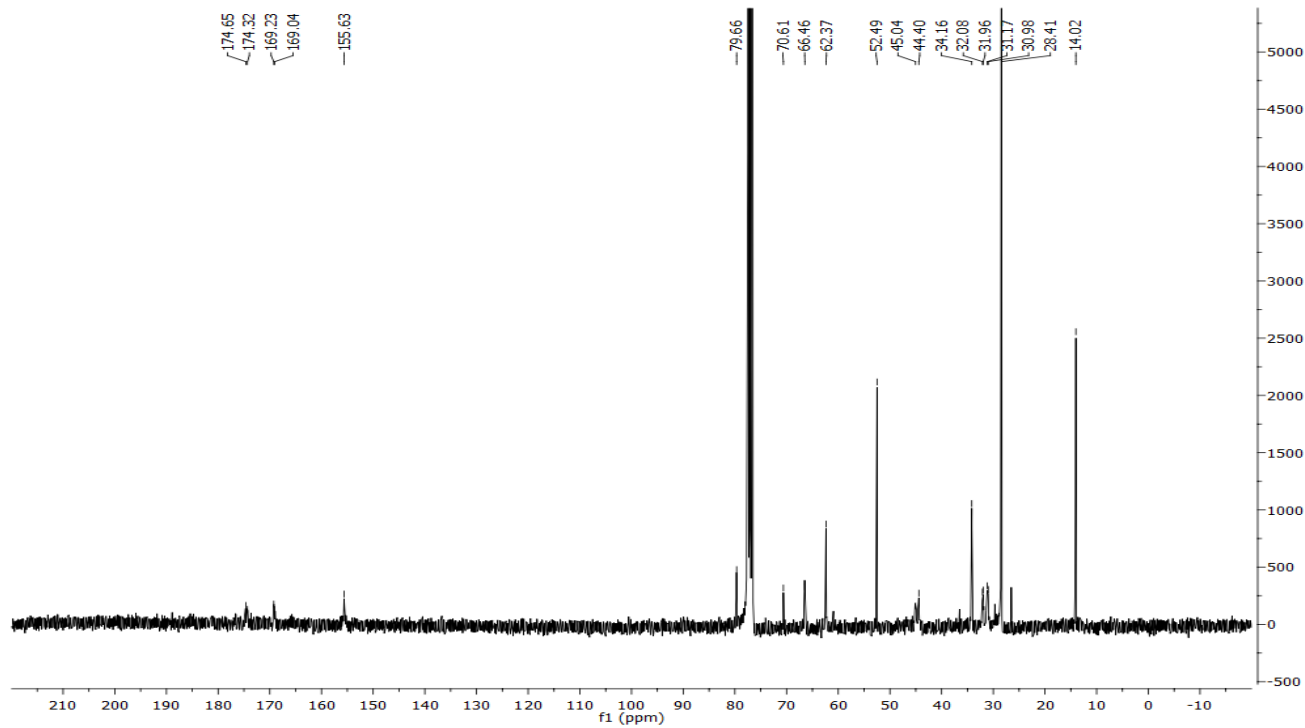


Ethyl 3-(2-((*tert*-butoxycarbonyl)(methyl)amino)ethyl)-2-oxotetrahydrofuran-3-carboxylate (4-105)

¹H-NMR spectrum

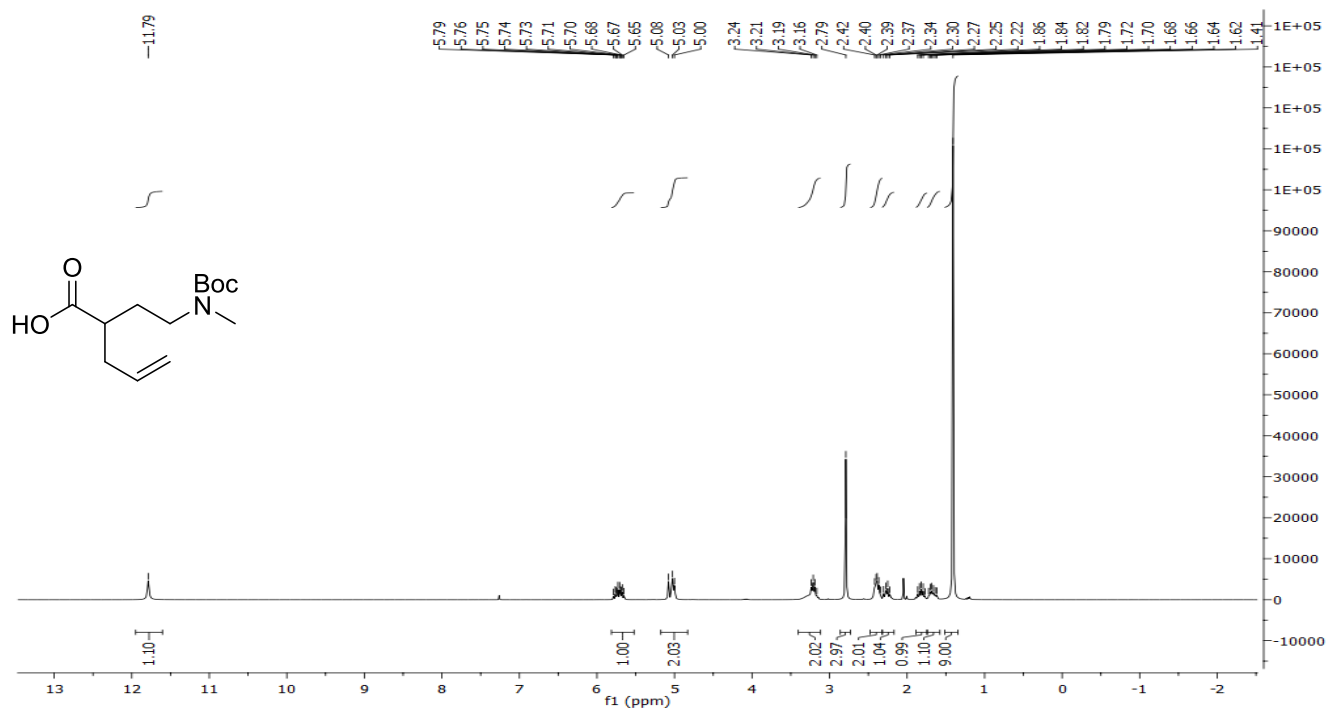


¹³C-NMR spectrum

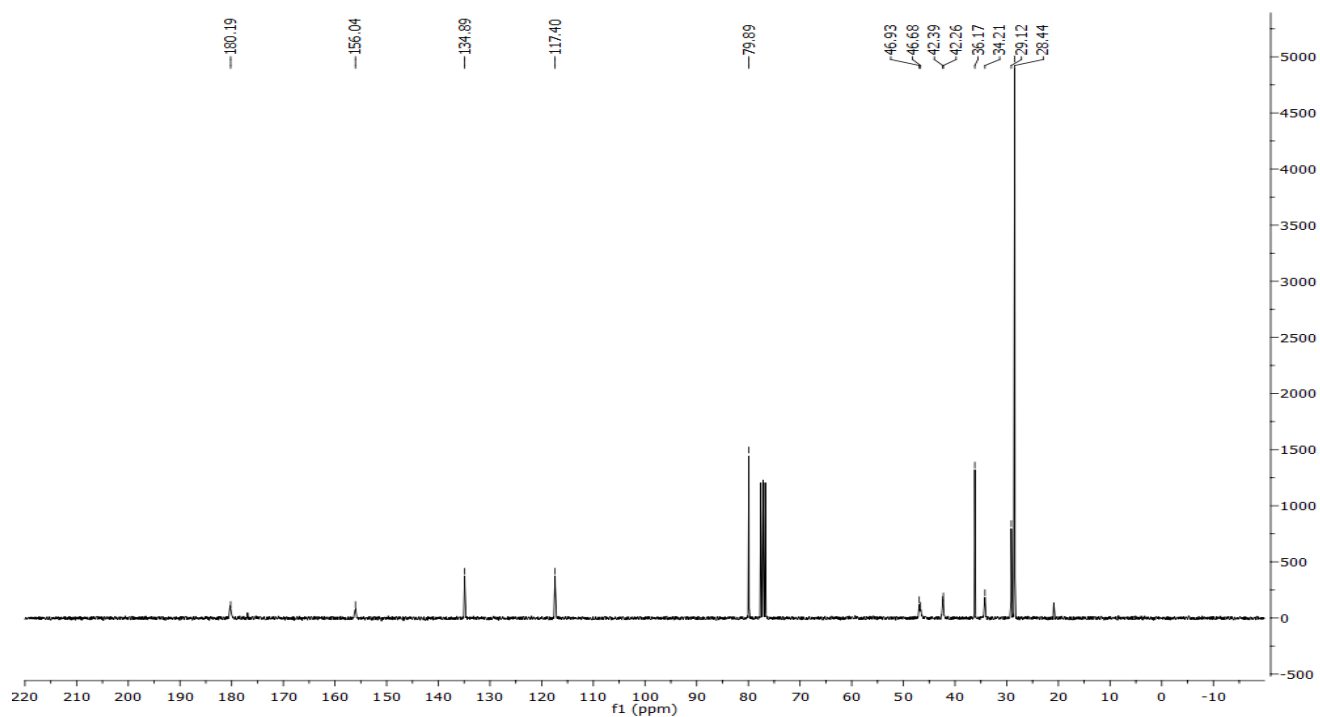


2-(2-((*tert*-Butoxycarbonyl)(methyl)amino)ethyl)pent-4-enoic acid (4-106)

$^1\text{H-NMR}$ spectrum

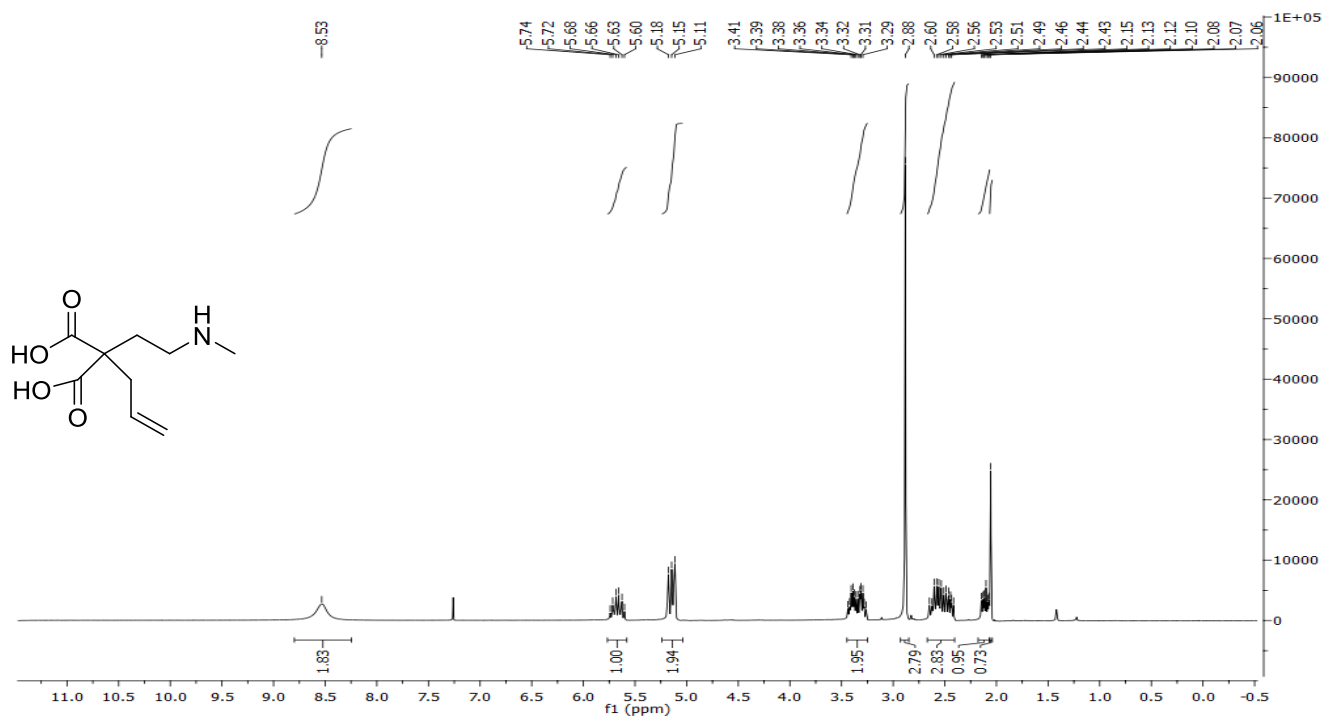


$^{13}\text{C-NMR}$ spectrum

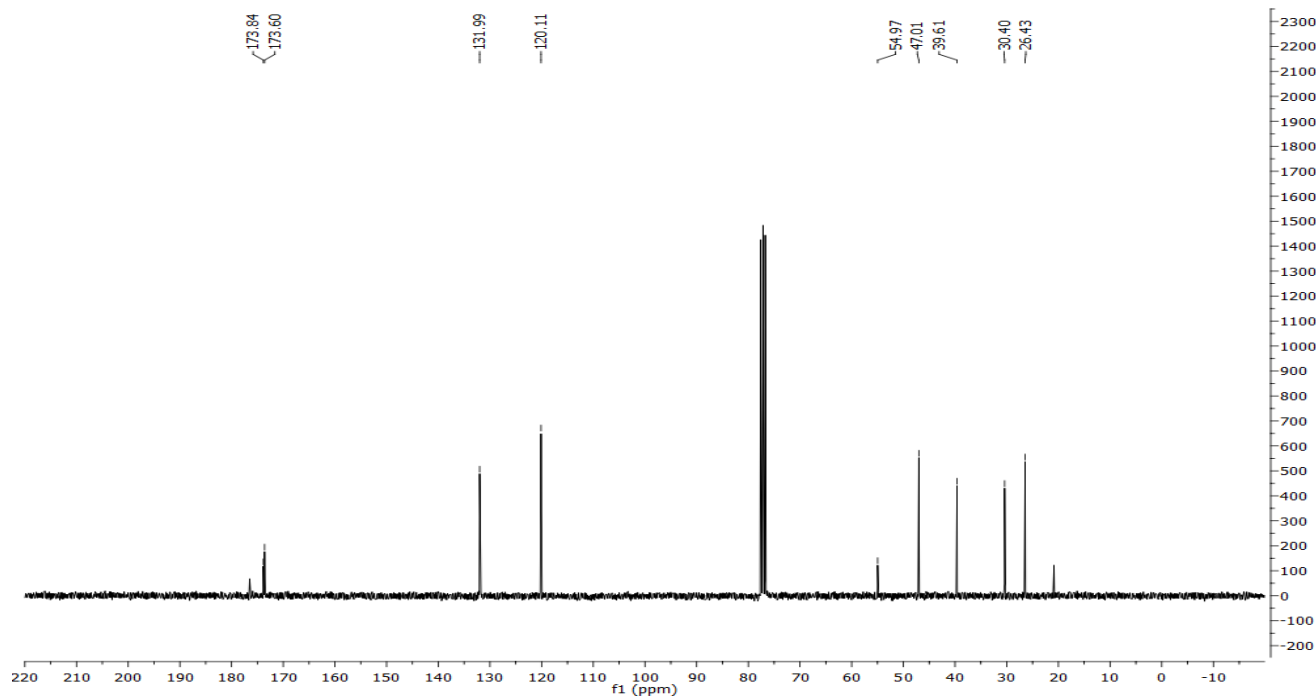


2-Allyl-2-(2-(methylamino)ethyl)malonic acid (4-107)

$^1\text{H-NMR}$ spectrum

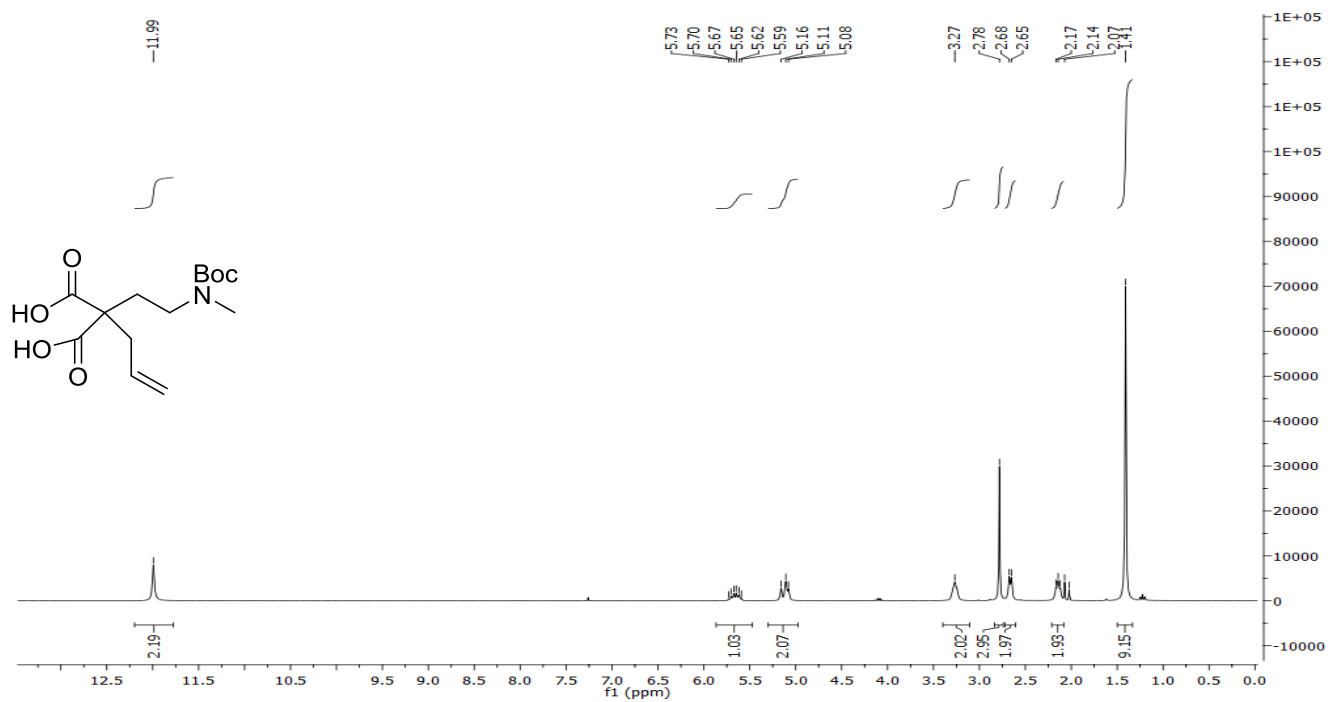


$^{13}\text{C-NMR}$ spectrum

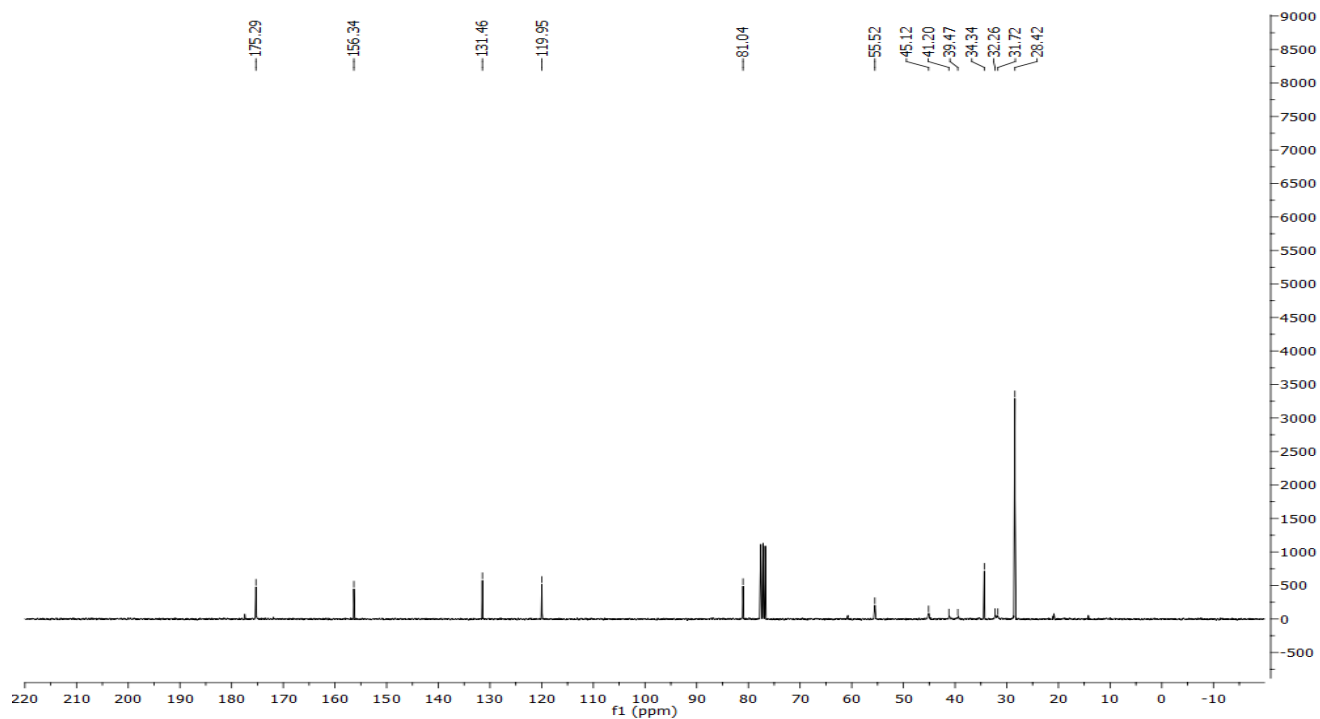


2-Allyl-2-(2-((*tert*-butoxycarbonyl)(methyl)amino)ethyl)malonic acid (4-108)

$^1\text{H-NMR}$ spectrum

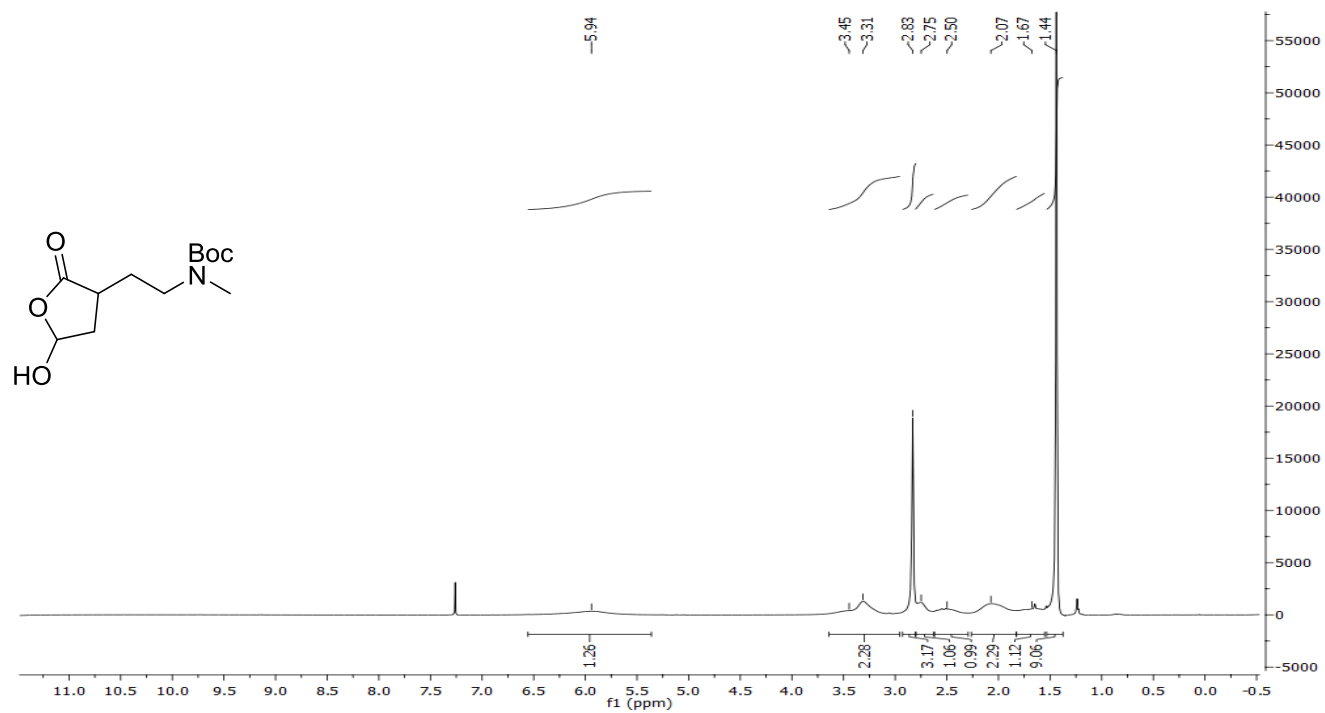


$^{13}\text{C-NMR}$ spectrum

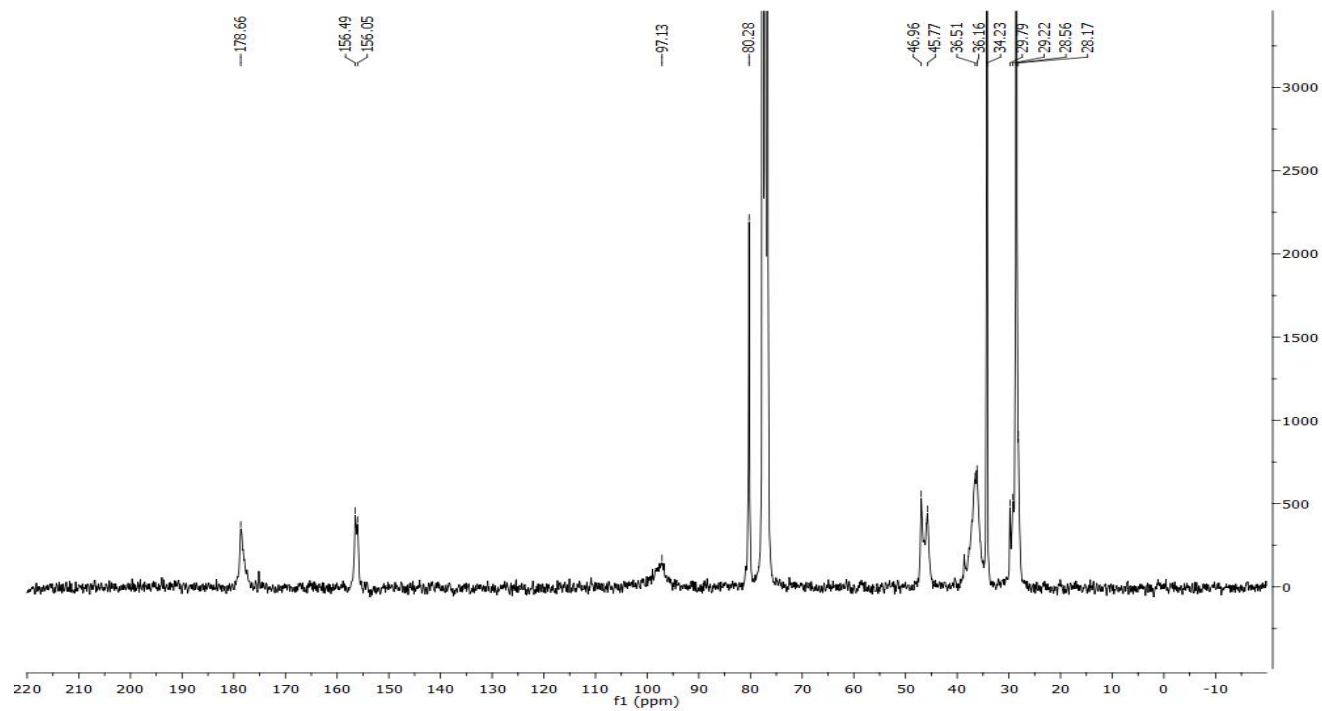


***tert*-Butyl *N*-(2-(5-hydroxy-2-oxotetrahydrofuran-3-yl)ethyl)-*N*-methylcarbamate (4-109)**

¹H-NMR spectrum

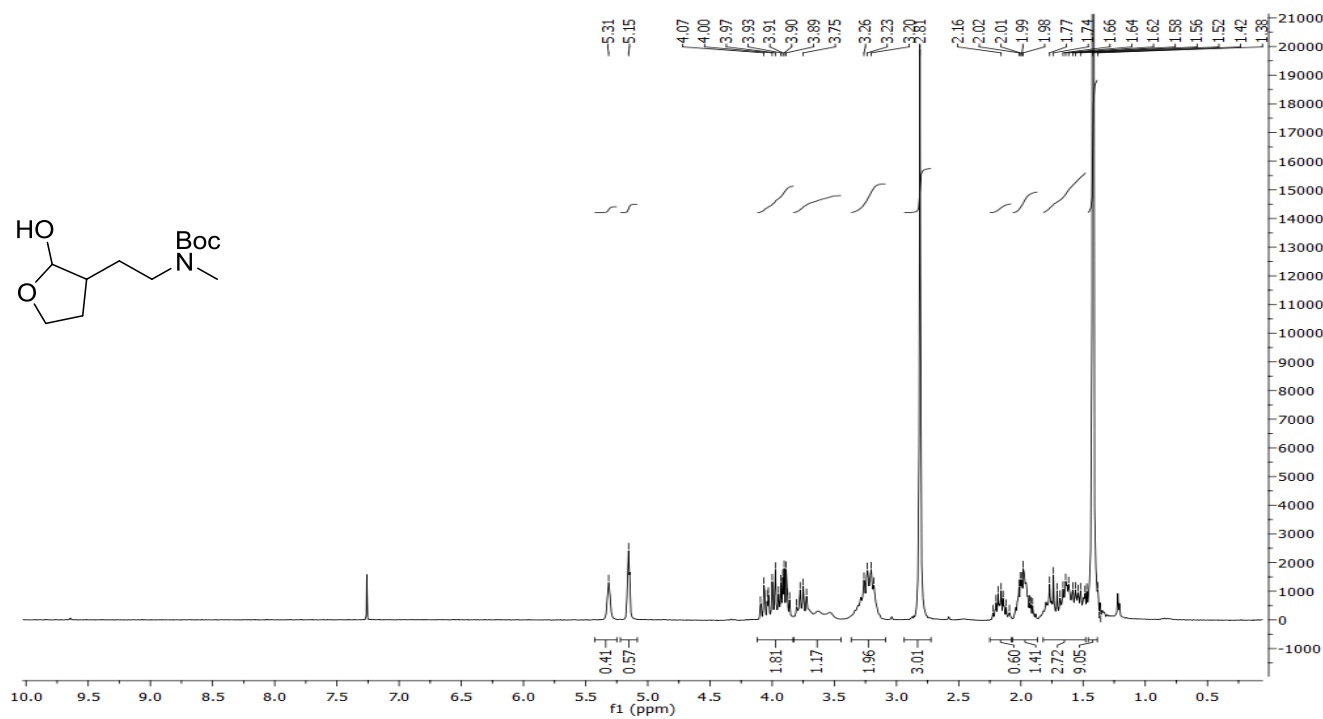


¹³C-NMR spectrum

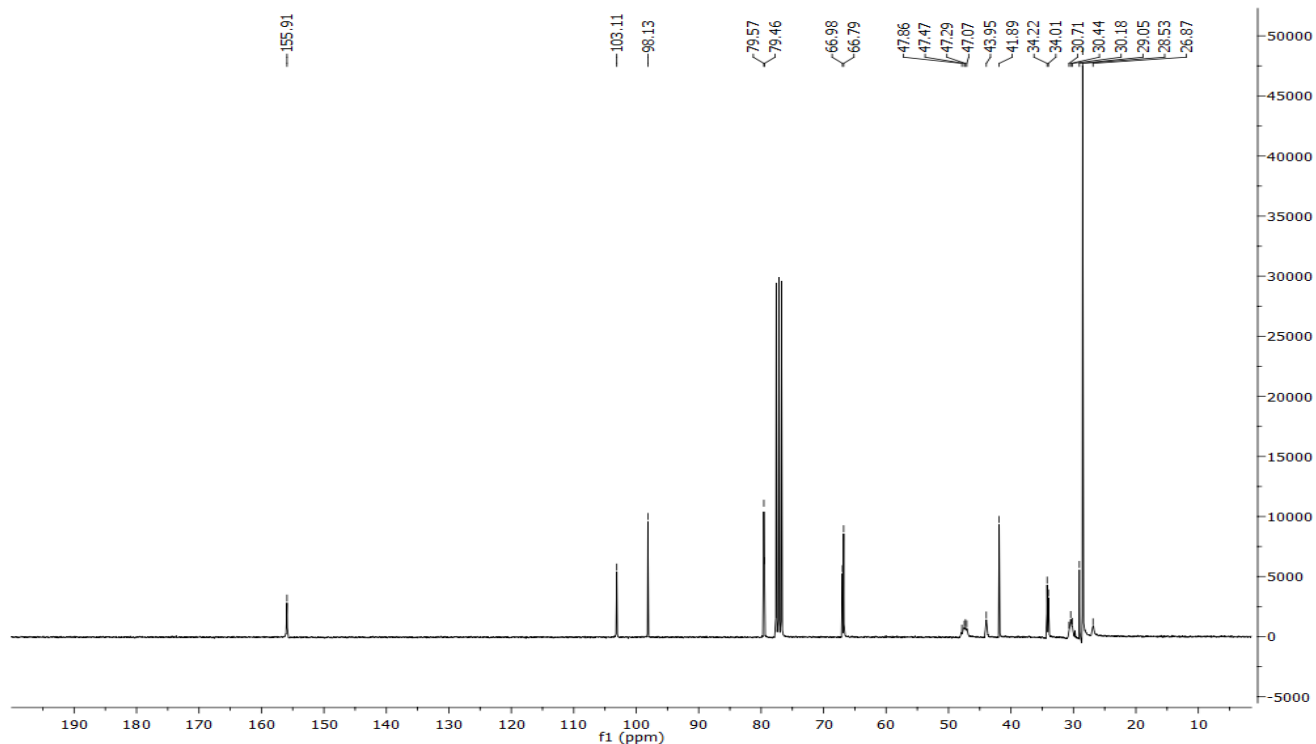


***tert*-Butyl *N*-(2-(2-hydroxytetrahydrofuran-3-yl)ethyl)-*N*-methylcarbamate (4-111)**

¹H-NMR spectrum

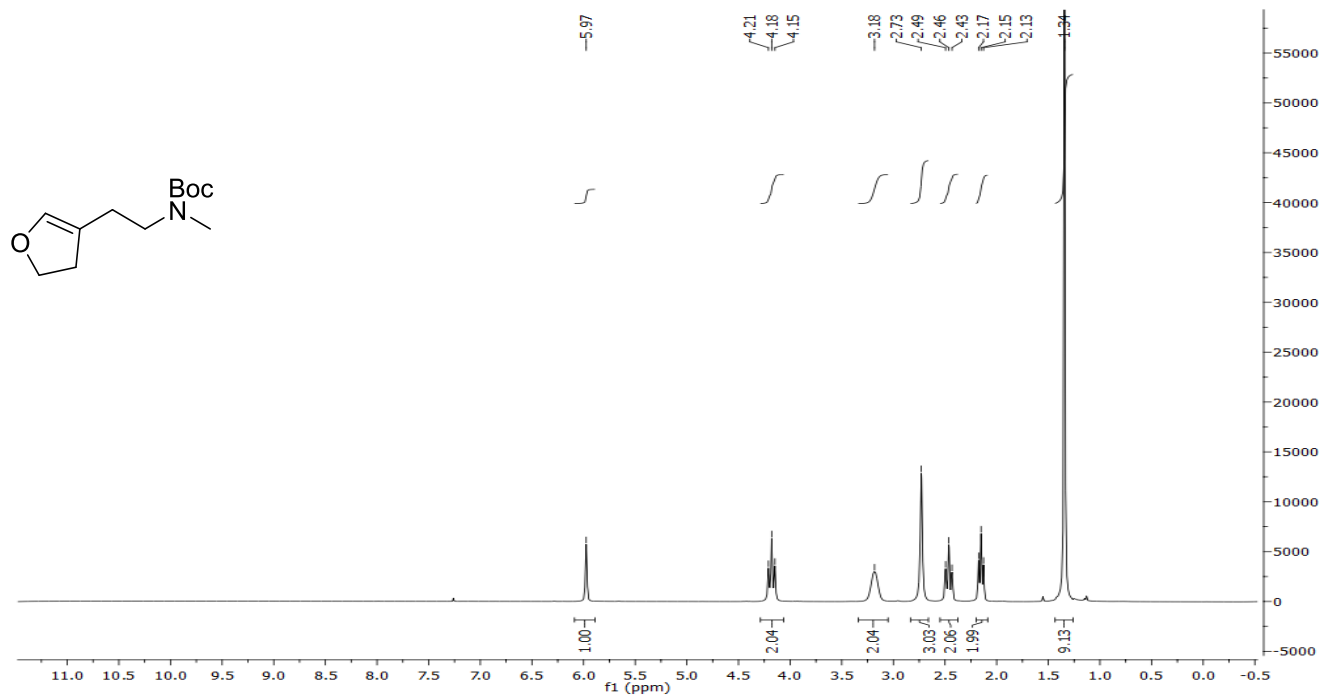


¹³C-NMR spectrum



***tert*-Butyl *N*-(2-(4,5-dihydrofuran-3-yl)ethyl)-*N*-methylcarbamate (4-113)**

¹H-NMR spectrum



¹³C-NMR spectrum

