

One-pot synthesis of amides from carboxylic acids activated using thionyl chloride

Antonella Leggio,^{*a} Emilia Lucia Belsito,^a Giuseppina De Luca,^b Maria Luisa Di Gioia,^a Vanessa Leotta,^a Emanuela Romio,^a Carlo Siciliano^a and Angelo Liguori ^{*a}

^aDipartimento di Farmacia e Scienze della Salute e della Nutrizione, Università della Calabria, Edificio Polifunzionale, I-87036 Arcavacata di Rende- Italy

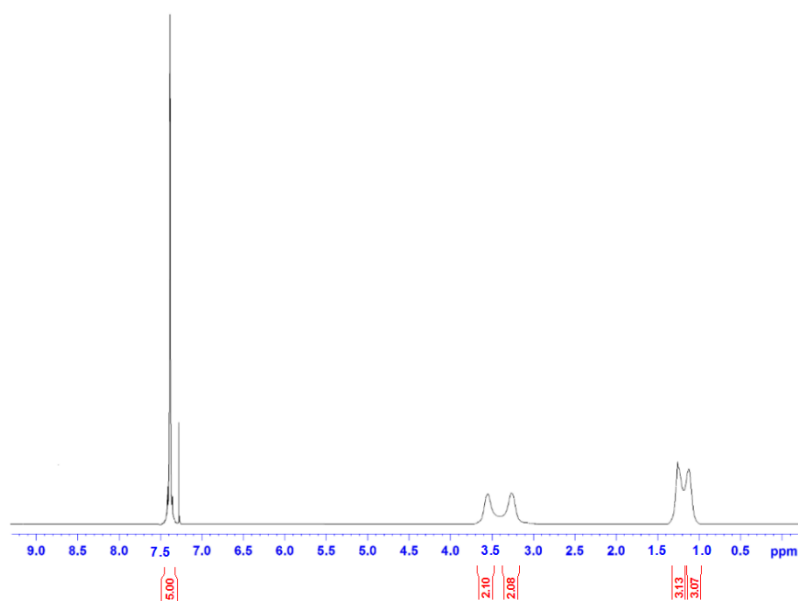
^bDipartimento di Dipartimento di Chimica e Tecnologie Chimiche, Università della Calabria, Via P. Bucci, I-87036 Arcavacata di Rende- Italy

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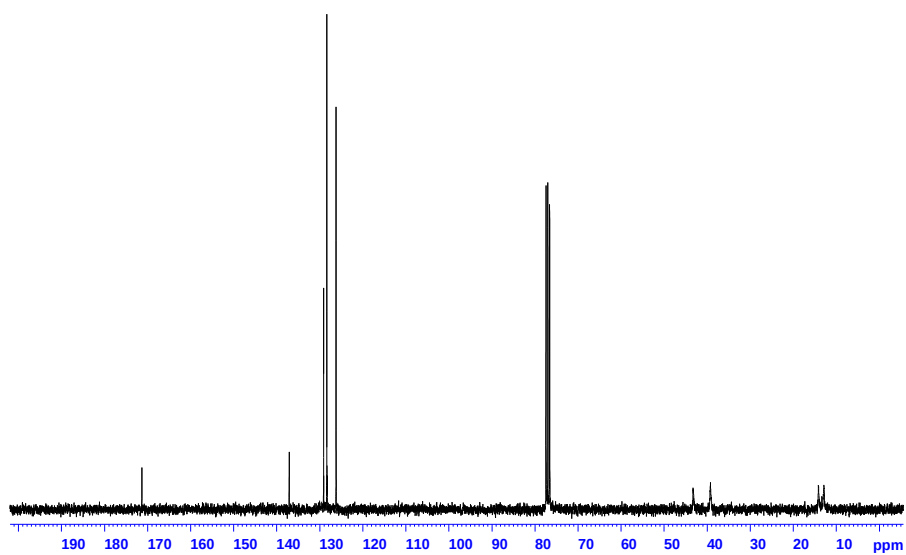
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***N,N*-diethylbenzamide (1)**

^1H NMR

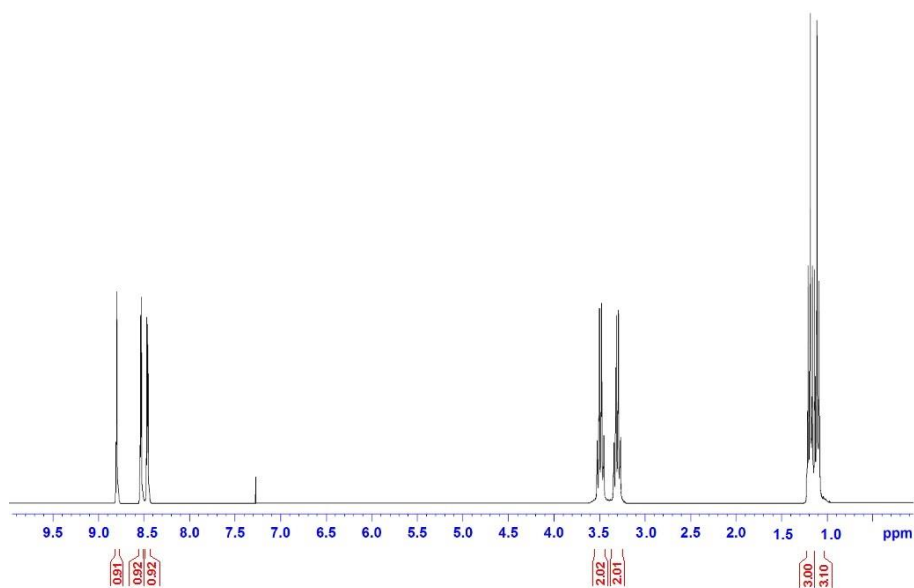


^{13}C NMR

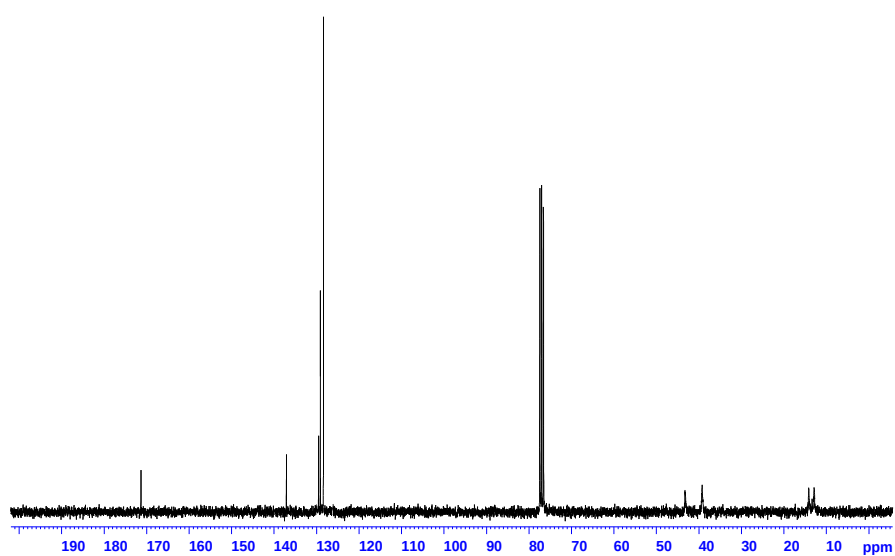


***N,N*-diethylpyrazine-2-carboxamide (2)**

^1H NMR

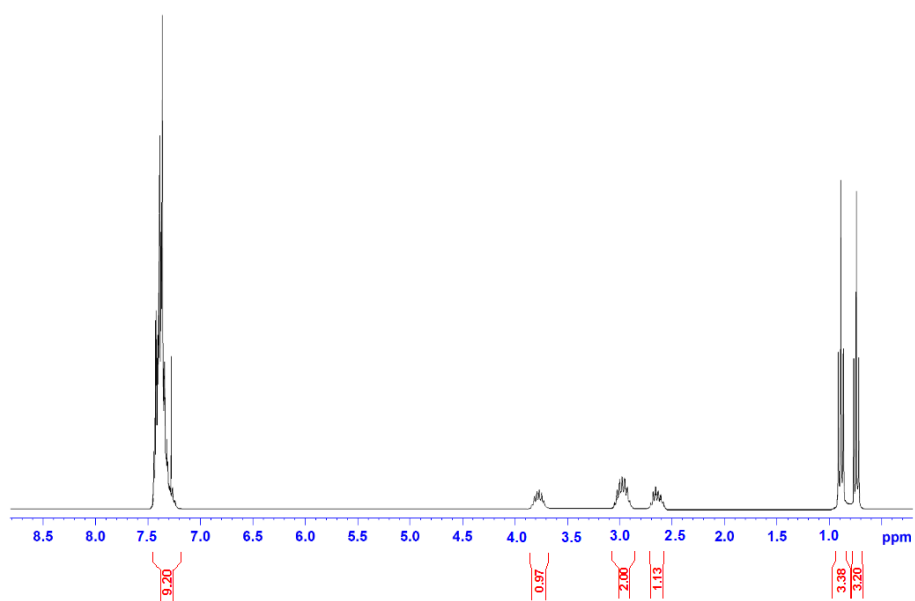


^{13}C NMR

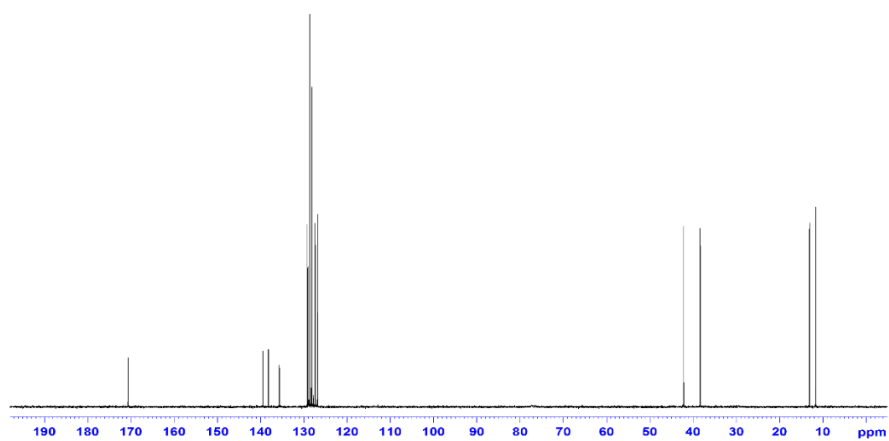


***N,N*-diethyl-3-phenylbenzamide (3)**

^1H NMR

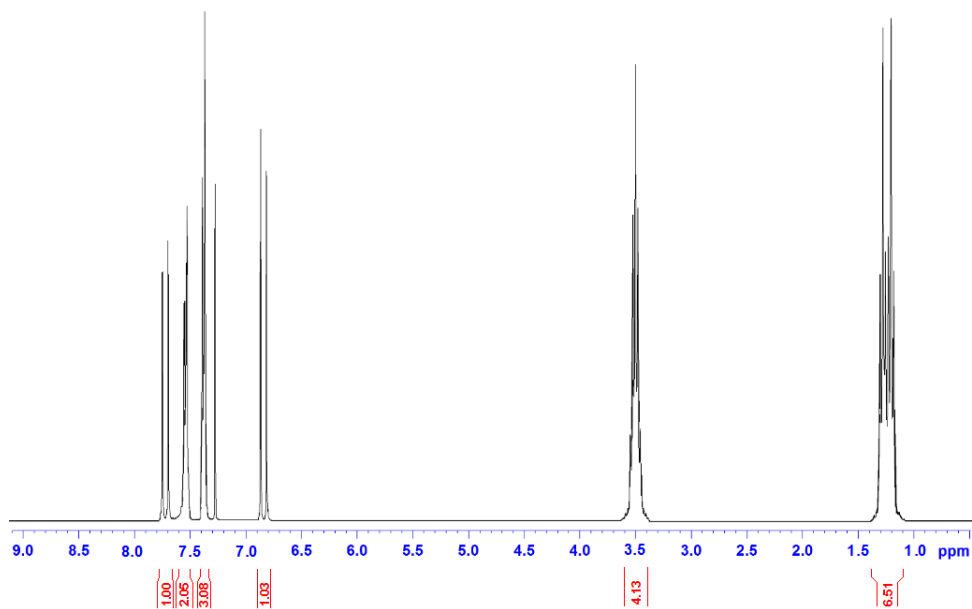


^{13}C NMR

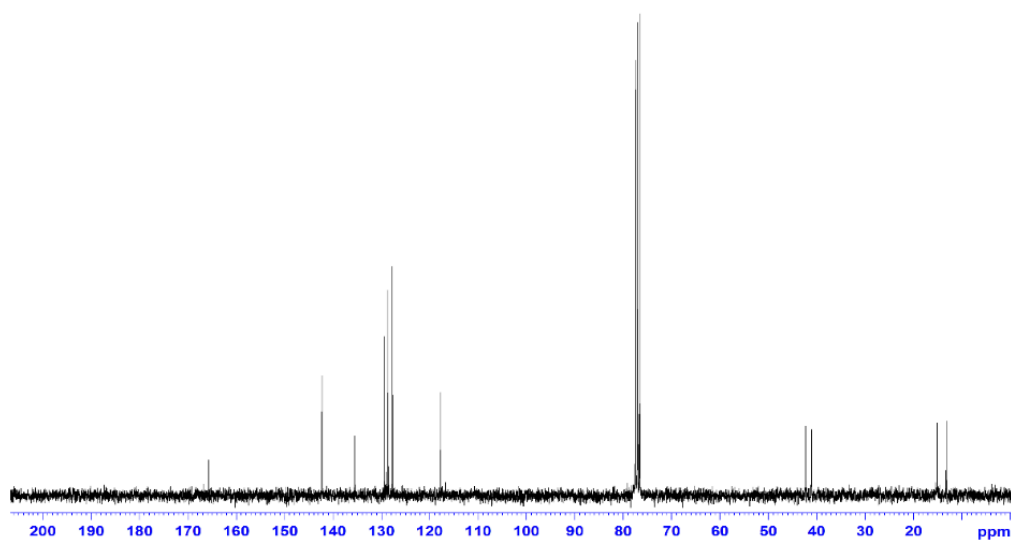


***N,N*-diethylcinnamamide (4)**

^1H NMR

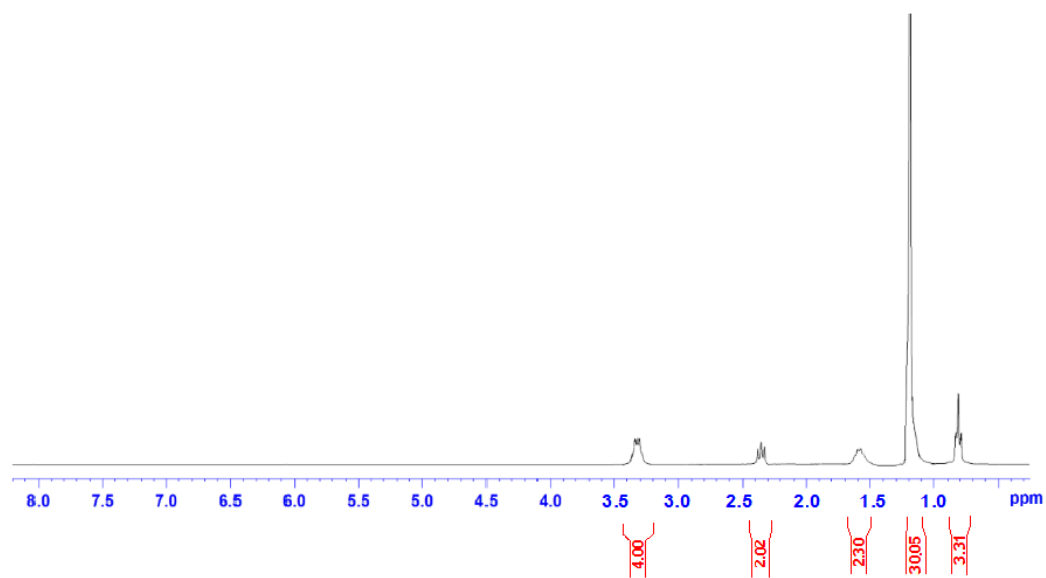


^{13}C NMR



***N,N*-diethylpalmitamide (5)**

^1H NMR

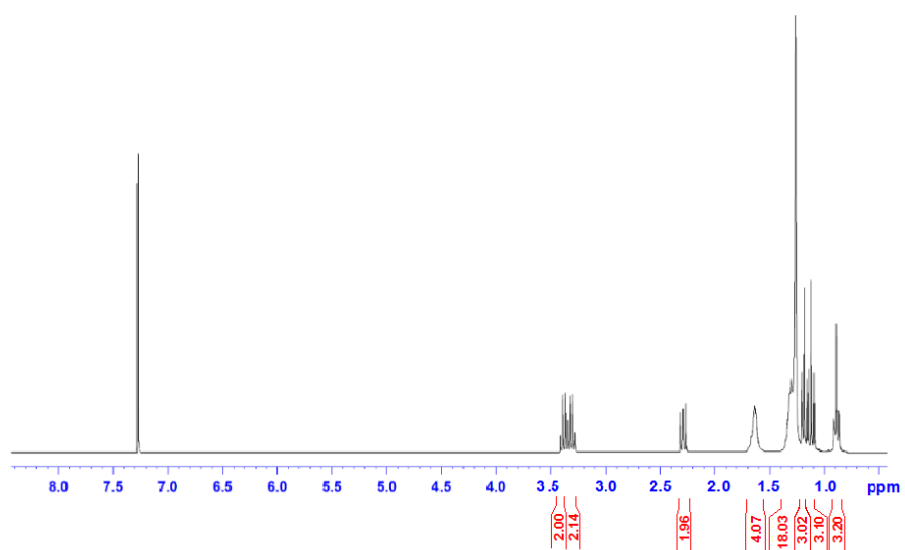


^{13}C NMR

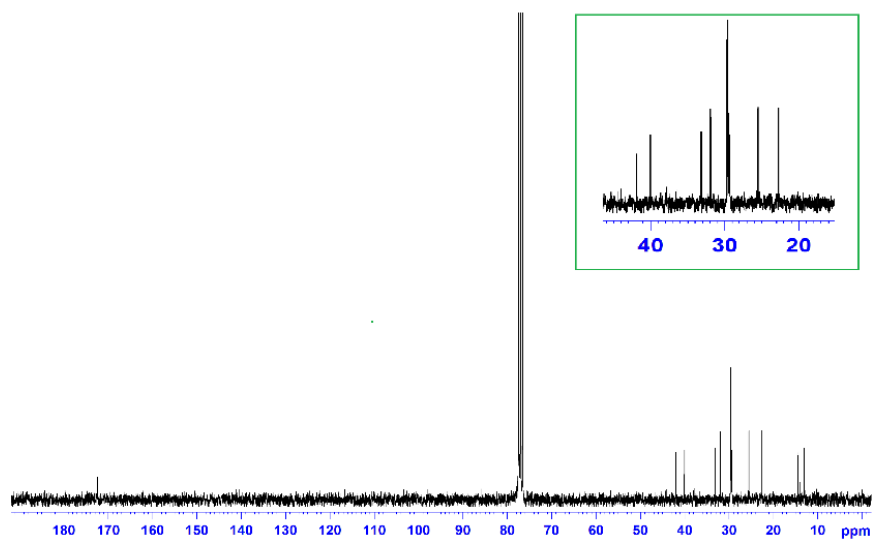


***N,N*-diethylmyristamide (6)**

^1H NMR

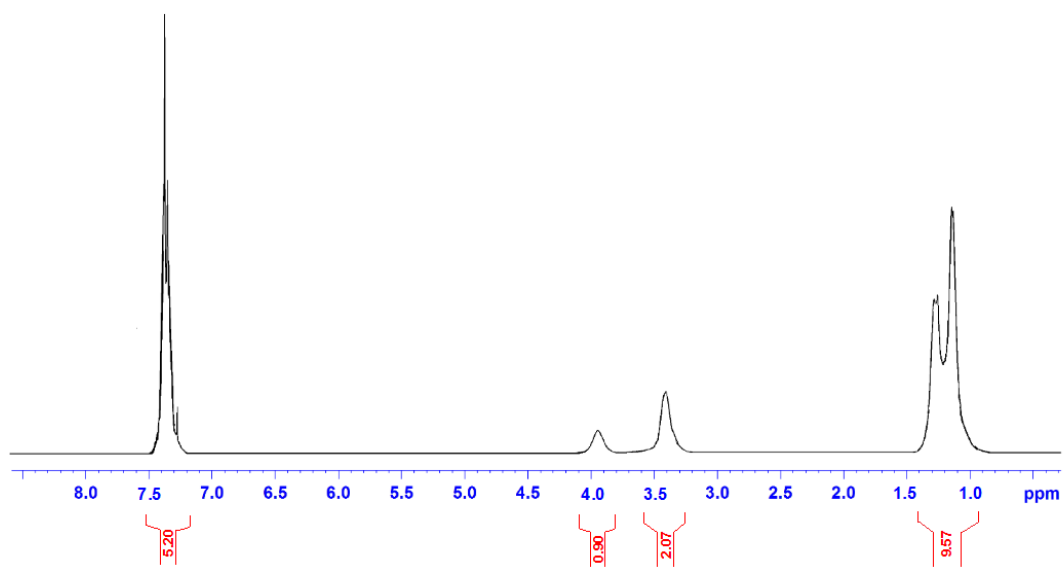


^{13}C NMR

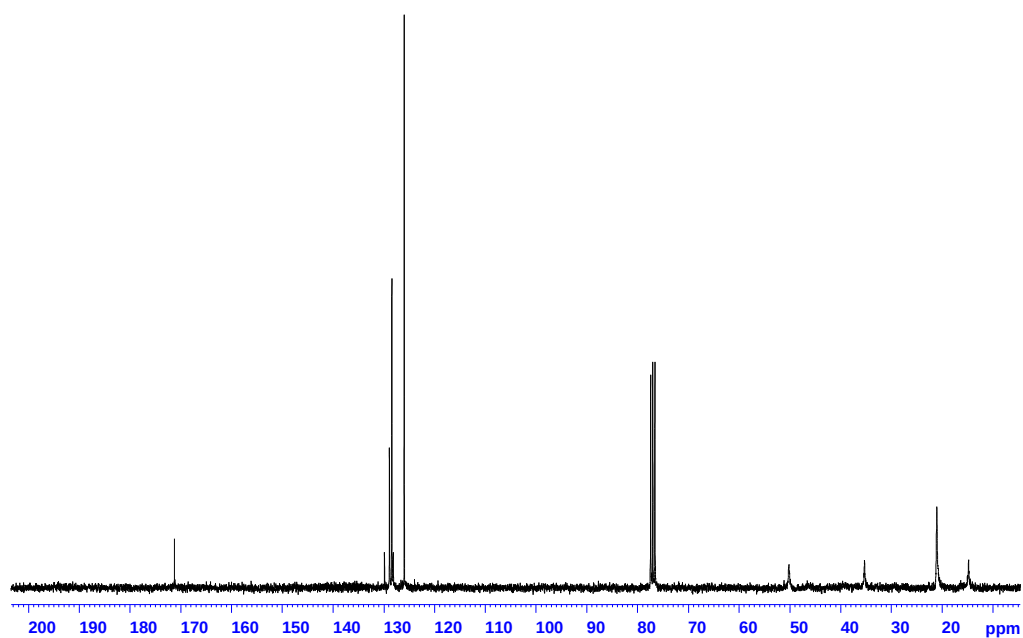


***N*-ethyl-*N*-isopropylbenzamide (7)**

^1H NMR

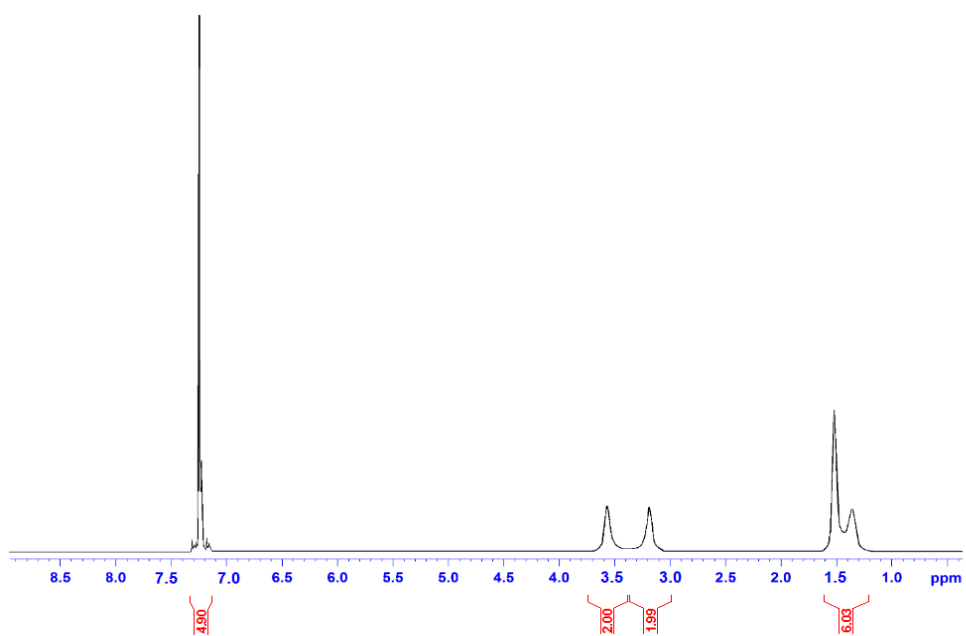


^{13}C NMR

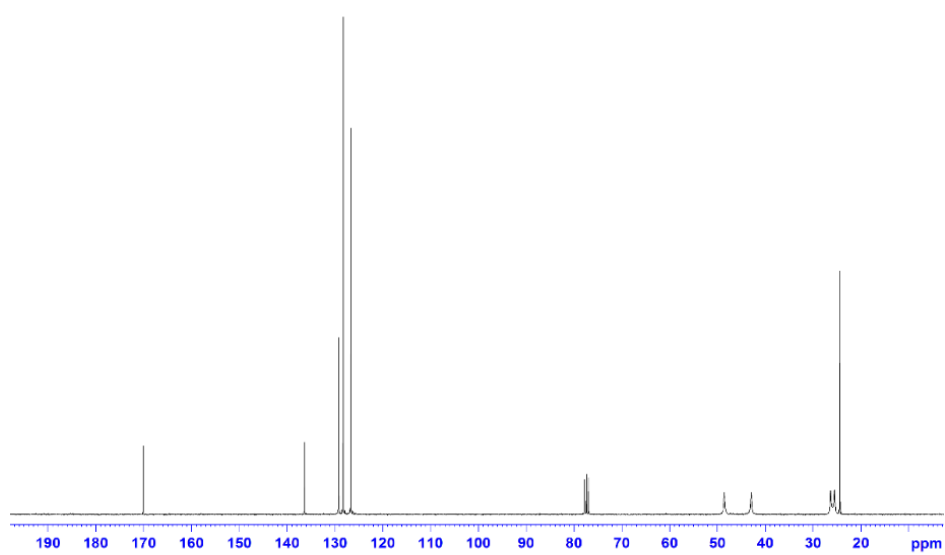


***N*-benzoylpiperidine (8)**

^1H NMR

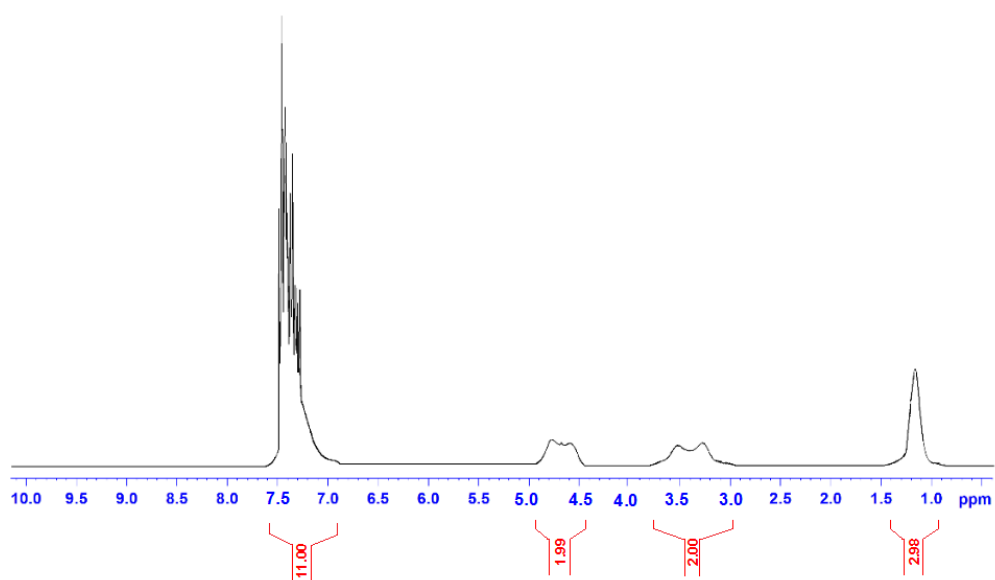


^{13}C NMR

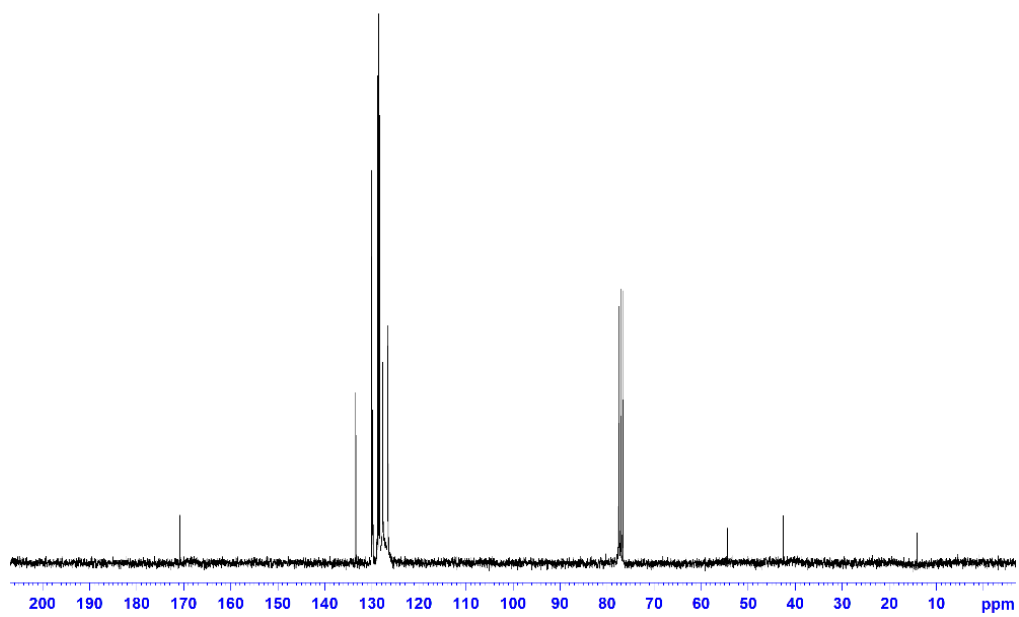


***N*-benzyl-*N*-ethylbenzamide (9)**

¹H NMR

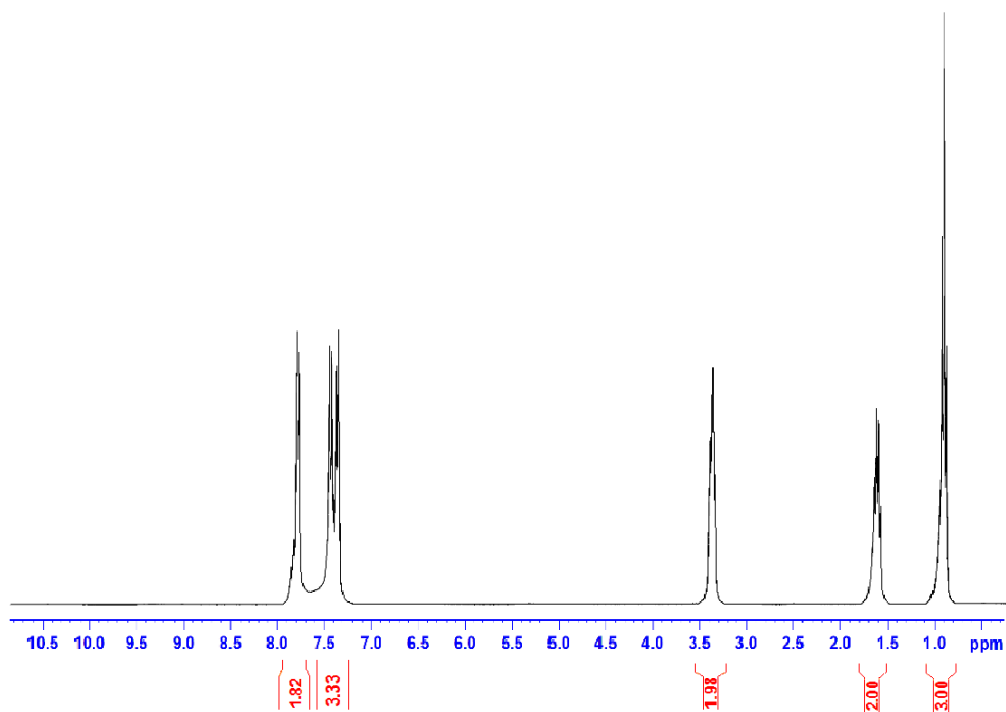


¹³C NMR

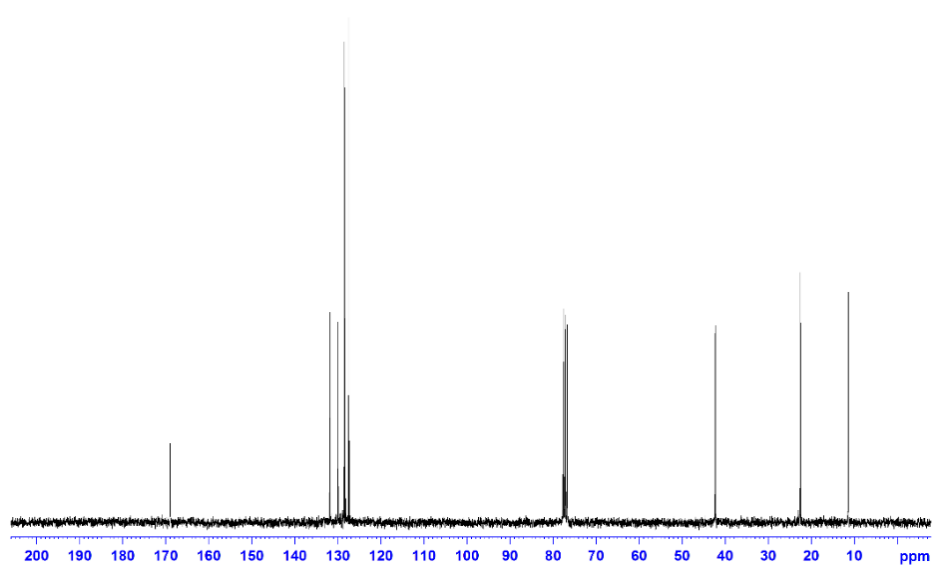


***N*-propylbenzamide (10)**

^1H NMR

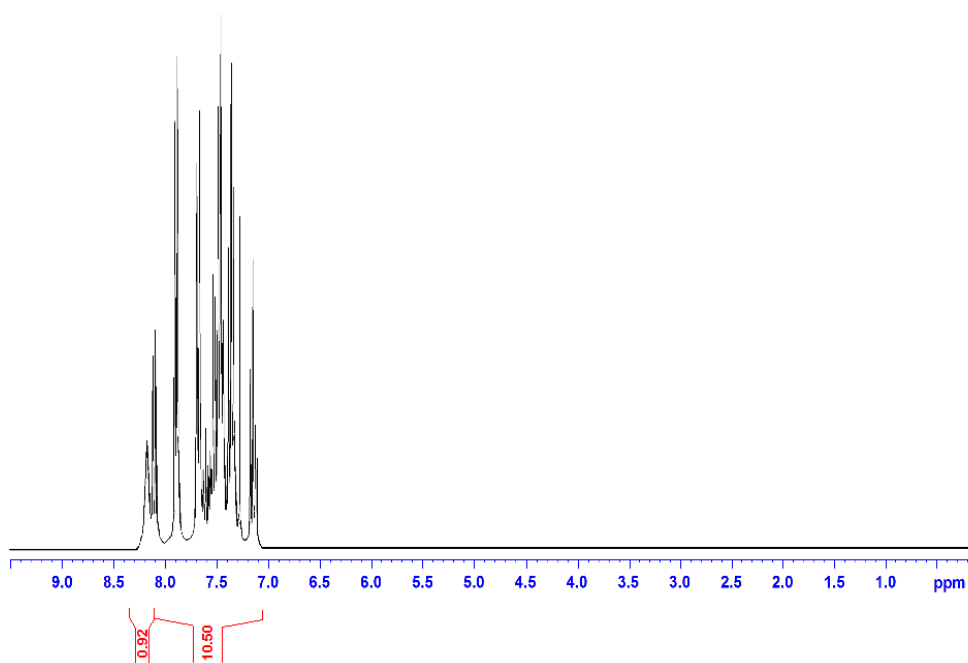


^{13}C NMR

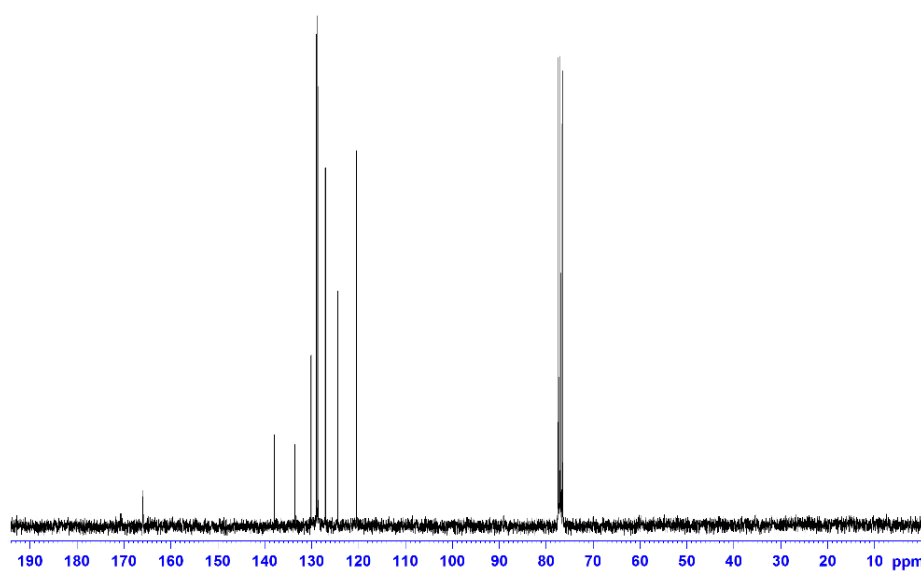


***N*-phenylbenzamide (11)**

^1H NMR

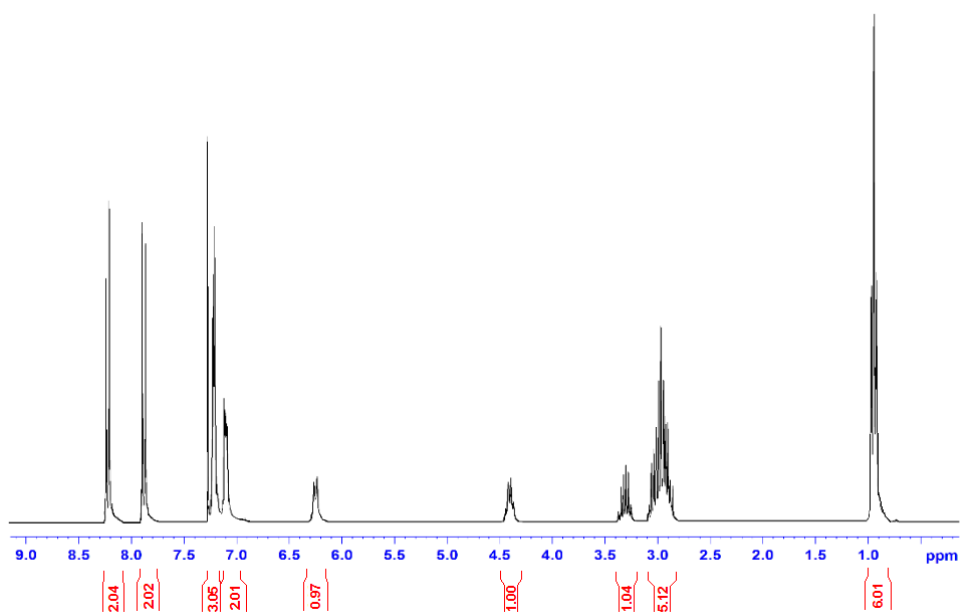


^{13}C NMR

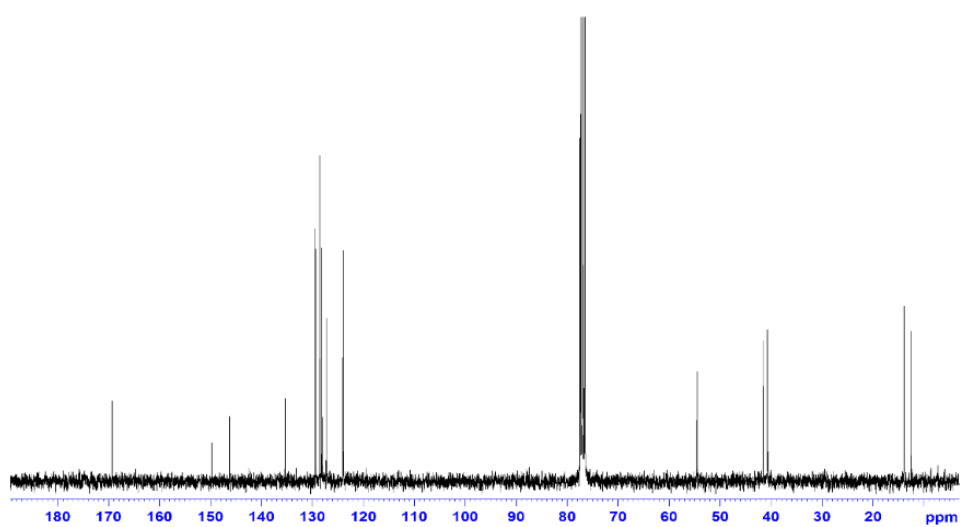


***N,N*-diethyl-(*S*)-2-(4-nitrophenylsulfonamido)-3-phenylpropanamide (12)**

¹H NMR

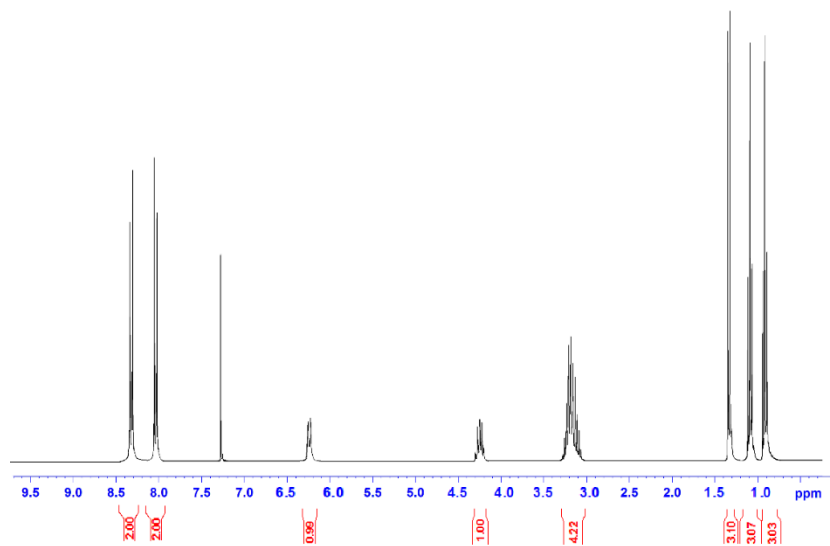


¹³C NMR

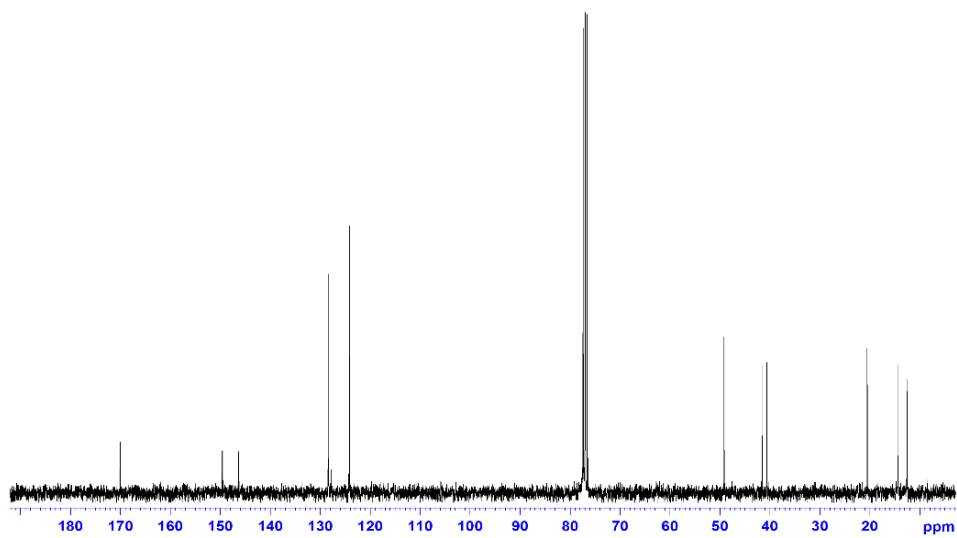


***N,N*-diethyl-(*S*)-2-(4-nitrophenylsulfonamido)-propanamide (13)**

^1H NMR

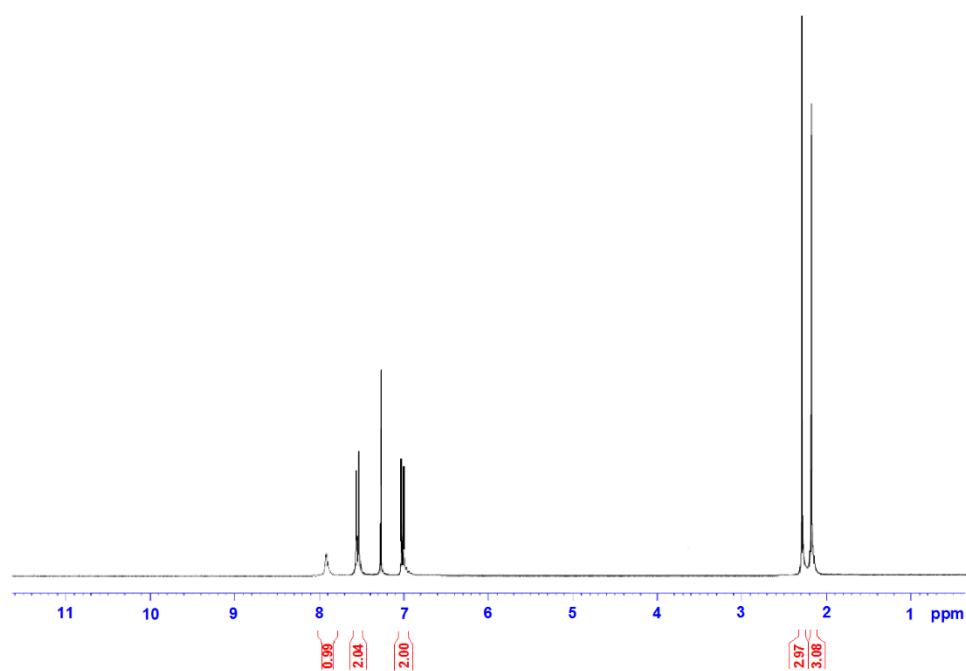


^{13}C NMR

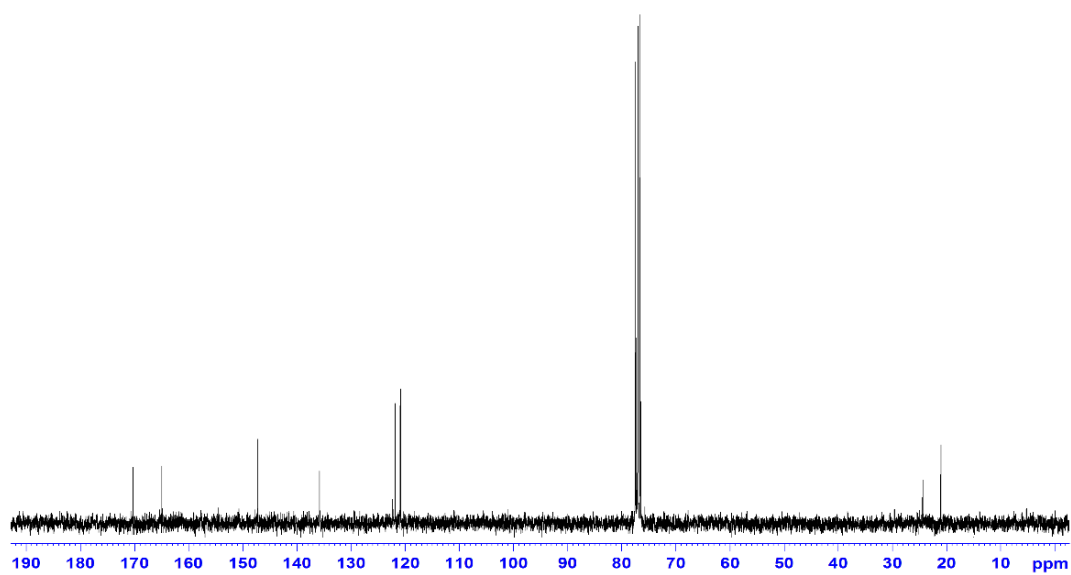


4-acetamidophenylacetate (14)

^1H NMR

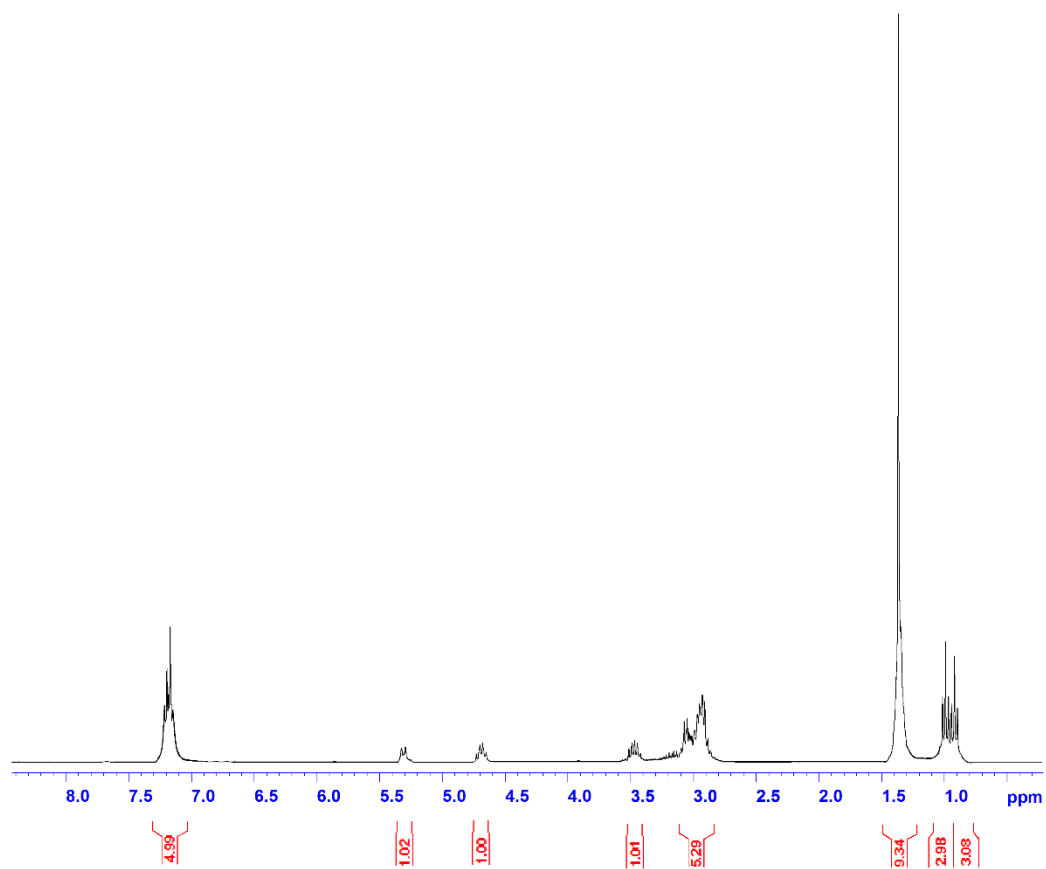


^{13}C NMR

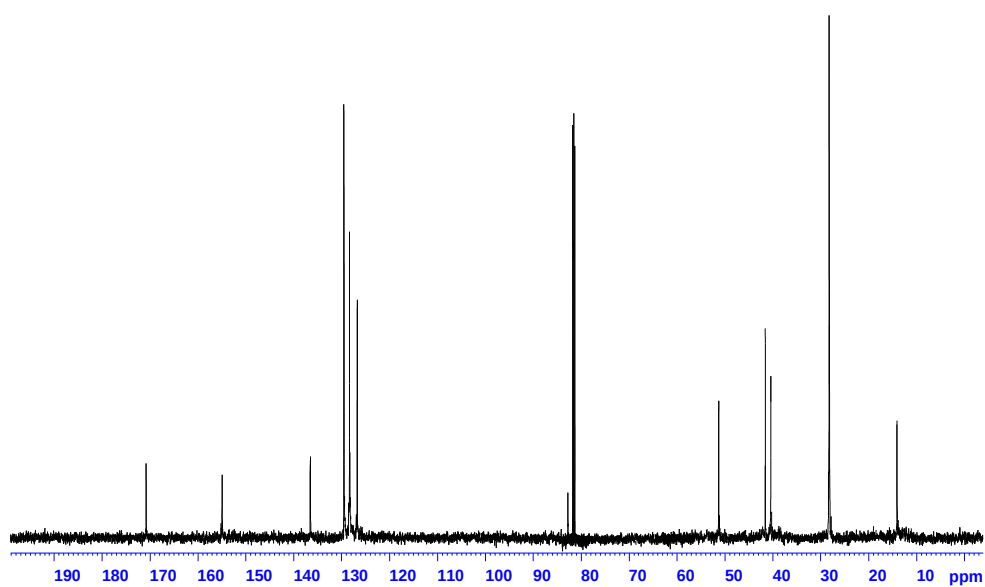


***N,N*-diethyl-(*S*)-2-(*tert*-butoxycarbonyl)-amino-3-phenylpropanamide (15)**

¹H NMR

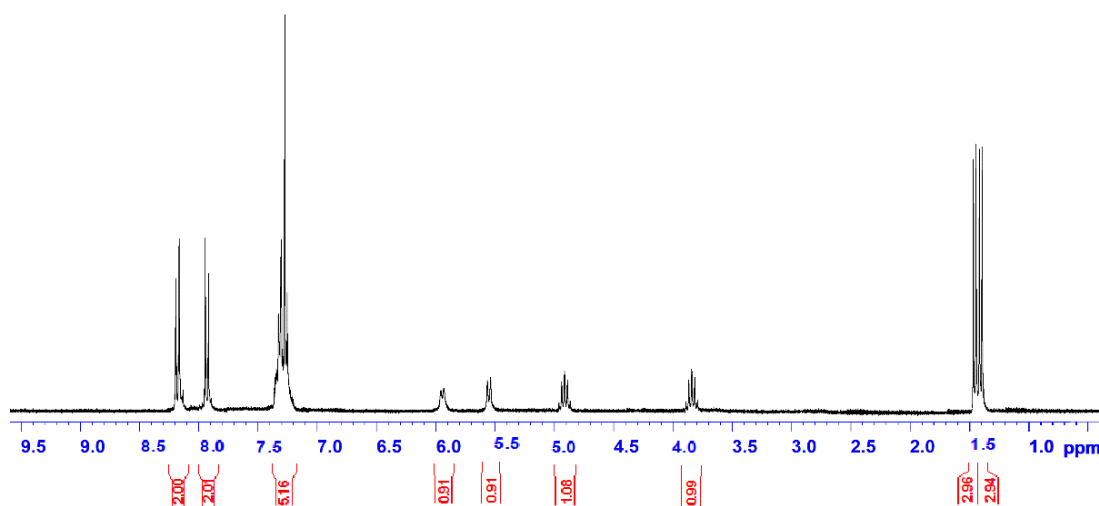


¹³C NMR

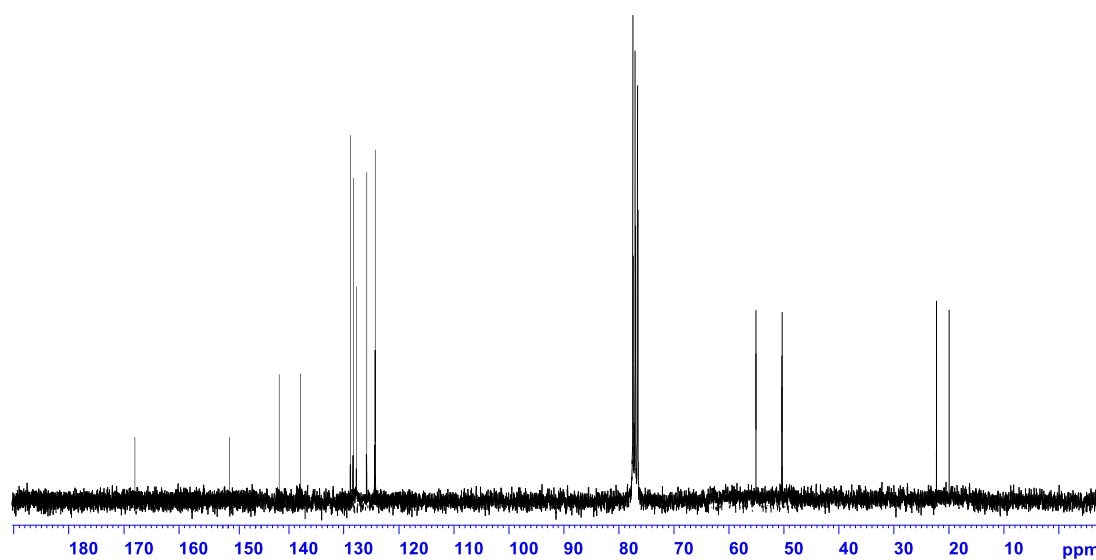


***N*-(*(R)*-1-phenylethyl)-2-(*(S)*)-(4-nitrophenylsulfonamido)-propanamide (16)**

¹H NMR

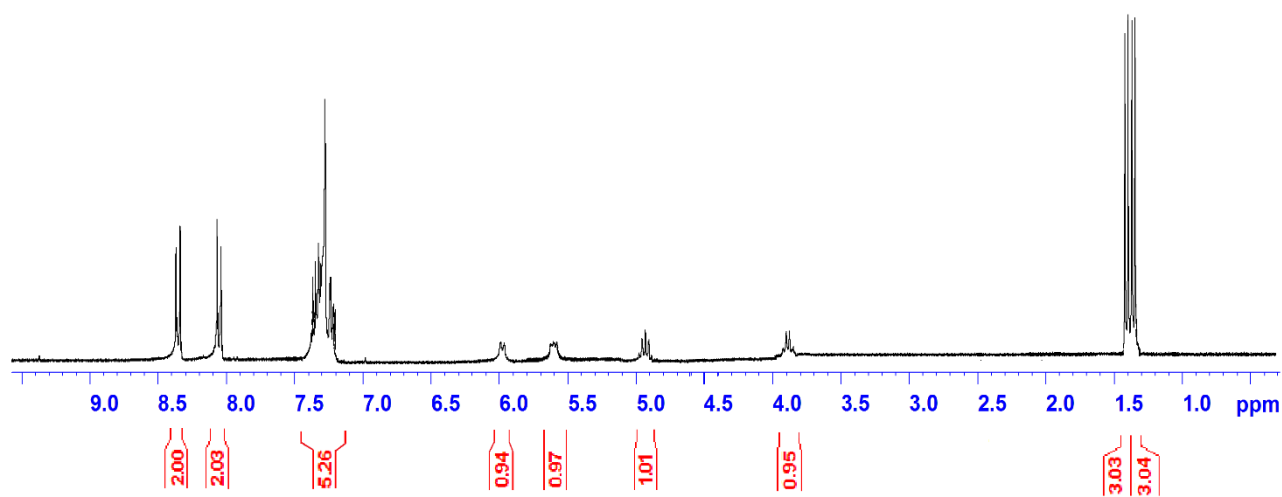


¹³C NMR

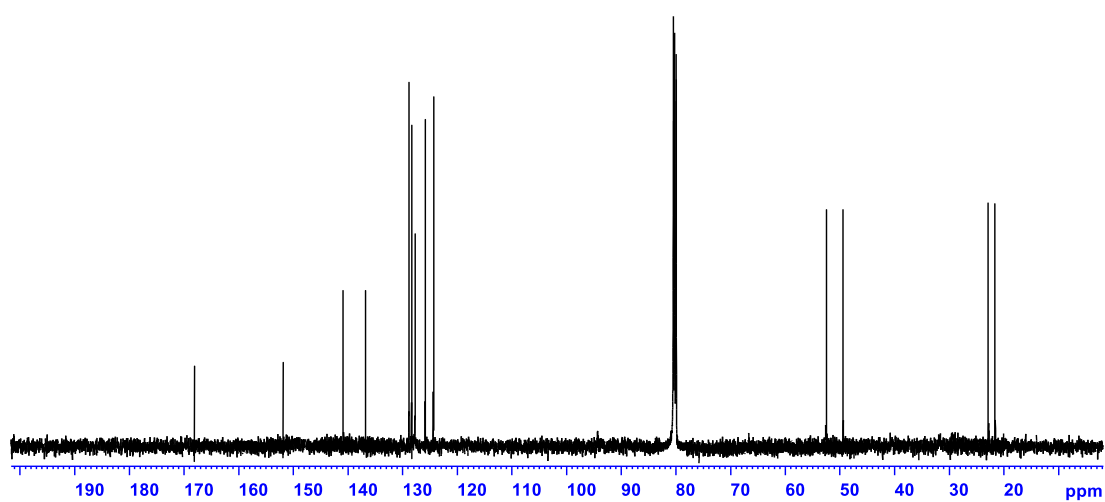


N-((S)-1-phenylethyl)-2-(S)-(4-nitrophenylsulfonamido)-propanamide (17)

¹H NMR

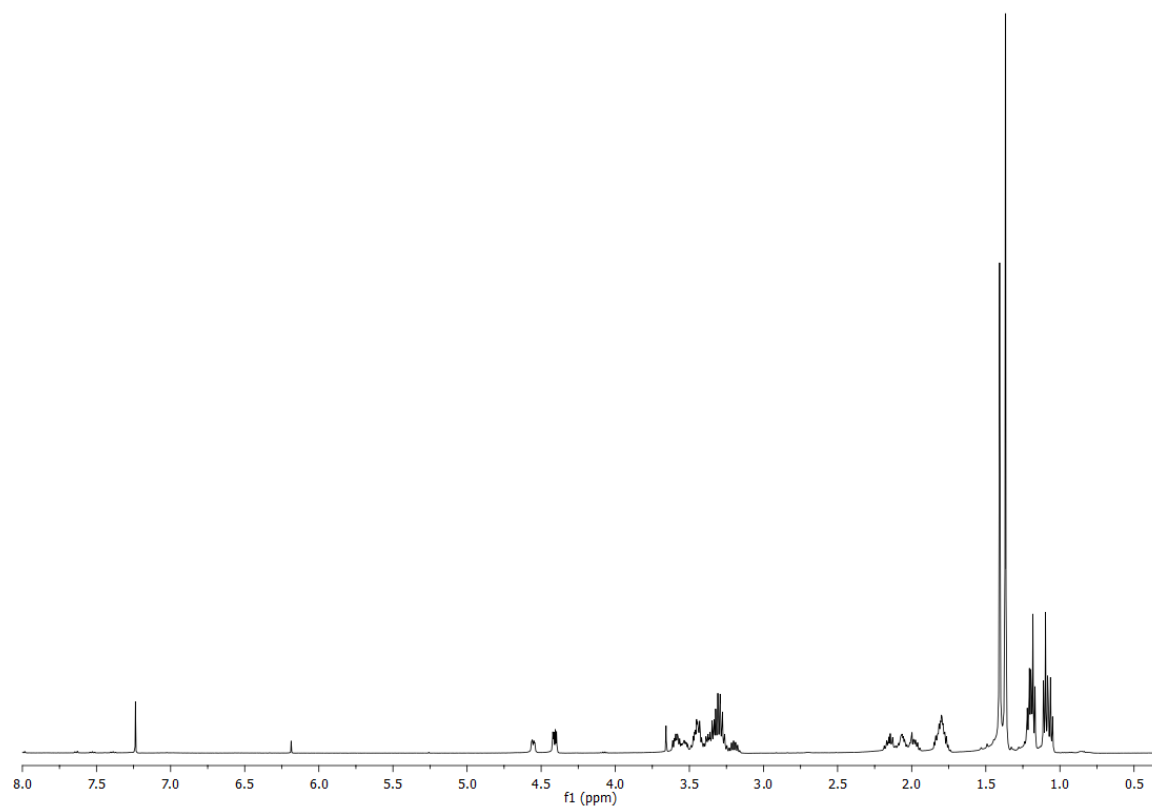


¹³C NMR

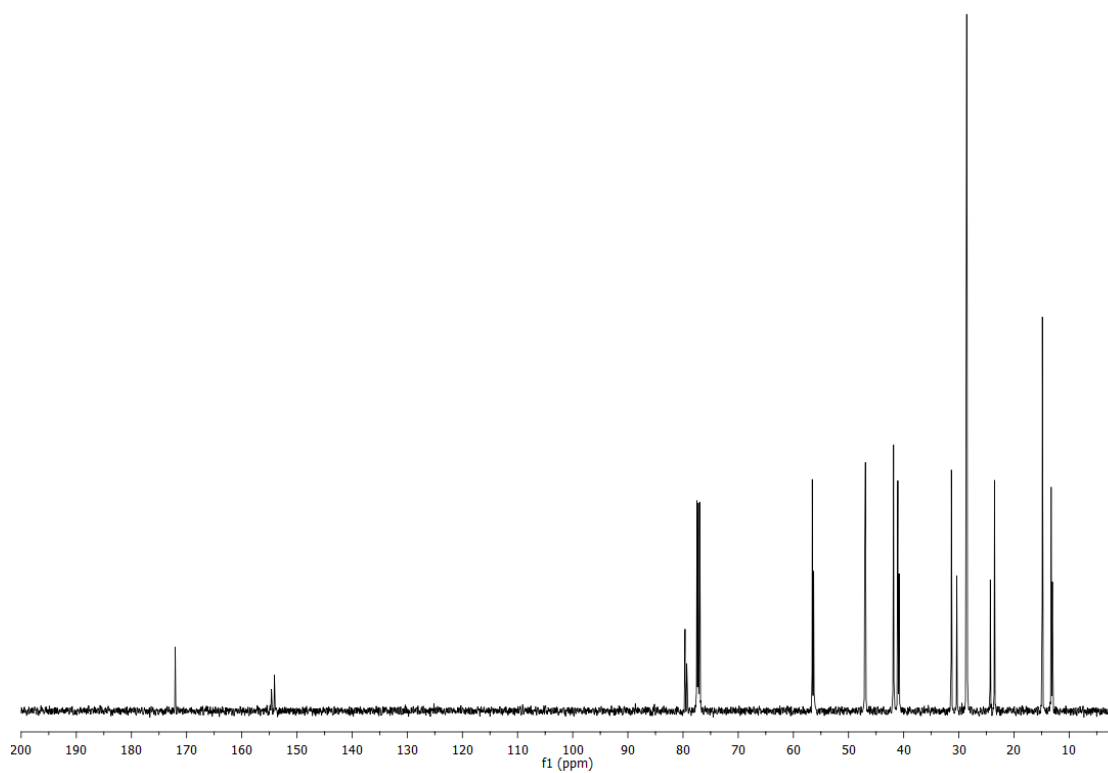


1-(tert-butoxycarbonyl)-2-(S)-(N,N-diethylaminocarbonyl)-pyrrolidine (18)

¹H NMR

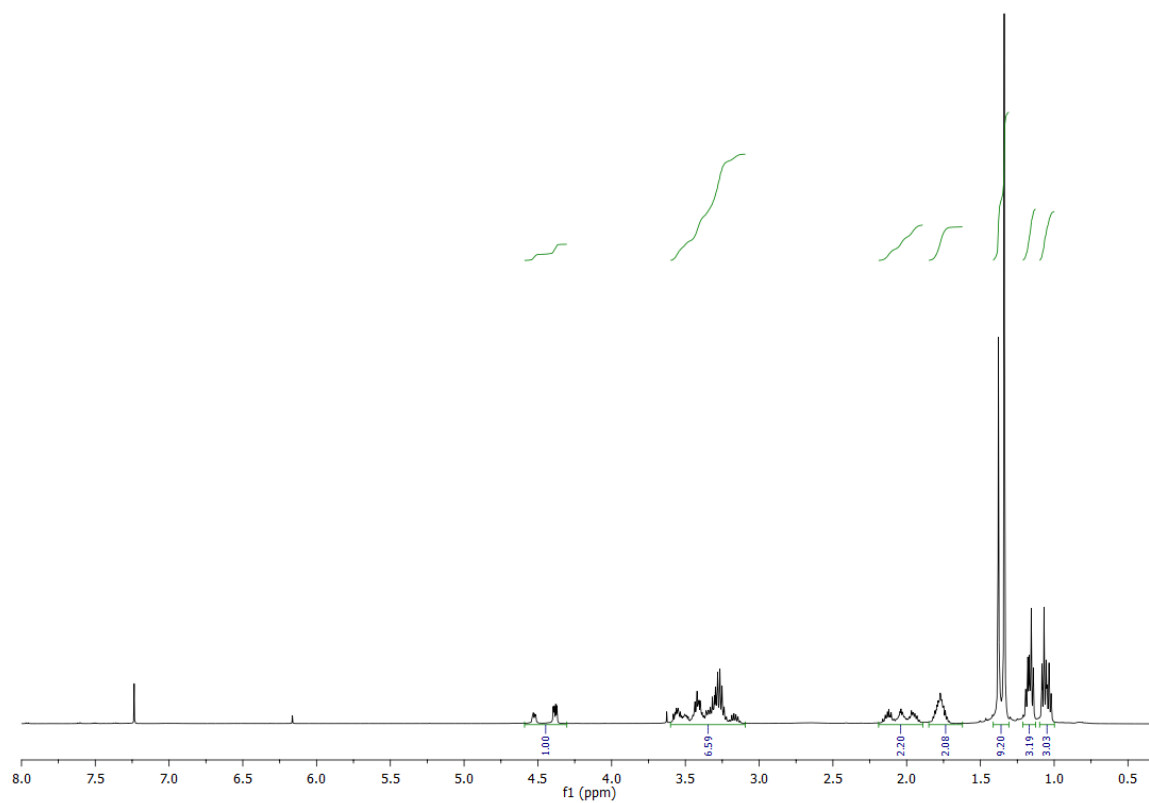


¹³C NMR

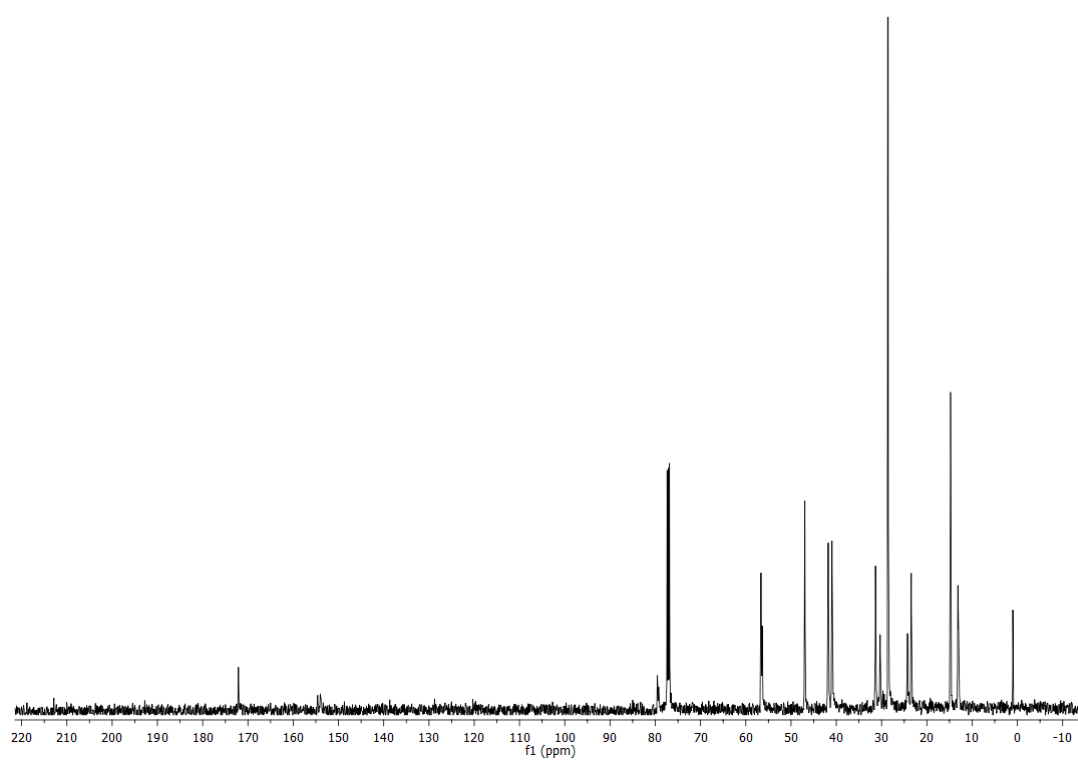


1-(tert-butoxycarbonyl)-2-(R)-(N,N-diethylaminocarbonyl)-pyrrolidine (19)

^1H NMR

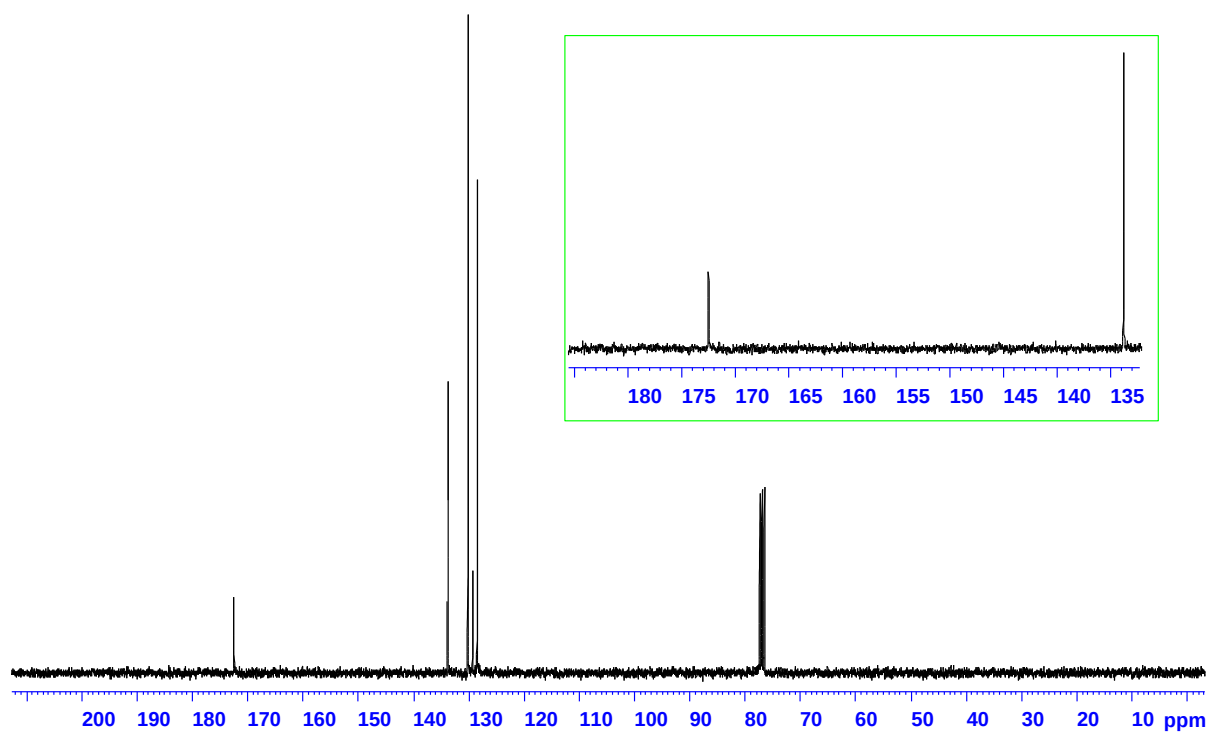


^{13}C NMR



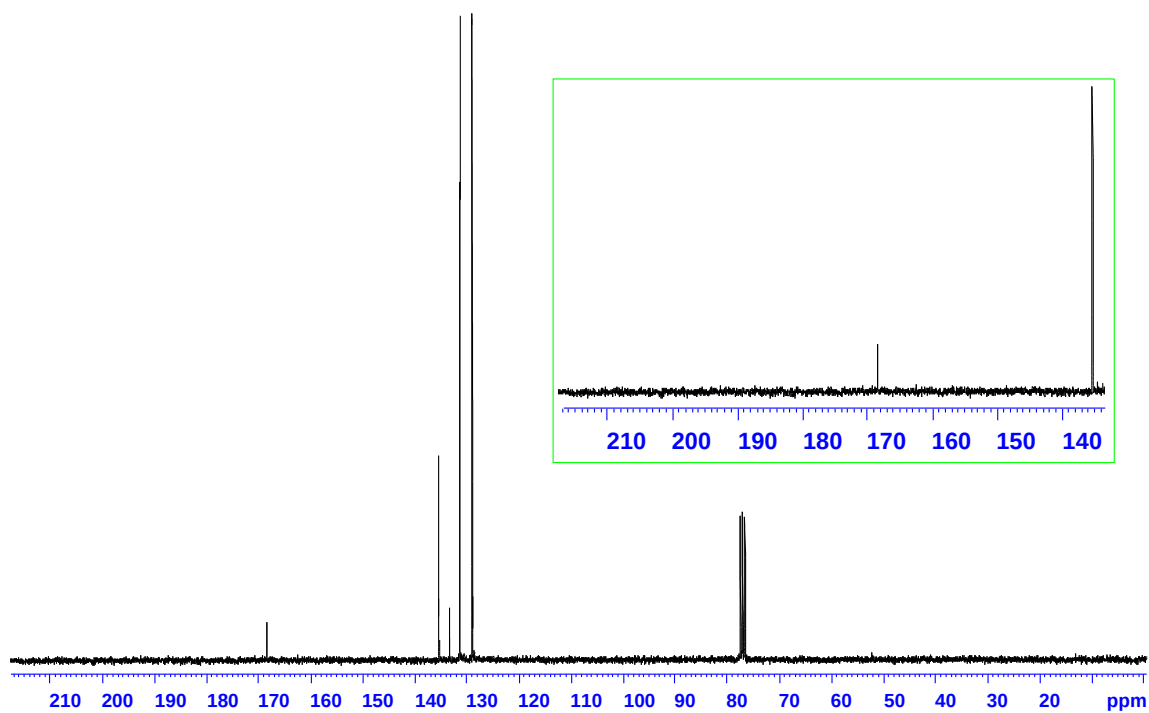
Benzoic Acid

^{13}C NMR



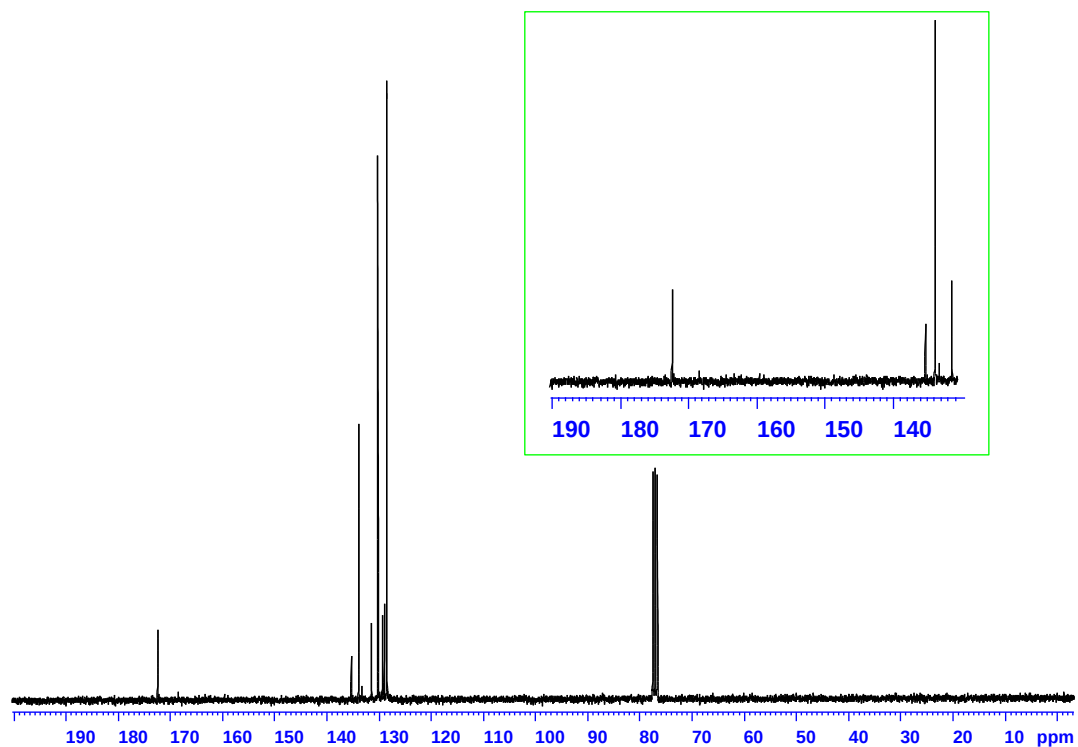
Benzoyl Chloride

^{13}C NMR



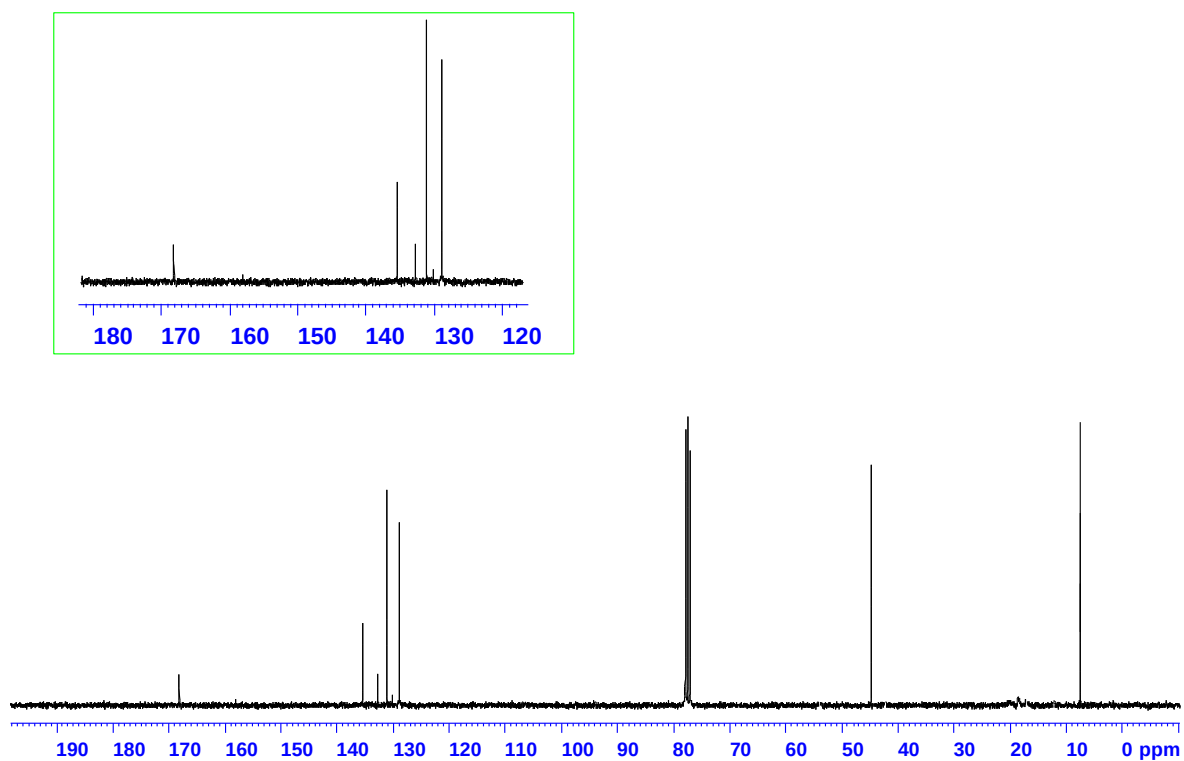
Reaction between Benzoic Acid and Thionyl Chloride

^{13}C NMR



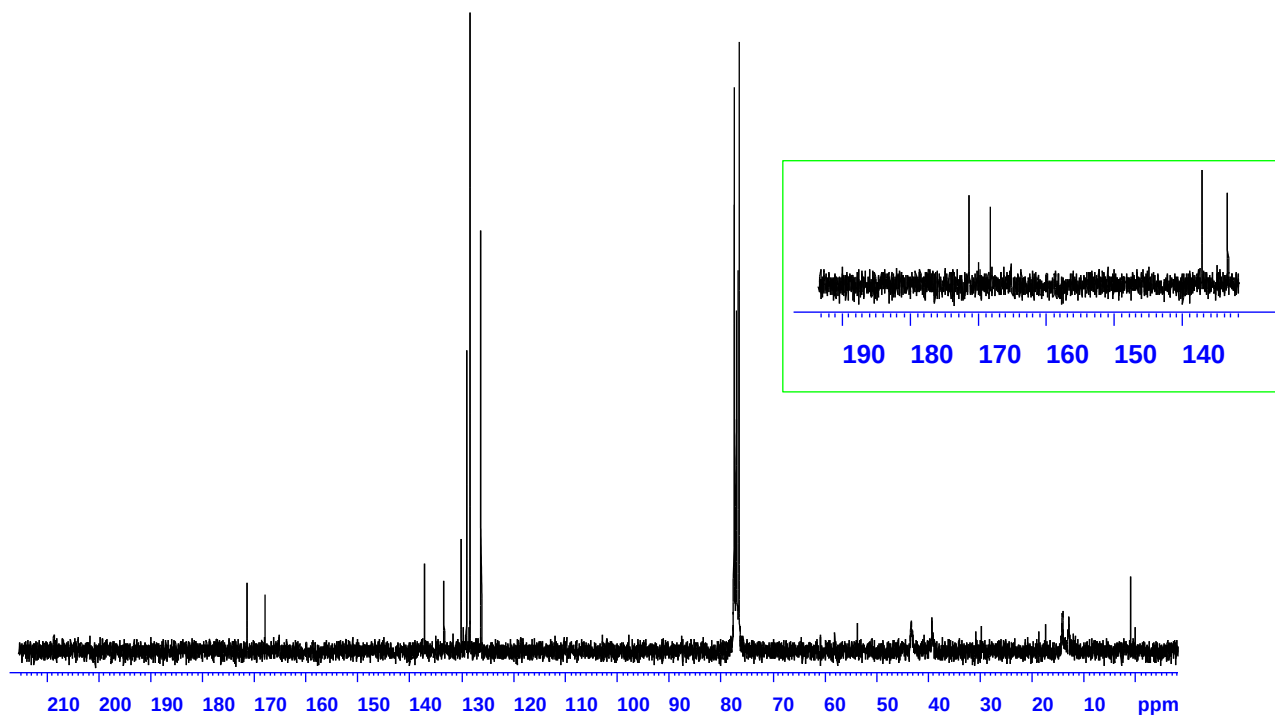
Reaction between Benzoic Acid, Triethylamine and Thionyl Chloride

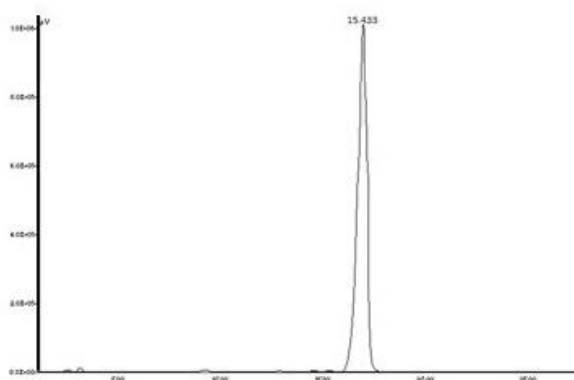
^{13}C NMR



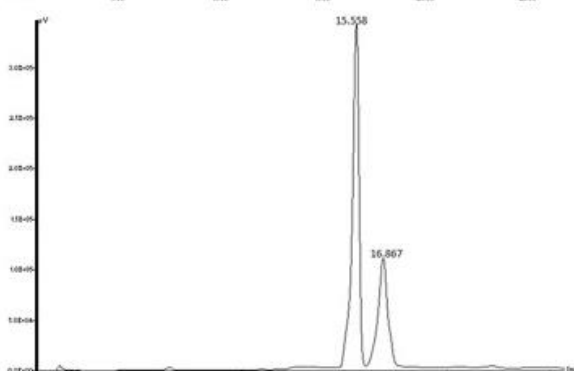
Formation reaction of *N,N*-diethylbenzamide (1) in CDCl_3 after 3 minutes.

^{13}C NMR

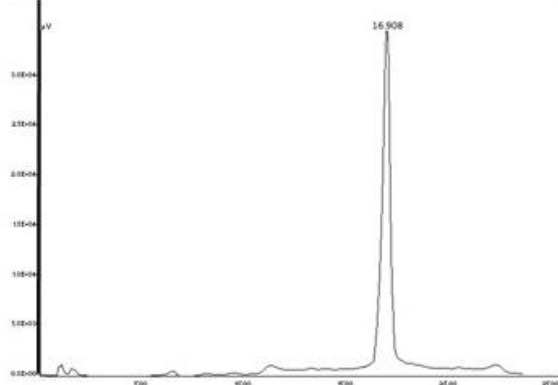




C

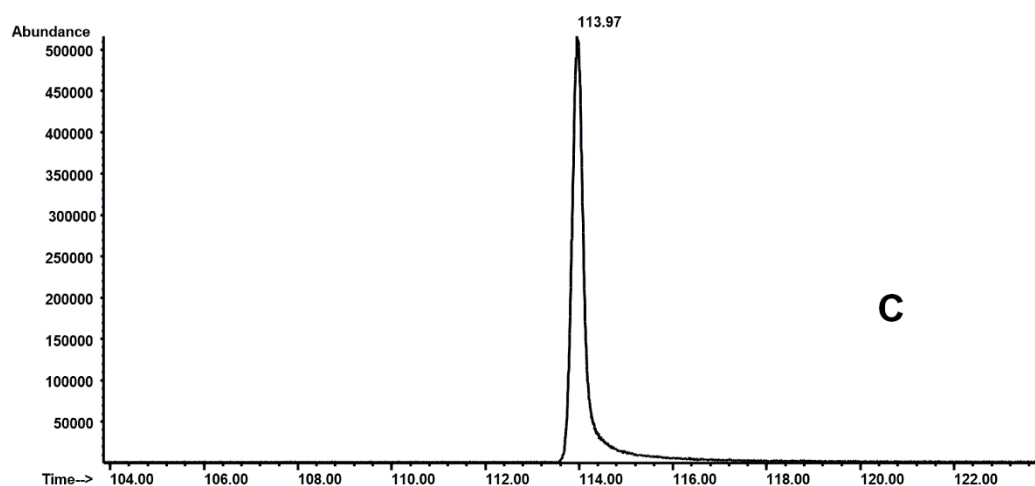
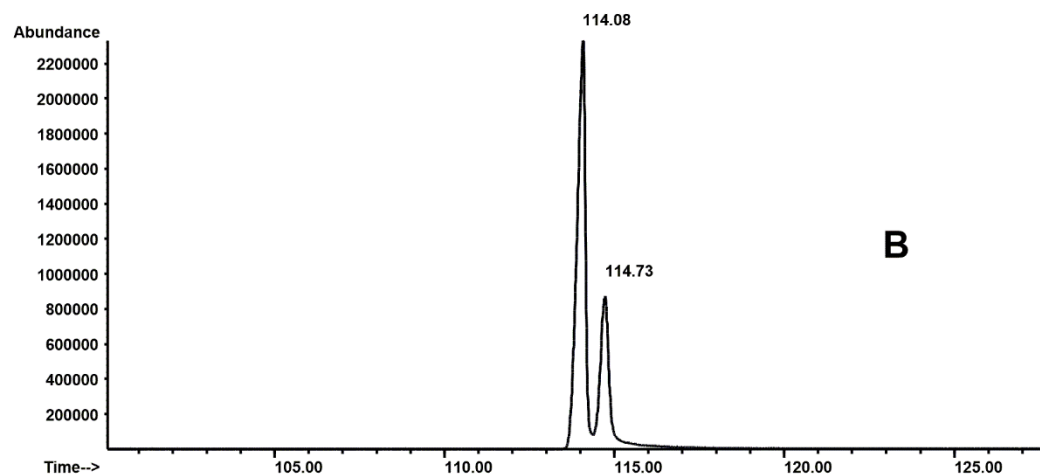
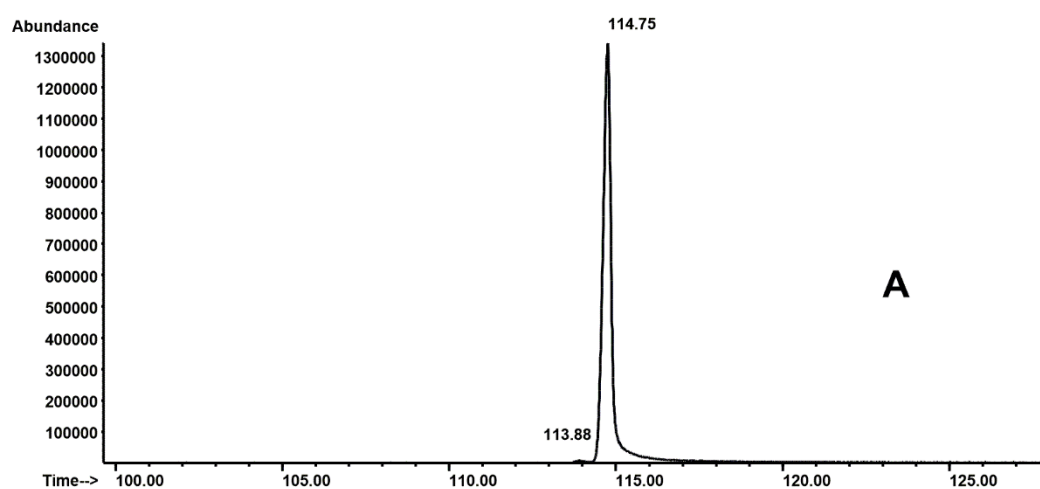


B



A

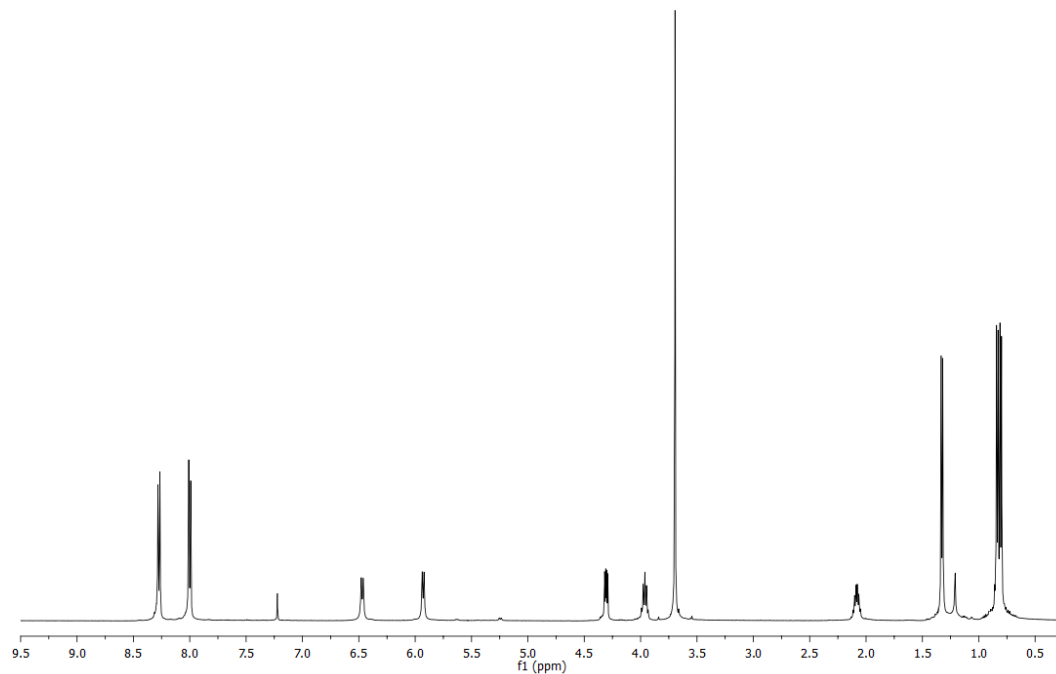
HPLC analyses of crude amides 16 and 17: (A) *N*-((*R*)-1-phenylethyl)-2-(*S*)-(4-nitrophenylsulfonamido)-propanamide (**16**); **(B)** a mixture of **16** and **17** (approx. 30% : 70%); **(C)** *N*-((*S*)-1-phenylethyl)-2-(*S*)-(4-nitrophenylsulfonamido)-propanamide (**17**)



Chiral GC/MS analyses of crude amides 18 and 19: (A) 1-(tert-butoxycarbonyl)-2-(R)-(N,N-diethylaminocarbonyl)-pyrrolidine (**19**); **(B)** a mixture of **18** and **19** (approx. 70% : 30%); **(C)** 1-(tert-butoxycarbonyl)-2-(S)-(N,N-diethylaminocarbonyl)-pyrrolidine (**18**)

Synthesis of dipeptide methyl 3-methyl-2-(S)-(2-(R)-(4-nitrophenylsulfonamido)propanamido)butanoate (20)

¹H NMR



¹³C NMR

