

## Amphiphilic Allylation of Arylidene-1,3-oxazol-5(4H)-one Using Bis- $\pi$ -allylpalladium Complexes: An Approach to Synthesis of Cyclohexyl and Cyclohexenyl $\alpha$ -Amino Acids

Afaf R. Genady<sup>1</sup> and Hiroyuki Nakamura<sup>2\*</sup>

<sup>1</sup>Department of Chemistry, Faculty of Science, University of Tanta, 31527-Tanta, Egypt, <sup>2</sup>Department of Chemistry, Faculty of Science, Gakushuin University, 1-5-1 Mejiro, Toshima-ku, Tokyo 171-8588, Japan, Fax: +81-3-5992-1029

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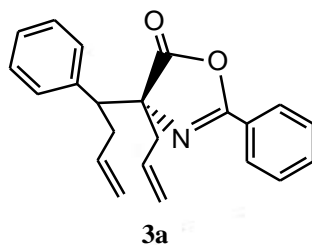
Page S45:  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectrum of compound **18**

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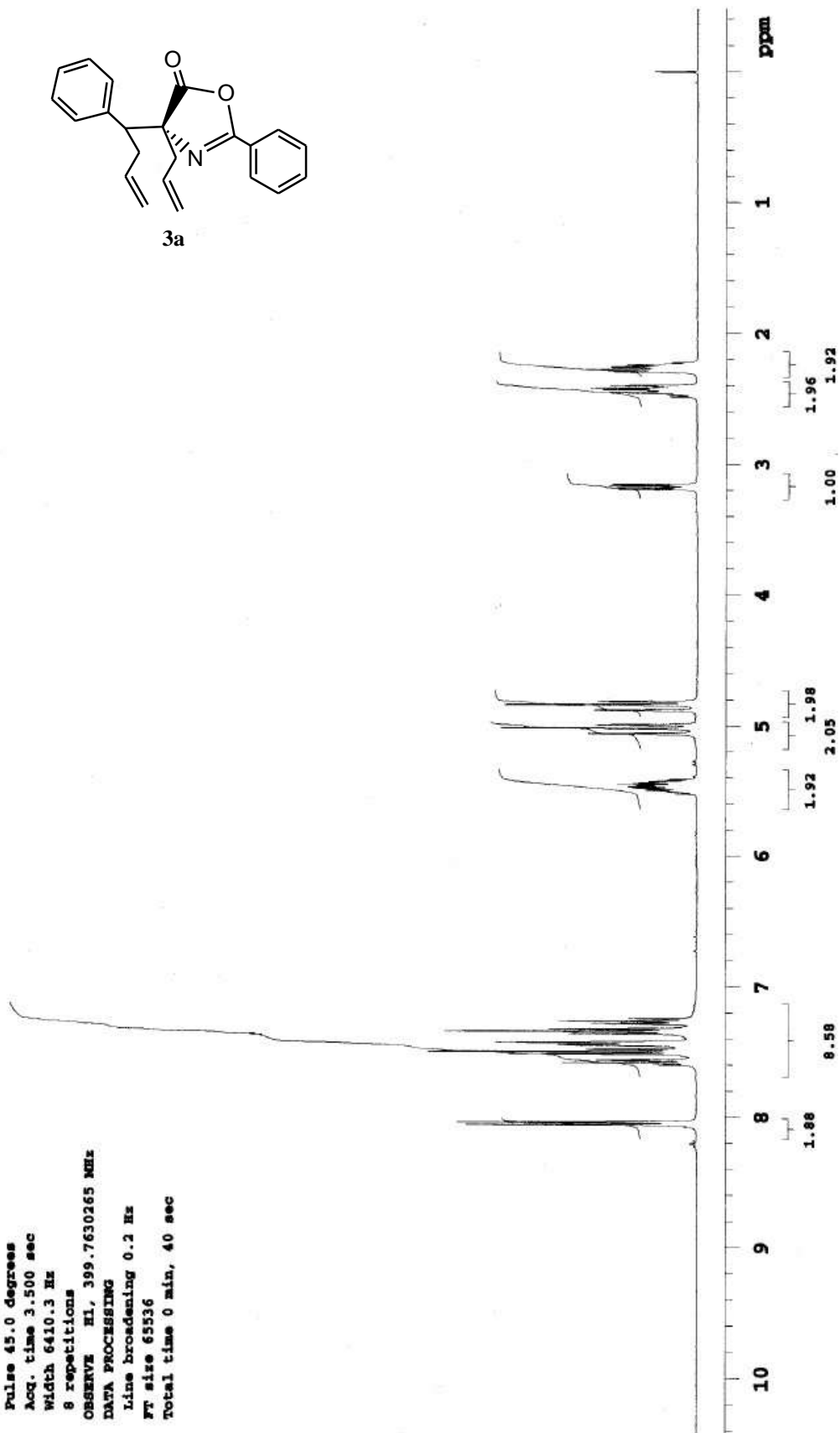
Page S49:  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectrum of compound **20**

### Allyl-2-phenyl-4-(1-phenyl-but-3-enyl)-4H-oxazol-5-one (3a)

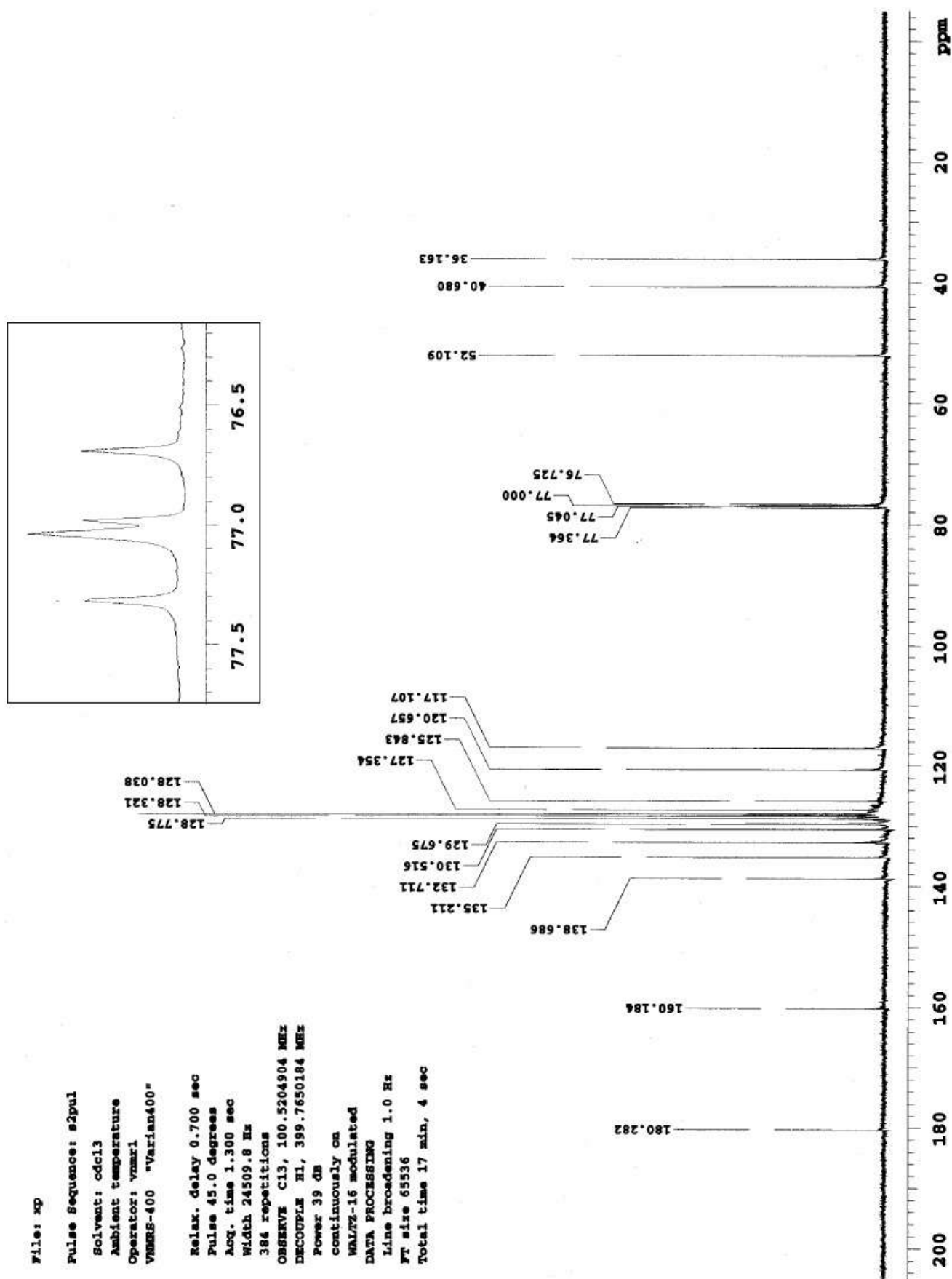
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VNMRS-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE H1, 399.7630265 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



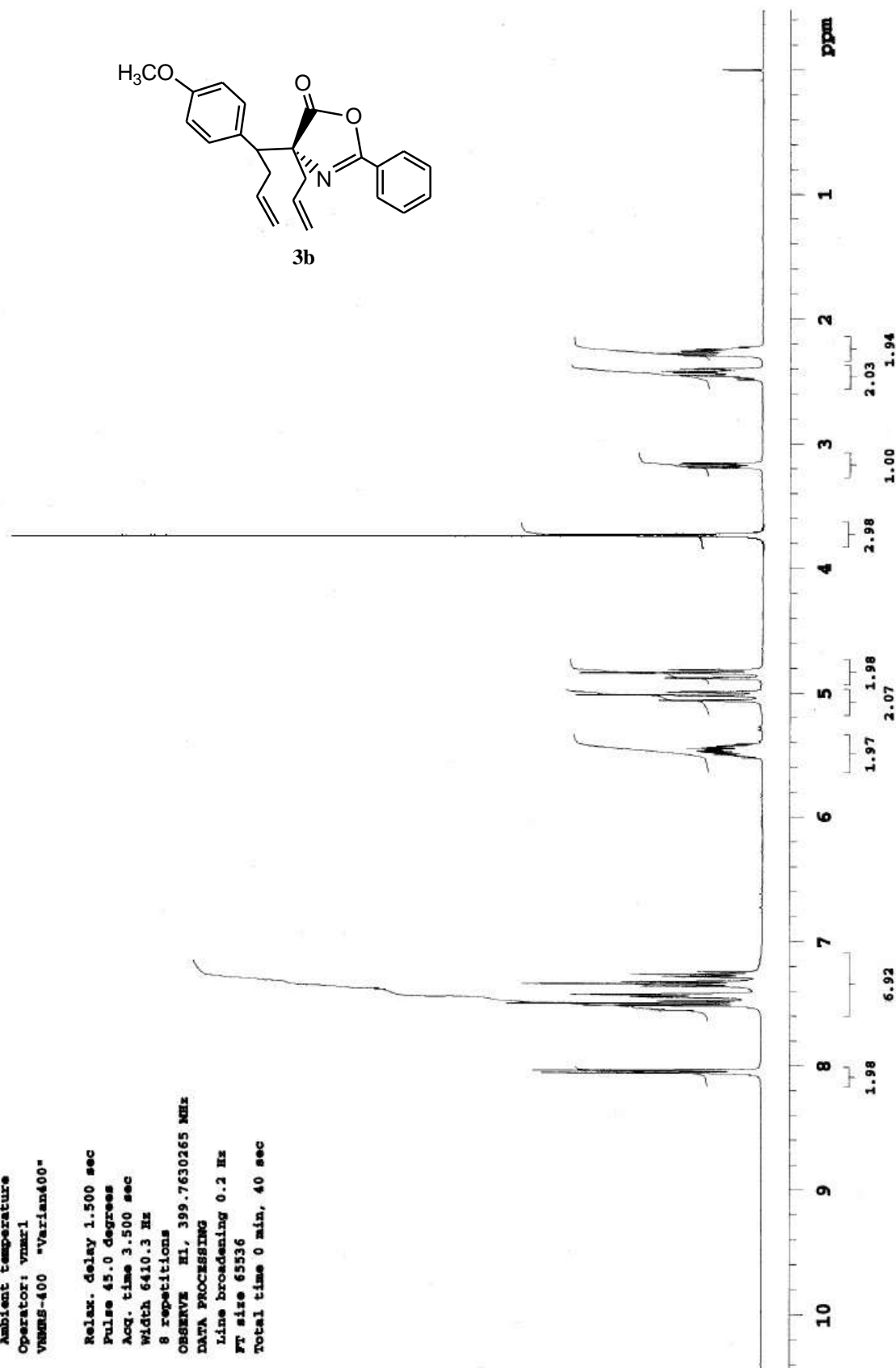
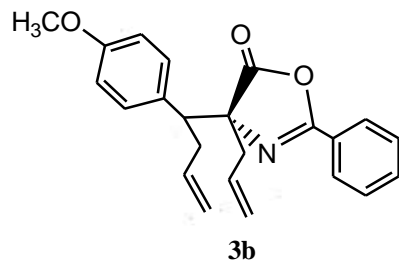
$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )



### 4-Allyl-4-[1-(4-methoxy-phenyl)-but-3-enyl]-2-phenyl-4H-oxazol-5-one (3b)

<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)

File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmerl  
VNMRS-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE F1, 399.7630265 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmar1

VNMR-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5204904 MHz

DECOUPLE H1, 399.7650184 MHz

Power 39 dB

continuously on

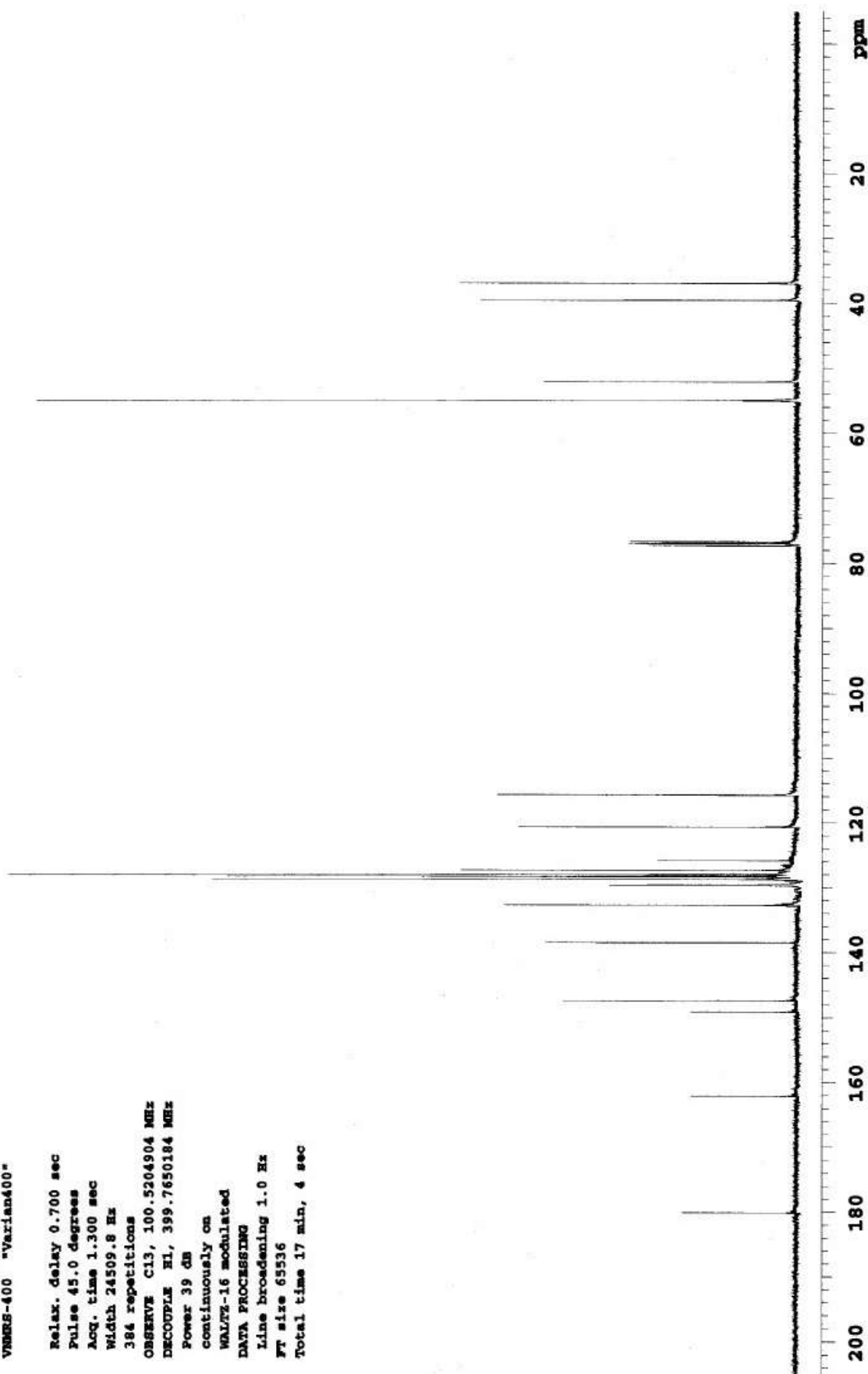
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

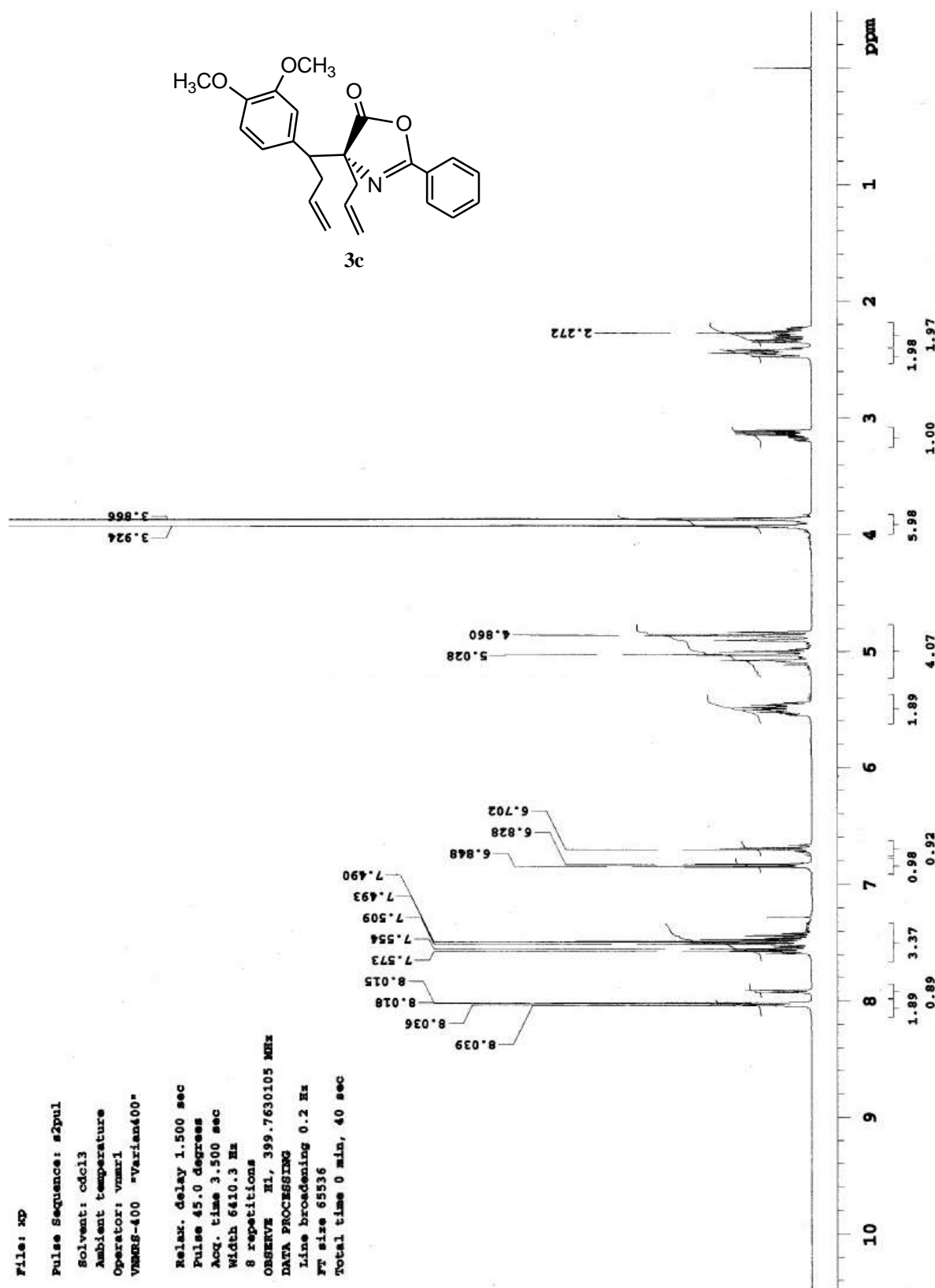
FT size 65536

Total time 17 min, 4 sec



### 4-Allyl-4-[1-(3,4-dimethoxy-phenyl)-but-3-enyl]-2-phenyl-4H-oxazol-5-one (3c)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmari

VMRS-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5204904 MHz

DECOUPLE H1, 399.7650184 MHz

Power 39 dB

continuously on

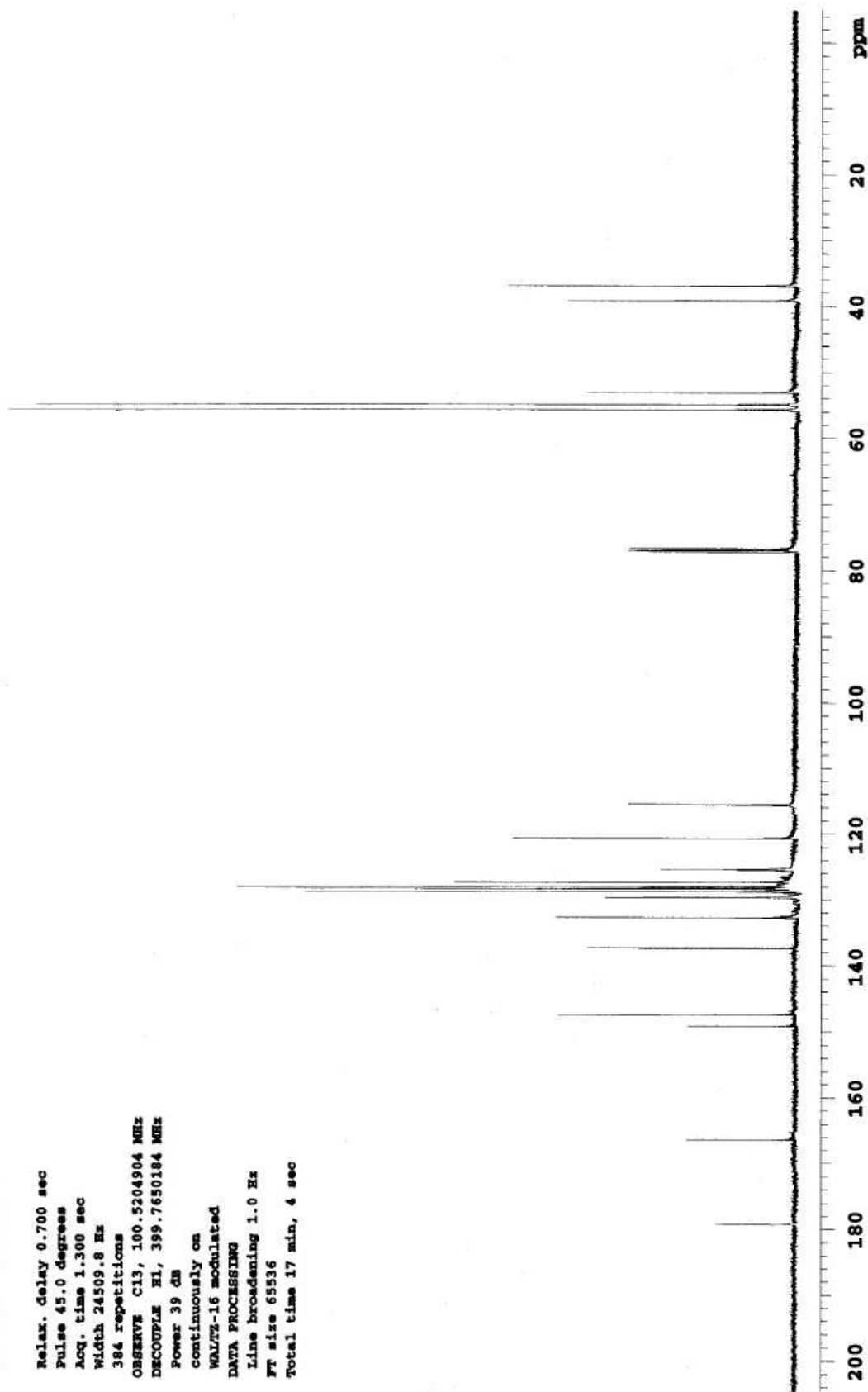
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 65536

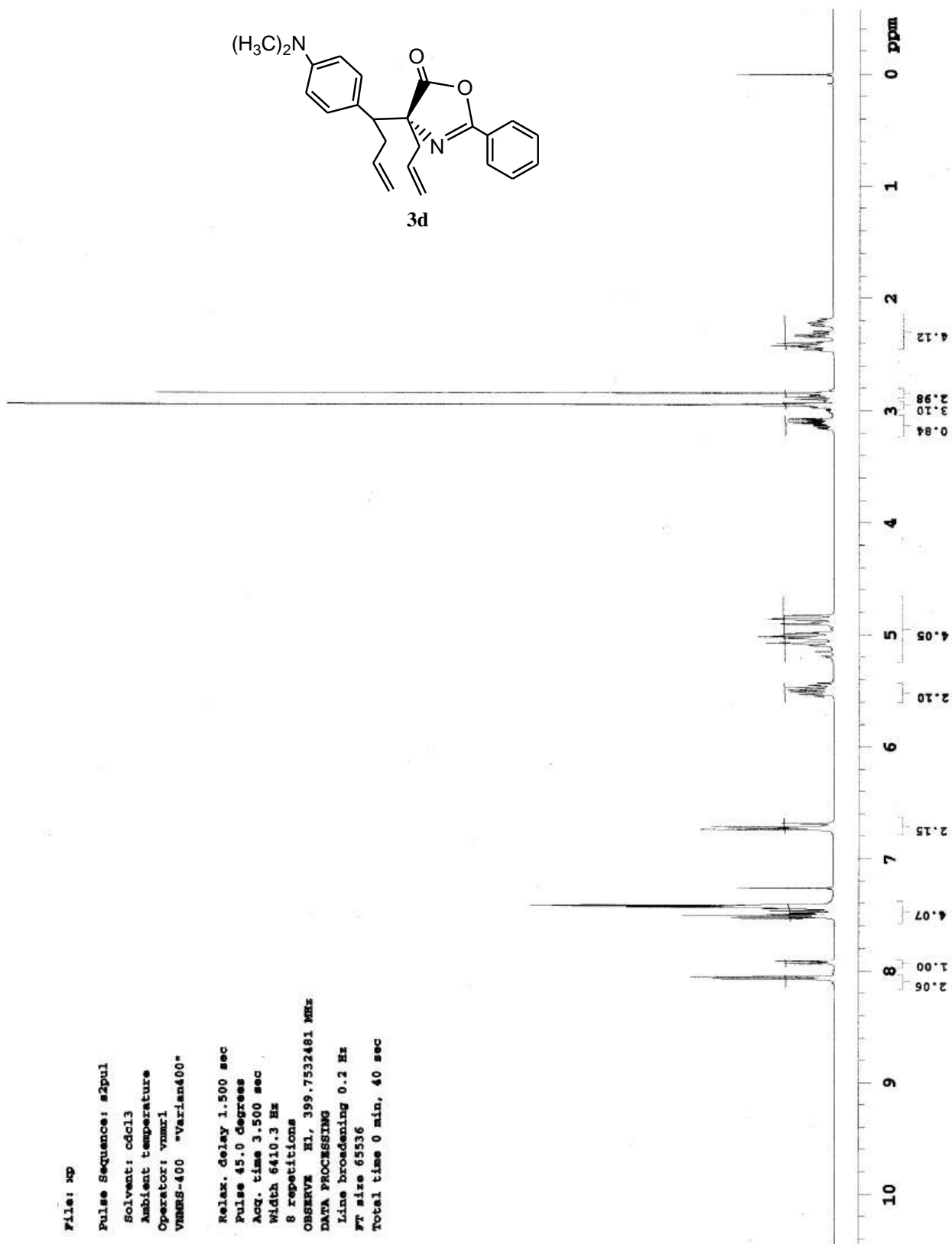
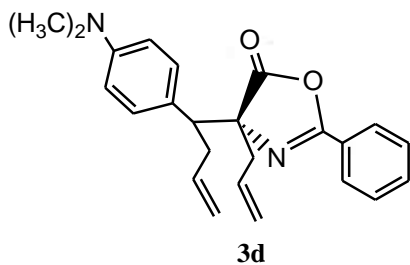
Total time 17 min, 4 sec





### 4-Allyl-4-[1-(4-dimethylamino-phenyl)-but-3-enyl]-2-phenyl-4H-oxazol-5-one (3d)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



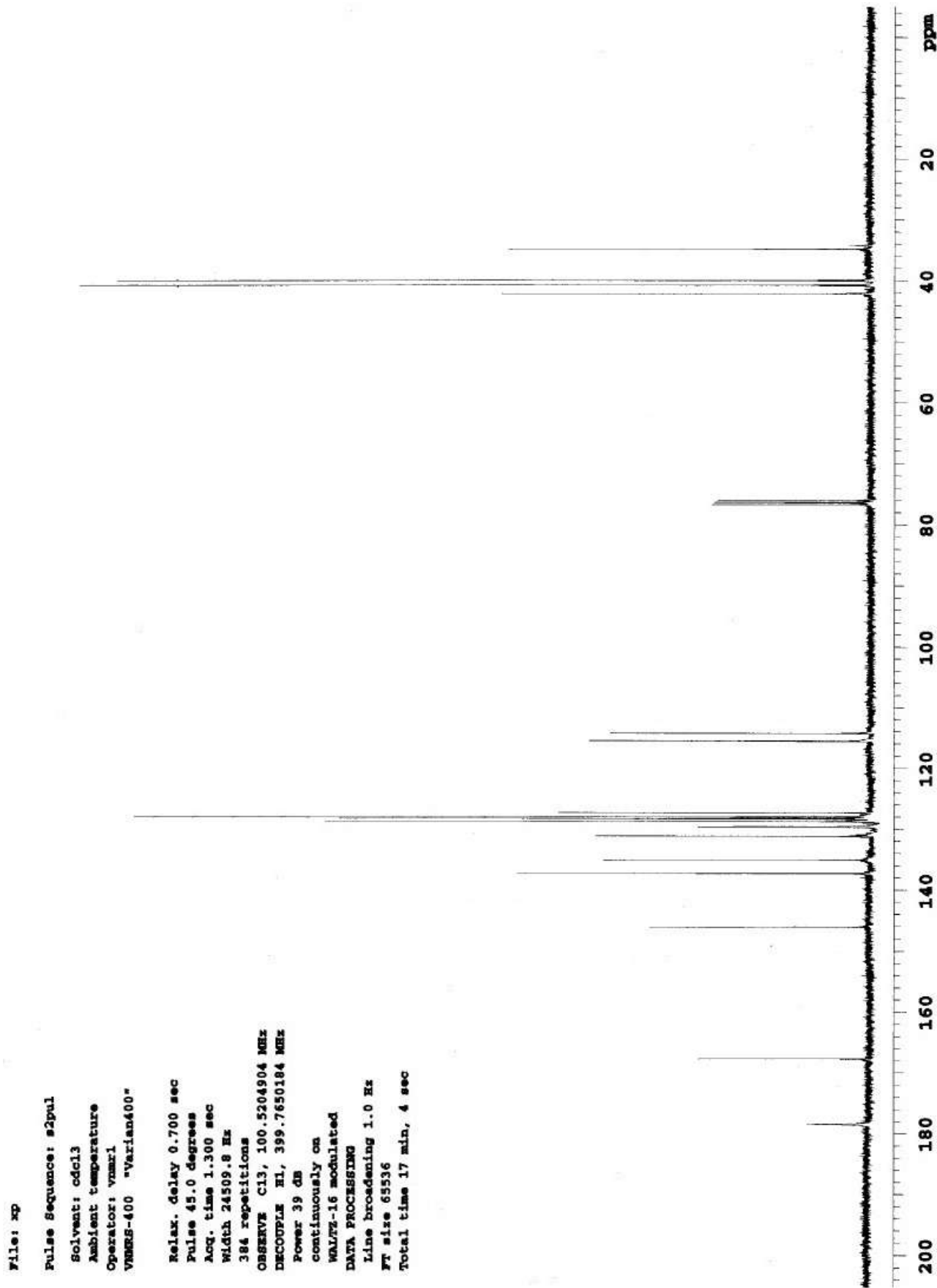
File: xp

Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VNMRS-400 "Varian400"

Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions

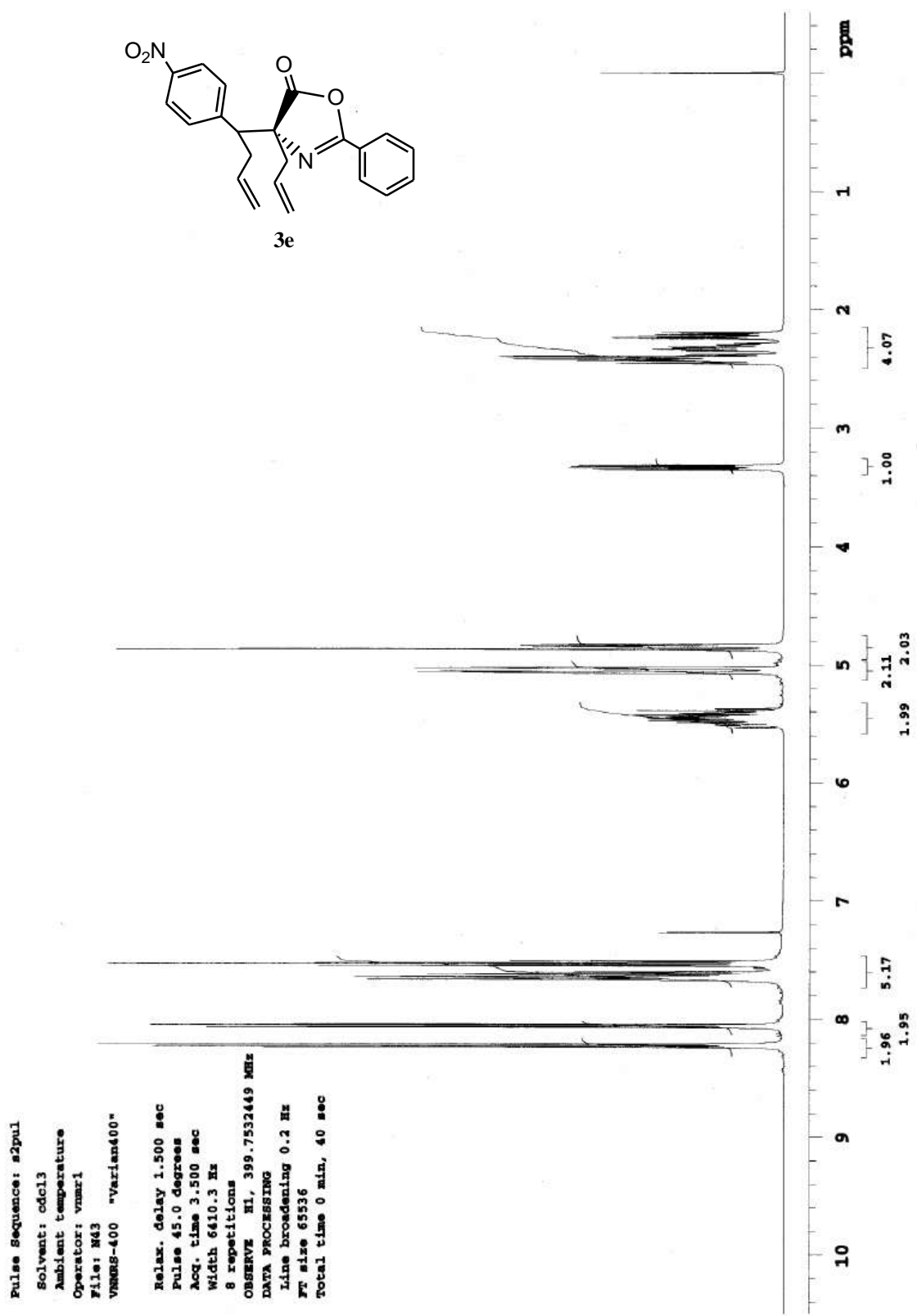
OBSERVE F1, 399.7532481 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec

$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

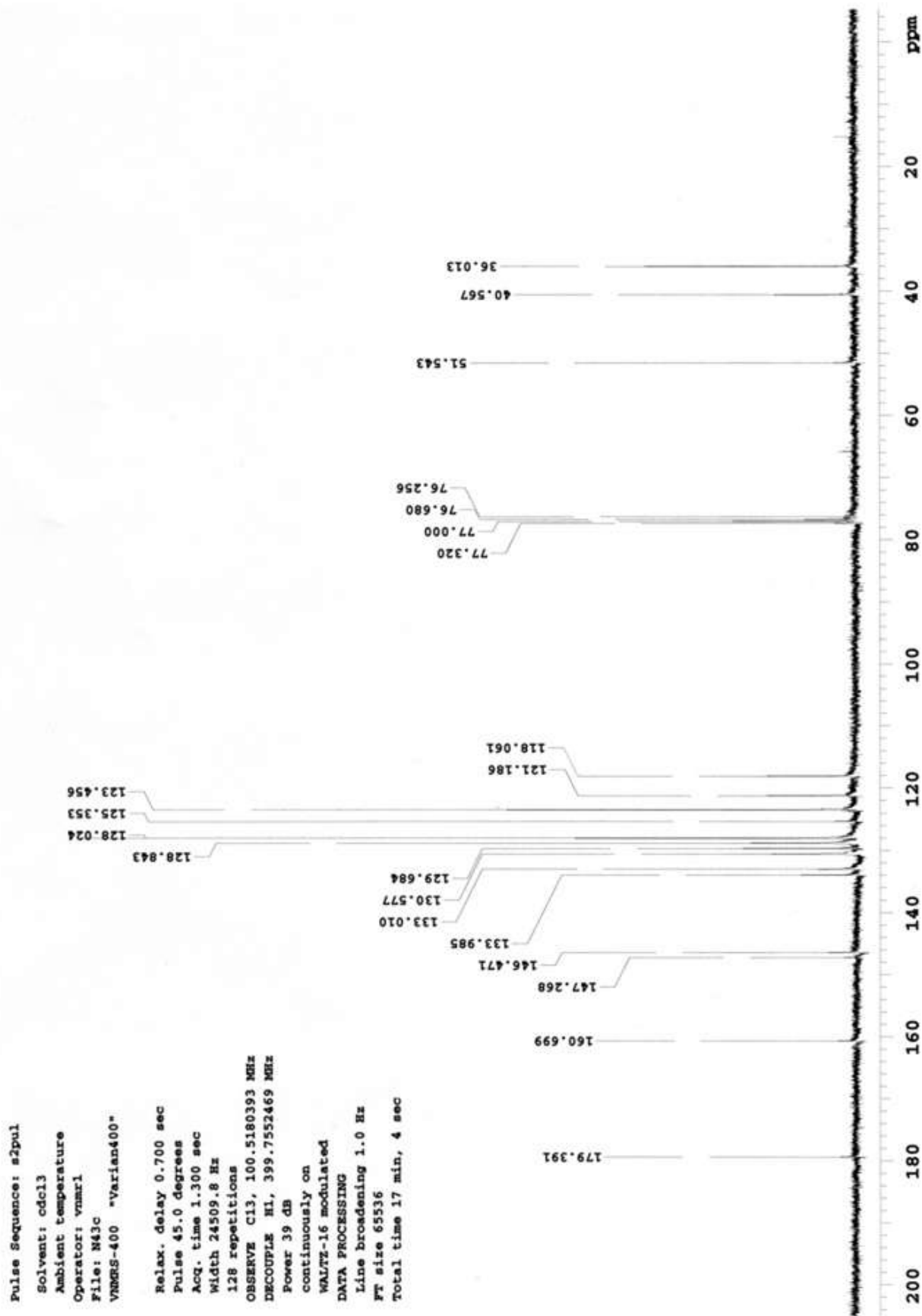


### 4-Allyl-4-[1-(4-nitro-phenyl)-but-3-enyl]-2-phenyl-4H-oxazol-5-one (3e)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

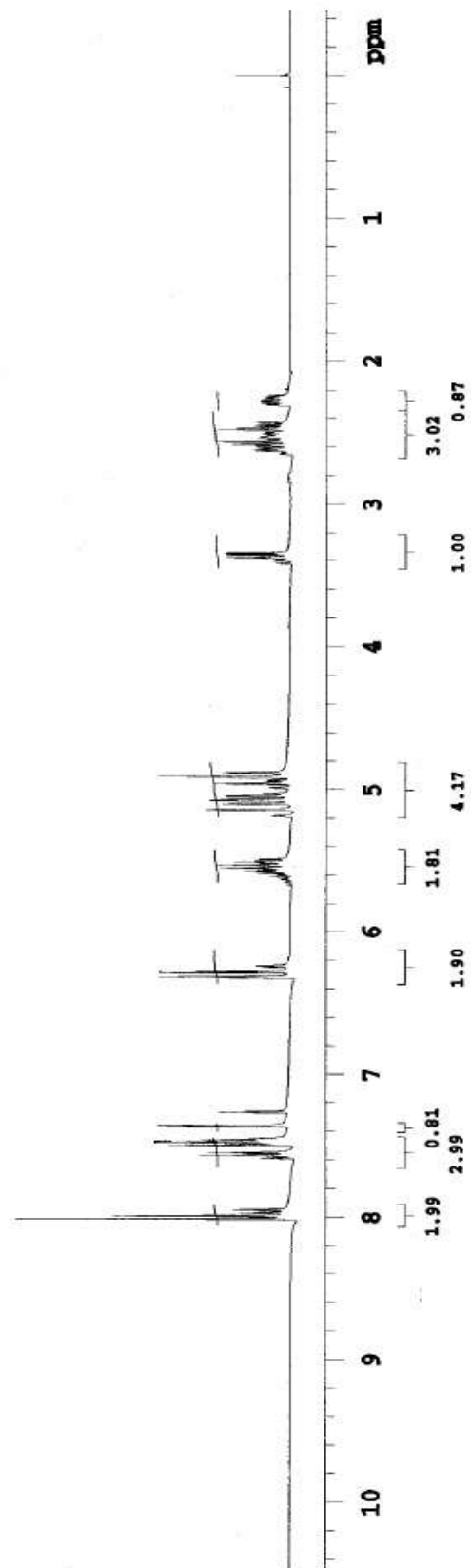
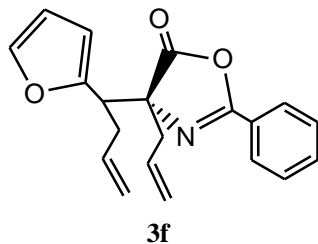


$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )



### 4-Allyl-4-(1-(furan-2-yl)but-3-enyl)-2-phenyloxazol-5(4H)-one (3f)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmar1

VNMR-400 "Varian400"

Relax. delay 1.500 sec

Pulse 45.0 degrees

Acq. time 3.500 sec

Width 6410.3 Hz

8 repetitions

OBSERVE F1, 399.7630181 MHz

DATA PROCESSING

Line broadening 0.2 Hz

FT size 65536

Total time 0 min, 40 sec

<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmari

VNMR-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

256 repetitions

OBSERVE C13, 100.5180447 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

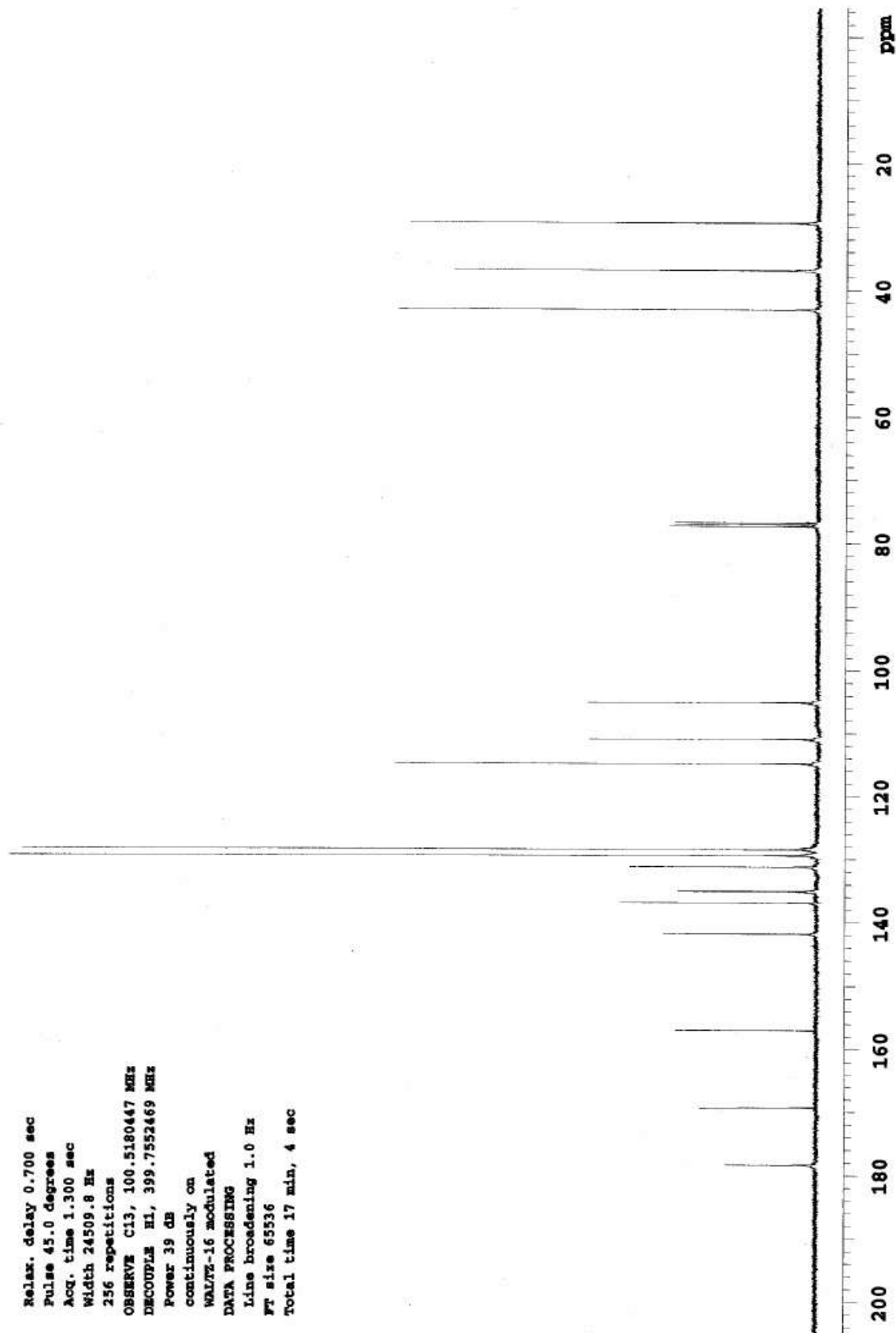
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

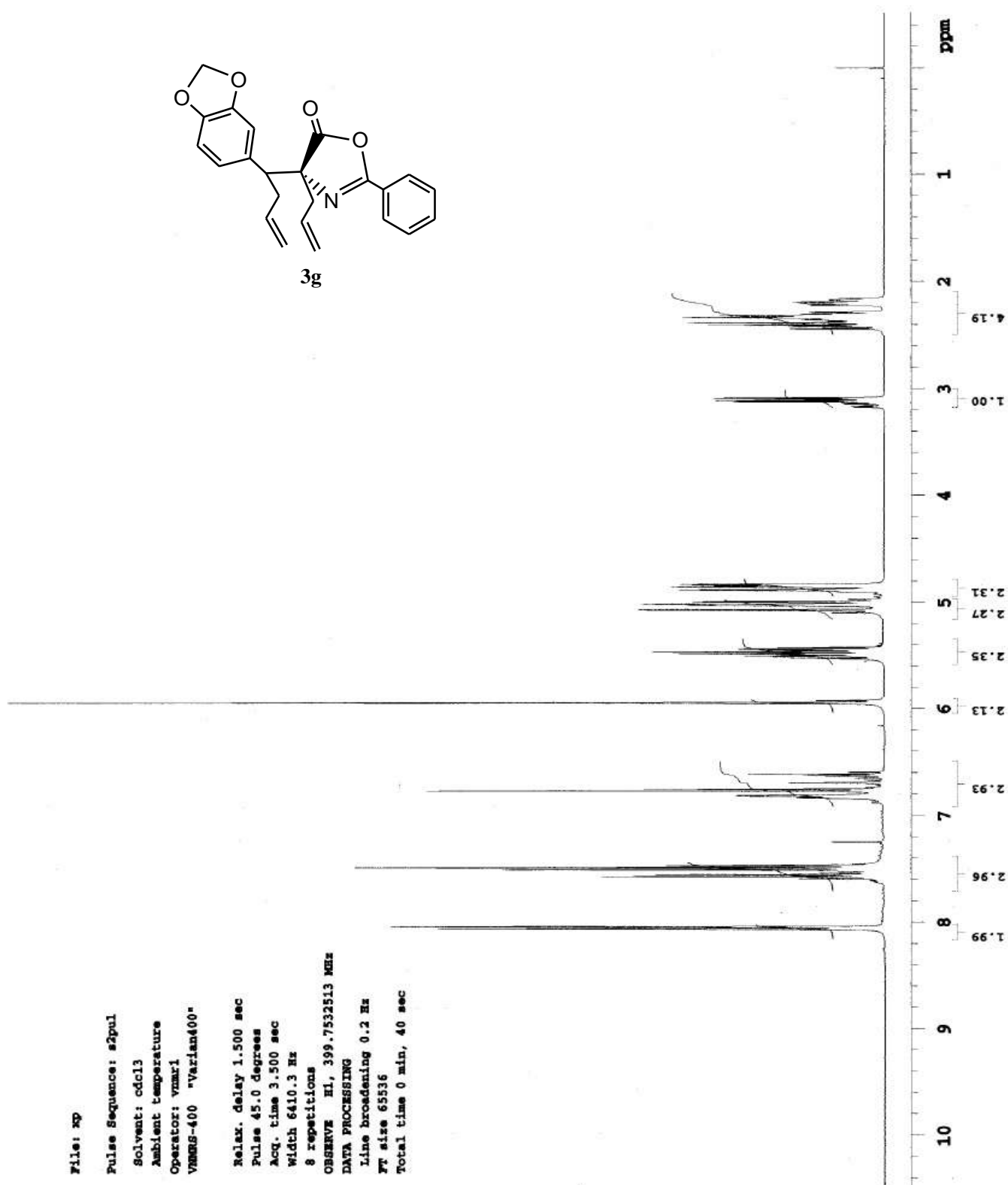
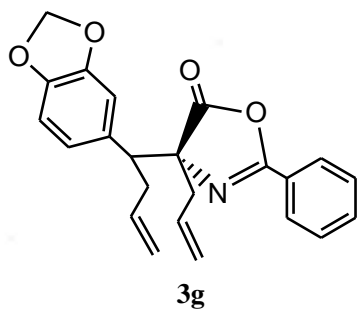
FT size 65536

Total time 17 min, 4 sec



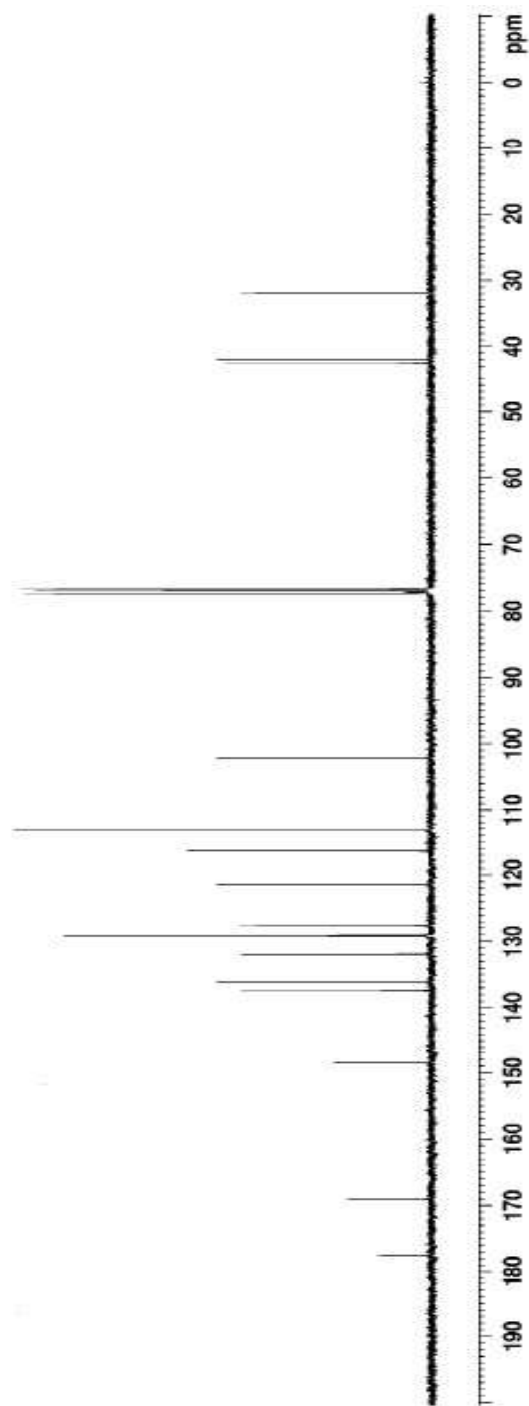
### 4-Allyl-4-(1-benzo[1,3]dioxol-5-yl-but-3-enyl)-2-phenyl-4H-oxazol-5-one (3g)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

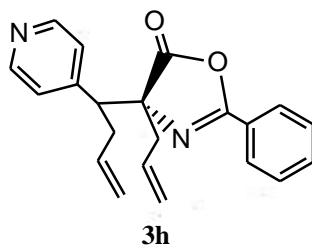
Pulse Sequence: sZpul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmm1  
VNMRS-400 "Varian400"  
  
Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
384 repetitions  
OBSERVE C13, 100.5204904 MHz  
DECOUPLE H1, 399.7650184 MHz  
Power 39 dB  
continuously on  
WALTZ-16 modulated  
DATA PROCESSING  
line broadening 1.0 Hz  
F1 size 65536  
Total time 17 min, 4 sec



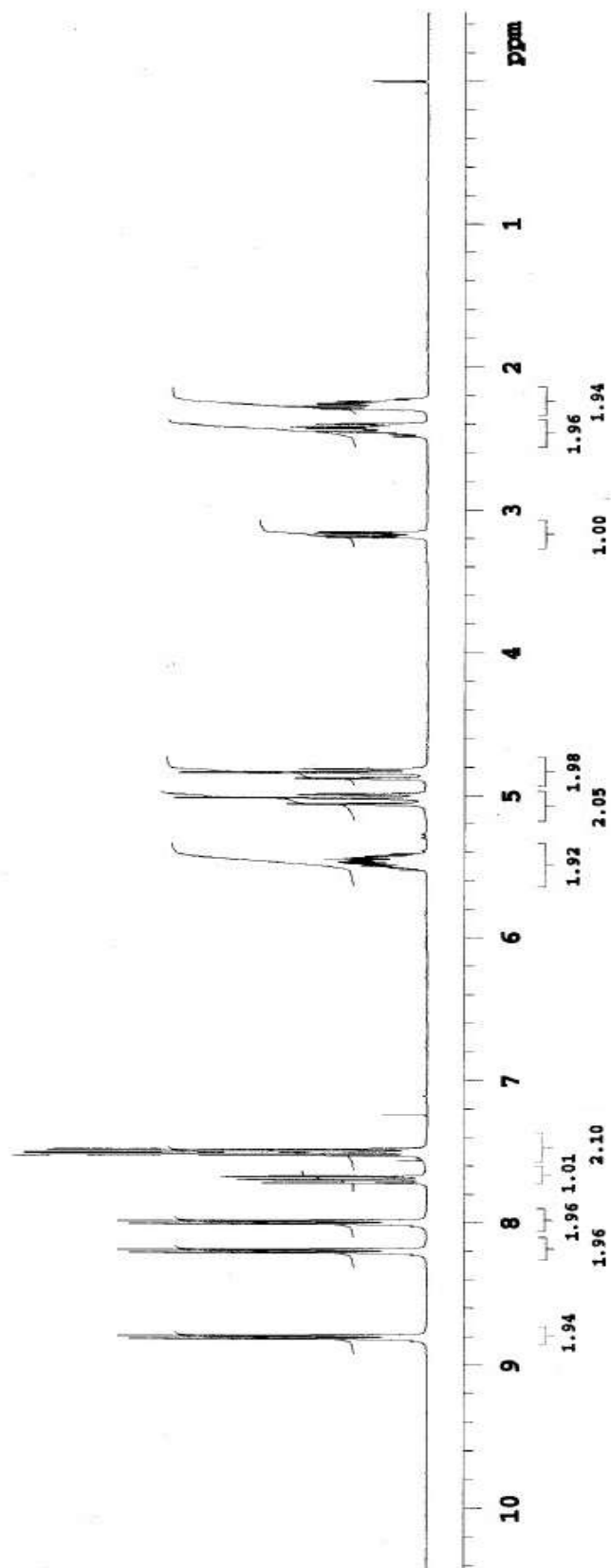


### 4-Allyl-2-phenyl-4-(1-(pyridin-4-yl)but-3-enyl)oxazol-5(4H)-one (3h)

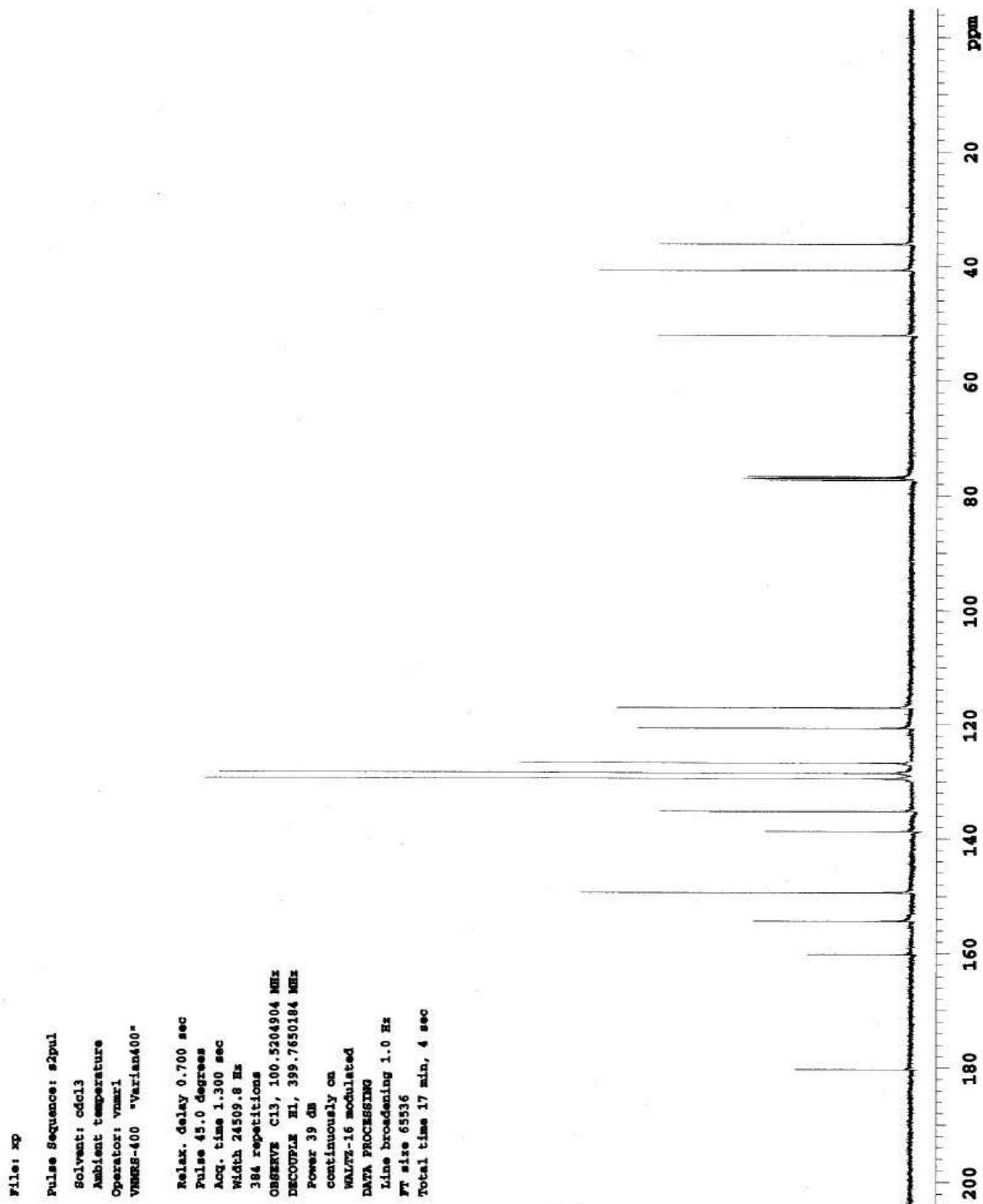
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VMS-400 "Varian400"  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE H1, 399.7630265 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec

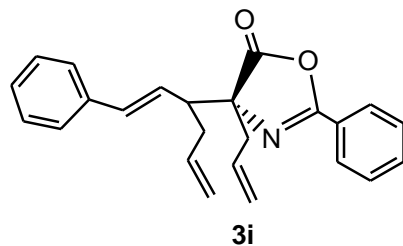


<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)



(*E/Z*)-4-allyl-2-phenyl-4-(1-phenylhexa-1,5-dien-3-yl)oxazol-5(4H)-one (3i)

<sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>)



F71101.D

Pulse Sequence: zgpg30

Solvent: cdcl3

Ambient temperature

Operator: vmmr1

VMMR-400 "Varian400"

Relax. delay 1.500 sec

Pulse 45.0 degrees

Acq. time 3.500 sec

NUC1 6410.3 Hz

8 repetitions

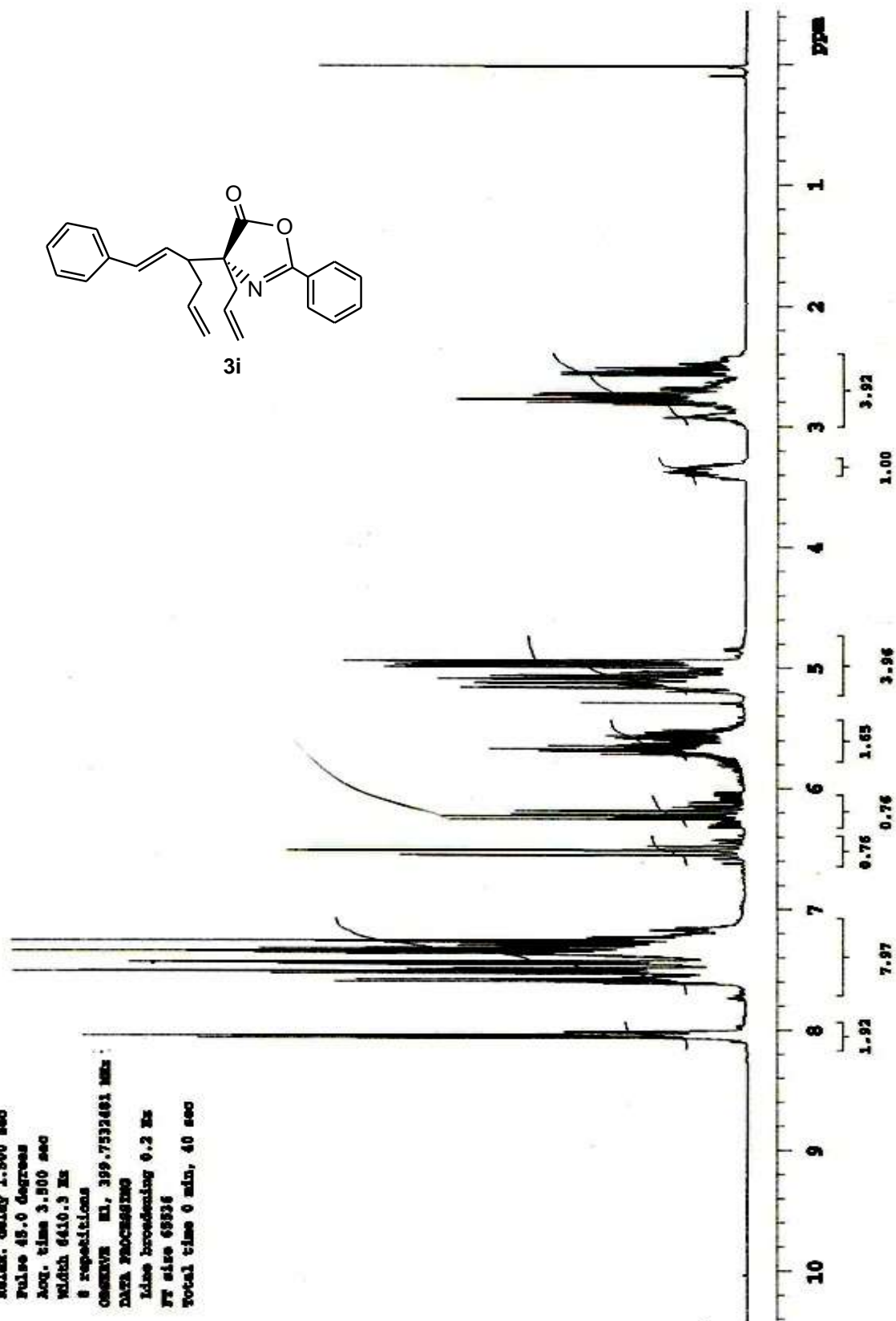
CONVPR EL, 399.7532601 MHz

DATA PROCESSING

Gain broadening 0.2 Hz

FT size 65536

Total time 0 min, 40 sec



<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

kw\_7\_97\_crude

Sample: N31C

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vumr1

VNMR-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5180380 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

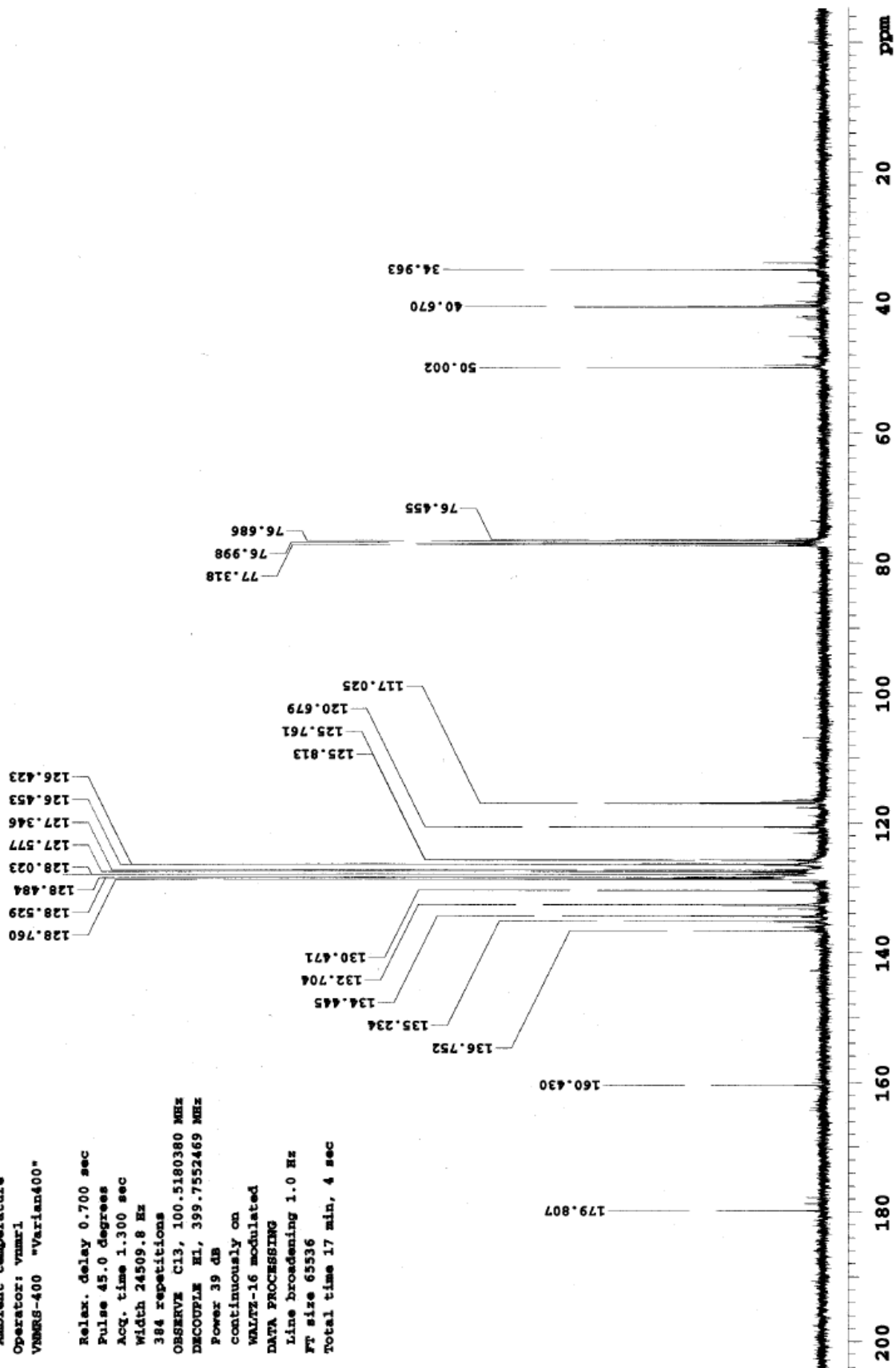
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

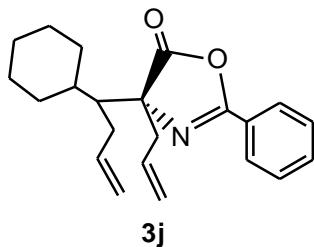
FT size 65536

Total time 17 min, 4 sec

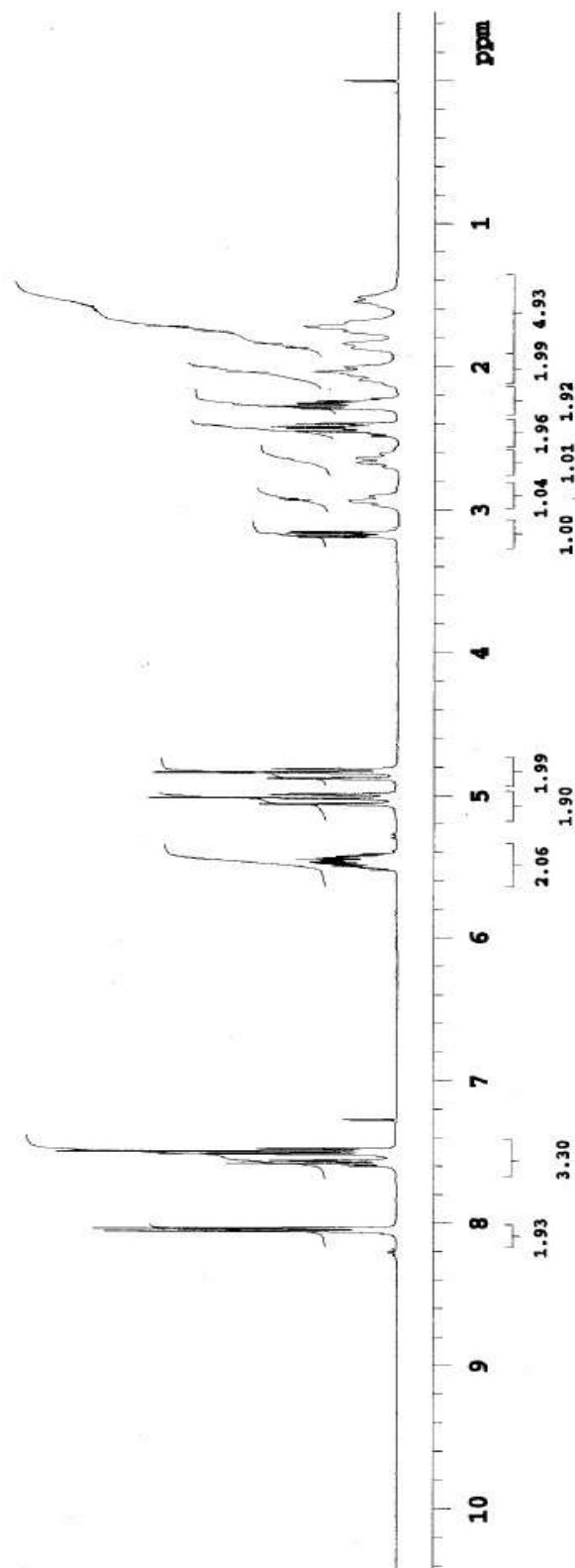


### 4-Allyl-4-(1-cyclohexylbut-3-enyl)-2-phenyloxazol-5(4H)-one (3j)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

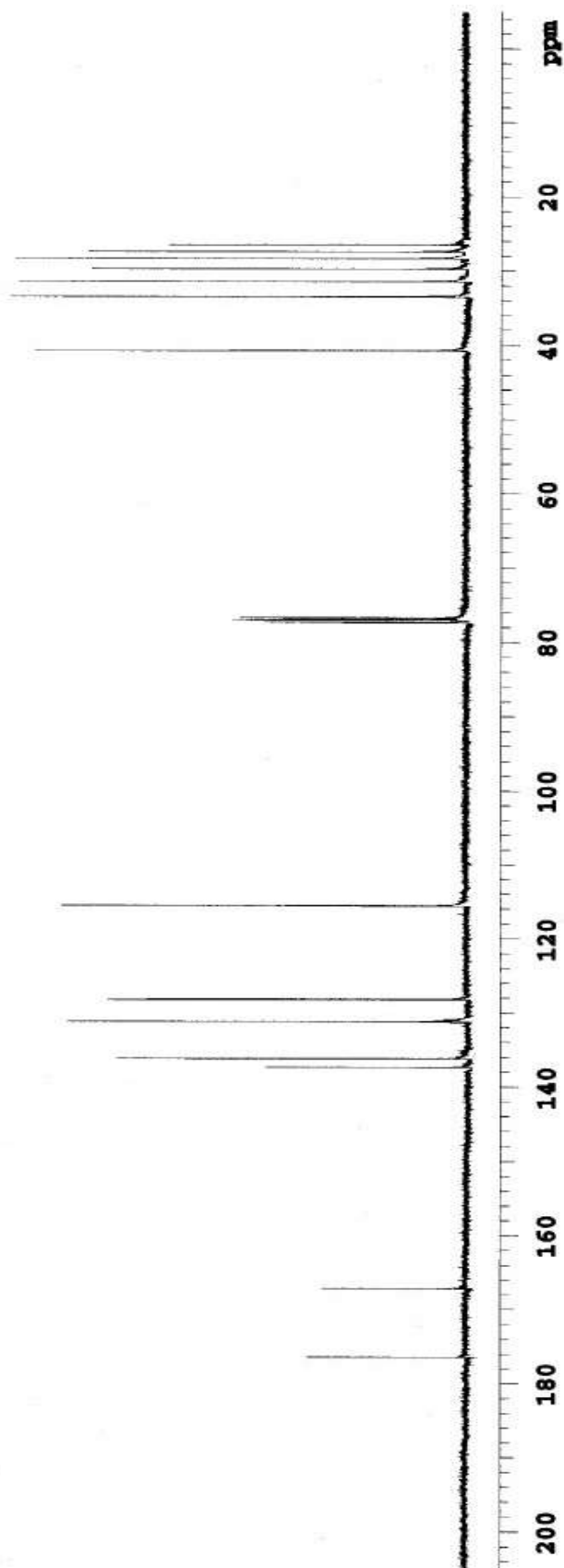


File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmar1  
VMSB-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE F1, 399.7630265 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
Ft size 65536  
Total time 0 min, 40 sec



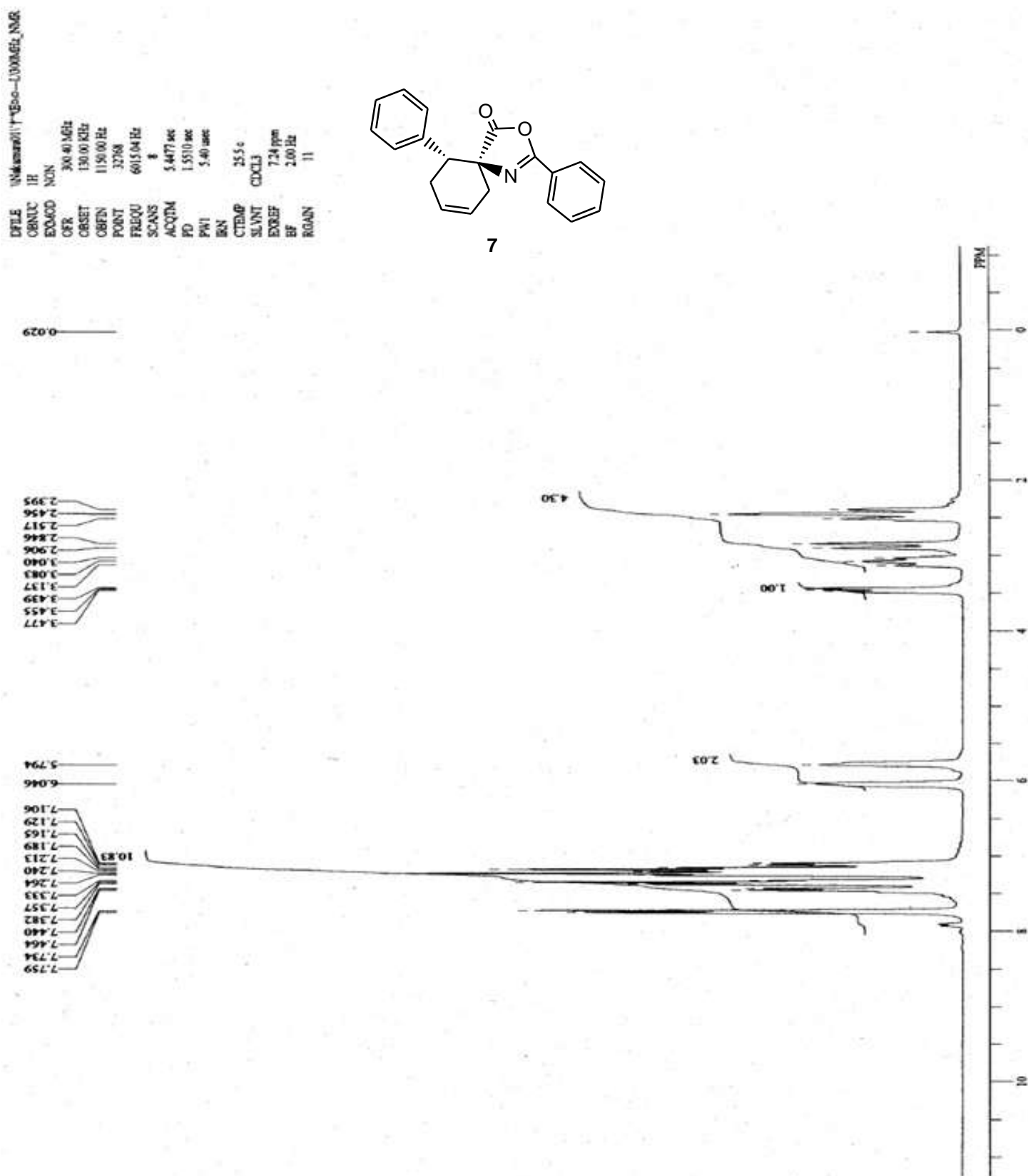
<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VNMRS-400 "Varian400"  
  
Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
384 repetitions  
OBSERVE C13, 100.5204904 MHz  
DECOUPLE H1, 399.7650184 MHz  
Power 39 dB  
continuously on  
WALTZ-16 modulated  
DATA PROCESSING  
Line broadening 1.0 Hz  
FT size 65536  
Total time 17 min, 4 sec



## 2,10-Diphenyl-3-oxa-1-aza-spiro[4.5]deca-1,7-dien-4-one (7)

$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmari

VNMRB-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5204904 MHz

DECOUPLE H1, 399.7650184 MHz

Power 39 dB

continuously on

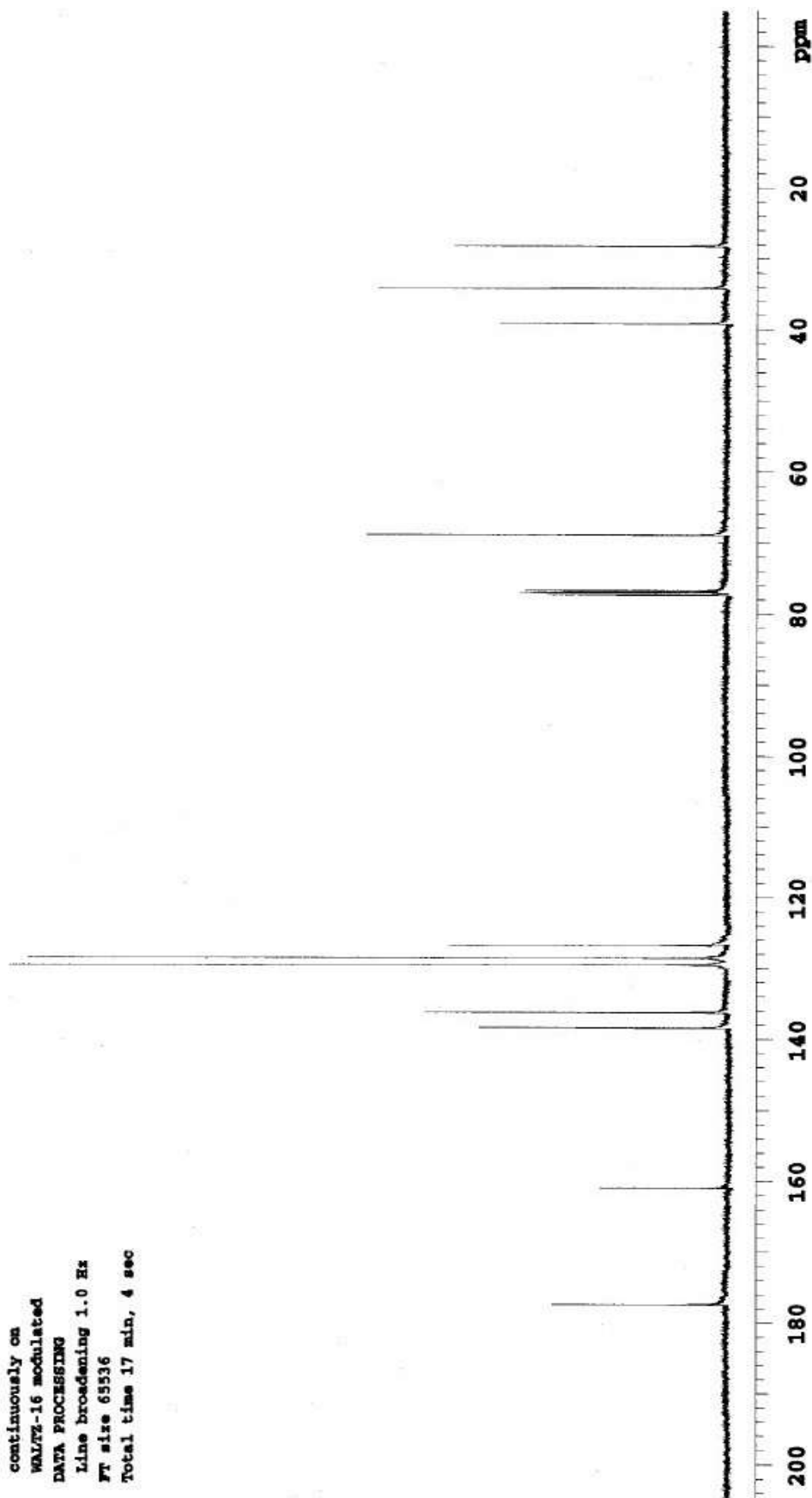
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 65536

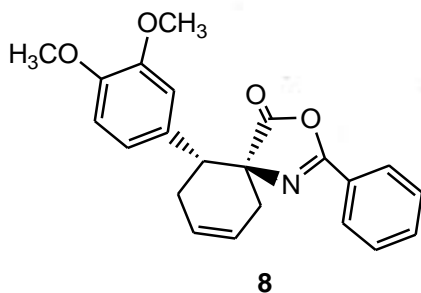
Total time 17 min, 4 sec



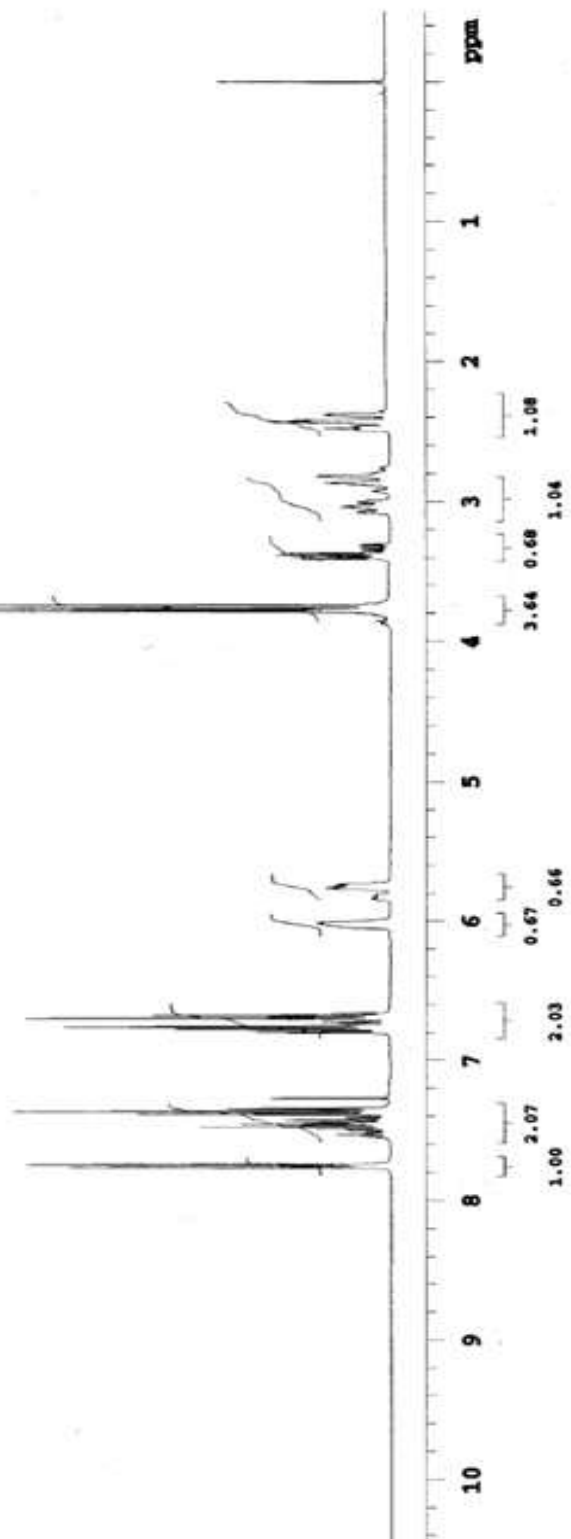


# 10-(3,4-Dimethoxy-phenyl)-2-phenyl-3-oxa-1-aza-spiro[4.5]deca-1,7-dien-4-one (8)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



STANDARD 1H OBSERVE - profile  
Sample: cyclohexen  
File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmari  
VMHS-400 "Varian400"  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE H1, 399.7630130 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmari

VMRS-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

256 repetitions

OBSERVE C13, 100.5180447 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

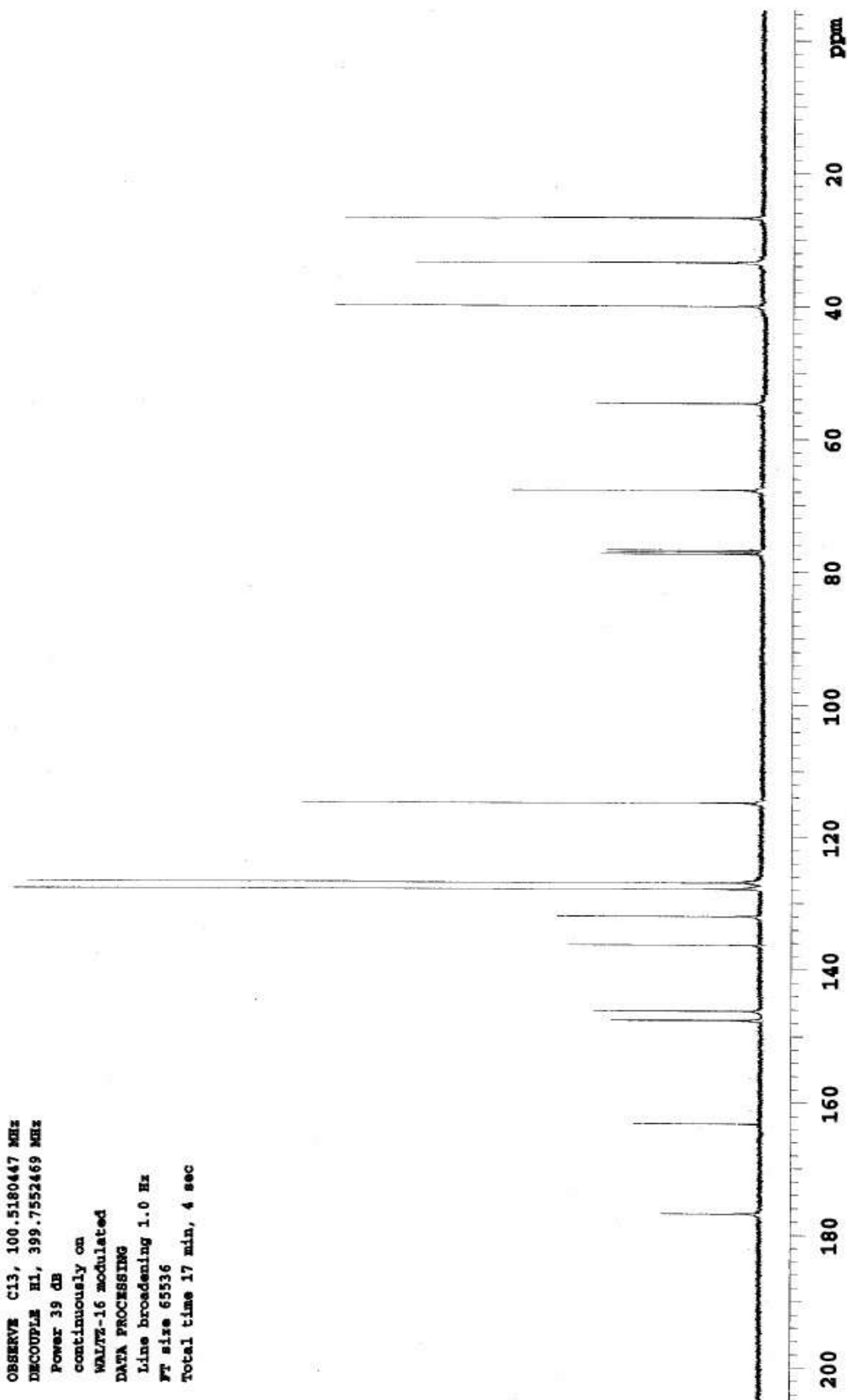
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

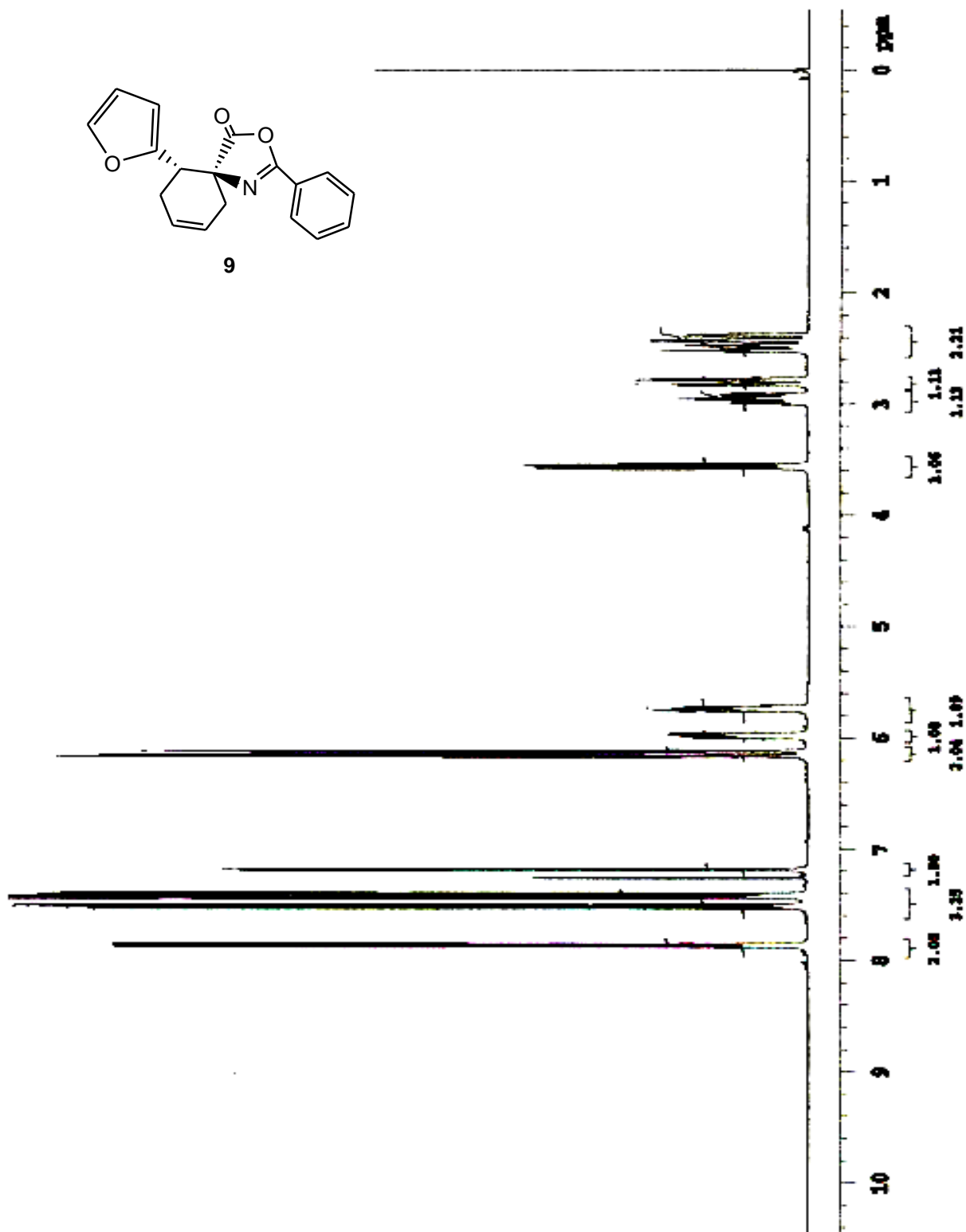
FT size 65536

Total time 17 min, 4 sec

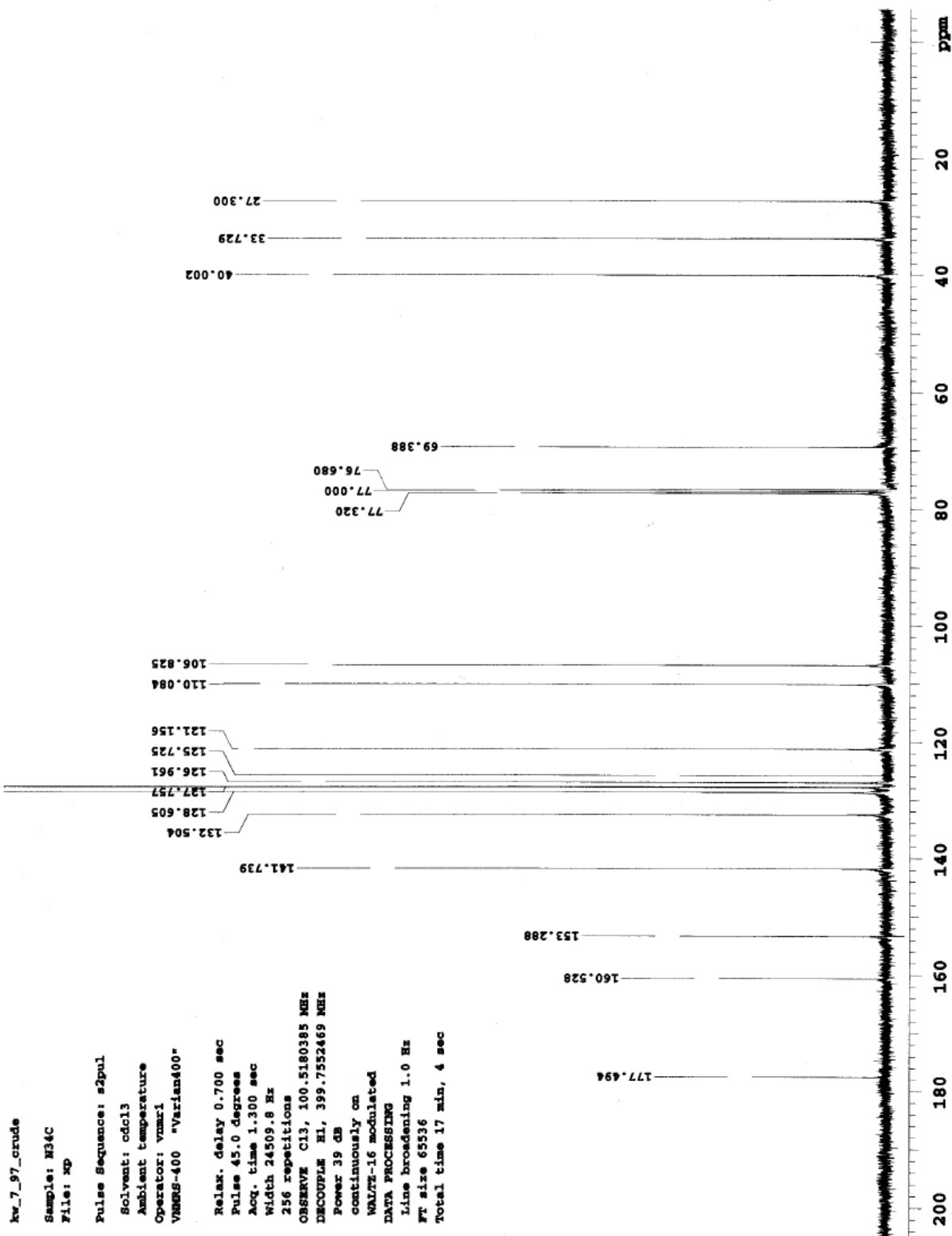


### 10-Furan-2-yl-2-phenyl-3-oxa-1-aza-spiro[4.5]deca-1,7-dien-4-one (9)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )

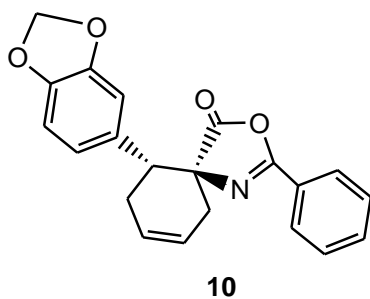


# <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

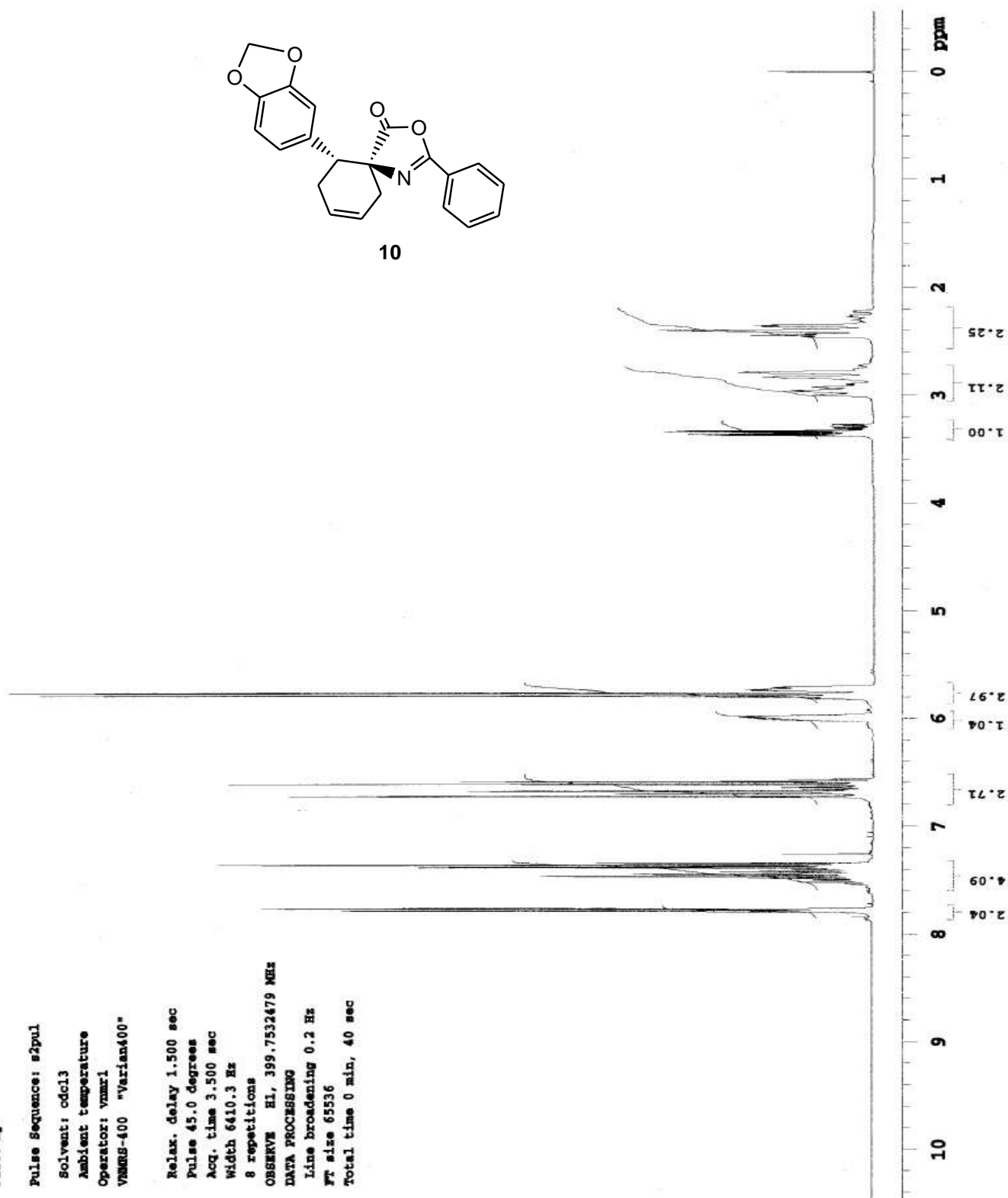


### 10-Benzo[1,3]dioxol-5-yl-2-phenyl-3-oxa-1-aza-spiro[4.5]deca-1,7-dien-4-one (10)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VNMRS-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE E1, 399.7532479 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
File: N43c  
VNMR-400 "Varian400"

Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
128 repetitions

OBSERVE C13, 100.5180393 MHz  
DECOUPLE H1, 399.7552469 MHz  
Power 39 dB

continuously on

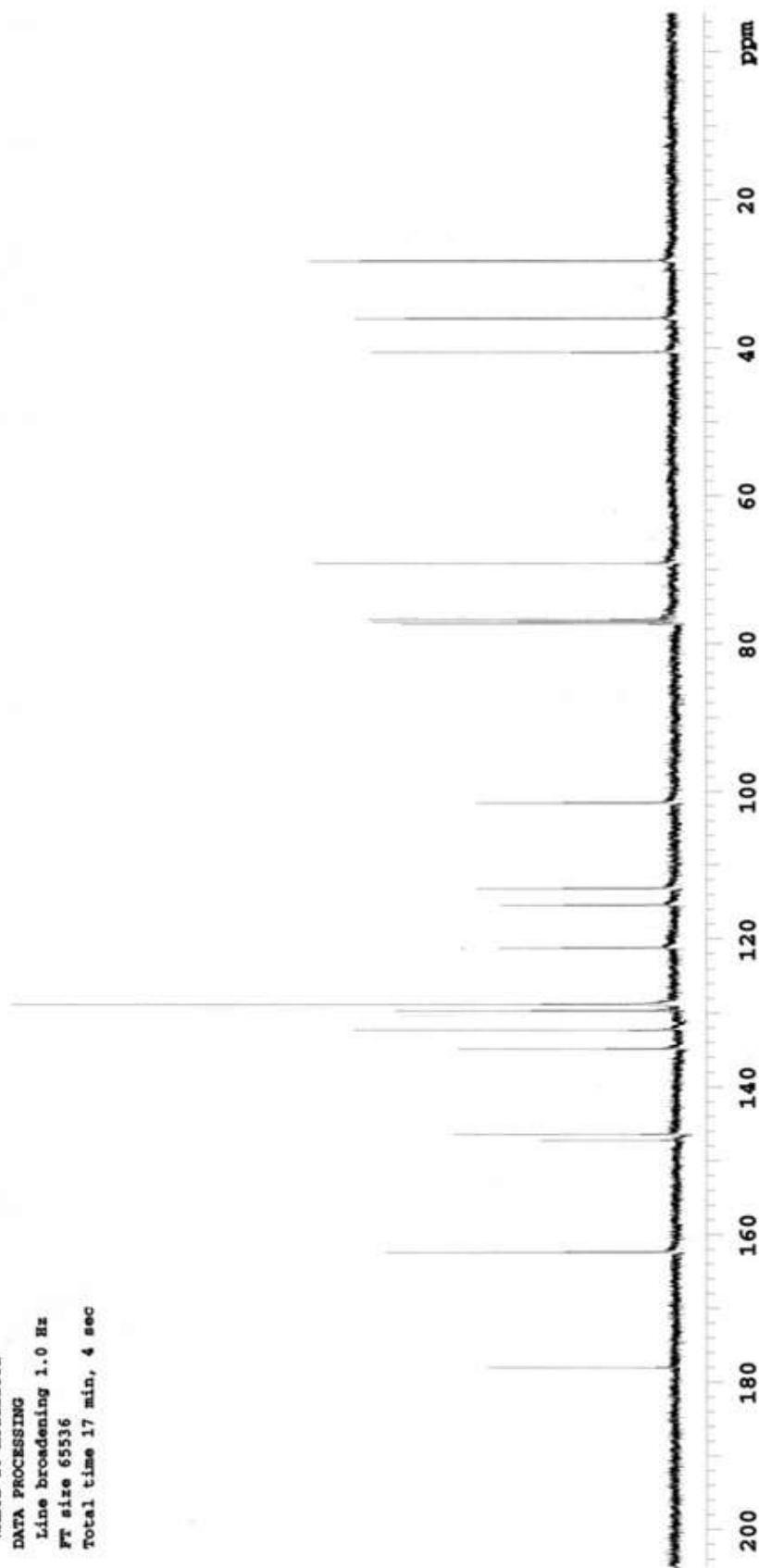
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

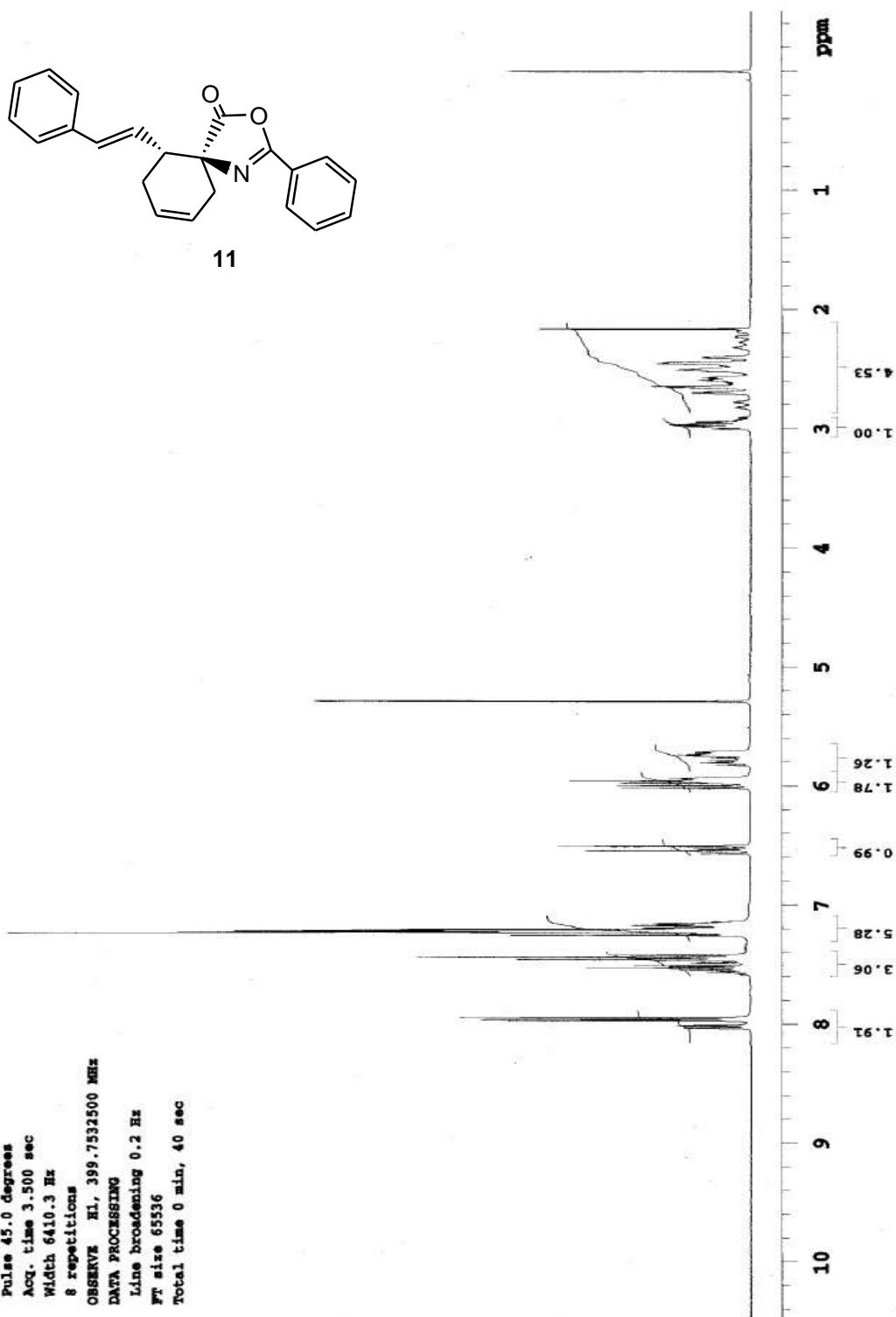
FT size 65536

Total time 17 min, 4 sec

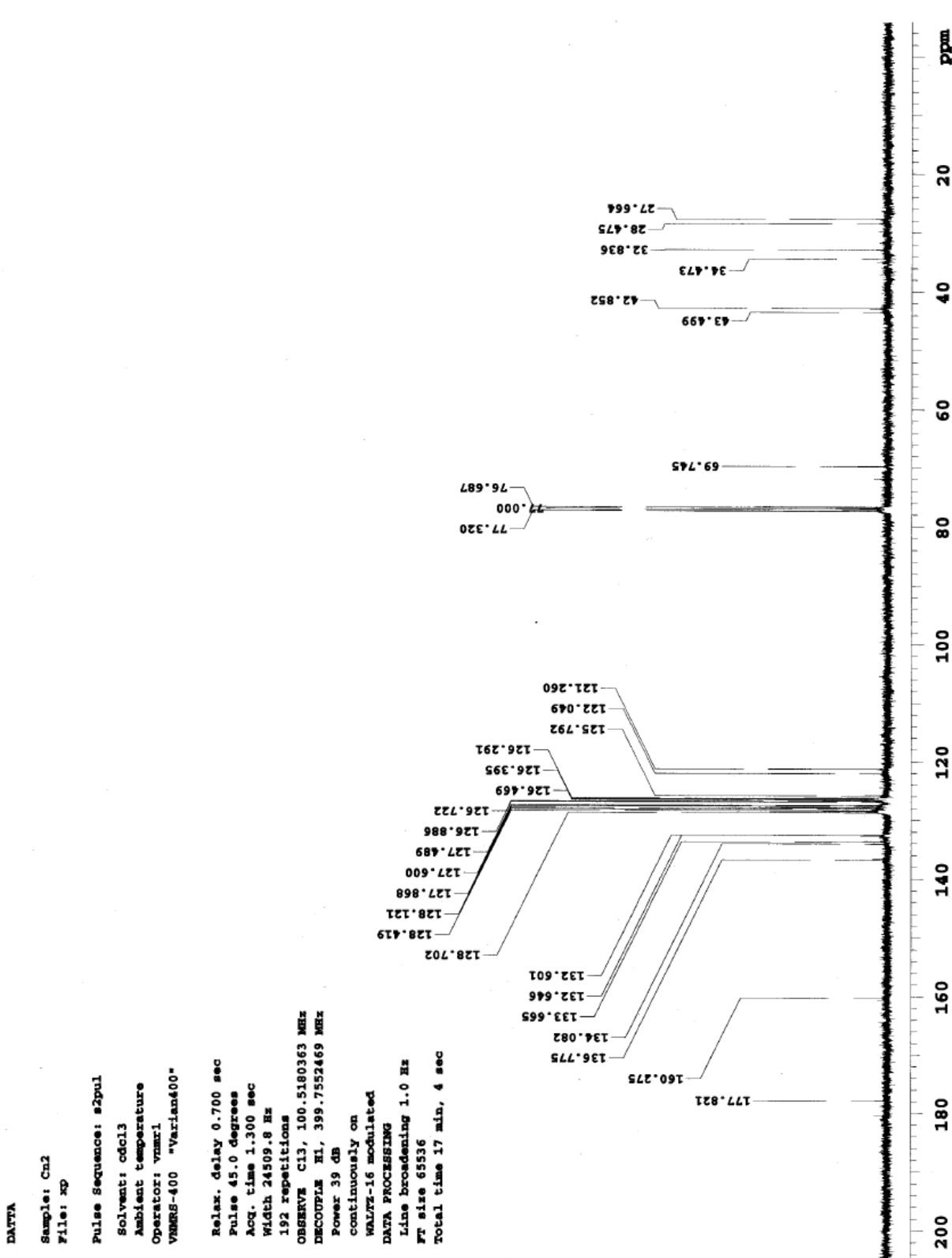


## 2-Phenyl-10-styryl-3-oxa-1-aza-spiro[4.5]deca-1,7-dien-4-one (11)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



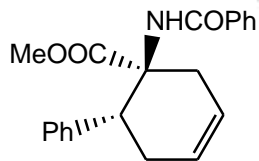
# <sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)



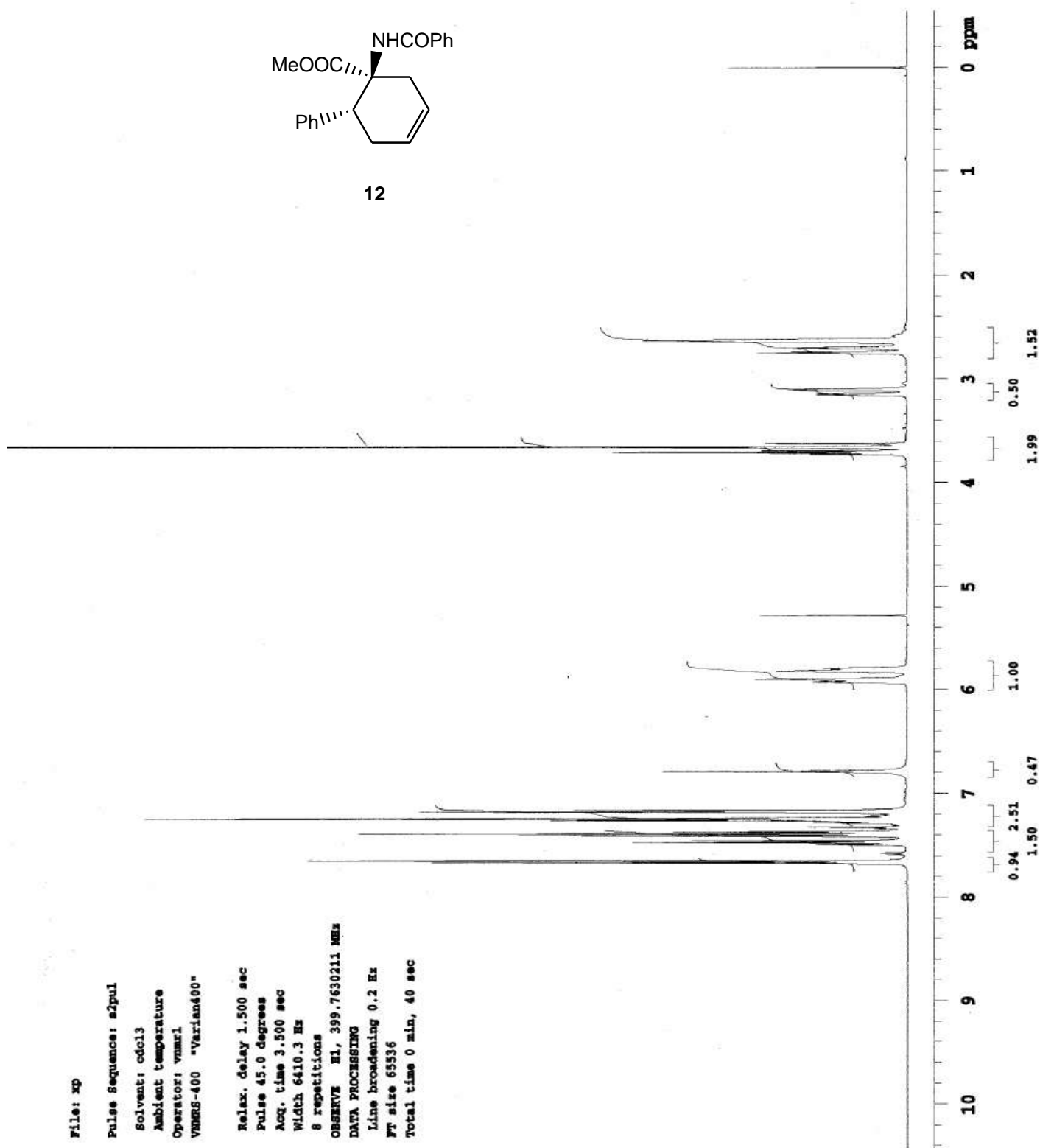


# Methyl(1-Benzoylamino-6-phenyl-cyclohex-3-enecarboxylate) (12)

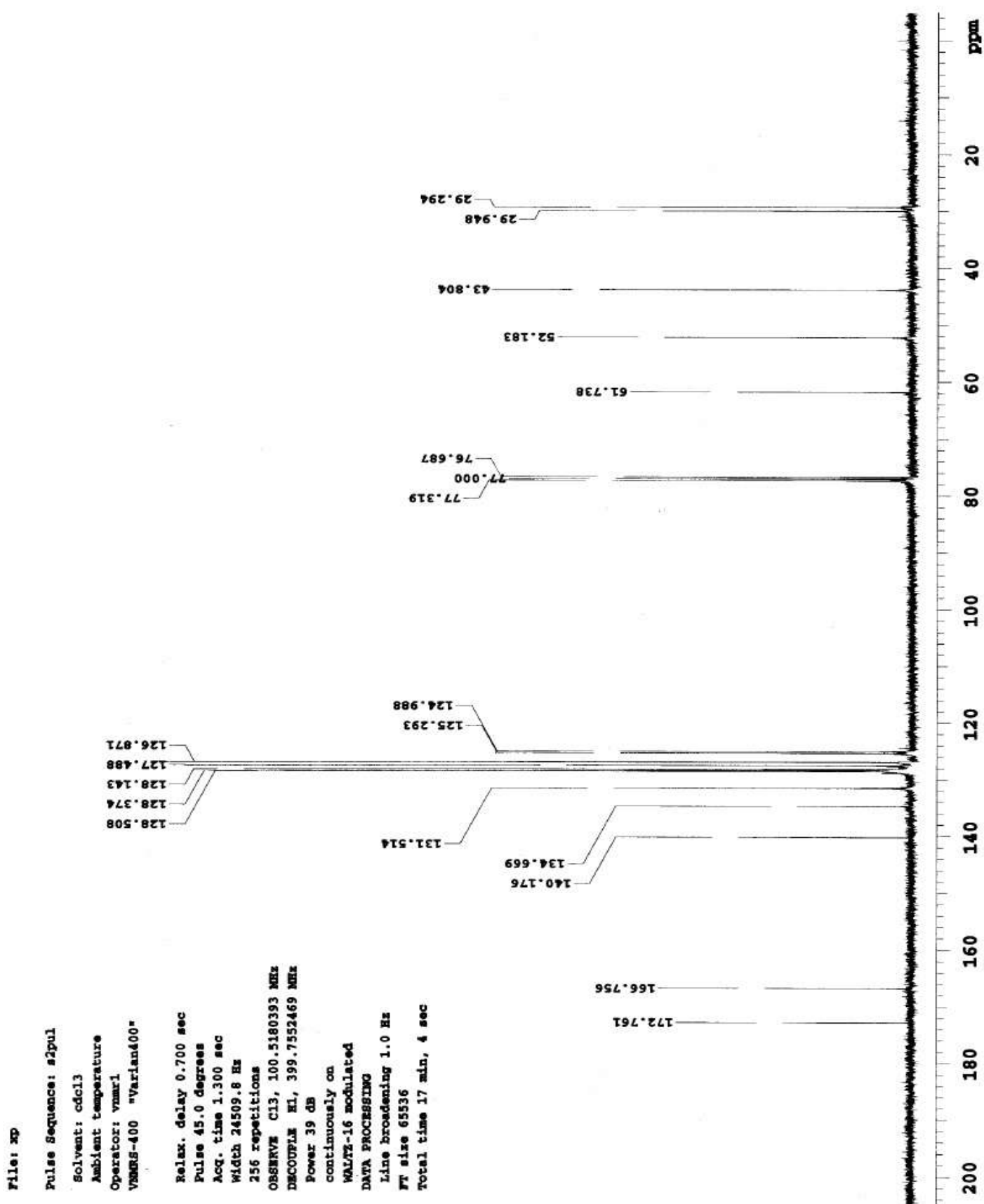
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



12

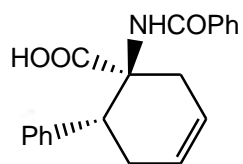


<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)



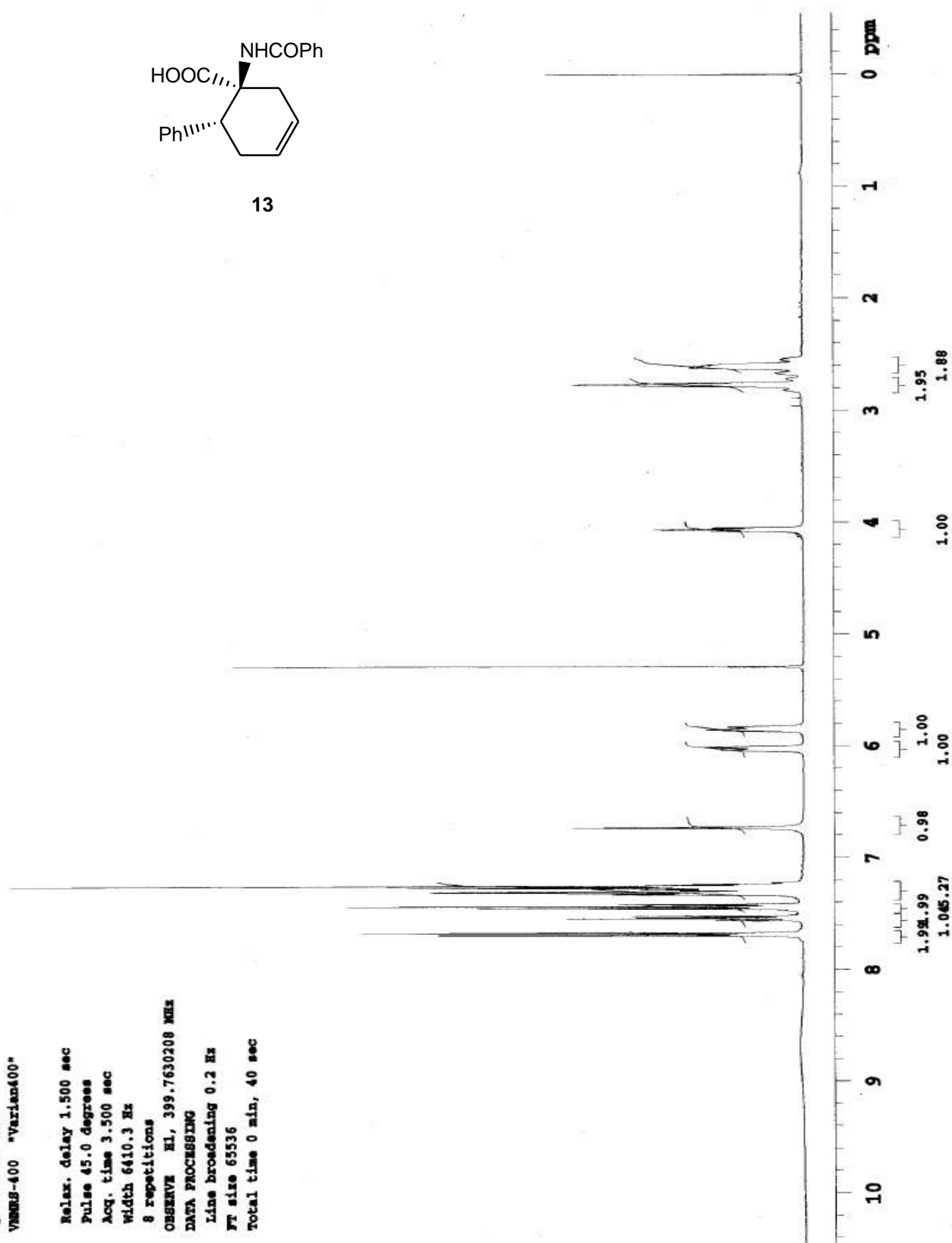
# 1-Benzoylamino-6-phenyl-cyclohex-3-enecarboxylic acid (13)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



13

File: XP  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmar1  
VNMRS-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE F1, 399.7630208 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vnmr1

VNMR-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5204904 MHz

DECOUPLE H1, 399.7650184 MHz

Power 39 dB

continuously on

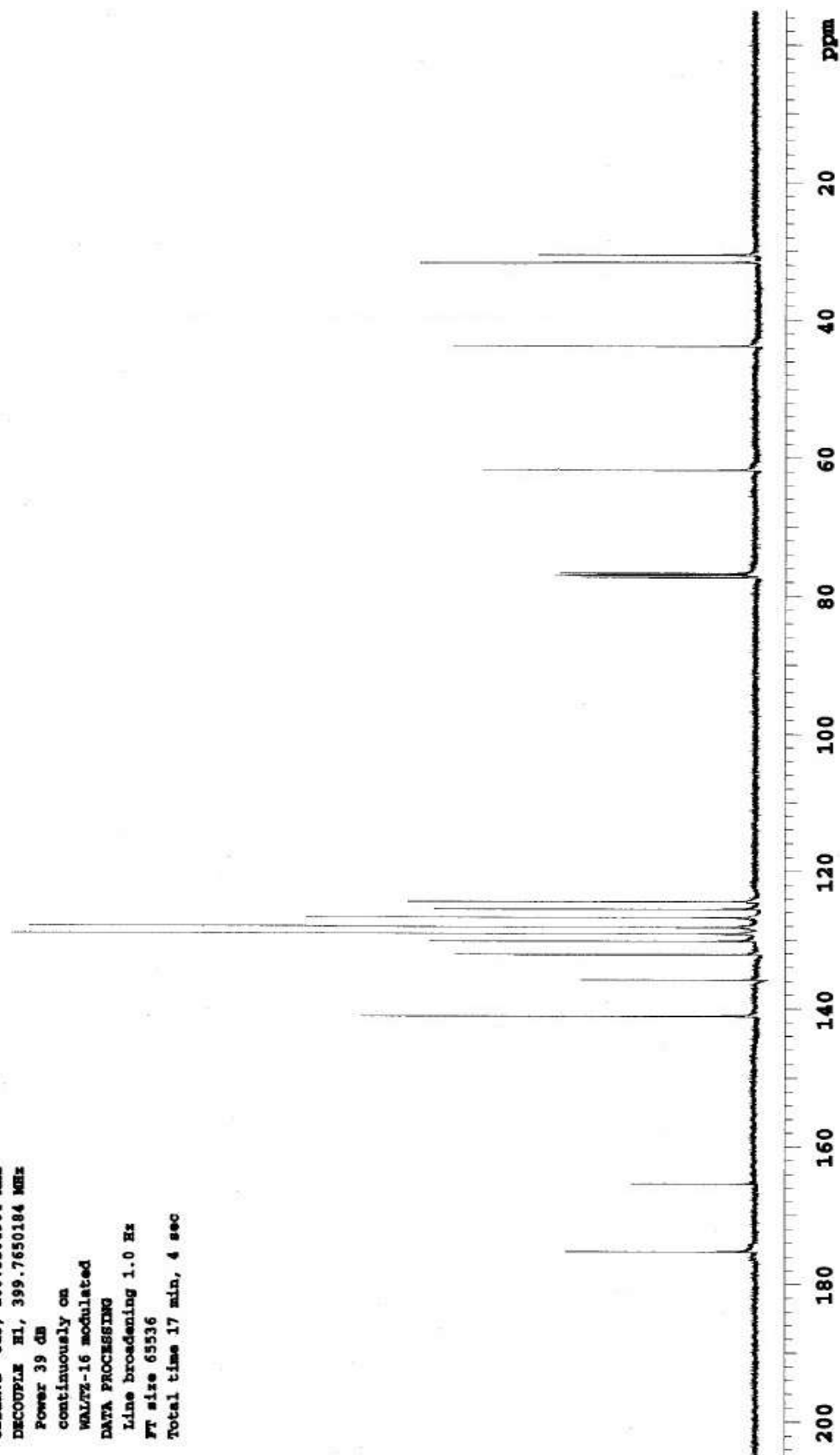
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

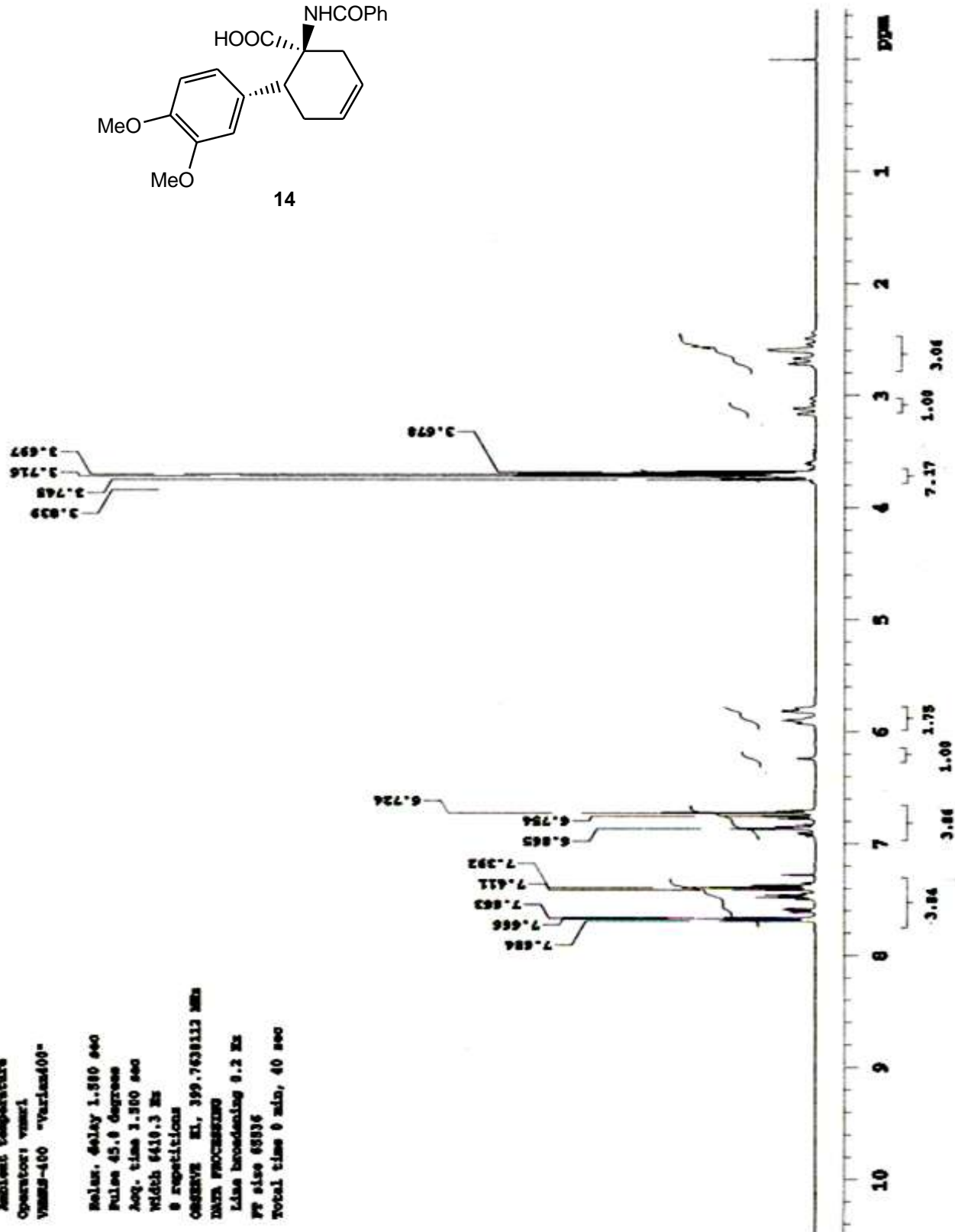
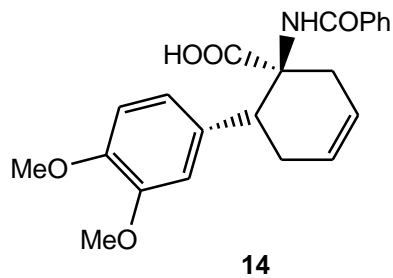
FT size 65536

Total time 17 min, 4 sec



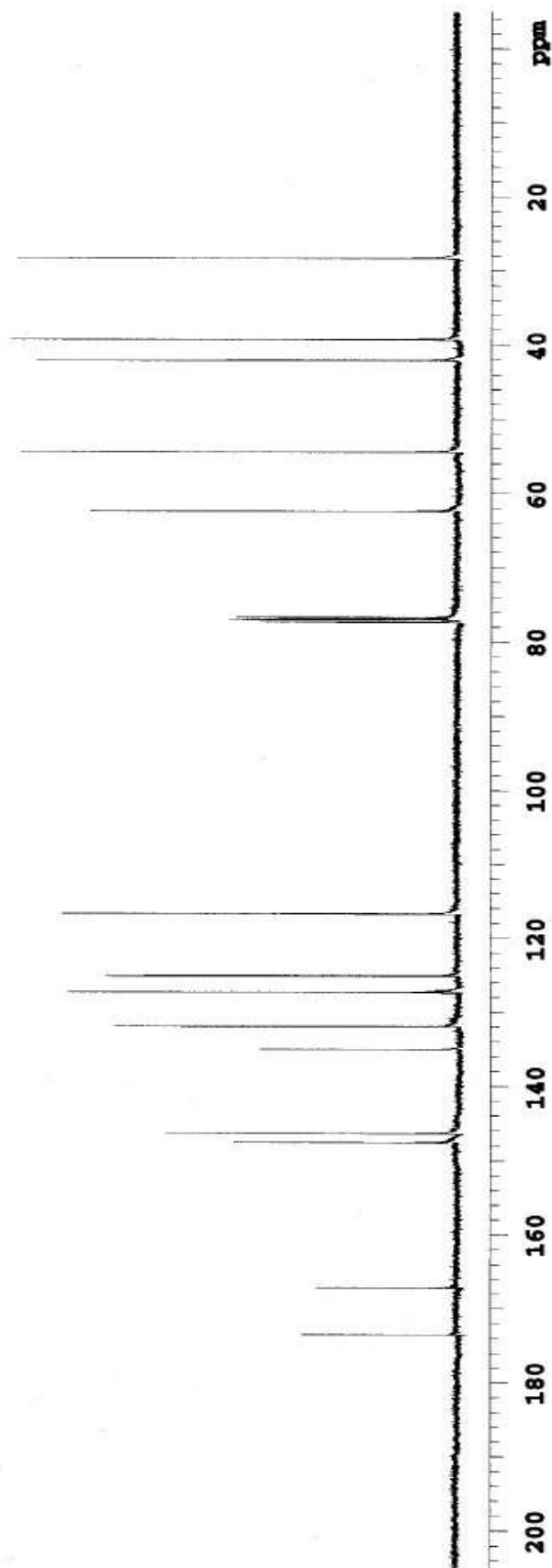
# 1-Benzoylamino-6-(3,4-dimethoxy-phenyl)-cyclohex-3-enecarboxylic acid (14)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



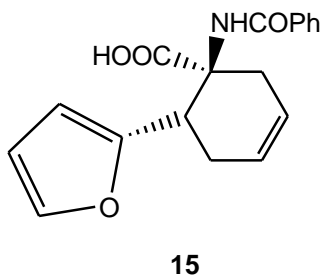
<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmari  
VMSR-400 "Varian400"  
  
Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
384 repetitions  
OBSERVE C13, 100.5204904 MHz  
DECOUPLE H1, 399.7650184 MHz  
Power 39 dB  
continuously on  
WALTZ-16 modulated  
DATA PROCESSING  
Line broadening 1.0 Hz  
FT size 65536  
Total time 17 min, 4 sec



### 6-Benzo[1,3]dioxol-5-yl-1-benzoylamino-cyclohex-3-enecarboxylic acid (15)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmar1

VMMS-400 "Varian400"

Relax. delay 1.500 sec

Pulse 45.0 degrees

Acq. time 3.500 sec

Width 6410.3 Hz

8 repetitions

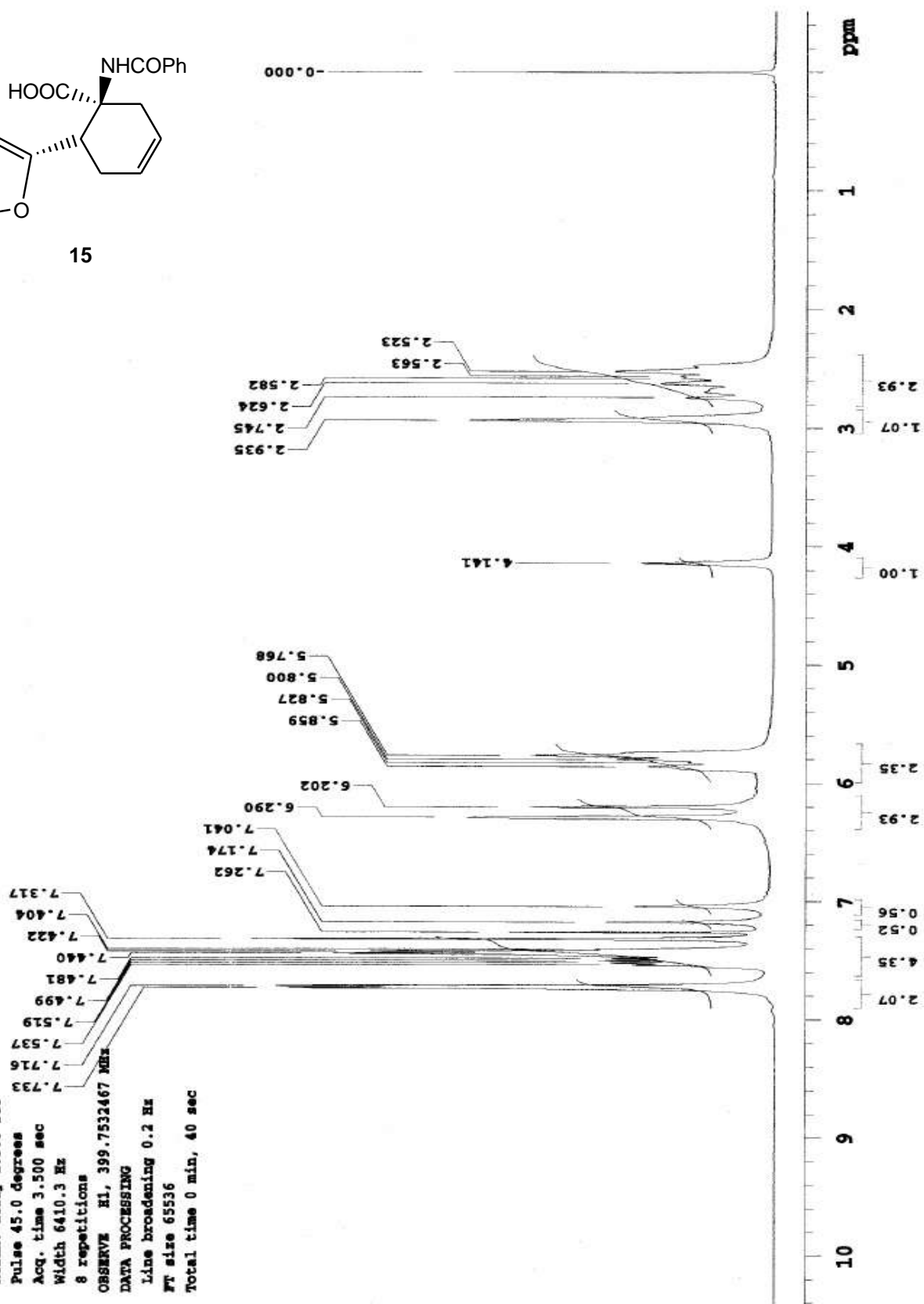
OBSERVE H1, 399.7532467 MHz

DATA PROCESSING

Line broadening 0.2 Hz

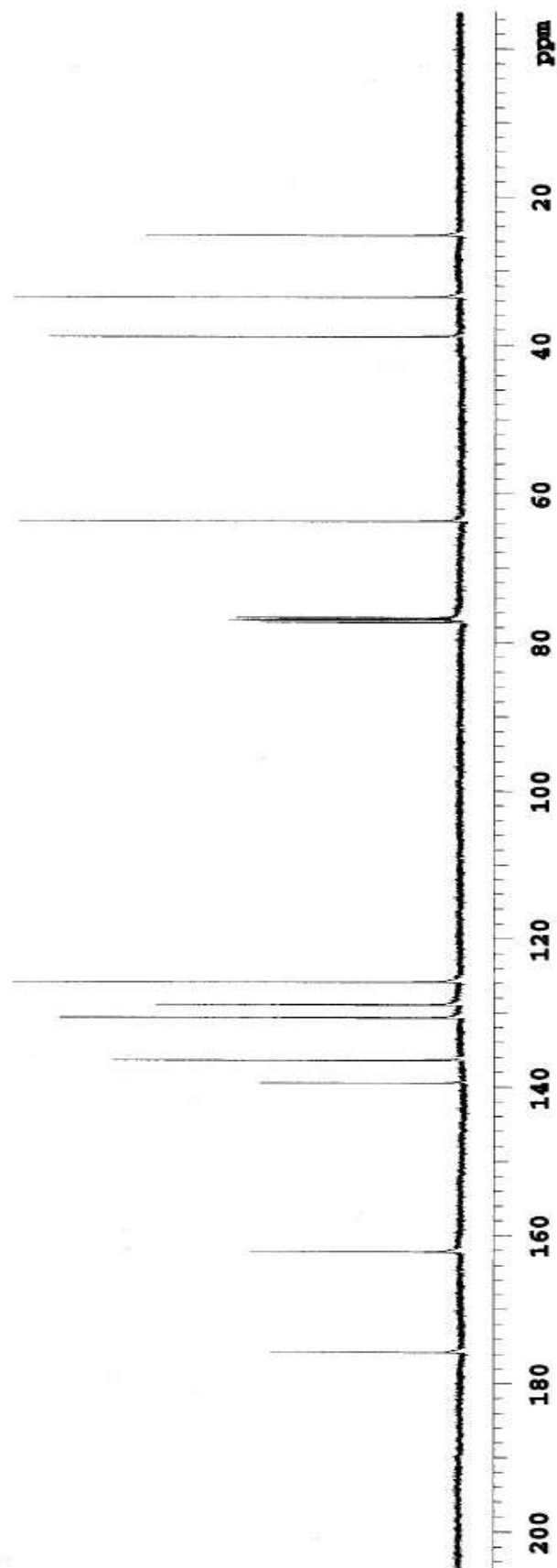
FT size 65536

Total time 0 min, 40 sec



<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

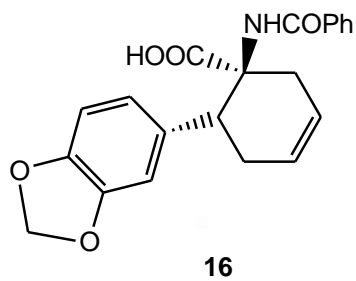
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmari  
VNMRS-400 "Varian400"  
  
Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
384 repetitions  
OBSERVE C13, 100.5204904 MHz  
DECOUPLE H1, 399.7650184 MHz  
Power 39 dB  
continuously on  
WALTZ-16 modulated  
DATA PROCESSING  
Line broadening 1.0 Hz  
FT size 65536  
Total time 17 min, 4 sec



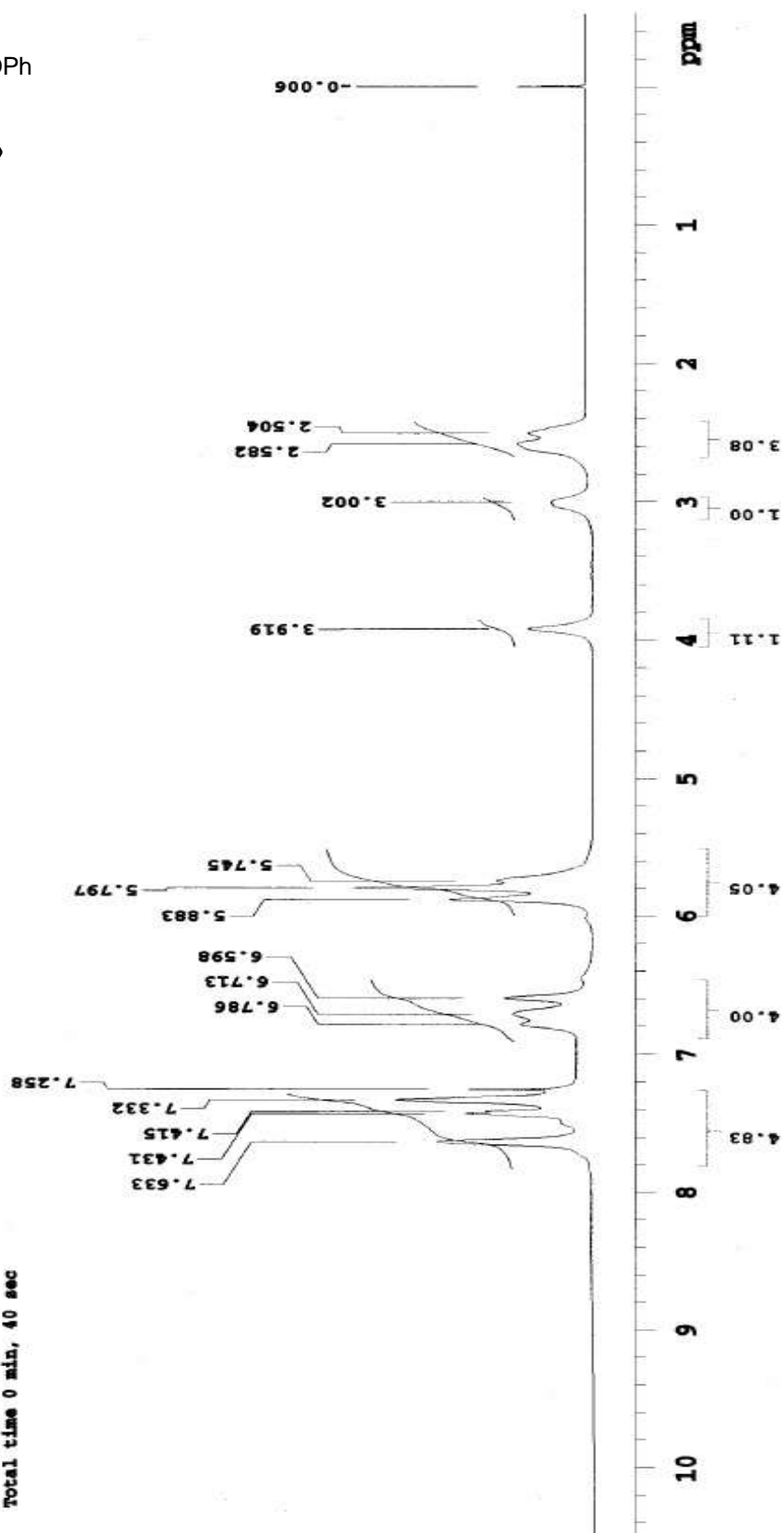


# 1-Benzoylamino-6-furan-2-yl-cyclohex-3-enecarboxylic acid (16)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmar1  
VNMR-400 "Varian400"  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE H1, 399.7532481 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmar1

VNMR5-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

384 repetitions

OBSERVE C13, 100.5204904 MHz

DECOUPLE H1, 399.7650184 MHz

Power 39 dB

continuously on

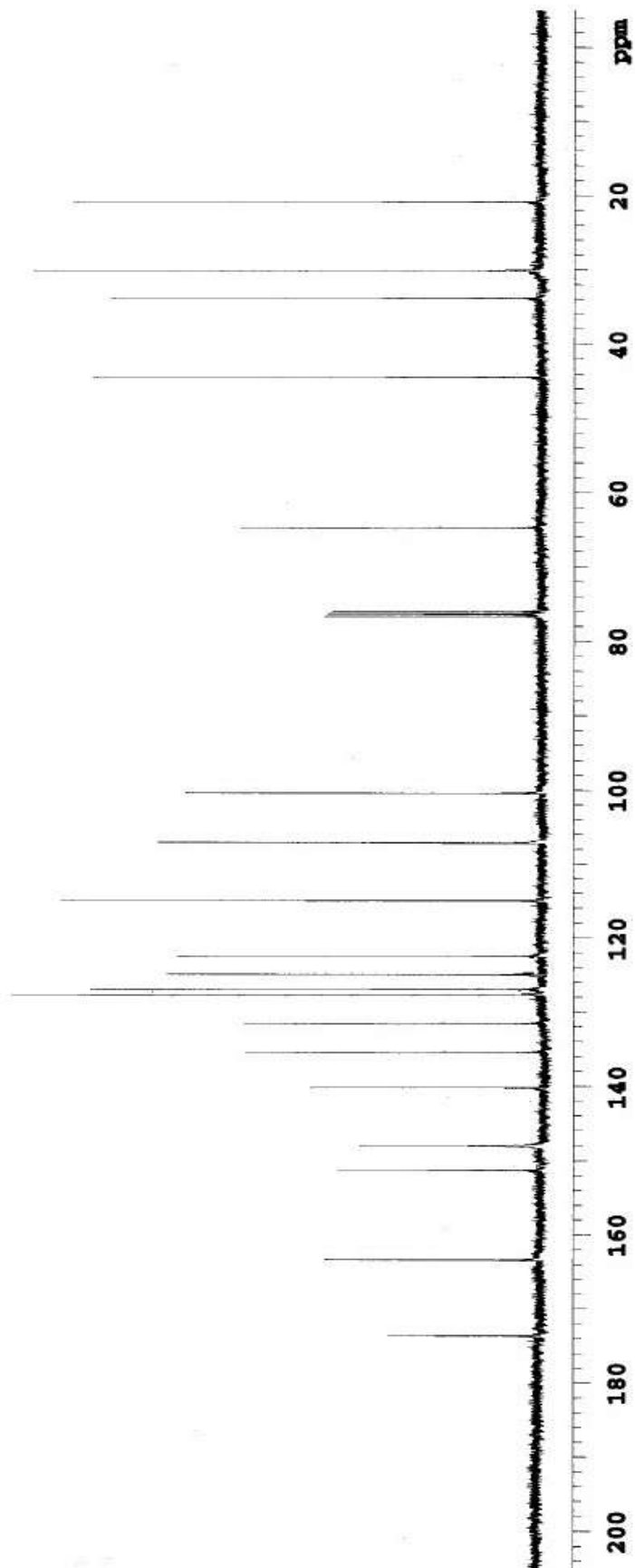
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

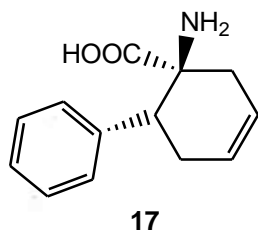
FT size 65536

Total time 17 min, 4 sec

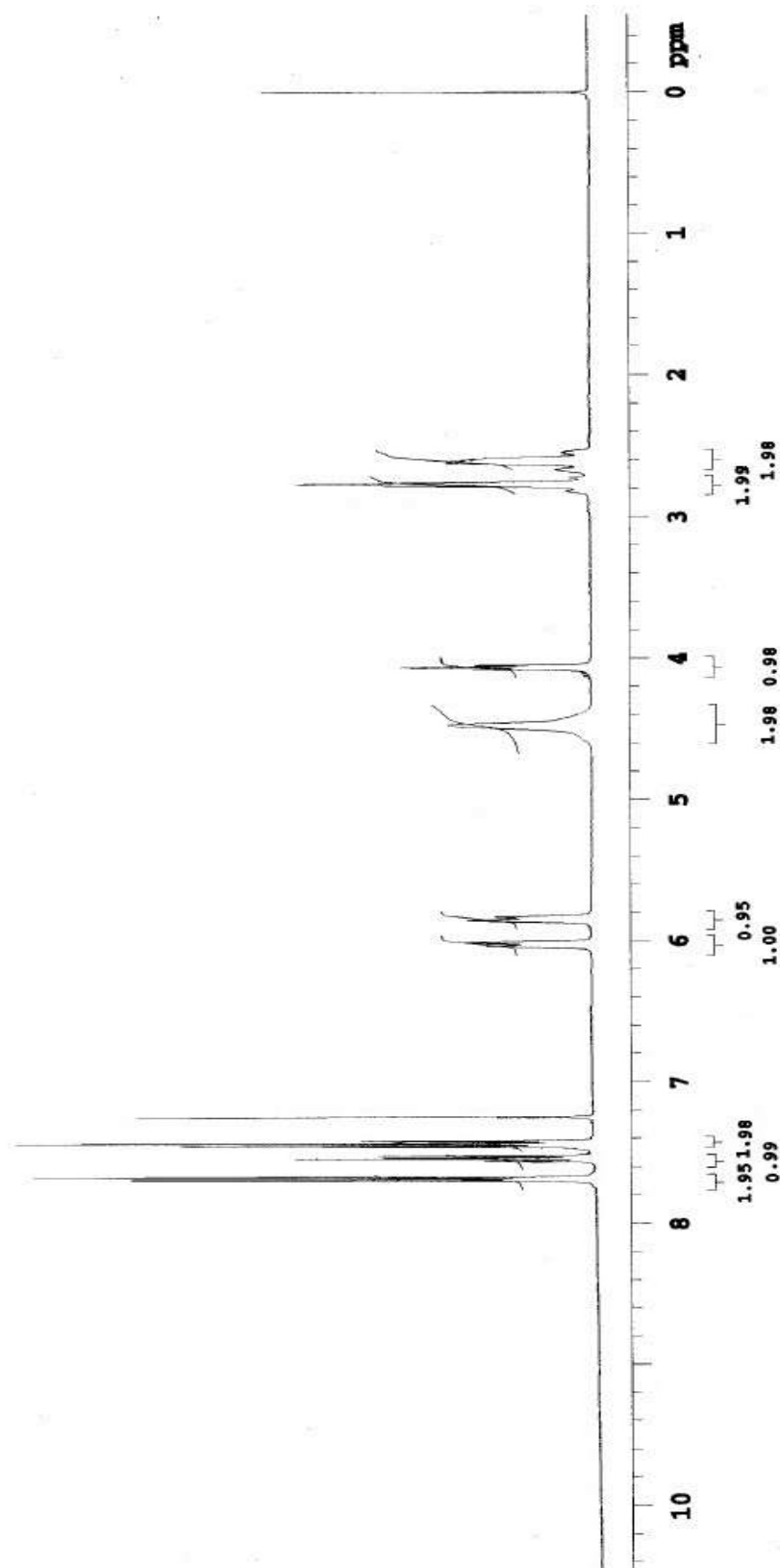


# 1-Amino-6-phenyl-cyclohex-3-enecarboxylic acid (17)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: XP  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmari  
VNMRS-400 "Varian400"  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE EL, 399.7630208 MHz  
DATA PROCESSING  
Line broadening 0.2 Hz  
FT size 65536  
Total time 0 min, 40 sec



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmr1

VMRS-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

256 repetitions

OBSERVE C13, 100.5180393 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

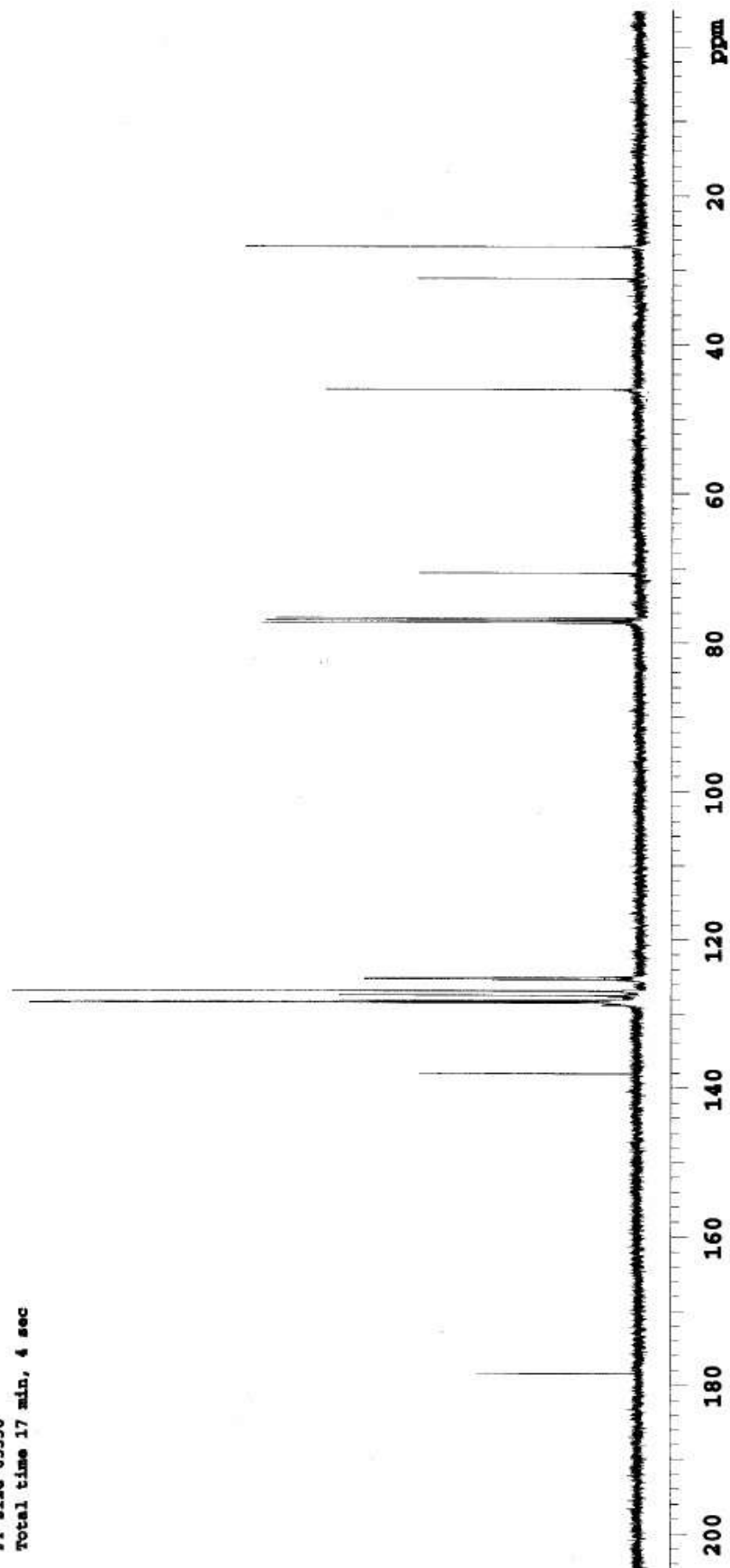
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

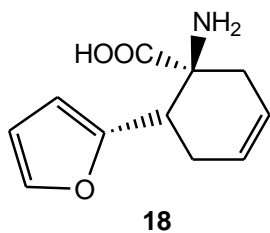
FT size 65536

Total time 17 min, 4 sec



# 1-Amino-6-furan-2-yl-cyclohex-3-enecarboxylic acid (18)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmar1

VMMS-400 "Varian400"

Relax. delay 1.500 sec

Pulse 45.0 degrees

Acq. time 3.500 sec

Width 6410.3 Hz

8 repetitions

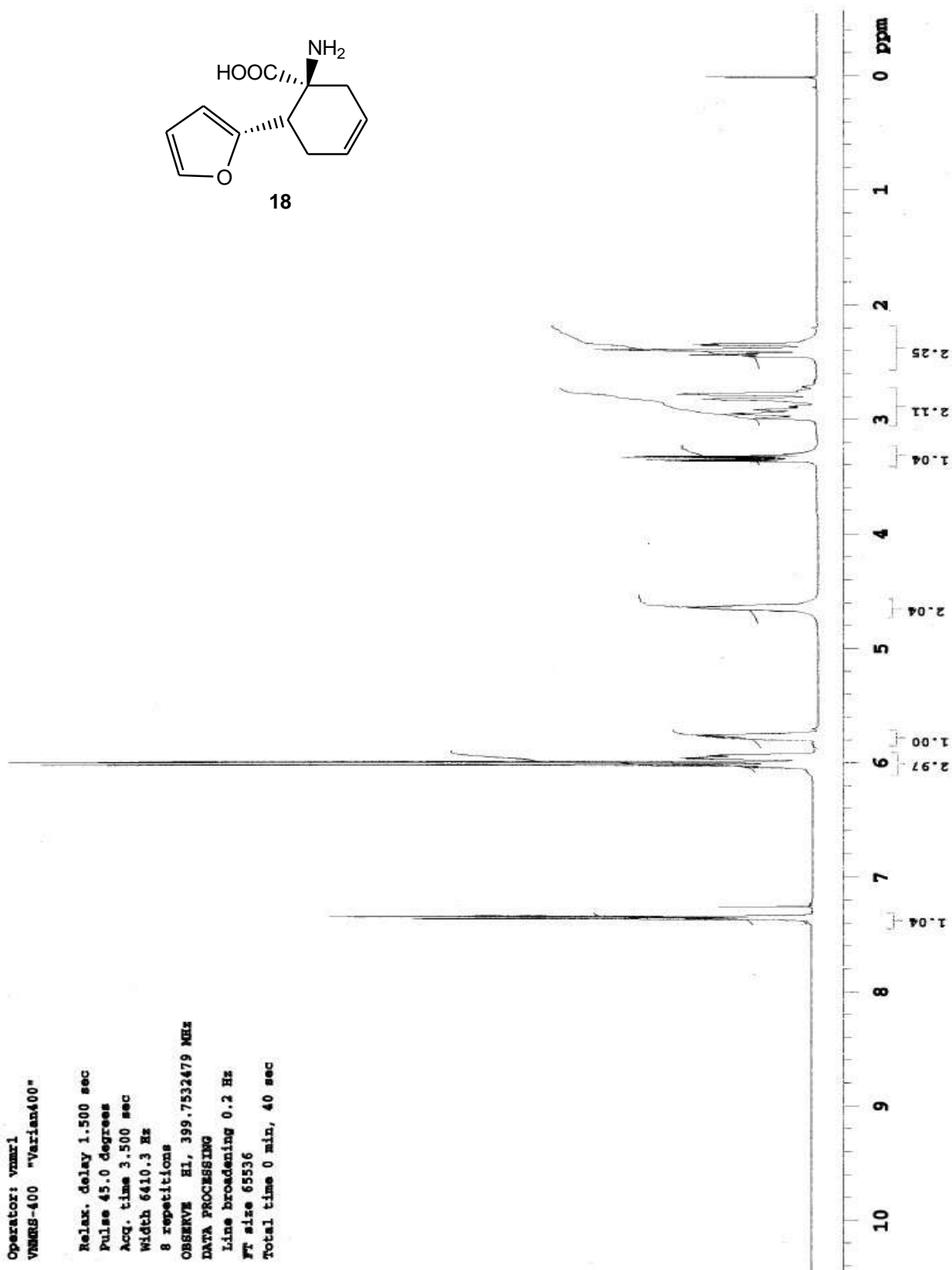
OBSERVE E1, 399.7532479 MHz

DATA PROCESSING

Line broadening 0.2 Hz

FT size 65536

Total time 0 min, 40 sec



<sup>13</sup>C NMR (100 MHz, CDCl<sub>3</sub>)

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vnmr1

VNMR-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

256 repetitions

OBSERVE C13, 100.5180393 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

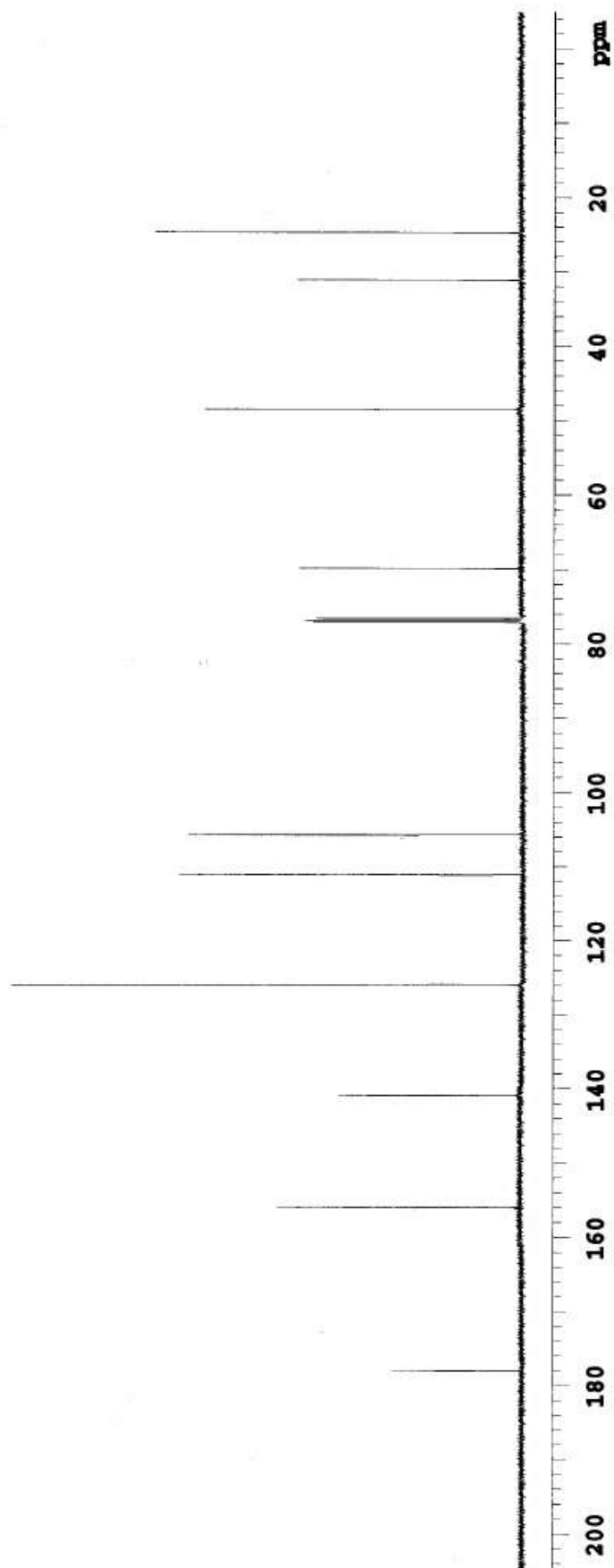
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

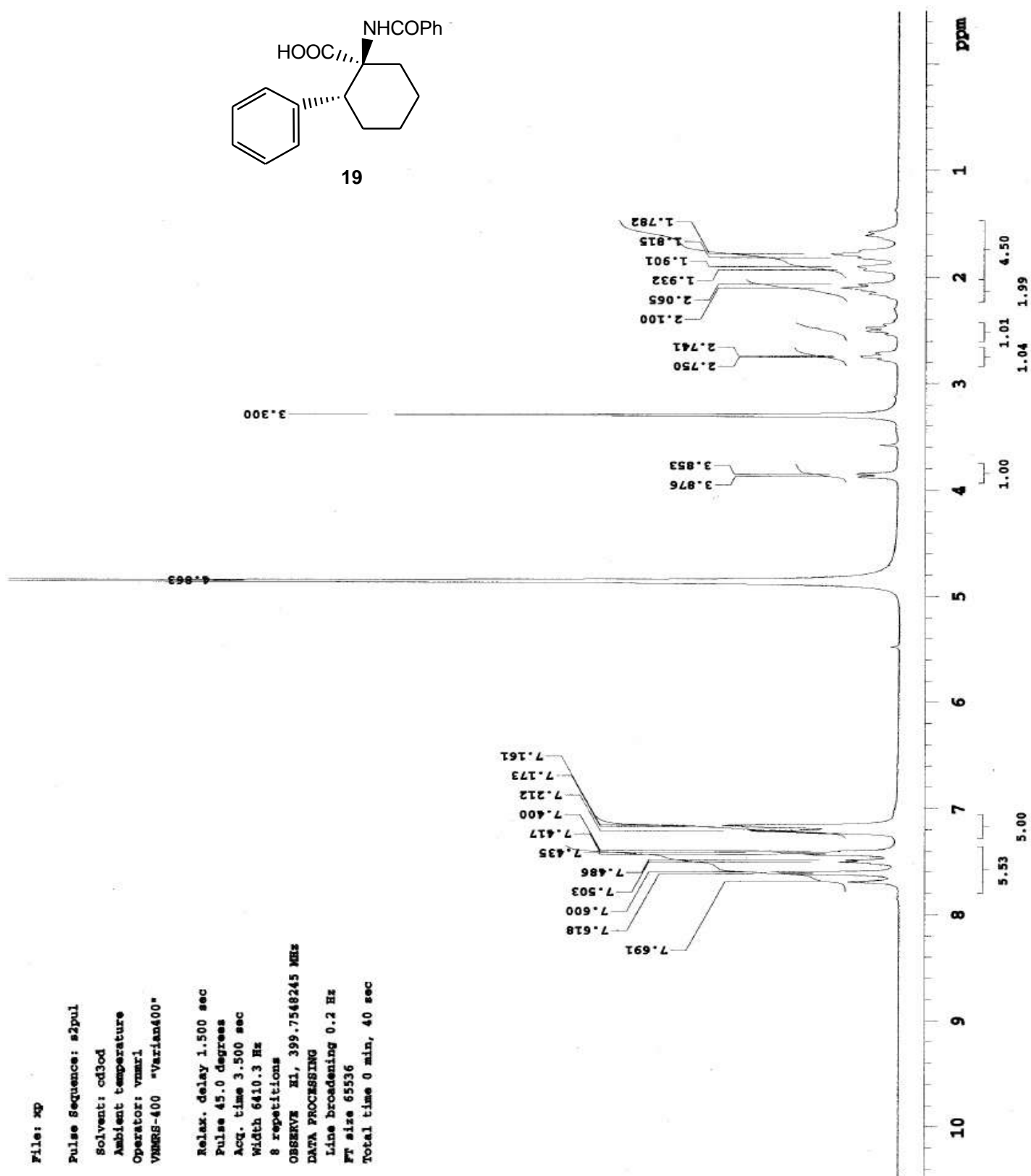
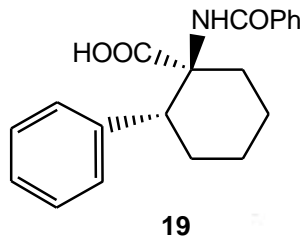
FT size 65536

Total time 17 min, 4 sec



# 1-benzamido-2-phenylcyclohexanecarboxylic acid (19)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vnmr1

VNMR5-400 "Varian400"

Relax. delay 0.700 sec

Pulse 45.0 degrees

Acq. time 1.300 sec

Width 24509.8 Hz

256 repetitions

OBSERVE C13, 100.5180393 MHz

DECOUPLE H1, 399.7552469 MHz

Power 39 dB

continuously on

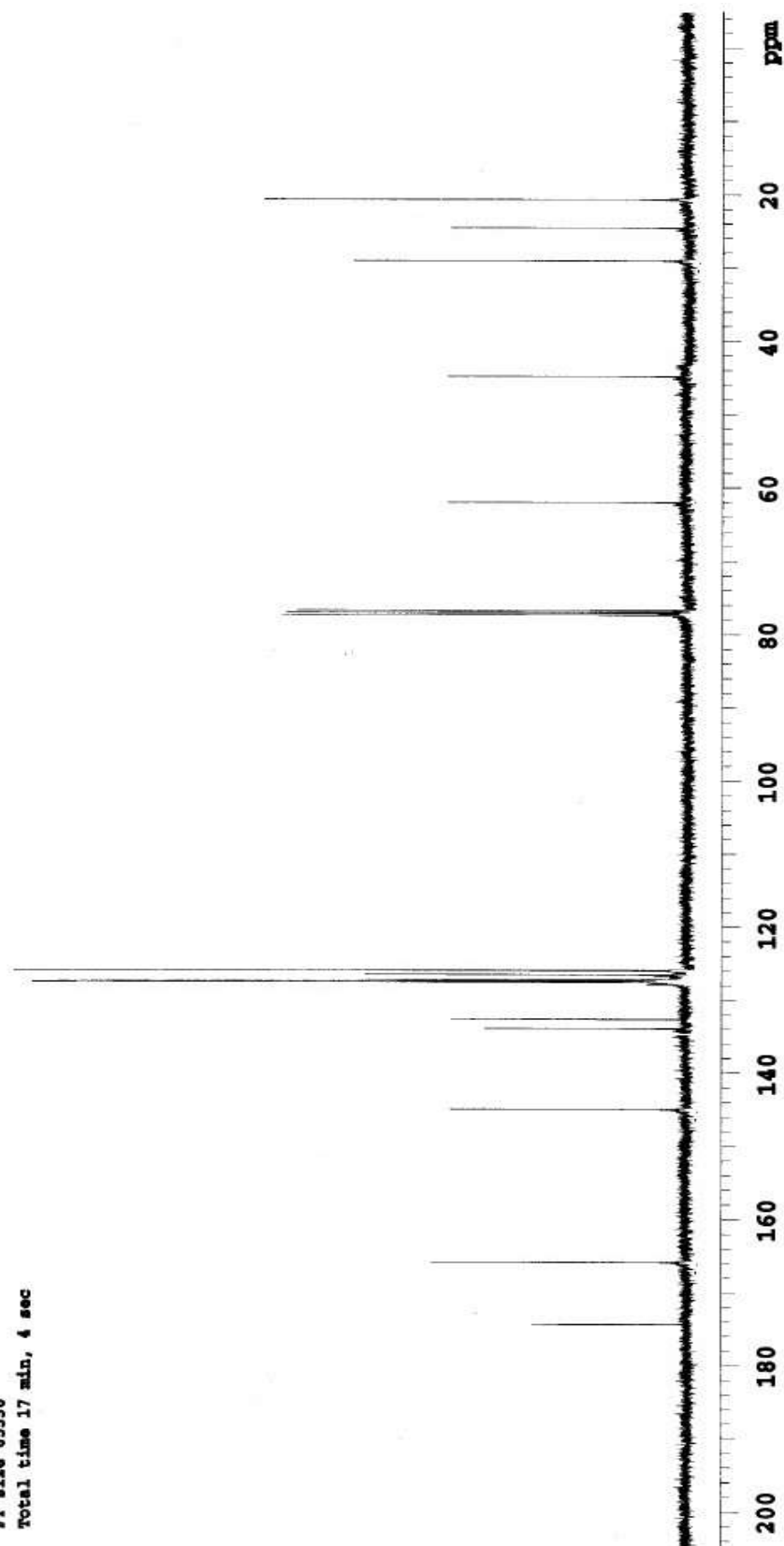
WALTZ-16 modulated

DATA PROCESSING

Line broadening 1.0 Hz

FT size 65536

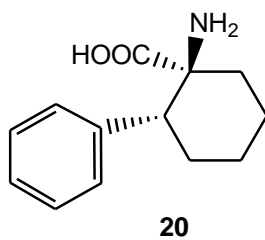
Total time 17 min, 4 sec



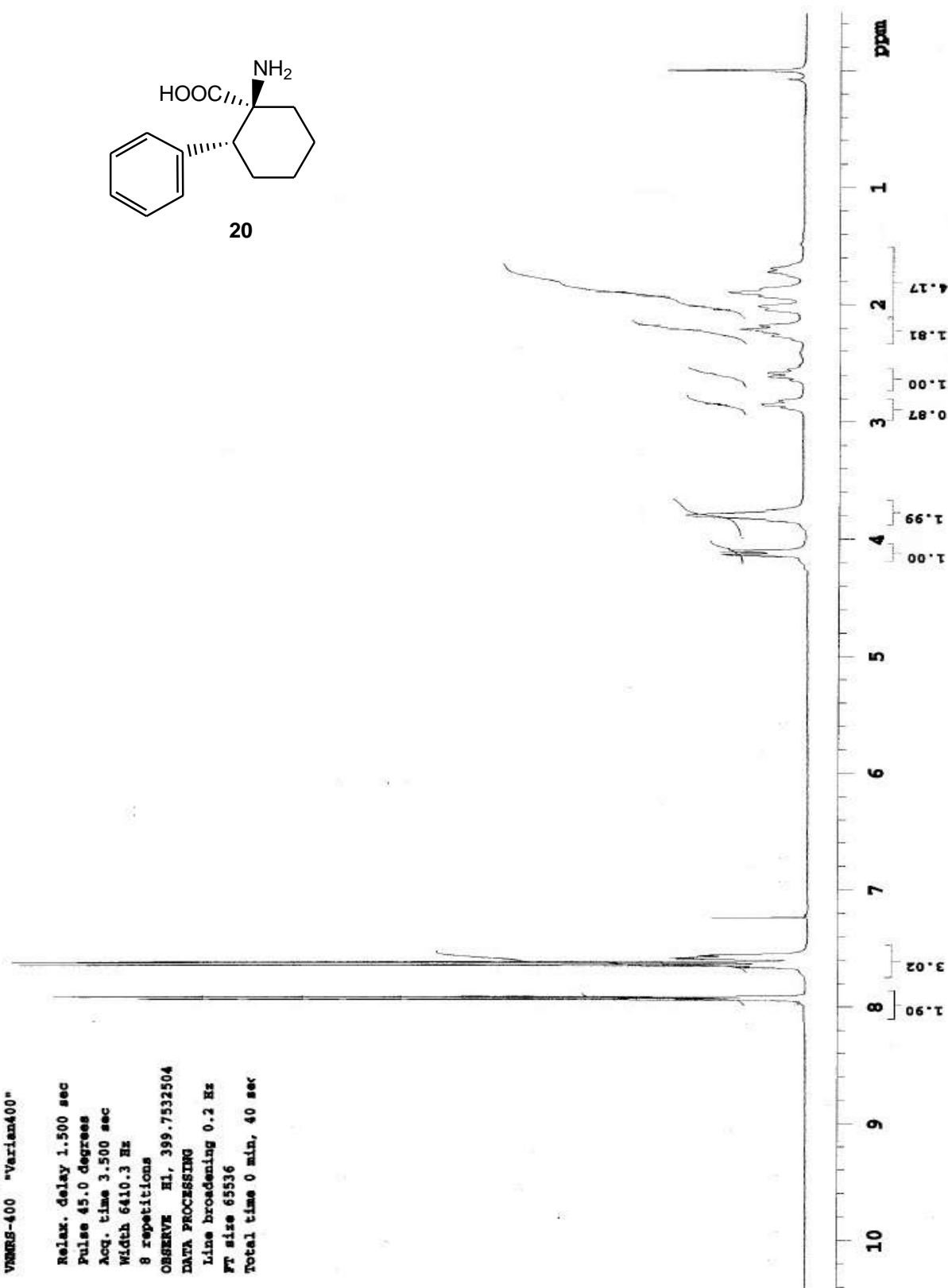


# 1-Amino-2-phenyl-cyclohexanecarboxylic acid (20)

$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vnmr1  
VNMRS-400 "Varian400"  
  
Relax. delay 1.500 sec  
Pulse 45.0 degrees  
Acq. time 3.500 sec  
Width 6410.3 Hz  
8 repetitions  
OBSERVE H1, 399.7532504  
DATA PROCESSING  
Line broadening 0.2 Hz  
Ft size 65536  
Total time 0 min, 40 sec



$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )

File: xp  
Pulse Sequence: s2pul  
Solvent: cdcl3  
Ambient temperature  
Operator: vmr1  
VMRS-400 "Varian400"  
  
Relax. delay 0.700 sec  
Pulse 45.0 degrees  
Acq. time 1.300 sec  
Width 24509.8 Hz  
256 repetitions  
OBSERVE C13, 100.5180393 MHz  
DECOUPLE H1, 399.7552469 MHz  
Power 39 dB  
continuously on  
WALTZ-16 modulated  
DATA PROCESSING  
Line broadening 1.0 Hz  
FT size 65536  
Total time 17 min, 4 sec

