$^1$H- and $^{13}$C- NMR Spectra of Compound 6
$^1$H- and $^{13}$C- NMR Spectra of Compound 8

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$^1$H- and $^{13}$C- NMR Spectra of Compound 9

**1H- NMR Spectra**

**13C- NMR Spectra**
1H- and 13C- NMR Spectra of Compound 11
$^1$H- and $^{13}$C- NMR Spectra of Compound 16

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$^1$H- and $^{13}$C- NMR Spectra of Compound 17
$^1$H- and $^{13}$C- NMR Spectra of Compound 12
**1H- and 13C- NMR Spectra of Compound 14**

DFILE 1036C-CSO-2-1.als
COMNT single pulse
DATIM 13-05-2009 14:15:55
OBNUC 1H
EXMOD single_pulse.ex2
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.39 Hz
SCANS 16
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 6.35 usec
IRNUC 1H
CTEMP 28.5 c
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 52

---

DFILE 1036C-CSO-carbon-1.als
COMNT single pulse decoupled ga
DATIM 12-05-2009 16:51:36
OBNUC 13C
EXMOD single_pulse_dec
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.06 Hz
SCANS 310
ACQTM 0.8336 sec
PD 1400.0000 sec
PW1 3.50 usec
IRNUC 1H
CTEMP 29.7 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60
1H- and 13C- NMR Spectra of Compound 25a

**1H-NMR Spectrum**

- **Chemical Shifts:**
  - 8.05, 8.03, 7.26, 6.56, 6.55, 6.54, 6.28, 3.87, 3.85, 3.59, 2.97, 1.93, 1.89, 1.39

- **Other Parameters:**
  - **Frequency:** 399.65 MHz
  - **Resolution:** 124.00 kHz
  - **Noise Level:** 10500 Hz
  - **Data Points:** 32768
  - ** Acquisition Time:** 4.10 sec
  - **Pulse Width:** 2.90 sec
  - **Temperature:** 23.6 °C

**13C-NMR Spectrum**

- **Chemical Shifts:**
  - 151.17, 147.98, 139.19, 130.00, 129.47, 115.66, 110.64, 105.35, 77.31, 77.00, 76.68, 53.96, 45.45, 44.89, 40.04, 29.99, 22.01

- **Other Parameters:**
  - **Frequency:** 100.40 MHz
  - **Resolution:** 125.00 kHz
  - **Noise Level:** 10500 Hz
  - **Data Points:** 32768
  - ** Acquisition Time:** 1.21 sec
  - **Pulse Width:** 1.79 sec
  - **Temperature:** 24.3 °C

---

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**1H- and 13C- NMR Spectra of Compound 28a**

**1H NMR Spectrum**
- PPM values: 0.81, 0.88, 2.03, 2.98, 3.98, 6.03, 6.17, 7.01, 7.26, 8.05

**13C NMR Spectrum**
- PPM values: 15.24, 35.84, 39.97, 43.81, 44.70, 76.75, 77.26, 104.69, 110.73, 114.41, 129.83, 129.86, 146.69, 151.32

**Experimental Details**
- DFILE: 1036D-166-1.als
- COMNT: single_pulse
date: 26-10-2009 18:47:27
- OBNUC: 1H
- OBFRQ: 500.16 MHz
- OBSET: 2.41 KHz
- OBFIN: 6.01 Hz
- POINT: 13107
- FREQU: 7507.39 Hz
- SCANS: 8
- ACQTM: 1.7459 sec
- PD: 5.00 sec
- PW1: 6.35 usec
- IRNUC: 1H
- CTEMP: 25.4 c
- SLVNT: CDCL3
- EXREF: 0.00 ppm
- BF: 0.12 Hz
- RGAIN: 40

**Additional Information**
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**1H- and 13C- NMR Spectra of Compound 31**

![1H- and 13C- NMR Spectra of Compound 31](image)

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1H- and 13C- NMR Spectra of Compound 25b
\(^1\text{H}-\) and \(^{13}\text{C}-\) NMR Spectra of Compound 28b

**\(^1\text{H}-\text{NMR Spectra**}

**\(^{13}\text{C}-\text{NMR Spectra**}

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Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry

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**1H- and 13C- NMR Spectra of Compound 25c**

![1H- and 13C- NMR Spectra of Compound 25c](image)
**1H- and 13C- NMR Spectra of Compound 28c**

![1H- and 13C- NMR Spectra of Compound 28c]
$^1$H- and $^{13}$C- NMR Spectra of Compound 28d
$^1$H- and $^{13}$C- NMR Spectra of Compound 25e

DFILE 1036D-43-2-2-2-1.als
COMNT single_pulse
DATIM 14-07-2009 14:19:32
OBNUC 1H
EXMOD single_pulse.ex2
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.39 Hz
SCANS 8
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 6.35 usec
IRNUC 1H
CTEMP 27.6 c
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 46

---

DFILE 1036D-43-carbon-1.als
COMNT single pulse decoupled ga
DATIM 13-07-2009 14:00:36
OBNUC 13C
EXMOD single_pulse_dec
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.06 Hz
SCANS 302
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.50 usec
IRNUC 1H
CTEMP 28.4 c
SLVNT CCCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60
1H- and 13C- NMR Spectra of Compound 28e

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\(^1\)H- and \(^{13}\)C- NMR Spectra of Compound 28f

![NMR Spectra](image)

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1H- and 13C- NMR Spectra of Compound 28g
1H- and 13C- NMR Spectra of Compound 25h
\[\text{**1H- and } ^{13}\text{C- NMR Spectra of Compound 28h**}\]

![NMR Spectra Diagram](image-url)

**1H NMR Spectra:**
- Peaks at various ppm values, indicating the chemical shifts of different protons.
- Peaks are marked with their corresponding chemical shifts.

**13C NMR Spectra:**
- Peaks at various ppm values, indicating the chemical shifts of different carbon atoms.
- Peaks are marked with their corresponding chemical shifts.

**Specifications:**
- **Dfile:** D-138-2-2-2-carbon.als
- **Comment:** This journal is © The Royal Society of Chemistry 2012
- **Data Time:** Tue Oct 06 18:33:38 2009
- **OBNUC:** 1H
- **OBFRQ:** 399.65 MHz
- **OBSET:** 124.00 KHz
- **OBFIN:** 10500.00 Hz
- **POINT:** 32768
- **FREQU:** 7992.01 Hz
- **SCANS:** 5
- **ACQTM:** 4.1001 sec
- **PD:** 2.9000 sec
- **IRNUC:** 1H
- **CTEMP:** 21.2 c
- **SLVNT:** CDCl3
- **EXREF:** 0.00 ppm
- **RGAIN:** 15

**Specifications:**
- **Dfile:** D-138-2-2-carbon.als
- **Comment:** This journal is © The Royal Society of Chemistry 2012
- **Data Time:** Tue Oct 06 18:33:38 2009
- **OBNUC:** 13C
- **OBFRQ:** 100.40 MHz
- **OBSET:** 125.00 KHz
- **OBFIN:** 10500.00 Hz
- **POINT:** 32768
- **FREQU:** 27118.64 Hz
- **SCANS:** 160
- **ACQTM:** 1.2083 sec
- **PD:** 1.7920 sec
- **PW1:** 5.10 usec
- **IRNUC:** 1H
- **CTEMP:** 24.1 c
- **SLVNT:** CDCl3
- **EXREF:** 77.00 ppm
- **RGAIN:** 24
\textbf{\textsuperscript{1}H- and \textsuperscript{13}C- NMR Spectra of Compound 28i}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{s54.png}
\caption{NMR Spectra of Compound 28i}
\end{figure}
1H- and 13C- NMR Spectra of Compound 21j
\( ^1 \text{H} \) and \( ^{13} \text{C} \) NMR Spectra of Compound 25j
**1H- and 13C- NMR Spectra of Compound 28j**

**1H-NMR Spectra:**
- ppm values range from 0.00 to 8.40.
- Resonances include aromatic protons (7.30 to 7.45 ppm) and aliphatic protons (1.00 to 2.10 ppm).
- Peaks at 2.01, 1.99, 1.98, 1.97 ppm correspond to methyl groups.

**13C-NMR Spectra:**
- ppm values range from 15.0 to 170.0.
- Resonances include aromatic carbons (120.0 to 132.9 ppm) and aliphatic carbons (20.9 ppm).
- Peaks at 120.7 to 129.9 ppm correspond to aromatic carbons.

**Experimental Conditions:**
- Datable: 1036D-199-2.als
- Comments: single pulse
- Date: 21-11-2009 17:02:27
- NUCl: 1H
- EXMOD: single_pulse.xls
- Obfrq: 500.16 MHz
- Obset: 2.41 KHz
- Obfin: 6.01 Hz
- POINT: 13107
- Frequ: 7507.39 Hz
- Scans: 6
- Acqtm: 1.7459 sec
- Pd: 5.0000 sec
- Pw1: 6.35 usec
- IRNUC: 1H
- CTEMP: 25.9 c
- Slvnt: CDCl3
- EXREF: 0.00 ppm
- Bf: 0.12 Hz
- RGAIN: 44

**13C-NMR Spectra:**
- ppm values range from 15.0 to 170.0.
- Resonances include aromatic carbons (120.0 to 132.9 ppm) and aliphatic carbons (20.9 ppm).
- Peaks at 120.7 to 129.9 ppm correspond to aromatic carbons.

**Experimental Conditions:**
- Datable: 1036D-199-carbon-1.als
- Comments: single pulse decoupled ga
- Date: 21-11-2009 17:12:58
- NUCl: 13C
- EXMOD: single_pulse_dec.xls
- Obfrq: 125.77 MHz
- Obset: 7.87 KHz
- Obfin: 4.21 Hz
- POINT: 32768
- Frequ: 39308.18 Hz
- Scans: 208
- Acqtm: 0.8336 sec
- Pd: 2.0000 sec
- Pw1: 3.50 usec
- IRNUC: 1H
- CTEMP: 25.6 c
- Slvnt: CDCl3
- EXREF: 77.00 ppm
- Bf: 0.12 Hz
- RGAIN: 60

**Structural Formula:**
- Compound 28j contains a sulfur atom, an amine group, and a trifluoromethyl group.
- The molecular structure is depicted with the highlighted functional groups.
\textbf{1H- and $^{13}$C- NMR Spectra of Compound 21k}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{nmr_spectra.png}
\caption{1H- and $^{13}$C- NMR Spectra of Compound 21k}
\end{figure}

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$^1$H- and $^{13}$C- NMR Spectra of Compound 25k

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1H- and 13C- NMR Spectra of Compound 28k

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**1H- and 13C- NMR Spectra of Compound 25l**

---

**1H NMR Spectra**

- PPM values:
  - 0.96, 2.00, 2.97, 1.92, 2.06, 2.06, 2.00
  - 9.38, 8.26, 8.24, 7.58, 7.57, 7.44, 7.43, 7.41, 7.37, 7.36, 7.35, 7.33, 7.32, 7.24
  - 3.89, 3.88, 3.87, 3.64, 3.63, 3.62
  - 1.94, 1.93, 1.92, 1.91, 1.90
  - 1.40, 0.84, 0.77, 0.00

---

**13C NMR Spectra**

- PPM values:
  - 147.71, 142.92, 139.41, 138.26, 129.48, 128.91, 128.83, 128.02, 126.99, 126.51, 124.81, 122.73
  - 77.25, 77.00, 76.74
  - 54.15, 45.42, 45.09, 29.97, 21.88

---

**Notes:**

- DFILE 1036D-122-110221-1.als
- COMNT single_pulse
- OBNUC 1H
- OBFRQ 500.16 MHz
- OBSET 2.41 KHz
- OBFIN 6.01 Hz
- POINT 13107
- FREQU 7507.39 Hz
- SCANS 2
- PD 5.0000 sec
- PW1 6.50 usec
- IRNUC 1H
- CTEMP 25.7 °C
- SLVNT CDCL3
- EXREF 0.00 ppm
- BF 0.12 Hz
- RGAIN 38

---

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$^1$H- and $^{13}$C- NMR Spectra of Compound 28i

**DFILE**: D-124-carbon.als  
**COMMT**: single_pulse  
**DATIM**: Fri Sep 18 19:25:14 2009  
**OBNUC**: 13C  
**EXMOD**: BCM  
**OBFRQ**: 100.40 MHz  
**OBSET**: 125.00 KHz  
**OBFIN**: 10508.00 Hz  
**POINT**: 37868  
**FREQU**: 27118.64 Hz  
**SCANS**: 378  
**ACQTM**: 1.2083 sec  
**PD**: 1.7928 sec  
**MWI**: 5.10 usec  
**IRNUC**: 1H  
**CTEMP**: 24.4 C  
**SLVNT**: CDCl$_3$  
**EXREF**: 77.00 ppm  
**BF**: 0.12 Hz  
**RGAIN**: 46
$^1$H- and $^{13}$C- NMR Spectra of Compound 25m


1H- and 13C- NMR Spectra of Compound 28m

![NMR Spectra](image)

**1H-NMR Spectra:**
- **Chemical Shifts:**
  - 8.2, 7.25, 7.1, 6.6, 5.8, 5.4, 4.00, 3.75, 3.50, 2.00

**13C-NMR Spectra:**
- **Chemical Shifts:**
  - 153.345, 146.372, 139.800, 135.165, 129.041, 125.836, 123.986, 121.134, 116.422, 77.258, 77.000, 76.742, 44.923, 43.797, 20.981

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$^1$H- and $^{13}$C- NMR Spectra of Compound 25n

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1H- and 13C- NMR Spectra of Compound 28n
$^1$H- and $^{13}$C- NMR Spectra of Compound 25o
$^1$H- and $^{13}$C- NMR Spectra of Compound 28o

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$^1$H- and $^{13}$C- NMR Spectra of Compound 25p

**$^1$H- NMR Spectra**

- **FREQU**: 399.65 MHz
- **OBSET**: 124.00 KHz
- **OBFIN**: 10500.00 Hz
- **POINT**: 32768
- **SCANS**: 6
- **ACQTM**: 4.1001 sec
- **PD**: 2.9000 sec
- **PW1**: 5.50 usec
- **CTEMP**: 24.7 c
- **SLVNT**: CDCl3
- **EXREF**: 0.00 ppm
- **BF**: 0.12 Hz
- **RGAIN**: 16

**$^{13}$C- NMR Spectra**

- **FREQU**: 100.40 MHz
- **OBSET**: 125.00 KHz
- **OBFIN**: 10500.00 Hz
- **POINT**: 32768
- **FREQ**: 27118.64 Hz
- **SCANS**: 201
- **ACQTM**: 1.2083 sec
- **PD**: 1.7920 sec
- **PW1**: 5.10 usec
- **CTEMP**: 24.7 c
- **SLVNT**: CDCl3
- **EXREF**: 77.00 ppm
- **BF**: 0.12 Hz
- **RGAIN**: 27
$^{1}$H- and $^{13}$C- NMR Spectra of Compound 28p
**1H- and 13C- NMR Spectra of Compound 25q**

The spectra show the chemical shifts and multiplet patterns of the protons and carbon nuclei in the compound 25q. The spectra are recorded using 1H and 13C NMR techniques, with the spectra obtained on different days and under various conditions as indicated by the data files and comments. The spectra are useful for structural elucidation and characterization of the compound.

---

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$^{1}$H- and $^{13}$C- NMR Spectra of Compound 28q
$^1$H- and $^{13}$C- NMR Spectra of Compound 26a
$^1$H- and $^{13}$C- NMR Spectra of Compound 29a

[Image of NMR spectra]

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1H- and 13C- NMR Spectra of Compound 26e
$^1$H- and $^{13}$C- NMR Spectra of Compound 29e
1H- and 13C- NMR Spectra of Compound 26f
$^1$H- and $^{13}$C- NMR Spectra of Compound 29f
**1H- and 13C- NMR Spectra of Compound 22g**

![1H- NMR Spectrum](image1)

**1H- NMR Data**
- Chemical Shifts (ppm): 7.64, 7.62, 7.12, 7.09, 6.92, 5.00, 3.51, 2.31, 1.90
- Other Parameters:
  - Frequency: 500.16 MHz
  - Spin Rate: 2.41 KHz
  - Spin Flip: 6.0 Hz
  - Acquisition Time: 1.7459 sec
  - Pulse Width: 5.00 sec

![13C- NMR Spectrum](image2)

**13C- NMR Data**
- Chemical Shifts (ppm): 159.36, 157.42, 133.89, 131.39, 130.62, 123.71
- Other Parameters:
  - Frequency: 125.77 MHz
  - Spin Rate: 7.87 KHz
  - Spin Flip: 4.21 Hz
  - Acquisition Time: 0.8336 sec
  - Pulse Width: 2.00 sec

---

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$^1$H- and $^{13}$C- NMR Spectra of Compound 26g
1H- and 13C- NMR Spectra of Compound 29g

**1H Spectra**

- PPM values: 8.038, 7.264, 7.172, 7.153, 6.945, 6.925, 4.030, 4.015, 4.000, 3.704, 3.690, 3.676, 2.343, 2.000, 1.986, 1.972, 1.957, 1.941, 0.072, 0.000

**13C Spectra**

- PPM values: 153.729, 146.887, 136.251, 131.607, 129.022, 126.544, 125.400, 123.482, 77.321, 77.000, 76.679, 44.942, 43.830, 21.075, 21.018

---

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$^1$H- and $^{13}$C- NMR Spectra of Compound 22k
**1H- and 13C- NMR Spectra of Compound 26k**

![1H- and 13C- NMR Spectra of Compound 26k](image)

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**1H- and 13C- NMR Spectra of Compound 29k**

[Image of NMR spectra]

**Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry**

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**$^1$H- and $^{13}$C- NMR Spectra of Compound 26l**

![NMR Spectra](image)

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**1H- and 13C- NMR Spectra of Compound 291**

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**Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry**

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$^1$H- and $^{13}$C- NMR Spectra of Compound 26m
\[\text{\( ^1\)H- and } ^{13}\text{C- NMR Spectra of Compound 29m} \]
1H- and 13C- NMR Spectra of Compound 26q
$^1$H- and $^{13}$C- NMR Spectra of Compound 29q
1H- and 13C- NMR Spectra of Compound 23r
$^{1}$H- and $^{13}$C- NMR Spectra of Compound 27r

File 1036F-163-2-2-2.als
COMNT single_pulse
DATIM Thu Oct 07 12:39:30 2010
OBNUC 1H
EXMOD NCH
OBFRQ 399.65 MHz
OBSET 124.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 7992.01 Hz
SCANS 8
ACQTM 4.1001 sec
PD 2.9000 sec
PW1 5.50 usec
IRNUC 1H
CTEMP 23.9 c
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 18

File 1036F-163-carbon.als
COMNT
DATIM Thu Oct 07 12:53:23 2010
OBNUC 13C
EXMOD BCM
OBFRQ 100.40 MHz
OBSET 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 254
ACQTM 1.2083 sec
PD 1.7920 sec
PW1 5.10 usec
IRNUC 1H
CTEMP 23.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIM 26
$^1$H- and $^{13}$C- NMR Spectra of Compound 30r

DFILE 1036F-166.als
COMMT
DATIM Thu Oct 07 12:57:43 2010
OBNUC 1H
EXMOD NCH
OBFRQ 399.65 MHz
OBSET 124.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 7992.01 Hz
SCANS 8
ACQTM 4.1001 sec
PD 2.9000 sec
PW1 5.50 usec
IRNUC 1H
CTEMP 24.7 c
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 18

DFILE 1036F-166-carbon.als
COMMT
DATIM Thu Oct 07 13:06:00 2010
OBNUC 13C
EXMOD BCM
OBFRQ 100.40 MHz
OBSET 125.00 KHz
OBFIN 10500.00 Hz
POINT 32768
FREQU 27118.64 Hz
SCANS 151
ACQTM 1.2083 sec
PD 1.7920 sec
PW1 5.10 usec
IRNUC 1H
CTEMP 23.1 c
SLVNT CCCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 26
$^{1}$H- and $^{13}$C- NMR Spectra of Compound 30s
$^1$H- and $^{13}$C- NMR Spectra of Compound 23k
**H- and 13C- NMR Spectra of Compound 27k**

[Diagram of NMR spectra]
$^1$H- and $^{13}$C- NMR Spectra of Compound 30k
$^1$H- and $^{13}$C- NMR Spectra of Compound 30t
$^1$H- and $^{13}$C- NMR Spectra of Compound 23i

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**1H- and 13C- NMR Spectra of Compound 27i**

**1H NMR Spectra:**
- Chemical shifts: 7.25, 7.0, 3.8, 3.6, 1.9, 1.4
- PPM scale: 0 to 8

**13C NMR Spectra:**
- Chemical shifts: 161.242, 159.173, 146.086, 146.019, 137.568, 131.874, 130.605, 130.520, 120.914, 120.886, 118.702, 115.134, 114.943, 77.258, 77.000, 76.742, 54.213, 45.504, 45.304, 30.071, 22.479
- PPM scale: 0 to 200

---

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**1H- and 13C- NMR Spectra of Compound 30i**

![1H-NMR Spectrum](image1)

![13C-NMR Spectrum](image2)

---

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\textbf{$^1$H- and $^{13}$C- NMR Spectra of Compound 23u}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{paper.png}
\caption{\textbf{1H- and $^{13}$C- NMR Spectra of Compound 23u}}
\end{figure}
$^1$H- and $^{13}$C- NMR Spectra of Compound 24u
1H- and 13C- NMR Spectra of Compound 30u
**1H- and 13C- NMR Spectra of Compound 35a**

---

**1H- NMR Spectra**

- **Dfile**: 1036D-76-3.a1a
- **Comnt**: single_pulse
- **Datim**: 07-08-2009 15:29:26
- **OBNUC**: 1H
- **EXMOD**: single_pulse.ex2
- **OBFRQ**: 500.16 MHz
- **OBSET**: 2.41 KHz
- **OBFIN**: 6.01 Hz
- **POINT**: 13107
- **FREQU**: 7507.39 Hz
- **SCANS**: 89
- **ACQTM**: 1.7459 sec
- **PD**: 5.0000 sec
- **PM1**: 6.35 usec
- **IRNUC**: 1H
- **CTEMP**: 28.4 c
- **SLVNT**: CDCL3
- **EXREF**: 0.00 ppm
- **BF**: 0.12 Hz
- **RGAIN**: 42

---

**13C- NMR Spectra**

- **Dfile**: 1036D-76-3.a1c
- **Comnt**: single_pulse
- **OBNUC**: 13C
- **EXMOD**: single_pulse_dec
- **OBFRQ**: 125.77 MHz
- **OBSET**: 7.87 KHz
- **OBFIN**: 4.21 Hz
- **POINT**: 26214
- **FREQU**: 31446.06 Hz
- **SCANS**: 153
- **ACQTM**: 0.8336 sec
- **PD**: 2.0000 sec
- **PM1**: 3.50 usec
- **IRNUC**: 1H
- **CTEMP**: 28.4 c
- **SLVNT**: CDCL3
- **EXREF**: 77.00 ppm
- **BF**: 0.12 Hz
- **RGAIN**: 60

---

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**1H- and 13C- NMR Spectra of Compound 34b**

![NMR Spectra](image)

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**1H- and 13C- NMR Spectra of Compound 35b**

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HMBC Spectrum of Compound 35b

HMBC expansion (1H; 5.0-8.5 ppm, $^{13}$C; 135-180 ppm)
$^1$H- and $^{13}$C- NMR Spectra of Compound 33c

[Chemical structures and spectra images]
**1H- and 13C- NMR Spectra of Compound 34e**

DFILE 1036D-117-1.als
COMNT single_pulse
DATIM 10-10-2010 14:03:13
OBNUC 1H
EXMOD single_pulse.ex2
OBFRQ 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 13107
FREQU 7507.39 Hz
SCANS 6
ACQTM 1.7459 sec
PD 5.0000 sec
PW1 6.35 usec
IRNUC 1H
CTEMP 25.4 c
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 42

DFILE 1036D-117-carbon-1.als
COMNT single pulse decoupled ga
DATIM 10-10-2010 14:10:45
OBNUC 13C
EXMOD single_pulse_dec
OBFRQ 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 26214
FREQU 31446.06 Hz
SCANS 146
ACQTM 0.8336 sec
PD 2.0000 sec
PW1 3.50 usec
IRNUC 1H
CTEMP 25.3 c
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 58

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$^1$H- and $^{13}$C- NMR Spectra of Compound 35c
\(^1\)H- and \(^{13}\)C- NMR Spectra of Compound 33d
$^1$H- and $^{13}$C- NMR Spectra of Compound 34d

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$^1$H- and $^{13}$C- NMR Spectra of Compound 35d

![NMR Spectra](image)

**NMR Spectra Details**
- **1H NMR**
  - Chemical Shifts: 1H (ppm)
- **13C NMR**
  - Chemical Shifts: 13C (ppm)

**Experimental Details**
- **Date:** 16-09-2009
- **Samples:**
  - **Sample 1:**
    - Chemical Formula: \( \text{Formula} \)
    - Solvent: \( \text{Solvent} \)
    - Temperature: 25.0°C

**Note:**
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$^1$H- and $^{13}$C- NMR Spectra of Compound 36
1H- and 13C- NMR Spectra of Compound 33e
H- and 13C- NMR Spectra of Compound 34e

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$^1$H- and $^{13}$C- NMR Spectra of Compound 35e

**$^1$H NMR Spectrum**

- Chemical shifts: 0.86, 1.00, 1.93, 2.02, 2.00, 1.99, 1.97, 1.96, 1.95, 1.93, 0.001, -0.007, 7.87, 7.3, 7.15, 7.10, 4.0, 2.0

**$^{13}$C NMR Spectrum**

- Chemical shifts: 155.47, 150.97, 132.02, 129.94, 129.28, 127.54, 126.59, 124.22, 77.24, 77.00, 76.74, 49.00, 47.48, 24.32, 23.29

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