Supporting Information

Nanoscale Tripodal 1,3,5,7-Tetrasubstituted Adamantanes for AFM Applications

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¹³C NMR (75 MHz) spectra for **7**, **8**, **10-18**, **20-24**, **26**; ¹³C NMR (125 MHz) spectra for
25 and **27**.

Compound 7

quant1010924a
Pulse Sequence: s2pul1
Solvent: CDCl3
Ambient temperature
File: c1010924a
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.9 degrees
Acq. time 2.500 sec
Width 4759.0 Hz
8 repetitions
OBSERVE H1, 299.3460689 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

quant1010924b
Pulse Sequence: s2pul1
Solvent: CDCl3
Ambient temperature
File: quant1010924b
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 0.599 sec
Width 16501.7 Hz
384 repetitions
OBSERVE C13, 75.4216995 MHz
DECOUPLE H1, 299.3478455 MHz
Power 32 dB
Continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 16 min, 6 sec

Compound 8

qt1010927a
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: qt1010927a
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.4 degrees
Acq. time 2.500 sec
Width 4292.0 Hz
8 repetitions
OBSERVE H1, 299.9468689 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 9 min, 28 sec

quant1010927c
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: quant1010927c
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 9.599 sec
Width 16501.7 Hz
448 repetitions
OBSERVE H1, 75.4217001 MHz
DECOUPLE H1, 299.9478514 MHz
Power 38 dB
continuously on
VOLTAGE modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 21 min, 26 sec

Compound 10

quan1020731a
 Pulse Sequence: szpul
 Solvent: CDCl3
 Ambient temperature
 INOVA-300 "sunofmr"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 37.3 degrees
 Acq. time 2.500 sec
 Width 4799.0 Hz
 8 repetitions
 OBSERVE H1, 299.9460610 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 32768
 Total time 0 min, 20 sec

quan1020731b
 Pulse Sequence: szpul
 Solvent: CDCl3
 Ambient temperature
 File: xg2
 INOVA-300 "sunofmr"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 42.6 degrees
 Acq. time 0.559 sec
 Width 1651.7 Hz
 240 repetitions
 OBSERVE C13, 75.4217001 MHz
 DECOUPLE H1, 299.9470514 MHz
 Power 32 dB
 continuously on
 MALTZ-15 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 0 min, 2 sec

Compound 11

Compound 12

Changshu020918Aa
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: changshu020918Aa
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.8 degrees
Acq. time 2.500 sec
Width 4799.0 Hz
8 repetitions
OBSERVE H1, 299.9468689 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

changshu020918Ab
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: changshu020918Ab
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 0.593 sec
Width 16501.7 Hz
400 repetitions
OBSERVE C13, 75.4216995 MHz
DECOUPLE H1, 299.9478455 MHz
Power 32 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 21 min, 28 sec

Compound 13

quan1020807c
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 INOVA-300 "sunofmr"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 37.5 degrees
 Acq. time 0.591 sec
 Width 4789.8 Hz
 8 repetitions
 OBSERVE H1, 299.946583 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 32768
 Total time 9 min, 28 sec

quan1020807d
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 INOVA-300 "sunofmr"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 42.6 degrees
 Acq. time 0.599 sec
 Width 18501.7 Hz
 176 repetitions
 OBSERVE C13, 75.4217041 MHz
 DECOUPLE H1, 299.9470514 MHz
 Power 32 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 10 min, 43 sec

Compound 14

quant101127b
 Pulse Sequence: s2pul
 Solvent: CDCl₃
 Ambient temperature
 File: q101127b
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 62.0 degrees
 Acq. time 0.589 sec
 Width 18501.7 Hz
 200 repetitions
 OBSERVE C13: 75.4216985 MHz
 DECOUPLE H1: 299.8478455 MHz
 Power 32 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 5 min, 22 sec

Compound 15

Compound 15

Compound 16

Compound 16

Compound 17

quan1020325a
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 INOVA-300 "Sunofmr"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 37.5 degrees
 Acq. time 2.500 sec
 Width 4799.6 Hz
 36 repetitions
 OBSERVE H1, 299.9468612 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 32768
 Total time 1 min, 45 sec

q11011112b
 Pulse Sequence: s2pul

Compound 18

q11011204a
Pulse Sequence: s2pul

q11011204b
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
INDVIA-300 "sunofmar"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 0.559 sec
Width 18501.7 Hz
360 repetitions
OBSERVE C13, 75.4217801 MHz
DECOUPLE H1, 299.9478514 MHz
Power 32 dB
CONTINUOUSLY ON
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 0 min, 2 sec

Compound 20

quant1020130a
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
INNOVA-300 "sunofmar"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.5 degrees
Acq. time 2.561 sec
Width 4789.0 Hz
8 repetitions
OBSERVE H1: 299.9460612 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 8 min, 20 sec

quant1020130b
Pulse Sequence: s2pul

Compound 21

Compound 21

quan1020805a
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 File: quan1020805a
 INOVA-300 "acetone"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 37.9 degrees
 Acq. time 2.500 sec
 Width 4789.0 Hz
 8 repetitions
 OBSERVE H1, 299.9468685 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 32768
 Total time 0 min, 28 sec

quan1020425d
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 File: quan1020425d
 INOVA-300 "sunofnar"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 42.6 degrees
 Acq. time 6.538 sec
 Width 16501.7 Hz
 480 repetitions
 OBSERVE C13, 75.4217011 MHz
 DECOUPLE H1, 299.9478514 MHz
 Power 32 dB
 Continuously on
 VALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 10 min, 43 sec

Compound 21

Compound 22

Compound 22

quant1020507t1pa
Pulse Sequence: s2pu1
Solvent: CDCl3
Ambient Temperature
File: quant1020507t1pa
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.3 degrees
Acq. time 2.500 sec
Width 4789.0 Hz
8 repetitions
OBSERVE H1, 299.9468609 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

500-5mm
Quant1 020730
Pulse Sequence: s2pu1
Solvent: CDCl3
Temp. 25.0 C / 288.1 K
User: 1-15-07
File: Quant1-020730c-1H-500MHz
INOVA-500 "acetone"
PULSE SEQUENCE
Pulse 81.1 degrees
Acq. time 2.458 sec
Width 6886.1 Hz
32 repetitions
OBSERVE H1, 500.1303418 MHz
DATA PROCESSING
FT size 65536
Total time 1 min, 16 sec

Compound 22

Compound 22

Pulse Sequence: s2pul
 Solvent: CDCl₃
 Temp: 25.0 C / 298.1 K
 User: 1-15-87
 File: Quant1-020730c-1H-500MHz
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Pulse 81.1 degrees
 Acq. time 2.458 sec
 Width 6666.1 Hz
 32 repetitions
 OBSERVE H1, 500.1003418 MHz
 DATA PROCESSING
 FT size 65536
 Total time 1 min, 18 sec

*DBQ-5mm
 Quant1 020730
 Pulse Sequence: s2pul
 Solvent: CDCl₃
 Temp: 25.0 C / 298.1 K
 User: 1-15-87
 File: Quant1-020730c-1H-500MHz
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Pulse 81.1 degrees
 Acq. time 2.458 sec
 Width 6666.1 Hz
 32 repetitions
 OBSERVE H1, 500.1003418 MHz
 DATA PROCESSING
 FT size 65536
 Total time 1 min, 18 sec

Compound 22

Compound 23

changshu0209188a
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: changshu0209188a
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.9 degrees
Acq. time 2.500 sec
Width 4789.0 Hz
8 repetitions
OBSERVE H1: 299.946668 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

changshu0209188c
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: quan110103188
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 0.589 sec
Width 16501.7 Hz
30000 repetitions
OBSERVE C13: 75.4216995 MHz
DECOUPLE H1: 299.9478455 MHz
Power 32 dB
Continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 13 hr, 25 min, 1 sec

Compound 23

Compound 24

Quant1020507byproduct
Pulse Sequence: s2pu1
Solvent: CDCl3
Ambient temperature
File: quant1020507byproduct
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.3 degrees
Acq. time 2.500 sec
Width 4799.0 Hz
8 repetitions
OBSERVE H1: 299.9468689 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

300MHz NMR

Compound 24

QUANT1020507byproduct
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: quant1020507byproduct
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 37.9 degrees
Acq. time 2.500 sec
Width 4798.0 Hz
8 repetitions
OBSERVE H1, 299.946889 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 32768
Total time 0 min, 28 sec

quant1020910c
Pulse Sequence: s2pul
Solvent: CDCl3
Temp. 25.9 C / 298.1 K
User: 1-15-97
File: Quant1-020910-1H-500
INOVA-500 "acetone"
PULSE SEQUENCE
Pulse 45.3 degrees
Acq. time 4.316 sec
Width 8886.1 Hz
64 repetitions
OBSERVE H1, 500.1003418 MHz
DATA PROCESSING
Line broadening 0.1 Hz
FT size 131072
Total time 5 min, 15 sec

Compound 24

quant1020910a
Pulse Sequence: s2pul
Solvent: CDCl3
Temp: 25.0 C / 298.1 K
User: 1-15-87
File: quant1020910b
INNOVA-500 "acetone"
PULSE SEQUENCE
Pulse 48.6 degrees
Acq. time 4.916 sec
Width 6666.1 Hz
64 repetitions
OBSERVE H1: 500.1003418 MHz
DATA PROCESSING
Line broadening 0.1 Hz
FT size 131072
Total time 5 min, 15 sec

quant1020507byproduct3
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: quant1020507byproduct2
INNOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.6 degrees
Acq. time 9.559 sec
Width 16591.7 Hz
23600 repetitions
OBSERVE H1: 299.9478435 MHz
DECOUPLE H1: 299.9478435 MHz
Power 35 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 13 hr, 25 min, 1 sec

Compound 24

quan11020507byproduct3a
 Pulse Sequence: s2pu1
 Solvent: CDCl3
 Ambient temperature
 File: quan110207byproduct2
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 42.6 degrees
 Acq. time 0.539 sec
 Width 16501.7 Hz
 23600 repetitions
 OBSERVE C13, 75.4216995 MHz
 DECOUPLE H1, 299.9478455 MHz
 Power 32 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 13 hr, 25 min, 1 sec

13C OBSERVE
 Pulse Sequence: s2pu1
 Solvent: CDCl3
 Ambient temperature
 File: quan110207byproduct2
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Relax. delay 1.000 sec
 Pulse 42.6 degrees
 Acq. time 0.539 sec
 Width 16501.7 Hz
 23600 repetitions
 OBSERVE C13, 75.4216765 MHz
 DECOUPLE H1, 299.9478455 MHz
 Power 32 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 1.0 Hz
 FT size 32768
 Total time 13 hr, 25 min, 1 sec

Compound 25

Compound 25

quan1020725j
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Temp: 25.0 C / 298.1 K
 User: 1-15-87
 File: Quan1-020725f-1H-500
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Pulse 48.0 degrees
 Acq. time 4.916 sec
 Width 6666.1 Hz
 256 repetitions
 OBSERVE N1, 500.1003418 MHz
 DATA PROCESSING
 Line broadening 0.1 Hz
 FT elze 131072
 Total time 21 min, 1 sec

10mm 13C
 Quan1 020725f
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 User: 1-15-87
 File: Quan1-020725f-10mm13C-44440scans
 INOVA-500 "acetone"
 PULSE SEQUENCE
 Relax. delay 7.000 sec
 Pulse 90.9 degrees
 Acq. time 0.540 sec
 Width 30303.0 Hz
 4440 repetitions
 OBSERVE C13, 125.7503281 MHz
 DECOUPLE N1, 500.1003113 MHz
 Power 40.00
 on during acquisition
 off during delay
 waltz16 modulated
 DATA PROCESSING
 Line broadening 10.0 Hz
 FT elze 65536
 Total time 104 hr, 52 min, 27 sec

Compound 25

10mm 13C
Qunl1 020725f
Pulse Sequence: s2pul
Solvent: CDCl3
Temp: 25.0 C / 298.1 K
User: 1-15-87
File: Qunl1-020725f-10mm13C-44440scans
INOVA-500 "acetone"
PULSE SEQUENCE
Relax. delay 7.000 sec
Pulse 90.8 degrees
Acq. time 0.540 sec
Width 30300.0 Hz
44440 repetitions
OBSERVE C13, 125.7593281 MHz
DECOUPLE H1, 500.1083113 MHz
Power 40 dB
on during acquisition
off during delay
waltz16 modulated
DATA PROCESSING
Line broadening 10.0 Hz
FT size 65536
Total time 104 hr, 52 min, 27 sec

Compound 26

quant1020809d
Pulse Sequence: s2pul
Solvent: CDCl3
Temp: 25.0 C / 298.1 K
User: 1-15-87
File: Quant1-020809d-1H-500MHz
INNOVA-500 "acetone"
PULSE SEQUENCE
Pulse 48.6 degrees
Acq. time 2.458 sec
Width 6666.1 Hz
64 repetitions
OBSERVE H1, 500.1003418 MHz
DATA PROCESSING
FT size 65536
Total time 2 min, 37 sec

IDTG-5mm
Quant1 020809d
Pulse Sequence: s2pul
Solvent: CDCl3
Temp: 25.0 C / 298.1 K
User: 1-15-87
File: Quant1-020809d-1H-500MHz
INNOVA-500 "acetone"
PULSE SEQUENCE
Pulse 48.6 degrees
Acq. time 2.458 sec
Width 6666.1 Hz
64 repetitions
OBSERVE H1, 500.1003418 MHz
DATA PROCESSING
FT size 65536
Total time 2 min, 37 sec

Compound 26

Compound 26

quant1020809e
Pulse Sequence: s2pul
Solvent: CDCl3
Ambient temperature
File: quant1020809e
INOVA-300 "acetone"
PULSE SEQUENCE
Relax. delay 1.000 sec
Pulse 42.5 degrees
Acq. time 0.539 sec
Width 16501.7 Hz
25000 repetitions
OBSERVE C13, 75.4218395 MHz
DECOUPLE H1, 299.9478455 MHz
Power 32 dB
Continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 32768
Total time 11 hr, 10 min, 51 sec

Compound 27

Compound 27

Compound 27