SUPPORTING INFORMATION

FOR

Synthesis of fused bicyclic imidazoles by sequential van Leusen/ring-closing metathesis reactions

Vijaya Gracias,* Alan F. Gasiecki and Stevan W. Djuric

*Scaffold-Oriented Synthesis, Abbott Laboratories, Medicinal Chemistry
Technologies, R4CP, AP10, 100 Abbott Park Road, Abbott Park, IL 60064-
6099, USA*

vijaya.gracias@abbott.com

Acquisition Time (sec) 3.2589	
Comment LOT#77950A-164A(ABBOTTNB) in CDCL3 20 BC2524 8.0mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI	
Date	
File Name \INTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\029\2029194.NMR	
Frequency (MHz) 399.95	Nucleus 1H
Origin emma2.ppd_sc	Original Points Count 32768
Owner nmrdat	Points Count 32768
Solvent CHLOROFORM-D	Spectrum Offset (Hz) 3591.3774
Sweep Width (Hz) 10055.00	

SPEC: j29631z (20-DEC-04 14:03:29) Scans: 1 > 31
 Smp: LOT#77950A-164A(ABBOTTNB) MS-j29631
 Com: SSQ7000/LC958515 DCI/NH3 Expected Monoisotopic Mass: 238.15
 Oper: AUTO Study: GD099030 Client: GASIECKI
 Base: 239.09 Masses: 79.97 > 495.99 #Peaks: 362
 Peak: 1000.0 MHz Intensity: 102245208 RIC: 152488291
 REC #9 = 0.60 min (CI +QIMS LMR UP LR) (/21x23)

Acquisition Time (sec)	3.2589		
Comment	LOT#77950A-169A(ABBOTTNB) in CDCL3 17 BC2572 8.7mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI		
Date			
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\034\2034808.NMR		
Frequency (MHz)	399.95	Nucleus	1H
Origin	emma2.ppd_sc	Original Points Count	32768
Owner	nmrdat	Points Count	32768
Solvent	CHLOROFORM-D	Spectrum Offset (Hz)	3591.0706
Sweep Width (Hz)	10055.00		

2

SPFC: j30430z (22-DEC-04 10:35:20)
 Samp: LOT#77950A-167A(ABBOTTNB) NS-j30430
 Com: SSQ7000/LC958515 DCI/MH3 Expected Monoisotopic Mass: 210.12
 Oper: AUTO Study: GD099030
 Base: 211.02 Masses: 79.97 > 439.98
 Peak: 1000.0 mmu Intensity: 86256472

Scans: 1 > 31

Client: GASIECKI
 #Peaks: 313
 RIC: 105174754

REG #9 @ 0.61 min (CI +QIMS LMR UP LR) (/21>23)

8.6E+07
 Score: 0.99

Acquisition Time (sec)	3.2589		
Comment	LOT#77950A-198A(ABBOTTNB) in CDCL3 16 BC2673 8.7mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI		
Date			
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\044\2044307.NMR		
Frequency (MHz)	399.95	Nucleus	1H
Origin	spectre.ppd_sc	Original Points Count	32768
Owner	nmrdat	Points Count	32768
Solvent	CHLOROFORM-D	Spectrum Offset (Hz)	3591.9905
Sweep Width (Hz)	10055.00		

Table 1, entry 1

SPEC: j58577z (16-FEB-06 15:11:49)
 Samp: LOT#77950A-198A(ABBOTTNB) MS-j58577
 Conn: SSQ7000/LC950515 DCI/MS3 Expected Monoisotopic Mass: 224.13
 Oper: AUTO Study: GD099030
 Base: 225.07 Masses: 79.97 > 468.03
 Peak: 1080.0 MHz Intensity: 143058352
 REG #9 = 0.60 min (CI +QIMS LMR UP LR) (/21x23)

Scans: 1 > 31

Client: GASIECKI
 #Peaks: 321
 RIC: 190943722

1.4E+08
 Score: 0.99

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-199A(ABBOTTNB) in CDCL3 17 BC2680 8.6mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\045\2045063.NMR
Frequency (MHz)	399.95
Nucleus	1H
Origin	spectre.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3590.7637
Sweep Width (Hz)	10055.00

Table 2, entry 1

SPEC: j59334x (17-FEB-05 16:46:05)
 Sarp: LOT#77950A-199A(ABBOTTNB) MS-j59334
 Comp: S2Q7609/LC958515 DCI/NH3 Expected Monoisotopic Mass: 196.10
 Oper: AUTO Study: QD099030
 Base: 197.01 Masses: 79.97 > 412.01
 Peak: 1000.0 MHz Intensity: 99026272
 RES #9 = 0.58 min (CI +Q1MS LMR UP LR) (/19>21)

Scans: 1 > 31

Client: GASIECKI
 #Peaks: 254
 RIC: 131533252

9.9E+07
 Score: 0.99

Acquisition Time (sec) 3.2589	
Comment LOT#77950A-165A(ABBOTTNB) in CDCL3 21 BC2535 8.6mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI	
Date	
File Name \\WTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\029\2029392.NMR	
Frequency (MHz) 399.95	Nucleus 1H
Origin emma2.ppd_sc	Original Points Count 32768
Owner nmrdatt	Points Count 32768
Solvent CHLOROFORM-D	Spectrum Offset (Hz) 3595.9805
Sweep Width (Hz) 10055.00	

Table 1, entry 2

SPBC: j30182x (21-DEC-04 14:30:14)
 Samp: LOT#77950A-165A(ABBOTTNB) MS-j30182
 Conn: S8Q7000/LC958616 DCI/NH3 Expected Monoisotopic Mass: 353.21
 Oper: AUTO Study: G0099030
 Base: 354.18 Masses: 105.88 > 726.01
 Peak: 1000.0 nm Intensity: 15546200
 REG #9 @ 0.63 min (CI +QIMS LMR UP LR) (/19>21)

Scans: 1 > 26

Client: GASIECKI
 #Peaks: 530
 RIC: 45339426

1.6E+07
 Score: 0.83

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-168A(ABBOTTNB) in CDCL3 22 BC2539 10.7mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\SC\DATA\STRUCTDB\NMR_SPECTRA\002\029\2029708.NMR
Frequency (MHz)	399.95
Nucleus	¹ H
Origin	emma2.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3595.3667
Sweep Width (Hz)	10055.00

Table 2, entry 2

SPBC: j30913 (22-DEC-04 14:19:52)
 Samp: LOT#77950A-168A(ABBOTTNB) NS-j30913
 Conn: SSQ7000/LC950016 DCI/MS Expected Monoisotopic Mass: 325.18
 Cpat: AUTO Study: Q0099030
 Base: 326.10 Masses: 97.46 > 670.00
 Peak: 1000.0 THW Intensity: 2488597
 REC #9 = 0.65 min (CI +QIMS LMR UP LR) (/20x22)

Scans: 1 > 27

Client: GASIECKI
 #Peaks: 463
 MS: 7163258

2.5E+06
 Score: 0.86

Acquisition Time (sec)	3.2589	
Comment	LOT#77950A-177A(ABBOTTNB) in CDCL3 26 BC2591 18.0mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI	
Date		
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\037\2037676.NMR	
Frequency (MHz)	399.95	Nucleus 1H
Origin	emma2.ppd.sc	Original Points Count 32768
Owner	nmrdat	Points Count 32768
Solvent	CHLOROFORM-D	Spectrum Offset (Hz) 3592.2974
Sweep Width (Hz)	10055.00	

Table 1, entry 3

SPEC: j46278z (26-JAN-05 18:30:18)
 Samp: LOT#77950A-177A(ABBOTTNB) NE-j46278
 Comm: SSQ7800/LC958515 DCI/NH3 Expected Monoisotopic Mass: 252.16
 Oper: AUTO Study: GD099030
 Base: 253.13 Masses: 79.97 > 523.96
 Peak: 1000.0 nm Intensity: 252448272
 REG #9 = 0.59 min (CI +QIMS LMR UP LR) (/20>22)

Scans: 1 > 31

Client: CASIBCKI
 #Peaks: 381
 RIC: 460923237

2.5E+08
 Score: 0.97

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-179A(ABBOTTNB) in CDCL3 27 BC2592 11.6mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\038\2038127.NMR
Frequency (MHz)	399.95
Nucleus	1H
Origin	emma2.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3591.6846
Sweep Width (Hz)	10055.00

Table 2, entry 3

Acquisition Time (sec) 3.2589	
Comment LOT#77950A-182A(ABBOTTNB) in CDCL3 01 BC2605 5.5mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI	
Date	
File Name \\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\039\2039730.NMR	
Frequency (MHz) 399.95	Nucleus 1H
Origin emma2.ppd_sc	Original Points Count 32768
Owner nmrdat	Points Count 32768
Solvent CHLOROFORM-D	Spectrum Offset (Hz) 3591.6846
Sweep Width (Hz) 10055.00	

Table 1, entry 4

SPEC: 149143 (02-FEB-05 00:29:05) Scans: 1 > 27
 Samp: LOT#77950A-182A(ABBOTTNB) MS-149143
 Comp: SSQ7000/LC958515 DCI/NH3 Expected Monoisotopic Mass: 385.22
 Oper: AUTO Study: GD099030 Client: GASIECKI
 Base: 386.18 Masses: 115.50 > 790.02 #Peaks: 557
 Peak: 1000.0 THW Intensity: 117270400 RIC: 196404971
 REG #9 = 0.64 min (CI +Q1MS LMR UP LR) (/19-21) N+H
 386.2
 327.3
 162.1 217.1 244.1 281.1 348.1
 1.2E+08
 Score: 0.96

Acquisition Time (sec) 3.2589	
Comment LOT#77950A-187A(ABBOTTNB) in CDCL3 03 BC2611 14.0mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI	
Date	
File Name \\NTUFS.PPRD.ABBOTT.COM\DA\SC\DATA\STRUCTDB\NMR_SPECTRA\002\040\2040308.NMR	
Frequency (MHz) 399.95	Nucleus 1H
Origin spectre.ppd_sc	Original Points Count 32768
Owner nmrdat	Points Count 32768
Solvent CHLOROFORM-D	Spectrum Offset (Hz) 3596.9004
Sweep Width (Hz) 10055.00	

Table 2, entry 4

SPIC: j50889z (03-FEB-05 14:43:45)
 Samp: LOT#77950A-187A(ABBOTTNB) MS-j50889
 Conn: 5207800/LC958515 DCI/NH3 Expected Molecular Mass: 357.19
 Oper: AUTO Study: G0899030
 Base: 358.14 Masses: 107.08 > 734.00
 Peak: 1000.0 m/z Intensity: 79965528
 REG #9 = 0.65 min (CI +QIMS LMR UP LR) (/20x22)
 N+H

Scans: 1 > 26

Client: GASIECKI
 #Peaks: 528
 RIC: 120330323

8.0E+07
 Score: 0.97

Acquisition Time (sec) 2.9493	
Comment LOT#77950A-188A(ABBOTTNB) in CDCL3 BC#1115.3 SampleNum 840308 m300	
Date	
File Name \\NTUFS.PPRD.ABBOTT.COM\DA\SC\DATA\STRUCTDB\NMR_SPECTRA\002\040\2040006.NMR	
Frequency (MHz) 300.07	Nucleus 1H
Origin spectre.ppd_sc	Original Points Count 16384
Owner nmrdat	Points Count 16384
Solvent CHLOROFORM-D	Spectrum Offset (Hz) 2386.9832
Sweep Width (Hz) 5555.22	

Table 1, entry 5

SPEC: j51028r (03-FEB-05 20:04:59) Scans: 1 > 31
 Samp: LOT#77950A-188A(ABBOTTNB) MS-j51028
 Comp: SSQT800/LC958515 DCI/MS3 Expected Monoisotopic Mass: 252.16
 Oper: AUTO Study: G0099030 Client: CASIBCKI
 Base: 253.11 Masses: 79.97 > 523.96 #Peaks: 357
 Peak: 1000.0 mVW Intensity: 233032976 RIC: 325953801
 REG #9 = 0.61 min (CI +QIMS LMR UP LR) (/21>23) M+H 2.3E+08
 Score: 0.98

Acquisition Time (sec)	3.2589		
Comment	LOT#77950A-189B(ABBOTTNB) in CDCL3 08 BC2642 6.0mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI		
Date			
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\041\2041786.NMR		
Frequency (MHz)	399.95	Nucleus	1H
Origin	spectre.ppd_sc	Original Points Count	32768
Owner	nmrdat	Points Count	32768
Solvent	CHLOROFORM-D	Spectrum Offset (Hz)	3591.0706
Sweep Width (Hz)	10055.00		

Table 2, entry 5

SPBC: j30430x (22-DEC-04 10:35:20)
 Samp: LOT#77950A-167A(ABBOTTNB) MS-j30430
 Com: SSQ7000/LC958515 DCI/NH3 Expected Monoisotopic Mass: 210.12
 Oper: AUTO Study: G0999030
 Base: 211.02 Masses: 79.97 > 439.98
 Peak: 1000.0 m/z Intensity: 86256472
 REC #9 = 0.61 min (CI +QIMS LMR UP LR) (/21>23)

Scans: 1 > 31

Client: GASIECKI
 #Peaks: 313
 RIC: 105174754

8.6E+07
 Score: 0.99

Acquisition Time (sec)	3.2589
Comment	84791-2-A in CDCl3 22 BC2699 6.4mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\046\2046334.NMR
Frequency (MHz)	399.95
Nucleus	1H
Origin	spectre.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3594.7524
Sweep Width (Hz)	10055.00

Table 1, entry 6

SPBC: j62192z (22-FEB-05 18:24:02)
 Samp: 84791-2-A MS-j62192
 Conn: SQ7000/LC958515 DCI/NH3 Expected Monoisotopic Mass: 367.23
 Oper: AUTO Study: GD099030
 Base: 368.17 Masses: 110.08 > 753.98
 Peak: 1000.0 mm Intensity: 49786712
 REG #9 = 0.62 min (CI +QIMS LMR UP LR) (/19>21)
 M+H

Scans: 1 > 27

Client: GASIECKI
 #Peaks: 548
 RIC: 85009519

5.0E+07
 Score: 0.95

Acquisition Time (sec)	3.2589
Comment	84791-4-A in CDCL3 23 BC2706 6.3mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/spectre Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\SC\DATA\STRUCTDB\NMR_SPECTRA\002\046\2046858.NMR
Frequency (MHz)	399.95
Nucleus	¹ H
Origin	spectre.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3591.9905
Sweep Width (Hz)	10055.00

Table 2, entry 6

SPC: j62727z (23-FEB-05 15:06:57)
 Samp: 84791-4-A MS-j62727
 Comp: S207000/LC958515 DCI/NH3 Expected Monoisotopic Mass: 339.19
 Oper: AUTO Study: G0099030
 Base: 340.13 Masses: 101.67 > 697.97
 Peak: 1000.0 THW Intensity: 13471836
 RES #9 = 0.62 min (CI +QIMS LMR UP LR) (/19>21)

Scans: 1 > 27

Client: GASIECKI
 #Peaks: 450
 RID: 26519390
 1.3E+07
 Score: 0.91

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-183A(ABBOTTNB) in CDCL3 31 BC2601 9.9mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\SC\DATA\STRUCTDB\NMR_SPECTRA\002\038\2038827.NMR
Frequency (MHz)	399.95
Nucleus	¹ H
Origin	emma2.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3594.1387
Sweep Width (Hz)	10055.00

Table 1, entry 7

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-184A(ABBOTTNB) in CDCL3 (1 BC2604 7.9mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\039\2039177.NMR
Frequency (MHz)	399.95
Nucleus	¹ H
Origin	emma2.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3593.2185
Sweep Width (Hz)	10055.00

Table 2, entry 7

Acquisition Time (sec)	3.2589
Comment	LOT#77950A-166A(ABBOTTNB) in CDCL3 22 BC2537 8.6mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI
Date	
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\029\2029755.NMR
Frequency (MHz)	399.95
Nucleus	¹ H
Origin	emma2.ppd_sc
Original Points Count	32768
Owner	nmrdat
Points Count	32768
Solvent	CHLOROFORM-D
Spectrum Offset (Hz)	3593.5254
Sweep Width (Hz)	10055.00

Table 1, entry 8

SPEC: j30706x (22-IBC-04 11:05:39)
 Samp: LOT#77950A-166A(ABBOTTNB) MS-j30706
 Comp: 55Q7000/LC950515 DCI/NH3 Expected Monoisotopic Mass: 252.16
 Oper: AUTO Study: 5D099030
 Base: 253.11 Masses: 79.97 > 523.96
 Peak: 1000.0 mmu Intensity: 79672320
 REG #9 = 0.62 min (CI +Q1MS LMR UP LR) (/21523)

Scans: 1 > 32

Client: GASIECKI
 #Peaks: 378
 RIC: 149112991

8.0E+07
 Score: 0.92

Acquisition Time (sec)	3.2589		
Comment	LOT#77950A-170A(ABBOTTNB) in CDCL3 j8 BC2573 6.5mg u400 Acq: VERSION 6.1 REVISION A/u400 Proc: VERSION 4.2 REVISION A/emma2 Chemist: ALAN GASIECKI		
Date			
File Name	\\NTUFS.PPRD.ABBOTT.COM\DATA\STRUCTDB\NMR_SPECTRA\002\035\2035231.NMR		
Frequency (MHz)	399.95	Nucleus	1H
Origin	emma2.ppd_sc	Original Points Count	32768
Owner	nmrdat	Points Count	32768
Solvent	CHLOROFORM-D	Spectrum Offset (Hz)	3593.5254
Sweep Width (Hz)	10055.00		

Table 2, entry 8

SPEC: j40960z (18-JAN-05 14:17:50) Scans: 1 > 31
 Samp: LOT#77950A-170A(ABBOTTNB) MS-j40960
 Conn: SSQ7000/LC958515 DCI/HH3 Expected Monoisotopic Mass: 224.13
 Oper: AUTO Study: GD099030 Client: GASIECKI
 Base: 225.08 Masses: 79.97 > 468.03 #Peaks: 363
 Peak: 1000.0 THW Intensity: 268074592 RIC: 438388993
 REG #9 = 0.61 min (CI +QIMS LMR UP LR) (/21>23) M+H 2.7E+08
 225.1 Score: 0.98