Supporting Information

A Highly Practical *Instant* Catalyst for Cyclotrimerization of Alkynes to Substituted Benzenes

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E:\601\700\NS625-1-1H.1
NS625-1-1H

DFILE E:\601\700\NS625-1-1H.1
COMNT NS625-1-1H
DATIM 20-12-2004 12:38:05
OBNOC 1H
EXMOD single pulse.ex2
OBFRO 500.16 MHz
OBFET 2.41 KHz
POINT 6.01 Hz
FREQU 16384
SCANS 9384.38 Hz
ACQTM 8
PD 1.7459 sec
PM1 5.0000 sec
IRNUC 6.00 usec
CTEMP 1H
SLVNT 20.9 C
EXREF CDCL3
BF 0.00 ppm
RGAIN 0.12 Hz
50

¹H NMR

¹H NMR

E:\201\300\NS214-1-13C_CARBON.1
NS214-1-13C

DEFILE E:\201\300\NS214-1-13C_CARBON.1
 COMNT NS214-1-13C
 DATIM 07-01-2004 11:35:37
 OBNUC 13C
 EXMOD single pulse dec
 OBFRQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREOU 39308.18 Hz
 SCANS 222
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.50 usec
 TRNUC 1H
 CTEMP 22.5 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 66

E:\NS773-1-1H.1
NS773-1-1H

DFIL E:\NS773-1-1H.1
 COMNT NS773-1-1H
 DATIM 04-03-2005 16:53:28
 OBNUC 1H
 EXMOD single_pulse.ex2
 OBPRO 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQU 9384.38 Hz
 SCANS 16
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PM1 6.00 usec
 IRNUC 1H
 CTEMP 20.6 C
 SLVNT CDCL3
 EXREF 7.26 ppm
 BF 0.12 Hz
 RGAIN 50

E:\201\300\NS219-2-13C.1
NS219-2-13C

DFILE E:\201\300\NS219-2-13C.1
 COMNT NS219-2-13C
 DATIM 24-12-2003 16:11:33
 OBNUC 13C
 EXMOD single_pulse_dec
 OBFRO 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 39308.18 Hz
 SCANS 58
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.50 usec
 IRNUC 1H
 CTEMP 22.8 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 66

E:\601\700\NS667-1-1H.1
NS667-1-1H

DFILE E:\601\700\NS667-1-1H.1
COMPT NS667-1-1H
DATIM 17-01-2005 12:15:12
OBNUC 1H
EXMOD single pulse.ex2
OBFRO 500.16 MHz
OBFET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 16
ACQTM 1.7459 sec
PD 5.0000 sec
PM1 6.00 usec
IRNUC 1H
CTEMP 20.9 C
SLVNT CDCl3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 36

E:\601\700\NS667-1-13C.1
NS667-1-13C

FILE E:\601\700\NS667-1-13C.1
 COMNT NS667-1-13C
 DATIM 17-01-2005 12:20:16
 OBNOC 13C
 EXMOD single pulse dec
 OBERQ 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 39308.18 Hz
 SCANS 53
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.73 usec
 IRNUC 1H
 CTEMP 21.3 C
 CDCL3
 SLVNT 77.00 ppm
 EXREF 0.12 Hz
 BF 64
 RGAIN

E:\NS922-2-1H.als
NS922-2-1H

DFILE E:\NS922-2-1H.als
 COMNT NS922-2-1H
 DATIM 21-06-2005 14:15:13
 1H
 single_pulse.ex2
 600.17 MHz
 5.30 KHz
 5.47 Hz
 13107
 9008.87 Hz
 16
 1.4549 sec
 5.0000 sec
 6.00 usec
 21.5 C
 0.00 ppm
 0.12 Hz
 40

¹H NMR

E:\NS922-2-13C.1
NS922-2-13C

DEFILE E:\NS922-2-13C.1
 COMANT NS922-2-13C
 DATIM 21-06-2005 14:29:08
 OBNUC 13C
 EXMOD single_pulse_dec
 OBFRQ 150.92_MHz
 OBSET 8.52_KHz
 OBFIN 1.74_Hz
 POINT 32768
 FREQU 47348.49_Hz
 SCANS 249
 ACQTM 0.6921_sec
 PD 2.0000_sec
 PM1 3.67_usec
 IRNUC 1H
 CTEMP 23.1_C
 SLVNT CDCL3
 EXREF 77.00_ppm
 BF 0.12_Hz
 RGAIN 60

13C NMR

E:\NS944-3-1H.1
NS944-3-1H

¹H NMR

FILE E:\NS944-3-1H.1
 CONT NS944-3-1H
 DATE 15-07-2005 12:47:48
 INSTR 1H
 PULPROG single_pulse.ex2
 F2 - 500.16 MHz
 OBSET 2.41 KHz
 OBFIN 6.01 Hz
 POINT 16384
 FREQ 9384.38 Hz
 SCANS 16
 ACQTM 1.7459 sec
 PD 5.0000 sec
 PM 6.00 usec
 IRNUC 1H
 CTEMP 24.0 C
 SLVNT CDCL3
 EXREF 0.00 ppm
 BF 0.12 Hz
 RGAIN 42

E:\NS944-3-13C.1
NS944-3-13C

DETILE E:\NS944-3-13C.1
 COMPT NS944-3-13C
 DATIM 15-07-2005 12:43:14
 OBNUC 13C
 EXMOD single_pulse_dec
 OBFRO 125.77 MHz
 OBSET 7.87 KHz
 OBFIN 4.21 Hz
 POINT 32768
 FREQU 39308.18 Hz
 SCANS 62
 ACQTM 0.8336 sec
 PD 2.0000 sec
 PW1 3.73 usec
 IRNUC 1H
 CTEMP 24.3 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 64

¹³C NMR

E:\NS906-2-1H.1
NS906-2-1H

DEFILE E:\NS906-2-1H.1
COMNT NS906-2-1H
DATIM 13-06-2005 12:22:17
OBNUC 1H
EXMOD single_pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 23.6 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 40

¹H NMR

(in a small amount of Acetone)

E:\NS906-2-13C.10
NS906-2-13C

DFILE E:\NS906-2-13C.10
 COMNT NS906-2-13C
 DATIM 13-06-2005 12:37:15
 OBNUC 13C
 EXMOD single pulse dec
 OBFRO 150.92 MHz
 OBSET 8.52 KHz
 OBFIN 1.74 Hz
 POINT 32768
 FREQU 47348.49 Hz
 SCANS 286
 ACQTM 0.6921 sec
 PD 2.0000 sec
 PUL 3.67 usec
 IRNUC 1H
 CTEMP 24.4 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

¹³C NMR

¹³C NMR

E:\NS905-2-byproduct-1H.1
NS905-2-byproduct-1H

DFILE E:\NS905-2-byproduct-1H.1
COMNT NS905-2-byproduct-1H
DATIM 22-06-2005 09:41:06
1H
OBNUC 1H
EXMOD single_pulse.ex2
OBFRQ 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 22.8 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 38

DFILE E:\NS905-2-byproduct-13C
 COMNT NS905-2-byproduct-13C
 DATIM 22-06-2005 10:16:36
 EXMOD 13C
 OBFRQ single pulse dec
 OBSET 150.92 MHz
 OBFIN 8.52 KHz
 POINT 1.74 Hz
 FREQU 32768
 SCANS 47348.49 Hz
 ACQTM 743
 PD 0.6921 sec
 PM1 2.0000 sec
 IRNUC 3.67 usec
 CTEMP 1H
 STVNT 23.6 C
 EXREF CDCL3
 BF 77.00 ppm
 RGAIN 0.12 Hz
 60

E:\NS964-3-1H.1
NS964-3-1H

DEFILE E:\NS964-3-1H.1
COMNT NS964-3-1H
DATIM 22-07-2005 15:04:42
OBNUC 1H
EXMOD single pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 8
AQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 23.7 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 30

E:\NS964-3-13C.3
NS964-3-13C

DEFILE E:\NS964-3-13C.3
COMNT NS964-3-13C
DATIM 22-07-2005 15:11:11
OBNUC 13C
EXMOD single pulse_dec
OBFRO 150.92 MHz
OBSET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREQU 47348.49 Hz
SCANS 97
ACQTM 0.6921 sec
PD 2.0000 sec
PWL 3.67 usec
IRNUC 1H
CTEMP 24.5 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

E:\MNS004-2-naka-1H.1
MNS004-2-naka-1H

DEFILE E:\MNS004-2-naka-1H.1
COMNT MNS004-2-naka-1H
DATIM 02-08-2005 18:35:42
OBNUC 1H
EXMOD single_pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 24.3 C
SLVNT CDCL3
EXREF 7.26 ppm
BF 0.12 Hz
RGAIN 34

E:\MNS004-2-naka-13C.1
MNS004-2-naka-13C

DFILE E:\MNS004-2-naka-13C.1
COMNT MNS004-2-naka-13C
DATIM 02-08-2005 18:40:37
ONUD 13C
EXMOD single pulse dec
OBFRO 150.92 MHz
OBSET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREOU 47348.49 Hz
SCANS 62
ACQTM 0.6921 sec
PD 2.0000 sec
PW1 3.67 usec
IRNUC 1H
CTEMP 24.7 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

E:\Ns943-2-1H.1
NS943-2-1H

DEFILE E:\Ns943-2-1H.1
 COMNT NS943-2-1H
 DATIM 07-07-2005 10:06:58
 OBNUC 1H
 EXMOD single pulse.ex2
 OBFRO 600.17 MHz
 OBSET 5.30 KHz
 OBFIN 5.47 Hz
 POINT 16384
 FREQU 11261.26 Hz
 SCANS 16
 ACQTM 1.4549 sec
 PD 5.0000 sec
 PW1 6.00 usec
 IRNUC 1H
 CTEMP 23.1 C
 SLVNT CDCL3
 EXREF 0.00 ppm
 BF 0.12 Hz
 RGAIN 38

E:\NS943-2-13C.1
NS943-2-13C

DFILE E:\NS943-2-13C.1
 COMNT NS943-2-13C
 DATIM 07-07-2005 10:11:38
 OBNUC 13C
 EXMOD single pulse dec
 OBFRO 150.92 MHz
 OBSET 8.52 KHz
 OBFIN 1.74 Hz
 POINT 32768
 FREQU 47348.49 Hz
 SCANS 57
 ACQTM 0.6921 sec
 PD 2.0000 sec
 PUL 3.67 usec
 IRNUC 1H
 CTEMP 23.8 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 60

E:\MNS056-EA-1H.1
MNS056-EA-1H

DEFILE E:\MNS056-EA-1H.1
COMNT MNS056-EA-1H
DATIM 10-11-2005 12:29:47
OBNUC 1H
EXMOD single pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
AQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 24.5 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 44

E:\MNS056-EA-13C.2
MNS056-EA-13C

DEFILE E:\MNS056-EA-13C.2
COMNT MNS056-EA-13C
DATIM 10-11-2005 12:26:12
OBNUC 13C
EXMOD single pulse dec
OBFRO 150.92 MHz
OBSET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREOU 47348.49 Hz
SCANS 213
ACQTM 0.6921 sec
PD 2.0000 sec
PM1 3.67 usec
IRNUC 1H
CTEMP 25.1 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

¹³C NMR

E:\MNS019-EA-1H.1
MNS019-EA-1H

DEFILE E:\MNS019-EA-1H.1
COMNT MNS019-EA-1H
DATIM 15-09-2005 19:44:18
OENUC 1H
EXMOD single_pulse.ex2
OBFRO 500.16 MHz
OBSET 2.41 KHz
OBFIN 6.01 Hz
POINT 16384
FREQU 9384.38 Hz
SCANS 16
ACQTM 1.7459 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 24.2 C
SLVNT CDCl3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 44

¹H NMR

E:\MNS019-EA-13C.1
MNS019-EA-13C

DEFILE E:\MNS019-EA-13C.1
COMNT MNS019-EA-13C
DATIM 15-09-2005 19:53:25
OBNUC 13C
EXMOD single_pulse_dec
OBFRO 125.77 MHz
OBSET 7.87 KHz
OBFIN 4.21 Hz
POINT 32768
FREQU 39308.18 Hz
SCANS 138
ACQTM 0.8336 sec
PD 2.0000 sec
PWL 3.73 usec
IRNUC 1H
CTEMP 24.8 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 66

E:\MNS049-2-1H.3
MNS049-2-1H

DFILE E:\MNS049-2-1H.3
COMNT MNS049-2-1H
DATIM 10-11-2005 11:22:35
OBNUC 1H
EXMOD single pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
FMT 6.00 usec
IRNUC 1H
CTEMP 24.9 C
SIVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 40

E:\MNS057-3-13C.1
MNS057-3-13C

DFILE E:\MNS057-3-13C.1
COMNT MNS057-3-13C
DATIM 14-11-2005 20:57:53
OBNUC 13C
EXMOD single pulse dec
OBFRO 150.92 MHz
OBSET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREQU 47348.49 Hz
SCANS 80
ACQTM 0.6921 sec
PD 2.0000 sec
PWL 3.67 usec
IRNUC 1H
CTEMP 24.9 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.22 Hz
RGAIN 60

E:\MNS047-2-sita-1h.1
MNS047-2-sita-1h

DFILE E:\MNS047-2-sita-1h.1
COMNT MNS047-2-sita-1h
DATIM 06-09-2005 17:57.53
OBNUC 1H
EXMOD single_pulse.ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 24.1 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 40

E:\MNS047-2-sita-13C.2
MNS047-2-sita-13C

DFILE E:\MNS047-2-sita-13C.2
COMNT MNS047-2-sita-13C
DATIM 06-09-2005 18:25:54
13C
OBNUC 13C
EXMOD single pulse dec
OBFRO 150.92 MHz
OBSET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREOU 47348.49 Hz
SCANS 207
ACQTM 0.6921 sec
PD 2.0000 sec
PM1 3.67 usec
IRNUC 1H
CTEMP 24.4 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

E:\MNS126-2-1H.1
MNS126-2-1H

DFILE E:\MNS126-2-1H.1
COMNT MNS126-2-1H
DATIM 29-10-2005 14:40:30
OBNUC 1H
EXMOD single pulse, ex2
OBFRO 600.17 MHz
OBSET 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PWL 6.00 usec
IRNUC 1H
CTEMP 25.2 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 1.00 Hz
RGAIN 42

¹H NMR

42

E:\MNS126-2-13C.12
MNS126-2-13C

DFILE E:\MNS126-2-13C.12
 COMNT MNS126-2-13C
 DATIM 29-10-2005 14:51:40
 OBNUC 13C
 EXMOD single_pulse_dec
 OBFRQ 150.92 MHz
 OBSET 8.52 KHz
 OBFIN 1.74 Hz
 POINT 32768
 FREQU 47348.49 Hz
 SCANS 201
 ACQTM 0.6921 sec
 PD 2.0000 sec
 PUL 3.67 usec
 TRNUC 1H
 CTEMP 25.9 C
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 1.00 Hz
 RGAIN 60

¹³C NMR

E:\MNS092-2-1H.4
MNS092-2-1H

DFILE E:\MNS092-2-1H.4
CONANT MNS092-2-1H
DATIM 13-10-2005 15:48:16
OBNUC 1H
EXMOD single_pulse.ex2
OBFRO 600.17 MHz
OBSEI 5.30 KHz
OBFIN 5.47 Hz
POINT 16384
FREQU 11261.26 Hz
SCANS 16
ACQTM 1.4549 sec
PD 5.0000 sec
PM1 6.00 usec
IRNUC 1H
CTEMP 23.8 C
SLVNT CDCL3
EXREF 0.00 ppm
BF 0.12 Hz
RGAIN 40

43

E:\MNS092-2-13C.1
MNS092-2-13C

DELTE E:\MNS092-2-13C.1
COMNT MNS092-2-13C
DATIM 13-10-2005 15:54:09
EXMOD 13C
OENUC
OENUC single_pulse_dec
OBFRO 150.92 MHz
OBFRO 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREQU 47348.49 Hz
SCANS 84
ACQTM 0.6921 sec
PD 2.0000 sec
PWI 3.67 usec
IRNUC 1H
CTEMP 24.4 C
SLVNT CDCl3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

E:\MNS079-2-1H.19
MNS079-2-1H

DEFILE E:\MNS079-2-1H.19
 COMNT MNS079-2-1H
 DATIM 04-10-2005 14:24:49
 OBNUC 1H
 EXMOD single-pulse.ex2
 OBFRO 600.17 MHz
 OBSET 5.30 KHz
 OBFIN 5.47 Hz
 POINT 16384
 FREQU 11261.26 Hz
 SCANS 16
 ACQTM 1.4549 sec
 PD 5.0000 sec
 PM1 6.00 usec
 IRNUC 1H
 CTEMP 23.5 C
 SLVNT CDCL3
 EXREF 0.00 ppm
 BF 0.12 Hz
 RGAIN 30

E:\MNS079-2-13C.1
MNS079-2-13C

DEFILE E:\MNS079-2-13C.1
COMNT MNS079-2-13C
DATIM 04-10-2005 14:32:32
OENUC 13C
EXMOD single pulse dec
OBFRO 150.92 MHz
OBFET 8.52 KHz
OBFIN 1.74 Hz
POINT 32768
FREQU 47348.49 Hz
SCANS 110
AQTM 0.6921 sec
PD 2.0000 sec
PWL 3.67 usec
IRNUC 1H
CTEMP 24.4 C
SLVNT CDCl3
EXREF 77.00 ppm
BF 0.12 Hz
RGAIN 60

¹³C NMR

¹³C NMR