

Supporting Information

α -Amination of Keto-Nitrones via Multihetero-Cope Rearrangement Employing an Imidoyl Chloride Reagent

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Table of Contents

General Methods and Materials	S2
General Procedure A for Nitronone Synthesis	S3
General Procedure B for [3,3]-Rearrangement	S7
Secondary Transformations	S14
¹ H, ¹³ C NMR Spectra	S16

Methods: General. Infrared (IR) spectra were obtained using a Jasco 460 Plus Fourier transform infrared spectrometer. Proton and carbon magnetic resonance spectra (^1H NMR and ^{13}C NMR) were recorded on a Bruker model Avance 400 (^1H NMR at 400 MHz and ^{13}C at 100 MHz) or a Bruker model Avance 600 (^1H NMR at 600 MHz and ^{13}C NMR at 150 MHz) spectrometer with solvent resonance as the internal standard (^1H NMR: CDCl_3 at 7.26 ppm; ^{13}C NMR: CDCl_3 at 77.0 ppm). ^1H NMR data are reported as follows: chemical shift, multiplicity (s = singlet, br s = broad singlet, d = doublet, t = triplet, br t = broad triplet, q = quartet, m = multiplet), coupling constants (Hz), and integration. Mass spectra were obtained using a Bruker BioTOF II spectrometer with electrospray ionization calibrated with CsOAc or an Agilent Technologies 6520, Accurate – Mass QTOF LCMS, 1200 series LC with dual spray ESI source. All samples were prepared in methanol. Analytical thin layer chromatography (TLC) was performed on Sorbent Technologies 0.20 mm Silica G TLC plates. Visualization was accomplished with UV light and/or aqueous ceric ammonium nitrate solution followed by heating. Purification of the reaction products was carried out by flash chromatography using Siliaflash-P60 silica gel (40–63 μm) purchased from Silicycle. Unless otherwise noted, all reactions were carried out under an atmosphere of dry nitrogen in oven-dried glassware with magnetic stirring. Yield refers to isolated yield of analytically pure material unless otherwise noted. Yields are reported for a specific experiment and as a result may differ slightly from those found in the tables, which are averages of at least two experiments. Nitron stereochemistry was assigned by ^1H NOESY analysis.

Materials: General. Dichloromethane was dried by passage through a column of neutral alumina under nitrogen prior to use. Triethylamine was freshly distilled from calcium hydride prior to use. Benzyl-hydroxylamine,¹ *p*-methoxy-benzylhydroxylamine,² *p*-methyl-benzylhydroxylamine,³ *p*-chloro-benzylhydroxylamine,³ and (*S*)- α -methyl-benzylhydroxylamine⁴ were prepared according to the published procedures. Imidoyl chloride (**1**) was prepared via the literature method.⁵ Nitron **S11** was prepared via the published method.⁶ All other reagents were purchased from commercial sources and were used as received unless otherwise noted.

¹ Maskill, H.; Jencks, W. P. *J. Am. Chem. Soc.* **1987**, *109*, 2062.

² Nakano, Y.; Kato, Y.; Imai, K.; Ochiai, E.; Namekawa, J.; Ishizuka, S.; Takenouchi, K.; Tanatani, A.; Hashimoto, Y.; Nagasawa, K. *J. Med. Chem.* **2006**, *49*, 2398.

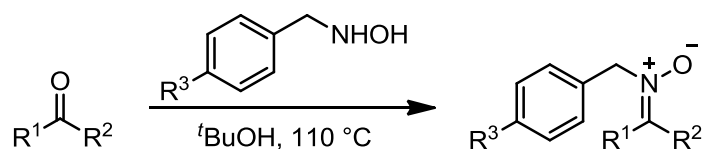
³ Gordon, I. M.; Maskill, H. *J. Chem. Soc., Perkin Trans. 2* **2001**, 2059.

⁴ Breuning, M.; Hauser, T.; Tanzer, E.-M. *Org. Lett.*, **2009**, *11*, 4032.

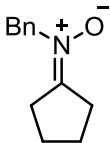
⁵ Osipov, S.; Artyushin, O.; Kolomiets, A.; Bruneau, C.; Dixneuf, P. *Synlett*, **2000**, 1031.

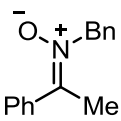
⁶ Pfeiffer, J. Y.; Beauchemin, A. M. *J. Org. Chem.*, **2009**, *74*, 8381.

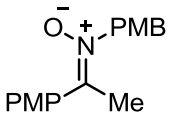
General Procedure A for Nitrone Synthesis:



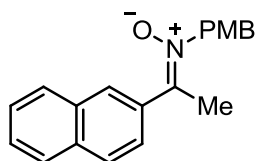
An oven-dried 4-mL scintillation vial equipped with magnetic stir bar was charged with the appropriate ketone (2.0 mmol, 2.0 equiv) and hydroxylamine (1.0 mmol, 1 equiv). The vial was purged with nitrogen and *tert*-butanol (2.0 mL) was added. The septum was replaced with a Teflon-sealed cap and the reaction was stirred at 110 °C for 14 h. The reaction was cooled to 23 °C and volatiles were removed *in vacuo*. The crude product was purified via flash chromatography (SiO₂) to give the desired product.

 ***N*-Cyclopentylidene-1-phenylmethanamine oxide (2):** The title compound was prepared according to General Procedure A using cyclopentanone (1.00 mL, 11.3 mmol, 2.0 equiv) and benzylhydroxylamine (695 mg, 5.64 mmol, 1.0 equiv) in *t*BuOH (10 mL). Purification by flash chromatography (dichloromethane to 98:2 dichloromethane/methanol) furnished **2** as a tan solid (800 mg, 4.23 mmol, 75%). Analytical data: **mp** 64-67.5 °C; **¹H NMR** (400 MHz, CDCl₃): δ 7.38 (d, *J* = 7.2 Hz, 2H), 7.33-7.27 (m, 3H), 4.90 (s, 2H), 2.65 (br s, 2H), 2.50 (br s, 2H), 1.83-1.74 (m, 4H); **¹³C NMR** (100 MHz, CDCl₃): δ 155.9, 133.2, 128.5, 128.0, 127.9, 65.0, 30.9, 30.8, 26.1, 24.3; **HRMS (ESI⁺)** Calcd. for C₁₂H₁₅NO+H, 190.1232; Found, 190.1229; **IR** (thin film, cm⁻¹) 3398, 2965, 2876, 1632, 1454, 1136, 960; **TLC** (95:5 dichloromethane/methanol): R_f = 0.20.

 **(*Z*)-1-Phenyl-*N*-(1-phenylethylidene)methanamine oxide (6):** The title compound was prepared according to General Procedure A using acetophenone (0.234 mL, 2.0 mmol, 2.0 equiv) and benzyl-hydroxylamine (123 mg, 1.0 mmol, 1.0 equiv) in *t*BuOH (2 mL). Purification by flash chromatography (100:0 to 98:2 dichloromethane/methanol) furnished **6** as a pale yellow oil (111 mg, 0.493 mmol, 49%). Analytical data: **¹H NMR** (400 MHz, CDCl₃): δ 7.42-7.39 (m, 3H), 7.31-7.28 (m, 5H), 7.21-7.19 (m, 2H), 4.97 (s, 2H), 2.45 (s, 3H); **¹³C NMR** (100 MHz, CDCl₃): δ 147.6, 136.2, 134.2, 129.1, 128.8, 128.4, 128.1, 128.0, 127.5, 63.8, 20.6; **HRMS (ESI⁺)** Calcd. for C₁₅H₁₅NO+Na, 248.1052; Found, 248.1050; **IR** (thin film, cm⁻¹) 3223, 3060, 1579, 1495, 1453, 1265, 1178; **TLC** (95:5 dichloromethane/methanol): R_f = 0.1.

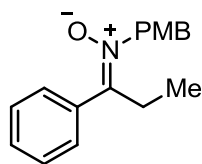
 **(*Z*)-1-(4-Methoxyphenyl)-*N*-(1-(4-methoxyphenyl)ethylidene) methanamine oxide (S1):** The title compound was prepared according to General Procedure A using *p*-methoxyacetophenone (300 mg, 2.0 mmol, 2.0 equiv) and *p*-methoxybenzylhydroxylamine (153 mg, 1.0 mmol, 1.0 equiv) in *t*BuOH (2 mL). Purification by flash chromatography (100:0 to 98:2 dichloromethane/methanol) furnished **S1** as

a yellow oil with a 6:1 diastereomeric ratio (37 mg, 0.130 mmol, 13%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.23 (d, $J = 8.4$ Hz, 2H), 7.13 (d, $J = 8.4$ Hz, 2H), 6.92 (d, $J = 8.8$ Hz, 2H), 6.83 (d, $J = 8.8$ Hz, 2H), 4.89 (s, 2H), 3.82 (s, 3H), 3.76 (s, 3H), 2.39 (s, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 160.0, 159.3, 147.0, 130.4, 130.1, 129.7, 129.0, 128.5, 126.5, 114.2, 114.1, 113.8, 113.1, 63.0, 55.3, 55.2, 55.2, 20.7, 19.2; **HRMS (ESI⁺)** Calcd. for $\text{C}_{17}\text{H}_{19}\text{NO}_3+\text{H}$, 286.1443; Found, 286.1444; **IR** (thin film, cm^{-1}) 3349, 2958, 2837, 2220, 1609, 1512, 1441, 1249, 1175; **TLC** (95:5 dichloromethane/methanol): $R_f = 0.1$.



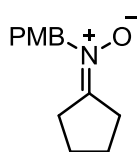
(Z)-1-(4-Methoxyphenyl)-N-(1-(naphthalen-2-yl)ethylidene)methanamine oxide (S2):

The title compound was prepared according to General Procedure A using 2-acetonaphthone (340 mg, 2.0 mmol, 2.0 equiv) and *p*-methoxy-benzylhydroxylamine (153 mg, 1.0 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (98:2 dichloromethane/methanol) furnished **S2** as a yellow oil (97.1 mg, 0.318 mmol, 32%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.50-7.45 (m, 2H), 7.41-7.38 (m, 1H), 7.17-7.13 (m, 2H), 6.91 (d, $J = 8.4$ Hz, 1H), 6.83 (d, $J = 8.8$ Hz, 2H), 6.43 (d, $J = 8.8$ Hz, 2H), 4.53 (s, 2H), 3.37 (s, 3H), 2.09 (s, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 159.5, 147.1, 133.6, 133.1, 132.8, 129.9, 128.9, 128.2, 127.8, 127.4, 127.3, 127.1, 126.5, 124.8, 113.9, 63.5, 55.3, 20.8; **HRMS (ESI⁺)** Calcd. for $\text{C}_{20}\text{H}_{19}\text{NO}_2+\text{Na}$, 328.1314; Found, 328.1324; **IR** (thin film, cm^{-1}) 3408, 3053, 2986, 1513, 1265, 1213, 1176; **TLC** (95:5 dichloromethane/methanol): $R_f = 0.14$.



(Z)-1-(4-Methoxyphenyl)-N-(1-phenylpropylidene)methanamine oxide (S3):

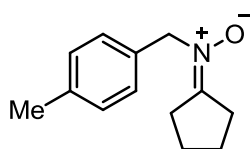
The title compound was prepared according to General Procedure A using propiophenone (0.26 mL, 2.0 mmol, 2.0 equiv) and *p*-methoxy-benzylhydroxylamine (153 mg, 1.0 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (98:2 dichloromethane/methanol) furnished **S3** as a pale yellow oil (83.2 mg, 0.309 mmol, 31%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.44-7.42 (m, 3H), 7.20-7.15 (m, 4H), 6.82 (d, $J = 8.8$ Hz, 2H), 4.80 (s, 2H), 3.78 (s, 3H), 2.88 (q, $J = 7.2, 7.6$ Hz, 2H), 1.02 (t, $J = 7.4$ Hz, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 159.4, 151.6, 135.1, 129.9, 129.1, 128.9, 128.0, 126.4, 113.8, 63.8, 55.2, 26.2, 9.3; **HRMS (ESI⁺)** Calcd. for $\text{C}_{17}\text{H}_{19}\text{NO}_2+\text{H}$, 270.1495; Found, 270.1497; **IR** (thin film, cm^{-1}) 3409, 3053, 2985, 1612, 1493, 1265, 1177; **TLC** (95:5 dichloromethane/methanol): $R_f = 0.16$.



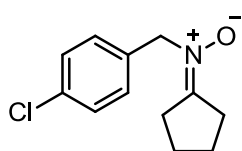
N-Cyclopentylidene-1-(4-methoxyphenyl)methanamine oxide (S4):

The title compound was prepared according to General Procedure A using cyclopentanone (0.177 mL, 2.0 mmol, 2.0 equiv) and *p*-methoxy-benzylhydroxylamine (153 mg, 1.00 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (100:0 to 95:5 dichloromethane/methanol) furnished **S4** as a brown oil (192 mg, 0.876 mmol, 88%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.32 (d, $J = 8.8$ Hz, 2H), 6.82 (d, $J = 8.8$ Hz, 2H), 4.82 (s, 2H), 3.73 (s, 2H), 2.61 (t, $J = 7.2$ Hz, 2H), 2.50 (t, $J = 7.2$ Hz, 2H), 1.81-1.72 (m, 4H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 159.4, 155.0, 129.5, 125.5, 113.9, 64.5,

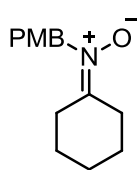
55.1, 30.9, 26.2, 24.3; **HRMS (ESI⁺)** Calcd. for C₁₃H₁₇NO₂+H, 220.1337; Found, 220.1338; **IR** (thin film, cm⁻¹) 3388, 2963, 1612, 1513, 1250, 1179, 1133, 1029; **TLC** (95:5 dichloromethane/methanol): R_f = 0.15.



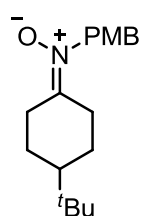
N-Cyclopentylidene-1-(p-tolyl)methanamine oxide (S5): The title compound was prepared according to General Procedure A using cyclopentanone (0.18 mL, 2.0 mmol, 2.0 equiv) and *p*-methylbenzylhydroxylamine (137 mg, 1.0 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (98:2 to 95:5 dichloromethane/methanol) furnished **S5** as an off-white semi-solid (160 mg, 0.787 mmol, 77%). Analytical data: **¹H NMR** (400 MHz, CDCl₃): δ 7.29 (d, *J* = 8.0 Hz, 2H), 7.13 (d, *J* = 9.6 Hz, 2H), 4.88 (s, 2H), 2.65 (t, *J* = 7.2, 2H), 2.51 (t, *J* = 6.8 Hz, 2H), 2.31 (s, 3H), 1.85-1.75 (m, 4H); **¹³C NMR** (100 MHz, CDCl₃): δ 155.2, 137.8, 130.3, 129.2, 128.0, 64.9, 30.9, 30.9, 26.2, 24.3, 20.9; **HRMS (ESI⁺)** Calcd. for C₁₃H₁₇NO+Na, 226.1208; Found, 226.1208; **IR** (thin film, cm⁻¹) 3388, 2964, 2875, 2207, 1627, 1514, 1452, 1142; **TLC** (95:5 dichloromethane/methanol): R_f = 0.4.



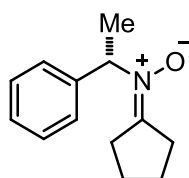
1-(4-Chlorophenyl)-N-cyclopentylidenemethanamine oxide (S6): The title compound was prepared according to General Procedure A using cyclopentanone (0.18 mL, 2.0 mmol, 2.0 equiv) and *p*-chlorobenzylhydroxylamine (157 mg, 1.0 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (98:2 dichloromethane/methanol) furnished **S6** as an off-white solid (175 mg, 0.784 mmol, 78%). Analytical data: **mp** 104-107 °C; **¹H NMR** (400 MHz, CDCl₃): δ 7.39 (d, *J* = 8.4 Hz, 2H), 7.34 (d, *J* = 8.4 Hz, 2H), 4.92 (s, 2H), 2.69 (t, *J* = 7.2 Hz, 2H), 2.54 (t, *J* = 7.0 Hz, 2H), 1.90-1.80 (m, 4H); **¹³C NMR** (100 MHz, CDCl₃): δ 155.8, 134.2, 131.9, 129.6, 128.9, 64.3, 31.1, 31.1, 26.3, 24.5; **HRMS (ESI⁺)** Calcd. for C₁₂H₁₄ClNO+H, 224.0841; Found, 224.0843; **IR** (thin film, cm⁻¹) 3388, 2964, 2875, 2207, 1627, 1514, 1452, 1142; **TLC** (95:5 dichloromethane/methanol): R_f = 0.12.



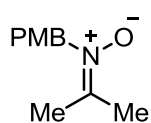
N-Cyclohexylidene-1-(4-methoxyphenyl)methanamine oxide (S7): The title compound was prepared according to General Procedure A using cyclohexanone (0.2 mL, 2.00 mmol, 2.0 equiv) and *p*-methoxybenzylhydroxylamine (153 mg, 1.00 mmol, 1.0 equiv) in ^tBuOH (2 mL). Purification by flash chromatography (100:0 to 95:5 dichloromethane/methanol) furnished **S7** as a yellow oil (167 mg, 0.716 mmol, 71%). Analytical data: **¹H NMR** (400 MHz, CDCl₃): δ 7.30 (d, *J* = 8.8 Hz, 2H), 6.83 (d, *J* = 8.4 Hz, 2H), 4.98 (s, 2H), 3.74 (s, 3H), 2.71 (t, *J* = 6.4, 2H), 2.46 (t, *J* = 6.0 Hz, 2H), 1.65-1.59 (m, 2H), 1.56-1.48 (m, 4H); **¹³C NMR** (100 MHz, CDCl₃): δ 159.3, 149.3, 129.0, 126.2, 114.0, 63.0, 55.1, 29.9, 26.8, 25.5, 24.5; **HRMS (ESI⁺)** Calcd. for C₁₄H₁₉NO+H, 234.1494; Found, 234.1484; **IR** (thin film, cm⁻¹) 3400, 2937, 2860, 1612, 1513, 1249, 1032, 734; **TLC** (95:5 dichloromethane/methanol): R_f = 0.2.



N-(4-(Tert-butyl)cyclohexylidene)-1-(4-methoxyphenyl)methanamine oxide (S8): The title compound was prepared according to General Procedure A using 4-butylcyclohexanone (308 mg, 2.0 mmol, 2.0 equiv) and *p*-methoxybenzylhydroxylamine (153 mg, 1.0 mmol, 1.0 equiv) in *t*BuOH (2 mL). Purification by flash chromatography (100:0 to 98:2 dichloromethane/methanol) furnished **S8** as a pale yellow solid (220 mg, 0.761 mmol, 76%). Analytical data: **mp** 74-77.5 °C; **¹H NMR** (400 MHz, CDCl₃): δ 7.34 (d, *J* = 8.8 Hz, 2H), 6.88 (d, *J* = 8.8 Hz, 2H), 5.03 (d, *J* = 14.0 Hz, 1H), 4.99 (d, *J* = 14.0 Hz, 1H), 3.79 (s, 3H), 3.60-3.56 (m, 1H), 2.88-2.84 (m, 1H), 2.01-1.86 (m, 3H), 1.25-1.15 (m, 3H), 0.812 (s, 9H); **¹³C NMR** (100 MHz, CDCl₃): δ 159.3, 149.3, 129.1, 126.1, 114.0, 63.0, 55.1, 46.1, 32.3, 29.8, 27.3, 27.0, 26.2, 25.0; **HRMS (ESI⁺)** Calcd. for C₁₈H₂₇NO₂+H, 290.2120; Found, 290.2121; **IR** (thin film, cm⁻¹) 3409, 3053, 2985, 1612, 1493, 1265, 1177; **TLC** (95:5 dichloromethane/methanol): R_f = 0.16.

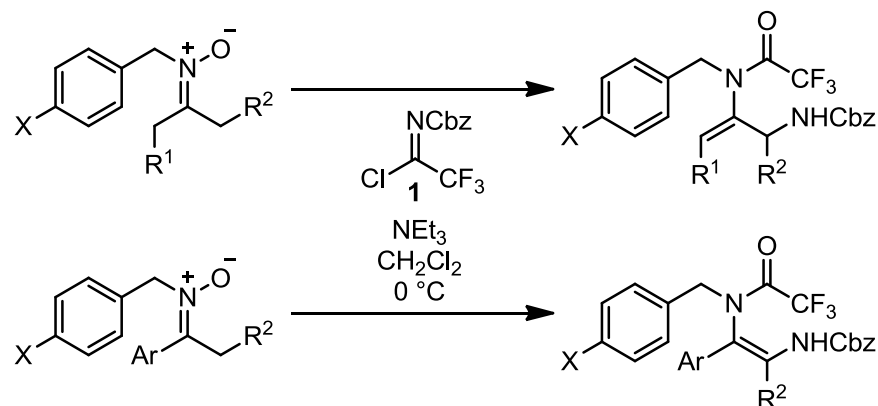


(S)-N-Cyclopentylidene-1-phenylethanamine oxide (S9): The title compound was prepared according to General Procedure A using cyclopentanone (0.18 mL, 2.0 mmol, 2.0 equiv) and (*S*)- α -methyl-benzyl-hydroxylamine⁴ (137 mg, 1.0 mmol, 1.0 equiv) in *t*BuOH (2 mL). Purification by flash chromatography (98:2 dichloromethane/methanol) furnished **S9** as an off-white solid (177.0 mg, 0.871 mmol, 87%). Analytical data: **mp** 76-79 °C; **¹H NMR** (400 MHz, CDCl₃): δ 7.47 (d, *J* = 7.6 Hz, 2H), 7.35-7.28 (m, 3H), 5.15 (q, *J* = 6.8 Hz, 1H), 2.75-2.49 (m, 4H), 1.88-1.78 (m, 4H), 1.75 (d, *J* = 6.8 Hz, 3H); **¹³C NMR** (100 MHz, CDCl₃): δ 154.2, 139.1, 128.6, 128.1, 127.0, 67.7, 31.2, 30.6, 26.3, 24.3, 19.3; **HRMS (ESI⁺)** Calcd. for C₁₃H₁₇NO+Na, 226.1208; Found, 226.1214; **IR** (thin film, cm⁻¹) 3399, 2967, 2876, 2190, 1622, 1454, 1255, 1172, 1141, 1055; **TLC** (95:5 dichloromethane/methanol): R_f = 0.13.

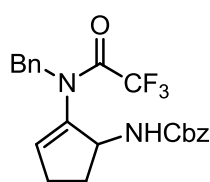


1-(4-Methoxyphenyl)-N-(propan-2-ylidene)methanamine oxide (S10): The title compound was prepared according to General Procedure A using acetone (0.44 mL, 6.0 mmol, 2.0 equiv) and *p*-methoxy-benzylhydroxylamine (459 mg, 3.0 mmol, 1.0 equiv) in *t*BuOH (6 mL). Purification by flash chromatography (98:2 to 95:5 dichloromethane/methanol) furnished **S10** as a pale brown oil (257 mg, 1.33 mmol, 44%). Analytical data: **¹H NMR** (400 MHz, CDCl₃): δ 7.32 (d, *J* = 8.4 Hz, 2H), 6.85 (d, *J* = 8.4 Hz, 2H), 4.95 (s, 2H), 3.75 (s, 3H), 2.11 (d, *J* = 5.6 Hz, 6H); **¹³C NMR** (100 MHz, CDCl₃): δ 159.4, 143.1, 129.1, 125.8, 114.0, 63.2, 55.2, 20.4, 19.9; **HRMS (ESI⁺)** Calcd. for C₁₁H₁₅NO₂+H, 194.1181; Found, 194.1182; **IR** (thin film, cm⁻¹) 3348, 2958, 2213, 1612, 1513, 1441, 1304, 1177, 1156; **TLC** (95:5 dichloromethane/methanol): R_f = 0.05.

General Procedure B for [3,3]-Rearrangement:



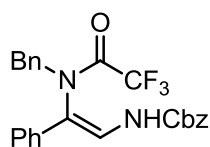
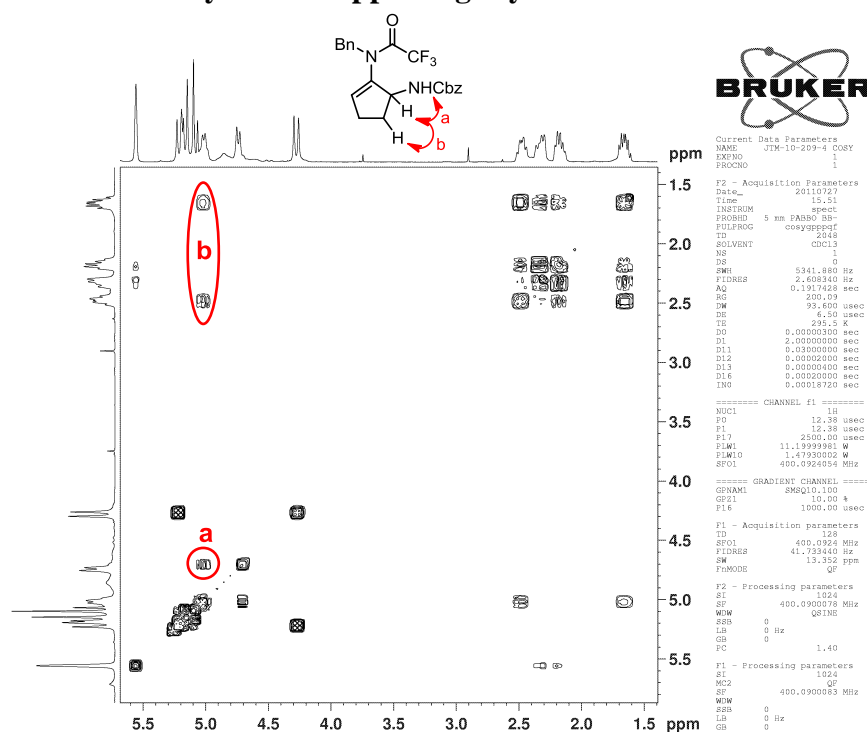
An oven-dried 4-mL scintillation vial equipped with magnetic stir bar was charged with imidoyl chloride **1** (0.26 g, 0.1 mmol, 1.0 equiv) and purged with nitrogen. Dichloromethane (0.5 mL) was added and the solution was cooled to 0 °C in an ice/water bath. Triethylamine (0.028 mL, 0.2 mmol, 2.0 equiv) was then added, followed by a cooled dichloromethane solution (0.5 mL) of nitrone **2**, **6**, **S1-S11** (0.1 mmol, 1.0 equiv). The reaction was stirred at 0 °C until judged complete by TLC analysis, generally 30 min. Upon completion, volatiles were removed *in vacuo*. The crude product was purified via flash chromatography (SiO₂) to give the desired product.



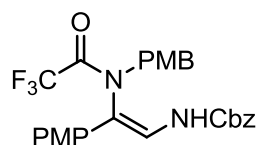
Benzyl carbamate (3) (**2-(N-benzyl-2,2,2-trifluoroacetamido)cyclopent-2-en-1-yl**) carbamate (**3**): The title compound was prepared according to General Procedure B using nitrone **2** (57 mg, 0.305 mmol, 1.0 equiv), imidoyl chloride **1** (81 mg, 0.305 mmol, 1.0 equiv) and triethylamine (85 μ L, 0.61 mmol, 2.0 equiv) in CH₂Cl₂ (2 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **3** as a yellow oil (82 mg, 0.196 mmol,

65%). Analytical data: ¹H NMR (400 MHz, CDCl₃): δ 7.38-7.25 (m, 10H), 5.56 (s, 1H), 5.21 (d, J = 14.4 Hz, 1H), 5.16 (d, J = 12.4 Hz, 1H), 5.08 (d, J = 12.0 Hz, 1H), 5.05-4.99 (m, 1H), 4.74 (d, J = 9.6 Hz, 1H), 4.28 (d, J = 14.8 Hz, 1H), 2.49-2.44 (m, 1H), 2.36-2.30 (m, 1H), 2.21-2.15 (m, 1H), 1.70-1.63 (m, 1H); ¹³C NMR (100 MHz, CDCl₃): δ 157.1, 156.8, 155.9, 137.8, 136.1, 135.1, 132.9, 128.6, 128.6, 128.2, 128.1, 127.9, 67.0, 54.0, 49.6, 30.9, 27.1; HRMS (ESI⁺) Calcd. for C₂₂H₂₁F₃N₂O₃+Na, 441.1402; Found, 441.1402; IR (thin film, cm⁻¹) 3428, 3352, 3064, 2950, 1693, 1512, 1208, 1157, 1051; TLC (60:40 petroleum ether/acetone): R_f = 0.60.

¹H COSY analysis of **3** supporting acyl transfer:

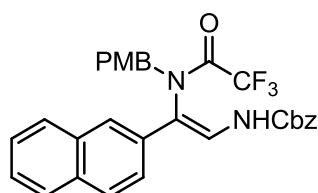


(Z)-Benzyl (2-(N-benzyl-2,2,2-trifluoroacetamido)-2-phenylvinyl) carbamate (7): The title compound was prepared according to General Procedure B using nitron **6** (22 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (26.5 mg, 0.1 mmol, 1.0 equiv) and triethylamine (28 μ L, 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **7** as a colorless oil (28 mg, 0.062 mmol, 61%). Analytical data: ¹H NMR (400 MHz, CDCl_3): δ 7.40-7.15 (m, 15H), 5.70 (d, J = 10.8 Hz, 1H), 5.60 (d, J = 13.2 Hz, 1H), 5.10 (d, J = 12.4 Hz, 1H), 4.92 (d, J = 12.0 Hz, 1H), 3.76 (d, J = 13.6 Hz, 1H); ¹³C NMR (100 MHz, CDCl_3): δ 158.7, 158.3, 152.6, 135.6, 135.3, 133.6, 129.5, 129.1, 129.0, 128.8, 128.4, 128.4, 128.0, 127.7, 123.8, 123.5, 117.7, 67.5, 51.6; HRMS (ESI⁺) Calcd. for $\text{C}_{25}\text{H}_{21}\text{F}_3\text{N}_2\text{O}_3+\text{H}$, 455.1582; Found, 455.1585; IR (thin film, cm^{-1}) 3409, 3053, 1691, 1665, 1482, 1265, 1211, 1174; TLC (75:25 hexanes/ethyl acetate): R_f = 0.30.

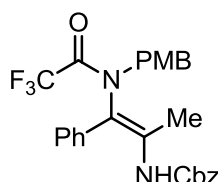


(Z)-Benzyl (2-(4-methoxyphenyl)-2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)vinyl) carbamate (10): The title compound was prepared according to General Procedure B using nitron **S1** (30 mg, 0.105 mmol, 1.0 equiv), imidoyl chloride **1** (28 mg, 0.105 mmol, 1.0 equiv) and triethylamine (30 μ L, 0.21 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **10** as a pale yellow oil (37 mg, 0.072 mmol, 69%). Analytical data: ¹H NMR (600 MHz, CDCl_3): δ 7.39-7.22 (m, 9H), 6.92 (d, J = 9.0 Hz, 2H), 6.82 (d, J = 8.4 Hz, 2H), 5.72 (d, J = 11.4 Hz, 1H), 5.50 (d, J =

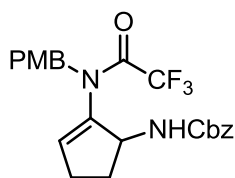
13.2 Hz, 1H), 5.06 (d, $J = 12.6$ Hz, 1H), 4.97 (d, $J = 12.6$ Hz, 1H), 3.83 (s, 3H), 3.72 (d, $J = 13.8$ Hz, 1H), 3.67 (s, 3H); ^{13}C NMR (150 MHz, CDCl_3): δ 160.0, 159.4, 152.8, 135.4, 130.9, 128.8, 128.6, 128.3, 127.7, 126.0, 125.4, 121.8, 117.9, 114.5, 114.5, 67.5, 55.3, 55.2, 50.9; HRMS (ESI^+) Calcd. for $\text{C}_{27}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_5+\text{H}$, 515.1794; Found, 515.1794; IR (thin film, cm^{-1}) 3403, 3057, 2959, 1693, 1611, 1483, 1215, 1033; TLC (70:30 petroleum ether/acetone): $R_f = 0.60$.



(Z)-Benzyl (2-(naphthalen-2-yl)-2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)vinyl) carbamate (11): The title compound was prepared according to General Procedure B using nitron **S2** (30.5 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (26.5 mg, 0.1 mmol, 1.0 equiv) and triethylamine (27.9 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 hexanes/ethyl acetate) furnished **11** as an off-white solid (21.7 mg, 0.041 mmol, 51%). Analytical data: mp 50-51 $^\circ\text{C}$; ^1H NMR (400 MHz, CDCl_3): δ 7.84 (q, $J = 8.4$, 6.8 Hz, 3H), 7.59 (br s, 1H), 7.52-7.50 (m, 4H), 7.40-7.27 (m, 3H), 6.83 (d, $J = 8.8$, 2H), 5.87 (d, $J = 11.2$ Hz, 1H), 5.61 (d, $J = 13.6$ Hz, 1H), 5.10 (d, $J = 12.4$ Hz, 1H), 5.01 (d, $J = 12.0$ Hz, 1H), 3.84 (d, $J = 13.6$ Hz, 1H), 3.67 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 160.1, 152.8, 135.2, 133.4, 132.7, 131.0, 130.9, 128.9, 128.6, 128.4, 128.1, 127.8, 127.6, 126.8, 126.3, 123.9, 122.7, 121.6, 118.0, 117.0, 115.1, 114.6, 67.7, 55.2, 51.3; HRMS (ESI^+) Calcd. for $\text{C}_{30}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_4+\text{H}$, 535.1845; Found, 535.1838; IR (thin film, cm^{-1}) 3408, 3054, 2986, 2305, 1692, 1659, 1512, 1484, 1265, 1213; TLC (70:30 hexanes/ethyl acetate): $R_f = 0.51$.

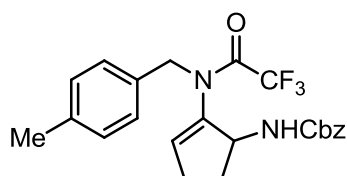


(E)-Benzyl (1-phenyl-1-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)prop-1-en-2-yl) carbamate (12): The title compound was prepared according to General Procedure B using nitron **S3** (27 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 hexanes/ethyl acetate) furnished **12** as a pale yellow oil (31.1 mg, 0.062 mmol, 62%) as a 5.5:1 mixture of inseparable diastereomers. Analytical data: ^1H NMR (400 MHz, CDCl_3): (Major diastereomer) δ 7.44-7.28 (m, 10H), 7.24 (d, $J = 7.2$ Hz, 2H), 6.84 (d, $J = 8.8$ Hz, 2H), 5.72 (s, 1H), 5.30 (d, $J = 13.6$ Hz, 1H), 4.98 (d, $J = 12.4$ Hz, 1H), 4.92 (d, $J = 12.4$ Hz, 1H), 3.69 (s, 3H), 3.51 (d, $J = 13.6$ Hz, 1H), 2.31 (s, 3H); ^{13}C NMR (100 MHz, CDCl_3): δ 160.0, 152.5, 135.8, 135.5, 133.9, 130.8, 129.8, 129.7, 128.7, 128.6, 128.5, 128.3, 128.1, 127.9, 127.7, 127.5, 119.0, 114.7, 114.1, 66.7, 55.2, 50.1, 16.5; HRMS (ESI^+) Calcd. for $\text{C}_{27}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_4+\text{Na}$, 521.1665; Found, 521.1664; IR (thin film, cm^{-1}) 3387, 2593, 1690, 1641, 1512, 1482, 1250, 1167, 1110; TLC (70:30 hexane/ethyl acetate): $R_f = 0.58$.

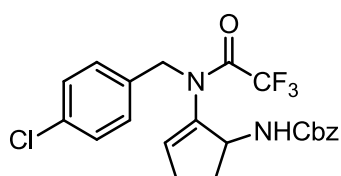


Benzyl (2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)cyclopent-2-en-1-yl) carbamate (13): The title compound was prepared according to General Procedure B using nitron **S4** (38 mg, 0.173 mmol, 1.0 equiv), imidoyl chloride **1** (46 mg, 0.173 mmol, 1.0 equiv) and triethylamine (48 μL , 0.346 mmol, 2.0 equiv) in CH_2Cl_2 (2 mL). Purification by flash

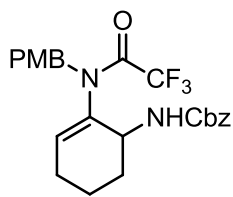
chromatography (90:10 petroleum ether/acetone) furnished **13** as a colorless oil (52 mg, 0.116 mmol, 67%). Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): δ 7.38-7.34 (m, 5H), 7.18 (d, $J = 8.4$ Hz, 2H), 6.83 (d, $J = 9.0$ Hz, 2H), 5.52 (s, 1H), 5.16 (d, $J = 12.0$ Hz, 1H), 5.07 (d, $J = 12.0$ Hz, 1H), 5.02-4.98 (m, 1H), 4.68 (d, $J = 9.6$ Hz, 1H), 4.17 (d, $J = 14.4$ Hz, 1H), 3.78 (s, 3H), 2.50-2.47 (m, 1H), 2.35-2.30 (m, 1H), 2.20-2.17 (m, 1H), 1.66-1.62 (m, 1H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): δ 159.3, 155.9, 137.7, 136.1, 132.9, 130.1, 128.6, 128.5, 128.4, 128.1, 127.2, 113.9, 68.1, 67.1, 55.2, 54.0, 49.1, 30.9, 27.1; **HRMS** (ESI^+) Calcd. for $\text{C}_{23}\text{H}_{23}\text{F}_3\text{N}_2\text{O}_4+\text{Na}$, 471.1508; Found, 471.1508; **IR** (thin film, cm^{-1}) 3426, 3054, 1691, 1513, 1265, 1207, 1175; **TLC** (70:30 petroleum ether/acetone): $R_f = 0.80$.



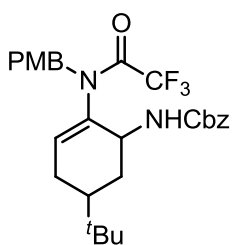
Benzyl (2-(2,2,2-trifluoro-N-(4-methylbenzyl)acetamido)cyclopent-2-en-1-yl)carbamate (14): The title compound was prepared according to General Procedure B using nitrone **S5** (20 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **14** as a colorless oil (34 mg, 0.079 mmol, 79%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.40-7.33 (m, 5H), 7.15-7.10 (m, 4H), 5.55 (s, 1H), 5.16 (d, $J = 12.4$ Hz, 2H), 5.08 (d, $J = 12.0$ Hz, 1H), 5.04-4.98 (m, 1H), 4.70 (d, $J = 9.2$ Hz, 1H), 4.22 (d, $J = 14.8$, 1H), 2.51-2.45 (m, 1H), 2.32 (s, 4H), 2.22-2.16 (m, 1H), 1.70-1.60 (m, 1H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 157.0, 156.7, 155.9, 137.8, 137.7, 136.2, 132.9, 132.1, 129.2, 128.7, 128.6, 128.2, 128.0, 67.0, 54.0, 49.5, 30.9, 27.1, 21.1; **HRMS** (ESI^+) Calcd. for $\text{C}_{21}\text{H}_{21}\text{ClF}_3\text{N}_2\text{O}_4+\text{H}$, 433.1739; Found, 433.1741; **IR** (thin film, cm^{-1}) 3439, 3353, 3034, 2950, 2253, 1692, 1513, 1209, 1175; **TLC** (70:30 petroleum ether/acetone): $R_f = 0.70$.



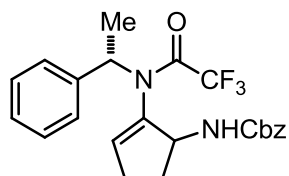
Benzyl (2-(N-(4-chlorobenzyl)-2,2,2-trifluoroacetamido)cyclopent-2-en-1-yl)carbamate (15): The title compound was prepared according to General Procedure B using nitrone **S6** (23 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 hexanes/ethyl acetate) furnished **15** as a colorless oil (31.8 mg, 0.070 mmol, 70%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.38-7.34 (m, 5H), 7.28 (d, $J = 8.0$ Hz, 2H), 7.19 (d, $J = 8.0$ Hz, 2H), 5.56 (s, 1H), 5.15 (d, $J = 12.0$ Hz, 1H), 5.13 (d, $J = 14.4$ Hz, 1H), 5.07 (d, $J = 12.0$ Hz, 1H), 5.02-4.96 (m, 1H), 4.69 (d, $J = 9.2$ Hz, 1H), 4.25 (d, $J = 14.8$ Hz, 1H), 2.52-2.45 (m, 1H), 2.38-2.32 (m, 1H), 2.24-2.17 (m, 1H), 1.71-1.59 (m, 1H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 157.2, 156.8, 155.9, 137.8, 136.1, 133.9, 133.7, 133.0, 130.1, 128.8, 128.6, 128.3, 128.1, 67.1, 54.0, 49.0, 30.8, 27.2; **HRMS** (ESI^+) Calcd. for $\text{C}_{22}\text{H}_{20}\text{ClF}_3\text{N}_2\text{O}_3+\text{H}$, 453.1194; Found, 453.1191; **IR** (thin film, cm^{-1}) 3431, 2096, 1690, 1641, 1512, 1265, 1207, 1157, 1051; **TLC** (70:30 hexanes/ethyl acetate): $R_f = 0.48$.



Benzyl (2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)cyclohex-2-en-1-yl)carbamate (16): The title compound was prepared according to General Procedure B using nitrone **S7** (23 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μ L, 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **16** as a pale yellow oil (32 mg, 0.069 mmol, 69%). Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): δ 7.40-7.33 (m, 8H), 7.20 (d, $J = 8.4$ Hz, 2H), 6.83 (d, $J = 8.4$ Hz, 2H), 5.41 (s, 1H), 5.29 (d, $J = 10.8$ Hz, 1H), 5.25 (d, $J = 14.4$ Hz, 1H), 5.16 (d, $J = 12.6$ Hz, 1H), 5.06 (d, $J = 12.0$ Hz, 1H), 4.75 (d, $J = 9.6$ Hz, 1H), 4.62-4.59 (m, 1H), 4.04 (d, $J = 14.4$ Hz, 1H), 3.79 (s, 3H), 2.04 (t, $J = 16.8$ Hz, 2H), 1.94 (d, $J = 18.0$ Hz, 1H), 1.62-1.59 (m, 3H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): δ 159.2, 156.1, 136.1, 133.4, 132.9, 130.6, 128.6, 128.5, 128.3, 128.1, 127.3, 113.8, 67.1, 55.2, 49.0, 46.1, 30.6, 24.7, 19.9; **LRMS (ESI⁺)** Calcd. for $\text{C}_{24}\text{H}_{25}\text{F}_3\text{N}_2\text{O}_4 + \text{H}$, 463.18; Found, 463.22; **IR** (thin film, cm^{-1}) 3356, 3064, 2948, 1691, 1512, 1454, 1323, 1208, 1177; **TLC** (80:20 petroleum ether/acetone): $R_f = 0.30$.

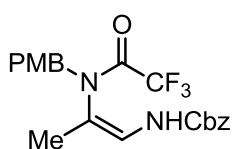


Benzyl (5-(tert-butyl)-2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido)cyclohex-2-en-1-yl) carbamate (17): The title compound was prepared according to General Procedure B using nitrone **S8** (30.5 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (26.5 mg, 0.01 mmol, 1.0 equiv) and triethylamine (27.9 μ L, 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 hexanes/ethyl acetate) furnished **17** as an off-white solid (21.7 mg, 0.041 mmol, 51%) as a 1.5:1 mixture of separable diastereomers. Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): (Major Diastereomer) δ 7.37-7.34 (m, 5H), 7.17 (d, $J = 6.6$ Hz, 2H), 7.10 (d, $J = 8.4$ Hz, 1H), 6.83 (d, $J = 7.2$ Hz, 3H), 5.52 (br s, 1H), 5.14 (d, $J = 12.0$ Hz, 1H), 5.08 (d, $J = 13.2$ Hz, 1H), 5.00-4.66 (m, 1H), 4.66 (br s, 1H), 4.15 (d, $J = 15.0$ Hz, 1H), 3.79 (s, 3H), 3.12-3.10 (m, 1H), 2.10-2.07 (m, 1H), 1.97-1.95 (m, 1H), 1.72-1.68 (m, 1H), 1.40-1.30 (m, 1H), 1.20-1.15 (m, 1H), 0.85 (s, 9H); (Minor Diastereomer) δ 7.39-7.35 (m, 5H), 7.21 (d, $J = 8.4$ Hz, 2H), 6.84 (d, $J = 8.4$ Hz, 2H), 5.38-5.36 (m, 1H), 5.22 (d, $J = 14.4$ Hz, 1H), 5.17 (d, $J = 12.0$ Hz, 1H), 5.06 (d, $J = 12.0$ Hz, 1H), 4.64 (s, 2H), 3.99 (d, $J = 14.4$ Hz, 1H), 3.80 (s, 3H), 2.20 (d, $J = 12.0$ Hz, 1H), 1.99-1.96 (m, 1H), 1.83-1.78 (m, 1H), 1.42-1.41 (m, 1H), 1.21-1.17 (m, 1H), 0.86 (s, 9H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): (Minor Diastereomer) δ 159.2, 156.2, 136.1, 133.7, 132.2, 130.6, 128.6, 128.3, 128.1, 127.4, 113.8, 67.2, 55.2, 49.1, 48.1, 43.2, 32.6, 32.1, 26.9, 26.3; **HRMS (ESI⁺)** Calcd. for $\text{C}_{28}\text{H}_{33}\text{F}_3\text{N}_2\text{O}_4 + \text{Na}$, 541.2291; Found, 541.2290; **IR** (thin film, cm^{-1}) 3487, 3035, 2962, 1803, 1712, 1612, 1498, 1455, 1251; **TLC** (70:30 hexanes/ethyl acetate): $R_f = 0.49$.

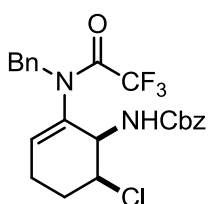


Benzyl (2-(2,2,2-trifluoro-N-((S)-1-phenylethyl)acetamido)cyclopent-2-en-1-yl)carbamate (18): The title compound was prepared according to General Procedure B using nitrone **S9** (40 mg, 0.20 mmol, 1.0 equiv), imidoyl chloride **1** (53 mg, 0.20 mmol, 1.0 equiv) and triethylamine (56 μ L, 0.40 mmol, 2.0 equiv) in CH_2Cl_2 (2 mL). Purification by flash chromatography (90:10 hexanes/ethyl acetate) furnished **18** as a pale yellow oil which was a 1:1 mixture of separable diastereomers (Diastereomer 1: 20.2 mg, 0.047 mmol,

23%; Diastereomer 2: 19 mg, 0.043, 22%). Analytical data: $^1\text{H NMR}$ (400 MHz, CDCl_3): (Diastereomer 1) δ 7.38-7.31 (m, 10H), 5.73-5.68 (m, 1H), 5.48 (br s, 1H), 5.13 (d, $J = 12.4$ Hz, 1H), 5.09 (d, $J = 8.4$ Hz, 1H), 4.84 (d, $J = 7.2$ Hz, 1H), 2.35-2.21 (m, 2H), 1.99 (br s, 1H), 1.63 (d, $J = 7.2$ Hz, 3H), 1.59-1.48 (m, 1H); (Diastereomer 2) δ 7.39-7.27 (m, 10H), 5.84 (s, 1H), 5.45-5.40 (m, 1H), 5.01 (s, 2H), 4.60 (br s, 1H), 4.30 (br s, 1H), 2.38-2.30 (m, 4H), 1.62 (d, $J = 6.8$ Hz, 3H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): (Diastereomer 1) 156.6, 156.4, 155.9, 138.1, 136.8, 136.2, 135.9, 128.6, 128.4, 128.3, 128.2, 67.0, 56.5, 32.1, 26.8, 16.3; (Diastereomer 2) δ 155.3, 138.3, 137.5, 136.2, 134.8, 128.5, 128.2, 128.1, 127.6, 66.8, 56.4, 55.2, 32.0, 27.1, 16.4; **HRMS (ESI⁺)** Calcd. for $\text{C}_{23}\text{H}_{23}\text{F}_3\text{N}_2\text{O}_3+\text{H}$, 433.1740; Found, 433.1750; **IR** (thin film, cm^{-1}) 3422, 3054, 2986, 2305, 1685, 1508, 1420, 1265, 1206, 1155; **TLC** (70:30 hexane/ethyl acetate): $R_f =$ Diastereomer 1: 0.55; Diastereomer 2: 0.45.



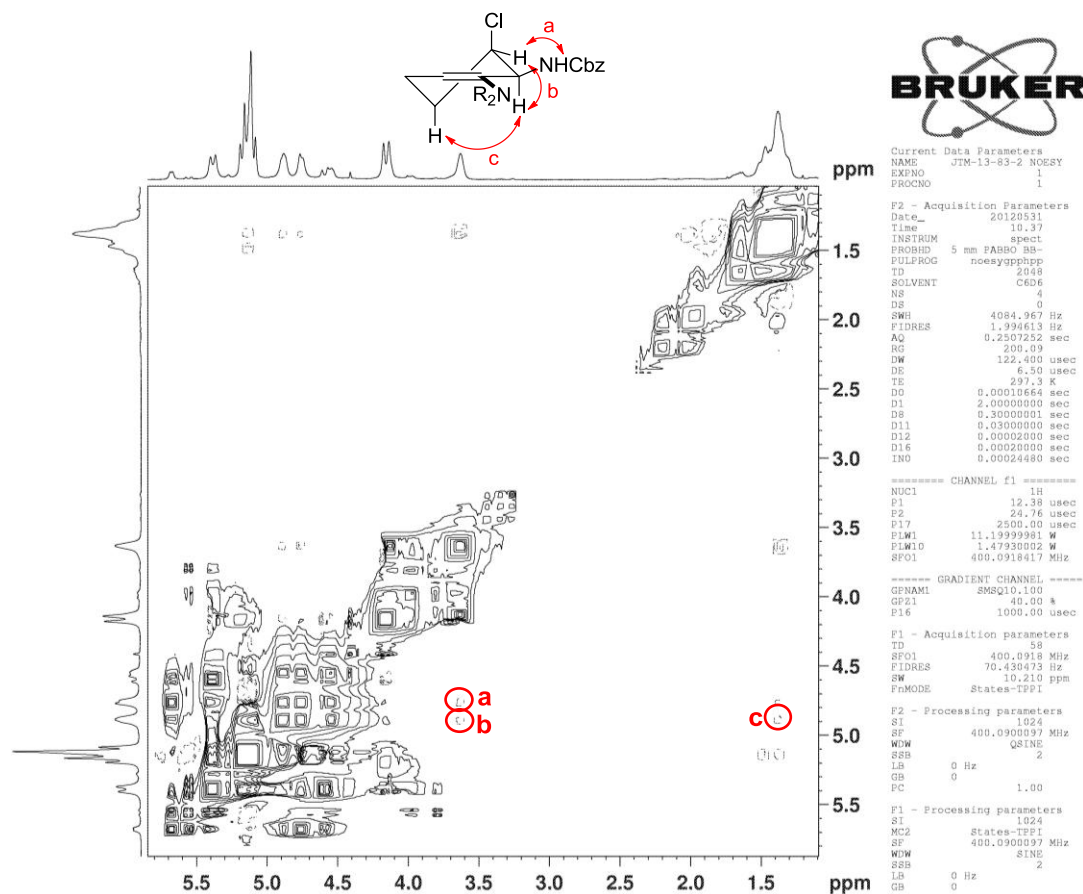
(Z)-Benzyl (2-(2,2,2-trifluoro-N-(4-methoxybenzyl)acetamido) prop-1-en-1-yl)carbamate (19): The title compound was prepared according to General Procedure B using nitron **S10** (20 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (95:5 to 90:10 petroleum ether/acetone) furnished **19** as a pale yellow oil (19 mg, 0.045 mmol, 45%). Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): δ 7.37-7.29 (m, 3H), 7.24 (d, $J = 7.2$ Hz, 2H), 6.83 (d, $J = 8.4$ Hz, 2H), 6.52 (d, $J = 10.8$ Hz, 1H), 5.62 (d, $J = 11.4$ Hz, 1H), 5.12 (d, $J = 13.8$ Hz, 1H), 5.03 (d, $J = 12.0$ Hz, 1H), 4.96 (d, $J = 12.0$, 1H), 4.02 (d, $J = 13.8$ Hz, 1H), 3.68 (s, 3H), 1.85 (s, 3H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): δ 159.9, 152.7, 135.4, 130.7, 128.6, 128.3, 127.9, 127.8, 123.7, 114.4, 113.7, 67.4, 55.2, 49.8, 18.9; **HRMS (ESI⁺)** Calcd. for $\text{C}_{21}\text{H}_{21}\text{ClF}_3\text{N}_2\text{O}_4+\text{Na}$, 445.1351; Found, 445.1354; **IR** (thin film, cm^{-1}) 3415, 2958, 2253, 1693, 1513, 1213, 1173, 1034; **TLC** (70:30 petroleum ether/acetone): $R_f = 0.70$.



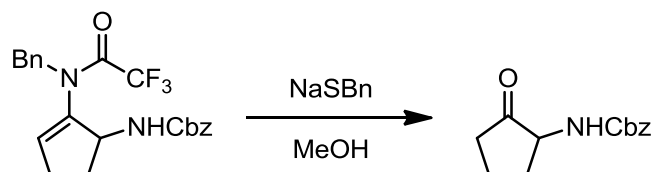
Benzyl (2-(N-benzyl-2,2,2-trifluoroacetamido)-1-chlorocyclohex-2-en-1-yl)carbamate (20): The title compound was prepared according to General Procedure B using nitron **S11**⁶ (23 mg, 0.10 mmol, 1.0 equiv), imidoyl chloride **1** (27 mg, 0.10 mmol, 1.0 equiv) and triethylamine (28 μL , 0.20 mmol, 2.0 equiv) in CH_2Cl_2 (1 mL). Purification by flash chromatography (90:10 petroleum ether/acetone) furnished **20** as a pale yellow oil (39 mg, 0.084 mmol, 84%). Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): δ 7.39-7.30 (m, 11H), 5.53 (s, 1H), 5.27 (d, $J = 15.0$ Hz, 1H), 5.19 (d, $J = 12.0$ Hz, 1H), 5.11 (d, $J = 6.0$ Hz, 1H), 5.09 (d, $J = 7.8$ Hz, 1H), 4.90 (d, $J = 9.0$ Hz, 1H), 4.74-4.67 (m, 1H), 4.11 (d, $J = 14.4$ Hz, 2H), 2.23 (br s, 1H), 2.16-2.13 (m, 1H), 2.07-2.05 (m, 1H), 2.01-1.96 (m, 1H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): δ 156.1, 135.8, 134.8, 132.8, 130.5, 129.3, 128.8, 128.7, 128.6, 128.6, 128.5, 128.4, 128.1, 127.9, 67.5, 58.9, 53.0, 49.7, 27.6, 22.0; **HRMS (ESI⁺)** Calcd. for $\text{C}_{23}\text{H}_{22}\text{ClF}_3\text{N}_2\text{O}_3+\text{Na}$, 467.1271; Found, 467.1361; **IR** (thin film, cm^{-1}) 3439, 3068, 2960, 2253, 1692, 1500, 1442, 1213, 1158; **TLC** (70:30 petroleum ether/acetone): $R_f = 0.50$.

¹H NOESY analysis of 20:

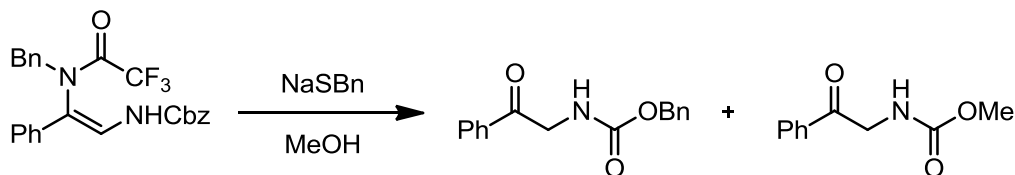
The *cis* chloro/amino stereochemistry was supported by NOESY spectroscopy. The β-methine (R₂CHCl) showed two nOe's: a strong interaction (a) with the amino methine (RNHCbz), and interaction (b) with the allylic methine proton (R₂CHNHCbz). Additionally, the allylic methine displayed an interaction (c) with the γ-alkyl methylene, an interaction that would not be observed if the allylic methine occupied the pseudoequatorial position – the only orientation that would support a *trans* relationship based upon the dual nOe observed with the β-methine (R₂CHCl).



Secondary Transformations:

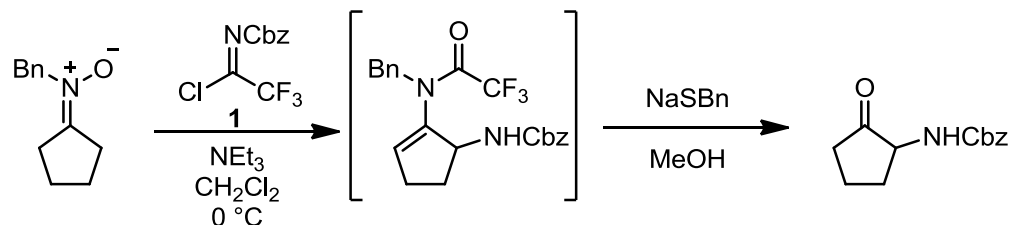


Benzyl (2-oxocyclopentyl)carbamate (21): A oven-dried 4-mL vial equipped with magnetic stir bar was charged with α -amino enamide **3** (0.065 g, 0.15 mmol, 1.0 equiv). Methanol (1.0 mL) was added, followed by freshly prepared sodium benzylthiolate (0.112 g, 0.77 mmol, 5.0 equiv). The vial was sealed with a Teflon-lined cap and the reaction was stirred at rt for 14 h. Volatiles were removed *in vacuo* and the crude product was purified via flash chromatography (90:10 to 80:20 petroleum ether/acetone) to provide **21** as a pale yellow oil (29 mg, 85%). Analytical data: $^1\text{H NMR}$ (600 MHz, CDCl_3): δ 7.38-7.31 (m, 5H), 5.22 (br s, 1H), 5.11 (s, 2H), 3.99-3.96 (m, 1H), 2.64-2.62 (m, 1H), 2.42 (dd, $J = 19.8, 9.0$ Hz, 1H), 2.21-2.14 (m, 1H), 2.09-2.04 (m, 1H), 1.86-1.84 (m, 1H), 1.67-1.63 (m, 1H); $^{13}\text{C NMR}$ (150 MHz, CDCl_3): δ 214.6, 156.2, 136.2, 128.5, 128.2, 128.1, 67.0, 59.2, 34.8, 30.2, 17.8; **MS** (ESI^+) Calcd. for $\text{C}_{13}\text{H}_{15}\text{NO}_3 + \text{Na}$, 256.10; Found, 256.10; **IR** (thin film, cm^{-1}) 3414, 3055, 2978, 2885, 2305, 1719, 1509, 1455, 1266, 1063; **TLC** (60:40 petroleum ether/acetone): $R_f = 0.40$.

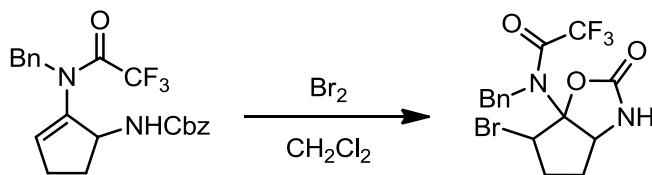


Benzyl (2-oxo-2-phenylethyl)carbamate and Methyl (2-oxo-2-phenylethyl)carbamate (22): A oven-dried 20-mL scintillation vial equipped with magnetic stir bar was charged with enediamine **7** (0.160 g, 0.346 mmol, 1.0 equiv). Methanol (4.0 mL) was added, followed by freshly prepared sodium benzylthiolate (0.202 g, 1.38 mmol, 4.0 equiv). The vial was sealed with a Teflon-lined cap and the reaction was stirred at rt for 2 h. Volatiles were removed *in vacuo*. THF (1.5 mL) and 1 M HCl (aq.) were added to the vial and the reaction was allowed to stir at rt for 0.5 h. The organic layer was extracted with Et_2O (3 x 2 mL) and dried with MgSO_4 . Volatiles were removed *in vacuo* and the crude product was purified via flash chromatography (85:15 to 75:25 hexanes/ethyl acetate) to provide two products. Cbz: colorless oil, 38 mg, 41%, OMe: white solid, 7 mg, 11%. Analytical data: **Cbz Product:** $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.96 (d, $J = 7.6$ Hz, 2H), 7.62 (t, $J = 7.6$ Hz, 1H), 7.49 (t, $J = 7.6$ Hz, 2H), 5.85 (br s, 1H), 5.16 (s, 2H), 4.73-4.69 (m, 2H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 193.2, 156.2, 136.3, 134.0, 128.9, 128.5, 128.1, 128.0, 127.8, 126.9, 67.0, 47.8; **MS** (ESI^+) Calcd. for $\text{C}_{16}\text{H}_{15}\text{NO}_3 + \text{H}$, 270.10; Found, 270.07; **IR** (thin film, cm^{-1}) 3417, 3061, 1692, 1511, 1354, 1266, 1218, 1057; **TLC** (70:30 hexanes/ethyl acetate): $R_f = 0.30$. **OMe Product:** mp 77-82 $^\circ\text{C}$; $^1\text{H NMR}$ (400 MHz, CDCl_3): δ 7.96 (d, $J = 7.6$ Hz, 2H), 7.62 (t, $J = 7.6$ Hz, 1H), 7.49 (t, $J = 7.6$ Hz, 2H), 5.74 (br s, 1H), 4.71 (d, $J = 4.4$ Hz, 2H), 3.72 (s, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3): δ 194.1, 156.9, 134.3, 134.0,

128.9, 127.8, 52.4, 47.8; **MS** (ESI⁺) Calcd. for C₁₀H₁₁NO₃+Na, 216.06; Found, 216.01; **IR** (thin film, cm⁻¹) 3426, 1692, 1518, 1536, 1265, 737, 701; **TLC** (70:30 hexanes/ethyl acetate): R_f = 0.20.

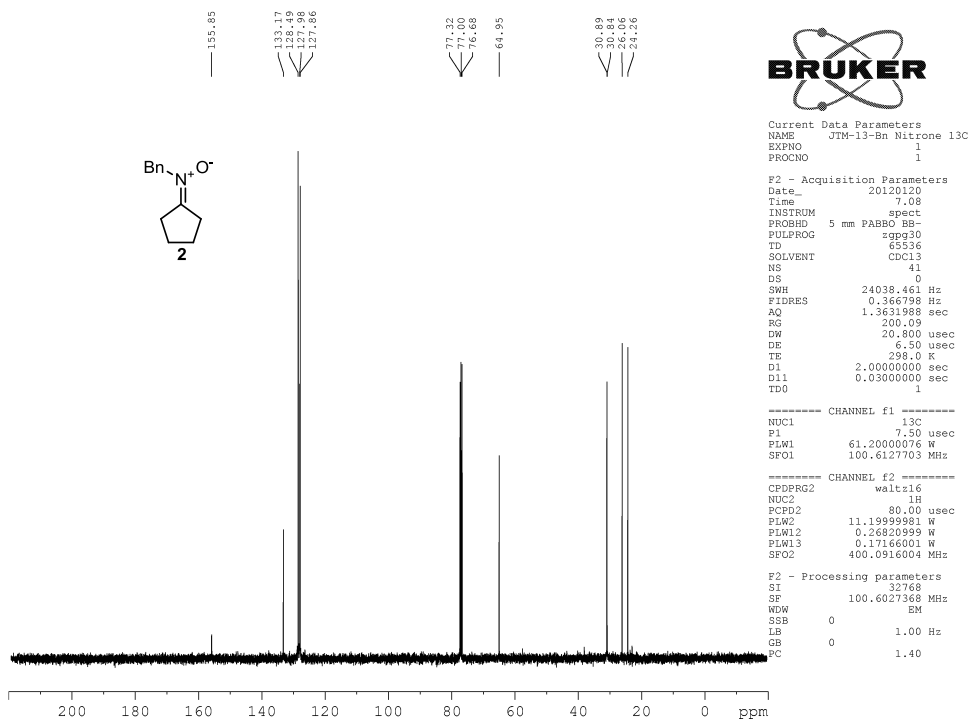
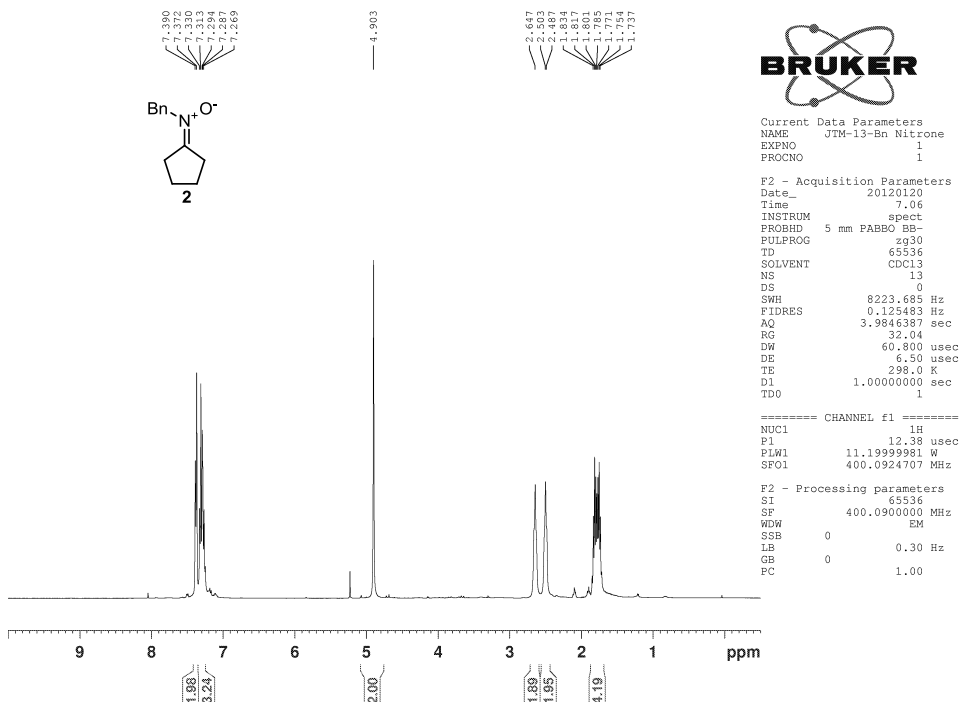


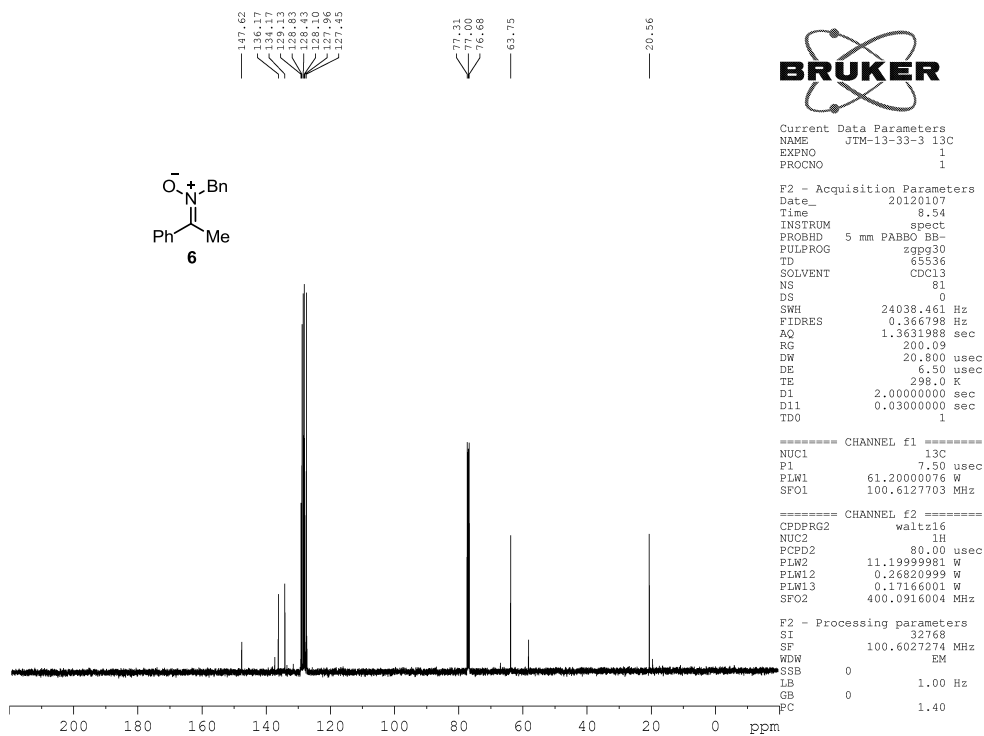
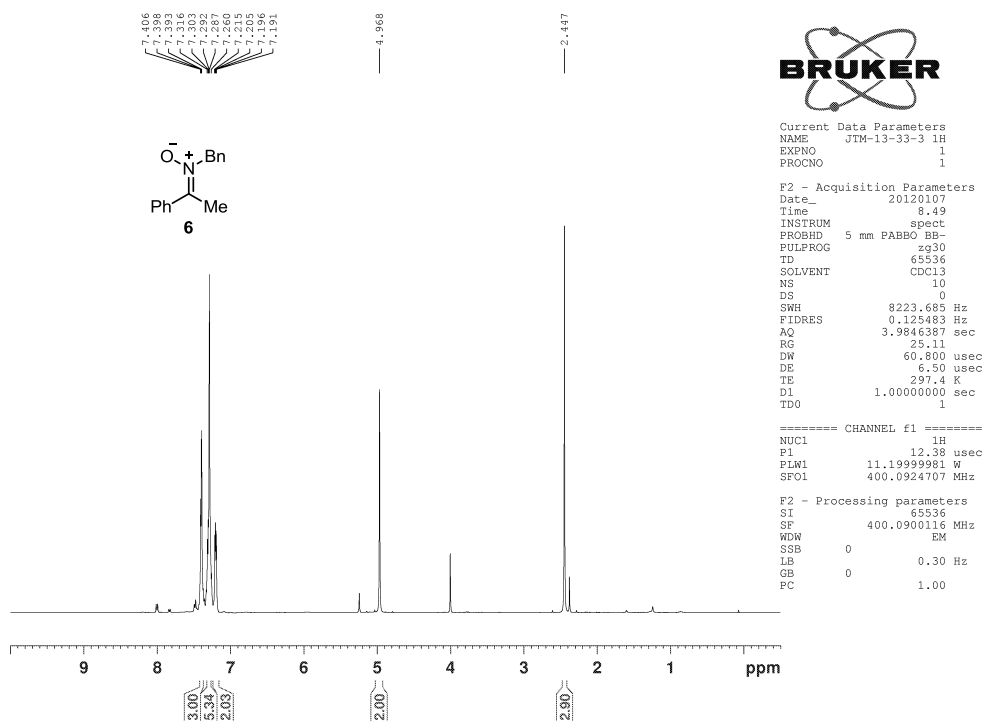
Benzyl (2-oxocyclopentyl)carbamate (21): The title compound was prepared according to General Procedure B using nitron **2** (71 mg, 0.377 mmol, 1.0 equiv), imidoyl chloride **1** (100 mg, 0.377 mmol, 1.0 equiv) and triethylamine (100 μ L, 0.755 mmol, 2.0 equiv) in CH₂Cl₂ (2 mL). Upon completion, volatiles were removed *in vacuo*. Methanol was immediately added to the vial (3.0 mL) followed by the addition of freshly prepared sodium benzylthiolate (0.165 g, 1.13 mmol, 3.0 equiv). The vial was sealed with a Teflon-lined cap and the reaction was stirred at rt for 14 h. Volatiles were removed *in vacuo* and the crude product was purified via flash chromatography (90:10 to 80:20 petroleum ether/acetone) to provide the desired product as a pale yellow oil (58 mg, 67%).

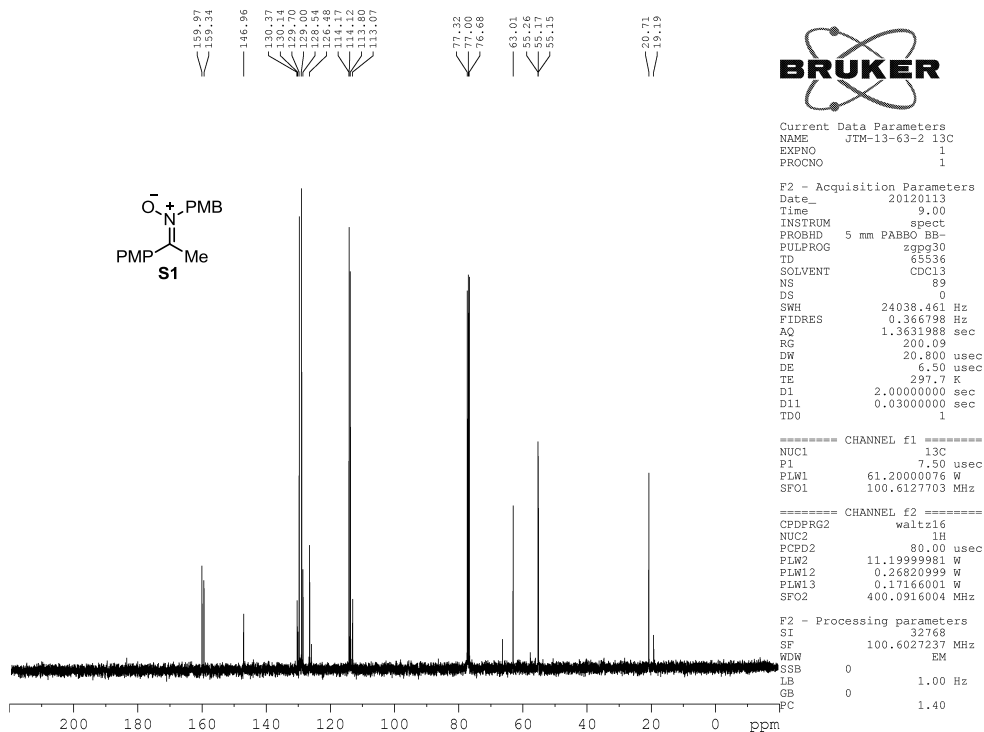
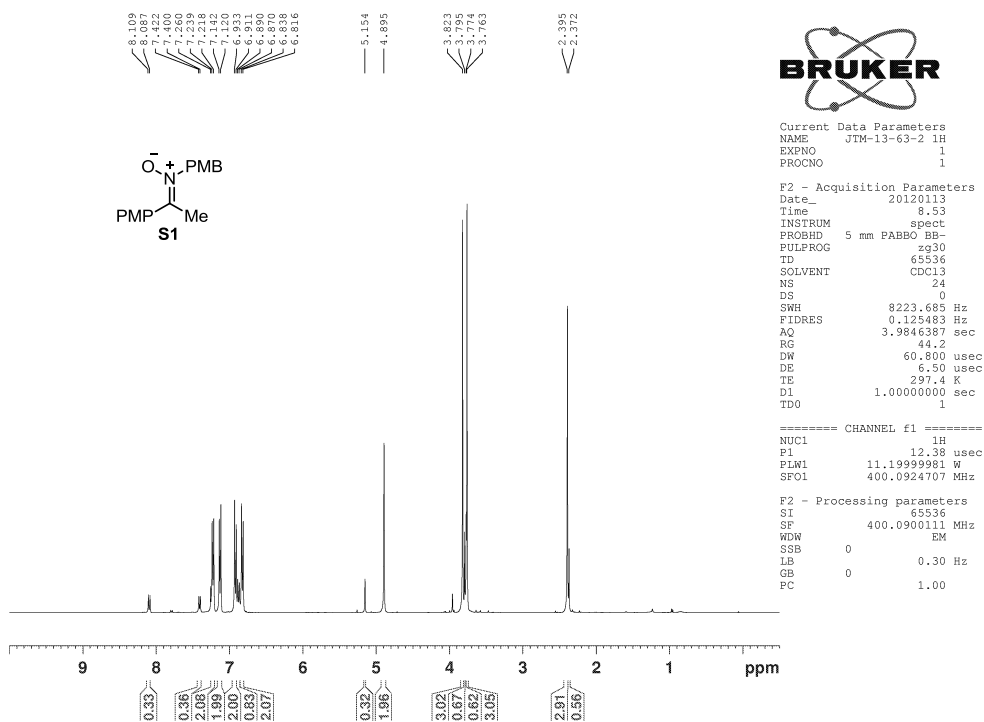


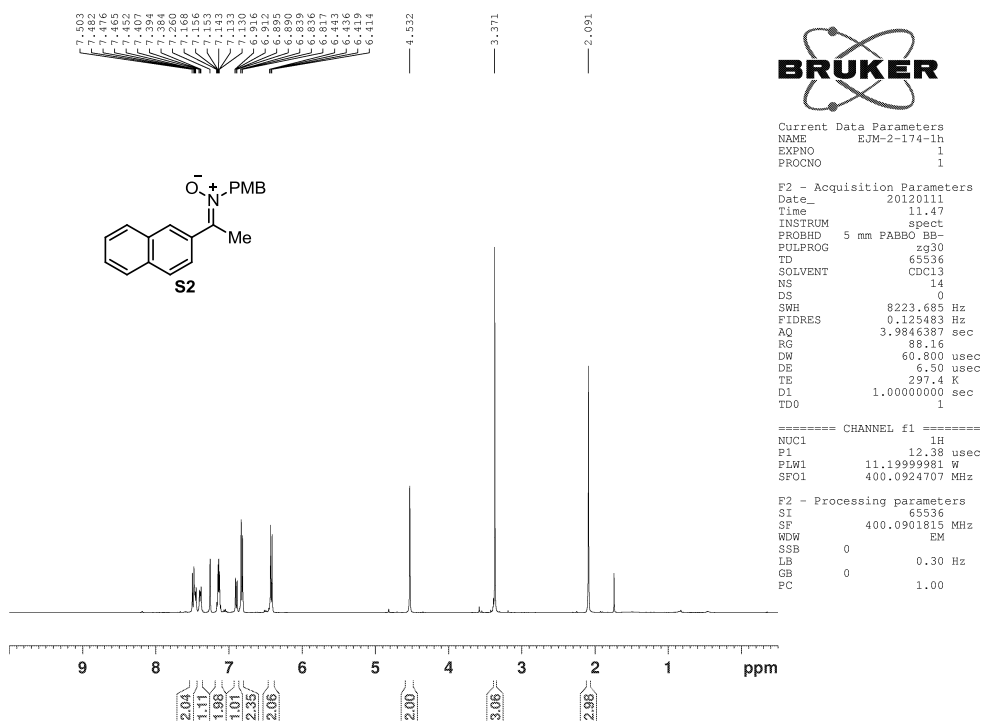
N-benzyl-N-(6-bromo-2-oxohexahydro-2H-cyclopenta[d]oxazol-6a-yl)-2,2,2-trifluoroacetamide (23): A oven-dried 4-mL scintillation vial equipped with magnetic stir bar was charged with α '-amino enamide **3** (0.020 g, 0.048 mmol, 1.0 equiv). The vial was purged with nitrogen and dichloromethane (1.2 mL) was added. Bromine (0.007 mL, 0.14 mmol, 3.0 equiv) was then added dropwise and the reaction was stirred at 23 °C for 45 min. Upon completion, volatiles were removed *in vacuo*. The crude product was purified via flash chromatography (90:10 to 80:20 petroleum ether/acetone) to provide the desired product as a white solid with 2.5:1 diastereomeric ratio (15 mg, 79%). Analytical data: **mp** 176.5-178 °C; **¹H NMR** (600 MHz, CDCl₃): (Major Diastereomer) δ 7.38-7.22 (m, 5H), 6.01 (s, 1H), 5.49 (s, 1H), 5.01 (d, *J* = 19.8 Hz, 1H), 4.68 (d, *J* = 18.0 Hz, 1H), 4.28 (d, *J* = 4.2 Hz, 1H), 2.38-2.21 (m, 3H), 1.66 (d, *J* = 12.6 Hz, 1H); **¹³C NMR** (150 MHz, CDCl₃): (Major Diastereomer) δ 156.7, 135.5, 129.1, 128.6, 128.1, 125.5, 116.8, 114.9, 105.2, 57.8, 56.2, 50.6, 32.5, 31.4; **HRMS** (ESI⁺) Calcd. for C₁₅H₁₄BrF₃N₂O₃ +Na, 429.0038; Found, 429.0039; **IR** (thin film, cm⁻¹) 3054, 2986, 2305, 1778, 1719, 1292, 1209, 1149, 740; **TLC** (60:40 hexanes/ethyl acetate): R_f = 0.30.

¹H, ¹³C NMR Spectra:







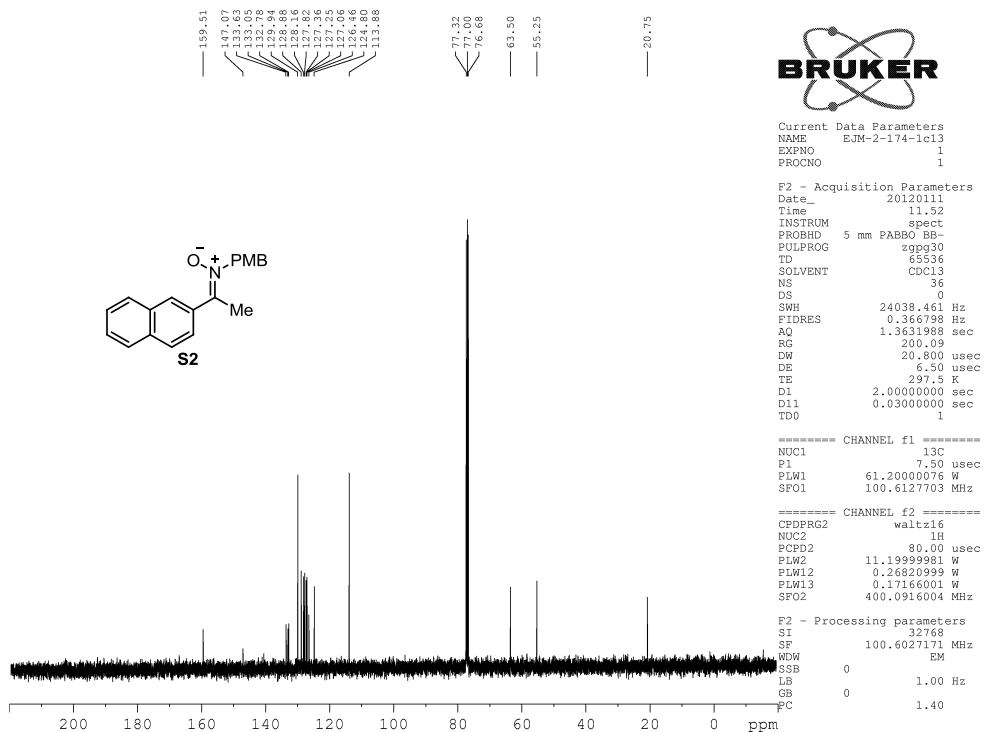


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 PROCNO 1

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 FIDRES 0.125483 Hz
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 RG 88.16
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F2 - Processing parameters
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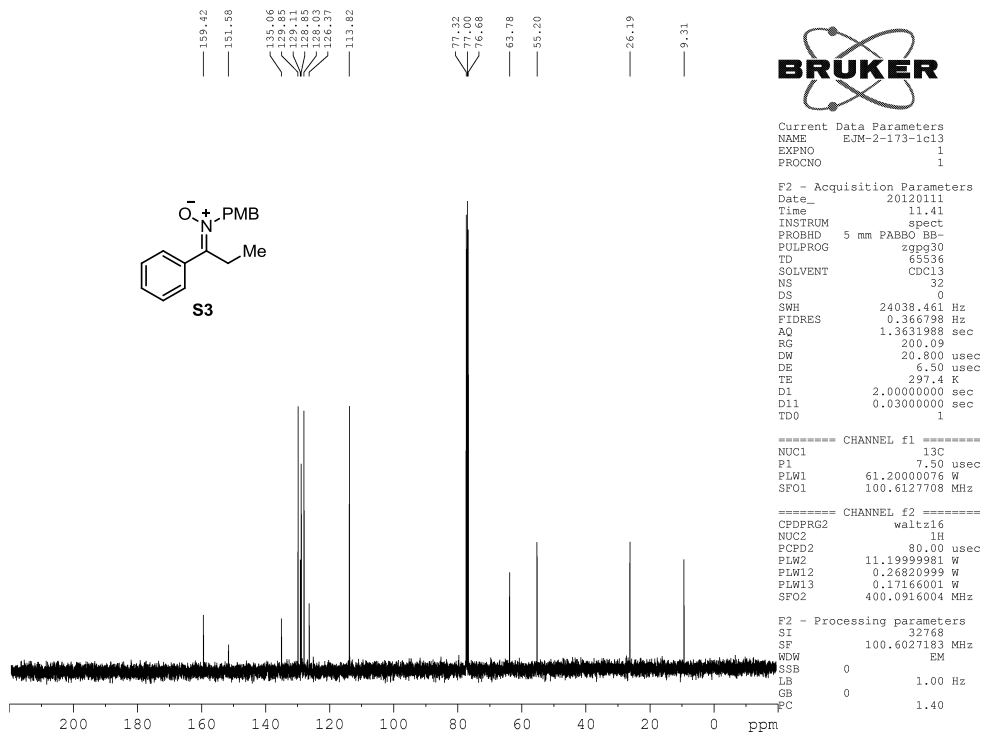
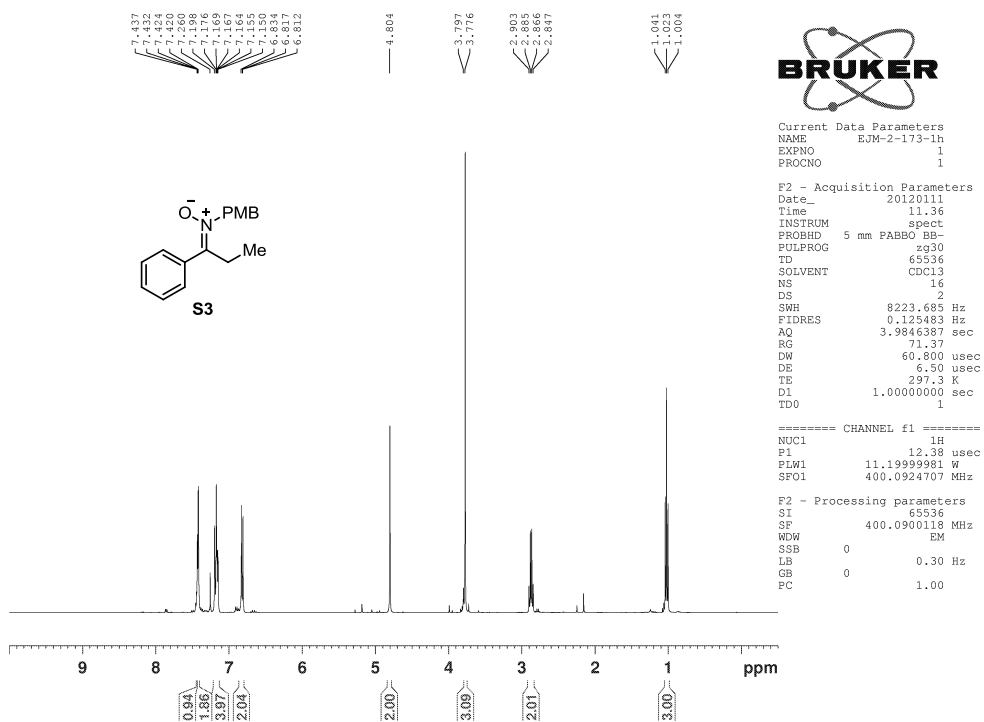
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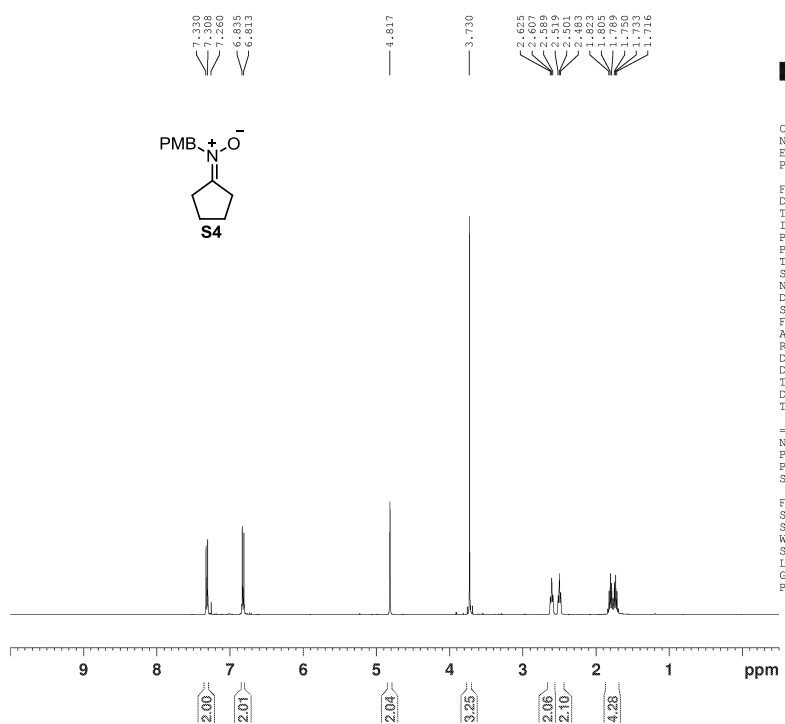
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 RG 200.09
 DW 20.800 usec
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 TE 297.5 K
 D1 2.00000000 sec
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 TD0 1

===== CHANNEL f1 =====
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 P1 7.50 usec
 PLW1 61.20000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
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 PLW12 0.26820999 W
 PLW13 0.17160001 W
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F2 - Processing parameters
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 PC 1.40



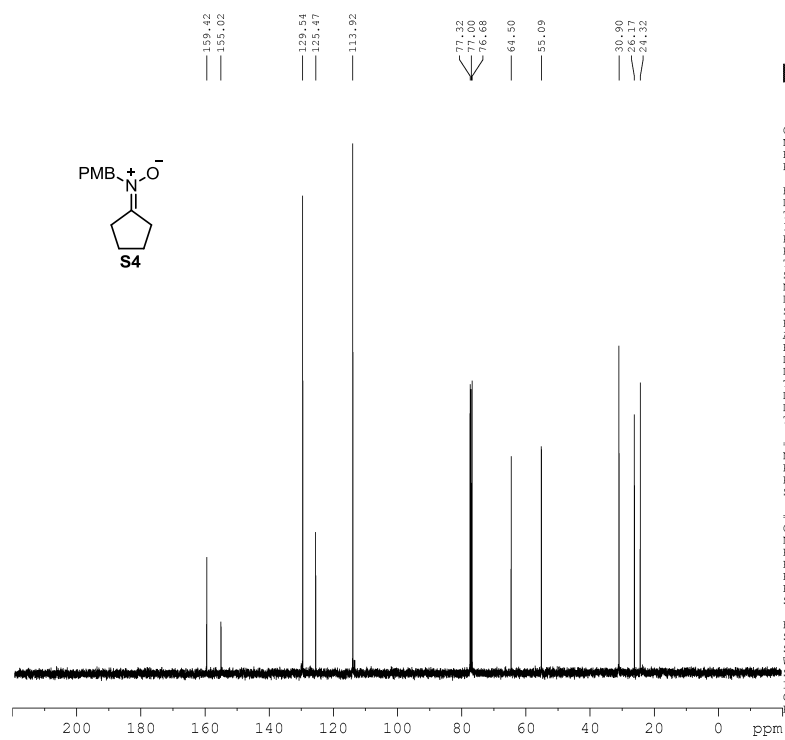


Current Data Parameters
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 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 40.18
 DW 60.800 usec
 DE 6.50 usec
 TE 297.7 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
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 PLW1 11.1999981 W
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F2 - Processing parameters
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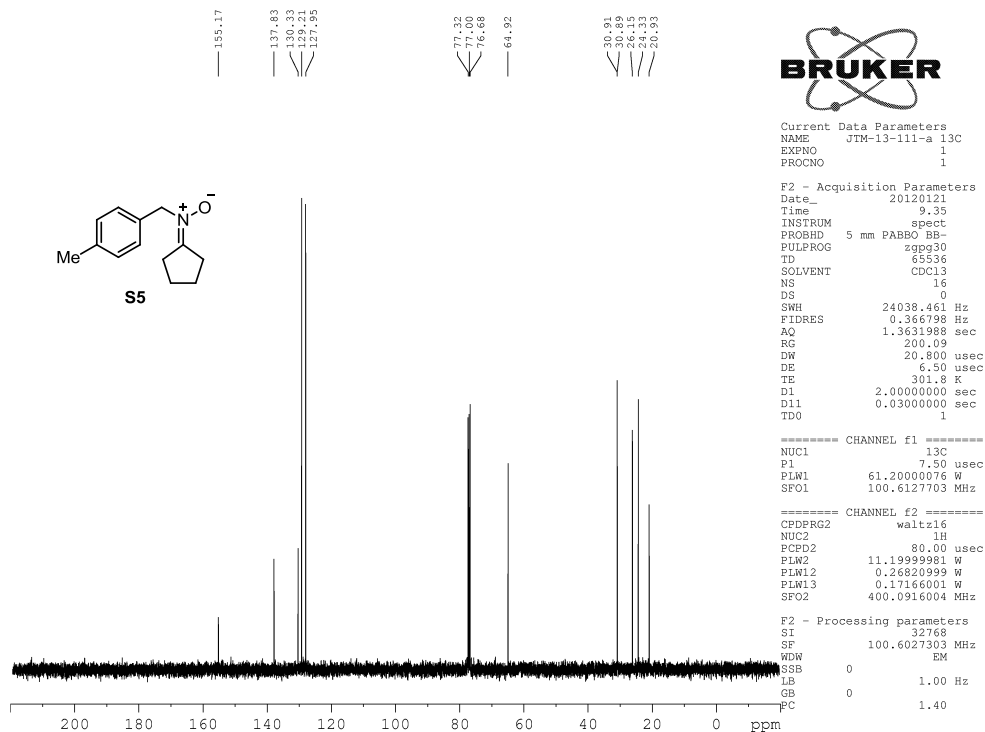
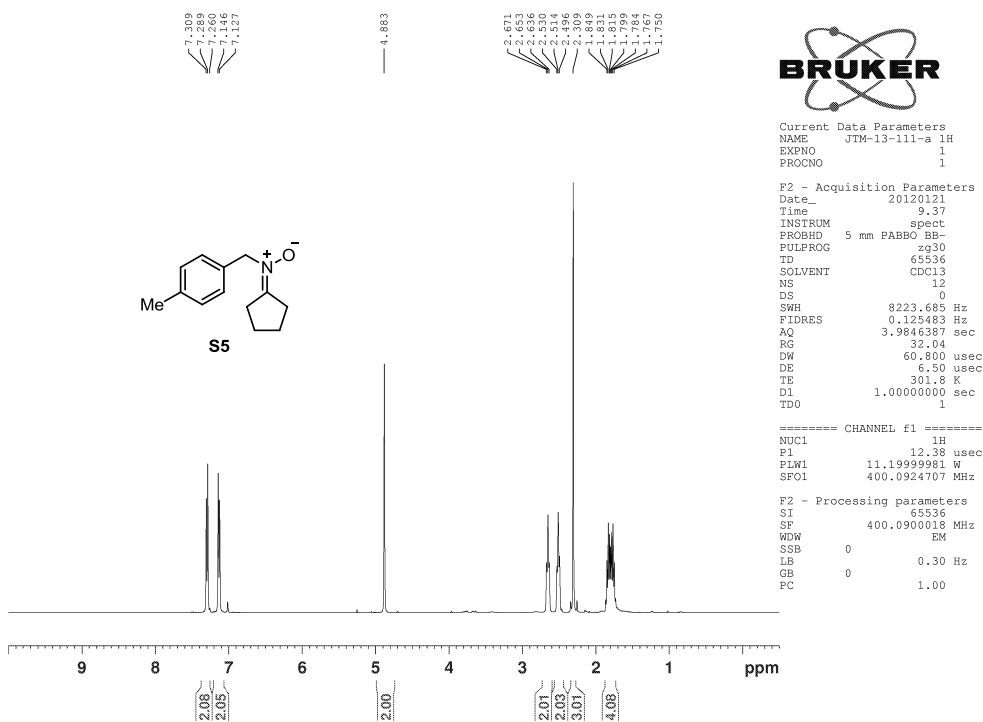
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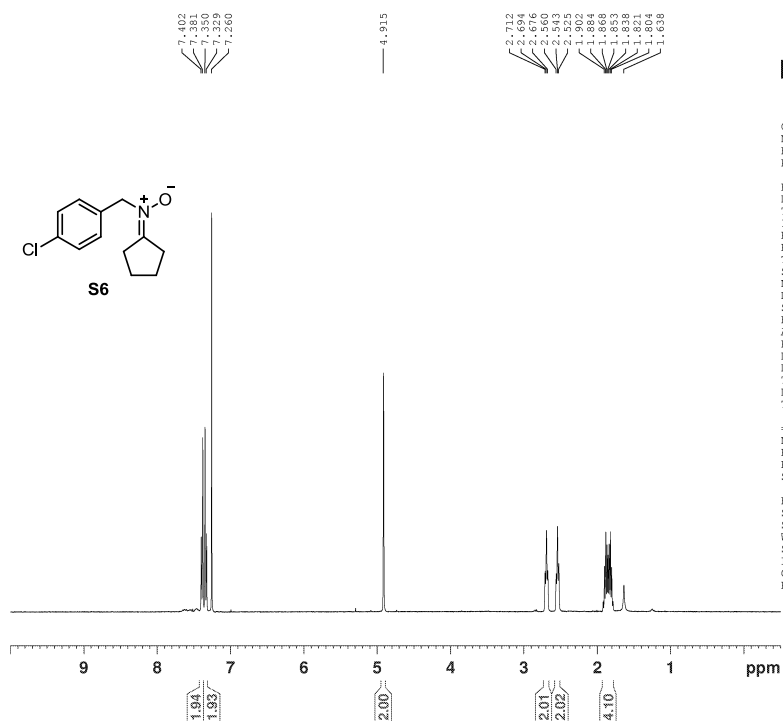
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 NS 58
 DS 0
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 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 298.3 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====
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 P1 7.50 usec
 PLW1 61.20000076 W
 SFO1 100.6127703 MHz

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 PLM12 0.26820999 W
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F2 - Processing parameters
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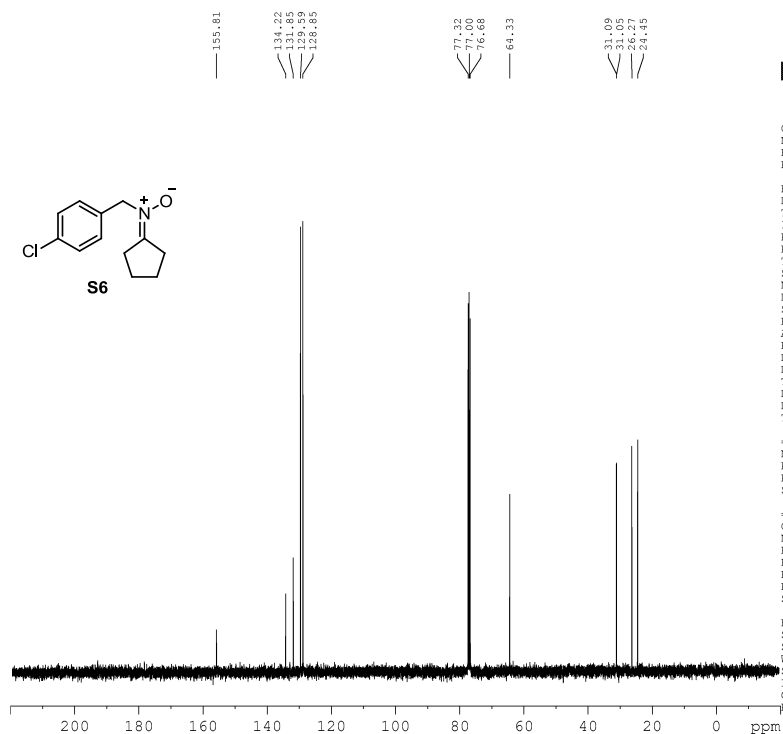


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 PROCNO 1

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 SOLVENT CDCl3
 NS 14
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 200.09
 DW 60.800 usec
 DE 6.50 usec
 TE 301.4 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
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 P1 12.38 usec
 PLW1 11.19999981 W
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F2 - Processing parameters
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 WDW EM
 SSB 0
 LB 0.30 Hz
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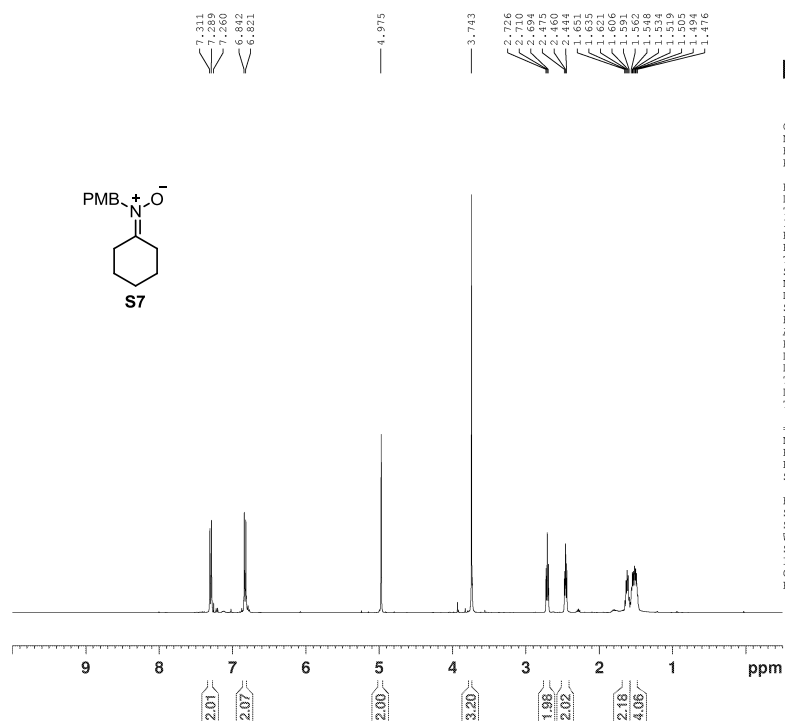
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 SOLVENT CDCl3
 NS 52
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 301.7 K
 D1 2.0000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLM2 11.19999981 W
 PLM12 0.26820999 W
 PLM13 0.17166001 W
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F2 - Processing parameters
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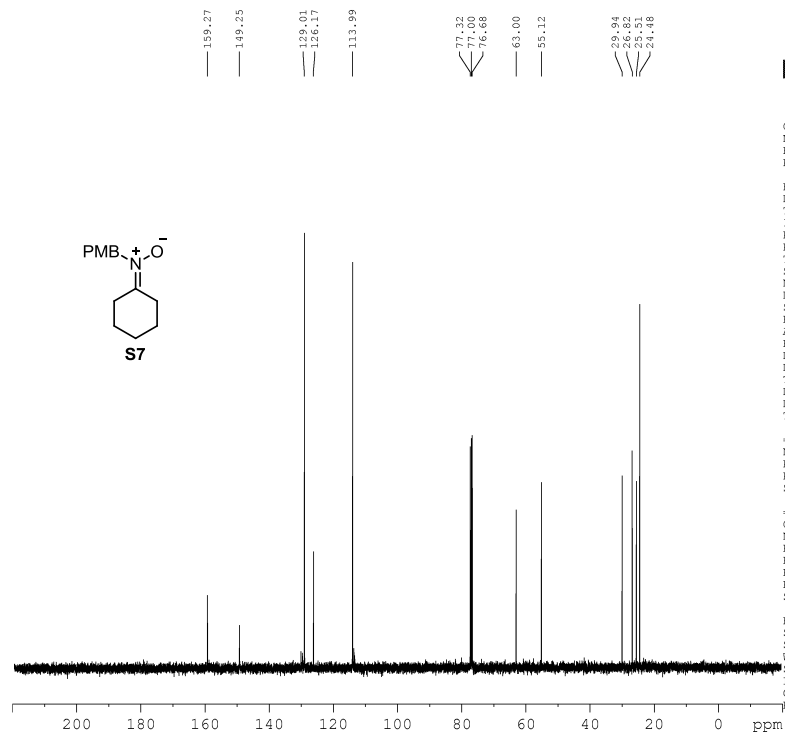


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 PROCNO 1

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 SOLVENT CDCl3
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 DS 0
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 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 21.94
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 DE 6.50 usec
 TE 297.2 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
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 SF01 400.0924707 MHz

F2 - Processing parameters
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 SF 400.0900114 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



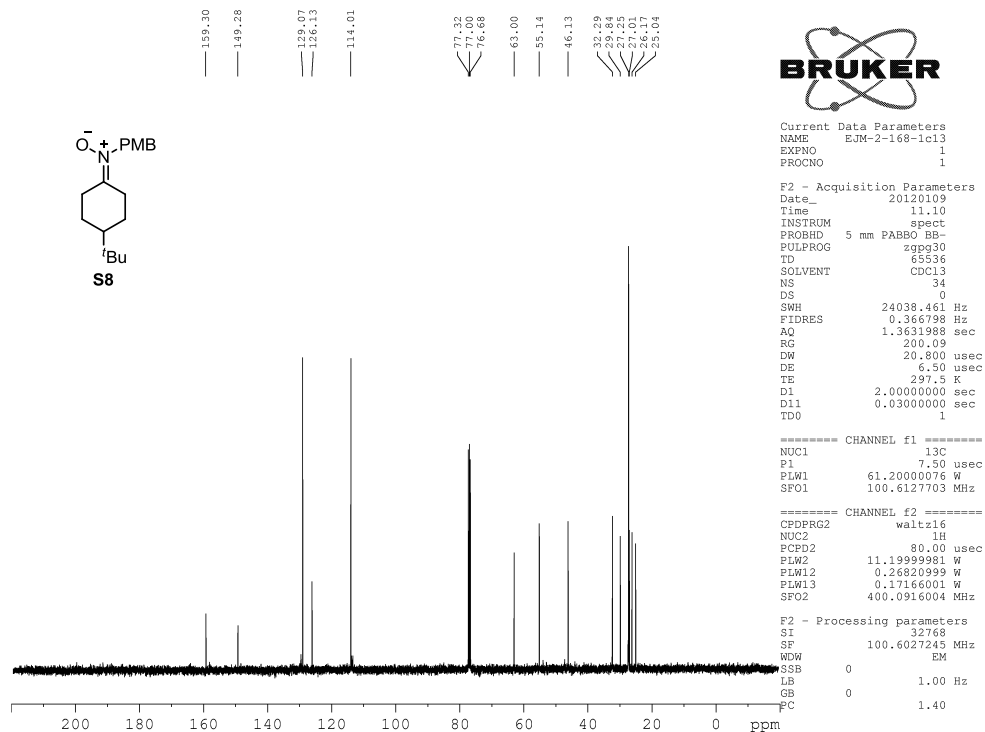
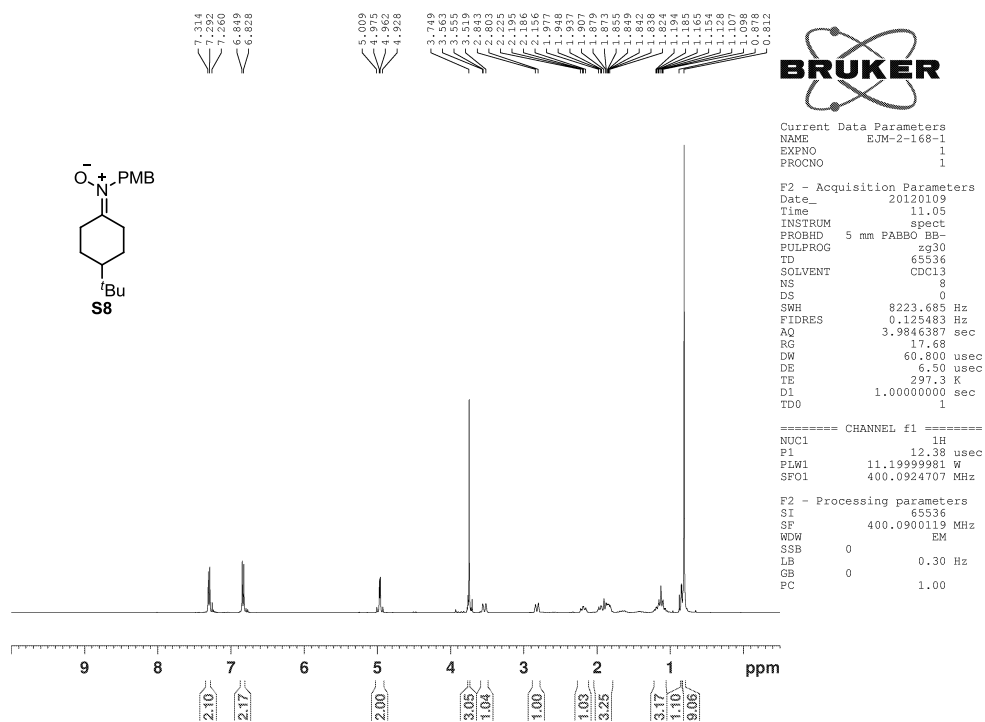
Current Data Parameters
 NAME JTM-12-263-1b 13C
 EXPNO 1
 PROCNO 1

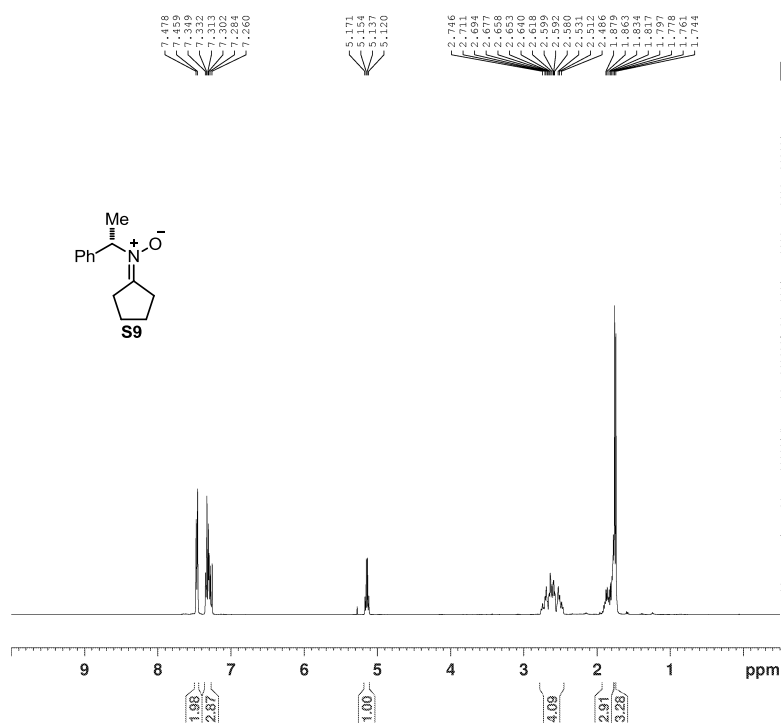
F2 - Acquisition Parameters
 Date_ 20111215
 Time 14.34
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 41
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 297.1 K
 D1 2.0000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLM2 11.19999981 W
 PLM12 0.26820999 W
 PLM13 0.17166001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027252 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



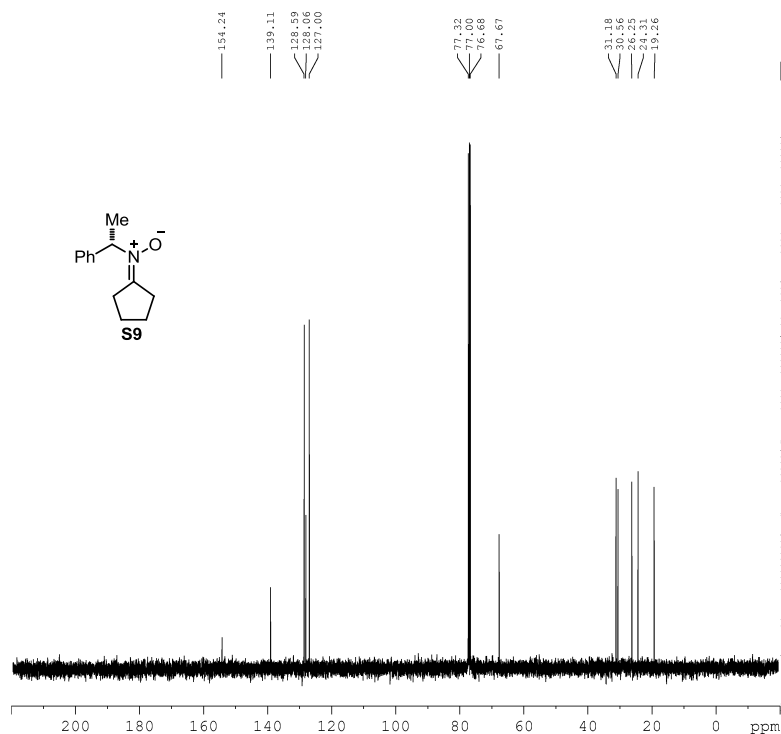


Current Data Parameters
 NAME EJM-2-199-1
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120124
 Time 15.45
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 4
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 88.16
 DW 60.800 usec
 DE 6.50 usec
 TE 301.3 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900117 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



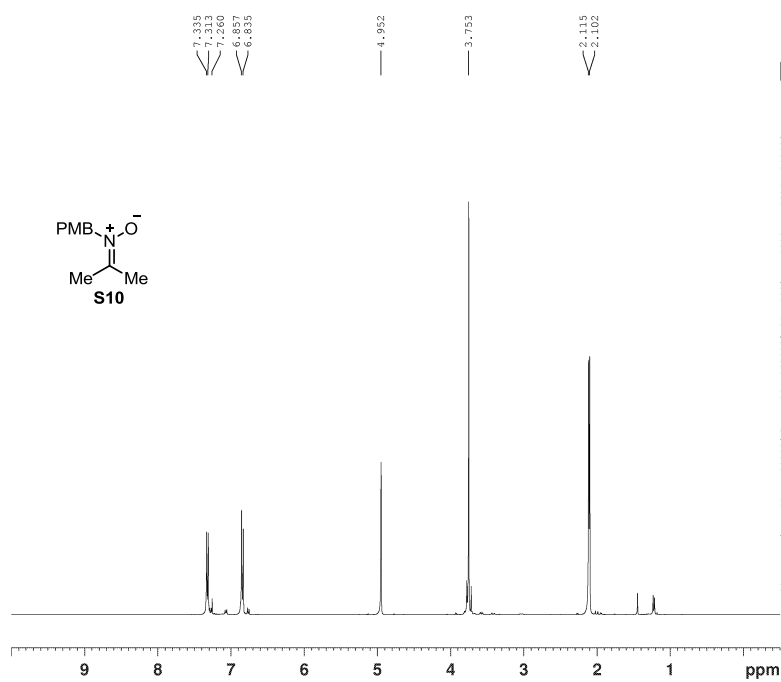
Current Data Parameters
 NAME EJM-2-199-cl3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120125
 Time 12.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 53
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.363198 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 301.7 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.2000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820939 W
 PLW13 0.1716001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027164 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

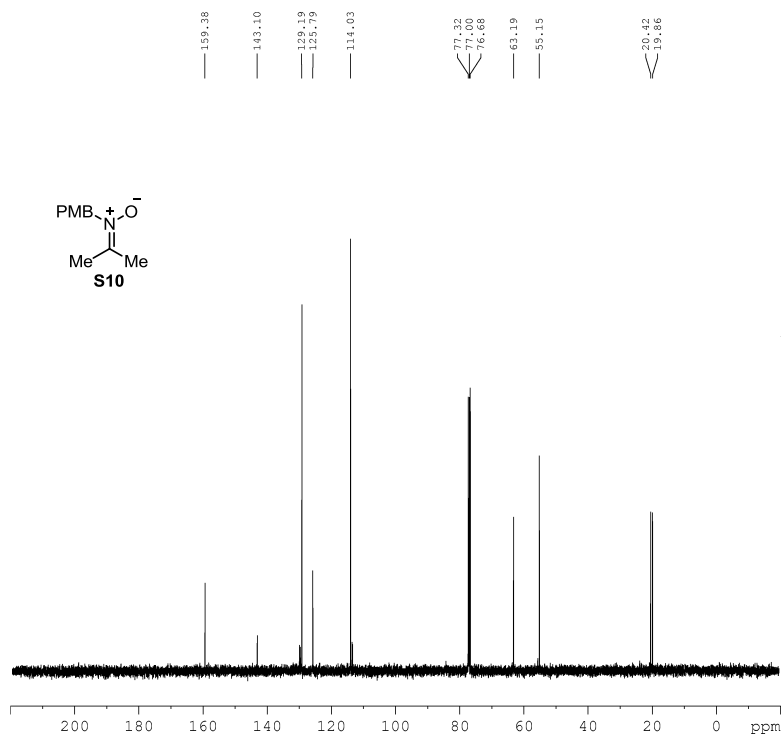


Current Data Parameters
 NAME JTM-13-73-1
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120114
 Time 10.25
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 13
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 44.2
 DW 60.800 usec
 DE 6.50 usec
 TE 297.7 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.090115 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



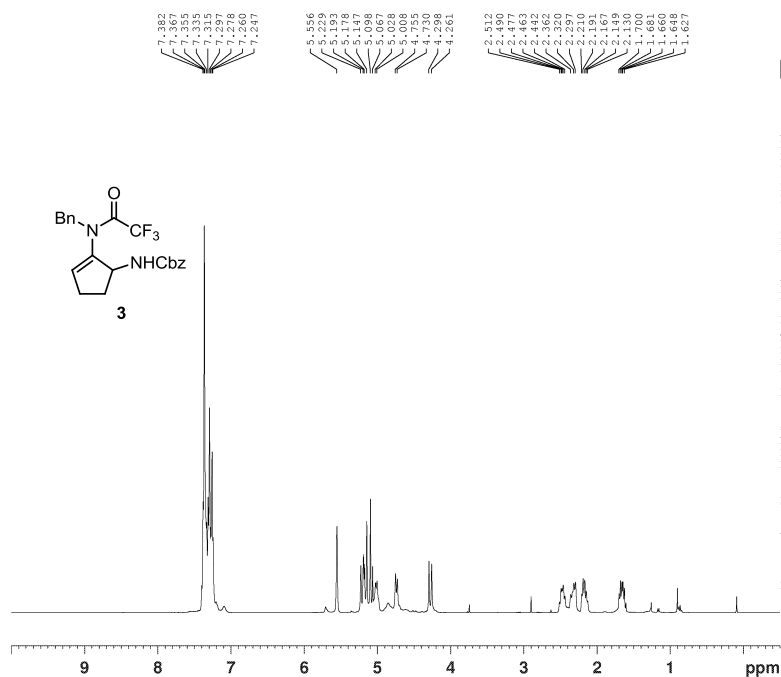
Current Data Parameters
 NAME JTM-13-73-1 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120114
 Time 10.30
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 63
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 298.4 K
 D1 2.0000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SFO1 100.6127703 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLM2 11.19999981 W
 PLM12 0.26820999 W
 PLM13 0.17166001 W
 SFO2 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027244 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

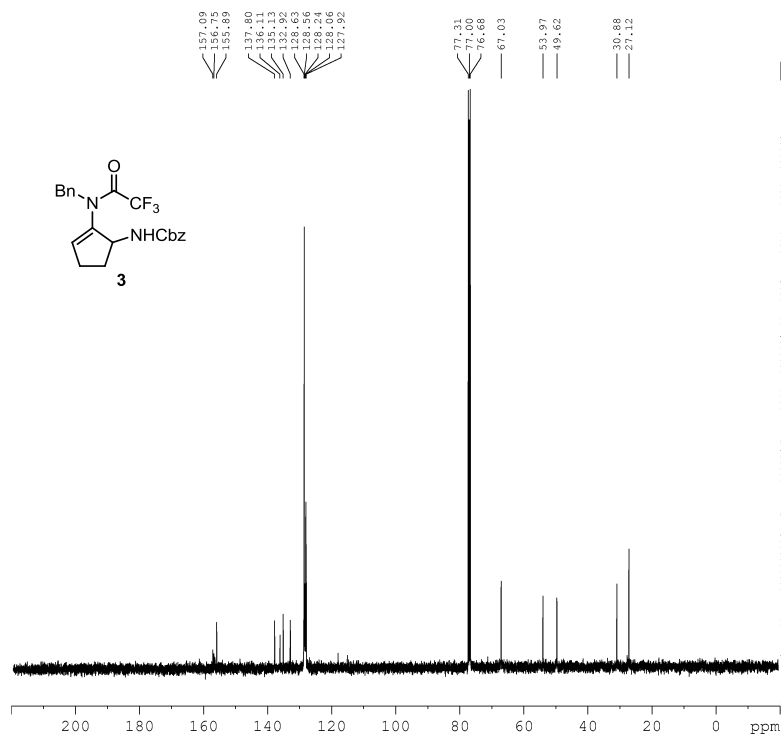


Current Data Parameters
 NAME JTM-13-Bn Prod
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120120
 Time 6.52
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 19
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 59.75
 DW 60.800 usec
 DE 6.50 usec
 TE 297.6 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900115 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



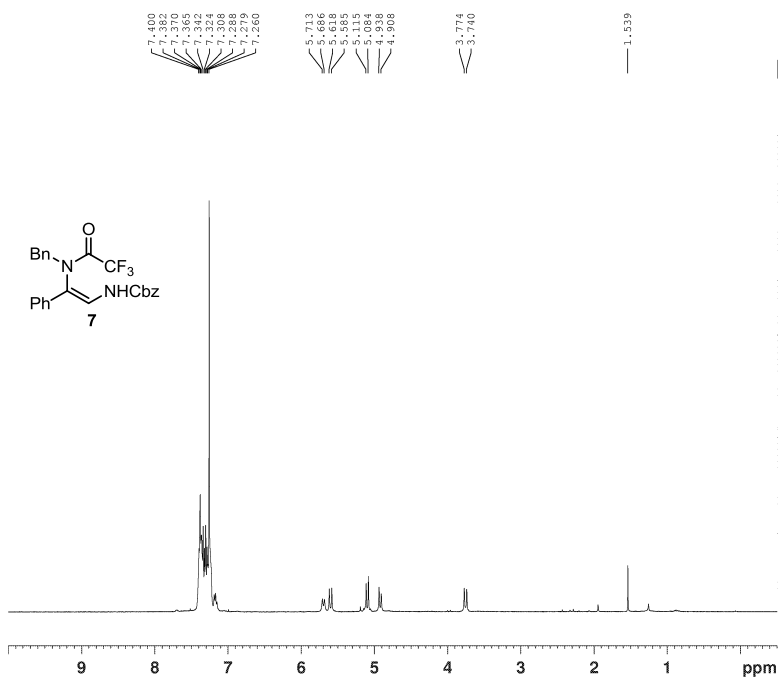
Current Data Parameters
 NAME JTM-13-Bn Prod 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120120
 Time 6.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 152
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.363198 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 297.5 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.2000076 W
 SFO1 100.6127703 MHz

===== CHANNEL f2 =====
 CDEPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820939 W
 PLW13 0.1716001 W
 SFO2 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027186 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

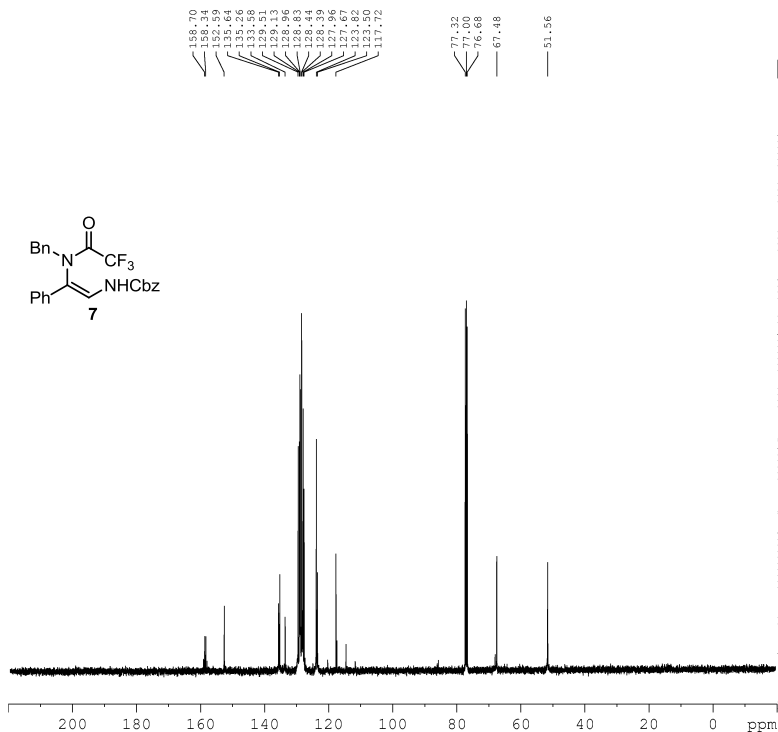


Current Data Parameters
 NAME JTM-13-13-3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120104
 Time 7.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 24
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 200.09
 DW 60.800 usec
 DE 6.50 usec
 TE 297.6 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900111 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



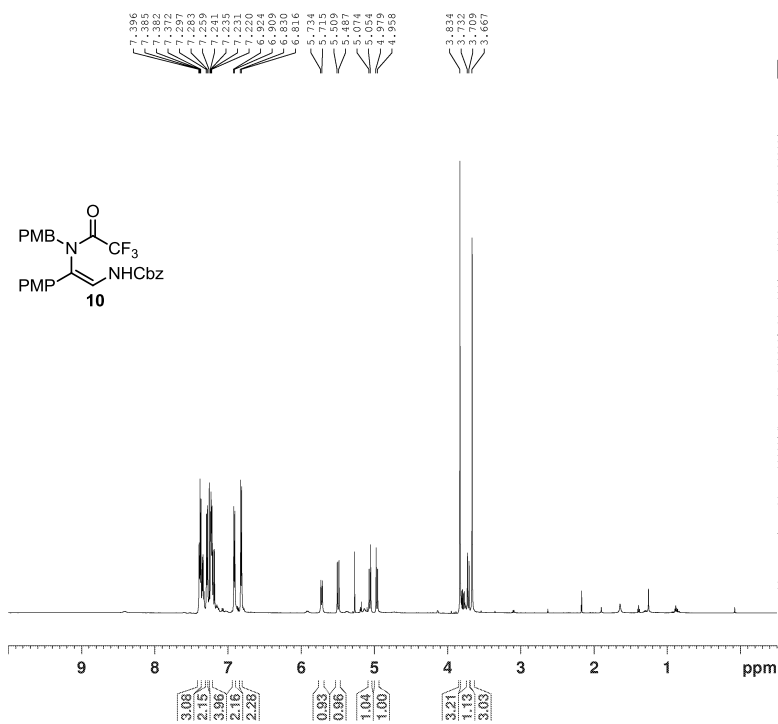
Current Data Parameters
 NAME JTM-13-227-1 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120218
 Time 9.10
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 132
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 297.8 K
 D1 2.0000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SFO1 100.6127703 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820939 W
 PLW13 0.17166001 W
 SFO2 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027259 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

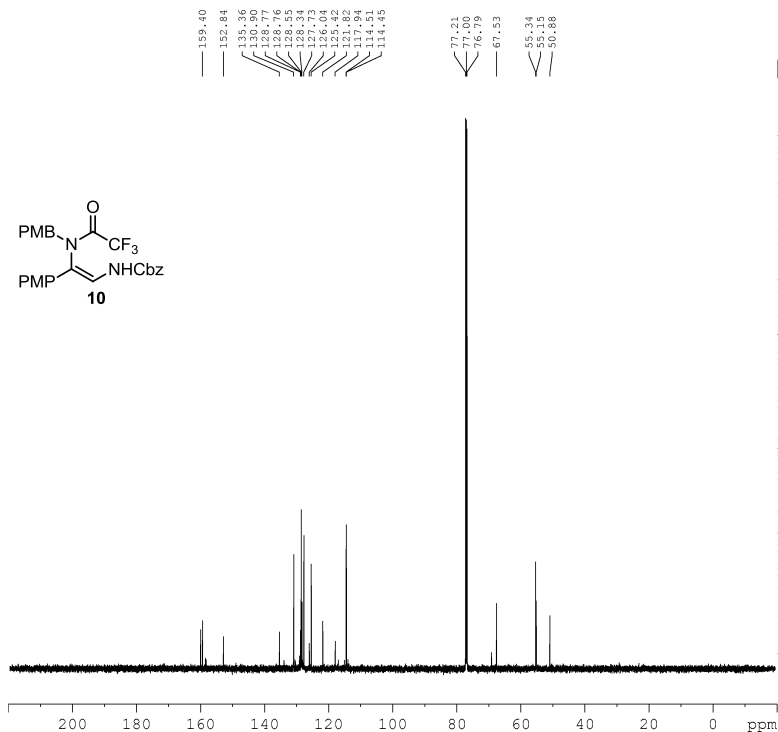


Current Data Parameters
 NAME JTM-13-57-2
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120111
 Time 12.58
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 292.7 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.0000000 W
 SF01 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300184 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



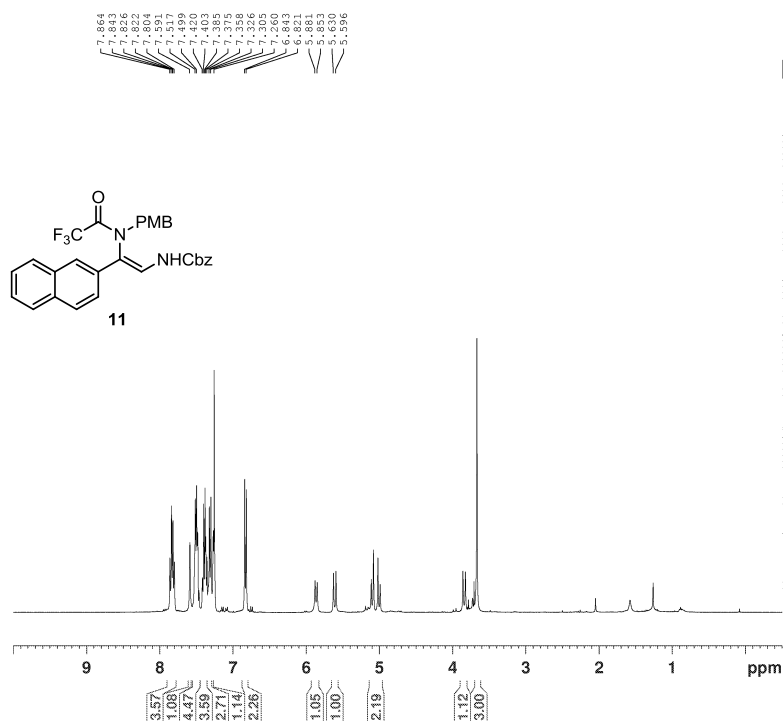
Current Data Parameters
 NAME JTM-13-57-2 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120111
 Time 13.06
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 239
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.3088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 293.9 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SF01 150.9178981 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.8000001 W
 PLW13 0.3919999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028184 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

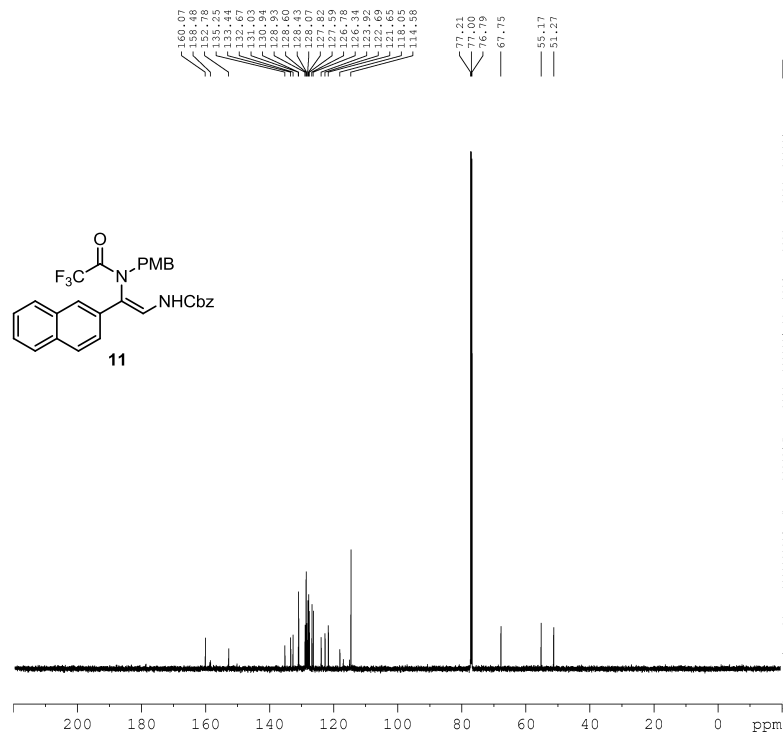


Current Data Parameters
 NAME EJM-2-179-2h
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120112
 Time 10.57
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 12
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 120.26
 DW 60.800 usec
 DE 6.50 usec
 TE 297.2 K
 D1 1.00000000 sec
 TDO 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900116 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



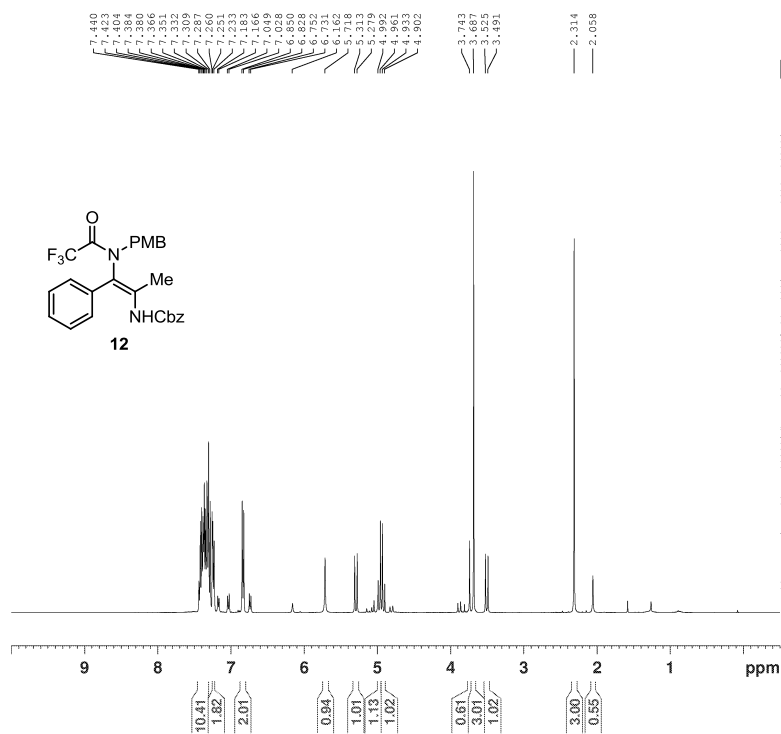
Current Data Parameters
 NAME JTM-E-185-13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120118
 Time 11.33
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 328
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.3088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 293.3 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TDO 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.00000000 W
 SF01 150.9178981 MHz

==== CHANNEL f2 =====
 CDEPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.00000000 W
 PLW12 0.80000001 W
 PLW13 0.39199999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028173 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

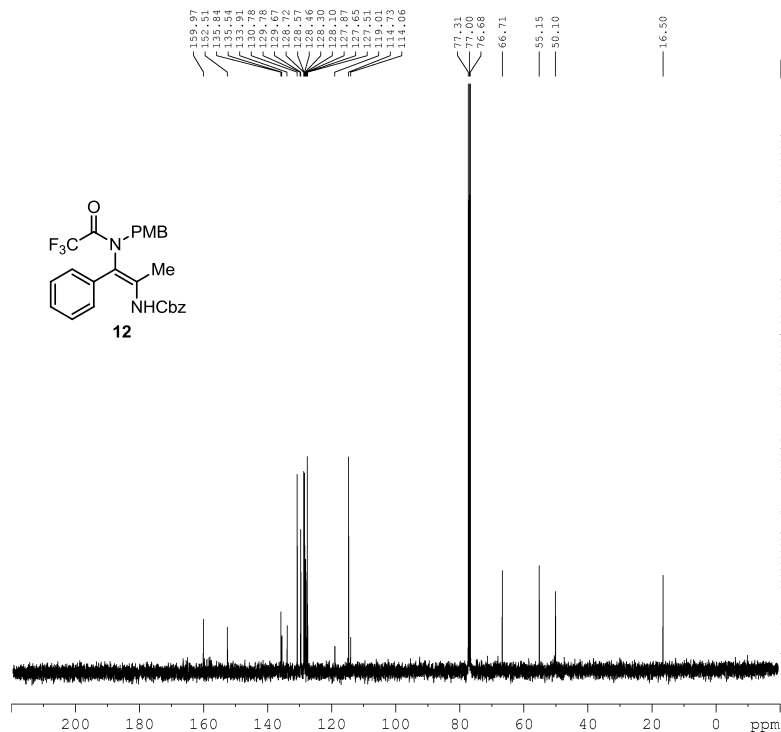


Current Data Parameters
 NAME EJM-2-178-h
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120114
 Time 14.15
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 12
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 88.16
 DW 60.800 usec
 DE 6.50 usec
 TE 297.7 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900116 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



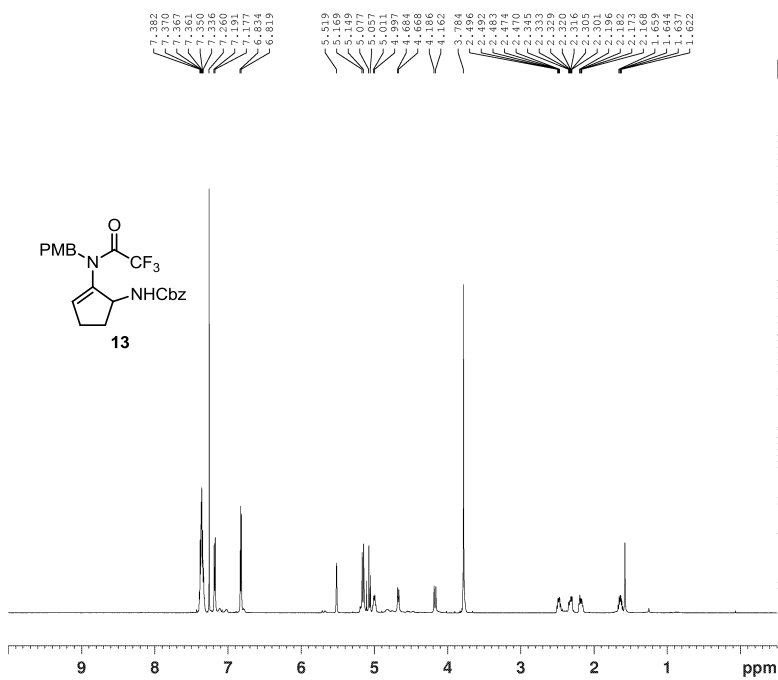
Current Data Parameters
 NAME EJM-2-178-cl3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120114
 Time 14.21
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 118
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 297.5 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.2000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820999 W
 PLW13 0.17166001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027149 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

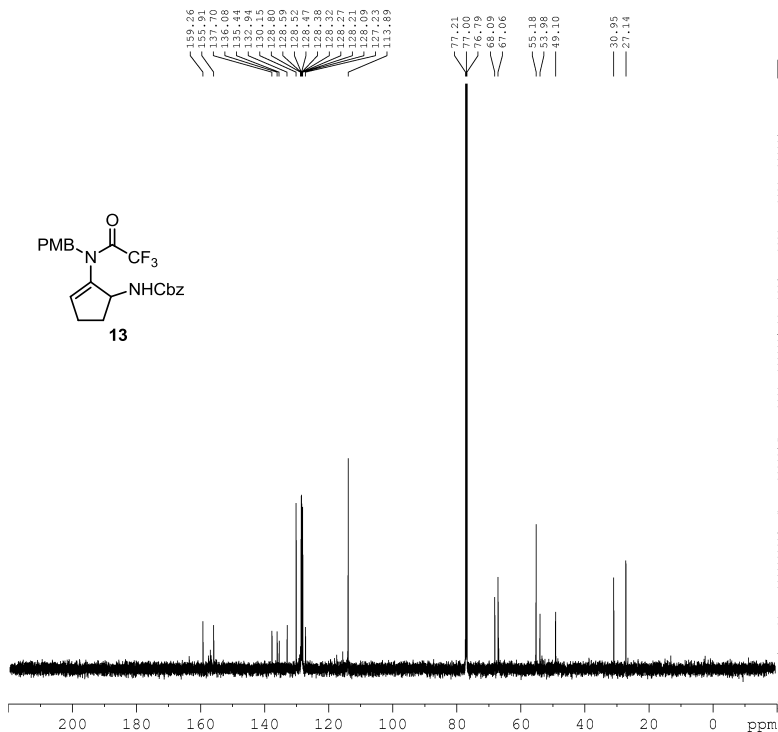


Current Data Parameters
 NAME JTM-12-257-3 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111216
 Time 12.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 21
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 292.8 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.0000000 W
 SF01 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300180 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



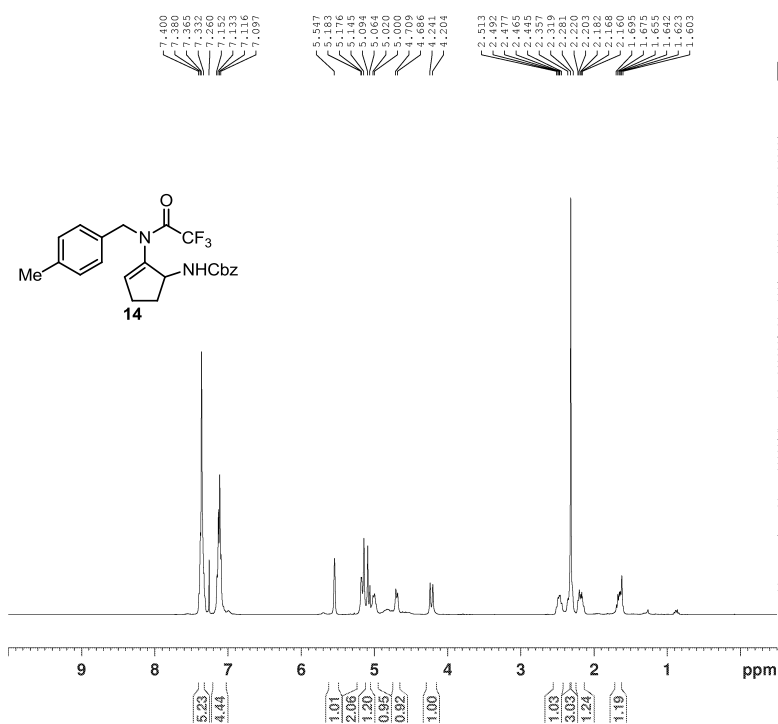
Current Data Parameters
 NAME JTM-12-257-3 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111216
 Time 12.10
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 181
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.3088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 293.4 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SF01 150.9178981 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.8000000 W
 PLW13 0.3919999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028184 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

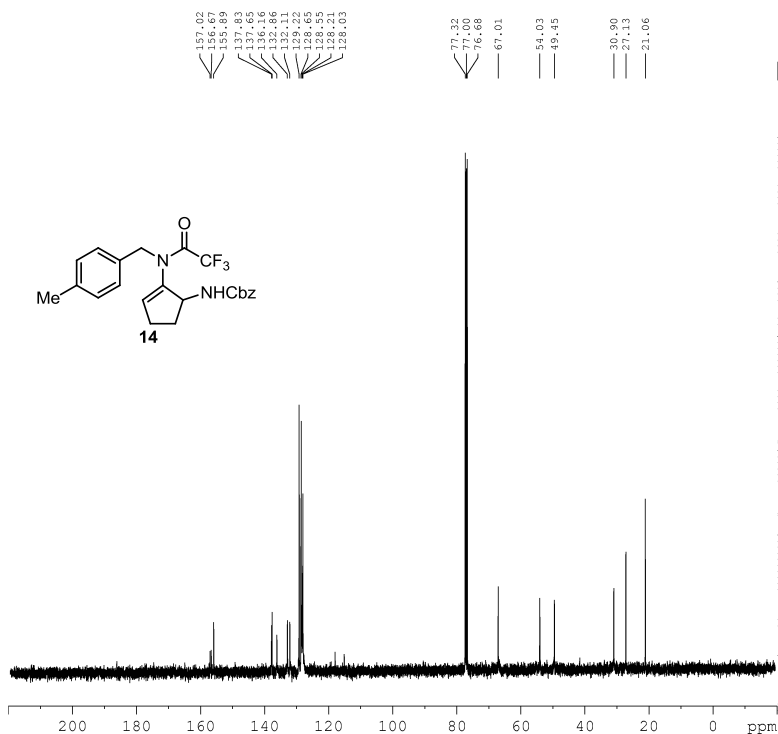


Current Data Parameters
 NAME JTM-13-113-b
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120121
 Time 9.21
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 21
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.37
 DW 60.800 usec
 DE 6.50 usec
 TE 301.6 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900113 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



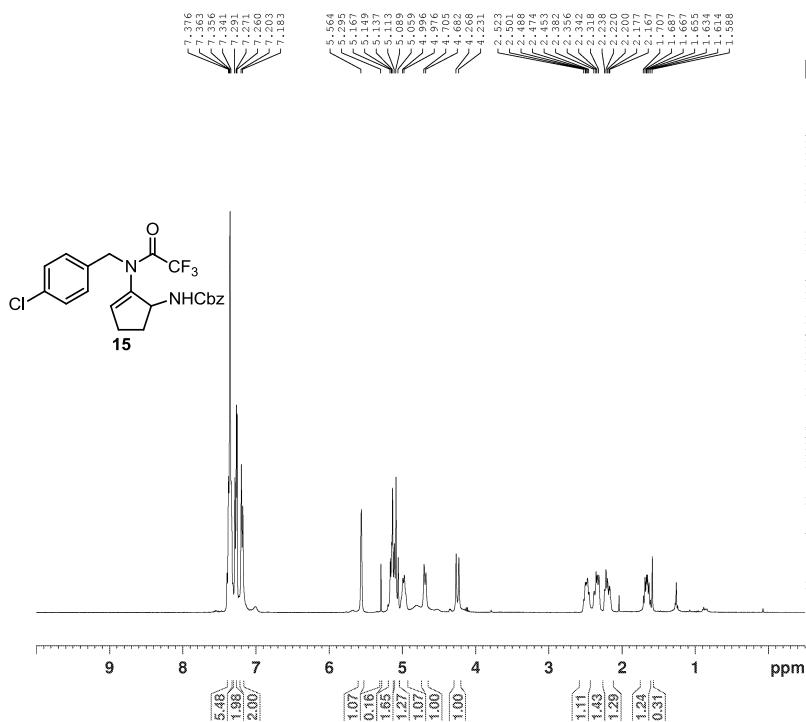
Current Data Parameters
 NAME JTM-13-113 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120121
 Time 11.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 174
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.363198 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 301.5 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.2000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820939 W
 PLW13 0.17166001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027184 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

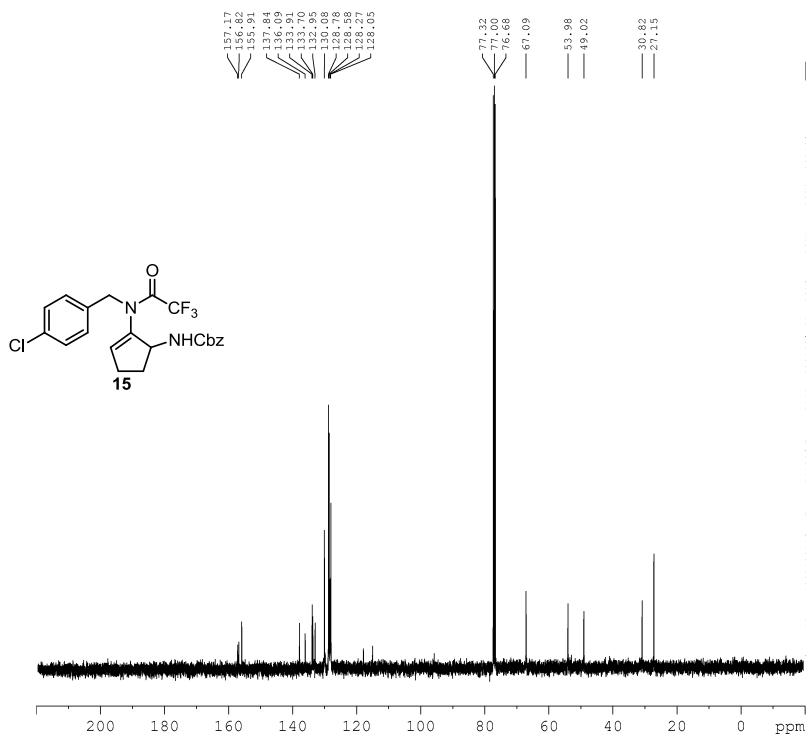


Current Data Parameters
 NAME EJM-2-197-2b
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120123
 Time 13.13
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 110.42
 DW 60.900 usec
 DE 6.50 usec
 TE 301.1 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900118 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



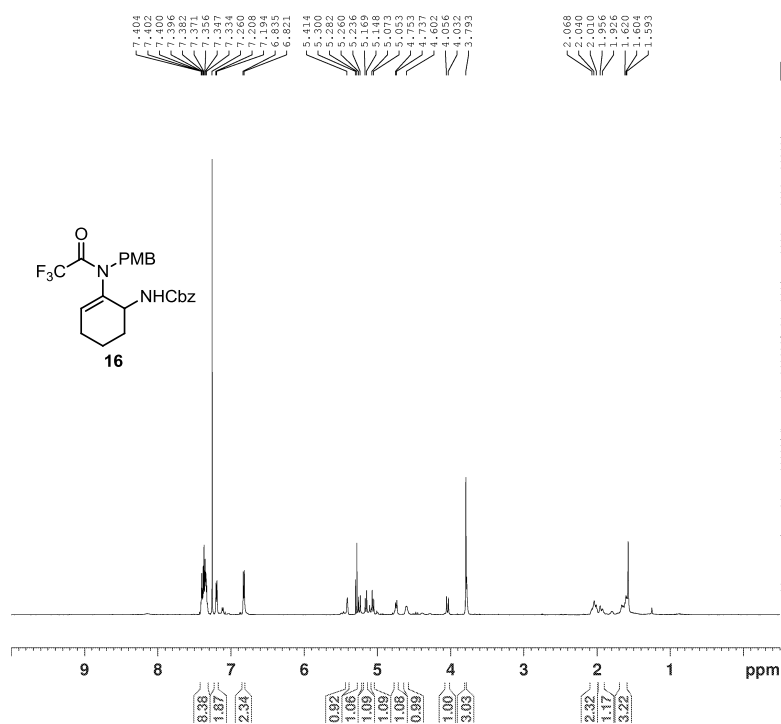
Current Data Parameters
 NAME EJM-2-197-cl3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120124
 Time 16.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 115
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.363198 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 301.6 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.2000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820999 W
 PLW13 0.17166001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027164 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

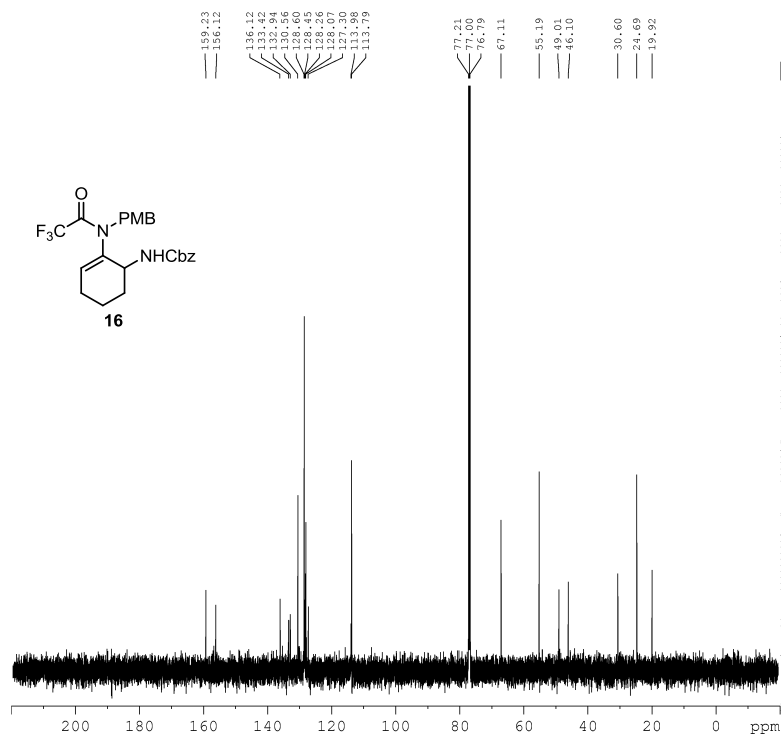


Current Data Parameters
 NAME JTM-12-297-1 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111221
 Time 13.11
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 292.6 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.0000000 W
 SF01 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300180 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



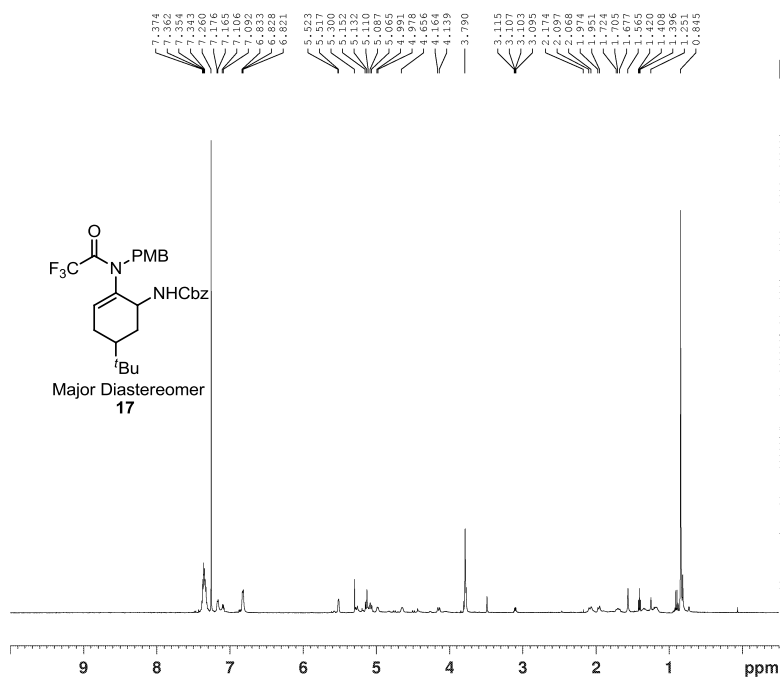
Current Data Parameters
 NAME JTM-12-265-2 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111216
 Time 9.56
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 147
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.308159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 292.8 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SF01 150.9178981 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.8000001 W
 PLW13 0.3919999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028162 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

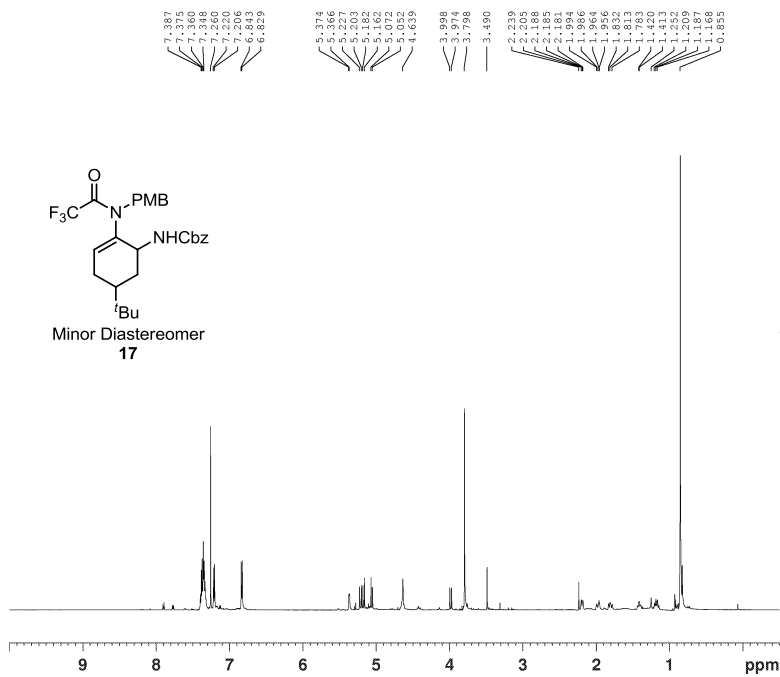


Current Data Parameters
 NAME EJM-2-200-3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120131
 Time 14.32
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 14
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 292.8 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.60 usec
 PLW1 20.0000000 W
 SFO1 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300180 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

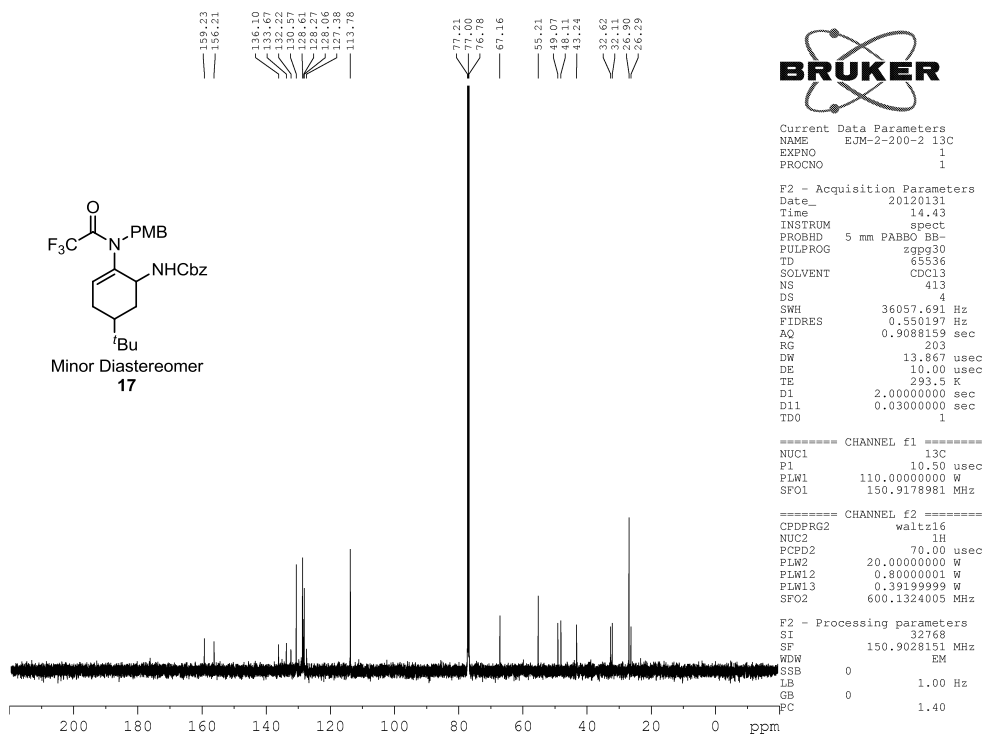
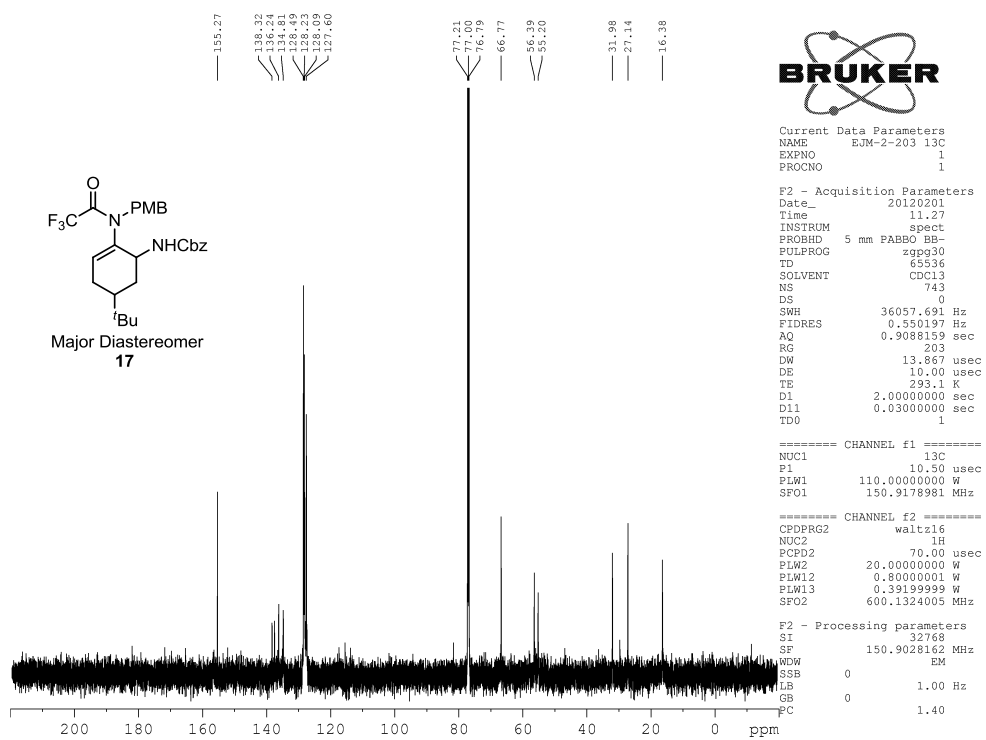


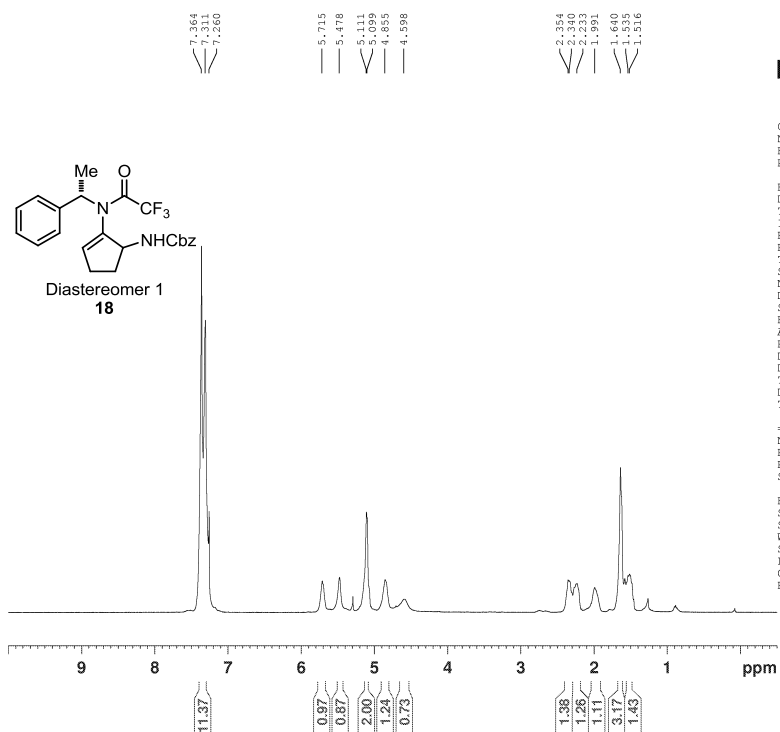
Current Data Parameters
 NAME EJM-2-200-2
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120131
 Time 14.22
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 10
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 292.9 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.60 usec
 PLW1 20.0000000 W
 SFO1 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300179 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



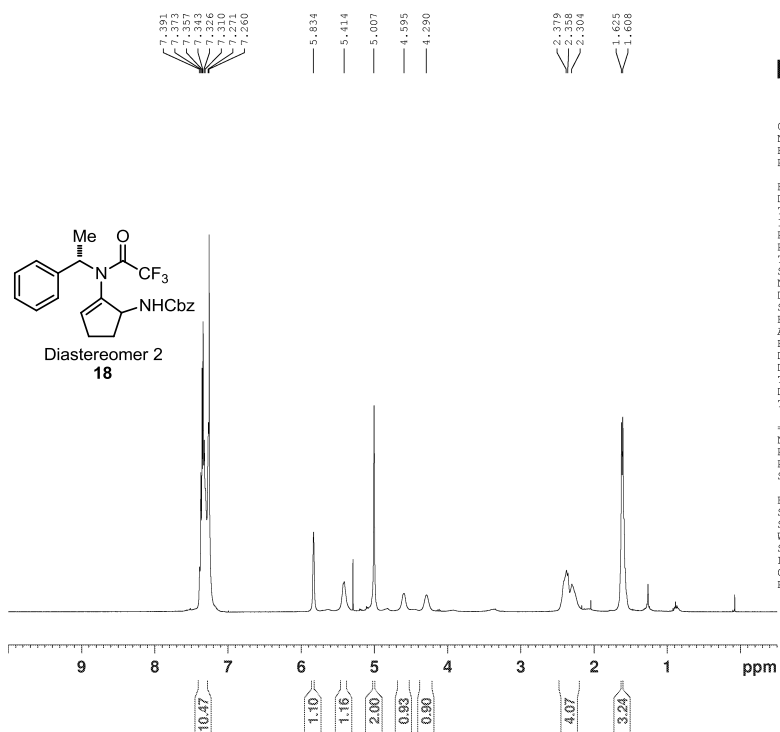


Current Data Parameters
 NAME EJM-2-227-2
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120215
 Time 15.43
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 13
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 120.26
 DW 60.800 usec
 DE 6.50 usec
 TE 301.9 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900106 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

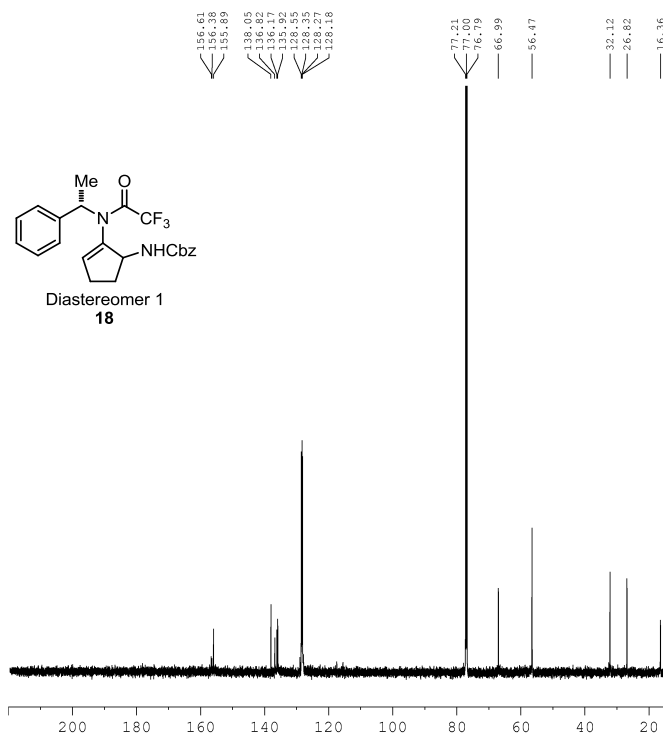


Current Data Parameters
 NAME EJM-2-227-3
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120215
 Time 15.52
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 12
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 110.42
 DW 60.800 usec
 DE 6.50 usec
 TE 302.0 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900113 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



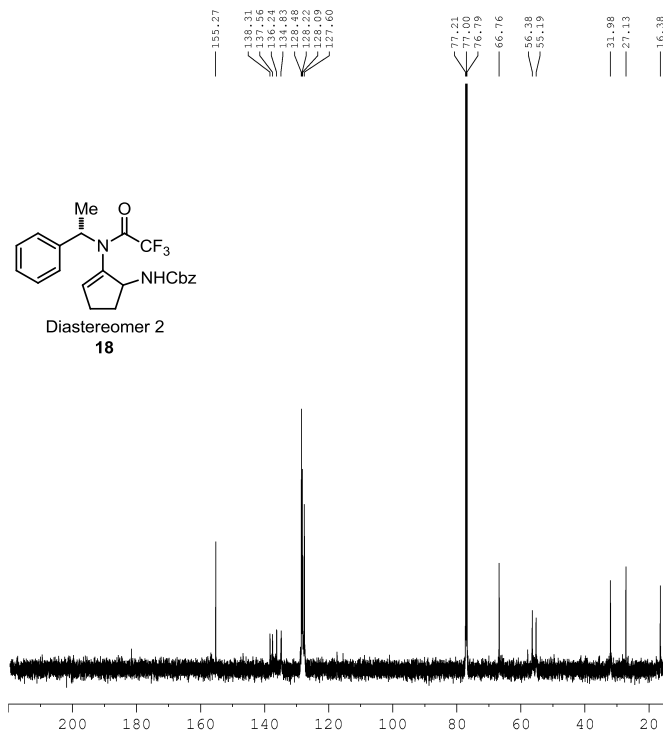
Current Data Parameters
 NAME EJM-227-2 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120217
 Time 7.11
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 1327
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.9088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 294.3 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SFO1 150.9178981 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.80000001 W
 PLW13 0.39199999 W
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028161 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40



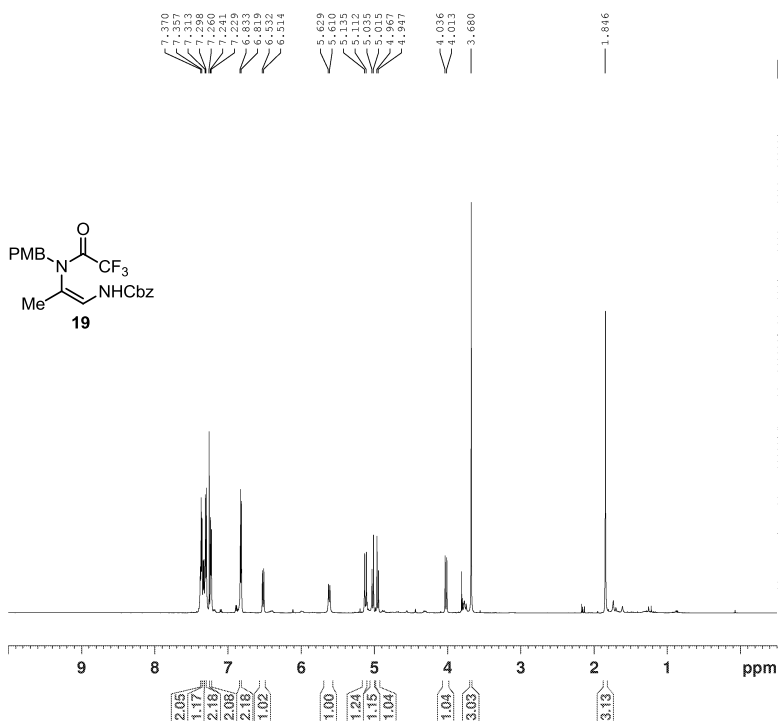
Current Data Parameters
 NAME EJM-227-3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120216
 Time 13.07
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 906
 DS 4
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.9088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 294.3 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SFO1 150.9178981 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.80000001 W
 PLW13 0.39199999 W
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028173 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

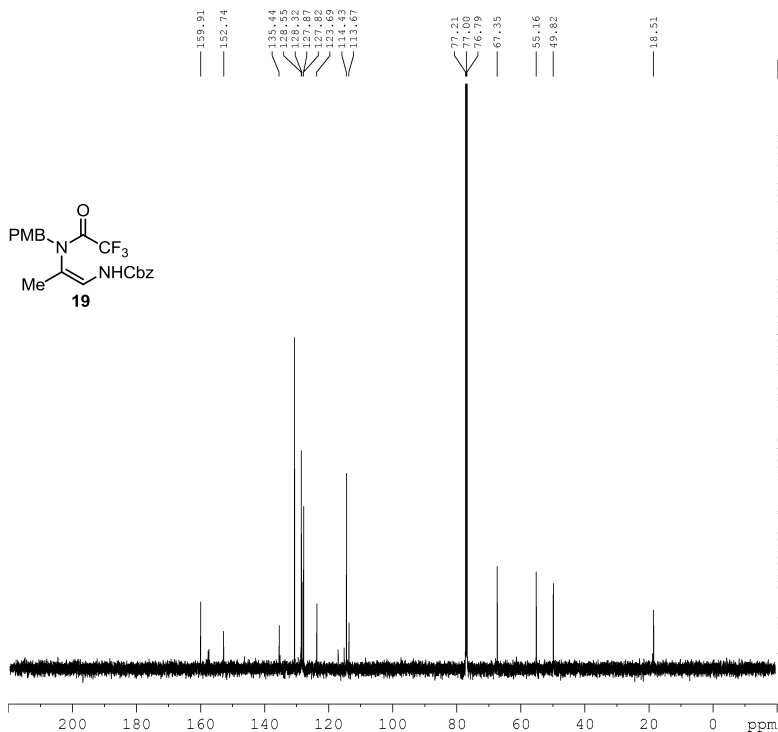


Current Data Parameters
 NAME JTM-13-97-2
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120118
 Time 11.53
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 28
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 293.1 K
 D1 1.0000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.0000000 W
 SF01 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300179 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



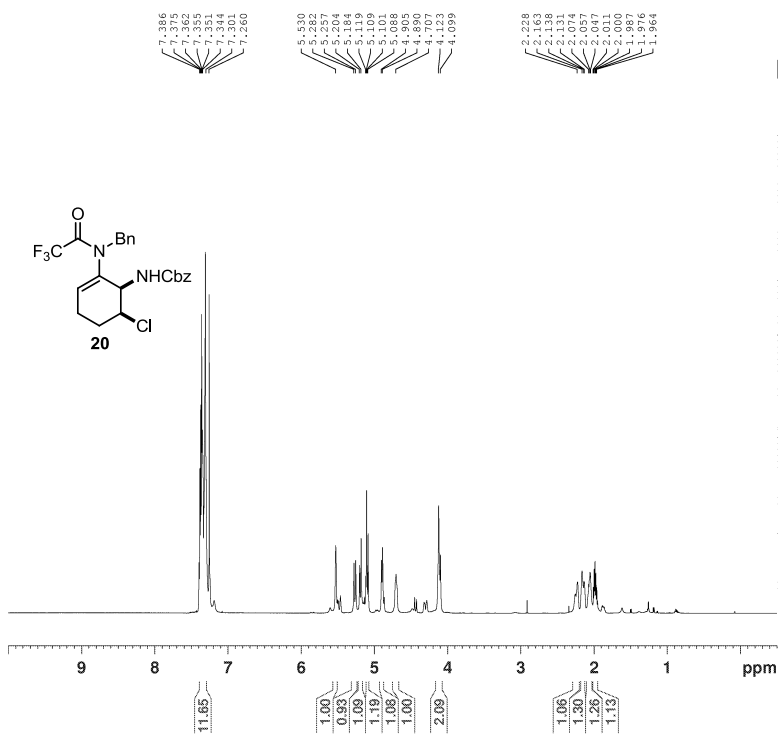
Current Data Parameters
 NAME JTM-13-97-2 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120118
 Time 11.58
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 187
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.3088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 294.4 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SF01 150.9178981 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.8000000 W
 PLW13 0.3919999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028161 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

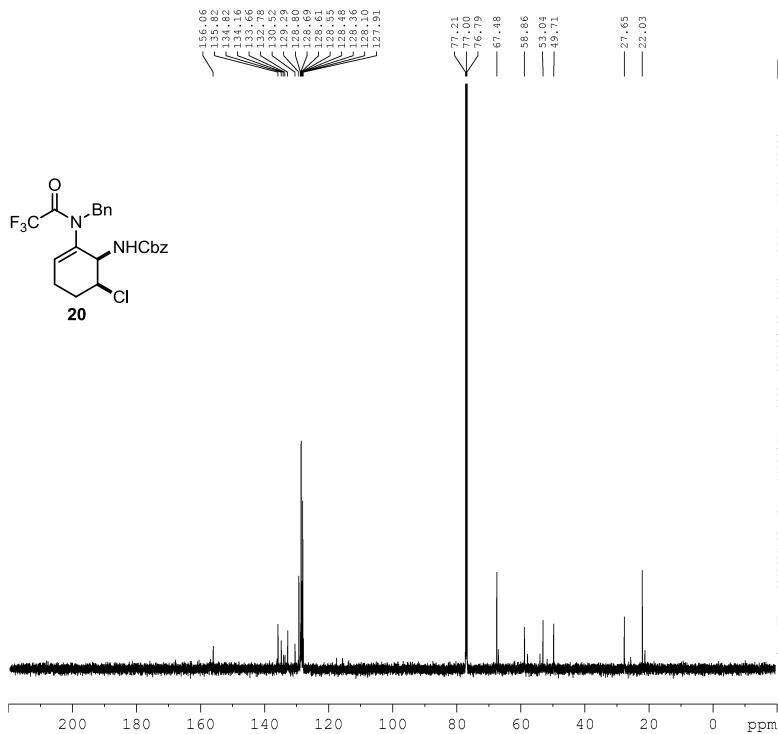


Current Data Parameters
 NAME JTM-13-95-2
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120118
 Time 14.23
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 19
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 181
 DW 40.533 usec
 DE 6.50 usec
 TE 292.8 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.00000000 W
 SFO1 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300179 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



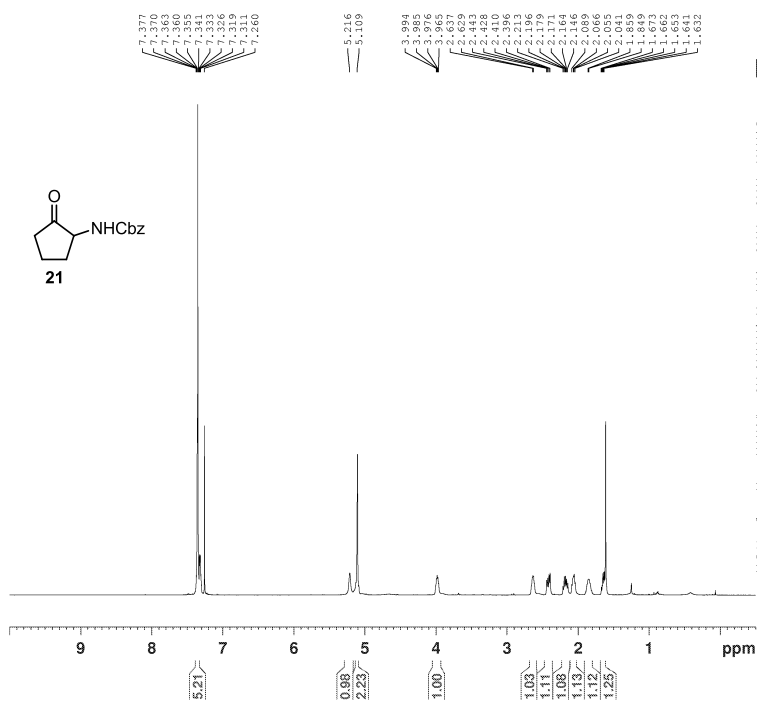
Current Data Parameters
 NAME JTM-13-95-2 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120118
 Time 14.28
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 235
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.308159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 293.6 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.00000000 W
 SFO1 150.9178981 MHz

===== CHANNEL f2 =====
 CDFPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.00000000 W
 PLW12 0.80000001 W
 PLW13 0.39199999 W
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028173 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

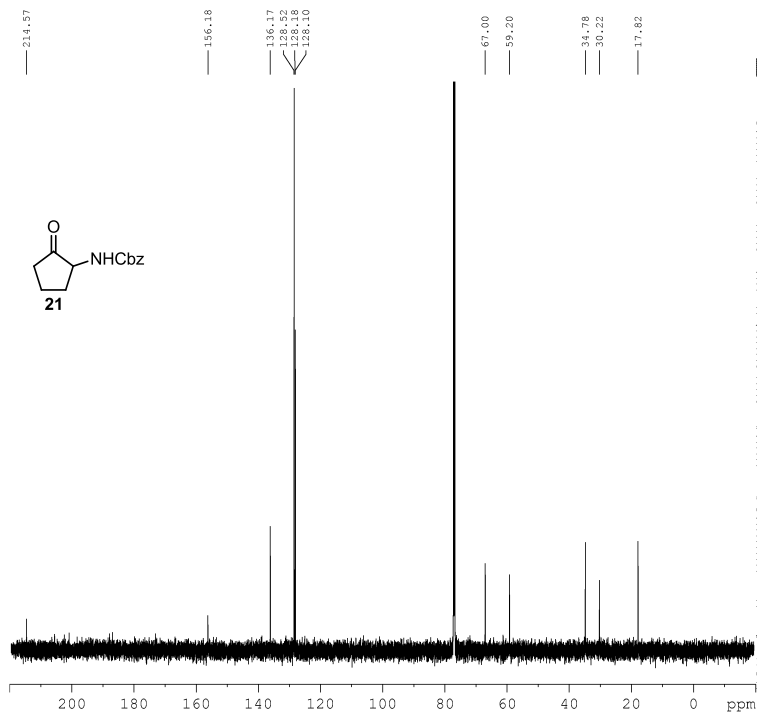


Current Data Parameters
 NAME JTM-14-263-3 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120419
 Time 9.00
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 21
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 203
 DW 40.533 usec
 DE 6.50 usec
 TE 293.6 K
 D1 1.0000000 sec
 TDO 1

==== CHANNEL f1 =====
 NUC1 1H
 P1 13.60 usec
 PLW1 20.0000000 W
 SFO1 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300180 MHz
 MDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



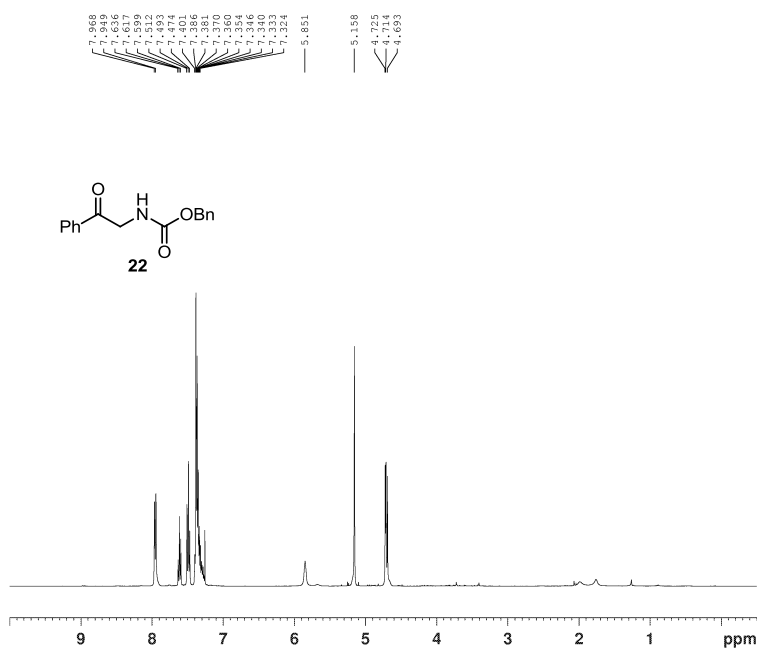
Current Data Parameters
 NAME JTM-14-263-3 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120419
 Time 9.04
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 533
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.9088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 294.8 K
 D1 2.0000000 sec
 D11 0.0300000 sec
 TDO 1

==== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.0000000 W
 SFO1 150.9178981 MHz

==== CHANNEL f2 =====
 CPDPRG2 wait16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.0000000 W
 PLW12 0.9300000 W
 PLW13 0.39199999 W
 SFO2 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028156 MHz
 MDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

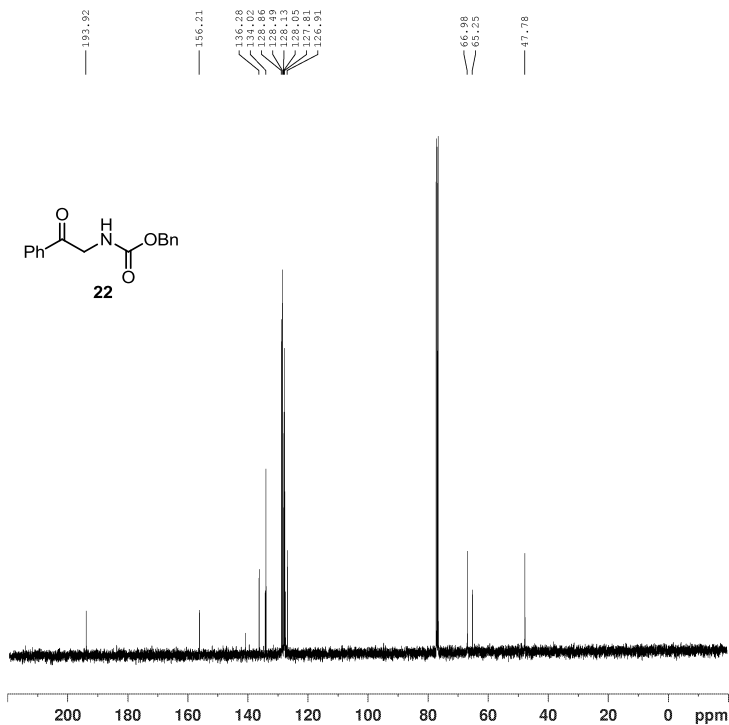


Current Data Parameters
 NAME JTM-15-69-B-top
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120502
 Time 16.09
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 10
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 78.87
 DW 60.800 usec
 DE 6.50 usec
 TE 297.2 K
 D1 1.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.19999981 W
 SFO1 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900109 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



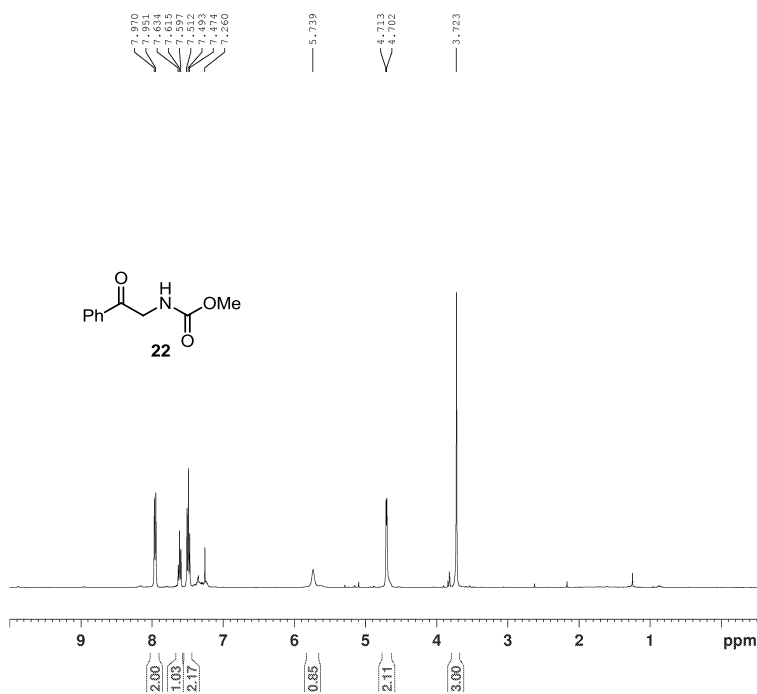
Current Data Parameters
 NAME JTM-15-69-B-top 1
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameter
 Date_ 20120502
 Time 16.12
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 121
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3621988 sec
 RG 50.11
 DW 20.800 usec
 DE 6.50 usec
 TE 297.6 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SFO1 100.6127703 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.19999981 W
 PLW12 0.26820999 W
 PLW13 0.17166001 W
 SFO2 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027193 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

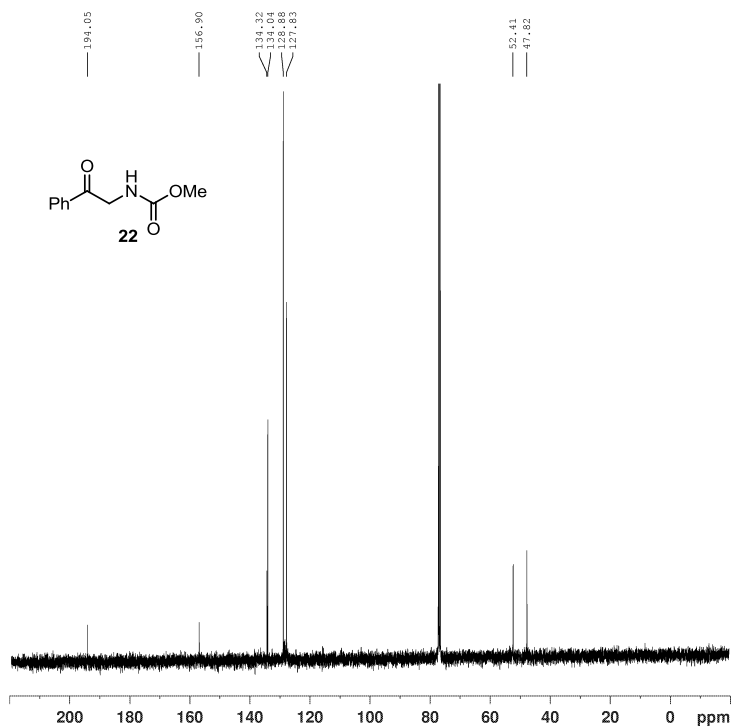


Current Data Parameters
 NAME JTM-14-289-5
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120423
 Time 10.27
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 13
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 134.63
 DW 60.800 usec
 DE 6.50 usec
 TE 296.8 K
 D1 1.0000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.38 usec
 PLW1 11.1999981 W
 SF01 400.0924707 MHz

F2 - Processing parameters
 SI 65536
 SF 400.0900111 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



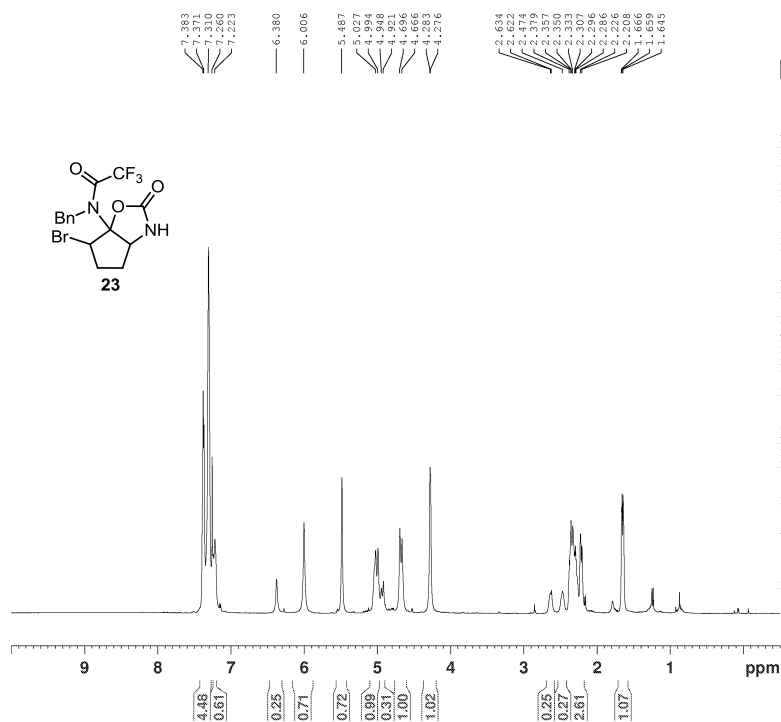
Current Data Parameters
 NAME JTM-14-289-5 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameter
 Date_ 20120423
 Time 10.31
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 215
 DS 0
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 200.09
 DW 20.800 usec
 DE 6.50 usec
 TE 297.3 K
 D1 2.0000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 7.50 usec
 PLW1 61.20000076 W
 SF01 100.6127703 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PLW2 11.1999981 W
 PLW12 0.26820999 W
 PLW13 0.17166001 W
 SF02 400.0916004 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6027156 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

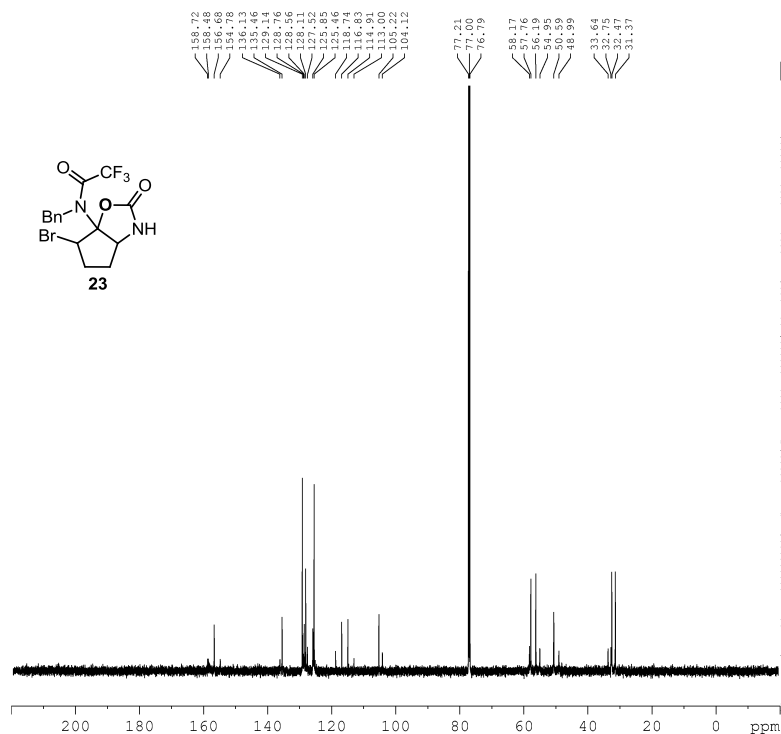


Current Data Parameters
 NAME JTM-13-253-1 1H
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120217
 Time 13.30
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 19
 DS 0
 SWH 12335.526 Hz
 FIDRES 0.188225 Hz
 AQ 2.6564426 sec
 RG 114
 DW 40.533 usec
 DE 6.50 usec
 TE 293.2 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.80 usec
 PLW1 20.00000000 W
 SF01 600.1337060 MHz

F2 - Processing parameters
 SI 65536
 SF 600.1300179 MHz
 WW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Current Data Parameters
 NAME JTM-13-253-1 13C
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20120217
 Time 13.36
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 421
 DS 0
 SWH 36057.691 Hz
 FIDRES 0.550197 Hz
 AQ 0.3088159 sec
 RG 203
 DW 13.867 usec
 DE 10.00 usec
 TE 294.4 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 10.50 usec
 PLW1 110.00000000 W
 SF01 150.9178981 MHz

===== CHANNEL f2 =====
 CDEPRG2 waltz16
 NUC2 1H
 PCPD2 70.00 usec
 PLW2 20.00000000 W
 PLW12 0.80000001 W
 PLW13 0.39199999 W
 SF02 600.1324005 MHz

F2 - Processing parameters
 SI 32768
 SF 150.9028206 MHz
 WW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40