

Stereoselectivity of conformationally restricted glucosazide donors

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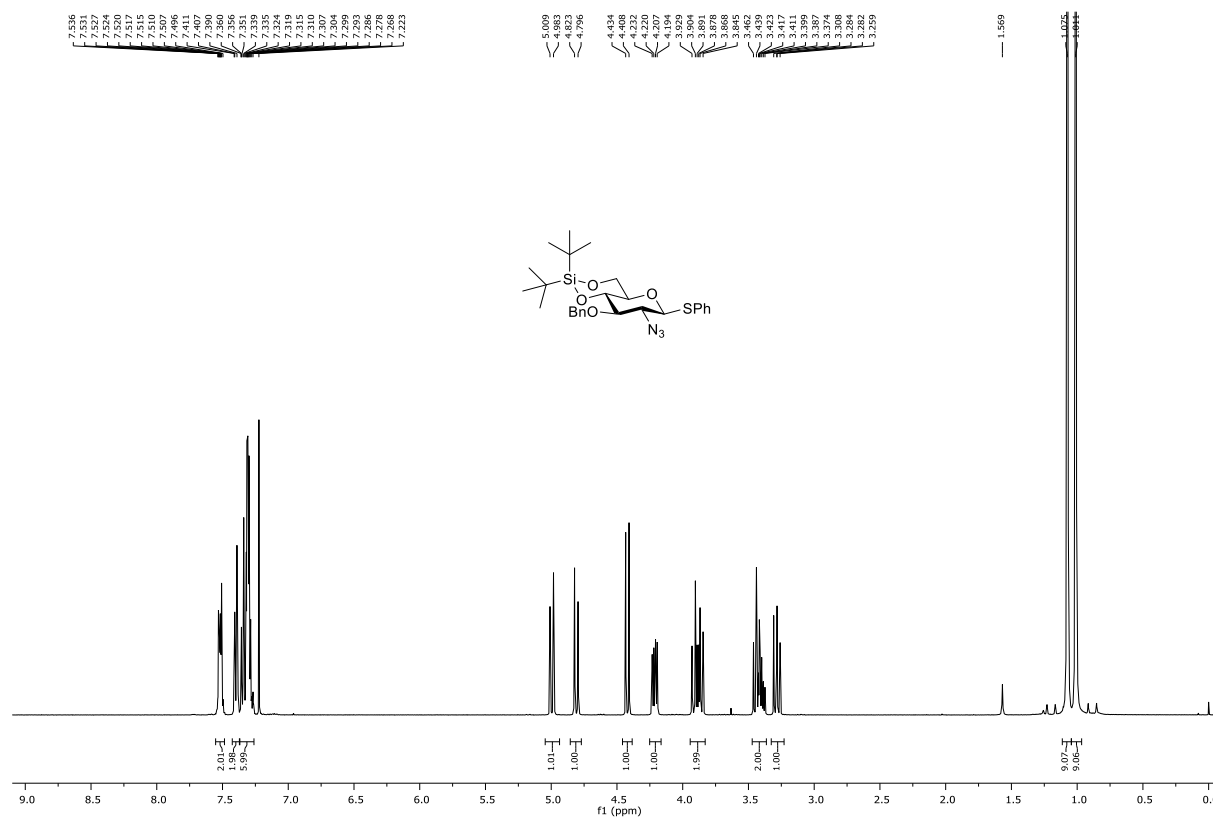
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NMR spectra for product	2A	¹ H, ¹³ C, COSY, HSQC	S30
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	2I	¹ H, ¹³ C, COSY, HSQC, HMBC	S50
	2J	¹ H, ¹³ C, COSY, HSQC	S52
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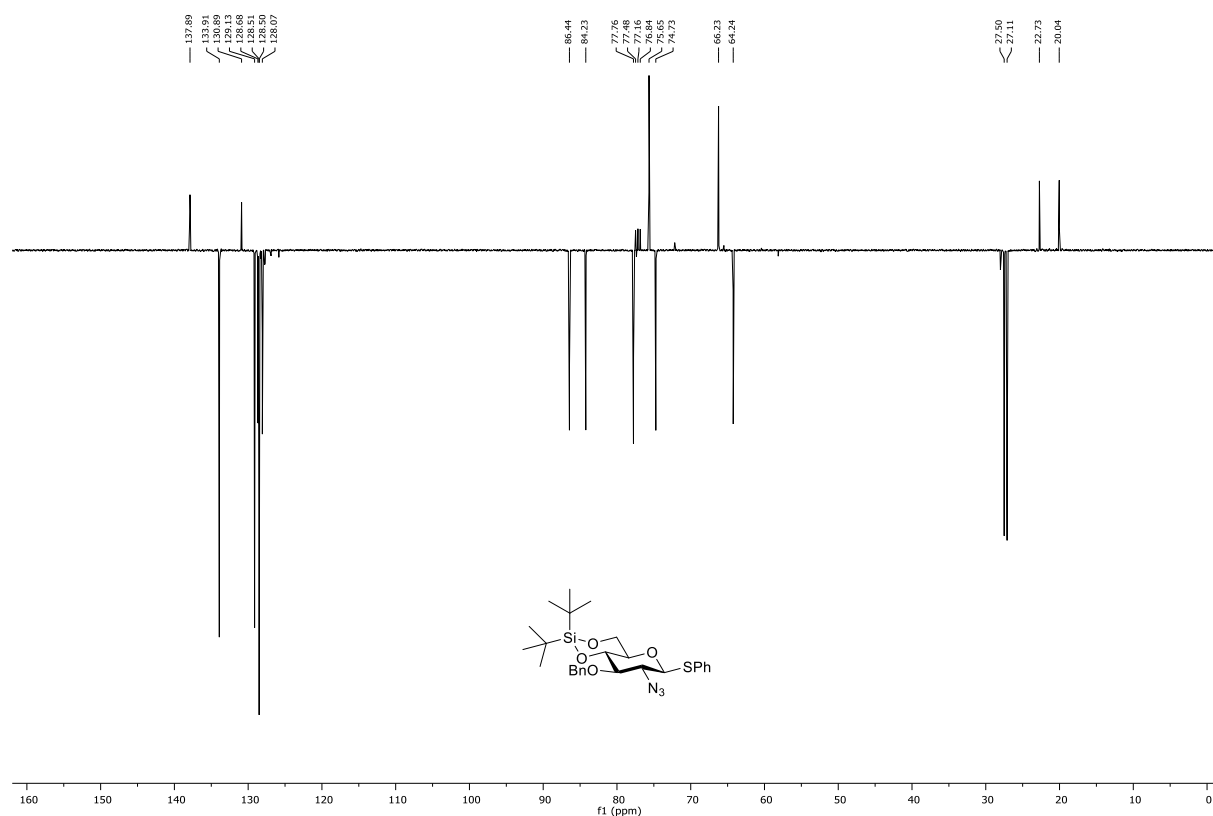
NMR spectra for product	3A	¹ H, ¹³ C, COSY, HSQC, HMBC-GATED	S57
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	3E	¹ H, ¹³ C, COSY, HSQC, TOCSY	S67
	3F	¹ H, ¹³ C, COSY, HSQC, HMBC	S69
	3G	¹ H, ¹³ C, COSY, HSQC, HMBC-GATED	S72
	3H	¹ H, ¹³ C, COSY, HSQC, HMBC	S74
	3I	¹ H, ¹³ C, COSY, HSQC, HMBC	S77
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NMR spectra for product	4A	¹ H, ¹³ C, COSY, HSQC	S84
	4B	¹ H, ¹³ C, COSY, HSQC	S86
	4C	¹ H, ¹³ C, COSY, HSQC, HMBC	S88
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	5D	¹ H, ¹³ C, COSY, HSQC	S113
	5E	¹ H, ¹³ C, COSY, HSQC, HMBC, HMBC-GATED	S115
	5F	¹ H, ¹³ C, COSY, HSQC, HMBC, HMBC-GATED, NOESY	S119
	5G	¹ H, ¹³ C, COSY, HSQC	S122
	5H	¹ H, ¹³ C, COSY, HSQC, HMBC, HMBC-GATED	S126
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Phenyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene-1-thio- β -D-glucopyranoside (**2**).

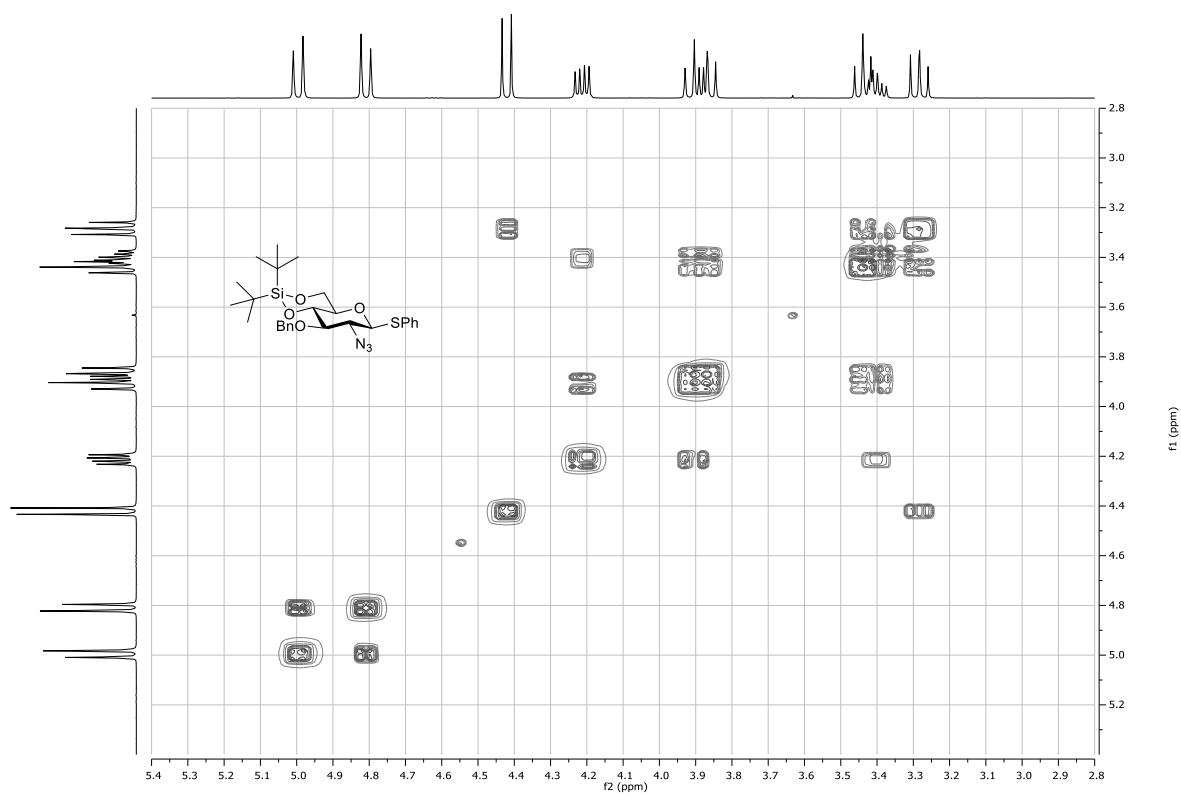
^1H NMR, 400 MHz, CDCl_3



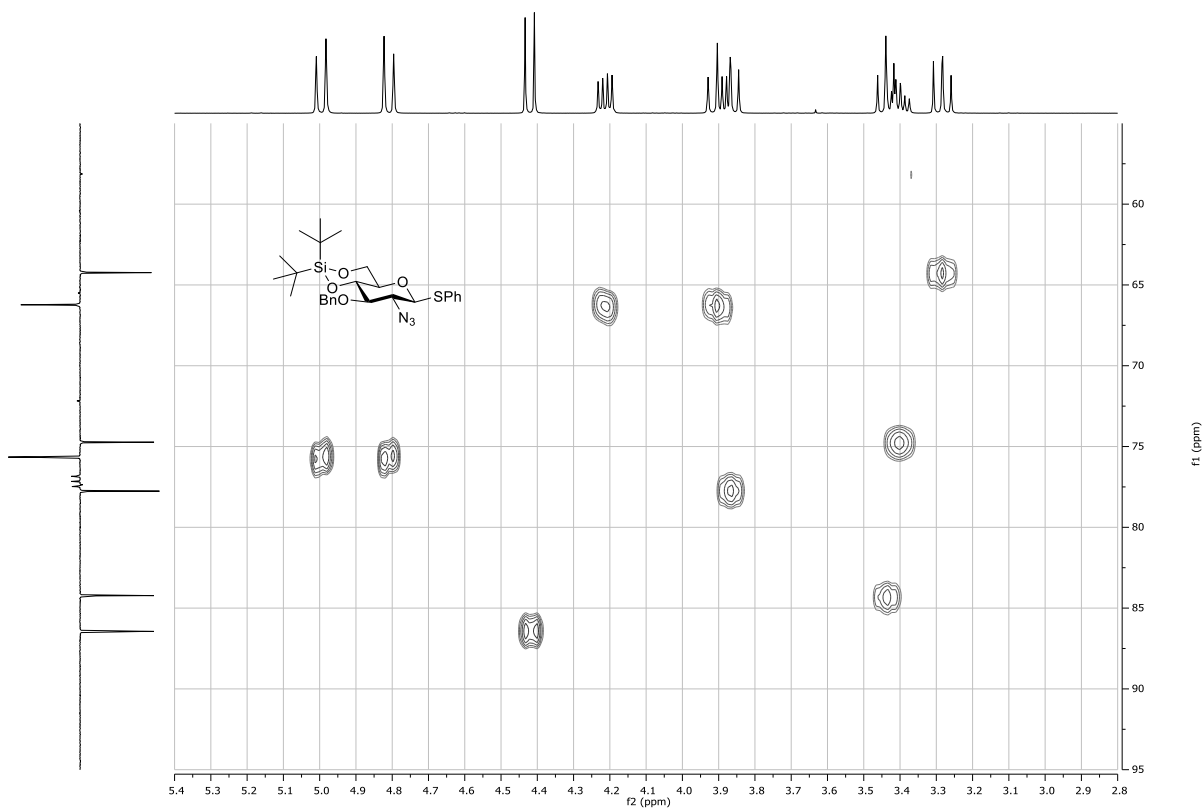
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

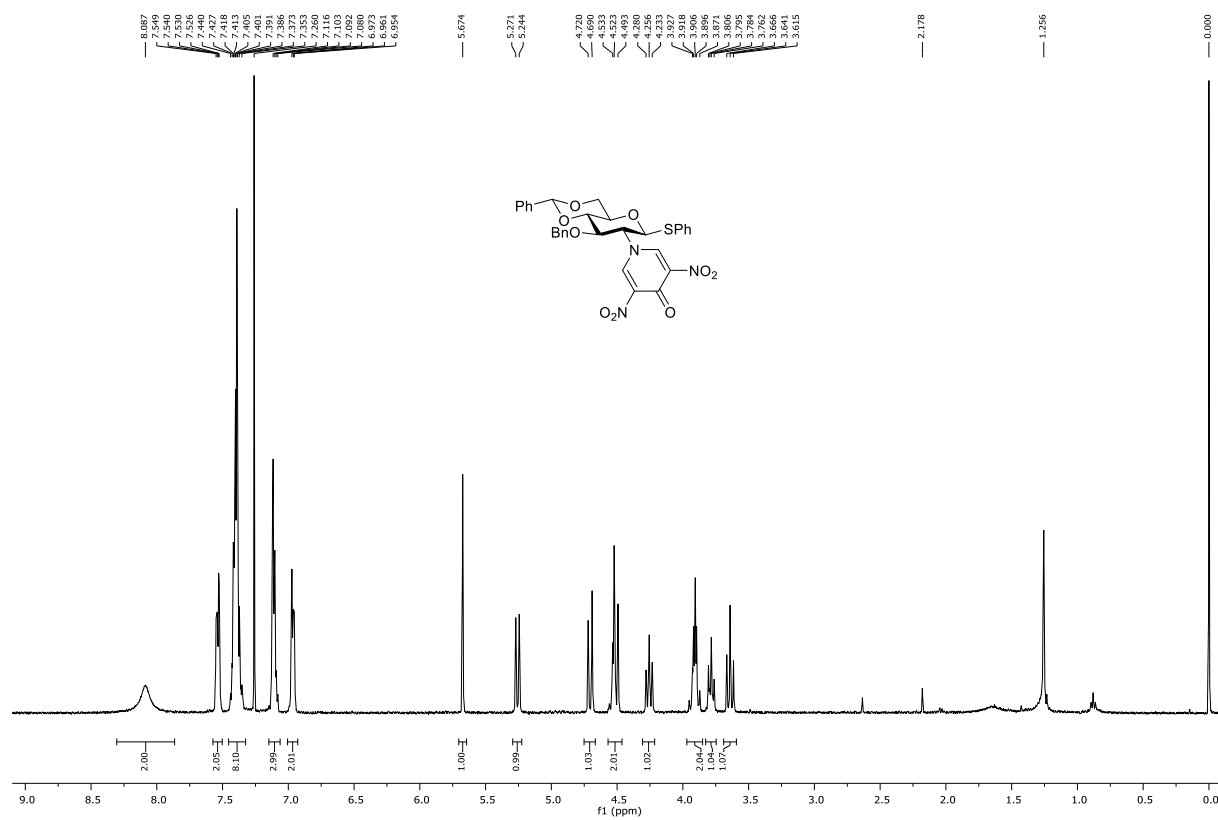


^1H - ^{13}C HSQC NMR, CDCl_3

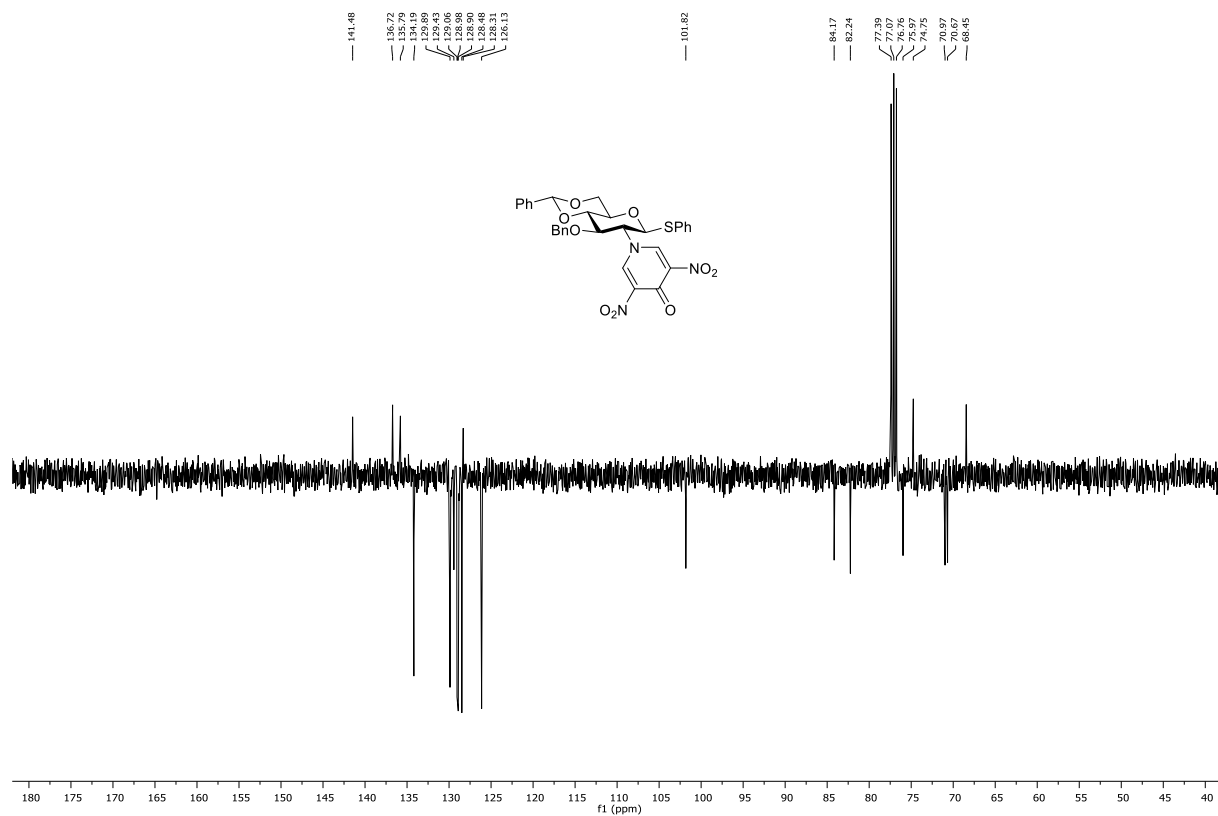


Phenyl 2-(3,5-dinitro-4-pyridone)-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-1-thio-β-D-glucopyranoside (**5**).

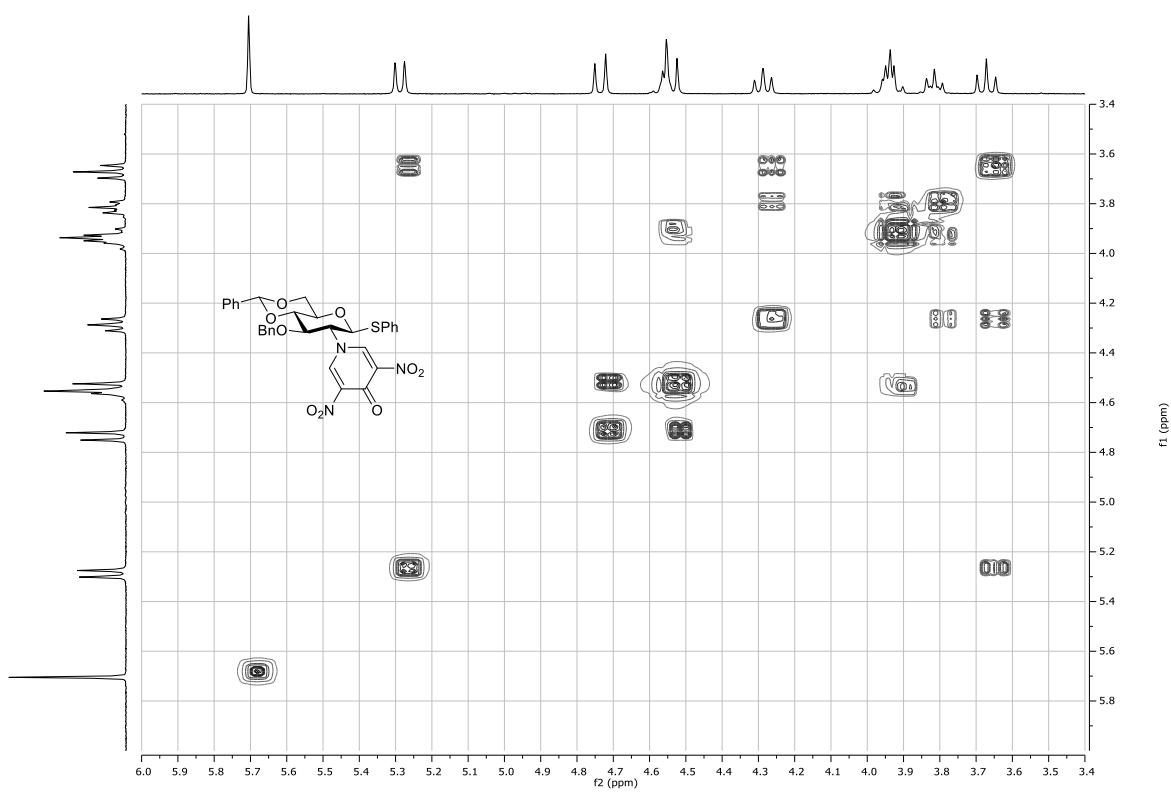
¹H NMR, 400 MHz, CDCl₃



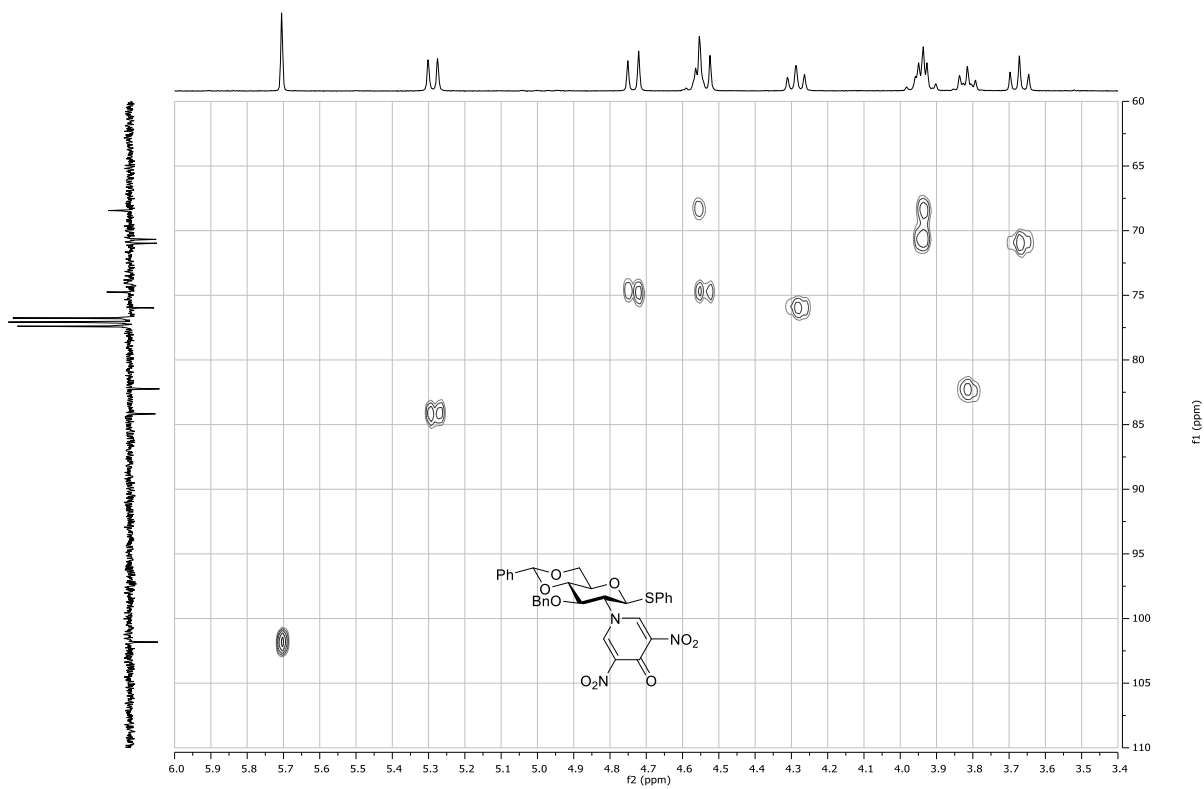
¹³C-APT NMR, 101 MHz, CDCl₃



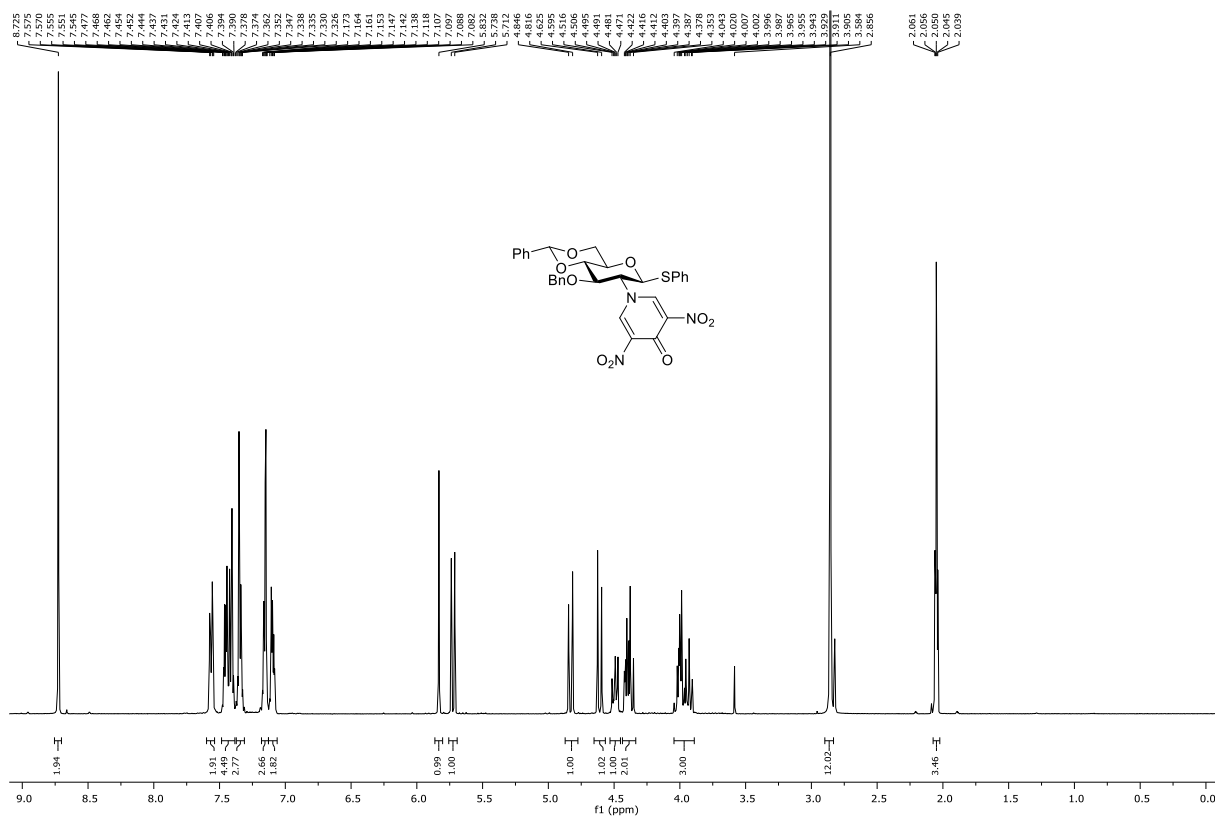
^1H - ^1H COSY NMR, CDCl_3



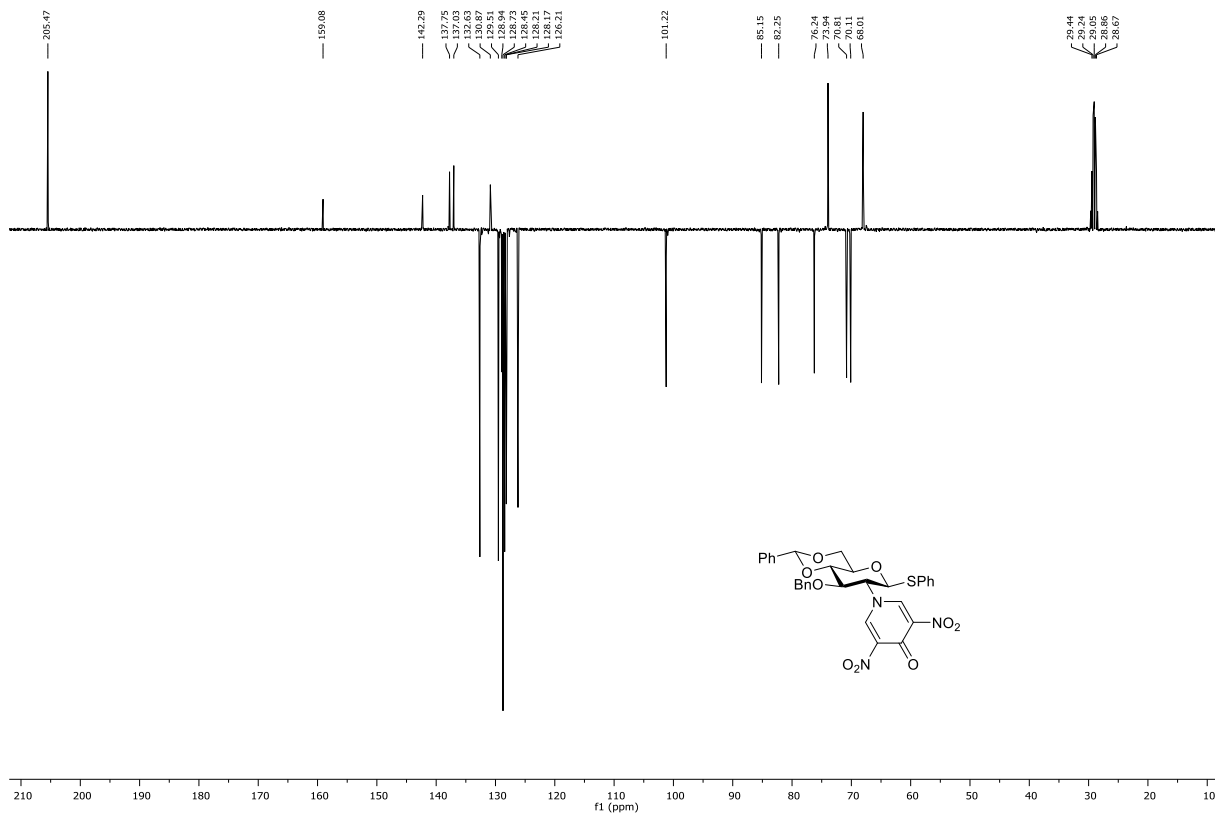
^1H - ^{13}C HSQC NMR, CDCl_3



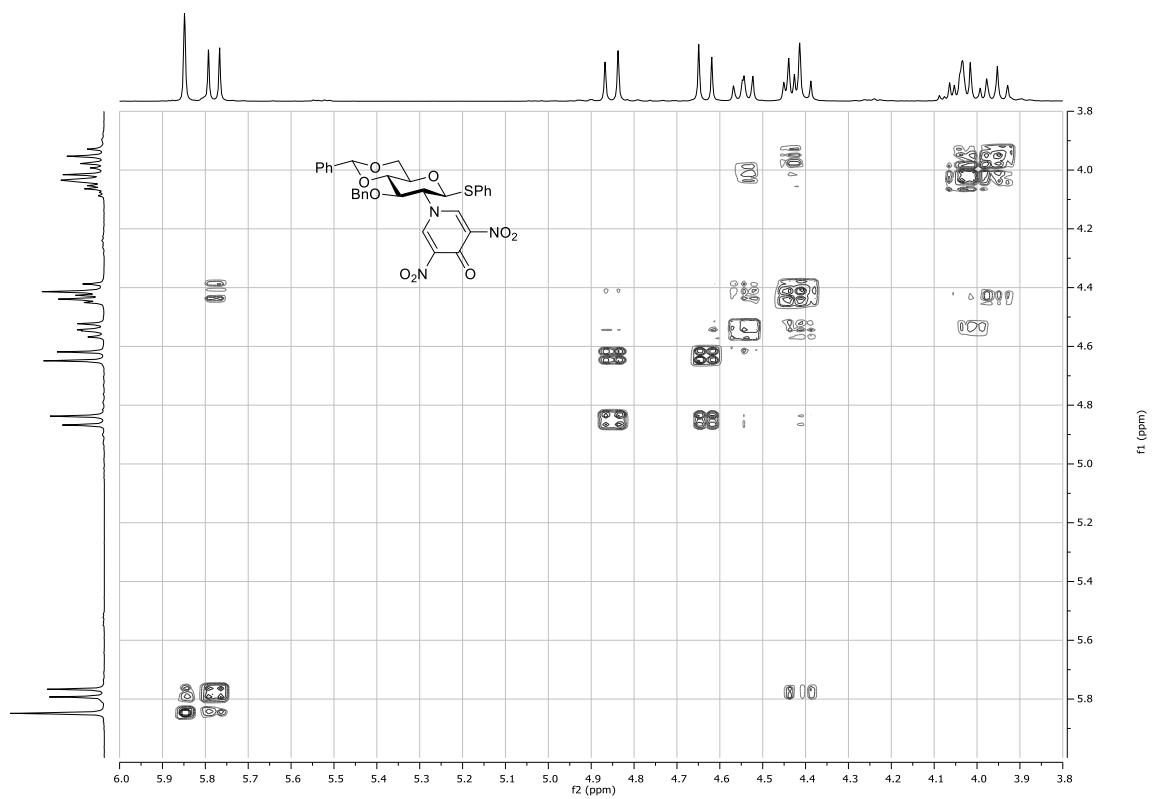
¹H NMR, 400 MHz, acetone-*d*₆



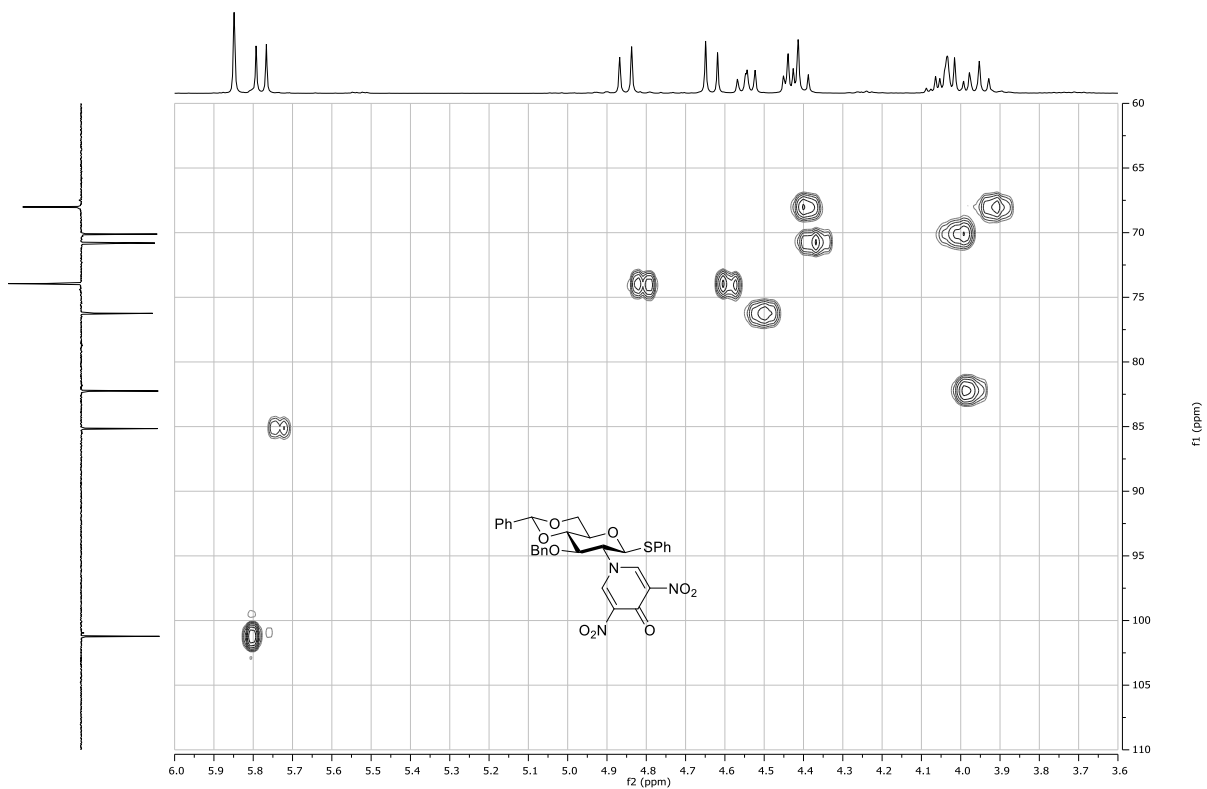
¹³C-APT NMR, 101 MHz, acetone-*d*₆



^1H - ^1H COSY NMR, acetone- d_6

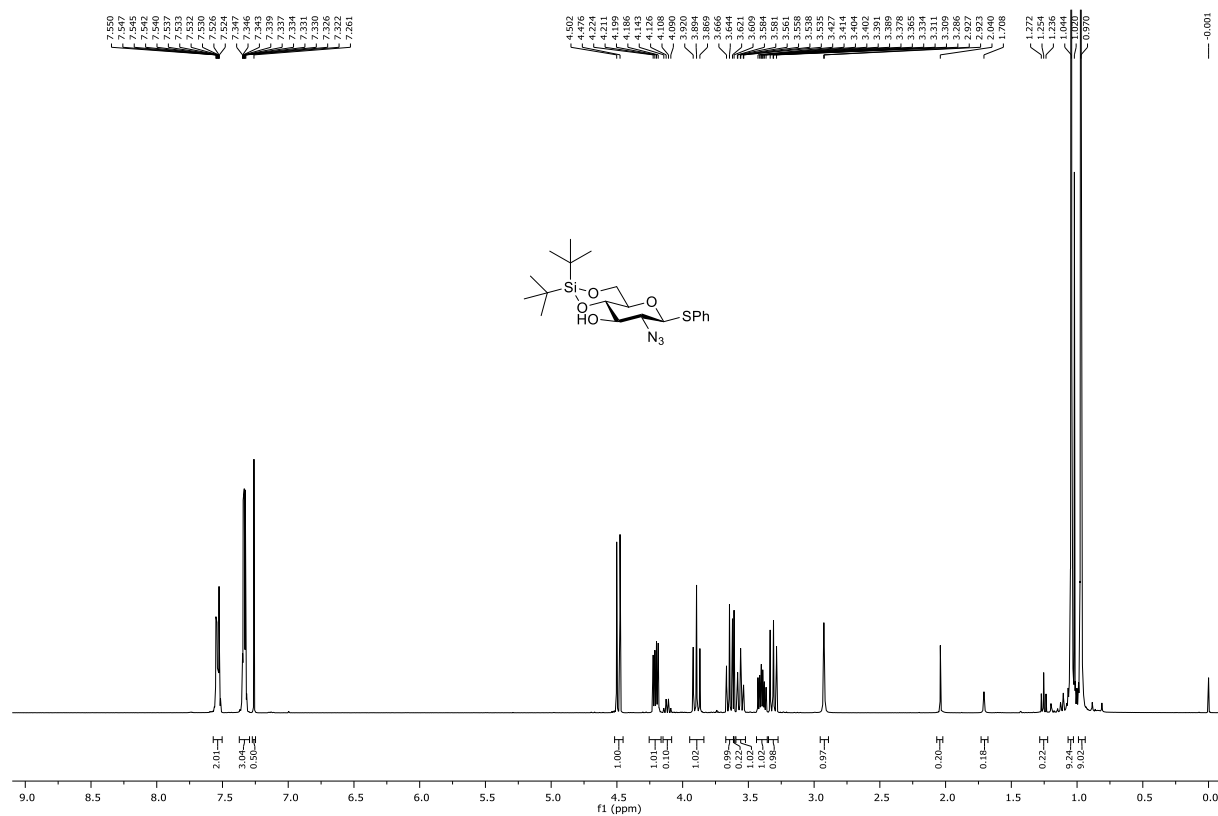


^1H - ^{13}C HSQC NMR, acetone- d_6

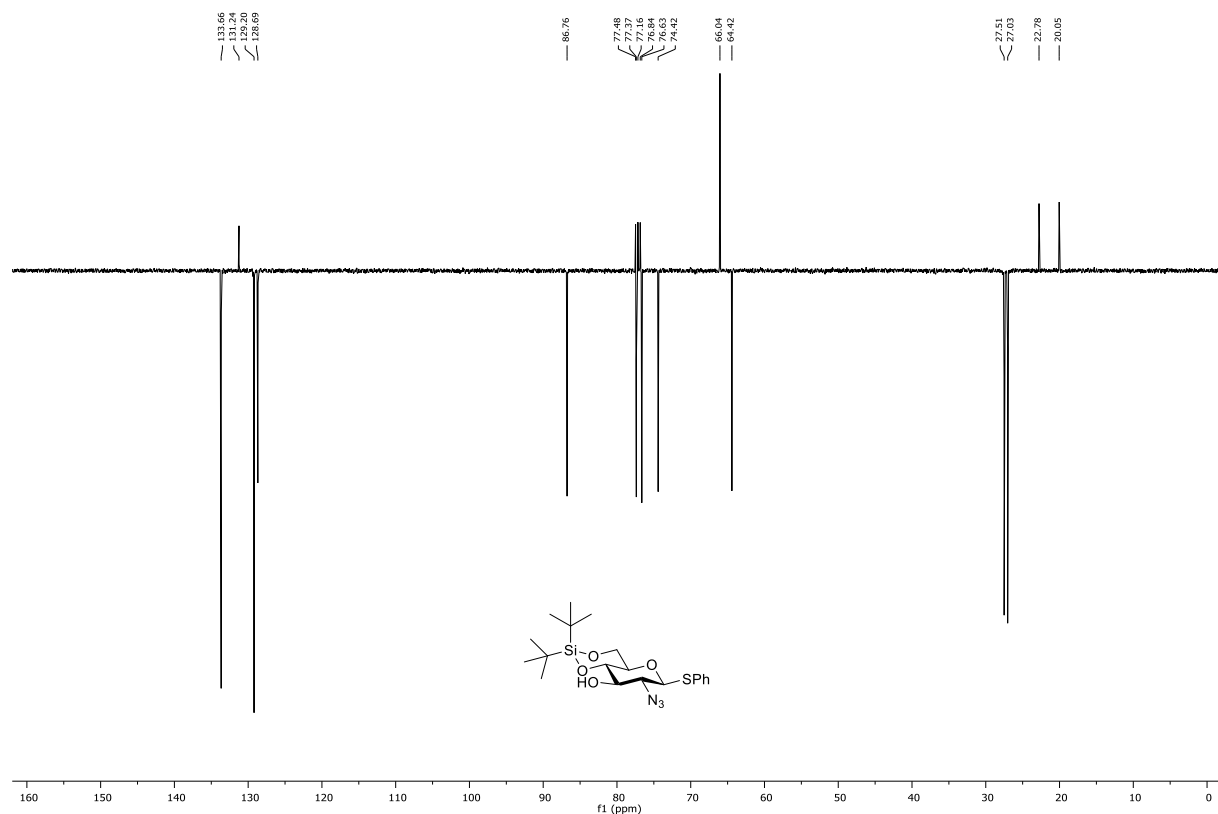


Phenyl 2-azido-2-deoxy-4,6-*O*-*tert*-butylsilylidene-1-thio-β-D-glucopyranoside (**14**).

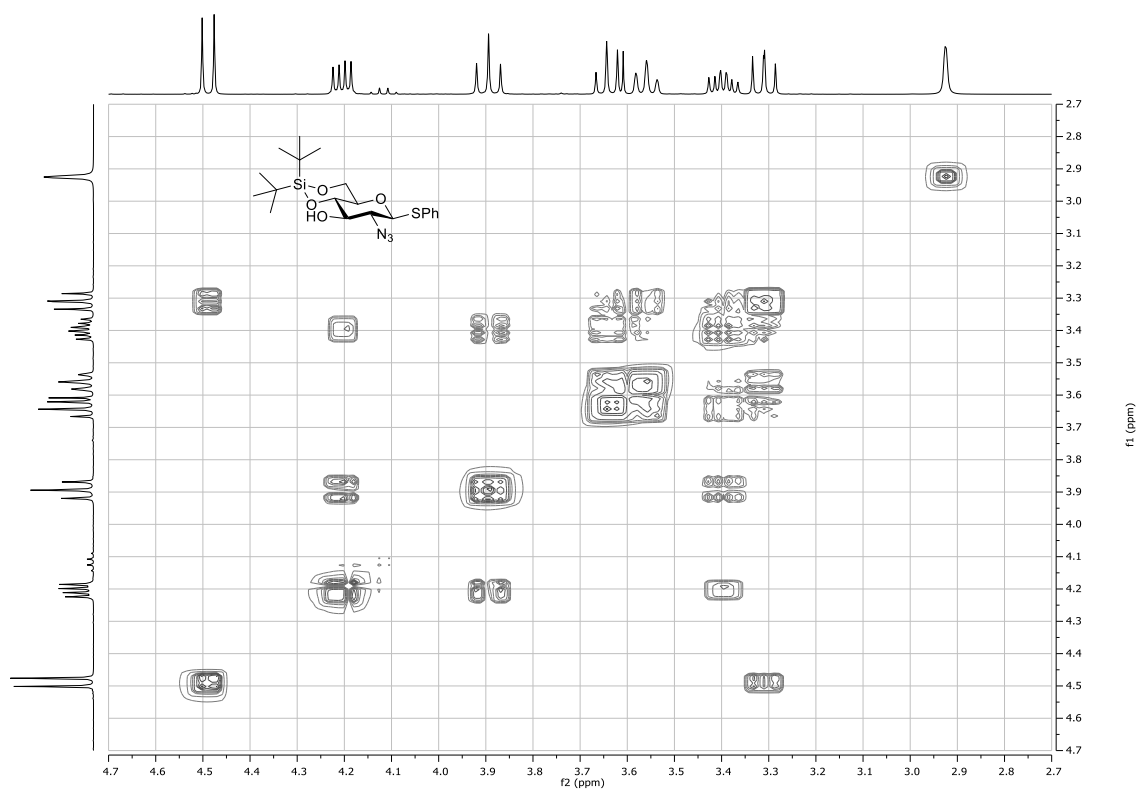
¹H NMR, 400 MHz, CDCl₃



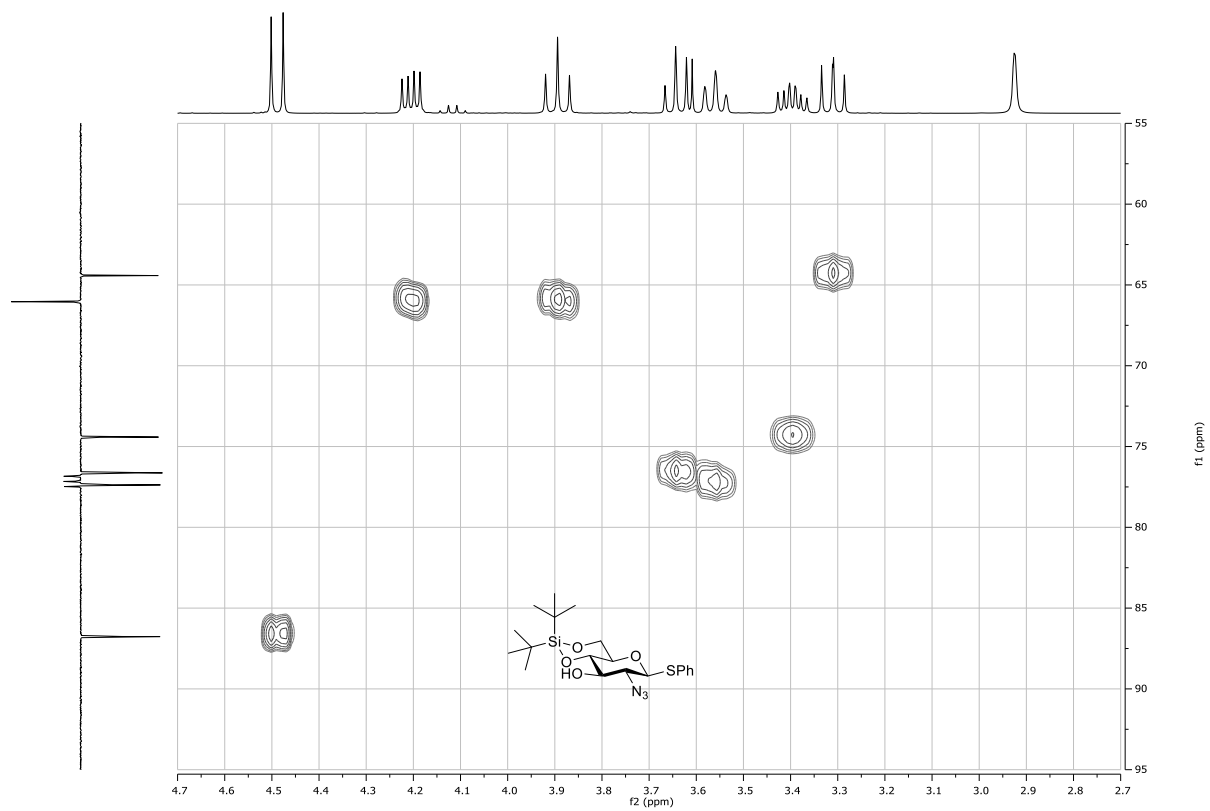
¹³C-APT NMR, 101 MHz, CDCl₃



^1H - ^1H COSY NMR, CDCl_3

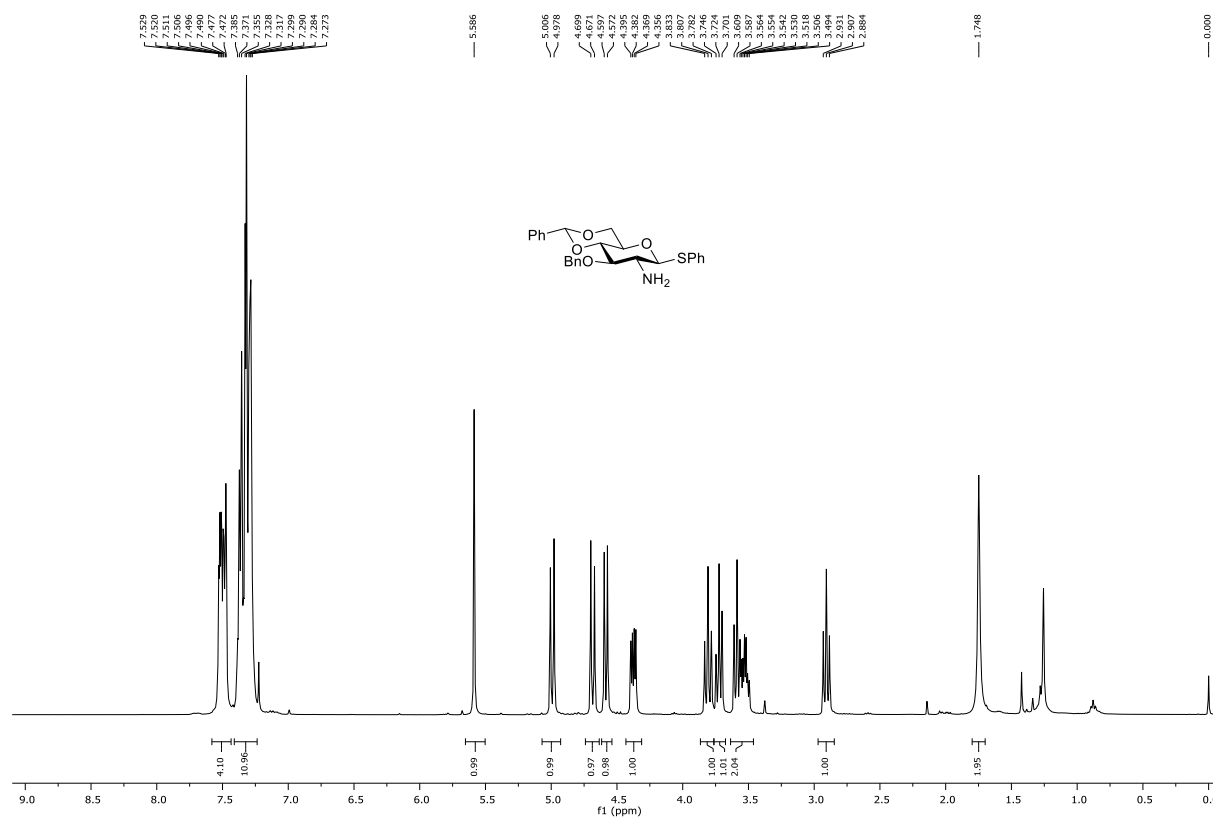


^1H - ^{13}C HSQC NMR, CDCl_3

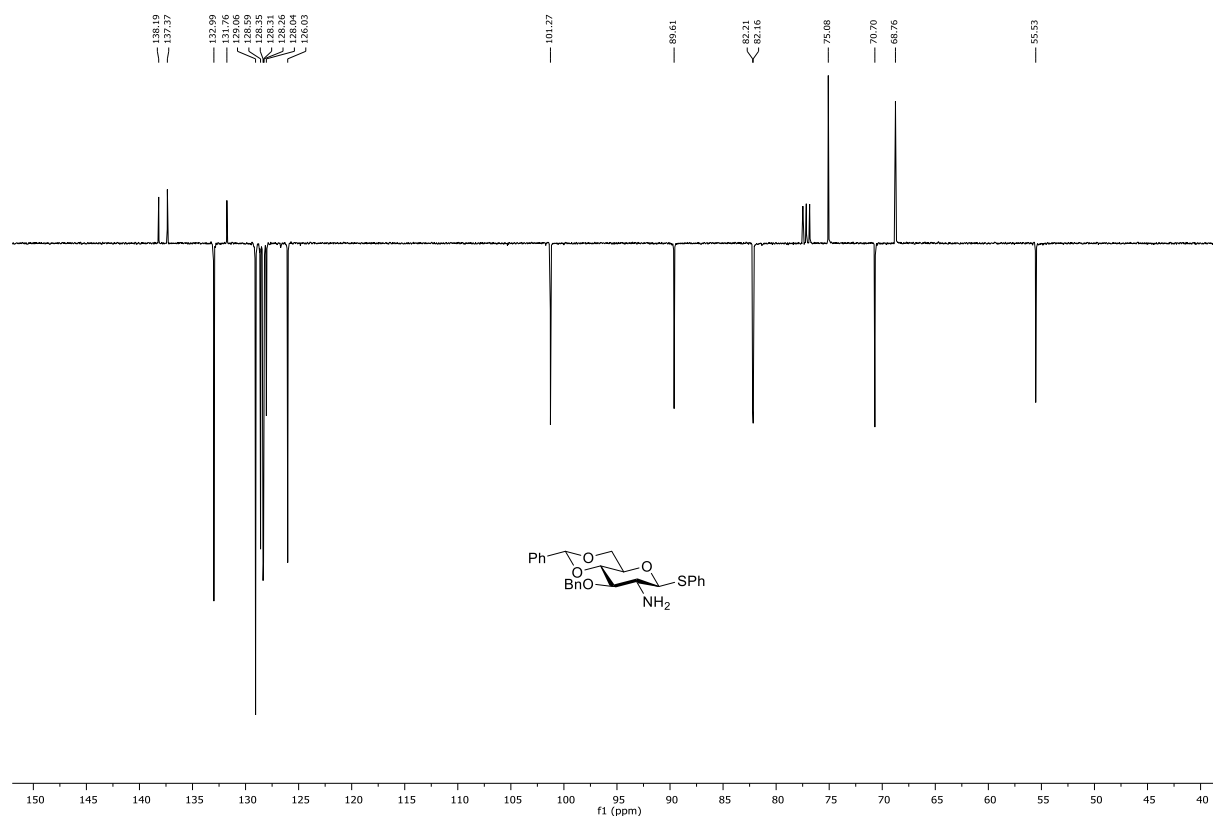


Phenyl 2-amino-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-1-thio- β -D-glucopyranoside (**16**).

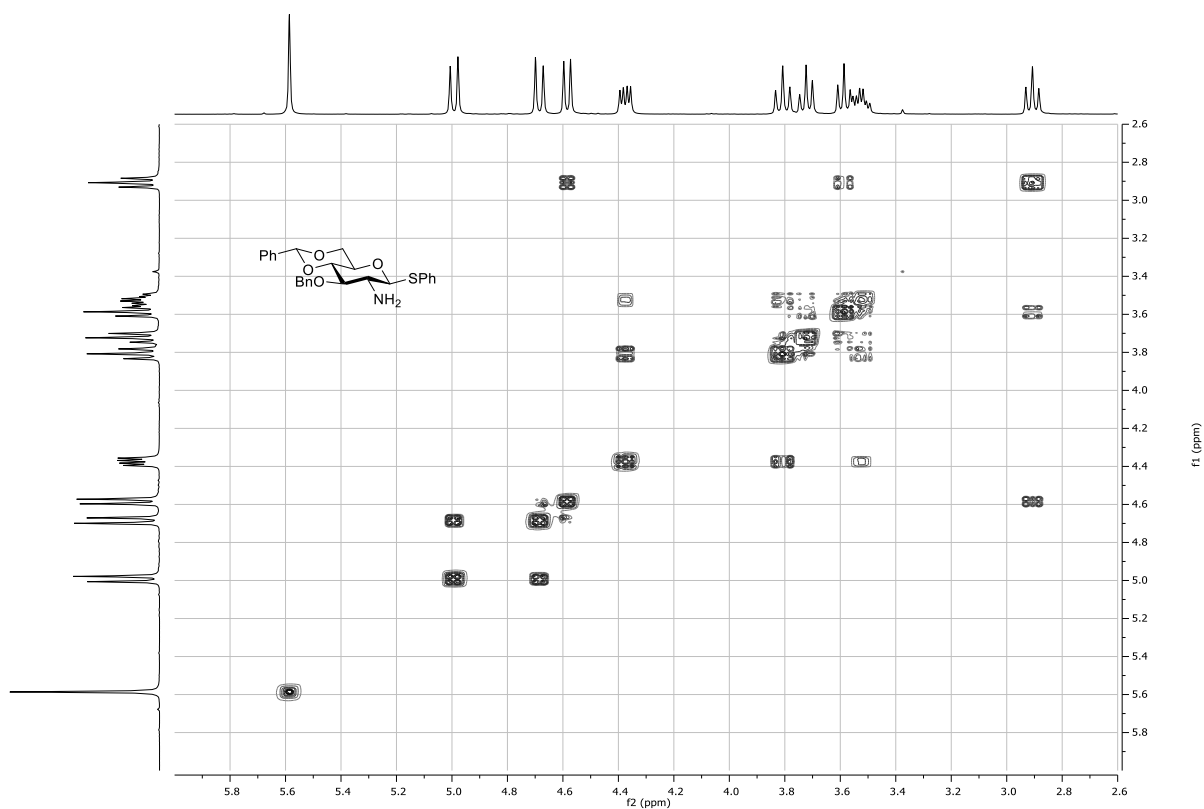
^1H NMR, 400 MHz, CDCl_3



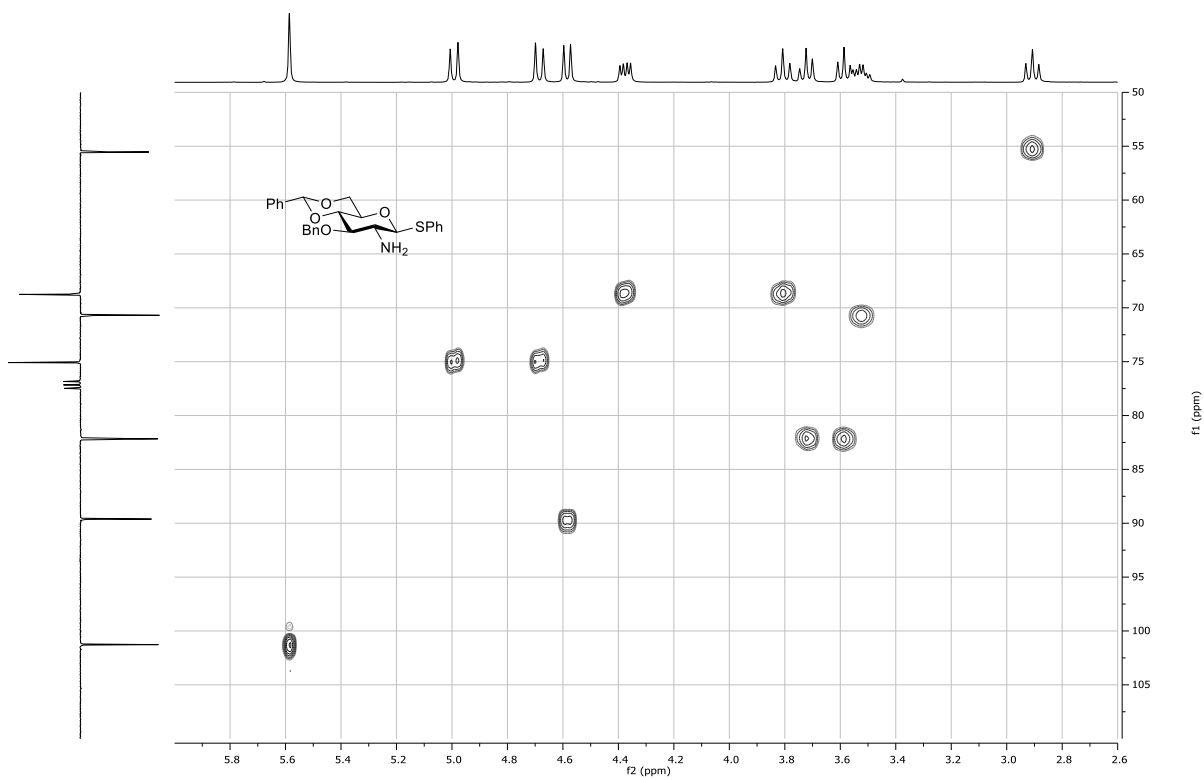
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

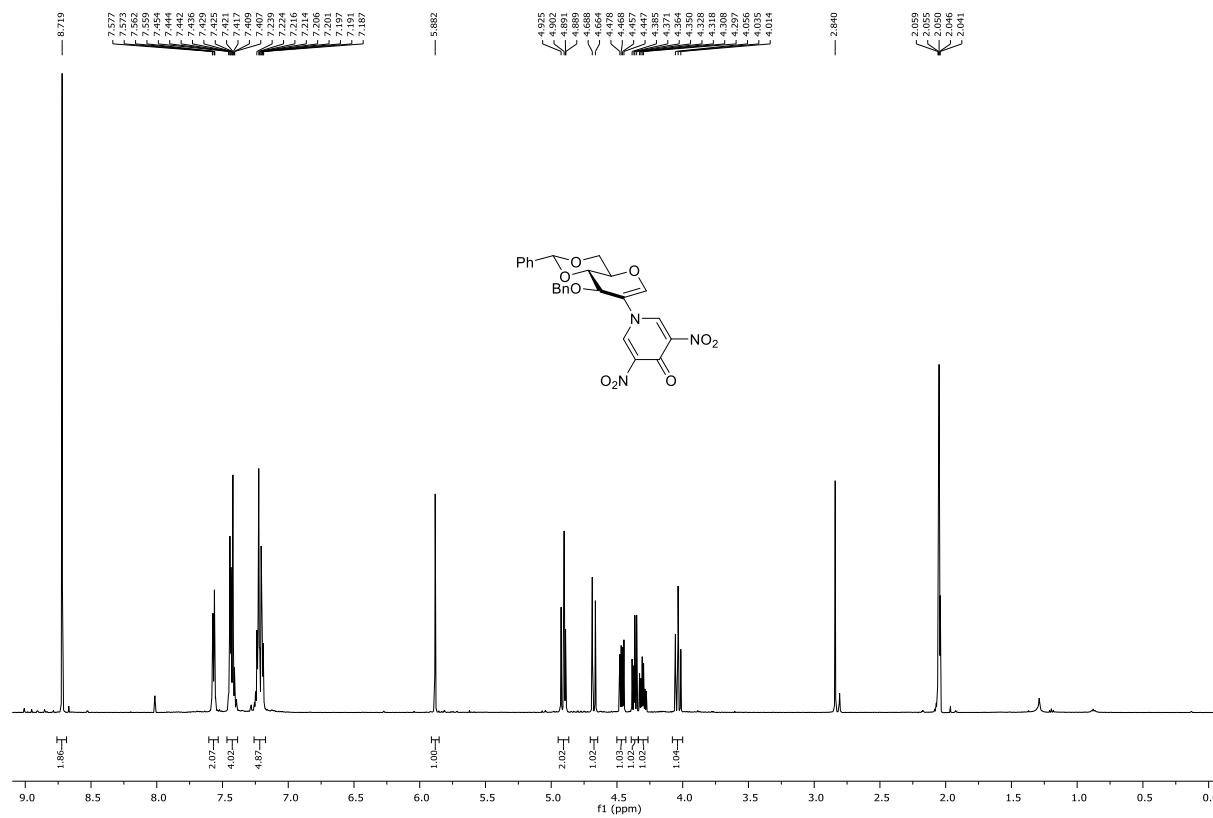


^1H - ^{13}C HSQC NMR, CDCl_3

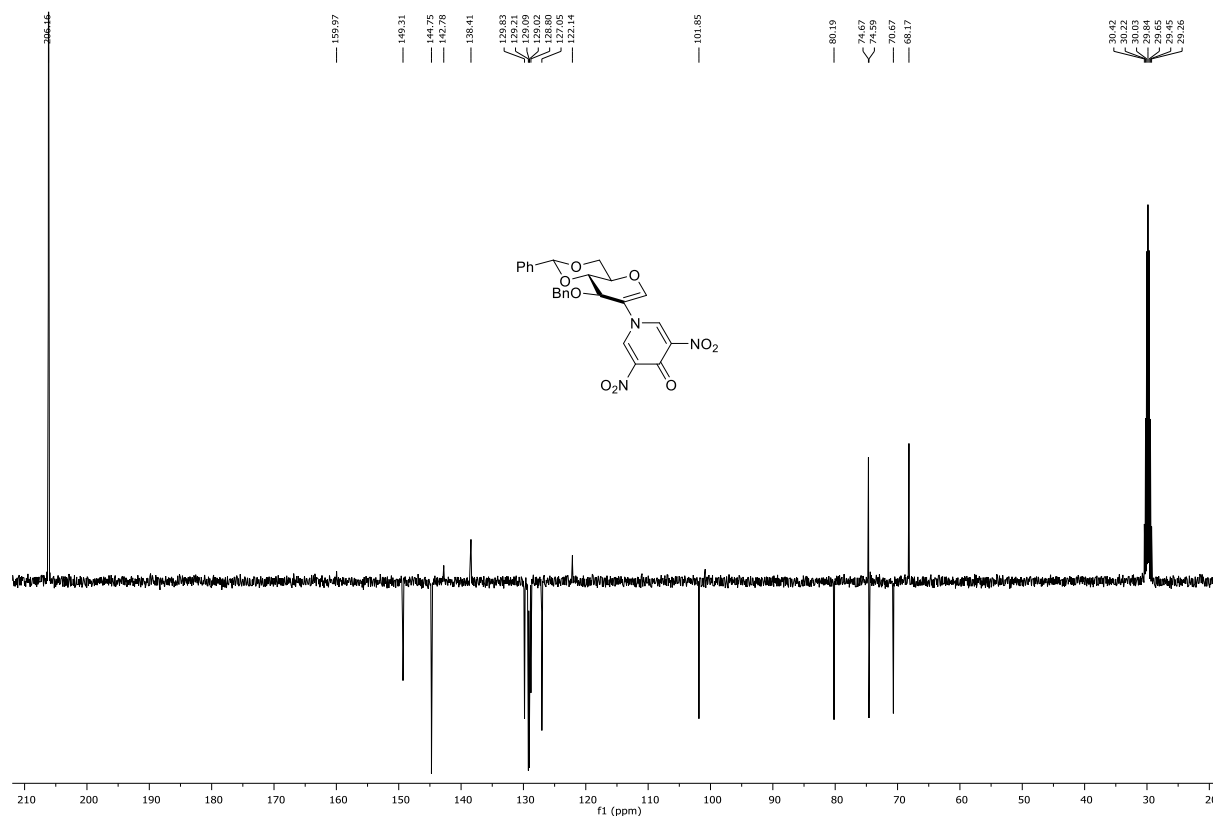


3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)-D-glucal (**24**).

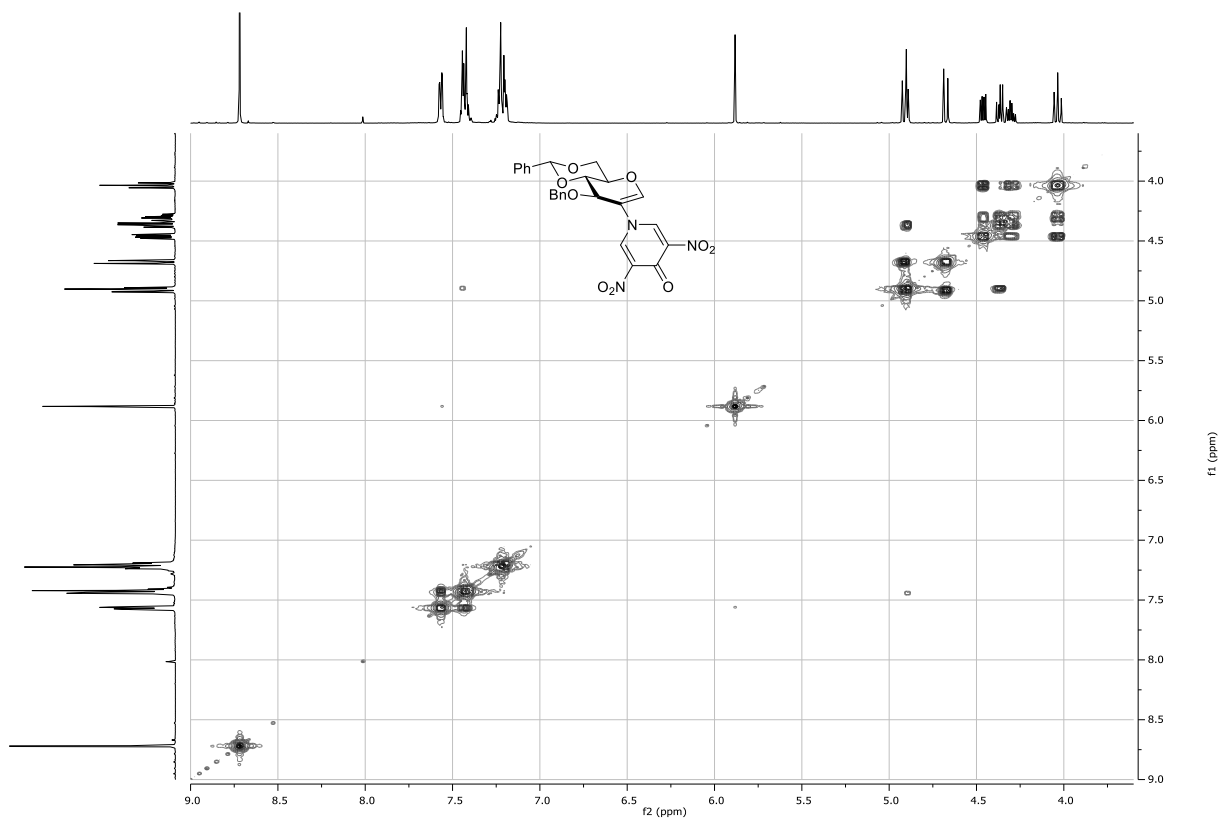
¹H NMR, 500 MHz, acetone-*d*₆



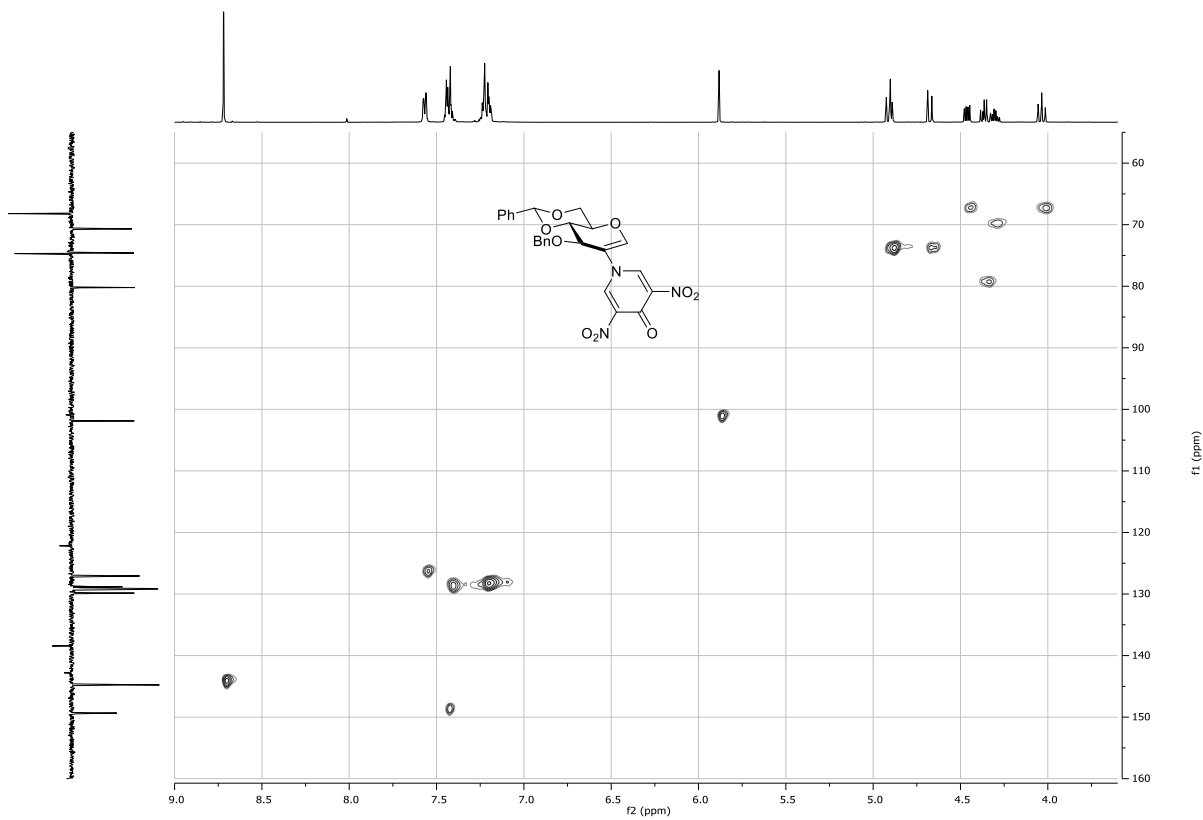
¹³C-APT NMR, 126 MHz, acetone-*d*₆



^1H - ^1H COSY NMR, acetone- d_6

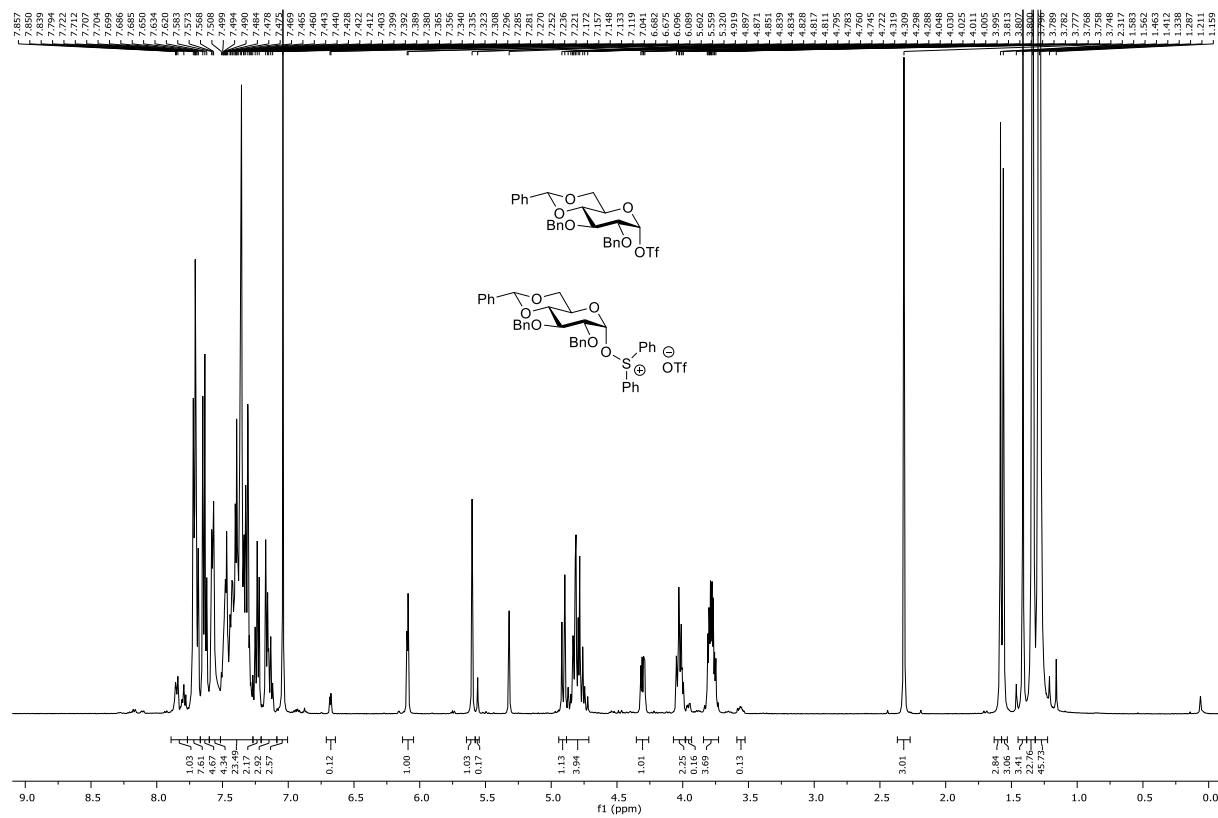


^1H - ^{13}C HSQC NMR, acetone- d_6

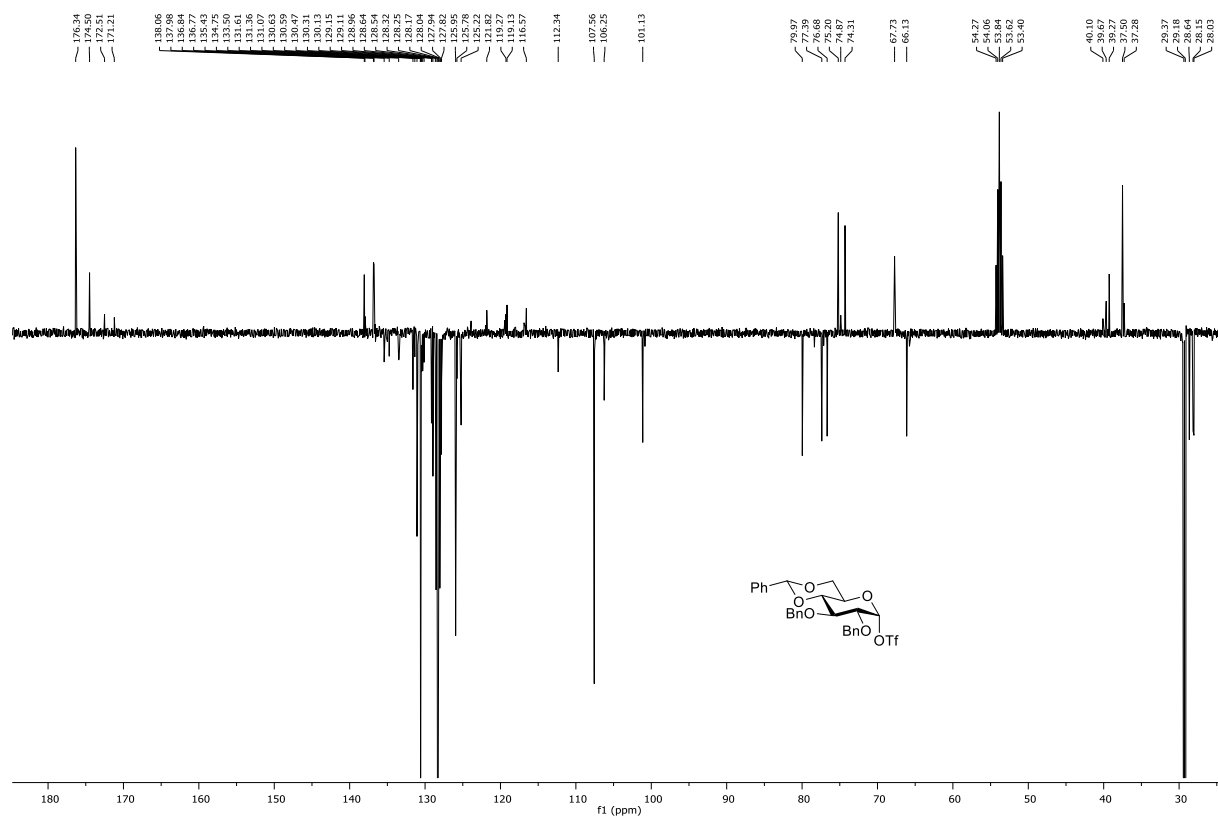


Trifluoromethanesulfonyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene- α -D-glucopyranoside (19).

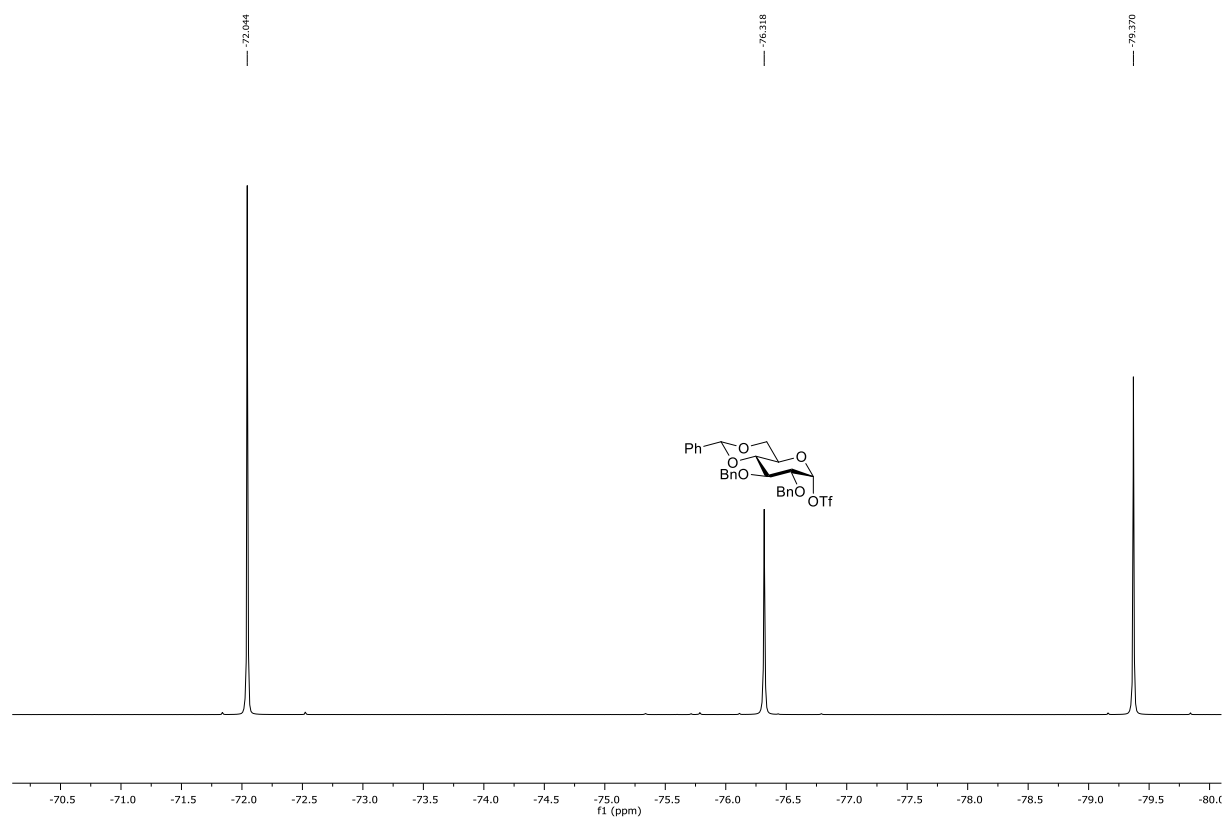
^1H NMR, 500 MHz, CD_2Cl_2



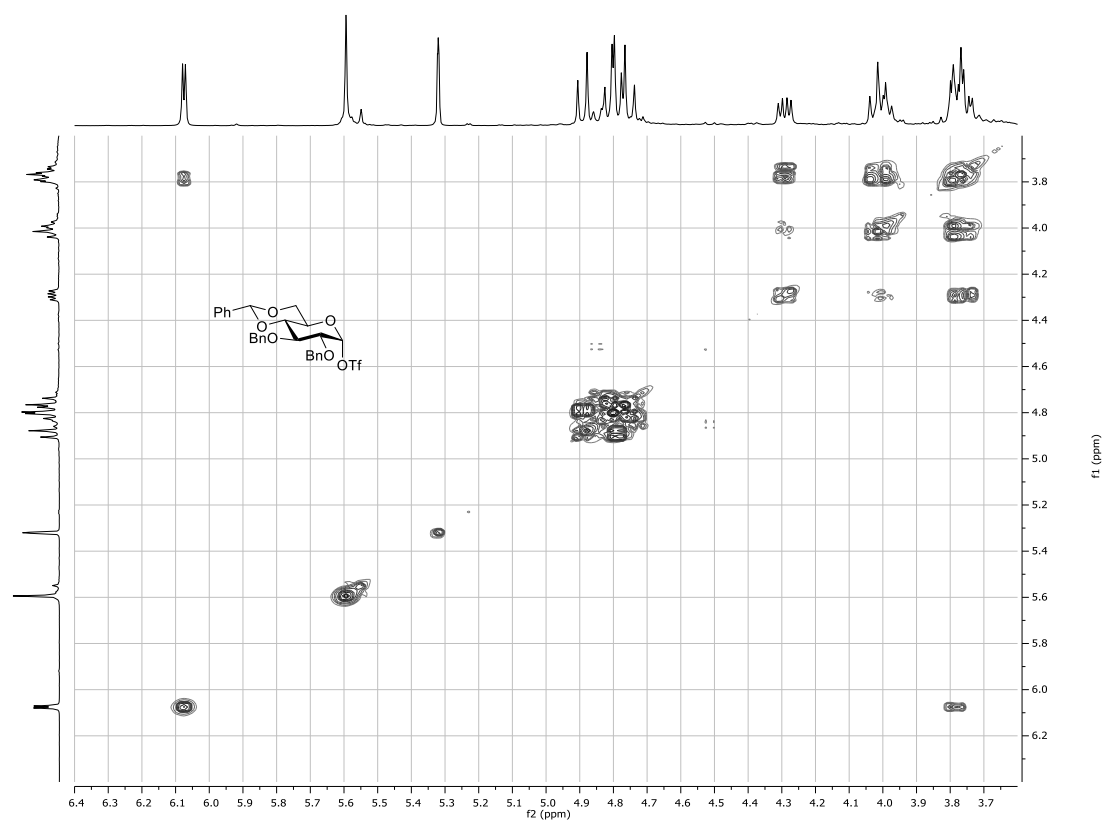
^{13}C -APT NMR, 126 MHz, CD_2Cl_2



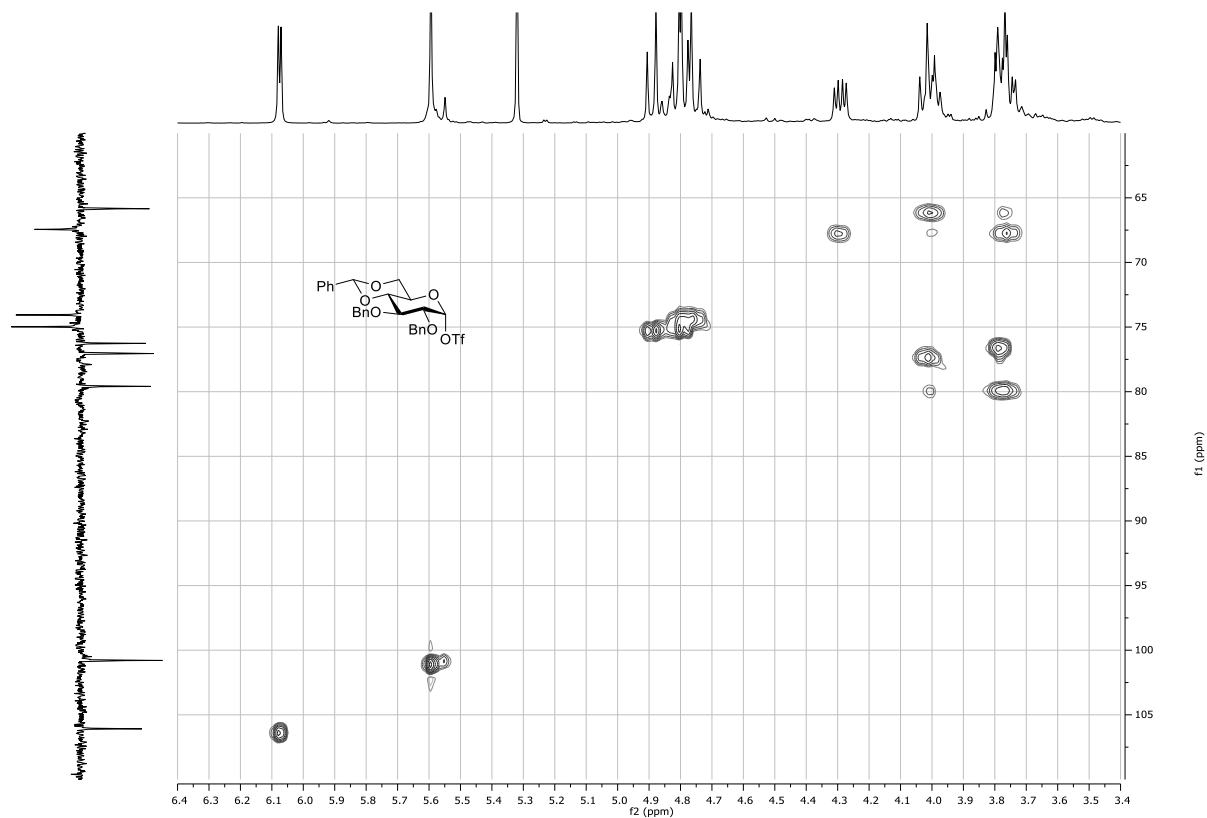
^{19}F NMR, 470 MHz, CD_2Cl_2



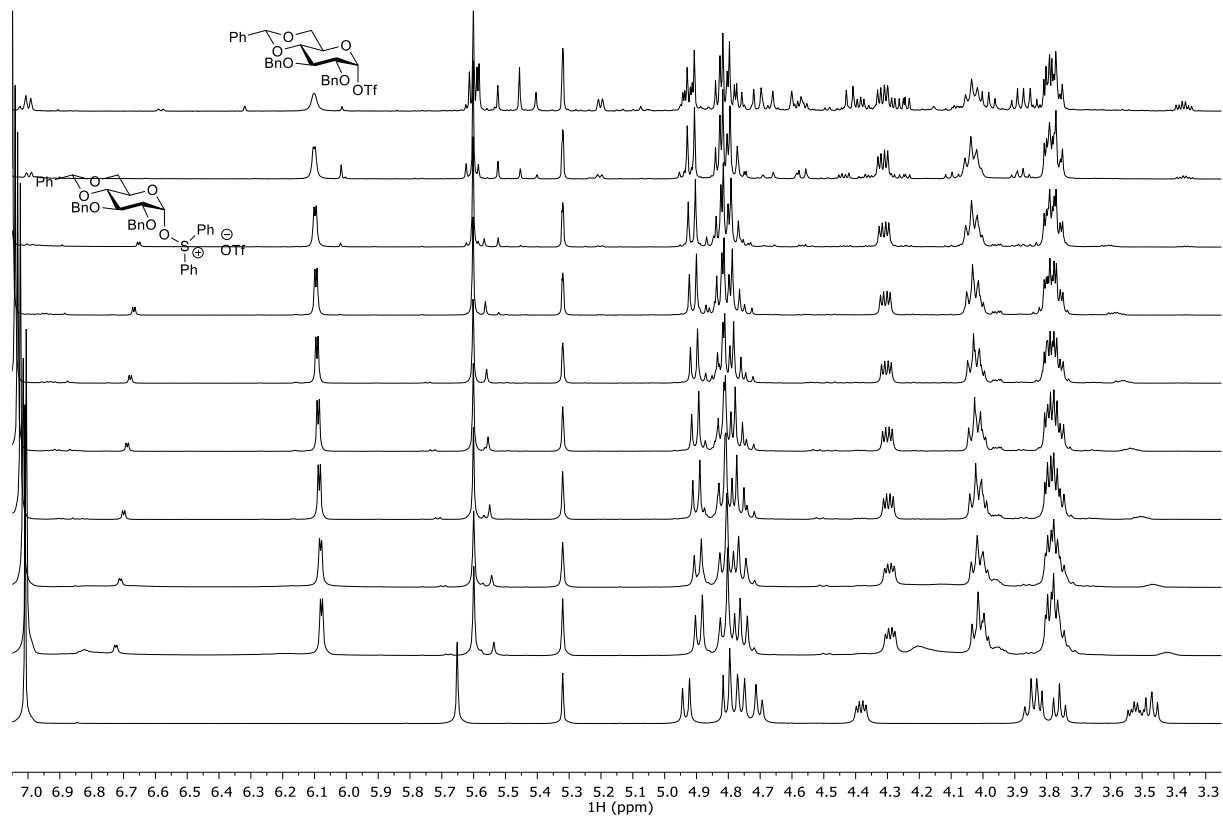
^1H - ^1H COSY NMR, CD_2Cl_2



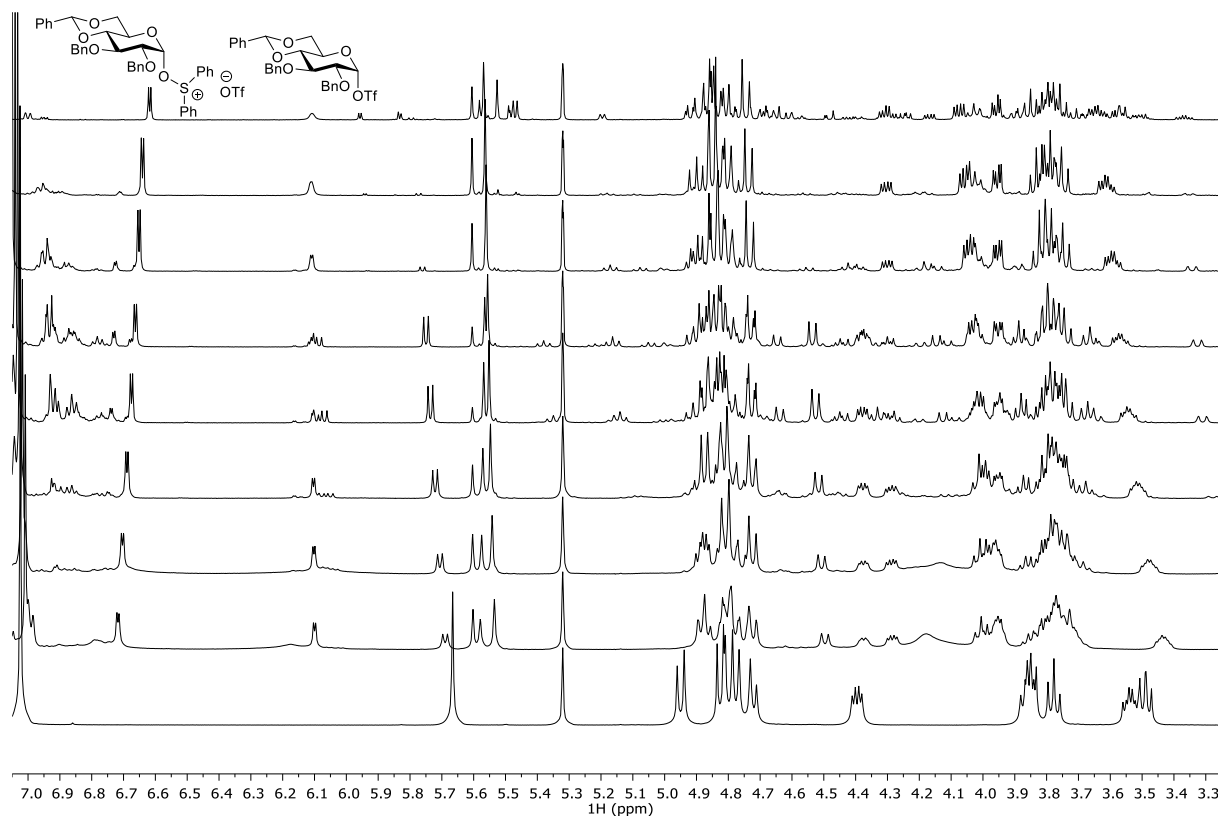
^1H - ^{13}C HSQC NMR, CD_2Cl_2



Decomposition study ^1H NMR, 500 MHz, CD_2Cl_2

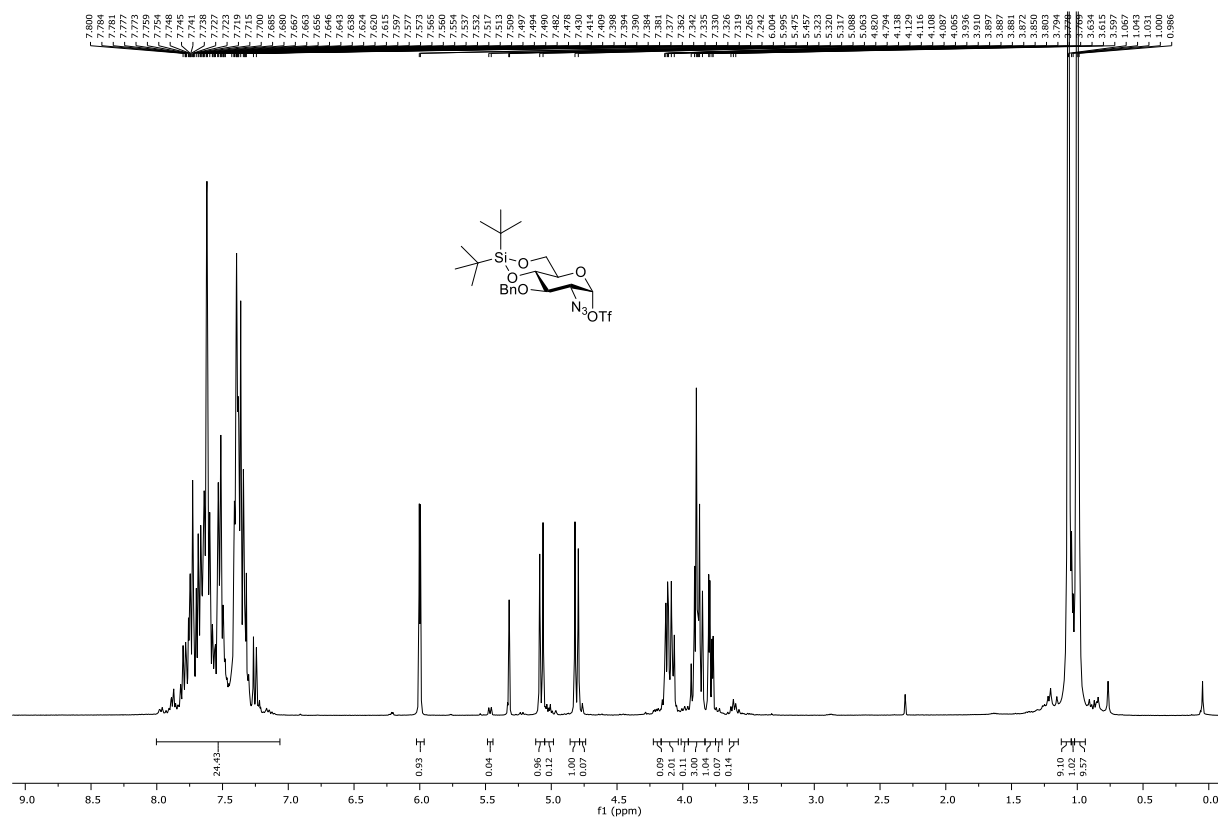


Decomposition study ¹H NMR, 500 MHz, CD₂Cl₂ [4.0 eq. Ph₂SO]

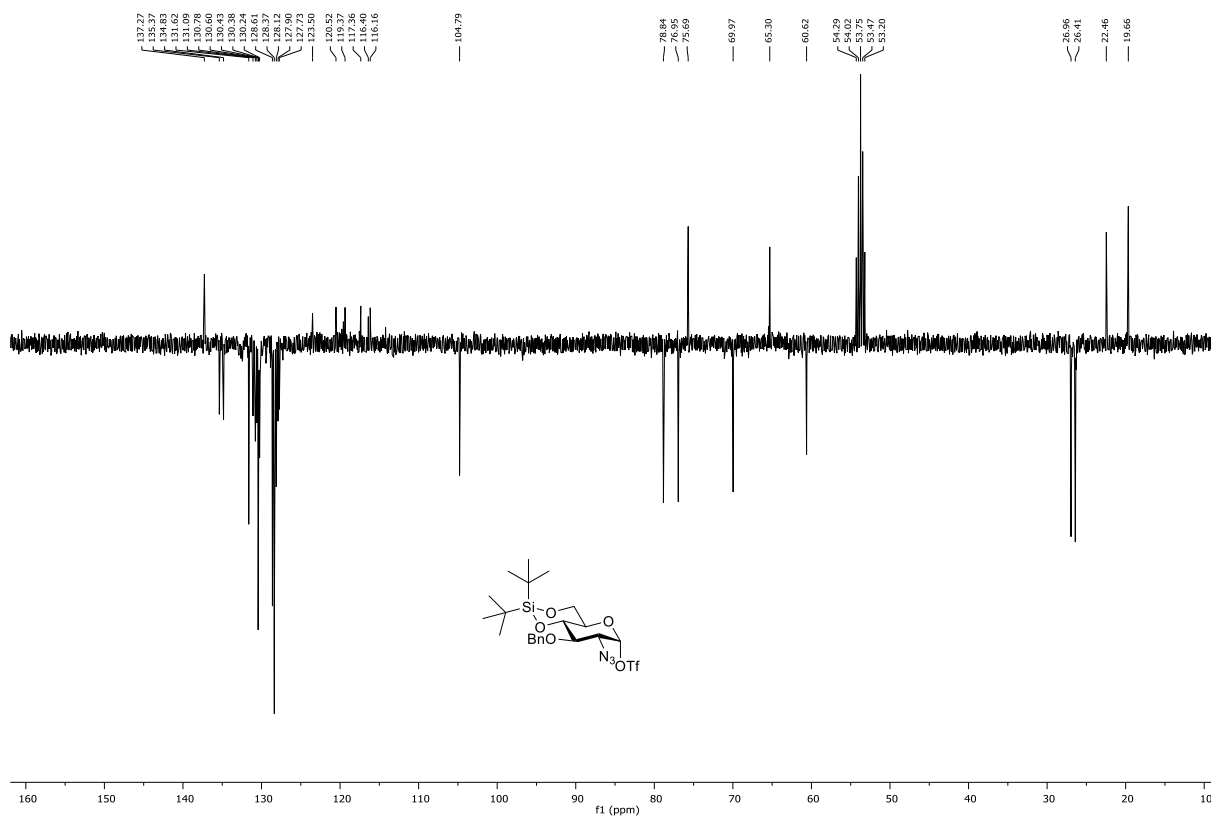


Trifluoromethanesulfonyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α -D-glucopyranoside (**20**).

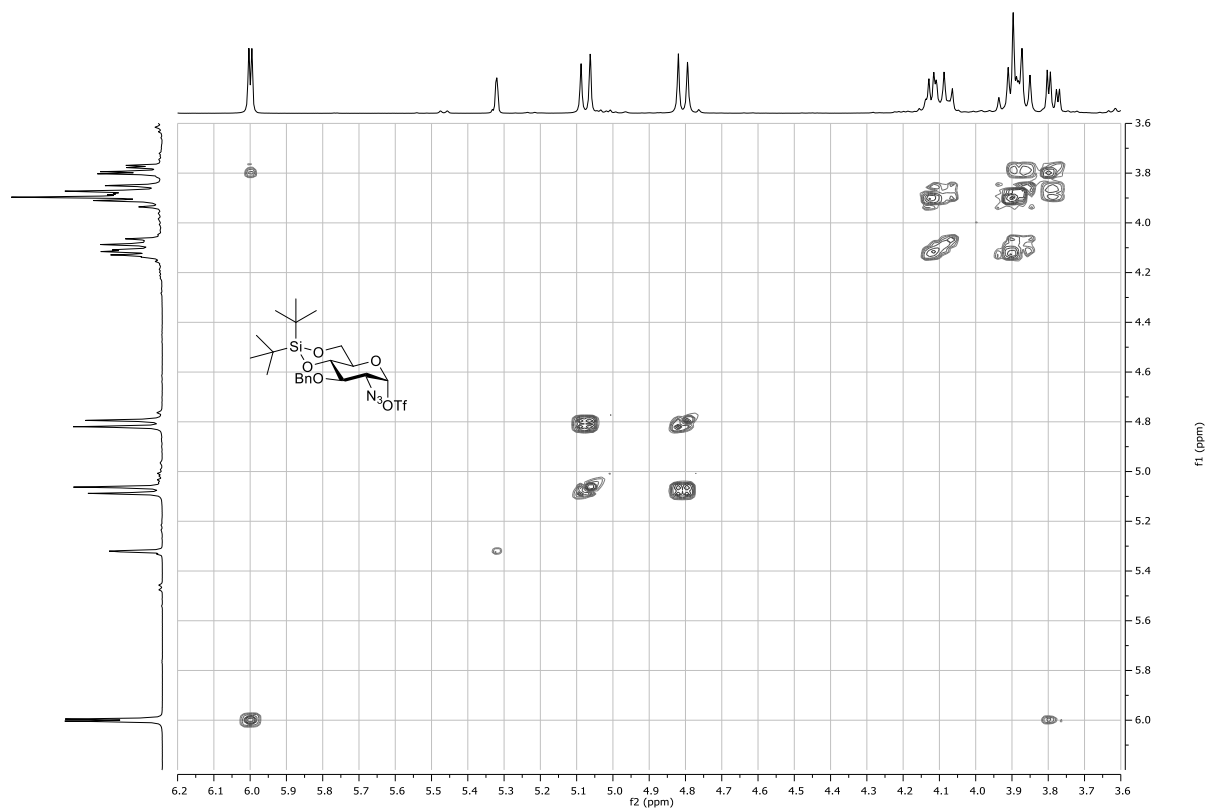
¹H NMR, 400 MHz, CD₂Cl₂



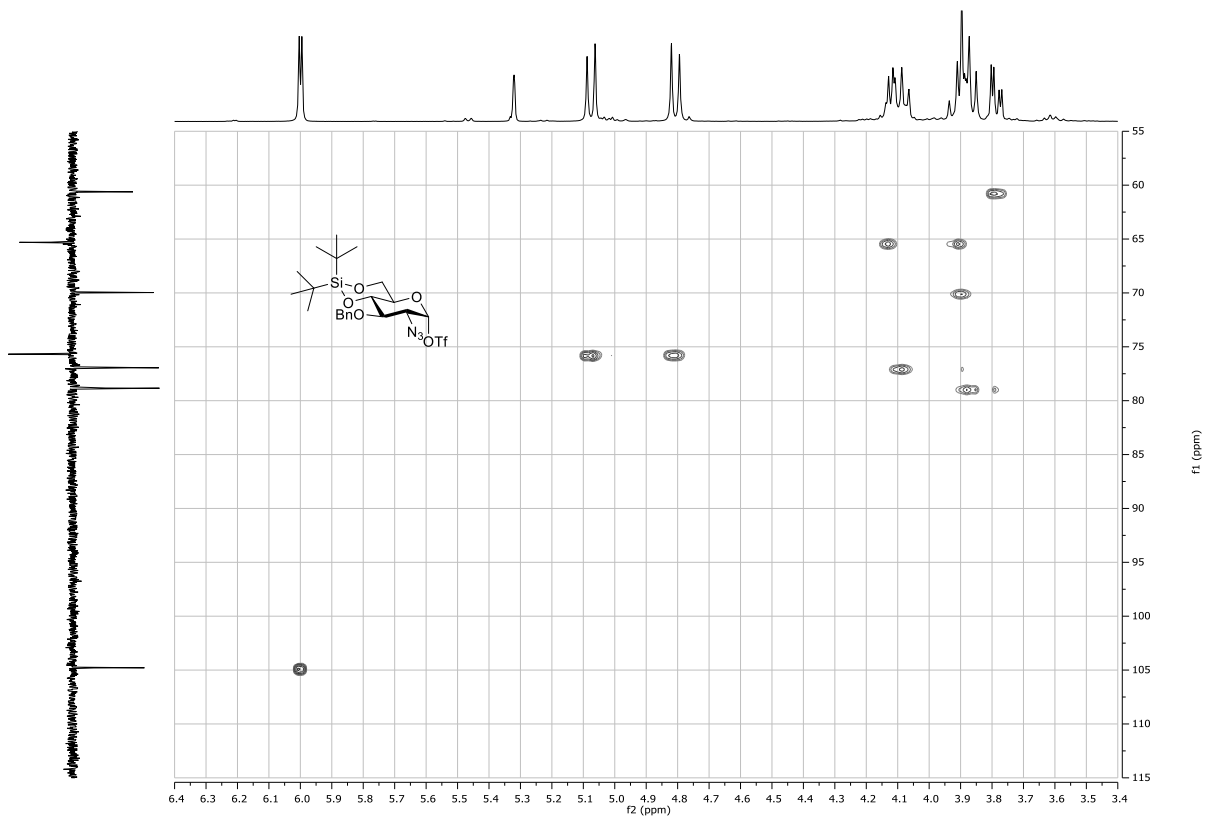
^{13}C -APT NMR, 101 MHz, CD_2Cl_2



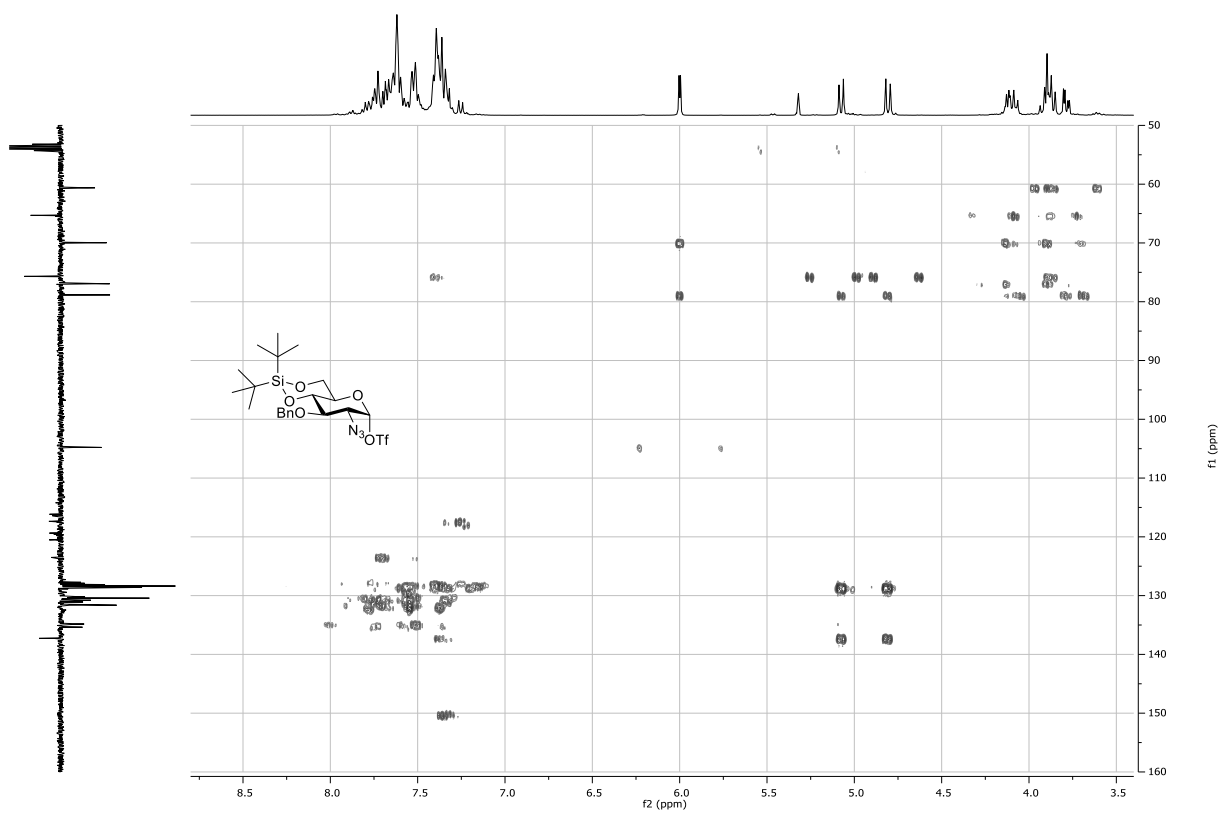
^1H - ^1H COSY NMR, CD_2Cl_2



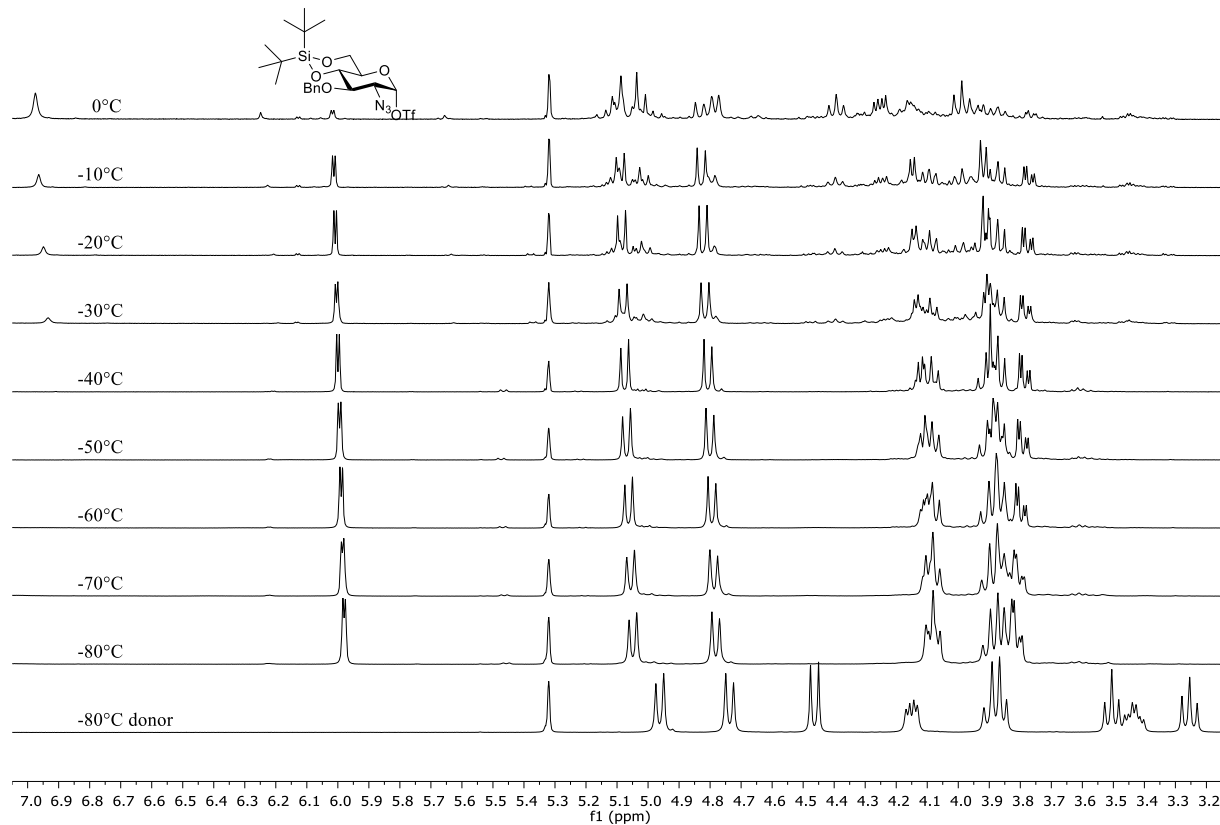
^1H - ^{13}C HSQC NMR, CD_2Cl_2



^1H - ^{13}C HMBC NMR, CD_2Cl_2

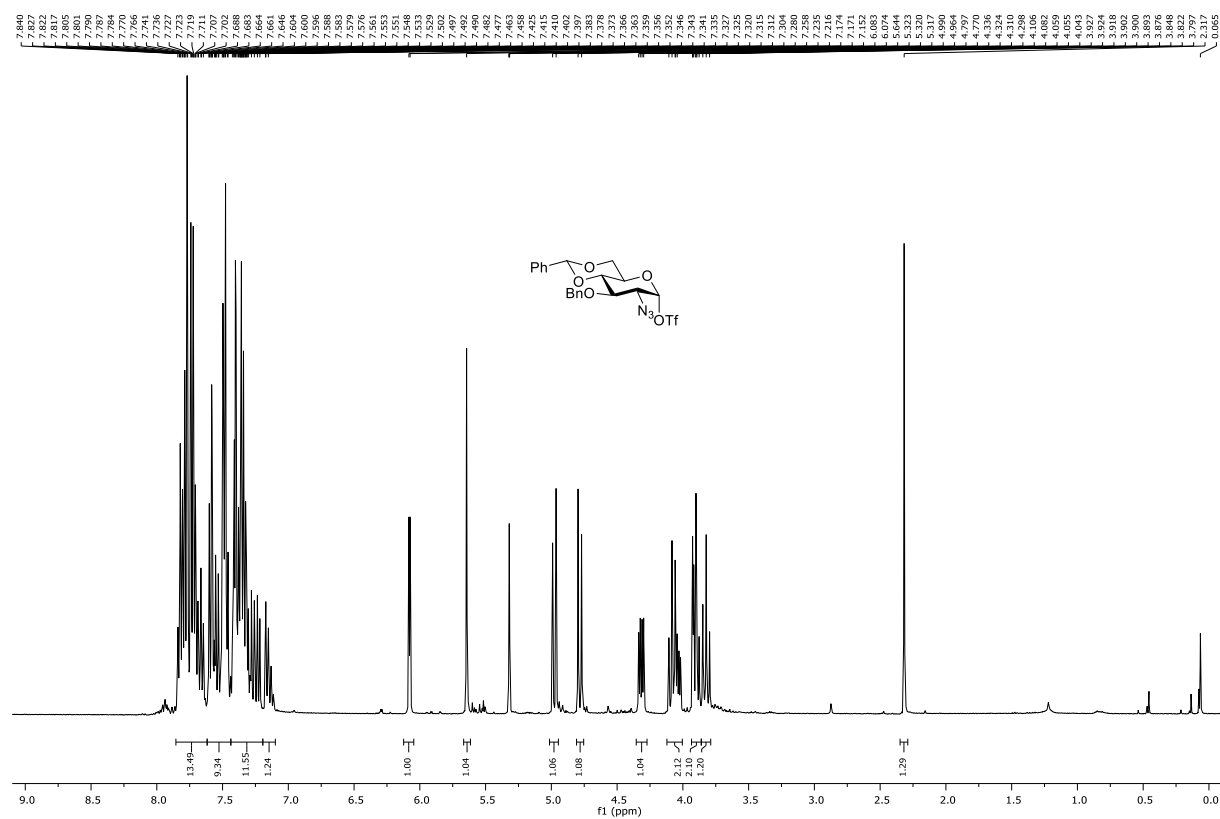


Decomposition study ^1H NMR, 400 MHz, CD_2Cl_2

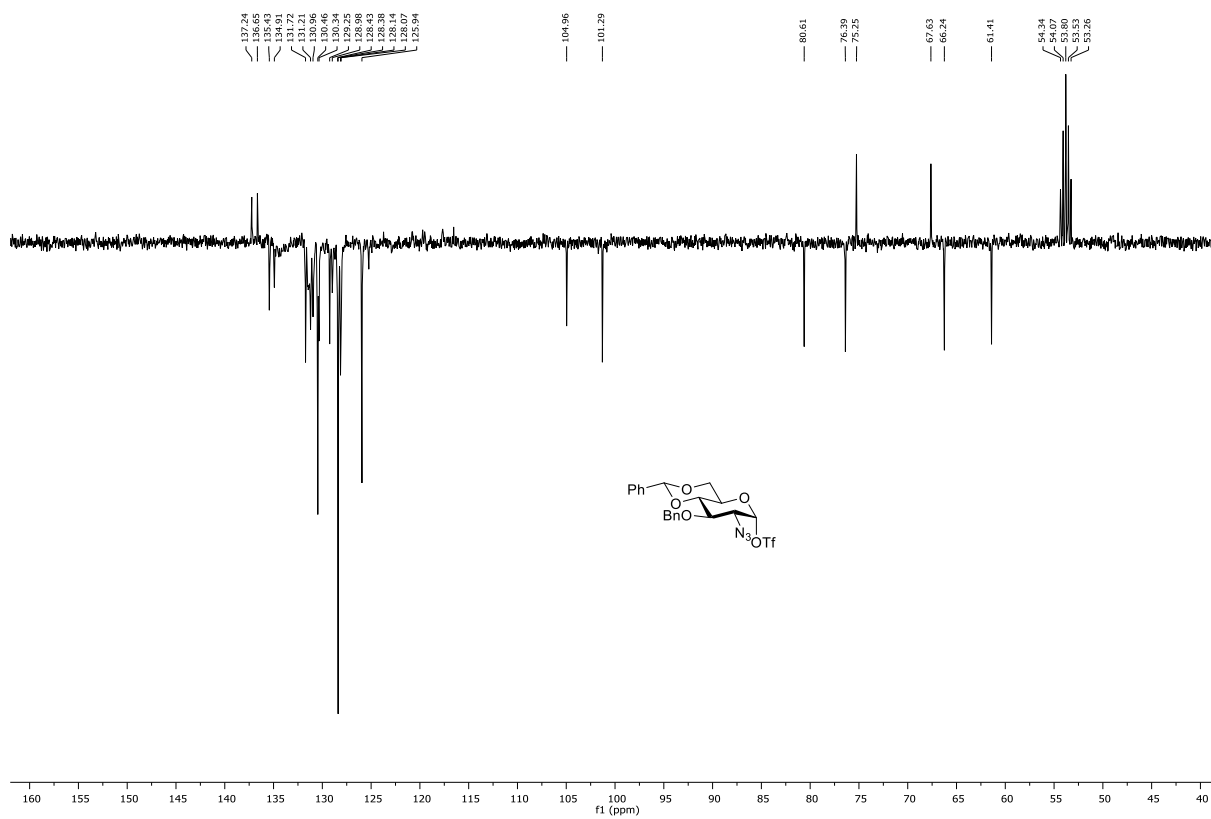


Trifluoromethanesulfonyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside (**21**).

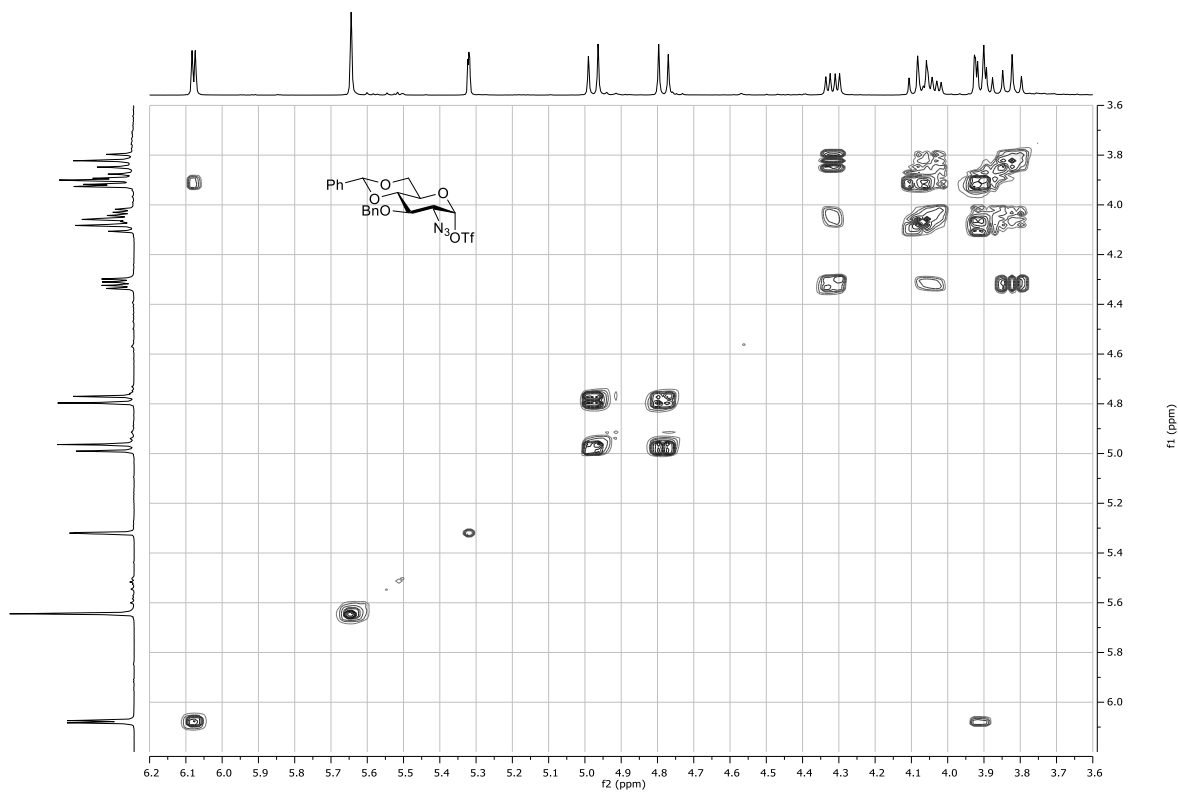
^1H NMR, 400 MHz, CD_2Cl_2



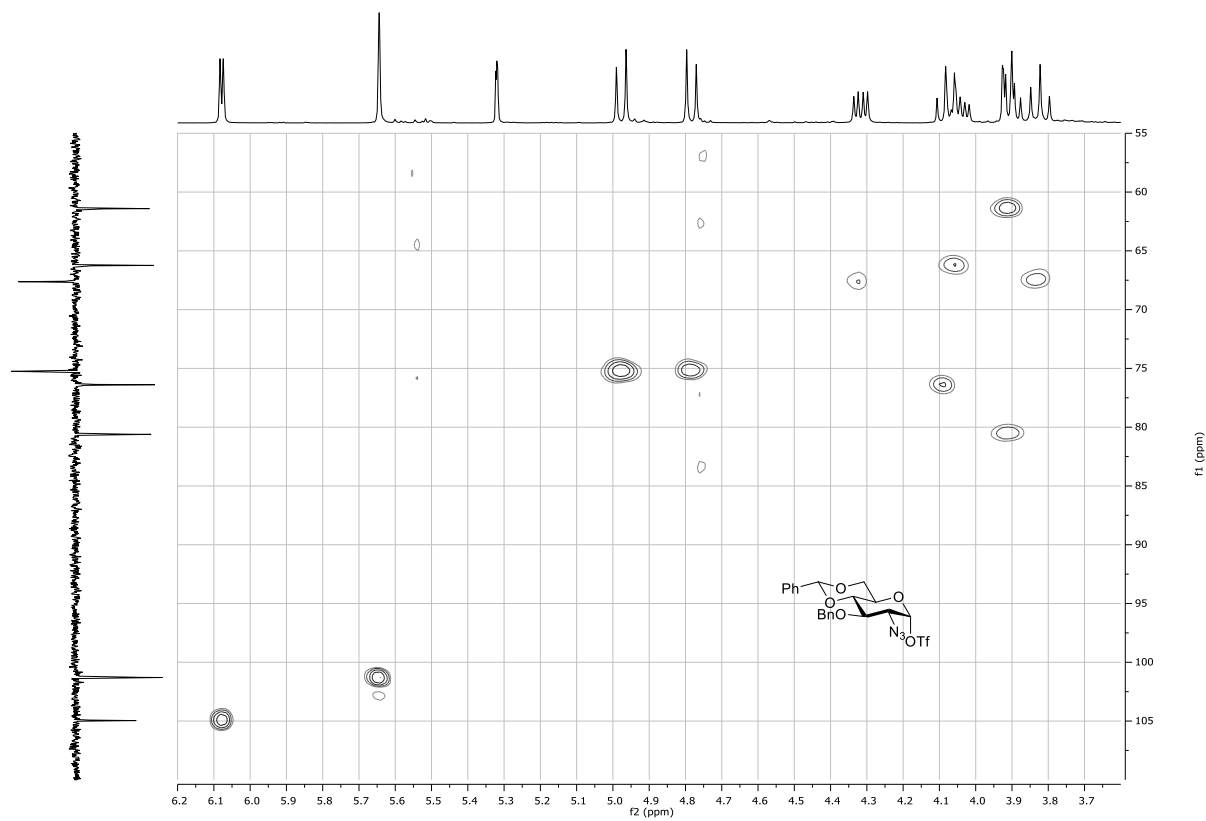
^{13}C -APT NMR, 101 MHz, CD_2Cl_2



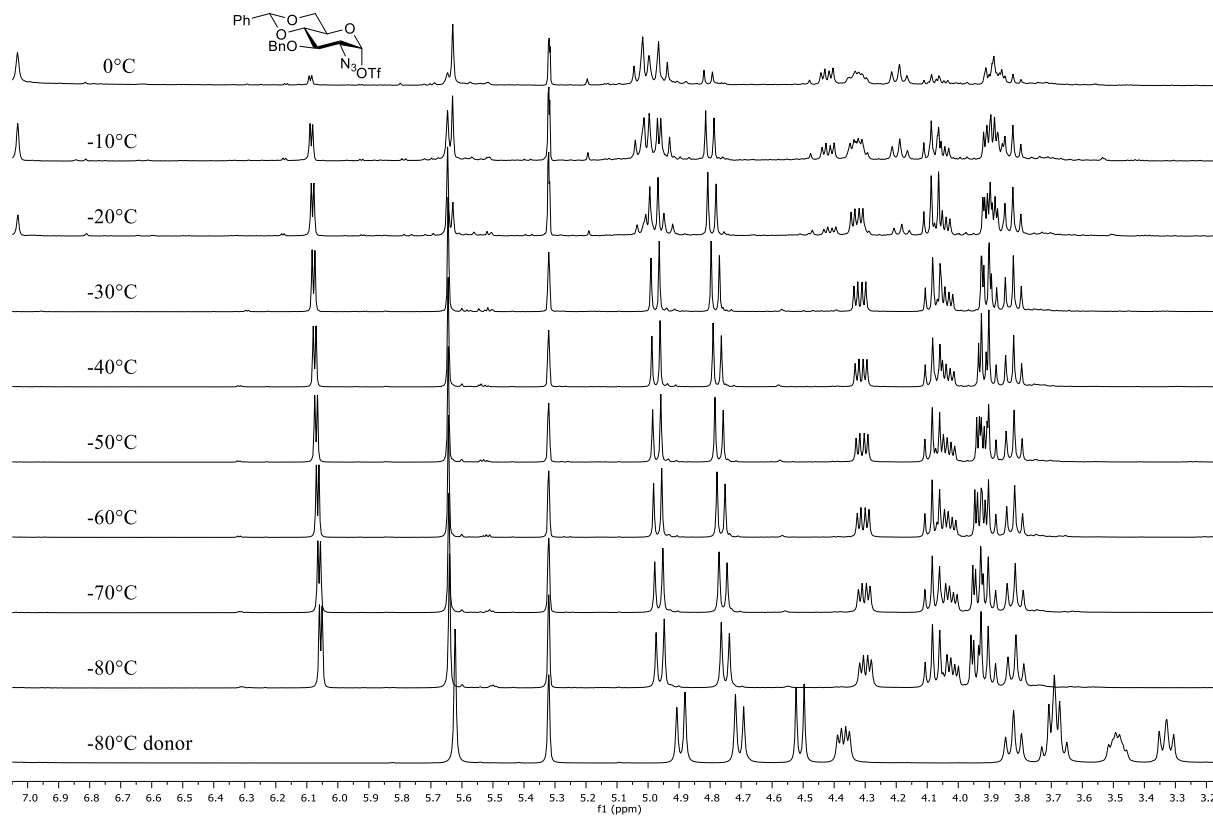
^1H - ^1H COSY NMR, CD_2Cl_2



^1H - ^{13}C HSQC NMR, CD_2Cl_2

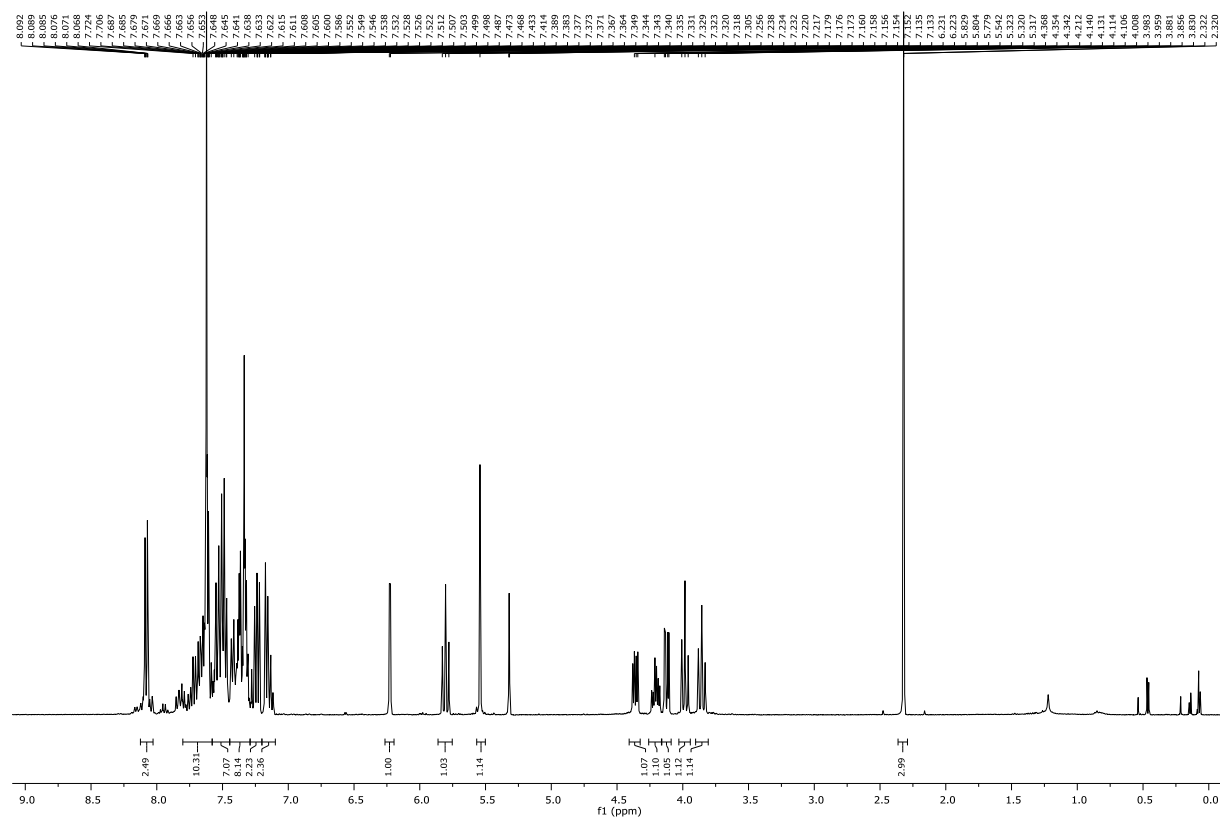


Decomposition study ^1H NMR, 400 MHz, CD_2Cl_2

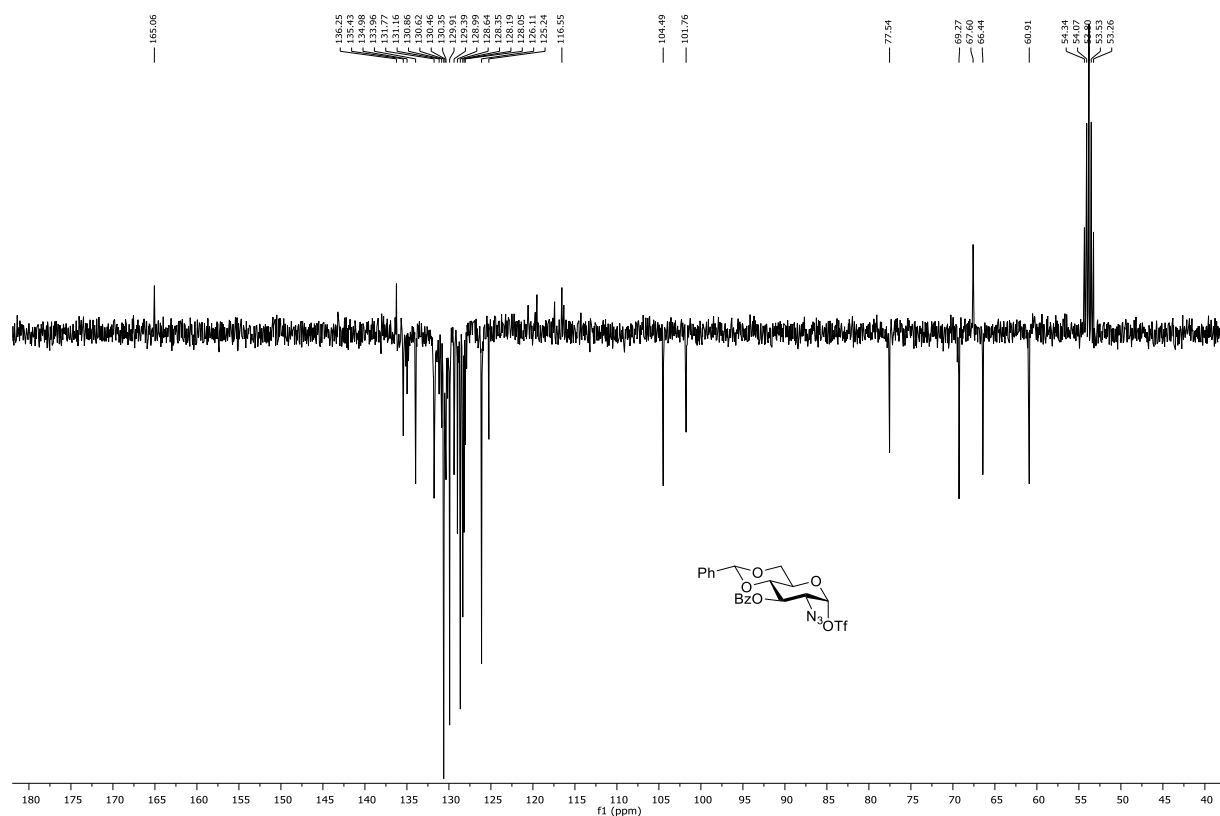


Trifluoromethanesulfonyl 2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside (**22**).

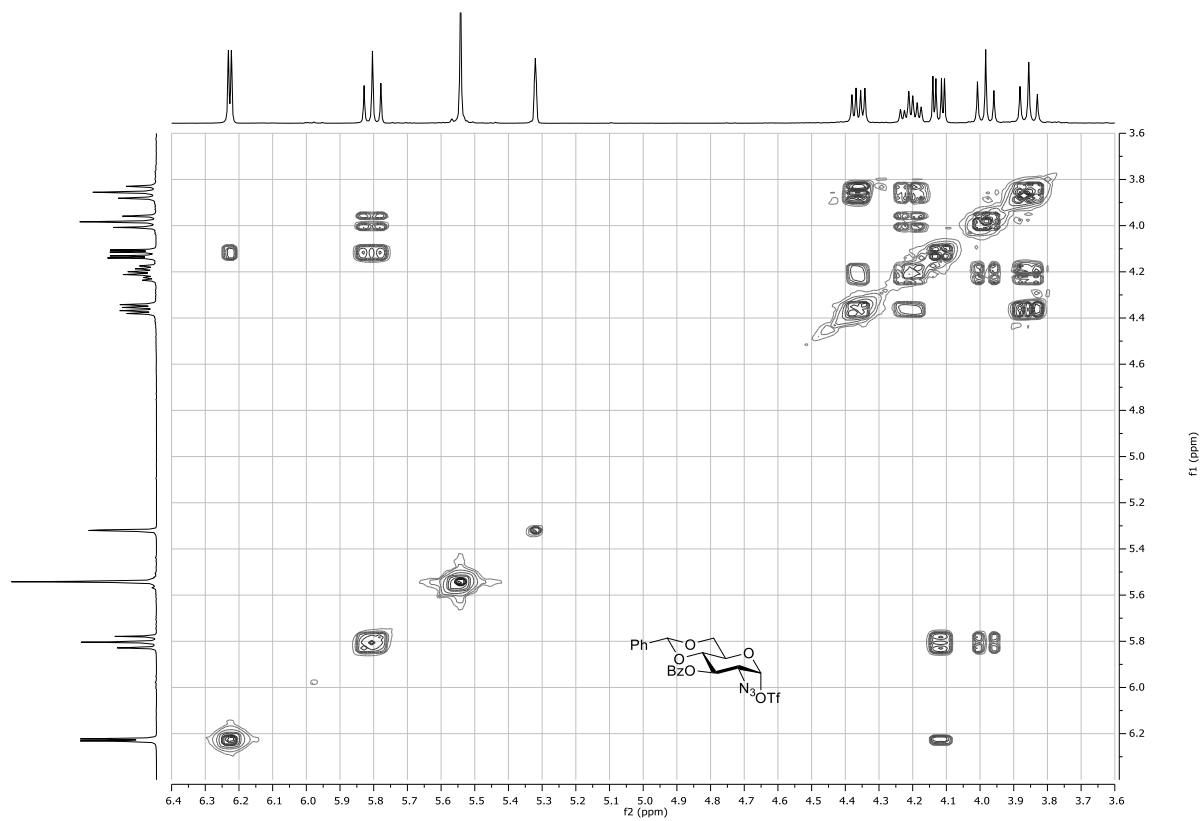
^1H NMR, 400 MHz, CD_2Cl_2



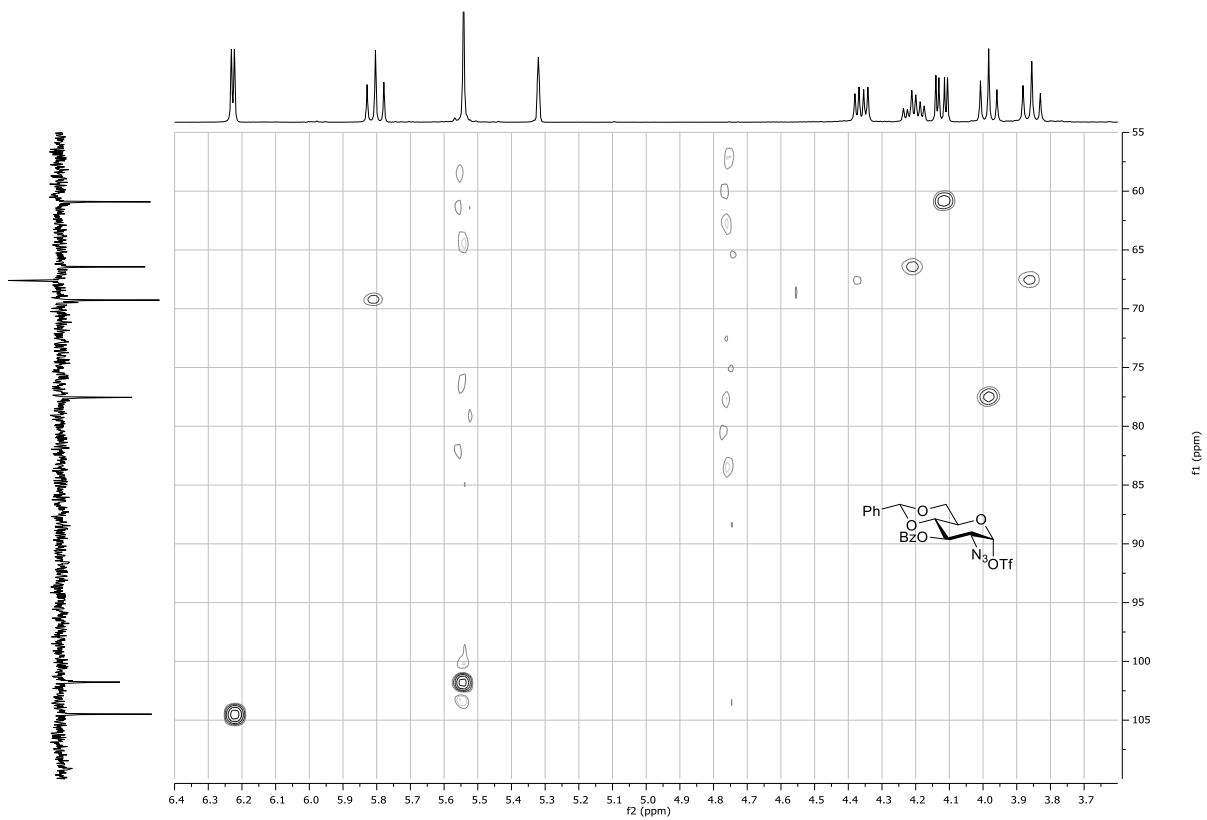
^{13}C -APT NMR, 101 MHz, CD_2Cl_2



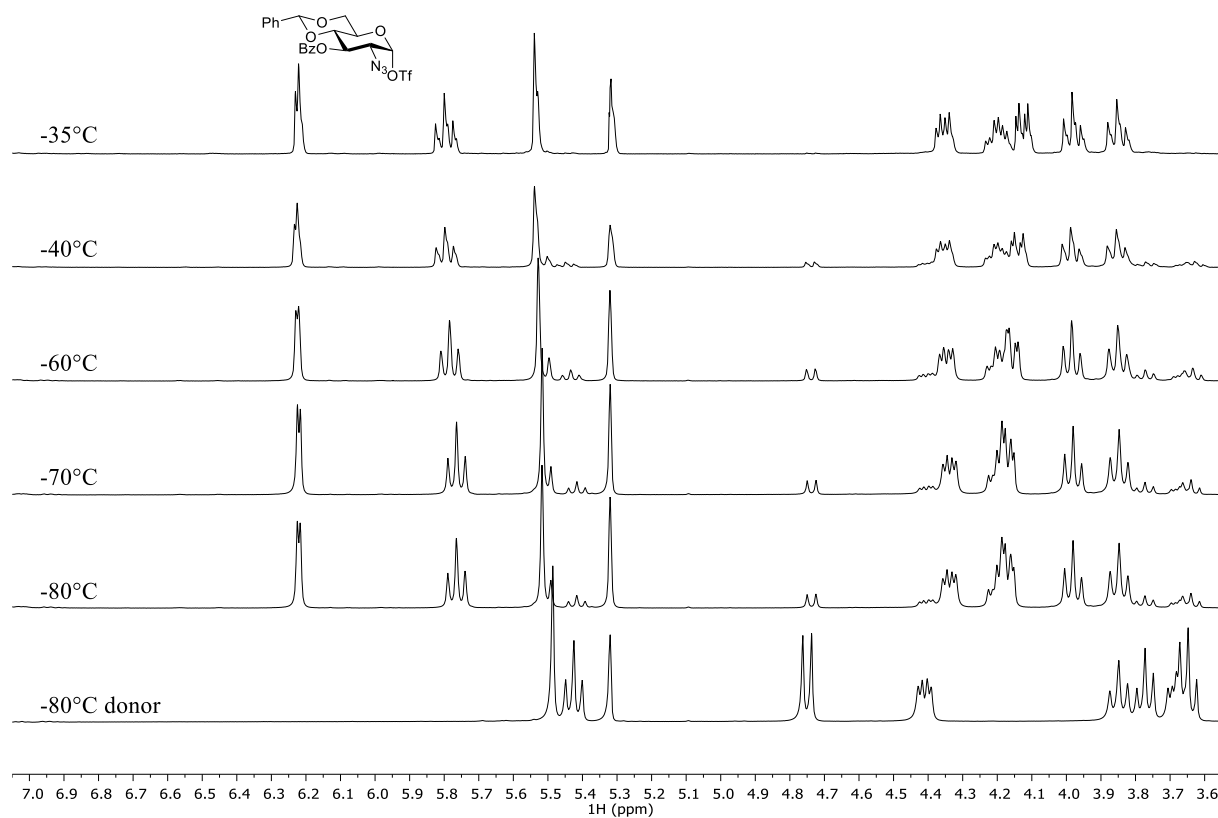
^1H - ^1H COSY NMR, CD_2Cl_2



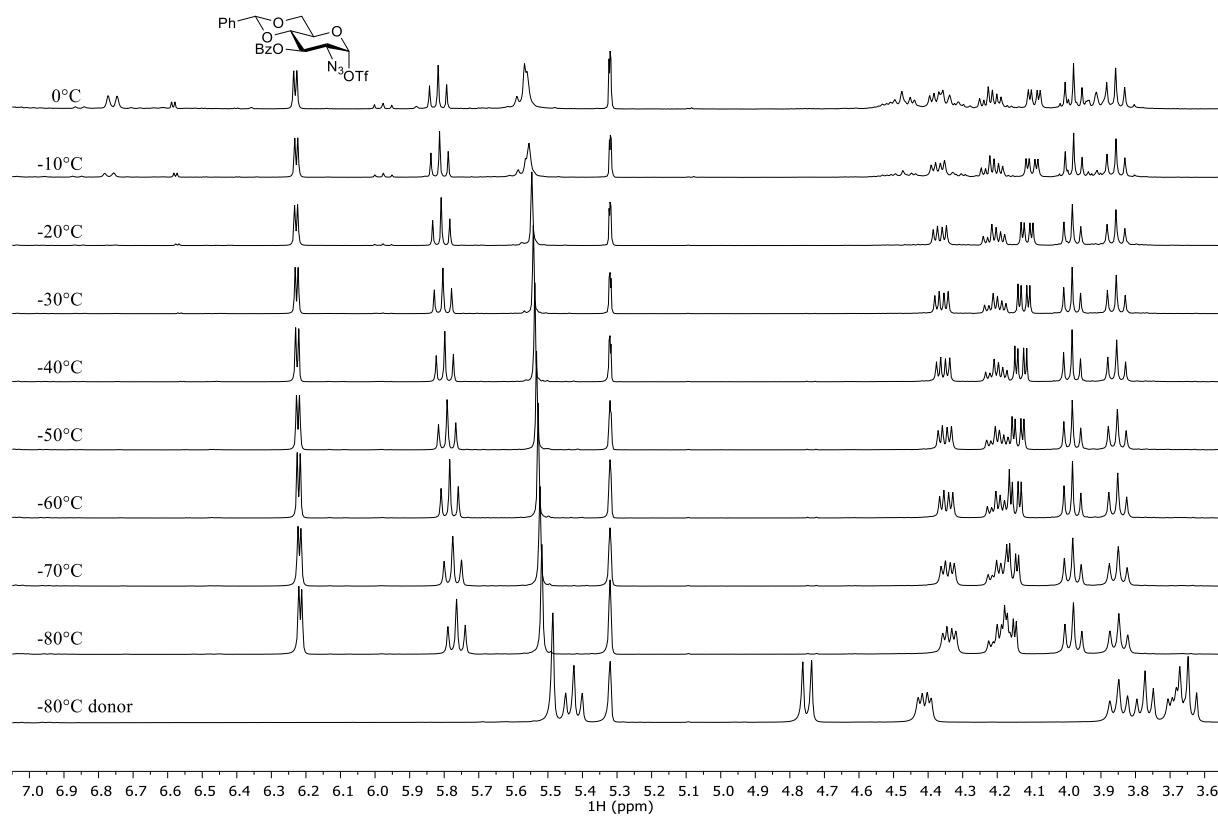
^1H - ^{13}C HSQC NMR, CD_2Cl_2



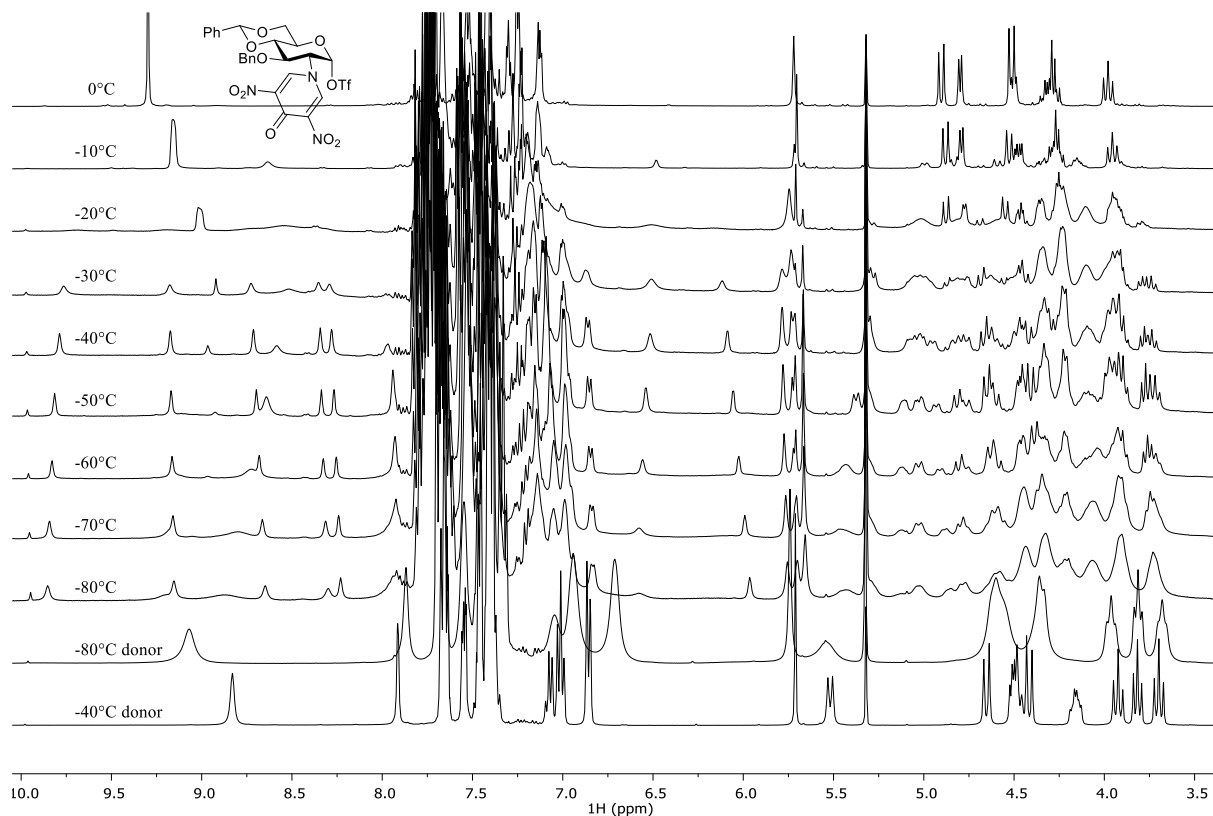
Activation study ^1H NMR, 400 MHz, CD_2Cl_2



Decomposition study ^1H NMR, 400 MHz, CD_2Cl_2

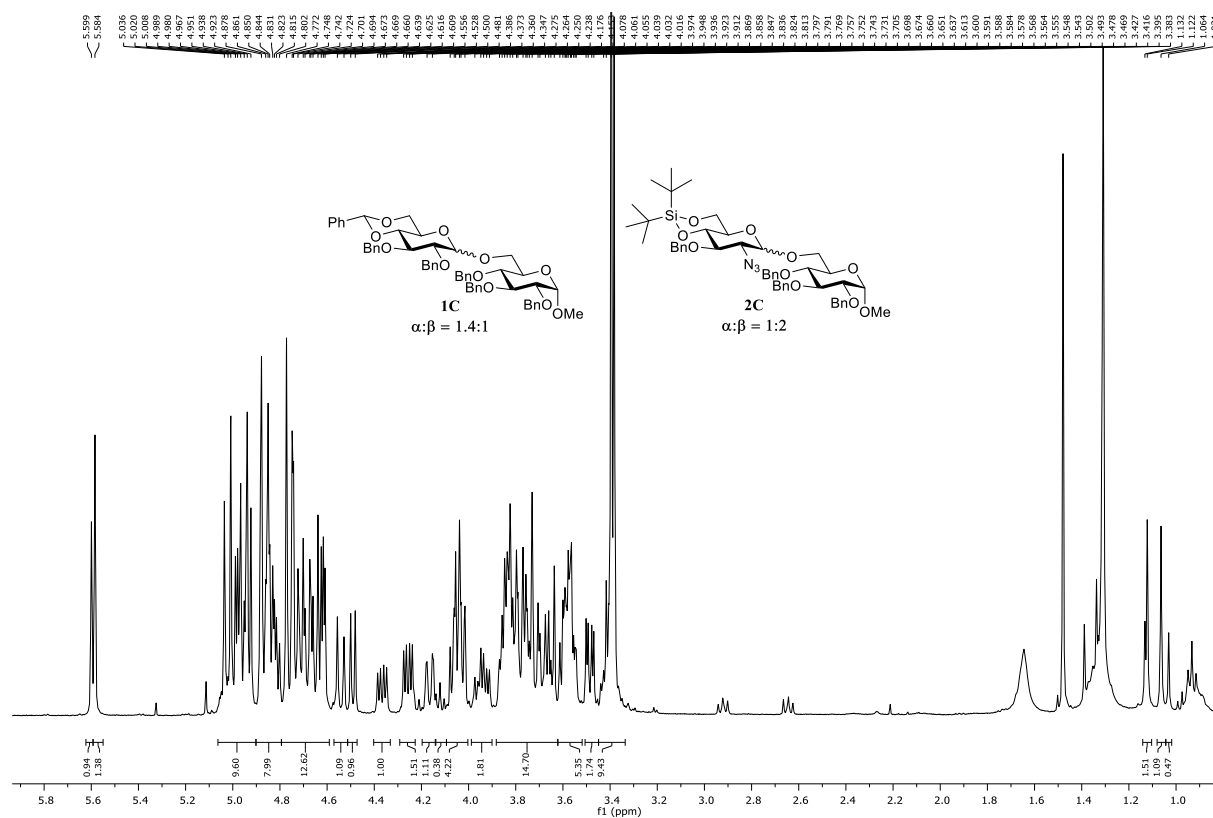


Trifluoromethanesulfonyl 2-(3,5-dinitro-4-pyridone)-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy α -D-glucopyranoside (**23**).



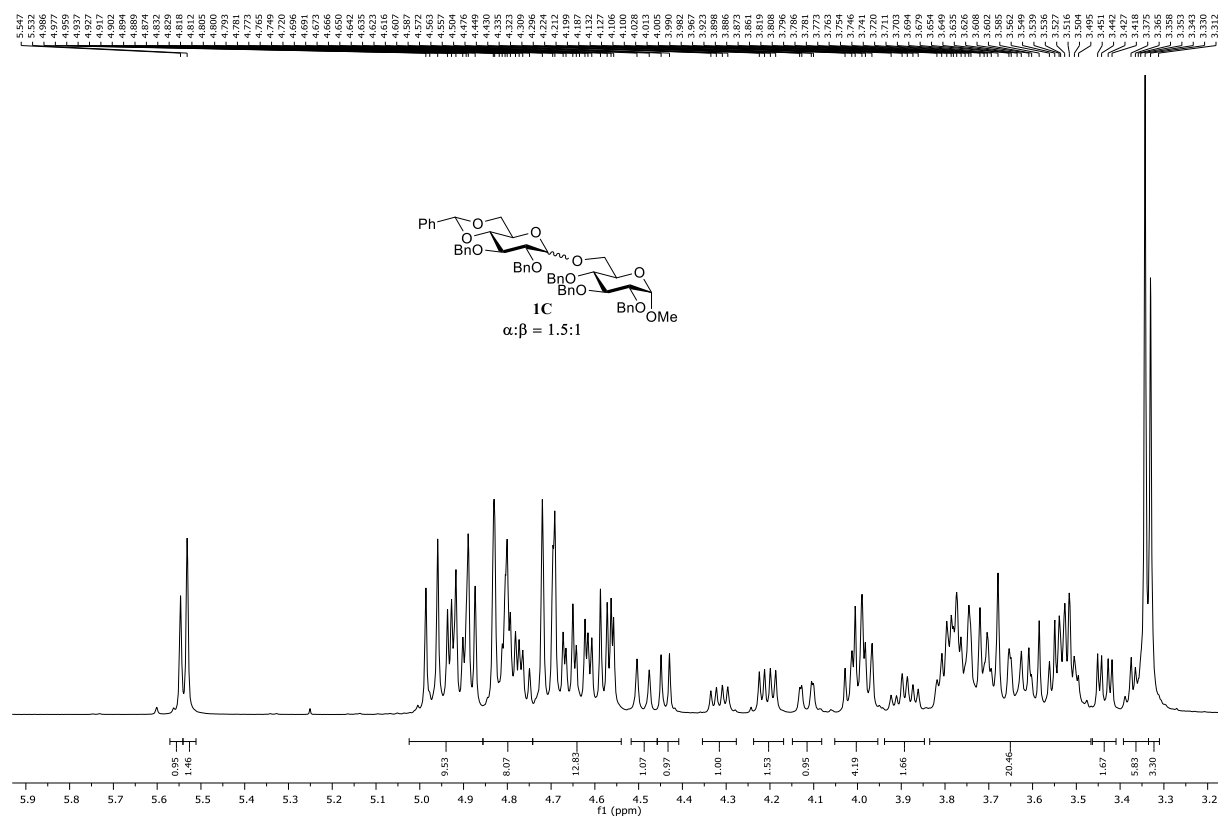
Competition experiment between donors **1** and **2**, with acceptor **25**.

14 : 1, 1C:2C



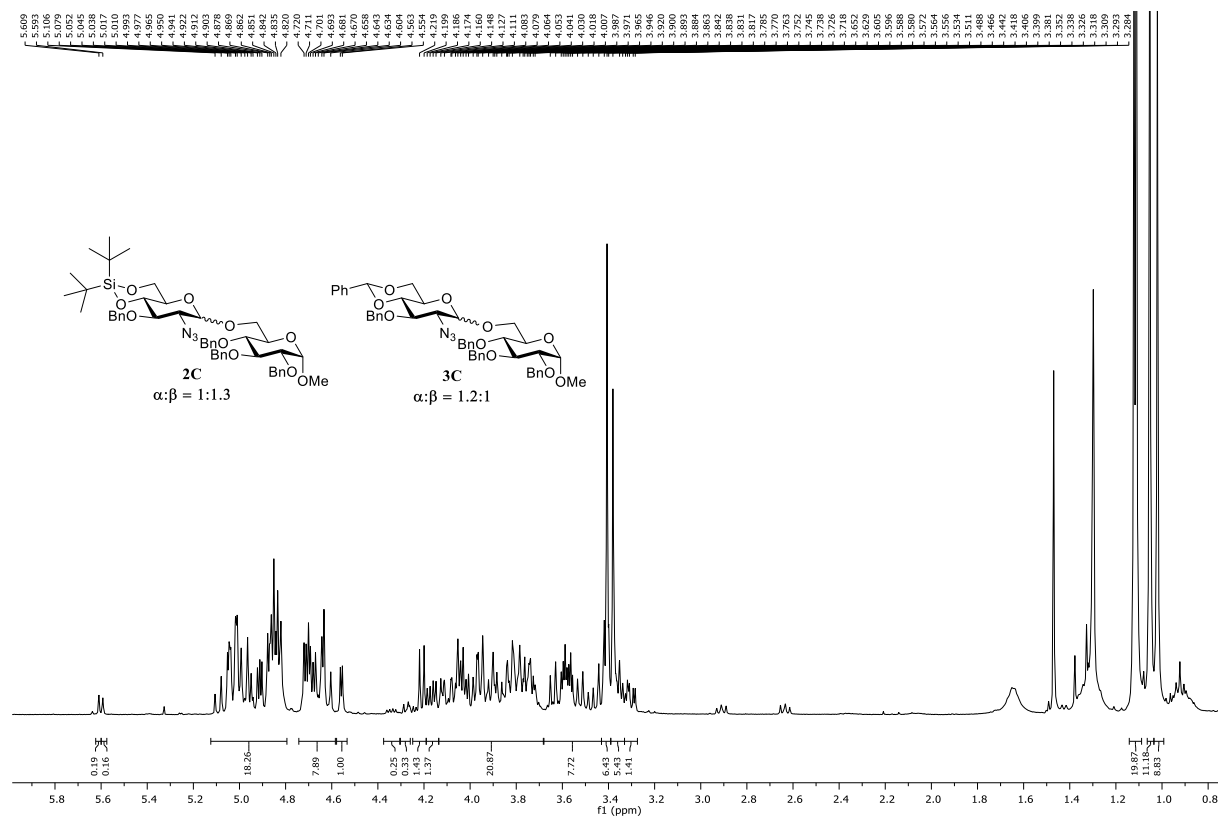
Competition experiment between donors **1** and **3**, with acceptor **25**.

1 : **0**, **1C**:**3C**



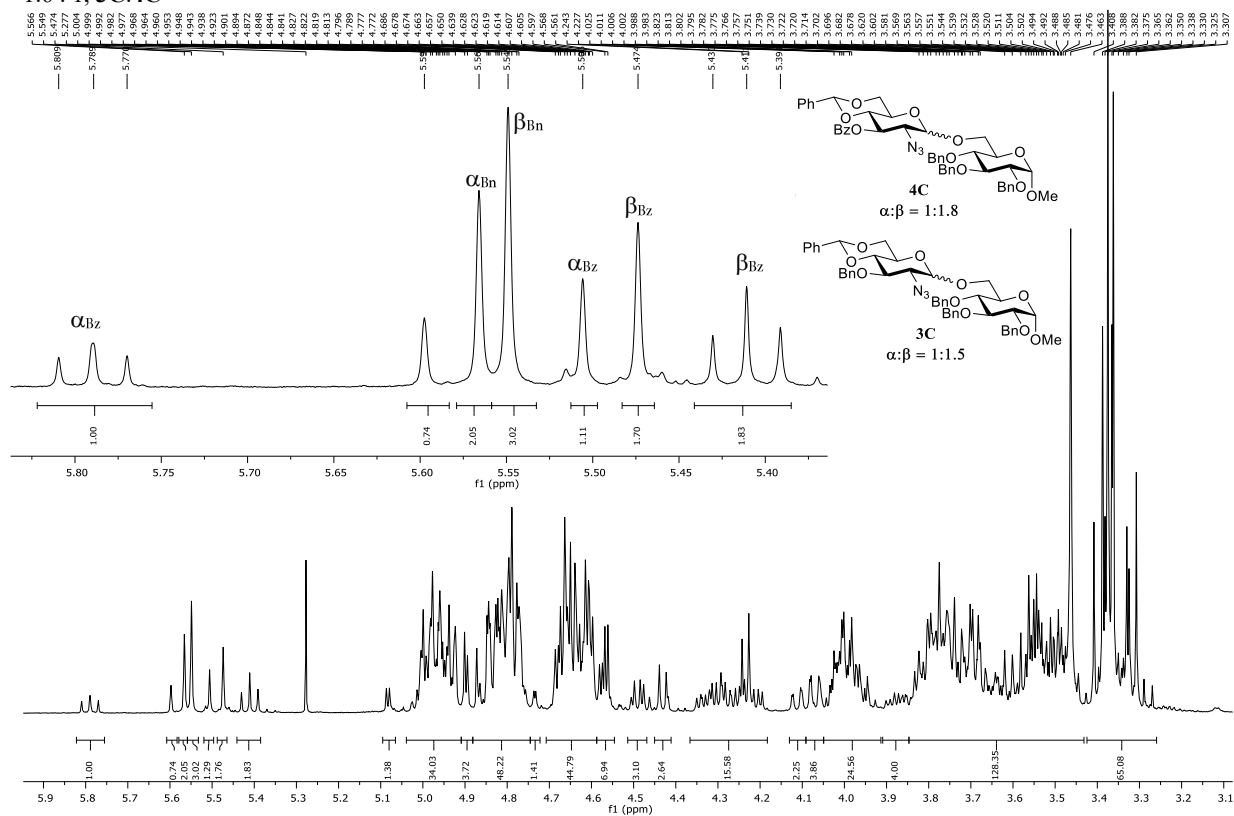
Competition experiment between donors **2** and **3**, with acceptor **25**.

6 : **1**, **2C**:**3C**



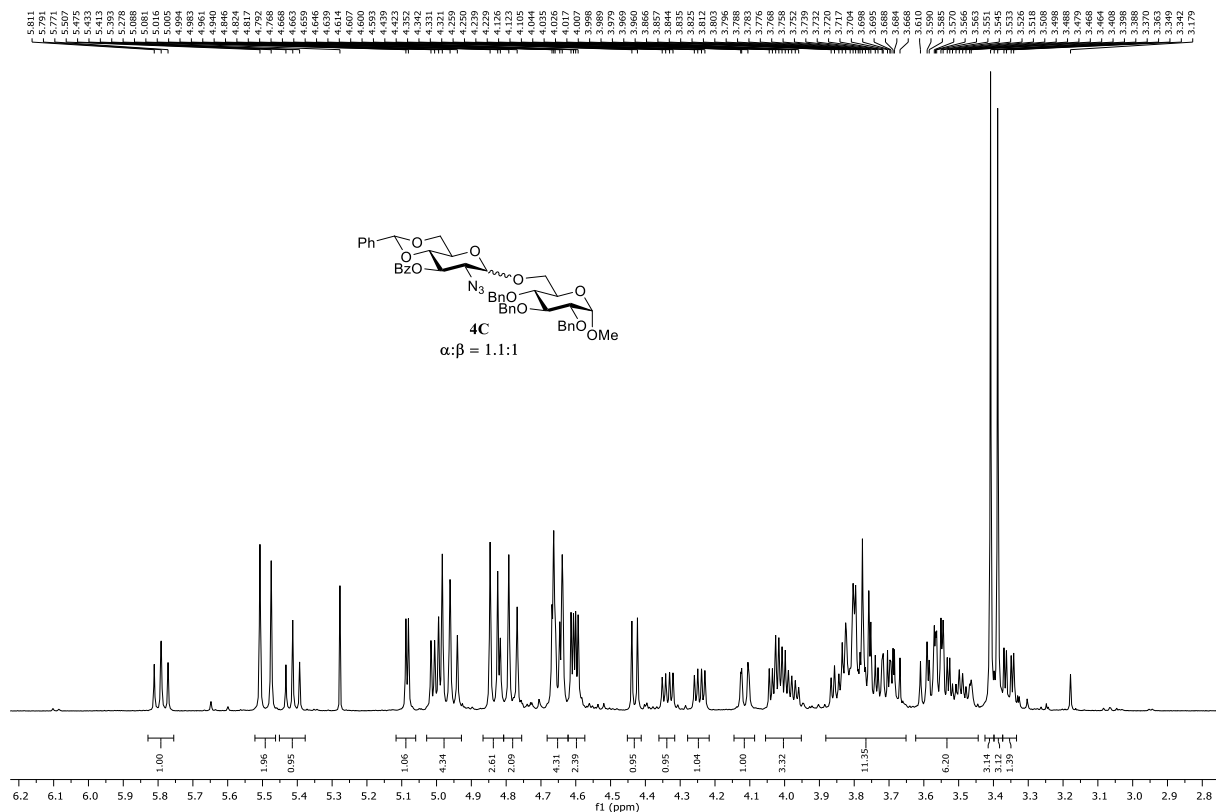
Competition experiment between donors **3** and **4**, with acceptor **25**.

1.6 : 1, **3C**:**4C**



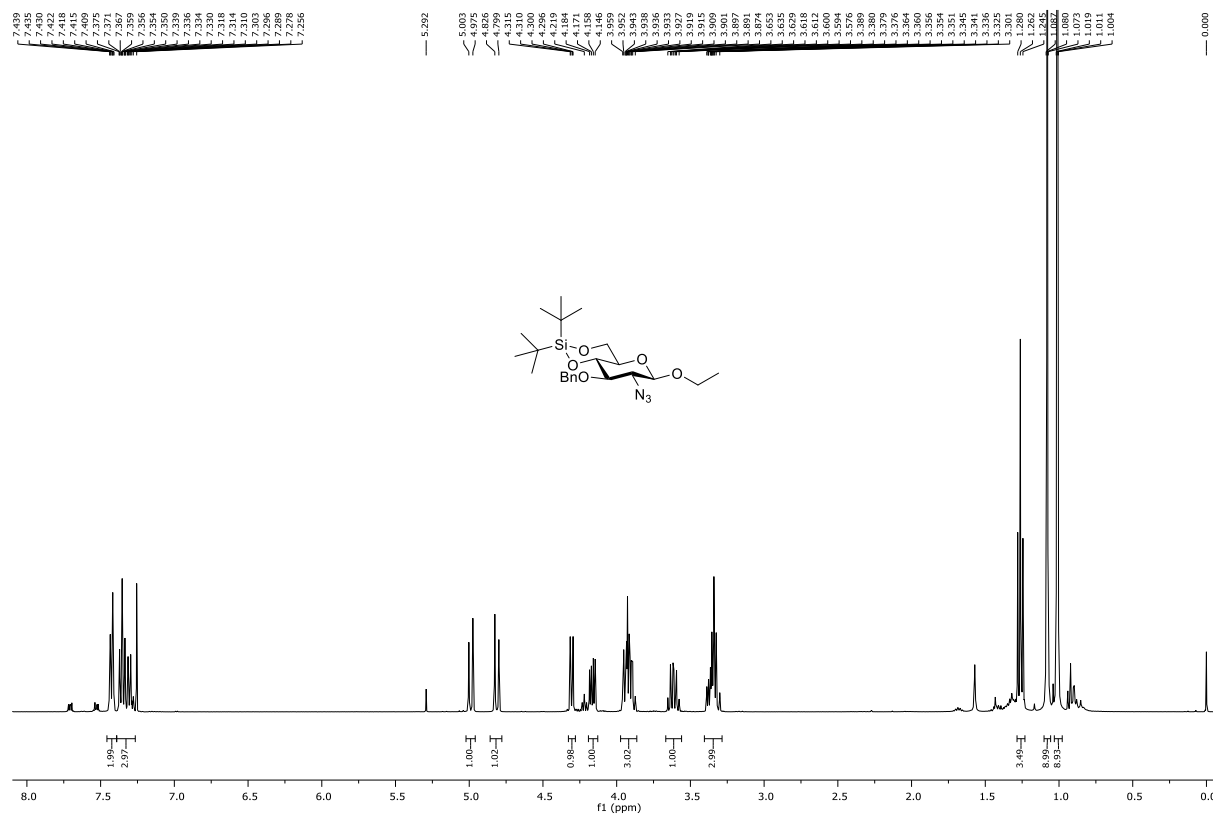
Competition experiment between donors **4** and **5**, with acceptor **25**.

1 : 0, **4C**:**5C**

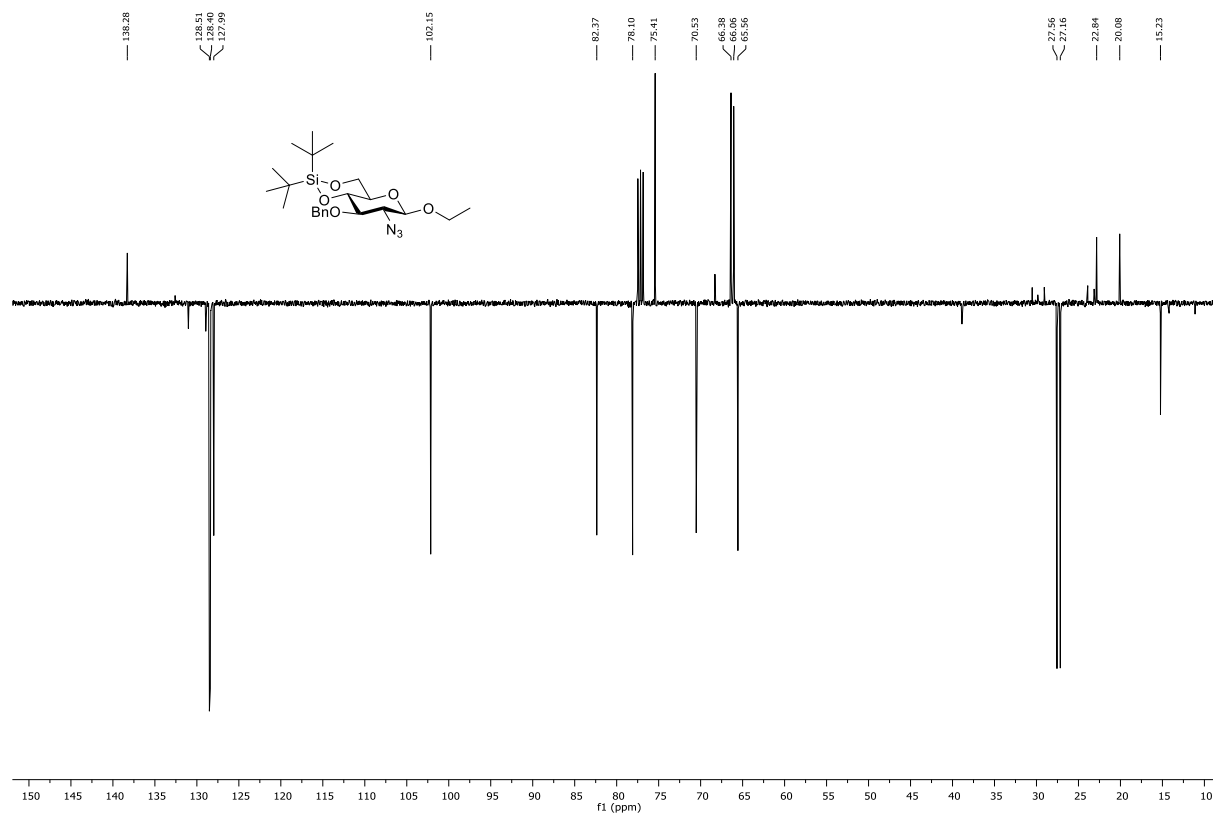


Ethyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- β -D-glucopyranoside (**2A**).

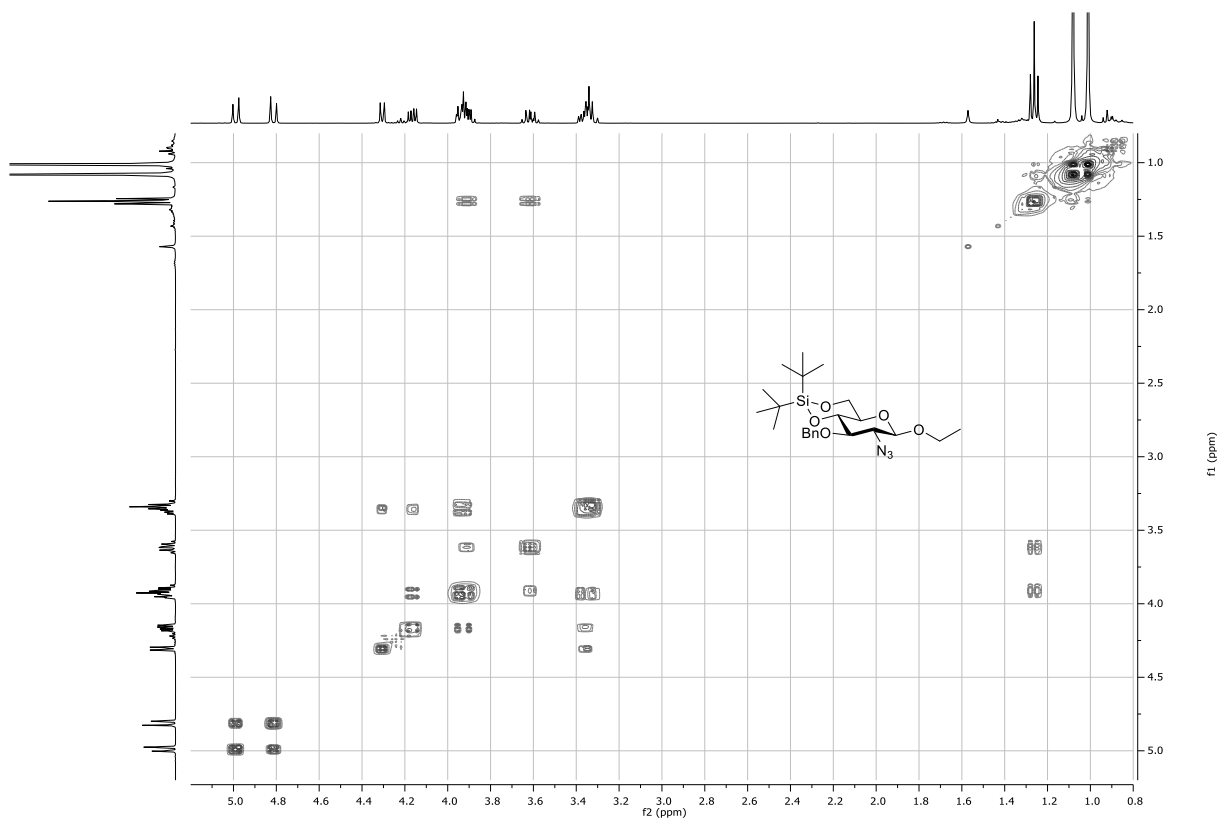
^1H NMR, 400 MHz, CDCl_3



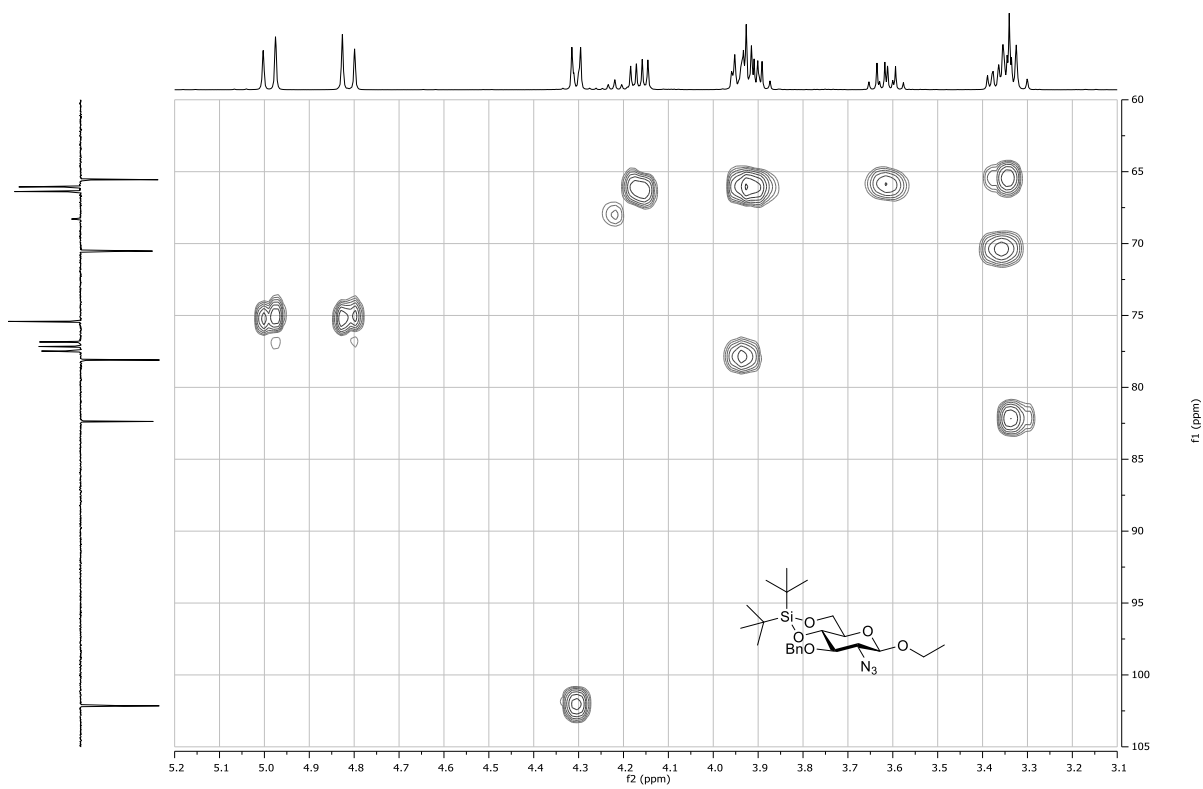
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR

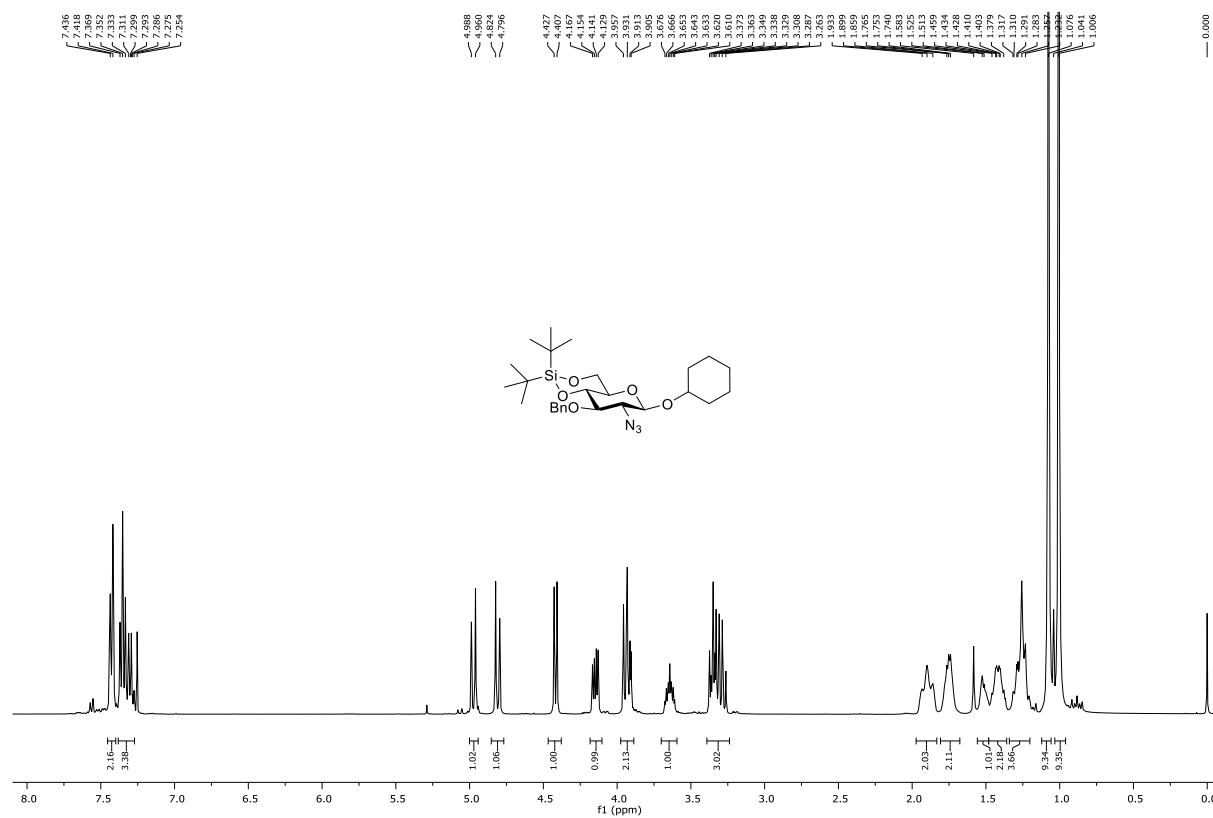


^1H - ^{13}C HSQC NMR

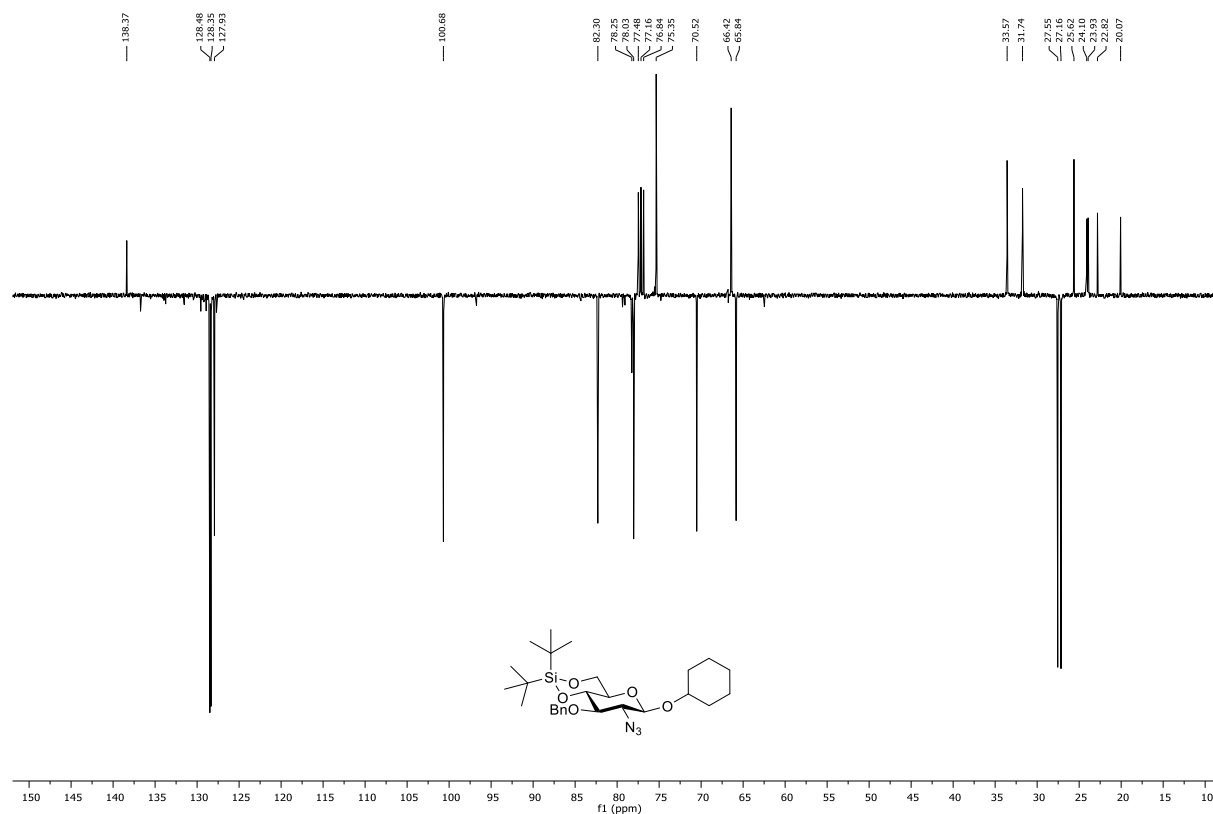


Cyclohexyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- β -D-glucopyranoside (**2B**).

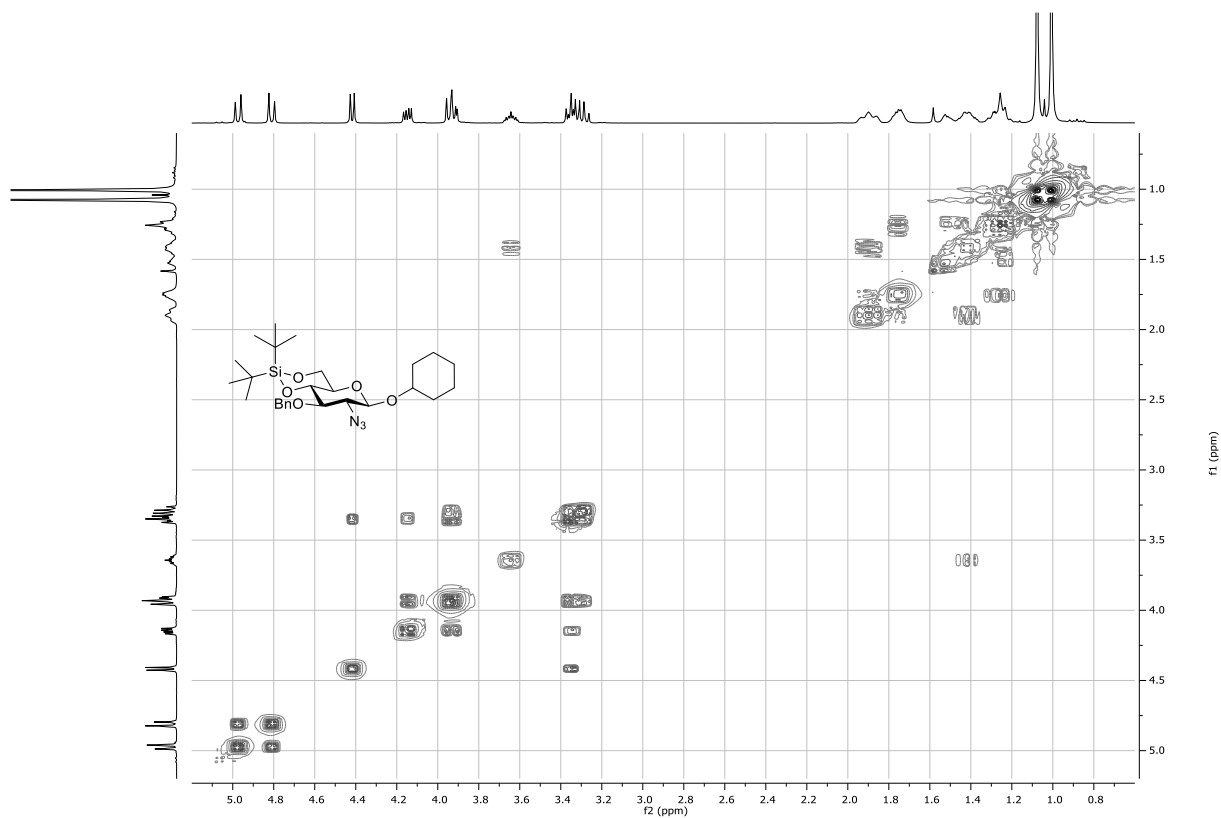
^1H NMR, 400 MHz, CDCl_3



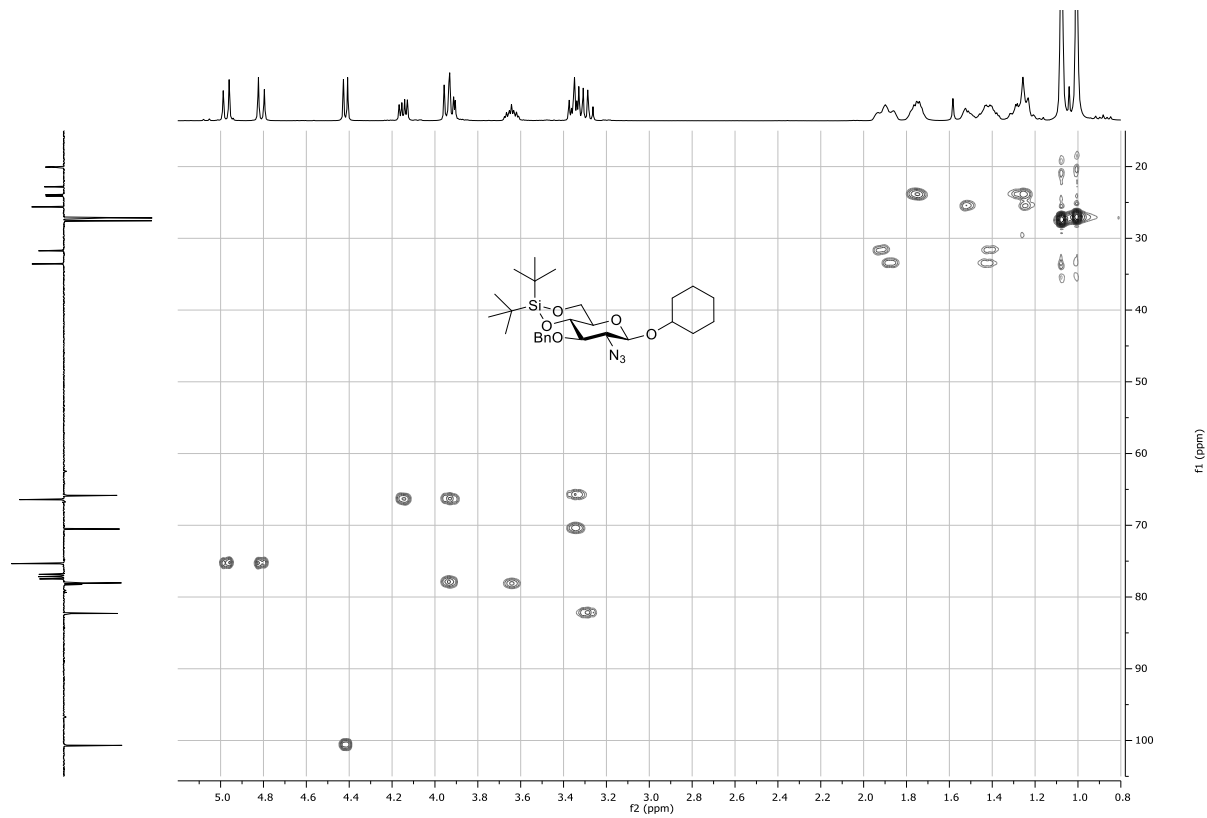
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR

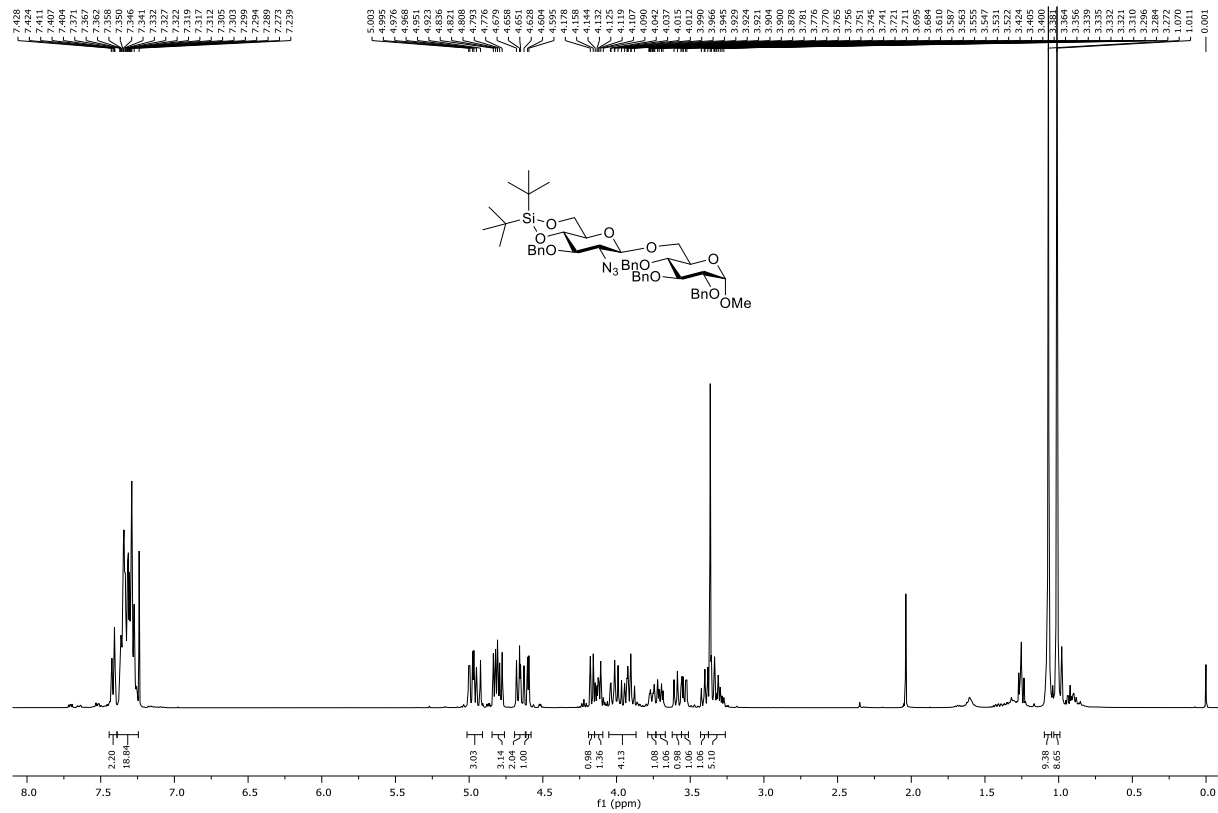


^1H - ^{13}C HSQC NMR

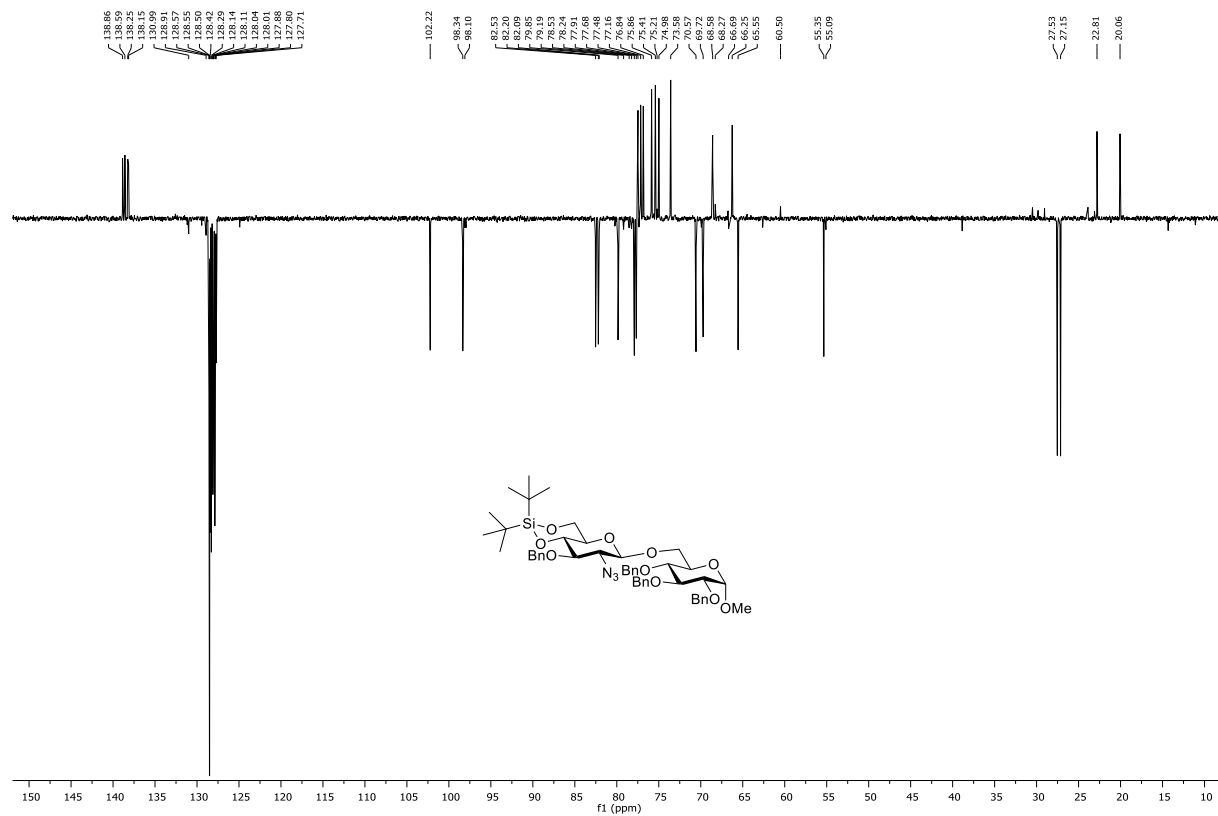


Methyl 6-*O*-(2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α / β -*D*-glucopyranosyl)-2,3,4-tri-*O*-benzyl- α -*D*-glucopyranoside (**2C**).

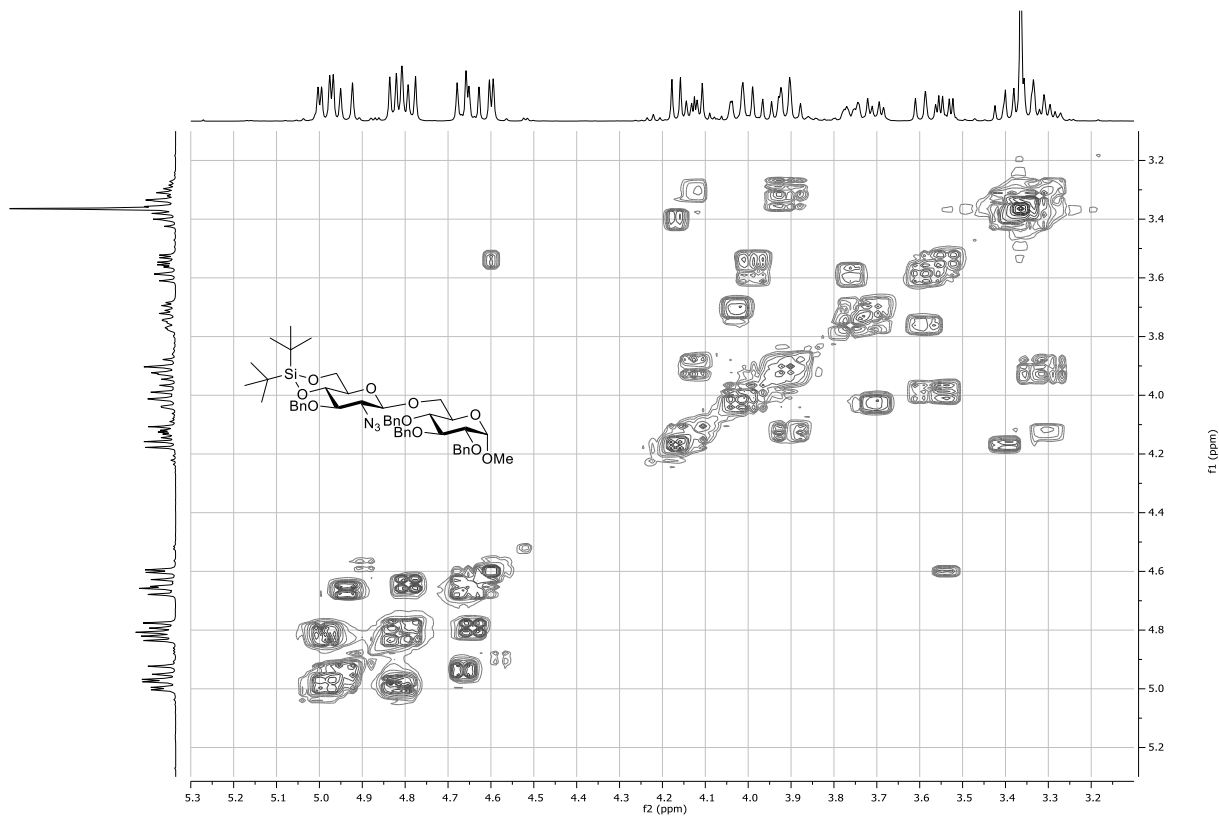
¹H NMR, 400 MHz, CDCl₃



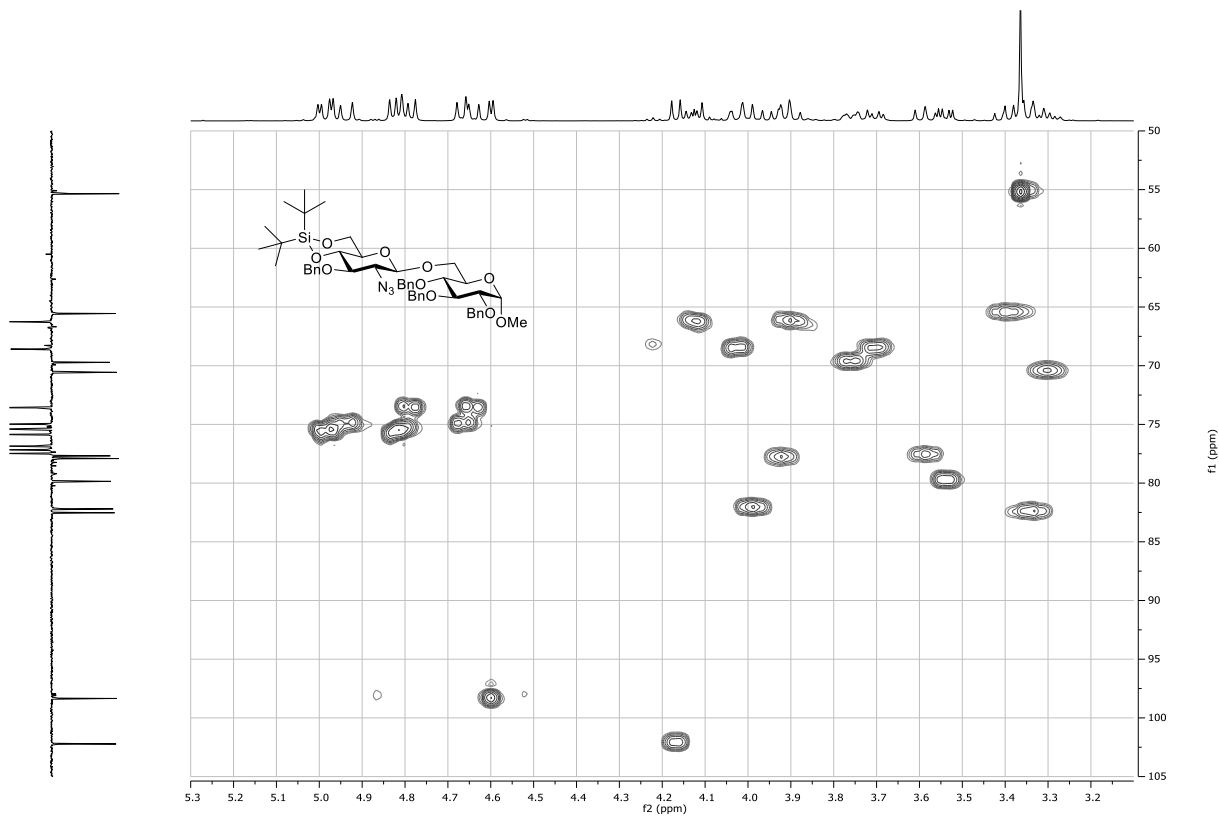
¹³C-APT NMR, 101 MHz, CDCl₃



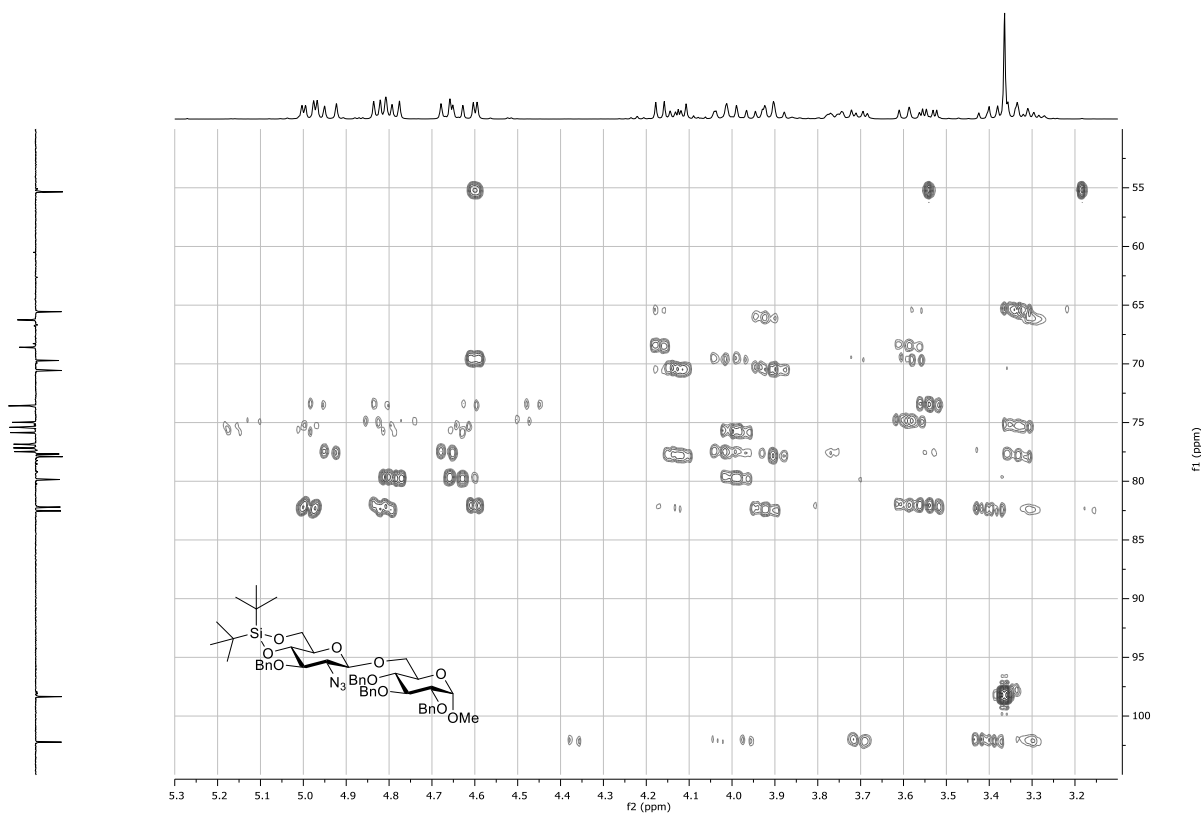
^1H - ^1H COSY NMR



^1H - ^{13}C HSQC NMR

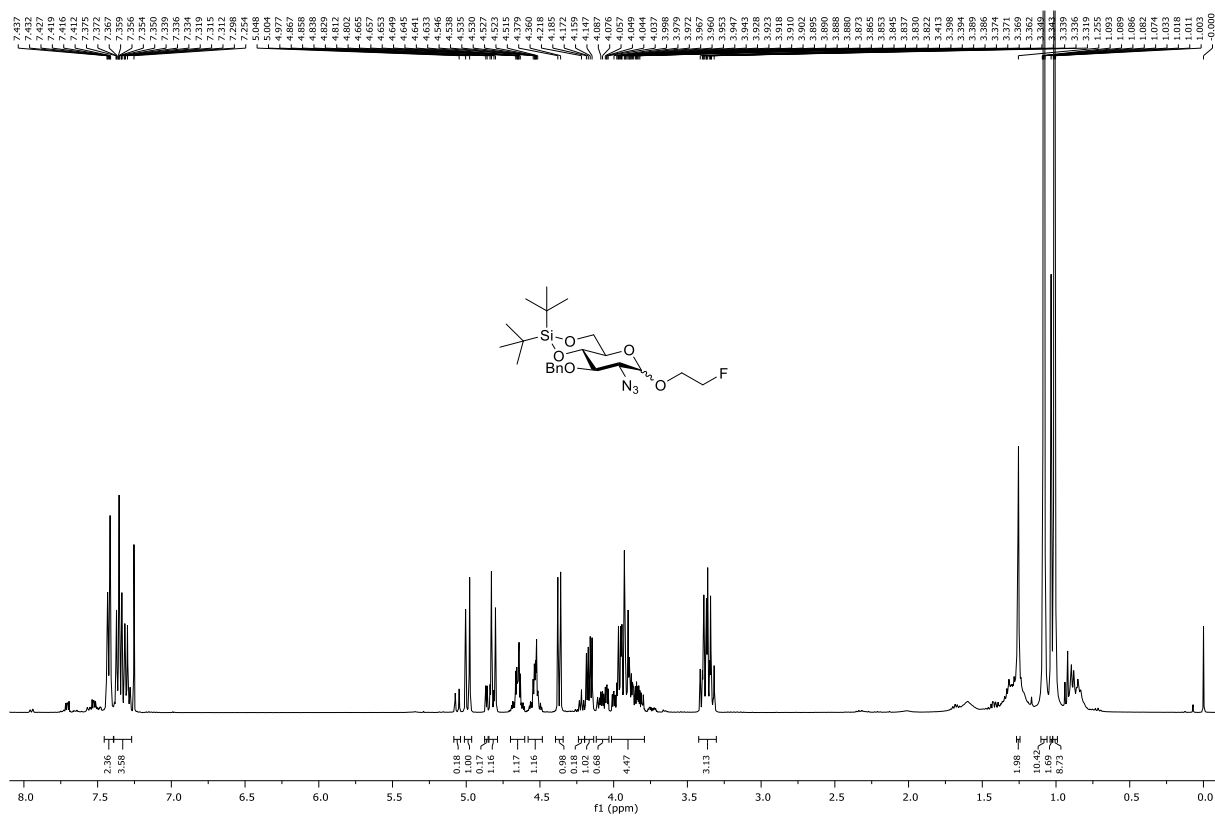


^1H - ^{13}C HMBC NMR

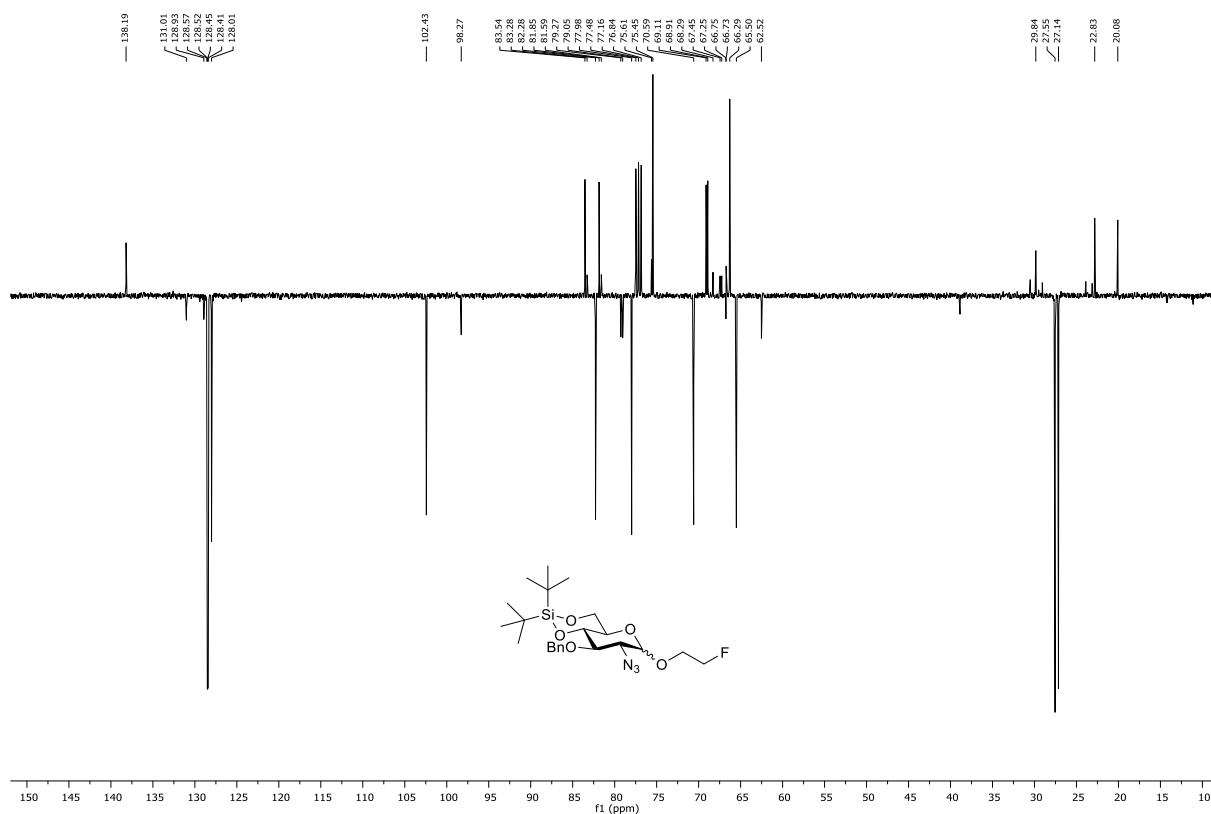


2-Fluoroethyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α/β -D-glucopyranoside (**2D**).

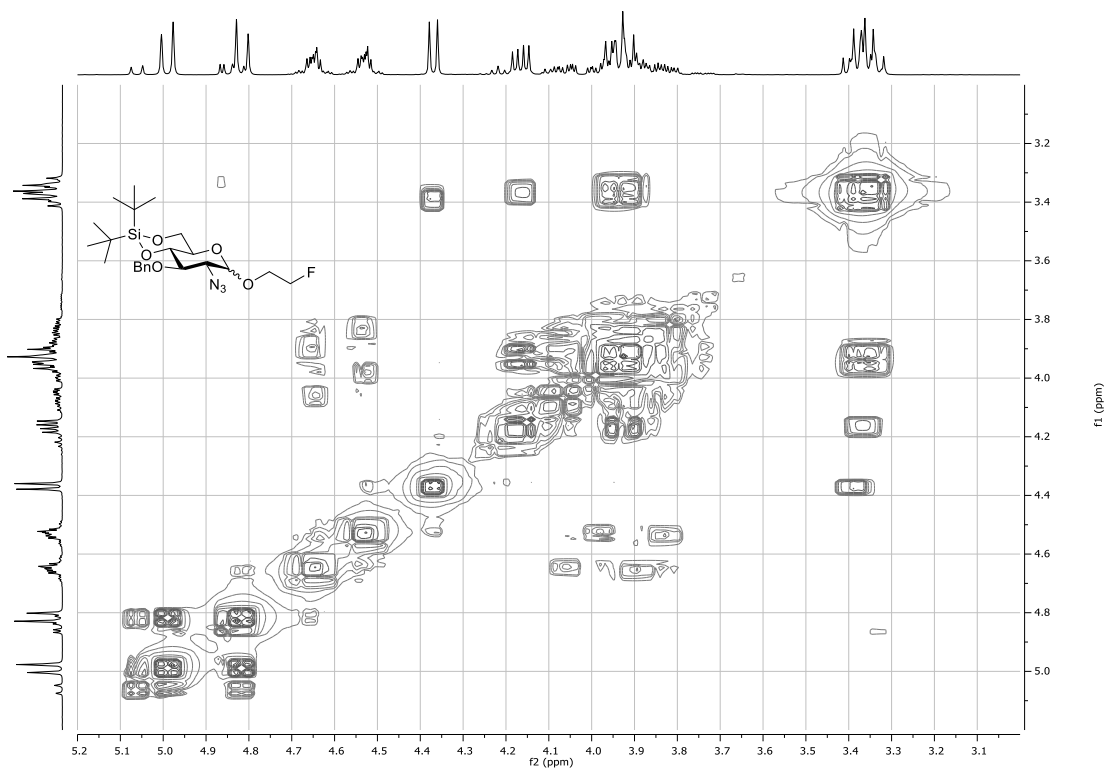
^1H NMR, 400 MHz, CDCl_3



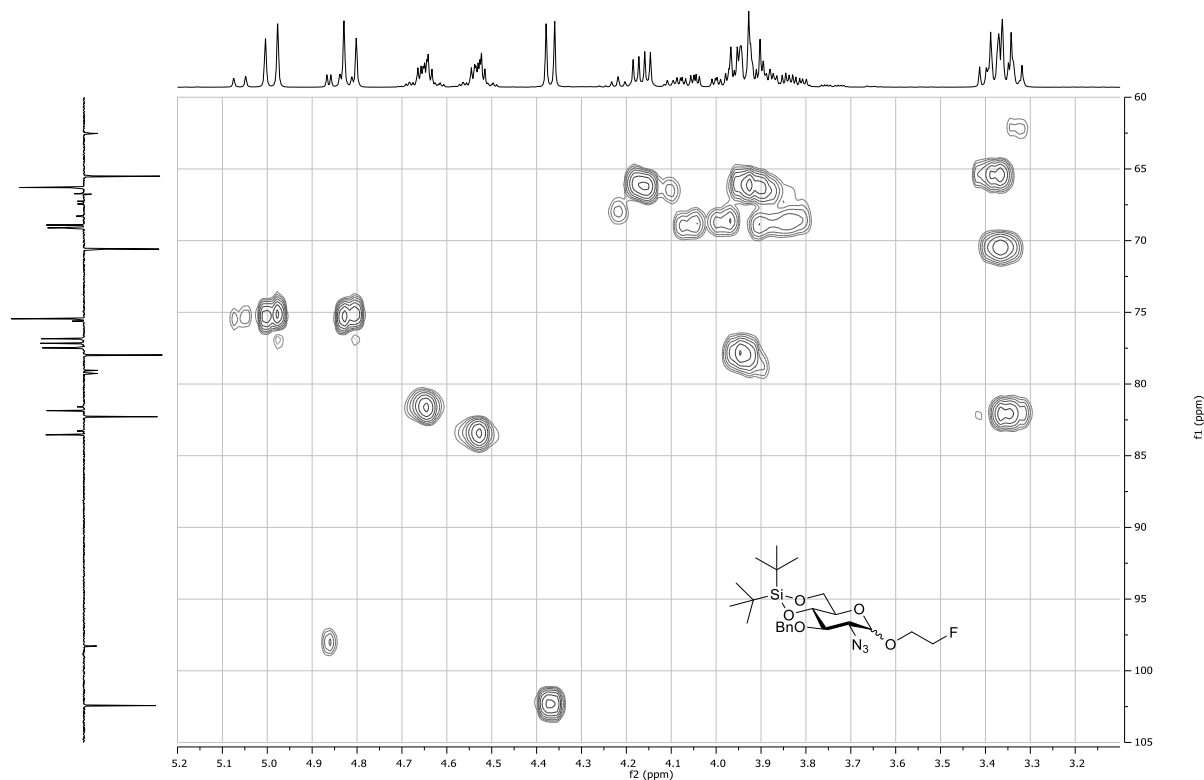
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR

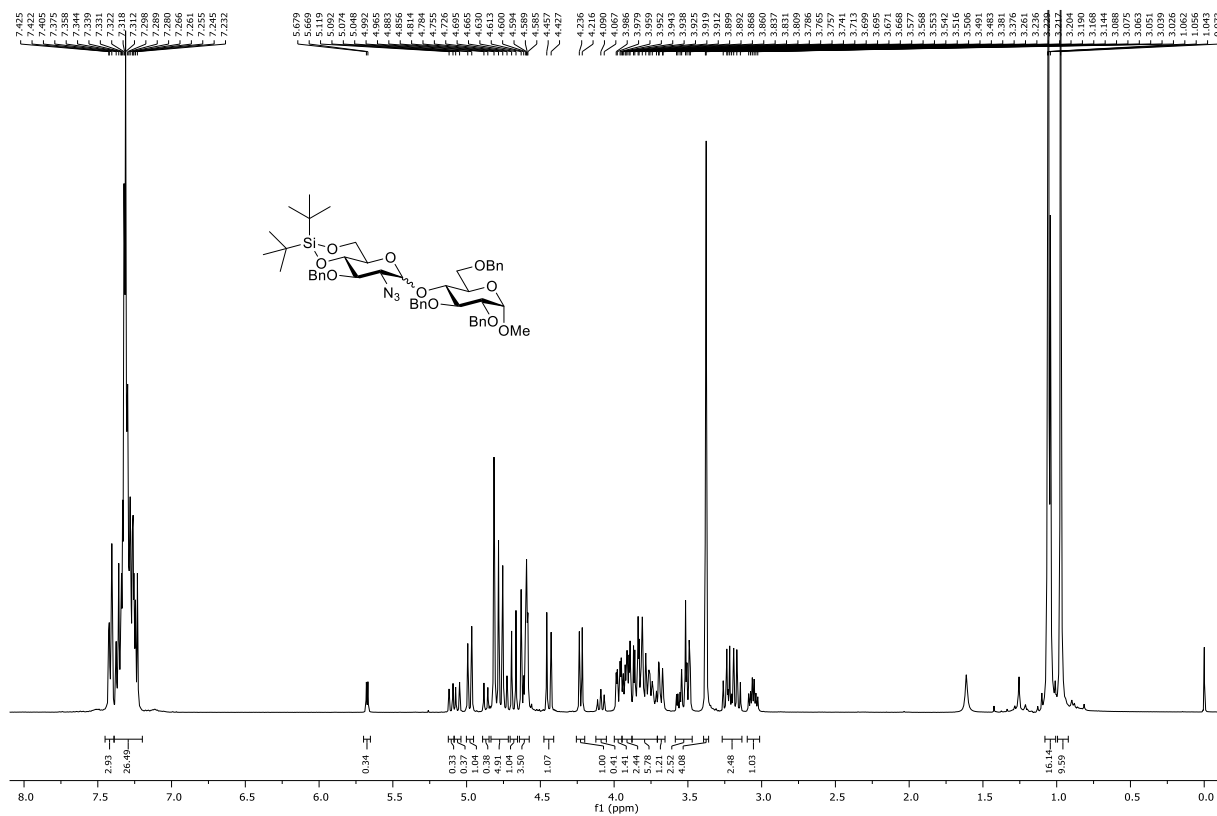


^1H - ^{13}C HSQC NMR

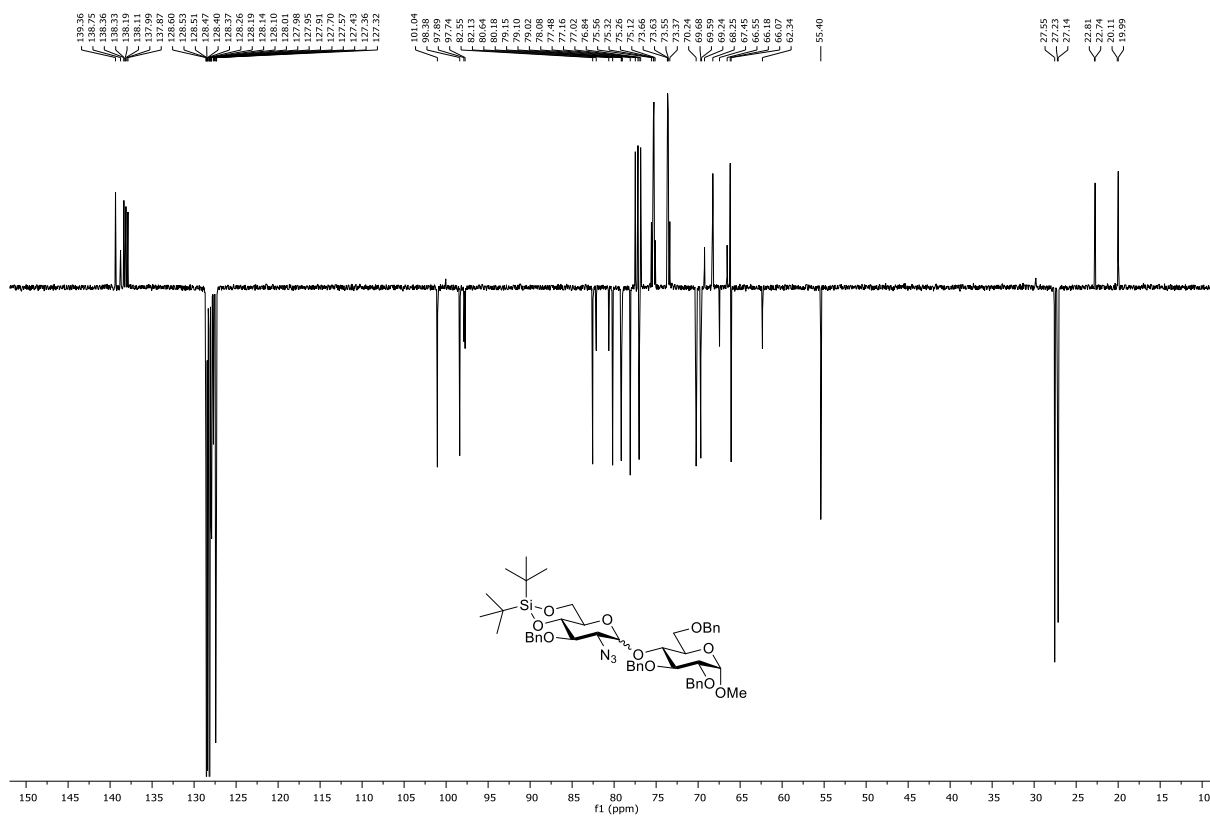


Methyl 4-O-(2-azido-3-O-benzyl-2-deoxy-4,6-O-di-*tert*-butylsilylidene- α / β -D-glucopyranosyl)-2,3,6-tri-O-benzyl- α -D-glucopyranoside (**2E**).

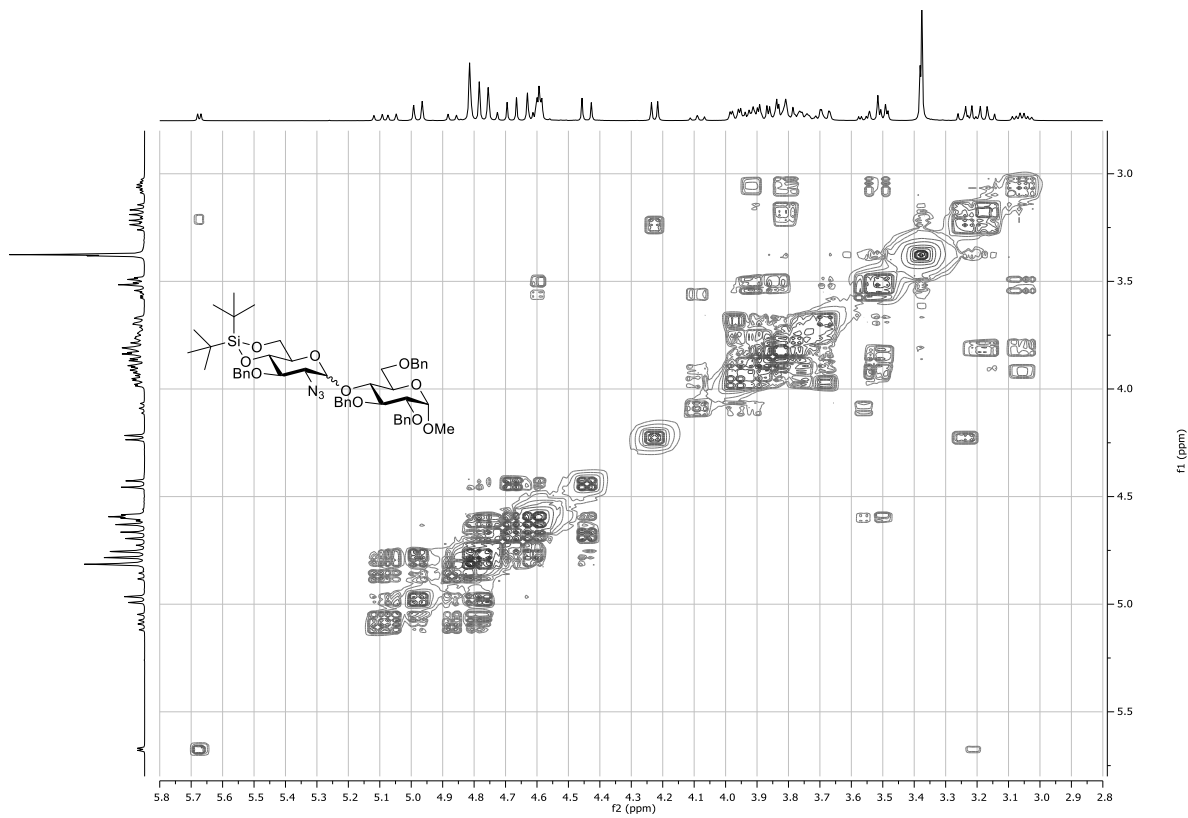
^1H NMR, 400 MHz, CDCl_3



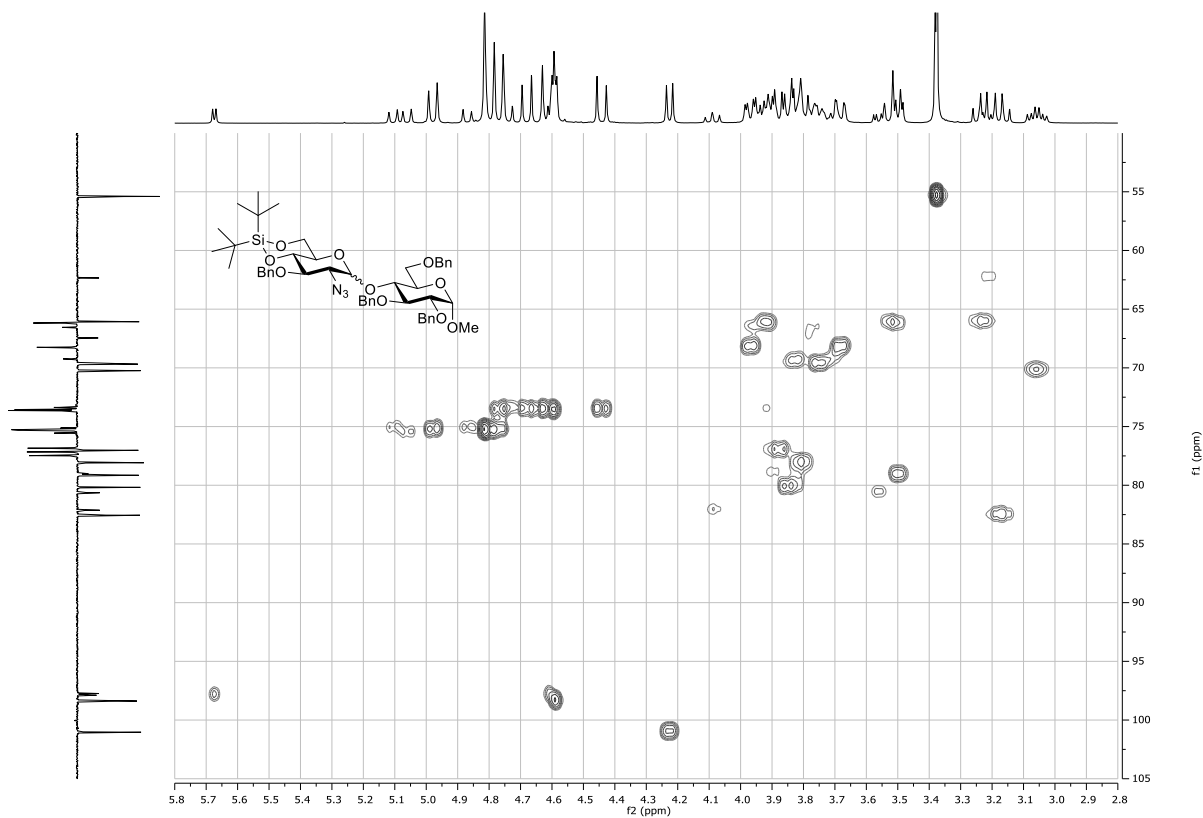
¹³C-APT NMR, 101 MHz, CDCl₃



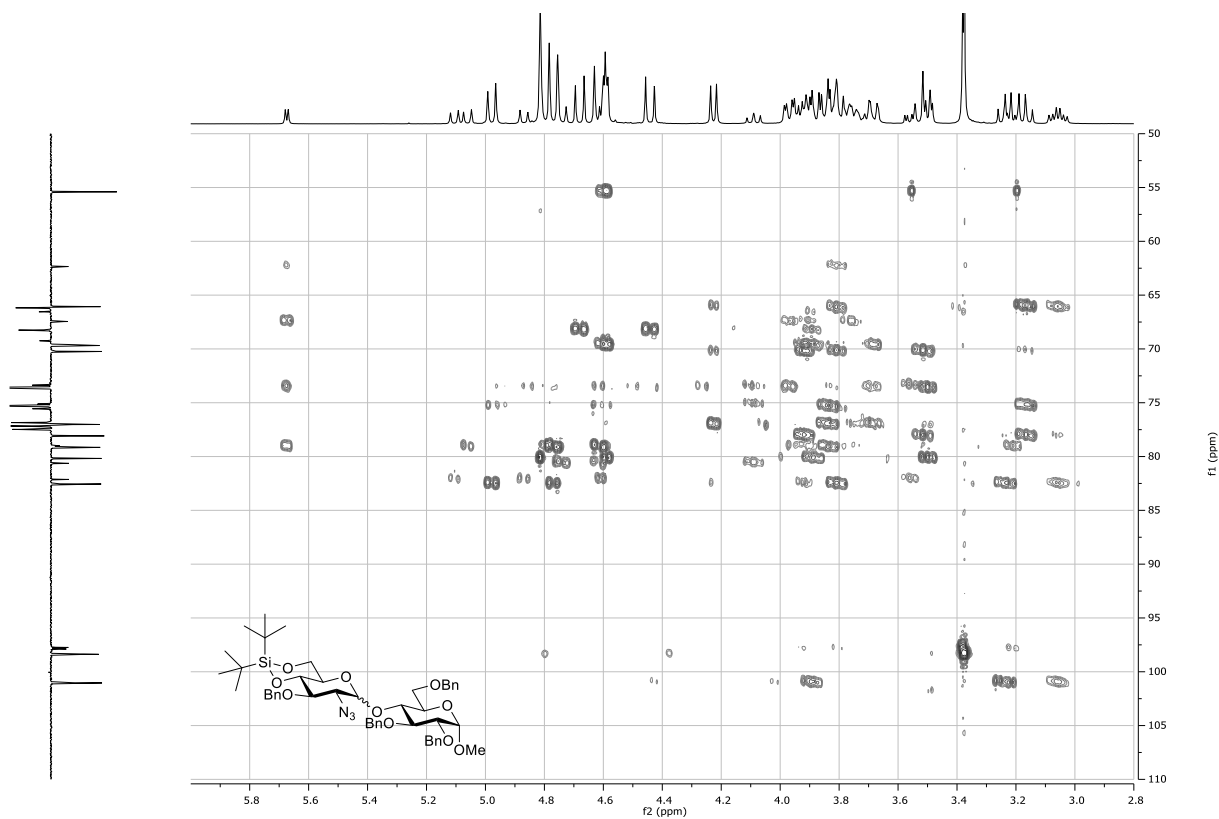
¹H-¹H COSY NMR



^1H - ^{13}C HSQC NMR

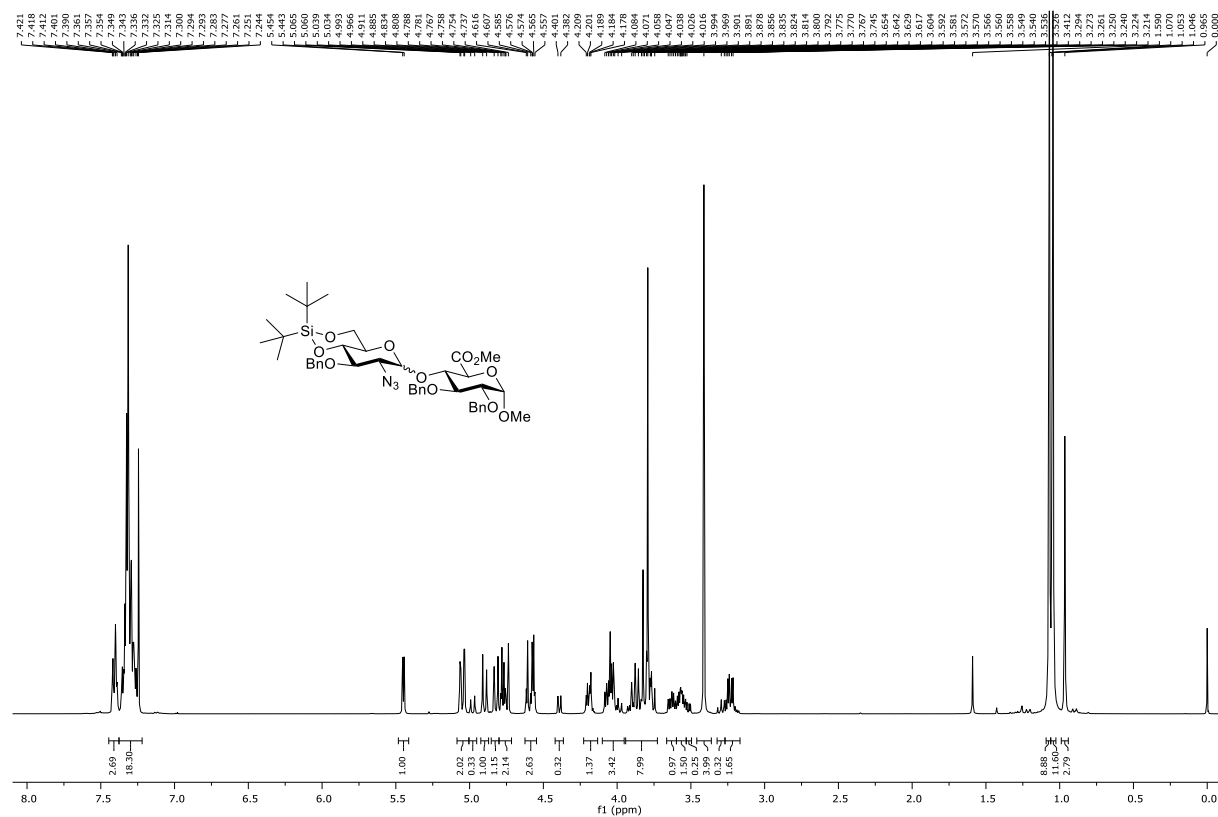


^1H - ^{13}C HMBC NMR

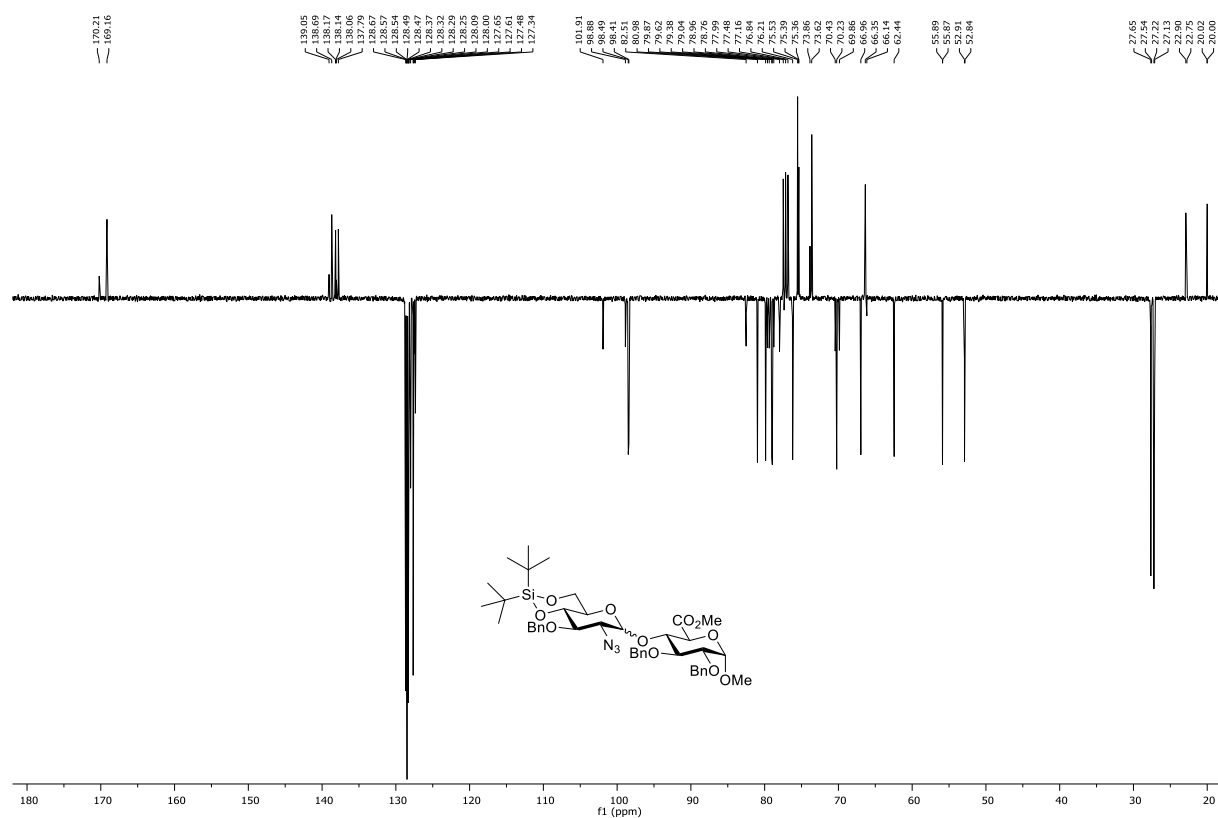


Methyl (methyl 4-*O*-[2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α / β -D-glucopyranosyl]-2,3-di-*O*-benzyl- α -D-glucopyranosyl uronate) (2F).

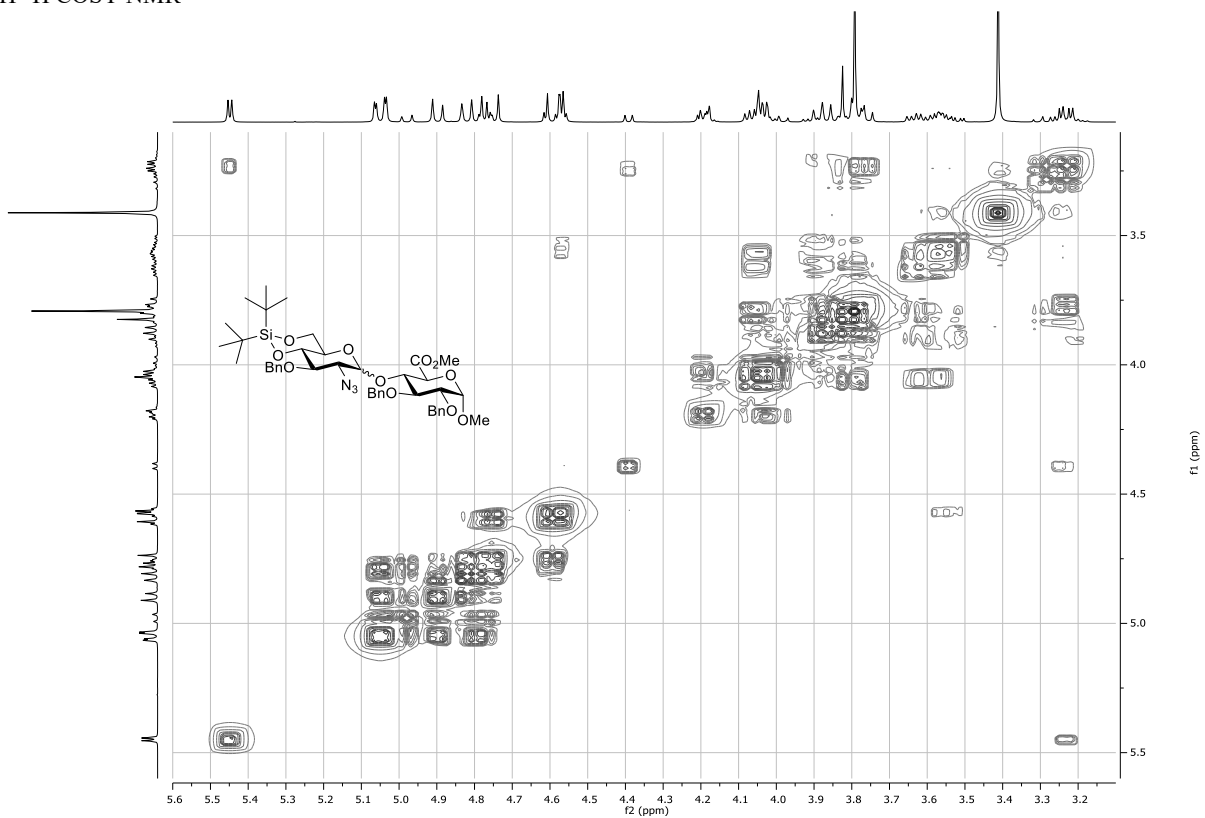
^1H NMR, 400 MHz, CDCl_3



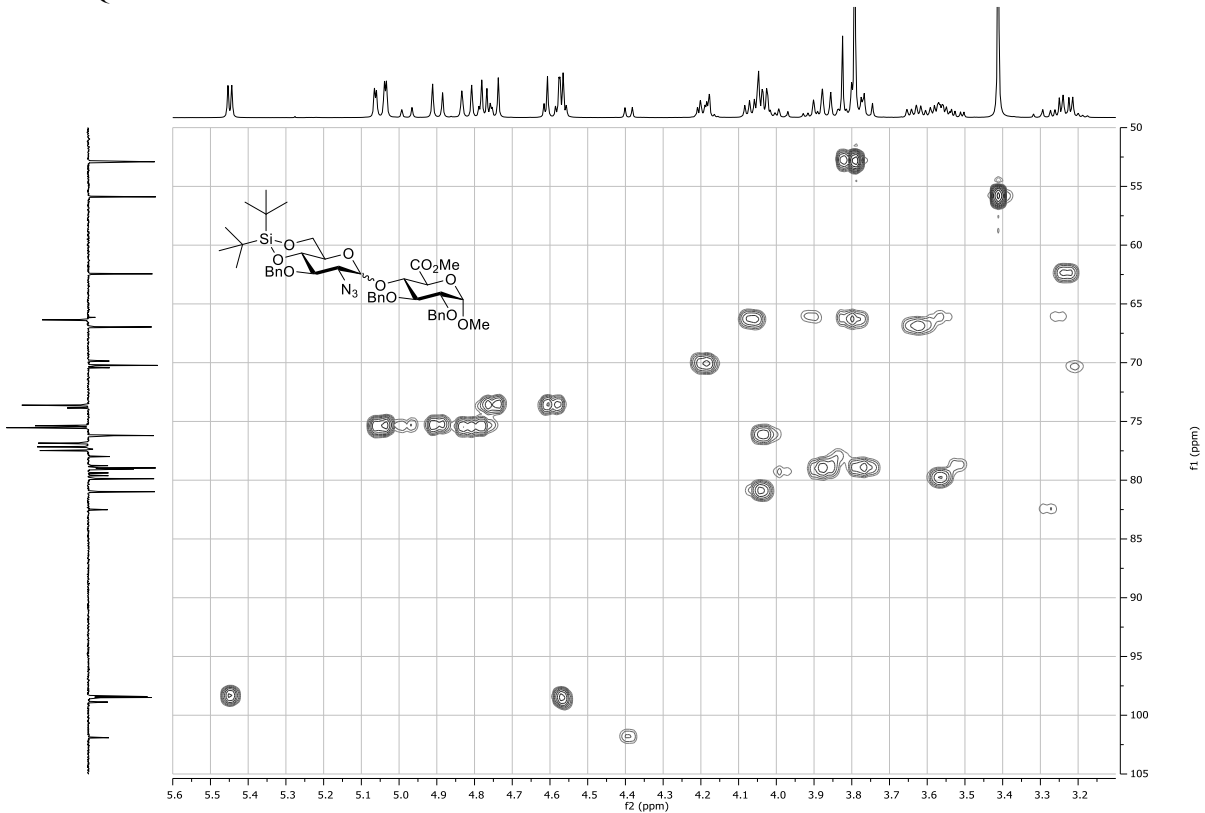
^{13}C -APT NMR, 101 MHz, CDCl_3



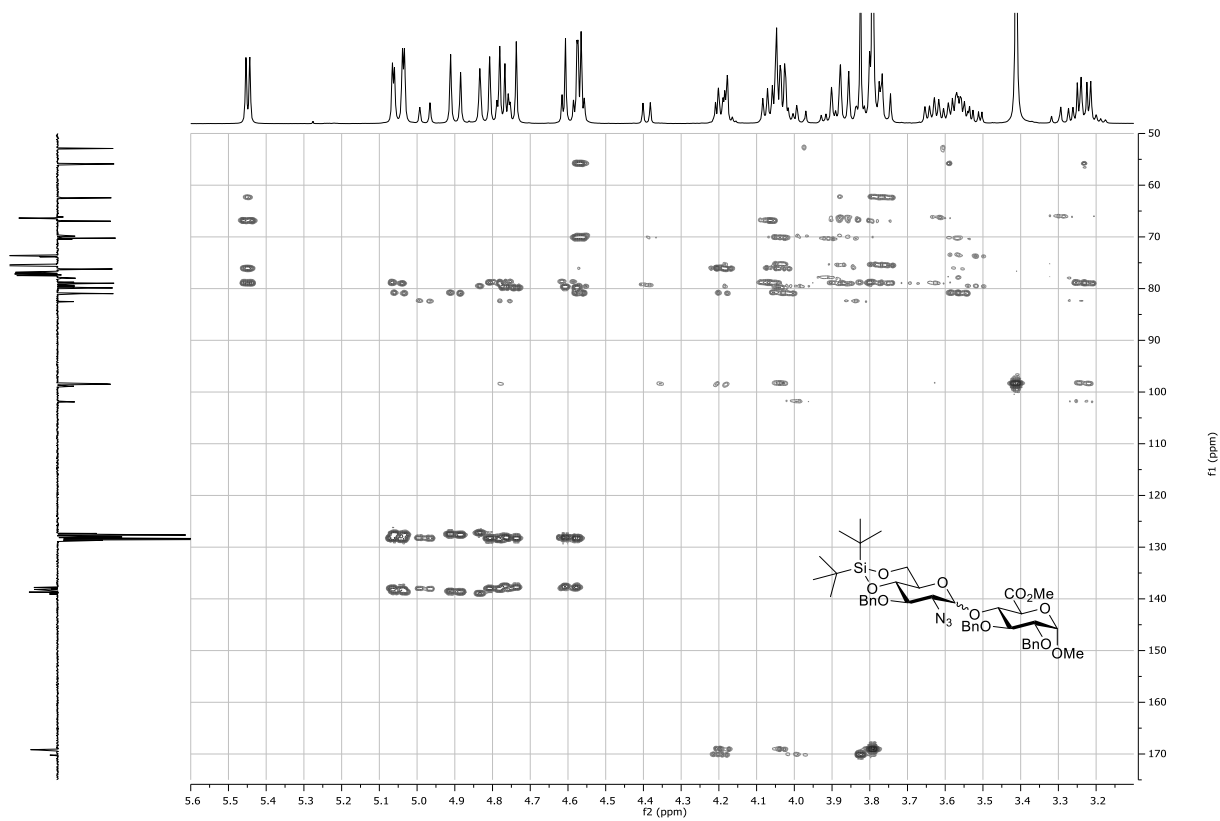
¹H-¹H COSY NMR



¹H-¹³C HSQC NMR

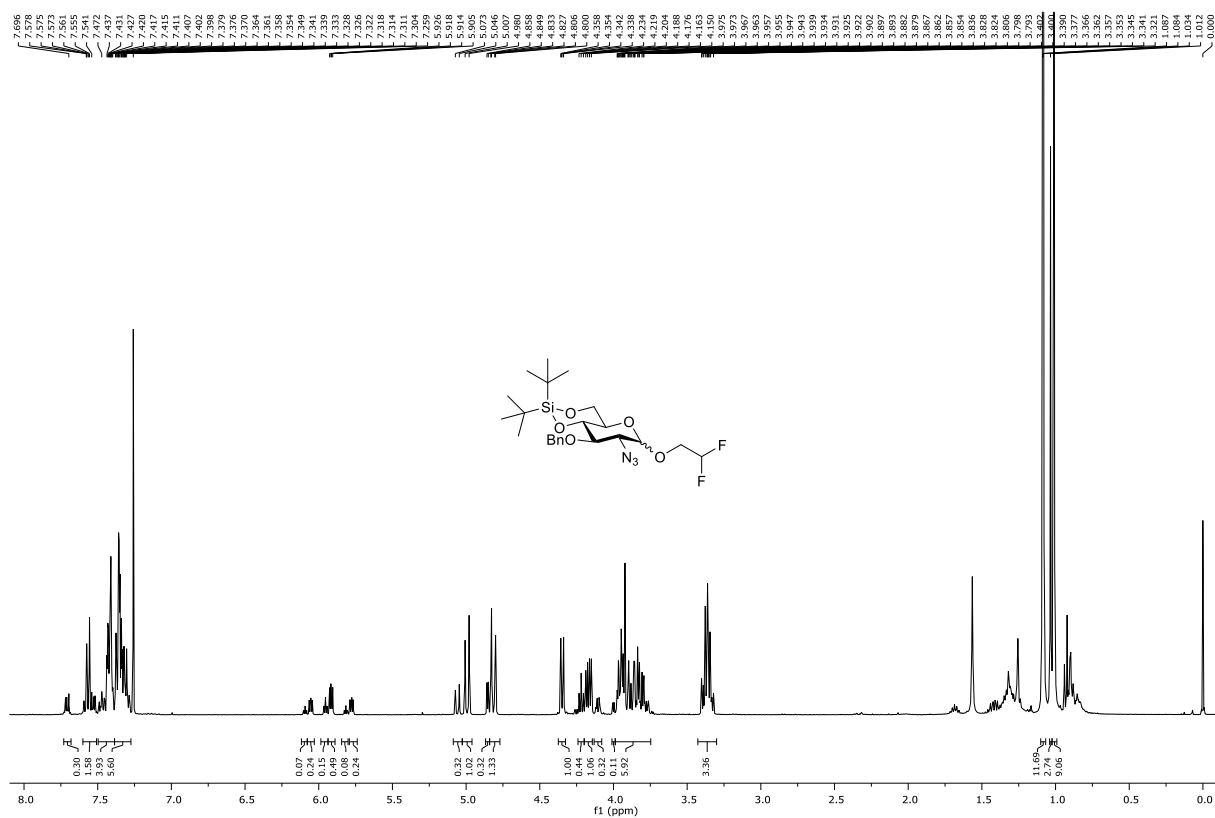


^1H - ^{13}C HMBC NMR

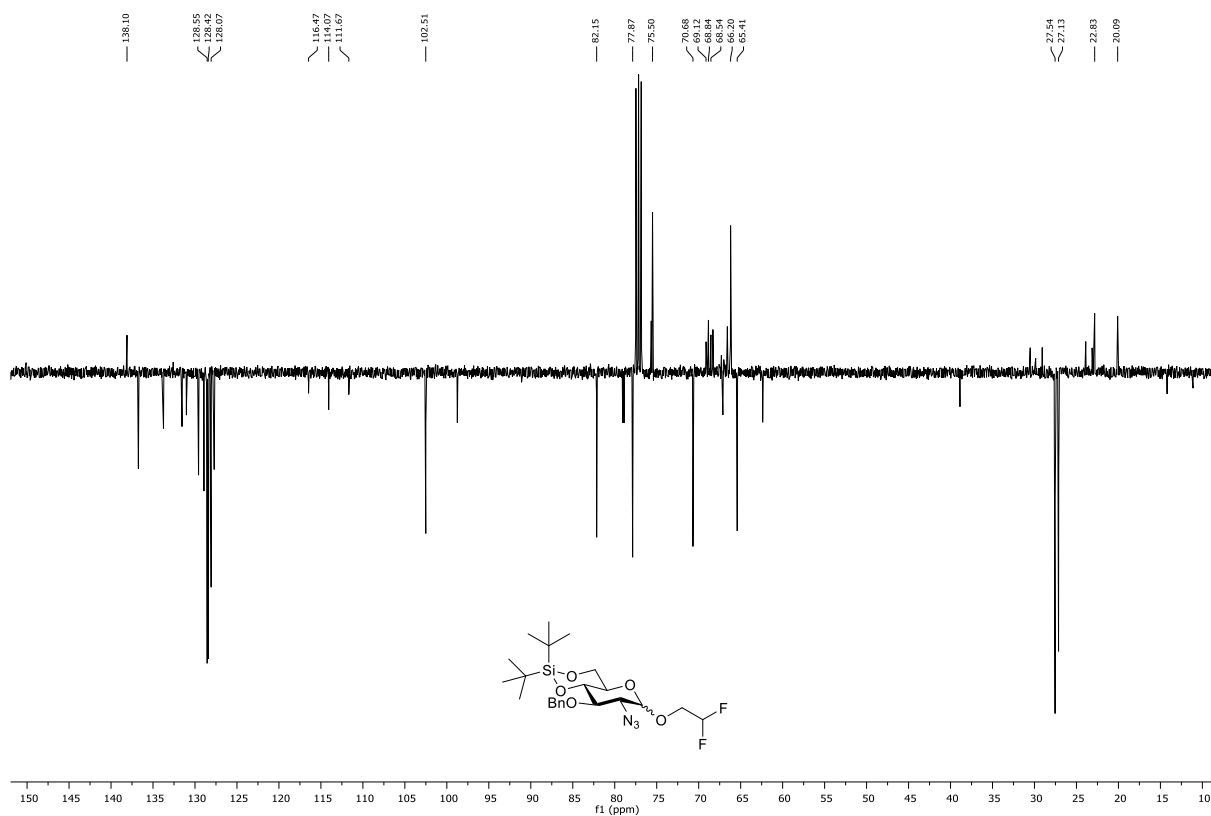


2,2-Difluoroethyl 2-azido-3-O-benzyl-2-deoxy-4,6-O-di-*tert*-butylsilylidene- α/β -D-glucopyranoside (**2G**).

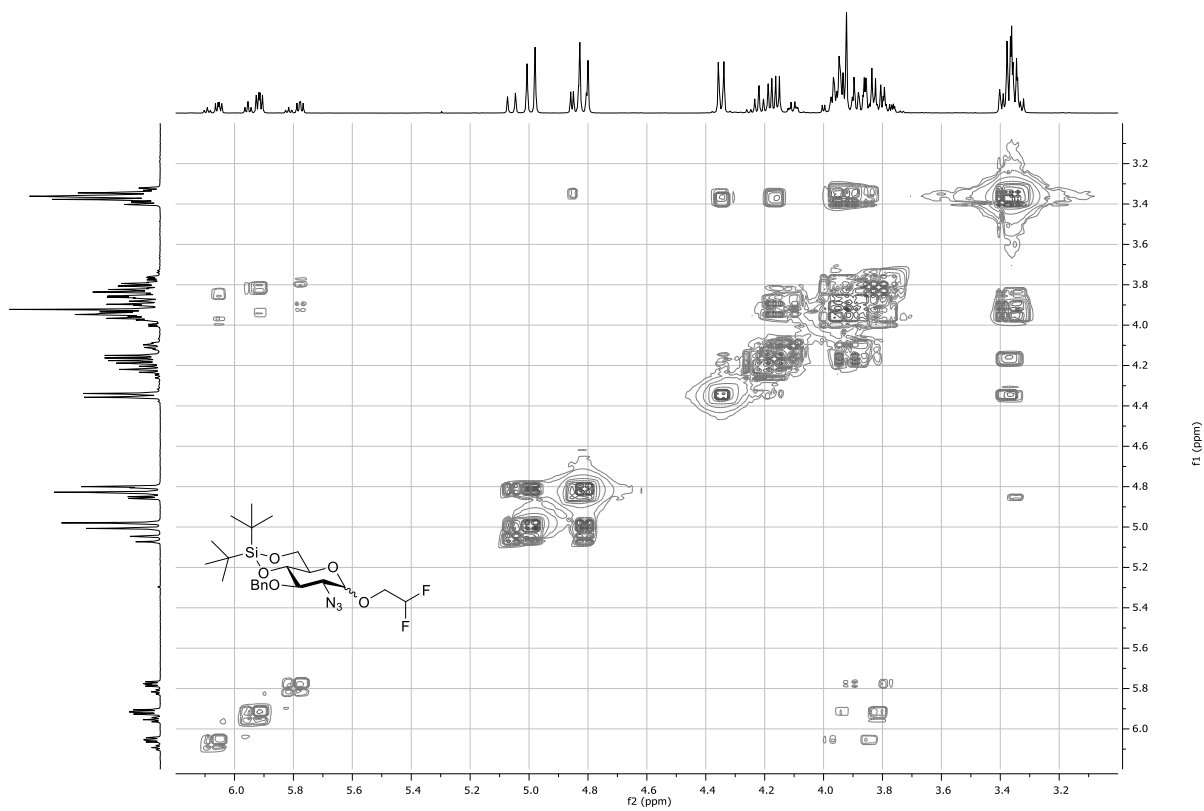
^1H NMR, 400 MHz, CDCl_3



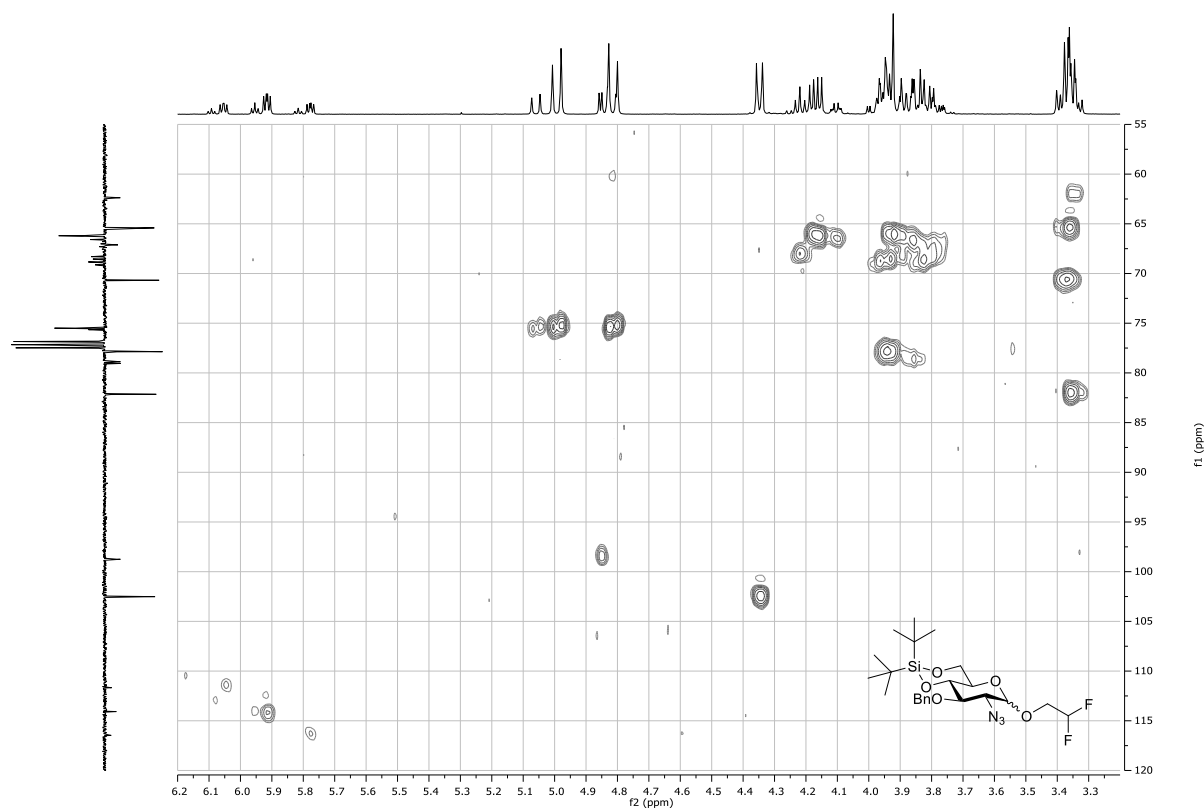
^{13}C -APT NMR, 101 MHz, CDCl_3



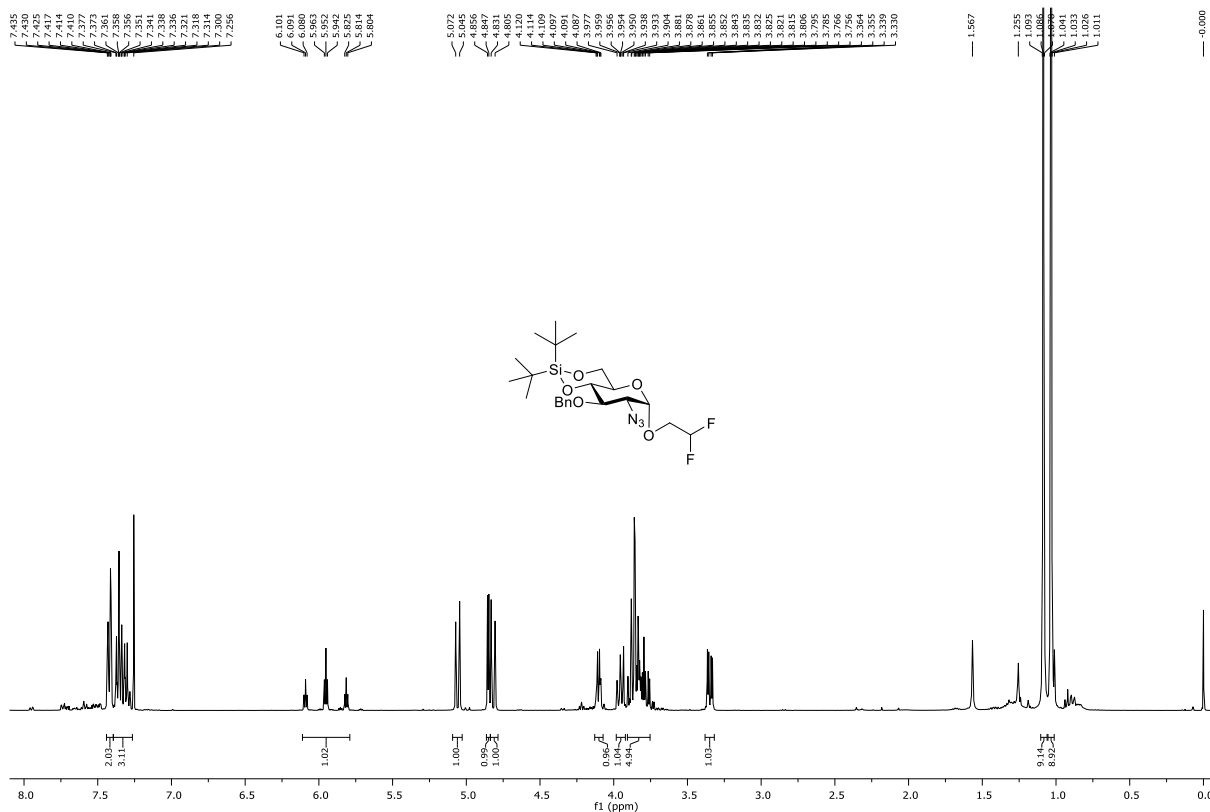
^1H - ^1H COSY NMR



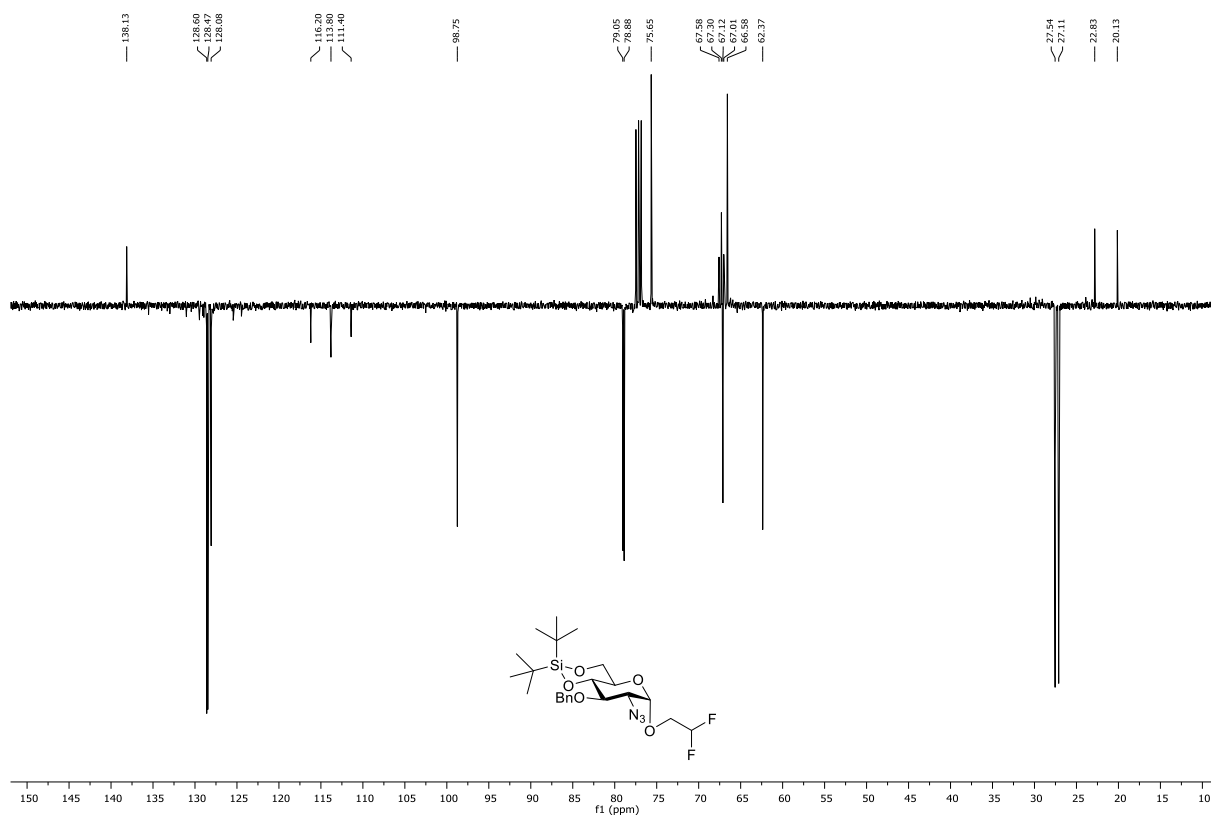
^1H - ^{13}C HSQC NMR



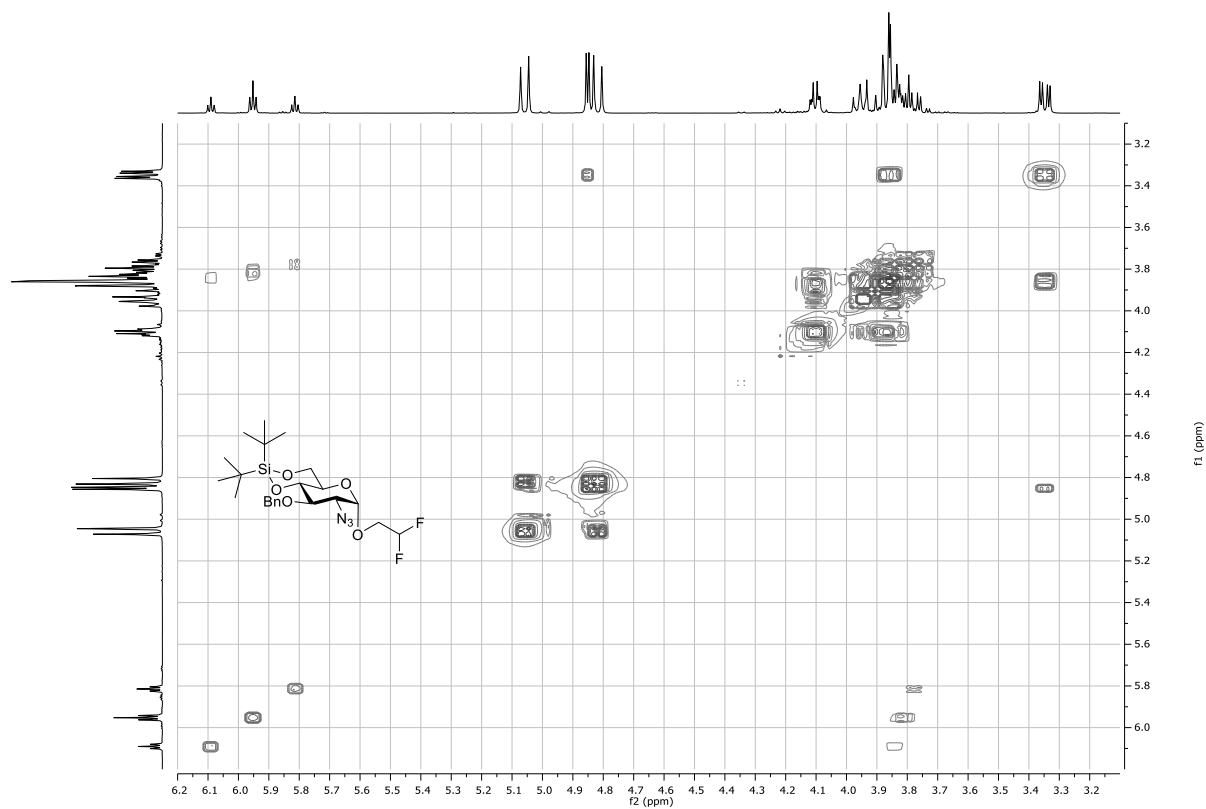
^1H NMR, 400 MHz, CDCl_3



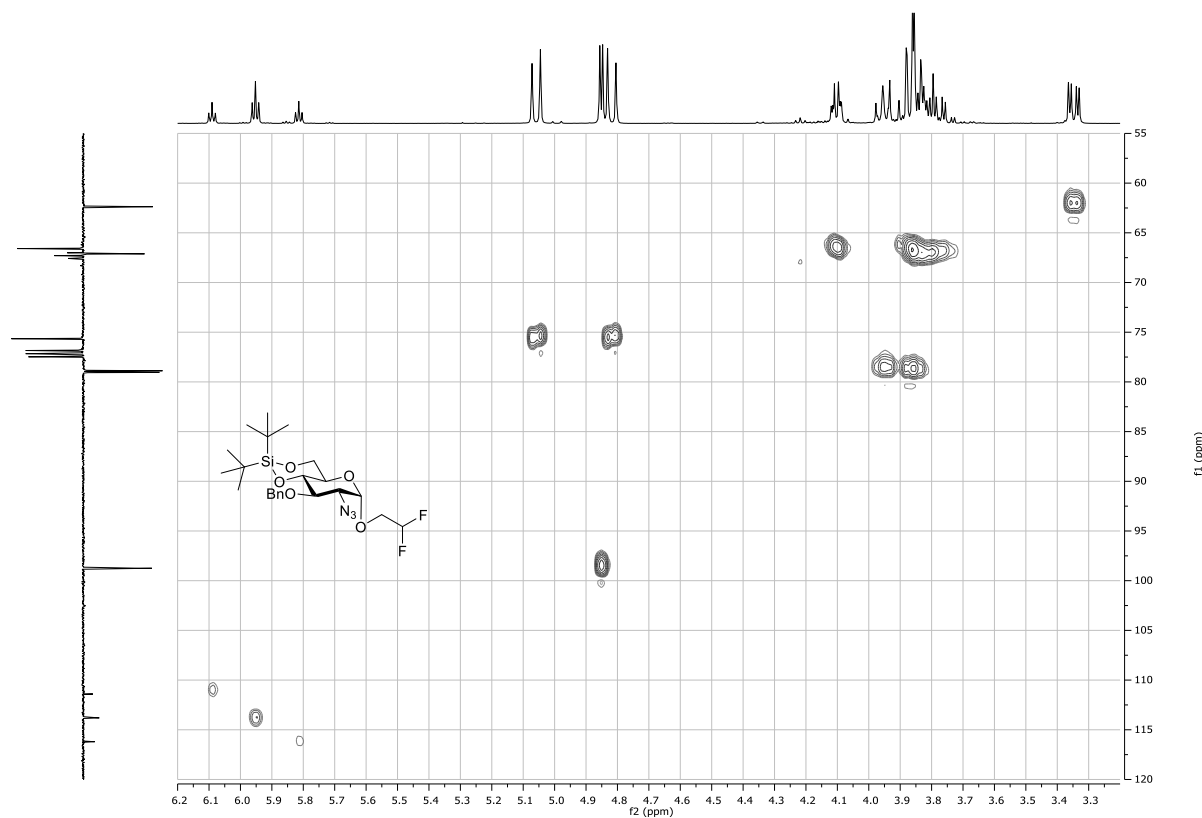
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR

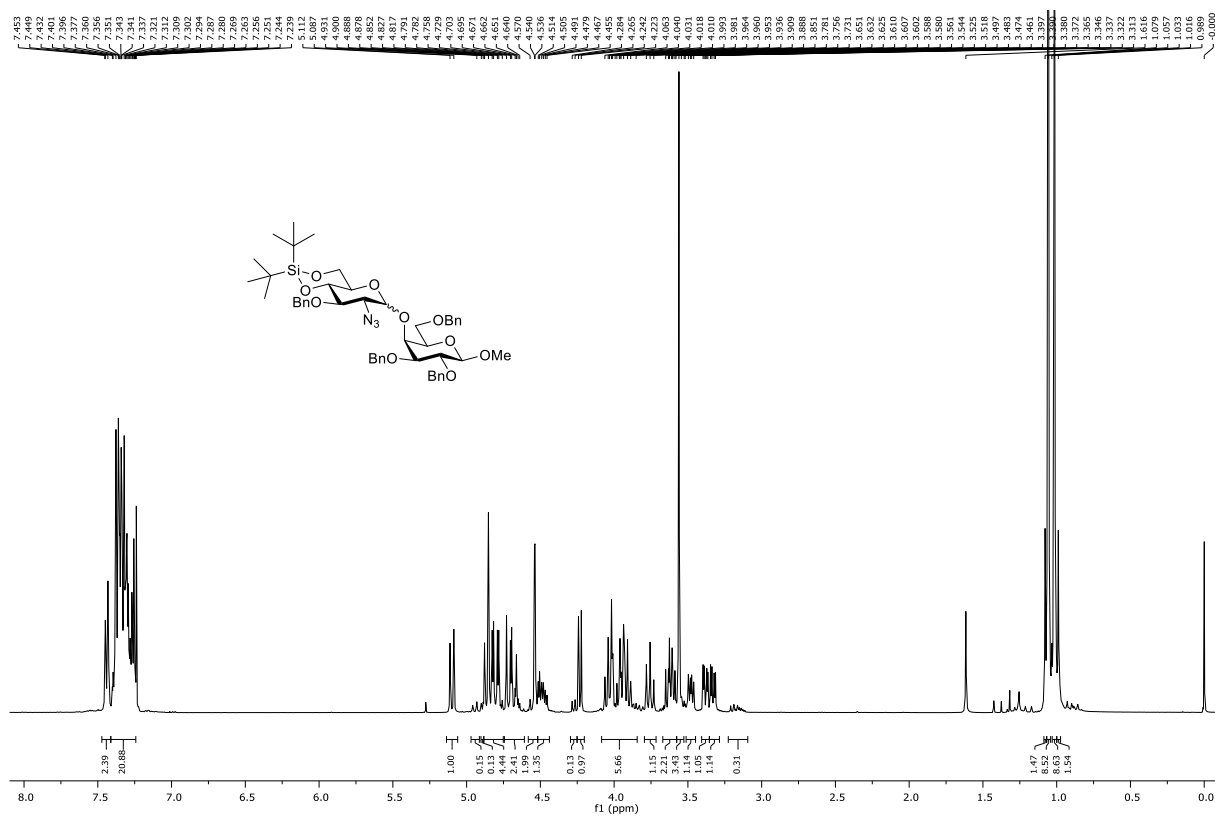


^1H - ^{13}C HSQC NMR

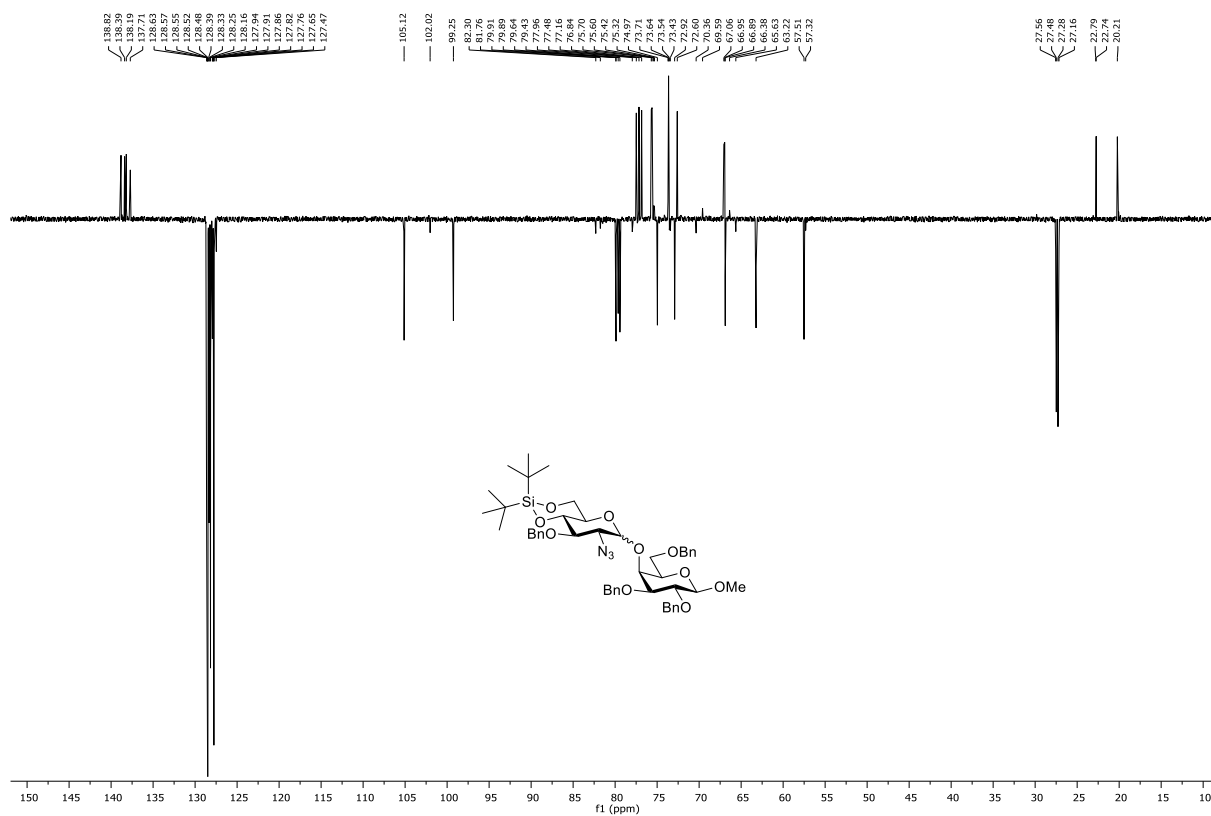


Methyl 4-*O*-(2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α -D-glucopyranosyl)-2,3,6-tri-*O*-benzyl- β -D-galactopyranoside (**2H**).

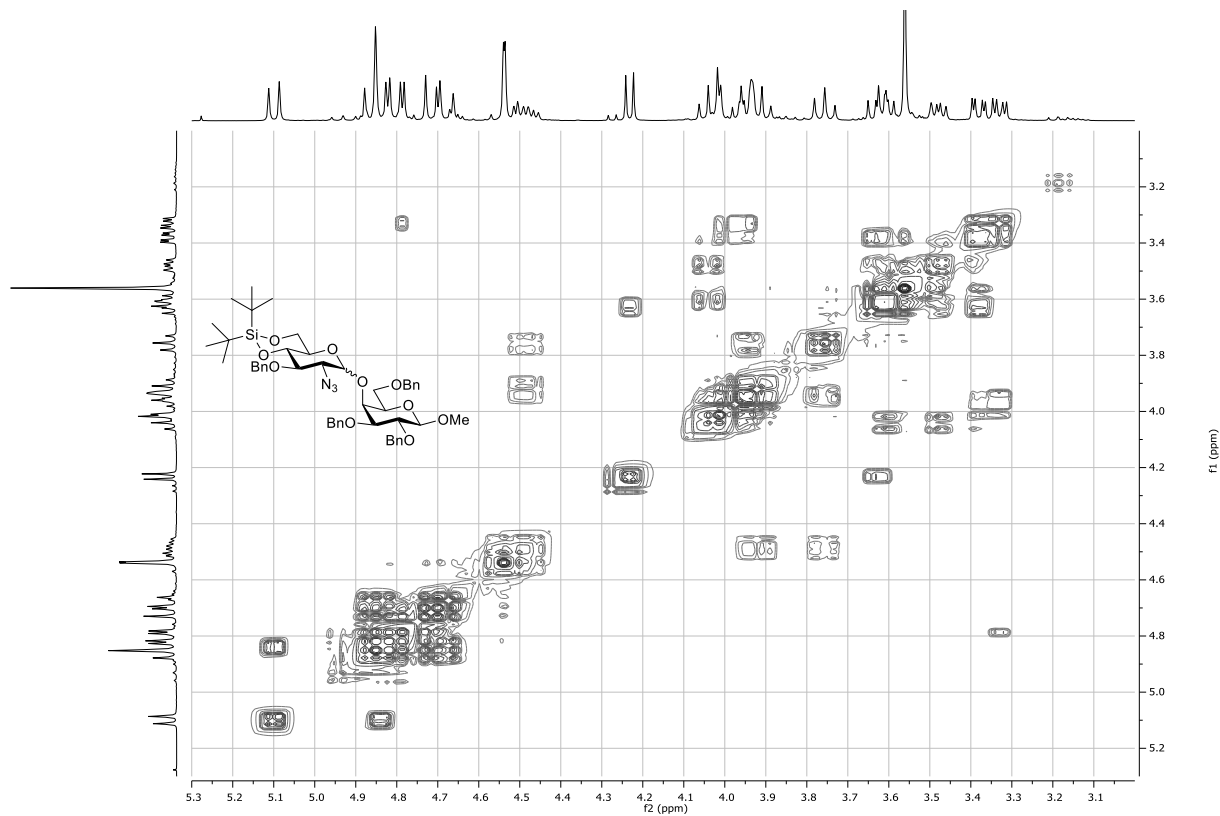
^1H NMR, 400 MHz, CDCl_3



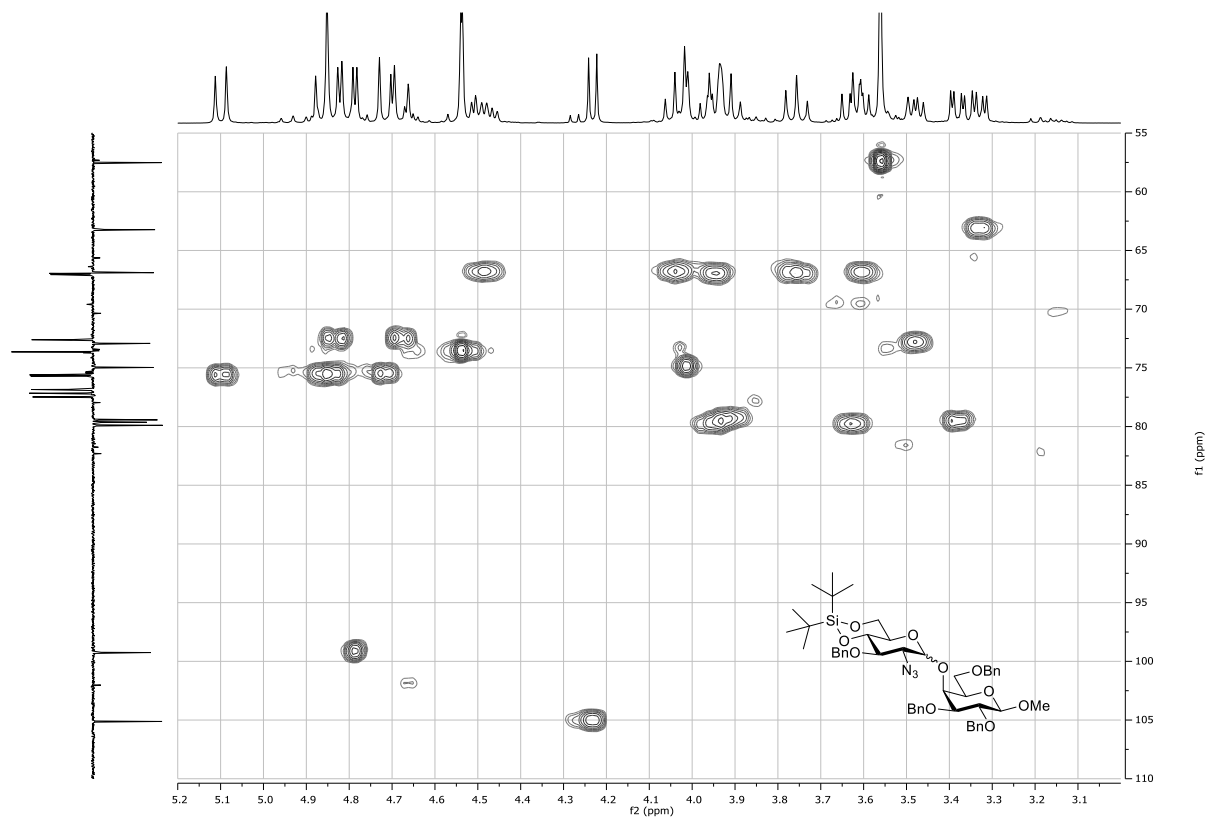
^{13}C -APT NMR, 101 MHz, CDCl_3



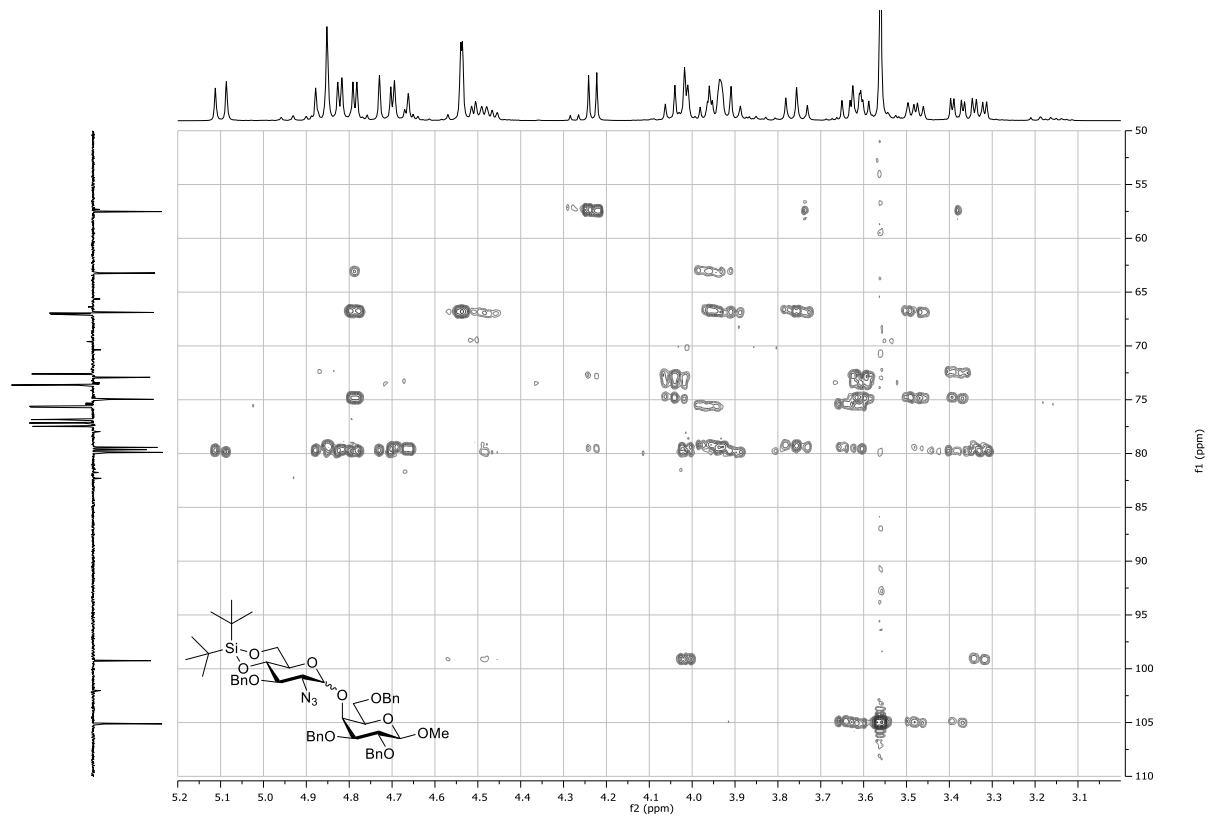
^1H - ^1H COSY NMR



^1H - ^{13}C HSQC NMR

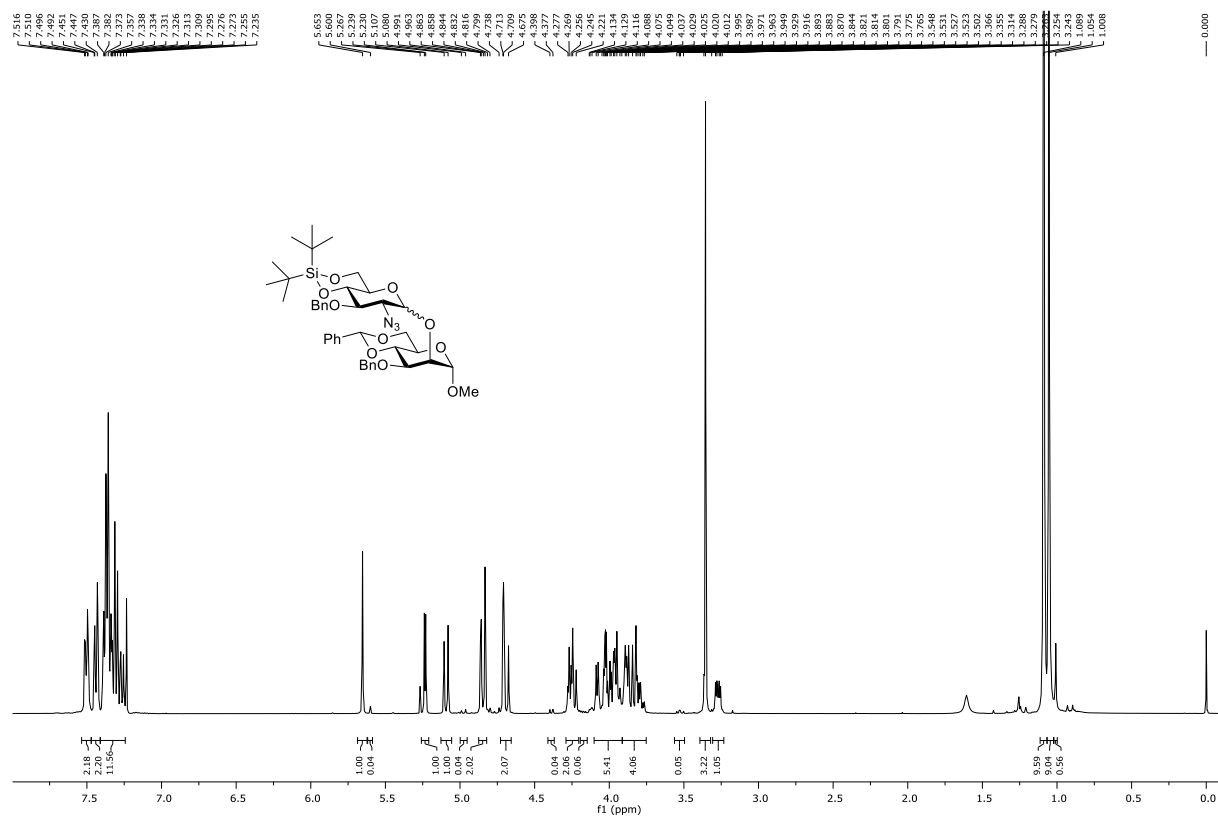


^1H - ^{13}C HMBC NMR

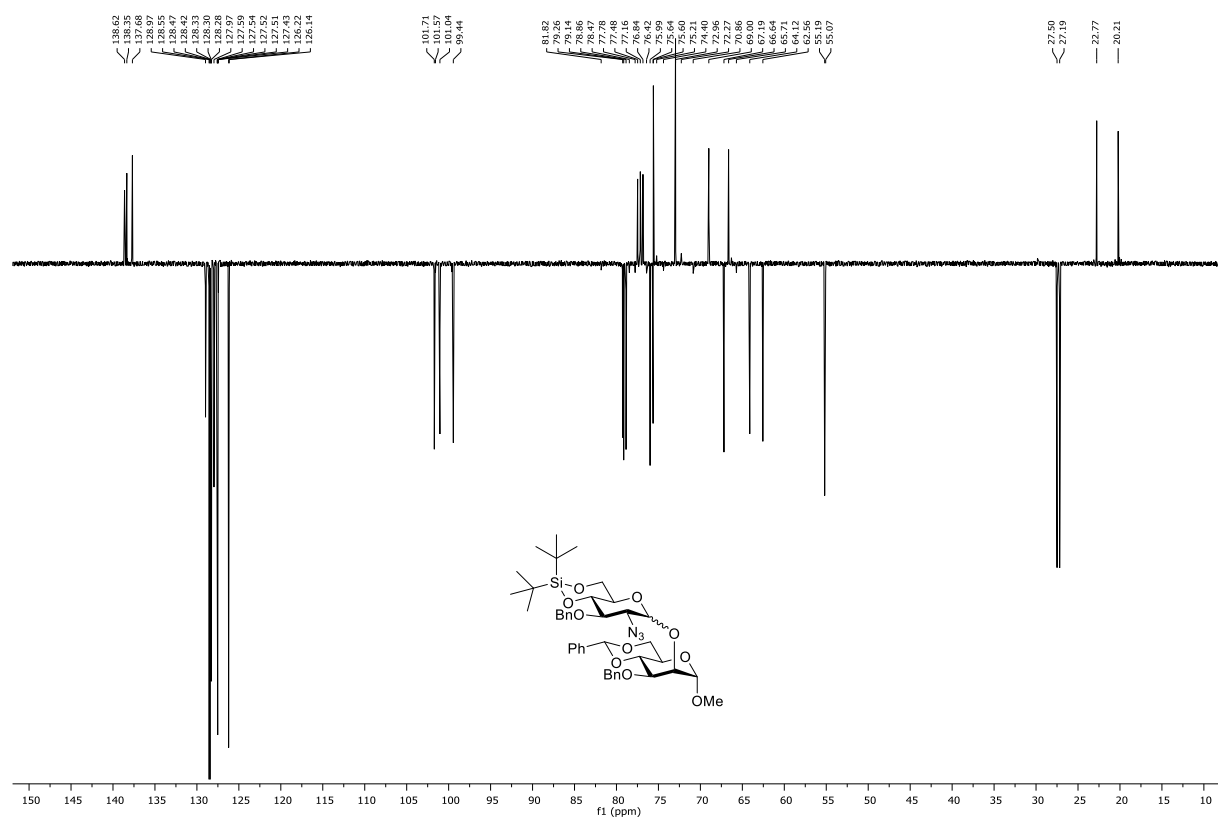


Methyl 2-*O*-(2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α -D-glucopyranosyl)-3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside (**21**).

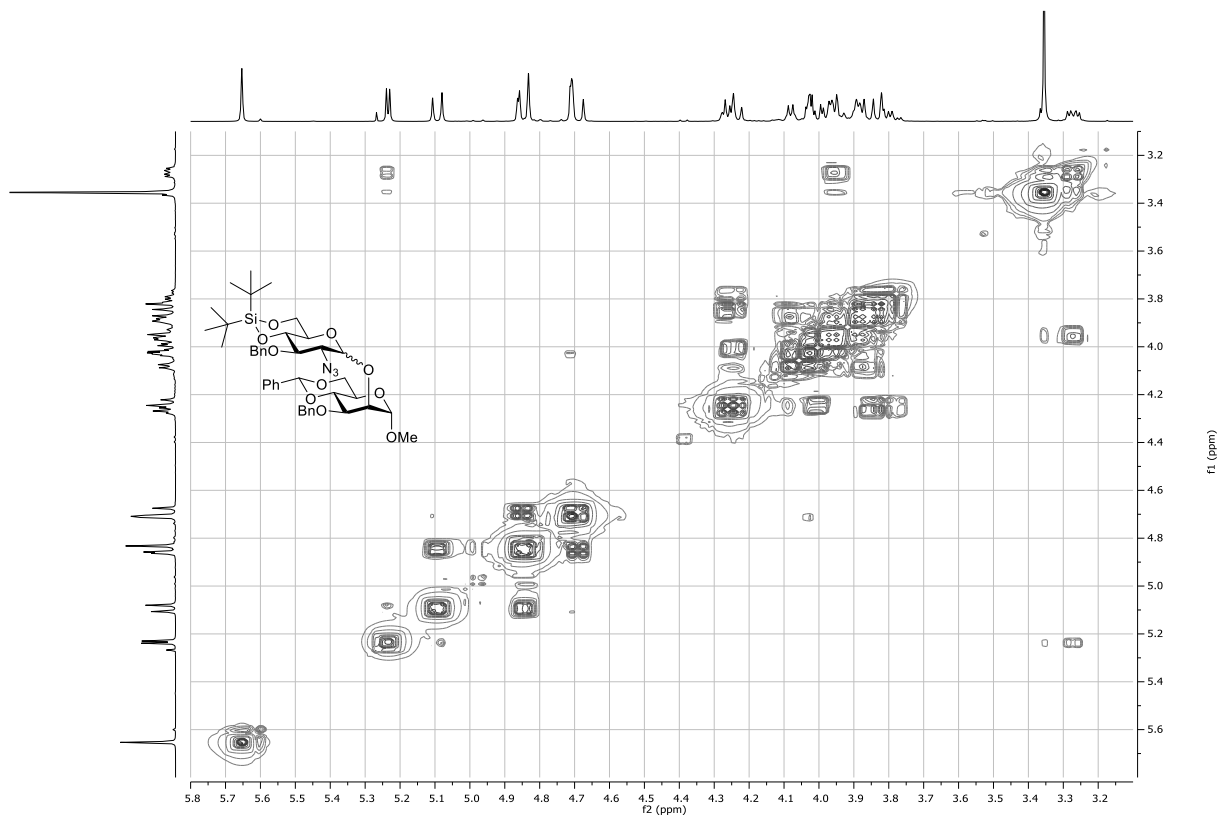
^1H NMR, 400 MHz, CDCl_3



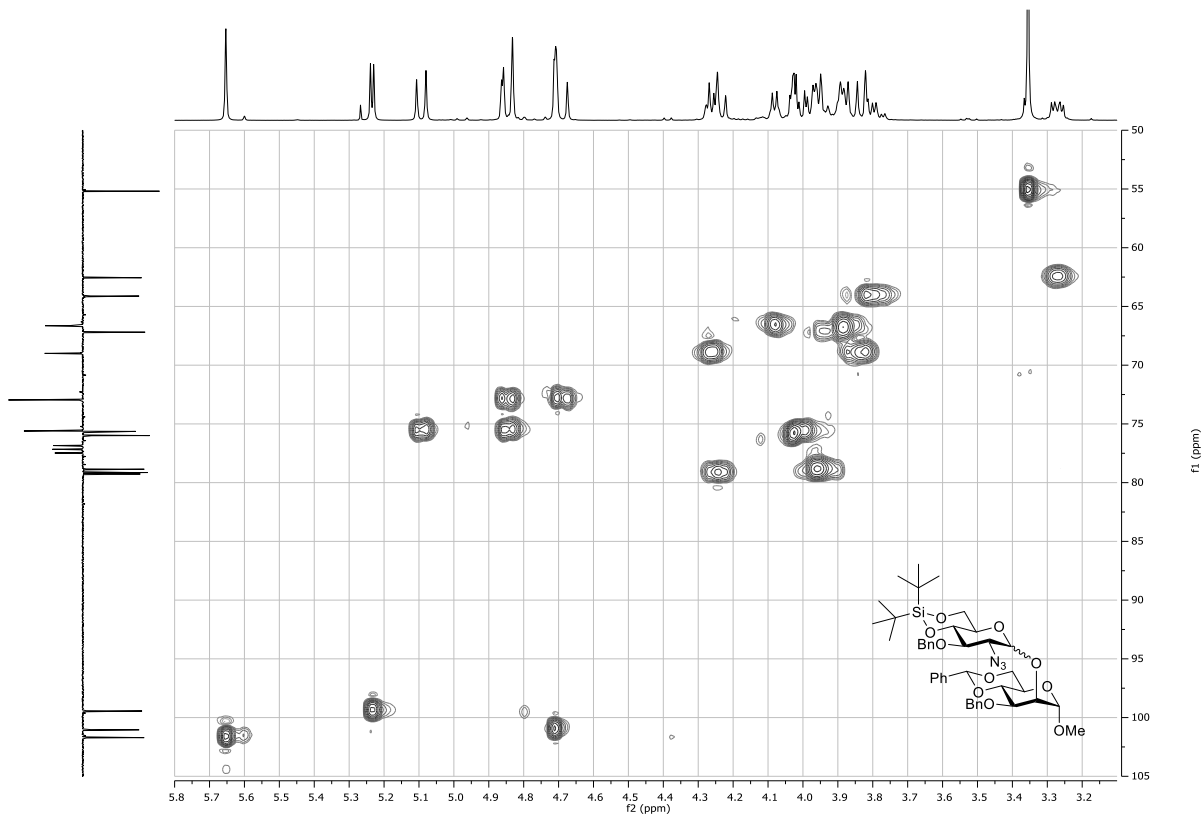
^{13}C -APT NMR, 101 MHz, CDCl_3



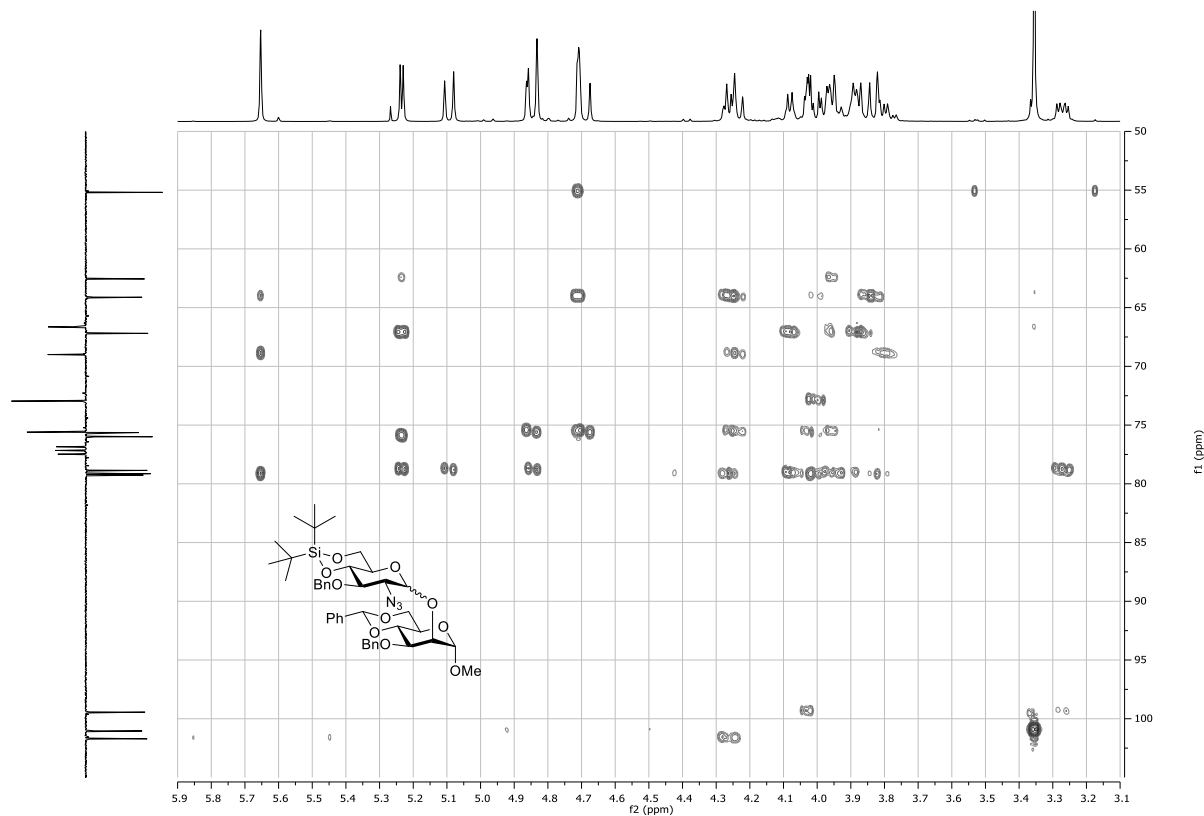
^1H - ^1H COSY NMR



^1H - ^{13}C HSQC NMR

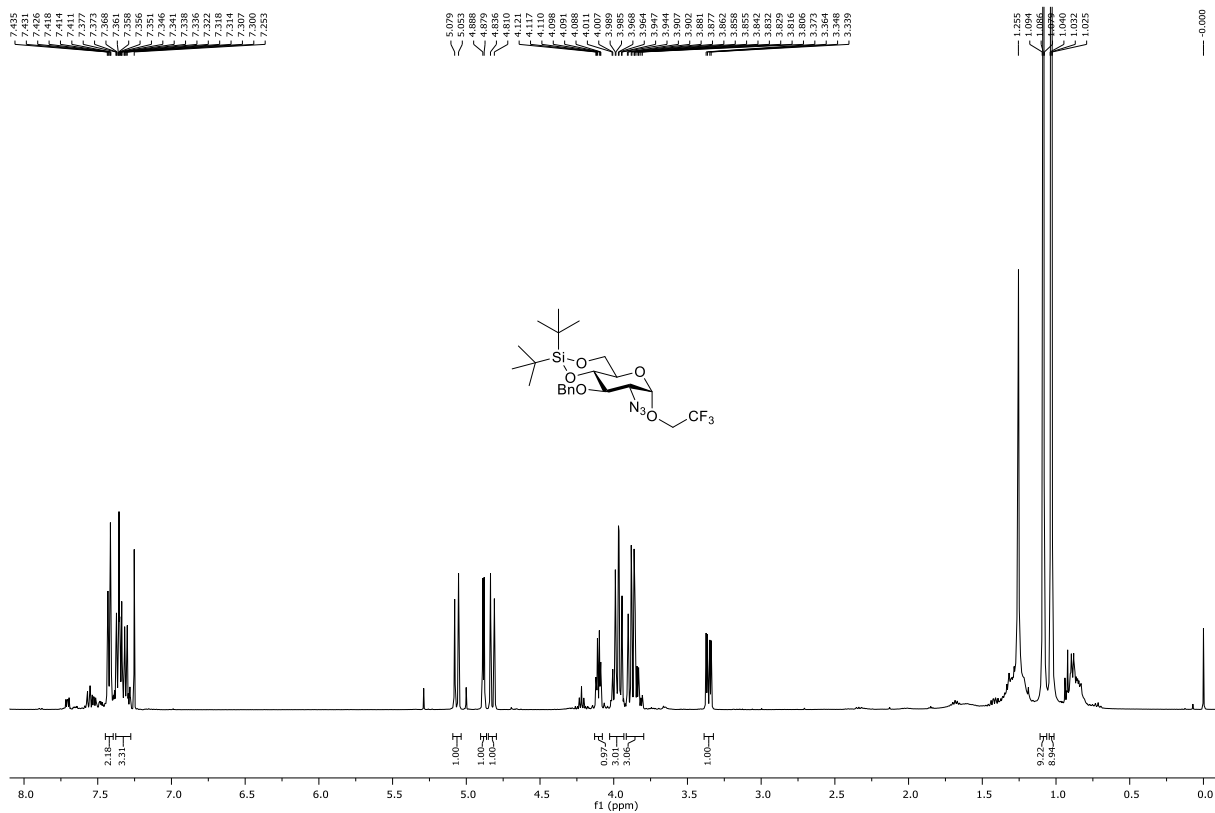


^1H - ^{13}C HMBC NMR

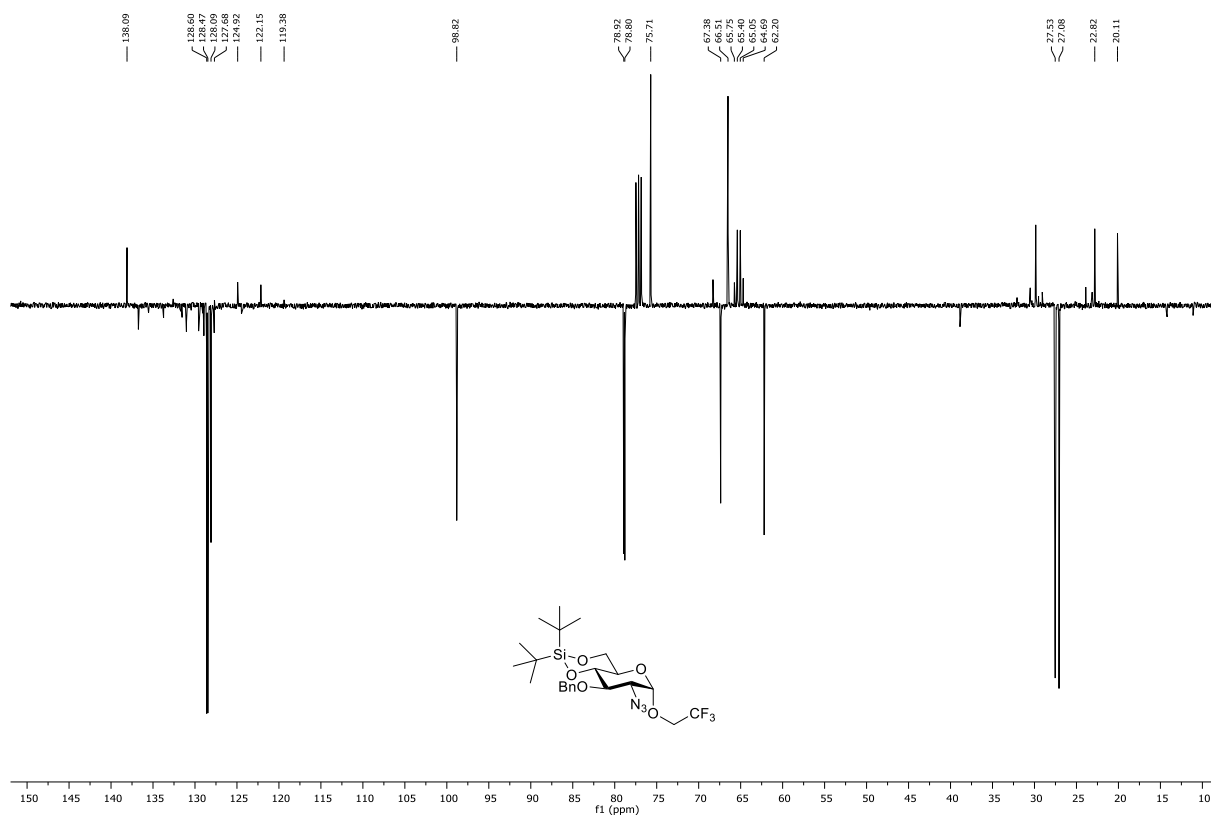


2,2,2-Trifluoroethyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α -D-glucopyranoside (**2J**).

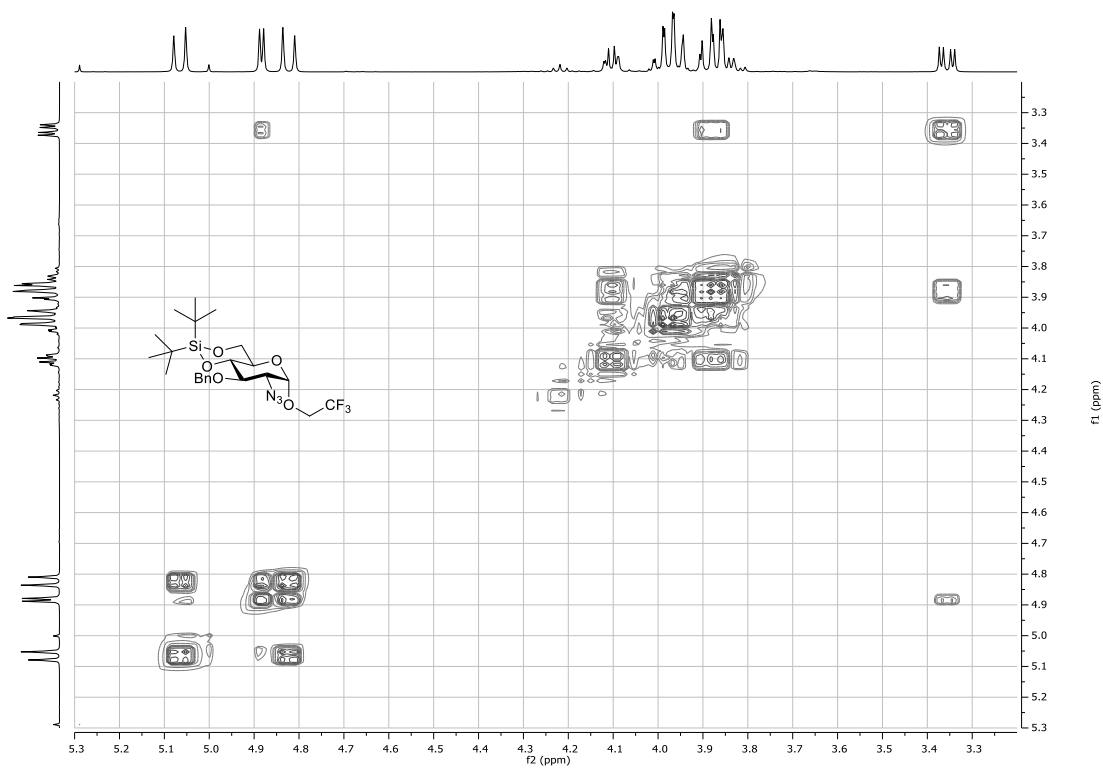
^1H NMR, 400 MHz, CDCl_3



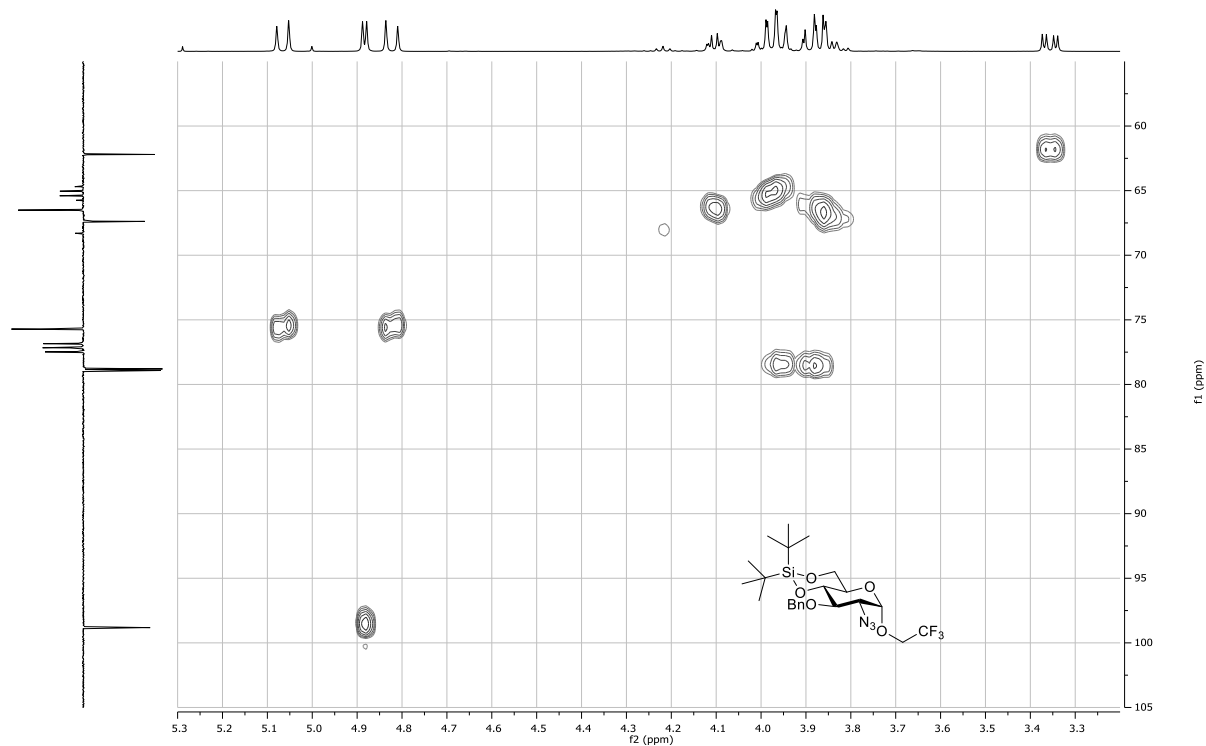
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR

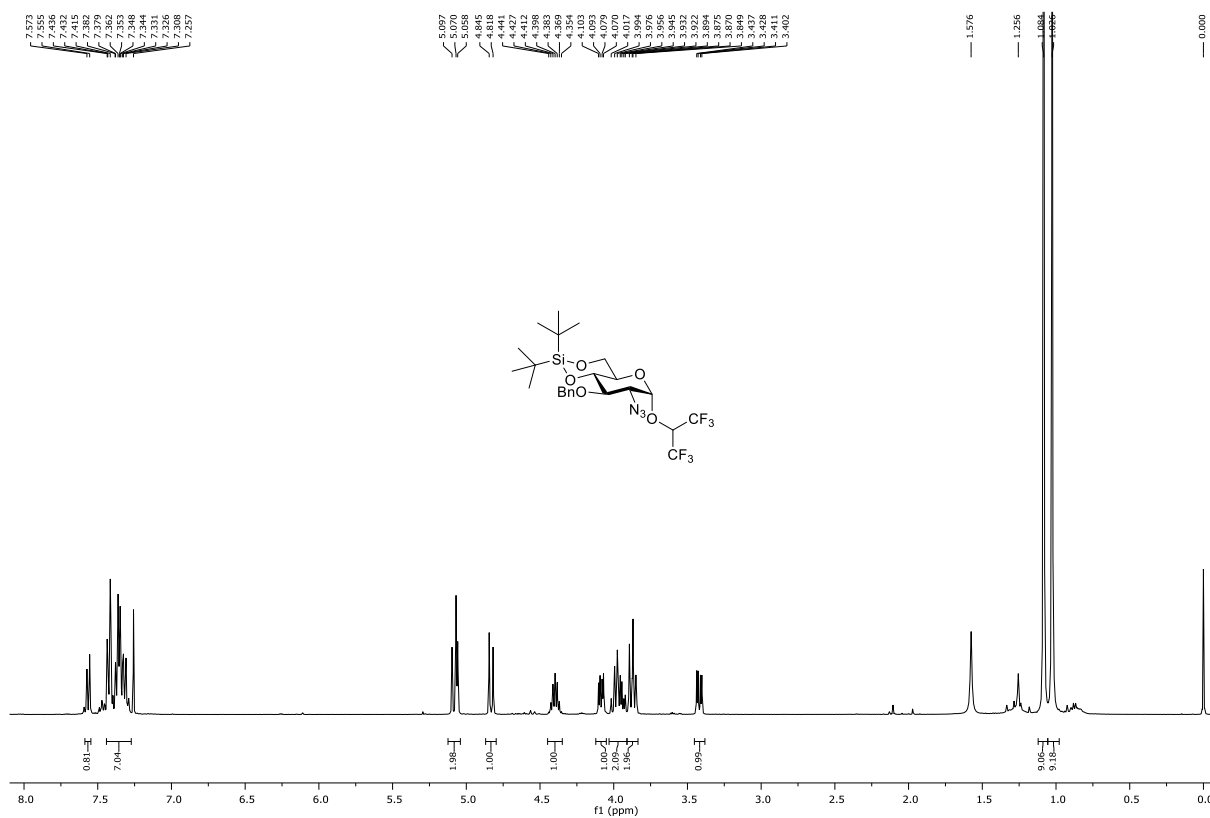


^1H - ^{13}C HSQC NMR

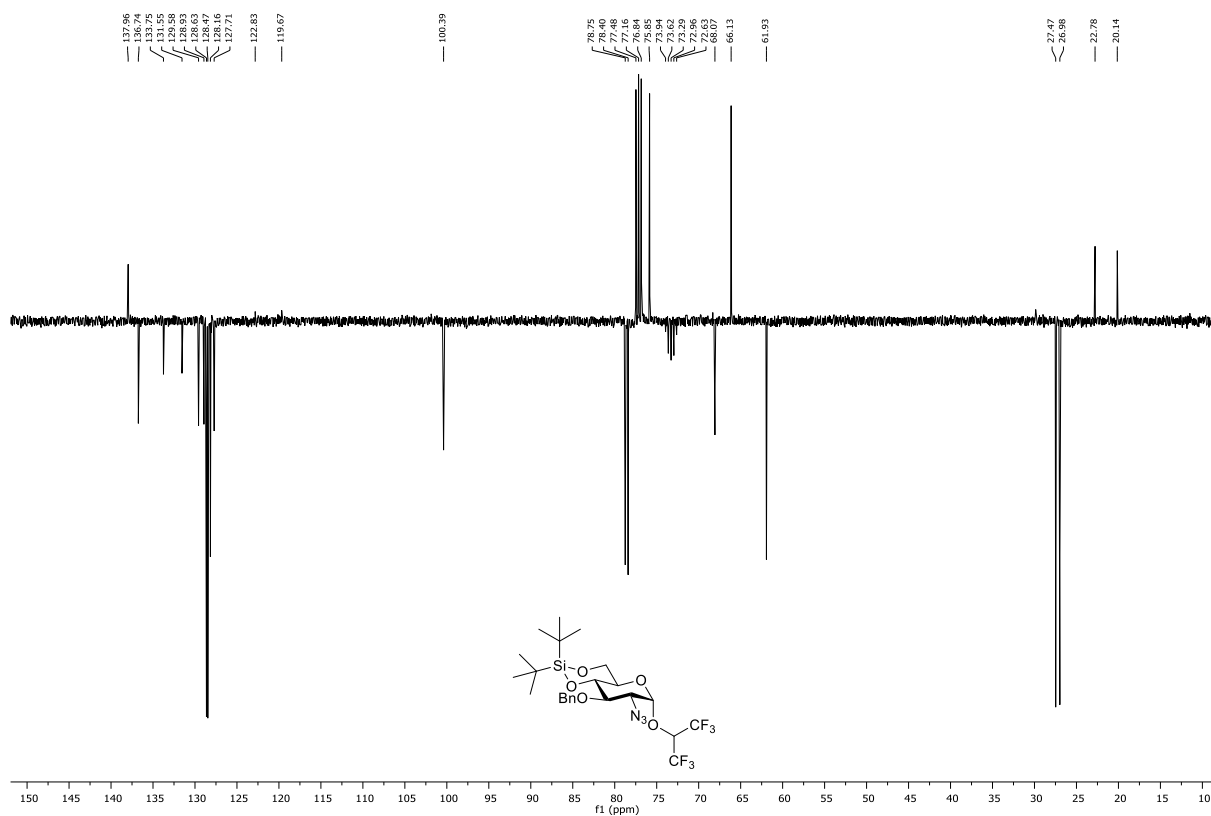


1,1,1,3,3,3-Hexafluoro-2-propyl 2-azido-3-*O*-benzyl-2-deoxy-4,6-*O*-di-*tert*-butylsilylidene- α -D-glucopyranoside (**2K**).

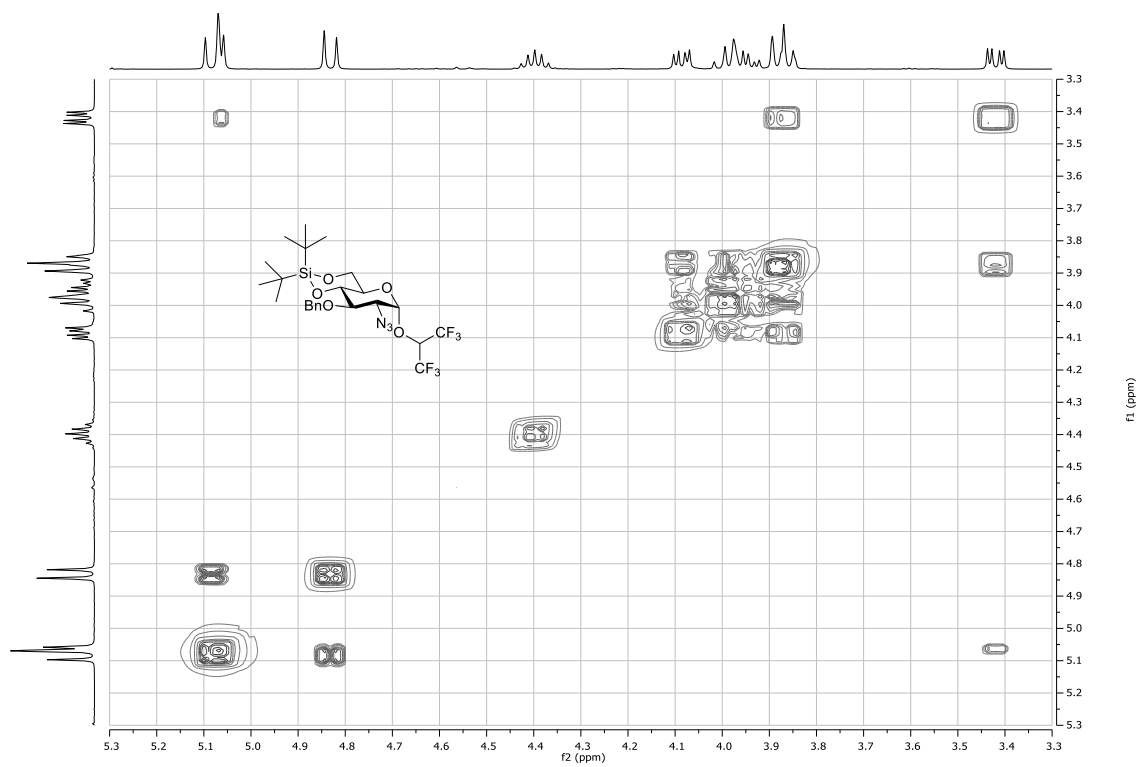
^1H NMR, 400 MHz, CDCl_3



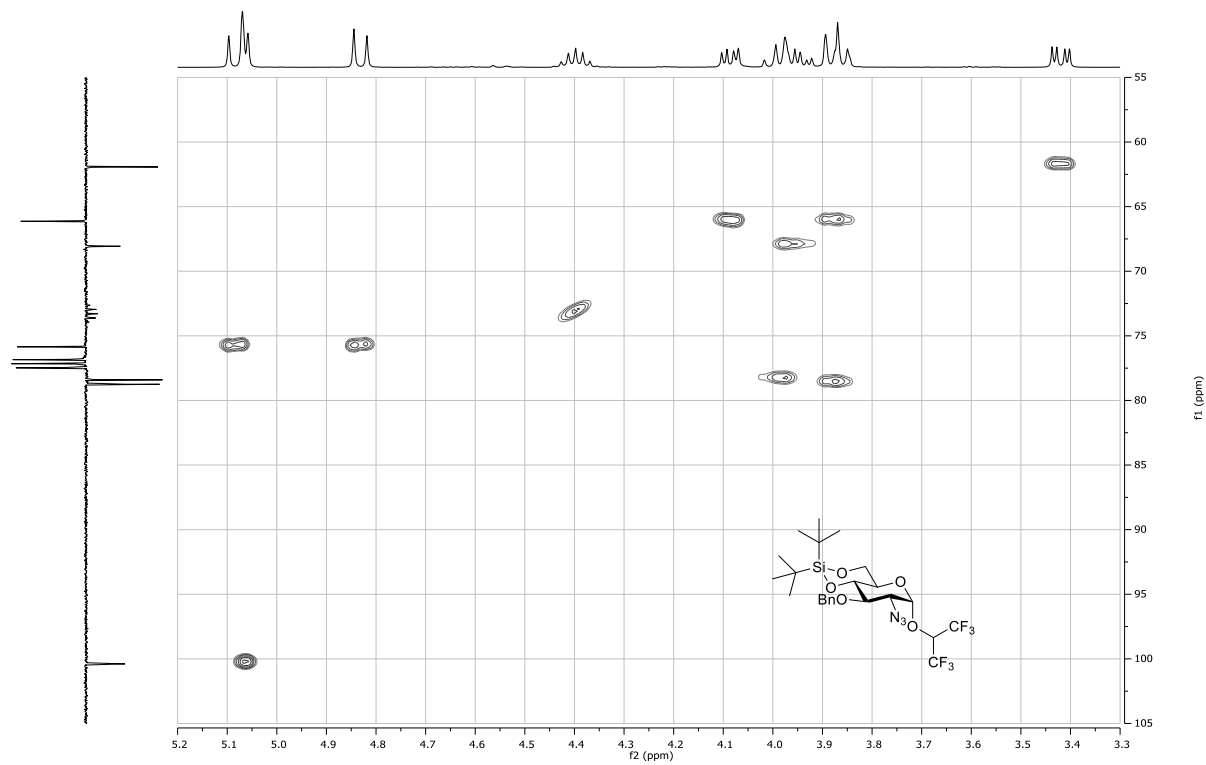
^{13}C -APT NMR, 101 MHz, CDCl_3



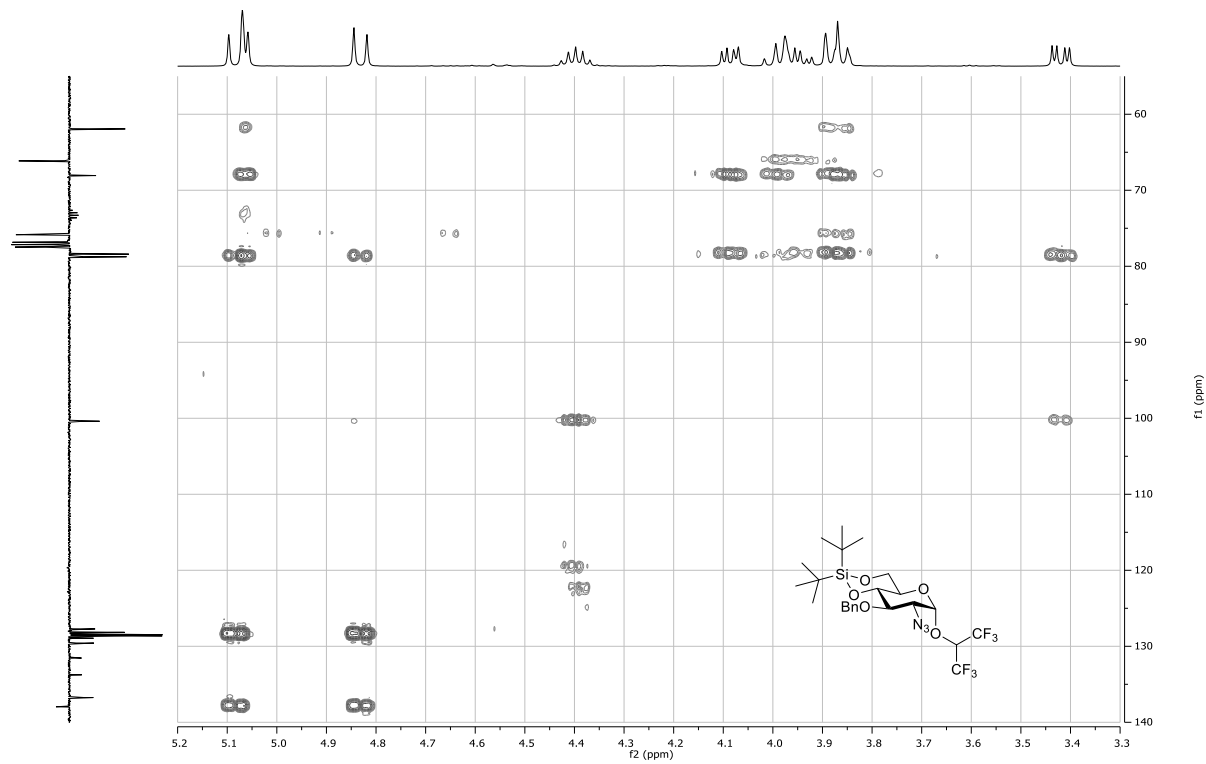
^1H - ^1H COSY NMR



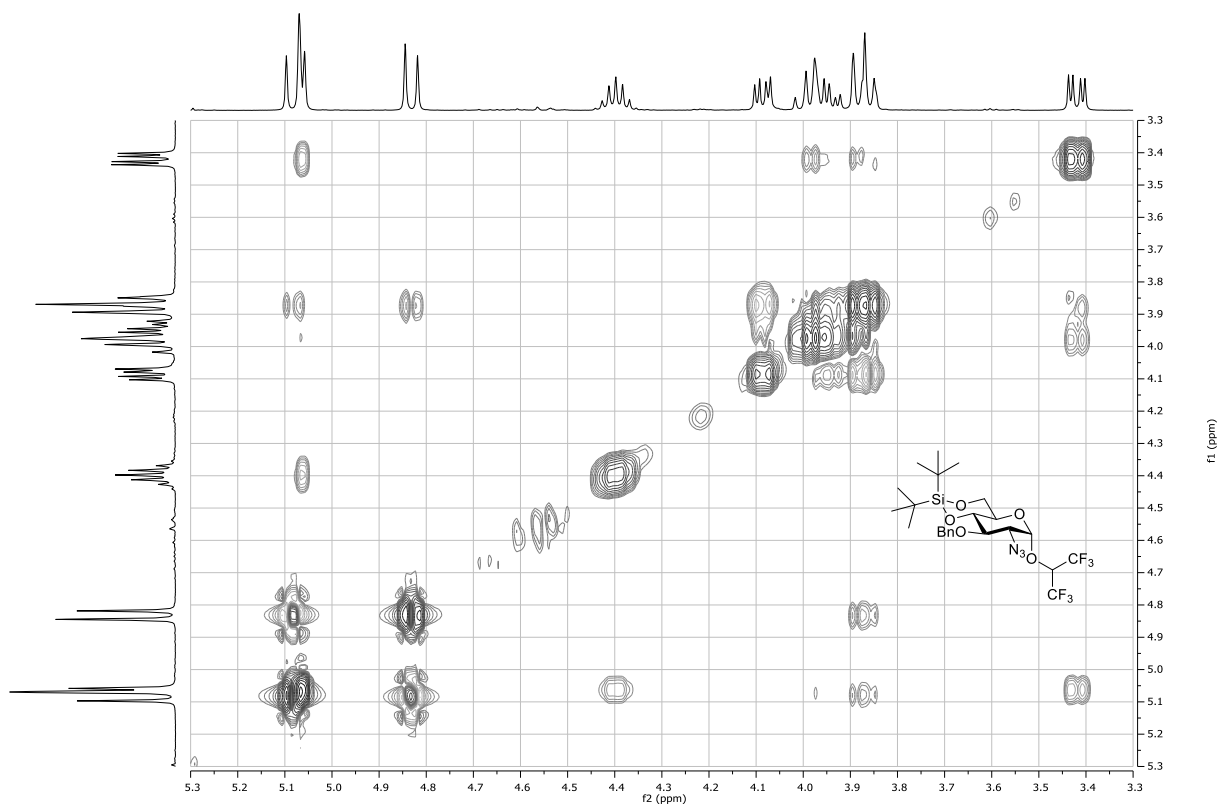
^1H - ^{13}C HSQC NMR



^1H - ^{13}C HMBC NMR

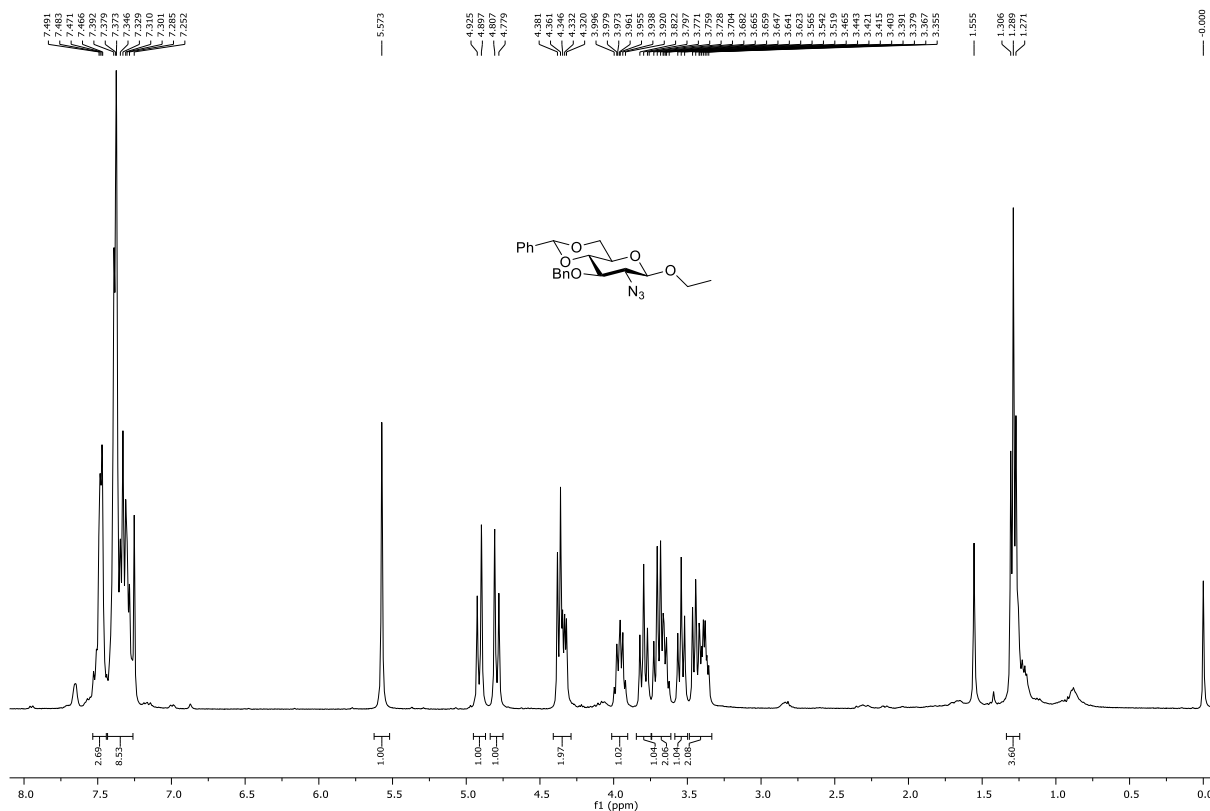


^1H - ^1H NOESY NMR

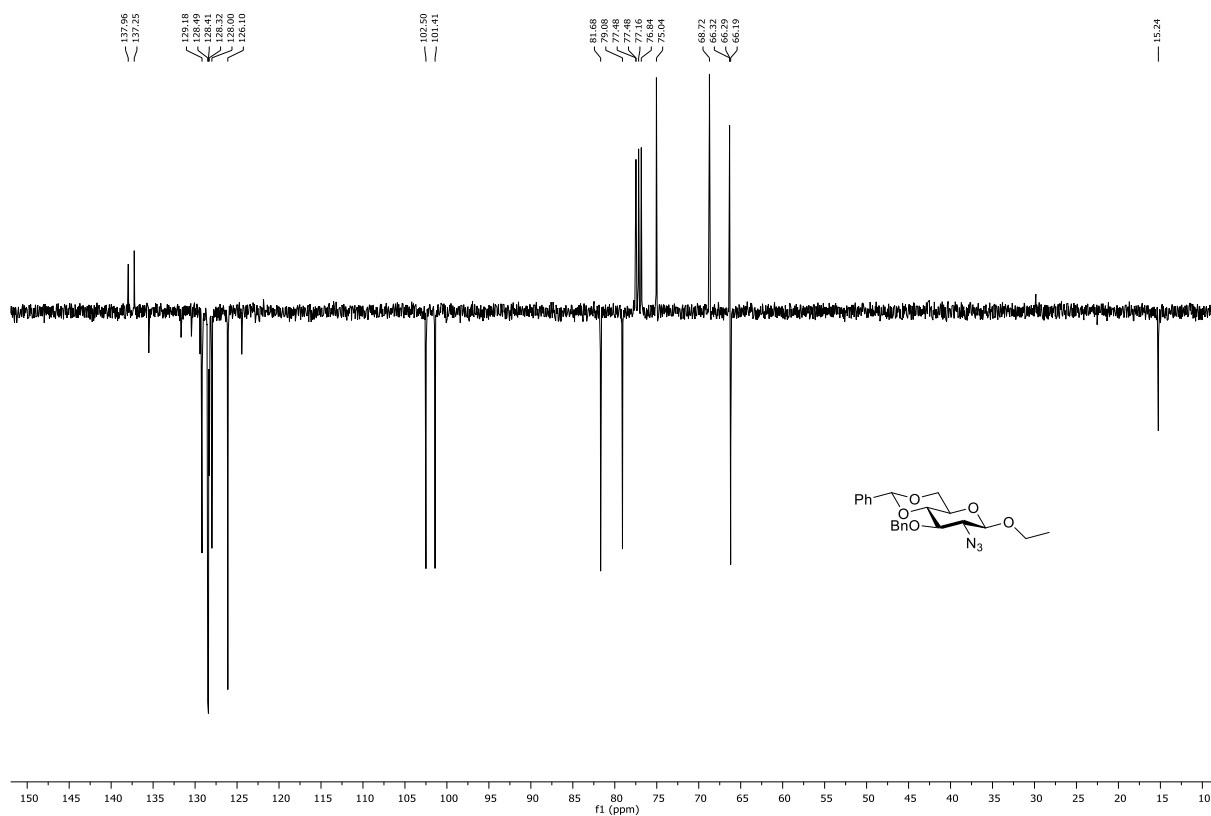


Ethyl 2-azido-3-O-benzyl-4,6-O-benzylidene-2-deoxy- β -D-glucopyranoside (3A).

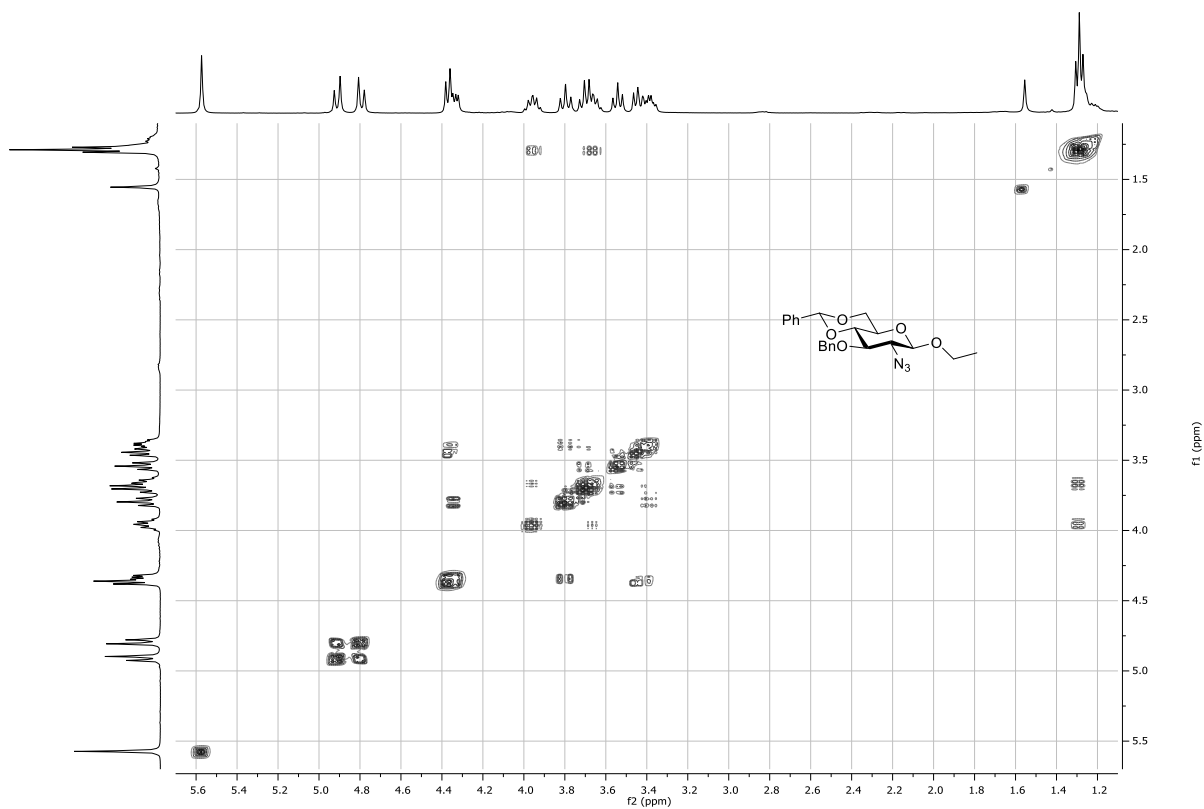
^1H NMR, 400 MHz, CDCl_3



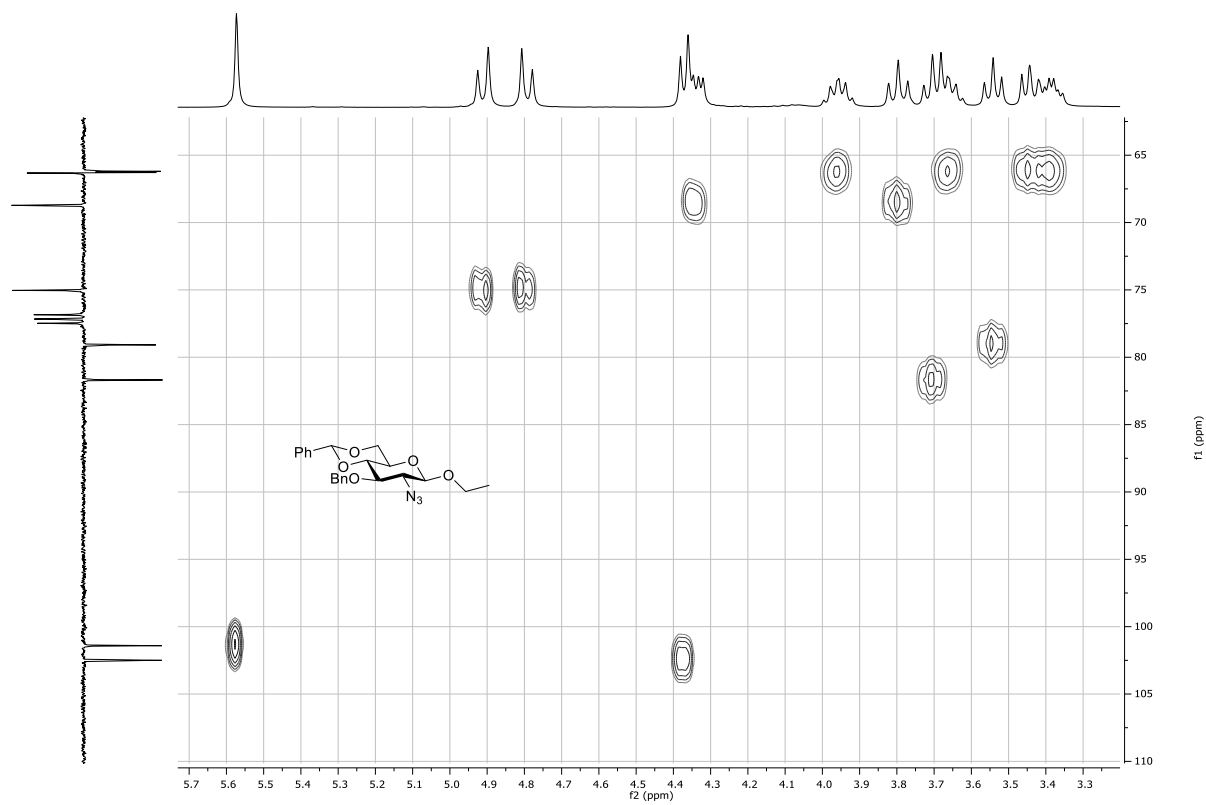
^{13}C -APT NMR, 101 MHz, CDCl_3



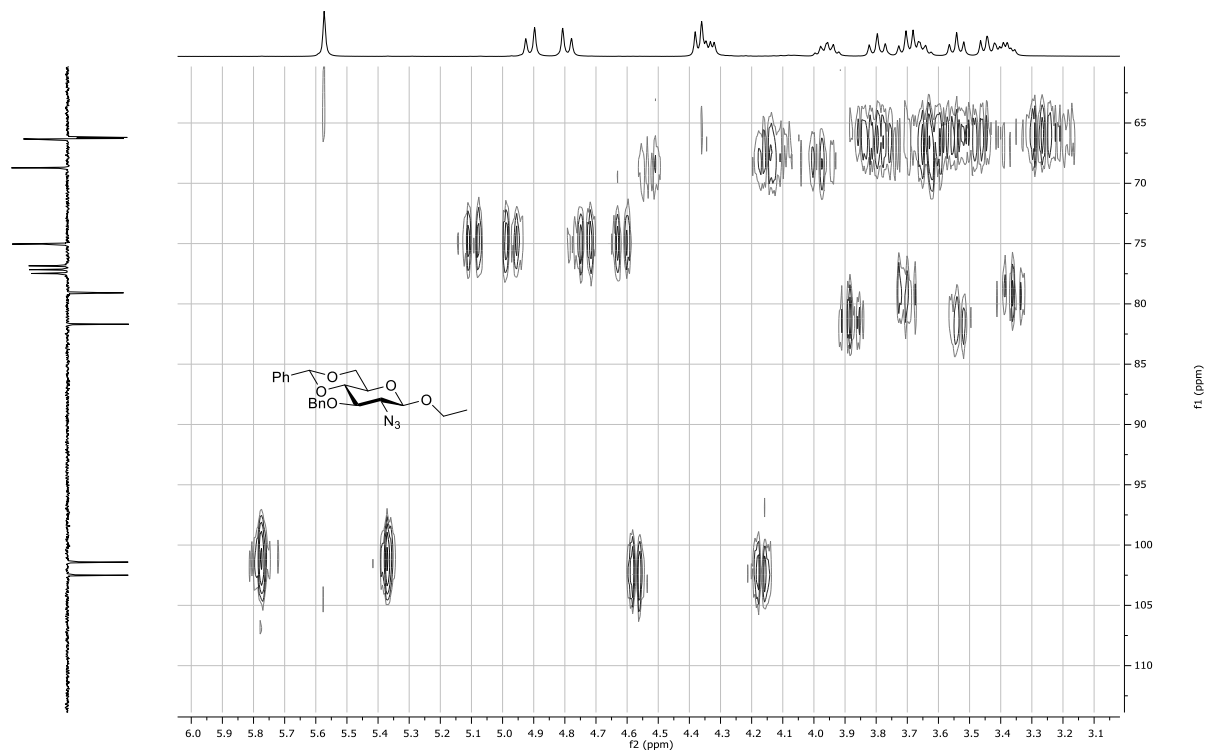
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

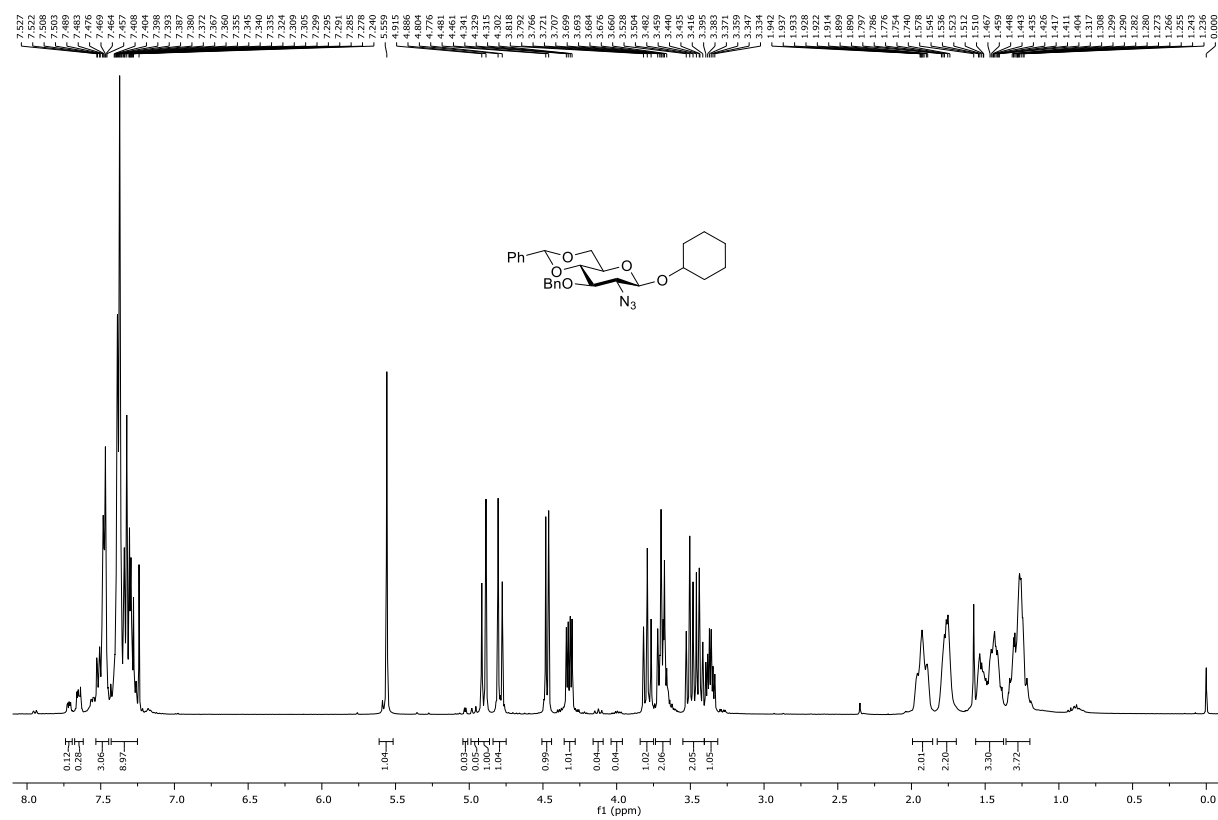


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

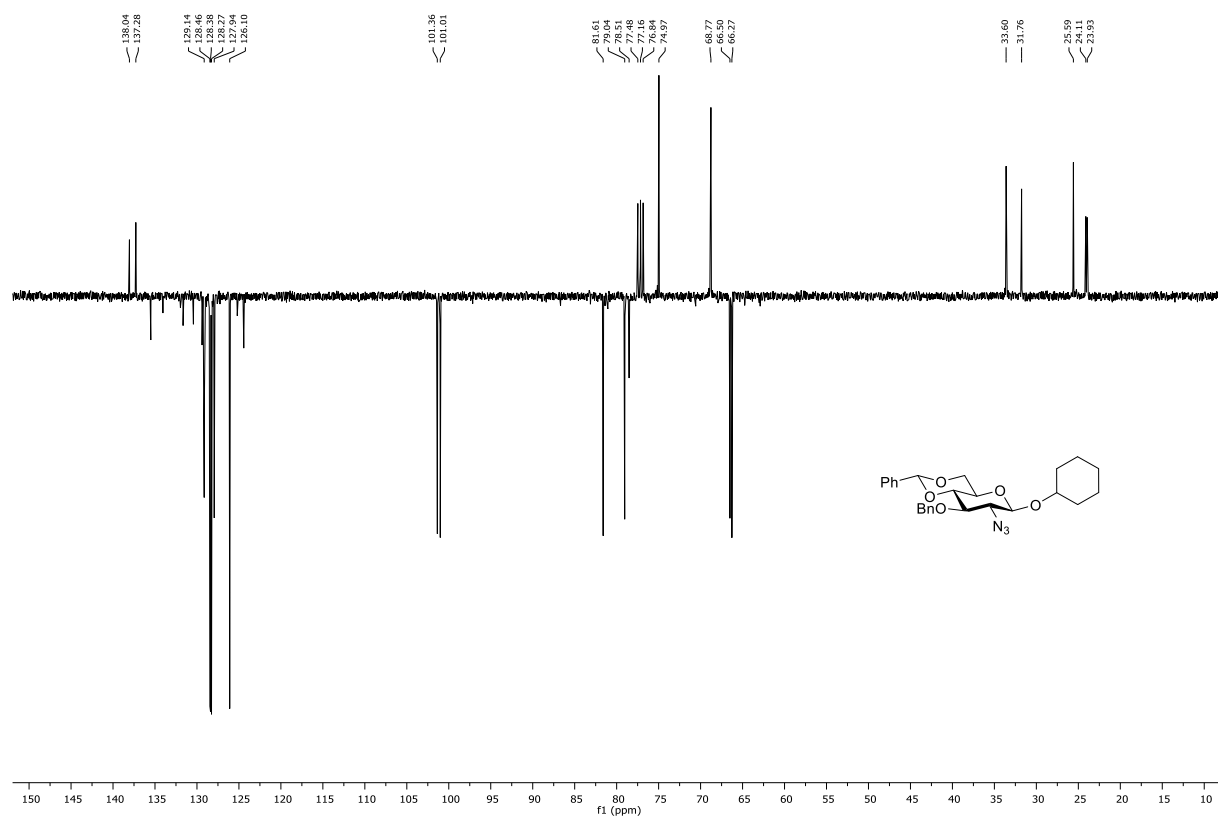


Cyclohexyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranoside (**3B**).

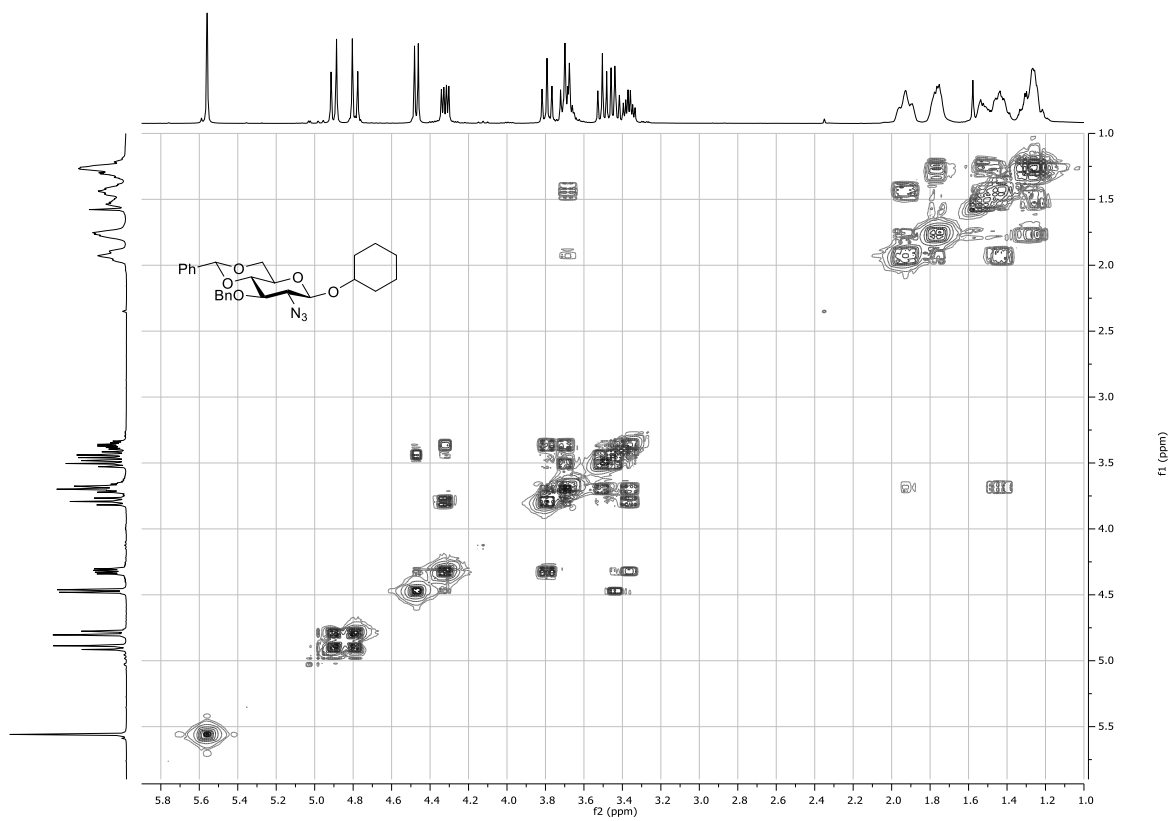
^1H NMR, 400 MHz, CDCl_3



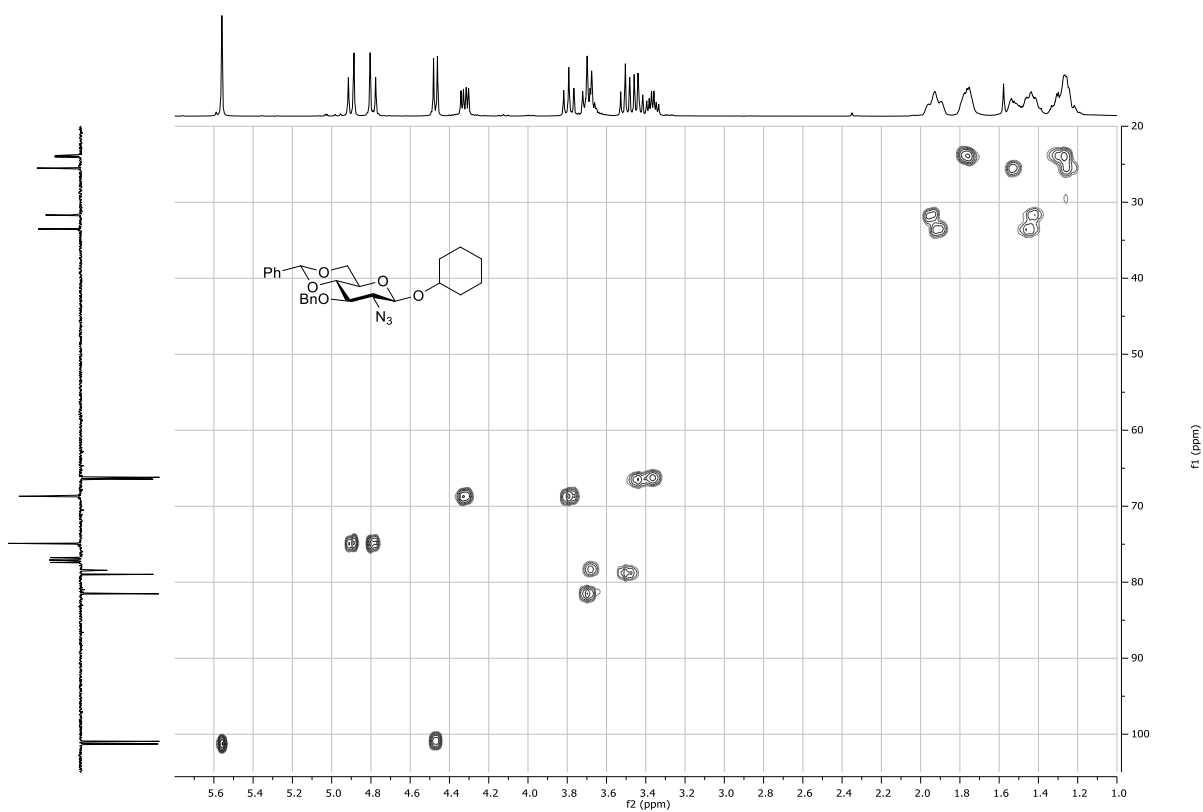
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

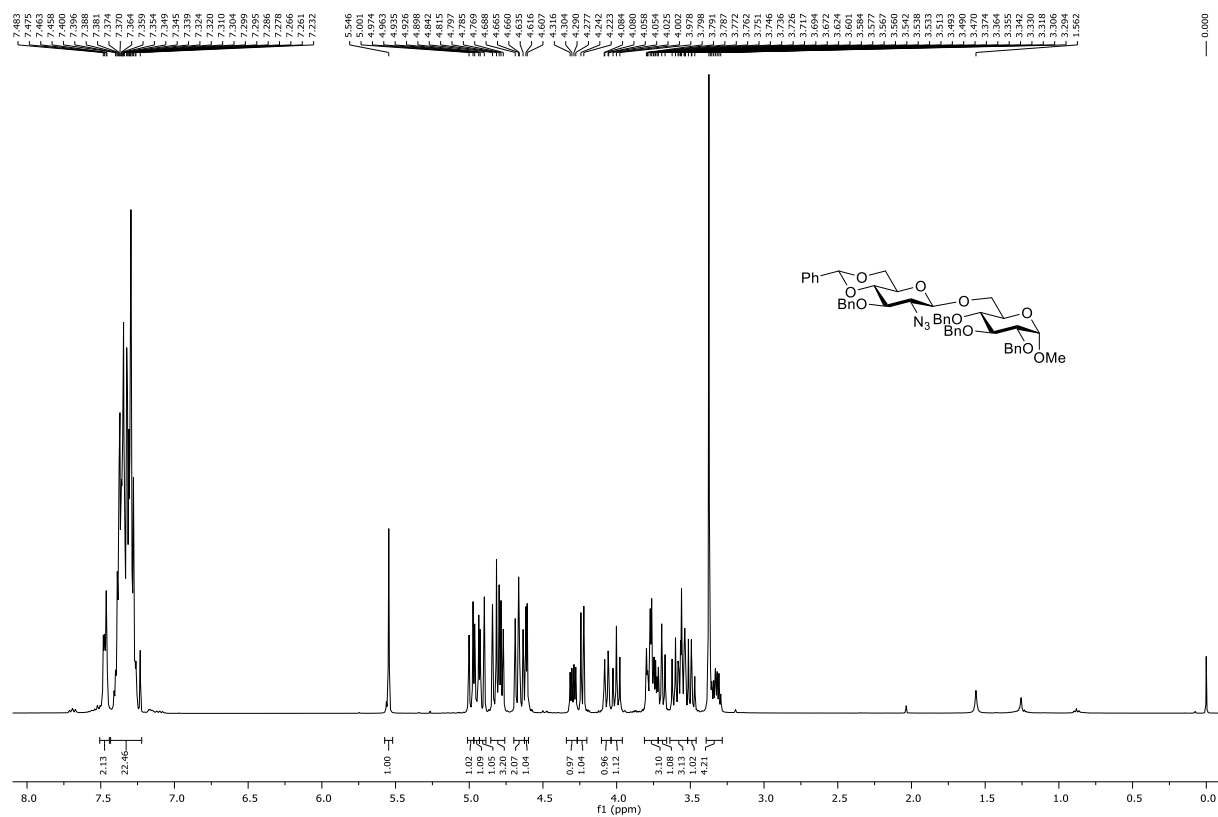


^1H - ^{13}C HSQC NMR, CDCl_3

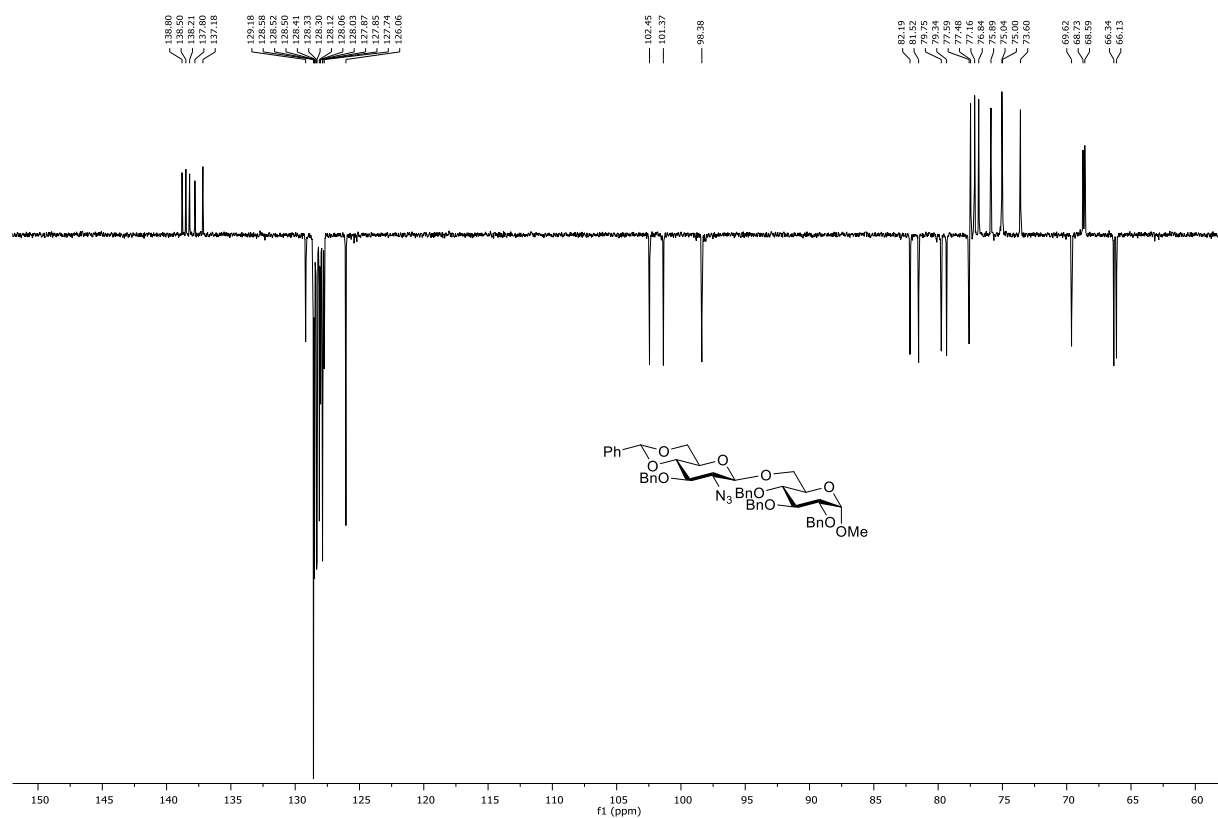


Methyl 6-*O*-(2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranosyl)-2,3,4-tri-*O*-benzyl- α -D-glucopyranoside (**3C**).

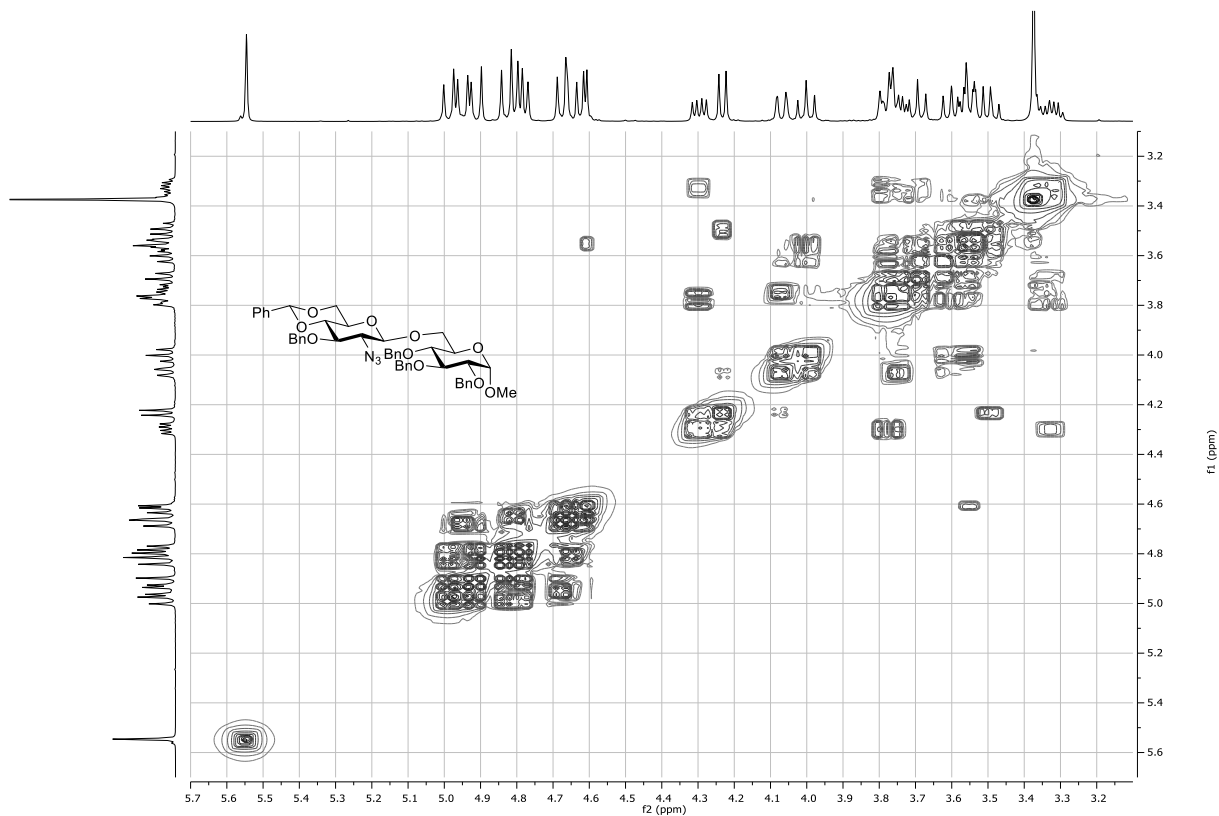
^1H NMR, 400 MHz, CDCl_3



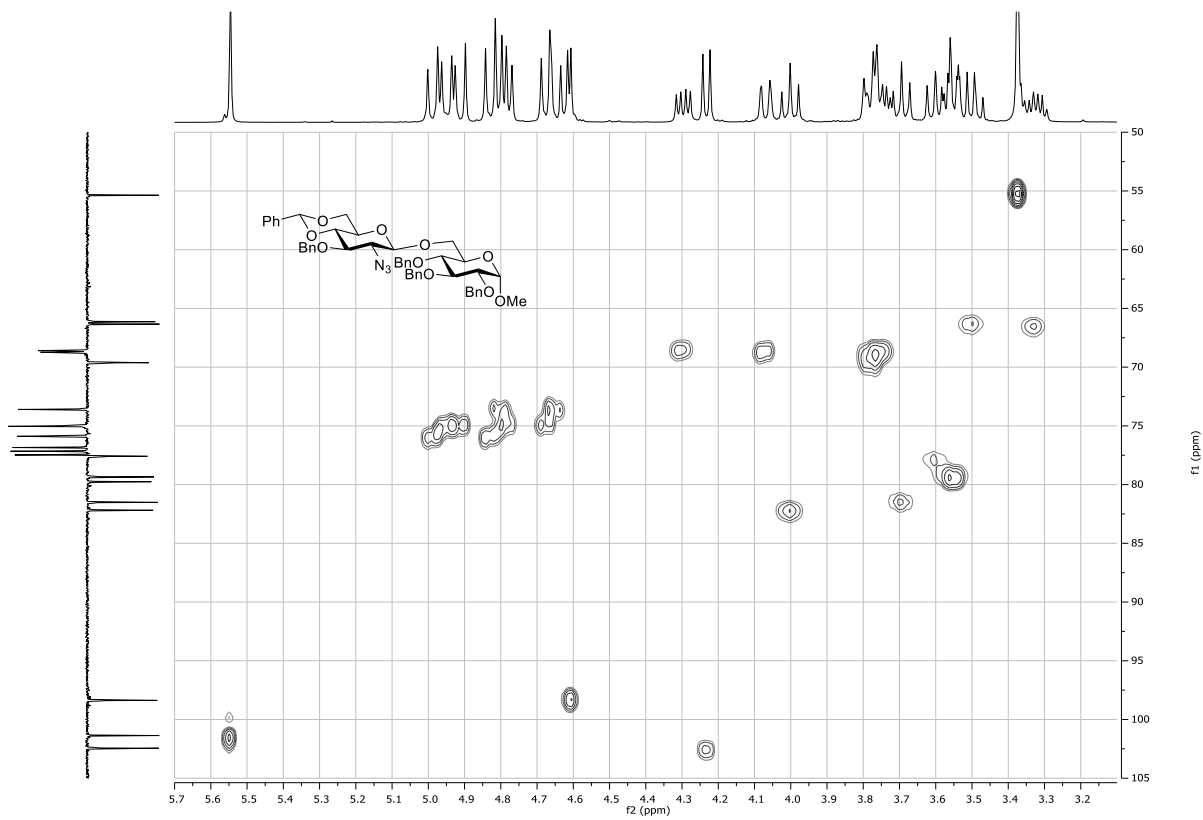
^{13}C -APT NMR, 101 MHz, CDCl_3



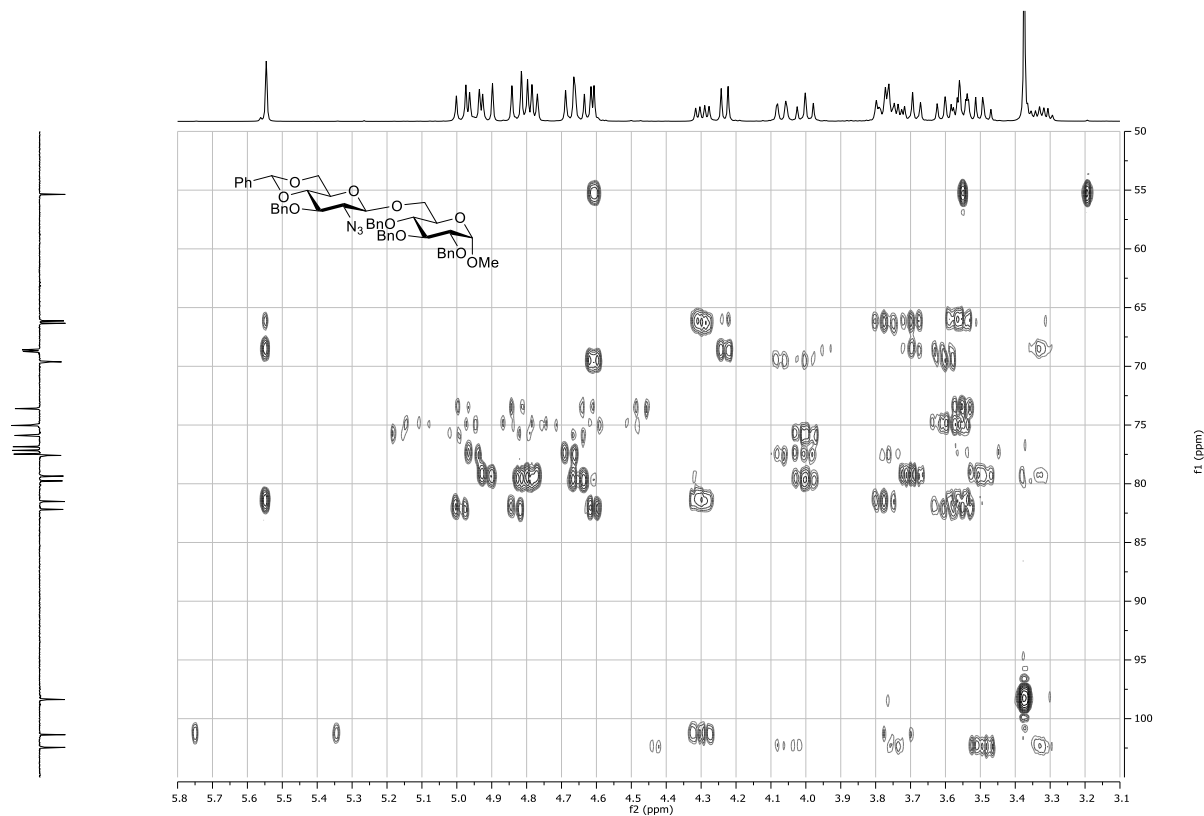
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

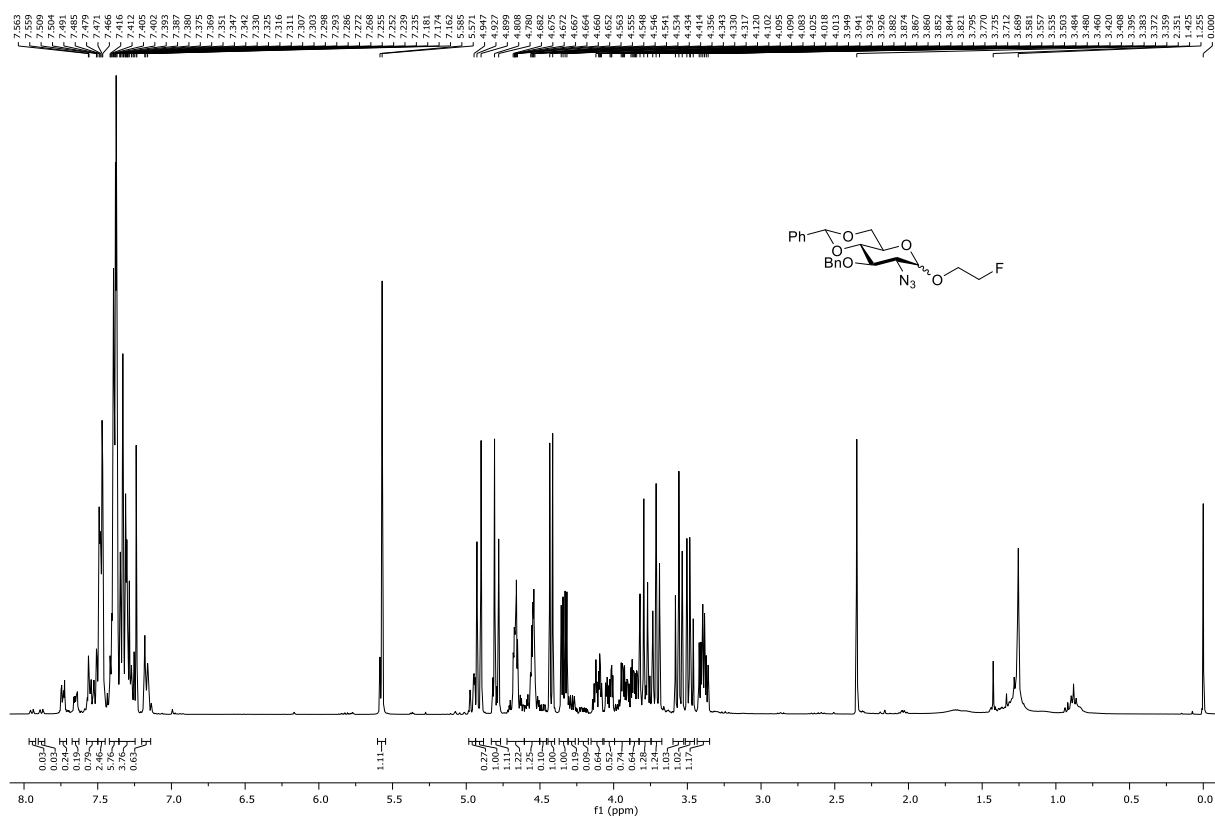


^1H - ^{13}C HMBC NMR, CDCl_3

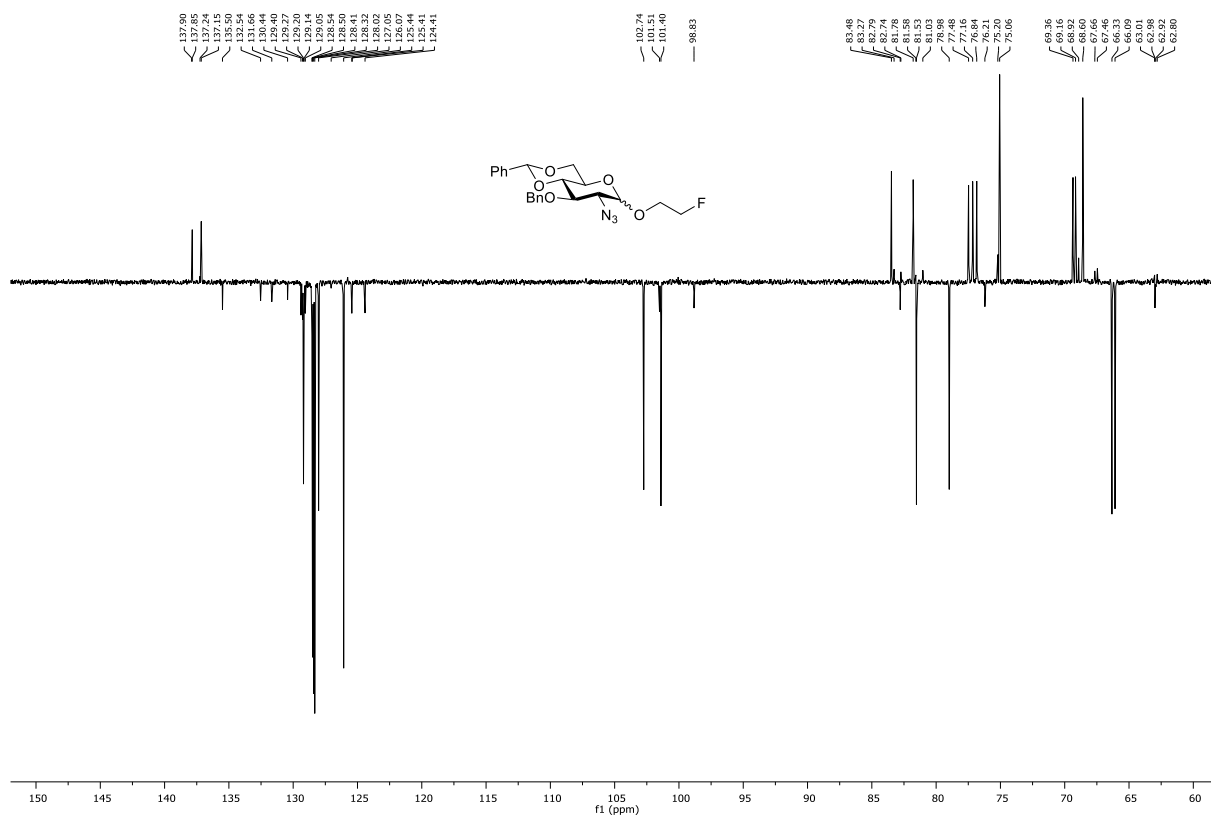


2-Fluoroethyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α/β -D-glucopyranoside (**3D**).

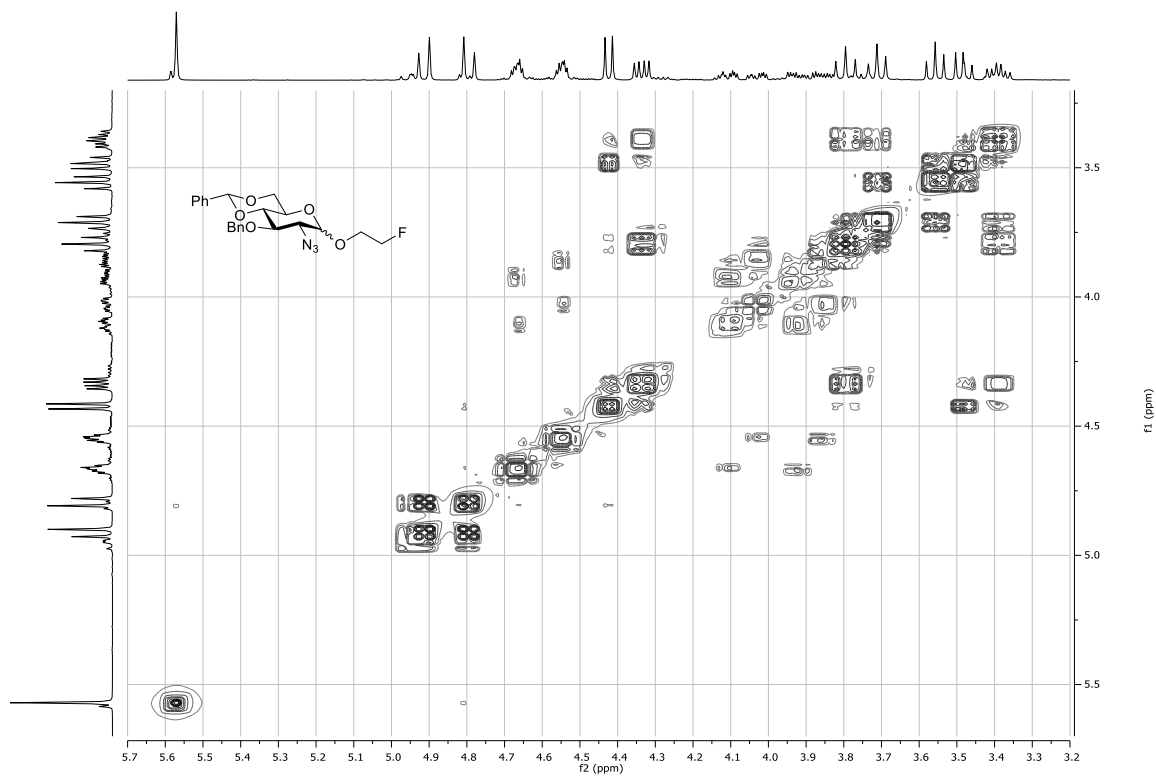
^1H NMR, 400 MHz, CDCl_3



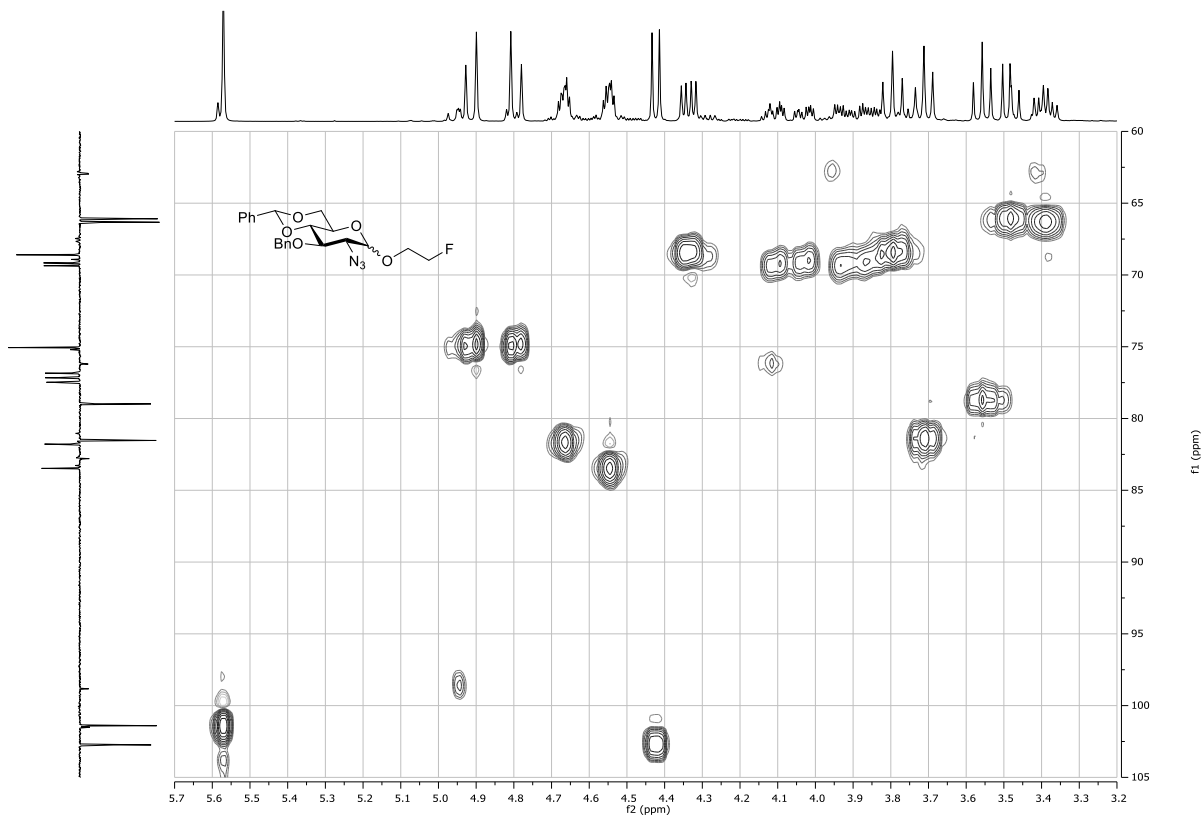
^{13}C -APT NMR, 101 MHz, CDCl_3



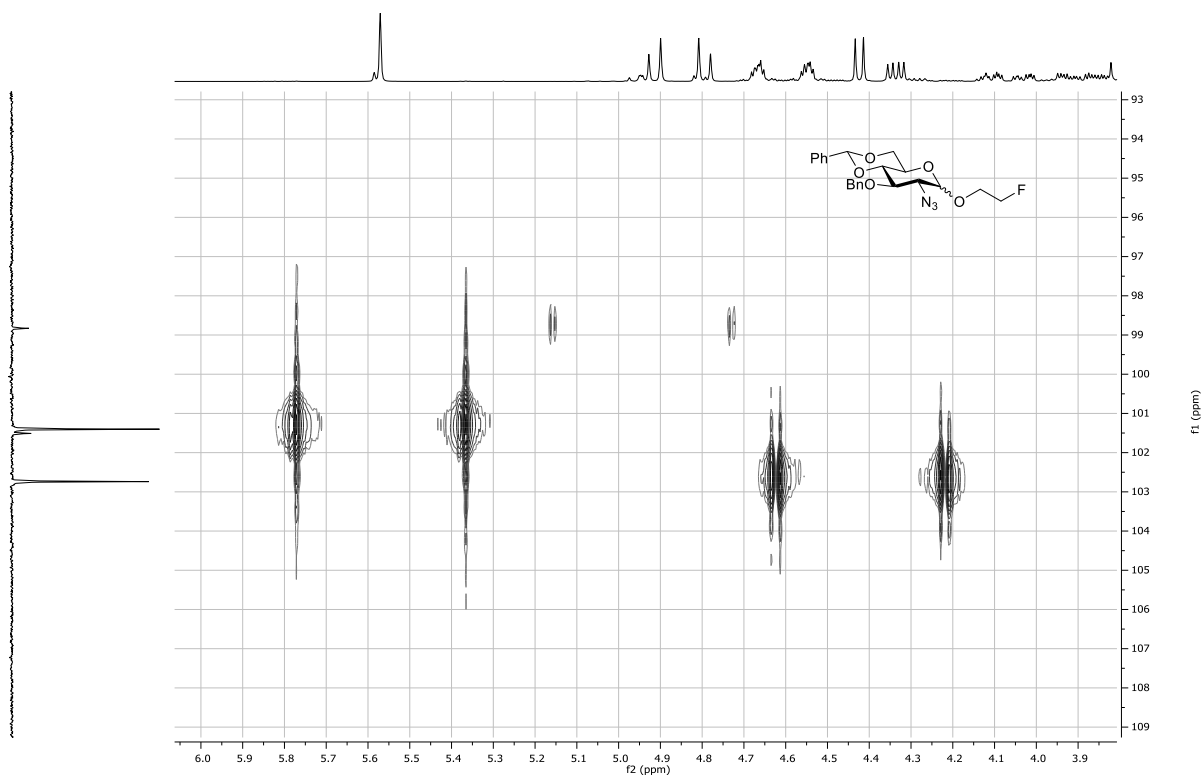
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

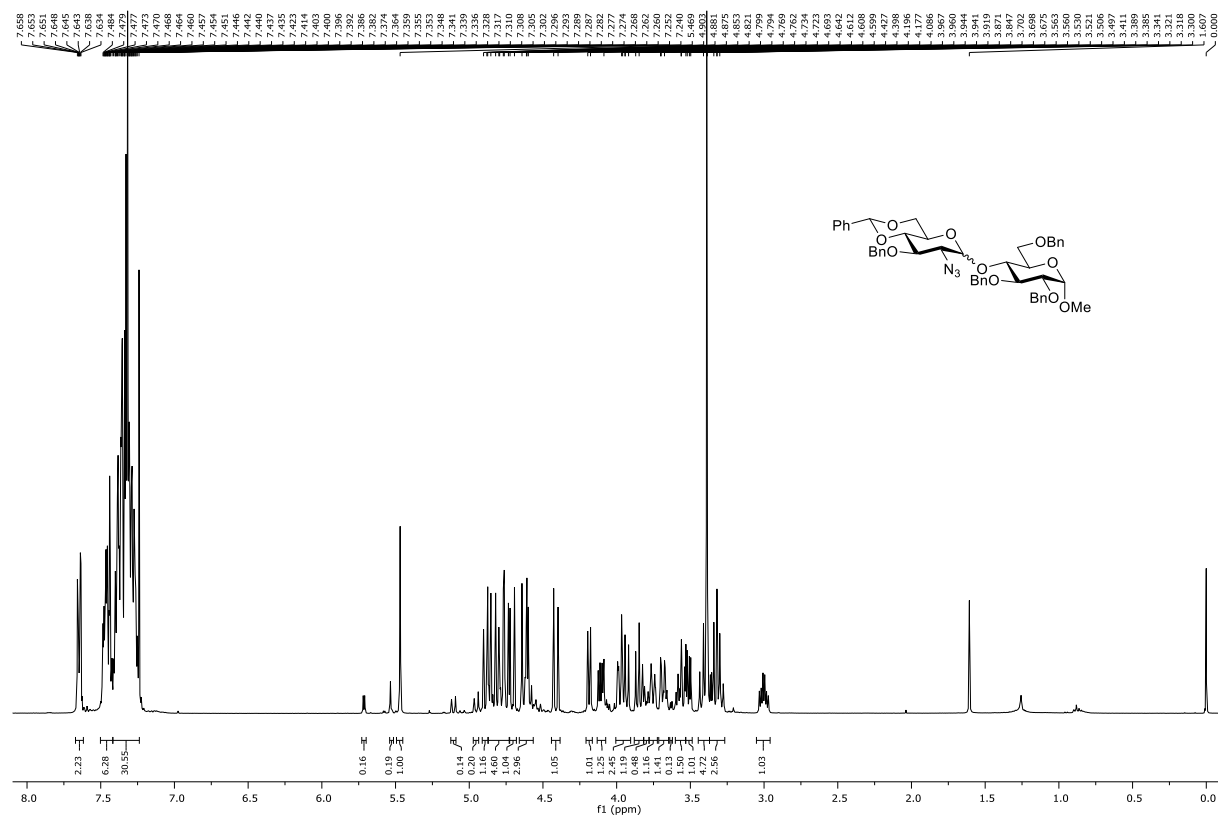


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

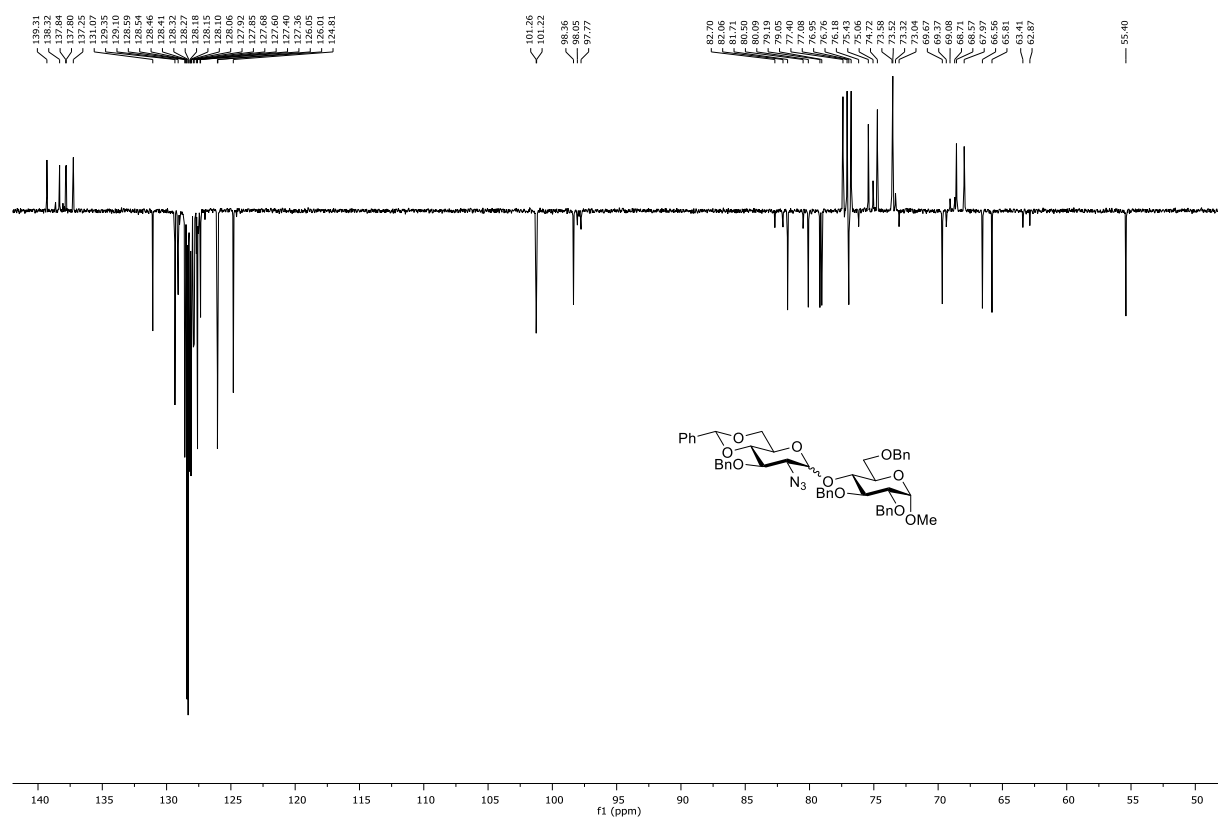


Methyl 4-*O*-(2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α/β -D-glucopyranosyl)-2,3,6-tri-*O*-benzyl- α -D-glucopyranoside (**3E**).

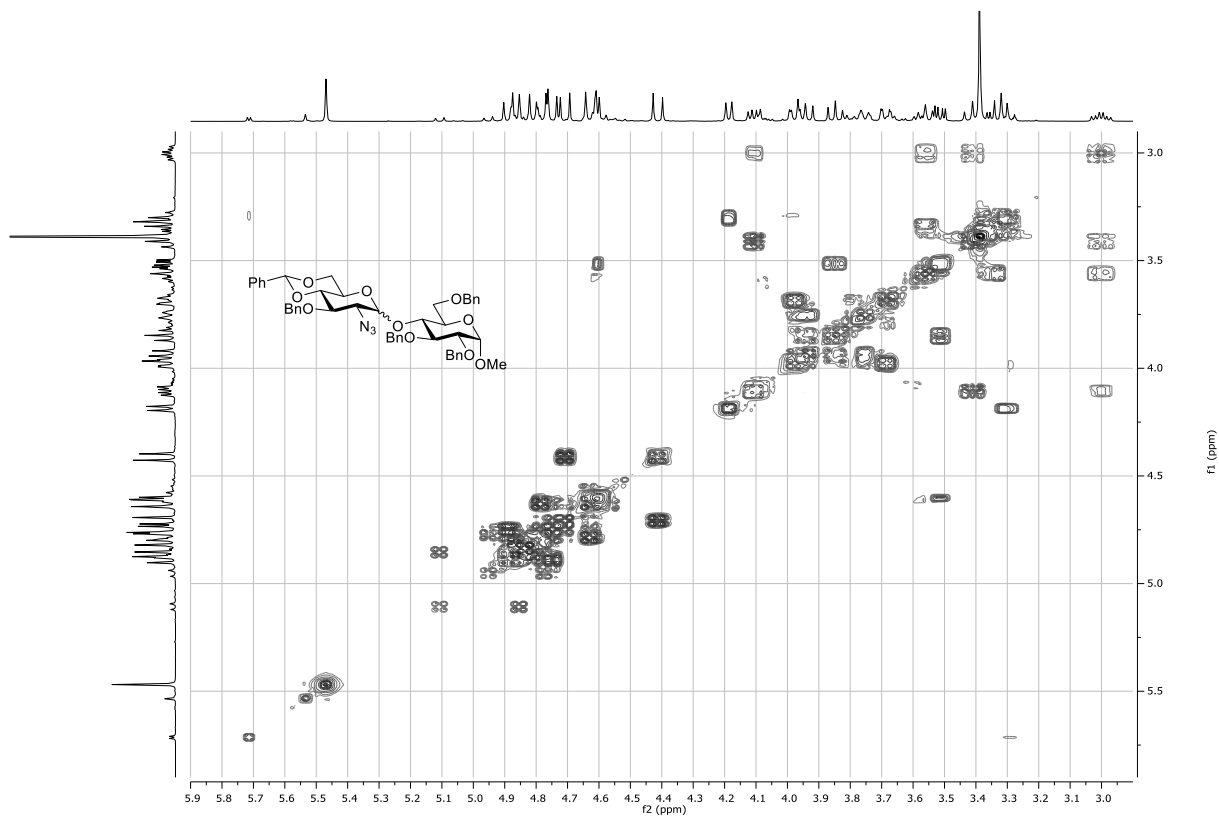
^1H NMR, 400 MHz, CDCl_3



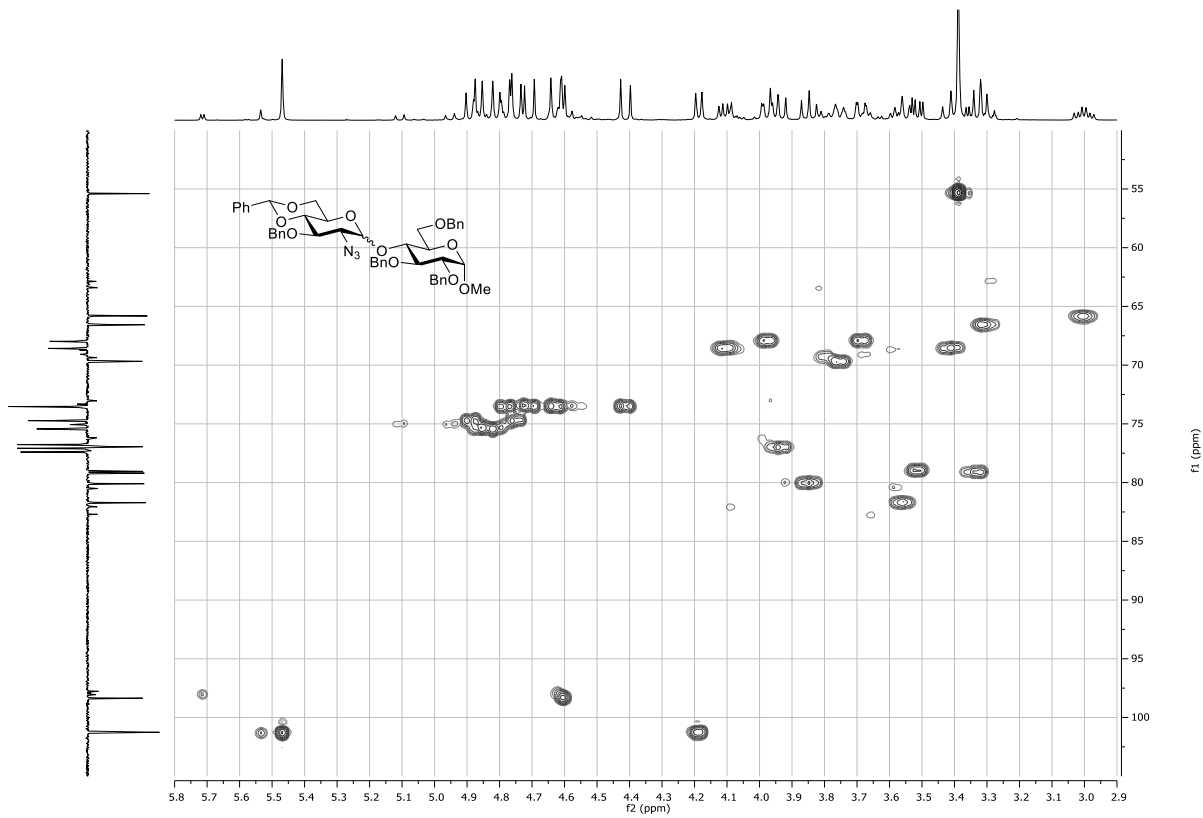
^{13}C -APT NMR, 101 MHz, CDCl_3



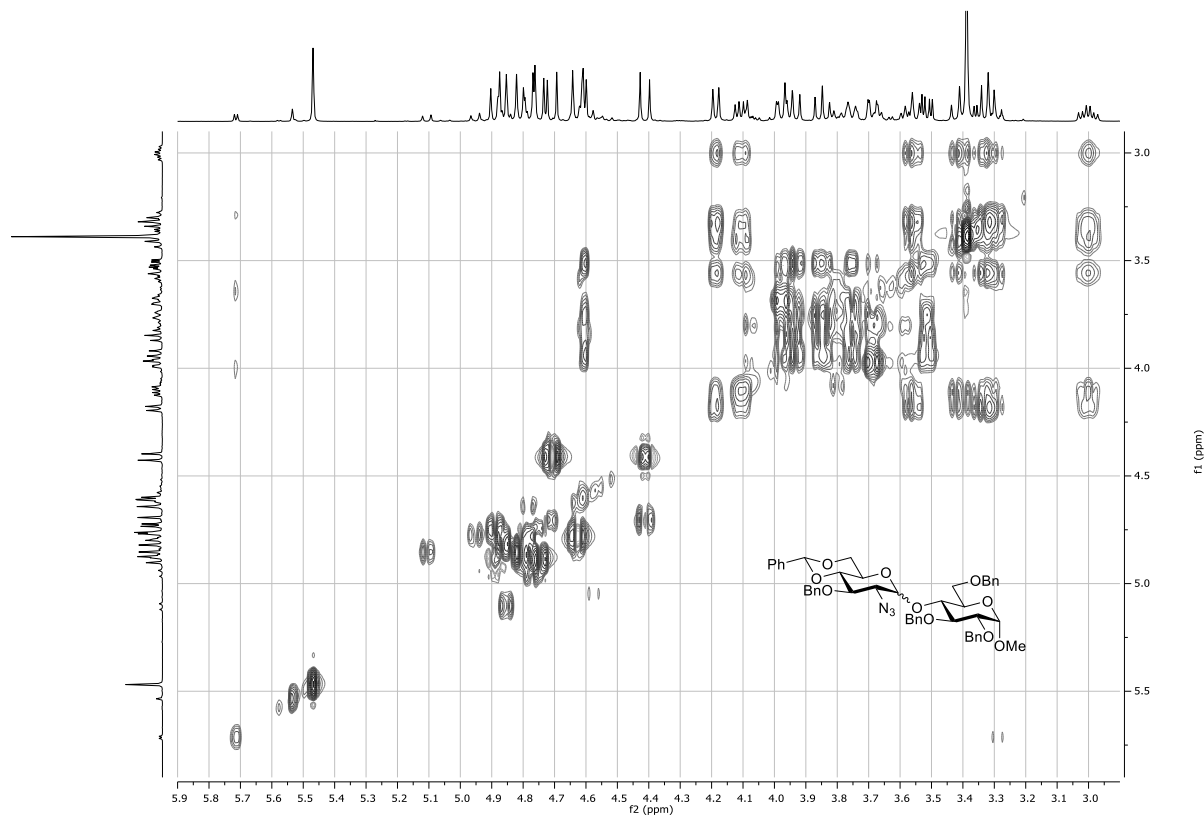
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

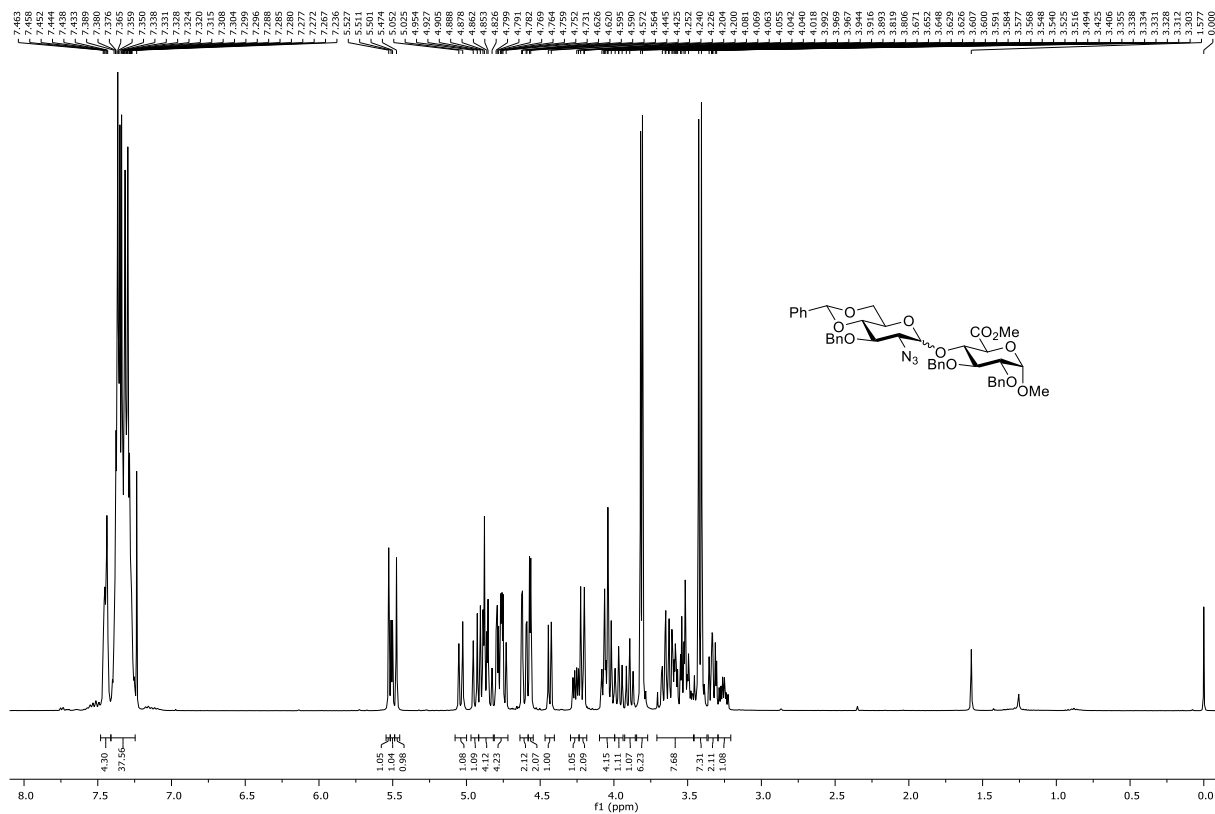


^1H - ^1H TOCSY NMR, CDCl_3

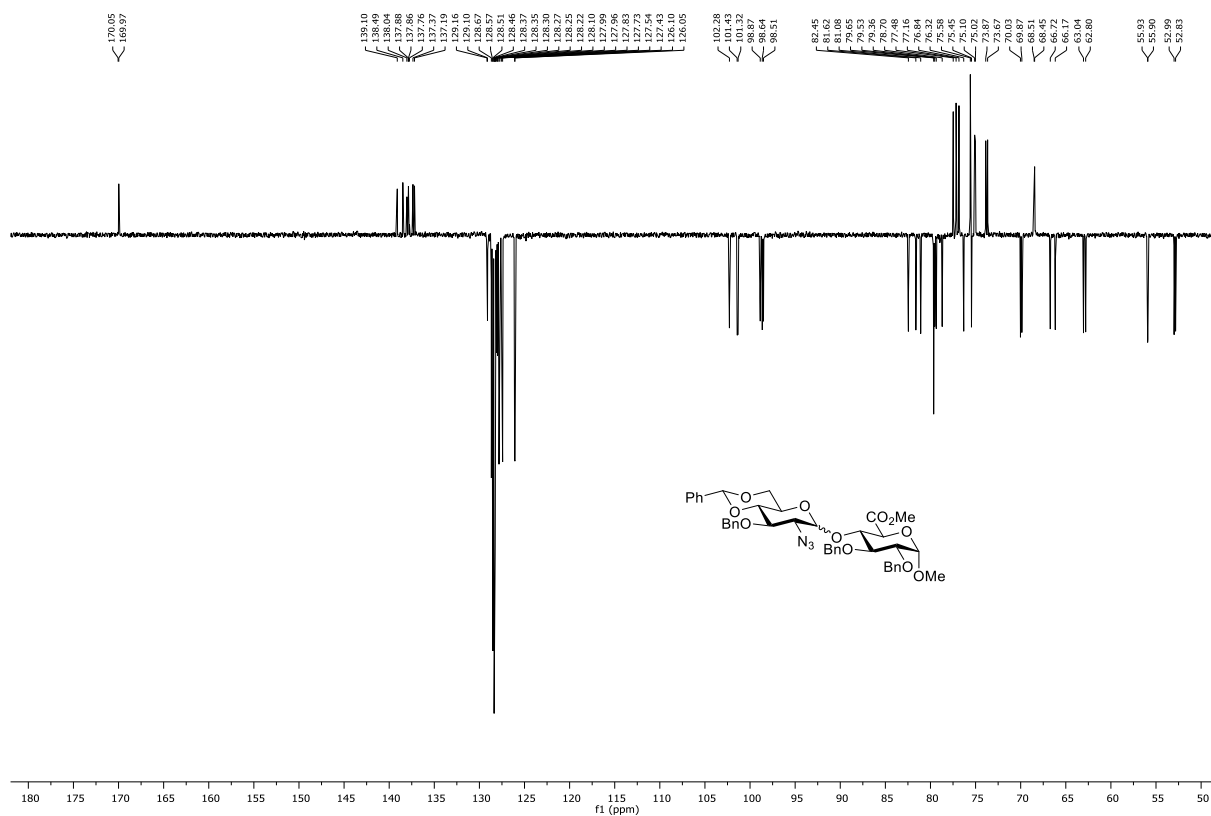


Methyl (Methyl 4-*O*-[2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α - β -D-glucopyranosyl]-2,3-di-*O*-benzyl- α -D-glucopyranosyl uronate) (3F).

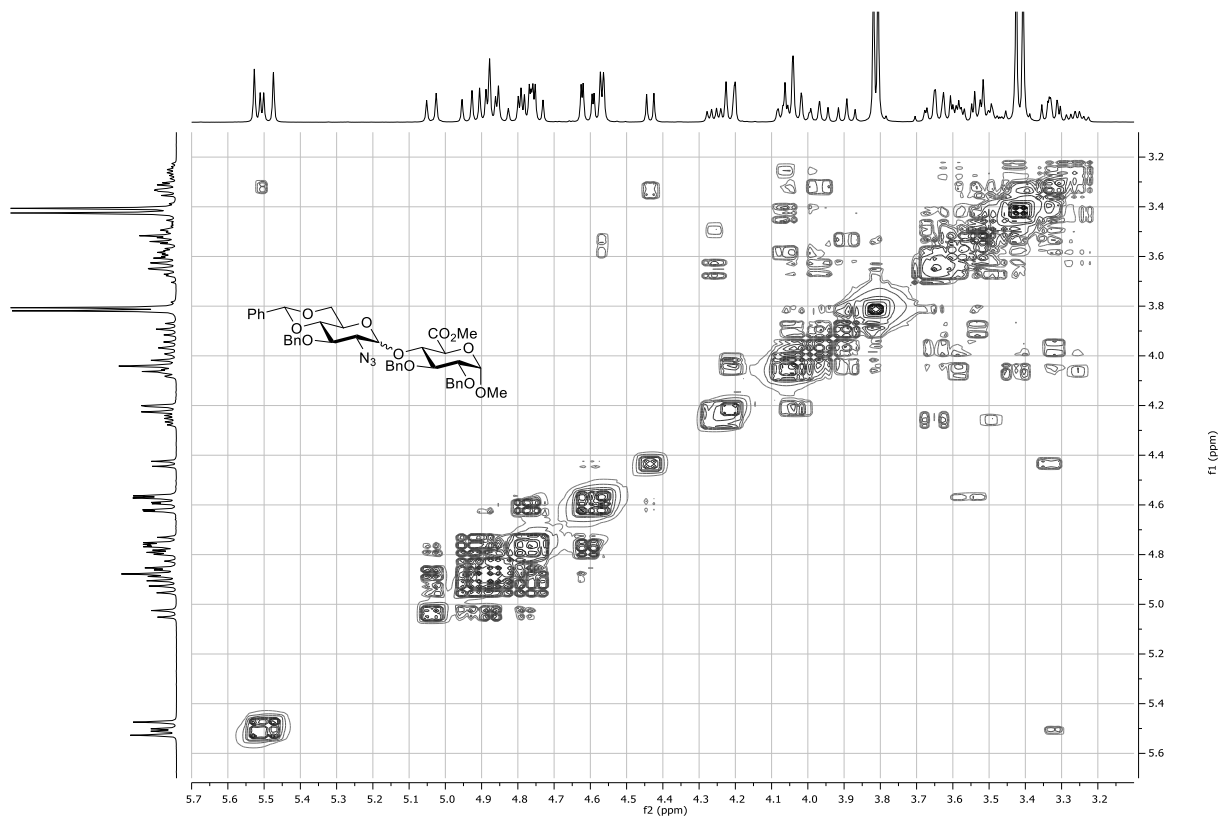
^1H NMR, 400 MHz, CDCl_3



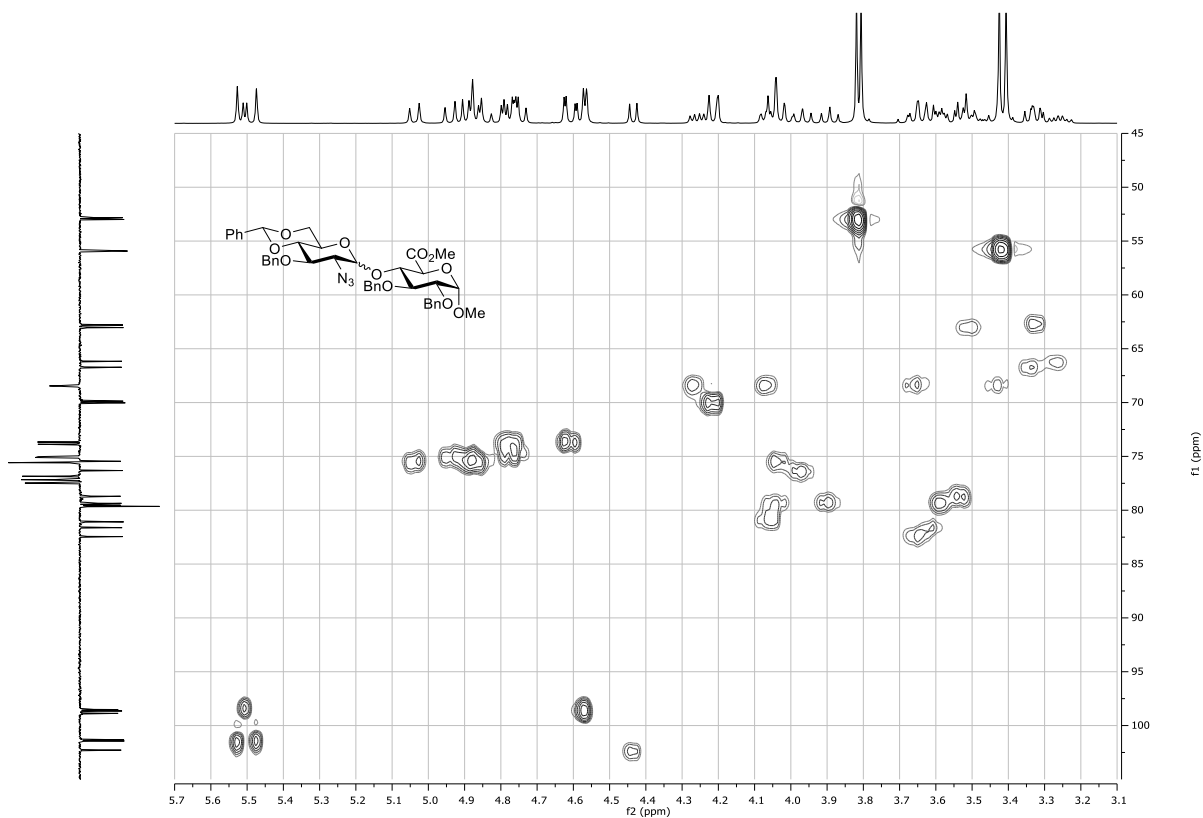
^{13}C -APT NMR, 101 MHz, CDCl_3



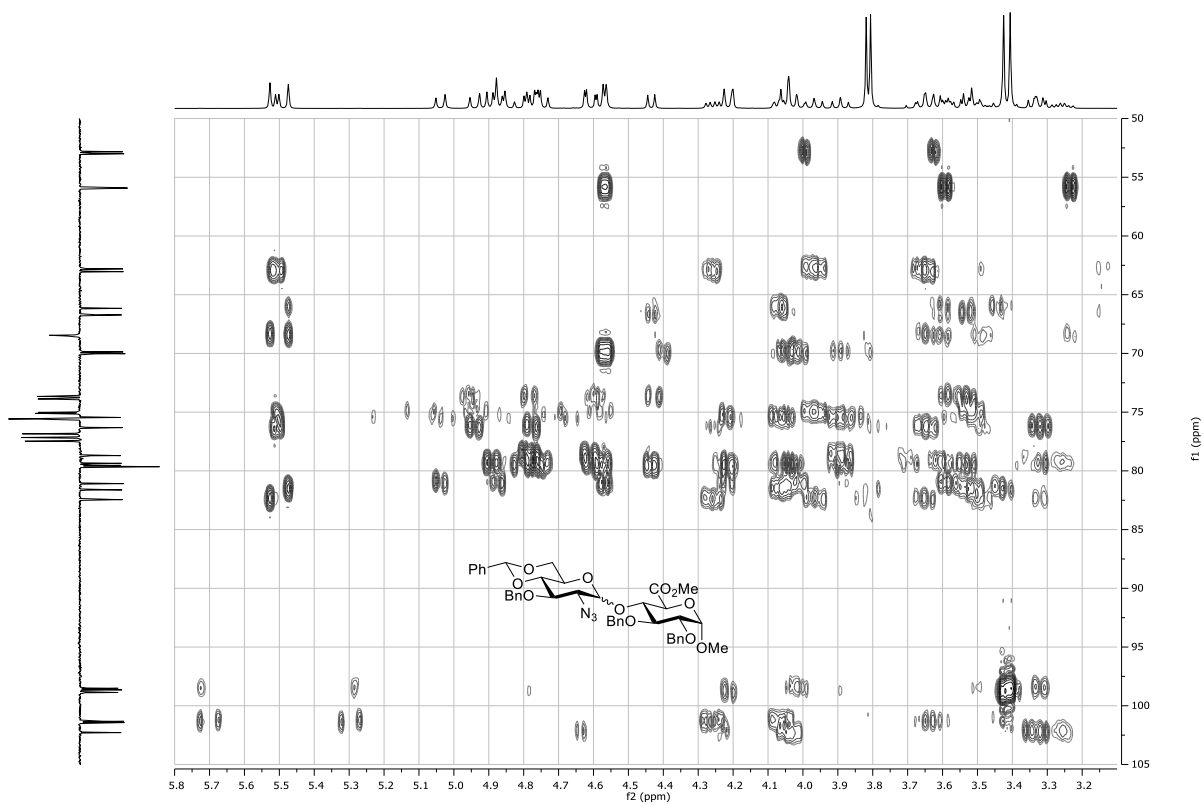
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

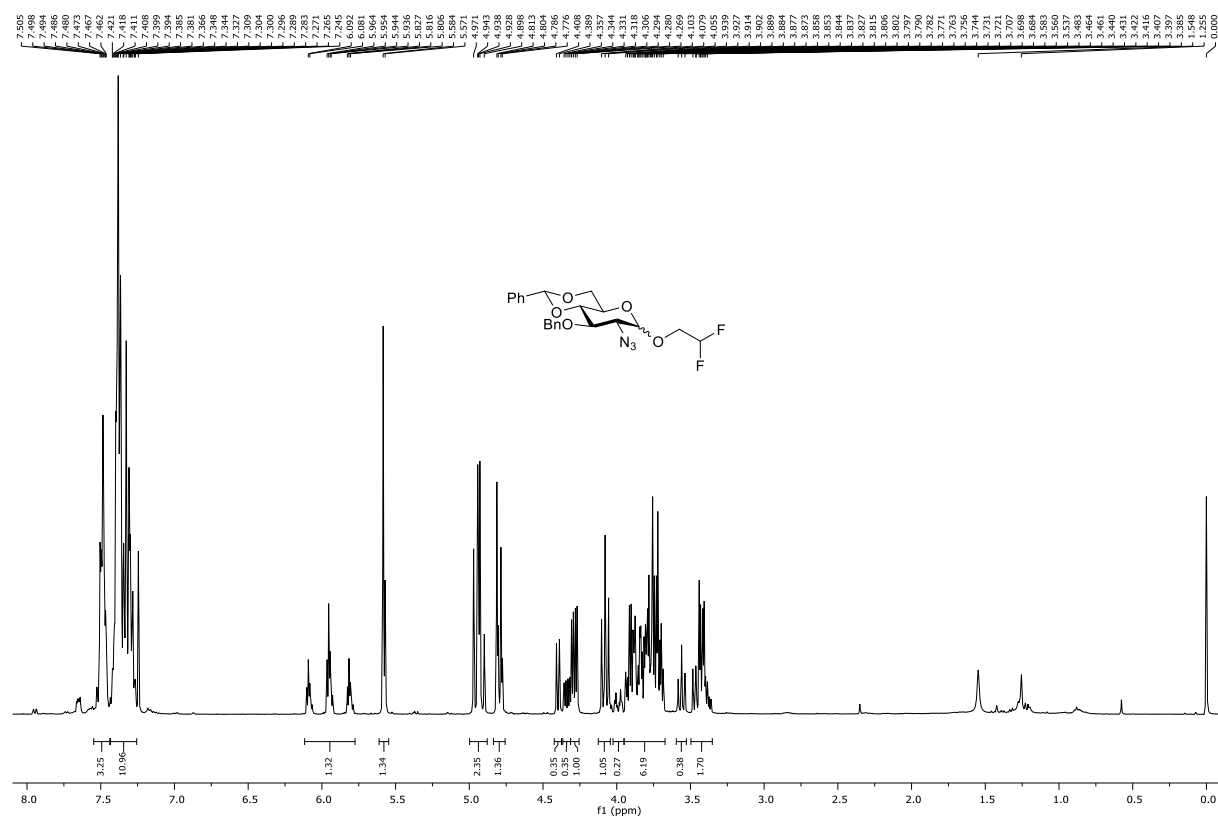


^1H - ^{13}C HMBC NMR, CDCl_3

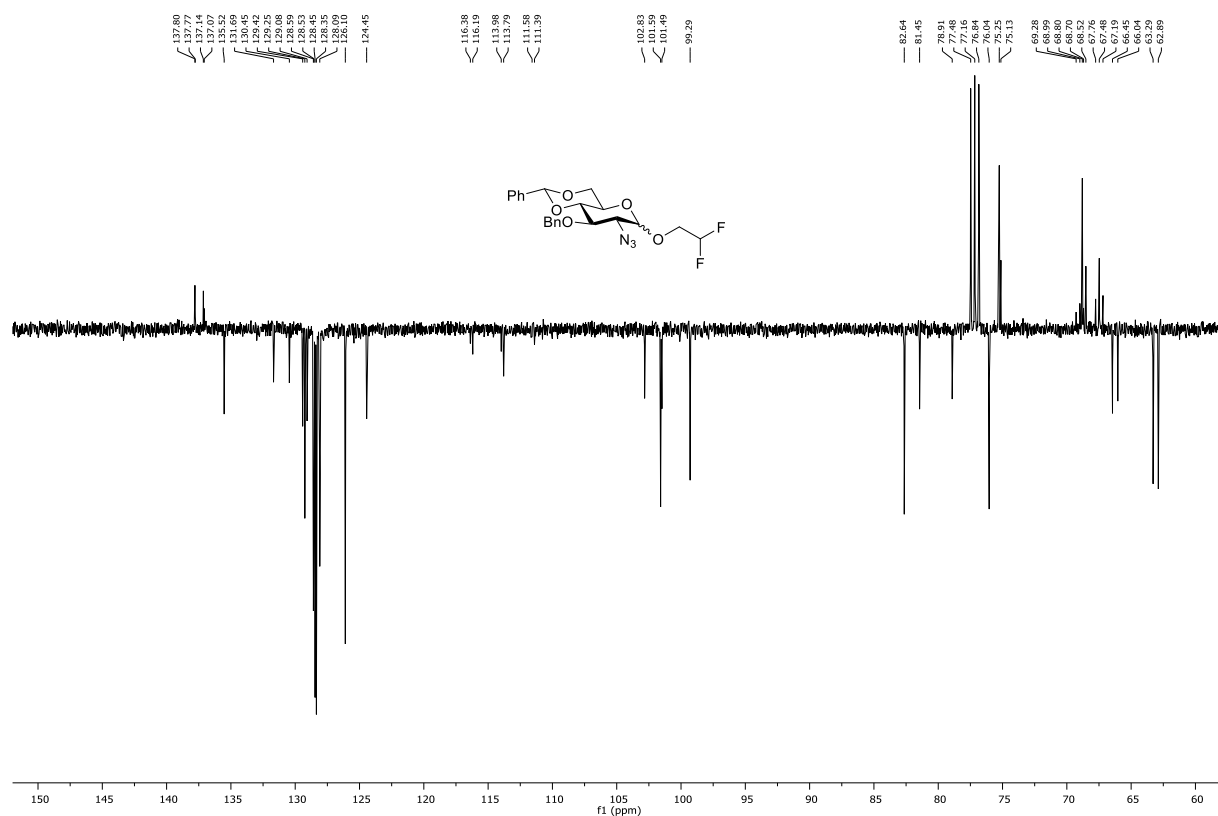


2,2-Difluoroethyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α / β -D-glucopyranoside (**3G**).

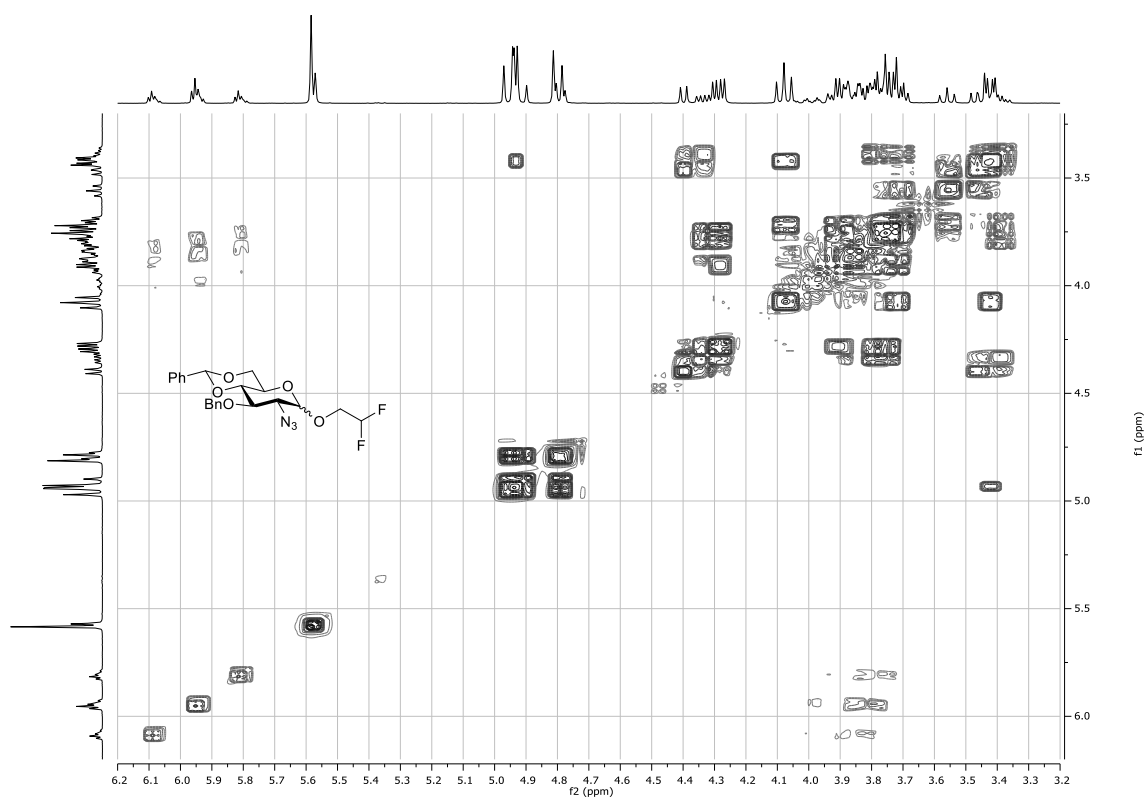
^1H NMR, 400 MHz, CDCl_3



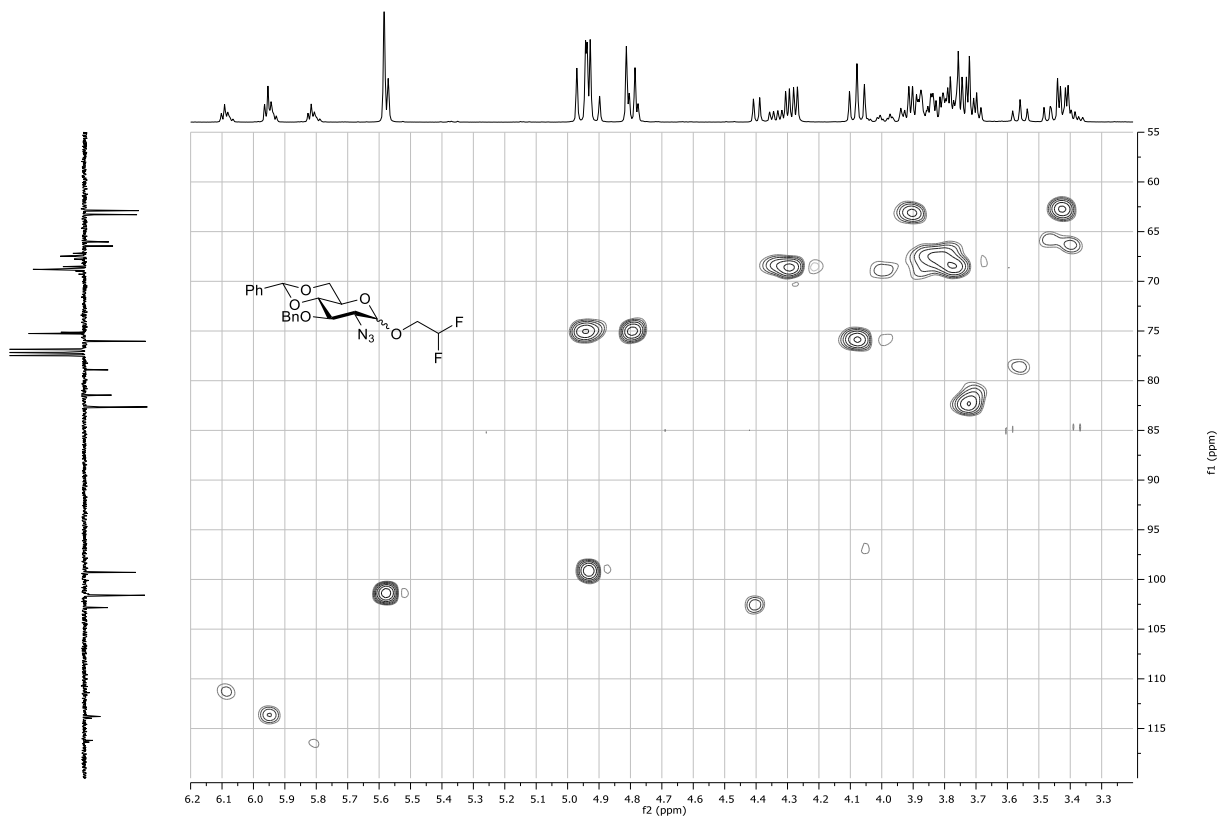
^{13}C -APT NMR, 101 MHz, CDCl_3



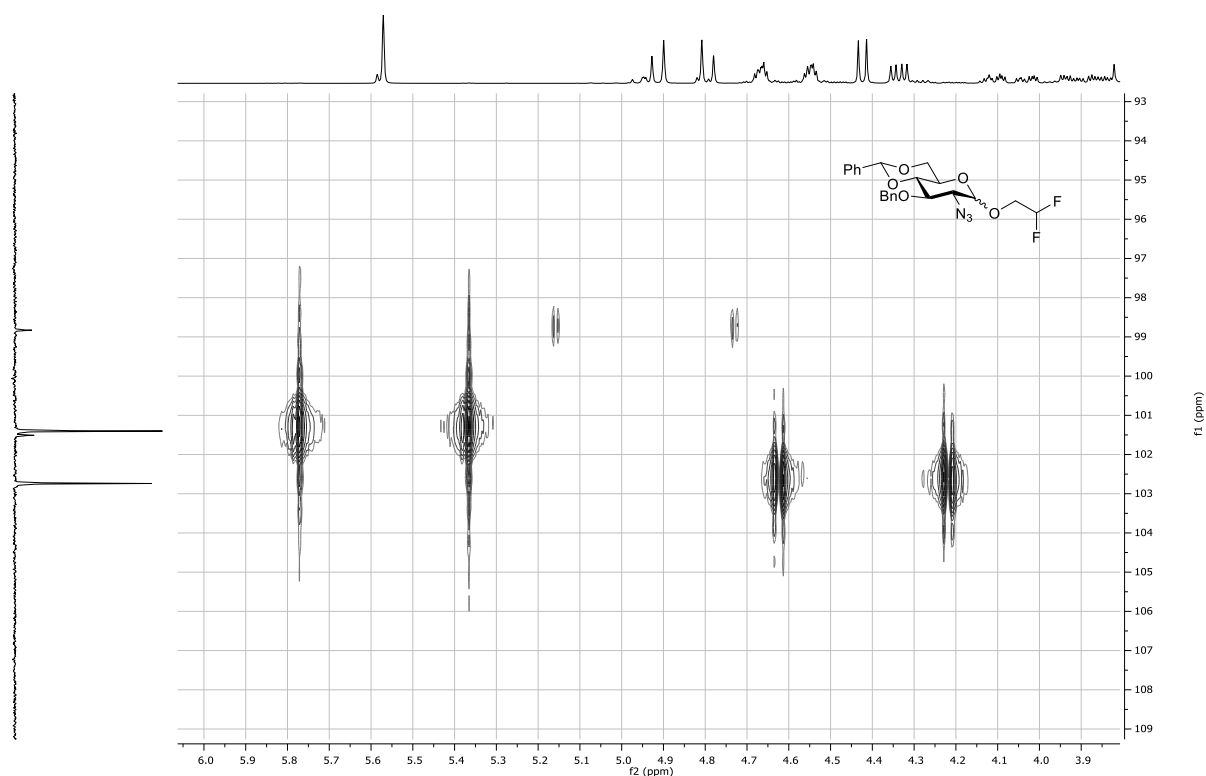
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

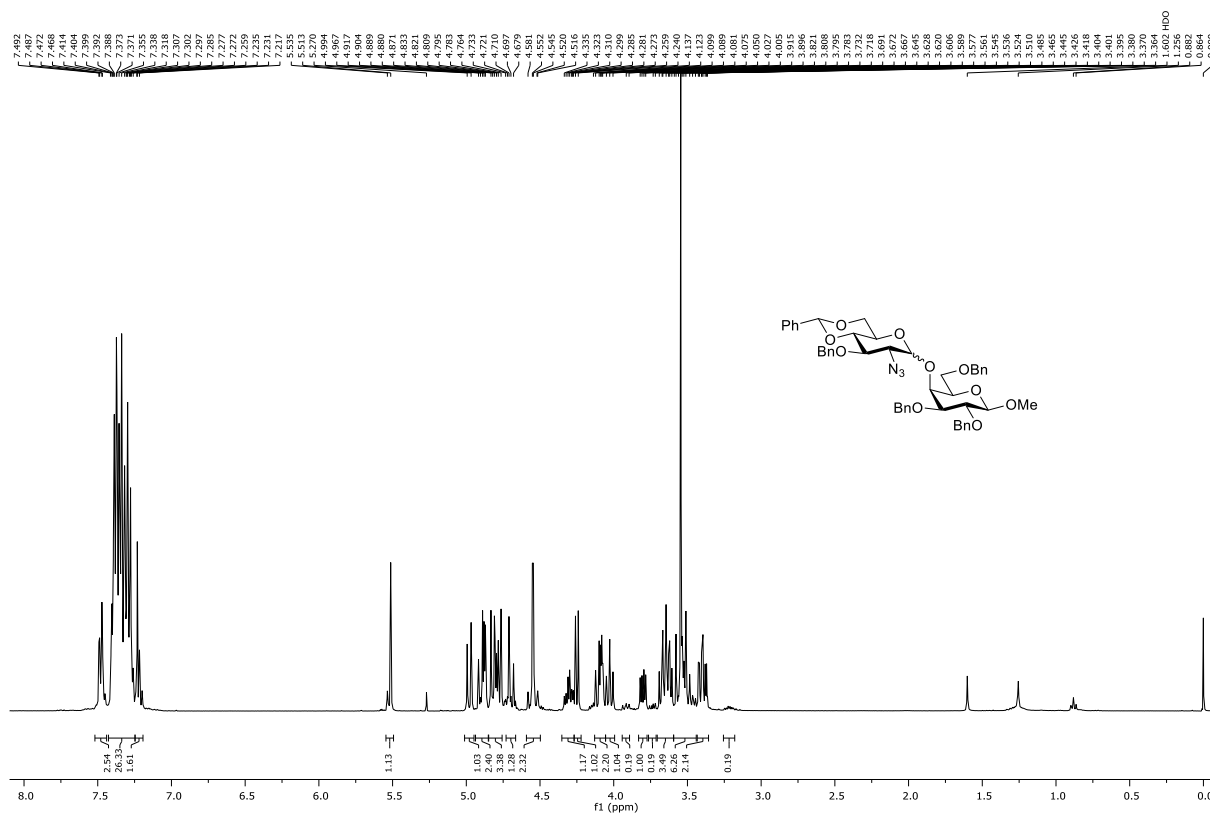


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

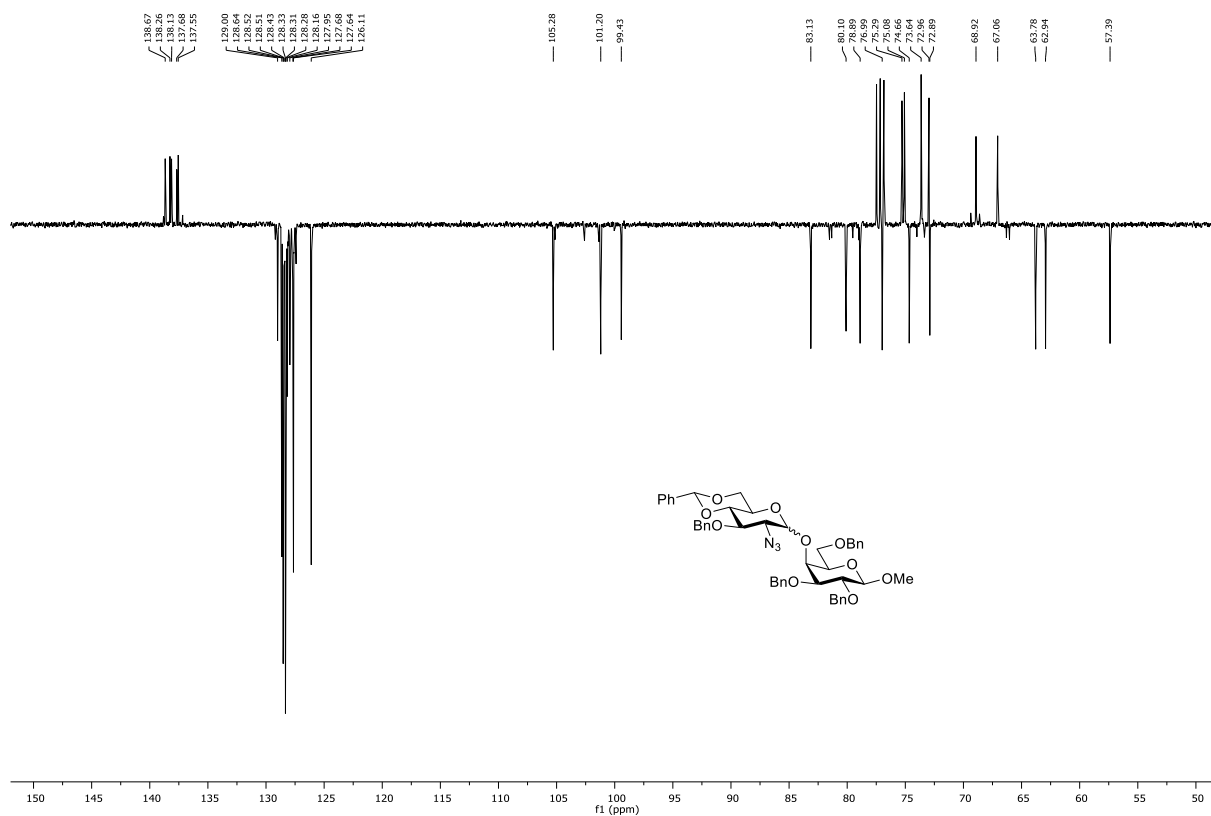


Methyl 4-*O*-(2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α - β -D-glucopyranosyl)-2,3,6-tri-*O*-benzyl- β -D-galactopyranoside (**3H**).

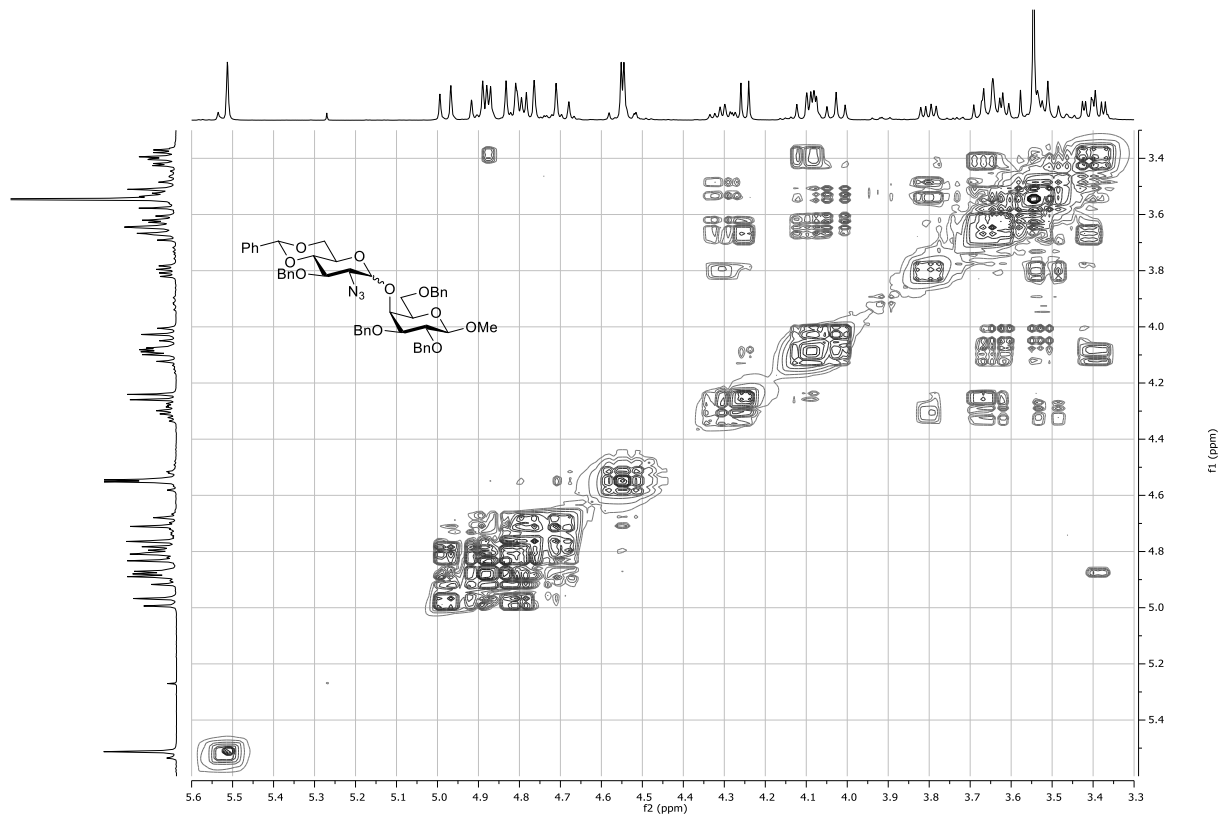
^1H NMR, 400 MHz, CDCl_3



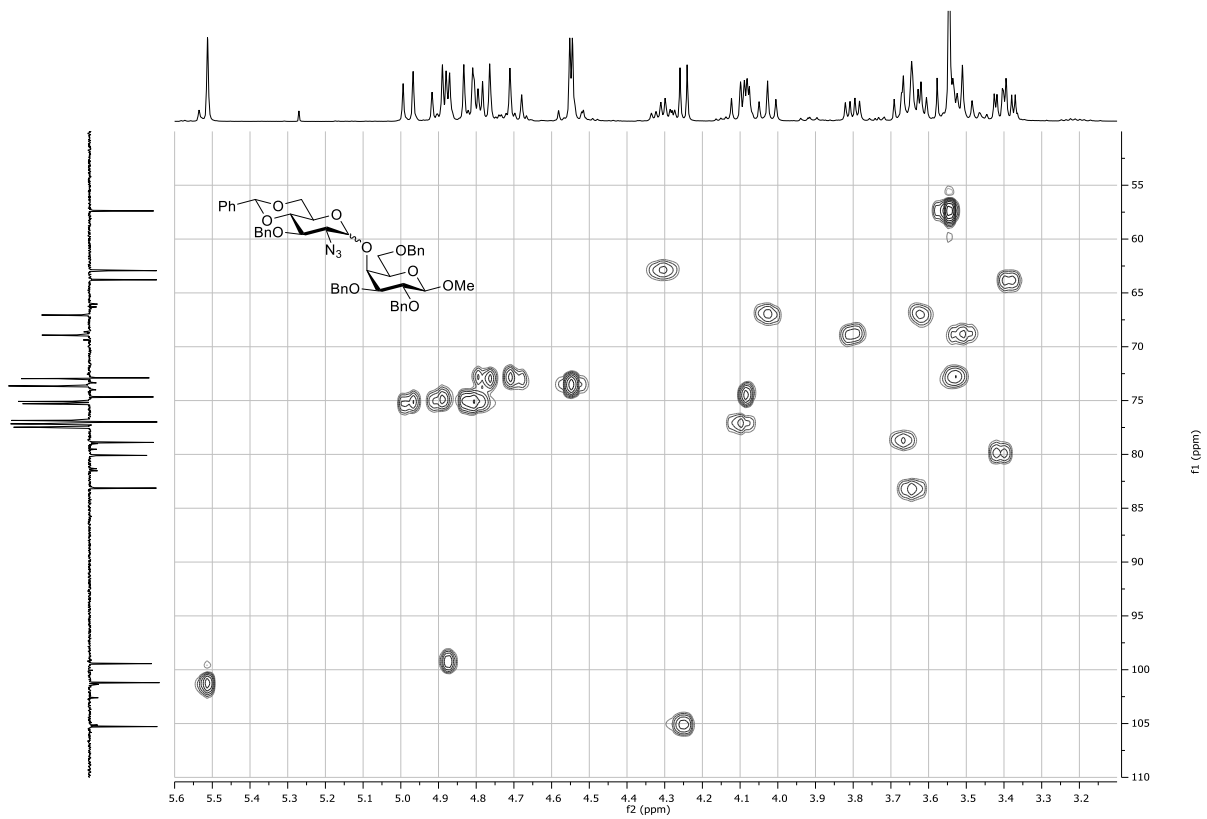
^{13}C -APT NMR, 101 MHz, CDCl_3



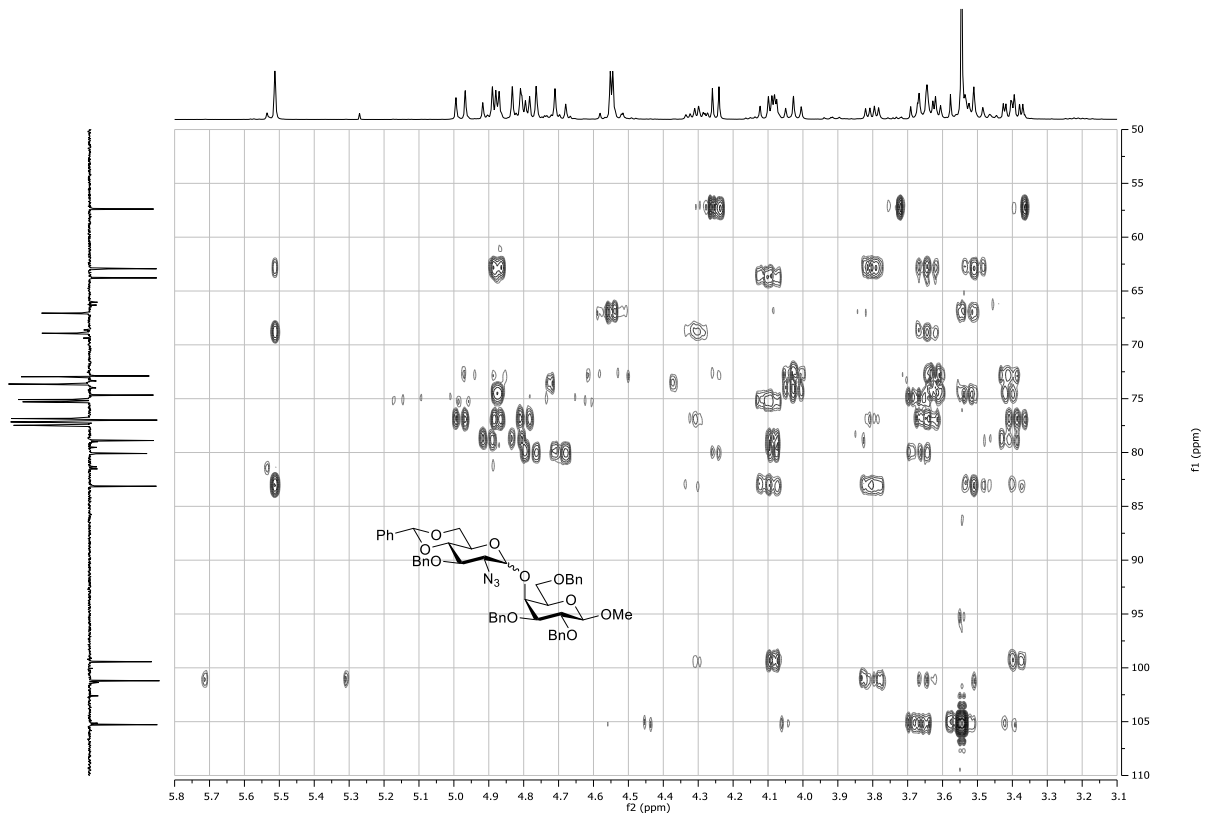
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

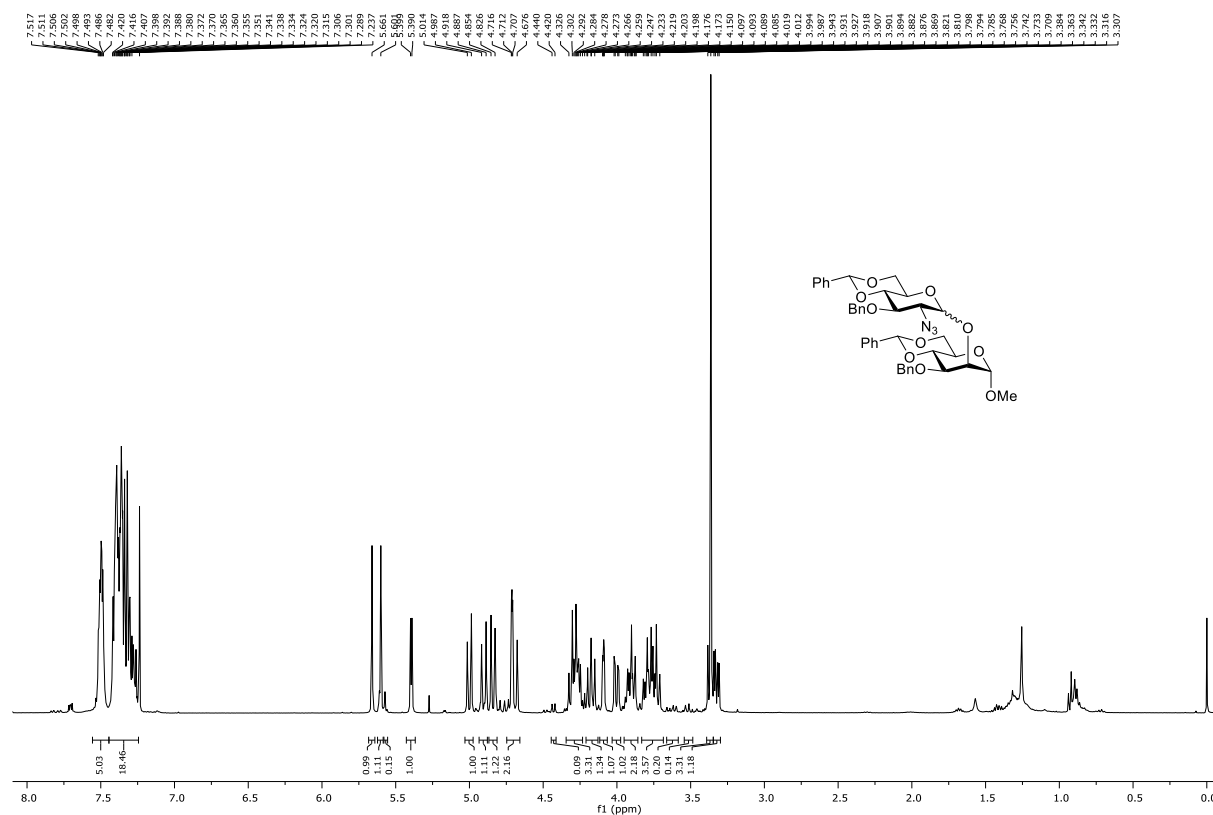


^1H - ^{13}C HMBC NMR, CDCl_3

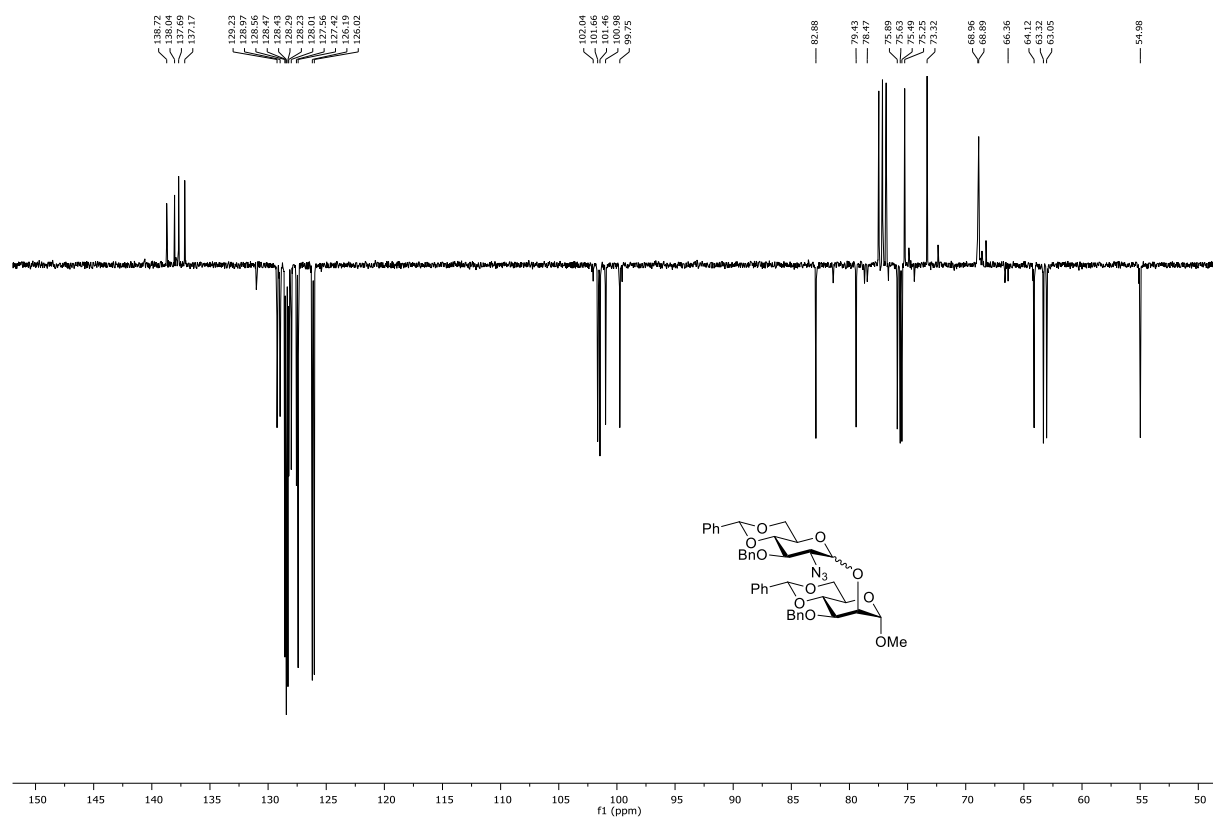


Methyl 2-*O*-(2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α / β -D-glucopyranosyl)-3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside (**31**).

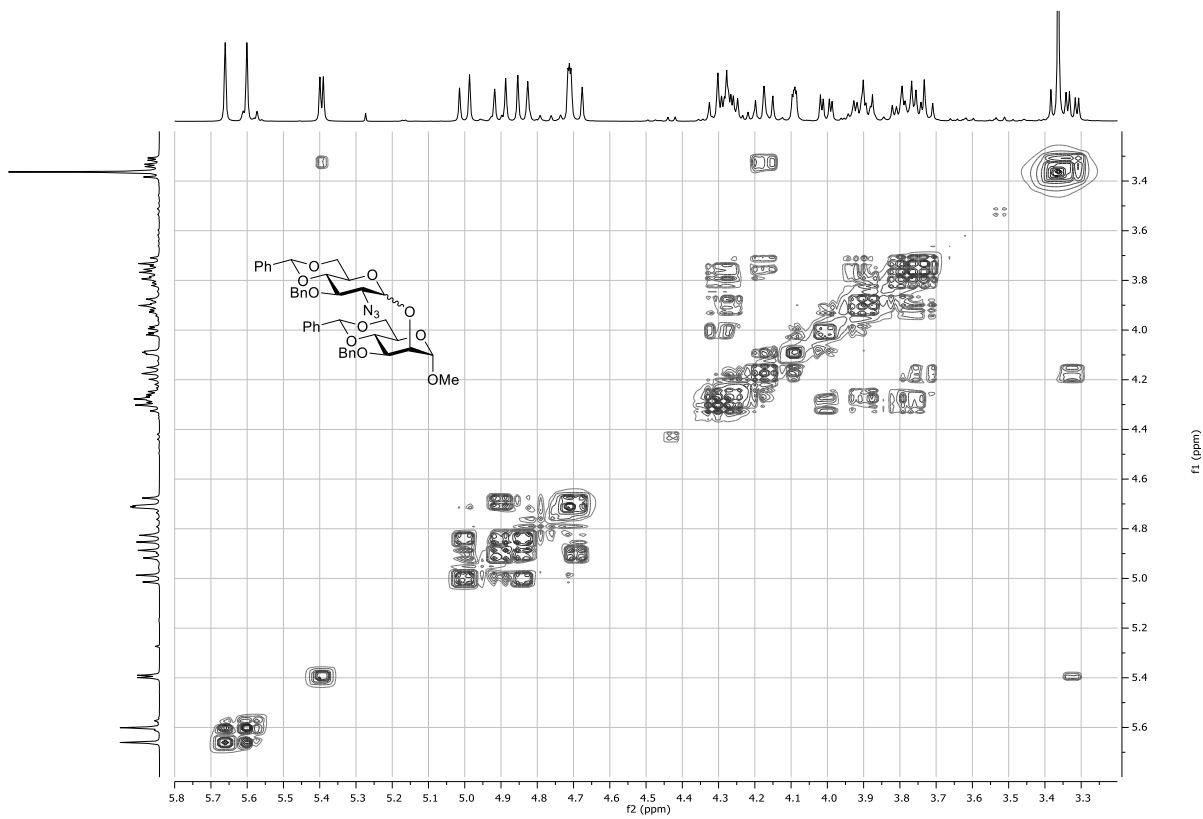
^1H NMR, 400 MHz, CDCl_3



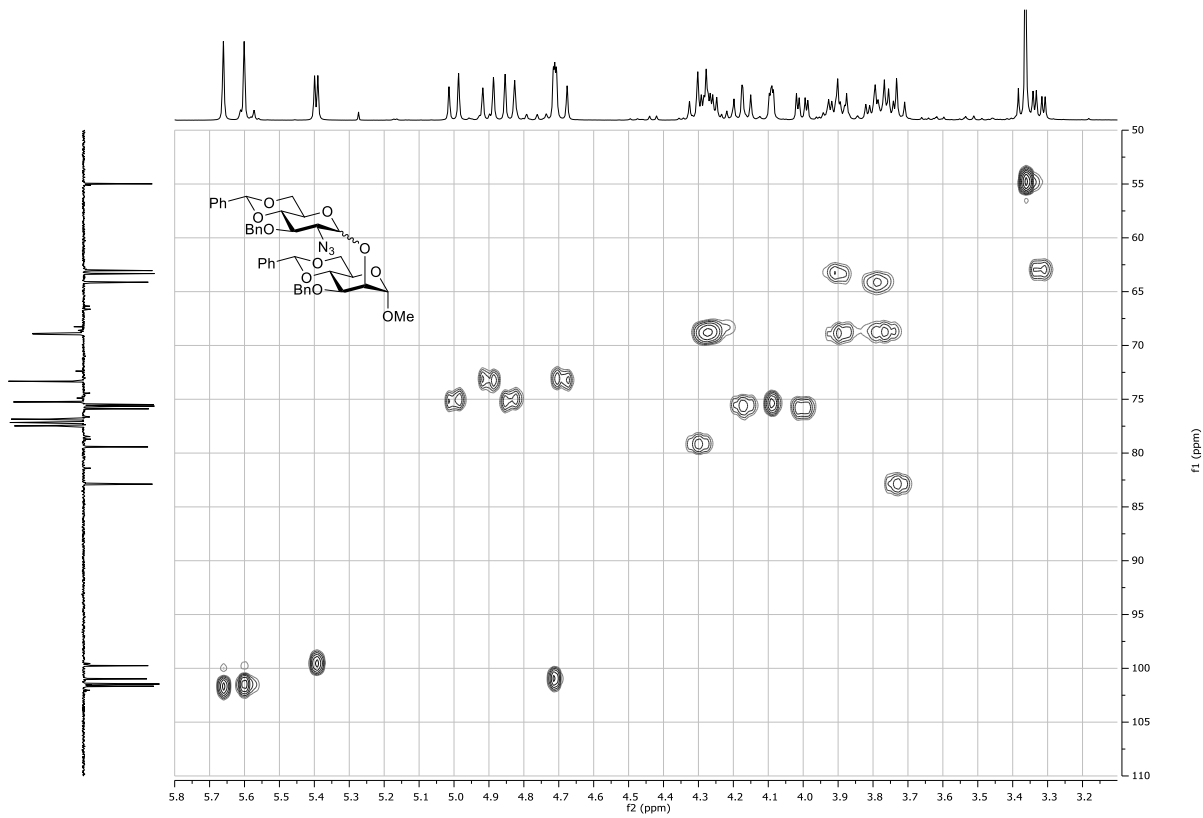
^{13}C -APT NMR, 101 MHz, CDCl_3



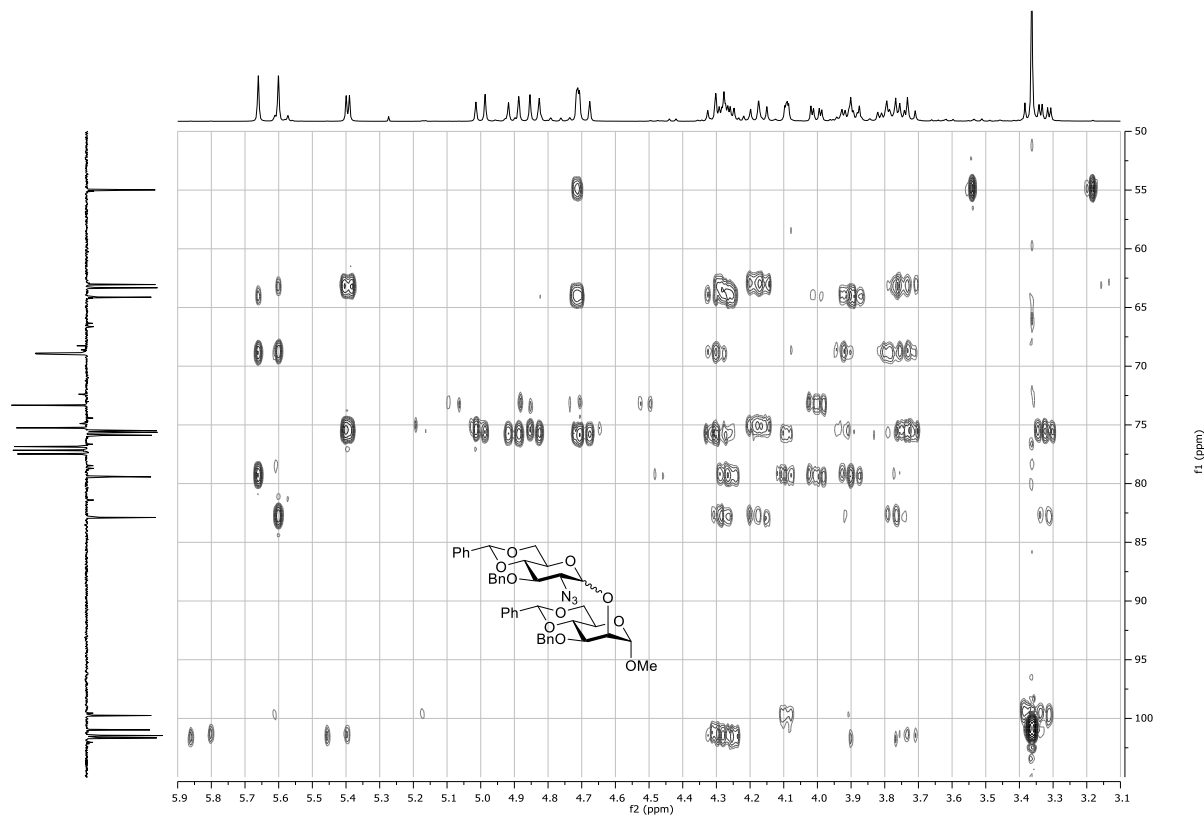
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

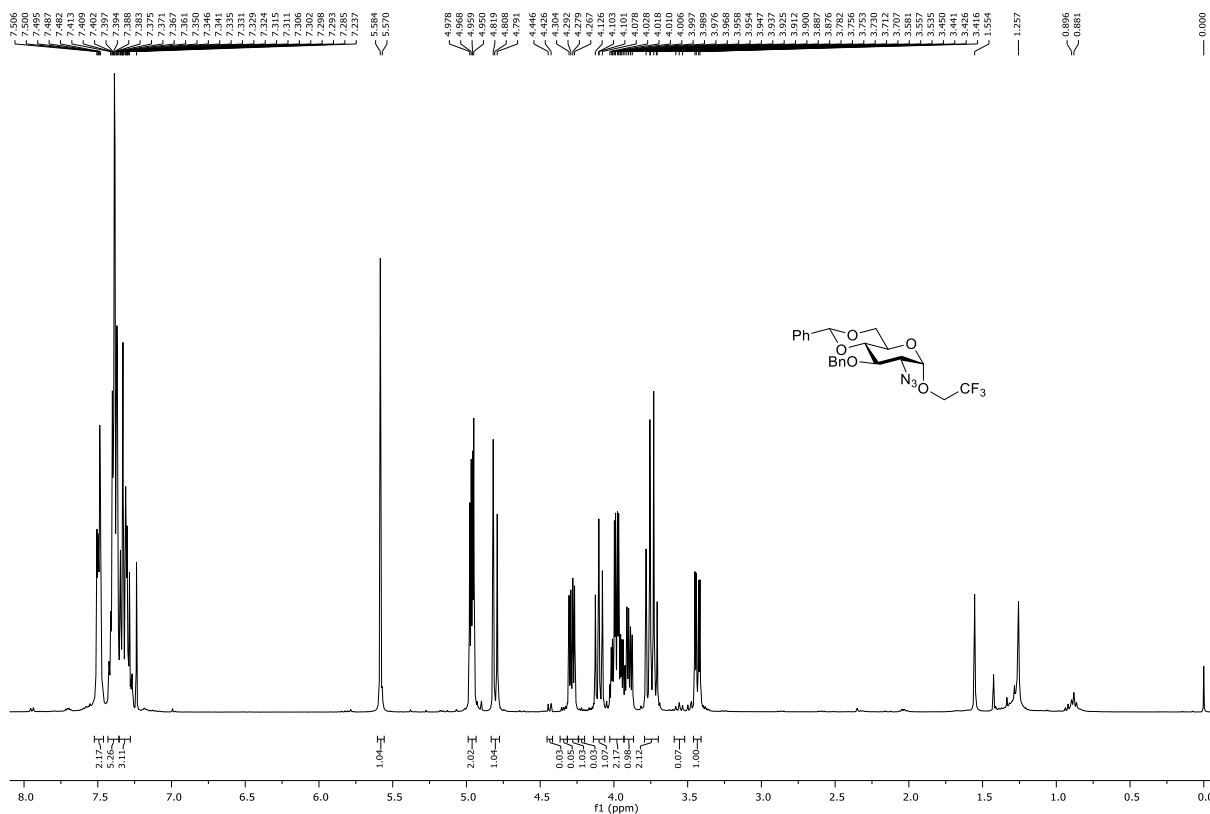


^1H - ^{13}C HMBC NMR, CDCl_3

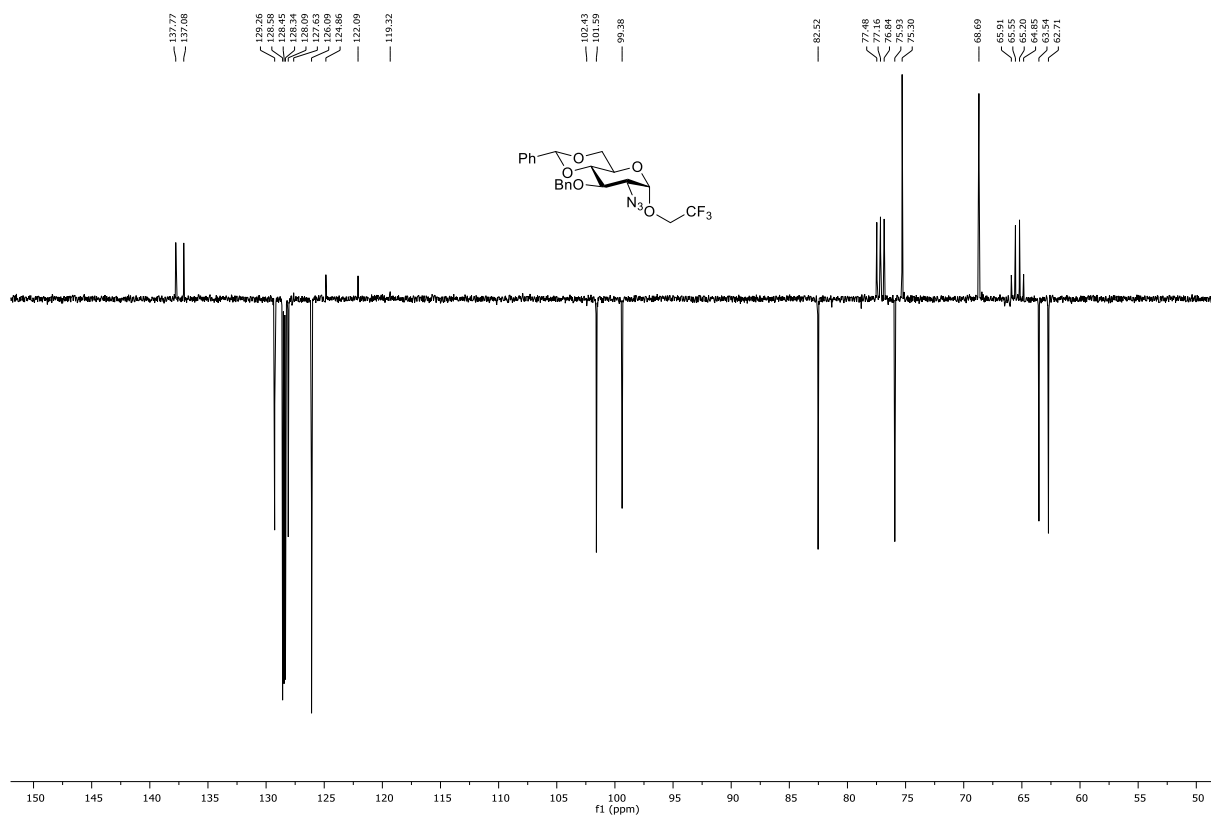


2,2,2-Trifluoroethyl 2-azido-3-O-benzyl-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside (**3J**).

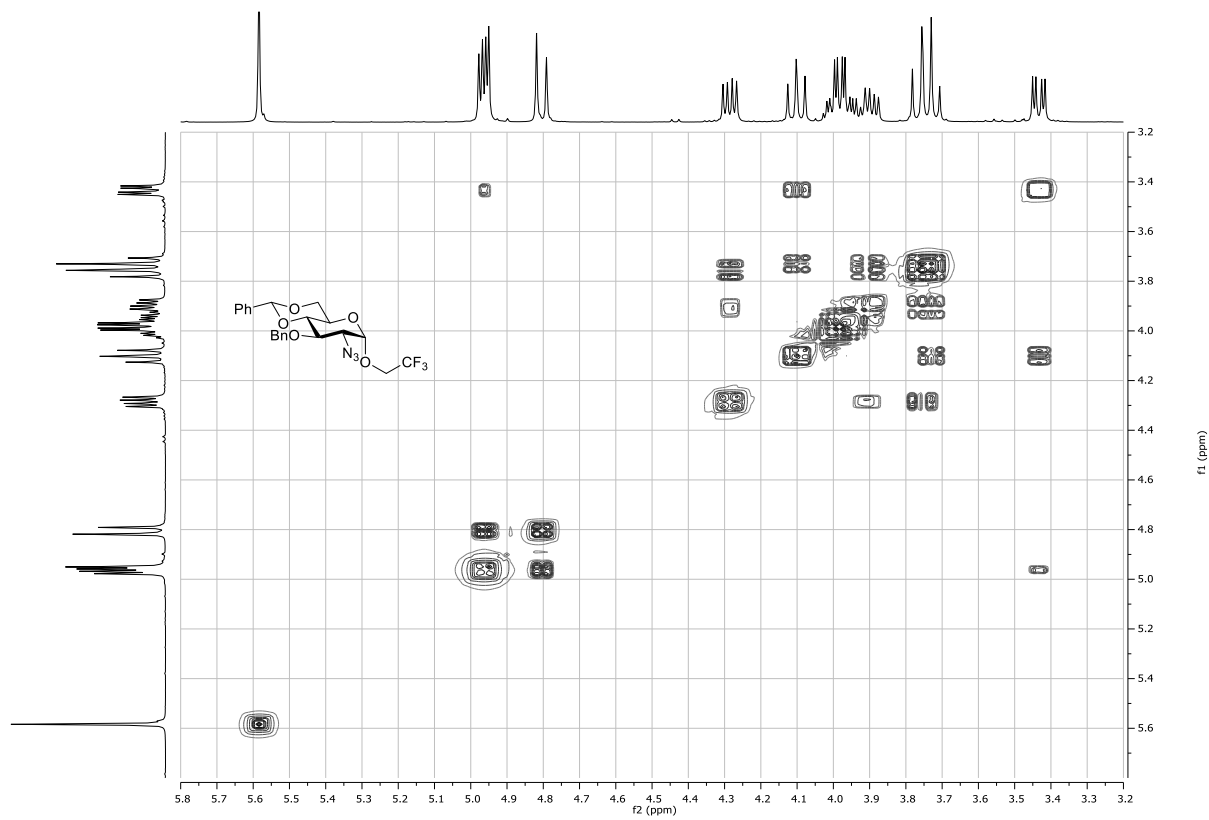
^1H NMR, 400 MHz, CDCl_3



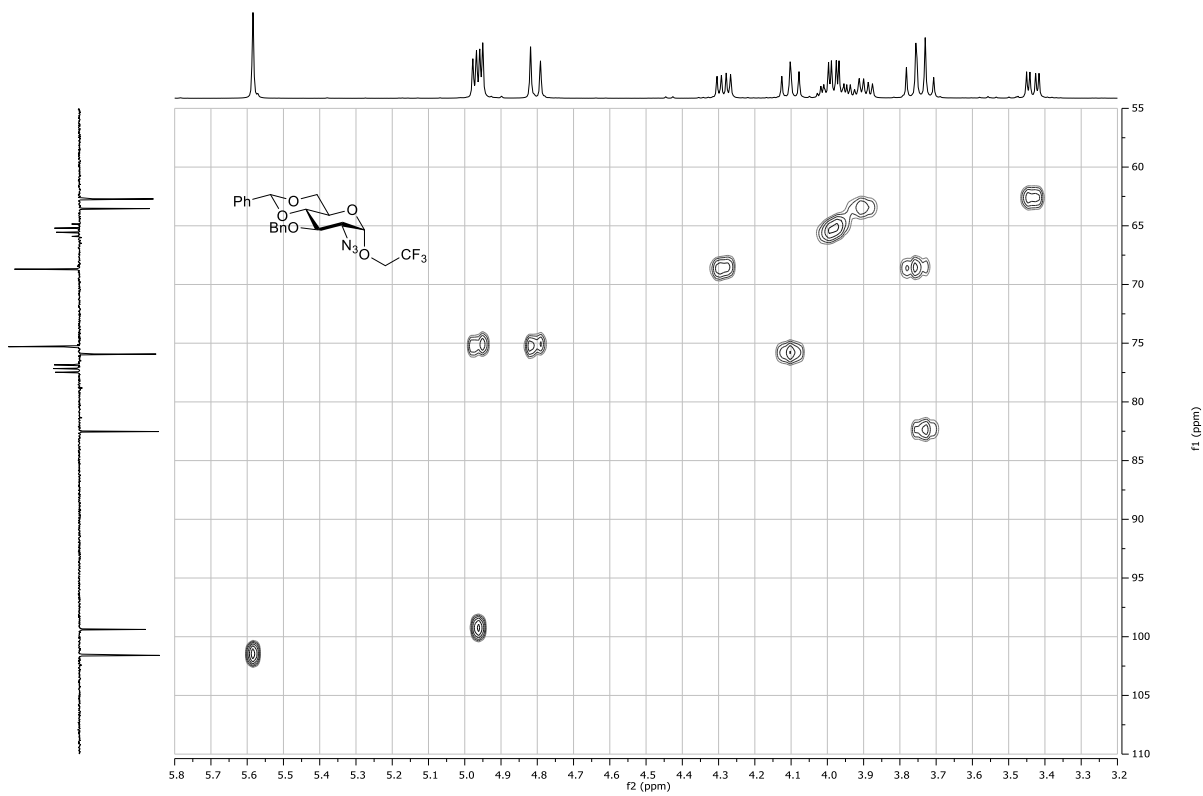
^{13}C -APT NMR, 101 MHz, CDCl_3



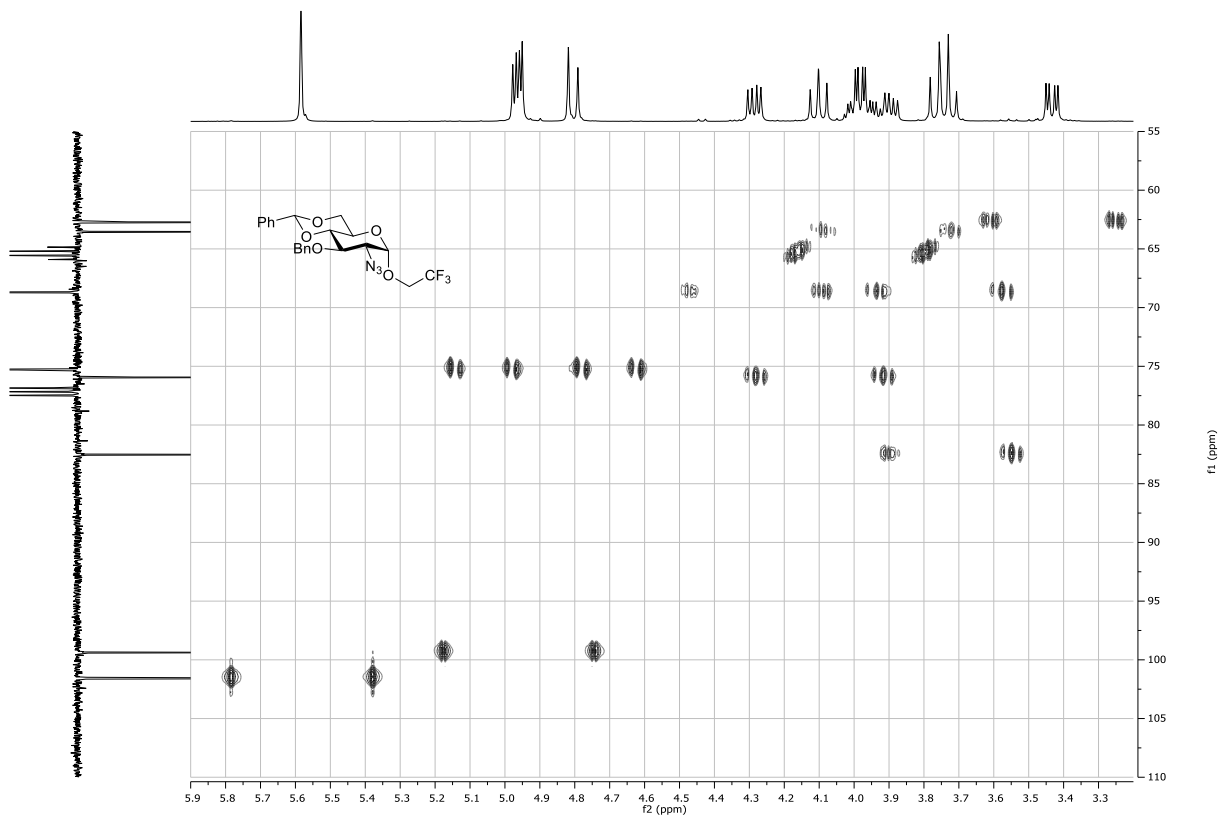
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

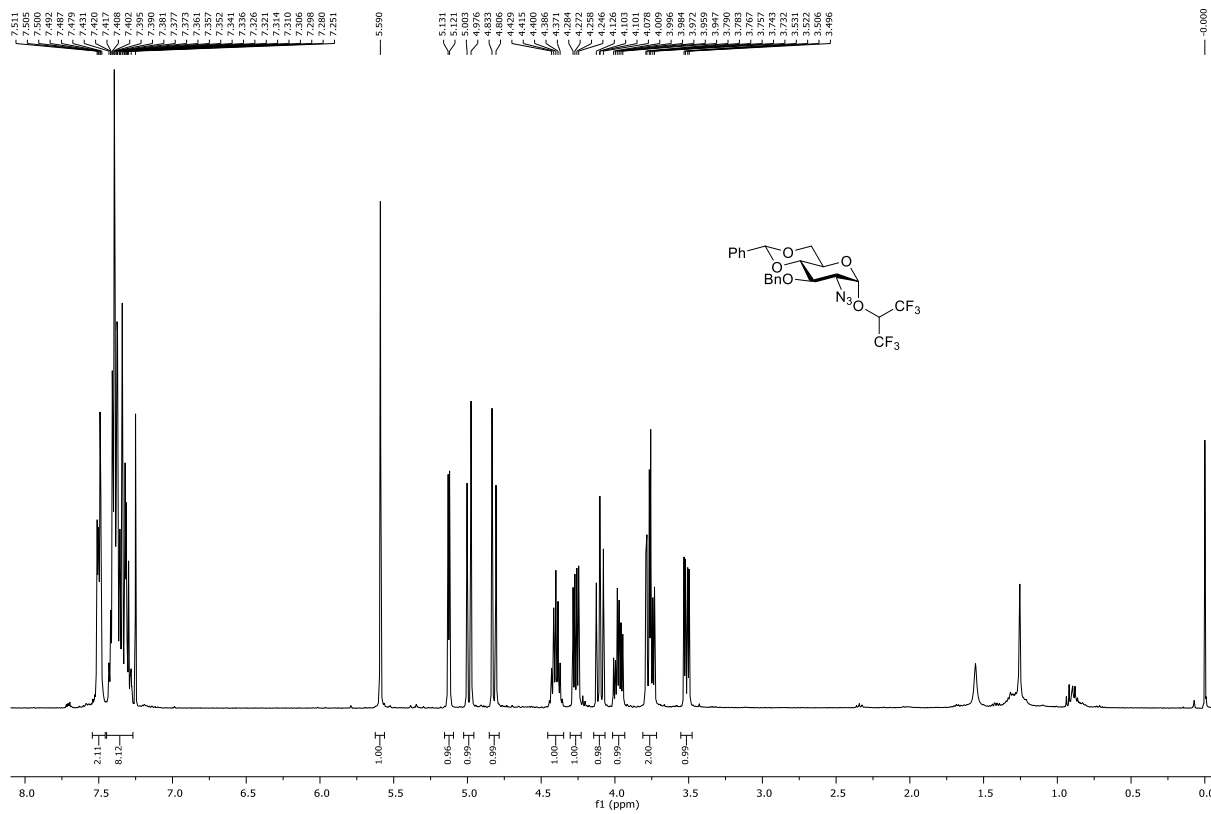


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

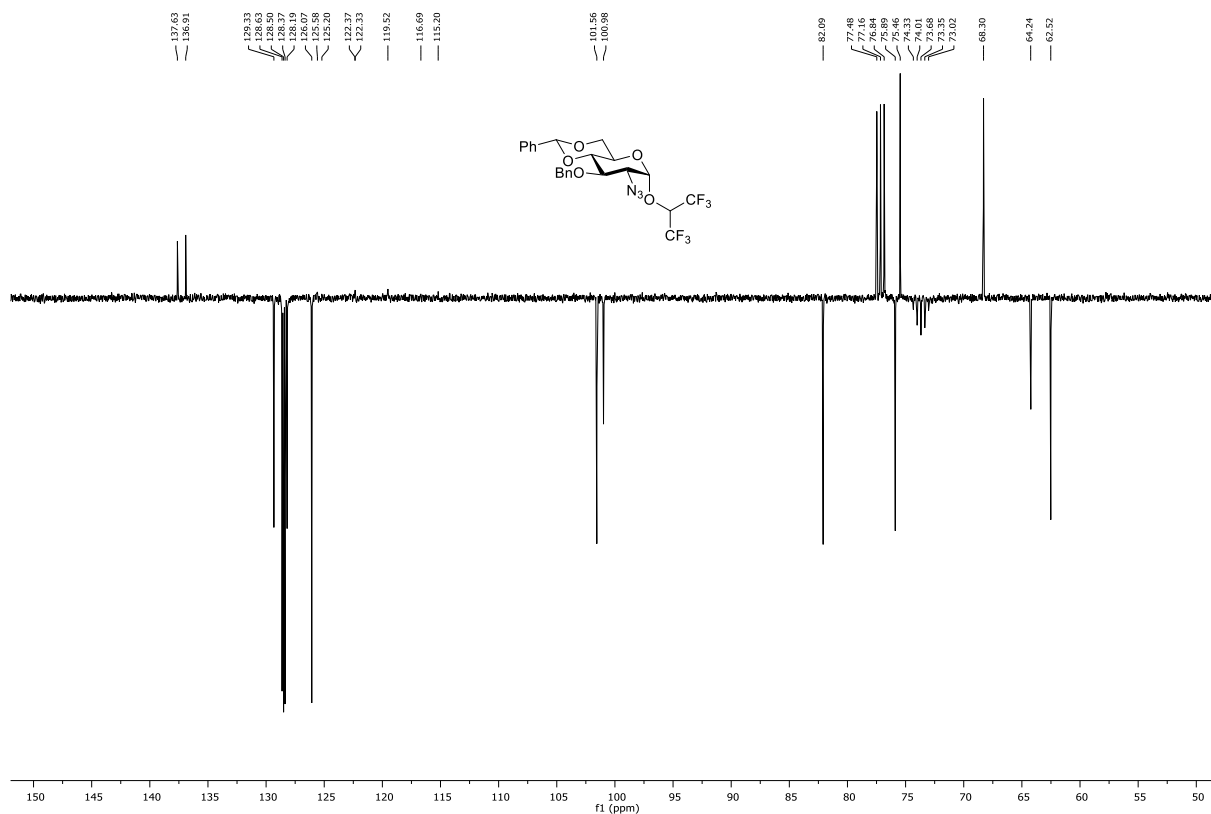


1,1,1,3,3,3-Hexafluoro-2-propyl 2-azido-3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy- α -D-glucopyranoside (**3K**).

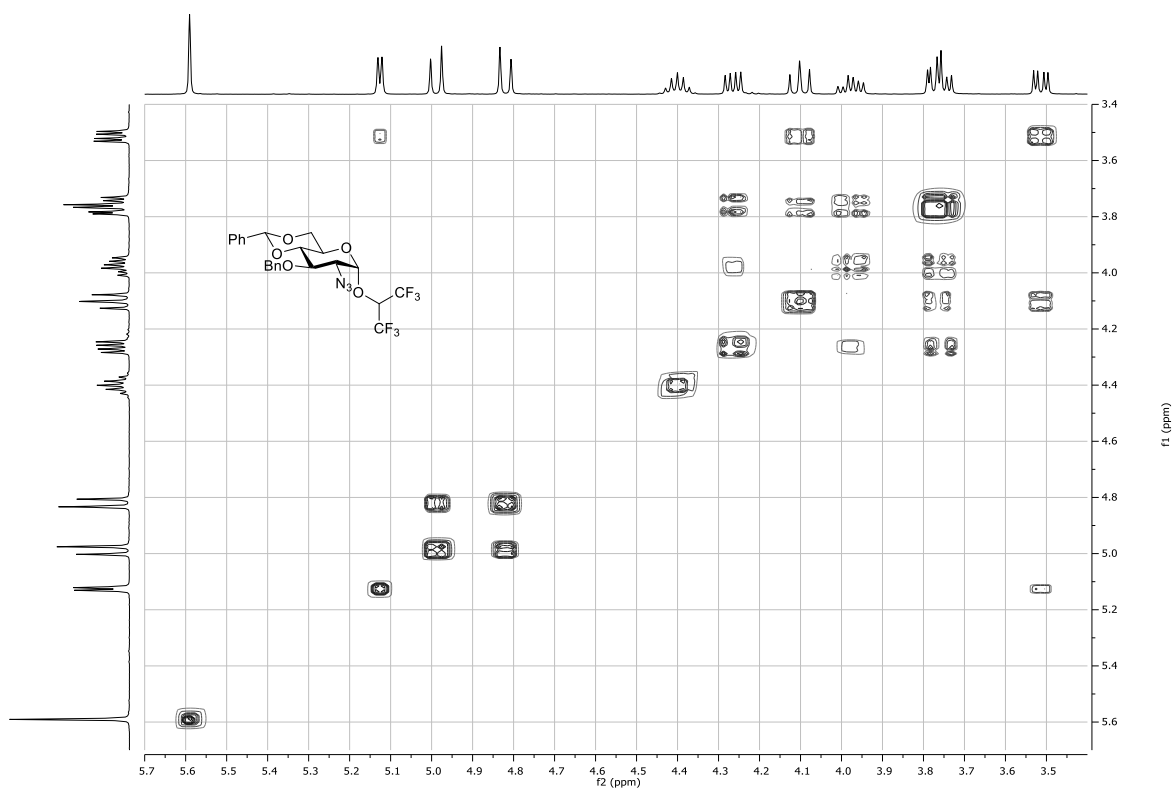
^1H NMR, 400 MHz, CDCl_3



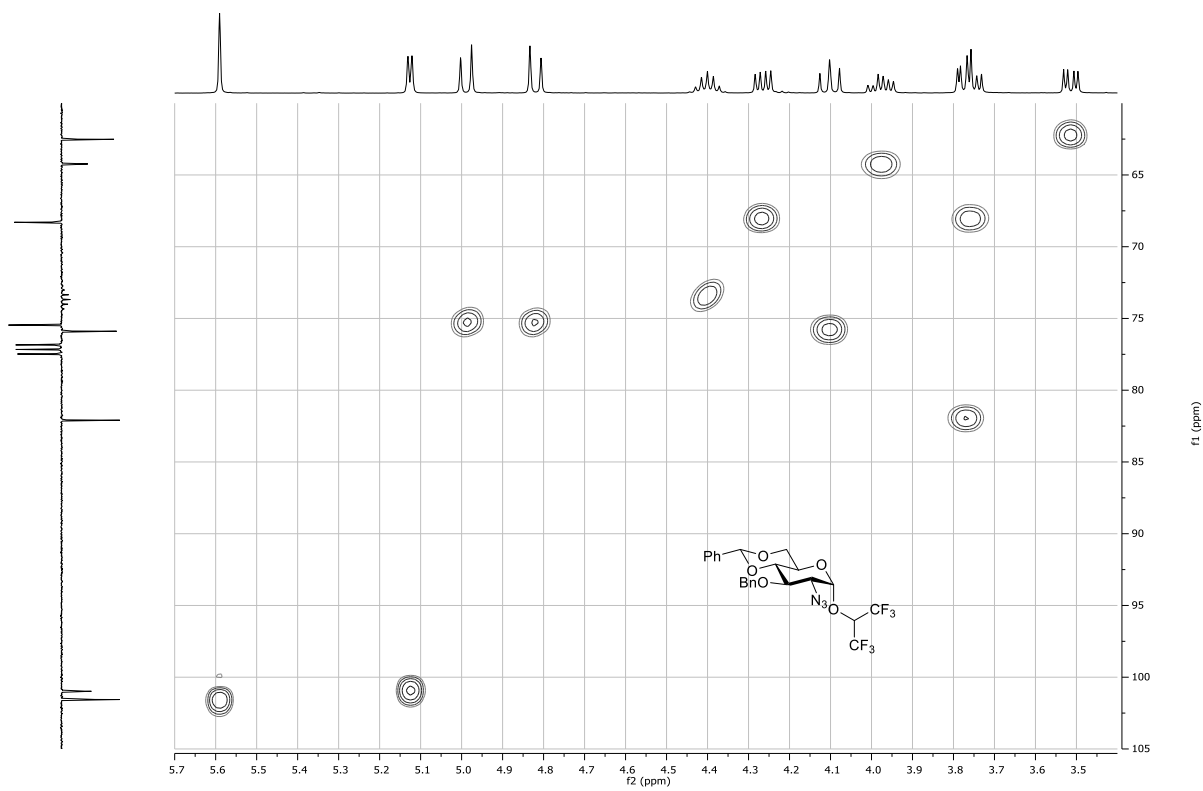
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

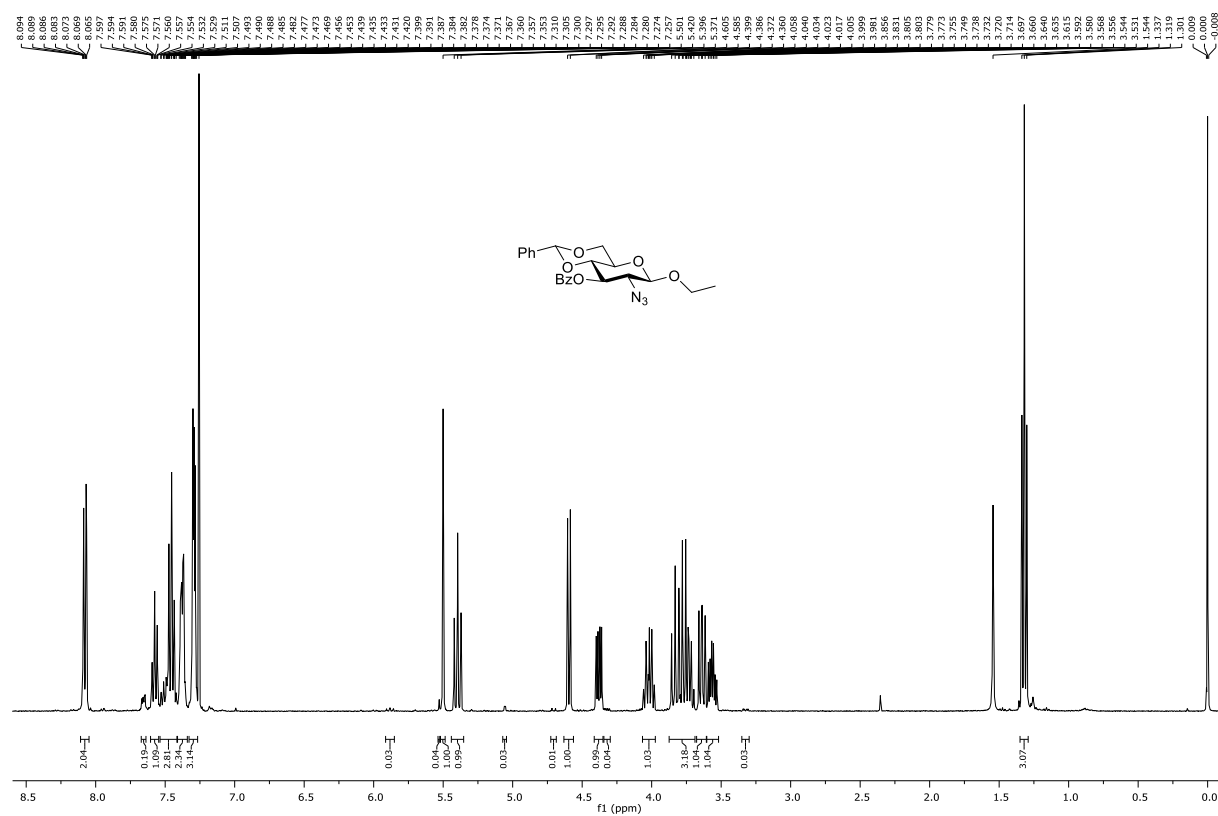


^1H - ^{13}C HSQC NMR, CDCl_3

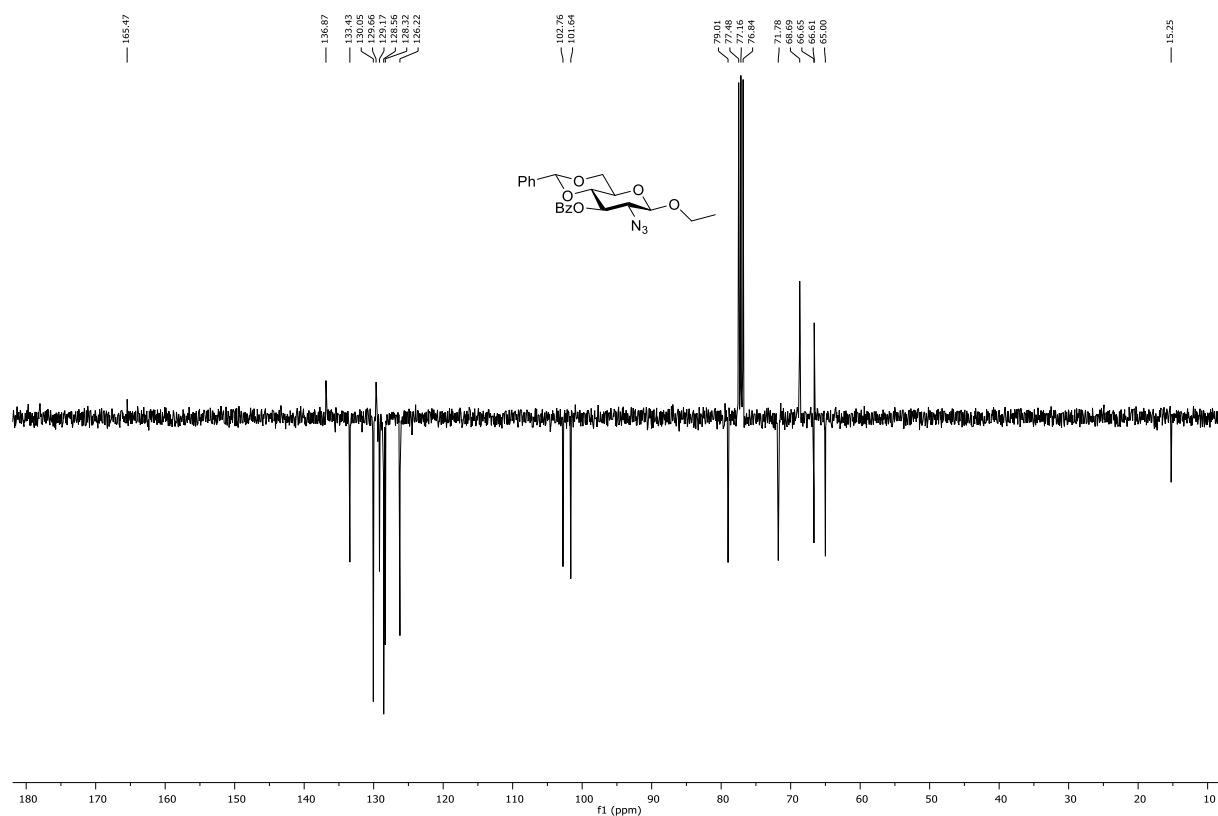


Ethyl 2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranoside (**4A**).

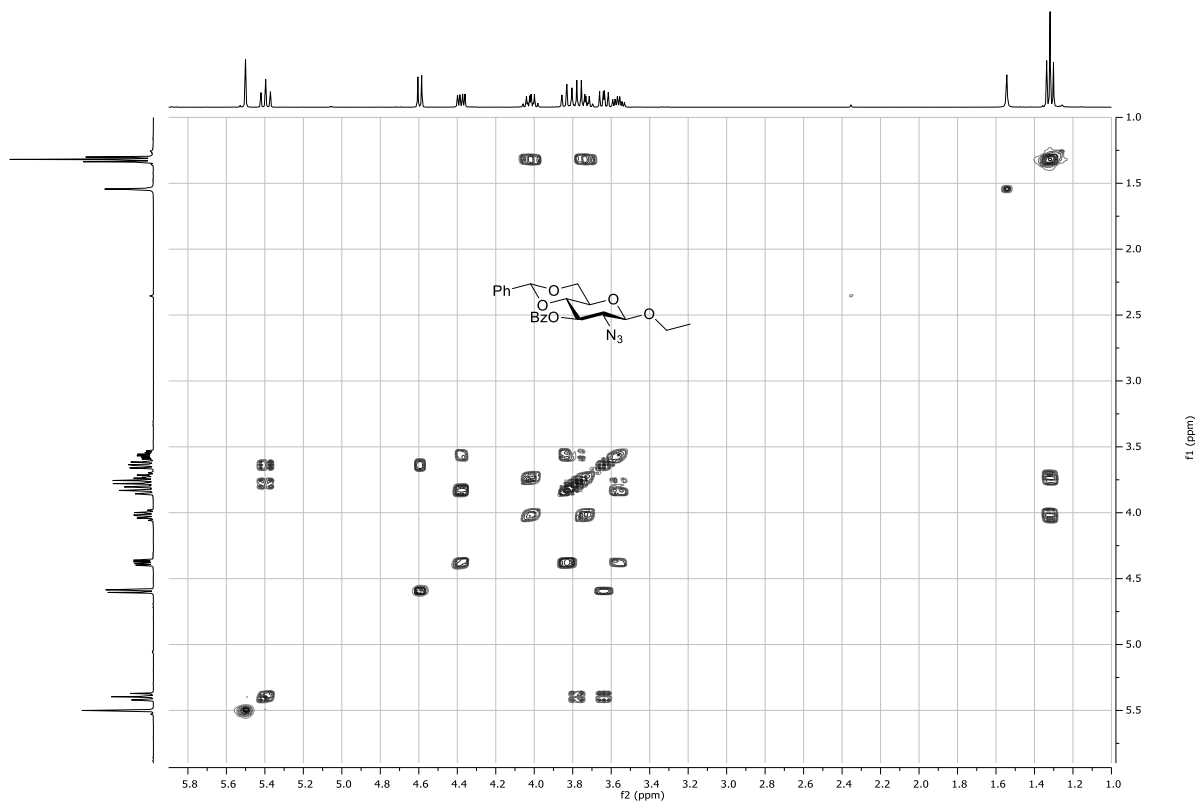
^1H NMR, 400 MHz, CDCl_3



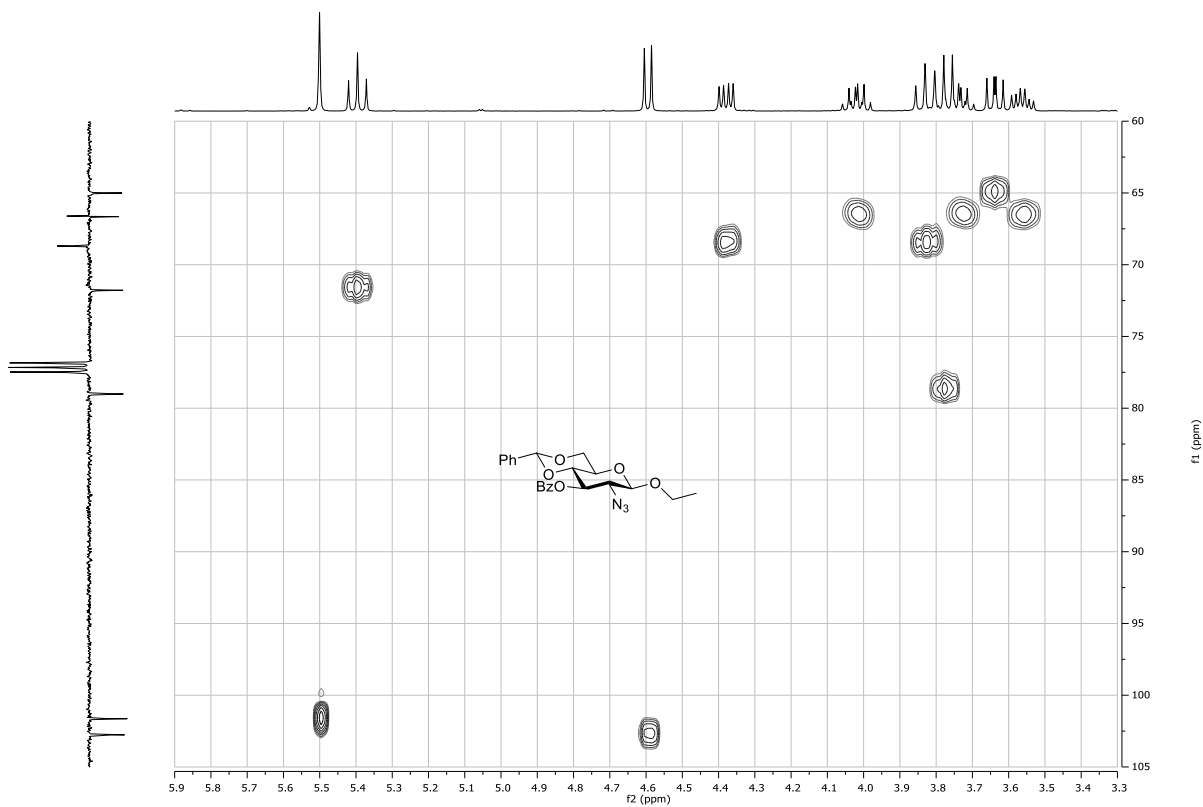
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

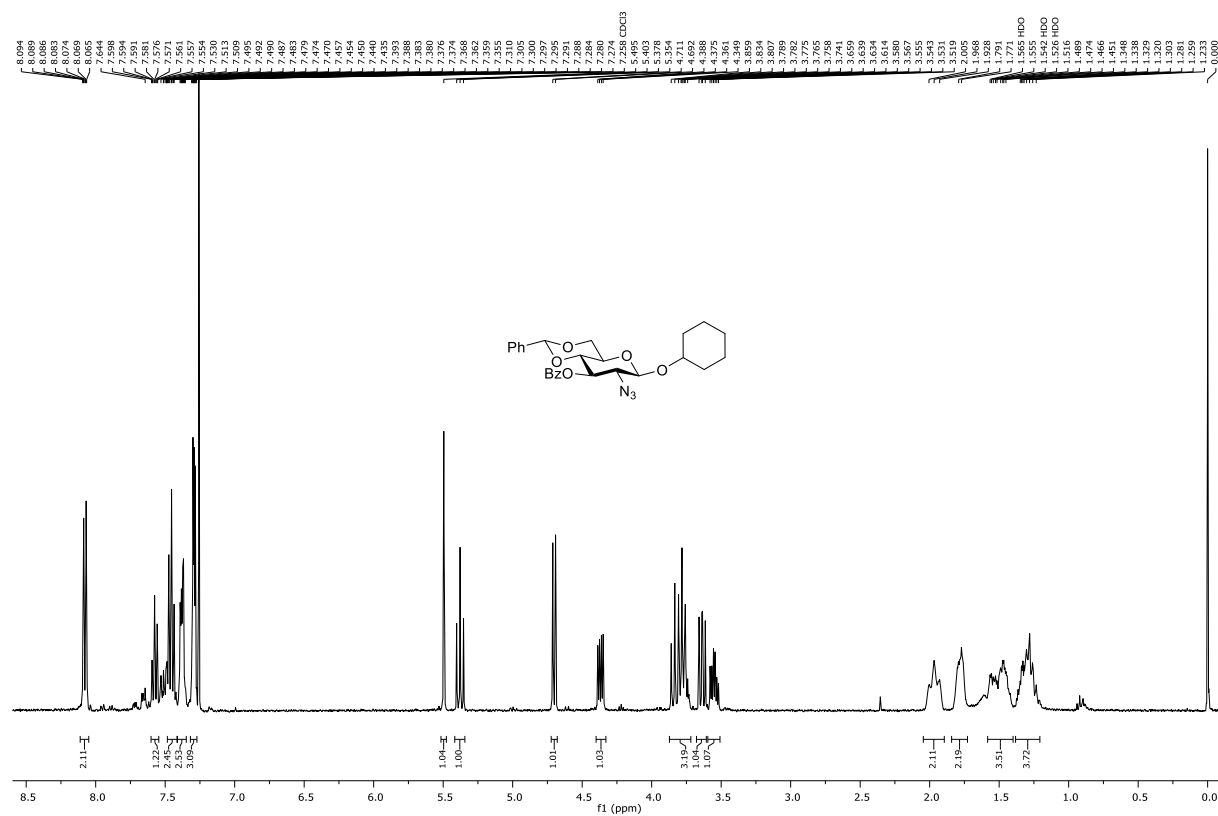


^1H - ^{13}C HSQC NMR, CDCl_3

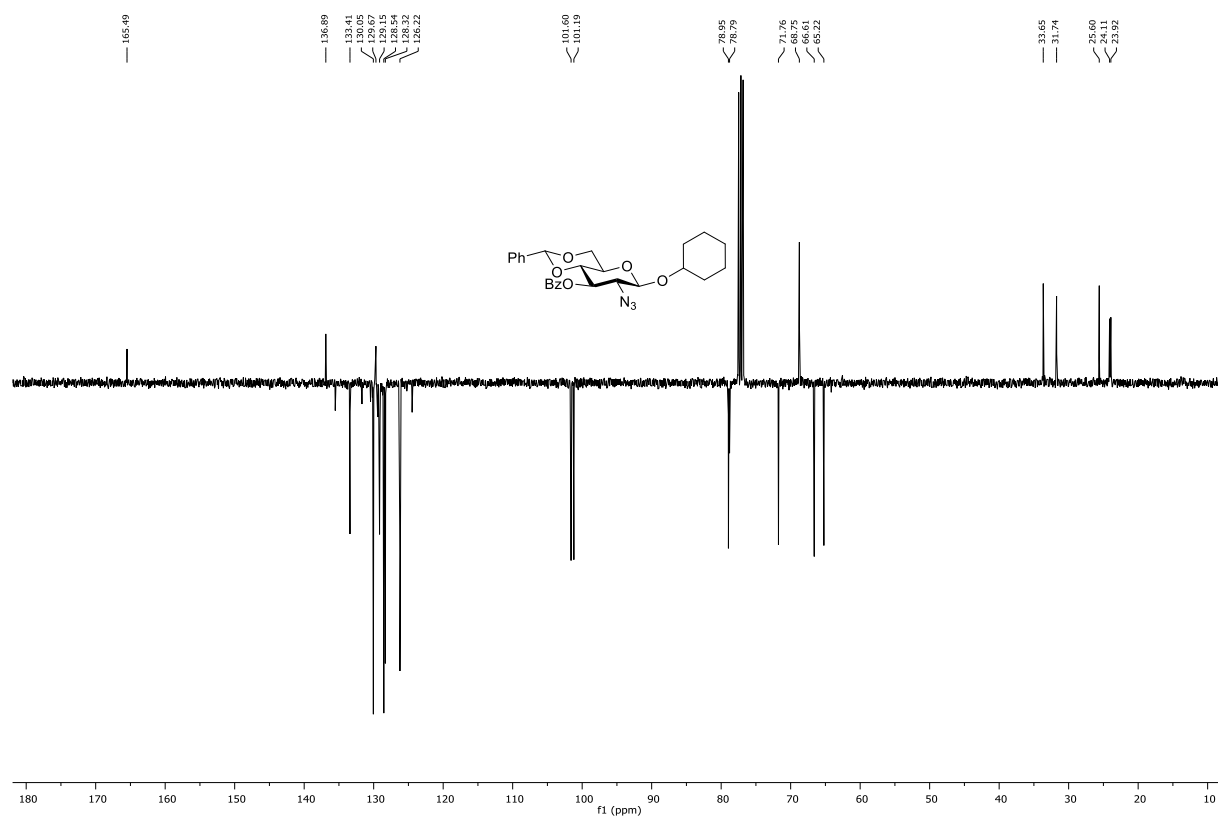


Cyclohexyl 2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- β -D-glucopyranoside (**4B**).

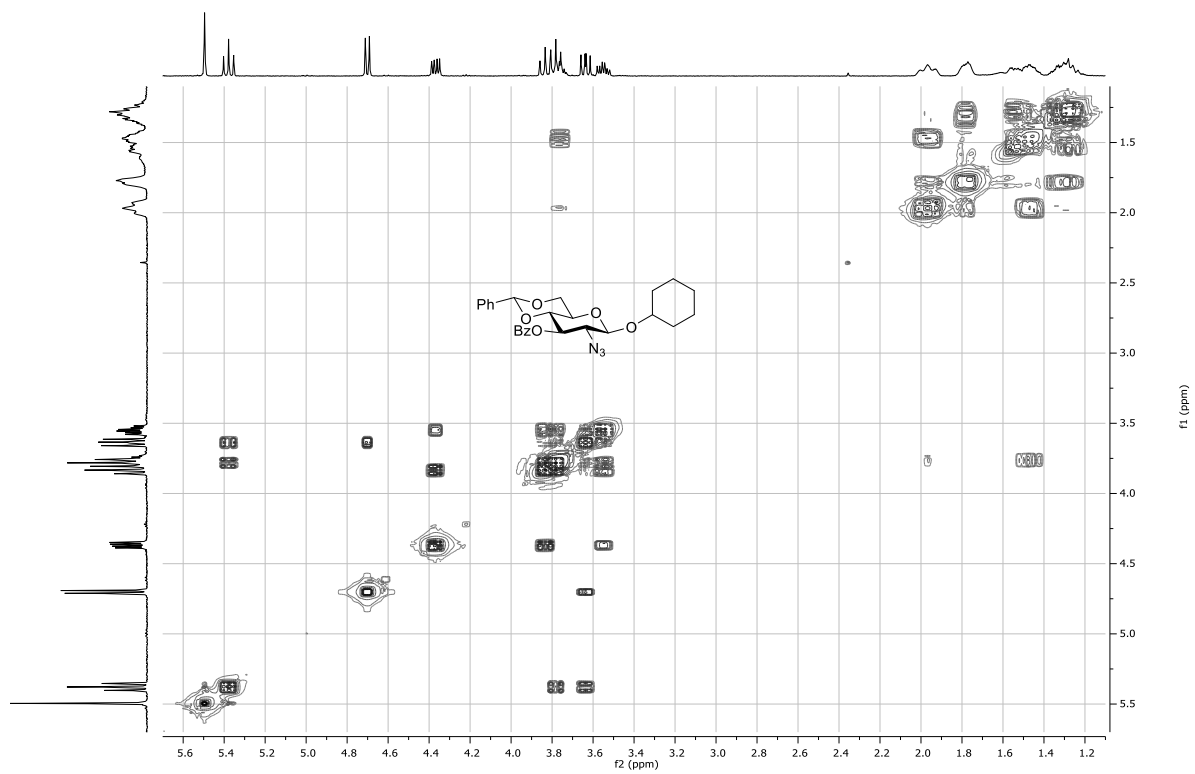
^1H NMR, 400 MHz, CDCl_3



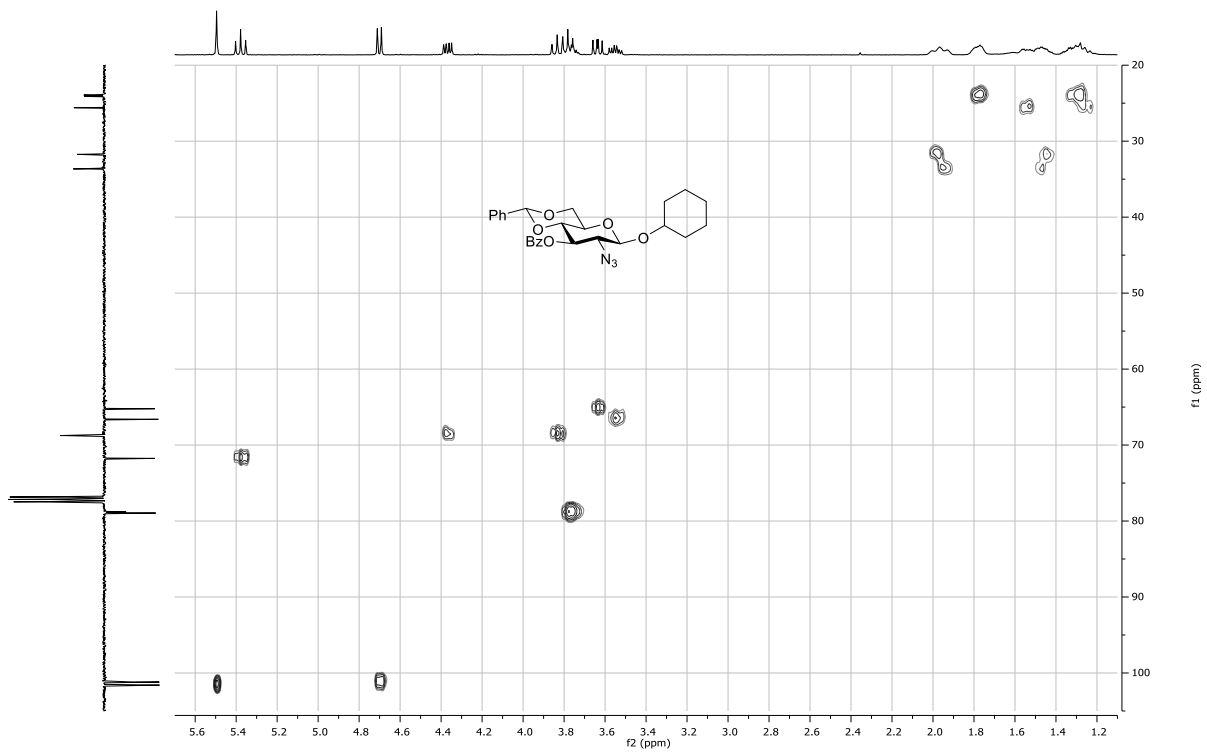
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

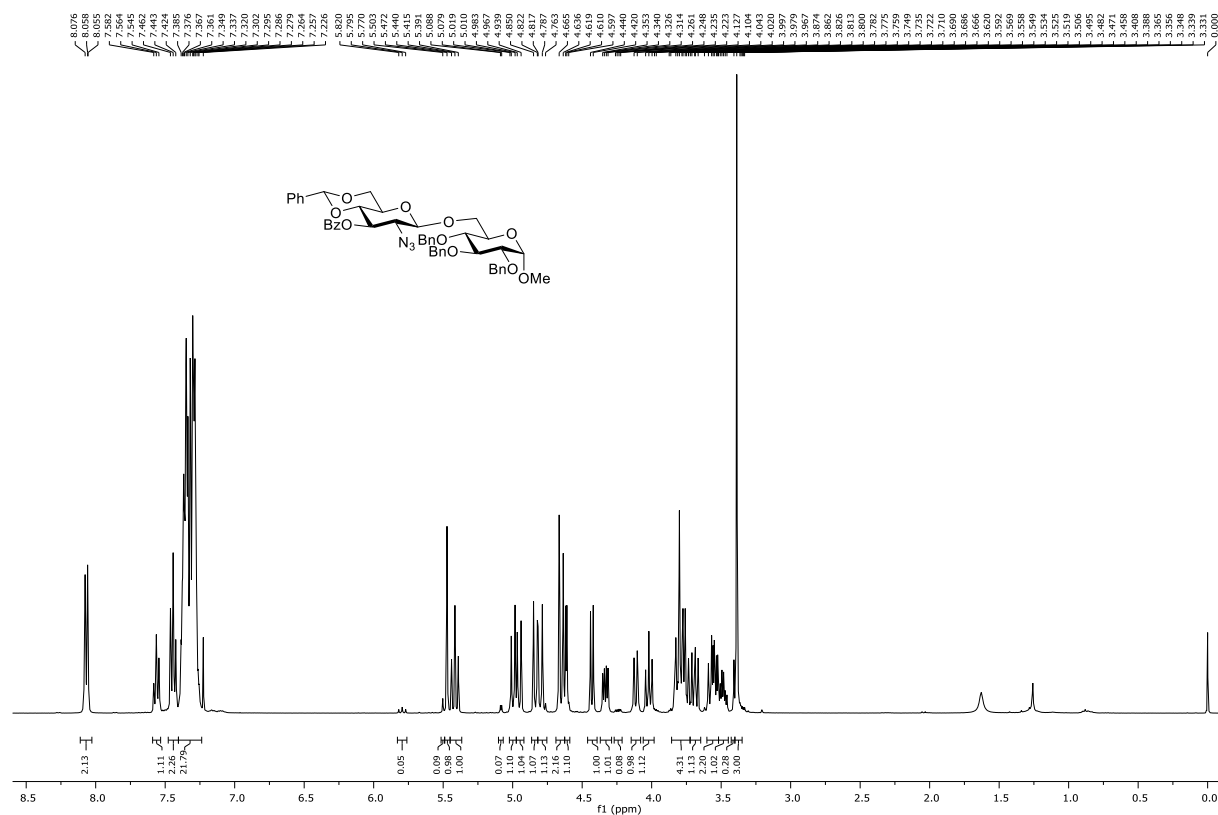


^1H - ^{13}C HSQC NMR, CDCl_3

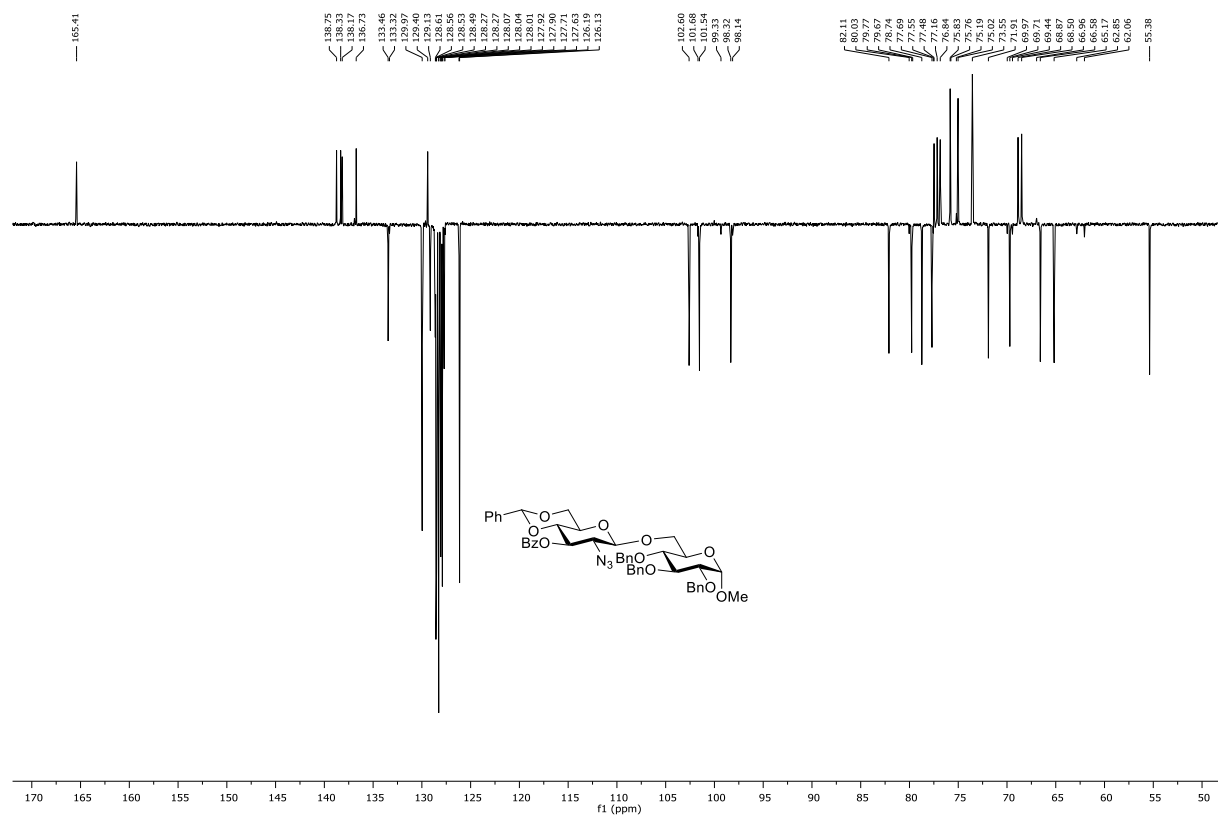


Methyl 6-*O*-(2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α / β -D-glucopyranosyl)-2,3,4-tri-*O*-benzyl- α -D-glucopyranoside (4C).

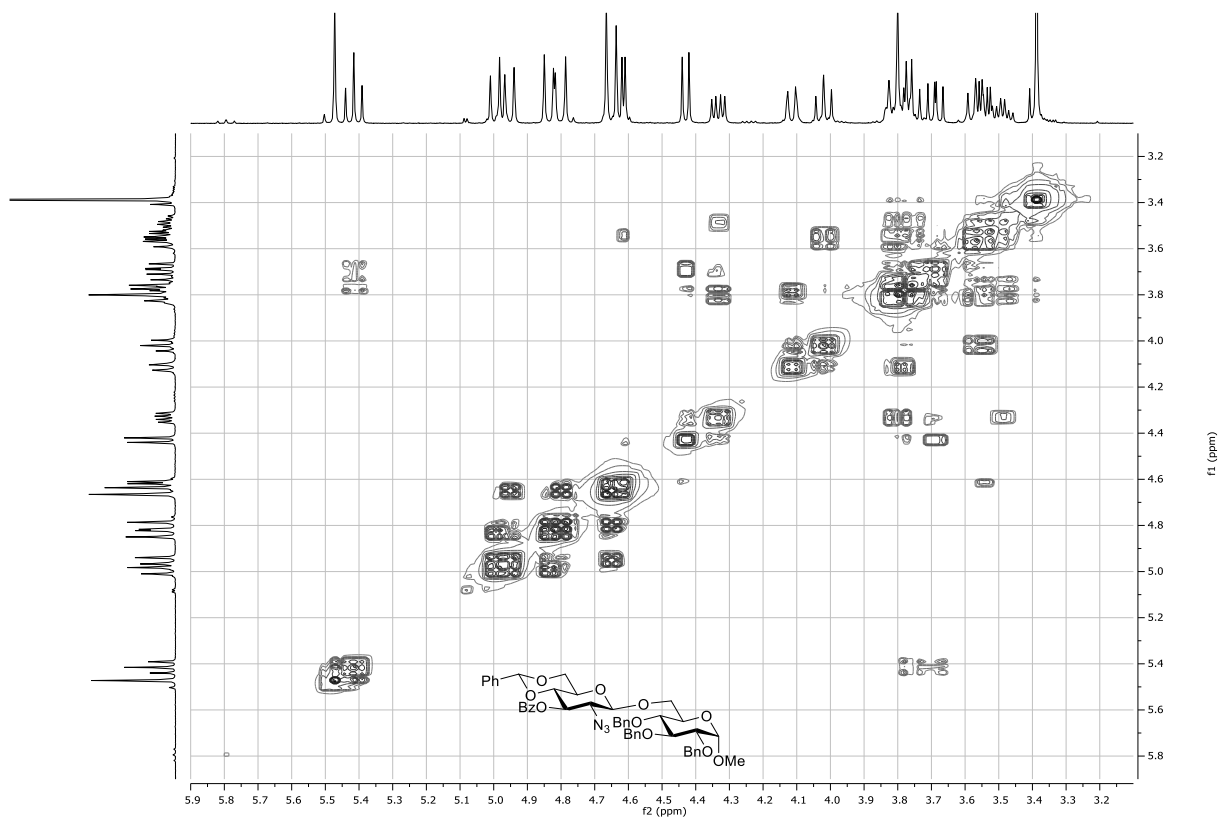
^1H NMR, 400 MHz, CDCl_3



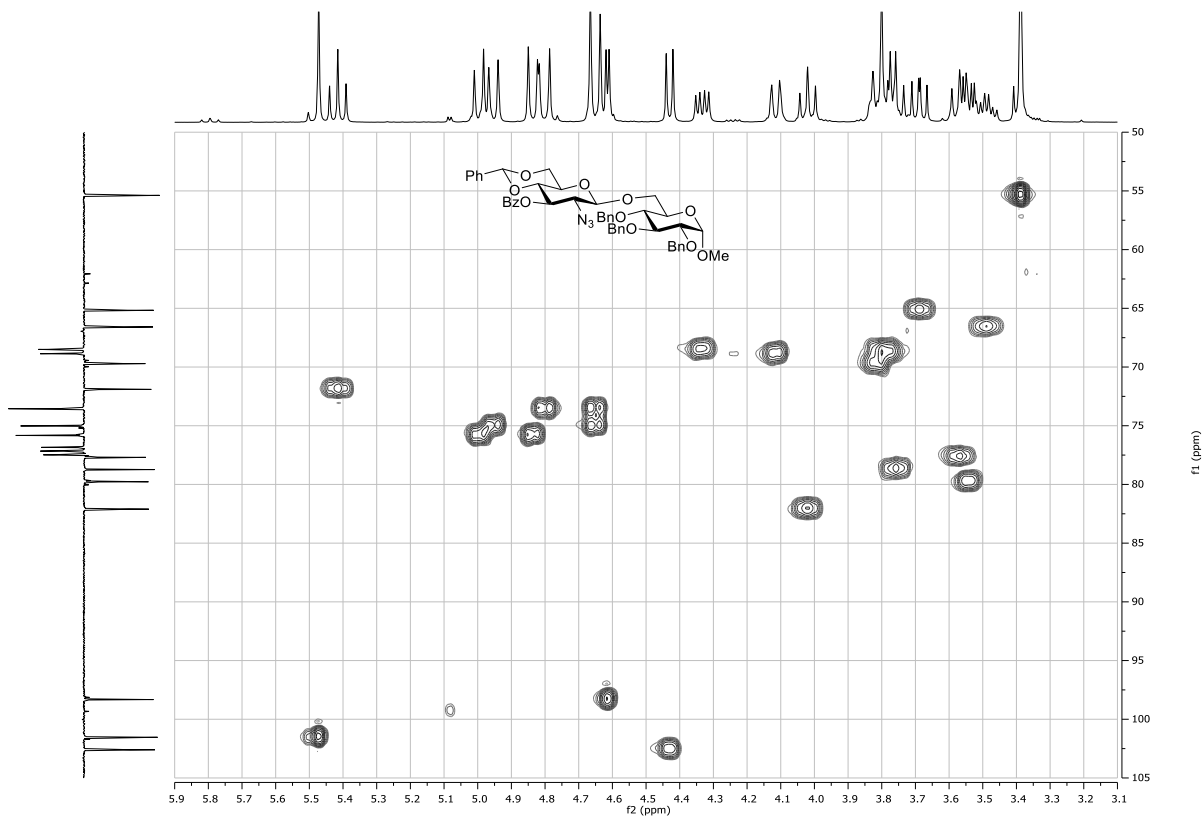
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

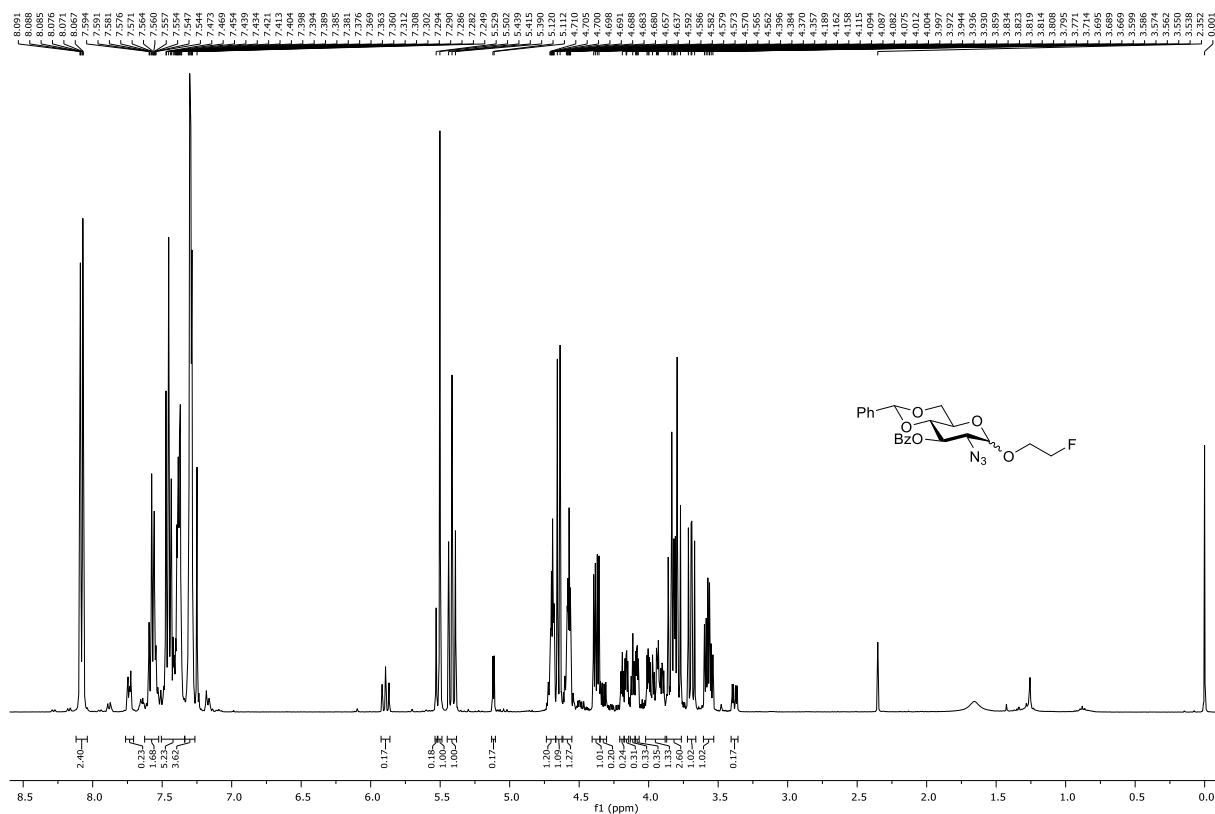


^1H - ^{13}C HMBC NMR, CDCl_3

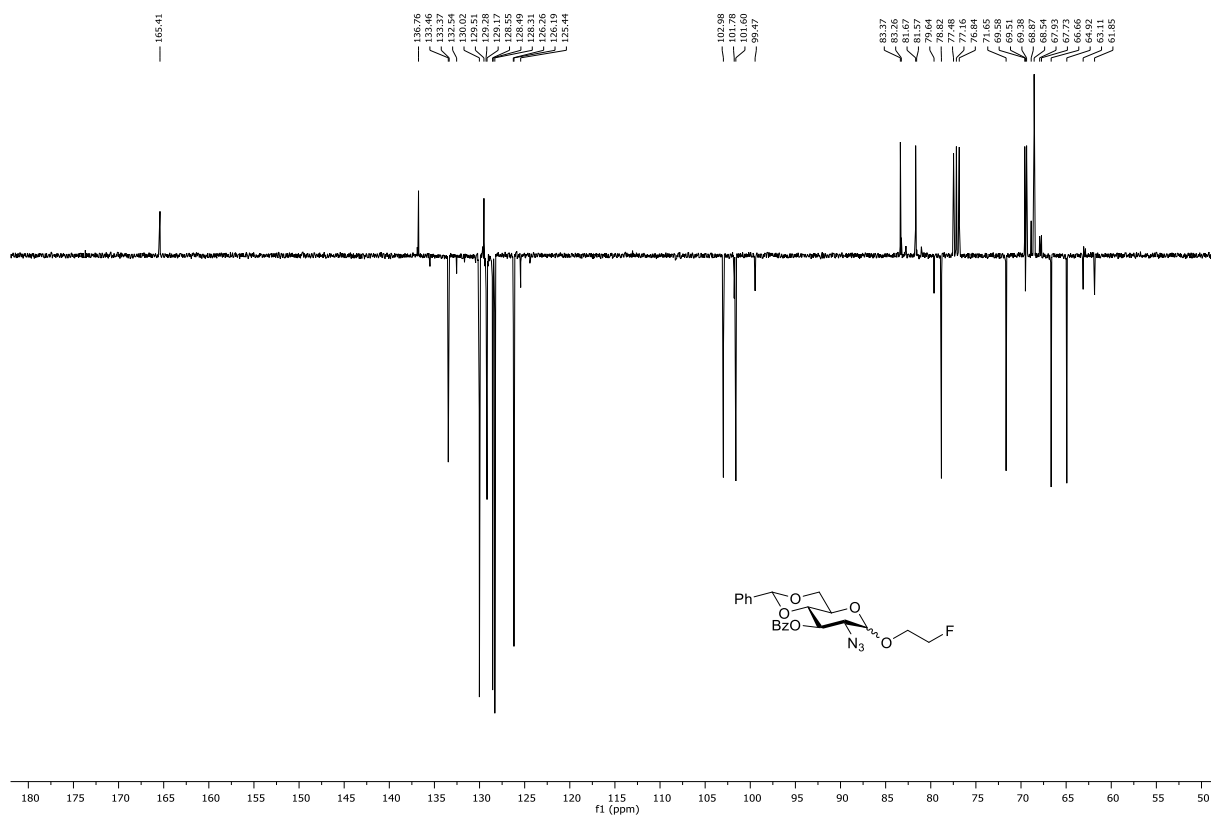


2-Fluoroethyl 2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α/β -D-glucopyranoside (**4D**).

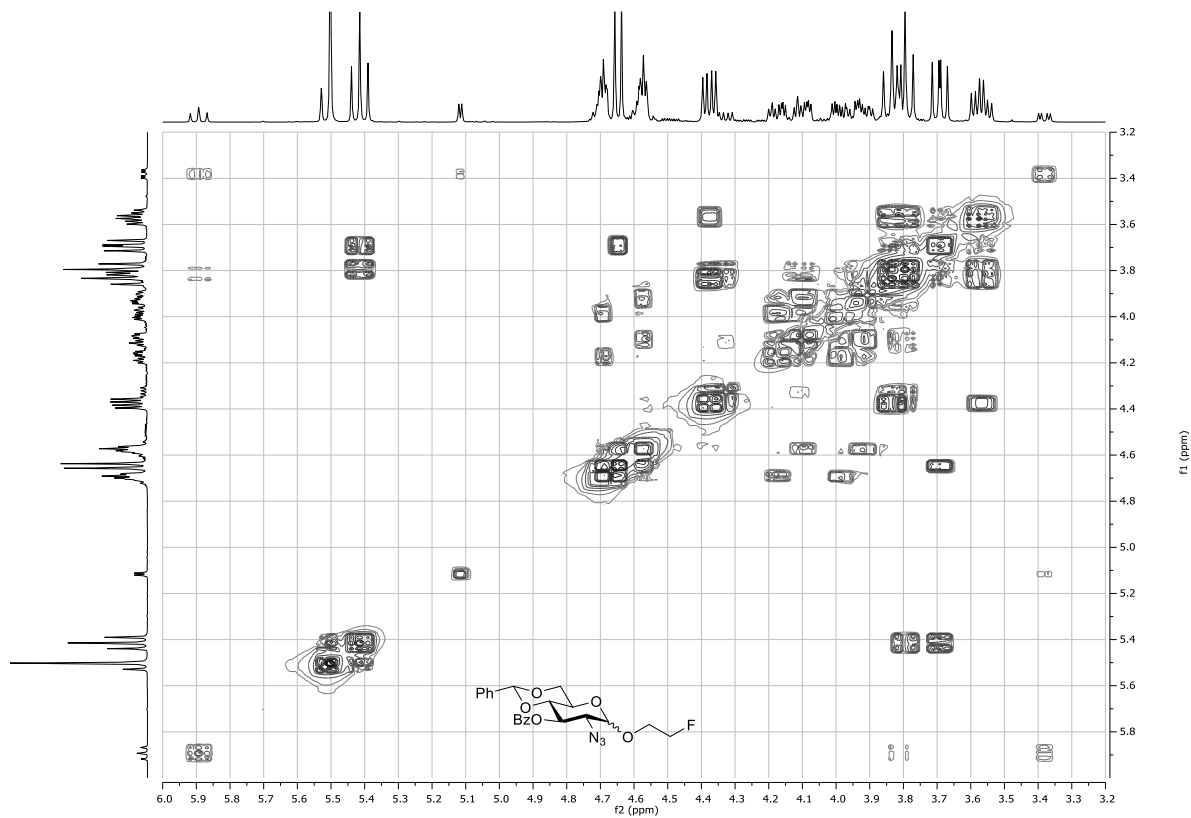
^1H NMR, 400 MHz, CDCl_3



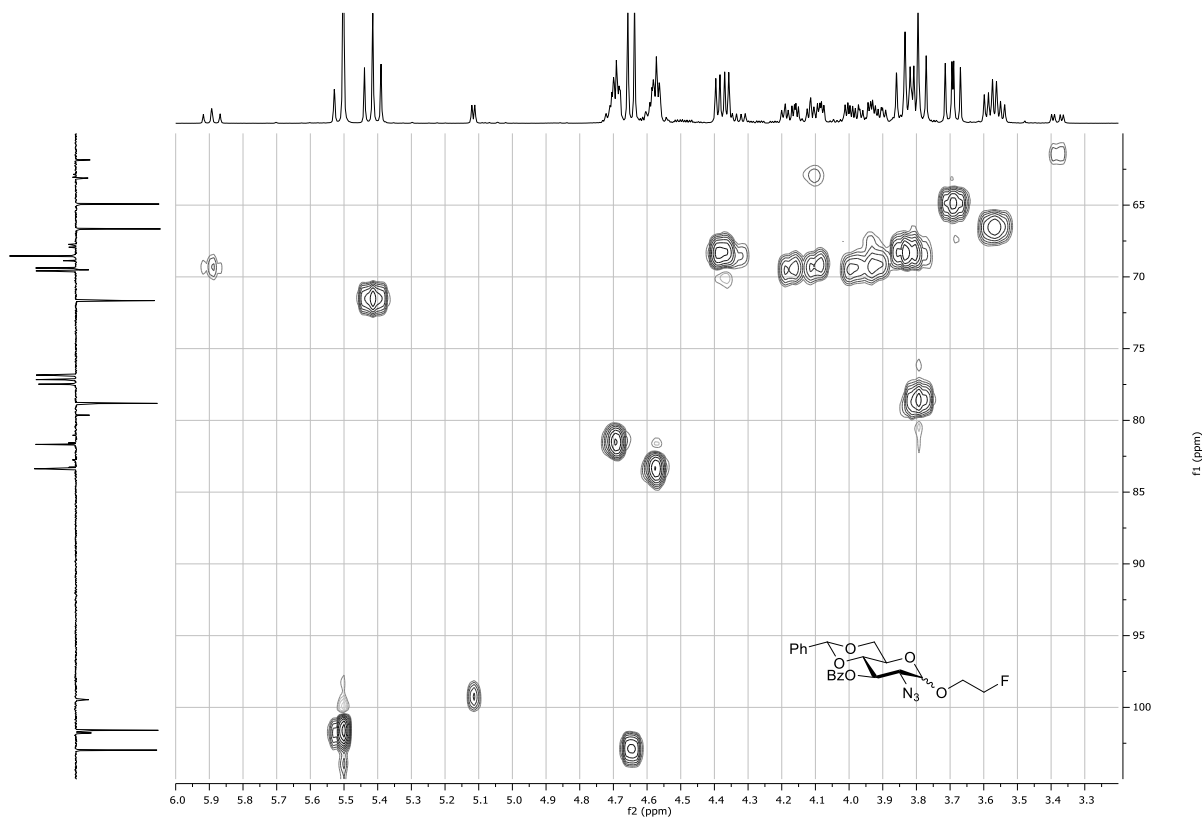
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

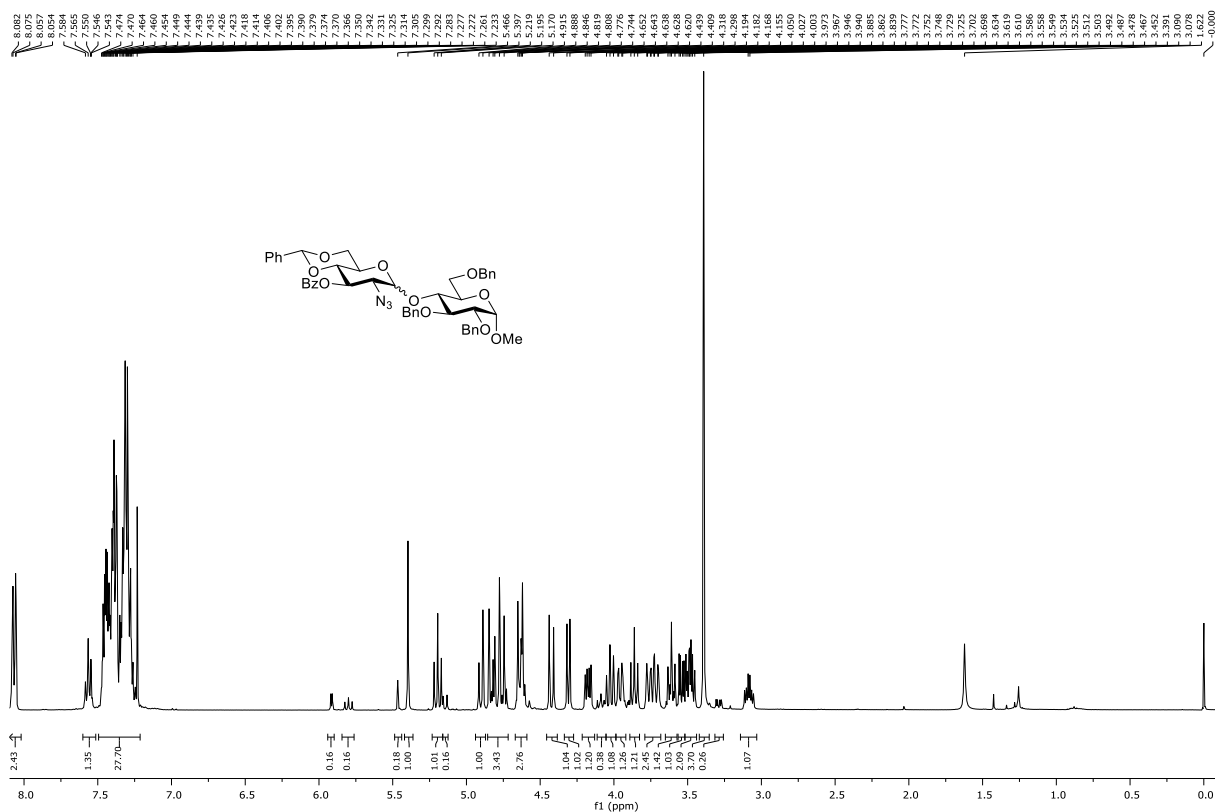


¹H-¹³C HSQC NMR, CDCl₃

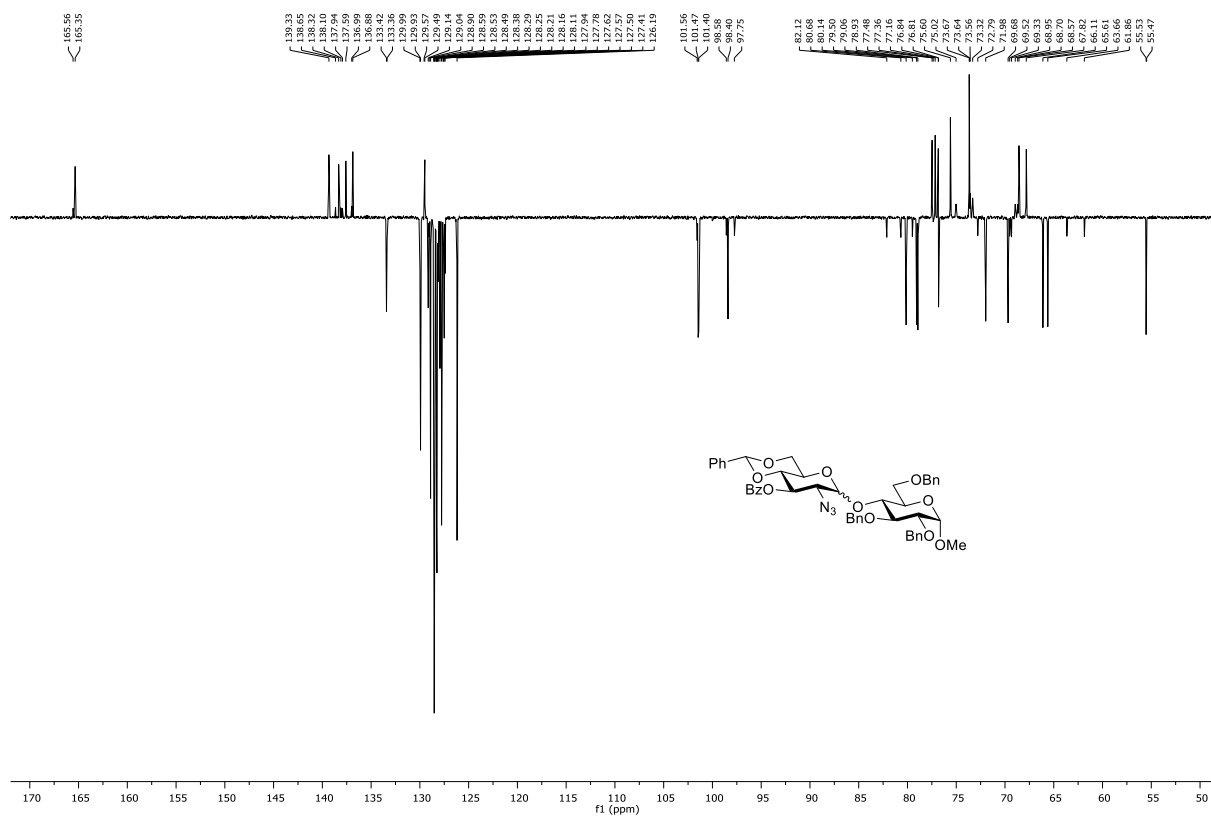


Methyl 4-O-(2-azido-3-O-benzoyl-4,6-O-benzylidene-2-deoxy- α/β -D-glucopyranosyl)-2,3,6-tri-O-benzyl- α -D-glucopyranoside (**4E**).

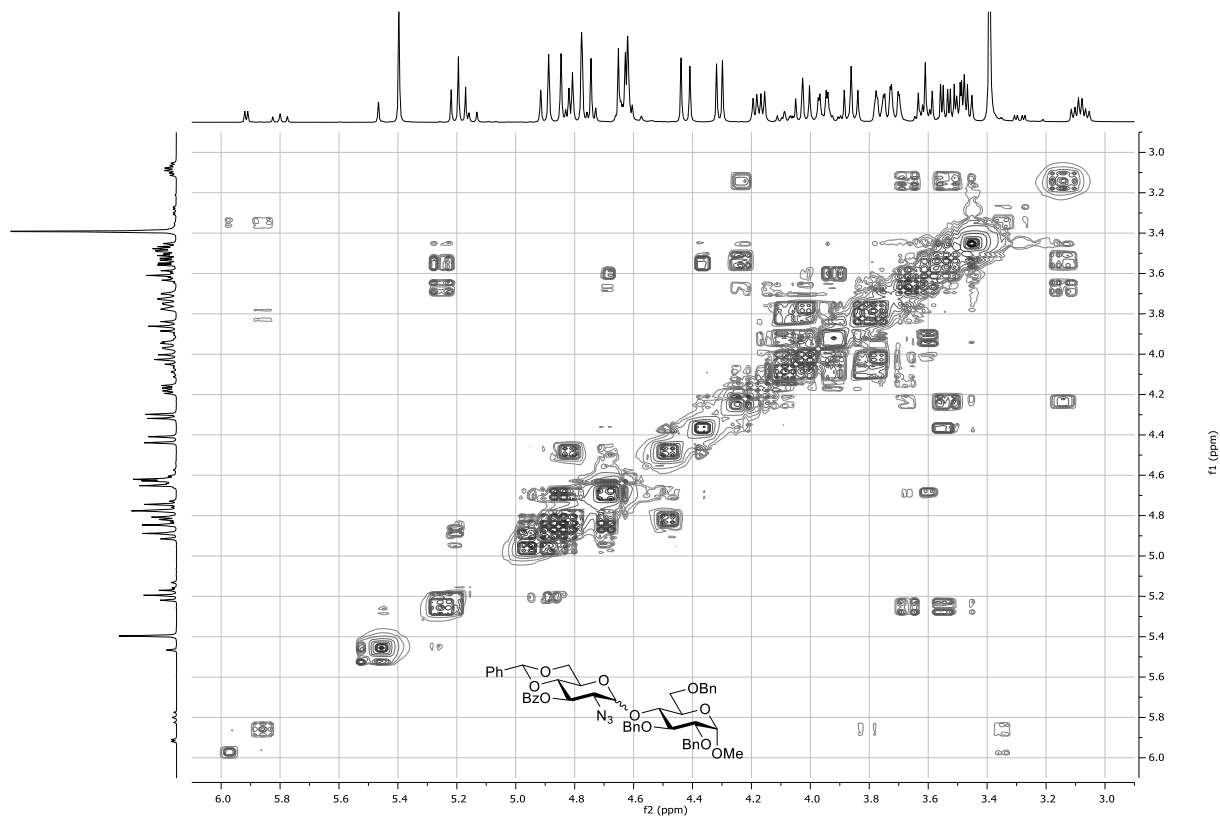
¹H NMR, 400 MHz, CDCl₃



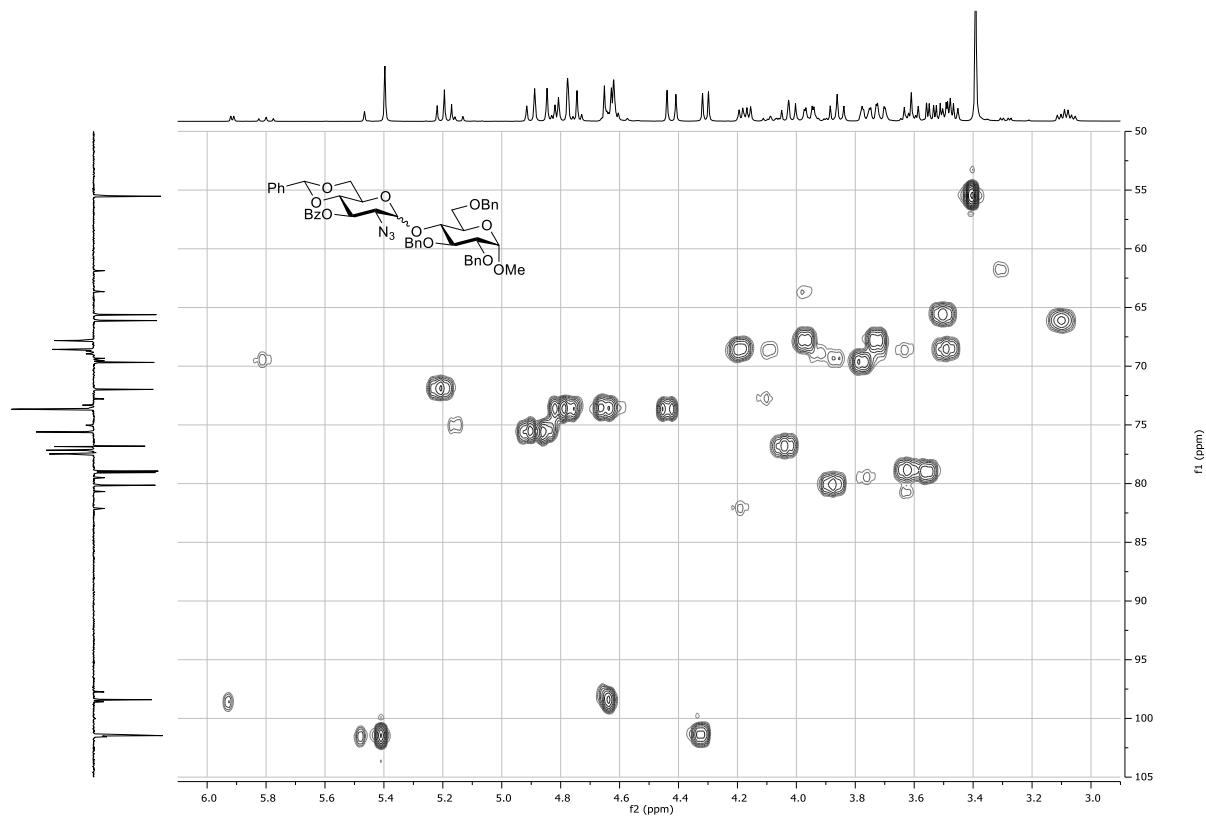
^{13}C -APT NMR, 101 MHz, CDCl_3



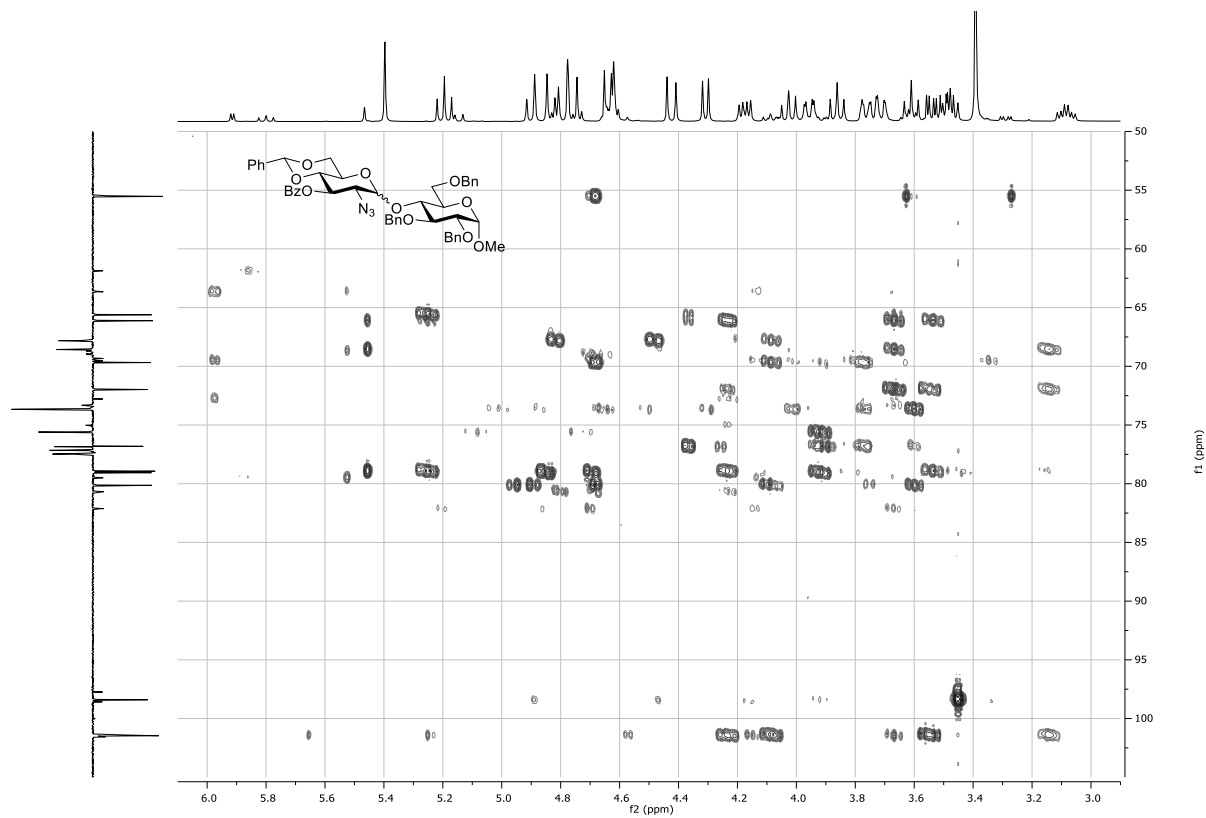
^1H - ^1H COSY NMR, CDCl_3



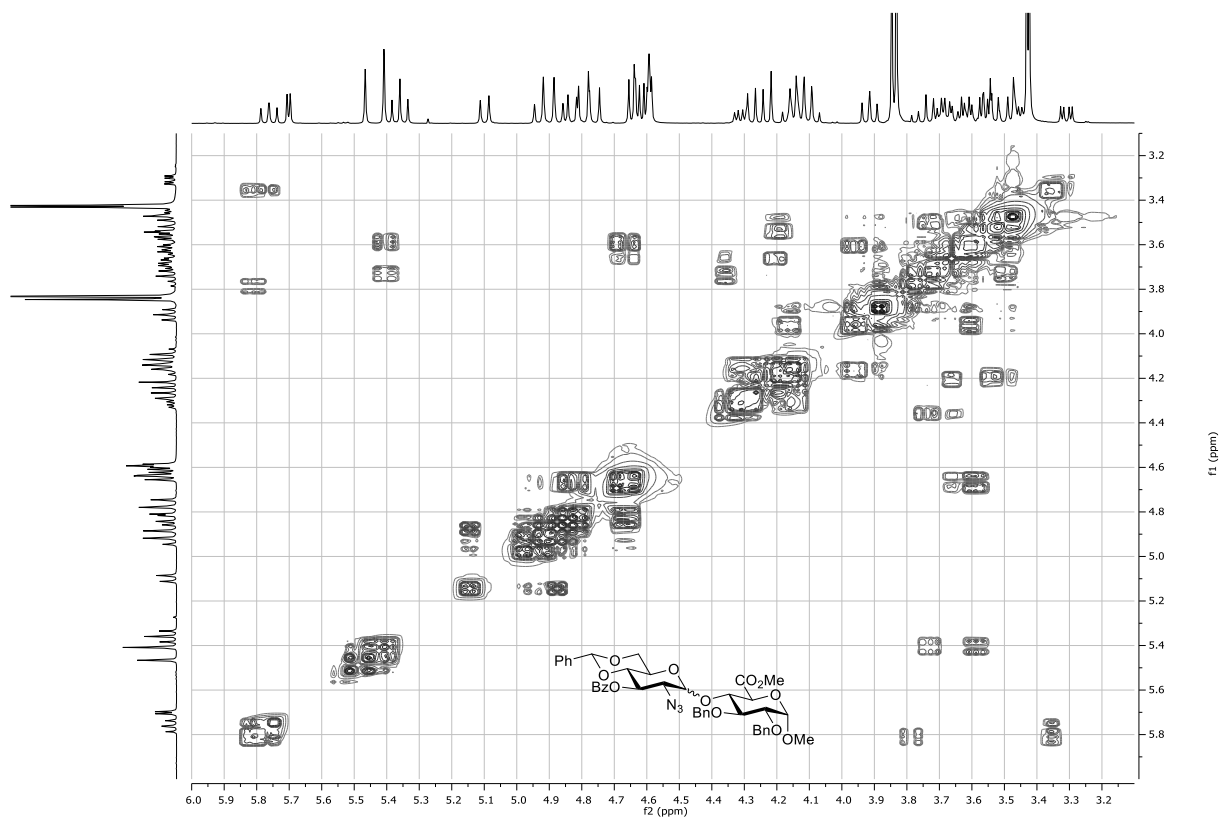
^1H - ^{13}C HSQC NMR, CDCl_3



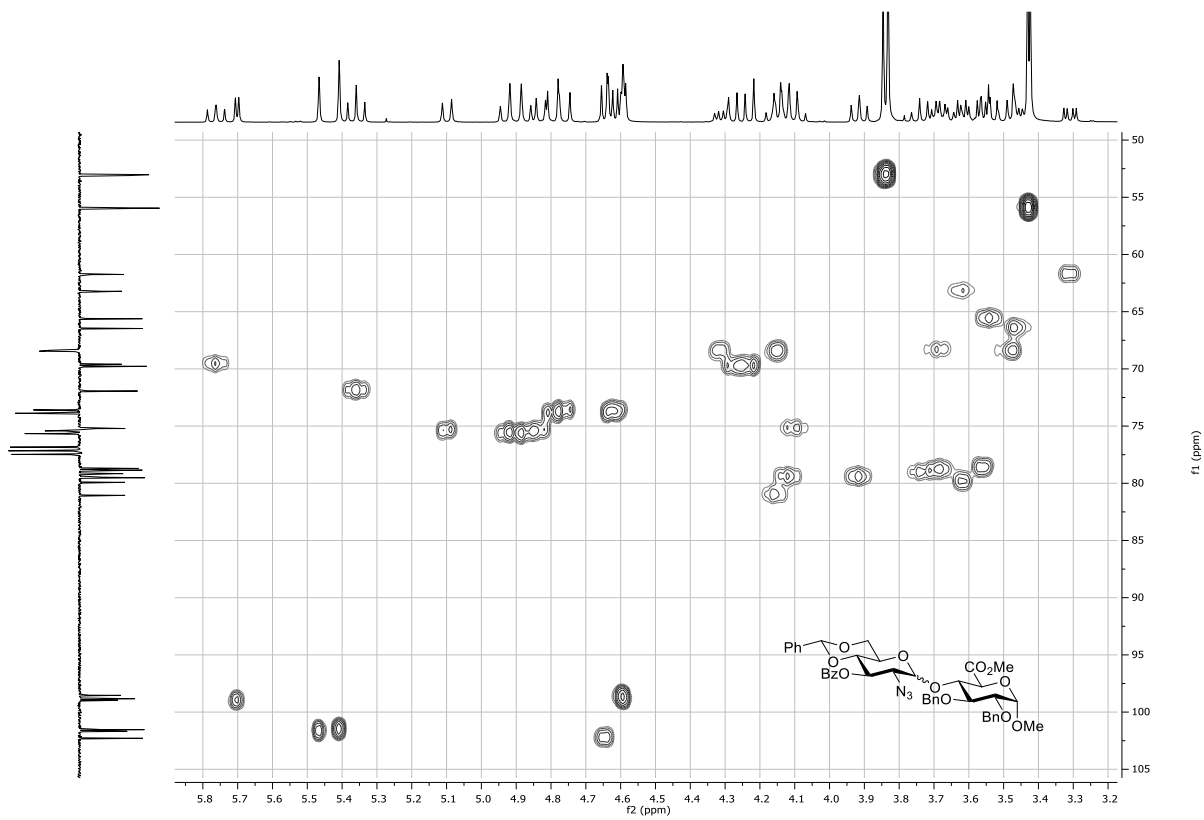
^1H - ^{13}C HMBC NMR, CDCl_3



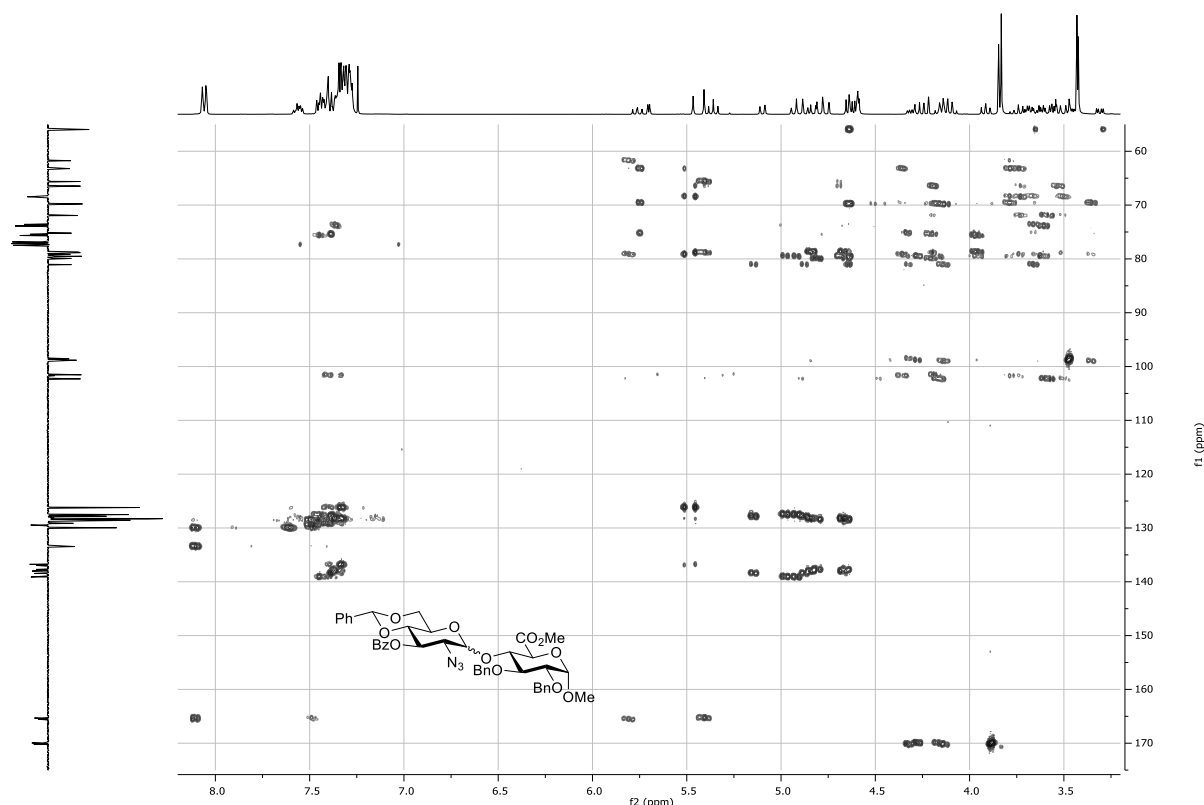
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

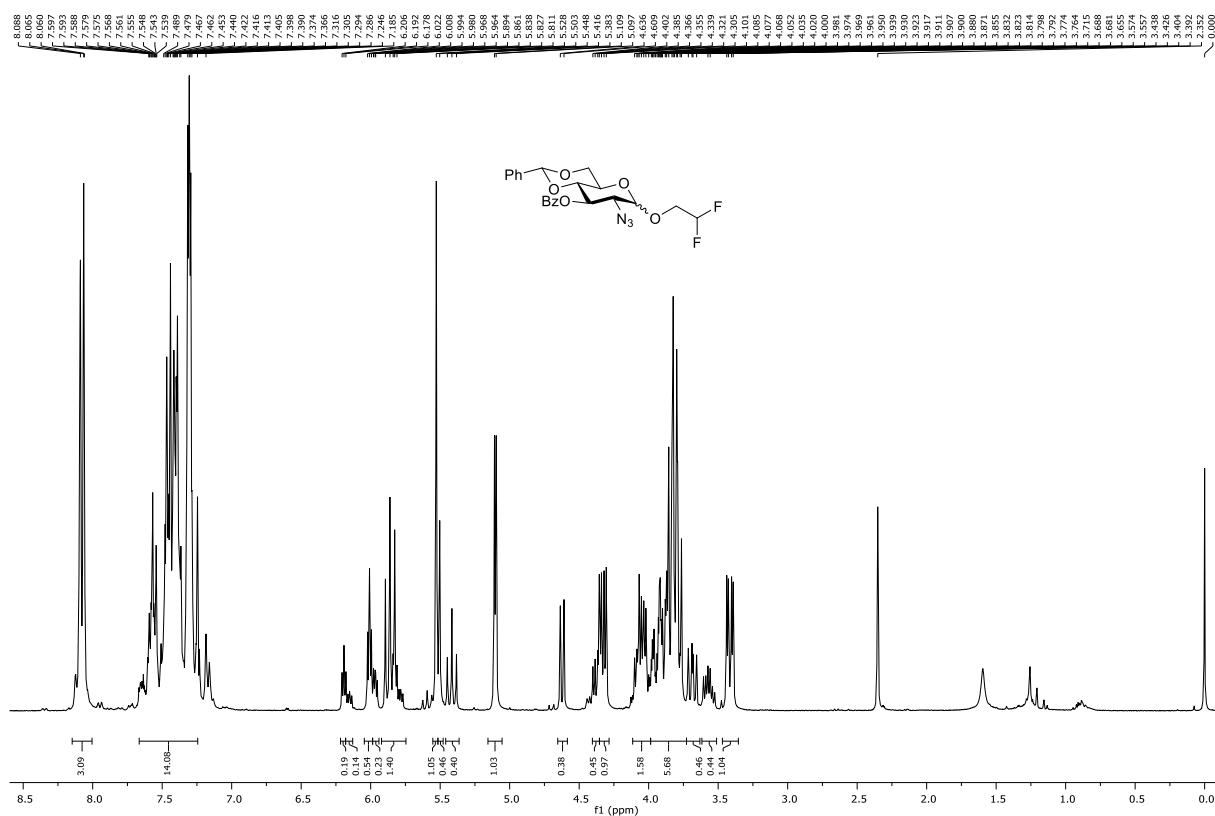


^1H - ^{13}C HMBC NMR, CDCl_3

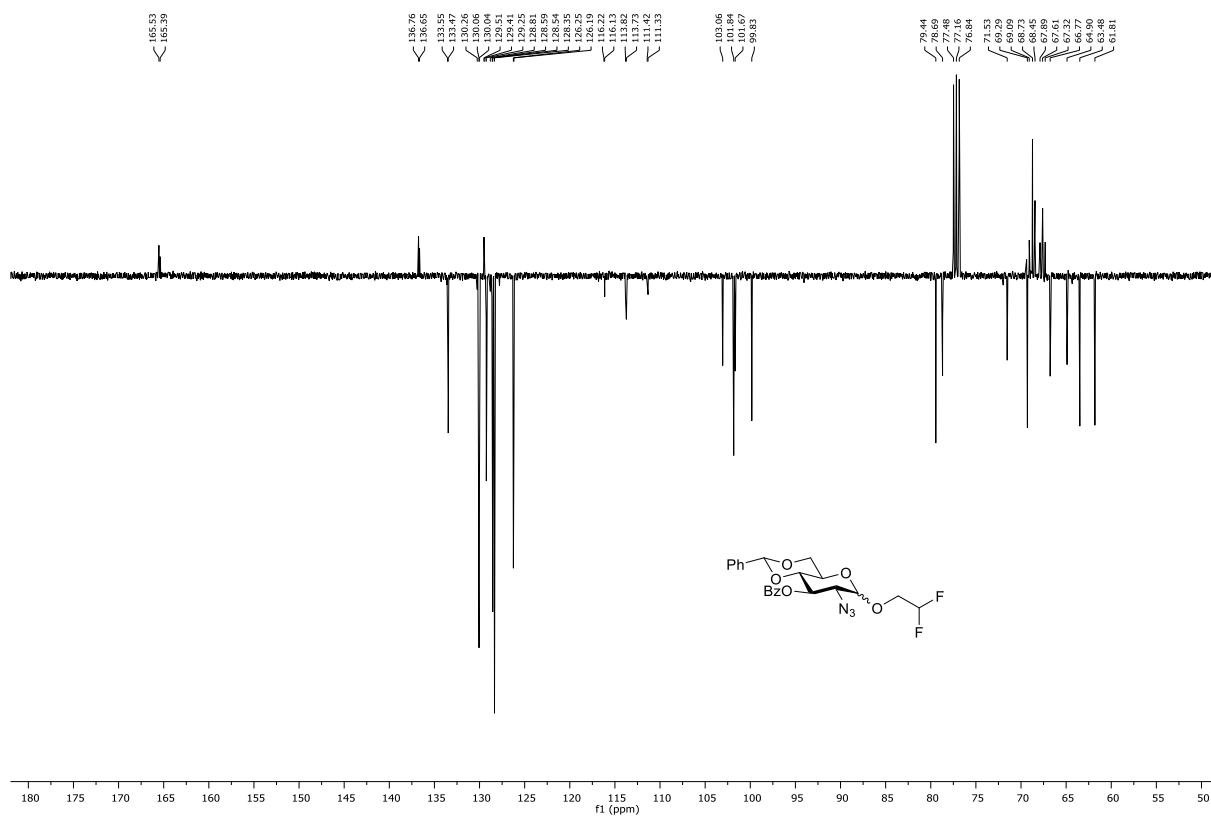


2,2-Difluoroethyl 2-azido-3-O-benzoyl-4,6-O-benzylidene-2-deoxy- α/β -D-glucopyranoside (4G).

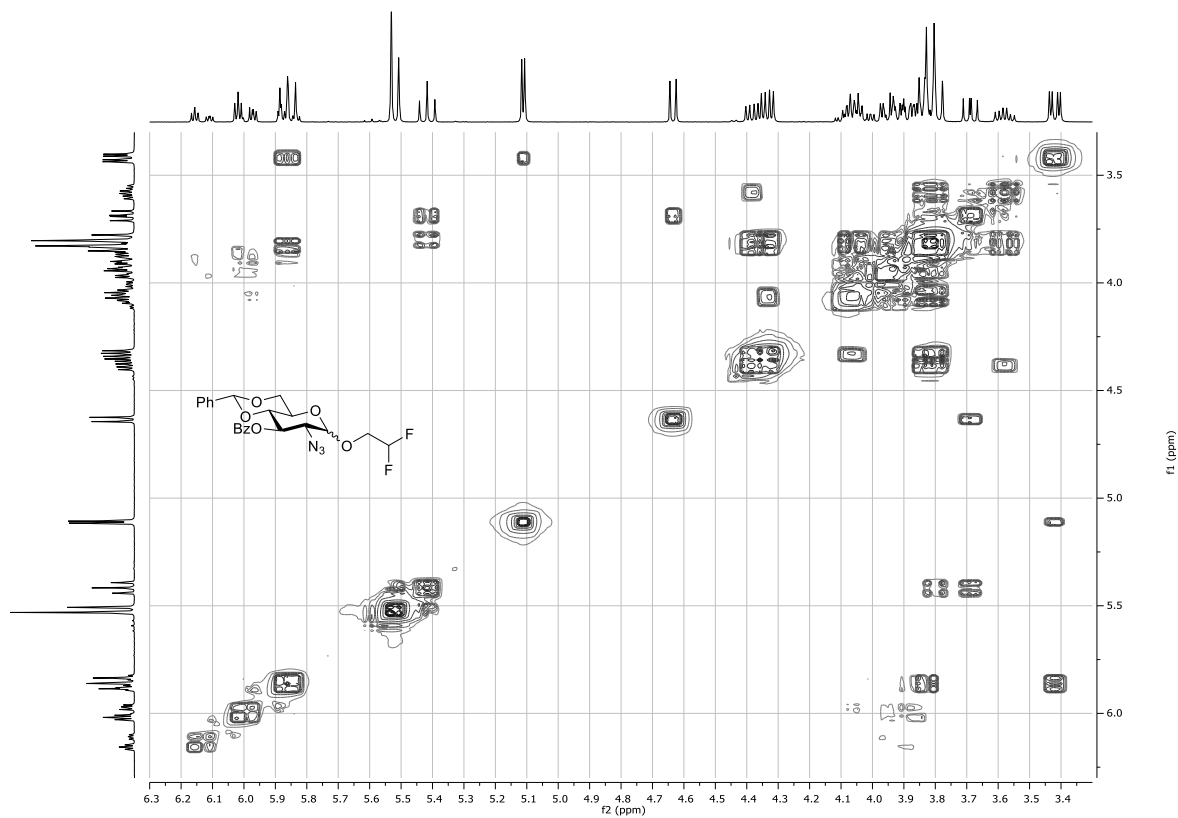
^1H NMR, 300 MHz, CDCl_3



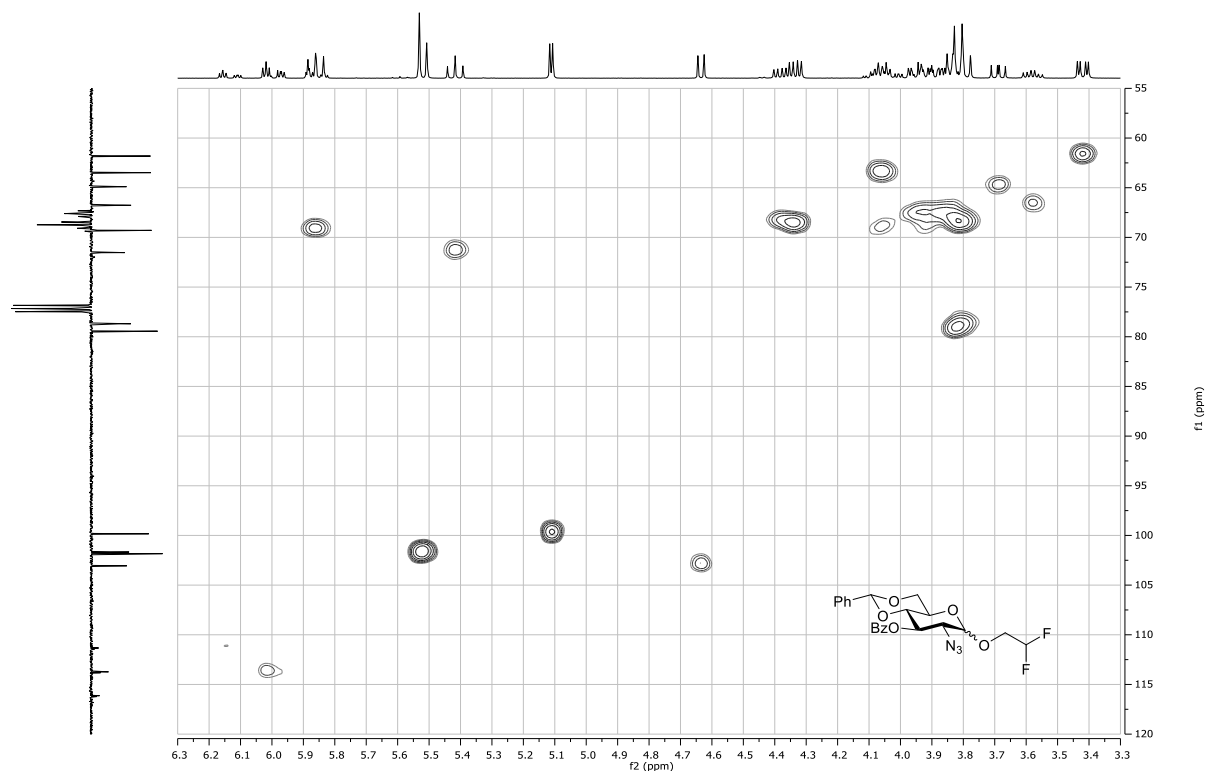
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

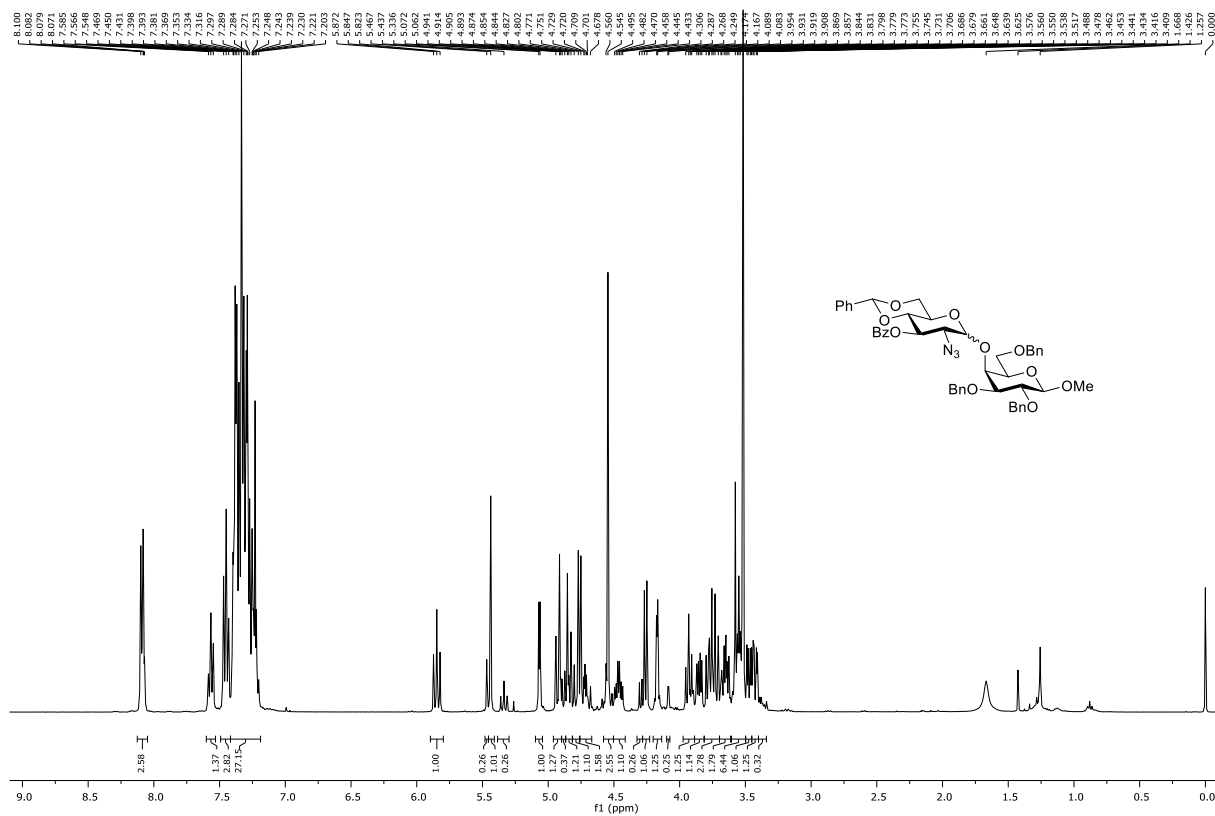


^1H - ^{13}C HSQC NMR, CDCl_3

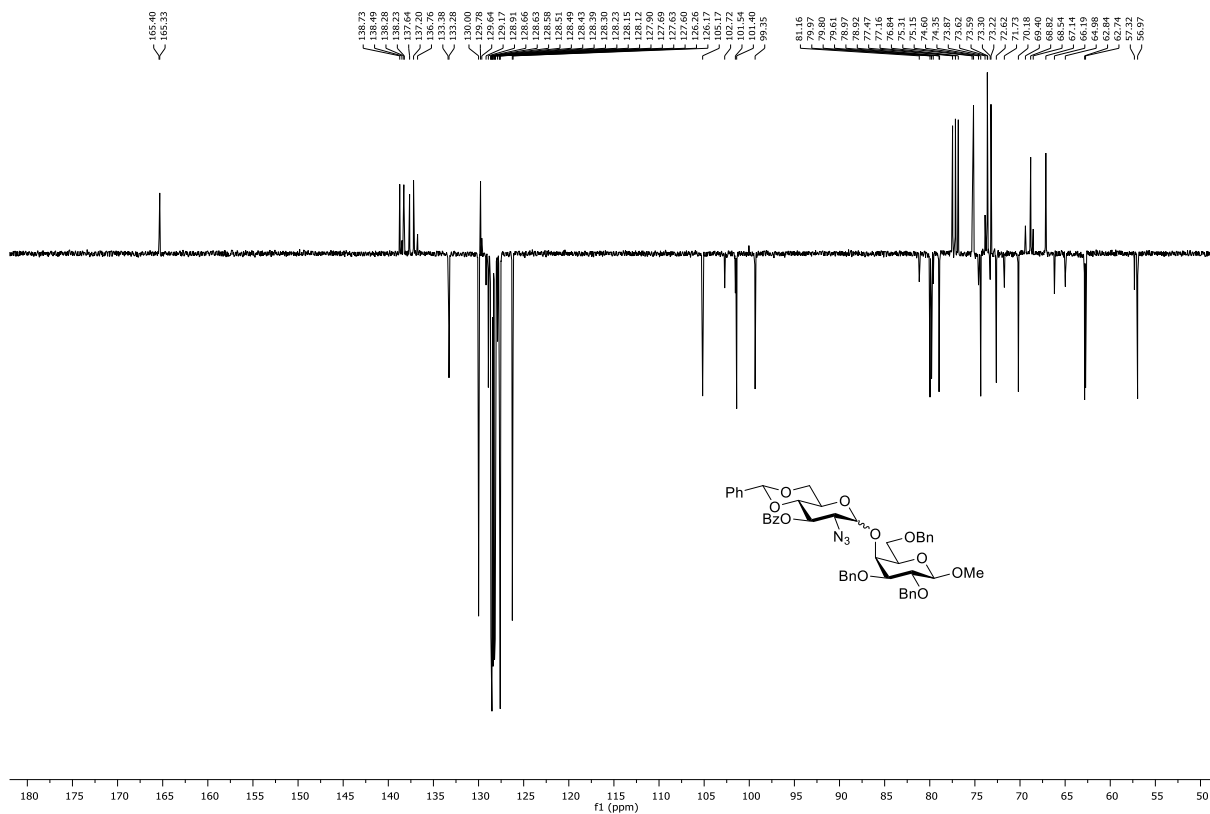


Methyl 4-*O*-(2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α/β -D-glucopyranosyl)-2,3,6-tri-*O*-benzyl- β -D-galactopyranoside (**4H**).

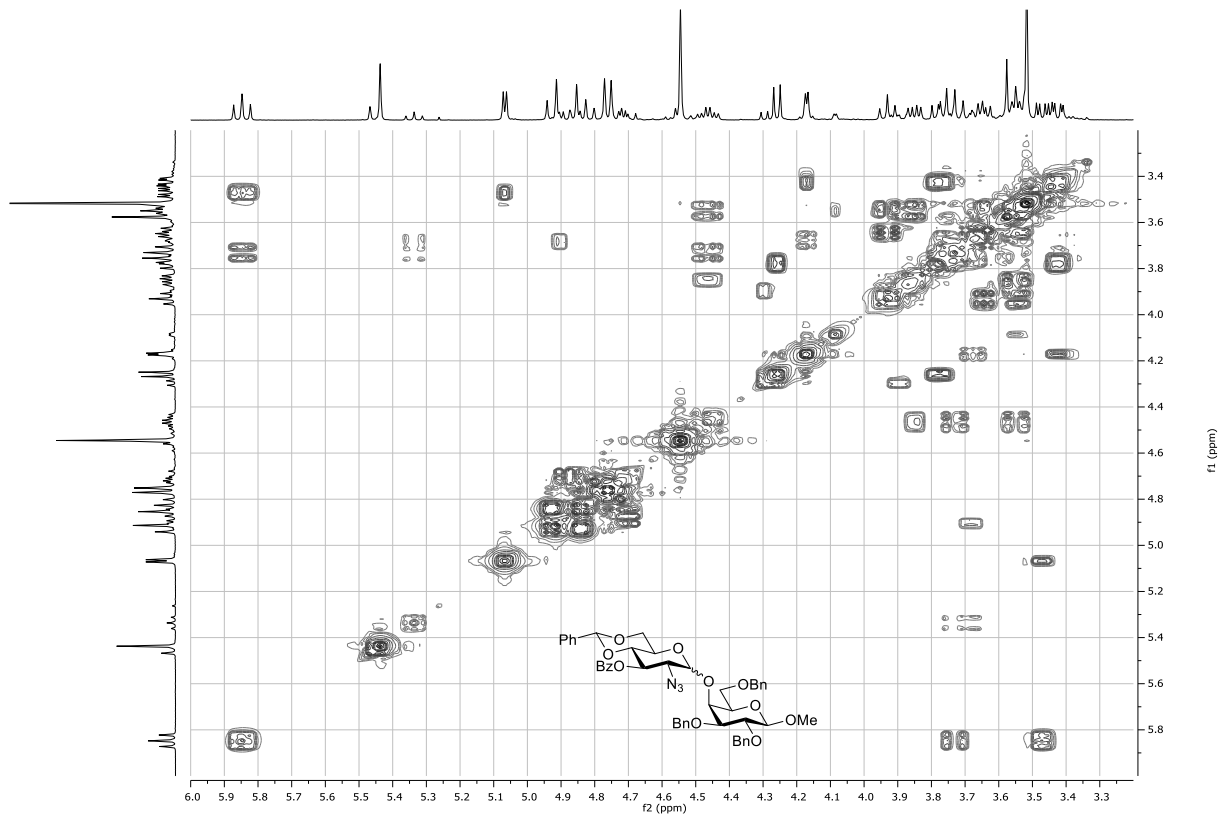
^1H NMR, 400 MHz, CDCl_3



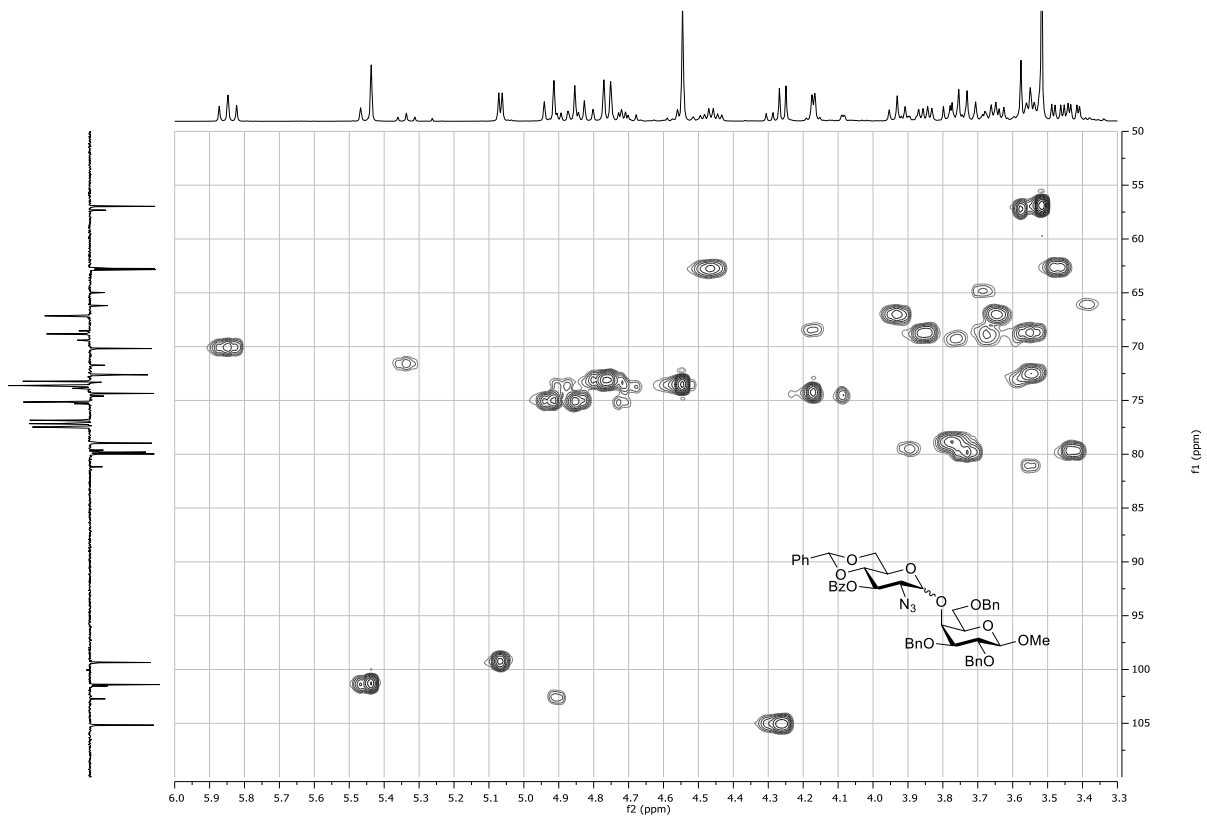
¹³C-APT NMR, 101 MHz, CDCl₃



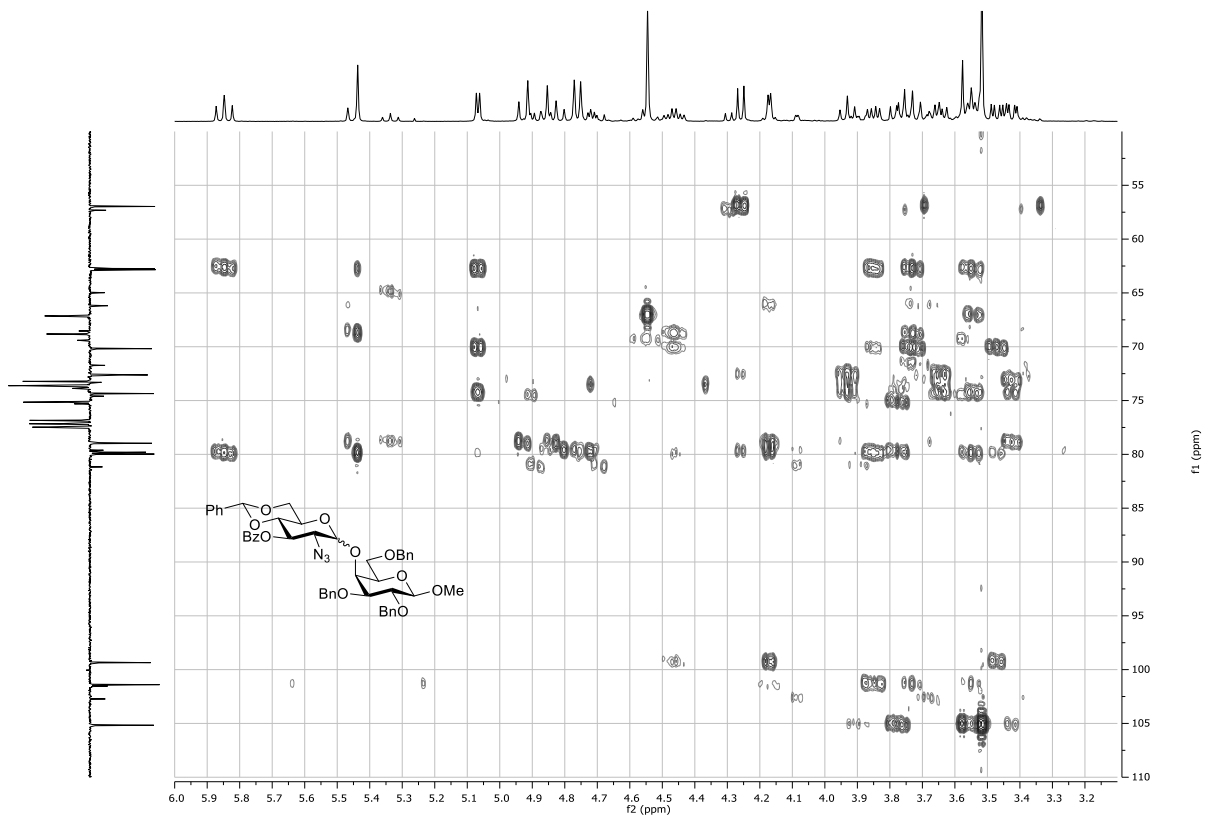
¹H-¹H COSY NMR, CDCl₃



^1H - ^{13}C HSQC NMR, CDCl_3

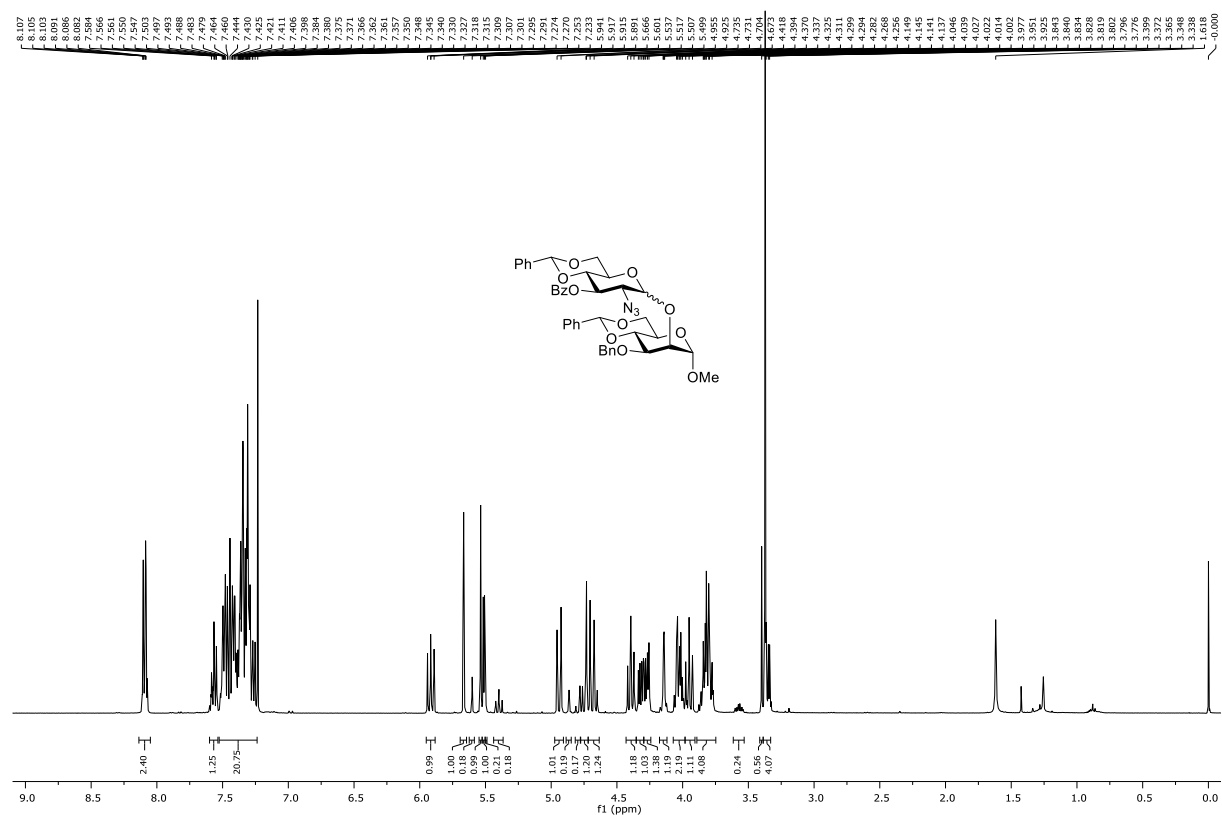


^1H - ^{13}C HMBC NMR, CDCl_3

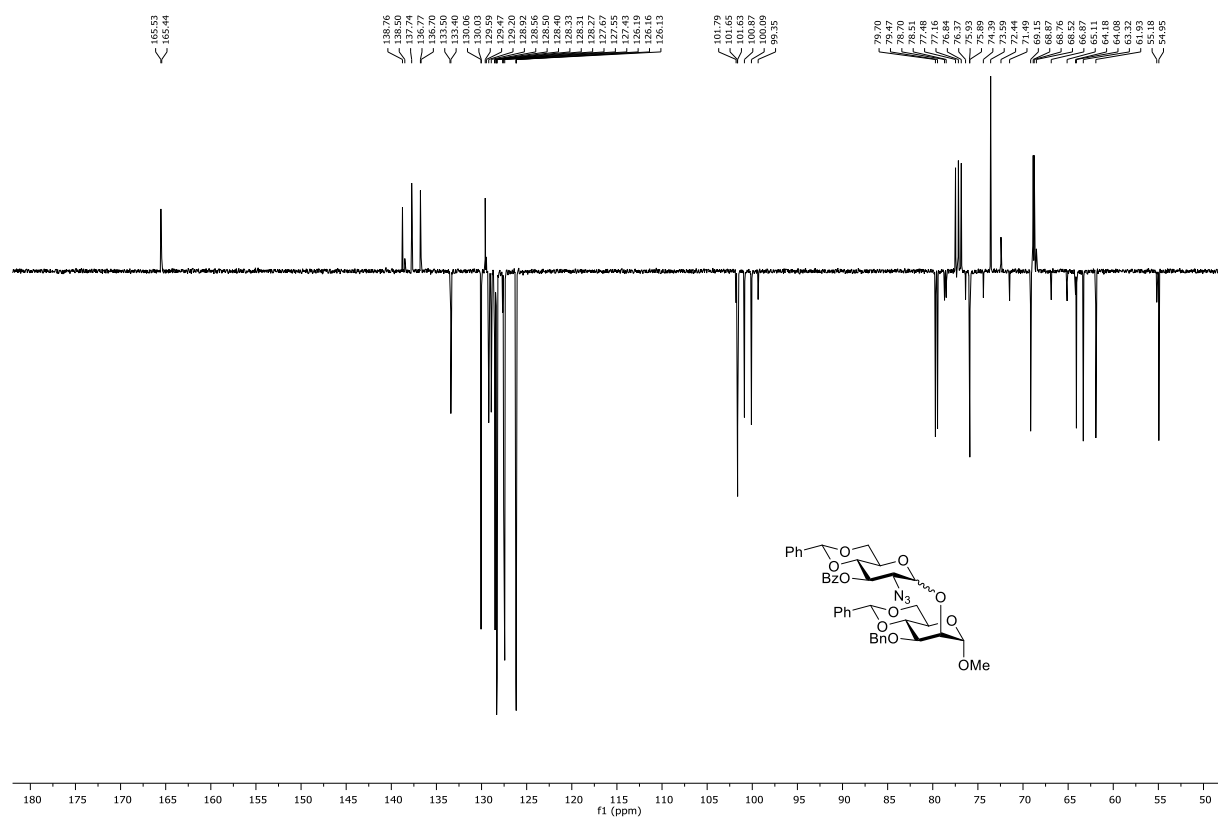


Methyl 2-*O*-(2-azido-3-*O*-benzoyl-4,6-*O*-benzylidene-2-deoxy- α / β -D-glucopyranosyl)-3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside (**4I**).

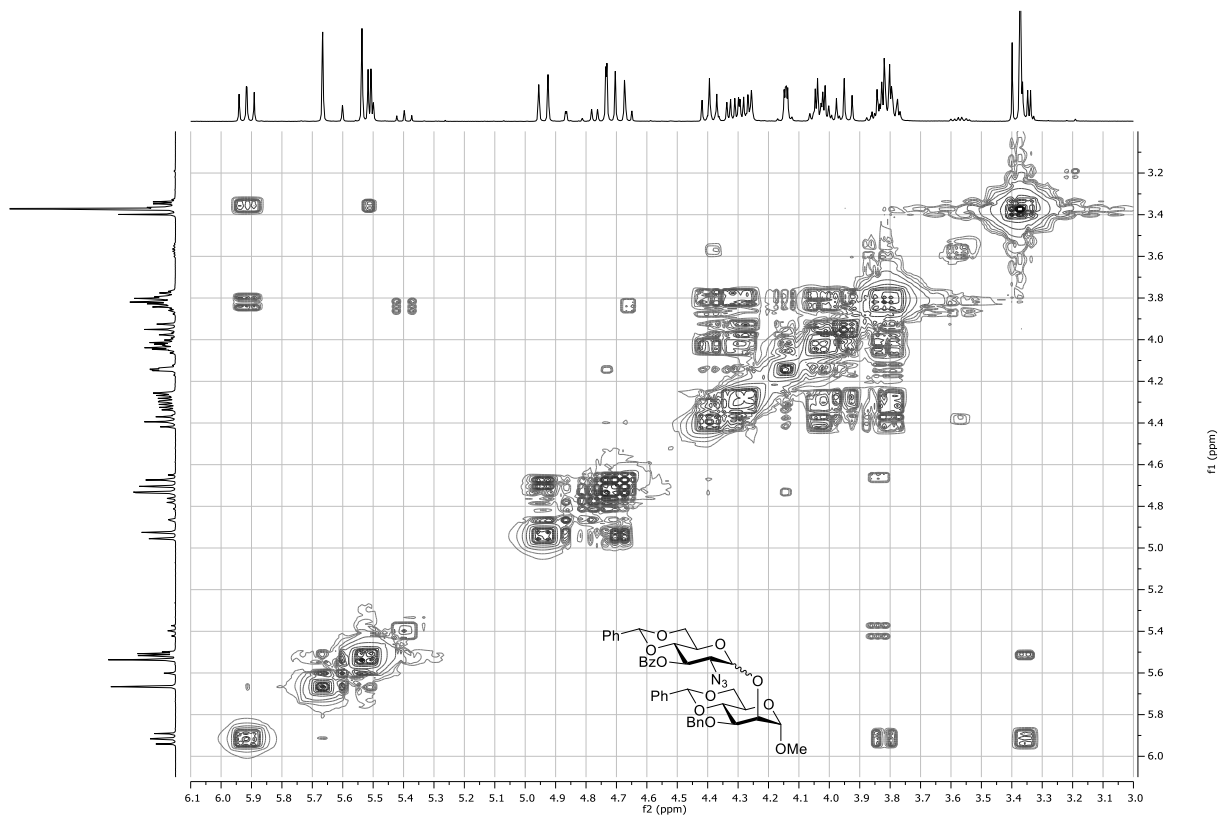
^1H NMR, 400 MHz, CDCl_3



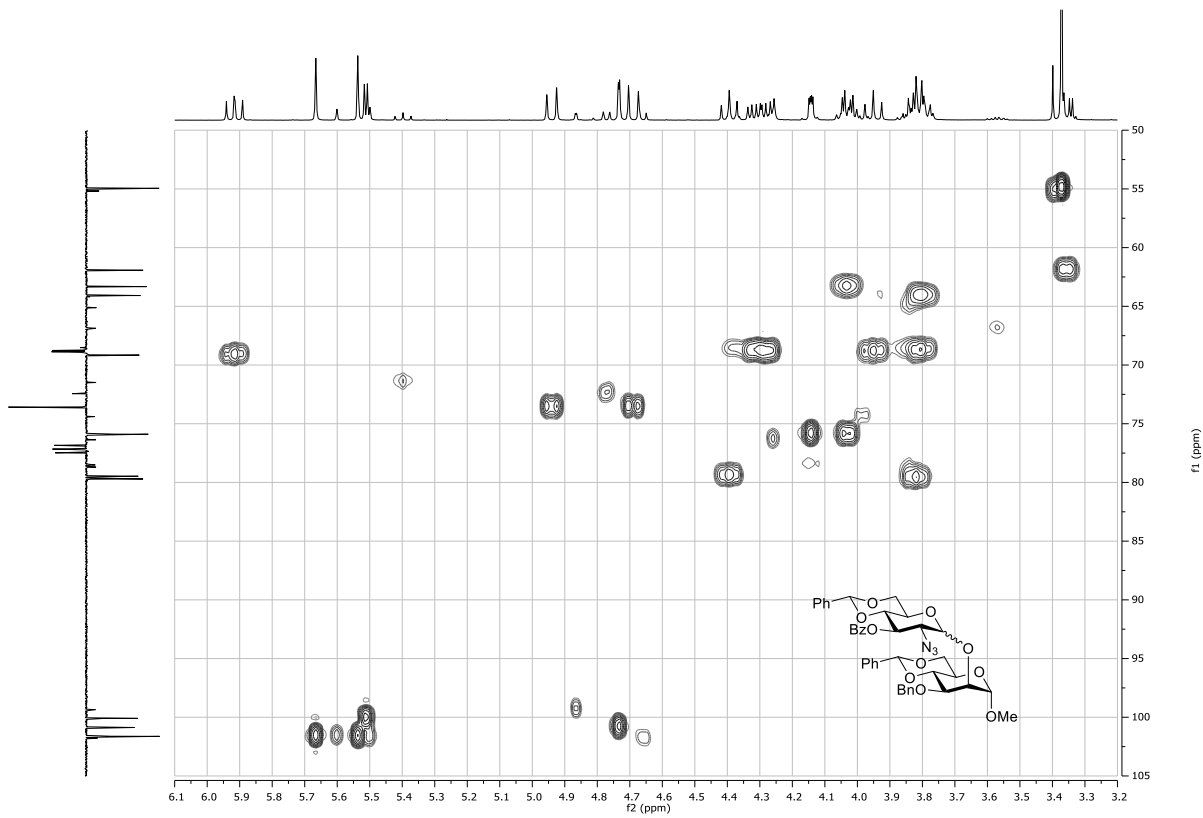
^{13}C -APT NMR, 101 MHz, CDCl_3



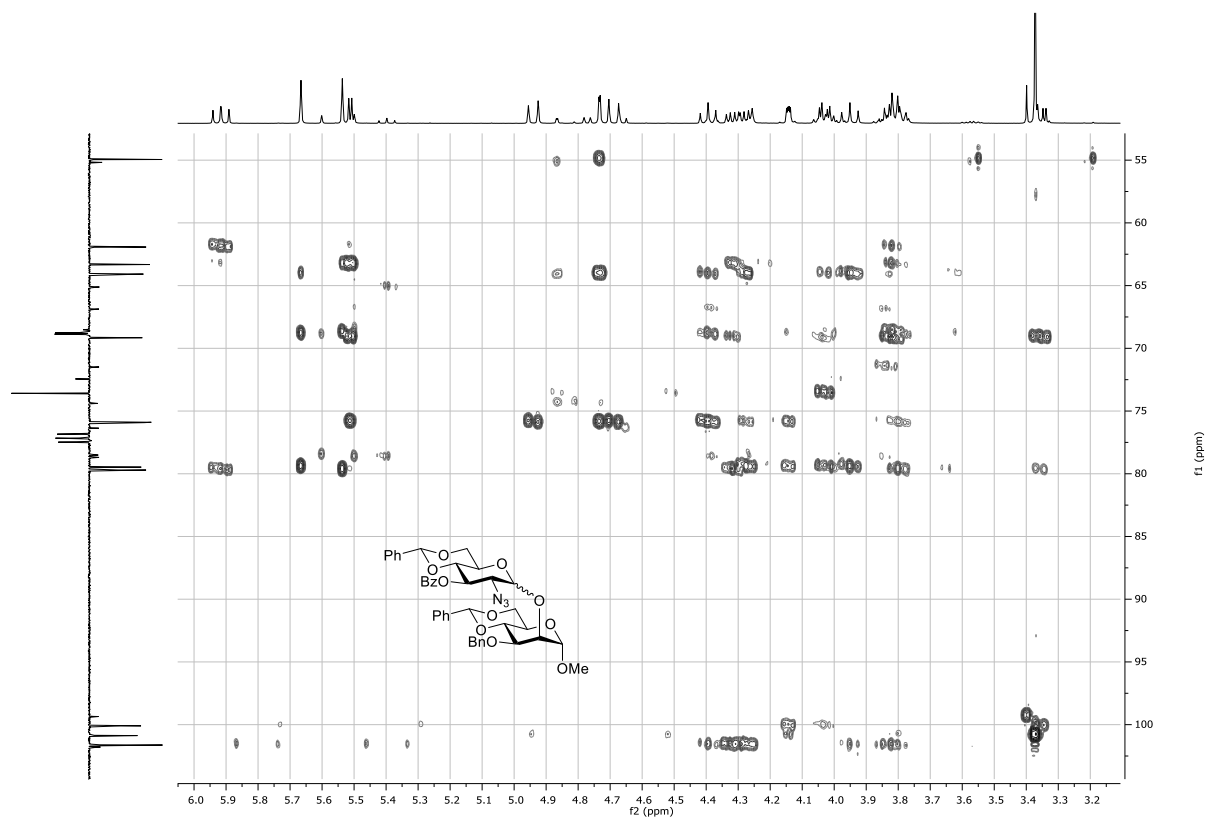
^1H - ^1H COSY NMR, CDCl_3



^1H - ^{13}C HSQC NMR, CDCl_3

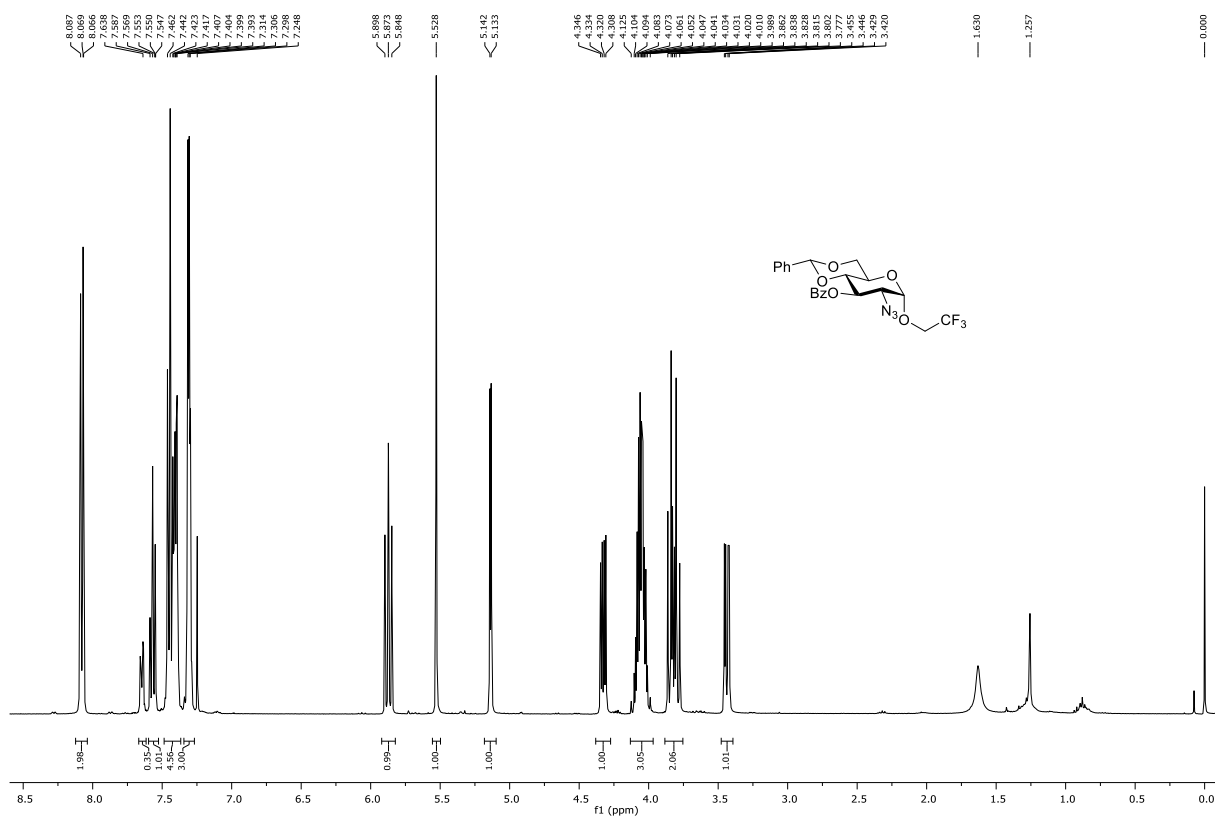


^1H - ^{13}C HMBC NMR, CDCl_3

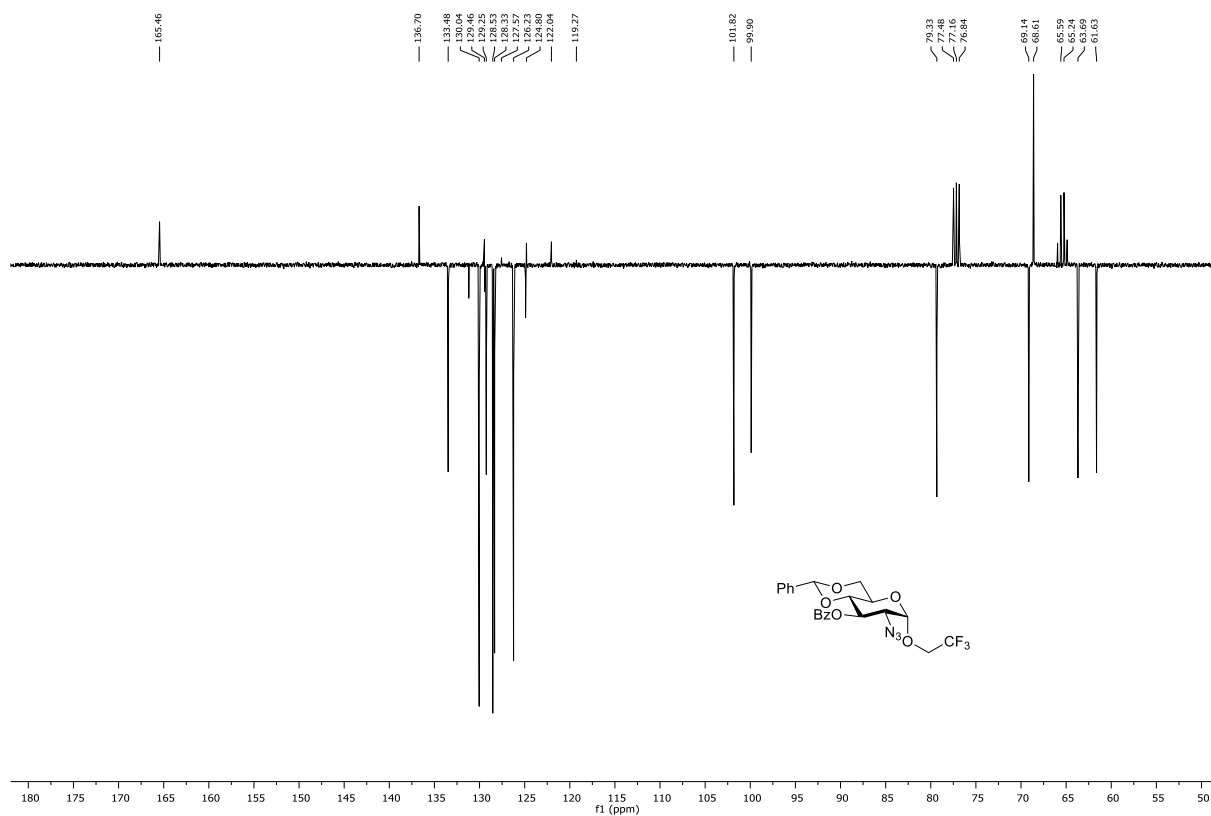


2,2,2-Trifluoroethyl 2-azido-3-O-benzoyl-4,6-O-benzylidene-2-deoxy- α -D-glucopyranoside (**4J**).

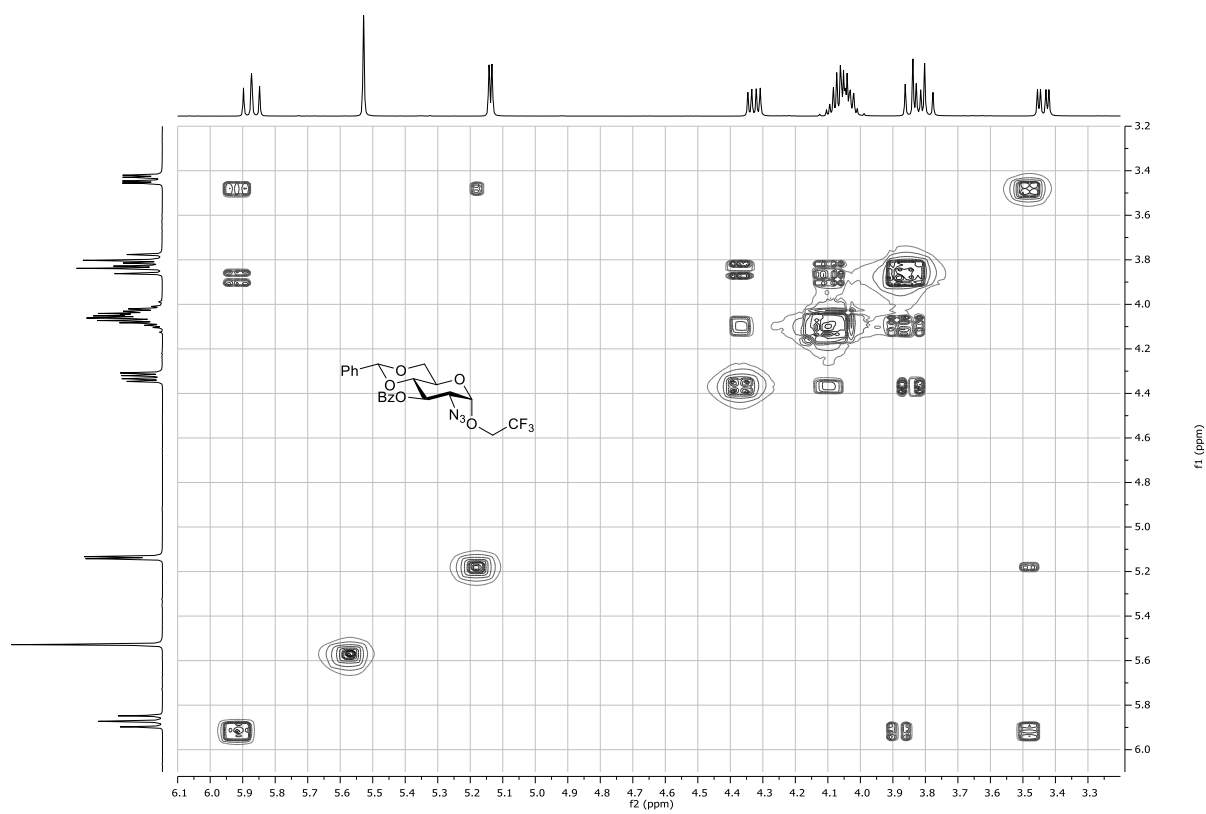
^1H NMR, 400 MHz, CDCl_3



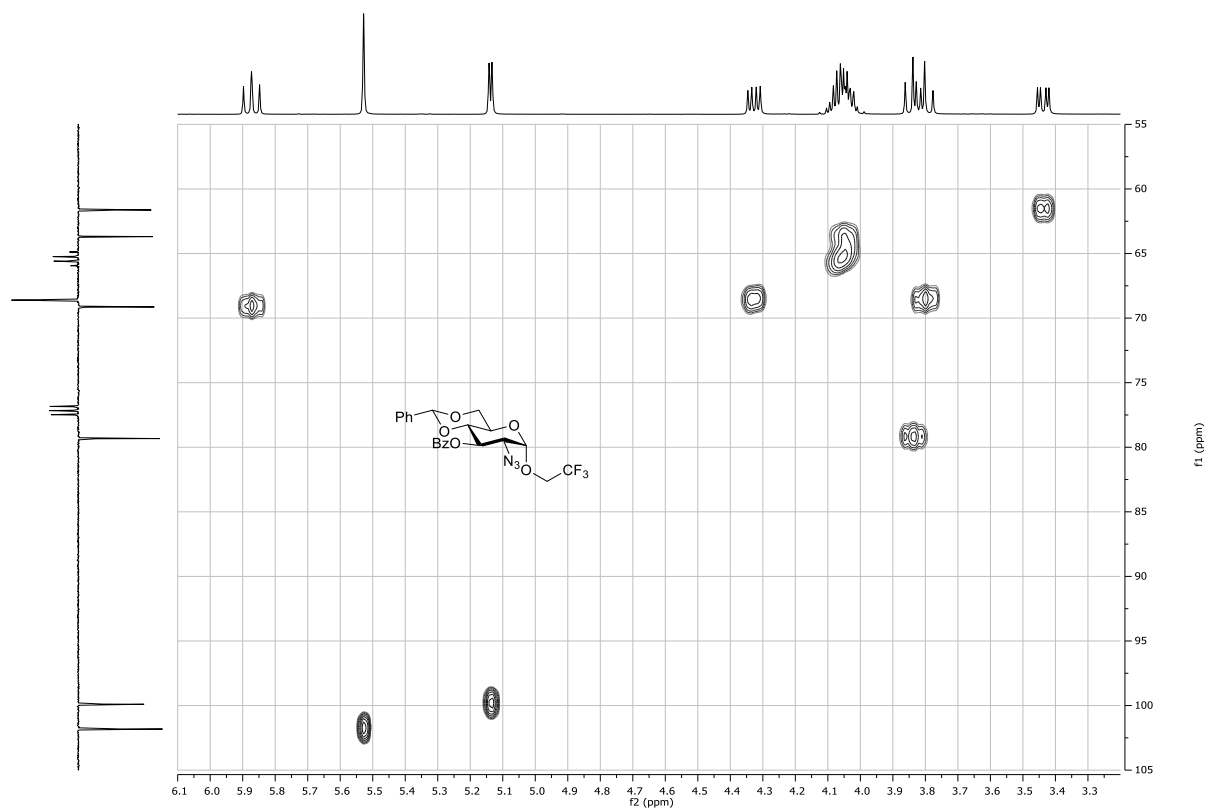
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

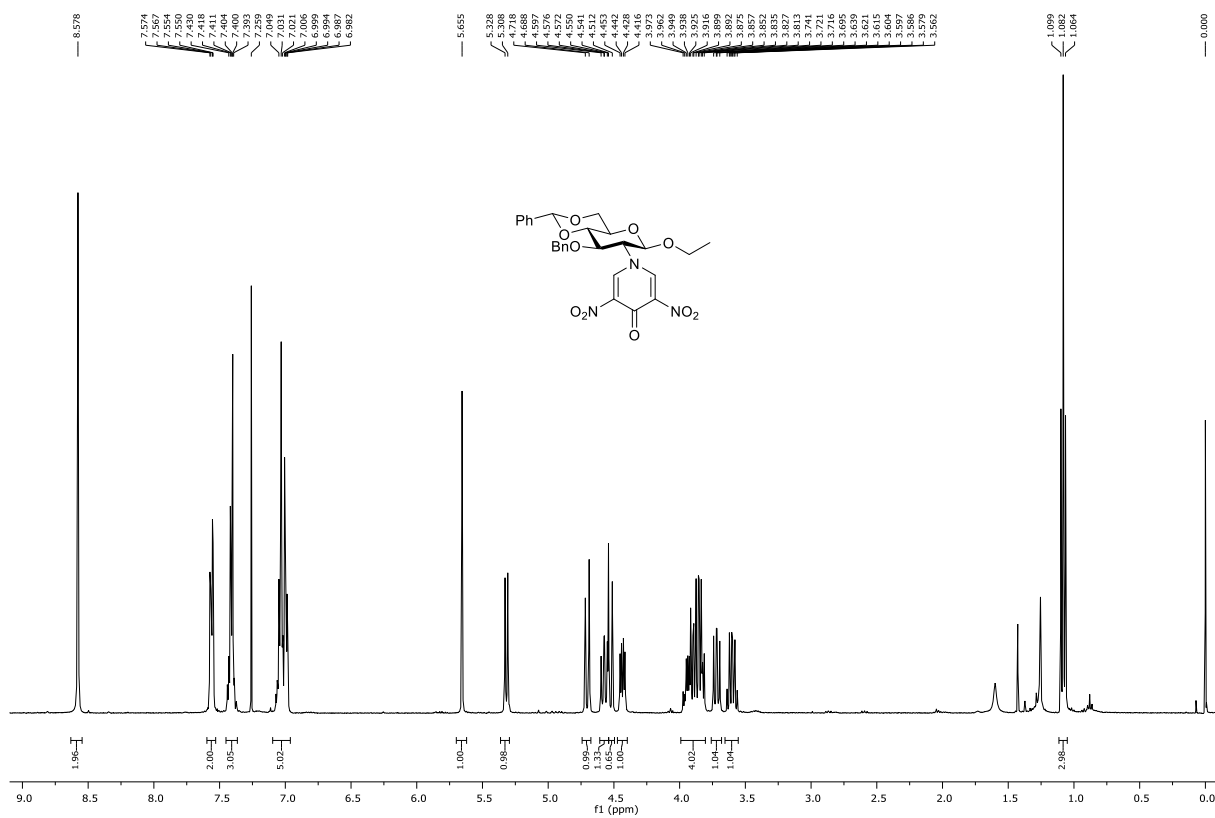


^1H - ^{13}C HSQC NMR, CDCl_3

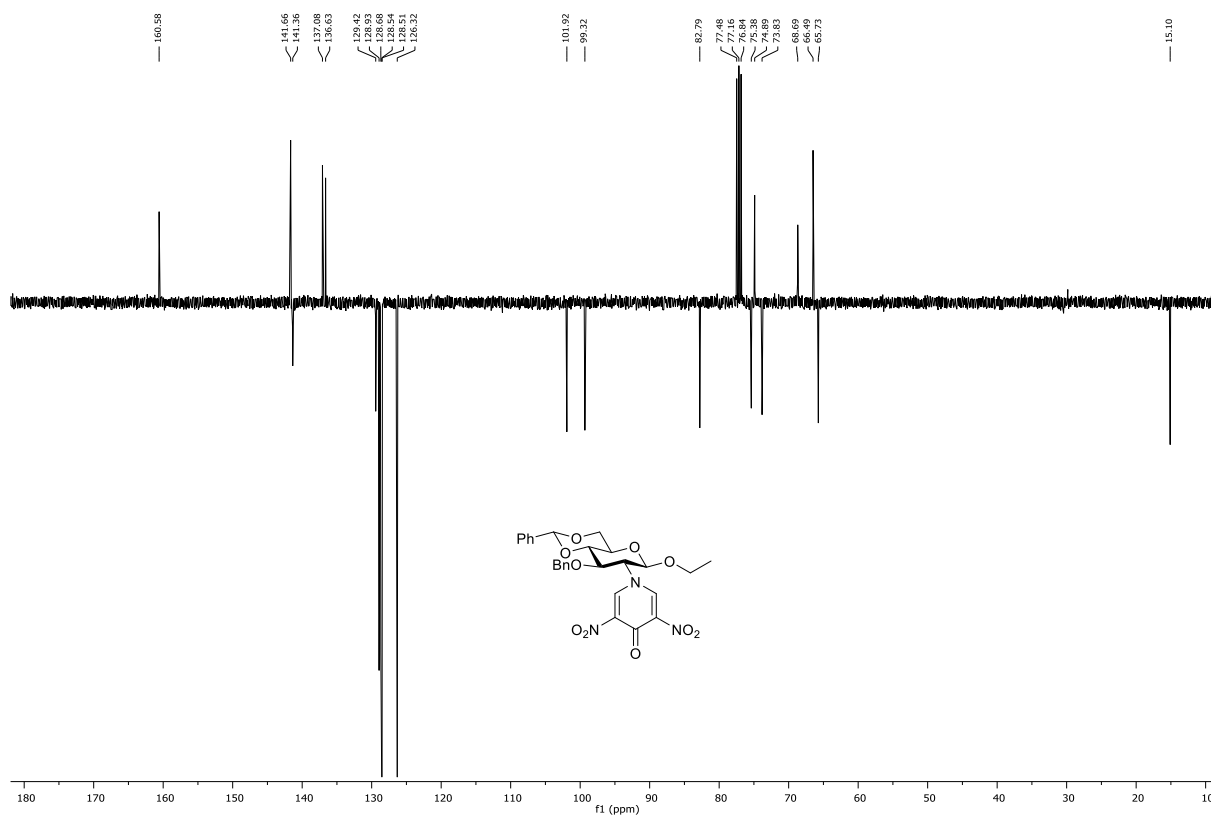


Ethyl 3-O-benzyl-4,6-O-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- β -D-glucopyranoside (**5A**).

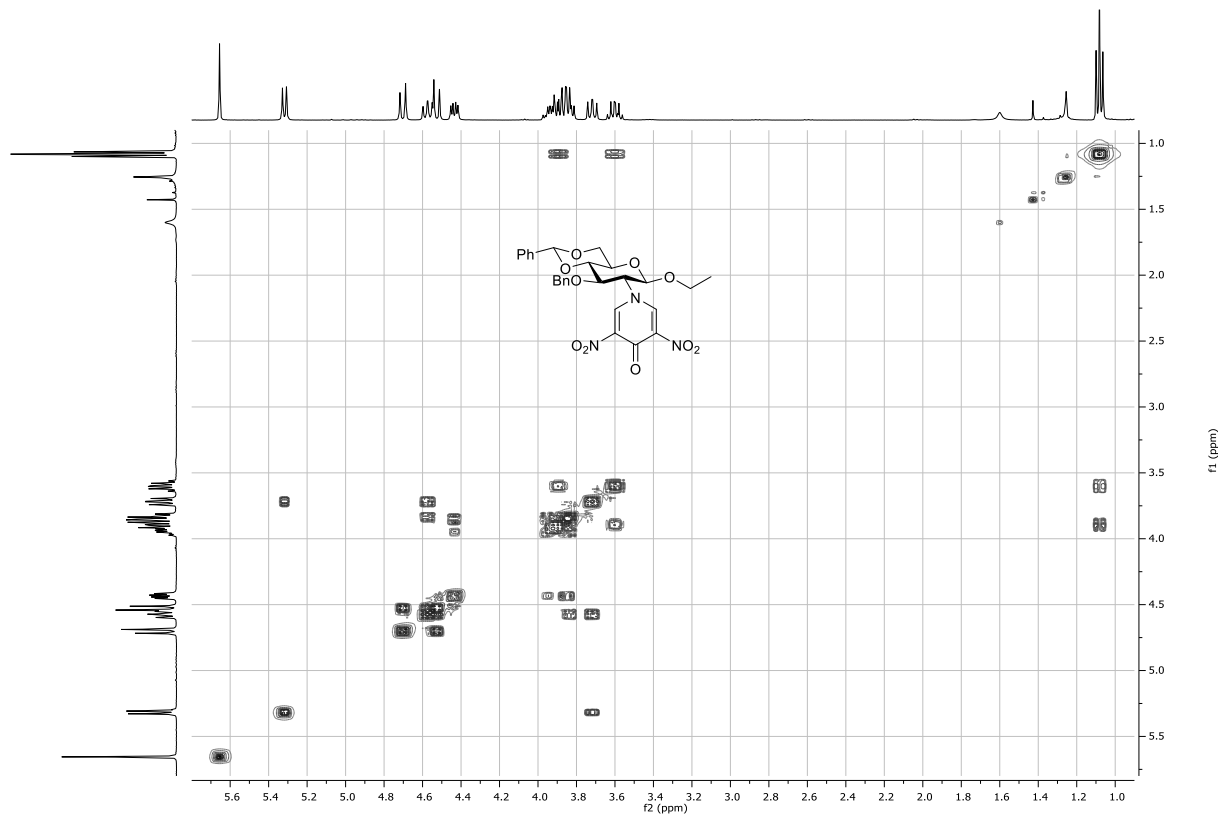
^1H NMR, 400 MHz, CDCl_3



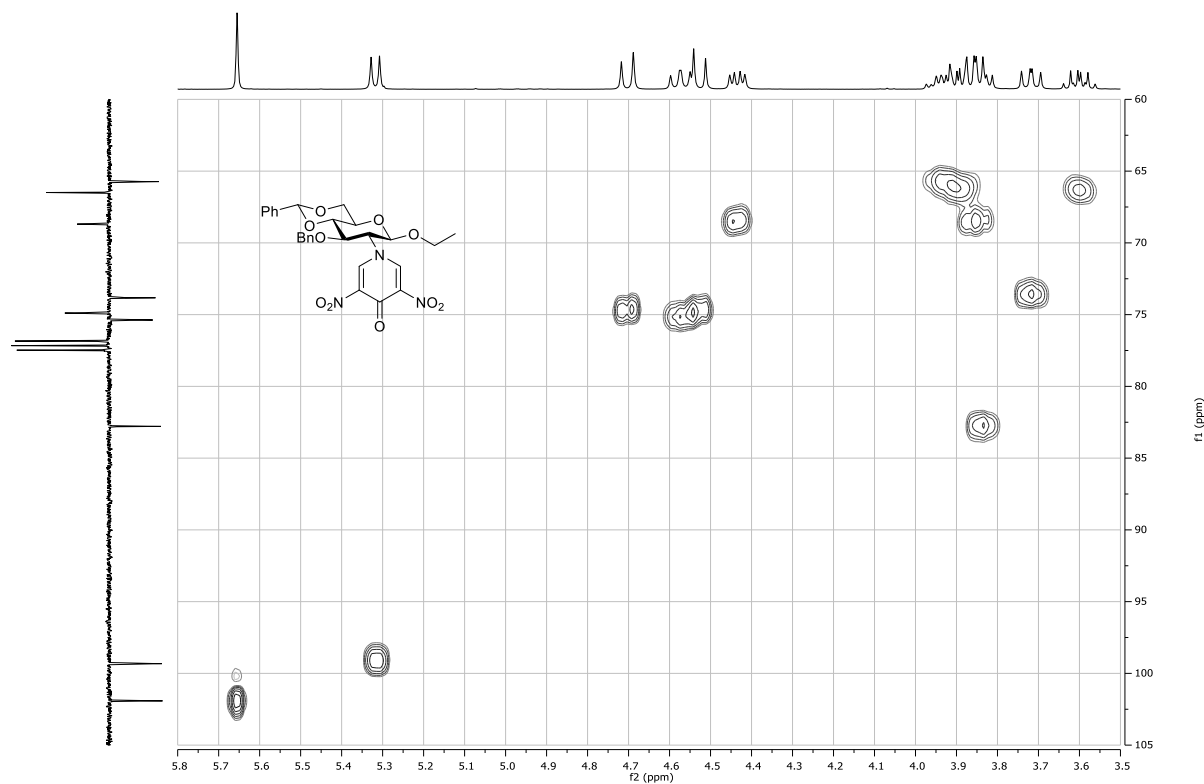
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

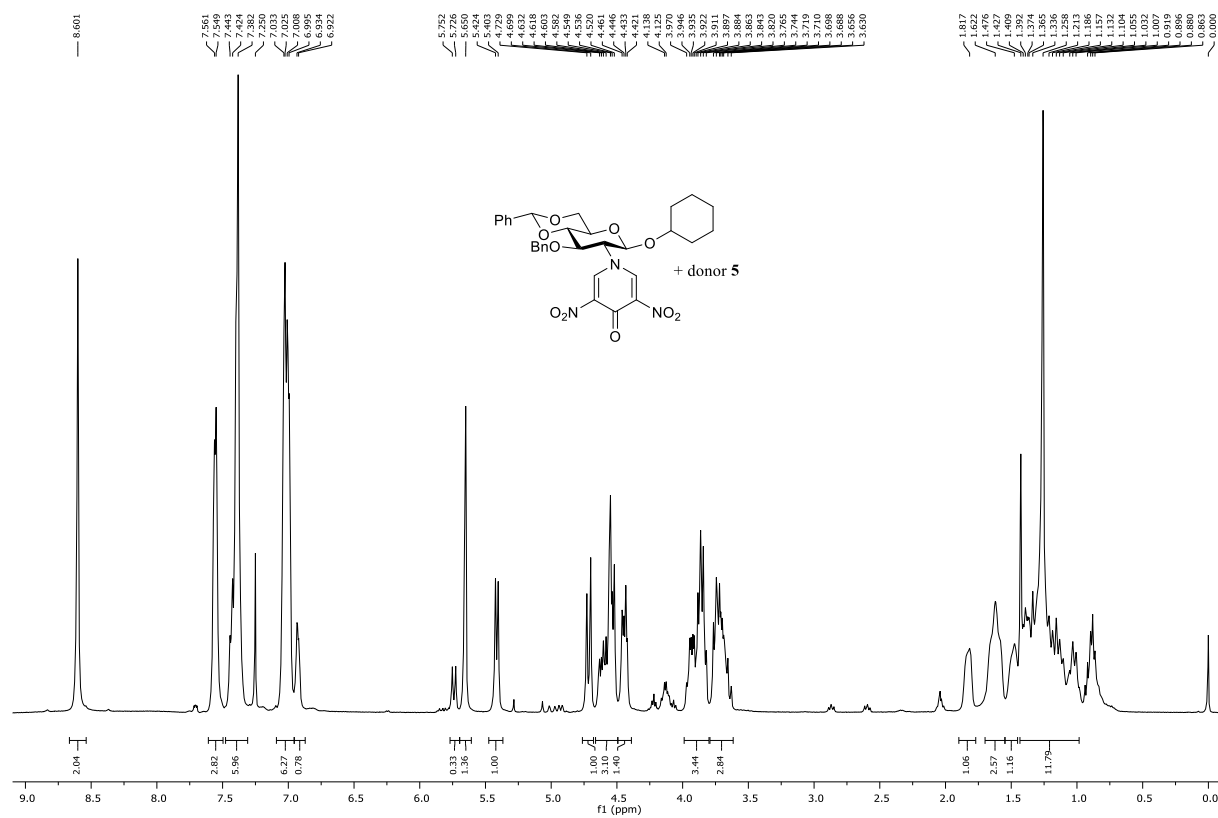


^1H - ^{13}C HSQC NMR, CDCl_3

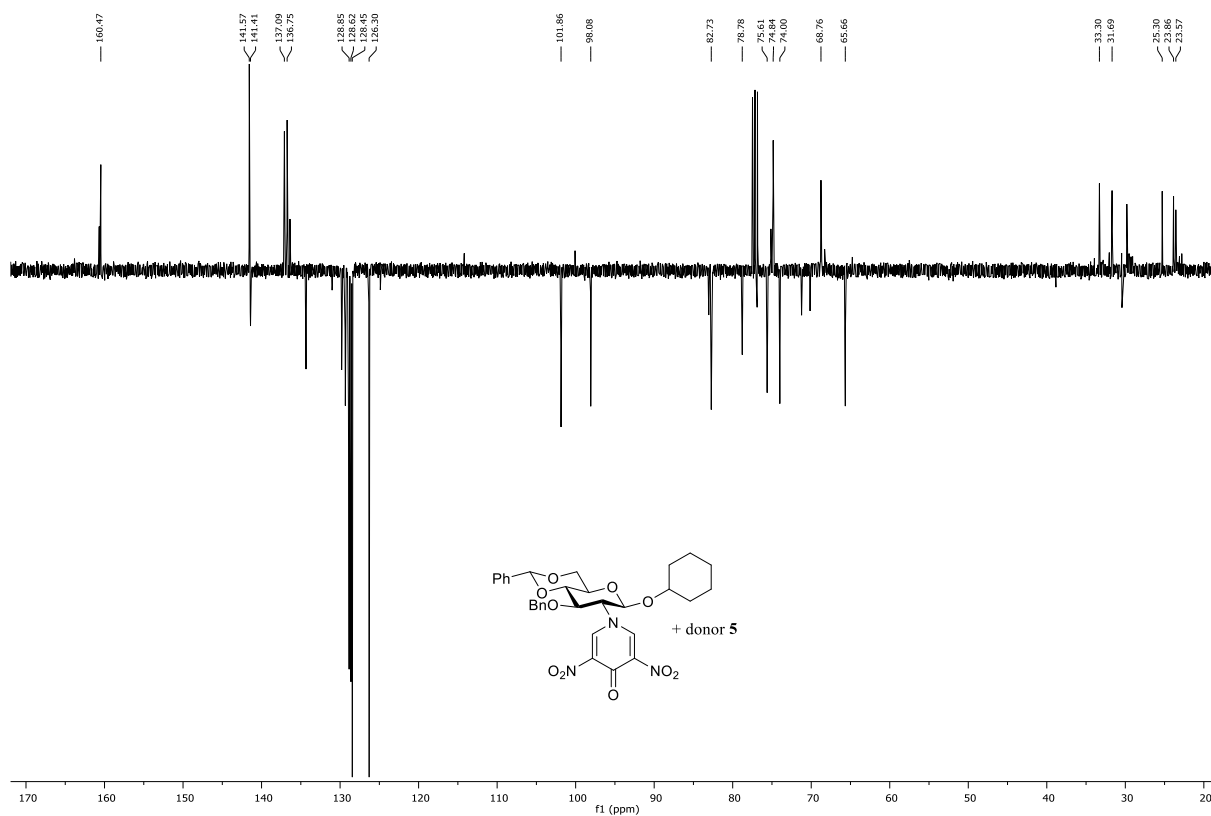


Cyclohexyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- β -D-glucopyranoside (**5B**).

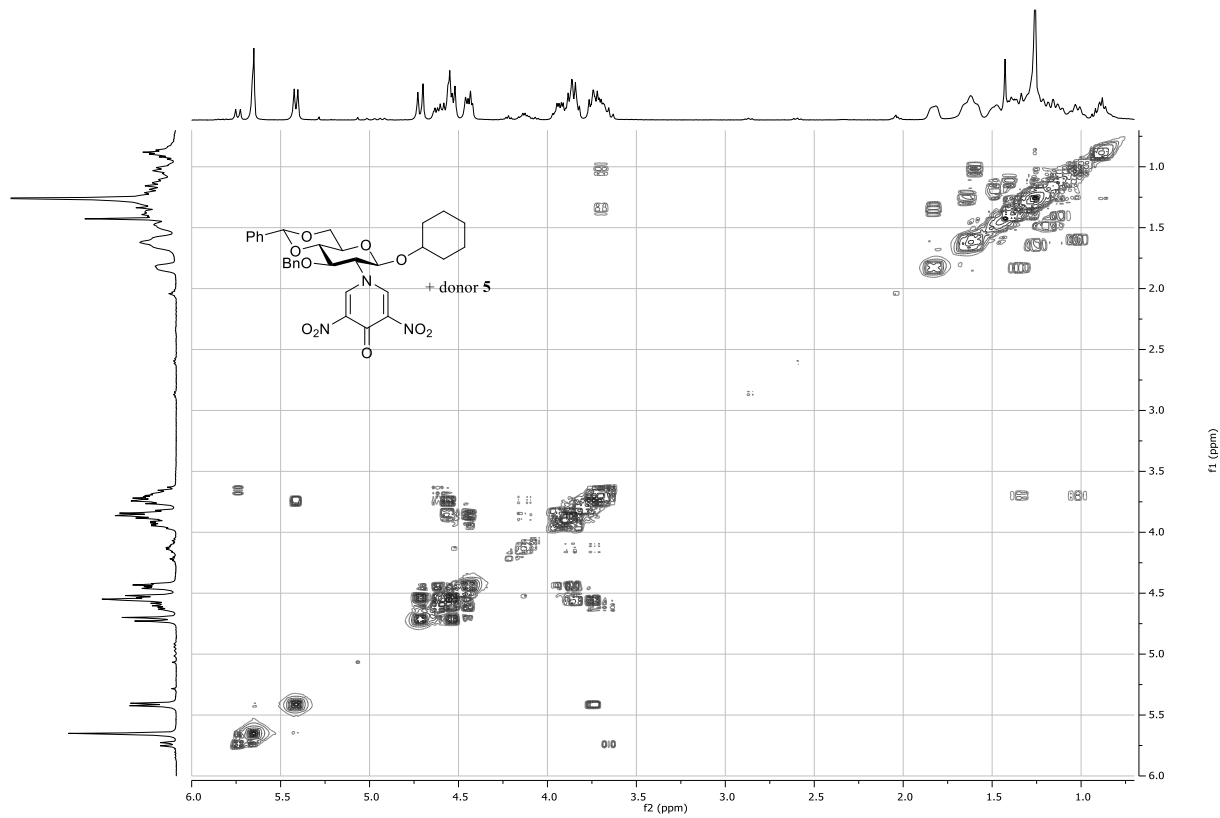
^1H NMR, 400 MHz, CDCl_3



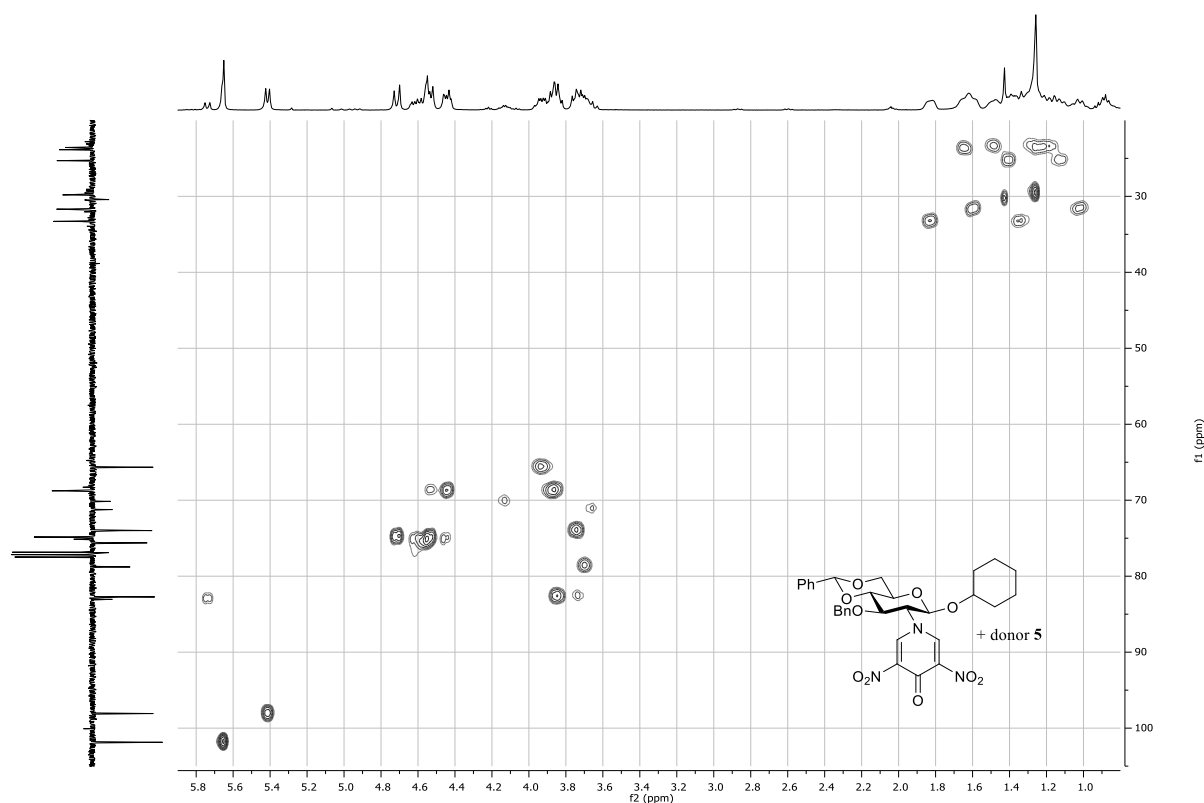
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

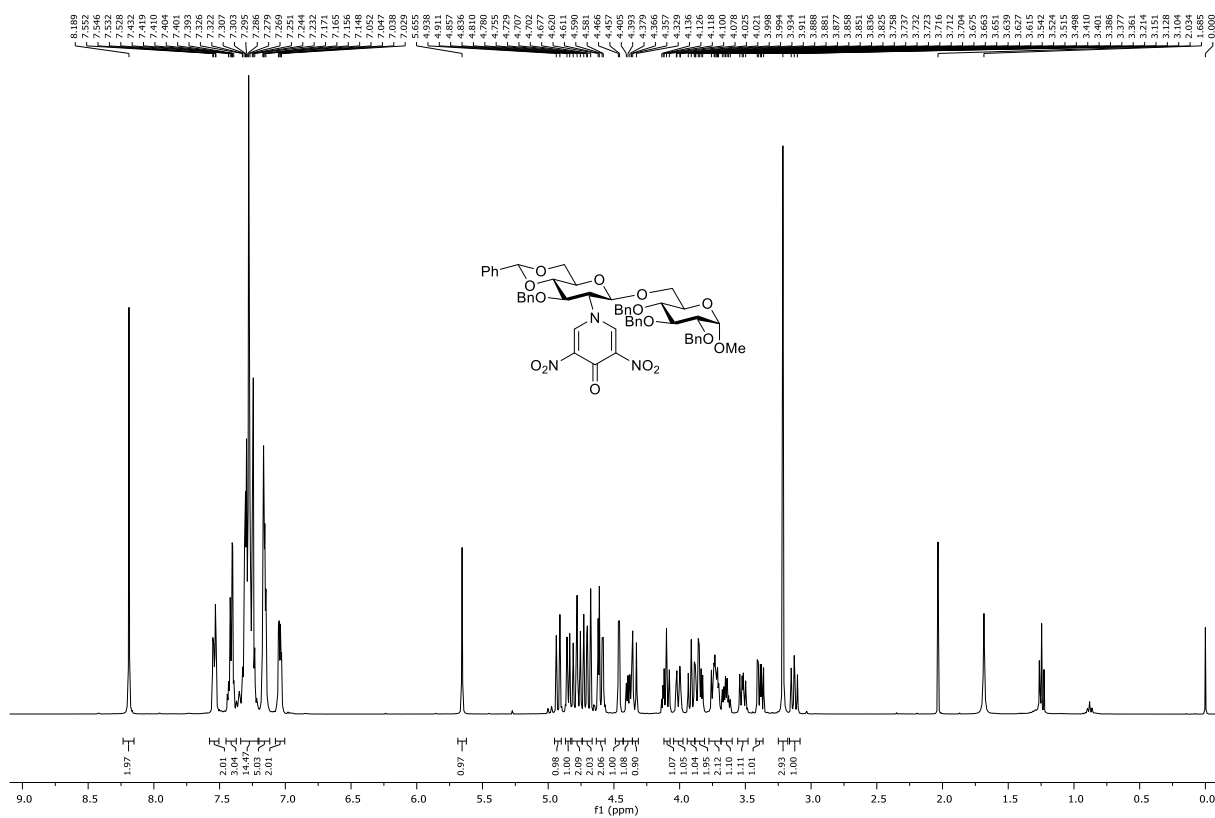


^1H - ^{13}C HSQC NMR, CDCl_3

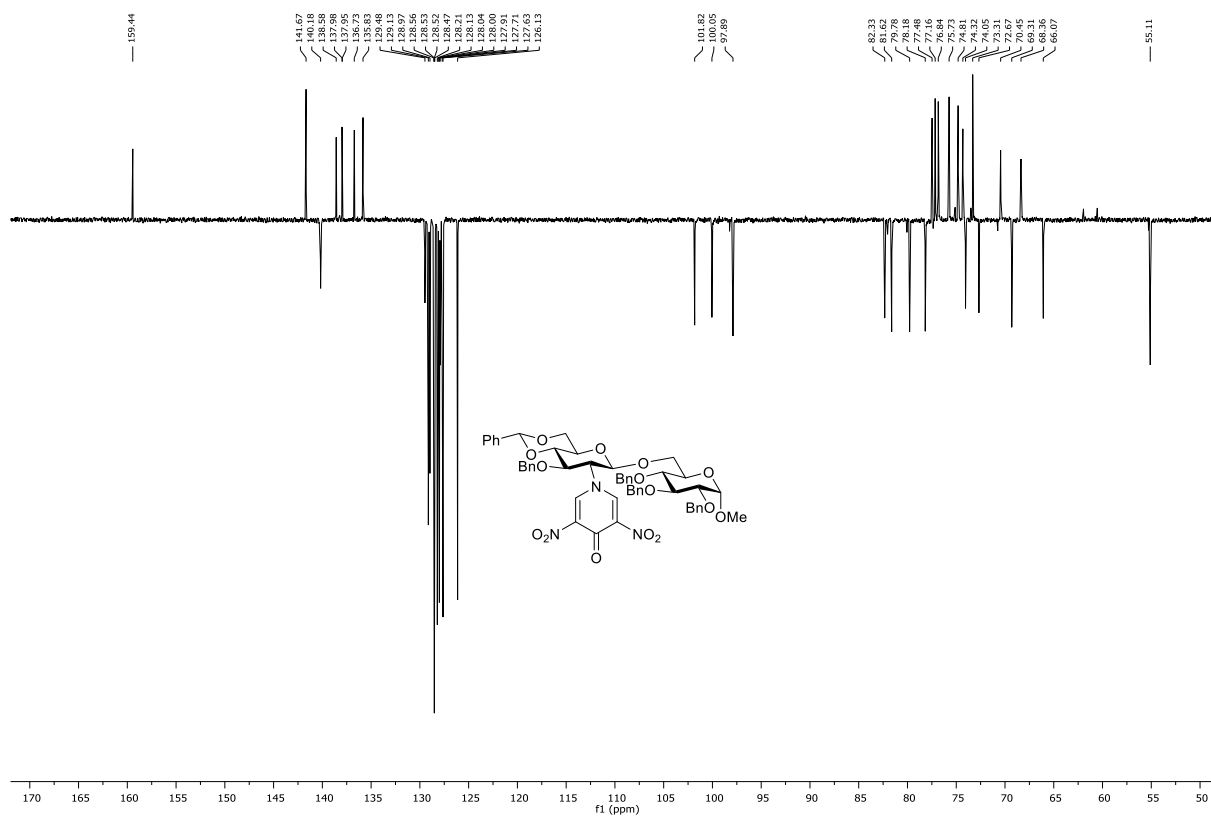


Methyl 6-*O*-(3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- β -D-glucopyranosyl)-2,3,4-tri-*O*-benzyl- α -D-glucopyranoside (**5C**).

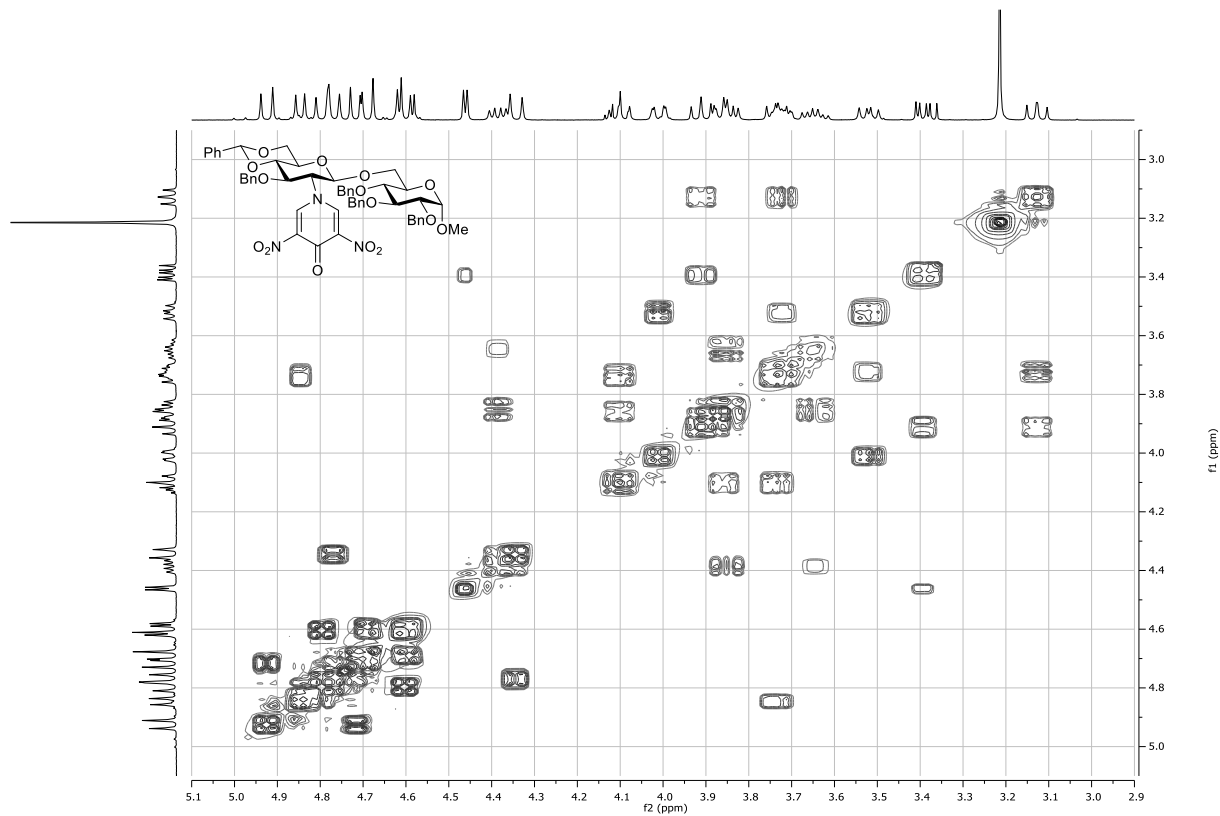
^1H NMR, 400 MHz, CDCl_3



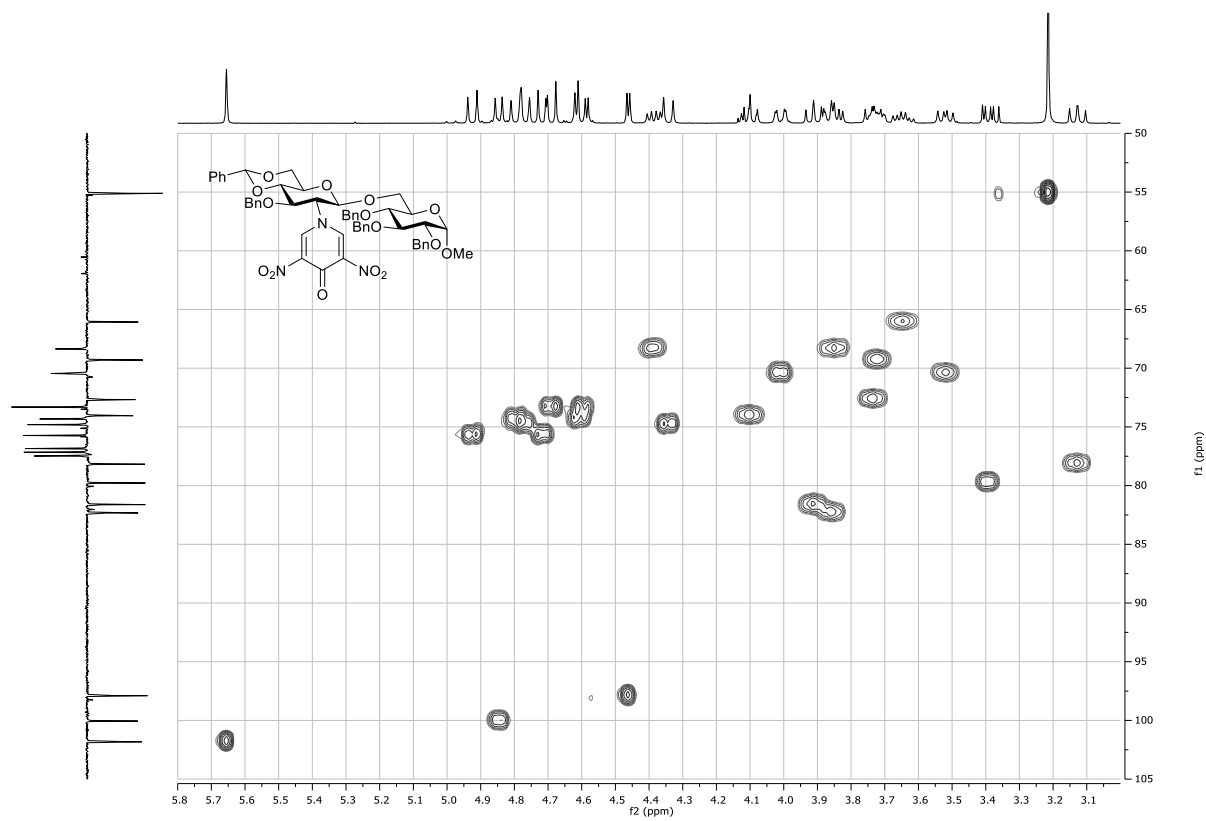
^{13}C -APT NMR, 101 MHz, CDCl_3



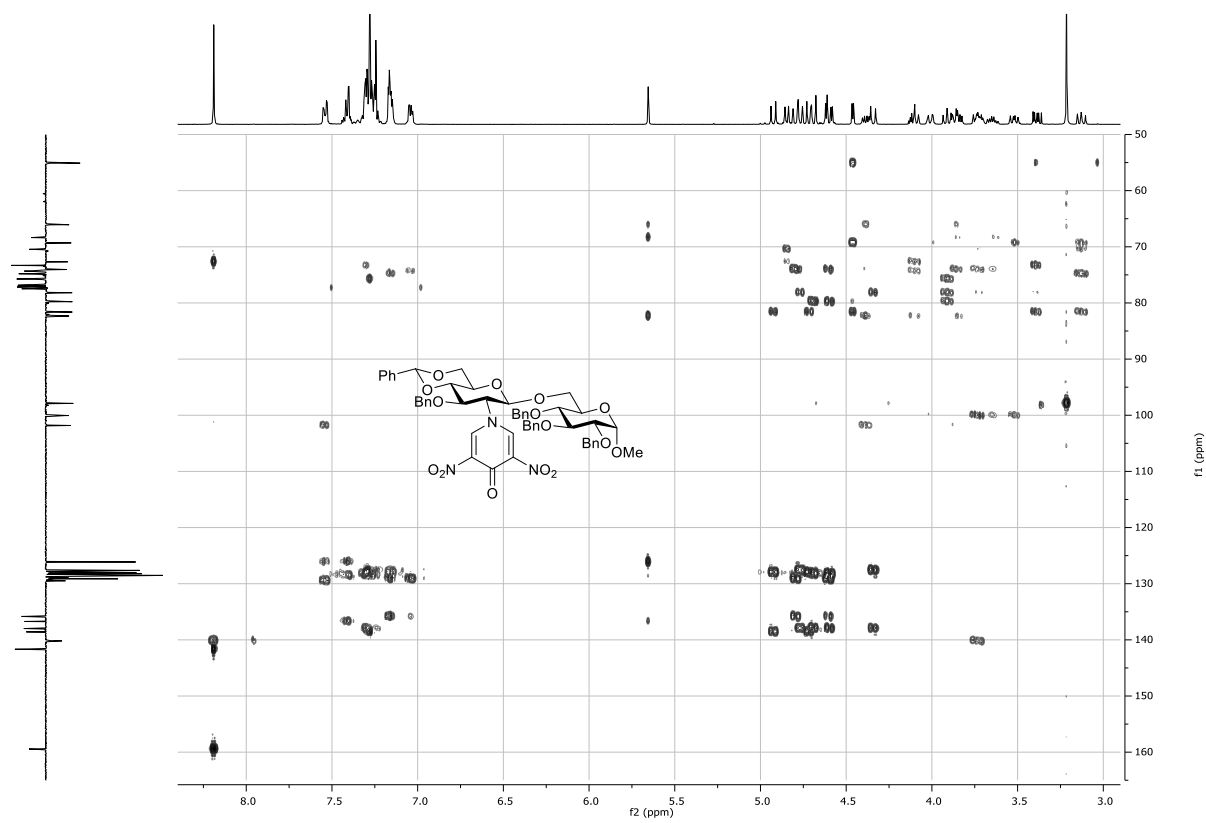
^1H - ^1H COSY NMR, CDCl_3



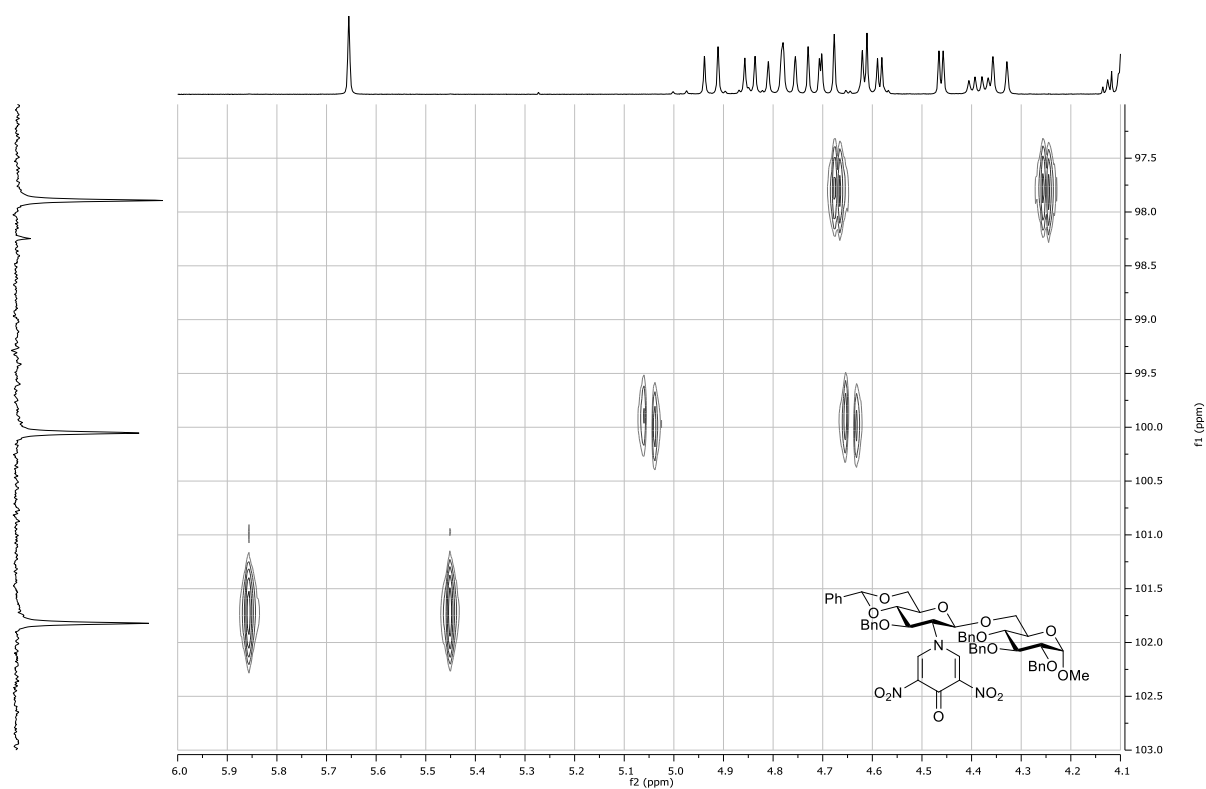
^1H - ^{13}C HSQC NMR, CDCl_3



^1H - ^{13}C HMBC NMR, CDCl_3

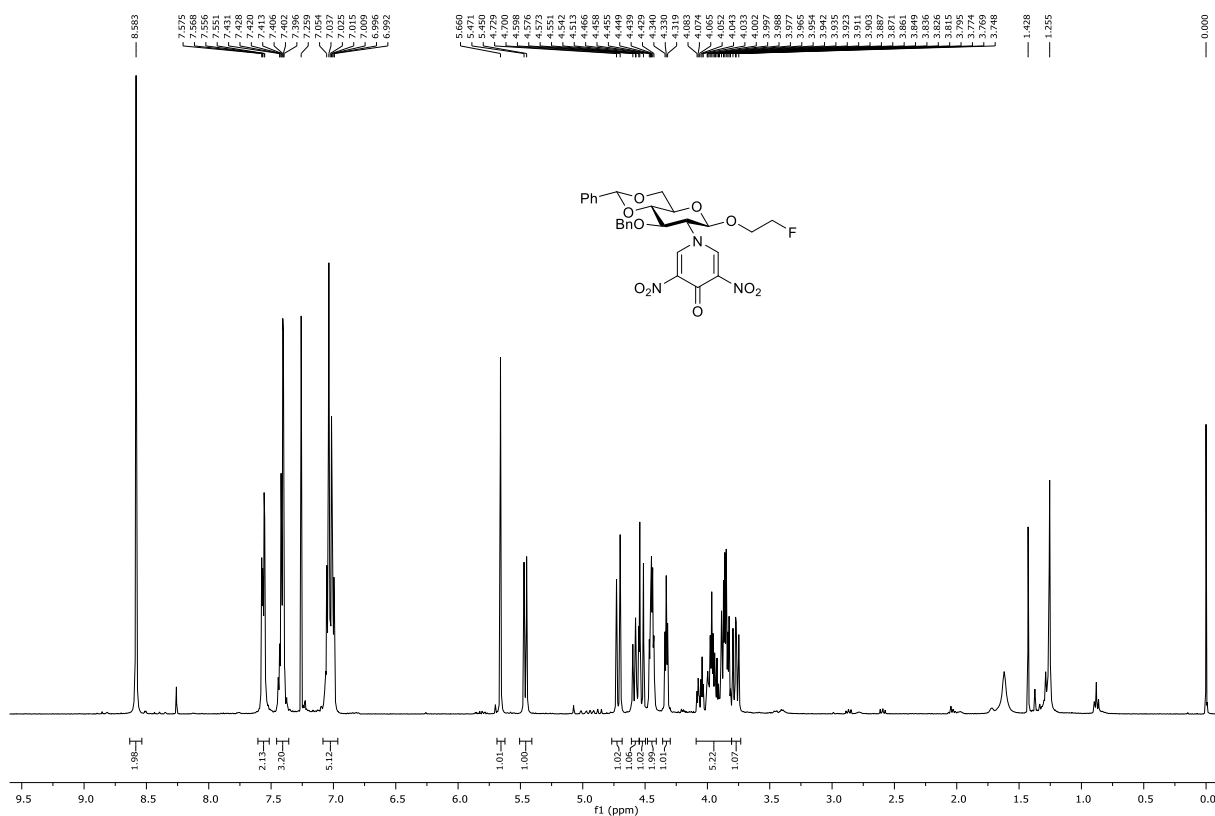


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

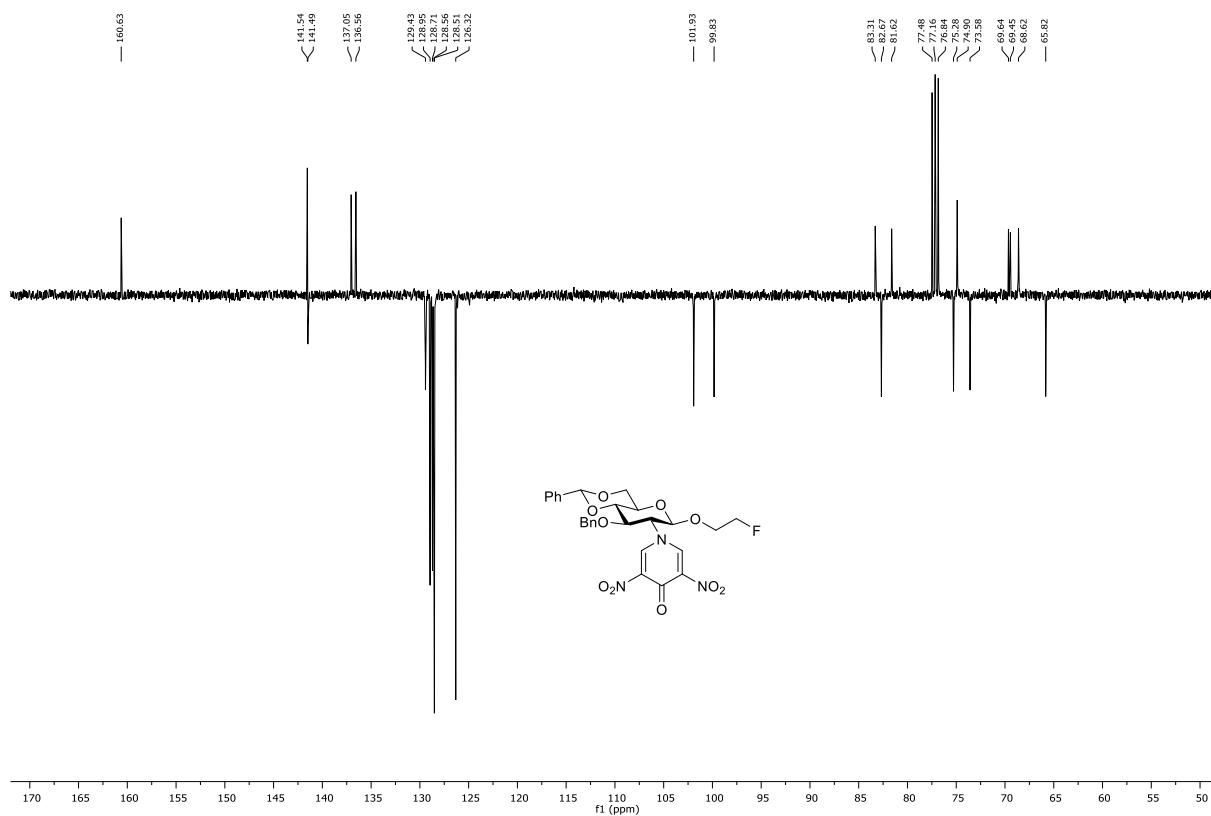


2-Fluoroethyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- β -D-glucopyranoside (**5D**).

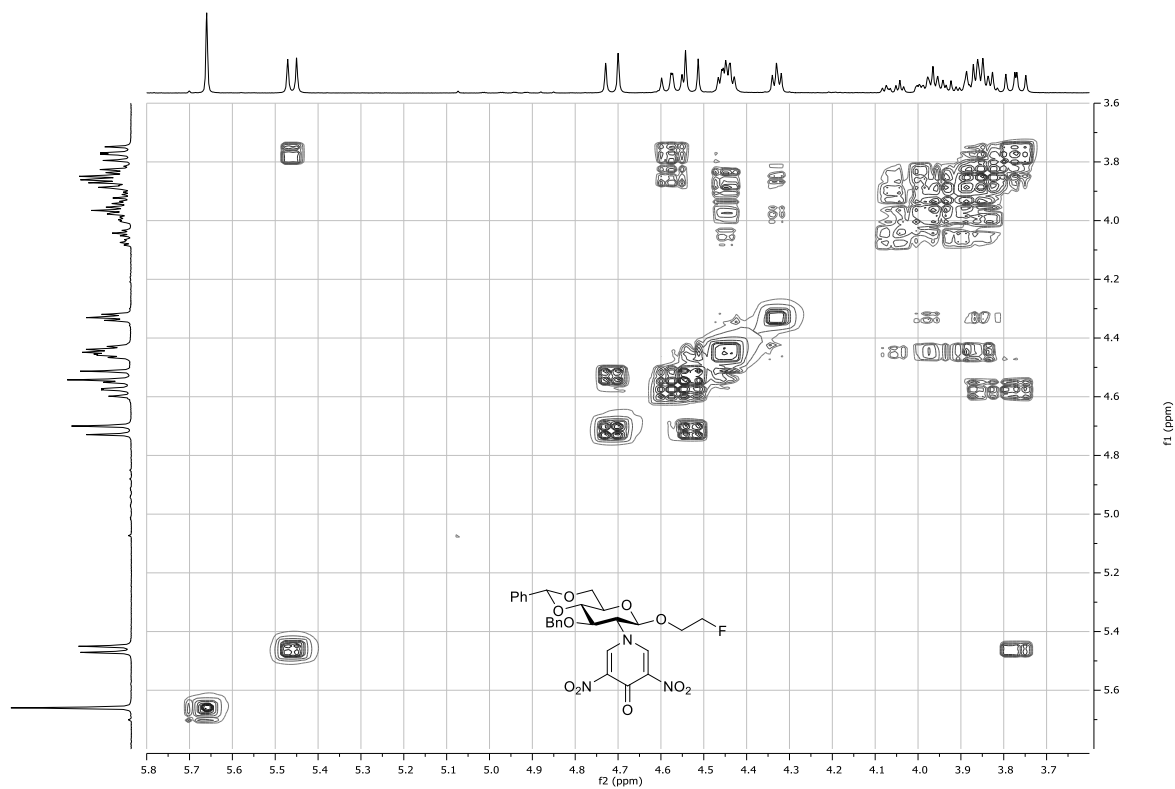
^1H NMR, 400 MHz, CDCl_3



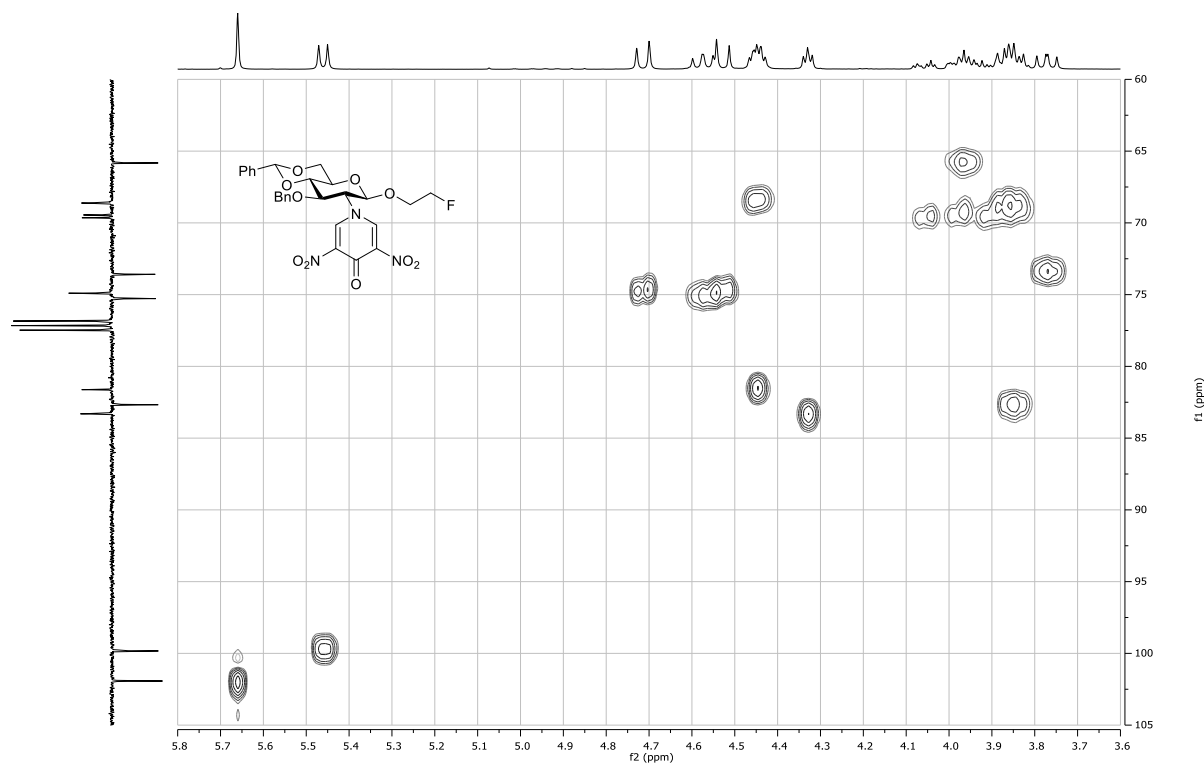
^{13}C -APT NMR, 101 MHz, CDCl_3



^1H - ^1H COSY NMR, CDCl_3

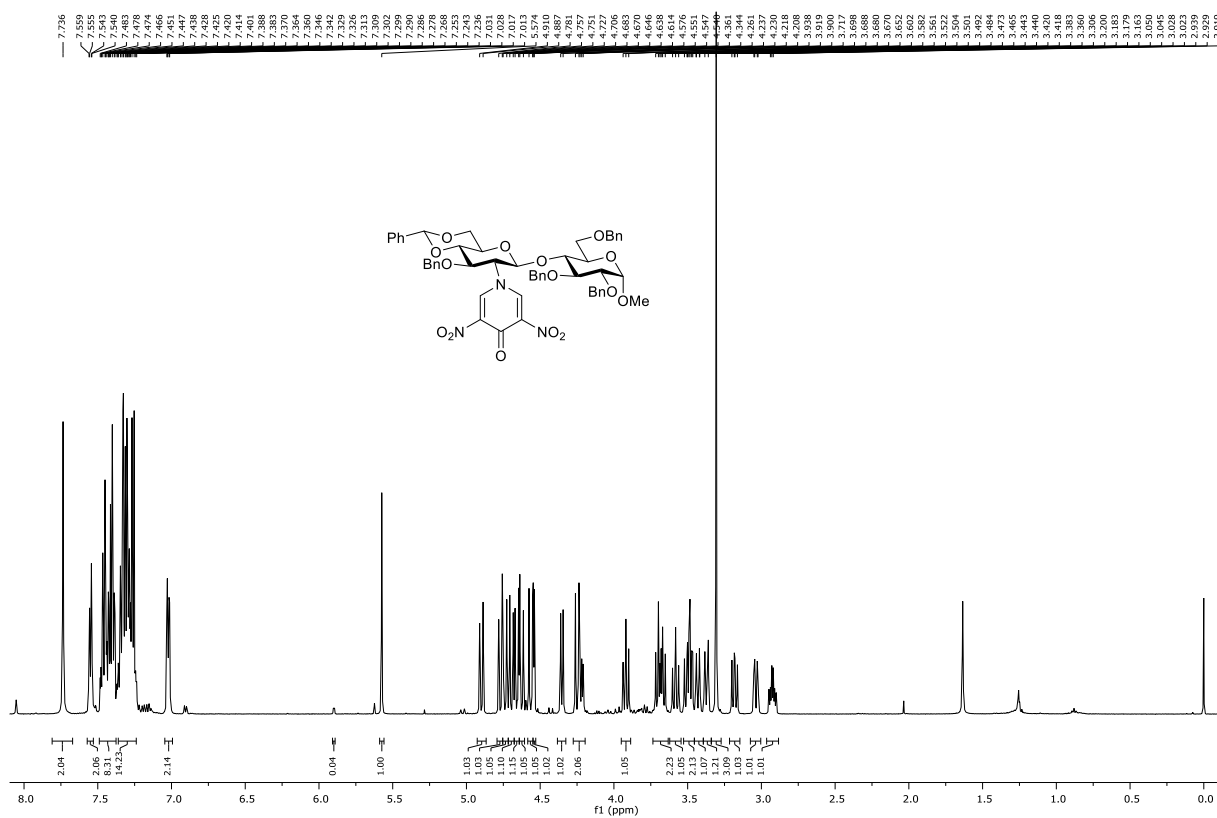


^1H - ^{13}C HSQC NMR, CDCl_3

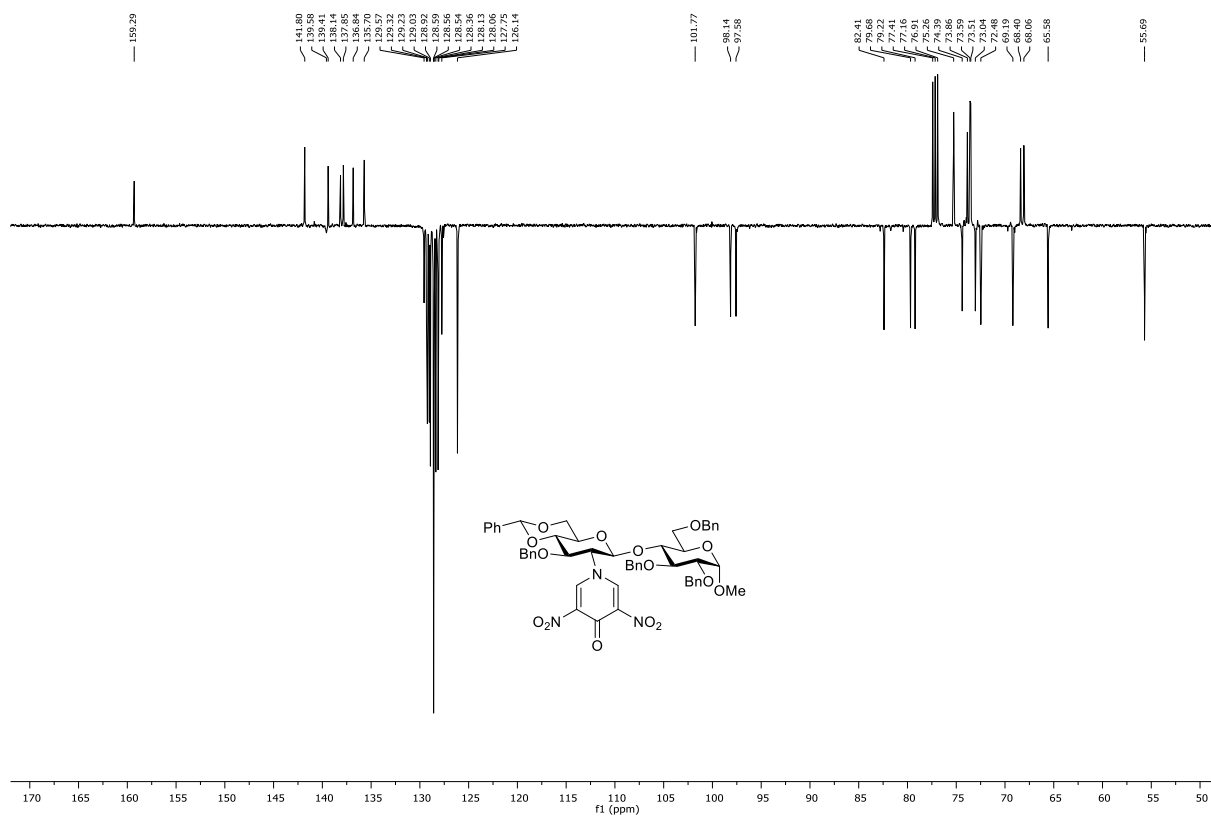


Methyl 4-*O*-(3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- β -D-glucopyranosyl)-2,3,6-tri-*O*-benzyl- α -D-glucopyranoside (**5E**).

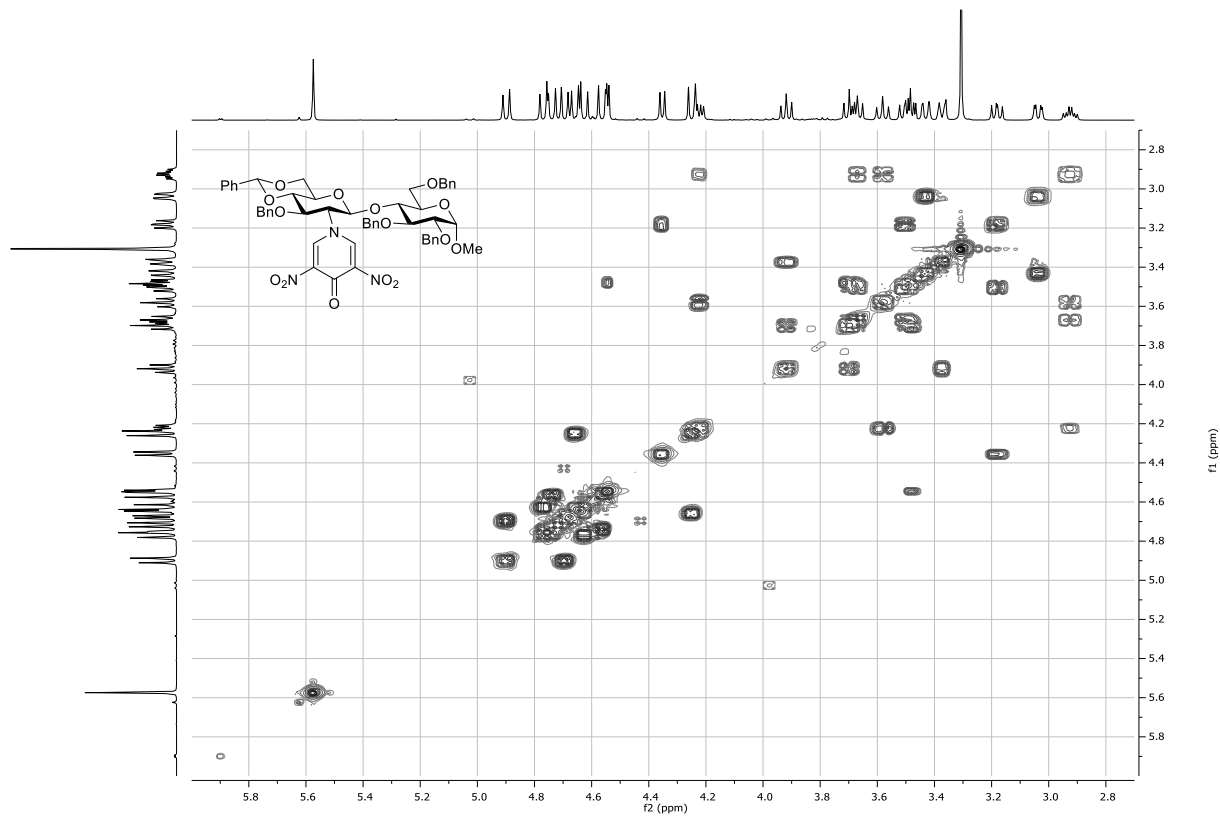
^1H NMR, 500 MHz, CDCl_3



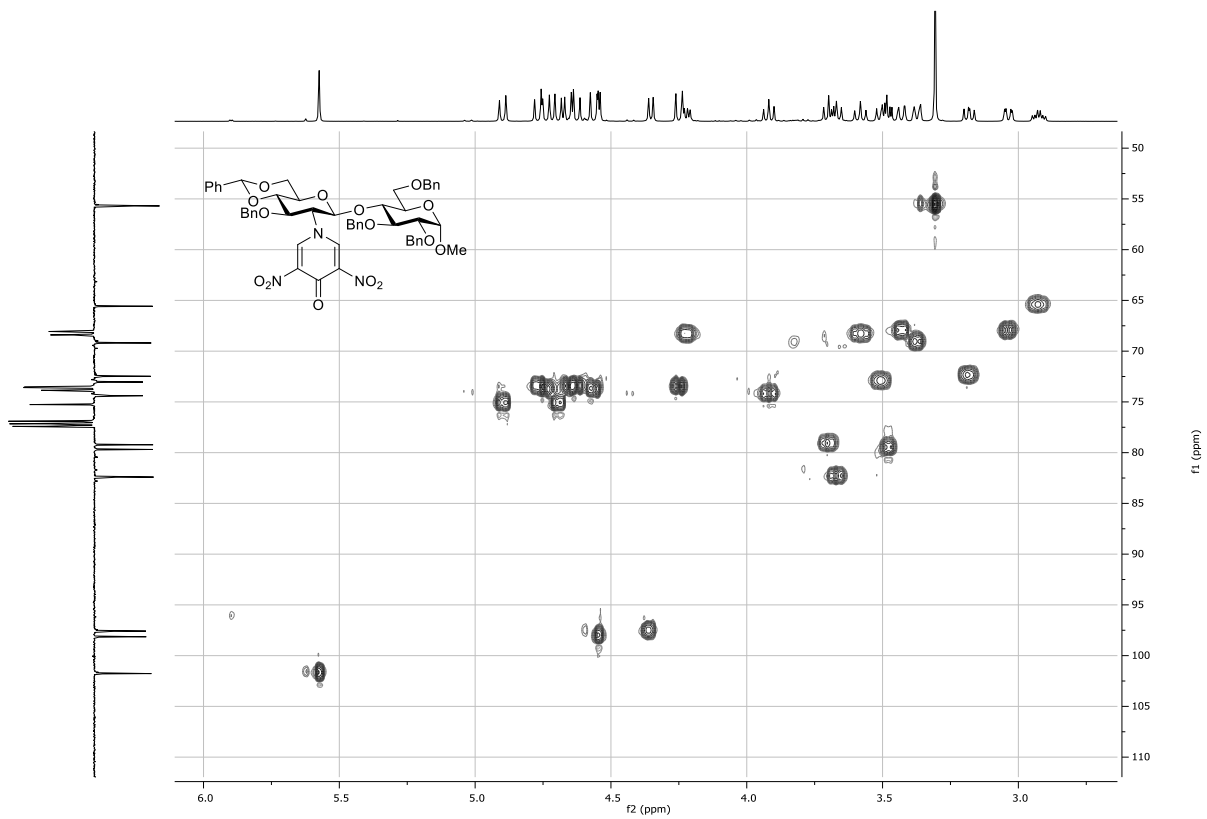
^{13}C -APT NMR, 126 MHz, CDCl_3



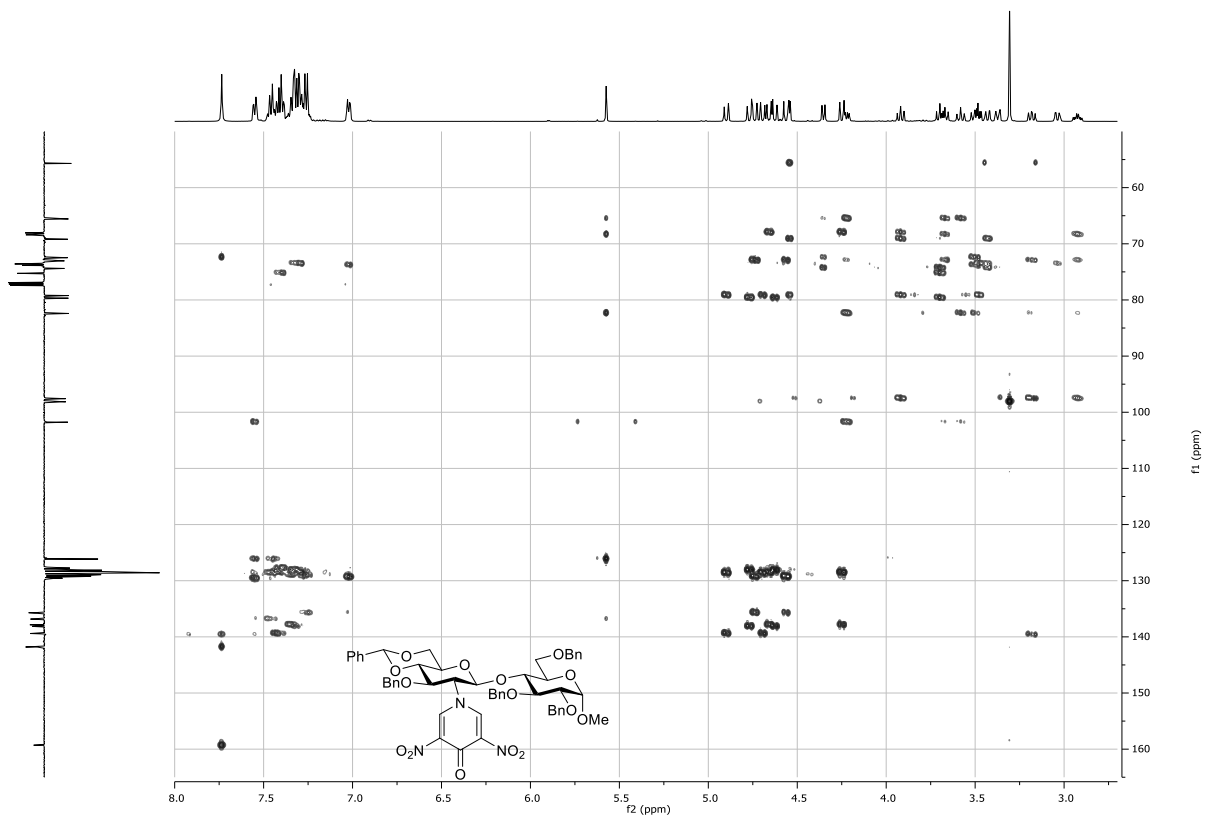
^1H - ^1H COSY NMR, CDCl_3



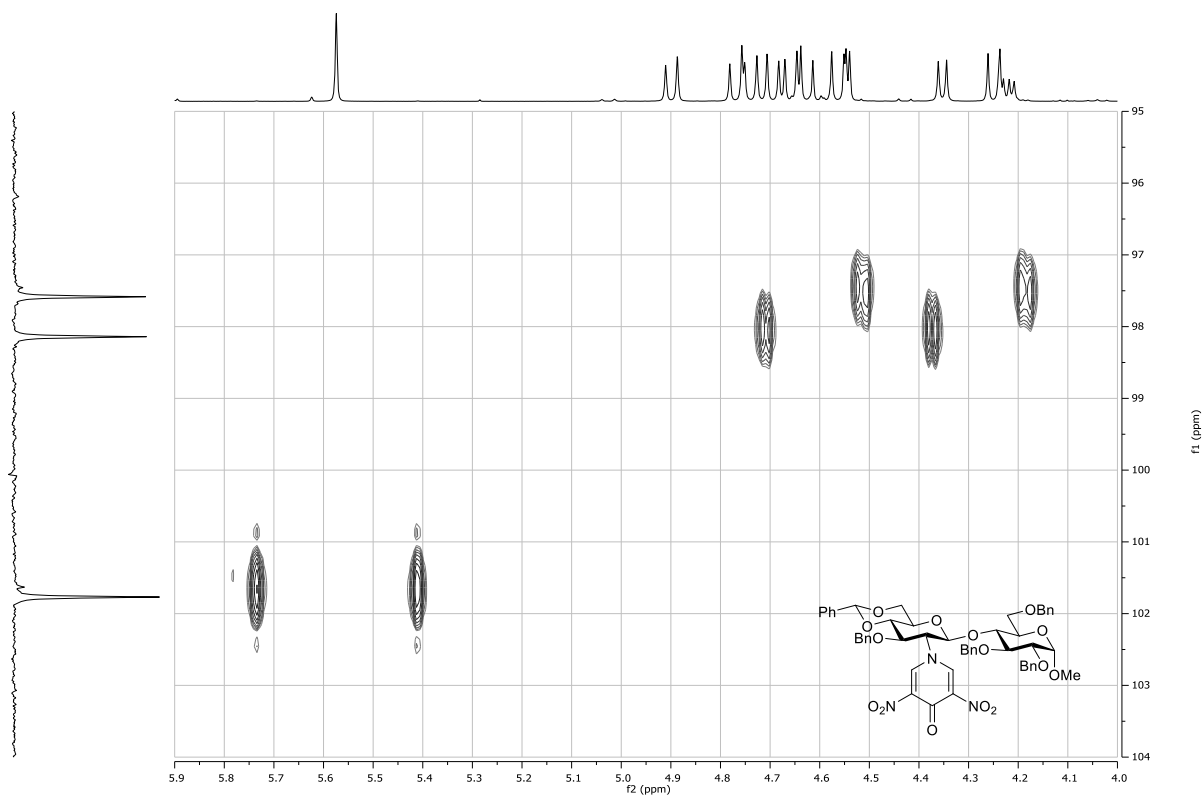
^1H - ^{13}C HSQC NMR, CDCl_3



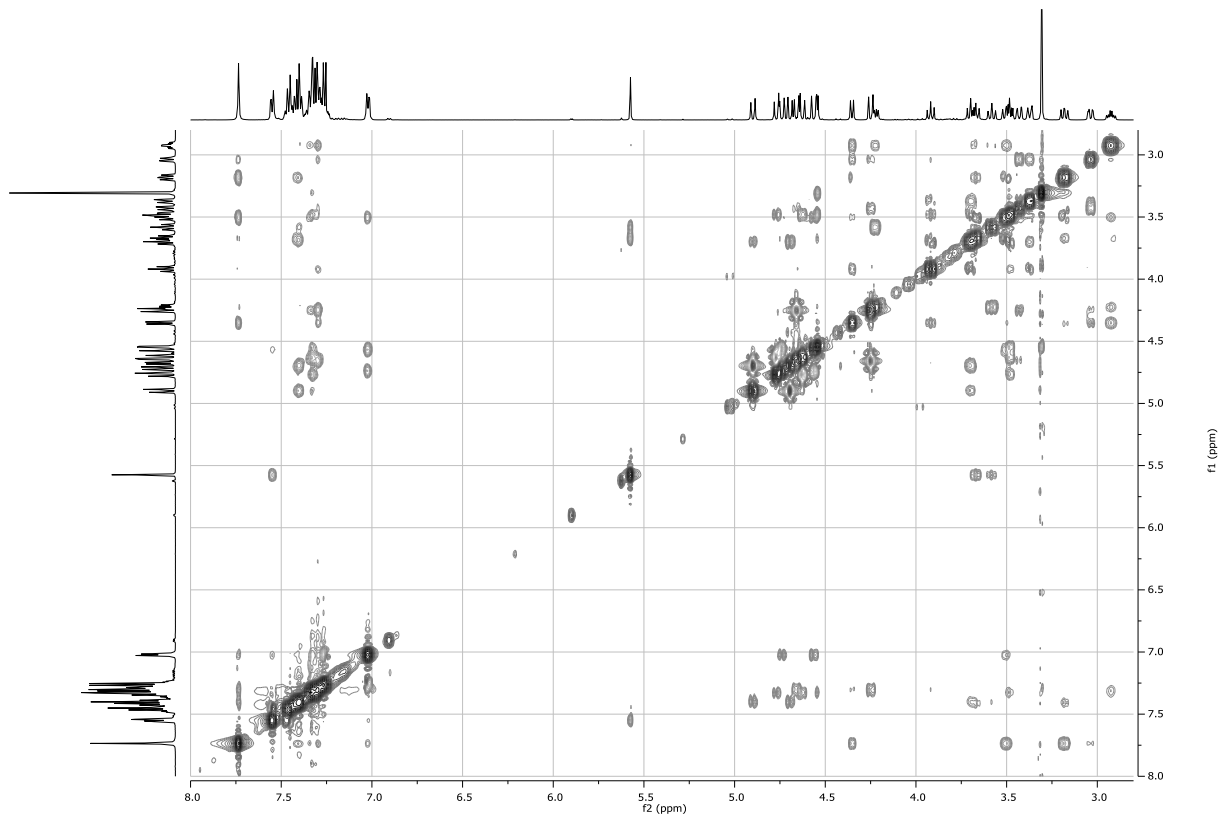
^1H - ^{13}C HMBC NMR, CDCl_3



^1H - ^{13}C HMBC-GATED NMR, CDCl_3

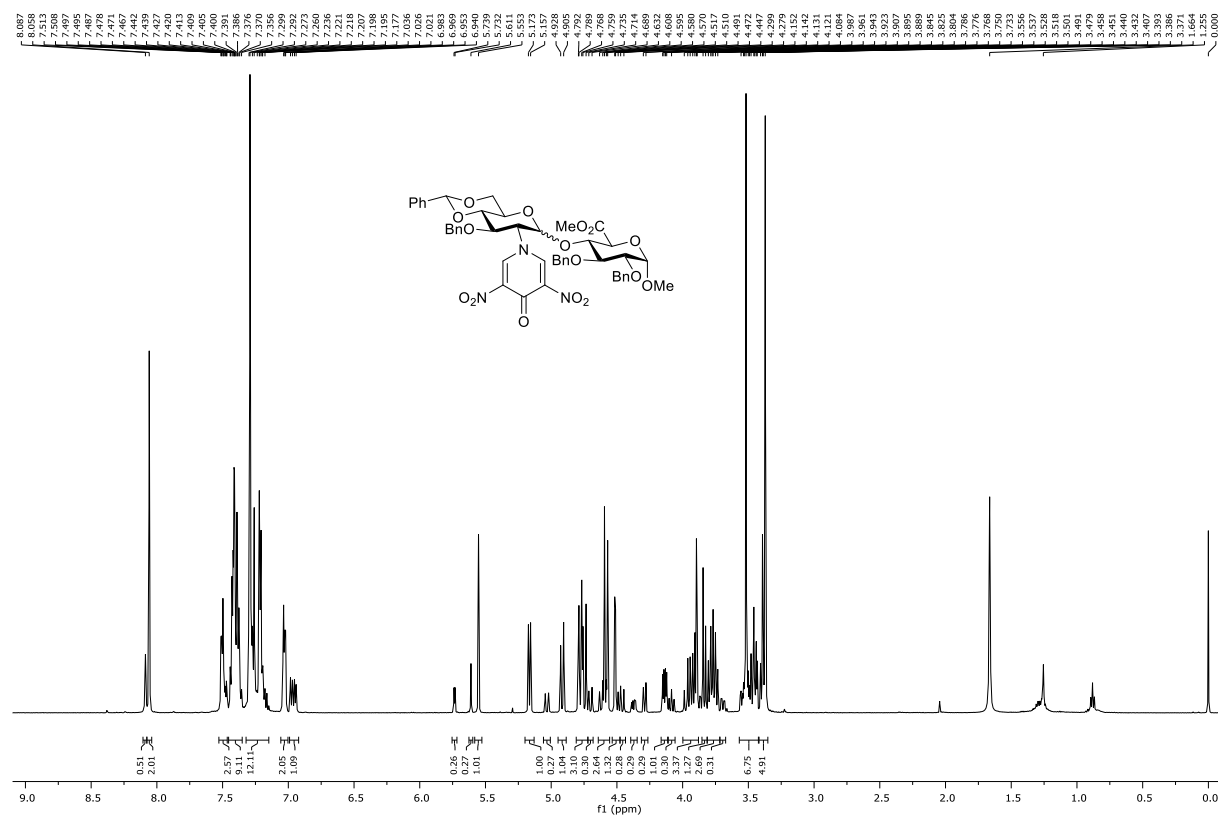


^1H - ^1H NOESY NMR, CDCl_3

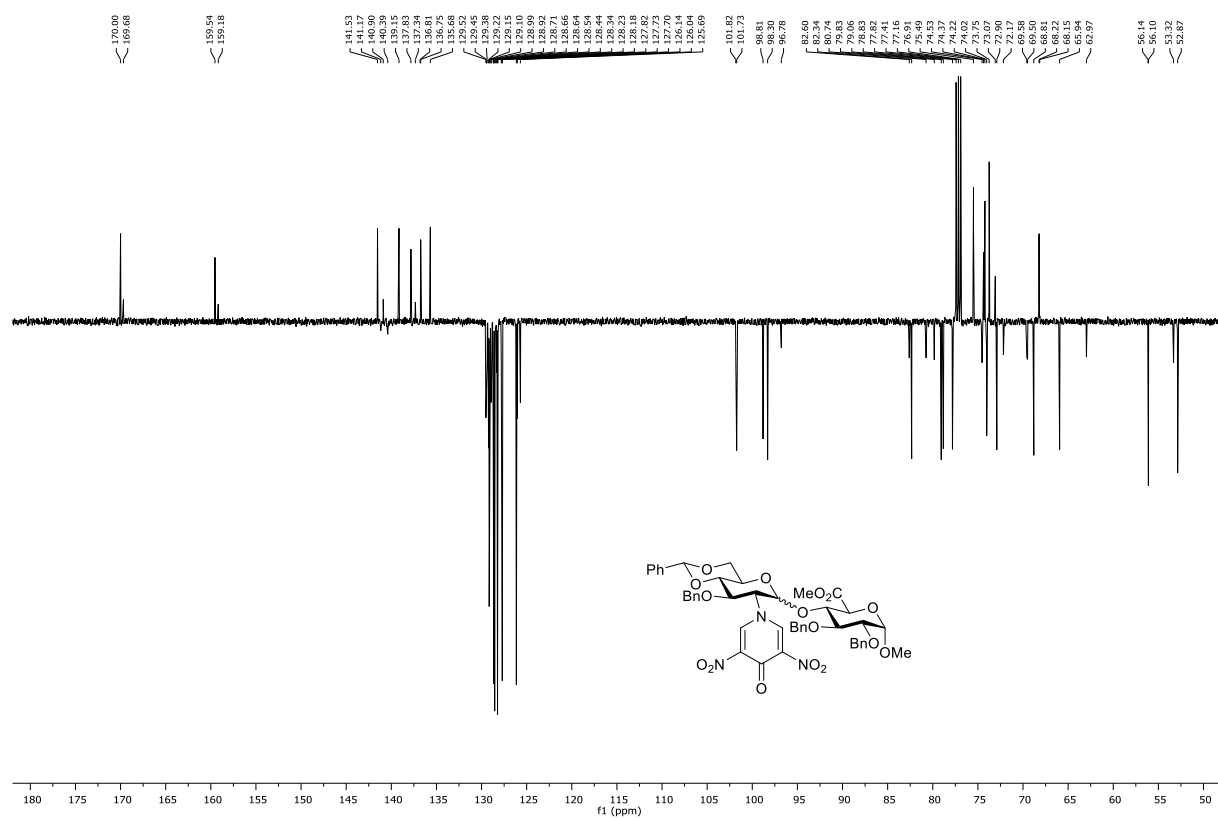


Methyl (Methyl 4-*O*-[3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- α - β -D-glucopyranosyl]-2,3-di-*O*-benzyl- α -D-glucopyranosyl uronate) (**5F**).

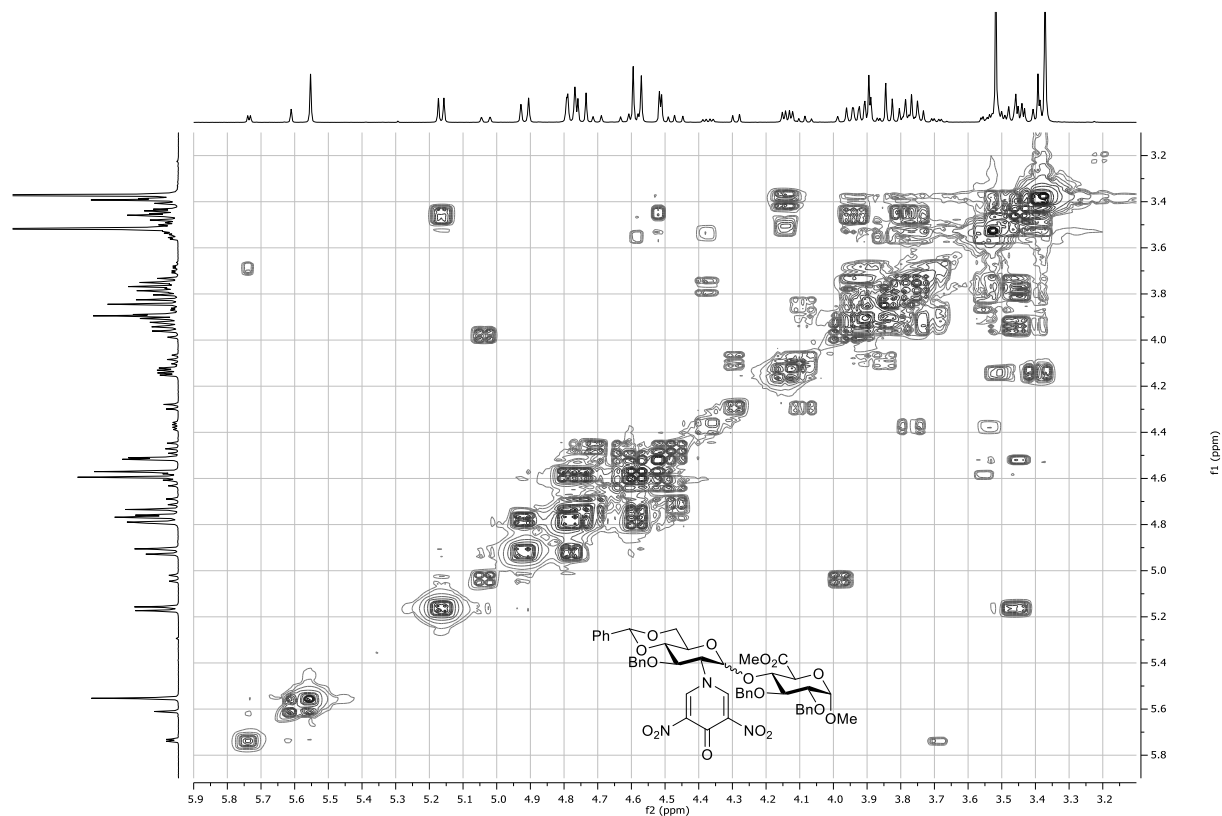
^1H NMR, 500 MHz, CDCl_3



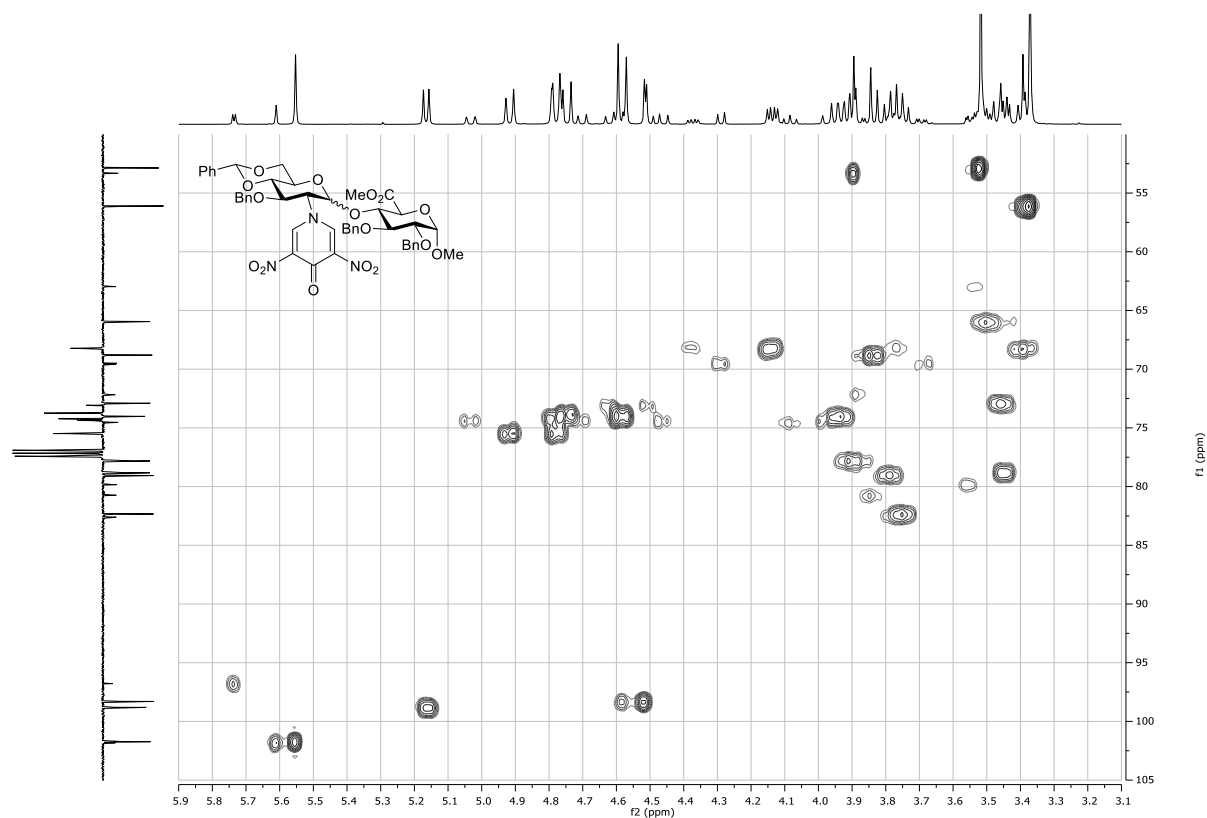
^{13}C -APT NMR, 126 MHz, CDCl_3



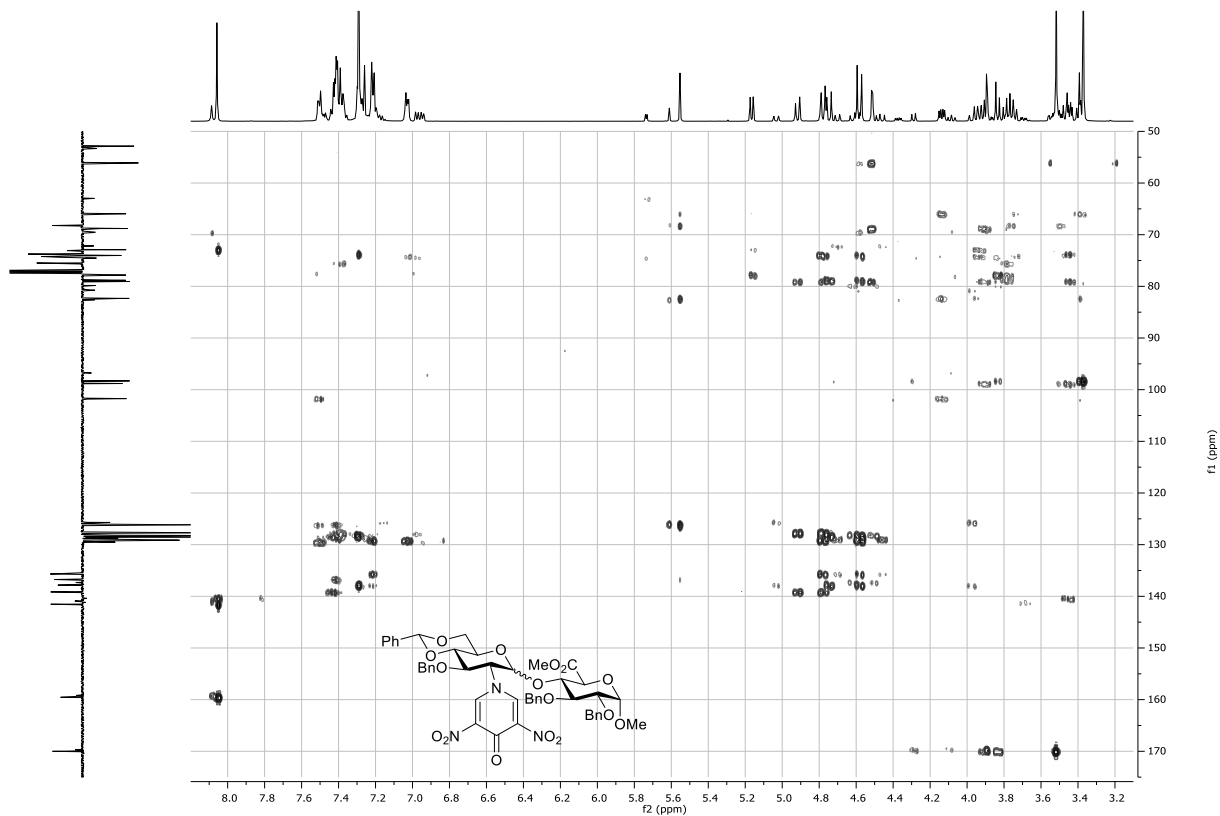
^1H - ^1H COSY NMR, CDCl_3



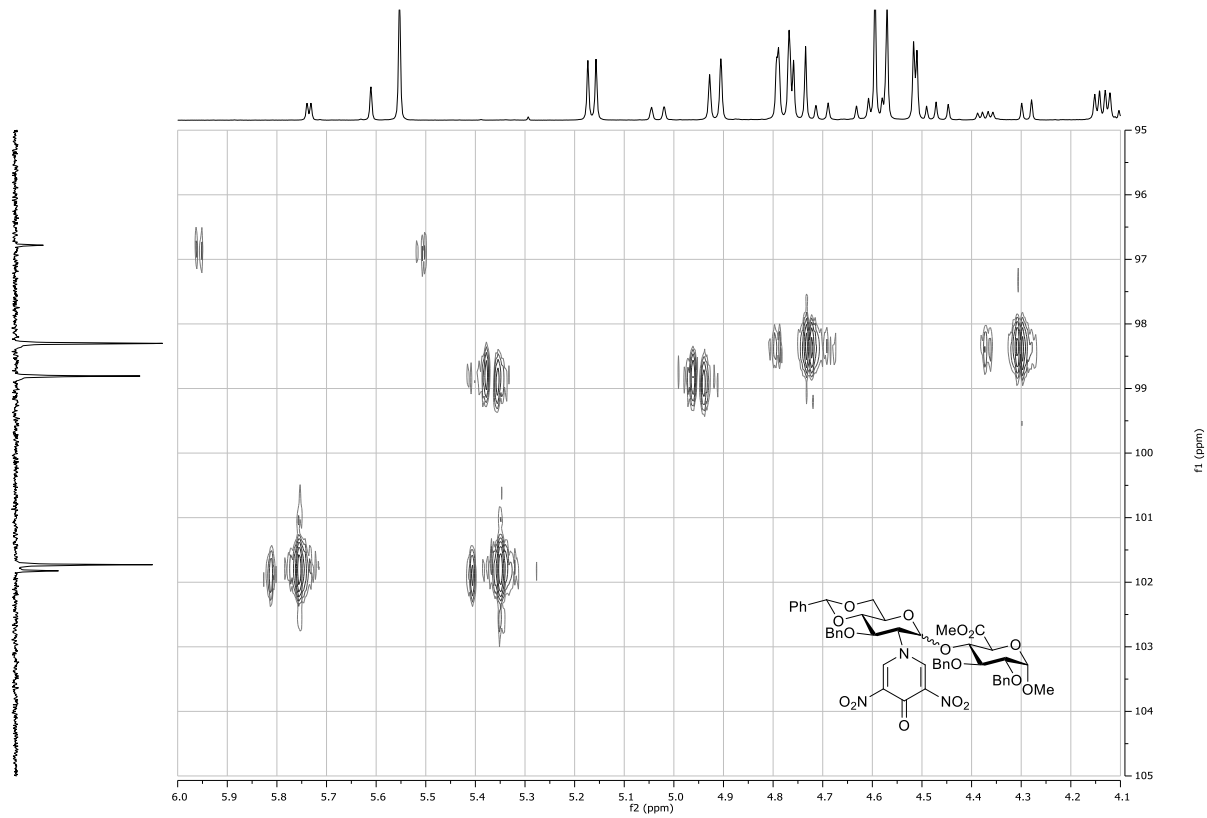
^1H - ^{13}C HSQC NMR, CDCl_3



^1H - ^{13}C HMBC NMR, CDCl_3

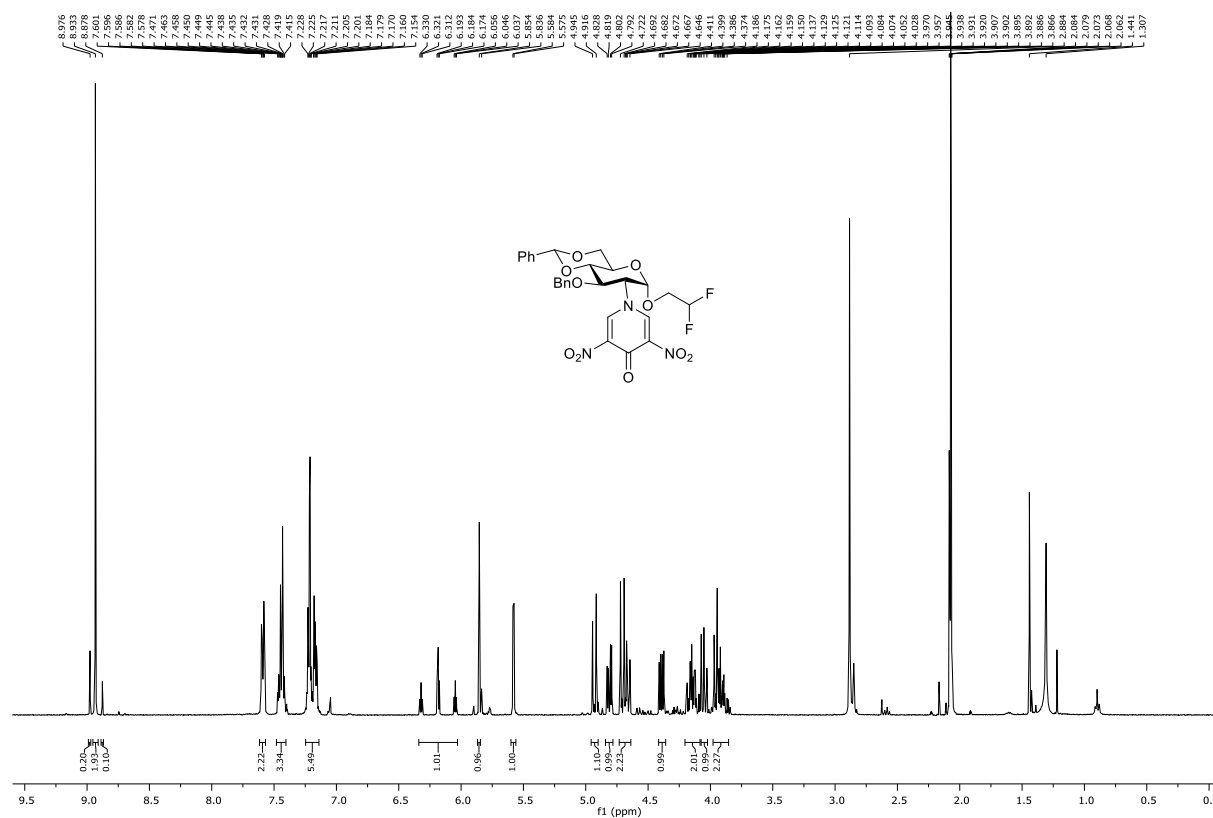


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

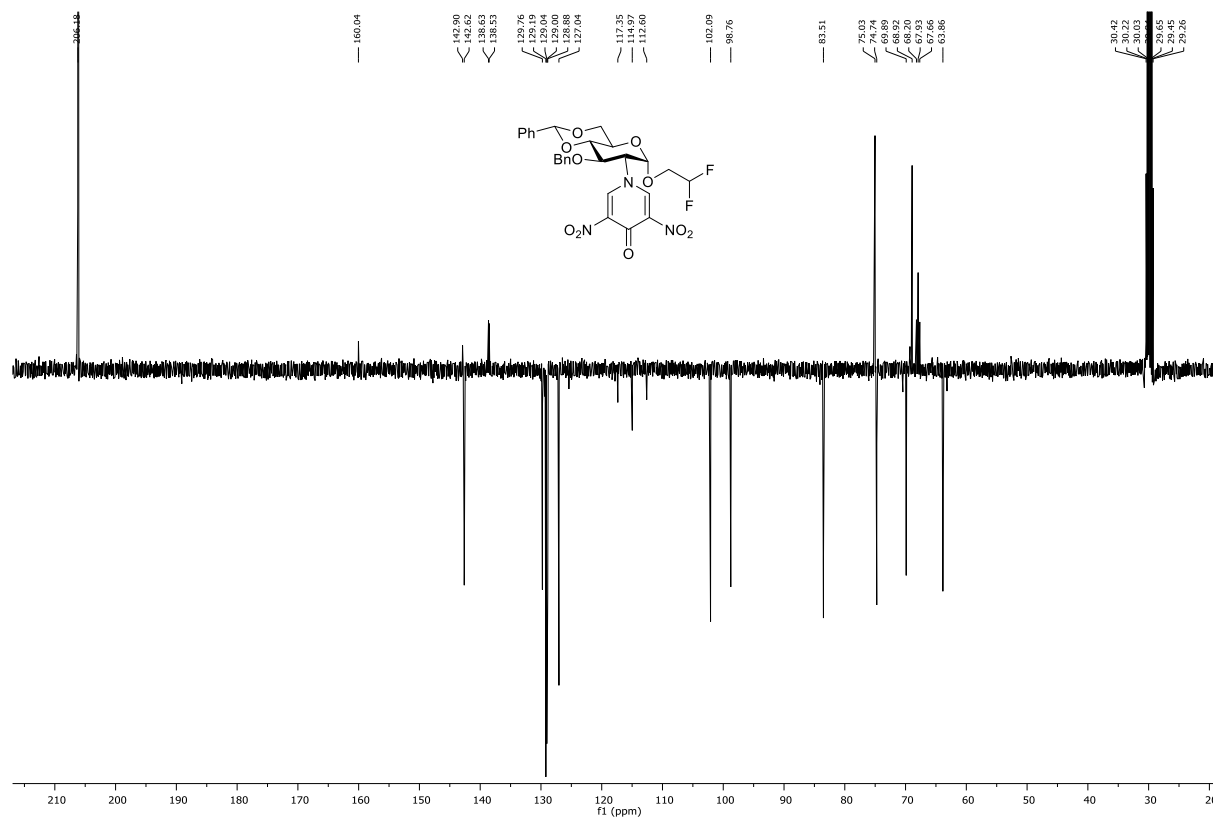


2,2-Difluoroethyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- α/β -D-glucopyranoside (**5G**).

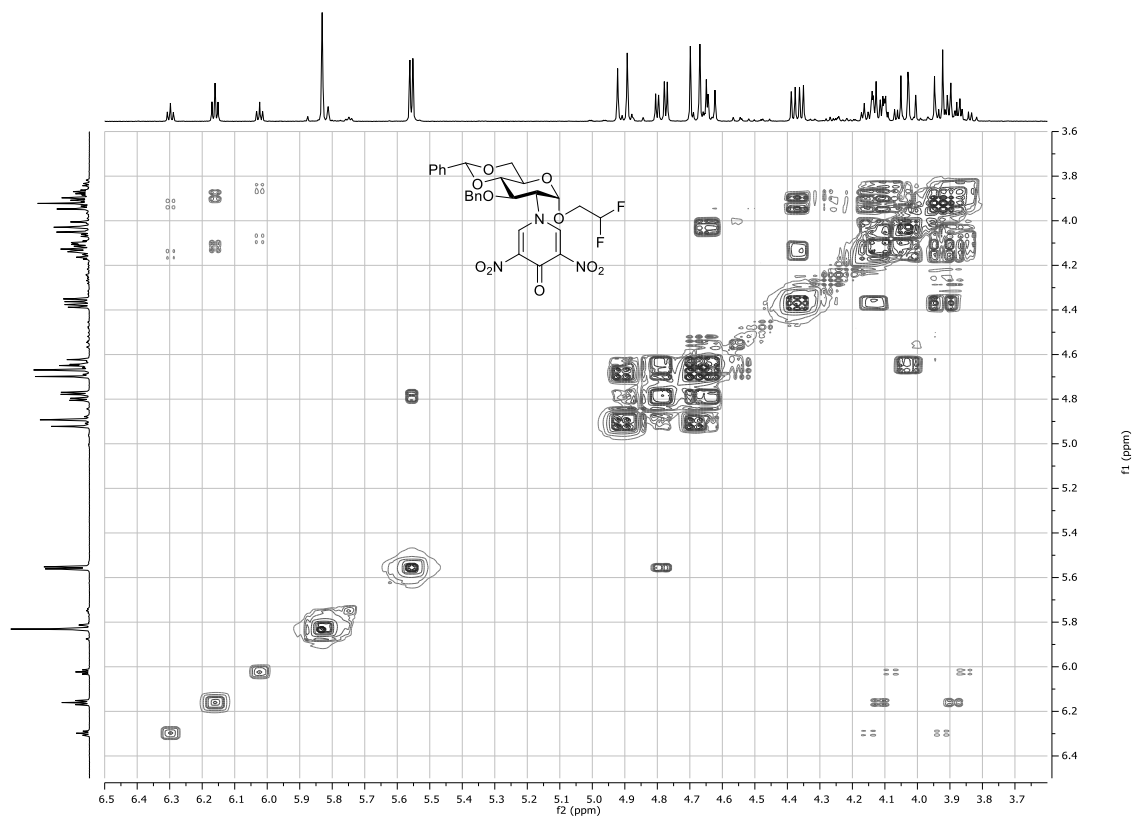
^1H NMR, 400 MHz, acetone- d_6



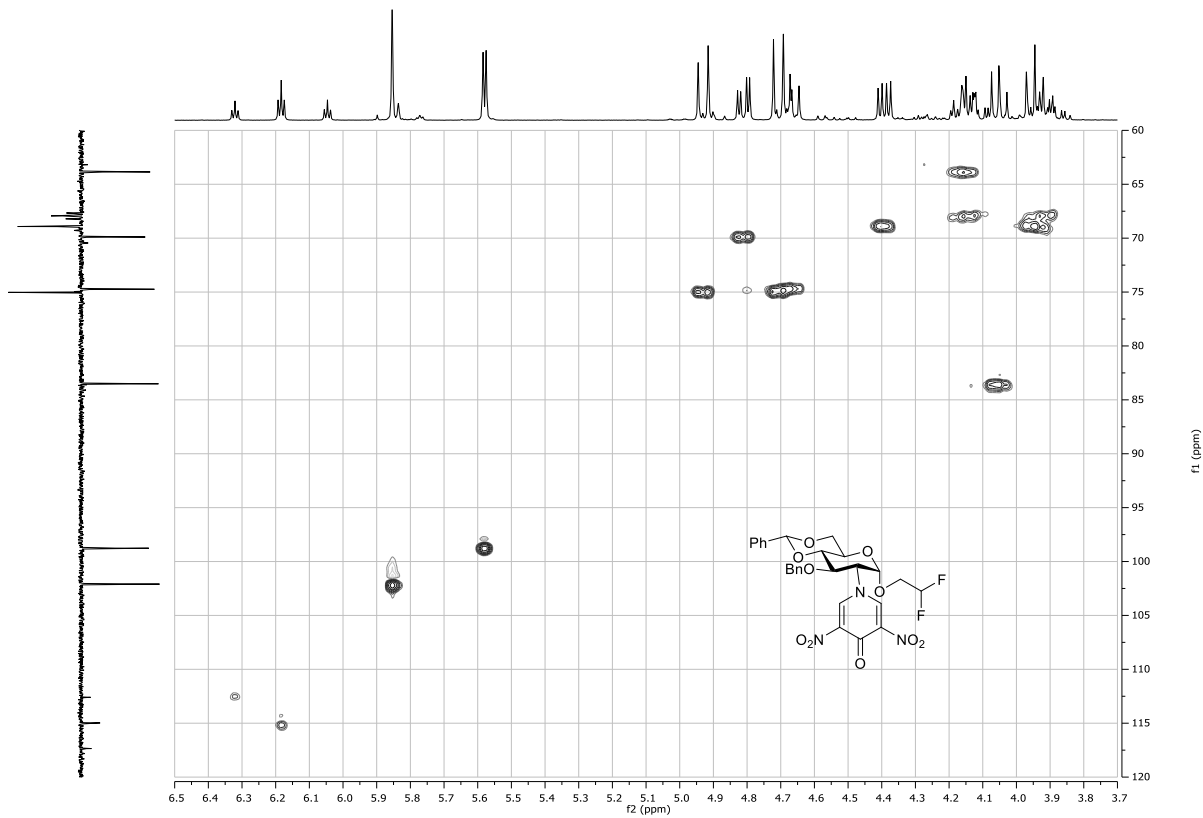
^{13}C -APT NMR, 101 MHz, acetone- d_6



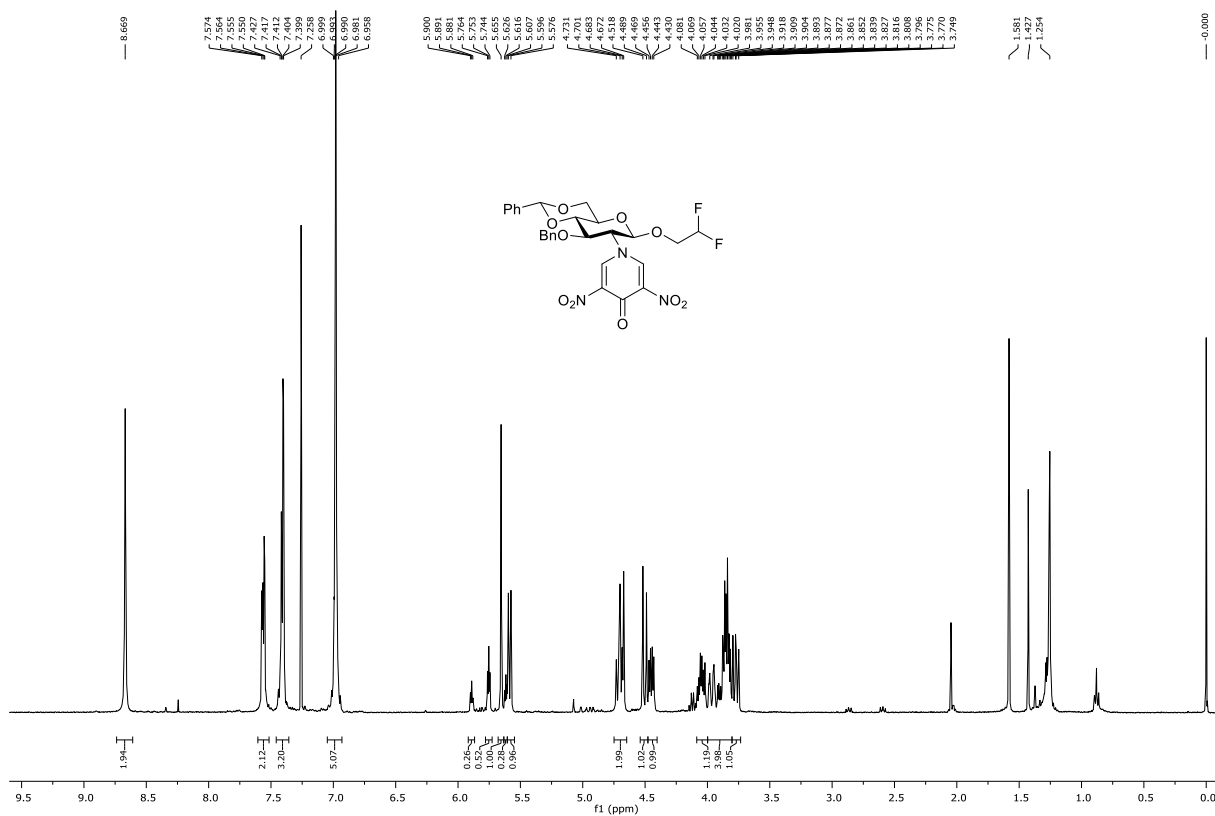
^1H - ^1H COSY NMR, acetone- d_6



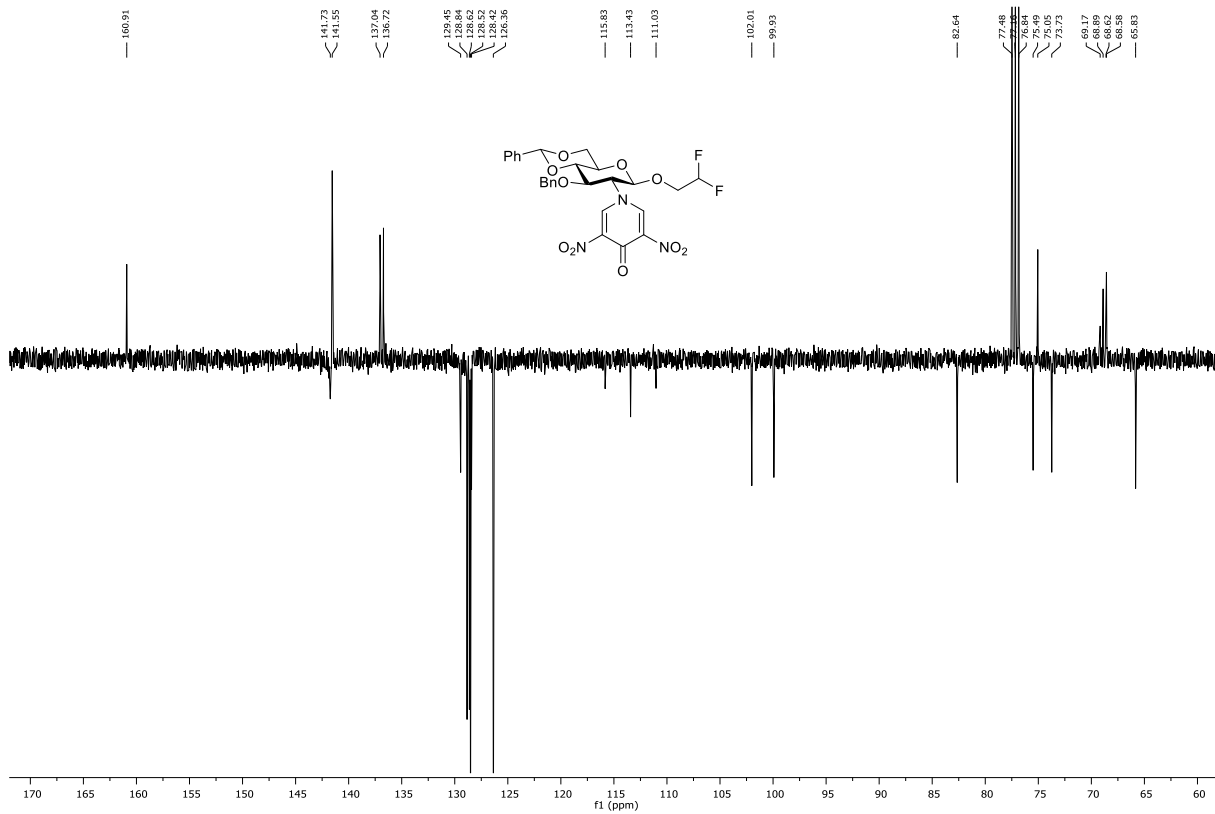
^1H - ^{13}C HSQC NMR, acetone- d_6



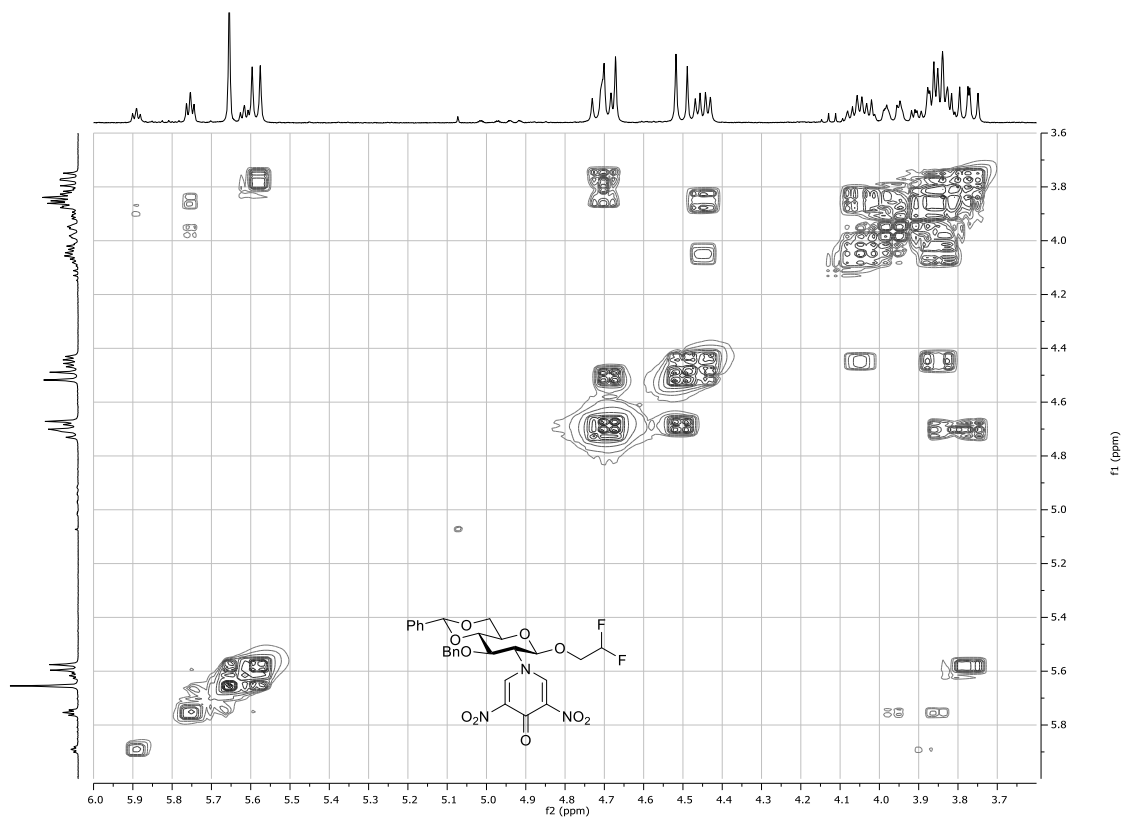
¹H NMR, 400 MHz, CDCl₃



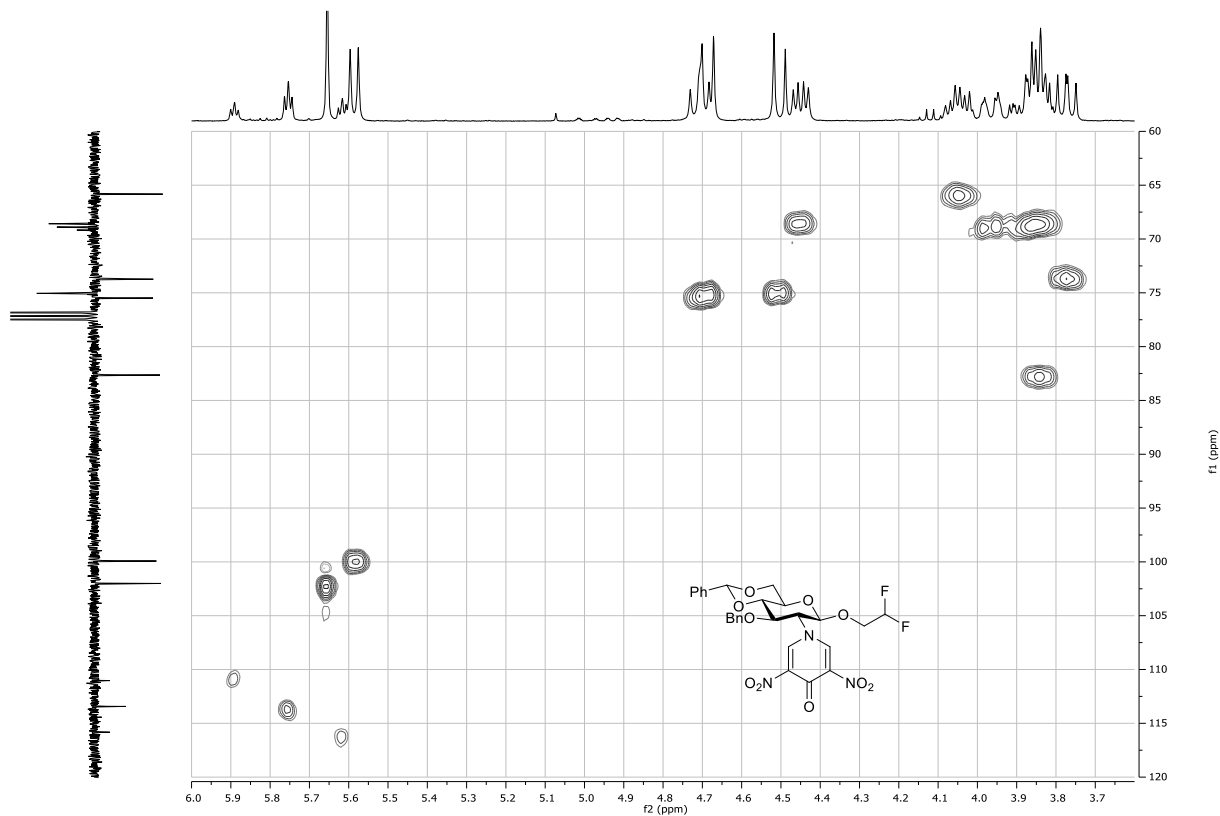
¹³C-APT NMR, 101 MHz, CDCl₃



^1H - ^1H COSY NMR, CDCl_3

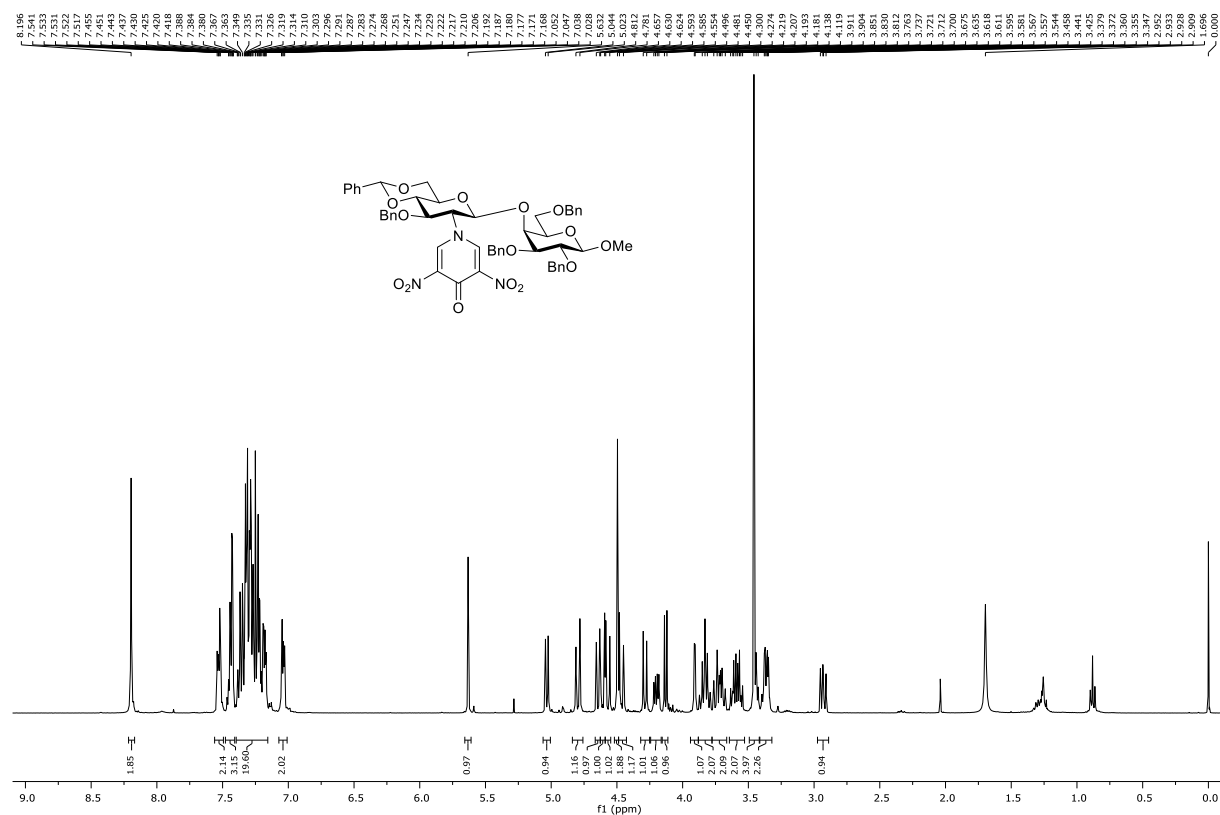


^1H - ^{13}C HSQC NMR, CDCl_3

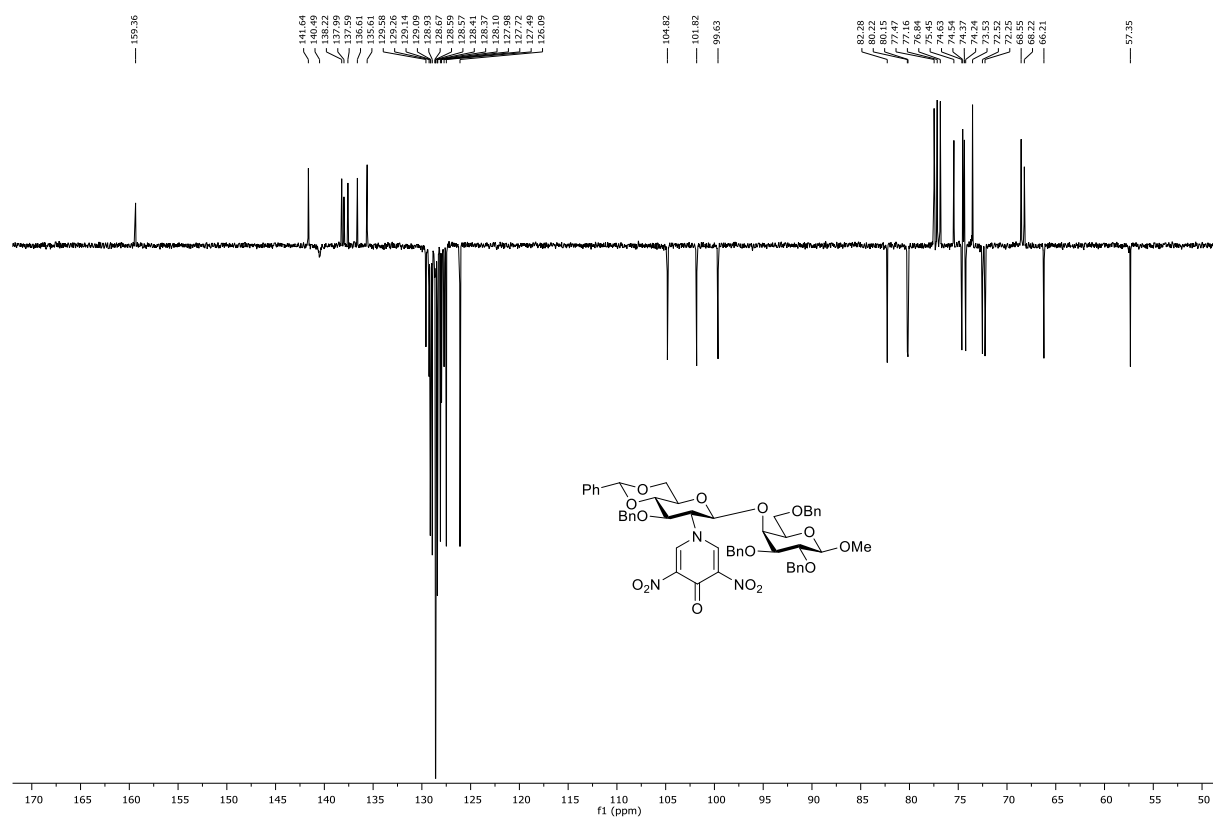


Methyl 4-*O*-(3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)-β-D-glucopyranosyl)-2,3,6-tri-*O*-benzyl-β-D-galactopyranoside (**5H**).

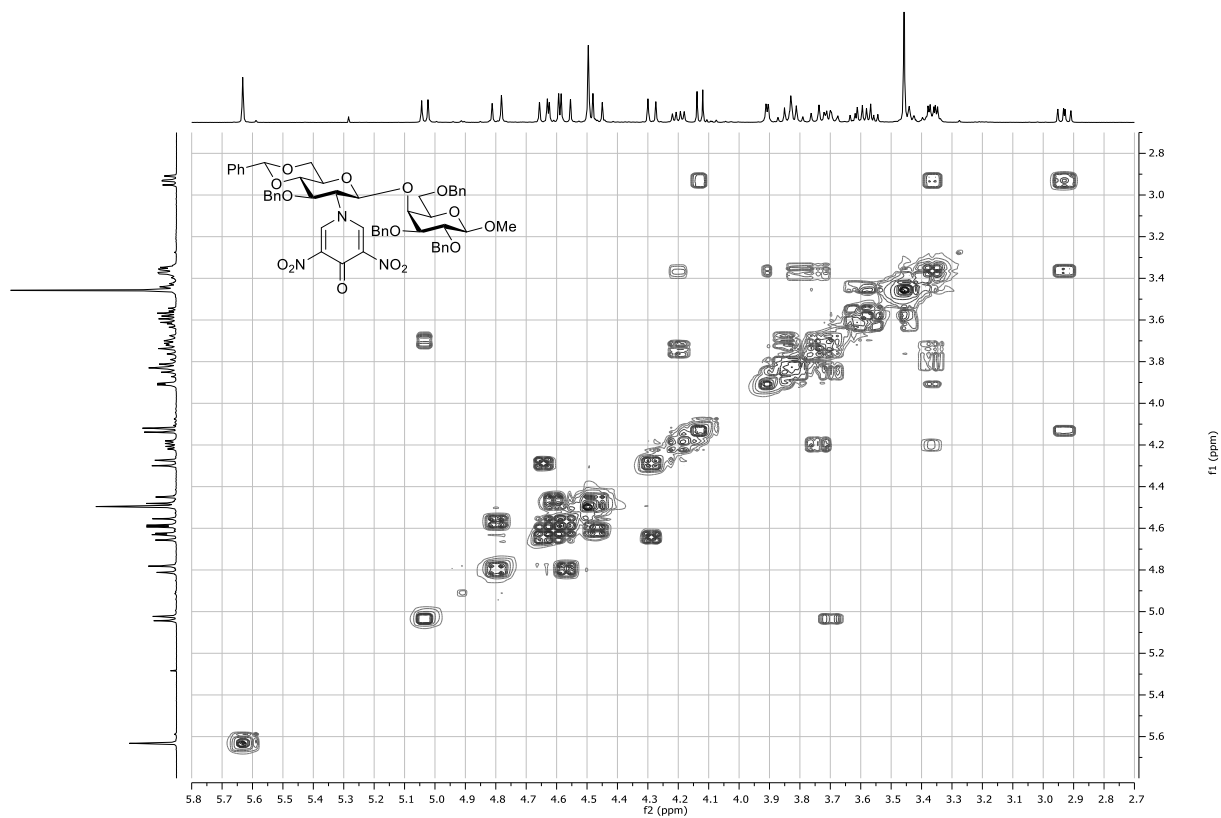
¹H NMR, 400 MHz, CDCl₃



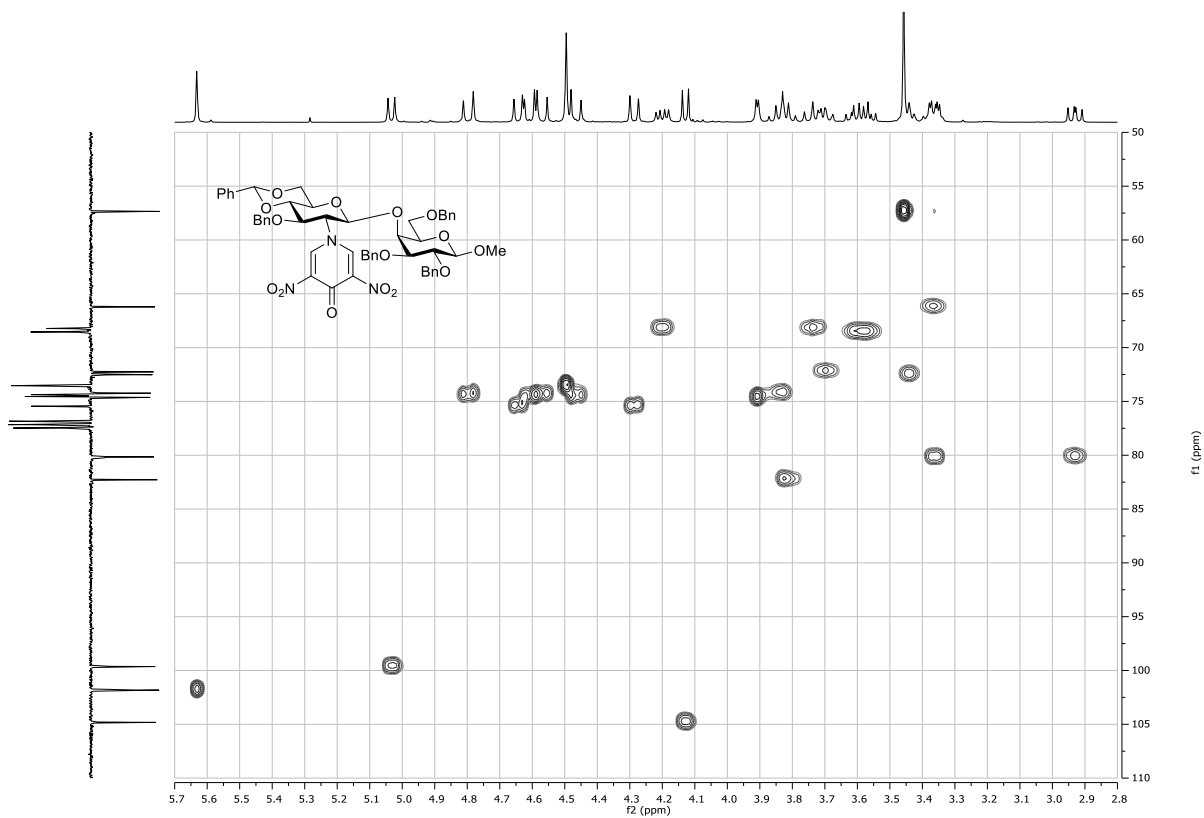
¹³C-APT NMR, 101 MHz, CDCl₃



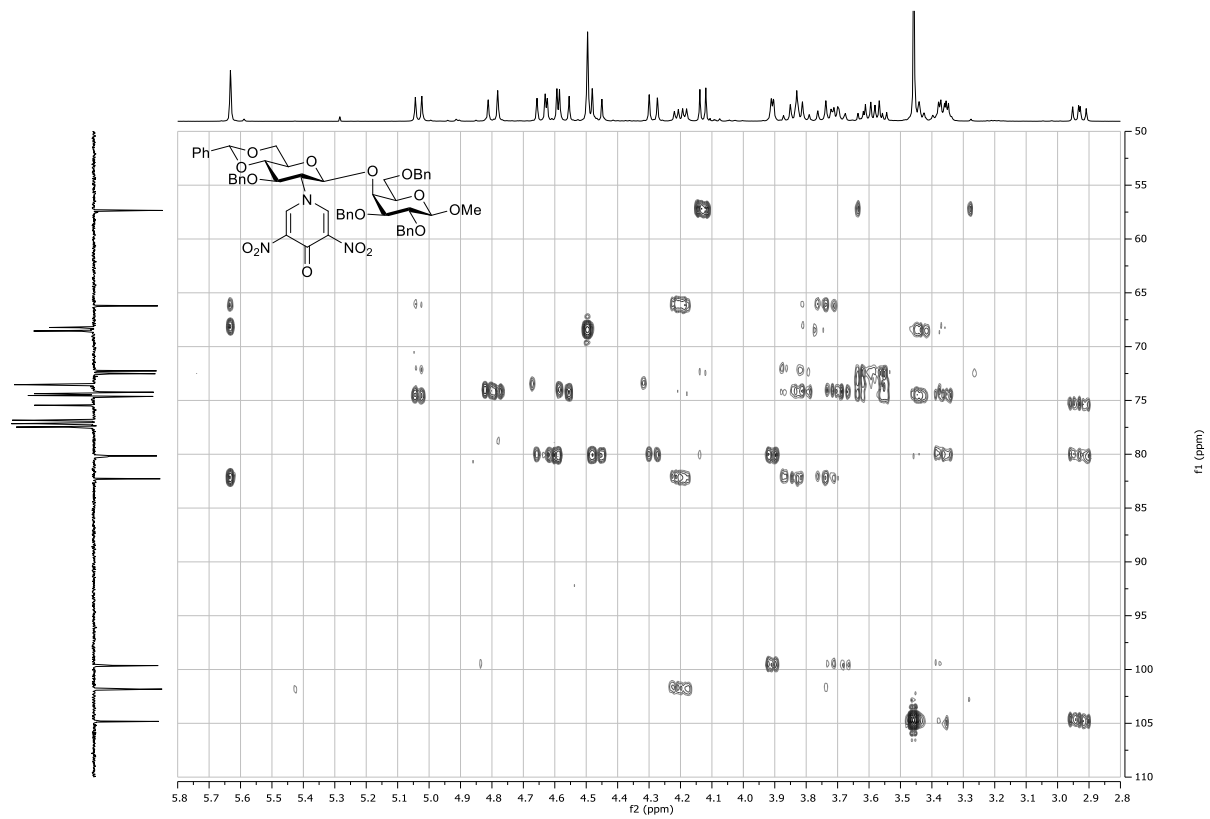
^1H - ^1H COSY NMR, CDCl_3



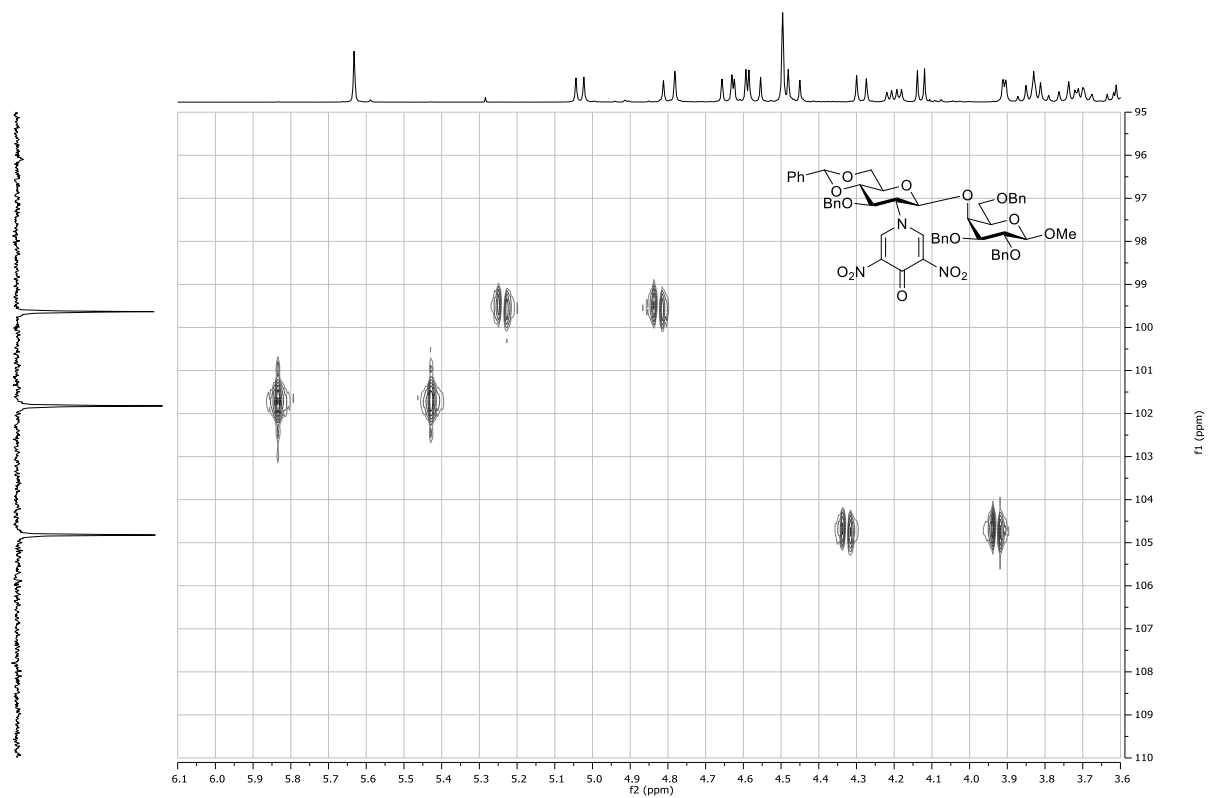
^1H - ^{13}C HSQC NMR, CDCl_3



^1H - ^{13}C HMBC NMR, CDCl_3

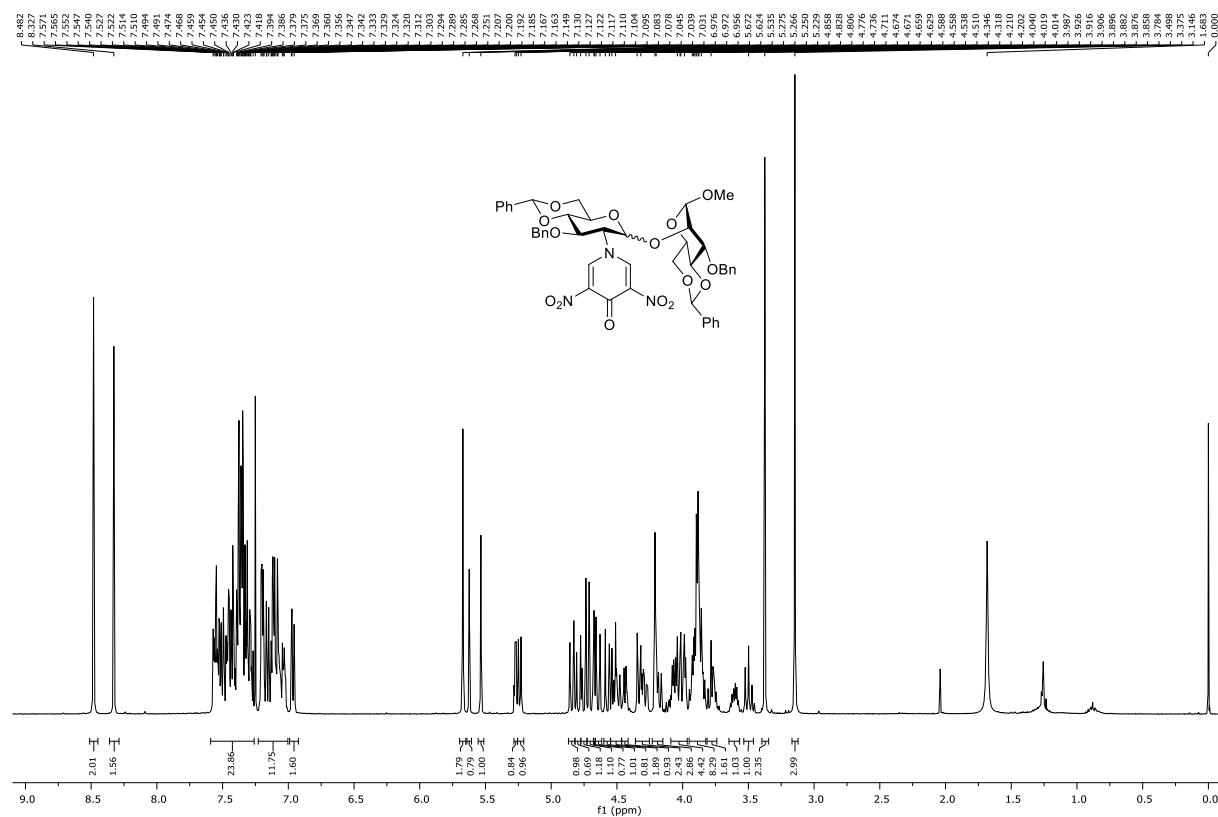


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

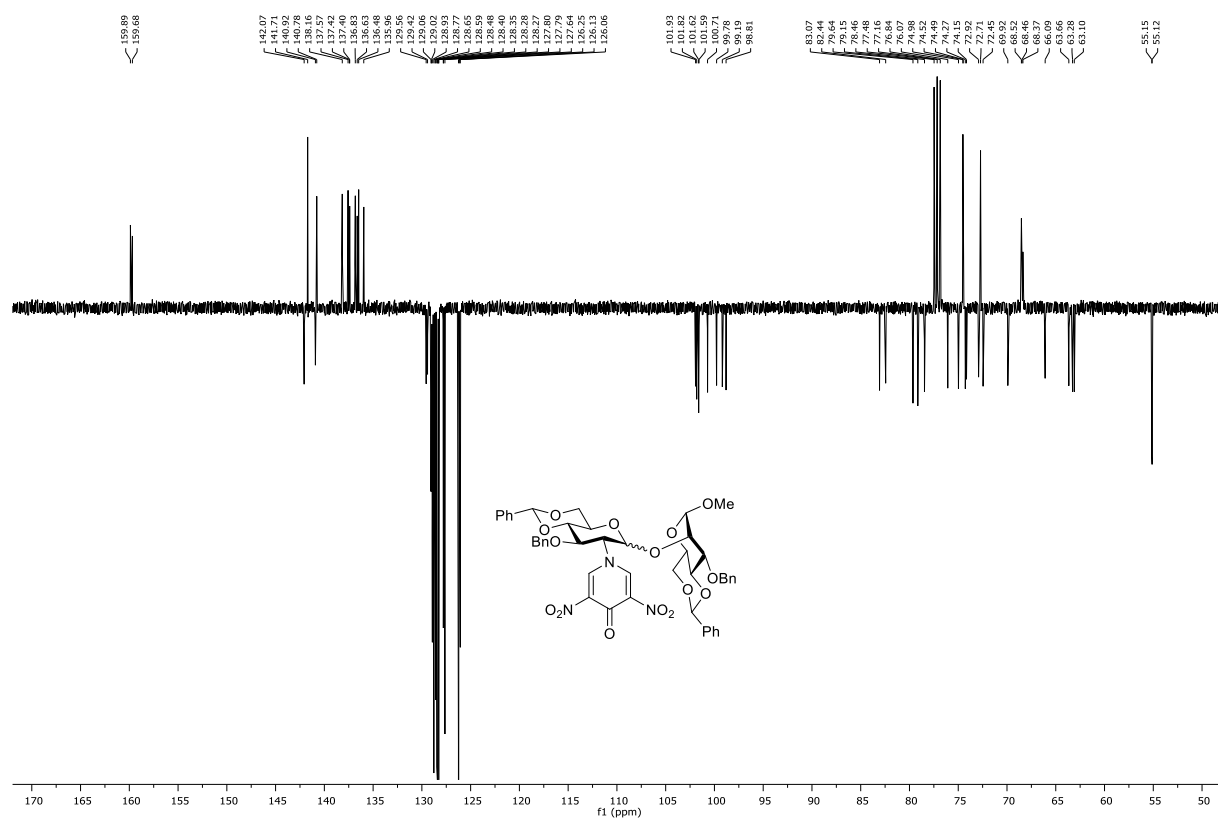


Methyl 2-*O*-(3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- α - β -D-glucopyranosyl)-3-*O*-benzyl-4,6-*O*-benzylidene- α -D-mannopyranoside (**51**).

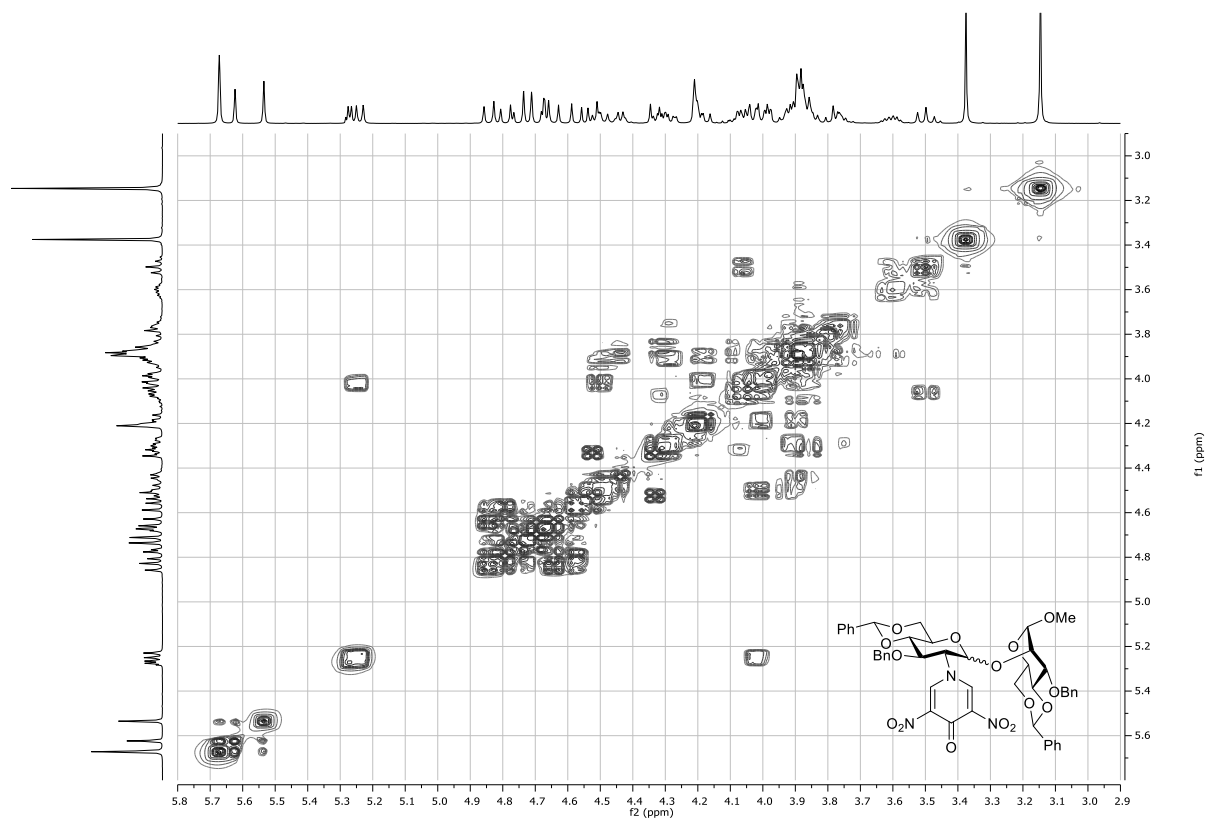
^1H NMR, 400 MHz, CDCl_3



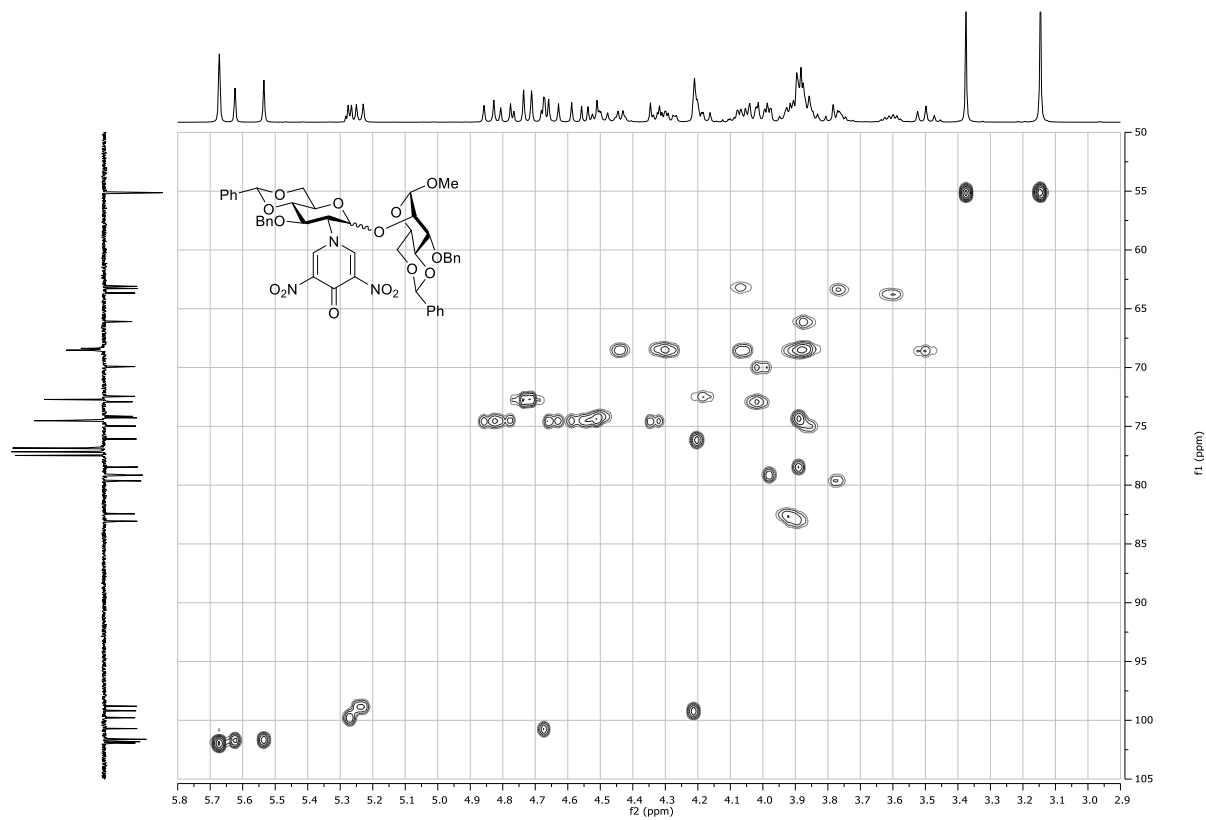
^{13}C -APT NMR, 101 MHz, CDCl_3



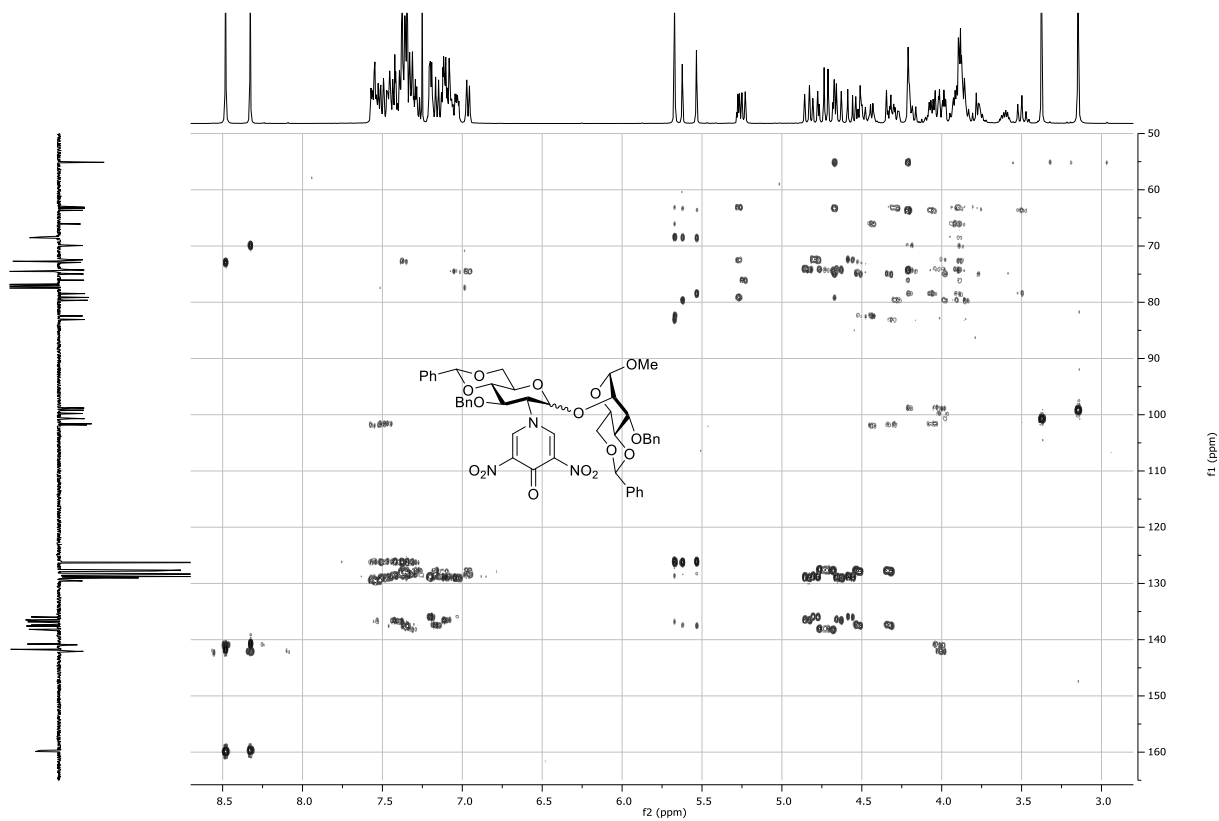
^1H - ^1H COSY NMR, CDCl_3



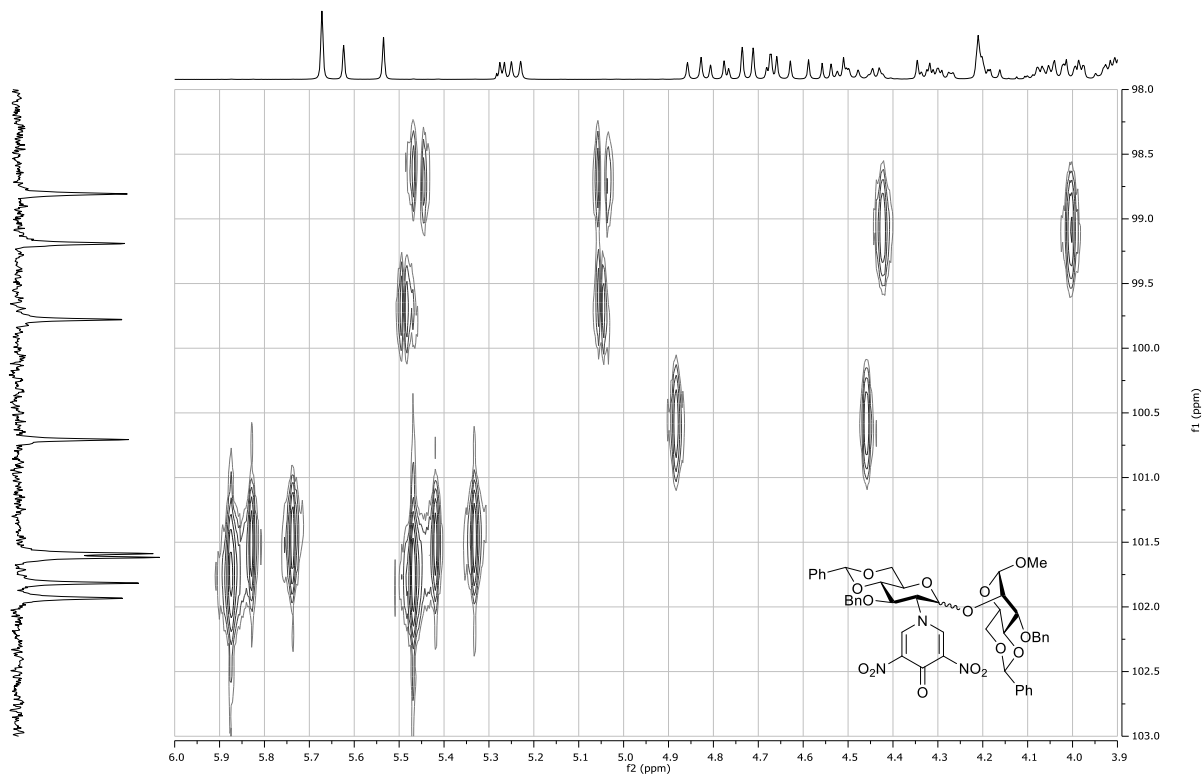
^1H - ^{13}C HSQC NMR, CDCl_3



^1H - ^{13}C HMBC NMR, CDCl_3

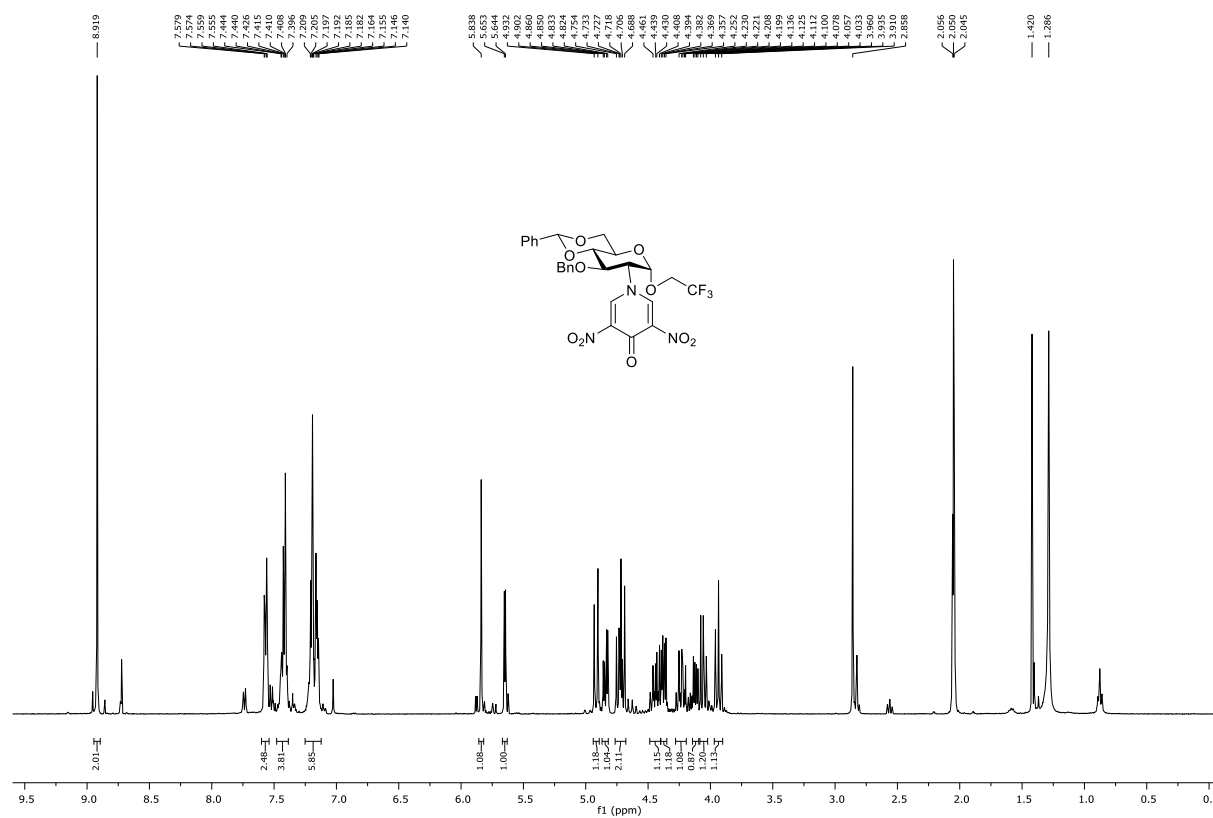


^1H - ^{13}C HMBC-GATED NMR, CDCl_3

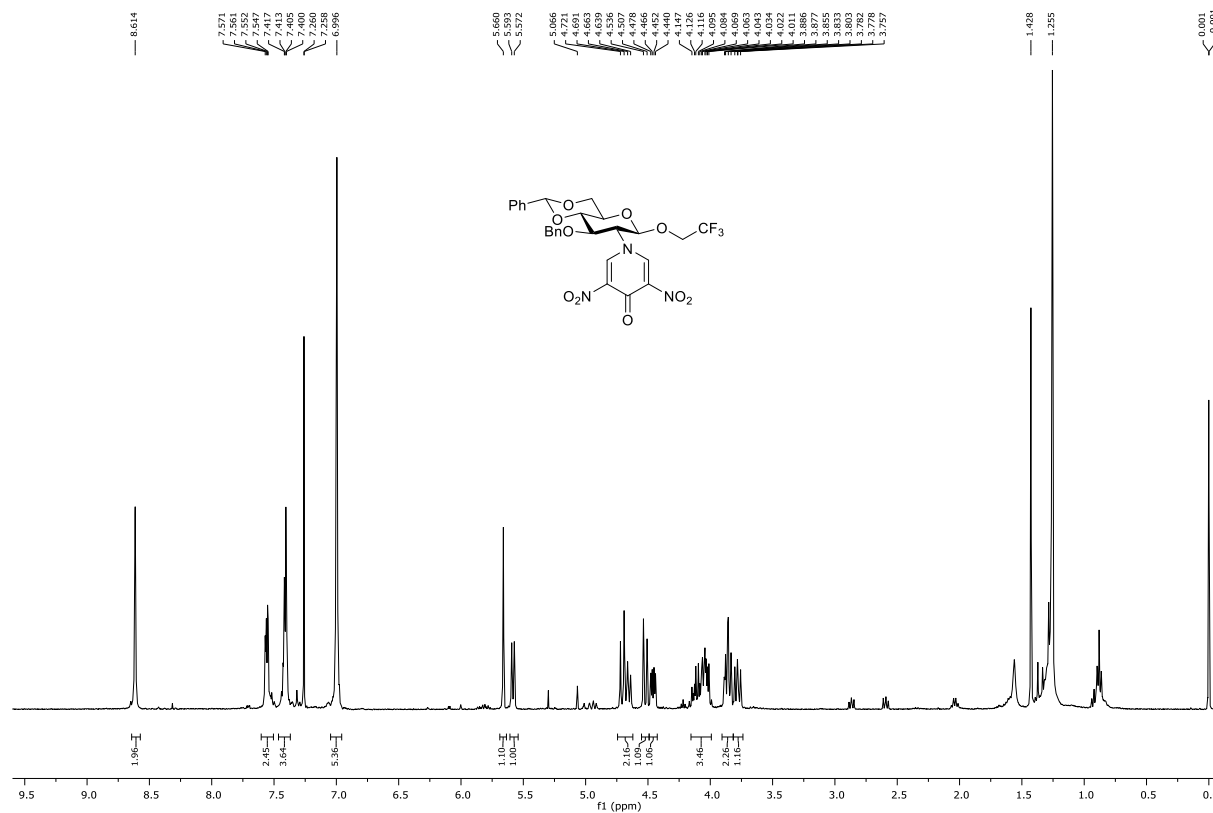


2,2,2-Trifluoroethyl 3-*O*-benzyl-4,6-*O*-benzylidene-2-deoxy-2-(3,5-dinitro-4-pyridone)- α/β -D-glucopyranoside (**5J**).

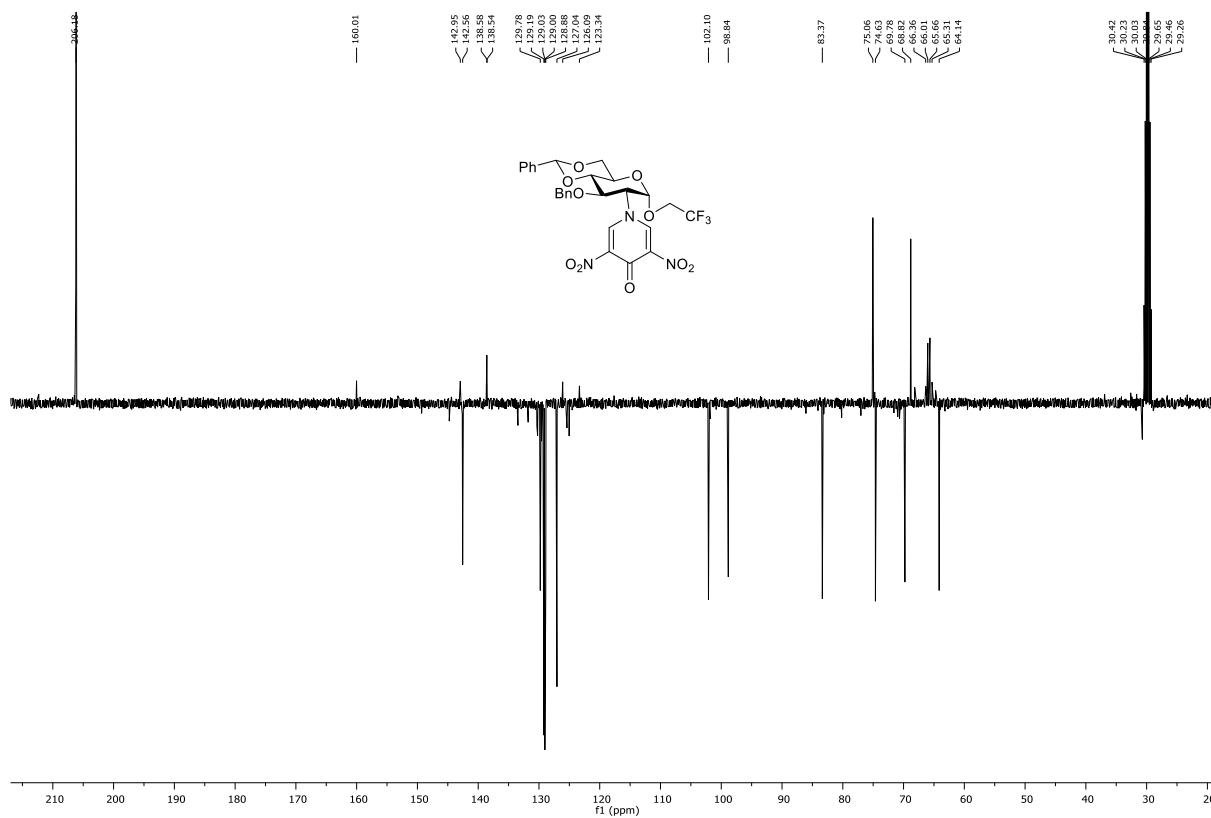
^1H NMR, 400 MHz, acetone- d_6



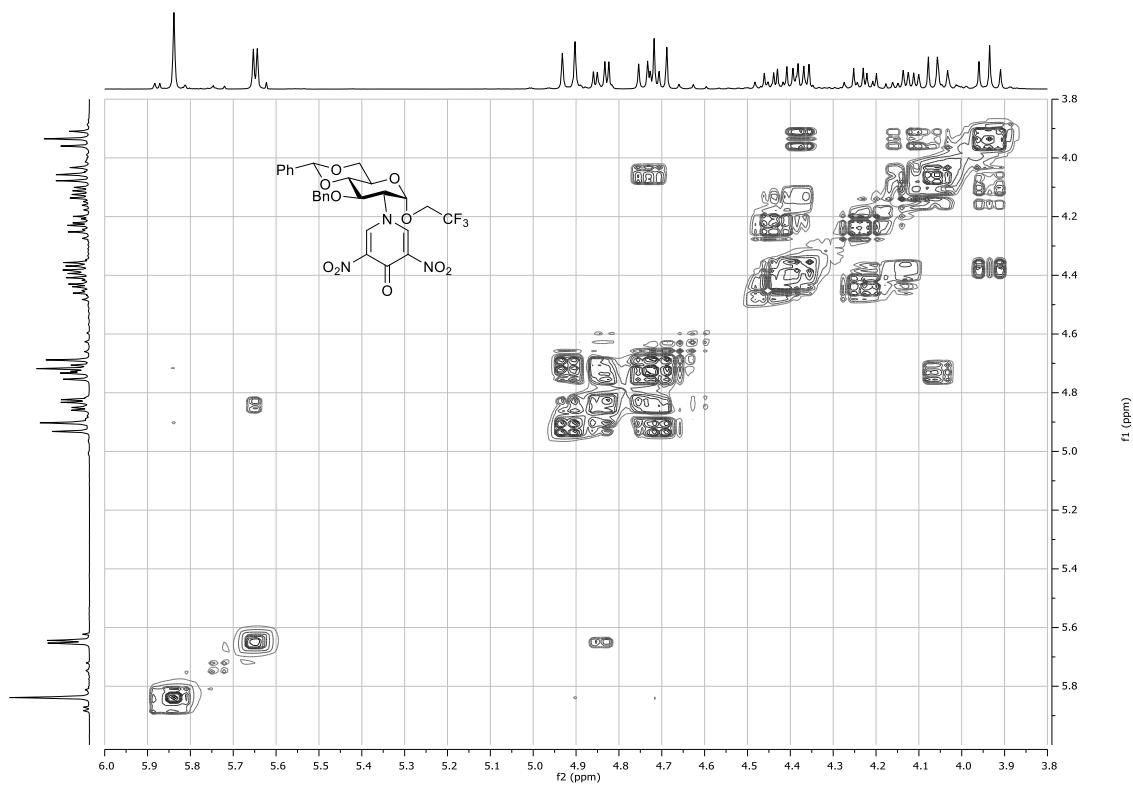
^1H NMR, 400 MHz, CDCl_3



^{13}C -APT NMR, 101 MHz, acetone- d_6



^1H - ^1H COSY NMR, acetone- d_6



^1H - ^{13}C HSQC NMR, acetone- d_6

