Full wwPDB EM Validation Report ⓘ

Nov 21, 2022 – 01:14 PM EST

PDB ID	:	7N1Q
EMDB ID	:	EMD-24121
Title	:	Structural basis for enhanced infectivity and immune evasion of SARS-CoV-2 variants
Authors	:	Zhang, J.; Cai, Y.F.; Xiao, T.S.; Rawson, S.; Peng, H.Q.; Sterling, S.M.; Walsh Jr, R.M.; Volloch, S.R.; Chen, B.
Deposited on	:	2021-05-28
Resolution	:	3.44 Å(reported)
Based on initial model	:	7KRR

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

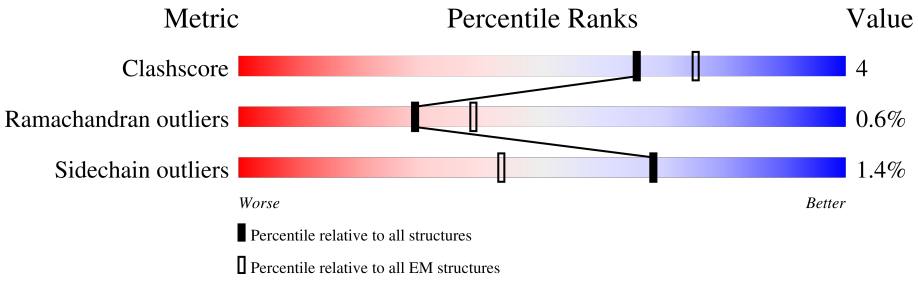
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.44 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1305	78% 6% 16%
1	B	1305	78% 17%
1	C	1305	81% 15%
2	D	2	100% 100%
2	E	2	50% 50%
2	F	2	50% 100%
2	G	2	100%
2	H	2	100%

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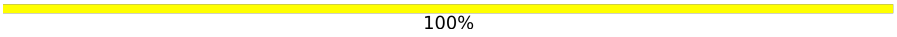
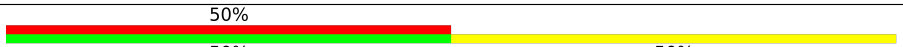
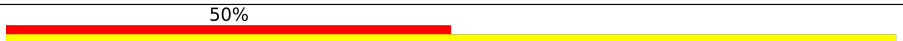
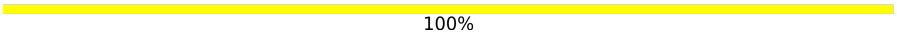
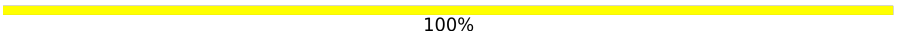
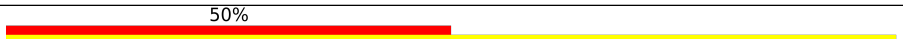
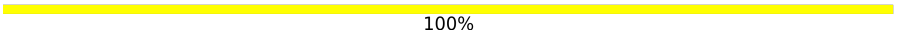
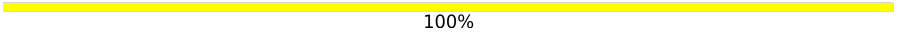
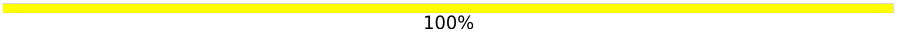
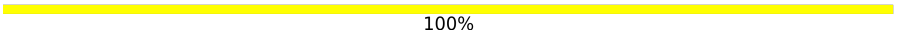
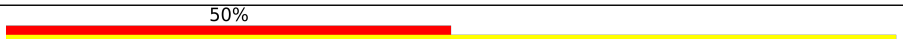
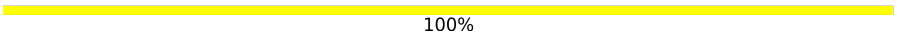
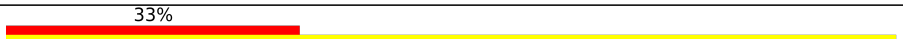
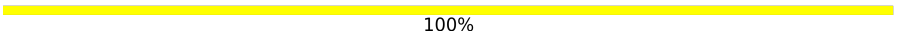
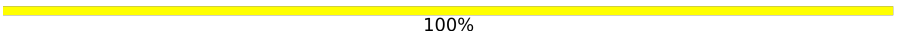
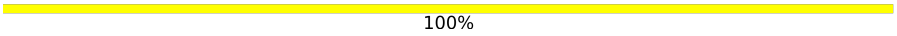
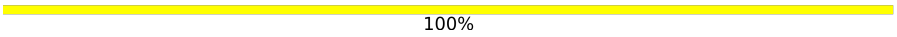
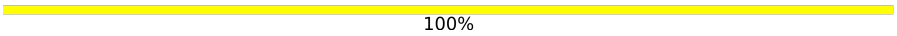
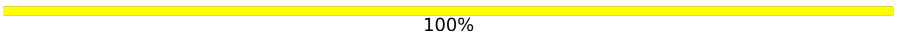
Mol	Chain	Length	Quality of chain
2	L	2	
2	M	2	
2	N	2	
2	O	2	
2	P	2	
2	Q	2	
2	U	2	
2	V	2	
2	W	2	
2	X	2	
2	Y	2	
2	Z	2	
2	a	2	
2	b	2	
3	I	3	
3	R	3	
3	c	3	
4	J	3	
4	K	3	
4	S	3	
4	T	3	
4	d	3	
4	e	3	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 27012 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1098	Total	C	N	O	S	0	0
			8598	5490	1435	1633	40		
1	B	1079	Total	C	N	O	S	0	0
			8475	5417	1415	1605	38		
1	C	1104	Total	C	N	O	S	0	0
			8653	5528	1445	1641	39		

There are 138 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	18	PHE	LEU	conflict	UNP P0DTC2
A	80	ALA	ASP	conflict	UNP P0DTC2
A	215	GLY	ASP	conflict	UNP P0DTC2
A	?	-	LEU	deletion	UNP P0DTC2
A	?	-	LEU	deletion	UNP P0DTC2
A	?	-	ALA	deletion	UNP P0DTC2
A	417	ASN	LYS	conflict	UNP P0DTC2
A	484	LYS	GLU	conflict	UNP P0DTC2
A	501	TYR	ASN	conflict	UNP P0DTC2
A	614	GLY	ASP	conflict	UNP P0DTC2
A	701	VAL	ALA	conflict	UNP P0DTC2
A	1274	SER	-	expression tag	UNP P0DTC2
A	1275	GLY	-	expression tag	UNP P0DTC2
A	1276	GLY	-	expression tag	UNP P0DTC2
A	1277	GLY	-	expression tag	UNP P0DTC2
A	1278	SER	-	expression tag	UNP P0DTC2
A	1279	ALA	-	expression tag	UNP P0DTC2
A	1280	TRP	-	expression tag	UNP P0DTC2
A	1281	SER	-	expression tag	UNP P0DTC2
A	1282	HIS	-	expression tag	UNP P0DTC2
A	1283	PRO	-	expression tag	UNP P0DTC2
A	1284	GLN	-	expression tag	UNP P0DTC2
A	1285	PHE	-	expression tag	UNP P0DTC2
A	1286	GLU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1287	LYS	-	expression tag	UNP P0DTC2
A	1288	GLY	-	expression tag	UNP P0DTC2
A	1289	GLY	-	expression tag	UNP P0DTC2
A	1290	GLY	-	expression tag	UNP P0DTC2
A	1291	SER	-	expression tag	UNP P0DTC2
A	1292	GLY	-	expression tag	UNP P0DTC2
A	1293	GLY	-	expression tag	UNP P0DTC2
A	1294	GLY	-	expression tag	UNP P0DTC2
A	1295	SER	-	expression tag	UNP P0DTC2
A	1296	GLY	-	expression tag	UNP P0DTC2
A	1297	GLY	-	expression tag	UNP P0DTC2
A	1298	SER	-	expression tag	UNP P0DTC2
A	1299	SER	-	expression tag	UNP P0DTC2
A	1300	ALA	-	expression tag	UNP P0DTC2
A	1301	TRP	-	expression tag	UNP P0DTC2
A	1302	SER	-	expression tag	UNP P0DTC2
A	1303	HIS	-	expression tag	UNP P0DTC2
A	1304	PRO	-	expression tag	UNP P0DTC2
A	1305	GLN	-	expression tag	UNP P0DTC2
A	1306	PHE	-	expression tag	UNP P0DTC2
A	1307	GLU	-	expression tag	UNP P0DTC2
A	1308	LYS	-	expression tag	UNP P0DTC2
B	18	PHE	LEU	conflict	UNP P0DTC2
B	80	ALA	ASP	conflict	UNP P0DTC2
B	215	GLY	ASP	conflict	UNP P0DTC2
B	?	-	LEU	deletion	UNP P0DTC2
B	?	-	LEU	deletion	UNP P0DTC2
B	?	-	ALA	deletion	UNP P0DTC2
B	417	ASN	LYS	conflict	UNP P0DTC2
B	484	LYS	GLU	conflict	UNP P0DTC2
B	501	TYR	ASN	conflict	UNP P0DTC2
B	614	GLY	ASP	conflict	UNP P0DTC2
B	701	VAL	ALA	conflict	UNP P0DTC2
B	1274	SER	-	expression tag	UNP P0DTC2
B	1275	GLY	-	expression tag	UNP P0DTC2
B	1276	GLY	-	expression tag	UNP P0DTC2
B	1277	GLY	-	expression tag	UNP P0DTC2
B	1278	SER	-	expression tag	UNP P0DTC2
B	1279	ALA	-	expression tag	UNP P0DTC2
B	1280	TRP	-	expression tag	UNP P0DTC2
B	1281	SER	-	expression tag	UNP P0DTC2
B	1282	HIS	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1283	PRO	-	expression tag	UNP P0DTC2
B	1284	GLN	-	expression tag	UNP P0DTC2
B	1285	PHE	-	expression tag	UNP P0DTC2
B	1286	GLU	-	expression tag	UNP P0DTC2
B	1287	LYS	-	expression tag	UNP P0DTC2
B	1288	GLY	-	expression tag	UNP P0DTC2
B	1289	GLY	-	expression tag	UNP P0DTC2
B	1290	GLY	-	expression tag	UNP P0DTC2
B	1291	SER	-	expression tag	UNP P0DTC2
B	1292	GLY	-	expression tag	UNP P0DTC2
B	1293	GLY	-	expression tag	UNP P0DTC2
B	1294	GLY	-	expression tag	UNP P0DTC2
B	1295	SER	-	expression tag	UNP P0DTC2
B	1296	GLY	-	expression tag	UNP P0DTC2
B	1297	GLY	-	expression tag	UNP P0DTC2
B	1298	SER	-	expression tag	UNP P0DTC2
B	1299	SER	-	expression tag	UNP P0DTC2
B	1300	ALA	-	expression tag	UNP P0DTC2
B	1301	TRP	-	expression tag	UNP P0DTC2
B	1302	SER	-	expression tag	UNP P0DTC2
B	1303	HIS	-	expression tag	UNP P0DTC2
B	1304	PRO	-	expression tag	UNP P0DTC2
B	1305	GLN	-	expression tag	UNP P0DTC2
B	1306	PHE	-	expression tag	UNP P0DTC2
B	1307	GLU	-	expression tag	UNP P0DTC2
B	1308	LYS	-	expression tag	UNP P0DTC2
C	18	PHE	LEU	conflict	UNP P0DTC2
C	80	ALA	ASP	conflict	UNP P0DTC2
C	215	GLY	ASP	conflict	UNP P0DTC2
C	?	-	LEU	deletion	UNP P0DTC2
C	?	-	LEU	deletion	UNP P0DTC2
C	?	-	ALA	deletion	UNP P0DTC2
C	417	ASN	LYS	conflict	UNP P0DTC2
C	484	LYS	GLU	conflict	UNP P0DTC2
C	501	TYR	ASN	conflict	UNP P0DTC2
C	614	GLY	ASP	conflict	UNP P0DTC2
C	701	VAL	ALA	conflict	UNP P0DTC2
C	1274	SER	-	expression tag	UNP P0DTC2
C	1275	GLY	-	expression tag	UNP P0DTC2
C	1276	GLY	-	expression tag	UNP P0DTC2
C	1277	GLY	-	expression tag	UNP P0DTC2
C	1278	SER	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1279	ALA	-	expression tag	UNP P0DTC2
C	1280	TRP	-	expression tag	UNP P0DTC2
C	1281	SER	-	expression tag	UNP P0DTC2
C	1282	HIS	-	expression tag	UNP P0DTC2
C	1283	PRO	-	expression tag	UNP P0DTC2
C	1284	GLN	-	expression tag	UNP P0DTC2
C	1285	PHE	-	expression tag	UNP P0DTC2
C	1286	GLU	-	expression tag	UNP P0DTC2
C	1287	LYS	-	expression tag	UNP P0DTC2
C	1288	GLY	-	expression tag	UNP P0DTC2
C	1289	GLY	-	expression tag	UNP P0DTC2
C	1290	GLY	-	expression tag	UNP P0DTC2
C	1291	SER	-	expression tag	UNP P0DTC2
C	1292	GLY	-	expression tag	UNP P0DTC2
C	1293	GLY	-	expression tag	UNP P0DTC2
C	1294	GLY	-	expression tag	UNP P0DTC2
C	1295	SER	-	expression tag	UNP P0DTC2
C	1296	GLY	-	expression tag	UNP P0DTC2
C	1297	GLY	-	expression tag	UNP P0DTC2
C	1298	SER	-	expression tag	UNP P0DTC2
C	1299	SER	-	expression tag	UNP P0DTC2
C	1300	ALA	-	expression tag	UNP P0DTC2
C	1301	TRP	-	expression tag	UNP P0DTC2
C	1302	SER	-	expression tag	UNP P0DTC2
C	1303	HIS	-	expression tag	UNP P0DTC2
C	1304	PRO	-	expression tag	UNP P0DTC2
C	1305	GLN	-	expression tag	UNP P0DTC2
C	1306	PHE	-	expression tag	UNP P0DTC2
C	1307	GLU	-	expression tag	UNP P0DTC2
C	1308	LYS	-	expression tag	UNP P0DTC2

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	D	2	Total	C	N	O	0	0
			28	16	2	10		

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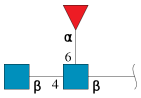
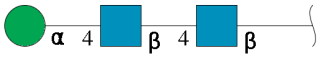
Mol	Chain	Residues	Atoms				AltConf	Trace
2	E	2	Total	C	N	O	0	0
			28	16	2	10		
2	F	2	Total	C	N	O	0	0
			28	16	2	10		
2	G	2	Total	C	N	O	0	0
			28	16	2	10		
2	H	2	Total	C	N	O	0	0
			28	16	2	10		
2	L	2	Total	C	N	O	0	0
			28	16	2	10		
2	M	2	Total	C	N	O	0	0
			28	16	2	10		
2	N	2	Total	C	N	O	0	0
			28	16	2	10		
2	O	2	Total	C	N	O	0	0
			28	16	2	10		
2	P	2	Total	C	N	O	0	0
			28	16	2	10		
2	Q	2	Total	C	N	O	0	0
			28	16	2	10		
2	U	2	Total	C	N	O	0	0
			28	16	2	10		
2	V	2	Total	C	N	O	0	0
			28	16	2	10		
2	W	2	Total	C	N	O	0	0
			28	16	2	10		
2	X	2	Total	C	N	O	0	0
			28	16	2	10		
2	Y	2	Total	C	N	O	0	0
			28	16	2	10		
2	Z	2	Total	C	N	O	0	0
			28	16	2	10		
2	a	2	Total	C	N	O	0	0
			28	16	2	10		
2	b	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



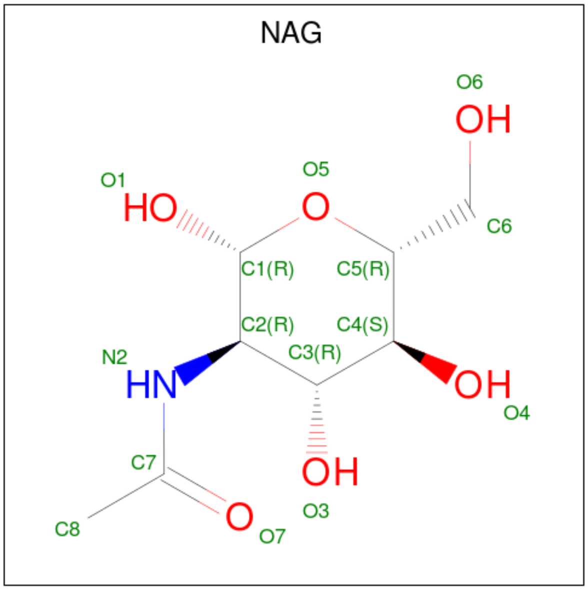
Mol	Chain	Residues	Atoms	AltConf	Trace
3	I	3	Total C N O 38 22 2 14	0	0
3	R	3	Total C N O 38 22 2 14	0	0
3	c	3	Total C N O 38 22 2 14	0	0

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms	AltConf	Trace
4	J	3	Total C N O 39 22 2 15	0	0
4	K	3	Total C N O 39 22 2 15	0	0
4	S	3	Total C N O 39 22 2 15	0	0
4	T	3	Total C N O 39 22 2 15	0	0
4	d	3	Total C N O 39 22 2 15	0	0
4	e	3	Total C N O 39 22 2 15	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	A	1	Total 154	C 88	N 11	O 55	0
5	B	1	Total 140	C 80	N 10	O 50	0
5	B	1	Total 140	C 80	N 10	O 50	0
5	B	1	Total 140	C 80	N 10	O 50	0

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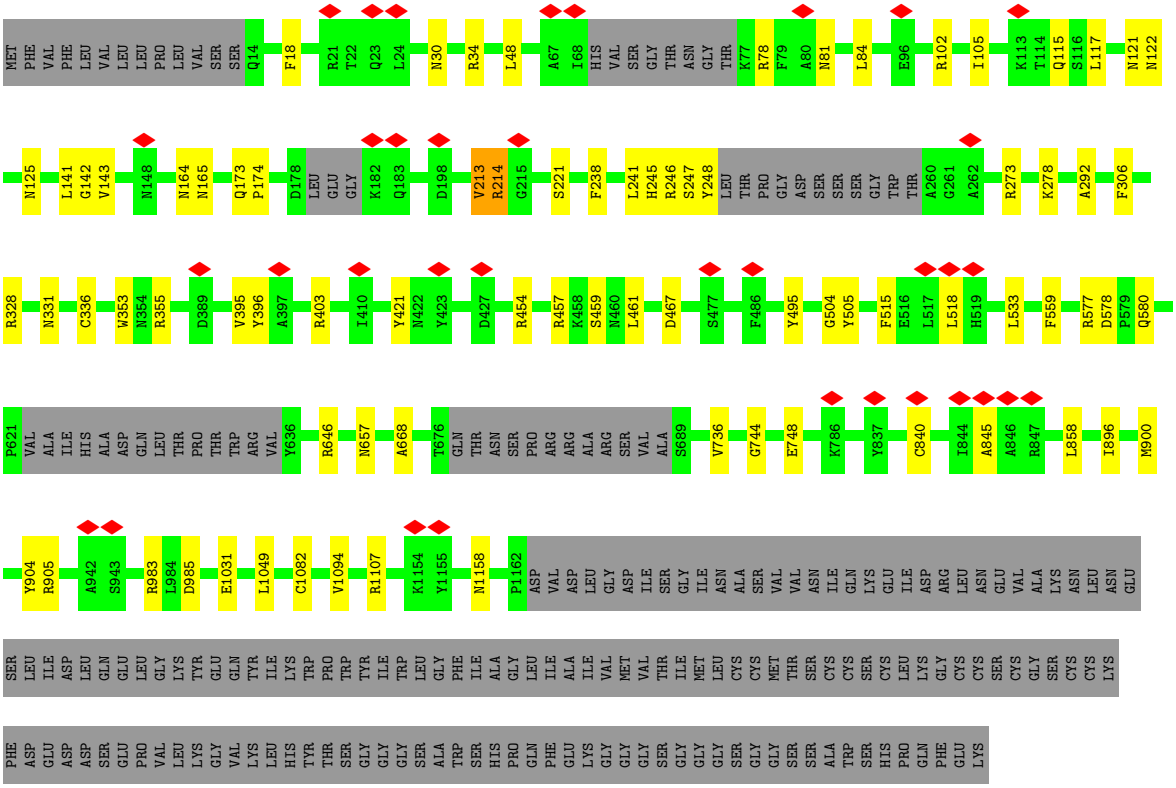
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	B	1	140	80	10	50	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0
5	C	1	112	64	8	40	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

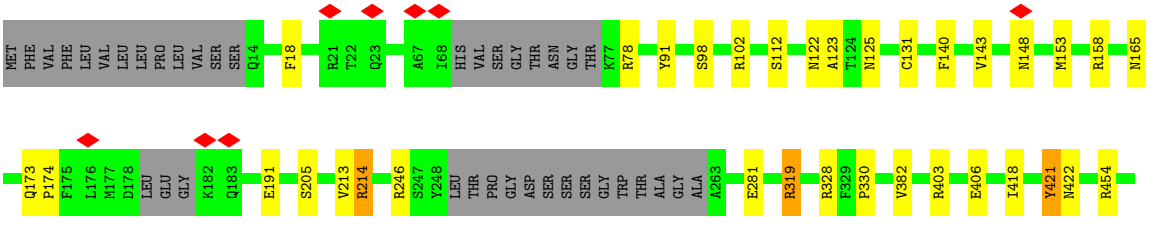
• Molecule 1: Spike glycoprotein

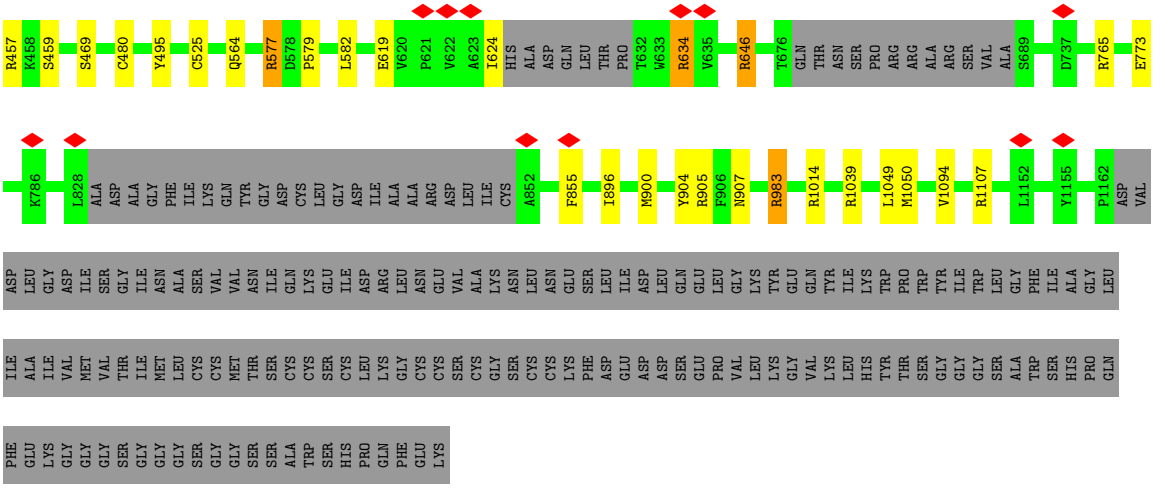
Chain A:



• Molecule 1: Spike glycoprotein

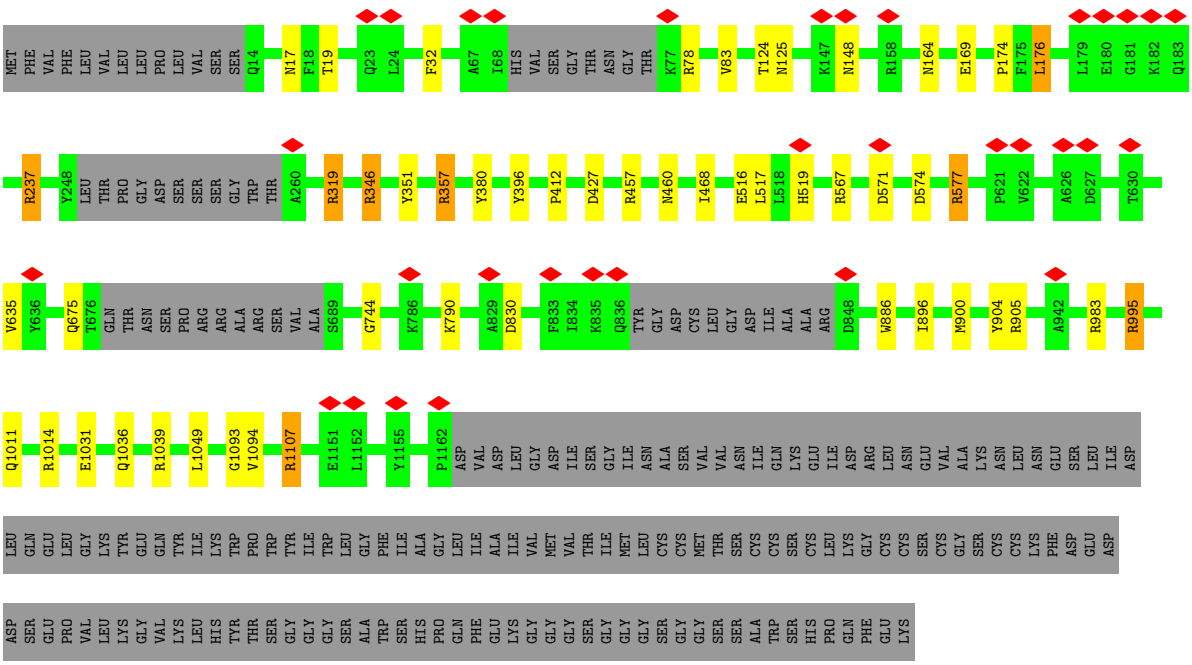
Chain B:





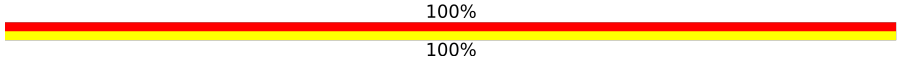
• Molecule 1: Spike glycoprotein

Chain C:



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D:

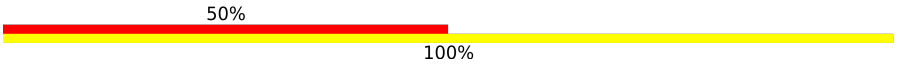


• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

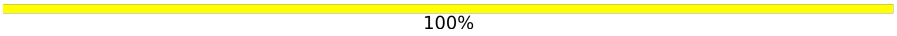
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:



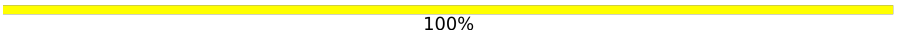
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:



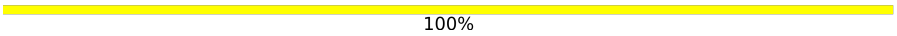
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:

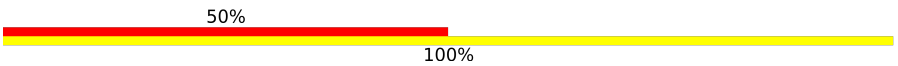


• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:

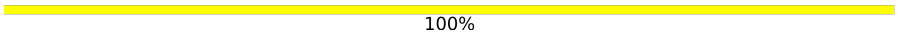
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:



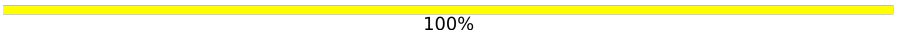
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:

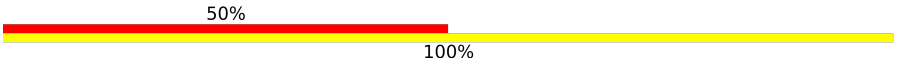


• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:

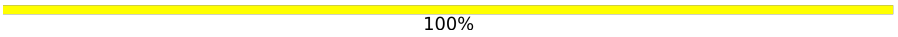
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:



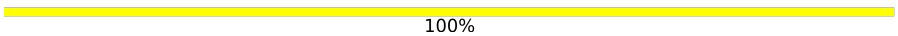
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:

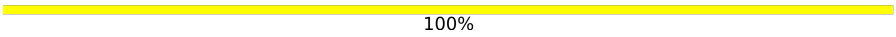


• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

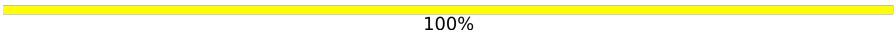
Chain W:



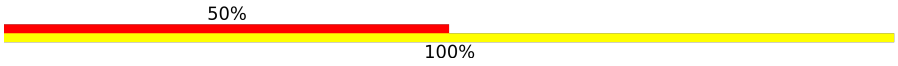
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X: 

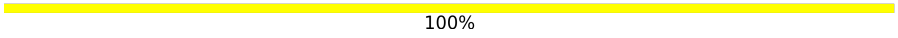
• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y: 

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Z: 

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain a: 

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

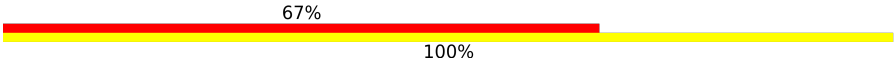
Chain b: 

• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I: 

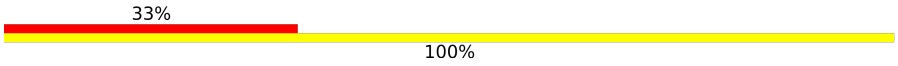
• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:



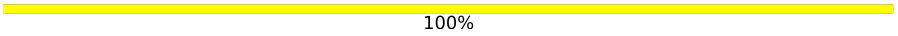
• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain c:



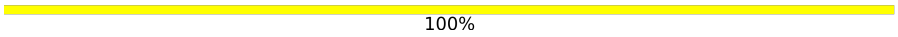
• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:



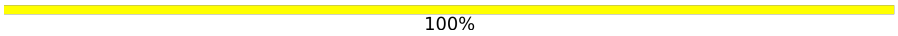
• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:



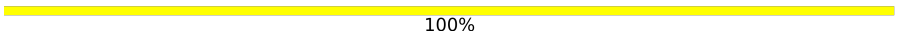
• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:



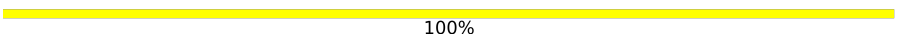
• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T:



• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain d:



• Molecule 4: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain e:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	302965	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	55.5	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.421	Depositor
Minimum map value	-0.001	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.044	Depositor
Recommended contour level	0.25	Depositor
Map size (Å)	396.03217, 396.03217, 396.03217	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.825067, 0.825067, 0.825067	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MAN, NAG, FUC

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.64	0/8797	0.91	0/11961
1	B	0.64	0/8673	0.91	0/11795
1	C	0.63	0/8856	0.91	0/12047
All	All	0.64	0/26326	0.91	0/35803

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8598	0	8372	98	0
1	B	8475	0	8259	82	0
1	C	8653	0	8430	60	0
2	D	28	0	25	0	0
2	E	28	0	25	4	0
2	F	28	0	25	0	0
2	G	28	0	25	0	0
2	H	28	0	25	0	0
2	L	28	0	25	3	0
2	M	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	N	28	0	25	0	0
2	O	28	0	25	0	0
2	P	28	0	25	0	0
2	Q	28	0	25	0	0
2	U	28	0	25	0	0
2	V	28	0	25	0	0
2	W	28	0	25	0	0
2	X	28	0	25	0	0
2	Y	28	0	25	0	0
2	Z	28	0	25	0	0
2	a	28	0	25	0	0
2	b	28	0	25	0	0
3	I	38	0	34	0	0
3	R	38	0	34	0	0
3	c	38	0	34	0	0
4	J	39	0	34	0	0
4	K	39	0	34	0	0
4	S	39	0	34	0	0
4	T	39	0	34	0	0
4	d	39	0	34	0	0
4	e	39	0	34	0	0
5	A	154	0	143	10	0
5	B	140	0	130	0	0
5	C	112	0	104	0	0
All	All	27012	0	26219	219	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (219) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:331:ASN:HD21	2:E:1:NAG:C1	1.16	1.57
1:A:1158:ASN:HD21	5:A:1411:NAG:C1	0.96	1.56
1:B:122:ASN:HD21	2:L:1:NAG:C1	0.92	1.53
1:A:165:ASN:HD21	5:A:1404:NAG:C1	1.16	1.53
1:B:122:ASN:ND2	2:L:1:NAG:C1	1.77	1.45
1:A:1158:ASN:ND2	5:A:1411:NAG:C1	1.74	1.44
1:A:34:ARG:NH1	1:A:221:SER:HB3	1.36	1.36
1:A:657:ASN:HD21	5:A:1409:NAG:C1	1.38	1.33
1:A:173:GLN:CG	1:A:174:PRO:HD2	1.59	1.30

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:331:ASN:ND2	2:E:1:NAG:C1	1.93	1.30
1:A:173:GLN:HG2	1:A:174:PRO:CD	1.63	1.28
1:A:165:ASN:ND2	5:A:1404:NAG:C1	2.00	1.23
1:B:624:ILE:C	1:B:634:ARG:HD2	1.59	1.23
1:C:896:ILE:HD11	1:C:904:TYR:CE2	1.75	1.20
1:A:328:ARG:NH1	1:A:533:LEU:HB2	1.57	1.19
1:C:905:ARG:NH1	1:C:1036:GLN:HB2	1.58	1.19
1:A:1107:ARG:HD3	1:B:904:TYR:CE1	1.79	1.18
1:B:905:ARG:NH1	1:B:1050:MET:HB3	1.65	1.10
1:C:900:MET:O	1:C:904:TYR:CD2	2.06	1.07
1:A:34:ARG:HH12	1:A:221:SER:CB	1.66	1.06
1:A:1107:ARG:CD	1:B:904:TYR:HE1	1.69	1.05
1:A:657:ASN:ND2	5:A:1409:NAG:C1	2.18	1.05
1:A:1158:ASN:ND2	5:A:1411:NAG:O5	1.91	0.99
1:B:403:ARG:NH2	1:B:406:GLU:OE2	1.94	0.98
1:A:328:ARG:HH12	1:A:533:LEU:HB2	1.16	0.97
1:A:983:ARG:CZ	1:C:517:LEU:HD12	1.94	0.97
1:A:34:ARG:HH12	1:A:221:SER:HB3	0.84	0.97
1:B:624:ILE:CA	1:B:634:ARG:HD2	1.95	0.96
1:B:646:ARG:HG3	1:B:646:ARG:HH11	1.29	0.95
1:B:143:VAL:HG11	1:B:246:ARG:HH21	1.30	0.95
1:C:905:ARG:HH11	1:C:1036:GLN:HB2	1.11	0.94
1:A:143:VAL:HG21	1:A:246:ARG:HH21	1.32	0.94
1:C:995:ARG:HG2	1:C:995:ARG:HH11	1.32	0.91
1:B:905:ARG:HH12	1:B:1050:MET:CB	1.84	0.91
1:A:1107:ARG:CD	1:B:904:TYR:CE1	2.48	0.91
1:A:1107:ARG:HD3	1:B:904:TYR:HE1	1.22	0.90
1:B:624:ILE:C	1:B:634:ARG:CD	2.38	0.90
1:B:102:ARG:NH2	1:B:246:ARG:HH11	1.70	0.90
1:B:319:ARG:HH11	1:B:319:ARG:HB2	1.35	0.88
1:B:905:ARG:HH12	1:B:1050:MET:HB3	1.37	0.87
1:C:900:MET:O	1:C:904:TYR:HD2	1.54	0.86
1:B:91:TYR:OH	1:B:191:GLU:OE2	1.94	0.85
1:C:17:ASN:OD1	1:C:17:ASN:O	1.94	0.85
1:B:896:ILE:HD11	1:B:904:TYR:CE2	2.10	0.85
1:B:102:ARG:HH21	1:B:246:ARG:NH1	1.72	0.85
1:C:896:ILE:HD11	1:C:904:TYR:HE2	1.39	0.85
1:C:1093:GLY:O	1:C:1107:ARG:NH1	2.10	0.85
1:B:900:MET:O	1:B:904:TYR:HD2	1.61	0.84
1:A:983:ARG:NH2	1:C:517:LEU:HD12	1.91	0.84
1:A:1107:ARG:HD3	1:B:904:TYR:CD1	2.12	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:319:ARG:HH11	1:B:319:ARG:CB	1.92	0.83
1:B:900:MET:O	1:B:904:TYR:CD2	2.32	0.82
1:B:624:ILE:HA	1:B:634:ARG:HD2	1.59	0.82
1:A:102:ARG:HD3	1:A:121:ASN:O	1.80	0.81
1:C:124:THR:O	1:C:174:PRO:HG3	1.78	0.81
1:A:81:ASN:ND2	1:A:245:HIS:CD2	2.48	0.80
1:B:403:ARG:HE	1:B:406:GLU:CD	1.83	0.80
1:C:319:ARG:HB2	1:C:319:ARG:NH1	1.96	0.80
1:B:905:ARG:NH1	1:B:1050:MET:CB	2.42	0.79
1:C:995:ARG:HG2	1:C:995:ARG:NH1	1.93	0.79
1:C:896:ILE:CD1	1:C:904:TYR:CE2	2.63	0.79
1:B:102:ARG:NH2	1:B:246:ARG:NH1	2.31	0.78
1:C:1107:ARG:HG2	1:C:1107:ARG:HH11	1.49	0.77
1:A:143:VAL:HG21	1:A:246:ARG:NH2	1.99	0.77
1:B:403:ARG:CZ	1:B:406:GLU:OE2	2.31	0.77
1:A:143:VAL:CG2	1:A:246:ARG:HH21	1.99	0.75
1:B:140:PHE:CZ	1:B:158:ARG:HD2	2.22	0.75
1:A:81:ASN:HD21	1:A:245:HIS:CD2	2.05	0.74
1:A:142:GLY:HA2	1:A:247:SER:O	1.87	0.74
1:A:173:GLN:CB	1:A:174:PRO:HD2	2.16	0.74
1:B:403:ARG:NE	1:B:406:GLU:OE2	2.21	0.73
1:B:1107:ARG:HD3	1:C:904:TYR:CD1	2.23	0.73
1:A:125:ASN:HB3	1:A:173:GLN:HA	1.71	0.73
1:A:173:GLN:HG2	1:A:174:PRO:HD2	0.77	0.73
1:C:1107:ARG:HH11	1:C:1107:ARG:CG	2.03	0.71
1:C:1093:GLY:C	1:C:1107:ARG:NH1	2.43	0.71
1:A:454:ARG:HH12	1:A:467:ASP:CG	1.94	0.70
1:C:1093:GLY:CA	1:C:1107:ARG:NH1	2.54	0.70
1:A:896:ILE:HD11	1:A:904:TYR:CE2	2.27	0.69
1:B:102:ARG:HG3	1:B:246:ARG:HB2	1.73	0.69
1:B:319:ARG:HB2	1:B:319:ARG:NH1	2.07	0.69
1:B:213:VAL:HG13	1:B:214:ARG:HD2	1.75	0.68
1:A:454:ARG:NH1	1:A:467:ASP:HB3	2.09	0.67
1:B:896:ILE:HD11	1:B:904:TYR:HE2	1.58	0.67
1:C:83:VAL:HG11	1:C:237:ARG:NH2	2.08	0.67
1:A:141:LEU:O	1:A:247:SER:N	2.26	0.66
1:C:1011:GLN:OE1	1:C:1014:ARG:NH1	2.29	0.66
1:C:1093:GLY:N	1:C:1107:ARG:NH1	2.43	0.66
1:B:1107:ARG:HD3	1:C:904:TYR:HD1	1.61	0.65
1:A:328:ARG:HH11	1:A:533:LEU:HB2	1.56	0.65
1:A:983:ARG:NE	1:C:517:LEU:HD12	2.11	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:319:ARG:HB2	1:C:319:ARG:HH11	1.61	0.64
1:A:273:ARG:HH21	1:A:292:ALA:HB3	1.63	0.64
1:B:102:ARG:HH21	1:B:246:ARG:HH11	1.34	0.64
1:A:457:ARG:CZ	1:A:461:LEU:HB3	2.28	0.63
1:C:1093:GLY:C	1:C:1107:ARG:HH12	1.97	0.63
1:A:1107:ARG:NE	1:B:904:TYR:CE1	2.66	0.63
1:A:34:ARG:NH1	1:A:221:SER:CB	2.32	0.63
1:B:646:ARG:HH11	1:B:646:ARG:CG	2.07	0.63
1:A:983:ARG:NE	1:C:517:LEU:CD1	2.62	0.62
1:A:896:ILE:HD11	1:A:904:TYR:HE2	1.62	0.62
1:A:81:ASN:OD1	1:A:245:HIS:NE2	2.33	0.61
1:B:418:ILE:HA	1:B:422:ASN:HD22	1.66	0.61
1:A:278:LYS:HB2	1:A:306:PHE:CE2	2.36	0.60
1:A:273:ARG:NH2	1:A:292:ALA:HB3	2.16	0.60
1:C:1093:GLY:H	1:C:1107:ARG:NH1	1.99	0.60
1:C:125:ASN:HB3	1:C:174:PRO:HD3	1.83	0.60
1:A:105:ILE:CD1	1:A:241:LEU:HD21	2.32	0.59
1:B:646:ARG:HG3	1:B:646:ARG:NH1	2.08	0.58
1:A:48:LEU:HD21	1:A:306:PHE:CD2	2.37	0.58
1:B:983:ARG:HH11	1:B:983:ARG:CB	2.17	0.58
1:A:454:ARG:NH1	1:A:467:ASP:CG	2.57	0.58
1:A:84:LEU:O	1:A:238:PHE:N	2.32	0.57
1:A:278:LYS:HB2	1:A:306:PHE:CZ	2.39	0.57
1:A:328:ARG:HH12	1:A:533:LEU:CB	2.03	0.57
1:A:900:MET:O	1:A:904:TYR:HD2	1.87	0.57
1:C:995:ARG:HH11	1:C:995:ARG:CG	2.12	0.56
1:C:1107:ARG:NH1	1:C:1107:ARG:HG2	2.15	0.56
1:A:328:ARG:HH21	1:A:580:GLN:HB2	1.69	0.56
1:B:328:ARG:O	1:B:579:PRO:HG3	2.05	0.56
1:C:900:MET:O	1:C:904:TYR:CE2	2.57	0.56
1:C:886:TRP:HE3	1:C:905:ARG:NH1	2.04	0.56
1:A:840:CYS:HA	1:A:845:ALA:HB2	1.88	0.56
1:A:34:ARG:HH11	1:A:221:SER:HB3	1.59	0.56
1:A:143:VAL:CG2	1:A:246:ARG:HE	2.19	0.55
1:A:143:VAL:HG23	1:A:246:ARG:HE	1.71	0.55
1:A:904:TYR:OH	1:C:1094:VAL:HB	2.05	0.55
1:A:141:LEU:O	1:A:247:SER:OG	2.22	0.54
1:A:905:ARG:NH1	1:A:1049:LEU:O	2.39	0.54
1:C:319:ARG:CZ	1:C:319:ARG:CB	2.85	0.54
1:C:357:ARG:HB2	1:C:396:TYR:CE1	2.42	0.54
2:E:1:NAG:H62	2:E:2:NAG:C7	2.37	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:91:TYR:OH	1:B:191:GLU:CD	2.46	0.54
1:C:1093:GLY:CA	1:C:1107:ARG:HH11	2.20	0.54
1:B:418:ILE:HA	1:B:422:ASN:ND2	2.22	0.54
1:A:454:ARG:NH1	1:A:467:ASP:CB	2.72	0.53
1:B:896:ILE:CD1	1:B:904:TYR:CE2	2.90	0.53
1:A:173:GLN:CB	1:A:174:PRO:CD	2.86	0.53
1:B:905:ARG:NH1	1:B:1049:LEU:O	2.35	0.53
1:A:173:GLN:CG	1:A:174:PRO:CD	2.49	0.53
1:A:125:ASN:CB	1:A:173:GLN:HA	2.38	0.52
1:C:905:ARG:HH12	1:C:1036:GLN:HB2	1.64	0.52
1:B:457:ARG:NH1	1:B:459:SER:O	2.42	0.52
1:C:905:ARG:HD2	1:C:1049:LEU:O	2.09	0.52
1:A:353:TRP:HZ3	1:A:355:ARG:HD2	1.75	0.51
1:A:1031:GLU:OE2	1:C:1039:ARG:NH2	2.40	0.51
1:B:564:GLN:HG2	1:B:577:ARG:HG2	1.92	0.51
1:B:382:VAL:HG12	1:C:983:ARG:HB3	1.93	0.50
1:B:646:ARG:CG	1:B:646:ARG:NH1	2.71	0.50
1:A:81:ASN:HD21	1:A:245:HIS:CG	2.30	0.50
1:A:454:ARG:HH12	1:A:467:ASP:CB	2.23	0.50
1:C:886:TRP:CE3	1:C:905:ARG:NH1	2.79	0.50
1:A:142:GLY:HA2	1:A:247:SER:C	2.32	0.49
1:A:105:ILE:HD13	1:A:241:LEU:HD21	1.93	0.49
1:A:900:MET:O	1:A:904:TYR:CD2	2.65	0.49
1:B:457:ARG:HG2	1:B:459:SER:O	2.12	0.49
1:A:143:VAL:N	1:A:247:SER:O	2.46	0.49
1:A:403:ARG:HD3	1:A:505:TYR:HA	1.95	0.48
1:A:328:ARG:NH1	1:A:533:LEU:CB	2.51	0.48
1:B:1014:ARG:NH1	1:B:1014:ARG:HB2	2.29	0.48
1:A:403:ARG:HG2	1:A:504:GLY:O	2.13	0.48
1:C:319:ARG:NH1	1:C:319:ARG:CB	2.73	0.48
1:C:577:ARG:O	1:C:577:ARG:HG3	2.14	0.48
1:B:418:ILE:O	1:B:422:ASN:HB2	2.14	0.47
1:A:421:TYR:CD1	1:A:457:ARG:HB3	2.49	0.47
1:B:1094:VAL:CG2	1:C:904:TYR:OH	2.62	0.46
1:A:1107:ARG:NE	1:B:904:TYR:HE1	2.05	0.46
5:A:1404:NAG:H83	1:C:351:TYR:OH	2.15	0.46
1:A:896:ILE:CD1	1:A:904:TYR:CE2	2.98	0.46
1:B:1107:ARG:NH1	1:C:904:TYR:CD1	2.79	0.46
1:A:1094:VAL:HB	1:B:904:TYR:OH	2.16	0.46
1:B:1107:ARG:HD3	1:C:904:TYR:CE1	2.51	0.46
1:B:1039:ARG:NH2	1:C:1031:GLU:OE2	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:122:ASN:CG	2:L:1:NAG:C1	2.71	0.46
1:B:983:ARG:HH11	1:B:983:ARG:HB3	1.80	0.46
1:C:346:ARG:H	1:C:346:ARG:HD3	1.81	0.45
5:A:1404:NAG:H81	1:C:468:ILE:HG23	1.97	0.45
1:B:454:ARG:NH2	1:B:469:SER:O	2.44	0.45
1:B:102:ARG:CG	1:B:246:ARG:HB2	2.42	0.44
1:B:403:ARG:HG3	1:B:495:TYR:CE2	2.52	0.44
1:A:1107:ARG:CG	1:B:904:TYR:HE1	2.27	0.44
1:A:457:ARG:HD3	1:A:459:SER:O	2.18	0.44
1:A:559:PHE:HB2	1:A:577:ARG:NH2	2.33	0.44
1:B:1014:ARG:HB2	1:B:1014:ARG:CZ	2.48	0.44
2:E:1:NAG:O4	2:E:2:NAG:O7	2.36	0.44
1:C:319:ARG:HB2	1:C:319:ARG:CZ	2.47	0.43
1:B:173:GLN:HG2	1:B:174:PRO:HD2	2.00	0.43
1:A:454:ARG:HH11	1:A:467:ASP:HB3	1.84	0.43
1:B:131:CYS:HA	1:B:165:ASN:O	2.19	0.43
1:A:48:LEU:HG	1:A:306:PHE:HE2	1.84	0.43
1:B:457:ARG:HG2	1:B:457:ARG:HH11	1.83	0.43
1:C:380:TYR:CE2	1:C:412:PRO:HD2	2.54	0.43
1:A:646:ARG:HB2	1:A:668:ALA:CB	2.49	0.42
1:B:191:GLU:O	1:B:205:SER:HA	2.18	0.42
1:B:319:ARG:CB	1:B:319:ARG:NH1	2.72	0.42
1:A:328:ARG:NH2	1:A:578:ASP:OD2	2.52	0.42
1:A:657:ASN:CG	5:A:1409:NAG:C1	2.85	0.42
1:B:421:TYR:HB3	1:B:457:ARG:CB	2.50	0.42
1:B:905:ARG:HD2	1:B:1049:LEU:O	2.20	0.42
1:A:273:ARG:NH2	1:A:292:ALA:CB	2.82	0.42
1:A:355:ARG:NH2	1:A:396:TYR:CD1	2.81	0.42
1:B:173:GLN:CB	1:B:174:PRO:HD2	2.50	0.41
1:C:1107:ARG:H	1:C:1107:ARG:HG3	1.43	0.41
1:A:395:VAL:HG22	1:A:515:PHE:HB3	2.01	0.41
1:B:18:PHE:CZ	1:B:158:ARG:NH1	2.88	0.41
1:B:330:PRO:HD2	1:B:525:CYS:SG	2.60	0.41
1:A:457:ARG:CD	1:A:459:SER:O	2.69	0.41
1:B:454:ARG:HH11	1:B:454:ARG:HD3	1.71	0.41
1:B:765:ARG:O	1:B:765:ARG:HG2	2.16	0.41
1:B:122:ASN:OD1	1:B:125:ASN:O	2.38	0.41
1:C:900:MET:C	1:C:904:TYR:CD2	2.90	0.41
1:A:143:VAL:O	1:A:248:TYR:HA	2.21	0.41
1:A:736:VAL:HG13	1:A:858:LEU:HD23	2.03	0.41
1:C:567:ARG:HD3	1:C:571:ASP:O	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:213:VAL:HG13	1:A:214:ARG:HD3	2.03	0.40
1:C:346:ARG:HD3	1:C:346:ARG:N	2.37	0.40
1:A:403:ARG:NH2	1:A:495:TYR:CD1	2.90	0.40
1:C:83:VAL:HG11	1:C:237:ARG:HH21	1.83	0.40
1:B:1094:VAL:HG21	1:C:904:TYR:OH	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1086/1305 (83%)	1009 (93%)	72 (7%)	5 (0%)	29	66
1	B	1065/1305 (82%)	996 (94%)	62 (6%)	7 (1%)	22	60
1	C	1094/1305 (84%)	1020 (93%)	65 (6%)	9 (1%)	19	57
All	All	3245/3915 (83%)	3025 (93%)	199 (6%)	21 (1%)	29	62

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	635	VAL
1	A	164	ASN
1	A	744	GLY
1	B	78	ARG
1	B	634	ARG
1	C	19	THR
1	C	78	ARG
1	C	164	ASN
1	C	744	GLY
1	A	78	ARG
1	C	148	ASN
1	A	18	PHE

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Mol	Chain	Res	Type
1	C	176	LEU
1	A	518	LEU
1	B	112	SER
1	B	148	ASN
1	C	830	ASP
1	B	98	SER
1	B	123	ALA
1	B	582	LEU
1	C	32	PHE

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	957/1130 (85%)	947 (99%)	10 (1%)	76 89
1	B	947/1130 (84%)	934 (99%)	13 (1%)	67 85
1	C	964/1130 (85%)	947 (98%)	17 (2%)	59 81
All	All	2868/3390 (85%)	2828 (99%)	40 (1%)	68 85

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	ASN
1	A	115	GLN
1	A	117	LEU
1	A	122	ASN
1	A	213	VAL
1	A	214	ARG
1	A	336	CYS
1	A	748	GLU
1	A	985	ASP
1	A	1082	CYS
1	B	153	MET
1	B	214	ARG
1	B	281	GLU

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Mol	Chain	Res	Type
1	B	319	ARG
1	B	421	TYR
1	B	480	CYS
1	B	577	ARG
1	B	619	GLU
1	B	646	ARG
1	B	773	GLU
1	B	855	PHE
1	B	907	ASN
1	B	983	ARG
1	C	169	GLU
1	C	176	LEU
1	C	237	ARG
1	C	319	ARG
1	C	346	ARG
1	C	357	ARG
1	C	427	ASP
1	C	457	ARG
1	C	460	ASN
1	C	516	GLU
1	C	519	HIS
1	C	574	ASP
1	C	577	ARG
1	C	675	GLN
1	C	790	LYS
1	C	995	ARG
1	C	1107	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	81	ASN
1	A	165	ASN
1	A	239	GLN
1	A	331	ASN
1	A	657	ASN
1	A	1158	ASN
1	B	122	ASN
1	B	422	ASN
1	C	14	GLN
1	C	115	GLN
1	C	519	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

65 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	NAG	D	1	2,1	14,14,15	1.39	3 (21%)	17,19,21	0.72	1 (5%)
2	NAG	D	2	2	14,14,15	1.29	2 (14%)	17,19,21	0.90	1 (5%)
2	NAG	E	1	2	14,14,15	0.32	0	17,19,21	0.40	0
2	NAG	E	2	2	14,14,15	1.04	1 (7%)	17,19,21	1.03	1 (5%)
2	NAG	F	1	2,1	14,14,15	1.33	2 (14%)	17,19,21	1.08	1 (5%)
2	NAG	F	2	2	14,14,15	1.32	2 (14%)	17,19,21	0.82	0
2	NAG	G	1	2,1	14,14,15	1.11	1 (7%)	17,19,21	0.76	1 (5%)
2	NAG	G	2	2	14,14,15	1.19	1 (7%)	17,19,21	0.74	0
2	NAG	H	1	2,1	14,14,15	1.13	1 (7%)	17,19,21	0.72	0
2	NAG	H	2	2	14,14,15	1.25	2 (14%)	17,19,21	0.85	1 (5%)
3	NAG	I	1	3,1	14,14,15	1.18	2 (14%)	17,19,21	0.75	1 (5%)
3	NAG	I	2	3	14,14,15	1.26	2 (14%)	17,19,21	0.84	1 (5%)
3	FUC	I	3	3	10,10,11	1.61	2 (20%)	14,14,16	0.94	0
4	NAG	J	1	4,1	14,14,15	1.16	1 (7%)	17,19,21	0.99	1 (5%)
4	NAG	J	2	4	14,14,15	1.26	3 (21%)	17,19,21	0.68	0
4	MAN	J	3	4	11,11,12	1.43	2 (18%)	15,15,17	0.90	0
4	NAG	K	1	4,1	14,14,15	1.21	1 (7%)	17,19,21	0.92	1 (5%)
4	NAG	K	2	4	14,14,15	1.24	2 (14%)	17,19,21	0.90	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	MAN	K	3	4	11,11,12	1.54	2 (18%)	15,15,17	1.28	2 (13%)
2	NAG	L	1	2	14,14,15	0.25	0	17,19,21	0.44	0
2	NAG	L	2	2	14,14,15	1.06	1 (7%)	17,19,21	1.00	1 (5%)
2	NAG	M	1	2,1	14,14,15	0.53	0	17,19,21	0.55	0
2	NAG	M	2	2	14,14,15	1.08	1 (7%)	17,19,21	0.86	0
2	NAG	N	1	2,1	14,14,15	1.25	2 (14%)	17,19,21	0.89	0
2	NAG	N	2	2	14,14,15	1.32	2 (14%)	17,19,21	0.94	1 (5%)
2	NAG	O	1	2,1	14,14,15	1.26	1 (7%)	17,19,21	0.85	1 (5%)
2	NAG	O	2	2	14,14,15	1.18	2 (14%)	17,19,21	0.86	1 (5%)
2	NAG	P	1	2,1	14,14,15	1.12	1 (7%)	17,19,21	0.70	0
2	NAG	P	2	2	14,14,15	1.17	1 (7%)	17,19,21	0.85	0
2	NAG	Q	1	2,1	14,14,15	1.03	0	17,19,21	0.61	0
2	NAG	Q	2	2	14,14,15	1.24	2 (14%)	17,19,21	0.78	1 (5%)
3	NAG	R	1	3,1	14,14,15	1.30	2 (14%)	17,19,21	0.94	1 (5%)
3	NAG	R	2	3	14,14,15	1.26	2 (14%)	17,19,21	0.86	1 (5%)
3	FUC	R	3	3	10,10,11	1.63	2 (20%)	14,14,16	0.92	0
4	NAG	S	1	4,1	14,14,15	1.18	1 (7%)	17,19,21	0.99	2 (11%)
4	NAG	S	2	4	14,14,15	1.23	2 (14%)	17,19,21	0.65	0
4	MAN	S	3	4	11,11,12	1.48	2 (18%)	15,15,17	0.83	0
4	NAG	T	1	4,1	14,14,15	1.15	1 (7%)	17,19,21	0.85	0
4	NAG	T	2	4	14,14,15	1.23	2 (14%)	17,19,21	0.74	0
4	MAN	T	3	4	11,11,12	1.62	2 (18%)	15,15,17	1.17	2 (13%)
2	NAG	U	1	2	14,14,15	1.37	2 (14%)	17,19,21	1.36	1 (5%)
2	NAG	U	2	2	14,14,15	1.38	2 (14%)	17,19,21	0.73	0
2	NAG	V	1	2,1	14,14,15	1.30	2 (14%)	17,19,21	0.83	0
2	NAG	V	2	2	14,14,15	1.20	2 (14%)	17,19,21	0.94	1 (5%)
2	NAG	W	1	2,1	14,14,15	1.14	1 (7%)	17,19,21	0.84	1 (5%)
2	NAG	W	2	2	14,14,15	1.17	1 (7%)	17,19,21	0.87	1 (5%)
2	NAG	X	1	2,1	14,14,15	1.24	2 (14%)	17,19,21	0.79	0
2	NAG	X	2	2	14,14,15	1.31	2 (14%)	17,19,21	0.87	0
2	NAG	Y	1	2,1	14,14,15	1.19	1 (7%)	17,19,21	0.80	0
2	NAG	Y	2	2	14,14,15	1.25	2 (14%)	17,19,21	0.93	1 (5%)
2	NAG	Z	1	2,1	14,14,15	1.23	2 (14%)	17,19,21	0.79	1 (5%)
2	NAG	Z	2	2	14,14,15	1.17	1 (7%)	17,19,21	1.02	1 (5%)
2	NAG	a	1	2,1	14,14,15	1.13	1 (7%)	17,19,21	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	NAG	a	2	2	14,14,15	1.13	1 (7%)	17,19,21	0.80	0
2	NAG	b	1	2,1	14,14,15	1.04	0	17,19,21	0.68	0
2	NAG	b	2	2	14,14,15	1.21	1 (7%)	17,19,21	0.97	1 (5%)
3	NAG	c	1	3,1	14,14,15	1.18	1 (7%)	17,19,21	0.93	1 (5%)
3	NAG	c	2	3	14,14,15	1.29	2 (14%)	17,19,21	0.91	0
3	FUC	c	3	3	10,10,11	1.68	3 (30%)	14,14,16	1.28	2 (14%)
4	NAG	d	1	4,1	14,14,15	1.19	1 (7%)	17,19,21	1.11	1 (5%)
4	NAG	d	2	4	14,14,15	1.26	2 (14%)	17,19,21	0.85	0
4	MAN	d	3	4	11,11,12	1.46	2 (18%)	15,15,17	0.98	1 (6%)
4	NAG	e	1	4,1	14,14,15	1.25	1 (7%)	17,19,21	0.81	0
4	NAG	e	2	4	14,14,15	1.26	2 (14%)	17,19,21	0.83	1 (5%)
4	MAN	e	3	4	11,11,12	1.52	2 (18%)	15,15,17	1.41	2 (13%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	D	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	0/6/23/26	0/1/1/1
2	NAG	E	1	2	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	0/6/23/26	0/1/1/1
2	NAG	F	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	F	2	2	-	0/6/23/26	0/1/1/1
2	NAG	G	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	G	2	2	-	0/6/23/26	0/1/1/1
2	NAG	H	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	H	2	2	-	0/6/23/26	0/1/1/1
3	NAG	I	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	I	2	3	-	0/6/23/26	0/1/1/1
3	FUC	I	3	3	-	-	0/1/1/1
4	NAG	J	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	J	2	4	-	0/6/23/26	0/1/1/1
4	MAN	J	3	4	-	1/2/19/22	1/1/1/1
4	NAG	K	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	K	2	4	-	0/6/23/26	0/1/1/1
4	MAN	K	3	4	-	0/2/19/22	1/1/1/1
2	NAG	L	1	2	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	L	2	2	-	0/6/23/26	0/1/1/1
2	NAG	M	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	M	2	2	-	0/6/23/26	0/1/1/1
2	NAG	N	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	N	2	2	-	0/6/23/26	0/1/1/1
2	NAG	O	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	O	2	2	-	0/6/23/26	0/1/1/1
2	NAG	P	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	P	2	2	-	0/6/23/26	0/1/1/1
2	NAG	Q	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	Q	2	2	-	0/6/23/26	0/1/1/1
3	NAG	R	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	R	2	3	-	0/6/23/26	0/1/1/1
3	FUC	R	3	3	-	-	0/1/1/1
4	NAG	S	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	S	2	4	-	0/6/23/26	0/1/1/1
4	MAN	S	3	4	-	1/2/19/22	1/1/1/1
4	NAG	T	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	T	2	4	-	0/6/23/26	0/1/1/1
4	MAN	T	3	4	-	0/2/19/22	1/1/1/1
2	NAG	U	1	2	-	0/6/23/26	0/1/1/1
2	NAG	U	2	2	-	0/6/23/26	0/1/1/1
2	NAG	V	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	V	2	2	-	0/6/23/26	0/1/1/1
2	NAG	W	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	W	2	2	-	0/6/23/26	0/1/1/1
2	NAG	X	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	X	2	2	-	0/6/23/26	0/1/1/1
2	NAG	Y	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	Y	2	2	-	0/6/23/26	0/1/1/1
2	NAG	Z	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	Z	2	2	-	0/6/23/26	0/1/1/1
2	NAG	a	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	a	2	2	-	0/6/23/26	0/1/1/1
2	NAG	b	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	b	2	2	-	0/6/23/26	0/1/1/1
3	NAG	c	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	c	2	3	-	0/6/23/26	0/1/1/1
3	FUC	c	3	3	-	-	0/1/1/1
4	NAG	d	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	d	2	4	-	0/6/23/26	0/1/1/1
4	MAN	d	3	4	-	1/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	e	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	e	2	4	-	0/6/23/26	0/1/1/1
4	MAN	e	3	4	-	0/2/19/22	1/1/1/1

All (100) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	T	3	MAN	O5-C5	3.12	1.49	1.43
4	K	3	MAN	O5-C5	3.03	1.49	1.43
4	T	3	MAN	O5-C1	3.03	1.48	1.43
2	U	1	NAG	O4-C4	2.95	1.49	1.43
2	U	2	NAG	O5-C5	2.93	1.49	1.43
2	U	2	NAG	O5-C1	2.88	1.48	1.43
4	e	3	MAN	O5-C5	2.88	1.49	1.43
2	L	2	NAG	O5-C5	2.87	1.49	1.43
4	J	3	MAN	O5-C5	2.85	1.49	1.43
2	E	2	NAG	O5-C5	2.85	1.49	1.43
2	X	2	NAG	O5-C5	2.82	1.49	1.43
4	S	3	MAN	O5-C5	2.82	1.49	1.43
2	N	2	NAG	O5-C5	2.81	1.49	1.43
3	c	2	NAG	O5-C5	2.80	1.49	1.43
2	F	2	NAG	O5-C5	2.80	1.49	1.43
2	D	2	NAG	O5-C5	2.77	1.49	1.43
2	M	2	NAG	O5-C5	2.77	1.49	1.43
4	d	3	MAN	O5-C5	2.76	1.49	1.43
4	e	3	MAN	O5-C1	2.76	1.48	1.43
2	V	1	NAG	O5-C5	2.75	1.49	1.43
3	R	2	NAG	O5-C5	2.74	1.49	1.43
3	R	3	FUC	O5-C1	2.69	1.48	1.43
2	b	2	NAG	O5-C5	2.69	1.48	1.43
2	D	1	NAG	O5-C5	2.68	1.48	1.43
4	K	2	NAG	O4-C4	2.68	1.49	1.43
2	H	2	NAG	O5-C5	2.67	1.48	1.43
3	I	3	FUC	O5-C1	2.66	1.48	1.43
2	F	1	NAG	O5-C5	2.65	1.48	1.43
2	G	2	NAG	O5-C5	2.64	1.48	1.43
2	Y	2	NAG	O5-C5	2.64	1.48	1.43
4	J	2	NAG	O5-C5	2.64	1.48	1.43
2	Q	2	NAG	O5-C5	2.64	1.48	1.43
4	d	2	NAG	O5-C5	2.62	1.48	1.43
2	Y	1	NAG	O5-C5	2.62	1.48	1.43
3	c	3	FUC	O5-C1	2.60	1.47	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	N	1	NAG	O5-C5	2.59	1.48	1.43
2	X	1	NAG	O5-C5	2.58	1.48	1.43
3	I	2	NAG	O5-C5	2.58	1.48	1.43
2	a	2	NAG	O5-C5	2.57	1.48	1.43
2	V	2	NAG	O5-C5	2.56	1.48	1.43
4	K	3	MAN	O5-C1	2.56	1.47	1.43
3	I	3	FUC	O5-C5	2.55	1.49	1.43
2	P	2	NAG	O5-C5	2.54	1.48	1.43
2	O	2	NAG	O5-C5	2.53	1.48	1.43
4	e	1	NAG	O5-C5	2.52	1.48	1.43
3	R	1	NAG	O5-C5	2.51	1.48	1.43
4	d	1	NAG	O5-C5	2.51	1.48	1.43
4	J	1	NAG	O5-C5	2.51	1.48	1.43
4	S	3	MAN	O5-C1	2.51	1.47	1.43
2	W	2	NAG	O5-C5	2.50	1.48	1.43
2	U	1	NAG	O5-C5	2.47	1.48	1.43
2	O	1	NAG	O5-C5	2.46	1.48	1.43
3	c	3	FUC	O5-C5	2.46	1.48	1.43
4	K	1	NAG	O5-C5	2.46	1.48	1.43
2	V	1	NAG	O4-C4	2.42	1.48	1.43
2	Z	1	NAG	O5-C5	2.42	1.48	1.43
4	T	2	NAG	O4-C4	2.42	1.48	1.43
4	e	2	NAG	O4-C4	2.41	1.48	1.43
4	d	3	MAN	O5-C1	2.41	1.47	1.43
4	J	3	MAN	O5-C1	2.40	1.47	1.43
4	S	1	NAG	O5-C5	2.40	1.48	1.43
4	T	2	NAG	O5-C5	2.39	1.48	1.43
3	R	3	FUC	O5-C5	2.38	1.48	1.43
4	e	2	NAG	O5-C5	2.37	1.48	1.43
4	S	2	NAG	O5-C5	2.37	1.48	1.43
2	N	2	NAG	O5-C1	2.37	1.47	1.43
2	Z	2	NAG	O5-C5	2.36	1.48	1.43
4	T	1	NAG	O5-C5	2.33	1.48	1.43
2	X	2	NAG	O5-C1	2.29	1.47	1.43
2	H	2	NAG	O5-C1	2.29	1.47	1.43
4	S	2	NAG	O4-C4	2.28	1.48	1.43
2	F	2	NAG	O5-C1	2.28	1.47	1.43
4	d	2	NAG	O4-C4	2.27	1.48	1.43
2	D	1	NAG	O4-C4	2.24	1.48	1.43
3	c	2	NAG	O5-C1	2.23	1.47	1.43
2	D	2	NAG	O5-C1	2.23	1.47	1.43
2	Y	2	NAG	O5-C1	2.21	1.47	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	I	1	NAG	O5-C5	2.20	1.47	1.43
2	Q	2	NAG	O5-C1	2.20	1.47	1.43
2	H	1	NAG	O4-C4	2.17	1.48	1.43
2	P	1	NAG	O5-C5	2.14	1.47	1.43
3	I	2	NAG	O5-C1	2.13	1.47	1.43
2	V	2	NAG	O5-C1	2.13	1.47	1.43
3	I	1	NAG	O4-C4	2.11	1.48	1.43
2	N	1	NAG	O4-C4	2.09	1.47	1.43
2	a	1	NAG	O5-C5	2.09	1.47	1.43
2	X	1	NAG	O4-C4	2.09	1.47	1.43
4	J	2	NAG	O4-C4	2.08	1.47	1.43
2	G	1	NAG	O5-C5	2.07	1.47	1.43
3	c	1	NAG	O5-C5	2.07	1.47	1.43
2	W	1	NAG	C1-C2	2.07	1.55	1.52
3	R	1	NAG	O4-C4	2.06	1.47	1.43
2	Z	1	NAG	O4-C4	2.06	1.47	1.43
2	F	1	NAG	O4-C4	2.06	1.47	1.43
4	K	2	NAG	O5-C5	2.05	1.47	1.43
3	c	3	FUC	C1-C2	2.05	1.56	1.52
3	R	2	NAG	O5-C1	2.01	1.46	1.43
2	D	1	NAG	C1-C2	2.01	1.55	1.52
2	O	2	NAG	O5-C1	2.01	1.46	1.43
4	J	2	NAG	O5-C1	2.00	1.46	1.43

All (39) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	U	1	NAG	C1-O5-C5	4.84	118.75	112.19
4	K	3	MAN	C1-O5-C5	3.83	117.39	112.19
4	e	3	MAN	C1-O5-C5	3.82	117.37	112.19
2	L	2	NAG	C1-O5-C5	3.31	116.68	112.19
3	R	1	NAG	O5-C5-C6	3.21	112.24	107.20
2	E	2	NAG	C1-O5-C5	3.21	116.54	112.19
4	T	3	MAN	C1-O5-C5	3.14	116.45	112.19
2	Z	2	NAG	C1-O5-C5	2.95	116.18	112.19
3	c	1	NAG	O5-C5-C6	2.94	111.81	107.20
2	Y	2	NAG	C1-O5-C5	2.83	116.03	112.19
2	N	2	NAG	C1-O5-C5	2.79	115.97	112.19
2	b	2	NAG	C1-O5-C5	2.73	115.89	112.19
2	O	2	NAG	C1-O5-C5	2.63	115.76	112.19
2	Z	1	NAG	C1-O5-C5	2.61	115.73	112.19
4	T	3	MAN	O5-C5-C6	2.56	111.22	107.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	e	3	MAN	O5-C5-C6	2.53	111.17	107.20
2	D	2	NAG	C1-O5-C5	2.49	115.56	112.19
4	K	3	MAN	O5-C5-C6	2.42	110.99	107.20
4	d	1	NAG	C3-C4-C5	2.39	114.50	110.24
2	V	2	NAG	C1-O5-C5	2.29	115.30	112.19
4	K	1	NAG	C1-O5-C5	2.29	115.29	112.19
3	I	1	NAG	O5-C5-C6	2.28	110.78	107.20
2	Q	2	NAG	C1-O5-C5	2.28	115.29	112.19
3	R	2	NAG	C1-O5-C5	2.27	115.27	112.19
3	I	2	NAG	C1-O5-C5	2.25	115.23	112.19
2	D	1	NAG	C1-O5-C5	2.24	115.23	112.19
4	d	3	MAN	C1-C2-C3	2.20	112.37	109.67
2	H	2	NAG	C1-O5-C5	2.17	115.13	112.19
2	W	2	NAG	C1-O5-C5	2.15	115.11	112.19
4	J	1	NAG	C3-C4-C5	2.13	114.04	110.24
3	c	3	FUC	C1-C2-C3	2.12	112.27	109.67
2	F	1	NAG	C1-O5-C5	2.12	115.06	112.19
2	G	1	NAG	O5-C5-C6	2.10	110.50	107.20
4	S	1	NAG	O5-C5-C6	2.07	110.45	107.20
4	e	2	NAG	C1-O5-C5	2.06	114.98	112.19
2	W	1	NAG	C1-O5-C5	2.03	114.94	112.19
4	S	1	NAG	C3-C4-C5	2.01	113.83	110.24
2	O	1	NAG	C4-C3-C2	-2.01	108.07	111.02
3	c	3	FUC	C6-C5-C4	2.00	116.77	113.07

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	R	1	NAG	O5-C5-C6-O6
3	c	1	NAG	O5-C5-C6-O6
3	I	1	NAG	O5-C5-C6-O6
2	L	1	NAG	O5-C5-C6-O6
3	I	1	NAG	C4-C5-C6-O6
3	c	1	NAG	C4-C5-C6-O6
3	R	1	NAG	C4-C5-C6-O6
2	L	1	NAG	C4-C5-C6-O6
4	d	3	MAN	O5-C5-C6-O6
4	S	3	MAN	O5-C5-C6-O6
4	J	3	MAN	O5-C5-C6-O6
2	M	1	NAG	C4-C5-C6-O6
2	M	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
2	H	1	NAG	C4-C5-C6-O6
2	H	1	NAG	O5-C5-C6-O6

All (5) ring outliers are listed below:

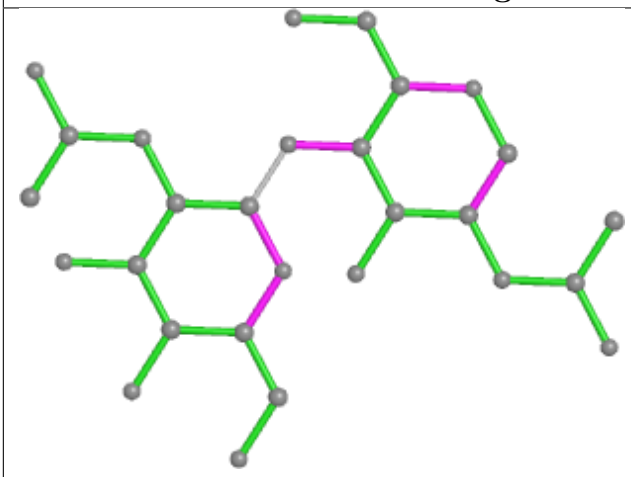
Mol	Chain	Res	Type	Atoms
4	S	3	MAN	C1-C2-C3-C4-C5-O5
4	e	3	MAN	C1-C2-C3-C4-C5-O5
4	J	3	MAN	C1-C2-C3-C4-C5-O5
4	K	3	MAN	C1-C2-C3-C4-C5-O5
4	T	3	MAN	C1-C2-C3-C4-C5-O5

3 monomers are involved in 7 short contacts:

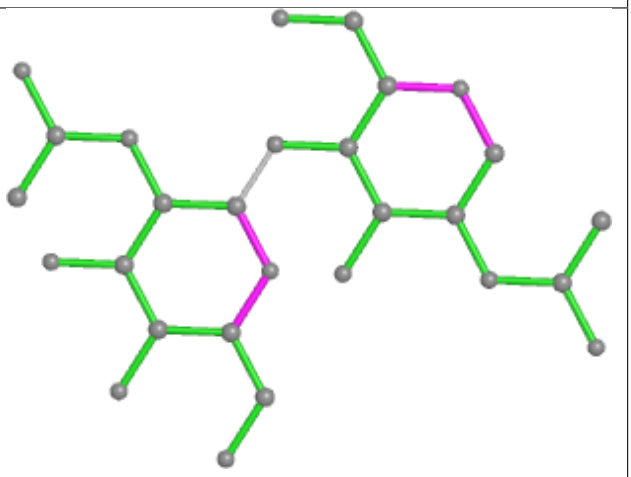
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	2	NAG	2	0
2	L	1	NAG	3	0
2	E	1	NAG	4	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

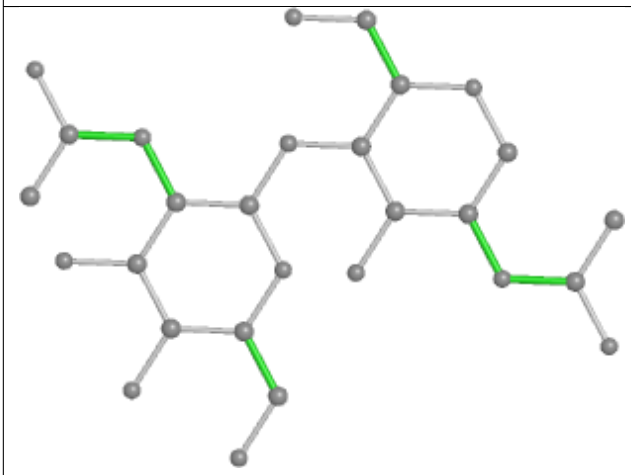
Oligosaccharide Chain D



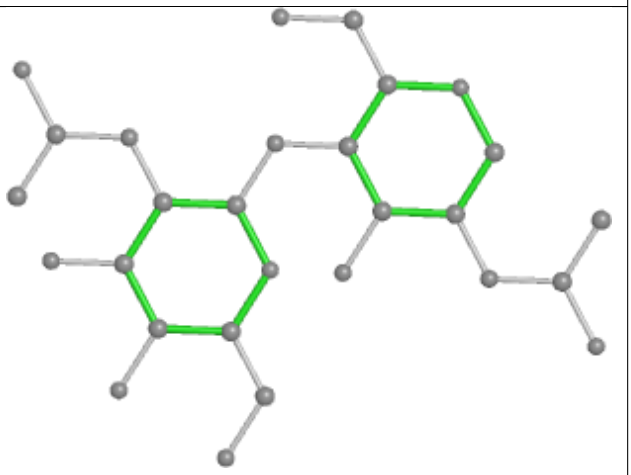
Bond lengths



Bond angles

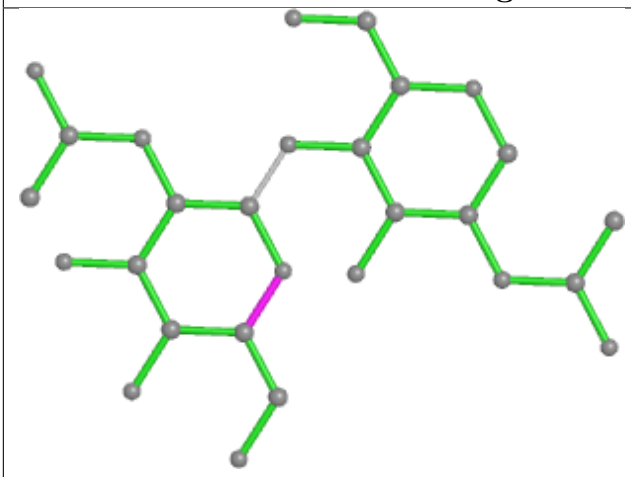


Torsions

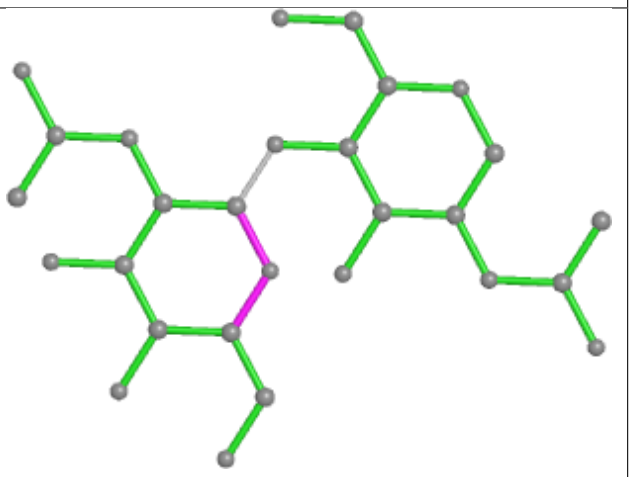


Rings

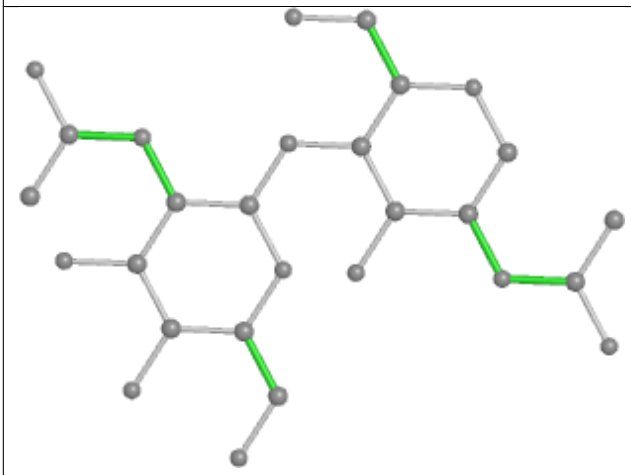
Oligosaccharide Chain E



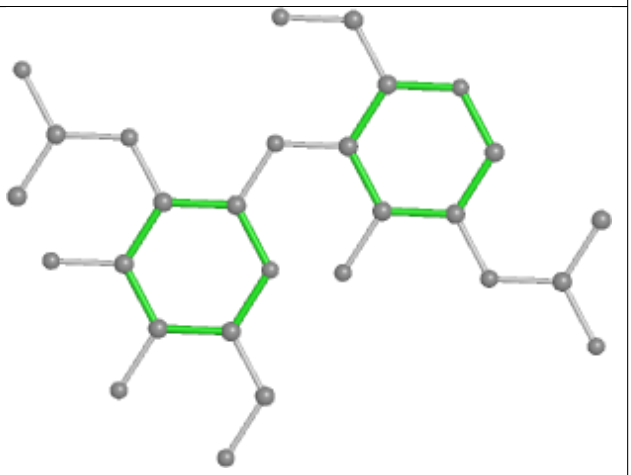
Bond lengths



Bond angles

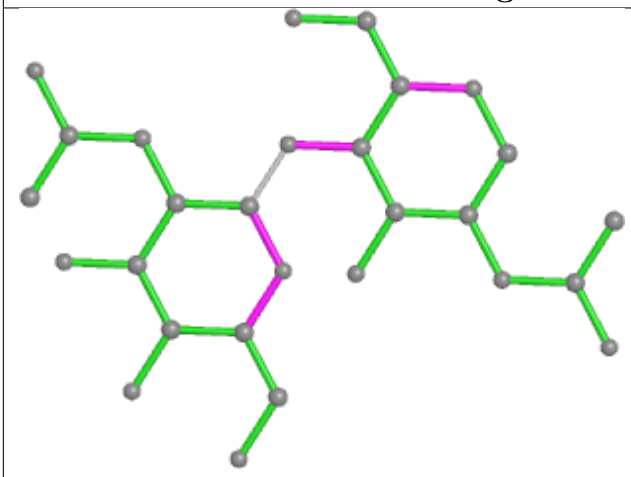


Torsions

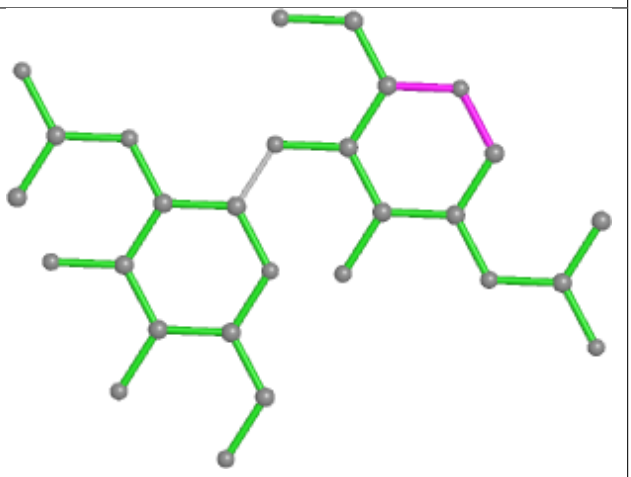


Rings

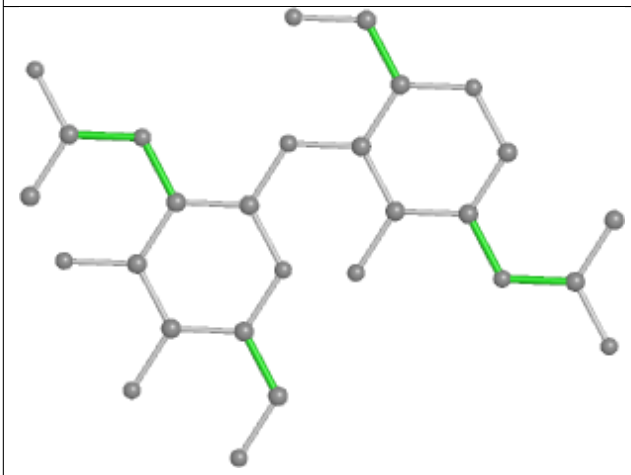
Oligosaccharide Chain F



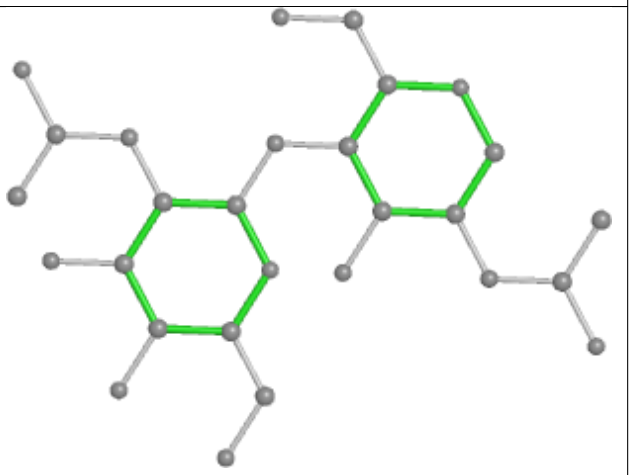
Bond lengths



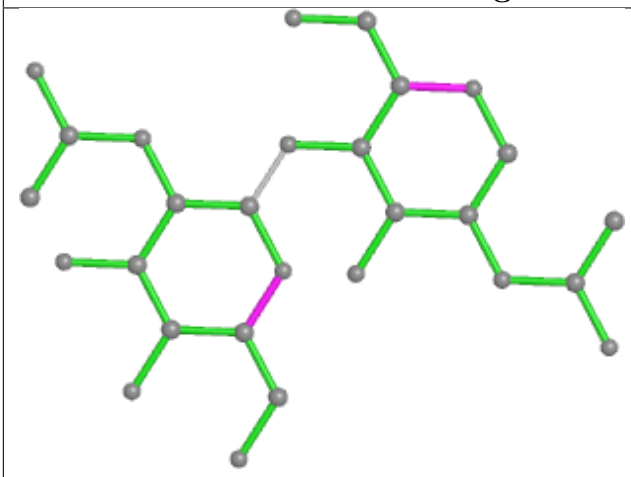
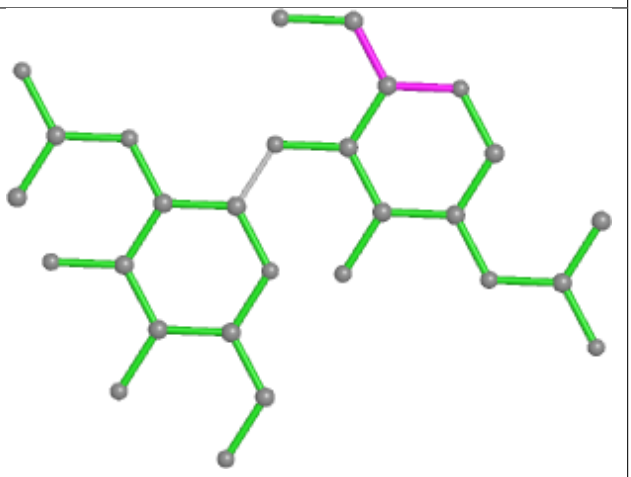
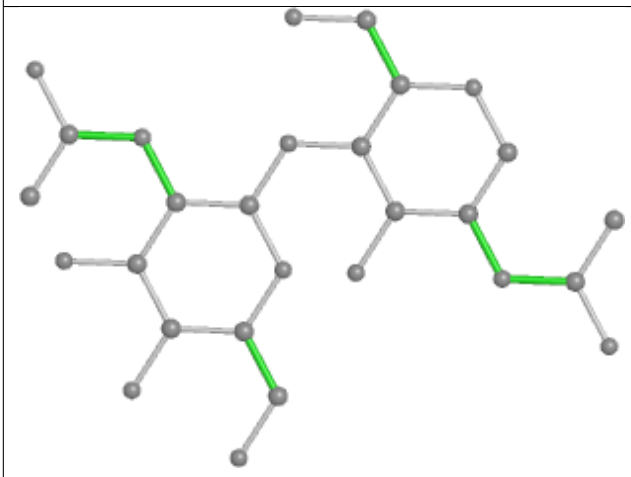
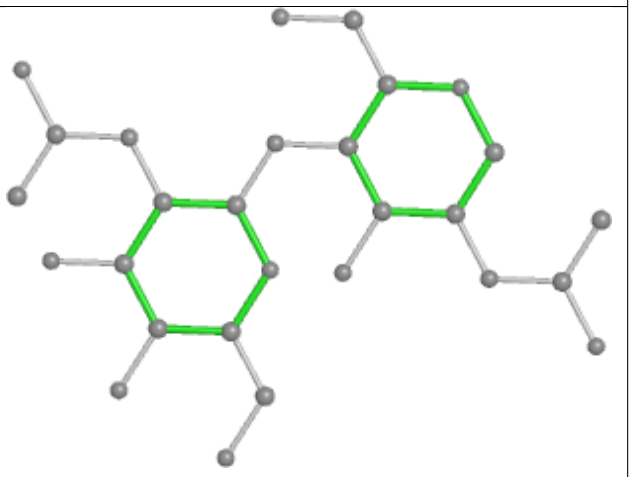
Bond angles



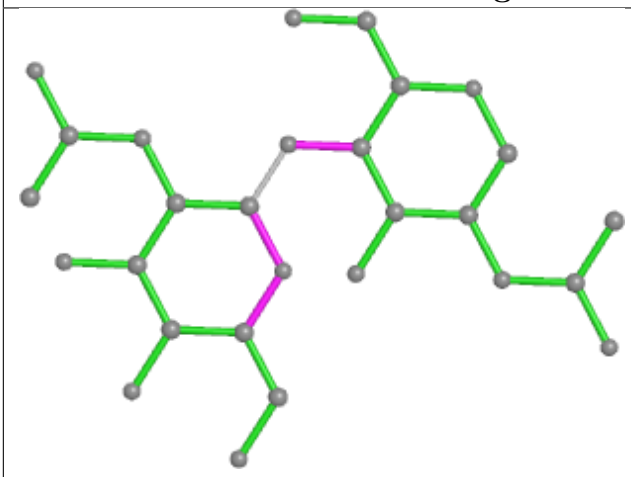
Torsions



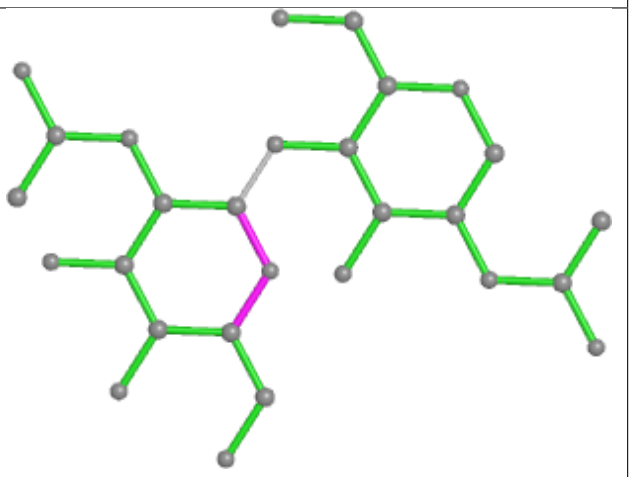
Rings

Oligosaccharide Chain G	
	
Bond lengths	**Bond angles**
	
Torsions	**Rings**

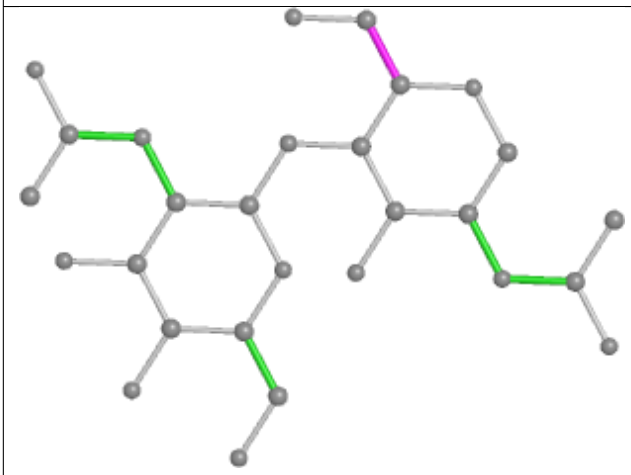
Oligosaccharide Chain H



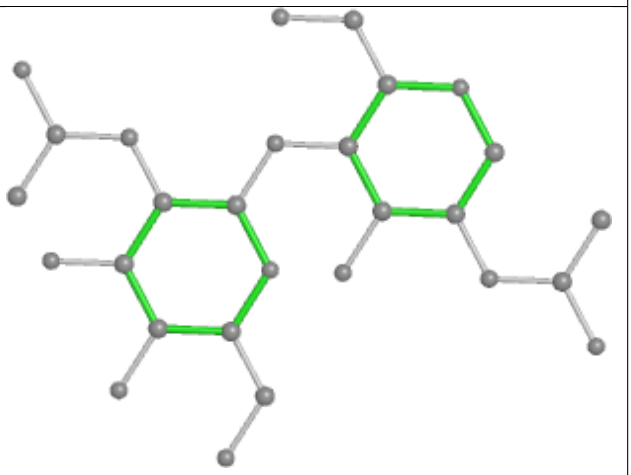
Bond lengths



Bond angles

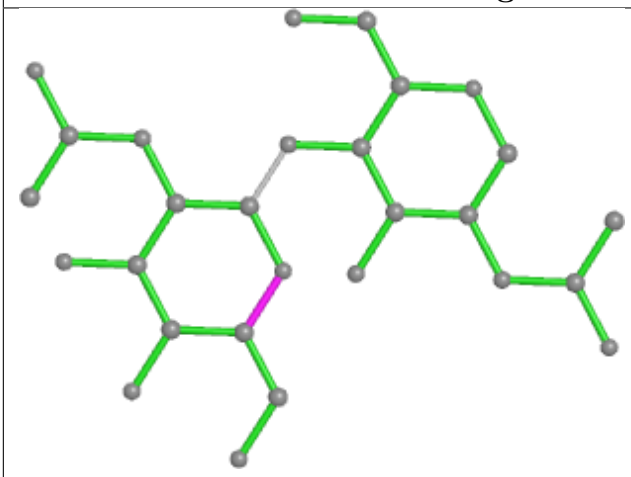


Torsions

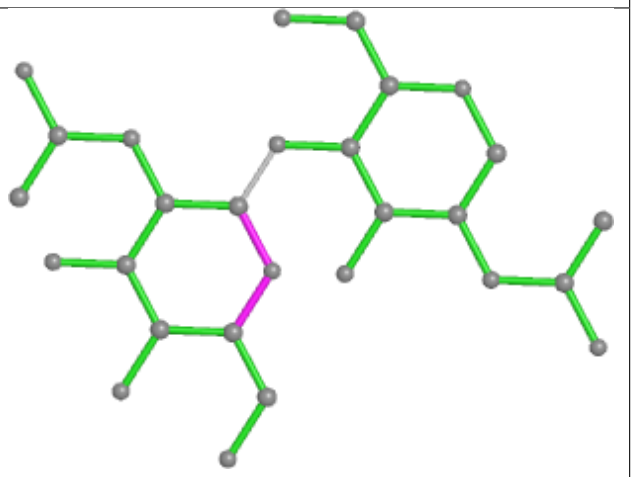


Rings

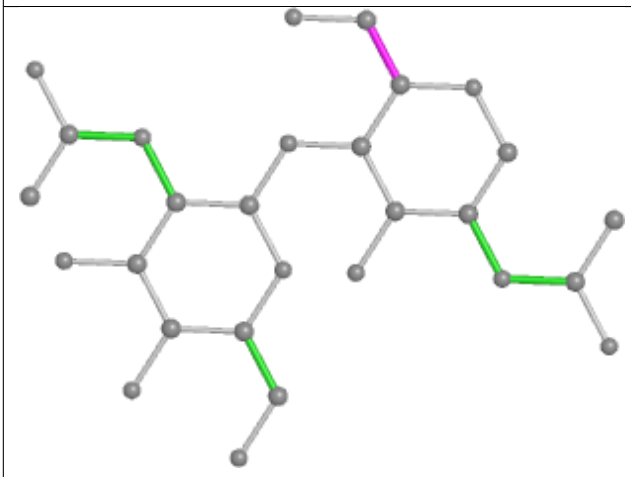
Oligosaccharide Chain L



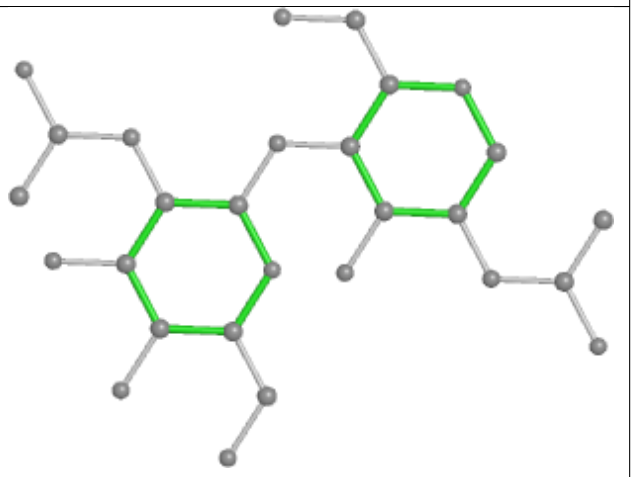
Bond lengths



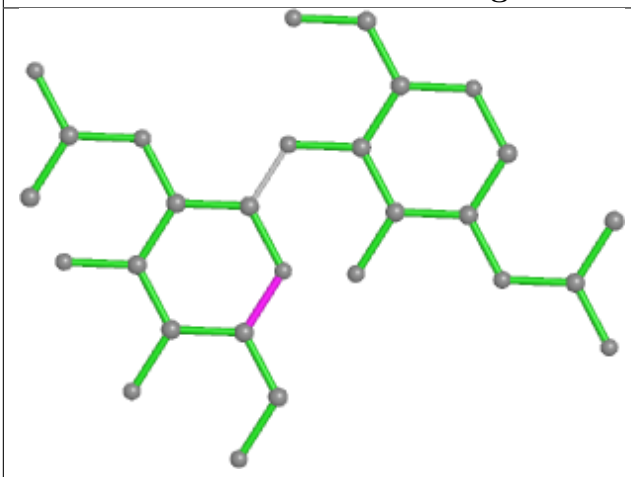
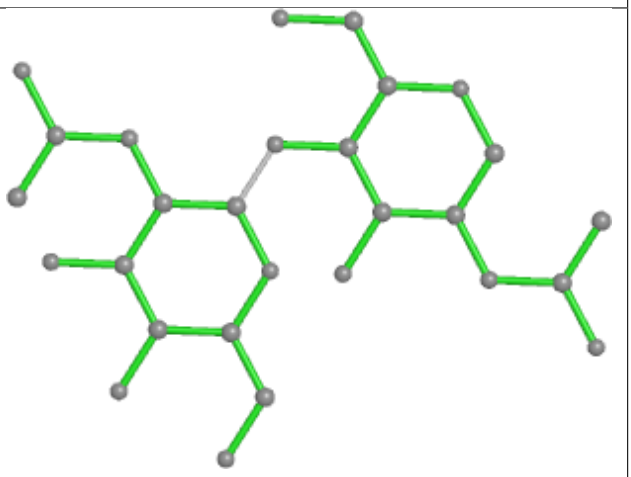
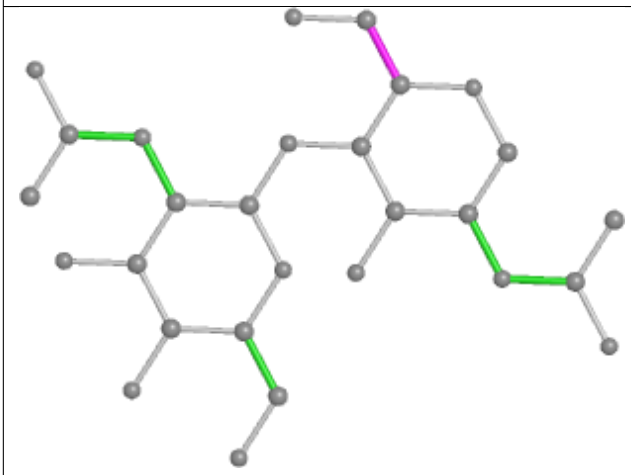
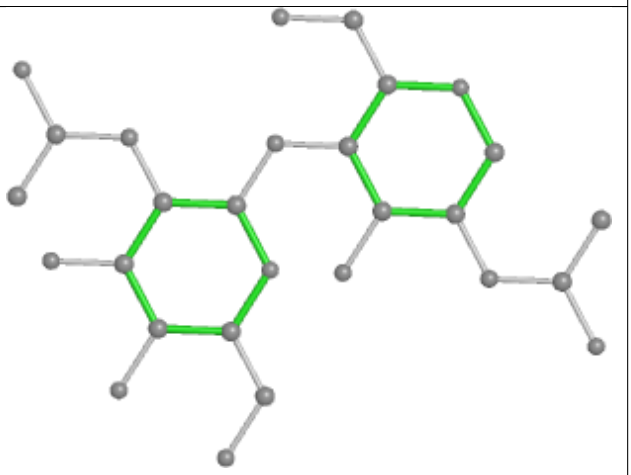
Bond angles



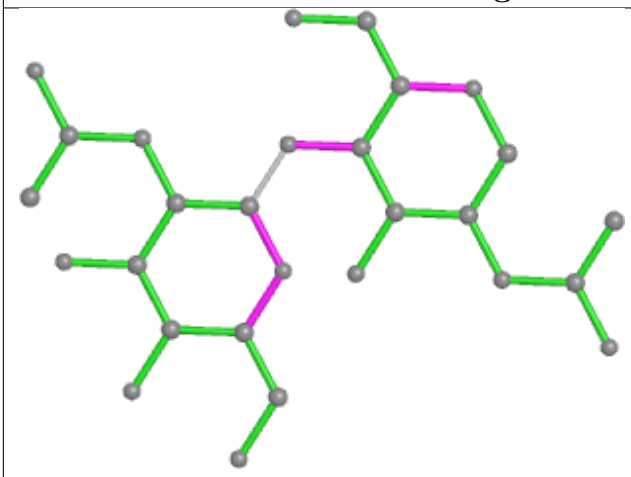
Torsions



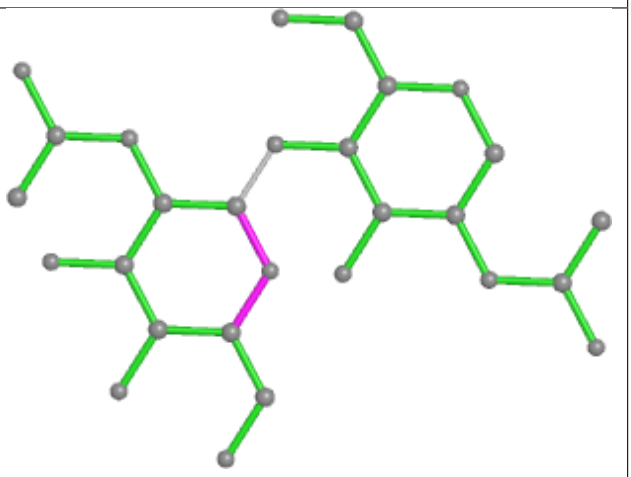
Rings

Oligosaccharide Chain M	
	
Bond lengths	**Bond angles**
	
Torsions	**Rings**

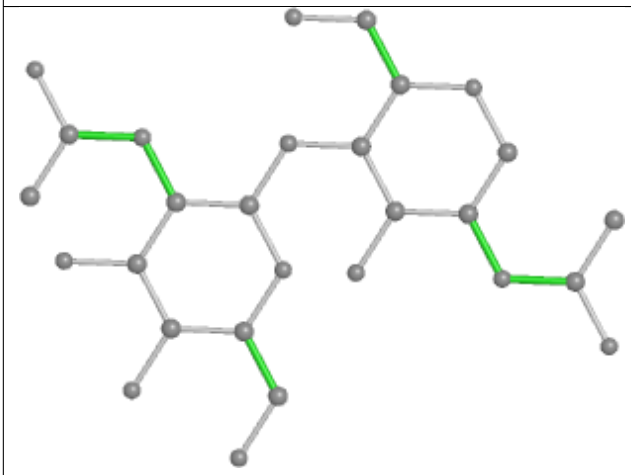
Oligosaccharide Chain N



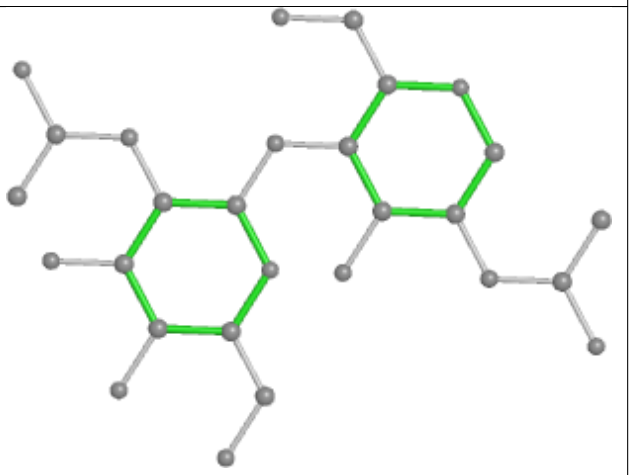
Bond lengths



Bond angles

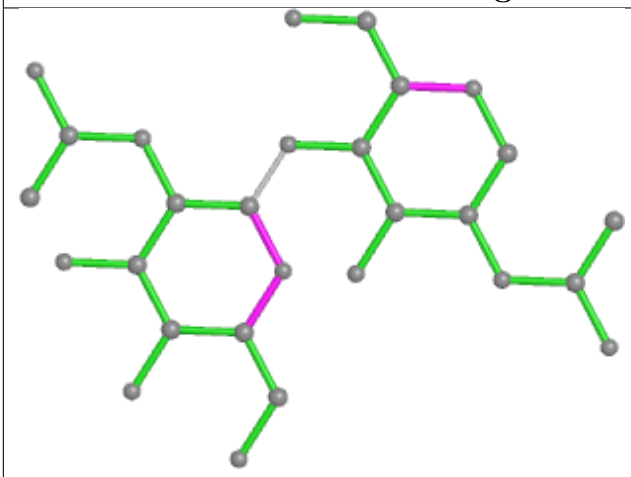


Torsions

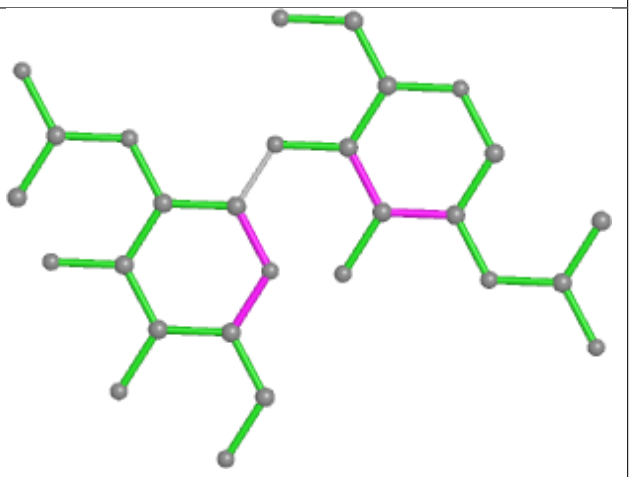


Rings

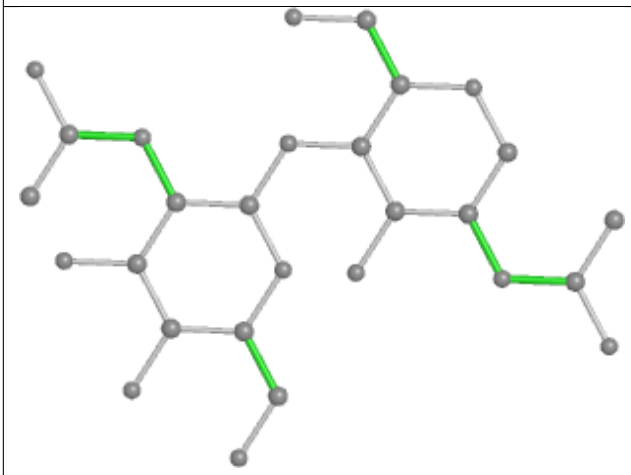
Oligosaccharide Chain O



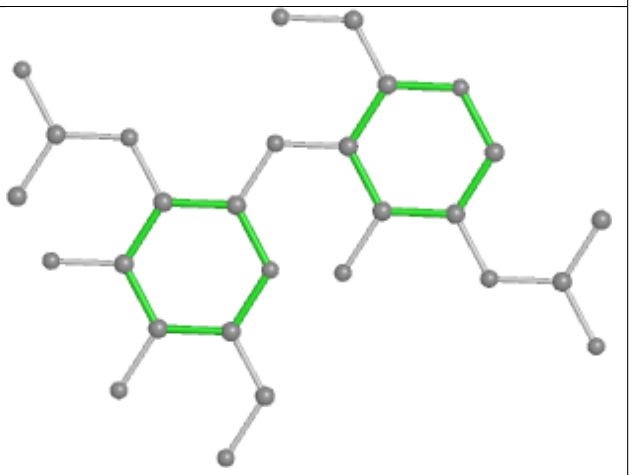
Bond lengths



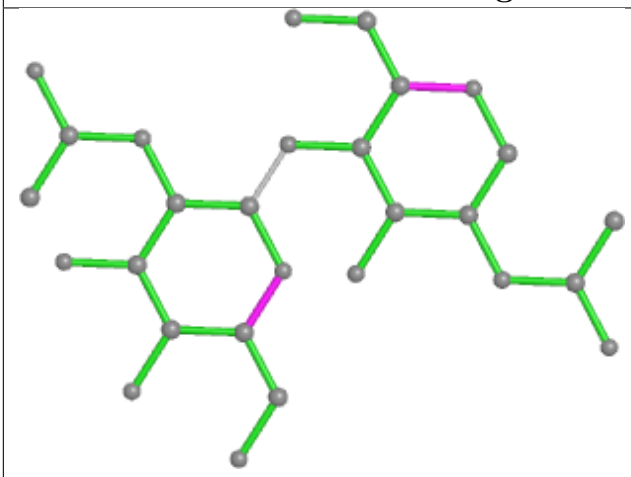
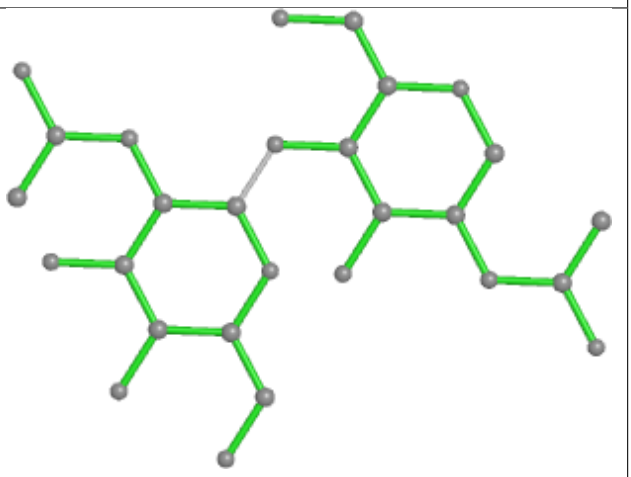
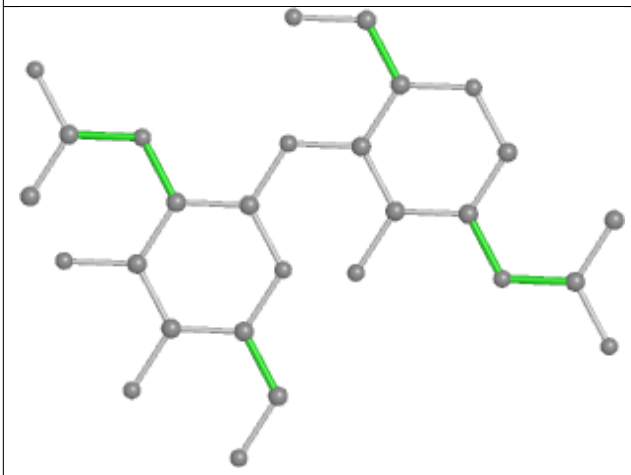
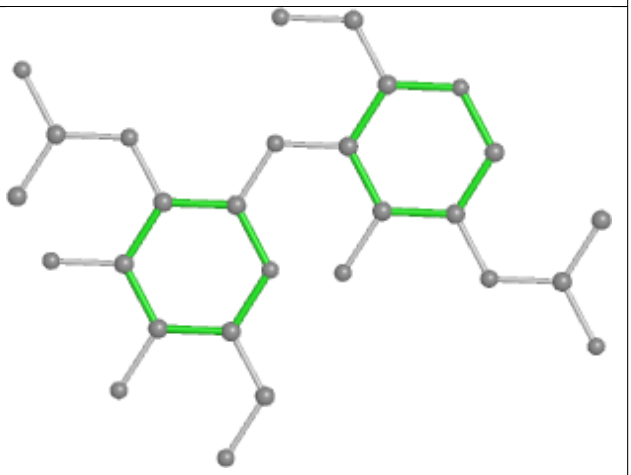
Bond angles



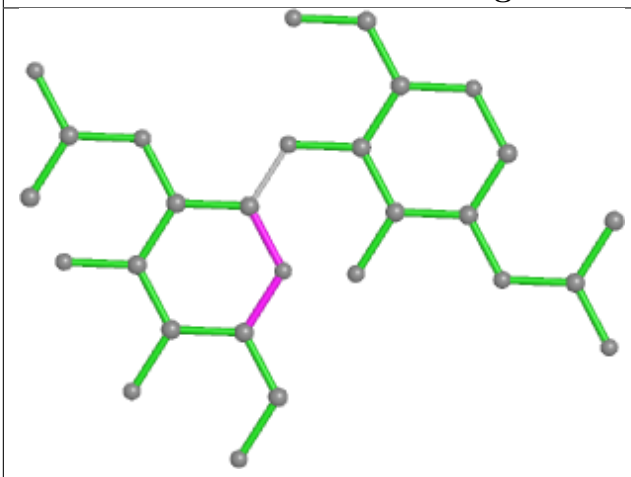
Torsions



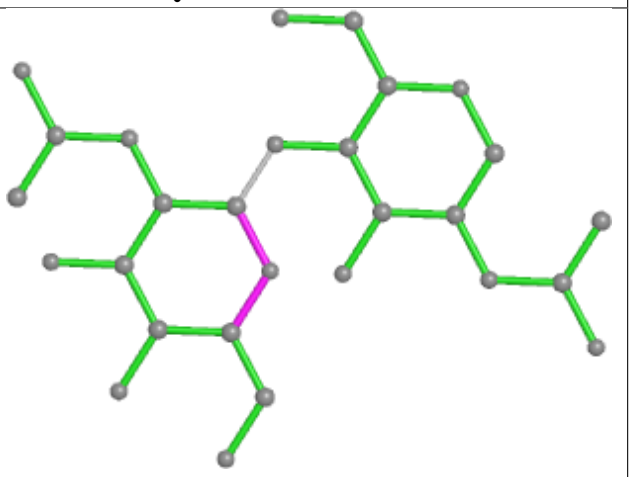
Rings

Oligosaccharide Chain P	
	
Bond lengths	**Bond angles**
	
Torsions	**Rings**

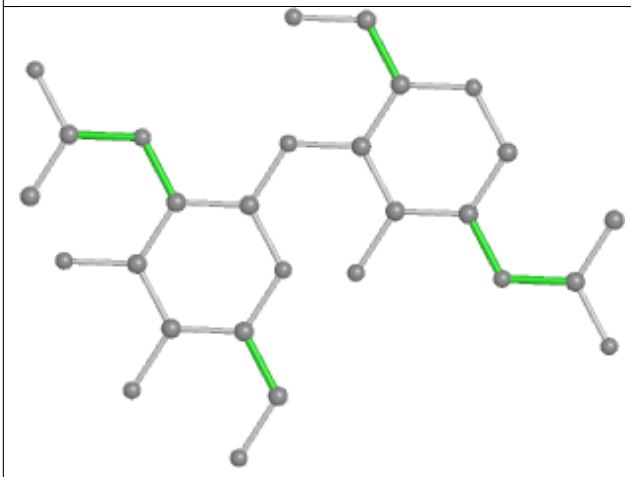
Oligosaccharide Chain Q



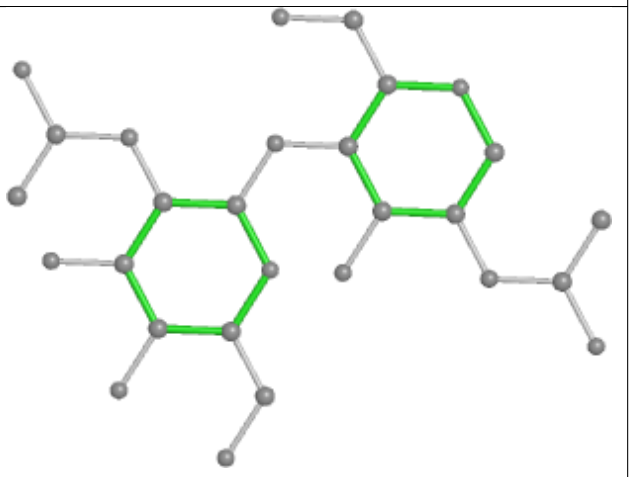
Bond lengths



Bond angles

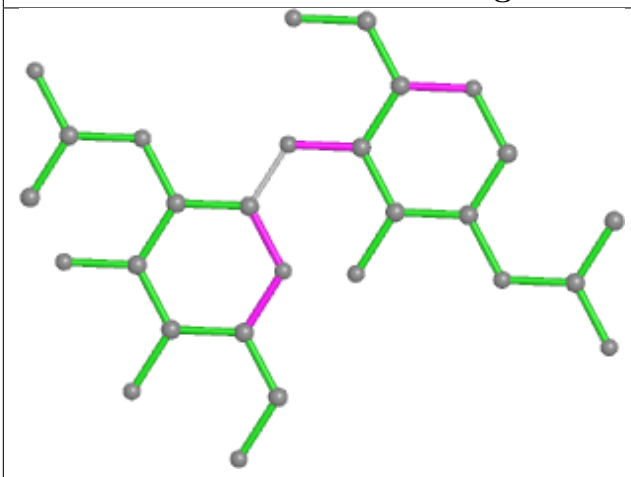


Torsions

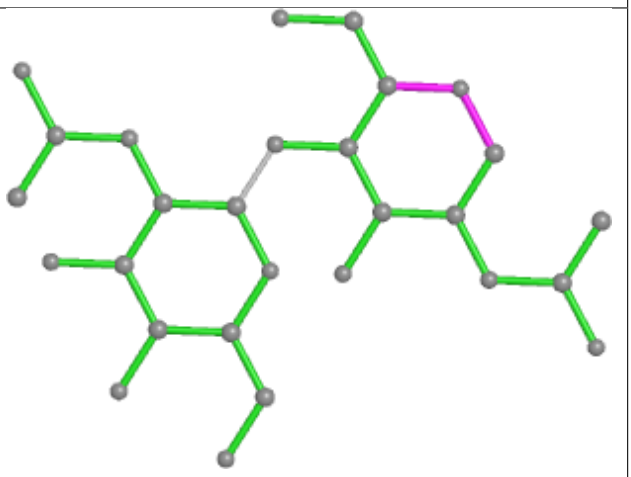


Rings

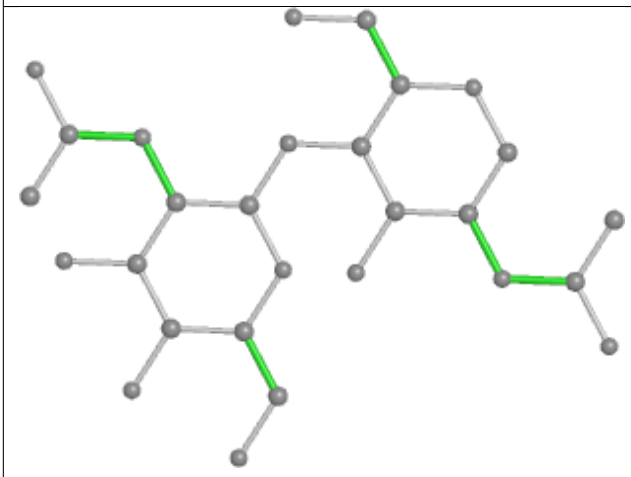
Oligosaccharide Chain U



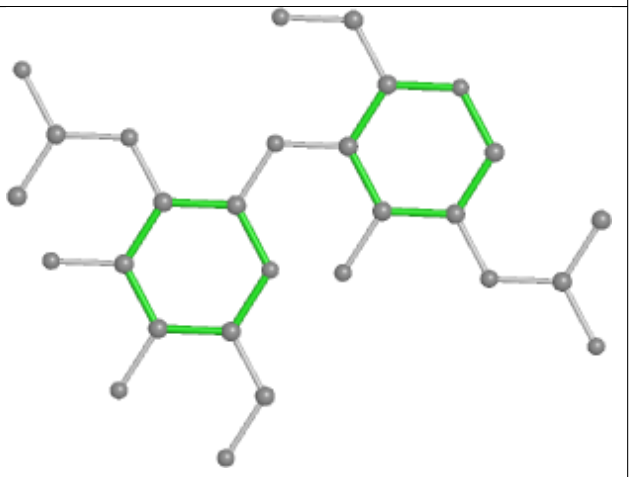
Bond lengths



Bond angles

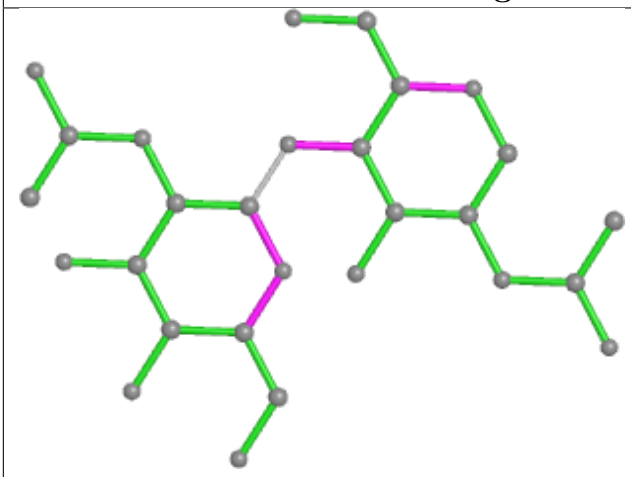


Torsions



Rings

Oligosaccharide Chain V



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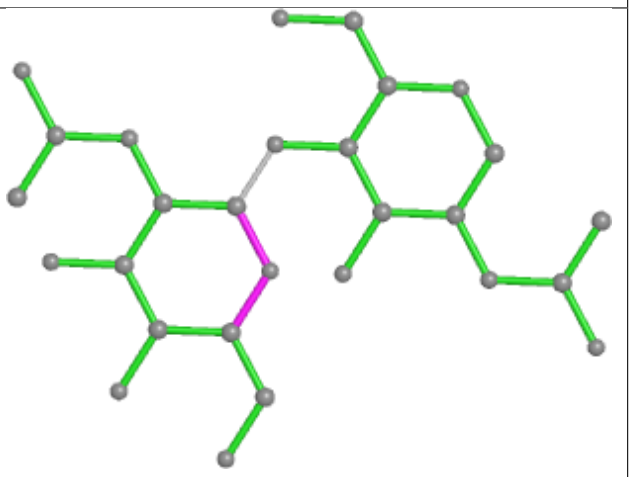
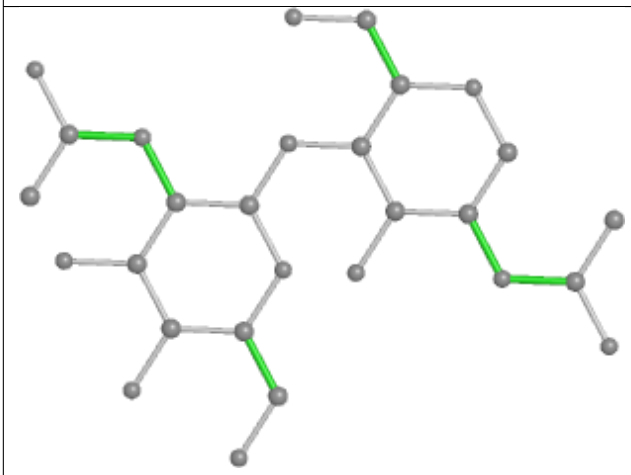
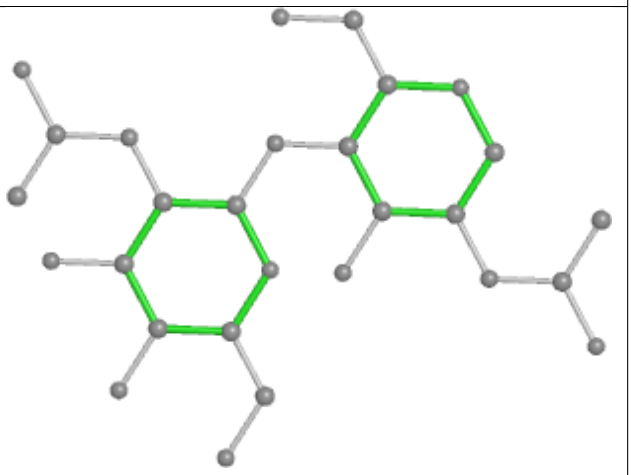


Bond angles

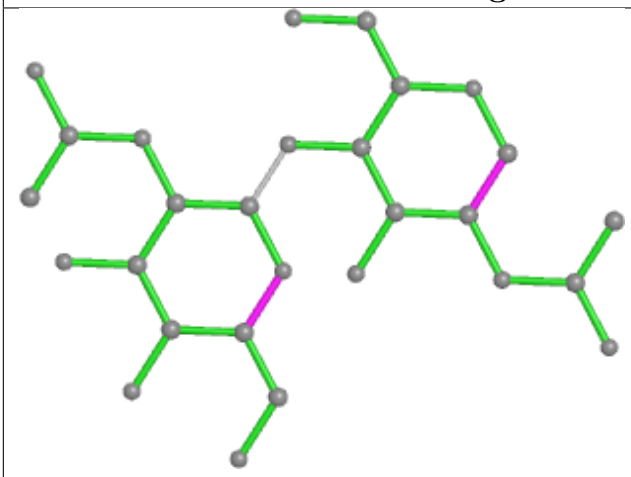


Torsions



Rings

Oligosaccharide Chain W



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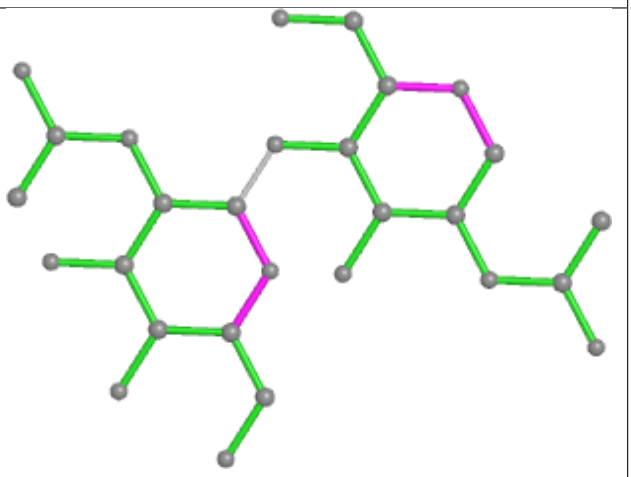
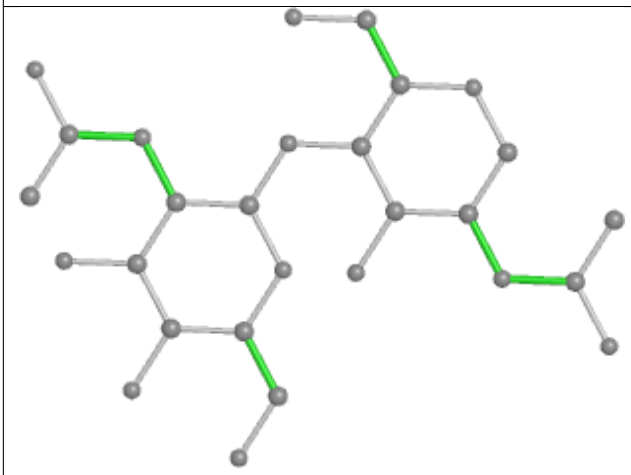


Bond angles



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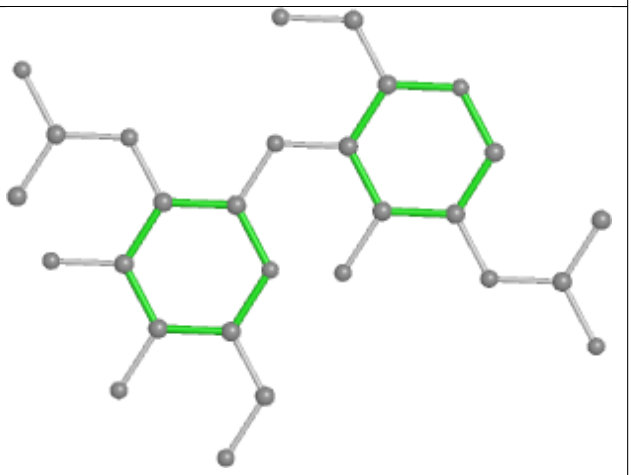
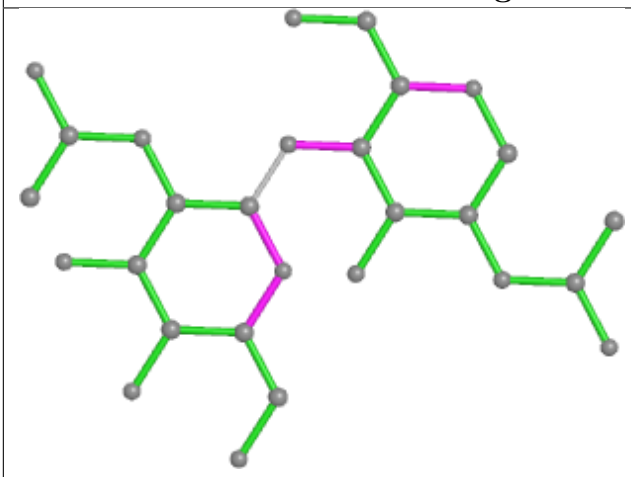


Rings

Oligosaccharide Chain X



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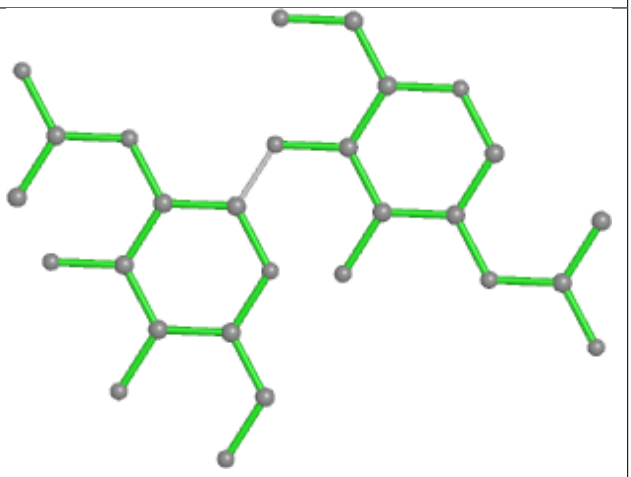
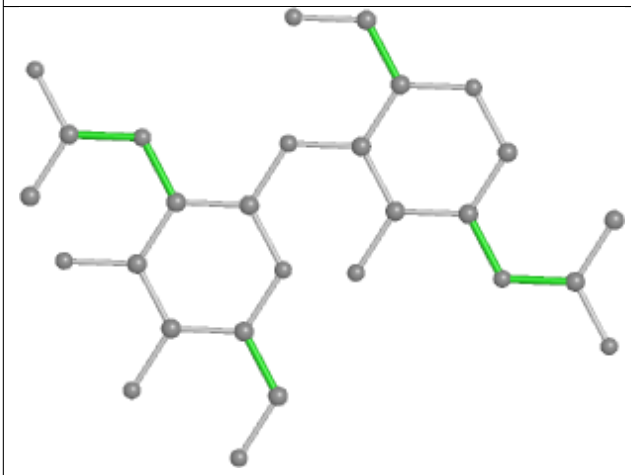
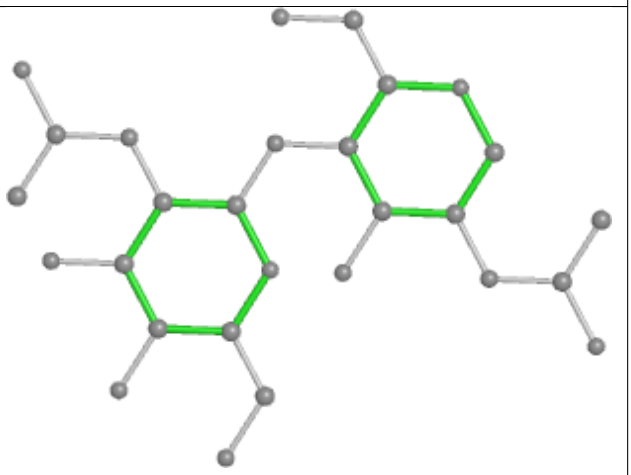


Bond angles

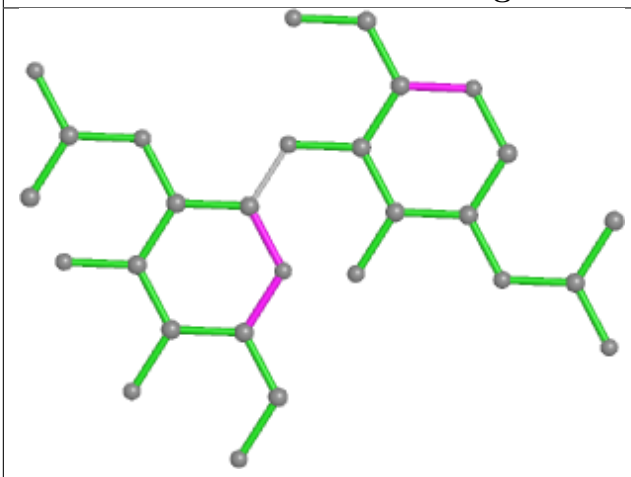


Torsions



Rings

Oligosaccharide Chain Y



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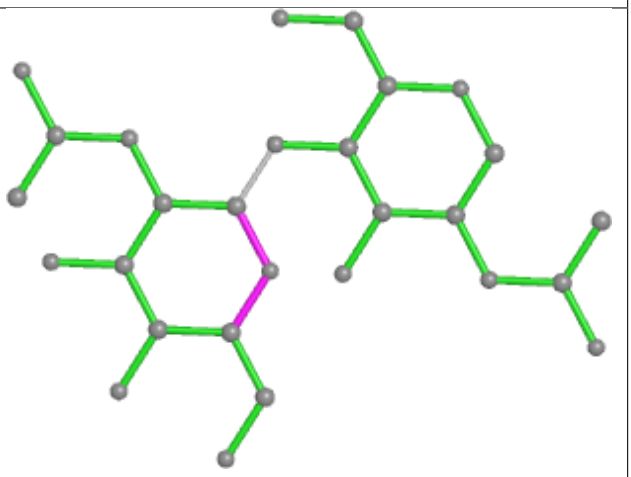
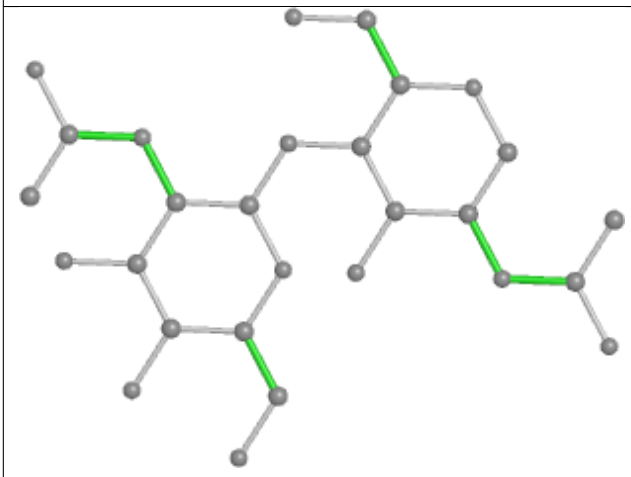


Bond angles



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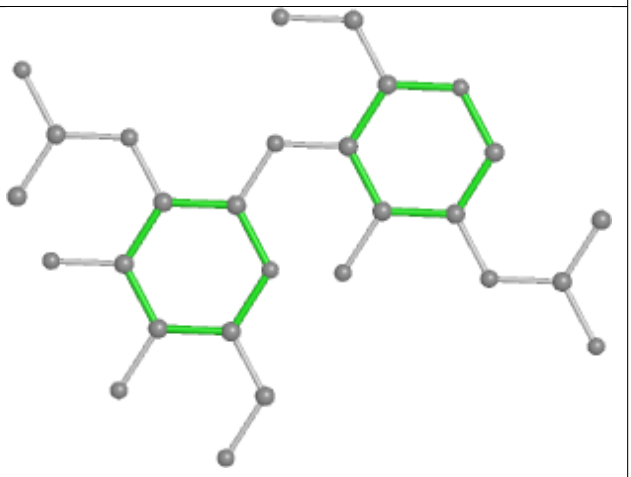
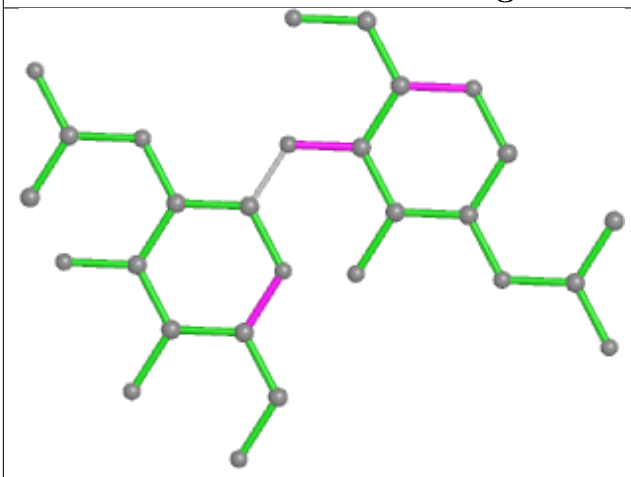
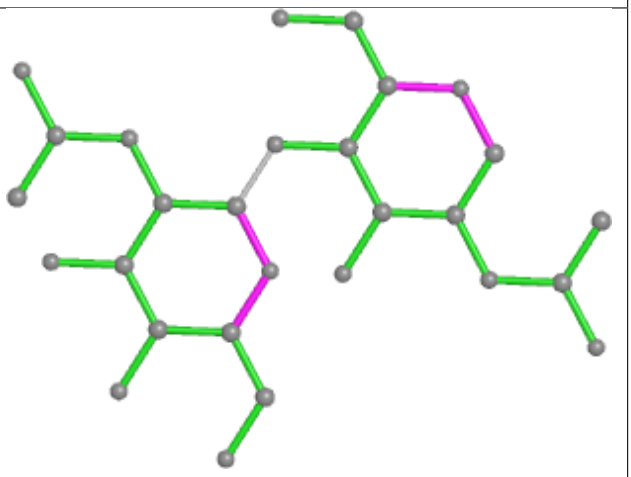


Rings

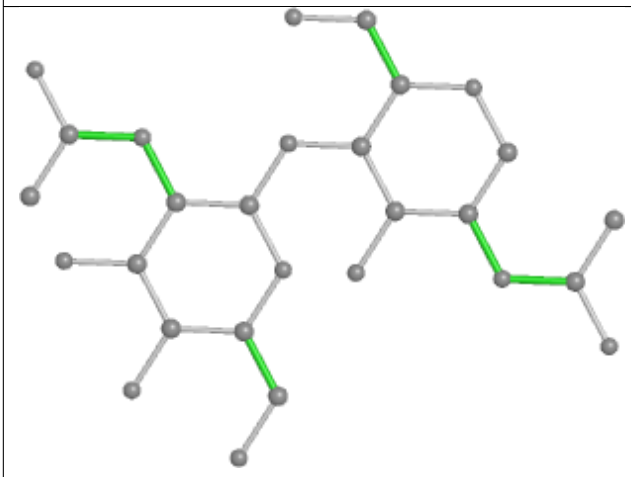
Oligosaccharide Chain Z



Bond lengths



Bond angles



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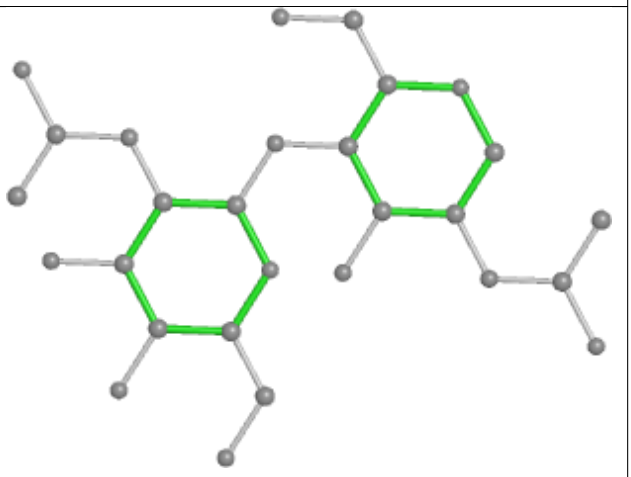
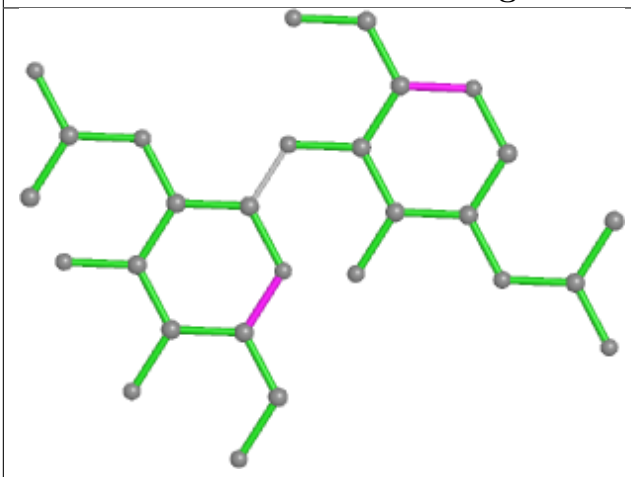


Rings

Oligosaccharide Chain a



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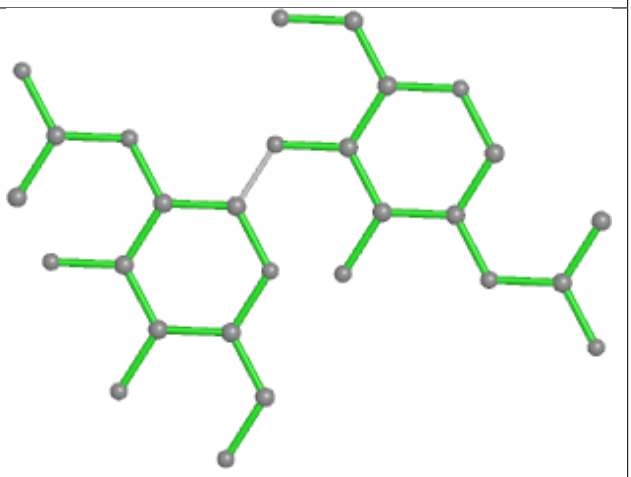
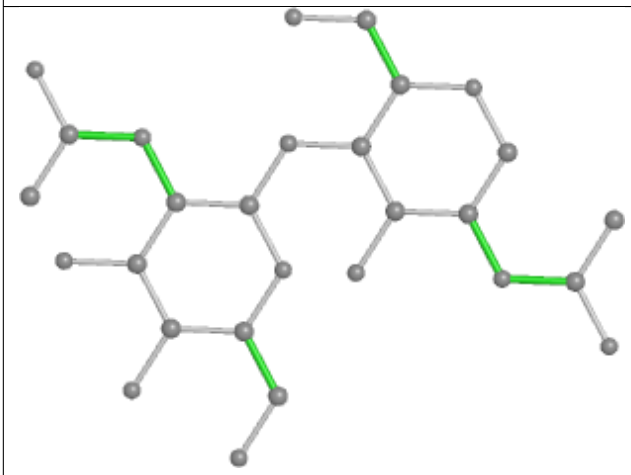


Bond angles



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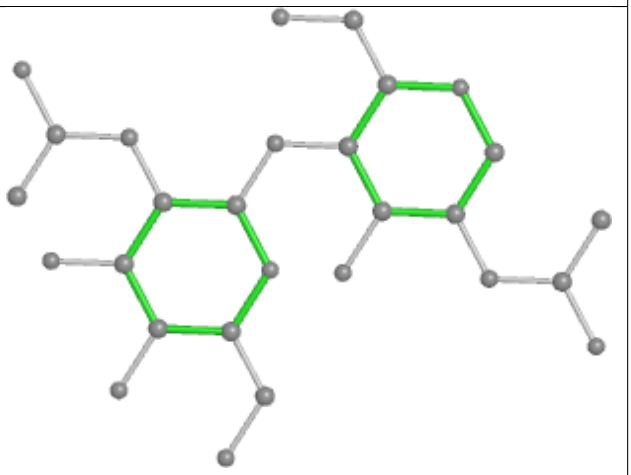
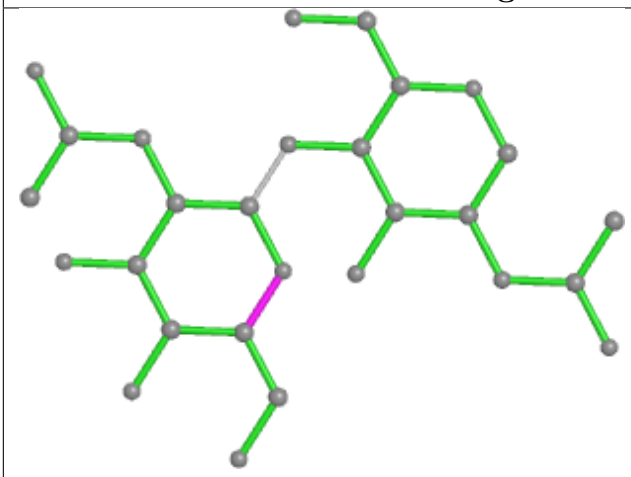


Rings

Oligosaccharide Chain b



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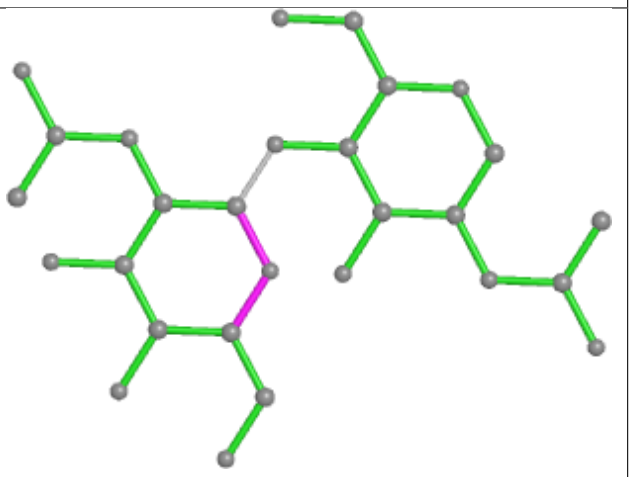
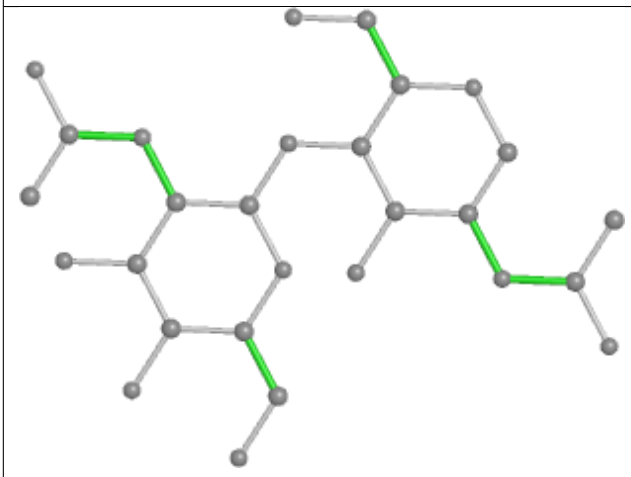


Bond angles



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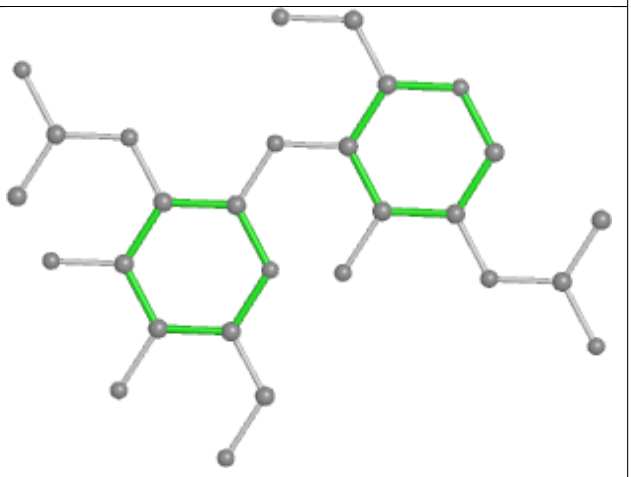
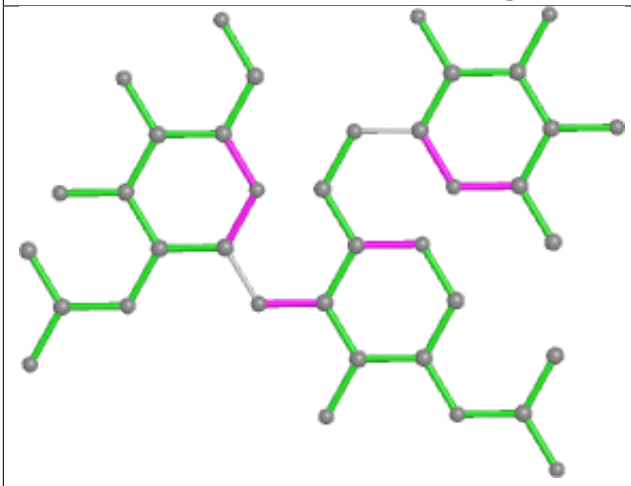


Rings

Oligosaccharide Chain I



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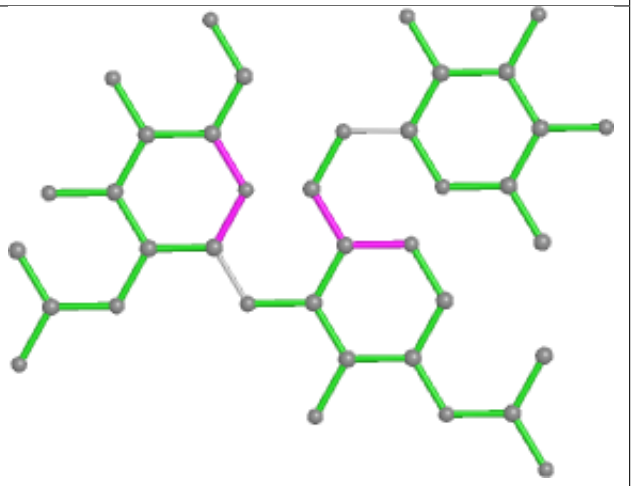
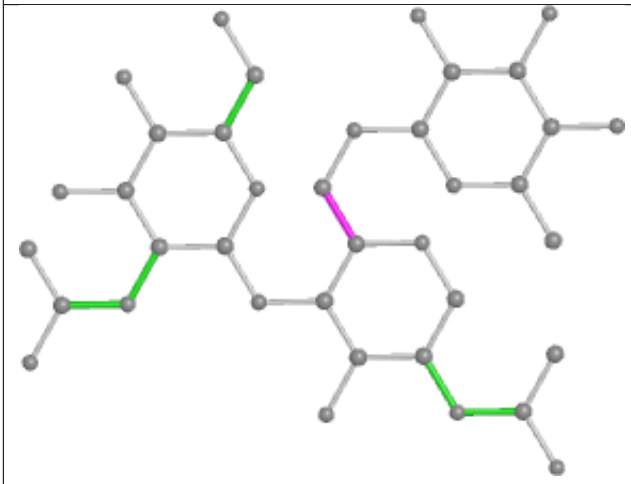
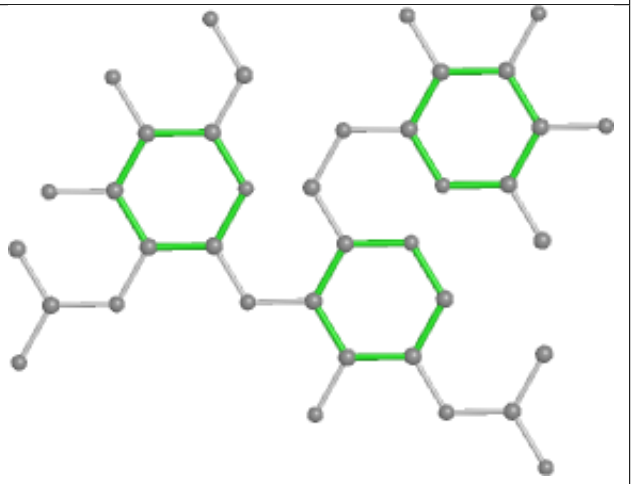


Bond angles

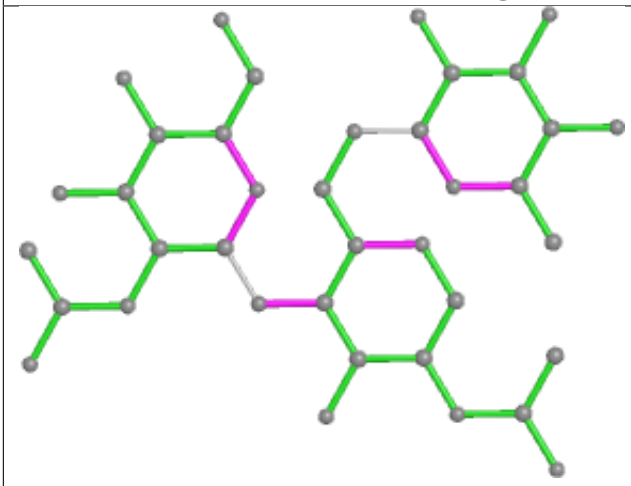


Torsions



Rings

Oligosaccharide Chain R



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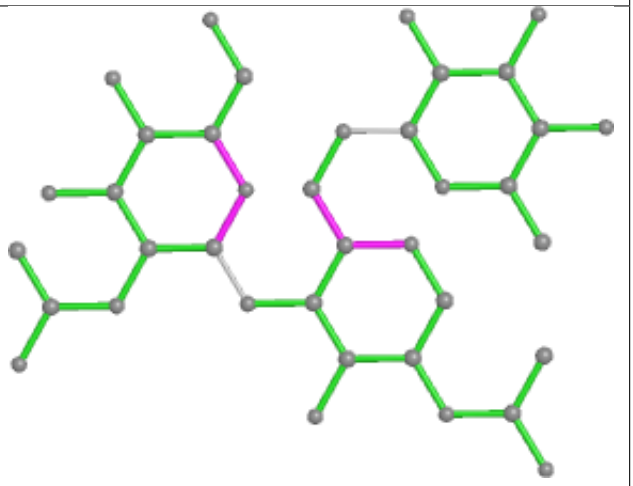
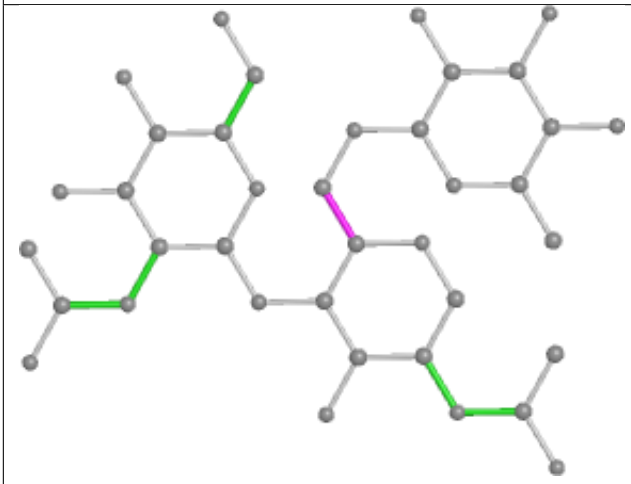


Bond angles



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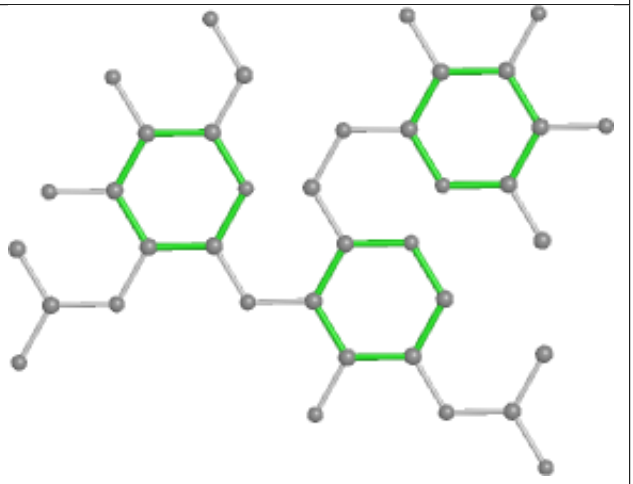
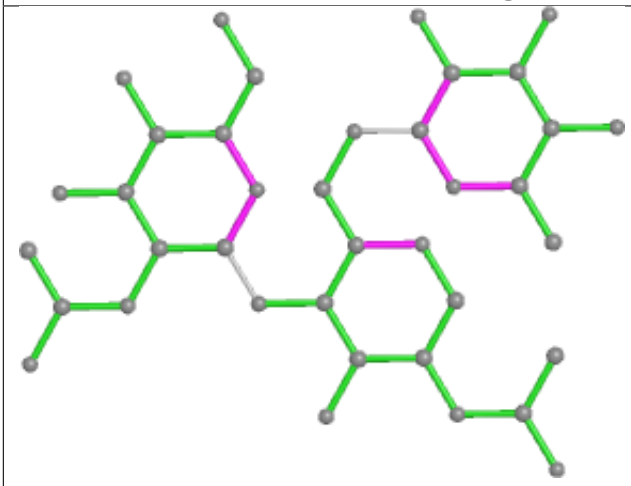


Rings

Oligosaccharide Chain c



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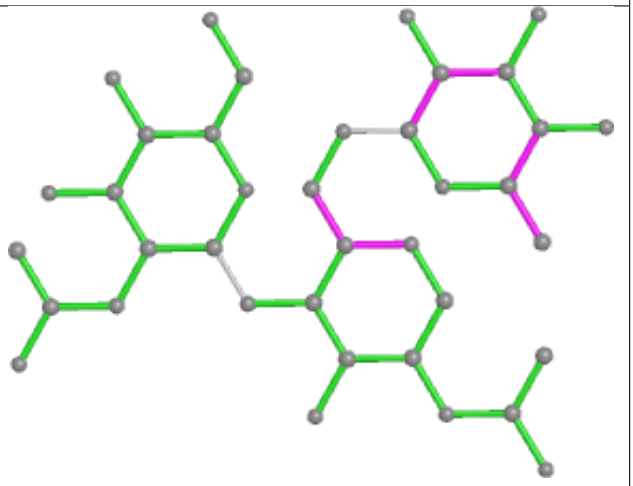
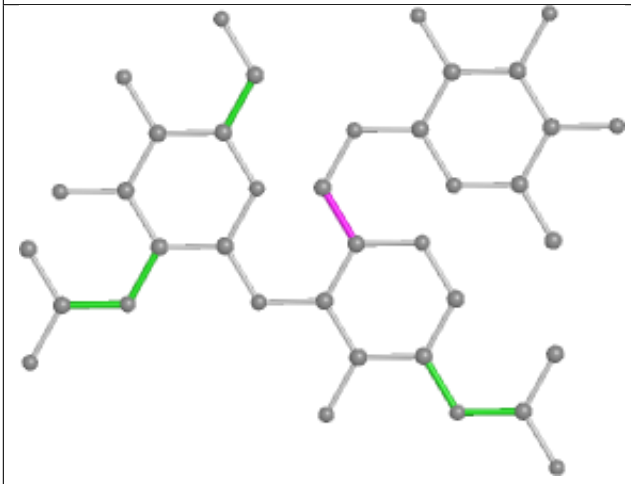


Bond angles



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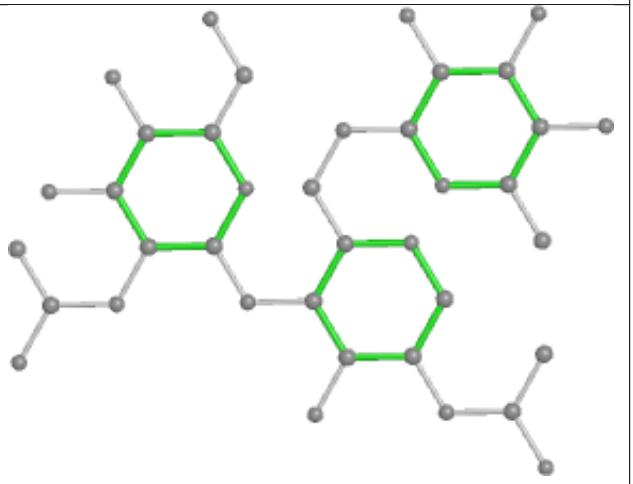
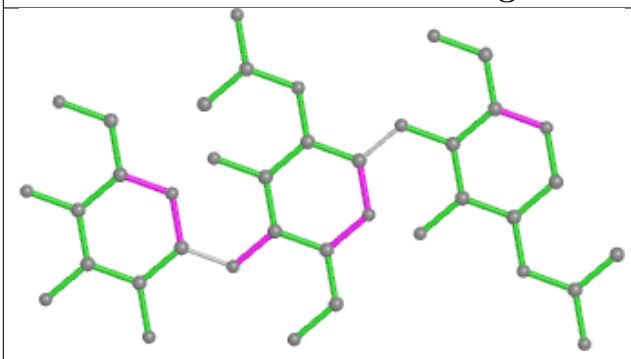


Rings

Oligosaccharide Chain J



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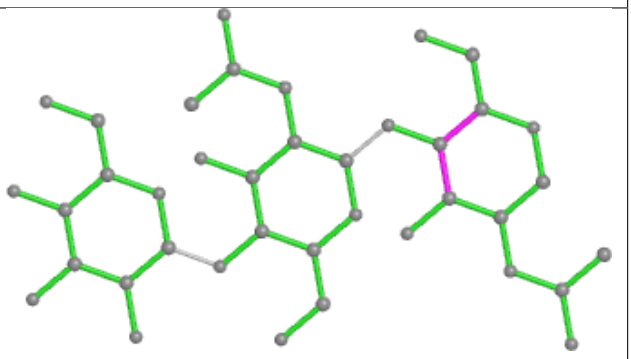
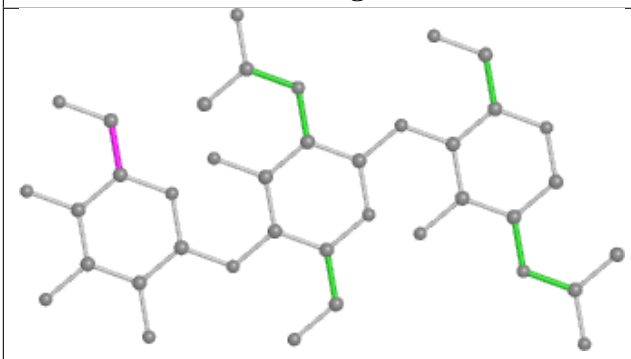


Bond angles



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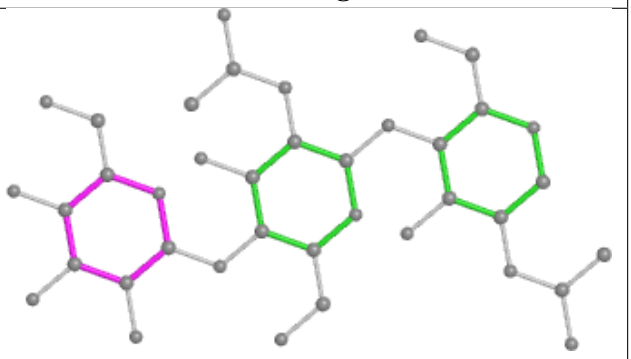
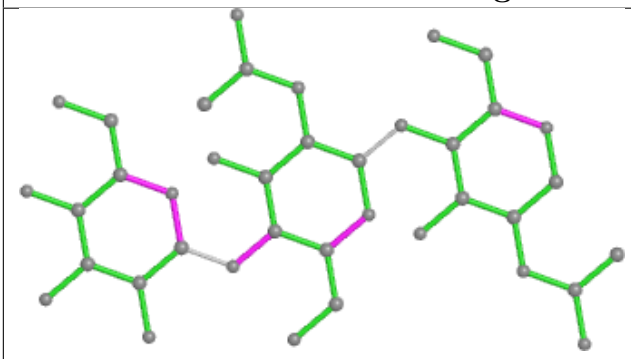
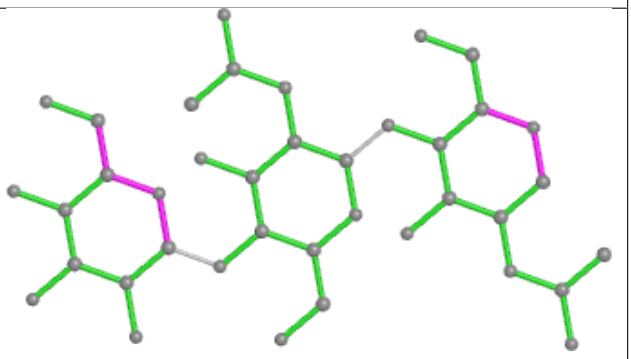


Rings

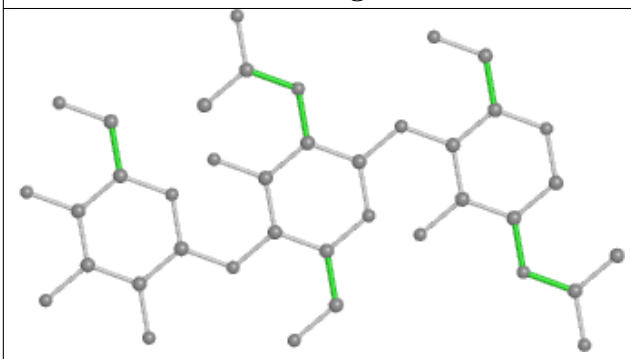
Oligosaccharide Chain K



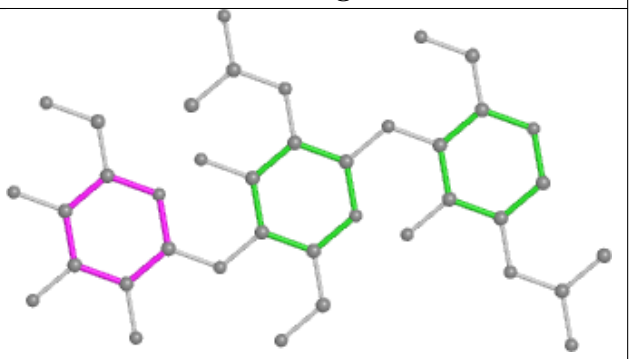
Bond lengths



Bond angles

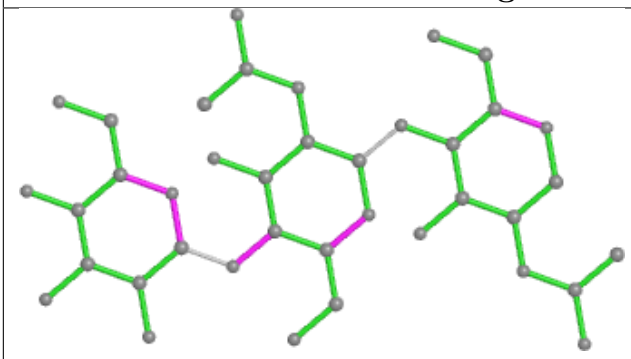


Torsions



Rings

Oligosaccharide Chain S



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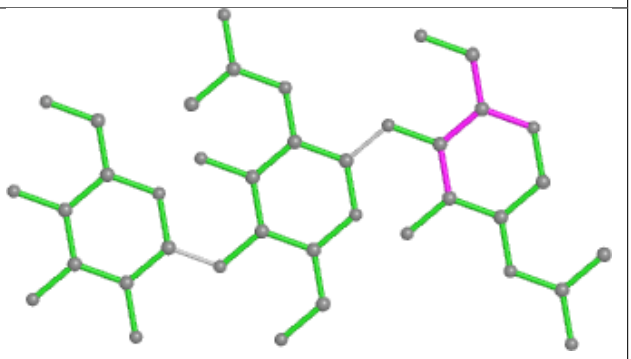
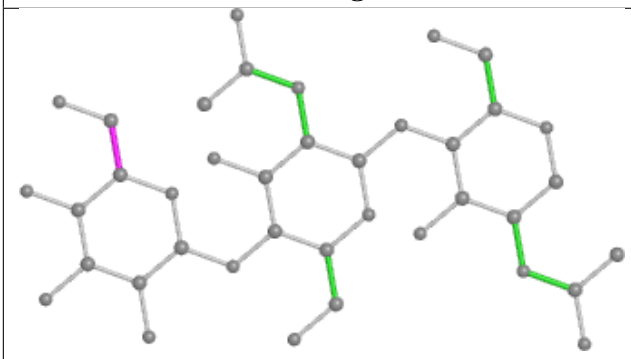
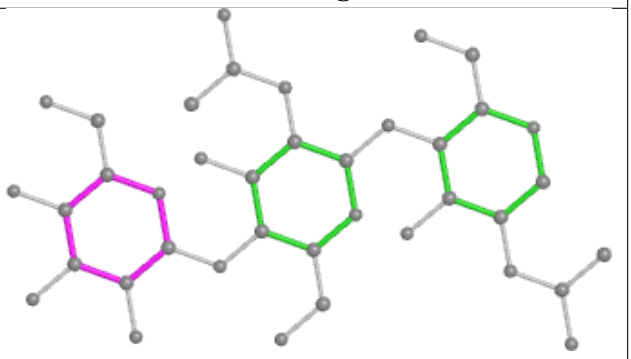


Bond angles

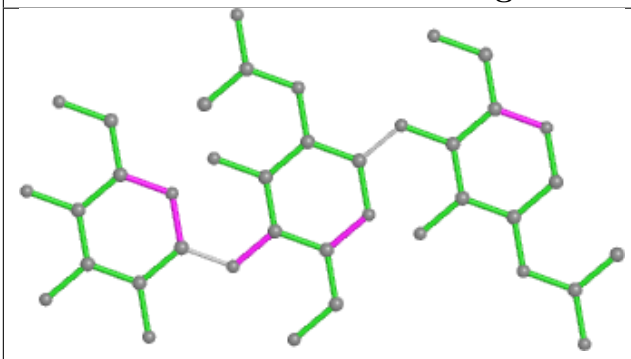


Torsions

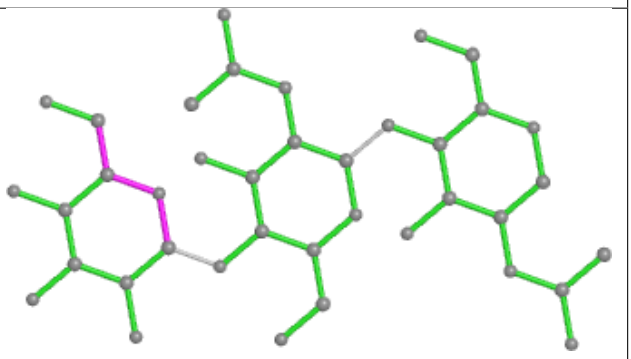


Rings

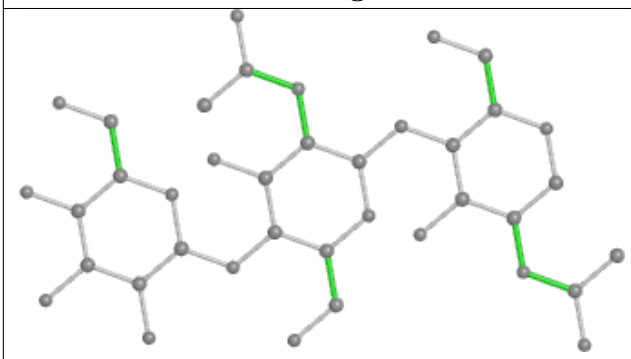
Oligosaccharide Chain T



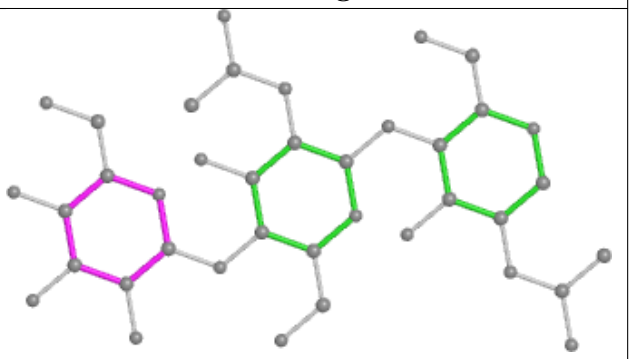
Bond lengths



Bond angles

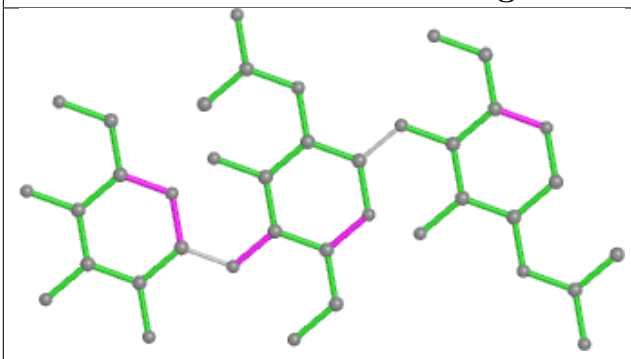


Torsions

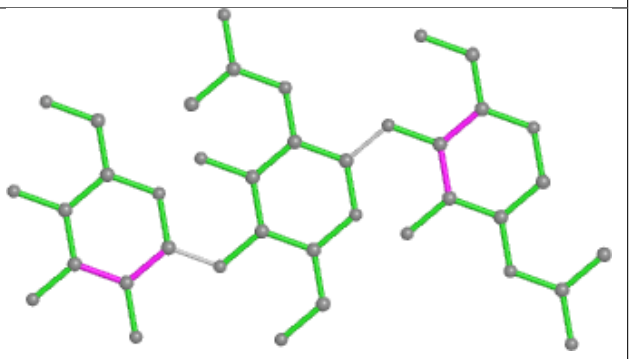


Rings

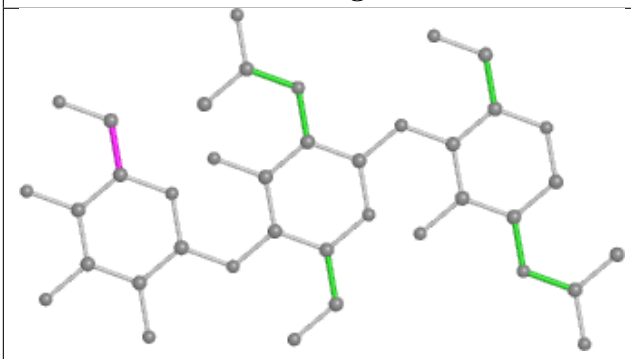
Oligosaccharide Chain d



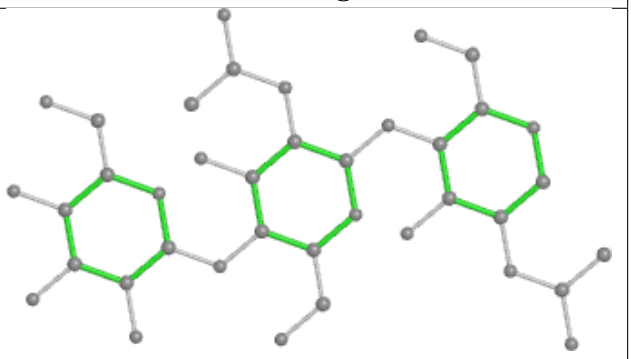
Bond lengths



Bond angles

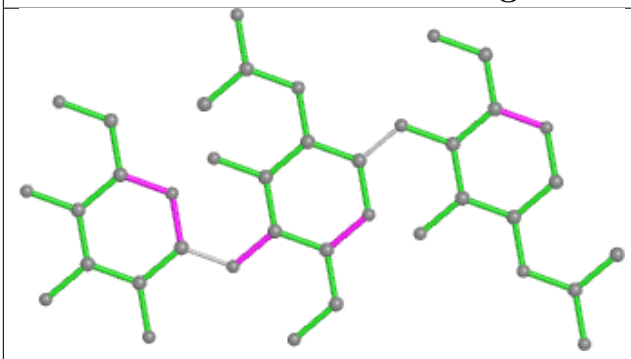


Torsions

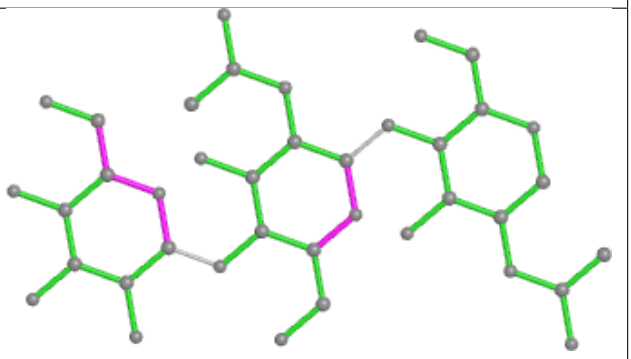


Rings

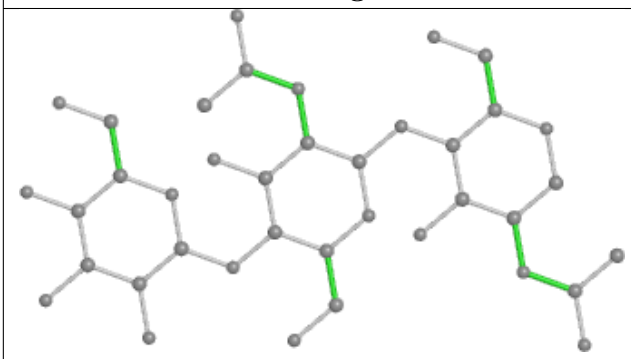
Oligosaccharide Chain e



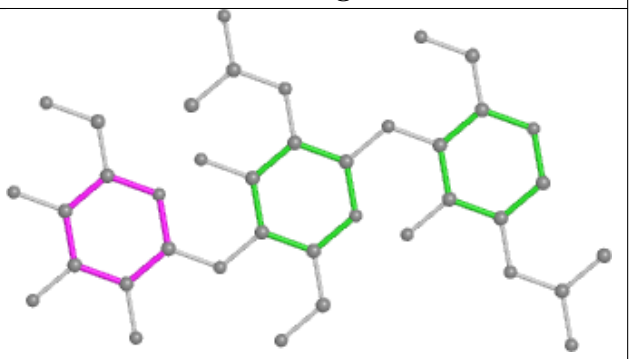
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry (i)

29 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	NAG	C	1404	1	14,14,15	1.26	2 (14%)	17,19,21	1.03	1 (5%)
5	NAG	A	1404	-	14,14,15	0.23	0	17,19,21	0.42	0
5	NAG	C	1405	1	14,14,15	1.31	3 (21%)	17,19,21	0.75	0
5	NAG	B	1409	1	14,14,15	1.16	1 (7%)	17,19,21	0.78	0
5	NAG	B	1404	1	14,14,15	1.37	3 (21%)	17,19,21	0.65	0
5	NAG	A	1408	1	14,14,15	1.31	2 (14%)	17,19,21	0.75	0
5	NAG	B	1406	1	14,14,15	1.23	2 (14%)	17,19,21	0.68	0
5	NAG	B	1410	1	14,14,15	1.34	3 (21%)	17,19,21	0.72	0
5	NAG	C	1401	1	14,14,15	1.17	1 (7%)	17,19,21	0.65	0
5	NAG	A	1405	1	14,14,15	1.24	1 (7%)	17,19,21	0.62	0
5	NAG	A	1406	1	14,14,15	1.28	2 (14%)	17,19,21	0.84	0
5	NAG	B	1401	1	14,14,15	1.27	2 (14%)	17,19,21	0.79	0
5	NAG	B	1408	1	14,14,15	1.28	1 (7%)	17,19,21	0.83	1 (5%)
5	NAG	A	1410	1	14,14,15	1.18	1 (7%)	17,19,21	0.70	0
5	NAG	A	1411	-	14,14,15	0.22	0	17,19,21	0.38	0
5	NAG	C	1402	1	14,14,15	1.26	3 (21%)	17,19,21	0.81	0
5	NAG	B	1402	1	14,14,15	1.22	2 (14%)	17,19,21	0.89	1 (5%)
5	NAG	A	1409	-	14,14,15	0.24	0	17,19,21	0.41	0
5	NAG	A	1401	1	14,14,15	1.19	2 (14%)	17,19,21	1.14	1 (5%)
5	NAG	B	1405	1	14,14,15	1.24	1 (7%)	17,19,21	0.82	0
5	NAG	C	1407	1	14,14,15	1.17	1 (7%)	17,19,21	0.84	1 (5%)
5	NAG	C	1408	1	14,14,15	1.34	3 (21%)	17,19,21	0.89	1 (5%)
5	NAG	B	1407	1	14,14,15	1.31	1 (7%)	17,19,21	0.81	0
5	NAG	A	1407	1	14,14,15	1.33	2 (14%)	17,19,21	1.14	1 (5%)
5	NAG	A	1403	1	14,14,15	1.26	2 (14%)	17,19,21	0.79	0
5	NAG	C	1406	1	14,14,15	1.26	2 (14%)	17,19,21	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	NAG	A	1402	1	14,14,15	1.26	1 (7%)	17,19,21	1.10	1 (5%)
5	NAG	C	1403	1	14,14,15	1.19	1 (7%)	17,19,21	0.92	1 (5%)
5	NAG	B	1403	1	14,14,15	1.26	2 (14%)	17,19,21	0.87	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	C	1404	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1404	-	-	0/6/23/26	0/1/1/1
5	NAG	C	1405	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1409	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1404	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1408	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1406	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1410	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1401	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1405	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1406	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1401	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1408	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1410	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1411	-	-	0/6/23/26	0/1/1/1
5	NAG	C	1402	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1402	1	-	1/6/23/26	0/1/1/1
5	NAG	A	1409	-	-	2/6/23/26	0/1/1/1
5	NAG	A	1401	1	-	1/6/23/26	0/1/1/1
5	NAG	B	1405	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1407	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1408	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1407	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1407	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1403	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1406	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1402	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1403	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1403	1	-	0/6/23/26	0/1/1/1

All (47) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1407	NAG	O5-C5	3.07	1.49	1.43
5	C	1408	NAG	O5-C5	2.95	1.49	1.43
5	A	1402	NAG	O5-C5	2.92	1.49	1.43
5	A	1405	NAG	O5-C5	2.89	1.49	1.43
5	C	1406	NAG	O5-C5	2.86	1.49	1.43
5	B	1404	NAG	O5-C5	2.85	1.49	1.43
5	B	1407	NAG	O5-C5	2.85	1.49	1.43
5	B	1408	NAG	O5-C5	2.85	1.49	1.43
5	A	1406	NAG	O5-C5	2.82	1.49	1.43
5	C	1407	NAG	O5-C5	2.75	1.49	1.43
5	B	1410	NAG	O5-C5	2.74	1.49	1.43
5	B	1401	NAG	O5-C5	2.71	1.48	1.43
5	C	1404	NAG	O5-C5	2.70	1.48	1.43
5	C	1405	NAG	O5-C5	2.65	1.48	1.43
5	A	1410	NAG	O5-C5	2.60	1.48	1.43
5	A	1408	NAG	O5-C5	2.57	1.48	1.43
5	A	1403	NAG	O5-C5	2.56	1.48	1.43
5	B	1403	NAG	O5-C5	2.51	1.48	1.43
5	B	1405	NAG	O5-C5	2.50	1.48	1.43
5	B	1406	NAG	O5-C5	2.50	1.48	1.43
5	C	1403	NAG	O5-C5	2.48	1.48	1.43
5	C	1401	NAG	O5-C5	2.47	1.48	1.43
5	B	1402	NAG	O5-C5	2.46	1.48	1.43
5	C	1402	NAG	O5-C5	2.45	1.48	1.43
5	A	1401	NAG	C1-C2	2.42	1.55	1.52
5	B	1410	NAG	O5-C1	2.36	1.47	1.43
5	B	1409	NAG	O5-C5	2.29	1.48	1.43
5	B	1404	NAG	C1-C2	2.26	1.55	1.52
5	A	1401	NAG	O5-C5	2.20	1.47	1.43
5	A	1403	NAG	O5-C1	2.19	1.47	1.43
5	A	1407	NAG	O5-C1	2.19	1.47	1.43
5	B	1401	NAG	C1-C2	2.17	1.55	1.52
5	B	1410	NAG	C1-C2	2.17	1.55	1.52
5	A	1406	NAG	O5-C1	2.17	1.47	1.43
5	C	1402	NAG	O5-C1	2.16	1.47	1.43
5	A	1408	NAG	C1-C2	2.14	1.55	1.52
5	B	1406	NAG	C1-C2	2.14	1.55	1.52
5	C	1408	NAG	O5-C1	2.14	1.47	1.43
5	B	1403	NAG	C1-C2	2.08	1.55	1.52
5	B	1404	NAG	O5-C1	2.07	1.47	1.43
5	C	1408	NAG	C1-C2	2.05	1.55	1.52
5	C	1404	NAG	O5-C1	2.04	1.47	1.43
5	B	1402	NAG	C1-C2	2.03	1.55	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	1405	NAG	O5-C1	2.02	1.46	1.43
5	C	1402	NAG	C1-C2	2.02	1.55	1.52
5	C	1405	NAG	C1-C2	2.01	1.55	1.52
5	C	1406	NAG	O5-C1	2.00	1.46	1.43

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	1407	NAG	C1-O5-C5	3.35	116.73	112.19
5	A	1402	NAG	C1-O5-C5	3.01	116.27	112.19
5	C	1404	NAG	C1-O5-C5	2.97	116.21	112.19
5	B	1402	NAG	C1-O5-C5	2.79	115.97	112.19
5	A	1401	NAG	C1-O5-C5	2.73	115.90	112.19
5	C	1407	NAG	C1-O5-C5	2.61	115.73	112.19
5	B	1408	NAG	C1-O5-C5	2.13	115.08	112.19
5	C	1403	NAG	C1-O5-C5	2.11	115.05	112.19
5	C	1408	NAG	C1-O5-C5	2.06	114.98	112.19

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1409	NAG	O5-C5-C6-O6
5	A	1409	NAG	C4-C5-C6-O6
5	B	1402	NAG	O5-C5-C6-O6
5	A	1401	NAG	C1-C2-N2-C7

There are no ring outliers.

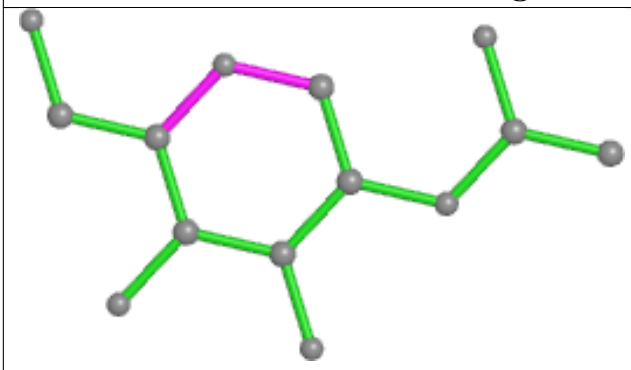
3 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1404	NAG	4	0
5	A	1411	NAG	3	0
5	A	1409	NAG	3	0

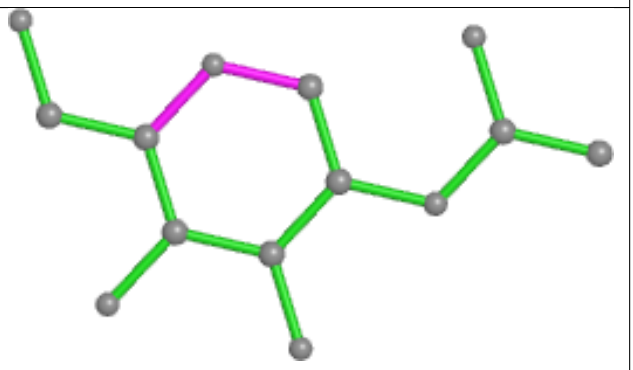
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be

highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

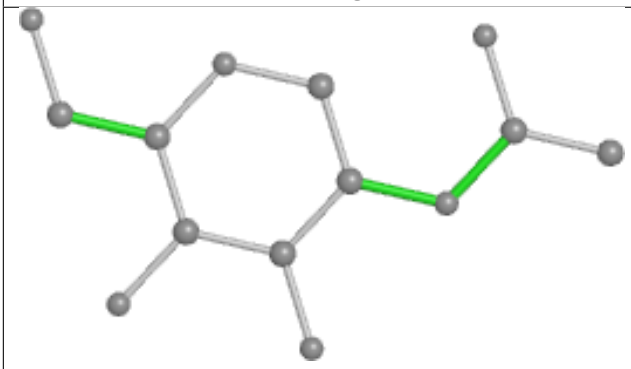
Ligand NAG C 1404



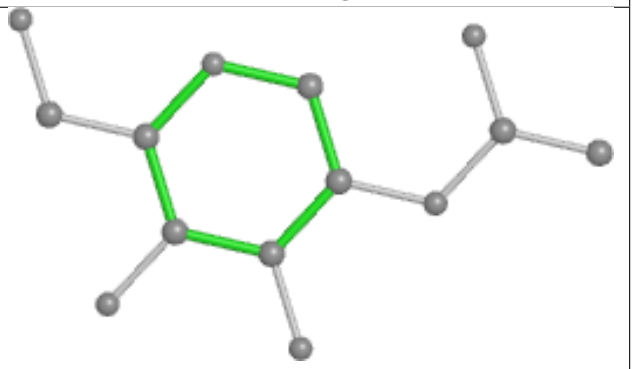
Bond lengths



Bond angles

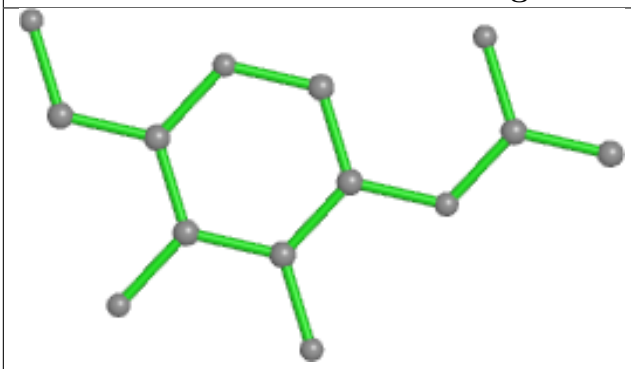


Torsions

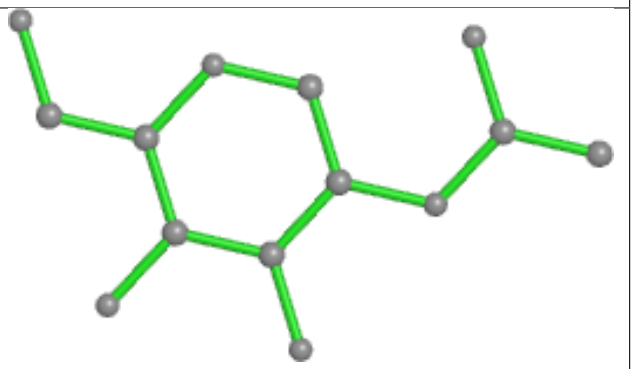


Rings

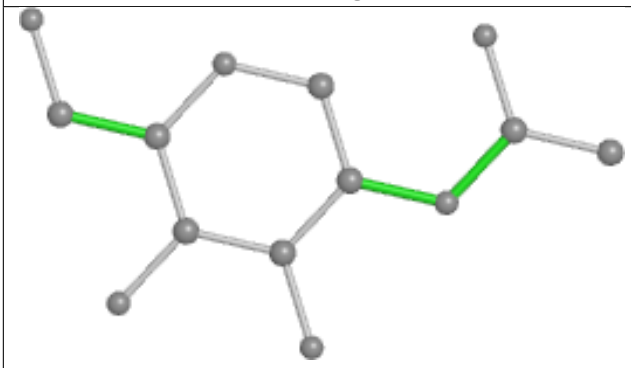
Ligand NAG A 1404



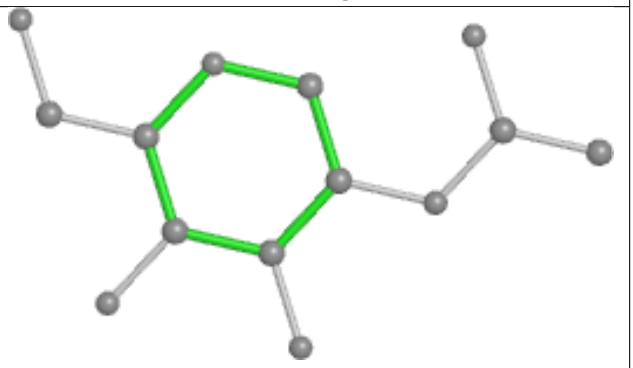
Bond lengths



Bond angles

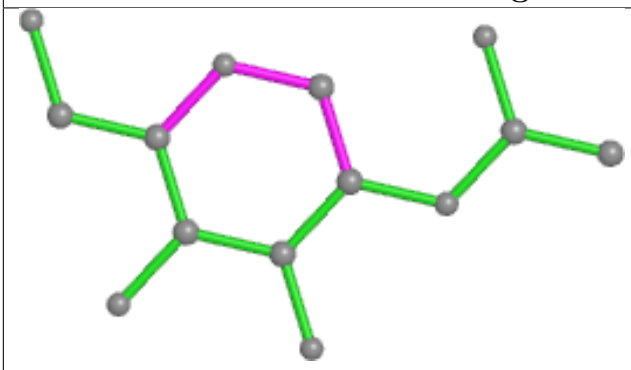


Torsions

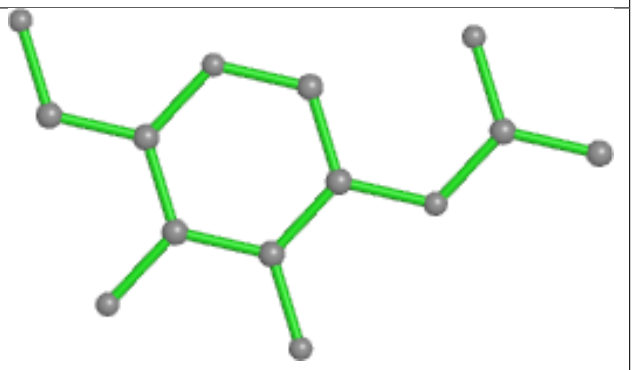


Rings

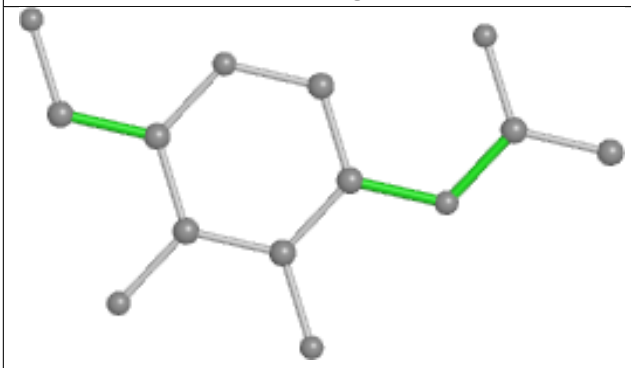
Ligand NAG C 1405



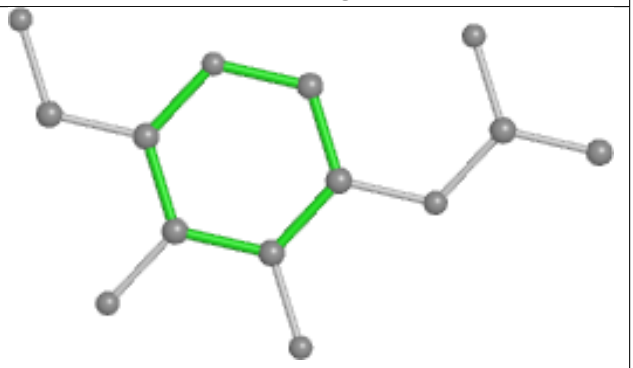
Bond lengths



Bond angles

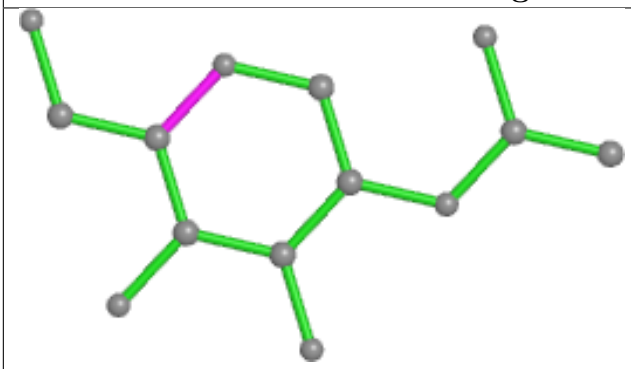


Torsions

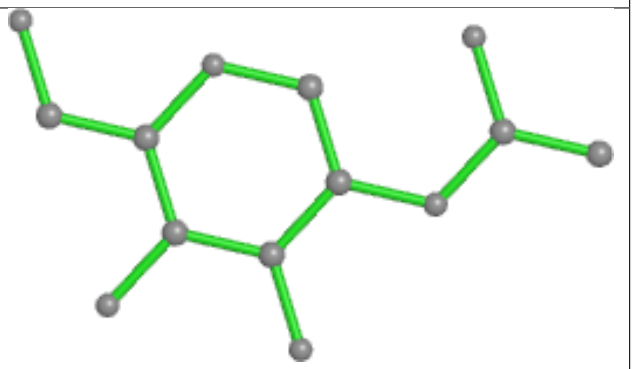


Rings

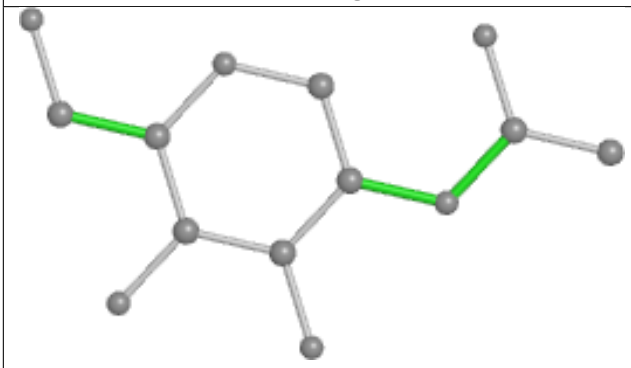
Ligand NAG B 1409



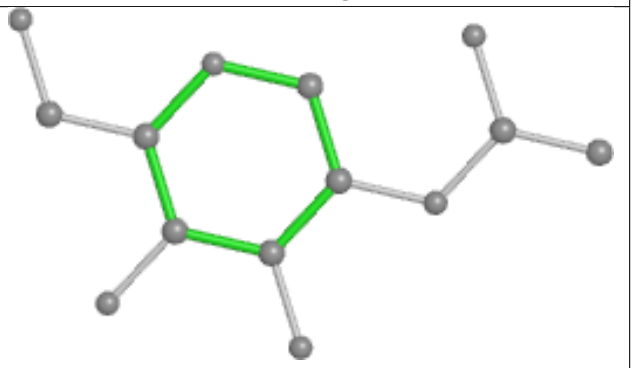
Bond lengths



Bond angles

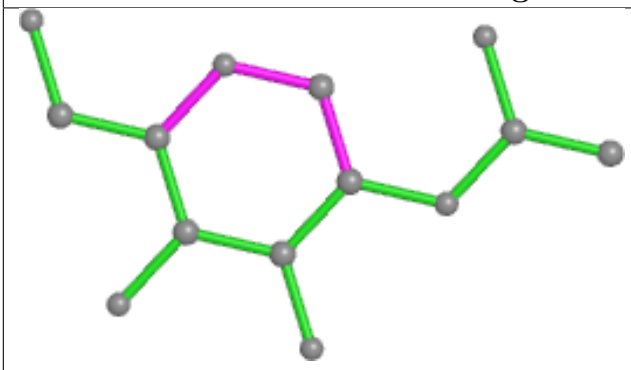


Torsions

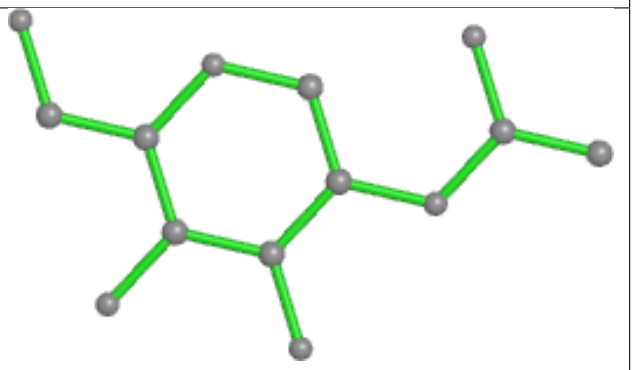


Rings

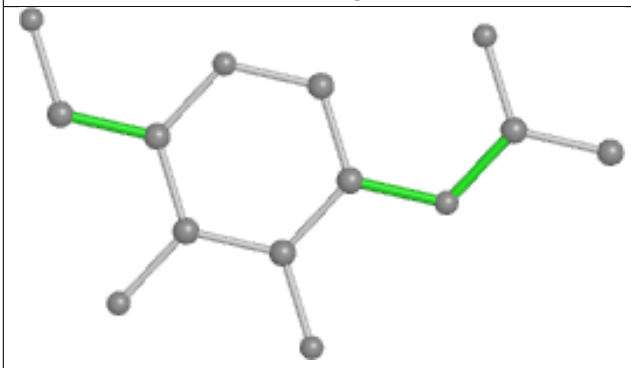
Ligand NAG B 1404



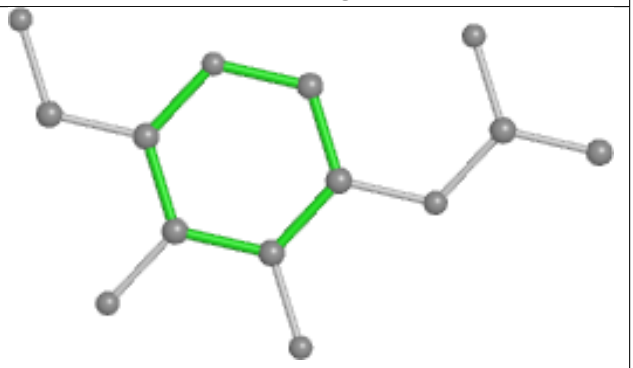
Bond lengths



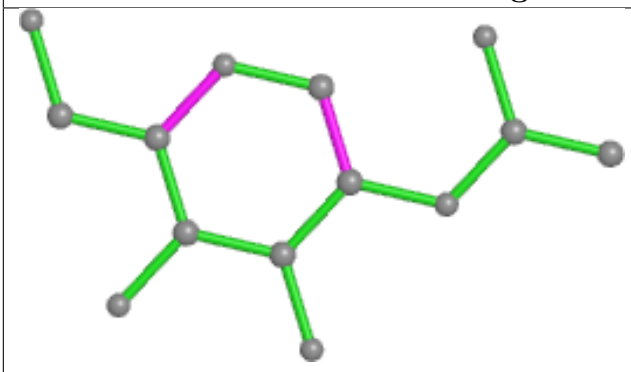
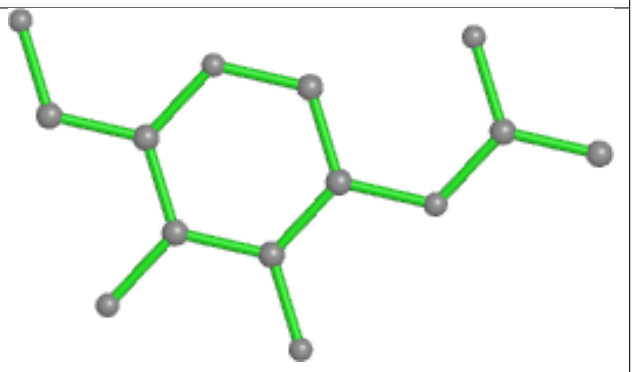
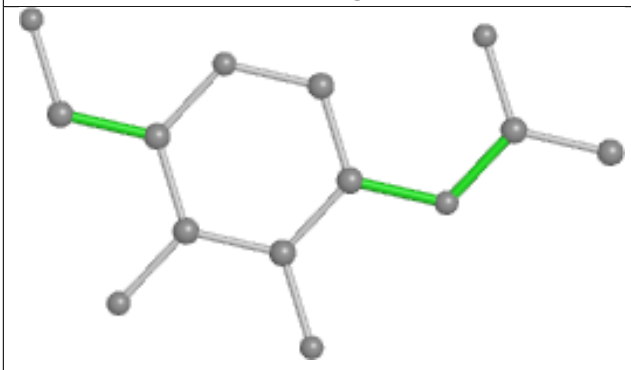
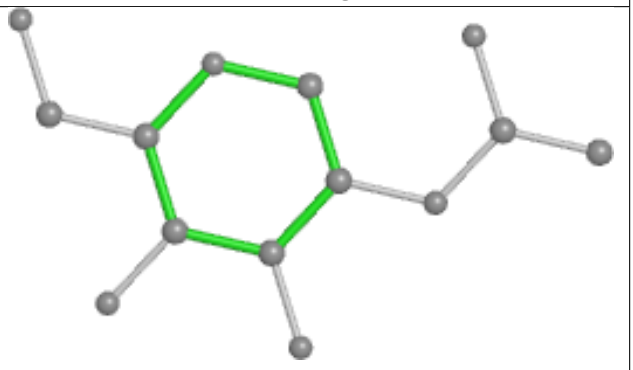
Bond angles

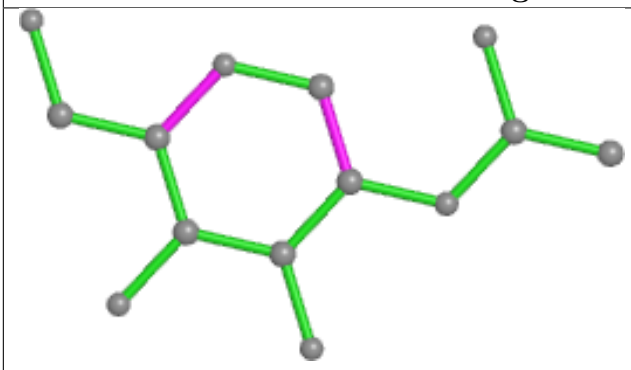
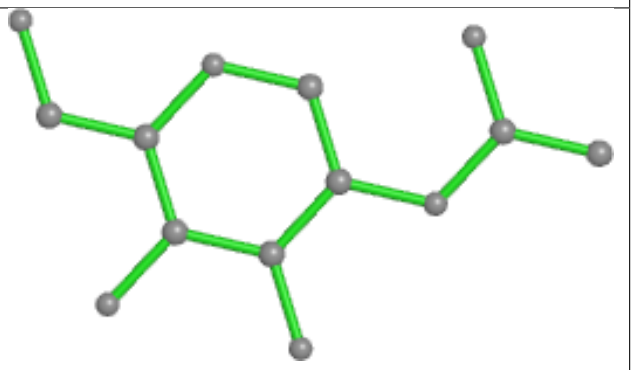
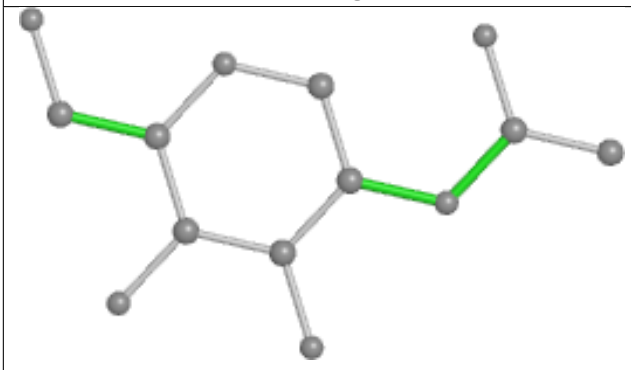
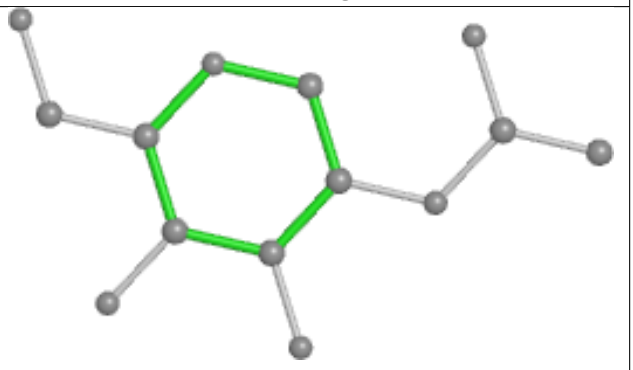


Torsions

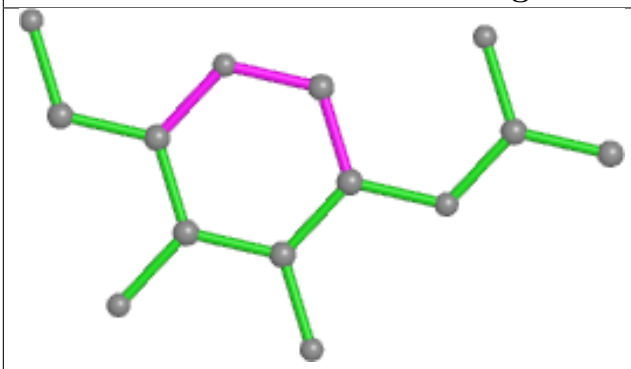


Rings

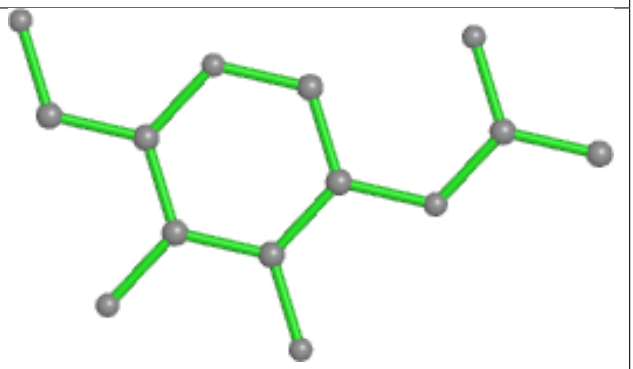
Ligand NAG A 1408	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG B 1406	
 Bond lengths	 Bond angles
 Torsions	 Rings

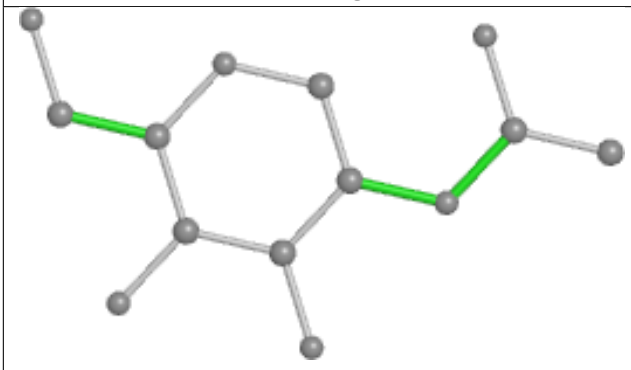
Ligand NAG B 1410



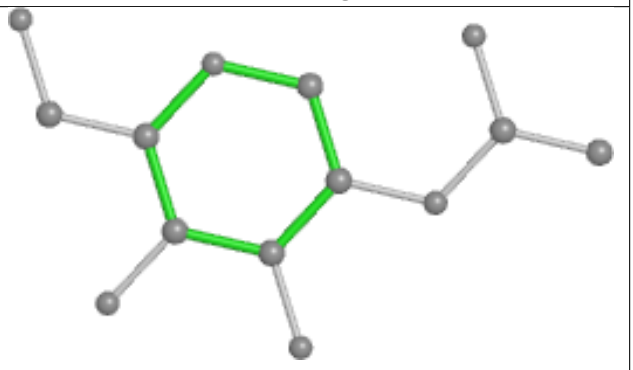
Bond lengths



Bond angles

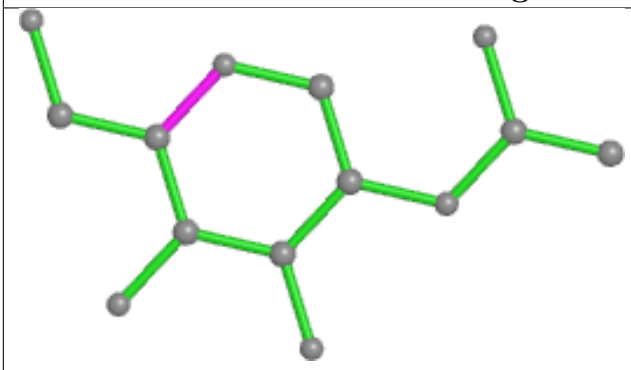


Torsions



Rings

Ligand NAG C 1401



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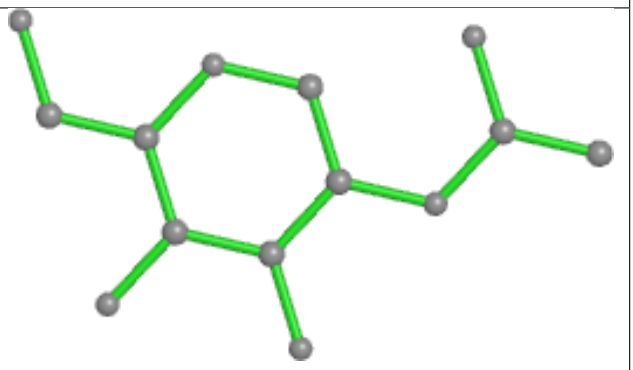
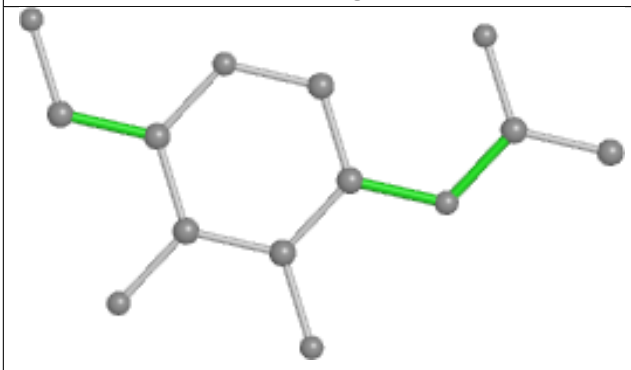
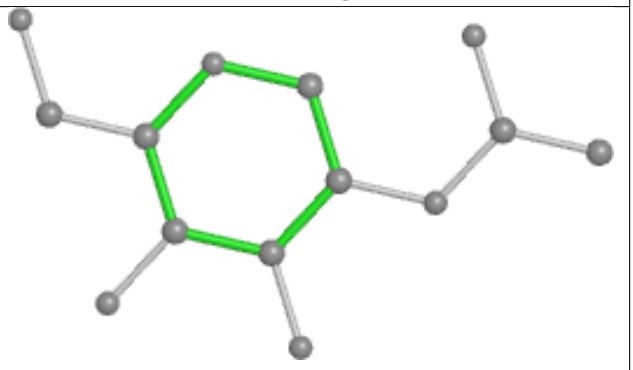


Bond angles

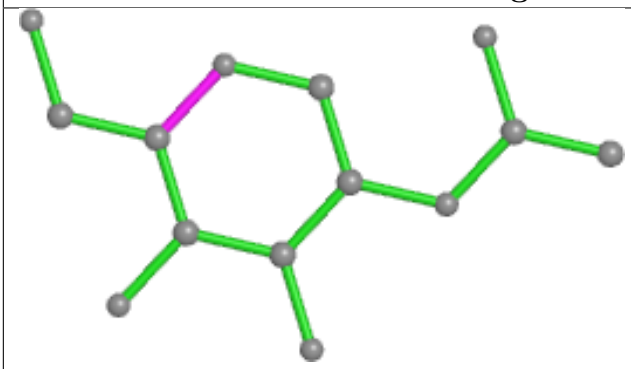


Torsions

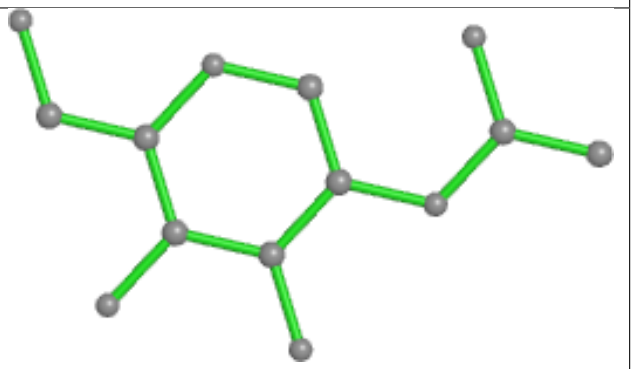


Rings

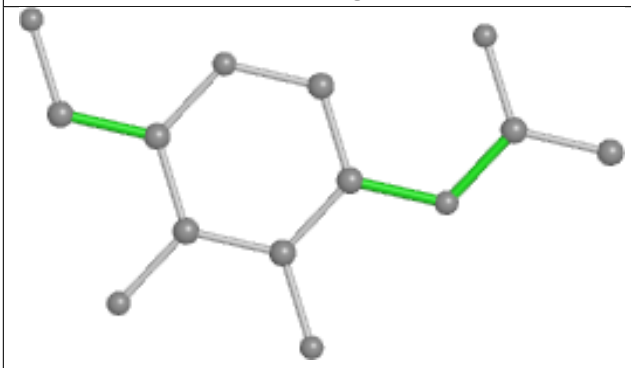
Ligand NAG A 1405



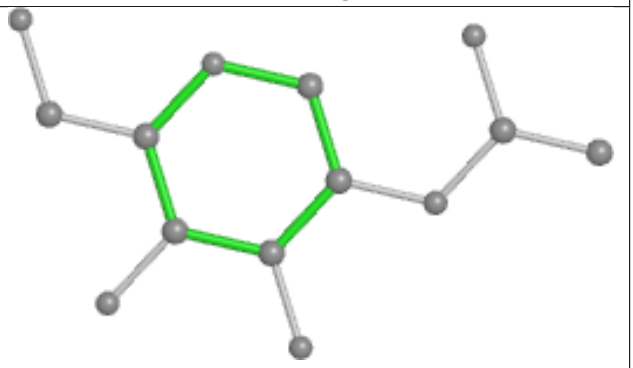
Bond lengths



Bond angles

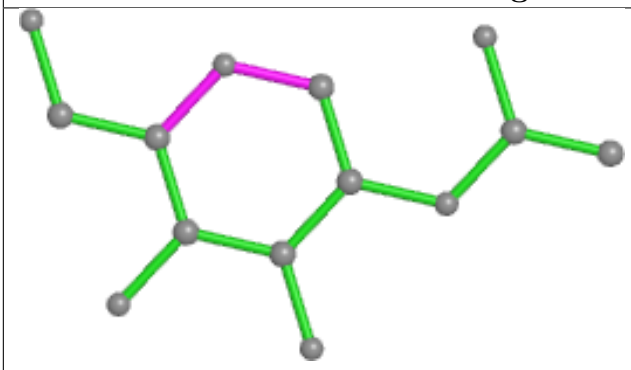


Torsions

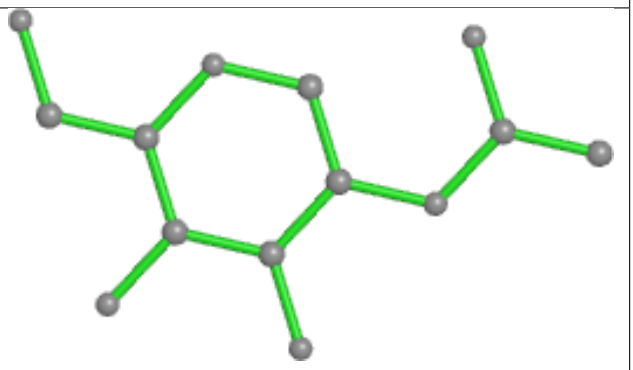


Rings

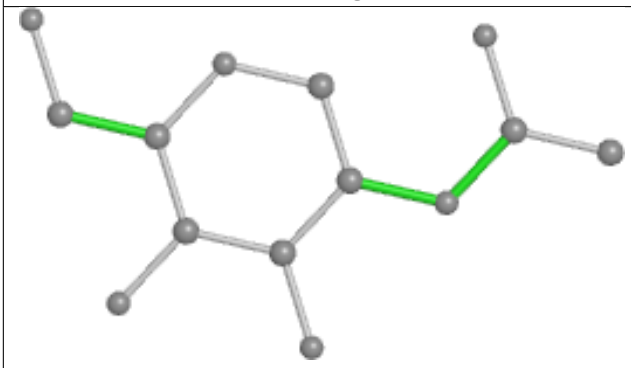
Ligand NAG A 1406



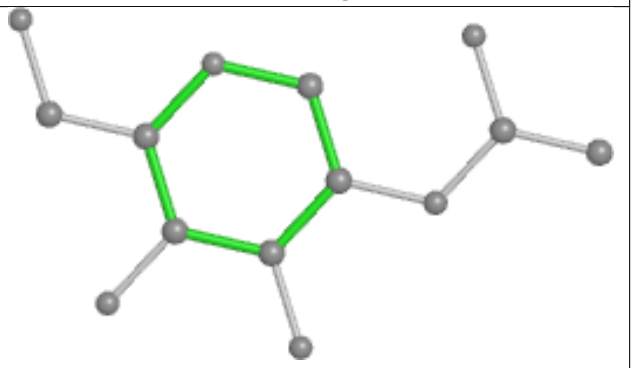
Bond lengths



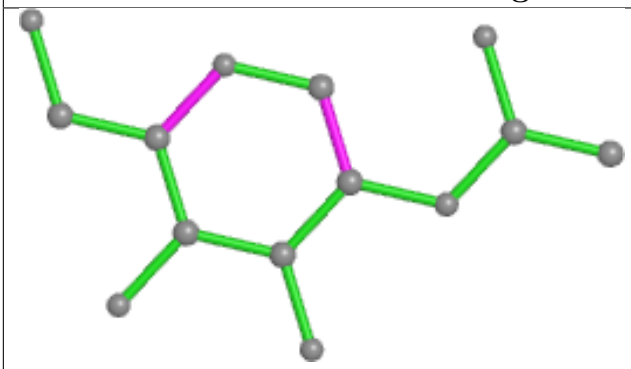
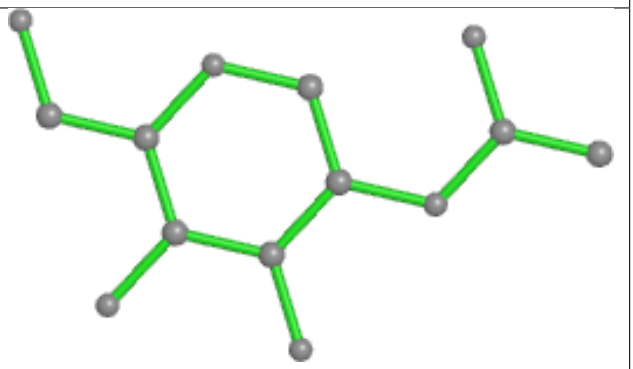
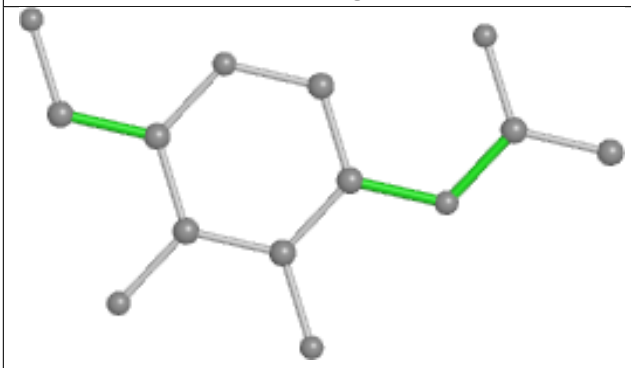
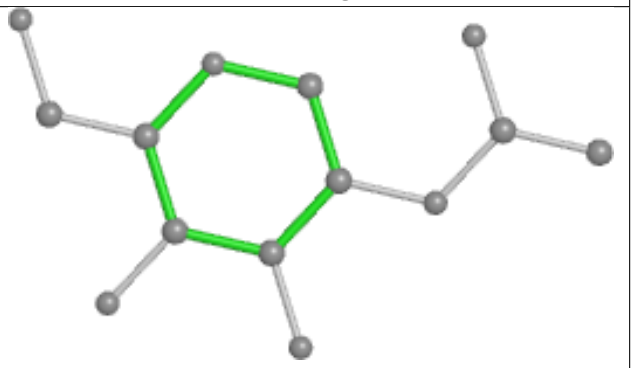
Bond angles

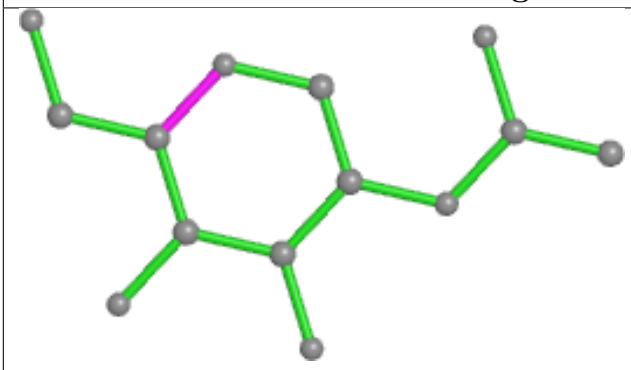
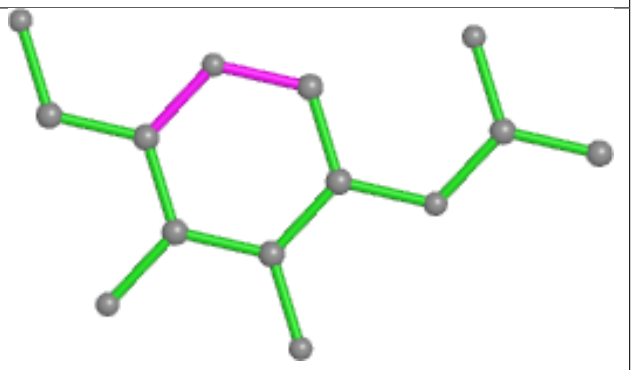
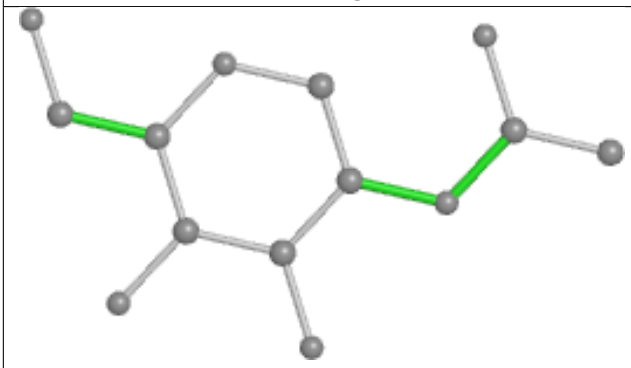
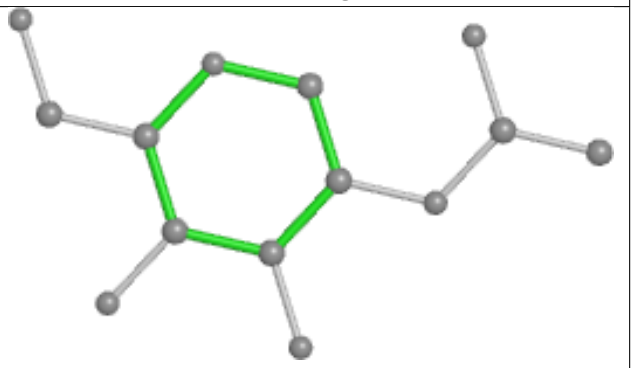


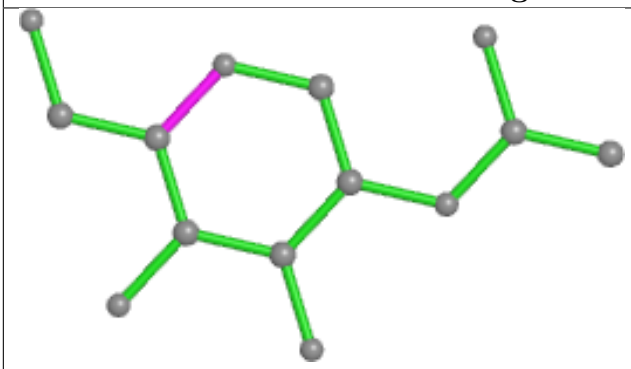
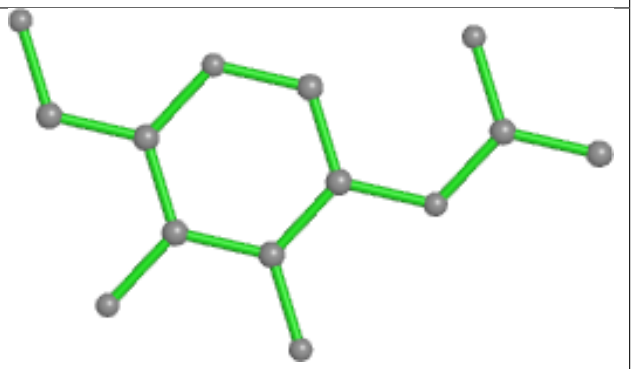
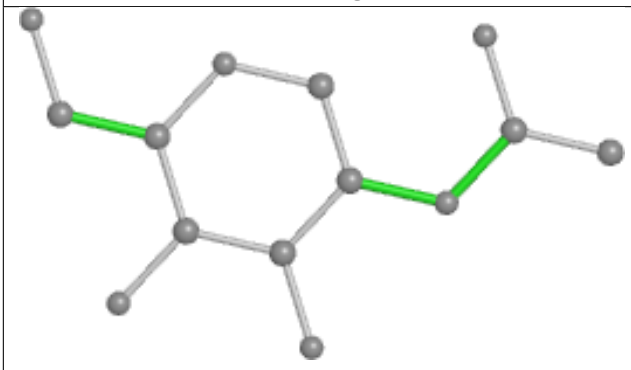
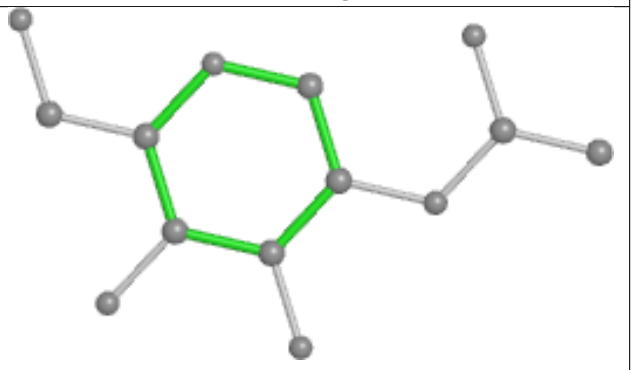
Torsions

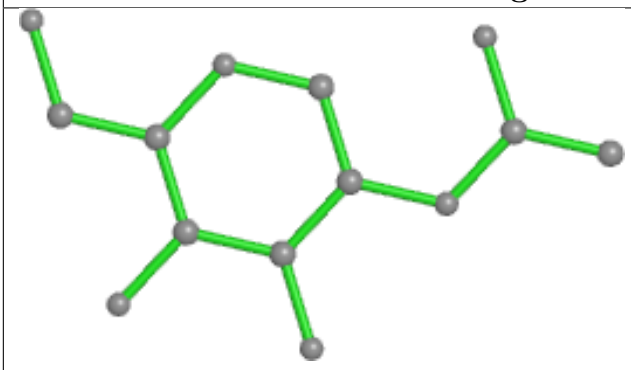
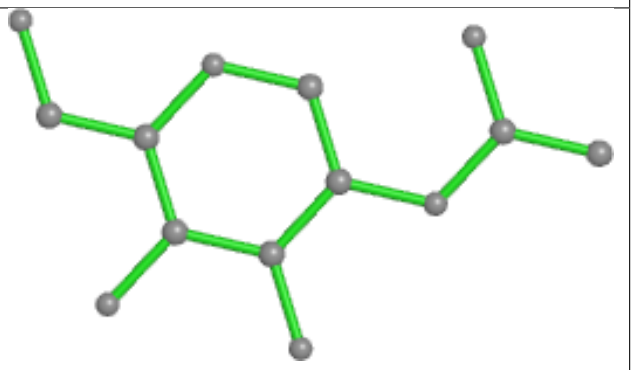
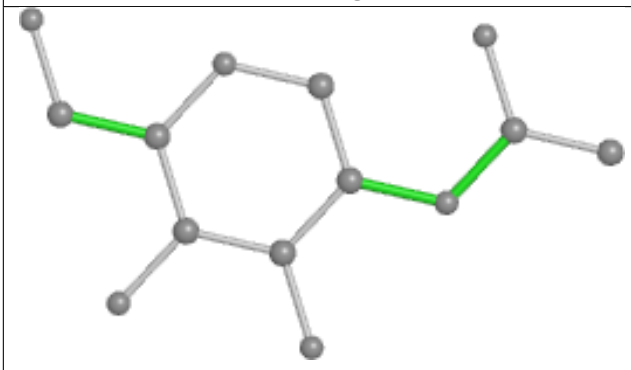
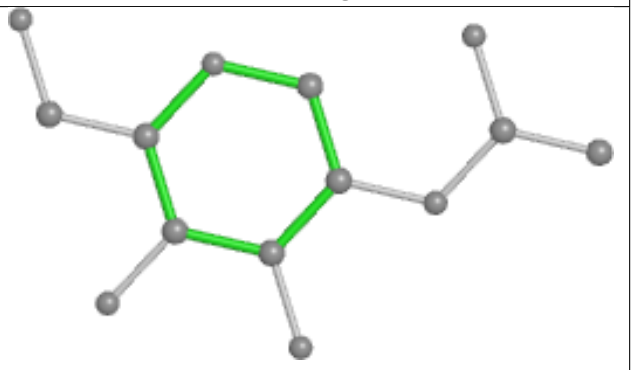


Rings

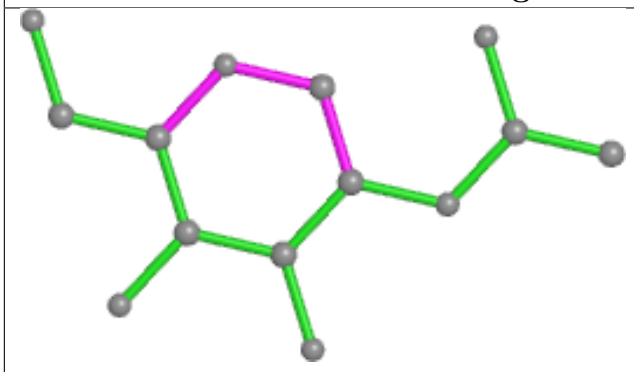
Ligand NAG B 1401	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG B 1408	
 Bond lengths	 Bond angles
 Torsions	 Rings

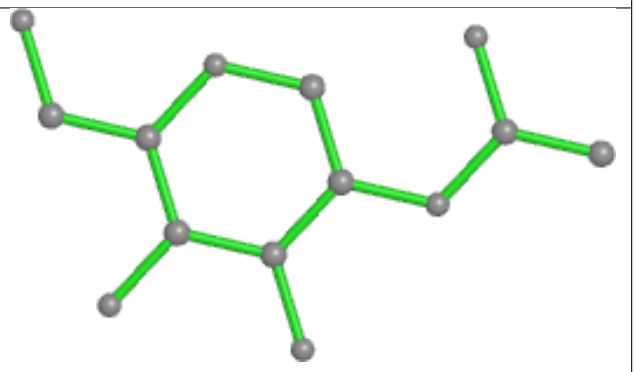
Ligand NAG A 1410	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG A 1411	
 Bond lengths	 Bond angles
 Torsions	 Rings

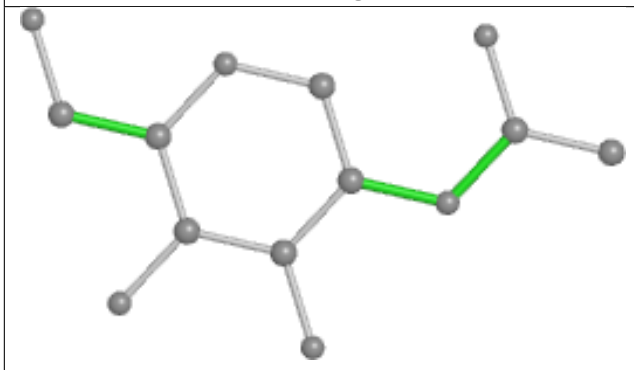
Ligand NAG C 1402



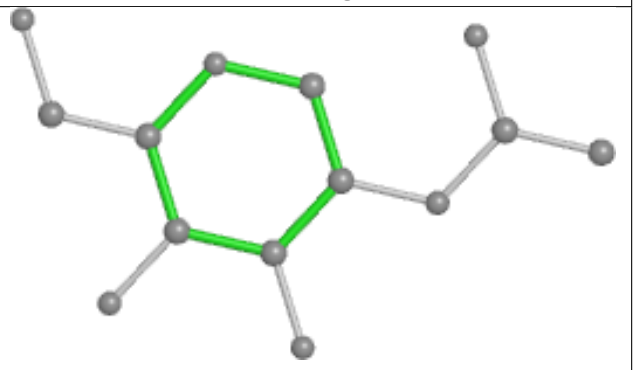
Bond lengths



Bond angles

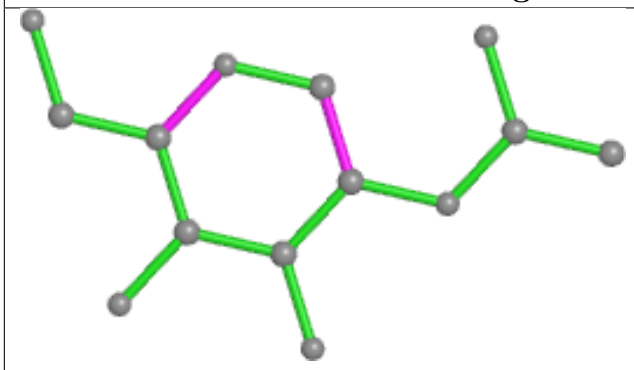


Torsions

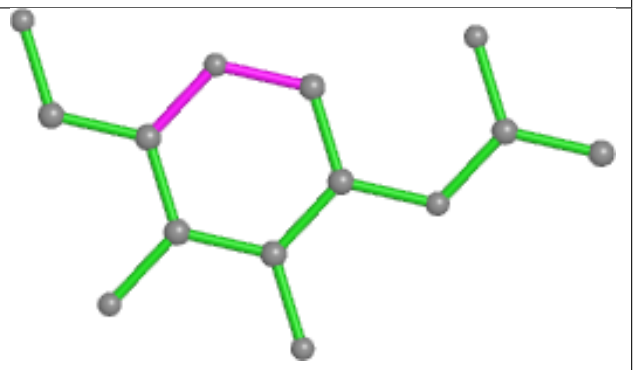


Rings

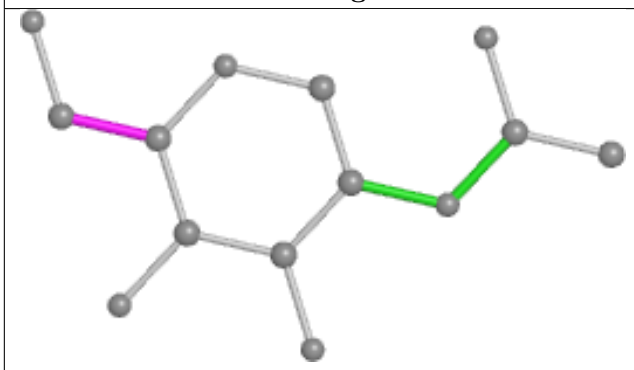
Ligand NAG B 1402



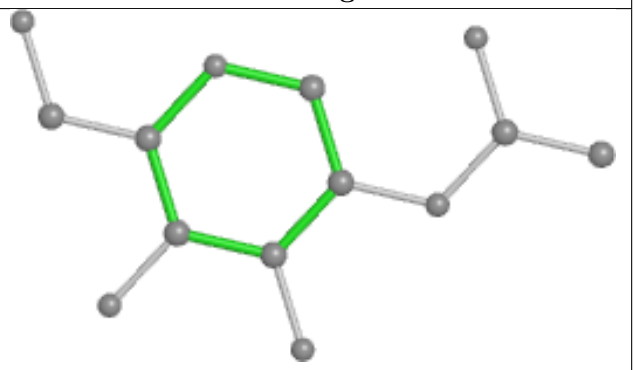
Bond lengths



Bond angles

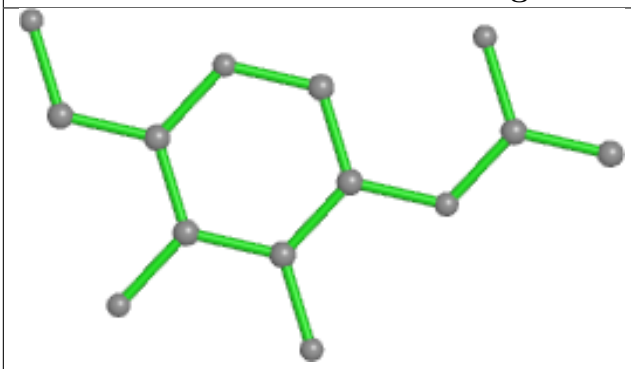


Torsions

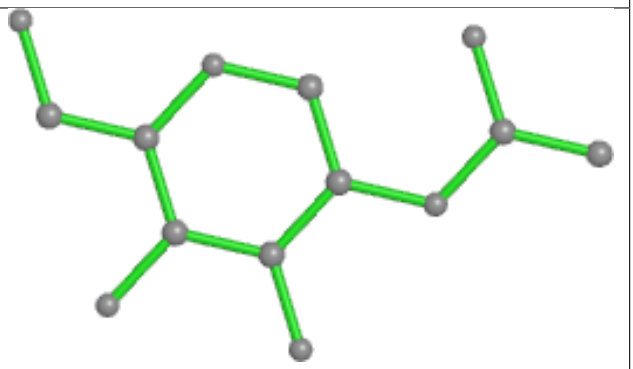


Rings

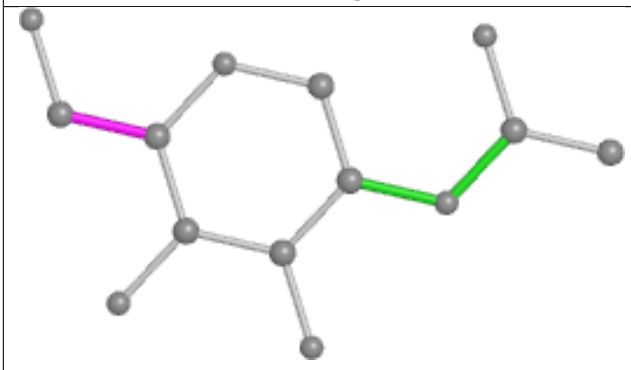
Ligand NAG A 1409



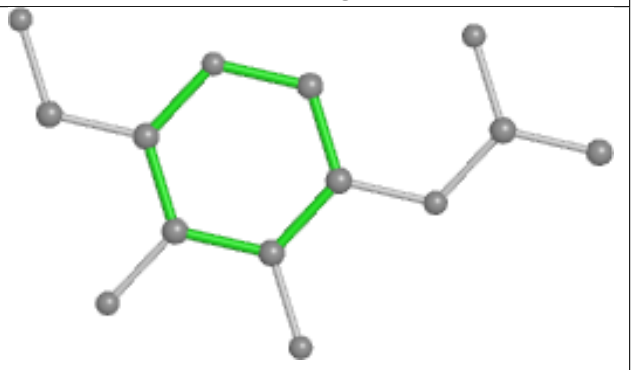
Bond lengths



Bond angles

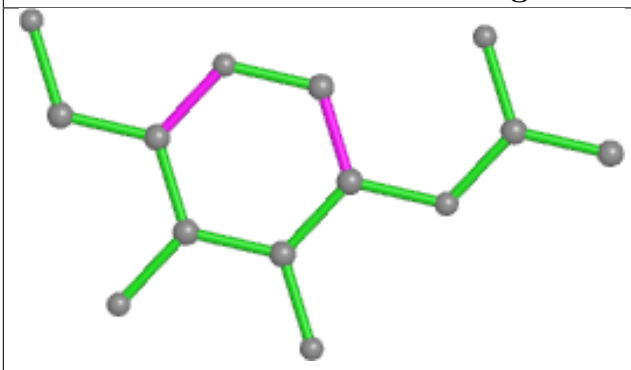


Torsions

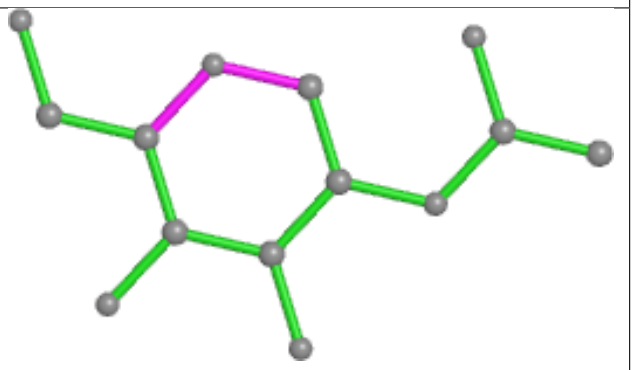


Rings

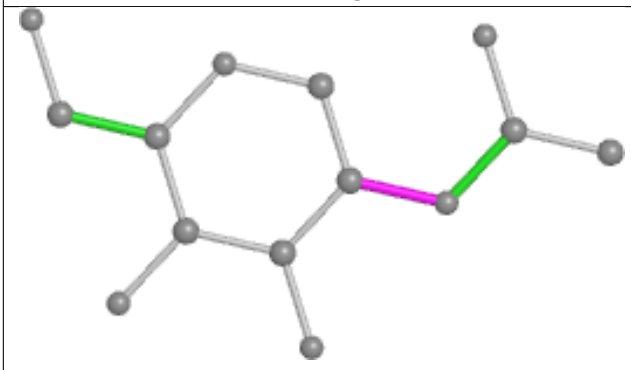
Ligand NAG A 1401



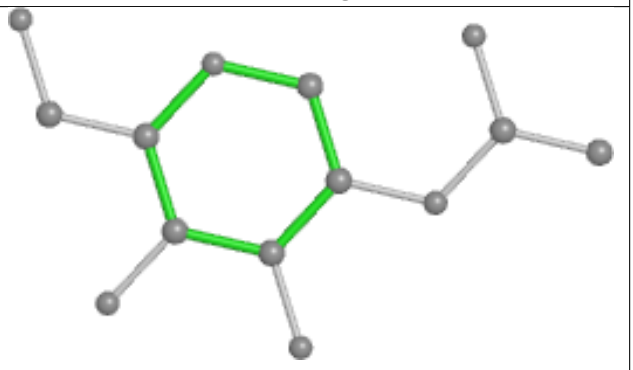
Bond lengths



Bond angles

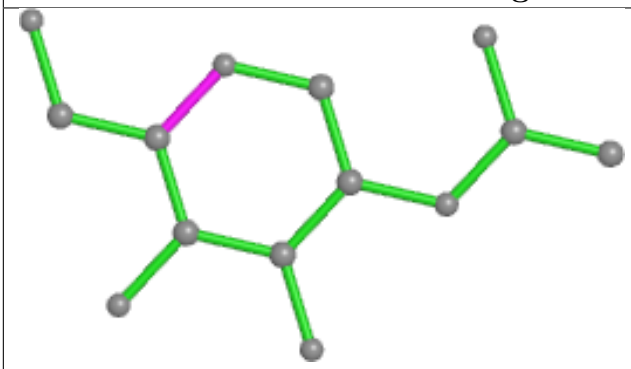


Torsions

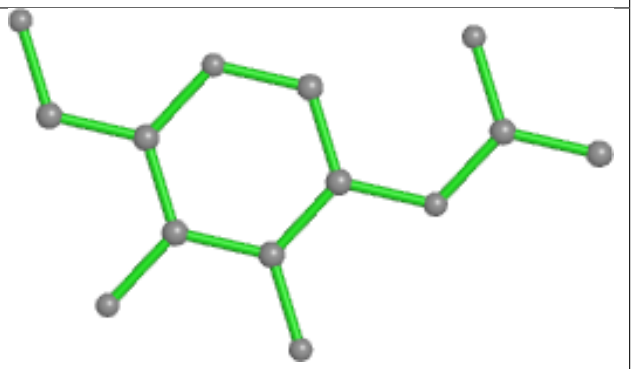


Rings

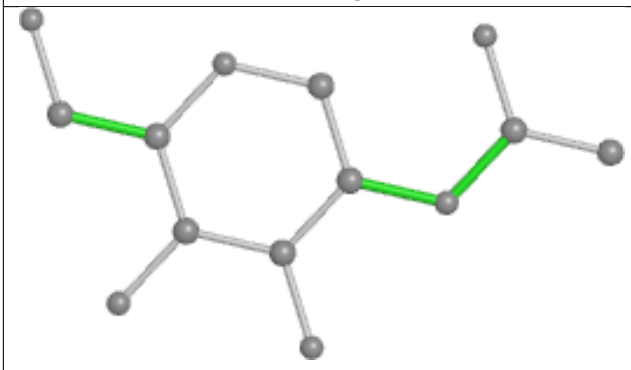
Ligand NAG B 1405



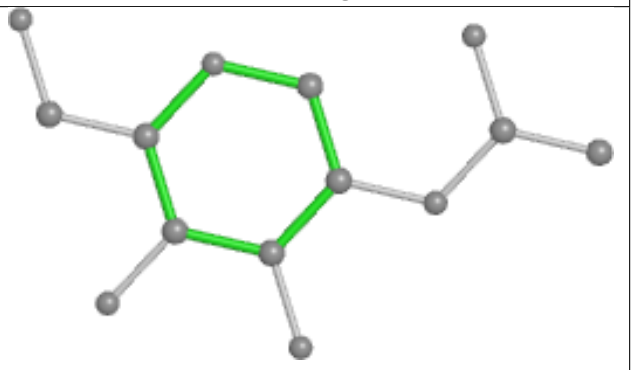
Bond lengths



Bond angles

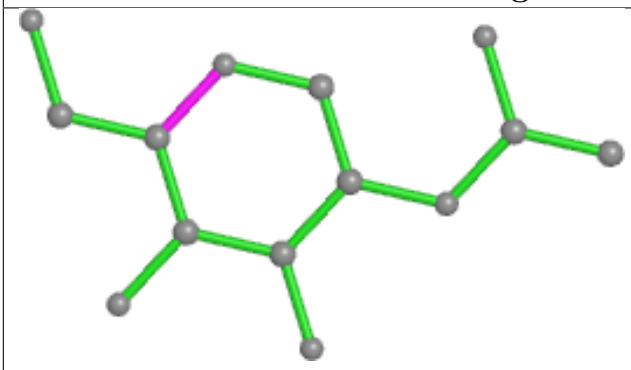


Torsions

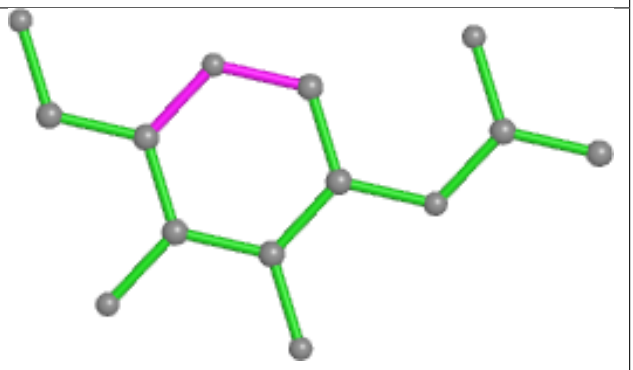


Rings

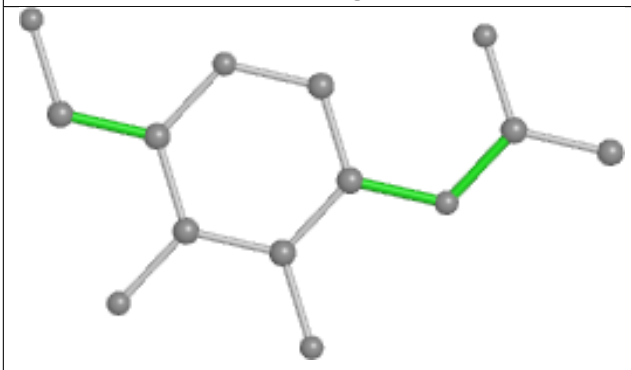
Ligand NAG C 1407



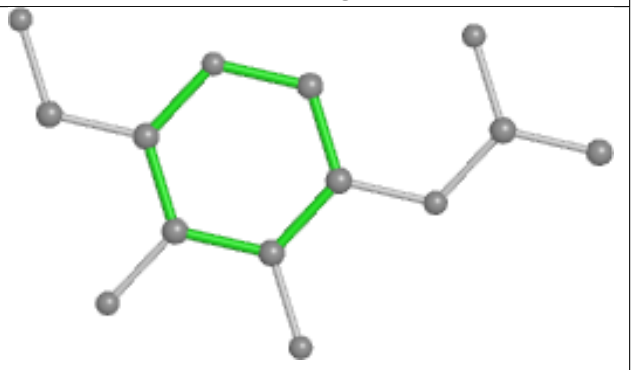
Bond lengths



Bond angles

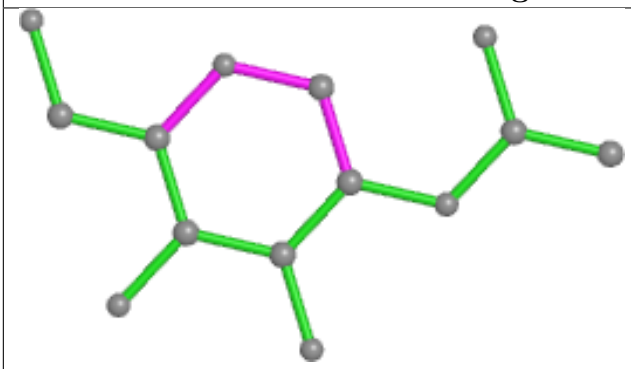


Torsions

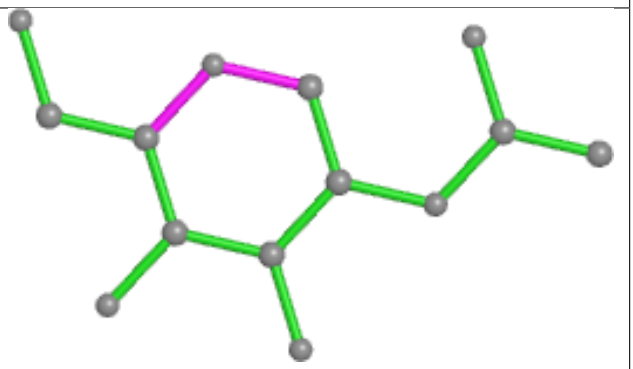


Rings

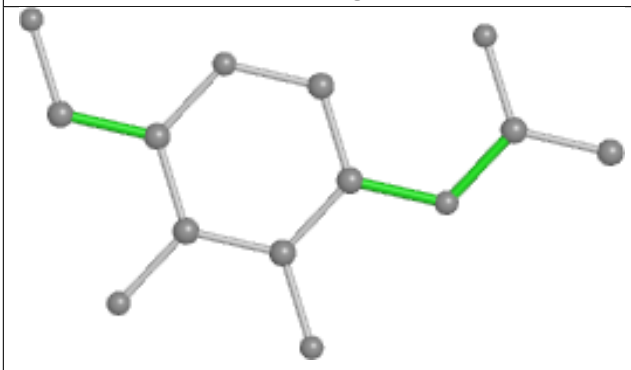
Ligand NAG C 1408



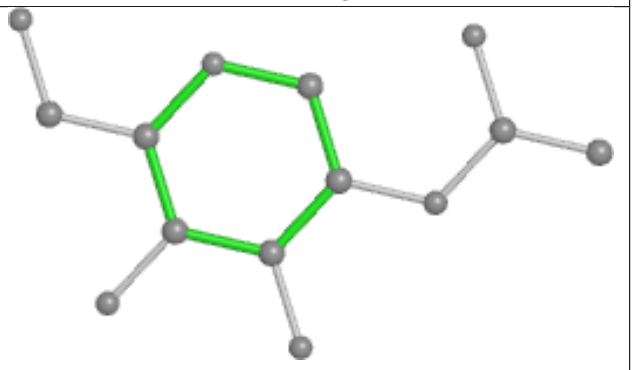
Bond lengths



Bond angles

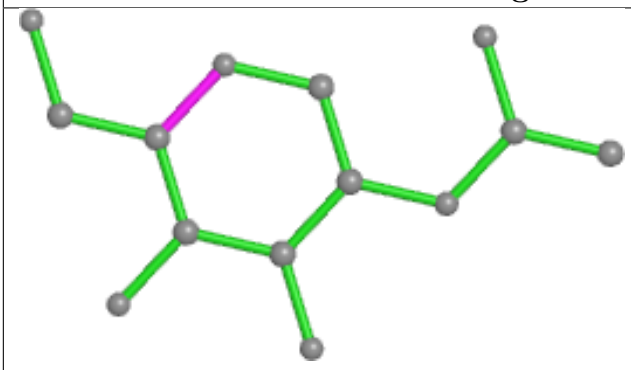


Torsions

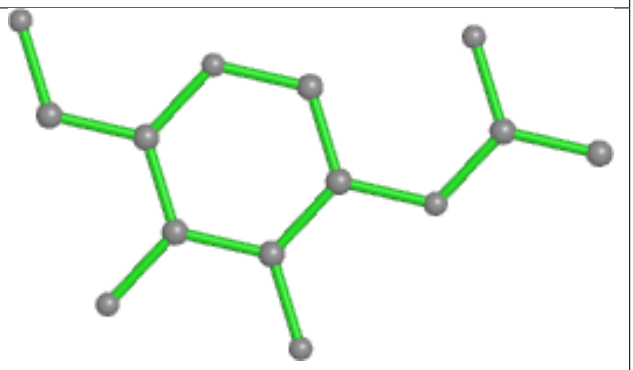


Rings

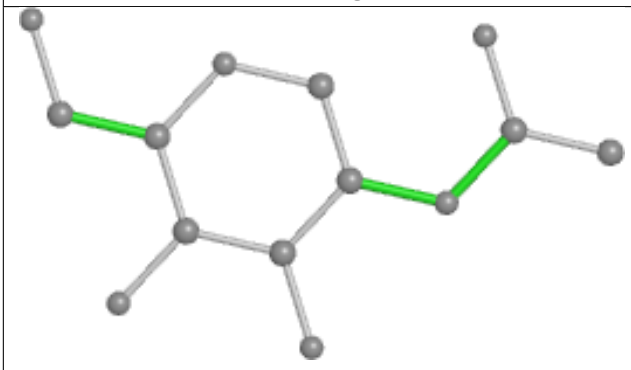
Ligand NAG B 1407



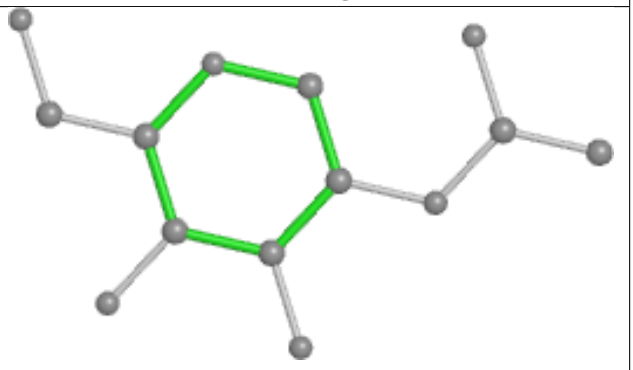
Bond lengths



Bond angles

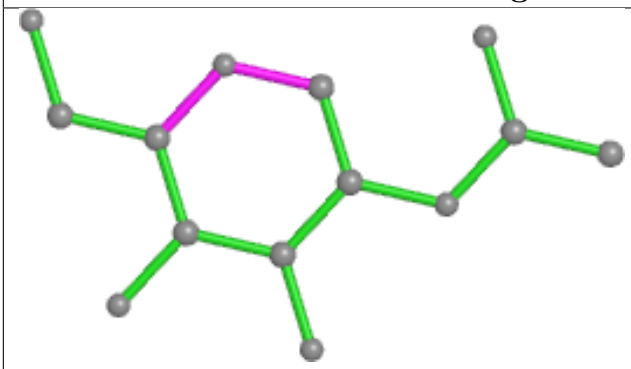


Torsions

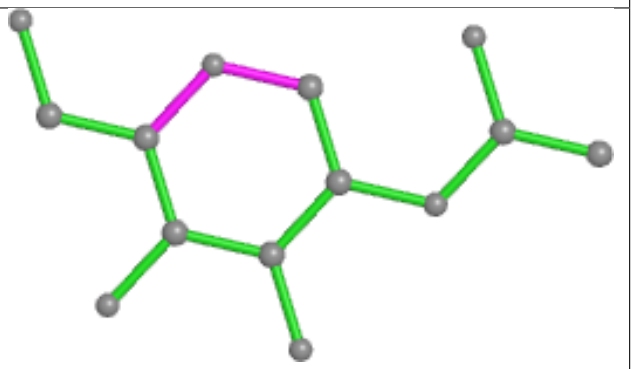


Rings

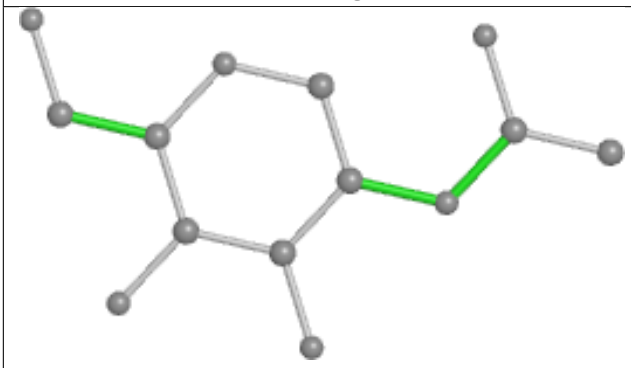
Ligand NAG A 1407



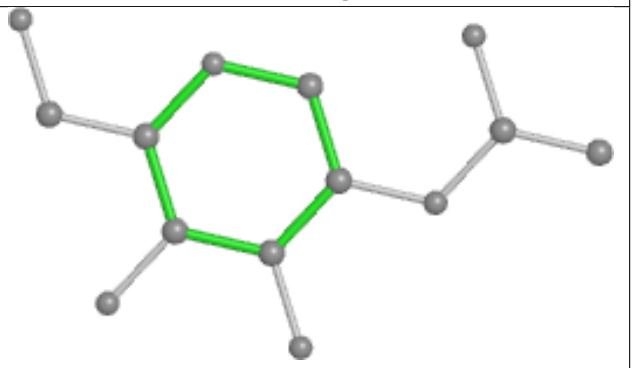
Bond lengths



Bond angles

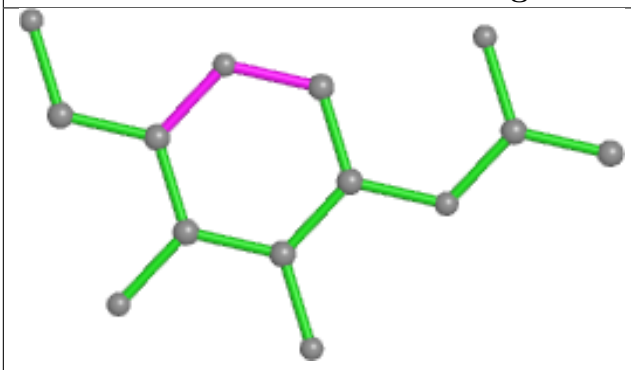


Torsions

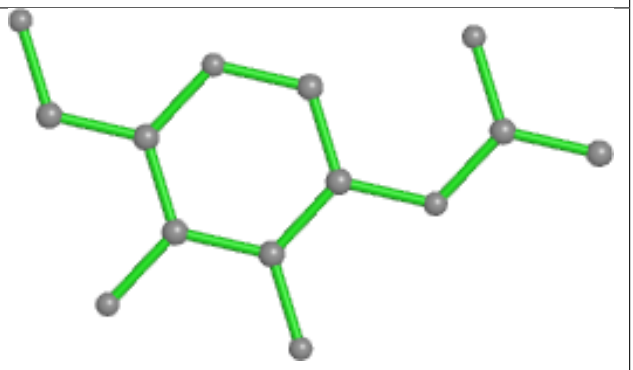


Rings

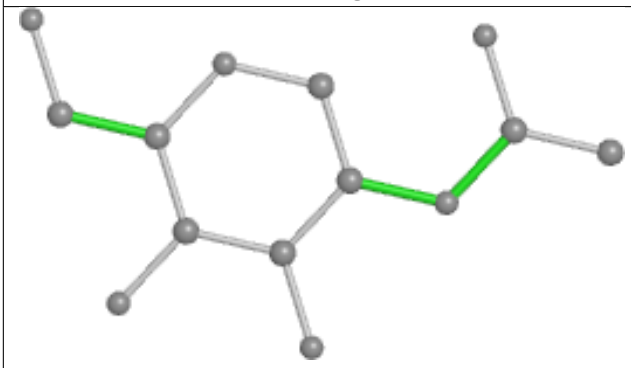
Ligand NAG A 1403



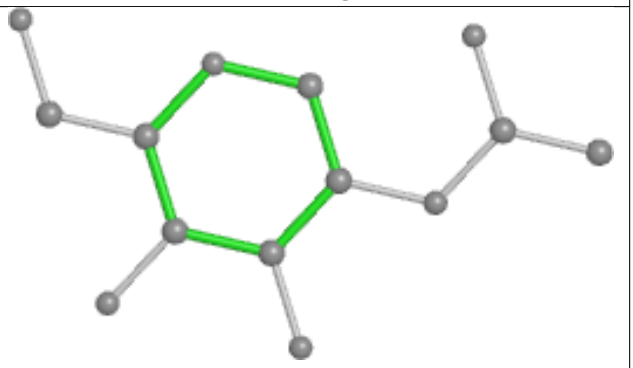
Bond lengths



Bond angles

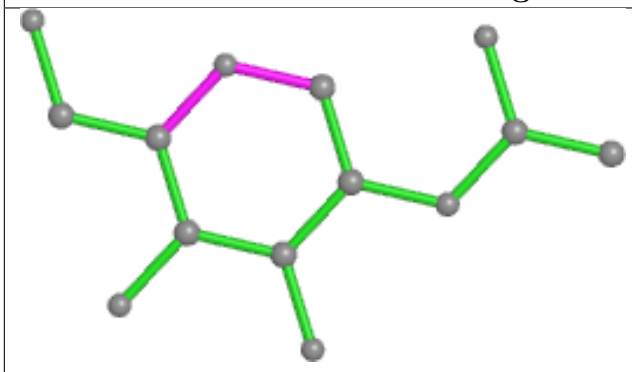


Torsions

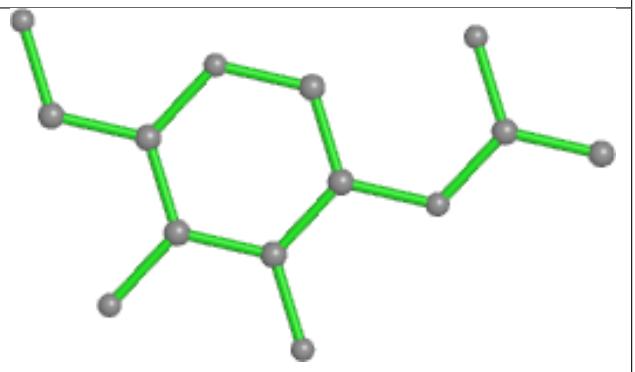


Rings

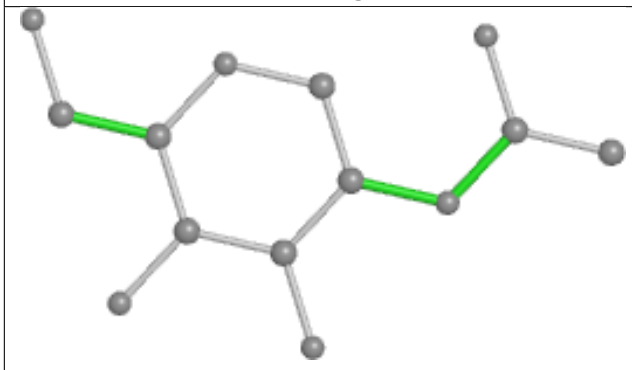
Ligand NAG C 1406



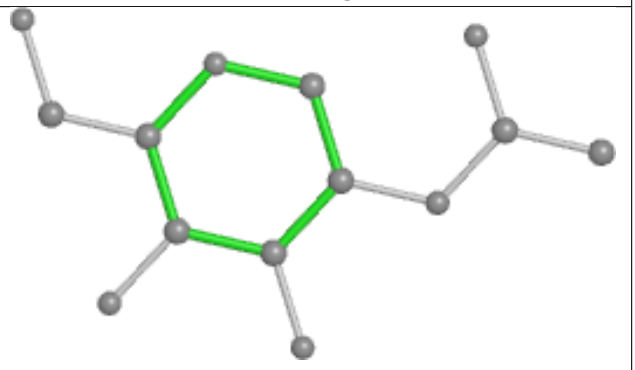
Bond lengths



Bond angles

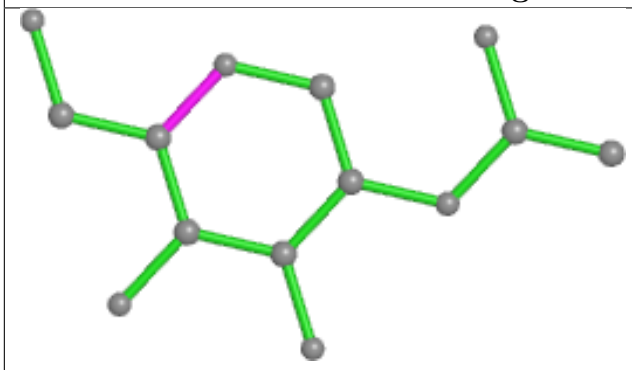


Torsions

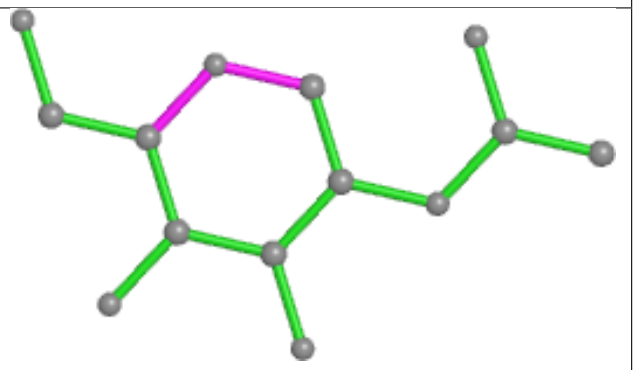


Rings

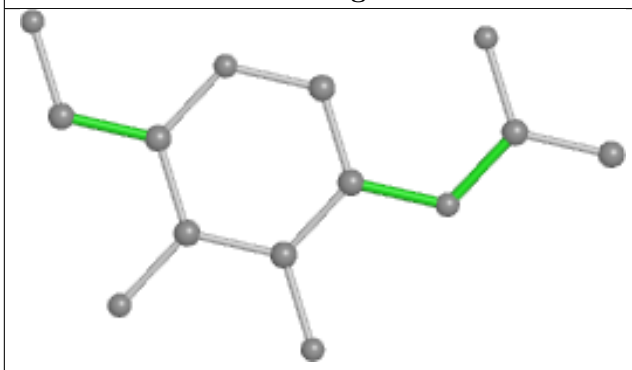
Ligand NAG A 1402



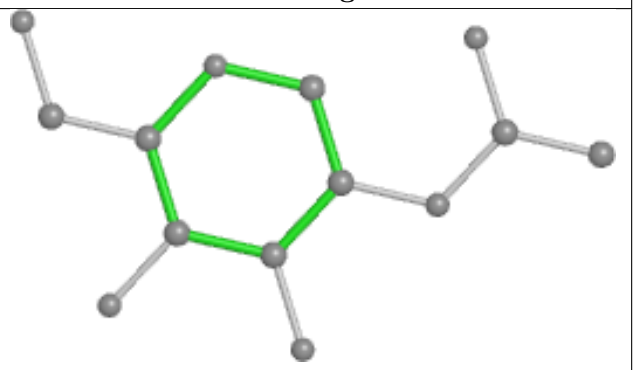
Bond lengths



Bond angles

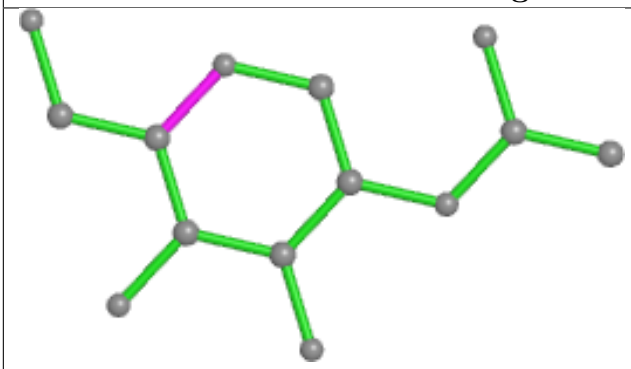


Torsions

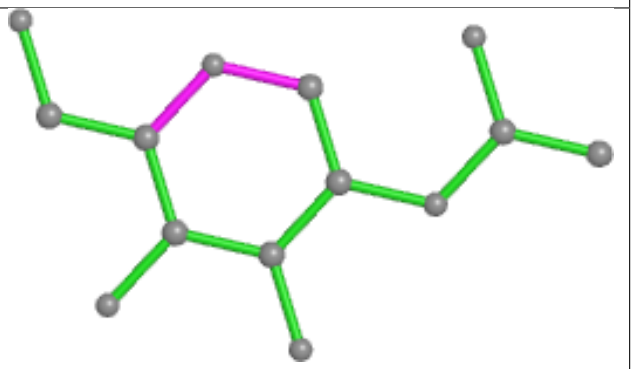


Rings

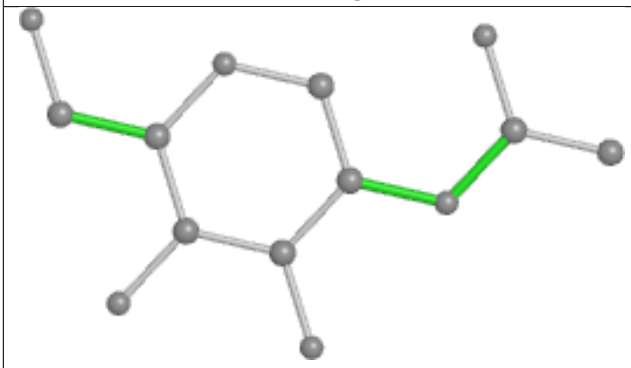
Ligand NAG C 1403



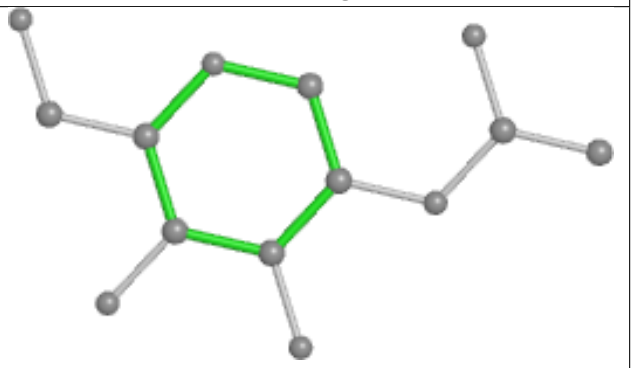
Bond lengths



Bond angles

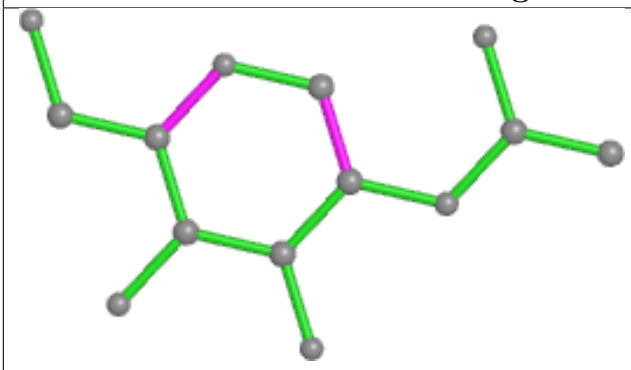


Torsions

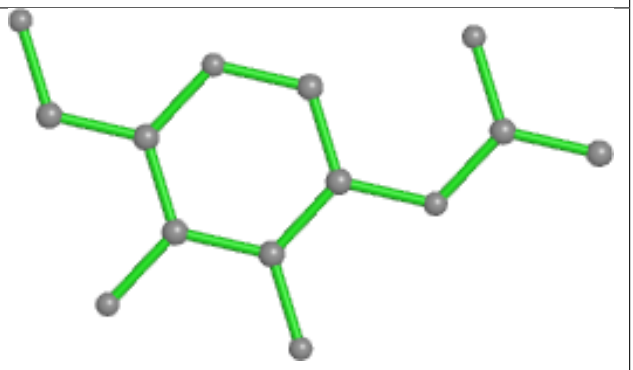


Rings

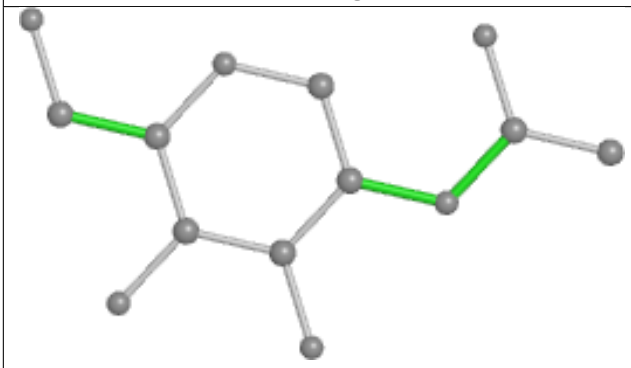
Ligand NAG B 1403



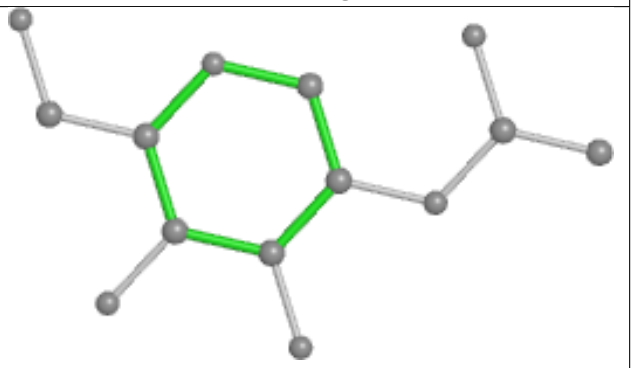
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

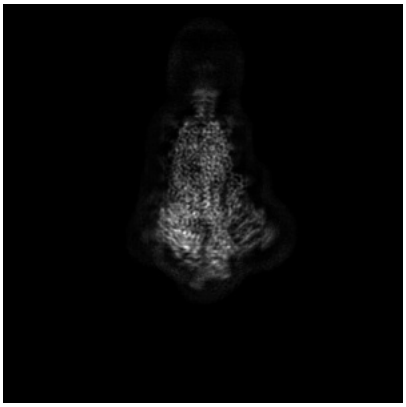
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-24121. These allow visual inspection of the internal detail of the map and identification of artifacts.

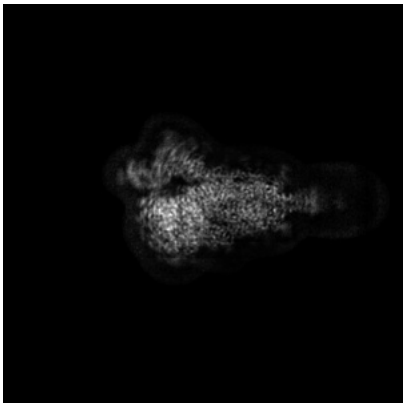
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

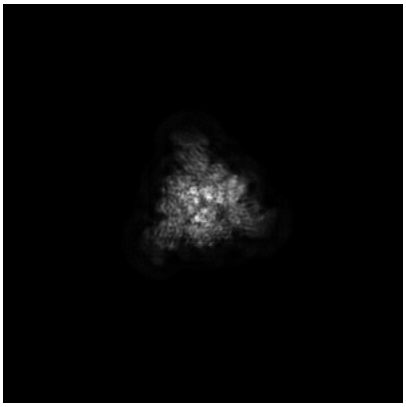
6.1.1 Primary map



X



Y



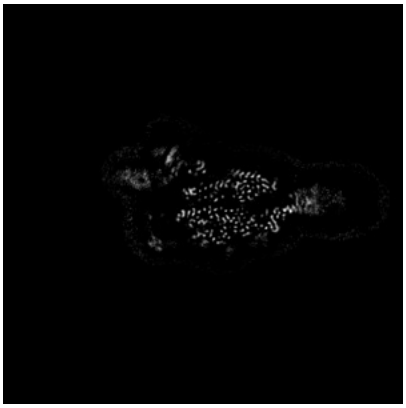
Z

The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map

X Index: 240



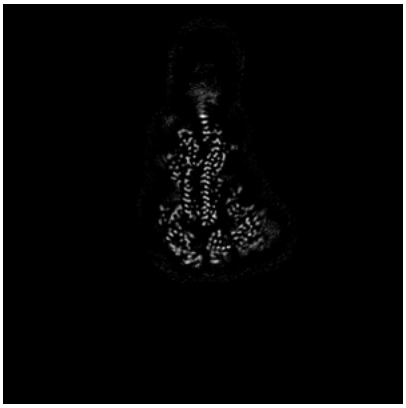
Y Index: 240

Z Index: 240

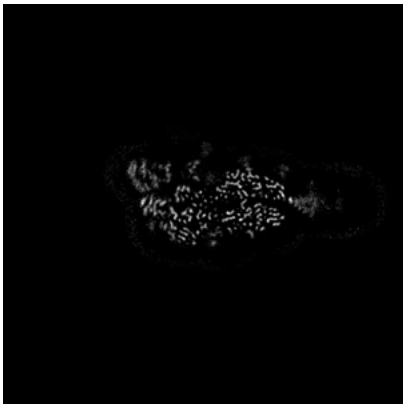
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

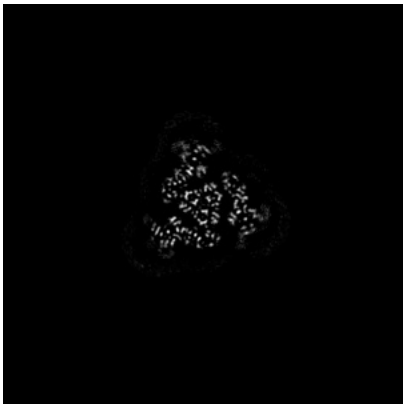
6.3.1 Primary map



X Index: 231



Y Index: 252



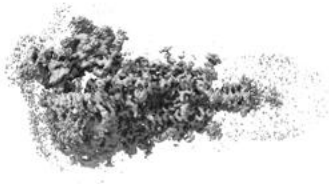
Z Index: 223

The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.25. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

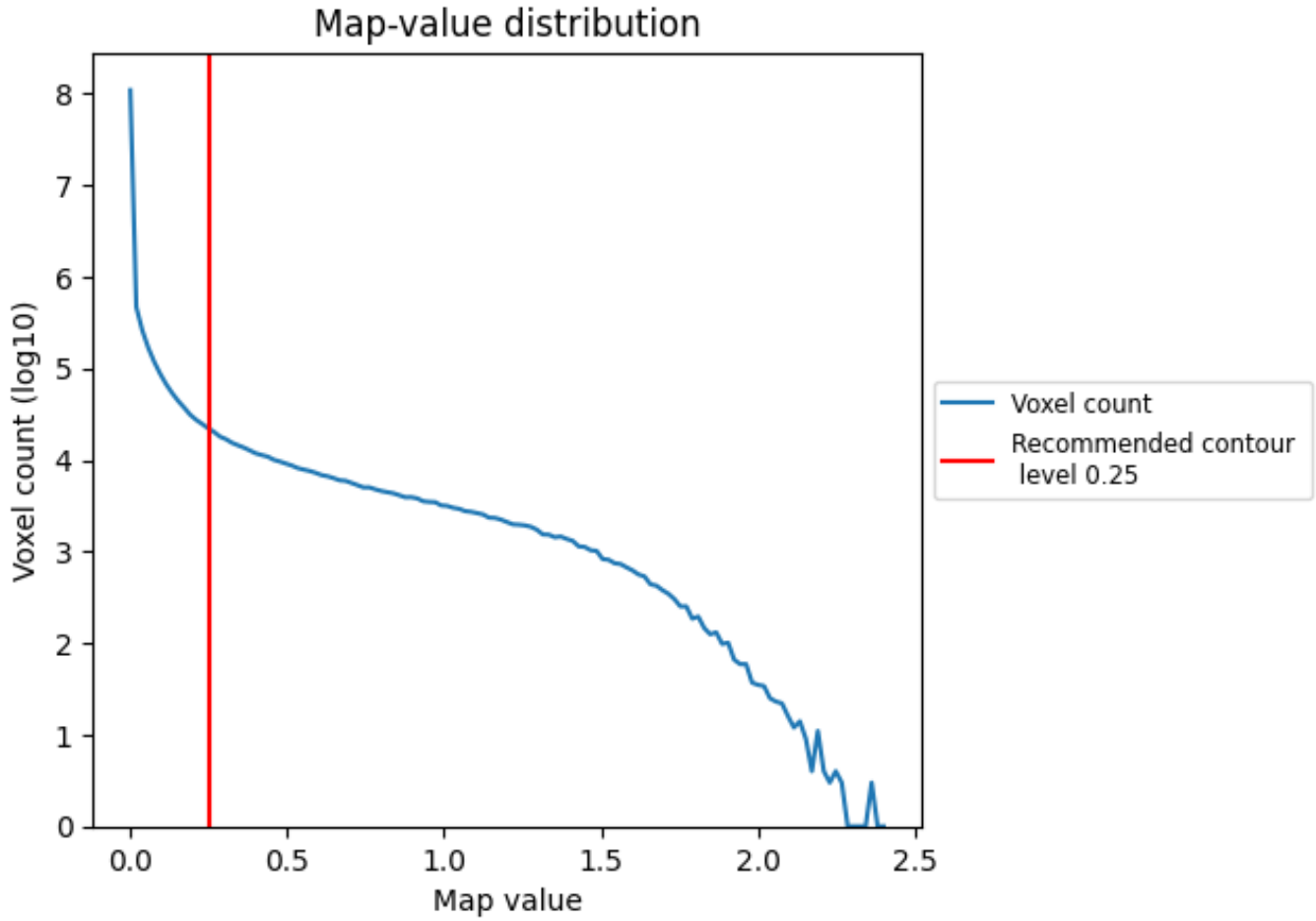
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

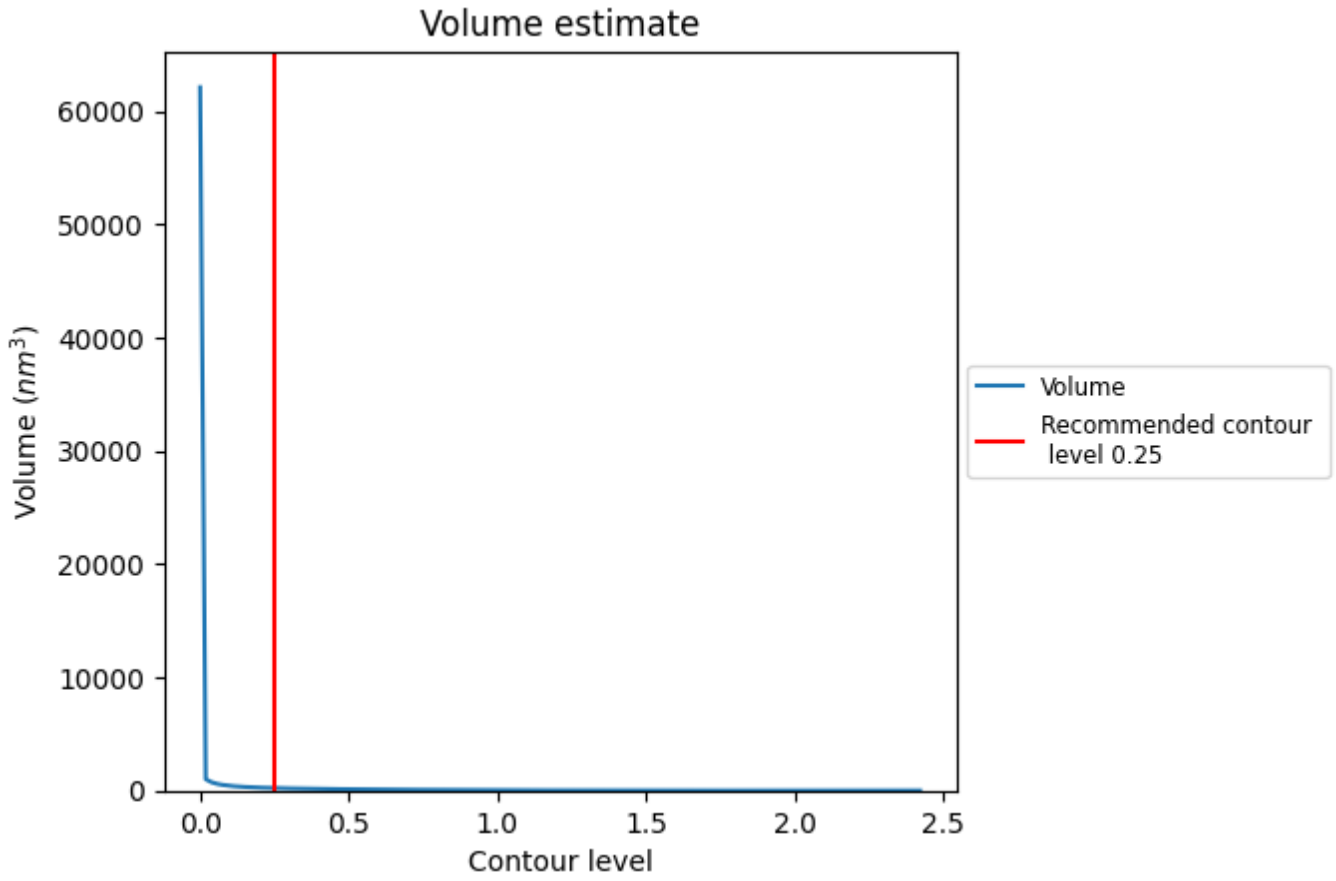
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

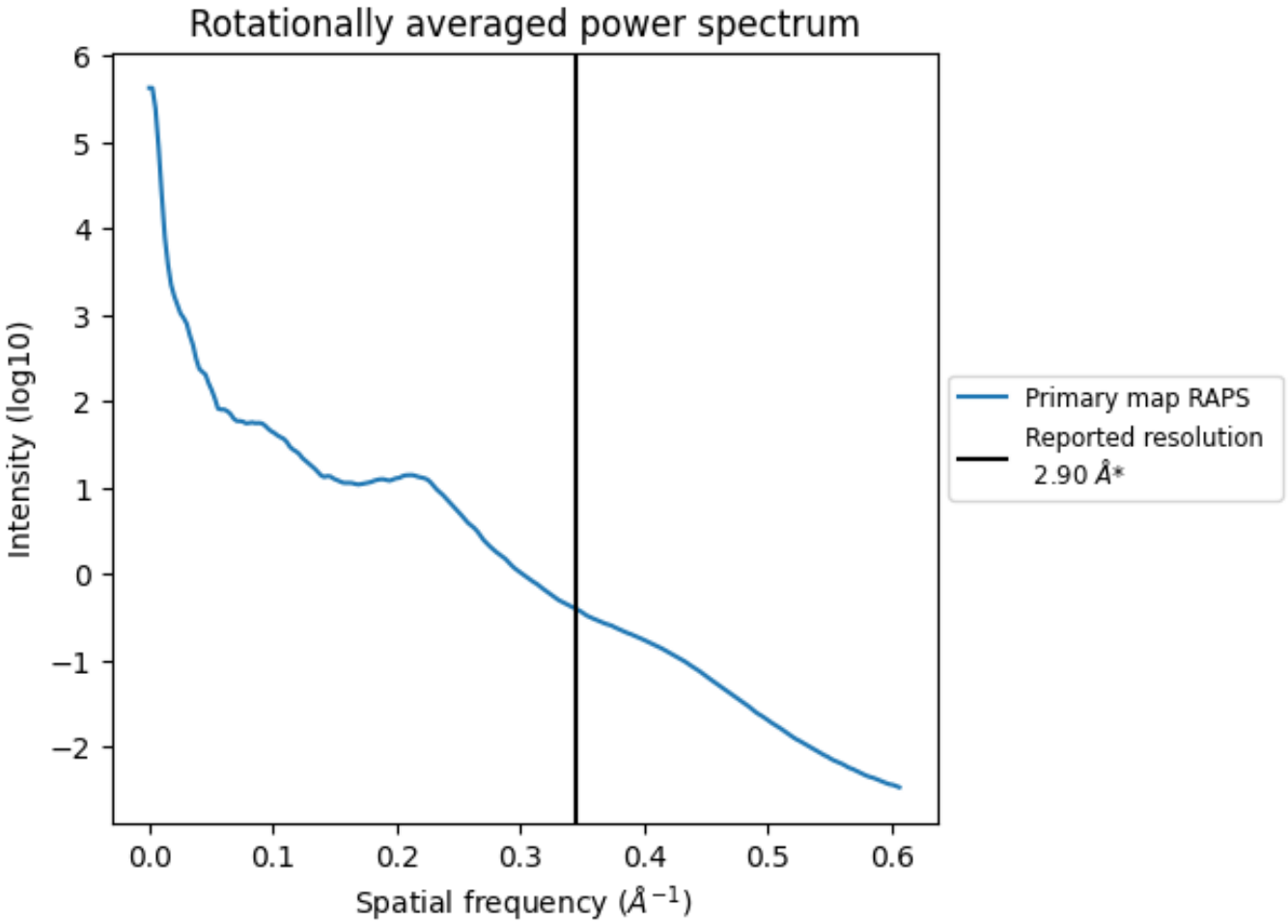
7.2 Volume estimate



The volume at the recommended contour level is 220 nm^3; this corresponds to an approximate mass of 199 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

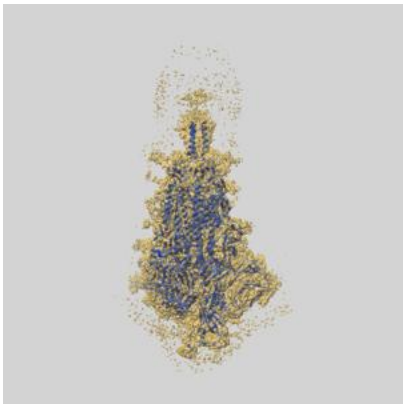
8 Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

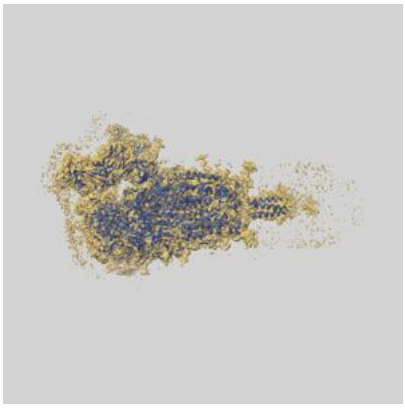
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-24121 and PDB model 7N1Q. Per-residue inclusion information can be found in section 3 on page 12.

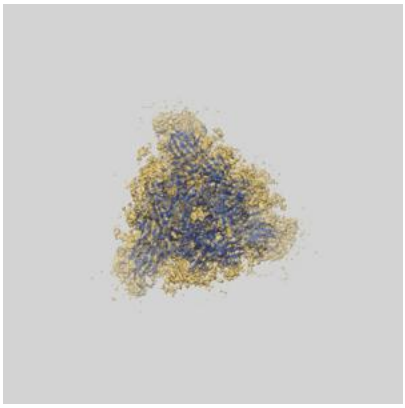
9.1 Map-model overlay



X



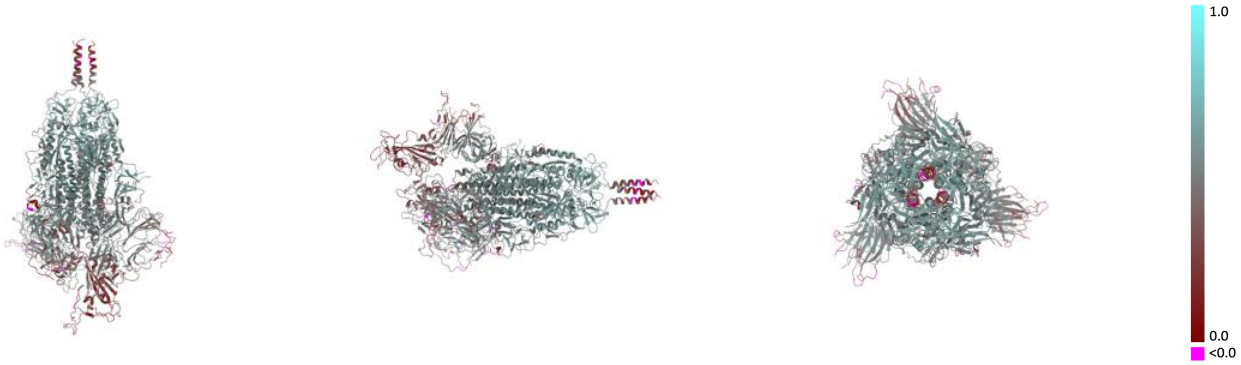
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.25 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

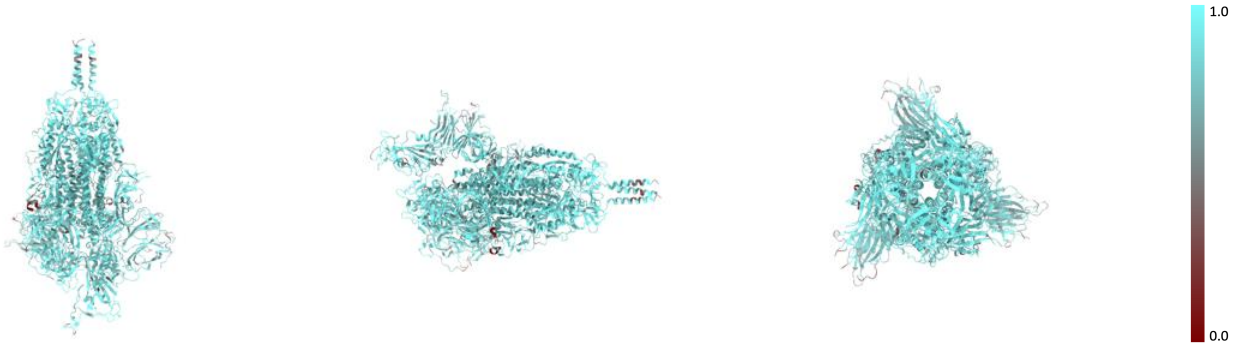
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

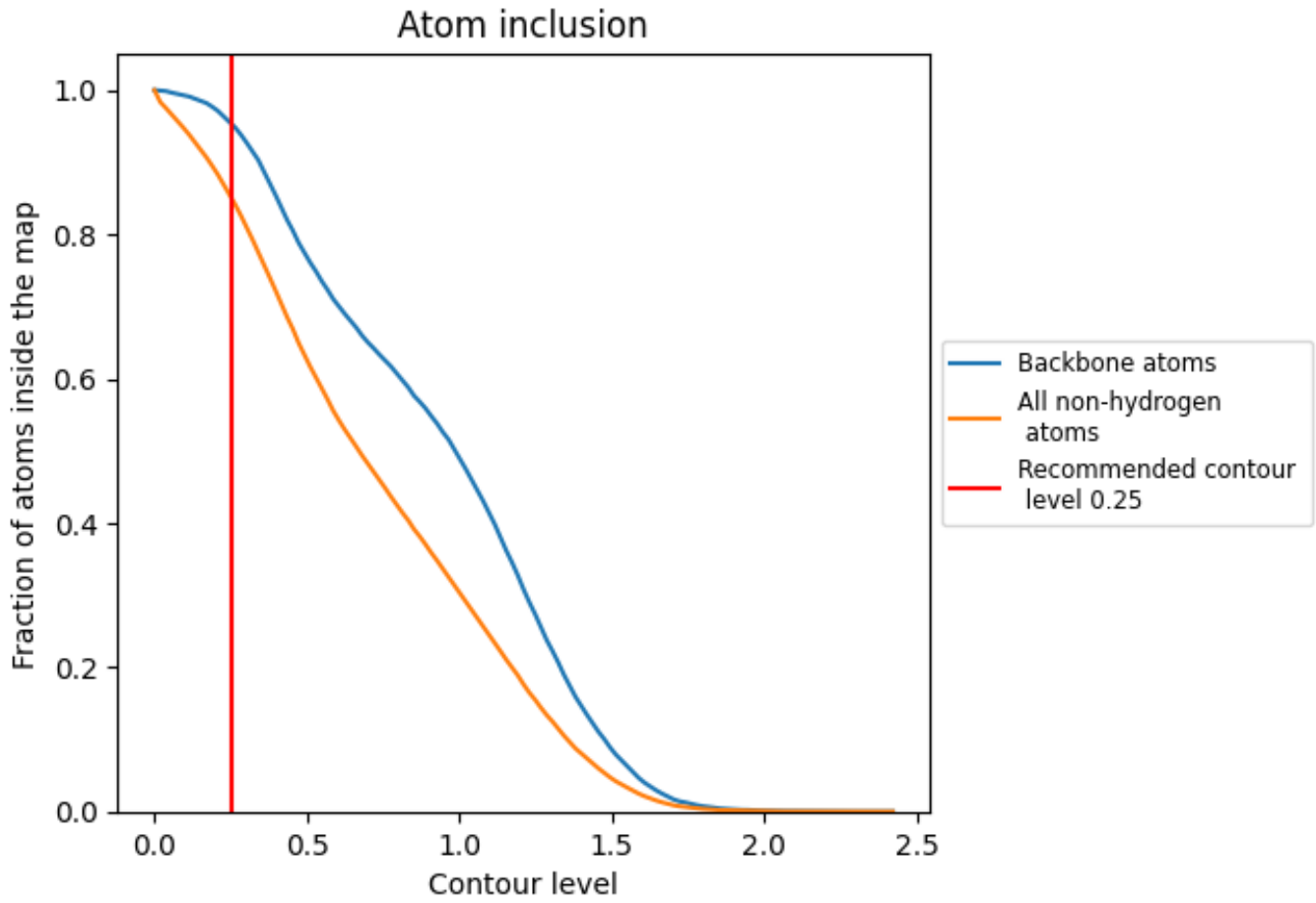
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.25).

9.4 Atom inclusion (i)



At the recommended contour level, 95% of all backbone atoms, 85% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.25) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8518	0.4720
A	0.8434	0.4480
B	0.8649	0.4850
C	0.8638	0.4920
D	0.1429	0.0540
E	0.8571	0.4280
F	0.5714	0.3860
G	0.7500	0.4460
H	0.6786	0.3820
I	0.5263	0.3760
J	0.8205	0.4620
K	0.8974	0.4300
L	0.7500	0.1470
M	0.6071	0.2020
N	0.6071	0.3380
O	0.8214	0.4510
P	0.7143	0.4540
Q	0.7500	0.4280
R	0.4737	0.3990
S	0.8462	0.4130
T	0.8718	0.4260
U	0.2500	-0.0010
V	0.7500	0.4190
W	0.8571	0.3060
X	0.6786	0.3900
Y	0.6071	0.3090
Z	0.6071	0.3360
a	0.8214	0.5140
b	0.7143	0.4410
c	0.4474	0.3700
d	0.8718	0.4720
e	0.8462	0.3900