Full wwPDB EM Validation Report ⓘ

Oct 14, 2024 – 05:20 PM JST

PDB ID	:	7DWX
EMDB ID	:	EMD-30888
Title	:	Conformation 1 of S-ACE2-B0AT1 ternary complex
Authors	:	Yan, R.H.; Zhang, Y.Y.; Li, Y.N.; Ye, F.F.; Guo, Y.Y.; Xia, L.; Zhong, X.Y.; Chi, X.M.; Zhou, Q.
Deposited on	:	2021-01-18
Resolution	:	8.30 Å(reported)

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:

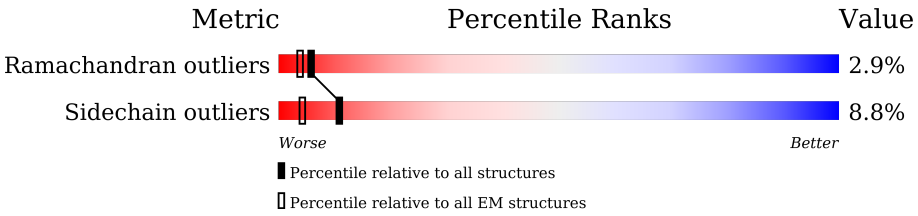
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance

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

The reported resolution of this entry is 8.30 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)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	654	5% 89% · 7%
1	C	654	6% 89% · 7%
2	B	817	· 88% · 8%
2	D	817	5% 88% · 8%
3	E	1283	· 68% 10% · 22%
3	F	1283	· 69% 9% · 22%
3	G	1283	5% 69% 8% · 22%
3	H	1283	31% 68% 10% · 22%
3	I	1283	43% 69% 9% · 22%

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Mol	Chain	Length	Quality of chain
3	J	1283	65% 69% 8% 22%
4	0	2	100% 50% 50%
4	1	2	100% 100%
4	2	2	100% 50% 50%
4	3	2	100% 100%
4	4	2	100% 50% 50%
4	5	2	50% 50%
4	6	2	100% 100%
4	7	2	100% 100%
4	8	2	100% 100%
4	9	2	100% 50% 50%
4	AA	2	100% 50% 50%
4	BA	2	100% 50% 50%
4	CA	2	100% 100%
4	DA	2	100% 50% 50%
4	EA	2	100% 100%
4	FA	2	100% 100%
4	K	2	100%
4	L	2	50% 50%
4	M	2	50% 50%
4	N	2	100%
4	O	2	50% 100%
4	P	2	50% 50%
4	Q	2	100%
4	R	2	100%

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Mol	Chain	Length	Quality of chain
4	S	2	50% 50% 50%
4	T	2	50% 50%
4	U	2	100%
4	V	2	50% 100%
4	W	2	50% 50%
4	X	2	100%
4	Y	2	100%
4	Z	2	100%
4	a	2	100%
4	b	2	50% 50%
4	c	2	50% 100%
4	d	2	50% 50% 50%
4	e	2	50% 50%
4	f	2	50% 100%
4	g	2	50% 50%
4	h	2	100%
4	i	2	50% 50%
4	j	2	50% 50% 50%
4	k	2	50% 100%
4	l	2	100%
4	m	2	100%
4	n	2	50% 50%
4	o	2	50% 50% 50%
4	p	2	50% 50%
4	q	2	100%

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Mol	Chain	Length	Quality of chain
4	r	2	50% 50%
4	s	2	100%
4	t	2	100%
4	u	2	100% 100%
4	v	2	100%
4	w	2	100% 50% 50%
4	x	2	100% 50% 50%
4	y	2	100% 100%
4	z	2	100% 50% 50%

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 71532 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 Sodium-dependent neutral amino acid transporter B(0)AT1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	605	Total 4799	C 3171	N 744	O 854	S 30	0	0
1	C	605	Total 4799	C 3171	N 744	O 854	S 30	0	0

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP Q695T7
A	-18	ALA	-	expression tag	UNP Q695T7
A	-17	ASP	-	expression tag	UNP Q695T7
A	-16	TYR	-	expression tag	UNP Q695T7
A	-15	LYS	-	expression tag	UNP Q695T7
A	-14	ASP	-	expression tag	UNP Q695T7
A	-13	ASP	-	expression tag	UNP Q695T7
A	-12	ASP	-	expression tag	UNP Q695T7
A	-11	ASP	-	expression tag	UNP Q695T7
A	-10	LYS	-	expression tag	UNP Q695T7
A	-9	SER	-	expression tag	UNP Q695T7
A	-8	GLY	-	expression tag	UNP Q695T7
A	-7	PRO	-	expression tag	UNP Q695T7
A	-6	ASP	-	expression tag	UNP Q695T7
A	-5	GLU	-	expression tag	UNP Q695T7
A	-4	VAL	-	expression tag	UNP Q695T7
A	-3	ASP	-	expression tag	UNP Q695T7
A	-2	ALA	-	expression tag	UNP Q695T7
A	-1	SER	-	expression tag	UNP Q695T7
A	0	GLY	-	expression tag	UNP Q695T7
A	1	ARG	-	expression tag	UNP Q695T7
C	-19	MET	-	initiating methionine	UNP Q695T7
C	-18	ALA	-	expression tag	UNP Q695T7
C	-17	ASP	-	expression tag	UNP Q695T7
C	-16	TYR	-	expression tag	UNP Q695T7
C	-15	LYS	-	expression tag	UNP Q695T7

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-14	ASP	-	expression tag	UNP Q695T7
C	-13	ASP	-	expression tag	UNP Q695T7
C	-12	ASP	-	expression tag	UNP Q695T7
C	-11	ASP	-	expression tag	UNP Q695T7
C	-10	LYS	-	expression tag	UNP Q695T7
C	-9	SER	-	expression tag	UNP Q695T7
C	-8	GLY	-	expression tag	UNP Q695T7
C	-7	PRO	-	expression tag	UNP Q695T7
C	-6	ASP	-	expression tag	UNP Q695T7
C	-5	GLU	-	expression tag	UNP Q695T7
C	-4	VAL	-	expression tag	UNP Q695T7
C	-3	ASP	-	expression tag	UNP Q695T7
C	-2	ALA	-	expression tag	UNP Q695T7
C	-1	SER	-	expression tag	UNP Q695T7
C	0	GLY	-	expression tag	UNP Q695T7
C	1	ARG	-	expression tag	UNP Q695T7

- Molecule 2 is a protein called Angiotensin-converting enzyme 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	748	Total	C	N	O	S	0	0
			6089	3906	1018	1131	34		
2	D	748	Total	C	N	O	S	0	0
			6089	3906	1018	1131	34		

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	MET	-	expression tag	UNP Q9BYF1
B	-10	ALA	-	expression tag	UNP Q9BYF1
B	-9	SER	-	expression tag	UNP Q9BYF1
B	-8	GLY	-	expression tag	UNP Q9BYF1
B	-7	ARG	-	expression tag	UNP Q9BYF1
B	10	TRP	-	insertion	UNP Q9BYF1
B	11	SER	-	insertion	UNP Q9BYF1
B	12	HIS	-	insertion	UNP Q9BYF1
B	13	PRO	-	insertion	UNP Q9BYF1
B	14	GLN	-	insertion	UNP Q9BYF1
B	15	PHE	-	insertion	UNP Q9BYF1
B	16	GLU	-	insertion	UNP Q9BYF1
B	17	LYS	-	insertion	UNP Q9BYF1
D	-11	MET	-	expression tag	UNP Q9BYF1

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-10	ALA	-	expression tag	UNP Q9BYF1
D	-9	SER	-	expression tag	UNP Q9BYF1
D	-8	GLY	-	expression tag	UNP Q9BYF1
D	-7	ARG	-	expression tag	UNP Q9BYF1
D	10	TRP	-	insertion	UNP Q9BYF1
D	11	SER	-	insertion	UNP Q9BYF1
D	12	HIS	-	insertion	UNP Q9BYF1
D	13	PRO	-	insertion	UNP Q9BYF1
D	14	GLN	-	insertion	UNP Q9BYF1
D	15	PHE	-	insertion	UNP Q9BYF1
D	16	GLU	-	insertion	UNP Q9BYF1
D	17	LYS	-	insertion	UNP Q9BYF1

- Molecule 3 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	1007	Total	C	N	O	S	0	0
			7872	5025	1310	1501	36		
3	F	1006	Total	C	N	O	S	0	0
			7866	5022	1309	1499	36		
3	G	1006	Total	C	N	O	S	0	0
			7866	5022	1309	1499	36		
3	H	1007	Total	C	N	O	S	0	0
			7872	5025	1310	1501	36		
3	I	1006	Total	C	N	O	S	0	0
			7866	5022	1309	1499	36		
3	J	1006	Total	C	N	O	S	0	0
			7866	5022	1309	1499	36		

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	986	PRO	LYS	engineered mutation	UNP P0DTC2
E	987	PRO	VAL	engineered mutation	UNP P0DTC2
E	1274	LEU	-	expression tag	UNP P0DTC2
E	1275	GLU	-	expression tag	UNP P0DTC2
E	1276	ASP	-	expression tag	UNP P0DTC2
E	1277	TYR	-	expression tag	UNP P0DTC2
E	1278	LYS	-	expression tag	UNP P0DTC2
E	1279	ASP	-	expression tag	UNP P0DTC2
E	1280	ASP	-	expression tag	UNP P0DTC2
E	1281	ASP	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
E	1282	ASP	-	expression tag	UNP P0DTC2
E	1283	LYS	-	expression tag	UNP P0DTC2
F	986	PRO	LYS	engineered mutation	UNP P0DTC2
F	987	PRO	VAL	engineered mutation	UNP P0DTC2
F	1274	LEU	-	expression tag	UNP P0DTC2
F	1275	GLU	-	expression tag	UNP P0DTC2
F	1276	ASP	-	expression tag	UNP P0DTC2
F	1277	TYR	-	expression tag	UNP P0DTC2
F	1278	LYS	-	expression tag	UNP P0DTC2
F	1279	ASP	-	expression tag	UNP P0DTC2
F	1280	ASP	-	expression tag	UNP P0DTC2
F	1281	ASP	-	expression tag	UNP P0DTC2
F	1282	ASP	-	expression tag	UNP P0DTC2
F	1283	LYS	-	expression tag	UNP P0DTC2
G	986	PRO	LYS	engineered mutation	UNP P0DTC2
G	987	PRO	VAL	engineered mutation	UNP P0DTC2
G	1274	LEU	-	expression tag	UNP P0DTC2
G	1275	GLU	-	expression tag	UNP P0DTC2
G	1276	ASP	-	expression tag	UNP P0DTC2
G	1277	TYR	-	expression tag	UNP P0DTC2
G	1278	LYS	-	expression tag	UNP P0DTC2
G	1279	ASP	-	expression tag	UNP P0DTC2
G	1280	ASP	-	expression tag	UNP P0DTC2
G	1281	ASP	-	expression tag	UNP P0DTC2
G	1282	ASP	-	expression tag	UNP P0DTC2
G	1283	LYS	-	expression tag	UNP P0DTC2
H	986	PRO	LYS	engineered mutation	UNP P0DTC2
H	987	PRO	VAL	engineered mutation	UNP P0DTC2
H	1274	LEU	-	expression tag	UNP P0DTC2
H	1275	GLU	-	expression tag	UNP P0DTC2
H	1276	ASP	-	expression tag	UNP P0DTC2
H	1277	TYR	-	expression tag	UNP P0DTC2
H	1278	LYS	-	expression tag	UNP P0DTC2
H	1279	ASP	-	expression tag	UNP P0DTC2
H	1280	ASP	-	expression tag	UNP P0DTC2
H	1281	ASP	-	expression tag	UNP P0DTC2
H	1282	ASP	-	expression tag	UNP P0DTC2
H	1283	LYS	-	expression tag	UNP P0DTC2
I	986	PRO	LYS	engineered mutation	UNP P0DTC2
I	987	PRO	VAL	engineered mutation	UNP P0DTC2
I	1274	LEU	-	expression tag	UNP P0DTC2
I	1275	GLU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
I	1276	ASP	-	expression tag	UNP P0DTC2
I	1277	TYR	-	expression tag	UNP P0DTC2
I	1278	LYS	-	expression tag	UNP P0DTC2
I	1279	ASP	-	expression tag	UNP P0DTC2
I	1280	ASP	-	expression tag	UNP P0DTC2
I	1281	ASP	-	expression tag	UNP P0DTC2
I	1282	ASP	-	expression tag	UNP P0DTC2
I	1283	LYS	-	expression tag	UNP P0DTC2
J	986	PRO	LYS	engineered mutation	UNP P0DTC2
J	987	PRO	VAL	engineered mutation	UNP P0DTC2
J	1274	LEU	-	expression tag	UNP P0DTC2
J	1275	GLU	-	expression tag	UNP P0DTC2
J	1276	ASP	-	expression tag	UNP P0DTC2
J	1277	TYR	-	expression tag	UNP P0DTC2
J	1278	LYS	-	expression tag	UNP P0DTC2
J	1279	ASP	-	expression tag	UNP P0DTC2
J	1280	ASP	-	expression tag	UNP P0DTC2
J	1281	ASP	-	expression tag	UNP P0DTC2
J	1282	ASP	-	expression tag	UNP P0DTC2
J	1283	LYS	-	expression tag	UNP P0DTC2

- Molecule 4 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
4	K	2	Total	C	N	O	0	0
			28	16	2	10		
4	L	2	Total	C	N	O	0	0
			28	16	2	10		
4	M	2	Total	C	N	O	0	0
			28	16	2	10		
4	N	2	Total	C	N	O	0	0
			28	16	2	10		
4	O	2	Total	C	N	O	0	0
			28	16	2	10		
4	P	2	Total	C	N	O	0	0
			28	16	2	10		

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Mol	Chain	Residues	Atoms				AltConf	Trace
4	Q	2	Total	C	N	O	0	0
			28	16	2	10		
4	R	2	Total	C	N	O	0	0
			28	16	2	10		
4	S	2	Total	C	N	O	0	0
			28	16	2	10		
4	T	2	Total	C	N	O	0	0
			28	16	2	10		
4	U	2	Total	C	N	O	0	0
			28	16	2	10		
4	V	2	Total	C	N	O	0	0
			28	16	2	10		
4	W	2	Total	C	N	O	0	0
			28	16	2	10		
4	X	2	Total	C	N	O	0	0
			28	16	2	10		
4	Y	2	Total	C	N	O	0	0
			28	16	2	10		
4	Z	2	Total	C	N	O	0	0
			28	16	2	10		
4	a	2	Total	C	N	O	0	0
			28	16	2	10		
4	b	2	Total	C	N	O	0	0
			28	16	2	10		
4	c	2	Total	C	N	O	0	0
			28	16	2	10		
4	d	2	Total	C	N	O	0	0
			28	16	2	10		
4	e	2	Total	C	N	O	0	0
			28	16	2	10		
4	f	2	Total	C	N	O	0	0
			28	16	2	10		
4	g	2	Total	C	N	O	0	0
			28	16	2	10		
4	h	2	Total	C	N	O	0	0
			28	16	2	10		
4	i	2	Total	C	N	O	0	0
			28	16	2	10		
4	j	2	Total	C	N	O	0	0
			28	16	2	10		
4	k	2	Total	C	N	O	0	0
			28	16	2	10		

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Mol	Chain	Residues	Atoms				AltConf	Trace
4	l	2	Total	C	N	O	0	0
			28	16	2	10		
4	m	2	Total	C	N	O	0	0
			28	16	2	10		
4	n	2	Total	C	N	O	0	0
			28	16	2	10		
4	o	2	Total	C	N	O	0	0
			28	16	2	10		
4	p	2	Total	C	N	O	0	0
			28	16	2	10		
4	q	2	Total	C	N	O	0	0
			28	16	2	10		
4	r	2	Total	C	N	O	0	0
			28	16	2	10		
4	s	2	Total	C	N	O	0	0
			28	16	2	10		
4	t	2	Total	C	N	O	0	0
			28	16	2	10		
4	u	2	Total	C	N	O	0	0
			28	16	2	10		
4	v	2	Total	C	N	O	0	0
			28	16	2	10		
4	w	2	Total	C	N	O	0	0
			28	16	2	10		
4	x	2	Total	C	N	O	0	0
			28	16	2	10		
4	y	2	Total	C	N	O	0	0
			28	16	2	10		
4	z	2	Total	C	N	O	0	0
			28	16	2	10		
4	0	2	Total	C	N	O	0	0
			28	16	2	10		
4	1	2	Total	C	N	O	0	0
			28	16	2	10		
4	2	2	Total	C	N	O	0	0
			28	16	2	10		
4	3	2	Total	C	N	O	0	0
			28	16	2	10		
4	4	2	Total	C	N	O	0	0
			28	16	2	10		
4	5	2	Total	C	N	O	0	0
			28	16	2	10		

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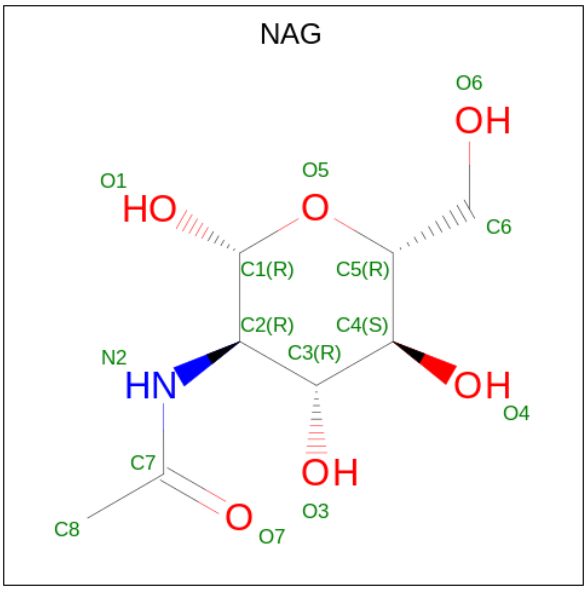
Mol	Chain	Residues	Atoms	AltConf	Trace
4	6	2	Total C N O 28 16 2 10	0	0
4	7	2	Total C N O 28 16 2 10	0	0
4	8	2	Total C N O 28 16 2 10	0	0
4	9	2	Total C N O 28 16 2 10	0	0
4	AA	2	Total C N O 28 16 2 10	0	0
4	BA	2	Total C N O 28 16 2 10	0	0
4	CA	2	Total C N O 28 16 2 10	0	0
4	DA	2	Total C N O 28 16 2 10	0	0
4	EA	2	Total C N O 28 16 2 10	0	0
4	FA	2	Total C N O 28 16 2 10	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 C N O 14 8 1 5	0

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Mol	Chain	Residues	Atoms	AltConf
5	A	1	Total C N O 14 8 1 5	0
5	A	1	Total C N O 14 8 1 5	0
5	A	1	Total C N O 14 8 1 5	0
5	B	1	Total C N O 14 8 1 5	0
5	C	1	Total C N O 14 8 1 5	0
5	C	1	Total C N O 14 8 1 5	0
5	C	1	Total C N O 14 8 1 5	0
5	C	1	Total C N O 14 8 1 5	0
5	D	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	E	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0

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Mol	Chain	Residues	Atoms	AltConf
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	F	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	G	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0

Continued on next page...

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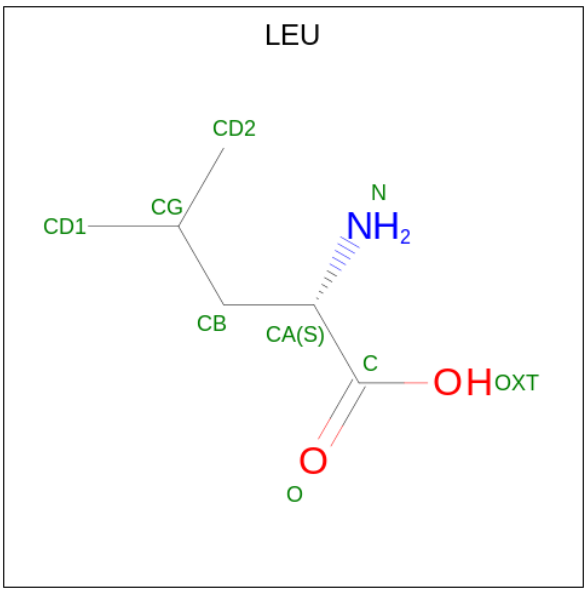
Mol	Chain	Residues	Atoms	AltConf
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	H	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	I	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0
5	J	1	Total C N O 14 8 1 5	0

- Molecule 6 is LEUCINE (three-letter code: LEU) (formula: $C_6H_{13}NO_2$).



Mol	Chain	Residues	Atoms	AltConf
6	A	1	Total C N O 9 6 1 2	0
6	C	1	Total C N O 9 6 1 2	0

- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
7	B	1	Total Zn 1 1	0
7	D	1	Total Zn 1 1	0

- Molecule 8 is water.

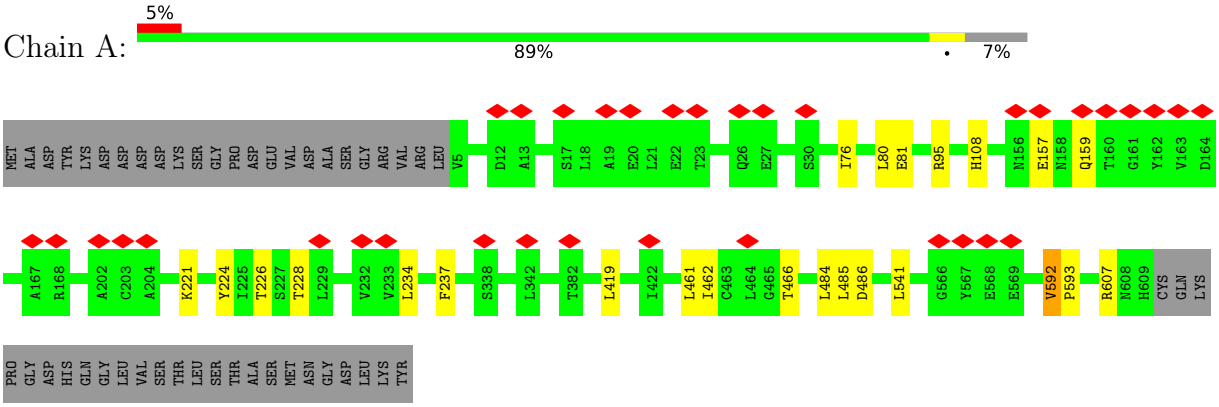
Mol	Chain	Residues	Atoms	AltConf
8	B	4	Total O 4 4	0
8	D	4	Total O 4 4	0

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.

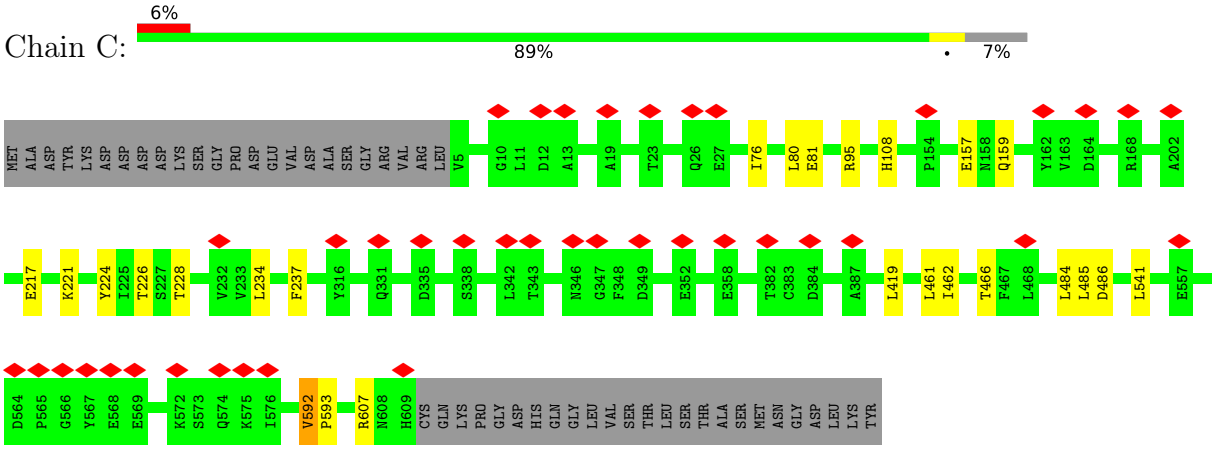
• Molecule 1: Sodium-dependent neutral amino acid transporter B(0)AT1

Chain A:



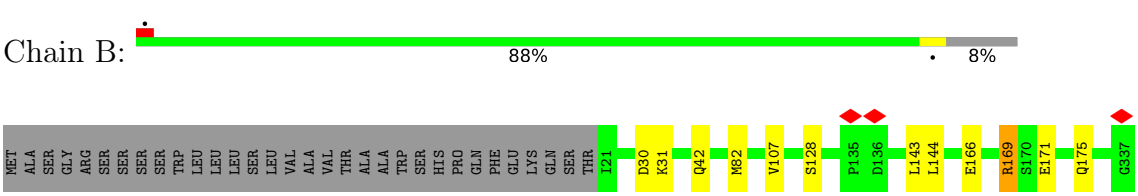
• Molecule 1: Sodium-dependent neutral amino acid transporter B(0)AT1

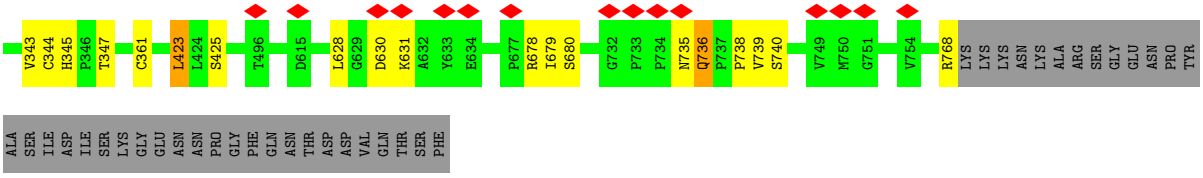
Chain C:



• Molecule 2: Angiotensin-converting enzyme 2

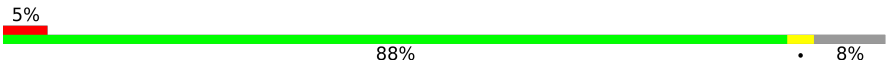
Chain B:

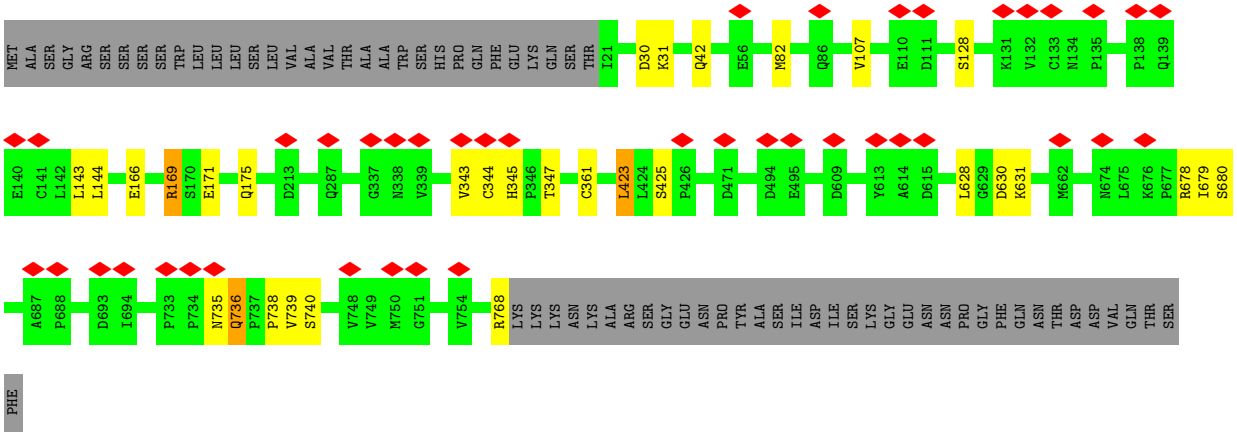




• Molecule 2: Angiotensin-converting enzyme 2

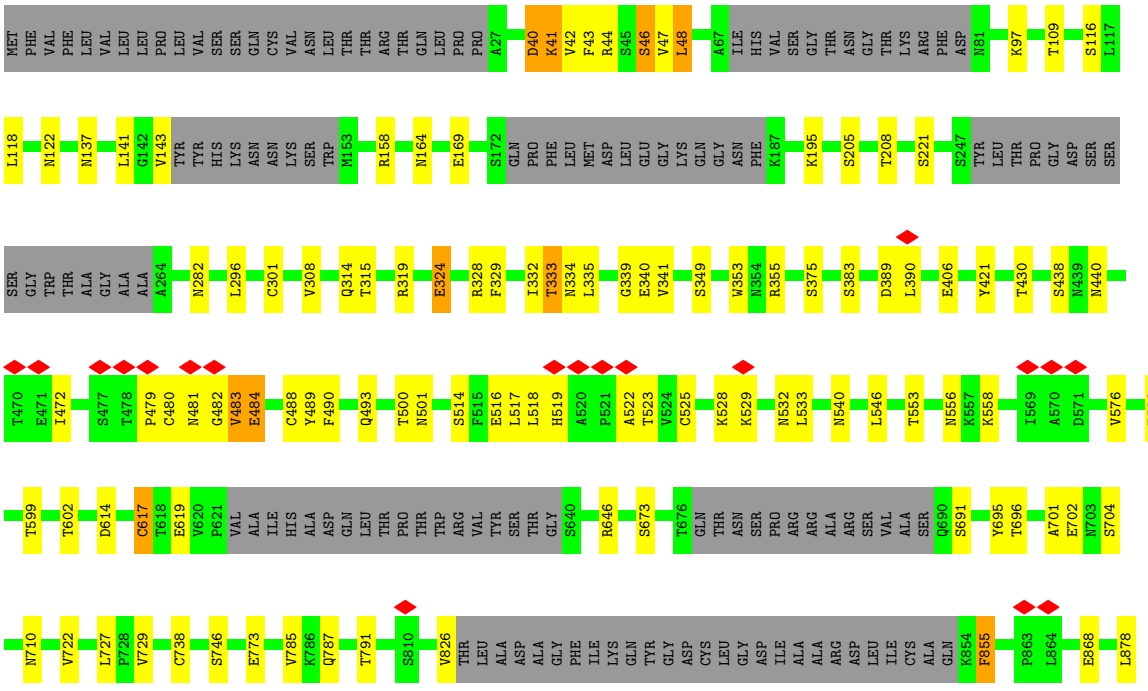
Chain D:

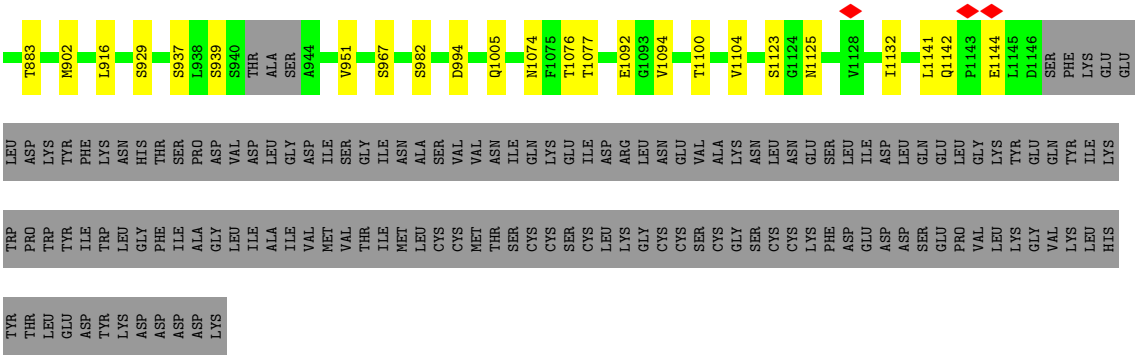




• Molecule 3: Spike glycoprotein

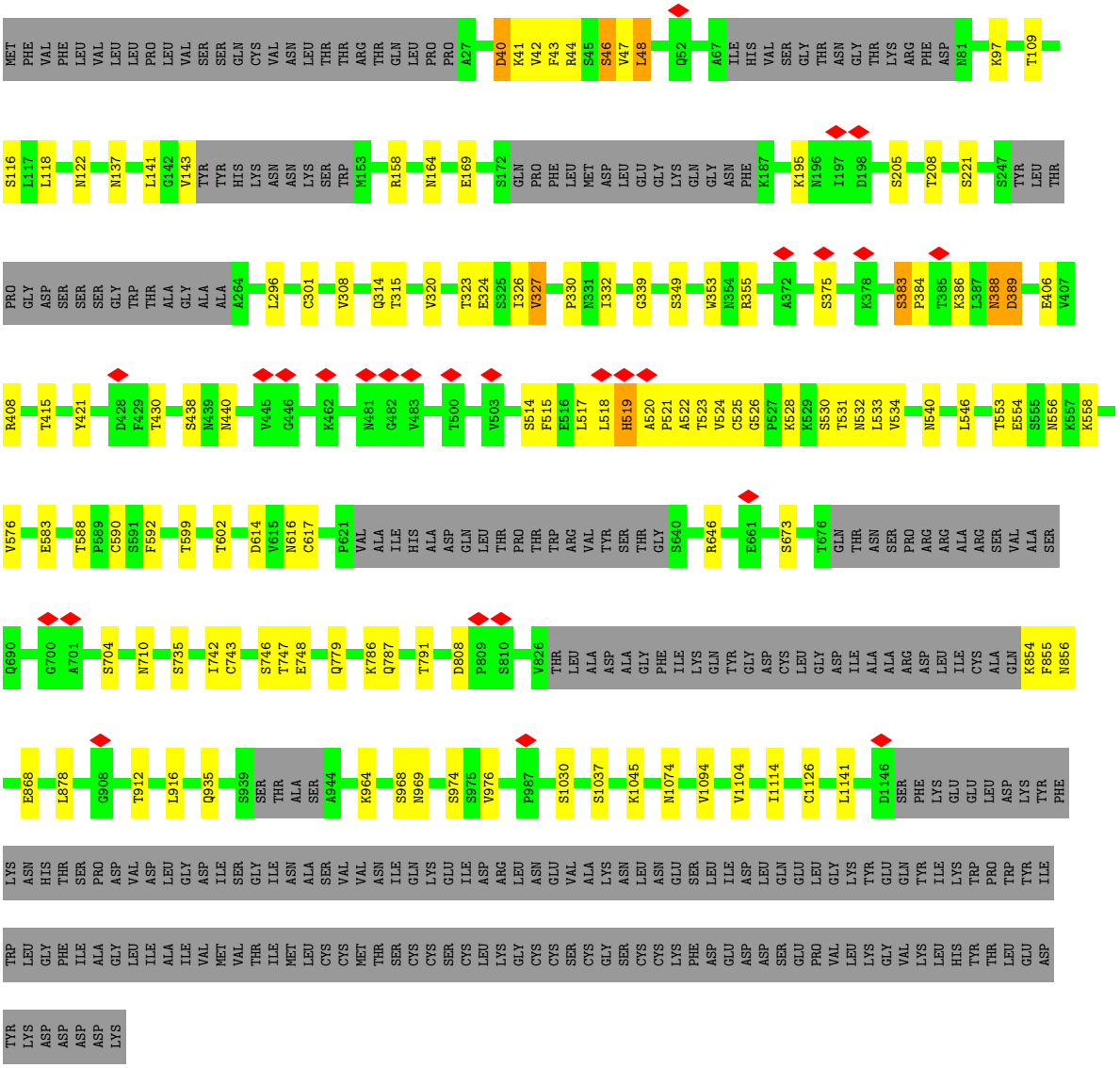
Chain E:





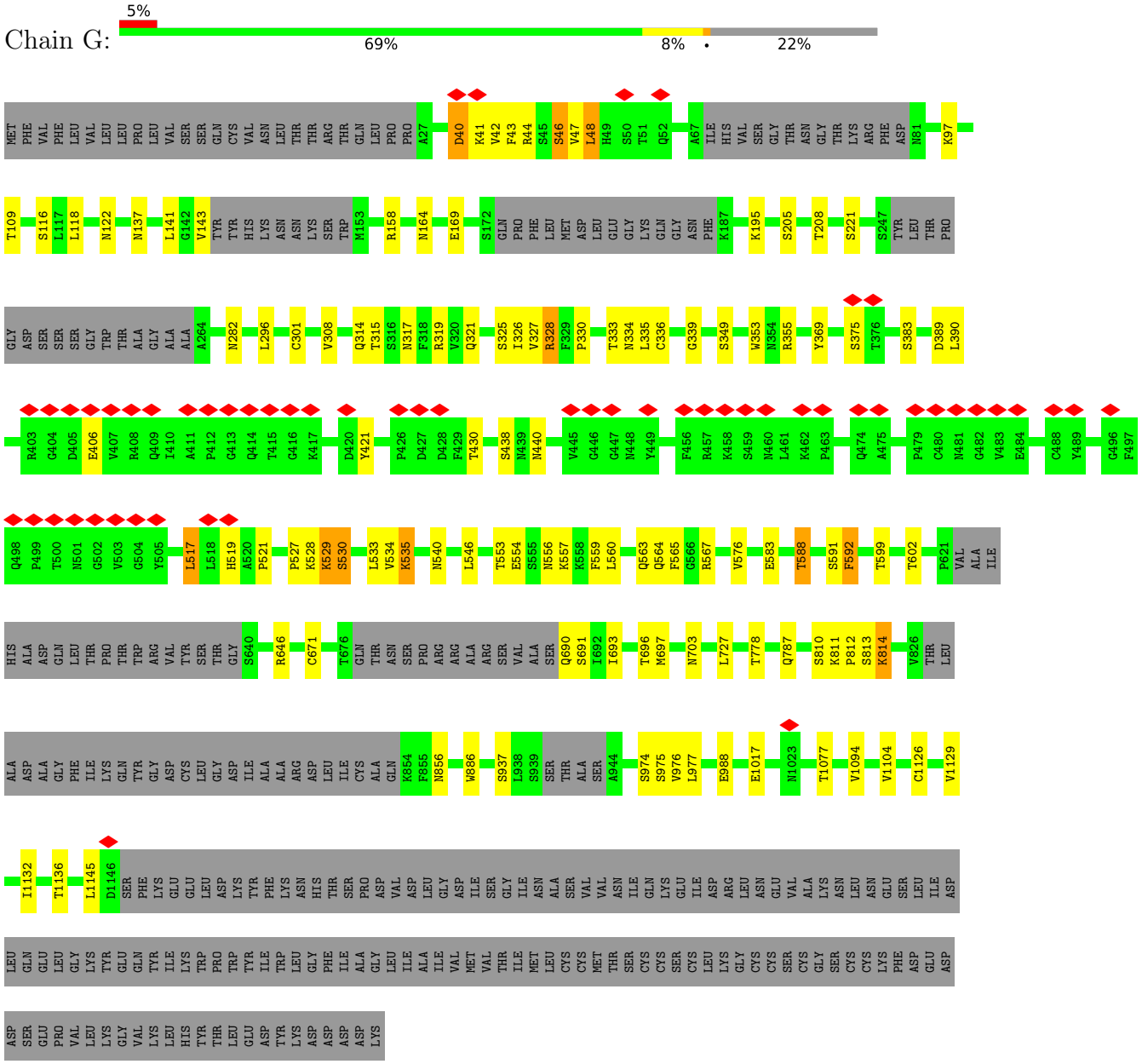
• Molecule 3: Spike glycoprotein

Chain F:



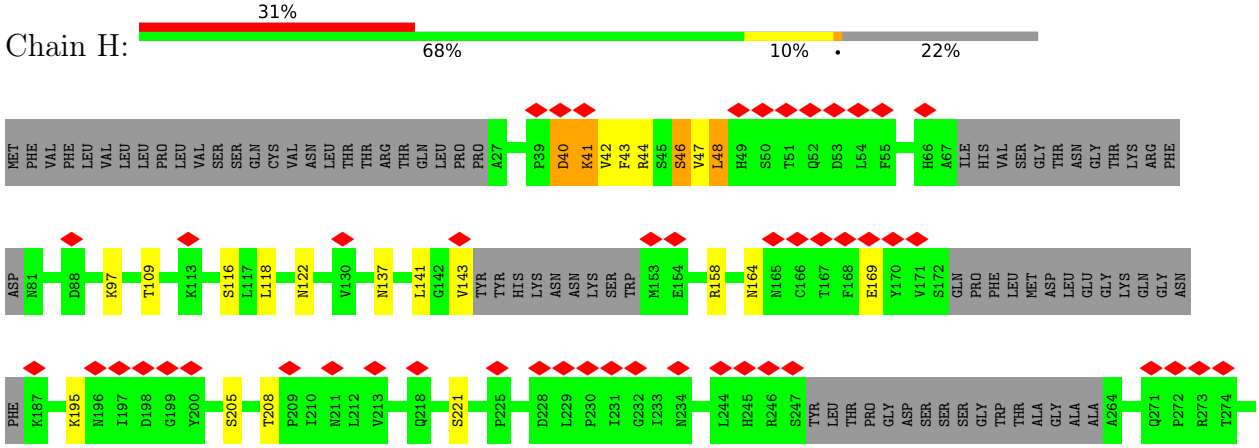
• Molecule 3: Spike glycoprotein

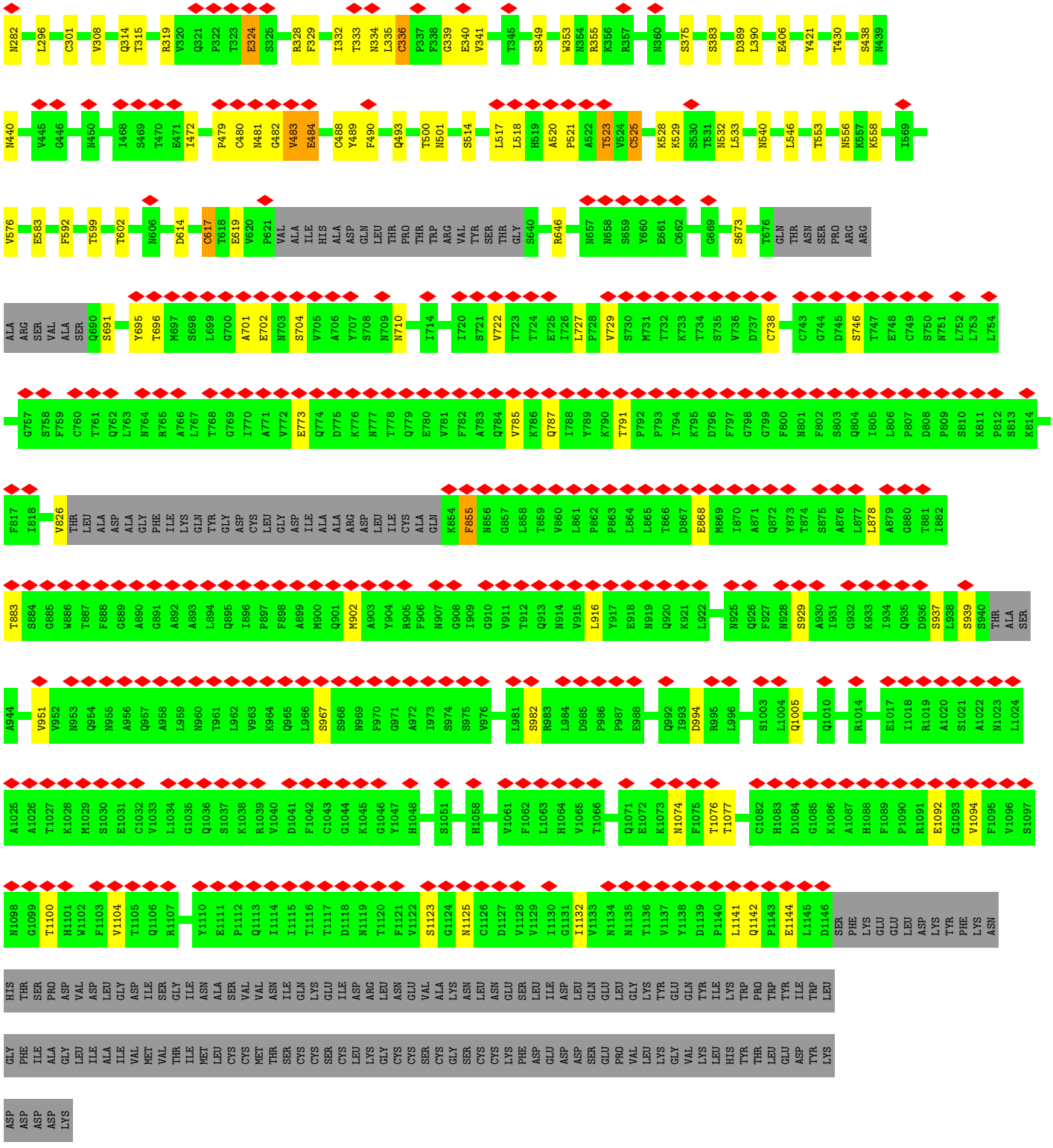
Chain G:



• Molecule 3: Spike glycoprotein

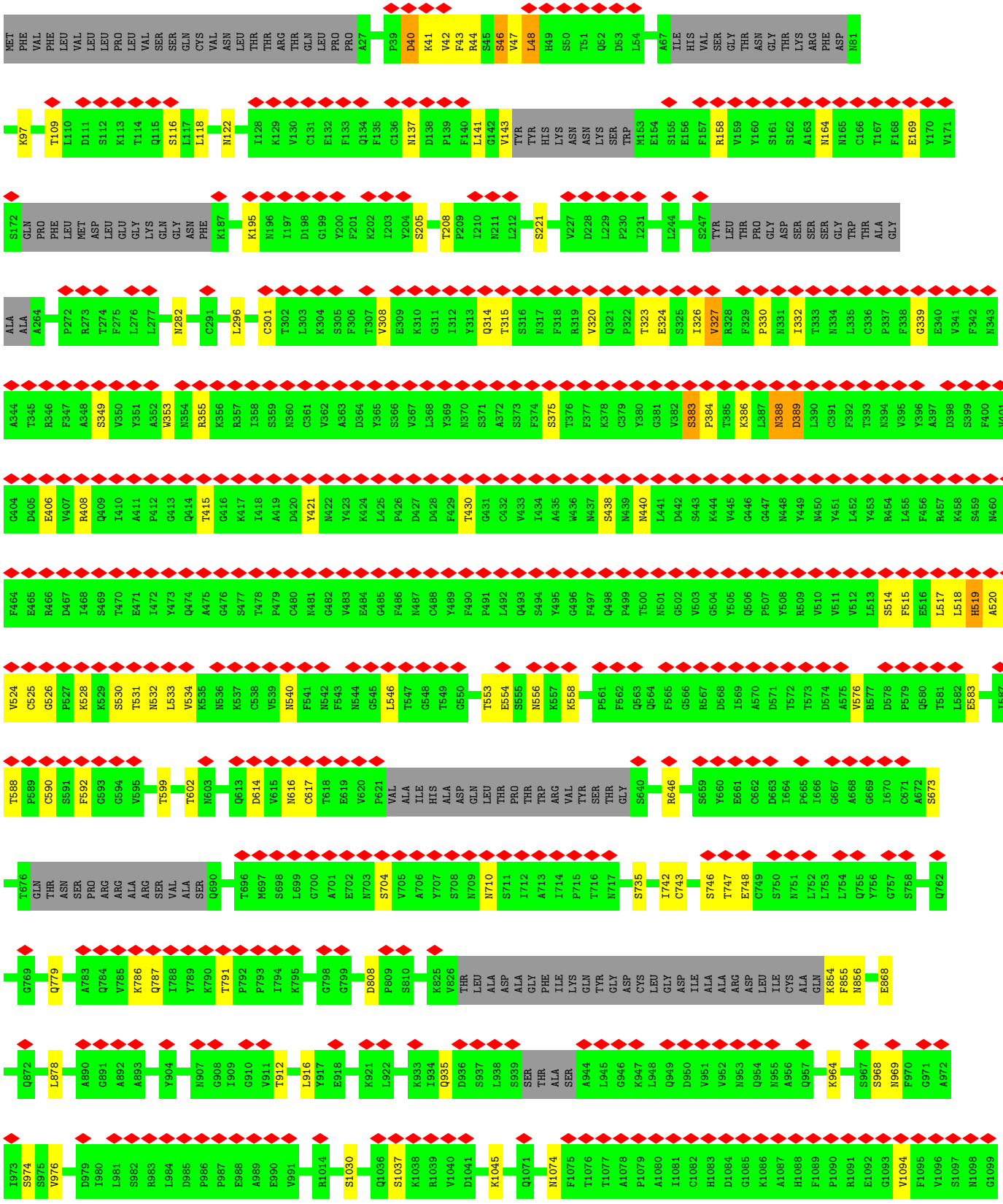
Chain H:





• Molecule 3: Spike glycoprotein

Chain I: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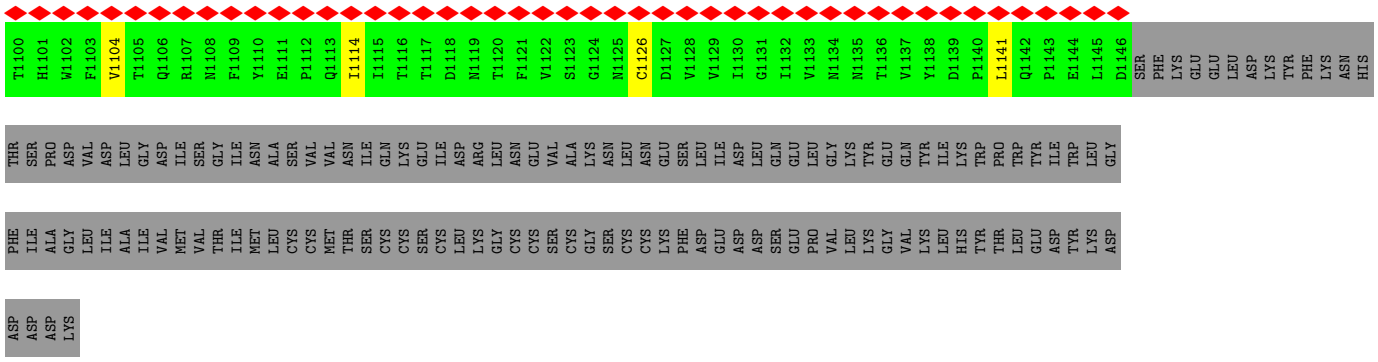
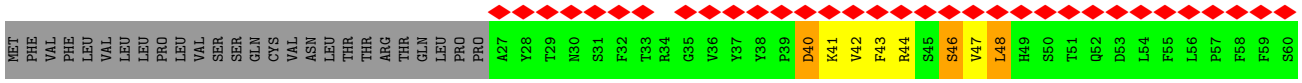
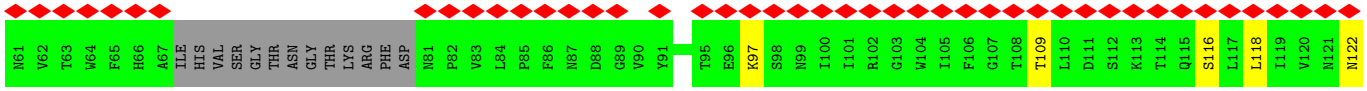
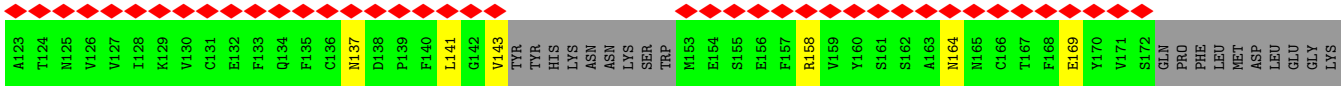
K97 T109 L110 D111 S112 K113 T114 Q115 S116 L117 L118 N122 I128 K129 V130 C131 E132 F133 Q134 F135 C136 N137 D138 P139 F140 L141 G142 V143 TYR TYR HIS LYS ASN ASN LYS SER TRP M153 E154 S155 E156 F157 R158 V159 Y160 S161 S162 A163 N164 N165 C166 T167 F168 E169 Y170 V171
S172 GLN PRO PHE LEU MET ASP LEU GLU GLY LYS GLN GLY ASN PHE K187 K195 N196 I197 D198 G199 Y200 F201 K202 I203 Y204 S205 T208 P209 I210 N211 L212 S221 V227 D228 L229 P230 I231 L244 S247 TYR LEU THR PRO GLY ASP SER SER GLY TRP THR ALA GLY
ALA ALA A264 P272 R273 T274 F275 L276 L277 N282 C291 L296 C301 T302 L303 K304 S305 F306 T307 V308 E309 K310 G311 I312 Y313 Q314 T315 S316 N317 F318 R319 V320 Q321 P322 T323 E324 S325 I326 V327 R328 F329 P330 N331 I332 T333 N334 L335 C336 P337 F338 G339 E340 V341 F342 N343
A344 T345 R346 F347 A348 S349 V350 Y351 A352 W353 N354 R355 K356 R357 I358 S359 N360 C361 V362 A363 D364 Y365 S366 V367 L368 Y369 N370 S371 A372 S373 F374 S375 T376 F377 K378 C379 Y380 G381 V382 S383 P384 T385 K386 L387 N388 D389 L390 C391 F392 T393 N394 V395 Y396 A397 D398 S399 F400 V401 I402 R403
G404 D405 E406 V407 R408 Q409 I410 A411 P412 G413 Q414 T415 G416 K417 I418 A419 D420 Y421 N422 Y423 K424 L425 P426 D427 D428 F429 T430 G431 C432 V433 I434 A435 W436 N437 S438 N439 N440 L441 D442 S443 K444 V445 G446 G447 N448 Y449 N450 Y451 L452 Y453 R454 L455 F456 R457 K458 S459 N460 L461 K462 P463
F464 E465 R466 D467 I468 S469 T470 E471 I472 Y473 Q474 A475 G476 S477 T478 P479 C480 N481 G482 V483 E484 G485 F486 N487 C488 Y489 F490 P491 L492 Q493 S494 Y495 G496 F497 Q498 P499 T500 N501 G502 V503 G504 Y505 Q506 P507 Y508 R509 V510 V511 V512 L513 S514 F515 E516 L517 L518 H519 A520 P521 A522 T523
V524 C525 G526 P527 K528 R529 S530 T531 N532 L533 V534 K535 N536 K537 C538 V539 N540 F541 N542 F543 N544 G545 L546 T547 G548 T549 G550 T553 E554 S555 N556 K557 K558 P561 F562 Q563 Q564 F565 G566 R567 D568 I569 A570 D571 T572 T573 D574 A575 V576 R577 D578 P579 Q580 T581 L582 E583 I587
T588 P589 C590 S591 F592 G593 G594 V595 T599 T602 N603 Q613 D614 V615 N616 C617 T618 E619 V620 P621 VAL ALA ILE HIS ALA ASP GLN LEU THR PRO THR TRP ARG VAL TYR SER THR GLY S640 R646 S659 Y660 E661 C662 D663 I664 P665 I666 G667 A668 G669 I670 C671 A672 S673
T676 GLN THR ASN SER PRO ARG ARG ALA ARG SER VAL ALA SER Q690 T696 M697 S698 L699 G700 A701 E702 N703 S704 V705 A706 Y707 S708 N709 N710 S711 I712 A713 I714 P715 T716 N717 S735 I742 C743 S746 T747 E748 C749 S750 N751 L752 L753 L754 Q755 Y756 G757 S758 Q762
G769 Q779 A783 Q784 V785 K786 Q787 I788 Y789 K790 T791 P792 P793 I794 K795 G798 G799 D808 P809 S810 K825 V826 THR LEU ALA ASP ALA GLY PHE ILE LYS GLN TYR GLY ASP CYS LEU GLY ASP ILE ALA ALA ARG ASP LEU ILE CYS ALA GLN K854 F855 N856 E868
Q872 L878 A890 G891 A892 A893 Y904 N907 G908 I909 G910 V911 T912 L916 Y917 E918 K921 L922 K933 I934 Q935 D936 S937 L938 S939 SER THR ALA SER A944 L945 G946 K947 L948 Q949 D950 V951 V952 N953 Q954 N955 A956 Q957 K964 S967 S968 N969 F970 G971 A972
I973 S974 S975 V976 D979 I980 L981 S982 R983 L984 D985 P986 P987 E988 A989 E990 V991 R1014 S1030 Q1036 S1037 K1038 R1039 V1040 D1041 K1045 Q1071 N1074 F1075 T1076 T1077 A1078 P1079 A1080 I1081 C1082 H1083 D1084 G1085 K1086 A1087 H1088 F1089 P1090 R1091 E1092 G1093 V1094 F1095 V1096 S1097 N1098 G1099

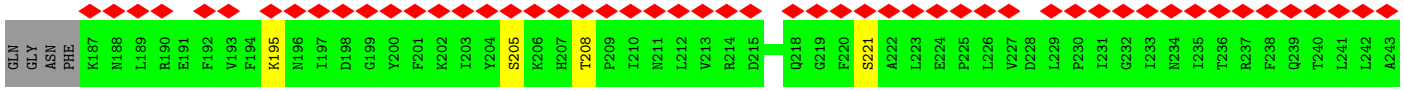


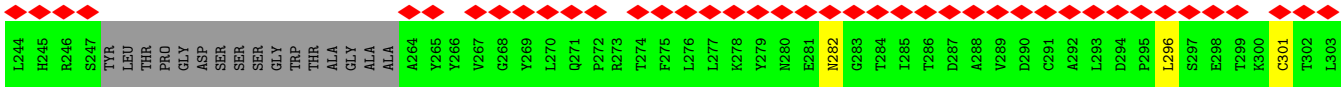
• Molecule 3: Spike glycoprotein

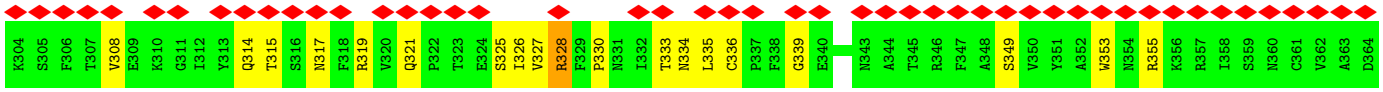


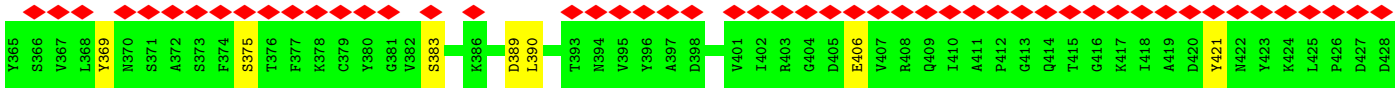


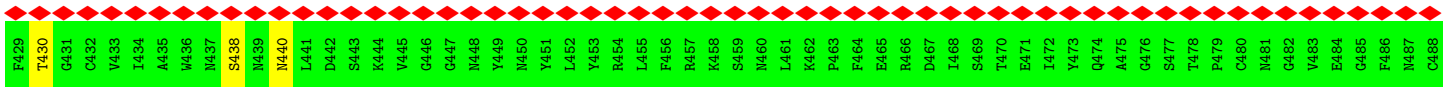


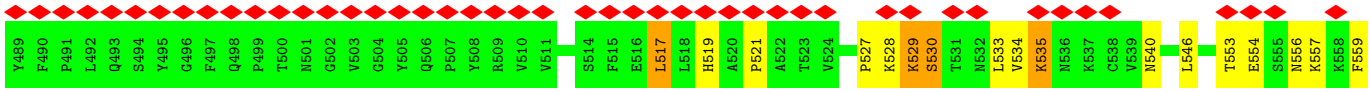


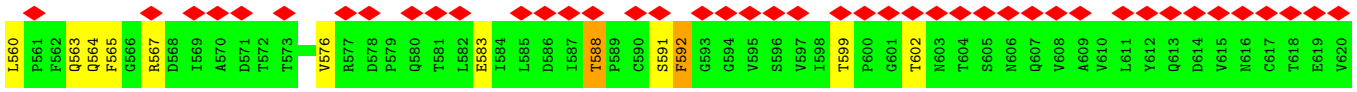


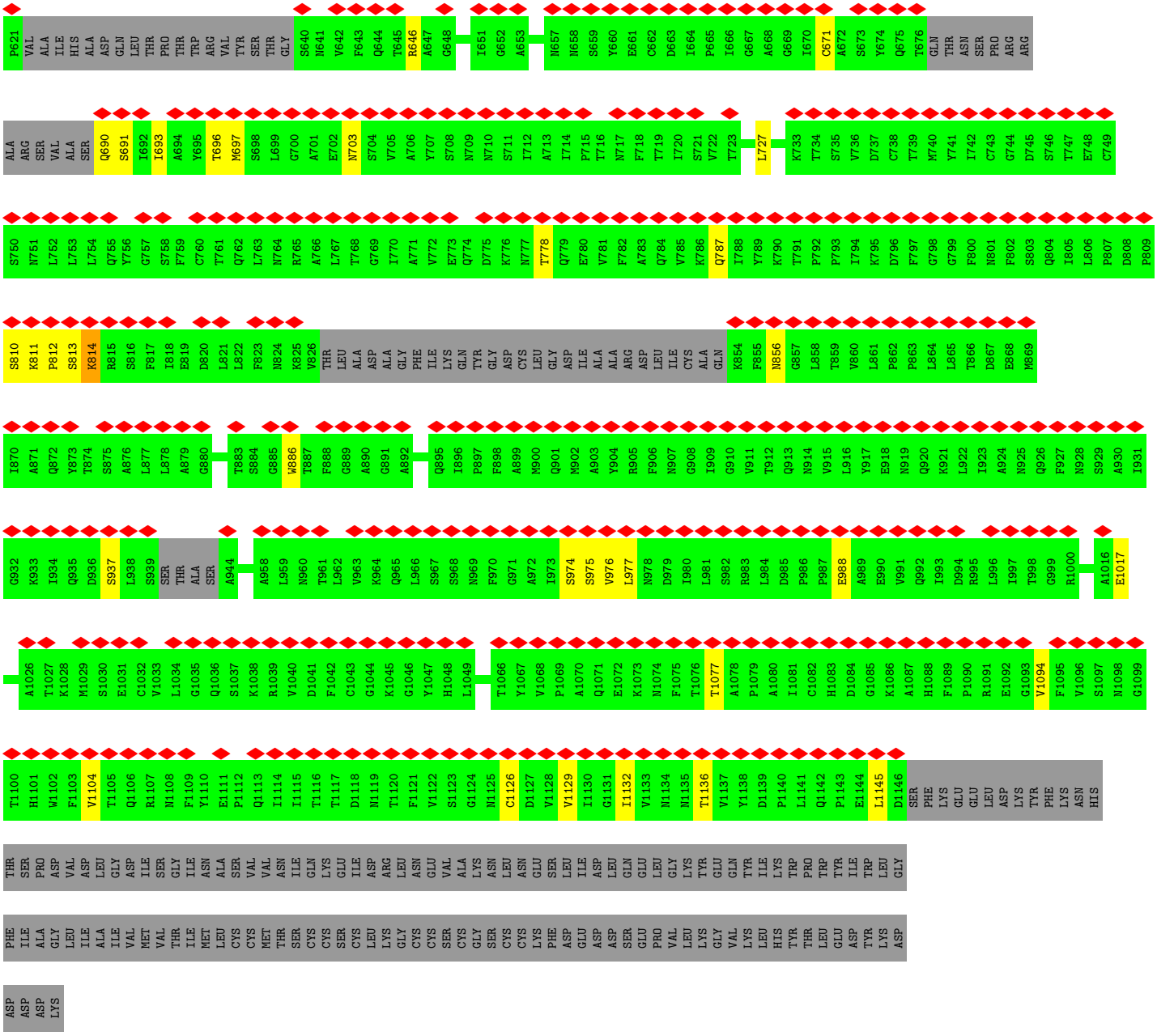






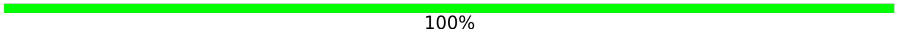






• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:



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

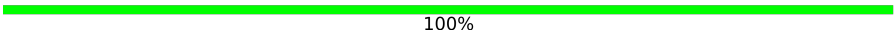
Chain L:

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

Chain M:

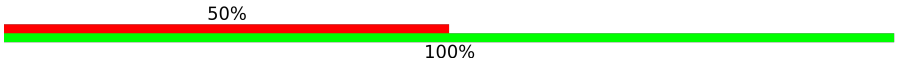
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:



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

Chain O:

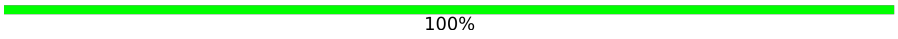


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:

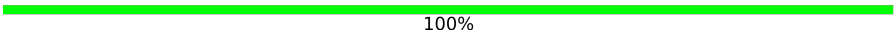
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:



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

Chain R:



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

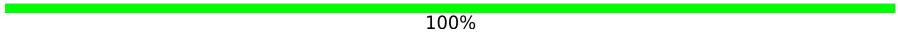
Chain S:

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

Chain T:

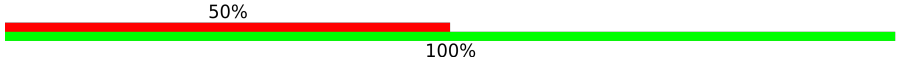
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:



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

Chain V:

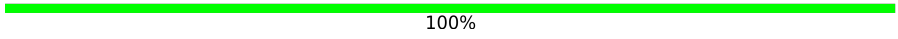


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:

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

Chain X:



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

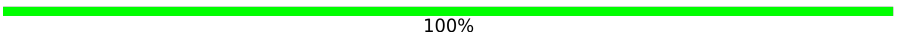
Chain Y:

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

Chain Z:

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

Chain a:

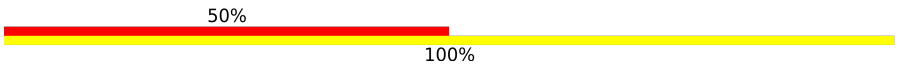


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain b:

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

Chain c:



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

Chain d:

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

Chain e:

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

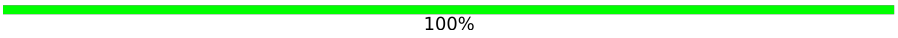
Chain f:

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

Chain g:

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

Chain h:



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

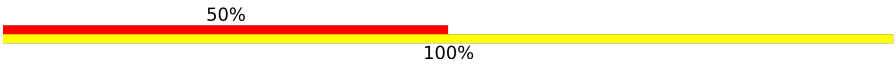
Chain i:

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

Chain j:

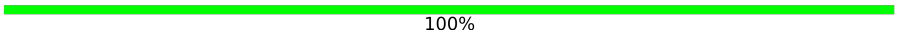
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain k:



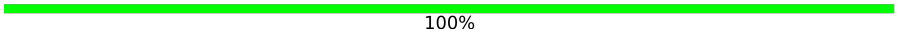
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain l:



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

Chain m:



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

Chain n:

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

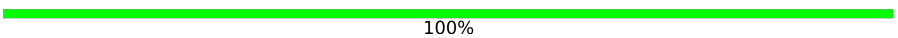
Chain o:

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

Chain p:

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

Chain q:

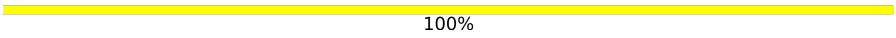


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain r:

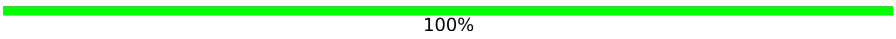
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain s:



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

Chain t:

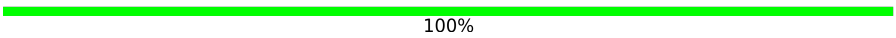


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain u:

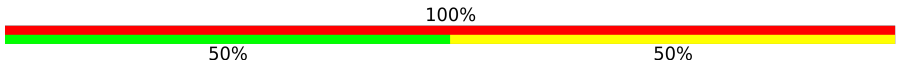
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain v:



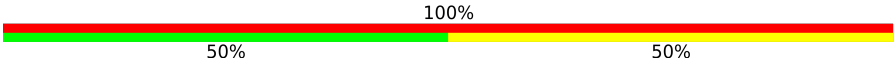
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain w:



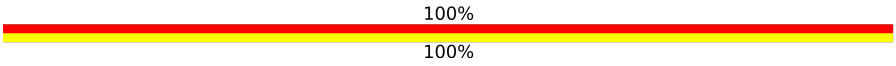
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain x:



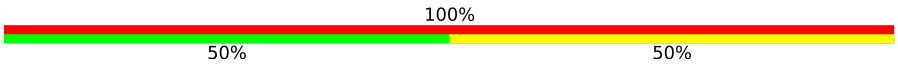
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain y:



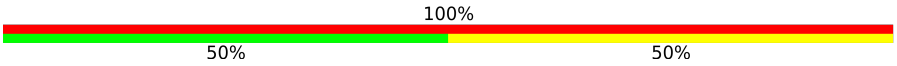
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain z:



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

Chain 0:

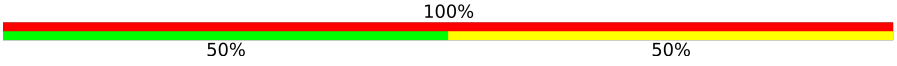


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain 1:

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

Chain 2:

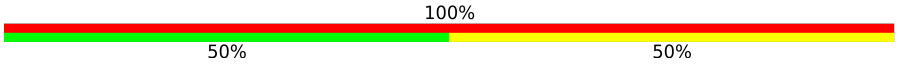


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain 3:

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

Chain 4:

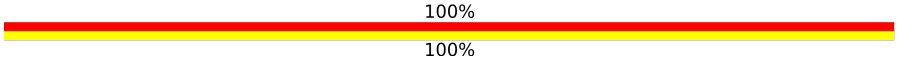


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain 5:

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

Chain 6:



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

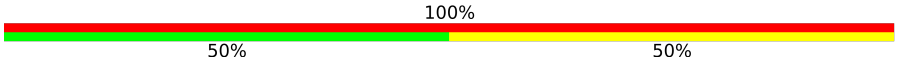
Chain 7:

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

Chain 8:

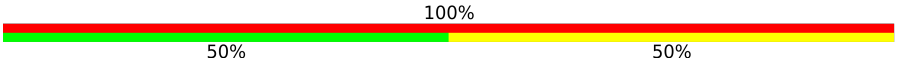
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain 9:



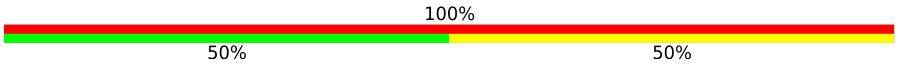
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain AA:



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

Chain BA:

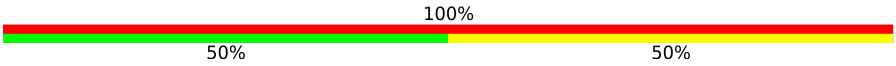


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain CA:

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

Chain DA:



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

Chain EA:

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

Chain FA:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	53141	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 ($e^-/Å^2$)	50	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	1.786	Depositor
Minimum map value	-0.869	Depositor
Average map value	0.009	Depositor
Map value standard deviation	0.074	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	521.76, 521.76, 521.76	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.087, 1.087, 1.087	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.34	0/4940	0.56	0/6748
1	C	0.34	0/4940	0.56	0/6748
2	B	0.36	0/6252	0.52	0/8488
2	D	0.36	0/6252	0.52	0/8488
3	E	0.58	0/8048	0.56	0/10947
3	F	0.57	0/8042	0.55	0/10939
3	G	0.58	0/8042	0.54	0/10939
3	H	0.58	0/8048	0.56	0/10947
3	I	0.57	0/8042	0.55	0/10939
3	J	0.58	0/8042	0.54	0/10939
All	All	0.51	0/70648	0.54	0/96122

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

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles

5.3.1 Protein backbone

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	603/654 (92%)	540 (90%)	59 (10%)	4 (1%)	19	57
1	C	603/654 (92%)	540 (90%)	59 (10%)	4 (1%)	19	57
2	B	746/817 (91%)	685 (92%)	51 (7%)	10 (1%)	10	43
2	D	746/817 (91%)	684 (92%)	52 (7%)	10 (1%)	10	43
3	E	989/1283 (77%)	841 (85%)	113 (11%)	35 (4%)	3	20
3	F	988/1283 (77%)	855 (86%)	96 (10%)	37 (4%)	2	20
3	G	988/1283 (77%)	842 (85%)	106 (11%)	40 (4%)	2	18
3	H	989/1283 (77%)	841 (85%)	112 (11%)	36 (4%)	3	20
3	I	988/1283 (77%)	855 (86%)	96 (10%)	37 (4%)	2	20
3	J	988/1283 (77%)	842 (85%)	106 (11%)	40 (4%)	2	18
All	All	8628/10640 (81%)	7525 (87%)	850 (10%)	253 (3%)	6	23

All (253) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	144	LEU
2	B	631	LYS
2	B	736	GLN
2	D	144	LEU
2	D	631	LYS
2	D	736	GLN
3	E	48	LEU
3	E	332	ILE
3	E	341	VAL
3	E	479	PRO
3	E	483	VAL
3	E	691	SER
3	E	701	ALA
3	E	855	PHE
3	F	48	LEU
3	F	326	ILE
3	F	388	ASN
3	F	519	HIS
3	F	524	VAL
3	F	526	GLY
3	F	530	SER
3	F	614	ASP

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Mol	Chain	Res	Type
3	G	48	LEU
3	G	336	CYS
3	G	529	LYS
3	G	530	SER
3	G	534	VAL
3	G	560	LEU
3	G	564	GLN
3	G	691	SER
3	G	814	LYS
3	H	48	LEU
3	H	332	ILE
3	H	334	ASN
3	H	341	VAL
3	H	479	PRO
3	H	483	VAL
3	H	521	PRO
3	H	691	SER
3	H	701	ALA
3	H	855	PHE
3	I	48	LEU
3	I	326	ILE
3	I	388	ASN
3	I	519	HIS
3	I	524	VAL
3	I	526	GLY
3	I	530	SER
3	I	614	ASP
3	J	48	LEU
3	J	336	CYS
3	J	529	LYS
3	J	530	SER
3	J	534	VAL
3	J	560	LEU
3	J	564	GLN
3	J	691	SER
3	J	814	LYS
2	B	343	VAL
2	B	679	ILE
2	B	735	ASN
2	B	739	VAL
2	D	343	VAL
2	D	679	ILE

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Mol	Chain	Res	Type
2	D	735	ASN
2	D	739	VAL
3	E	41	LYS
3	E	46	SER
3	E	334	ASN
3	E	339	GLY
3	E	481	ASN
3	E	482	GLY
3	E	484	GLU
3	E	488	CYS
3	F	41	LYS
3	F	46	SER
3	F	324	GLU
3	F	327	VAL
3	F	330	PRO
3	F	339	GLY
3	F	389	ASP
3	F	523	THR
3	F	532	ASN
3	F	742	ILE
3	F	743	CYS
3	G	41	LYS
3	G	46	SER
3	G	327	VAL
3	G	328	ARG
3	G	330	PRO
3	G	333	THR
3	G	335	LEU
3	G	339	GLY
3	G	535	LYS
3	G	588	THR
3	G	697	MET
3	G	810	SER
3	H	41	LYS
3	H	46	SER
3	H	339	GLY
3	H	481	ASN
3	H	482	GLY
3	H	484	GLU
3	H	488	CYS
3	H	520	ALA
3	I	41	LYS

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Mol	Chain	Res	Type
3	I	46	SER
3	I	324	GLU
3	I	327	VAL
3	I	330	PRO
3	I	339	GLY
3	I	389	ASP
3	I	523	THR
3	I	532	ASN
3	I	742	ILE
3	I	743	CYS
3	J	41	LYS
3	J	46	SER
3	J	327	VAL
3	J	328	ARG
3	J	330	PRO
3	J	333	THR
3	J	335	LEU
3	J	339	GLY
3	J	535	LYS
3	J	588	THR
3	J	697	MET
3	J	810	SER
1	A	486	ASP
2	B	169	ARG
2	B	423	LEU
1	C	486	ASP
2	D	169	ARG
2	D	423	LEU
3	E	43	PHE
3	E	324	GLU
3	E	333	THR
3	E	519	HIS
3	E	614	ASP
3	E	695	TYR
3	E	710	ASN
3	F	43	PHE
3	F	320	VAL
3	F	383	SER
3	F	521	PRO
3	F	590	CYS
3	G	43	PHE
3	G	517	LEU

Continued on next page...

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Mol	Chain	Res	Type
3	G	527	PRO
3	G	528	LYS
3	G	591	SER
3	H	43	PHE
3	H	324	GLU
3	H	614	ASP
3	H	695	TYR
3	H	710	ASN
3	I	43	PHE
3	I	320	VAL
3	I	383	SER
3	I	521	PRO
3	I	590	CYS
3	J	43	PHE
3	J	517	LEU
3	J	527	PRO
3	J	528	LYS
3	J	591	SER
1	A	108	HIS
1	A	592	VAL
1	C	108	HIS
1	C	592	VAL
3	E	44	ARG
3	E	329	PHE
3	E	349	SER
3	E	472	ILE
3	E	480	CYS
3	E	522	ALA
3	E	592	PHE
3	F	44	ARG
3	F	349	SER
3	F	518	LEU
3	F	531	THR
3	F	746	SER
3	G	44	ARG
3	G	325	SER
3	G	349	SER
3	G	519	HIS
3	G	592	PHE
3	G	813	SER
3	H	44	ARG
3	H	329	PHE

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Mol	Chain	Res	Type
3	H	349	SER
3	H	472	ILE
3	H	480	CYS
3	H	523	THR
3	H	592	PHE
3	I	44	ARG
3	I	349	SER
3	I	518	LEU
3	I	531	THR
3	I	746	SER
3	J	44	ARG
3	J	325	SER
3	J	349	SER
3	J	519	HIS
3	J	592	PHE
3	J	813	SER
3	E	40	ASP
3	E	42	VAL
3	E	47	VAL
3	E	617	CYS
3	F	40	ASP
3	F	42	VAL
3	F	47	VAL
3	F	520	ALA
3	F	522	ALA
3	F	616	ASN
3	G	40	ASP
3	G	42	VAL
3	G	47	VAL
3	G	812	PRO
3	H	40	ASP
3	H	42	VAL
3	H	47	VAL
3	H	525	CYS
3	H	617	CYS
3	I	40	ASP
3	I	42	VAL
3	I	47	VAL
3	I	520	ALA
3	I	522	ALA
3	I	616	ASN
3	J	40	ASP

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Mol	Chain	Res	Type
3	J	42	VAL
3	J	47	VAL
3	J	812	PRO
3	E	523	THR
3	G	334	ASN
3	G	811	LYS
3	H	336	CYS
3	J	334	ASN
3	J	811	LYS
3	G	521	PRO
3	J	521	PRO
1	A	593	PRO
1	C	593	PRO
3	F	384	PRO
3	I	384	PRO
3	F	534	VAL
3	I	534	VAL
2	B	738	PRO
2	D	738	PRO
3	G	326	ILE
3	J	326	ILE

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	531/572 (93%)	510 (96%)	21 (4%)	27 47
1	C	531/572 (93%)	509 (96%)	22 (4%)	26 47
2	B	662/721 (92%)	638 (96%)	24 (4%)	30 50
2	D	662/721 (92%)	638 (96%)	24 (4%)	30 50
3	E	882/1122 (79%)	771 (87%)	111 (13%)	3 14
3	F	881/1122 (78%)	787 (89%)	94 (11%)	5 19
3	G	881/1122 (78%)	793 (90%)	88 (10%)	6 20
3	H	882/1122 (79%)	770 (87%)	112 (13%)	3 14

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	I	881/1122 (78%)	786 (89%)	95 (11%)	5 19
3	J	881/1122 (78%)	793 (90%)	88 (10%)	6 20
All	All	7674/9318 (82%)	6995 (91%)	679 (9%)	11 25

All (679) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	76	ILE
1	A	80	LEU
1	A	81	GLU
1	A	95	ARG
1	A	157	GLU
1	A	159	GLN
1	A	221	LYS
1	A	224	TYR
1	A	226	THR
1	A	228	THR
1	A	234	LEU
1	A	237	PHE
1	A	419	LEU
1	A	461	LEU
1	A	462	ILE
1	A	466	THR
1	A	484	LEU
1	A	485	LEU
1	A	541	LEU
1	A	592	VAL
1	A	607	ARG
2	B	30	ASP
2	B	31	LYS
2	B	42	GLN
2	B	82	MET
2	B	107	VAL
2	B	128	SER
2	B	143	LEU
2	B	166	GLU
2	B	169	ARG
2	B	171	GLU
2	B	175	GLN
2	B	344	CYS
2	B	345	HIS

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Mol	Chain	Res	Type
2	B	347	THR
2	B	361	CYS
2	B	423	LEU
2	B	425	SER
2	B	628	LEU
2	B	630	ASP
2	B	678	ARG
2	B	680	SER
2	B	736	GLN
2	B	740	SER
2	B	768	ARG
1	C	76	ILE
1	C	80	LEU
1	C	81	GLU
1	C	95	ARG
1	C	157	GLU
1	C	159	GLN
1	C	217	GLU
1	C	221	LYS
1	C	224	TYR
1	C	226	THR
1	C	228	THR
1	C	234	LEU
1	C	237	PHE
1	C	419	LEU
1	C	461	LEU
1	C	462	ILE
1	C	466	THR
1	C	484	LEU
1	C	485	LEU
1	C	541	LEU
1	C	592	VAL
1	C	607	ARG
2	D	30	ASP
2	D	31	LYS
2	D	42	GLN
2	D	82	MET
2	D	107	VAL
2	D	128	SER
2	D	143	LEU
2	D	166	GLU
2	D	169	ARG

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Mol	Chain	Res	Type
2	D	171	GLU
2	D	175	GLN
2	D	344	CYS
2	D	345	HIS
2	D	347	THR
2	D	361	CYS
2	D	423	LEU
2	D	425	SER
2	D	628	LEU
2	D	630	ASP
2	D	678	ARG
2	D	680	SER
2	D	736	GLN
2	D	740	SER
2	D	768	ARG
3	E	40	ASP
3	E	41	LYS
3	E	46	SER
3	E	48	LEU
3	E	97	LYS
3	E	109	THR
3	E	116	SER
3	E	118	LEU
3	E	122	ASN
3	E	137	ASN
3	E	141	LEU
3	E	143	VAL
3	E	158	ARG
3	E	164	ASN
3	E	169	GLU
3	E	195	LYS
3	E	205	SER
3	E	208	THR
3	E	221	SER
3	E	282	ASN
3	E	296	LEU
3	E	301	CYS
3	E	308	VAL
3	E	314	GLN
3	E	315	THR
3	E	319	ARG
3	E	324	GLU

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Mol	Chain	Res	Type
3	E	328	ARG
3	E	333	THR
3	E	335	LEU
3	E	340	GLU
3	E	353	TRP
3	E	355	ARG
3	E	375	SER
3	E	383	SER
3	E	389	ASP
3	E	390	LEU
3	E	406	GLU
3	E	421	TYR
3	E	430	THR
3	E	438	SER
3	E	440	ASN
3	E	483	VAL
3	E	484	GLU
3	E	489	TYR
3	E	490	PHE
3	E	493	GLN
3	E	500	THR
3	E	501	ASN
3	E	514	SER
3	E	516	GLU
3	E	517	LEU
3	E	518	LEU
3	E	525	CYS
3	E	528	LYS
3	E	529	LYS
3	E	532	ASN
3	E	533	LEU
3	E	540	ASN
3	E	546	LEU
3	E	553	THR
3	E	556	ASN
3	E	558	LYS
3	E	576	VAL
3	E	583	GLU
3	E	599	THR
3	E	602	THR
3	E	617	CYS
3	E	619	GLU

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Mol	Chain	Res	Type
3	E	646	ARG
3	E	673	SER
3	E	696	THR
3	E	702	GLU
3	E	704	SER
3	E	722	VAL
3	E	727	LEU
3	E	729	VAL
3	E	738	CYS
3	E	746	SER
3	E	773	GLU
3	E	785	VAL
3	E	787	GLN
3	E	791	THR
3	E	826	VAL
3	E	855	PHE
3	E	868	GLU
3	E	878	LEU
3	E	883	THR
3	E	902	MET
3	E	916	LEU
3	E	929	SER
3	E	937	SER
3	E	939	SER
3	E	951	VAL
3	E	967	SER
3	E	982	SER
3	E	994	ASP
3	E	1005	GLN
3	E	1074	ASN
3	E	1076	THR
3	E	1077	THR
3	E	1092	GLU
3	E	1094	VAL
3	E	1100	THR
3	E	1104	VAL
3	E	1123	SER
3	E	1125	ASN
3	E	1132	ILE
3	E	1141	LEU
3	E	1142	GLN
3	E	1144	GLU

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Mol	Chain	Res	Type
3	F	40	ASP
3	F	46	SER
3	F	48	LEU
3	F	97	LYS
3	F	109	THR
3	F	116	SER
3	F	118	LEU
3	F	122	ASN
3	F	137	ASN
3	F	141	LEU
3	F	143	VAL
3	F	158	ARG
3	F	164	ASN
3	F	169	GLU
3	F	195	LYS
3	F	205	SER
3	F	208	THR
3	F	221	SER
3	F	296	LEU
3	F	301	CYS
3	F	308	VAL
3	F	314	GLN
3	F	315	THR
3	F	323	THR
3	F	327	VAL
3	F	332	ILE
3	F	353	TRP
3	F	355	ARG
3	F	375	SER
3	F	383	SER
3	F	386	LYS
3	F	388	ASN
3	F	389	ASP
3	F	406	GLU
3	F	408	ARG
3	F	415	THR
3	F	421	TYR
3	F	430	THR
3	F	438	SER
3	F	440	ASN
3	F	514	SER
3	F	515	PHE

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Mol	Chain	Res	Type
3	F	517	LEU
3	F	519	HIS
3	F	525	CYS
3	F	528	LYS
3	F	533	LEU
3	F	540	ASN
3	F	546	LEU
3	F	553	THR
3	F	554	GLU
3	F	556	ASN
3	F	558	LYS
3	F	576	VAL
3	F	583	GLU
3	F	588	THR
3	F	592	PHE
3	F	599	THR
3	F	602	THR
3	F	617	CYS
3	F	646	ARG
3	F	673	SER
3	F	704	SER
3	F	710	ASN
3	F	735	SER
3	F	747	THR
3	F	748	GLU
3	F	779	GLN
3	F	786	LYS
3	F	787	GLN
3	F	791	THR
3	F	808	ASP
3	F	854	LYS
3	F	855	PHE
3	F	856	ASN
3	F	868	GLU
3	F	878	LEU
3	F	912	THR
3	F	916	LEU
3	F	935	GLN
3	F	964	LYS
3	F	968	SER
3	F	969	ASN
3	F	974	SER

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Mol	Chain	Res	Type
3	F	976	VAL
3	F	1030	SER
3	F	1037	SER
3	F	1045	LYS
3	F	1074	ASN
3	F	1094	VAL
3	F	1104	VAL
3	F	1114	ILE
3	F	1126	CYS
3	F	1141	LEU
3	G	40	ASP
3	G	46	SER
3	G	48	LEU
3	G	97	LYS
3	G	109	THR
3	G	116	SER
3	G	118	LEU
3	G	122	ASN
3	G	137	ASN
3	G	141	LEU
3	G	143	VAL
3	G	158	ARG
3	G	164	ASN
3	G	169	GLU
3	G	195	LYS
3	G	205	SER
3	G	208	THR
3	G	221	SER
3	G	282	ASN
3	G	296	LEU
3	G	301	CYS
3	G	308	VAL
3	G	314	GLN
3	G	315	THR
3	G	317	ASN
3	G	319	ARG
3	G	321	GLN
3	G	328	ARG
3	G	353	TRP
3	G	355	ARG
3	G	369	TYR
3	G	375	SER

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Mol	Chain	Res	Type
3	G	383	SER
3	G	389	ASP
3	G	390	LEU
3	G	406	GLU
3	G	421	TYR
3	G	430	THR
3	G	438	SER
3	G	440	ASN
3	G	517	LEU
3	G	529	LYS
3	G	530	SER
3	G	533	LEU
3	G	535	LYS
3	G	540	ASN
3	G	546	LEU
3	G	553	THR
3	G	554	GLU
3	G	556	ASN
3	G	557	LYS
3	G	559	PHE
3	G	563	GLN
3	G	565	PHE
3	G	567	ARG
3	G	576	VAL
3	G	583	GLU
3	G	588	THR
3	G	592	PHE
3	G	599	THR
3	G	602	THR
3	G	646	ARG
3	G	671	CYS
3	G	690	GLN
3	G	693	ILE
3	G	696	THR
3	G	703	ASN
3	G	727	LEU
3	G	778	THR
3	G	787	GLN
3	G	814	LYS
3	G	856	ASN
3	G	886	TRP
3	G	937	SER

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Mol	Chain	Res	Type
3	G	974	SER
3	G	975	SER
3	G	976	VAL
3	G	977	LEU
3	G	988	GLU
3	G	1017	GLU
3	G	1077	THR
3	G	1094	VAL
3	G	1104	VAL
3	G	1126	CYS
3	G	1129	VAL
3	G	1132	ILE
3	G	1136	THR
3	G	1145	LEU
3	H	40	ASP
3	H	41	LYS
3	H	46	SER
3	H	48	LEU
3	H	97	LYS
3	H	109	THR
3	H	116	SER
3	H	118	LEU
3	H	122	ASN
3	H	137	ASN
3	H	141	LEU
3	H	143	VAL
3	H	158	ARG
3	H	164	ASN
3	H	169	GLU
3	H	195	LYS
3	H	205	SER
3	H	208	THR
3	H	221	SER
3	H	282	ASN
3	H	296	LEU
3	H	301	CYS
3	H	308	VAL
3	H	314	GLN
3	H	315	THR
3	H	319	ARG
3	H	324	GLU
3	H	328	ARG

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Mol	Chain	Res	Type
3	H	333	THR
3	H	335	LEU
3	H	336	CYS
3	H	340	GLU
3	H	353	TRP
3	H	355	ARG
3	H	375	SER
3	H	383	SER
3	H	389	ASP
3	H	390	LEU
3	H	406	GLU
3	H	421	TYR
3	H	430	THR
3	H	438	SER
3	H	440	ASN
3	H	483	VAL
3	H	484	GLU
3	H	489	TYR
3	H	490	PHE
3	H	493	GLN
3	H	500	THR
3	H	501	ASN
3	H	514	SER
3	H	517	LEU
3	H	518	LEU
3	H	523	THR
3	H	525	CYS
3	H	528	LYS
3	H	529	LYS
3	H	532	ASN
3	H	533	LEU
3	H	540	ASN
3	H	546	LEU
3	H	553	THR
3	H	556	ASN
3	H	558	LYS
3	H	576	VAL
3	H	583	GLU
3	H	599	THR
3	H	602	THR
3	H	617	CYS
3	H	619	GLU

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Mol	Chain	Res	Type
3	H	646	ARG
3	H	673	SER
3	H	696	THR
3	H	702	GLU
3	H	704	SER
3	H	722	VAL
3	H	727	LEU
3	H	729	VAL
3	H	738	CYS
3	H	746	SER
3	H	773	GLU
3	H	785	VAL
3	H	787	GLN
3	H	791	THR
3	H	826	VAL
3	H	855	PHE
3	H	868	GLU
3	H	878	LEU
3	H	883	THR
3	H	902	MET
3	H	916	LEU
3	H	929	SER
3	H	937	SER
3	H	939	SER
3	H	951	VAL
3	H	967	SER
3	H	982	SER
3	H	994	ASP
3	H	1005	GLN
3	H	1074	ASN
3	H	1076	THR
3	H	1077	THR
3	H	1092	GLU
3	H	1094	VAL
3	H	1100	THR
3	H	1104	VAL
3	H	1123	SER
3	H	1125	ASN
3	H	1132	ILE
3	H	1141	LEU
3	H	1142	GLN
3	H	1144	GLU

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Mol	Chain	Res	Type
3	I	40	ASP
3	I	46	SER
3	I	48	LEU
3	I	97	LYS
3	I	109	THR
3	I	116	SER
3	I	118	LEU
3	I	122	ASN
3	I	137	ASN
3	I	141	LEU
3	I	143	VAL
3	I	158	ARG
3	I	164	ASN
3	I	169	GLU
3	I	195	LYS
3	I	205	SER
3	I	208	THR
3	I	221	SER
3	I	282	ASN
3	I	296	LEU
3	I	301	CYS
3	I	308	VAL
3	I	314	GLN
3	I	315	THR
3	I	323	THR
3	I	327	VAL
3	I	332	ILE
3	I	353	TRP
3	I	355	ARG
3	I	375	SER
3	I	383	SER
3	I	386	LYS
3	I	388	ASN
3	I	389	ASP
3	I	406	GLU
3	I	408	ARG
3	I	415	THR
3	I	421	TYR
3	I	430	THR
3	I	438	SER
3	I	440	ASN
3	I	514	SER

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Mol	Chain	Res	Type
3	I	515	PHE
3	I	517	LEU
3	I	519	HIS
3	I	525	CYS
3	I	528	LYS
3	I	533	LEU
3	I	540	ASN
3	I	546	LEU
3	I	553	THR
3	I	554	GLU
3	I	556	ASN
3	I	558	LYS
3	I	576	VAL
3	I	583	GLU
3	I	588	THR
3	I	592	PHE
3	I	599	THR
3	I	602	THR
3	I	617	CYS
3	I	646	ARG
3	I	673	SER
3	I	704	SER
3	I	710	ASN
3	I	735	SER
3	I	747	THR
3	I	748	GLU
3	I	779	GLN
3	I	786	LYS
3	I	787	GLN
3	I	791	THR
3	I	808	ASP
3	I	854	LYS
3	I	855	PHE
3	I	856	ASN
3	I	868	GLU
3	I	878	LEU
3	I	912	THR
3	I	916	LEU
3	I	935	GLN
3	I	964	LYS
3	I	968	SER
3	I	969	ASN

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Mol	Chain	Res	Type
3	I	974	SER
3	I	976	VAL
3	I	1030	SER
3	I	1037	SER
3	I	1045	LYS
3	I	1074	ASN
3	I	1094	VAL
3	I	1104	VAL
3	I	1114	ILE
3	I	1126	CYS
3	I	1141	LEU
3	J	40	ASP
3	J	46	SER
3	J	48	LEU
3	J	97	LYS
3	J	109	THR
3	J	116	SER
3	J	118	LEU
3	J	122	ASN
3	J	137	ASN
3	J	141	LEU
3	J	143	VAL
3	J	158	ARG
3	J	164	ASN
3	J	169	GLU
3	J	195	LYS
3	J	205	SER
3	J	208	THR
3	J	221	SER
3	J	282	ASN
3	J	296	LEU
3	J	301	CYS
3	J	308	VAL
3	J	314	GLN
3	J	315	THR
3	J	317	ASN
3	J	319	ARG
3	J	321	GLN
3	J	328	ARG
3	J	353	TRP
3	J	355	ARG
3	J	369	TYR

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Mol	Chain	Res	Type
3	J	375	SER
3	J	383	SER
3	J	389	ASP
3	J	390	LEU
3	J	406	GLU
3	J	421	TYR
3	J	430	THR
3	J	438	SER
3	J	440	ASN
3	J	517	LEU
3	J	529	LYS
3	J	530	SER
3	J	533	LEU
3	J	535	LYS
3	J	540	ASN
3	J	546	LEU
3	J	553	THR
3	J	554	GLU
3	J	556	ASN
3	J	557	LYS
3	J	559	PHE
3	J	563	GLN
3	J	565	PHE
3	J	567	ARG
3	J	576	VAL
3	J	583	GLU
3	J	588	THR
3	J	592	PHE
3	J	599	THR
3	J	602	THR
3	J	646	ARG
3	J	671	CYS
3	J	690	GLN
3	J	693	ILE
3	J	696	THR
3	J	703	ASN
3	J	727	LEU
3	J	778	THR
3	J	787	GLN
3	J	814	LYS
3	J	856	ASN
3	J	886	TRP

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Mol	Chain	Res	Type
3	J	937	SER
3	J	974	SER
3	J	975	SER
3	J	976	VAL
3	J	977	LEU
3	J	988	GLU
3	J	1017	GLU
3	J	1077	THR
3	J	1094	VAL
3	J	1104	VAL
3	J	1126	CYS
3	J	1129	VAL
3	J	1132	ILE
3	J	1136	THR
3	J	1145	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (217) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	159	GLN
1	A	194	GLN
1	A	310	ASN
1	A	340	ASN
1	A	515	ASN
1	A	580	ASN
1	A	609	HIS
2	B	58	ASN
2	B	96	GLN
2	B	159	ASN
2	B	175	GLN
2	B	239	HIS
2	B	277	ASN
2	B	378	HIS
2	B	472	GLN
2	B	493	HIS
2	B	505	HIS
2	B	586	ASN
2	B	735	ASN
2	B	736	GLN
1	C	159	GLN
1	C	194	GLN
1	C	310	ASN

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Mol	Chain	Res	Type
1	C	340	ASN
1	C	515	ASN
1	C	580	ASN
1	C	609	HIS
2	D	58	ASN
2	D	96	GLN
2	D	159	ASN
2	D	175	GLN
2	D	239	HIS
2	D	277	ASN
2	D	378	HIS
2	D	472	GLN
2	D	493	HIS
2	D	505	HIS
2	D	586	ASN
2	D	599	ASN
2	D	735	ASN
2	D	736	GLN
3	E	134	GLN
3	E	137	ASN
3	E	188	ASN
3	E	239	GLN
3	E	317	ASN
3	E	354	ASN
3	E	360	ASN
3	E	394	ASN
3	E	422	ASN
3	E	440	ASN
3	E	501	ASN
3	E	532	ASN
3	E	540	ASN
3	E	556	ASN
3	E	644	GLN
3	E	658	ASN
3	E	703	ASN
3	E	762	GLN
3	E	787	GLN
3	E	901	GLN
3	E	914	ASN
3	E	919	ASN
3	E	926	GLN
3	E	955	ASN

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Mol	Chain	Res	Type
3	E	969	ASN
3	E	978	ASN
3	E	992	GLN
3	E	1125	ASN
3	E	1142	GLN
3	F	134	GLN
3	F	137	ASN
3	F	188	ASN
3	F	239	GLN
3	F	317	ASN
3	F	334	ASN
3	F	354	ASN
3	F	360	ASN
3	F	394	ASN
3	F	422	ASN
3	F	440	ASN
3	F	498	GLN
3	F	540	ASN
3	F	556	ASN
3	F	564	GLN
3	F	613	GLN
3	F	644	GLN
3	F	655	HIS
3	F	658	ASN
3	F	710	ASN
3	F	804	GLN
3	F	901	GLN
3	F	914	ASN
3	F	919	ASN
3	F	920	GLN
3	F	926	GLN
3	F	992	GLN
3	F	1054	GLN
3	G	134	GLN
3	G	137	ASN
3	G	188	ASN
3	G	239	GLN
3	G	317	ASN
3	G	321	GLN
3	G	354	ASN
3	G	360	ASN
3	G	394	ASN

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Mol	Chain	Res	Type
3	G	422	ASN
3	G	440	ASN
3	G	498	GLN
3	G	540	ASN
3	G	556	ASN
3	G	644	GLN
3	G	658	ASN
3	G	690	GLN
3	G	703	ASN
3	G	784	GLN
3	G	804	GLN
3	G	901	GLN
3	G	907	ASN
3	G	914	ASN
3	G	926	GLN
3	G	935	GLN
3	G	969	ASN
3	G	992	GLN
3	G	1010	GLN
3	G	1071	GLN
3	G	1101	HIS
3	G	1106	GLN
3	H	134	GLN
3	H	137	ASN
3	H	188	ASN
3	H	239	GLN
3	H	317	ASN
3	H	354	ASN
3	H	360	ASN
3	H	394	ASN
3	H	422	ASN
3	H	440	ASN
3	H	501	ASN
3	H	532	ASN
3	H	540	ASN
3	H	556	ASN
3	H	644	GLN
3	H	658	ASN
3	H	703	ASN
3	H	762	GLN
3	H	787	GLN
3	H	901	GLN

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Mol	Chain	Res	Type
3	H	914	ASN
3	H	919	ASN
3	H	926	GLN
3	H	955	ASN
3	H	969	ASN
3	H	978	ASN
3	H	992	GLN
3	H	1125	ASN
3	H	1142	GLN
3	I	134	GLN
3	I	137	ASN
3	I	188	ASN
3	I	239	GLN
3	I	317	ASN
3	I	334	ASN
3	I	354	ASN
3	I	360	ASN
3	I	394	ASN
3	I	422	ASN
3	I	440	ASN
3	I	498	GLN
3	I	540	ASN
3	I	556	ASN
3	I	564	GLN
3	I	613	GLN
3	I	644	GLN
3	I	655	HIS
3	I	658	ASN
3	I	710	ASN
3	I	804	GLN
3	I	901	GLN
3	I	914	ASN
3	I	919	ASN
3	I	920	GLN
3	I	926	GLN
3	I	992	GLN
3	I	1054	GLN
3	J	134	GLN
3	J	137	ASN
3	J	188	ASN
3	J	239	GLN
3	J	317	ASN

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Mol	Chain	Res	Type
3	J	321	GLN
3	J	354	ASN
3	J	360	ASN
3	J	394	ASN
3	J	422	ASN
3	J	440	ASN
3	J	498	GLN
3	J	540	ASN
3	J	556	ASN
3	J	644	GLN
3	J	658	ASN
3	J	690	GLN
3	J	703	ASN
3	J	784	GLN
3	J	804	GLN
3	J	901	GLN
3	J	907	ASN
3	J	914	ASN
3	J	926	GLN
3	J	935	GLN
3	J	969	ASN
3	J	992	GLN
3	J	1010	GLN
3	J	1071	GLN
3	J	1101	HIS
3	J	1106	GLN

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)

116 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	$\#\|Z\| > 2$
4	NAG	0	1	3,4	14,14,15	0.26	0	17,19,21	0.68	1 (5%)
4	NAG	0	2	4	14,14,15	0.15	0	17,19,21	0.49	0
4	NAG	1	1	3,4	14,14,15	0.28	0	17,19,21	0.62	0
4	NAG	1	2	4	14,14,15	0.24	0	17,19,21	0.58	0
4	NAG	2	1	3,4	14,14,15	0.61	1 (7%)	17,19,21	0.57	0
4	NAG	2	2	4	14,14,15	0.32	0	17,19,21	0.46	0
4	NAG	3	1	3,4	14,14,15	0.31	0	17,19,21	0.41	0
4	NAG	3	2	4	14,14,15	0.40	0	17,19,21	0.37	0
4	NAG	4	1	3,4	14,14,15	0.35	0	17,19,21	1.13	1 (5%)
4	NAG	4	2	4	14,14,15	0.29	0	17,19,21	0.48	0
4	NAG	5	1	3,4	14,14,15	0.32	0	17,19,21	0.71	1 (5%)
4	NAG	5	2	4	14,14,15	0.21	0	17,19,21	0.40	0
4	NAG	6	1	3,4	14,14,15	0.77	1 (7%)	17,19,21	0.90	1 (5%)
4	NAG	6	2	4	14,14,15	0.31	0	17,19,21	0.70	1 (5%)
4	NAG	7	1	3,4	14,14,15	0.22	0	17,19,21	0.43	0
4	NAG	7	2	4	14,14,15	0.26	0	17,19,21	0.36	0
4	NAG	8	1	3,4	14,14,15	0.55	0	17,19,21	0.49	0
4	NAG	8	2	4	14,14,15	0.25	0	17,19,21	0.56	0
4	NAG	9	1	3,4	14,14,15	0.58	1 (7%)	17,19,21	0.56	0
4	NAG	9	2	4	14,14,15	0.30	0	17,19,21	0.47	0
4	NAG	AA	1	3,4	14,14,15	0.23	0	17,19,21	1.37	1 (5%)
4	NAG	AA	2	4	14,14,15	0.19	0	17,19,21	0.50	0
4	NAG	BA	1	3,4	14,14,15	0.54	0	17,19,21	0.71	1 (5%)
4	NAG	BA	2	4	14,14,15	0.40	0	17,19,21	0.46	0
4	NAG	CA	1	3,4	14,14,15	0.36	0	17,19,21	0.40	0
4	NAG	CA	2	4	14,14,15	0.20	0	17,19,21	0.74	0
4	NAG	DA	1	3,4	14,14,15	0.36	0	17,19,21	0.48	0
4	NAG	DA	2	4	14,14,15	0.56	0	17,19,21	1.31	1 (5%)
4	NAG	EA	1	3,4	14,14,15	0.65	1 (7%)	17,19,21	0.42	0
4	NAG	EA	2	4	14,14,15	0.32	0	17,19,21	1.36	2 (11%)
4	NAG	FA	1	3,4	14,14,15	0.40	0	17,19,21	0.45	0
4	NAG	FA	2	4	14,14,15	0.24	0	17,19,21	0.50	0
4	NAG	K	1	4,1	14,14,15	0.32	0	17,19,21	0.51	0
4	NAG	K	2	4	14,14,15	0.32	0	17,19,21	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	L	1	4,2	14,14,15	0.61	1 (7%)	17,19,21	0.73	0
4	NAG	L	2	4	14,14,15	0.53	0	17,19,21	0.36	0
4	NAG	M	1	4,2	14,14,15	0.42	0	17,19,21	0.64	0
4	NAG	M	2	4	14,14,15	0.28	0	17,19,21	0.69	1 (5%)
4	NAG	N	1	4,2	14,14,15	0.29	0	17,19,21	0.63	0
4	NAG	N	2	4	14,14,15	0.30	0	17,19,21	0.61	0
4	NAG	O	1	4,2	14,14,15	0.30	0	17,19,21	0.51	0
4	NAG	O	2	4	14,14,15	0.37	0	17,19,21	0.47	0
4	NAG	P	1	4,2	14,14,15	0.24	0	17,19,21	0.62	0
4	NAG	P	2	4	14,14,15	0.31	0	17,19,21	0.60	1 (5%)
4	NAG	Q	1	4,2	14,14,15	0.25	0	17,19,21	0.56	0
4	NAG	Q	2	4	14,14,15	0.22	0	17,19,21	0.57	0
4	NAG	R	1	4,1	14,14,15	0.33	0	17,19,21	0.51	0
4	NAG	R	2	4	14,14,15	0.32	0	17,19,21	0.47	0
4	NAG	S	1	4,2	14,14,15	0.60	1 (7%)	17,19,21	0.73	0
4	NAG	S	2	4	14,14,15	0.53	0	17,19,21	0.36	0
4	NAG	T	1	4,2	14,14,15	0.40	0	17,19,21	0.64	0
4	NAG	T	2	4	14,14,15	0.27	0	17,19,21	0.69	1 (5%)
4	NAG	U	1	4,2	14,14,15	0.29	0	17,19,21	0.62	0
4	NAG	U	2	4	14,14,15	0.30	0	17,19,21	0.61	0
4	NAG	V	1	4,2	14,14,15	0.32	0	17,19,21	0.52	0
4	NAG	V	2	4	14,14,15	0.34	0	17,19,21	0.46	0
4	NAG	W	1	4,2	14,14,15	0.23	0	17,19,21	0.62	0
4	NAG	W	2	4	14,14,15	0.32	0	17,19,21	0.59	1 (5%)
4	NAG	X	1	4,2	14,14,15	0.26	0	17,19,21	0.56	0
4	NAG	X	2	4	14,14,15	0.22	0	17,19,21	0.57	0
4	NAG	Y	1	3,4	14,14,15	0.54	0	17,19,21	0.50	0
4	NAG	Y	2	4	14,14,15	0.25	0	17,19,21	0.58	0
4	NAG	Z	1	3,4	14,14,15	0.28	0	17,19,21	0.62	0
4	NAG	Z	2	4	14,14,15	0.29	0	17,19,21	0.62	0
4	NAG	a	1	3,4	14,14,15	0.32	0	17,19,21	0.62	0
4	NAG	a	2	4	14,14,15	0.51	0	17,19,21	0.47	0
4	NAG	b	1	3,4	14,14,15	0.37	0	17,19,21	0.73	0
4	NAG	b	2	4	14,14,15	0.30	0	17,19,21	1.32	2 (11%)
4	NAG	c	1	3,4	14,14,15	0.71	1 (7%)	17,19,21	0.70	0
4	NAG	c	2	4	14,14,15	0.38	0	17,19,21	1.41	3 (17%)
4	NAG	d	1	3,4	14,14,15	0.70	1 (7%)	17,19,21	0.66	0
4	NAG	d	2	4	14,14,15	0.30	0	17,19,21	0.63	0
4	NAG	e	1	3,4	14,14,15	0.25	0	17,19,21	0.69	1 (5%)
4	NAG	e	2	4	14,14,15	0.18	0	17,19,21	0.48	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	f	1	3,4	14,14,15	0.30	0	17,19,21	0.62	0
4	NAG	f	2	4	14,14,15	0.24	0	17,19,21	0.58	0
4	NAG	g	1	3,4	14,14,15	0.58	1 (7%)	17,19,21	0.57	0
4	NAG	g	2	4	14,14,15	0.31	0	17,19,21	0.46	0
4	NAG	h	1	3,4	14,14,15	0.32	0	17,19,21	0.39	0
4	NAG	h	2	4	14,14,15	0.39	0	17,19,21	0.37	0
4	NAG	i	1	3,4	14,14,15	0.35	0	17,19,21	1.13	1 (5%)
4	NAG	i	2	4	14,14,15	0.25	0	17,19,21	0.47	0
4	NAG	j	1	3,4	14,14,15	0.32	0	17,19,21	0.70	1 (5%)
4	NAG	j	2	4	14,14,15	0.22	0	17,19,21	0.40	0
4	NAG	k	1	3,4	14,14,15	0.77	1 (7%)	17,19,21	0.91	1 (5%)
4	NAG	k	2	4	14,14,15	0.31	0	17,19,21	0.70	1 (5%)
4	NAG	l	1	3,4	14,14,15	0.22	0	17,19,21	0.44	0
4	NAG	l	2	4	14,14,15	0.28	0	17,19,21	0.38	0
4	NAG	m	1	3,4	14,14,15	0.55	0	17,19,21	0.49	0
4	NAG	m	2	4	14,14,15	0.24	0	17,19,21	0.57	0
4	NAG	n	1	3,4	14,14,15	0.59	1 (7%)	17,19,21	0.57	0
4	NAG	n	2	4	14,14,15	0.30	0	17,19,21	0.46	0
4	NAG	o	1	3,4	14,14,15	0.22	0	17,19,21	1.37	1 (5%)
4	NAG	o	2	4	14,14,15	0.20	0	17,19,21	0.51	0
4	NAG	p	1	3,4	14,14,15	0.55	0	17,19,21	0.72	1 (5%)
4	NAG	p	2	4	14,14,15	0.39	0	17,19,21	0.46	0
4	NAG	q	1	3,4	14,14,15	0.36	0	17,19,21	0.39	0
4	NAG	q	2	4	14,14,15	0.20	0	17,19,21	0.74	0
4	NAG	r	1	3,4	14,14,15	0.36	0	17,19,21	0.47	0
4	NAG	r	2	4	14,14,15	0.56	0	17,19,21	1.31	1 (5%)
4	NAG	s	1	3,4	14,14,15	0.65	1 (7%)	17,19,21	0.43	0
4	NAG	s	2	4	14,14,15	0.32	0	17,19,21	1.36	2 (11%)
4	NAG	t	1	3,4	14,14,15	0.39	0	17,19,21	0.46	0
4	NAG	t	2	4	14,14,15	0.23	0	17,19,21	0.50	0
4	NAG	u	1	3,4	14,14,15	0.53	0	17,19,21	0.49	0
4	NAG	u	2	4	14,14,15	0.24	0	17,19,21	0.59	0
4	NAG	v	1	3,4	14,14,15	0.28	0	17,19,21	0.63	0
4	NAG	v	2	4	14,14,15	0.29	0	17,19,21	0.61	0
4	NAG	w	1	3,4	14,14,15	0.33	0	17,19,21	0.63	1 (5%)
4	NAG	w	2	4	14,14,15	0.52	0	17,19,21	0.47	0
4	NAG	x	1	3,4	14,14,15	0.38	0	17,19,21	0.73	0
4	NAG	x	2	4	14,14,15	0.31	0	17,19,21	1.32	2 (11%)
4	NAG	y	1	3,4	14,14,15	0.71	1 (7%)	17,19,21	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	y	2	4	14,14,15	0.38	0	17,19,21	1.40	3 (17%)
4	NAG	z	1	3,4	14,14,15	0.70	1 (7%)	17,19,21	0.67	0
4	NAG	z	2	4	14,14,15	0.28	0	17,19,21	0.63	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
4	NAG	0	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	0	2	4	-	0/6/23/26	0/1/1/1
4	NAG	1	1	3,4	-	3/6/23/26	0/1/1/1
4	NAG	1	2	4	-	2/6/23/26	0/1/1/1
4	NAG	2	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	2	2	4	-	4/6/23/26	0/1/1/1
4	NAG	3	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	3	2	4	-	1/6/23/26	0/1/1/1
4	NAG	4	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	4	2	4	-	0/6/23/26	0/1/1/1
4	NAG	5	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	5	2	4	-	3/6/23/26	0/1/1/1
4	NAG	6	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	6	2	4	-	3/6/23/26	0/1/1/1
4	NAG	7	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	7	2	4	-	2/6/23/26	0/1/1/1
4	NAG	8	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	8	2	4	-	2/6/23/26	0/1/1/1
4	NAG	9	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	9	2	4	-	4/6/23/26	0/1/1/1
4	NAG	AA	1	3,4	-	6/6/23/26	0/1/1/1
4	NAG	AA	2	4	-	2/6/23/26	0/1/1/1
4	NAG	BA	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	BA	2	4	-	2/6/23/26	0/1/1/1
4	NAG	CA	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	CA	2	4	-	1/6/23/26	0/1/1/1
4	NAG	DA	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	DA	2	4	-	5/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	EA	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	EA	2	4	-	4/6/23/26	0/1/1/1
4	NAG	FA	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	FA	2	4	-	2/6/23/26	0/1/1/1
4	NAG	K	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	K	2	4	-	2/6/23/26	0/1/1/1
4	NAG	L	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	L	2	4	-	2/6/23/26	0/1/1/1
4	NAG	M	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	M	2	4	-	2/6/23/26	0/1/1/1
4	NAG	N	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	N	2	4	-	4/6/23/26	0/1/1/1
4	NAG	O	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	O	2	4	-	0/6/23/26	0/1/1/1
4	NAG	P	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	P	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Q	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1
4	NAG	R	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	R	2	4	-	2/6/23/26	0/1/1/1
4	NAG	S	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	S	2	4	-	2/6/23/26	0/1/1/1
4	NAG	T	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	T	2	4	-	2/6/23/26	0/1/1/1
4	NAG	U	1	4,2	-	2/6/23/26	0/1/1/1
4	NAG	U	2	4	-	4/6/23/26	0/1/1/1
4	NAG	V	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	V	2	4	-	0/6/23/26	0/1/1/1
4	NAG	W	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	W	2	4	-	2/6/23/26	0/1/1/1
4	NAG	X	1	4,2	-	0/6/23/26	0/1/1/1
4	NAG	X	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Y	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	Y	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Z	1	3,4	-	4/6/23/26	0/1/1/1
4	NAG	Z	2	4	-	4/6/23/26	0/1/1/1
4	NAG	a	1	3,4	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	a	2	4	-	2/6/23/26	0/1/1/1
4	NAG	b	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	b	2	4	-	3/6/23/26	0/1/1/1
4	NAG	c	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	c	2	4	-	5/6/23/26	0/1/1/1
4	NAG	d	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	d	2	4	-	3/6/23/26	0/1/1/1
4	NAG	e	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	e	2	4	-	0/6/23/26	0/1/1/1
4	NAG	f	1	3,4	-	3/6/23/26	0/1/1/1
4	NAG	f	2	4	-	2/6/23/26	0/1/1/1
4	NAG	g	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	g	2	4	-	4/6/23/26	0/1/1/1
4	NAG	h	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	h	2	4	-	1/6/23/26	0/1/1/1
4	NAG	i	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	i	2	4	-	0/6/23/26	0/1/1/1
4	NAG	j	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	j	2	4	-	3/6/23/26	0/1/1/1
4	NAG	k	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	k	2	4	-	3/6/23/26	0/1/1/1
4	NAG	l	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	l	2	4	-	2/6/23/26	0/1/1/1
4	NAG	m	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	m	2	4	-	2/6/23/26	0/1/1/1
4	NAG	n	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	n	2	4	-	4/6/23/26	0/1/1/1
4	NAG	o	1	3,4	-	6/6/23/26	0/1/1/1
4	NAG	o	2	4	-	2/6/23/26	0/1/1/1
4	NAG	p	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	p	2	4	-	2/6/23/26	0/1/1/1
4	NAG	q	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	q	2	4	-	1/6/23/26	0/1/1/1
4	NAG	r	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	r	2	4	-	5/6/23/26	0/1/1/1
4	NAG	s	1	3,4	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	s	2	4	-	4/6/23/26	0/1/1/1
4	NAG	t	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	t	2	4	-	2/6/23/26	0/1/1/1
4	NAG	u	1	3,4	-	1/6/23/26	0/1/1/1
4	NAG	u	2	4	-	2/6/23/26	0/1/1/1
4	NAG	v	1	3,4	-	4/6/23/26	0/1/1/1
4	NAG	v	2	4	-	4/6/23/26	0/1/1/1
4	NAG	w	1	3,4	-	0/6/23/26	0/1/1/1
4	NAG	w	2	4	-	2/6/23/26	0/1/1/1
4	NAG	x	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	x	2	4	-	3/6/23/26	0/1/1/1
4	NAG	y	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	y	2	4	-	5/6/23/26	0/1/1/1
4	NAG	z	1	3,4	-	2/6/23/26	0/1/1/1
4	NAG	z	2	4	-	3/6/23/26	0/1/1/1

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	6	1	NAG	O5-C1	-2.78	1.39	1.43
4	k	1	NAG	O5-C1	-2.77	1.39	1.43
4	d	1	NAG	O5-C1	-2.53	1.39	1.43
4	z	1	NAG	O5-C1	-2.52	1.39	1.43
4	c	1	NAG	O5-C1	-2.35	1.40	1.43
4	y	1	NAG	O5-C1	-2.33	1.40	1.43
4	s	1	NAG	O5-C1	-2.17	1.40	1.43
4	EA	1	NAG	O5-C1	-2.17	1.40	1.43
4	2	1	NAG	O5-C1	-2.15	1.40	1.43
4	L	1	NAG	O5-C1	-2.11	1.40	1.43
4	S	1	NAG	O5-C1	-2.07	1.40	1.43
4	g	1	NAG	O5-C1	-2.06	1.40	1.43
4	n	1	NAG	O5-C1	-2.05	1.40	1.43
4	9	1	NAG	O5-C1	-2.04	1.40	1.43

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	AA	1	NAG	C2-N2-C7	4.70	129.59	122.90
4	o	1	NAG	C2-N2-C7	4.69	129.59	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	c	2	NAG	C2-N2-C7	4.44	129.22	122.90
4	y	2	NAG	C2-N2-C7	4.38	129.13	122.90
4	s	2	NAG	C2-N2-C7	4.37	129.12	122.90
4	DA	2	NAG	C2-N2-C7	4.34	129.08	122.90
4	EA	2	NAG	C2-N2-C7	4.33	129.07	122.90
4	r	2	NAG	C2-N2-C7	4.33	129.06	122.90
4	x	2	NAG	C2-N2-C7	4.31	129.04	122.90
4	b	2	NAG	C2-N2-C7	4.30	129.03	122.90
4	i	1	NAG	C1-O5-C5	3.33	116.70	112.19
4	4	1	NAG	C1-O5-C5	3.29	116.65	112.19
4	M	2	NAG	C1-O5-C5	2.47	115.54	112.19
4	T	2	NAG	C1-O5-C5	2.46	115.53	112.19
4	y	2	NAG	C1-C2-N2	2.39	114.57	110.49
4	6	1	NAG	O4-C4-C3	-2.38	104.85	110.35
4	k	1	NAG	O4-C4-C3	-2.38	104.85	110.35
4	c	2	NAG	C1-C2-N2	2.38	114.55	110.49
4	5	1	NAG	C1-O5-C5	2.31	115.33	112.19
4	p	1	NAG	C1-O5-C5	2.31	115.32	112.19
4	x	2	NAG	C1-C2-N2	2.30	114.42	110.49
4	b	2	NAG	C1-C2-N2	2.30	114.42	110.49
4	s	2	NAG	C1-C2-N2	2.27	114.36	110.49
4	j	1	NAG	C1-O5-C5	2.27	115.27	112.19
4	BA	1	NAG	C1-O5-C5	2.25	115.25	112.19
4	EA	2	NAG	C1-C2-N2	2.25	114.33	110.49
4	y	2	NAG	C1-O5-C5	2.13	115.08	112.19
4	e	1	NAG	C1-O5-C5	2.12	115.07	112.19
4	c	2	NAG	C1-O5-C5	2.12	115.06	112.19
4	0	1	NAG	C1-O5-C5	2.10	115.04	112.19
4	P	2	NAG	C1-O5-C5	2.07	114.99	112.19
4	W	2	NAG	C1-O5-C5	2.06	114.98	112.19
4	6	2	NAG	C1-O5-C5	2.03	114.94	112.19
4	k	2	NAG	C1-O5-C5	2.02	114.94	112.19
4	w	1	NAG	C1-O5-C5	2.02	114.93	112.19

There are no chirality outliers.

All (228) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	N	1	NAG	O7-C7-N2-C2
4	N	2	NAG	C3-C2-N2-C7
4	N	2	NAG	C8-C7-N2-C2
4	N	2	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
4	U	1	NAG	O7-C7-N2-C2
4	U	2	NAG	C3-C2-N2-C7
4	U	2	NAG	C8-C7-N2-C2
4	U	2	NAG	O7-C7-N2-C2
4	Z	1	NAG	C8-C7-N2-C2
4	Z	1	NAG	O7-C7-N2-C2
4	Z	2	NAG	C8-C7-N2-C2
4	Z	2	NAG	O7-C7-N2-C2
4	v	1	NAG	C8-C7-N2-C2
4	v	1	NAG	O7-C7-N2-C2
4	v	2	NAG	C8-C7-N2-C2
4	v	2	NAG	O7-C7-N2-C2
4	Q	2	NAG	O5-C5-C6-O6
4	X	2	NAG	O5-C5-C6-O6
4	N	1	NAG	C8-C7-N2-C2
4	U	1	NAG	C8-C7-N2-C2
4	o	2	NAG	O5-C5-C6-O6
4	p	2	NAG	O5-C5-C6-O6
4	q	1	NAG	O5-C5-C6-O6
4	AA	2	NAG	O5-C5-C6-O6
4	BA	2	NAG	O5-C5-C6-O6
4	CA	1	NAG	O5-C5-C6-O6
4	P	2	NAG	O5-C5-C6-O6
4	W	2	NAG	O5-C5-C6-O6
4	Y	2	NAG	O5-C5-C6-O6
4	d	1	NAG	O5-C5-C6-O6
4	f	2	NAG	O5-C5-C6-O6
4	k	1	NAG	O5-C5-C6-O6
4	m	2	NAG	O5-C5-C6-O6
4	u	2	NAG	O5-C5-C6-O6
4	z	1	NAG	O5-C5-C6-O6
4	1	2	NAG	O5-C5-C6-O6
4	6	1	NAG	O5-C5-C6-O6
4	8	2	NAG	O5-C5-C6-O6
4	L	1	NAG	O5-C5-C6-O6
4	M	2	NAG	O5-C5-C6-O6
4	S	1	NAG	O5-C5-C6-O6
4	T	2	NAG	O5-C5-C6-O6
4	p	1	NAG	O5-C5-C6-O6
4	BA	1	NAG	O5-C5-C6-O6
4	Y	2	NAG	C4-C5-C6-O6
4	f	2	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	k	1	NAG	C4-C5-C6-O6
4	m	2	NAG	C4-C5-C6-O6
4	u	2	NAG	C4-C5-C6-O6
4	1	2	NAG	C4-C5-C6-O6
4	6	1	NAG	C4-C5-C6-O6
4	8	2	NAG	C4-C5-C6-O6
4	Q	2	NAG	C4-C5-C6-O6
4	X	2	NAG	C4-C5-C6-O6
4	Z	2	NAG	C4-C5-C6-O6
4	d	1	NAG	C4-C5-C6-O6
4	l	1	NAG	C4-C5-C6-O6
4	p	1	NAG	C4-C5-C6-O6
4	v	2	NAG	C4-C5-C6-O6
4	z	1	NAG	C4-C5-C6-O6
4	7	1	NAG	C4-C5-C6-O6
4	BA	1	NAG	C4-C5-C6-O6
4	M	1	NAG	O5-C5-C6-O6
4	T	1	NAG	O5-C5-C6-O6
4	k	2	NAG	O5-C5-C6-O6
4	6	2	NAG	O5-C5-C6-O6
4	M	2	NAG	C4-C5-C6-O6
4	T	2	NAG	C4-C5-C6-O6
4	q	1	NAG	C4-C5-C6-O6
4	CA	1	NAG	C4-C5-C6-O6
4	Z	2	NAG	O5-C5-C6-O6
4	r	2	NAG	O5-C5-C6-O6
4	v	2	NAG	O5-C5-C6-O6
4	DA	2	NAG	O5-C5-C6-O6
4	p	2	NAG	C4-C5-C6-O6
4	BA	2	NAG	C4-C5-C6-O6
4	L	2	NAG	C4-C5-C6-O6
4	S	2	NAG	C4-C5-C6-O6
4	o	2	NAG	C4-C5-C6-O6
4	AA	2	NAG	C4-C5-C6-O6
4	l	2	NAG	O5-C5-C6-O6
4	k	2	NAG	C4-C5-C6-O6
4	6	2	NAG	C4-C5-C6-O6
4	b	2	NAG	C8-C7-N2-C2
4	b	2	NAG	O7-C7-N2-C2
4	c	2	NAG	C8-C7-N2-C2
4	c	2	NAG	O7-C7-N2-C2
4	j	2	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
4	j	2	NAG	O7-C7-N2-C2
4	o	1	NAG	C8-C7-N2-C2
4	o	1	NAG	O7-C7-N2-C2
4	r	2	NAG	C8-C7-N2-C2
4	r	2	NAG	O7-C7-N2-C2
4	s	2	NAG	C8-C7-N2-C2
4	s	2	NAG	O7-C7-N2-C2
4	x	2	NAG	C8-C7-N2-C2
4	x	2	NAG	O7-C7-N2-C2
4	y	2	NAG	C8-C7-N2-C2
4	y	2	NAG	O7-C7-N2-C2
4	5	2	NAG	C8-C7-N2-C2
4	5	2	NAG	O7-C7-N2-C2
4	AA	1	NAG	C8-C7-N2-C2
4	AA	1	NAG	O7-C7-N2-C2
4	DA	2	NAG	C8-C7-N2-C2
4	DA	2	NAG	O7-C7-N2-C2
4	EA	2	NAG	C8-C7-N2-C2
4	EA	2	NAG	O7-C7-N2-C2
4	7	2	NAG	O5-C5-C6-O6
4	P	2	NAG	C4-C5-C6-O6
4	W	2	NAG	C4-C5-C6-O6
4	c	1	NAG	C4-C5-C6-O6
4	M	1	NAG	C4-C5-C6-O6
4	T	1	NAG	C4-C5-C6-O6
4	r	2	NAG	C4-C5-C6-O6
4	y	1	NAG	C4-C5-C6-O6
4	DA	2	NAG	C4-C5-C6-O6
4	o	1	NAG	O5-C5-C6-O6
4	AA	1	NAG	O5-C5-C6-O6
4	L	1	NAG	C4-C5-C6-O6
4	S	1	NAG	C4-C5-C6-O6
4	b	1	NAG	C4-C5-C6-O6
4	x	1	NAG	C4-C5-C6-O6
4	L	2	NAG	O5-C5-C6-O6
4	S	2	NAG	O5-C5-C6-O6
4	o	1	NAG	C4-C5-C6-O6
4	AA	1	NAG	C4-C5-C6-O6
4	l	2	NAG	C4-C5-C6-O6
4	7	2	NAG	C4-C5-C6-O6
4	f	1	NAG	O5-C5-C6-O6
4	1	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	l	1	NAG	O5-C5-C6-O6
4	7	1	NAG	O5-C5-C6-O6
4	f	1	NAG	C4-C5-C6-O6
4	1	1	NAG	C4-C5-C6-O6
4	d	2	NAG	O5-C5-C6-O6
4	z	2	NAG	O5-C5-C6-O6
4	b	1	NAG	O5-C5-C6-O6
4	x	1	NAG	O5-C5-C6-O6
4	EA	1	NAG	O5-C5-C6-O6
4	c	1	NAG	O5-C5-C6-O6
4	s	1	NAG	O5-C5-C6-O6
4	y	1	NAG	O5-C5-C6-O6
4	d	2	NAG	C4-C5-C6-O6
4	z	2	NAG	C4-C5-C6-O6
4	s	1	NAG	C4-C5-C6-O6
4	EA	1	NAG	C4-C5-C6-O6
4	e	1	NAG	C4-C5-C6-O6
4	0	1	NAG	C4-C5-C6-O6
4	e	1	NAG	O5-C5-C6-O6
4	0	1	NAG	O5-C5-C6-O6
4	N	2	NAG	C1-C2-N2-C7
4	U	2	NAG	C1-C2-N2-C7
4	Z	1	NAG	C1-C2-N2-C7
4	v	1	NAG	C1-C2-N2-C7
4	g	2	NAG	C1-C2-N2-C7
4	n	2	NAG	C1-C2-N2-C7
4	9	2	NAG	C1-C2-N2-C7
4	s	2	NAG	O5-C5-C6-O6
4	EA	2	NAG	O5-C5-C6-O6
4	2	2	NAG	C1-C2-N2-C7
4	K	2	NAG	C4-C5-C6-O6
4	R	2	NAG	C4-C5-C6-O6
4	Z	1	NAG	C3-C2-N2-C7
4	v	1	NAG	C3-C2-N2-C7
4	K	2	NAG	O5-C5-C6-O6
4	R	2	NAG	O5-C5-C6-O6
4	j	2	NAG	O5-C5-C6-O6
4	5	2	NAG	O5-C5-C6-O6
4	8	1	NAG	O5-C5-C6-O6
4	m	1	NAG	O5-C5-C6-O6
4	u	1	NAG	O5-C5-C6-O6
4	Y	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	j	1	NAG	C4-C5-C6-O6
4	5	1	NAG	C4-C5-C6-O6
4	a	2	NAG	O5-C5-C6-O6
4	a	2	NAG	C4-C5-C6-O6
4	w	2	NAG	C4-C5-C6-O6
4	w	2	NAG	O5-C5-C6-O6
4	t	2	NAG	C4-C5-C6-O6
4	FA	2	NAG	C4-C5-C6-O6
4	r	1	NAG	C4-C5-C6-O6
4	DA	1	NAG	C4-C5-C6-O6
4	t	2	NAG	O5-C5-C6-O6
4	FA	2	NAG	O5-C5-C6-O6
4	h	2	NAG	C4-C5-C6-O6
4	3	2	NAG	C4-C5-C6-O6
4	d	2	NAG	C3-C2-N2-C7
4	i	1	NAG	C3-C2-N2-C7
4	k	2	NAG	C3-C2-N2-C7
4	q	2	NAG	C3-C2-N2-C7
4	s	2	NAG	C3-C2-N2-C7
4	z	2	NAG	C3-C2-N2-C7
4	4	1	NAG	C3-C2-N2-C7
4	6	2	NAG	C3-C2-N2-C7
4	CA	2	NAG	C3-C2-N2-C7
4	y	2	NAG	C4-C5-C6-O6
4	c	2	NAG	C4-C5-C6-O6
4	DA	1	NAG	O5-C5-C6-O6
4	r	1	NAG	O5-C5-C6-O6
4	f	1	NAG	C1-C2-N2-C7
4	1	1	NAG	C1-C2-N2-C7
4	c	2	NAG	O5-C5-C6-O6
4	y	2	NAG	O5-C5-C6-O6
4	o	1	NAG	C1-C2-N2-C7
4	AA	1	NAG	C1-C2-N2-C7
4	2	2	NAG	C4-C5-C6-O6
4	9	2	NAG	C4-C5-C6-O6
4	n	2	NAG	C4-C5-C6-O6
4	g	2	NAG	C4-C5-C6-O6
4	j	1	NAG	O5-C5-C6-O6
4	5	1	NAG	O5-C5-C6-O6
4	2	2	NAG	O5-C5-C6-O6
4	g	2	NAG	O5-C5-C6-O6
4	b	2	NAG	C3-C2-N2-C7

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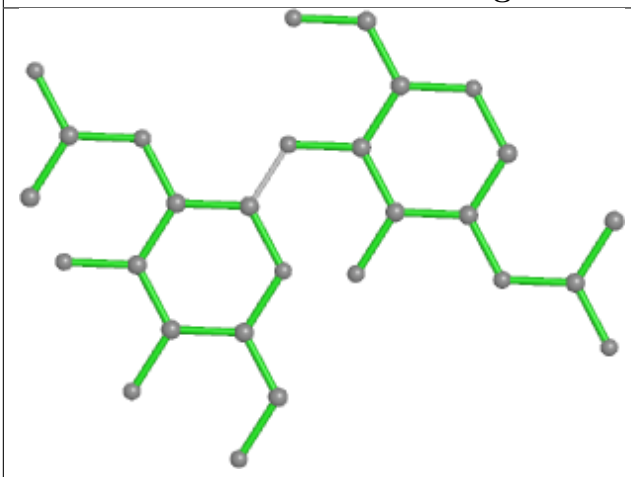
Mol	Chain	Res	Type	Atoms
4	c	2	NAG	C3-C2-N2-C7
4	g	2	NAG	C3-C2-N2-C7
4	n	2	NAG	C3-C2-N2-C7
4	o	1	NAG	C3-C2-N2-C7
4	r	2	NAG	C3-C2-N2-C7
4	x	2	NAG	C3-C2-N2-C7
4	y	2	NAG	C3-C2-N2-C7
4	2	2	NAG	C3-C2-N2-C7
4	9	2	NAG	C3-C2-N2-C7
4	AA	1	NAG	C3-C2-N2-C7
4	DA	2	NAG	C3-C2-N2-C7
4	EA	2	NAG	C3-C2-N2-C7
4	9	2	NAG	O5-C5-C6-O6
4	n	2	NAG	O5-C5-C6-O6

There are no ring outliers.

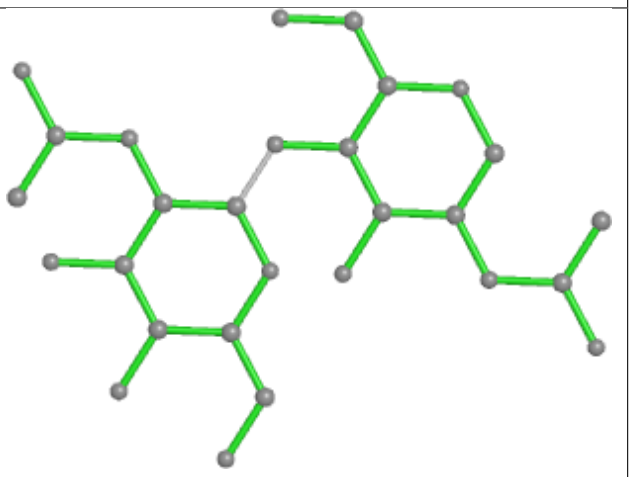
No monomer is involved in short contacts.

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

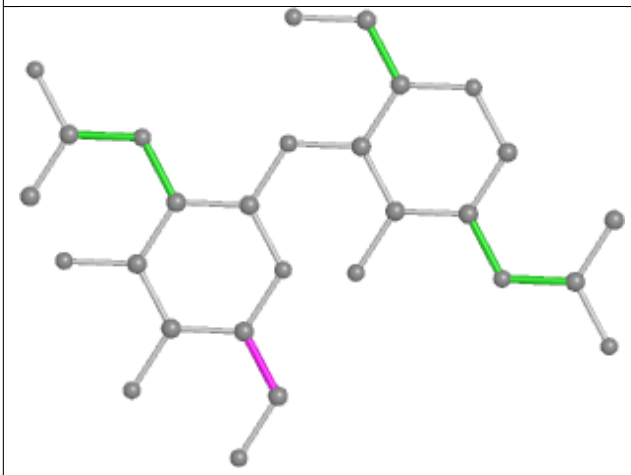
Oligosaccharide Chain K



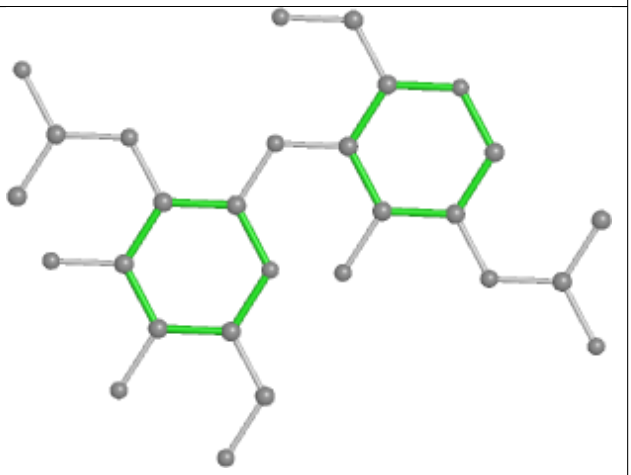
Bond lengths



Bond angles

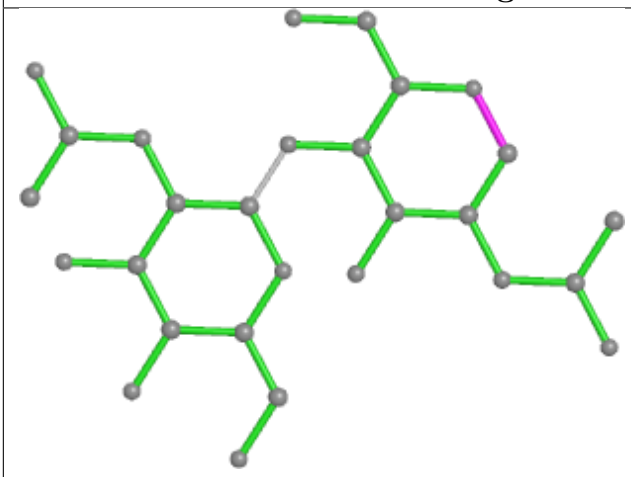


Torsions

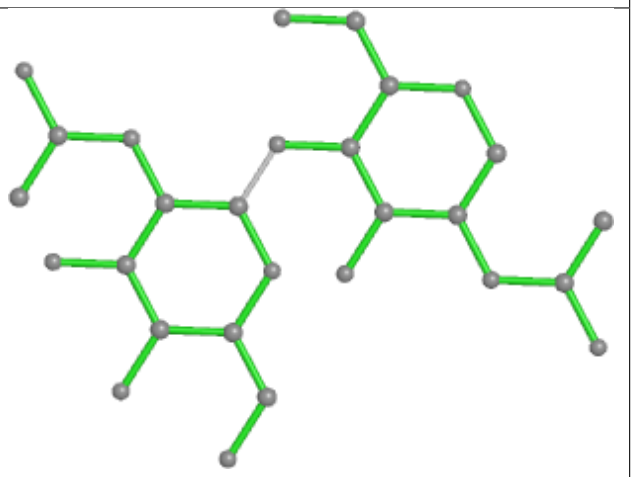


Rings

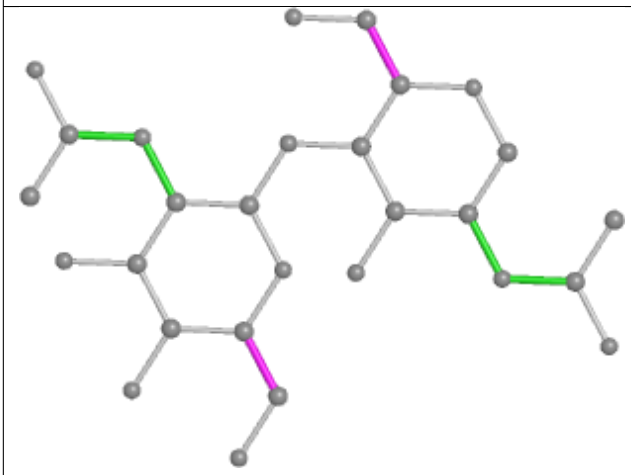
Oligosaccharide Chain L



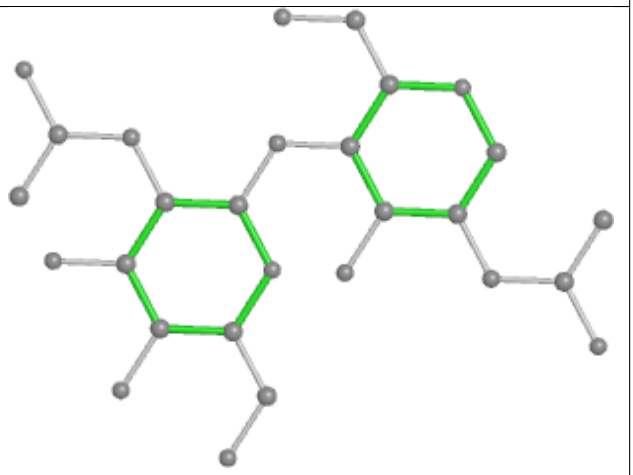
Bond lengths



Bond angles

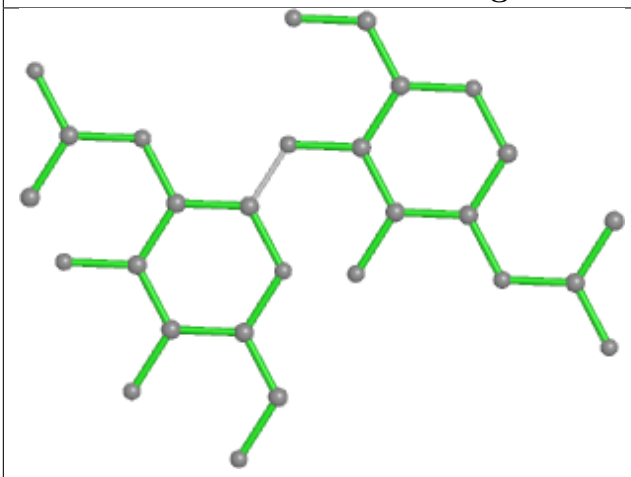


Torsions

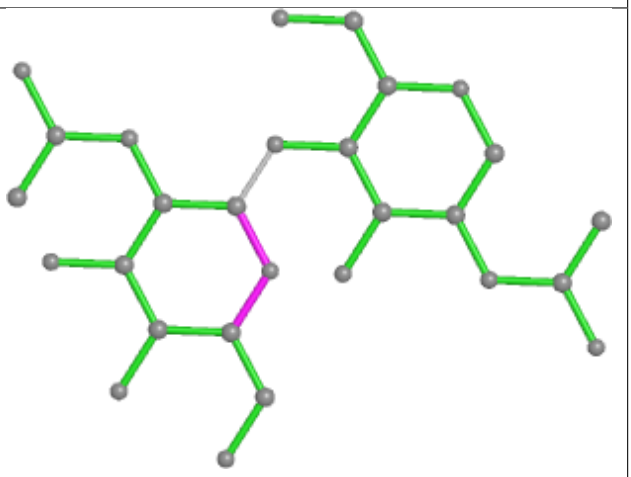


Rings

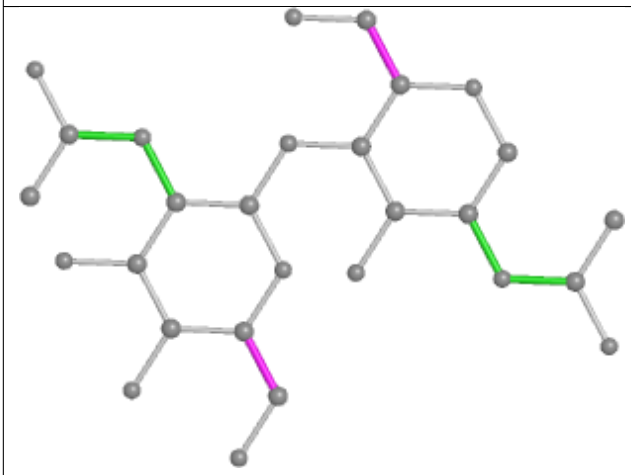
Oligosaccharide Chain M



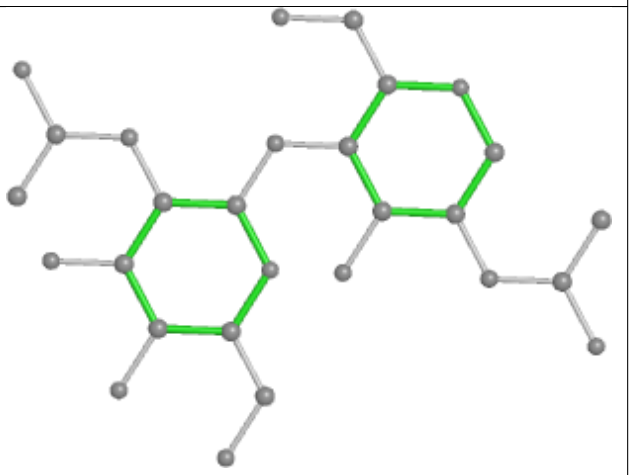
Bond lengths



Bond angles

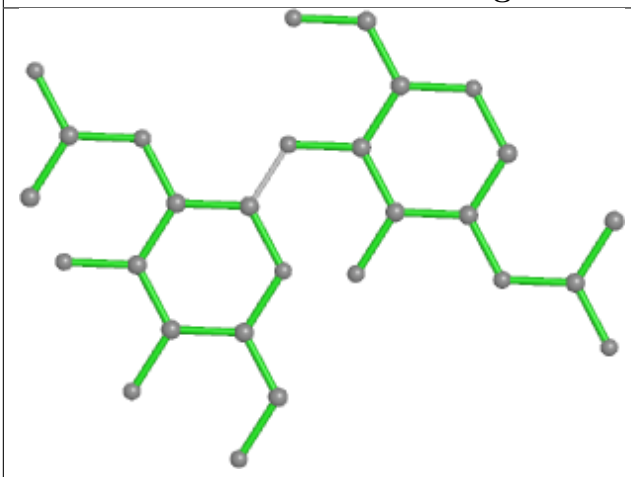


Torsions

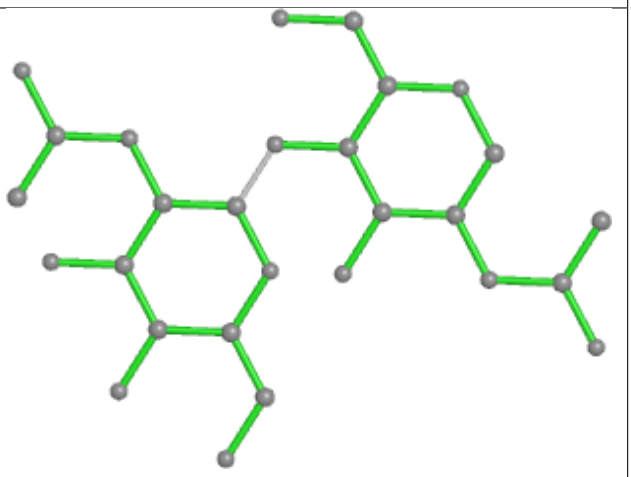


Rings

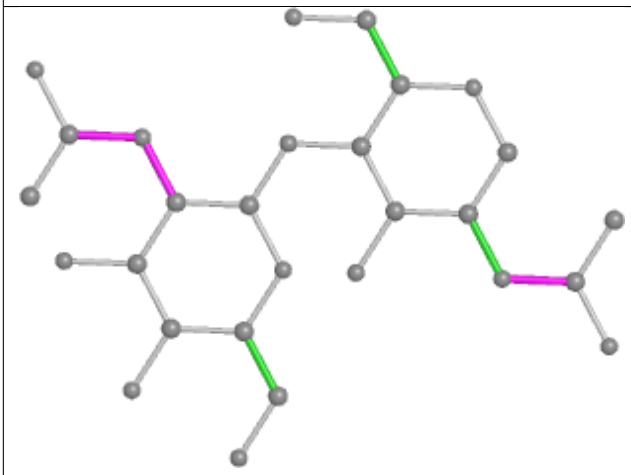
Oligosaccharide Chain N



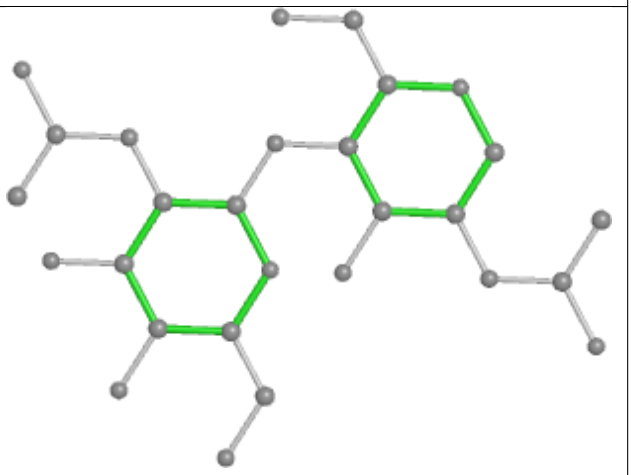
Bond lengths



Bond angles

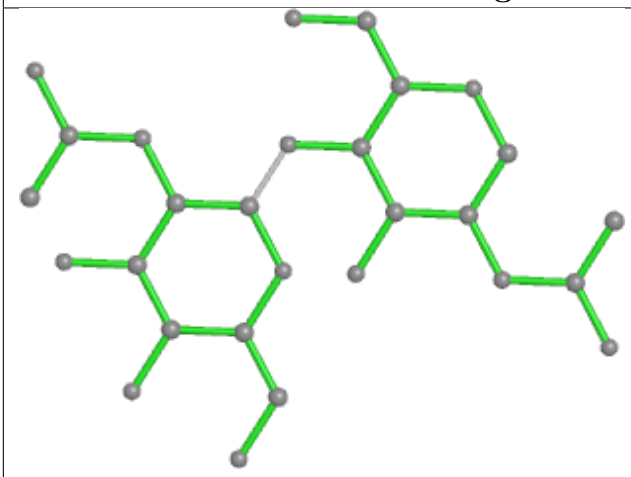


Torsions

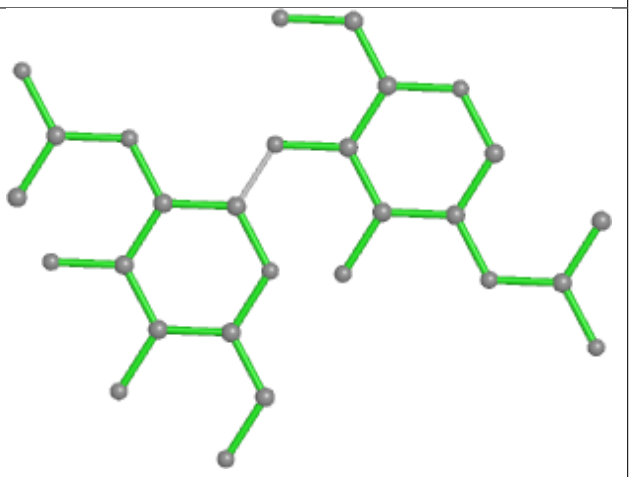


Rings

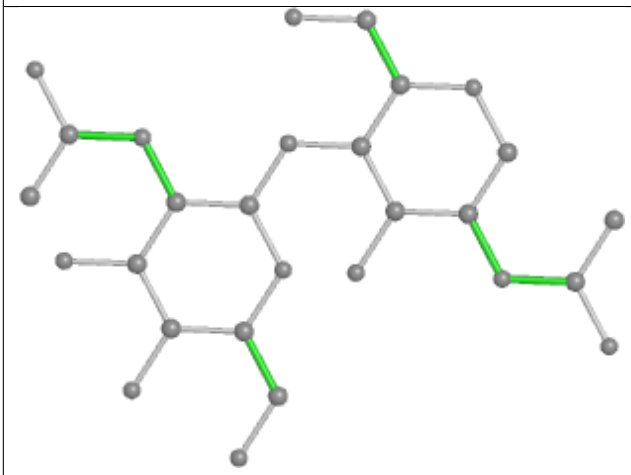
Oligosaccharide Chain O



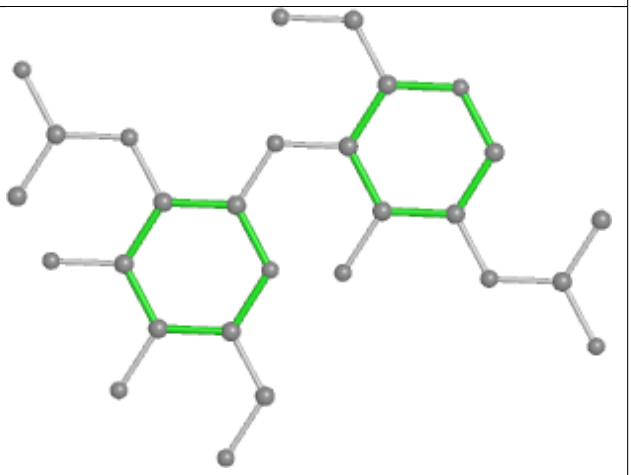
Bond lengths



Bond angles

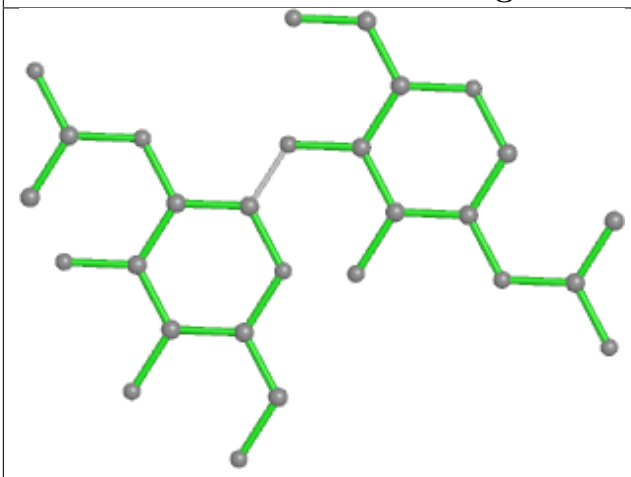


Torsions

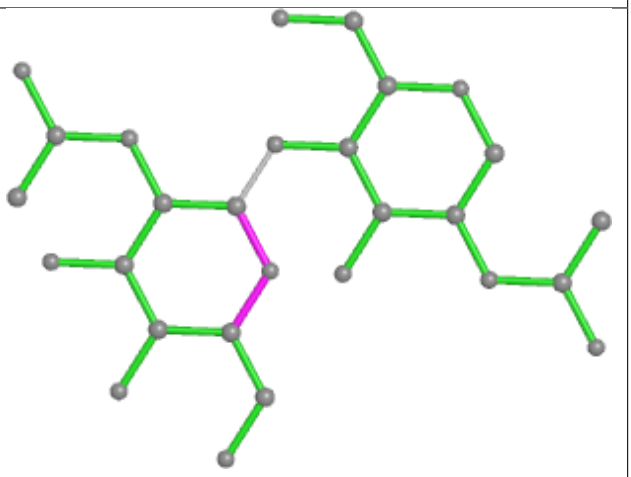


Rings

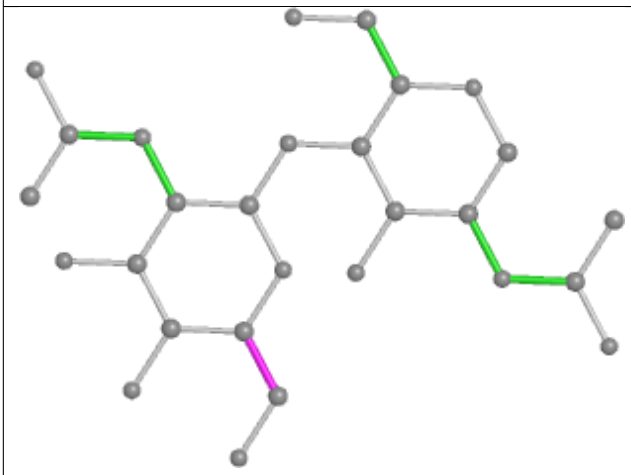
Oligosaccharide Chain P



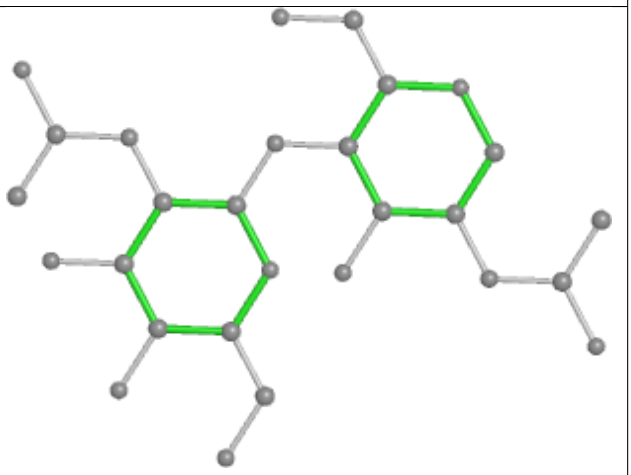
Bond lengths



Bond angles

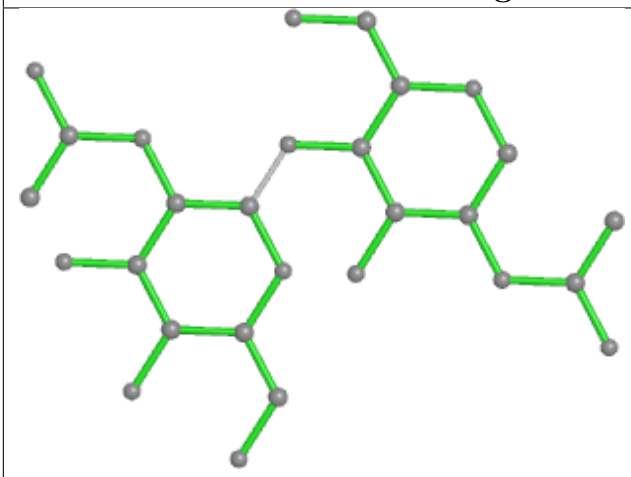


Torsions

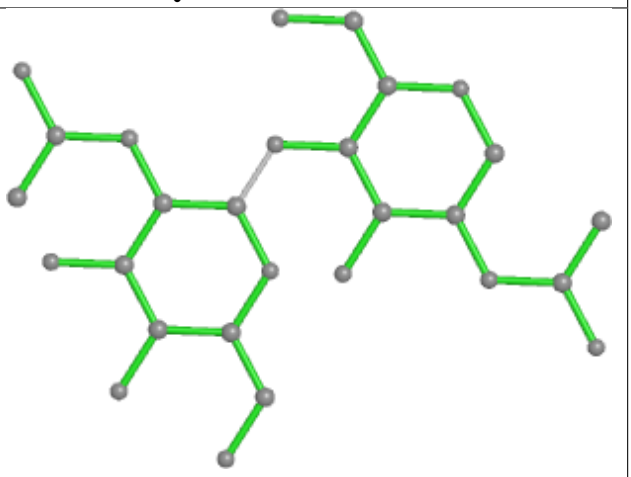


Rings

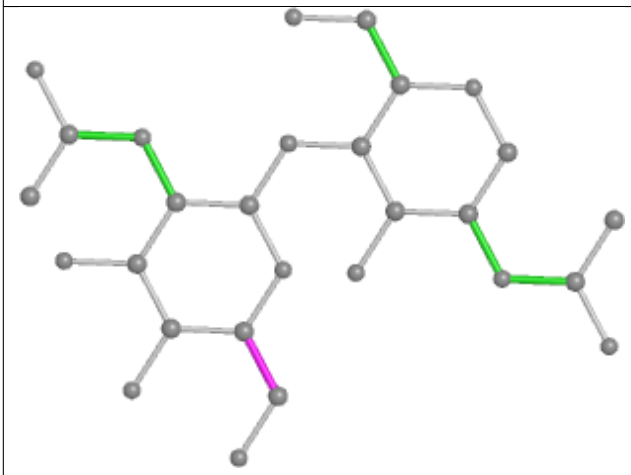
Oligosaccharide Chain Q



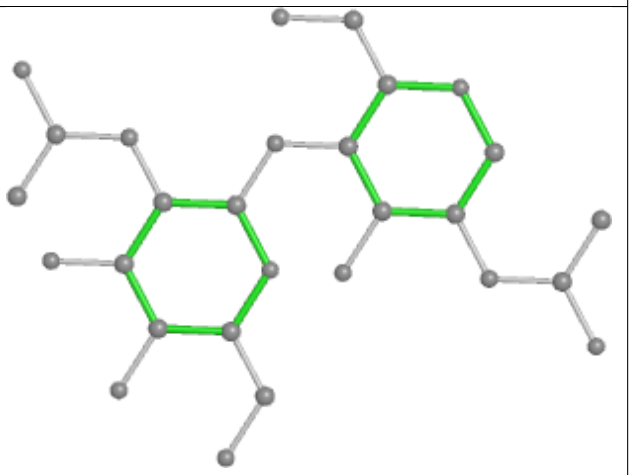
Bond lengths



Bond angles

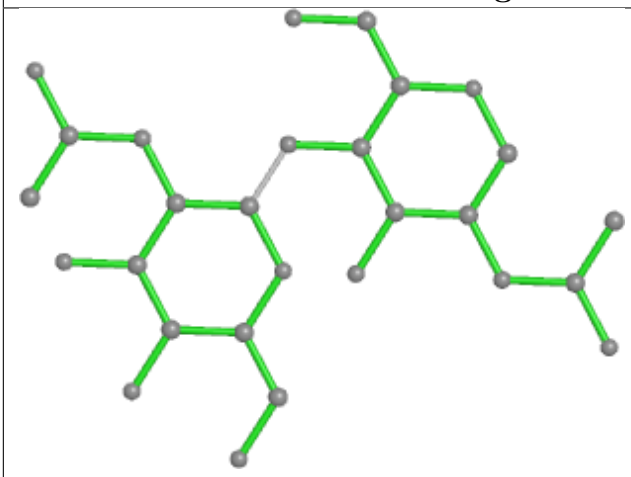


Torsions

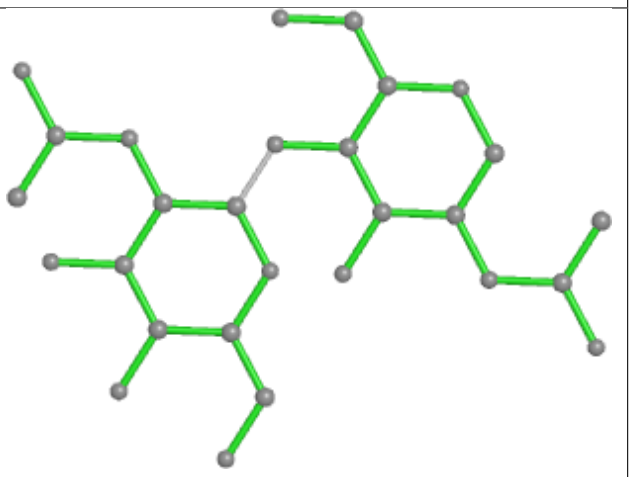


Rings

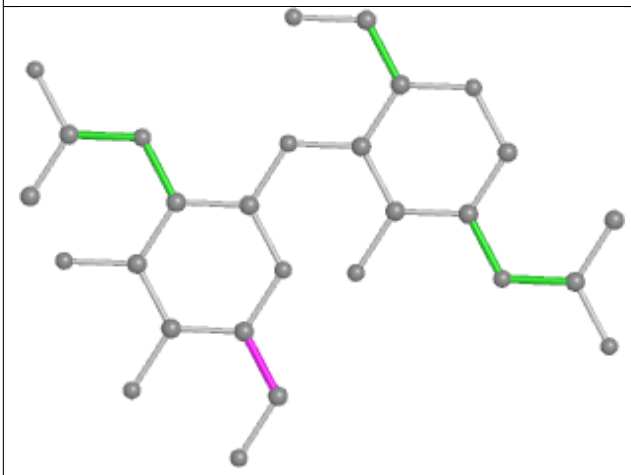
Oligosaccharide Chain R



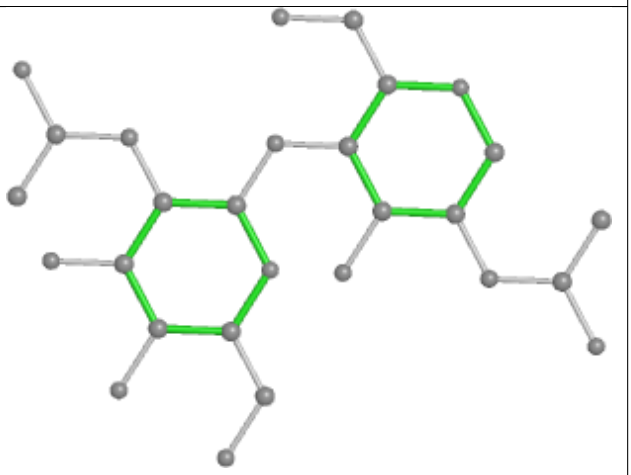
Bond lengths



Bond angles

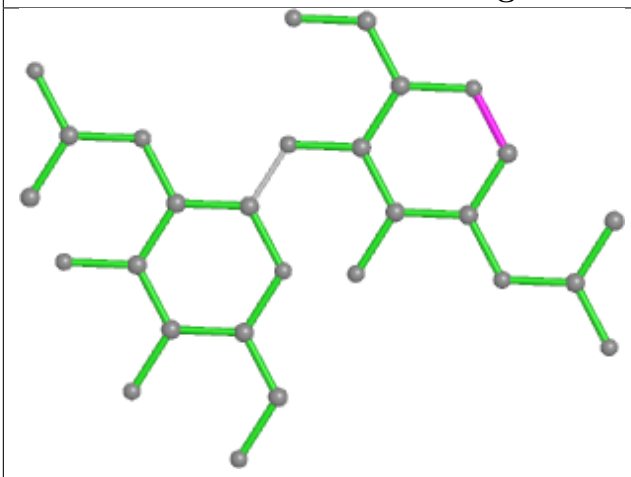


Torsions

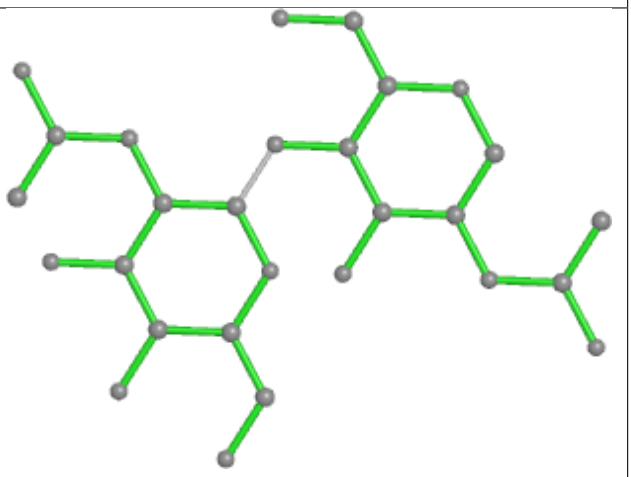


Rings

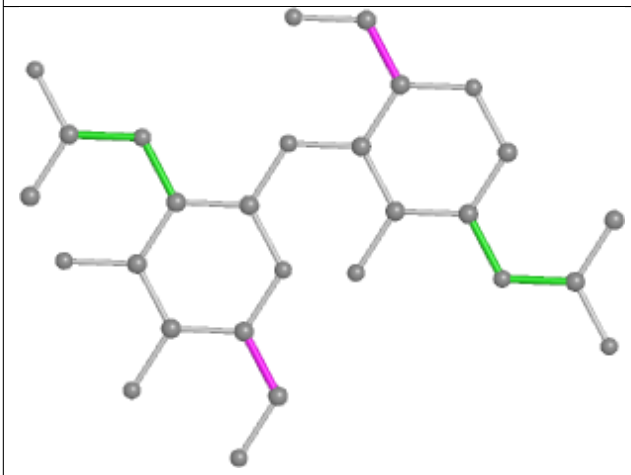
Oligosaccharide Chain S



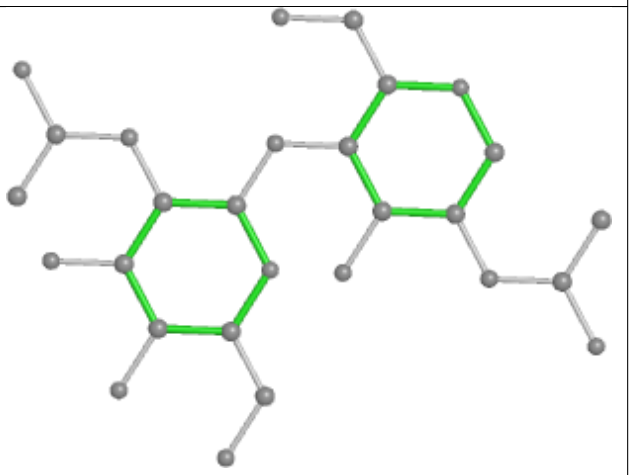
Bond lengths



Bond angles

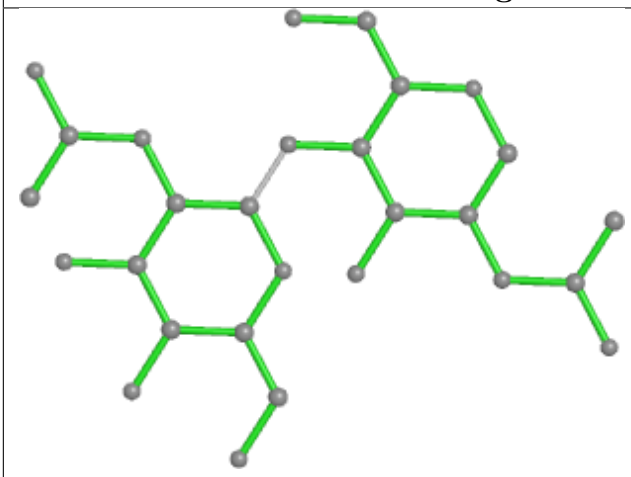


Torsions

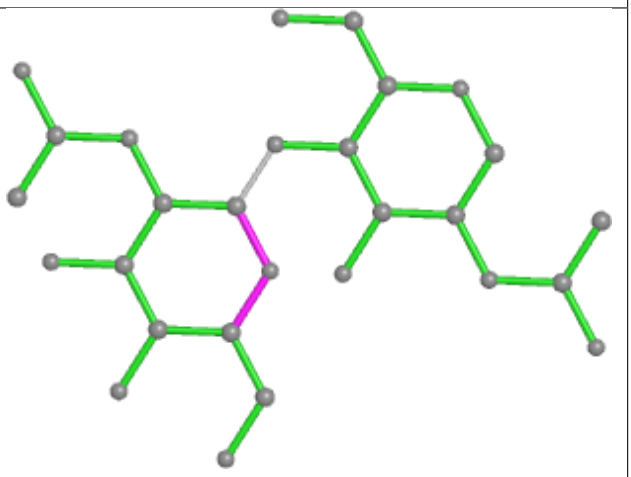


Rings

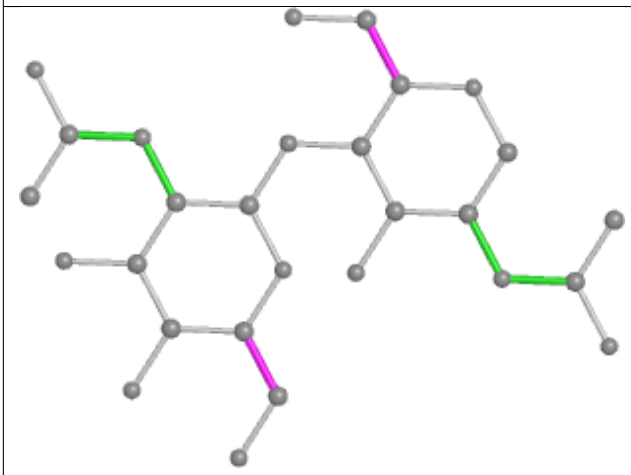
Oligosaccharide Chain T



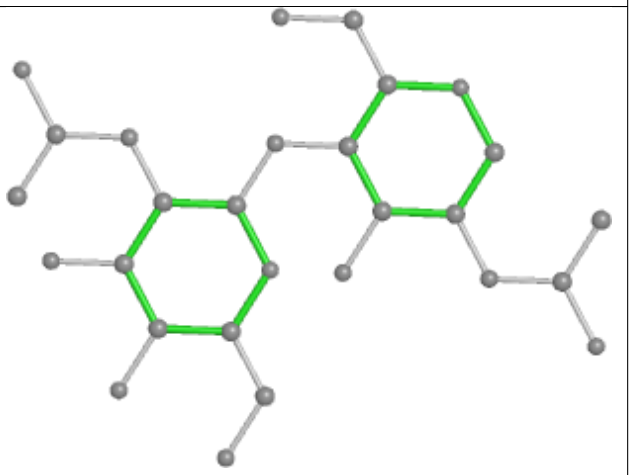
Bond lengths



Bond angles

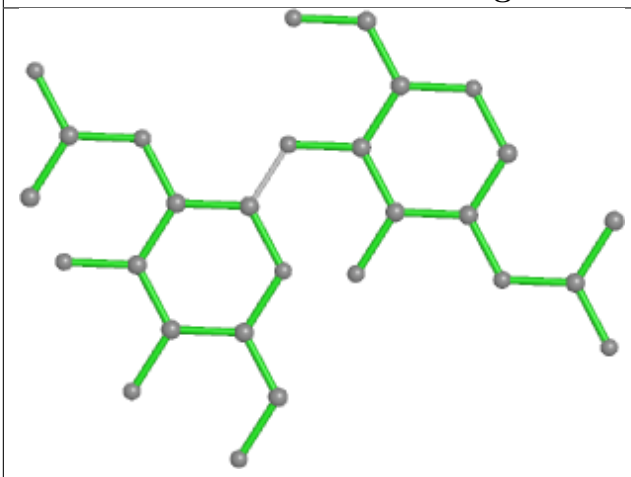


Torsions

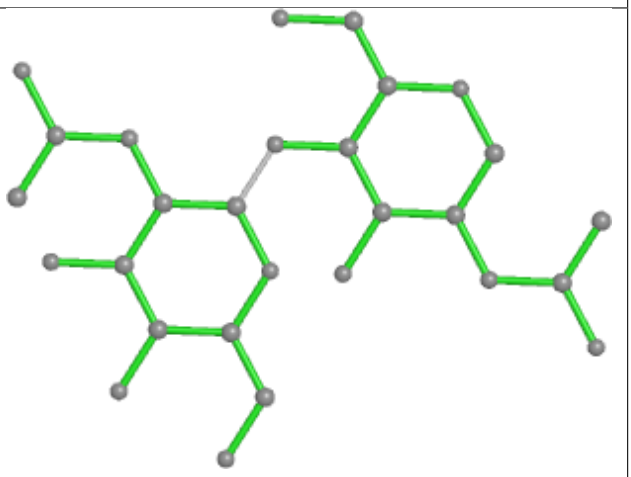


Rings

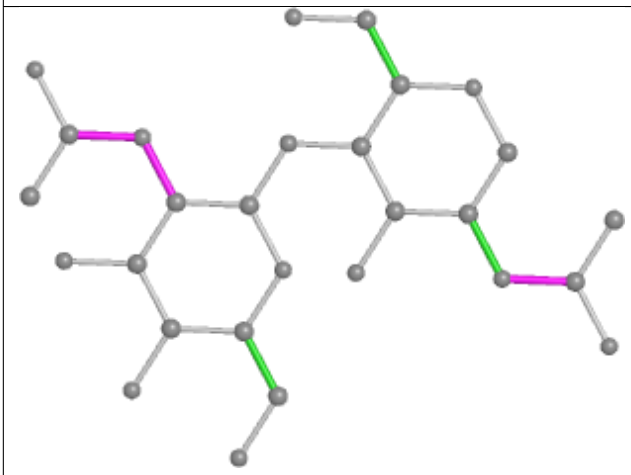
Oligosaccharide Chain U



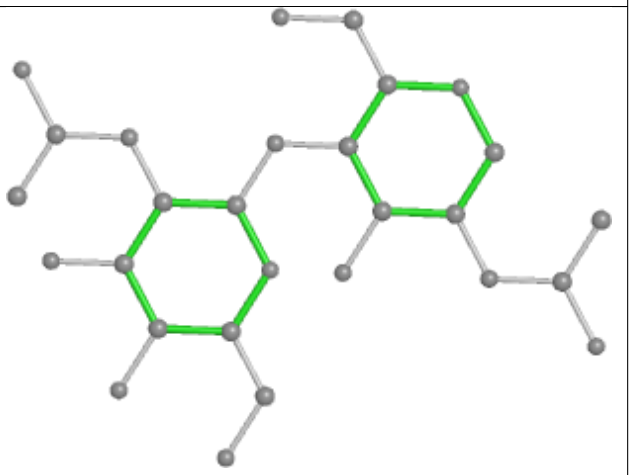
Bond lengths



Bond angles

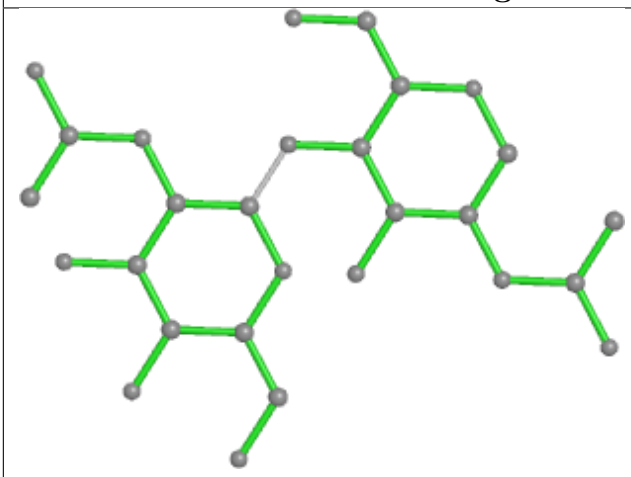


Torsions

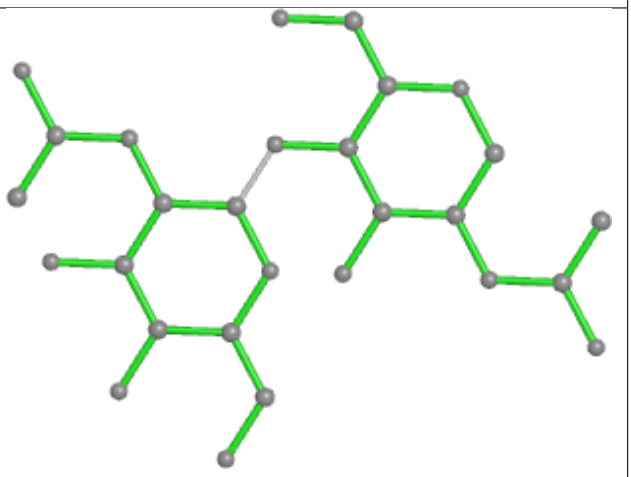


Rings

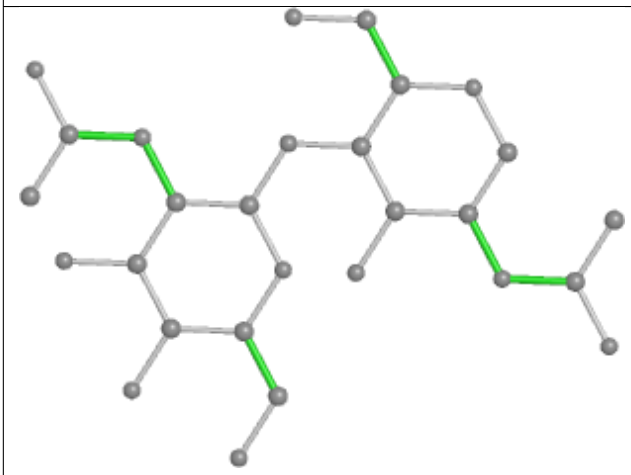
Oligosaccharide Chain V



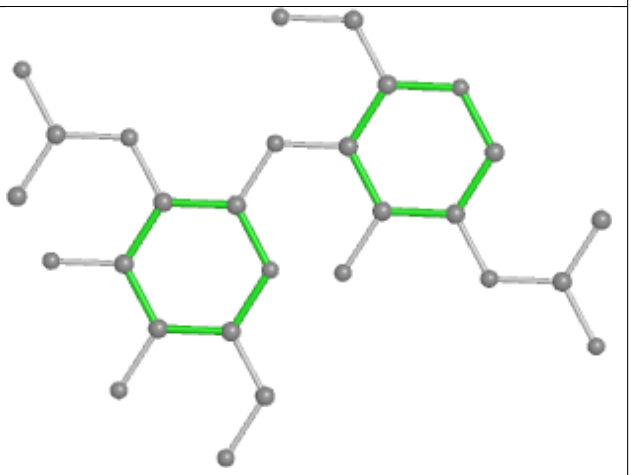
Bond lengths



Bond angles

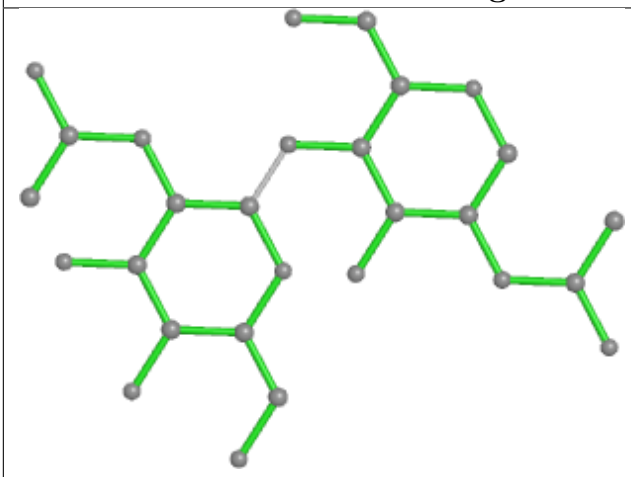


Torsions



Rings

Oligosaccharide Chain W



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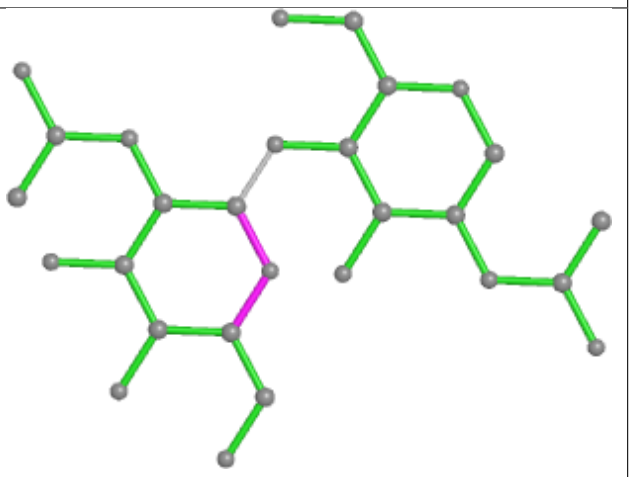

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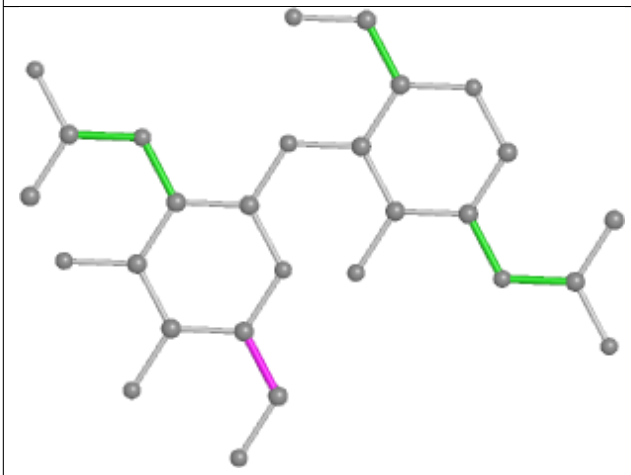
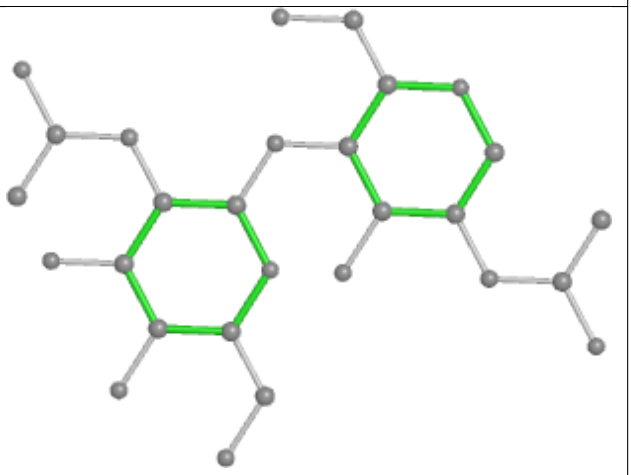
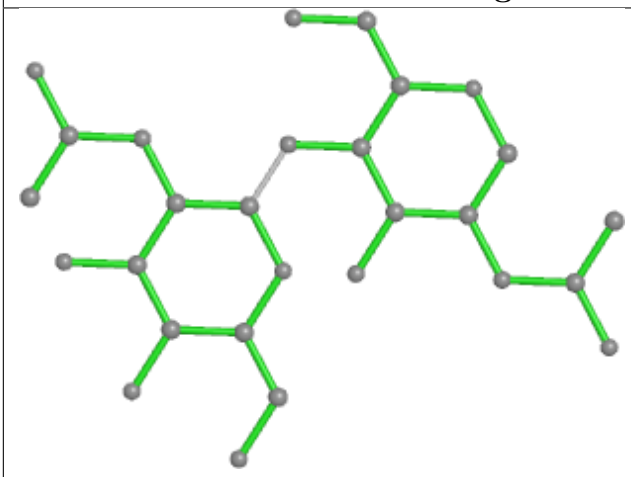


Torsions



Rings

Oligosaccharide Chain X



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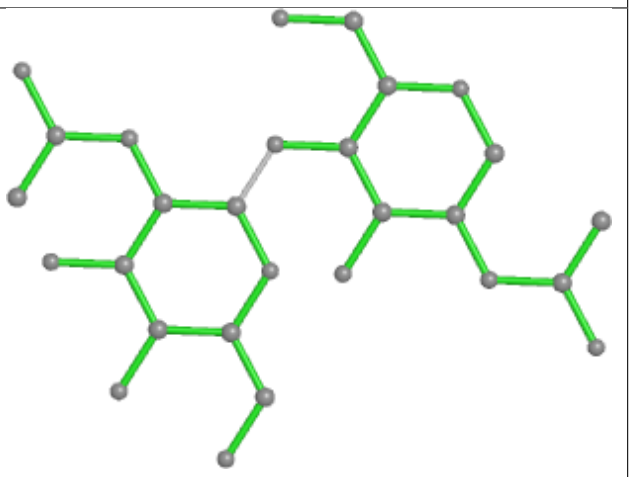
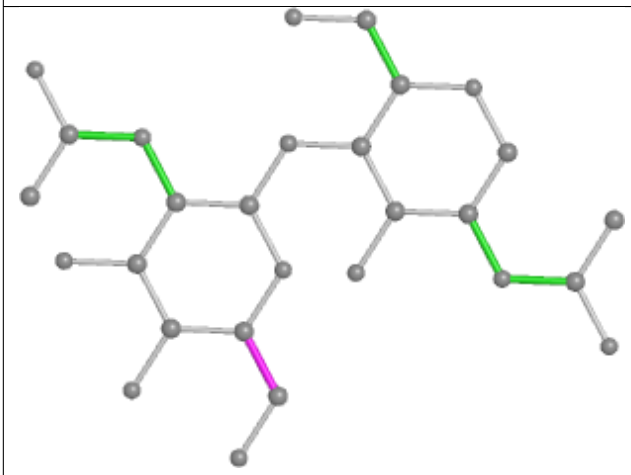


Bond angles



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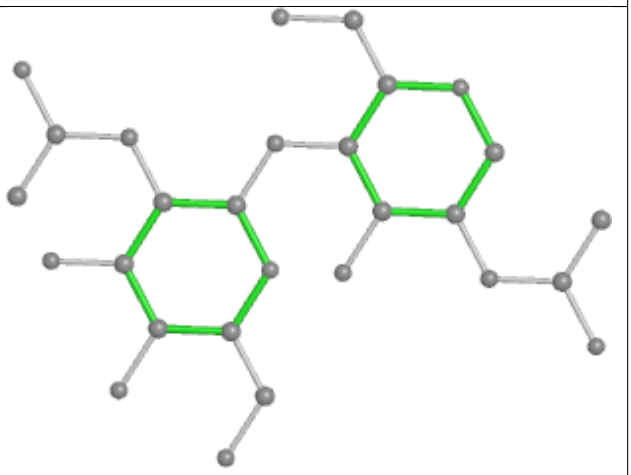
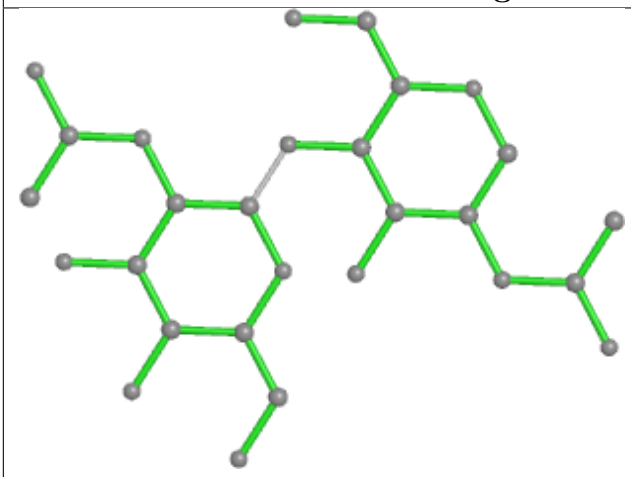


Rings

Oligosaccharide Chain Y



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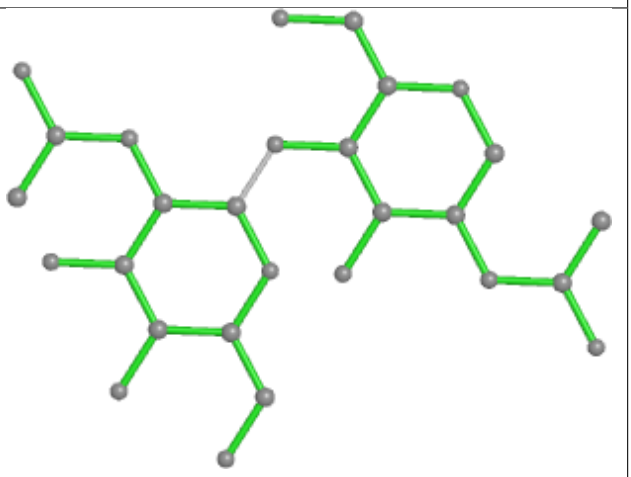
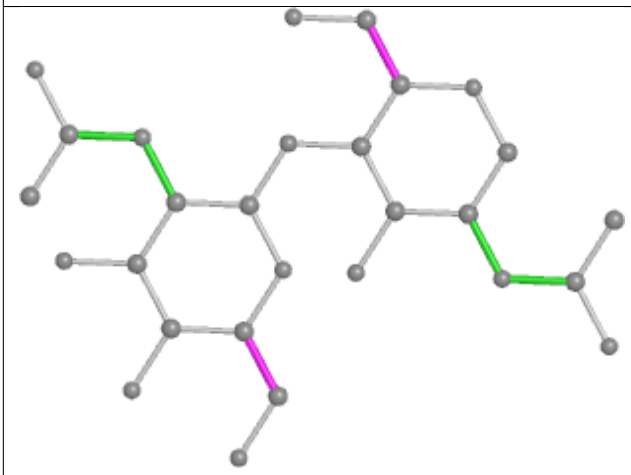


Bond angles



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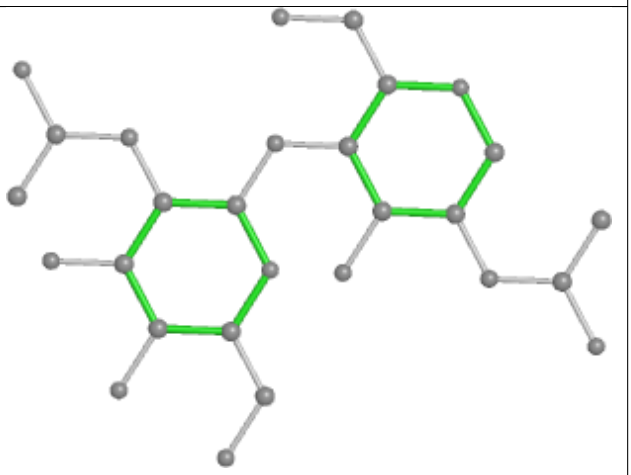
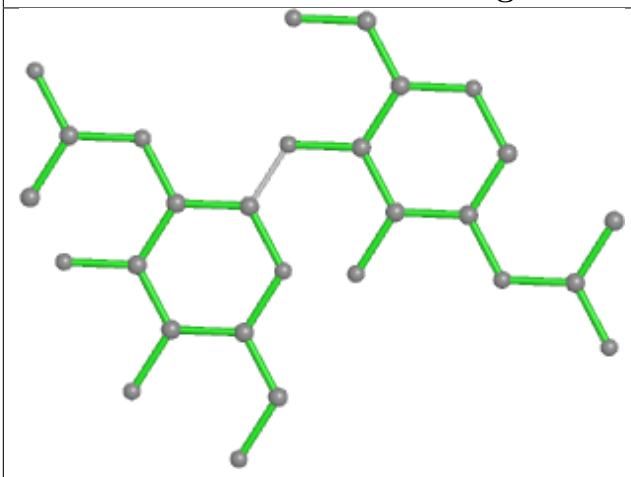


Rings

Oligosaccharide Chain Z



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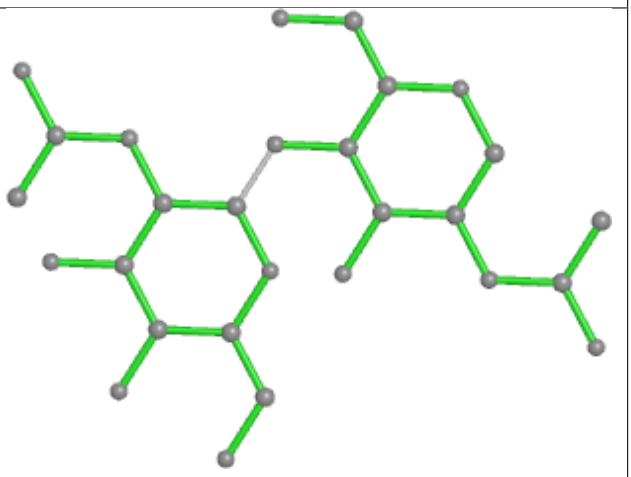
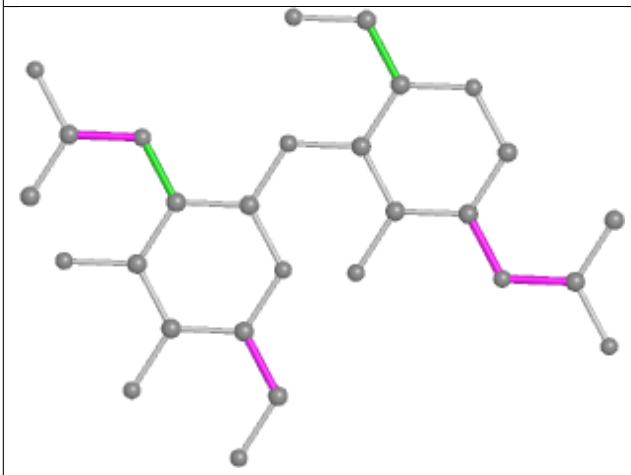


Bond angles



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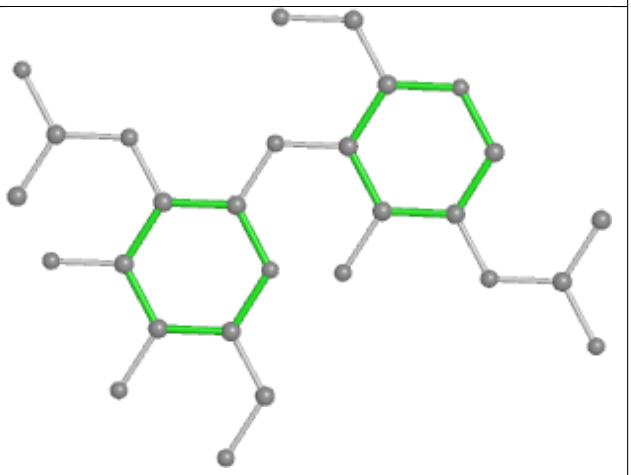
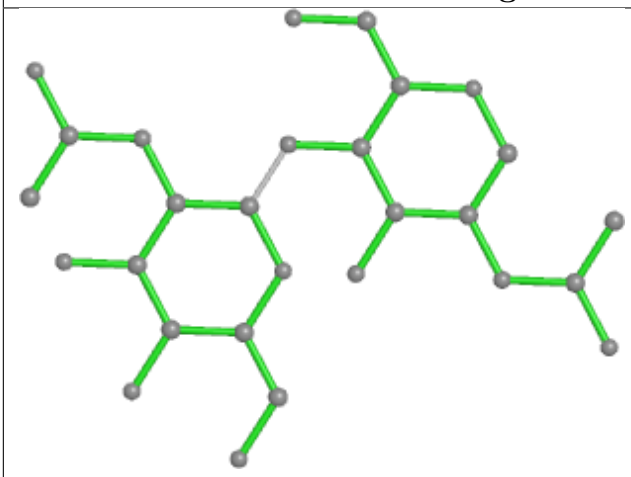


Rings

Oligosaccharide Chain a



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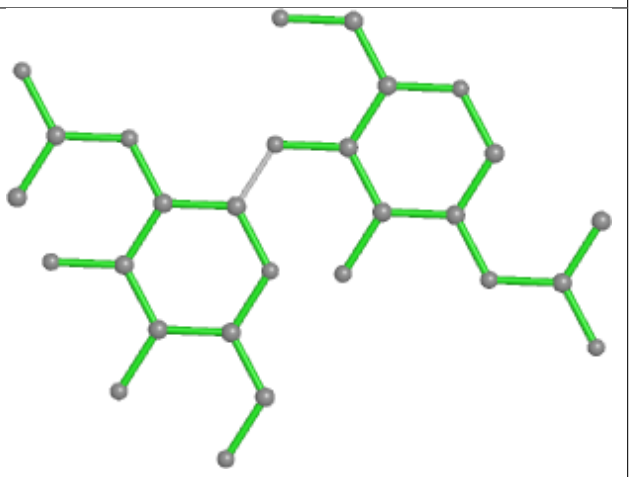
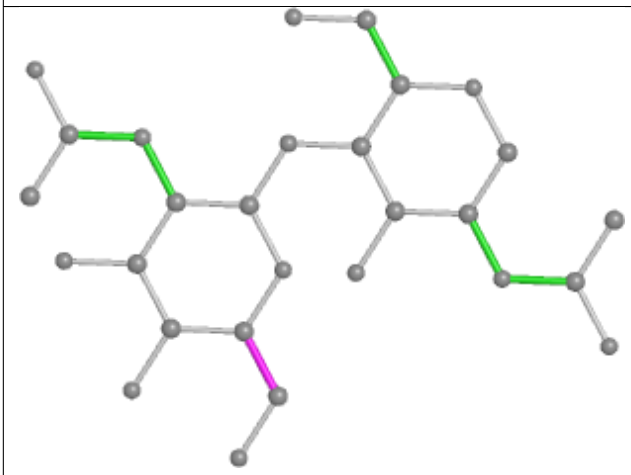


Bond angles



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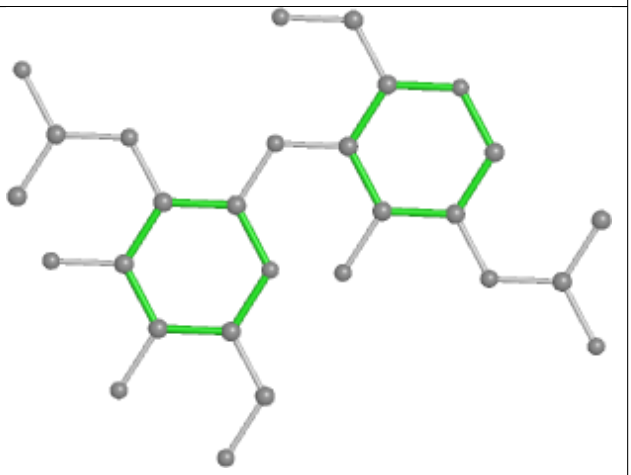
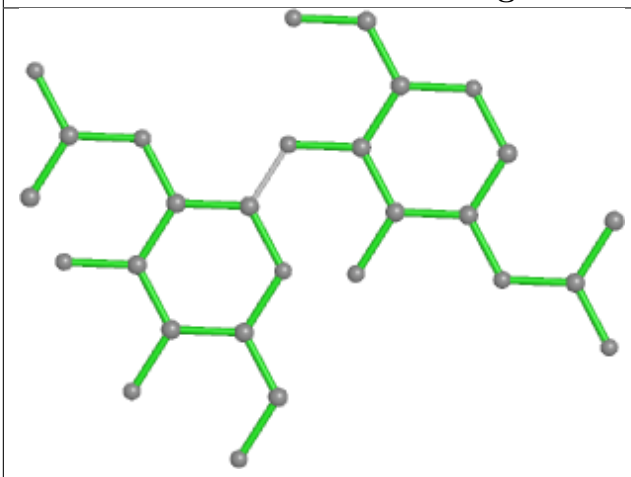


Rings

Oligosaccharide Chain b



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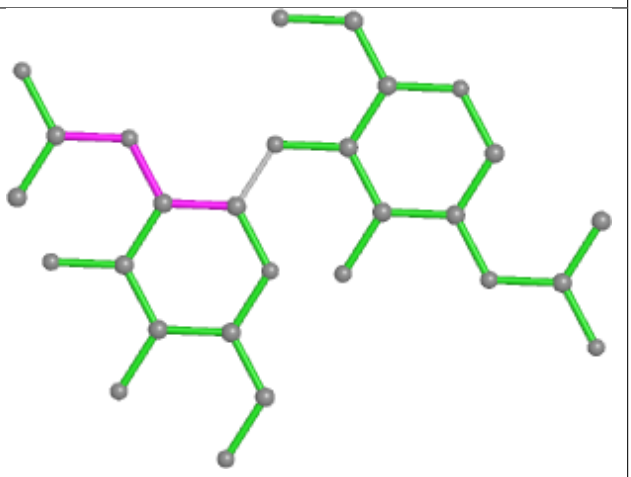
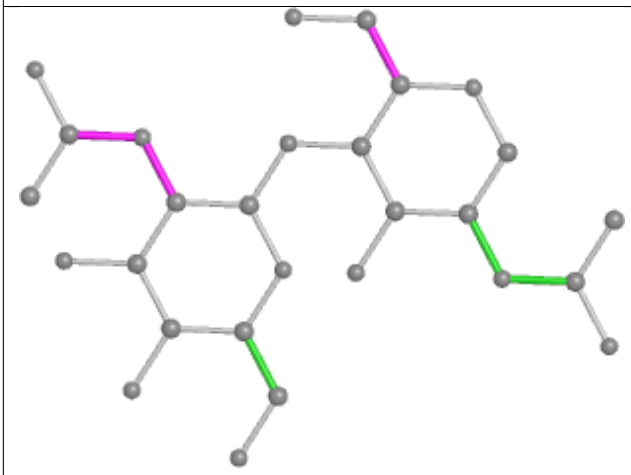


Bond angles



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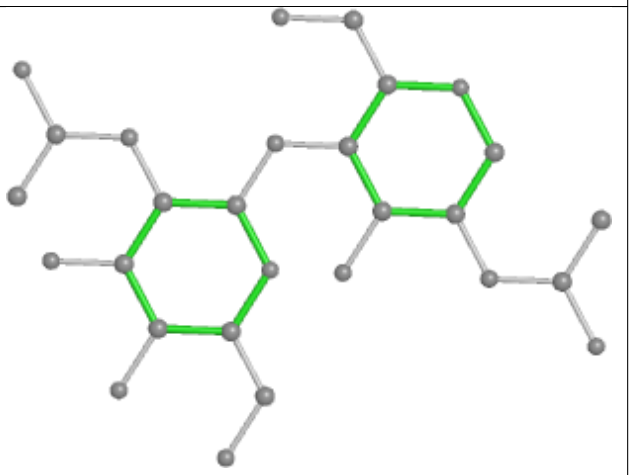
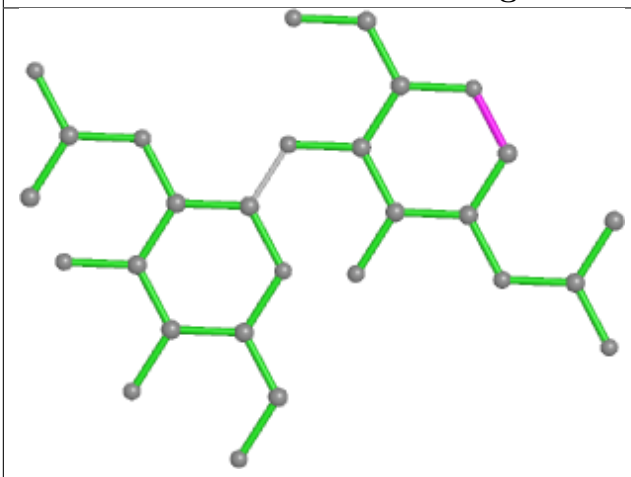


Rings

Oligosaccharide Chain c



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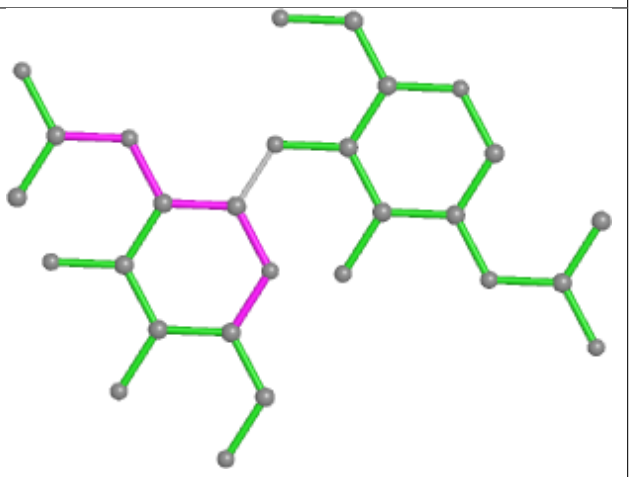

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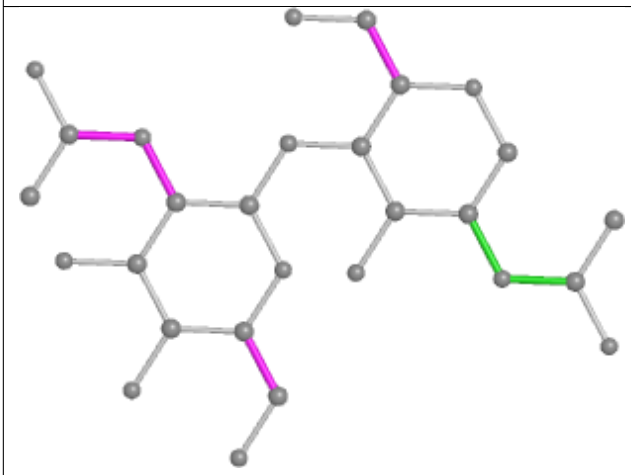

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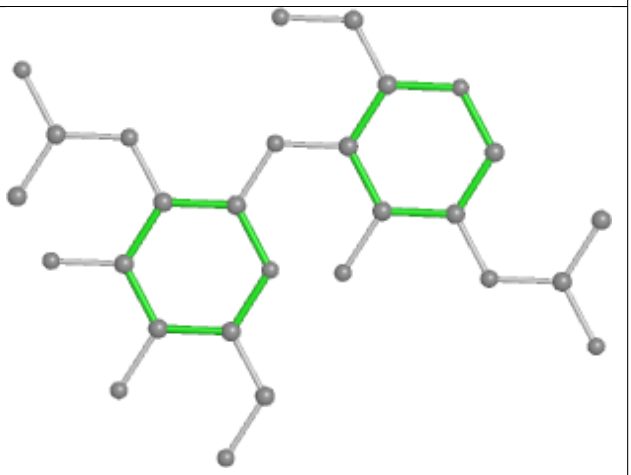
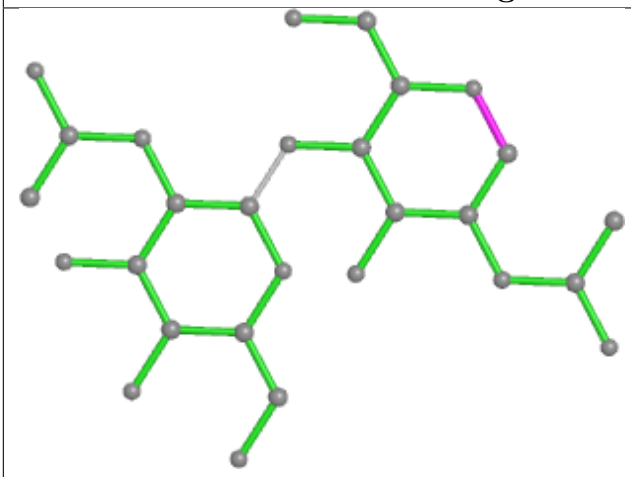


Rings

Oligosaccharide Chain d



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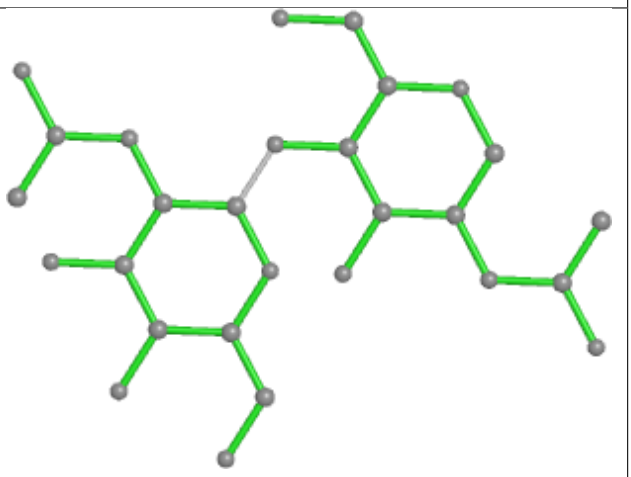
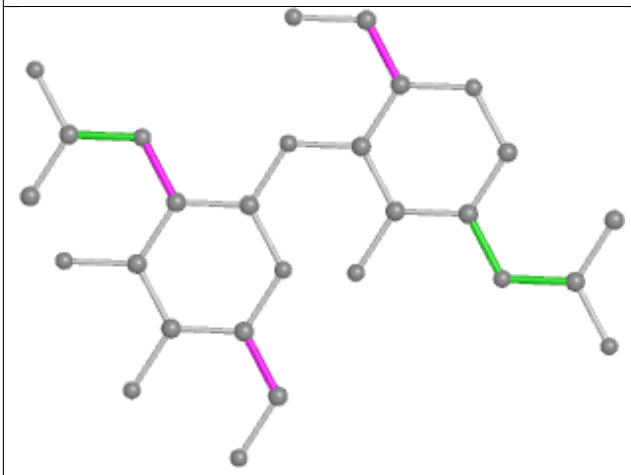
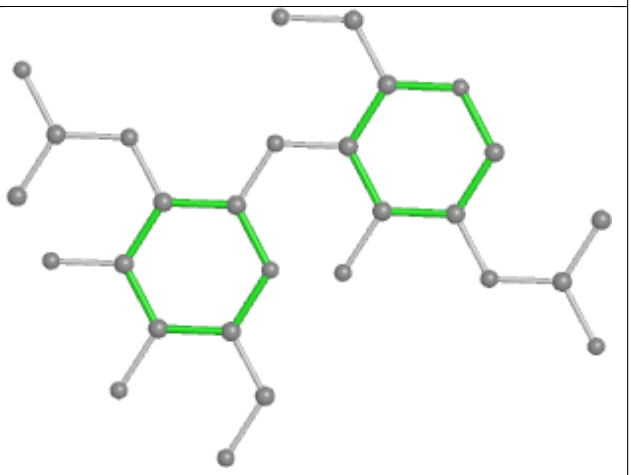


Bond angles

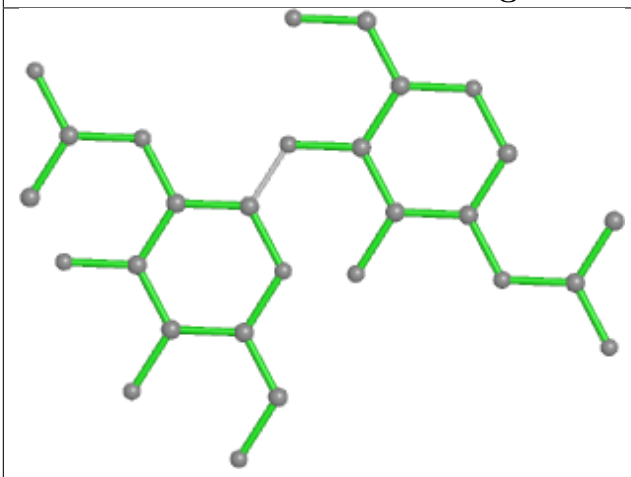


Torsions



Rings

Oligosaccharide Chain e



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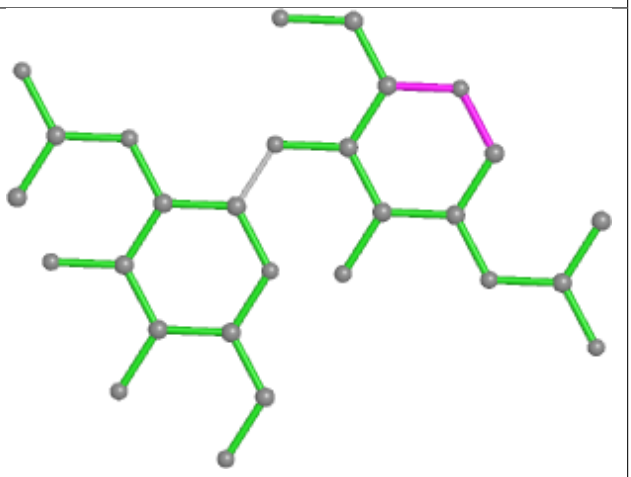
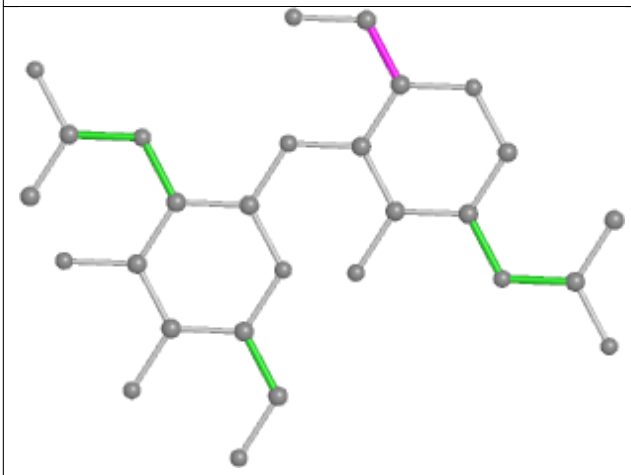


Bond angles



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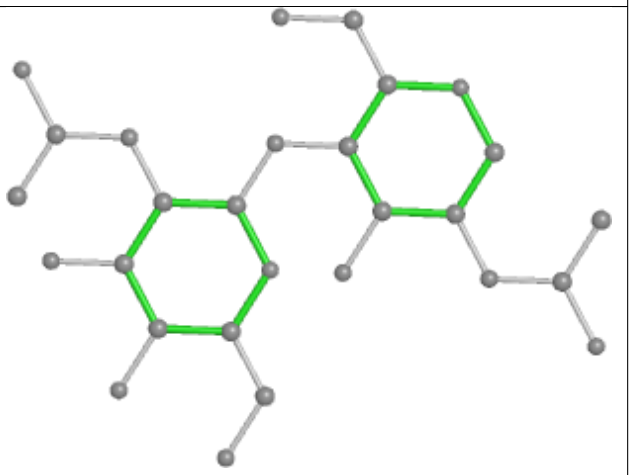
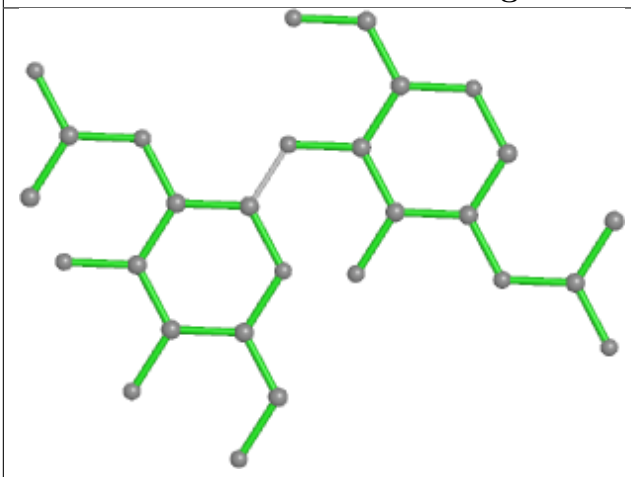


Rings

Oligosaccharide Chain f



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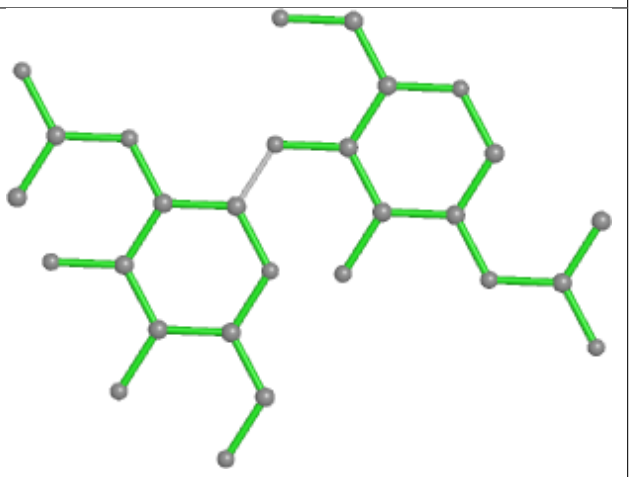
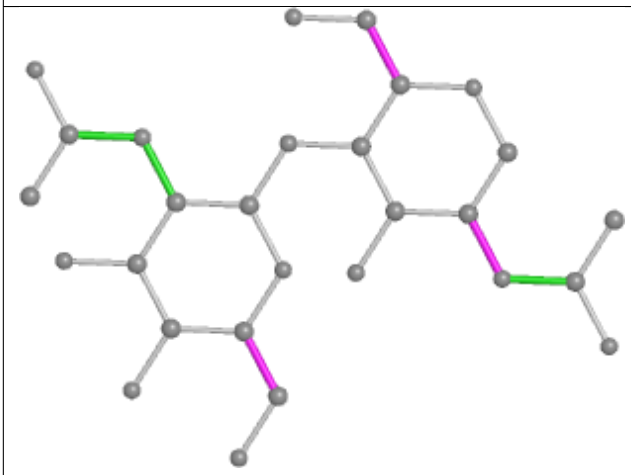


Bond angles



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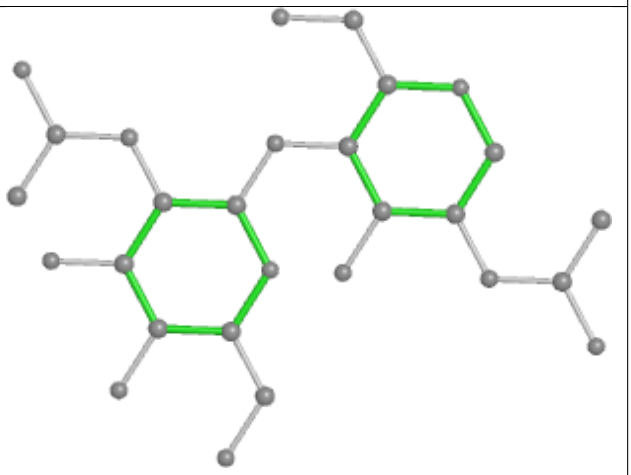
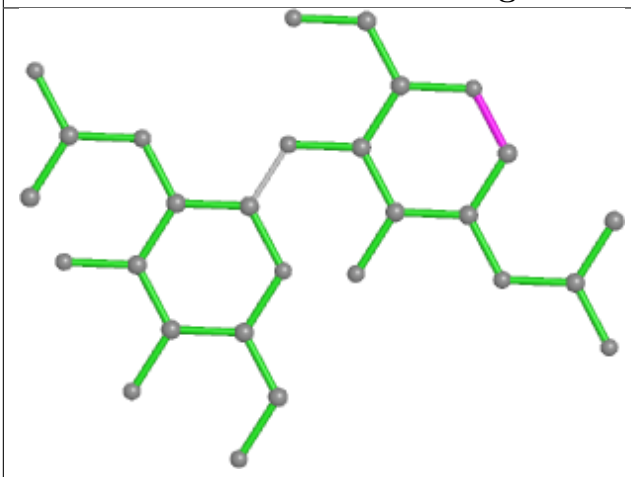


Rings

Oligosaccharide Chain g



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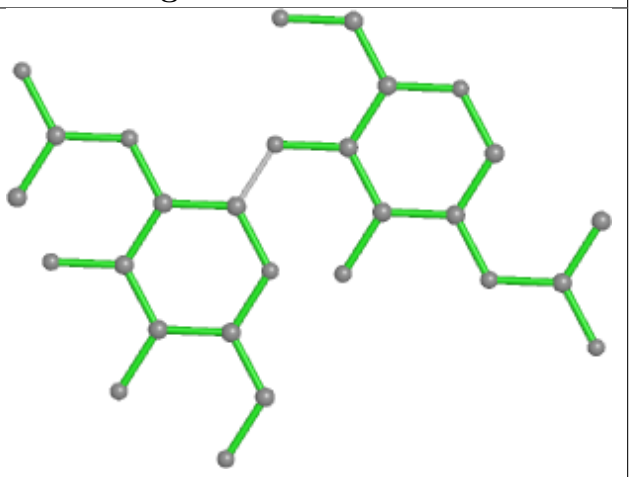
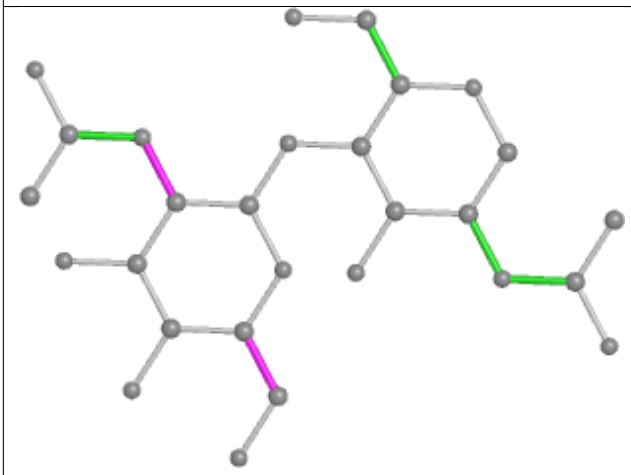


Bond angles



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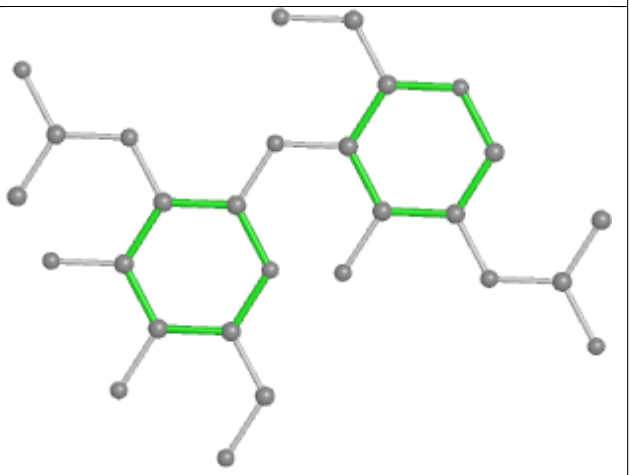
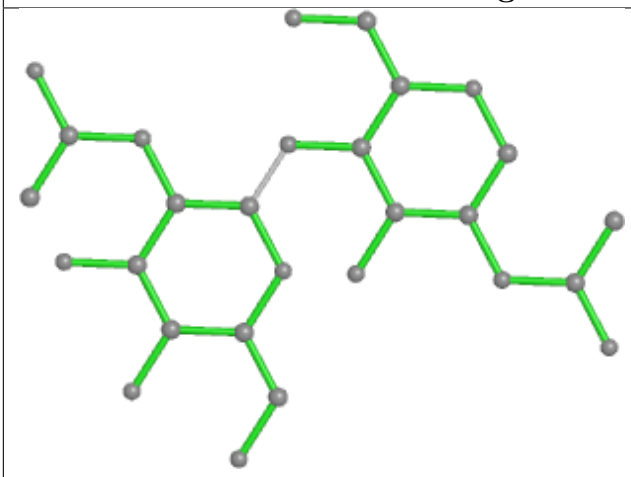


Rings

Oligosaccharide Chain h



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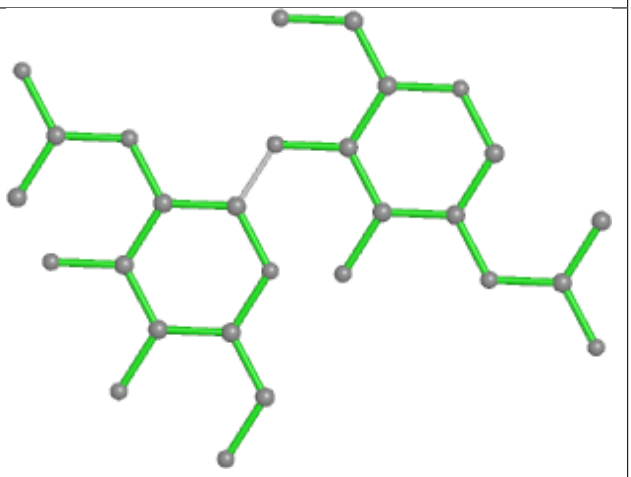
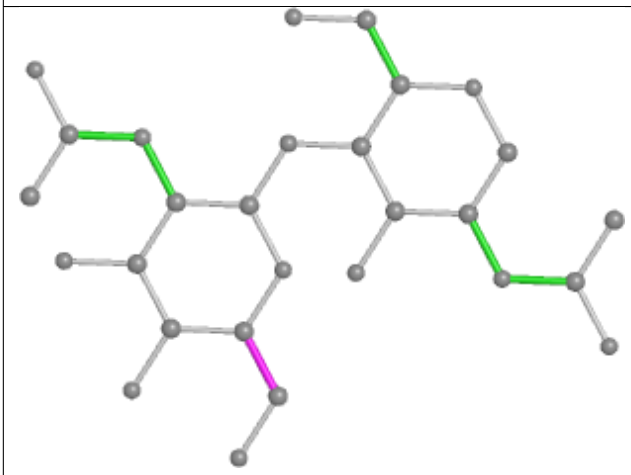
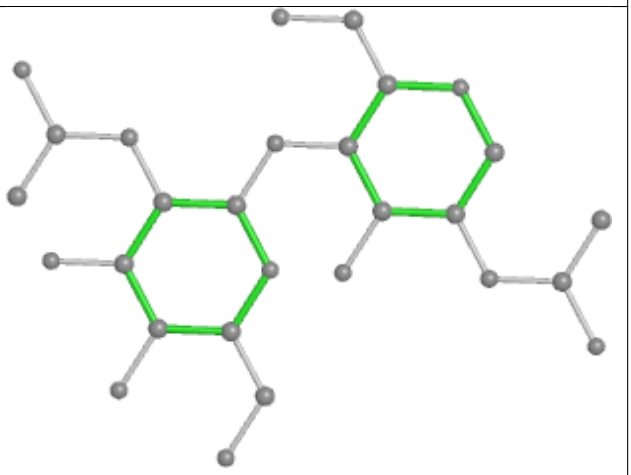


Bond angles

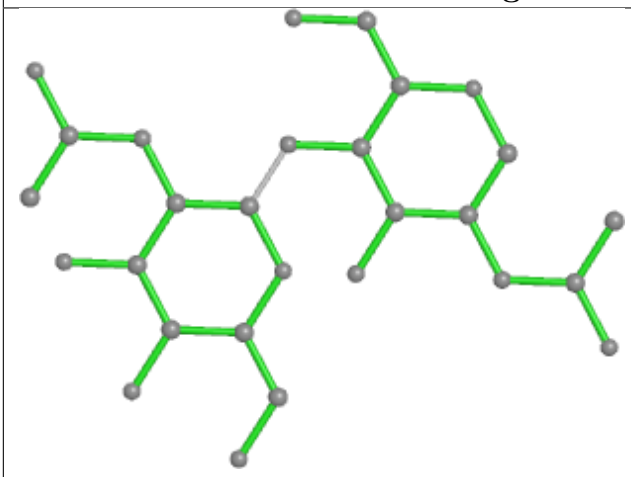


Torsions



Rings

Oligosaccharide Chain i



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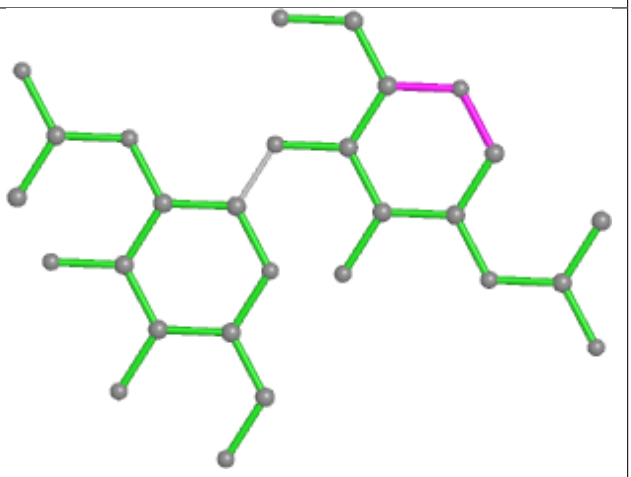
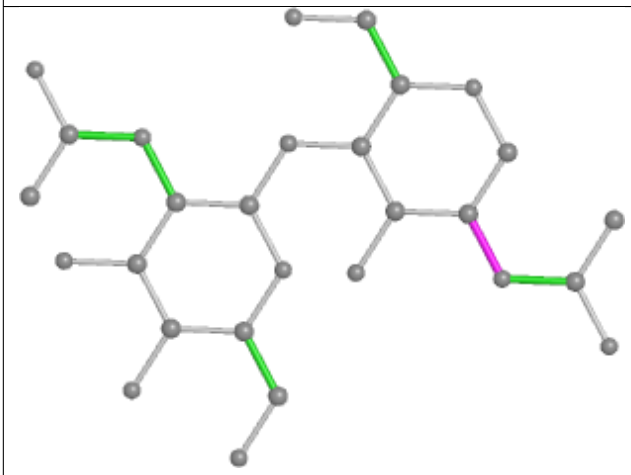


Bond angles



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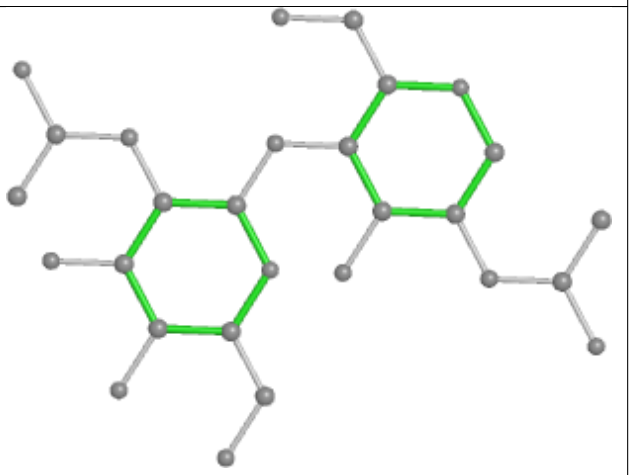
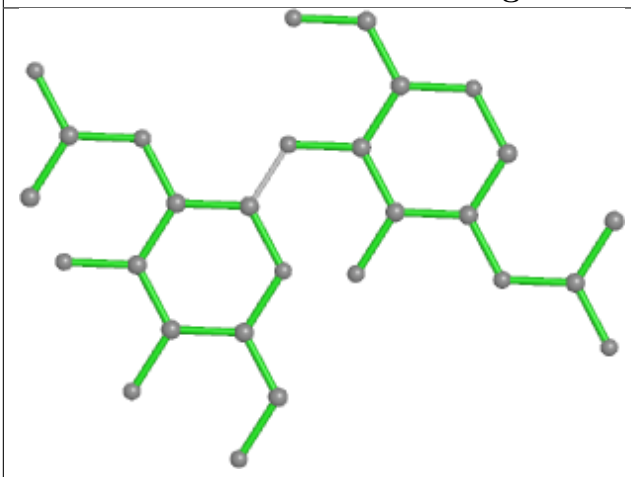


Rings

Oligosaccharide Chain j



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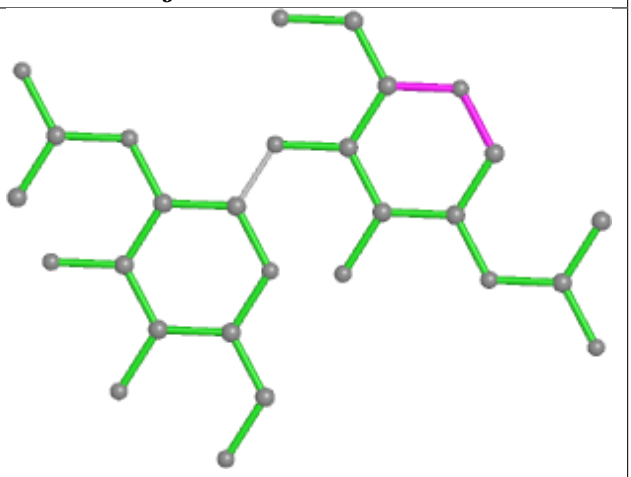
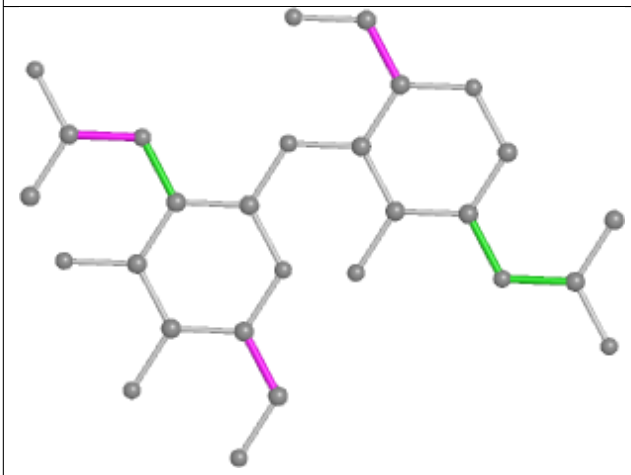


Bond angles



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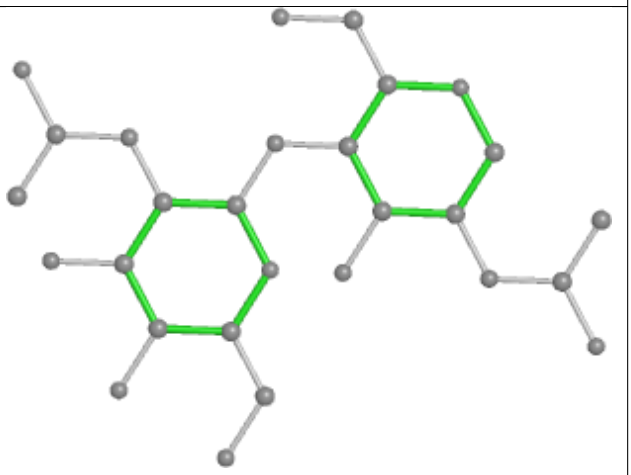
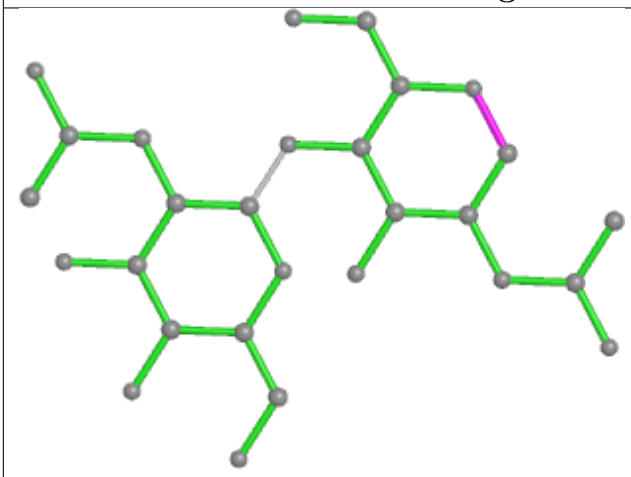
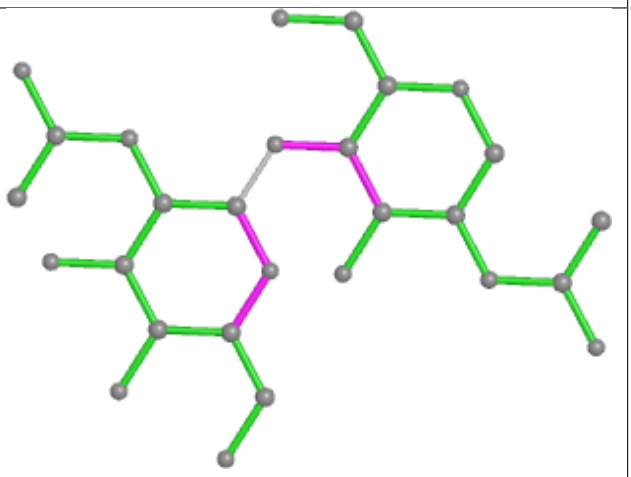


Rings

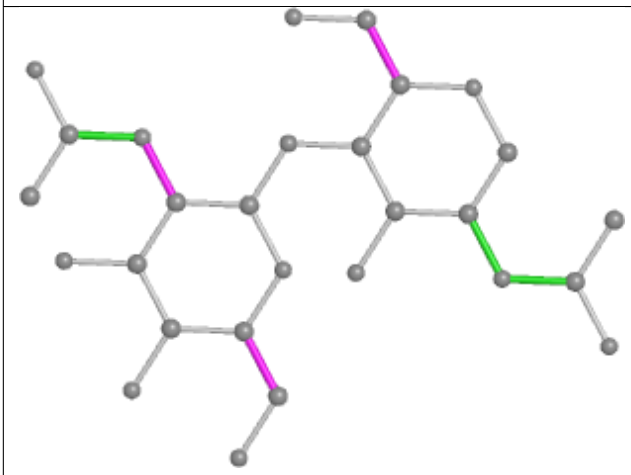
Oligosaccharide Chain k



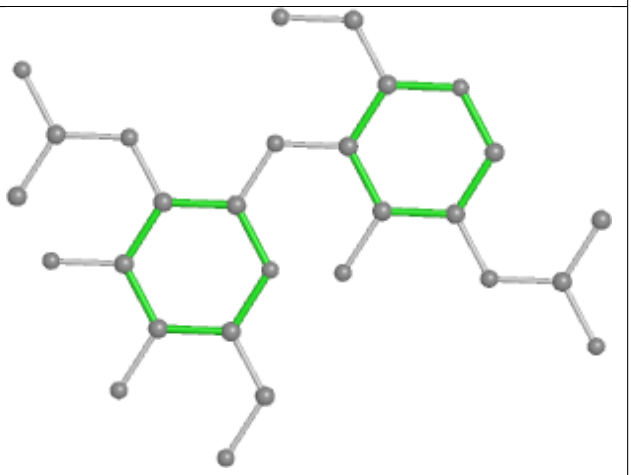
Bond lengths



Bond angles

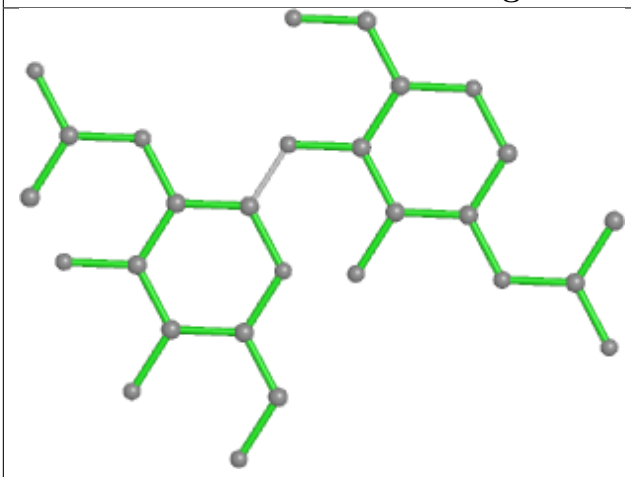


Torsions



Rings

Oligosaccharide Chain l



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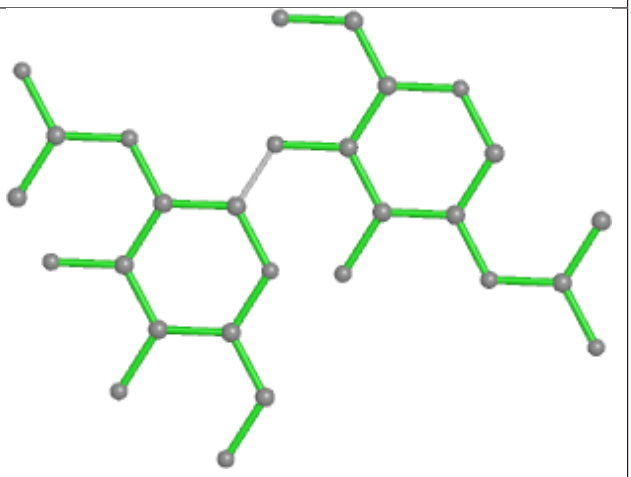

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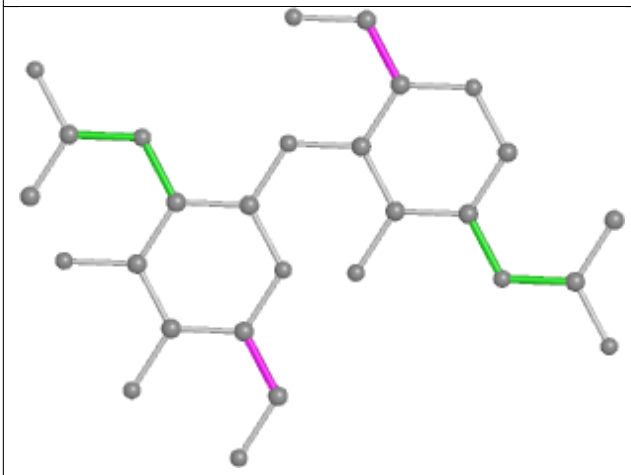

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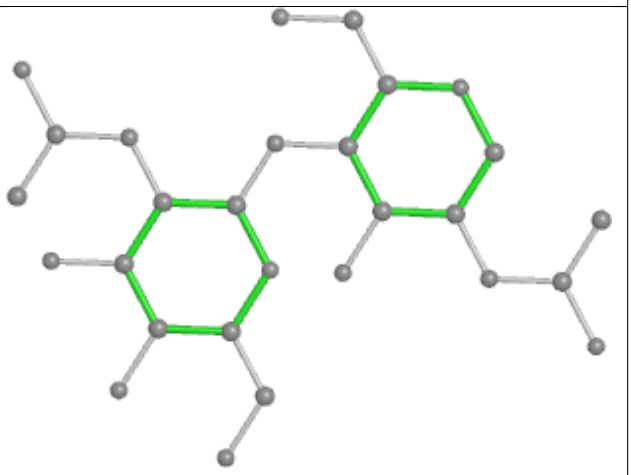
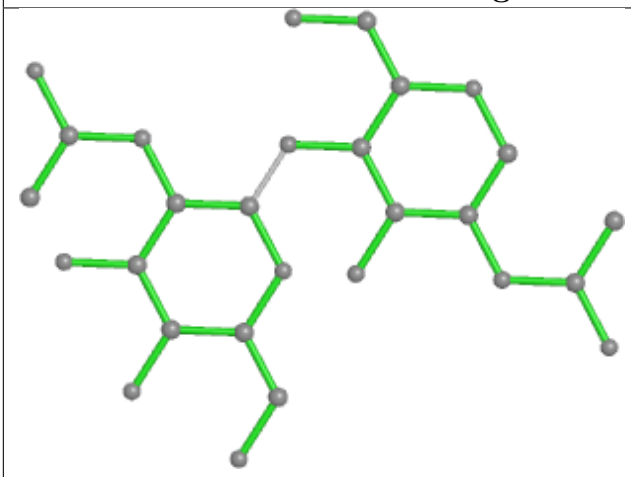


Rings

Oligosaccharide Chain m



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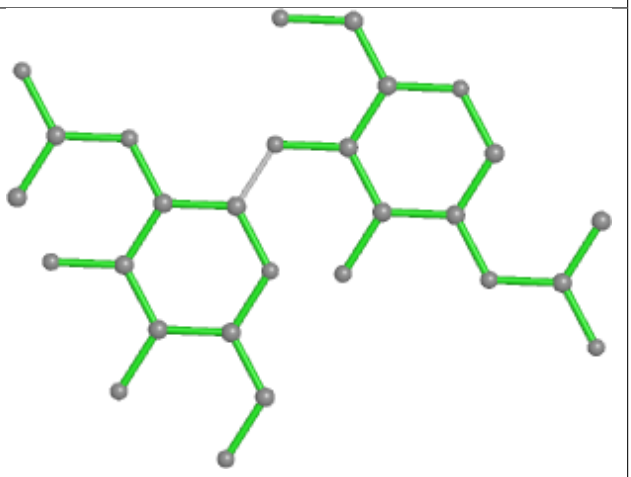

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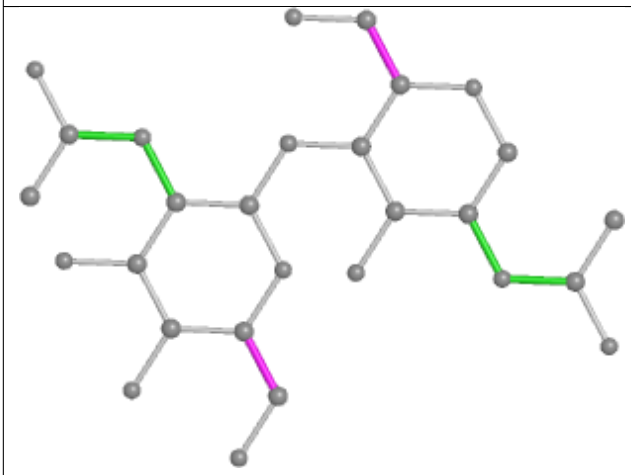

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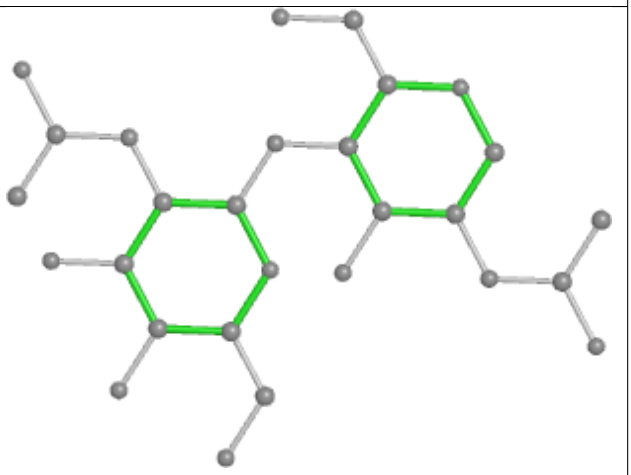
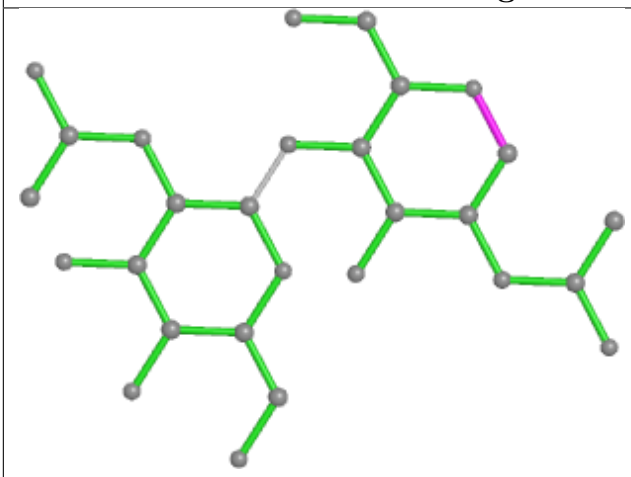
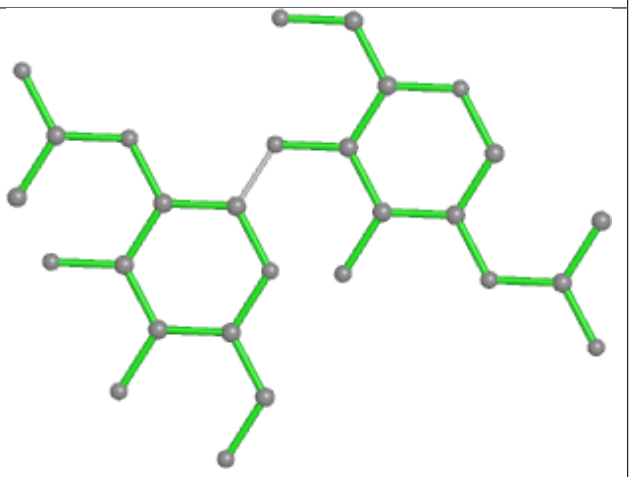
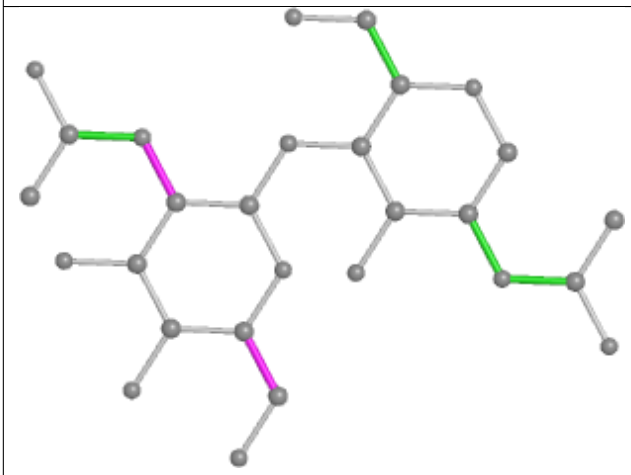
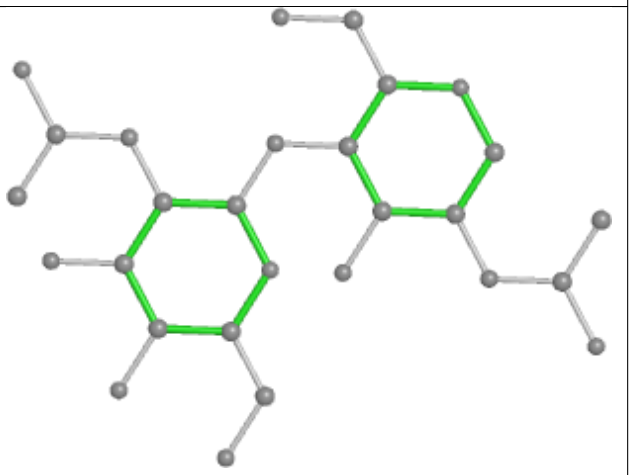
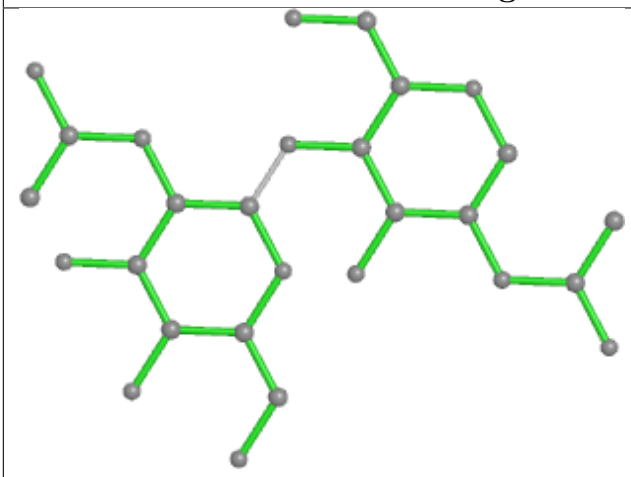


Rings

Oligosaccharide Chain n	
 Bond lengths	 Bond angles
 Torsions	 Rings

Oligosaccharide Chain o



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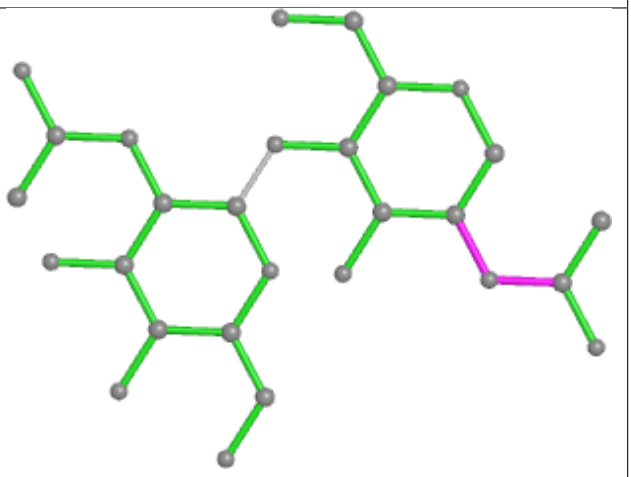

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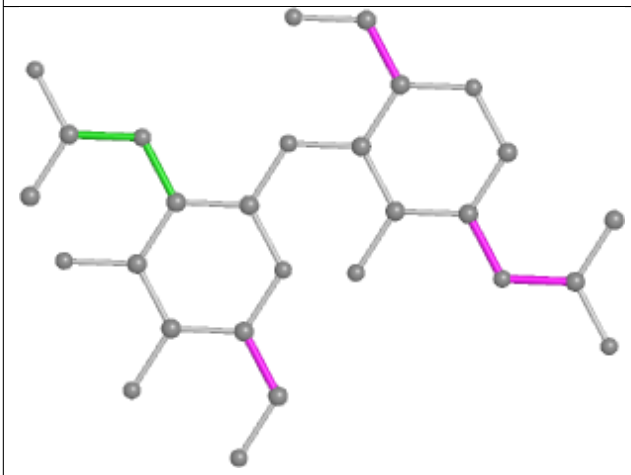

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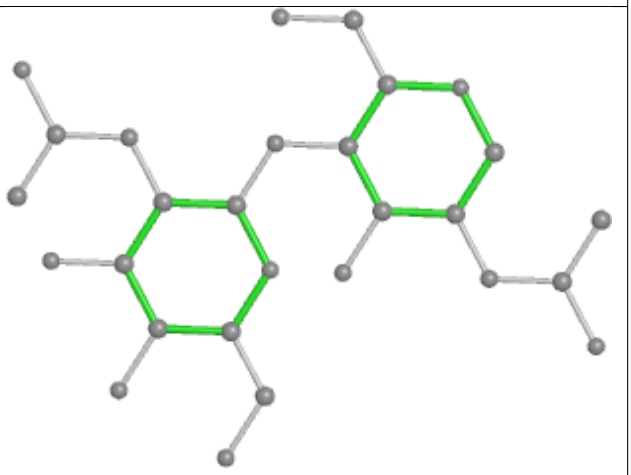
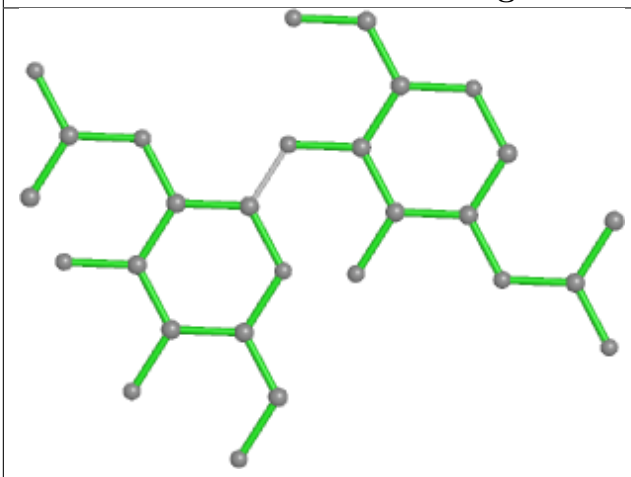


Rings

Oligosaccharide Chain p



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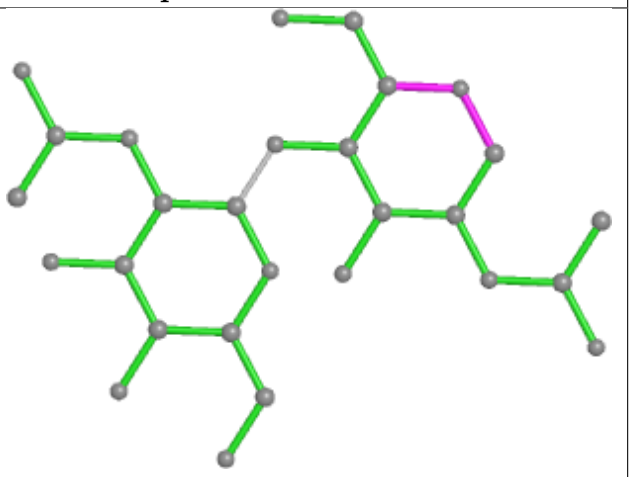

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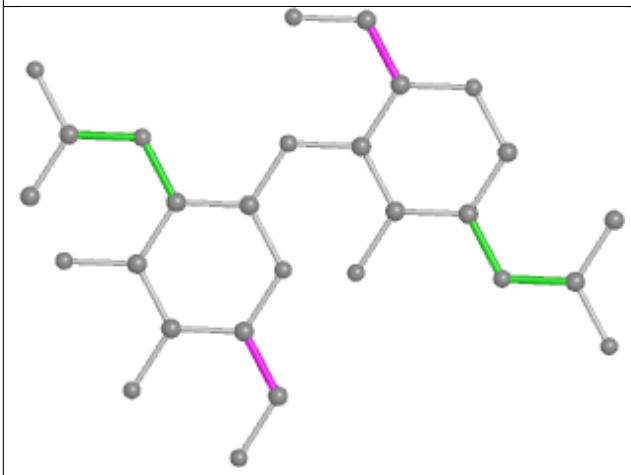

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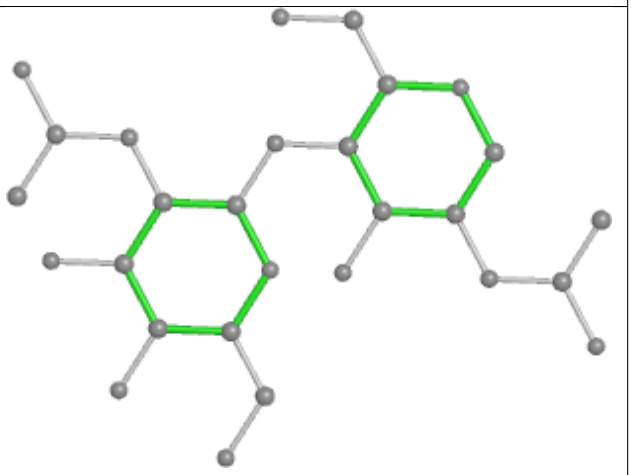
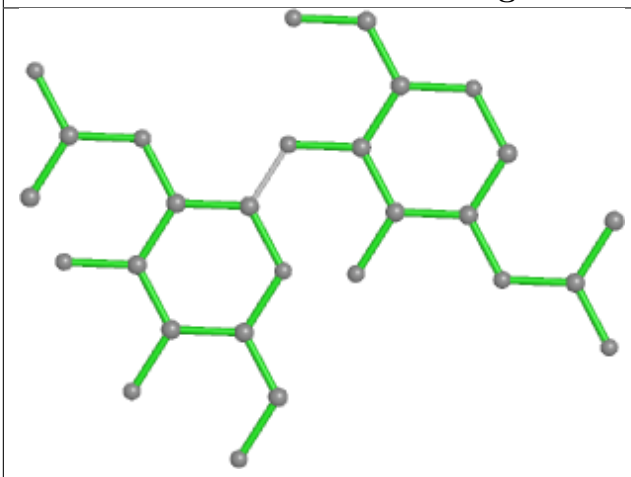


Rings

Oligosaccharide Chain q



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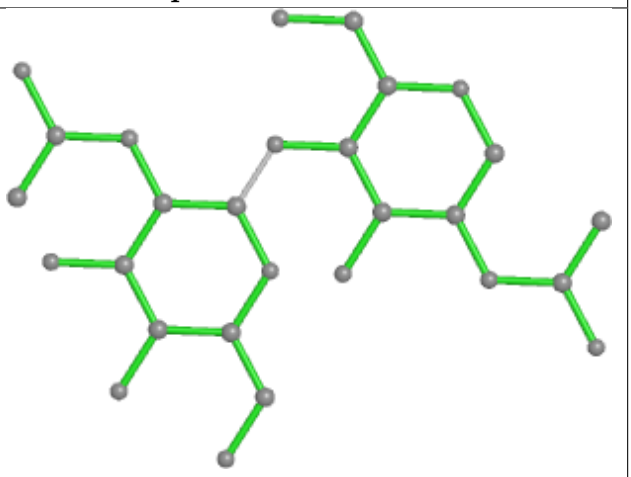

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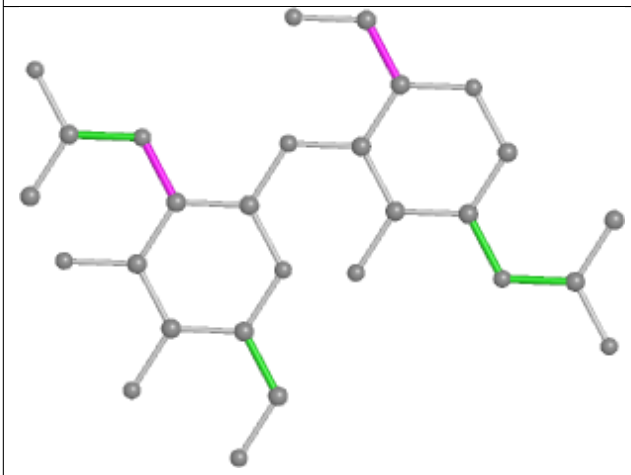

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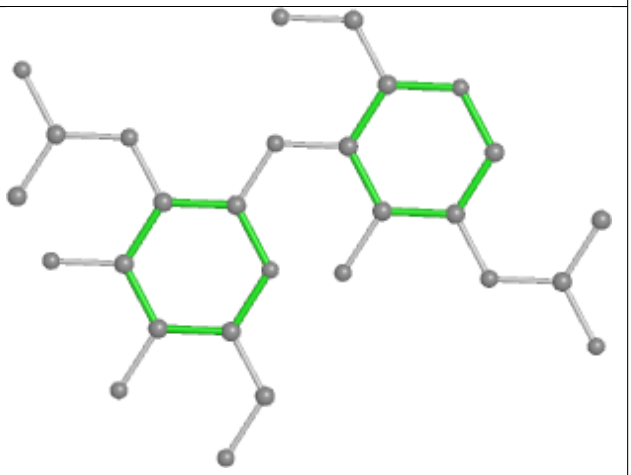
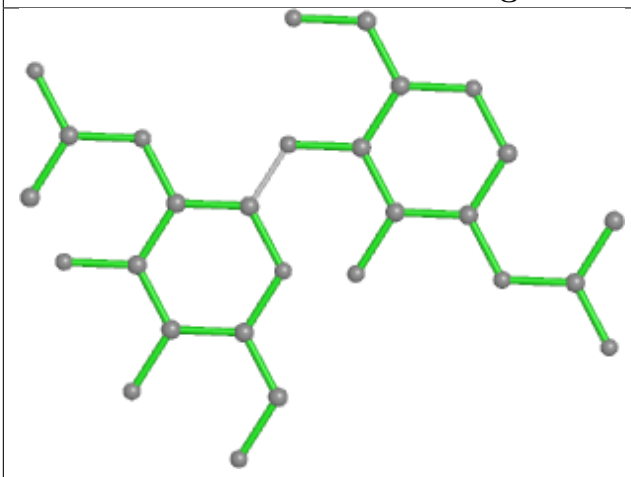


Rings

Oligosaccharide Chain r



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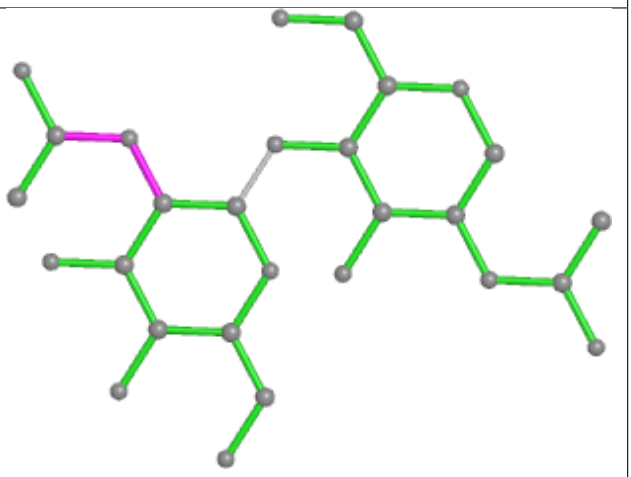

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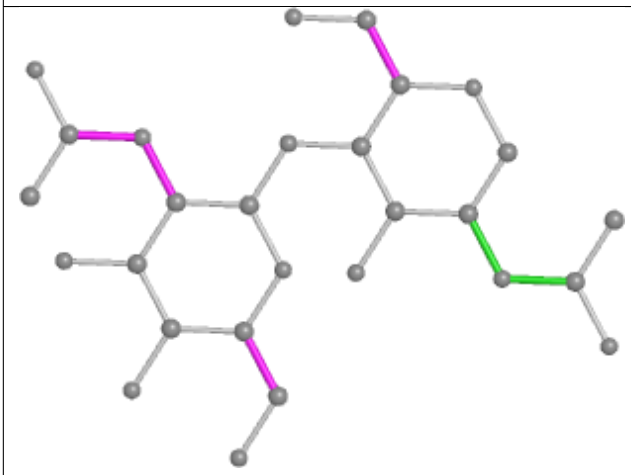

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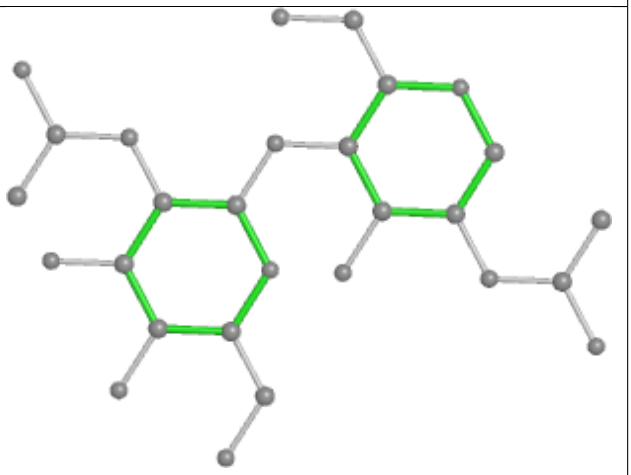
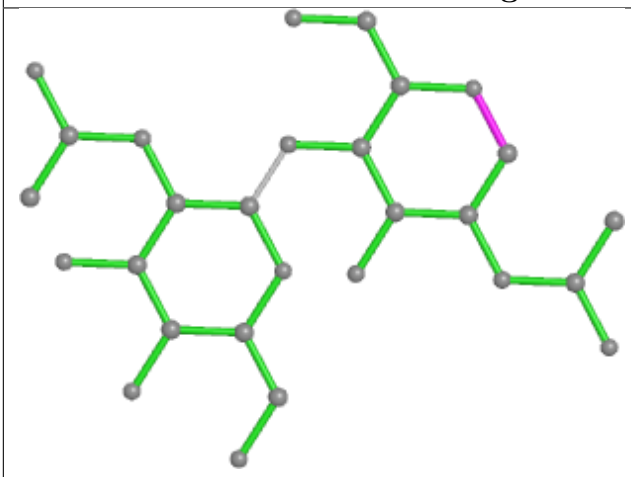


Rings

Oligosaccharide Chain s



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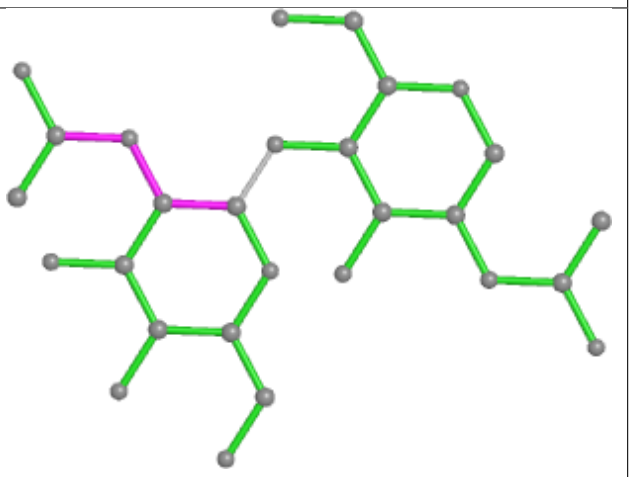

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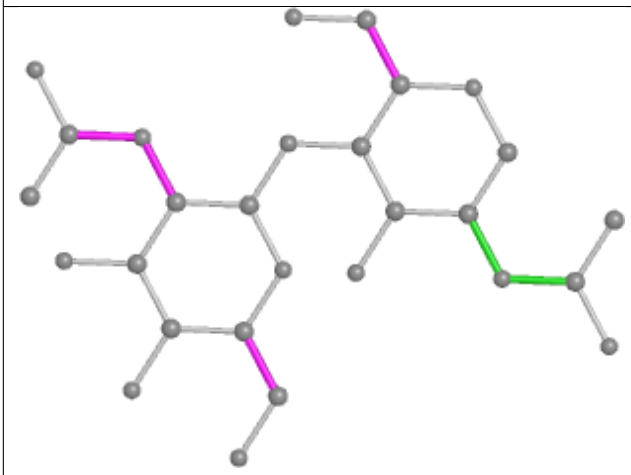

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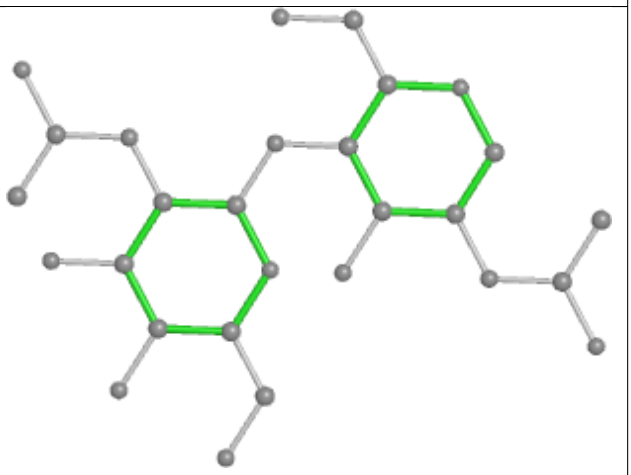
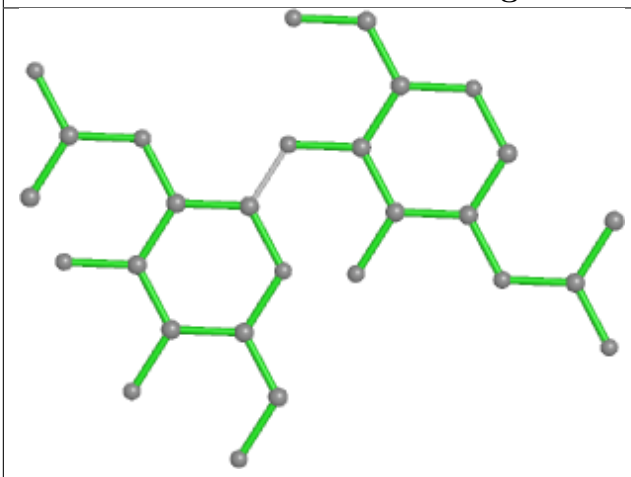


Rings

Oligosaccharide Chain t



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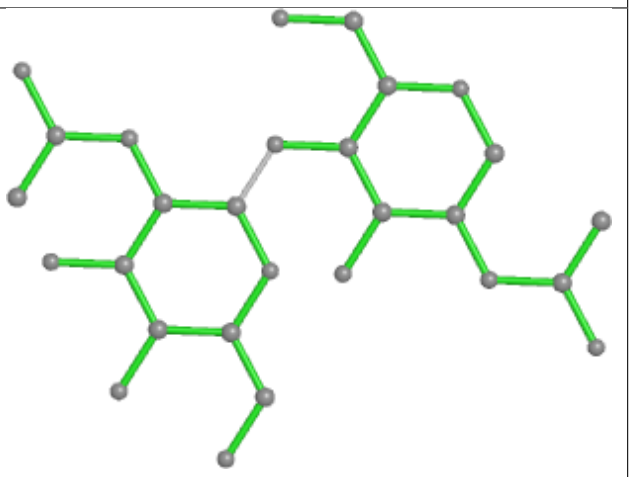

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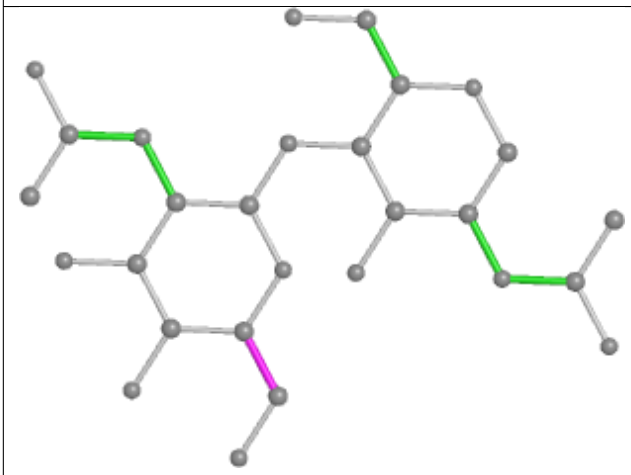

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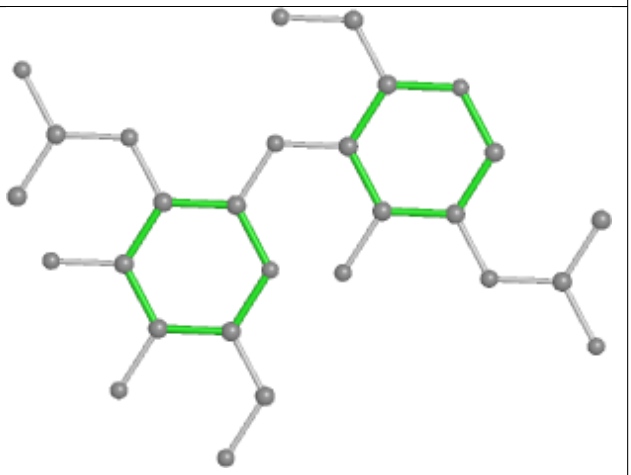
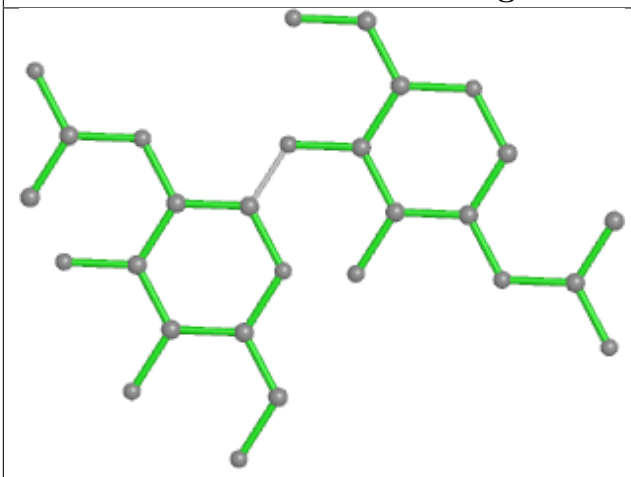


Rings

Oligosaccharide Chain u



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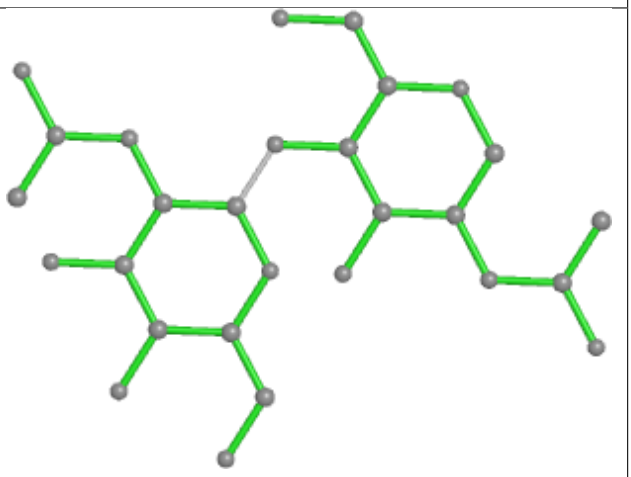

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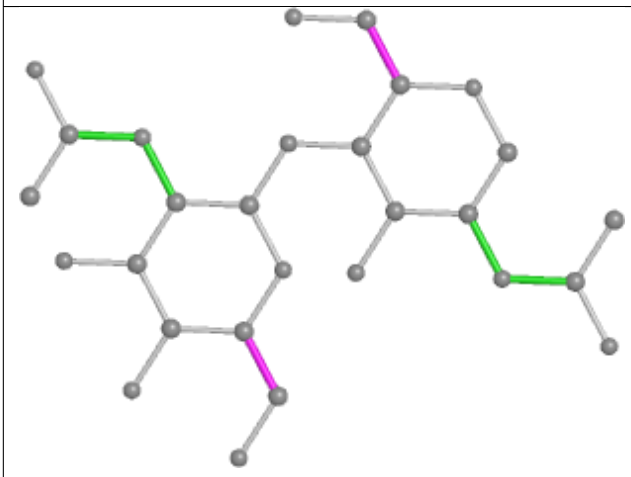

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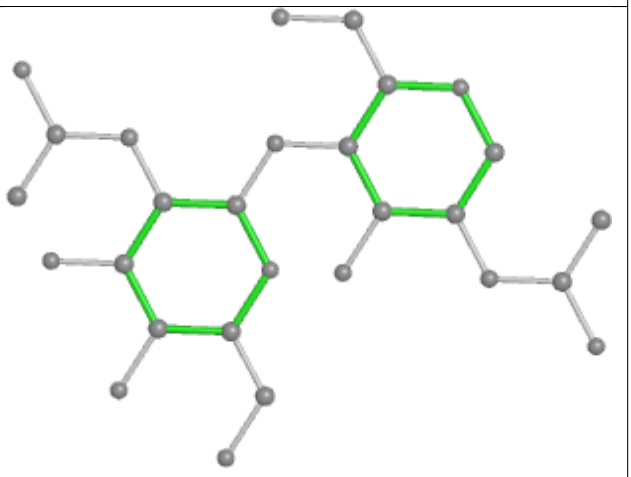
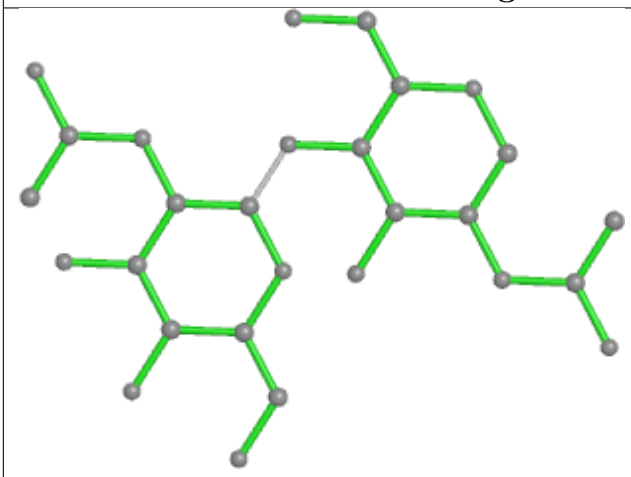


Rings

Oligosaccharide Chain v



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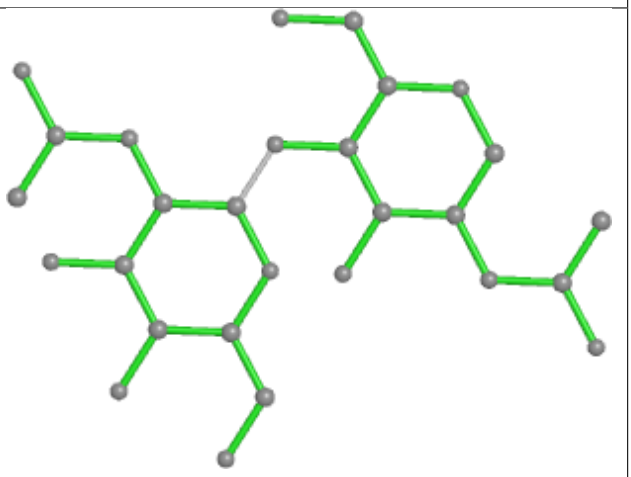

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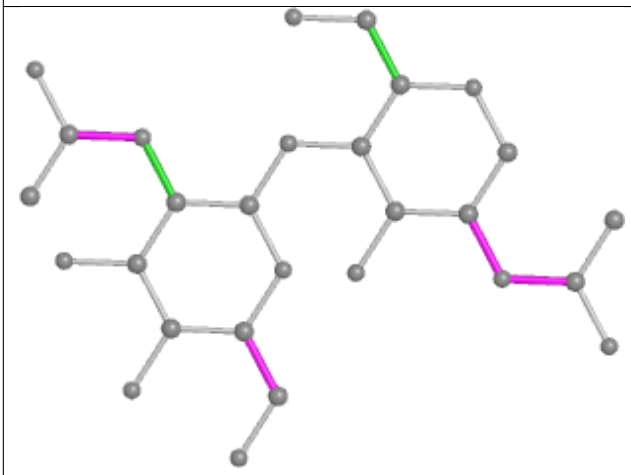

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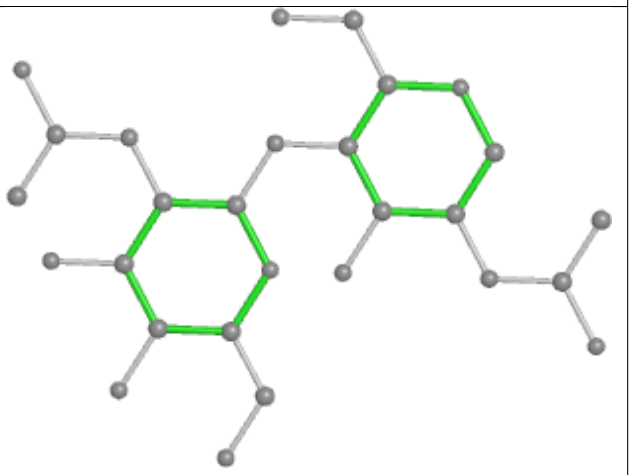
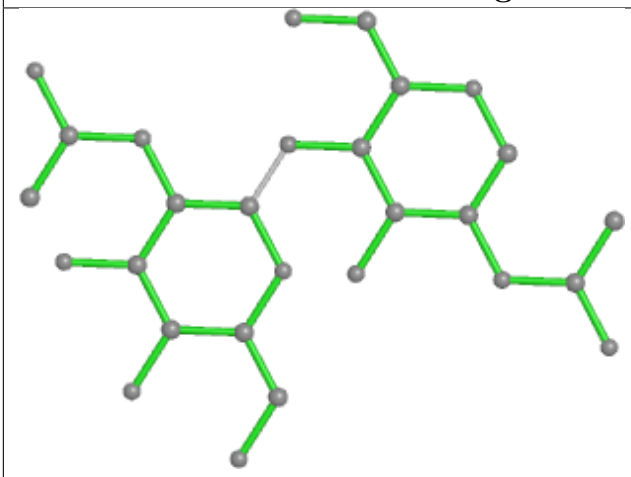


Rings

Oligosaccharide Chain w



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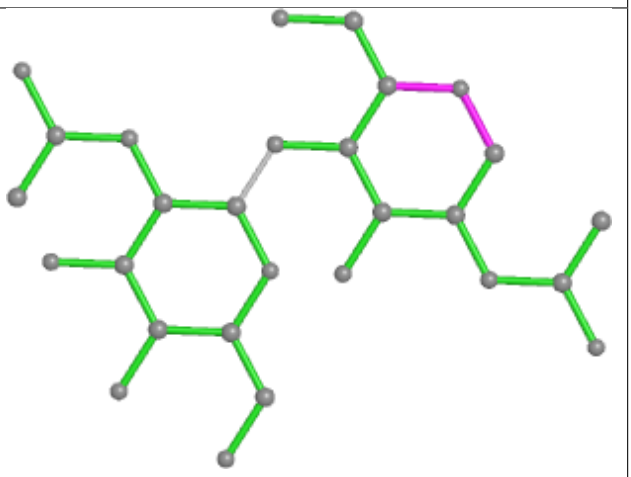

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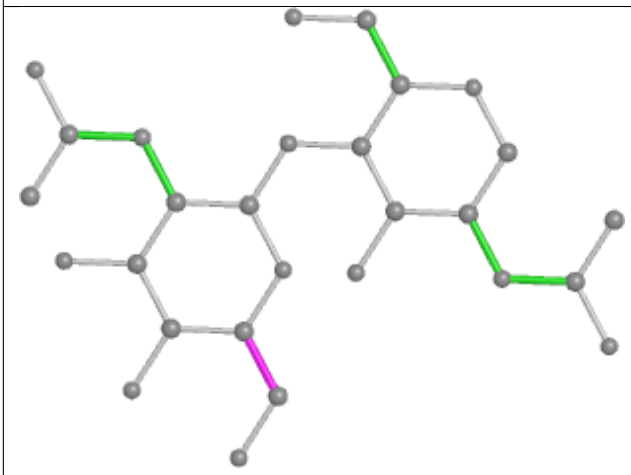

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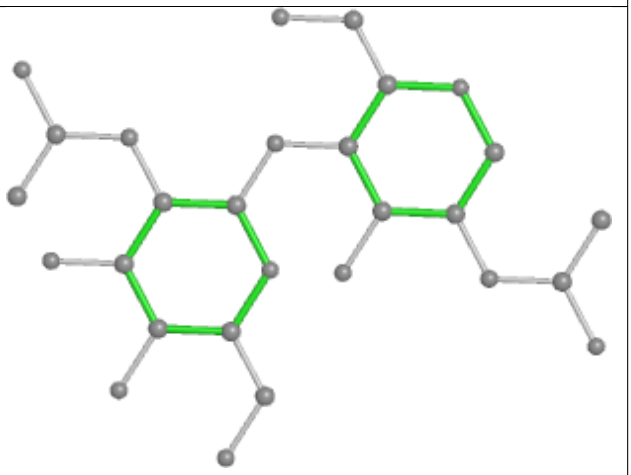
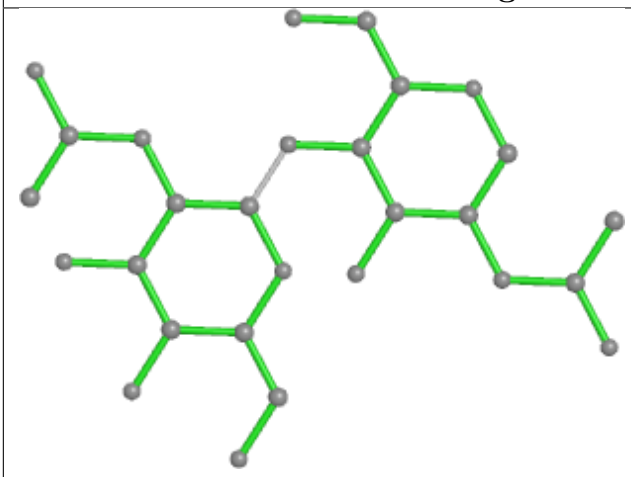


Rings

Oligosaccharide Chain x



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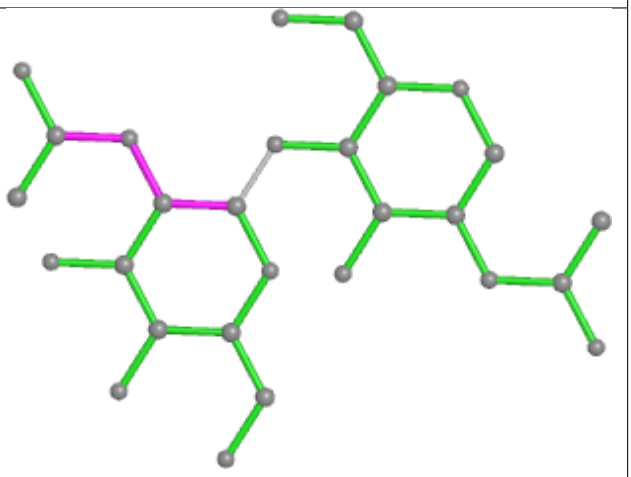
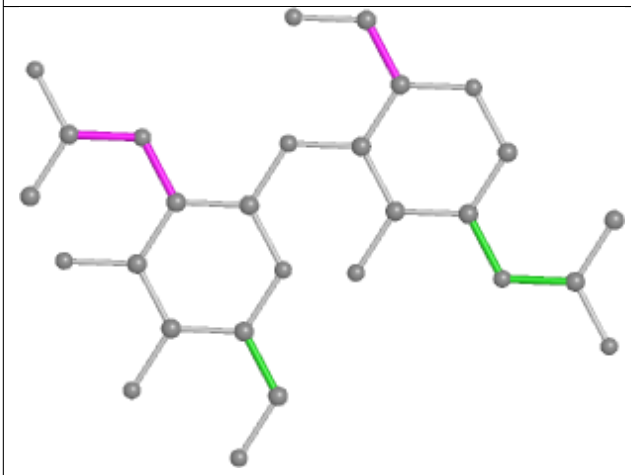


Bond angles



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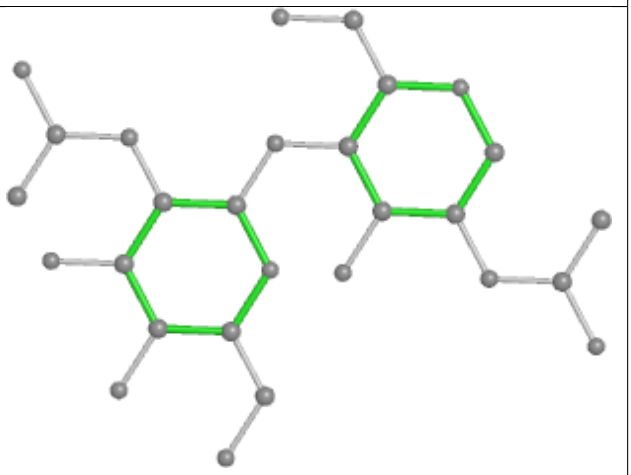
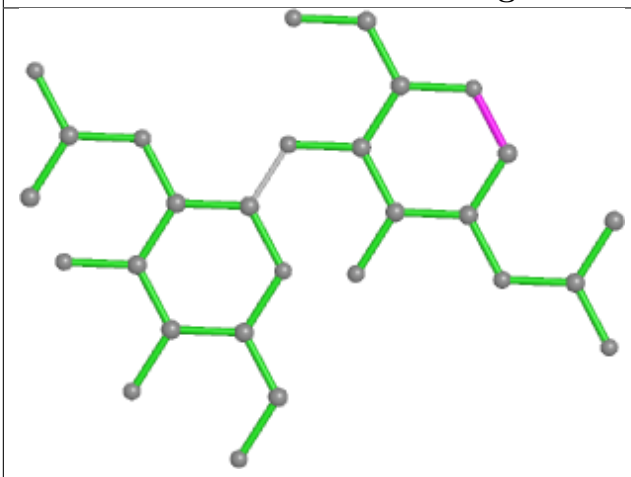


Rings

Oligosaccharide Chain y



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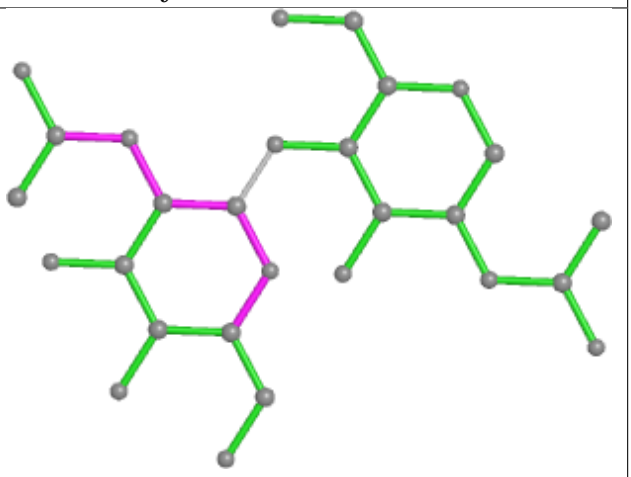
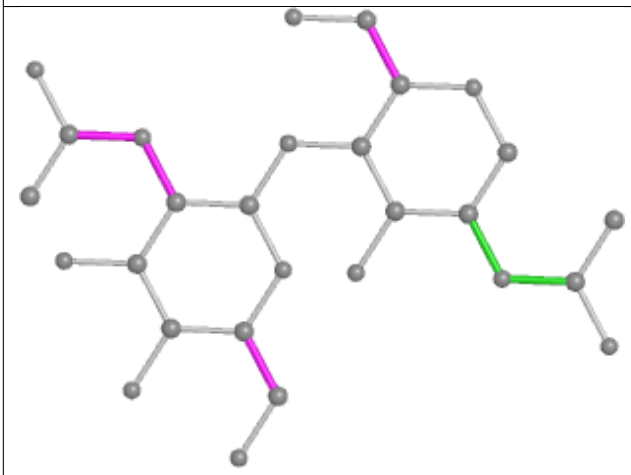


Bond angles



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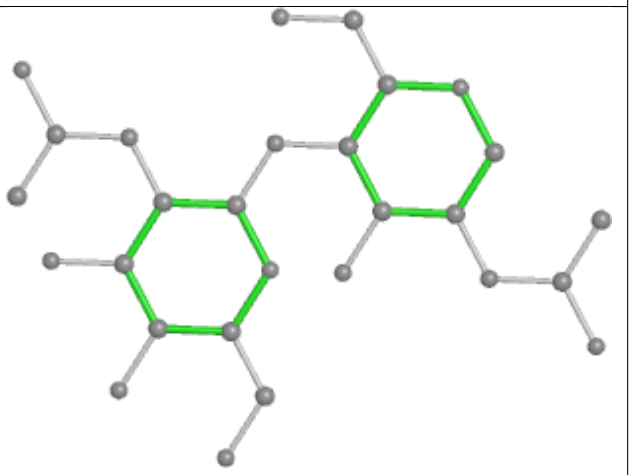
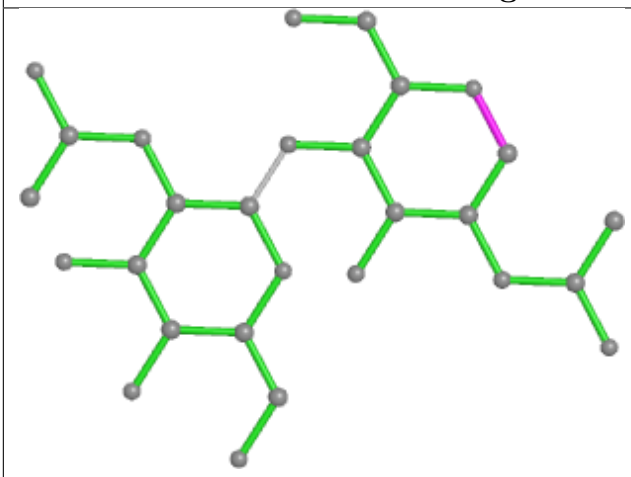
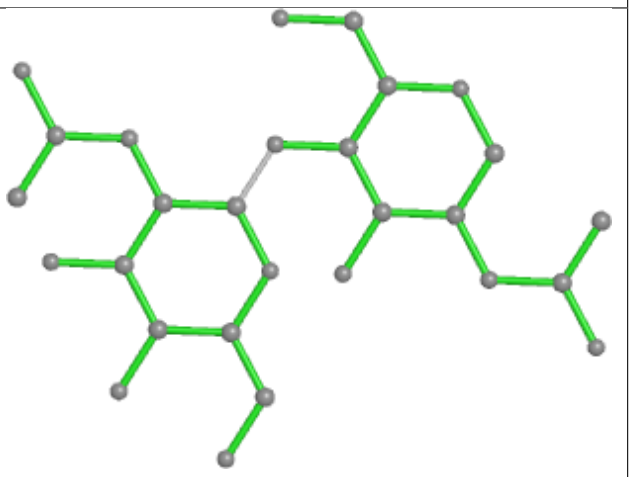


Rings

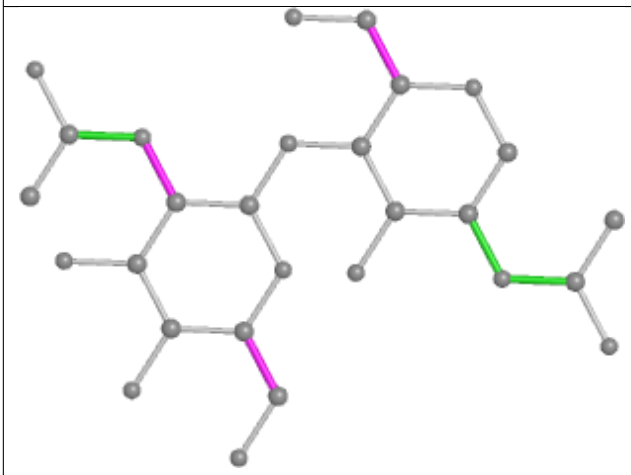
Oligosaccharide Chain z



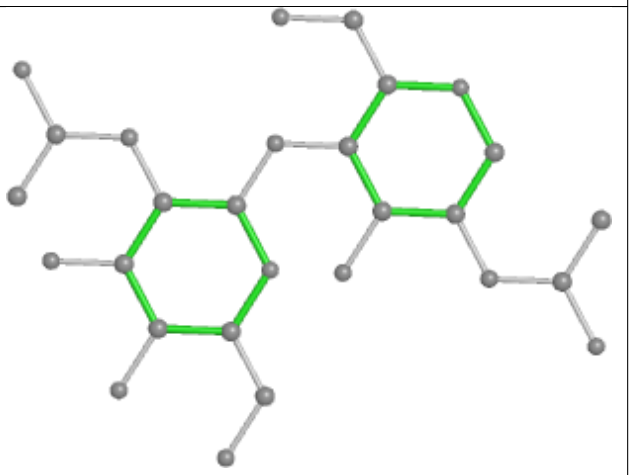
Bond lengths



Bond angles

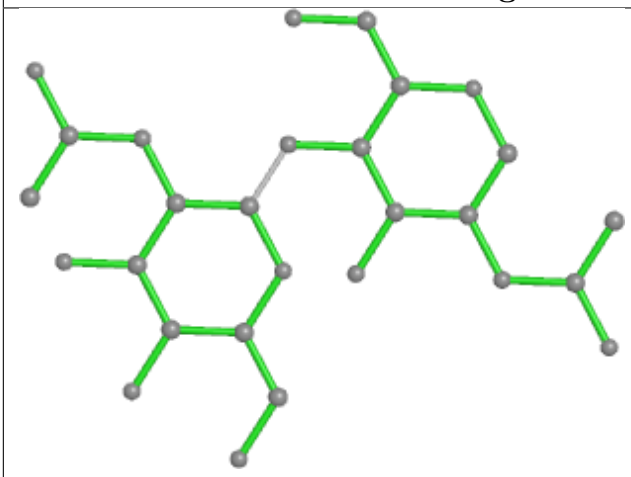


Torsions



Rings

Oligosaccharide Chain 0



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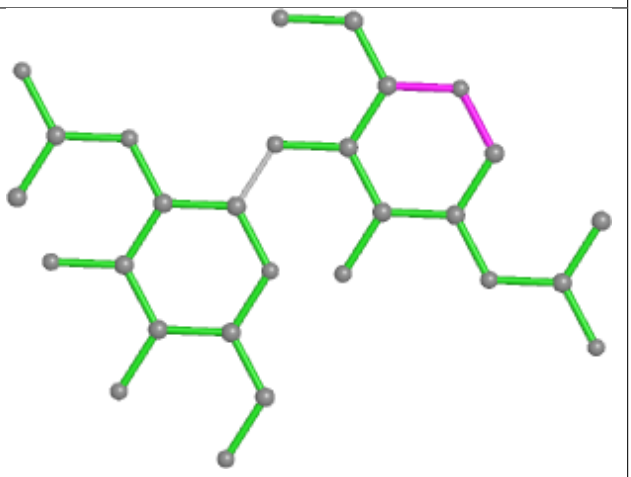
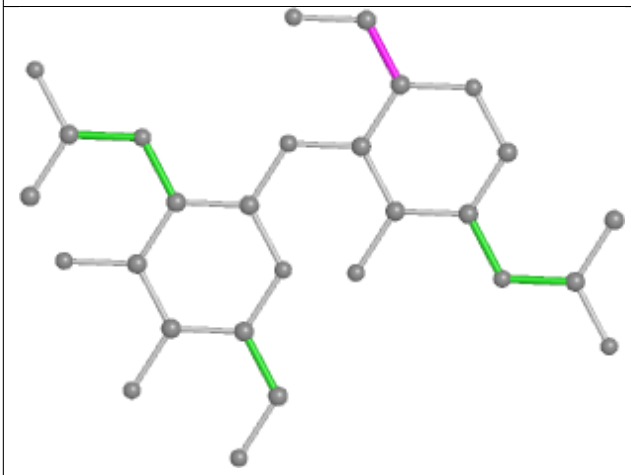


Bond angles



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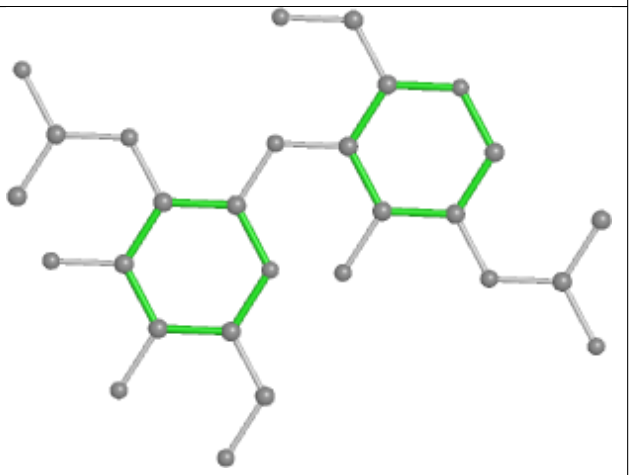
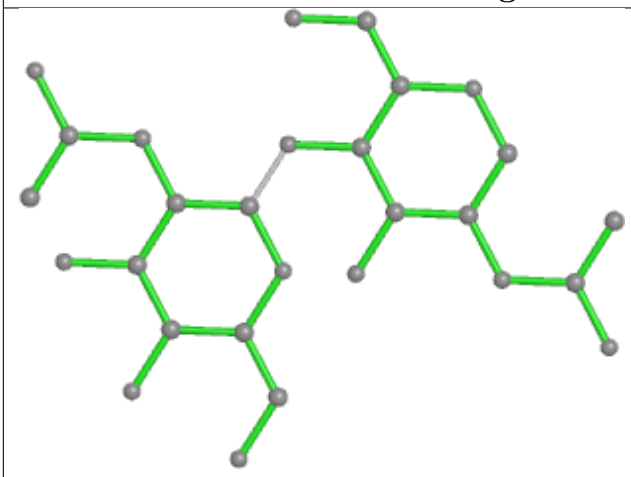


Rings

Oligosaccharide Chain 1



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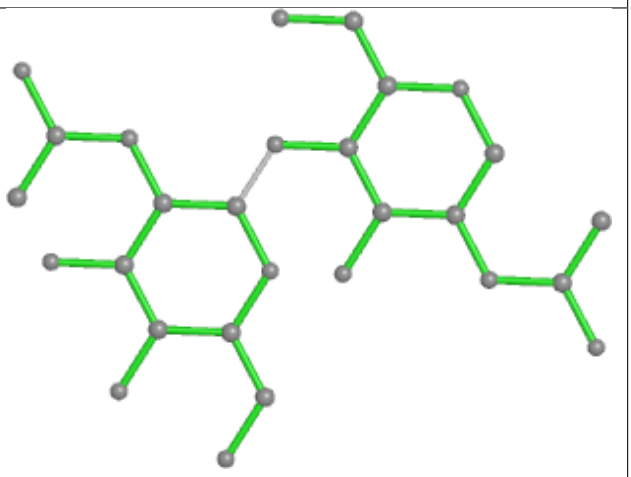
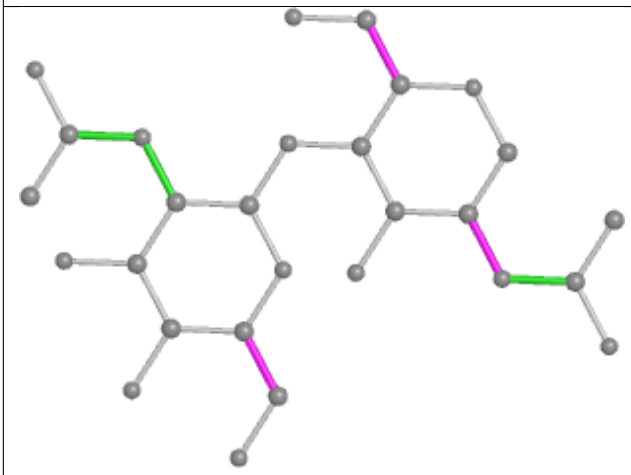


Bond angles



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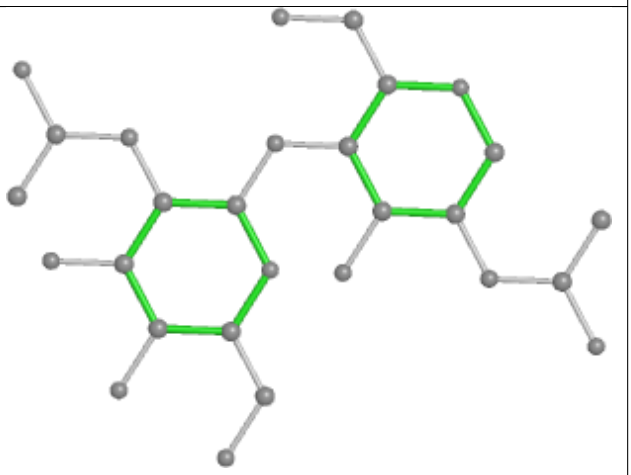
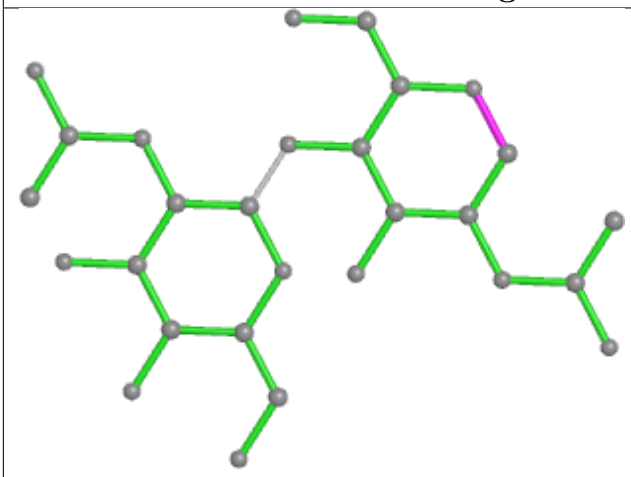
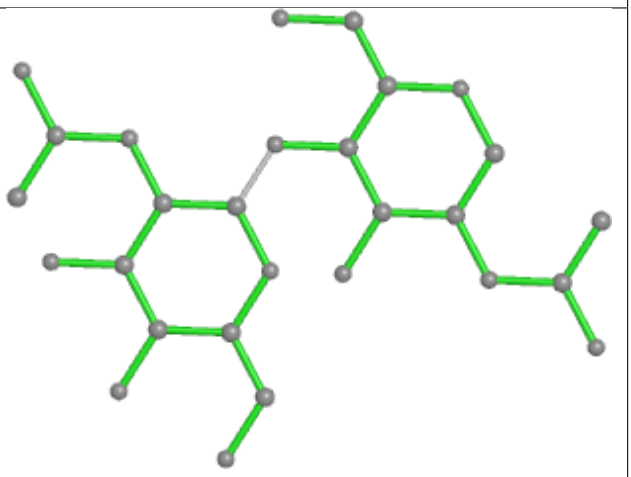


Rings

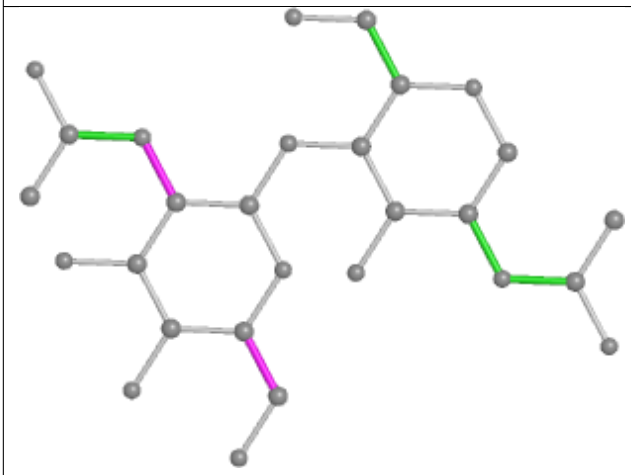
Oligosaccharide Chain 2



Bond lengths



Bond angles



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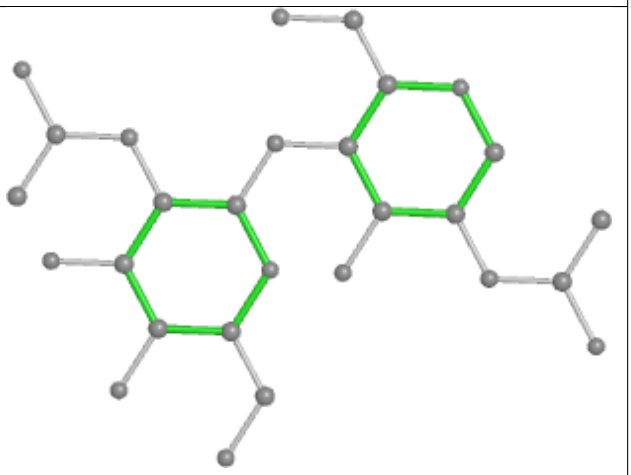
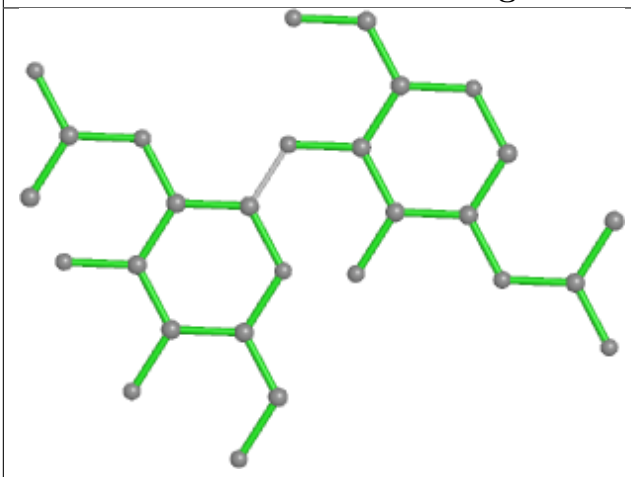


Rings

Oligosaccharide Chain 3



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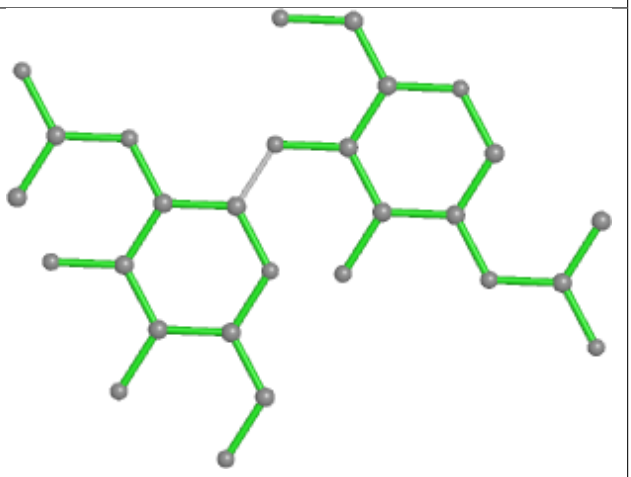
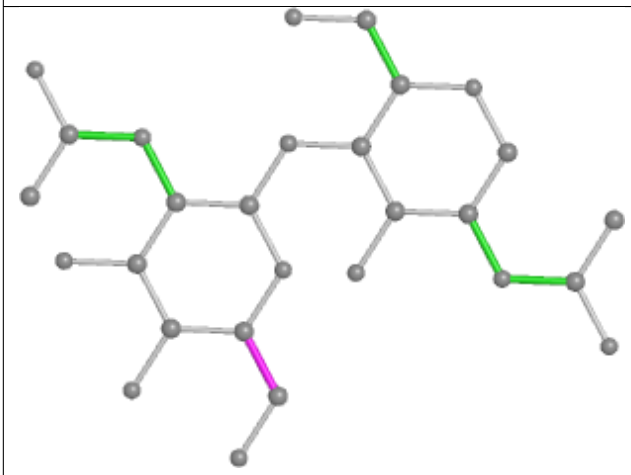


Bond angles



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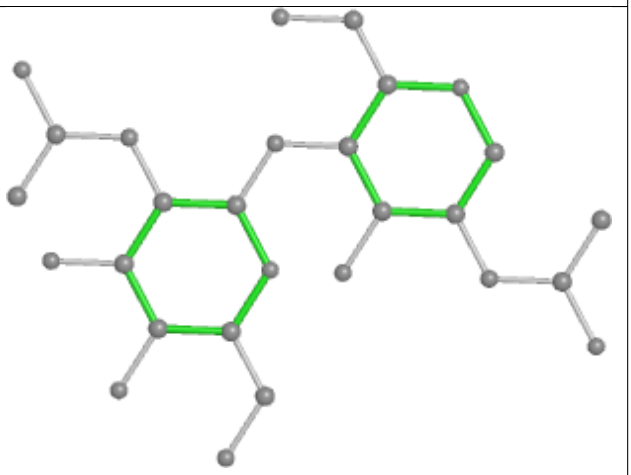
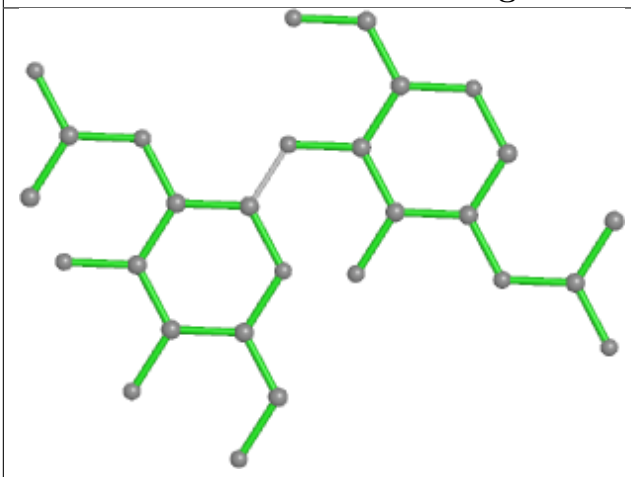


Rings

Oligosaccharide Chain 4



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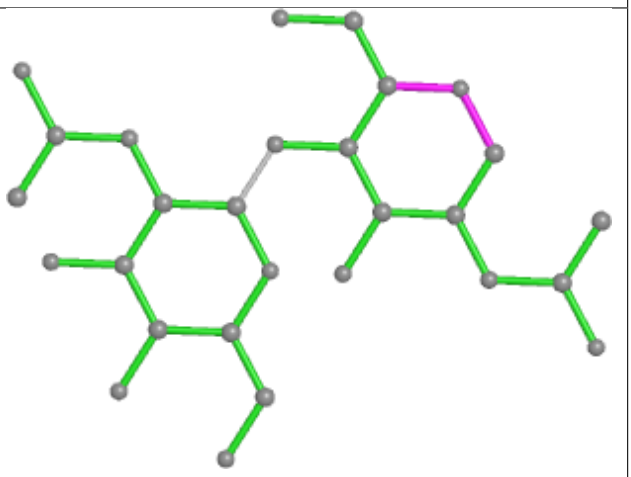
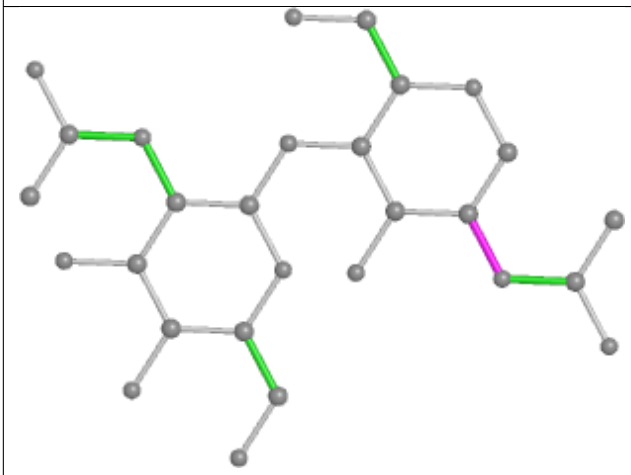


Bond angles



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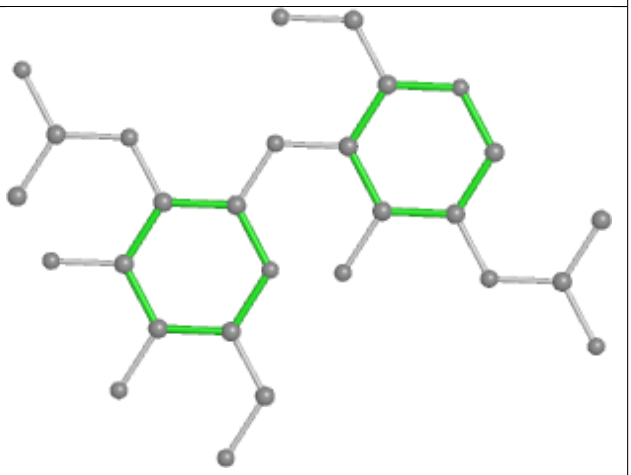
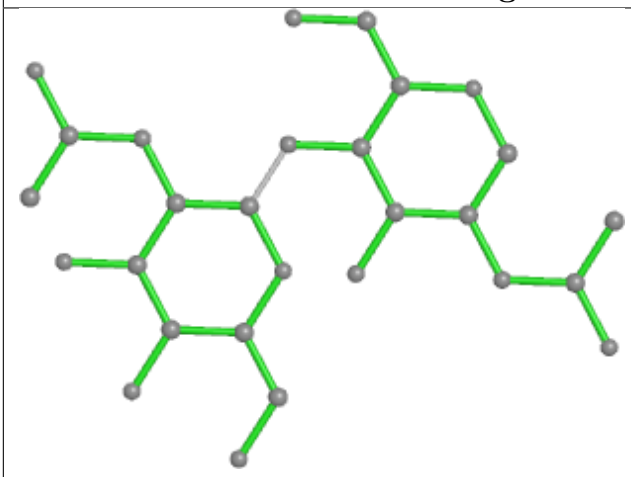


Rings

Oligosaccharide Chain 5



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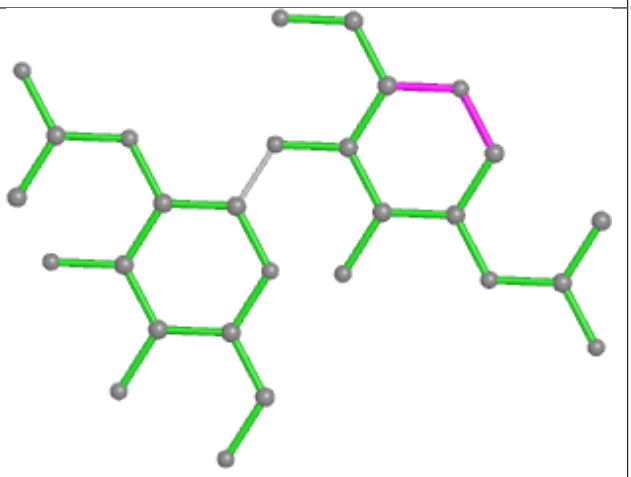
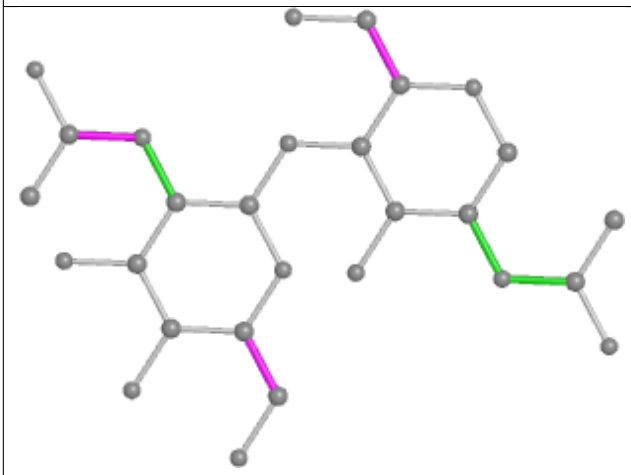


Bond angles



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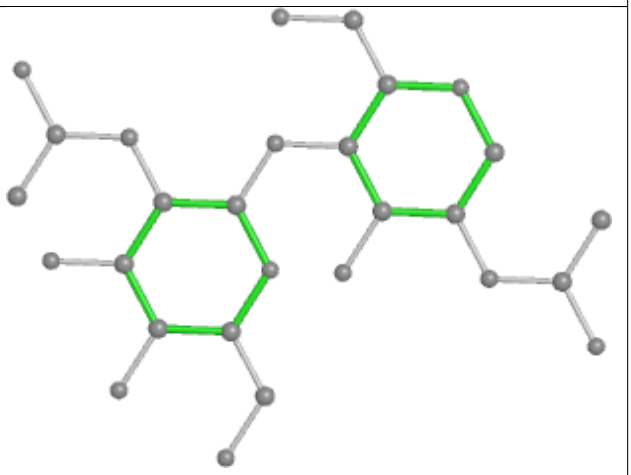
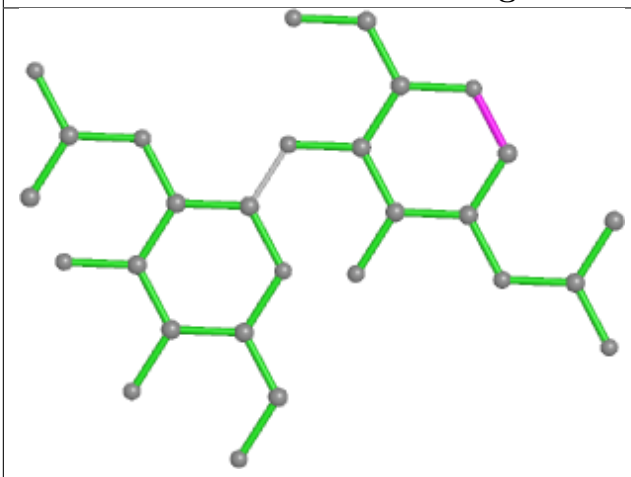


Rings

Oligosaccharide Chain 6



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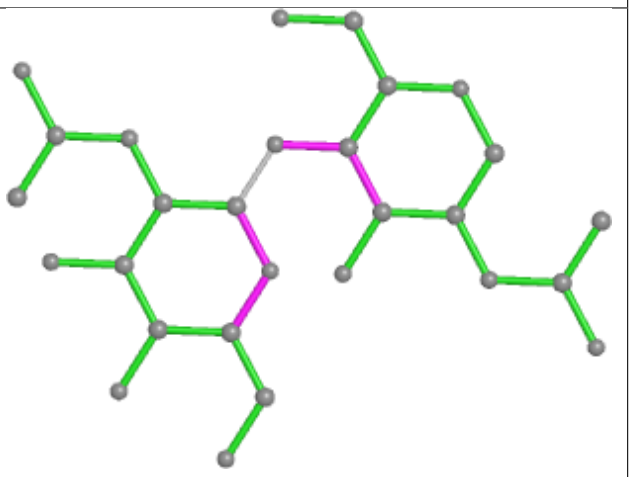
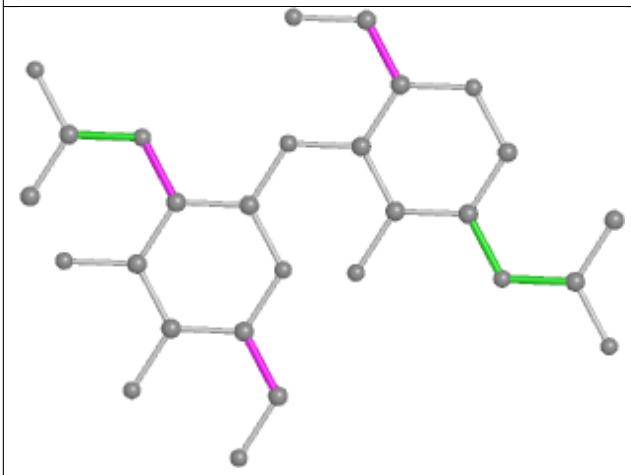


Bond angles



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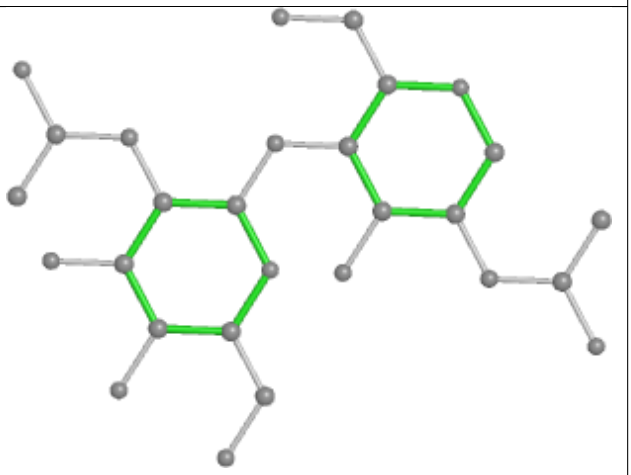
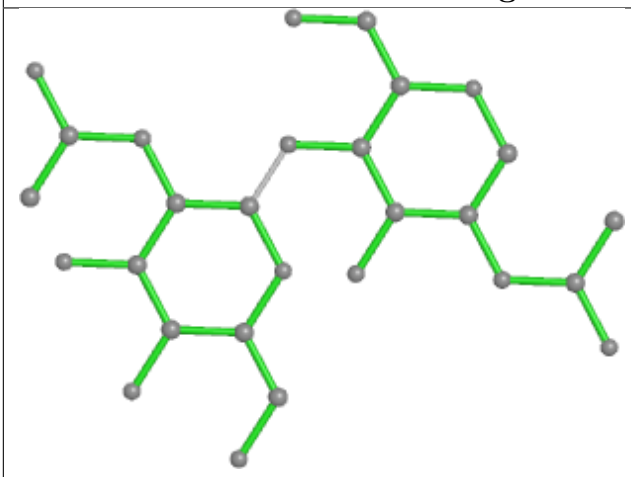


Rings

Oligosaccharide Chain 7



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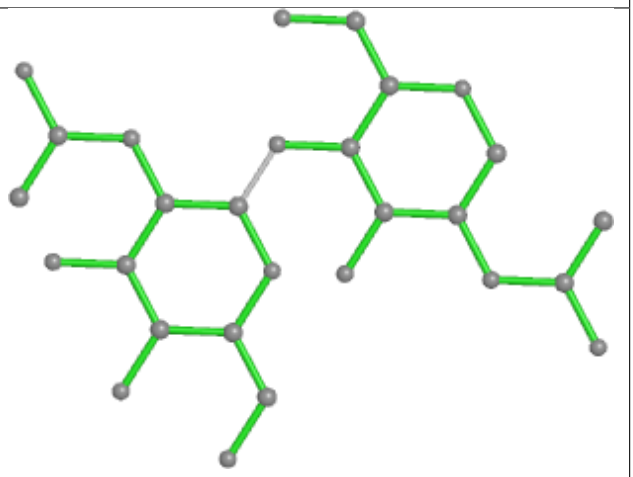
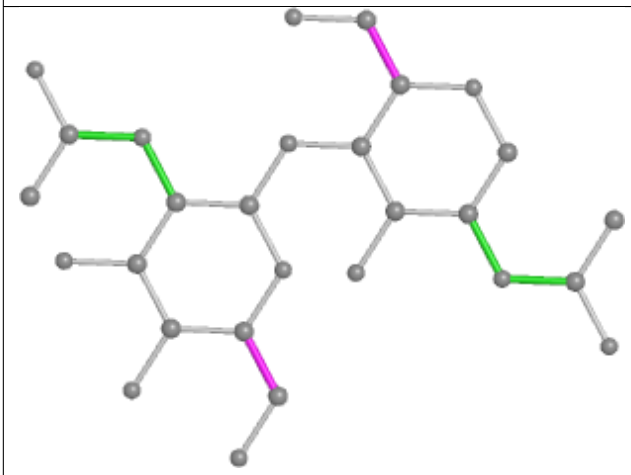
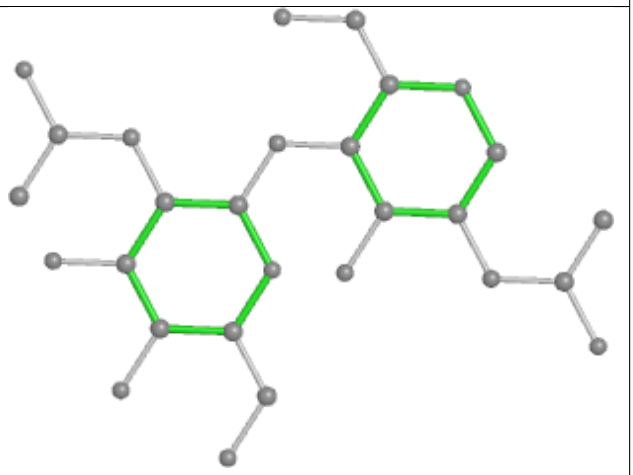


Bond angles

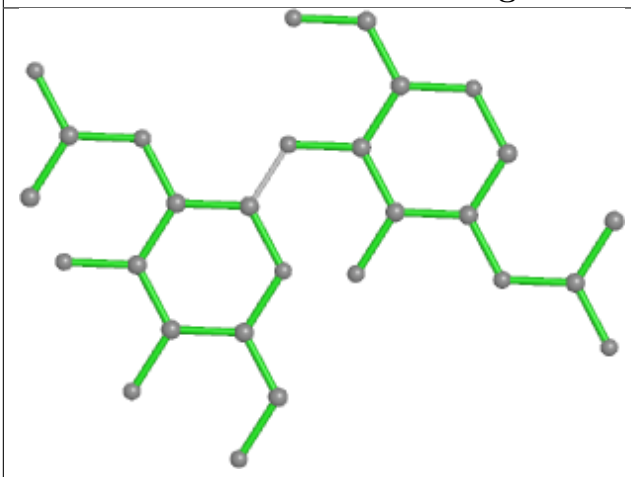


Torsions

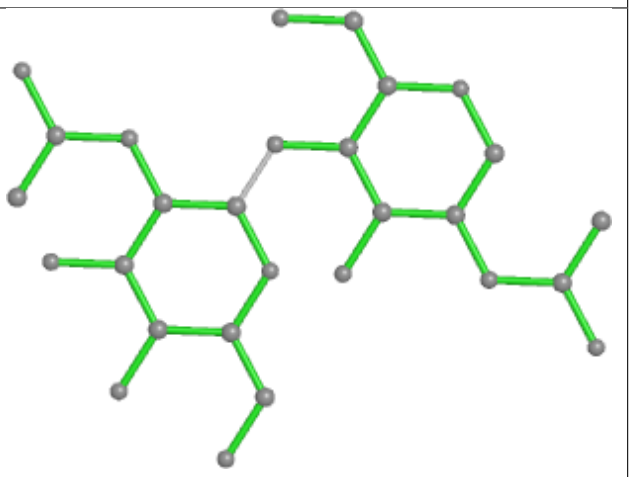


Rings

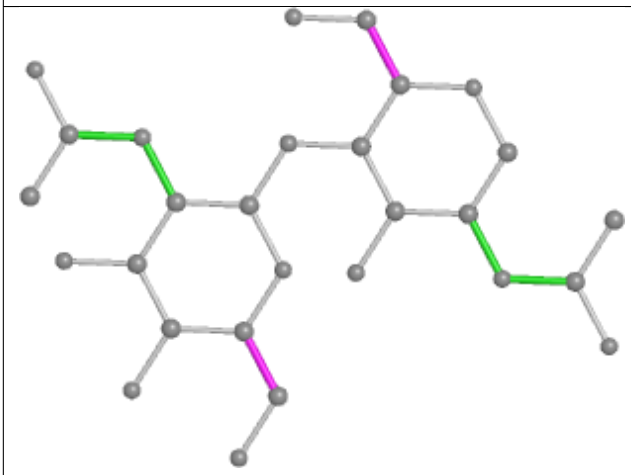
Oligosaccharide Chain 8



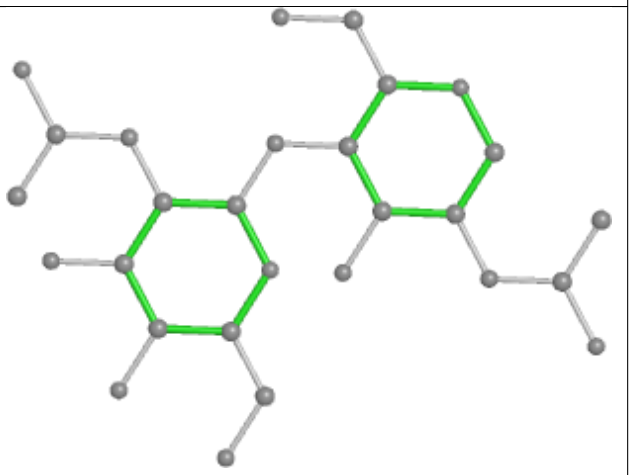
Bond lengths



Bond angles

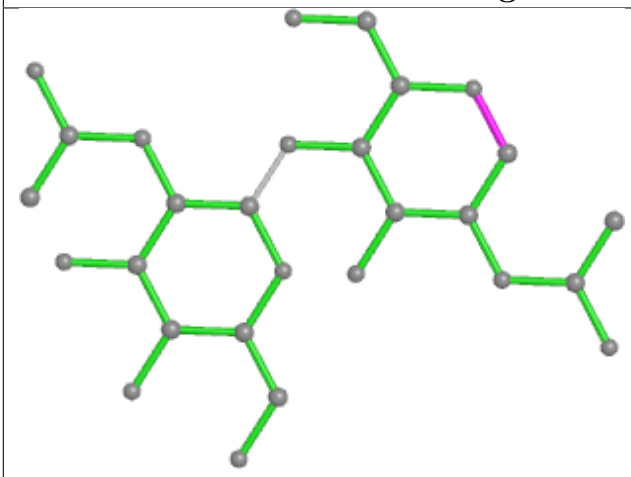


Torsions



Rings

Oligosaccharide Chain 9



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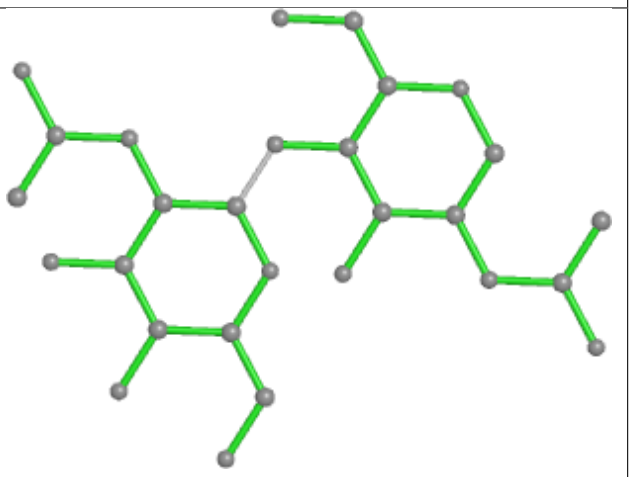

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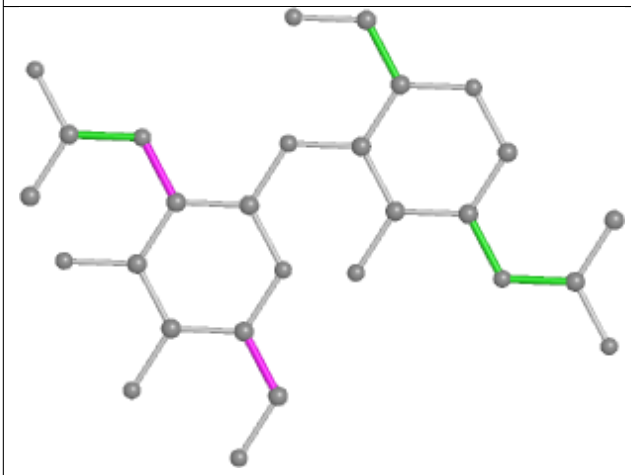

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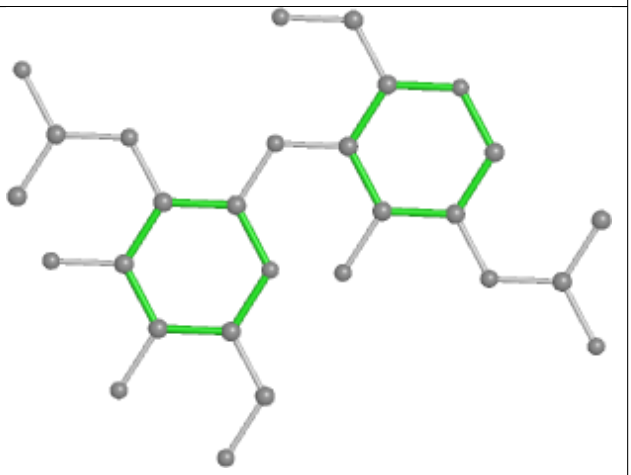
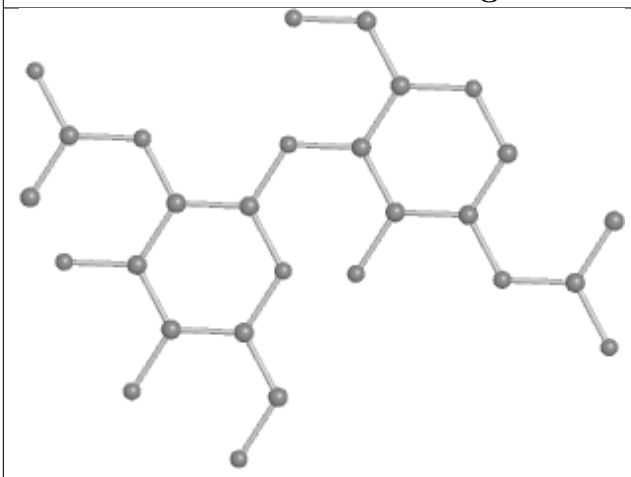


Rings

Oligosaccharide Chain AA



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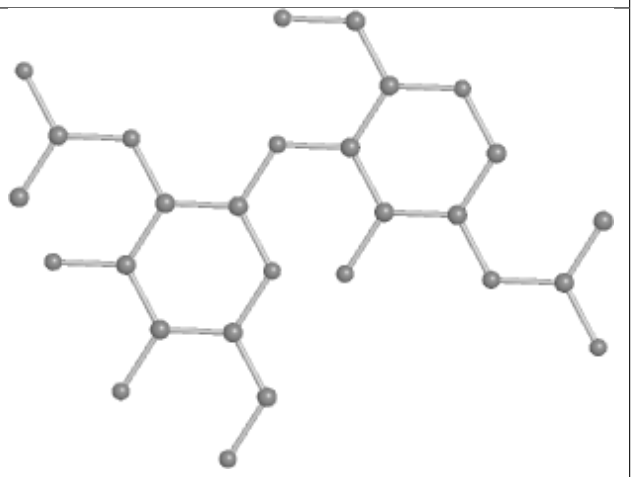

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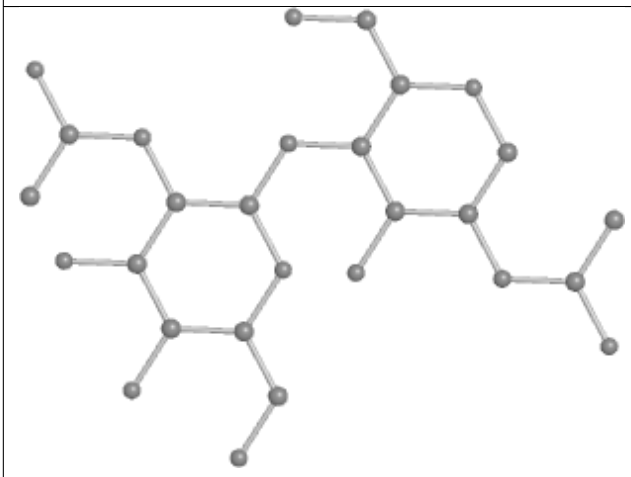

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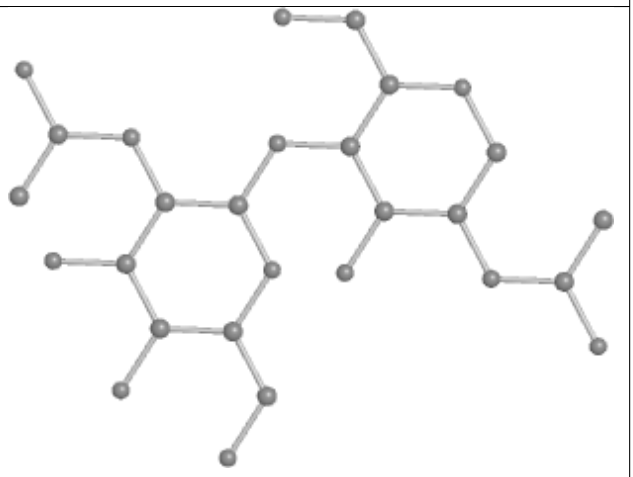
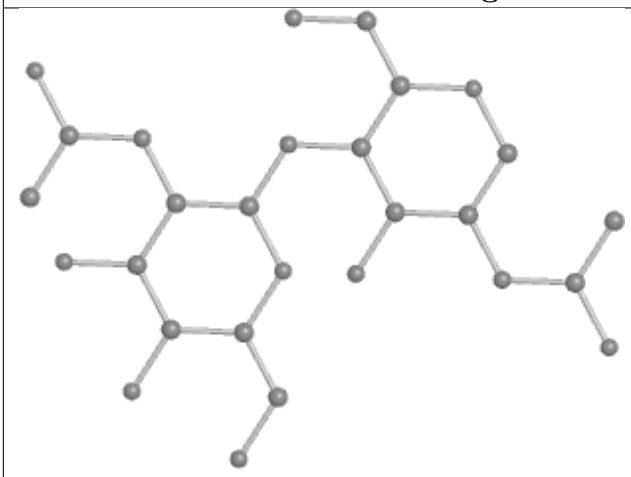
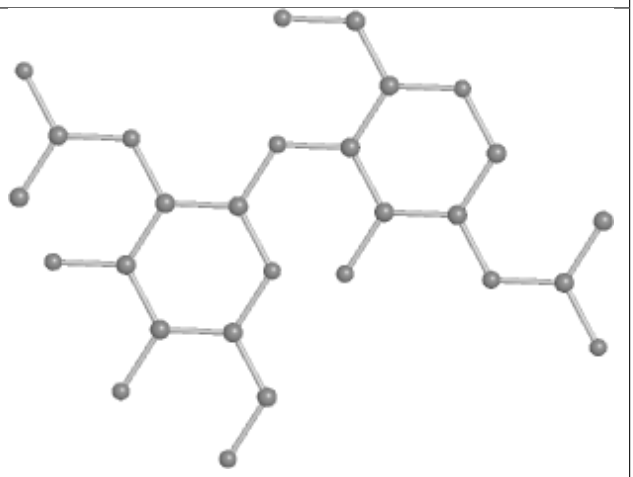


Rings

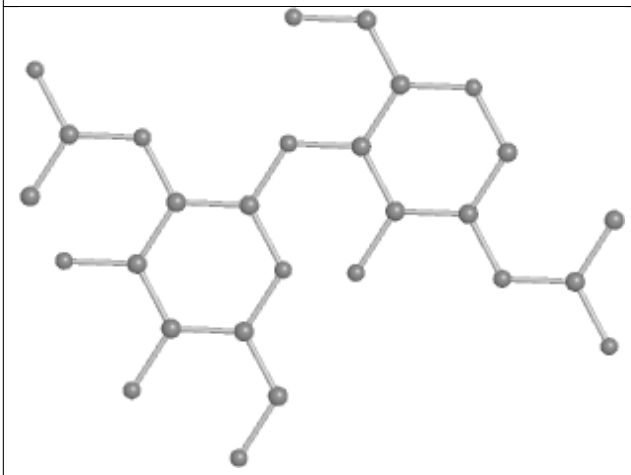
Oligosaccharide Chain BA



Bond lengths



Bond angles



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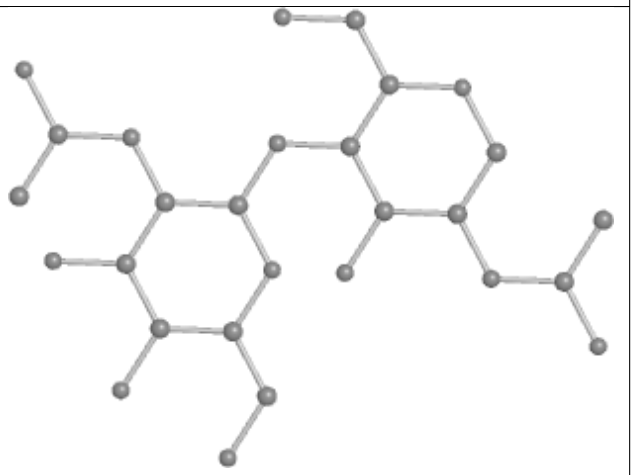
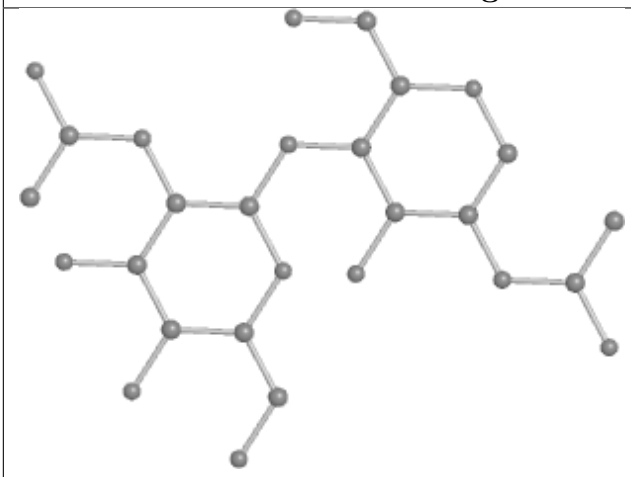
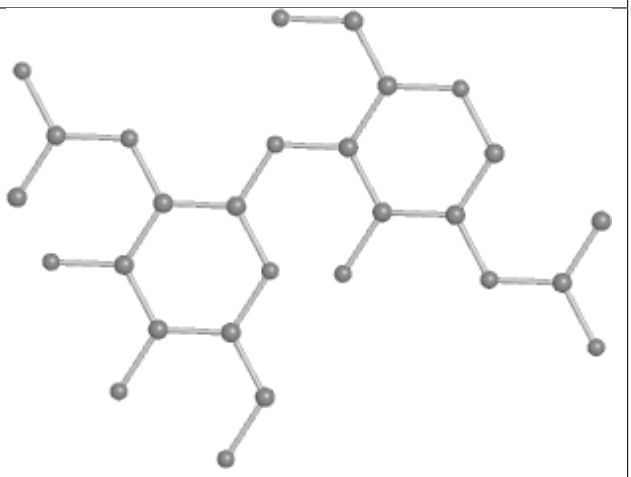


Rings

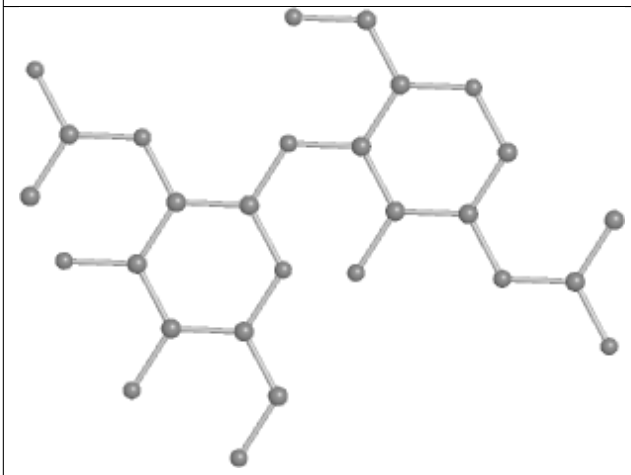
Oligosaccharide Chain CA



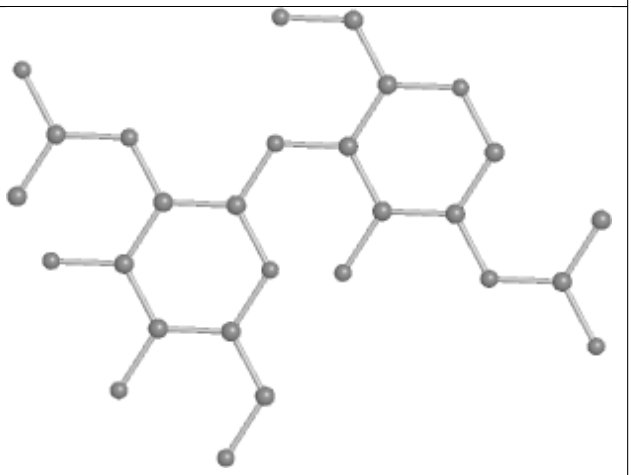
Bond lengths



Bond angles

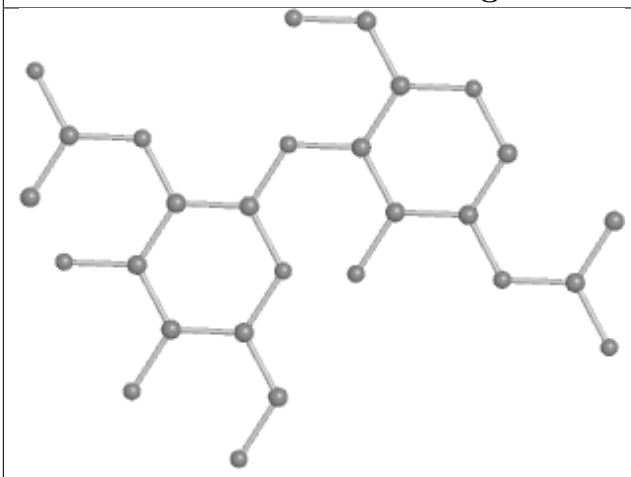


Torsions

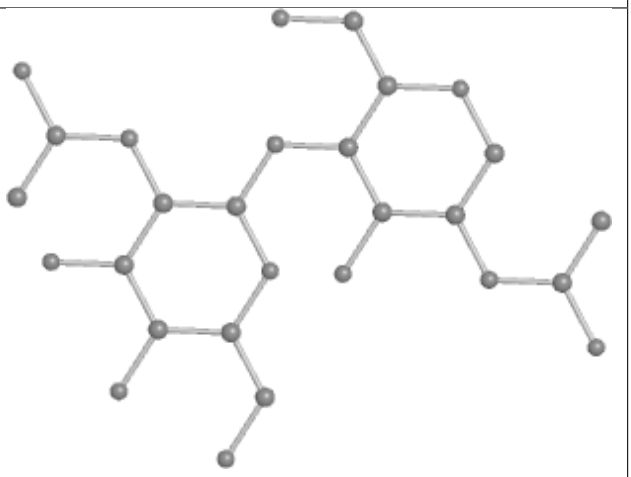


Rings

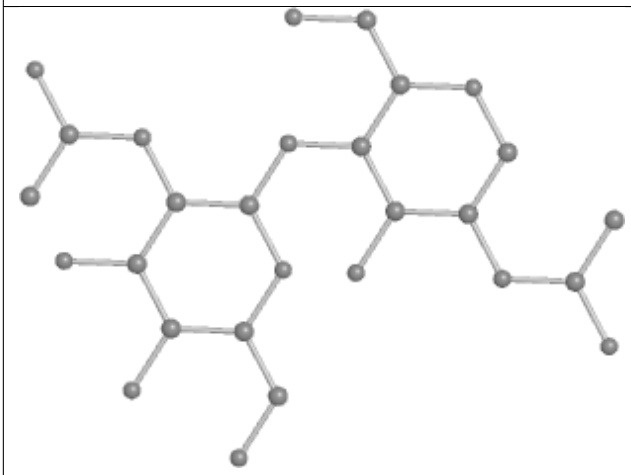
Oligosaccharide Chain DA



Bond lengths



Bond angles



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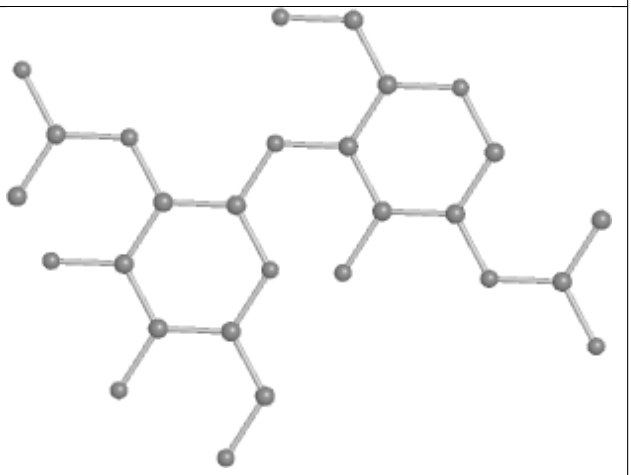
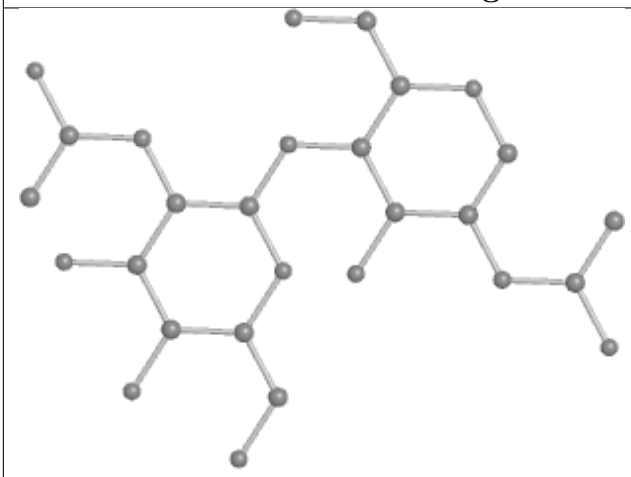
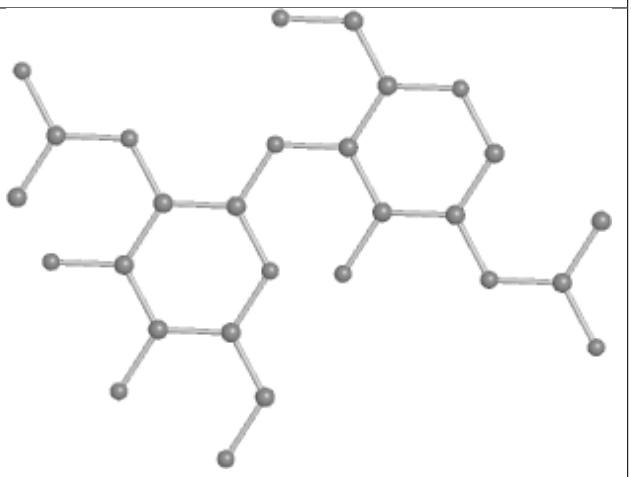


Rings

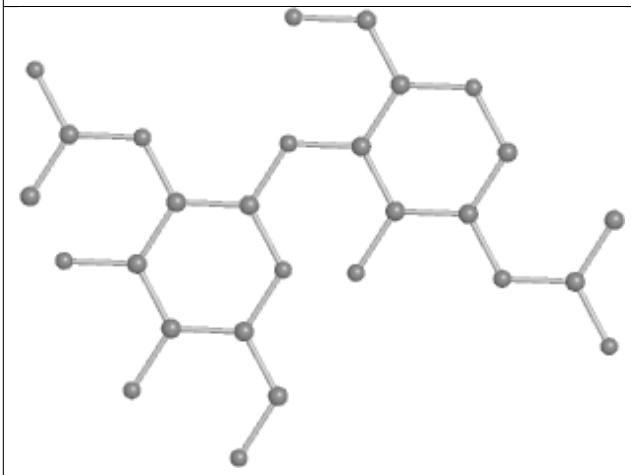
Oligosaccharide Chain EA



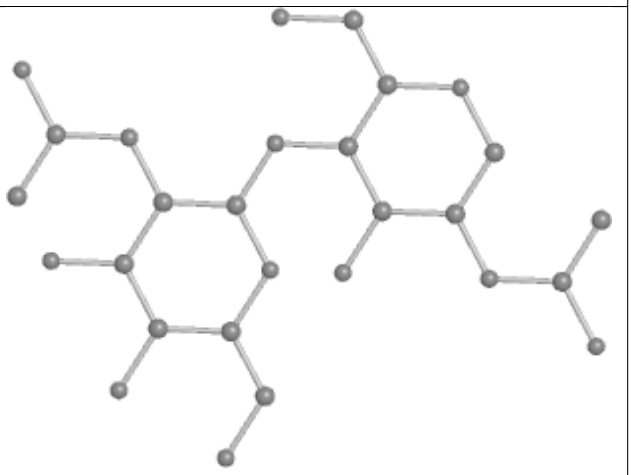
Bond lengths



Bond angles

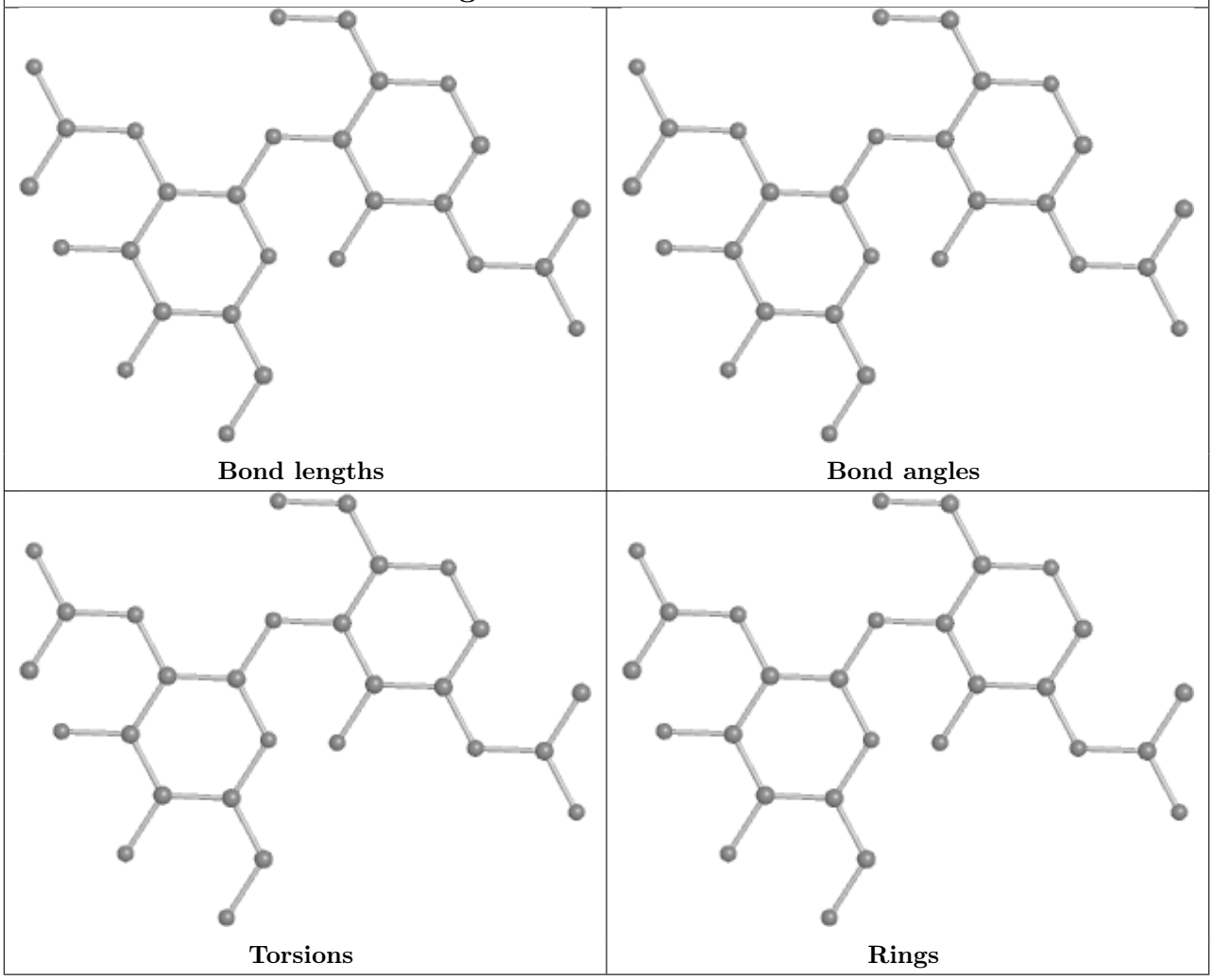


Torsions



Rings

Oligosaccharide Chain FA



5.6 Ligand geometry (i)

Of 68 ligands modelled in this entry, 2 are monoatomic - leaving 66 for Mogul analysis.

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	G	1408	3	14,14,15	0.31	0	17,19,21	0.40	0
5	NAG	G	1405	3	14,14,15	0.57	0	17,19,21	1.26	1 (5%)
5	NAG	D	901	2	14,14,15	0.39	0	17,19,21	0.59	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	NAG	F	1409	3	14,14,15	0.41	0	17,19,21	1.16	2 (11%)
5	NAG	H	1403	3	14,14,15	0.18	0	17,19,21	0.42	0
5	NAG	A	702	1	14,14,15	0.36	0	17,19,21	0.40	0
5	NAG	J	1405	3	14,14,15	0.58	0	17,19,21	1.26	1 (5%)
5	NAG	C	704	1	14,14,15	0.37	0	17,19,21	0.55	0
5	NAG	G	1406	3	14,14,15	0.29	0	17,19,21	0.39	0
5	NAG	I	1401	3	14,14,15	0.29	0	17,19,21	0.34	0
5	NAG	H	1406	3	14,14,15	0.29	0	17,19,21	0.38	0
5	NAG	H	1401	3	14,14,15	0.31	0	17,19,21	0.34	0
5	NAG	E	1409	3	14,14,15	0.49	0	17,19,21	0.36	0
5	NAG	G	1402	3	14,14,15	0.20	0	17,19,21	0.64	0
5	NAG	H	1408	3	14,14,15	0.33	0	17,19,21	0.38	0
6	LEU	C	705	-	7,8,8	0.91	1 (14%)	9,10,10	1.19	2 (22%)
5	NAG	E	1406	3	14,14,15	0.29	0	17,19,21	0.38	0
5	NAG	F	1407	3	14,14,15	0.25	0	17,19,21	0.50	0
5	NAG	F	1410	-	14,14,15	0.37	0	17,19,21	0.42	0
5	NAG	E	1403	3	14,14,15	0.19	0	17,19,21	0.42	0
5	NAG	G	1407	3	14,14,15	0.23	0	17,19,21	0.49	0
5	NAG	H	1407	3	14,14,15	0.24	0	17,19,21	0.49	0
5	NAG	G	1403	3	14,14,15	0.21	0	17,19,21	0.42	0
5	NAG	I	1402	3	14,14,15	0.21	0	17,19,21	0.63	0
5	NAG	I	1403	3	14,14,15	0.21	0	17,19,21	0.43	0
5	NAG	J	1402	3	14,14,15	0.20	0	17,19,21	0.63	0
5	NAG	A	701	1	14,14,15	0.35	0	17,19,21	0.43	0
5	NAG	I	1404	3	14,14,15	0.47	0	17,19,21	0.53	0
5	NAG	I	1408	3	14,14,15	0.32	0	17,19,21	0.38	0
5	NAG	E	1408	3	14,14,15	0.32	0	17,19,21	0.39	0
5	NAG	J	1406	3	14,14,15	0.30	0	17,19,21	0.38	0
5	NAG	I	1410	-	14,14,15	0.36	0	17,19,21	0.42	0
5	NAG	J	1403	3	14,14,15	0.21	0	17,19,21	0.42	0
5	NAG	C	701	1	14,14,15	0.36	0	17,19,21	0.43	0
5	NAG	E	1404	3	14,14,15	0.48	0	17,19,21	0.54	0
5	NAG	F	1404	3	14,14,15	0.48	0	17,19,21	0.54	0
5	NAG	G	1404	3	14,14,15	0.47	0	17,19,21	0.53	0
5	NAG	I	1409	3	14,14,15	0.42	0	17,19,21	1.15	2 (11%)
5	NAG	H	1404	3	14,14,15	0.48	0	17,19,21	0.53	0
6	LEU	A	705	-	7,8,8	0.92	1 (14%)	9,10,10	1.18	2 (22%)
5	NAG	C	703	1	14,14,15	0.39	0	17,19,21	0.64	0
5	NAG	E	1407	3	14,14,15	0.24	0	17,19,21	0.49	0
5	NAG	J	1408	3	14,14,15	0.32	0	17,19,21	0.39	0
5	NAG	F	1402	3	14,14,15	0.21	0	17,19,21	0.63	0
5	NAG	F	1403	3	14,14,15	0.21	0	17,19,21	0.42	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	NAG	A	704	1	14,14,15	0.38	0	17,19,21	0.55	0
5	NAG	F	1405	3	14,14,15	0.57	0	17,19,21	1.26	1 (5%)
5	NAG	A	703	1	14,14,15	0.40	0	17,19,21	0.65	1 (5%)
5	NAG	B	901	2	14,14,15	0.39	0	17,19,21	0.59	1 (5%)
5	NAG	E	1401	3	14,14,15	0.30	0	17,19,21	0.34	0
5	NAG	I	1405	3	14,14,15	0.57	0	17,19,21	1.27	1 (5%)
5	NAG	I	1406	3	14,14,15	0.30	0	17,19,21	0.39	0
5	NAG	J	1404	3	14,14,15	0.48	0	17,19,21	0.54	0
5	NAG	J	1401	3	14,14,15	0.30	0	17,19,21	0.33	0
5	NAG	C	702	1	14,14,15	0.35	0	17,19,21	0.40	0
5	NAG	H	1405	3	14,14,15	0.57	0	17,19,21	1.26	1 (5%)
5	NAG	I	1407	3	14,14,15	0.27	0	17,19,21	0.49	0
5	NAG	J	1407	3	14,14,15	0.23	0	17,19,21	0.49	0
5	NAG	E	1402	3	14,14,15	0.21	0	17,19,21	0.63	0
5	NAG	F	1406	3	14,14,15	0.31	0	17,19,21	0.39	0
5	NAG	E	1405	3	14,14,15	0.57	0	17,19,21	1.27	1 (5%)
5	NAG	F	1401	3	14,14,15	0.30	0	17,19,21	0.33	0
5	NAG	H	1402	3	14,14,15	0.21	0	17,19,21	0.64	0
5	NAG	H	1409	3	14,14,15	0.50	0	17,19,21	0.36	0
5	NAG	G	1401	3	14,14,15	0.29	0	17,19,21	0.33	0
5	NAG	F	1408	3	14,14,15	0.31	0	17,19,21	0.39	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	G	1408	3	-	2/6/23/26	0/1/1/1
5	NAG	G	1405	3	-	5/6/23/26	0/1/1/1
5	NAG	D	901	2	-	2/6/23/26	0/1/1/1
5	NAG	F	1409	3	-	0/6/23/26	0/1/1/1
5	NAG	H	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	A	702	1	-	2/6/23/26	0/1/1/1
5	NAG	J	1405	3	-	5/6/23/26	0/1/1/1
5	NAG	C	704	1	-	0/6/23/26	0/1/1/1
5	NAG	G	1406	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	H	1406	3	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	H	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	E	1409	3	-	2/6/23/26	0/1/1/1
5	NAG	G	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	H	1408	3	-	2/6/23/26	0/1/1/1
6	LEU	C	705	-	-	1/8/8/8	-
5	NAG	E	1406	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	F	1410	-	-	0/6/23/26	0/1/1/1
5	NAG	E	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	G	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	H	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	G	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	J	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	A	701	1	-	2/6/23/26	0/1/1/1
5	NAG	I	1404	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1408	3	-	2/6/23/26	0/1/1/1
5	NAG	E	1408	3	-	2/6/23/26	0/1/1/1
5	NAG	J	1406	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1410	-	-	0/6/23/26	0/1/1/1
5	NAG	J	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	C	701	1	-	2/6/23/26	0/1/1/1
5	NAG	E	1404	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1404	3	-	2/6/23/26	0/1/1/1
5	NAG	G	1404	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1409	3	-	0/6/23/26	0/1/1/1
5	NAG	H	1404	3	-	2/6/23/26	0/1/1/1
6	LEU	A	705	-	-	1/8/8/8	-
5	NAG	C	703	1	-	2/6/23/26	0/1/1/1
5	NAG	E	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	J	1408	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1403	3	-	2/6/23/26	0/1/1/1
5	NAG	A	704	1	-	0/6/23/26	0/1/1/1
5	NAG	F	1405	3	-	5/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	A	703	1	-	2/6/23/26	0/1/1/1
5	NAG	B	901	2	-	2/6/23/26	0/1/1/1
5	NAG	E	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	I	1405	3	-	5/6/23/26	0/1/1/1
5	NAG	I	1406	3	-	2/6/23/26	0/1/1/1
5	NAG	J	1404	3	-	2/6/23/26	0/1/1/1
5	NAG	J	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	C	702	1	-	2/6/23/26	0/1/1/1
5	NAG	H	1405	3	-	5/6/23/26	0/1/1/1
5	NAG	I	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	J	1407	3	-	1/6/23/26	0/1/1/1
5	NAG	E	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1406	3	-	2/6/23/26	0/1/1/1
5	NAG	E	1405	3	-	5/6/23/26	0/1/1/1
5	NAG	F	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	H	1402	3	-	2/6/23/26	0/1/1/1
5	NAG	H	1409	3	-	2/6/23/26	0/1/1/1
5	NAG	G	1401	3	-	2/6/23/26	0/1/1/1
5	NAG	F	1408	3	-	2/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	705	LEU	OXT-C	-2.31	1.23	1.30
6	C	705	LEU	OXT-C	-2.28	1.23	1.30

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	E	1405	NAG	C2-N2-C7	4.35	129.09	122.90
5	I	1405	NAG	C2-N2-C7	4.34	129.08	122.90
5	H	1405	NAG	C2-N2-C7	4.33	129.07	122.90
5	G	1405	NAG	C2-N2-C7	4.31	129.05	122.90
5	F	1405	NAG	C2-N2-C7	4.31	129.04	122.90
5	J	1405	NAG	C2-N2-C7	4.31	129.03	122.90
6	C	705	LEU	OXT-C-O	-2.83	117.67	124.09
6	A	705	LEU	OXT-C-O	-2.81	117.71	124.09
5	F	1409	NAG	C8-C7-N2	2.26	119.92	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	I	1409	NAG	C8-C7-N2	2.25	119.91	116.10
6	A	705	LEU	OXT-C-CA	2.14	120.67	113.38
5	F	1409	NAG	C2-N2-C7	-2.13	119.88	122.90
6	C	705	LEU	OXT-C-CA	2.13	120.62	113.38
5	I	1409	NAG	C2-N2-C7	-2.08	119.94	122.90
5	B	901	NAG	C1-O5-C5	2.06	114.98	112.19
5	D	901	NAG	C1-O5-C5	2.02	114.94	112.19
5	A	703	NAG	C1-O5-C5	2.02	114.93	112.19

There are no chirality outliers.

All (130) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	705	LEU	N-CA-CB-CG
6	C	705	LEU	N-CA-CB-CG
5	A	701	NAG	O5-C5-C6-O6
5	C	701	NAG	O5-C5-C6-O6
5	A	701	NAG	C4-C5-C6-O6
5	C	701	NAG	C4-C5-C6-O6
5	E	1406	NAG	O5-C5-C6-O6
5	F	1406	NAG	O5-C5-C6-O6
5	G	1406	NAG	O5-C5-C6-O6
5	H	1406	NAG	O5-C5-C6-O6
5	I	1406	NAG	O5-C5-C6-O6
5	J	1406	NAG	O5-C5-C6-O6
5	F	1401	NAG	O5-C5-C6-O6
5	G	1401	NAG	O5-C5-C6-O6
5	I	1401	NAG	O5-C5-C6-O6
5	J	1401	NAG	O5-C5-C6-O6
5	E	1402	NAG	C4-C5-C6-O6
5	F	1402	NAG	C4-C5-C6-O6
5	G	1402	NAG	C4-C5-C6-O6
5	H	1402	NAG	C4-C5-C6-O6
5	I	1402	NAG	C4-C5-C6-O6
5	J	1402	NAG	C4-C5-C6-O6
5	E	1401	NAG	O5-C5-C6-O6
5	E	1404	NAG	O5-C5-C6-O6
5	F	1402	NAG	O5-C5-C6-O6
5	F	1404	NAG	O5-C5-C6-O6
5	G	1402	NAG	O5-C5-C6-O6
5	G	1404	NAG	O5-C5-C6-O6
5	H	1401	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	H	1404	NAG	O5-C5-C6-O6
5	I	1402	NAG	O5-C5-C6-O6
5	I	1404	NAG	O5-C5-C6-O6
5	J	1402	NAG	O5-C5-C6-O6
5	J	1404	NAG	O5-C5-C6-O6
5	E	1402	NAG	O5-C5-C6-O6
5	H	1402	NAG	O5-C5-C6-O6
5	J	1405	NAG	O5-C5-C6-O6
5	E	1405	NAG	O5-C5-C6-O6
5	F	1405	NAG	O5-C5-C6-O6
5	G	1405	NAG	O5-C5-C6-O6
5	H	1405	NAG	O5-C5-C6-O6
5	I	1405	NAG	O5-C5-C6-O6
5	E	1409	NAG	C4-C5-C6-O6
5	H	1409	NAG	C4-C5-C6-O6
5	E	1408	NAG	O5-C5-C6-O6
5	F	1408	NAG	O5-C5-C6-O6
5	G	1408	NAG	O5-C5-C6-O6
5	H	1408	NAG	O5-C5-C6-O6
5	I	1408	NAG	O5-C5-C6-O6
5	J	1408	NAG	O5-C5-C6-O6
5	E	1405	NAG	C4-C5-C6-O6
5	F	1405	NAG	C4-C5-C6-O6
5	G	1405	NAG	C4-C5-C6-O6
5	H	1405	NAG	C4-C5-C6-O6
5	I	1405	NAG	C4-C5-C6-O6
5	J	1405	NAG	C4-C5-C6-O6
5	A	703	NAG	C8-C7-N2-C2
5	A	703	NAG	O7-C7-N2-C2
5	C	703	NAG	C8-C7-N2-C2
5	C	703	NAG	O7-C7-N2-C2
5	E	1405	NAG	C8-C7-N2-C2
5	E	1405	NAG	O7-C7-N2-C2
5	F	1405	NAG	C8-C7-N2-C2
5	F	1405	NAG	O7-C7-N2-C2
5	G	1405	NAG	C8-C7-N2-C2
5	G	1405	NAG	O7-C7-N2-C2
5	H	1405	NAG	C8-C7-N2-C2
5	H	1405	NAG	O7-C7-N2-C2
5	I	1405	NAG	C8-C7-N2-C2
5	I	1405	NAG	O7-C7-N2-C2
5	J	1405	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
5	J	1405	NAG	O7-C7-N2-C2
5	E	1409	NAG	O5-C5-C6-O6
5	H	1409	NAG	O5-C5-C6-O6
5	A	702	NAG	O5-C5-C6-O6
5	C	702	NAG	O5-C5-C6-O6
5	E	1406	NAG	C4-C5-C6-O6
5	F	1406	NAG	C4-C5-C6-O6
5	G	1406	NAG	C4-C5-C6-O6
5	H	1406	NAG	C4-C5-C6-O6
5	I	1406	NAG	C4-C5-C6-O6
5	J	1406	NAG	C4-C5-C6-O6
5	E	1404	NAG	C4-C5-C6-O6
5	F	1404	NAG	C4-C5-C6-O6
5	G	1404	NAG	C4-C5-C6-O6
5	H	1404	NAG	C4-C5-C6-O6
5	I	1404	NAG	C4-C5-C6-O6
5	J	1404	NAG	C4-C5-C6-O6
5	B	901	NAG	O5-C5-C6-O6
5	D	901	NAG	O5-C5-C6-O6
5	G	1403	NAG	O5-C5-C6-O6
5	E	1403	NAG	O5-C5-C6-O6
5	F	1403	NAG	O5-C5-C6-O6
5	H	1403	NAG	O5-C5-C6-O6
5	I	1403	NAG	O5-C5-C6-O6
5	J	1403	NAG	O5-C5-C6-O6
5	E	1403	NAG	C4-C5-C6-O6
5	F	1403	NAG	C4-C5-C6-O6
5	G	1403	NAG	C4-C5-C6-O6
5	H	1403	NAG	C4-C5-C6-O6
5	I	1403	NAG	C4-C5-C6-O6
5	J	1403	NAG	C4-C5-C6-O6
5	F	1408	NAG	C4-C5-C6-O6
5	I	1408	NAG	C4-C5-C6-O6
5	J	1408	NAG	C4-C5-C6-O6
5	E	1408	NAG	C4-C5-C6-O6
5	G	1408	NAG	C4-C5-C6-O6
5	H	1408	NAG	C4-C5-C6-O6
5	A	702	NAG	C4-C5-C6-O6
5	C	702	NAG	C4-C5-C6-O6
5	E	1401	NAG	C4-C5-C6-O6
5	F	1401	NAG	C4-C5-C6-O6
5	H	1401	NAG	C4-C5-C6-O6

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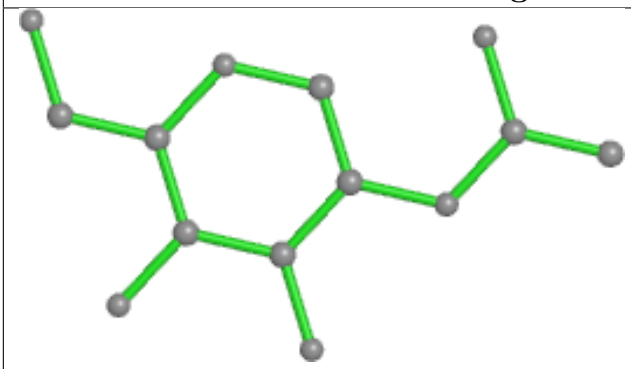
Mol	Chain	Res	Type	Atoms
5	I	1401	NAG	C4-C5-C6-O6
5	J	1401	NAG	C4-C5-C6-O6
5	G	1401	NAG	C4-C5-C6-O6
5	B	901	NAG	C4-C5-C6-O6
5	D	901	NAG	C4-C5-C6-O6
5	F	1407	NAG	C1-C2-N2-C7
5	G	1407	NAG	C1-C2-N2-C7
5	H	1407	NAG	C1-C2-N2-C7
5	I	1407	NAG	C1-C2-N2-C7
5	J	1407	NAG	C1-C2-N2-C7
5	E	1407	NAG	C1-C2-N2-C7
5	E	1405	NAG	C3-C2-N2-C7
5	F	1405	NAG	C3-C2-N2-C7
5	G	1405	NAG	C3-C2-N2-C7
5	H	1405	NAG	C3-C2-N2-C7
5	I	1405	NAG	C3-C2-N2-C7
5	J	1405	NAG	C3-C2-N2-C7

There are no ring outliers.

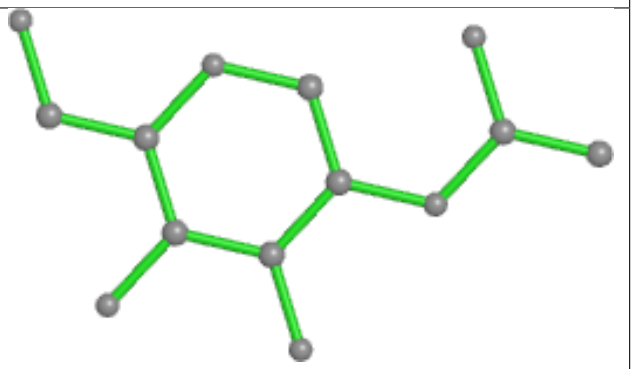
No monomer is involved in short contacts.

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.

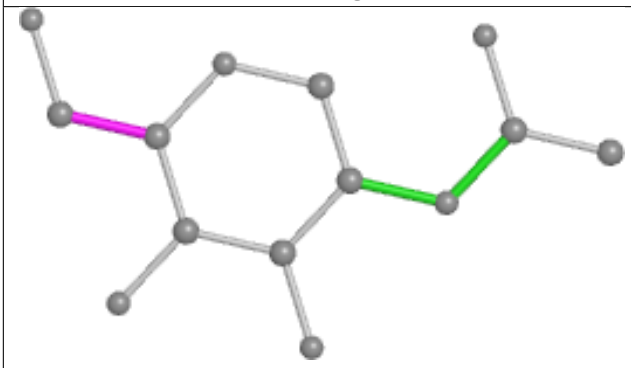
Ligand NAG G 1408



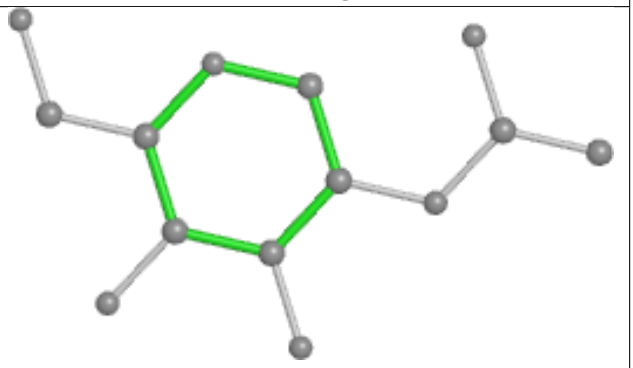
Bond lengths



Bond angles

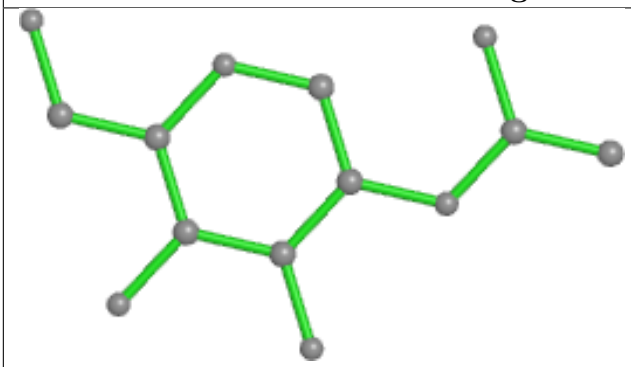


Torsions

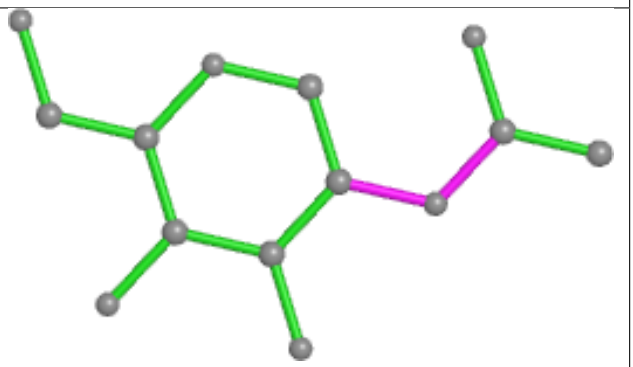


Rings

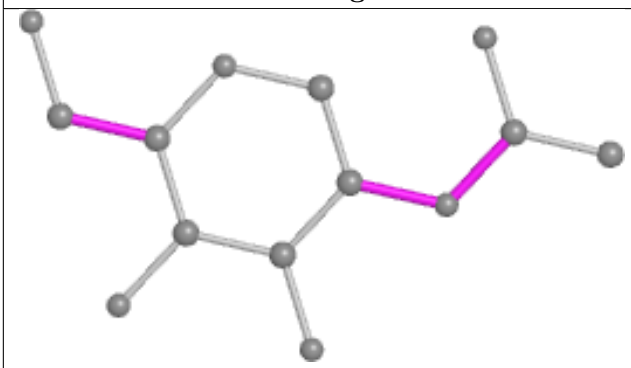
Ligand NAG G 1405



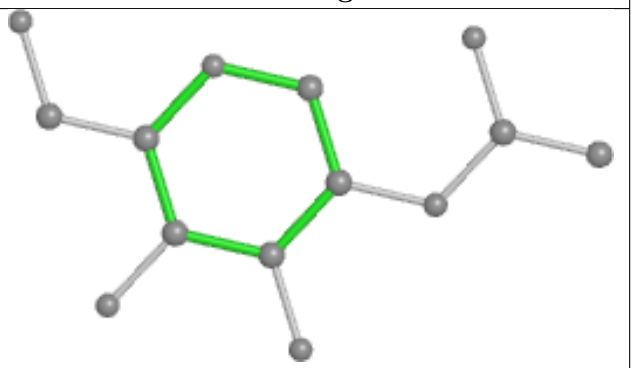
Bond lengths



Bond angles

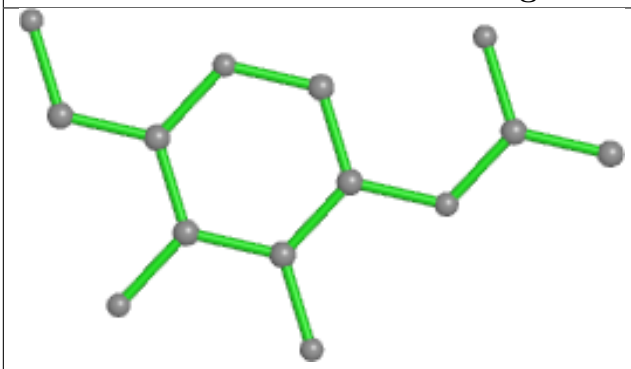


Torsions

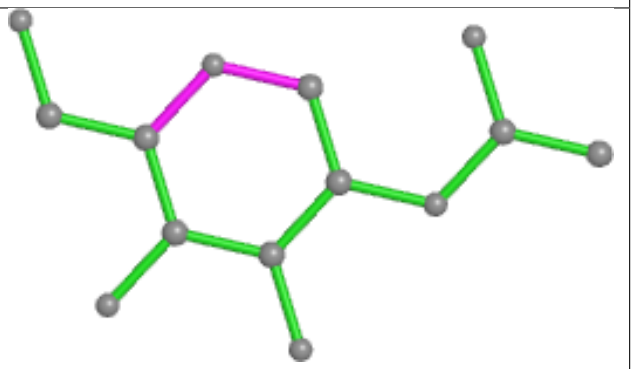


Rings

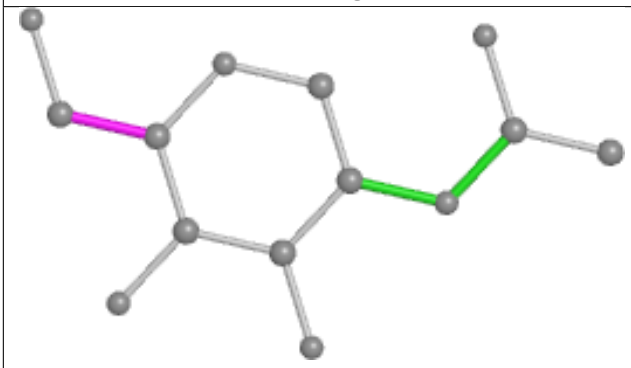
Ligand NAG D 901



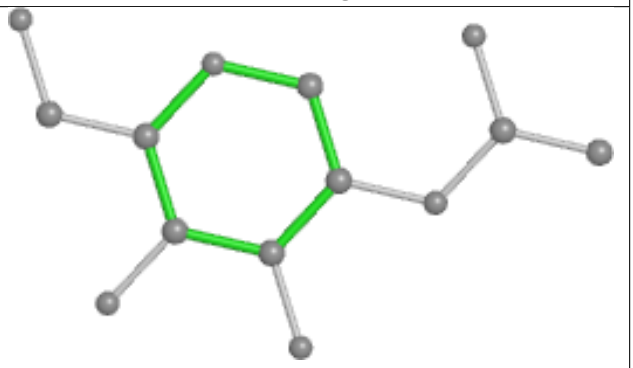
Bond lengths



Bond angles

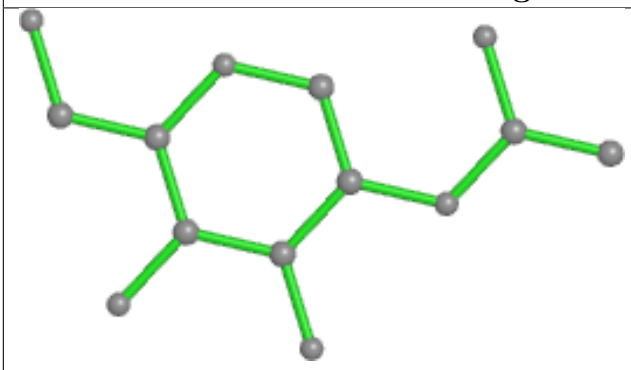


Torsions

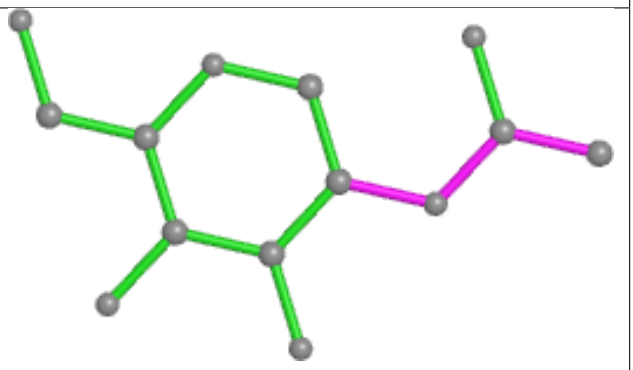


Rings

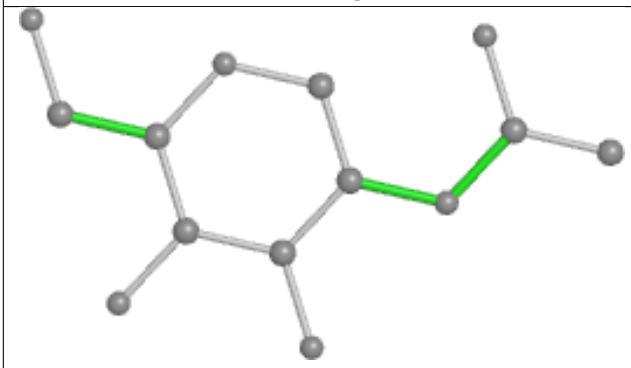
Ligand NAG F 1409



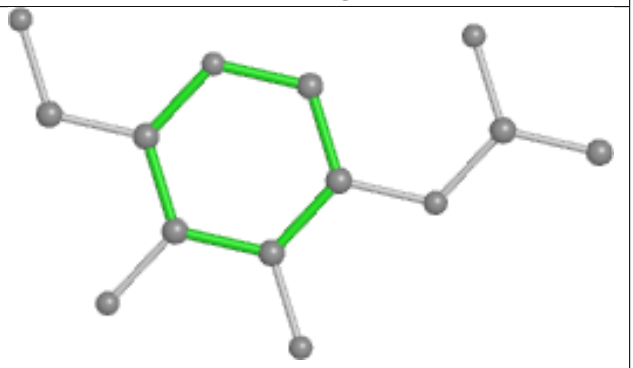
Bond lengths



Bond angles

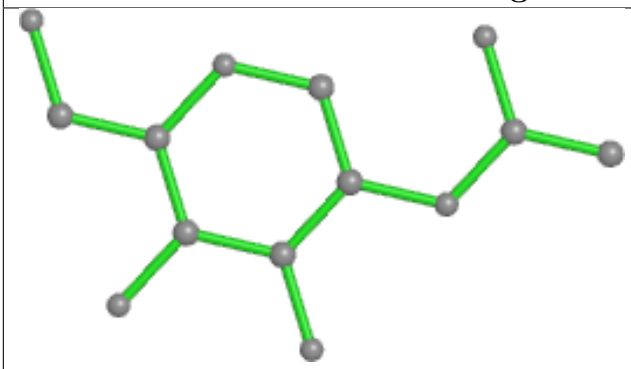


Torsions

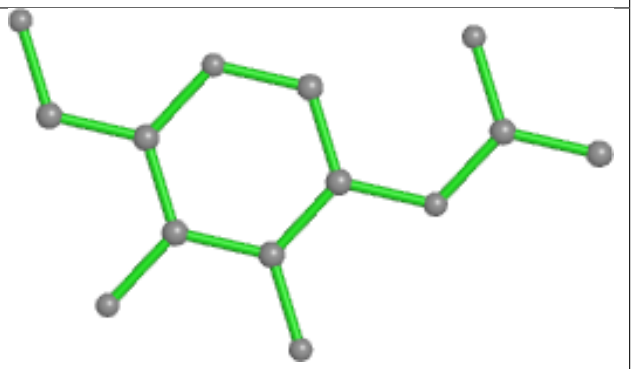


Rings

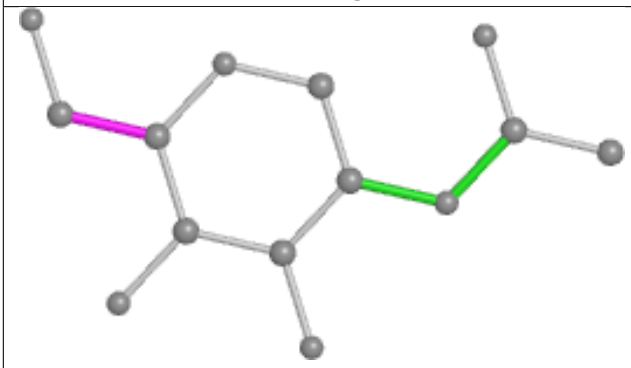
Ligand NAG H 1403



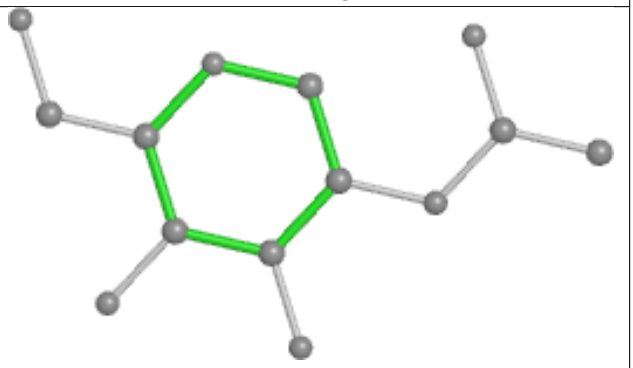
Bond lengths



Bond angles

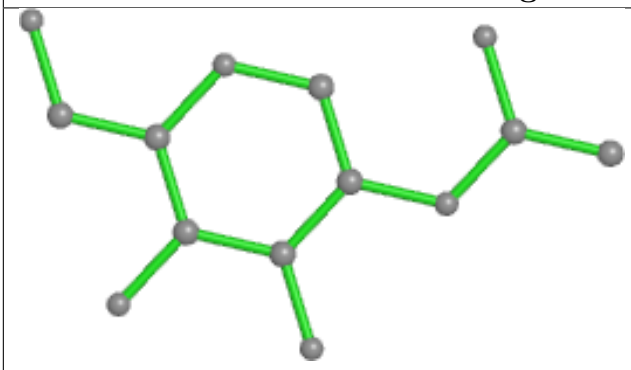


Torsions



Rings

Ligand NAG A 702



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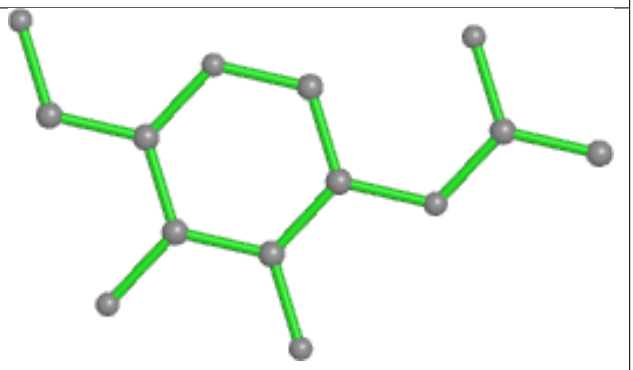
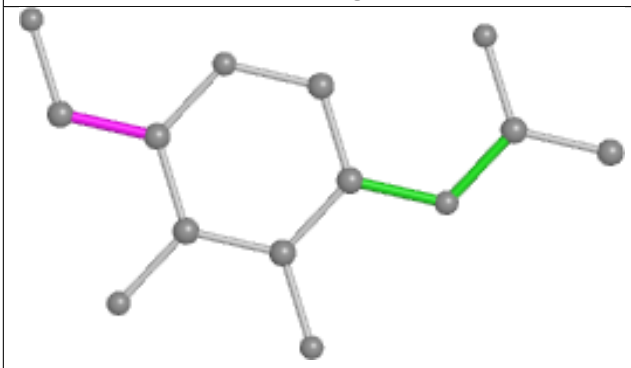


Bond angles



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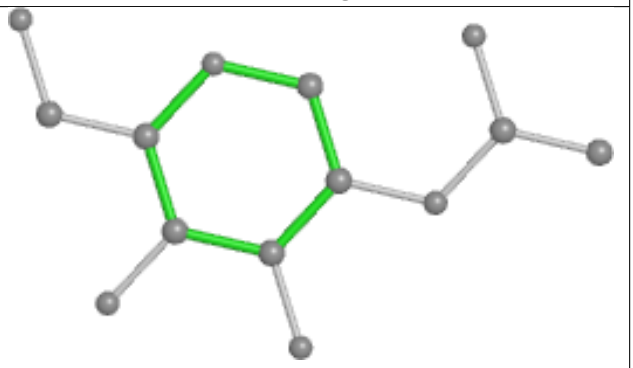
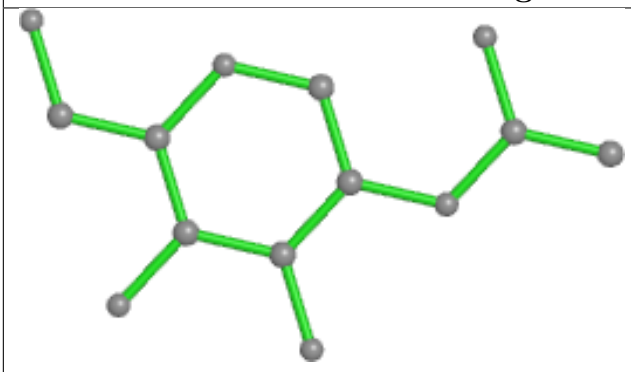
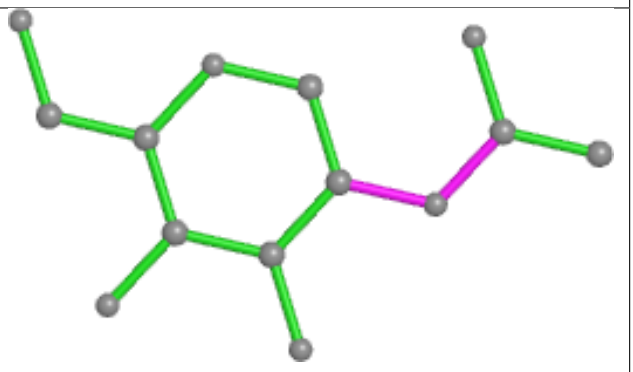
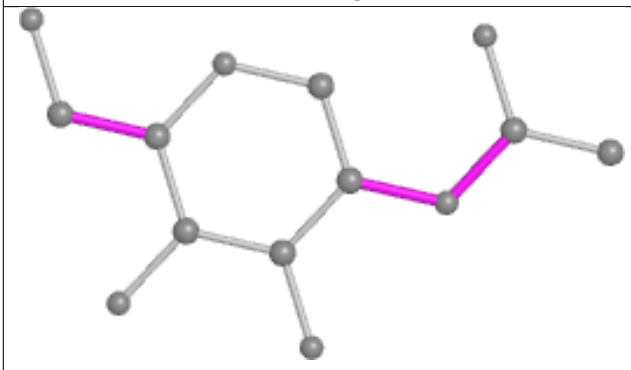
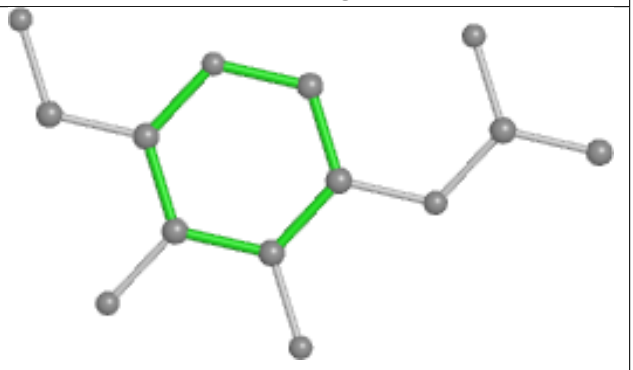
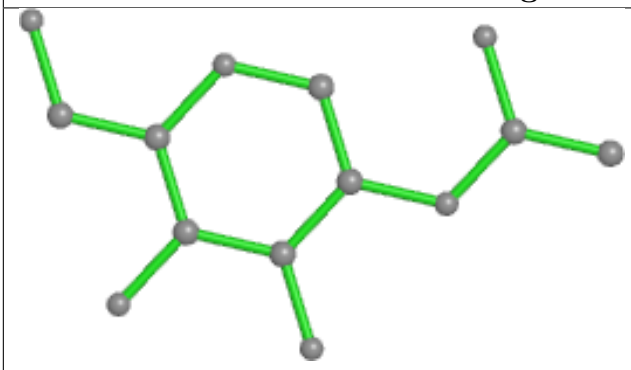
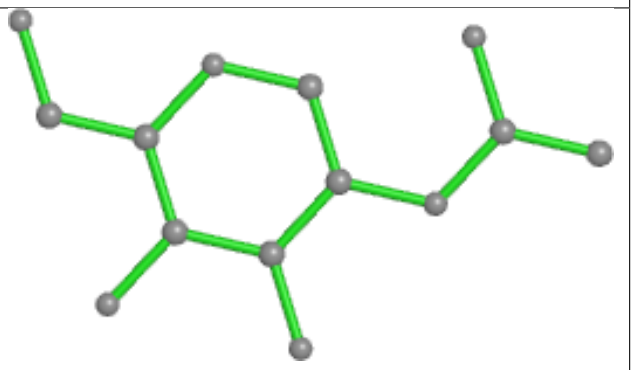
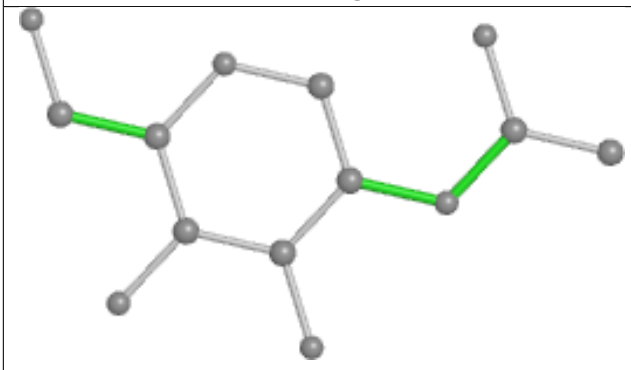
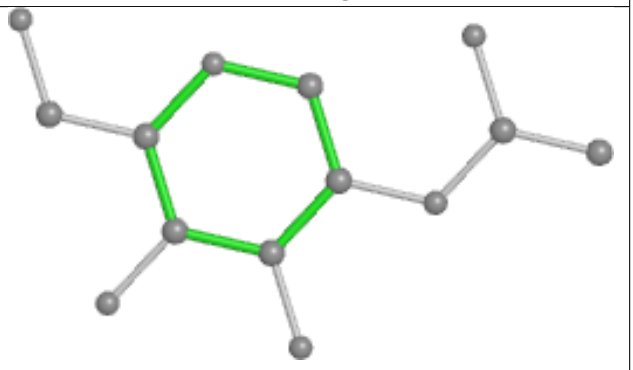
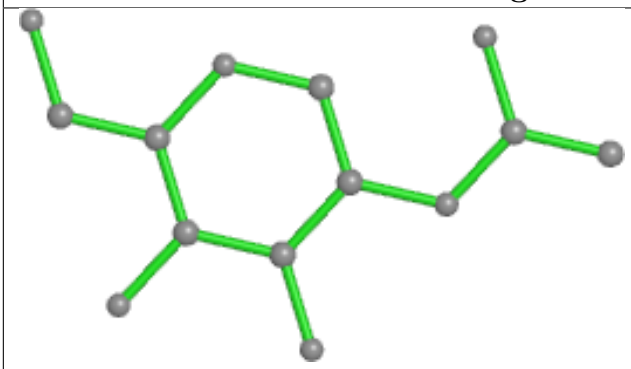


Rings

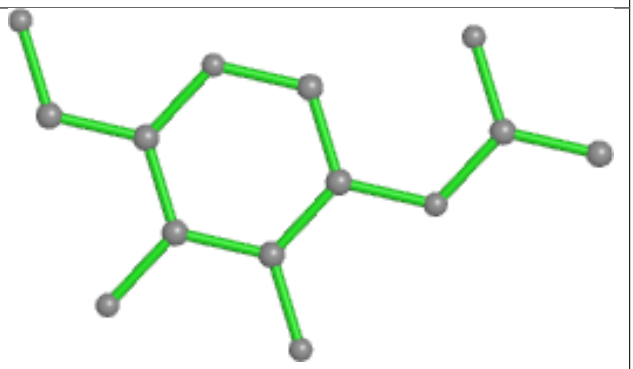
Ligand NAG J 1405	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG C 704	
 Bond lengths	 Bond angles
 Torsions	 Rings

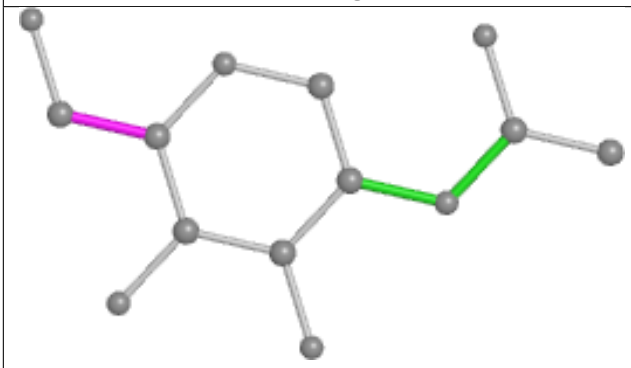
Ligand NAG G 1406



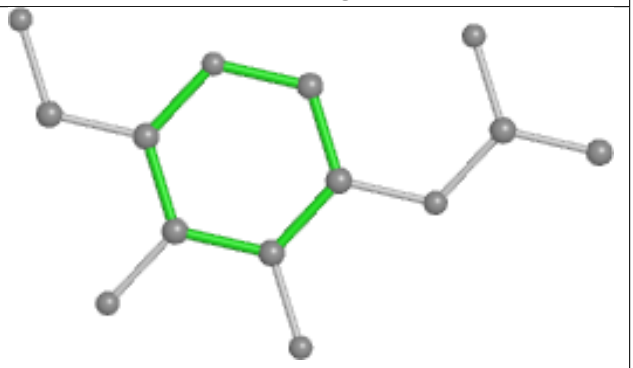
Bond lengths



Bond angles

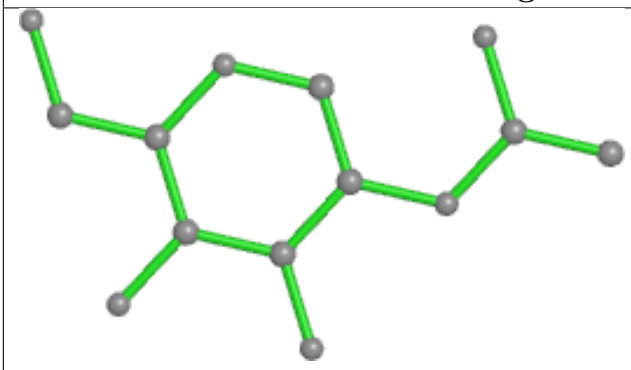


Torsions

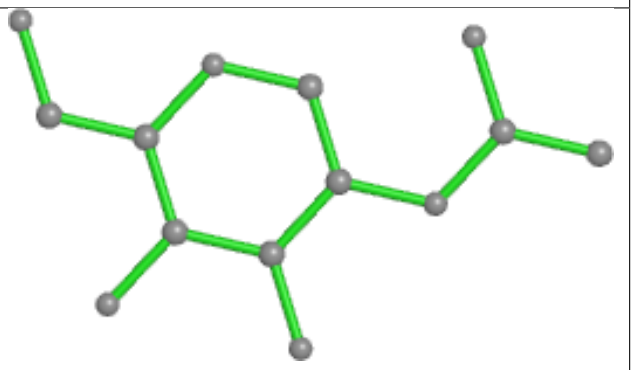


Rings

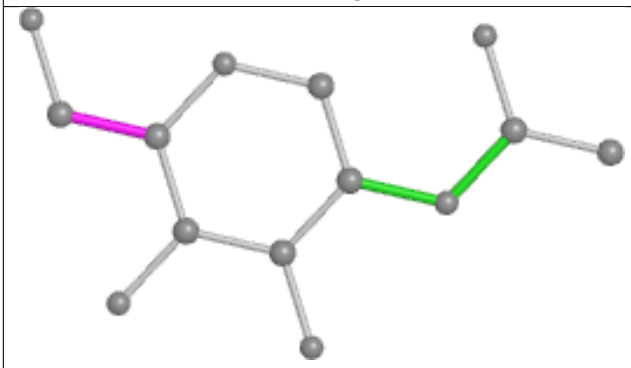
Ligand NAG I 1401



Bond lengths



Bond angles



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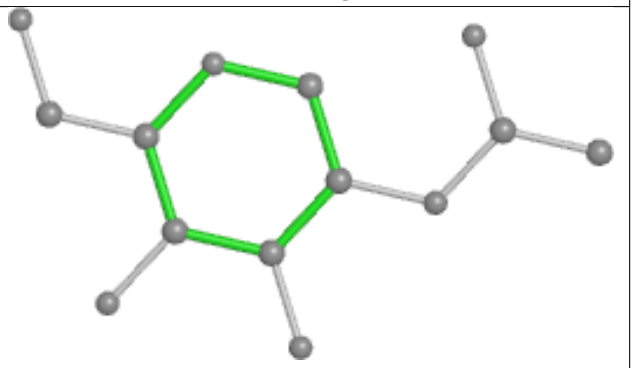
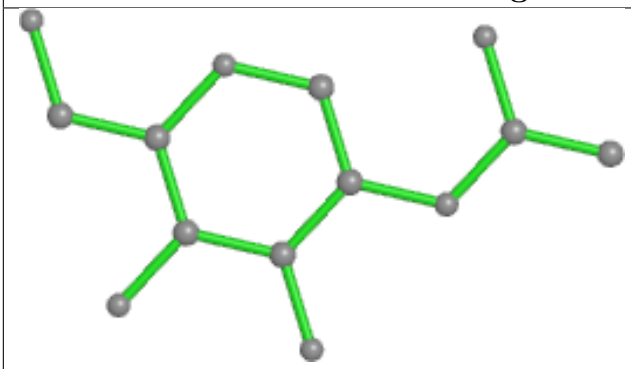


Rings

Ligand NAG H 1406



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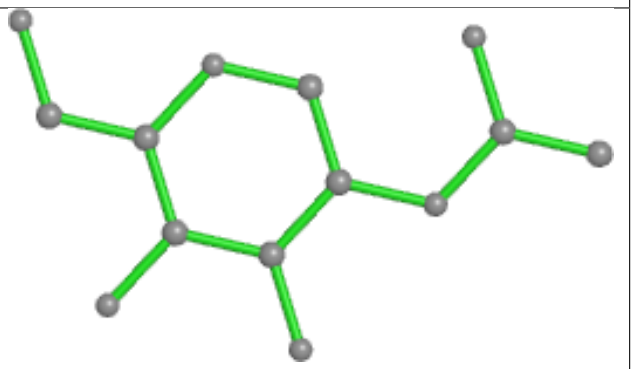
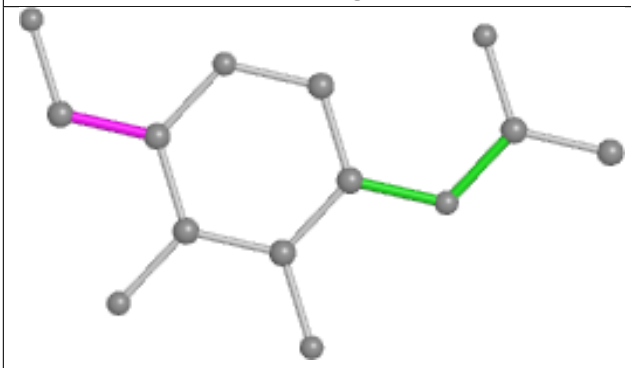


Bond angles



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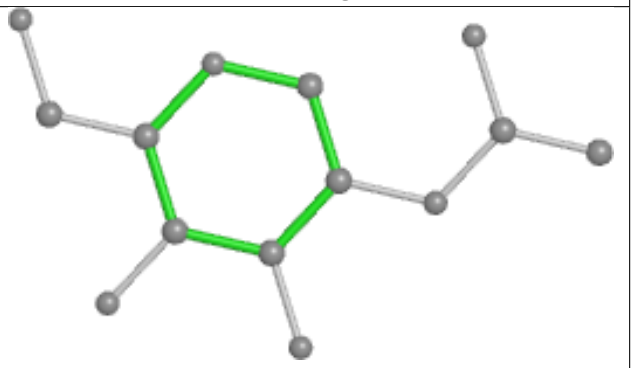
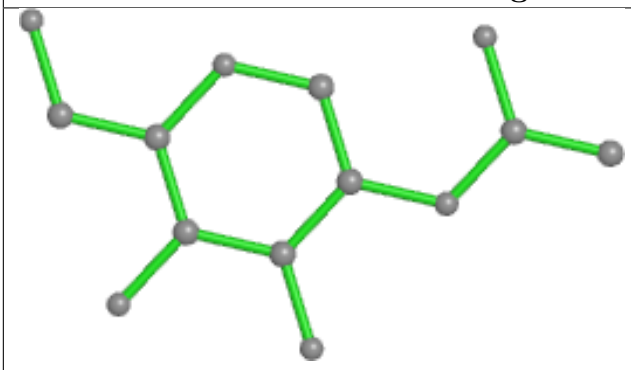
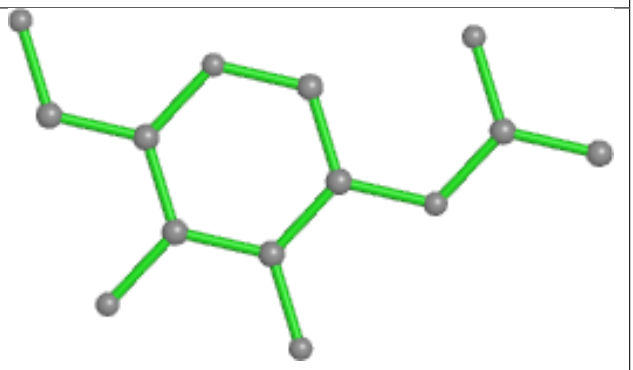


Rings

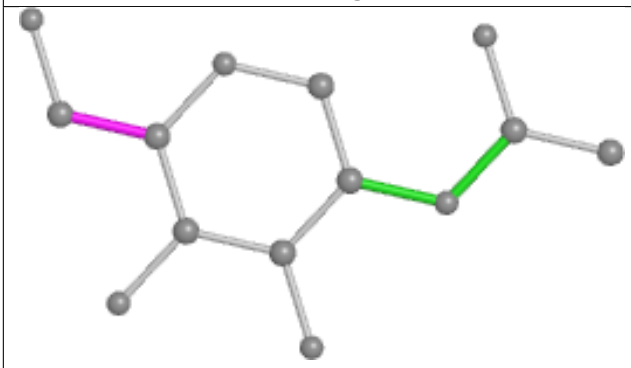
Ligand NAG H 1401



Bond lengths



Bond angles



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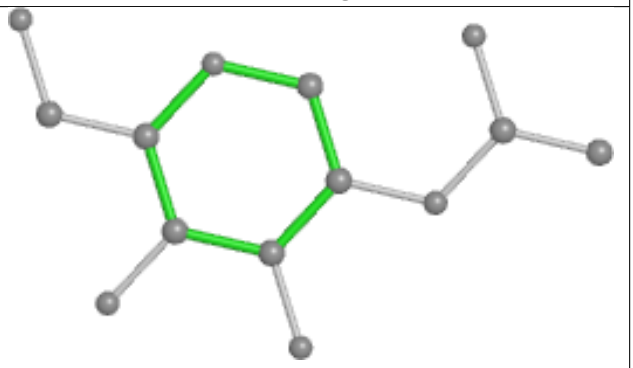
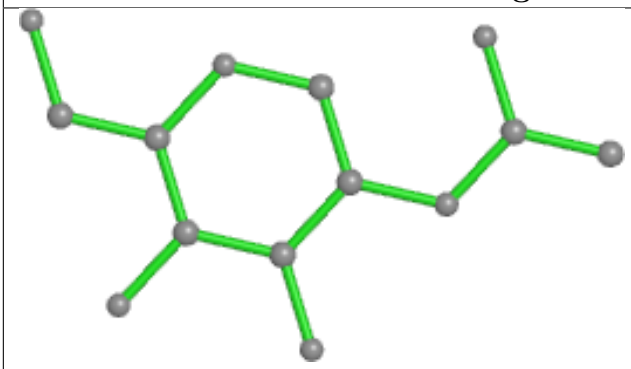
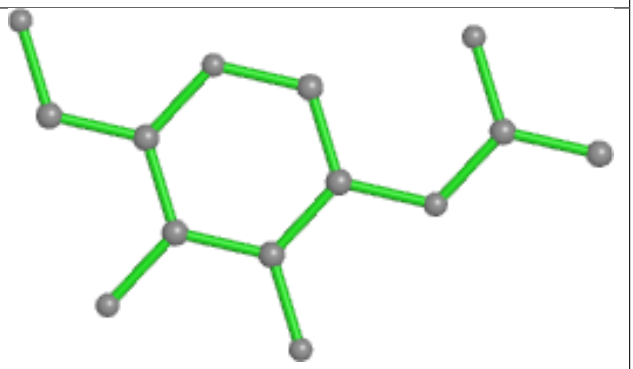


Rings

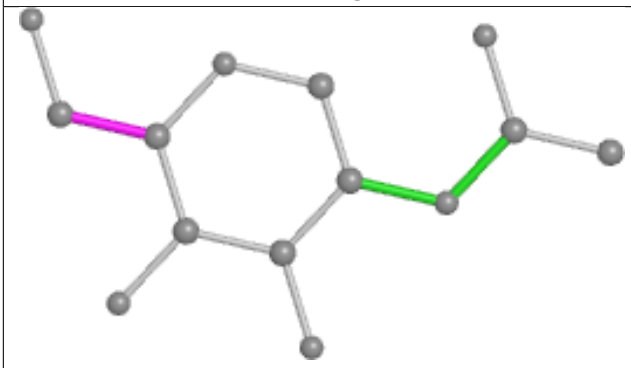
Ligand NAG E 1409



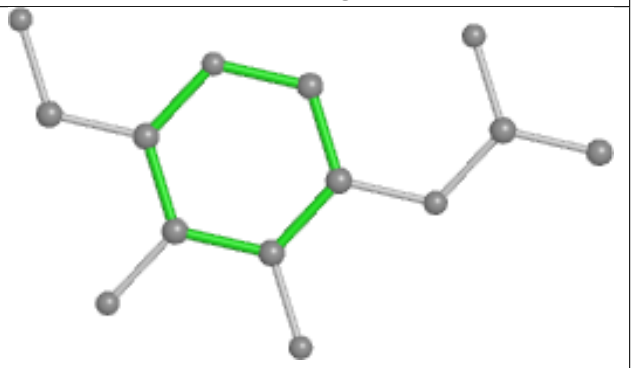
Bond lengths



Bond angles

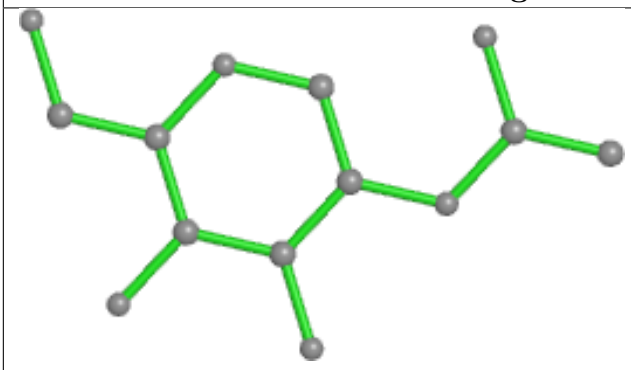


Torsions

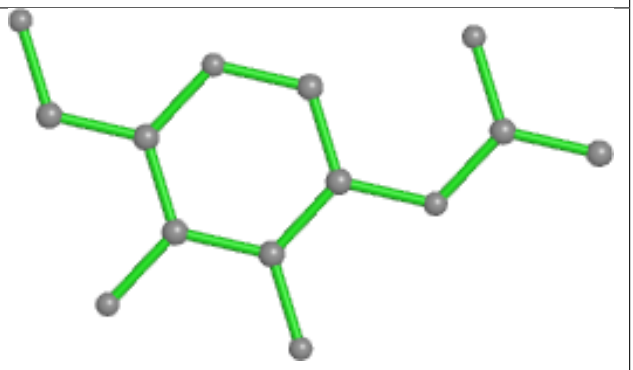


Rings

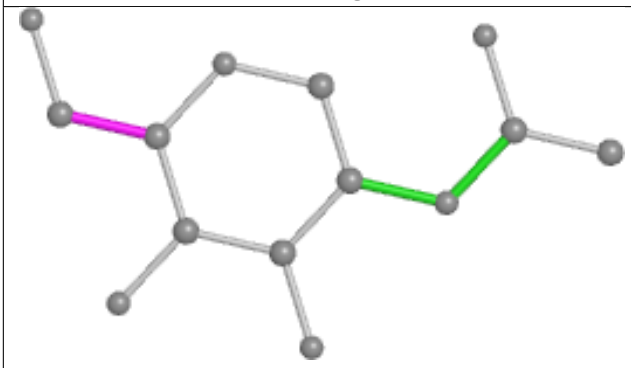
Ligand NAG G 1402



Bond lengths



Bond angles



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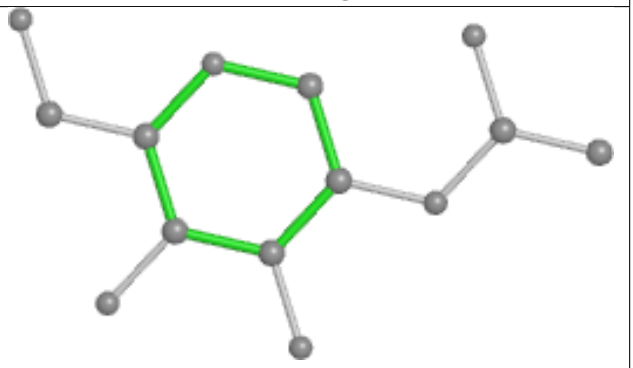
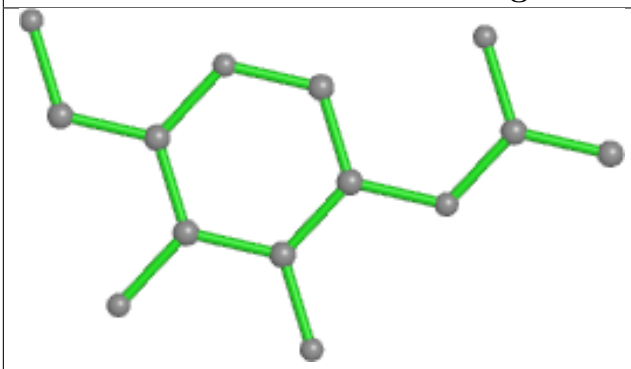


Rings

Ligand NAG H 1408



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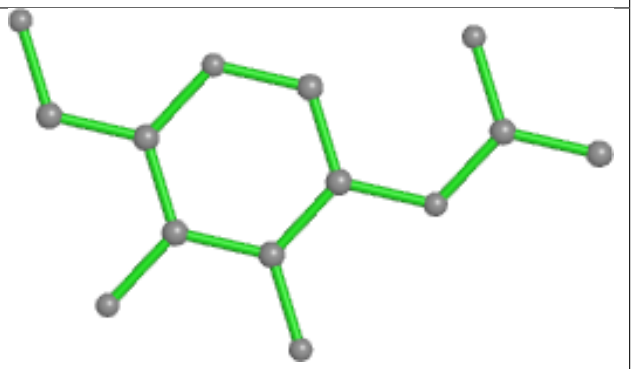
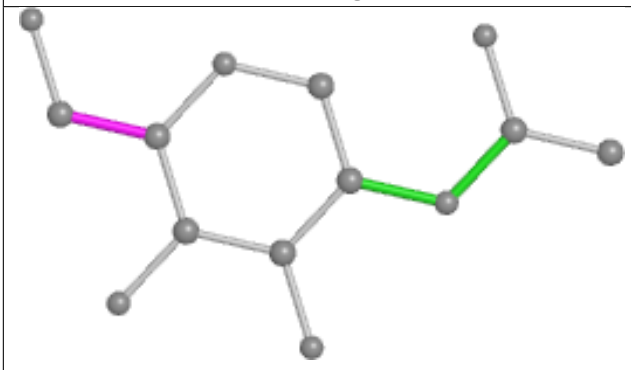


Bond angles



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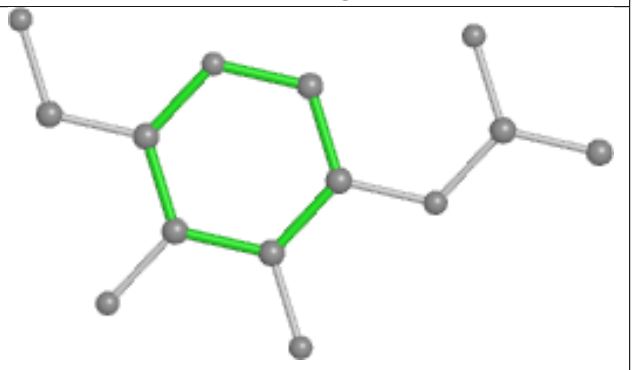
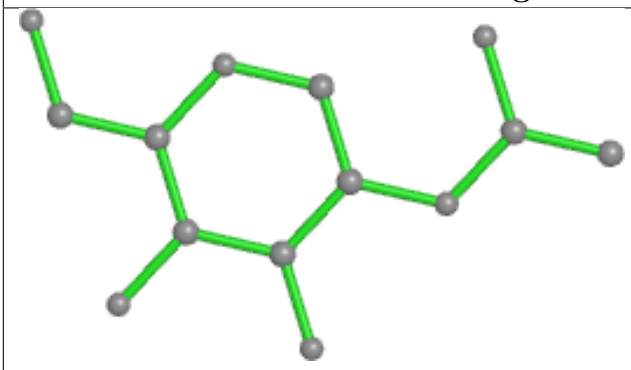


Rings

Ligand NAG E 1406



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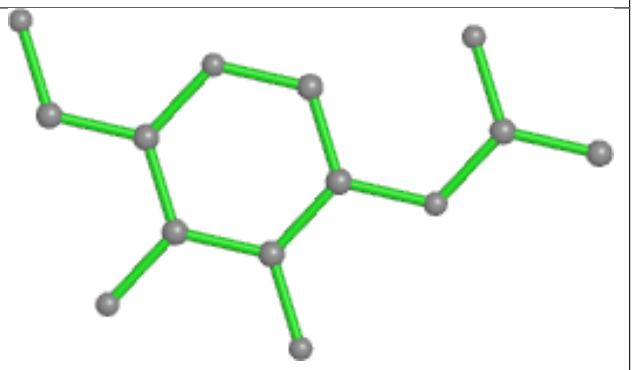
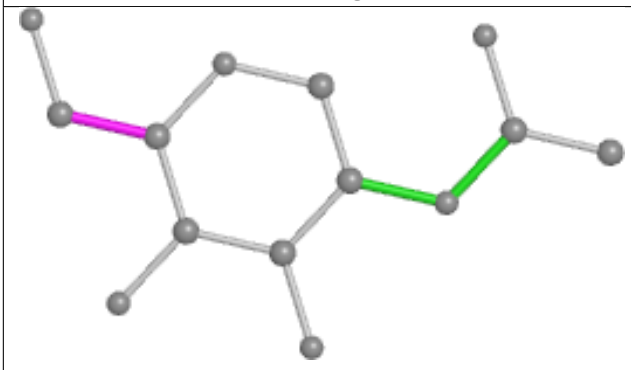


Bond angles



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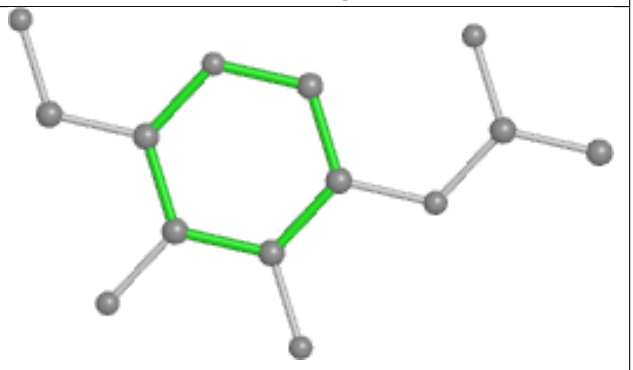
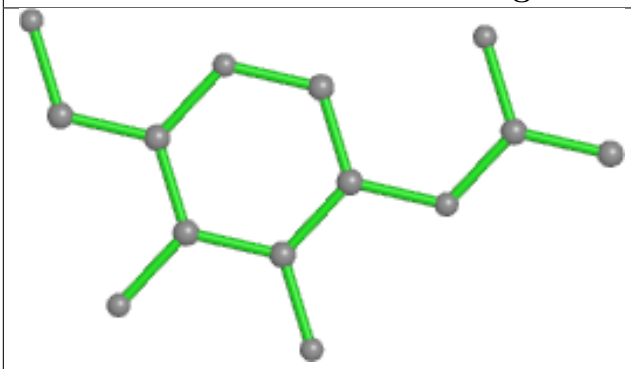


Rings

Ligand NAG F 1407



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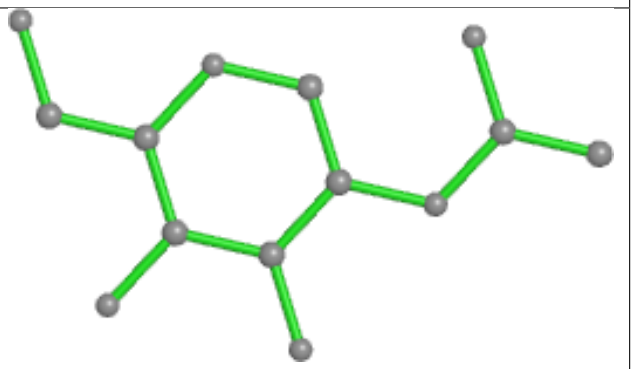
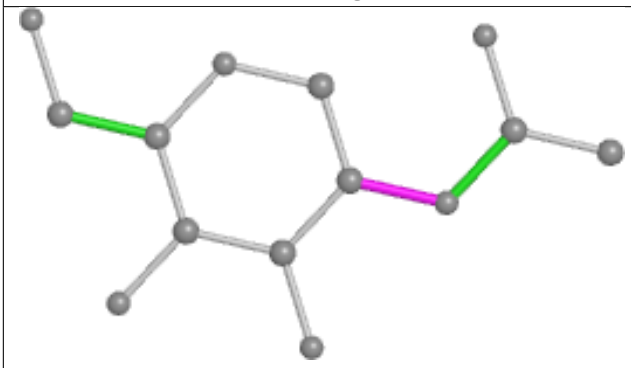
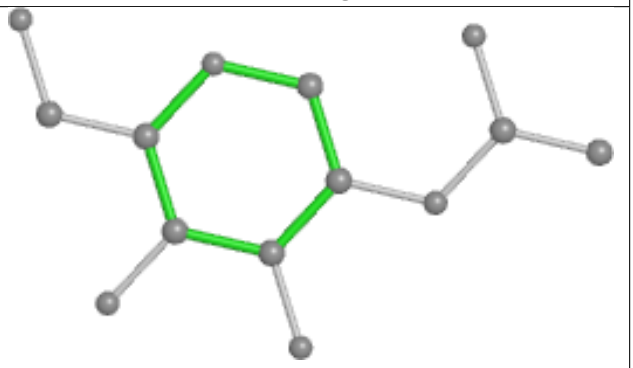


Bond angles

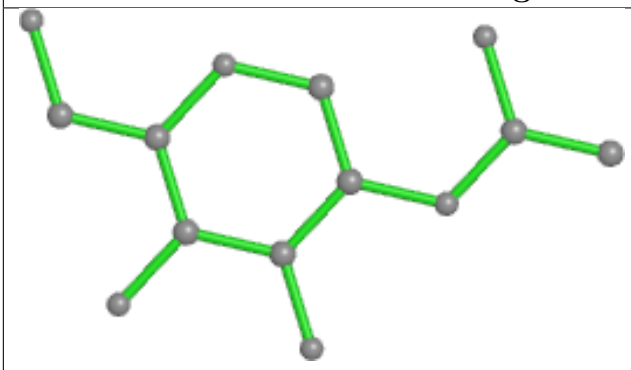


Torsions



Rings

Ligand NAG F 1410



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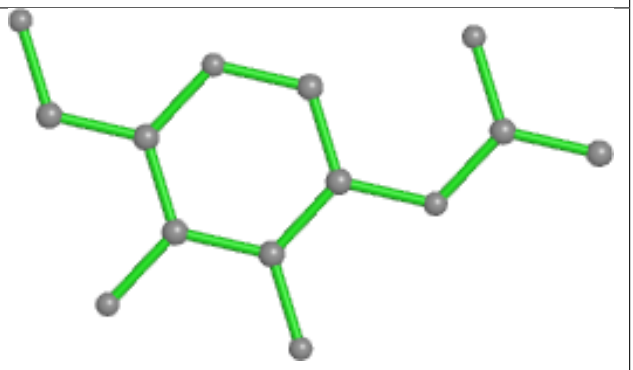
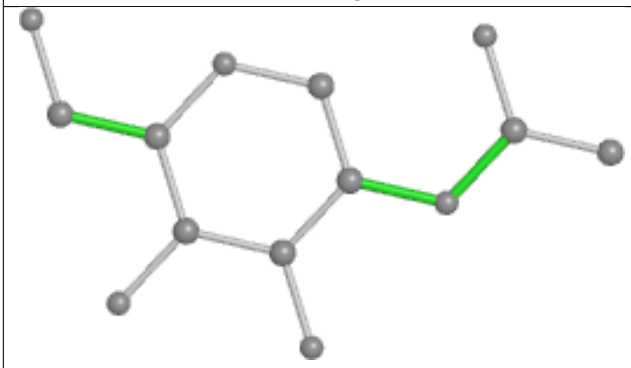


Bond angles



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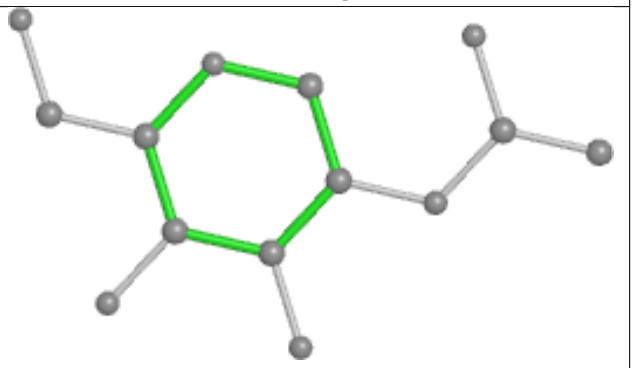
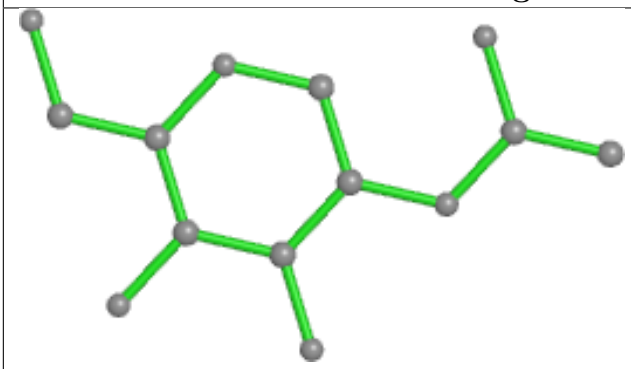


Rings

Ligand NAG E 1403



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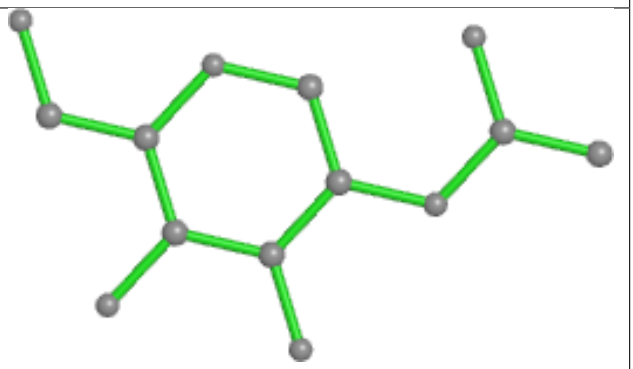
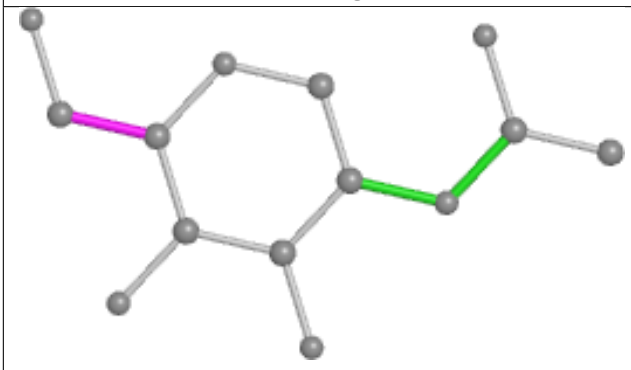
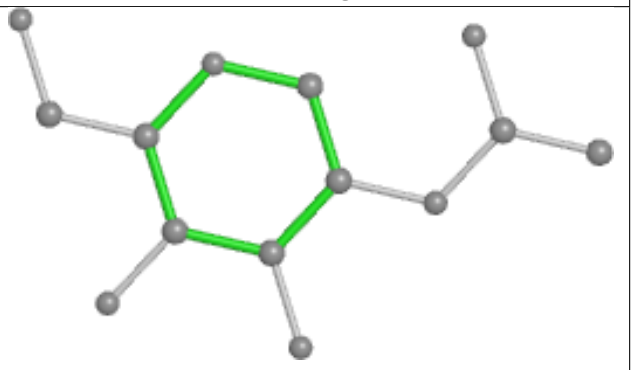


Bond angles

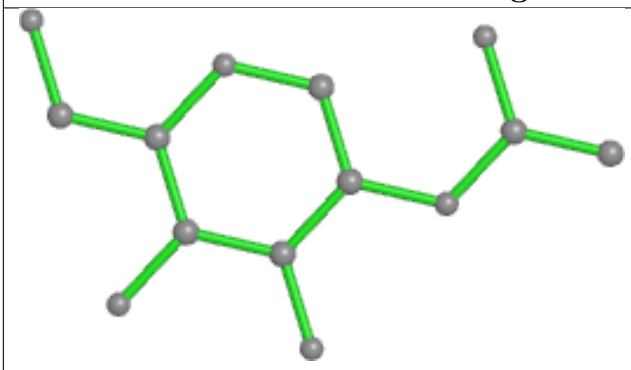


Torsions



Rings

Ligand NAG G 1407



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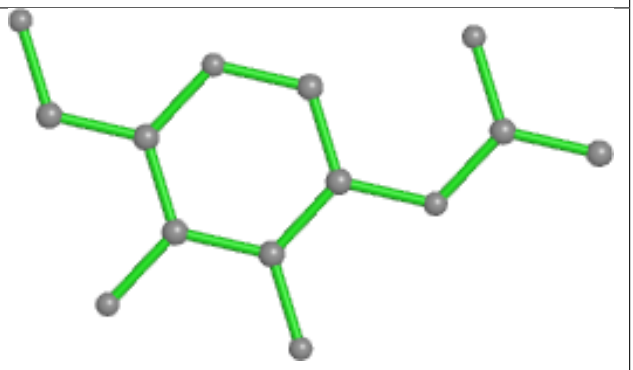
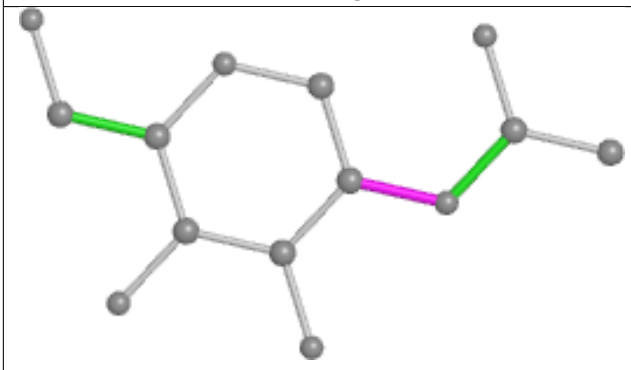


Bond angles



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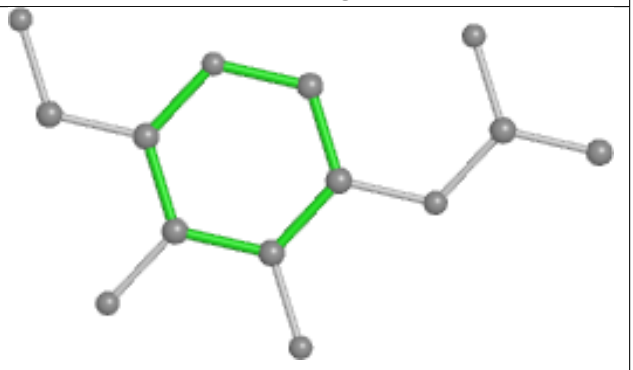
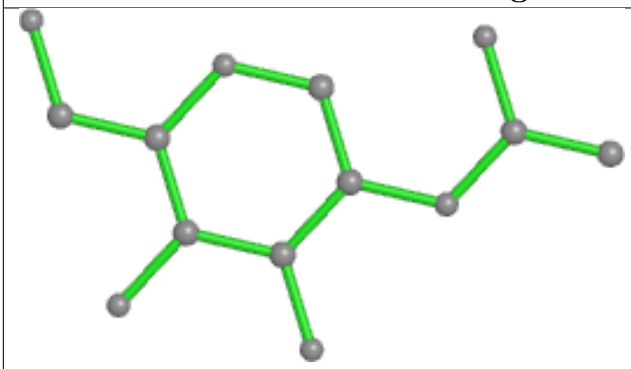
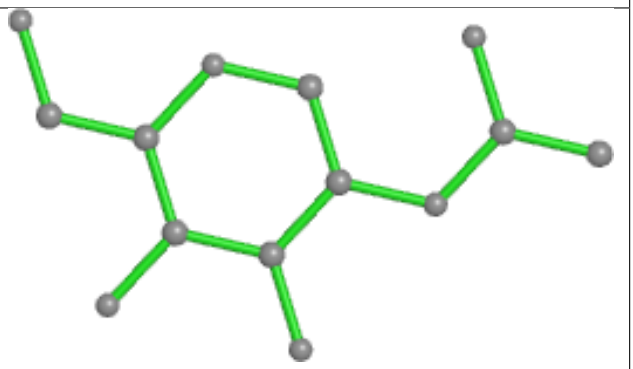


Rings

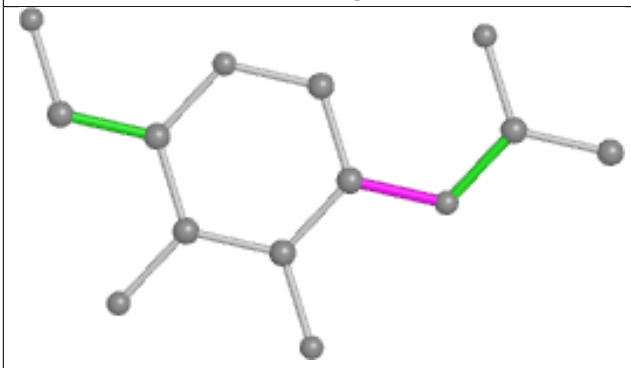
Ligand NAG H 1407



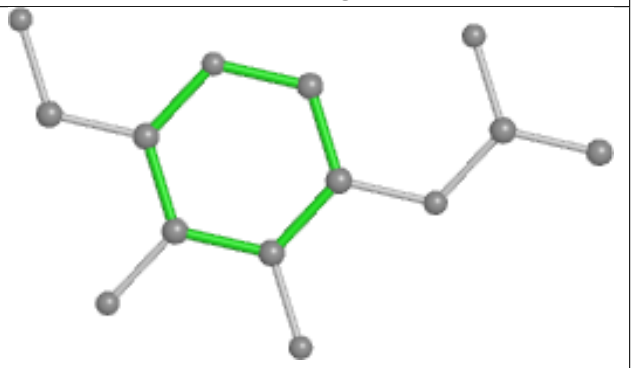
Bond lengths



Bond angles

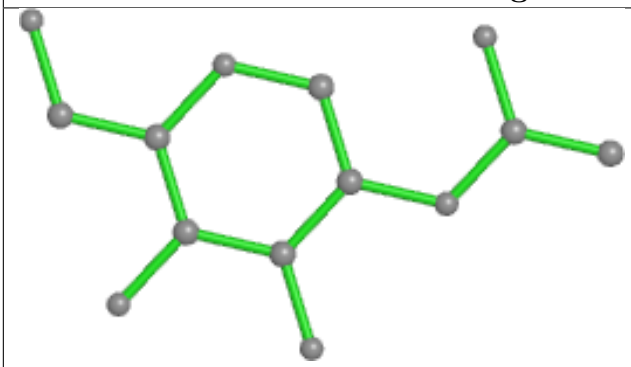


Torsions

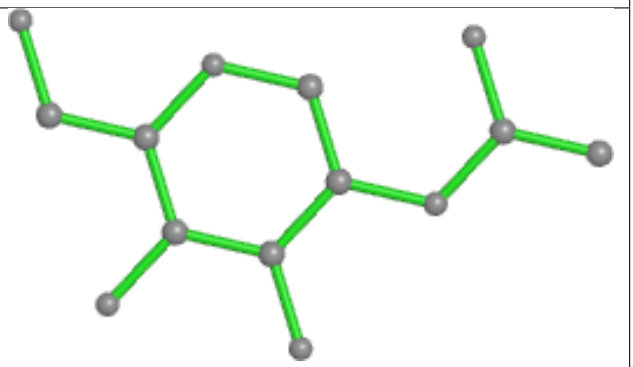


Rings

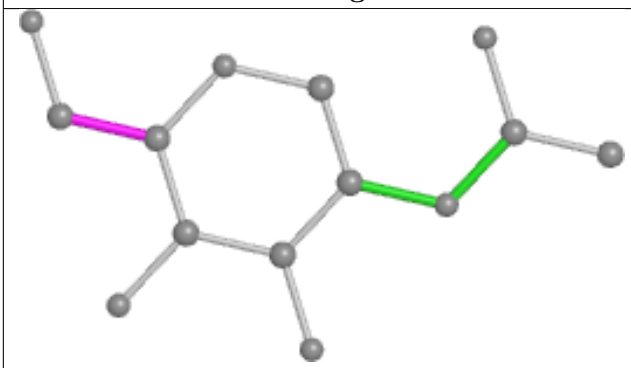
Ligand NAG G 1403



Bond lengths



Bond angles



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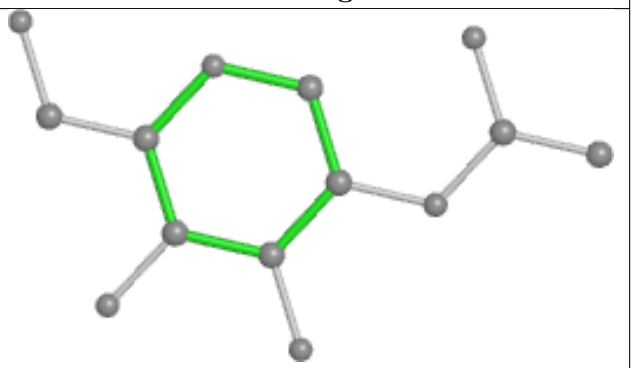
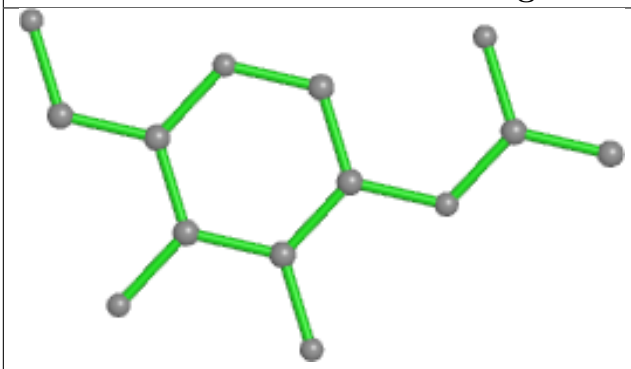


Rings

Ligand NAG I 1402



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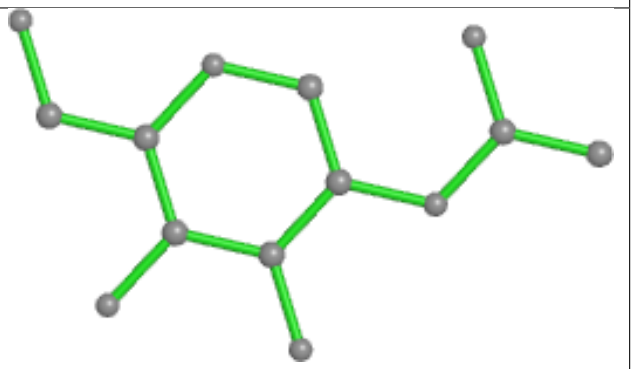
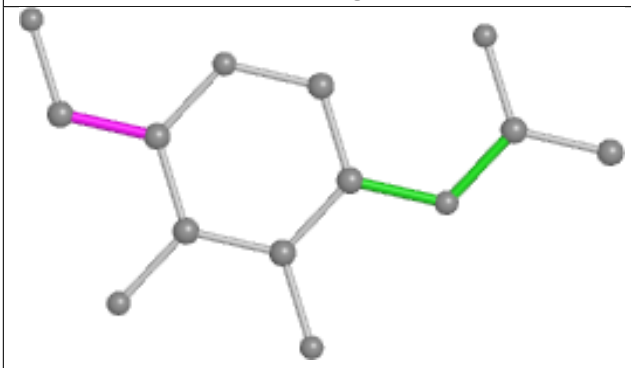


Bond angles



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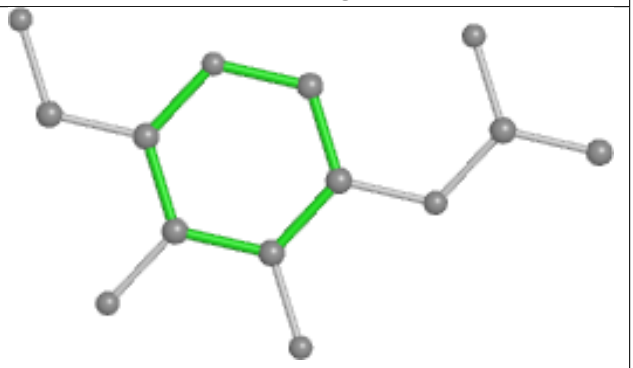
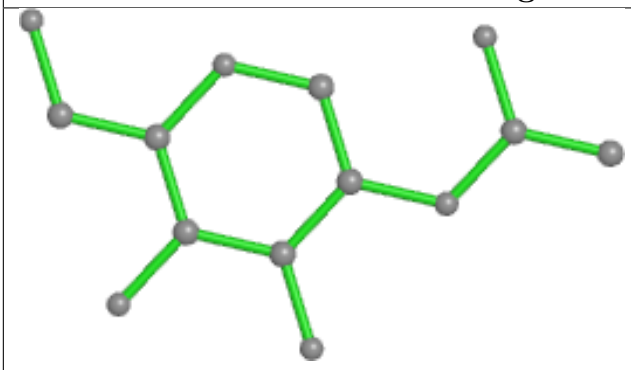
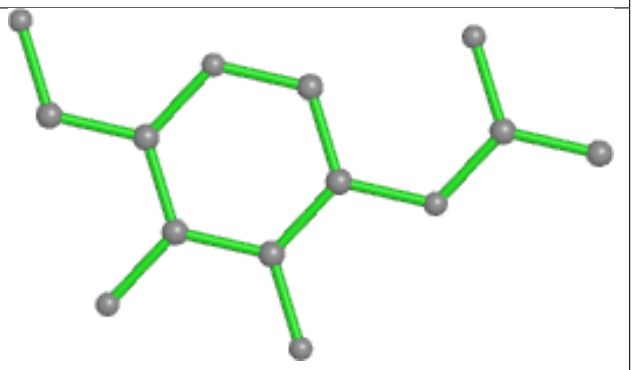


Rings

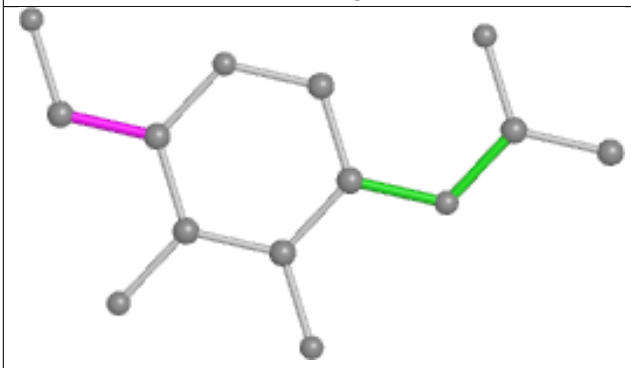
Ligand NAG I 1403



Bond lengths



Bond angles



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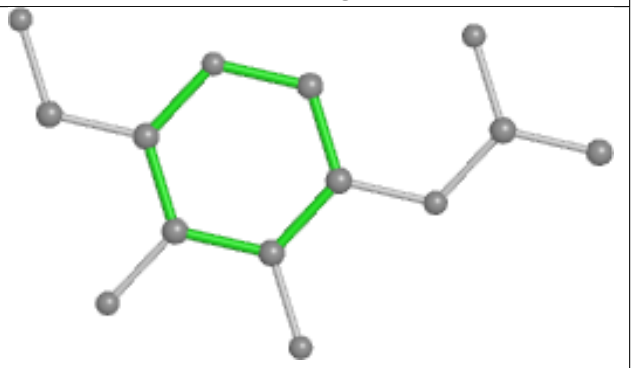
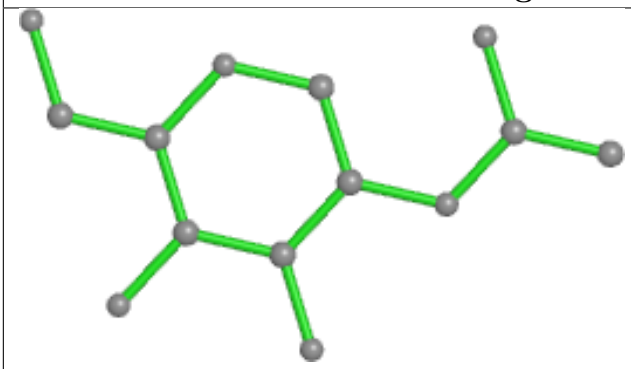
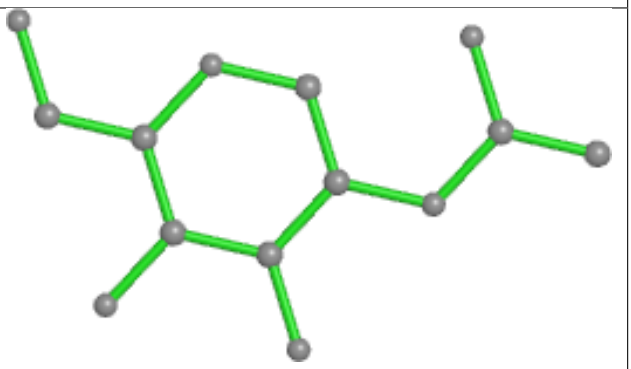
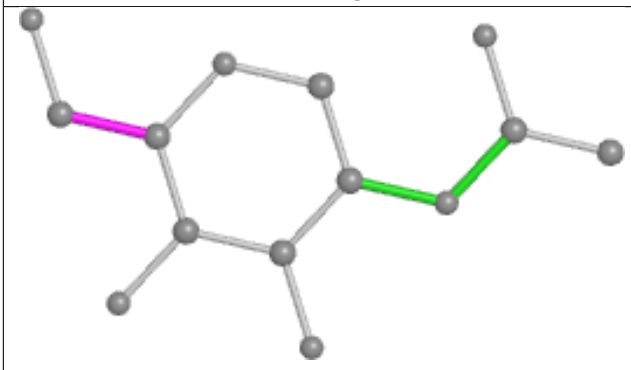
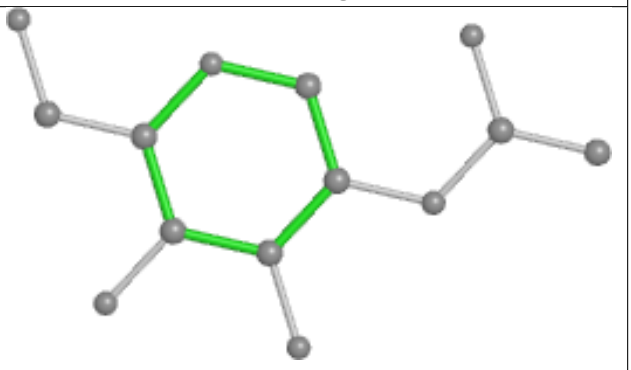
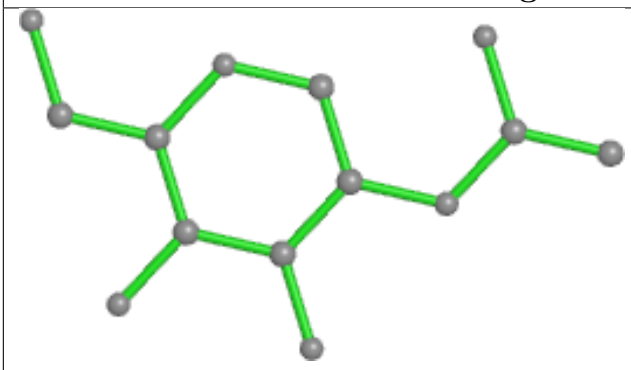
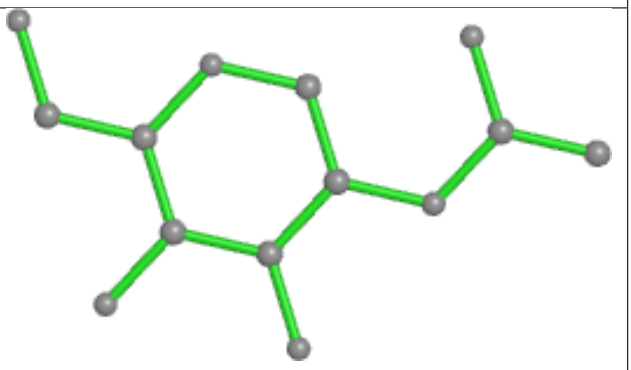
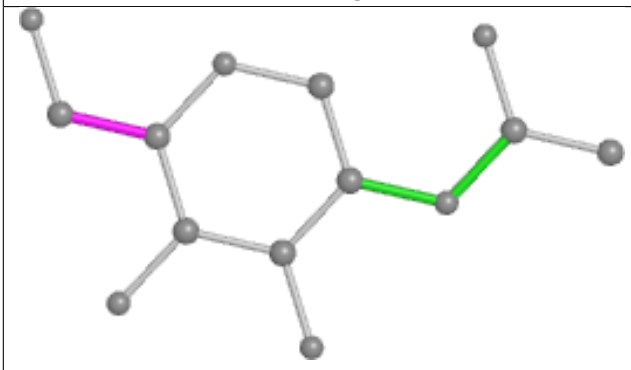
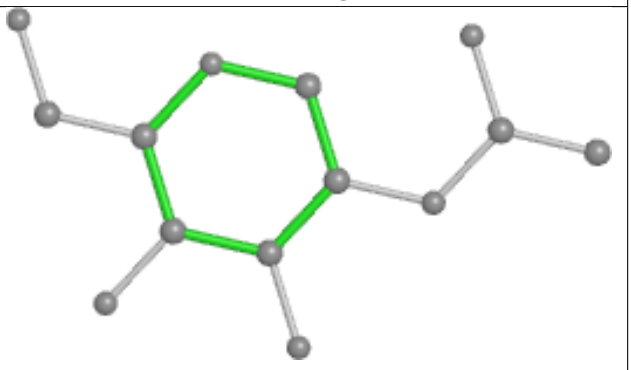
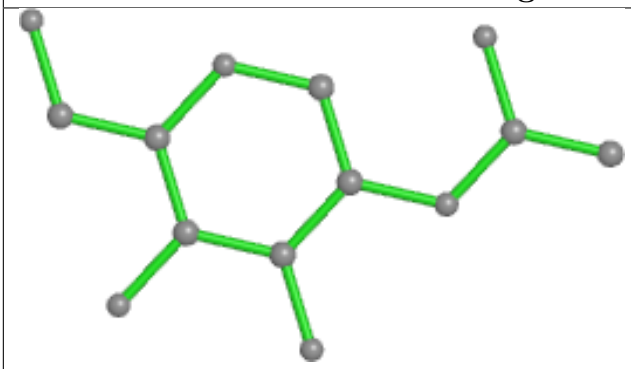
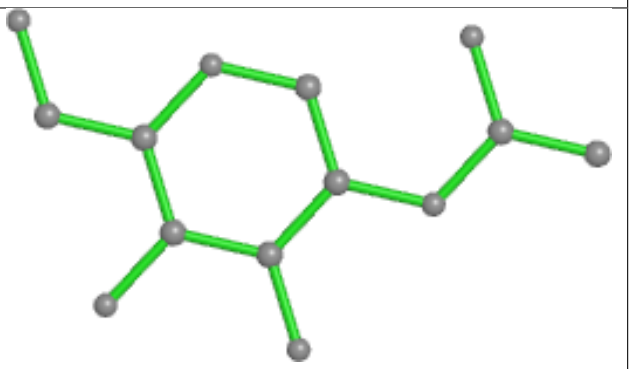
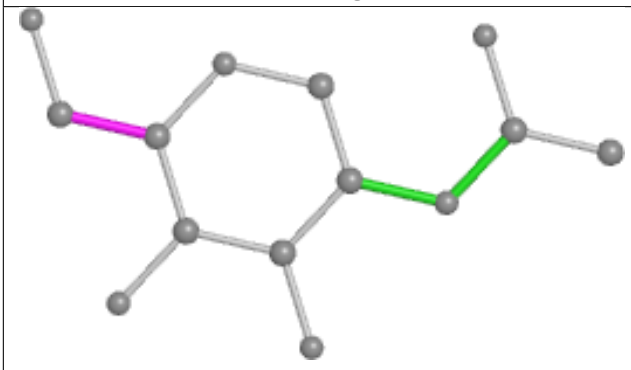
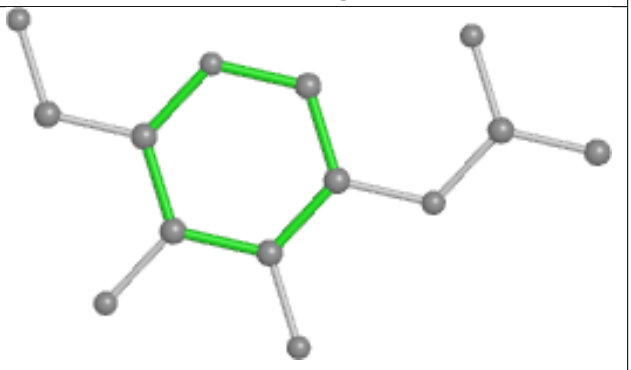
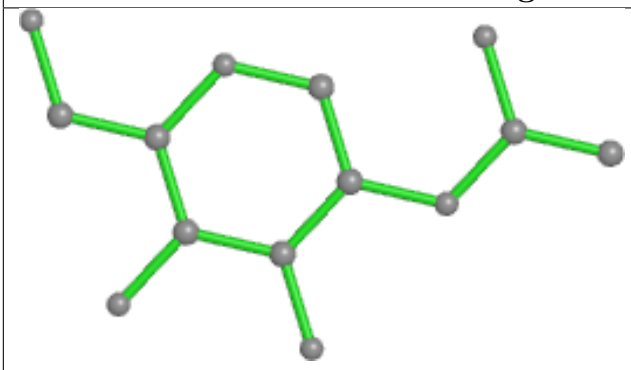
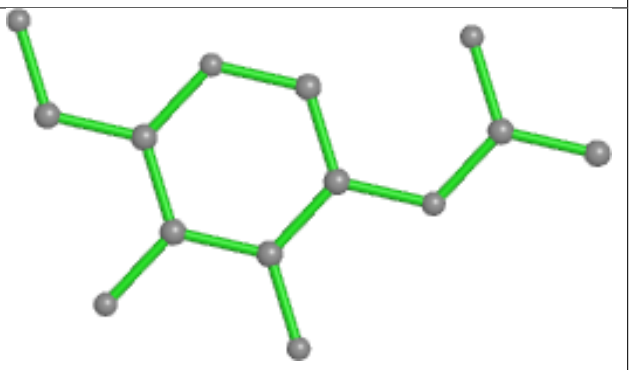
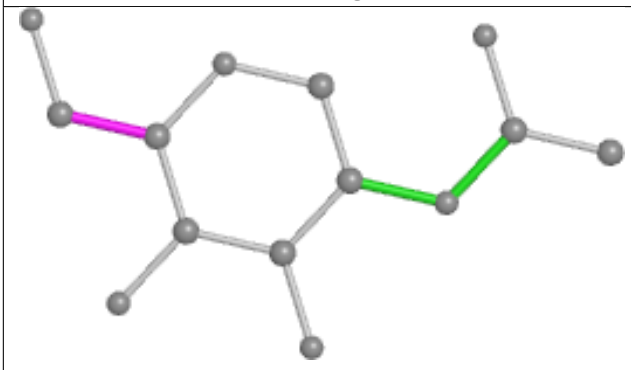
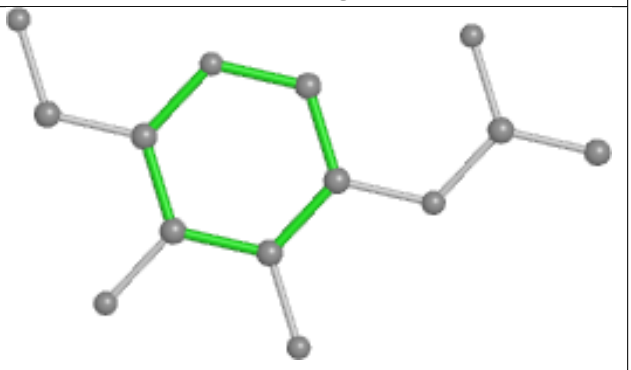


Rings

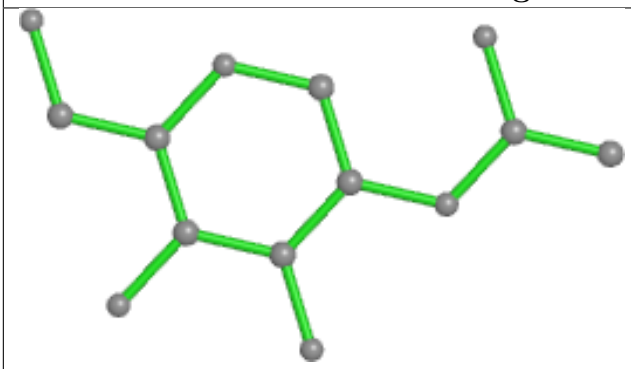
Ligand NAG J 1402	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG A 701	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG I 1404	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG I 1408	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG E 1408



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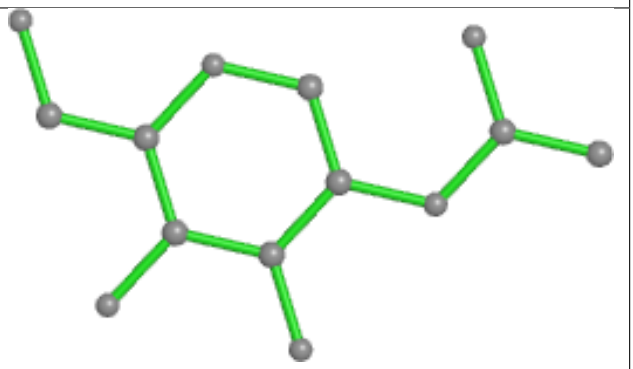

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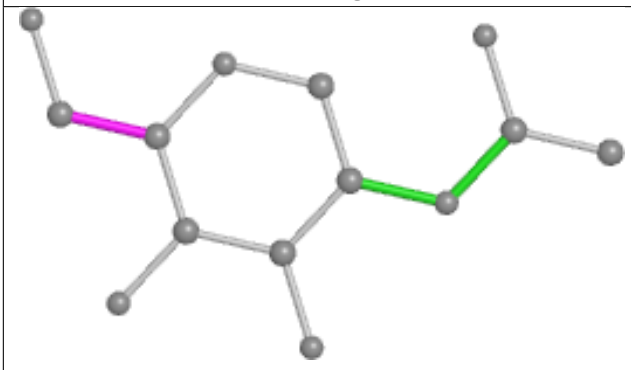

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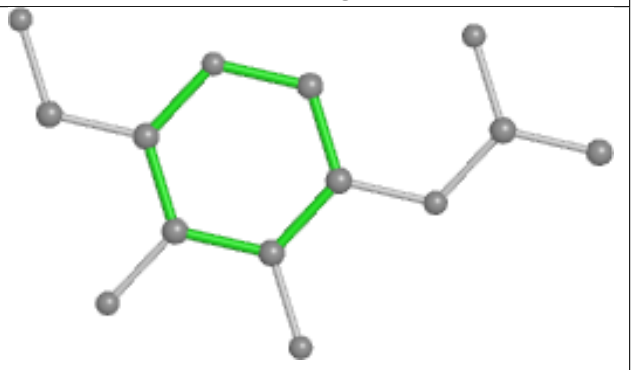
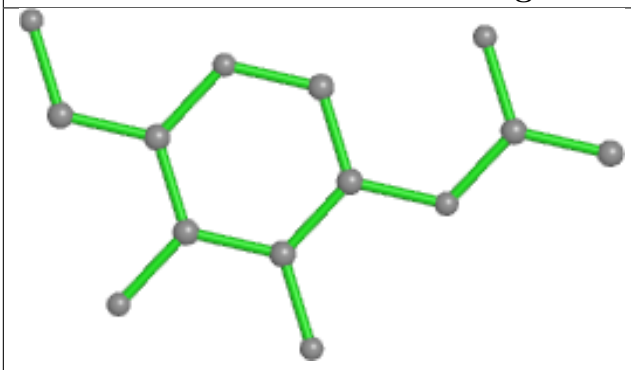


Rings

Ligand NAG J 1406



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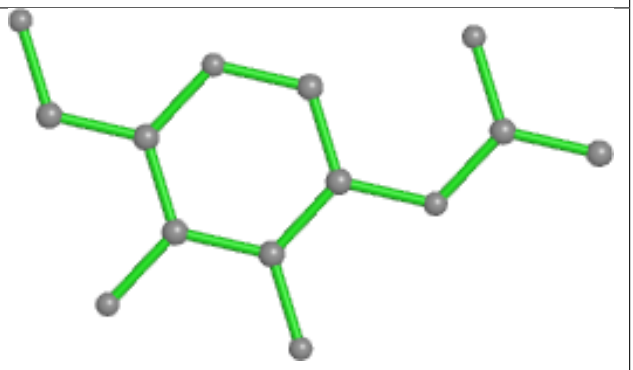
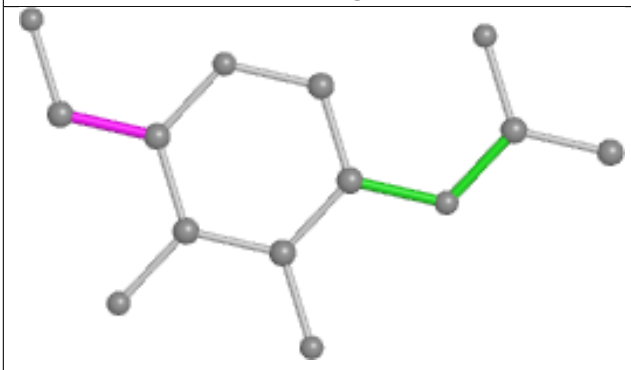


Bond angles



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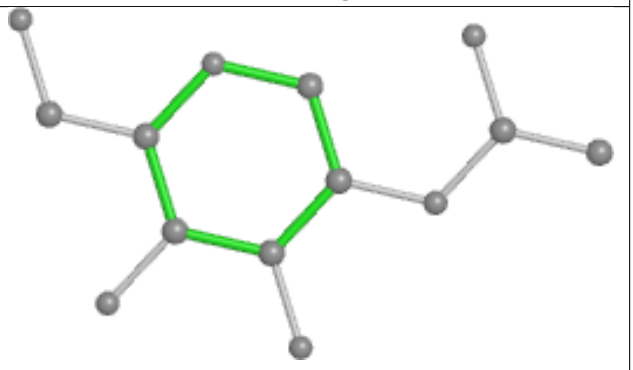
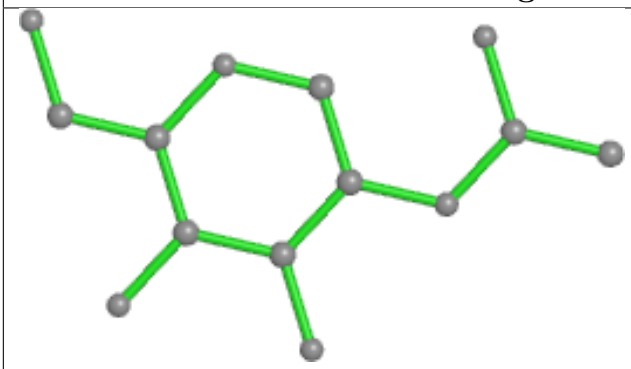


Rings

Ligand NAG I 1410



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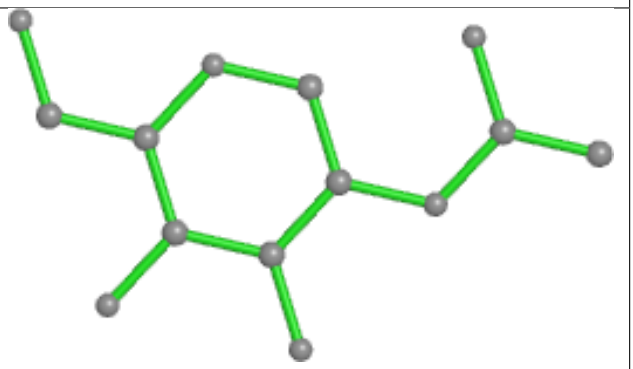

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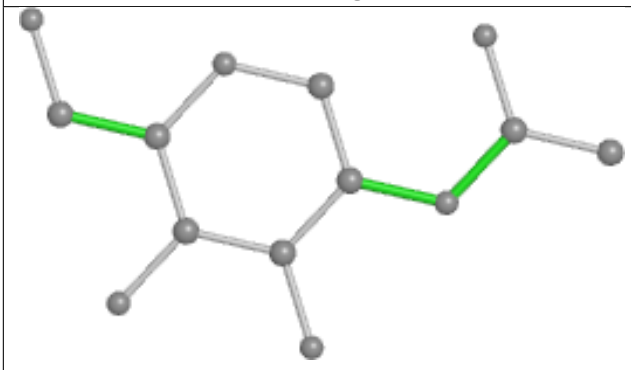

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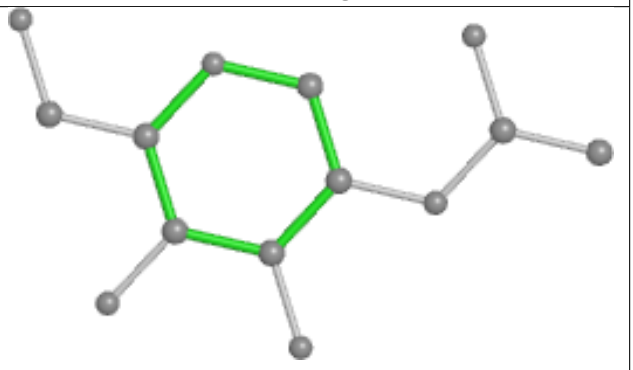
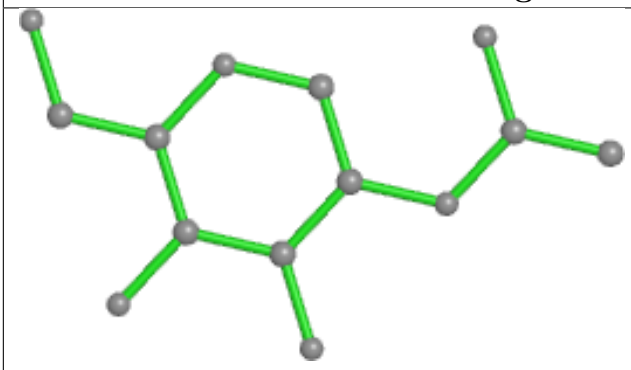


Rings

Ligand NAG J 1403



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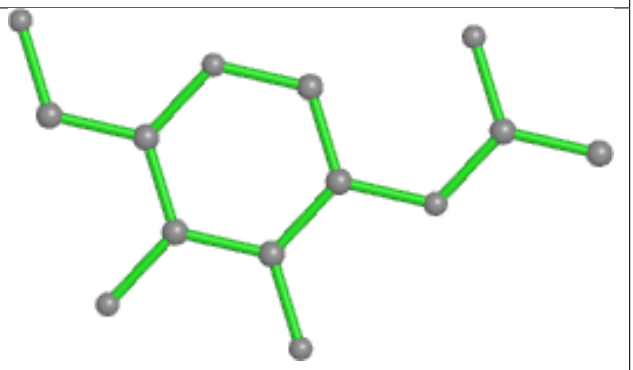

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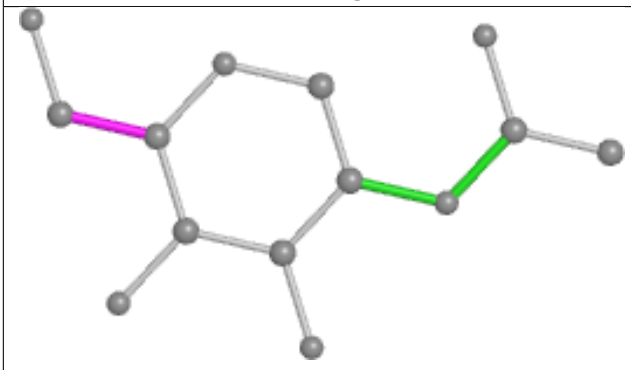

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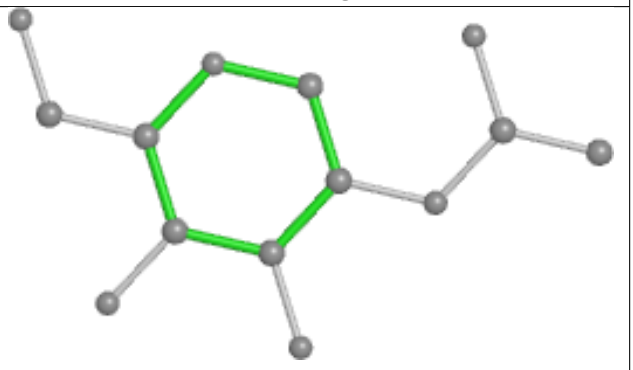
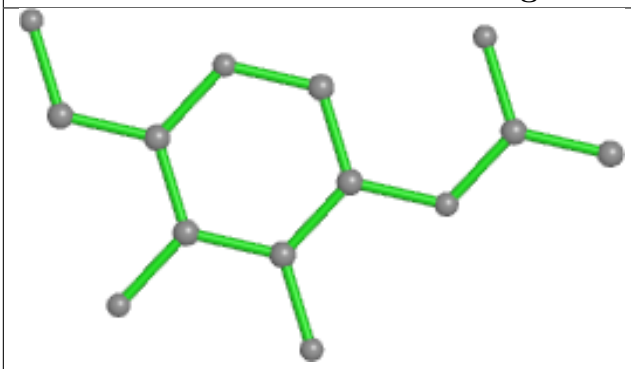


Rings

Ligand NAG C 701



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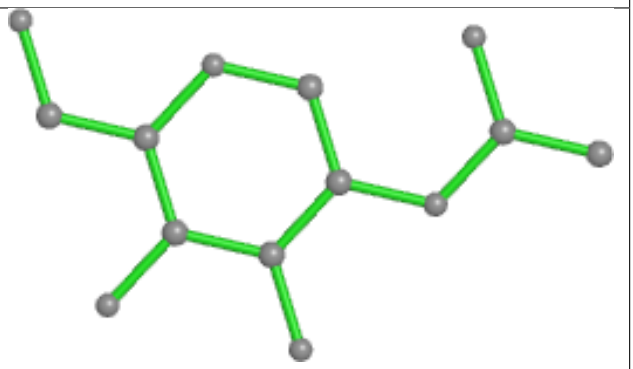

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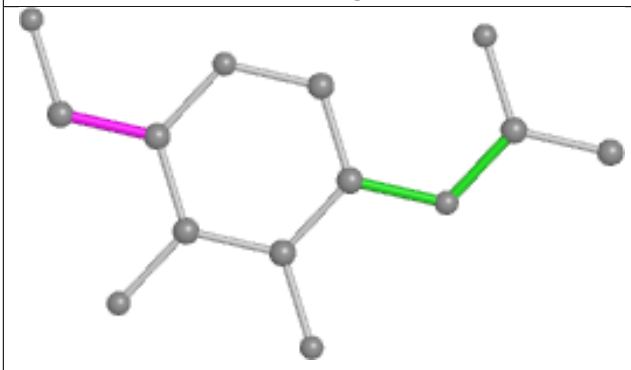

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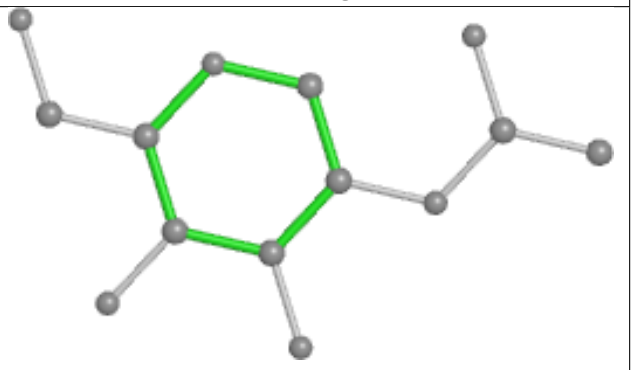
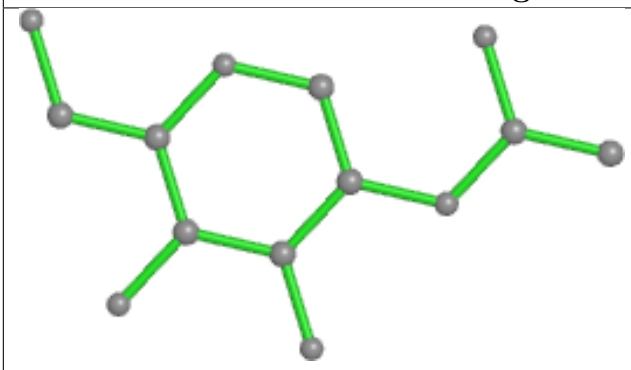


Rings

Ligand NAG E 1404



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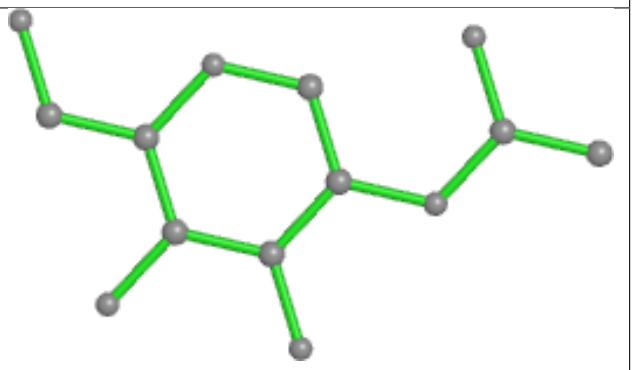
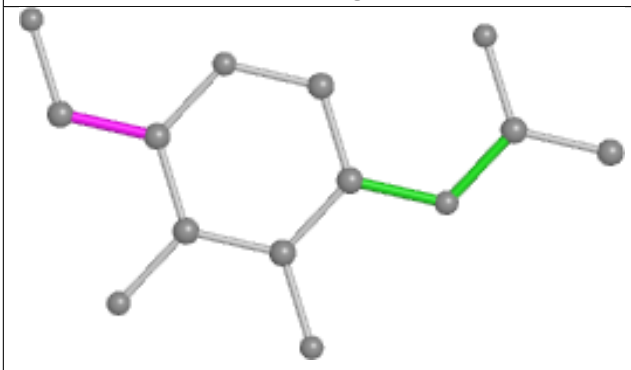


Bond angles



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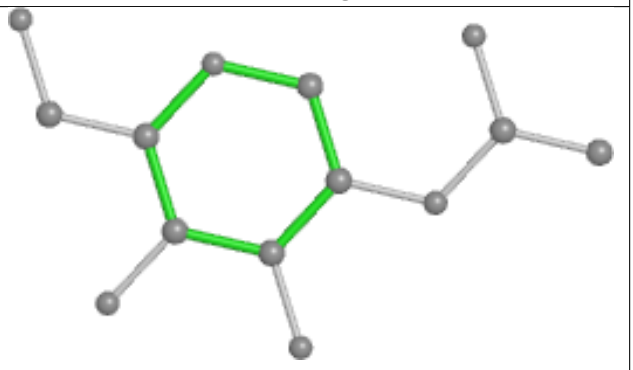
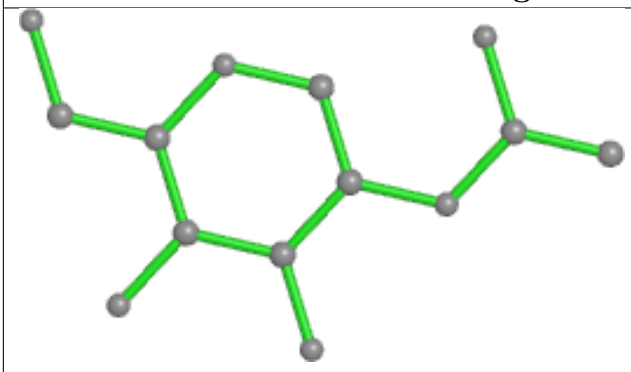


Rings

Ligand NAG F 1404



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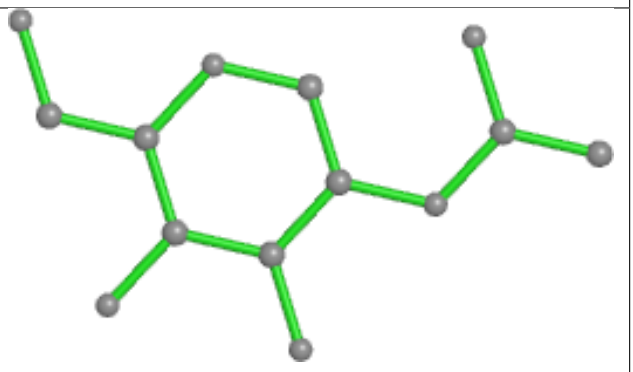

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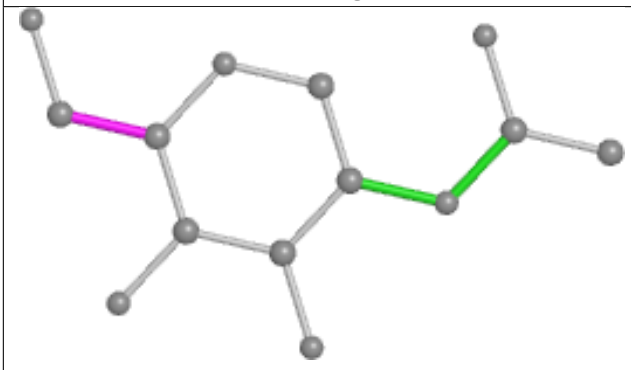

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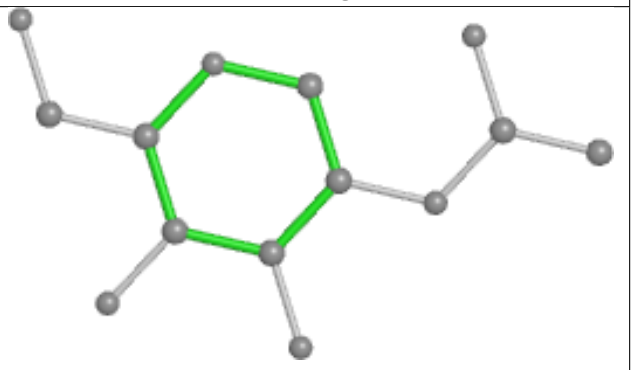
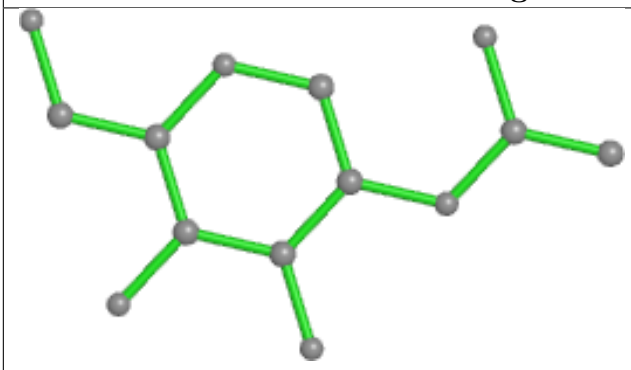


Rings

Ligand NAG G 1404



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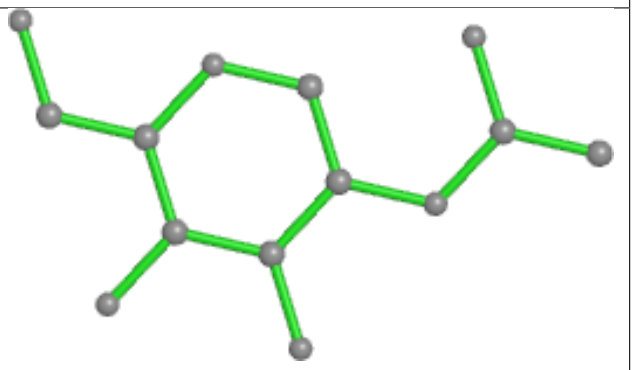

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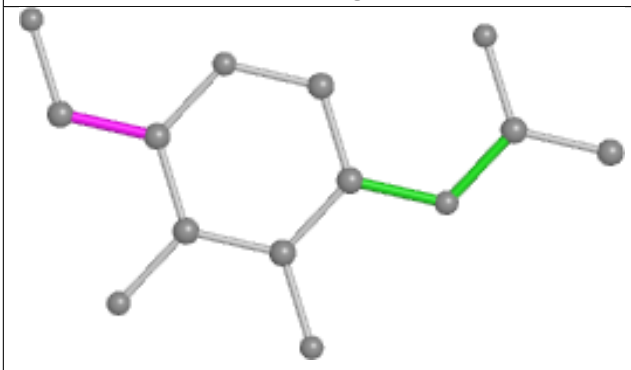

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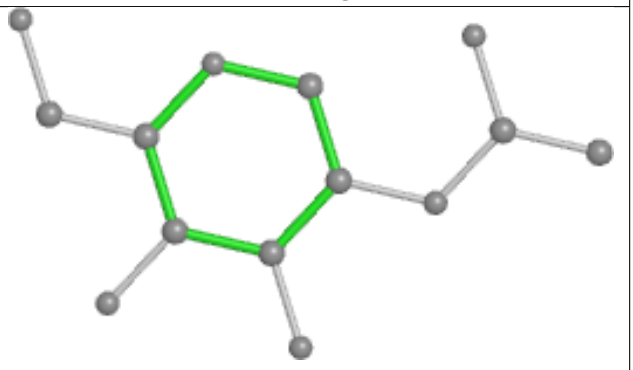
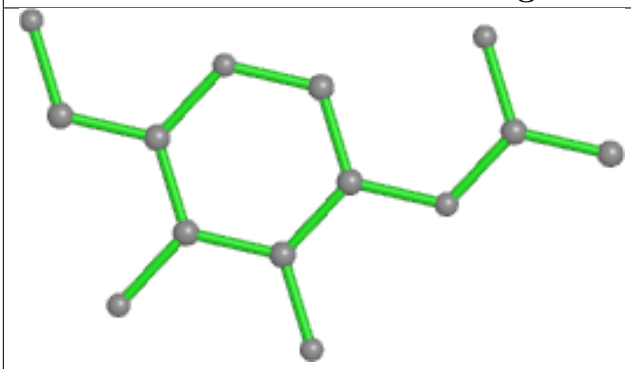


Rings

Ligand NAG I 1409



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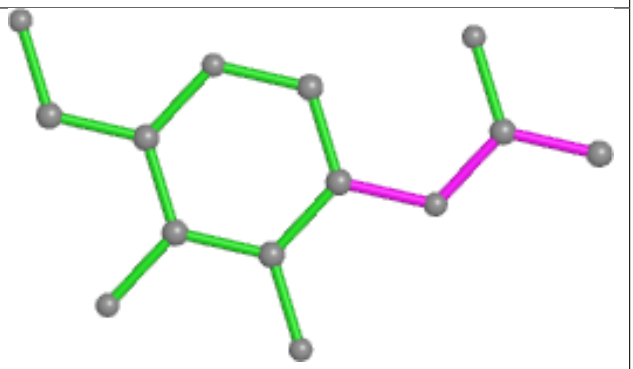

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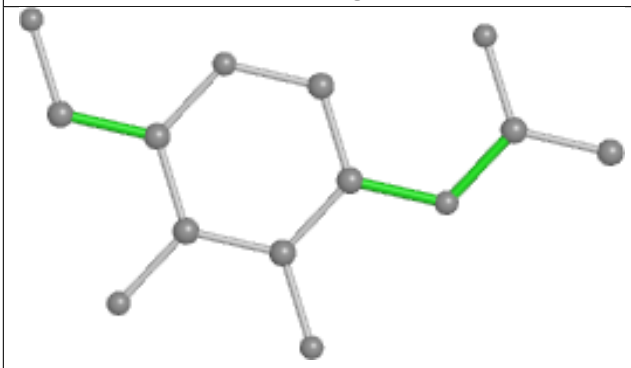

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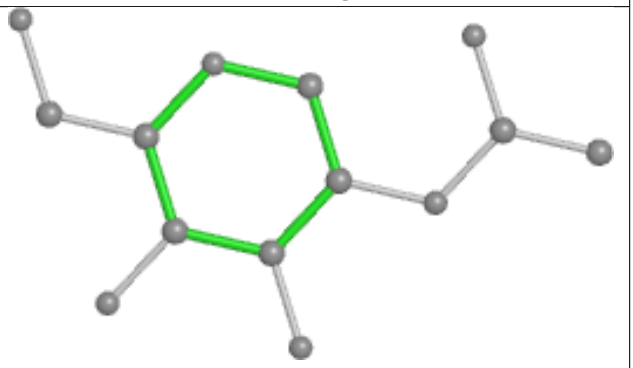
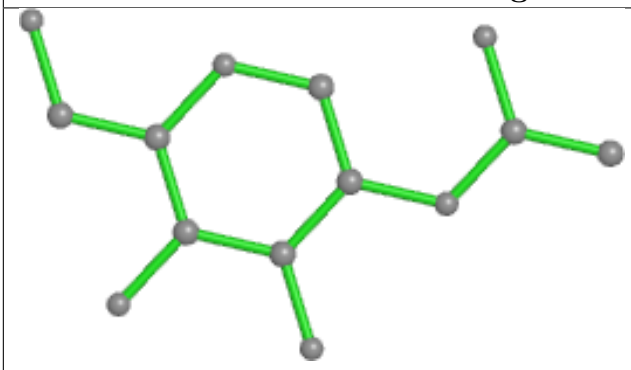


Rings

Ligand NAG H 1404



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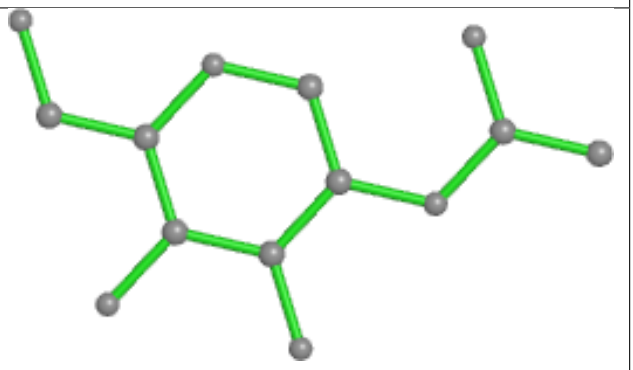

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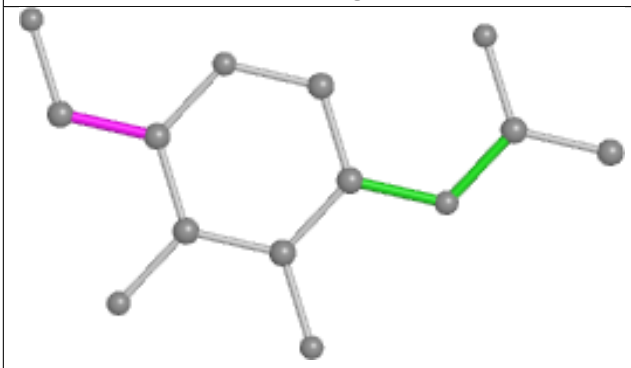

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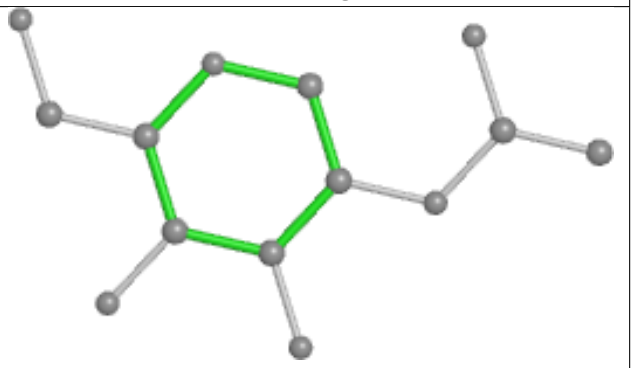
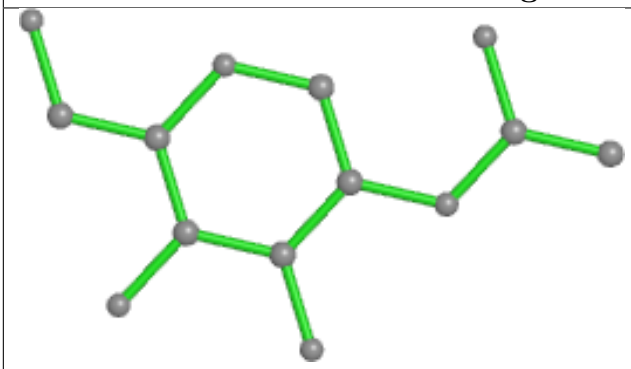


Rings

Ligand NAG C 703



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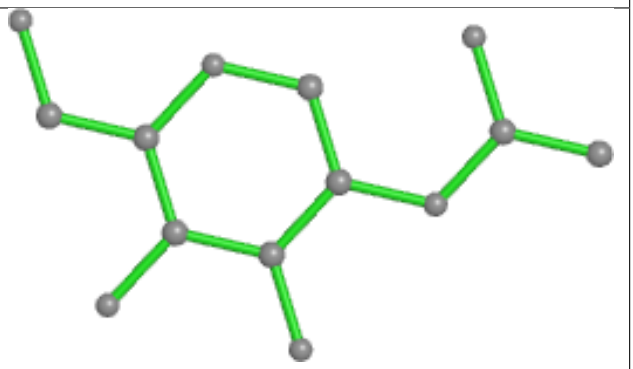

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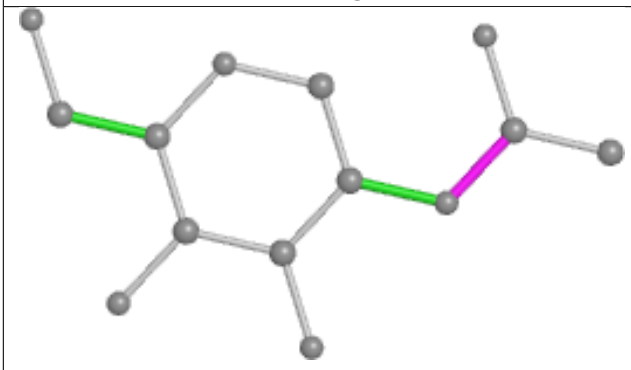

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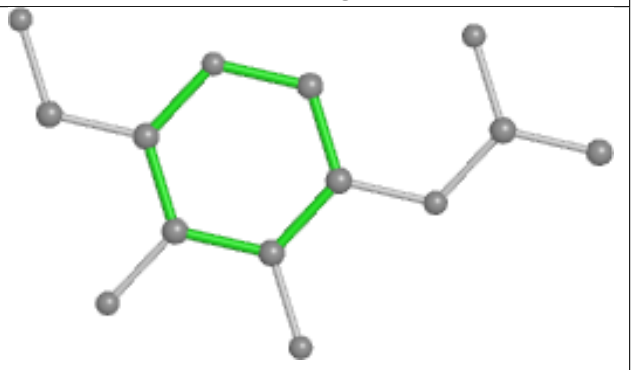
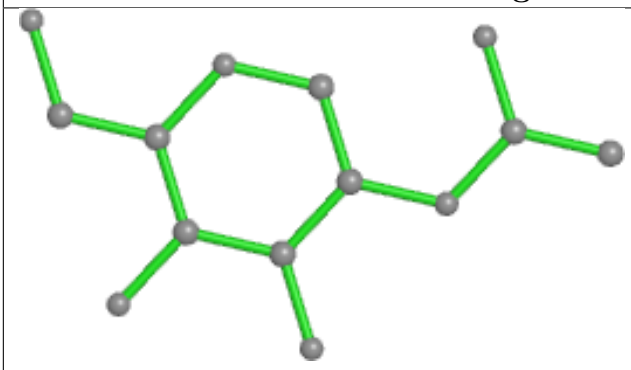


Rings

Ligand NAG E 1407



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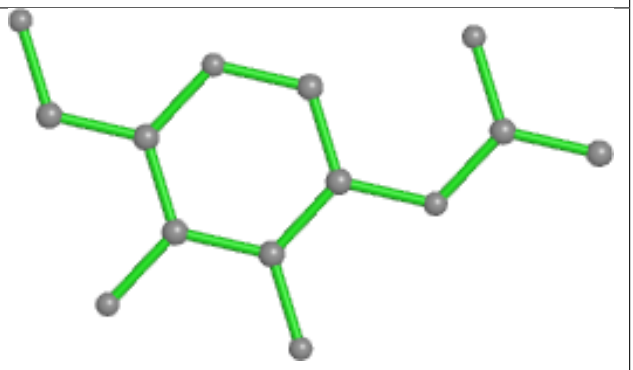

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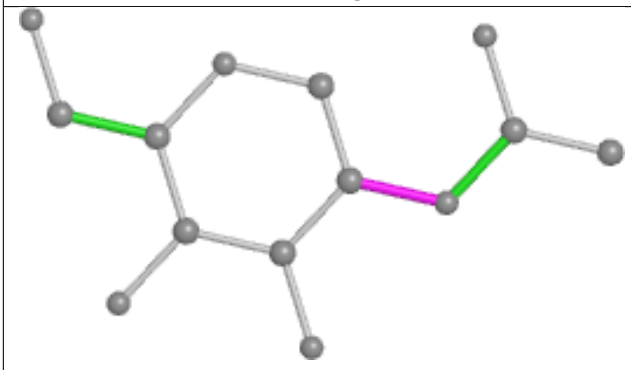

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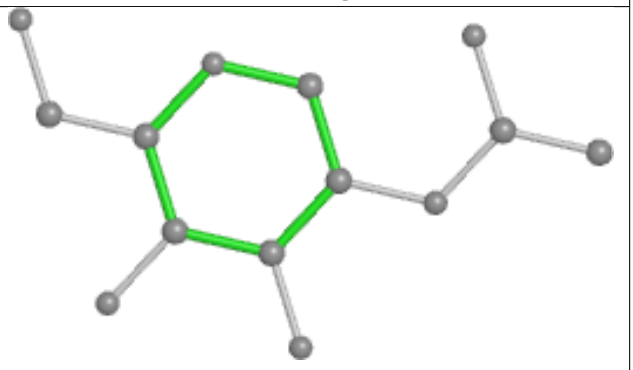
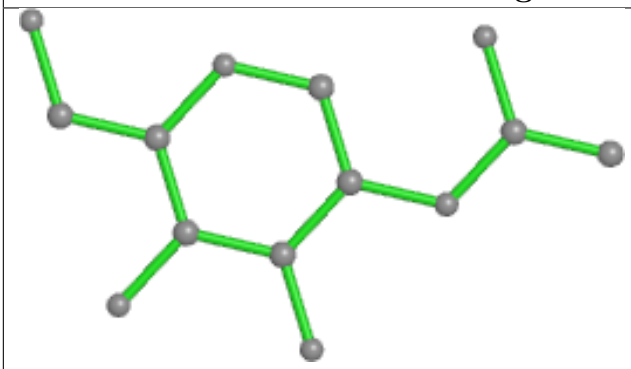
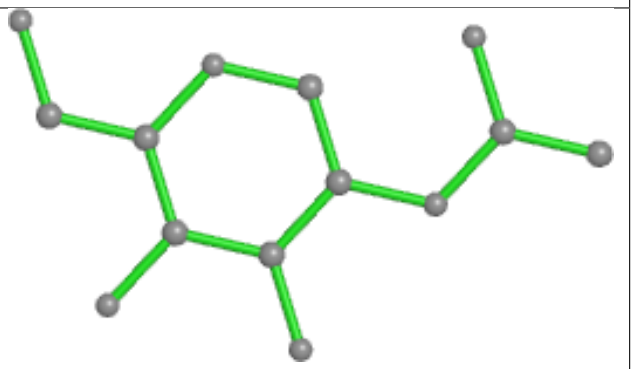
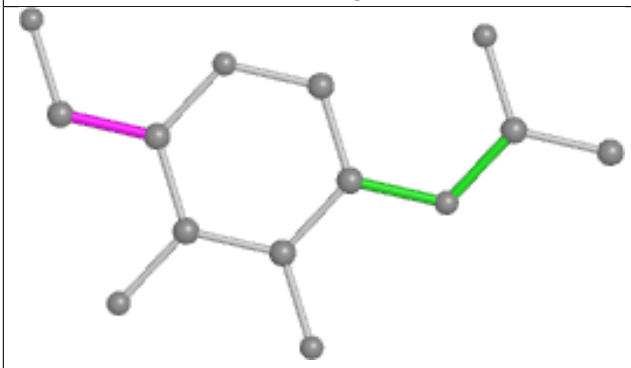
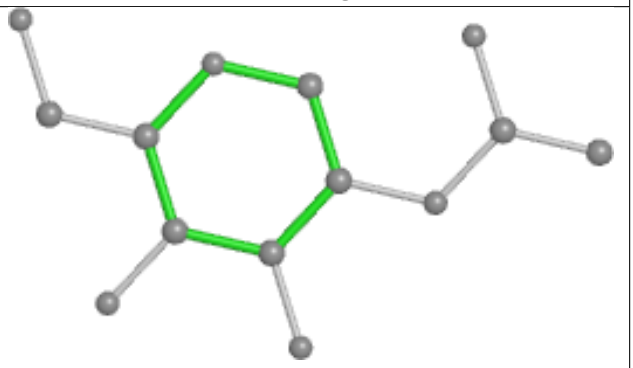


Rings

Ligand NAG J 1408	
	
Bond lengths	Bond angles
	
Torsions	Rings

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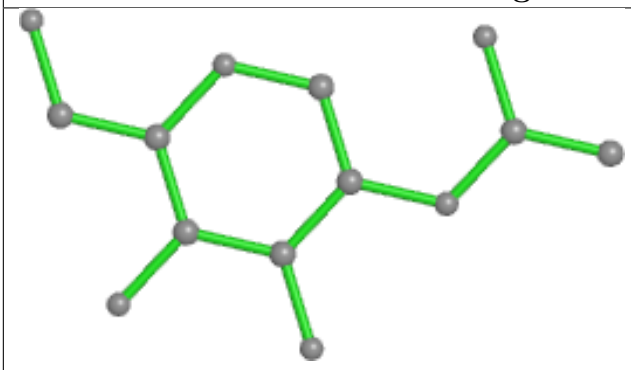
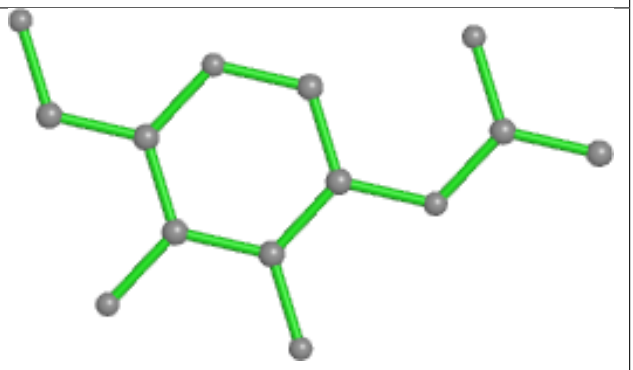
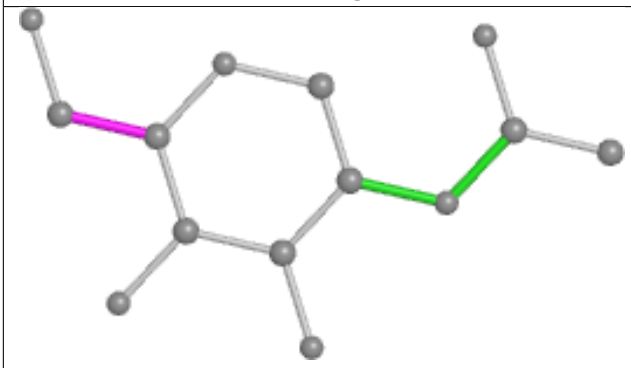
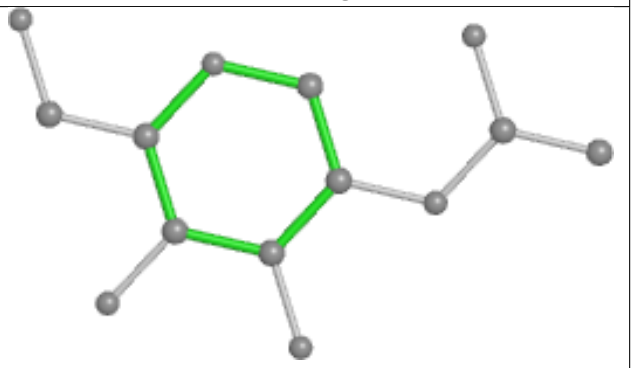
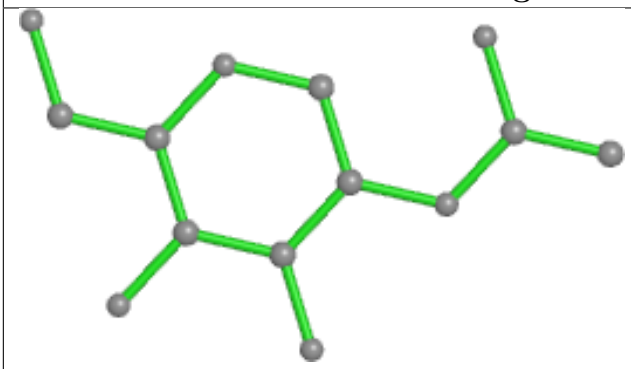
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand NAG F 1403



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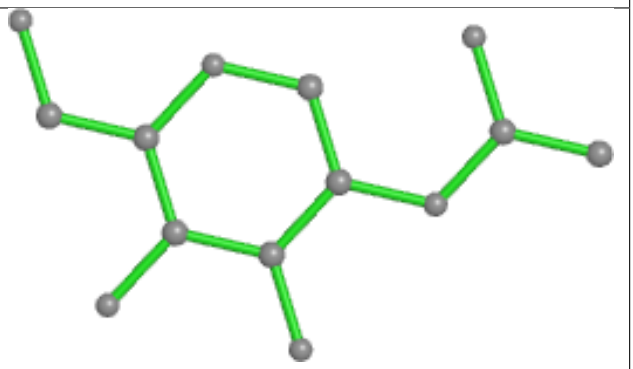

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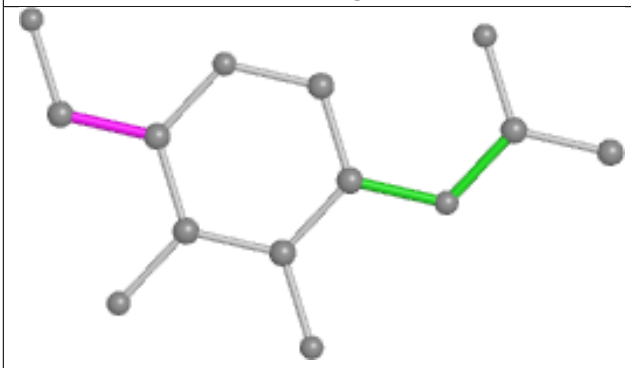

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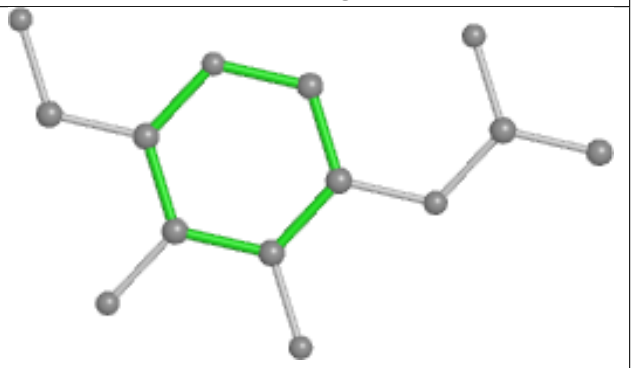
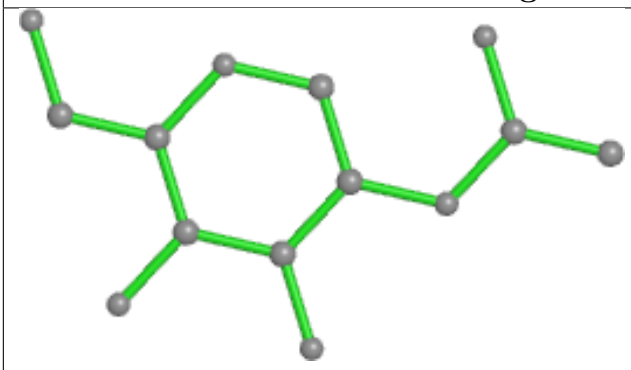


Rings

Ligand NAG A 704



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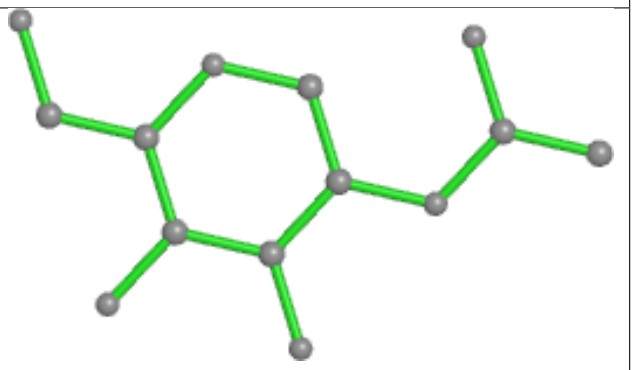
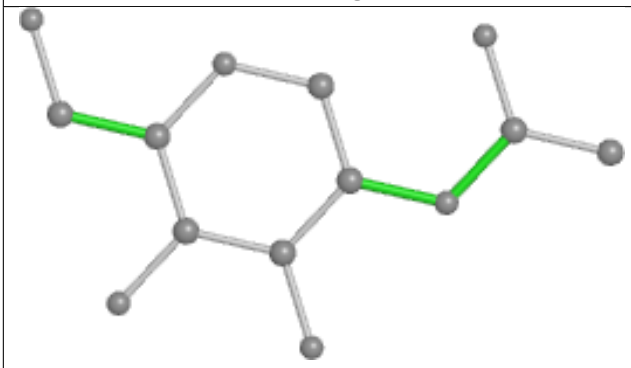


Bond angles



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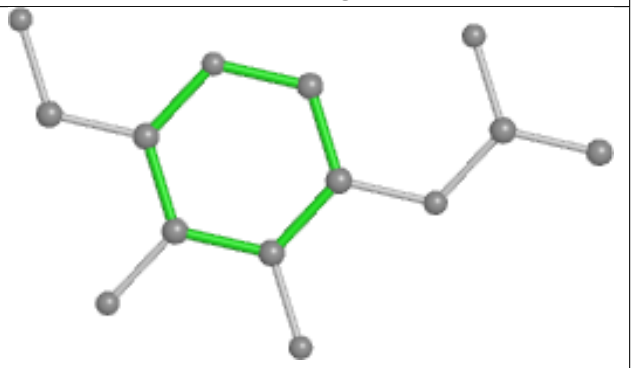
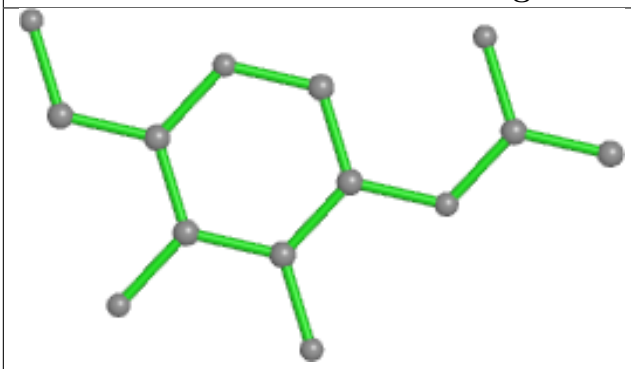


Rings

Ligand NAG F 1405



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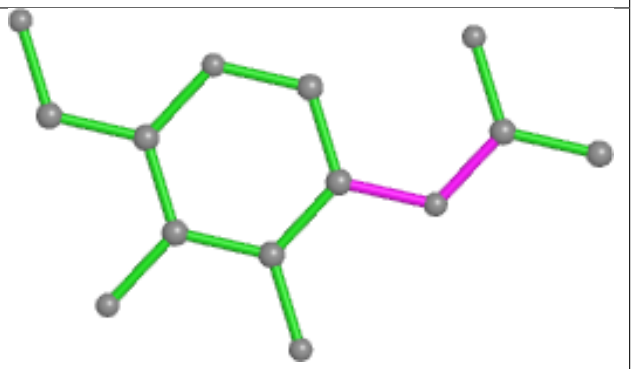

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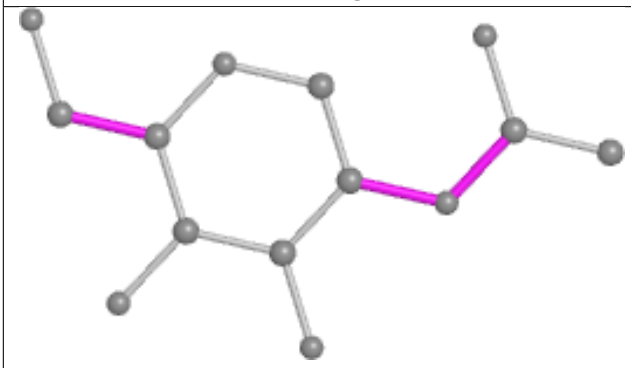

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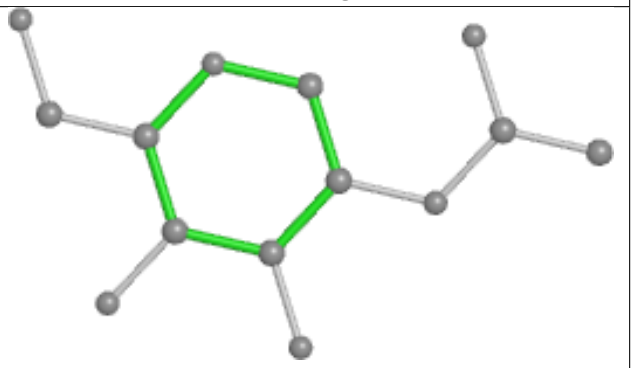
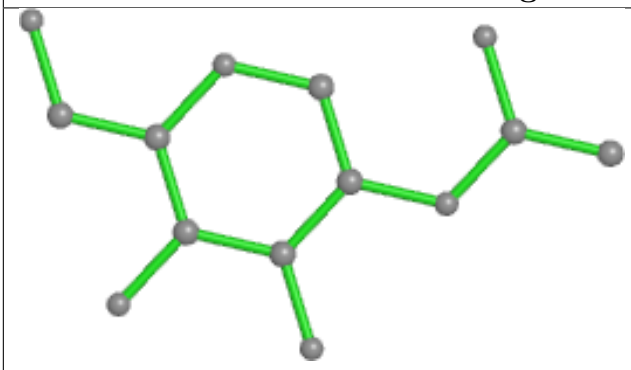


Rings

Ligand NAG A 703



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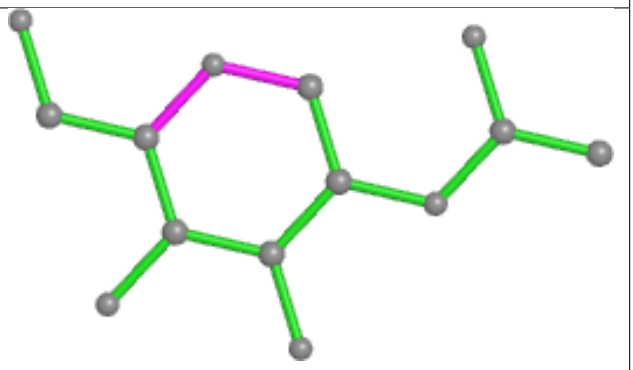

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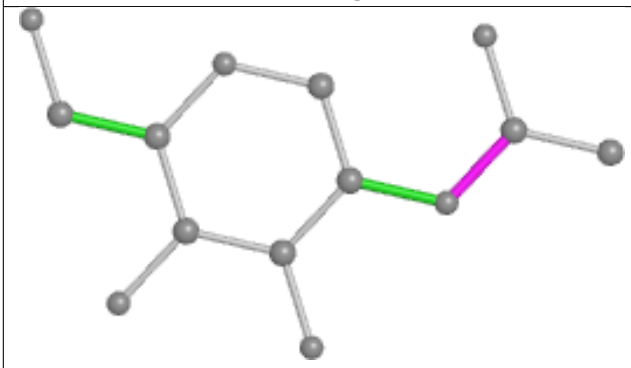

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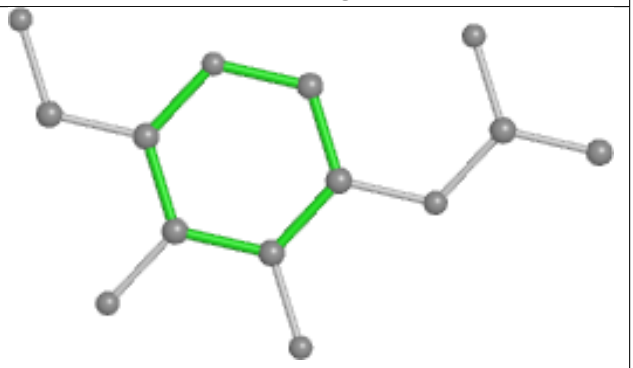
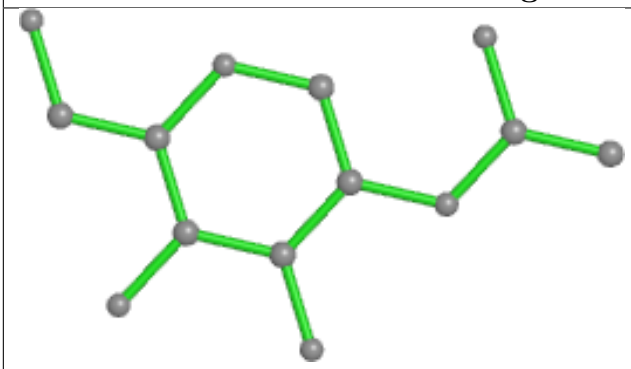


Rings

Ligand NAG B 901



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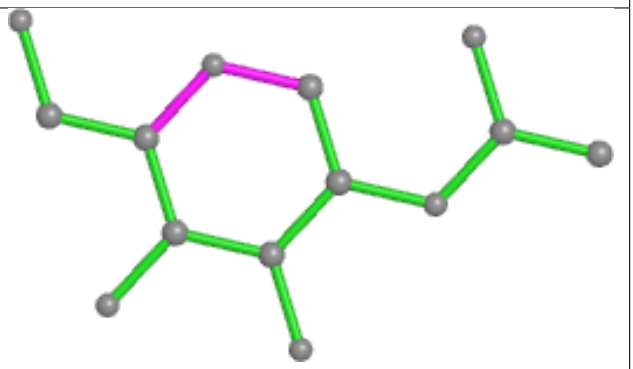
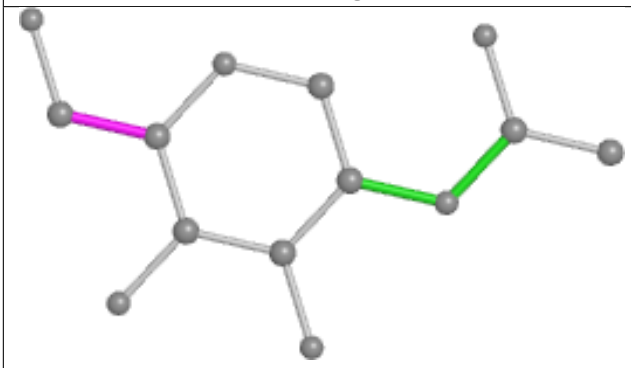


Bond angles



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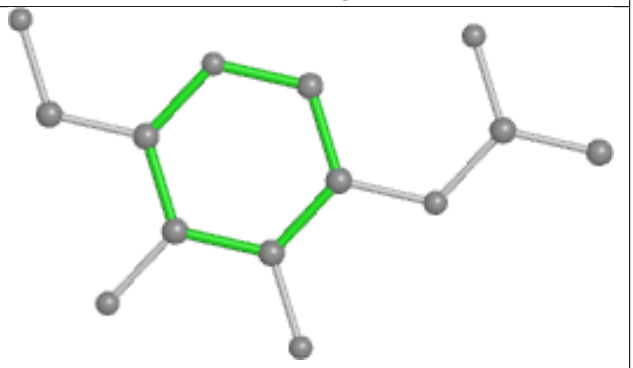
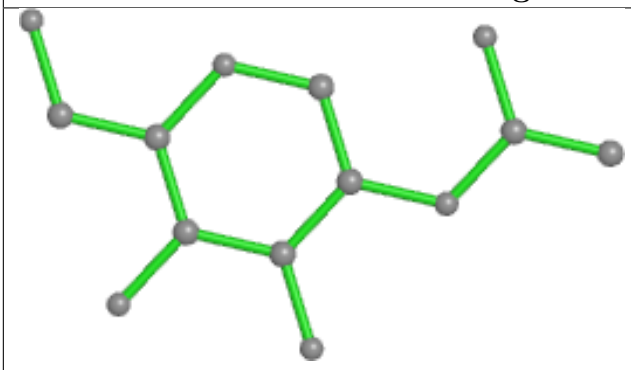


Rings

Ligand NAG E 1401



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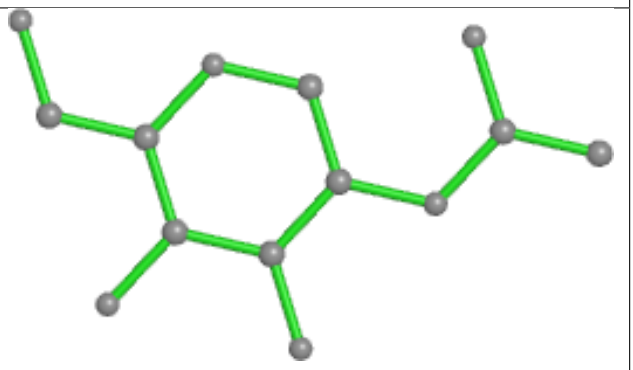
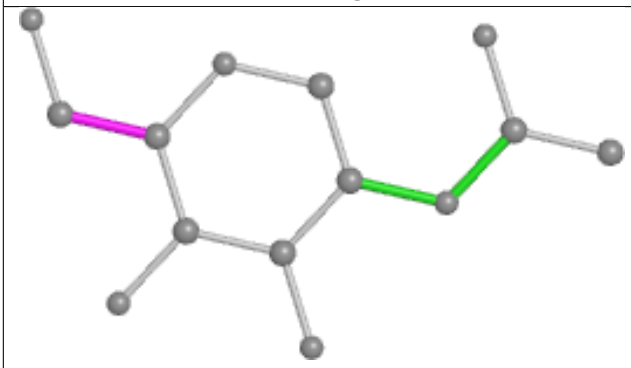


Bond angles



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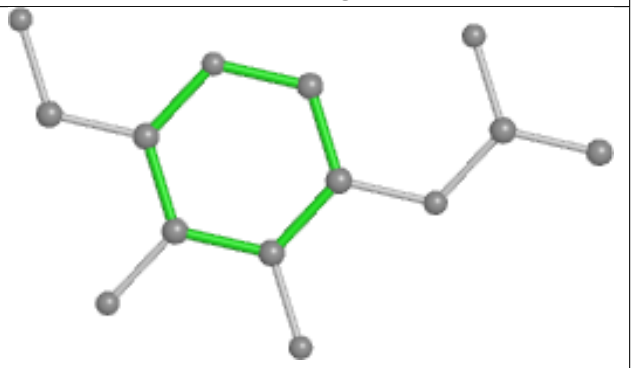
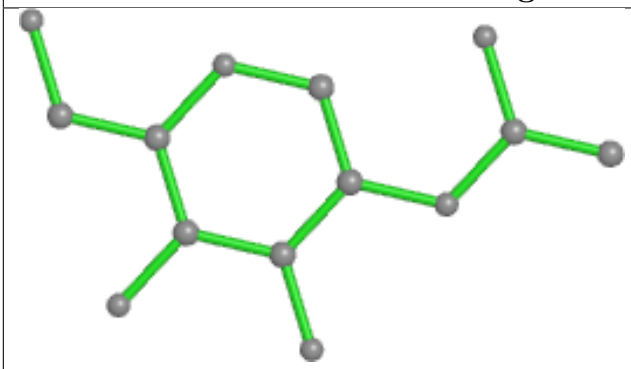
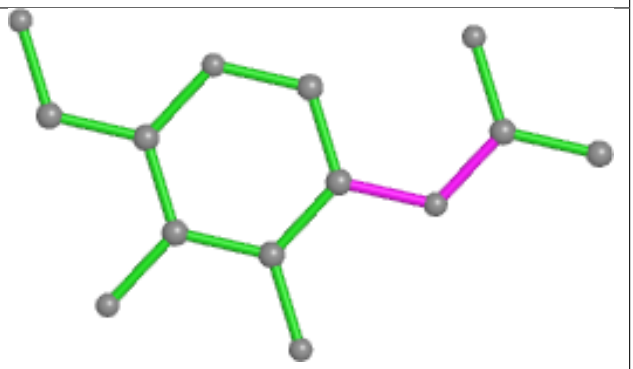
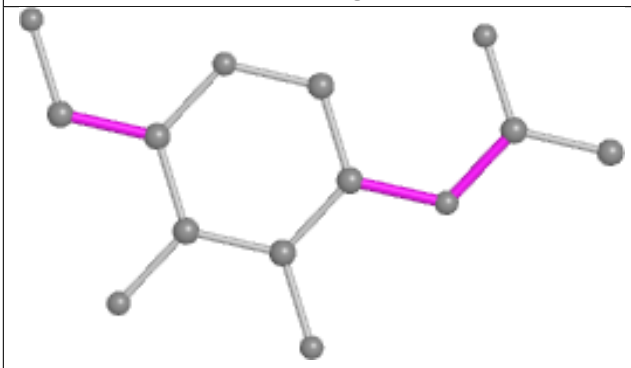
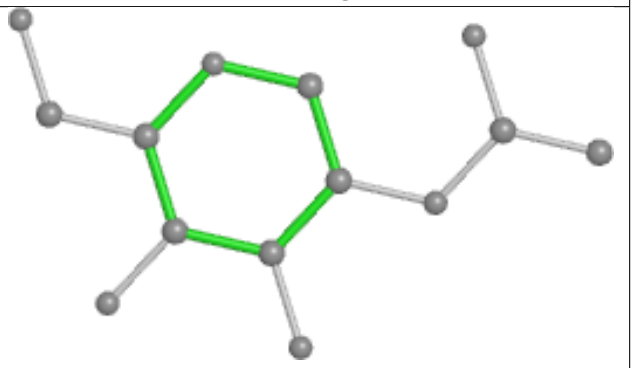


Rings

Ligand NAG I 1405	
 Bond lengths	 Bond angles
 Torsions	 Rings

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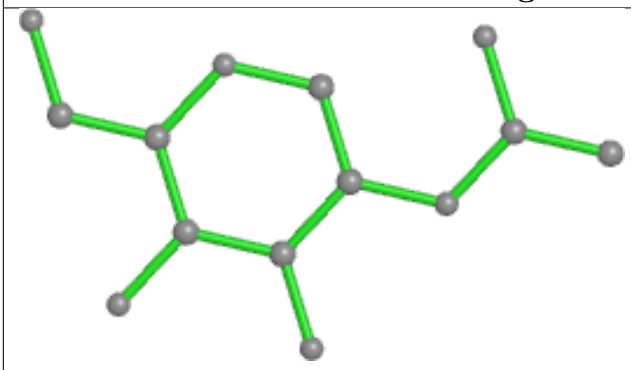
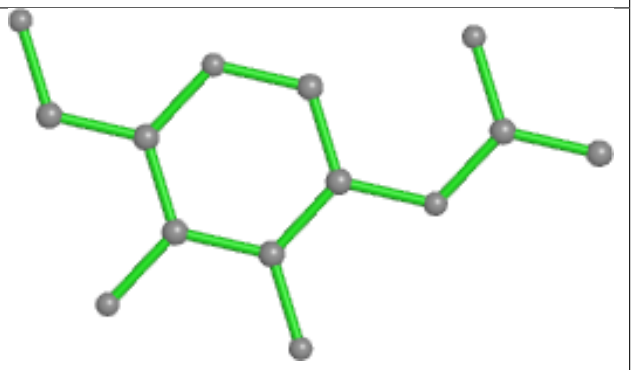
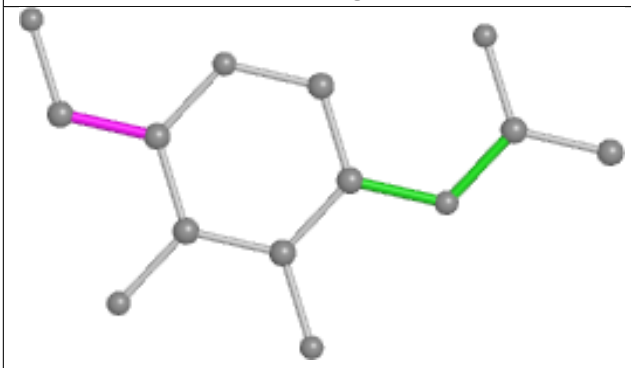
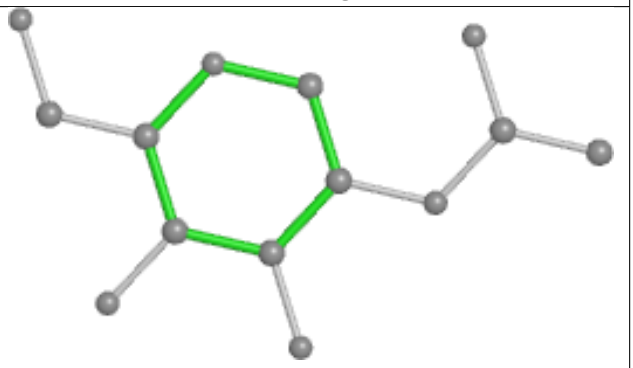
 Bond lengths	 Bond angles
 Torsions	 Rings

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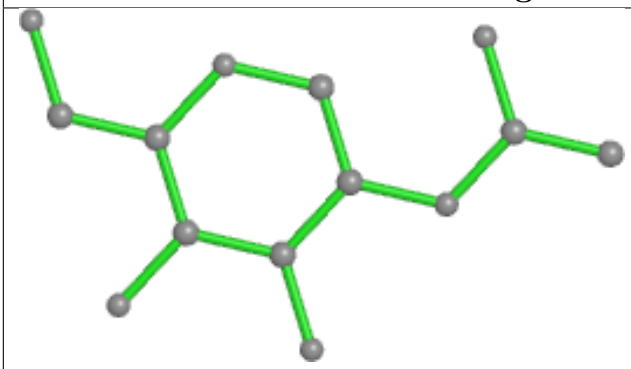
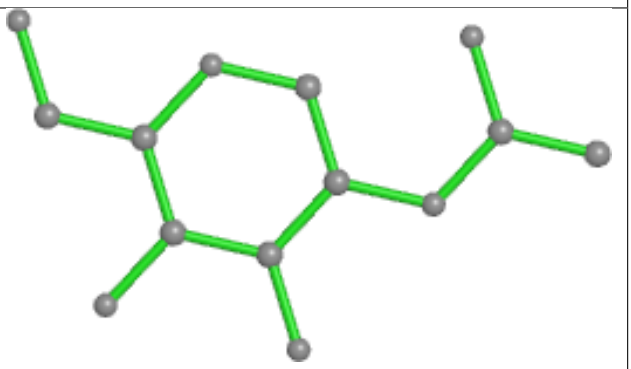
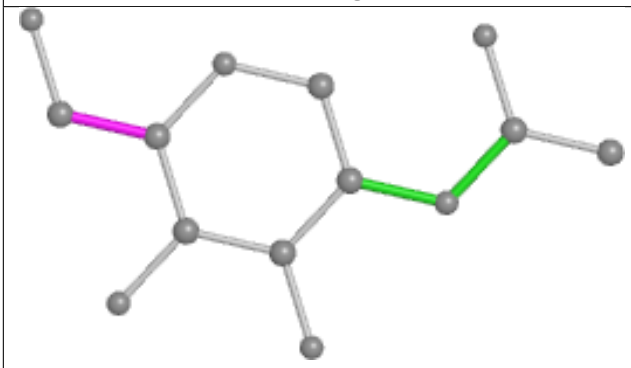
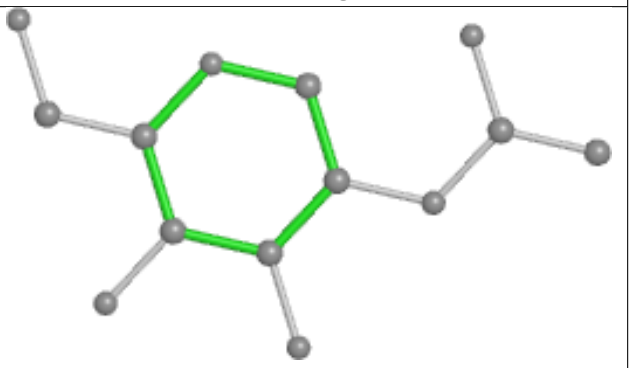
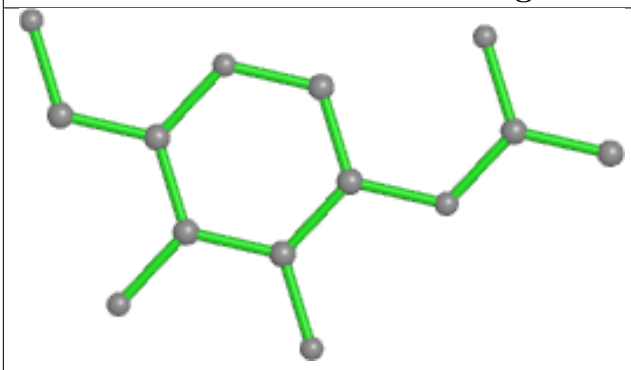
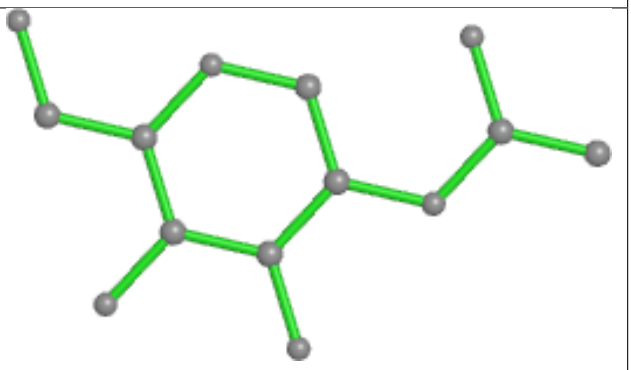
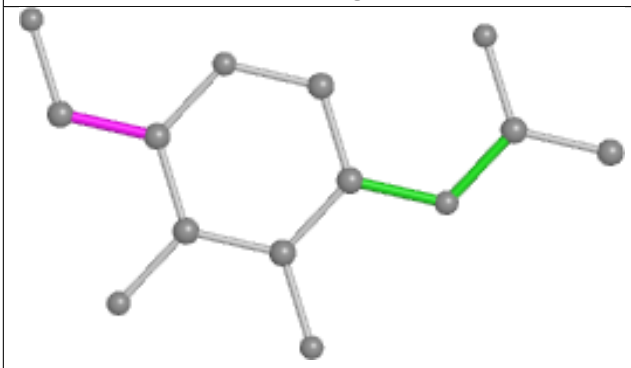
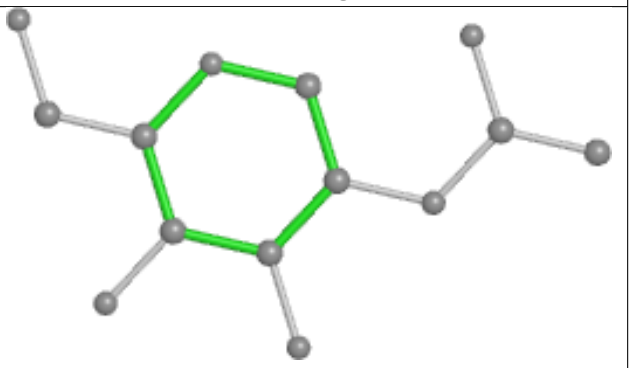
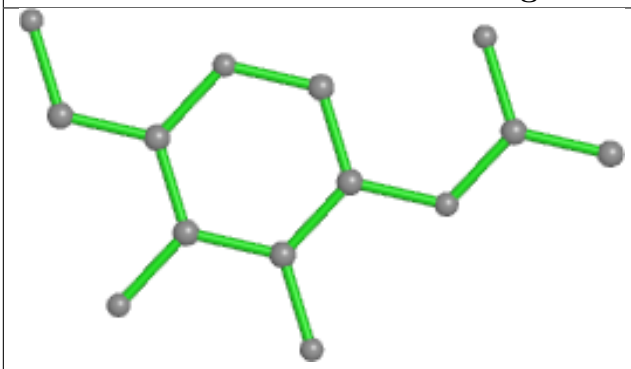
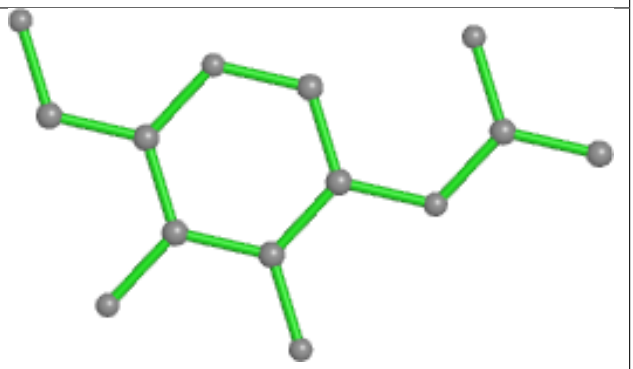
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG J 1401	
 Bond lengths	 Bond angles
 Torsions	 Rings

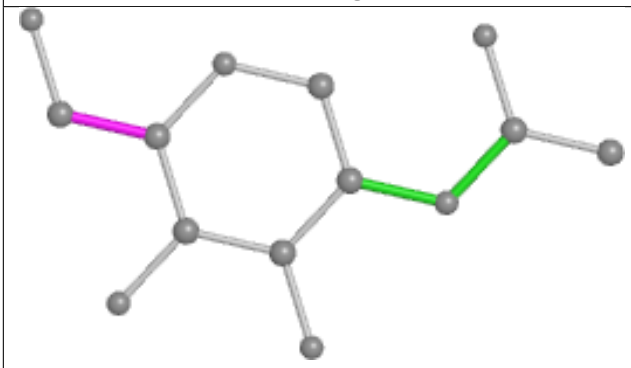
Ligand NAG C 702



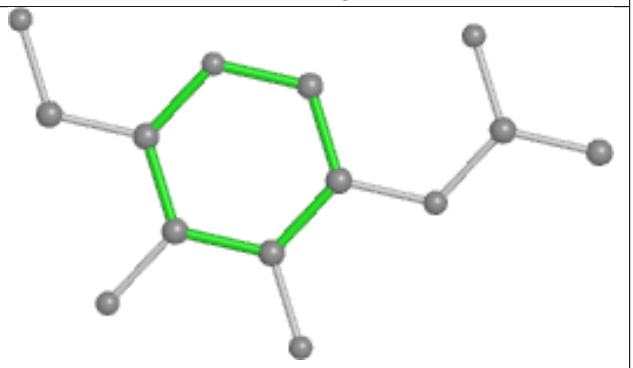
Bond lengths



Bond angles

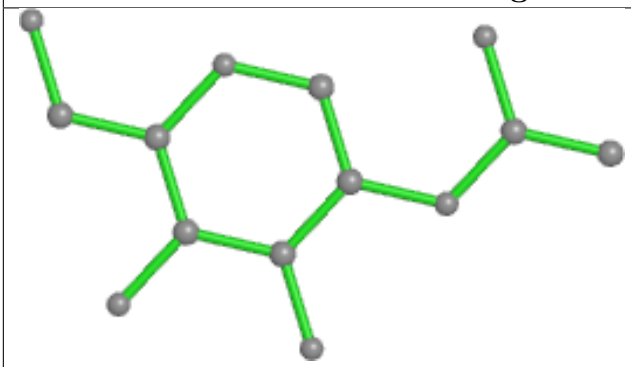


Torsions

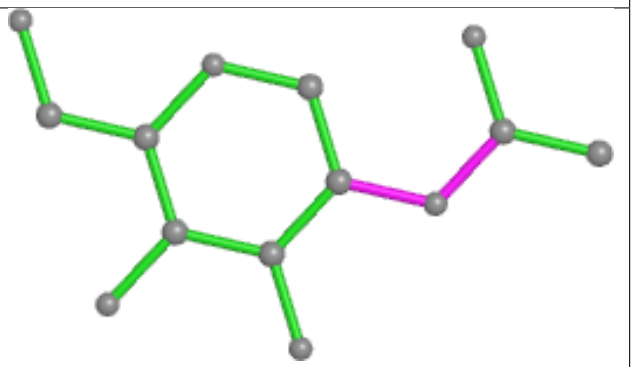


Rings

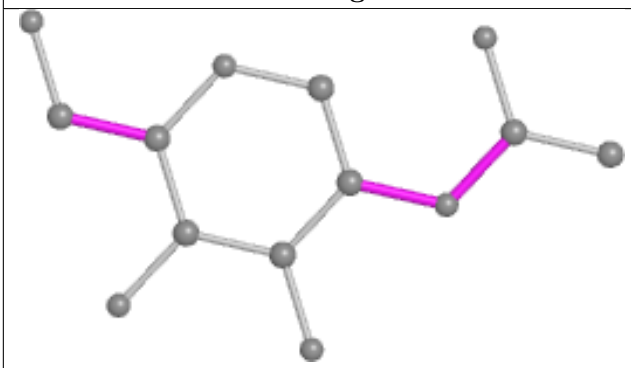
Ligand NAG H 1405



Bond lengths



Bond angles



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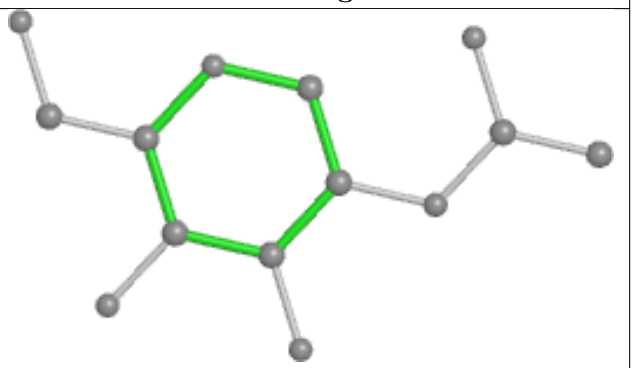
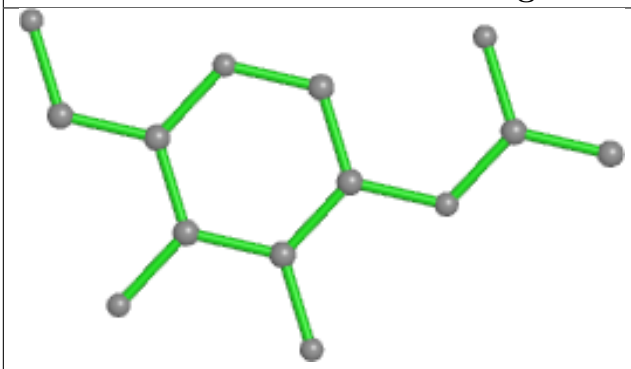
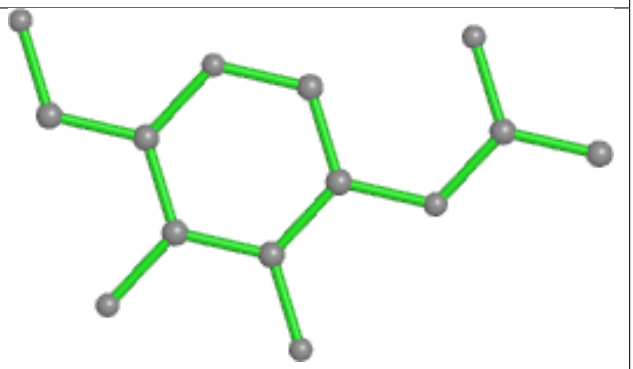


Rings

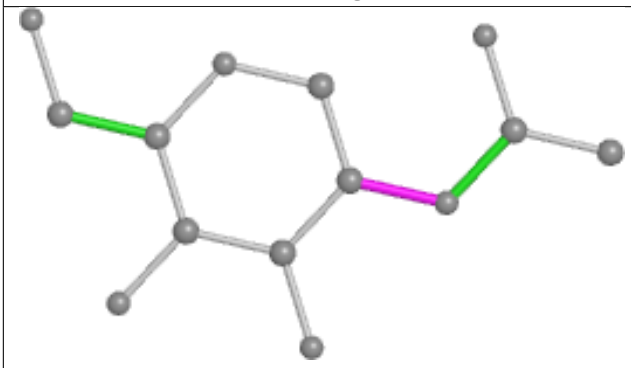
Ligand NAG I 1407



Bond lengths



Bond angles



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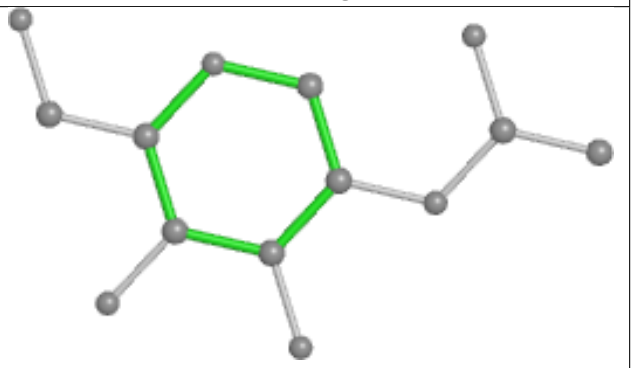
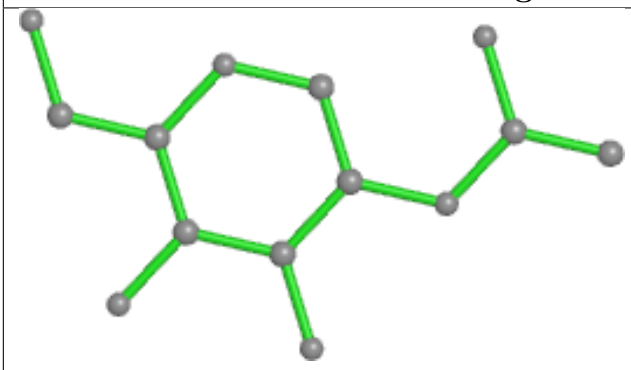
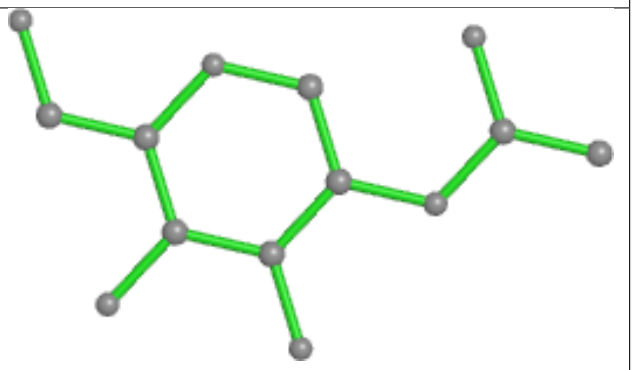


Rings

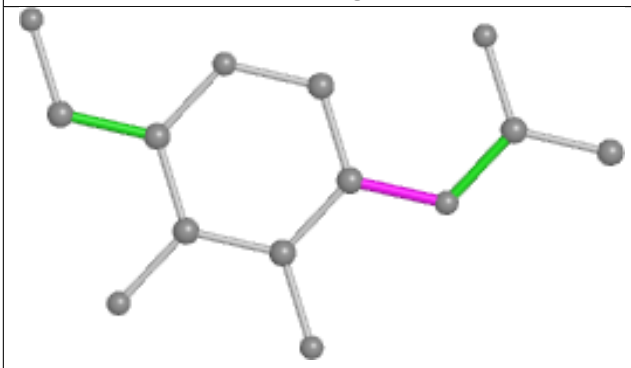
Ligand NAG J 1407



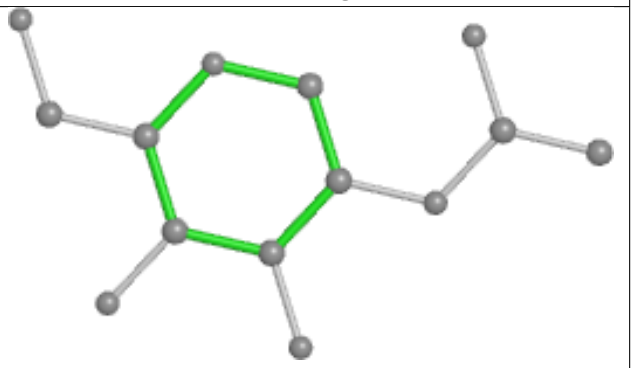
Bond lengths



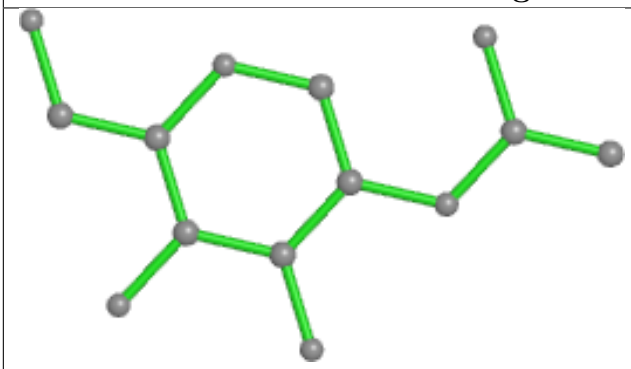
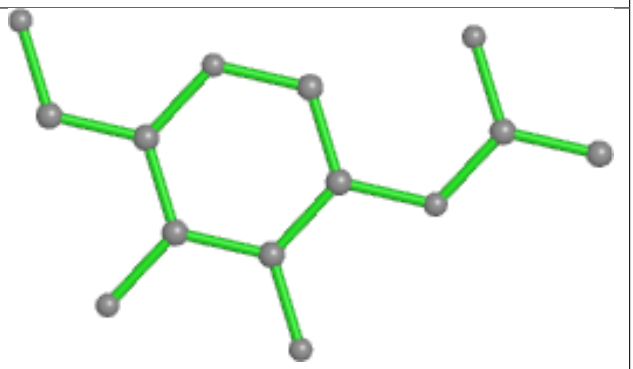
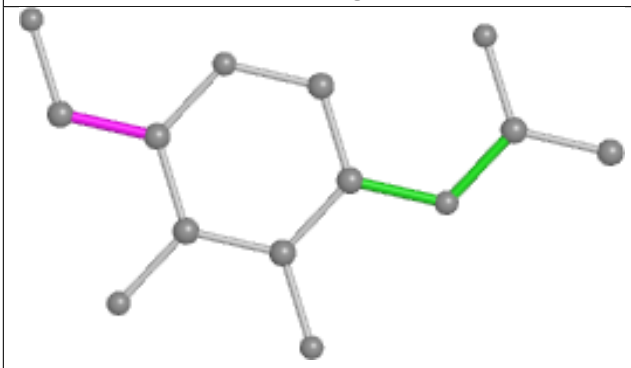
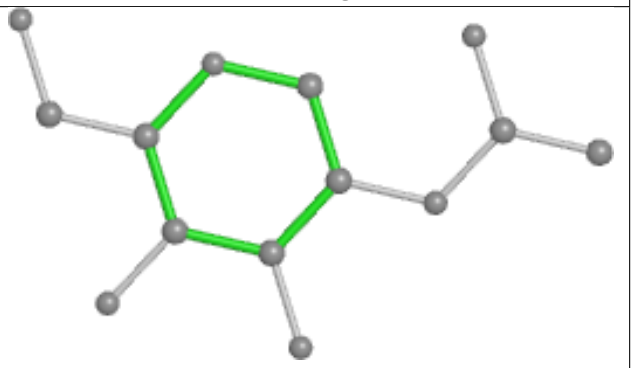
Bond angles

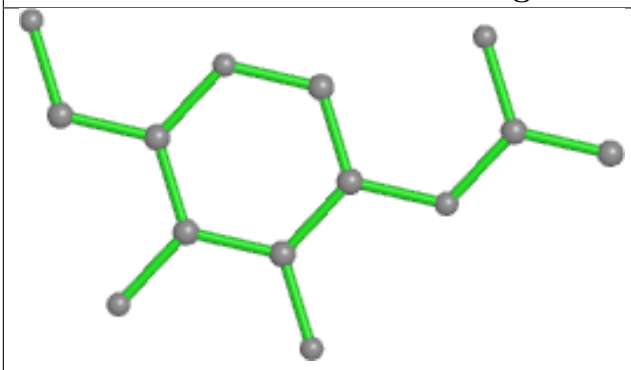
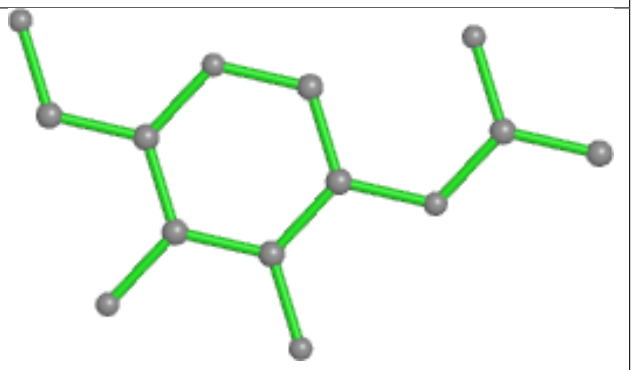
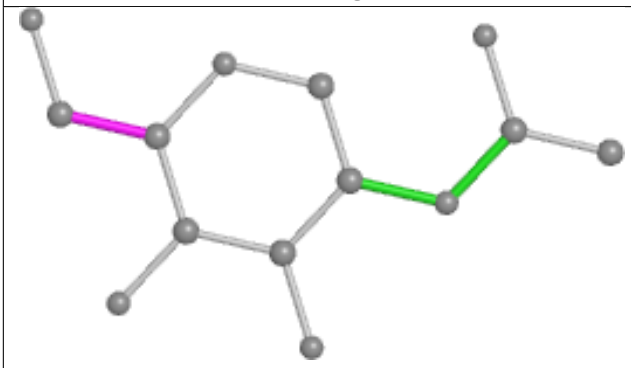
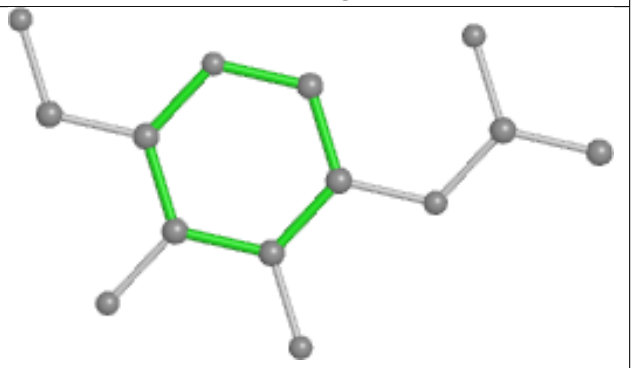


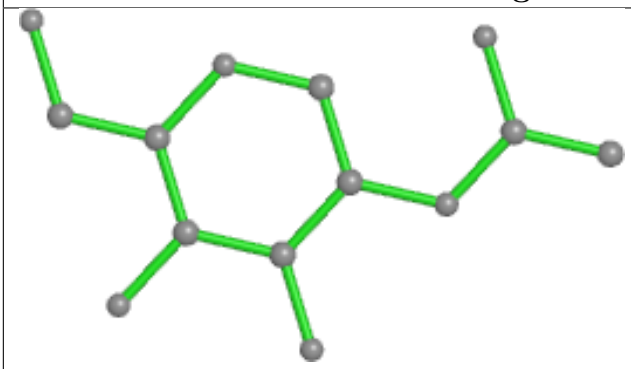
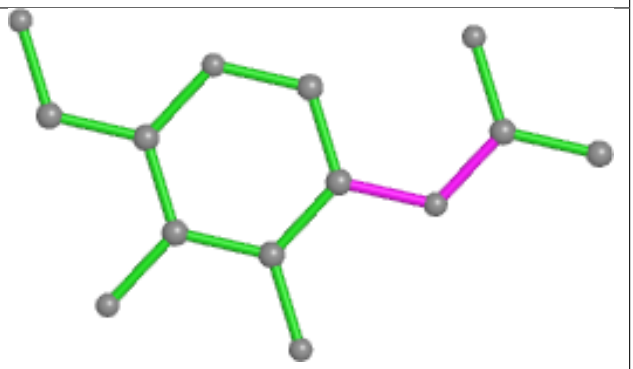
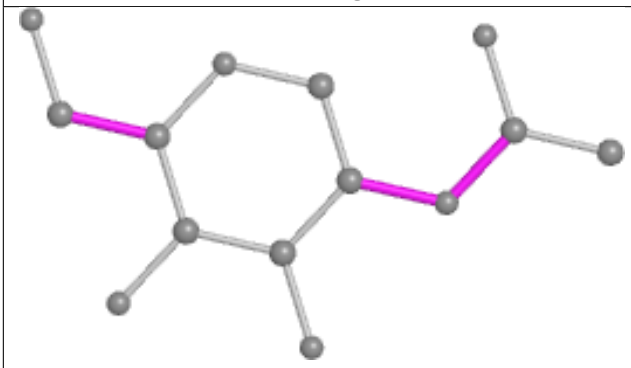
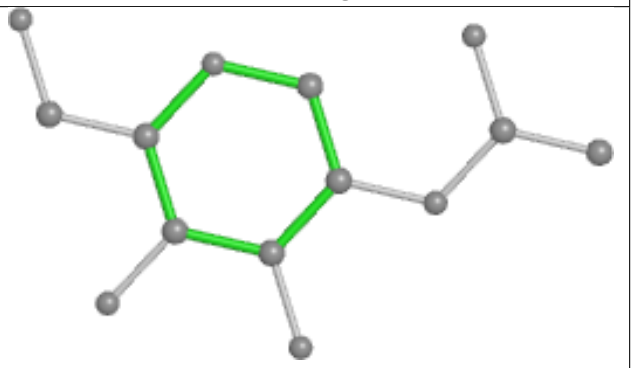
Torsions

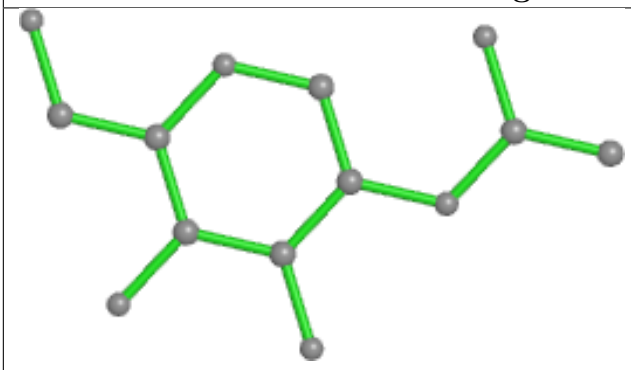
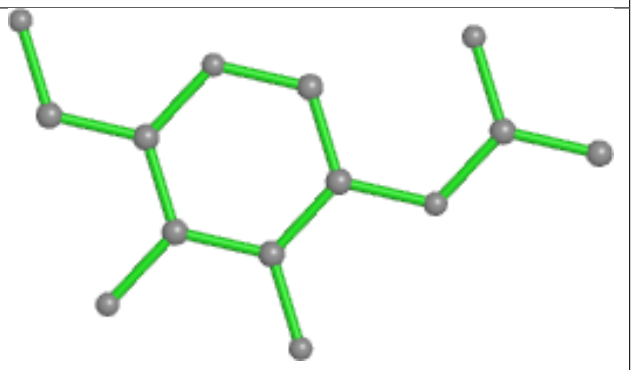
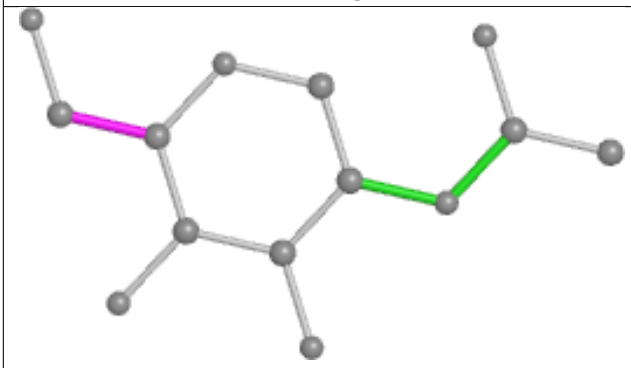
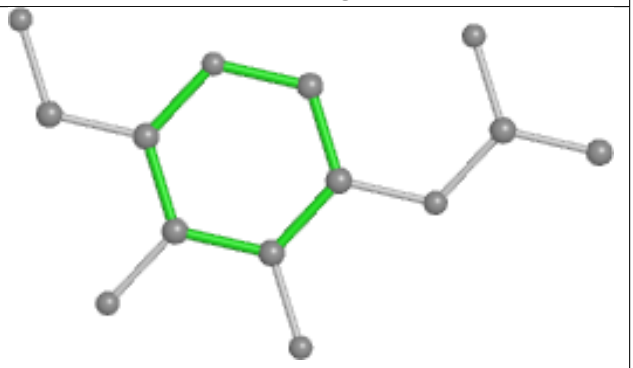


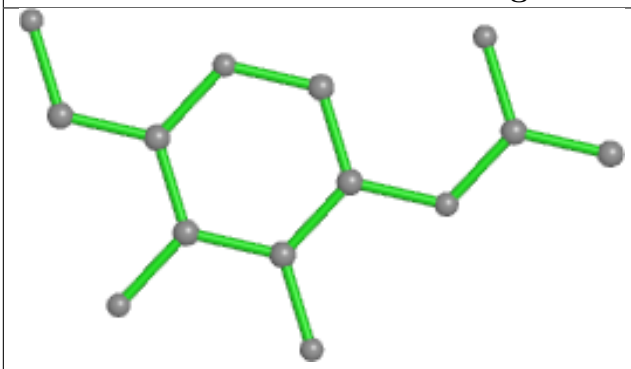
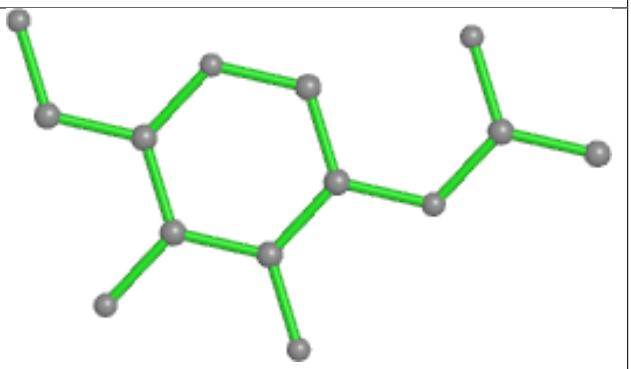
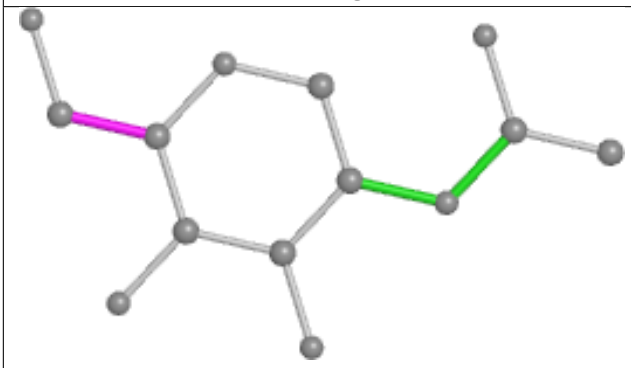
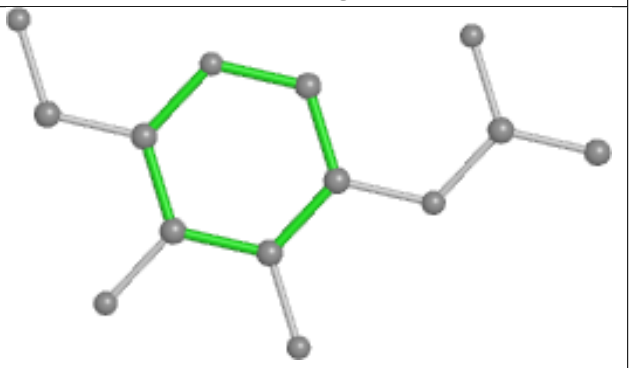
Rings

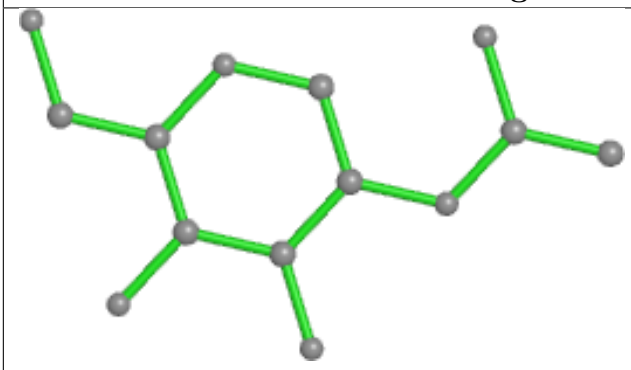
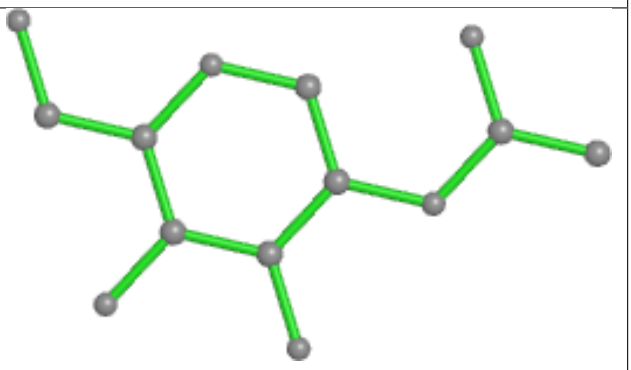
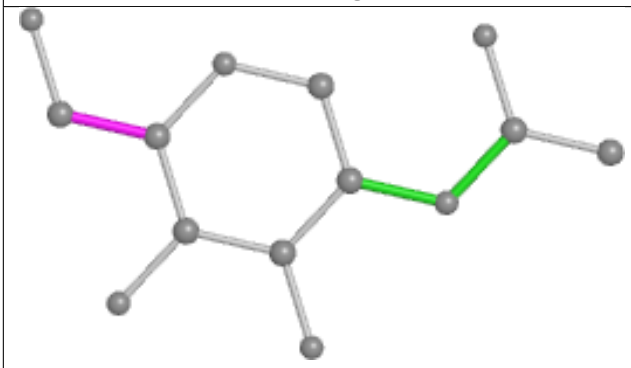
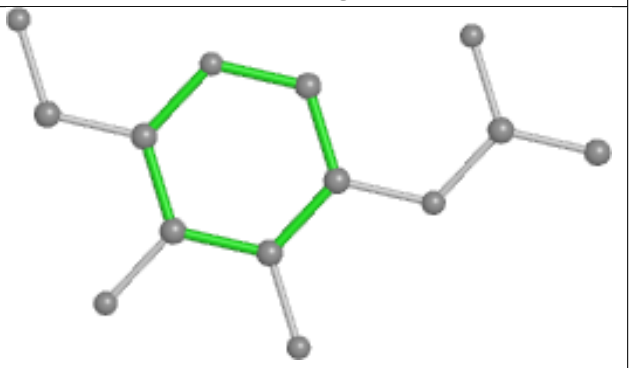
Ligand NAG E 1402	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand NAG F 1406	
	
Bond lengths	Bond angles
	
Torsions	Rings

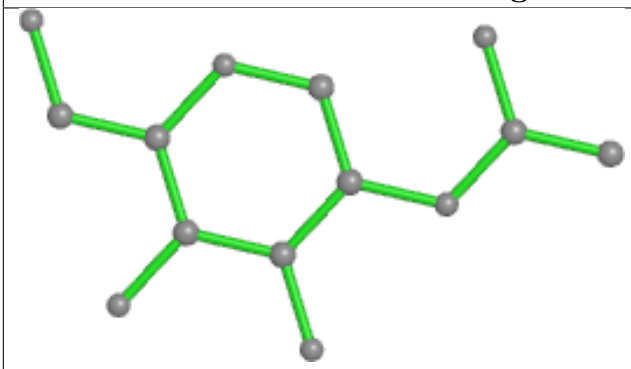
Ligand NAG E 1405	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand NAG F 1401	
	
Bond lengths	Bond angles
	
Torsions	Rings

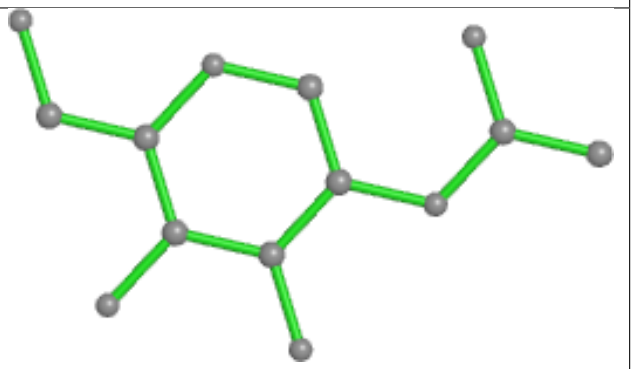
Ligand NAG H 1402	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand NAG H 1409	
 Bond lengths	 Bond angles
 Torsions	 Rings

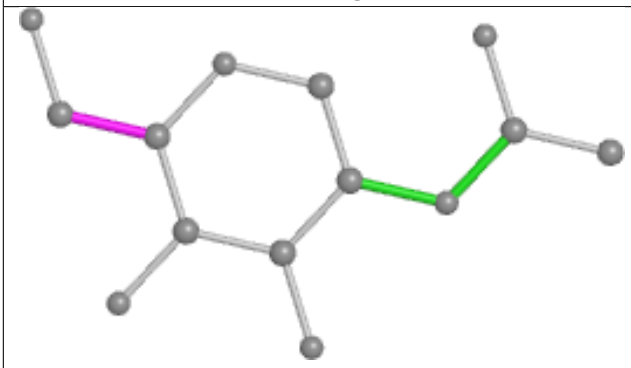
Ligand NAG G 1401



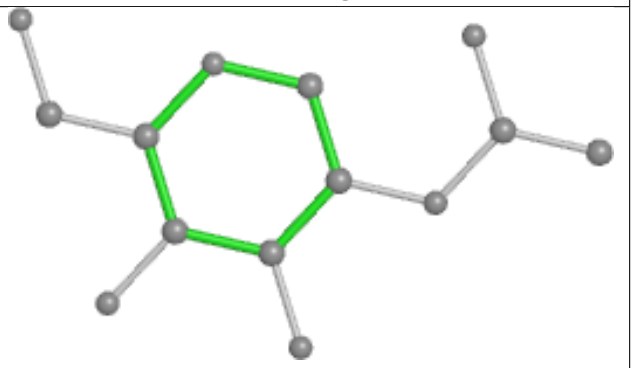
Bond lengths



Bond angles

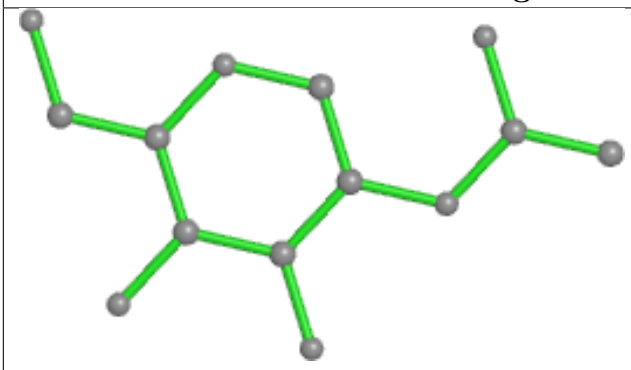


Torsions

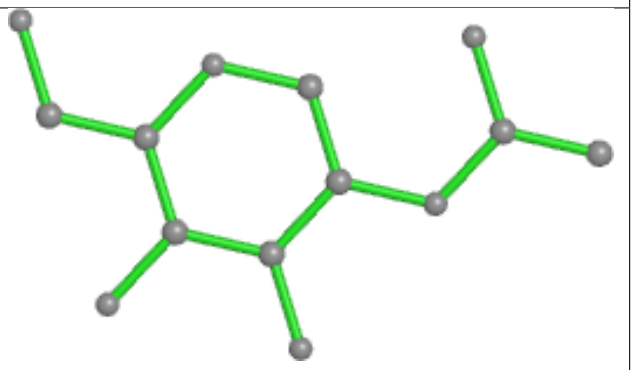


Rings

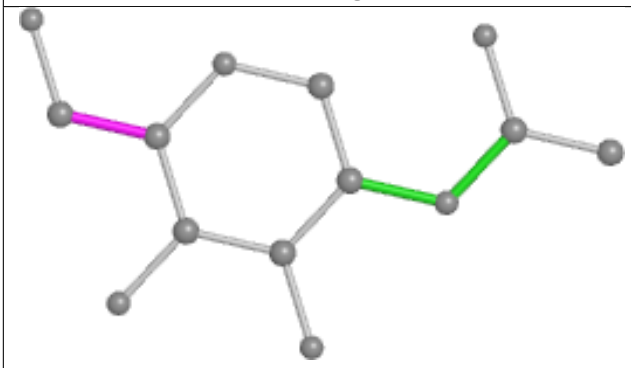
Ligand NAG F 1408



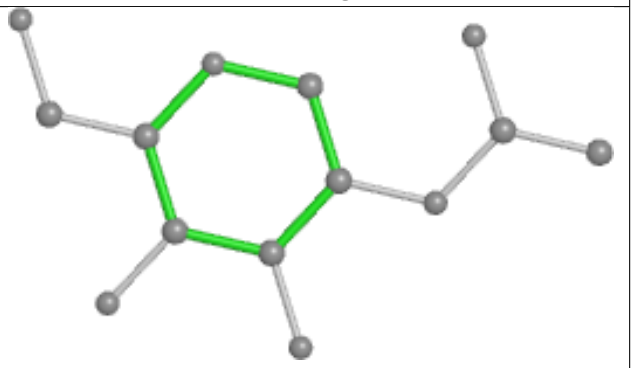
Bond lengths



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.

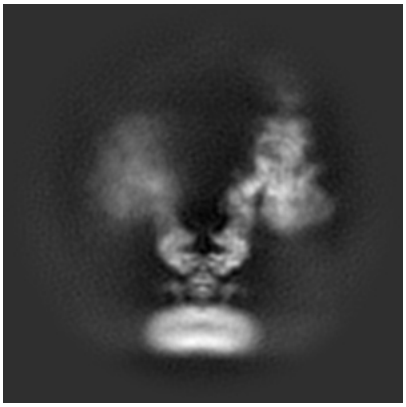
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30888. These allow visual inspection of the internal detail of the map and identification of artifacts.

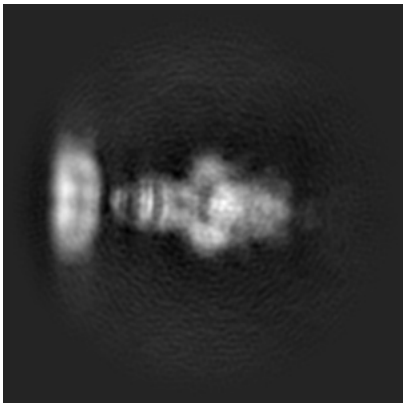
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

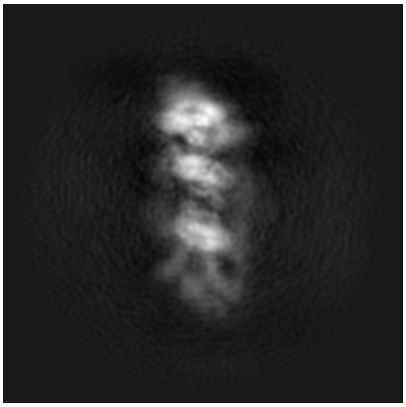
6.1.1 Primary map



X



Y

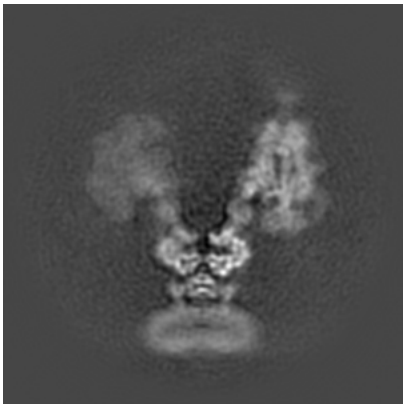


Z

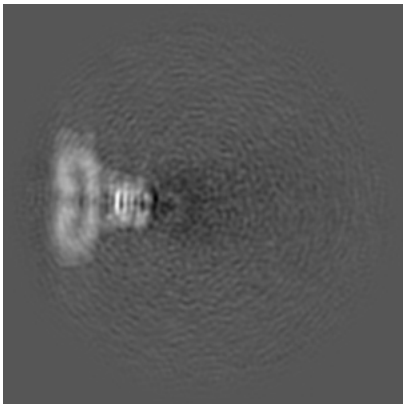
The images above show the map projected in three orthogonal directions.

6.2 Central slices

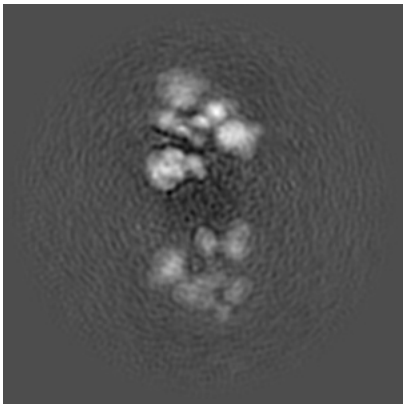
6.2.1 Primary map



X Index: 240



Y Index: 240

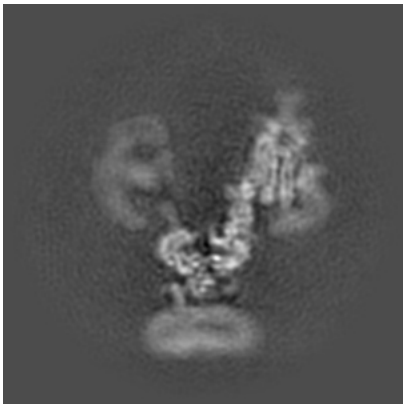


Z Index: 240

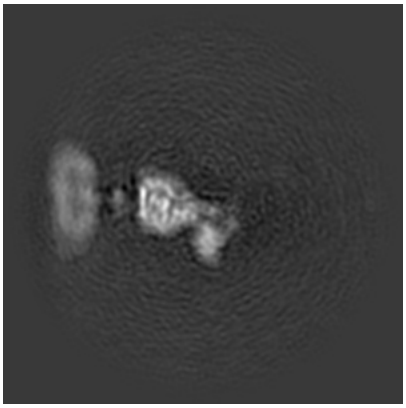
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

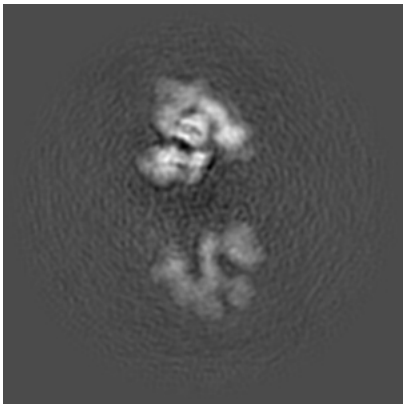
6.3.1 Primary map



X Index: 231



Y Index: 279



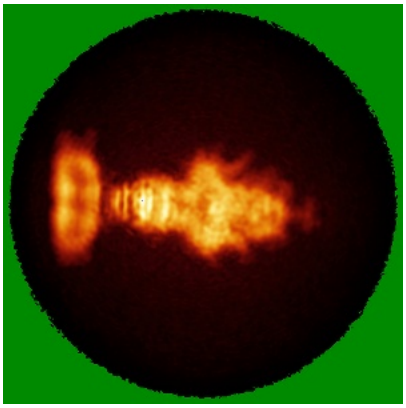
Z Index: 253

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

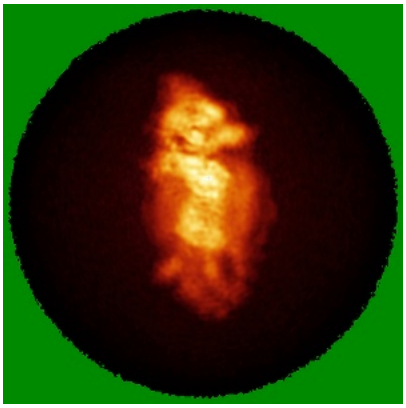
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map

X



Y

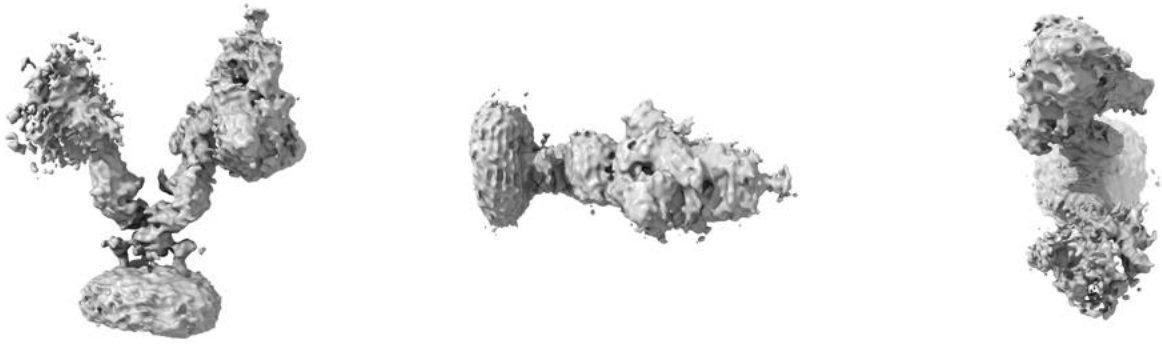


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

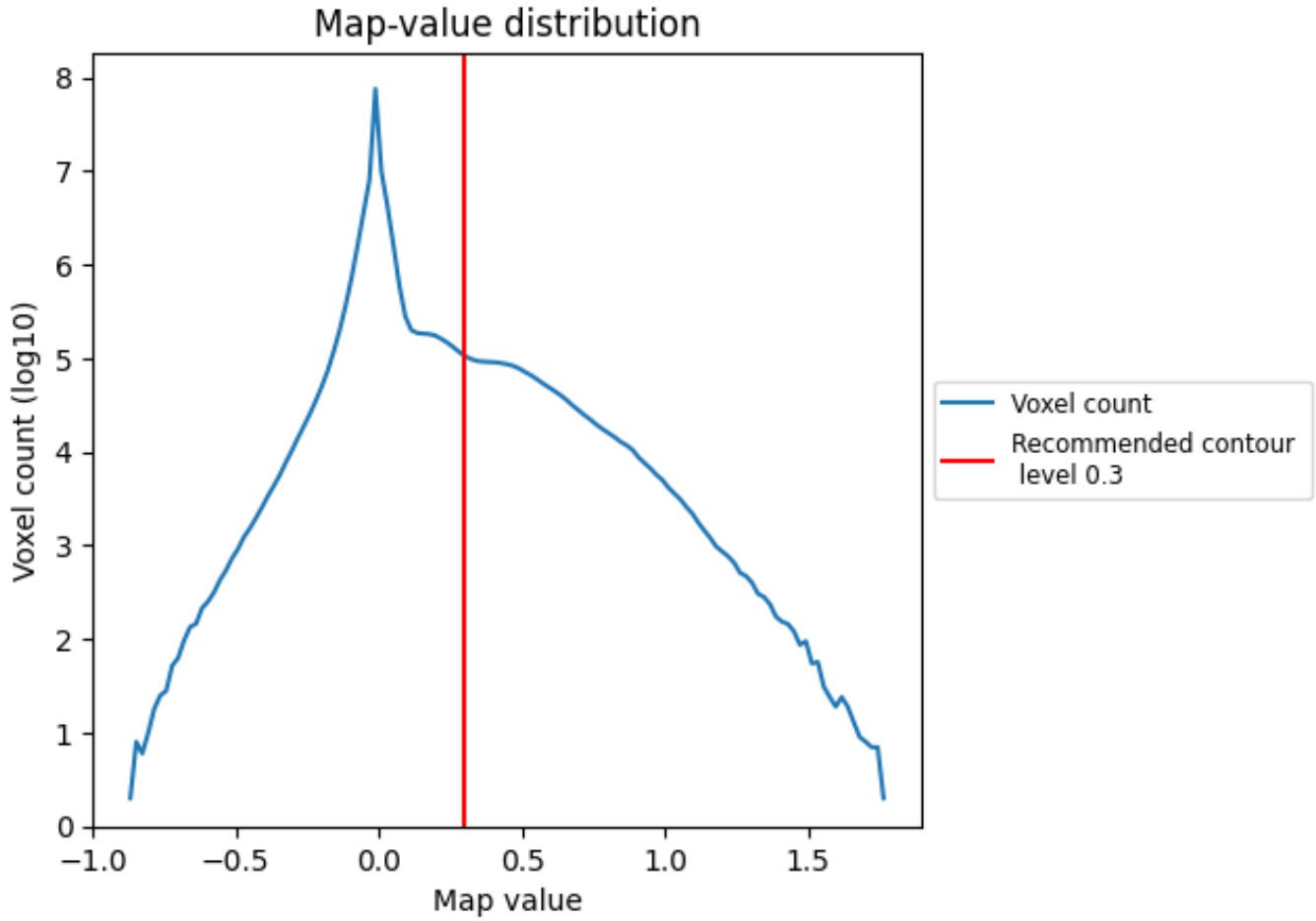
6.6 Mask visualisation (i)

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

7 Map analysis

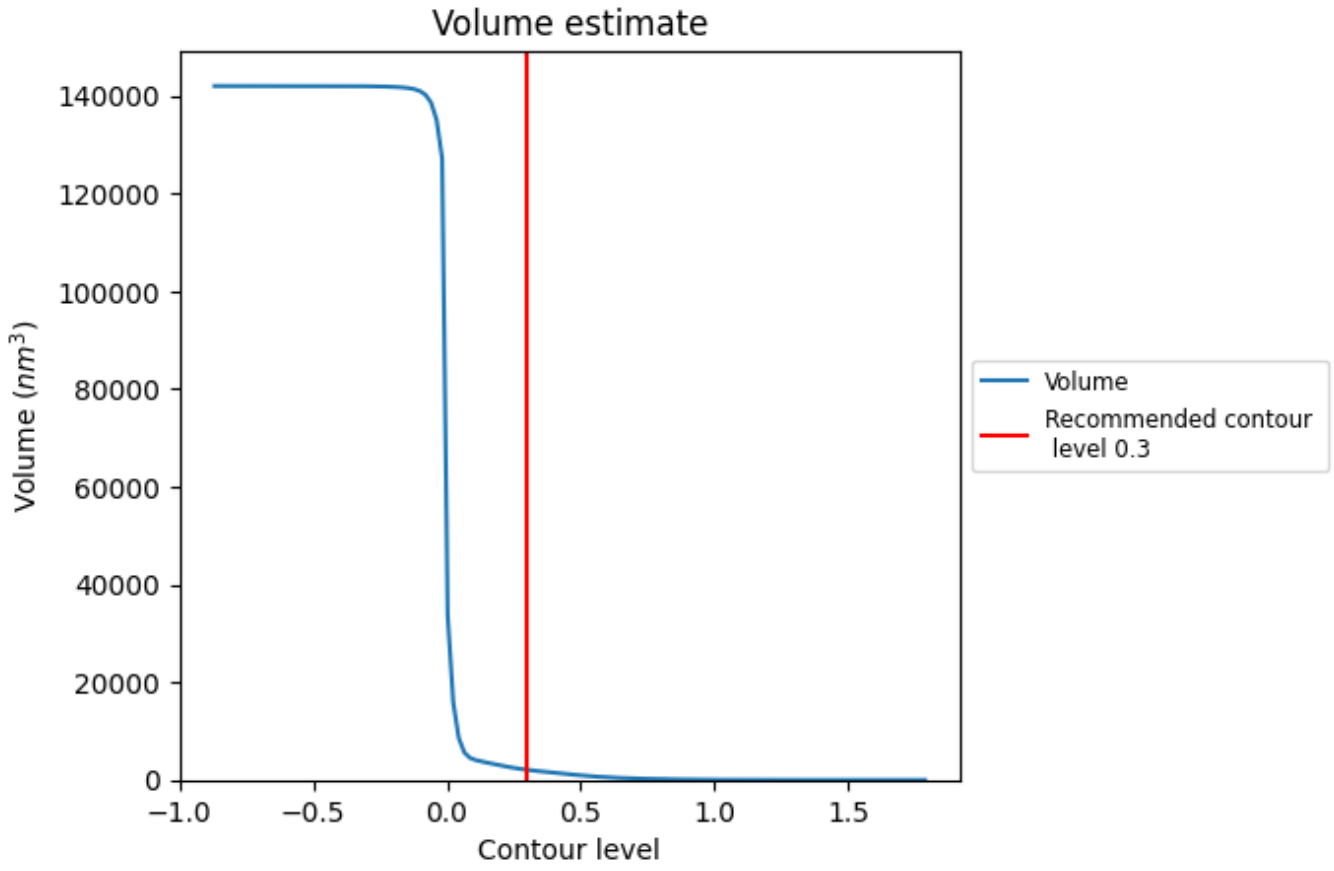
This section contains the results of statistical analysis of the map.

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.

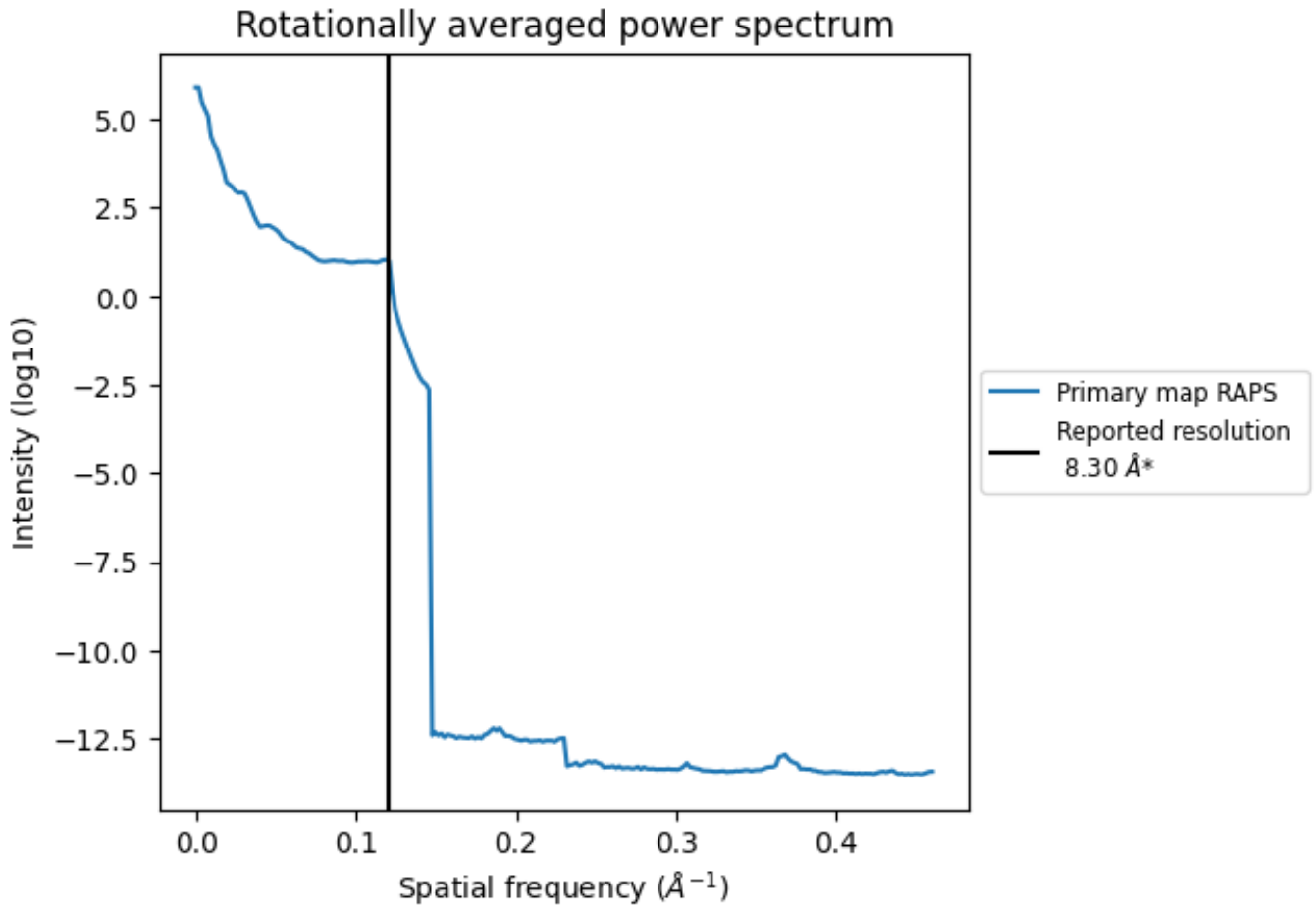
7.2 Volume estimate



The volume at the recommended contour level is 2071 nm^3; this corresponds to an approximate mass of 1871 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 0.120 $Å^{-1}$

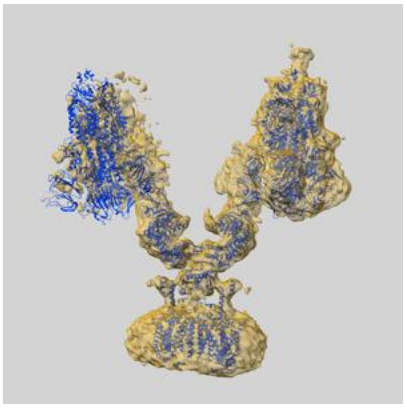
8 Fourier-Shell correlation

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

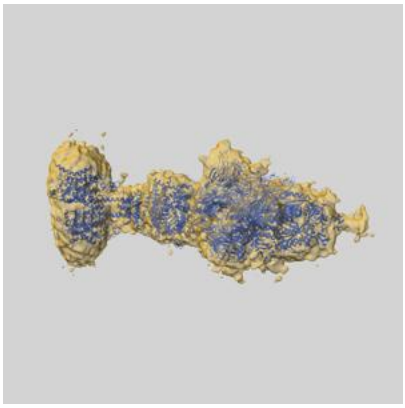
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30888 and PDB model 7DWX. Per-residue inclusion information can be found in section 3 on page 18.

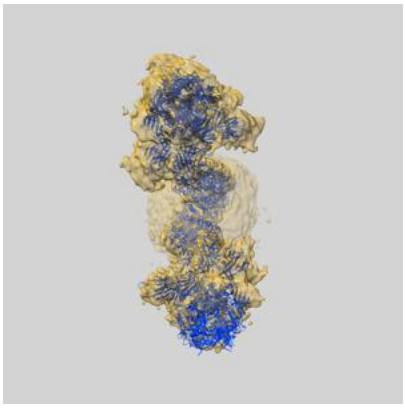
9.1 Map-model overlay



X



Y



Z

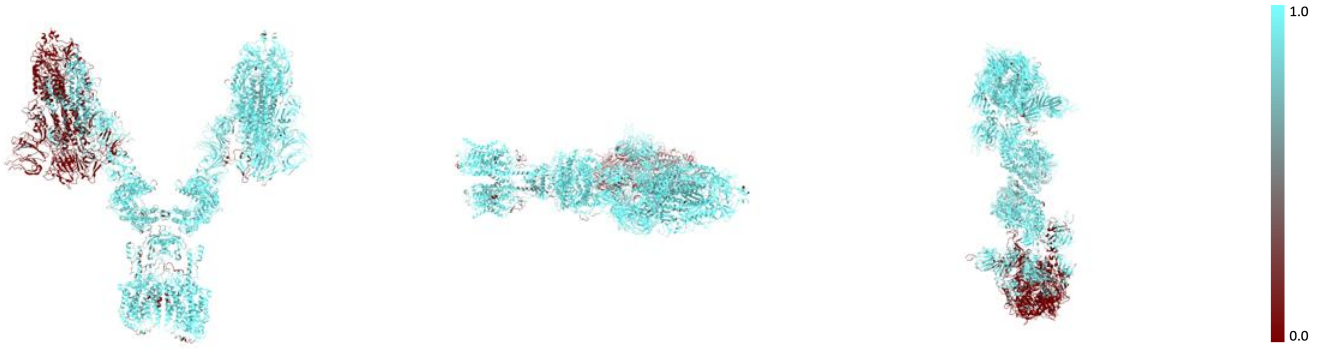
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)

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.

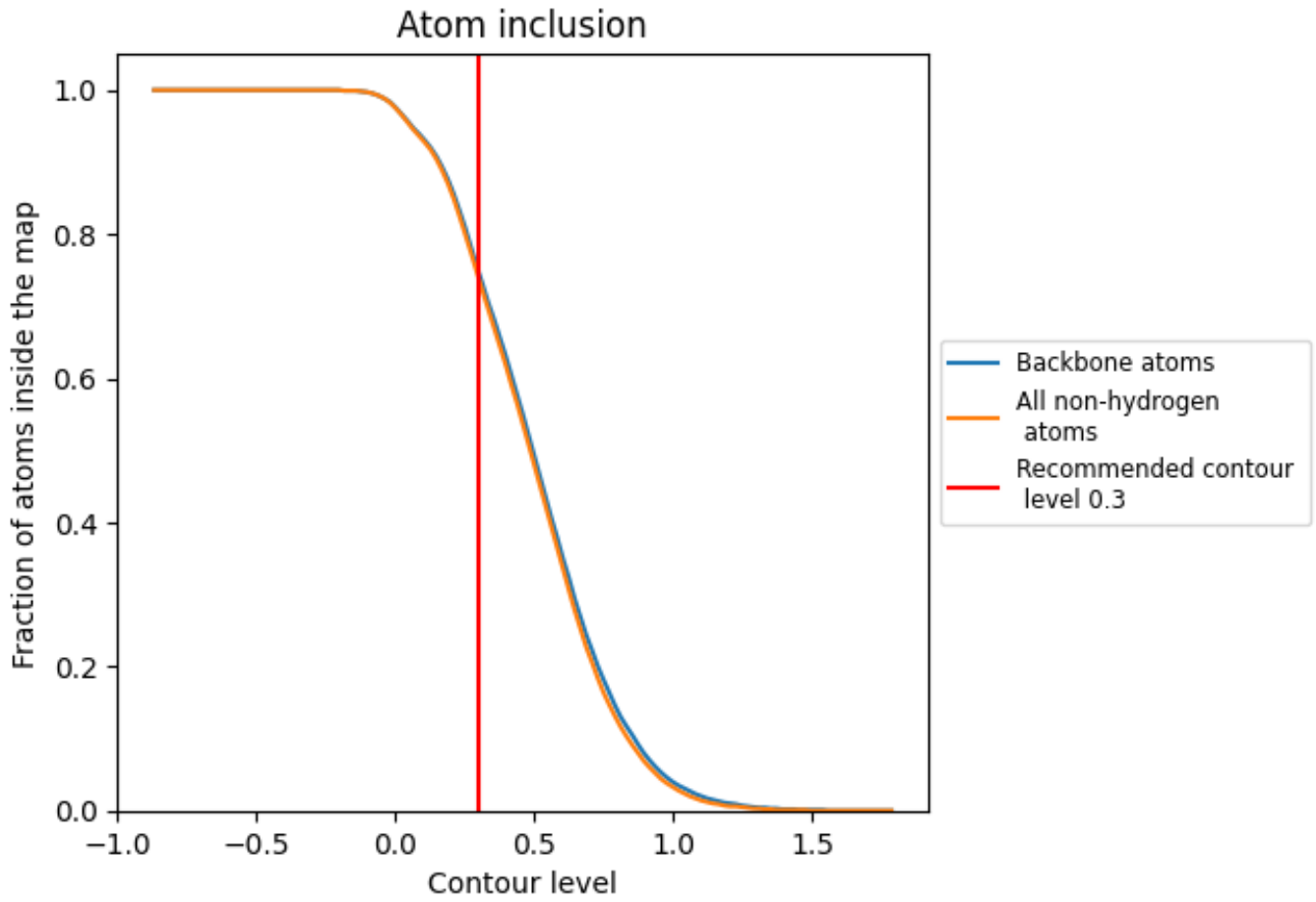
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.3).

9.4 Atom inclusion (i)



At the recommended contour level, 75% of all backbone atoms, 74% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7380	0.0590
0	0.0000	-0.1670
1	0.0000	0.2380
2	0.0000	-0.0390
3	0.0000	0.0190
4	0.0360	0.2120
5	0.6070	0.0500
6	0.0000	0.0020
7	0.0000	-0.2070
8	0.1070	-0.0560
9	0.0360	-0.0570
A	0.9270	0.0490
AA	0.0000	-0.0820
B	0.9440	0.1070
BA	0.0000	-0.0660
C	0.9090	0.0470
CA	0.0000	0.1500
D	0.9070	0.0910
DA	0.0000	-0.0150
E	0.9640	0.0800
EA	0.0000	-0.0910
F	0.9470	0.0870
FA	0.0000	-0.0470
G	0.9250	0.0690
H	0.5640	0.0340
I	0.4230	0.0240
J	0.1580	0.0150
K	0.5360	0.0770
L	0.7140	0.0810
M	0.8210	0.0720
N	1.0000	0.0400
O	0.2140	-0.0370
P	0.8210	0.0760
Q	0.8210	0.0990
R	0.5360	0.0400

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Chain	Atom inclusion	Q-score
S	0.2860	0.1170
T	0.7860	0.0600
U	0.7860	0.0600
V	0.2500	0.0480
W	0.9290	0.0700
X	1.0000	0.2210
Y	1.0000	0.2510
Z	1.0000	0.1410
a	0.8930	0.0060
b	0.8210	0.0300
c	0.5710	0.0880
d	0.4640	-0.0740
e	0.5710	0.1110
f	0.3930	0.0910
g	0.8210	-0.0920
h	0.9290	0.0370
i	0.8210	0.1070
j	0.5710	0.0380
k	0.4290	-0.0010
l	0.7860	0.0880
m	0.9640	0.1240
n	1.0000	0.1630
o	0.5000	-0.0350
p	1.0000	0.1070
q	1.0000	0.1420
r	0.7500	0.0740
s	0.6790	0.0080
t	0.7500	0.0860
u	0.2500	0.0420
v	0.6430	0.0270
w	0.1430	-0.0040
x	0.0000	0.1240
y	0.0000	-0.1520
z	0.0000	-0.1580