Full wwPDB EM Validation Report

Sep 18, 2025 – 02:34 PM EDT

PDB ID	:	7SWX / pdb_00007swx
EMDB ID	:	EMD-25488
Title	:	SARS-CoV-2 Spike in complex with neutralizing Fab SARS2-57 (three down conformation)
Authors	:	Adams, L.J.; Fremont, D.H.; Center for Structural Genomics of Infectious Diseases (CSGID); Center for Structural Biology of Infectious Diseases (CSBID)
Deposited on	:	2021-11-21
Resolution	:	3.13 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 (i) 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 (i)) were used in the production of this report:

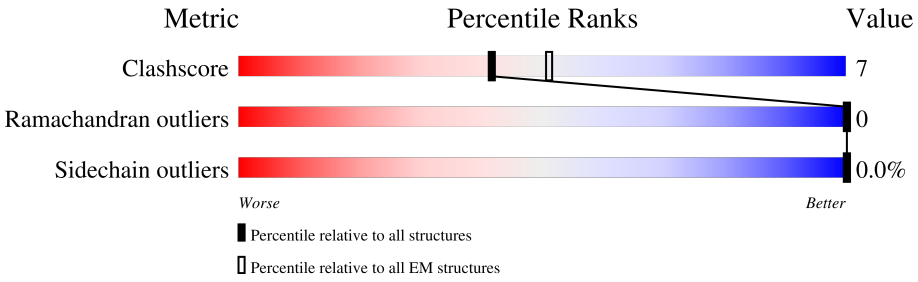
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.13 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
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	1133	80% 17%
1	B	1133	81% 16%
1	C	1133	83% 14%
2	H	117	32% 71% 29%
3	L	112	47% 75% 25%
4	D	2	50% 100%
4	E	2	50% 100%
4	F	2	100% 50% 50%

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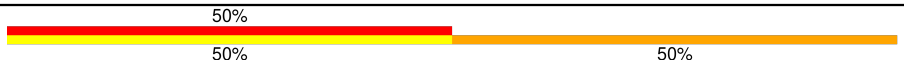
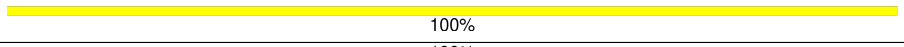
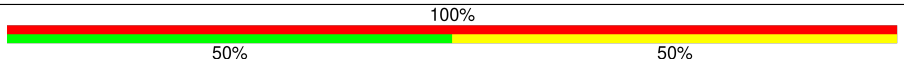
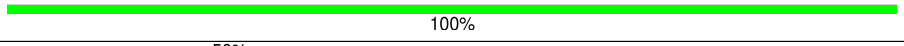
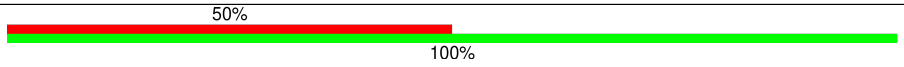
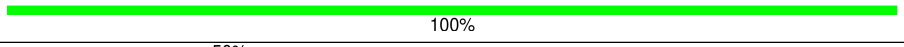
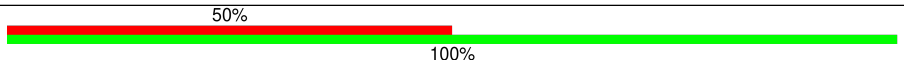
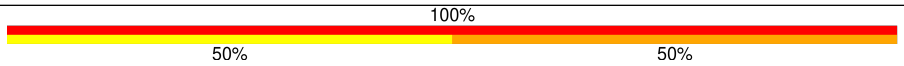
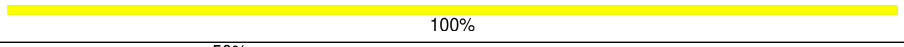
Mol	Chain	Length	Quality of chain
4	G	2	
4	I	2	
4	J	2	
4	K	2	
4	M	2	
4	N	2	
4	O	2	
4	P	2	
4	Q	2	
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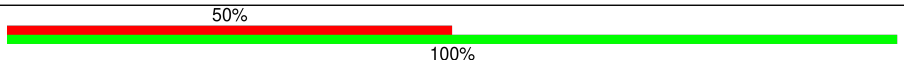
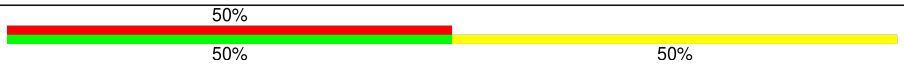
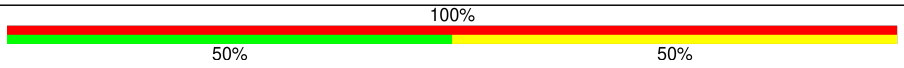
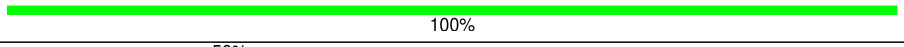
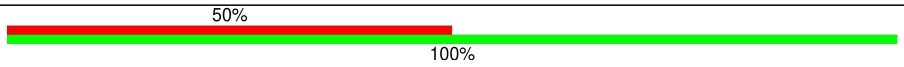
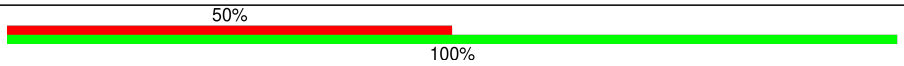
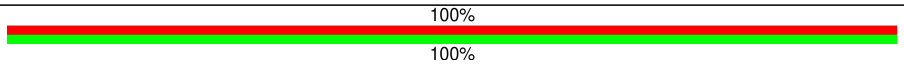
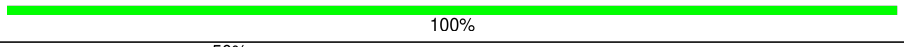
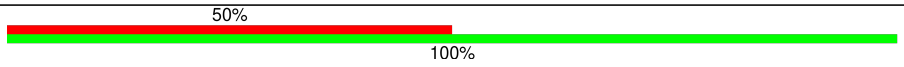
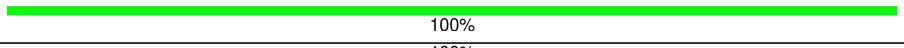
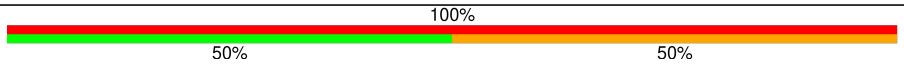
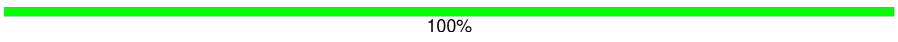
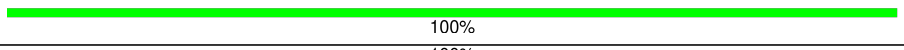
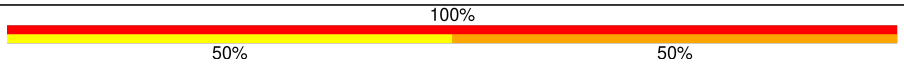
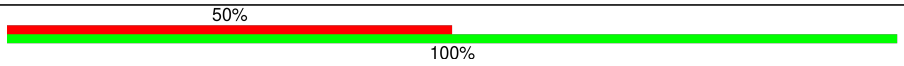
4	S	2	
4	T	2	
4	U	2	
4	V	2	
4	W	2	
4	X	2	
4	Y	2	
4	Z	2	
4	a	2	
4	b	2	
4	c	2	
4	d	2	
4	e	2	
4	f	2	
4	g	2	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 28669 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1095	Total	C	N	O	S	0	0
			8557	5457	1431	1630	39		
1	B	1099	Total	C	N	O	S	0	0
			8595	5483	1436	1636	40		
1	C	1099	Total	C	N	O	S	0	0
			8595	5483	1436	1636	40		

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	817	PRO	PHE	engineered mutation	UNP P0DTC2
A	892	PRO	ALA	engineered mutation	UNP P0DTC2
A	899	PRO	ALA	engineered mutation	UNP P0DTC2
A	942	PRO	ALA	engineered mutation	UNP P0DTC2
A	986	PRO	LYS	engineered mutation	UNP P0DTC2
A	987	PRO	VAL	engineered mutation	UNP P0DTC2
B	817	PRO	PHE	engineered mutation	UNP P0DTC2
B	892	PRO	ALA	engineered mutation	UNP P0DTC2
B	899	PRO	ALA	engineered mutation	UNP P0DTC2
B	942	PRO	ALA	engineered mutation	UNP P0DTC2
B	986	PRO	LYS	engineered mutation	UNP P0DTC2
B	987	PRO	VAL	engineered mutation	UNP P0DTC2
C	817	PRO	PHE	engineered mutation	UNP P0DTC2
C	892	PRO	ALA	engineered mutation	UNP P0DTC2
C	899	PRO	ALA	engineered mutation	UNP P0DTC2
C	942	PRO	ALA	engineered mutation	UNP P0DTC2
C	986	PRO	LYS	engineered mutation	UNP P0DTC2
C	987	PRO	VAL	engineered mutation	UNP P0DTC2

- Molecule 2 is a protein called SARS2-57 Fv heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	H	117	Total	C	N	O	S	0	0
			916	583	151	180	2		

- Molecule 3 is a protein called SARS2-57 Fv light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	L	112	Total	C	N	O	S	0	0
			872	554	139	175	4		

- 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	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	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		
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		

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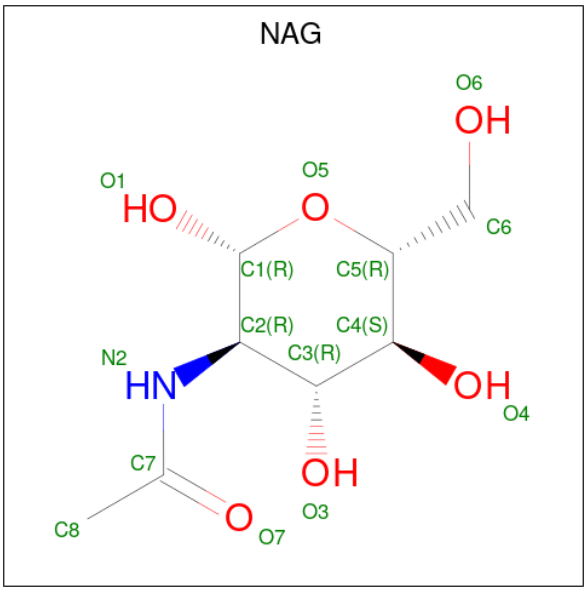
Mol	Chain	Residues	Atoms				AltConf	Trace
4	S	2	Total	C	N	O	0	0
			28	16	2	10		
4	T	2	Total	C	N	O	0	0
			28	16	2	10		
4	U	2	Total	C	N	O	0	0
			28	16	2	10		
4	V	2	Total	C	N	O	0	0
			28	16	2	10		
4	W	2	Total	C	N	O	0	0
			28	16	2	10		
4	X	2	Total	C	N	O	0	0
			28	16	2	10		
4	Y	2	Total	C	N	O	0	0
			28	16	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		

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



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

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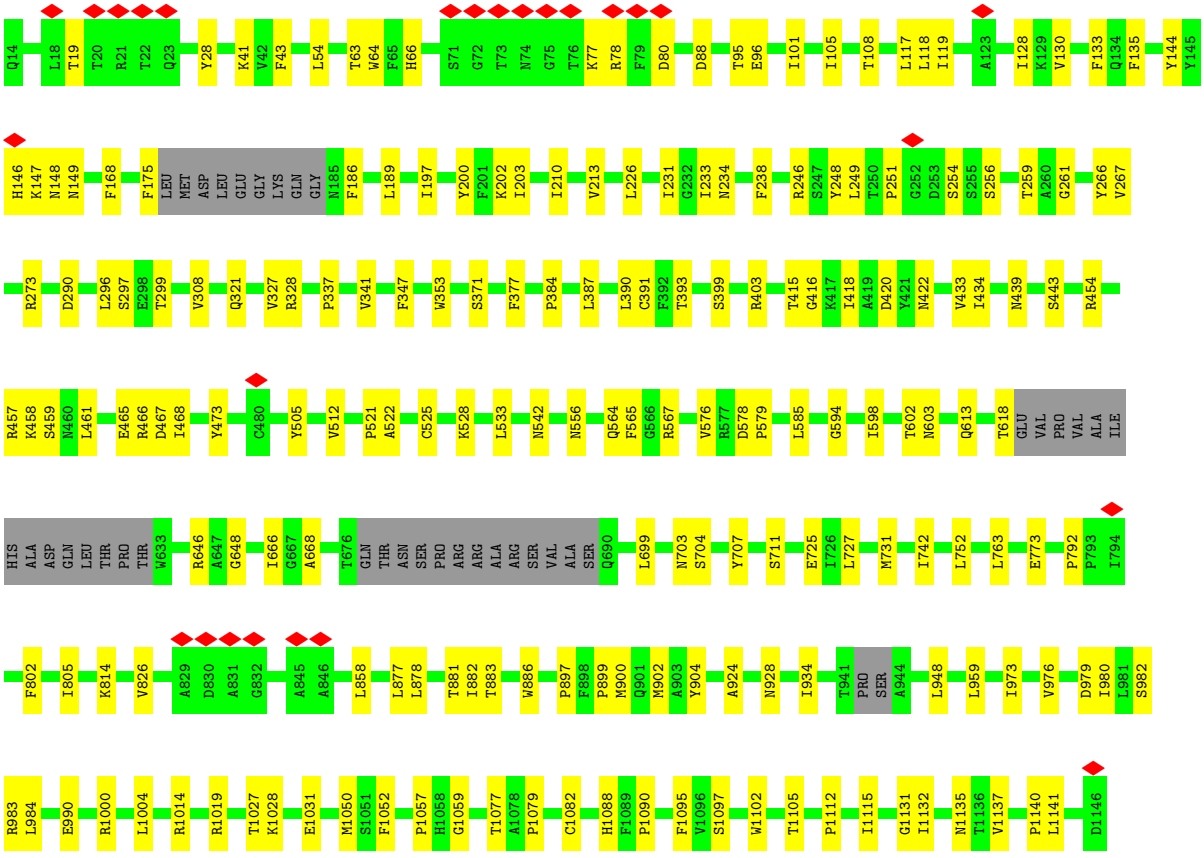
Mol	Chain	Residues	Atoms				AltConf
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	

3 Residue-property plots (i)

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

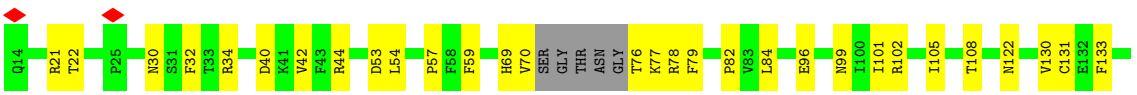
• Molecule 1: Spike glycoprotein

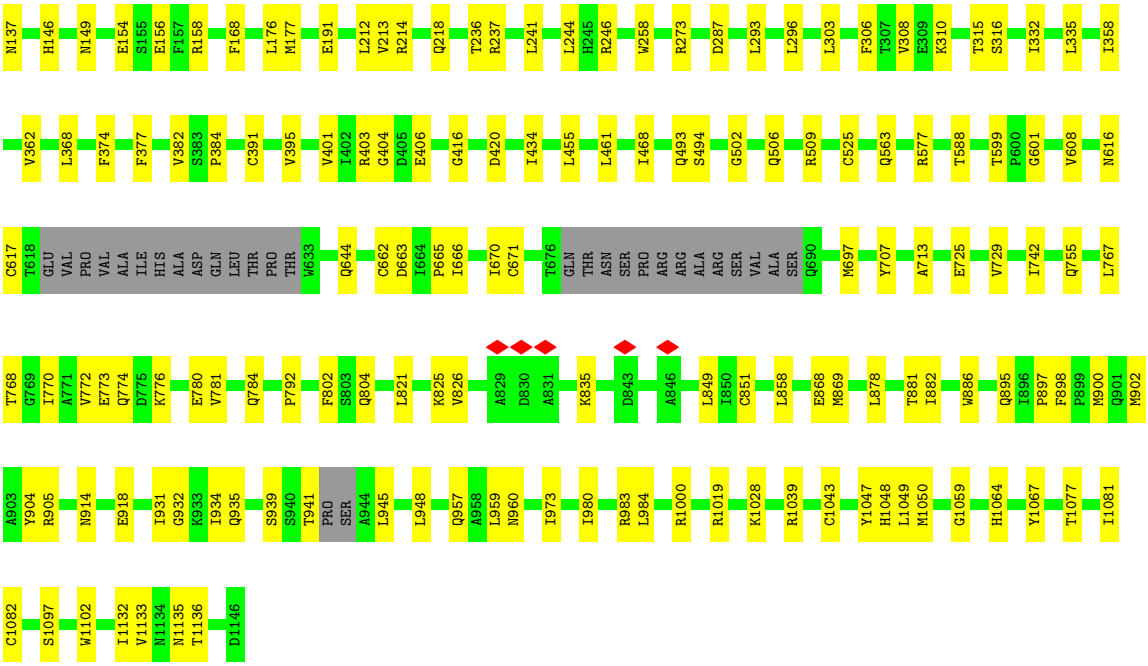
Chain A:



• Molecule 1: Spike glycoprotein

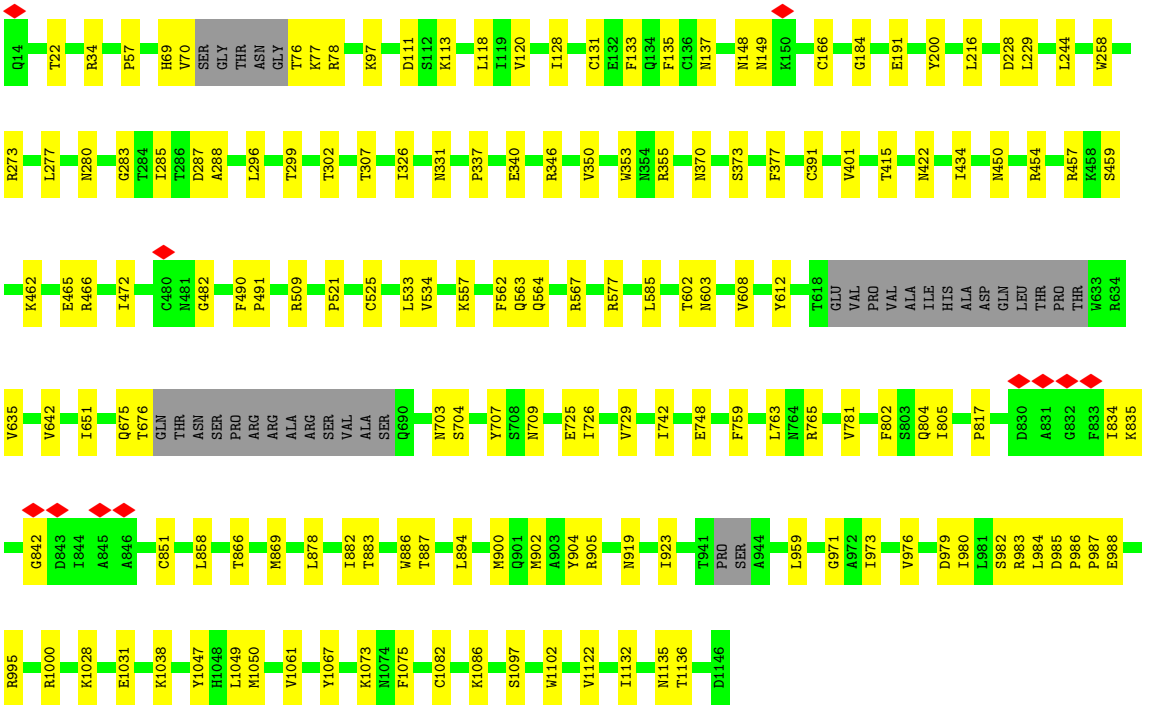
Chain B:





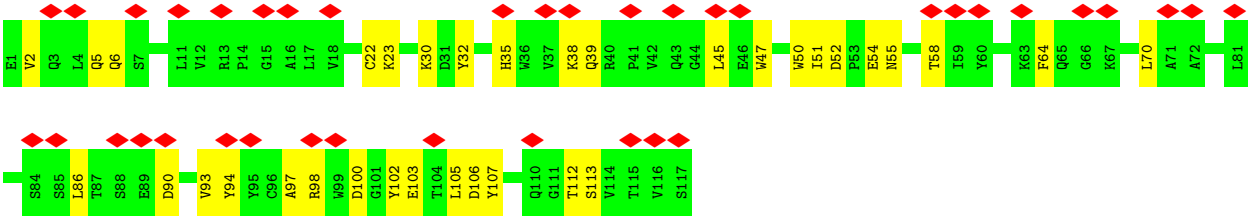
• Molecule 1: Spike glycoprotein

Chain C:

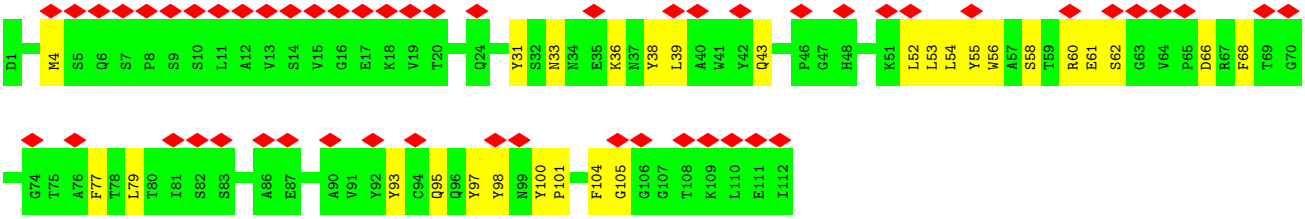


• Molecule 2: SARS2-57 Fv heavy chain

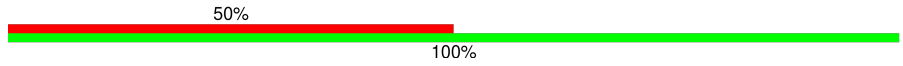
Chain H:



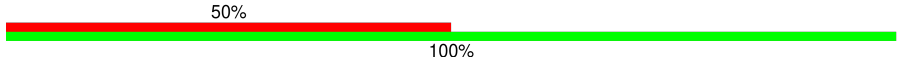
• Molecule 3: SARS2-57 Fv light chain



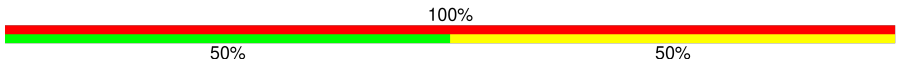
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



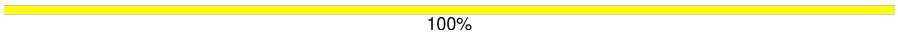
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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

• 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

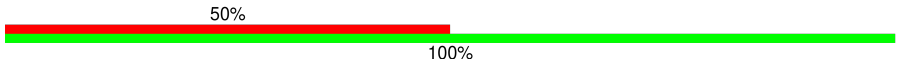
Chain J:

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

Chain K:

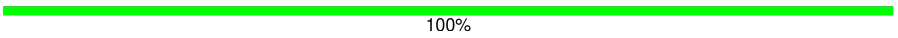
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:



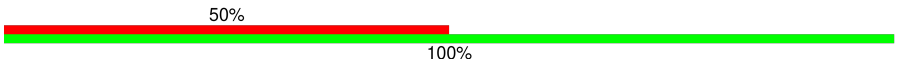
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:



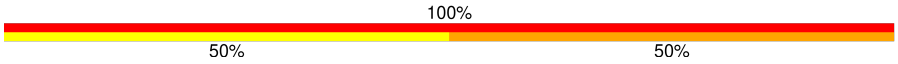
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:



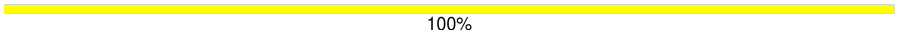
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P:



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

Chain Q:

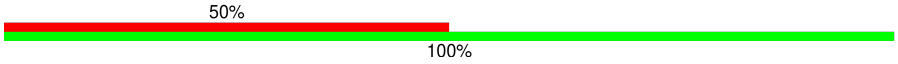


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

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

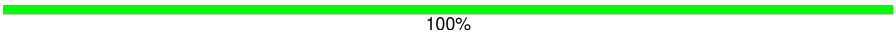
Chain T:

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

Chain U:

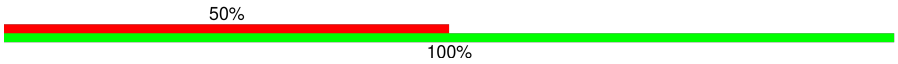
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:



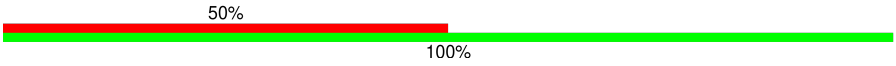
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:



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

Chain X:

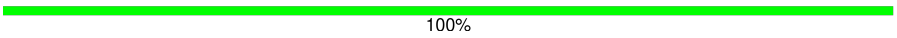


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y:

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

Chain Z:

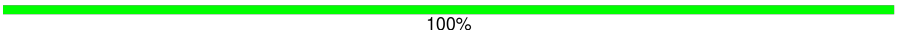


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain a:

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

Chain b:

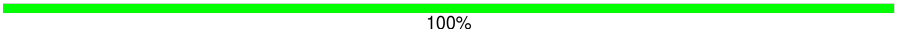


• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain c:

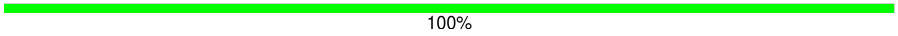
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain d:



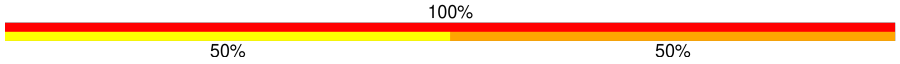
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

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:

NAG1
NAG2

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	241481	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 ($e^-/Å^2$)	66.9	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	2.216	Depositor
Minimum map value	-0.022	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	330.0, 330.0, 330.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1, 1.1, 1.1	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

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	0.16	0/8759	0.36	0/11926
1	B	0.16	0/8797	0.35	0/11975
1	C	0.15	0/8797	0.32	0/11975
2	H	0.15	0/940	0.42	0/1279
3	L	0.15	0/894	0.54	0/1213
All	All	0.16	0/28187	0.35	0/38368

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8557	0	8319	128	0
1	B	8595	0	8362	121	0
1	C	8595	0	8362	103	0
2	H	916	0	872	26	0
3	L	872	0	837	21	0
4	D	28	0	25	0	0
4	E	28	0	25	0	0
4	F	28	0	25	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	G	28	0	25	1	0
4	I	28	0	25	1	0
4	J	28	0	25	1	0
4	K	28	0	25	0	0
4	M	28	0	25	0	0
4	N	28	0	25	0	0
4	O	28	0	25	0	0
4	P	28	0	25	1	0
4	Q	28	0	25	1	0
4	R	28	0	25	1	0
4	S	28	0	25	0	0
4	T	28	0	25	0	0
4	U	28	0	25	0	0
4	V	28	0	25	0	0
4	W	28	0	25	0	0
4	X	28	0	25	0	0
4	Y	28	0	25	0	0
4	Z	28	0	25	0	0
4	a	28	0	25	0	0
4	b	28	0	25	0	0
4	c	28	0	25	2	0
4	d	28	0	25	0	0
4	e	28	0	25	0	0
4	f	28	0	25	2	0
4	g	28	0	25	0	0
5	A	98	0	91	1	0
5	B	126	0	117	3	0
5	C	126	0	117	4	0
All	All	28669	0	27777	370	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (370) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:773:GLU:OE2	1:B:1019:ARG:HD3	1.80	0.82
3:L:38:TYR:HB3	3:L:97:TYR:HB2	1.69	0.75
1:B:377:PHE:HD1	1:B:434:ILE:HG13	1.52	0.72
1:B:878:LEU:O	1:B:882:ILE:HG12	1.90	0.72
1:B:416:GLY:O	1:B:420:ASP:HB2	1.89	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:804:GLN:HA	1:C:817:PRO:HG2	1.72	0.70
1:B:849:LEU:HD13	1:B:960:ASN:HD21	1.56	0.70
1:C:131:CYS:HA	1:C:166:CYS:HB3	1.72	0.69
1:C:802:PHE:HD2	1:C:805:ILE:HD11	1.58	0.69
2:H:94:TYR:N	2:H:112:THR:O	2.21	0.68
1:A:594:GLY:HA3	1:A:613:GLN:HE21	1.58	0.68
2:H:35:HIS:CD2	2:H:50:TRP:HB3	2.30	0.66
1:B:1135:ASN:OD1	1:B:1136:THR:N	2.28	0.66
1:B:146:HIS:HB2	1:B:149:ASN:HB3	1.77	0.66
1:B:377:PHE:HD1	1:B:434:ILE:CG1	2.09	0.65
1:B:130:VAL:HG12	1:B:168:PHE:HB3	1.79	0.65
1:A:249:LEU:HB3	2:H:102:TYR:HD1	1.62	0.64
1:A:567:ARG:HD2	1:B:42:VAL:HG11	1.79	0.64
1:C:346:ARG:HH22	1:C:450:ASN:HB3	1.61	0.64
1:A:353:TRP:O	1:A:466:ARG:NH1	2.30	0.64
1:B:34:ARG:NH1	1:B:191:GLU:OE2	2.31	0.64
1:A:725:GLU:OE2	1:A:1028:LYS:NZ	2.30	0.64
1:B:99:ASN:ND2	1:B:177:MET:SD	2.66	0.63
1:C:22:THR:O	1:C:78:ARG:NH1	2.32	0.63
1:A:461:LEU:HD22	1:A:465:GLU:HB3	1.80	0.62
1:B:776:LYS:NZ	1:B:780:GLU:OE2	2.29	0.62
1:C:111:ASP:OD2	1:C:113:LYS:NZ	2.31	0.62
1:B:30:ASN:HD21	1:B:59:PHE:HA	1.64	0.62
1:B:82:PRO:HG2	1:B:84:LEU:HD21	1.80	0.61
1:A:403:ARG:HD3	1:A:505:TYR:HD1	1.64	0.61
1:C:878:LEU:O	1:C:882:ILE:HG12	2.00	0.61
1:B:105:ILE:HG23	1:B:241:LEU:HD11	1.82	0.61
1:A:598:ILE:HG12	1:A:666:ILE:HD11	1.82	0.61
1:C:472:ILE:HG13	1:C:482:GLY:HA2	1.82	0.61
1:C:287:ASP:OD1	1:C:288:ALA:N	2.34	0.61
1:A:773:GLU:OE2	1:A:1019:ARG:NE	2.32	0.60
3:L:68:PHE:HB3	3:L:79:LEU:HD21	1.82	0.60
1:C:353:TRP:O	1:C:466:ARG:NH1	2.33	0.60
1:A:883:THR:HG23	1:C:707:TYR:HB2	1.83	0.60
1:C:725:GLU:OE2	1:C:1028:LYS:NZ	2.35	0.60
1:A:707:TYR:HB3	1:B:792:PRO:HG3	1.84	0.60
1:B:377:PHE:CD1	1:B:434:ILE:HG13	2.35	0.60
1:A:878:LEU:O	1:A:882:ILE:HG12	2.02	0.60
1:B:287:ASP:HB3	1:B:306:PHE:HE2	1.66	0.60
1:B:973:ILE:HD12	1:B:983:ARG:HH22	1.67	0.60
1:C:391:CYS:HA	1:C:525:CYS:HA	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:22:THR:O	1:B:78:ARG:NH1	2.35	0.59
1:B:780:GLU:O	1:B:784:GLN:NE2	2.35	0.59
1:B:617:CYS:N	1:B:644:GLN:OE1	2.35	0.59
1:C:1135:ASN:OD1	1:C:1136:THR:N	2.36	0.59
1:B:588:THR:HG21	1:C:842:GLY:H	1.68	0.59
1:B:108:THR:HA	1:B:236:THR:HG22	1.84	0.58
1:B:213:VAL:HG23	1:B:214:ARG:HG2	1.84	0.58
2:H:106:ASP:HA	3:L:52:LEU:CD2	2.33	0.58
1:A:273:ARG:NH1	1:A:290:ASP:OD2	2.37	0.58
1:C:976:VAL:HG23	1:C:979:ASP:HB3	1.86	0.58
1:B:826:VAL:HG23	1:B:945:LEU:HD12	1.84	0.57
1:C:905:ARG:NH1	1:C:1049:LEU:O	2.35	0.57
1:A:899:PRO:HG2	5:C:1209:NAG:H81	1.85	0.57
2:H:106:ASP:HA	3:L:52:LEU:HD23	1.86	0.57
3:L:43:GLN:HG3	3:L:53:LEU:HD21	1.86	0.57
1:B:1102:TRP:HB2	1:B:1135:ASN:ND2	2.19	0.57
2:H:98:ARG:NH2	2:H:106:ASP:OD2	2.35	0.57
1:B:821:LEU:HD21	1:B:939:SER:HA	1.85	0.57
1:B:948:LEU:HD21	1:B:1059:GLY:HA3	1.86	0.57
1:B:905:ARG:NH1	1:B:1049:LEU:O	2.36	0.57
1:C:377:PHE:HD1	1:C:434:ILE:HG12	1.70	0.57
1:A:327:VAL:HG11	1:A:528:LYS:HD2	1.87	0.56
1:B:40:ASP:OD2	1:B:44:ARG:NH2	2.35	0.56
1:A:327:VAL:HG13	1:A:542:ASN:HB3	1.85	0.56
1:A:603:ASN:OD1	5:A:1405:NAG:N2	2.38	0.56
1:B:1043:CYS:HB2	1:B:1048:HIS:CD2	2.40	0.56
3:L:54:LEU:HB3	3:L:58:SER:O	2.06	0.56
1:C:642:VAL:HG22	1:C:651:ILE:HG12	1.88	0.56
1:A:731:MET:HE1	1:A:1014:ARG:HB3	1.87	0.55
1:A:877:LEU:O	1:A:881:THR:HG23	2.07	0.55
1:A:64:TRP:HD1	1:A:266:TYR:CE2	2.24	0.55
1:B:932:GLY:O	1:B:935:GLN:HG2	2.07	0.55
1:B:725:GLU:OE1	1:B:1064:HIS:NE2	2.31	0.55
1:C:521:PRO:HG3	1:C:564:GLN:HB2	1.88	0.55
1:A:763:LEU:HD21	1:A:1004:LEU:HB3	1.89	0.55
3:L:93:TYR:HB3	3:L:95:GLN:HE22	1.71	0.55
1:C:726:ILE:HG12	1:C:1061:VAL:HG22	1.88	0.55
1:B:825:LYS:NZ	1:B:941:THR:O	2.37	0.55
2:H:5:GLN:HB3	2:H:23:LYS:HB3	1.89	0.55
2:H:93:VAL:HA	2:H:113:SER:HA	1.87	0.55
1:C:973:ILE:HD11	1:C:984:LEU:HD11	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1082:CYS:HB3	1:C:1132:ILE:HD11	1.89	0.55
1:C:533:LEU:HD21	1:C:585:LEU:HD11	1.90	0.54
2:H:2:VAL:HB	2:H:107:TYR:CZ	2.42	0.54
1:A:337:PRO:O	1:A:341:VAL:HG12	2.08	0.54
1:B:455:LEU:HD21	1:C:370:ASN:HB3	1.89	0.54
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.39	0.54
3:L:39:LEU:HG	3:L:95:GLN:O	2.07	0.54
1:A:146:HIS:NE2	1:A:148:ASN:HB2	2.23	0.54
1:C:729:VAL:HG11	1:C:781:VAL:HG11	1.90	0.54
1:A:711:SER:OG	1:B:895:GLN:OE1	2.26	0.53
1:B:403:ARG:NH1	1:C:373:SER:OG	2.42	0.53
1:A:924:ALA:O	1:A:928:ASN:ND2	2.42	0.53
1:B:287:ASP:HB3	1:B:306:PHE:CE2	2.43	0.53
1:C:244:LEU:HD11	1:C:258:TRP:HB2	1.89	0.53
2:H:86:LEU:HD12	2:H:90:ASP:HB2	1.90	0.53
1:B:868:GLU:CD	1:B:868:GLU:H	2.16	0.53
1:B:902:MET:HE1	1:B:1050:MET:SD	2.48	0.53
1:C:858:LEU:HD13	1:C:959:LEU:HD22	1.90	0.53
1:A:1077:THR:HG23	1:A:1095:PHE:O	2.09	0.53
1:B:149:ASN:HB2	5:B:1203:NAG:O5	2.07	0.53
1:A:646:ARG:HG3	1:A:668:ALA:HB1	1.90	0.53
1:A:1097:SER:HB2	1:A:1102:TRP:CD2	2.42	0.53
1:A:533:LEU:HD21	1:A:585:LEU:HD11	1.90	0.53
1:C:886:TRP:HH2	1:C:904:TYR:HB3	1.73	0.53
4:f:1:NAG:H61	4:f:2:NAG:N2	2.23	0.53
1:A:792:PRO:HG3	1:C:707:TYR:HB3	1.90	0.53
4:P:1:NAG:H61	4:P:2:NAG:O7	2.09	0.53
1:B:391:CYS:HA	1:B:525:CYS:HA	1.91	0.52
1:B:102:ARG:NH2	1:B:154:GLU:OE1	2.42	0.52
1:A:251:PRO:HG2	3:L:98:TYR:HA	1.91	0.52
1:A:699:LEU:HD21	1:B:869:MET:HG2	1.91	0.52
4:f:1:NAG:H61	4:f:2:NAG:HN2	1.74	0.52
1:B:599:THR:HG23	1:B:601:GLY:H	1.74	0.52
1:A:119:ILE:HD11	1:A:175:PHE:HZ	1.75	0.52
1:C:401:VAL:HG22	1:C:509:ARG:HG2	1.92	0.52
1:A:147:LYS:NZ	2:H:32:TYR:O	2.42	0.52
1:A:556:ASN:OD1	1:A:556:ASN:N	2.43	0.52
1:B:886:TRP:HH2	1:B:904:TYR:HB3	1.74	0.52
1:A:618:THR:HG21	4:J:1:NAG:H4	1.91	0.52
1:B:776:LYS:O	1:B:780:GLU:HG3	2.10	0.51
1:C:603:ASN:HB2	5:C:1207:NAG:O5	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:957:GLN:OE1	1:C:765:ARG:NH1	2.43	0.51
1:B:377:PHE:CD1	1:B:434:ILE:CG1	2.92	0.51
1:C:277:LEU:HD23	1:C:285:ILE:HD13	1.91	0.51
1:B:666:ILE:HB	1:B:670:ILE:O	2.11	0.51
1:A:973:ILE:HD12	1:A:983:ARG:NH2	2.26	0.51
1:A:468:ILE:HD11	5:B:1204:NAG:H82	1.93	0.51
1:B:665:PRO:HA	1:B:671:CYS:HB3	1.92	0.51
1:A:246:ARG:HH12	1:A:254:SER:HA	1.76	0.50
1:B:122:ASN:HB3	5:B:1202:NAG:HN2	1.75	0.50
1:A:197:ILE:HG12	1:A:202:LYS:HE2	1.93	0.50
1:A:377:PHE:HD1	1:A:434:ILE:HG12	1.76	0.50
1:A:1105:THR:HG22	1:A:1112:PRO:HA	1.94	0.50
1:B:725:GLU:OE2	1:B:1028:LYS:NZ	2.44	0.50
4:Q:1:NAG:H61	4:Q:2:NAG:N2	2.27	0.50
1:B:858:LEU:HD13	1:B:959:LEU:HD22	1.94	0.50
1:A:41:LYS:HG2	1:C:562:PHE:HD1	1.76	0.49
1:C:331:ASN:HB2	4:c:1:NAG:HN2	1.77	0.49
1:C:563:GLN:O	1:C:577:ARG:NH1	2.45	0.49
1:B:236:THR:HG23	1:B:237:ARG:HG3	1.94	0.49
1:C:887:THR:HG21	1:C:894:LEU:HG	1.93	0.49
1:A:41:LYS:HG2	1:C:562:PHE:CD1	2.47	0.49
1:A:231:ILE:HG23	1:A:233:ILE:H	1.76	0.49
1:A:416:GLY:O	1:A:420:ASP:HB2	2.12	0.49
1:A:826:VAL:HB	1:A:1057:PRO:HG2	1.93	0.49
1:A:248:TYR:OH	1:A:256:SER:O	2.22	0.49
1:A:1077:THR:HG22	1:B:900:MET:HE1	1.95	0.49
1:A:1102:TRP:HB2	1:A:1135:ASN:ND2	2.28	0.49
1:B:21:ARG:NH1	1:B:79:PHE:O	2.46	0.49
1:B:57:PRO:HG3	1:B:273:ARG:HD2	1.95	0.49
1:B:156:GLU:OE1	1:B:246:ARG:NH1	2.45	0.49
1:B:897:PRO:HG2	1:B:900:MET:HE3	1.94	0.49
1:C:919:ASN:O	1:C:923:ILE:HD12	2.12	0.49
1:B:616:ASN:HB2	1:C:834:ILE:HG21	1.95	0.49
1:A:259:THR:HG22	1:A:261:GLY:H	1.78	0.49
1:B:96:GLU:OE2	1:B:101:ILE:N	2.34	0.49
1:C:69:HIS:ND1	1:C:77:LYS:HG3	2.28	0.48
1:A:146:HIS:HD2	1:A:149:ASN:CG	2.20	0.48
1:C:70:VAL:N	1:C:76:THR:O	2.44	0.48
1:A:458:LYS:HG2	1:A:473:TYR:HE1	1.78	0.48
1:A:144:TYR:CE2	1:A:249:LEU:HB2	2.48	0.48
1:A:902:MET:HE1	1:A:1050:MET:SD	2.53	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:433:VAL:HG12	1:A:512:VAL:HG22	1.94	0.48
1:C:131:CYS:CA	1:C:166:CYS:HB3	2.40	0.48
1:C:331:ASN:HB2	4:c:1:NAG:N2	2.28	0.48
1:B:21:ARG:HH11	1:B:79:PHE:HB3	1.79	0.48
1:A:976:VAL:HG23	1:A:979:ASP:H	1.79	0.48
1:C:675:GLN:HG3	1:C:676:THR:H	1.79	0.48
1:B:32:PHE:CD2	1:B:218:GLN:HG2	2.49	0.47
1:C:118:LEU:HD11	1:C:120:VAL:HB	1.96	0.47
1:C:307:THR:HA	1:C:602:THR:HG21	1.96	0.47
1:A:403:ARG:HD3	1:A:505:TYR:CD1	2.47	0.47
3:L:61:GLU:CD	3:L:62:SER:H	2.22	0.47
1:C:984:LEU:HD22	1:C:988:GLU:HG3	1.96	0.47
2:H:105:LEU:HD12	2:H:105:LEU:H	1.79	0.47
1:A:119:ILE:HD11	1:A:175:PHE:CZ	2.49	0.47
1:A:752:LEU:HD11	1:A:990:GLU:HG2	1.94	0.47
1:B:59:PHE:HD2	1:B:293:LEU:HD21	1.79	0.47
1:B:707:TYR:HB2	1:C:883:THR:HG23	1.96	0.47
1:A:66:HIS:HB3	1:A:78:ARG:HH12	1.78	0.47
1:A:980:ILE:O	1:A:984:LEU:HB2	2.15	0.47
1:B:713:ALA:HB3	1:C:894:LEU:HB3	1.97	0.47
1:B:804:GLN:NE2	1:B:935:GLN:OE1	2.47	0.47
1:B:1081:ILE:HD13	1:B:1133:VAL:HG23	1.97	0.47
1:B:403:ARG:HB3	1:B:406:GLU:OE1	2.14	0.47
1:C:902:MET:SD	1:C:1050:MET:HE1	2.55	0.47
1:C:982:SER:O	1:C:983:ARG:HG2	2.14	0.47
1:A:130:VAL:CG1	1:A:168:PHE:HB3	2.45	0.46
1:C:457:ARG:NH1	1:C:459:SER:O	2.40	0.46
1:B:1082:CYS:HB2	1:B:1132:ILE:HD13	1.96	0.46
3:L:54:LEU:HD23	3:L:61:GLU:HB2	1.97	0.46
3:L:55:TYR:CD2	3:L:56:TRP:CD1	3.03	0.46
1:A:347:PHE:CE2	1:A:399:SER:HB3	2.51	0.46
1:C:133:PHE:HB2	1:C:135:PHE:CE1	2.50	0.46
1:A:371:SER:HB2	4:F:1:NAG:H82	1.98	0.46
1:A:384:PRO:HB2	1:C:415:THR:HB	1.98	0.46
1:B:382:VAL:HG23	1:C:983:ARG:HB2	1.97	0.46
1:A:384:PRO:HA	1:A:387:LEU:HD12	1.97	0.46
1:A:391:CYS:HA	1:A:525:CYS:HA	1.97	0.46
1:A:742:ILE:O	1:A:1000:ARG:NH1	2.47	0.46
1:B:303:LEU:HD12	1:B:308:VAL:HG22	1.98	0.46
1:B:770:ILE:O	1:B:774:GLN:HG2	2.16	0.46
1:C:97:LYS:NZ	1:C:184:GLY:O	2.47	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:280:ASN:OD1	1:C:283:GLY:N	2.48	0.46
1:A:28:TYR:HD1	1:A:63:THR:HA	1.80	0.46
1:A:296:LEU:O	1:A:299:THR:HG22	2.16	0.46
1:A:948:LEU:HD21	1:A:1059:GLY:HA3	1.98	0.45
1:A:982:SER:O	1:A:983:ARG:HG2	2.16	0.45
1:B:368:LEU:HD22	1:B:374:PHE:HZ	1.80	0.45
1:C:835:LYS:HD3	1:C:851:CYS:SG	2.56	0.45
1:A:1090:PRO:HD3	1:A:1095:PHE:CE2	2.52	0.45
1:B:53:ASP:OD1	1:B:54:LEU:N	2.42	0.45
1:B:835:LYS:HD3	1:B:851:CYS:SG	2.56	0.45
1:C:919:ASN:C	1:C:923:ILE:HD12	2.41	0.45
1:A:321:GLN:HA	1:A:321:GLN:OE1	2.17	0.45
1:A:117:LEU:HD11	1:A:128:ILE:HG23	1.98	0.45
1:A:565:PHE:HD1	1:A:576:VAL:HG22	1.81	0.45
1:B:158:ARG:HG3	1:B:158:ARG:HH11	1.81	0.45
1:C:612:TYR:CE2	1:C:635:VAL:HG13	2.52	0.45
1:B:22:THR:HG22	1:B:77:LYS:O	2.17	0.45
1:B:335:LEU:HD12	1:B:362:VAL:HG13	1.99	0.45
1:C:296:LEU:HB2	1:C:608:VAL:HG11	1.97	0.45
1:C:422:ASN:HD21	1:C:454:ARG:H	1.63	0.45
1:C:985:ASP:OD1	1:C:988:GLU:HG2	2.17	0.45
1:A:95:THR:HG22	1:A:186:PHE:HB3	1.99	0.45
1:A:1082:CYS:HB2	1:A:1132:ILE:HG12	1.98	0.45
1:B:768:THR:O	1:B:772:VAL:HG13	2.17	0.45
1:B:802:PHE:HZ	1:B:898:PHE:CZ	2.34	0.45
1:C:866:THR:OG1	1:C:869:MET:HG3	2.17	0.45
2:H:100:ASP:HB2	2:H:103:GLU:HB3	1.99	0.45
1:A:43:PHE:CE1	1:C:557:LYS:HD3	2.52	0.45
1:A:133:PHE:HB2	1:A:135:PHE:CZ	2.51	0.45
1:B:1077:THR:OG1	1:C:900:MET:HE1	2.16	0.44
2:H:52:ASP:HB3	2:H:55:ASN:HB2	1.98	0.44
1:A:390:LEU:HD11	1:B:983:ARG:HA	1.98	0.44
1:B:755:GLN:N	1:B:755:GLN:OE1	2.50	0.44
1:C:337:PRO:HB2	1:C:340:GLU:HG2	1.98	0.44
3:L:31:TYR:CE2	3:L:33:ASN:HB2	2.52	0.44
1:C:350:VAL:HG22	1:C:422:ASN:HB3	1.98	0.44
2:H:51:ILE:HG13	2:H:58:THR:HB	1.99	0.44
1:A:146:HIS:CD2	1:A:149:ASN:H	2.36	0.44
1:A:1115:ILE:HG22	1:A:1137:VAL:HG22	2.00	0.44
3:L:39:LEU:HD13	3:L:77:PHE:CG	2.53	0.44
1:A:878:LEU:HD21	1:A:1052:PHE:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:69:HIS:NE2	1:B:77:LYS:HE3	2.32	0.44
1:A:328:ARG:NH2	1:A:578:ASP:OD2	2.40	0.44
1:A:415:THR:HG22	1:B:384:PRO:HB2	1.98	0.44
1:B:244:LEU:HD11	1:B:258:TRP:HB2	2.00	0.44
1:B:468:ILE:HD11	5:C:1204:NAG:H82	1.99	0.44
1:A:1079:PRO:HD2	1:A:1131:GLY:O	2.18	0.44
1:C:137:ASN:ND2	4:R:1:NAG:H5	2.33	0.44
1:A:1088:HIS:ND1	1:A:1137:VAL:HG21	2.33	0.44
1:B:401:VAL:HG22	1:B:509:ARG:HG2	2.00	0.44
1:C:980:ILE:O	1:C:984:LEU:HB2	2.17	0.44
3:L:95:GLN:HE21	3:L:104:PHE:HA	1.82	0.44
1:A:308:VAL:H	1:A:602:THR:HG22	1.83	0.44
1:A:418:ILE:HA	1:A:422:ASN:HD22	1.82	0.44
1:B:1047:TYR:HB2	1:B:1067:TYR:HB3	2.00	0.44
1:B:1097:SER:HB2	1:B:1102:TRP:CD2	2.52	0.44
1:C:296:LEU:O	1:C:299:THR:HG22	2.18	0.44
4:G:1:NAG:H62	4:G:2:NAG:O7	2.18	0.44
1:B:69:HIS:ND1	1:B:70:VAL:HG23	2.34	0.43
2:H:38:LYS:HE3	2:H:64:PHE:CZ	2.53	0.43
2:H:51:ILE:HD12	2:H:70:LEU:HB3	2.00	0.43
1:A:80:ASP:OD1	1:A:80:ASP:N	2.49	0.43
1:A:130:VAL:HG21	1:A:233:ILE:HG21	2.00	0.43
1:A:238:PHE:HZ	1:A:267:VAL:HG11	1.83	0.43
1:A:814:LYS:HD3	1:A:814:LYS:HA	1.79	0.43
1:B:315:THR:HG22	1:B:316:SER:H	1.84	0.43
1:C:759:PHE:O	1:C:763:LEU:HG	2.18	0.43
1:A:703:ASN:OD1	1:A:704:SER:N	2.52	0.43
1:B:914:ASN:O	1:B:918:GLU:HG3	2.18	0.43
1:B:931:ILE:O	1:B:934:ILE:HG22	2.19	0.43
1:C:748:GLU:H	1:C:748:GLU:CD	2.26	0.43
1:A:186:PHE:CD2	1:A:213:VAL:HG23	2.54	0.43
1:A:415:THR:OG1	1:A:416:GLY:N	2.52	0.43
1:A:521:PRO:HG3	1:A:564:GLN:HB2	2.00	0.43
1:B:980:ILE:O	1:B:984:LEU:HB2	2.19	0.43
1:A:249:LEU:HB3	2:H:102:TYR:CD1	2.48	0.43
1:B:78:ARG:HA	1:B:78:ARG:HD2	1.77	0.43
4:I:1:NAG:H61	4:I:2:NAG:N2	2.33	0.43
1:A:393:THR:HG22	1:A:522:ALA:HB2	2.00	0.43
1:A:439:ASN:O	1:A:443:SER:OG	2.32	0.43
1:B:296:LEU:HB2	1:B:608:VAL:HG11	2.00	0.43
1:B:563:GLN:O	1:B:577:ARG:NH1	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1073:LYS:HB3	1:C:1075:PHE:CE2	2.53	0.43
2:H:47:TRP:CH2	3:L:100:TYR:HB3	2.54	0.43
1:B:310:LYS:NZ	1:B:663:ASP:OD1	2.41	0.43
1:C:299:THR:HA	1:C:302:THR:HG22	2.01	0.43
1:C:326:ILE:HG21	1:C:534:VAL:HG22	2.01	0.43
1:B:332:ILE:HD13	1:B:332:ILE:HA	1.86	0.43
3:L:60:ARG:NE	3:L:66:ASP:HA	2.34	0.43
1:B:131:CYS:HB2	1:B:133:PHE:CZ	2.54	0.42
1:A:934:ILE:HD13	1:A:934:ILE:HA	1.88	0.42
1:B:493:GLN:HG3	1:B:494:SER:H	1.84	0.42
1:C:971:GLY:O	1:C:995:ARG:NH1	2.52	0.42
2:H:47:TRP:CE3	3:L:101:PRO:HB3	2.54	0.42
1:A:105:ILE:HD12	1:A:117:LEU:O	2.19	0.42
1:A:186:PHE:HD2	1:A:213:VAL:HG23	1.84	0.42
1:A:290:ASP:O	1:A:297:SER:HB3	2.19	0.42
1:C:200:TYR:HB3	1:C:228:ASP:OD1	2.19	0.42
1:C:1082:CYS:HB3	1:C:1132:ILE:CD1	2.49	0.42
1:B:212:LEU:HD12	1:B:213:VAL:H	1.83	0.42
1:B:137:ASN:HD22	1:B:137:ASN:HA	1.69	0.42
1:C:1086:LYS:HB3	1:C:1122:VAL:HG23	2.02	0.42
1:A:886:TRP:HH2	1:A:904:TYR:HB3	1.85	0.42
2:H:35:HIS:HB2	2:H:97:ALA:HB3	2.02	0.42
1:A:189:LEU:HB2	1:A:210:ILE:HG12	2.01	0.42
1:C:703:ASN:OD1	1:C:704:SER:N	2.53	0.42
2:H:39:GLN:HB2	2:H:45:LEU:HD12	2.02	0.42
1:C:57:PRO:HG3	1:C:273:ARG:HD2	2.01	0.41
3:L:4:MET:HB3	3:L:105:GLY:HA2	2.02	0.41
1:A:54:LEU:HD23	1:A:88:ASP:O	2.19	0.41
1:A:147:LYS:HD3	2:H:54:GLU:OE2	2.20	0.41
1:A:454:ARG:HH12	1:A:467:ASP:HB3	1.84	0.41
1:A:1140:PRO:C	1:A:1141:LEU:HD23	2.45	0.41
1:C:78:ARG:HA	1:C:78:ARG:HD2	1.75	0.41
1:C:128:ILE:HD13	1:C:229:LEU:HD11	2.01	0.41
2:H:6:GLN:HE22	2:H:22:CYS:HA	1.85	0.41
1:A:578:ASP:OD1	1:A:579:PRO:HD2	2.20	0.41
1:A:19:THR:HA	1:A:77:LYS:HD3	2.02	0.41
1:A:203:ILE:HG22	1:A:226:LEU:HB3	2.03	0.41
1:A:897:PRO:HB2	1:A:900:MET:HG3	2.02	0.41
1:B:1039:ARG:NE	1:C:1031:GLU:OE2	2.45	0.41
1:A:147:LYS:NZ	2:H:30:LYS:O	2.51	0.41
1:A:727:LEU:HD11	1:A:1028:LYS:HE3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:358:ILE:HB	1:B:395:VAL:HG12	2.02	0.41
1:C:216:LEU:HD12	1:C:216:LEU:HA	1.88	0.41
1:A:105:ILE:HD12	1:A:118:LEU:HA	2.03	0.41
1:A:959:LEU:HD23	1:A:959:LEU:HA	1.84	0.41
1:B:176:LEU:HD12	1:B:176:LEU:HA	1.91	0.41
1:B:729:VAL:HG13	1:B:781:VAL:HG21	2.03	0.41
1:C:148:ASN:OD1	1:C:149:ASN:N	2.52	0.41
1:C:490:PHE:CD1	1:C:491:PRO:HD2	2.56	0.41
2:H:47:TRP:HB2	3:L:104:PHE:HE2	1.86	0.41
1:A:1027:THR:O	1:A:1031:GLU:HG3	2.21	0.41
3:L:36:LYS:HD3	3:L:36:LYS:HA	1.81	0.41
1:B:697:MET:HB2	1:B:697:MET:HE3	1.77	0.41
1:C:462:LYS:HB2	1:C:465:GLU:OE1	2.21	0.41
1:A:96:GLU:OE2	1:A:101:ILE:HG12	2.21	0.41
1:B:502:GLY:O	1:B:506:GLN:HG3	2.21	0.41
1:C:709:ASN:HB3	5:C:1209:NAG:HN2	1.85	0.41
1:C:986:PRO:N	1:C:987:PRO:HD2	2.36	0.41
1:A:457:ARG:NH1	1:A:459:SER:O	2.49	0.40
1:A:802:PHE:CD1	1:A:805:ILE:HD11	2.56	0.40
1:B:403:ARG:HG2	1:B:404:GLY:H	1.86	0.40
1:B:742:ILE:O	1:B:1000:ARG:NH1	2.52	0.40
1:C:567:ARG:HH11	1:C:567:ARG:HG2	1.86	0.40
1:A:108:THR:HG23	1:A:234:ASN:O	2.21	0.40
1:B:244:LEU:HD11	1:B:258:TRP:CE3	2.56	0.40
1:C:34:ARG:NH1	1:C:191:GLU:OE2	2.54	0.40
1:C:1038:LYS:HE2	1:C:1038:LYS:HB3	1.79	0.40
1:A:200:TYR:HE1	1:C:355:ARG:NH1	2.19	0.40
1:A:613:GLN:HA	1:A:648:GLY:HA3	2.03	0.40
1:B:70:VAL:N	1:B:76:THR:O	2.54	0.40
1:C:69:HIS:CE1	1:C:77:LYS:HE3	2.56	0.40
1:C:350:VAL:O	1:C:353:TRP:HD1	2.04	0.40
1:A:858:LEU:HD13	1:A:959:LEU:HD22	2.04	0.40
1:B:461:LEU:HD23	1:B:461:LEU:HA	1.85	0.40
1:B:767:LEU:HD23	1:B:767:LEU:HA	1.88	0.40
1:B:878:LEU:O	1:B:881:THR:HG22	2.22	0.40
1:C:1047:TYR:HB2	1:C:1067:TYR:HB3	2.04	0.40
1:C:1097:SER:HB2	1:C:1102:TRP:CD2	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1085/1133 (96%)	1058 (98%)	27 (2%)	0	100	100
1	B	1089/1133 (96%)	1055 (97%)	34 (3%)	0	100	100
1	C	1089/1133 (96%)	1054 (97%)	35 (3%)	0	100	100
2	H	115/117 (98%)	113 (98%)	2 (2%)	0	100	100
3	L	110/112 (98%)	109 (99%)	1 (1%)	0	100	100
All	All	3488/3628 (96%)	3389 (97%)	99 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	955/987 (97%)	955 (100%)	0	100	100
1	B	959/987 (97%)	958 (100%)	1 (0%)	92	97
1	C	959/987 (97%)	959 (100%)	0	100	100
2	H	97/97 (100%)	97 (100%)	0	100	100
3	L	97/97 (100%)	97 (100%)	0	100	100
All	All	3067/3155 (97%)	3066 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	662	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	69	HIS
1	A	164	ASN
1	A	314	GLN
1	A	388	ASN
1	A	439	ASN
1	A	493	GLN
1	A	501	ASN
1	A	613	GLN
1	A	655	HIS
1	A	764	ASN
1	A	856	ASN
1	A	1054	GLN
1	B	30	ASN
1	B	134	GLN
1	B	137	ASN
1	B	448	ASN
1	B	536	ASN
1	B	613	GLN
1	B	675	GLN
1	B	764	ASN
1	B	804	GLN
1	B	853	GLN
1	B	856	ASN
1	B	872	GLN
1	B	907	ASN
1	B	913	GLN
1	B	935	GLN
1	B	960	ASN
1	B	1071	GLN
1	C	414	GLN
1	C	422	ASN
1	C	439	ASN
1	C	493	GLN
1	C	501	ASN
1	C	540	ASN
1	C	641	ASN
1	C	755	GLN
1	C	764	ASN

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Mol	Chain	Res	Type
1	C	853	GLN
1	C	872	GLN
1	C	1011	GLN
1	C	1071	GLN
2	H	39	GLN
2	H	57	ASN
2	H	65	GLN
3	L	24	GLN
3	L	95	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

56 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	D	1	1,4	14,14,15	0.21	0	17,19,21	0.48	0
4	NAG	D	2	4	14,14,15	0.52	0	17,19,21	0.51	0
4	NAG	E	1	1,4	14,14,15	0.29	0	17,19,21	0.44	0
4	NAG	E	2	4	14,14,15	0.23	0	17,19,21	0.54	0
4	NAG	F	1	1,4	14,14,15	0.35	0	17,19,21	0.57	0
4	NAG	F	2	4	14,14,15	0.63	0	17,19,21	0.73	0
4	NAG	G	1	1,4	14,14,15	0.29	0	17,19,21	0.49	0
4	NAG	G	2	4	14,14,15	0.29	0	17,19,21	0.97	1 (5%)
4	NAG	I	1	1,4	14,14,15	0.24	0	17,19,21	0.44	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	I	2	4	14,14,15	0.27	0	17,19,21	0.46	0
4	NAG	J	1	1,4	14,14,15	0.41	0	17,19,21	0.52	0
4	NAG	J	2	4	14,14,15	0.41	0	17,19,21	0.48	0
4	NAG	K	1	1,4	14,14,15	0.21	0	17,19,21	0.48	0
4	NAG	K	2	4	14,14,15	0.35	0	17,19,21	0.47	0
4	NAG	M	1	1,4	14,14,15	0.20	0	17,19,21	0.40	0
4	NAG	M	2	4	14,14,15	0.25	0	17,19,21	0.47	0
4	NAG	N	1	1,4	14,14,15	0.25	0	17,19,21	0.39	0
4	NAG	N	2	4	14,14,15	0.19	0	17,19,21	0.45	0
4	NAG	O	1	1,4	14,14,15	0.28	0	17,19,21	0.43	0
4	NAG	O	2	4	14,14,15	0.31	0	17,19,21	0.61	0
4	NAG	P	1	1,4	14,14,15	0.27	0	17,19,21	0.45	0
4	NAG	P	2	4	14,14,15	0.35	0	17,19,21	0.92	1 (5%)
4	NAG	Q	1	1,4	14,14,15	0.28	0	17,19,21	0.45	0
4	NAG	Q	2	4	14,14,15	0.28	0	17,19,21	0.46	0
4	NAG	R	1	1,4	14,14,15	0.19	0	17,19,21	0.50	0
4	NAG	R	2	4	14,14,15	0.23	0	17,19,21	0.48	0
4	NAG	S	1	1,4	14,14,15	0.24	0	17,19,21	0.41	0
4	NAG	S	2	4	14,14,15	0.24	0	17,19,21	0.43	0
4	NAG	T	1	1,4	14,14,15	0.24	0	17,19,21	0.49	0
4	NAG	T	2	4	14,14,15	0.76	1 (7%)	17,19,21	0.47	0
4	NAG	U	1	1,4	14,14,15	0.29	0	17,19,21	0.45	0
4	NAG	U	2	4	14,14,15	0.27	0	17,19,21	0.95	1 (5%)
4	NAG	V	1	1,4	14,14,15	0.20	0	17,19,21	0.45	0
4	NAG	V	2	4	14,14,15	0.31	0	17,19,21	0.48	0
4	NAG	W	1	1,4	14,14,15	0.18	0	17,19,21	0.43	0
4	NAG	W	2	4	14,14,15	0.22	0	17,19,21	0.46	0
4	NAG	X	1	1,4	14,14,15	0.22	0	17,19,21	0.47	0
4	NAG	X	2	4	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	Y	1	1,4	14,14,15	0.30	0	17,19,21	0.53	0
4	NAG	Y	2	4	14,14,15	0.32	0	17,19,21	0.64	0
4	NAG	Z	1	1,4	14,14,15	0.26	0	17,19,21	0.44	0
4	NAG	Z	2	4	14,14,15	0.27	0	17,19,21	0.54	0
4	NAG	a	1	1,4	14,14,15	0.22	0	17,19,21	0.47	0
4	NAG	a	2	4	14,14,15	0.24	0	17,19,21	0.42	0
4	NAG	b	1	1,4	14,14,15	0.19	0	17,19,21	0.42	0
4	NAG	b	2	4	14,14,15	0.26	0	17,19,21	0.56	0
4	NAG	c	1	1,4	14,14,15	0.68	1 (7%)	17,19,21	0.77	1 (5%)
4	NAG	c	2	4	14,14,15	0.28	0	17,19,21	0.46	0
4	NAG	d	1	1,4	14,14,15	0.21	0	17,19,21	0.49	0
4	NAG	d	2	4	14,14,15	0.25	0	17,19,21	0.43	0
4	NAG	e	1	1,4	14,14,15	0.25	0	17,19,21	0.44	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	NAG	e	2	4	14,14,15	0.27	0	17,19,21	0.53	0
4	NAG	f	1	1,4	14,14,15	0.50	0	17,19,21	0.63	1 (5%)
4	NAG	f	2	4	14,14,15	0.34	0	17,19,21	0.52	0
4	NAG	g	1	1,4	14,14,15	0.17	0	17,19,21	0.41	0
4	NAG	g	2	4	14,14,15	0.23	0	17,19,21	0.46	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	D	1	1,4	-	4/6/23/26	0/1/1/1
4	NAG	D	2	4	-	2/6/23/26	0/1/1/1
4	NAG	E	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1
4	NAG	F	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	F	2	4	-	2/6/23/26	0/1/1/1
4	NAG	G	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	G	2	4	-	3/6/23/26	0/1/1/1
4	NAG	I	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	I	2	4	-	2/6/23/26	0/1/1/1
4	NAG	J	1	1,4	-	3/6/23/26	0/1/1/1
4	NAG	J	2	4	-	3/6/23/26	0/1/1/1
4	NAG	K	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	K	2	4	-	0/6/23/26	0/1/1/1
4	NAG	M	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	M	2	4	-	0/6/23/26	0/1/1/1
4	NAG	N	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	N	2	4	-	1/6/23/26	0/1/1/1
4	NAG	O	1	1,4	-	1/6/23/26	0/1/1/1
4	NAG	O	2	4	-	3/6/23/26	0/1/1/1
4	NAG	P	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	P	2	4	-	3/6/23/26	0/1/1/1
4	NAG	Q	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1
4	NAG	R	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	R	2	4	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	S	1	1,4	-	1/6/23/26	0/1/1/1
4	NAG	S	2	4	-	2/6/23/26	0/1/1/1
4	NAG	T	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	T	2	4	-	0/6/23/26	0/1/1/1
4	NAG	U	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	U	2	4	-	4/6/23/26	0/1/1/1
4	NAG	V	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	V	2	4	-	2/6/23/26	0/1/1/1
4	NAG	W	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	W	2	4	-	0/6/23/26	0/1/1/1
4	NAG	X	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	X	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Y	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	Y	2	4	-	5/6/23/26	0/1/1/1
4	NAG	Z	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	Z	2	4	-	4/6/23/26	0/1/1/1
4	NAG	a	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	a	2	4	-	0/6/23/26	0/1/1/1
4	NAG	b	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	b	2	4	-	4/6/23/26	0/1/1/1
4	NAG	c	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	c	2	4	-	2/6/23/26	0/1/1/1
4	NAG	d	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	d	2	4	-	2/6/23/26	0/1/1/1
4	NAG	e	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	e	2	4	-	4/6/23/26	0/1/1/1
4	NAG	f	1	1,4	-	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	1,4	-	2/6/23/26	0/1/1/1
4	NAG	g	2	4	-	0/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	T	2	NAG	O5-C1	2.23	1.47	1.43
4	c	1	NAG	C1-C2	2.19	1.55	1.52

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	2	NAG	O5-C1-C2	-2.94	106.75	111.29
4	U	2	NAG	O5-C1-C2	-2.82	106.93	111.29
4	c	1	NAG	C1-O5-C5	2.67	115.76	112.19
4	P	2	NAG	O5-C1-C2	-2.25	107.82	111.29
4	f	1	NAG	C1-O5-C5	2.01	114.88	112.19

There are no chirality outliers.

All (102) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	G	2	NAG	C1-C2-N2-C7
4	G	2	NAG	C8-C7-N2-C2
4	G	2	NAG	O7-C7-N2-C2
4	O	2	NAG	C3-C2-N2-C7
4	O	2	NAG	C8-C7-N2-C2
4	O	2	NAG	O7-C7-N2-C2
4	P	2	NAG	C1-C2-N2-C7
4	P	2	NAG	C8-C7-N2-C2
4	P	2	NAG	O7-C7-N2-C2
4	U	2	NAG	C1-C2-N2-C7
4	U	2	NAG	C8-C7-N2-C2
4	U	2	NAG	O7-C7-N2-C2
4	Y	2	NAG	C3-C2-N2-C7
4	Y	2	NAG	C8-C7-N2-C2
4	Y	2	NAG	O7-C7-N2-C2
4	c	2	NAG	C4-C5-C6-O6
4	N	1	NAG	O5-C5-C6-O6
4	X	1	NAG	O5-C5-C6-O6
4	a	1	NAG	O5-C5-C6-O6
4	f	2	NAG	O5-C5-C6-O6
4	W	1	NAG	O5-C5-C6-O6
4	c	2	NAG	O5-C5-C6-O6
4	Q	2	NAG	O5-C5-C6-O6
4	V	2	NAG	O5-C5-C6-O6
4	d	1	NAG	O5-C5-C6-O6
4	f	1	NAG	O5-C5-C6-O6
4	d	2	NAG	C4-C5-C6-O6
4	I	1	NAG	O5-C5-C6-O6
4	Q	1	NAG	O5-C5-C6-O6
4	V	1	NAG	O5-C5-C6-O6
4	e	2	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	N	1	NAG	C4-C5-C6-O6
4	a	1	NAG	C4-C5-C6-O6
4	f	2	NAG	C4-C5-C6-O6
4	S	2	NAG	O5-C5-C6-O6
4	M	1	NAG	C4-C5-C6-O6
4	d	1	NAG	C4-C5-C6-O6
4	e	1	NAG	O5-C5-C6-O6
4	W	1	NAG	C4-C5-C6-O6
4	I	2	NAG	O5-C5-C6-O6
4	X	1	NAG	C4-C5-C6-O6
4	Z	1	NAG	O5-C5-C6-O6
4	b	1	NAG	O5-C5-C6-O6
4	M	1	NAG	O5-C5-C6-O6
4	I	2	NAG	C4-C5-C6-O6
4	Q	2	NAG	C4-C5-C6-O6
4	e	2	NAG	C4-C5-C6-O6
4	g	1	NAG	C4-C5-C6-O6
4	b	2	NAG	O5-C5-C6-O6
4	I	1	NAG	C4-C5-C6-O6
4	V	2	NAG	C4-C5-C6-O6
4	b	1	NAG	C4-C5-C6-O6
4	f	1	NAG	C4-C5-C6-O6
4	d	2	NAG	O5-C5-C6-O6
4	Q	1	NAG	C4-C5-C6-O6
4	V	1	NAG	C4-C5-C6-O6
4	Z	1	NAG	C4-C5-C6-O6
4	T	1	NAG	O5-C5-C6-O6
4	D	1	NAG	C8-C7-N2-C2
4	D	1	NAG	O7-C7-N2-C2
4	D	2	NAG	C8-C7-N2-C2
4	D	2	NAG	O7-C7-N2-C2
4	J	1	NAG	C8-C7-N2-C2
4	J	1	NAG	O7-C7-N2-C2
4	J	2	NAG	C8-C7-N2-C2
4	J	2	NAG	O7-C7-N2-C2
4	g	1	NAG	O5-C5-C6-O6
4	Z	2	NAG	O5-C5-C6-O6
4	D	1	NAG	O5-C5-C6-O6
4	J	1	NAG	O5-C5-C6-O6
4	b	2	NAG	C4-C5-C6-O6
4	Y	2	NAG	O5-C5-C6-O6
4	X	2	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	K	1	NAG	O5-C5-C6-O6
4	e	1	NAG	C4-C5-C6-O6
4	X	2	NAG	O5-C5-C6-O6
4	N	2	NAG	O5-C5-C6-O6
4	U	2	NAG	O5-C5-C6-O6
4	S	2	NAG	C4-C5-C6-O6
4	Z	2	NAG	C4-C5-C6-O6
4	S	1	NAG	O5-C5-C6-O6
4	T	1	NAG	C4-C5-C6-O6
4	E	2	NAG	C1-C2-N2-C7
4	F	1	NAG	C1-C2-N2-C7
4	Z	2	NAG	C1-C2-N2-C7
4	b	2	NAG	C1-C2-N2-C7
4	e	2	NAG	C1-C2-N2-C7
4	c	1	NAG	C4-C5-C6-O6
4	c	1	NAG	O5-C5-C6-O6
4	E	2	NAG	C3-C2-N2-C7
4	Z	2	NAG	C3-C2-N2-C7
4	b	2	NAG	C3-C2-N2-C7
4	e	2	NAG	C3-C2-N2-C7
4	D	1	NAG	C4-C5-C6-O6
4	F	2	NAG	C1-C2-N2-C7
4	F	1	NAG	C3-C2-N2-C7
4	F	2	NAG	C3-C2-N2-C7
4	f	1	NAG	C3-C2-N2-C7
4	O	1	NAG	C4-C5-C6-O6
4	J	2	NAG	C4-C5-C6-O6
4	K	1	NAG	C4-C5-C6-O6
4	Y	2	NAG	C4-C5-C6-O6

There are no ring outliers.

14 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	f	2	NAG	2	0
4	G	2	NAG	1	0
4	J	1	NAG	1	0
4	I	2	NAG	1	0
4	R	1	NAG	1	0
4	P	2	NAG	1	0
4	G	1	NAG	1	0
4	Q	2	NAG	1	0

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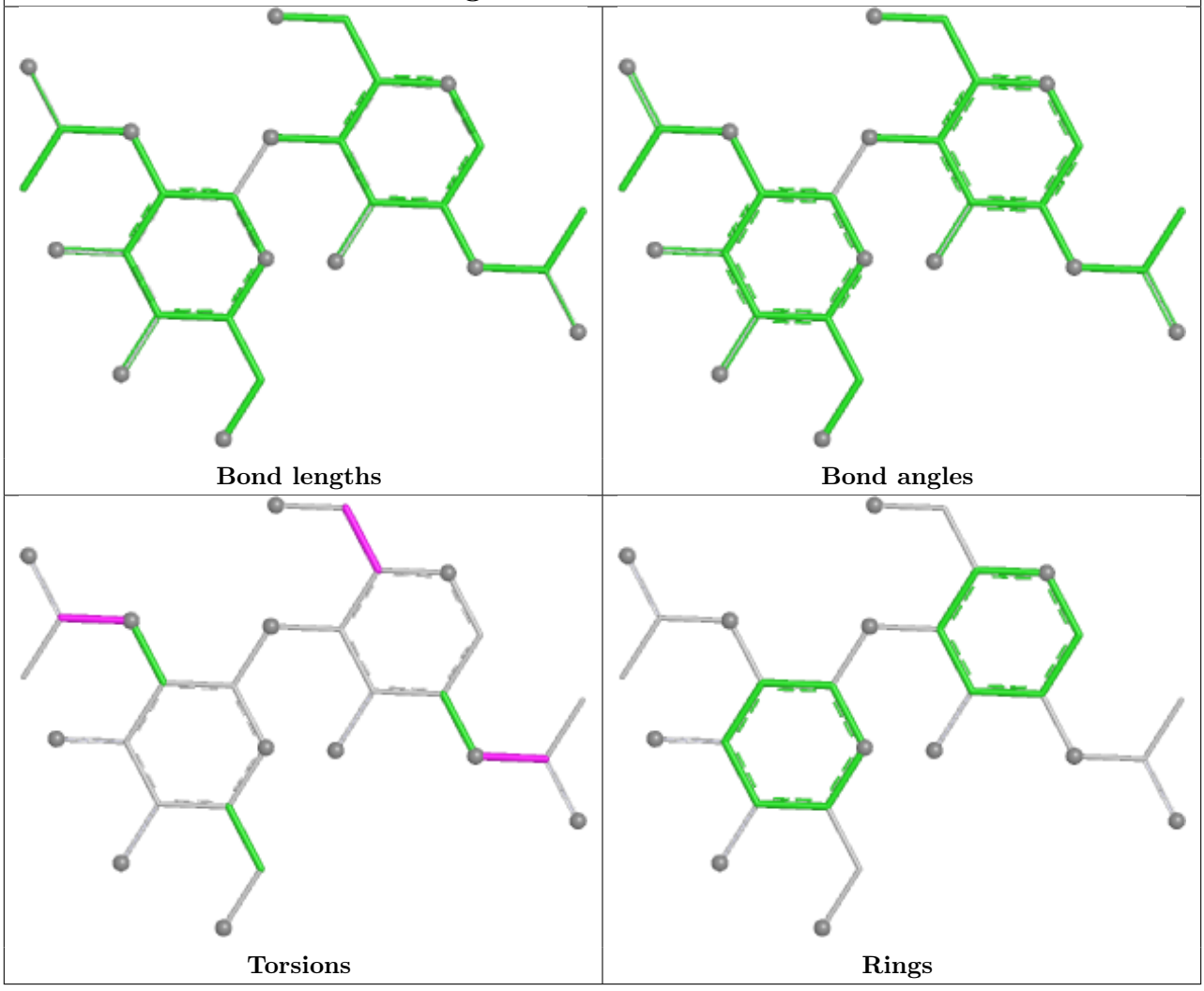
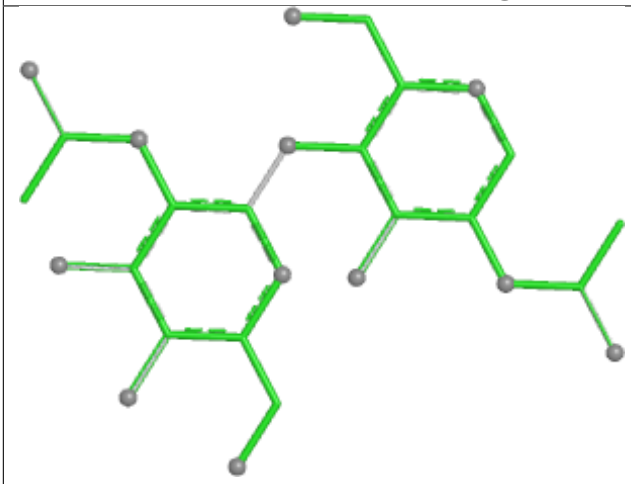
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	f	1	NAG	2	0
4	I	1	NAG	1	0
4	P	1	NAG	1	0
4	Q	1	NAG	1	0
4	c	1	NAG	2	0
4	F	1	NAG	1	0

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

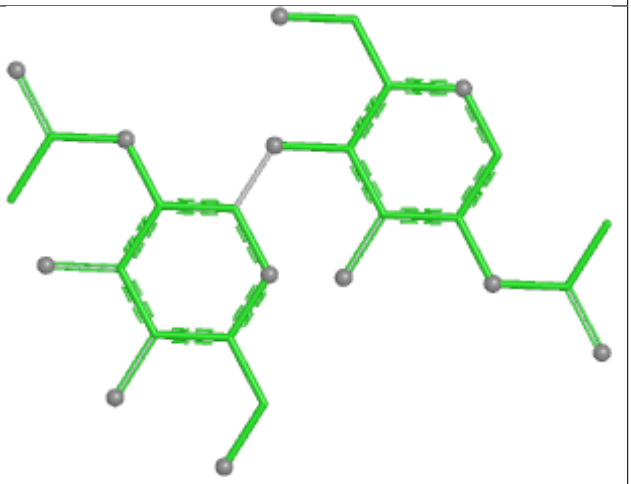
Oligosaccharide Chain D



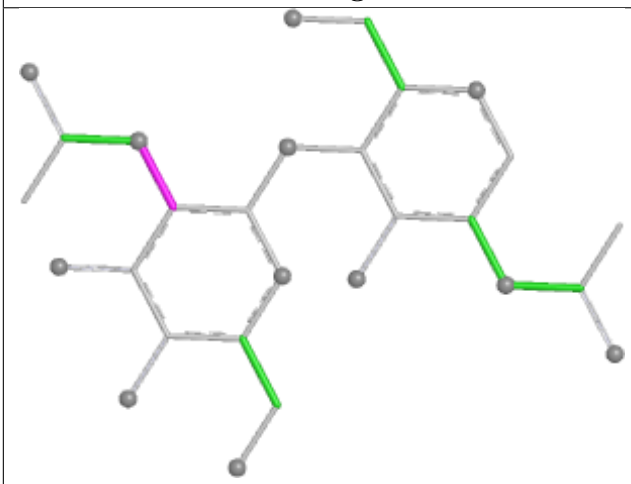
Oligosaccharide Chain E



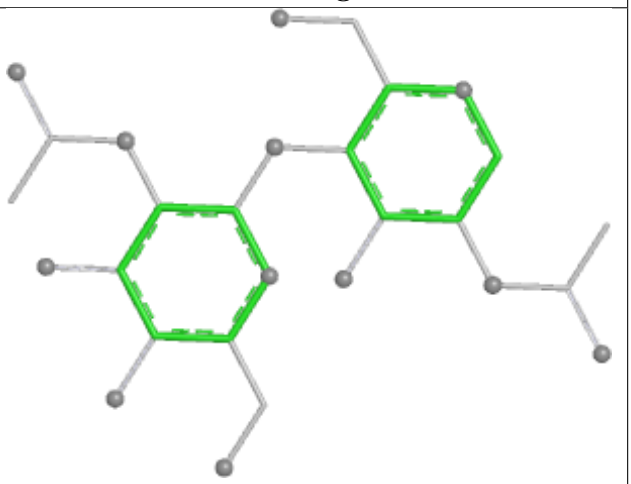
Bond lengths



Bond angles

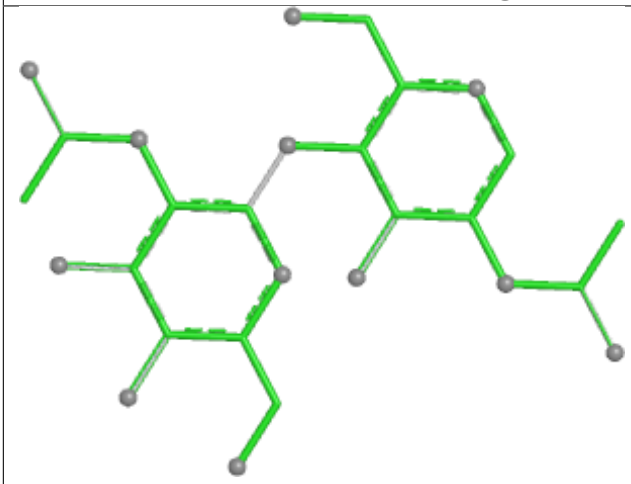


Torsions

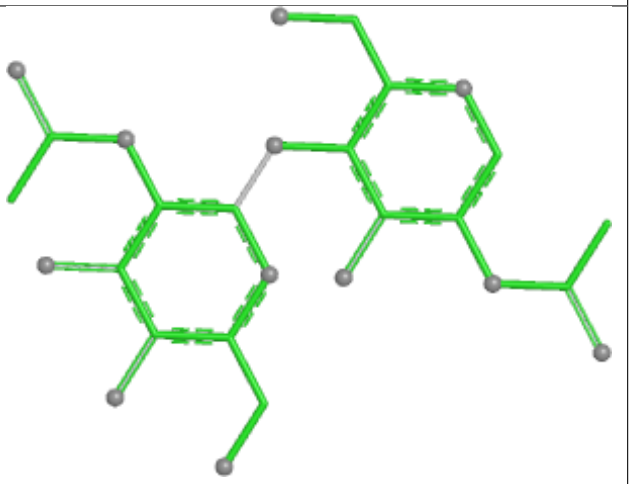


Rings

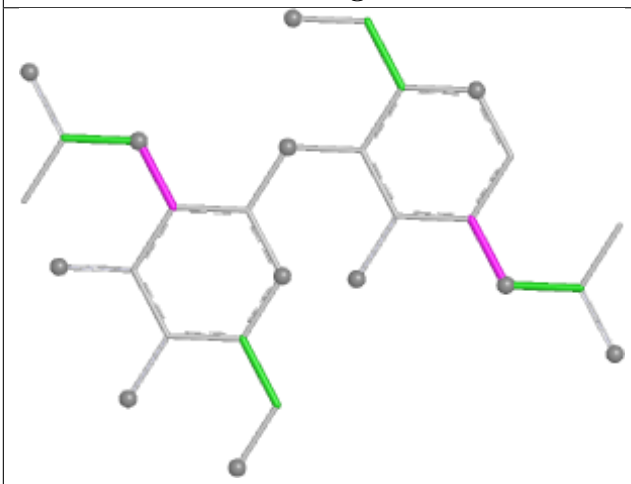
Oligosaccharide Chain F



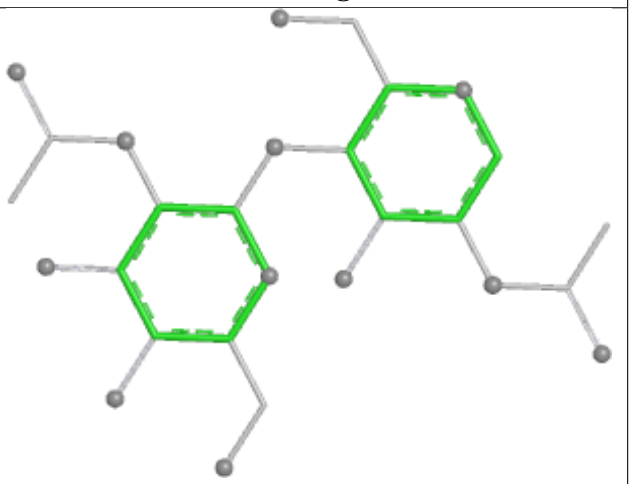
Bond lengths



Bond angles

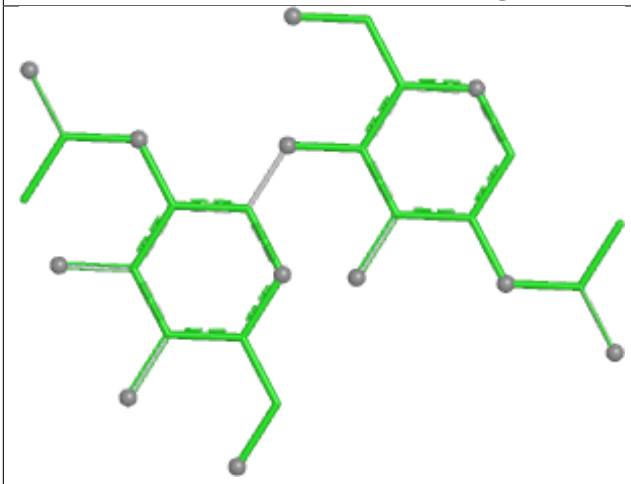


Torsions

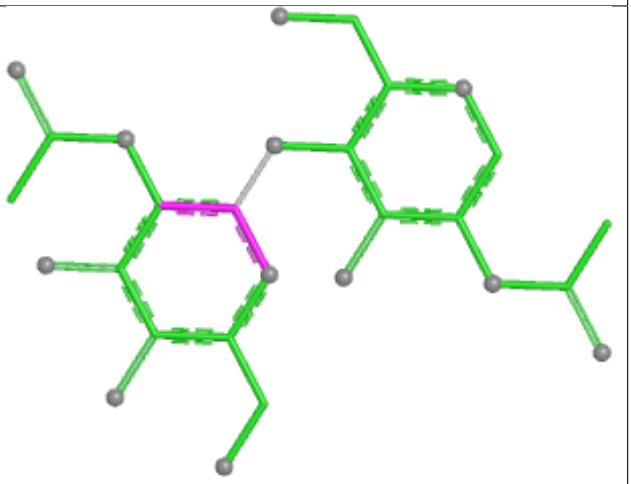


Rings

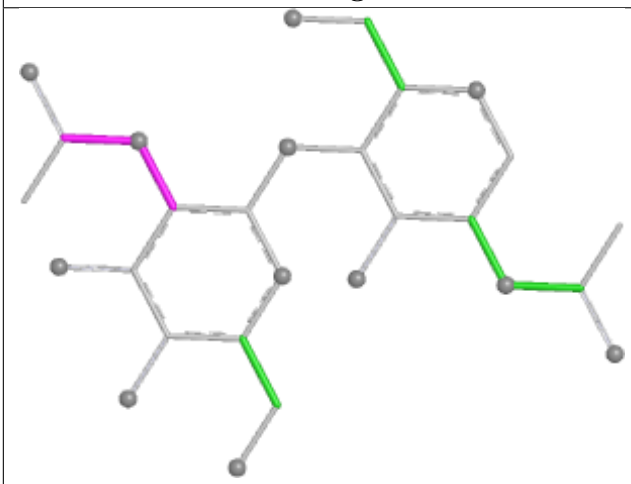
Oligosaccharide Chain G



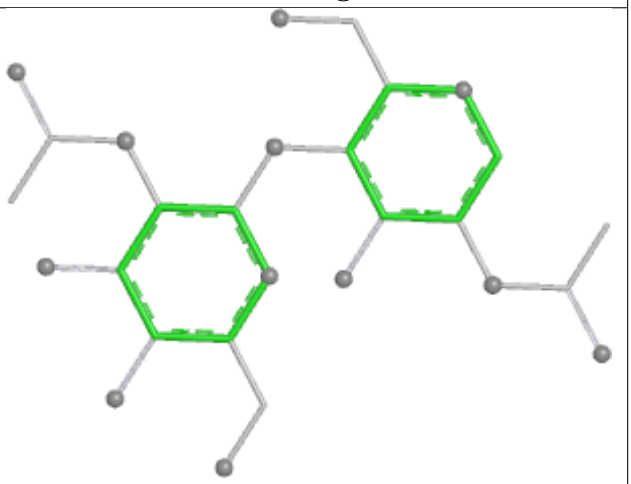
Bond lengths



Bond angles

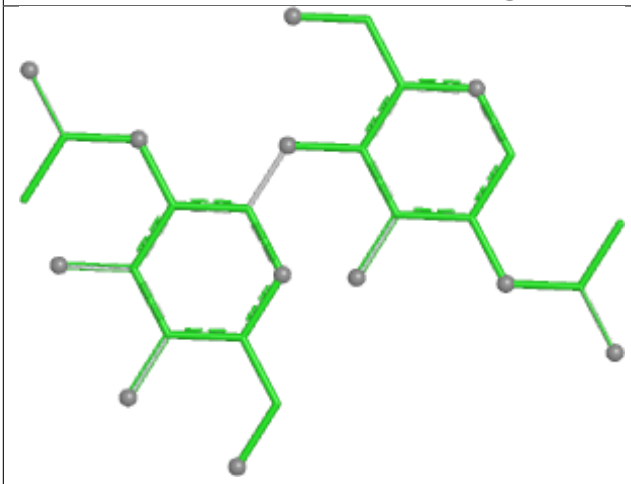


Torsions

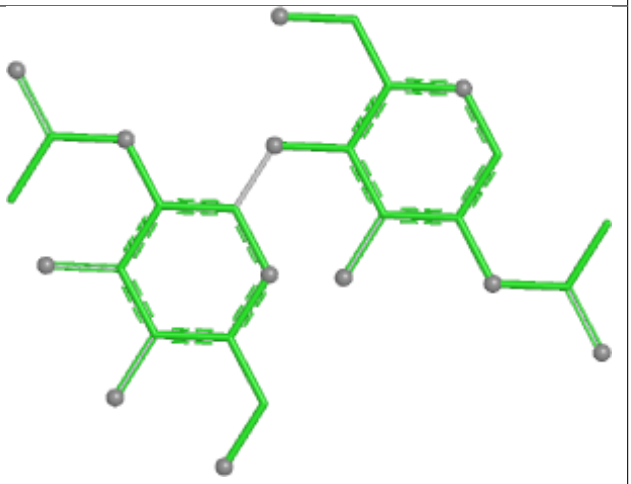


Rings

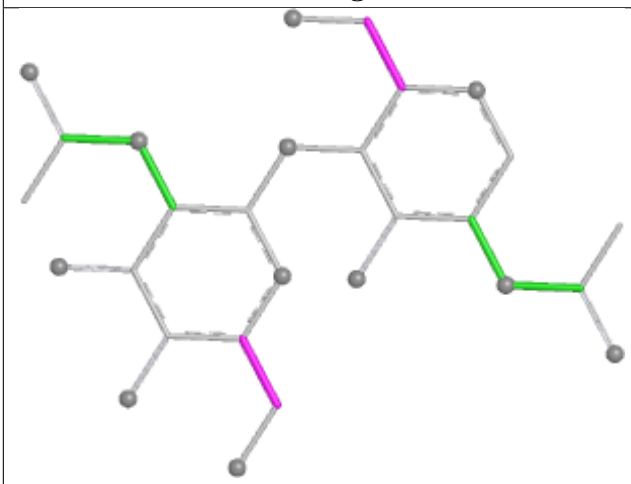
Oligosaccharide Chain I



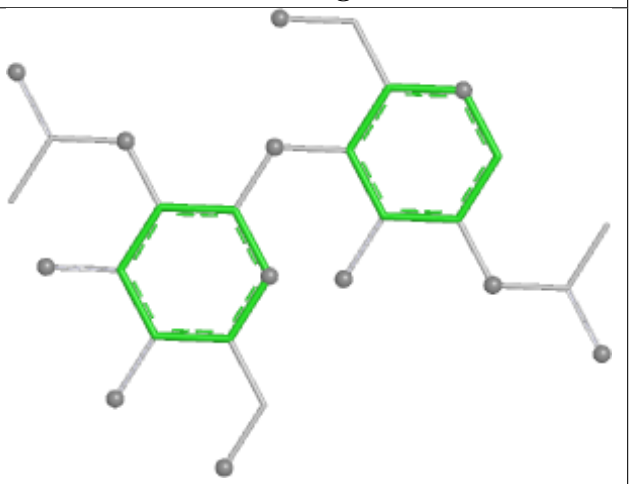
Bond lengths



Bond angles

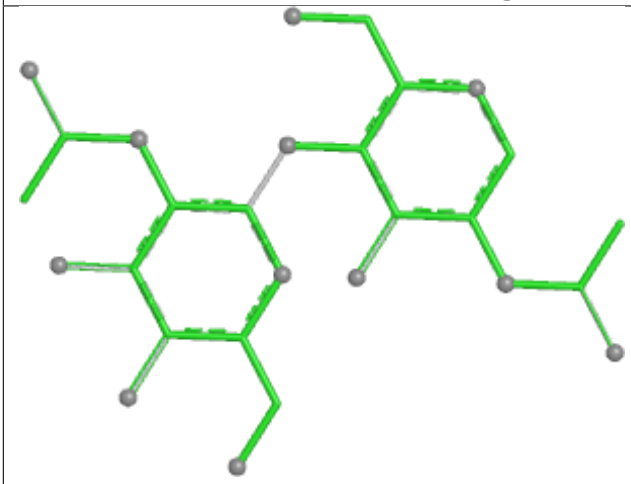


Torsions

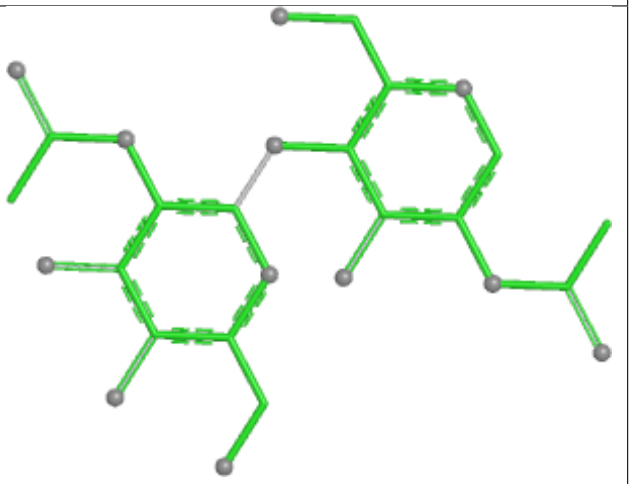


Rings

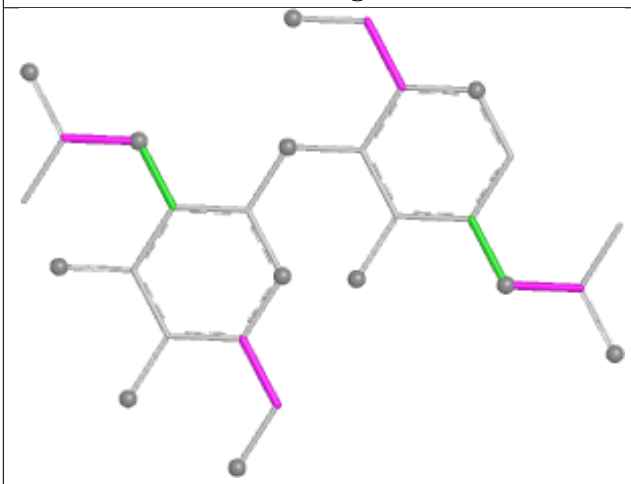
Oligosaccharide Chain J



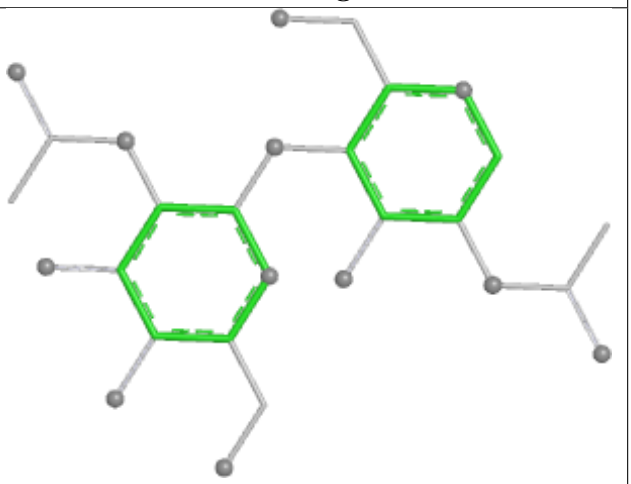
Bond lengths



Bond angles

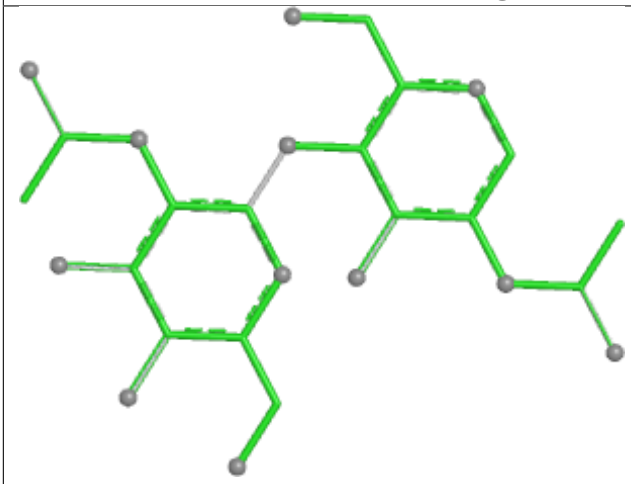


Torsions

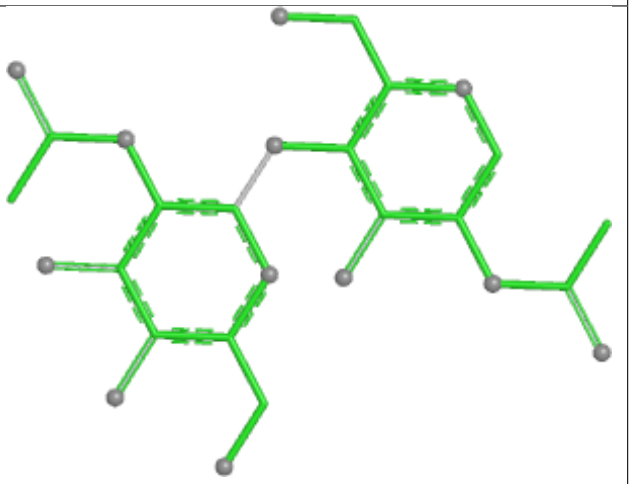


Rings

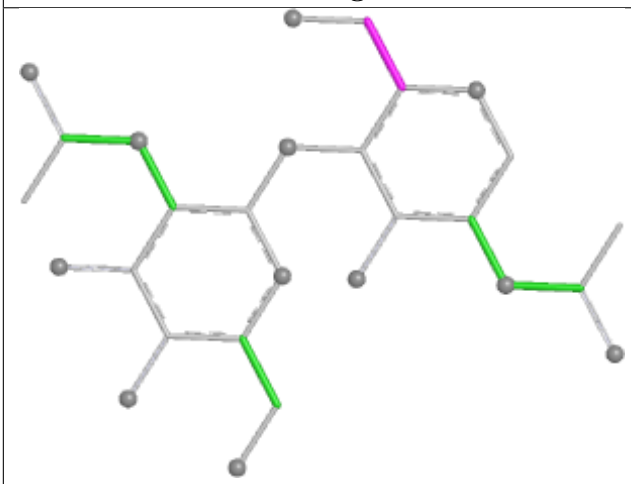
Oligosaccharide Chain K



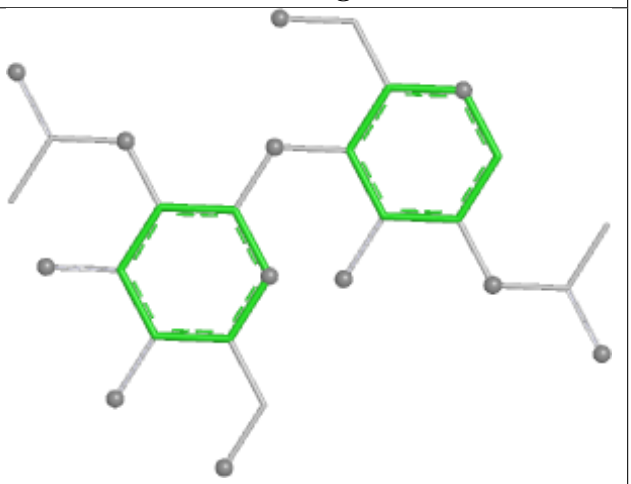
Bond lengths



Bond angles

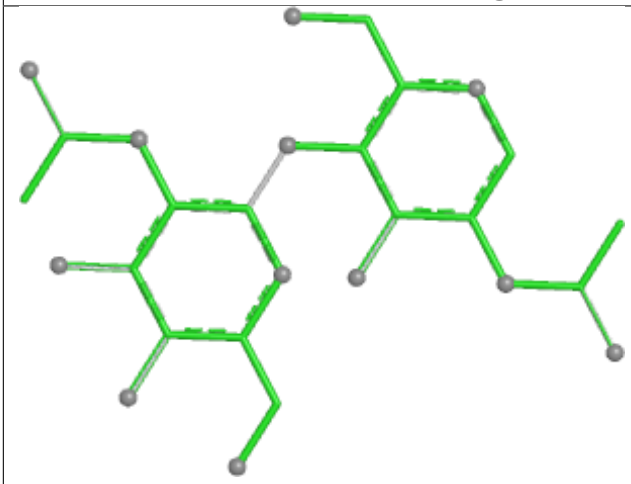


Torsions

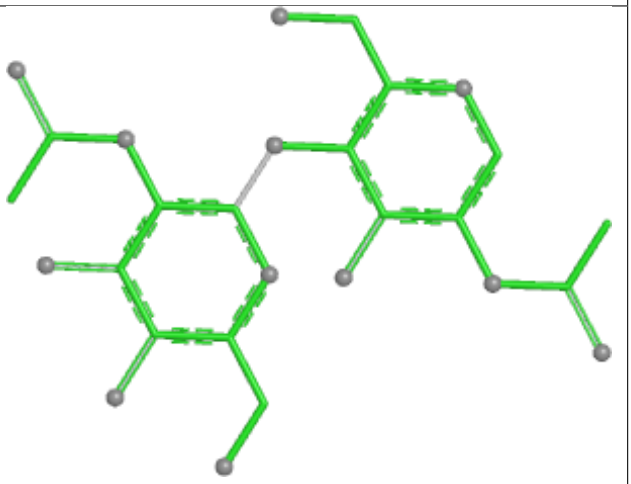


Rings

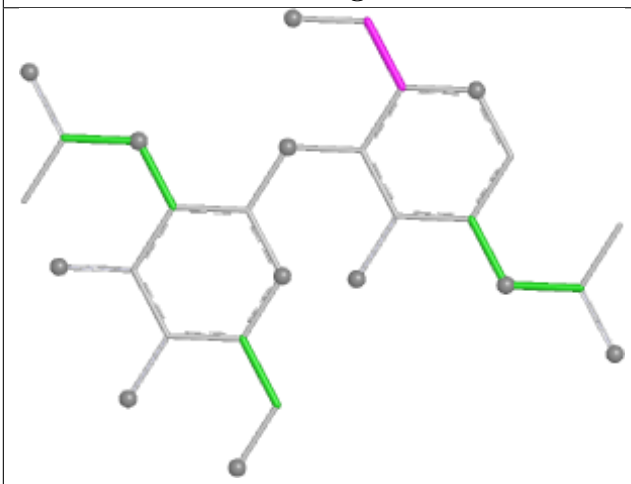
Oligosaccharide Chain M



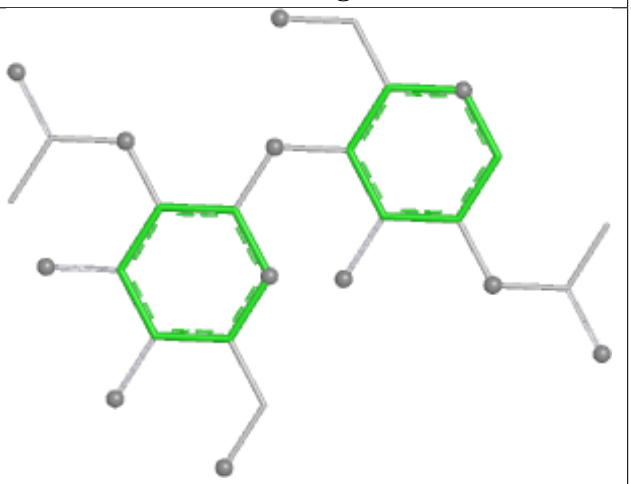
Bond lengths



Bond angles

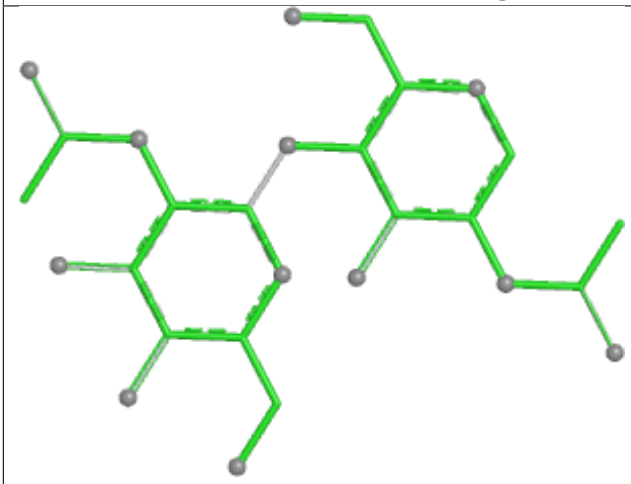


Torsions

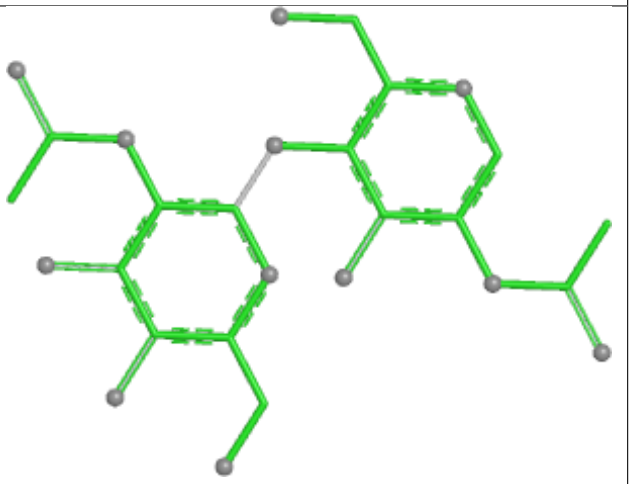


Rings

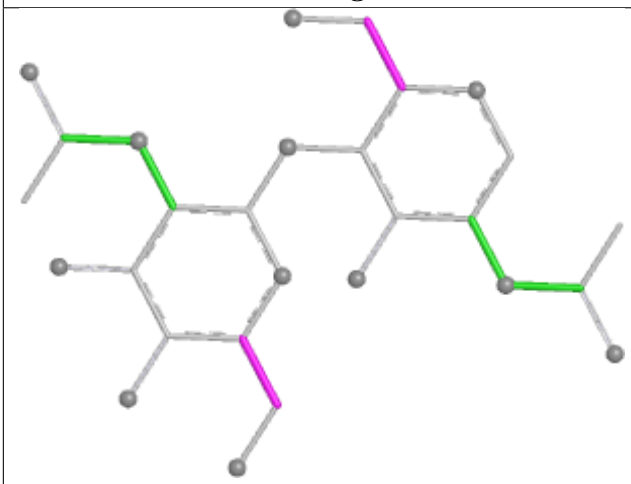
Oligosaccharide Chain N



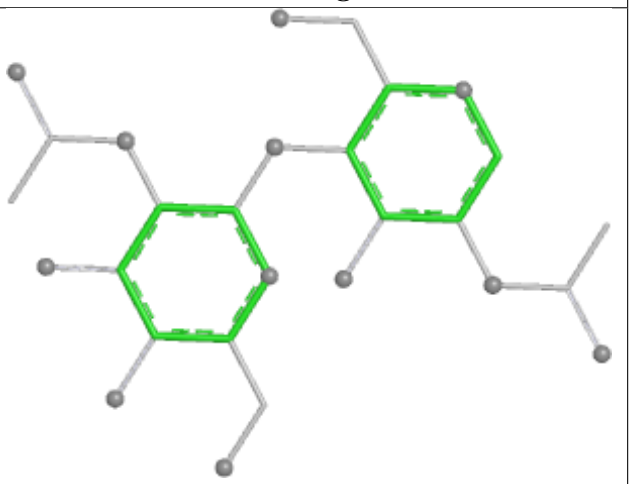
Bond lengths



Bond angles

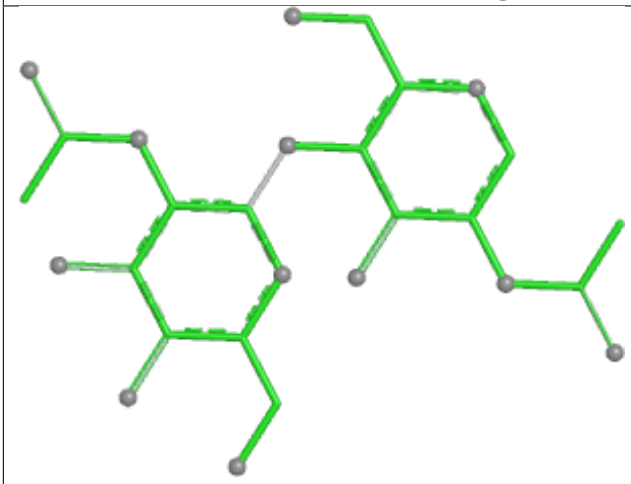


Torsions

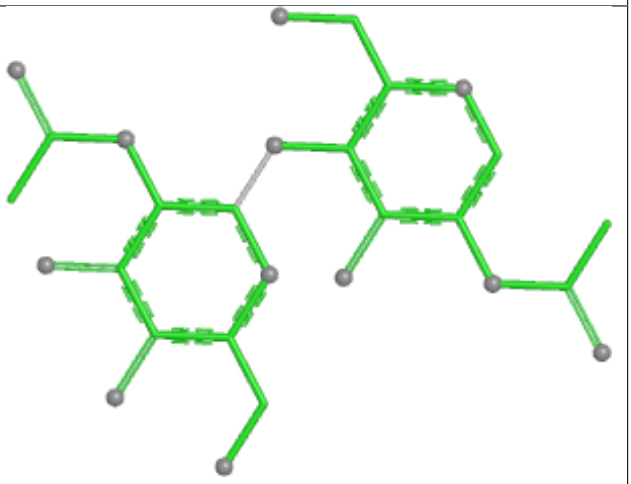


Rings

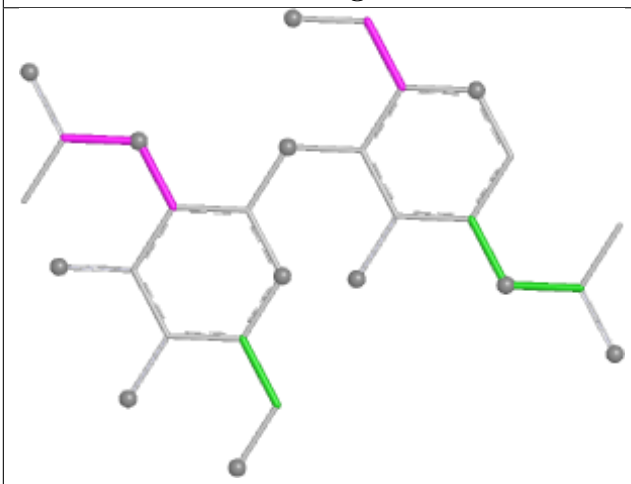
Oligosaccharide Chain O



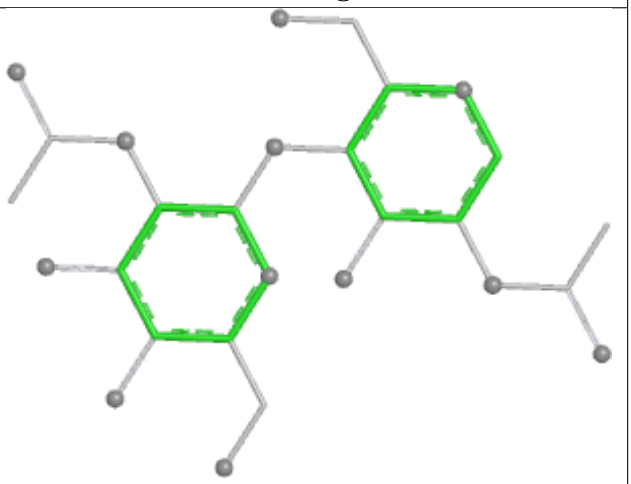
Bond lengths



Bond angles

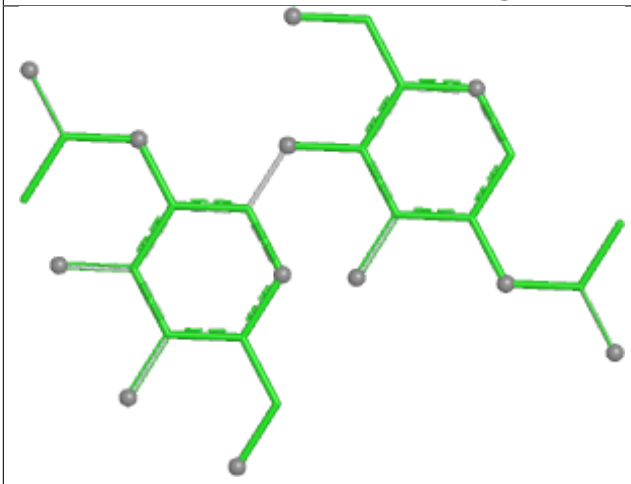


Torsions

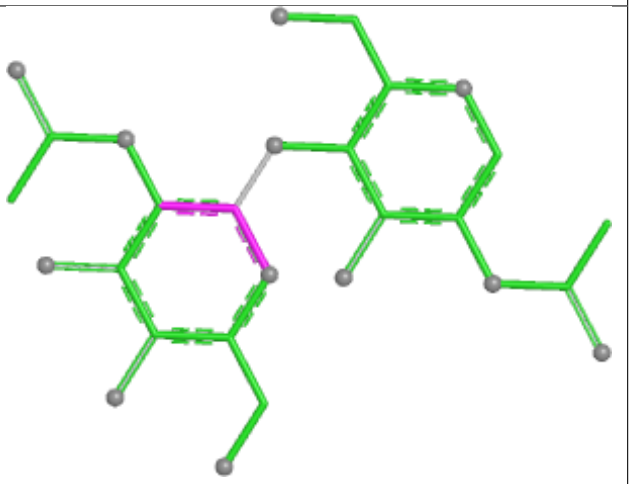


Rings

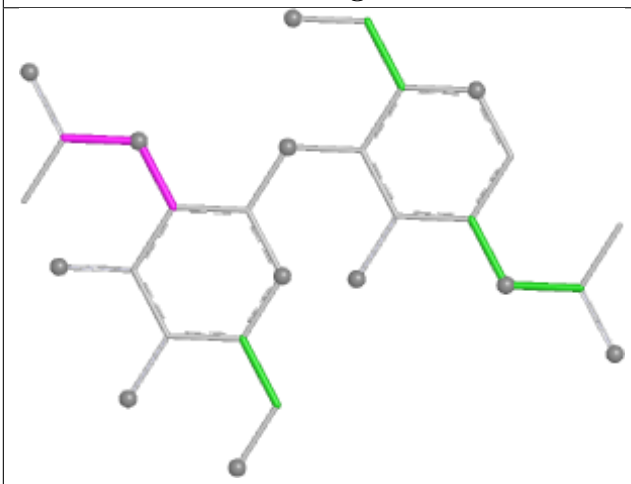
Oligosaccharide Chain P



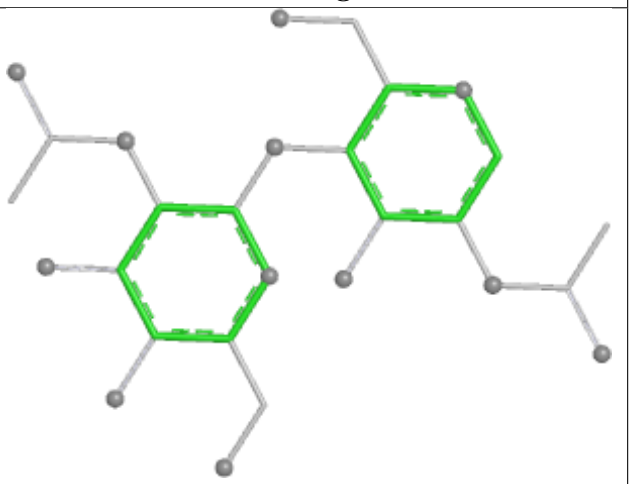
Bond lengths



Bond angles

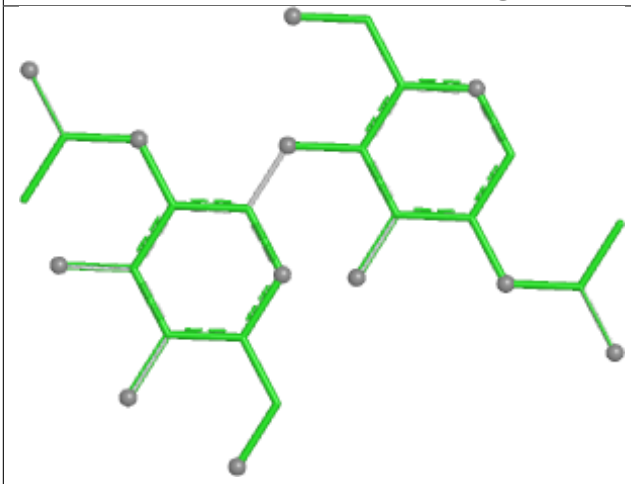


Torsions



Rings

Oligosaccharide Chain Q



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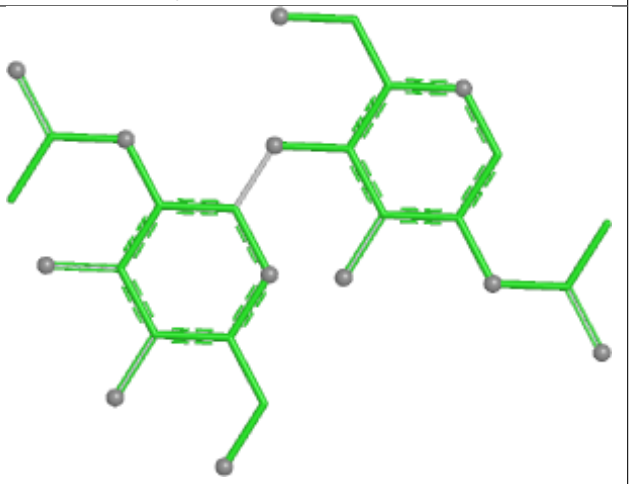
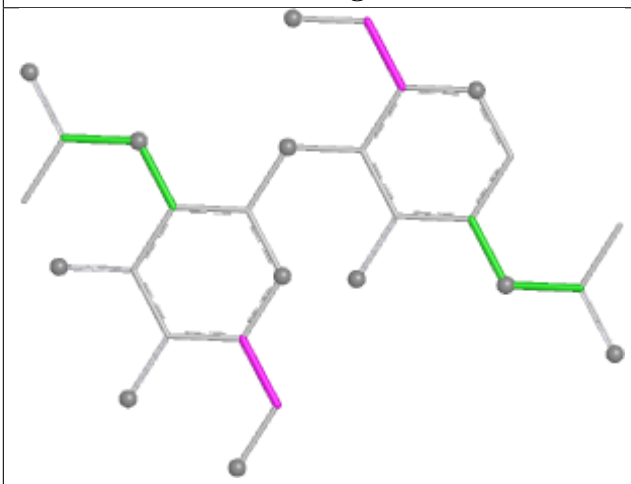


Bond angles



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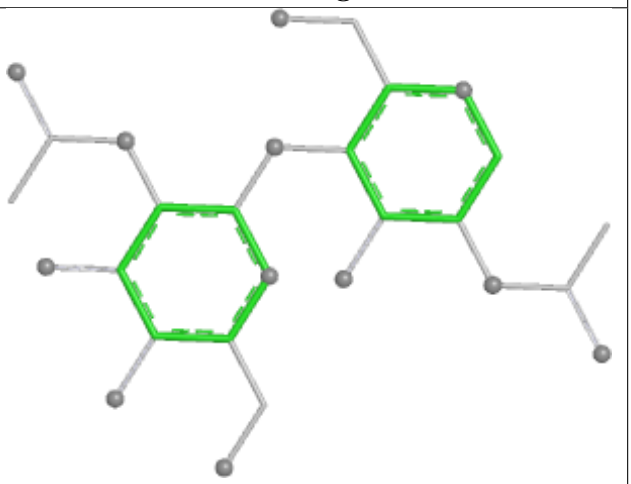
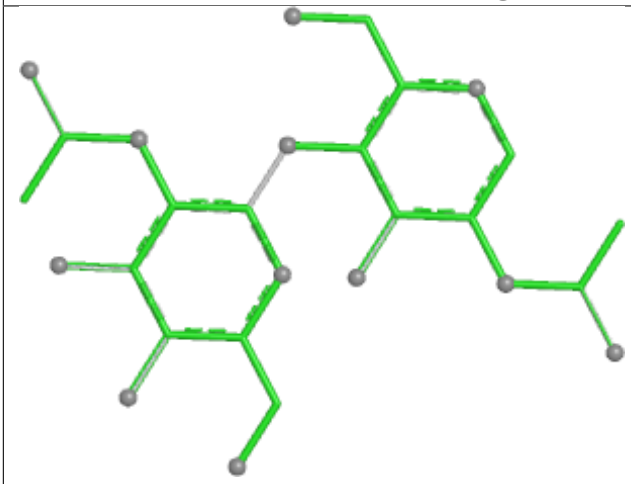


Rings

Oligosaccharide Chain R



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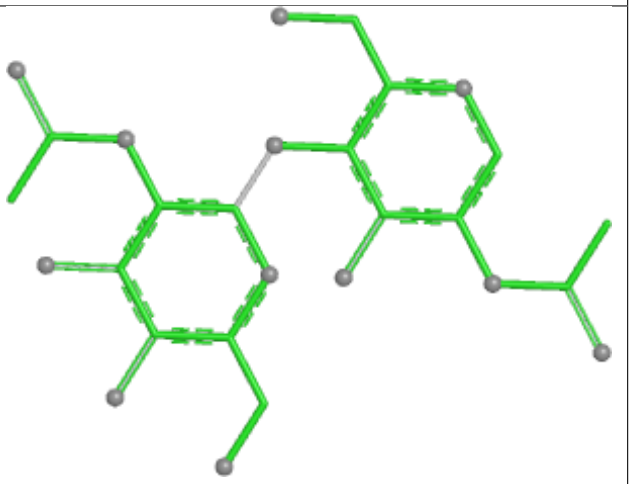
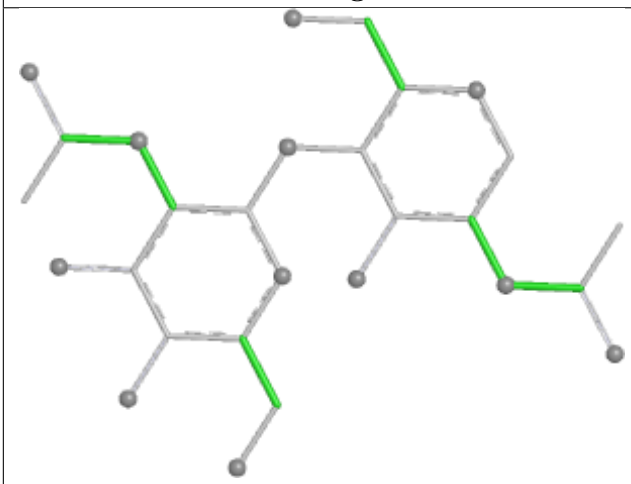


Bond angles



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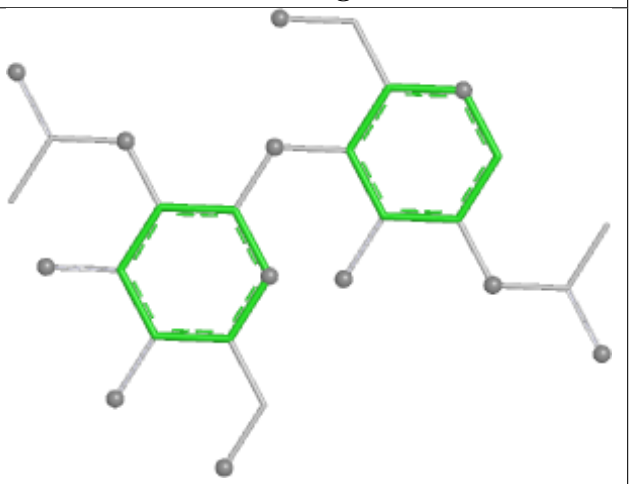
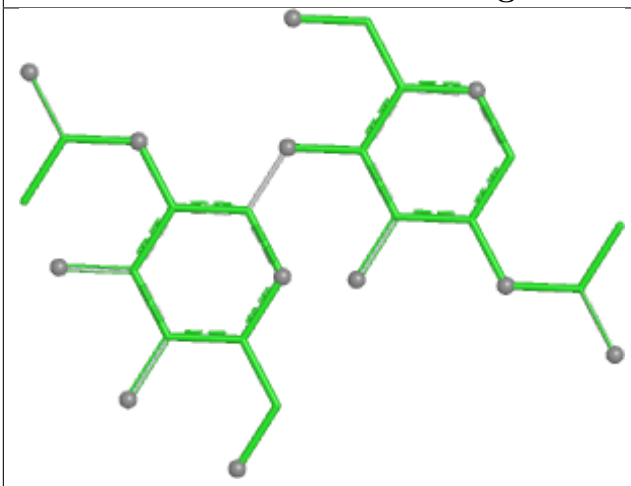


Rings

Oligosaccharide Chain S



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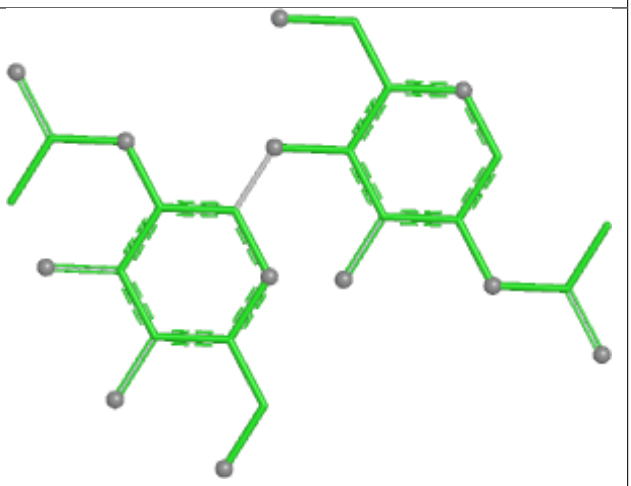

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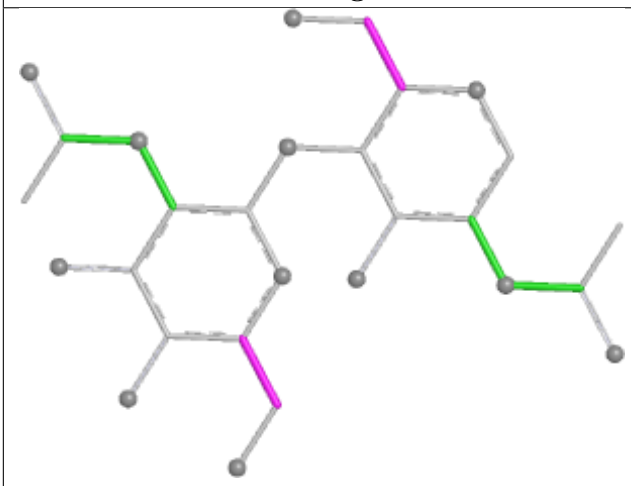

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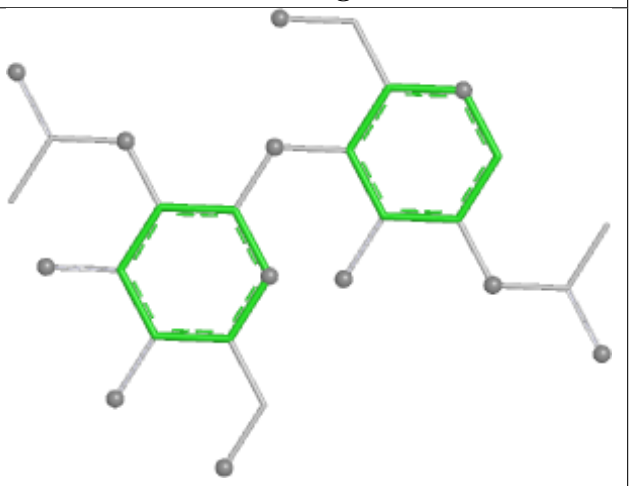
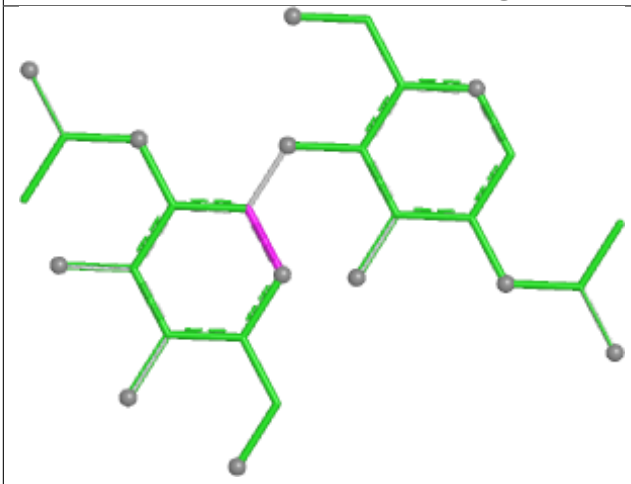


Rings

Oligosaccharide Chain T



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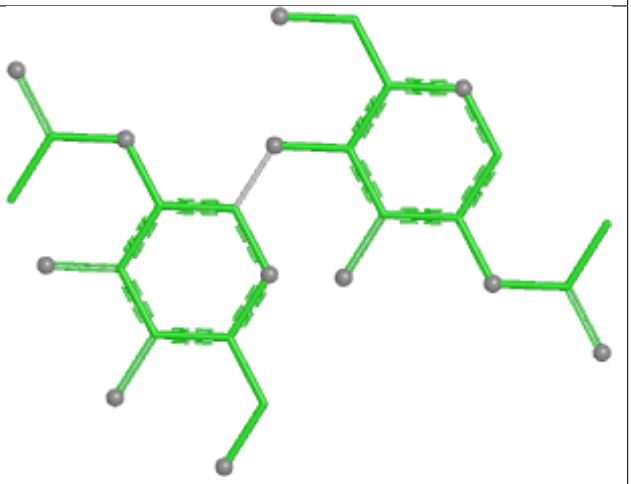

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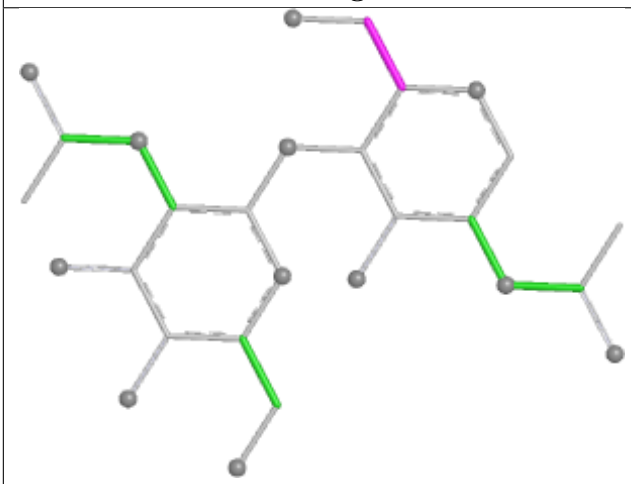

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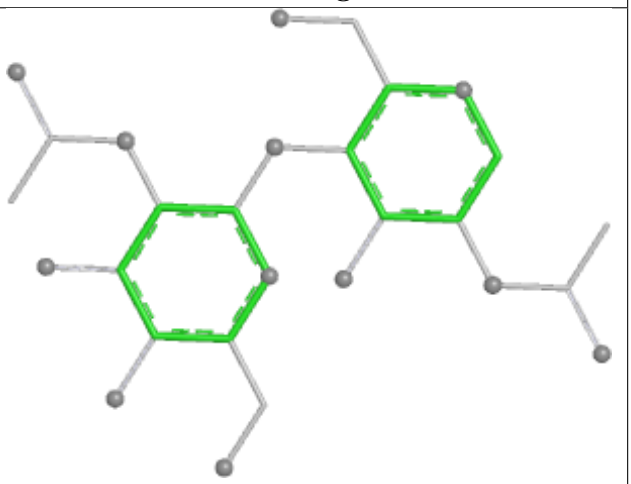
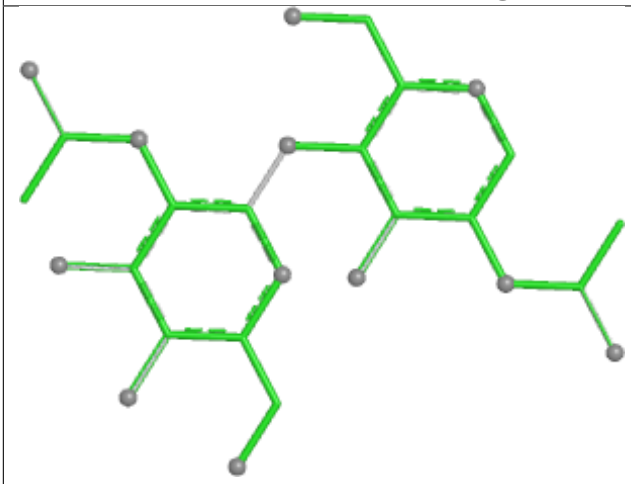


Rings

Oligosaccharide Chain U



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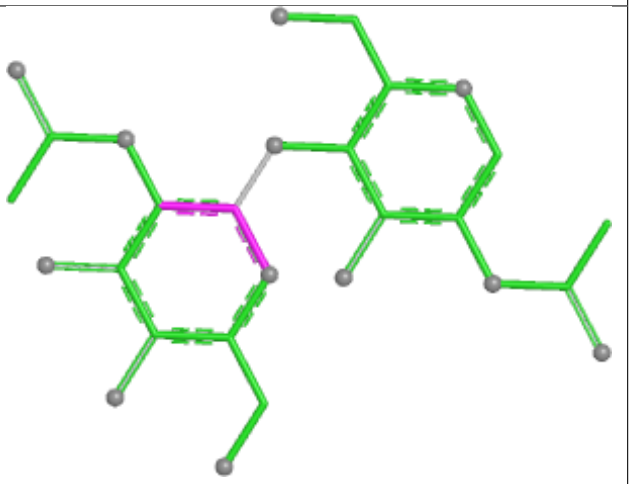

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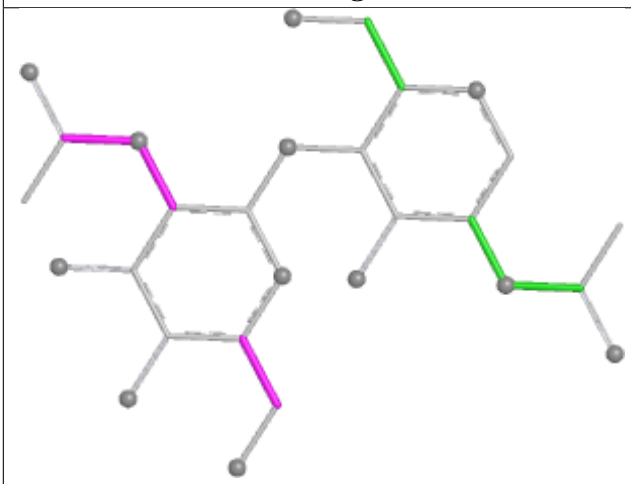

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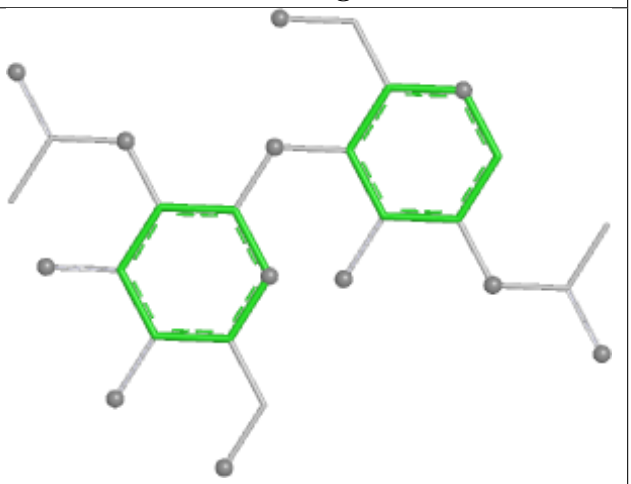
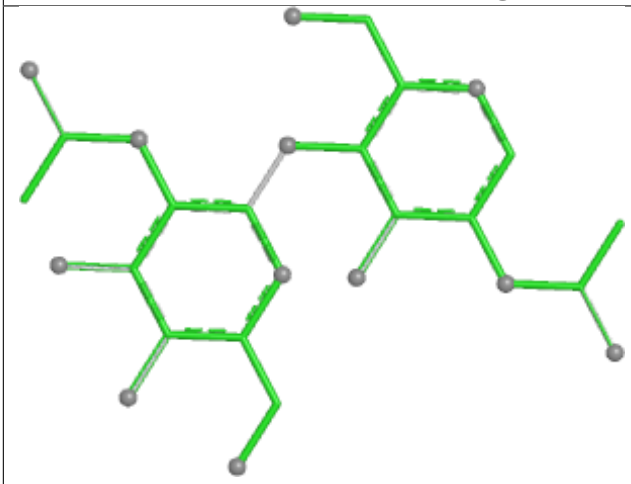


Rings

Oligosaccharide Chain V



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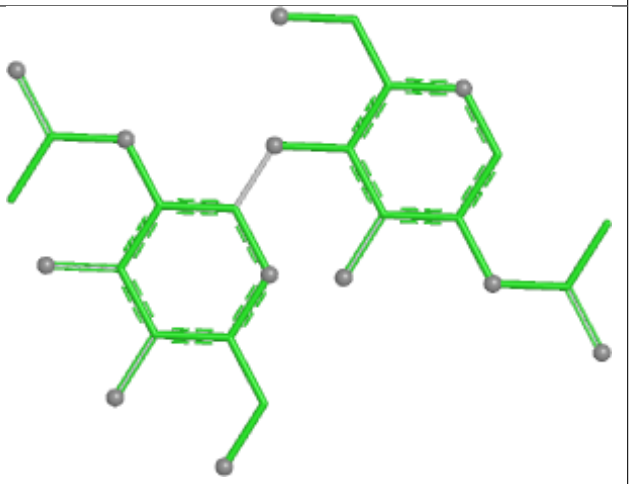

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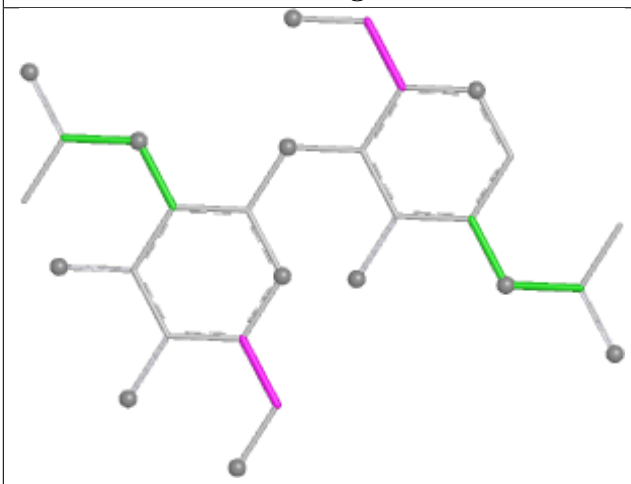

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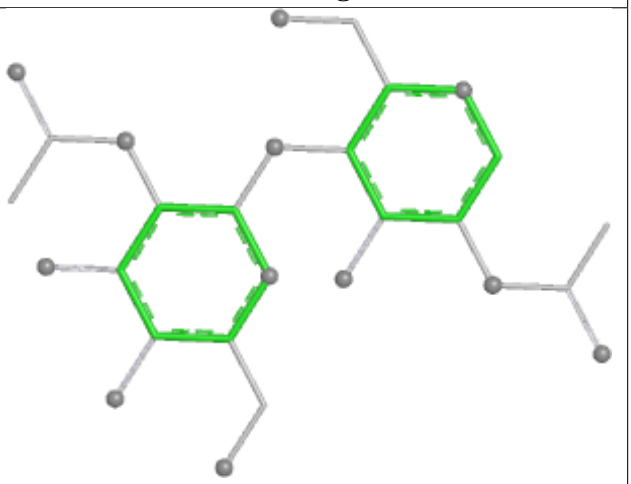
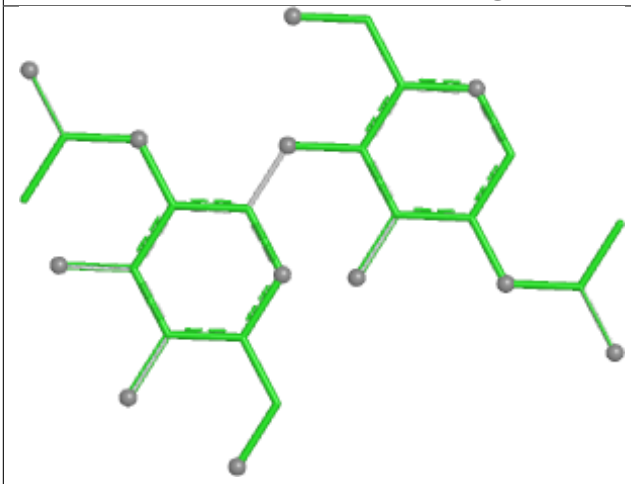


Rings

Oligosaccharide Chain W



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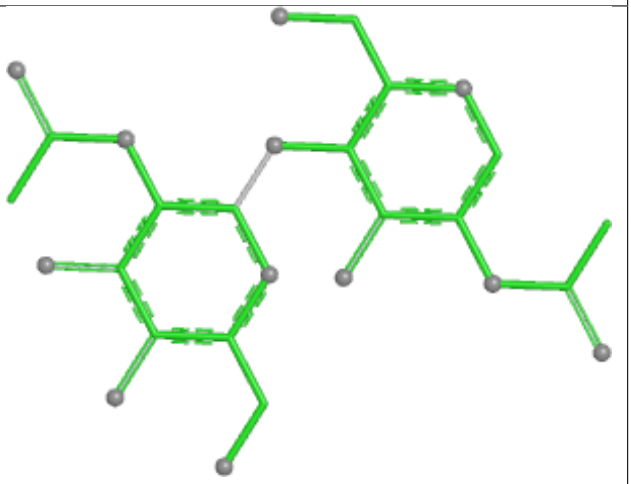

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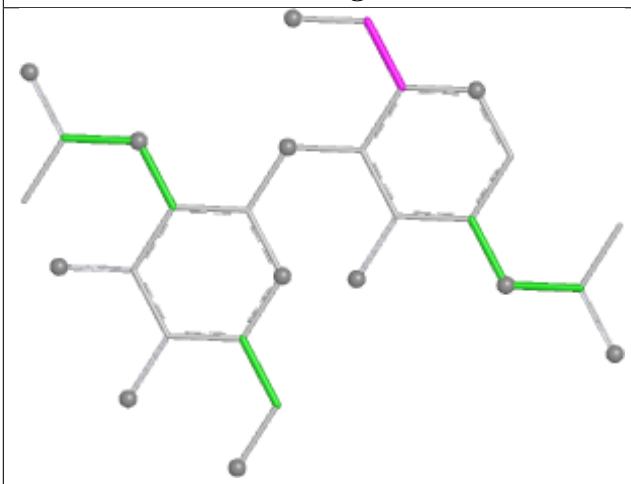

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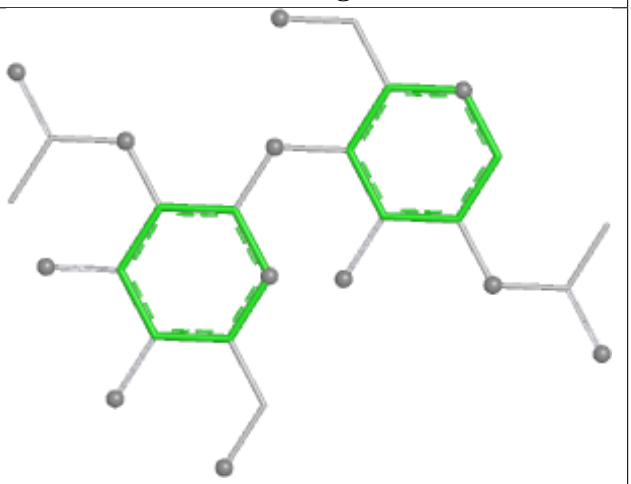
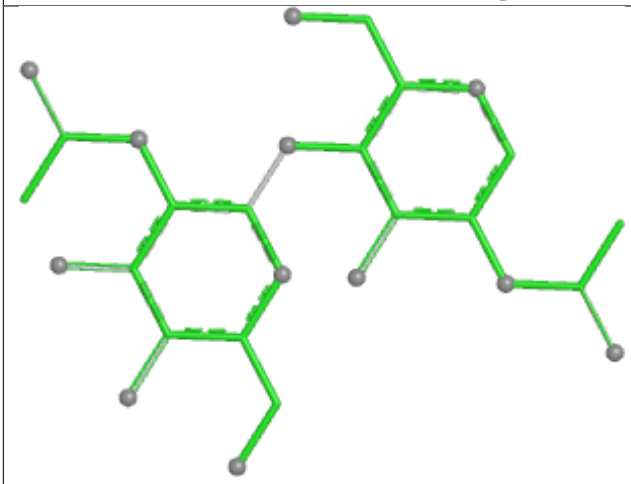


Rings

Oligosaccharide Chain X



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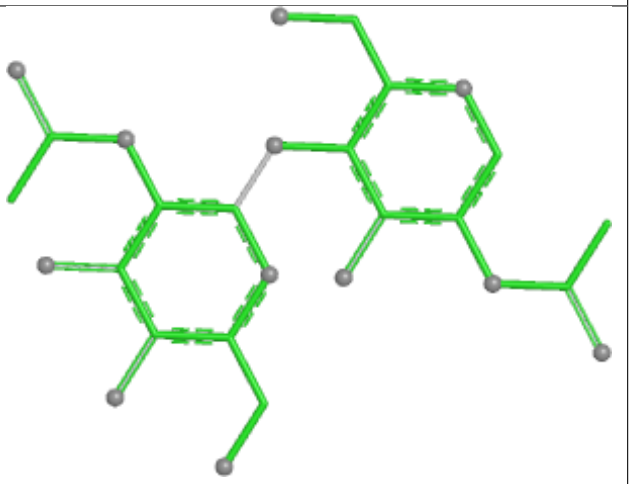

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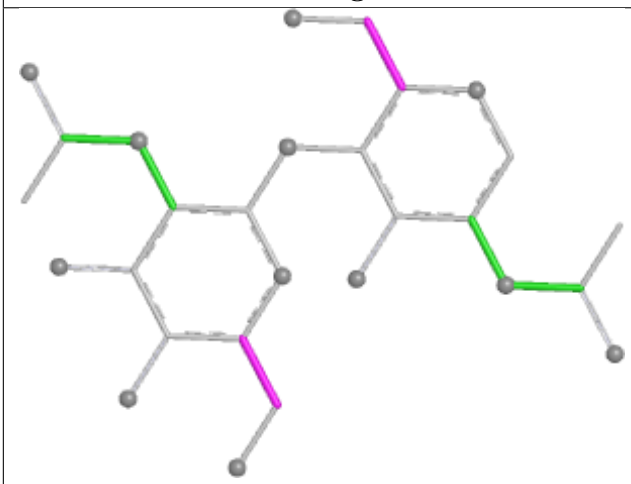

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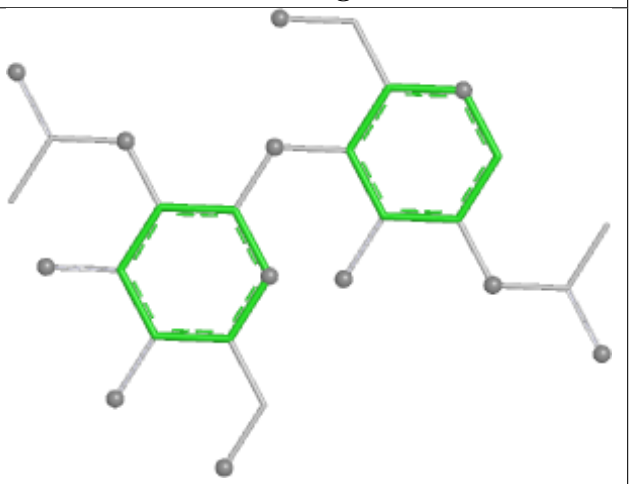

Rings

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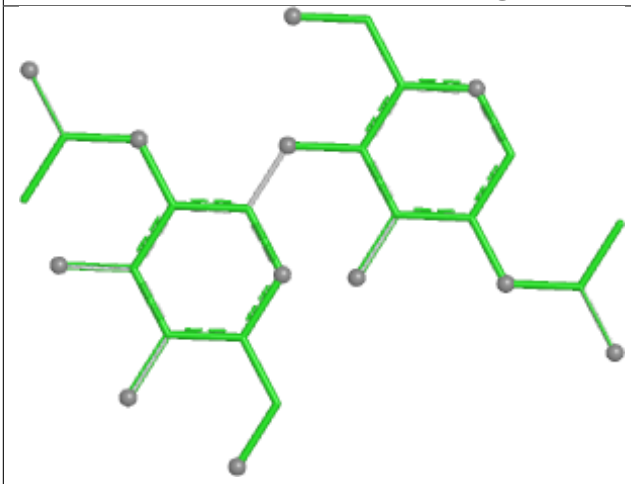

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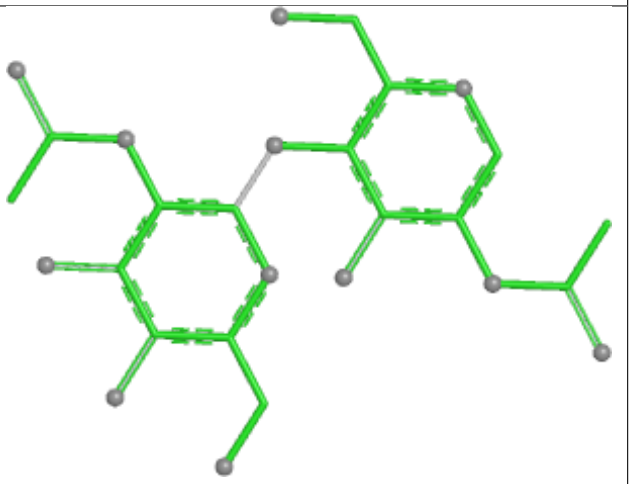

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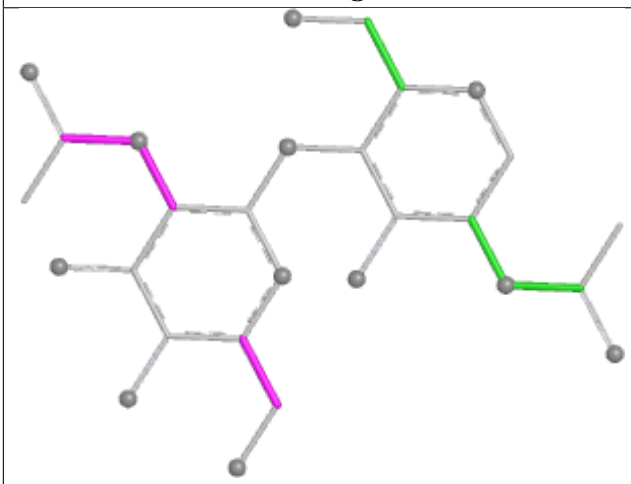

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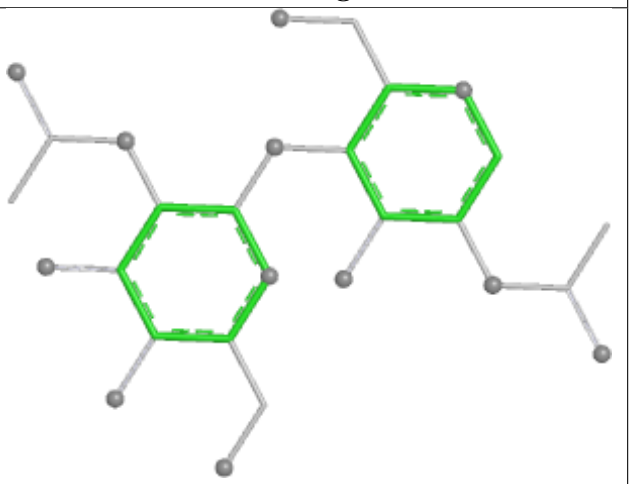
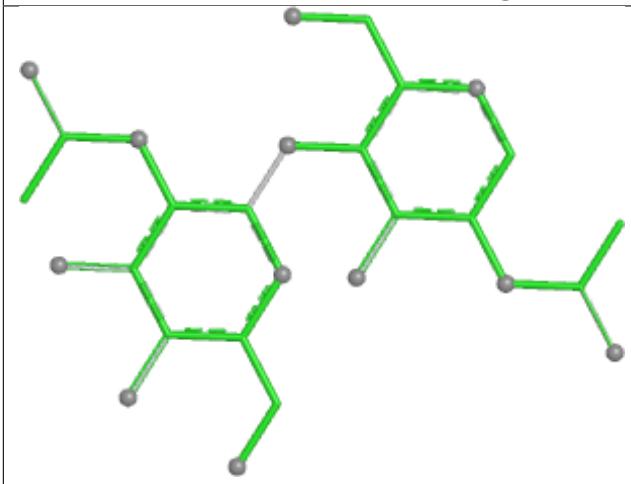


Rings

Oligosaccharide Chain Z



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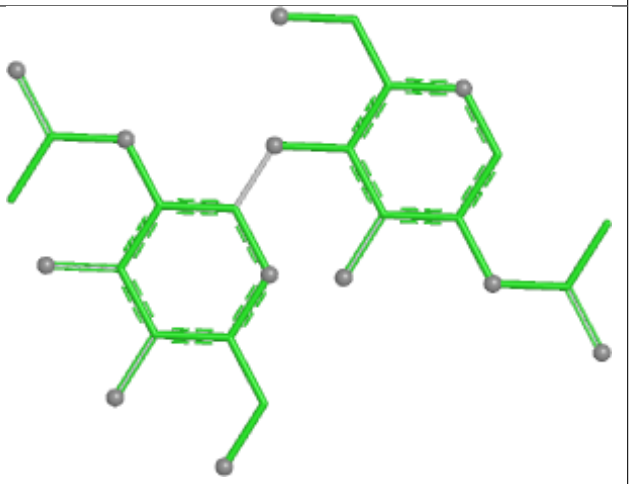
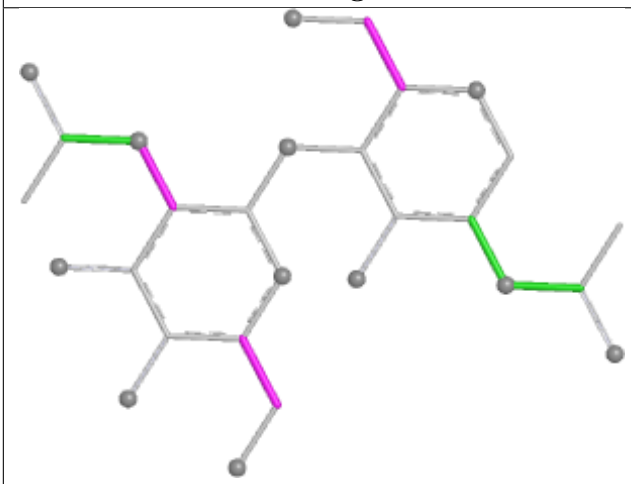


Bond angles



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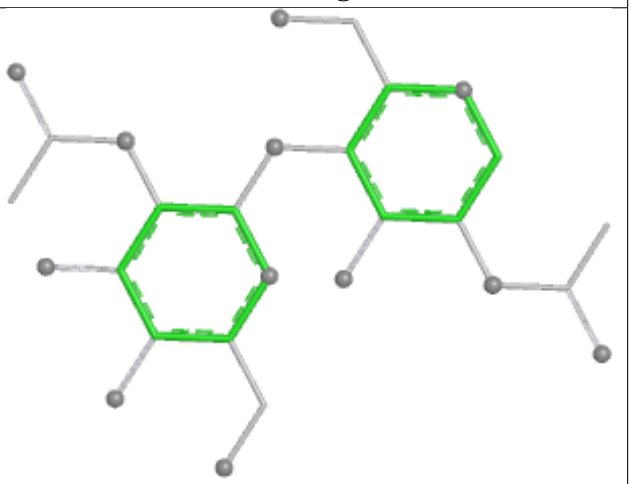
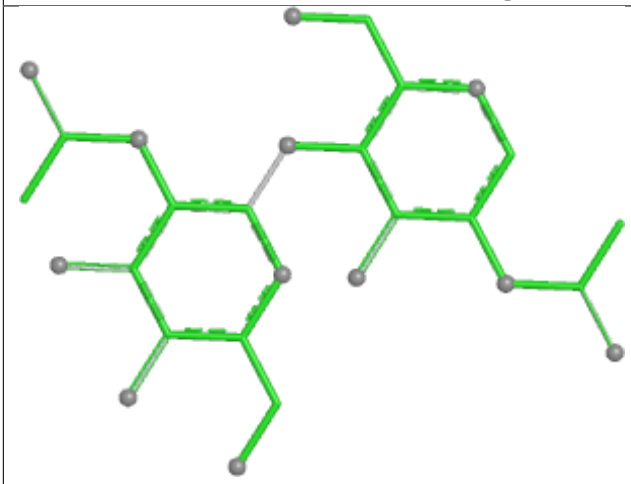


Rings

Oligosaccharide Chain a



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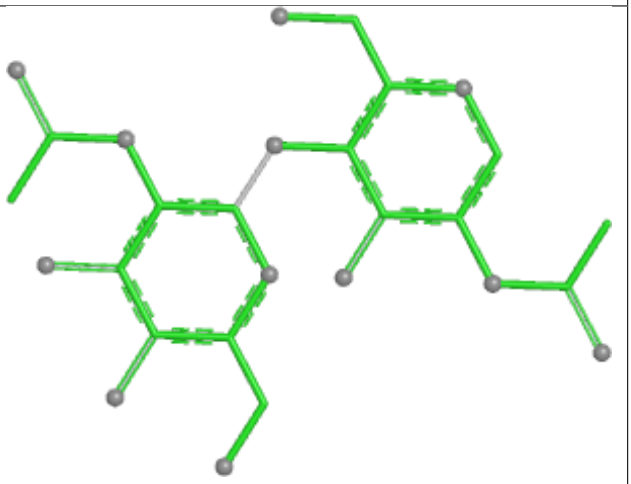

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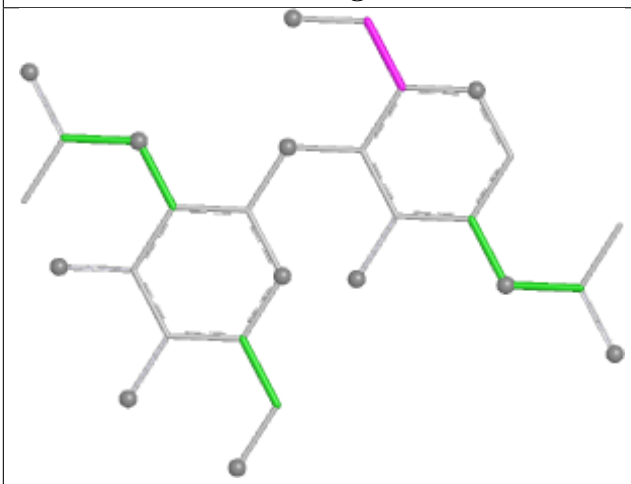

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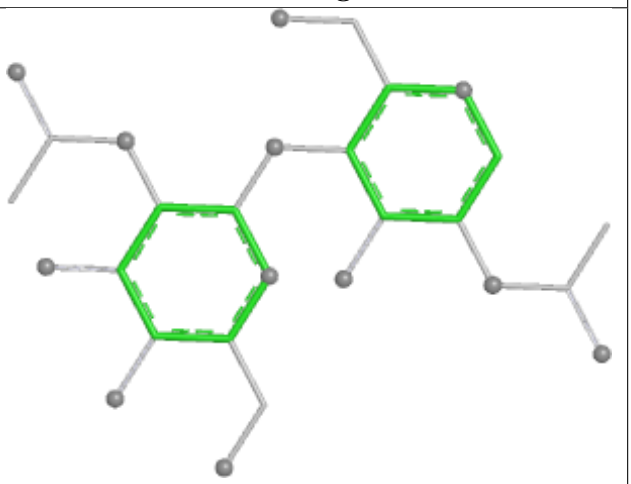
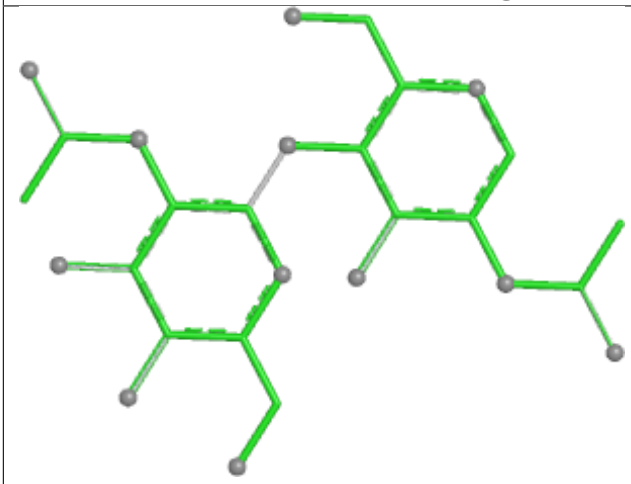


Rings

Oligosaccharide Chain b



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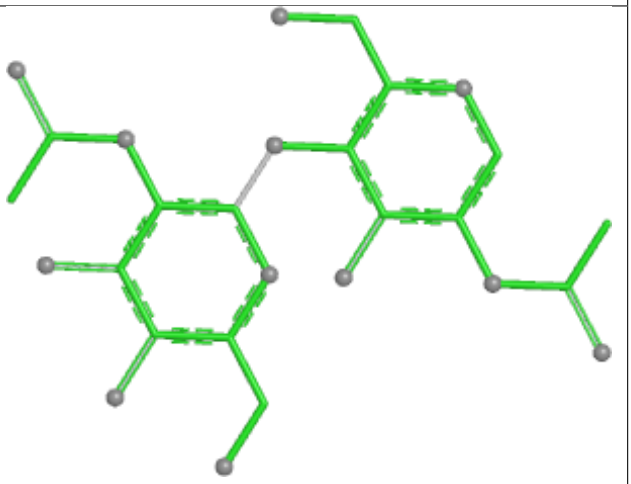

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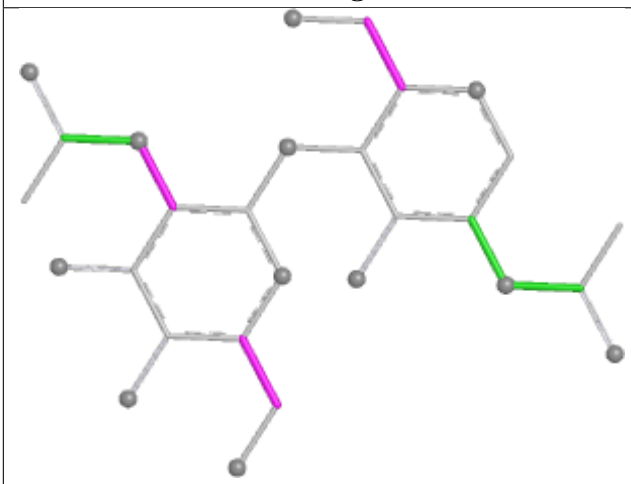

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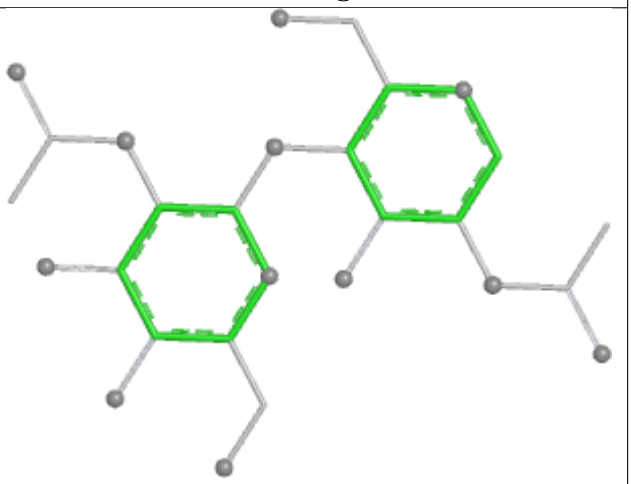
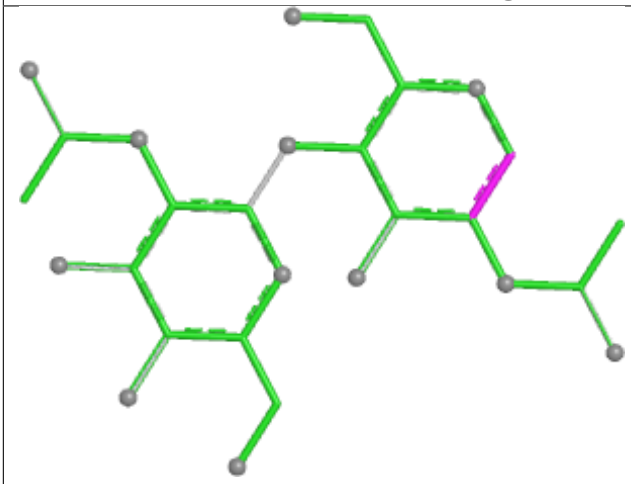


Rings

Oligosaccharide Chain c



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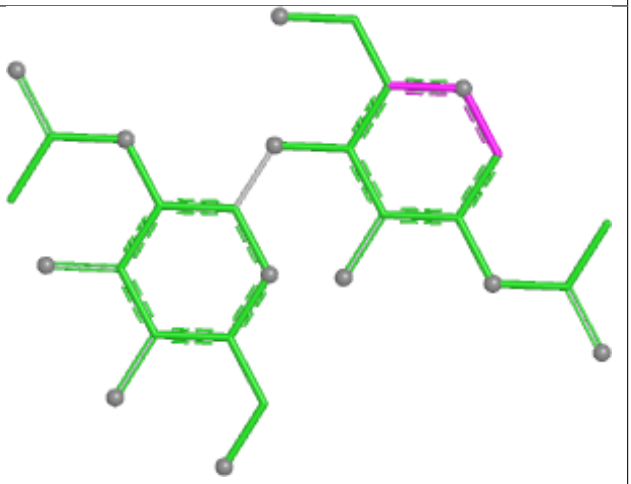
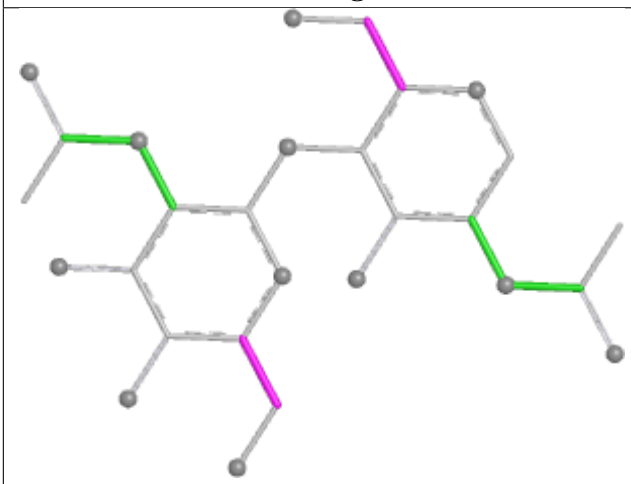


Bond angles



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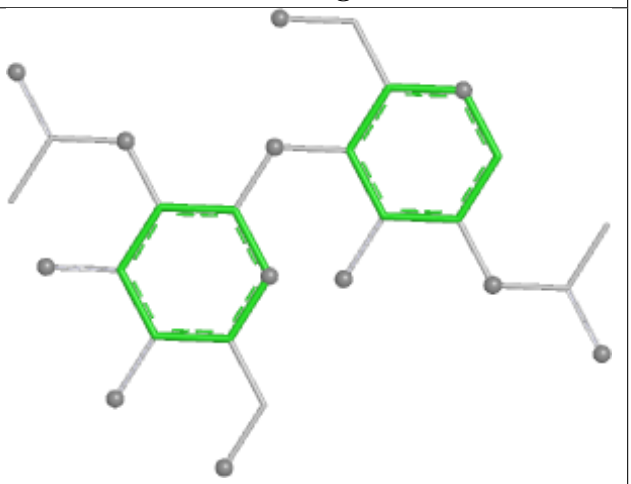
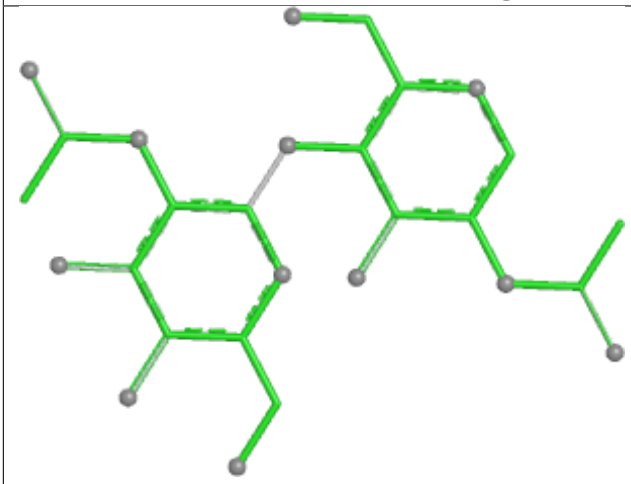
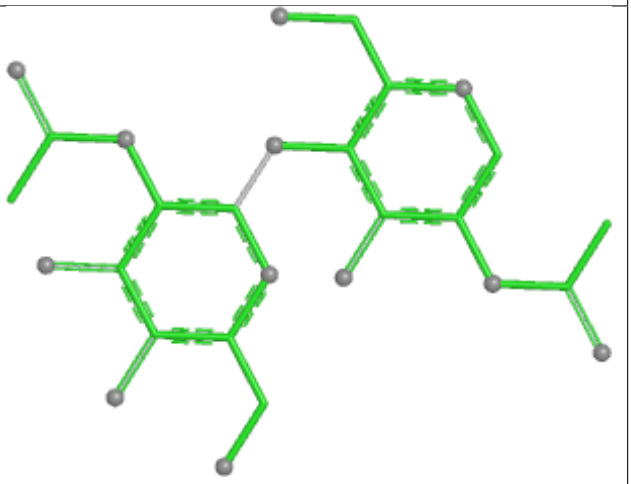


Rings

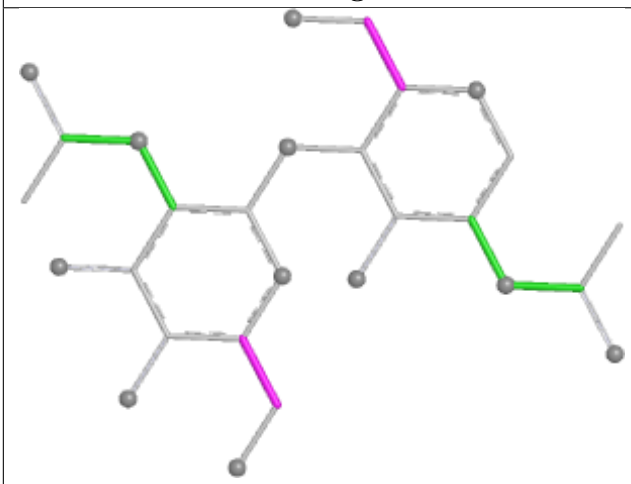
Oligosaccharide Chain d



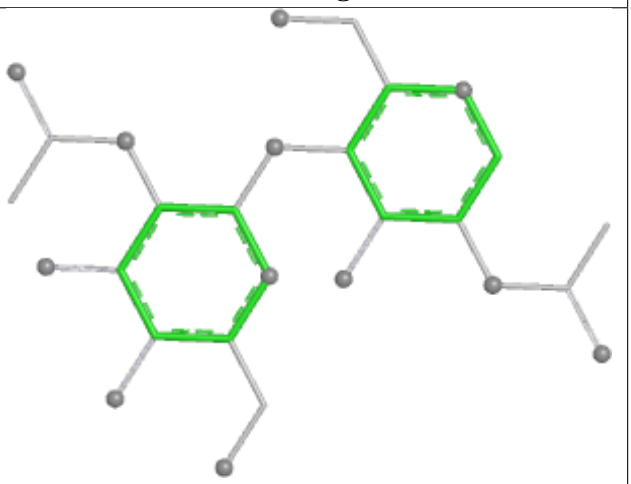
Bond lengths



Bond angles

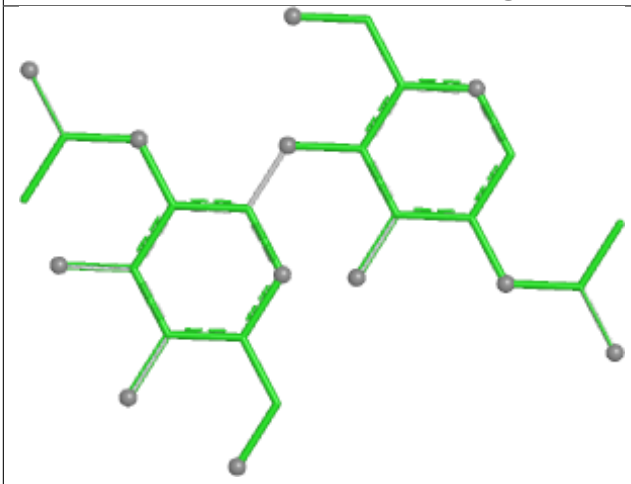


Torsions

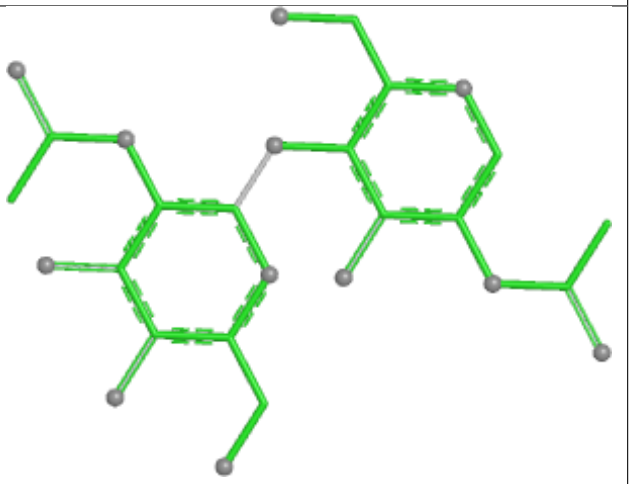


Rings

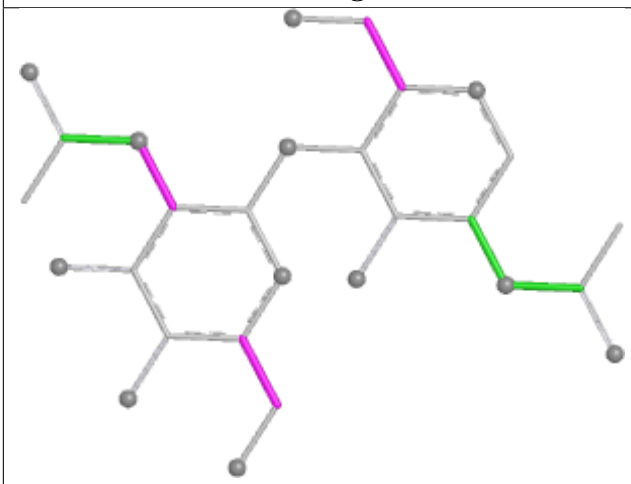
Oligosaccharide Chain e



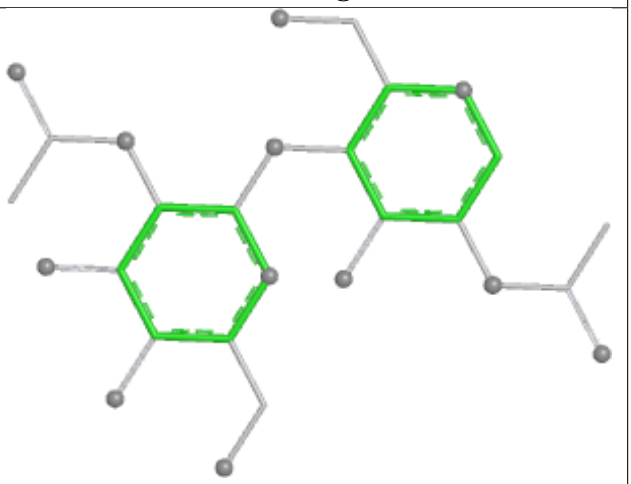
Bond lengths



Bond angles

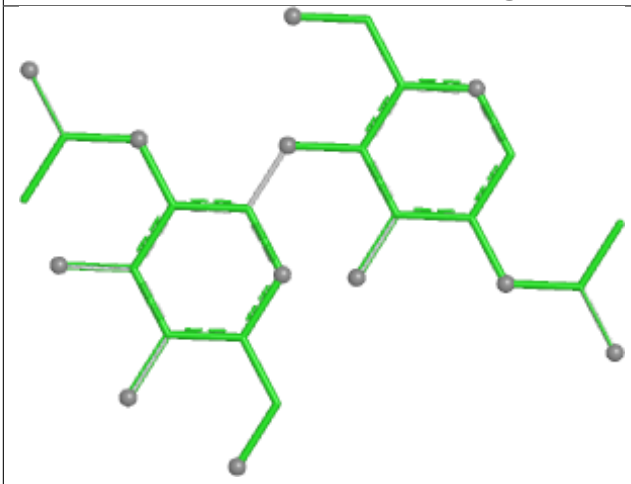


Torsions

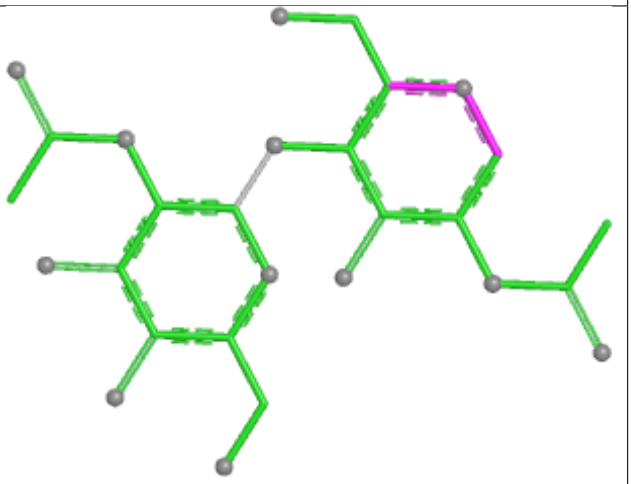


Rings

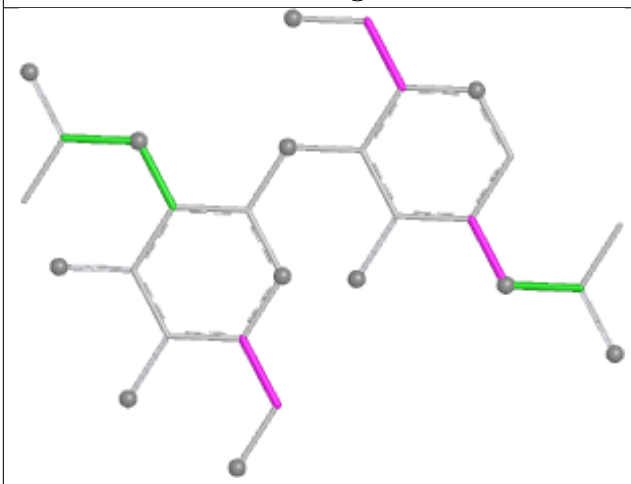
Oligosaccharide Chain f



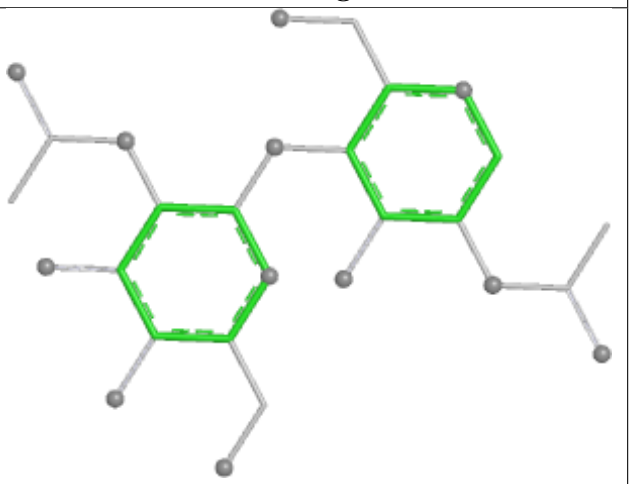
Bond lengths



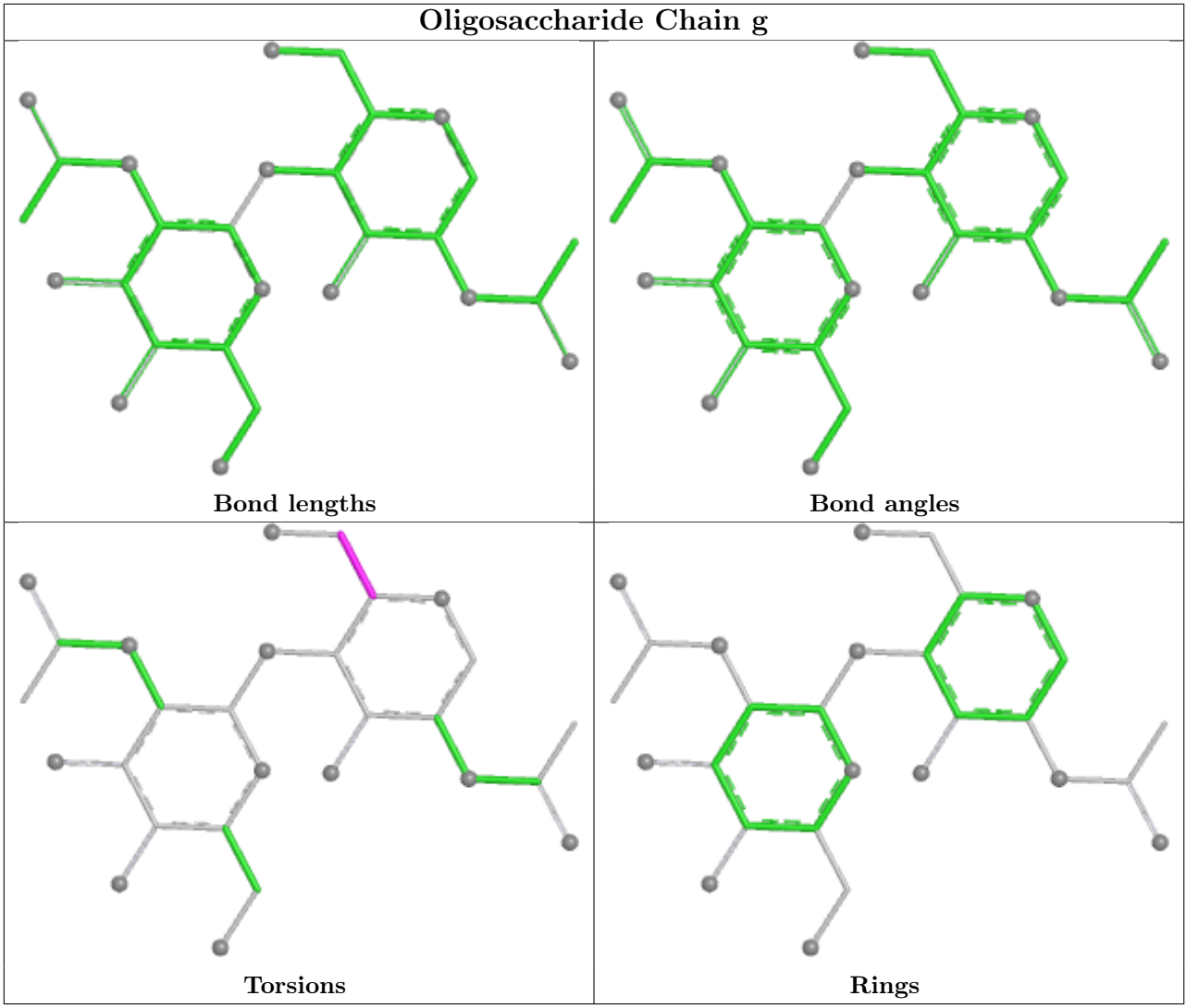
Bond angles



Torsions



Rings



5.6 Ligand geometry (i)

25 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	NAG	A	1407	1	14,14,15	0.32	0	17,19,21	0.46	0
5	NAG	A	1403	1	14,14,15	0.53	0	17,19,21	0.41	0
5	NAG	A	1401	1	14,14,15	0.36	0	17,19,21	0.45	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	NAG	B	1203	1	14,14,15	0.21	0	17,19,21	0.34	0
5	NAG	B	1205	1	14,14,15	0.21	0	17,19,21	0.47	0
5	NAG	A	1404	1	14,14,15	0.27	0	17,19,21	0.35	0
5	NAG	C	1207	1	14,14,15	0.25	0	17,19,21	0.39	0
5	NAG	B	1208	1	14,14,15	0.30	0	17,19,21	0.56	0
5	NAG	C	1208	1	14,14,15	0.29	0	17,19,21	0.60	0
5	NAG	A	1402	1	14,14,15	0.17	0	17,19,21	0.42	0
5	NAG	C	1205	1	14,14,15	0.21	0	17,19,21	0.47	0
5	NAG	B	1209	1	14,14,15	0.18	0	17,19,21	0.47	0
5	NAG	B	1207	1	14,14,15	0.36	0	17,19,21	0.36	0
5	NAG	B	1206	1	14,14,15	0.30	0	17,19,21	0.38	0
5	NAG	C	1202	1	14,14,15	0.57	0	17,19,21	0.75	1 (5%)
5	NAG	B	1204	1	14,14,15	0.22	0	17,19,21	0.44	0
5	NAG	B	1202	1	14,14,15	0.31	0	17,19,21	0.48	0
5	NAG	C	1203	1	14,14,15	0.22	0	17,19,21	0.43	0
5	NAG	C	1201	1	14,14,15	0.32	0	17,19,21	0.56	0
5	NAG	B	1201	1	14,14,15	0.24	0	17,19,21	0.48	0
5	NAG	C	1206	1	14,14,15	0.49	0	17,19,21	0.56	0
5	NAG	C	1204	1	14,14,15	0.24	0	17,19,21	0.40	0
5	NAG	C	1209	1	14,14,15	0.27	0	17,19,21	0.47	0
5	NAG	A	1406	1	14,14,15	0.30	0	17,19,21	0.64	0
5	NAG	A	1405	1	14,14,15	0.36	0	17,19,21	0.38	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	A	1407	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1403	1	-	3/6/23/26	0/1/1/1
5	NAG	A	1401	1	-	4/6/23/26	0/1/1/1
5	NAG	B	1203	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1205	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1404	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1207	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1208	1	-	3/6/23/26	0/1/1/1
5	NAG	C	1208	1	-	4/6/23/26	0/1/1/1
5	NAG	A	1402	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1205	1	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	B	1209	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1207	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1206	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1202	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1204	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1202	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1203	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1201	1	-	5/6/23/26	0/1/1/1
5	NAG	B	1201	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1206	1	-	4/6/23/26	0/1/1/1
5	NAG	C	1204	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1209	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1406	1	-	4/6/23/26	0/1/1/1
5	NAG	A	1405	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	C	1202	NAG	C1-O5-C5	2.52	115.57	112.19

There are no chirality outliers.

All (60) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1406	NAG	C3-C2-N2-C7
5	A	1406	NAG	C8-C7-N2-C2
5	A	1406	NAG	O7-C7-N2-C2
5	B	1208	NAG	C3-C2-N2-C7
5	B	1208	NAG	C8-C7-N2-C2
5	B	1208	NAG	O7-C7-N2-C2
5	C	1201	NAG	C3-C2-N2-C7
5	C	1201	NAG	C8-C7-N2-C2
5	C	1201	NAG	O7-C7-N2-C2
5	C	1208	NAG	C1-C2-N2-C7
5	C	1208	NAG	C8-C7-N2-C2
5	C	1208	NAG	O7-C7-N2-C2
5	B	1201	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	B	1203	NAG	O5-C5-C6-O6
5	C	1204	NAG	O5-C5-C6-O6
5	A	1405	NAG	O5-C5-C6-O6
5	B	1209	NAG	O5-C5-C6-O6
5	B	1201	NAG	O5-C5-C6-O6
5	C	1203	NAG	O5-C5-C6-O6
5	A	1401	NAG	O5-C5-C6-O6
5	B	1204	NAG	O5-C5-C6-O6
5	A	1405	NAG	C4-C5-C6-O6
5	B	1209	NAG	C4-C5-C6-O6
5	C	1203	NAG	C4-C5-C6-O6
5	B	1205	NAG	O5-C5-C6-O6
5	B	1203	NAG	C4-C5-C6-O6
5	C	1201	NAG	C4-C5-C6-O6
5	C	1209	NAG	O5-C5-C6-O6
5	C	1206	NAG	O5-C5-C6-O6
5	B	1204	NAG	C4-C5-C6-O6
5	C	1206	NAG	C4-C5-C6-O6
5	C	1209	NAG	C4-C5-C6-O6
5	C	1201	NAG	O5-C5-C6-O6
5	C	1204	NAG	C4-C5-C6-O6
5	B	1205	NAG	C4-C5-C6-O6
5	B	1207	NAG	O5-C5-C6-O6
5	C	1207	NAG	O5-C5-C6-O6
5	A	1401	NAG	C8-C7-N2-C2
5	A	1401	NAG	O7-C7-N2-C2
5	A	1402	NAG	C8-C7-N2-C2
5	A	1402	NAG	O7-C7-N2-C2
5	A	1403	NAG	C8-C7-N2-C2
5	A	1403	NAG	O7-C7-N2-C2
5	A	1407	NAG	C8-C7-N2-C2
5	A	1407	NAG	O7-C7-N2-C2
5	B	1206	NAG	C8-C7-N2-C2
5	B	1206	NAG	O7-C7-N2-C2
5	C	1206	NAG	C8-C7-N2-C2
5	C	1206	NAG	O7-C7-N2-C2
5	A	1404	NAG	O5-C5-C6-O6
5	C	1207	NAG	C4-C5-C6-O6
5	A	1401	NAG	C4-C5-C6-O6
5	A	1406	NAG	O5-C5-C6-O6
5	C	1208	NAG	O5-C5-C6-O6
5	B	1207	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	B	1202	NAG	C4-C5-C6-O6
5	B	1202	NAG	O5-C5-C6-O6
5	C	1205	NAG	O5-C5-C6-O6
5	A	1404	NAG	C4-C5-C6-O6
5	A	1403	NAG	O5-C5-C6-O6

There are no ring outliers.

7 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	1203	NAG	1	0
5	C	1207	NAG	1	0
5	B	1204	NAG	1	0
5	B	1202	NAG	1	0
5	C	1204	NAG	1	0
5	C	1209	NAG	2	0
5	A	1405	NAG	1	0

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.

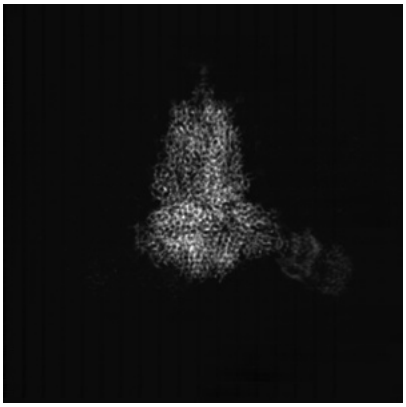
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-25488. These allow visual inspection of the internal detail of the map and identification of artifacts.

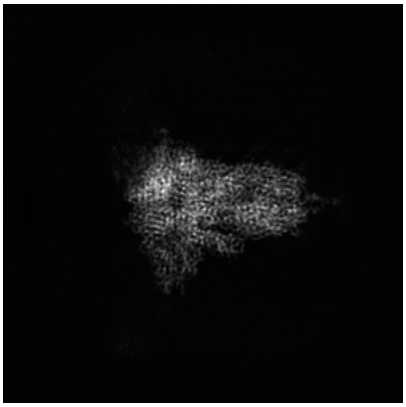
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

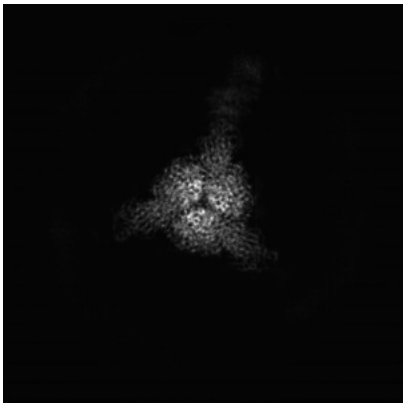
6.1.1 Primary map



X



Y



Z

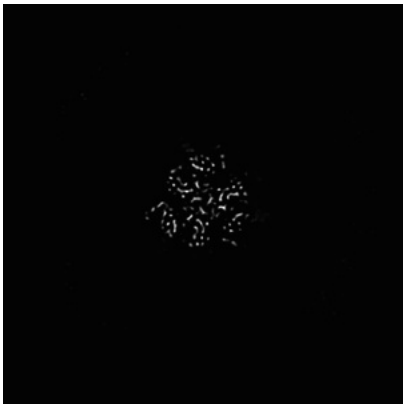
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map

X Index: 150

Y Index: 150



Z Index: 150

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: 147

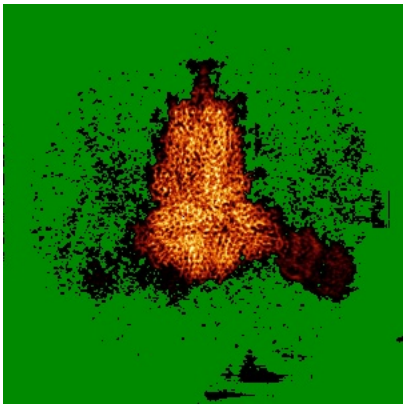
Y Index: 161

Z Index: 135

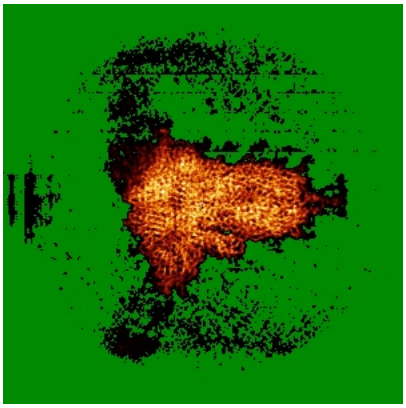
The images above show the largest variance slices of the map in three orthogonal directions.

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

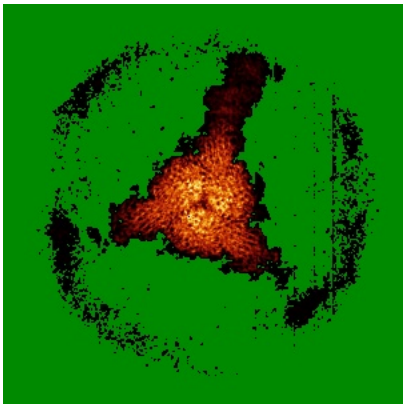
6.4.1 Primary map



X



Y

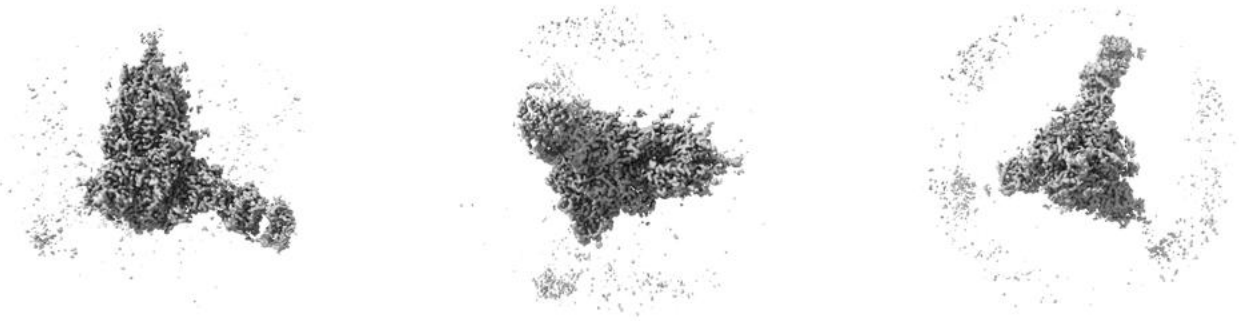


Z

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 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

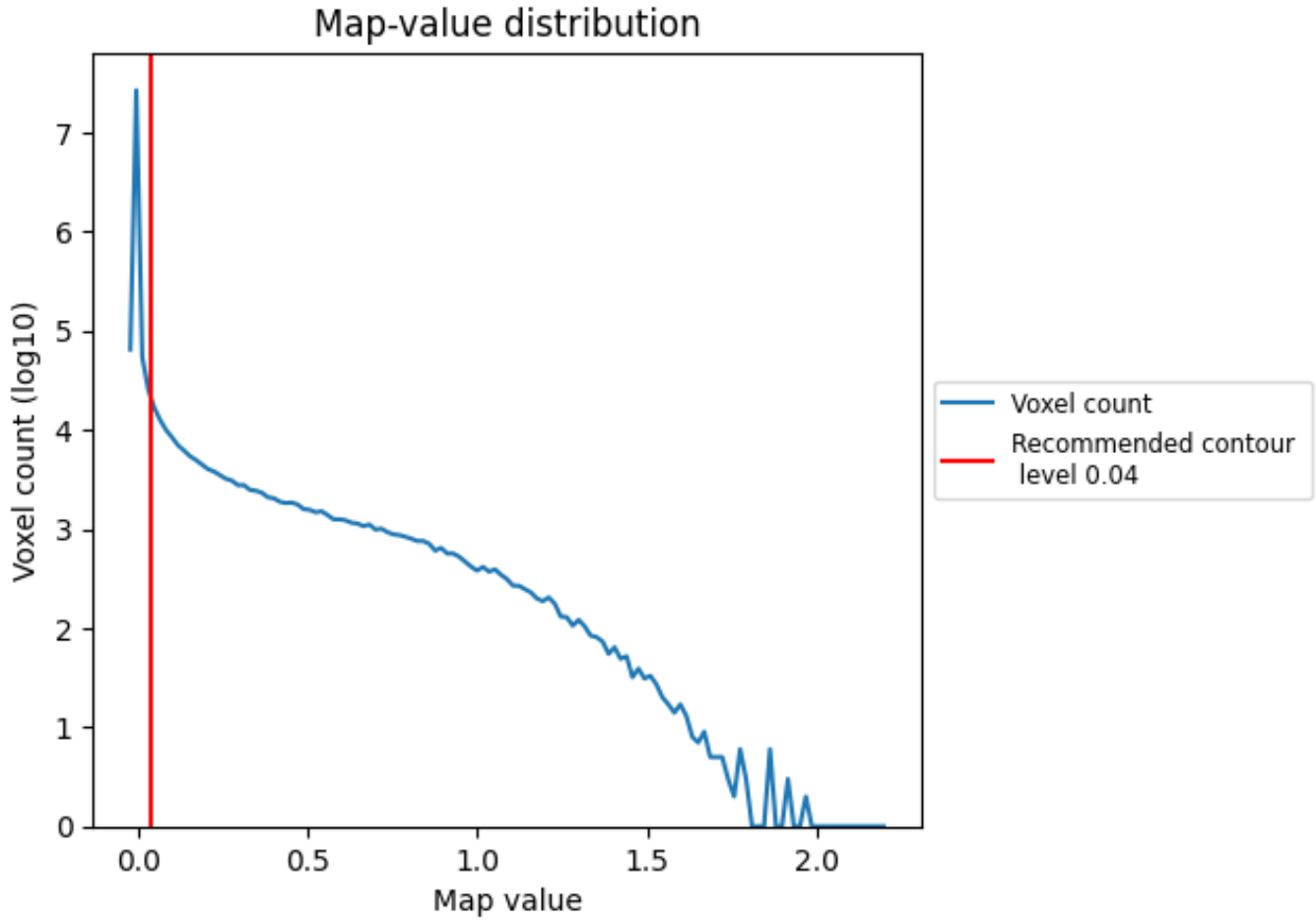
6.6 Mask visualisation (i)

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

7 Map analysis

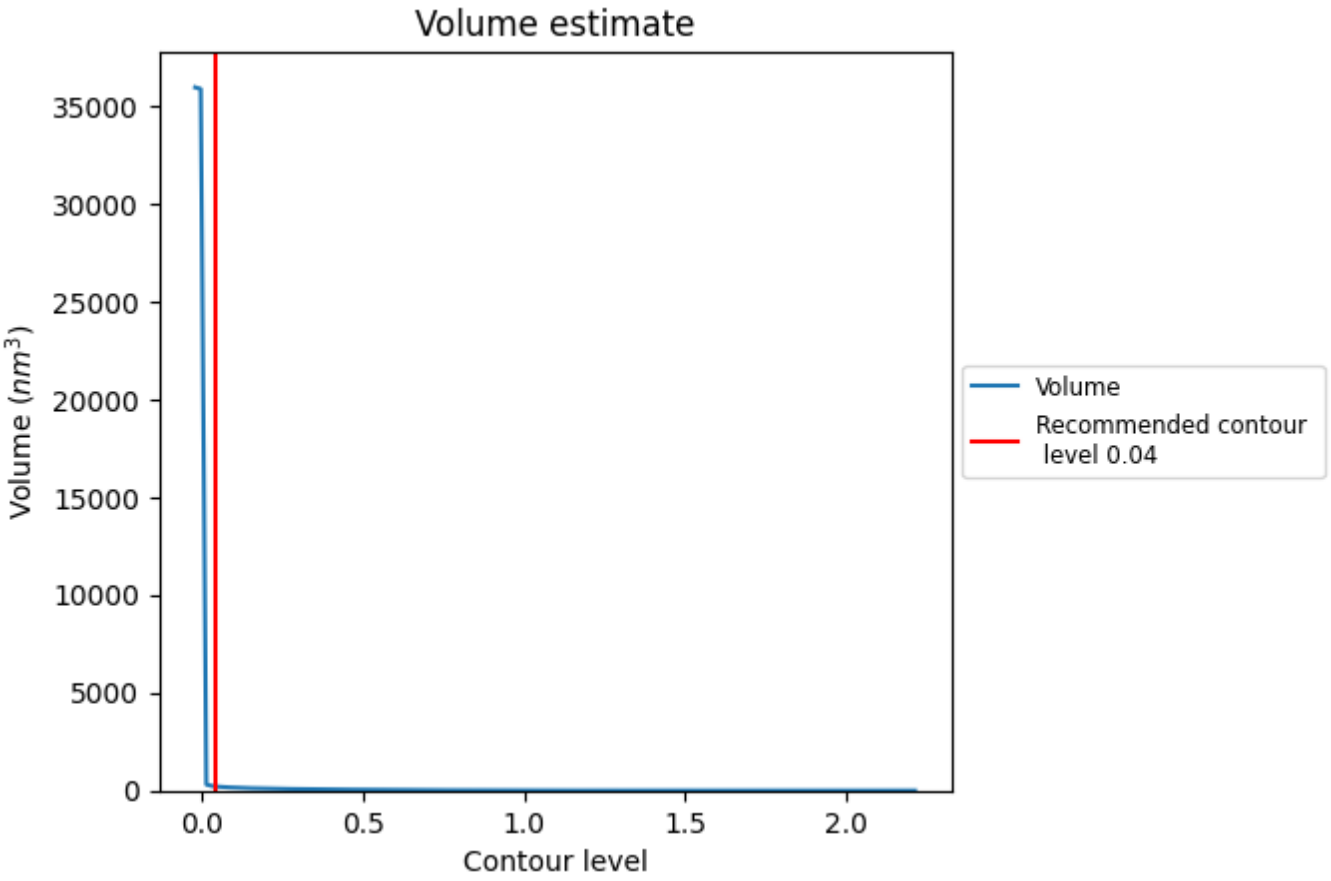
This section contains the results of statistical analysis of the map.

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.

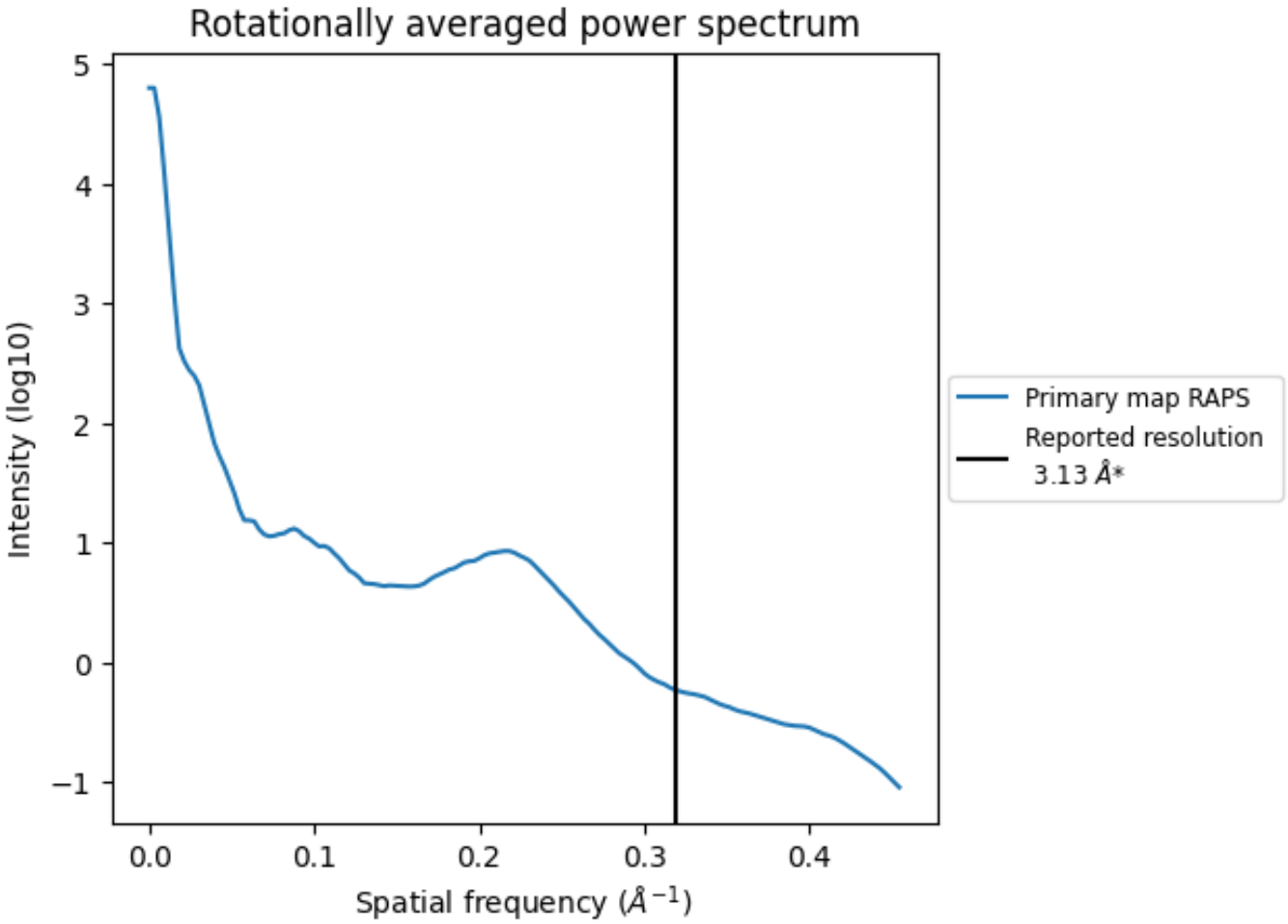
7.2 Volume estimate



The volume at the recommended contour level is 216 nm^3; this corresponds to an approximate mass of 195 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)

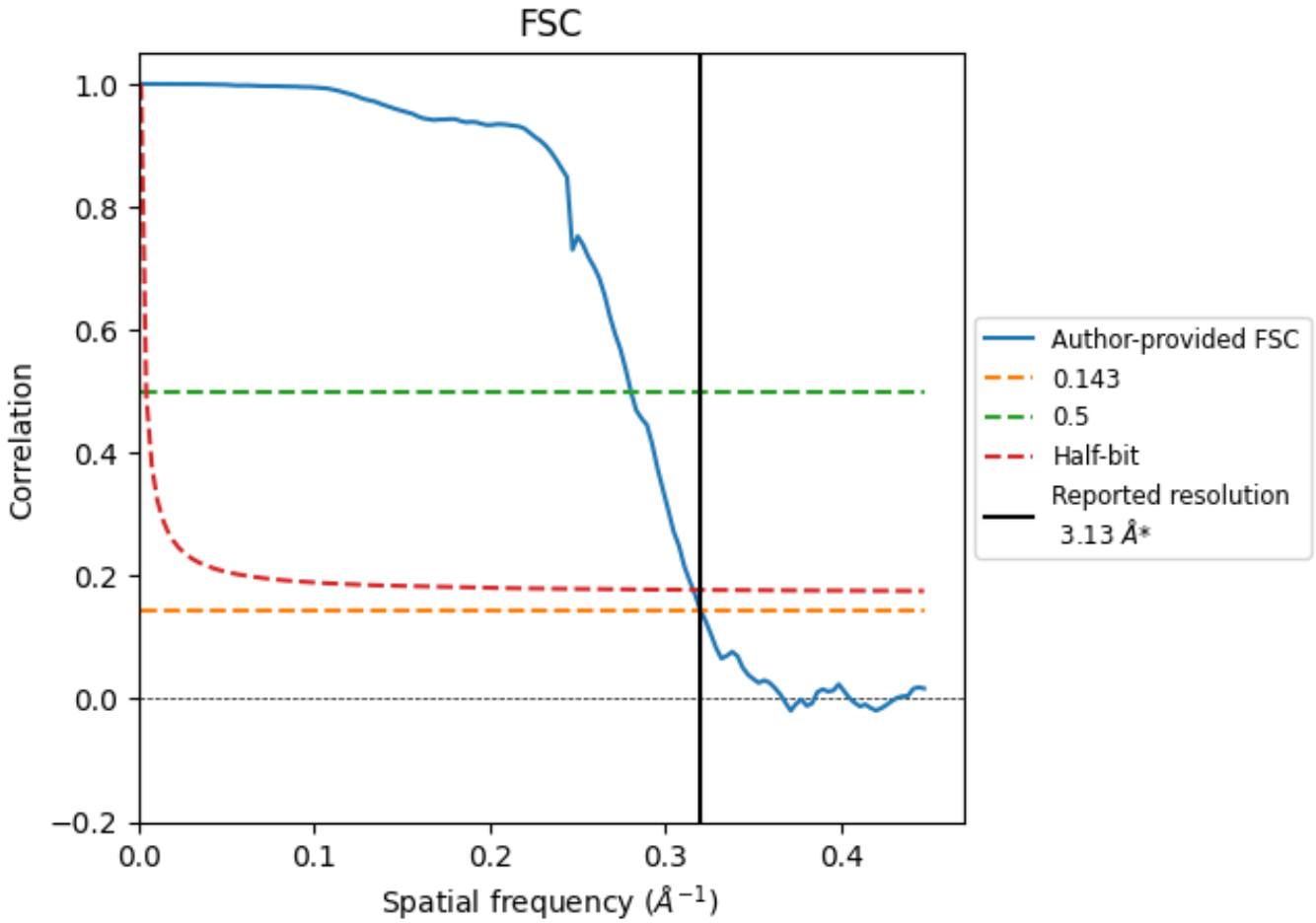


*Reported resolution corresponds to spatial frequency of 0.319 $Å^{-1}$

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.319 Å^{-1}

8.2 Resolution estimates (i)

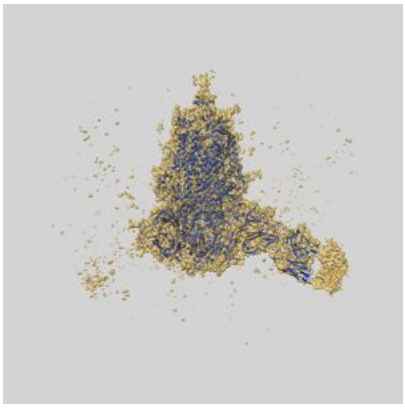
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.13	-	-
Author-provided FSC curve	3.12	3.57	3.17
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

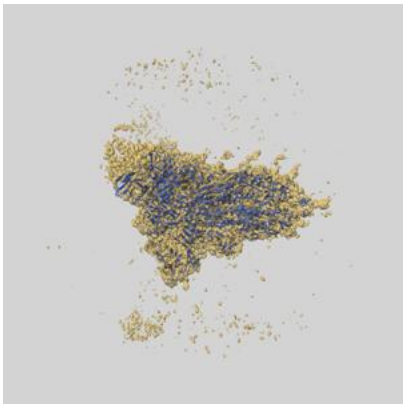
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-25488 and PDB model 7SWX. Per-residue inclusion information can be found in section 3 on page 9.

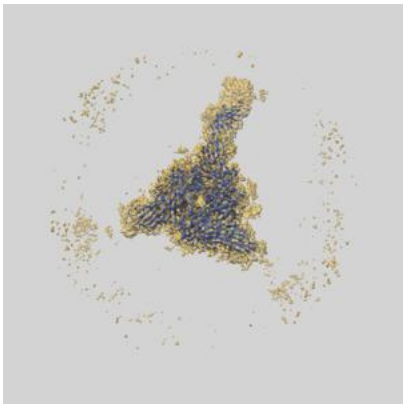
9.1 Map-model overlay



X



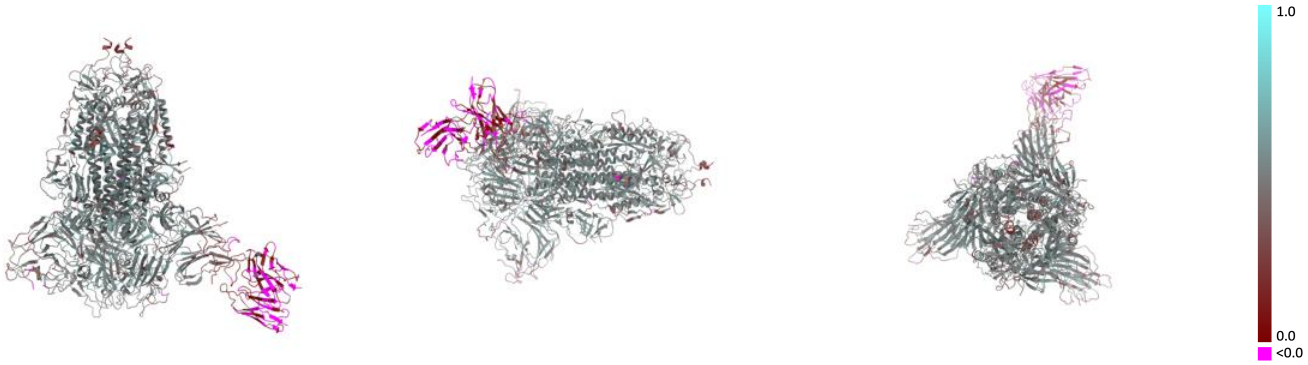
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04 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.

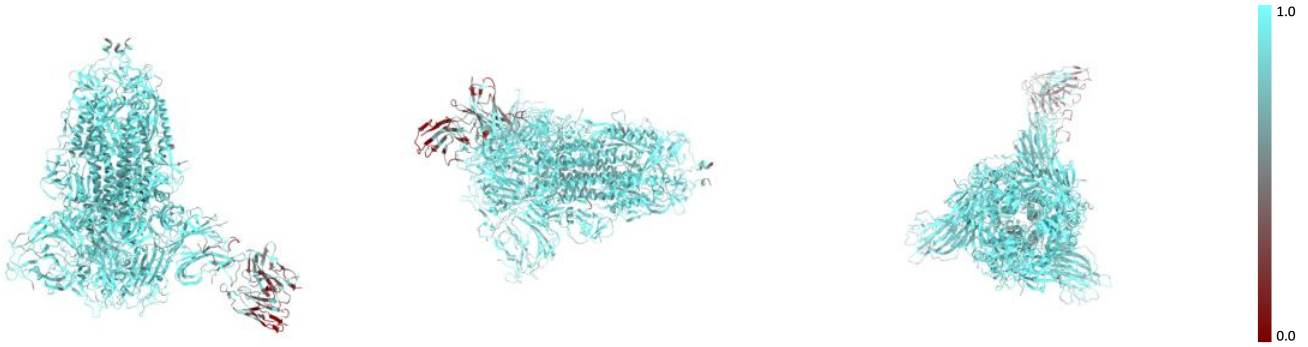
9.2 Q-score mapped to coordinate model (i)



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.

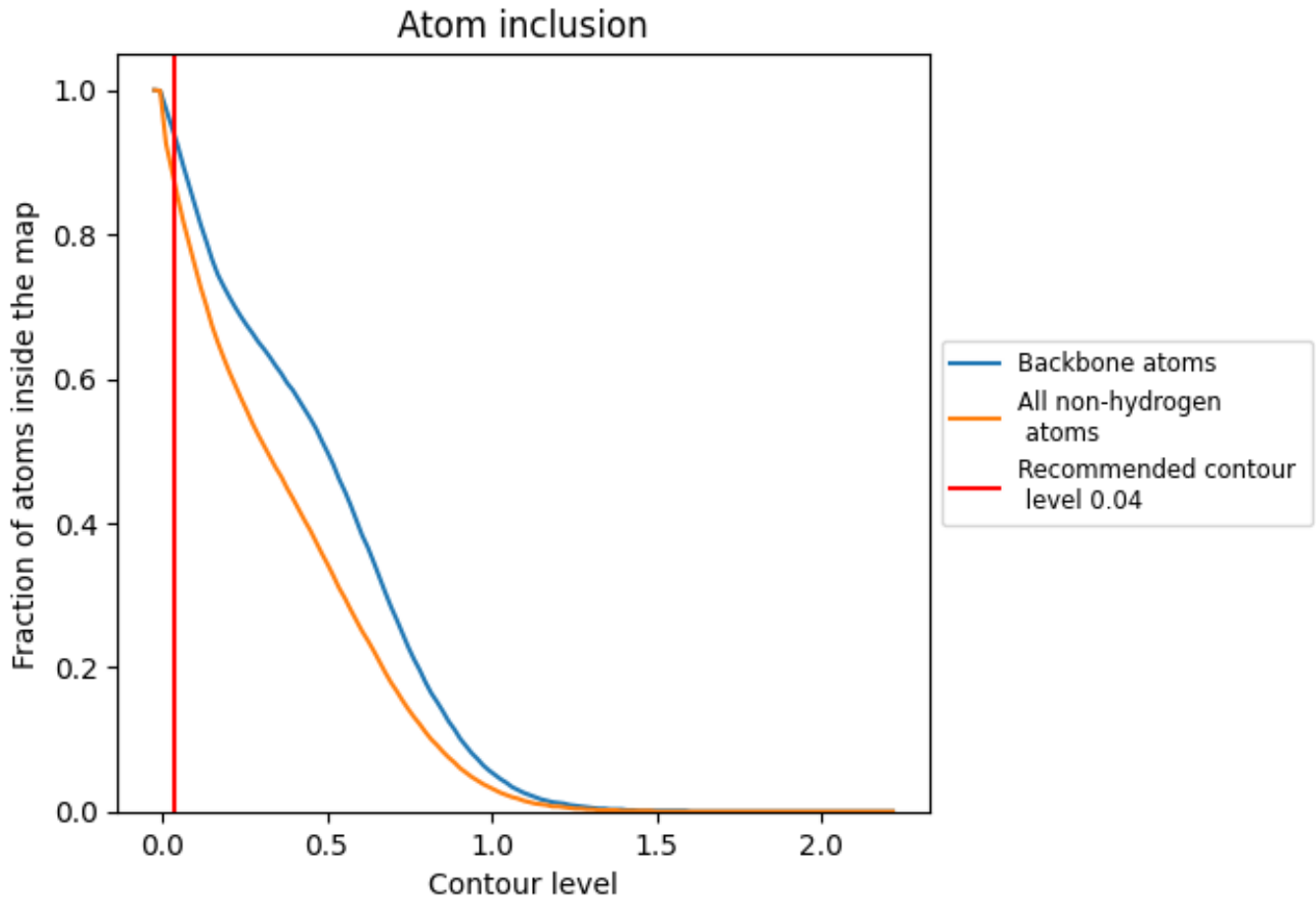
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.04).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 87% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8680	0.4460
A	0.9030	0.4700
B	0.9120	0.4860
C	0.9080	0.4860
D	0.4290	0.1210
E	0.3930	0.2580
F	0.0000	0.1460
G	0.5710	0.3150
H	0.5280	0.0420
I	0.7140	0.3260
J	0.1790	0.0960
K	0.7860	0.3320
L	0.4440	0.0350
M	0.3570	0.1660
N	0.5360	0.3590
O	0.3210	0.1570
P	0.0000	0.0650
Q	0.7140	0.2990
R	0.5000	0.2370
S	0.4290	0.2770
T	0.3570	0.1850
U	0.0000	0.0530
V	0.5710	0.2710
W	0.2500	0.1400
X	0.6070	0.2860
Y	0.0360	-0.0400
Z	0.6790	0.3050
a	0.5710	0.3490
b	0.6790	0.3040
c	0.1790	0.0300
d	0.6790	0.3940
e	0.7500	0.3560
f	0.1430	0.1620
g	0.2140	0.1780