



# wwPDB EM Validation Summary Report ⓘ

Mar 23, 2026 – 12:31 AM UTC

PDB ID : 9BEA / pdb\_00009bea  
EMDB ID : EMD-44475  
Title : Structure of SARS-CoV-2 full-length WT spike protein with internal tag,  
2RBD-up conformation (SPIKE-WT)  
Authors : Singh, S.; Hasan, S.S.  
Deposited on : 2024-04-15  
Resolution : 3.85 Å (reported)  
Based on initial model : 7KRR

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

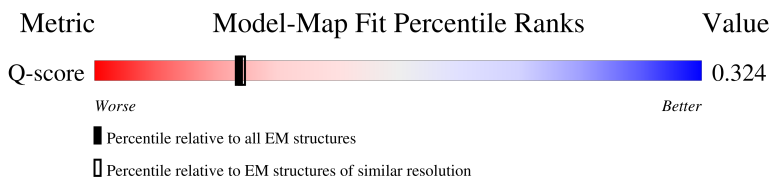
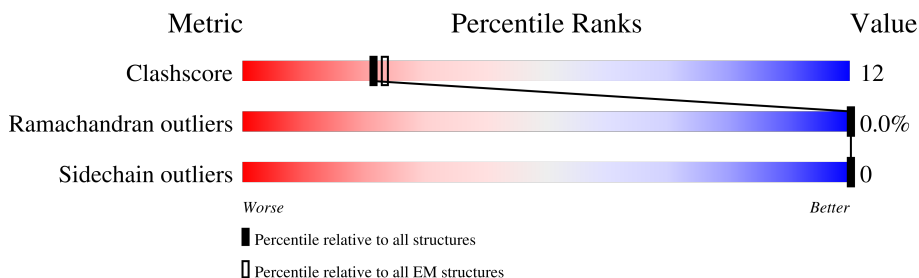
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

# 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 3.85 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	8989 ( 3.35 - 4.35 )

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  $\geq 3$ , 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  $\leq 5\%$ . 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	1312	61% 18% 21%
1	B	1312	61% 20% 19%
1	C	1312	66% 15% 19%
2	D	3	100%



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Mol	Chain	Length	Quality of chain
2	G	3	33% 67%
2	J	3	33% 33% 33%
2	M	3	33% 33% 33%
2	R	3	33% 67%
2	T	3	33% 67%
2	Y	3	33% 67%
2	Z	3	33% 67%
2	d	3	33% 67%
2	f	3	33% 67%
2	g	3	33% 67%
3	E	2	100%
3	F	2	100%
3	N	2	50% 50%
3	P	2	50% 50%
3	X	2	100%
3	b	2	100%
3	c	2	50% 50%
4	H	4	50% 50%
4	O	4	50% 50%
4	Q	4	25% 75%
4	S	4	25% 100%
4	a	4	50% 50%
4	i	4	25% 75%
5	I	5	100%
5	L	5	20% 80%

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Mol	Chain	Length	Quality of chain
6	K	3	 100%
6	U	3	 67% 33%
7	V	4	 50% 50%
8	W	4	 50% 50%
9	e	2	 50% 50%
10	h	4	 25% 25% 50%
11	j	2	 100%
12	k	6	 33% 67%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
11	NAG	j	1	-	-	X	-
12	NAG	k	1	-	-	X	-
12	NAG	k	2	-	-	X	-
12	FUC	k	6	-	-	X	-
13	NAG	A	1302	X	-	-	-
13	NAG	A	1303	X	-	-	-
2	NAG	R	2	-	-	X	-
2	NAG	d	2	-	-	X	-
2	BMA	d	3	-	-	X	-
3	NAG	N	2	X	-	-	-
4	MAN	O	4	X	-	-	-
5	NAG	L	1	-	-	X	-
5	BMA	L	3	-	-	X	-
7	MAN	V	3	X	-	-	-

## 2 Entry composition [i](#)

There are 13 unique types of molecules in this entry. The entry contains 50916 atoms, of which 24709 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
			Total	C	H	N	O	S		
1	A	1033	15842	5132	7807	1337	1530	36	0	0
1	B	1067	16339	5302	8027	1387	1585	38	0	0
1	C	1061	16225	5273	7968	1374	1574	36	0	0

There are 135 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-20	SER	-	insertion	UNP P0DTC2
A	-19	ALA	-	insertion	UNP P0DTC2
A	-18	TRP	-	insertion	UNP P0DTC2
A	-17	SER	-	insertion	UNP P0DTC2
A	-16	HIS	-	insertion	UNP P0DTC2
A	-15	PRO	-	insertion	UNP P0DTC2
A	-14	GLN	-	insertion	UNP P0DTC2
A	-13	PHE	-	insertion	UNP P0DTC2
A	-12	GLU	-	insertion	UNP P0DTC2
A	-11	LYS	-	insertion	UNP P0DTC2
A	-10	GLY	-	insertion	UNP P0DTC2
A	-9	GLY	-	insertion	UNP P0DTC2
A	-8	GLY	-	insertion	UNP P0DTC2
A	-7	SER	-	insertion	UNP P0DTC2
A	-6	GLY	-	insertion	UNP P0DTC2
A	-5	GLY	-	insertion	UNP P0DTC2
A	-4	GLY	-	insertion	UNP P0DTC2
A	-3	SER	-	insertion	UNP P0DTC2
A	-2	GLY	-	insertion	UNP P0DTC2
A	-1	GLY	-	insertion	UNP P0DTC2
A	0	SER	-	insertion	UNP P0DTC2
A	1	SER	-	insertion	UNP P0DTC2
A	2	ALA	-	insertion	UNP P0DTC2
A	3	TRP	-	insertion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	4	SER	-	insertion	UNP P0DTC2
A	5	HIS	-	insertion	UNP P0DTC2
A	6	PRO	-	insertion	UNP P0DTC2
A	7	GLN	-	insertion	UNP P0DTC2
A	8	PHE	-	insertion	UNP P0DTC2
A	9	GLU	-	insertion	UNP P0DTC2
A	10	LYS	-	insertion	UNP P0DTC2
A	11	SER	-	insertion	UNP P0DTC2
A	12	ALA	-	insertion	UNP P0DTC2
A	13	LEU	-	insertion	UNP P0DTC2
A	14	VAL	-	insertion	UNP P0DTC2
A	15	PRO	-	insertion	UNP P0DTC2
A	16	ARG	-	insertion	UNP P0DTC2
A	17	GLY	-	insertion	UNP P0DTC2
A	18	SER	-	insertion	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	682	GLY	ARG	engineered mutation	UNP P0DTC2
A	683	SER	ARG	engineered mutation	UNP P0DTC2
A	685	SER	ARG	engineered mutation	UNP P0DTC2
A	986	PRO	LYS	engineered mutation	UNP P0DTC2
A	987	PRO	VAL	engineered mutation	UNP P0DTC2
B	-20	SER	-	insertion	UNP P0DTC2
B	-19	ALA	-	insertion	UNP P0DTC2
B	-18	TRP	-	insertion	UNP P0DTC2
B	-17	SER	-	insertion	UNP P0DTC2
B	-16	HIS	-	insertion	UNP P0DTC2
B	-15	PRO	-	insertion	UNP P0DTC2
B	-14	GLN	-	insertion	UNP P0DTC2
B	-13	PHE	-	insertion	UNP P0DTC2
B	-12	GLU	-	insertion	UNP P0DTC2
B	-11	LYS	-	insertion	UNP P0DTC2
B	-10	GLY	-	insertion	UNP P0DTC2
B	-9	GLY	-	insertion	UNP P0DTC2
B	-8	GLY	-	insertion	UNP P0DTC2
B	-7	SER	-	insertion	UNP P0DTC2
B	-6	GLY	-	insertion	UNP P0DTC2
B	-5	GLY	-	insertion	UNP P0DTC2
B	-4	GLY	-	insertion	UNP P0DTC2
B	-3	SER	-	insertion	UNP P0DTC2
B	-2	GLY	-	insertion	UNP P0DTC2
B	-1	GLY	-	insertion	UNP P0DTC2
B	0	SER	-	insertion	UNP P0DTC2

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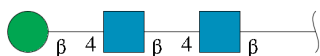
Chain	Residue	Modelled	Actual	Comment	Reference
B	1	SER	-	insertion	UNP P0DTC2
B	2	ALA	-	insertion	UNP P0DTC2
B	3	TRP	-	insertion	UNP P0DTC2
B	4	SER	-	insertion	UNP P0DTC2
B	5	HIS	-	insertion	UNP P0DTC2
B	6	PRO	-	insertion	UNP P0DTC2
B	7	GLN	-	insertion	UNP P0DTC2
B	8	PHE	-	insertion	UNP P0DTC2
B	9	GLU	-	insertion	UNP P0DTC2
B	10	LYS	-	insertion	UNP P0DTC2
B	11	SER	-	insertion	UNP P0DTC2
B	12	ALA	-	insertion	UNP P0DTC2
B	13	LEU	-	insertion	UNP P0DTC2
B	14	VAL	-	insertion	UNP P0DTC2
B	15	PRO	-	insertion	UNP P0DTC2
B	16	ARG	-	insertion	UNP P0DTC2
B	17	GLY	-	insertion	UNP P0DTC2
B	18	SER	-	insertion	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	682	GLY	ARG	engineered mutation	UNP P0DTC2
B	683	SER	ARG	engineered mutation	UNP P0DTC2
B	685	SER	ARG	engineered mutation	UNP P0DTC2
B	986	PRO	LYS	engineered mutation	UNP P0DTC2
B	987	PRO	VAL	engineered mutation	UNP P0DTC2
C	-20	SER	-	insertion	UNP P0DTC2
C	-19	ALA	-	insertion	UNP P0DTC2
C	-18	TRP	-	insertion	UNP P0DTC2
C	-17	SER	-	insertion	UNP P0DTC2
C	-16	HIS	-	insertion	UNP P0DTC2
C	-15	PRO	-	insertion	UNP P0DTC2
C	-14	GLN	-	insertion	UNP P0DTC2
C	-13	PHE	-	insertion	UNP P0DTC2
C	-12	GLU	-	insertion	UNP P0DTC2
C	-11	LYS	-	insertion	UNP P0DTC2
C	-10	GLY	-	insertion	UNP P0DTC2
C	-9	GLY	-	insertion	UNP P0DTC2
C	-8	GLY	-	insertion	UNP P0DTC2
C	-7	SER	-	insertion	UNP P0DTC2
C	-6	GLY	-	insertion	UNP P0DTC2
C	-5	GLY	-	insertion	UNP P0DTC2
C	-4	GLY	-	insertion	UNP P0DTC2
C	-3	SER	-	insertion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	GLY	-	insertion	UNP P0DTC2
C	-1	GLY	-	insertion	UNP P0DTC2
C	0	SER	-	insertion	UNP P0DTC2
C	1	SER	-	insertion	UNP P0DTC2
C	2	ALA	-	insertion	UNP P0DTC2
C	3	TRP	-	insertion	UNP P0DTC2
C	4	SER	-	insertion	UNP P0DTC2
C	5	HIS	-	insertion	UNP P0DTC2
C	6	PRO	-	insertion	UNP P0DTC2
C	7	GLN	-	insertion	UNP P0DTC2
C	8	PHE	-	insertion	UNP P0DTC2
C	9	GLU	-	insertion	UNP P0DTC2
C	10	LYS	-	insertion	UNP P0DTC2
C	11	SER	-	insertion	UNP P0DTC2
C	12	ALA	-	insertion	UNP P0DTC2
C	13	LEU	-	insertion	UNP P0DTC2
C	14	VAL	-	insertion	UNP P0DTC2
C	15	PRO	-	insertion	UNP P0DTC2
C	16	ARG	-	insertion	UNP P0DTC2
C	17	GLY	-	insertion	UNP P0DTC2
C	18	SER	-	insertion	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	682	GLY	ARG	engineered mutation	UNP P0DTC2
C	683	SER	ARG	engineered mutation	UNP P0DTC2
C	685	SER	ARG	engineered mutation	UNP P0DTC2
C	986	PRO	LYS	engineered mutation	UNP P0DTC2
C	987	PRO	VAL	engineered mutation	UNP P0DTC2

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



Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	3	Total	C	N	O	0	0	
			39	22	2	15			
2	G	3	Total	C	H	N	O	0	0
			72	22	33	2	15		
2	J	3	Total	C	H	N	O	0	0
			72	22	33	2	15		

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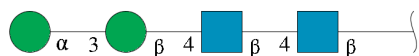
Mol	Chain	Residues	Atoms					AltConf	Trace
2	M	3	Total	C	H	N	O	0	0
			50	22	11	2	15		
2	R	3	Total	C	N	O	0	0	
			39	22	2	15			
2	T	3	Total	C	H	N	O	0	0
			73	22	34	2	15		
2	Y	3	Total	C	H	N	O	0	0
			73	22	34	2	15		
2	Z	3	Total	C	H	N	O	0	0
			73	22	34	2	15		
2	d	3	Total	C	N	O	0	0	
			39	22	2	15			
2	f	3	Total	C	N	O	0	0	
			39	22	2	15			
2	g	3	Total	C	N	O	0	0	
			39	22	2	15			

- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



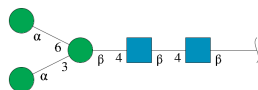
Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	2	Total	C	N	O	0	0	
			28	16	2	10			
3	F	2	Total	C	H	N	O	0	0
			53	16	25	2	10		
3	N	2	Total	C	H	N	O	0	0
			52	16	24	2	10		
3	P	2	Total	C	N	O	0	0	
			28	16	2	10			
3	X	2	Total	C	H	N	O	0	0
			53	16	25	2	10		
3	b	2	Total	C	H	N	O	0	0
			40	16	12	2	10		
3	c	2	Total	C	H	N	O	0	0
			53	16	25	2	10		

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



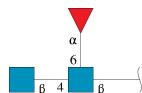
Mol	Chain	Residues	Atoms					AltConf	Trace
4	H	4	Total	C	H	N	O	0	0
			93	28	43	2	20		
4	O	4	Total	C	H	N	O	0	0
			93	28	43	2	20		
4	Q	4	Total	C	N	O		0	0
			50	28	2	20			
4	S	4	Total	C	H	N	O	0	0
			92	28	42	2	20		
4	a	4	Total	C	H	N	O	0	0
			93	28	43	2	20		
4	i	4	Total	C	H	N	O	0	0
			93	28	43	2	20		

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	5	Total	C	H	N	O	0	0
			113	34	52	2	25		
5	L	5	Total	C	N	O		0	0
			61	34	2	25			

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



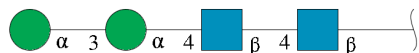
Mol	Chain	Residues	Atoms					AltConf	Trace
6	K	3	Total	C	H	N	O	0	0
			62	22	24	2	14		

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
6	U	3	72	22	34	2	14	0	0

- Molecule 7 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
7	V	4	82	28	32	2	20	0	0

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



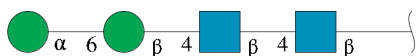
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
8	W	4	93	28	43	2	20	0	0

- Molecule 9 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
9	e	2	46	14	21	1	10	0	0

- Molecule 10 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



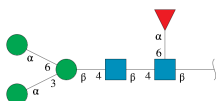
Mol	Chain	Residues	Atoms				AltConf	Trace	
			Total	C	H	N			O
10	h	4	93	28	43	2	20	0	0

- Molecule 11 is an oligosaccharide called alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose.



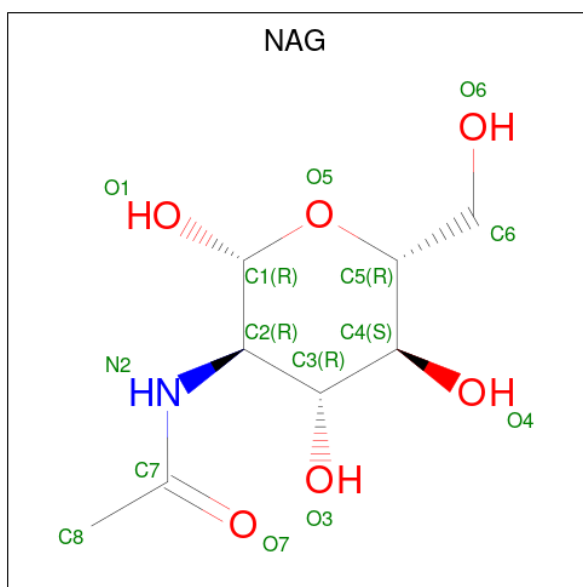
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	j	2	24	14	1	9	0	0

- Molecule 12 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	k	6	71	40	2	29	0	0

- Molecule 13 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



Mol	Chain	Residues	Atoms				AltConf	
13	A	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	A	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	A	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	A	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	A	1	Total	C	N	O		0
			14	8	1	5		
13	B	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	B	1	Total	C	H	N	O	0
			26	8	12	1	5	
13	B	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	B	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	B	1	Total	C	N	O		0
			14	8	1	5		
13	B	1	Total	C	N	O		0
			14	8	1	5		
13	C	1	Total	C	H	N	O	0
			27	8	13	1	5	
13	C	1	Total	C	H	N	O	0
			27	8	13	1	5	

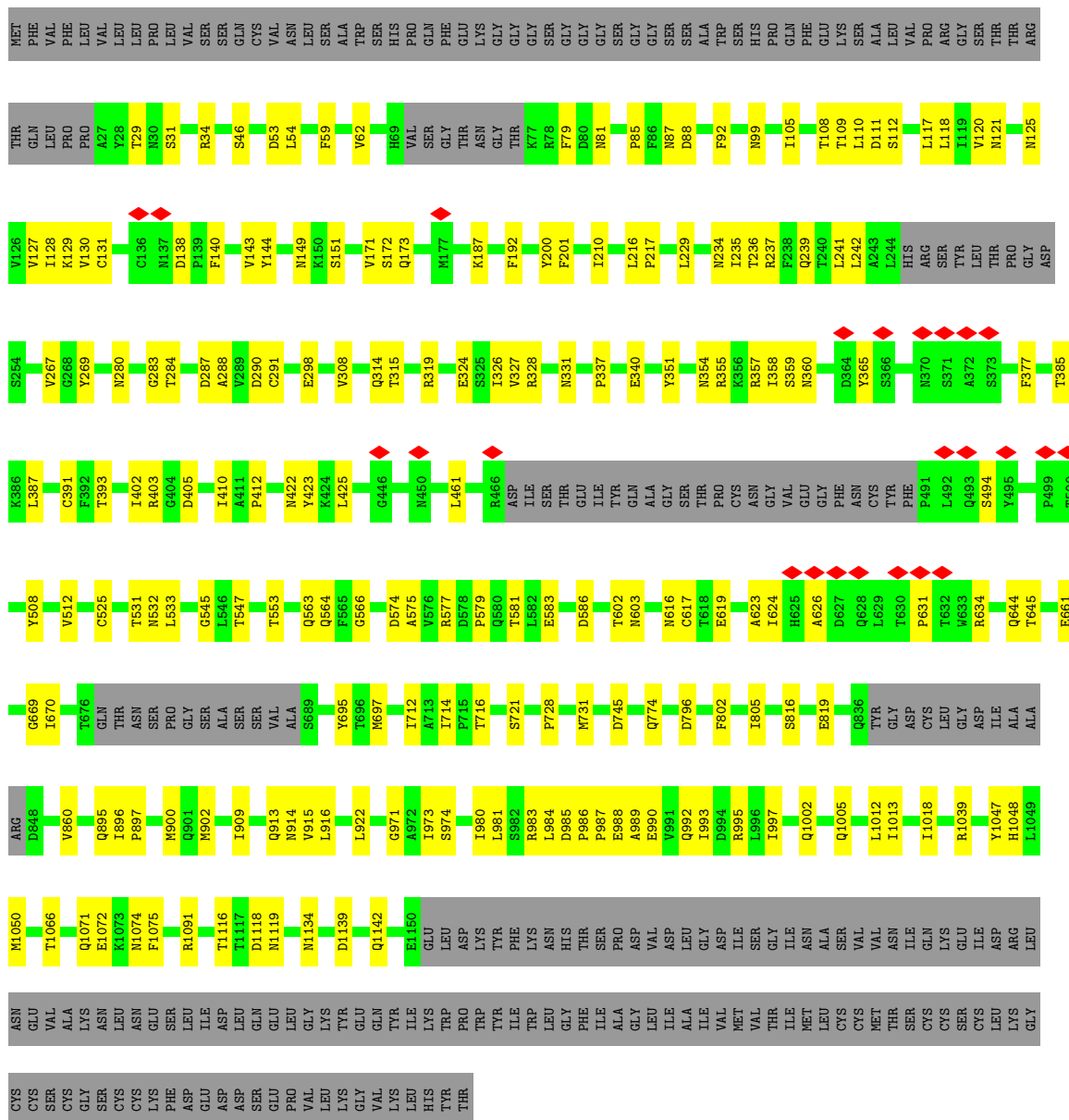
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Mol	Chain	Residues	Atoms					AltConf
			Total	C	H	N	O	
13	C	1	26	8	12	1	5	0







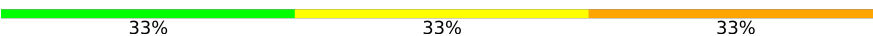
- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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

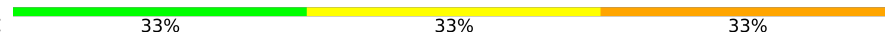


- Molecule 2: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  33% 33% 33%



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

Chain M:  33% 33% 33%



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

Chain R:  33% 67%



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

Chain T:  33% 67%



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

Chain Y:  33% 67%



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

Chain Z:  33% 67%



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

Chain d:  33% 67%



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

Chain f: 33% 67%



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

Chain g: 33% 67%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 100%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F: 100%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N: 50% 50%




- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P: 50% 50%



- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X:  100%

MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain b:  100%

MAG1  
MAG2

- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain c:  50% 50%

MAG1  
MAG2

- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:  50% 50%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:  50% 50%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:  25% 75%

MAG1  
MAG2  
BMA3  
MAN4

- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



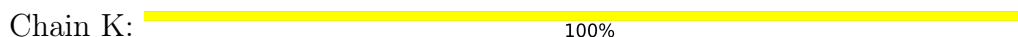
- Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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





- Molecule 7: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 10: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 11: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 12: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	19227	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	0.581	Depositor
Minimum map value	-0.194	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.021	Depositor
Recommended contour level	0.0916	Depositor
Map size (Å)	350.01, 350.01, 350.01	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1667, 1.1667, 1.1667	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.12	0/8213	0.29	1/11171 (0.0%)
1	B	0.12	0/8503	0.28	2/11571 (0.0%)
1	C	0.11	0/8448	0.25	0/11499
All	All	0.12	0/25164	0.27	3/34241 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	1
All	All	0	3

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	760	CYS	CA-CB-SG	6.11	128.44	114.40
1	B	709	ASN	N-CA-CB	5.60	118.35	110.12
1	B	234	ASN	CB-CA-C	-5.22	101.05	109.72

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	233	ILE	Peptide
1	A	335	LEU	Peptide

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Mol	Chain	Res	Type	Group
1	B	1133	VAL	Peptide

## 5.2 Too-close contacts [i](#)

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	8035	7807	7832	183	0
1	B	8312	8027	8070	187	0
1	C	8257	7968	8010	154	0
2	D	39	0	34	5	0
2	G	39	33	34	2	0
2	J	39	33	34	2	0
2	M	39	11	34	1	0
2	R	39	0	34	8	0
2	T	39	34	34	3	0
2	Y	39	34	34	0	0
2	Z	39	34	34	0	0
2	d	39	0	34	11	0
2	f	39	0	34	4	0
2	g	39	0	34	5	0
3	E	28	0	25	4	0
3	F	28	25	25	1	0
3	N	28	24	24	2	0
3	P	28	0	25	3	0
3	X	28	25	25	0	0
3	b	28	12	25	3	0
3	c	28	25	25	1	0
4	H	50	43	43	6	0
4	O	50	43	42	2	0
4	Q	50	0	43	8	0
4	S	50	42	43	0	0
4	a	50	43	43	3	0
4	i	50	43	43	0	0
5	I	61	52	52	0	0
5	L	61	0	52	19	0
6	K	38	24	34	2	0
6	U	38	34	34	1	0
7	V	50	32	42	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	W	50	43	43	1	0
9	e	25	21	22	1	0
10	h	50	43	43	4	0
11	j	24	0	22	9	0
12	k	71	0	61	20	0
13	A	84	65	76	8	0
13	B	84	51	76	9	0
13	C	42	38	39	4	0
All	All	26207	24709	25313	602	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 12.

The worst 5 of 602 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)
3:E:1:NAG:H3	3:E:2:NAG:H2	1.14	1.09
1:B:234:ASN:O	1:B:235:ILE:HD13	1.58	1.04
2:g:2:NAG:HO3	2:g:3:BMA:HO2	1.05	1.02
1:B:986:PRO:HG2	1:B:987:PRO:HD3	1.42	1.01
3:E:1:NAG:H3	3:E:2:NAG:C2	1.97	0.90

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	1017/1312 (78%)	948 (93%)	69 (7%)	0	100	100
1	B	1055/1312 (80%)	982 (93%)	73 (7%)	0	100	100
1	C	1049/1312 (80%)	943 (90%)	105 (10%)	1 (0%)	48	80

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	3121/3936 (79%)	2873 (92%)	247 (8%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	327	VAL

### 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	893/1137 (78%)	893 (100%)	0	100	100
1	B	923/1137 (81%)	923 (100%)	0	100	100
1	C	914/1137 (80%)	914 (100%)	0	100	100
All	All	2730/3411 (80%)	2730 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 31 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	474	GLN
1	C	953	ASN
1	B	935	GLN
1	C	965	GLN
1	C	321	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

109 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	NAG	D	1	2,1	14,14,15	2.05	6 (42%)	17,19,21	2.75	8 (47%)
2	NAG	D	2	2	14,14,15	2.07	5 (35%)	17,19,21	1.91	4 (23%)
2	BMA	D	3	2	11,11,12	0.64	0	15,15,17	0.78	1 (6%)
3	NAG	E	1	3,1	14,14,15	2.01	5 (35%)	17,19,21	2.20	8 (47%)
3	NAG	E	2	3	14,14,15	1.99	3 (21%)	17,19,21	1.38	2 (11%)
3	NAG	F	1	3,1	14,14,15	1.99	4 (28%)	17,19,21	1.08	2 (11%)
3	NAG	F	2	3	14,14,15	1.98	4 (28%)	17,19,21	1.05	2 (11%)
2	NAG	G	1	2,1	14,14,15	1.97	5 (35%)	17,19,21	1.37	2 (11%)
2	NAG	G	2	2	14,14,15	2.02	4 (28%)	17,19,21	1.50	2 (11%)
2	BMA	G	3	2	11,11,12	0.52	0	15,15,17	0.68	0
4	NAG	H	1	4,1	14,14,15	1.98	4 (28%)	17,19,21	2.51	11 (64%)
4	NAG	H	2	4	14,14,15	2.13	4 (28%)	17,19,21	1.02	1 (5%)
4	BMA	H	3	4	11,11,12	0.51	0	15,15,17	0.78	0
4	MAN	H	4	4	11,11,12	0.62	0	15,15,17	1.00	2 (13%)
5	NAG	I	1	5,1	14,14,15	1.95	4 (28%)	17,19,21	1.16	2 (11%)
5	NAG	I	2	5	14,14,15	1.98	4 (28%)	17,19,21	1.12	2 (11%)
5	BMA	I	3	5	11,11,12	0.71	0	15,15,17	1.15	2 (13%)
5	MAN	I	4	5	11,11,12	0.83	1 (9%)	15,15,17	0.92	2 (13%)
5	MAN	I	5	5	11,11,12	1.12	1 (9%)	15,15,17	1.47	2 (13%)
2	NAG	J	1	2,1	14,14,15	1.95	4 (28%)	17,19,21	1.20	3 (17%)
2	NAG	J	2	2	14,14,15	1.99	4 (28%)	17,19,21	1.26	3 (17%)
2	BMA	J	3	2	11,11,12	0.60	0	15,15,17	0.86	0
6	NAG	K	1	6,1	14,14,15	2.00	4 (28%)	17,19,21	1.31	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
6	NAG	K	2	6	14,14,15	2.01	4 (28%)	17,19,21	1.14	2 (11%)
6	FUC	K	3	6	10,10,11	0.68	0	14,14,16	0.78	0
5	NAG	L	1	5,1	14,14,15	2.13	5 (35%)	17,19,21	1.80	6 (35%)
5	NAG	L	2	5	14,14,15	1.97	4 (28%)	17,19,21	1.19	2 (11%)
5	BMA	L	3	5	11,11,12	0.61	0	15,15,17	0.76	0
5	MAN	L	4	5	11,11,12	1.00	1 (9%)	15,15,17	1.61	2 (13%)
5	MAN	L	5	5	11,11,12	0.61	0	15,15,17	0.98	2 (13%)
2	NAG	M	1	2,1	14,14,15	2.05	4 (28%)	17,19,21	0.97	0
2	NAG	M	2	2	14,14,15	1.97	4 (28%)	17,19,21	1.10	2 (11%)
2	BMA	M	3	2	11,11,12	0.51	0	15,15,17	0.68	0
3	NAG	N	1	3,1	14,14,15	2.09	4 (28%)	17,19,21	1.99	6 (35%)
3	NAG	N	2	3	14,14,15	2.02	4 (28%)	17,19,21	2.37	4 (23%)
4	NAG	O	1	4,1	14,14,15	2.02	4 (28%)	17,19,21	1.63	3 (17%)
4	NAG	O	2	4	14,14,15	2.09	4 (28%)	17,19,21	1.14	1 (5%)
4	BMA	O	3	4	11,11,12	0.53	0	15,15,17	0.83	0
4	MAN	O	4	4	11,11,12	0.91	0	15,15,17	2.16	5 (33%)
3	NAG	P	1	3,1	14,14,15	2.00	3 (21%)	17,19,21	1.67	5 (29%)
3	NAG	P	2	3	14,14,15	2.00	4 (28%)	17,19,21	1.16	2 (11%)
4	NAG	Q	1	4,1	14,14,15	1.98	5 (35%)	17,19,21	1.86	3 (17%)
4	NAG	Q	2	4	14,14,15	2.05	5 (35%)	17,19,21	1.62	4 (23%)
4	BMA	Q	3	4	11,11,12	0.78	0	15,15,17	1.29	1 (6%)
4	MAN	Q	4	4	11,11,12	0.68	0	15,15,17	1.04	2 (13%)
2	NAG	R	1	2,1	14,14,15	2.00	4 (28%)	17,19,21	1.28	2 (11%)
2	NAG	R	2	2	14,14,15	2.00	4 (28%)	17,19,21	1.07	1 (5%)
2	BMA	R	3	2	11,11,12	0.55	0	15,15,17	0.69	0
4	NAG	S	1	4,1	14,14,15	1.95	3 (21%)	17,19,21	1.10	2 (11%)
4	NAG	S	2	4	14,14,15	1.90	4 (28%)	17,19,21	1.81	6 (35%)
4	BMA	S	3	4	11,11,12	0.98	1 (9%)	15,15,17	1.00	1 (6%)
4	MAN	S	4	4	11,11,12	0.70	1 (9%)	15,15,17	1.18	2 (13%)
2	NAG	T	1	2,1	14,14,15	1.84	3 (21%)	17,19,21	2.27	5 (29%)
2	NAG	T	2	2	14,14,15	1.99	4 (28%)	17,19,21	1.65	4 (23%)
2	BMA	T	3	2	11,11,12	0.68	0	15,15,17	0.67	0
6	NAG	U	1	6,1	14,14,15	1.95	4 (28%)	17,19,21	1.40	1 (5%)
6	NAG	U	2	6	14,14,15	1.99	4 (28%)	17,19,21	1.08	1 (5%)
6	FUC	U	3	6	10,10,11	0.61	0	14,14,16	0.76	0
7	NAG	V	1	7,1	14,14,15	1.95	4 (28%)	17,19,21	1.16	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	NAG	V	2	7	14,14,15	2.00	4 (28%)	17,19,21	1.03	2 (11%)
7	MAN	V	3	7	11,11,12	1.81	2 (18%)	15,15,17	2.40	3 (20%)
7	MAN	V	4	7	11,11,12	0.57	0	15,15,17	0.97	2 (13%)
8	NAG	W	1	8,1	14,14,15	1.79	3 (21%)	17,19,21	2.63	6 (35%)
8	NAG	W	2	8	14,14,15	2.03	4 (28%)	17,19,21	1.06	1 (5%)
8	MAN	W	3	8	11,11,12	0.71	0	15,15,17	0.91	1 (6%)
8	MAN	W	4	8	11,11,12	1.37	2 (18%)	15,15,17	2.02	3 (20%)
3	NAG	X	1	3,1	14,14,15	2.02	4 (28%)	17,19,21	1.17	1 (5%)
3	NAG	X	2	3	14,14,15	2.04	4 (28%)	17,19,21	1.09	1 (5%)
2	NAG	Y	1	2,1	14,14,15	2.04	4 (28%)	17,19,21	1.17	1 (5%)
2	NAG	Y	2	2	14,14,15	2.13	4 (28%)	17,19,21	1.59	3 (17%)
2	BMA	Y	3	2	11,11,12	0.56	0	15,15,17	0.68	0
2	NAG	Z	1	2,1	14,14,15	1.96	4 (28%)	17,19,21	1.14	2 (11%)
2	NAG	Z	2	2	14,14,15	2.04	4 (28%)	17,19,21	1.16	1 (5%)
2	BMA	Z	3	2	11,11,12	0.58	0	15,15,17	0.68	0
4	NAG	a	1	4,1	14,14,15	1.91	4 (28%)	17,19,21	2.01	4 (23%)
4	NAG	a	2	4	14,14,15	2.01	5 (35%)	17,19,21	1.00	1 (5%)
4	BMA	a	3	4	11,11,12	0.59	0	15,15,17	0.87	0
4	MAN	a	4	4	11,11,12	0.58	0	15,15,17	0.90	1 (6%)
3	NAG	b	1	3,1	14,14,15	2.05	4 (28%)	17,19,21	1.59	3 (17%)
3	NAG	b	2	3	14,14,15	2.04	4 (28%)	17,19,21	1.11	1 (5%)
3	NAG	c	1	3,1	14,14,15	1.92	3 (21%)	17,19,21	1.26	3 (17%)
3	NAG	c	2	3	14,14,15	2.04	4 (28%)	17,19,21	1.60	3 (17%)
2	NAG	d	1	2,1	14,14,15	2.02	4 (28%)	17,19,21	1.15	1 (5%)
2	NAG	d	2	2	14,14,15	1.96	4 (28%)	17,19,21	1.58	3 (17%)
2	BMA	d	3	2	11,11,12	0.50	0	15,15,17	0.74	0
9	NAG	e	1	9	14,14,15	1.97	4 (28%)	17,19,21	1.34	2 (11%)
9	BMA	e	2	9	11,11,12	0.55	0	15,15,17	0.66	0
2	NAG	f	1	2,1	14,14,15	1.96	4 (28%)	17,19,21	1.10	2 (11%)
2	NAG	f	2	2	14,14,15	1.98	4 (28%)	17,19,21	1.09	1 (5%)
2	BMA	f	3	2	11,11,12	0.54	0	15,15,17	0.74	0
2	NAG	g	1	2,1	14,14,15	1.92	4 (28%)	17,19,21	1.24	2 (11%)
2	NAG	g	2	2	14,14,15	1.99	4 (28%)	17,19,21	1.05	2 (11%)
2	BMA	g	3	2	11,11,12	0.60	0	15,15,17	0.76	0
10	NAG	h	1	10,1	14,14,15	1.92	4 (28%)	17,19,21	1.40	3 (17%)
10	NAG	h	2	10	14,14,15	2.01	3 (21%)	17,19,21	0.93	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
10	BMA	h	3	10	11,11,12	0.62	0	15,15,17	0.73	0
10	MAN	h	4	10	11,11,12	0.74	0	15,15,17	1.09	2 (13%)
4	NAG	i	1	4,1	14,14,15	1.95	4 (28%)	17,19,21	1.31	3 (17%)
4	NAG	i	2	4	14,14,15	2.01	4 (28%)	17,19,21	1.24	1 (5%)
4	BMA	i	3	4	11,11,12	0.59	0	15,15,17	0.76	0
4	MAN	i	4	4	11,11,12	0.63	0	15,15,17	1.06	2 (13%)
11	NAG	j	1	11,1	14,14,15	2.03	4 (28%)	17,19,21	1.53	1 (5%)
11	FUC	j	2	11	10,10,11	1.07	1 (10%)	14,14,16	1.04	1 (7%)
12	NAG	k	1	12,1	14,14,15	2.03	4 (28%)	17,19,21	1.37	2 (11%)
12	NAG	k	2	12	14,14,15	1.88	4 (28%)	17,19,21	1.83	4 (23%)
12	BMA	k	3	12	11,11,12	0.50	0	15,15,17	0.71	0
12	MAN	k	4	12	11,11,12	0.60	0	15,15,17	0.88	1 (6%)
12	MAN	k	5	12	11,11,12	0.55	0	15,15,17	0.98	2 (13%)
12	FUC	k	6	12	10,10,11	0.61	0	14,14,16	0.74	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
2	NAG	D	1	2,1	-	3/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1
2	BMA	D	3	2	-	1/2/19/22	0/1/1/1
3	NAG	E	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	E	2	3	-	0/6/23/26	0/1/1/1
3	NAG	F	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	F	2	3	-	2/6/23/26	0/1/1/1
2	NAG	G	1	2,1	-	3/6/23/26	0/1/1/1
2	NAG	G	2	2	-	3/6/23/26	0/1/1/1
2	BMA	G	3	2	-	1/2/19/22	0/1/1/1
4	NAG	H	1	4,1	-	6/6/23/26	0/1/1/1
4	NAG	H	2	4	-	0/6/23/26	0/1/1/1
4	BMA	H	3	4	-	2/2/19/22	0/1/1/1
4	MAN	H	4	4	-	1/2/19/22	0/1/1/1
5	NAG	I	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	I	2	5	-	0/6/23/26	0/1/1/1
5	BMA	I	3	5	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	MAN	I	4	5	-	2/2/19/22	0/1/1/1
5	MAN	I	5	5	-	2/2/19/22	1/1/1/1
2	NAG	J	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	J	2	2	-	2/6/23/26	0/1/1/1
2	BMA	J	3	2	-	0/2/19/22	0/1/1/1
6	NAG	K	1	6,1	-	4/6/23/26	0/1/1/1
6	NAG	K	2	6	-	3/6/23/26	0/1/1/1
6	FUC	K	3	6	-	-	0/1/1/1
5	NAG	L	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	L	2	5	-	4/6/23/26	0/1/1/1
5	BMA	L	3	5	-	1/2/19/22	0/1/1/1
5	MAN	L	4	5	-	0/2/19/22	0/1/1/1
5	MAN	L	5	5	-	1/2/19/22	0/1/1/1
2	NAG	M	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	M	2	2	-	4/6/23/26	0/1/1/1
2	BMA	M	3	2	-	0/2/19/22	0/1/1/1
3	NAG	N	1	3,1	-	3/6/23/26	0/1/1/1
3	NAG	N	2	3	1/1/6/7	2/6/23/26	0/1/1/1
4	NAG	O	1	4,1	-	3/6/23/26	0/1/1/1
4	NAG	O	2	4	-	2/6/23/26	0/1/1/1
4	BMA	O	3	4	-	0/2/19/22	0/1/1/1
4	MAN	O	4	4	1/1/4/5	1/2/19/22	1/1/1/1
3	NAG	P	1	3,1	-	4/6/23/26	0/1/1/1
3	NAG	P	2	3	-	0/6/23/26	0/1/1/1
4	NAG	Q	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1
4	BMA	Q	3	4	-	0/2/19/22	0/1/1/1
4	MAN	Q	4	4	-	1/2/19/22	0/1/1/1
2	NAG	R	1	2,1	-	3/6/23/26	0/1/1/1
2	NAG	R	2	2	-	2/6/23/26	0/1/1/1
2	BMA	R	3	2	-	0/2/19/22	0/1/1/1
4	NAG	S	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	S	2	4	-	0/6/23/26	0/1/1/1
4	BMA	S	3	4	-	1/2/19/22	0/1/1/1
4	MAN	S	4	4	-	2/2/19/22	0/1/1/1
2	NAG	T	1	2,1	-	1/6/23/26	0/1/1/1
2	NAG	T	2	2	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BMA	T	3	2	-	0/2/19/22	0/1/1/1
6	NAG	U	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	U	2	6	-	2/6/23/26	0/1/1/1
6	FUC	U	3	6	-	-	0/1/1/1
7	NAG	V	1	7,1	-	2/6/23/26	0/1/1/1
7	NAG	V	2	7	-	1/6/23/26	0/1/1/1
7	MAN	V	3	7	1/1/4/5	1/2/19/22	0/1/1/1
7	MAN	V	4	7	-	0/2/19/22	0/1/1/1
8	NAG	W	1	8,1	-	1/6/23/26	0/1/1/1
8	NAG	W	2	8	-	3/6/23/26	0/1/1/1
8	MAN	W	3	8	-	0/2/19/22	0/1/1/1
8	MAN	W	4	8	-	0/2/19/22	0/1/1/1
3	NAG	X	1	3,1	-	3/6/23/26	0/1/1/1
3	NAG	X	2	3	-	0/6/23/26	0/1/1/1
2	NAG	Y	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	Y	2	2	-	4/6/23/26	0/1/1/1
2	BMA	Y	3	2	-	1/2/19/22	0/1/1/1
2	NAG	Z	1	2,1	-	1/6/23/26	0/1/1/1
2	NAG	Z	2	2	-	2/6/23/26	0/1/1/1
2	BMA	Z	3	2	-	0/2/19/22	0/1/1/1
4	NAG	a	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	a	2	4	-	4/6/23/26	0/1/1/1
4	BMA	a	3	4	-	2/2/19/22	0/1/1/1
4	MAN	a	4	4	-	0/2/19/22	0/1/1/1
3	NAG	b	1	3,1	-	4/6/23/26	0/1/1/1
3	NAG	b	2	3	-	5/6/23/26	0/1/1/1
3	NAG	c	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	c	2	3	-	5/6/23/26	0/1/1/1
2	NAG	d	1	2,1	-	6/6/23/26	0/1/1/1
2	NAG	d	2	2	-	3/6/23/26	0/1/1/1
2	BMA	d	3	2	-	0/2/19/22	0/1/1/1
9	NAG	e	1	9	-	0/6/23/26	0/1/1/1
9	BMA	e	2	9	-	1/2/19/22	0/1/1/1
2	NAG	f	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	f	2	2	-	3/6/23/26	0/1/1/1
2	BMA	f	3	2	-	0/2/19/22	0/1/1/1
2	NAG	g	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	g	2	2	-	3/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BMA	g	3	2	-	2/2/19/22	0/1/1/1
10	NAG	h	1	10,1	-	2/6/23/26	0/1/1/1
10	NAG	h	2	10	-	4/6/23/26	0/1/1/1
10	BMA	h	3	10	-	0/2/19/22	0/1/1/1
10	MAN	h	4	10	-	2/2/19/22	1/1/1/1
4	NAG	i	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	i	2	4	-	2/6/23/26	0/1/1/1
4	BMA	i	3	4	-	0/2/19/22	0/1/1/1
4	MAN	i	4	4	-	0/2/19/22	1/1/1/1
11	NAG	j	1	11,1	-	4/6/23/26	0/1/1/1
11	FUC	j	2	11	-	-	0/1/1/1
12	NAG	k	1	12,1	-	6/6/23/26	0/1/1/1
12	NAG	k	2	12	-	2/6/23/26	0/1/1/1
12	BMA	k	3	12	-	2/2/19/22	0/1/1/1
12	MAN	k	4	12	-	0/2/19/22	0/1/1/1
12	MAN	k	5	12	-	2/2/19/22	0/1/1/1
12	FUC	k	6	12	-	-	0/1/1/1

The worst 5 of 276 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	H	2	NAG	O5-C1	4.94	1.52	1.43
7	V	3	MAN	O5-C1	-4.94	1.35	1.43
4	O	2	NAG	O5-C1	4.76	1.51	1.43
5	L	1	NAG	O5-C1	4.68	1.51	1.43
2	Y	2	NAG	O5-C1	4.51	1.51	1.43

The worst 5 of 221 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	N	2	NAG	C3-C4-C5	6.86	122.67	110.23
8	W	4	MAN	C1-O5-C5	6.74	121.22	112.19
8	W	1	NAG	C4-C3-C2	6.64	120.75	111.02
7	V	3	MAN	O2-C2-C1	6.22	123.47	109.22
2	D	1	NAG	O4-C4-C3	-6.11	95.98	110.38

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	N	2	NAG	C4

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Mol	Chain	Res	Type	Atom
4	O	4	MAN	C5
7	V	3	MAN	C2

5 of 189 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	G	1	NAG	C1-C2-N2-C7
2	M	1	NAG	C1-C2-N2-C7
2	T	1	NAG	C1-C2-N2-C7
2	T	2	NAG	C1-C2-N2-C7
2	Y	2	NAG	C1-C2-N2-C7

All (4) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	O	4	MAN	C1-C2-C3-C4-C5-O5
5	I	5	MAN	C1-C2-C3-C4-C5-O5
4	i	4	MAN	C1-C2-C3-C4-C5-O5
10	h	4	MAN	C1-C2-C3-C4-C5-O5

66 monomers are involved in 132 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	j	1	NAG	7	0
2	f	2	NAG	2	0
3	F	2	NAG	1	0
10	h	2	NAG	4	0
2	J	1	NAG	2	0
4	H	3	BMA	1	0
3	E	2	NAG	4	0
4	a	4	MAN	1	0
2	g	3	BMA	3	0
5	L	2	NAG	2	0
11	j	2	FUC	5	0
12	k	2	NAG	8	0
7	V	2	NAG	1	0
2	f	3	BMA	1	0
2	f	1	NAG	3	0
4	H	1	NAG	5	0
4	H	2	NAG	1	0
4	a	1	NAG	2	0
3	E	1	NAG	2	0

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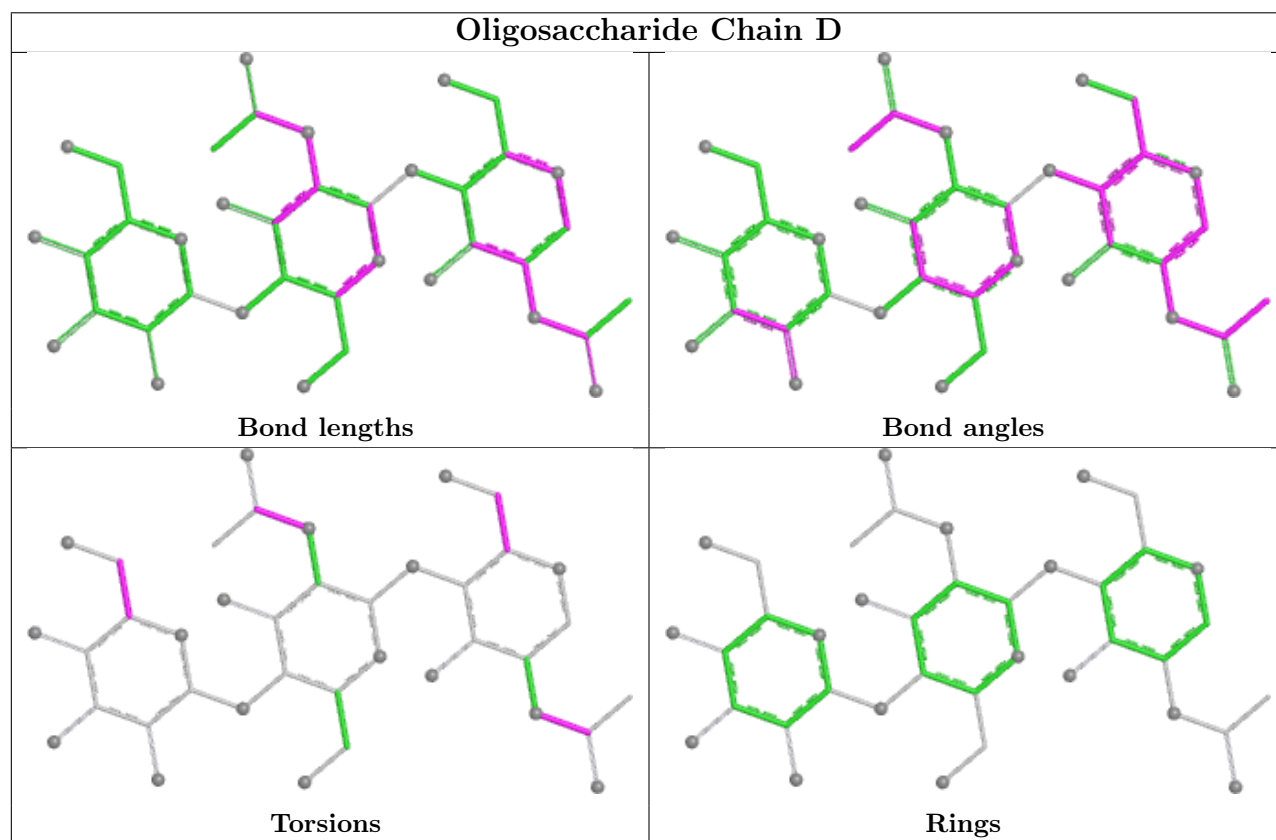
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	3	BMA	1	0
5	L	5	MAN	4	0
4	O	1	NAG	1	0
6	U	3	FUC	1	0
4	Q	2	NAG	6	0
12	k	5	MAN	2	0
12	k	1	NAG	11	0
8	W	3	MAN	1	0
2	g	2	NAG	5	0
3	c	1	NAG	1	0
8	W	2	NAG	1	0
2	T	2	NAG	2	0
4	Q	1	NAG	4	0
2	M	1	NAG	1	0
4	O	4	MAN	1	0
3	b	2	NAG	3	0
9	e	1	NAG	1	0
2	G	2	NAG	1	0
6	K	3	FUC	2	0
2	D	2	NAG	3	0
3	b	1	NAG	1	0
10	h	1	NAG	3	0
3	P	1	NAG	3	0
2	T	1	NAG	1	0
12	k	6	FUC	10	0
2	R	2	NAG	7	0
2	d	2	NAG	8	0
2	G	1	NAG	2	0
2	d	1	NAG	5	0
5	L	1	NAG	12	0
5	L	4	MAN	3	0
2	D	1	NAG	4	0
4	O	3	BMA	1	0
2	T	3	BMA	2	0
12	k	3	BMA	4	0
3	N	1	NAG	2	0
2	R	3	BMA	3	0
2	R	1	NAG	5	0
2	d	3	BMA	6	0
5	L	3	BMA	7	0
2	g	1	NAG	2	0
4	a	3	BMA	1	0

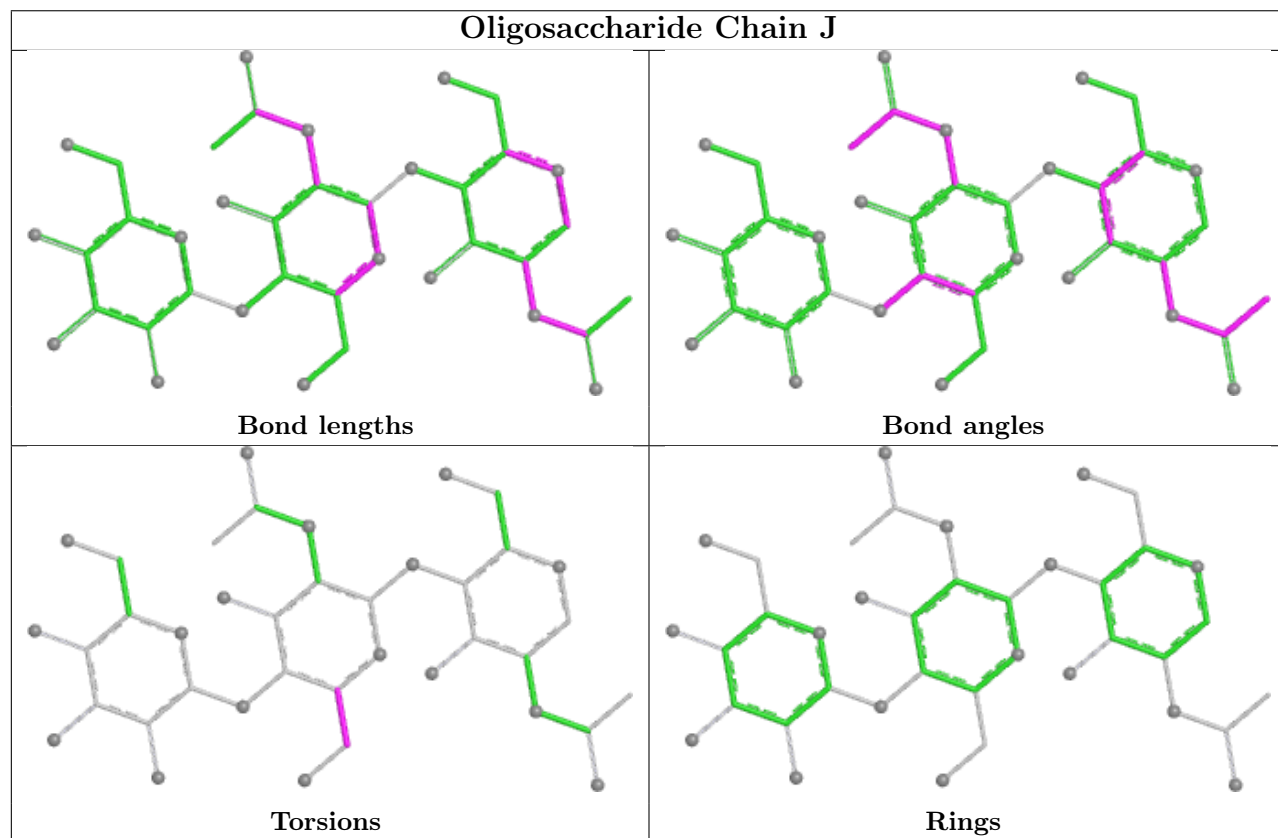
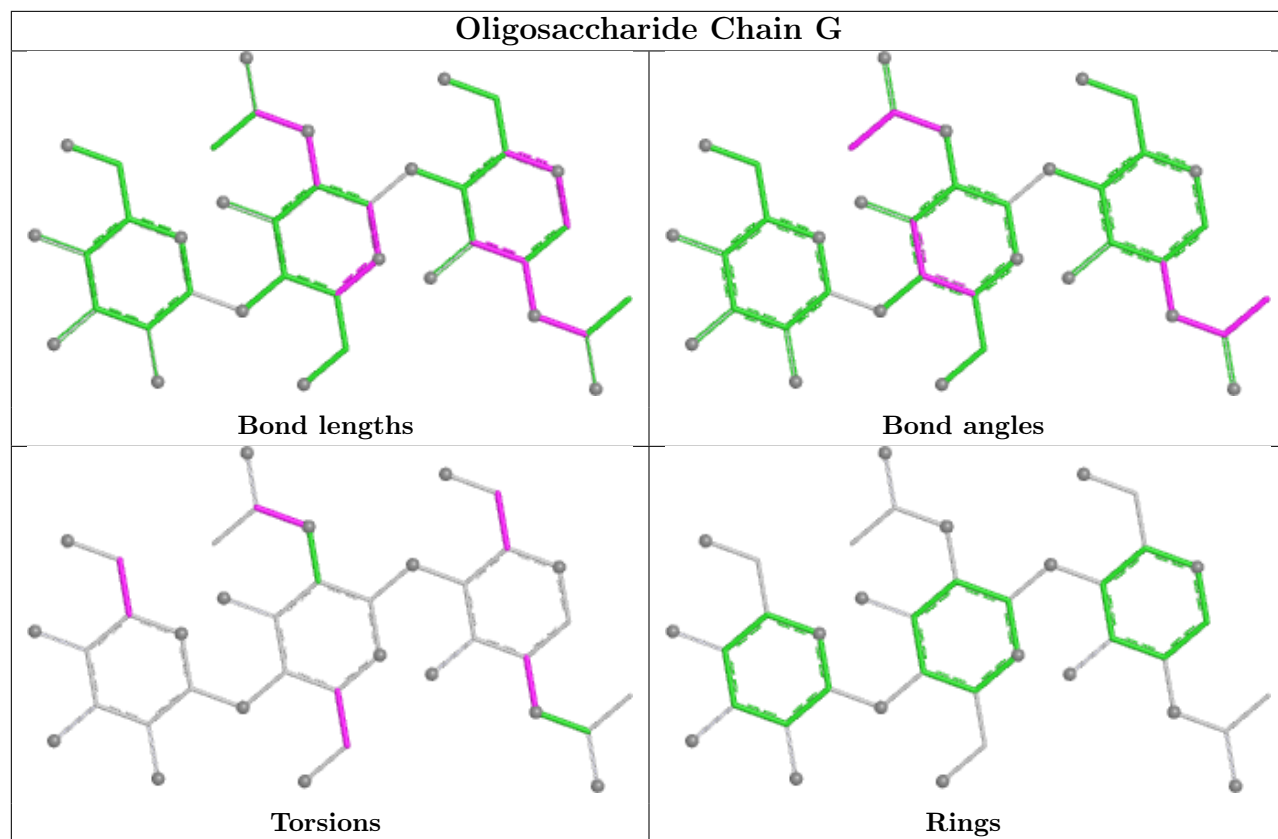
*Continued on next page...*

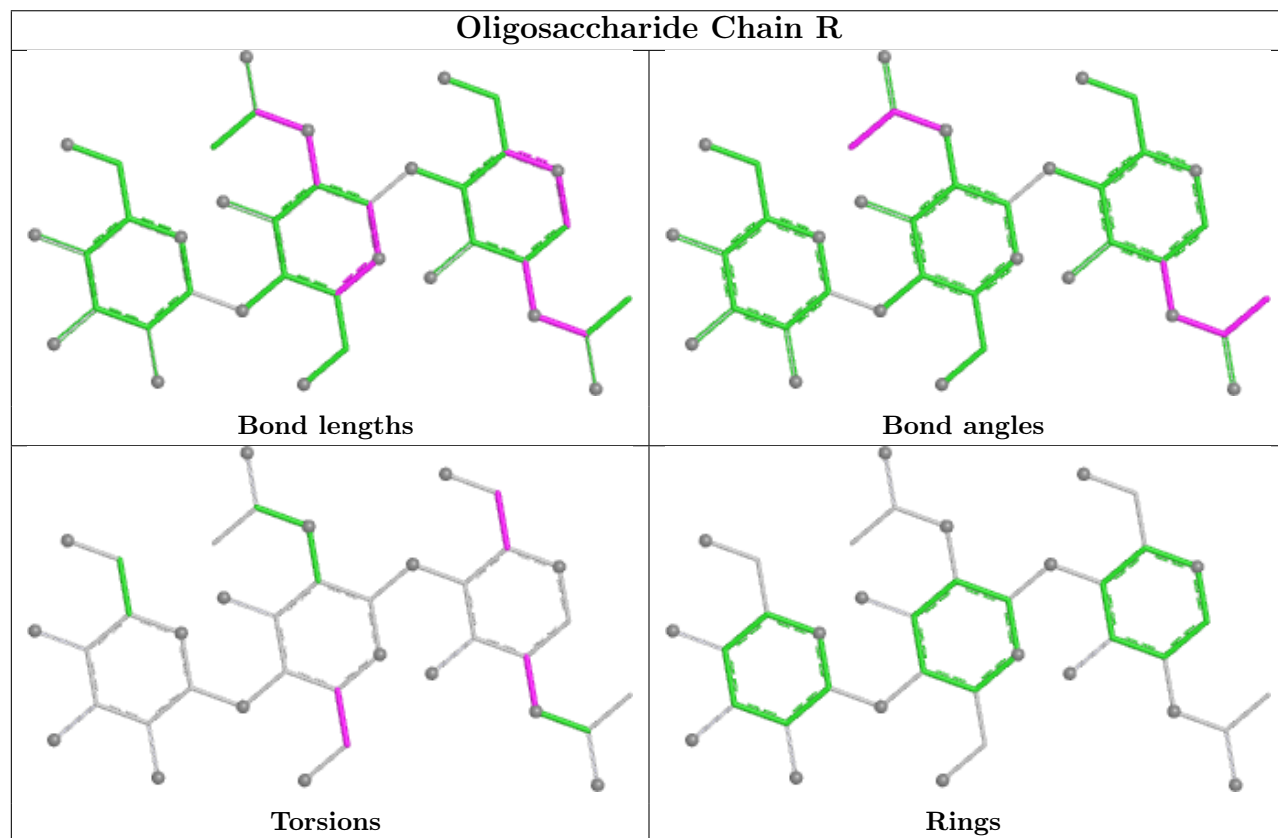
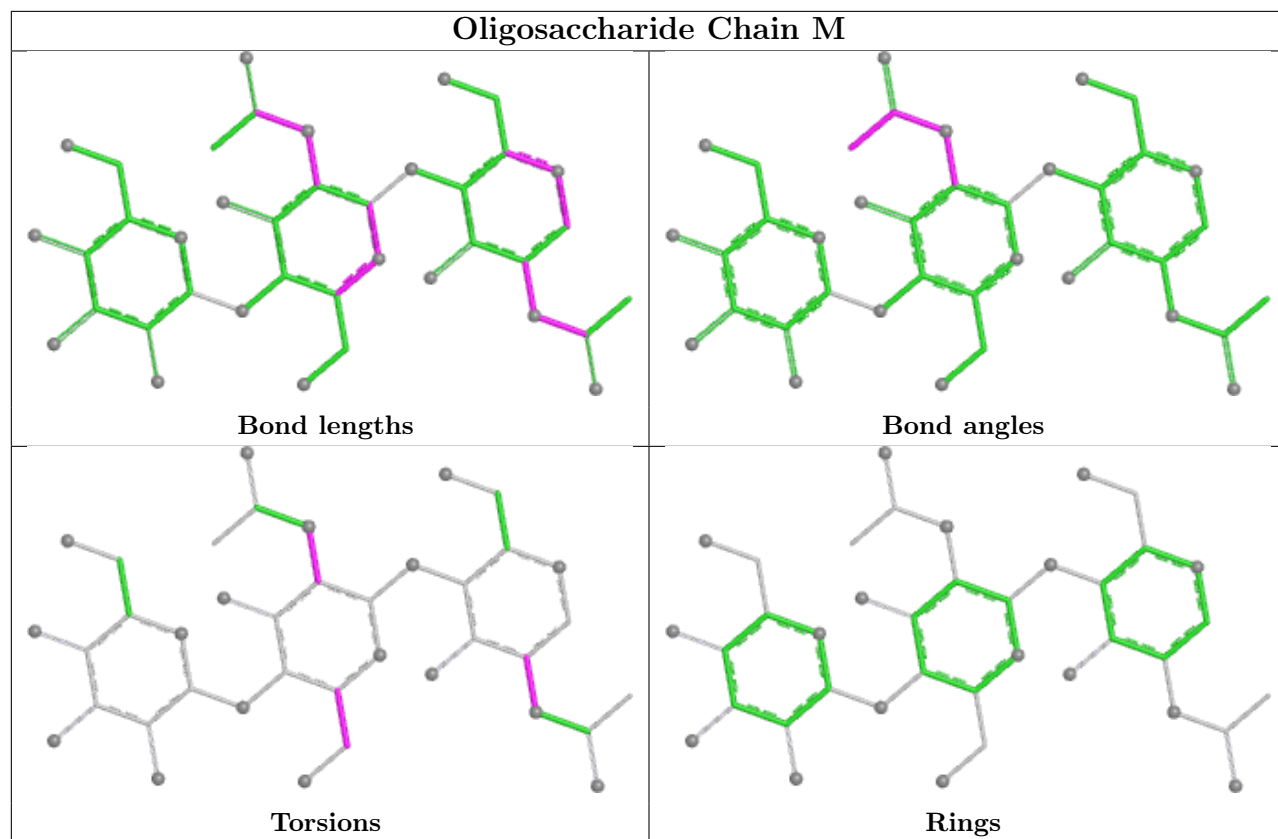
Continued from previous page...

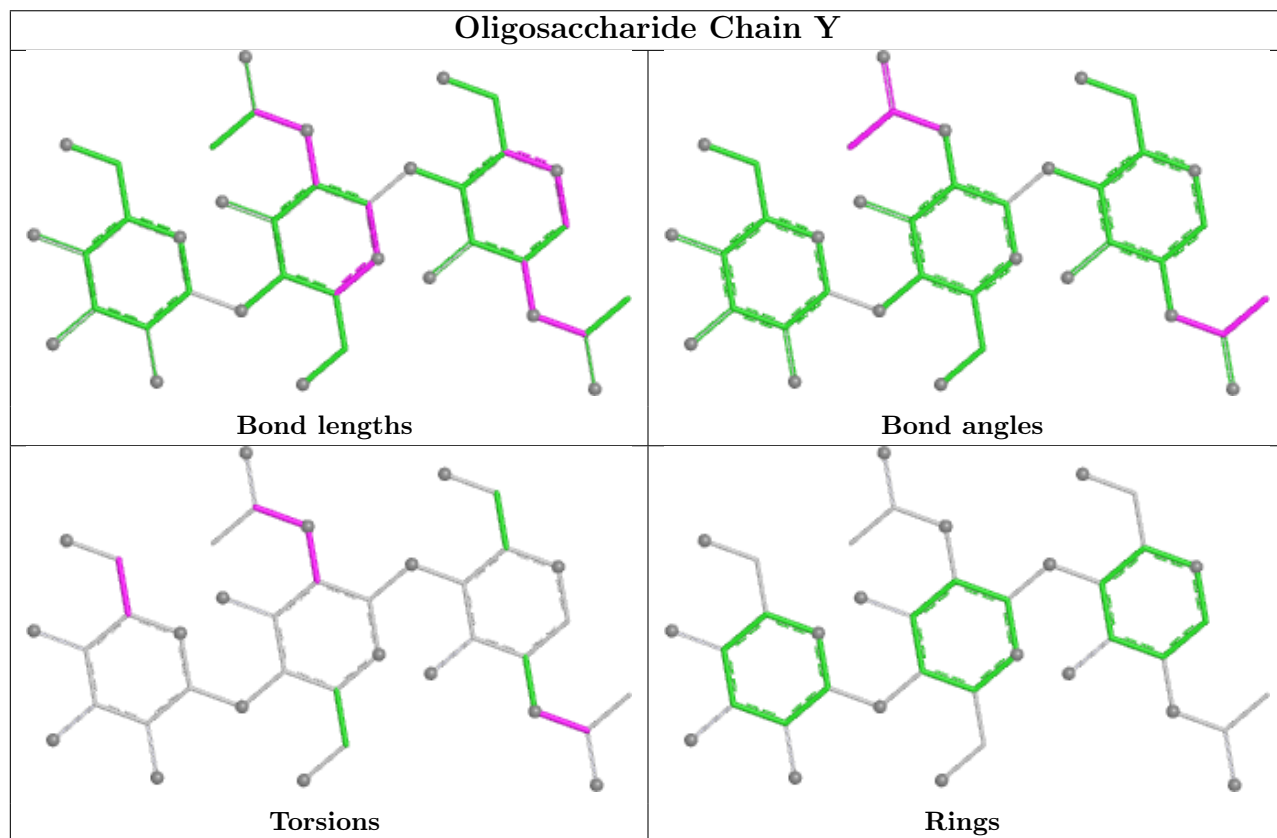
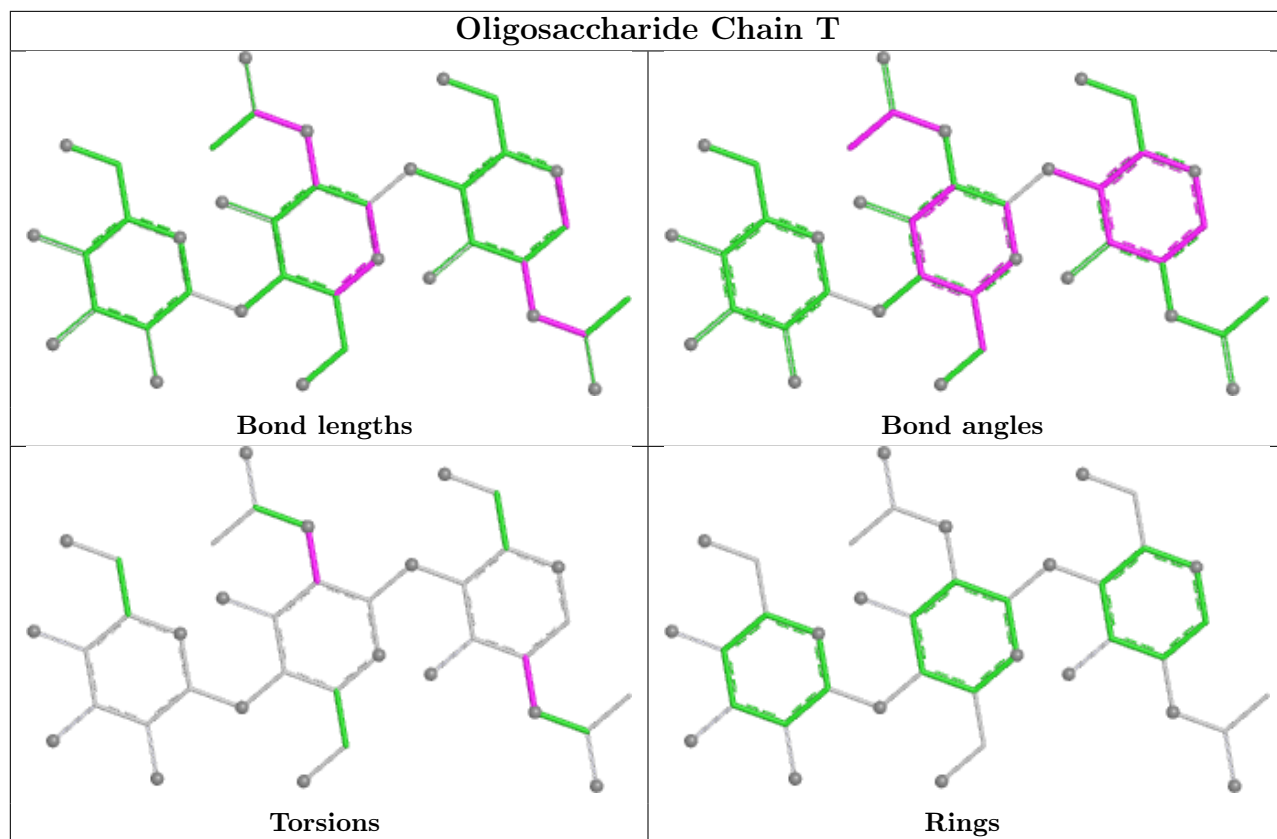
Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	V	1	NAG	1	0
12	k	4	MAN	2	0
3	F	1	NAG	1	0
4	Q	3	BMA	4	0
6	U	1	NAG	1	0

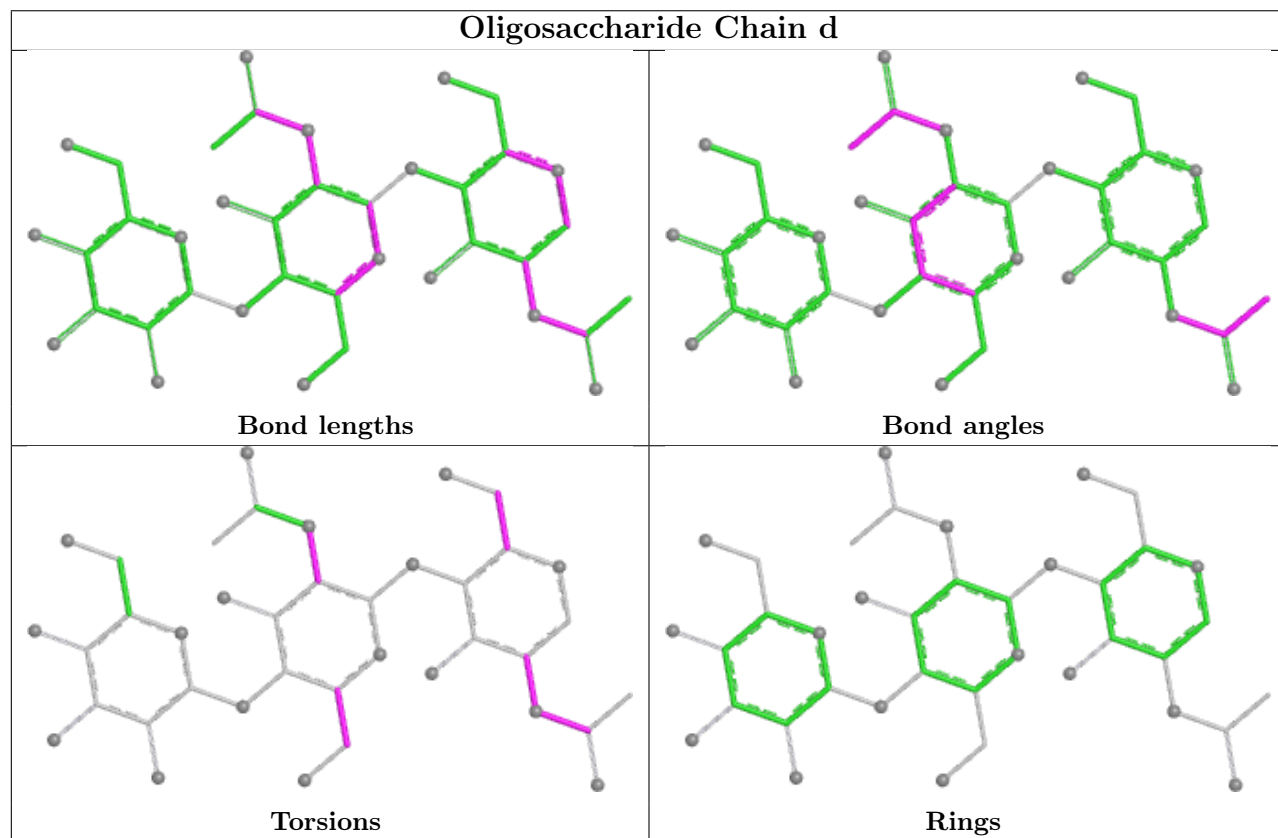
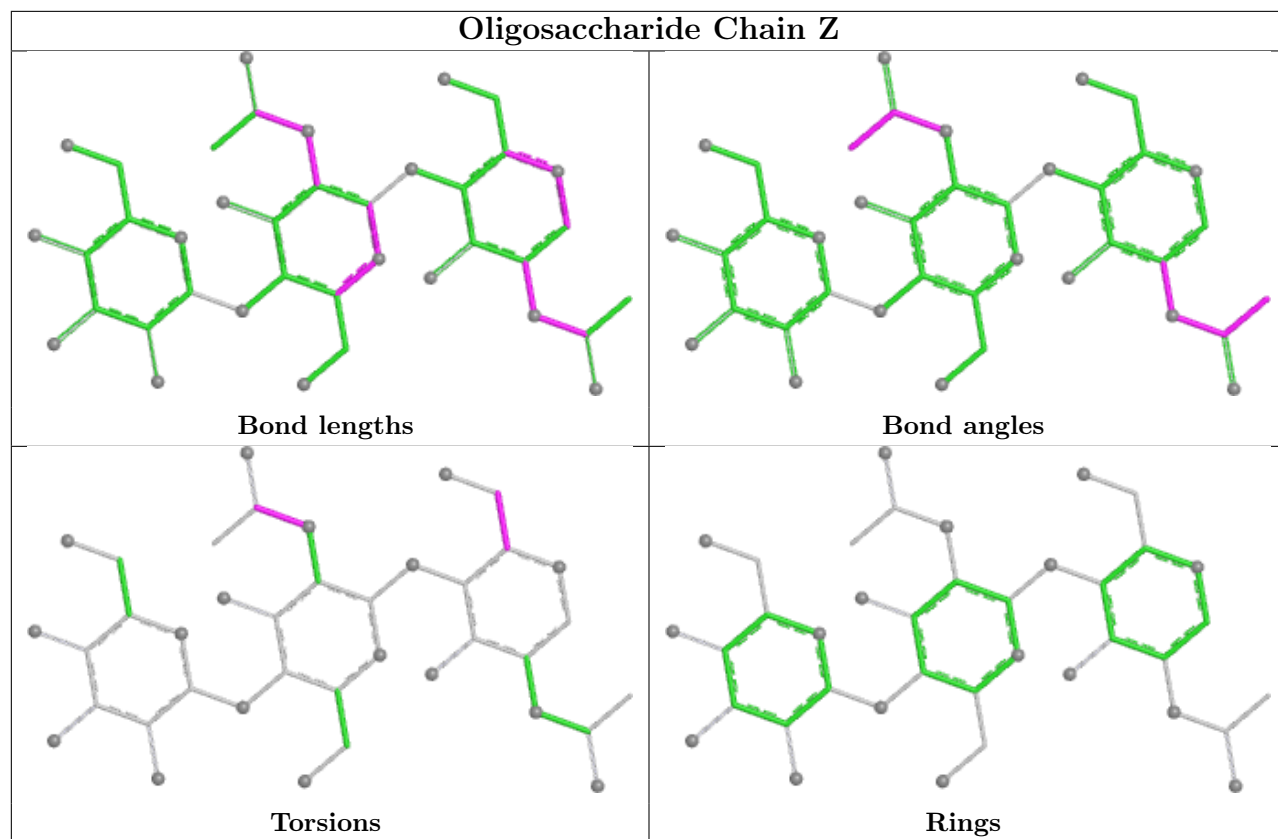
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

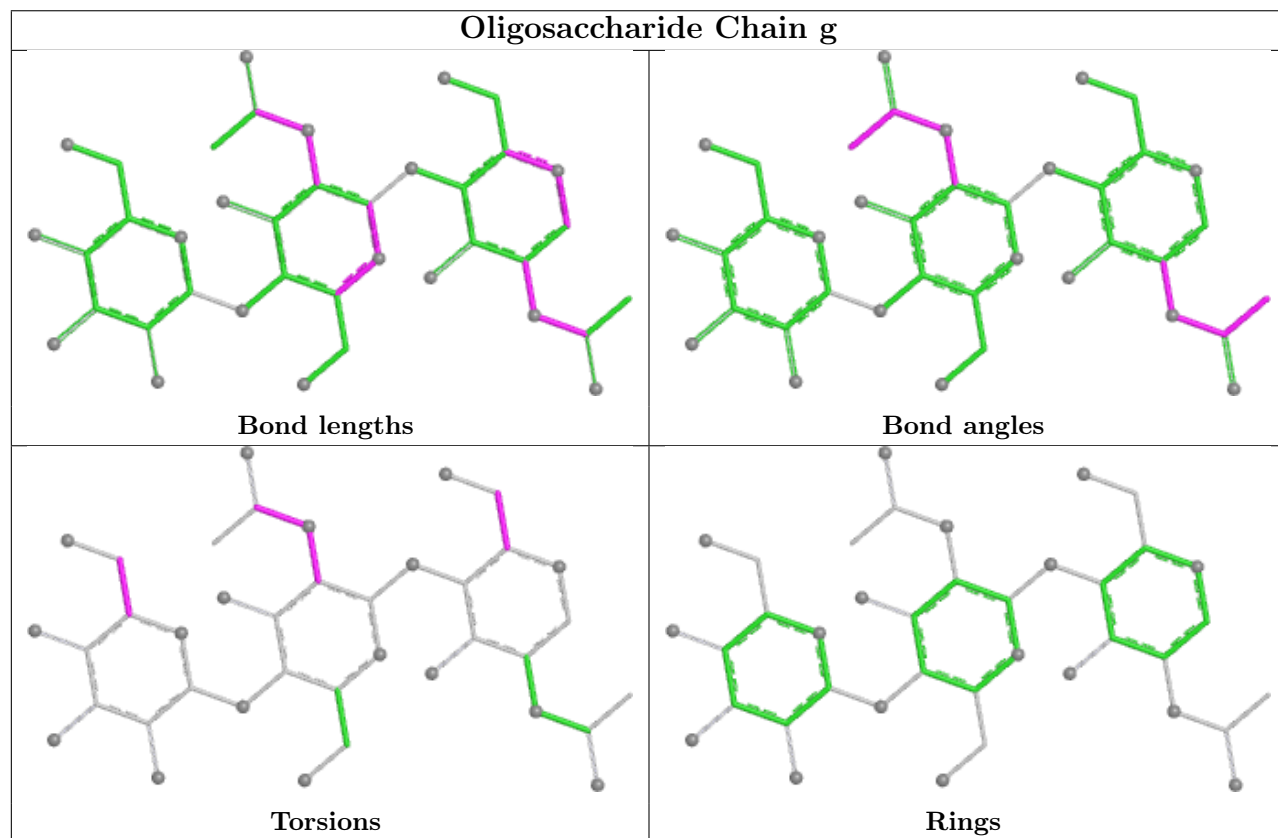
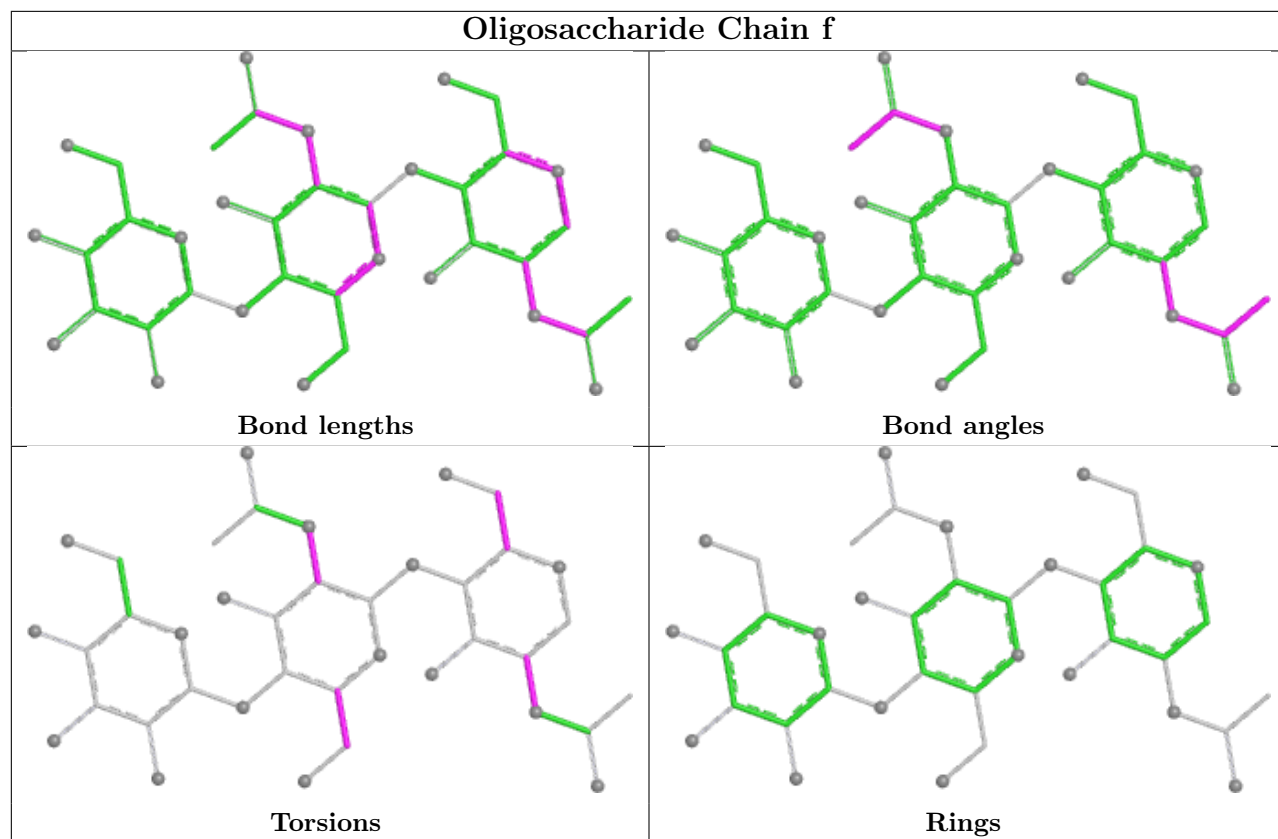


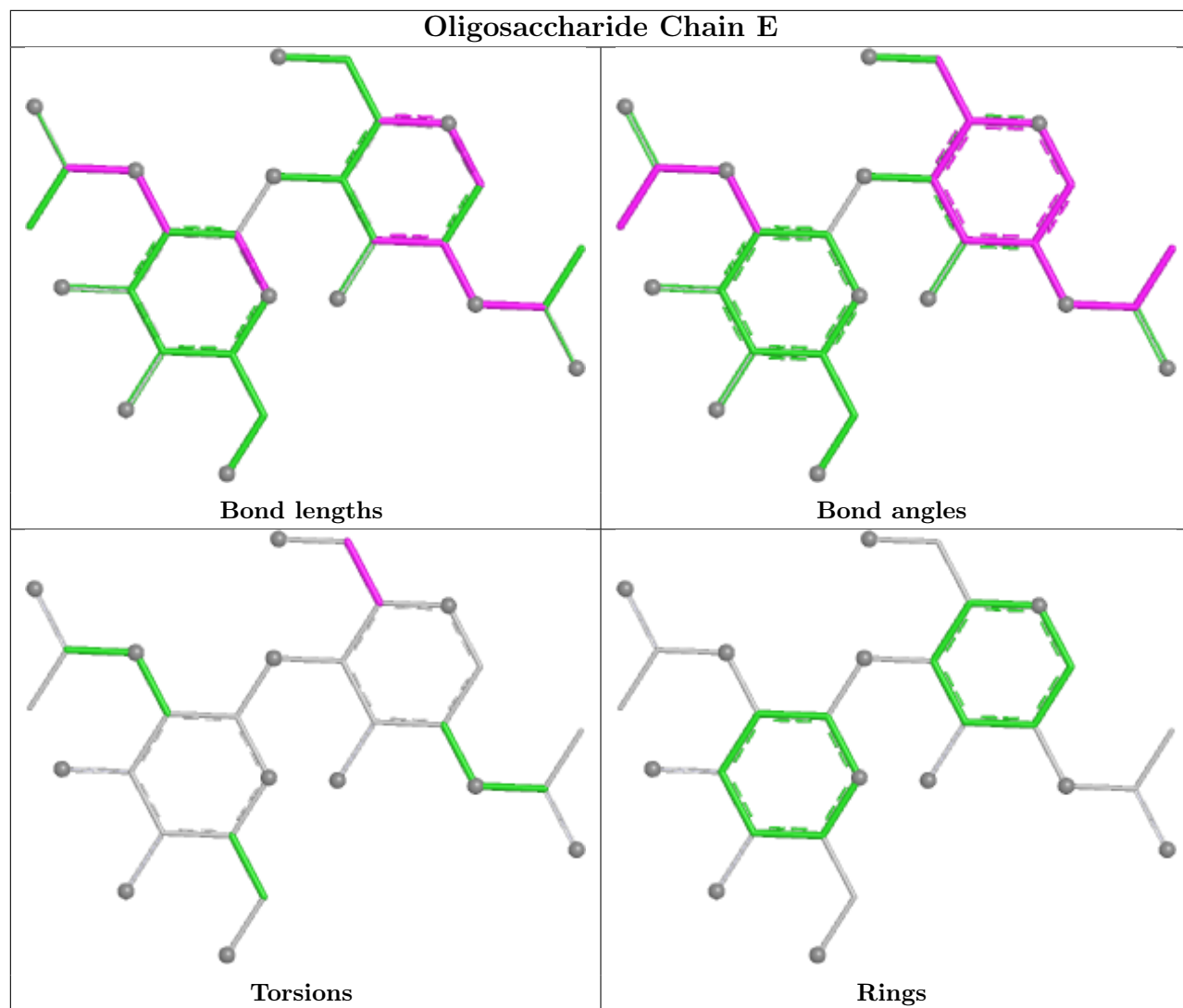


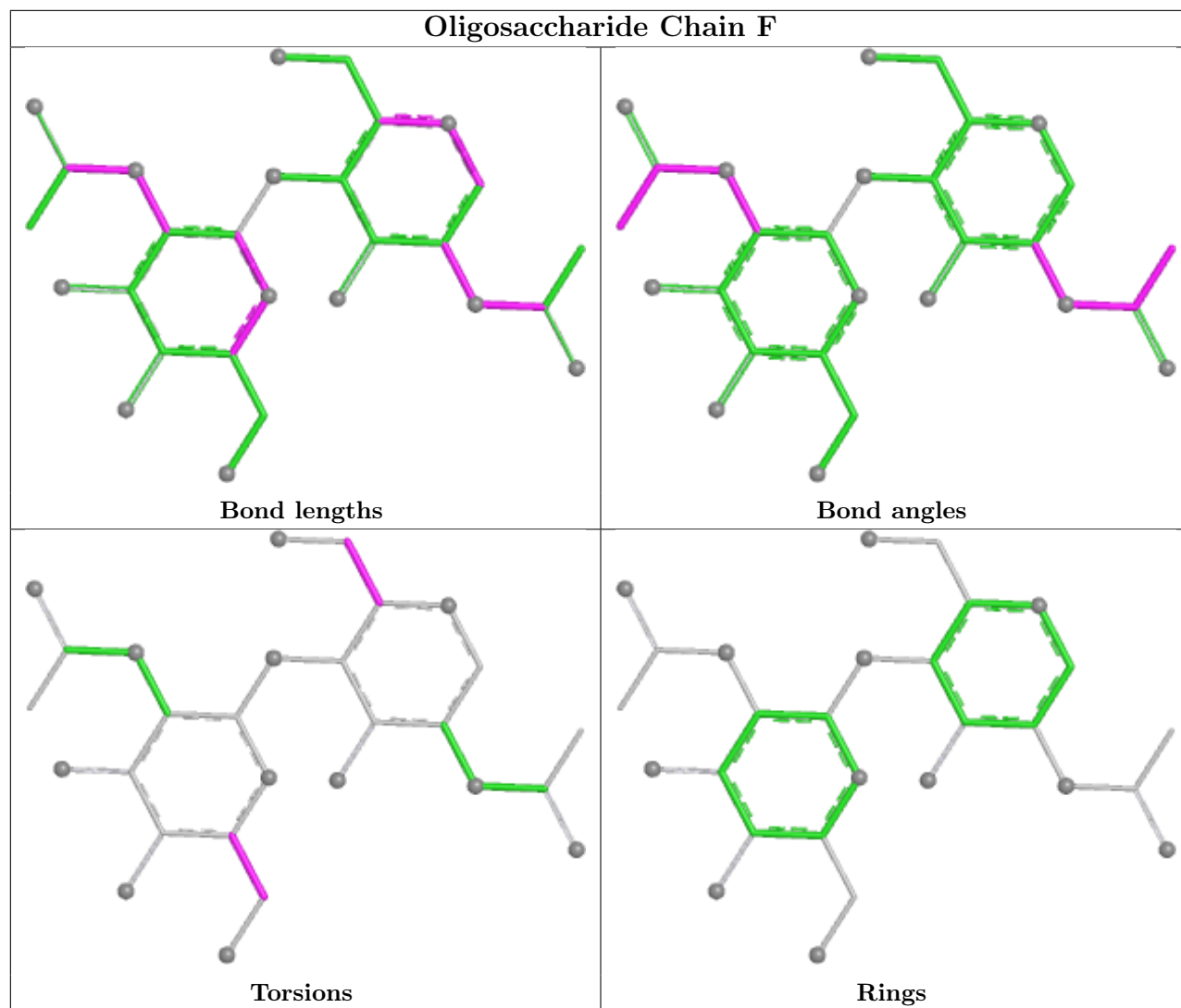


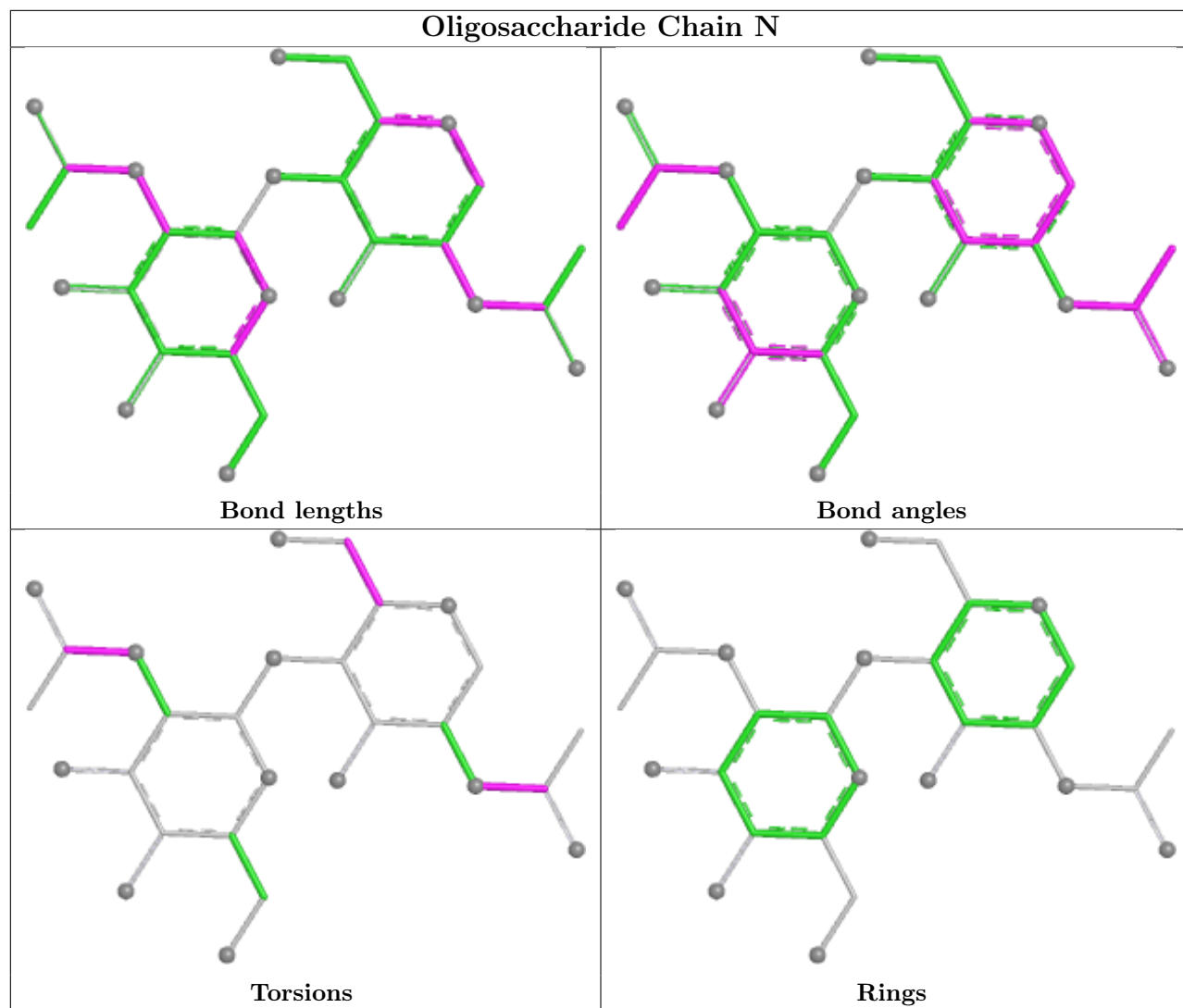


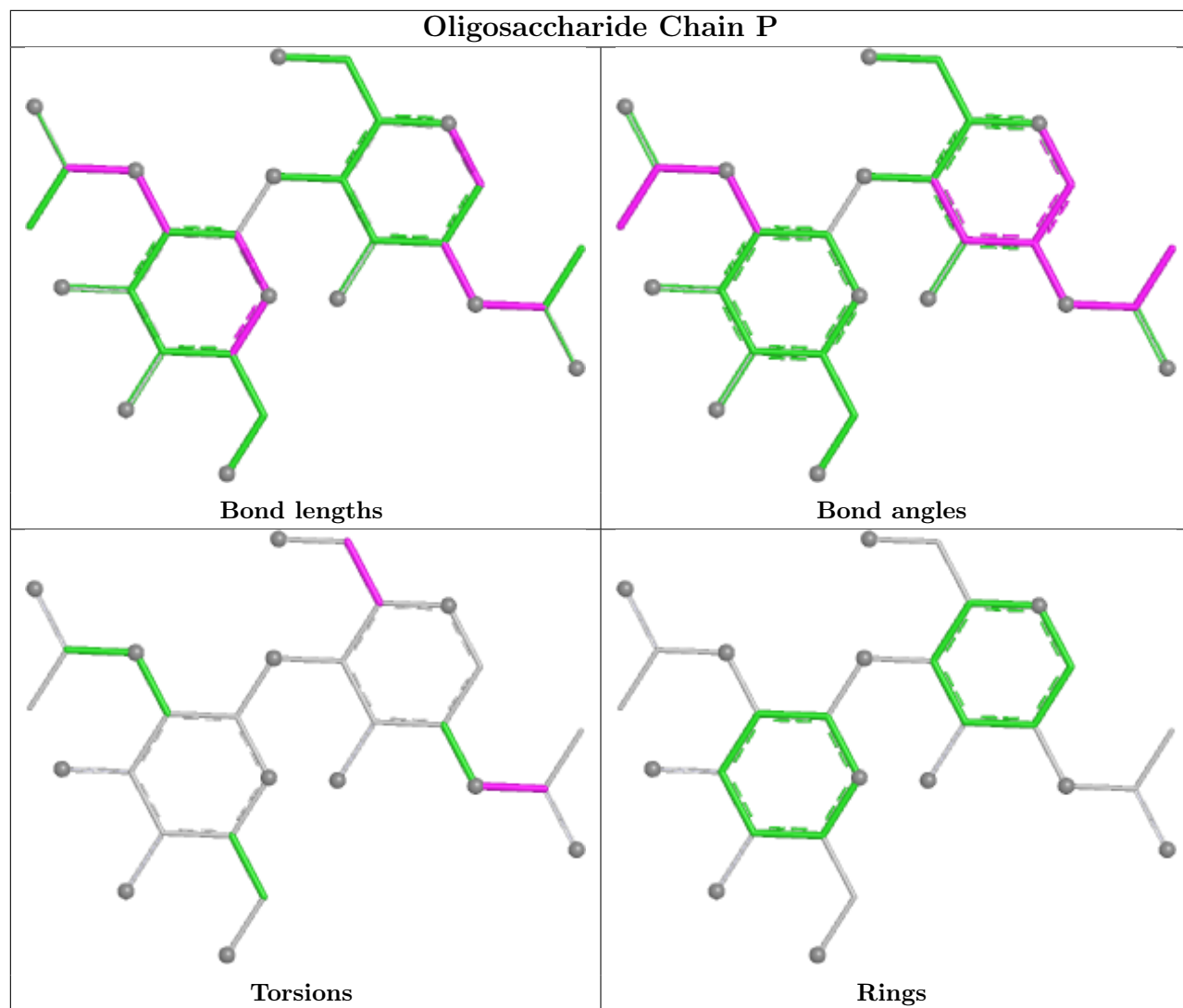


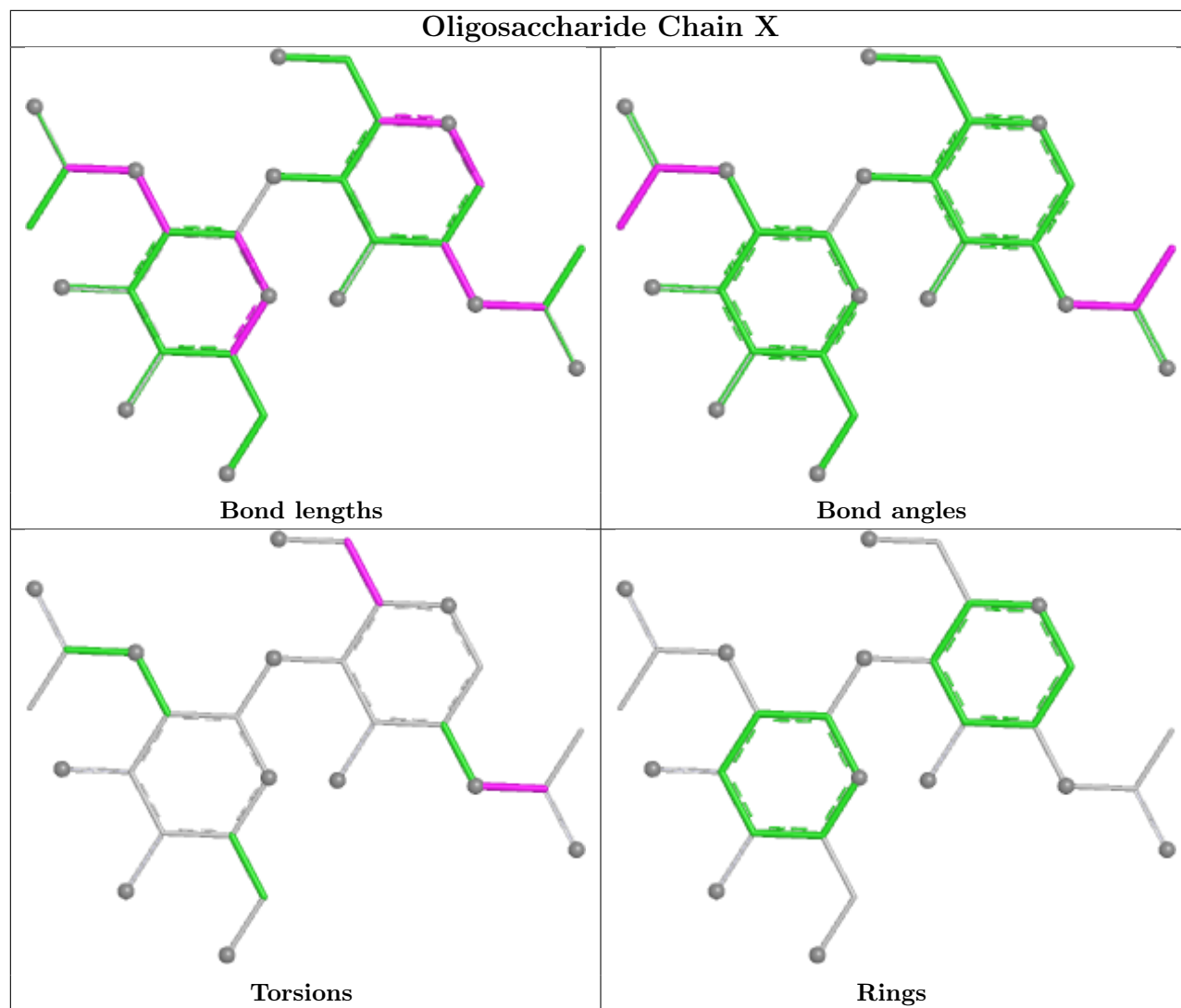


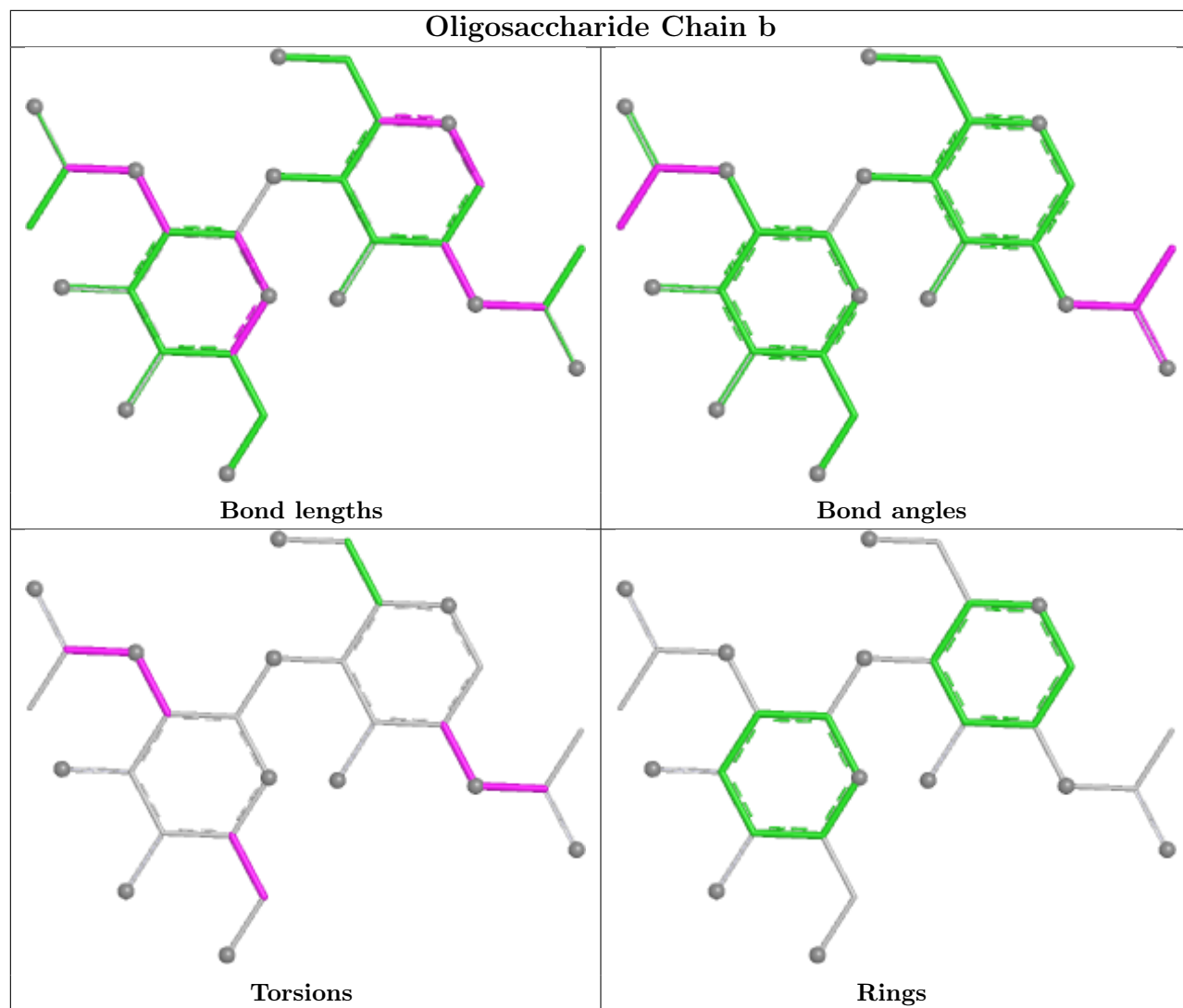


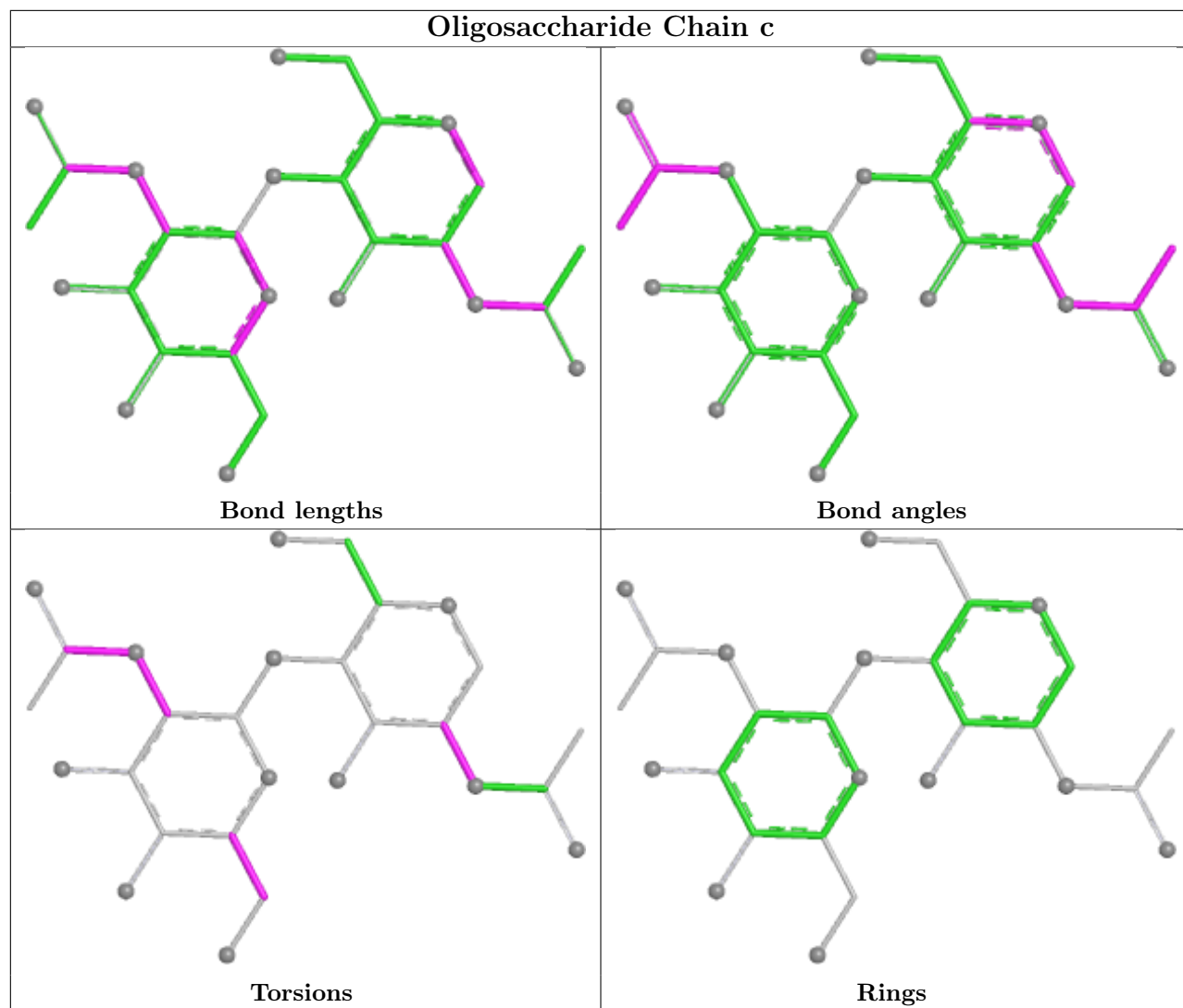


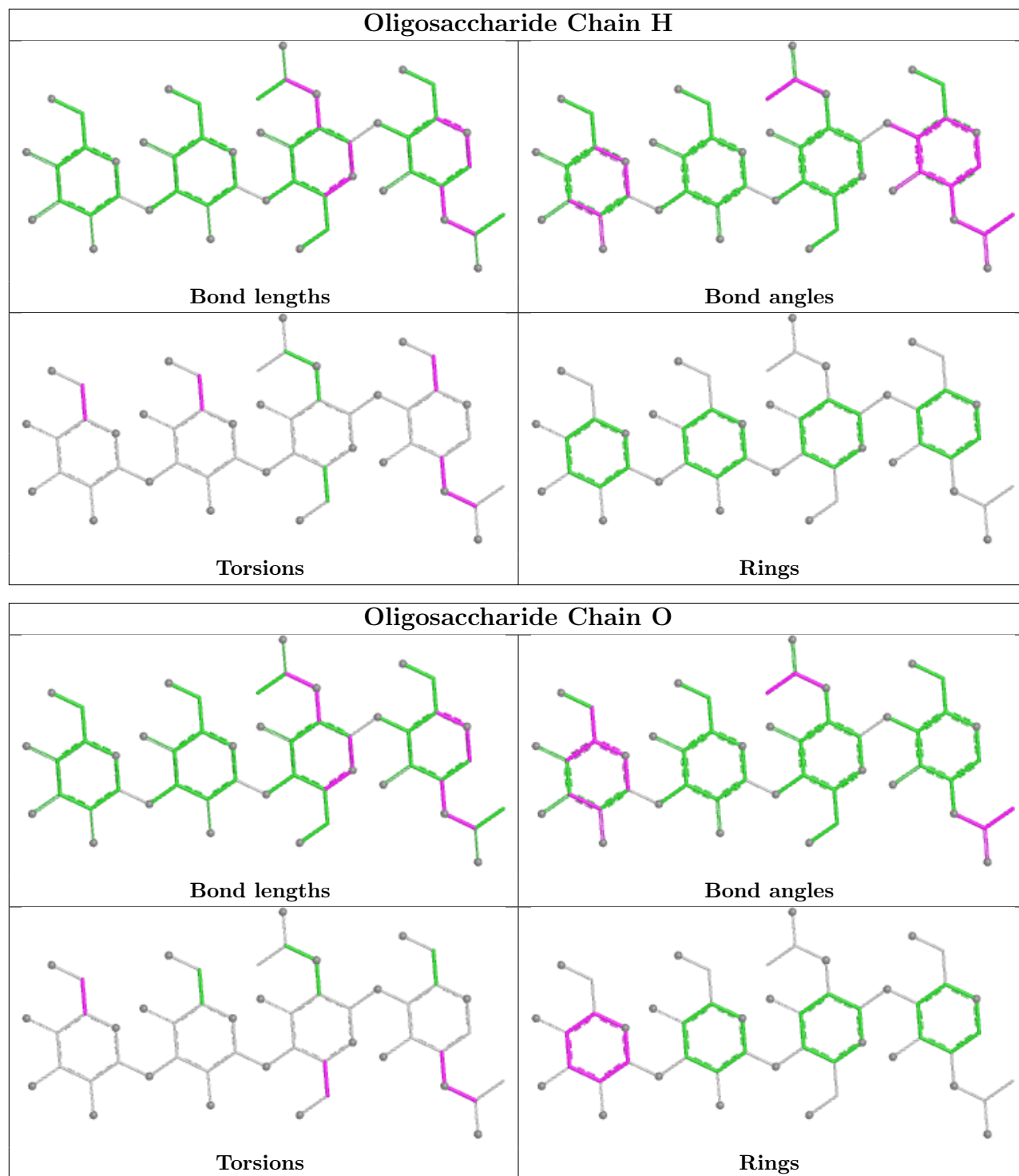


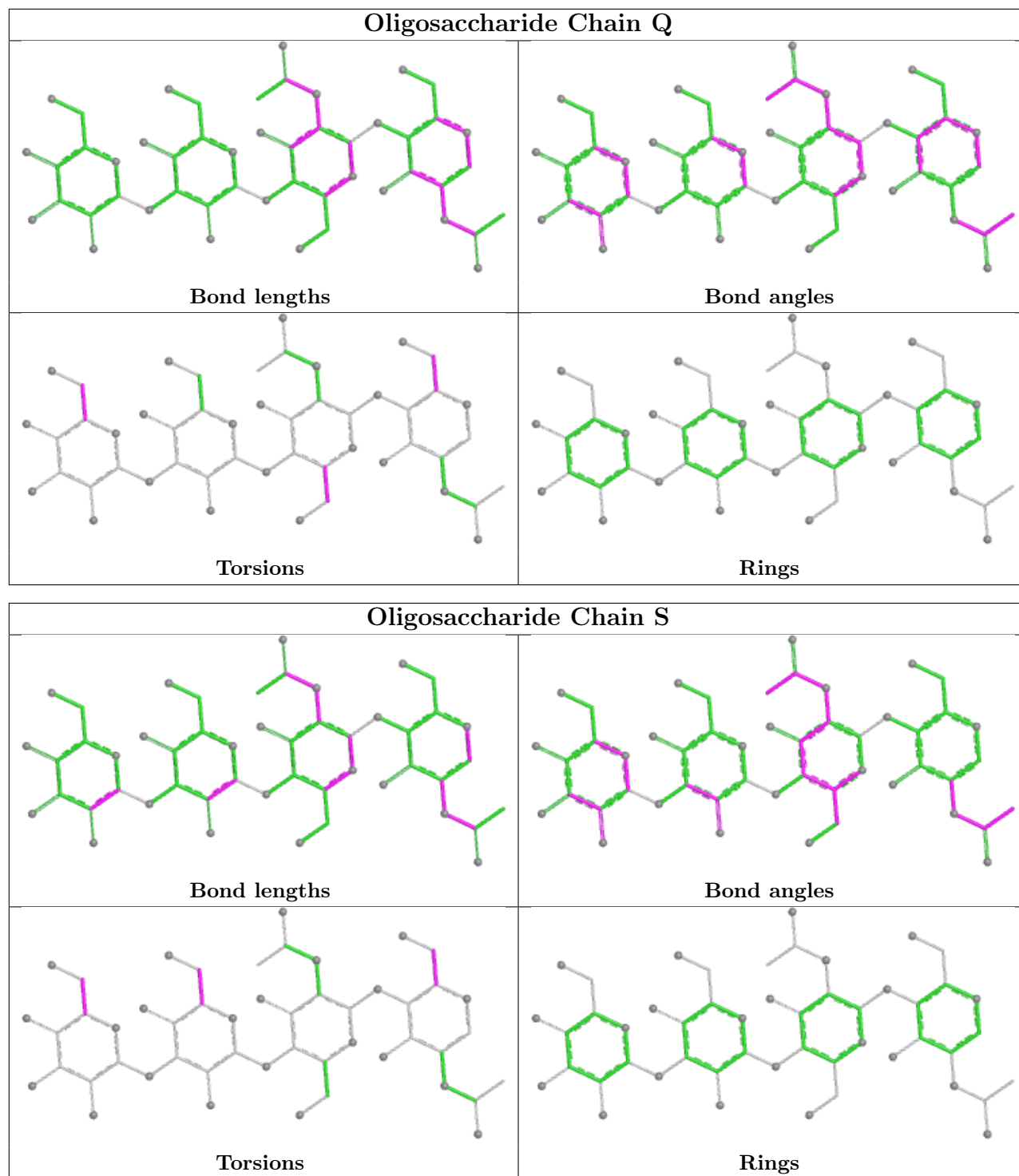


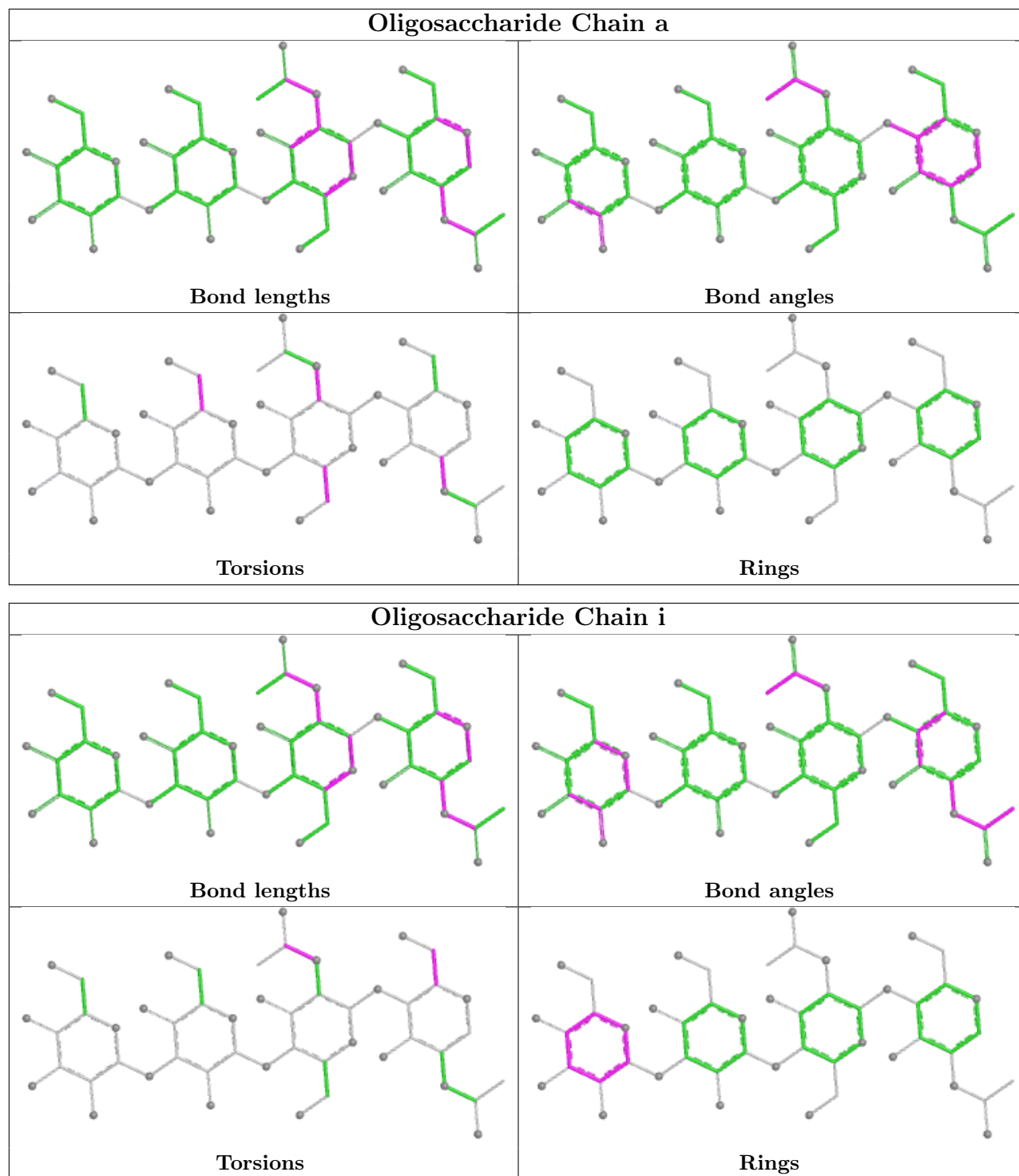


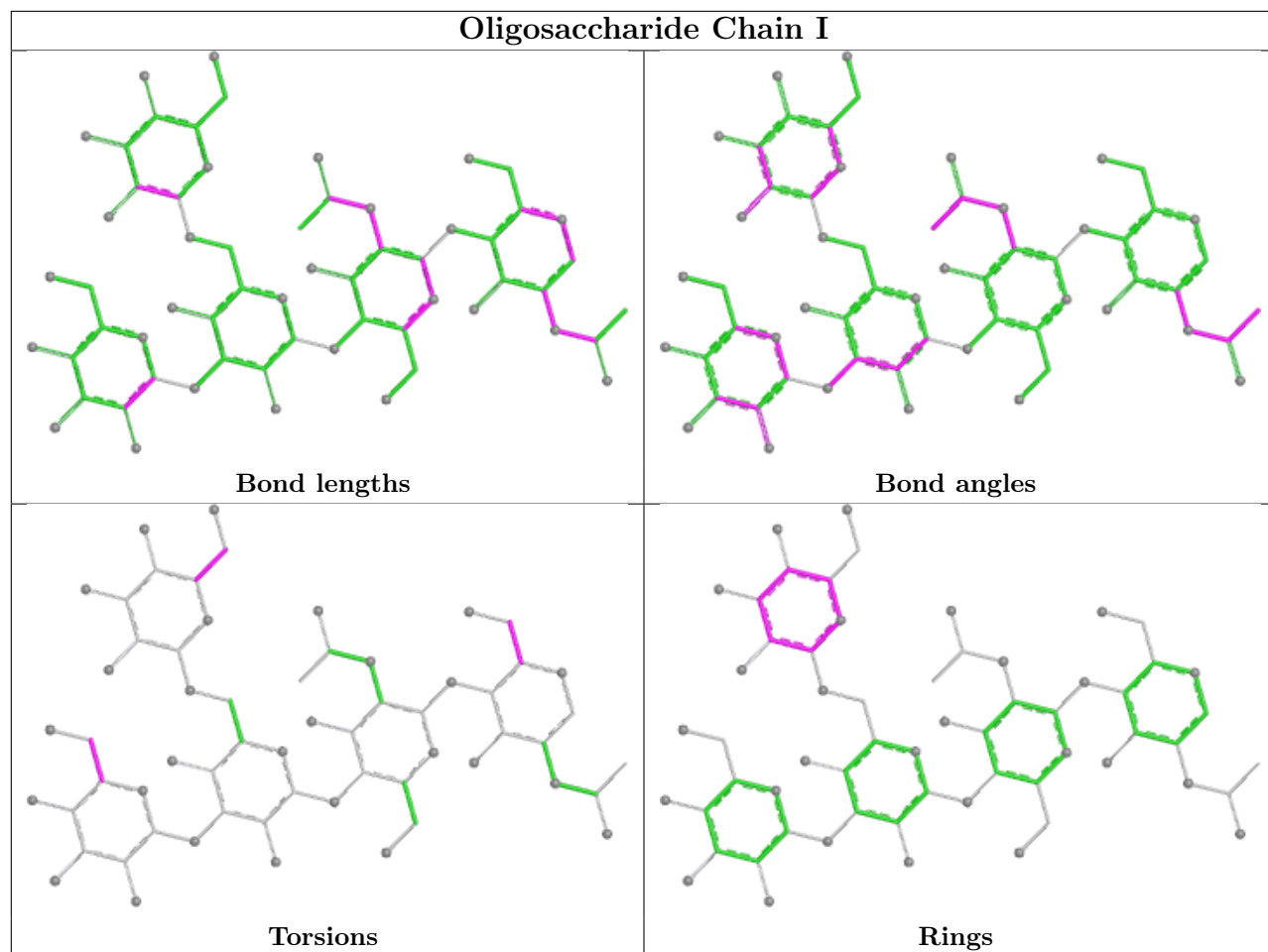


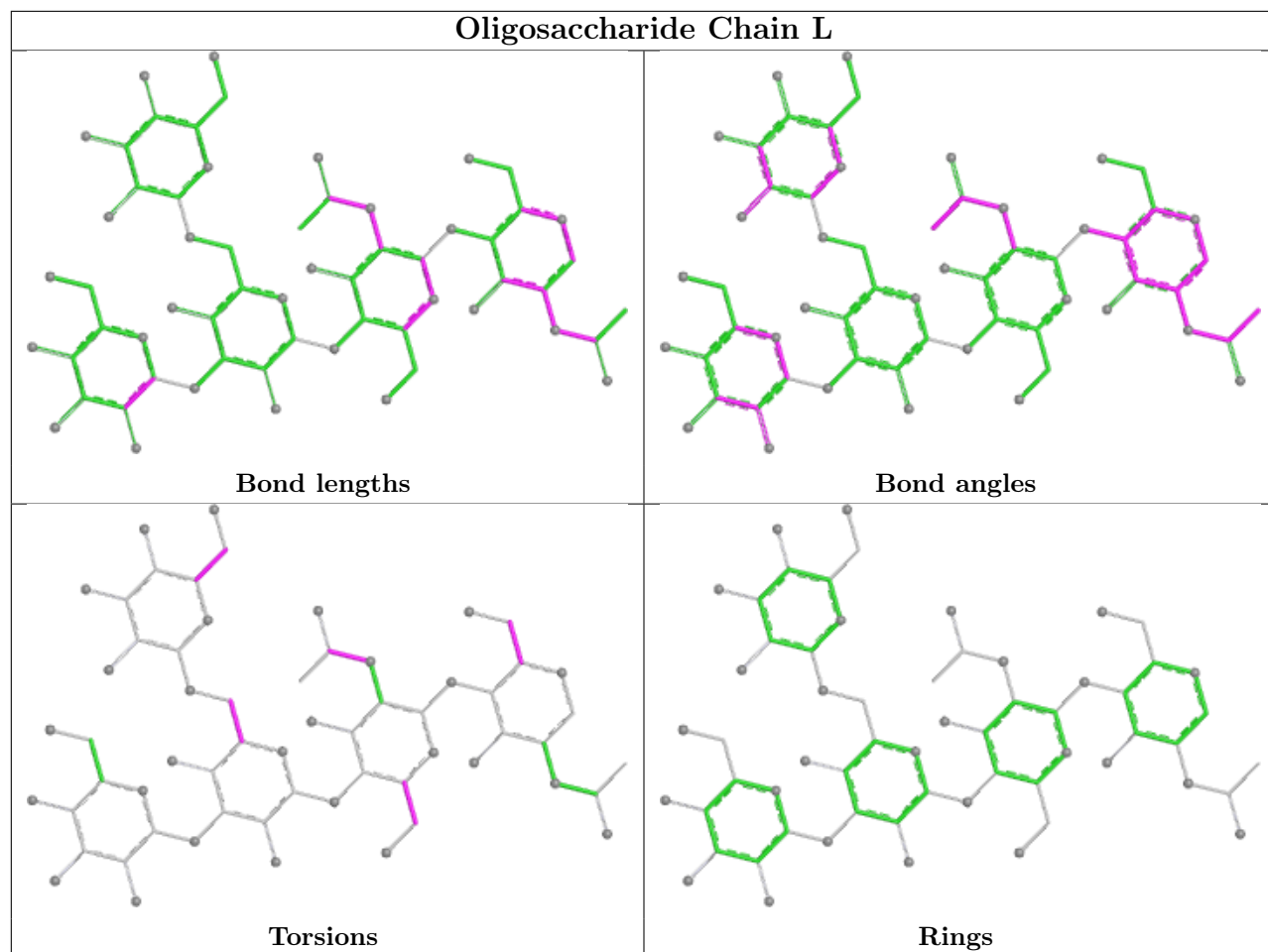


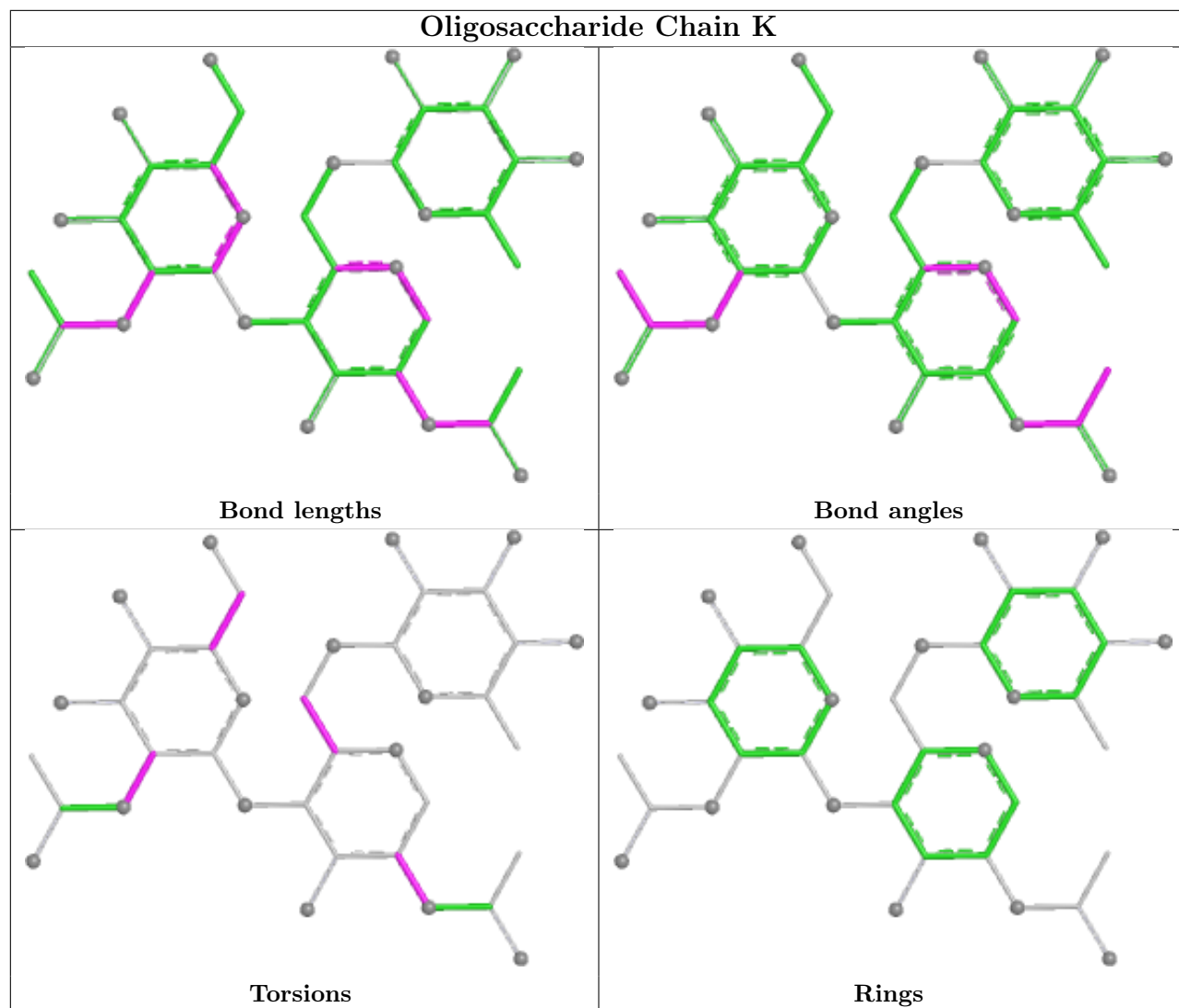


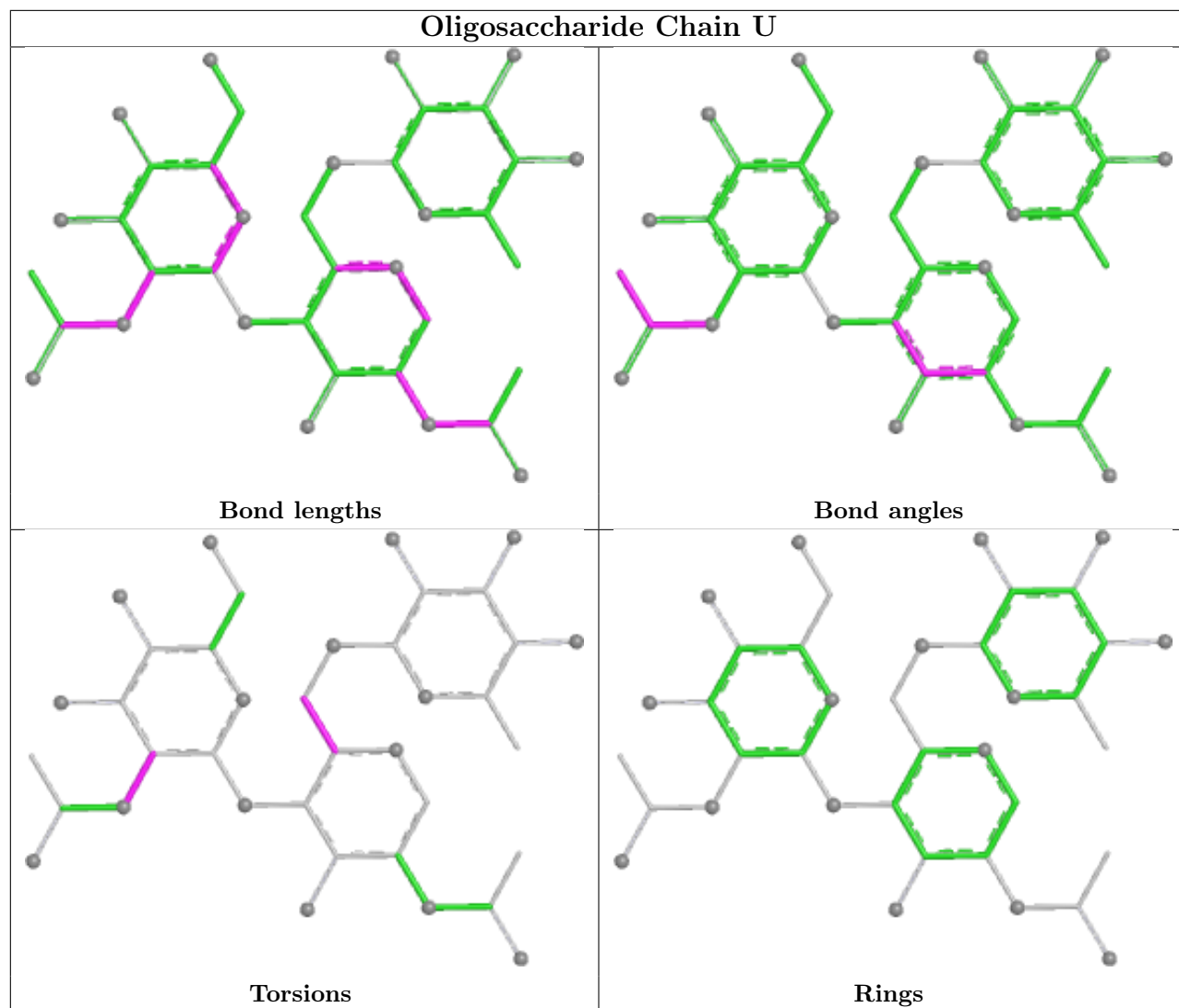


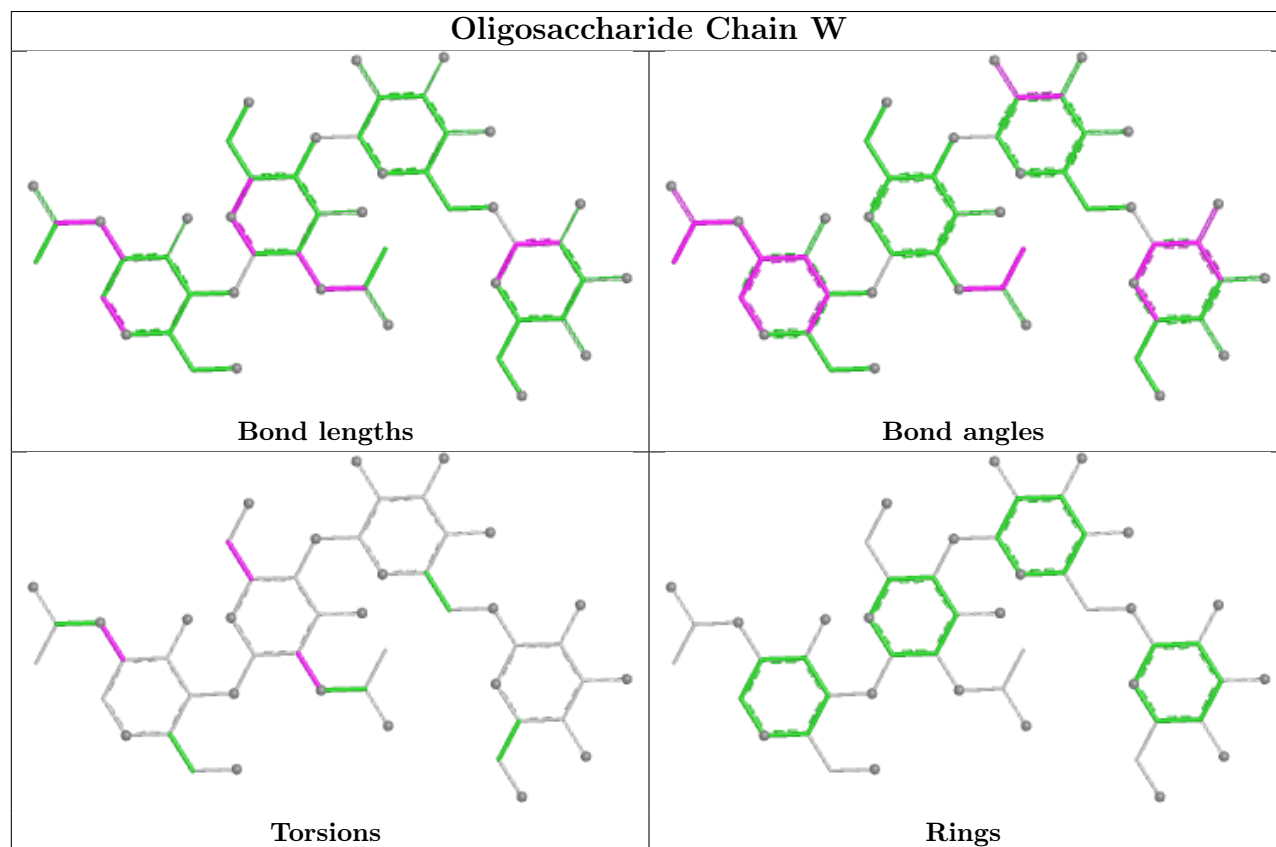
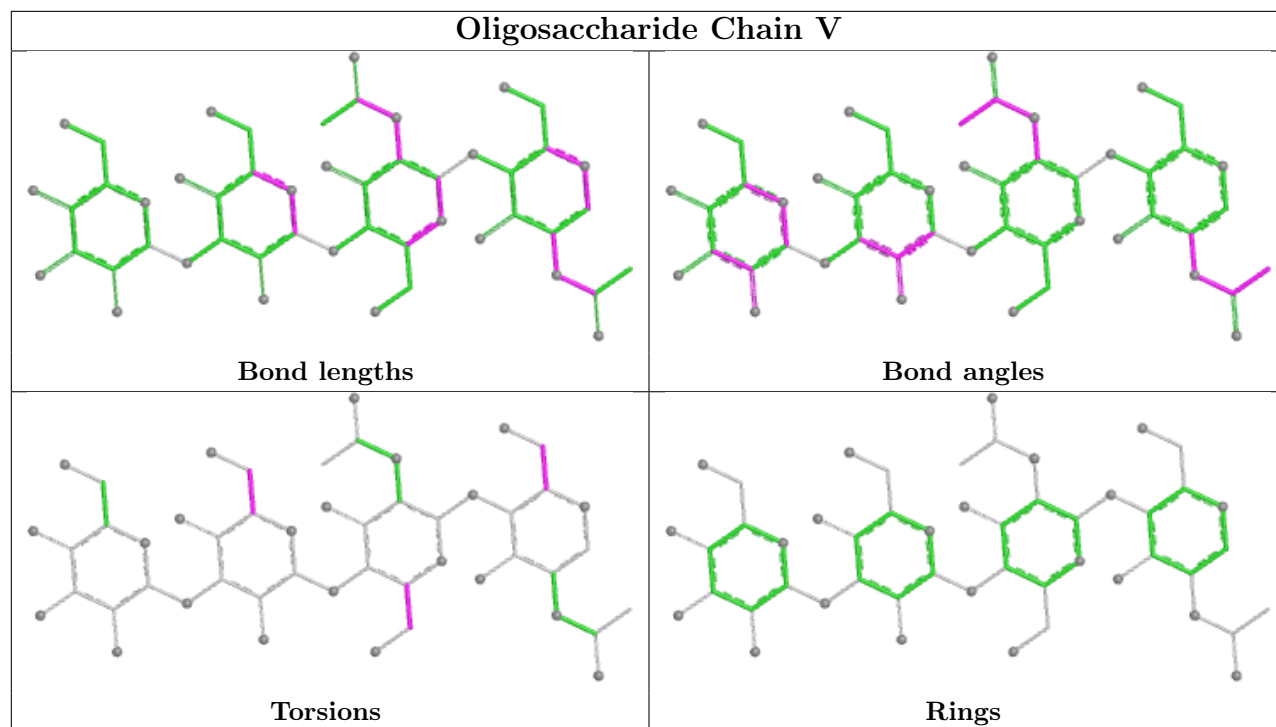


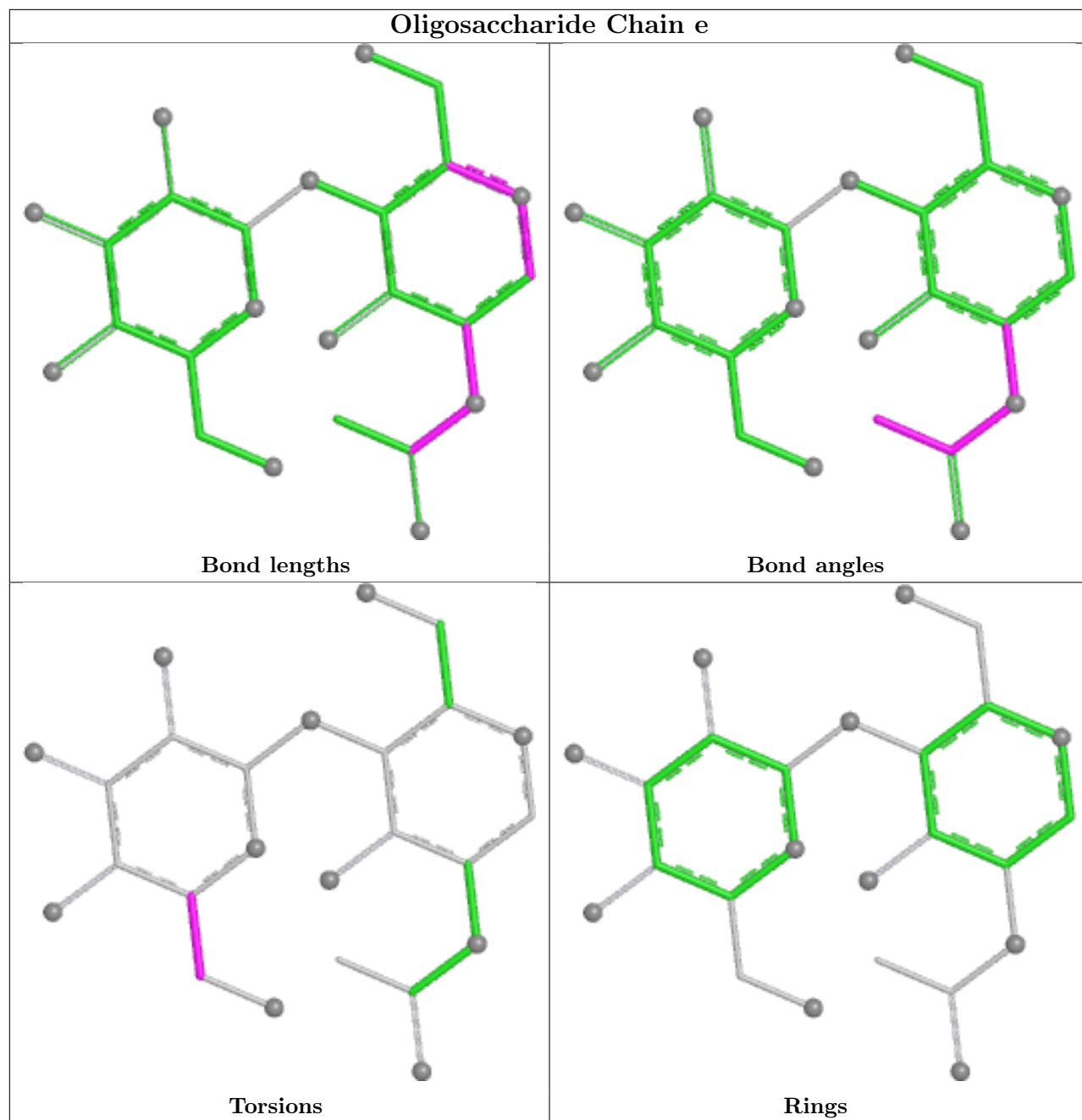


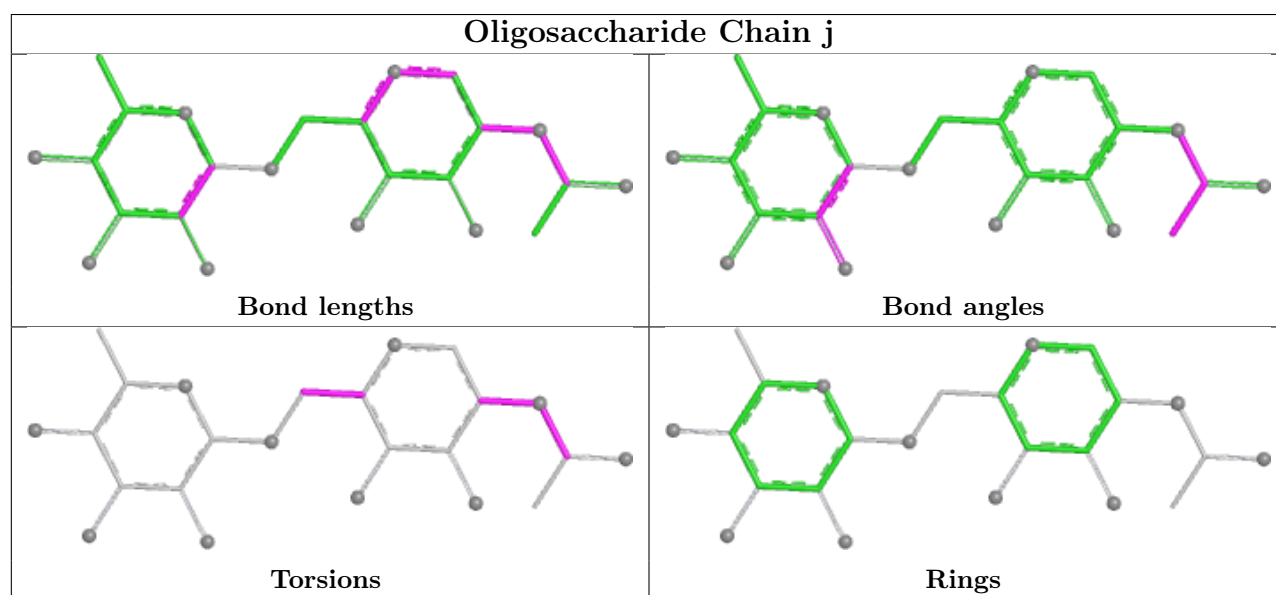
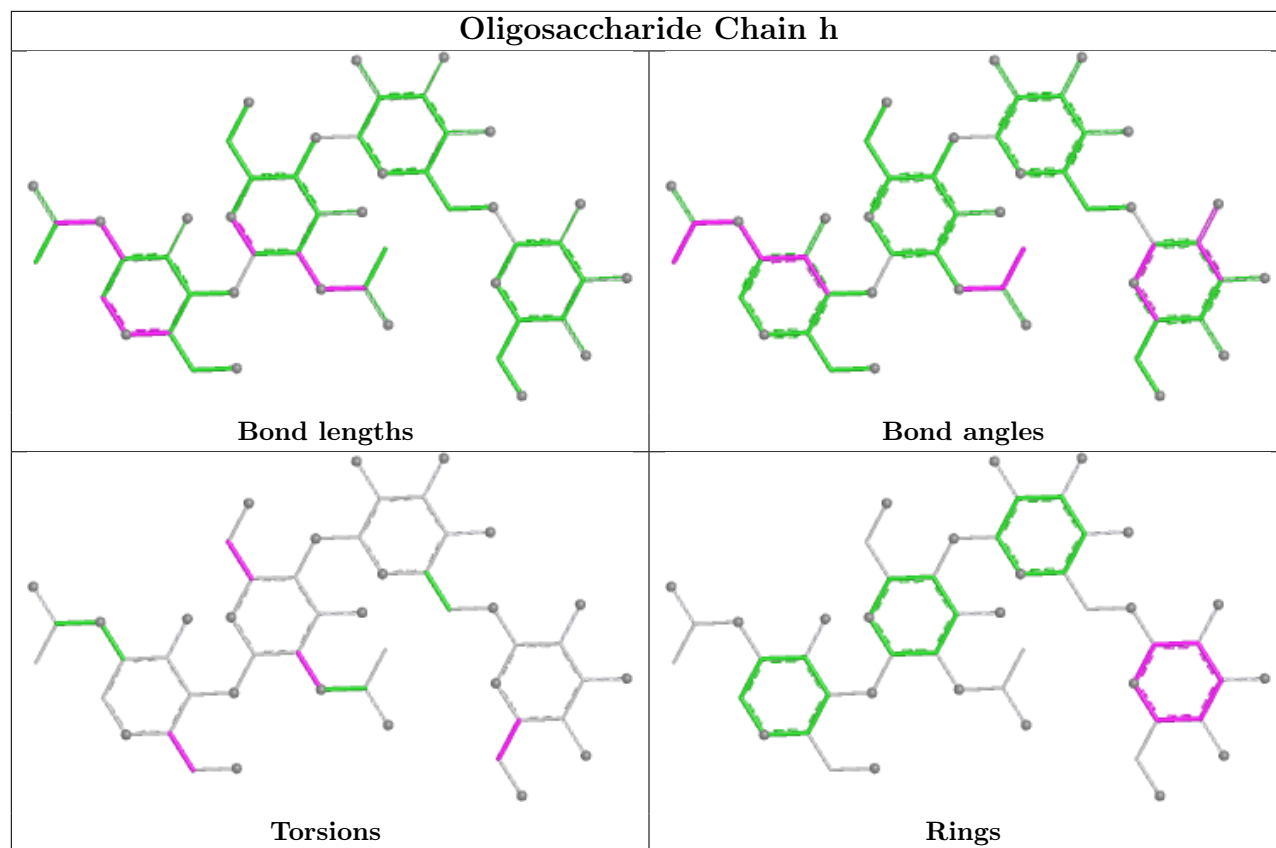


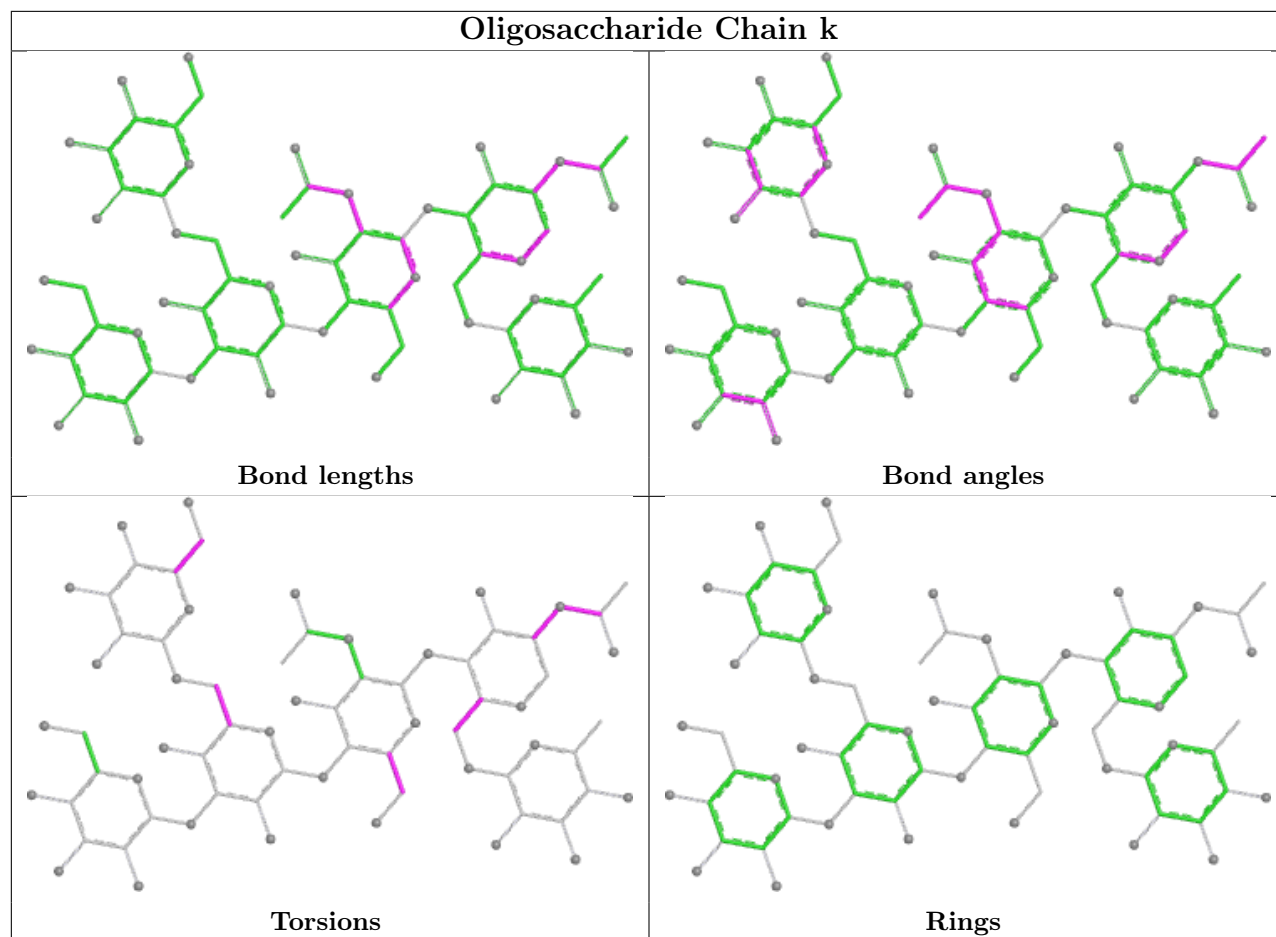












## 5.6 Ligand geometry [i](#)

15 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
13	NAG	C	1302	1	14,14,15	2.03	4 (28%)	17,19,21	1.16	1 (5%)
13	NAG	A	1301	1	14,14,15	2.11	5 (35%)	17,19,21	1.40	2 (11%)
13	NAG	B	1304	1	14,14,15	2.35	4 (28%)	17,19,21	2.58	7 (41%)
13	NAG	A	1306	1	14,14,15	1.93	3 (21%)	17,19,21	1.36	2 (11%)
13	NAG	C	1303	1	14,14,15	2.19	5 (35%)	17,19,21	1.92	4 (23%)
13	NAG	B	1303	1	14,14,15	2.02	4 (28%)	17,19,21	1.47	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
13	NAG	A	1304	1	14,14,15	1.98	4 (28%)	17,19,21	1.02	1 (5%)
13	NAG	B	1306	1	14,14,15	2.14	5 (35%)	17,19,21	1.87	4 (23%)
13	NAG	A	1303	1	14,14,15	2.03	4 (28%)	17,19,21	2.48	7 (41%)
13	NAG	C	1301	1	14,14,15	2.11	4 (28%)	17,19,21	1.35	3 (17%)
13	NAG	B	1301	1	14,14,15	1.98	4 (28%)	17,19,21	1.09	2 (11%)
13	NAG	A	1302	1	14,14,15	2.10	4 (28%)	17,19,21	2.39	9 (52%)
13	NAG	B	1305	1	14,14,15	2.09	4 (28%)	17,19,21	1.72	4 (23%)
13	NAG	A	1305	1	14,14,15	2.04	4 (28%)	17,19,21	1.33	3 (17%)
13	NAG	B	1302	1	14,14,15	2.01	4 (28%)	17,19,21	1.15	2 (11%)

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
13	NAG	C	1302	1	-	3/6/23/26	0/1/1/1
13	NAG	A	1301	1	-	2/6/23/26	0/1/1/1
13	NAG	B	1304	1	-	4/6/23/26	0/1/1/1
13	NAG	A	1306	1	-	0/6/23/26	0/1/1/1
13	NAG	C	1303	1	-	3/6/23/26	0/1/1/1
13	NAG	B	1303	1	-	1/6/23/26	0/1/1/1
13	NAG	A	1304	1	-	2/6/23/26	0/1/1/1
13	NAG	B	1306	1	-	2/6/23/26	0/1/1/1
13	NAG	A	1303	1	1/1/6/7	1/6/23/26	0/1/1/1
13	NAG	C	1301	1	-	2/6/23/26	0/1/1/1
13	NAG	B	1301	1	-	2/6/23/26	0/1/1/1
13	NAG	A	1302	1	1/1/6/7	2/6/23/26	0/1/1/1
13	NAG	B	1305	1	-	1/6/23/26	0/1/1/1
13	NAG	A	1305	1	-	0/6/23/26	0/1/1/1
13	NAG	B	1302	1	-	3/6/23/26	0/1/1/1

The worst 5 of 62 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	B	1304	NAG	O5-C1	5.24	1.52	1.43
13	C	1303	NAG	O5-C1	5.08	1.52	1.43
13	B	1303	NAG	O5-C1	4.78	1.51	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	C	1301	NAG	O5-C1	4.77	1.51	1.43
13	A	1301	NAG	O5-C1	4.59	1.51	1.43

The worst 5 of 53 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	A	1303	NAG	C3-C4-C5	6.94	122.81	110.23
13	C	1303	NAG	C1-O5-C5	5.66	119.77	112.19
13	B	1306	NAG	C1-O5-C5	-5.26	105.13	112.19
13	B	1304	NAG	C8-C7-N2	5.15	124.66	116.12
13	A	1302	NAG	C8-C7-N2	4.72	123.95	116.12

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
13	A	1302	NAG	C2
13	A	1303	NAG	C4

5 of 28 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
13	B	1302	NAG	C1-C2-N2-C7
13	B	1303	NAG	C1-C2-N2-C7
13	A	1301	NAG	C4-C5-C6-O6
13	B	1301	NAG	C4-C5-C6-O6
13	A	1304	NAG	O5-C5-C6-O6

There are no ring outliers.

13 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
13	C	1302	NAG	1	0
13	A	1301	NAG	1	0
13	B	1304	NAG	1	0
13	A	1306	NAG	1	0
13	C	1303	NAG	2	0
13	B	1303	NAG	2	0
13	A	1303	NAG	1	0
13	C	1301	NAG	1	0
13	B	1301	NAG	1	0
13	A	1302	NAG	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
13	B	1305	NAG	3	0
13	A	1305	NAG	3	0
13	B	1302	NAG	2	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.

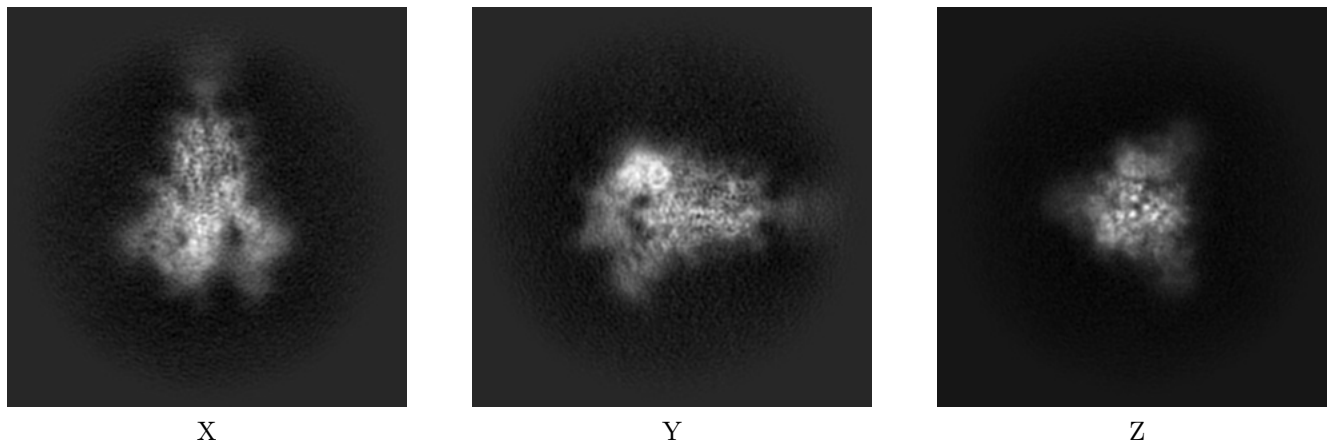
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-44475. These allow visual inspection of the internal detail of the map and identification of artifacts.

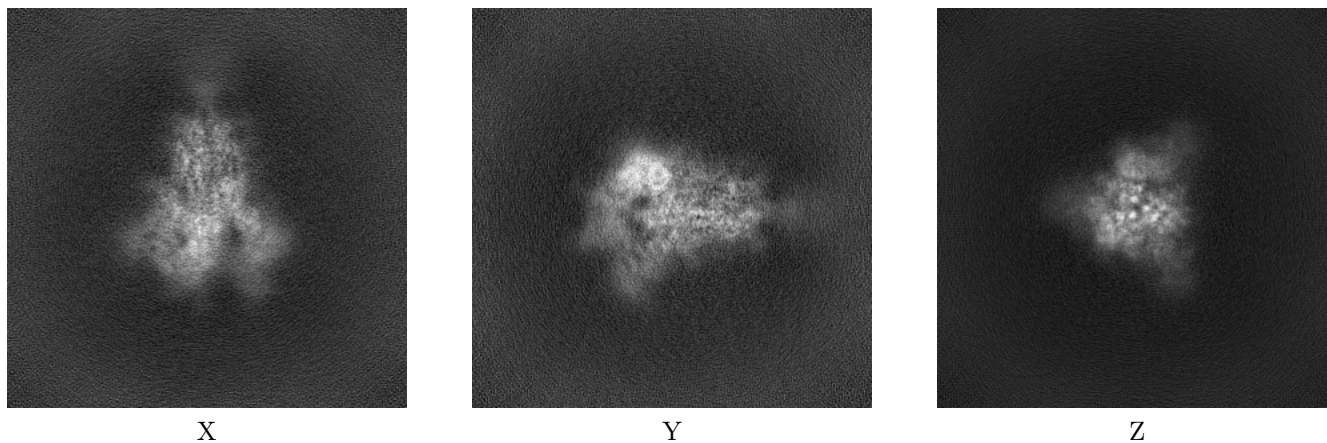
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

#### 6.1.1 Primary map



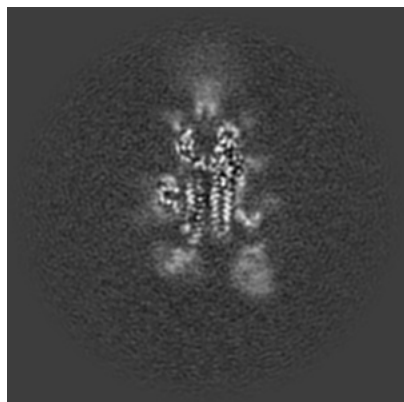
#### 6.1.2 Raw map



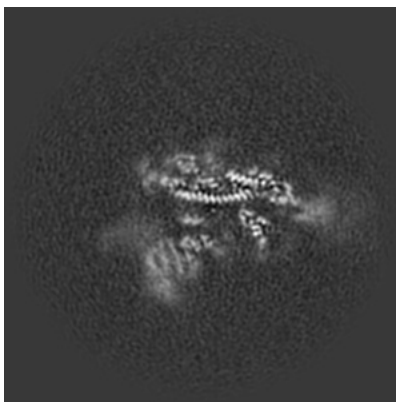
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

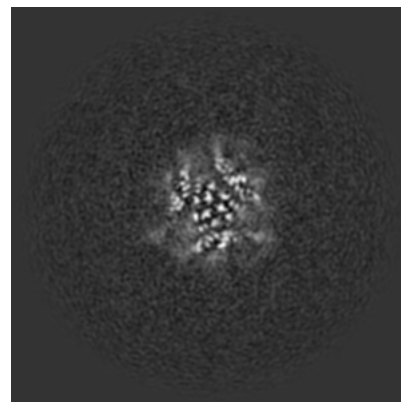
### 6.2.1 Primary map



X Index: 150

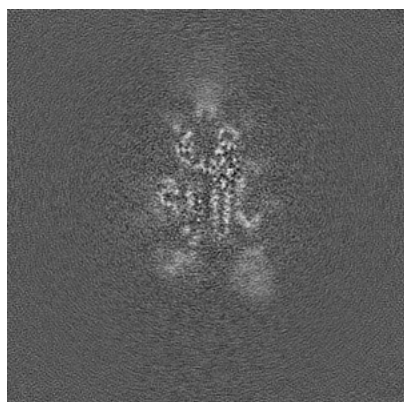


Y Index: 150

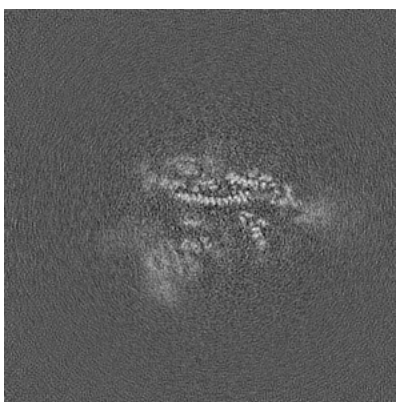


Z Index: 150

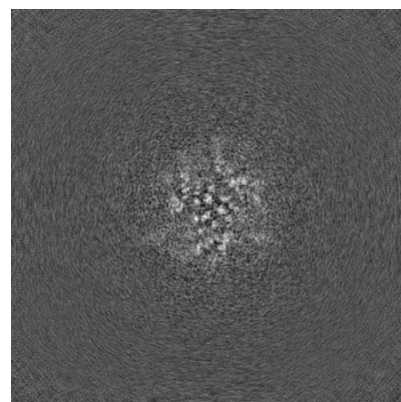
### 6.2.2 Raw map



X Index: 150



Y Index: 150

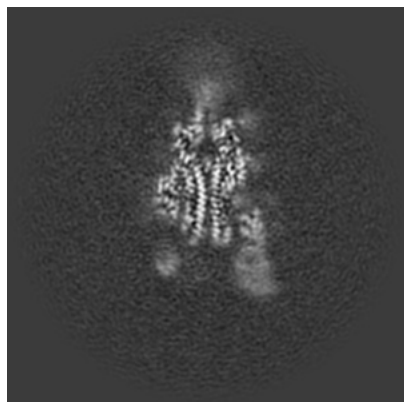


Z Index: 150

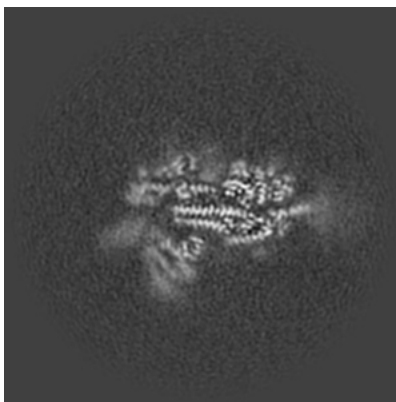
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

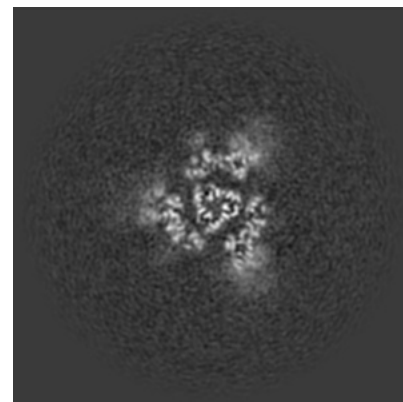
### 6.3.1 Primary map



X Index: 146

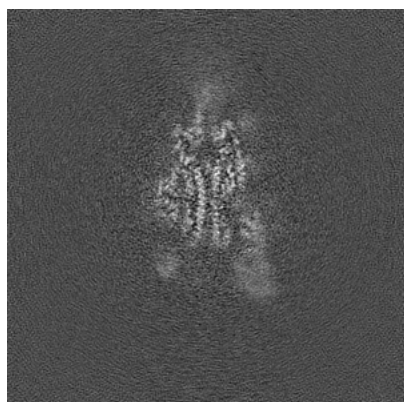


Y Index: 144

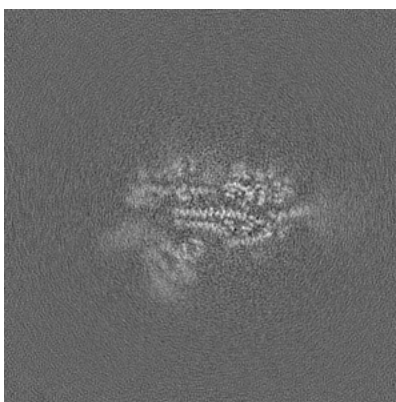


Z Index: 135

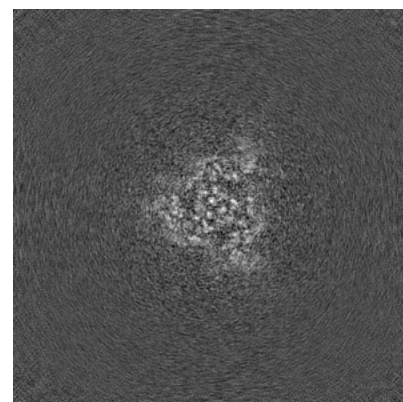
### 6.3.2 Raw map



X Index: 146



Y Index: 144

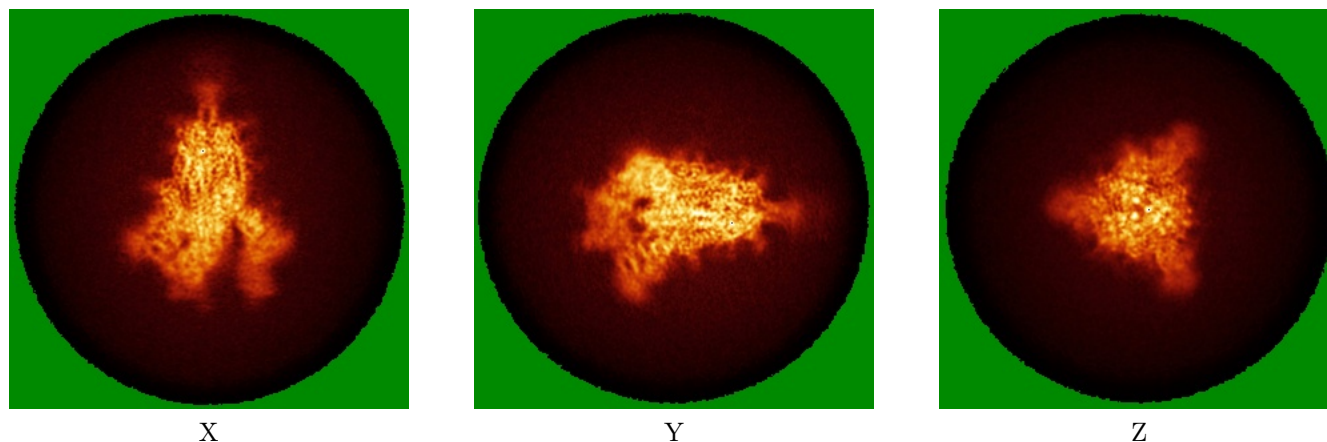


Z Index: 143

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

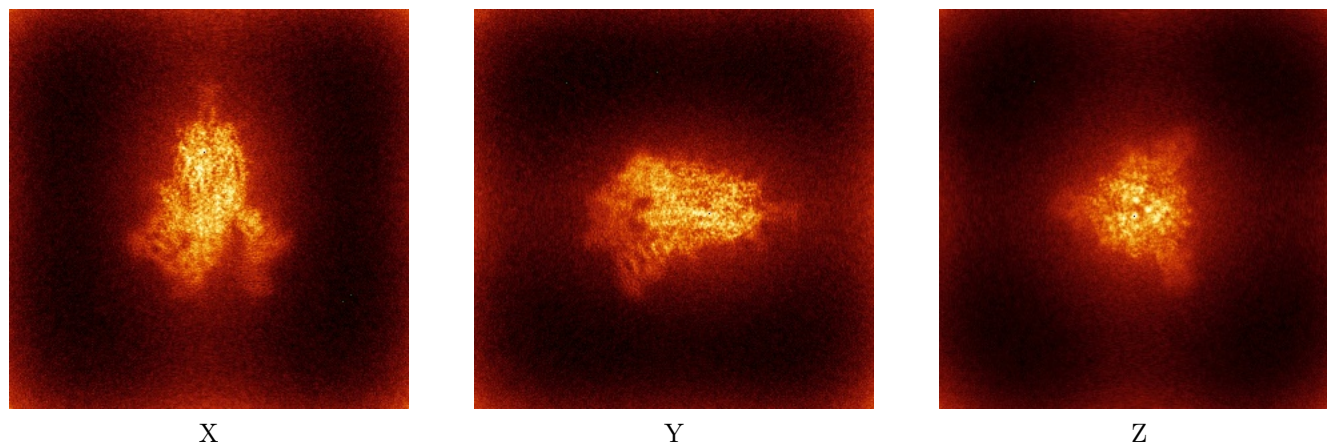


X

Y

Z

### 6.4.2 Raw map



X

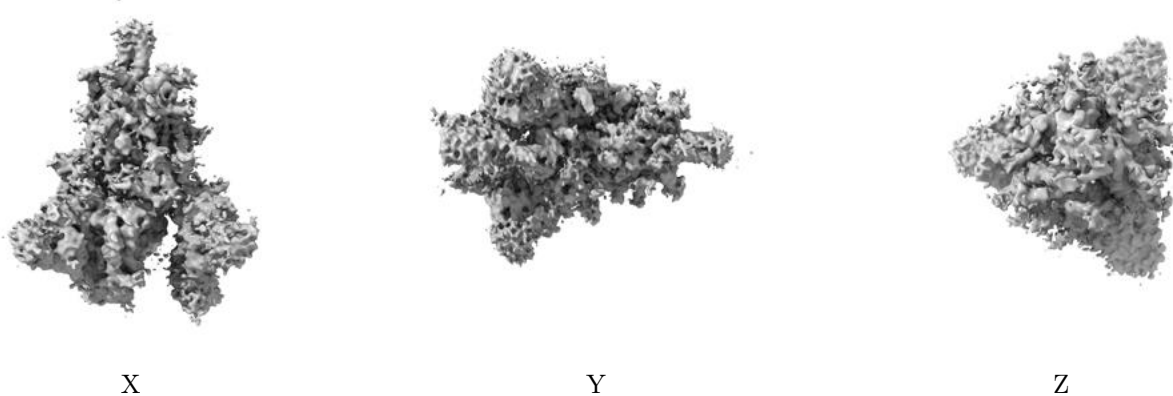
Y

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.

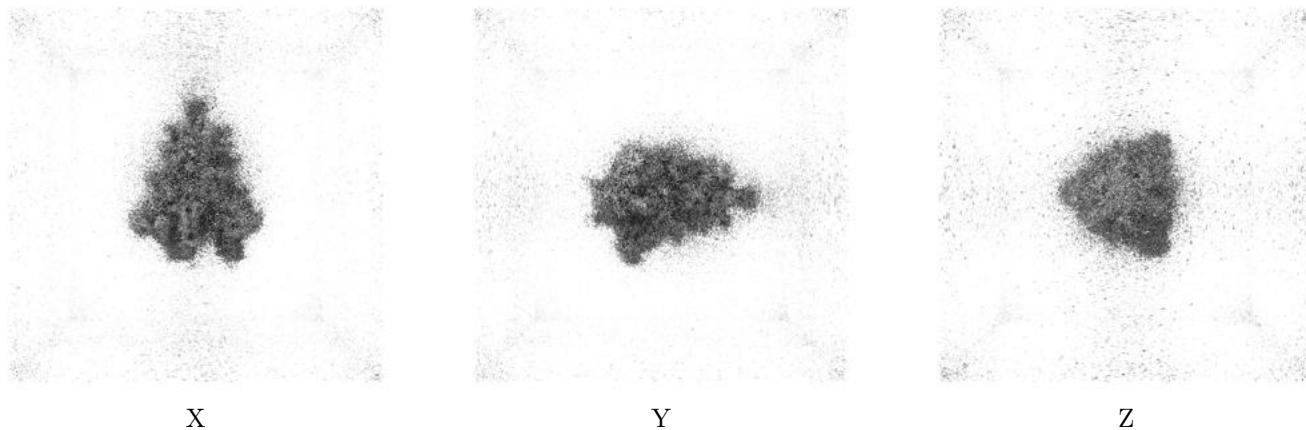
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0916. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

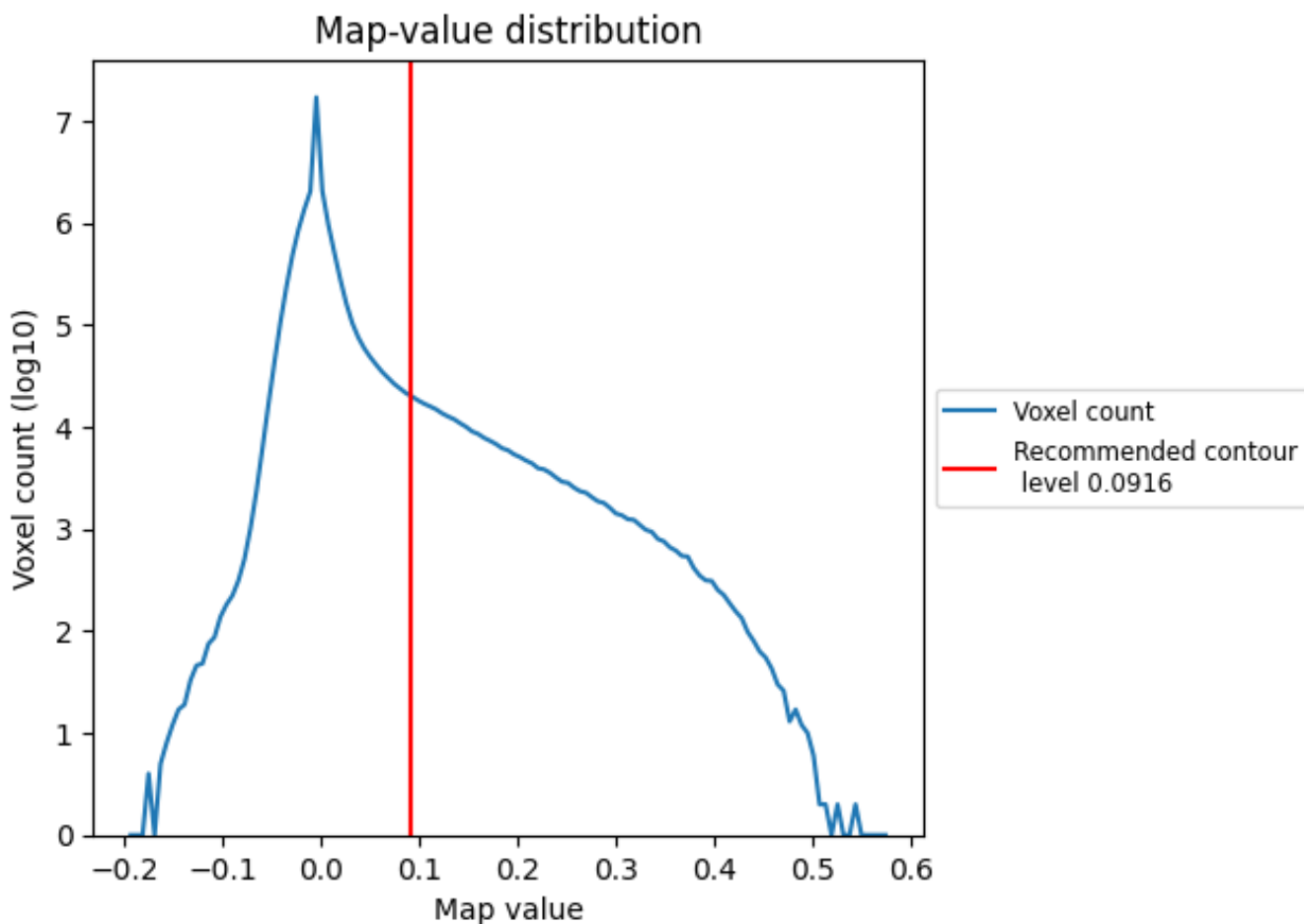
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

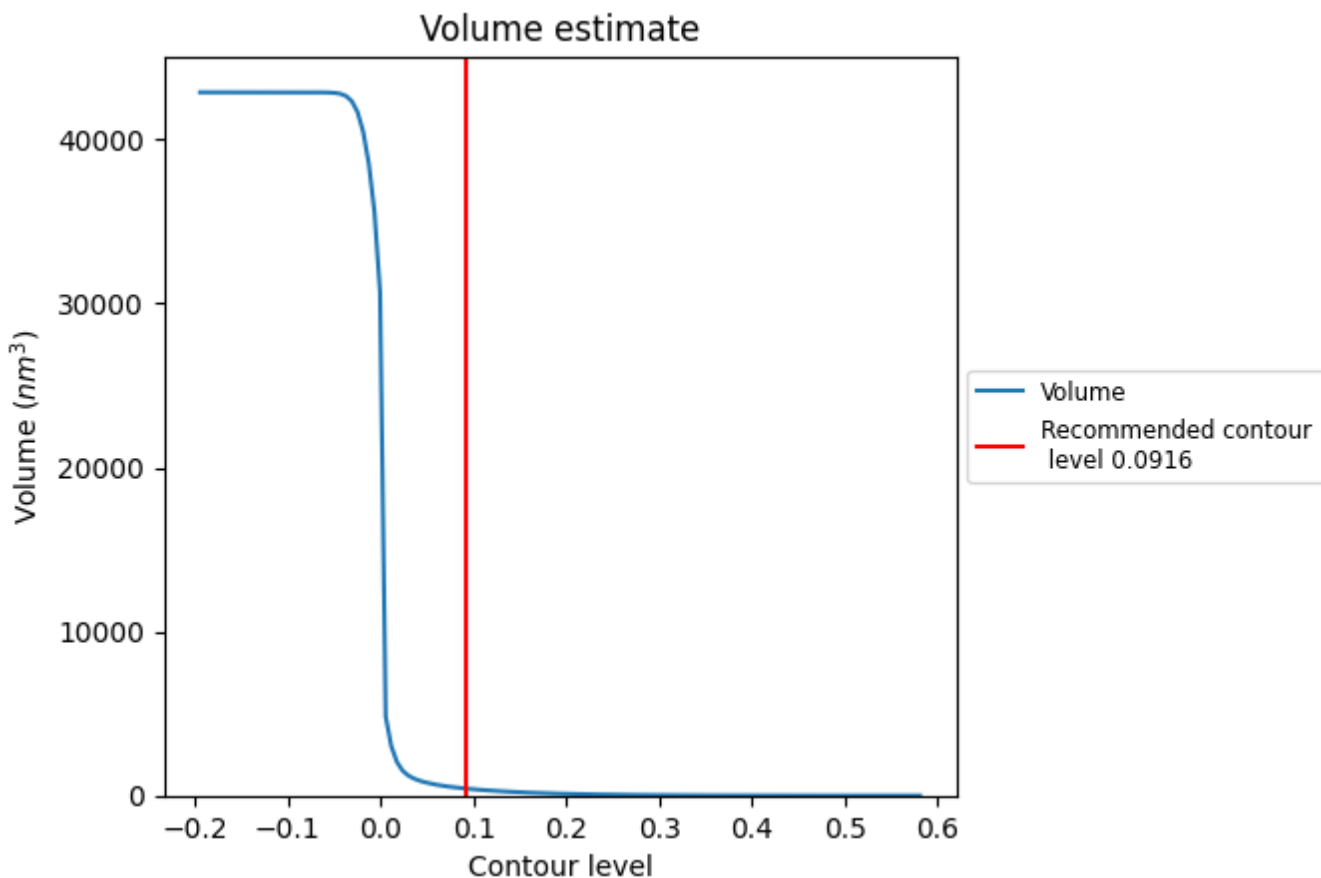
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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.

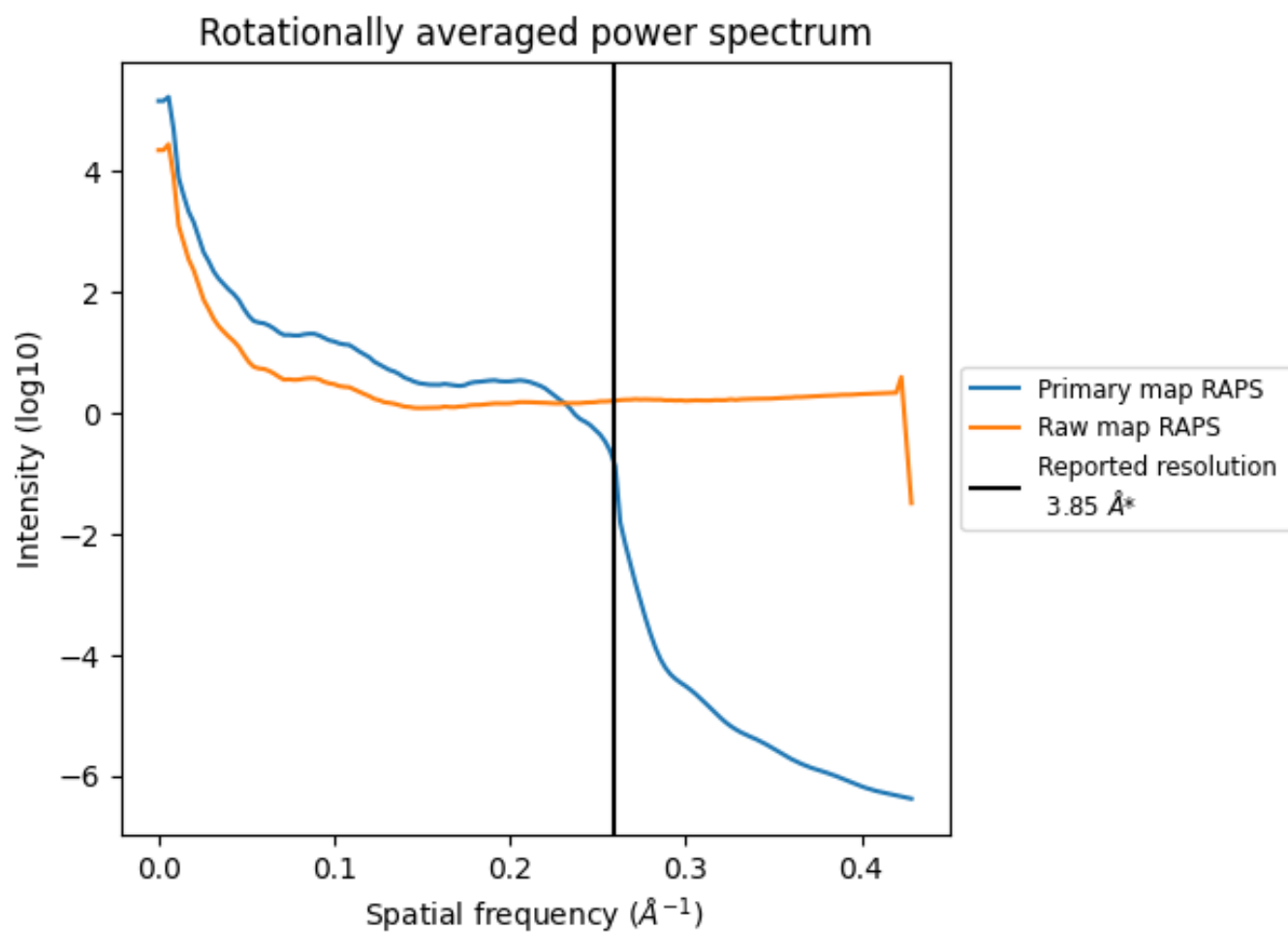
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 429 nm<sup>3</sup>; this corresponds to an approximate mass of 387 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

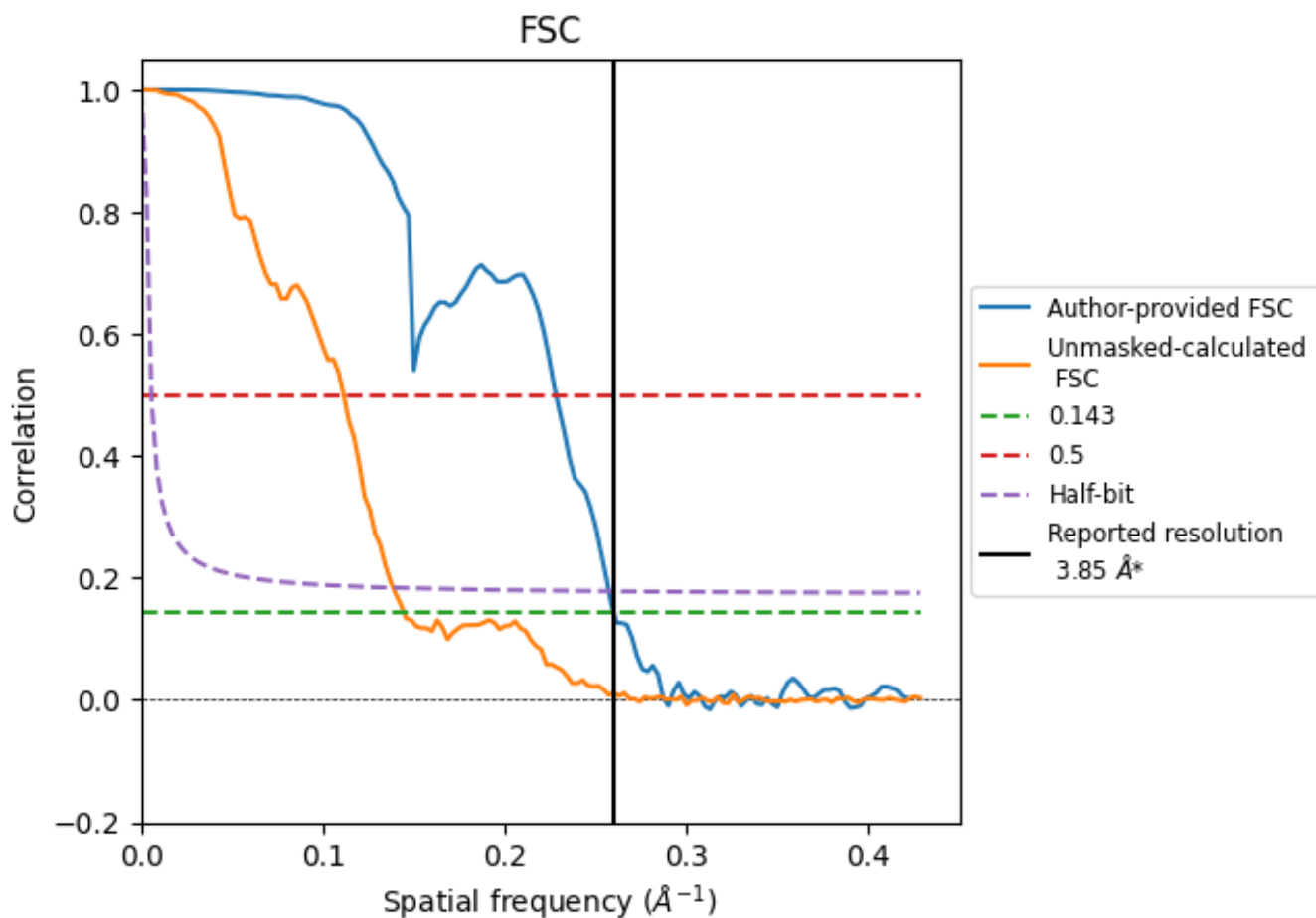


\*Reported resolution corresponds to spatial frequency of 0.260 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.260 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

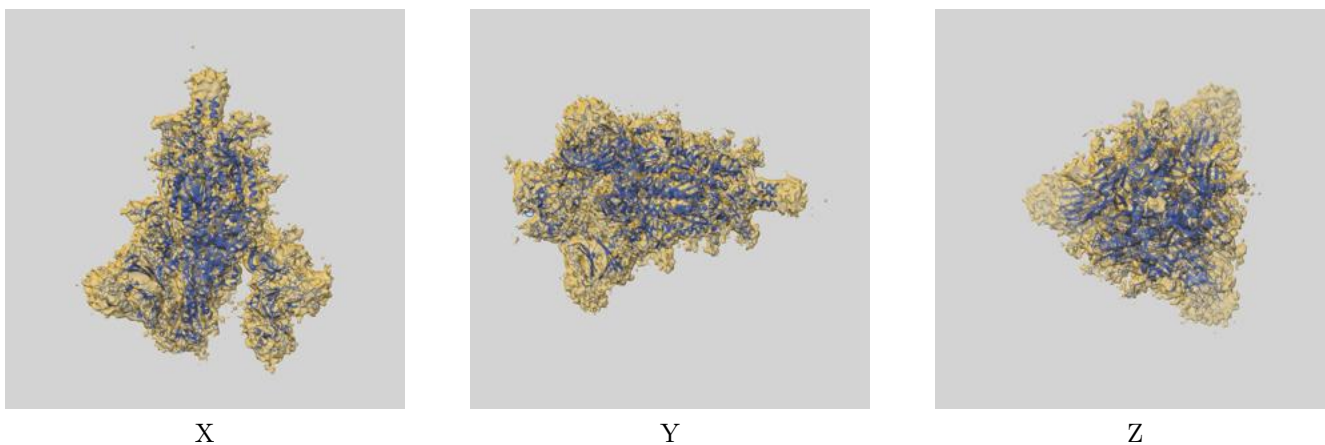
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.85	-	-
Author-provided FSC curve	3.85	4.38	3.89
Unmasked-calculated*	6.92	8.98	7.21

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.92 differs from the reported value 3.85 by more than 10 %

## 9 Map-model fit [i](#)

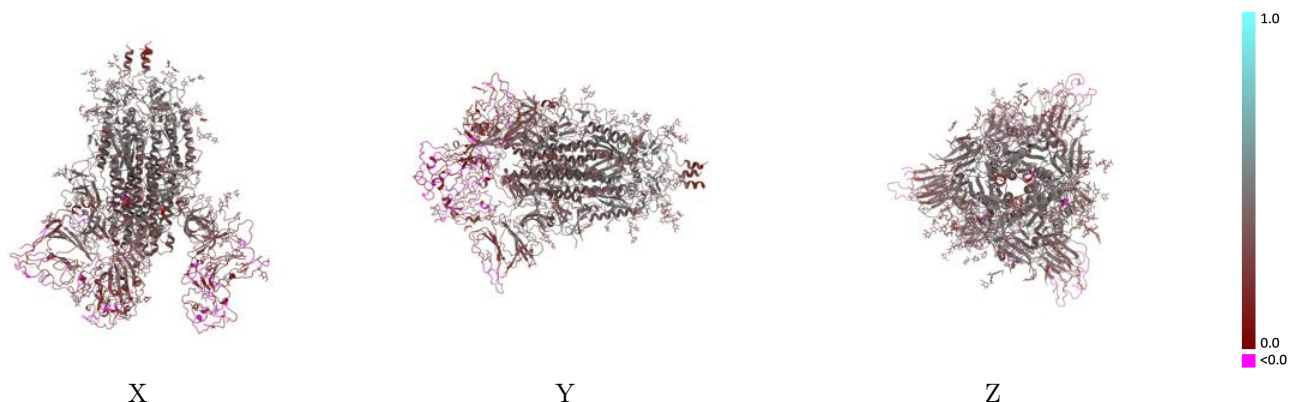
This section contains information regarding the fit between EMDB map EMD-44475 and PDB model 9BEA. Per-residue inclusion information can be found in section 3 on page 15.

### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.0916 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 [\(i\)](#)



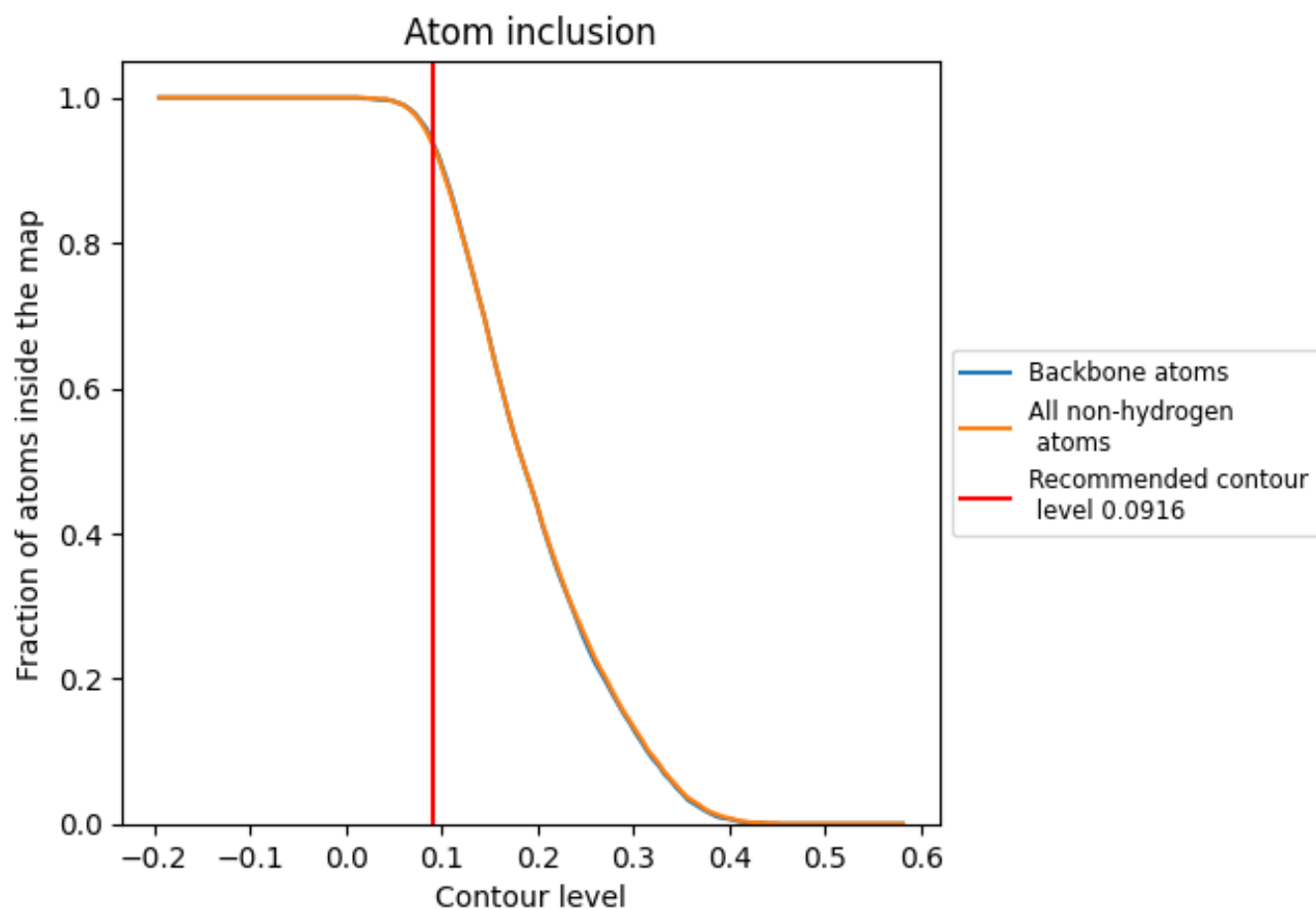
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 [\(i\)](#)



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 (0.0916).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 93% 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 (0.0916) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9330	 0.3240
A	 0.9310	 0.3160
B	 0.9540	 0.3390
C	 0.9280	 0.3180
D	 0.9230	 0.3220
E	 0.8930	 0.3080
F	 0.8570	 0.3210
G	 0.9490	 0.3030
H	 0.8600	 0.2300
I	 0.8850	 0.3280
J	 0.9230	 0.2890
K	 0.8950	 0.3120
L	 0.9670	 0.3000
M	 0.9740	 0.3490
N	 0.8210	 0.2410
O	 0.8800	 0.2760
P	 0.8570	 0.2430
Q	 0.8200	 0.2790
R	 0.9230	 0.3370
S	 0.8000	 0.2980
T	 0.9740	 0.3070
U	 0.8160	 0.3320
V	 0.8800	 0.3140
W	 0.8000	 0.2990
X	 0.7500	 0.2210
Y	 0.8210	 0.3750
Z	 0.8210	 0.3610
a	 0.9400	 0.3380
b	 0.8570	 0.3730
c	 0.8210	 0.2310
d	 0.8210	 0.3300
e	 0.6800	 0.2480
f	 1.0000	 0.3930
g	 0.8970	 0.3290
h	 0.9000	 0.3020



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Chain	Atom inclusion	Q-score
i	 0.9400	 0.3590
j	 0.9170	 0.3730
k	 0.9010	 0.3330