



## wwPDB EM Validation Summary Report ⓘ

May 21, 2026 – 03:23 PM EDT

PDB ID : 9Q09 / pdb\_00009q09  
EMDB ID : EMD-72094  
Title : Cryo-EM structure of PGT121 Fab and Rhesus macaque Ab76 Fab in complex with HIV-1 Env trimer BG505 SOSIP.664  
Authors : Chandravanshi, M.; Tolbert, W.D.; Pazgier, M.  
Deposited on : 2025-08-12  
Resolution : 3.23 Å(reported)

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:

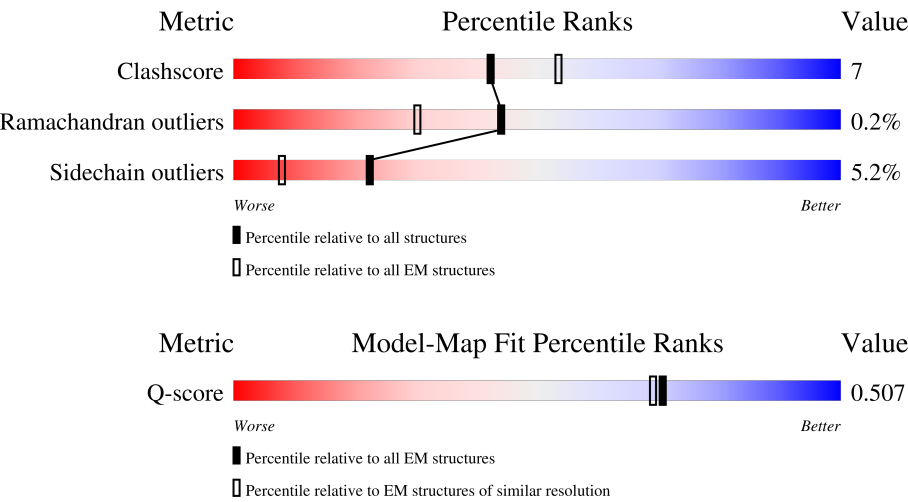
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 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 3.23 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.





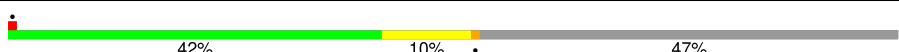
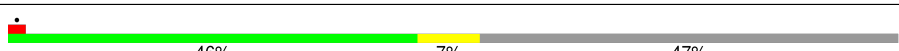
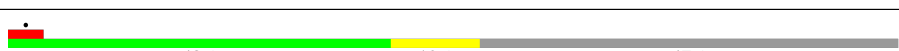
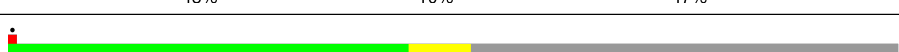
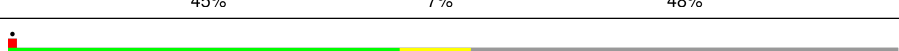
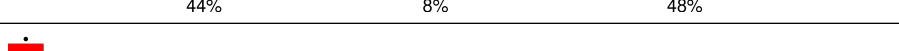
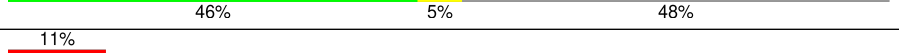
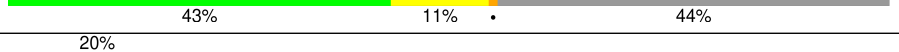
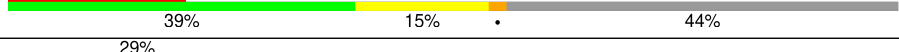
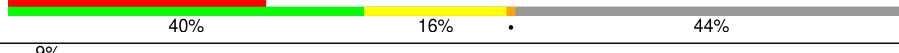
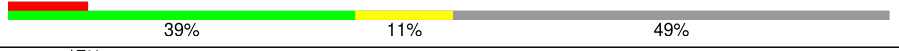


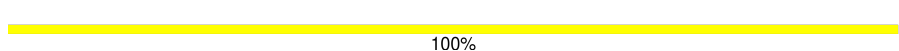


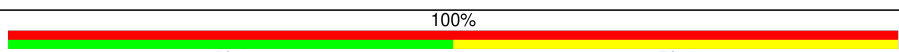

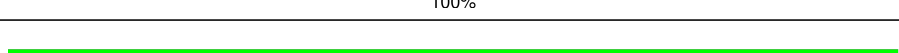
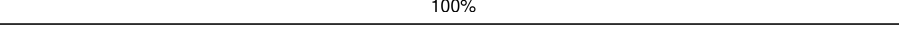

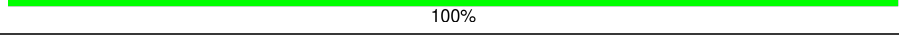

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14612 ( 2.73 - 3.73 )

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	481	<div><div></div><div><div></div><div></div><div></div><div></div></div><div>74%20%• 6%</div></div>
1	G	481	<div><div></div><div><div></div><div></div><div></div><div></div></div><div>77%15%• 6%</div></div>
1	I	481	<div><div></div><div><div></div><div></div><div></div><div></div></div><div>74%19%• 6%</div></div>
2	B	153	<div><div>10%</div><div><div></div><div></div><div></div><div></div></div><div>70%15%• 13%</div></div>

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Mol	Chain	Length	Quality of chain
2	C	153	
2	J	153	
3	D	230	
3	H	230	
3	K	230	
4	E	222	
4	L	222	
4	M	222	
5	d	235	
5	h	235	
5	k	235	
6	e	213	
6	l	213	
6	m	213	
7	0	2	
7	1	2	
7	2	2	
7	3	2	
7	4	2	
7	5	2	
7	6	2	
7	7	2	
7	8	2	
7	9	2	
7	F	2	

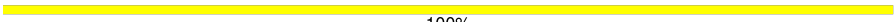

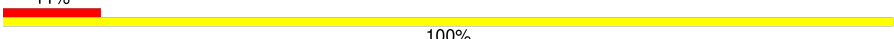
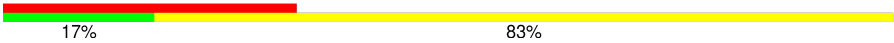


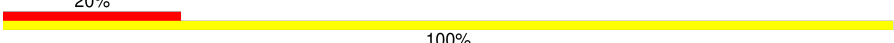
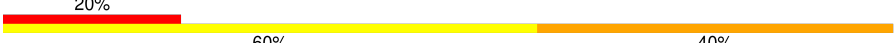
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Mol	Chain	Length	Quality of chain
7	a	2	
7	b	2	
7	c	2	
7	f	2	
7	g	2	
7	i	2	
7	j	2	
7	n	2	
7	o	2	
7	p	2	
7	q	2	
7	r	2	
7	v	2	
7	x	2	
7	z	2	
8	N	4	
8	O	4	
8	Q	4	
8	U	4	
8	W	4	
8	Z	4	
9	P	6	
9	R	6	
9	S	6	
9	T	6	

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Mol	Chain	Length	Quality of chain
10	X	9	 100%
10	u	9	 22% 89% 11%
10	w	9	 11% 100%
11	Y	6	 33% 17% 83%
11	s	6	 33% 83% 17%
11	y	6	 50% 17% 83%
12	V	5	 20% 100%
13	t	5	 20% 60% 40%

## 2 Entry composition

There are 14 unique types of molecules in this entry. The entry contains 26930 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 BG505 SOSIP.664 gp120.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	452	Total	C	N	O	S	2	0
			3573	2242	633	670	28		
1	G	452	Total	C	N	O	S	1	0
			3565	2237	630	670	28		
1	I	452	Total	C	N	O	S	0	0
			3559	2233	629	669	28		

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	332	ASN	THR	conflict	UNP Q2N0S5
A	501	CYS	ALA	conflict	UNP Q2N0S5
A	509	ARG	GLU	engineered mutation	UNP Q2N0S5
A	510	ARG	LYS	engineered mutation	UNP Q2N0S5
A	512	ARG	-	insertion	UNP Q2N0S5
A	513	ARG	-	insertion	UNP Q2N0S5
G	332	ASN	THR	conflict	UNP Q2N0S5
G	501	CYS	ALA	conflict	UNP Q2N0S5
G	509	ARG	GLU	engineered mutation	UNP Q2N0S5
G	510	ARG	LYS	engineered mutation	UNP Q2N0S5
G	512	ARG	-	insertion	UNP Q2N0S5
G	513	ARG	-	insertion	UNP Q2N0S5
I	332	ASN	THR	conflict	UNP Q2N0S5
I	501	CYS	ALA	conflict	UNP Q2N0S5
I	509	ARG	GLU	engineered mutation	UNP Q2N0S5
I	510	ARG	LYS	engineered mutation	UNP Q2N0S5
I	512	ARG	-	insertion	UNP Q2N0S5
I	513	ARG	-	insertion	UNP Q2N0S5

- Molecule 2 is a protein called BG505 SOSIP.664 gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	133	Total	C	N	O	S	0	0
			1038	656	179	197	6		
2	C	130	Total	C	N	O	S	1	0
			1029	651	177	195	6		
2	J	129	Total	C	N	O	S	0	0
			1018	644	175	193	6		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	559	PRO	ILE	conflict	UNP Q2N0S5
B	605	CYS	THR	conflict	UNP Q2N0S5
C	559	PRO	ILE	conflict	UNP Q2N0S5
C	605	CYS	THR	conflict	UNP Q2N0S5
J	559	PRO	ILE	conflict	UNP Q2N0S5
J	605	CYS	THR	conflict	UNP Q2N0S5

- Molecule 3 is a protein called Ab76 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	122	Total	C	N	O	S	0	0
			942	599	157	182	4		
3	H	122	Total	C	N	O	S	0	0
			942	599	157	182	4		
3	K	122	Total	C	N	O	S	0	0
			942	599	157	182	4		

- Molecule 4 is a protein called Ab76 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	116	Total	C	N	O	S	0	0
			855	535	151	167	2		
4	L	116	Total	C	N	O	S	0	0
			855	535	151	167	2		
4	M	116	Total	C	N	O	S	0	0
			855	535	151	167	2		

- Molecule 5 is a protein called PGT121 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	h	132	Total	C	N	O	S	0	0
			1026	649	175	198	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
5	d	132	Total	C	N	O	S	0	0
			1026	649	175	198	4		
5	k	132	Total	C	N	O	S	0	0
			1026	649	175	198	4		

- Molecule 6 is a protein called PGT121 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	l	108	Total	C	N	O	S	0	0
			824	516	143	163	2		
6	e	108	Total	C	N	O	S	0	0
			824	516	143	163	2		
6	m	108	Total	C	N	O	S	0	0
			824	516	143	163	2		

- Molecule 7 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
7	F	2	Total	C	N	O	0	0
			28	16	2	10		
7	z	2	Total	C	N	O	0	0
			28	16	2	10		
7	v	2	Total	C	N	O	0	0
			28	16	2	10		
7	n	2	Total	C	N	O	0	0
			28	16	2	10		
7	o	2	Total	C	N	O	0	0
			28	16	2	10		
7	p	2	Total	C	N	O	0	0
			28	16	2	10		
7	q	2	Total	C	N	O	0	0
			28	16	2	10		
7	r	2	Total	C	N	O	0	0
			28	16	2	10		
7	x	2	Total	C	N	O	0	0
			28	16	2	10		

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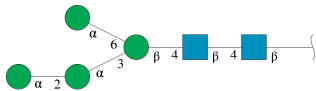
Mol	Chain	Residues	Atoms				AltConf	Trace
7	a	2	Total	C	N	O	0	0
			28	16	2	10		
7	b	2	Total	C	N	O	0	0
			28	16	2	10		
7	c	2	Total	C	N	O	0	0
			28	16	2	10		
7	f	2	Total	C	N	O	0	0
			28	16	2	10		
7	g	2	Total	C	N	O	0	0
			28	16	2	10		
7	i	2	Total	C	N	O	0	0
			28	16	2	10		
7	j	2	Total	C	N	O	0	0
			28	16	2	10		
7	0	2	Total	C	N	O	0	0
			28	16	2	10		
7	1	2	Total	C	N	O	0	0
			28	16	2	10		
7	2	2	Total	C	N	O	0	0
			28	16	2	10		
7	3	2	Total	C	N	O	0	0
			28	16	2	10		
7	4	2	Total	C	N	O	0	0
			28	16	2	10		
7	5	2	Total	C	N	O	0	0
			28	16	2	10		
7	6	2	Total	C	N	O	0	0
			28	16	2	10		
7	7	2	Total	C	N	O	0	0
			28	16	2	10		
7	8	2	Total	C	N	O	0	0
			28	16	2	10		
7	9	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranos e-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



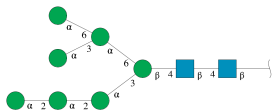
Mol	Chain	Residues	Atoms				AltConf	Trace
8	N	4	Total	C	N	O	0	0
			50	28	2	20		
8	O	4	Total	C	N	O	0	0
			50	28	2	20		
8	Q	4	Total	C	N	O	0	0
			50	28	2	20		
8	Z	4	Total	C	N	O	0	0
			50	28	2	20		
8	U	4	Total	C	N	O	0	0
			50	28	2	20		
8	W	4	Total	C	N	O	0	0
			50	28	2	20		

- Molecule 9 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-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
9	P	6	Total	C	N	O	0	0
			72	40	2	30		
9	R	6	Total	C	N	O	0	0
			72	40	2	30		
9	S	6	Total	C	N	O	0	0
			72	40	2	30		
9	T	6	Total	C	N	O	0	0
			72	40	2	30		

- Molecule 10 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]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.



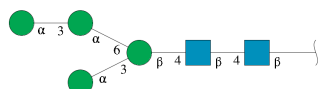
Mol	Chain	Residues	Atoms				AltConf	Trace
10	X	9	Total	C	N	O	0	0
			105	58	2	45		

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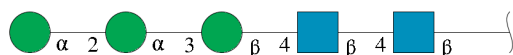
Mol	Chain	Residues	Atoms				AltConf	Trace
10	u	9	Total	C	N	O	0	0
			105	58	2	45		
10	w	9	Total	C	N	O	0	0
			105	58	2	45		

- Molecule 11 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[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.



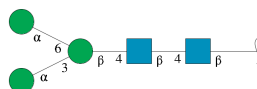
Mol	Chain	Residues	Atoms				AltConf	Trace
11	Y	6	Total	C	N	O	0	0
			72	40	2	30		
11	s	6	Total	C	N	O	0	0
			72	40	2	30		
11	y	6	Total	C	N	O	0	0
			72	40	2	30		

- Molecule 12 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-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
12	V	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 13 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
13	t	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 14 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula:  $C_8H_{15}NO_6$ ).



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

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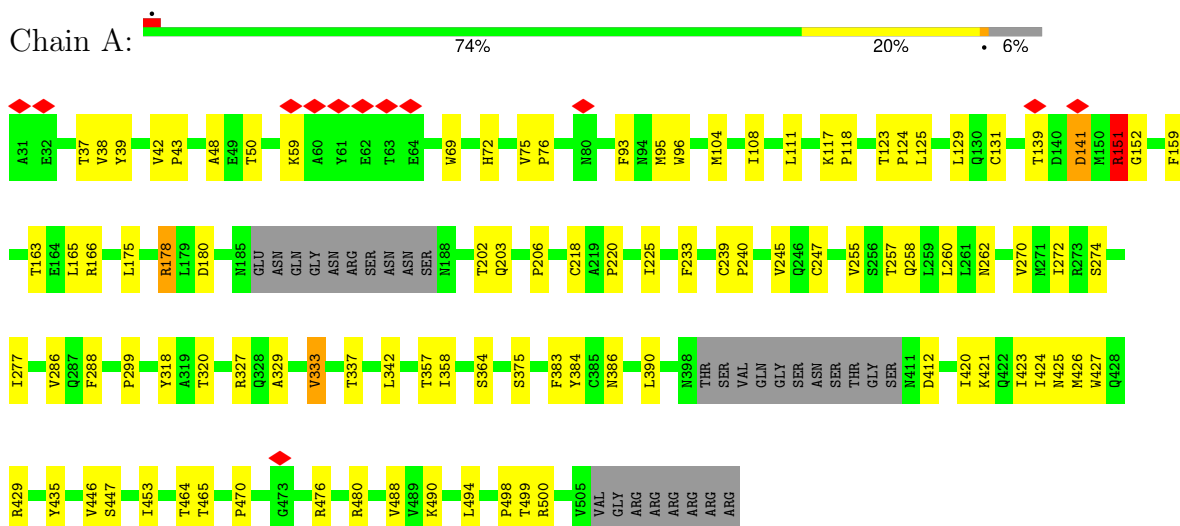
*Continued from previous page...*

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

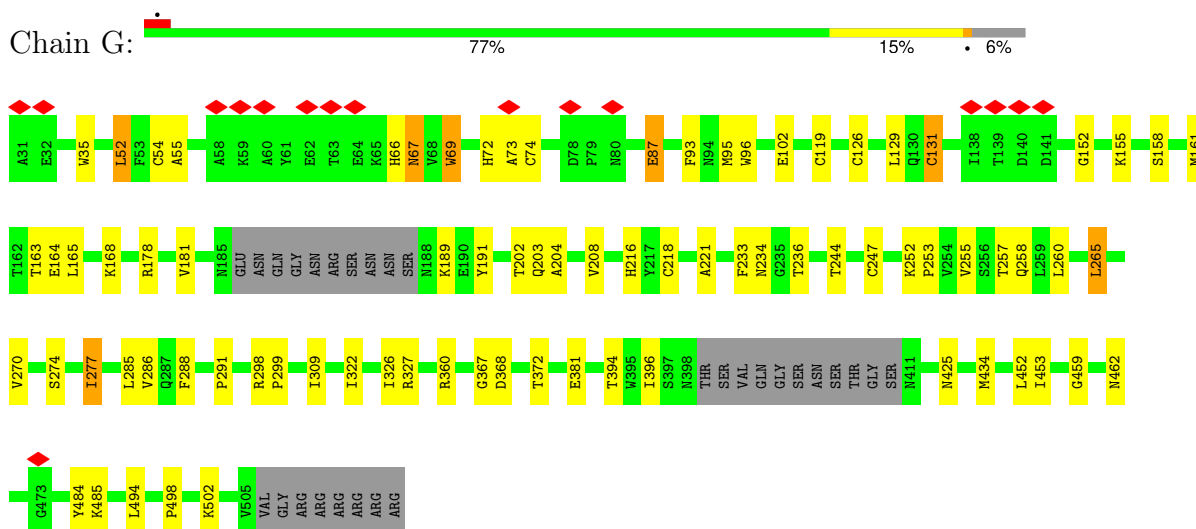
### 3 Residue-property plots

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.

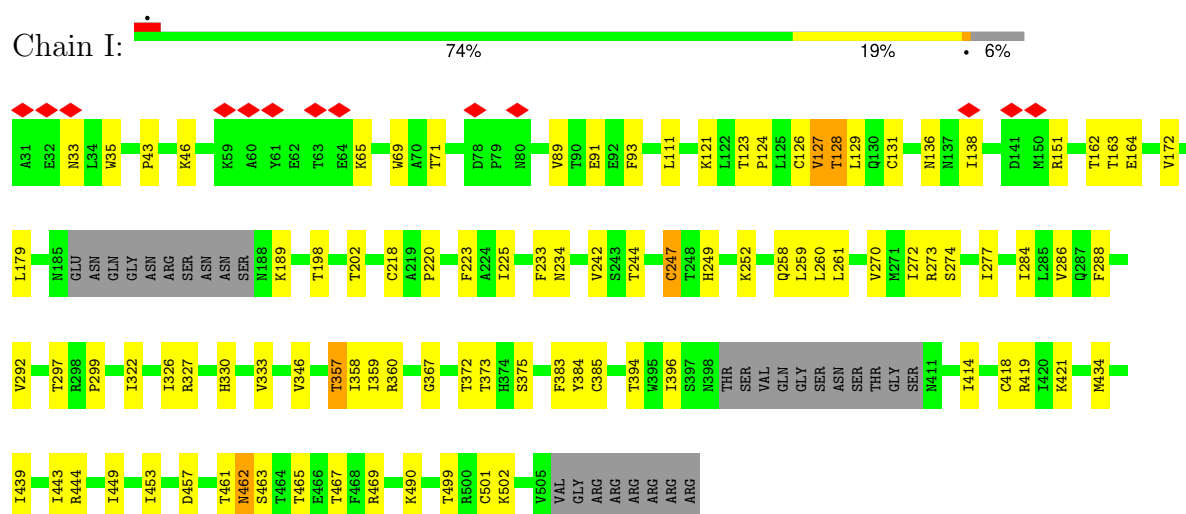
- Molecule 1: BG505 SOSIP.664 gp120



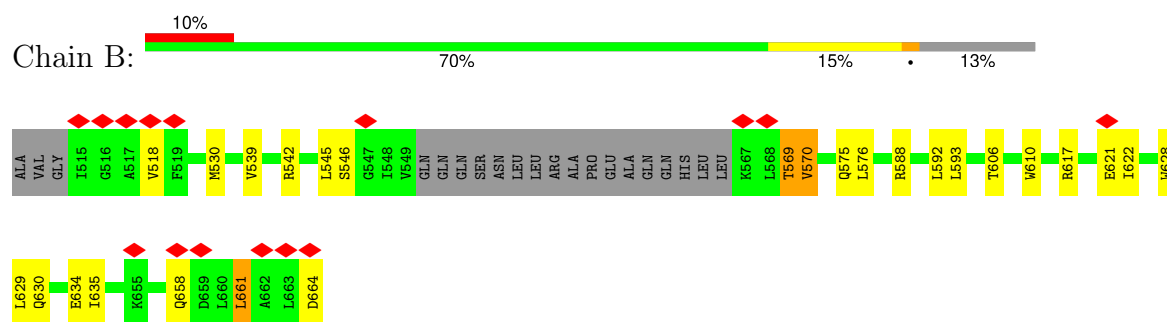
- Molecule 1: BG505 SOSIP.664 gp120



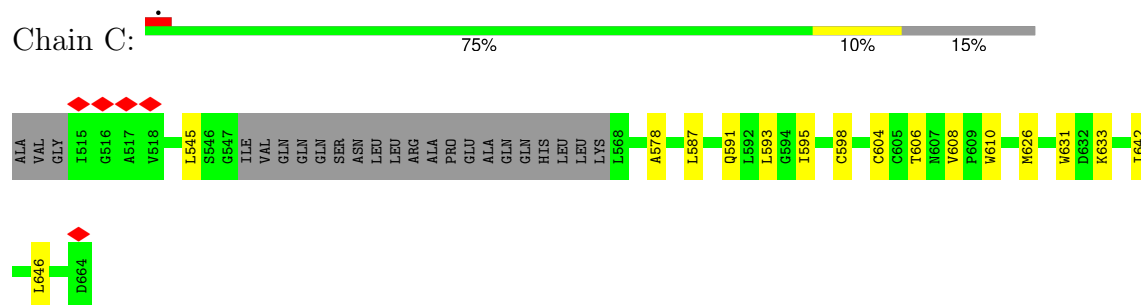
- Molecule 1: BG505 SOSIP.664 gp120



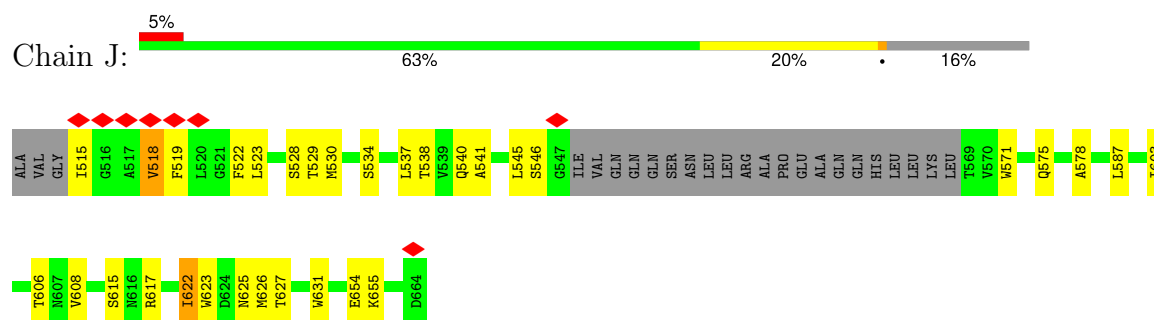
- Molecule 2: BG505 SOSIP.664 gp41



- Molecule 2: BG505 SOSIP.664 gp41



- Molecule 2: BG505 SOSIP.664 gp41



- Molecule 3: Ab76 Fab heavy chain

- Molecule 3: Ab76 Fab heavy chain

- Molecule 3: Ab76 Fab heavy chain

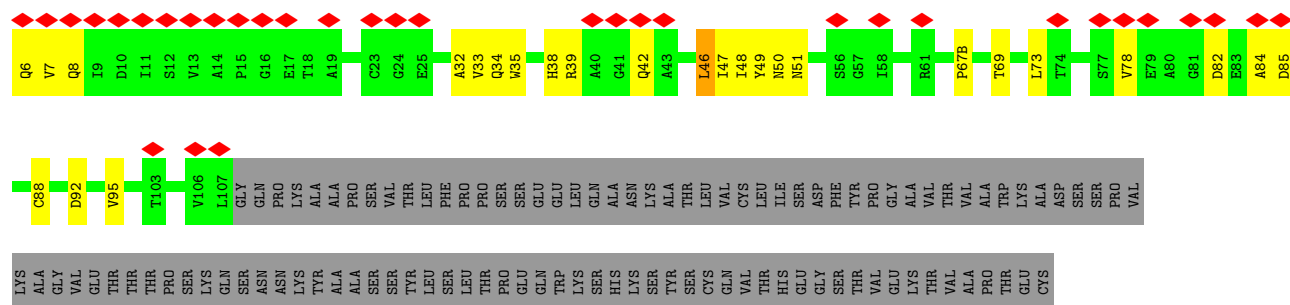
- Molecule 4: Ab76 Fab light chain

- Molecule 4: Ab76 Fab light chain









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



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



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



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



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





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



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



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



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



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



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



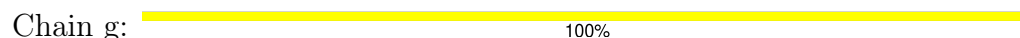
- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



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



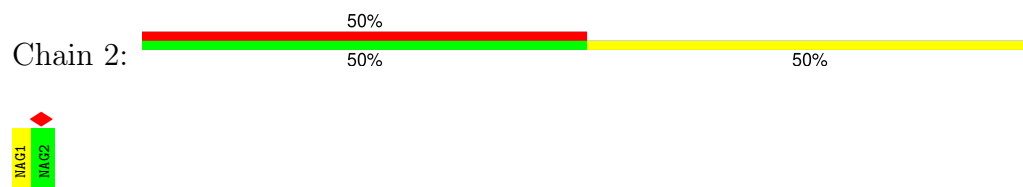
- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



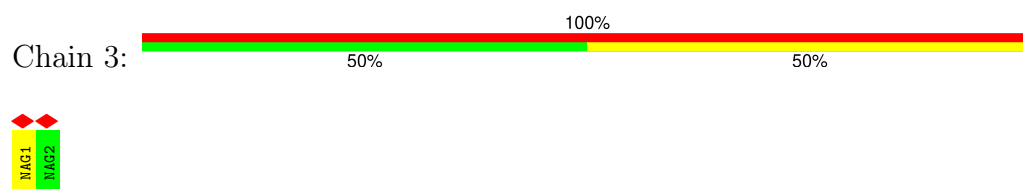
- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



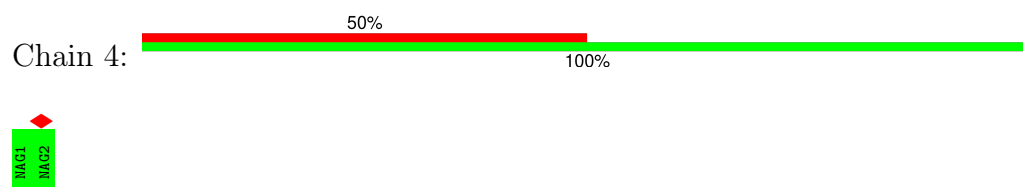
- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



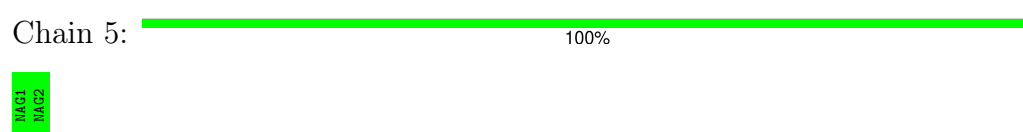
- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



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





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



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



- Molecule 8: 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 8: 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 8: 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 8: 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





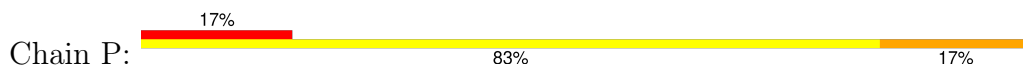
- Molecule 8: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: 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



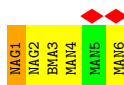
- Molecule 9: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: alpha-D-mannopyranose-(1-2)-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 9: alpha-D-mannopyranose-(1-2)-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 9: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T: 

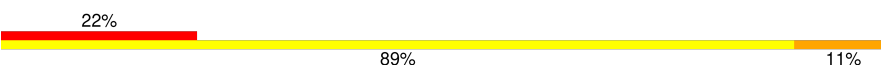


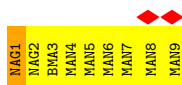
- Molecule 10: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X: 



- Molecule 10: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain u: 



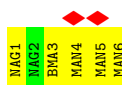
- Molecule 10: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain w: 




- Molecule 11: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y: 



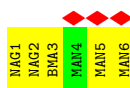
- Molecule 11:  $\alpha$ -D-mannopyranose-(1-3)- $\alpha$ -D-mannopyranose-(1-6)-[ $\alpha$ -D-mannopyranose-(1-3)] $\beta$ -D-mannopyranose-(1-4)-2-acetamido-2-deoxy- $\beta$ -D-glucopyranose-(1-4)-2-acetamido-2-deoxy- $\beta$ -D-glucopyranose

Chain s: 



- Molecule 11:  $\alpha$ -D-mannopyranose-(1-3)- $\alpha$ -D-mannopyranose-(1-6)-[ $\alpha$ -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 y: 



- Molecule 12:  $\alpha$ -D-mannopyranose-(1-2)- $\alpha$ -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 V: 



- Molecule 13:  $\alpha$ -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

Chain t: 



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	332541	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 200	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.713	Depositor
Minimum map value	-0.975	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.029	Depositor
Recommended contour level	0.175	Depositor
Map size (Å)	405.372, 405.372, 405.372	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.9213, 0.9213, 0.9213	Depositor

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MAN, NAG, 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	0.20	0/3653	0.40	0/4959
1	G	0.13	0/3642	0.32	0/4945
1	I	0.14	0/3633	0.33	0/4933
2	B	0.14	0/1056	0.33	0/1433
2	C	0.13	0/1050	0.30	0/1424
2	J	0.15	0/1036	0.37	0/1405
3	D	0.11	0/965	0.29	0/1308
3	H	0.11	0/965	0.31	0/1308
3	K	0.11	0/965	0.28	0/1308
4	E	0.11	0/876	0.30	0/1185
4	L	0.11	0/876	0.27	0/1185
4	M	0.11	0/876	0.32	0/1185
5	d	0.12	0/1052	0.35	0/1429
5	h	0.12	0/1052	0.37	0/1429
5	k	0.12	0/1052	0.34	0/1429
6	e	0.13	0/845	0.34	0/1154
6	l	0.14	0/845	0.43	2/1154 (0.2%)
6	m	0.13	0/845	0.39	2/1154 (0.2%)
All	All	0.14	0/25284	0.34	4/34327 (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	1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	l	50	ASN	CA-C-N	5.62	132.27	121.54
6	l	50	ASN	C-N-CA	5.62	132.27	121.54
6	m	50	ASN	CA-C-N	5.38	131.82	121.54
6	m	50	ASN	C-N-CA	5.38	131.82	121.54

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	151	ARG	Sidechain

## 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	3573	0	3510	56	0
1	G	3565	0	3497	43	0
1	I	3559	0	3489	56	0
2	B	1038	0	1003	12	0
2	C	1029	0	1005	11	0
2	J	1018	0	997	21	0
3	D	942	0	894	15	0
3	H	942	0	894	10	0
3	K	942	0	894	15	0
4	E	855	0	825	8	0
4	L	855	0	825	11	0
4	M	855	0	825	7	0
5	d	1026	0	994	16	0
5	h	1026	0	994	21	0
5	k	1026	0	994	28	0
6	e	824	0	785	11	0
6	l	824	0	785	21	0
6	m	824	0	785	16	0
7	0	28	0	25	0	0
7	1	28	0	25	0	0
7	2	28	0	25	0	0
7	3	28	0	25	0	0
7	4	28	0	25	0	0

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*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	5	28	0	25	0	0
7	6	28	0	25	0	0
7	7	28	0	25	0	0
7	8	28	0	25	0	0
7	9	28	0	25	0	0
7	F	28	0	25	3	0
7	a	28	0	25	0	0
7	b	28	0	25	0	0
7	c	28	0	25	0	0
7	f	28	0	25	0	0
7	g	28	0	25	0	0
7	i	28	0	25	0	0
7	j	28	0	25	0	0
7	n	28	0	25	0	0
7	o	28	0	25	1	0
7	p	28	0	25	0	0
7	q	28	0	25	0	0
7	r	28	0	25	0	0
7	v	28	0	25	0	0
7	x	28	0	25	0	0
7	z	28	0	25	0	0
8	N	50	0	43	1	0
8	O	50	0	43	0	0
8	Q	50	0	43	0	0
8	U	50	0	43	2	0
8	W	50	0	43	0	0
8	Z	50	0	43	0	0
9	P	72	0	61	1	0
9	R	72	0	61	0	0
9	S	72	0	61	1	0
9	T	72	0	61	0	0
10	X	105	0	88	0	0
10	u	105	0	88	1	0
10	w	105	0	88	0	0
11	Y	72	0	61	0	0
11	s	72	0	61	1	0
11	y	72	0	61	0	0
12	V	61	0	52	0	0
13	t	61	0	52	1	0
14	A	56	0	52	0	0
14	B	28	0	26	0	0
14	C	28	0	26	0	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	G	56	0	52	1	0
14	I	70	0	65	1	0
All	All	26930	0	25919	356	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.

The worst 5 of 356 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:I:218:CYS:HA	1:I:247:CYS:HB3	1.49	0.94
1:A:218:CYS:HA	1:A:247:CYS:HB3	1.52	0.91
6:e:78:VAL:HG23	6:e:82:ASP:HB2	1.63	0.81
1:G:55:ALA:HB3	1:G:216:HIS:HB2	1.62	0.81
6:m:78:VAL:HG23	6:m:82:ASP:HB2	1.64	0.80

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	448/481 (93%)	417 (93%)	31 (7%)	0	100	100
1	G	447/481 (93%)	416 (93%)	31 (7%)	0	100	100
1	I	446/481 (93%)	419 (94%)	27 (6%)	0	100	100
2	B	129/153 (84%)	118 (92%)	9 (7%)	2 (2%)	7	33
2	C	127/153 (83%)	122 (96%)	5 (4%)	0	100	100
2	J	125/153 (82%)	114 (91%)	10 (8%)	1 (1%)	16	47
3	D	120/230 (52%)	113 (94%)	7 (6%)	0	100	100
3	H	120/230 (52%)	114 (95%)	5 (4%)	1 (1%)	16	47

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	K	120/230 (52%)	116 (97%)	4 (3%)	0	100	100
4	E	114/222 (51%)	106 (93%)	8 (7%)	0	100	100
4	L	114/222 (51%)	108 (95%)	6 (5%)	0	100	100
4	M	114/222 (51%)	108 (95%)	6 (5%)	0	100	100
5	d	130/235 (55%)	111 (85%)	18 (14%)	1 (1%)	16	47
5	h	130/235 (55%)	109 (84%)	20 (15%)	1 (1%)	16	47
5	k	130/235 (55%)	114 (88%)	15 (12%)	1 (1%)	16	47
6	e	106/213 (50%)	97 (92%)	9 (8%)	0	100	100
6	l	106/213 (50%)	95 (90%)	11 (10%)	0	100	100
6	m	106/213 (50%)	99 (93%)	7 (7%)	0	100	100
All	All	3132/4602 (68%)	2896 (92%)	229 (7%)	7 (0%)	44	72

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	J	518	VAL
2	B	569	THR
3	H	12	VAL
5	d	81	SER
5	k	81	SER

### 5.3.2 Protein sidechains ⓘ

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	405/428 (95%)	386 (95%)	19 (5%)	23	54
1	G	404/428 (94%)	387 (96%)	17 (4%)	26	56
1	I	403/428 (94%)	379 (94%)	24 (6%)	17	47
2	B	109/129 (84%)	99 (91%)	10 (9%)	8	31
2	C	110/129 (85%)	108 (98%)	2 (2%)	51	71
2	J	109/129 (84%)	101 (93%)	8 (7%)	13	41

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	D	100/194 (52%)	96 (96%)	4 (4%)	28	58
3	H	100/194 (52%)	98 (98%)	2 (2%)	48	69
3	K	100/194 (52%)	97 (97%)	3 (3%)	36	63
4	E	89/182 (49%)	85 (96%)	4 (4%)	24	55
4	L	89/182 (49%)	84 (94%)	5 (6%)	19	49
4	M	89/182 (49%)	84 (94%)	5 (6%)	19	49
5	d	113/202 (56%)	106 (94%)	7 (6%)	16	46
5	h	113/202 (56%)	103 (91%)	10 (9%)	9	33
5	k	113/202 (56%)	106 (94%)	7 (6%)	16	46
6	e	89/179 (50%)	86 (97%)	3 (3%)	32	61
6	l	89/179 (50%)	78 (88%)	11 (12%)	4	20
6	m	89/179 (50%)	87 (98%)	2 (2%)	45	68
All	All	2713/3942 (69%)	2570 (95%)	143 (5%)	22	51

5 of 143 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	l	23	CYS
6	l	95	VAL
5	d	109	VAL
1	G	202	THR
1	G	158	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
2	J	630	GLN
5	k	97	HIS
4	M	79	GLN
6	m	50	ASN
5	k	5	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 ⓘ

155 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	$\# Z  > 2$
7	NAG	0	1	1,7	14,14,15	0.73	0	17,19,21	1.33	2 (11%)
7	NAG	0	2	7	14,14,15	0.71	0	17,19,21	0.88	1 (5%)
7	NAG	1	1	1,7	14,14,15	0.72	0	17,19,21	1.06	1 (5%)
7	NAG	1	2	7	14,14,15	0.71	0	17,19,21	0.82	0
7	NAG	2	1	1,7	14,14,15	0.74	0	17,19,21	0.95	1 (5%)
7	NAG	2	2	7	14,14,15	0.70	0	17,19,21	0.79	0
7	NAG	3	1	1,7	14,14,15	0.83	0	17,19,21	1.06	2 (11%)
7	NAG	3	2	7	14,14,15	0.72	0	17,19,21	0.85	0
7	NAG	4	1	1,7	14,14,15	0.73	0	17,19,21	0.90	0
7	NAG	4	2	7	14,14,15	0.74	0	17,19,21	0.83	0
7	NAG	5	1	1,7	14,14,15	0.74	0	17,19,21	0.80	0
7	NAG	5	2	7	14,14,15	0.72	0	17,19,21	0.84	0
7	NAG	6	1	1,7	14,14,15	0.75	0	17,19,21	0.91	1 (5%)
7	NAG	6	2	7	14,14,15	0.73	0	17,19,21	0.83	0
7	NAG	7	1	1,7	14,14,15	0.73	0	17,19,21	0.84	0
7	NAG	7	2	7	14,14,15	0.72	0	17,19,21	0.80	0
7	NAG	8	1	1,7	14,14,15	0.71	0	17,19,21	1.27	2 (11%)
7	NAG	8	2	7	14,14,15	0.71	0	17,19,21	0.80	0
7	NAG	9	1	1,7	14,14,15	0.73	0	17,19,21	1.22	2 (11%)
7	NAG	9	2	7	14,14,15	0.73	0	17,19,21	0.83	0
7	NAG	F	1	1,7	14,14,15	0.78	0	17,19,21	1.49	2 (11%)
7	NAG	F	2	7	14,14,15	0.71	0	17,19,21	0.85	0
8	NAG	N	1	1,8	14,14,15	0.78	0	17,19,21	1.43	2 (11%)
8	NAG	N	2	8	14,14,15	0.73	0	17,19,21	1.03	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	BMA	N	3	8	11,11,12	0.81	0	15,15,17	2.53	4 (26%)
8	MAN	N	4	8	11,11,12	0.69	0	15,15,17	1.23	1 (6%)
8	NAG	O	1	1,8	14,14,15	0.77	0	17,19,21	0.89	0
8	NAG	O	2	8	14,14,15	0.69	0	17,19,21	0.86	0
8	BMA	O	3	8	11,11,12	0.86	0	15,15,17	2.17	4 (26%)
8	MAN	O	4	8	11,11,12	0.81	1 (9%)	15,15,17	0.91	0
9	NAG	P	1	1,9	14,14,15	0.65	0	17,19,21	1.83	2 (11%)
9	NAG	P	2	9	14,14,15	0.72	0	17,19,21	1.03	1 (5%)
9	BMA	P	3	9	11,11,12	0.82	0	15,15,17	2.22	5 (33%)
9	MAN	P	4	9	11,11,12	0.61	0	15,15,17	1.67	1 (6%)
9	MAN	P	5	9	11,11,12	0.73	0	15,15,17	1.00	1 (6%)
9	MAN	P	6	9	11,11,12	0.66	0	15,15,17	1.25	1 (6%)
8	NAG	Q	1	1,8	14,14,15	0.79	0	17,19,21	1.43	3 (17%)
8	NAG	Q	2	8	14,14,15	0.75	0	17,19,21	1.30	3 (17%)
8	BMA	Q	3	8	11,11,12	0.81	0	15,15,17	2.64	4 (26%)
8	MAN	Q	4	8	11,11,12	0.72	0	15,15,17	1.04	1 (6%)
9	NAG	R	1	1,9	14,14,15	0.69	0	17,19,21	1.01	1 (5%)
9	NAG	R	2	9	14,14,15	0.77	0	17,19,21	1.08	1 (5%)
9	BMA	R	3	9	11,11,12	0.88	0	15,15,17	2.18	6 (40%)
9	MAN	R	4	9	11,11,12	0.58	0	15,15,17	1.62	1 (6%)
9	MAN	R	5	9	11,11,12	0.76	0	15,15,17	0.95	1 (6%)
9	MAN	R	6	9	11,11,12	0.71	0	15,15,17	1.01	1 (6%)
9	NAG	S	1	1,9	14,14,15	0.70	0	17,19,21	1.14	1 (5%)
9	NAG	S	2	9	14,14,15	0.78	0	17,19,21	1.22	2 (11%)
9	BMA	S	3	9	11,11,12	0.84	0	15,15,17	2.22	6 (40%)
9	MAN	S	4	9	11,11,12	0.57	0	15,15,17	1.63	1 (6%)
9	MAN	S	5	9	11,11,12	0.78	0	15,15,17	0.93	0
9	MAN	S	6	9	11,11,12	0.69	0	15,15,17	1.23	1 (6%)
9	NAG	T	1	1,9	14,14,15	0.72	0	17,19,21	1.08	1 (5%)
9	NAG	T	2	9	14,14,15	0.78	0	17,19,21	1.17	2 (11%)
9	BMA	T	3	9	11,11,12	0.83	0	15,15,17	2.27	6 (40%)
9	MAN	T	4	9	11,11,12	0.56	0	15,15,17	1.77	1 (6%)
9	MAN	T	5	9	11,11,12	0.76	0	15,15,17	0.91	1 (6%)
9	MAN	T	6	9	11,11,12	0.69	0	15,15,17	1.23	1 (6%)
8	NAG	U	1	1,8	14,14,15	0.83	0	17,19,21	1.36	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	NAG	U	2	8	14,14,15	0.73	0	17,19,21	1.02	2 (11%)
8	BMA	U	3	8	11,11,12	0.86	0	15,15,17	1.90	2 (13%)
8	MAN	U	4	8	11,11,12	0.71	0	15,15,17	1.22	1 (6%)
12	NAG	V	1	1,12	14,14,15	0.64	0	17,19,21	2.01	2 (11%)
12	NAG	V	2	12	14,14,15	0.70	0	17,19,21	1.31	2 (11%)
12	BMA	V	3	12	11,11,12	0.83	0	15,15,17	2.23	3 (20%)
12	MAN	V	4	12	11,11,12	0.67	0	15,15,17	1.22	1 (6%)
12	MAN	V	5	12	11,11,12	0.74	0	15,15,17	1.08	1 (6%)
8	NAG	W	1	1,8	14,14,15	0.75	0	17,19,21	0.94	0
8	NAG	W	2	8	14,14,15	0.70	0	17,19,21	0.89	0
8	BMA	W	3	8	11,11,12	0.86	0	15,15,17	2.04	4 (26%)
8	MAN	W	4	8	11,11,12	0.73	0	15,15,17	1.08	1 (6%)
10	NAG	X	1	1,10	14,14,15	0.72	0	17,19,21	0.84	1 (5%)
10	NAG	X	2	10	14,14,15	0.70	0	17,19,21	1.54	2 (11%)
10	BMA	X	3	10	11,11,12	0.92	0	15,15,17	2.50	5 (33%)
10	MAN	X	4	10	11,11,12	0.59	0	15,15,17	1.76	1 (6%)
10	MAN	X	5	10	11,11,12	0.77	0	15,15,17	1.57	2 (13%)
10	MAN	X	6	10	11,11,12	0.70	0	15,15,17	1.29	1 (6%)
10	MAN	X	7	10	11,11,12	0.74	0	15,15,17	1.10	1 (6%)
10	MAN	X	8	10	11,11,12	0.71	0	15,15,17	1.11	1 (6%)
10	MAN	X	9	10	11,11,12	0.73	0	15,15,17	1.24	1 (6%)
11	NAG	Y	1	1,11	14,14,15	0.66	0	17,19,21	2.20	2 (11%)
11	NAG	Y	2	11	14,14,15	0.70	0	17,19,21	0.95	0
11	BMA	Y	3	11	11,11,12	0.78	0	15,15,17	2.53	5 (33%)
11	MAN	Y	4	11	11,11,12	0.73	0	15,15,17	1.03	1 (6%)
11	MAN	Y	5	11	11,11,12	0.66	0	15,15,17	1.36	1 (6%)
11	MAN	Y	6	11	11,11,12	0.66	0	15,15,17	1.31	1 (6%)
8	NAG	Z	1	1,8	14,14,15	0.76	0	17,19,21	0.94	1 (5%)
8	NAG	Z	2	8	14,14,15	0.72	0	17,19,21	0.86	0
8	BMA	Z	3	8	11,11,12	0.83	0	15,15,17	2.53	5 (33%)
8	MAN	Z	4	8	11,11,12	0.70	0	15,15,17	1.25	1 (6%)
7	NAG	a	1	1,7	14,14,15	0.74	0	17,19,21	1.00	1 (5%)
7	NAG	a	2	7	14,14,15	0.72	0	17,19,21	0.83	0
7	NAG	b	1	1,7	14,14,15	0.69	0	17,19,21	1.45	3 (17%)
7	NAG	b	2	7	14,14,15	0.71	0	17,19,21	0.86	0
7	NAG	c	1	1,7	14,14,15	0.74	0	17,19,21	1.72	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
7	NAG	c	2	7	14,14,15	0.72	0	17,19,21	0.91	0
7	NAG	f	1	1,7	14,14,15	0.76	0	17,19,21	1.12	1 (5%)
7	NAG	f	2	7	14,14,15	0.72	0	17,19,21	0.79	0
7	NAG	g	1	1,7	14,14,15	0.76	0	17,19,21	1.23	3 (17%)
7	NAG	g	2	7	14,14,15	0.73	0	17,19,21	0.95	1 (5%)
7	NAG	i	1	1,7	14,14,15	0.71	0	17,19,21	0.85	0
7	NAG	i	2	7	14,14,15	0.74	0	17,19,21	0.80	0
7	NAG	j	1	1,7	14,14,15	0.73	0	17,19,21	0.91	0
7	NAG	j	2	7	14,14,15	0.72	0	17,19,21	0.84	0
7	NAG	n	1	1,7	14,14,15	0.71	0	17,19,21	0.79	0
7	NAG	n	2	7	14,14,15	0.70	0	17,19,21	0.86	1 (5%)
7	NAG	o	1	1,7	14,14,15	0.71	0	17,19,21	1.08	2 (11%)
7	NAG	o	2	7	14,14,15	0.83	1 (7%)	17,19,21	0.95	0
7	NAG	p	1	1,7	14,14,15	0.74	0	17,19,21	0.84	0
7	NAG	p	2	7	14,14,15	0.75	0	17,19,21	0.83	0
7	NAG	q	1	1,7	14,14,15	0.75	0	17,19,21	0.88	0
7	NAG	q	2	7	14,14,15	0.72	0	17,19,21	0.89	0
7	NAG	r	1	1,7	14,14,15	0.75	0	17,19,21	0.86	0
7	NAG	r	2	7	14,14,15	0.69	0	17,19,21	1.15	1 (5%)
11	NAG	s	1	1,11	14,14,15	0.69	0	17,19,21	1.13	1 (5%)
11	NAG	s	2	11	14,14,15	0.71	0	17,19,21	1.11	1 (5%)
11	BMA	s	3	11	11,11,12	0.88	0	15,15,17	2.39	5 (33%)
11	MAN	s	4	11	11,11,12	0.71	0	15,15,17	1.16	1 (6%)
11	MAN	s	5	11	11,11,12	0.74	0	15,15,17	1.04	1 (6%)
11	MAN	s	6	11	11,11,12	0.68	0	15,15,17	1.24	1 (6%)
13	NAG	t	1	1,13	14,14,15	0.72	0	17,19,21	1.15	1 (5%)
13	NAG	t	2	13	14,14,15	0.71	0	17,19,21	1.02	1 (5%)
13	BMA	t	3	13	11,11,12	0.78	0	15,15,17	2.57	5 (33%)
13	MAN	t	4	13	11,11,12	0.68	0	15,15,17	1.16	1 (6%)
13	MAN	t	5	13	11,11,12	0.64	0	15,15,17	1.52	1 (6%)
10	NAG	u	1	1,10	14,14,15	0.74	0	17,19,21	0.89	1 (5%)
10	NAG	u	2	10	14,14,15	0.68	0	17,19,21	1.63	2 (11%)
10	BMA	u	3	10	11,11,12	0.88	0	15,15,17	2.60	6 (40%)
10	MAN	u	4	10	11,11,12	0.60	0	15,15,17	1.73	1 (6%)
10	MAN	u	5	10	11,11,12	0.81	0	15,15,17	1.78	3 (20%)
10	MAN	u	6	10	11,11,12	0.70	0	15,15,17	1.34	1 (6%)
10	MAN	u	7	10	11,11,12	0.75	0	15,15,17	1.06	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
10	MAN	u	8	10	11,11,12	0.65	0	15,15,17	1.50	1 (6%)
10	MAN	u	9	10	11,11,12	0.71	0	15,15,17	1.09	1 (6%)
7	NAG	v	1	1,7	14,14,15	0.66	0	17,19,21	1.43	2 (11%)
7	NAG	v	2	7	14,14,15	0.72	0	17,19,21	0.87	0
10	NAG	w	1	1,10	14,14,15	0.74	0	17,19,21	0.82	1 (5%)
10	NAG	w	2	10	14,14,15	0.70	0	17,19,21	1.67	2 (11%)
10	BMA	w	3	10	11,11,12	0.99	0	15,15,17	2.42	5 (33%)
10	MAN	w	4	10	11,11,12	0.61	0	15,15,17	1.72	1 (6%)
10	MAN	w	5	10	11,11,12	0.73	0	15,15,17	1.02	1 (6%)
10	MAN	w	6	10	11,11,12	0.74	0	15,15,17	1.15	1 (6%)
10	MAN	w	7	10	11,11,12	0.72	0	15,15,17	1.24	1 (6%)
10	MAN	w	8	10	11,11,12	0.74	0	15,15,17	1.11	1 (6%)
10	MAN	w	9	10	11,11,12	0.65	0	15,15,17	1.30	1 (6%)
7	NAG	x	1	1,7	14,14,15	0.72	0	17,19,21	1.35	2 (11%)
7	NAG	x	2	7	14,14,15	0.71	0	17,19,21	0.79	0
11	NAG	y	1	1,11	14,14,15	0.73	0	17,19,21	1.12	1 (5%)
11	NAG	y	2	11	14,14,15	0.72	0	17,19,21	0.96	1 (5%)
11	BMA	y	3	11	11,11,12	0.83	0	15,15,17	2.38	4 (26%)
11	MAN	y	4	11	11,11,12	0.77	0	15,15,17	0.93	0
11	MAN	y	5	11	11,11,12	0.68	0	15,15,17	1.22	1 (6%)
11	MAN	y	6	11	11,11,12	0.70	0	15,15,17	1.24	1 (6%)
7	NAG	z	1	1,7	14,14,15	0.79	0	17,19,21	1.87	5 (29%)
7	NAG	z	2	7	14,14,15	0.75	0	17,19,21	2.14	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
7	NAG	0	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	0	2	7	-	1/6/23/26	0/1/1/1
7	NAG	1	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	1	2	7	-	0/6/23/26	0/1/1/1
7	NAG	2	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	2	2	7	-	0/6/23/26	0/1/1/1
7	NAG	3	1	1,7	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	NAG	3	2	7	-	0/6/23/26	0/1/1/1
7	NAG	4	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	4	2	7	-	0/6/23/26	0/1/1/1
7	NAG	5	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	5	2	7	-	0/6/23/26	0/1/1/1
7	NAG	6	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	6	2	7	-	0/6/23/26	0/1/1/1
7	NAG	7	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	7	2	7	-	0/6/23/26	0/1/1/1
7	NAG	8	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	8	2	7	-	0/6/23/26	0/1/1/1
7	NAG	9	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	9	2	7	-	1/6/23/26	0/1/1/1
7	NAG	F	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	F	2	7	-	0/6/23/26	0/1/1/1
8	NAG	N	1	1,8	-	5/6/23/26	0/1/1/1
8	NAG	N	2	8	-	2/6/23/26	0/1/1/1
8	BMA	N	3	8	-	1/2/19/22	0/1/1/1
8	MAN	N	4	8	-	2/2/19/22	1/1/1/1
8	NAG	O	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	O	2	8	-	2/6/23/26	0/1/1/1
8	BMA	O	3	8	-	0/2/19/22	0/1/1/1
8	MAN	O	4	8	-	2/2/19/22	0/1/1/1
9	NAG	P	1	1,9	-	1/6/23/26	0/1/1/1
9	NAG	P	2	9	-	2/6/23/26	0/1/1/1
9	BMA	P	3	9	-	2/2/19/22	0/1/1/1
9	MAN	P	4	9	-	0/2/19/22	0/1/1/1
9	MAN	P	5	9	-	2/2/19/22	0/1/1/1
9	MAN	P	6	9	-	0/2/19/22	0/1/1/1
8	NAG	Q	1	1,8	-	5/6/23/26	0/1/1/1
8	NAG	Q	2	8	-	2/6/23/26	0/1/1/1
8	BMA	Q	3	8	-	1/2/19/22	0/1/1/1
8	MAN	Q	4	8	-	2/2/19/22	1/1/1/1
9	NAG	R	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	R	2	9	-	1/6/23/26	0/1/1/1
9	BMA	R	3	9	-	0/2/19/22	0/1/1/1
9	MAN	R	4	9	-	1/2/19/22	0/1/1/1
9	MAN	R	5	9	-	2/2/19/22	0/1/1/1
9	MAN	R	6	9	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	S	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	S	2	9	-	2/6/23/26	0/1/1/1
9	BMA	S	3	9	-	0/2/19/22	0/1/1/1
9	MAN	S	4	9	-	0/2/19/22	0/1/1/1
9	MAN	S	5	9	-	0/2/19/22	0/1/1/1
9	MAN	S	6	9	-	0/2/19/22	0/1/1/1
9	NAG	T	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	T	2	9	-	2/6/23/26	0/1/1/1
9	BMA	T	3	9	-	0/2/19/22	0/1/1/1
9	MAN	T	4	9	-	0/2/19/22	0/1/1/1
9	MAN	T	5	9	-	1/2/19/22	0/1/1/1
9	MAN	T	6	9	-	0/2/19/22	0/1/1/1
8	NAG	U	1	1,8	-	2/6/23/26	0/1/1/1
8	NAG	U	2	8	-	2/6/23/26	0/1/1/1
8	BMA	U	3	8	-	1/2/19/22	0/1/1/1
8	MAN	U	4	8	-	2/2/19/22	1/1/1/1
12	NAG	V	1	1,12	-	1/6/23/26	0/1/1/1
12	NAG	V	2	12	-	2/6/23/26	0/1/1/1
12	BMA	V	3	12	-	0/2/19/22	0/1/1/1
12	MAN	V	4	12	-	0/2/19/22	0/1/1/1
12	MAN	V	5	12	-	2/2/19/22	0/1/1/1
8	NAG	W	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	W	2	8	-	2/6/23/26	0/1/1/1
8	BMA	W	3	8	-	0/2/19/22	0/1/1/1
8	MAN	W	4	8	-	2/2/19/22	0/1/1/1
10	NAG	X	1	1,10	-	0/6/23/26	0/1/1/1
10	NAG	X	2	10	-	4/6/23/26	0/1/1/1
10	BMA	X	3	10	-	0/2/19/22	0/1/1/1
10	MAN	X	4	10	-	0/2/19/22	0/1/1/1
10	MAN	X	5	10	-	2/2/19/22	0/1/1/1
10	MAN	X	6	10	-	0/2/19/22	1/1/1/1
10	MAN	X	7	10	-	2/2/19/22	0/1/1/1
10	MAN	X	8	10	-	2/2/19/22	0/1/1/1
10	MAN	X	9	10	-	0/2/19/22	0/1/1/1
11	NAG	Y	1	1,11	-	0/6/23/26	0/1/1/1
11	NAG	Y	2	11	-	0/6/23/26	0/1/1/1
11	BMA	Y	3	11	-	1/2/19/22	0/1/1/1
11	MAN	Y	4	11	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	MAN	Y	5	11	-	0/2/19/22	1/1/1/1
11	MAN	Y	6	11	-	2/2/19/22	0/1/1/1
8	NAG	Z	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	Z	2	8	-	2/6/23/26	0/1/1/1
8	BMA	Z	3	8	-	0/2/19/22	0/1/1/1
8	MAN	Z	4	8	-	2/2/19/22	0/1/1/1
7	NAG	a	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	a	2	7	-	1/6/23/26	0/1/1/1
7	NAG	b	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	b	2	7	-	0/6/23/26	0/1/1/1
7	NAG	c	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	c	2	7	-	2/6/23/26	0/1/1/1
7	NAG	f	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	f	2	7	-	0/6/23/26	0/1/1/1
7	NAG	g	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	g	2	7	-	2/6/23/26	0/1/1/1
7	NAG	i	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	i	2	7	-	0/6/23/26	0/1/1/1
7	NAG	j	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	j	2	7	-	2/6/23/26	0/1/1/1
7	NAG	n	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	n	2	7	-	0/6/23/26	0/1/1/1
7	NAG	o	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	o	2	7	-	0/6/23/26	0/1/1/1
7	NAG	p	1	1,7	-	1/6/23/26	0/1/1/1
7	NAG	p	2	7	-	0/6/23/26	0/1/1/1
7	NAG	q	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	q	2	7	-	2/6/23/26	0/1/1/1
7	NAG	r	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	r	2	7	-	2/6/23/26	0/1/1/1
11	NAG	s	1	1,11	-	0/6/23/26	0/1/1/1
11	NAG	s	2	11	-	1/6/23/26	0/1/1/1
11	BMA	s	3	11	-	0/2/19/22	0/1/1/1
11	MAN	s	4	11	-	0/2/19/22	0/1/1/1
11	MAN	s	5	11	-	0/2/19/22	0/1/1/1
11	MAN	s	6	11	-	1/2/19/22	1/1/1/1
13	NAG	t	1	1,13	-	0/6/23/26	0/1/1/1
13	NAG	t	2	13	-	0/6/23/26	0/1/1/1
13	BMA	t	3	13	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
13	MAN	t	4	13	-	2/2/19/22	1/1/1/1
13	MAN	t	5	13	-	2/2/19/22	1/1/1/1
10	NAG	u	1	1,10	-	0/6/23/26	0/1/1/1
10	NAG	u	2	10	-	1/6/23/26	0/1/1/1
10	BMA	u	3	10	-	0/2/19/22	0/1/1/1
10	MAN	u	4	10	-	2/2/19/22	0/1/1/1
10	MAN	u	5	10	-	2/2/19/22	0/1/1/1
10	MAN	u	6	10	-	2/2/19/22	1/1/1/1
10	MAN	u	7	10	-	0/2/19/22	0/1/1/1
10	MAN	u	8	10	-	2/2/19/22	0/1/1/1
10	MAN	u	9	10	-	0/2/19/22	1/1/1/1
7	NAG	v	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	v	2	7	-	0/6/23/26	0/1/1/1
10	NAG	w	1	1,10	-	0/6/23/26	0/1/1/1
10	NAG	w	2	10	-	1/6/23/26	0/1/1/1
10	BMA	w	3	10	-	0/2/19/22	0/1/1/1
10	MAN	w	4	10	-	1/2/19/22	0/1/1/1
10	MAN	w	5	10	-	2/2/19/22	0/1/1/1
10	MAN	w	6	10	-	1/2/19/22	1/1/1/1
10	MAN	w	7	10	-	0/2/19/22	0/1/1/1
10	MAN	w	8	10	-	0/2/19/22	0/1/1/1
10	MAN	w	9	10	-	2/2/19/22	1/1/1/1
7	NAG	x	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	x	2	7	-	0/6/23/26	0/1/1/1
11	NAG	y	1	1,11	-	0/6/23/26	0/1/1/1
11	NAG	y	2	11	-	0/6/23/26	0/1/1/1
11	BMA	y	3	11	-	1/2/19/22	0/1/1/1
11	MAN	y	4	11	-	2/2/19/22	0/1/1/1
11	MAN	y	5	11	-	1/2/19/22	0/1/1/1
11	MAN	y	6	11	-	2/2/19/22	0/1/1/1
7	NAG	z	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	z	2	7	-	1/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	o	2	NAG	C1-C2	2.14	1.55	1.52
8	O	4	MAN	O5-C1	-2.11	1.40	1.43

The worst 5 of 222 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	Q	3	BMA	C1-O5-C5	8.27	123.28	112.19
8	N	3	BMA	C1-O5-C5	8.11	123.06	112.19
13	t	3	BMA	C1-O5-C5	8.05	122.98	112.19
11	Y	1	NAG	C1-O5-C5	8.02	122.94	112.19
10	u	3	BMA	C1-O5-C5	7.82	122.66	112.19

There are no chirality outliers.

5 of 146 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	z	2	NAG	C3-C2-N2-C7
8	N	4	MAN	C4-C5-C6-O6
10	X	2	NAG	O5-C5-C6-O6
13	t	5	MAN	C4-C5-C6-O6
8	N	4	MAN	O5-C5-C6-O6

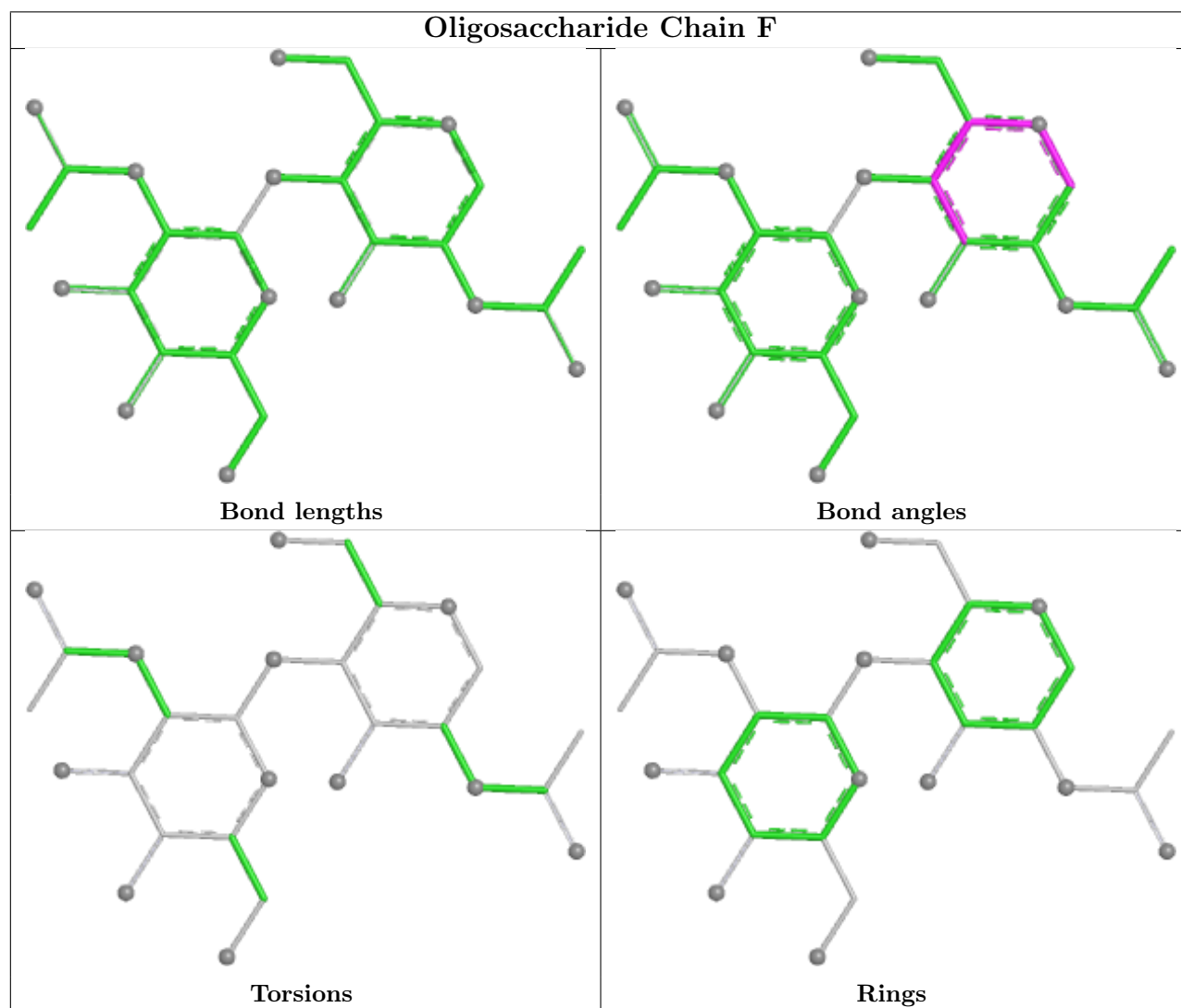
5 of 12 ring outliers are listed below:

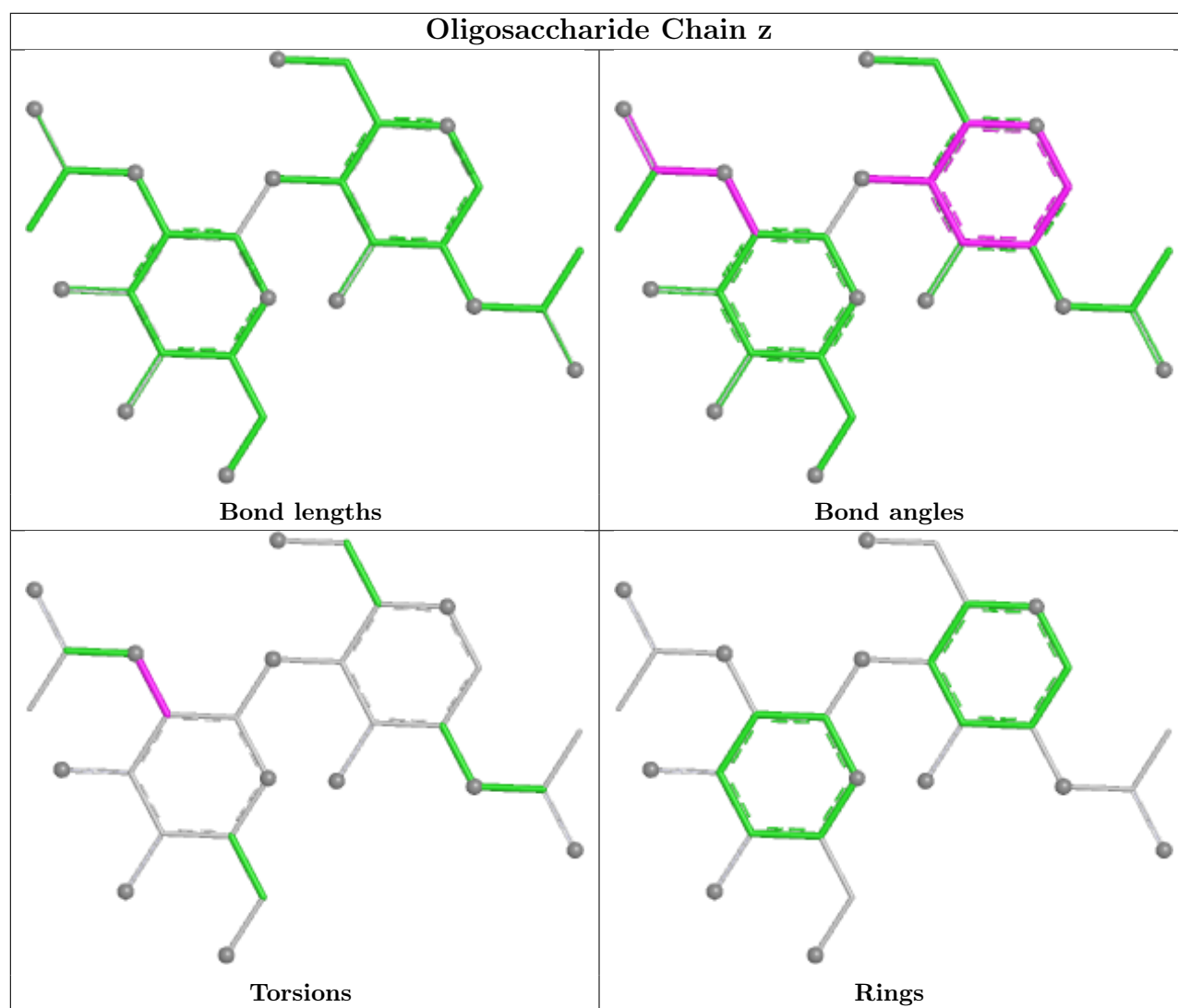
Mol	Chain	Res	Type	Atoms
10	w	6	MAN	C1-C2-C3-C4-C5-O5
10	u	6	MAN	C1-C2-C3-C4-C5-O5
10	X	6	MAN	C1-C2-C3-C4-C5-O5
10	u	9	MAN	C1-C2-C3-C4-C5-O5
8	Q	4	MAN	C1-C2-C3-C4-C5-O5

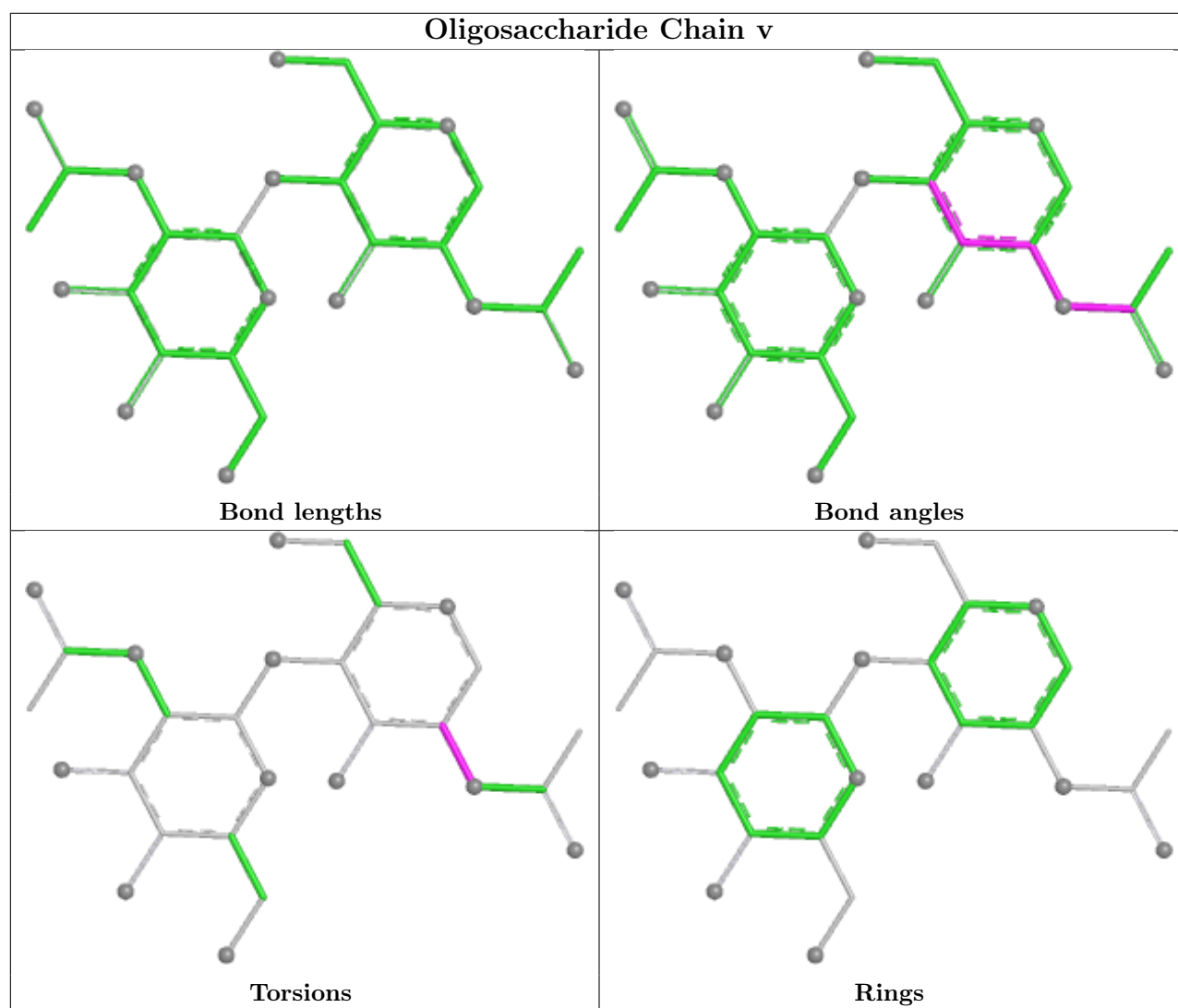
15 monomers are involved in 12 short contacts:

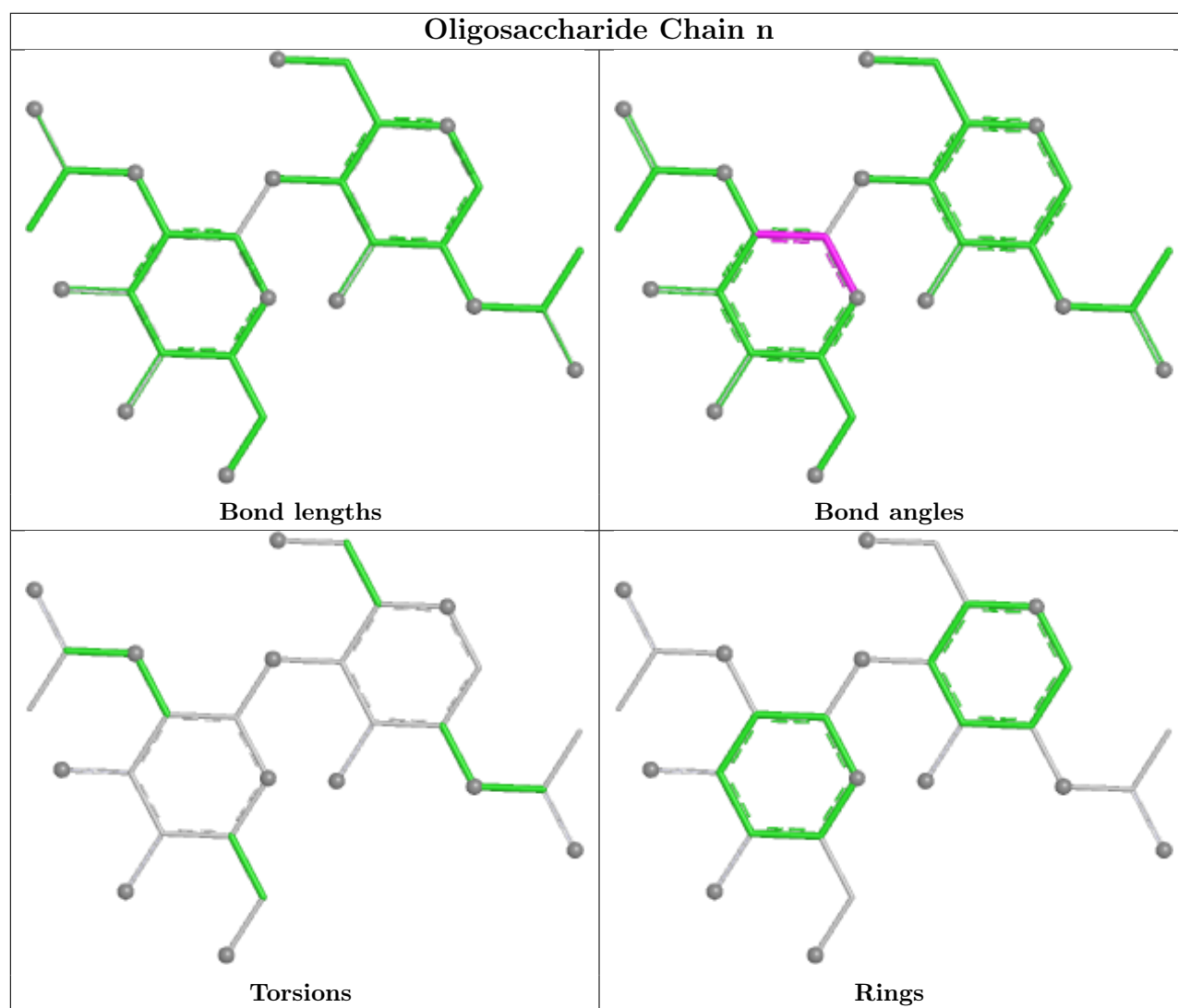
Mol	Chain	Res	Type	Clashes	Symm-Clashes
13	t	5	MAN	1	0
7	o	1	NAG	1	0
8	U	2	NAG	1	0
11	s	1	NAG	1	0
7	o	2	NAG	1	0
10	u	1	NAG	1	0
9	P	1	NAG	1	0
7	F	1	NAG	3	0
8	U	1	NAG	1	0
9	S	1	NAG	1	0
8	U	3	BMA	1	0
8	N	4	MAN	1	0
8	N	3	BMA	1	0
13	t	3	BMA	1	0
8	U	4	MAN	1	0

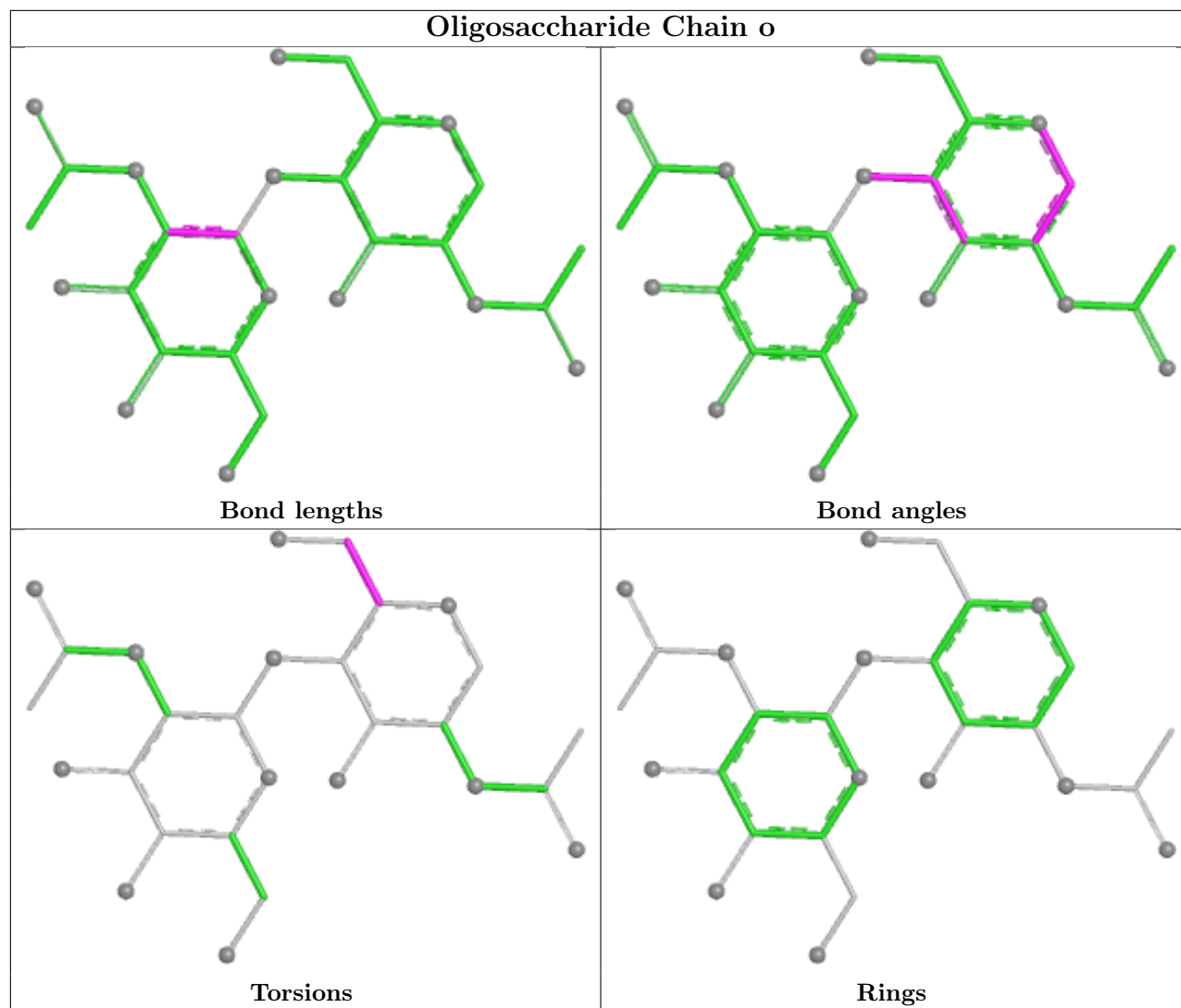
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.



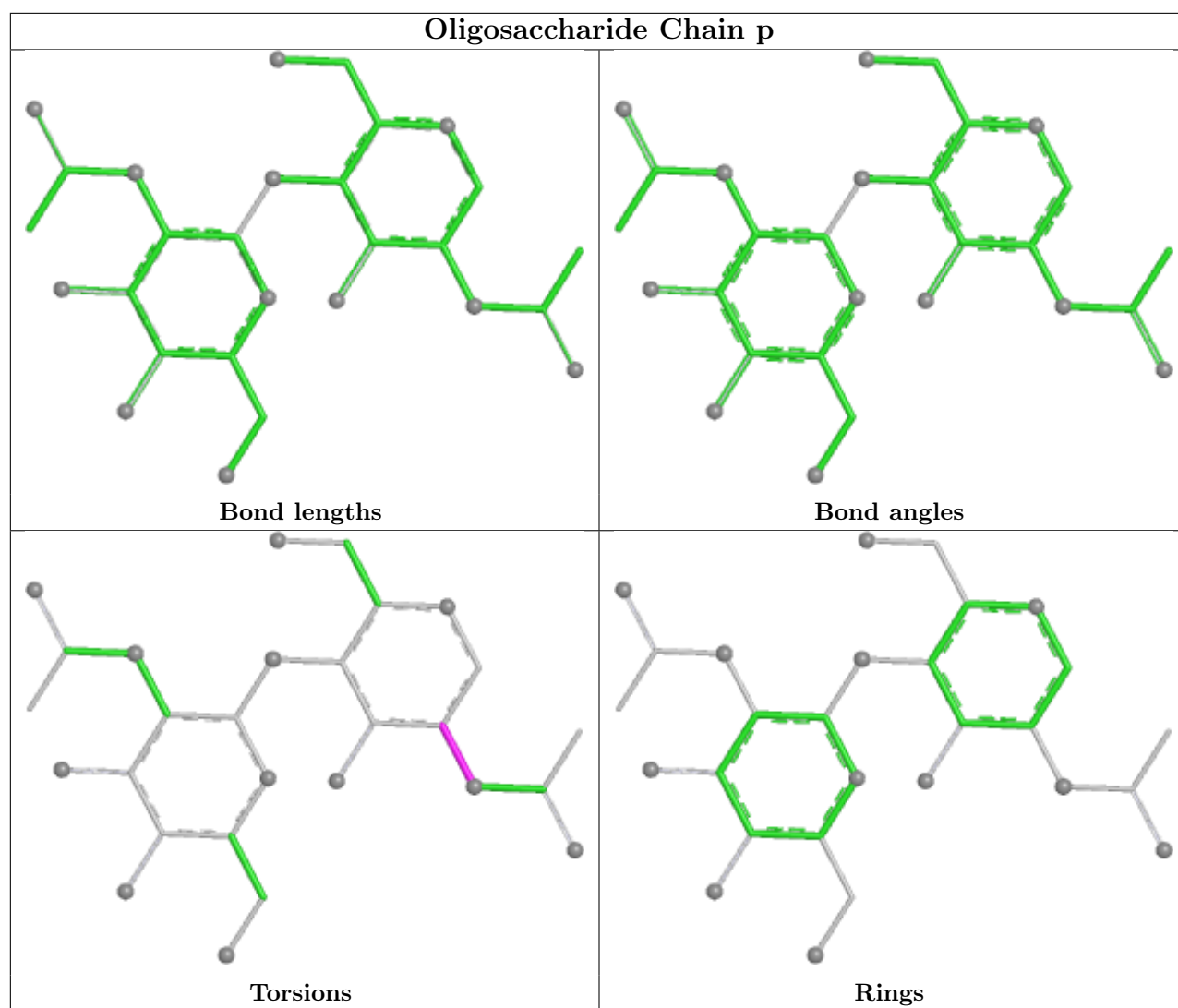


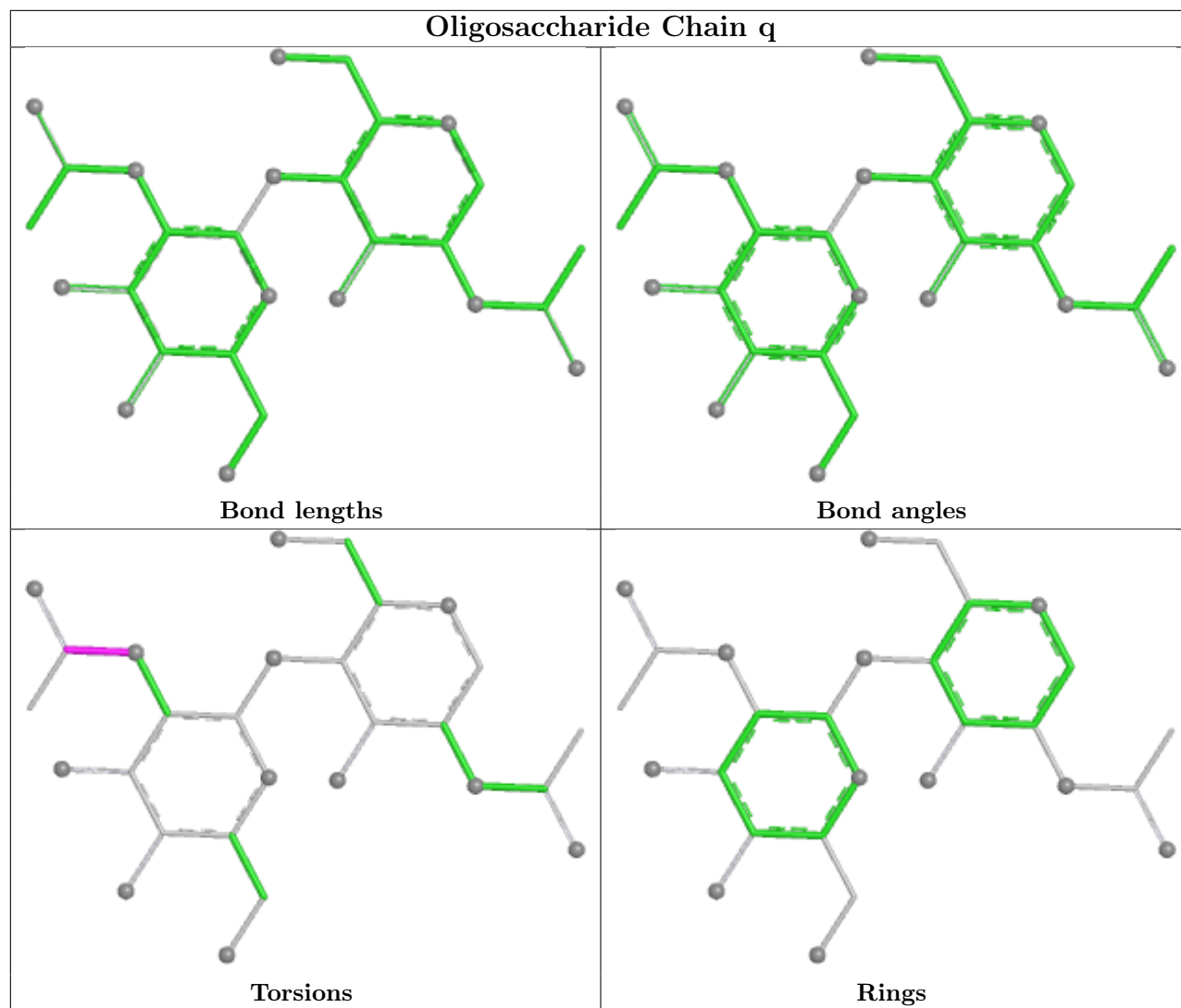


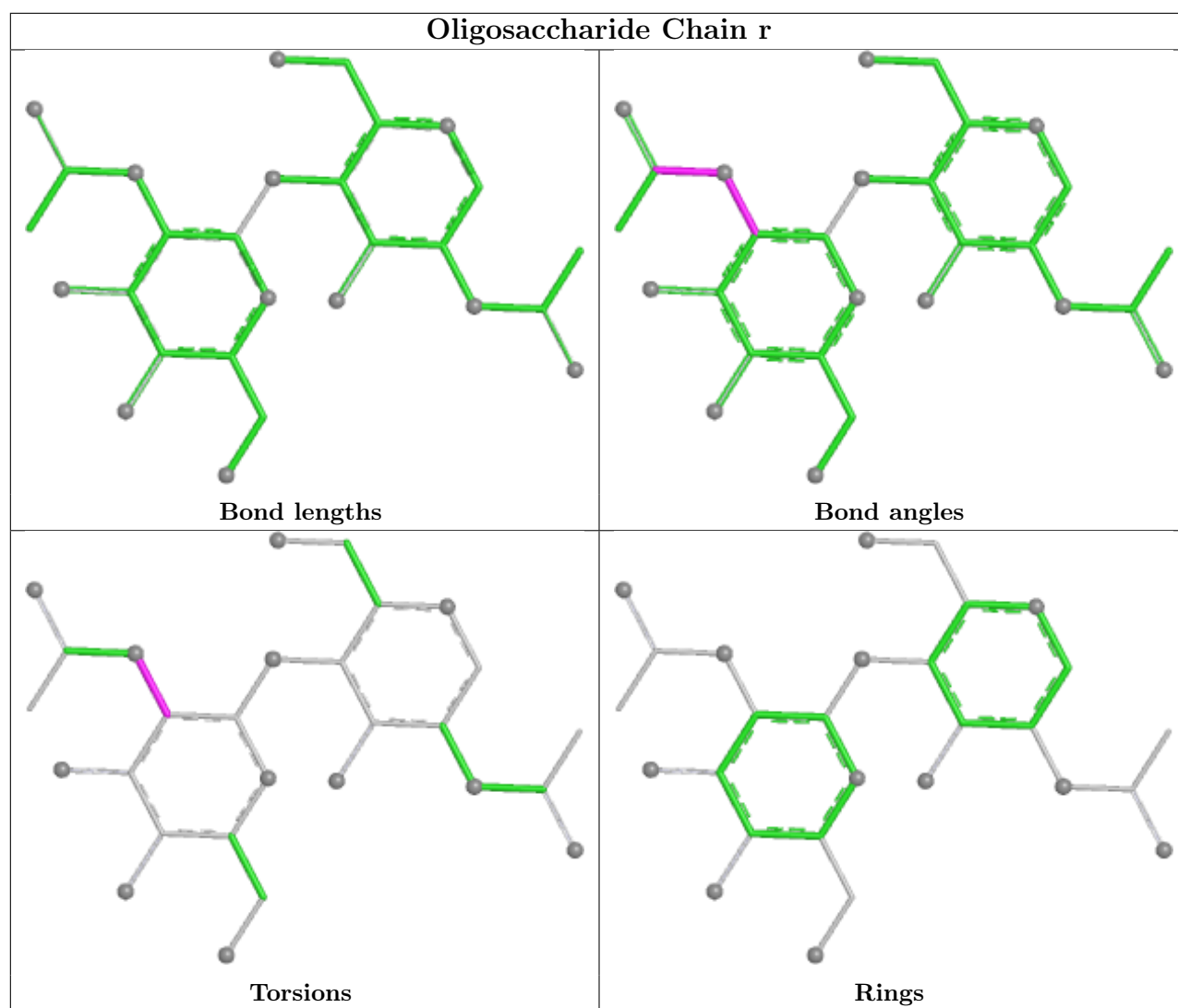


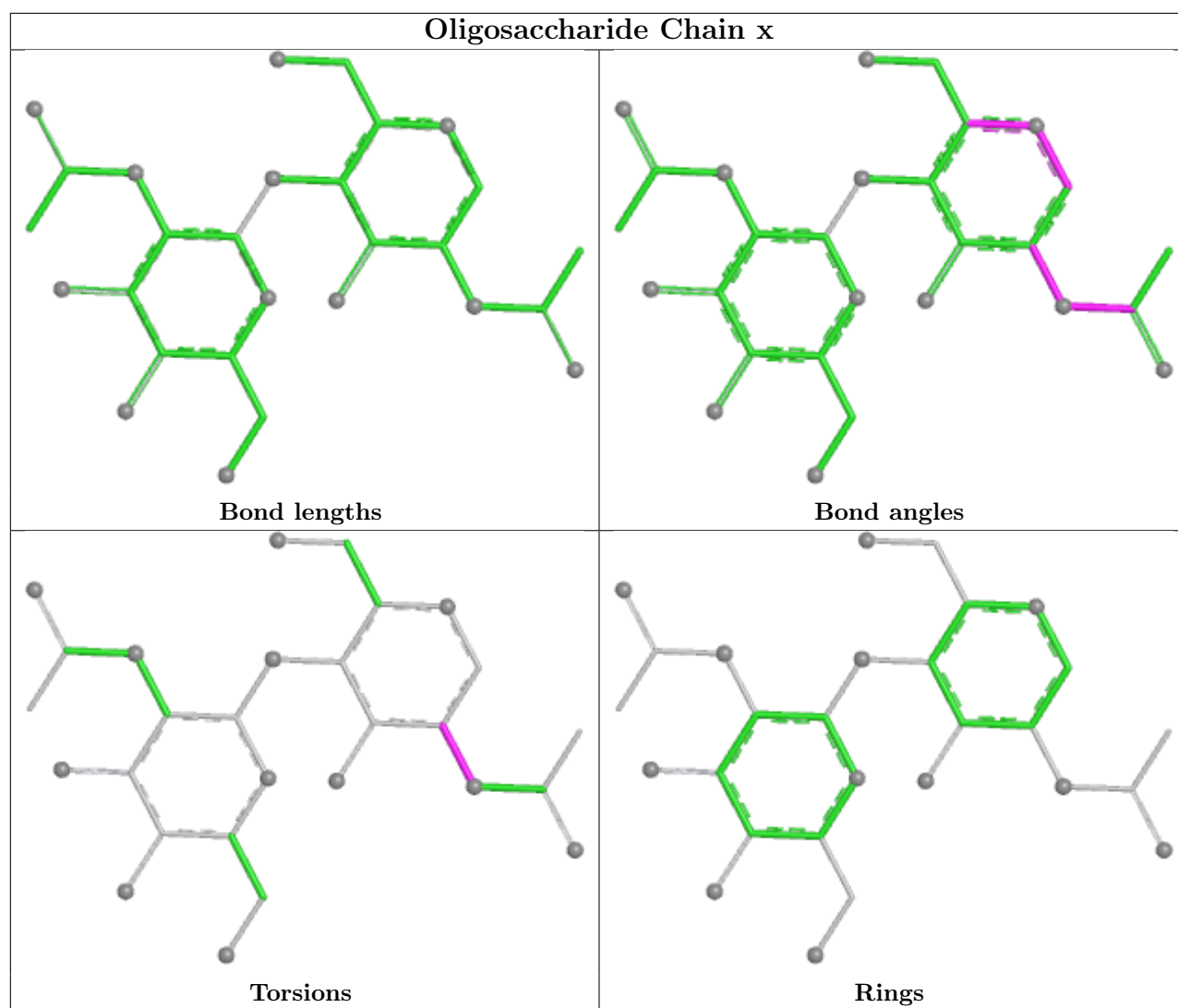


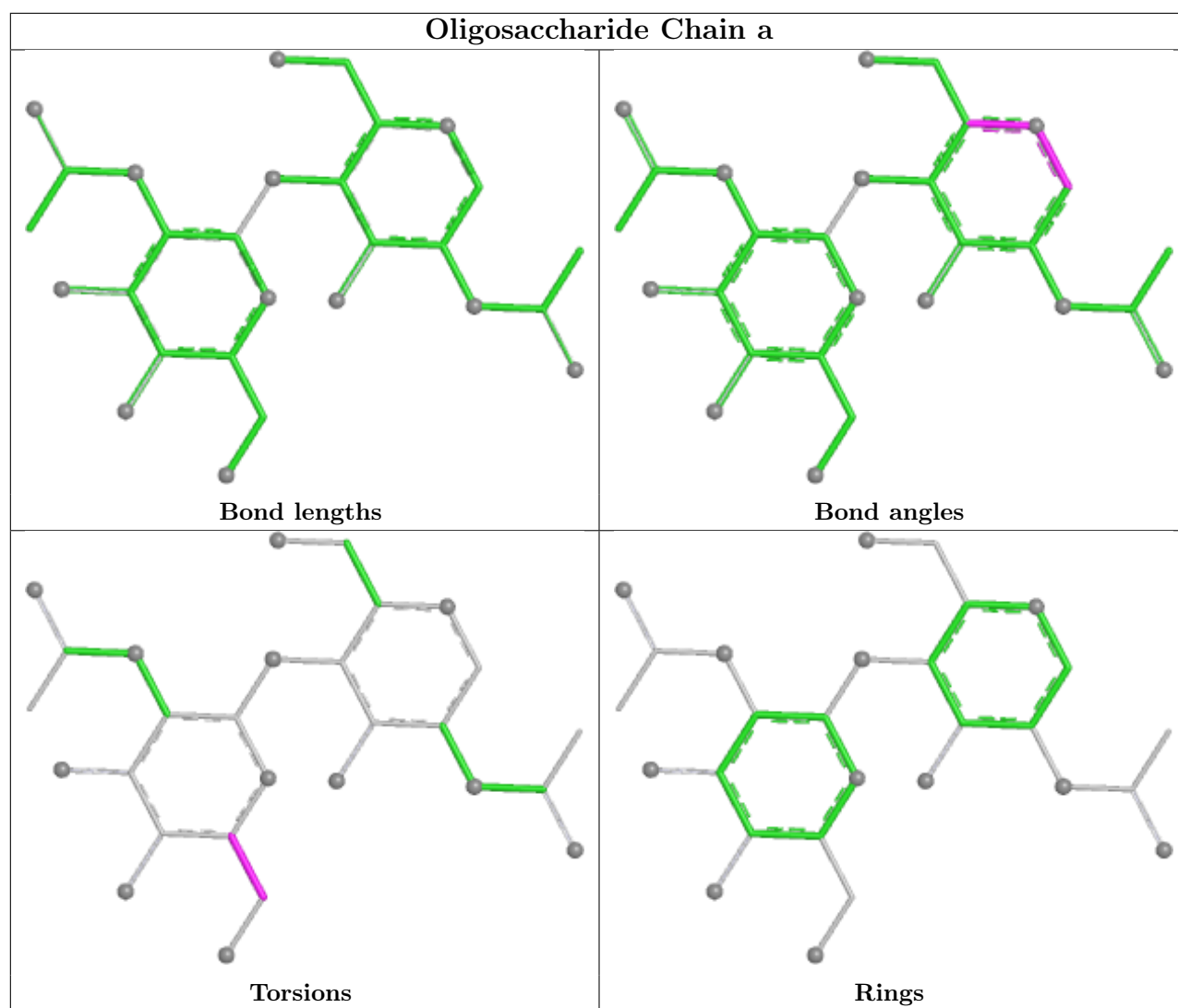


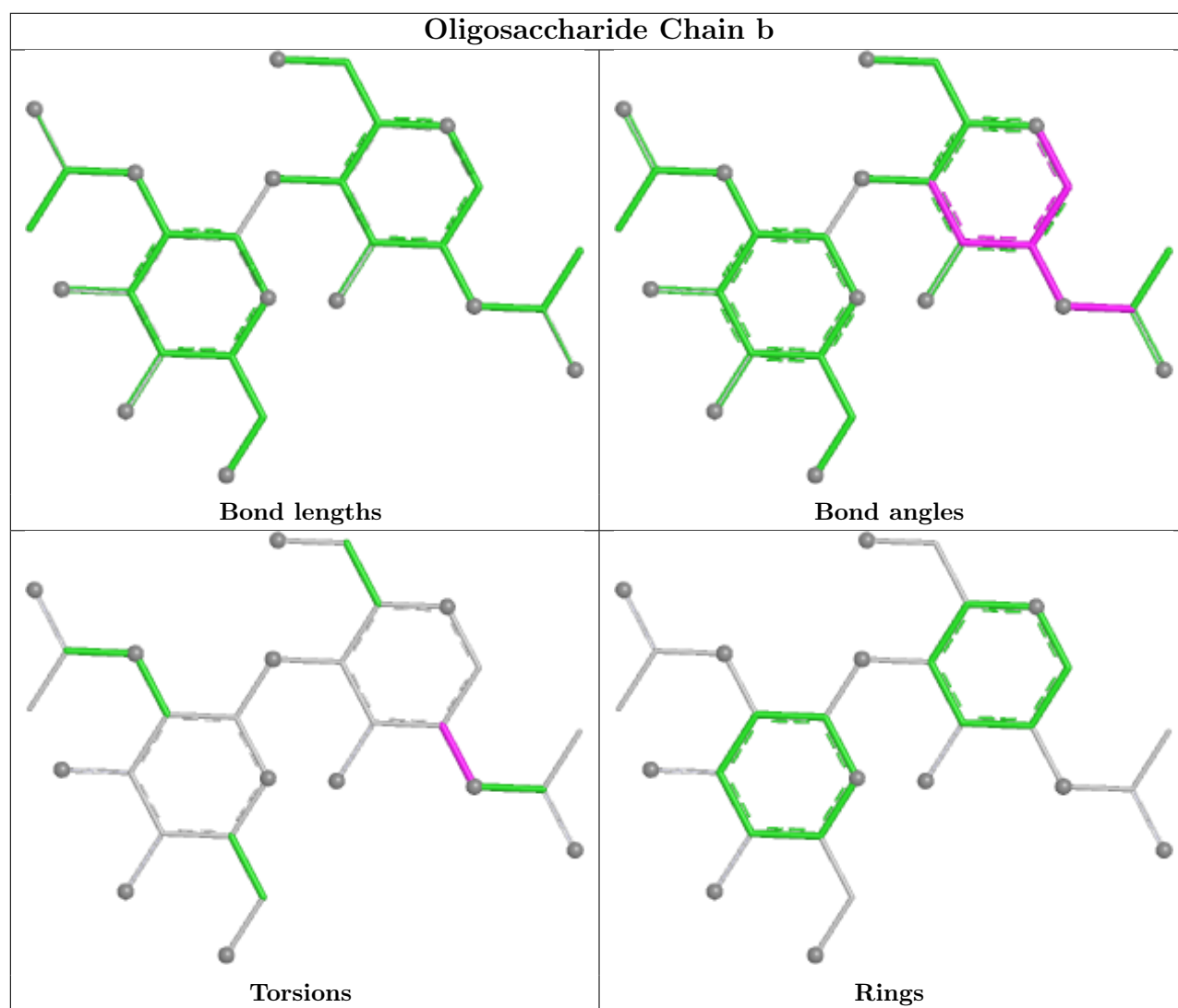


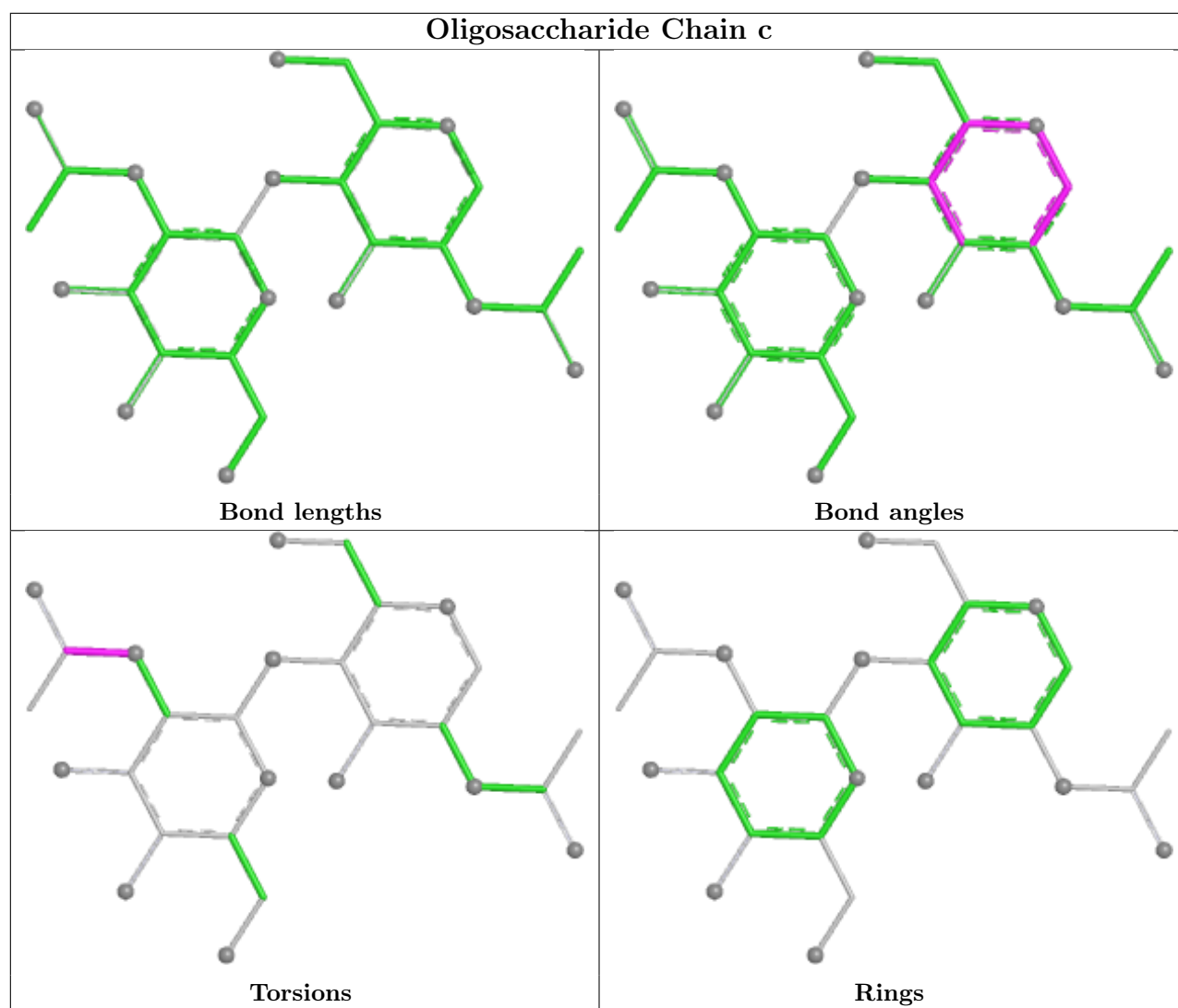


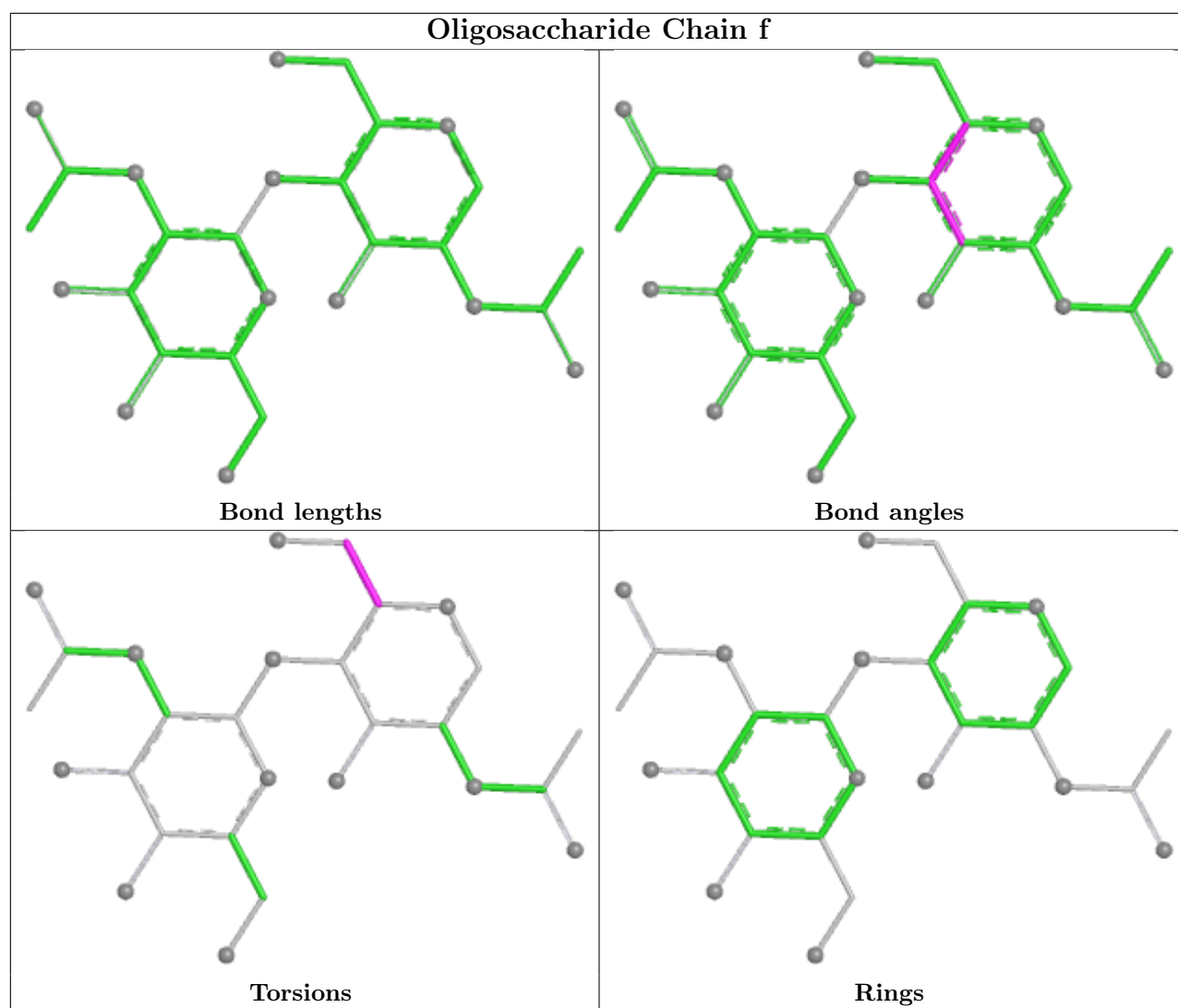




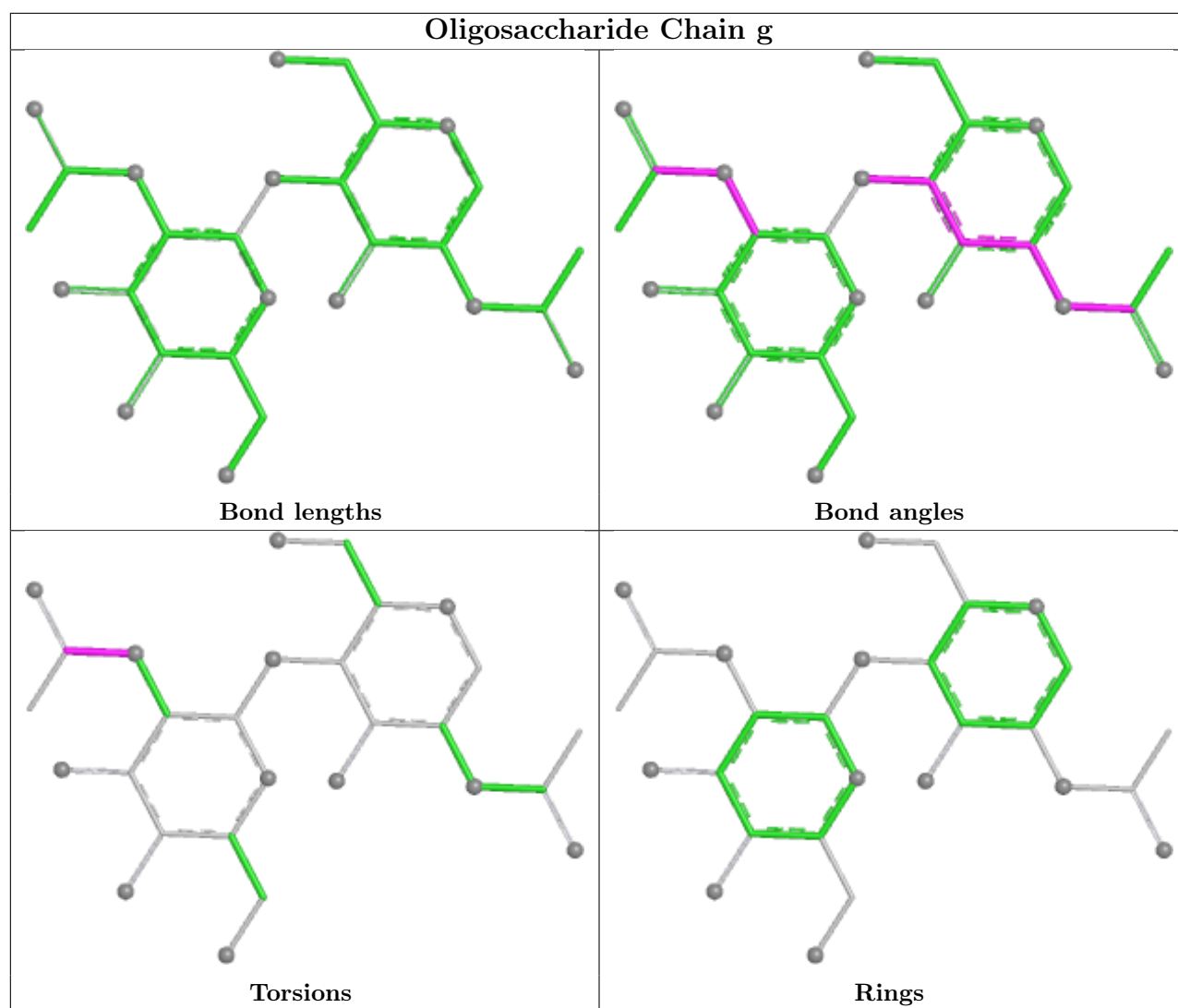


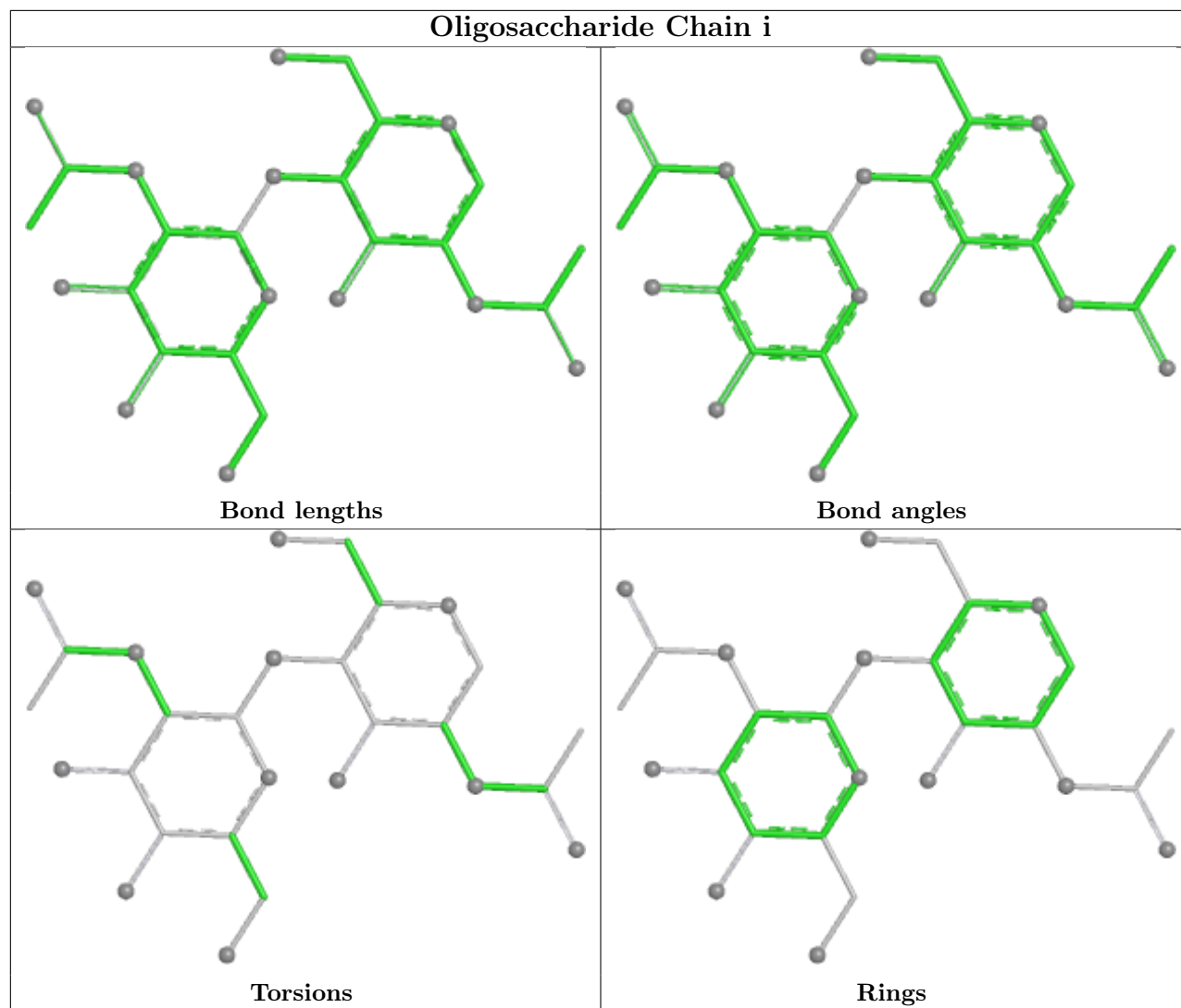


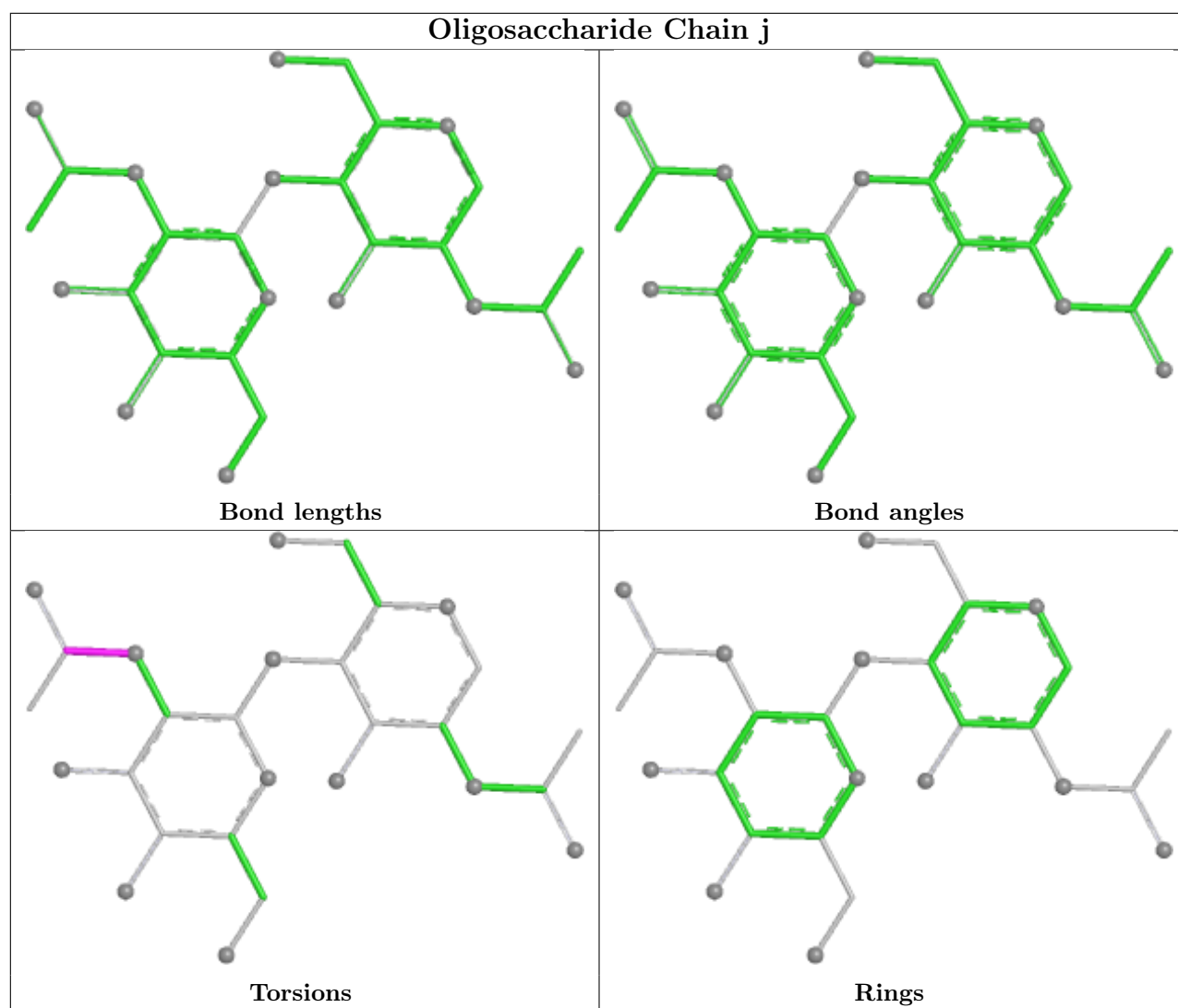


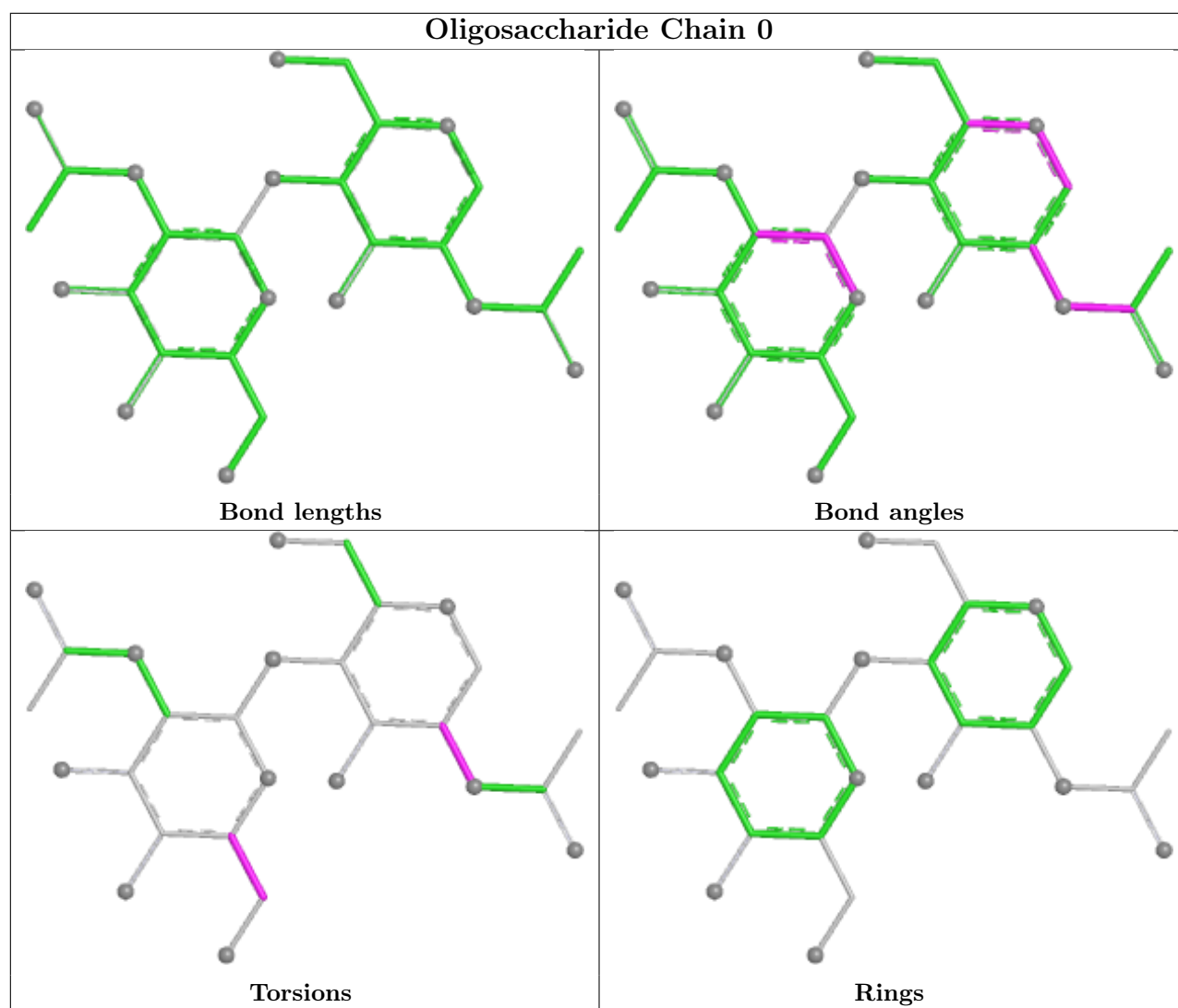


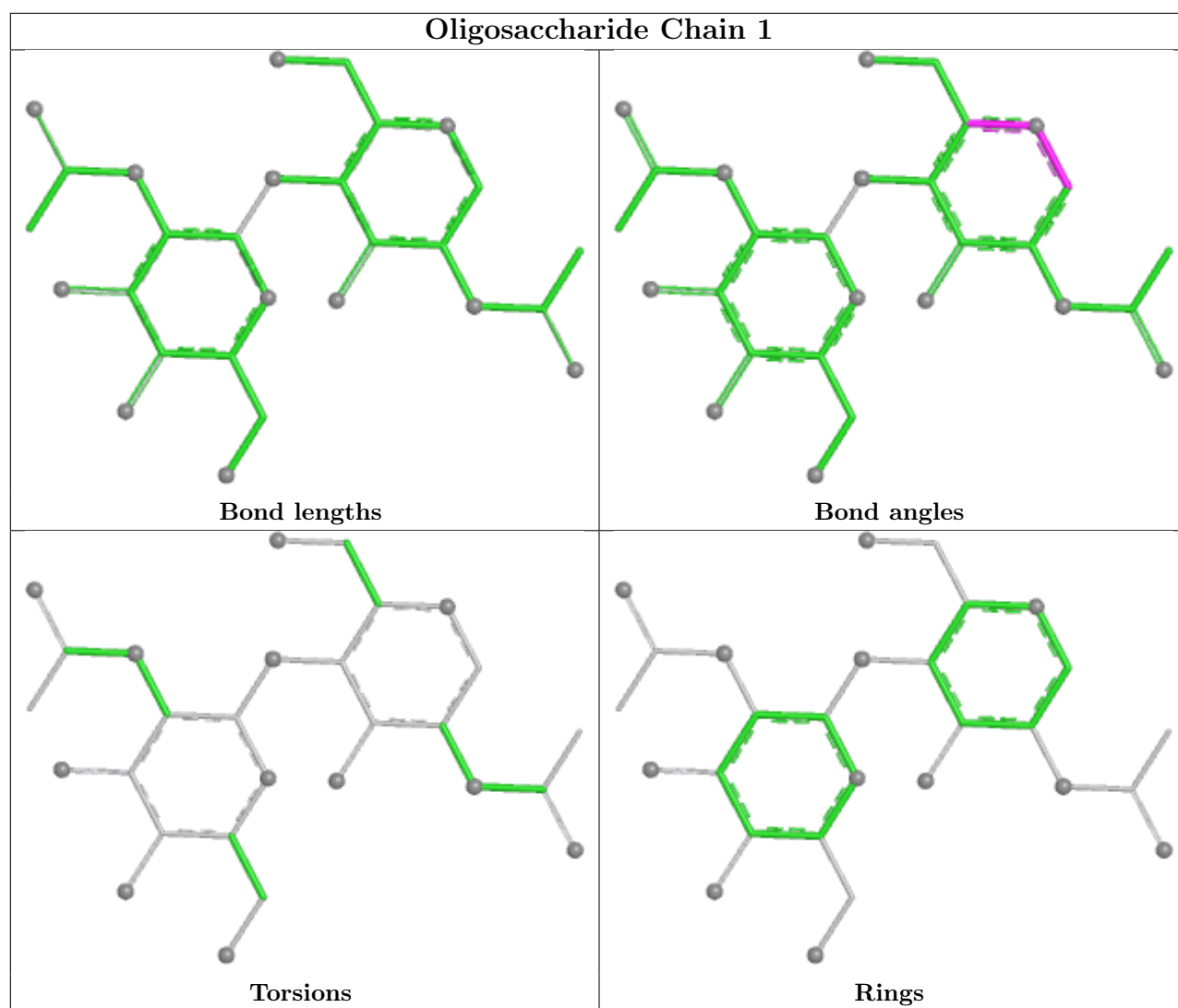


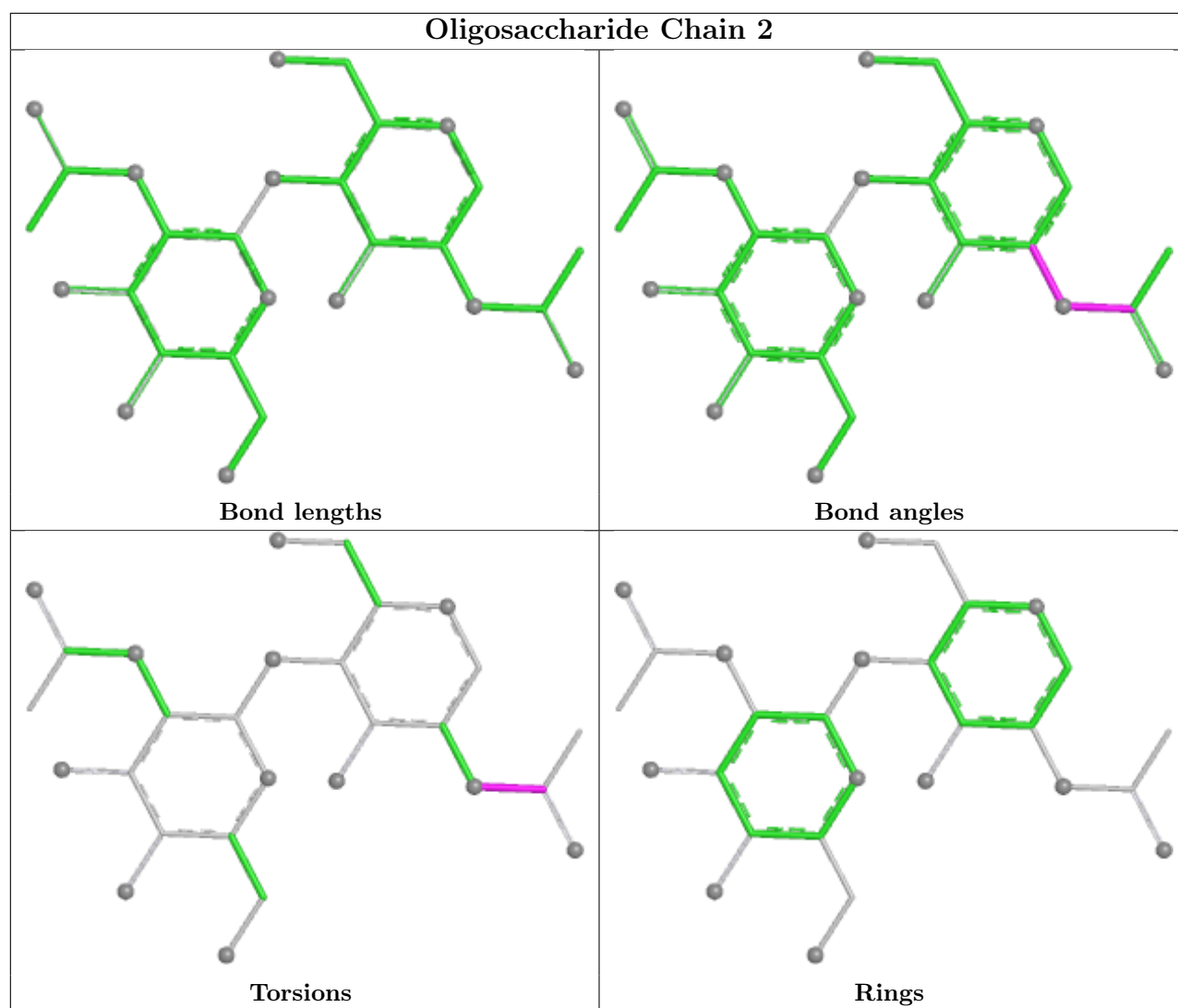


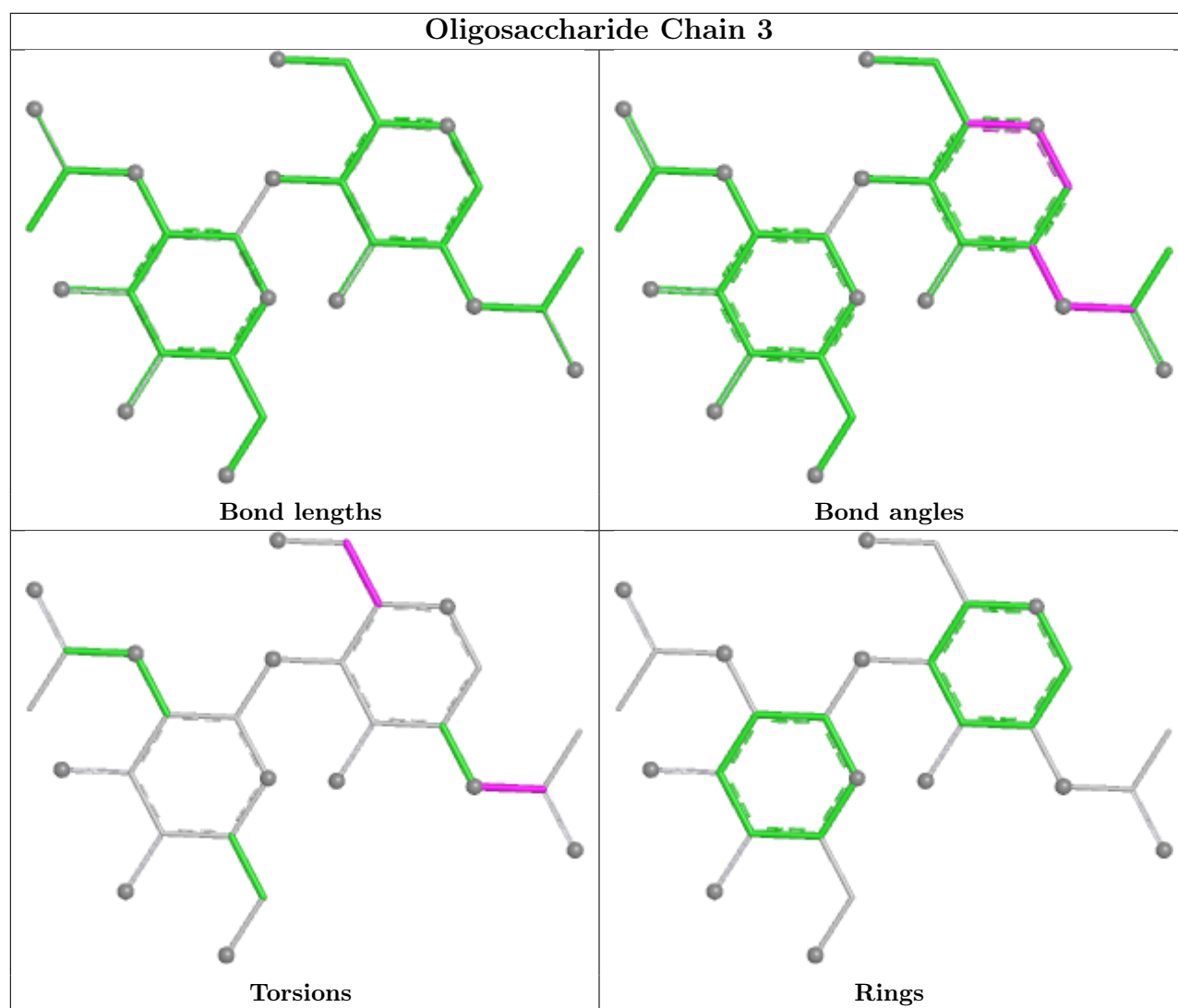


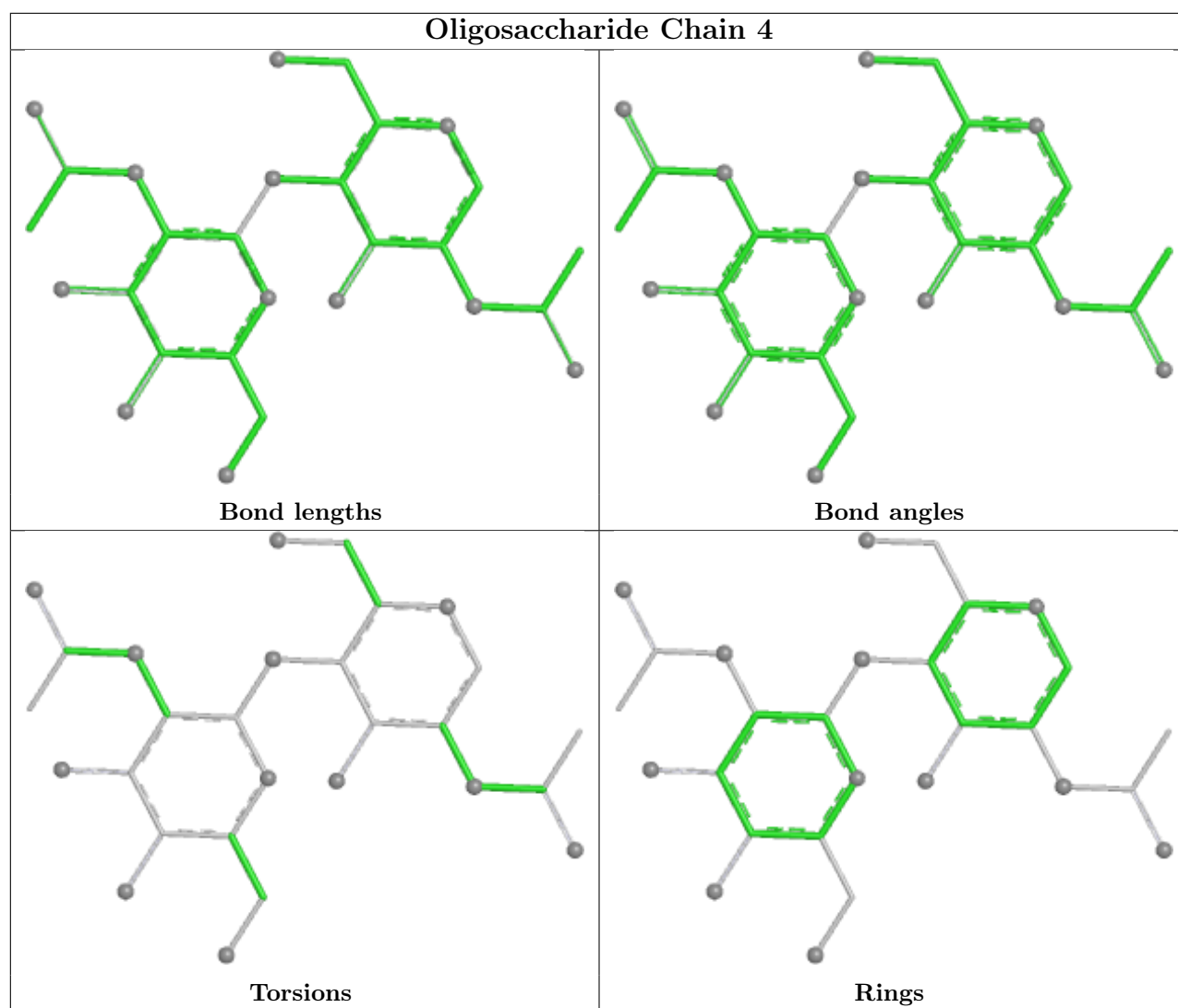




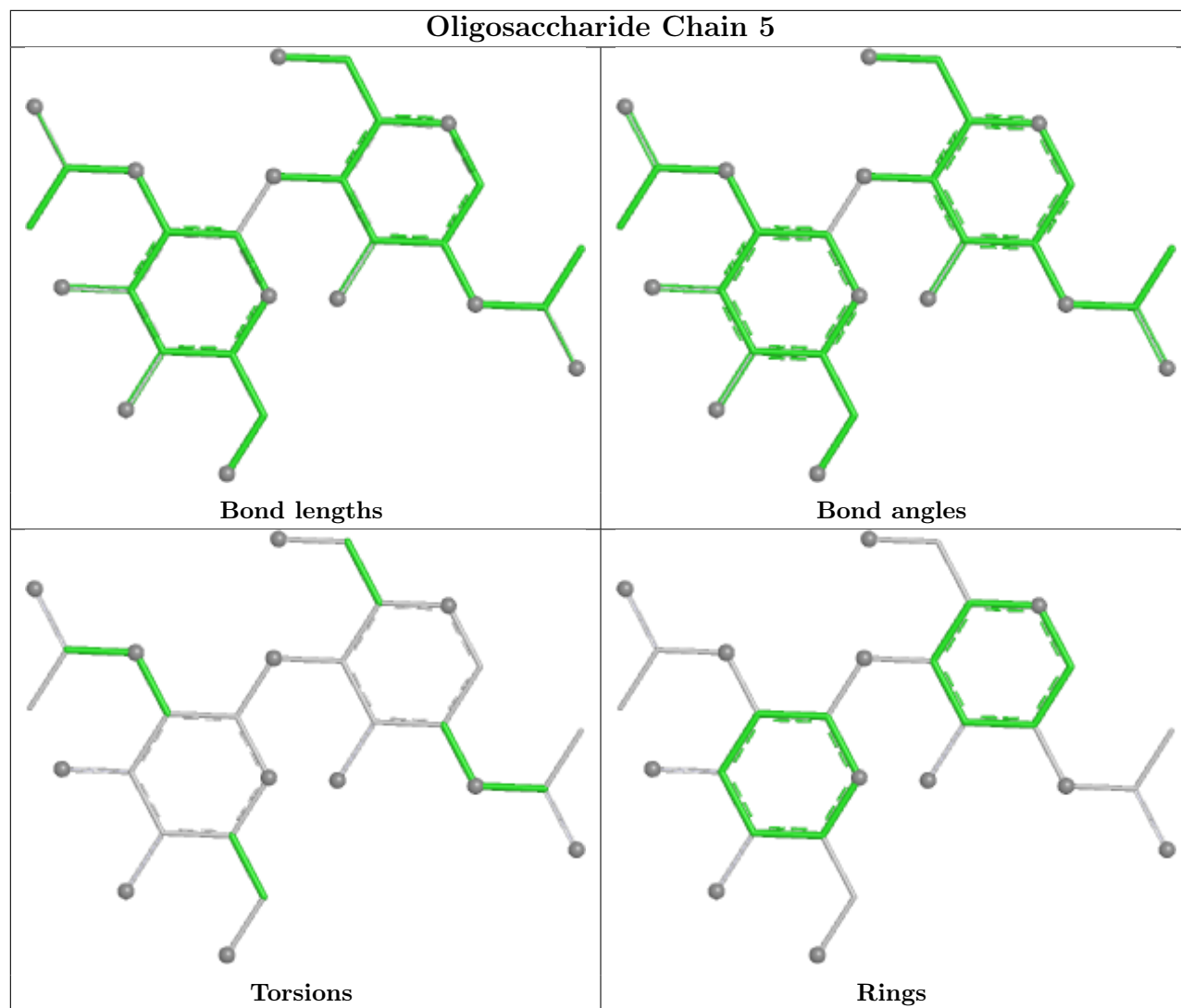


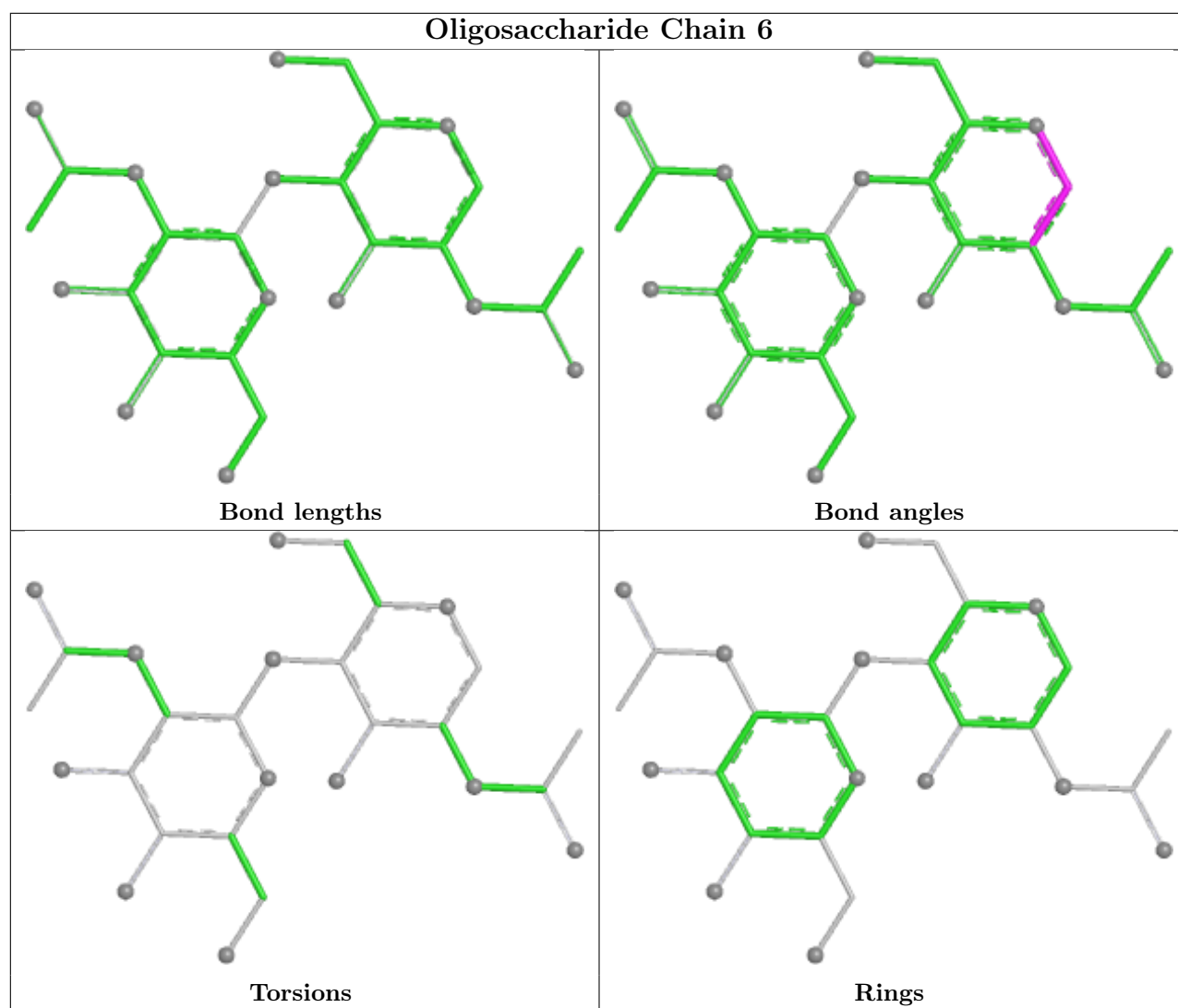


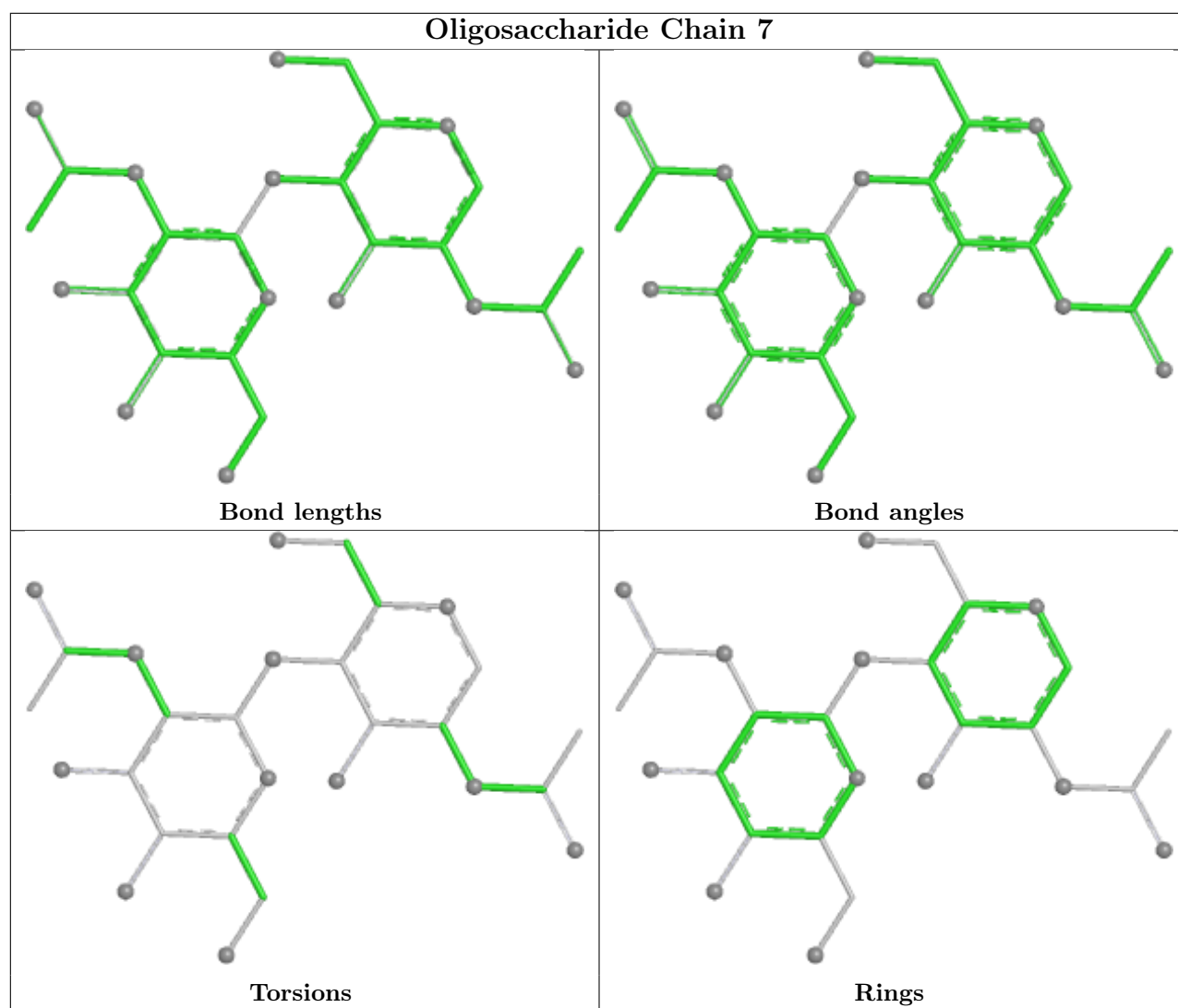


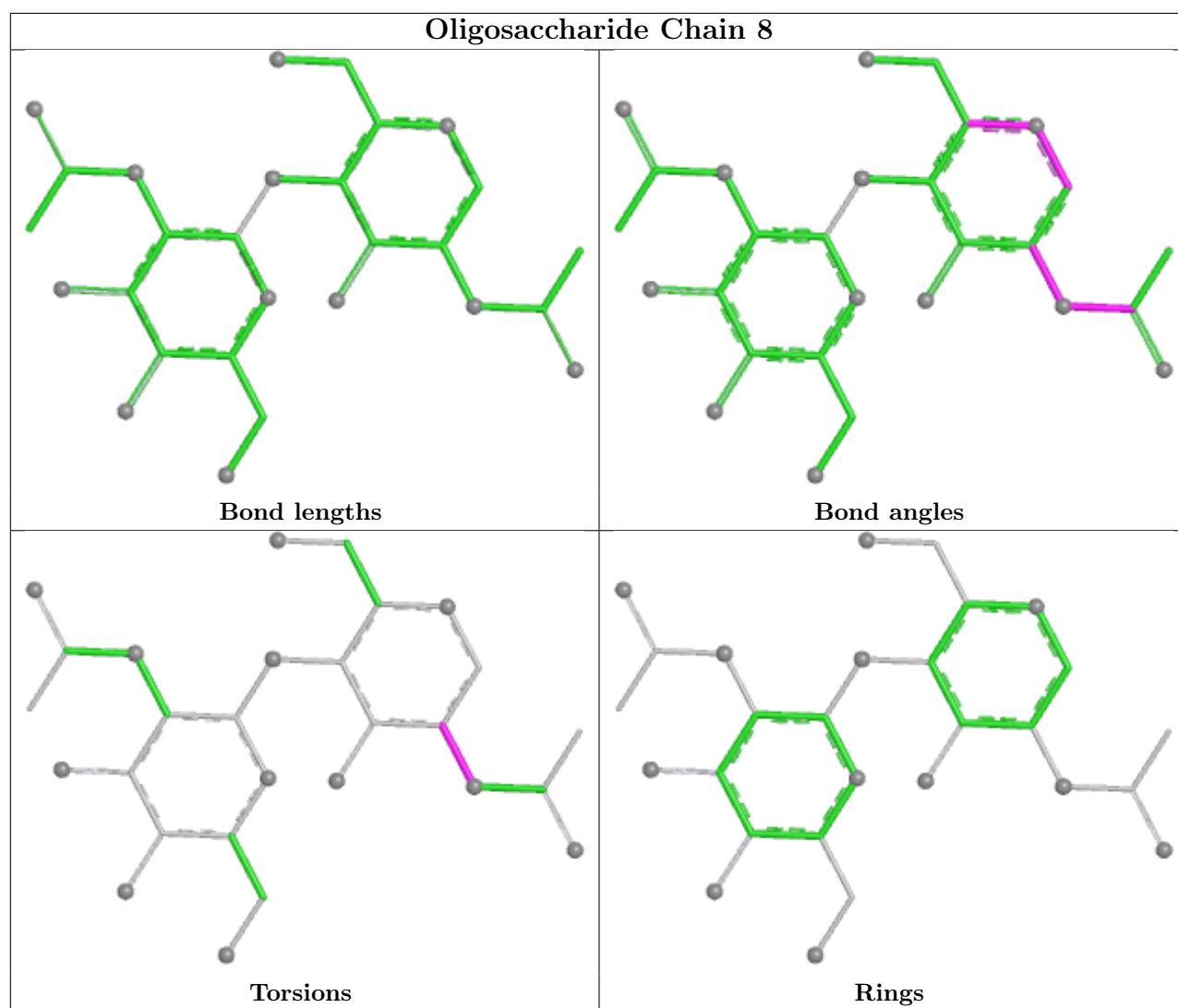


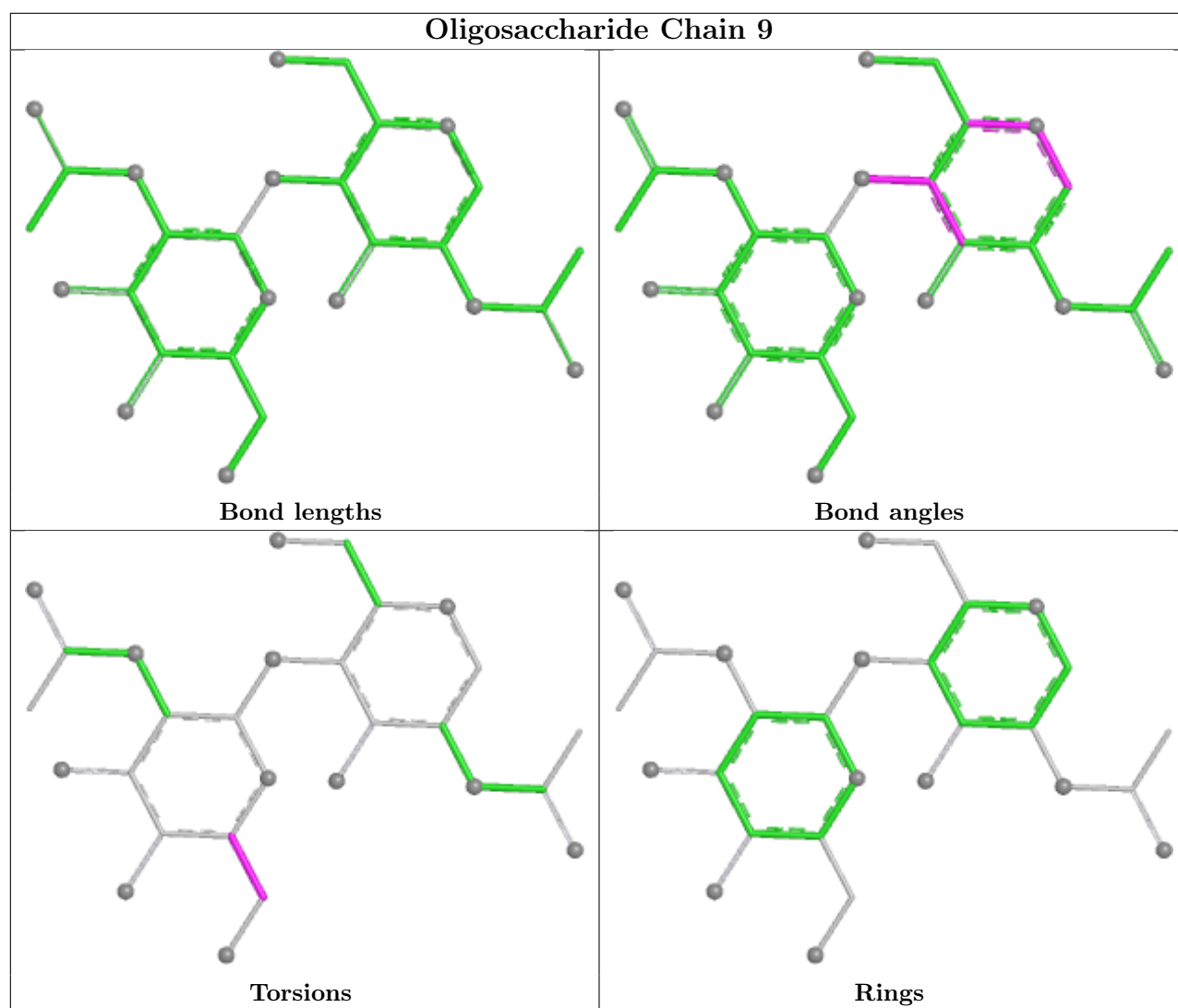


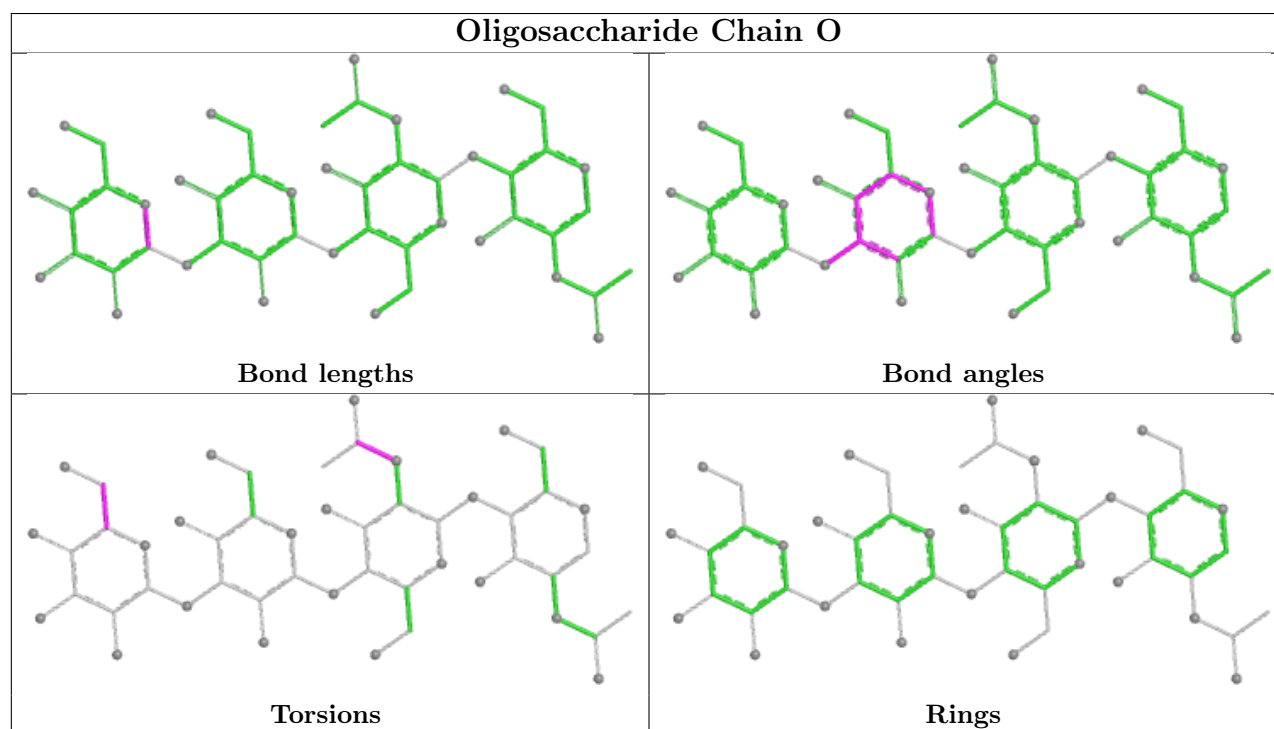
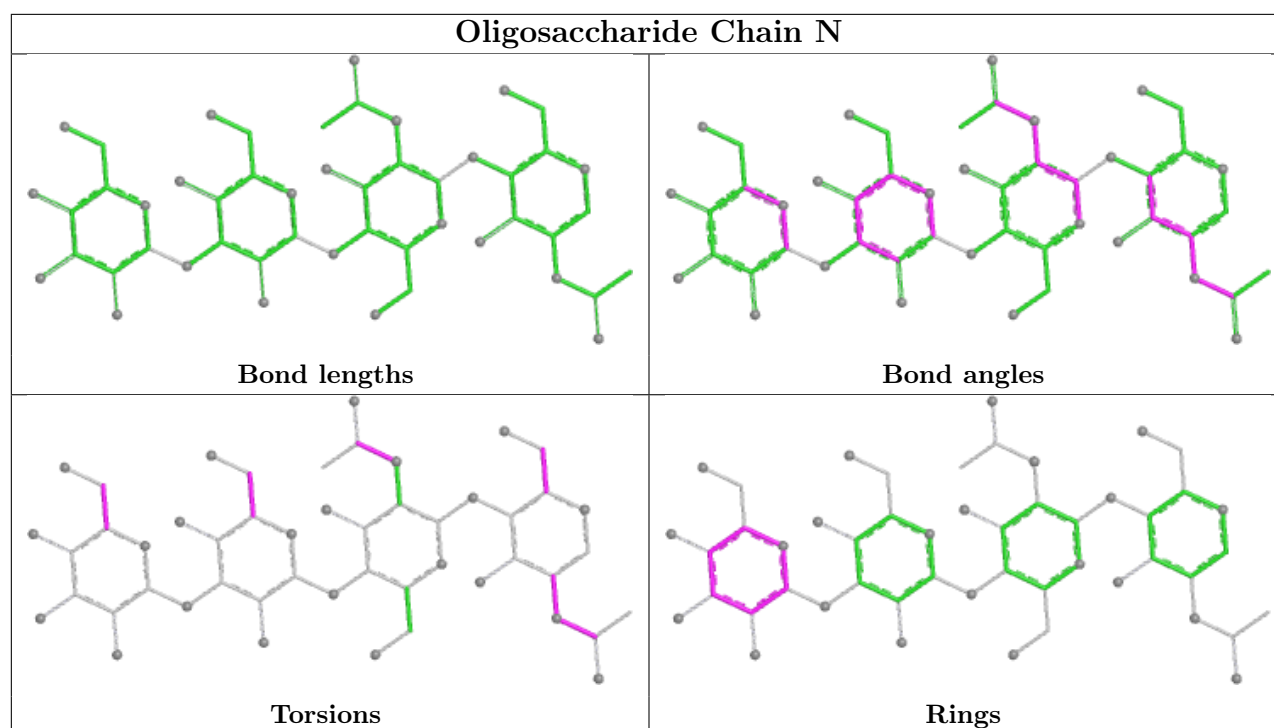


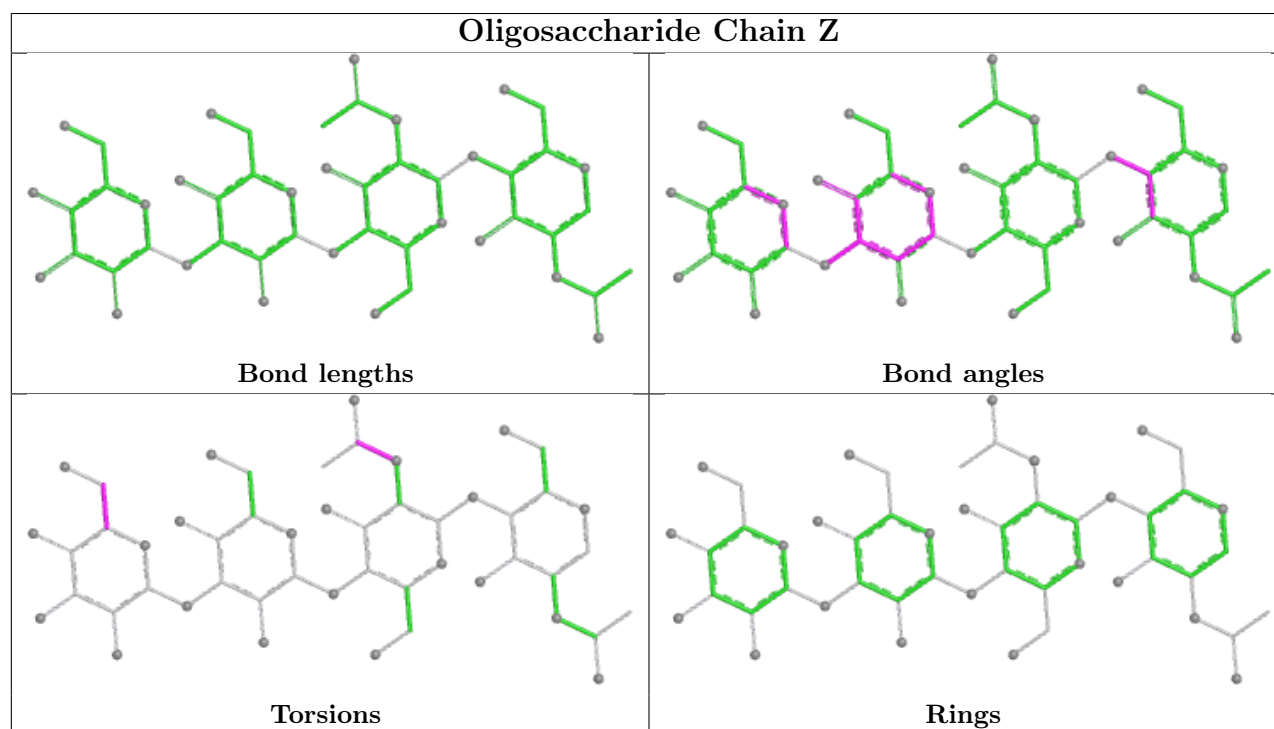
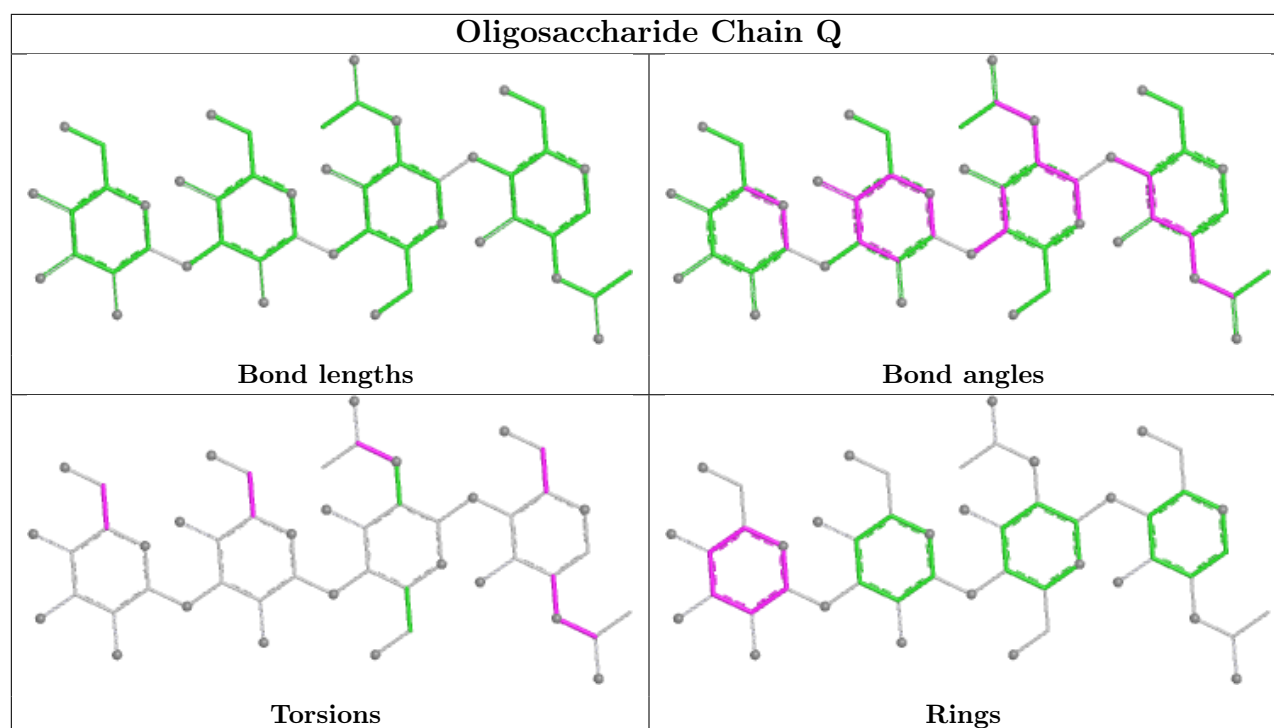


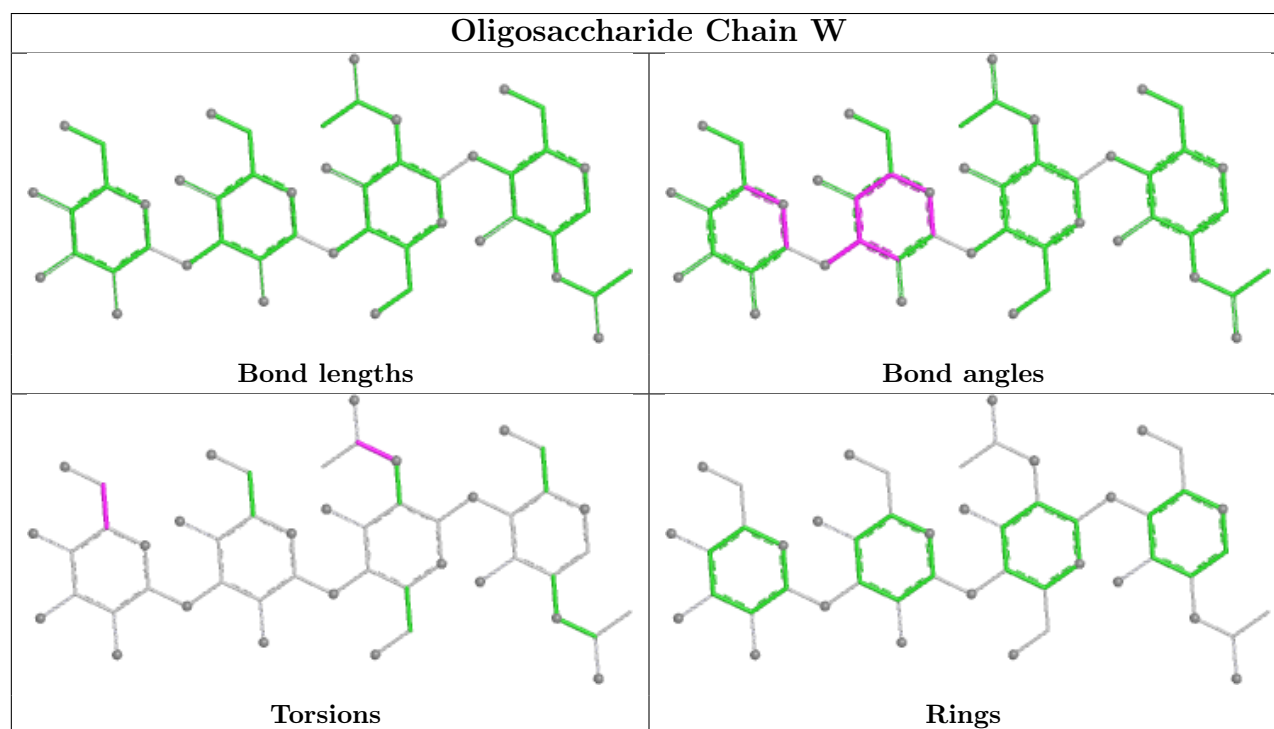
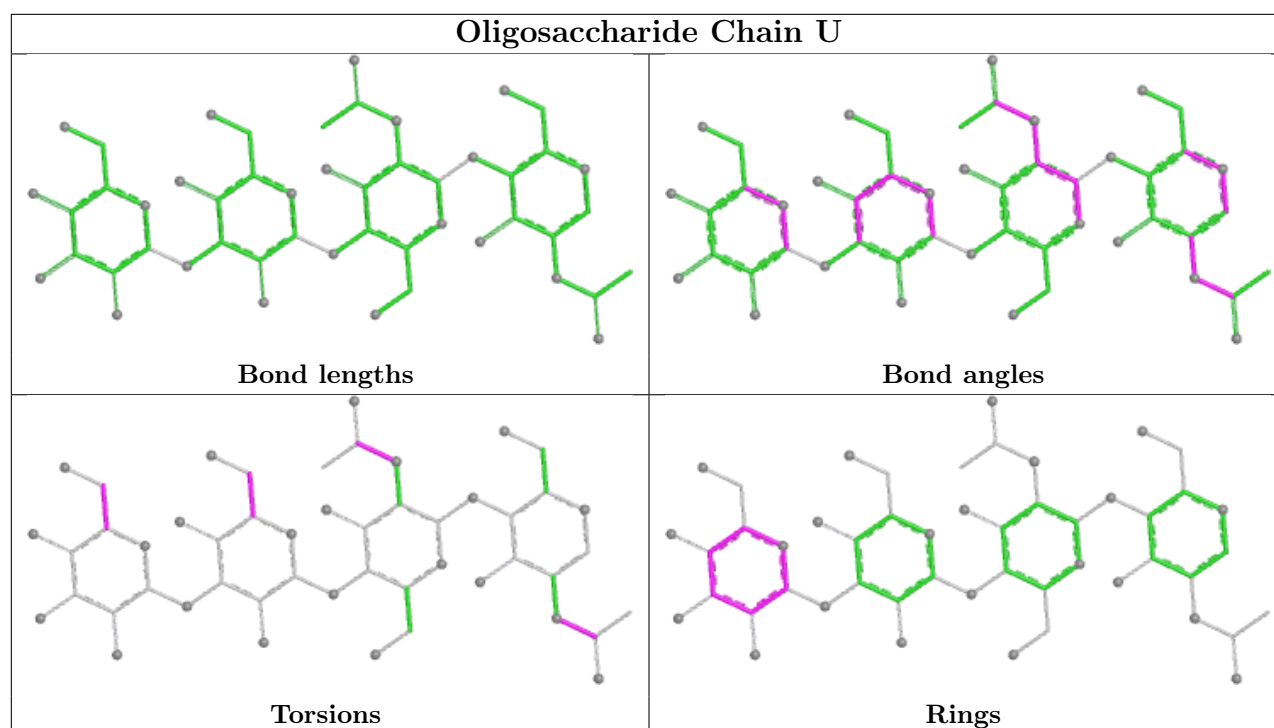




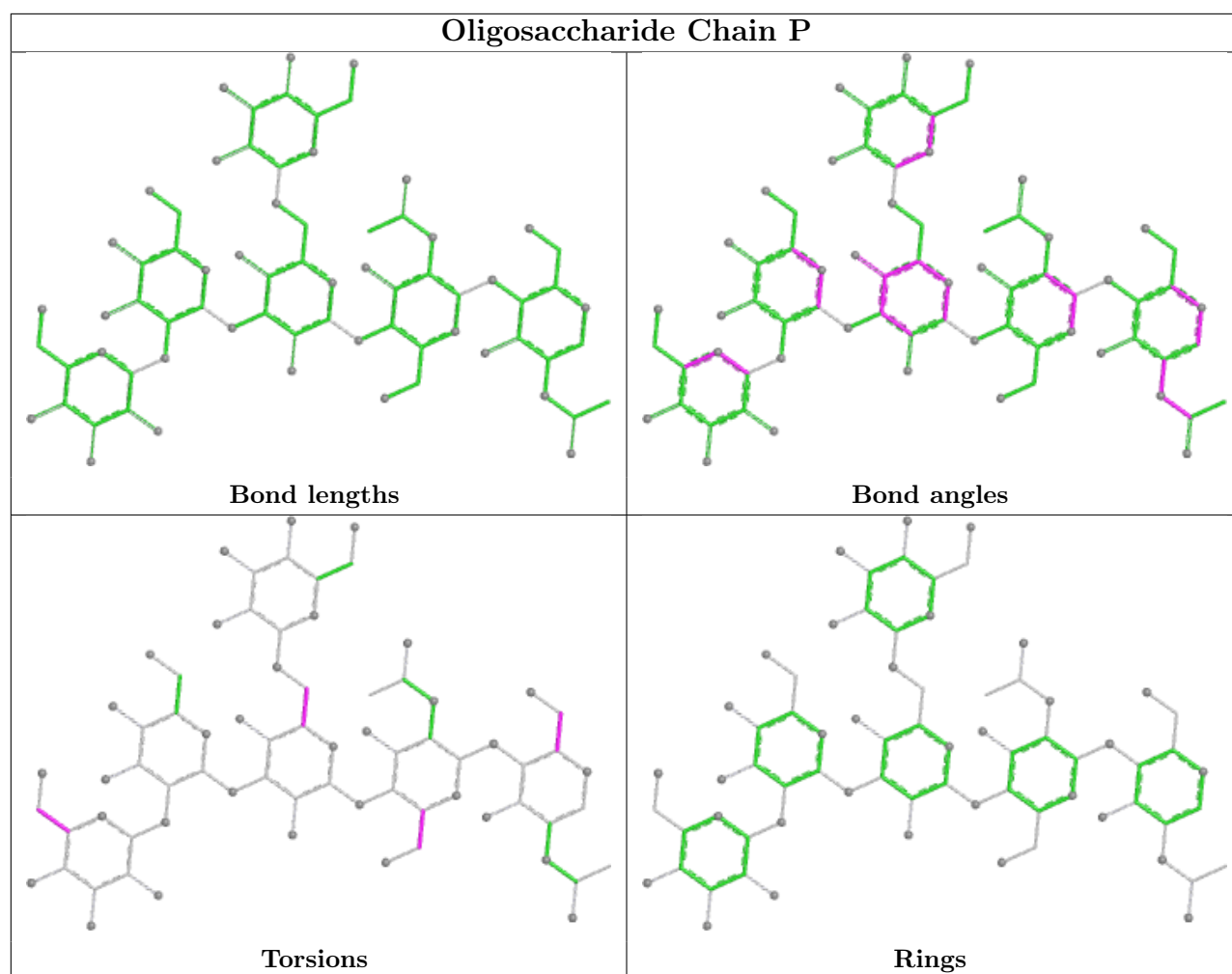


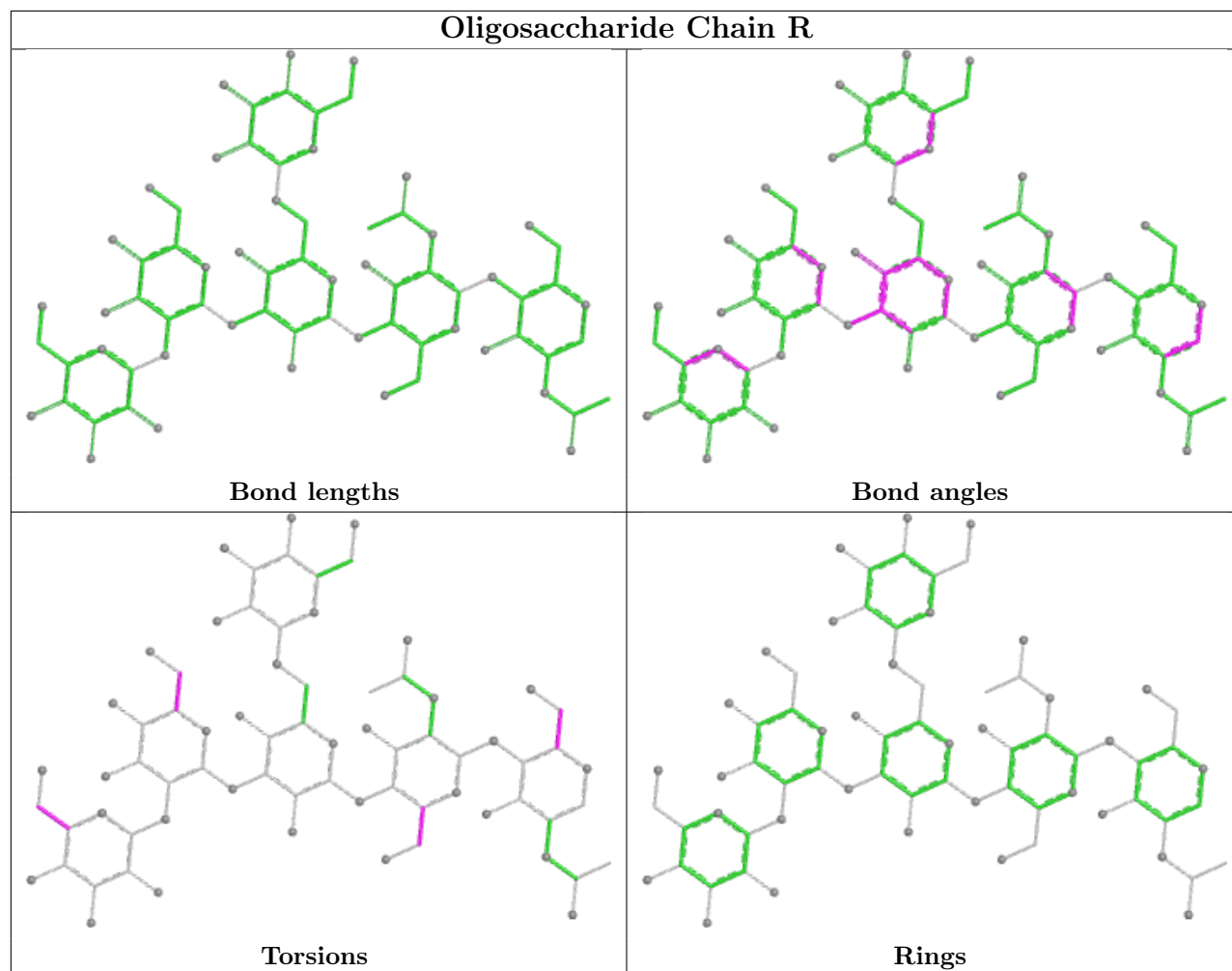


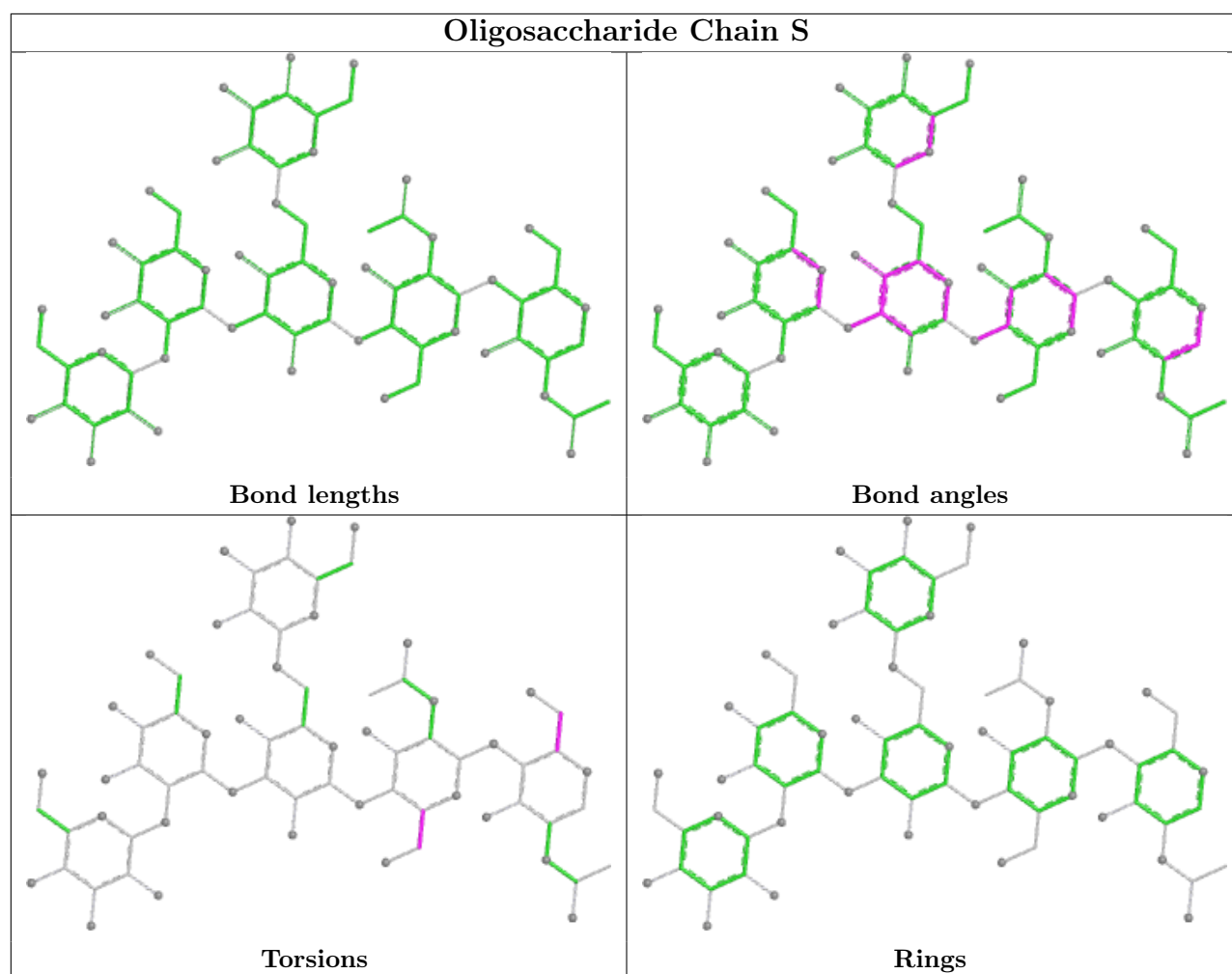


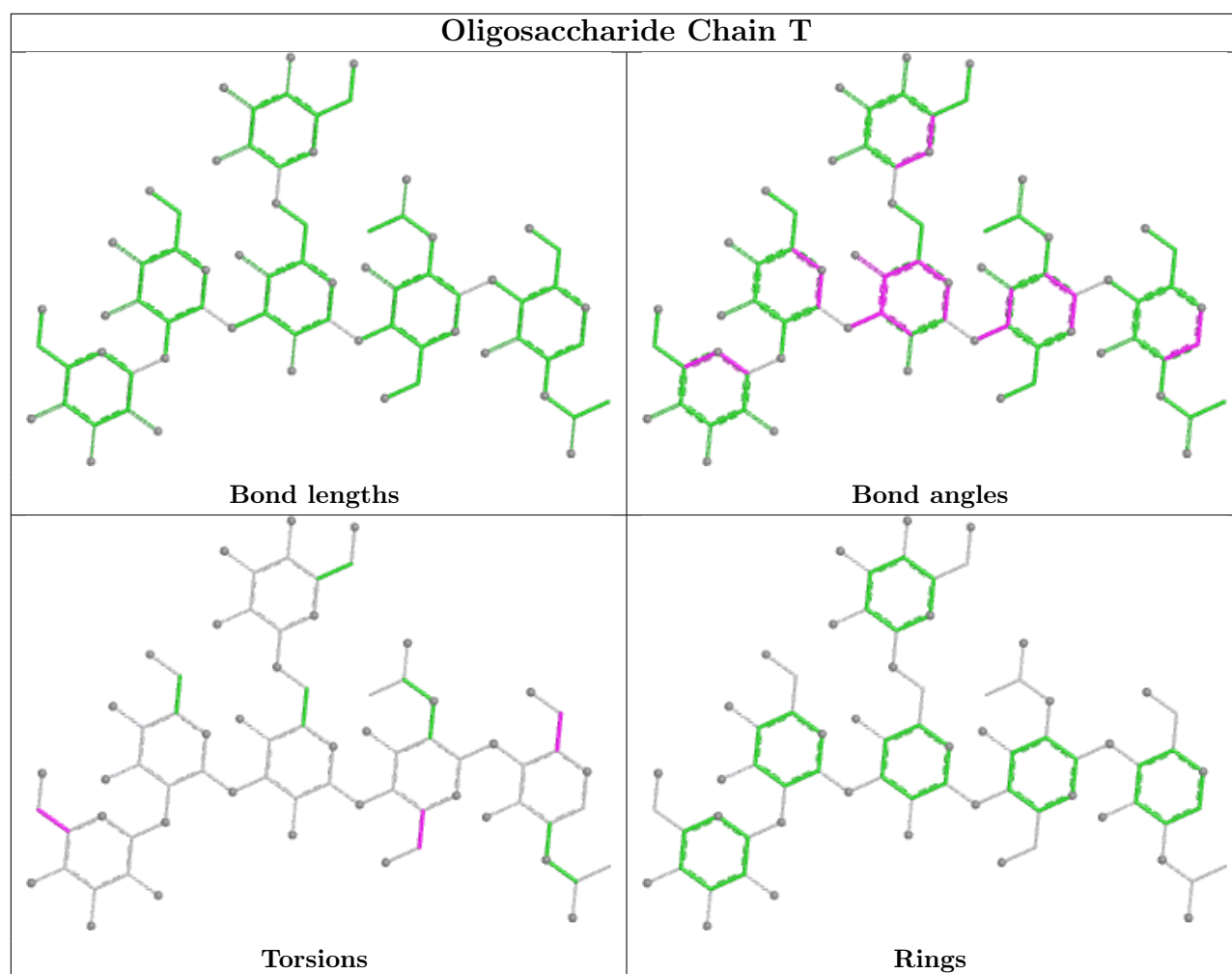


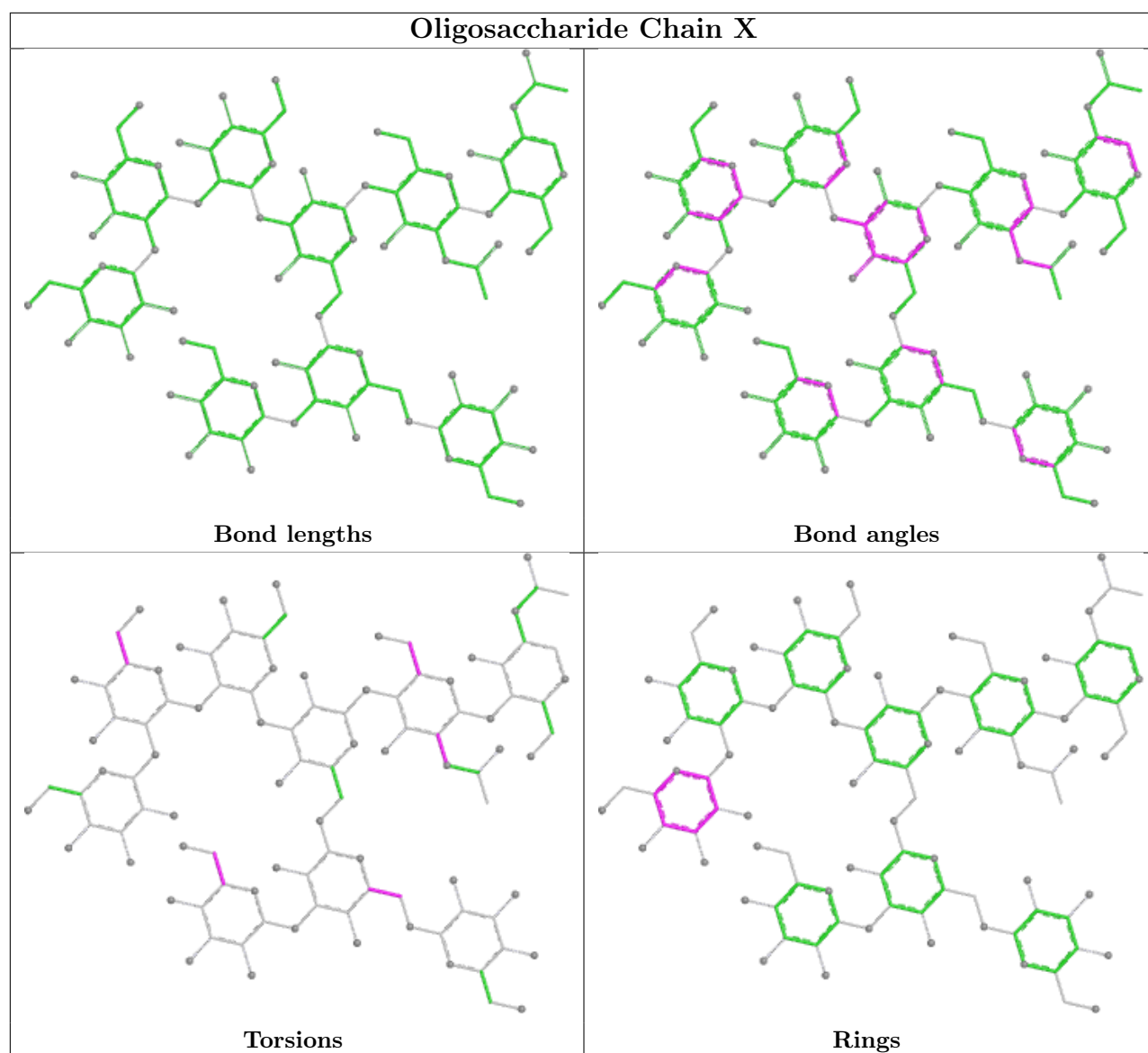


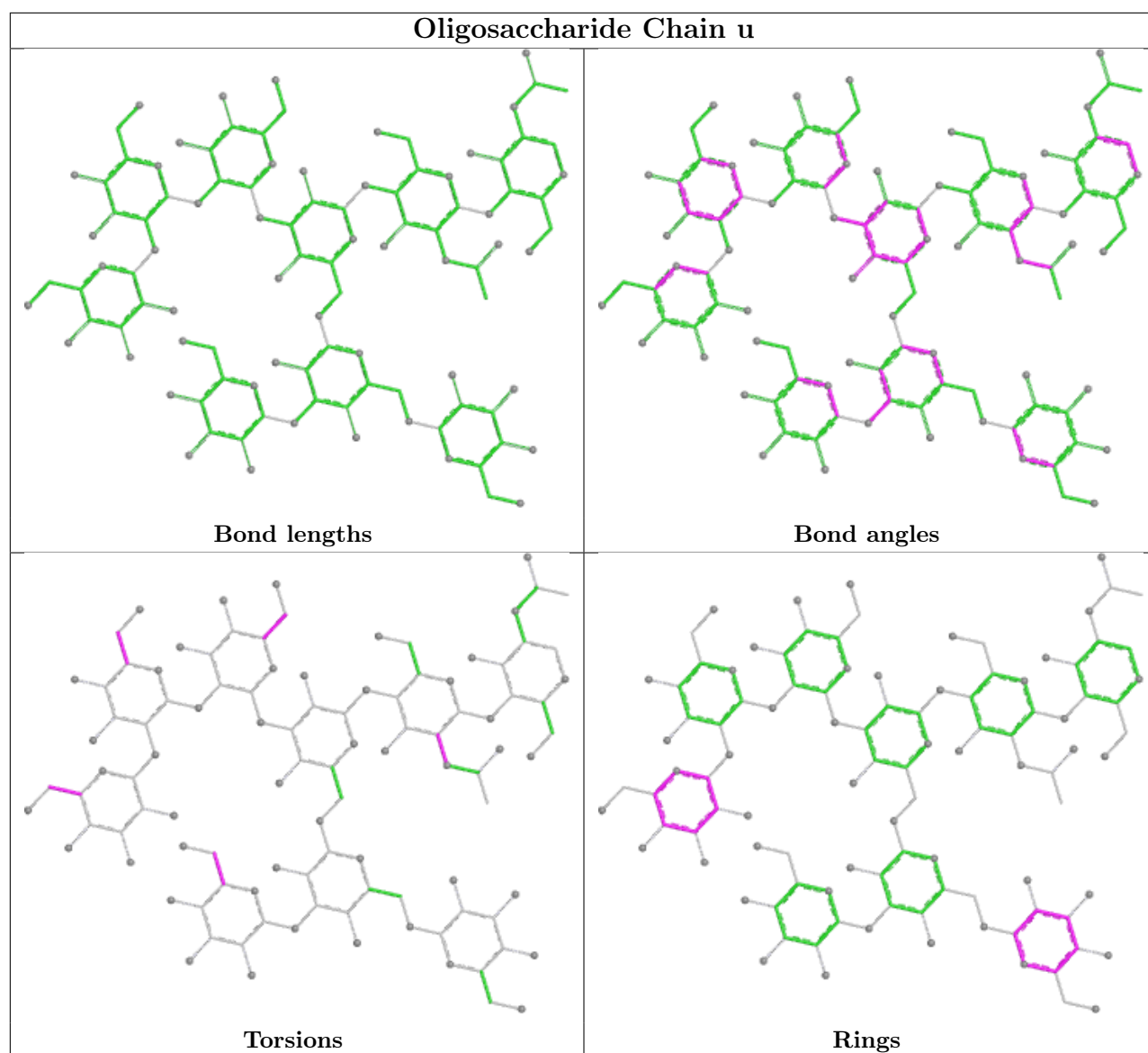


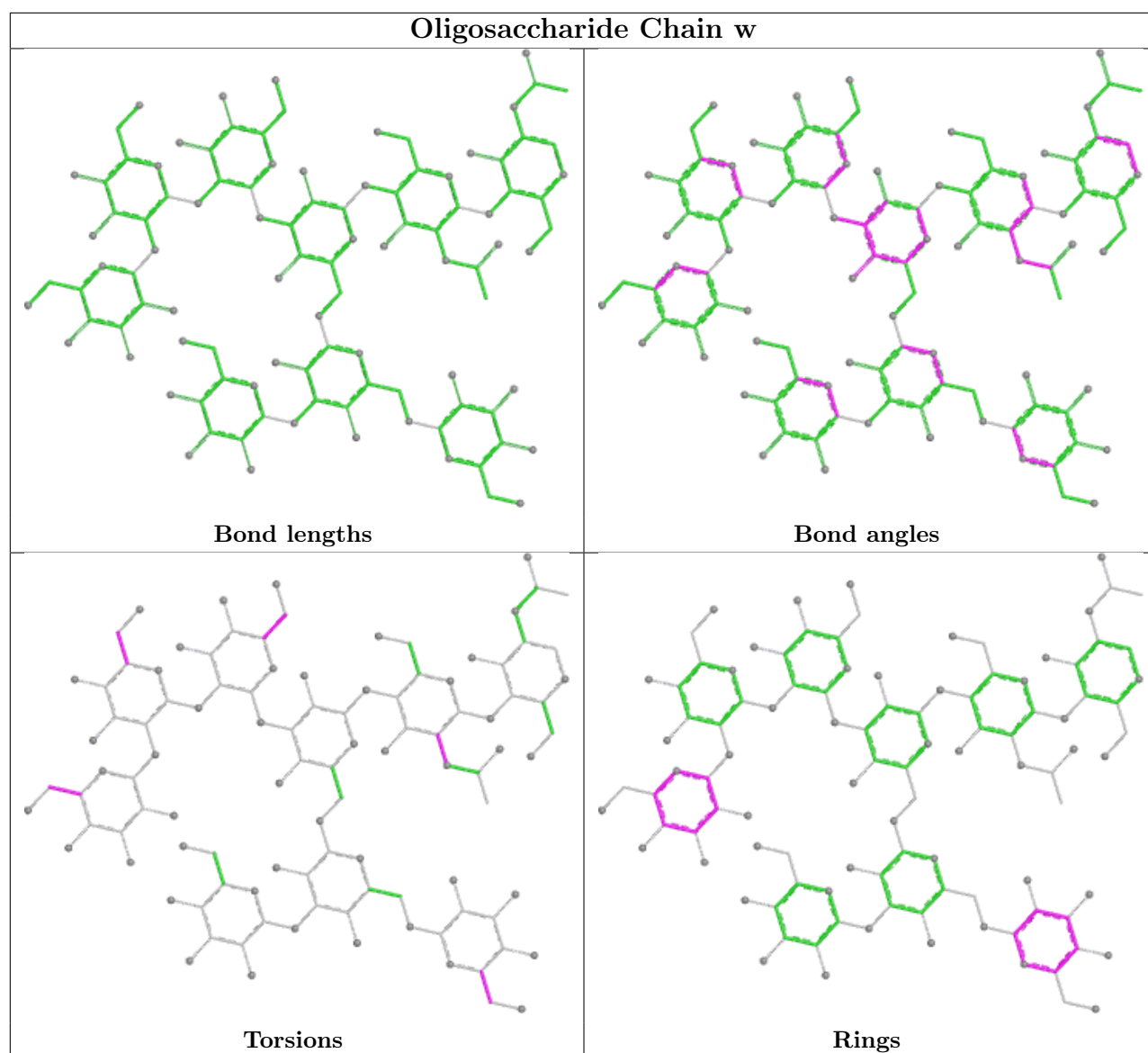


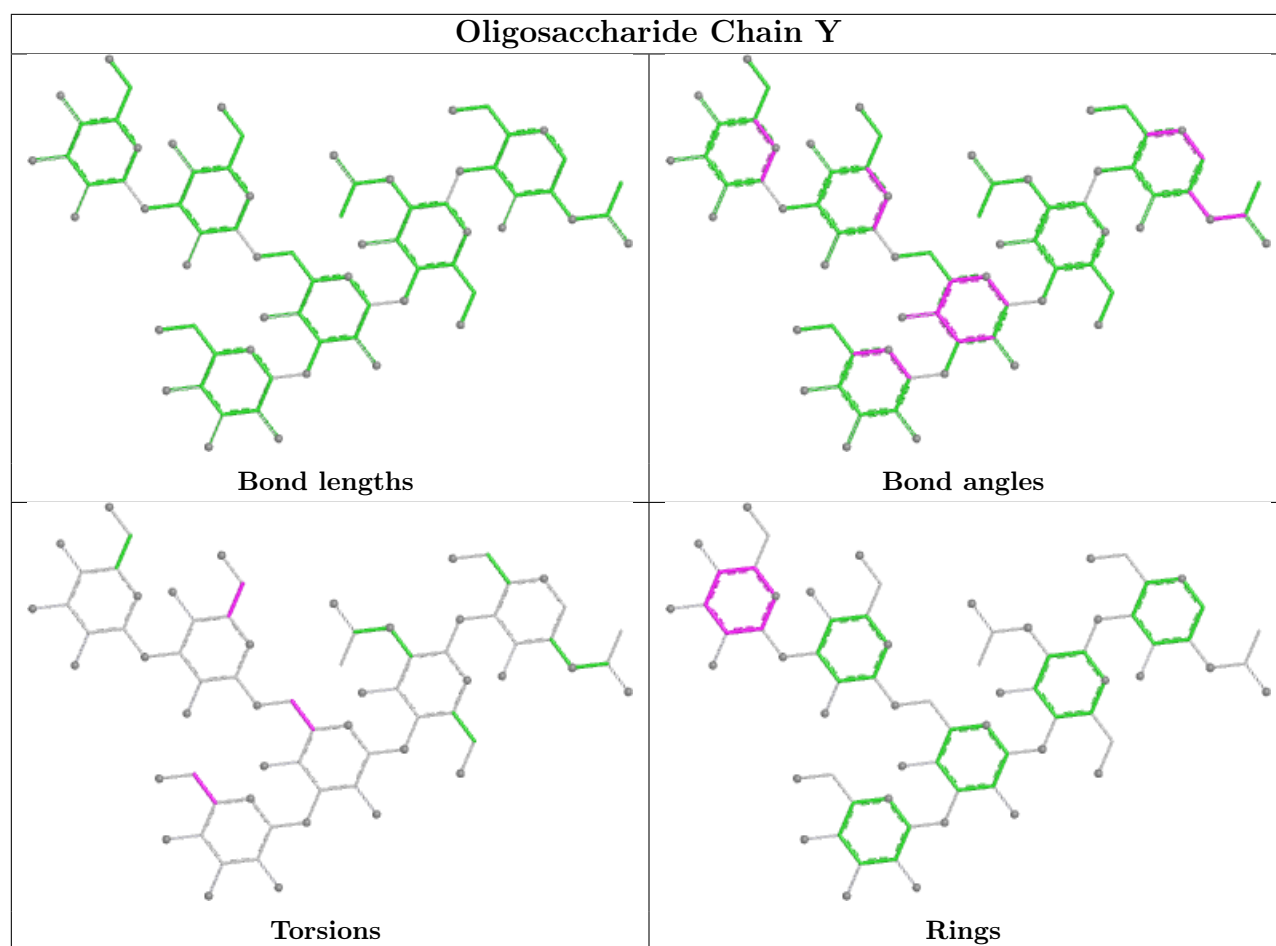




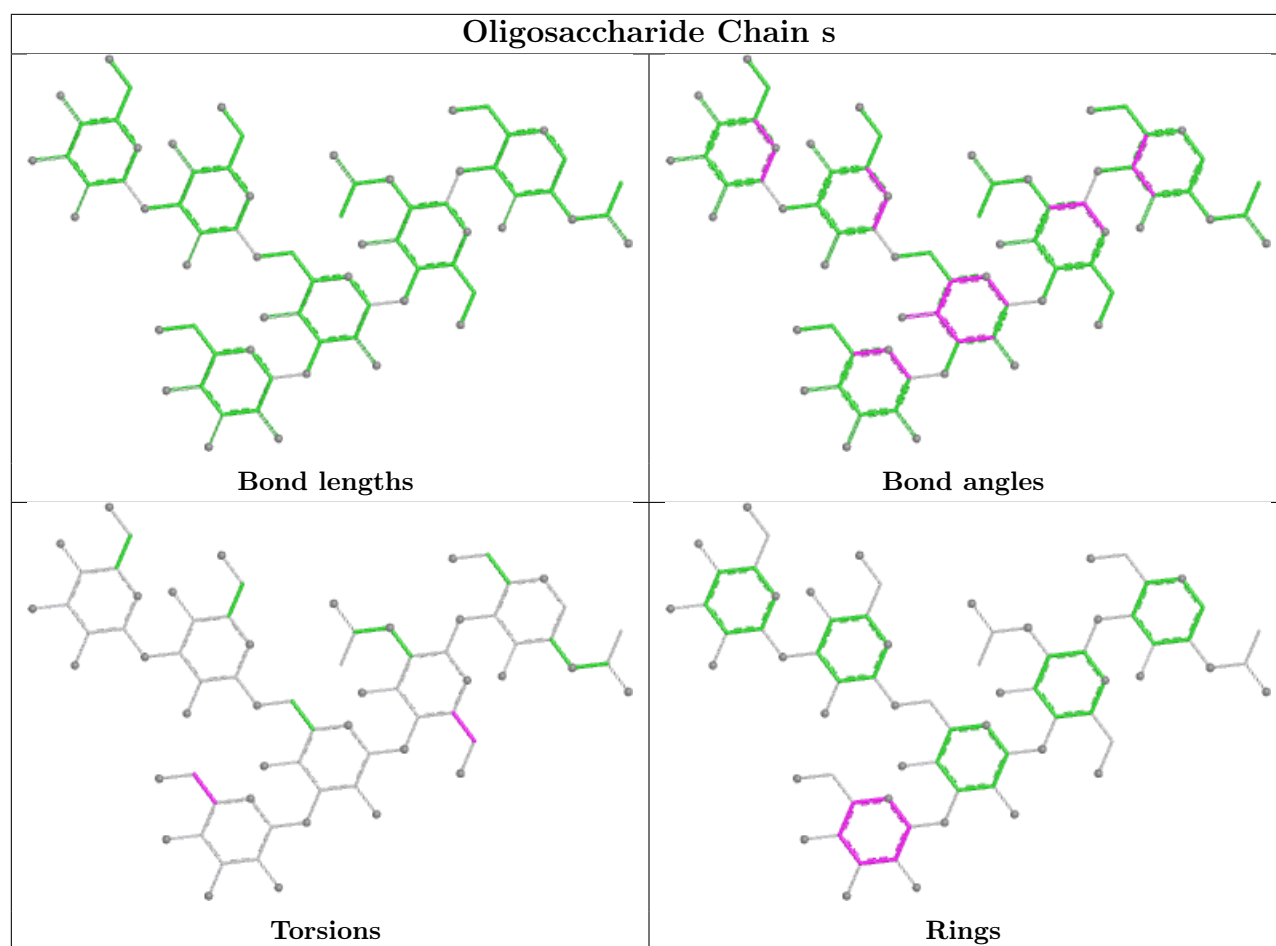


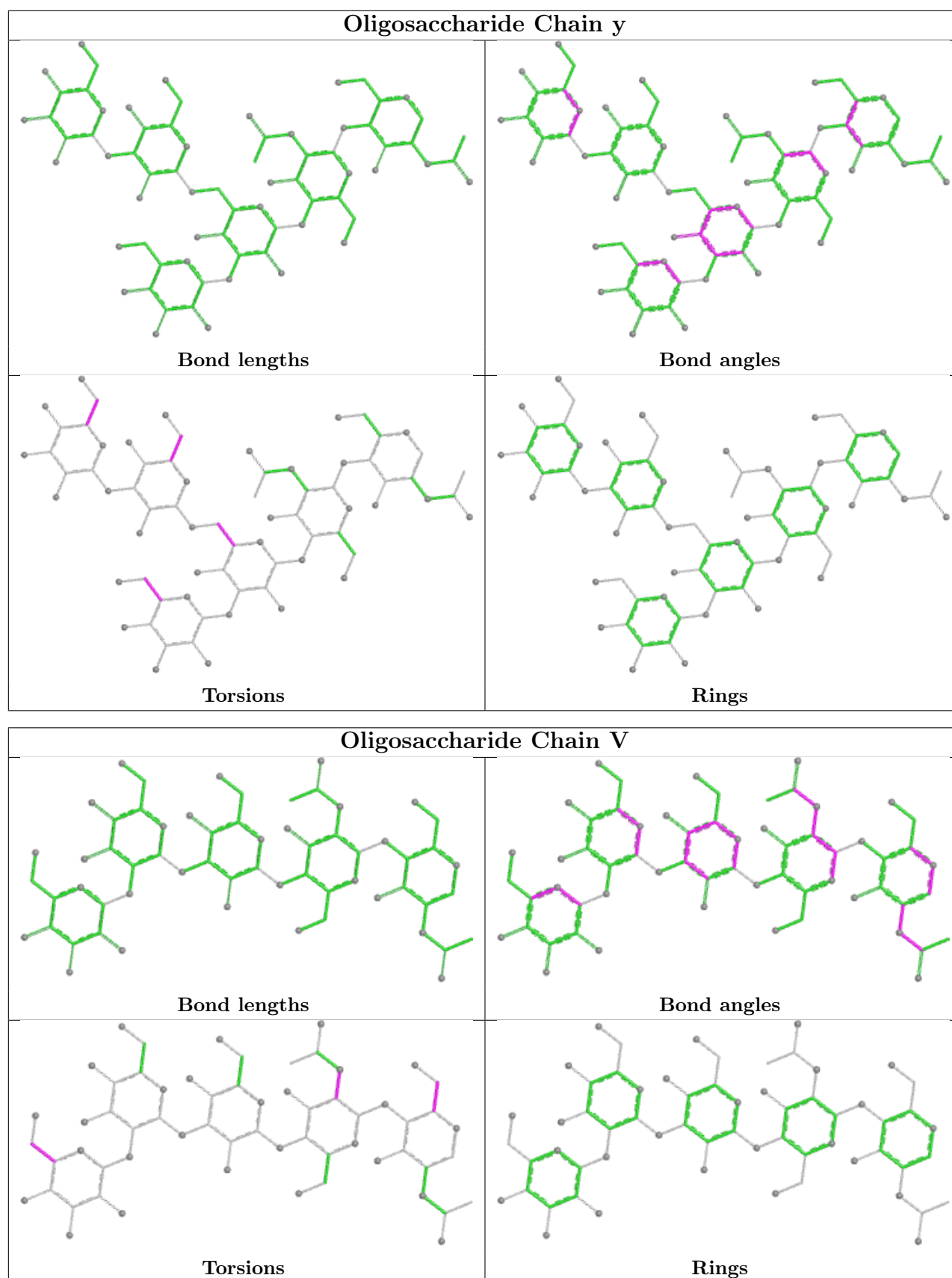


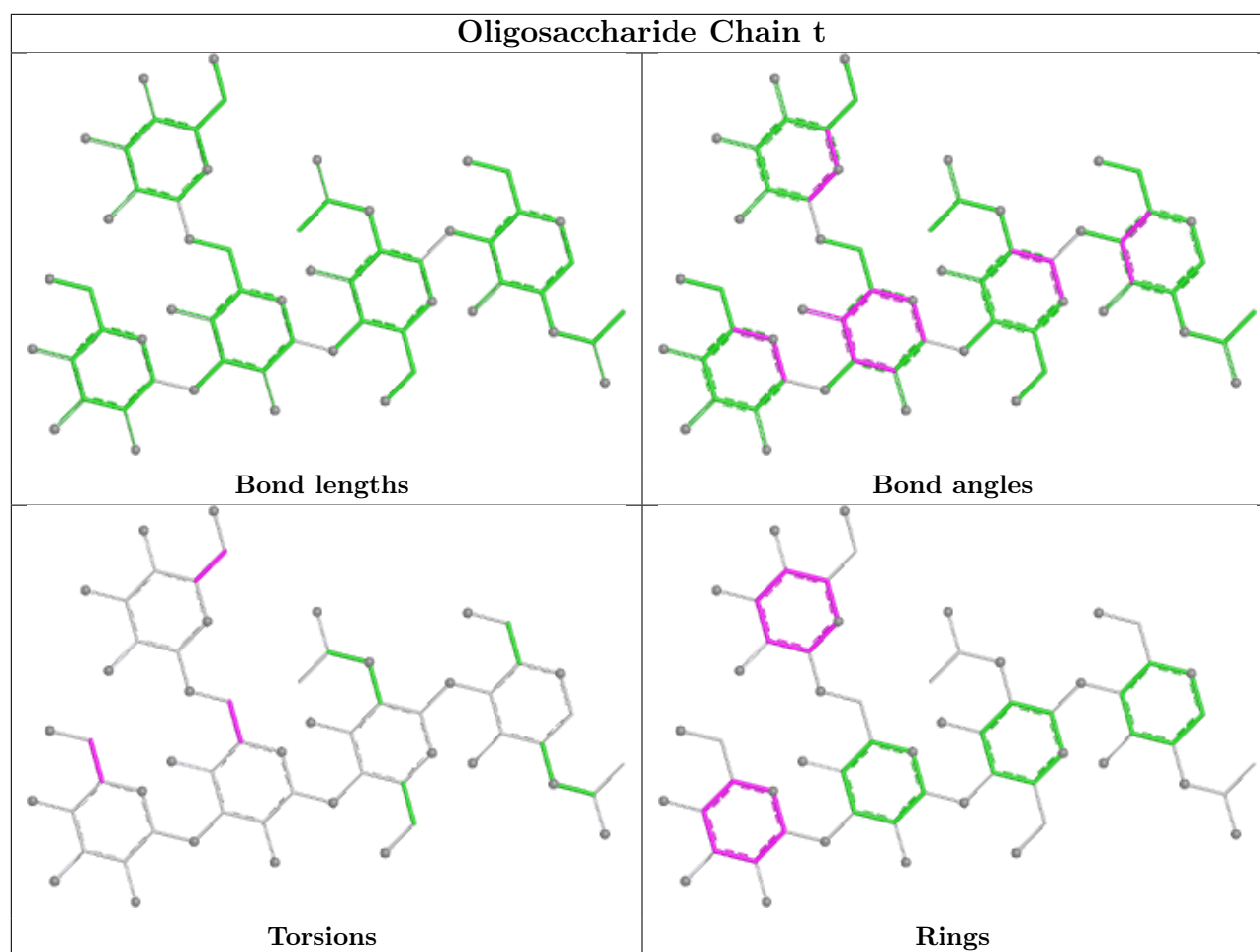












## 5.6 Ligand geometry [i](#)

17 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	$\# Z  > 2$
14	NAG	G	602	1	14,14,15	0.72	0	17,19,21	0.96	1 (5%)
14	NAG	G	601	1	14,14,15	0.71	0	17,19,21	0.89	0
14	NAG	I	605	1	14,14,15	0.71	0	17,19,21	0.82	1 (5%)
14	NAG	I	603	1	14,14,15	0.75	0	17,19,21	0.90	0
14	NAG	C	701	2	14,14,15	0.75	0	17,19,21	0.87	0
14	NAG	G	604	1	14,14,15	0.72	0	17,19,21	1.19	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
14	NAG	A	601	1	14,14,15	0.72	0	17,19,21	0.85	0
14	NAG	I	602	1	14,14,15	0.75	0	17,19,21	1.37	2 (11%)
14	NAG	B	701	2	14,14,15	0.76	0	17,19,21	0.79	0
14	NAG	G	603	1	14,14,15	0.71	0	17,19,21	0.88	0
14	NAG	I	604	1	14,14,15	0.72	0	17,19,21	0.90	0
14	NAG	A	602	1	14,14,15	0.71	0	17,19,21	0.79	0
14	NAG	B	702	2	14,14,15	0.75	0	17,19,21	0.76	0
14	NAG	I	601	1	14,14,15	0.69	0	17,19,21	0.83	0
14	NAG	A	603	1	14,14,15	0.71	0	17,19,21	0.80	0
14	NAG	A	604	1	14,14,15	0.75	0	17,19,21	0.85	0
14	NAG	C	702	2	14,14,15	0.76	0	17,19,21	0.85	1 (5%)

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
14	NAG	G	602	1	-	4/6/23/26	0/1/1/1
14	NAG	G	601	1	-	2/6/23/26	0/1/1/1
14	NAG	I	605	1	-	0/6/23/26	0/1/1/1
14	NAG	I	603	1	-	0/6/23/26	0/1/1/1
14	NAG	C	701	2	-	2/6/23/26	0/1/1/1
14	NAG	G	604	1	-	2/6/23/26	0/1/1/1
14	NAG	A	601	1	-	1/6/23/26	0/1/1/1
14	NAG	I	602	1	-	1/6/23/26	0/1/1/1
14	NAG	B	701	2	-	0/6/23/26	0/1/1/1
14	NAG	G	603	1	-	2/6/23/26	0/1/1/1
14	NAG	I	604	1	-	2/6/23/26	0/1/1/1
14	NAG	A	602	1	-	0/6/23/26	0/1/1/1
14	NAG	B	702	2	-	0/6/23/26	0/1/1/1
14	NAG	I	601	1	-	0/6/23/26	0/1/1/1
14	NAG	A	603	1	-	0/6/23/26	0/1/1/1
14	NAG	A	604	1	-	0/6/23/26	0/1/1/1
14	NAG	C	702	2	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	I	602	NAG	C2-N2-C7	3.36	127.40	122.90
14	G	604	NAG	C2-N2-C7	3.30	127.33	122.90
14	I	602	NAG	C1-O5-C5	2.94	116.13	112.19
14	G	602	NAG	O5-C1-C2	-2.40	107.57	111.29
14	C	702	NAG	C2-N2-C7	2.22	125.88	122.90

There are no chirality outliers.

5 of 19 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
14	G	602	NAG	O5-C5-C6-O6
14	C	702	NAG	C8-C7-N2-C2
14	C	702	NAG	O7-C7-N2-C2
14	G	602	NAG	C8-C7-N2-C2
14	G	602	NAG	O7-C7-N2-C2

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
14	G	601	NAG	1	0
14	I	603	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.

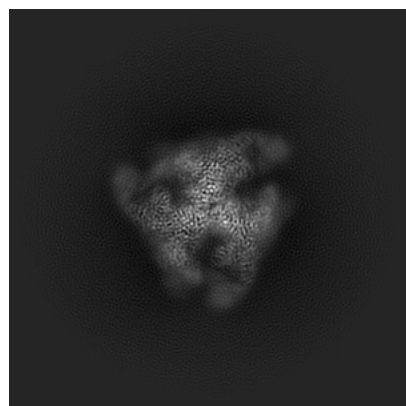
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-72094. These allow visual inspection of the internal detail of the map and identification of artifacts.

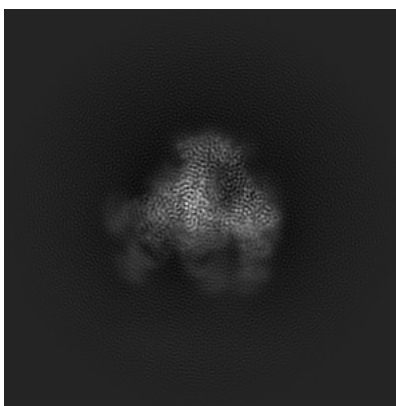
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

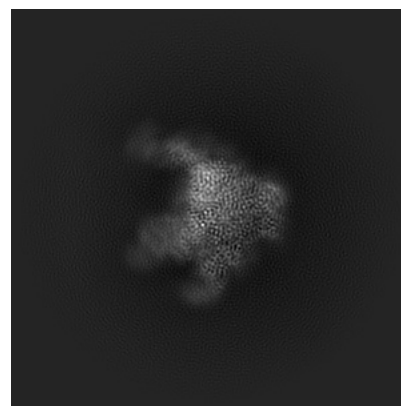
#### 6.1.1 Primary map



X

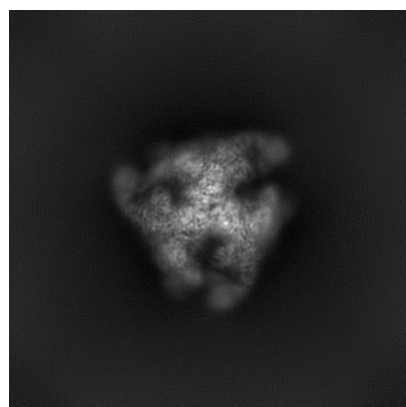


Y

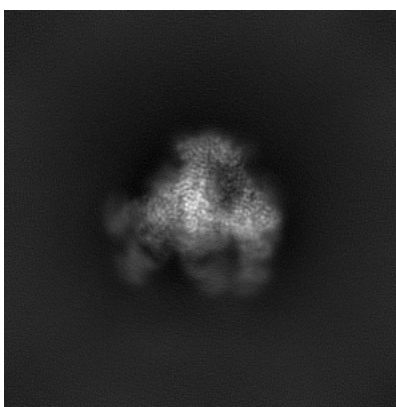


Z

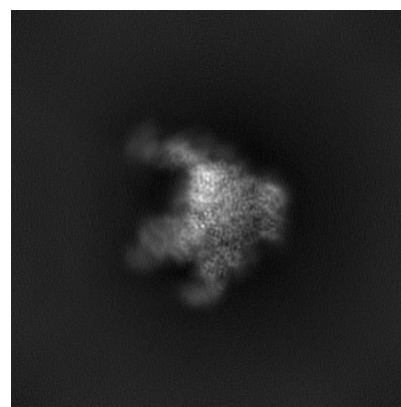
#### 6.1.2 Raw map



X



Y

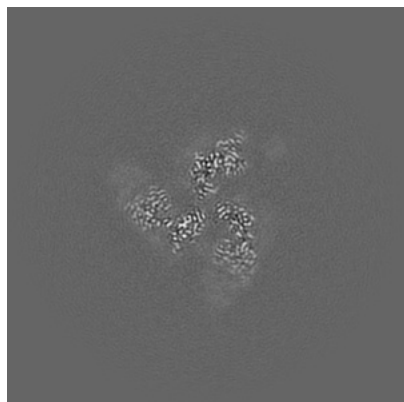


Z

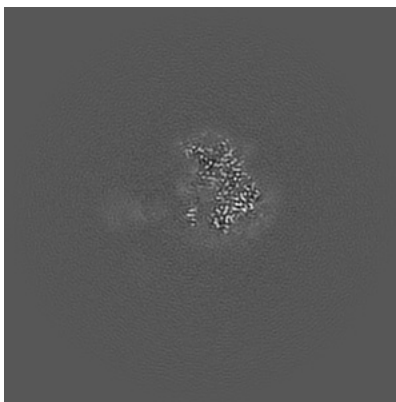
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

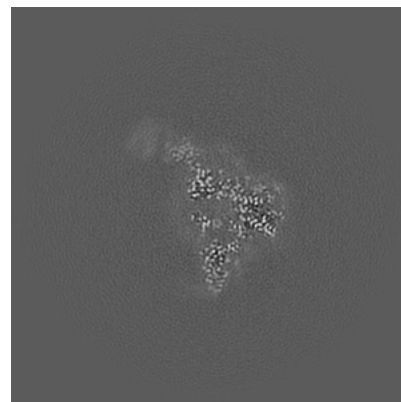
### 6.2.1 Primary map



X Index: 220

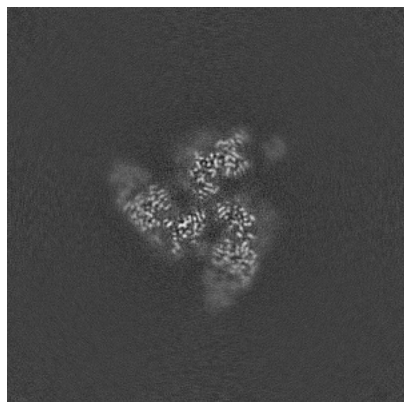


Y Index: 220

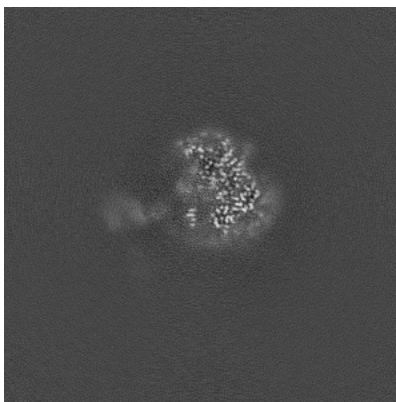


Z Index: 220

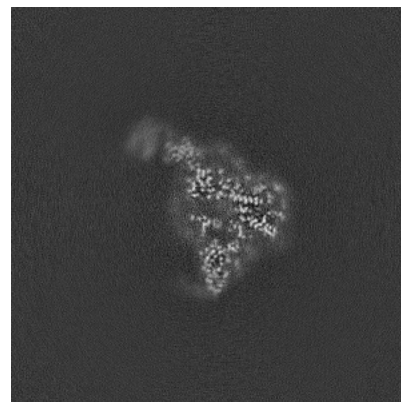
### 6.2.2 Raw map



X Index: 220



Y Index: 220



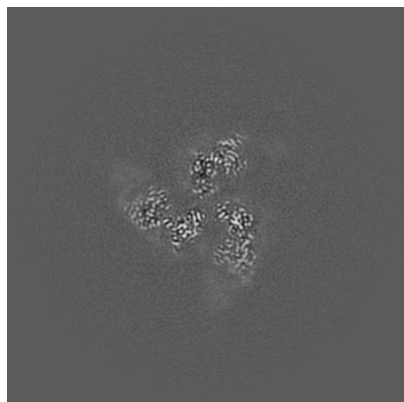
Z Index: 220

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

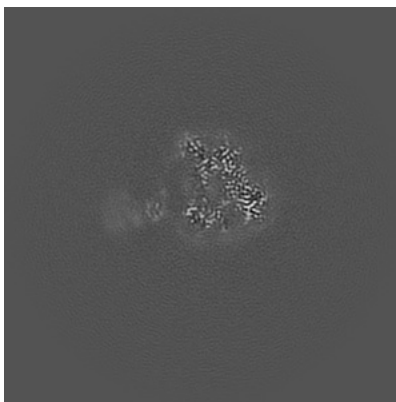


## 6.3 Largest variance slices [i](#)

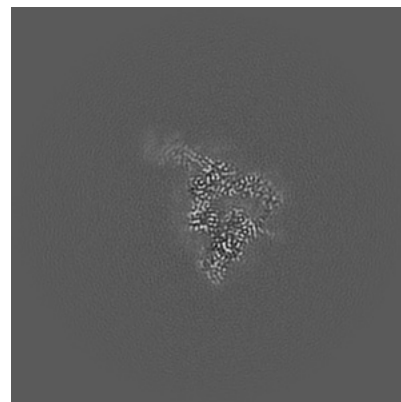
### 6.3.1 Primary map



X Index: 221

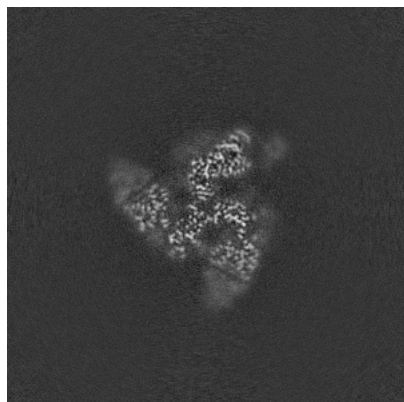


Y Index: 229

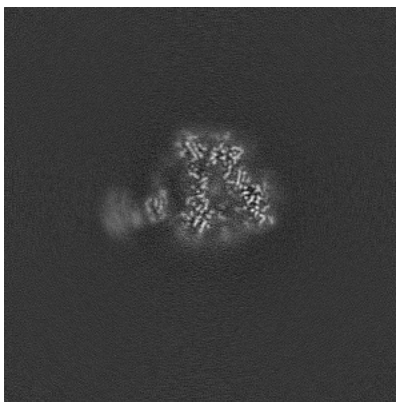


Z Index: 207

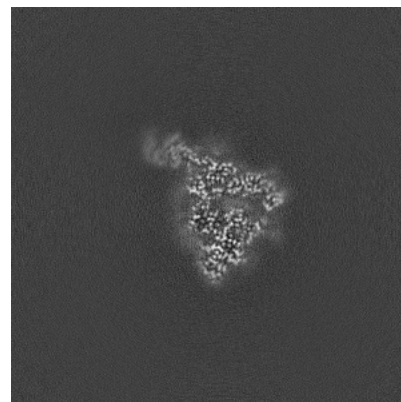
### 6.3.2 Raw map



X Index: 217



Y Index: 232



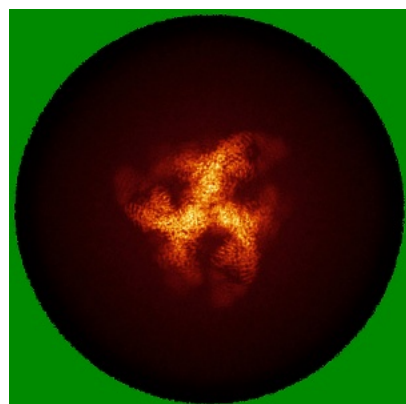
Z Index: 205

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

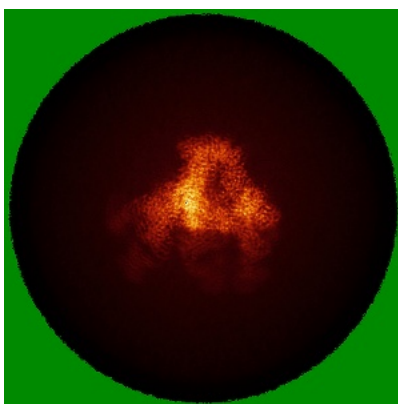


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

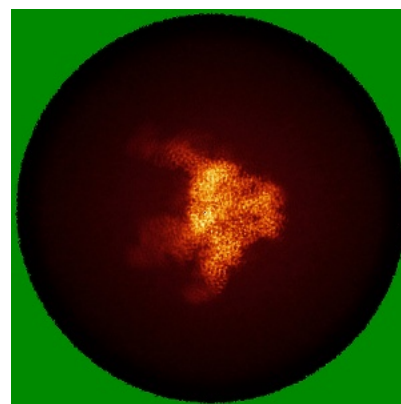
### 6.4.1 Primary map



X

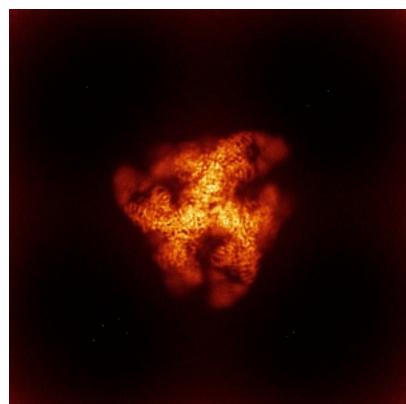


Y

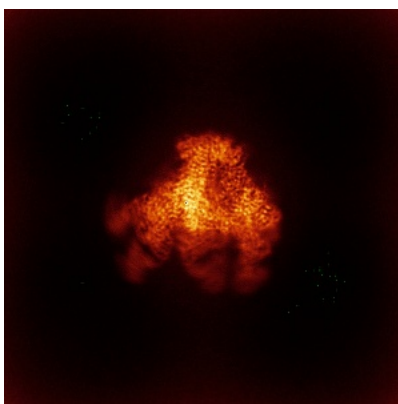


Z

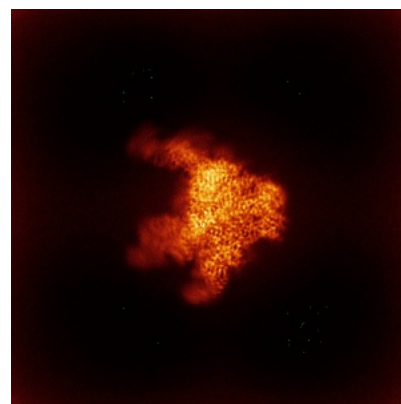
### 6.4.2 Raw map



X



Y

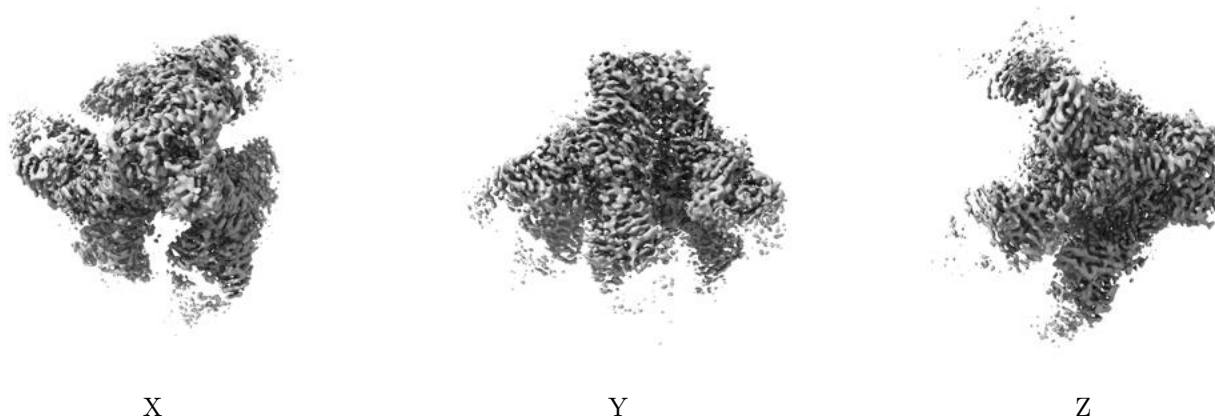


Z

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.

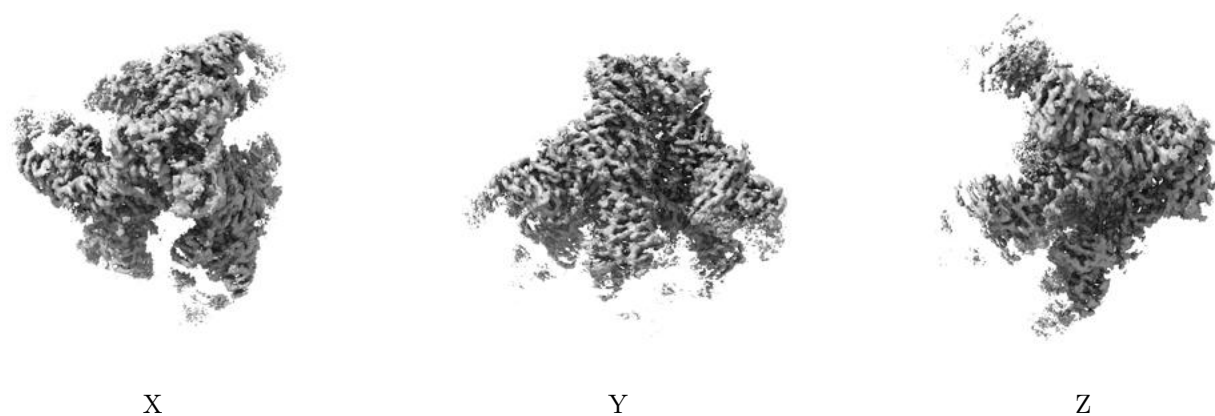
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.175. 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.

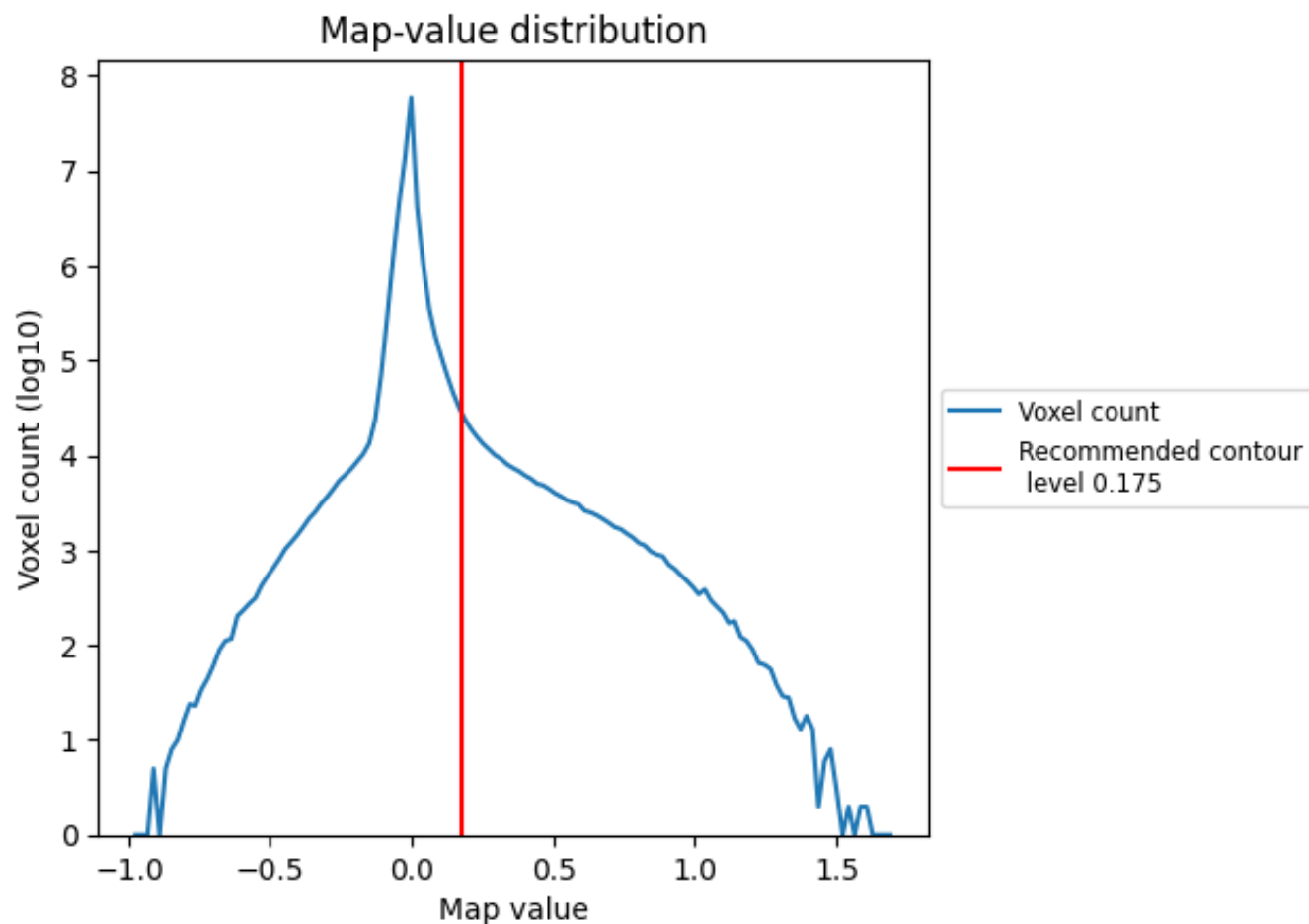
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

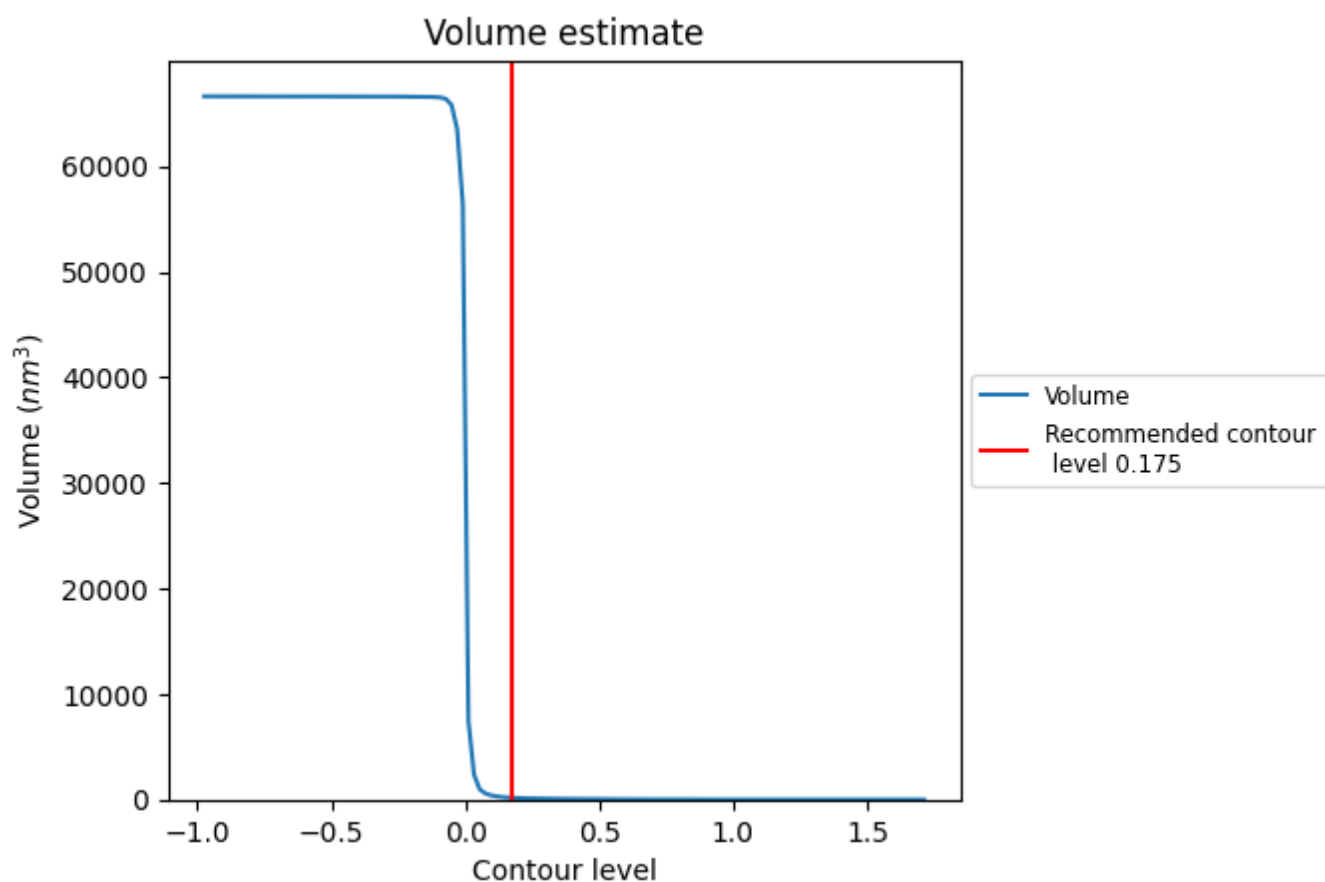
This section contains the results of statistical analysis of the map.

### 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.

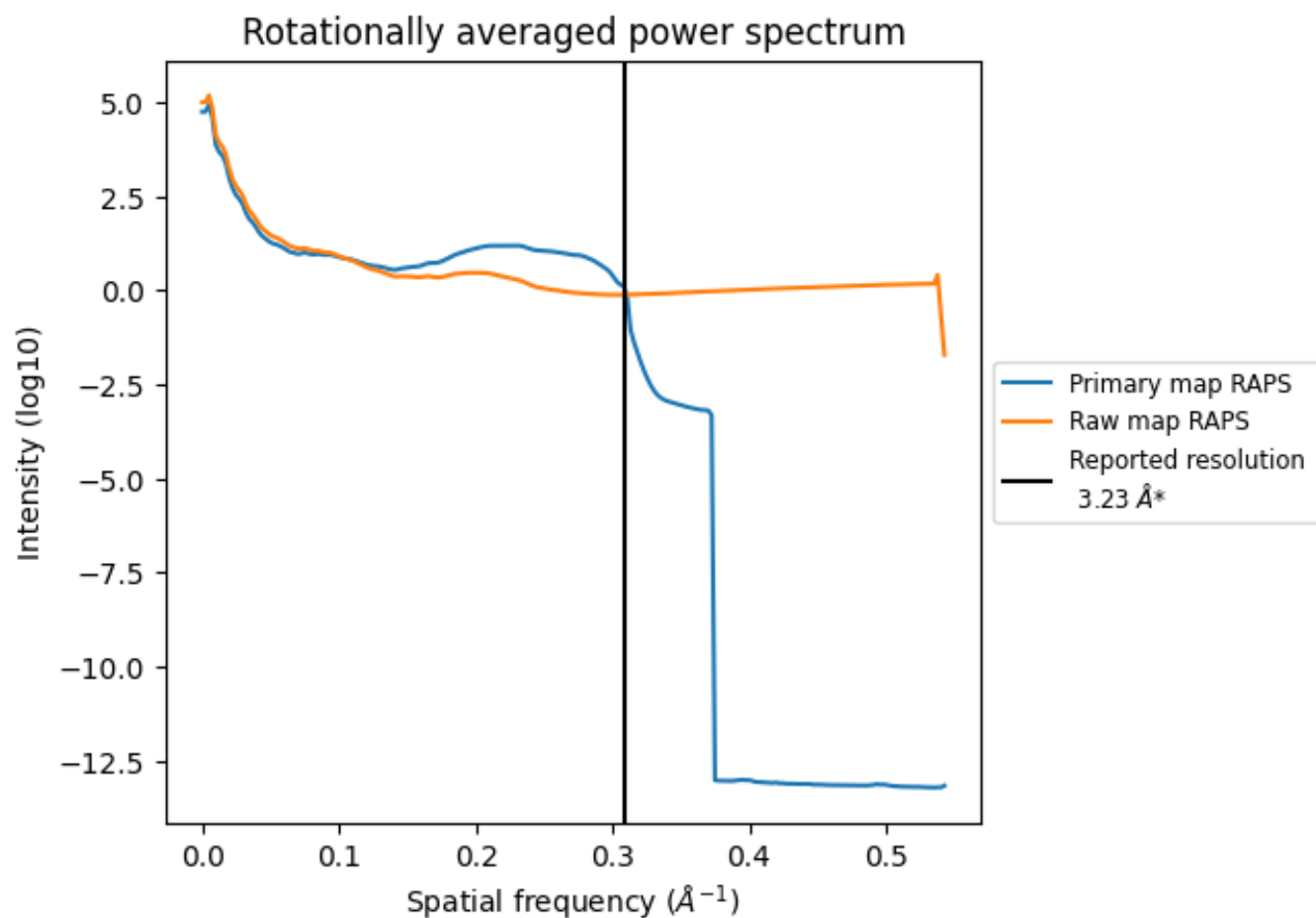
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 169 nm<sup>3</sup>; this corresponds to an approximate mass of 153 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 ⓘ

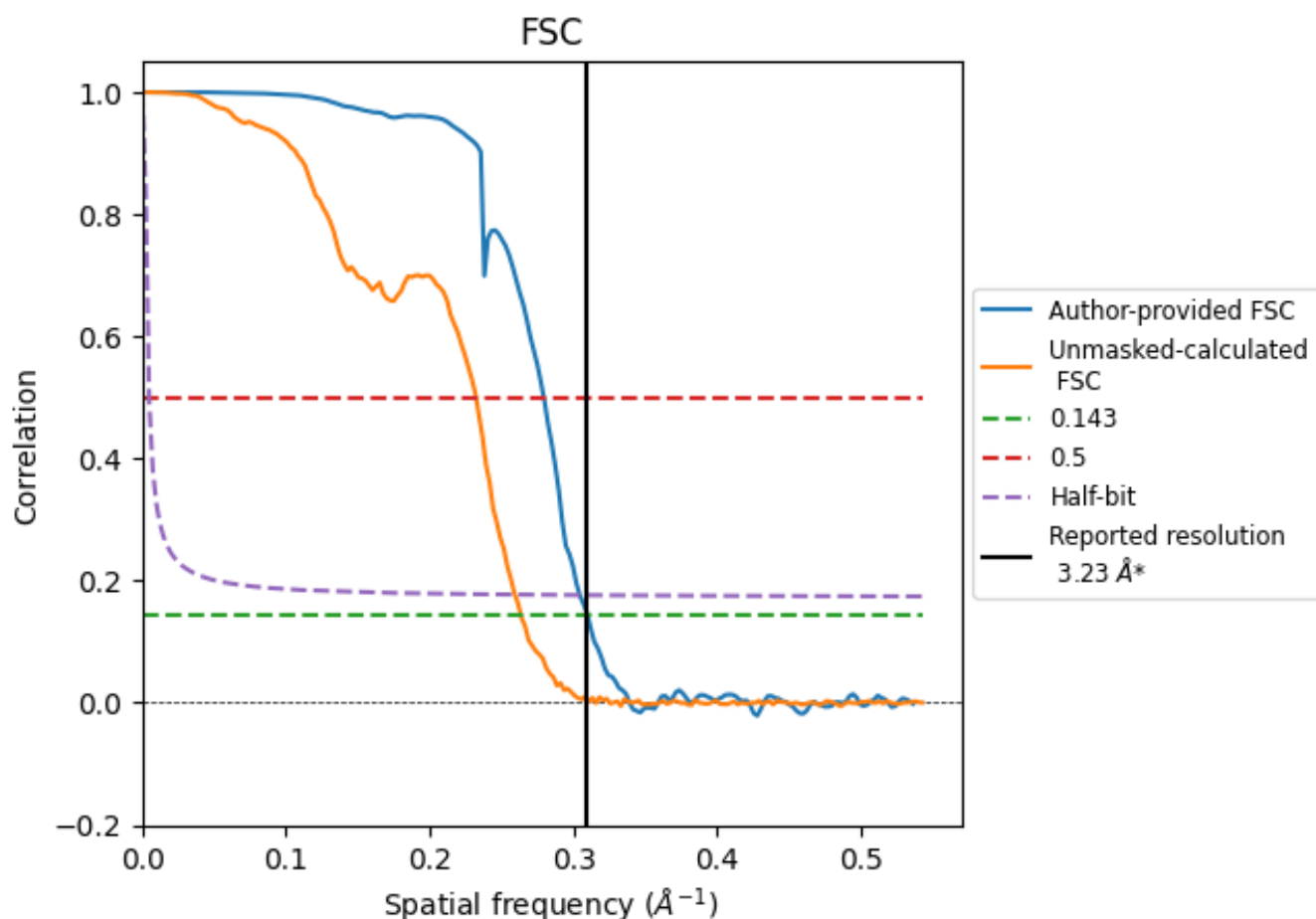


\*Reported resolution corresponds to spatial frequency of 0.310  $\text{\AA}^{-1}$

## 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 0.310  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

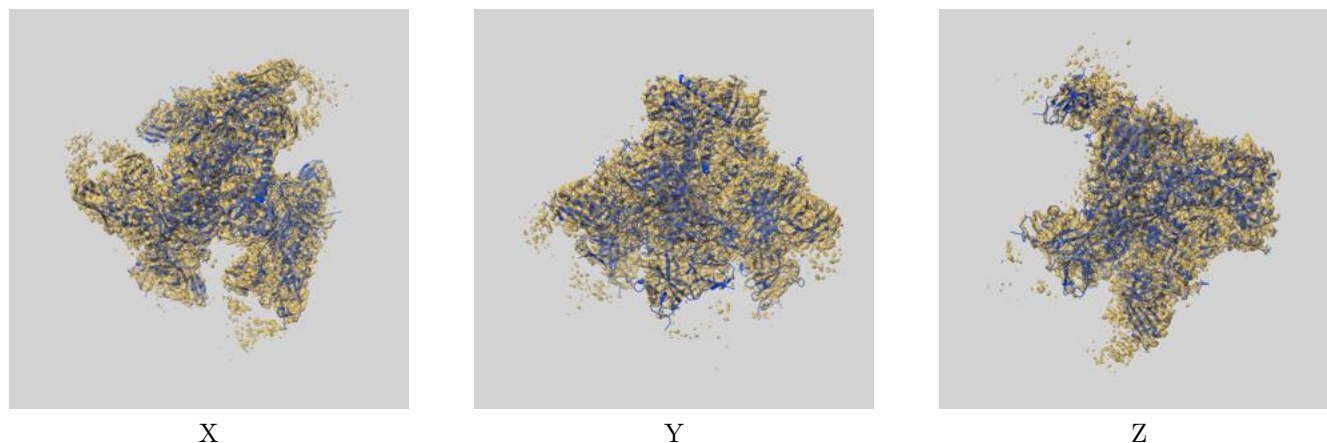
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.23	-	-
Author-provided FSC curve	3.23	3.58	3.29
Unmasked-calculated*	3.80	4.30	3.86

\*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 3.80 differs from the reported value 3.23 by more than 10 %

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

This section contains information regarding the fit between EMDB map EMD-72094 and PDB model 9Q09. Per-residue inclusion information can be found in [section 3](#) on [page 14](#).

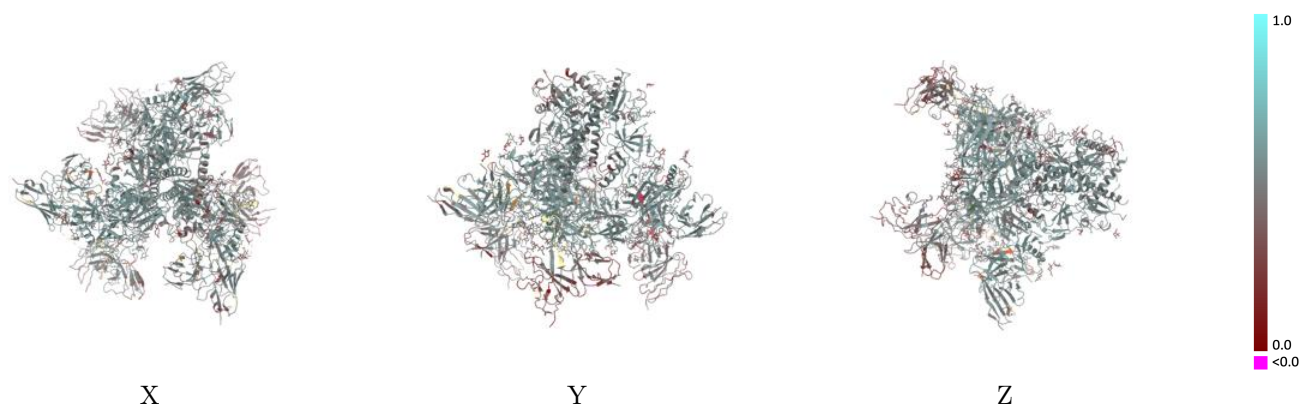
### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.175 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.

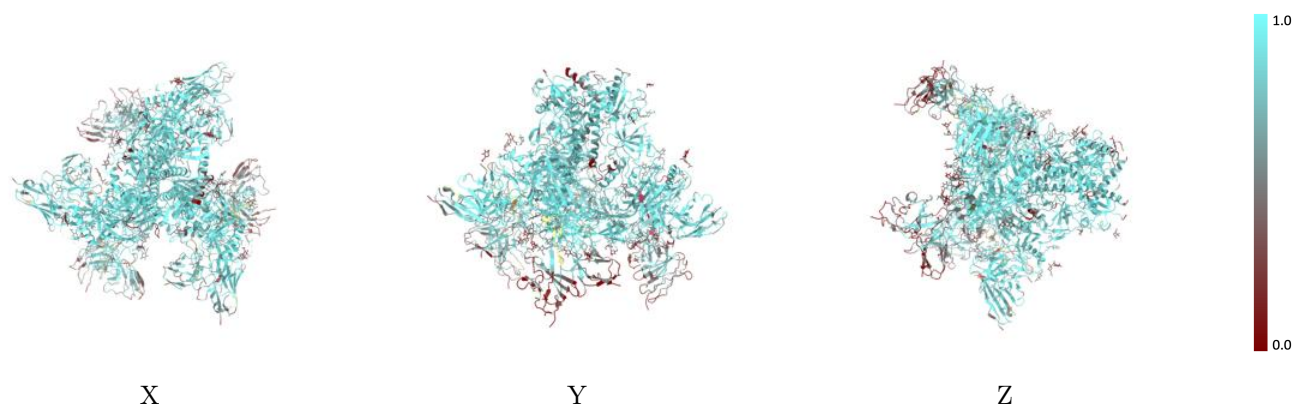


## 9.2 Q-score mapped to coordinate model [i](#)



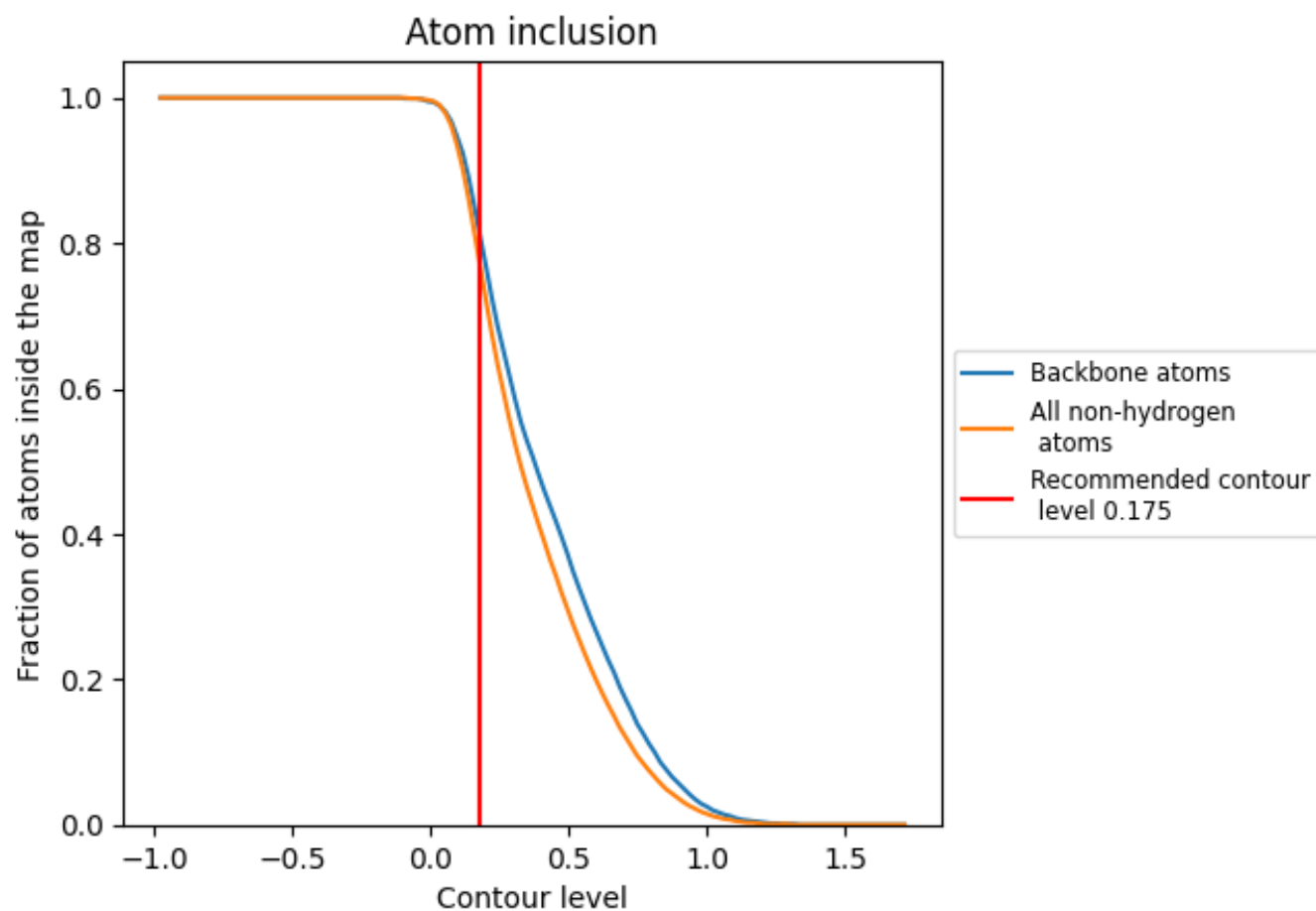
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.175).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 82% of all backbone atoms, 78% 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 (0.175) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7770	 0.5070
0	 0.6430	 0.4500
1	 0.7140	 0.4630
2	 0.4640	 0.4680
3	 0.3210	 0.3240
4	 0.5710	 0.4690
5	 0.6430	 0.4070
6	 0.6070	 0.4180
7	 0.8570	 0.5390
8	 0.5710	 0.4370
9	 0.5360	 0.4160
A	 0.8890	 0.5600
B	 0.7700	 0.4960
C	 0.8240	 0.5200
D	 0.8460	 0.5410
E	 0.8480	 0.5450
F	 0.5000	 0.3820
G	 0.8650	 0.5440
H	 0.8510	 0.5410
I	 0.8570	 0.5380
J	 0.7870	 0.4860
K	 0.8060	 0.5170
L	 0.8410	 0.5330
M	 0.7940	 0.5120
N	 0.6600	 0.4840
O	 0.5200	 0.4660
P	 0.7220	 0.5110
Q	 0.4000	 0.4640
R	 0.7360	 0.5080
S	 0.6530	 0.4760
T	 0.6940	 0.4850
U	 0.4400	 0.4020
V	 0.6720	 0.4700
W	 0.5400	 0.4470
X	 0.8570	 0.5170



*Continued on next page...*

*Continued from previous page...*

Chain	Atom inclusion	Q-score
Y	 0.6390	 0.4630
Z	 0.5000	 0.3980
a	 0.6790	 0.4180
b	 0.7860	 0.4870
c	 0.2140	 0.2650
d	 0.6620	 0.4500
e	 0.6830	 0.4550
f	 0.5360	 0.5000
g	 0.7140	 0.4670
h	 0.5590	 0.4280
i	 0.6430	 0.5220
j	 0.7860	 0.4790
k	 0.4690	 0.3830
l	 0.5750	 0.4360
m	 0.5700	 0.4090
n	 0.1430	 0.3260
o	 0.5000	 0.4600
p	 0.5710	 0.4000
q	 0.6070	 0.4130
r	 0.8210	 0.5200
s	 0.6940	 0.4720
t	 0.6720	 0.4510
u	 0.7520	 0.4830
v	 0.6430	 0.5080
w	 0.7520	 0.4980
x	 0.6430	 0.4090
y	 0.5690	 0.3430
z	 0.2860	 0.3790