



Full wwPDB EM Validation Report ⓘ

Nov 20, 2022 – 03:52 PM JST

PDB ID : 7C2L
EMDB ID : EMD-30276
Title : S protein of SARS-CoV-2 in complex bound with 4A8
Authors : Yan, R.H.; Zhang, Y.Y.; Guo, Y.Y.; Li, Y.N.; Xia, L.; Zhou, Q.
Deposited on : 2020-05-08
Resolution : 3.10 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

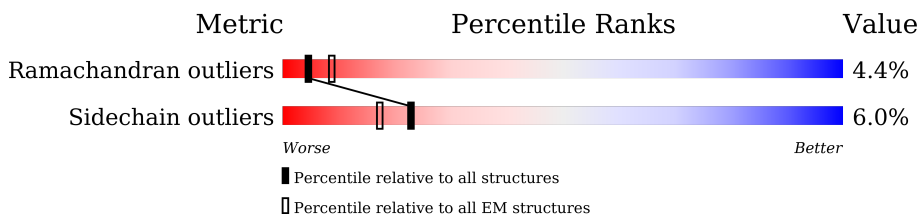
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	1283	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">16%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 16%, orange 16%, yellow 16%, green 16%, grey 16%);"></div> <div style="text-align: center;">75%</div> <div style="text-align: center;">5% •</div> <div style="text-align: center;">20%</div> </div>
1	B	1283	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">10%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 10%, orange 10%, yellow 10%, green 10%, grey 10%);"></div> <div style="text-align: center;">77%</div> <div style="text-align: center;">• •</div> <div style="text-align: center;">18%</div> </div>
1	C	1283	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">8%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 8%, orange 8%, yellow 8%, green 8%, grey 8%);"></div> <div style="text-align: center;">77%</div> <div style="text-align: center;">• •</div> <div style="text-align: center;">18%</div> </div>
2	H	458	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">50%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 50%, orange 50%, yellow 50%, green 50%, grey 50%);"></div> <div style="text-align: center;">44%</div> <div style="text-align: center;">5% •</div> <div style="text-align: center;">50%</div> </div>
2	I	458	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">50%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 50%, orange 50%, yellow 50%, green 50%, grey 50%);"></div> <div style="text-align: center;">44%</div> <div style="text-align: center;">5% •</div> <div style="text-align: center;">50%</div> </div>
2	J	458	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">50%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 50%, orange 50%, yellow 50%, green 50%, grey 50%);"></div> <div style="text-align: center;">44%</div> <div style="text-align: center;">5% •</div> <div style="text-align: center;">50%</div> </div>
3	L	219	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">100%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 100%, orange 100%, yellow 100%, green 100%, grey 100%);"></div> <div style="text-align: center;">83%</div> <div style="text-align: center;">15%</div> <div style="text-align: center;">•</div> </div>
3	M	219	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">100%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 100%, orange 100%, yellow 100%, green 100%, grey 100%);"></div> <div style="text-align: center;">83%</div> <div style="text-align: center;">15%</div> <div style="text-align: center;">•</div> </div>
3	N	219	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">100%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 100%, orange 100%, yellow 100%, green 100%, grey 100%);"></div> <div style="text-align: center;">83%</div> <div style="text-align: center;">15%</div> <div style="text-align: center;">•</div> </div>




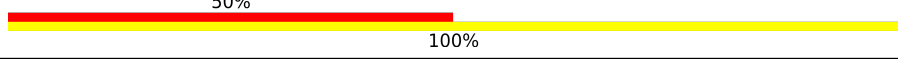
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Mol	Chain	Length	Quality of chain
4	D	3	100%
4	E	3	100%
4	S	3	67%
4	T	3	100%
4	c	3	100%
4	d	3	100%
5	F	2	50%
5	G	2	100%
5	K	2	50%
5	O	2	50%
5	P	2	50%
5	Q	2	50%
5	R	2	50%
5	U	2	100%
5	V	2	100%
5	W	2	50%
5	X	2	100%
5	Y	2	50%
5	Z	2	50%
5	a	2	100%
5	b	2	50%
5	e	2	100%
5	f	2	100%
5	g	2	50%
5	h	2	100%

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Mol	Chain	Length	Quality of chain
5	i	2	 50% 50% 50%
5	j	2	 50% 50% 50%
5	k	2	 50% 50%
5	l	2	 50% 100%

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 35988 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1031	8064	5146	1346	1536	36	0	0
1	B	1055	8269	5278	1380	1574	37	0	0
1	C	1049	8227	5254	1374	1562	37	0	0

There are 36 discrepancies between the modelled and reference sequences:

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

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

- Molecule 2 is a protein called heavy chain of 4A8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	H	229	Total	C	N	O	S	0	0
			1706	1073	273	350	10		
2	I	229	Total	C	N	O	S	0	0
			1706	1073	273	350	10		
2	J	229	Total	C	N	O	S	0	0
			1706	1073	273	350	10		

- Molecule 3 is a protein called light chain of 4A8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	L	219	Total	C	N	O	S	0	0
			1688	1056	288	338	6		
3	M	219	Total	C	N	O	S	0	0
			1688	1056	288	338	6		
3	N	219	Total	C	N	O	S	0	0
			1688	1056	288	338	6		

- Molecule 4 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(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	D	3	Total	C	N	O	0	0
			42	24	3	15		
4	E	3	Total	C	N	O	0	0
			42	24	3	15		
4	S	3	Total	C	N	O	0	0
			42	24	3	15		
4	T	3	Total	C	N	O	0	0
			42	24	3	15		
4	c	3	Total	C	N	O	0	0
			42	24	3	15		
4	d	3	Total	C	N	O	0	0
			42	24	3	15		

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



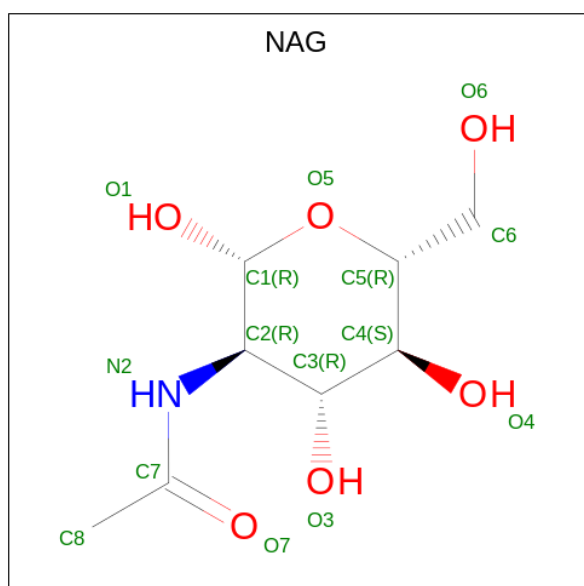
Mol	Chain	Residues	Atoms				AltConf	Trace
5	F	2	Total	C	N	O	0	0
			28	16	2	10		
5	G	2	Total	C	N	O	0	0
			28	16	2	10		
5	K	2	Total	C	N	O	0	0
			28	16	2	10		
5	O	2	Total	C	N	O	0	0
			28	16	2	10		
5	P	2	Total	C	N	O	0	0
			28	16	2	10		
5	Q	2	Total	C	N	O	0	0
			28	16	2	10		
5	R	2	Total	C	N	O	0	0
			28	16	2	10		
5	U	2	Total	C	N	O	0	0
			28	16	2	10		
5	V	2	Total	C	N	O	0	0
			28	16	2	10		
5	W	2	Total	C	N	O	0	0
			28	16	2	10		
5	X	2	Total	C	N	O	0	0
			28	16	2	10		

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	Y	2	Total 28	C 16	N 2	O 10	0	0
5	Z	2	Total 28	C 16	N 2	O 10	0	0
5	a	2	Total 28	C 16	N 2	O 10	0	0
5	b	2	Total 28	C 16	N 2	O 10	0	0
5	e	2	Total 28	C 16	N 2	O 10	0	0
5	f	2	Total 28	C 16	N 2	O 10	0	0
5	g	2	Total 28	C 16	N 2	O 10	0	0
5	h	2	Total 28	C 16	N 2	O 10	0	0
5	i	2	Total 28	C 16	N 2	O 10	0	0
5	j	2	Total 28	C 16	N 2	O 10	0	0
5	k	2	Total 28	C 16	N 2	O 10	0	0
5	l	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).

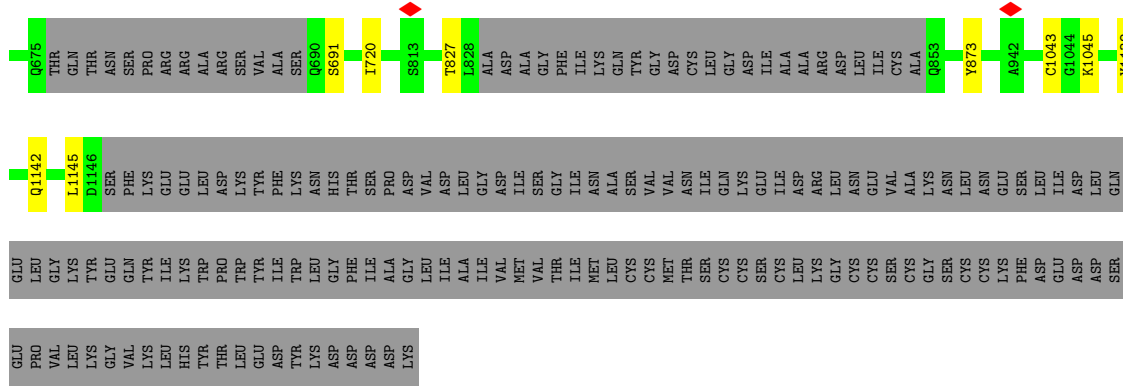


Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	A	1	Total	C	N	O	0
			126	72	9	45	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	B	1	Total	C	N	O	0
			112	64	8	40	
6	C	1	Total	C	N	O	0
			112	64	8	40	
6	C	1	Total	C	N	O	0
			112	64	8	40	
6	C	1	Total	C	N	O	0
			112	64	8	40	
6	C	1	Total	C	N	O	0
			112	64	8	40	
6	C	1	Total	C	N	O	0
			112	64	8	40	

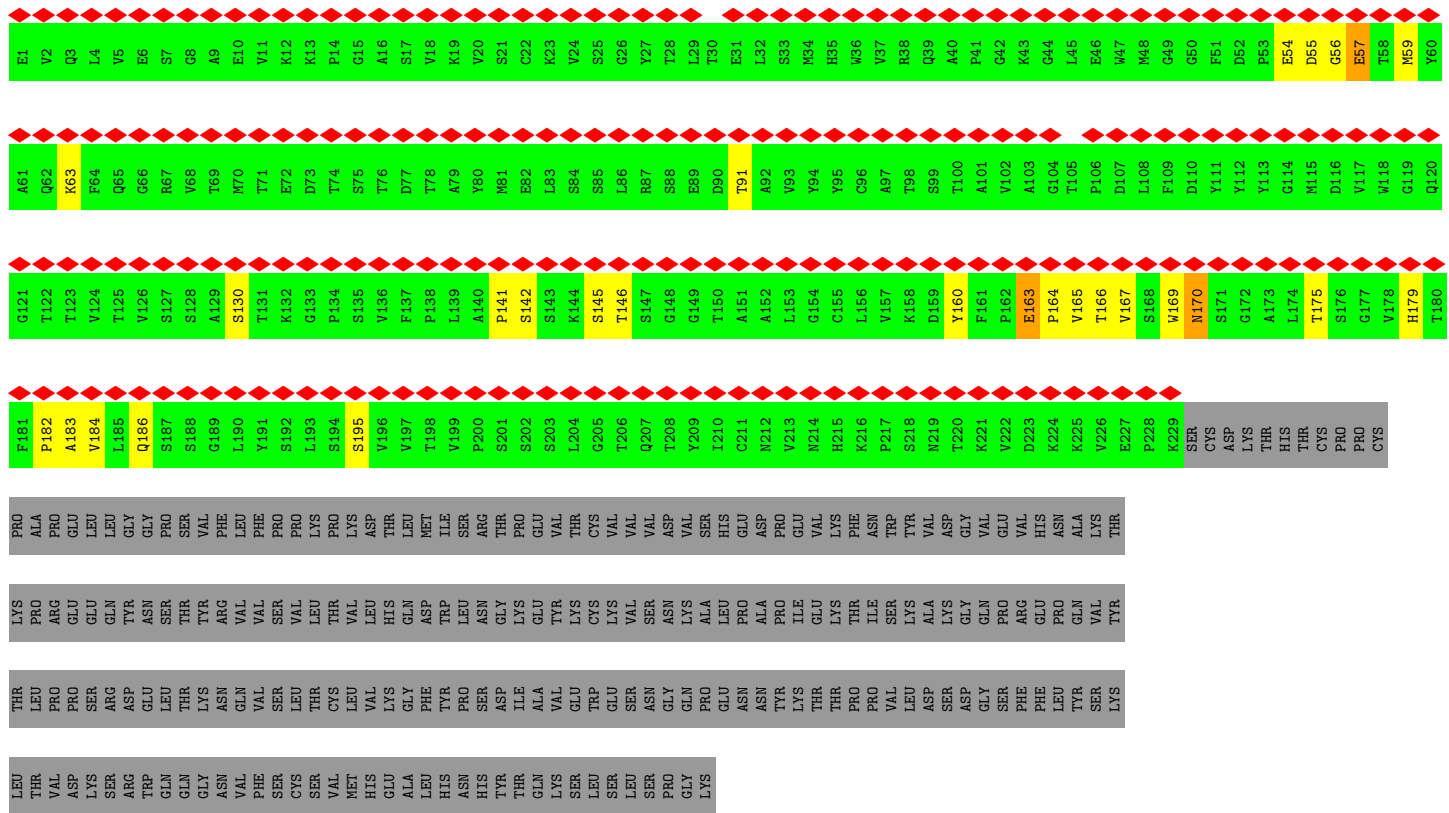
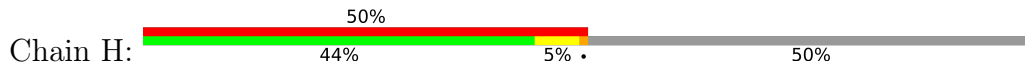
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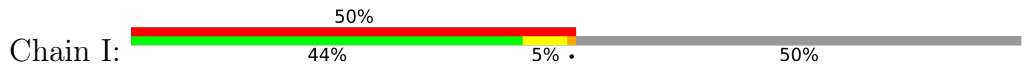
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
6	C	1	Total 112	C 64	N 8	O 40	0
6	C	1	Total 112	C 64	N 8	O 40	0
6	C	1	Total 112	C 64	N 8	O 40	0

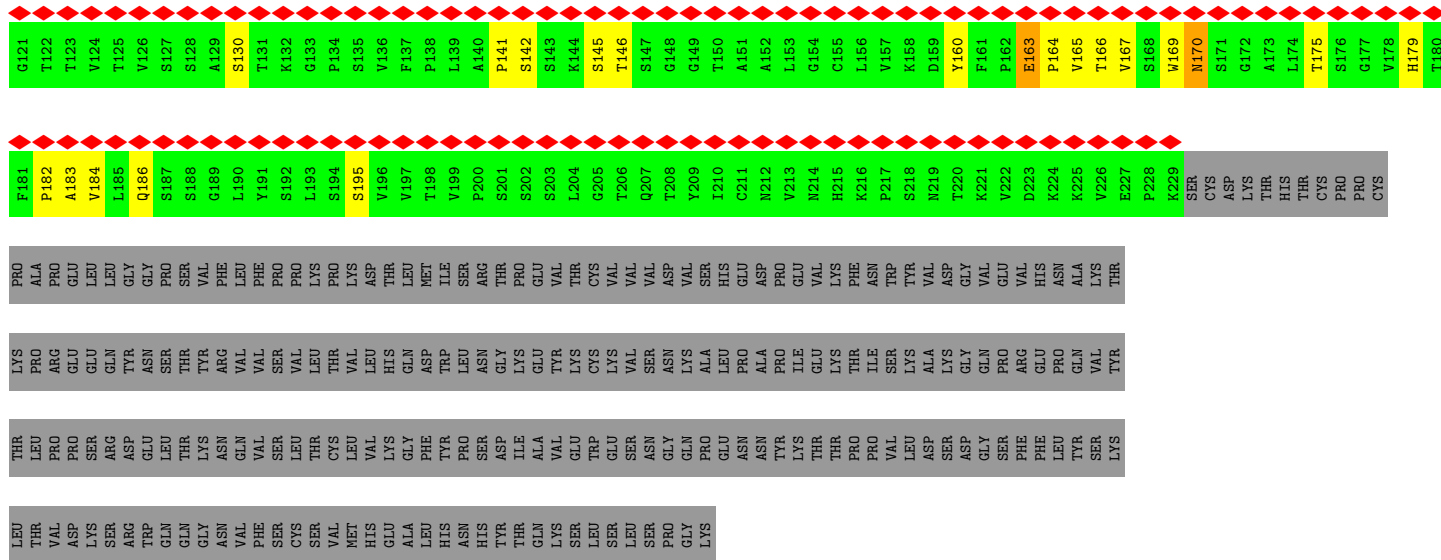


● Molecule 2: heavy chain of 4A8

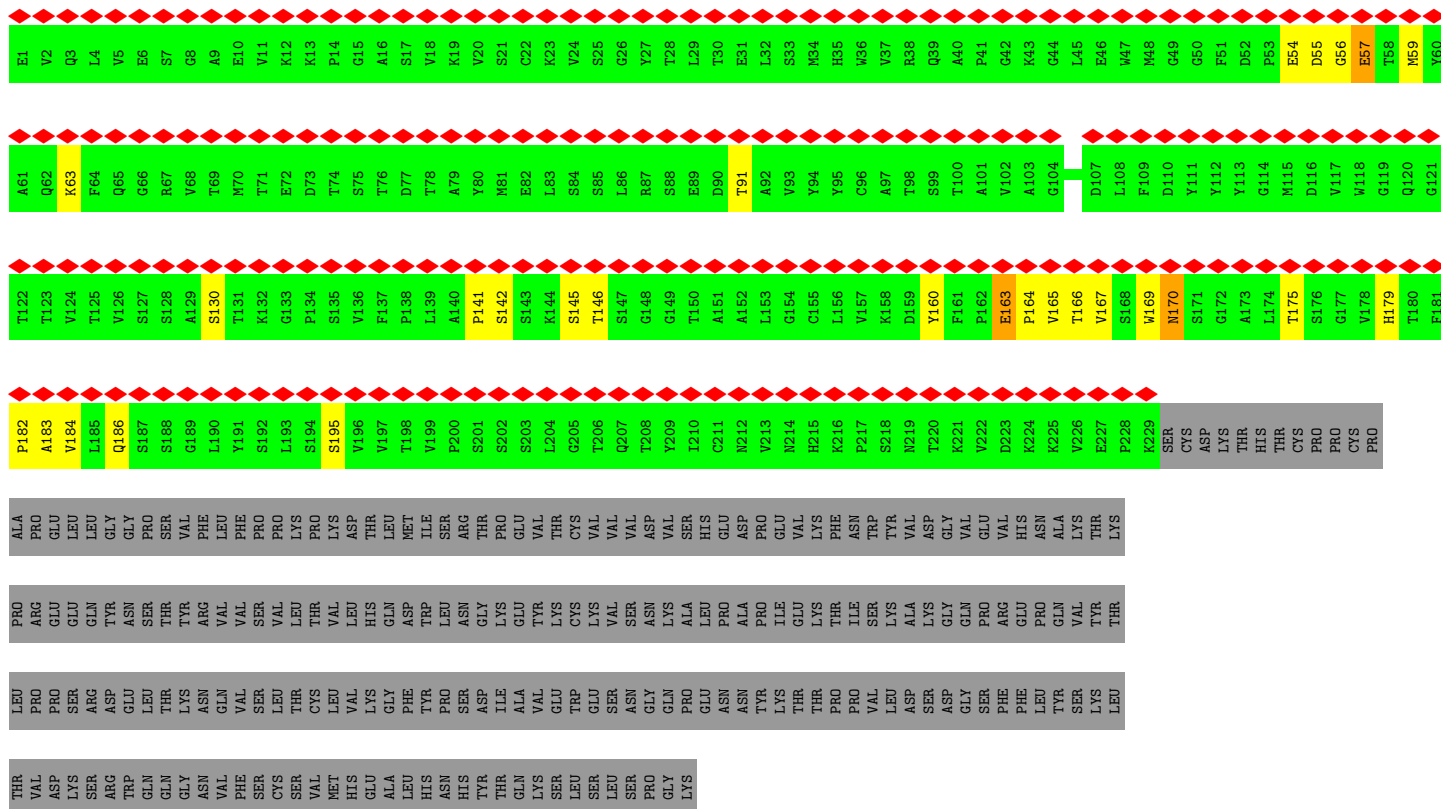
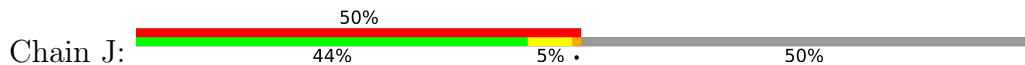


● Molecule 2: heavy chain of 4A8

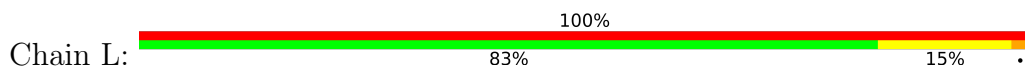


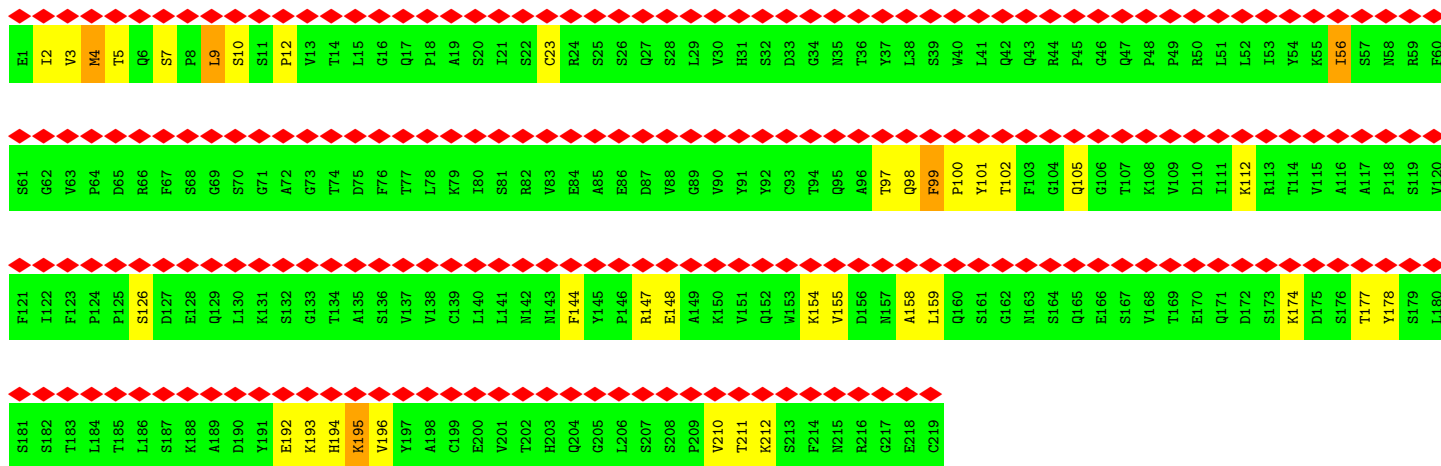


• Molecule 2: heavy chain of 4A8

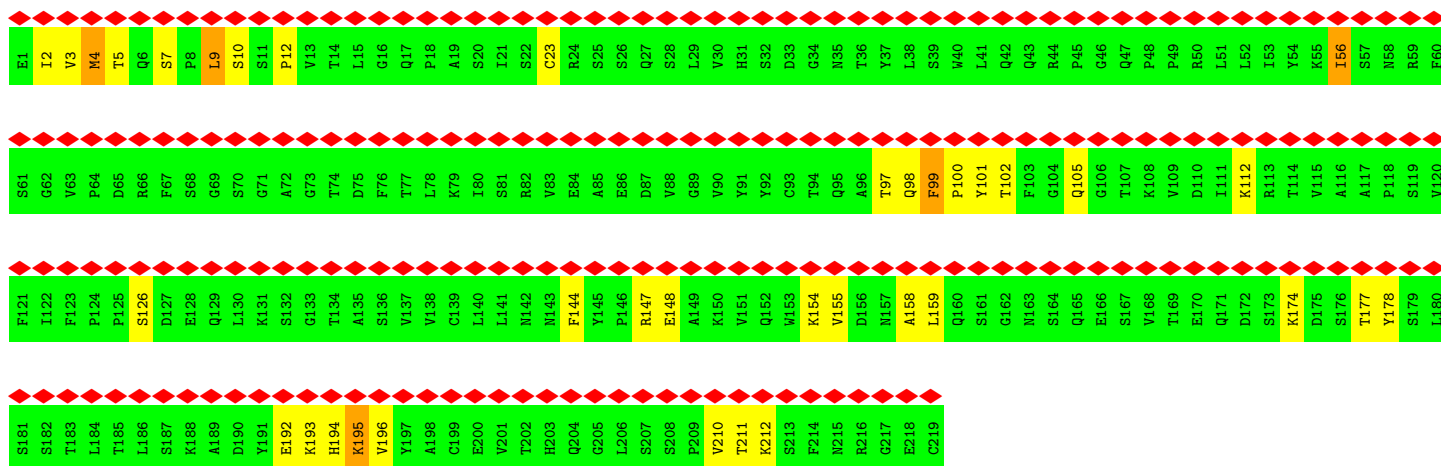
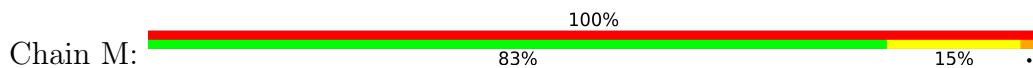


• Molecule 3: light chain of 4A8

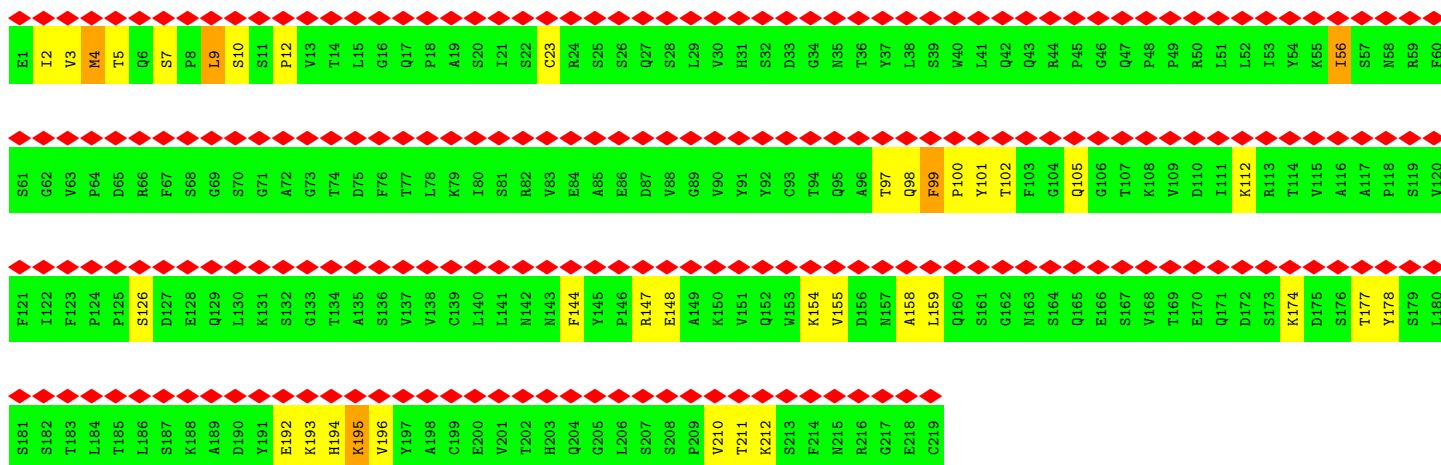
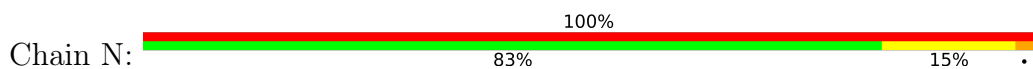




• Molecule 3: light chain of 4A8



• Molecule 3: light chain of 4A8



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



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



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





- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain h:  100%



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain i:  50% 50%



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain j:  50% 50%



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain k:  50% 50%



- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain l:  50% 100%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	171673	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.144	Depositor
Minimum map value	-0.076	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	313.056, 313.056, 313.056	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.087, 1.087, 1.087	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

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	0.55	0/8249	0.61	0/11228
1	B	0.54	0/8458	0.60	0/11507
1	C	0.55	0/8417	0.59	0/11454
2	H	0.58	0/1746	0.66	0/2380
2	I	0.59	0/1746	0.65	0/2380
2	J	0.59	0/1746	0.66	0/2380
3	L	0.49	0/1725	0.61	0/2343
3	M	0.49	0/1725	0.61	0/2343
3	N	0.49	0/1725	0.61	0/2343
All	All	0.54	0/35537	0.61	0/48358

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

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	1017/1283 (79%)	864 (85%)	121 (12%)	32 (3%)	4	23
1	B	1039/1283 (81%)	901 (87%)	110 (11%)	28 (3%)	5	25
1	C	1035/1283 (81%)	884 (85%)	125 (12%)	26 (2%)	5	27
2	H	227/458 (50%)	184 (81%)	29 (13%)	14 (6%)	1	9
2	I	227/458 (50%)	184 (81%)	29 (13%)	14 (6%)	1	9
2	J	227/458 (50%)	182 (80%)	31 (14%)	14 (6%)	1	9
3	L	217/219 (99%)	149 (69%)	46 (21%)	22 (10%)	0	3
3	M	217/219 (99%)	149 (69%)	46 (21%)	22 (10%)	0	3
3	N	217/219 (99%)	149 (69%)	46 (21%)	22 (10%)	0	3
All	All	4423/5880 (75%)	3646 (82%)	583 (13%)	194 (4%)	4	15

All (194) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	22	THR
1	A	23	GLN
1	A	76	THR
1	A	285	ILE
1	A	330	PRO
1	A	810	SER
1	A	811	LYS
1	B	22	THR
1	B	23	GLN
1	B	76	THR
1	B	270	LEU
1	B	271	GLN
1	B	428	ASP
1	B	455	LEU
1	B	459	SER
1	B	1126	CYS
1	C	22	THR
1	C	23	GLN
1	C	76	THR
1	C	286	THR
1	C	457	ARG
1	C	460	ASN
1	C	617	CYS

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Mol	Chain	Res	Type
1	C	827	THR
2	H	141	PRO
2	H	163	GLU
2	H	165	VAL
2	H	167	VAL
3	L	3	VAL
3	L	10	SER
3	L	99	PHE
3	L	147	ARG
3	L	155	VAL
3	L	158	ALA
3	L	159	LEU
3	L	211	THR
2	I	141	PRO
2	I	163	GLU
2	I	165	VAL
2	I	167	VAL
3	M	3	VAL
3	M	10	SER
3	M	99	PHE
3	M	147	ARG
3	M	155	VAL
3	M	158	ALA
3	M	159	LEU
3	M	211	THR
2	J	141	PRO
2	J	163	GLU
2	J	165	VAL
2	J	167	VAL
3	N	3	VAL
3	N	10	SER
3	N	99	PHE
3	N	147	ARG
3	N	155	VAL
3	N	158	ALA
3	N	159	LEU
3	N	211	THR
1	A	19	THR
1	A	21	ARG
1	A	24	LEU
1	A	73	THR
1	A	74	ASN

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Mol	Chain	Res	Type
1	A	286	THR
1	A	292	ALA
1	A	334	ASN
1	A	442	ASP
1	A	519	HIS
1	A	827	THR
1	B	19	THR
1	B	21	ARG
1	B	24	LEU
1	B	73	THR
1	B	74	ASN
1	B	456	PHE
1	C	19	THR
1	C	21	ARG
1	C	24	LEU
1	C	73	THR
1	C	74	ASN
1	C	292	ALA
1	C	614	ASP
2	H	56	GLY
2	H	183	ALA
2	H	184	VAL
2	H	186	GLN
3	L	56	ILE
2	I	56	GLY
2	I	183	ALA
2	I	184	VAL
2	I	186	GLN
3	M	56	ILE
2	J	56	GLY
2	J	183	ALA
2	J	184	VAL
2	J	186	GLN
3	N	56	ILE
1	A	20	THR
1	A	81	ASN
1	A	87	ASN
1	A	180	GLU
1	A	337	PRO
1	A	503	VAL
1	A	522	ALA
1	B	20	THR

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Mol	Chain	Res	Type
1	B	40	ASP
1	B	81	ASN
1	B	87	ASN
1	B	180	GLU
1	B	454	ARG
1	B	458	LYS
1	C	20	THR
1	C	81	ASN
1	C	87	ASN
1	C	180	GLU
2	H	166	THR
2	H	170	ASN
3	L	7	SER
3	L	9	LEU
3	L	100	PRO
3	L	101	TYR
3	L	126	SER
3	L	195	LYS
3	L	210	VAL
2	I	166	THR
2	I	170	ASN
3	M	7	SER
3	M	9	LEU
3	M	100	PRO
3	M	101	TYR
3	M	126	SER
3	M	195	LYS
3	M	210	VAL
2	J	166	THR
2	J	170	ASN
3	N	7	SER
3	N	9	LEU
3	N	100	PRO
3	N	101	TYR
3	N	126	SER
3	N	195	LYS
3	N	210	VAL
1	A	67	ALA
1	A	544	ASN
1	B	67	ALA
1	B	273	ARG
1	B	491	PRO

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Mol	Chain	Res	Type
1	C	67	ALA
1	C	500	THR
1	C	691	SER
1	C	1138	TYR
2	H	175	THR
3	L	4	MET
3	L	194	HIS
3	L	196	VAL
2	I	175	THR
3	M	4	MET
3	M	194	HIS
3	M	196	VAL
2	J	175	THR
3	N	4	MET
3	N	194	HIS
1	A	518	LEU
1	A	520	ALA
2	H	57	GLU
2	H	164	PRO
2	H	182	PRO
3	L	5	THR
2	I	57	GLU
2	I	164	PRO
2	I	182	PRO
3	M	5	THR
2	J	57	GLU
2	J	164	PRO
2	J	182	PRO
3	N	5	THR
3	N	196	VAL
1	A	249	LEU
1	A	336	CYS
1	B	249	LEU
1	B	488	CYS
1	C	249	LEU
1	A	75	GLY
1	B	75	GLY
1	C	75	GLY
3	L	2	ILE
3	M	2	ILE
3	N	2	ILE
3	L	12	PRO

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Mol	Chain	Res	Type
3	M	12	PRO
3	N	12	PRO
1	C	502	GLY

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	902/1122 (80%)	861 (96%)	41 (4%)	27 60
1	B	924/1122 (82%)	880 (95%)	44 (5%)	25 58
1	C	920/1122 (82%)	879 (96%)	41 (4%)	27 60
2	H	193/405 (48%)	177 (92%)	16 (8%)	11 38
2	I	193/405 (48%)	177 (92%)	16 (8%)	11 38
2	J	193/405 (48%)	177 (92%)	16 (8%)	11 38
3	L	194/194 (100%)	174 (90%)	20 (10%)	7 27
3	M	194/194 (100%)	174 (90%)	20 (10%)	7 27
3	N	194/194 (100%)	174 (90%)	20 (10%)	7 27
All	All	3907/5163 (76%)	3673 (94%)	234 (6%)	23 49

All (234) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	LEU
1	A	19	THR
1	A	21	ARG
1	A	22	THR
1	A	23	GLN
1	A	24	LEU
1	A	40	ASP
1	A	48	LEU
1	A	71	SER
1	A	76	THR
1	A	77	LYS

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Mol	Chain	Res	Type
1	A	78	ARG
1	A	88	ASP
1	A	138	ASP
1	A	150	LYS
1	A	166	CYS
1	A	169	GLU
1	A	170	TYR
1	A	190	ARG
1	A	277	LEU
1	A	296	LEU
1	A	379	CYS
1	A	453	TYR
1	A	454	ARG
1	A	495	TYR
1	A	498	GLN
1	A	500	THR
1	A	506	GLN
1	A	515	PHE
1	A	516	GLU
1	A	524	VAL
1	A	617	CYS
1	A	675	GLN
1	A	811	LYS
1	A	814	LYS
1	A	873	TYR
1	A	878	LEU
1	A	1057	PRO
1	A	1072	GLU
1	A	1141	LEU
1	A	1146	ASP
1	B	18	LEU
1	B	19	THR
1	B	21	ARG
1	B	22	THR
1	B	23	GLN
1	B	24	LEU
1	B	41	LYS
1	B	44	ARG
1	B	46	SER
1	B	52	GLN
1	B	71	SER
1	B	76	THR

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Mol	Chain	Res	Type
1	B	77	LYS
1	B	78	ARG
1	B	88	ASP
1	B	138	ASP
1	B	150	LYS
1	B	166	CYS
1	B	169	GLU
1	B	170	TYR
1	B	190	ARG
1	B	273	ARG
1	B	276	LEU
1	B	277	LEU
1	B	287	ASP
1	B	296	LEU
1	B	303	LEU
1	B	309	GLU
1	B	368	LEU
1	B	422	ASN
1	B	424	LYS
1	B	425	LEU
1	B	458	LYS
1	B	466	ARG
1	B	487	ASN
1	B	488	CYS
1	B	525	CYS
1	B	588	THR
1	B	649	CYS
1	B	720	ILE
1	B	1141	LEU
1	B	1142	GLN
1	B	1144	GLU
1	B	1146	ASP
1	C	18	LEU
1	C	19	THR
1	C	21	ARG
1	C	22	THR
1	C	23	GLN
1	C	24	LEU
1	C	40	ASP
1	C	48	LEU
1	C	71	SER
1	C	76	THR

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Mol	Chain	Res	Type
1	C	77	LYS
1	C	78	ARG
1	C	88	ASP
1	C	138	ASP
1	C	150	LYS
1	C	166	CYS
1	C	169	GLU
1	C	170	TYR
1	C	190	ARG
1	C	277	LEU
1	C	287	ASP
1	C	296	LEU
1	C	310	LYS
1	C	333	THR
1	C	455	LEU
1	C	457	ARG
1	C	458	LYS
1	C	471	GLU
1	C	500	THR
1	C	558	LYS
1	C	613	GLN
1	C	616	ASN
1	C	617	CYS
1	C	619	GLU
1	C	649	CYS
1	C	720	ILE
1	C	873	TYR
1	C	1043	CYS
1	C	1045	LYS
1	C	1142	GLN
1	C	1145	LEU
2	H	54	GLU
2	H	55	ASP
2	H	57	GLU
2	H	59	MET
2	H	63	LYS
2	H	91	THR
2	H	130	SER
2	H	142	SER
2	H	145	SER
2	H	146	THR
2	H	160	TYR

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Mol	Chain	Res	Type
2	H	163	GLU
2	H	169	TRP
2	H	170	ASN
2	H	179	HIS
2	H	195	SER
3	L	4	MET
3	L	9	LEU
3	L	23	CYS
3	L	56	ILE
3	L	97	THR
3	L	98	GLN
3	L	99	PHE
3	L	102	THR
3	L	105	GLN
3	L	112	LYS
3	L	144	PHE
3	L	148	GLU
3	L	154	LYS
3	L	174	LYS
3	L	177	THR
3	L	178	TYR
3	L	192	GLU
3	L	193	LYS
3	L	195	LYS
3	L	212	LYS
2	I	54	GLU
2	I	55	ASP
2	I	57	GLU
2	I	59	MET
2	I	63	LYS
2	I	91	THR
2	I	130	SER
2	I	142	SER
2	I	145	SER
2	I	146	THR
2	I	160	TYR
2	I	163	GLU
2	I	169	TRP
2	I	170	ASN
2	I	179	HIS
2	I	195	SER
3	M	4	MET

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Mol	Chain	Res	Type
3	M	9	LEU
3	M	23	CYS
3	M	56	ILE
3	M	97	THR
3	M	98	GLN
3	M	99	PHE
3	M	102	THR
3	M	105	GLN
3	M	112	LYS
3	M	144	PHE
3	M	148	GLU
3	M	154	LYS
3	M	174	LYS
3	M	177	THR
3	M	178	TYR
3	M	192	GLU
3	M	193	LYS
3	M	195	LYS
3	M	212	LYS
2	J	54	GLU
2	J	55	ASP
2	J	57	GLU
2	J	59	MET
2	J	63	LYS
2	J	91	THR
2	J	130	SER
2	J	142	SER
2	J	145	SER
2	J	146	THR
2	J	160	TYR
2	J	163	GLU
2	J	169	TRP
2	J	170	ASN
2	J	179	HIS
2	J	195	SER
3	N	4	MET
3	N	9	LEU
3	N	23	CYS
3	N	56	ILE
3	N	97	THR
3	N	98	GLN
3	N	99	PHE

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Mol	Chain	Res	Type
3	N	102	THR
3	N	105	GLN
3	N	112	LYS
3	N	144	PHE
3	N	148	GLU
3	N	154	LYS
3	N	174	LYS
3	N	177	THR
3	N	178	TYR
3	N	192	GLU
3	N	193	LYS
3	N	195	LYS
3	N	212	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (66) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	GLN
1	A	23	GLN
1	A	280	ASN
1	A	334	ASN
1	A	422	ASN
1	A	542	ASN
1	A	658	ASN
1	A	675	GLN
1	A	751	ASN
1	A	755	GLN
1	A	764	ASN
1	A	804	GLN
1	A	914	ASN
1	A	978	ASN
1	A	1071	GLN
1	A	1142	GLN
1	B	14	GLN
1	B	52	GLN
1	B	271	GLN
1	B	280	ASN
1	B	360	ASN
1	B	422	ASN
1	B	498	GLN
1	B	544	ASN
1	B	564	GLN

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Mol	Chain	Res	Type
1	B	613	GLN
1	B	644	GLN
1	B	655	HIS
1	B	926	GLN
1	B	1054	GLN
1	B	1101	HIS
1	B	1113	GLN
1	C	14	GLN
1	C	280	ASN
1	C	321	GLN
1	C	370	ASN
1	C	394	ASN
1	C	498	GLN
1	C	501	ASN
1	C	613	GLN
1	C	762	GLN
1	C	914	ASN
1	C	955	ASN
1	C	1010	GLN
1	C	1101	HIS
2	H	170	ASN
2	H	219	ASN
3	L	42	GLN
3	L	43	GLN
3	L	105	GLN
3	L	171	GLN
3	L	194	HIS
2	I	170	ASN
2	I	219	ASN
3	M	42	GLN
3	M	43	GLN
3	M	105	GLN
3	M	171	GLN
3	M	194	HIS
2	J	170	ASN
2	J	219	ASN
3	N	42	GLN
3	N	43	GLN
3	N	105	GLN
3	N	171	GLN
3	N	194	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

64 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	D	1	4,1	14,14,15	0.70	1 (7%)	17,19,21	0.72	0
4	NAG	D	2	4	14,14,15	0.35	0	17,19,21	0.88	1 (5%)
4	NAG	D	3	4	14,14,15	0.51	0	17,19,21	0.78	1 (5%)
4	NAG	E	1	4,1	14,14,15	0.79	1 (7%)	17,19,21	0.98	0
4	NAG	E	2	4	14,14,15	0.39	0	17,19,21	1.00	1 (5%)
4	NAG	E	3	4	14,14,15	0.34	0	17,19,21	0.51	0
5	NAG	F	1	5,1	14,14,15	0.83	1 (7%)	17,19,21	1.04	2 (11%)
5	NAG	F	2	5	14,14,15	0.70	1 (7%)	17,19,21	0.53	0
5	NAG	G	1	5,1	14,14,15	1.70	1 (7%)	17,19,21	2.60	4 (23%)
5	NAG	G	2	5	14,14,15	0.25	0	17,19,21	0.59	0
5	NAG	K	1	5,1	14,14,15	0.31	0	17,19,21	0.76	1 (5%)
5	NAG	K	2	5	14,14,15	0.22	0	17,19,21	0.46	0
5	NAG	O	1	5,1	14,14,15	0.40	0	17,19,21	1.16	2 (11%)
5	NAG	O	2	5	14,14,15	0.29	0	17,19,21	0.61	0
5	NAG	P	1	5,1	14,14,15	0.33	0	17,19,21	0.59	0
5	NAG	P	2	5	14,14,15	0.60	0	17,19,21	2.37	4 (23%)
5	NAG	Q	1	5,1	14,14,15	0.34	0	17,19,21	0.59	0
5	NAG	Q	2	5	14,14,15	0.37	0	17,19,21	0.95	1 (5%)
5	NAG	R	1	5,1	14,14,15	0.19	0	17,19,21	0.53	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	R	2	5	14,14,15	0.19	0	17,19,21	0.62	1 (5%)
4	NAG	S	1	4,1	14,14,15	0.71	1 (7%)	17,19,21	0.72	0
4	NAG	S	2	4	14,14,15	0.34	0	17,19,21	0.88	1 (5%)
4	NAG	S	3	4	14,14,15	0.51	0	17,19,21	0.78	1 (5%)
4	NAG	T	1	4,1	14,14,15	0.78	1 (7%)	17,19,21	0.98	0
4	NAG	T	2	4	14,14,15	0.39	0	17,19,21	1.00	1 (5%)
4	NAG	T	3	4	14,14,15	0.33	0	17,19,21	0.51	0
5	NAG	U	1	5,1	14,14,15	0.82	1 (7%)	17,19,21	1.04	2 (11%)
5	NAG	U	2	5	14,14,15	0.71	1 (7%)	17,19,21	0.53	0
5	NAG	V	1	5	14,14,15	1.69	1 (7%)	17,19,21	2.61	4 (23%)
5	NAG	V	2	5	14,14,15	0.25	0	17,19,21	0.60	0
5	NAG	W	1	5,1	14,14,15	0.31	0	17,19,21	0.38	0
5	NAG	W	2	5	14,14,15	0.32	0	17,19,21	0.61	1 (5%)
5	NAG	X	1	5,1	14,14,15	0.20	0	17,19,21	1.25	2 (11%)
5	NAG	X	2	5	14,14,15	0.20	0	17,19,21	0.69	1 (5%)
5	NAG	Y	1	5,1	14,14,15	0.43	0	17,19,21	0.73	1 (5%)
5	NAG	Y	2	5	14,14,15	0.17	0	17,19,21	0.62	0
5	NAG	Z	1	5,1	14,14,15	0.28	0	17,19,21	0.53	0
5	NAG	Z	2	5	14,14,15	0.18	0	17,19,21	0.76	1 (5%)
5	NAG	a	1	5,1	14,14,15	0.41	0	17,19,21	0.84	1 (5%)
5	NAG	a	2	5	14,14,15	0.53	0	17,19,21	1.33	2 (11%)
5	NAG	b	1	5,1	14,14,15	0.35	0	17,19,21	0.90	1 (5%)
5	NAG	b	2	5	14,14,15	0.29	0	17,19,21	0.62	0
4	NAG	c	1	4,1	14,14,15	0.69	1 (7%)	17,19,21	0.72	0
4	NAG	c	2	4	14,14,15	0.35	0	17,19,21	0.88	1 (5%)
4	NAG	c	3	4	14,14,15	0.51	0	17,19,21	0.77	1 (5%)
4	NAG	d	1	4,1	14,14,15	0.79	1 (7%)	17,19,21	0.98	0
4	NAG	d	2	4	14,14,15	0.40	0	17,19,21	1.00	1 (5%)
4	NAG	d	3	4	14,14,15	0.34	0	17,19,21	0.51	0
5	NAG	e	1	5,1	14,14,15	0.83	1 (7%)	17,19,21	1.04	2 (11%)
5	NAG	e	2	5	14,14,15	0.71	1 (7%)	17,19,21	0.53	0
5	NAG	f	1	5	14,14,15	1.70	1 (7%)	17,19,21	2.60	4 (23%)
5	NAG	f	2	5	14,14,15	0.25	0	17,19,21	0.59	0
5	NAG	g	1	5,1	14,14,15	0.60	0	17,19,21	2.25	3 (17%)
5	NAG	g	2	5	14,14,15	0.32	0	17,19,21	0.60	1 (5%)
5	NAG	h	1	5,1	14,14,15	0.45	0	17,19,21	0.61	0
5	NAG	h	2	5	14,14,15	0.41	0	17,19,21	0.44	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	i	1	5,1	14,14,15	0.33	0	17,19,21	0.53	0
5	NAG	i	2	5	14,14,15	0.37	0	17,19,21	0.95	1 (5%)
5	NAG	j	1	5,1	14,14,15	0.35	0	17,19,21	0.64	0
5	NAG	j	2	5	14,14,15	0.86	1 (7%)	17,19,21	2.31	4 (23%)
5	NAG	k	1	5,1	14,14,15	0.46	0	17,19,21	0.58	0
5	NAG	k	2	5	14,14,15	0.81	1 (7%)	17,19,21	2.22	3 (17%)
5	NAG	l	1	5,1	14,14,15	0.24	0	17,19,21	0.72	1 (5%)
5	NAG	l	2	5	14,14,15	0.29	0	17,19,21	0.71	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
4	NAG	D	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	D	2	4	-	2/6/23/26	0/1/1/1
4	NAG	D	3	4	-	2/6/23/26	0/1/1/1
4	NAG	E	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	E	2	4	-	0/6/23/26	0/1/1/1
4	NAG	E	3	4	-	2/6/23/26	0/1/1/1
5	NAG	F	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	F	2	5	-	0/6/23/26	0/1/1/1
5	NAG	G	1	5,1	-	5/6/23/26	0/1/1/1
5	NAG	G	2	5	-	2/6/23/26	0/1/1/1
5	NAG	K	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	K	2	5	-	2/6/23/26	0/1/1/1
5	NAG	O	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	O	2	5	-	3/6/23/26	0/1/1/1
5	NAG	P	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	P	2	5	-	3/6/23/26	0/1/1/1
5	NAG	Q	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Q	2	5	-	2/6/23/26	0/1/1/1
5	NAG	R	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	R	2	5	-	0/6/23/26	0/1/1/1
4	NAG	S	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	S	2	4	-	2/6/23/26	0/1/1/1
4	NAG	S	3	4	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	T	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	T	2	4	-	0/6/23/26	0/1/1/1
4	NAG	T	3	4	-	2/6/23/26	0/1/1/1
5	NAG	U	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	U	2	5	-	0/6/23/26	0/1/1/1
5	NAG	V	1	5	-	5/6/23/26	0/1/1/1
5	NAG	V	2	5	-	2/6/23/26	0/1/1/1
5	NAG	W	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	W	2	5	-	2/6/23/26	0/1/1/1
5	NAG	X	1	5,1	-	3/6/23/26	0/1/1/1
5	NAG	X	2	5	-	2/6/23/26	0/1/1/1
5	NAG	Y	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Y	2	5	-	4/6/23/26	0/1/1/1
5	NAG	Z	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	Z	2	5	-	2/6/23/26	0/1/1/1
5	NAG	a	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	a	2	5	-	1/6/23/26	0/1/1/1
5	NAG	b	1	5,1	-	1/6/23/26	0/1/1/1
5	NAG	b	2	5	-	0/6/23/26	0/1/1/1
4	NAG	c	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	c	2	4	-	2/6/23/26	0/1/1/1
4	NAG	c	3	4	-	2/6/23/26	0/1/1/1
4	NAG	d	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	d	2	4	-	0/6/23/26	0/1/1/1
4	NAG	d	3	4	-	2/6/23/26	0/1/1/1
5	NAG	e	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	e	2	5	-	0/6/23/26	0/1/1/1
5	NAG	f	1	5	-	5/6/23/26	0/1/1/1
5	NAG	f	2	5	-	2/6/23/26	0/1/1/1
5	NAG	g	1	5,1	-	5/6/23/26	0/1/1/1
5	NAG	g	2	5	-	2/6/23/26	0/1/1/1
5	NAG	h	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	h	2	5	-	2/6/23/26	0/1/1/1
5	NAG	i	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	i	2	5	-	3/6/23/26	0/1/1/1
5	NAG	j	1	5,1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	j	2	5	-	5/6/23/26	0/1/1/1
5	NAG	k	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	k	2	5	-	5/6/23/26	0/1/1/1
5	NAG	l	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	l	2	5	-	0/6/23/26	0/1/1/1

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	f	1	NAG	O5-C1	-5.98	1.34	1.43
5	G	1	NAG	O5-C1	-5.97	1.34	1.43
5	V	1	NAG	O5-C1	-5.95	1.34	1.43
4	E	1	NAG	O5-C1	-2.83	1.39	1.43
4	d	1	NAG	O5-C1	-2.82	1.39	1.43
4	T	1	NAG	O5-C1	-2.81	1.39	1.43
5	j	2	NAG	C1-C2	2.64	1.56	1.52
5	F	1	NAG	O5-C1	-2.47	1.39	1.43
5	e	1	NAG	O5-C1	-2.44	1.39	1.43
5	U	1	NAG	O5-C1	-2.44	1.39	1.43
5	k	2	NAG	C1-C2	2.37	1.55	1.52
5	e	2	NAG	C1-C2	2.34	1.55	1.52
5	U	2	NAG	C1-C2	2.33	1.55	1.52
5	F	2	NAG	C1-C2	2.31	1.55	1.52
4	S	1	NAG	O5-C1	-2.28	1.40	1.43
4	D	1	NAG	O5-C1	-2.26	1.40	1.43
4	c	1	NAG	O5-C1	-2.22	1.40	1.43

All (60) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	V	1	NAG	C2-N2-C7	8.05	134.37	122.90
5	G	1	NAG	C2-N2-C7	8.04	134.35	122.90
5	f	1	NAG	C2-N2-C7	8.03	134.33	122.90
5	g	1	NAG	C2-N2-C7	7.97	134.26	122.90
5	j	2	NAG	C2-N2-C7	7.82	134.04	122.90
5	k	2	NAG	C2-N2-C7	7.80	134.00	122.90
5	P	2	NAG	C2-N2-C7	7.77	133.97	122.90
5	P	2	NAG	C1-C2-N2	4.34	117.89	110.49
5	f	1	NAG	C3-C4-C5	3.99	117.36	110.24
5	V	1	NAG	C3-C4-C5	3.98	117.34	110.24
5	G	1	NAG	C3-C4-C5	3.97	117.33	110.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	a	2	NAG	C1-O5-C5	3.90	117.48	112.19
5	j	2	NAG	C1-C2-N2	3.88	117.12	110.49
5	k	2	NAG	C1-C2-N2	3.78	116.94	110.49
5	G	1	NAG	C1-C2-N2	3.54	116.53	110.49
5	V	1	NAG	C1-C2-N2	3.52	116.50	110.49
5	f	1	NAG	C1-C2-N2	3.51	116.49	110.49
5	g	1	NAG	C1-C2-N2	3.48	116.44	110.49
5	X	1	NAG	C2-N2-C7	3.18	127.43	122.90
5	b	1	NAG	C1-O5-C5	3.08	116.36	112.19
5	a	2	NAG	C2-N2-C7	3.02	127.20	122.90
5	Q	2	NAG	C2-N2-C7	3.00	127.17	122.90
5	i	2	NAG	C2-N2-C7	2.90	127.03	122.90
5	X	1	NAG	C1-O5-C5	2.86	116.07	112.19
5	Z	2	NAG	C1-O5-C5	2.75	115.92	112.19
4	D	3	NAG	C1-O5-C5	2.59	115.70	112.19
5	K	1	NAG	C1-O5-C5	2.59	115.70	112.19
4	c	3	NAG	C1-O5-C5	2.57	115.68	112.19
4	S	3	NAG	C1-O5-C5	2.57	115.67	112.19
5	j	2	NAG	C1-O5-C5	2.54	115.63	112.19
5	l	2	NAG	C1-O5-C5	2.53	115.62	112.19
4	d	2	NAG	O3-C3-C2	-2.49	104.32	109.47
4	E	2	NAG	O3-C3-C2	-2.48	104.33	109.47
4	T	2	NAG	O3-C3-C2	-2.48	104.34	109.47
5	a	1	NAG	O4-C4-C5	-2.46	103.18	109.30
5	P	2	NAG	C1-O5-C5	2.46	115.52	112.19
4	S	2	NAG	C1-O5-C5	2.45	115.51	112.19
4	c	2	NAG	C1-O5-C5	2.44	115.50	112.19
4	D	2	NAG	C1-O5-C5	2.44	115.50	112.19
5	X	2	NAG	C1-O5-C5	2.39	115.43	112.19
5	O	1	NAG	C8-C7-N2	2.32	120.02	116.10
5	f	1	NAG	C8-C7-N2	2.31	120.02	116.10
5	V	1	NAG	C8-C7-N2	2.31	120.01	116.10
5	G	1	NAG	C8-C7-N2	2.30	120.00	116.10
5	l	1	NAG	C1-O5-C5	2.22	115.21	112.19
5	F	1	NAG	O4-C4-C3	-2.16	105.34	110.35
5	e	1	NAG	O4-C4-C3	-2.16	105.35	110.35
5	g	1	NAG	C8-C7-N2	2.16	119.75	116.10
5	U	1	NAG	O4-C4-C3	-2.15	105.38	110.35
5	Y	1	NAG	C1-O5-C5	2.13	115.08	112.19
5	g	2	NAG	C1-O5-C5	2.12	115.06	112.19
5	R	2	NAG	C1-O5-C5	2.09	115.02	112.19
5	j	2	NAG	C8-C7-N2	2.08	119.62	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	W	2	NAG	C1-O5-C5	2.08	115.01	112.19
5	k	2	NAG	C8-C7-N2	2.05	119.57	116.10
5	P	2	NAG	C8-C7-N2	2.04	119.56	116.10
5	O	1	NAG	C2-N2-C7	-2.02	120.02	122.90
5	F	1	NAG	C1-O5-C5	2.01	114.92	112.19
5	U	1	NAG	C1-O5-C5	2.00	114.91	112.19
5	e	1	NAG	C1-O5-C5	2.00	114.91	112.19

There are no chirality outliers.

All (118) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	O	2	NAG	C3-C2-N2-C7
5	O	2	NAG	C8-C7-N2-C2
5	O	2	NAG	O7-C7-N2-C2
5	f	2	NAG	O5-C5-C6-O6
5	G	2	NAG	O5-C5-C6-O6
5	V	2	NAG	O5-C5-C6-O6
4	E	3	NAG	O5-C5-C6-O6
4	T	3	NAG	O5-C5-C6-O6
4	d	3	NAG	O5-C5-C6-O6
5	X	1	NAG	O5-C5-C6-O6
4	E	1	NAG	C4-C5-C6-O6
4	T	1	NAG	C4-C5-C6-O6
4	d	1	NAG	C4-C5-C6-O6
4	S	3	NAG	O5-C5-C6-O6
5	G	1	NAG	O5-C5-C6-O6
5	V	1	NAG	O5-C5-C6-O6
5	Z	2	NAG	O5-C5-C6-O6
5	f	1	NAG	O5-C5-C6-O6
5	g	2	NAG	O5-C5-C6-O6
4	D	3	NAG	O5-C5-C6-O6
4	c	3	NAG	O5-C5-C6-O6
5	R	1	NAG	O5-C5-C6-O6
5	l	1	NAG	O5-C5-C6-O6
5	Y	1	NAG	C4-C5-C6-O6
4	E	3	NAG	C4-C5-C6-O6
4	T	3	NAG	C4-C5-C6-O6
4	d	3	NAG	C4-C5-C6-O6
5	W	1	NAG	O5-C5-C6-O6
5	Y	1	NAG	O5-C5-C6-O6
5	W	1	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	X	1	NAG	C4-C5-C6-O6
5	k	2	NAG	O5-C5-C6-O6
5	G	1	NAG	C4-C5-C6-O6
5	V	1	NAG	C4-C5-C6-O6
5	f	1	NAG	C4-C5-C6-O6
5	Q	1	NAG	O5-C5-C6-O6
5	G	2	NAG	C4-C5-C6-O6
5	V	2	NAG	C4-C5-C6-O6
5	f	2	NAG	C4-C5-C6-O6
5	F	1	NAG	C4-C5-C6-O6
5	U	1	NAG	C4-C5-C6-O6
5	K	1	NAG	C4-C5-C6-O6
5	e	1	NAG	C4-C5-C6-O6
5	j	2	NAG	C4-C5-C6-O6
4	D	2	NAG	O5-C5-C6-O6
4	S	2	NAG	O5-C5-C6-O6
4	c	2	NAG	O5-C5-C6-O6
5	Z	2	NAG	C4-C5-C6-O6
5	G	1	NAG	C8-C7-N2-C2
5	G	1	NAG	O7-C7-N2-C2
5	P	2	NAG	C8-C7-N2-C2
5	P	2	NAG	O7-C7-N2-C2
5	V	1	NAG	C8-C7-N2-C2
5	V	1	NAG	O7-C7-N2-C2
5	Y	2	NAG	C8-C7-N2-C2
5	Y	2	NAG	O7-C7-N2-C2
5	f	1	NAG	C8-C7-N2-C2
5	f	1	NAG	O7-C7-N2-C2
5	g	1	NAG	C8-C7-N2-C2
5	g	1	NAG	O7-C7-N2-C2
5	j	2	NAG	C8-C7-N2-C2
5	j	2	NAG	O7-C7-N2-C2
5	k	2	NAG	C8-C7-N2-C2
5	k	2	NAG	O7-C7-N2-C2
4	D	3	NAG	C4-C5-C6-O6
4	S	3	NAG	C4-C5-C6-O6
4	c	3	NAG	C4-C5-C6-O6
5	Q	1	NAG	C4-C5-C6-O6
5	g	2	NAG	C4-C5-C6-O6
4	E	1	NAG	O5-C5-C6-O6
4	T	1	NAG	O5-C5-C6-O6
4	d	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	j	2	NAG	O5-C5-C6-O6
5	Y	2	NAG	C4-C5-C6-O6
5	k	2	NAG	C4-C5-C6-O6
5	W	2	NAG	O5-C5-C6-O6
5	R	1	NAG	C4-C5-C6-O6
5	h	1	NAG	C4-C5-C6-O6
5	h	2	NAG	C4-C5-C6-O6
5	l	1	NAG	C4-C5-C6-O6
5	K	1	NAG	O5-C5-C6-O6
5	a	1	NAG	O5-C5-C6-O6
5	F	1	NAG	O5-C5-C6-O6
5	U	1	NAG	O5-C5-C6-O6
5	e	1	NAG	O5-C5-C6-O6
4	D	2	NAG	C4-C5-C6-O6
4	S	2	NAG	C4-C5-C6-O6
4	c	2	NAG	C4-C5-C6-O6
5	X	2	NAG	O5-C5-C6-O6
5	Y	2	NAG	O5-C5-C6-O6
5	X	2	NAG	C4-C5-C6-O6
5	W	2	NAG	C4-C5-C6-O6
5	h	1	NAG	O5-C5-C6-O6
5	h	2	NAG	O5-C5-C6-O6
5	i	1	NAG	C4-C5-C6-O6
5	b	1	NAG	O5-C5-C6-O6
5	i	1	NAG	O5-C5-C6-O6
5	j	1	NAG	C4-C5-C6-O6
5	j	1	NAG	O5-C5-C6-O6
5	i	2	NAG	C4-C5-C6-O6
5	g	1	NAG	C4-C5-C6-O6
5	i	2	NAG	O5-C5-C6-O6
5	Q	2	NAG	O5-C5-C6-O6
5	K	2	NAG	C4-C5-C6-O6
5	G	1	NAG	C3-C2-N2-C7
5	Q	2	NAG	C3-C2-N2-C7
5	V	1	NAG	C3-C2-N2-C7
5	a	2	NAG	C3-C2-N2-C7
5	f	1	NAG	C3-C2-N2-C7
5	i	2	NAG	C3-C2-N2-C7
5	g	1	NAG	O5-C5-C6-O6
5	K	2	NAG	O5-C5-C6-O6
5	a	1	NAG	C4-C5-C6-O6
5	P	2	NAG	C3-C2-N2-C7

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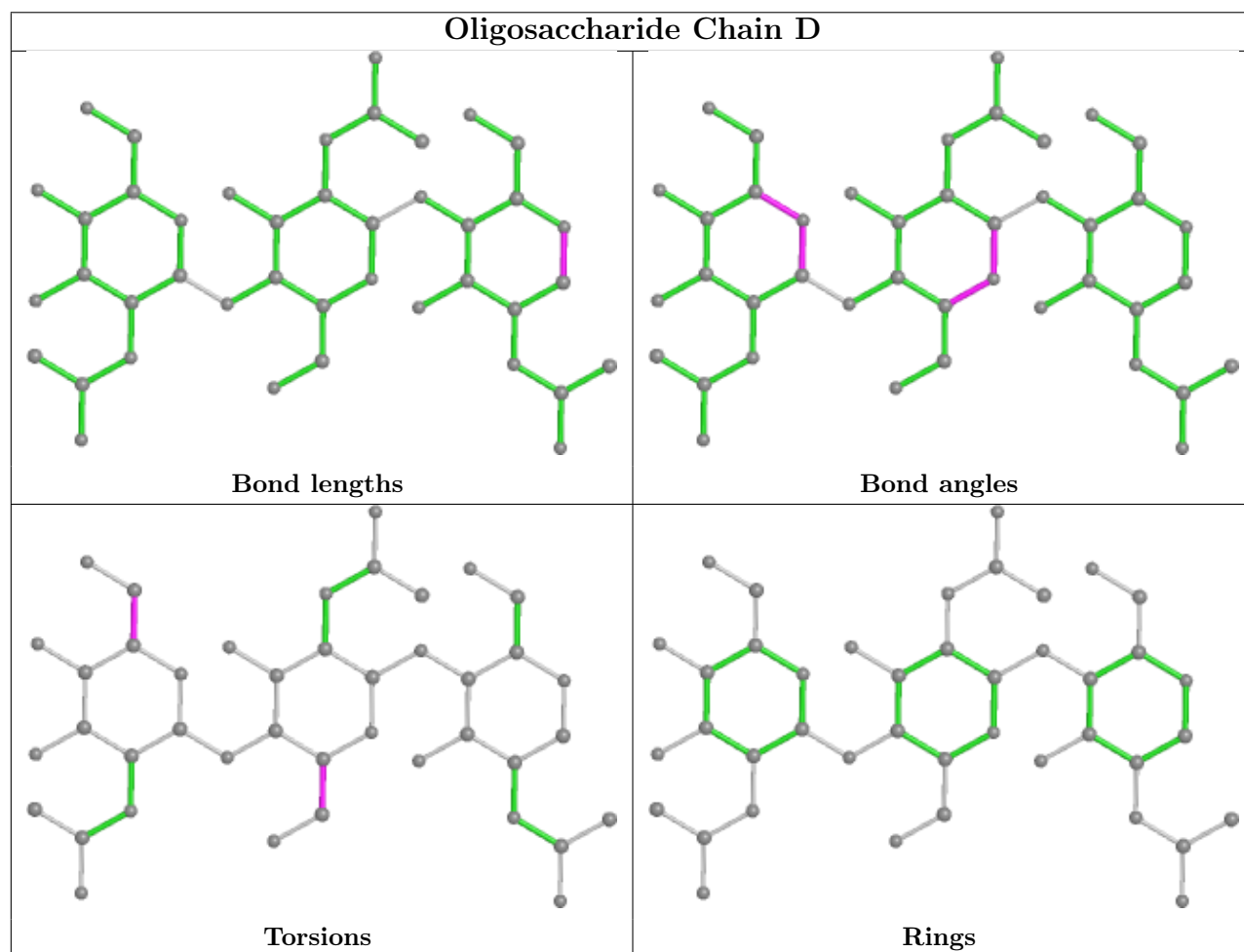
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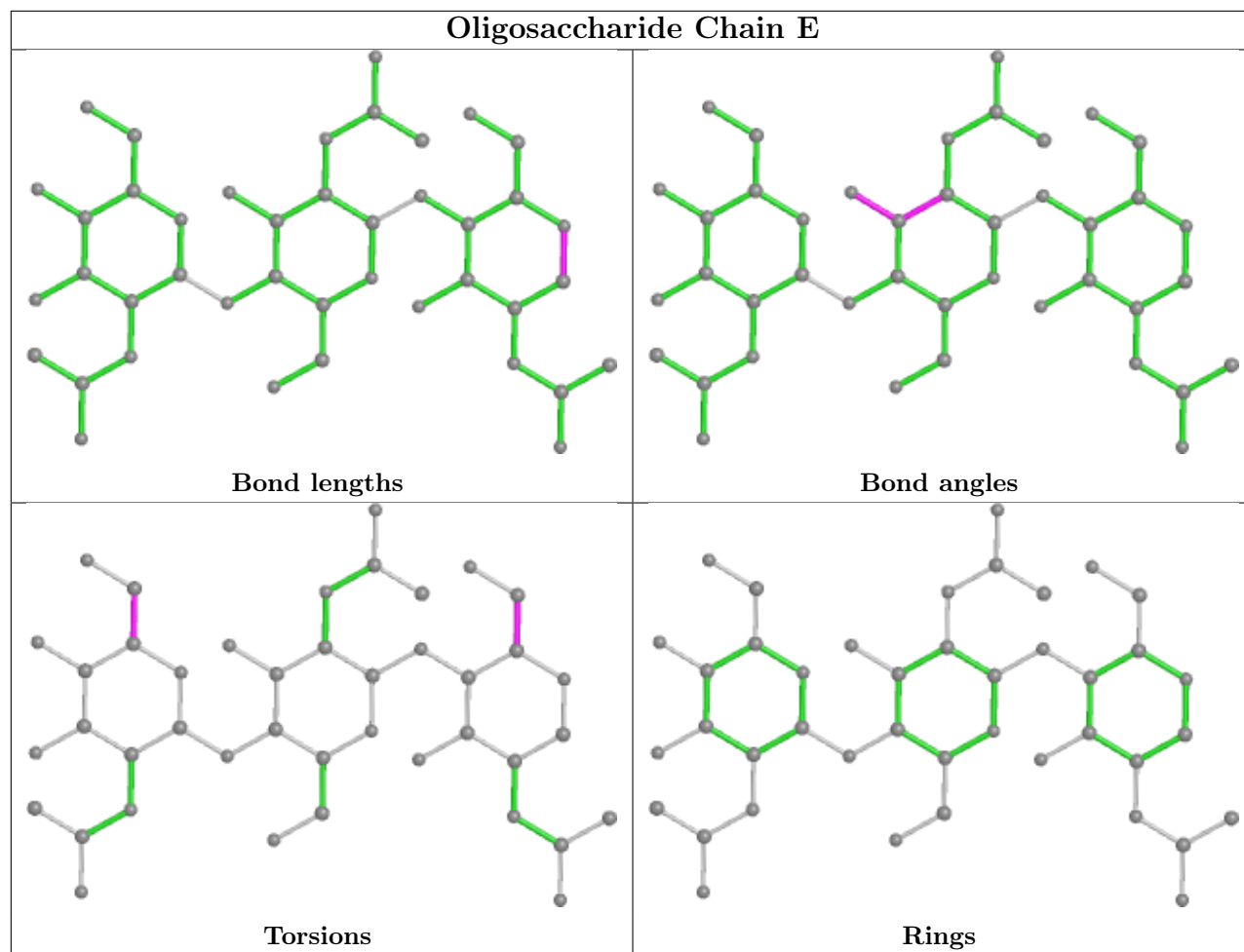
Mol	Chain	Res	Type	Atoms
5	X	1	NAG	C3-C2-N2-C7
5	g	1	NAG	C3-C2-N2-C7
5	j	2	NAG	C3-C2-N2-C7
5	k	2	NAG	C3-C2-N2-C7

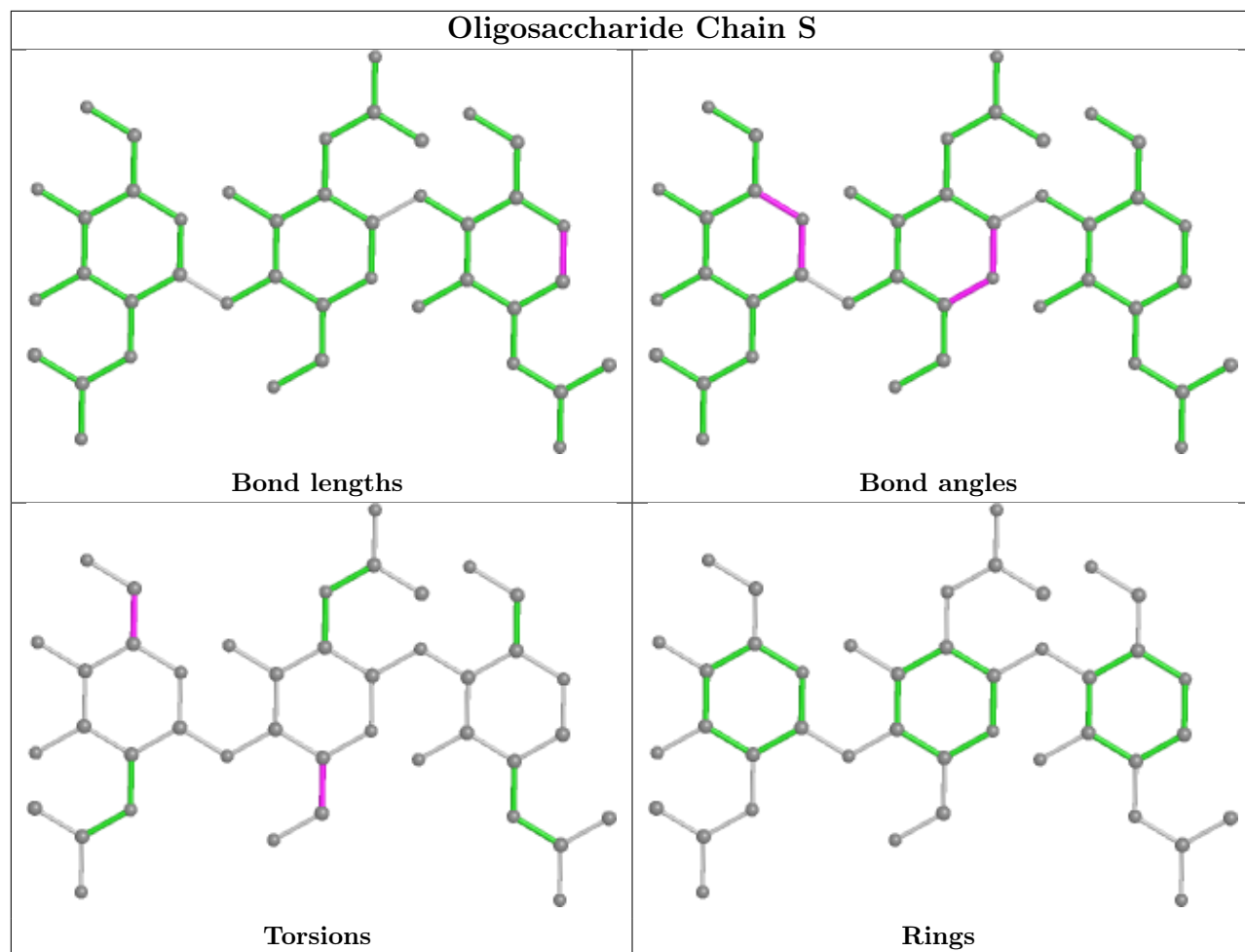
There are no ring outliers.

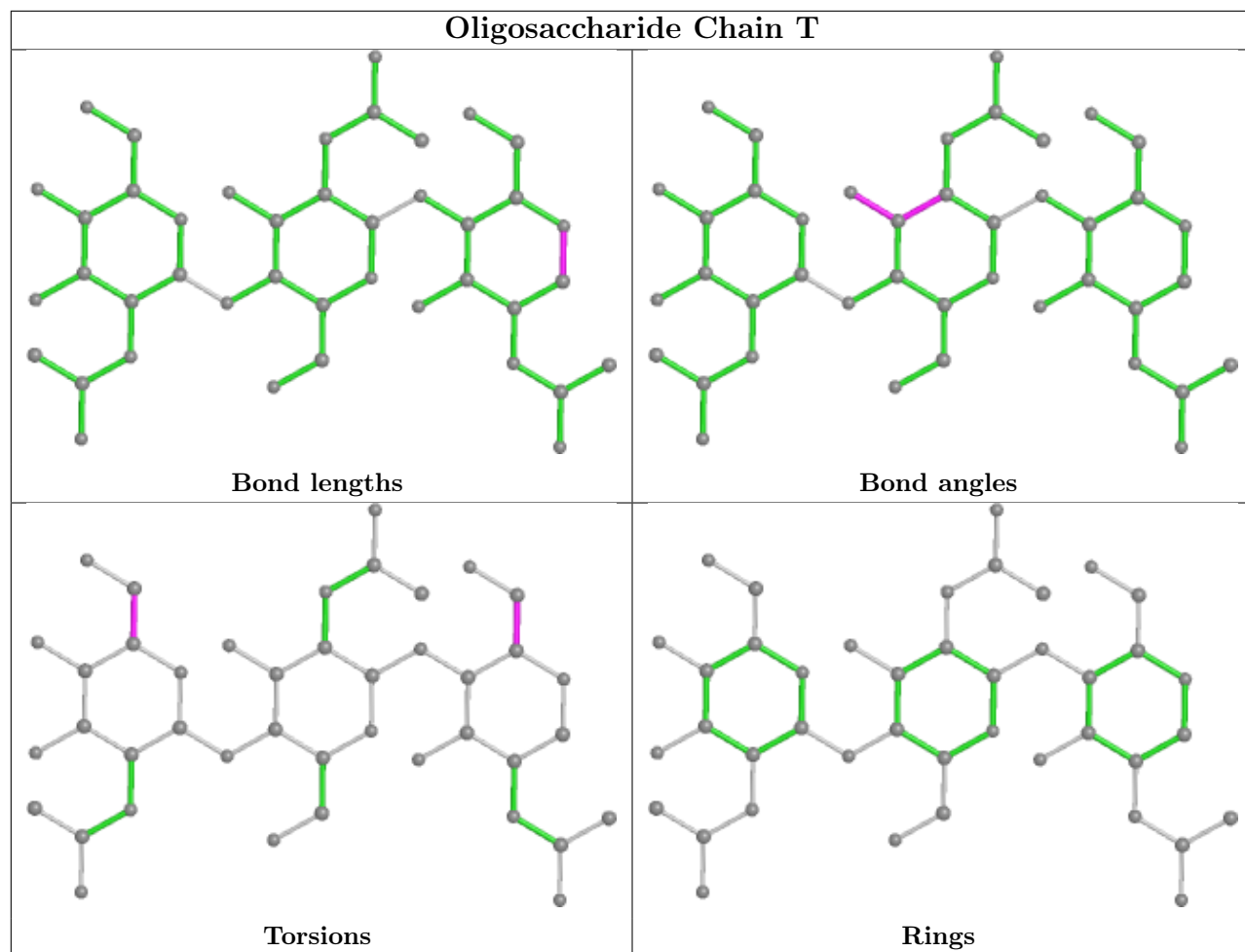
No monomer is involved in short contacts.

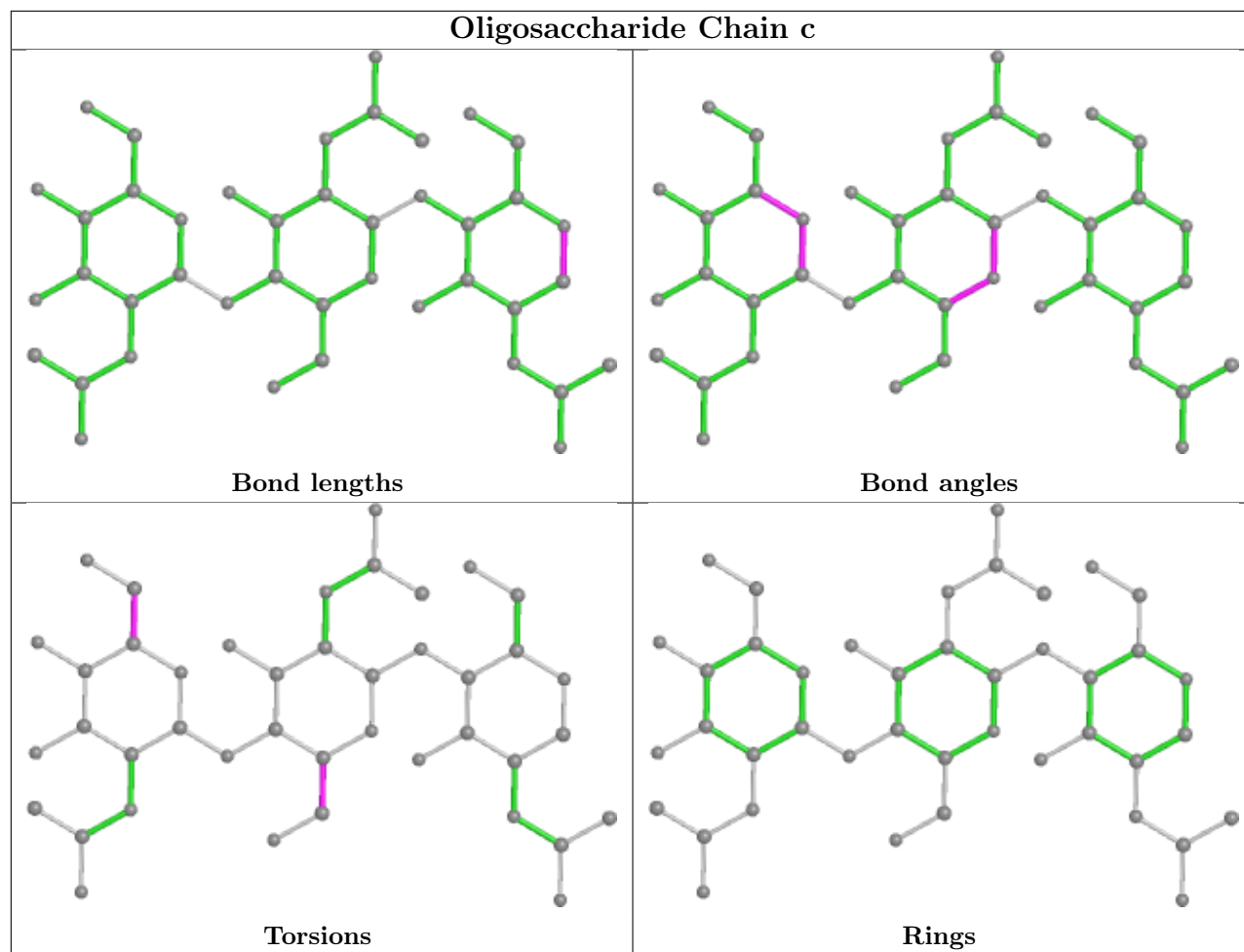
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

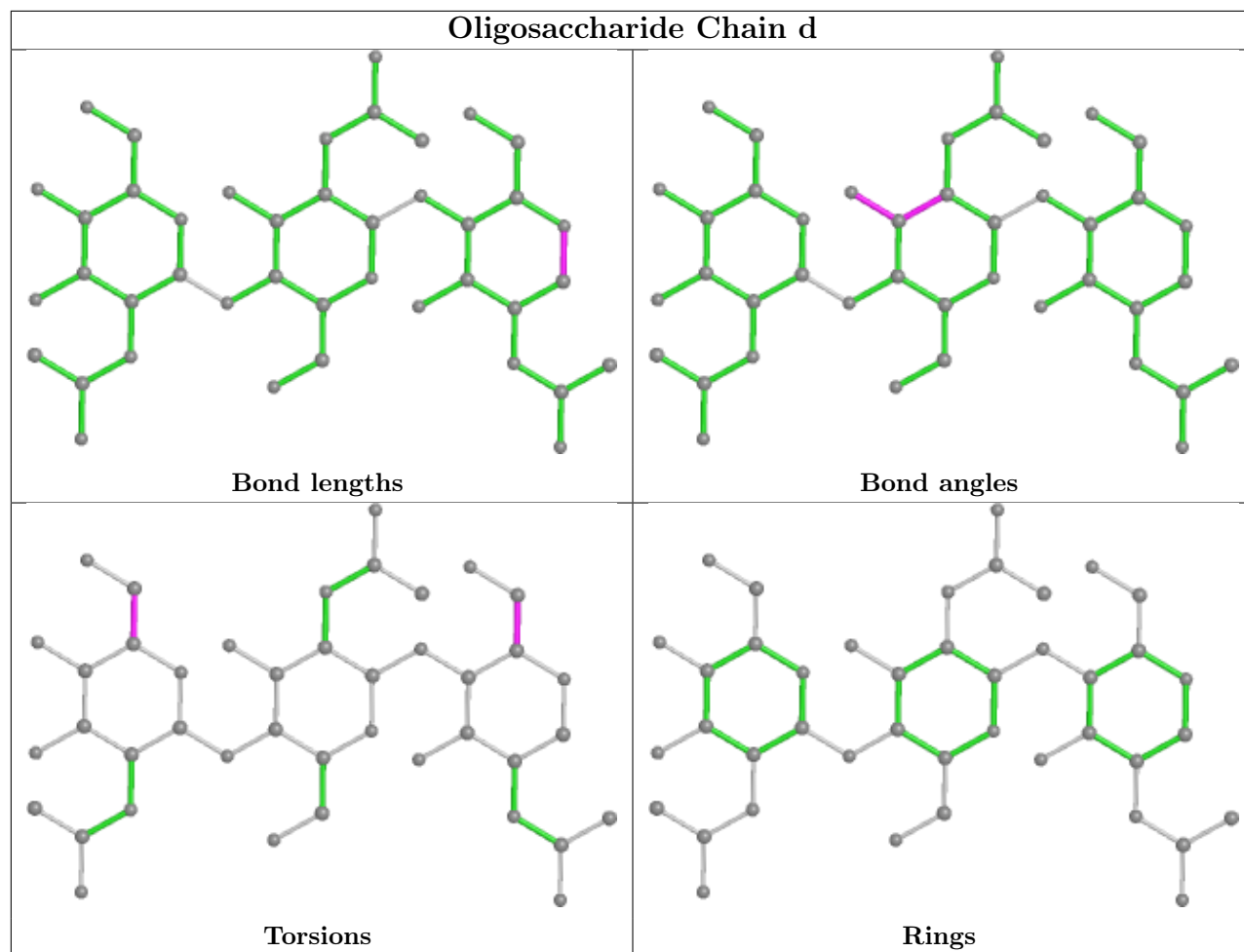


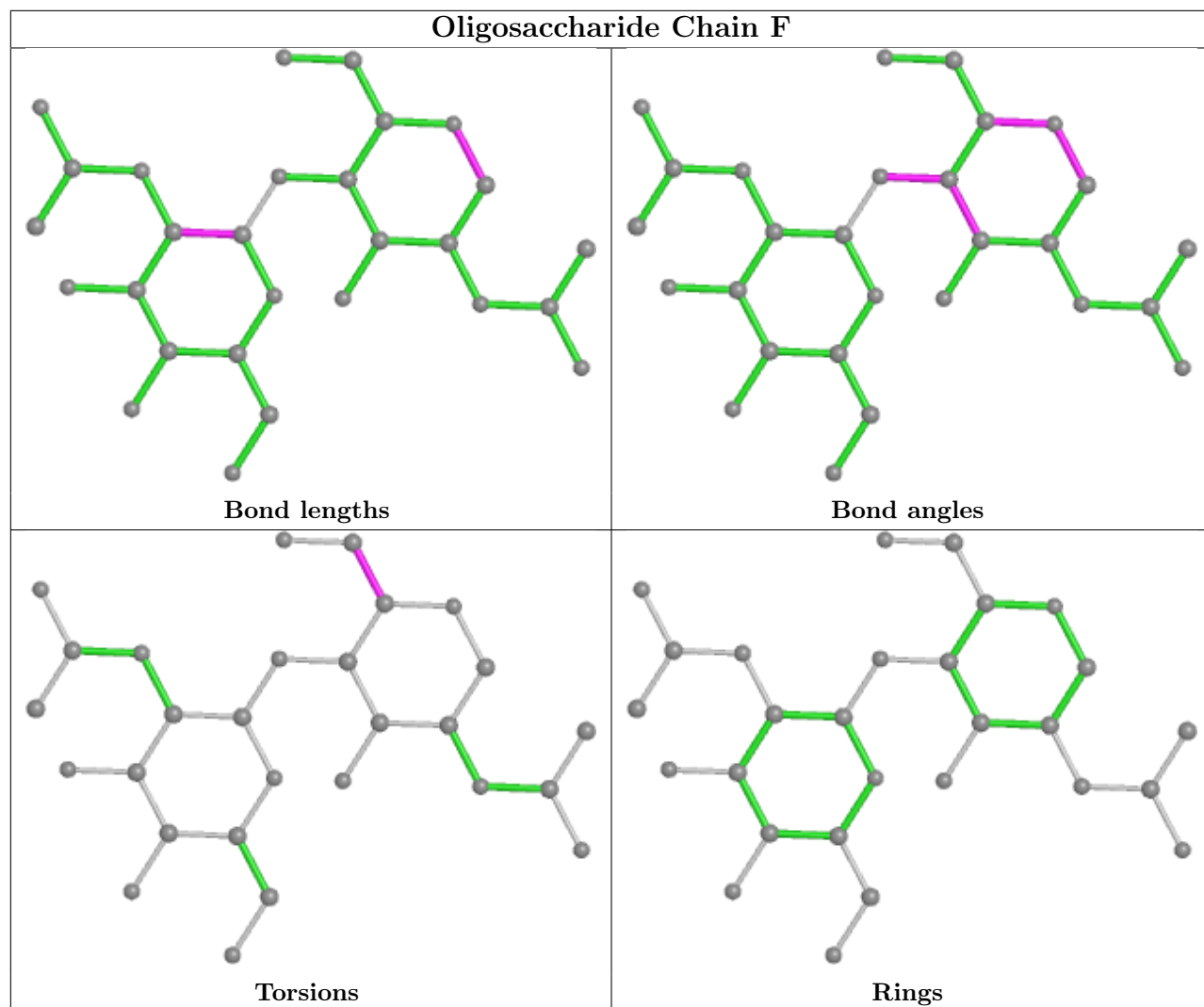


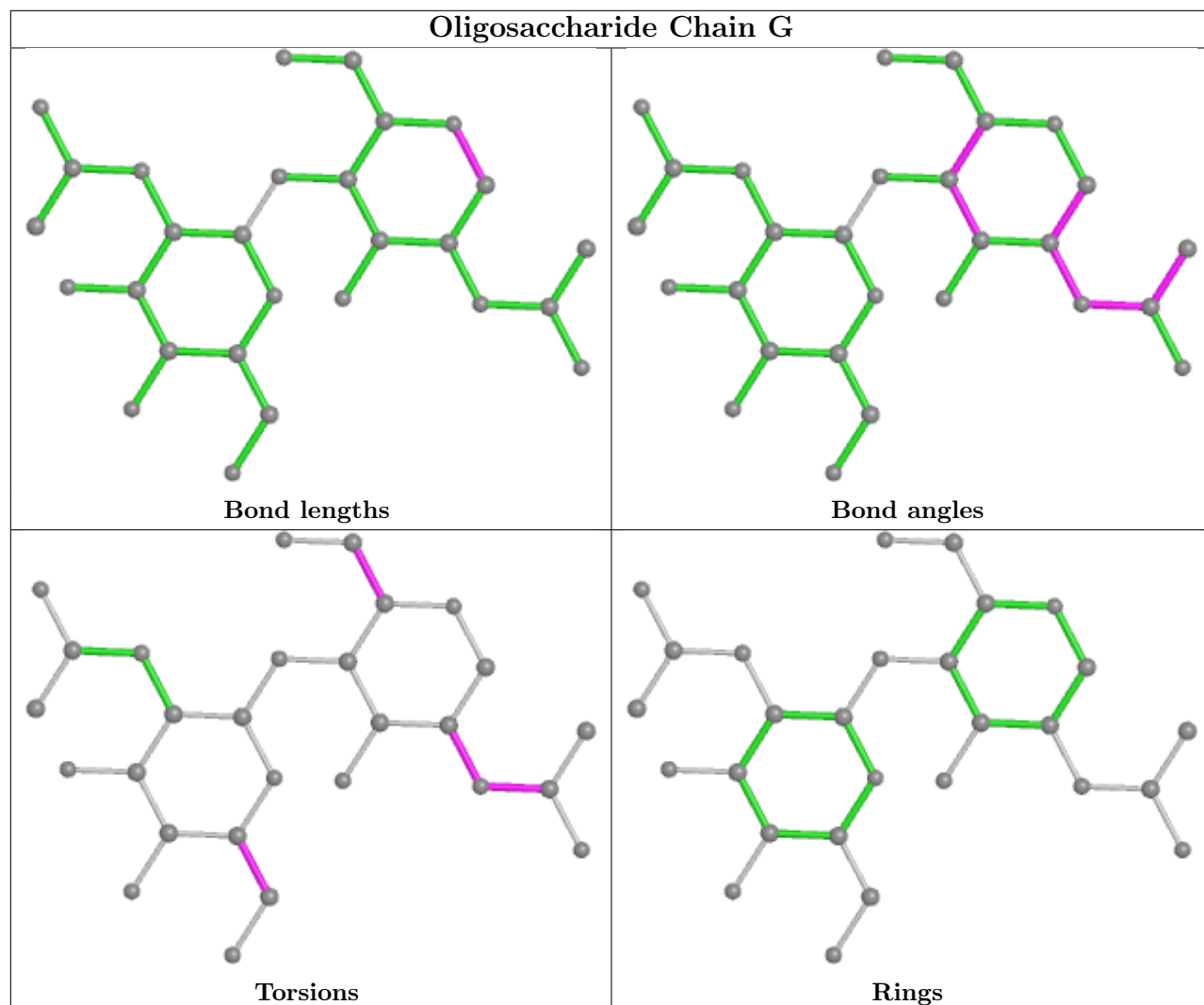


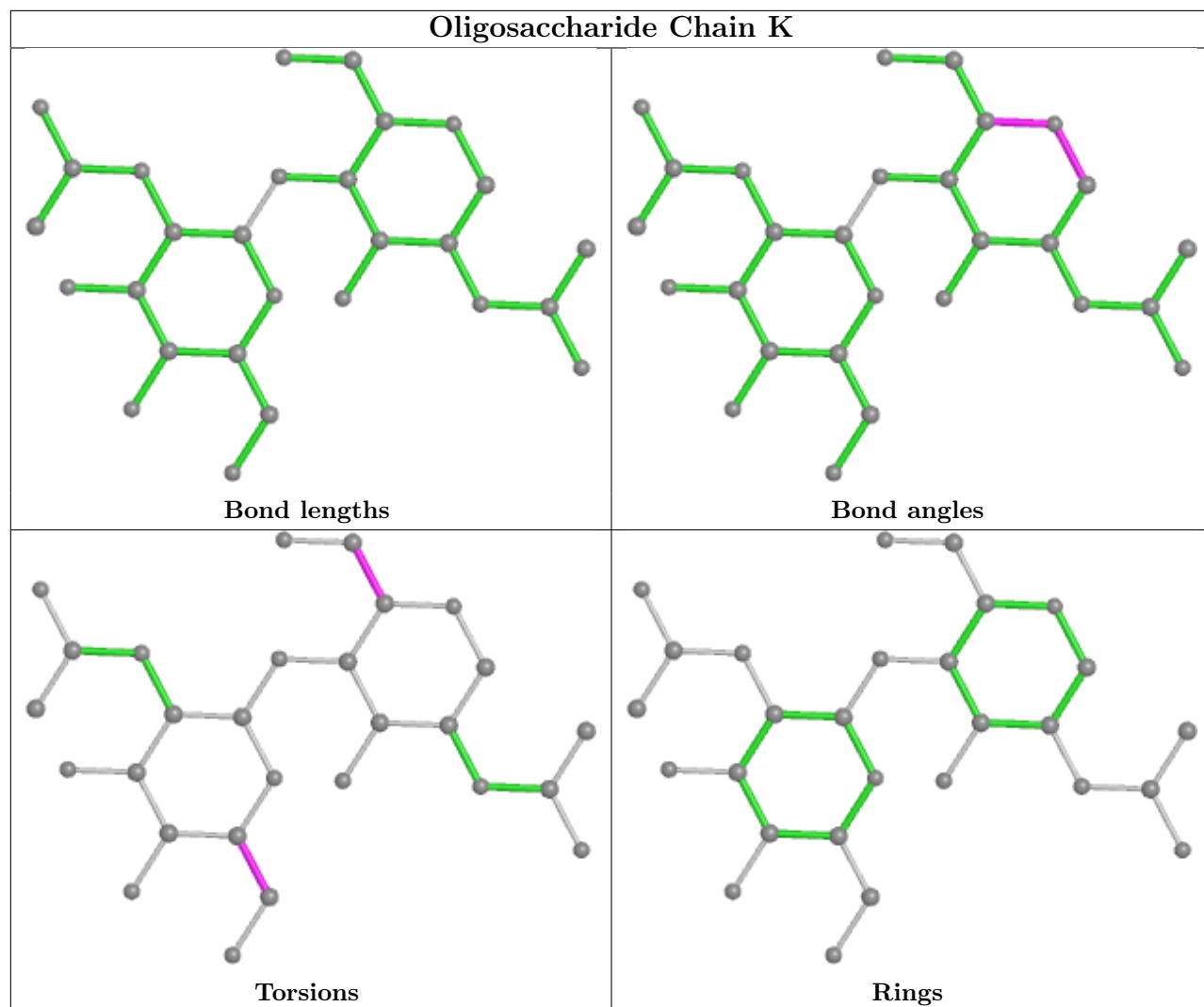


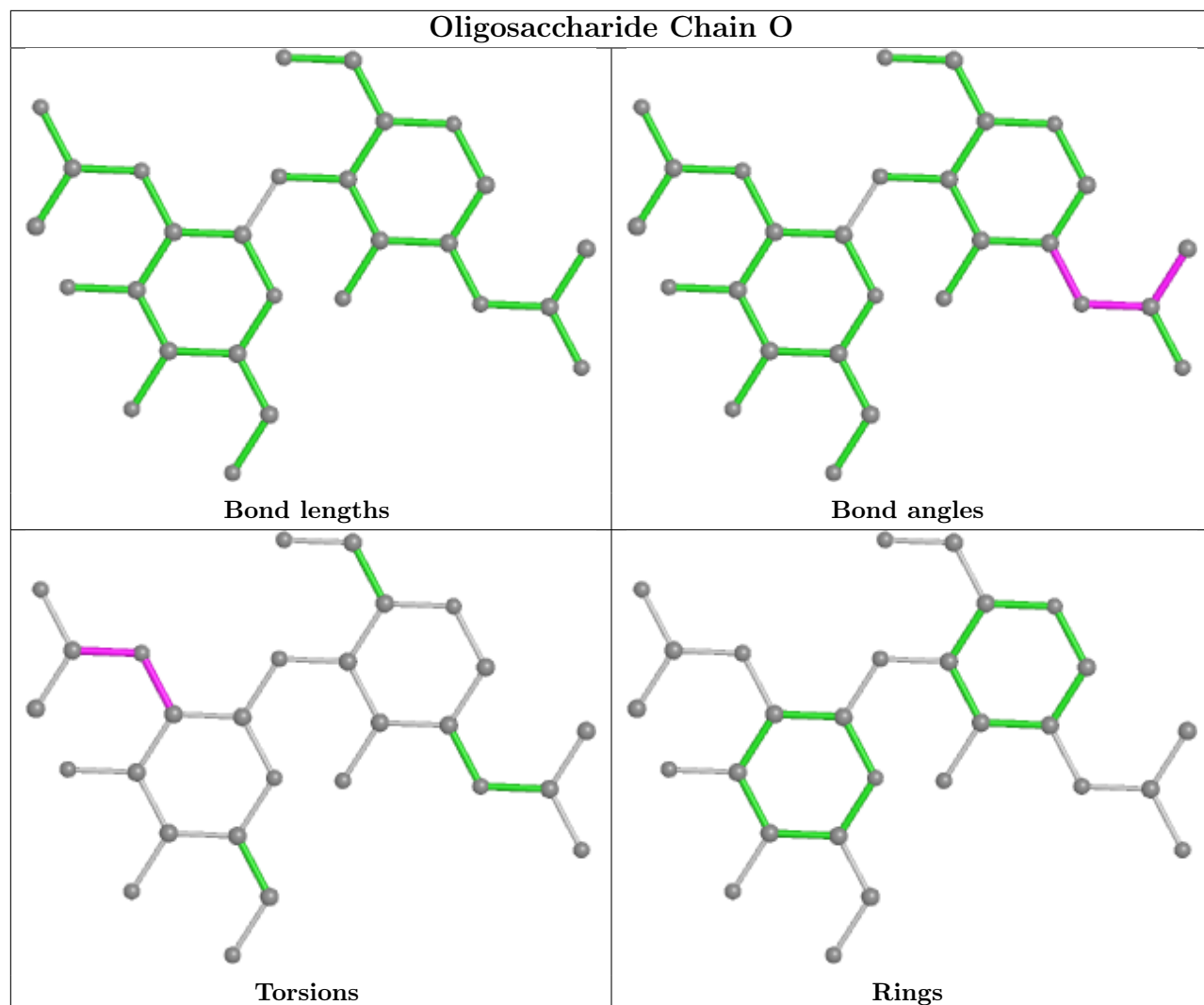


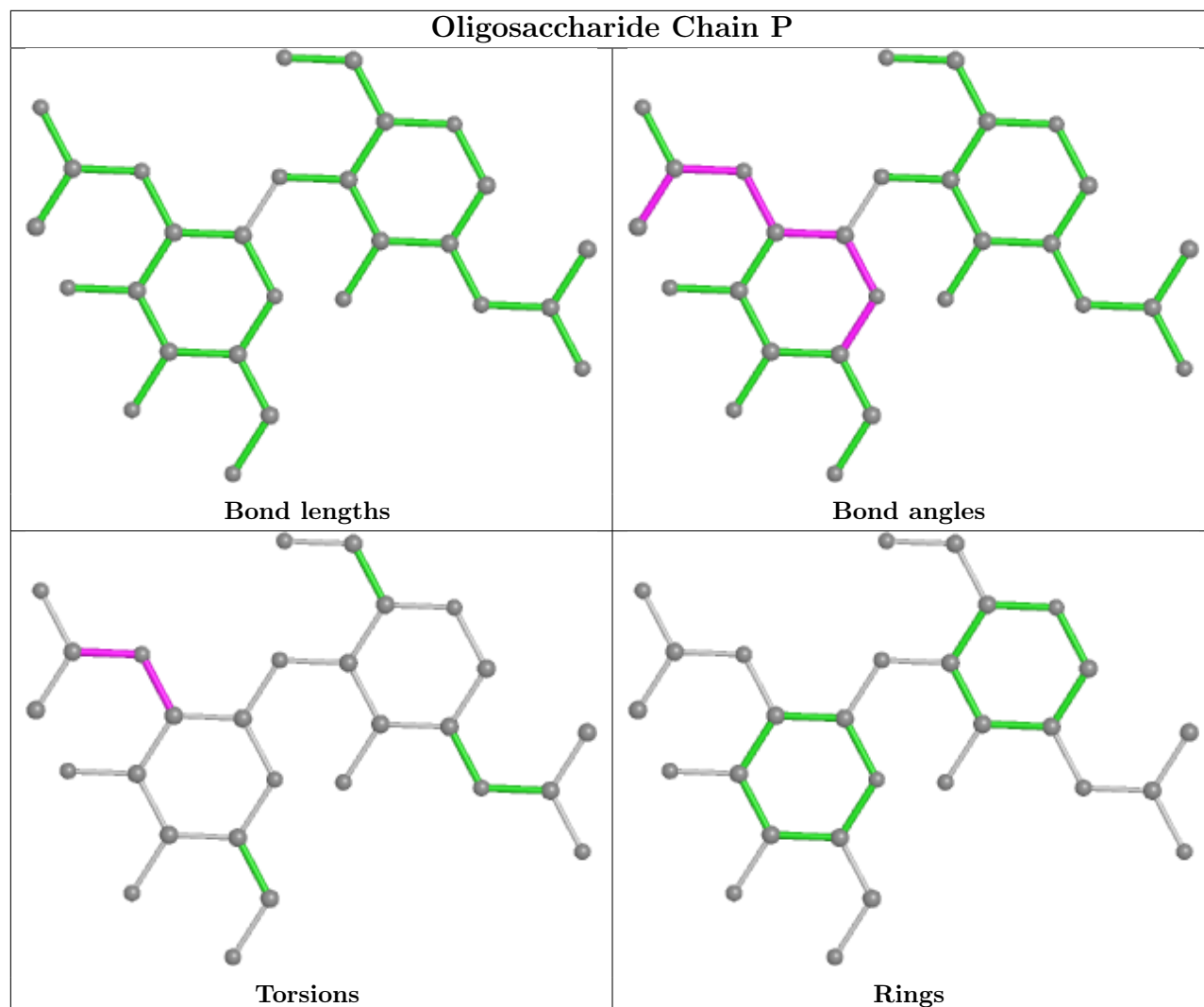


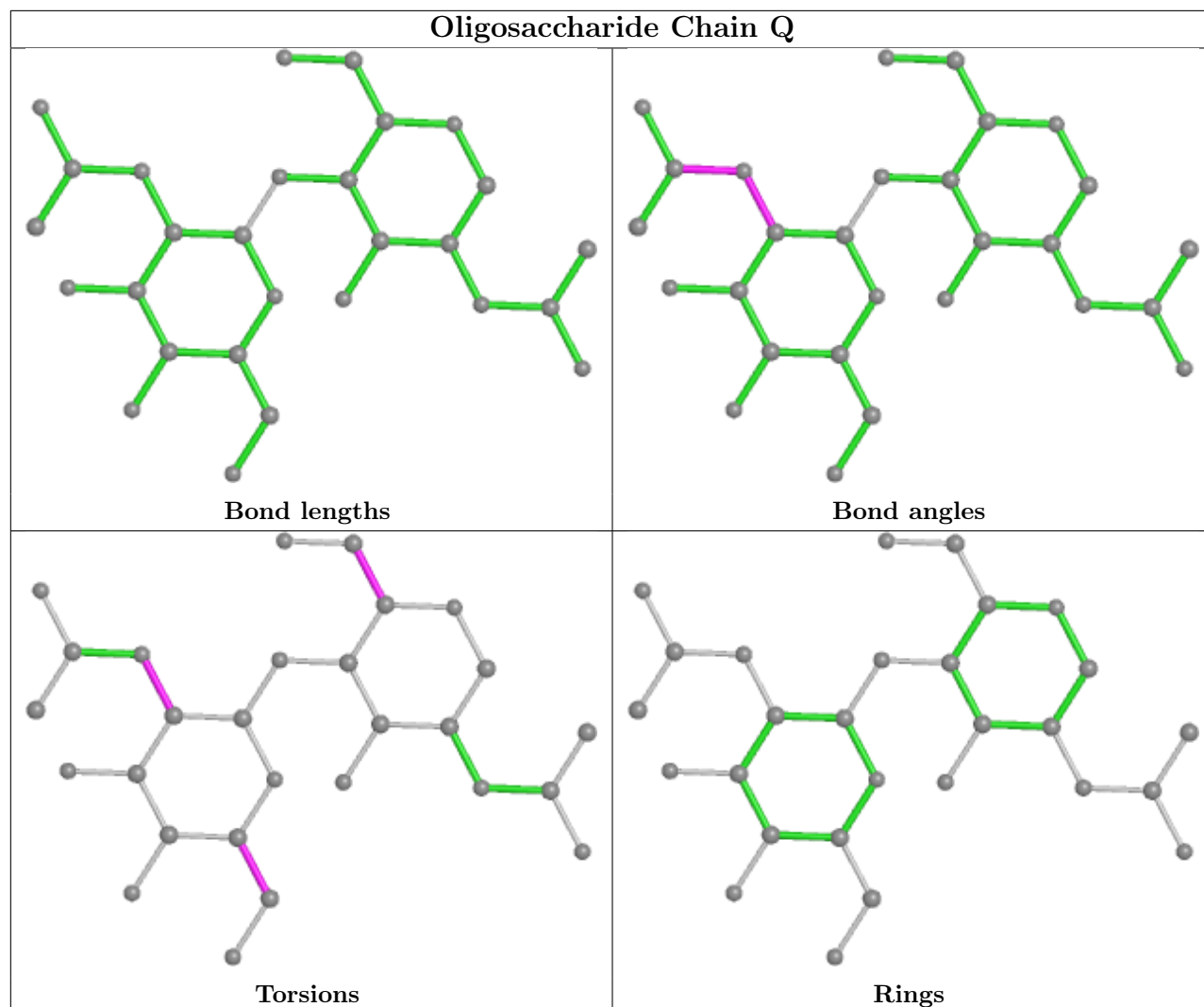


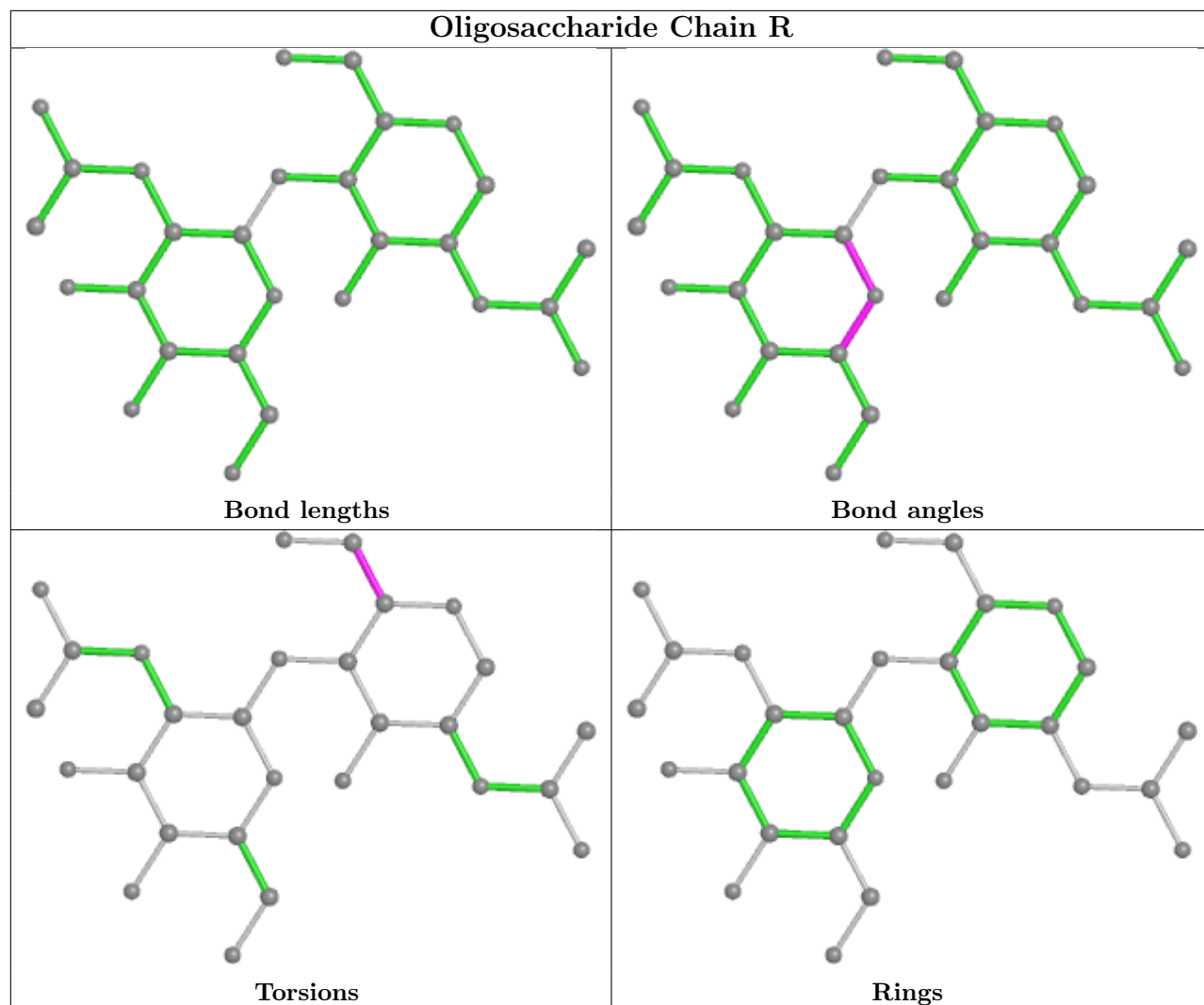


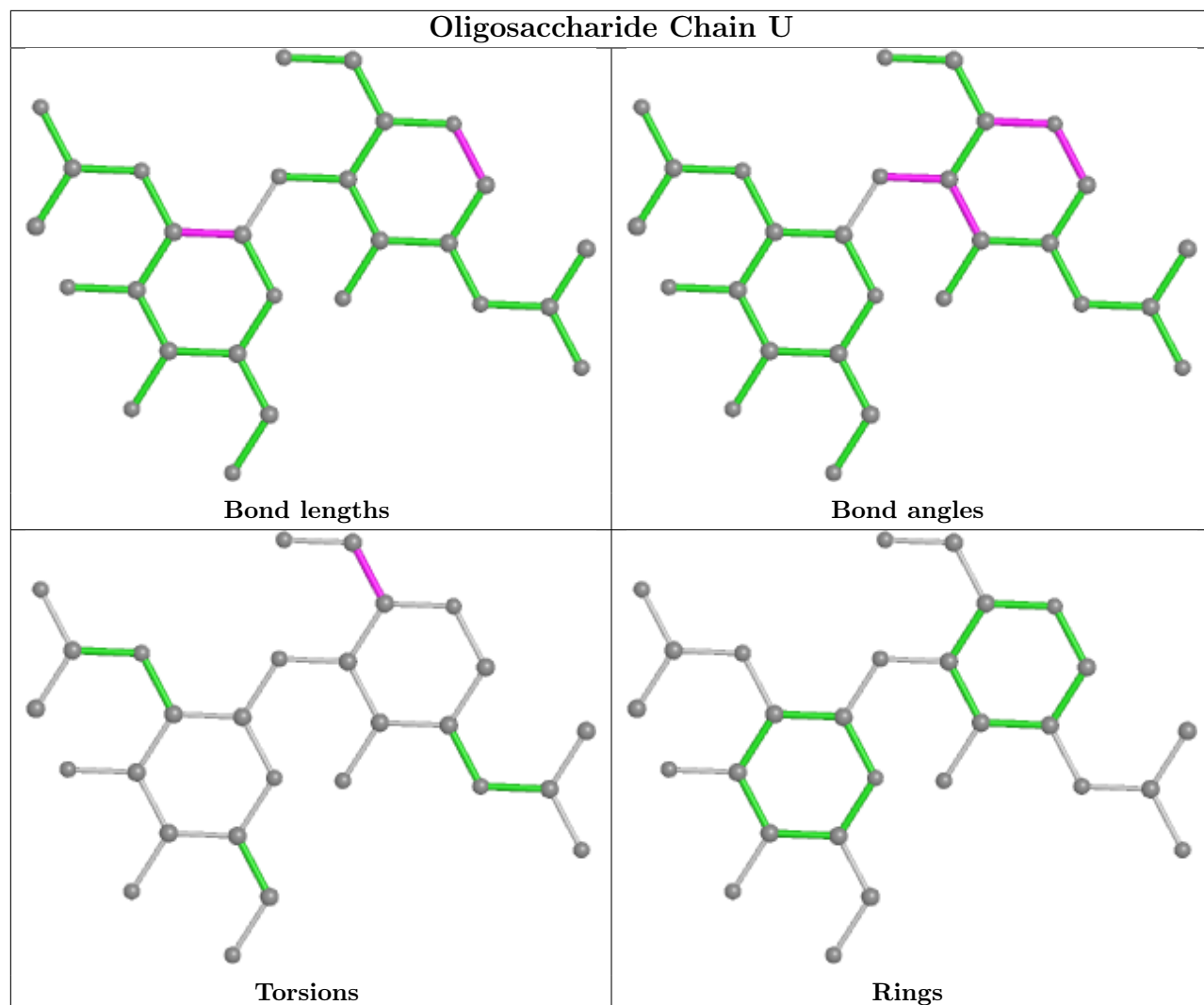


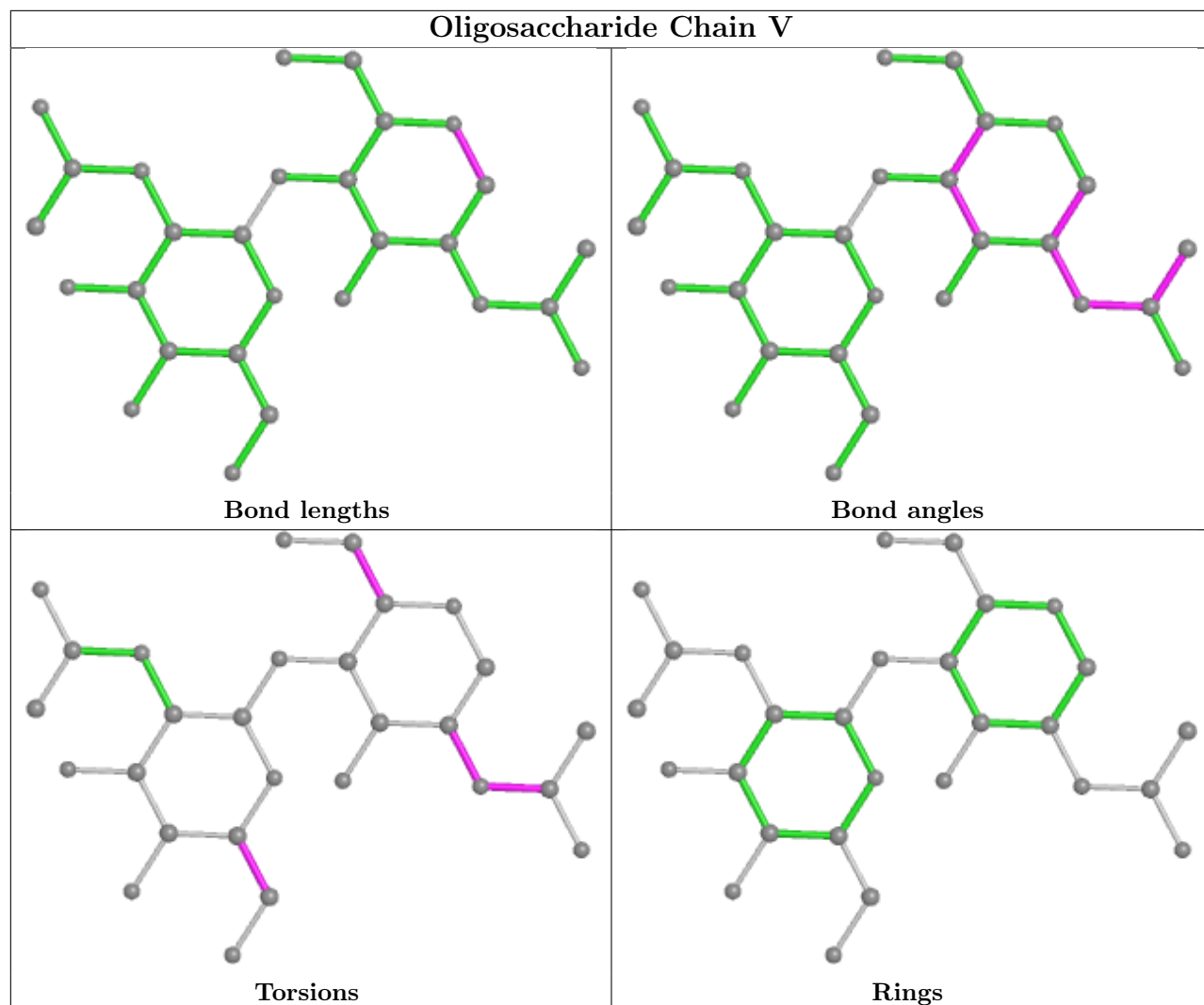


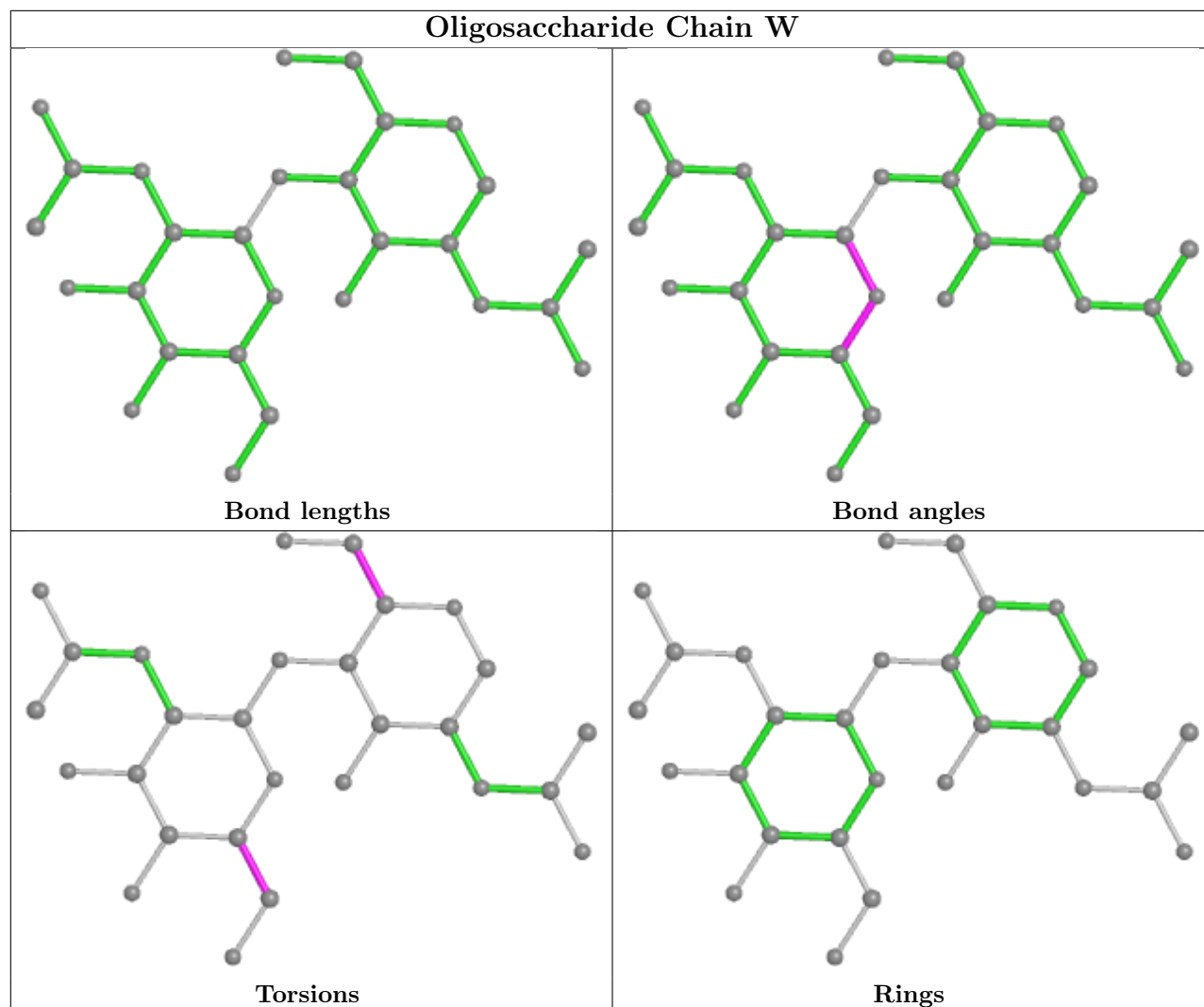


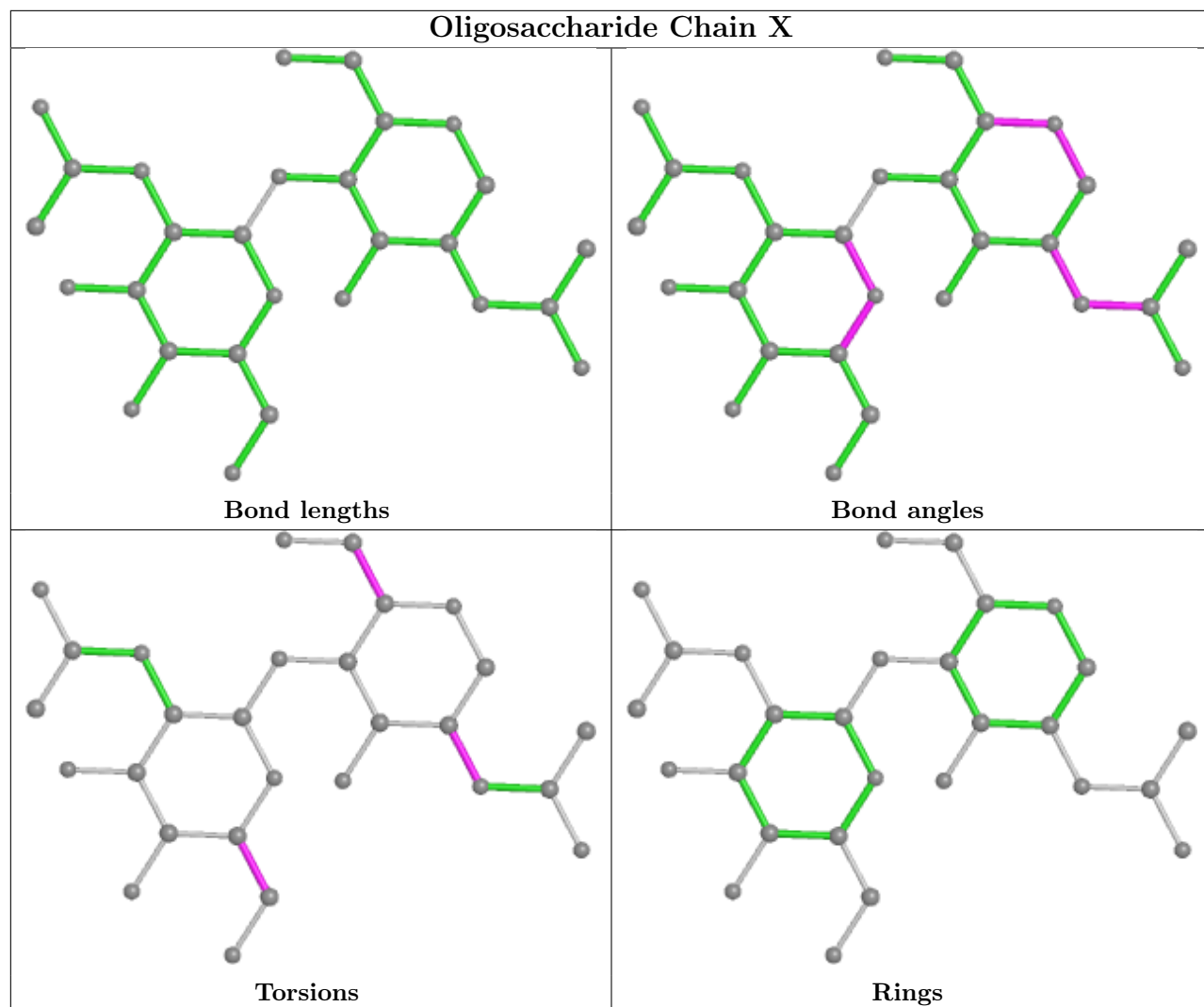


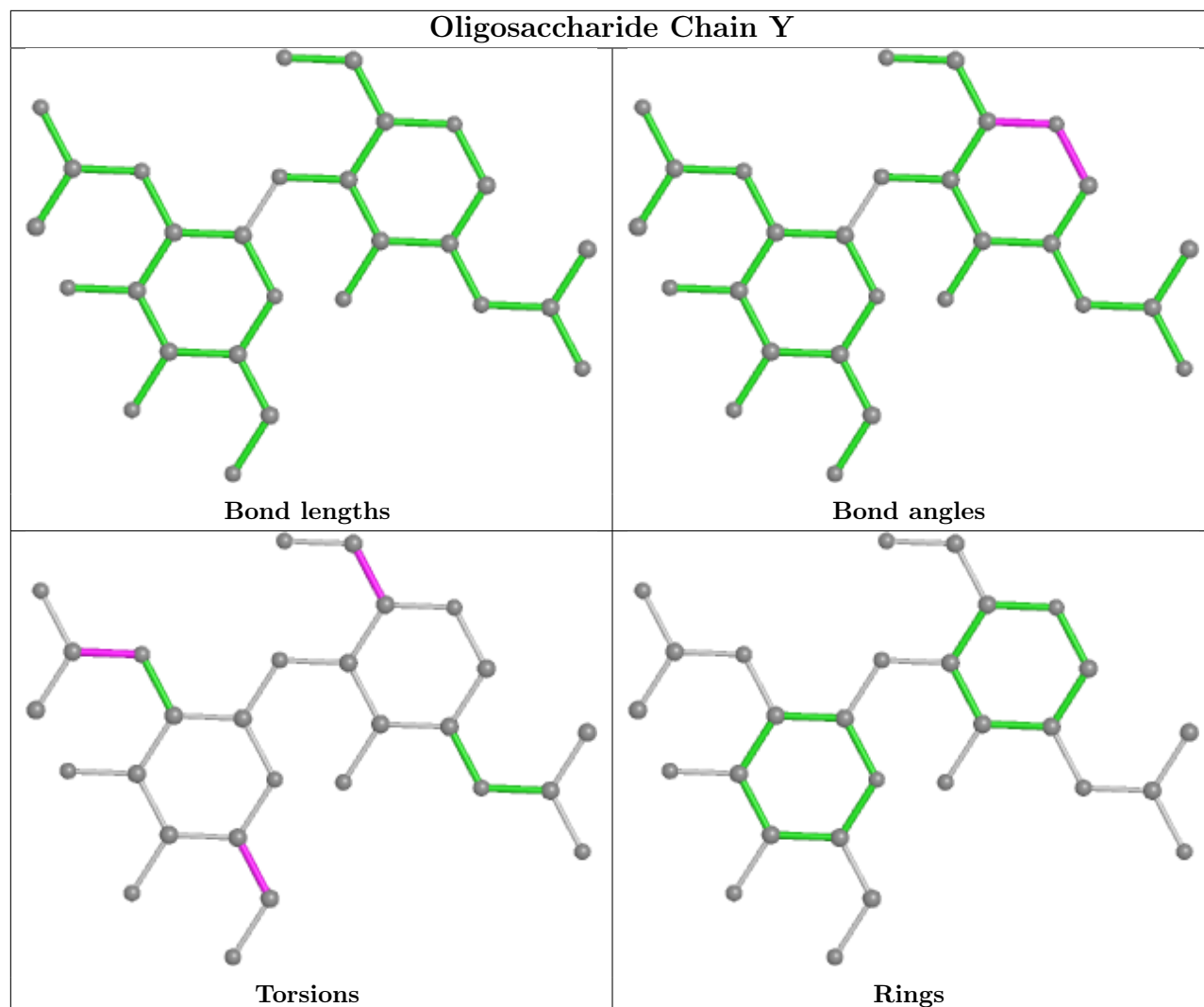


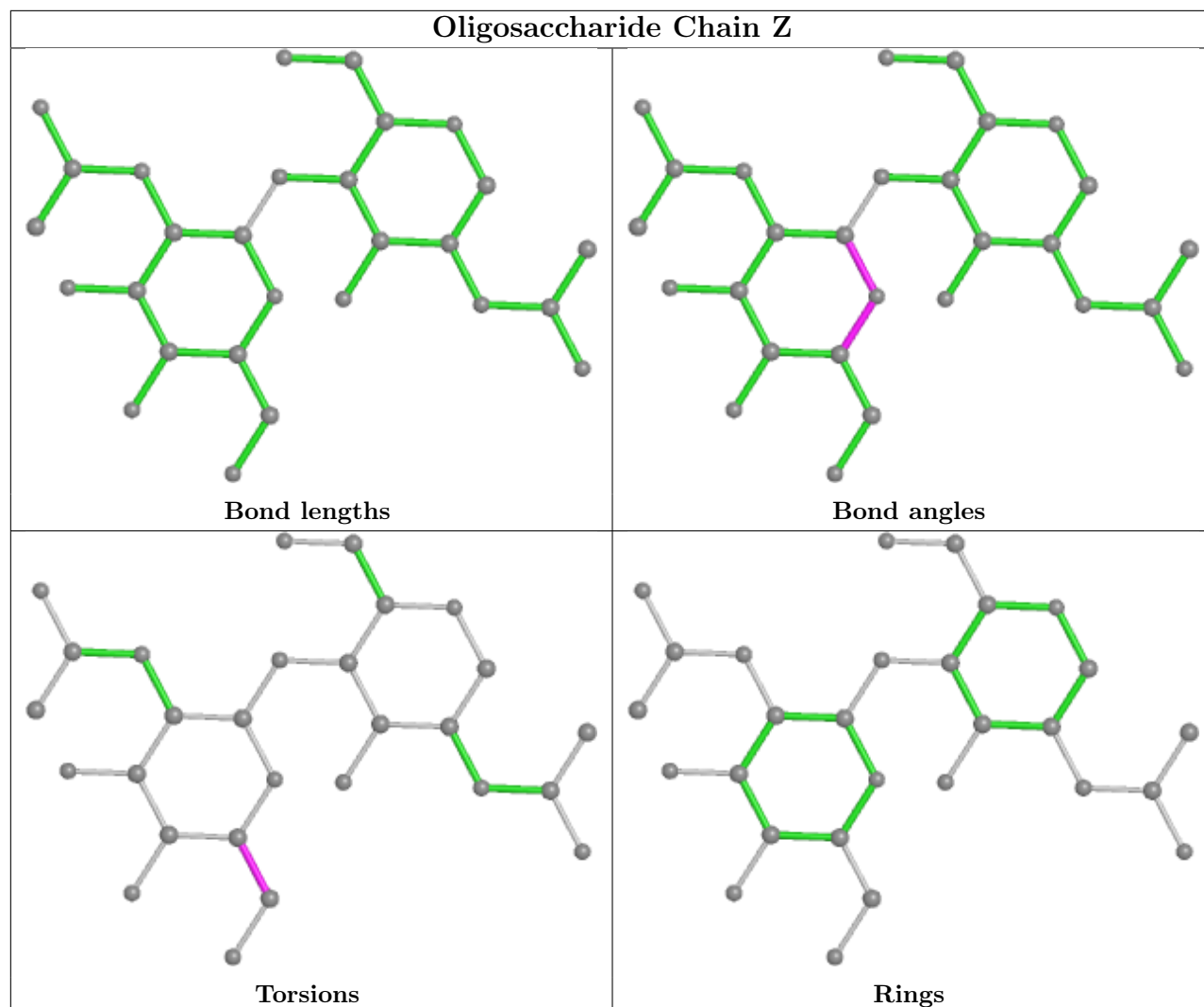


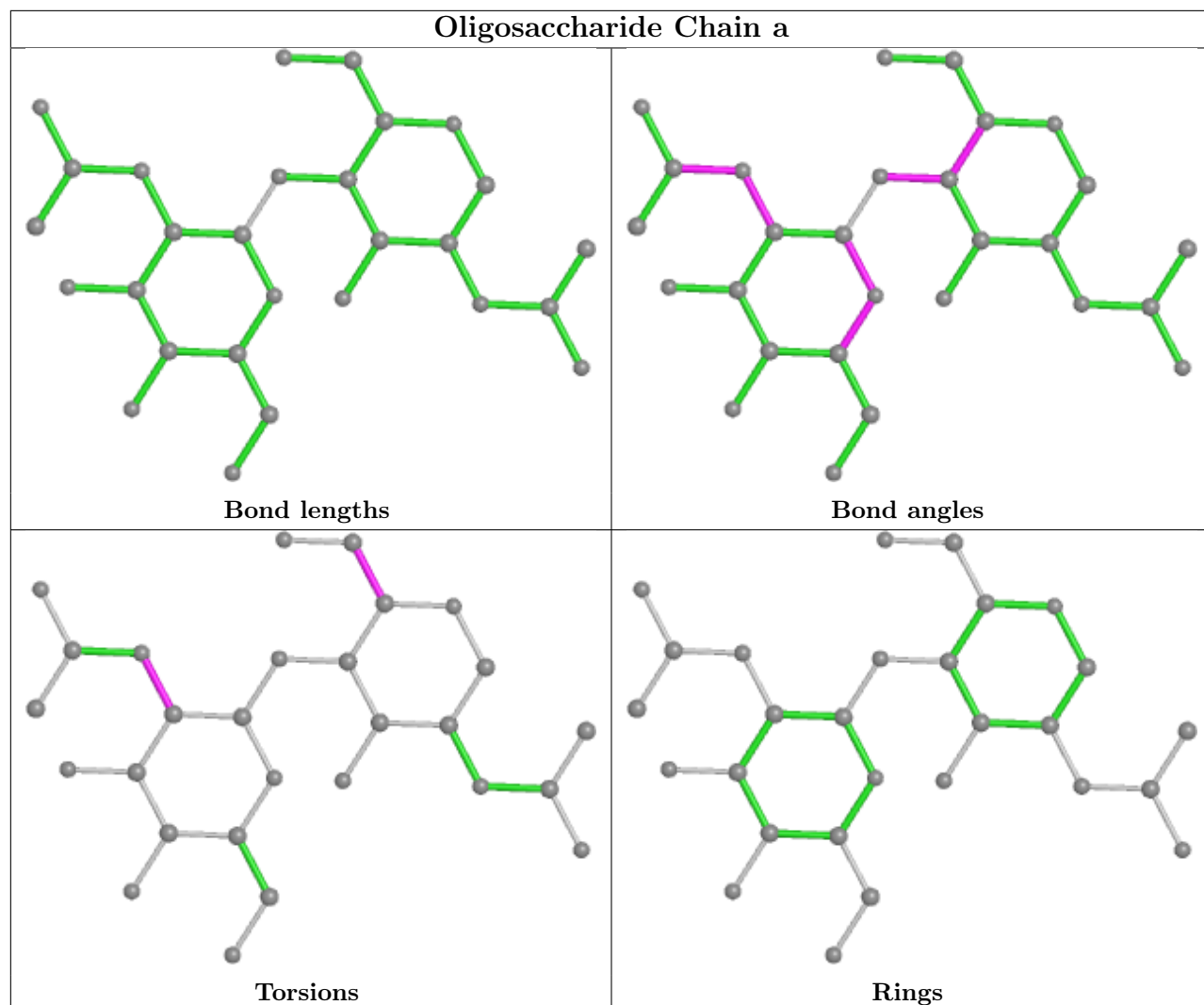


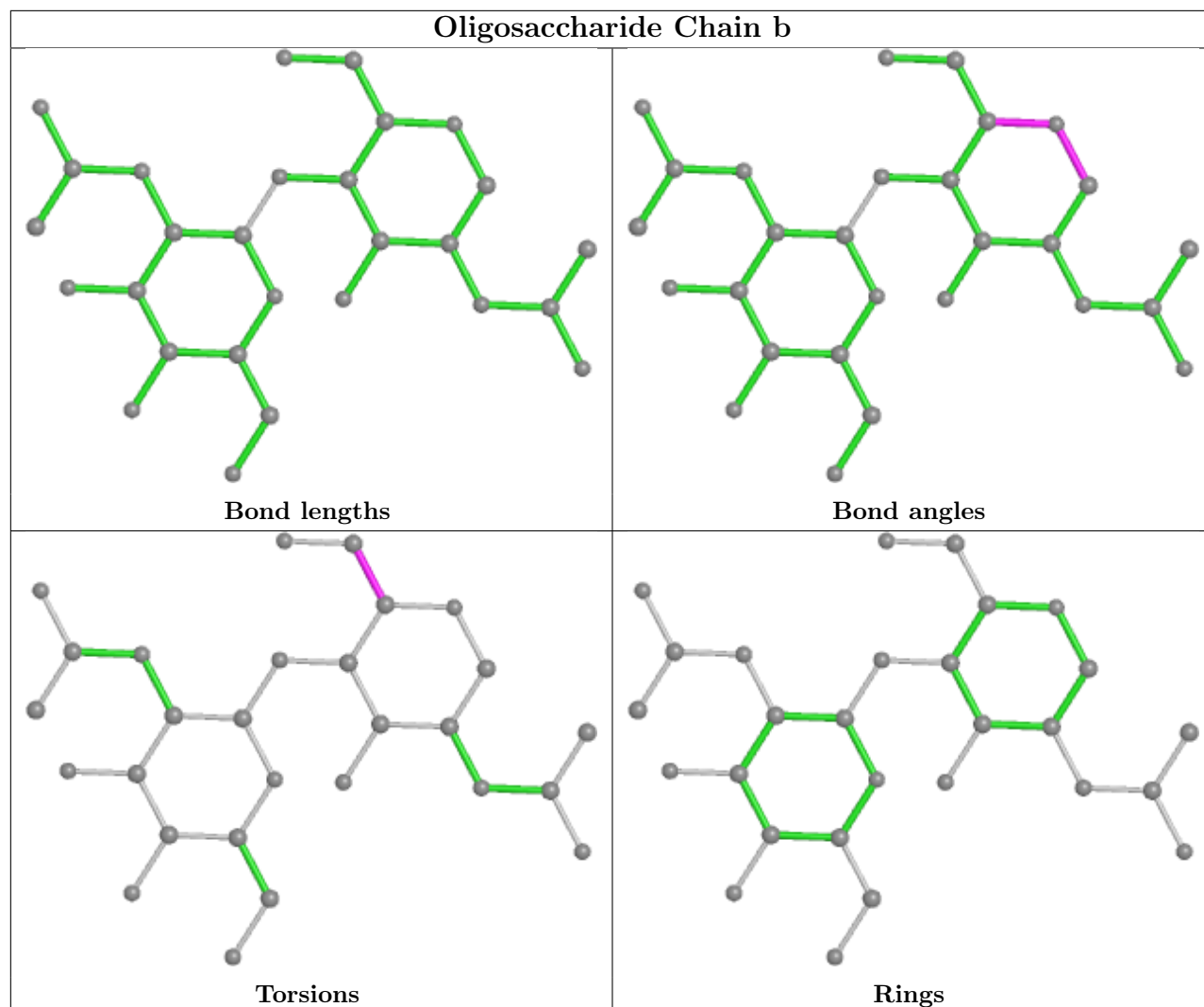


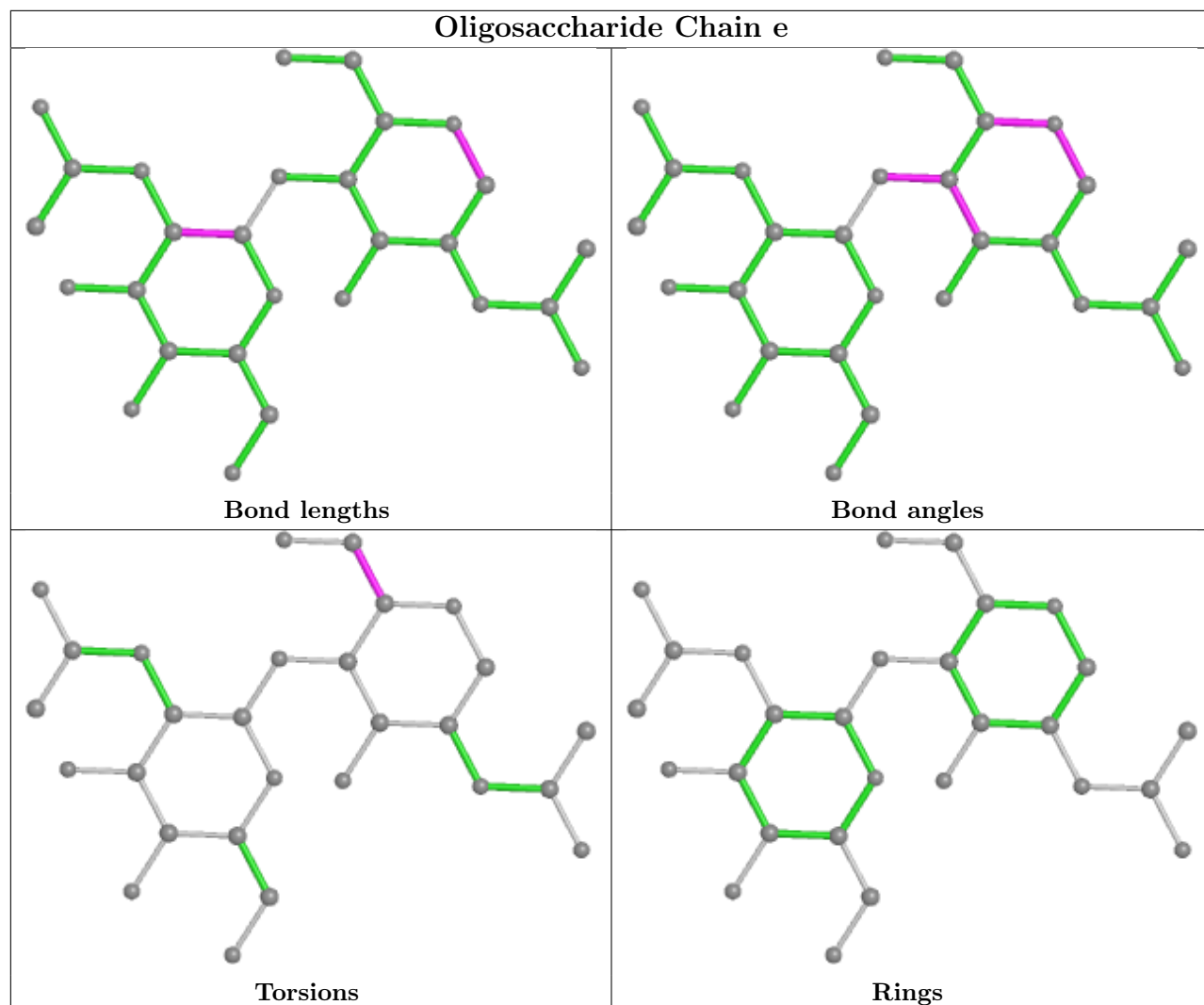


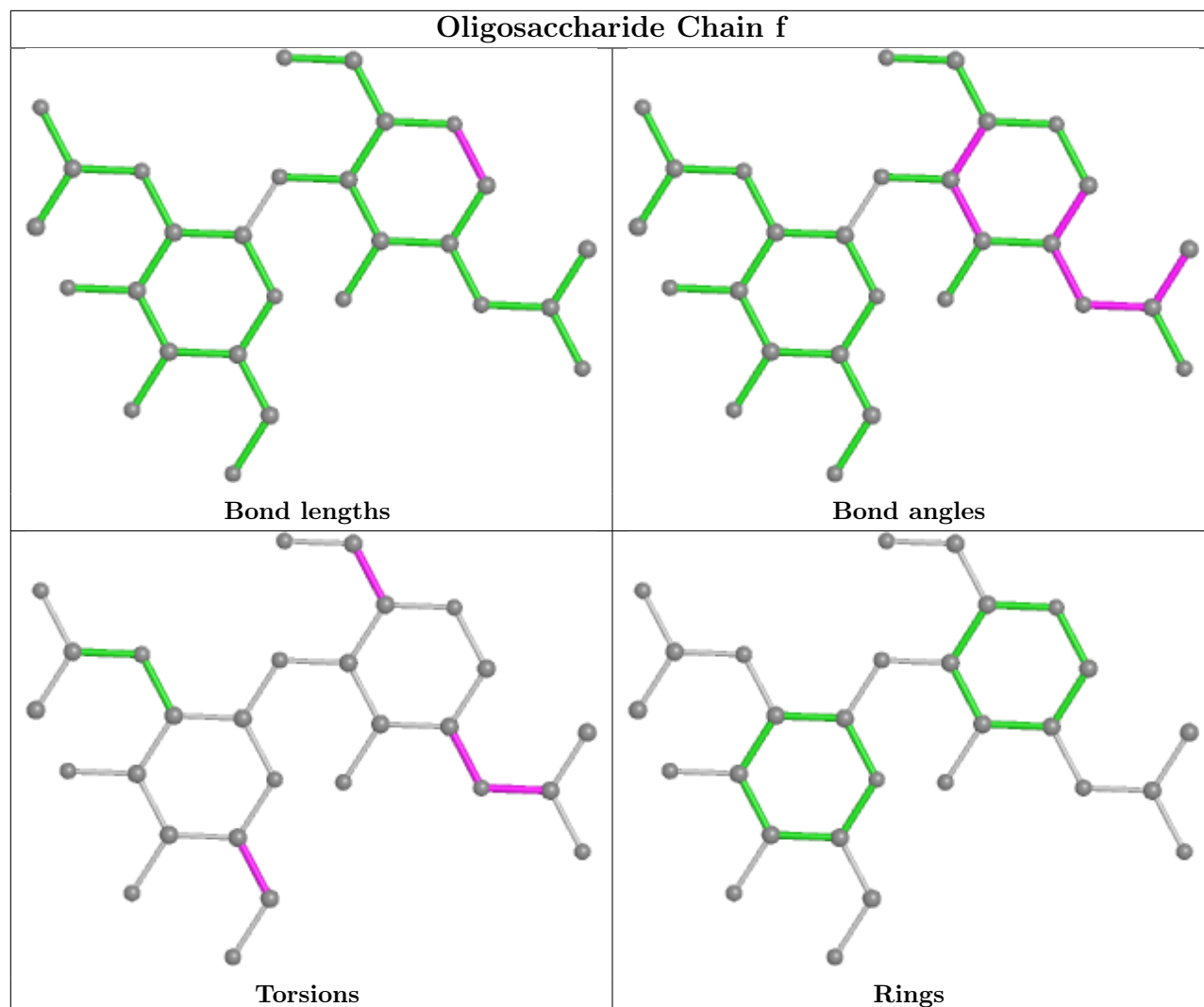


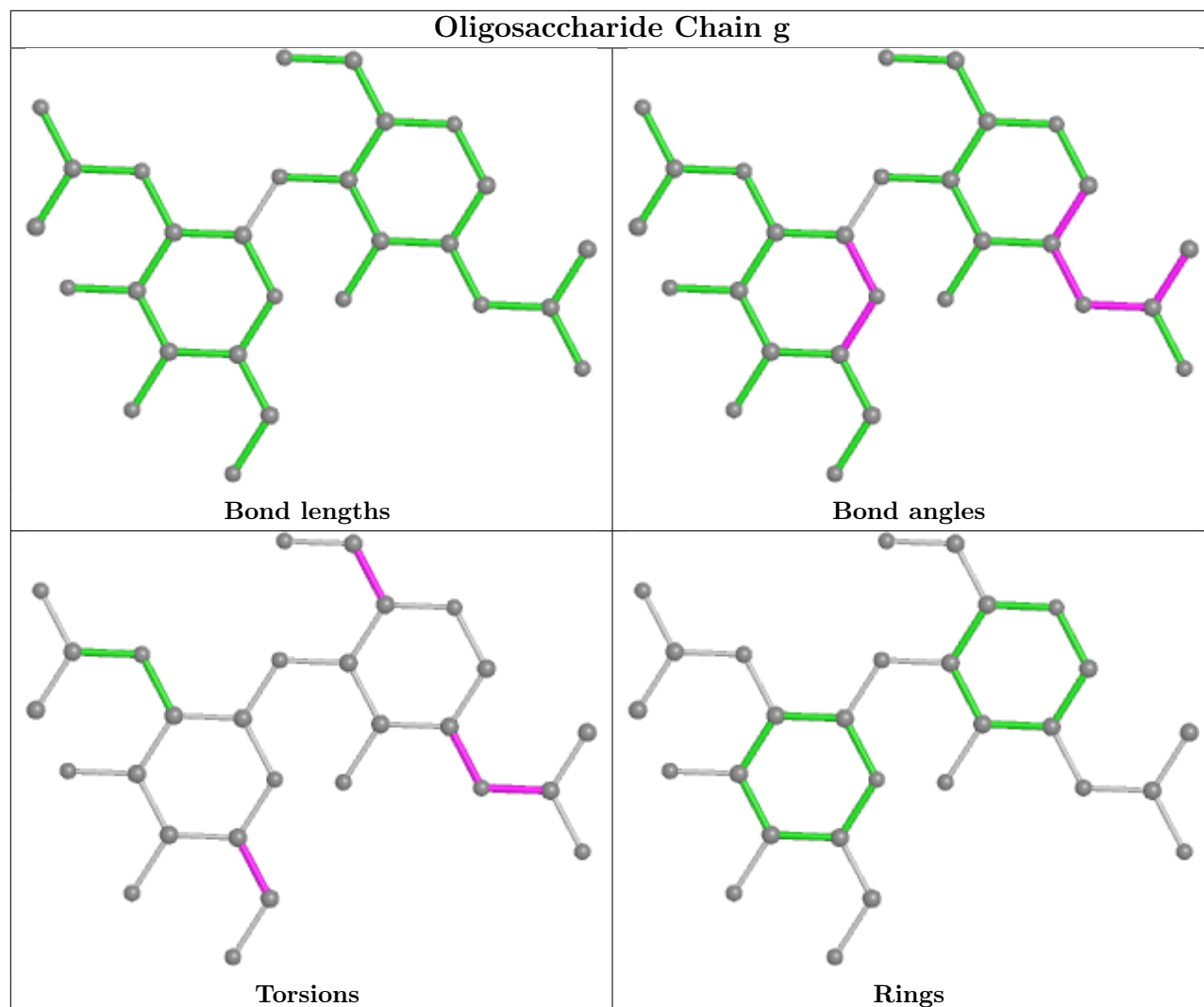


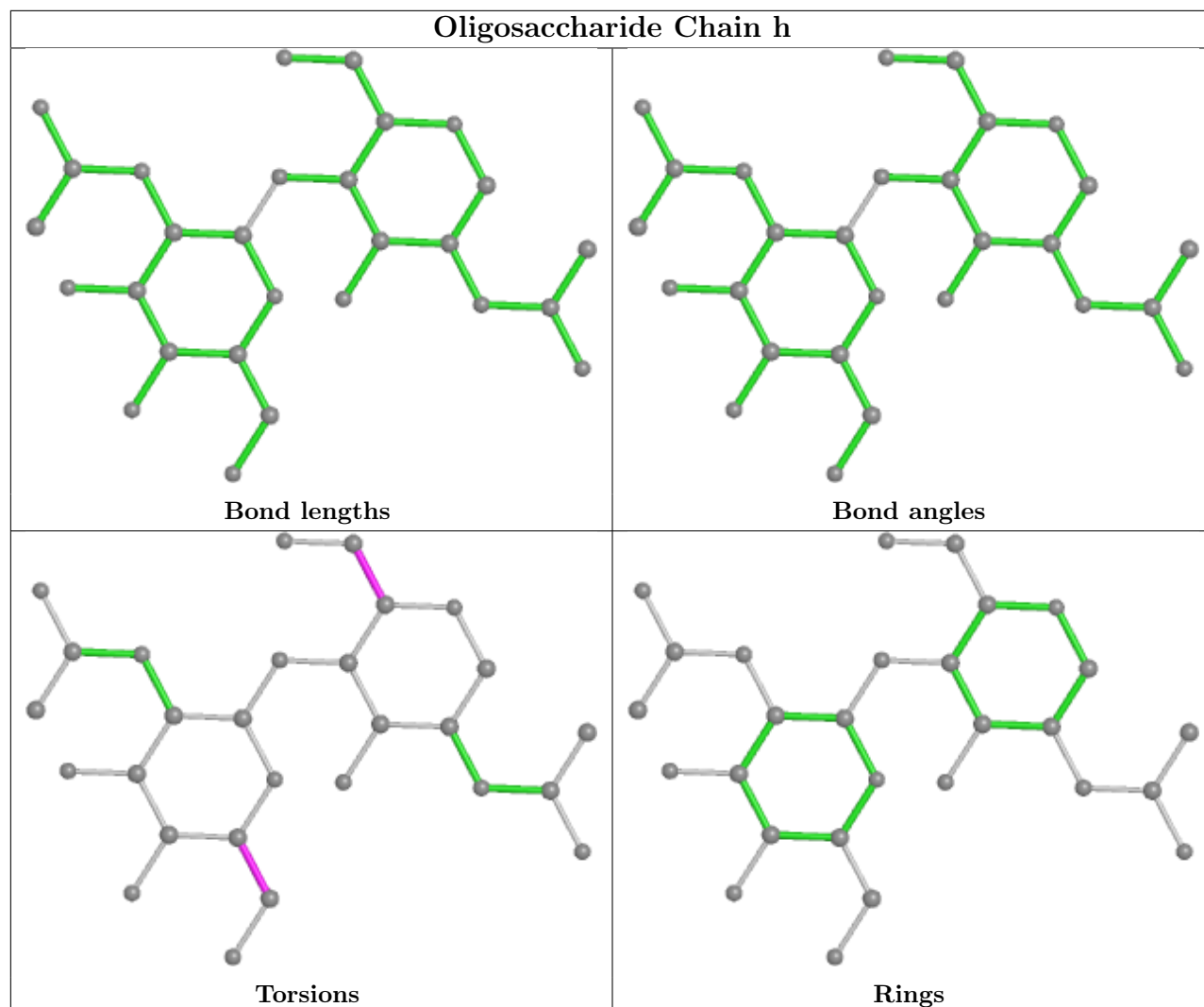


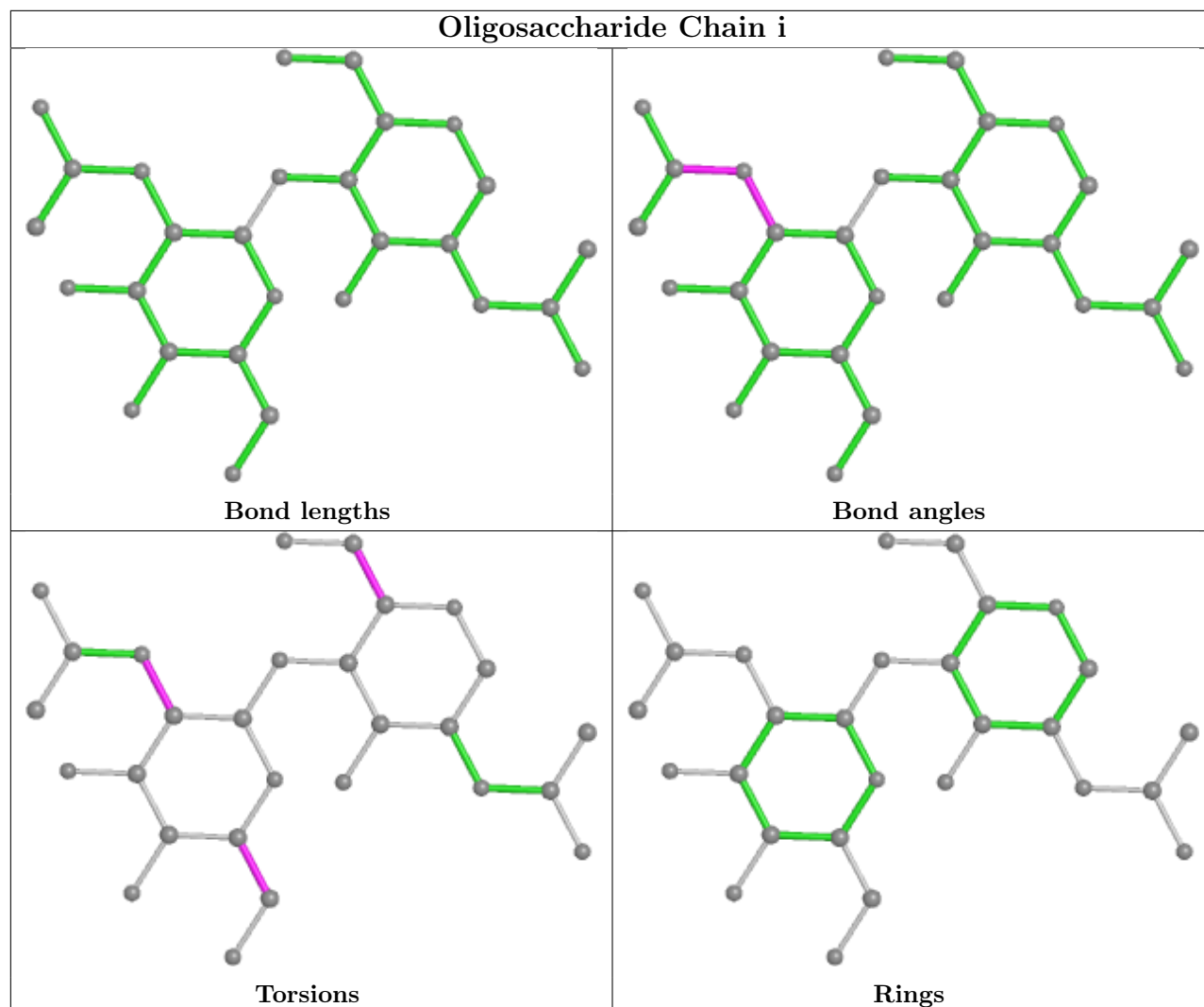


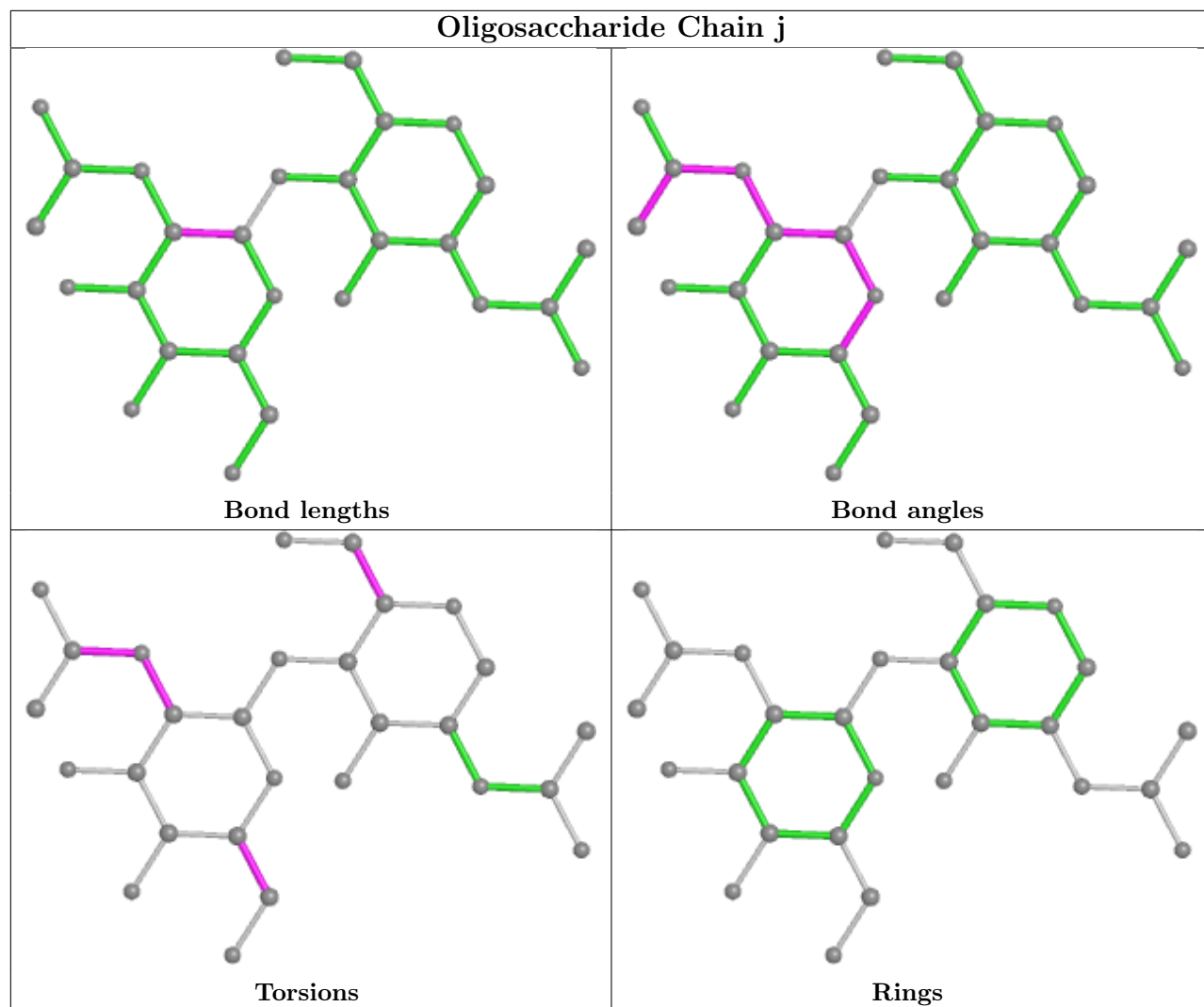


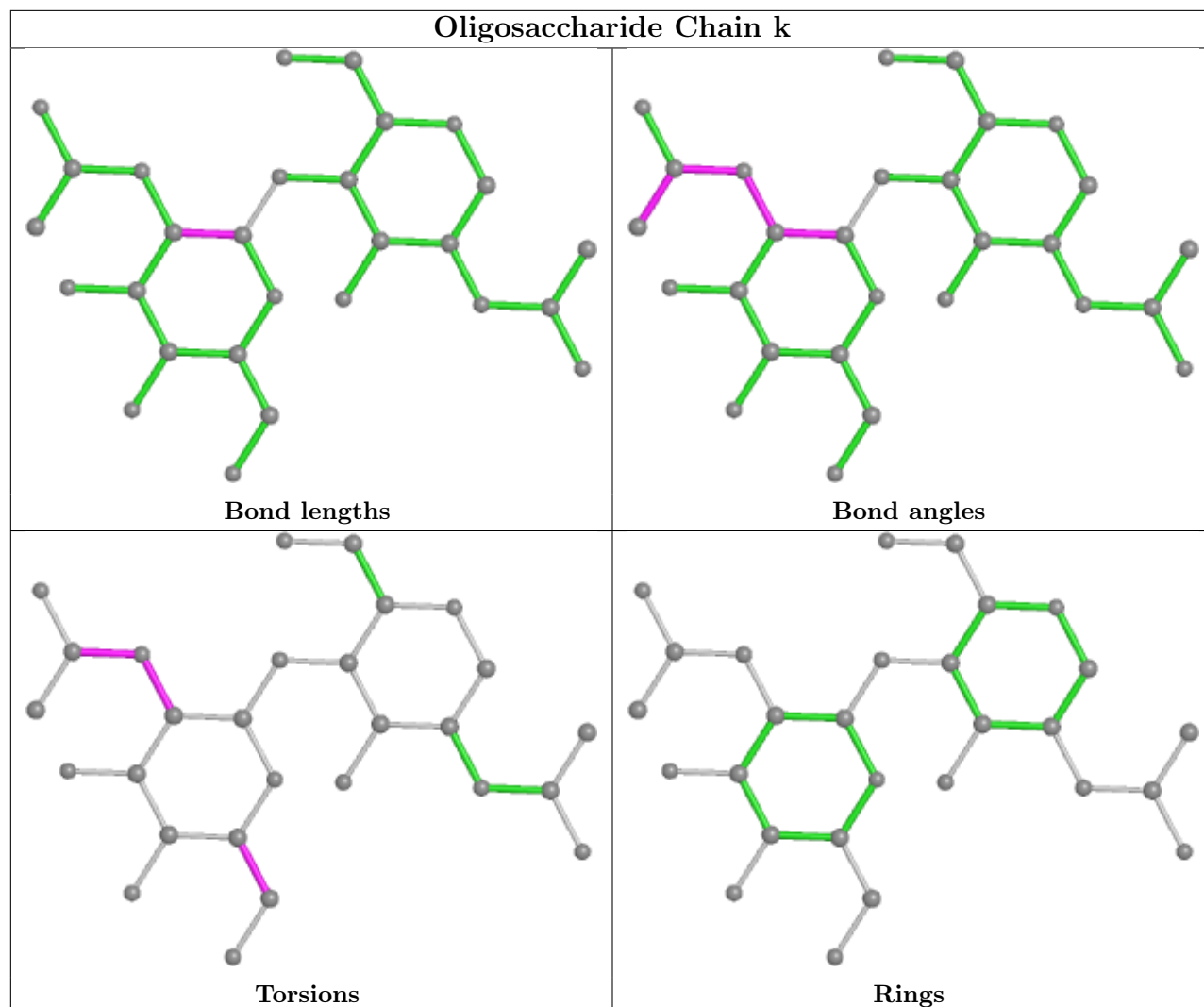


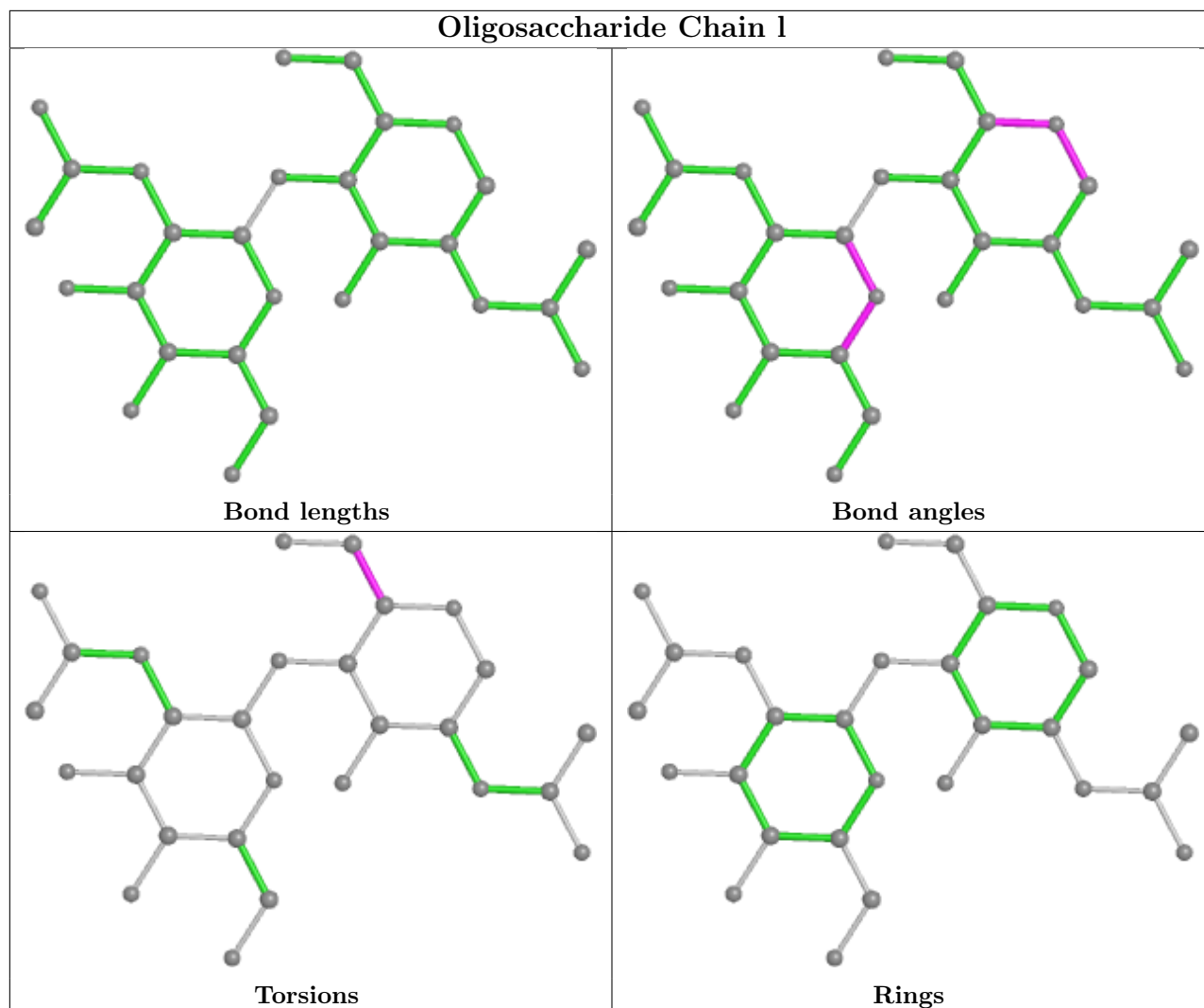












5.6 Ligand geometry [i](#)

25 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
6	NAG	A	1415	1	14,14,15	0.38	0	17,19,21	0.39	0
6	NAG	C	1406	1	14,14,15	0.36	0	17,19,21	0.53	0
6	NAG	B	1416	1	14,14,15	0.56	0	17,19,21	1.08	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	NAG	C	1401	1	14,14,15	0.40	0	17,19,21	1.17	2 (11%)
6	NAG	C	1415	1	14,14,15	0.32	0	17,19,21	0.56	0
6	NAG	C	1416	1	14,14,15	0.27	0	17,19,21	0.65	0
6	NAG	B	1414	1	14,14,15	0.51	0	17,19,21	0.54	0
6	NAG	B	1401	1	14,14,15	0.41	0	17,19,21	1.16	2 (11%)
6	NAG	A	1417	1	14,14,15	0.72	1 (7%)	17,19,21	0.70	1 (5%)
6	NAG	A	1416	1	14,14,15	0.43	0	17,19,21	0.46	0
6	NAG	C	1417	1	14,14,15	0.53	0	17,19,21	1.06	2 (11%)
6	NAG	A	1419	1	14,14,15	0.20	0	17,19,21	0.51	0
6	NAG	A	1418	1	14,14,15	0.86	1 (7%)	17,19,21	1.06	1 (5%)
6	NAG	C	1418	1	14,14,15	0.49	0	17,19,21	0.60	1 (5%)
6	NAG	A	1402	1	14,14,15	0.22	0	17,19,21	0.55	0
6	NAG	B	1402	1	14,14,15	0.23	0	17,19,21	0.56	0
6	NAG	B	1418	1	14,14,15	0.19	0	17,19,21	0.45	0
6	NAG	B	1406	1	14,14,15	0.36	0	17,19,21	0.52	0
6	NAG	A	1406	1	14,14,15	0.36	0	17,19,21	0.52	0
6	NAG	A	1414	1	14,14,15	0.28	0	17,19,21	0.48	0
6	NAG	A	1401	1	14,14,15	0.41	0	17,19,21	1.16	2 (11%)
6	NAG	B	1415	1	14,14,15	0.44	0	17,19,21	1.04	1 (5%)
6	NAG	C	1402	1	14,14,15	0.22	0	17,19,21	0.55	0
6	NAG	B	1417	1	14,14,15	0.29	0	17,19,21	0.60	1 (5%)
6	NAG	C	1414	1	14,14,15	0.49	0	17,19,21	0.50	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
6	NAG	A	1415	1	-	2/6/23/26	0/1/1/1
6	NAG	C	1406	1	-	2/6/23/26	0/1/1/1
6	NAG	B	1416	1	-	3/6/23/26	0/1/1/1
6	NAG	C	1401	1	-	0/6/23/26	0/1/1/1
6	NAG	C	1415	1	-	0/6/23/26	0/1/1/1
6	NAG	C	1416	1	-	4/6/23/26	0/1/1/1
6	NAG	B	1414	1	-	4/6/23/26	0/1/1/1
6	NAG	B	1401	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1417	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1416	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	C	1417	1	-	3/6/23/26	0/1/1/1
6	NAG	A	1419	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1418	1	-	2/6/23/26	0/1/1/1
6	NAG	C	1418	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1402	1	-	1/6/23/26	0/1/1/1
6	NAG	B	1402	1	-	1/6/23/26	0/1/1/1
6	NAG	B	1418	1	-	0/6/23/26	0/1/1/1
6	NAG	B	1406	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1406	1	-	2/6/23/26	0/1/1/1
6	NAG	A	1414	1	-	1/6/23/26	0/1/1/1
6	NAG	A	1401	1	-	0/6/23/26	0/1/1/1
6	NAG	B	1415	1	-	3/6/23/26	0/1/1/1
6	NAG	C	1402	1	-	1/6/23/26	0/1/1/1
6	NAG	B	1417	1	-	2/6/23/26	0/1/1/1
6	NAG	C	1414	1	-	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)
6	A	1418	NAG	C1-C2	2.42	1.56	1.52
6	A	1417	NAG	O5-C1	2.10	1.47	1.43

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	1418	NAG	C1-O5-C5	3.96	117.56	112.19
6	B	1416	NAG	C2-N2-C7	3.02	127.20	122.90
6	B	1415	NAG	C2-N2-C7	2.99	127.17	122.90
6	C	1417	NAG	C2-N2-C7	2.98	127.15	122.90
6	A	1417	NAG	C1-O5-C5	2.44	115.50	112.19
6	B	1416	NAG	C1-O5-C5	2.43	115.49	112.19
6	C	1417	NAG	C1-O5-C5	2.39	115.42	112.19
6	C	1401	NAG	C8-C7-N2	2.35	120.08	116.10
6	A	1401	NAG	C8-C7-N2	2.32	120.03	116.10
6	B	1401	NAG	C8-C7-N2	2.30	120.00	116.10
6	B	1417	NAG	C1-O5-C5	2.05	114.97	112.19
6	C	1418	NAG	C1-O5-C5	2.03	114.94	112.19
6	A	1401	NAG	C2-N2-C7	-2.02	120.02	122.90
6	B	1401	NAG	C2-N2-C7	-2.02	120.03	122.90
6	C	1401	NAG	C2-N2-C7	-2.01	120.05	122.90

There are no chirality outliers.

All (42) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	B	1417	NAG	O5-C5-C6-O6
6	C	1417	NAG	C4-C5-C6-O6
6	A	1417	NAG	C4-C5-C6-O6
6	B	1416	NAG	O5-C5-C6-O6
6	C	1418	NAG	O5-C5-C6-O6
6	C	1416	NAG	O5-C5-C6-O6
6	B	1416	NAG	C4-C5-C6-O6
6	B	1417	NAG	C4-C5-C6-O6
6	A	1415	NAG	O5-C5-C6-O6
6	C	1417	NAG	O5-C5-C6-O6
6	A	1418	NAG	O5-C5-C6-O6
6	A	1417	NAG	O5-C5-C6-O6
6	B	1414	NAG	O5-C5-C6-O6
6	A	1415	NAG	C4-C5-C6-O6
6	B	1414	NAG	C8-C7-N2-C2
6	B	1414	NAG	O7-C7-N2-C2
6	C	1416	NAG	C8-C7-N2-C2
6	C	1416	NAG	O7-C7-N2-C2
6	A	1416	NAG	O5-C5-C6-O6
6	A	1406	NAG	O5-C5-C6-O6
6	B	1406	NAG	O5-C5-C6-O6
6	C	1406	NAG	O5-C5-C6-O6
6	C	1416	NAG	C4-C5-C6-O6
6	A	1419	NAG	C4-C5-C6-O6
6	C	1418	NAG	C4-C5-C6-O6
6	A	1418	NAG	C4-C5-C6-O6
6	B	1414	NAG	C4-C5-C6-O6
6	B	1415	NAG	C4-C5-C6-O6
6	A	1402	NAG	O5-C5-C6-O6
6	B	1402	NAG	O5-C5-C6-O6
6	C	1402	NAG	O5-C5-C6-O6
6	A	1419	NAG	O5-C5-C6-O6
6	A	1416	NAG	C4-C5-C6-O6
6	C	1406	NAG	C4-C5-C6-O6
6	A	1406	NAG	C4-C5-C6-O6
6	B	1406	NAG	C4-C5-C6-O6
6	C	1414	NAG	O5-C5-C6-O6
6	B	1415	NAG	O5-C5-C6-O6
6	A	1414	NAG	C4-C5-C6-O6
6	B	1416	NAG	C3-C2-N2-C7

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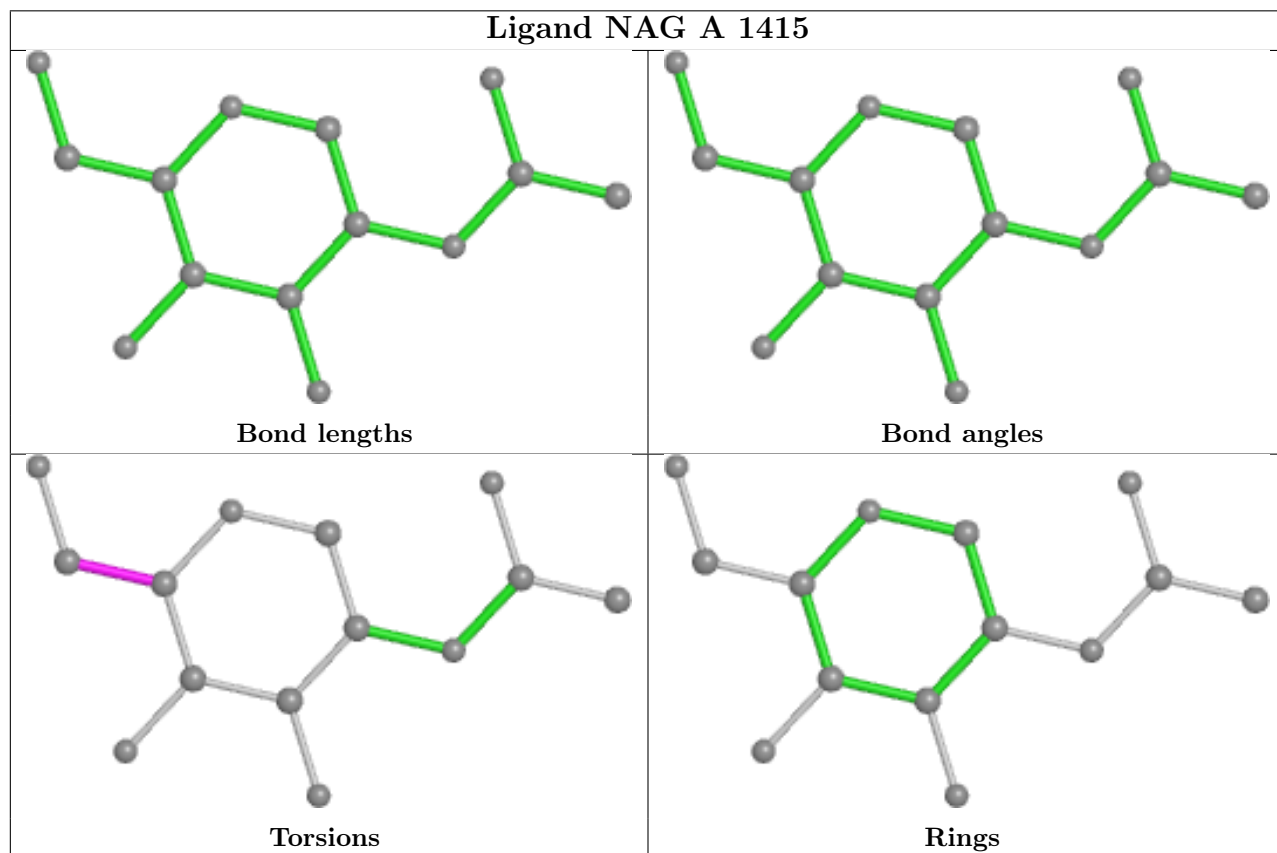
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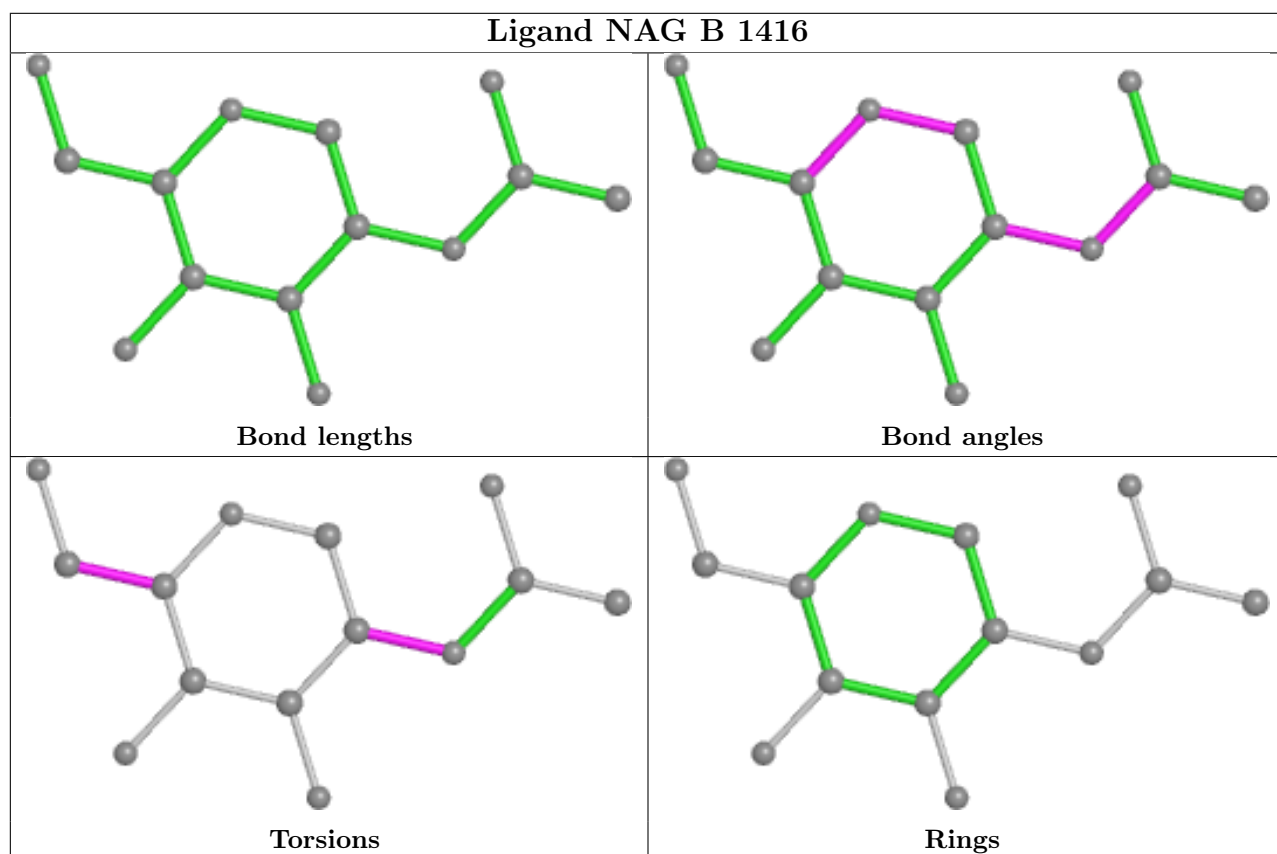
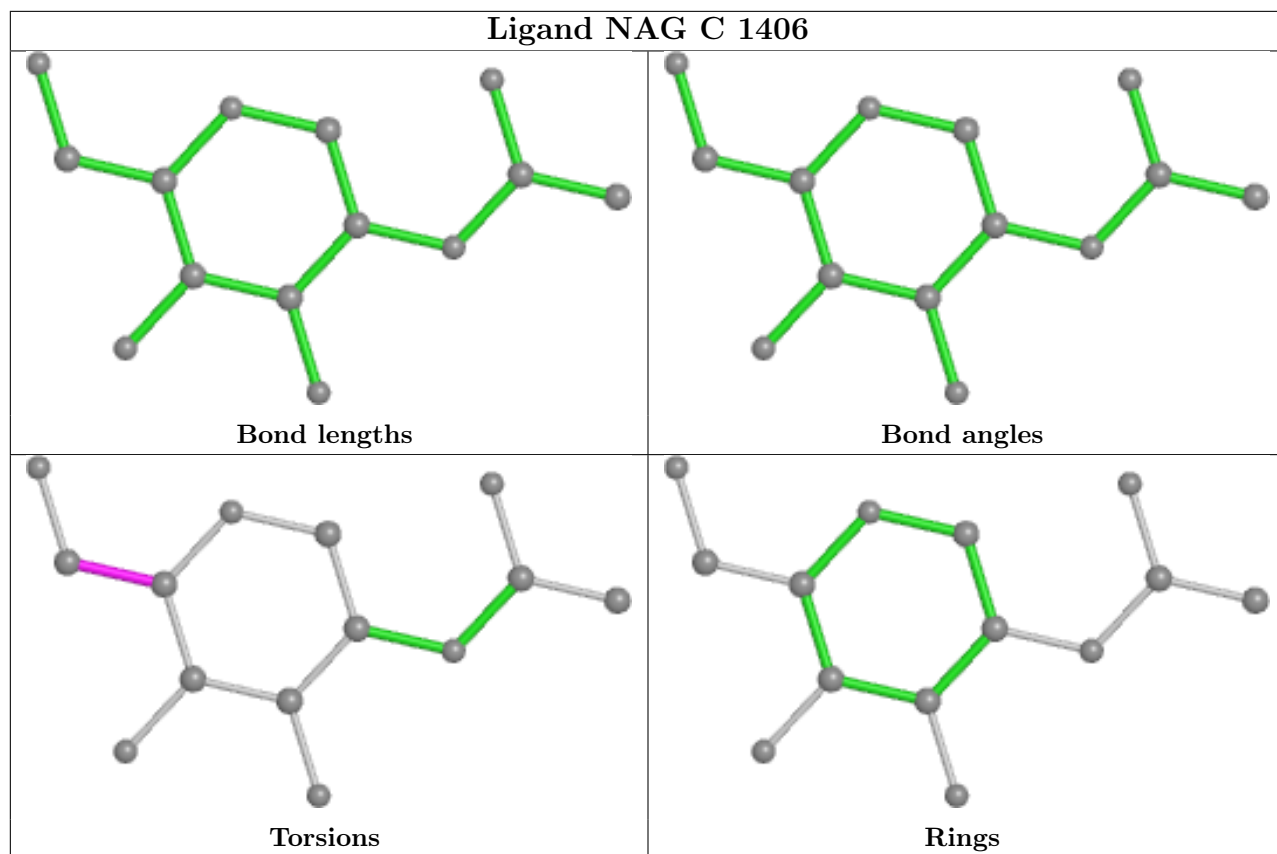
Mol	Chain	Res	Type	Atoms
6	B	1415	NAG	C3-C2-N2-C7
6	C	1417	NAG	C3-C2-N2-C7

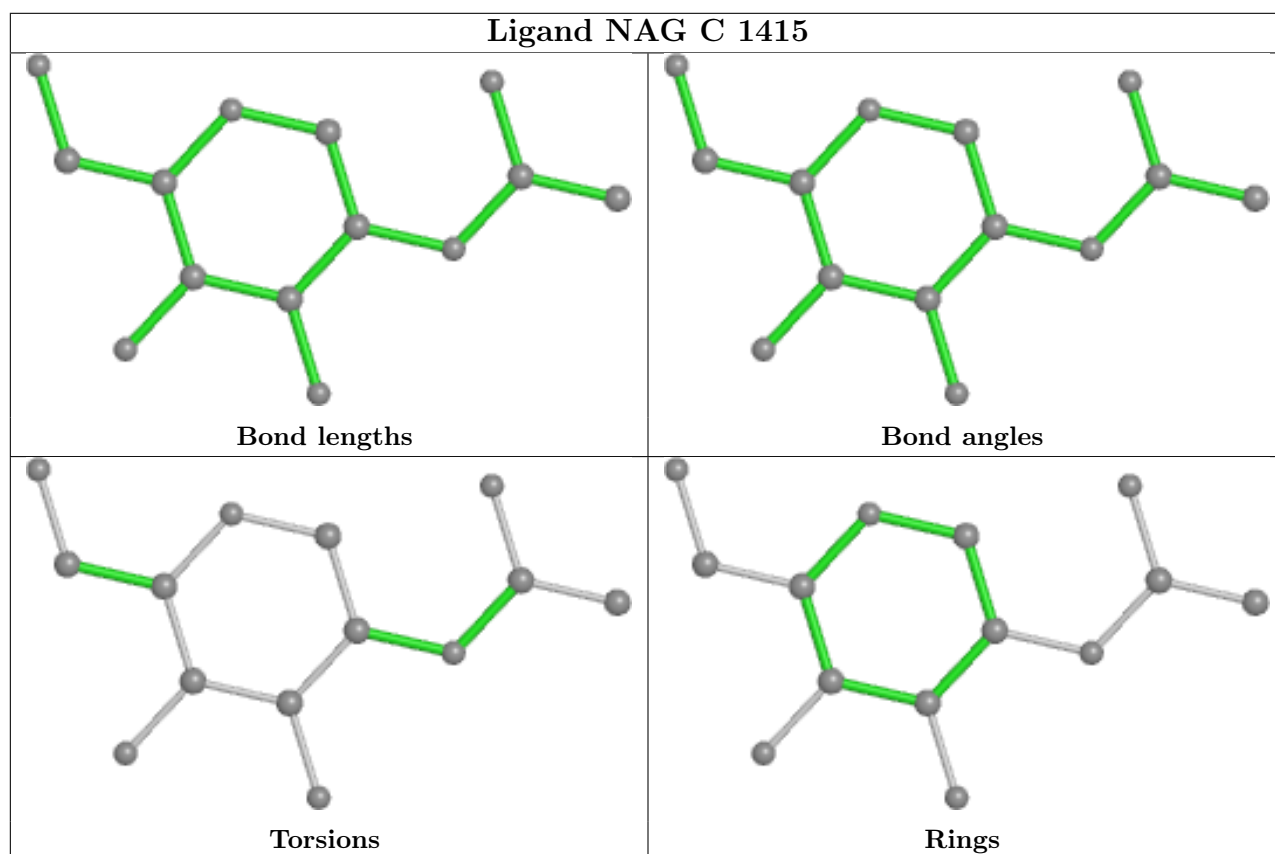
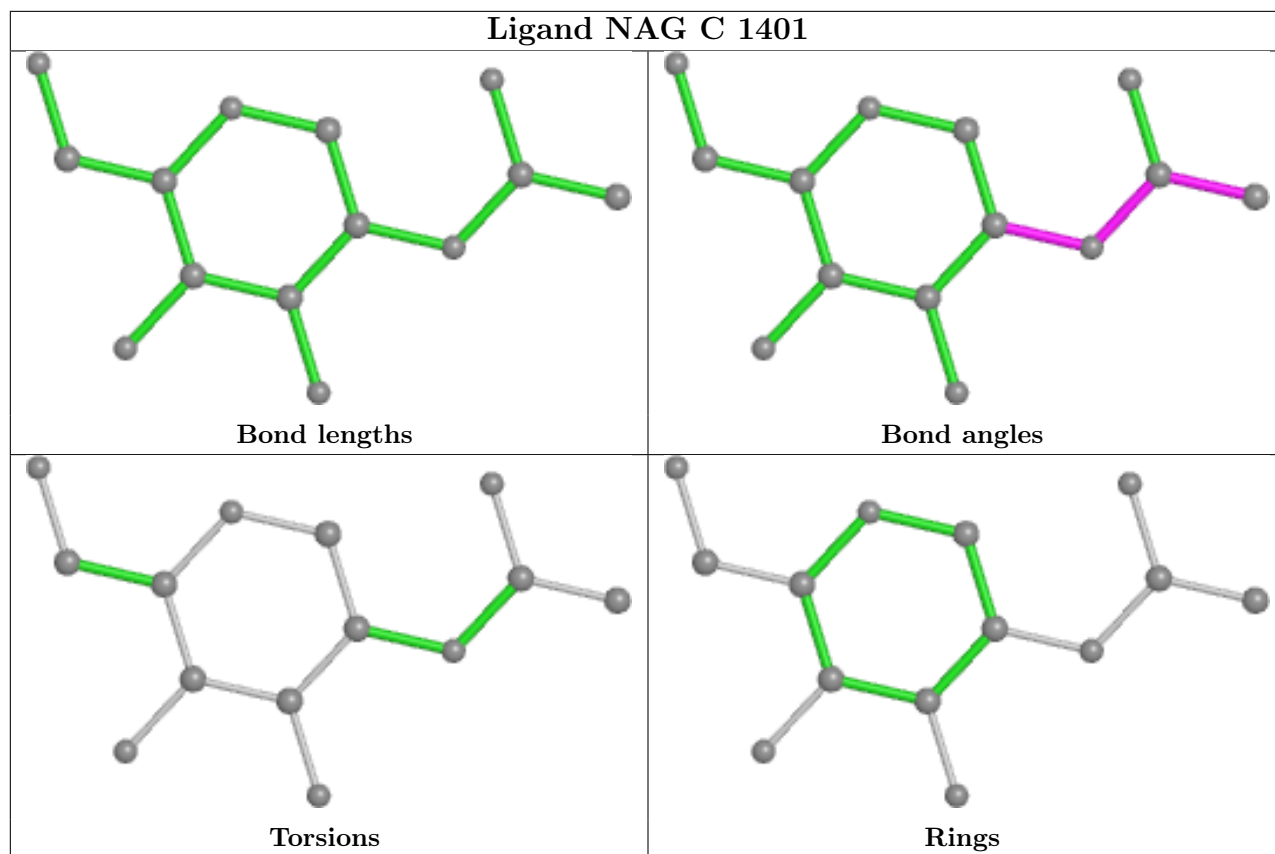
There are no ring outliers.

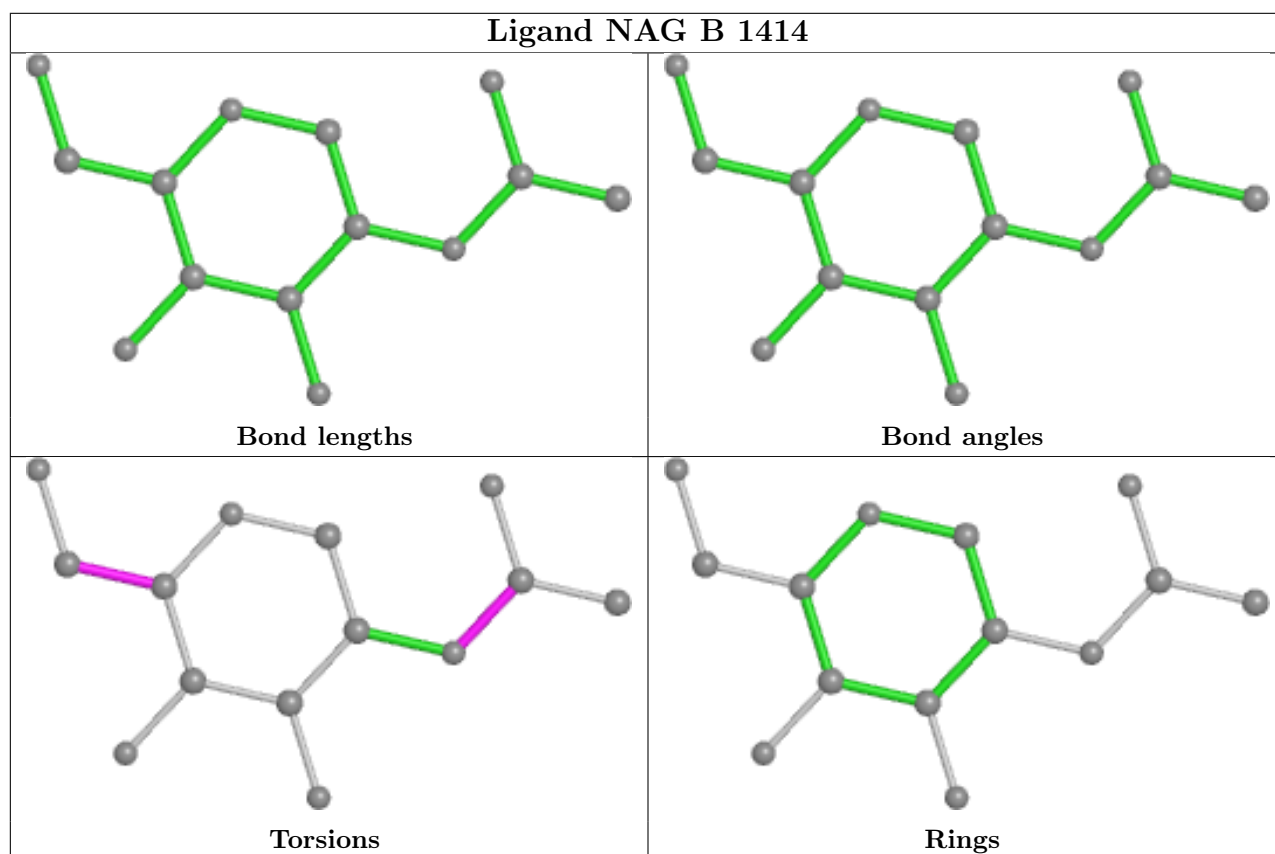
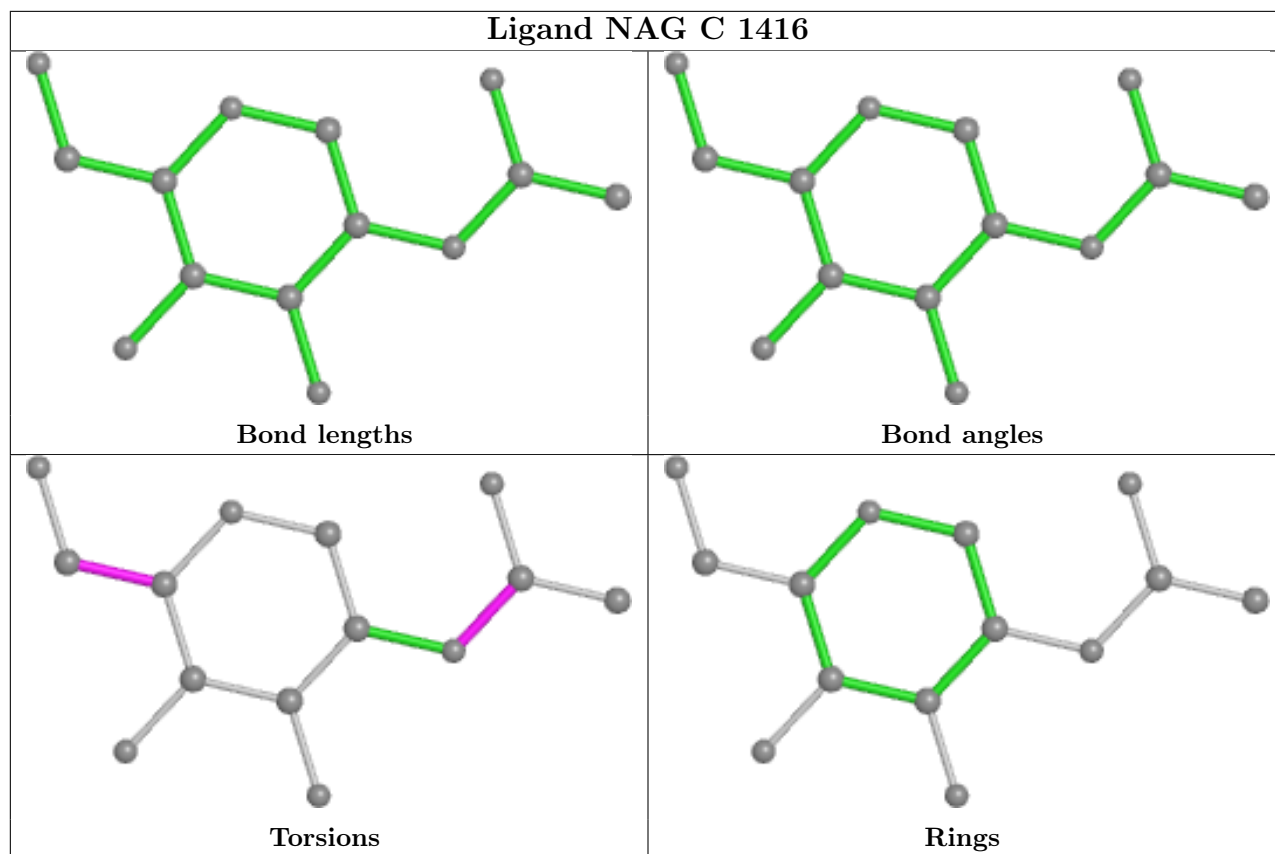
No monomer is involved in short contacts.

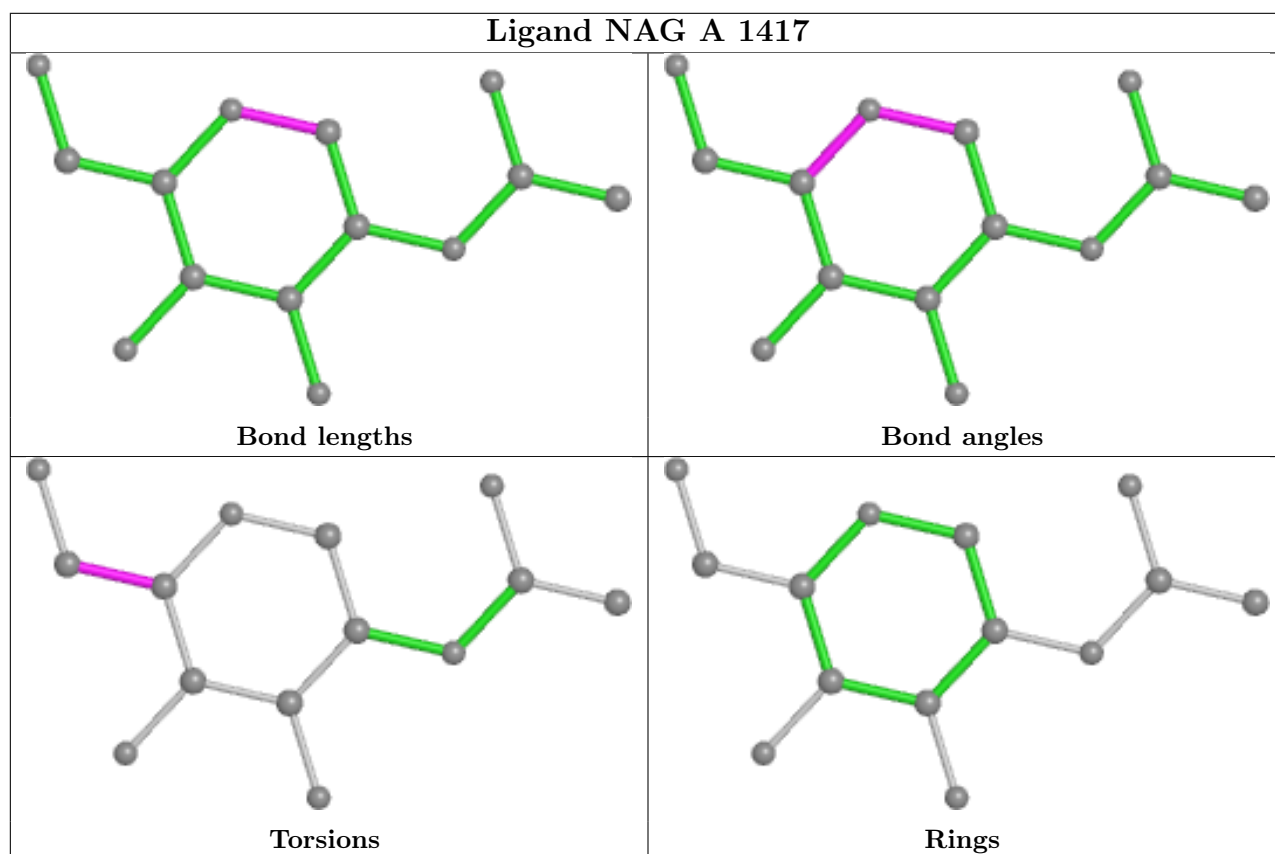
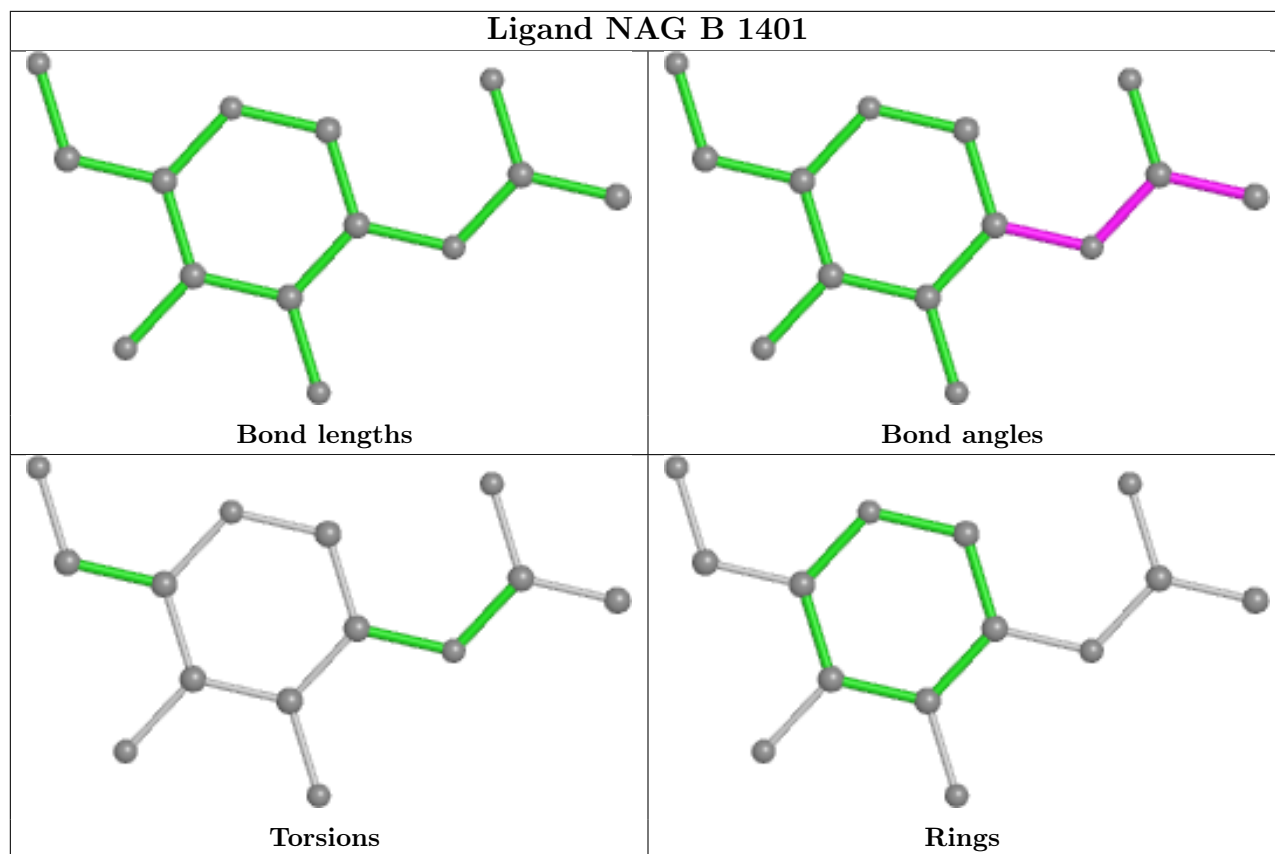
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

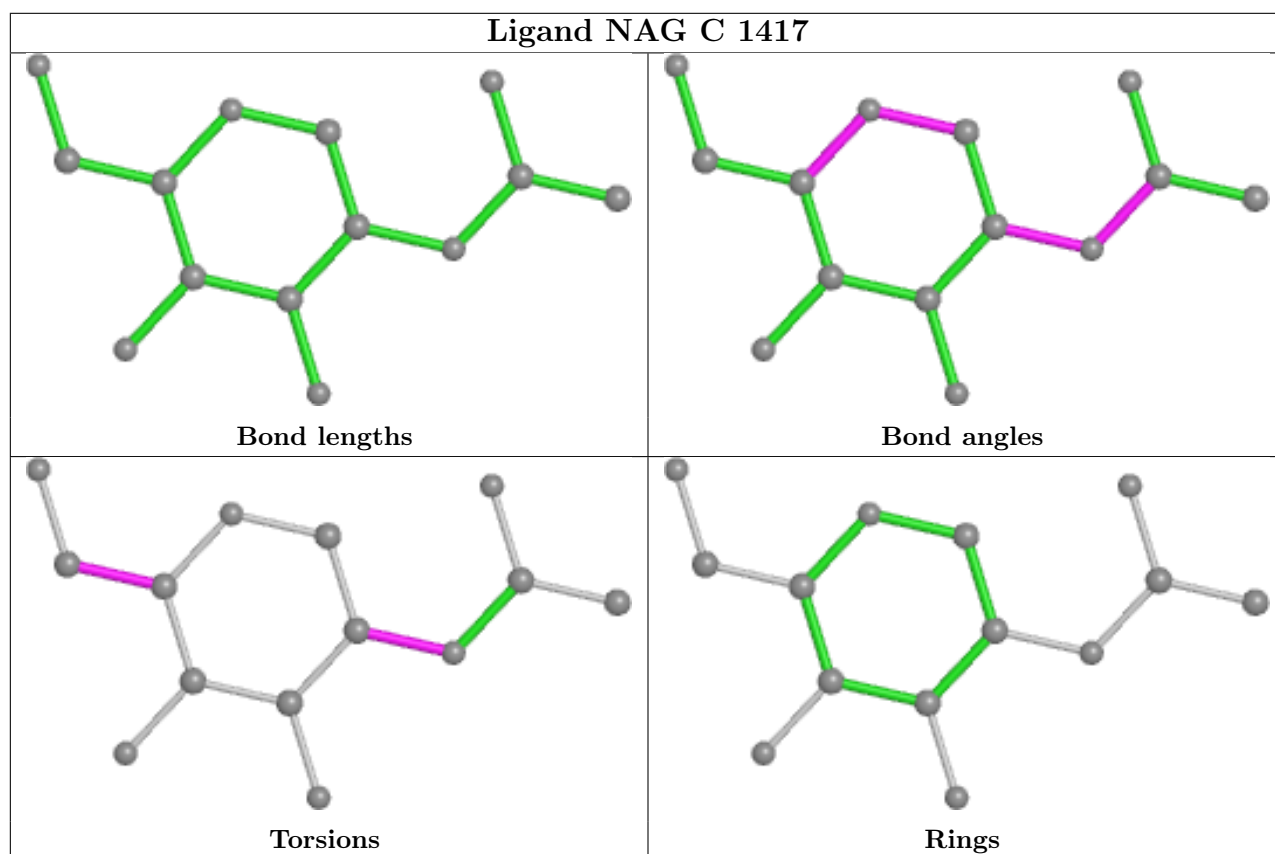
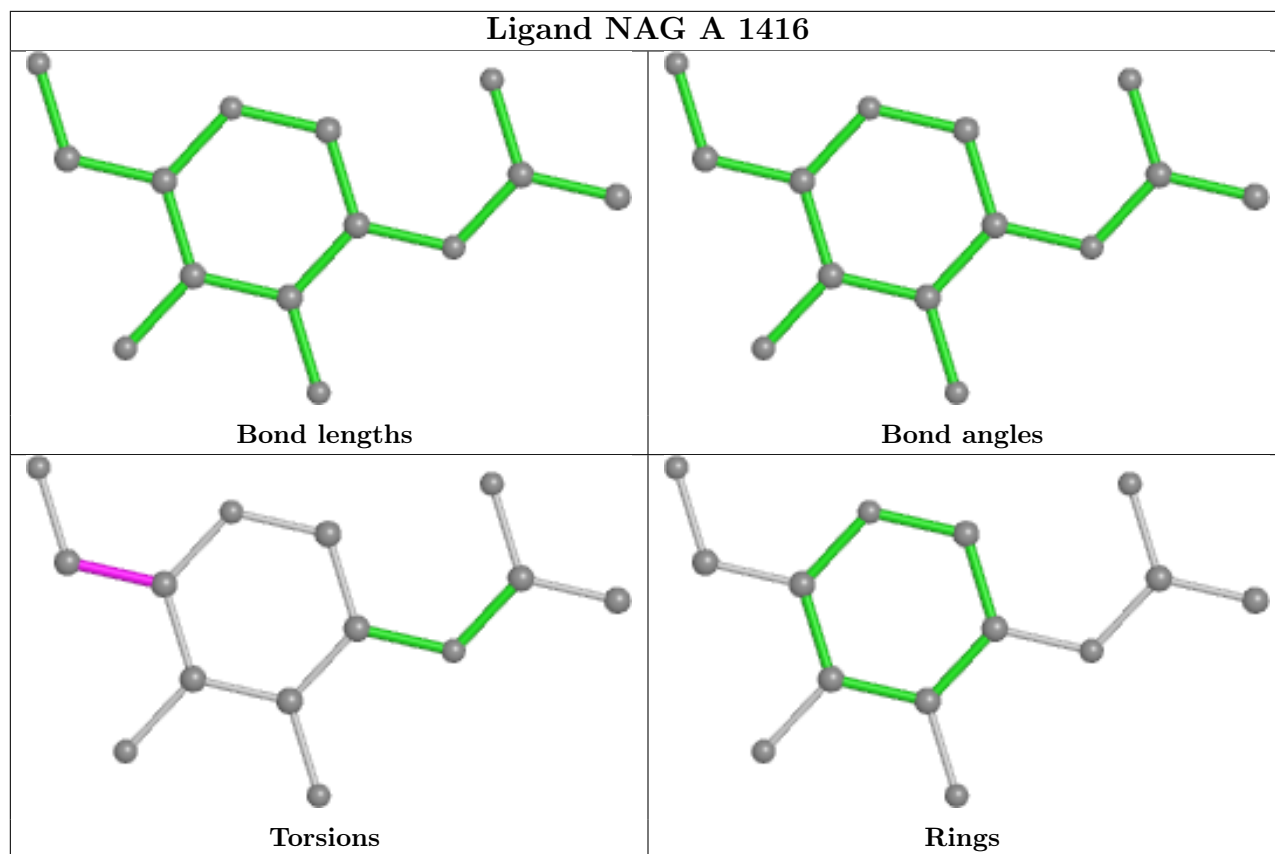


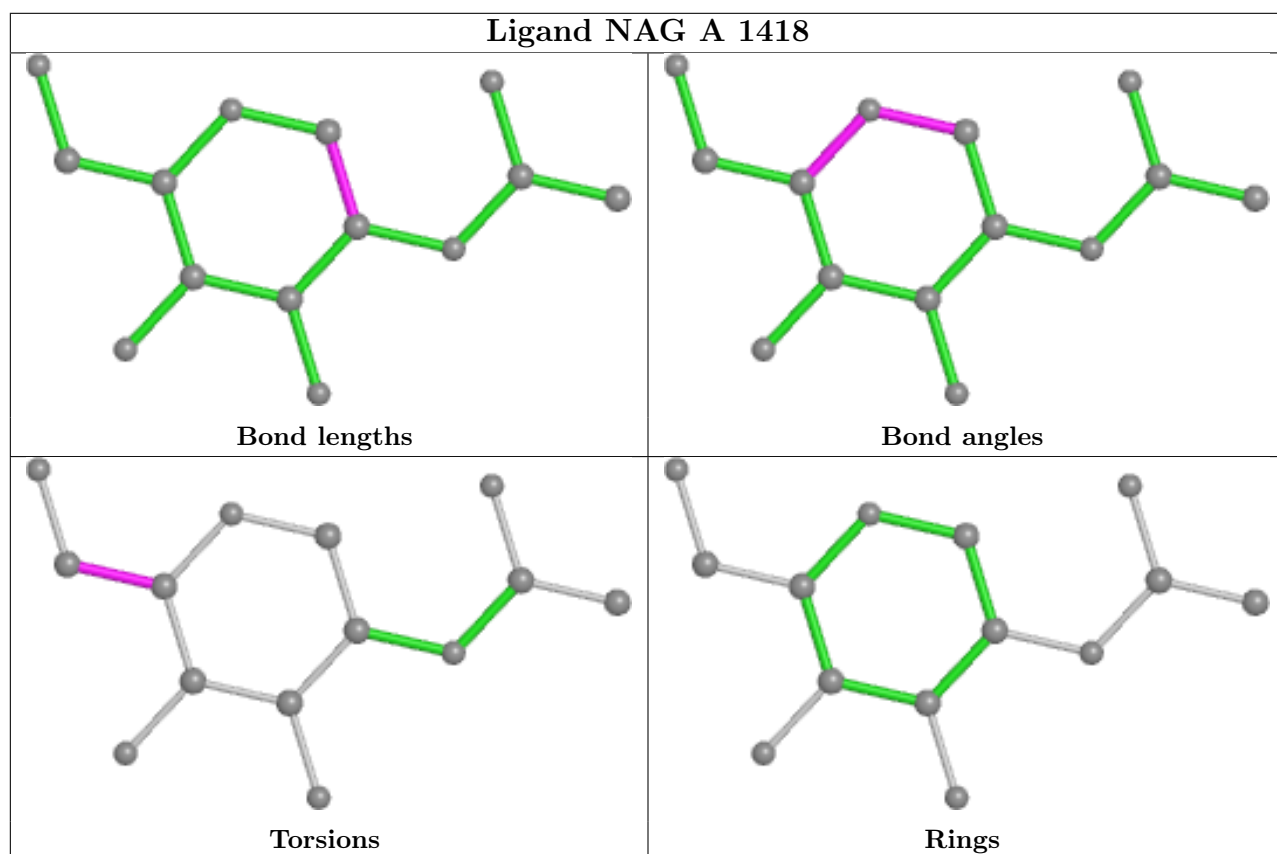
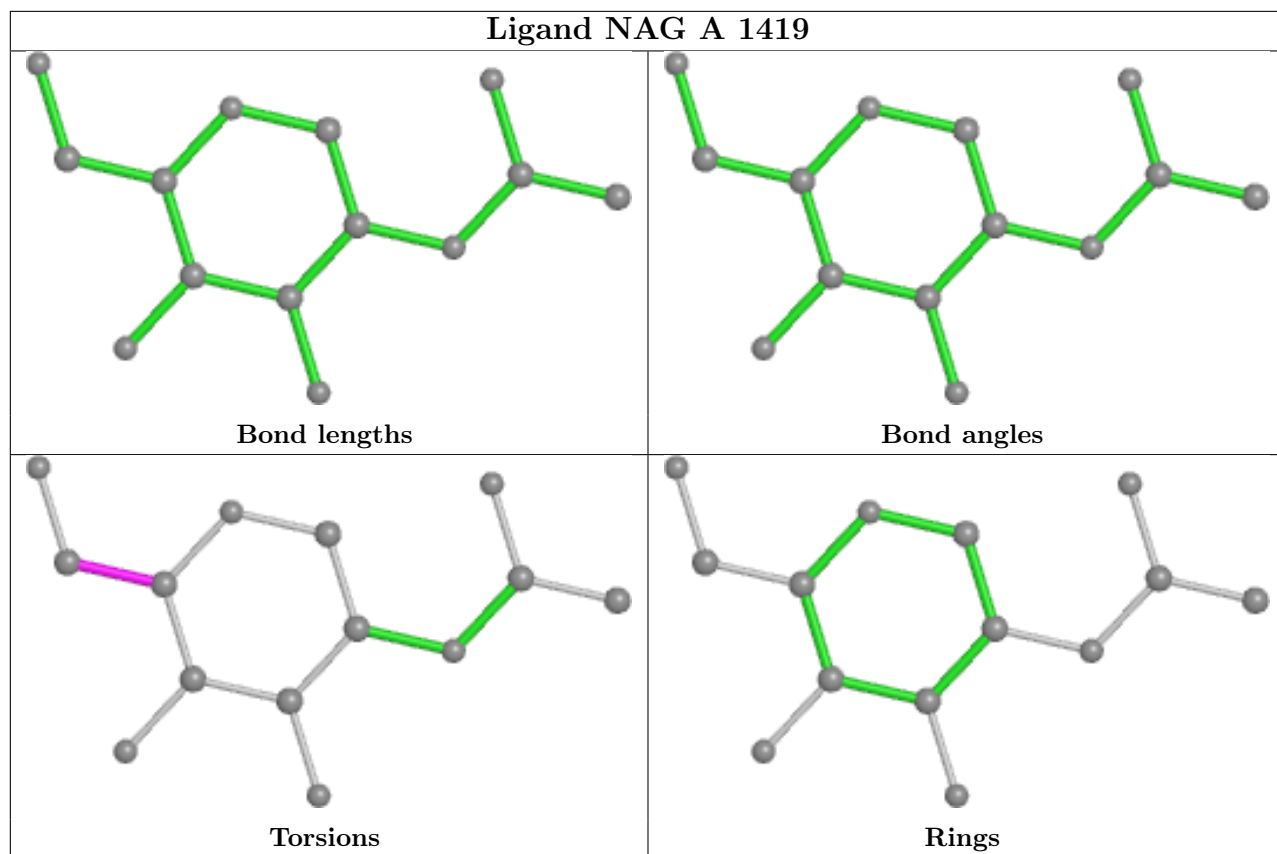


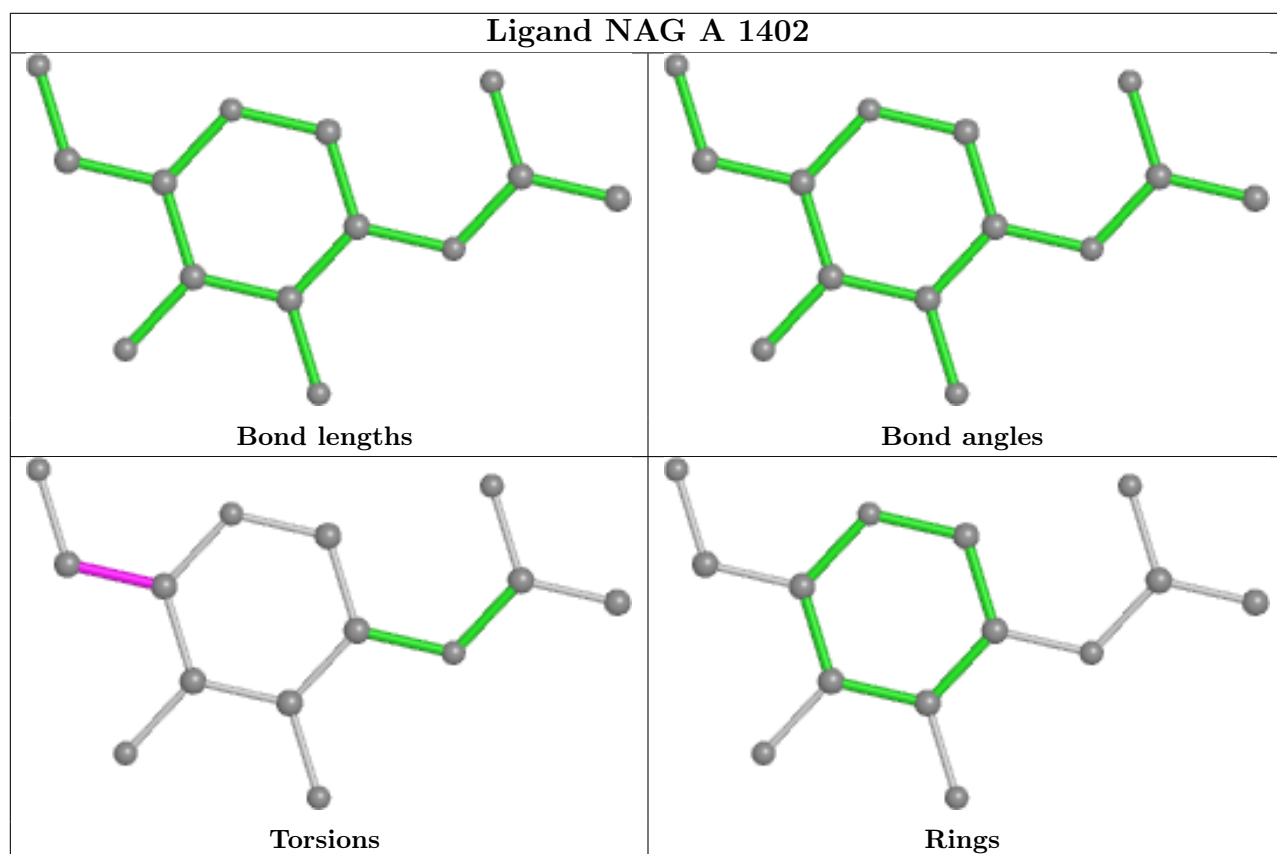
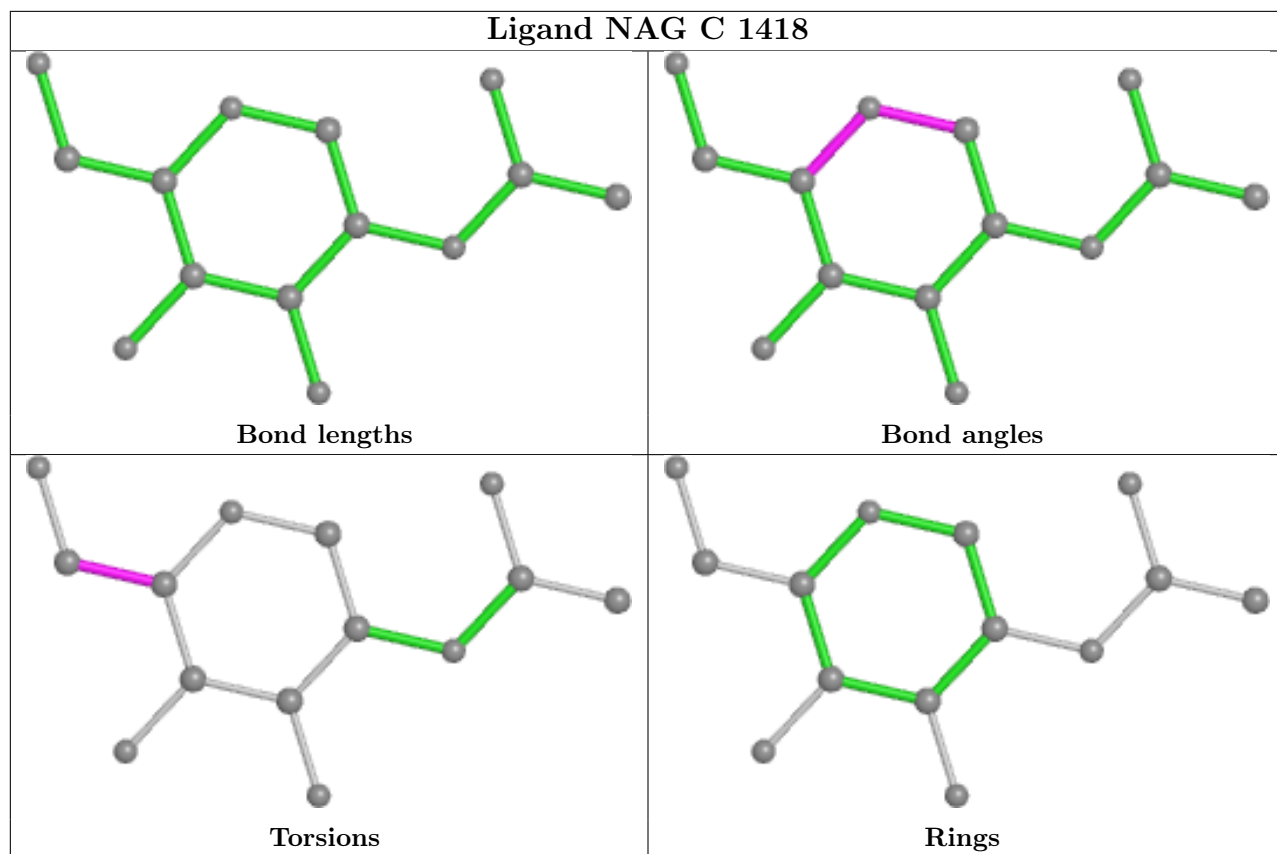


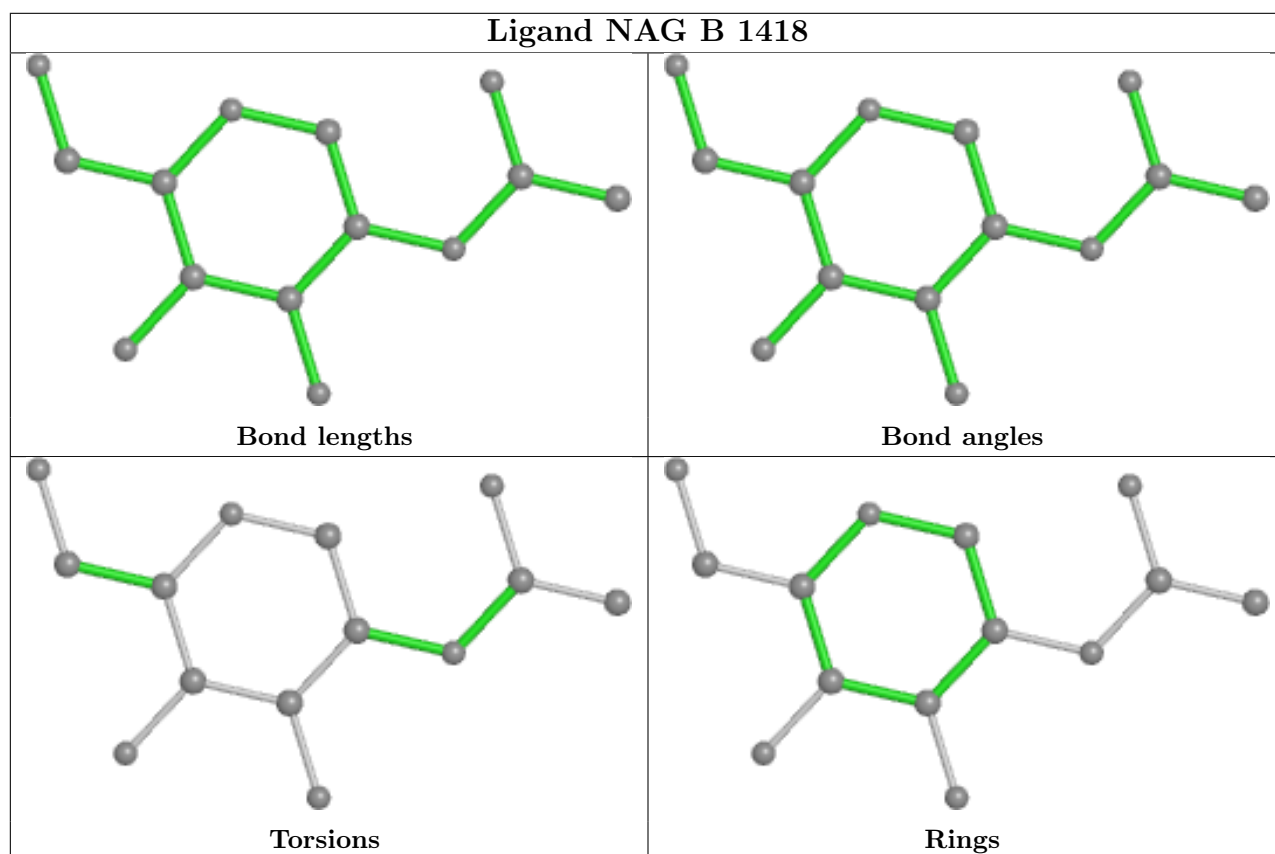
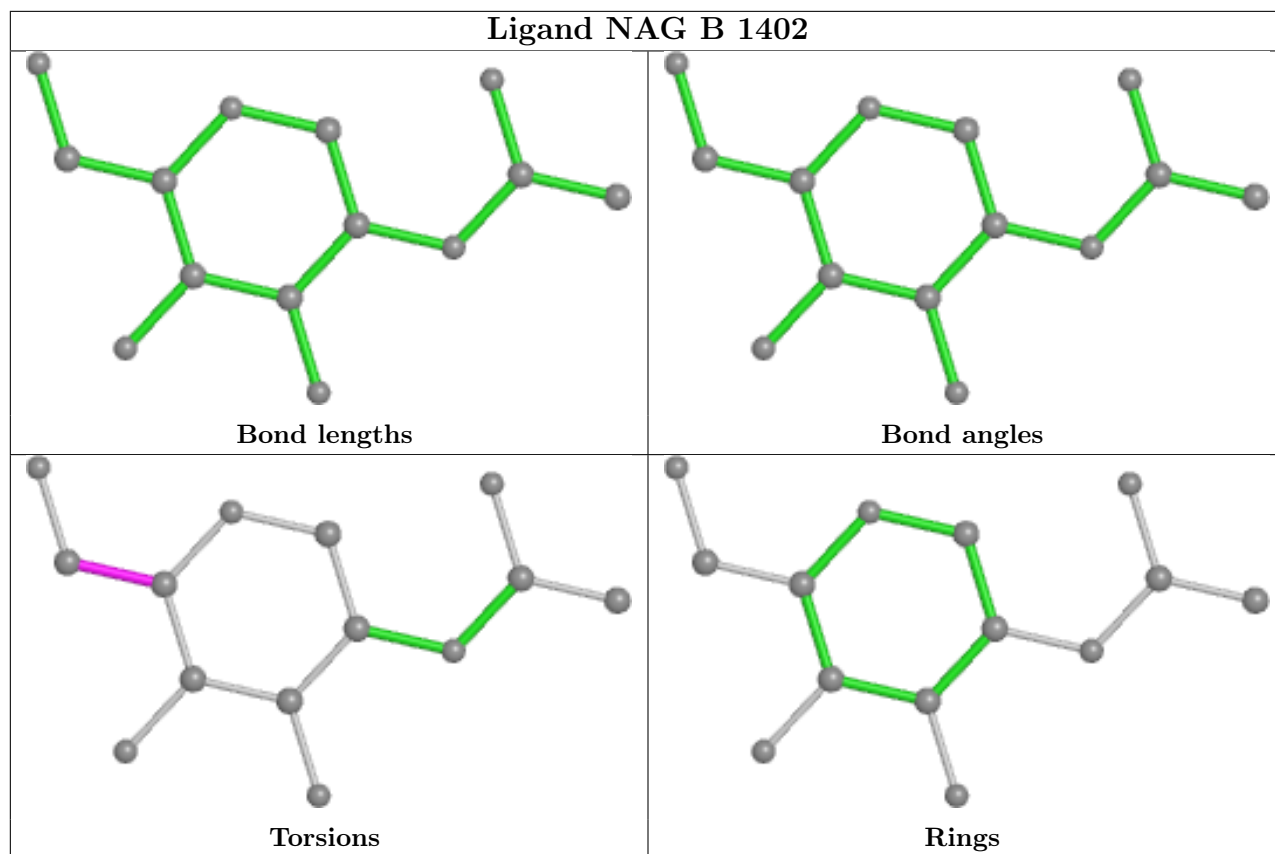


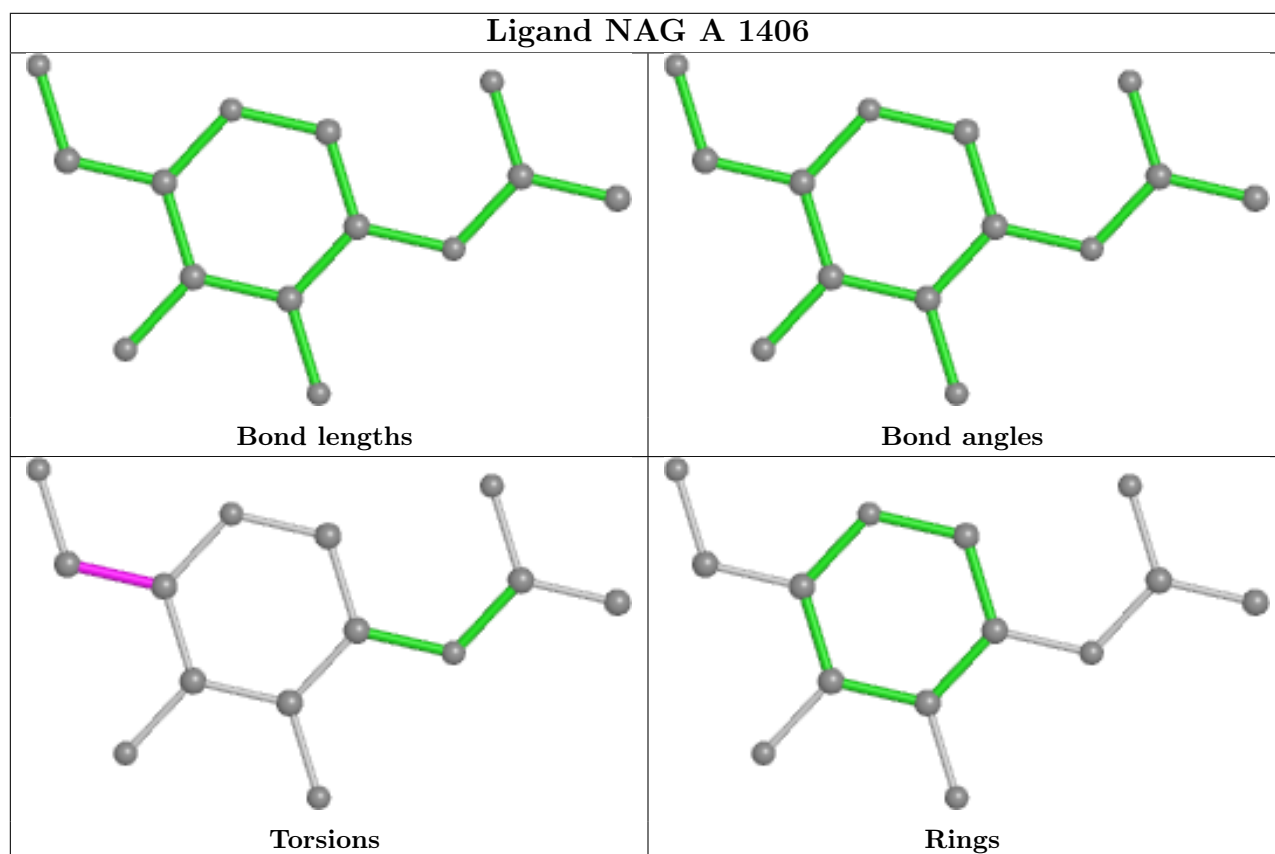
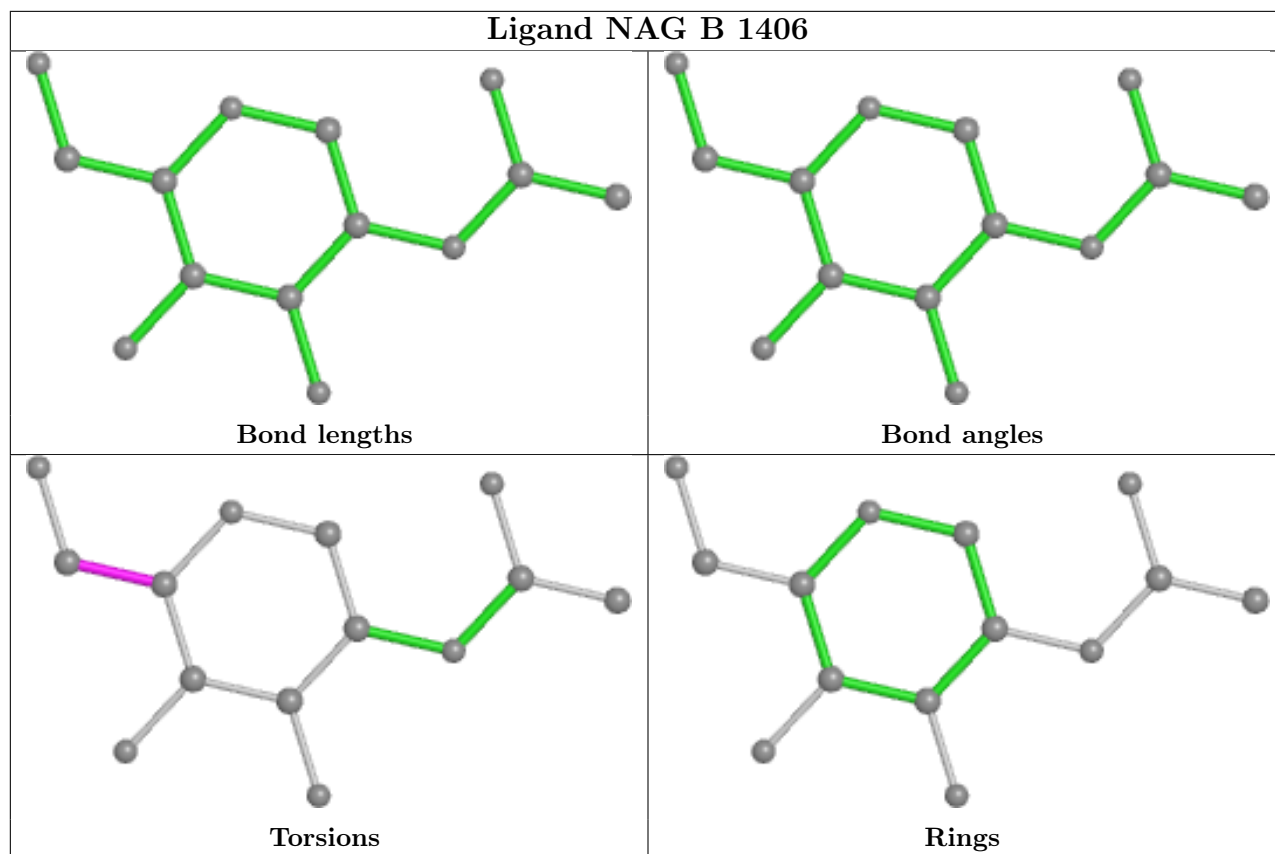


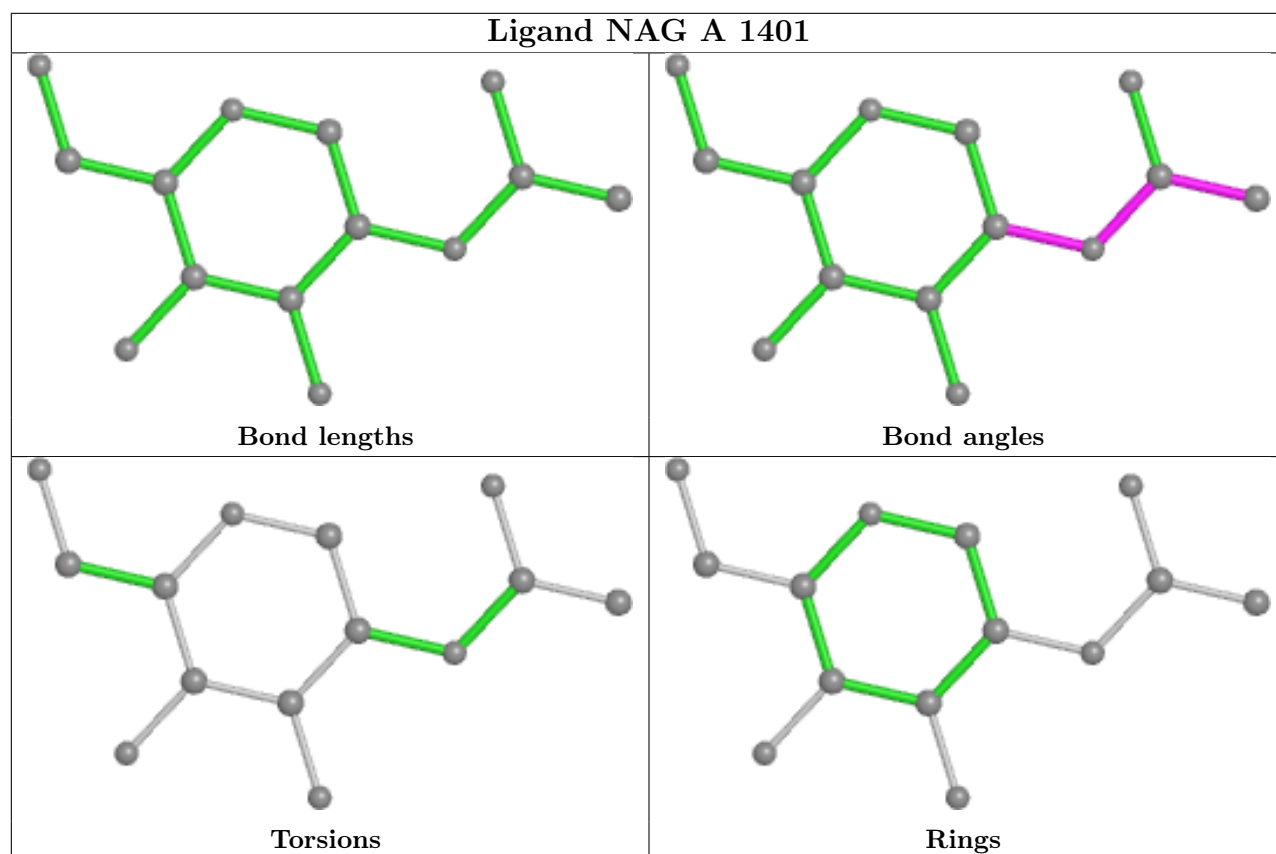
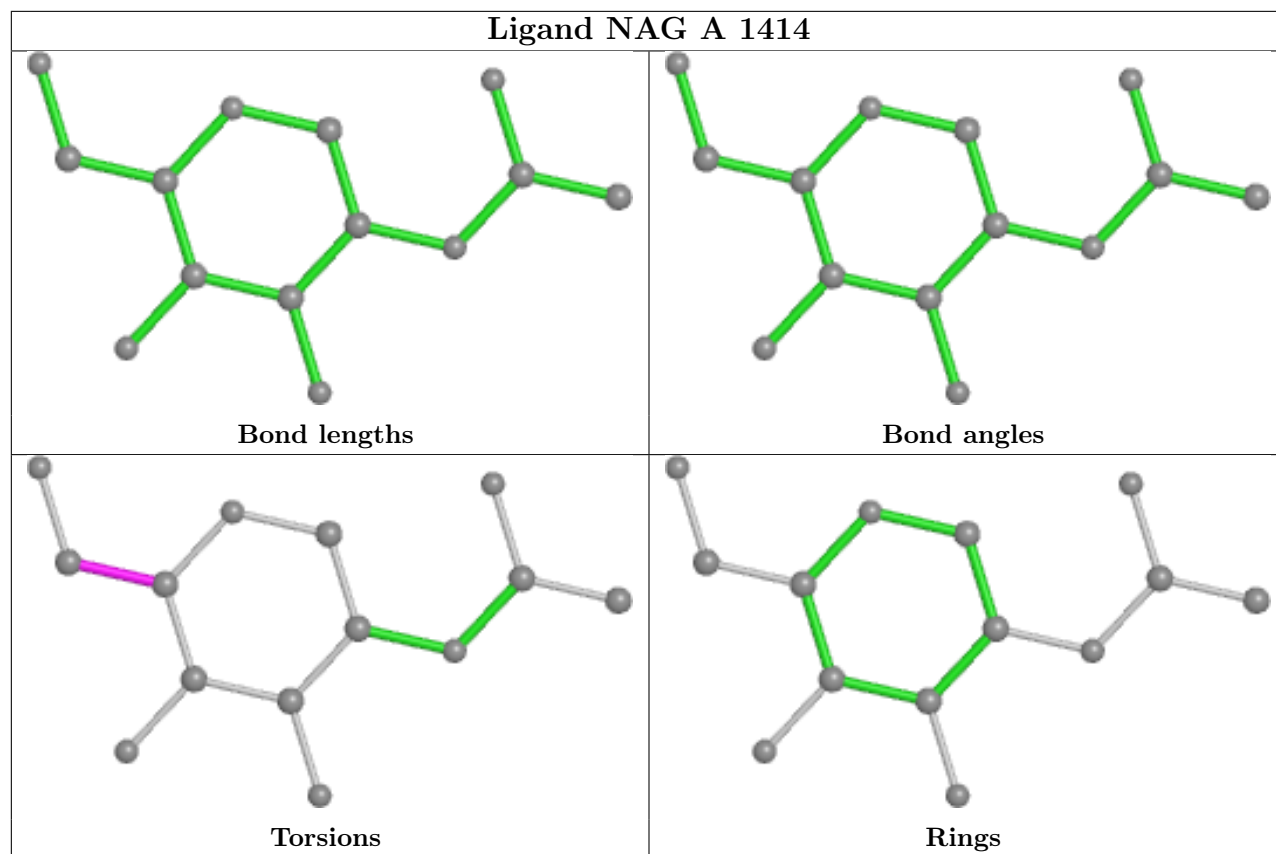


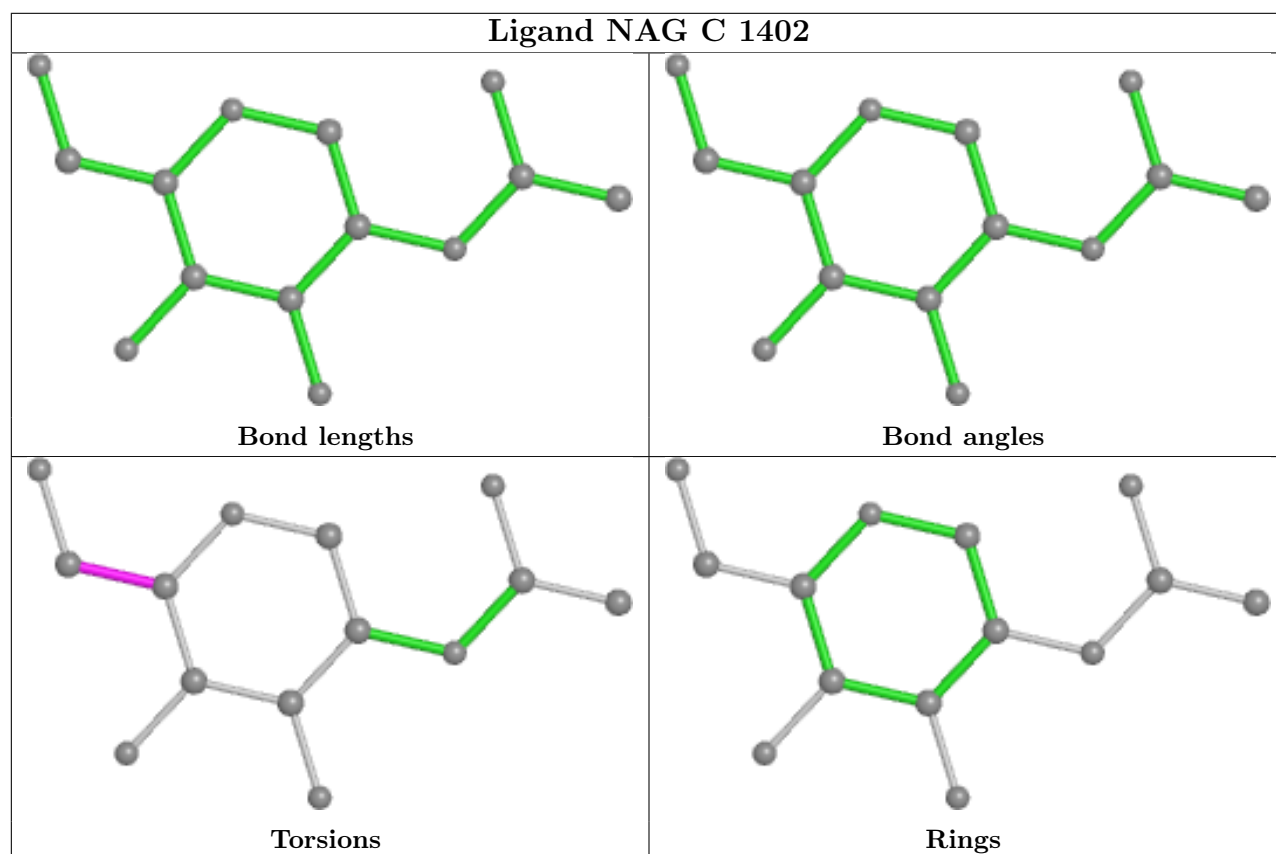
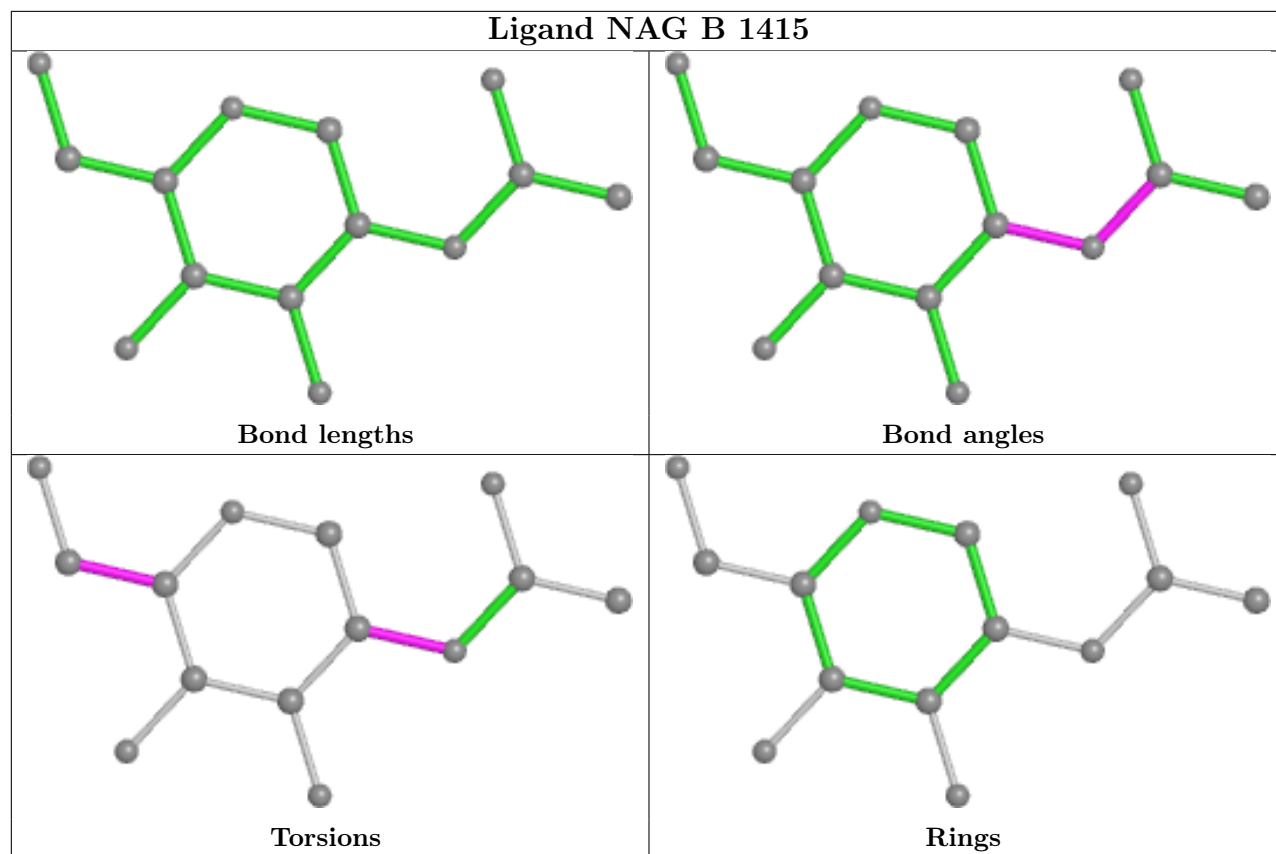


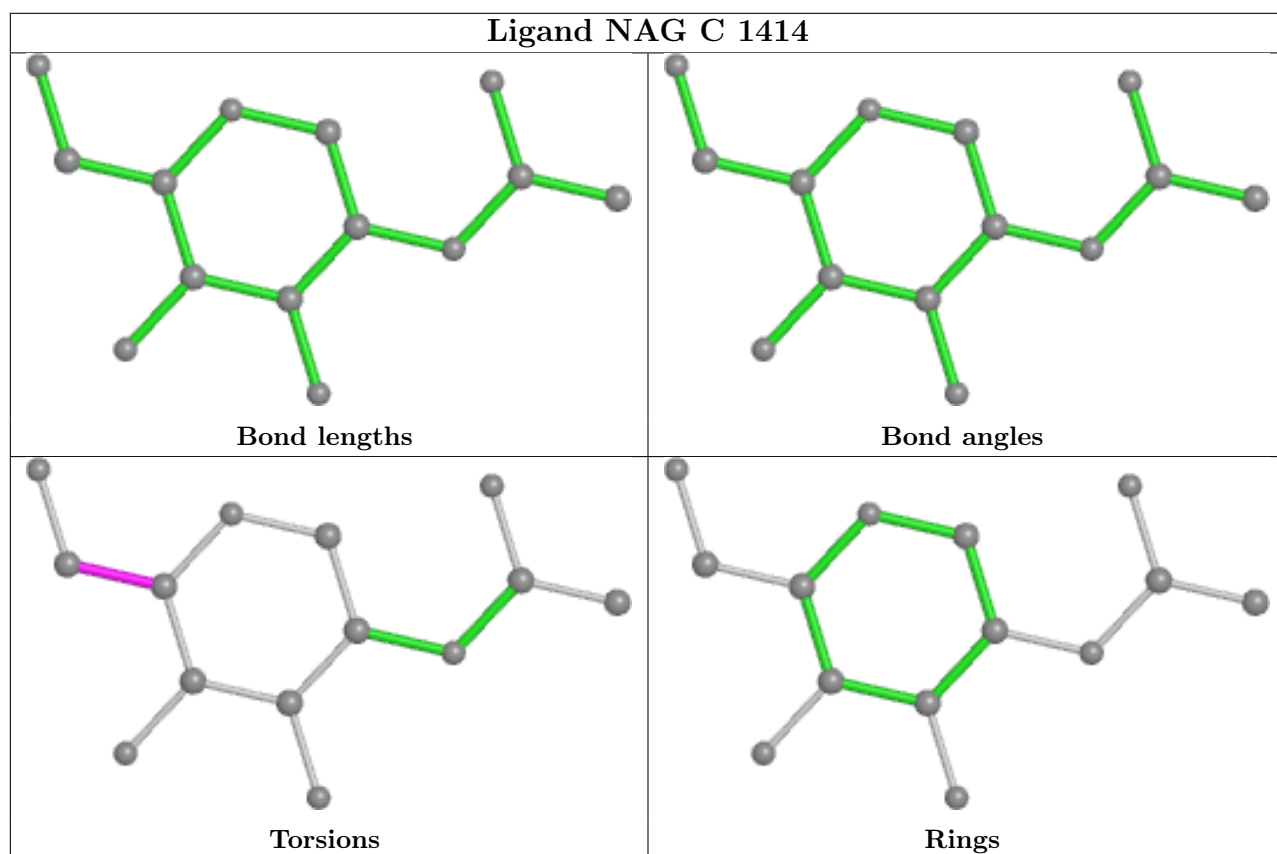
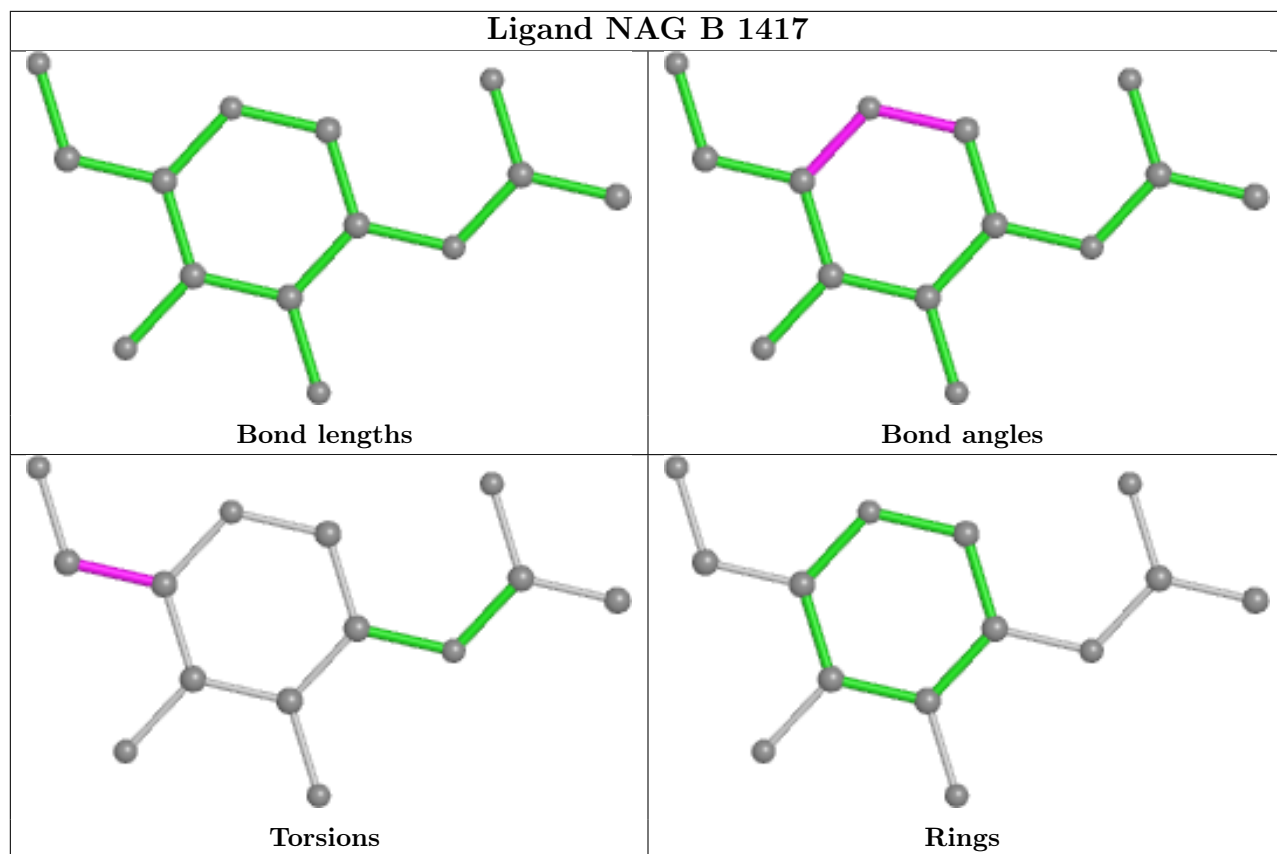












5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

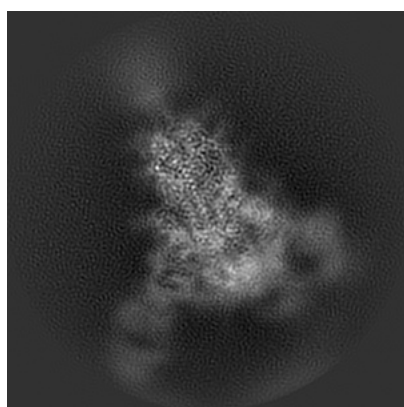
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30276. These allow visual inspection of the internal detail of the map and identification of artifacts.

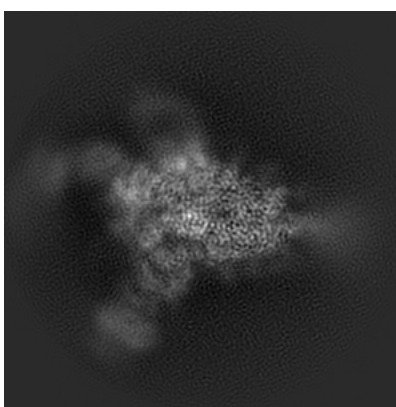
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

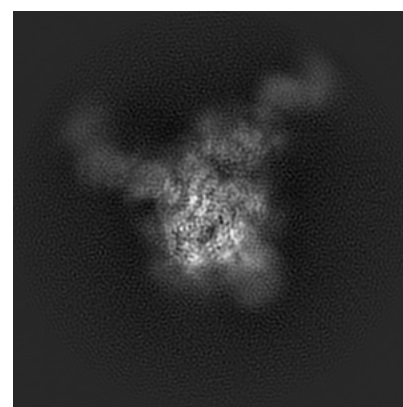
6.1.1 Primary map



X



Y

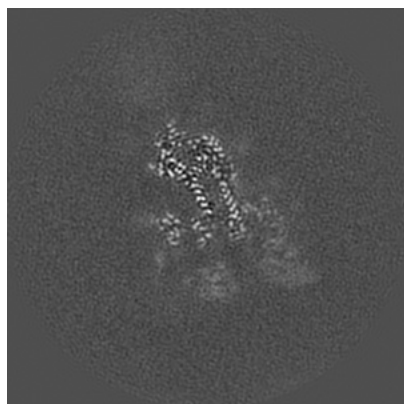


Z

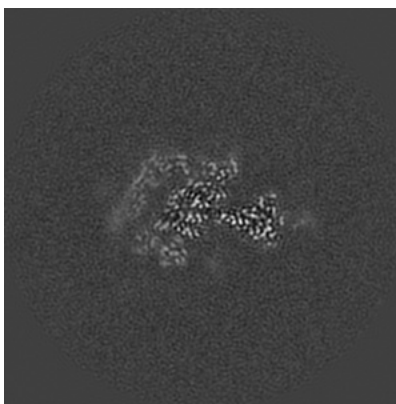
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

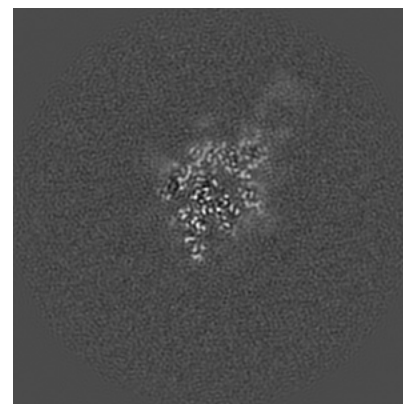
6.2.1 Primary map



X Index: 144



Y Index: 144

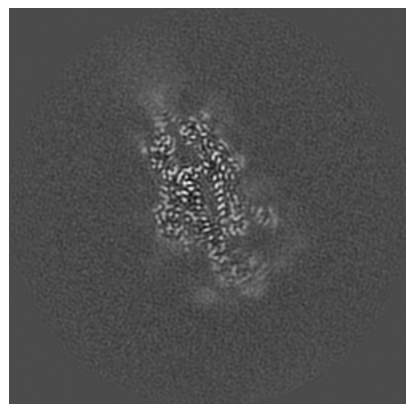


Z Index: 144

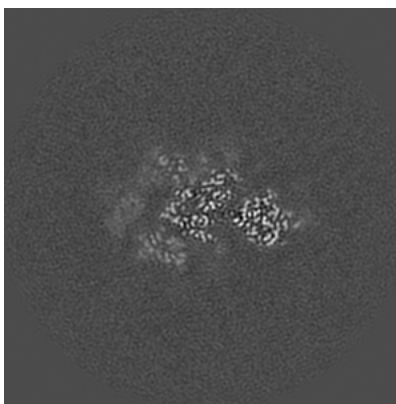
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

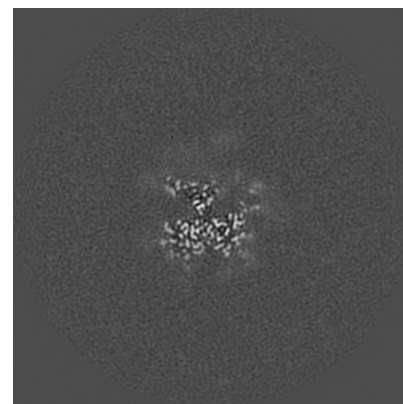
6.3.1 Primary map



X Index: 131



Y Index: 141

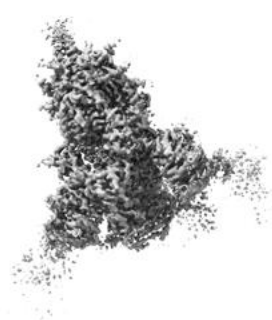


Z Index: 165

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

6.4 Orthogonal surface views [i](#)

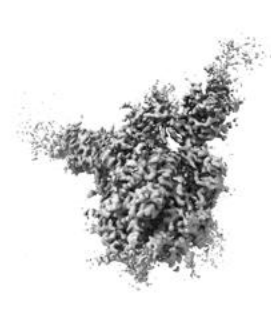
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

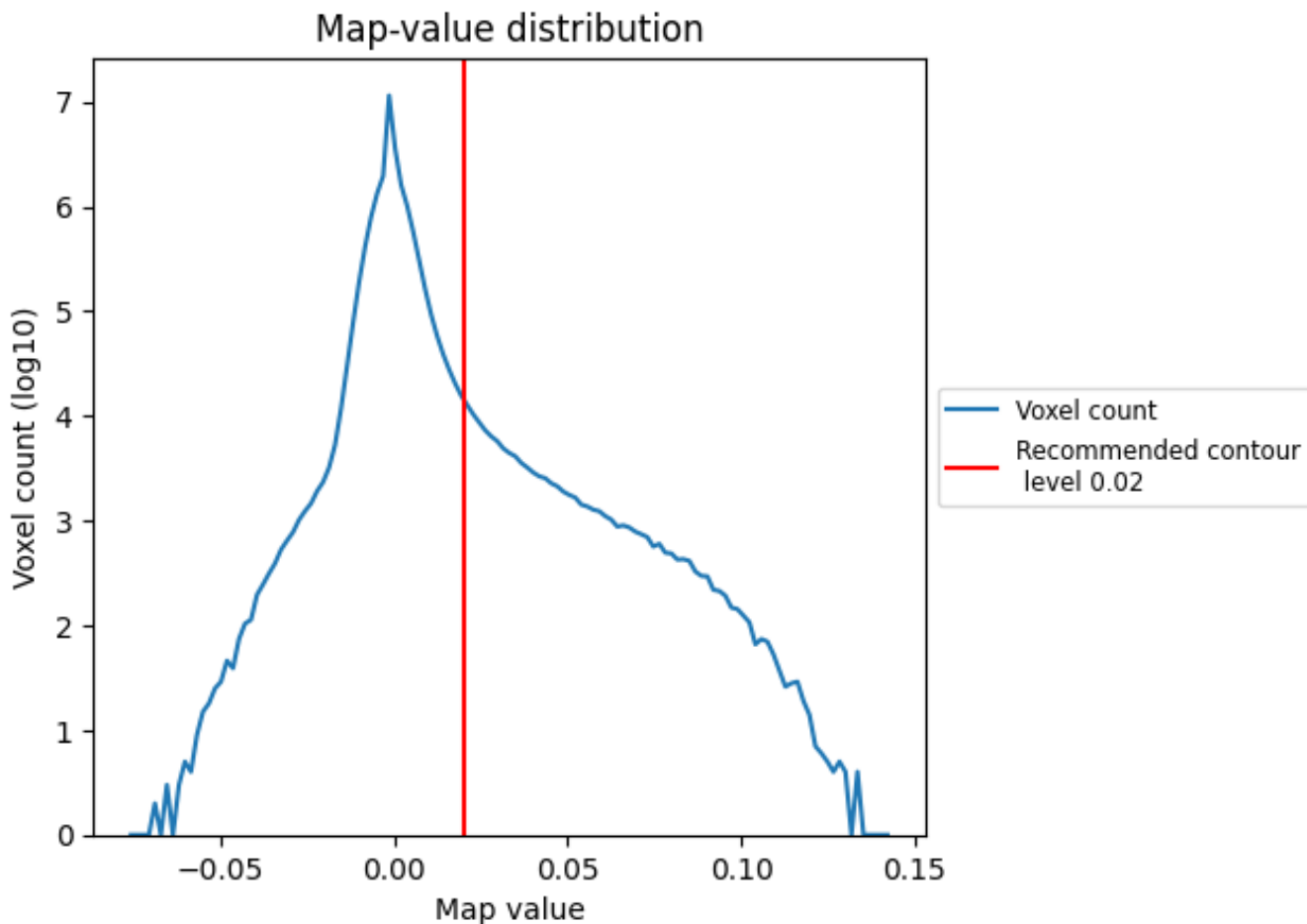
6.5 Mask visualisation

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

7 Map analysis [i](#)

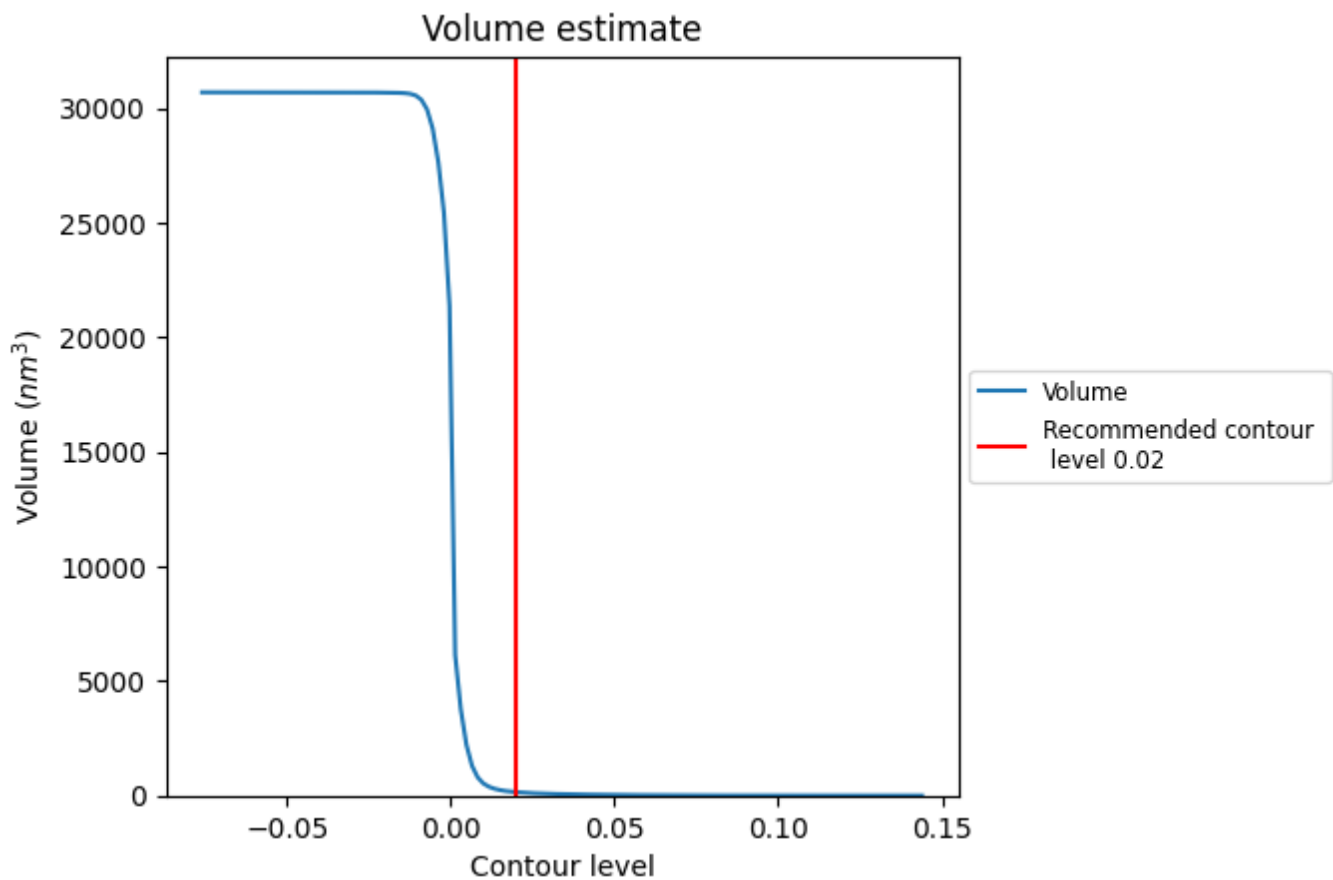
This section contains the results of statistical analysis of the map.

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.

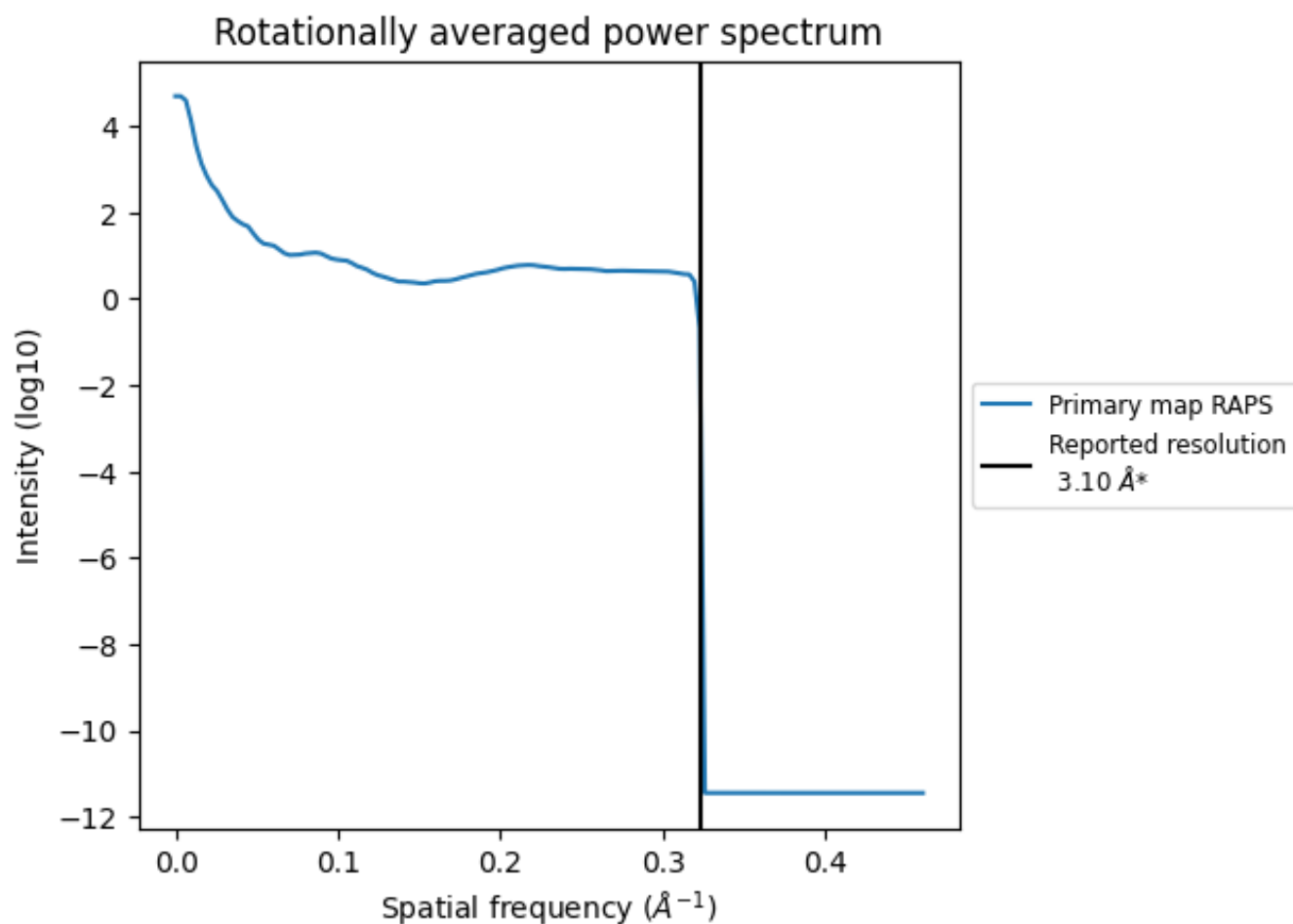
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 150 nm³; this corresponds to an approximate mass of 135 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 0.323 Å⁻¹

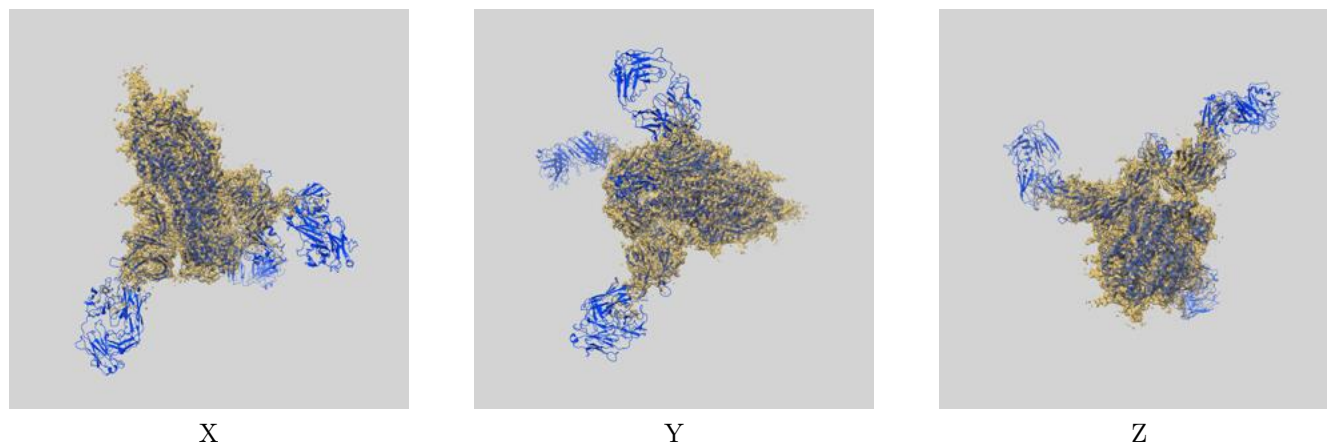
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

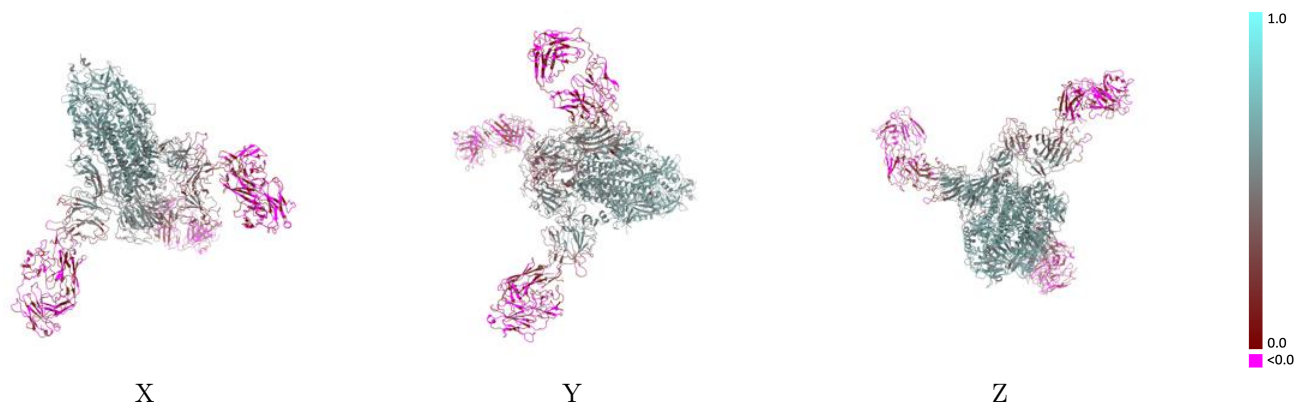
This section contains information regarding the fit between EMDB map EMD-30276 and PDB model 7C2L. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



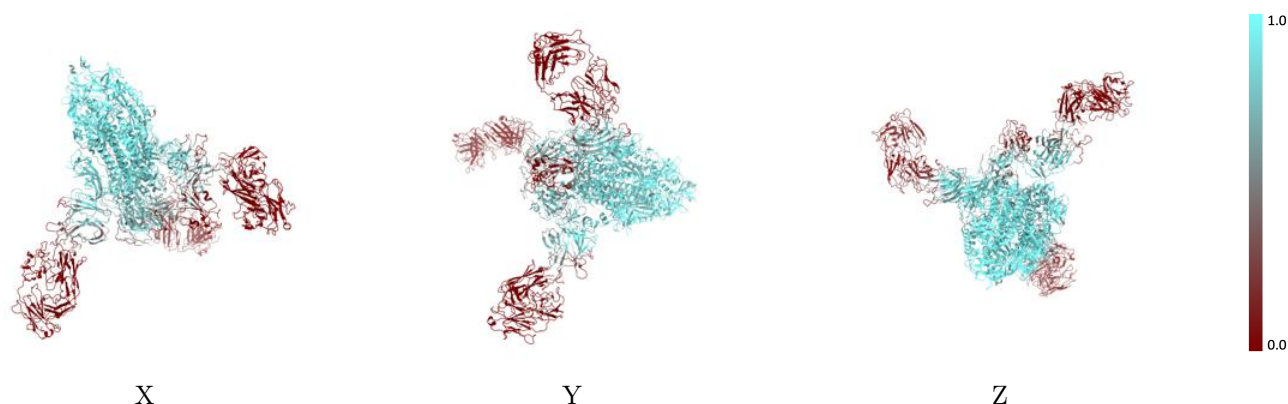
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



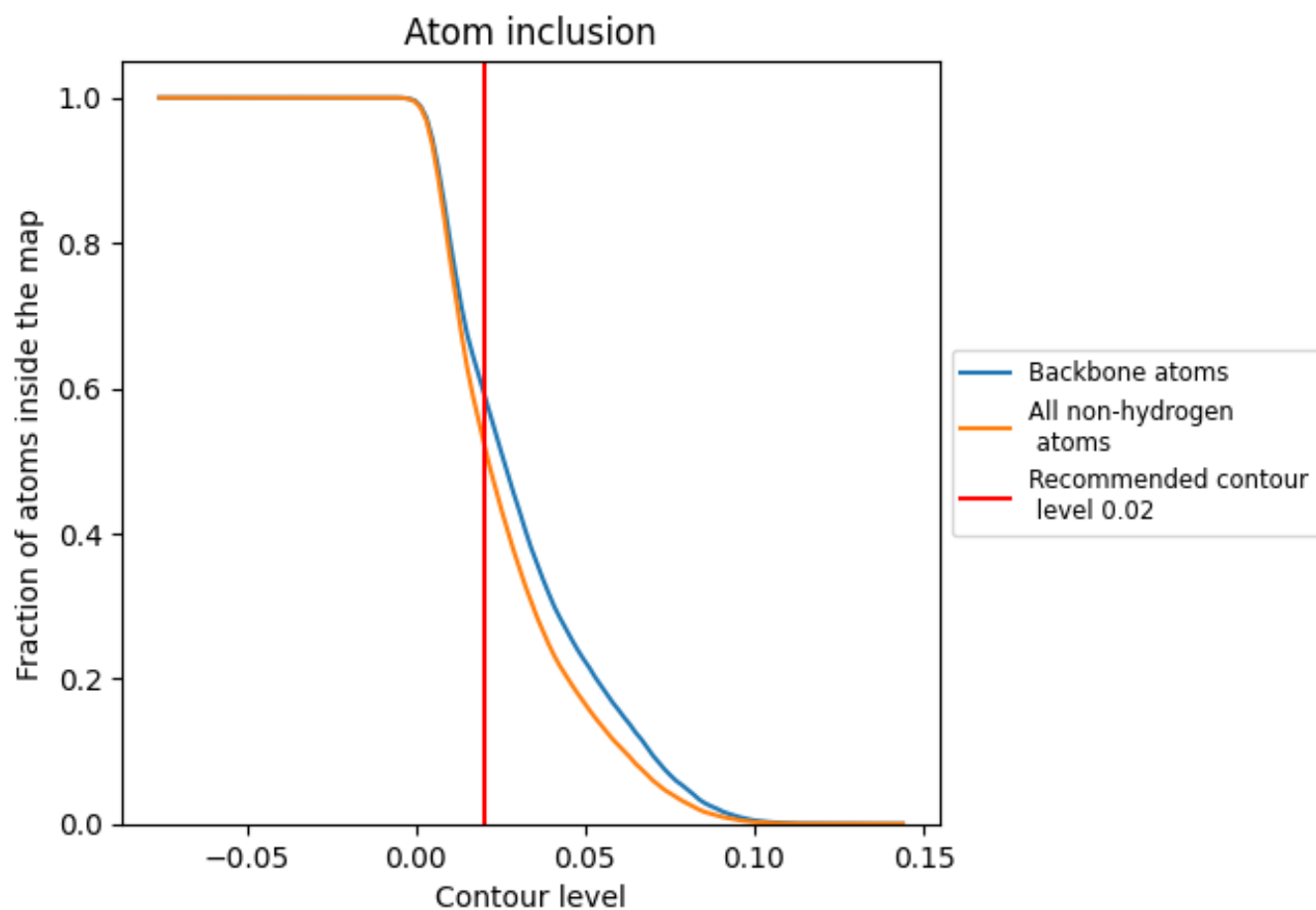
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 59% of all backbone atoms, 53% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5251	 0.3620
A	 0.7008	 0.4840
B	 0.7514	 0.4970
C	 0.7695	 0.5040
D	 0.1667	 0.1760
E	 0.0476	 0.0460
F	 0.3571	 0.3390
G	 0.0714	 -0.0930
H	 0.0220	 0.0660
I	 0.0125	 0.0430
J	 0.0178	 0.0630
K	 0.8214	 0.5000
L	 0.0042	 0.0310
M	 0.0030	 0.0140
N	 0.0018	 0.0200
O	 0.6429	 0.4190
P	 0.5357	 0.4520
Q	 0.6786	 0.4500
R	 0.7143	 0.4960
S	 0.2381	 0.3140
T	 0.0000	 0.0370
U	 0.0000	 0.1590
V	 0.1071	 0.2230
W	 0.3214	 0.3320
X	 0.7500	 0.4970
Y	 0.6429	 0.4980
Z	 0.3929	 0.4150
a	 0.7857	 0.4630
b	 0.6071	 0.4720
c	 0.0952	 0.1920
d	 0.0000	 0.1420
e	 0.1429	 0.3100
f	 0.1786	 0.1020
g	 0.3929	 0.4650
h	 0.7857	 0.5370



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Chain	Atom inclusion	Q-score
i	 0.6429	 0.3860
j	 0.4286	 0.3970
k	 0.8214	 0.4770
l	 0.5714	 0.4660