



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 3, 2023 – 08:19 AM EDT

PDB ID : 6P95
Title : Structure of Lassa virus glycoprotein in complex with Fab 25.6A
Authors : Sapphire, E.O.; Hastie, K.M.
Deposited on : 2019-06-09
Resolution : 3.50 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.50 Å.

There are no overall percentile quality scores available for this entry.

MolProbity and EDS failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 18593 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Pre-glycoprotein polyprotein GP complex.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	188	Total	C	N	O	S	0	0	0
			1488	938	249	285	16			
1	B	181	Total	C	N	O	S	0	0	0
			1428	901	239	272	16			
1	C	189	Total	C	N	O	S	0	0	0
			1499	944	253	286	16			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	207	CYS	ARG	engineered mutation	UNP P08669
A	258	ARG	LEU	engineered mutation	UNP P08669
A	259	ARG	LEU	engineered mutation	UNP P08669
B	207	CYS	ARG	engineered mutation	UNP P08669
B	258	ARG	LEU	engineered mutation	UNP P08669
B	259	ARG	LEU	engineered mutation	UNP P08669
C	207	CYS	ARG	engineered mutation	UNP P08669
C	258	ARG	LEU	engineered mutation	UNP P08669
C	259	ARG	LEU	engineered mutation	UNP P08669

- Molecule 2 is a protein called FAB Antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	D	218	Total	C	N	O	S	0	0	0
			1628	1018	286	318	6			
2	F	218	Total	C	N	O	S	0	0	0
			1628	1018	286	318	6			
2	H	219	Total	C	N	O	S	0	0	0
			1632	1020	287	319	6			

- Molecule 3 is a protein called FAB Antibody light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	212	Total	C	N	O	S	0	0	0
			1585	997	264	320	4			
3	G	212	Total	C	N	O	S	0	0	0
			1584	995	264	321	4			
3	L	212	Total	C	N	O	S	0	0	0
			1584	995	264	321	4			

- Molecule 4 is a protein called Pre-glycoprotein polyprotein GP complex.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	a	153	Total	C	N	O	S	0	0	0
			1242	784	209	236	13			
4	b	145	Total	C	N	O	S	0	0	0
			1185	753	200	219	13			
4	c	152	Total	C	N	O	S	0	0	0
			1246	791	209	232	14			

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	329	PRO	GLU	engineered mutation	UNP P08669
a	332	THR	MET	engineered mutation	UNP P08669
a	360	CYS	GLY	engineered mutation	UNP P08669
a	434	GLU	-	expression tag	UNP P08669
a	435	VAL	-	expression tag	UNP P08669
a	436	ASP	-	expression tag	UNP P08669
a	437	ASP	-	expression tag	UNP P08669
a	438	ASP	-	expression tag	UNP P08669
a	439	ASP	-	expression tag	UNP P08669
b	329	PRO	GLU	engineered mutation	UNP P08669
b	332	THR	MET	engineered mutation	UNP P08669
b	360	CYS	GLY	engineered mutation	UNP P08669
b	434	GLU	-	expression tag	UNP P08669
b	435	VAL	-	expression tag	UNP P08669
b	436	ASP	-	expression tag	UNP P08669
b	437	ASP	-	expression tag	UNP P08669
b	438	ASP	-	expression tag	UNP P08669
b	439	ASP	-	expression tag	UNP P08669
c	329	PRO	GLU	engineered mutation	UNP P08669
c	332	THR	MET	engineered mutation	UNP P08669
c	360	CYS	GLY	engineered mutation	UNP P08669
c	434	GLU	-	expression tag	UNP P08669
c	435	VAL	-	expression tag	UNP P08669

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Chain	Residue	Modelled	Actual	Comment	Reference
c	436	ASP	-	expression tag	UNP P08669
c	437	ASP	-	expression tag	UNP P08669
c	438	ASP	-	expression tag	UNP P08669
c	439	ASP	-	expression tag	UNP P08669

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
5	I	3	39	22	2	15	0	0	0
5	M	3	39	22	2	15	0	0	0
5	P	3	39	22	2	15	0	0	0
5	R	3	39	22	2	15	0	0	0

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
6	J	2	28	16	2	10	0	0	0
6	K	2	28	16	2	10	0	0	0
6	N	2	28	16	2	10	0	0	0
6	Q	2	28	16	2	10	0	0	0
6	S	2	28	16	2	10	0	0	0
6	X	2	28	16	2	10	0	0	0
6	d	2	28	16	2	10	0	0	0

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
7	O	4	Total	C	N	O	0	0	0
			50	28	2	20			
7	W	4	Total	C	N	O	0	0	0
			50	28	2	20			
7	Z	4	Total	C	N	O	0	0	0
			50	28	2	20			

- Molecule 8 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				ZeroOcc	AltConf	Trace
8	T	5	Total	C	N	O	0	0	0
			61	34	2	25			

- Molecule 9 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				ZeroOcc	AltConf	Trace
9	U	5	Total	C	N	O	0	0	0
			61	34	2	25			

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
10	V	3	Total	C	N	O	0	0	0
			38	22	2	14			
10	Y	3	Total	C	N	O	0	0	0
			38	22	2	14			
10	e	3	Total	C	N	O	0	0	0
			38	22	2	14			

- Molecule 11 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆) (labeled as "Ligand of Interest" by depositor).



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

MolProbity and EDS failed to run properly - this section is therefore empty.

3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α , β , γ	152.24Å 152.24Å 453.89Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.66 – 3.50	Depositor
% Data completeness (in resolution range)	99.9 (29.66-3.50)	Depositor
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.92 (at 3.47Å)	Xtrriage
Refinement program	PHENIX 1.15.2_3472	Depositor
R, R_{free}	0.205 , 0.247	Depositor
Wilson B-factor (Å ²)	119.4	Xtrriage
Anisotropy	0.043	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	18593	wwPDB-VP
Average B, all atoms (Å ²)	123.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.98% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

4 Model quality [i](#)

4.1 Standard geometry [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

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

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

4.5 Carbohydrates [i](#)

57 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
5	NAG	I	1	1,5	14,14,15	0.24	0	17,19,21	0.42	0
5	NAG	I	2	5	14,14,15	0.18	0	17,19,21	0.47	0
5	BMA	I	3	5	11,11,12	0.63	0	15,15,17	0.87	0
6	NAG	J	1	1,6	14,14,15	0.33	0	17,19,21	0.49	0
6	NAG	J	2	6	14,14,15	0.18	0	17,19,21	0.70	1 (5%)
6	NAG	K	1	1,6	14,14,15	0.23	0	17,19,21	0.43	0
6	NAG	K	2	6	14,14,15	0.21	0	17,19,21	0.43	0
5	NAG	M	1	1,5	14,14,15	0.24	0	17,19,21	0.42	0
5	NAG	M	2	5	14,14,15	0.19	0	17,19,21	0.48	0
5	BMA	M	3	5	11,11,12	0.64	0	15,15,17	0.87	0
6	NAG	N	1	1,6	14,14,15	0.27	0	17,19,21	0.46	0
6	NAG	N	2	6	14,14,15	0.21	0	17,19,21	0.69	1 (5%)
7	NAG	O	1	1,7	14,14,15	0.23	0	17,19,21	0.43	0
7	NAG	O	2	7	14,14,15	0.20	0	17,19,21	0.43	0
7	BMA	O	3	7	11,11,12	0.61	0	15,15,17	0.78	0
7	MAN	O	4	7	11,11,12	0.73	0	15,15,17	1.06	2 (13%)
5	NAG	P	1	1,5	14,14,15	0.25	0	17,19,21	0.48	0
5	NAG	P	2	5	14,14,15	0.22	0	17,19,21	0.68	1 (5%)
5	BMA	P	3	5	11,11,12	0.75	0	15,15,17	1.03	0
6	NAG	Q	1	1,6	14,14,15	0.23	0	17,19,21	0.41	0
6	NAG	Q	2	6	14,14,15	0.19	0	17,19,21	0.44	0
5	NAG	R	1	1,5	14,14,15	0.24	0	17,19,21	0.43	0
5	NAG	R	2	5	14,14,15	0.20	0	17,19,21	0.43	0
5	BMA	R	3	5	11,11,12	0.61	0	15,15,17	0.77	0
6	NAG	S	1	1,6	14,14,15	0.31	0	17,19,21	0.47	0
6	NAG	S	2	6	14,14,15	0.20	0	17,19,21	0.44	0
8	NAG	T	1	4,8	14,14,15	0.22	0	17,19,21	0.47	0
8	NAG	T	2	8	14,14,15	0.20	0	17,19,21	0.42	0
8	BMA	T	3	8	11,11,12	0.60	0	15,15,17	0.77	0
8	MAN	T	4	8	11,11,12	0.76	0	15,15,17	1.10	2 (13%)
8	MAN	T	5	8	11,11,12	0.73	0	15,15,17	1.02	2 (13%)
9	NAG	U	1	4,9	14,14,15	0.22	0	17,19,21	0.44	0
9	NAG	U	2	9	14,14,15	0.19	0	17,19,21	0.42	0
9	BMA	U	3	9	11,11,12	0.66	0	15,15,17	0.79	0
9	MAN	U	4	9	11,11,12	0.73	0	15,15,17	1.10	2 (13%)
9	MAN	U	5	9	11,11,12	0.68	0	15,15,17	1.04	2 (13%)
10	NAG	V	1	10,4	14,14,15	0.34	0	17,19,21	0.42	0
10	NAG	V	2	10	14,14,15	0.26	0	17,19,21	0.39	0
10	FUC	V	3	10	10,10,11	0.76	0	14,14,16	0.86	0
7	NAG	W	1	4,7	14,14,15	0.19	0	17,19,21	0.50	0
7	NAG	W	2	7	14,14,15	0.20	0	17,19,21	0.41	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	BMA	W	3	7	11,11,12	0.60	0	15,15,17	0.78	0
7	MAN	W	4	7	11,11,12	0.68	0	15,15,17	1.06	2 (13%)
6	NAG	X	1	6,4	14,14,15	0.20	0	17,19,21	0.45	0
6	NAG	X	2	6	14,14,15	0.22	0	17,19,21	0.41	0
10	NAG	Y	1	10,4	14,14,15	0.35	0	17,19,21	0.40	0
10	NAG	Y	2	10	14,14,15	0.26	0	17,19,21	0.38	0
10	FUC	Y	3	10	10,10,11	0.78	0	14,14,16	0.85	0
7	NAG	Z	1	4,7	14,14,15	0.16	0	17,19,21	0.52	0
7	NAG	Z	2	7	14,14,15	0.20	0	17,19,21	0.42	0
7	BMA	Z	3	7	11,11,12	0.61	0	15,15,17	0.79	0
7	MAN	Z	4	7	11,11,12	0.68	0	15,15,17	1.10	2 (13%)
6	NAG	d	1	6,4	14,14,15	0.21	0	17,19,21	0.46	0
6	NAG	d	2	6	14,14,15	0.21	0	17,19,21	0.41	0
10	NAG	e	1	10,4	14,14,15	0.34	0	17,19,21	0.39	0
10	NAG	e	2	10	14,14,15	0.25	0	17,19,21	0.39	0
10	FUC	e	3	10	10,10,11	0.75	0	14,14,16	0.83	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

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

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

There are no bond length outliers.

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	J	2	NAG	C1-O5-C5	2.47	115.54	112.19
6	N	2	NAG	C1-O5-C5	2.45	115.51	112.19
5	P	2	NAG	C1-O5-C5	2.41	115.46	112.19
7	O	4	MAN	C1-O5-C5	2.39	115.43	112.19
8	T	5	MAN	C1-O5-C5	2.38	115.41	112.19
7	Z	4	MAN	C1-O5-C5	2.37	115.40	112.19
9	U	4	MAN	C1-O5-C5	2.34	115.36	112.19
7	W	4	MAN	C1-O5-C5	2.30	115.31	112.19
7	Z	4	MAN	O2-C2-C3	-2.27	105.59	110.14
8	T	4	MAN	C1-O5-C5	2.27	115.26	112.19
9	U	5	MAN	O2-C2-C3	-2.27	105.60	110.14
7	W	4	MAN	O2-C2-C3	-2.25	105.62	110.14
9	U	5	MAN	C1-O5-C5	2.22	115.21	112.19
7	O	4	MAN	O2-C2-C3	-2.22	105.69	110.14
9	U	4	MAN	O2-C2-C3	-2.22	105.70	110.14
8	T	5	MAN	O2-C2-C3	-2.20	105.73	110.14
8	T	4	MAN	O2-C2-C3	-2.08	105.97	110.14

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	Y	2	NAG	O5-C5-C6-O6
10	Y	2	NAG	C4-C5-C6-O6
10	Y	1	NAG	O5-C5-C6-O6
10	V	1	NAG	O5-C5-C6-O6
10	Y	1	NAG	C4-C5-C6-O6
10	e	2	NAG	C4-C5-C6-O6
10	e	2	NAG	O5-C5-C6-O6
10	V	1	NAG	C4-C5-C6-O6
9	U	5	MAN	O5-C5-C6-O6
10	V	2	NAG	C4-C5-C6-O6
10	V	2	NAG	O5-C5-C6-O6
9	U	1	NAG	C4-C5-C6-O6
10	e	1	NAG	O5-C5-C6-O6
10	e	1	NAG	C4-C5-C6-O6
9	U	1	NAG	O5-C5-C6-O6
5	P	1	NAG	C4-C5-C6-O6
5	M	1	NAG	C4-C5-C6-O6
6	X	2	NAG	C4-C5-C6-O6

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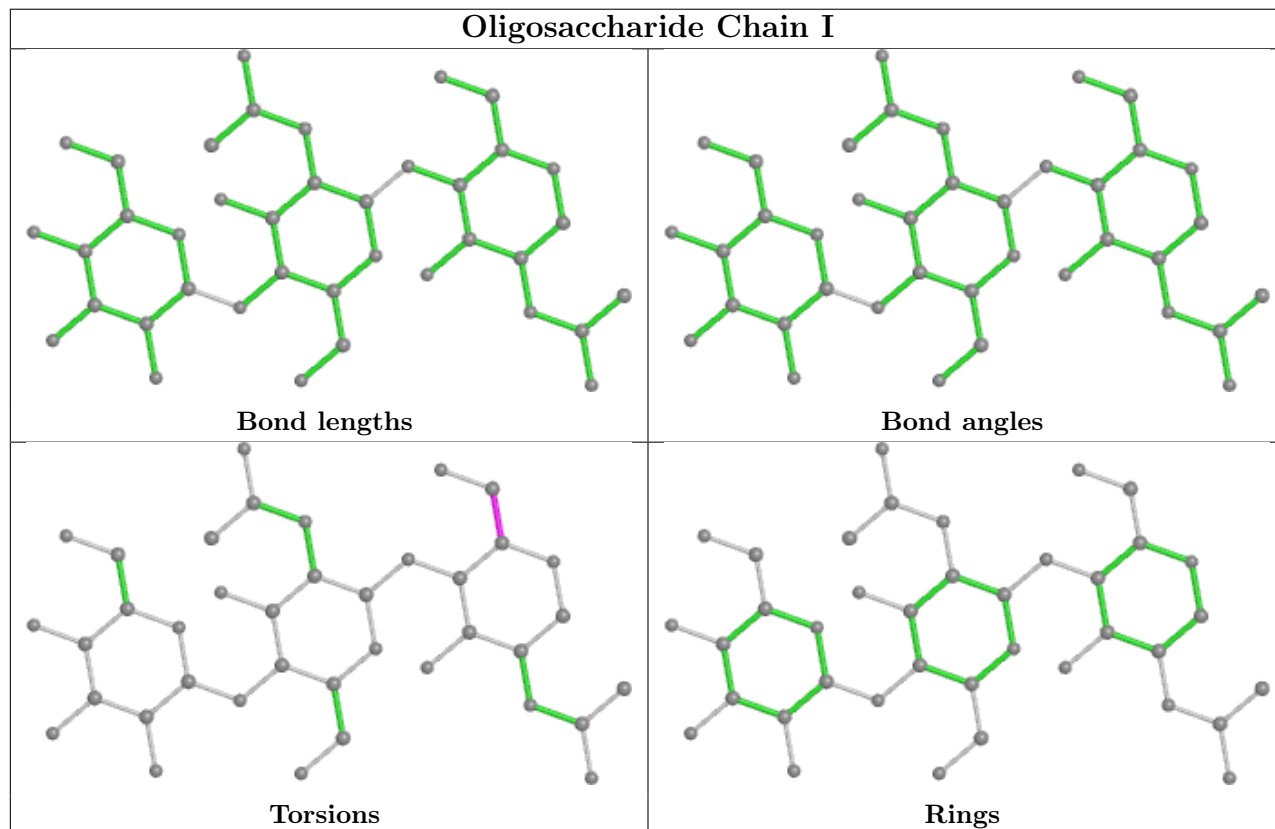
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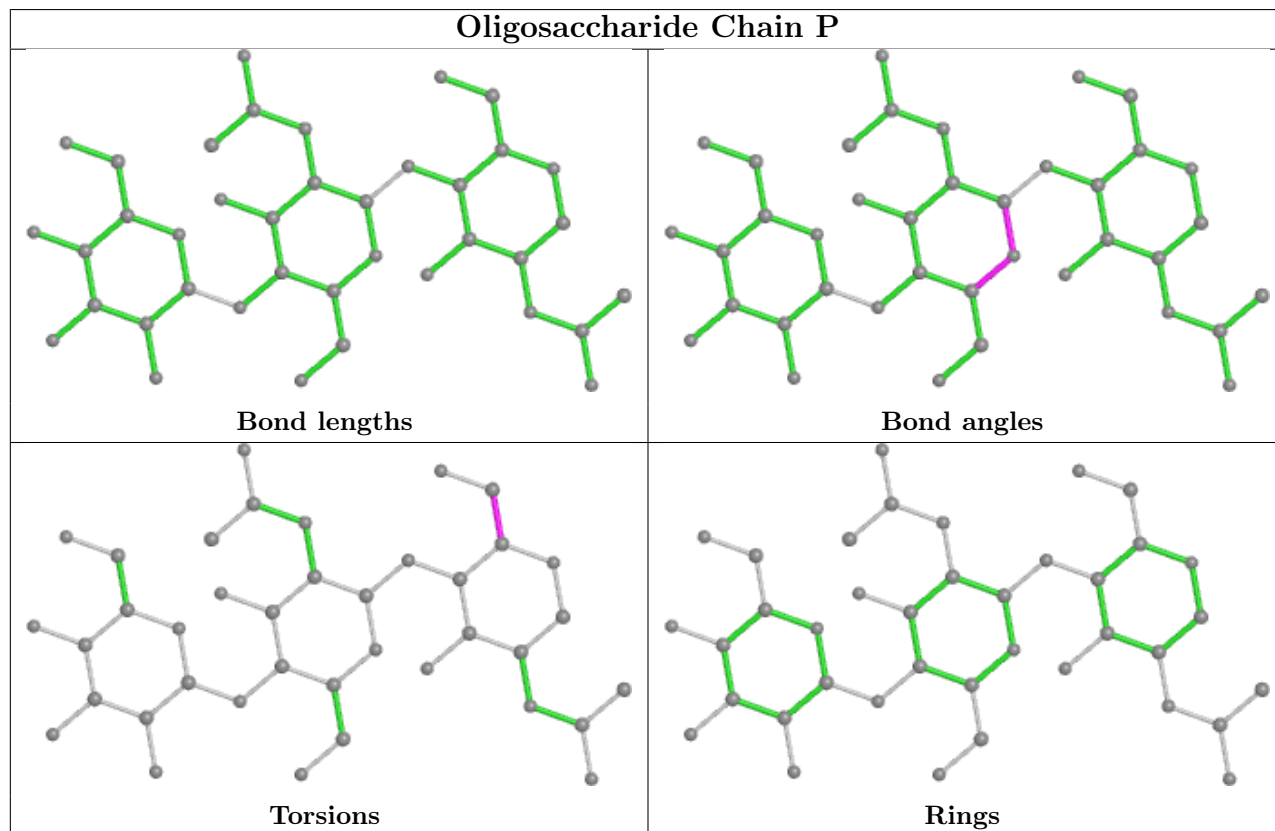
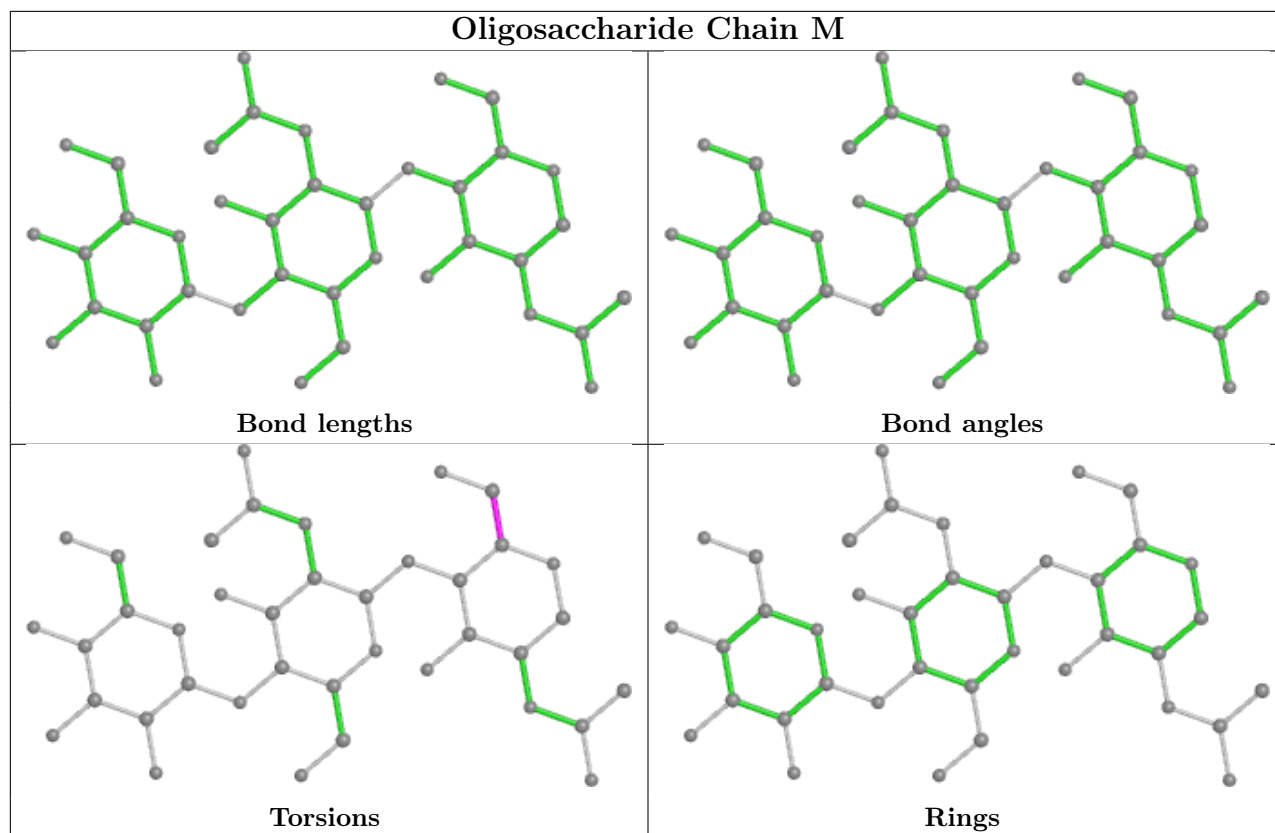
Mol	Chain	Res	Type	Atoms
5	I	1	NAG	C4-C5-C6-O6
5	M	1	NAG	O5-C5-C6-O6
5	P	1	NAG	O5-C5-C6-O6
6	N	1	NAG	C4-C5-C6-O6
6	d	2	NAG	C4-C5-C6-O6
5	I	1	NAG	O5-C5-C6-O6
6	X	2	NAG	O5-C5-C6-O6
6	N	1	NAG	O5-C5-C6-O6
6	S	1	NAG	C4-C5-C6-O6
6	d	2	NAG	O5-C5-C6-O6
6	S	1	NAG	O5-C5-C6-O6
6	d	1	NAG	C4-C5-C6-O6
6	X	1	NAG	C4-C5-C6-O6
6	d	1	NAG	O5-C5-C6-O6
6	X	1	NAG	O5-C5-C6-O6

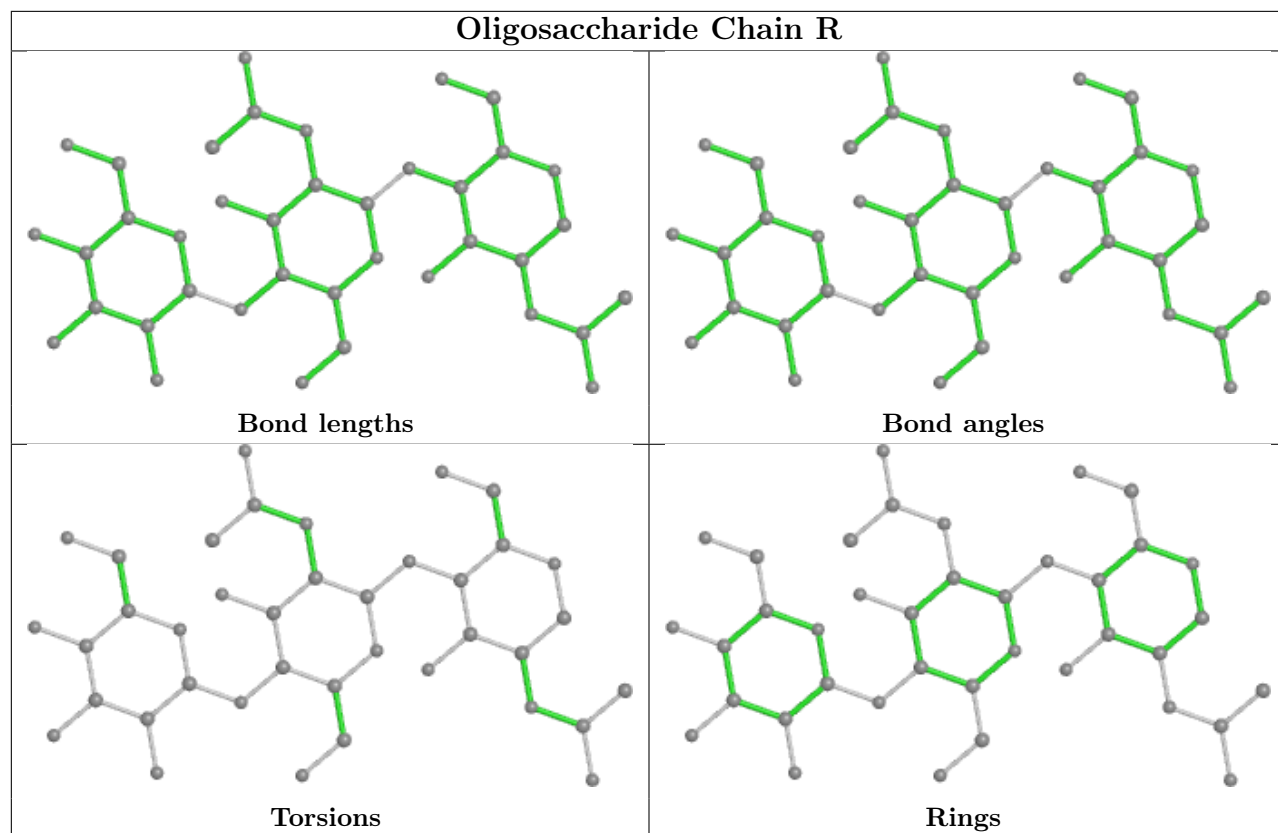
There are no ring outliers.

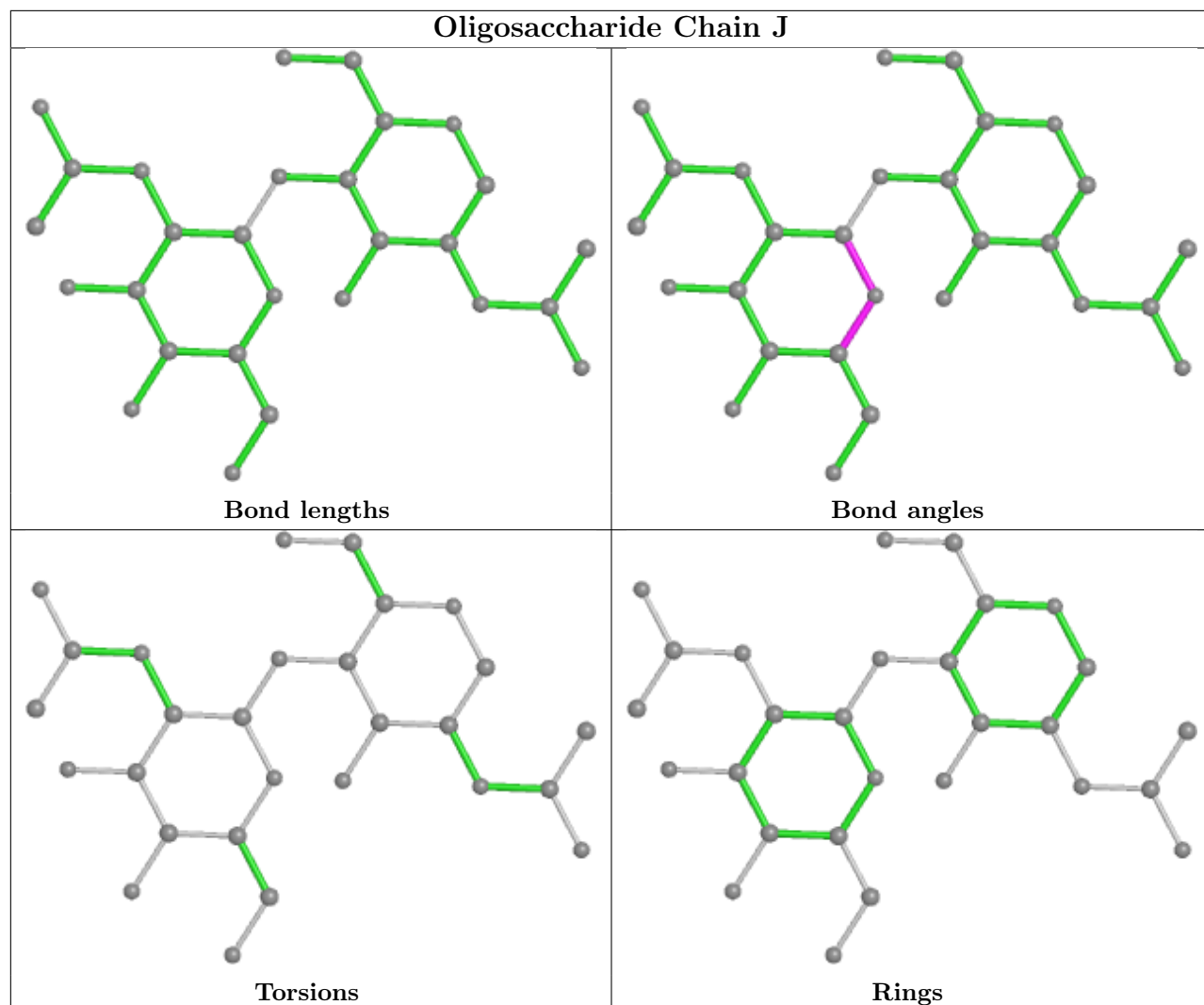
No monomer is involved in short contacts.

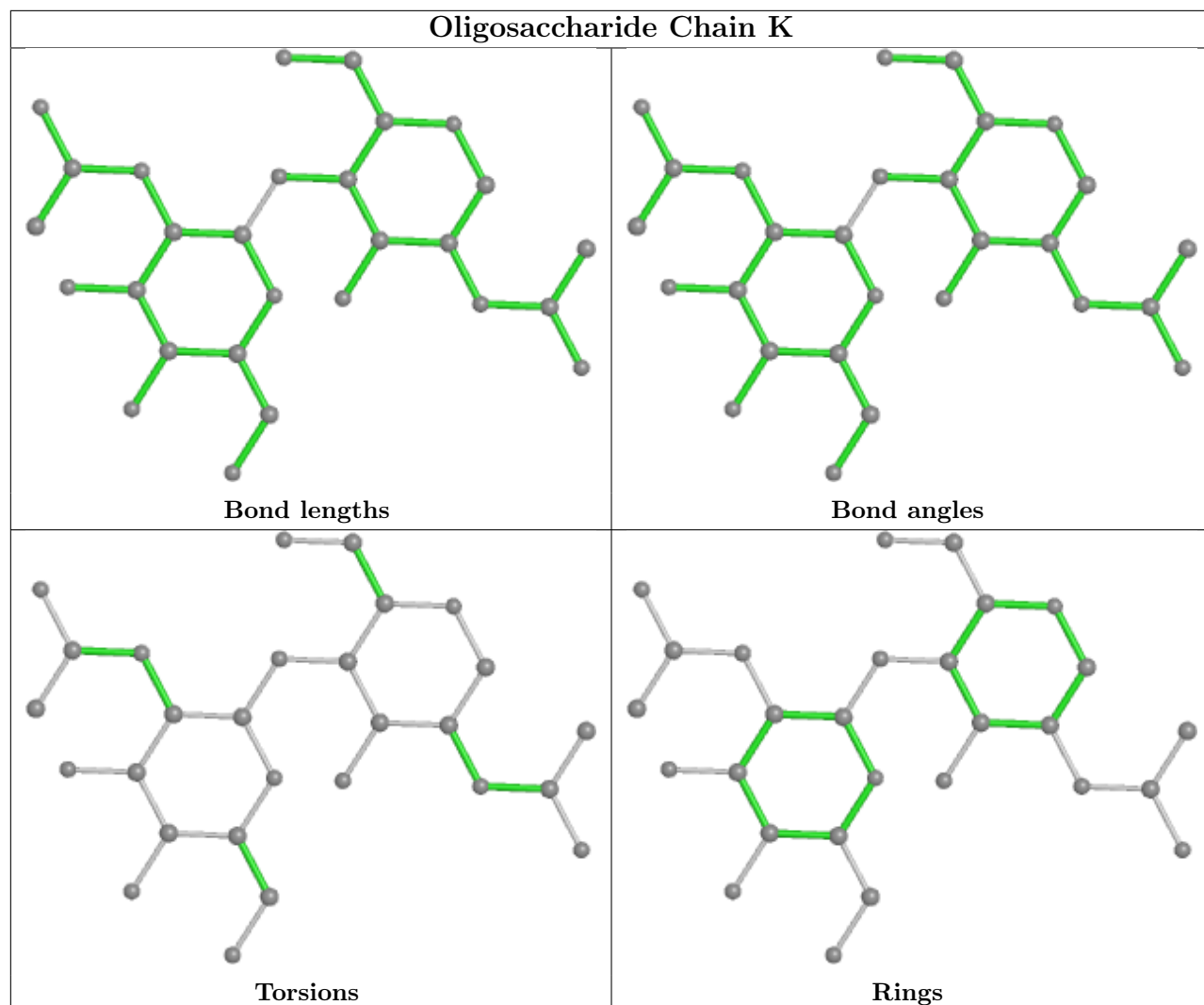
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

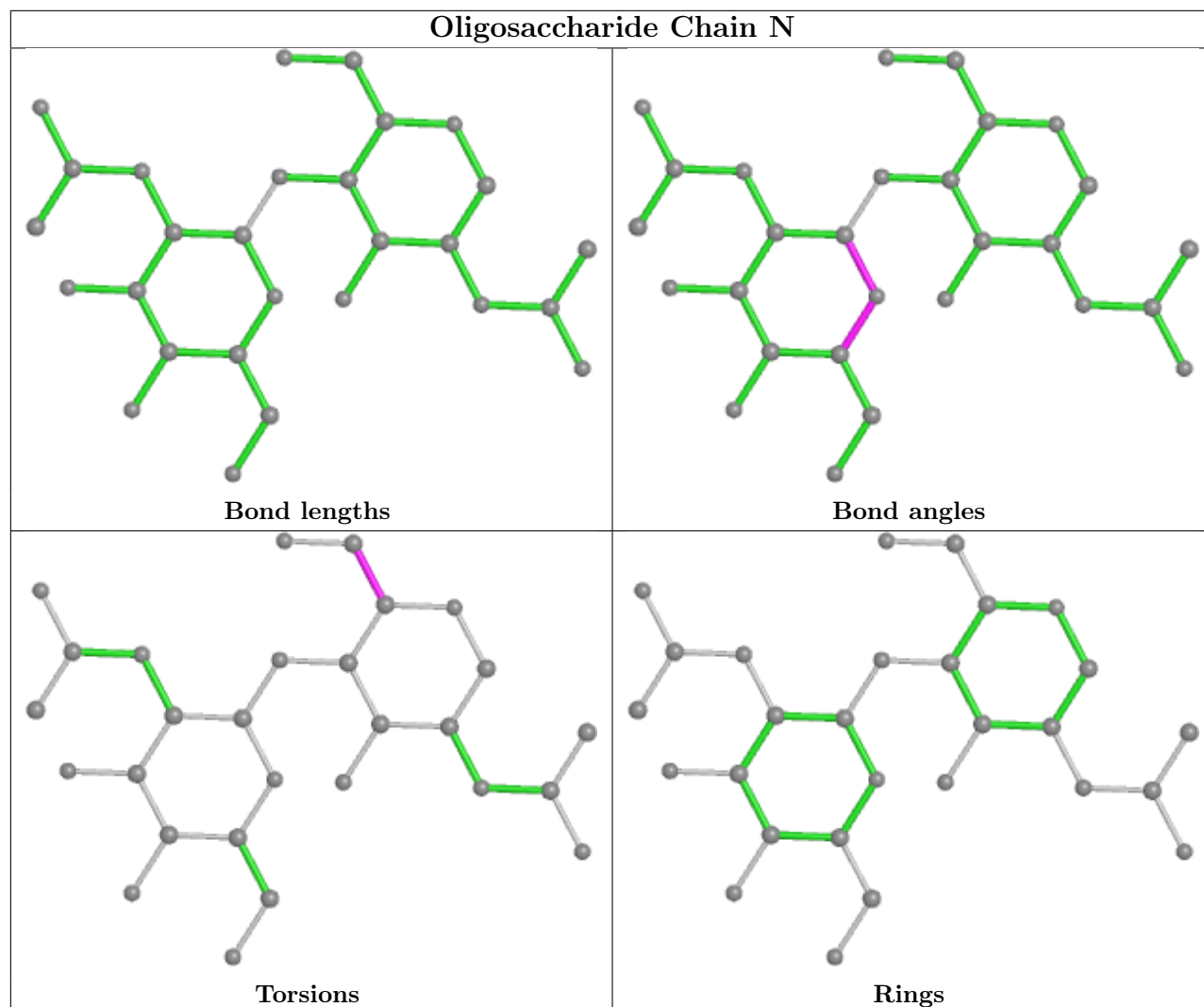


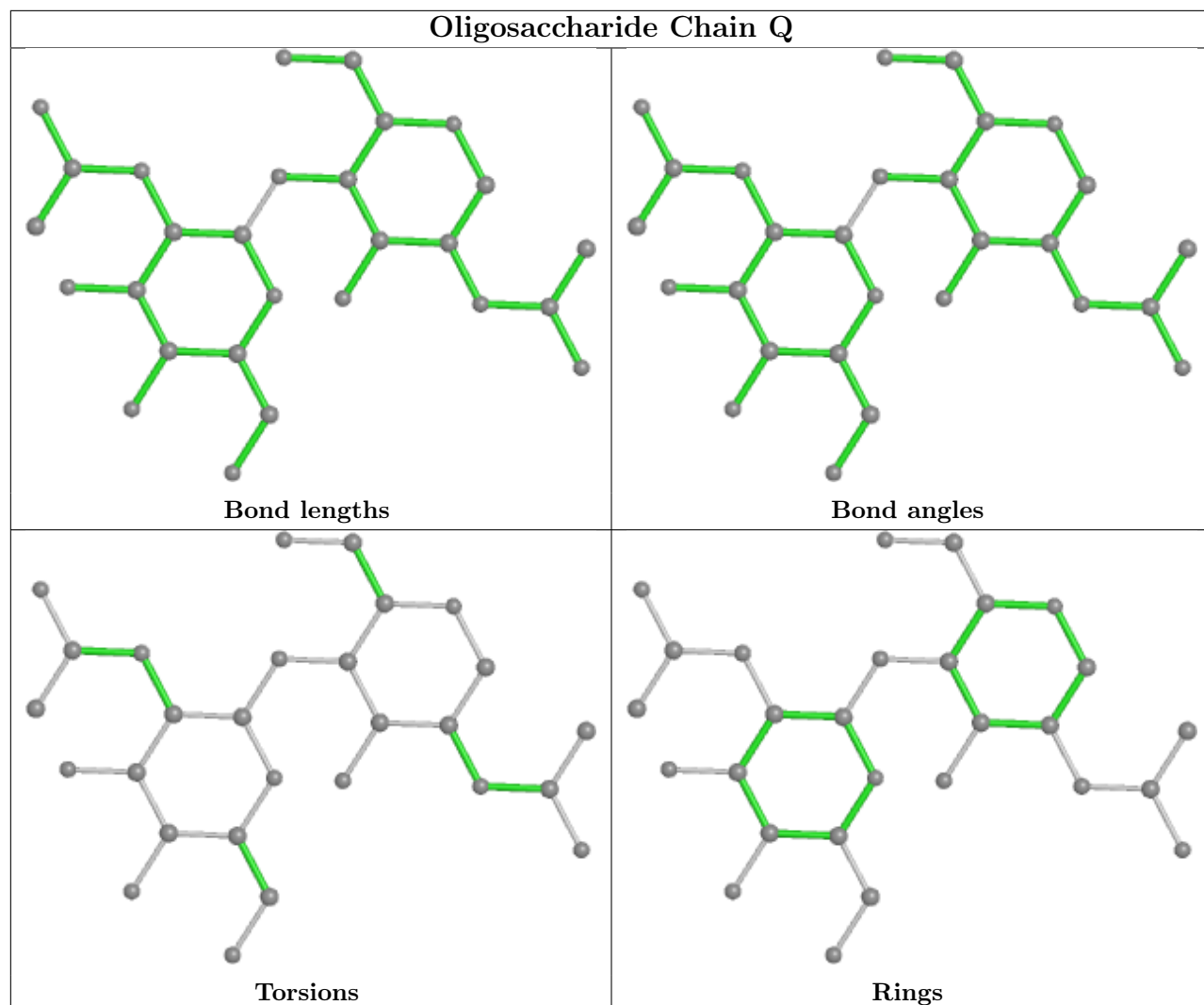


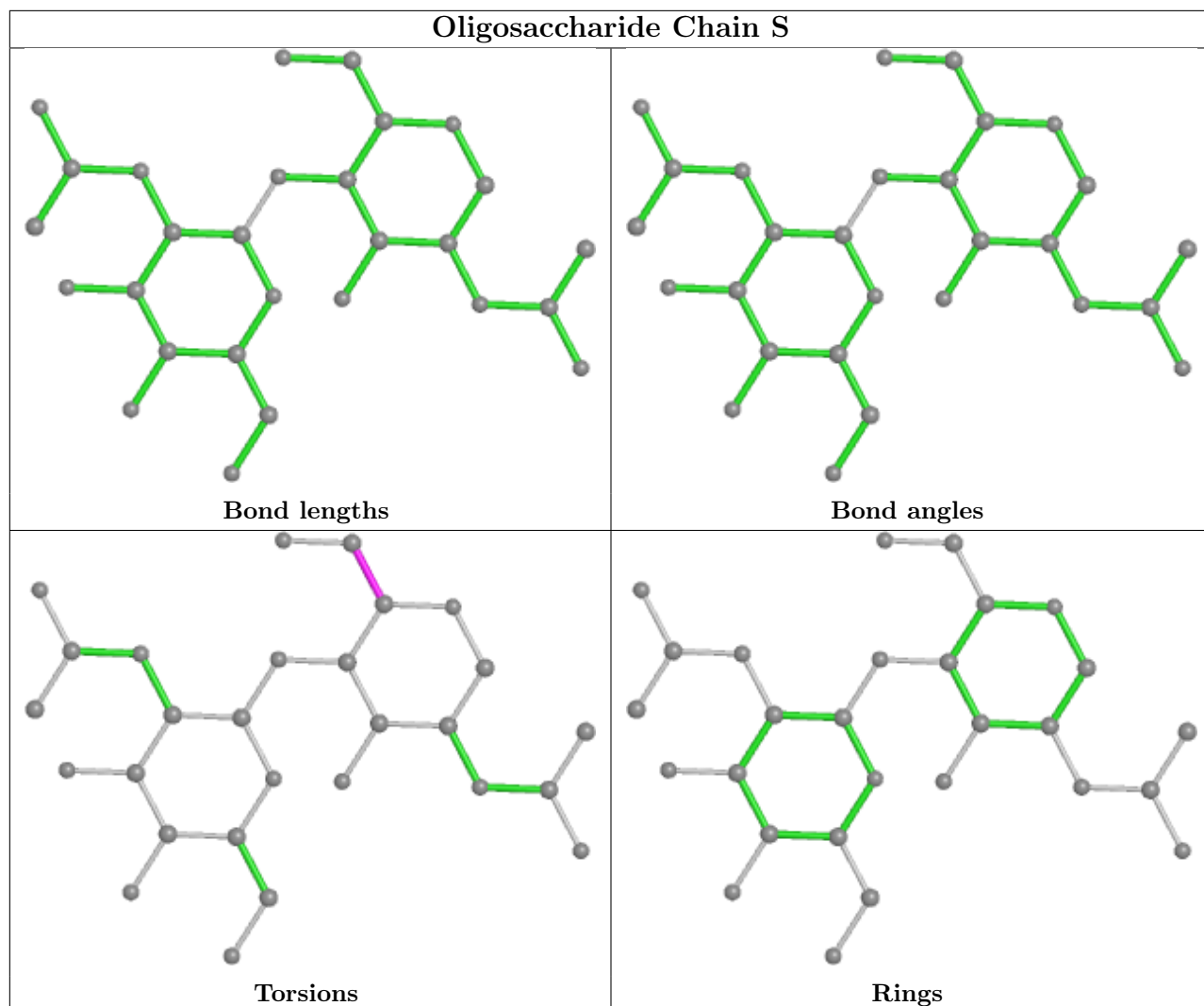


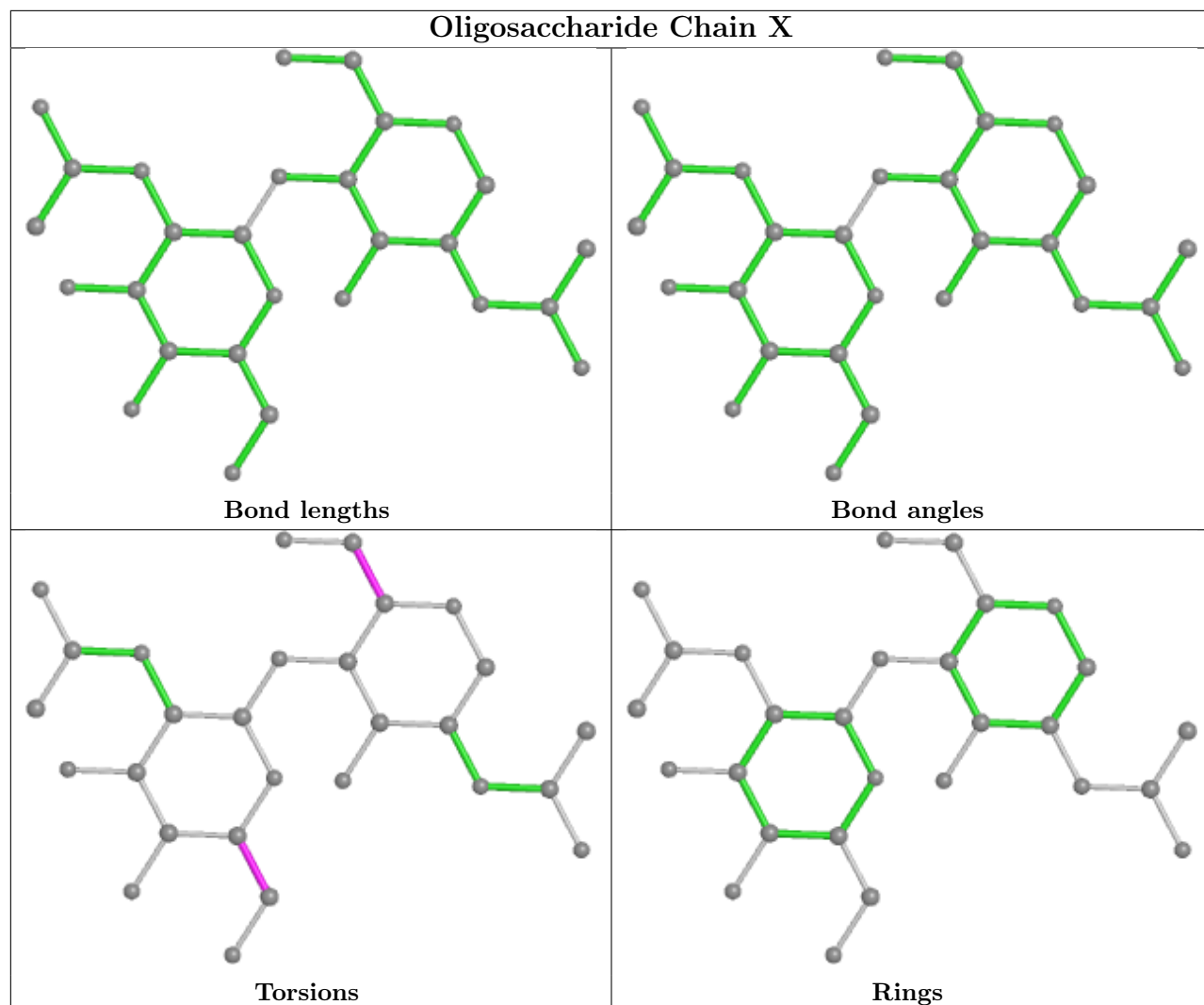


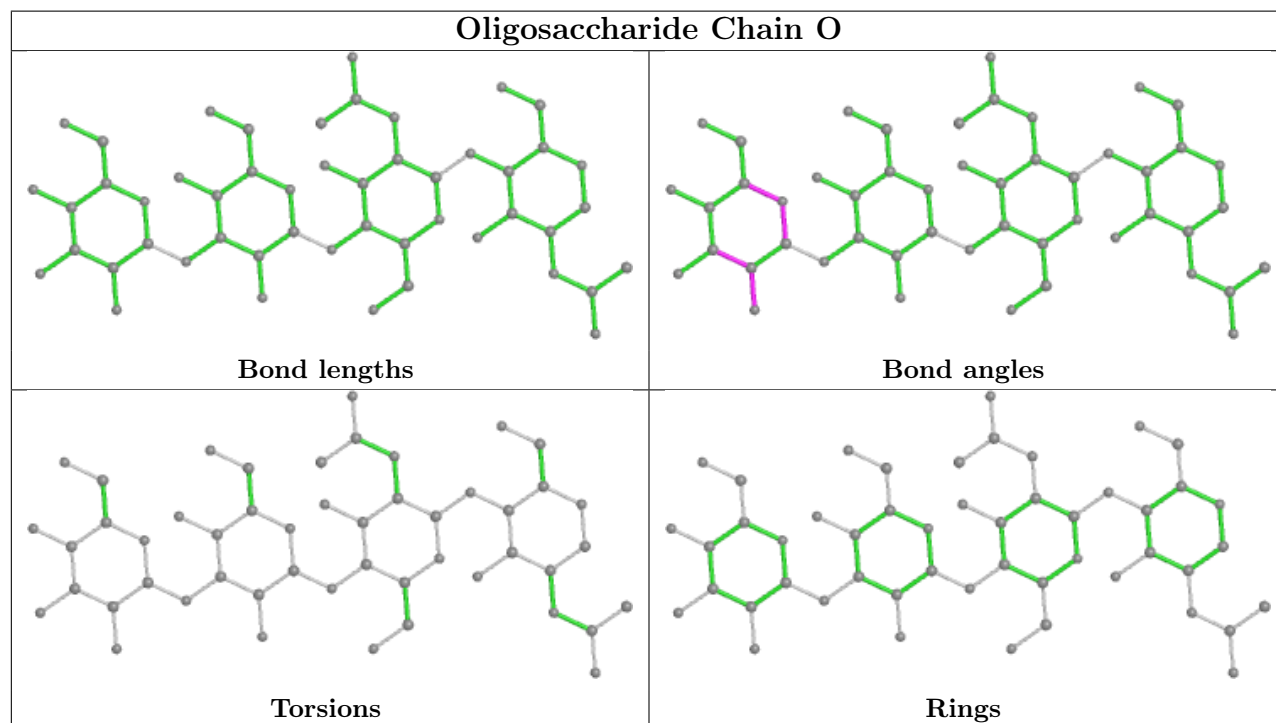
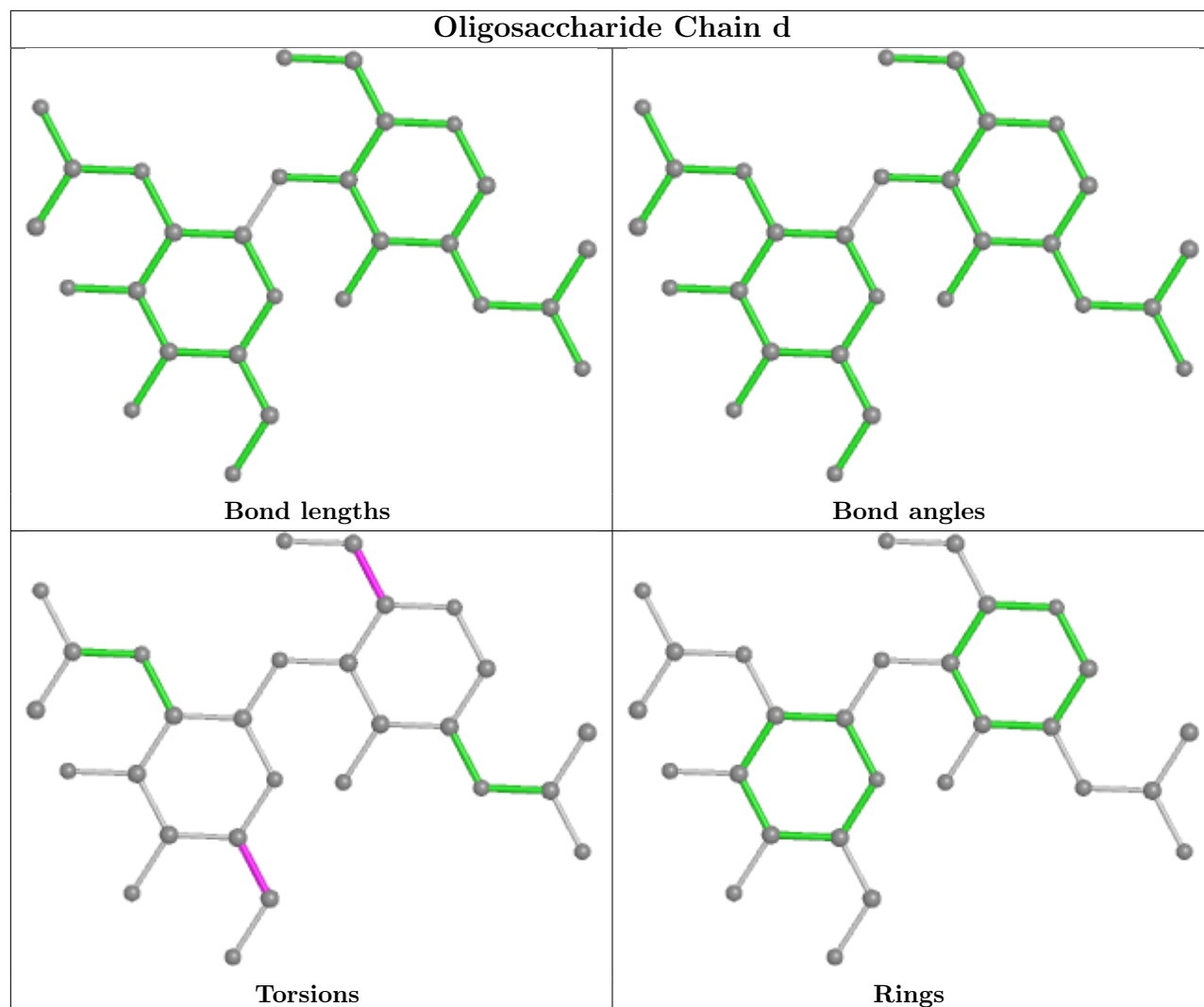


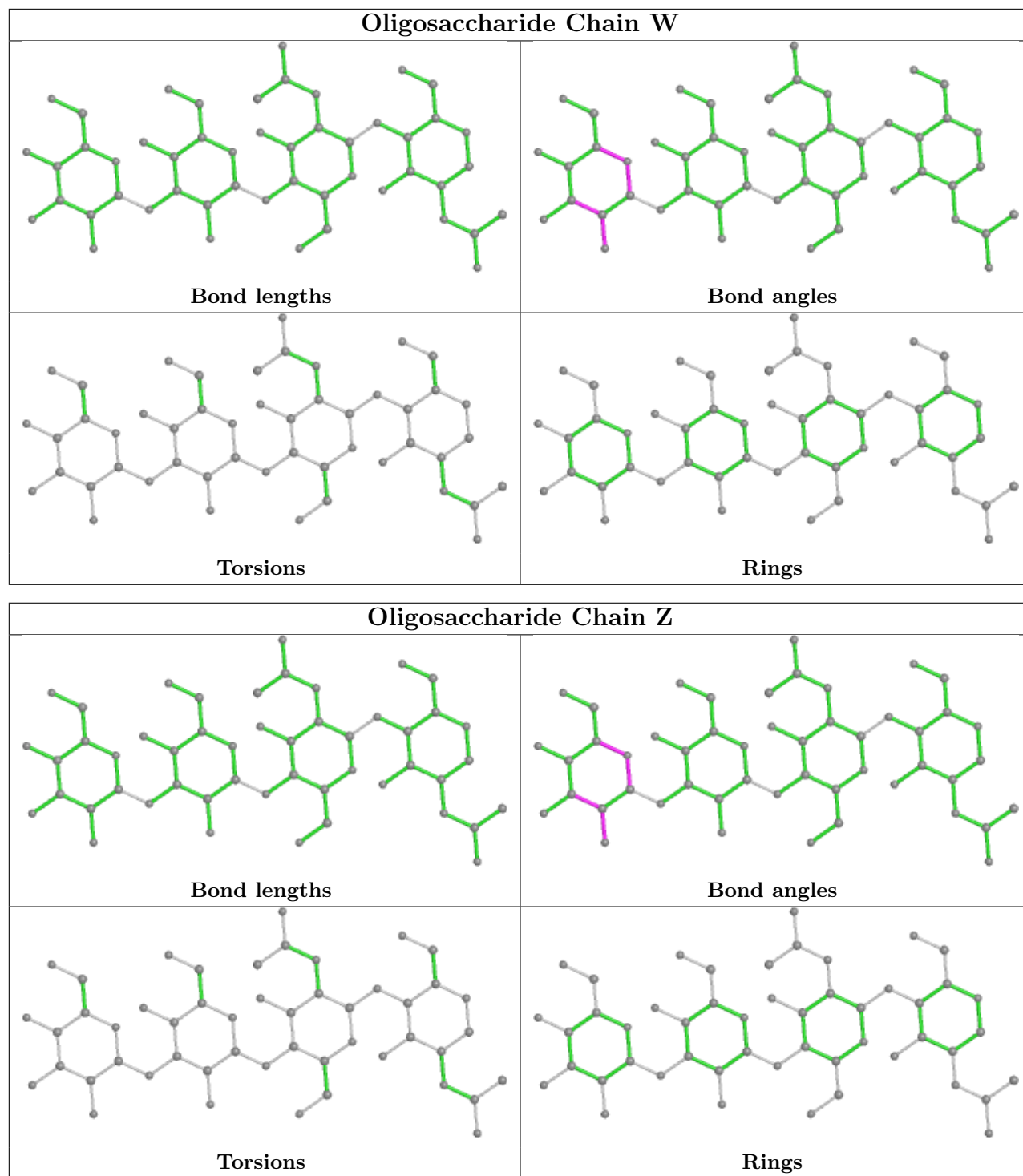


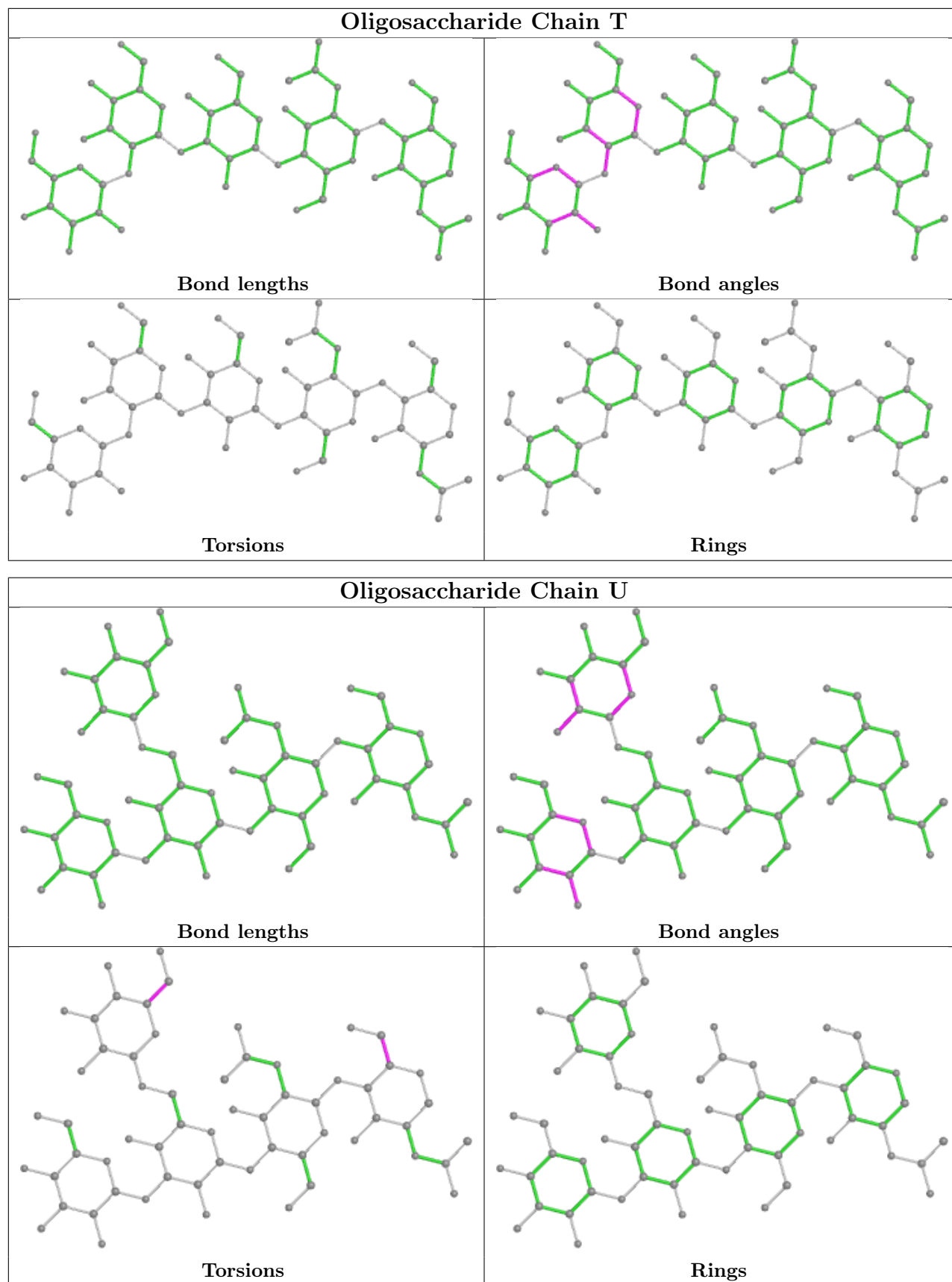


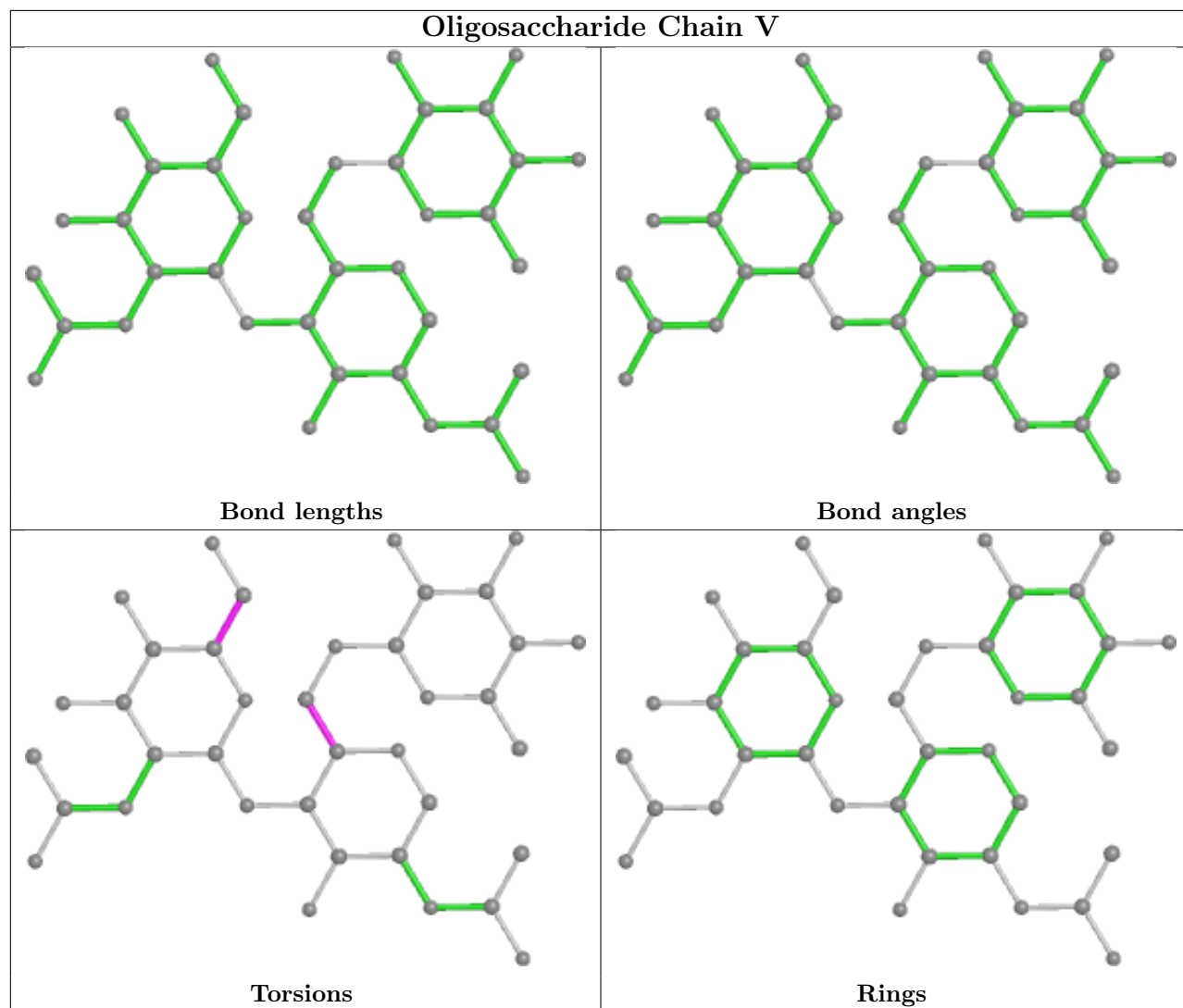


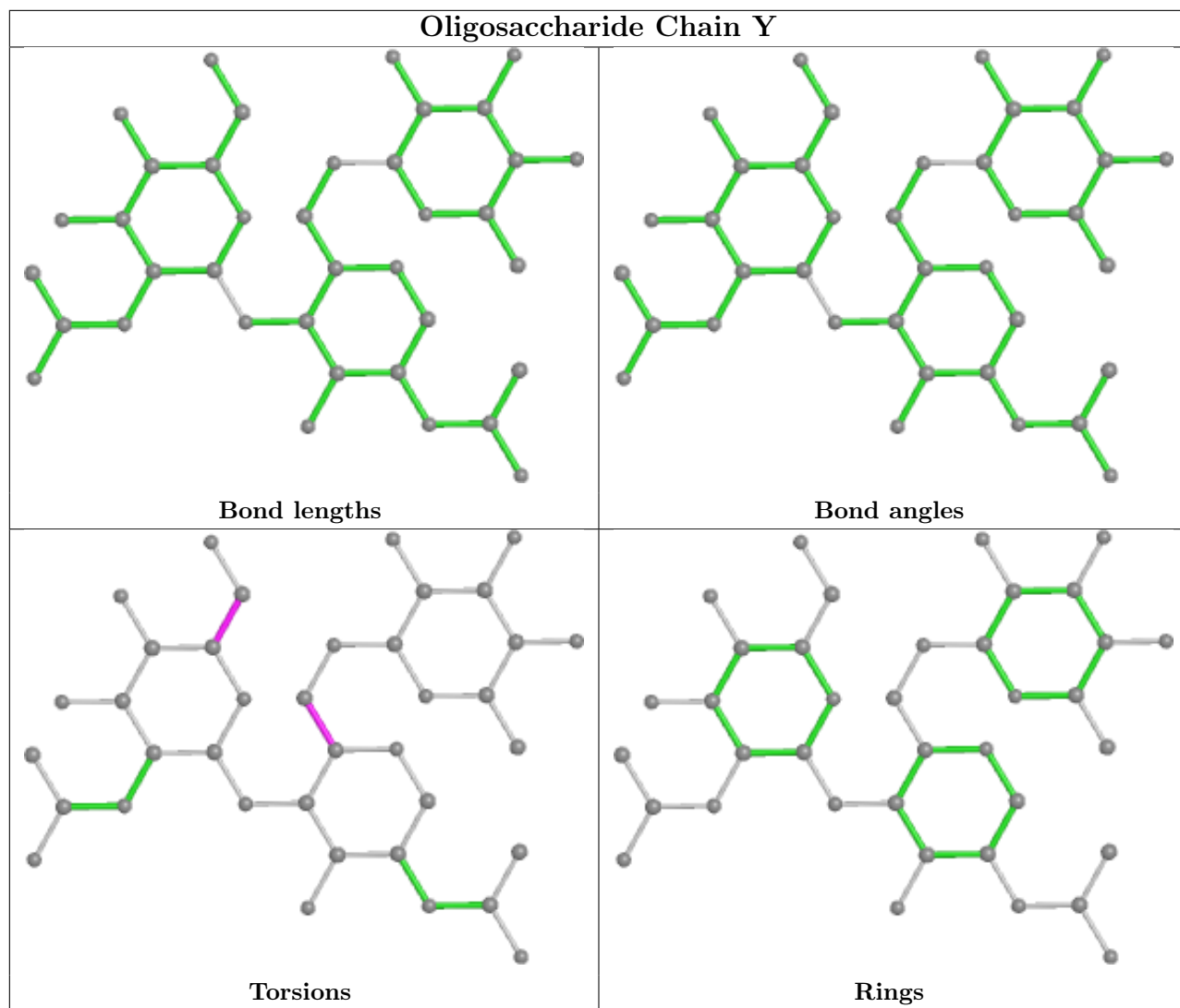


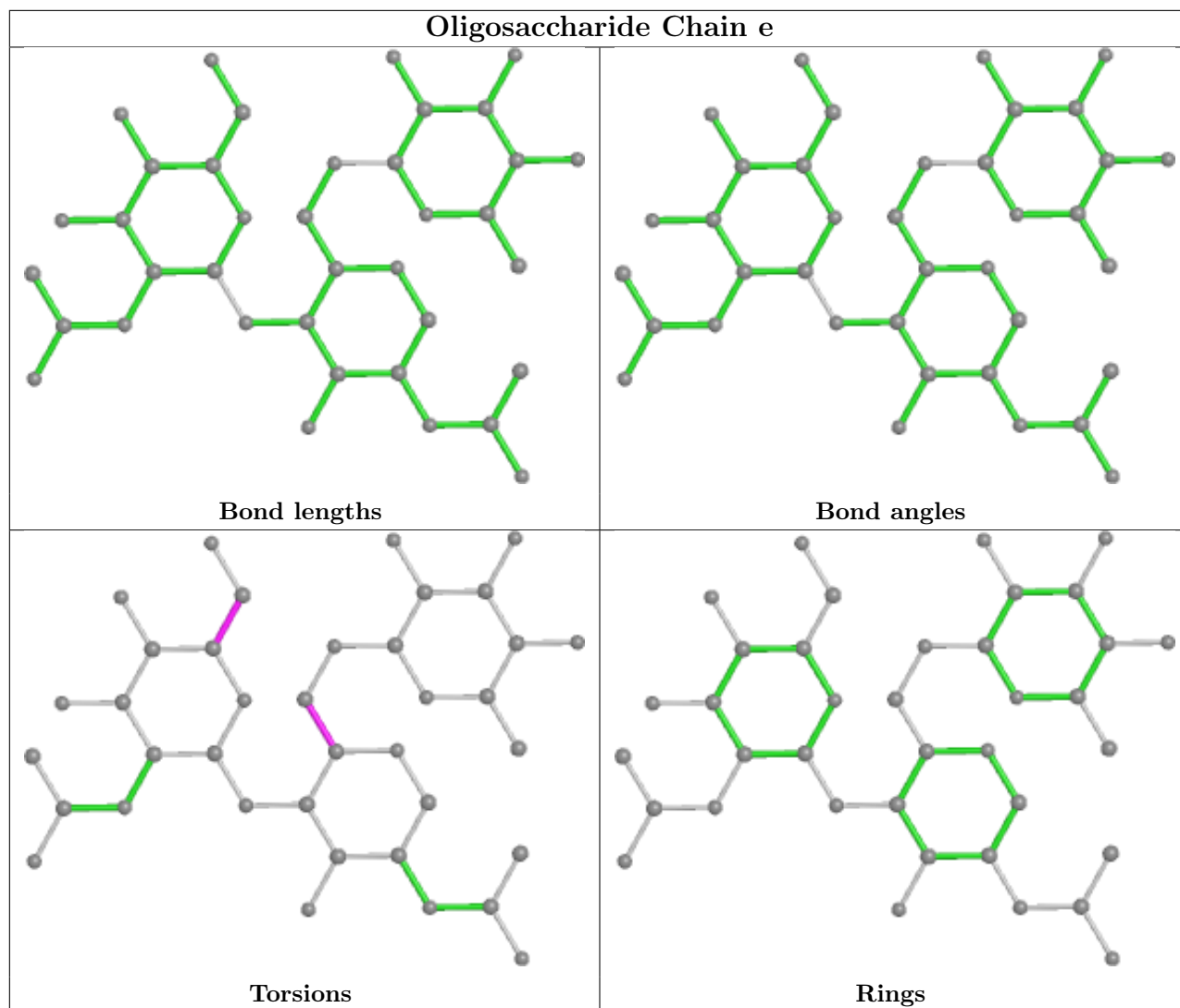












4.6 Ligand geometry [i](#)

9 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	$\# Z > 2$
11	NAG	B	312	1	14,14,15	0.30	0	17,19,21	0.47	0
11	NAG	B	311	1	14,14,15	0.20	0	17,19,21	0.44	0
11	NAG	A	306	1	14,14,15	0.24	0	17,19,21	0.46	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
11	NAG	B	306	1	14,14,15	0.26	0	17,19,21	0.47	0
11	NAG	A	310	1	14,14,15	0.29	0	17,19,21	0.46	0
11	NAG	A	309	1	14,14,15	0.21	0	17,19,21	0.43	0
11	NAG	a	511	4	14,14,15	0.48	0	17,19,21	0.70	0
11	NAG	C	306	1	14,14,15	0.23	0	17,19,21	0.48	0
11	NAG	C	310	1	14,14,15	0.22	0	17,19,21	0.43	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	NAG	B	312	1	-	2/6/23/26	0/1/1/1
11	NAG	B	311	1	-	0/6/23/26	0/1/1/1
11	NAG	A	306	1	-	2/6/23/26	0/1/1/1
11	NAG	B	306	1	-	2/6/23/26	0/1/1/1
11	NAG	A	310	1	-	2/6/23/26	0/1/1/1
11	NAG	A	309	1	-	0/6/23/26	0/1/1/1
11	NAG	a	511	4	-	3/6/23/26	0/1/1/1
11	NAG	C	306	1	-	2/6/23/26	0/1/1/1
11	NAG	C	310	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	a	511	NAG	O5-C5-C6-O6
11	a	511	NAG	C4-C5-C6-O6
11	C	306	NAG	O5-C5-C6-O6
11	C	306	NAG	C4-C5-C6-O6
11	A	306	NAG	C4-C5-C6-O6
11	A	306	NAG	O5-C5-C6-O6
11	a	511	NAG	C3-C2-N2-C7
11	B	306	NAG	C4-C5-C6-O6
11	B	306	NAG	O5-C5-C6-O6
11	B	312	NAG	C4-C5-C6-O6

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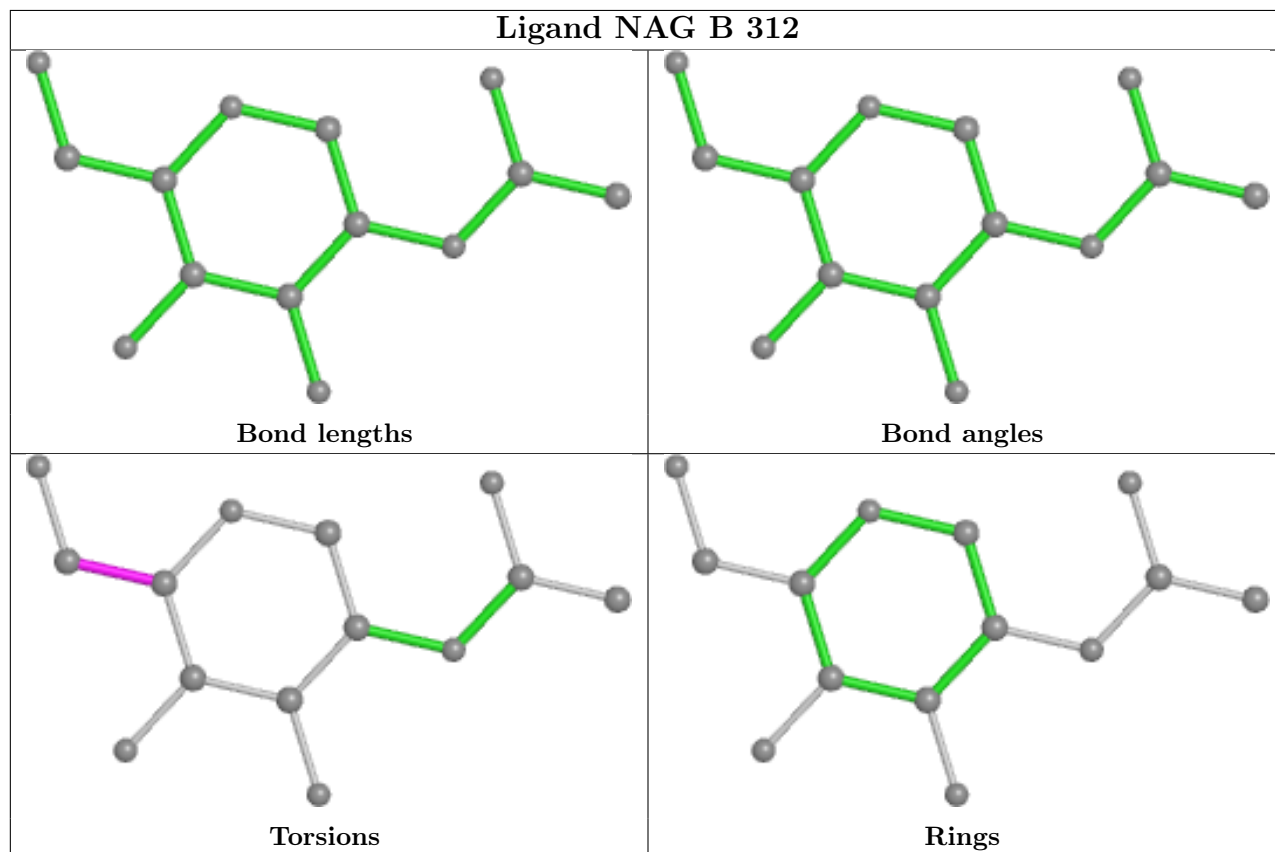
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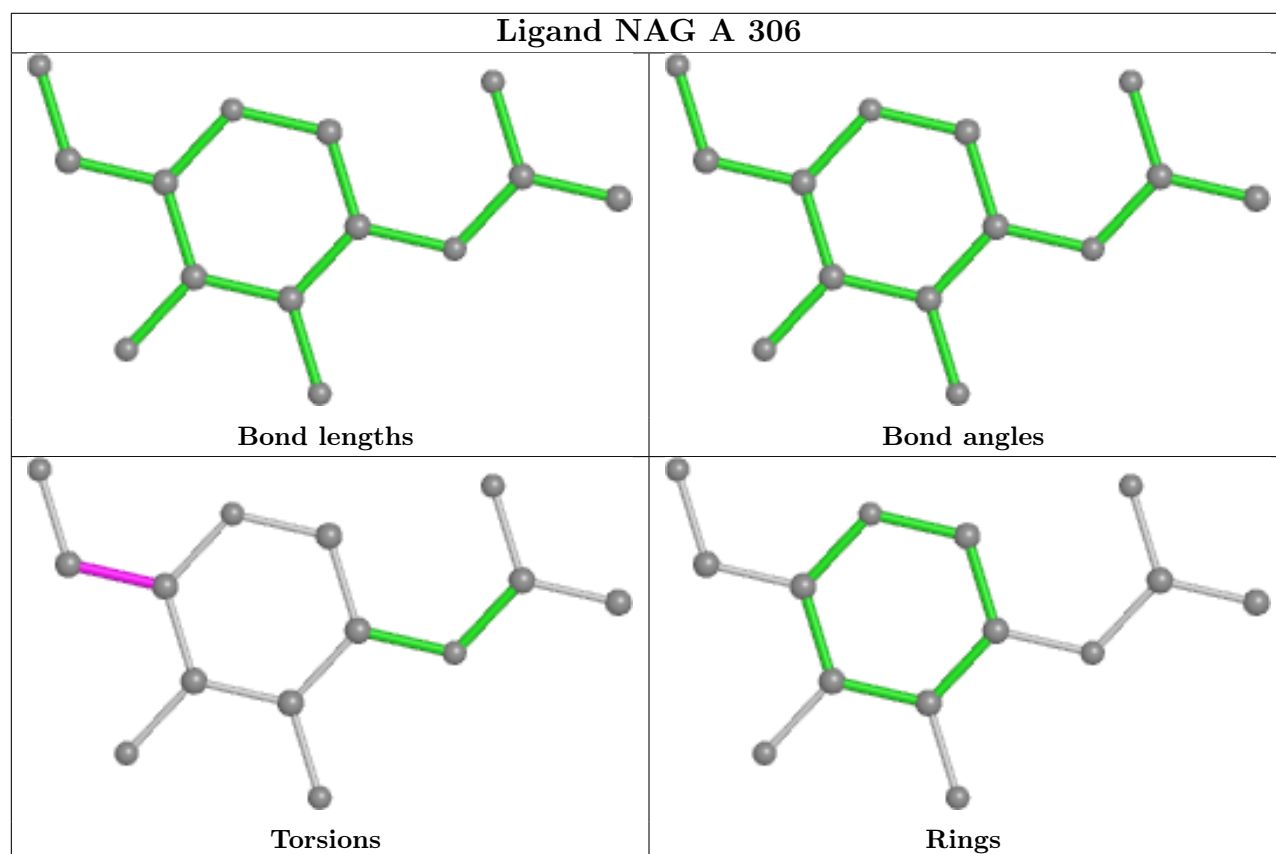
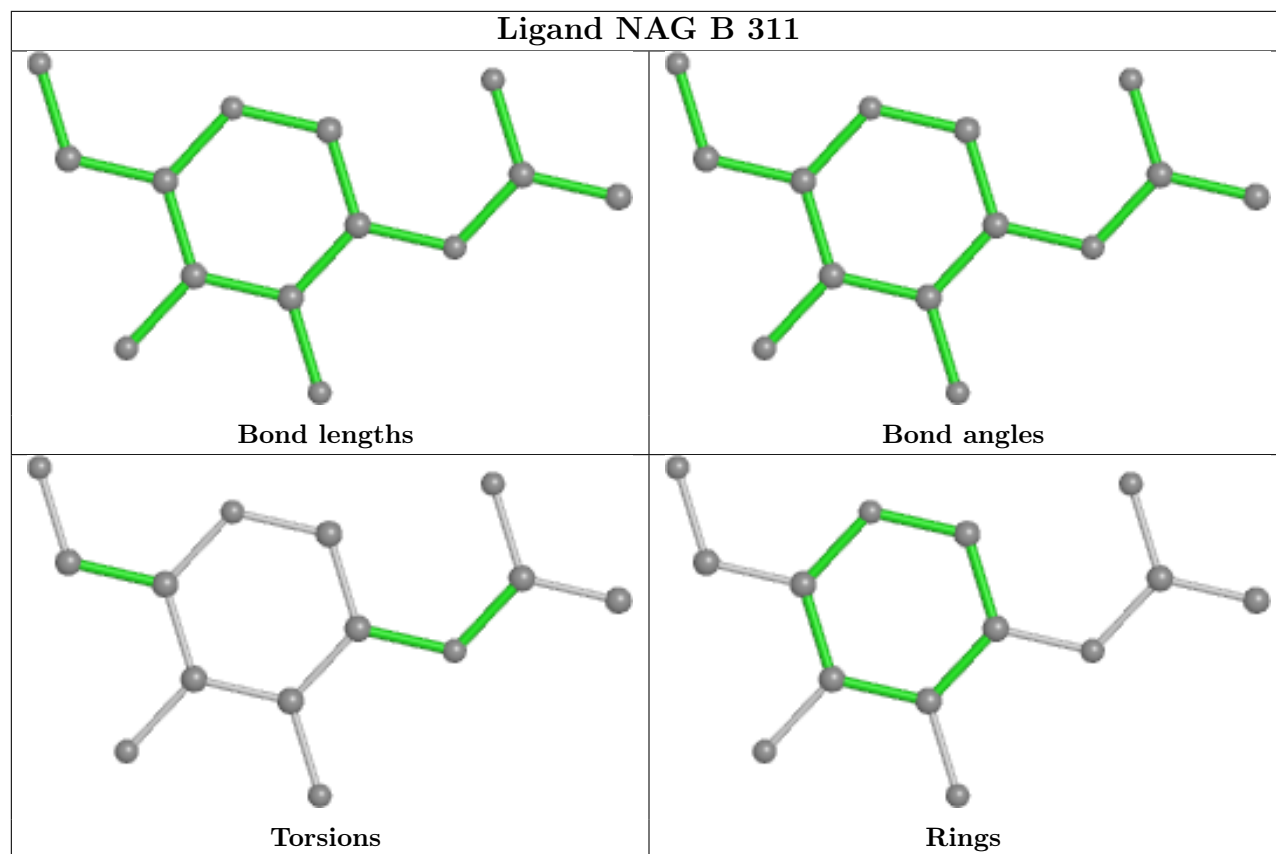
Mol	Chain	Res	Type	Atoms
11	B	312	NAG	O5-C5-C6-O6
11	A	310	NAG	C4-C5-C6-O6
11	A	310	NAG	O5-C5-C6-O6

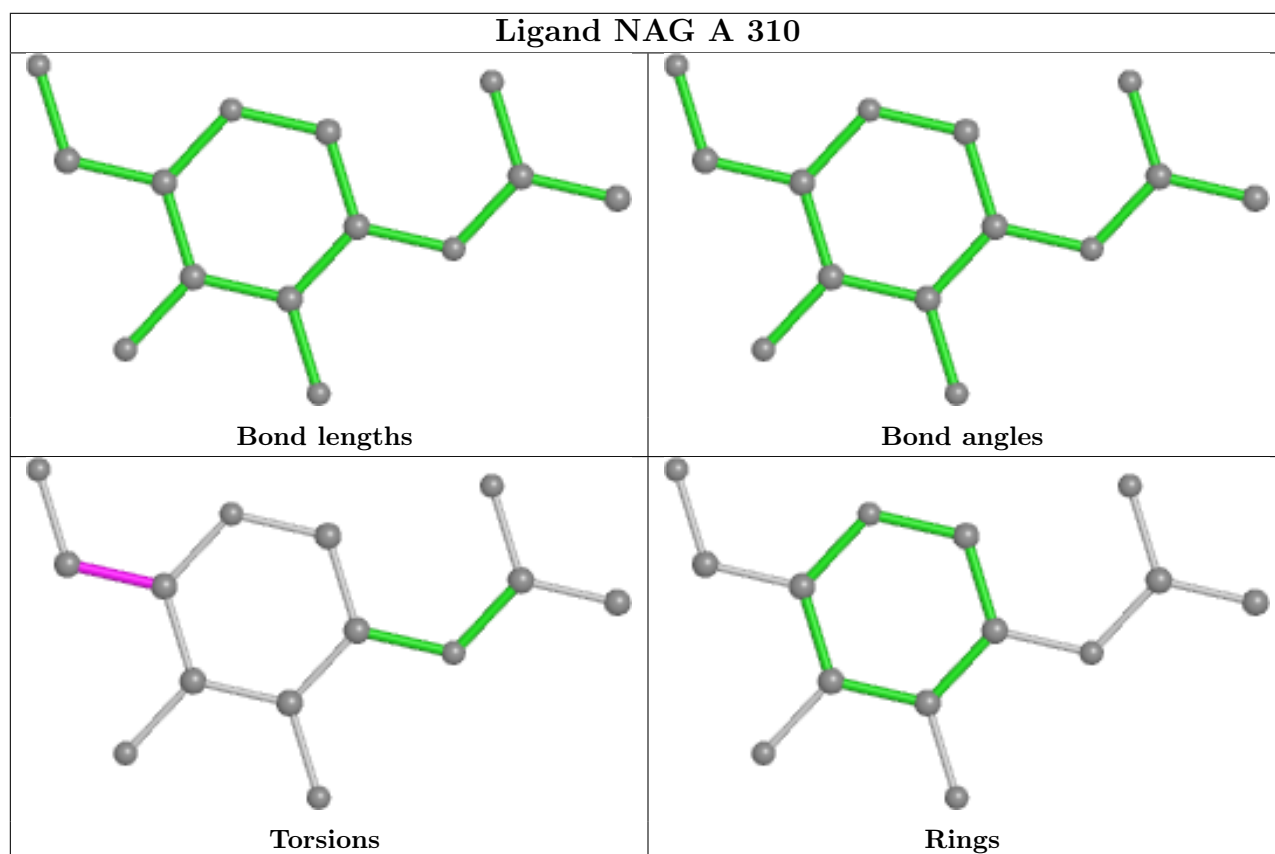
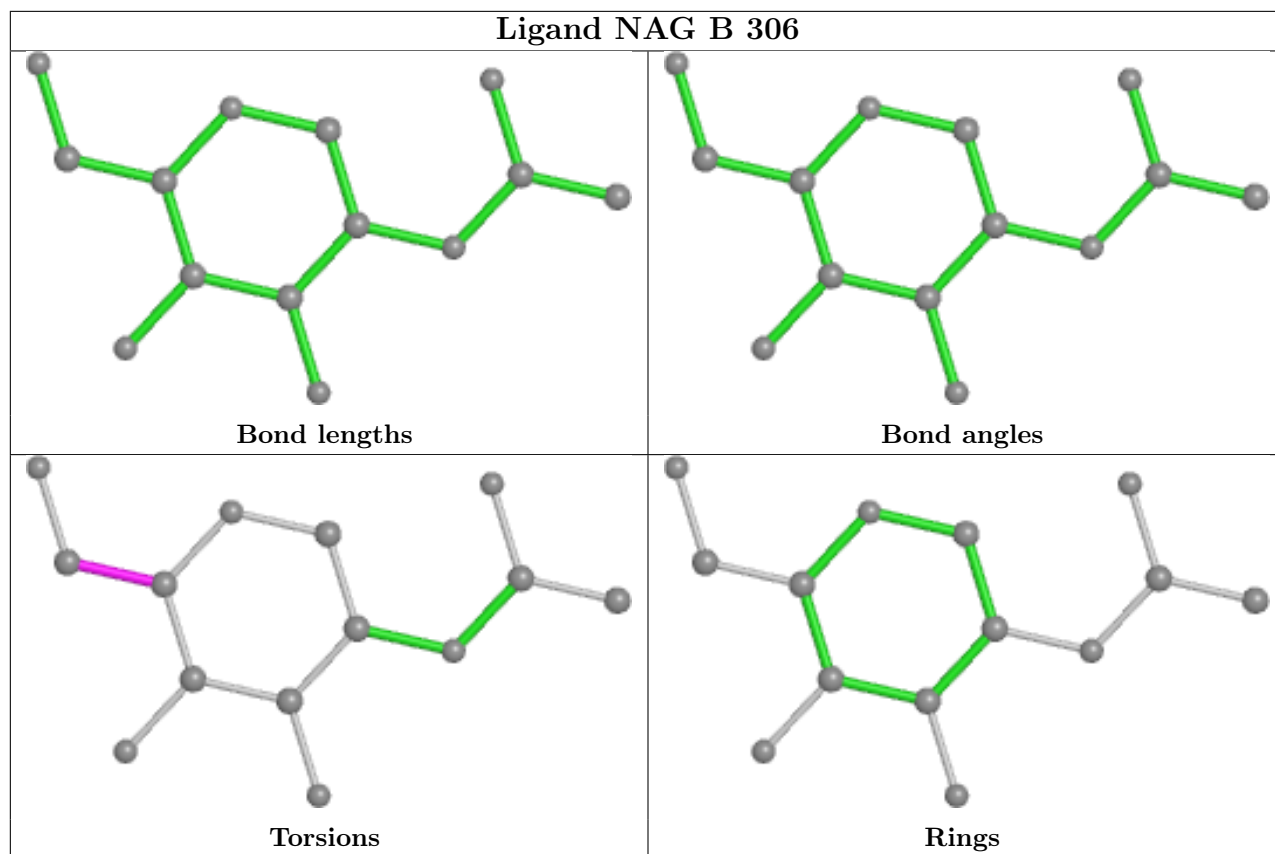
There are no ring outliers.

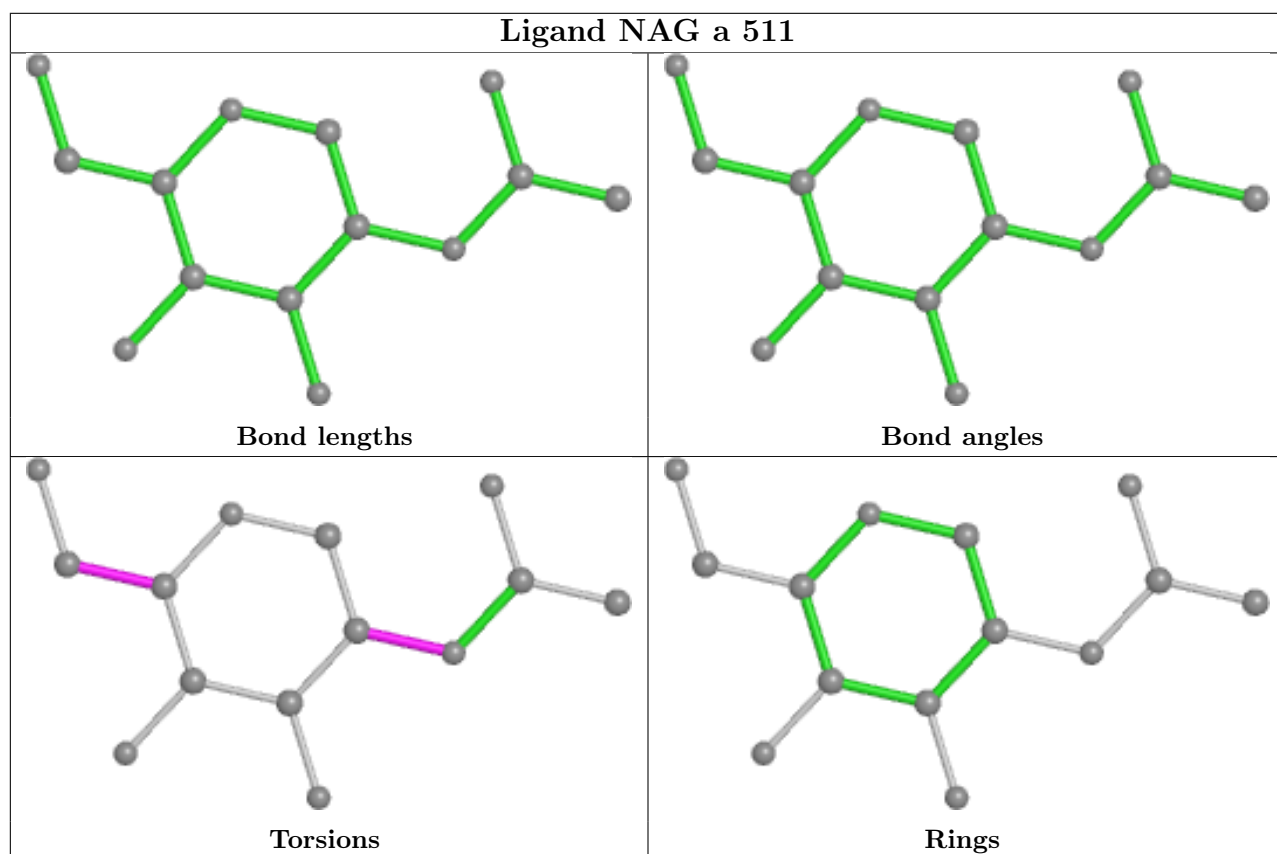
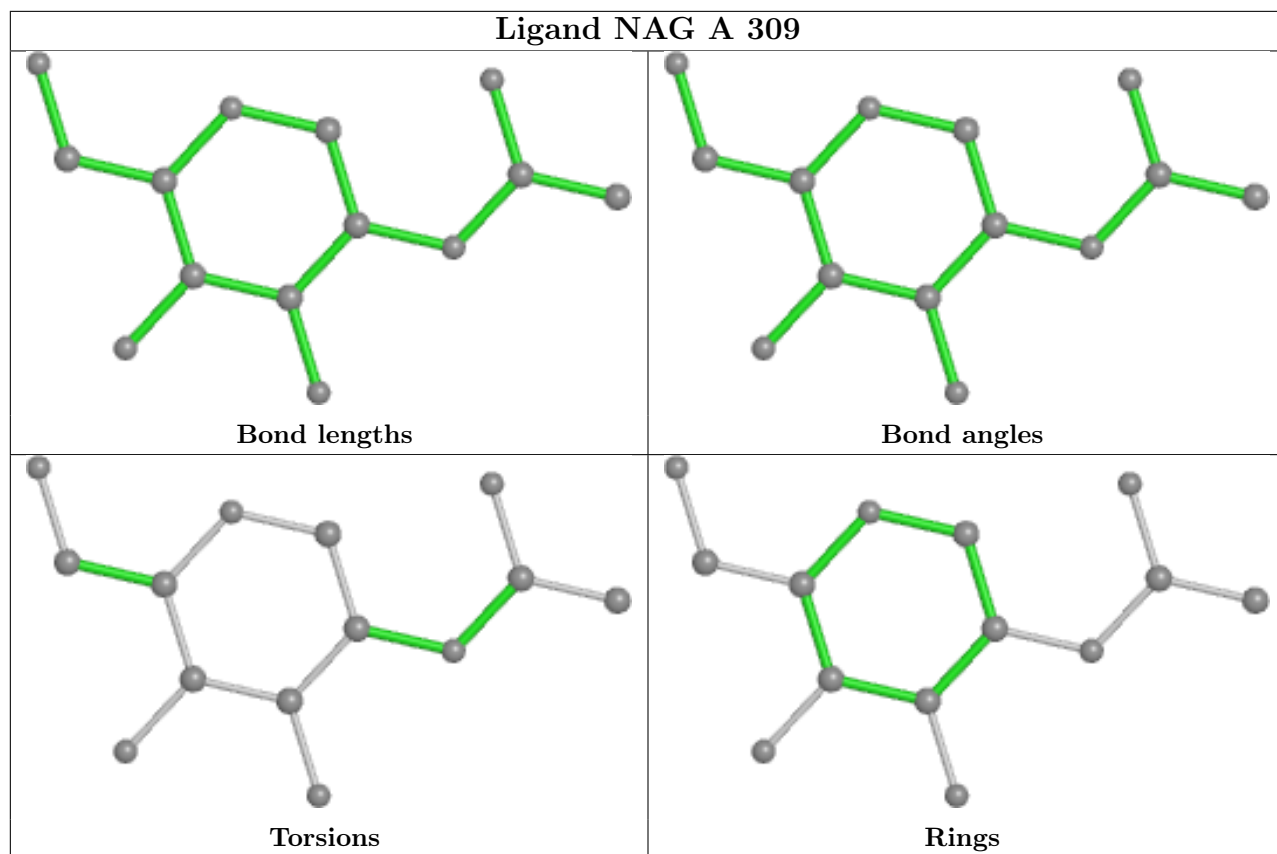
No monomer is involved in short contacts.

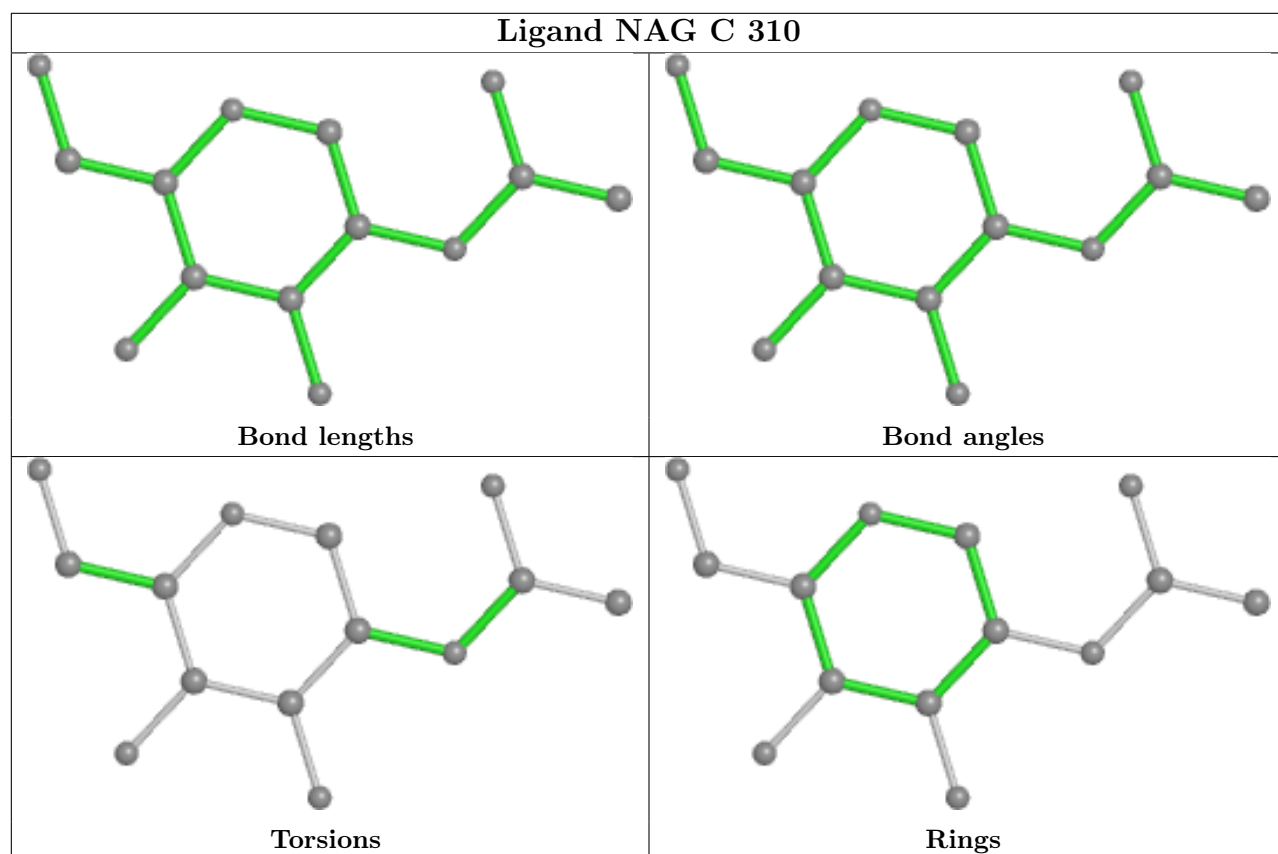
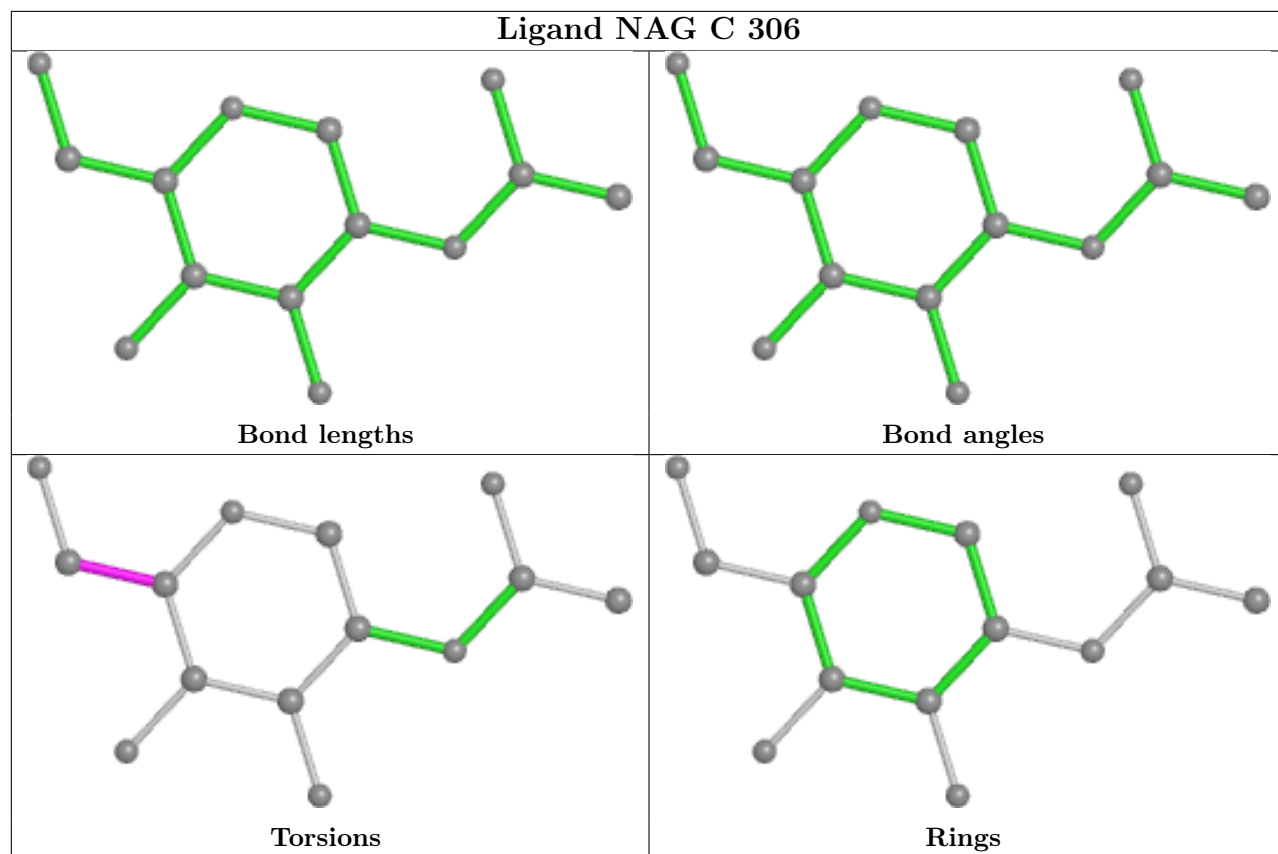
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.











4.7 Other polymers [i](#)

There are no such residues in this entry.

4.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

5 Fit of model and data

5.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

5.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

5.4 Ligands

EDS failed to run properly - this section is therefore empty.

5.5 Other polymers

EDS failed to run properly - this section is therefore empty.