



Full wwPDB EM Validation Report ⓘ

Mar 10, 2026 – 11:31 AM UTC

PDB ID : 6Q06 / pdb_00006q06
EMDB ID : EMD-20544
Title : MERS-CoV S structure in complex with 2,3-sialyl-N-acetyl-lactosamine
Authors : Park, Y.J.; Walls, A.C.; Wang, Z.; Sauer, M.; Li, W.; Tortorici, M.A.; Bosch, B.J.; DiMaio, F.D.; Veisler, D.; Seattle Structural Genomics Center for Infectious Disease (SSGCID)
Deposited on : 2019-08-01
Resolution : 2.70 Å (reported)
Based on initial model : 6BN3

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:

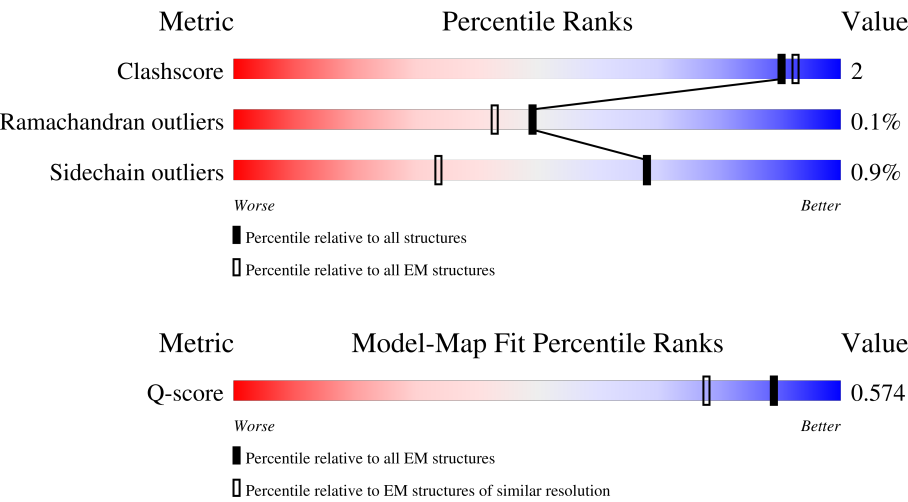
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance i

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

The reported resolution of this entry is 2.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	10327 (2.20 - 3.20)

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	1359	
1	B	1359	
1	C	1359	

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Mol	Chain	Length	Quality of chain
2	D	4	50% 100%
2	H	4	75% 100%
2	O	4	50% 100%
2	S	4	75% 100%
2	Z	4	50% 100%
2	d	4	75% 100%
3	E	2	50% 100%
3	I	2	50% 100%
3	J	2	50% 100%
3	M	2	50% 100%
3	P	2	50% 100%
3	T	2	50% 100%
3	U	2	50% 100%
3	X	2	50% 100%
3	a	2	50% 100%
3	e	2	50% 100%
3	f	2	50% 100%
3	i	2	50% 100%
4	F	7	57% 43% 43% 14%
4	Q	7	57% 43% 57%
4	b	7	57% 43% 57%
5	G	3	67% 100%
5	R	3	100%
5	c	3	67% 100%
6	K	5	40% 100%

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Mol	Chain	Length	Quality of chain
6	L	5	
6	V	5	
6	W	5	
6	g	5	
6	h	5	
7	N	2	
7	Y	2	
7	j	2	

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 28926 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1159	Total	C	N	O	S	0	0
			8952	5694	1476	1733	49		
1	B	1159	Total	C	N	O	S	0	0
			8952	5694	1476	1733	49		
1	C	1159	Total	C	N	O	S	0	0
			8952	5694	1476	1733	49		

There are 261 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-13	MET	-	initiating methionine	UNP K0BRG7
A	-12	GLY	-	expression tag	UNP K0BRG7
A	-11	ILE	-	expression tag	UNP K0BRG7
A	-10	LEU	-	expression tag	UNP K0BRG7
A	-9	PRO	-	expression tag	UNP K0BRG7
A	-8	SER	-	expression tag	UNP K0BRG7
A	-7	PRO	-	expression tag	UNP K0BRG7
A	-6	GLY	-	expression tag	UNP K0BRG7
A	-5	MET	-	expression tag	UNP K0BRG7
A	-4	PRO	-	expression tag	UNP K0BRG7
A	-3	ALA	-	expression tag	UNP K0BRG7
A	-2	LEU	-	expression tag	UNP K0BRG7
A	-1	LEU	-	expression tag	UNP K0BRG7
A	0	SER	-	expression tag	UNP K0BRG7
A	1	LEU	-	expression tag	UNP K0BRG7
A	2	VAL	-	expression tag	UNP K0BRG7
A	3	SER	-	expression tag	UNP K0BRG7
A	4	LEU	-	expression tag	UNP K0BRG7
A	5	LEU	-	expression tag	UNP K0BRG7
A	6	SER	-	expression tag	UNP K0BRG7
A	7	VAL	-	expression tag	UNP K0BRG7
A	8	LEU	-	expression tag	UNP K0BRG7
A	9	LEU	-	expression tag	UNP K0BRG7
A	10	MET	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
A	11	GLY	-	expression tag	UNP K0BRG7
A	12	CYS	-	expression tag	UNP K0BRG7
A	13	VAL	-	expression tag	UNP K0BRG7
A	14	ALA	-	expression tag	UNP K0BRG7
A	15	GLU	-	expression tag	UNP K0BRG7
A	16	THR	-	expression tag	UNP K0BRG7
A	17	GLY	-	expression tag	UNP K0BRG7
A	18	THR	-	expression tag	UNP K0BRG7
A	748	ALA	ARG	engineered mutation	UNP K0BRG7
A	751	GLY	ARG	engineered mutation	UNP K0BRG7
A	1060	PRO	VAL	engineered mutation	UNP K0BRG7
A	1061	PRO	LEU	engineered mutation	UNP K0BRG7
A	1295	GLY	-	expression tag	UNP K0BRG7
A	1296	SER	-	expression tag	UNP K0BRG7
A	1297	GLY	-	expression tag	UNP K0BRG7
A	1298	ARG	-	expression tag	UNP K0BRG7
A	1299	GLU	-	expression tag	UNP K0BRG7
A	1300	ASN	-	expression tag	UNP K0BRG7
A	1301	LEU	-	expression tag	UNP K0BRG7
A	1302	TYR	-	expression tag	UNP K0BRG7
A	1303	PHE	-	expression tag	UNP K0BRG7
A	1304	GLN	-	expression tag	UNP K0BRG7
A	1305	GLY	-	expression tag	UNP K0BRG7
A	1306	GLY	-	expression tag	UNP K0BRG7
A	1307	GLY	-	expression tag	UNP K0BRG7
A	1308	GLY	-	expression tag	UNP K0BRG7
A	1309	SER	-	expression tag	UNP K0BRG7
A	1310	GLY	-	expression tag	UNP K0BRG7
A	1311	TYR	-	expression tag	UNP K0BRG7
A	1312	ILE	-	expression tag	UNP K0BRG7
A	1313	PRO	-	expression tag	UNP K0BRG7
A	1314	GLU	-	expression tag	UNP K0BRG7
A	1315	ALA	-	expression tag	UNP K0BRG7
A	1316	PRO	-	expression tag	UNP K0BRG7
A	1317	ARG	-	expression tag	UNP K0BRG7
A	1318	ASP	-	expression tag	UNP K0BRG7
A	1319	GLY	-	expression tag	UNP K0BRG7
A	1320	GLN	-	expression tag	UNP K0BRG7
A	1321	ALA	-	expression tag	UNP K0BRG7
A	1322	TYR	-	expression tag	UNP K0BRG7
A	1323	VAL	-	expression tag	UNP K0BRG7
A	1324	ARG	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1325	LYS	-	expression tag	UNP K0BRG7
A	1326	ASP	-	expression tag	UNP K0BRG7
A	1327	GLY	-	expression tag	UNP K0BRG7
A	1328	GLU	-	expression tag	UNP K0BRG7
A	1329	TRP	-	expression tag	UNP K0BRG7
A	1330	VAL	-	expression tag	UNP K0BRG7
A	1331	LEU	-	expression tag	UNP K0BRG7
A	1332	LEU	-	expression tag	UNP K0BRG7
A	1333	SER	-	expression tag	UNP K0BRG7
A	1334	THR	-	expression tag	UNP K0BRG7
A	1335	PHE	-	expression tag	UNP K0BRG7
A	1336	LEU	-	expression tag	UNP K0BRG7
A	1337	GLY	-	expression tag	UNP K0BRG7
A	1338	HIS	-	expression tag	UNP K0BRG7
A	1339	HIS	-	expression tag	UNP K0BRG7
A	1340	HIS	-	expression tag	UNP K0BRG7
A	1341	HIS	-	expression tag	UNP K0BRG7
A	1342	HIS	-	expression tag	UNP K0BRG7
A	1343	HIS	-	expression tag	UNP K0BRG7
A	1344	HIS	-	expression tag	UNP K0BRG7
A	1345	HIS	-	expression tag	UNP K0BRG7
B	-13	MET	-	initiating methionine	UNP K0BRG7
B	-12	GLY	-	expression tag	UNP K0BRG7
B	-11	ILE	-	expression tag	UNP K0BRG7
B	-10	LEU	-	expression tag	UNP K0BRG7
B	-9	PRO	-	expression tag	UNP K0BRG7
B	-8	SER	-	expression tag	UNP K0BRG7
B	-7	PRO	-	expression tag	UNP K0BRG7
B	-6	GLY	-	expression tag	UNP K0BRG7
B	-5	MET	-	expression tag	UNP K0BRG7
B	-4	PRO	-	expression tag	UNP K0BRG7
B	-3	ALA	-	expression tag	UNP K0BRG7
B	-2	LEU	-	expression tag	UNP K0BRG7
B	-1	LEU	-	expression tag	UNP K0BRG7
B	0	SER	-	expression tag	UNP K0BRG7
B	1	LEU	-	expression tag	UNP K0BRG7
B	2	VAL	-	expression tag	UNP K0BRG7
B	3	SER	-	expression tag	UNP K0BRG7
B	4	LEU	-	expression tag	UNP K0BRG7
B	5	LEU	-	expression tag	UNP K0BRG7
B	6	SER	-	expression tag	UNP K0BRG7
B	7	VAL	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	8	LEU	-	expression tag	UNP K0BRG7
B	9	LEU	-	expression tag	UNP K0BRG7
B	10	MET	-	expression tag	UNP K0BRG7
B	11	GLY	-	expression tag	UNP K0BRG7
B	12	CYS	-	expression tag	UNP K0BRG7
B	13	VAL	-	expression tag	UNP K0BRG7
B	14	ALA	-	expression tag	UNP K0BRG7
B	15	GLU	-	expression tag	UNP K0BRG7
B	16	THR	-	expression tag	UNP K0BRG7
B	17	GLY	-	expression tag	UNP K0BRG7
B	18	THR	-	expression tag	UNP K0BRG7
B	748	ALA	ARG	engineered mutation	UNP K0BRG7
B	751	GLY	ARG	engineered mutation	UNP K0BRG7
B	1060	PRO	VAL	engineered mutation	UNP K0BRG7
B	1061	PRO	LEU	engineered mutation	UNP K0BRG7
B	1295	GLY	-	expression tag	UNP K0BRG7
B	1296	SER	-	expression tag	UNP K0BRG7
B	1297	GLY	-	expression tag	UNP K0BRG7
B	1298	ARG	-	expression tag	UNP K0BRG7
B	1299	GLU	-	expression tag	UNP K0BRG7
B	1300	ASN	-	expression tag	UNP K0BRG7
B	1301	LEU	-	expression tag	UNP K0BRG7
B	1302	TYR	-	expression tag	UNP K0BRG7
B	1303	PHE	-	expression tag	UNP K0BRG7
B	1304	GLN	-	expression tag	UNP K0BRG7
B	1305	GLY	-	expression tag	UNP K0BRG7
B	1306	GLY	-	expression tag	UNP K0BRG7
B	1307	GLY	-	expression tag	UNP K0BRG7
B	1308	GLY	-	expression tag	UNP K0BRG7
B	1309	SER	-	expression tag	UNP K0BRG7
B	1310	GLY	-	expression tag	UNP K0BRG7
B	1311	TYR	-	expression tag	UNP K0BRG7
B	1312	ILE	-	expression tag	UNP K0BRG7
B	1313	PRO	-	expression tag	UNP K0BRG7
B	1314	GLU	-	expression tag	UNP K0BRG7
B	1315	ALA	-	expression tag	UNP K0BRG7
B	1316	PRO	-	expression tag	UNP K0BRG7
B	1317	ARG	-	expression tag	UNP K0BRG7
B	1318	ASP	-	expression tag	UNP K0BRG7
B	1319	GLY	-	expression tag	UNP K0BRG7
B	1320	GLN	-	expression tag	UNP K0BRG7
B	1321	ALA	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1322	TYR	-	expression tag	UNP K0BRG7
B	1323	VAL	-	expression tag	UNP K0BRG7
B	1324	ARG	-	expression tag	UNP K0BRG7
B	1325	LYS	-	expression tag	UNP K0BRG7
B	1326	ASP	-	expression tag	UNP K0BRG7
B	1327	GLY	-	expression tag	UNP K0BRG7
B	1328	GLU	-	expression tag	UNP K0BRG7
B	1329	TRP	-	expression tag	UNP K0BRG7
B	1330	VAL	-	expression tag	UNP K0BRG7
B	1331	LEU	-	expression tag	UNP K0BRG7
B	1332	LEU	-	expression tag	UNP K0BRG7
B	1333	SER	-	expression tag	UNP K0BRG7
B	1334	THR	-	expression tag	UNP K0BRG7
B	1335	PHE	-	expression tag	UNP K0BRG7
B	1336	LEU	-	expression tag	UNP K0BRG7
B	1337	GLY	-	expression tag	UNP K0BRG7
B	1338	HIS	-	expression tag	UNP K0BRG7
B	1339	HIS	-	expression tag	UNP K0BRG7
B	1340	HIS	-	expression tag	UNP K0BRG7
B	1341	HIS	-	expression tag	UNP K0BRG7
B	1342	HIS	-	expression tag	UNP K0BRG7
B	1343	HIS	-	expression tag	UNP K0BRG7
B	1344	HIS	-	expression tag	UNP K0BRG7
B	1345	HIS	-	expression tag	UNP K0BRG7
C	-13	MET	-	initiating methionine	UNP K0BRG7
C	-12	GLY	-	expression tag	UNP K0BRG7
C	-11	ILE	-	expression tag	UNP K0BRG7
C	-10	LEU	-	expression tag	UNP K0BRG7
C	-9	PRO	-	expression tag	UNP K0BRG7
C	-8	SER	-	expression tag	UNP K0BRG7
C	-7	PRO	-	expression tag	UNP K0BRG7
C	-6	GLY	-	expression tag	UNP K0BRG7
C	-5	MET	-	expression tag	UNP K0BRG7
C	-4	PRO	-	expression tag	UNP K0BRG7
C	-3	ALA	-	expression tag	UNP K0BRG7
C	-2	LEU	-	expression tag	UNP K0BRG7
C	-1	LEU	-	expression tag	UNP K0BRG7
C	0	SER	-	expression tag	UNP K0BRG7
C	1	LEU	-	expression tag	UNP K0BRG7
C	2	VAL	-	expression tag	UNP K0BRG7
C	3	SER	-	expression tag	UNP K0BRG7
C	4	LEU	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
C	5	LEU	-	expression tag	UNP K0BRG7
C	6	SER	-	expression tag	UNP K0BRG7
C	7	VAL	-	expression tag	UNP K0BRG7
C	8	LEU	-	expression tag	UNP K0BRG7
C	9	LEU	-	expression tag	UNP K0BRG7
C	10	MET	-	expression tag	UNP K0BRG7
C	11	GLY	-	expression tag	UNP K0BRG7
C	12	CYS	-	expression tag	UNP K0BRG7
C	13	VAL	-	expression tag	UNP K0BRG7
C	14	ALA	-	expression tag	UNP K0BRG7
C	15	GLU	-	expression tag	UNP K0BRG7
C	16	THR	-	expression tag	UNP K0BRG7
C	17	GLY	-	expression tag	UNP K0BRG7
C	18	THR	-	expression tag	UNP K0BRG7
C	748	ALA	ARG	engineered mutation	UNP K0BRG7
C	751	GLY	ARG	engineered mutation	UNP K0BRG7
C	1060	PRO	VAL	engineered mutation	UNP K0BRG7
C	1061	PRO	LEU	engineered mutation	UNP K0BRG7
C	1295	GLY	-	expression tag	UNP K0BRG7
C	1296	SER	-	expression tag	UNP K0BRG7
C	1297	GLY	-	expression tag	UNP K0BRG7
C	1298	ARG	-	expression tag	UNP K0BRG7
C	1299	GLU	-	expression tag	UNP K0BRG7
C	1300	ASN	-	expression tag	UNP K0BRG7
C	1301	LEU	-	expression tag	UNP K0BRG7
C	1302	TYR	-	expression tag	UNP K0BRG7
C	1303	PHE	-	expression tag	UNP K0BRG7
C	1304	GLN	-	expression tag	UNP K0BRG7
C	1305	GLY	-	expression tag	UNP K0BRG7
C	1306	GLY	-	expression tag	UNP K0BRG7
C	1307	GLY	-	expression tag	UNP K0BRG7
C	1308	GLY	-	expression tag	UNP K0BRG7
C	1309	SER	-	expression tag	UNP K0BRG7
C	1310	GLY	-	expression tag	UNP K0BRG7
C	1311	TYR	-	expression tag	UNP K0BRG7
C	1312	ILE	-	expression tag	UNP K0BRG7
C	1313	PRO	-	expression tag	UNP K0BRG7
C	1314	GLU	-	expression tag	UNP K0BRG7
C	1315	ALA	-	expression tag	UNP K0BRG7
C	1316	PRO	-	expression tag	UNP K0BRG7
C	1317	ARG	-	expression tag	UNP K0BRG7
C	1318	ASP	-	expression tag	UNP K0BRG7

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1319	GLY	-	expression tag	UNP K0BRG7
C	1320	GLN	-	expression tag	UNP K0BRG7
C	1321	ALA	-	expression tag	UNP K0BRG7
C	1322	TYR	-	expression tag	UNP K0BRG7
C	1323	VAL	-	expression tag	UNP K0BRG7
C	1324	ARG	-	expression tag	UNP K0BRG7
C	1325	LYS	-	expression tag	UNP K0BRG7
C	1326	ASP	-	expression tag	UNP K0BRG7
C	1327	GLY	-	expression tag	UNP K0BRG7
C	1328	GLU	-	expression tag	UNP K0BRG7
C	1329	TRP	-	expression tag	UNP K0BRG7
C	1330	VAL	-	expression tag	UNP K0BRG7
C	1331	LEU	-	expression tag	UNP K0BRG7
C	1332	LEU	-	expression tag	UNP K0BRG7
C	1333	SER	-	expression tag	UNP K0BRG7
C	1334	THR	-	expression tag	UNP K0BRG7
C	1335	PHE	-	expression tag	UNP K0BRG7
C	1336	LEU	-	expression tag	UNP K0BRG7
C	1337	GLY	-	expression tag	UNP K0BRG7
C	1338	HIS	-	expression tag	UNP K0BRG7
C	1339	HIS	-	expression tag	UNP K0BRG7
C	1340	HIS	-	expression tag	UNP K0BRG7
C	1341	HIS	-	expression tag	UNP K0BRG7
C	1342	HIS	-	expression tag	UNP K0BRG7
C	1343	HIS	-	expression tag	UNP K0BRG7
C	1344	HIS	-	expression tag	UNP K0BRG7
C	1345	HIS	-	expression tag	UNP K0BRG7

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



Mol	Chain	Residues	Atoms				AltConf	Trace
2	D	4	Total	C	N	O	0	0
			50	28	2	20		
2	H	4	Total	C	N	O	0	0
			50	28	2	20		

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Mol	Chain	Residues	Atoms				AltConf	Trace
2	O	4	Total	C	N	O	0	0
			50	28	2	20		
2	S	4	Total	C	N	O	0	0
			50	28	2	20		
2	Z	4	Total	C	N	O	0	0
			50	28	2	20		
2	d	4	Total	C	N	O	0	0
			50	28	2	20		

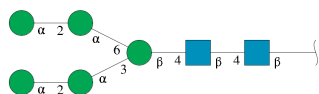
- Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
3	E	2	Total	C	N	O	0	0
			28	16	2	10		
3	I	2	Total	C	N	O	0	0
			28	16	2	10		
3	J	2	Total	C	N	O	0	0
			28	16	2	10		
3	M	2	Total	C	N	O	0	0
			28	16	2	10		
3	P	2	Total	C	N	O	0	0
			28	16	2	10		
3	T	2	Total	C	N	O	0	0
			28	16	2	10		
3	U	2	Total	C	N	O	0	0
			28	16	2	10		
3	X	2	Total	C	N	O	0	0
			28	16	2	10		
3	a	2	Total	C	N	O	0	0
			28	16	2	10		
3	e	2	Total	C	N	O	0	0
			28	16	2	10		
3	f	2	Total	C	N	O	0	0
			28	16	2	10		
3	i	2	Total	C	N	O	0	0
			28	16	2	10		

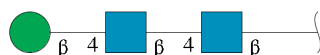
- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyran

ose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



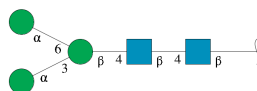
Mol	Chain	Residues	Atoms				AltConf	Trace
4	F	7	Total	C	N	O	0	0
			83	46	2	35		
4	Q	7	Total	C	N	O	0	0
			83	46	2	35		
4	b	7	Total	C	N	O	0	0
			83	46	2	35		

- 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				AltConf	Trace
5	G	3	Total	C	N	O	0	0
			39	22	2	15		
5	R	3	Total	C	N	O	0	0
			39	22	2	15		
5	c	3	Total	C	N	O	0	0
			39	22	2	15		

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



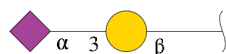
Mol	Chain	Residues	Atoms				AltConf	Trace
6	K	5	Total	C	N	O	0	0
			61	34	2	25		
6	L	5	Total	C	N	O	0	0
			61	34	2	25		

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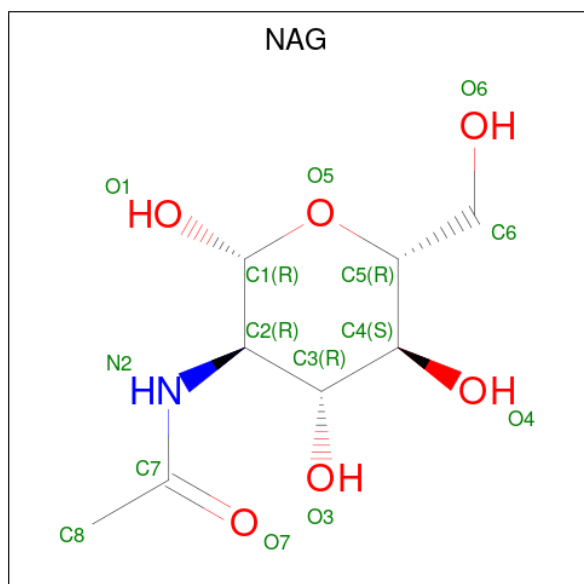
Mol	Chain	Residues	Atoms				AltConf	Trace
6	V	5	Total	C	N	O	0	0
			61	34	2	25		
6	W	5	Total	C	N	O	0	0
			61	34	2	25		
6	g	5	Total	C	N	O	0	0
			61	34	2	25		
6	h	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 7 is an oligosaccharide called N-acetyl-alpha-neuraminic acid-(2-3)-beta-D-galactopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
7	N	2	Total	C	N	O	0	0
			32	17	1	14		
7	Y	2	Total	C	N	O	0	0
			32	17	1	14		
7	j	2	Total	C	N	O	0	0
			32	17	1	14		

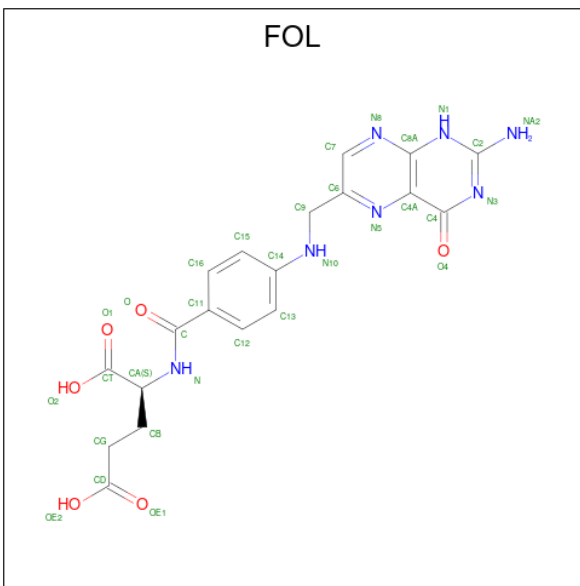
- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 9 is FOLIC ACID (CCD ID: FOL) (formula: C₁₉H₁₉N₇O₆) (labeled as "Ligand of

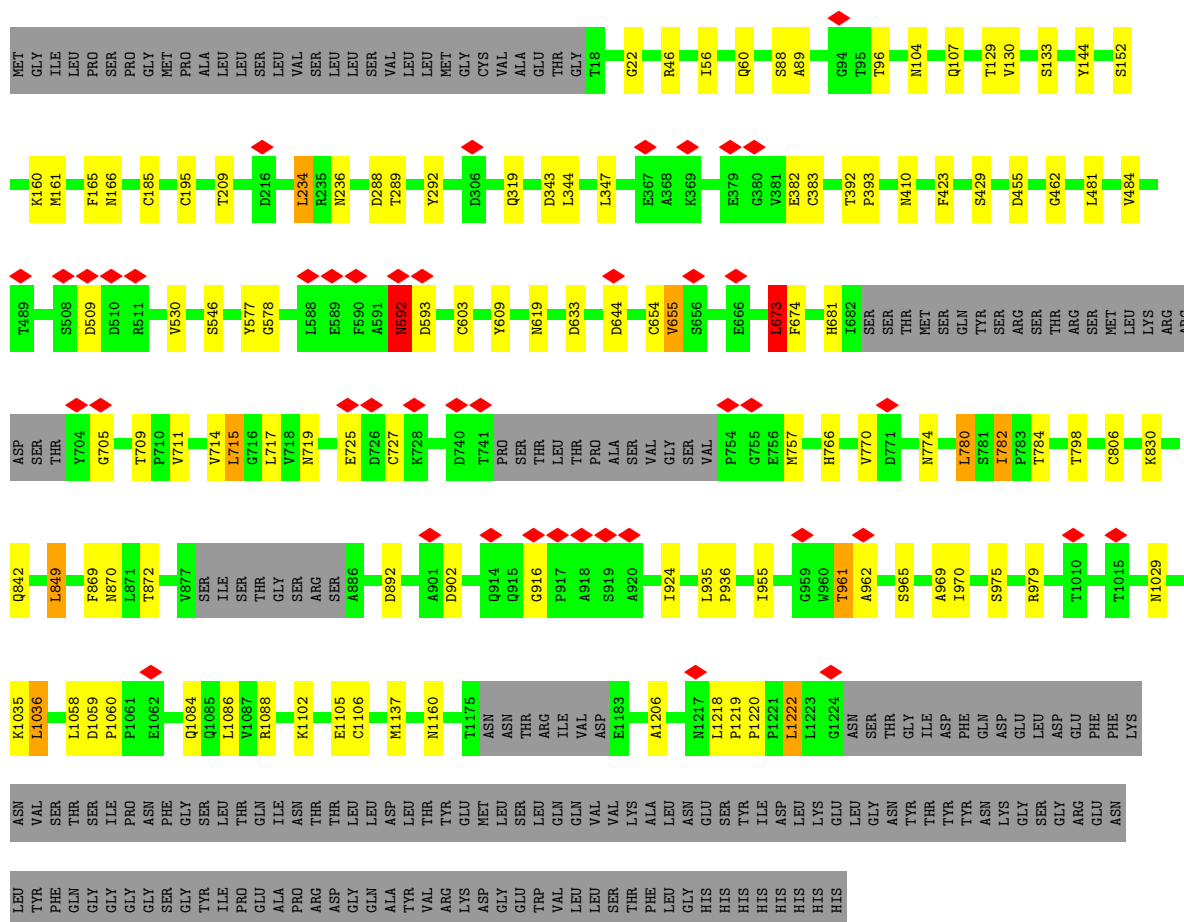
Interest" by depositor).



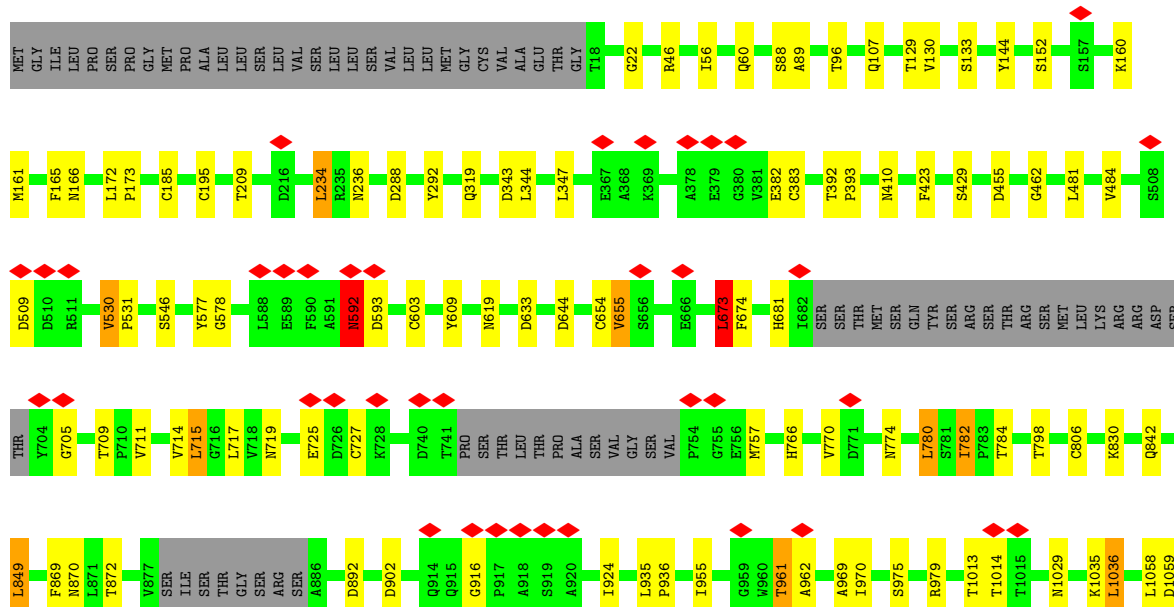
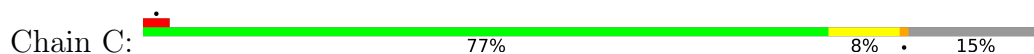
Mol	Chain	Residues	Atoms				AltConf
9	A	1	Total 32	C 19	N 7	O 6	0
9	B	1	Total 32	C 19	N 7	O 6	0
9	C	1	Total 32	C 19	N 7	O 6	0

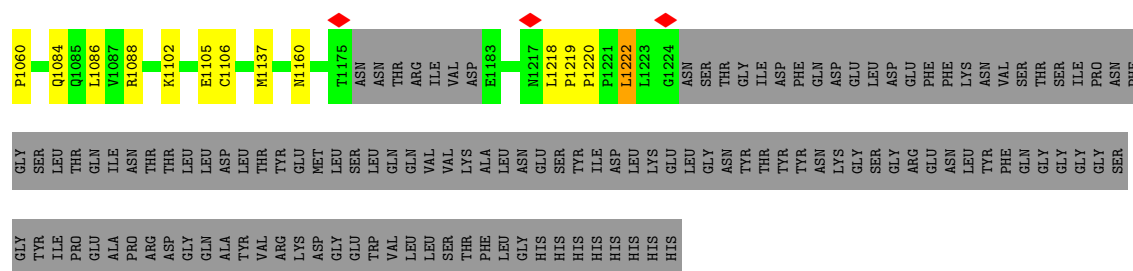
- Molecule 10 is water.

Mol	Chain	Residues	Atoms	AltConf
10	A	72	Total O 72 72	0
10	B	72	Total O 72 72	0
10	C	72	Total O 72 72	0



• Molecule 1: Spike glycoprotein

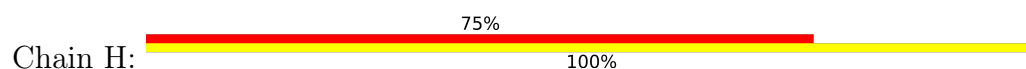




- Molecule 2: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



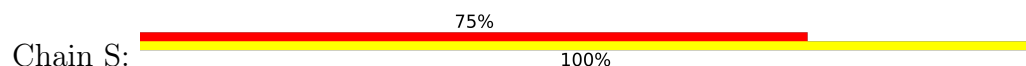
- Molecule 2: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 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



- Molecule 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

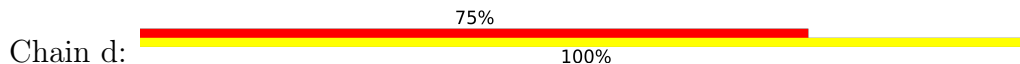


- Molecule 2: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 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



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



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



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



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



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



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



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



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



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



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



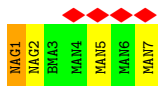
- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



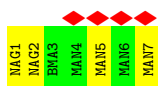
- Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



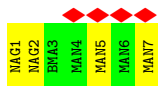
- Molecule 4: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



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



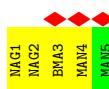
- Molecule 5: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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

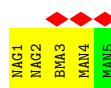


- Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





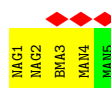
- Molecule 6: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



- Molecule 7: N-acetyl-alpha-neuraminic acid-(2-3)-beta-D-galactopyranose



- Molecule 7: N-acetyl-alpha-neuraminic acid-(2-3)-beta-D-galactopyranose



- Molecule 7: N-acetyl-alpha-neuraminic acid-(2-3)-beta-D-galactopyranose



 GAL1
STI2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	34458	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 ($e^-/\text{\AA}^2$)	70	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	6.963	Depositor
Minimum map value	-4.174	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.103	Depositor
Recommended contour level	0.9	Depositor
Map size (Å)	419.99997, 419.99997, 419.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GAL, BMA, FOL, SIA, MAN, 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	1.37	38/9163 (0.4%)	1.37	108/12471 (0.9%)
1	B	1.37	38/9163 (0.4%)	1.37	110/12471 (0.9%)
1	C	1.37	37/9163 (0.4%)	1.37	107/12471 (0.9%)
All	All	1.37	113/27489 (0.4%)	1.37	325/37413 (0.9%)

All (113) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	383	CYS	C-O	-30.15	0.87	1.23
1	C	383	CYS	C-O	-30.15	0.87	1.23
1	A	383	CYS	C-O	-30.10	0.87	1.23
1	B	383	CYS	C-N	15.79	1.56	1.33
1	A	383	CYS	N-CA	15.77	1.67	1.46
1	B	383	CYS	N-CA	15.75	1.67	1.46
1	A	383	CYS	C-N	15.74	1.56	1.33
1	C	383	CYS	C-N	15.71	1.56	1.33
1	C	383	CYS	N-CA	15.71	1.66	1.46
1	C	870	ASN	C-O	13.43	1.41	1.24
1	B	870	ASN	C-O	13.43	1.41	1.24
1	A	870	ASN	C-O	13.42	1.40	1.24
1	B	1106	CYS	C-N	12.61	1.45	1.33
1	C	1106	CYS	C-N	12.59	1.45	1.33
1	A	1106	CYS	C-N	12.56	1.45	1.33
1	B	774	ASN	C-O	10.44	1.36	1.23
1	C	774	ASN	C-O	10.44	1.36	1.23
1	A	774	ASN	C-O	10.43	1.36	1.23
1	A	1106	CYS	C-O	-10.39	1.11	1.23
1	B	1106	CYS	C-O	-10.39	1.11	1.23
1	C	1106	CYS	C-O	-10.39	1.11	1.23
1	C	166	ASN	C-O	-10.33	1.10	1.24
1	A	166	ASN	C-O	-10.33	1.10	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	166	ASN	C-O	-10.32	1.10	1.24
1	B	410	ASN	C-O	-9.87	1.11	1.23
1	C	410	ASN	C-O	-9.86	1.11	1.23
1	A	410	ASN	C-O	-9.85	1.11	1.23
1	C	383	CYS	CA-CB	9.54	1.67	1.53
1	A	383	CYS	CA-CB	9.53	1.67	1.53
1	B	383	CYS	CA-CB	9.53	1.67	1.53
1	C	1106	CYS	N-CA	-9.39	1.34	1.46
1	A	1106	CYS	N-CA	-9.37	1.34	1.46
1	B	1106	CYS	N-CA	-9.36	1.34	1.46
1	B	870	ASN	C-N	-9.03	1.22	1.33
1	C	870	ASN	C-N	-9.00	1.22	1.33
1	A	870	ASN	C-N	-8.99	1.22	1.33
1	C	383	CYS	CA-C	8.97	1.64	1.52
1	A	383	CYS	CA-C	8.97	1.64	1.52
1	B	383	CYS	CA-C	8.97	1.64	1.52
1	C	681	HIS	CB-CG	-8.68	1.38	1.50
1	A	681	HIS	CB-CG	-8.65	1.38	1.50
1	B	681	HIS	CB-CG	-8.63	1.38	1.50
1	B	603	CYS	C-O	-8.28	1.13	1.24
1	A	603	CYS	C-O	-8.21	1.14	1.24
1	C	603	CYS	C-O	-8.17	1.14	1.24
1	C	655	VAL	CA-C	-7.75	1.43	1.52
1	A	655	VAL	CA-C	-7.74	1.43	1.52
1	B	655	VAL	CA-C	-7.67	1.43	1.52
1	C	185	CYS	C-O	-7.47	1.15	1.23
1	B	185	CYS	C-O	-7.46	1.15	1.23
1	A	185	CYS	C-O	-7.46	1.15	1.23
1	C	727	CYS	C-O	-7.38	1.15	1.24
1	A	1086	LEU	CB-CG	7.33	1.68	1.53
1	C	1086	LEU	CB-CG	7.33	1.68	1.53
1	A	727	CYS	C-O	-7.33	1.15	1.24
1	B	1086	LEU	CB-CG	7.32	1.68	1.53
1	B	727	CYS	C-O	-7.30	1.15	1.24
1	C	870	ASN	CA-CB	-7.28	1.41	1.53
1	A	870	ASN	CA-CB	-7.26	1.41	1.53
1	B	870	ASN	CA-CB	-7.24	1.41	1.53
1	B	806	CYS	C-O	6.80	1.32	1.24
1	C	806	CYS	C-O	6.78	1.32	1.24
1	A	806	CYS	C-O	6.76	1.32	1.24
1	A	236	ASN	CA-C	-6.67	1.44	1.53
1	C	236	ASN	CA-C	-6.66	1.44	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	236	ASN	CA-C	-6.65	1.44	1.53
1	C	673	LEU	CB-CG	6.64	1.66	1.53
1	A	673	LEU	CB-CG	6.63	1.66	1.53
1	B	673	LEU	CB-CG	6.57	1.66	1.53
1	B	619	ASN	C-O	6.56	1.31	1.24
1	A	619	ASN	C-O	6.55	1.31	1.24
1	C	619	ASN	C-O	6.54	1.31	1.24
1	A	719	ASN	C-O	-6.50	1.16	1.23
1	B	719	ASN	C-O	-6.47	1.16	1.23
1	C	719	ASN	C-O	-6.45	1.16	1.23
1	A	236	ASN	C-O	6.37	1.31	1.23
1	C	236	ASN	C-O	6.37	1.31	1.23
1	B	236	ASN	C-O	6.34	1.31	1.23
1	C	1137	MET	CB-CG	-6.19	1.33	1.52
1	B	1137	MET	CB-CG	-6.18	1.33	1.52
1	A	1137	MET	CB-CG	-6.18	1.33	1.52
1	A	774	ASN	CA-C	-6.04	1.46	1.53
1	C	774	ASN	CA-C	-6.04	1.46	1.53
1	B	774	ASN	CA-C	-6.03	1.46	1.53
1	A	869	PHE	C-N	-5.72	1.25	1.33
1	B	869	PHE	C-N	-5.71	1.25	1.33
1	C	166	ASN	CA-CB	-5.71	1.43	1.53
1	C	869	PHE	C-N	-5.69	1.25	1.33
1	A	166	ASN	CA-CB	-5.67	1.43	1.53
1	B	166	ASN	CA-CB	-5.67	1.43	1.53
1	C	774	ASN	CA-CB	-5.57	1.46	1.52
1	A	774	ASN	CA-CB	-5.55	1.46	1.52
1	B	774	ASN	CA-CB	-5.54	1.46	1.52
1	A	774	ASN	C-N	-5.45	1.26	1.33
1	B	774	ASN	C-N	-5.43	1.26	1.33
1	C	774	ASN	C-N	-5.42	1.26	1.33
1	B	806	CYS	C-N	-5.35	1.26	1.33
1	A	806	CYS	C-N	-5.31	1.26	1.33
1	C	806	CYS	C-N	-5.29	1.27	1.33
1	B	780	LEU	CG-CD2	-5.25	1.35	1.52
1	A	780	LEU	CG-CD2	-5.24	1.35	1.52
1	B	592	ASN	C-O	5.24	1.30	1.24
1	C	780	LEU	CG-CD2	-5.24	1.35	1.52
1	A	592	ASN	C-O	5.20	1.30	1.24
1	A	104	ASN	C-O	5.18	1.29	1.23
1	C	292	TYR	CB-CG	-5.16	1.40	1.51
1	A	292	TYR	CB-CG	-5.15	1.40	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	1218	LEU	CG-CD2	-5.14	1.35	1.52
1	B	292	TYR	CB-CG	-5.14	1.40	1.51
1	A	1218	LEU	CG-CD2	-5.13	1.35	1.52
1	B	1218	LEU	CG-CD2	-5.13	1.35	1.52
1	B	104	ASN	C-O	5.12	1.29	1.23
1	C	592	ASN	C-O	5.12	1.30	1.24

All (325) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	383	CYS	CA-C-O	18.52	142.21	120.92
1	B	383	CYS	CA-C-O	18.48	142.17	120.92
1	C	383	CYS	CA-C-O	18.44	142.13	120.92
1	C	382	GLU	CA-C-N	-12.94	102.95	122.09
1	C	382	GLU	C-N-CA	-12.94	102.95	122.09
1	A	382	GLU	CA-C-N	-12.93	102.95	122.09
1	A	382	GLU	C-N-CA	-12.93	102.95	122.09
1	B	382	GLU	CA-C-N	-12.92	102.97	122.09
1	B	382	GLU	C-N-CA	-12.92	102.97	122.09
1	B	1106	CYS	CA-C-O	11.30	134.44	120.31
1	C	1106	CYS	CA-C-O	11.30	134.44	120.31
1	A	1106	CYS	CA-C-O	11.30	134.43	120.31
1	C	1222	LEU	CD1-CG-CD2	9.93	132.65	110.80
1	A	1222	LEU	CD1-CG-CD2	9.92	132.63	110.80
1	B	1222	LEU	CD1-CG-CD2	9.92	132.62	110.80
1	A	383	CYS	N-CA-C	-9.46	94.07	109.96
1	B	383	CYS	N-CA-C	-9.44	94.10	109.96
1	C	383	CYS	N-CA-C	-9.44	94.10	109.96
1	B	725	GLU	N-CA-C	-9.36	102.43	114.04
1	C	725	GLU	N-CA-C	-9.34	102.45	114.04
1	A	725	GLU	N-CA-C	-9.34	102.46	114.04
1	B	1218	LEU	CD1-CG-CD2	9.29	131.25	110.80
1	A	1218	LEU	CD1-CG-CD2	9.27	131.19	110.80
1	C	1218	LEU	CD1-CG-CD2	9.24	131.14	110.80
1	B	715	LEU	CD1-CG-CD2	9.18	131.00	110.80
1	A	715	LEU	CD1-CG-CD2	9.16	130.96	110.80
1	C	715	LEU	CD1-CG-CD2	9.15	130.94	110.80
1	A	383	CYS	N-CA-CB	-9.13	95.44	110.23
1	B	383	CYS	N-CA-CB	-9.13	95.45	110.23
1	C	383	CYS	N-CA-CB	-9.12	95.45	110.23
1	C	1160	ASN	CA-C-N	9.10	128.74	119.82
1	C	1160	ASN	C-N-CA	9.10	128.74	119.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1160	ASN	CA-C-N	9.06	128.70	119.82
1	B	1160	ASN	C-N-CA	9.06	128.70	119.82
1	A	1160	ASN	CA-C-N	9.05	128.69	119.82
1	A	1160	ASN	C-N-CA	9.05	128.69	119.82
1	C	1036	LEU	CD1-CG-CD2	9.04	130.70	110.80
1	A	1036	LEU	CD1-CG-CD2	9.04	130.68	110.80
1	B	1036	LEU	CD1-CG-CD2	9.03	130.67	110.80
1	A	60	GLN	N-CA-C	8.92	122.67	111.69
1	B	60	GLN	N-CA-C	8.92	122.66	111.69
1	C	60	GLN	N-CA-C	8.92	122.66	111.69
1	C	655	VAL	CG1-CB-CG2	8.90	130.38	110.80
1	A	655	VAL	CG1-CB-CG2	8.89	130.37	110.80
1	B	655	VAL	CG1-CB-CG2	8.87	130.32	110.80
1	B	234	LEU	CD1-CG-CD2	8.44	129.38	110.80
1	A	234	LEU	CD1-CG-CD2	8.44	129.38	110.80
1	C	234	LEU	CD1-CG-CD2	8.44	129.37	110.80
1	B	654	CYS	N-CA-C	-8.35	97.44	109.96
1	C	654	CYS	N-CA-C	-8.34	97.45	109.96
1	A	654	CYS	N-CA-C	-8.33	97.46	109.96
1	A	780	LEU	CD1-CG-CD2	8.27	128.99	110.80
1	B	780	LEU	CD1-CG-CD2	8.26	128.98	110.80
1	C	780	LEU	CD1-CG-CD2	8.26	128.97	110.80
1	C	429	SER	CA-C-N	8.22	128.69	119.32
1	C	429	SER	C-N-CA	8.22	128.69	119.32
1	B	429	SER	CA-C-N	8.21	128.68	119.32
1	B	429	SER	C-N-CA	8.21	128.68	119.32
1	A	429	SER	CA-C-N	8.20	128.66	119.32
1	A	429	SER	C-N-CA	8.20	128.66	119.32
1	B	481	LEU	CD1-CG-CD2	8.11	128.65	110.80
1	C	481	LEU	CD1-CG-CD2	8.10	128.62	110.80
1	A	481	LEU	CD1-CG-CD2	8.09	128.60	110.80
1	A	936	PRO	CA-C-N	8.04	127.99	120.03
1	A	936	PRO	C-N-CA	8.04	127.99	120.03
1	B	936	PRO	CA-C-N	8.03	127.98	120.03
1	B	936	PRO	C-N-CA	8.03	127.98	120.03
1	C	936	PRO	CA-C-N	8.00	127.95	120.03
1	C	936	PRO	C-N-CA	8.00	127.95	120.03
1	A	462	GLY	CA-C-N	7.53	127.56	119.28
1	A	462	GLY	C-N-CA	7.53	127.56	119.28
1	B	462	GLY	CA-C-N	7.52	127.55	119.28
1	B	462	GLY	C-N-CA	7.52	127.55	119.28
1	C	462	GLY	CA-C-N	7.49	127.52	119.28

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	462	GLY	C-N-CA	7.49	127.52	119.28
1	A	577	TYR	N-CA-C	7.35	122.36	112.88
1	C	577	TYR	N-CA-C	7.34	122.34	112.88
1	B	577	TYR	N-CA-C	7.32	122.33	112.88
1	B	1060	PRO	N-CA-C	7.14	119.41	110.70
1	A	1060	PRO	N-CA-C	7.13	119.40	110.70
1	C	1060	PRO	N-CA-C	7.13	119.39	110.70
1	B	709	THR	CA-C-N	7.02	126.72	119.56
1	B	709	THR	C-N-CA	7.02	126.72	119.56
1	B	484	VAL	CA-C-N	7.02	127.43	119.92
1	B	484	VAL	C-N-CA	7.02	127.43	119.92
1	C	484	VAL	CA-C-N	7.02	127.43	119.92
1	C	484	VAL	C-N-CA	7.02	127.43	119.92
1	A	709	THR	CA-C-N	7.02	126.72	119.56
1	A	709	THR	C-N-CA	7.02	126.72	119.56
1	A	484	VAL	CA-C-N	7.01	127.42	119.92
1	A	484	VAL	C-N-CA	7.01	127.42	119.92
1	C	709	THR	CA-C-N	6.96	126.66	119.56
1	C	709	THR	C-N-CA	6.96	126.66	119.56
1	B	935	LEU	CA-C-N	6.94	124.66	119.66
1	B	935	LEU	C-N-CA	6.94	124.66	119.66
1	A	935	LEU	CA-C-N	6.90	124.63	119.66
1	A	935	LEU	C-N-CA	6.90	124.63	119.66
1	C	530	VAL	CA-C-N	6.87	127.27	119.92
1	C	530	VAL	C-N-CA	6.87	127.27	119.92
1	A	530	VAL	CA-C-N	6.86	127.26	119.92
1	A	530	VAL	C-N-CA	6.86	127.26	119.92
1	C	935	LEU	CA-C-N	6.86	124.60	119.66
1	C	935	LEU	C-N-CA	6.86	124.60	119.66
1	B	530	VAL	CA-C-N	6.84	127.24	119.92
1	B	530	VAL	C-N-CA	6.84	127.24	119.92
1	C	96	THR	CA-C-N	6.75	126.73	119.78
1	C	96	THR	C-N-CA	6.75	126.73	119.78
1	A	96	THR	CA-C-N	6.75	126.73	119.78
1	A	96	THR	C-N-CA	6.75	126.73	119.78
1	B	96	THR	CA-C-N	6.74	126.72	119.78
1	B	96	THR	C-N-CA	6.74	126.72	119.78
1	A	1106	CYS	CA-C-N	-6.70	114.45	122.35
1	A	1106	CYS	C-N-CA	-6.70	114.45	122.35
1	B	1106	CYS	CA-C-N	-6.70	114.45	122.35
1	B	1106	CYS	C-N-CA	-6.70	114.45	122.35
1	C	392	THR	CA-C-N	6.70	124.55	119.66

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	392	THR	C-N-CA	6.70	124.55	119.66
1	C	1106	CYS	CA-C-N	-6.68	114.47	122.35
1	C	1106	CYS	C-N-CA	-6.68	114.47	122.35
1	B	392	THR	CA-C-N	6.68	124.53	119.66
1	B	392	THR	C-N-CA	6.68	124.53	119.66
1	A	393	PRO	CA-C-N	6.67	126.61	120.21
1	A	393	PRO	C-N-CA	6.67	126.61	120.21
1	A	392	THR	CA-C-N	6.66	124.52	119.66
1	A	392	THR	C-N-CA	6.66	124.52	119.66
1	C	393	PRO	CA-C-N	6.64	126.59	120.21
1	C	393	PRO	C-N-CA	6.64	126.59	120.21
1	B	393	PRO	CA-C-N	6.63	126.58	120.21
1	B	393	PRO	C-N-CA	6.63	126.58	120.21
1	B	133	SER	CA-C-N	6.58	127.10	119.47
1	B	133	SER	C-N-CA	6.58	127.10	119.47
1	A	133	SER	CA-C-N	6.57	127.09	119.47
1	A	133	SER	C-N-CA	6.57	127.09	119.47
1	C	56	ILE	N-CA-C	6.56	118.03	108.58
1	C	133	SER	CA-C-N	6.56	127.08	119.47
1	C	133	SER	C-N-CA	6.56	127.08	119.47
1	A	56	ILE	N-CA-C	6.56	118.02	108.58
1	B	56	ILE	N-CA-C	6.55	118.02	108.58
1	C	1059	ASP	CA-C-N	6.55	127.12	120.38
1	C	1059	ASP	C-N-CA	6.55	127.12	120.38
1	A	1059	ASP	CA-C-N	6.54	127.12	120.38
1	A	1059	ASP	C-N-CA	6.54	127.12	120.38
1	B	655	VAL	CA-CB-CG1	-6.54	99.29	110.40
1	A	655	VAL	CA-CB-CG1	-6.53	99.29	110.40
1	B	22	GLY	CA-C-N	6.53	126.49	120.03
1	B	22	GLY	C-N-CA	6.53	126.49	120.03
1	A	22	GLY	CA-C-N	6.53	126.49	120.03
1	A	22	GLY	C-N-CA	6.53	126.49	120.03
1	C	22	GLY	CA-C-N	6.52	126.49	120.03
1	C	22	GLY	C-N-CA	6.52	126.49	120.03
1	B	1059	ASP	CA-C-N	6.52	127.10	120.38
1	B	1059	ASP	C-N-CA	6.52	127.10	120.38
1	C	655	VAL	CA-CB-CG1	-6.52	99.31	110.40
1	C	870	ASN	CA-C-O	-6.51	111.20	120.51
1	B	870	ASN	CA-C-O	-6.50	111.21	120.51
1	A	870	ASN	CA-C-O	-6.50	111.22	120.51
1	C	1220	PRO	N-CA-C	6.46	118.58	110.70
1	A	1220	PRO	N-CA-C	6.45	118.57	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1220	PRO	N-CA-C	6.44	118.55	110.70
1	A	144	TYR	CA-C-N	6.38	126.29	119.85
1	A	144	TYR	C-N-CA	6.38	126.29	119.85
1	C	144	TYR	CA-C-N	6.38	126.29	119.85
1	C	144	TYR	C-N-CA	6.38	126.29	119.85
1	B	144	TYR	CA-C-N	6.36	126.27	119.85
1	B	144	TYR	C-N-CA	6.36	126.27	119.85
1	A	383	CYS	CB-CA-C	-6.31	99.12	109.53
1	C	383	CYS	CB-CA-C	-6.29	99.16	109.53
1	B	383	CYS	CB-CA-C	-6.28	99.16	109.53
1	B	383	CYS	CA-C-N	-6.28	114.07	122.42
1	B	383	CYS	C-N-CA	-6.28	114.07	122.42
1	B	766	HIS	CA-C-N	6.24	126.21	120.03
1	B	766	HIS	C-N-CA	6.24	126.21	120.03
1	A	383	CYS	CA-C-N	-6.24	114.12	122.42
1	A	383	CYS	C-N-CA	-6.24	114.12	122.42
1	C	383	CYS	CA-C-N	-6.24	114.12	122.42
1	C	383	CYS	C-N-CA	-6.24	114.12	122.42
1	C	766	HIS	CA-C-N	6.20	126.17	120.03
1	C	766	HIS	C-N-CA	6.20	126.17	120.03
1	A	766	HIS	CA-C-N	6.19	126.16	120.03
1	A	766	HIS	C-N-CA	6.19	126.16	120.03
1	C	166	ASN	CA-C-N	-6.06	112.83	121.50
1	C	166	ASN	C-N-CA	-6.06	112.83	121.50
1	A	1106	CYS	N-CA-CB	6.06	119.58	110.19
1	A	166	ASN	CA-C-N	-6.05	112.85	121.50
1	A	166	ASN	C-N-CA	-6.05	112.85	121.50
1	C	1106	CYS	N-CA-CB	6.05	119.57	110.19
1	B	1106	CYS	N-CA-CB	6.05	119.56	110.19
1	B	166	ASN	CA-C-N	-6.04	112.87	121.50
1	B	166	ASN	C-N-CA	-6.04	112.87	121.50
1	A	924	ILE	N-CA-C	-6.03	105.19	111.58
1	B	924	ILE	N-CA-C	-6.03	105.19	111.58
1	C	924	ILE	N-CA-C	-6.01	105.21	111.58
1	C	782	ILE	CA-C-N	6.00	125.96	119.78
1	C	782	ILE	C-N-CA	6.00	125.96	119.78
1	A	782	ILE	CA-C-N	5.98	125.94	119.78
1	A	782	ILE	C-N-CA	5.98	125.94	119.78
1	B	782	ILE	CA-C-N	5.96	125.92	119.78
1	B	782	ILE	C-N-CA	5.96	125.92	119.78
1	B	916	GLY	CA-C-N	5.96	125.89	119.76
1	B	916	GLY	C-N-CA	5.96	125.89	119.76

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	916	GLY	CA-C-N	5.94	125.88	119.76
1	A	916	GLY	C-N-CA	5.94	125.88	119.76
1	C	902	ASP	CA-C-N	5.93	125.55	119.56
1	C	902	ASP	C-N-CA	5.93	125.55	119.56
1	C	916	GLY	CA-C-N	5.93	125.86	119.76
1	C	916	GLY	C-N-CA	5.93	125.86	119.76
1	C	195	CYS	CA-C-N	5.91	125.59	119.56
1	C	195	CYS	C-N-CA	5.91	125.59	119.56
1	A	195	CYS	CA-C-N	5.90	125.58	119.56
1	A	195	CYS	C-N-CA	5.90	125.58	119.56
1	A	902	ASP	CA-C-N	5.90	125.52	119.56
1	A	902	ASP	C-N-CA	5.90	125.52	119.56
1	B	902	ASP	CA-C-N	5.89	125.51	119.56
1	B	902	ASP	C-N-CA	5.89	125.51	119.56
1	C	288	ASP	N-CA-C	-5.87	102.79	110.53
1	A	288	ASP	N-CA-C	-5.86	102.79	110.53
1	B	288	ASP	N-CA-C	-5.86	102.80	110.53
1	B	195	CYS	CA-C-N	5.85	125.53	119.56
1	B	195	CYS	C-N-CA	5.85	125.53	119.56
1	C	970	ILE	CA-C-N	5.85	125.80	119.78
1	C	970	ILE	C-N-CA	5.85	125.80	119.78
1	B	970	ILE	CA-C-N	5.84	125.80	119.78
1	B	970	ILE	C-N-CA	5.84	125.80	119.78
1	A	970	ILE	CA-C-N	5.84	125.79	119.78
1	A	970	ILE	C-N-CA	5.84	125.79	119.78
1	B	1218	LEU	CA-C-N	5.81	123.84	119.66
1	B	1218	LEU	C-N-CA	5.81	123.84	119.66
1	C	1218	LEU	CA-C-N	5.80	123.83	119.66
1	C	1218	LEU	C-N-CA	5.80	123.83	119.66
1	C	872	THR	CA-C-N	5.79	128.04	120.28
1	C	872	THR	C-N-CA	5.79	128.04	120.28
1	B	872	THR	CA-C-N	5.79	128.04	120.28
1	B	872	THR	C-N-CA	5.79	128.04	120.28
1	A	872	THR	CA-C-N	5.79	128.03	120.28
1	A	872	THR	C-N-CA	5.79	128.03	120.28
1	C	1106	CYS	N-CA-C	5.79	120.37	112.04
1	B	1106	CYS	N-CA-C	5.78	120.36	112.04
1	A	1106	CYS	N-CA-C	5.78	120.36	112.04
1	A	1218	LEU	CA-C-N	5.77	123.82	119.66
1	A	1218	LEU	C-N-CA	5.77	123.82	119.66
1	B	955	ILE	N-CA-C	5.73	115.92	110.42
1	C	955	ILE	N-CA-C	5.72	115.91	110.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	955	ILE	N-CA-C	5.72	115.91	110.42
1	C	209	THR	CA-C-N	5.71	125.83	119.32
1	C	209	THR	C-N-CA	5.71	125.83	119.32
1	A	209	THR	CA-C-N	5.70	125.81	119.32
1	A	209	THR	C-N-CA	5.70	125.81	119.32
1	A	673	LEU	CB-CG-CD2	5.69	127.78	110.70
1	B	673	LEU	CB-CG-CD2	5.69	127.77	110.70
1	C	673	LEU	CB-CG-CD2	5.69	127.77	110.70
1	A	1219	PRO	CA-C-N	5.67	126.22	120.38
1	A	1219	PRO	C-N-CA	5.67	126.22	120.38
1	A	1105	GLU	CA-C-N	5.67	134.04	121.80
1	A	1105	GLU	C-N-CA	5.67	134.04	121.80
1	C	1219	PRO	CA-C-N	5.67	126.22	120.38
1	C	1219	PRO	C-N-CA	5.67	126.22	120.38
1	C	705	GLY	CA-C-N	5.67	125.43	119.76
1	C	705	GLY	C-N-CA	5.67	125.43	119.76
1	A	705	GLY	CA-C-N	5.66	125.42	119.76
1	A	705	GLY	C-N-CA	5.66	125.42	119.76
1	B	705	GLY	CA-C-N	5.66	125.42	119.76
1	B	705	GLY	C-N-CA	5.66	125.42	119.76
1	B	209	THR	CA-C-N	5.66	125.77	119.32
1	B	209	THR	C-N-CA	5.66	125.77	119.32
1	C	1105	GLU	CA-C-N	5.65	134.00	121.80
1	C	1105	GLU	C-N-CA	5.65	134.00	121.80
1	B	1219	PRO	CA-C-N	5.64	126.19	120.38
1	B	1219	PRO	C-N-CA	5.64	126.19	120.38
1	B	1105	GLU	CA-C-N	5.64	133.98	121.80
1	B	1105	GLU	C-N-CA	5.64	133.98	121.80
1	C	1029	ASN	CA-CB-CG	5.53	118.13	112.60
1	B	1029	ASN	CA-CB-CG	5.51	118.11	112.60
1	B	892	ASP	CA-CB-CG	5.49	118.09	112.60
1	A	1029	ASN	CA-CB-CG	5.49	118.08	112.60
1	C	892	ASP	CA-CB-CG	5.49	118.08	112.60
1	A	892	ASP	CA-CB-CG	5.46	118.06	112.60
1	B	423	PHE	CA-CB-CG	5.33	119.13	113.80
1	A	319	GLN	CA-C-N	5.32	126.49	119.84
1	A	319	GLN	C-N-CA	5.32	126.49	119.84
1	C	319	GLN	CA-C-N	5.32	126.49	119.84
1	C	319	GLN	C-N-CA	5.32	126.49	119.84
1	C	423	PHE	CA-CB-CG	5.31	119.11	113.80
1	A	423	PHE	CA-CB-CG	5.31	119.11	113.80
1	B	319	GLN	CA-C-N	5.30	126.47	119.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	319	GLN	C-N-CA	5.30	126.47	119.84
1	B	774	ASN	CA-C-O	-5.30	115.34	122.44
1	C	774	ASN	CA-C-O	-5.29	115.34	122.44
1	A	774	ASN	CA-C-O	-5.29	115.35	122.44
1	A	784	THR	N-CA-C	-5.25	106.82	114.12
1	B	784	THR	N-CA-C	-5.25	106.82	114.12
1	C	961	THR	N-CA-C	5.23	115.20	108.34
1	A	961	THR	N-CA-C	5.22	115.18	108.34
1	C	784	THR	N-CA-C	-5.22	106.86	114.12
1	B	961	THR	N-CA-C	5.22	115.18	108.34
1	C	1102	LYS	CA-C-N	-5.20	114.01	120.56
1	C	1102	LYS	C-N-CA	-5.20	114.01	120.56
1	B	1102	LYS	CA-C-N	-5.19	114.02	120.56
1	B	1102	LYS	C-N-CA	-5.19	114.02	120.56
1	A	1102	LYS	CA-C-N	-5.19	114.02	120.56
1	A	1102	LYS	C-N-CA	-5.19	114.02	120.56
1	A	344	LEU	CB-CG-CD2	5.19	126.26	110.70
1	C	344	LEU	CB-CG-CD2	5.18	126.24	110.70
1	B	344	LEU	CB-CG-CD2	5.18	126.23	110.70
1	B	347	LEU	CD1-CG-CD2	-5.15	99.46	110.80
1	A	725	GLU	CA-C-O	5.15	125.50	119.06
1	A	347	LEU	CD1-CG-CD2	-5.14	99.50	110.80
1	C	347	LEU	CD1-CG-CD2	-5.13	99.52	110.80
1	B	725	GLU	CA-C-O	5.12	125.46	119.06
1	C	725	GLU	CA-C-O	5.12	125.46	119.06
1	C	509	ASP	CA-CB-CG	-5.12	107.48	112.60
1	A	509	ASP	CA-CB-CG	-5.09	107.51	112.60
1	B	509	ASP	CA-CB-CG	-5.06	107.54	112.60
1	C	546	SER	CA-C-N	5.05	124.83	119.28
1	C	546	SER	C-N-CA	5.05	124.83	119.28
1	C	1058	LEU	N-CA-C	5.03	117.76	109.72
1	B	1058	LEU	N-CA-C	5.02	117.75	109.72
1	B	1206	ALA	CA-C-N	5.02	124.92	119.85
1	B	1206	ALA	C-N-CA	5.02	124.92	119.85
1	A	1058	LEU	N-CA-C	5.02	117.75	109.72
1	B	965	SER	N-CA-C	5.02	119.45	113.23
1	A	546	SER	CA-C-N	5.01	124.80	119.28
1	A	546	SER	C-N-CA	5.01	124.80	119.28
1	A	965	SER	N-CA-C	5.01	119.44	113.23
1	B	546	SER	CA-C-N	5.01	124.79	119.28
1	B	546	SER	C-N-CA	5.01	124.79	119.28

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8952	0	8632	35	0
1	B	8952	0	8632	34	0
1	C	8952	0	8632	36	0
2	D	50	0	43	0	0
2	H	50	0	43	0	0
2	O	50	0	43	0	0
2	S	50	0	43	0	0
2	Z	50	0	43	0	0
2	d	50	0	43	0	0
3	E	28	0	25	0	0
3	I	28	0	25	0	0
3	J	28	0	25	0	0
3	M	28	0	25	0	0
3	P	28	0	25	0	0
3	T	28	0	25	0	0
3	U	28	0	25	0	0
3	X	28	0	25	0	0
3	a	28	0	25	0	0
3	e	28	0	25	0	0
3	f	28	0	25	0	0
3	i	28	0	25	0	0
4	F	83	0	70	1	0
4	Q	83	0	70	0	0
4	b	83	0	70	0	0
5	G	39	0	34	0	0
5	R	39	0	34	0	0
5	c	39	0	34	0	0
6	K	61	0	52	0	0
6	L	61	0	52	0	0
6	V	61	0	52	0	0
6	W	61	0	52	0	0
6	g	61	0	52	0	0
6	h	61	0	52	0	0
7	N	32	0	28	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	Y	32	0	28	0	0
7	j	32	0	28	0	0
8	A	98	0	91	0	0
8	B	98	0	91	0	0
8	C	98	0	91	0	0
9	A	32	0	17	1	0
9	B	32	0	17	1	0
9	C	32	0	17	1	0
10	A	72	0	0	3	0
10	B	72	0	0	3	0
10	C	72	0	0	2	0
All	All	28926	0	27486	96	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (96) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:673:LEU:HD13	1:C:714:VAL:HG22	1.57	0.87
1:B:673:LEU:HD13	1:B:714:VAL:HG22	1.57	0.86
1:A:673:LEU:HD13	1:A:714:VAL:HG22	1.57	0.85
1:B:107:GLN:HE21	1:B:160:LYS:HB3	1.42	0.85
1:A:673:LEU:HD21	1:A:711:VAL:HG23	1.59	0.82
1:C:673:LEU:HD21	1:C:711:VAL:HG23	1.59	0.82
1:B:673:LEU:HD21	1:B:711:VAL:HG23	1.59	0.82
1:A:107:GLN:HE21	1:A:160:LYS:HB3	1.42	0.81
1:C:107:GLN:HE21	1:C:160:LYS:HB3	1.42	0.81
1:C:673:LEU:HD13	1:C:714:VAL:CG2	2.21	0.71
1:A:107:GLN:NE2	1:A:160:LYS:HB3	2.06	0.71
1:B:673:LEU:HD13	1:B:714:VAL:CG2	2.21	0.71
1:A:673:LEU:HD13	1:A:714:VAL:CG2	2.21	0.70
1:C:107:GLN:NE2	1:C:160:LYS:HB3	2.06	0.70
1:B:107:GLN:NE2	1:B:160:LYS:HB3	2.06	0.69
1:B:673:LEU:HD21	1:B:711:VAL:CG2	2.28	0.63
1:C:673:LEU:HD21	1:C:711:VAL:CG2	2.28	0.63
1:A:673:LEU:HD21	1:A:711:VAL:CG2	2.28	0.63
1:A:107:GLN:NE2	1:A:160:LYS:HD3	2.17	0.60
1:B:107:GLN:NE2	1:B:160:LYS:HD3	2.17	0.60
1:C:107:GLN:NE2	1:C:160:LYS:HD3	2.17	0.59
1:A:107:GLN:HE22	1:A:160:LYS:HD3	1.68	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:107:GLN:HE22	1:C:160:LYS:HD3	1.69	0.58
1:C:343:ASP:N	1:C:343:ASP:OD1	2.35	0.58
1:C:46:ARG:HD3	10:C:8028:HOH:O	2.03	0.57
1:A:46:ARG:HD3	10:A:8028:HOH:O	2.03	0.57
1:B:46:ARG:HD3	10:B:8028:HOH:O	2.03	0.57
1:B:107:GLN:HE22	1:B:160:LYS:HD3	1.68	0.57
1:A:1035:LYS:HE3	1:B:830:LYS:HD2	1.87	0.57
1:A:830:LYS:HD2	1:C:1035:LYS:HE3	1.87	0.57
1:B:1035:LYS:HE3	1:C:830:LYS:HD2	1.87	0.56
1:A:343:ASP:OD1	1:A:343:ASP:N	2.35	0.56
1:B:343:ASP:N	1:B:343:ASP:OD1	2.35	0.56
1:A:798:THR:HA	1:A:842:GLN:OE1	2.07	0.54
1:B:798:THR:HA	1:B:842:GLN:OE1	2.07	0.54
1:C:798:THR:HA	1:C:842:GLN:OE1	2.07	0.53
1:C:130:VAL:HG13	10:C:8045:HOH:O	2.09	0.52
1:A:129:THR:H	9:A:1444:FOL:HN1	1.58	0.52
1:B:129:THR:H	9:B:1444:FOL:HN1	1.58	0.52
1:C:129:THR:H	9:C:1444:FOL:HN1	1.58	0.52
1:A:130:VAL:HG13	10:A:8045:HOH:O	2.09	0.52
1:A:830:LYS:CD	1:C:1035:LYS:HE3	2.41	0.51
1:A:1035:LYS:HE3	1:B:830:LYS:CD	2.41	0.51
1:B:130:VAL:HG13	10:B:8045:HOH:O	2.09	0.51
1:B:1035:LYS:HE3	1:C:830:LYS:CD	2.41	0.51
1:A:107:GLN:HG2	1:A:161:MET:O	2.11	0.50
1:B:107:GLN:HG2	1:B:161:MET:O	2.11	0.50
1:C:107:GLN:HG2	1:C:161:MET:O	2.11	0.49
1:B:592:ASN:OD1	1:B:592:ASN:N	2.45	0.49
1:B:961:THR:OG1	1:B:962:ALA:N	2.46	0.48
1:A:592:ASN:OD1	1:A:592:ASN:N	2.45	0.48
1:B:780:LEU:HG	1:B:782:ILE:HB	1.95	0.48
1:A:780:LEU:HG	1:A:782:ILE:HB	1.95	0.48
1:C:592:ASN:OD1	1:C:592:ASN:N	2.45	0.48
1:C:780:LEU:HG	1:C:782:ILE:HB	1.95	0.47
1:A:88:SER:OG	1:A:89:ALA:N	2.48	0.47
1:A:961:THR:OG1	1:A:962:ALA:N	2.46	0.47
1:C:975:SER:OG	1:C:979:ARG:NH1	2.48	0.47
1:C:88:SER:OG	1:C:89:ALA:N	2.48	0.46
1:B:88:SER:OG	1:B:89:ALA:N	2.48	0.46
1:B:975:SER:OG	1:B:979:ARG:NH1	2.48	0.46
1:C:673:LEU:HD12	1:C:674:PHE:N	2.31	0.46
1:A:673:LEU:HD12	1:A:674:PHE:N	2.31	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:673:LEU:HD12	1:B:674:PHE:N	2.31	0.46
1:A:770:VAL:HG12	1:B:969:ALA:HB2	1.98	0.46
1:A:975:SER:OG	1:A:979:ARG:NH1	2.48	0.45
1:B:770:VAL:HG12	1:C:969:ALA:HB2	1.98	0.45
1:A:969:ALA:HB2	1:C:770:VAL:HG12	1.98	0.45
1:A:633:ASP:OD1	1:A:633:ASP:C	2.61	0.44
1:B:152:SER:OG	1:B:165:PHE:HB2	2.18	0.44
1:C:961:THR:OG1	1:C:962:ALA:N	2.46	0.44
1:A:152:SER:OG	1:A:165:PHE:HB2	2.18	0.44
1:C:152:SER:OG	1:C:165:PHE:HB2	2.18	0.44
1:A:1084:GLN:HE21	1:A:1088:ARG:HD2	1.83	0.44
1:C:633:ASP:OD1	1:C:633:ASP:C	2.61	0.43
1:C:1084:GLN:HE21	1:C:1088:ARG:HD2	1.83	0.43
1:B:717:LEU:HD23	1:B:757:MET:HB2	2.01	0.43
1:B:1084:GLN:HE21	1:B:1088:ARG:HD2	1.83	0.43
1:A:782:ILE:HA	1:A:783:PRO:HD3	1.91	0.42
1:C:609:TYR:OH	1:C:644:ASP:OD2	2.38	0.42
1:C:717:LEU:HD23	1:C:757:MET:HB2	2.01	0.42
1:B:609:TYR:OH	1:B:644:ASP:OD2	2.38	0.42
1:B:633:ASP:OD1	1:B:633:ASP:C	2.61	0.42
1:C:530:VAL:HA	1:C:531:PRO:HD3	1.90	0.42
1:C:172:LEU:HA	1:C:173:PRO:HD2	1.95	0.41
1:A:849:LEU:HD13	1:A:849:LEU:C	2.46	0.41
1:B:849:LEU:HD13	1:B:849:LEU:C	2.46	0.41
1:A:717:LEU:HD23	1:A:757:MET:HB2	2.01	0.41
1:B:593:ASP:N	1:B:593:ASP:OD1	2.51	0.41
1:A:609:TYR:OH	1:A:644:ASP:OD2	2.38	0.41
1:A:289:THR:HG23	10:A:8024:HOH:O	2.21	0.40
1:C:1013:THR:OG1	1:C:1014:THR:N	2.51	0.40
1:A:587:LYS:CG	4:F:1:NAG:H81	2.52	0.40
1:B:289:THR:HG23	10:B:8024:HOH:O	2.21	0.40
1:C:593:ASP:N	1:C:593:ASP:OD1	2.51	0.40
1:C:849:LEU:C	1:C:849:LEU:HD13	2.46	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	1149/1359 (84%)	1130 (98%)	18 (2%)	1 (0%)	48	73
1	B	1149/1359 (84%)	1130 (98%)	18 (2%)	1 (0%)	48	73
1	C	1149/1359 (84%)	1130 (98%)	18 (2%)	1 (0%)	48	73
All	All	3447/4077 (84%)	3390 (98%)	54 (2%)	3 (0%)	49	73

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	578	GLY
1	B	578	GLY
1	C	578	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	992/1167 (85%)	983 (99%)	9 (1%)	70	87
1	B	992/1167 (85%)	983 (99%)	9 (1%)	70	87
1	C	992/1167 (85%)	983 (99%)	9 (1%)	70	87
All	All	2976/3501 (85%)	2949 (99%)	27 (1%)	68	87

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	234	LEU
1	A	455	ASP
1	A	592	ASN
1	A	655	VAL
1	A	673	LEU
1	A	715	LEU
1	A	849	LEU
1	A	1036	LEU
1	A	1222	LEU
1	B	234	LEU
1	B	455	ASP
1	B	592	ASN
1	B	655	VAL
1	B	673	LEU
1	B	715	LEU
1	B	849	LEU
1	B	1036	LEU
1	B	1222	LEU
1	C	234	LEU
1	C	455	ASP
1	C	592	ASN
1	C	655	VAL
1	C	673	LEU
1	C	715	LEU
1	C	849	LEU
1	C	1036	LEU
1	C	1222	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	107	GLN
1	A	280	GLN
1	A	377	GLN
1	A	421	ASN
1	A	636	GLN
1	A	733	GLN
1	A	848	ASN
1	A	981	ASN
1	A	987	GLN
1	A	1009	GLN
1	A	1072	ASN
1	A	1097	GLN

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Mol	Chain	Res	Type
1	A	1208	GLN
1	B	107	GLN
1	B	194	HIS
1	B	280	GLN
1	B	421	ASN
1	B	733	GLN
1	B	848	ASN
1	B	981	ASN
1	B	987	GLN
1	B	1009	GLN
1	B	1072	ASN
1	B	1097	GLN
1	B	1208	GLN
1	C	107	GLN
1	C	194	HIS
1	C	280	GLN
1	C	377	GLN
1	C	636	GLN
1	C	733	GLN
1	C	848	ASN
1	C	981	ASN
1	C	987	GLN
1	C	1072	ASN
1	C	1084	GLN
1	C	1097	GLN
1	C	1208	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

114 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	D	1	1,2	14,14,15	1.42	4 (28%)	17,19,21	1.86	6 (35%)
2	NAG	D	2	2	14,14,15	1.24	2 (14%)	17,19,21	1.64	3 (17%)
2	BMA	D	3	2	11,11,12	1.50	2 (18%)	15,15,17	1.63	1 (6%)
2	MAN	D	4	2	11,11,12	1.12	1 (9%)	15,15,17	1.13	3 (20%)
3	NAG	E	1	3,1	14,14,15	1.53	3 (21%)	17,19,21	1.79	5 (29%)
3	NAG	E	2	3	14,14,15	1.15	1 (7%)	17,19,21	0.87	1 (5%)
4	NAG	F	1	1,4	14,14,15	1.34	1 (7%)	17,19,21	0.84	0
4	NAG	F	2	4	14,14,15	1.41	1 (7%)	17,19,21	0.75	0
4	BMA	F	3	4	11,11,12	1.02	0	15,15,17	0.61	0
4	MAN	F	4	4	11,11,12	0.70	0	15,15,17	0.61	0
4	MAN	F	5	4	11,11,12	1.41	3 (27%)	15,15,17	0.60	0
4	MAN	F	6	4	11,11,12	0.64	0	15,15,17	0.59	0
4	MAN	F	7	4	11,11,12	1.41	2 (18%)	15,15,17	0.57	0
5	NAG	G	1	1,5	14,14,15	1.56	4 (28%)	17,19,21	1.75	3 (17%)
5	NAG	G	2	5	14,14,15	1.56	3 (21%)	17,19,21	1.26	1 (5%)
5	BMA	G	3	5	11,11,12	0.72	1 (9%)	15,15,17	0.81	0
2	NAG	H	1	1,2	14,14,15	1.78	4 (28%)	17,19,21	2.16	4 (23%)
2	NAG	H	2	2	14,14,15	1.68	3 (21%)	17,19,21	1.91	3 (17%)
2	BMA	H	3	2	11,11,12	1.44	2 (18%)	15,15,17	1.84	1 (6%)
2	MAN	H	4	2	11,11,12	1.15	1 (9%)	15,15,17	1.14	2 (13%)
3	NAG	I	1	3,1	14,14,15	1.53	4 (28%)	17,19,21	1.83	3 (17%)
3	NAG	I	2	3	14,14,15	1.15	1 (7%)	17,19,21	0.67	0
3	NAG	J	1	3,1	14,14,15	1.77	5 (35%)	17,19,21	1.73	2 (11%)
3	NAG	J	2	3	14,14,15	1.27	1 (7%)	17,19,21	0.77	0
6	NAG	K	1	1,6	14,14,15	1.47	4 (28%)	17,19,21	1.84	2 (11%)
6	NAG	K	2	6	14,14,15	1.40	2 (14%)	17,19,21	1.30	1 (5%)
6	BMA	K	3	6	11,11,12	2.09	3 (27%)	15,15,17	1.66	3 (20%)
6	MAN	K	4	6	11,11,12	1.07	1 (9%)	15,15,17	1.17	2 (13%)
6	MAN	K	5	6	11,11,12	1.05	1 (9%)	15,15,17	1.15	1 (6%)
6	NAG	L	1	1,6	14,14,15	0.84	1 (7%)	17,19,21	1.12	1 (5%)
6	NAG	L	2	6	14,14,15	0.80	1 (7%)	17,19,21	1.33	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	BMA	L	3	6	11,11,12	0.66	0	15,15,17	0.95	1 (6%)
6	MAN	L	4	6	11,11,12	0.69	0	15,15,17	0.74	1 (6%)
6	MAN	L	5	6	11,11,12	0.70	0	15,15,17	0.73	0
3	NAG	M	1	3,1	14,14,15	1.59	5 (35%)	17,19,21	1.64	2 (11%)
3	NAG	M	2	3	14,14,15	1.23	1 (7%)	17,19,21	0.78	1 (5%)
7	GAL	N	1	7	12,12,12	0.82	0	17,17,17	1.89	4 (23%)
7	SIA	N	2	7	20,20,21	1.70	3 (15%)	21,28,31	1.26	3 (14%)
2	NAG	O	1	1,2	14,14,15	1.42	4 (28%)	17,19,21	1.87	6 (35%)
2	NAG	O	2	2	14,14,15	1.24	2 (14%)	17,19,21	1.64	3 (17%)
2	BMA	O	3	2	11,11,12	1.51	2 (18%)	15,15,17	1.64	1 (6%)
2	MAN	O	4	2	11,11,12	1.11	1 (9%)	15,15,17	1.13	3 (20%)
3	NAG	P	1	3,1	14,14,15	1.53	3 (21%)	17,19,21	1.80	5 (29%)
3	NAG	P	2	3	14,14,15	1.15	1 (7%)	17,19,21	0.86	1 (5%)
4	NAG	Q	1	1,4	14,14,15	1.34	1 (7%)	17,19,21	0.84	0
4	NAG	Q	2	4	14,14,15	1.41	1 (7%)	17,19,21	0.74	0
4	BMA	Q	3	4	11,11,12	1.02	0	15,15,17	0.61	0
4	MAN	Q	4	4	11,11,12	0.70	0	15,15,17	0.61	0
4	MAN	Q	5	4	11,11,12	1.41	2 (18%)	15,15,17	0.60	0
4	MAN	Q	6	4	11,11,12	0.64	0	15,15,17	0.59	0
4	MAN	Q	7	4	11,11,12	1.42	2 (18%)	15,15,17	0.57	0
5	NAG	R	1	1,5	14,14,15	1.56	4 (28%)	17,19,21	1.75	3 (17%)
5	NAG	R	2	5	14,14,15	1.56	3 (21%)	17,19,21	1.26	1 (5%)
5	BMA	R	3	5	11,11,12	0.72	1 (9%)	15,15,17	0.81	0
2	NAG	S	1	1,2	14,14,15	1.78	5 (35%)	17,19,21	2.16	4 (23%)
2	NAG	S	2	2	14,14,15	1.67	3 (21%)	17,19,21	1.92	3 (17%)
2	BMA	S	3	2	11,11,12	1.44	2 (18%)	15,15,17	1.84	1 (6%)
2	MAN	S	4	2	11,11,12	1.15	1 (9%)	15,15,17	1.15	2 (13%)
3	NAG	T	1	3,1	14,14,15	1.52	4 (28%)	17,19,21	1.83	3 (17%)
3	NAG	T	2	3	14,14,15	1.16	1 (7%)	17,19,21	0.67	0
3	NAG	U	1	3,1	14,14,15	1.78	5 (35%)	17,19,21	1.74	2 (11%)
3	NAG	U	2	3	14,14,15	1.27	1 (7%)	17,19,21	0.77	0
6	NAG	V	1	1,6	14,14,15	1.46	4 (28%)	17,19,21	1.84	2 (11%)
6	NAG	V	2	6	14,14,15	1.40	2 (14%)	17,19,21	1.31	1 (5%)
6	BMA	V	3	6	11,11,12	2.09	3 (27%)	15,15,17	1.65	3 (20%)
6	MAN	V	4	6	11,11,12	1.07	1 (9%)	15,15,17	1.17	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	MAN	V	5	6	11,11,12	1.04	1 (9%)	15,15,17	1.15	1 (6%)
6	NAG	W	1	1,6	14,14,15	0.84	1 (7%)	17,19,21	1.12	1 (5%)
6	NAG	W	2	6	14,14,15	0.80	1 (7%)	17,19,21	1.34	3 (17%)
6	BMA	W	3	6	11,11,12	0.67	0	15,15,17	0.95	1 (6%)
6	MAN	W	4	6	11,11,12	0.69	0	15,15,17	0.74	1 (6%)
6	MAN	W	5	6	11,11,12	0.70	0	15,15,17	0.73	0
3	NAG	X	1	3,1	14,14,15	1.59	5 (35%)	17,19,21	1.64	2 (11%)
3	NAG	X	2	3	14,14,15	1.23	1 (7%)	17,19,21	0.79	1 (5%)
7	GAL	Y	1	7	12,12,12	0.82	0	17,17,17	1.89	4 (23%)
7	SIA	Y	2	7	20,20,21	1.70	3 (15%)	21,28,31	1.25	3 (14%)
2	NAG	Z	1	1,2	14,14,15	1.43	4 (28%)	17,19,21	1.86	6 (35%)
2	NAG	Z	2	2	14,14,15	1.25	2 (14%)	17,19,21	1.64	3 (17%)
2	BMA	Z	3	2	11,11,12	1.49	2 (18%)	15,15,17	1.63	1 (6%)
2	MAN	Z	4	2	11,11,12	1.11	1 (9%)	15,15,17	1.13	3 (20%)
3	NAG	a	1	3,1	14,14,15	1.55	3 (21%)	17,19,21	1.80	5 (29%)
3	NAG	a	2	3	14,14,15	1.15	1 (7%)	17,19,21	0.87	1 (5%)
4	NAG	b	1	1,4	14,14,15	1.34	1 (7%)	17,19,21	0.83	0
4	NAG	b	2	4	14,14,15	1.41	1 (7%)	17,19,21	0.74	0
4	BMA	b	3	4	11,11,12	1.02	0	15,15,17	0.61	0
4	MAN	b	4	4	11,11,12	0.69	0	15,15,17	0.61	0
4	MAN	b	5	4	11,11,12	1.41	3 (27%)	15,15,17	0.60	0
4	MAN	b	6	4	11,11,12	0.63	0	15,15,17	0.60	0
4	MAN	b	7	4	11,11,12	1.41	2 (18%)	15,15,17	0.57	0
5	NAG	c	1	1,5	14,14,15	1.57	5 (35%)	17,19,21	1.75	3 (17%)
5	NAG	c	2	5	14,14,15	1.57	3 (21%)	17,19,21	1.26	1 (5%)
5	BMA	c	3	5	11,11,12	0.73	1 (9%)	15,15,17	0.81	0
2	NAG	d	1	1,2	14,14,15	1.76	4 (28%)	17,19,21	2.16	4 (23%)
2	NAG	d	2	2	14,14,15	1.68	3 (21%)	17,19,21	1.91	3 (17%)
2	BMA	d	3	2	11,11,12	1.44	2 (18%)	15,15,17	1.85	1 (6%)
2	MAN	d	4	2	11,11,12	1.15	2 (18%)	15,15,17	1.14	2 (13%)
3	NAG	e	1	3,1	14,14,15	1.52	4 (28%)	17,19,21	1.83	3 (17%)
3	NAG	e	2	3	14,14,15	1.16	1 (7%)	17,19,21	0.67	0
3	NAG	f	1	3,1	14,14,15	1.77	5 (35%)	17,19,21	1.73	2 (11%)
3	NAG	f	2	3	14,14,15	1.26	1 (7%)	17,19,21	0.77	0
6	NAG	g	1	1,6	14,14,15	1.47	4 (28%)	17,19,21	1.84	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	NAG	g	2	6	14,14,15	1.41	2 (14%)	17,19,21	1.30	1 (5%)
6	BMA	g	3	6	11,11,12	2.09	3 (27%)	15,15,17	1.66	3 (20%)
6	MAN	g	4	6	11,11,12	1.08	1 (9%)	15,15,17	1.17	2 (13%)
6	MAN	g	5	6	11,11,12	1.05	1 (9%)	15,15,17	1.15	1 (6%)
6	NAG	h	1	1,6	14,14,15	0.83	1 (7%)	17,19,21	1.12	1 (5%)
6	NAG	h	2	6	14,14,15	0.81	1 (7%)	17,19,21	1.33	3 (17%)
6	BMA	h	3	6	11,11,12	0.66	0	15,15,17	0.94	1 (6%)
6	MAN	h	4	6	11,11,12	0.69	0	15,15,17	0.74	1 (6%)
6	MAN	h	5	6	11,11,12	0.70	0	15,15,17	0.73	0
3	NAG	i	1	3,1	14,14,15	1.60	5 (35%)	17,19,21	1.64	2 (11%)
3	NAG	i	2	3	14,14,15	1.23	1 (7%)	17,19,21	0.78	1 (5%)
7	GAL	j	1	7	12,12,12	0.81	0	17,17,17	1.89	4 (23%)
7	SIA	j	2	7	20,20,21	1.70	3 (15%)	21,28,31	1.26	3 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	D	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	D	2	2	-	0/6/23/26	0/1/1/1
2	BMA	D	3	2	-	1/2/19/22	0/1/1/1
2	MAN	D	4	2	-	1/2/19/22	0/1/1/1
3	NAG	E	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	E	2	3	-	1/6/23/26	0/1/1/1
4	NAG	F	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	F	2	4	-	0/6/23/26	0/1/1/1
4	BMA	F	3	4	-	2/2/19/22	0/1/1/1
4	MAN	F	4	4	-	1/2/19/22	0/1/1/1
4	MAN	F	5	4	-	0/2/19/22	0/1/1/1
4	MAN	F	6	4	-	1/2/19/22	0/1/1/1
4	MAN	F	7	4	-	0/2/19/22	0/1/1/1
5	NAG	G	1	1,5	-	1/6/23/26	0/1/1/1
5	NAG	G	2	5	-	2/6/23/26	0/1/1/1
5	BMA	G	3	5	-	1/2/19/22	0/1/1/1
2	NAG	H	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	1/6/23/26	0/1/1/1
2	BMA	H	3	2	-	1/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MAN	H	4	2	-	2/2/19/22	0/1/1/1
3	NAG	I	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	I	2	3	-	1/6/23/26	0/1/1/1
3	NAG	J	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	J	2	3	-	1/6/23/26	0/1/1/1
6	NAG	K	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	K	2	6	-	1/6/23/26	0/1/1/1
6	BMA	K	3	6	-	2/2/19/22	0/1/1/1
6	MAN	K	4	6	-	0/2/19/22	0/1/1/1
6	MAN	K	5	6	-	0/2/19/22	0/1/1/1
6	NAG	L	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	L	2	6	-	2/6/23/26	0/1/1/1
6	BMA	L	3	6	-	1/2/19/22	0/1/1/1
6	MAN	L	4	6	-	1/2/19/22	0/1/1/1
6	MAN	L	5	6	-	1/2/19/22	0/1/1/1
3	NAG	M	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	M	2	3	-	1/6/23/26	0/1/1/1
7	GAL	N	1	7	-	0/2/22/22	0/1/1/1
7	SIA	N	2	7	-	2/18/34/38	0/1/1/1
2	NAG	O	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	O	2	2	-	0/6/23/26	0/1/1/1
2	BMA	O	3	2	-	1/2/19/22	0/1/1/1
2	MAN	O	4	2	-	1/2/19/22	0/1/1/1
3	NAG	P	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	P	2	3	-	1/6/23/26	0/1/1/1
4	NAG	Q	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	0/6/23/26	0/1/1/1
4	BMA	Q	3	4	-	2/2/19/22	0/1/1/1
4	MAN	Q	4	4	-	1/2/19/22	0/1/1/1
4	MAN	Q	5	4	-	0/2/19/22	0/1/1/1
4	MAN	Q	6	4	-	1/2/19/22	0/1/1/1
4	MAN	Q	7	4	-	0/2/19/22	0/1/1/1
5	NAG	R	1	1,5	-	1/6/23/26	0/1/1/1
5	NAG	R	2	5	-	2/6/23/26	0/1/1/1
5	BMA	R	3	5	-	1/2/19/22	0/1/1/1
2	NAG	S	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	S	2	2	-	1/6/23/26	0/1/1/1
2	BMA	S	3	2	-	1/2/19/22	0/1/1/1
2	MAN	S	4	2	-	2/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	T	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	T	2	3	-	1/6/23/26	0/1/1/1
3	NAG	U	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	U	2	3	-	1/6/23/26	0/1/1/1
6	NAG	V	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	V	2	6	-	1/6/23/26	0/1/1/1
6	BMA	V	3	6	-	2/2/19/22	0/1/1/1
6	MAN	V	4	6	-	0/2/19/22	0/1/1/1
6	MAN	V	5	6	-	0/2/19/22	0/1/1/1
6	NAG	W	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	W	2	6	-	2/6/23/26	0/1/1/1
6	BMA	W	3	6	-	1/2/19/22	0/1/1/1
6	MAN	W	4	6	-	1/2/19/22	0/1/1/1
6	MAN	W	5	6	-	1/2/19/22	0/1/1/1
3	NAG	X	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	X	2	3	-	1/6/23/26	0/1/1/1
7	GAL	Y	1	7	-	0/2/22/22	0/1/1/1
7	SIA	Y	2	7	-	2/18/34/38	0/1/1/1
2	NAG	Z	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	Z	2	2	-	0/6/23/26	0/1/1/1
2	BMA	Z	3	2	-	1/2/19/22	0/1/1/1
2	MAN	Z	4	2	-	1/2/19/22	0/1/1/1
3	NAG	a	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	a	2	3	-	1/6/23/26	0/1/1/1
4	NAG	b	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	b	2	4	-	0/6/23/26	0/1/1/1
4	BMA	b	3	4	-	2/2/19/22	0/1/1/1
4	MAN	b	4	4	-	1/2/19/22	0/1/1/1
4	MAN	b	5	4	-	0/2/19/22	0/1/1/1
4	MAN	b	6	4	-	1/2/19/22	0/1/1/1
4	MAN	b	7	4	-	0/2/19/22	0/1/1/1
5	NAG	c	1	1,5	-	1/6/23/26	0/1/1/1
5	NAG	c	2	5	-	2/6/23/26	0/1/1/1
5	BMA	c	3	5	-	1/2/19/22	0/1/1/1
2	NAG	d	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	d	2	2	-	1/6/23/26	0/1/1/1
2	BMA	d	3	2	-	1/2/19/22	0/1/1/1
2	MAN	d	4	2	-	2/2/19/22	0/1/1/1
3	NAG	e	1	3,1	-	2/6/23/26	0/1/1/1
3	NAG	e	2	3	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	f	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	f	2	3	-	1/6/23/26	0/1/1/1
6	NAG	g	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	g	2	6	-	1/6/23/26	0/1/1/1
6	BMA	g	3	6	-	2/2/19/22	0/1/1/1
6	MAN	g	4	6	-	0/2/19/22	0/1/1/1
6	MAN	g	5	6	-	0/2/19/22	0/1/1/1
6	NAG	h	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	h	2	6	-	2/6/23/26	0/1/1/1
6	BMA	h	3	6	-	1/2/19/22	0/1/1/1
6	MAN	h	4	6	-	1/2/19/22	0/1/1/1
6	MAN	h	5	6	-	1/2/19/22	0/1/1/1
3	NAG	i	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	i	2	3	-	1/6/23/26	0/1/1/1
7	GAL	j	1	7	-	0/2/22/22	0/1/1/1
7	SIA	j	2	7	-	2/18/34/38	0/1/1/1

All (215) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	Y	2	SIA	C6-C5	5.40	1.61	1.53
7	j	2	SIA	C6-C5	5.39	1.61	1.53
7	N	2	SIA	C6-C5	5.38	1.61	1.53
3	J	2	NAG	C1-C2	4.62	1.58	1.52
3	U	2	NAG	C1-C2	4.60	1.58	1.52
3	f	2	NAG	C1-C2	4.59	1.58	1.52
3	X	2	NAG	C1-C2	4.48	1.58	1.52
3	M	2	NAG	C1-C2	4.46	1.58	1.52
3	i	2	NAG	C1-C2	4.45	1.58	1.52
6	g	3	BMA	O3-C3	-4.36	1.32	1.43
6	K	3	BMA	O3-C3	-4.35	1.32	1.43
6	V	3	BMA	O3-C3	-4.34	1.32	1.43
2	S	2	NAG	C1-C2	4.24	1.58	1.52
2	d	2	NAG	C1-C2	4.23	1.58	1.52
2	H	2	NAG	C1-C2	4.21	1.58	1.52
3	a	2	NAG	C1-C2	4.09	1.57	1.52
3	E	2	NAG	C1-C2	4.09	1.57	1.52
3	e	2	NAG	C1-C2	4.09	1.57	1.52
3	P	2	NAG	C1-C2	4.08	1.57	1.52
3	I	2	NAG	C1-C2	4.07	1.57	1.52
3	T	2	NAG	C1-C2	4.07	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	c	2	NAG	C1-C2	4.07	1.57	1.52
5	R	2	NAG	C1-C2	4.04	1.57	1.52
5	G	2	NAG	C1-C2	4.04	1.57	1.52
4	F	1	NAG	C1-C2	3.88	1.57	1.52
4	b	1	NAG	C1-C2	3.88	1.57	1.52
4	Q	1	NAG	C1-C2	3.87	1.57	1.52
2	S	1	NAG	C1-C2	3.86	1.57	1.52
2	H	1	NAG	C1-C2	3.83	1.57	1.52
3	a	1	NAG	C1-C2	3.82	1.57	1.52
4	b	2	NAG	C1-C2	3.79	1.57	1.52
3	U	1	NAG	C1-C2	3.78	1.57	1.52
2	d	1	NAG	C1-C2	3.78	1.57	1.52
4	F	2	NAG	C1-C2	3.76	1.57	1.52
3	J	1	NAG	C1-C2	3.76	1.57	1.52
3	f	1	NAG	C1-C2	3.75	1.57	1.52
4	Q	2	NAG	C1-C2	3.75	1.57	1.52
3	P	1	NAG	C1-C2	3.74	1.57	1.52
3	E	1	NAG	C1-C2	3.74	1.57	1.52
6	g	2	NAG	C1-C2	3.56	1.57	1.52
6	V	2	NAG	C1-C2	3.55	1.57	1.52
6	K	2	NAG	C1-C2	3.53	1.57	1.52
7	Y	2	SIA	C3-C2	3.31	1.57	1.52
7	N	2	SIA	C3-C2	3.31	1.57	1.52
7	j	2	SIA	C3-C2	3.29	1.57	1.52
3	i	1	NAG	C1-C2	3.16	1.56	1.52
2	D	3	BMA	C1-C2	3.13	1.59	1.52
3	M	1	NAG	C1-C2	3.13	1.56	1.52
2	O	3	BMA	C1-C2	3.13	1.59	1.52
2	Z	3	BMA	C1-C2	3.13	1.59	1.52
3	X	1	NAG	C1-C2	3.11	1.56	1.52
5	c	1	NAG	C1-C2	2.94	1.56	1.52
3	U	1	NAG	C3-C2	2.90	1.58	1.52
3	J	1	NAG	C3-C2	2.90	1.58	1.52
3	f	1	NAG	C3-C2	2.89	1.58	1.52
2	H	1	NAG	O5-C5	2.88	1.49	1.43
6	g	3	BMA	O6-C6	-2.87	1.30	1.42
6	K	3	BMA	O6-C6	-2.87	1.30	1.42
2	S	1	NAG	O5-C5	2.87	1.49	1.43
6	V	3	BMA	O6-C6	-2.86	1.30	1.42
5	G	1	NAG	C1-C2	2.86	1.56	1.52
2	d	1	NAG	O5-C5	2.86	1.49	1.43
3	I	1	NAG	C1-C2	2.85	1.56	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	R	1	NAG	C1-C2	2.85	1.56	1.52
3	e	1	NAG	C1-C2	2.84	1.56	1.52
3	T	1	NAG	C1-C2	2.83	1.56	1.52
2	H	4	MAN	C1-C2	2.82	1.58	1.52
2	S	4	MAN	C1-C2	2.81	1.58	1.52
5	R	1	NAG	O4-C4	-2.80	1.36	1.43
5	c	1	NAG	O4-C4	-2.80	1.36	1.43
2	d	4	MAN	C1-C2	2.80	1.58	1.52
3	E	1	NAG	O5-C5	2.79	1.48	1.43
3	P	1	NAG	O5-C5	2.79	1.48	1.43
3	a	1	NAG	O5-C5	2.79	1.48	1.43
5	G	1	NAG	O4-C4	-2.78	1.36	1.43
6	g	4	MAN	C1-C2	2.78	1.58	1.52
3	U	1	NAG	O5-C5	2.78	1.48	1.43
6	V	4	MAN	C1-C2	2.77	1.58	1.52
3	J	1	NAG	O5-C5	2.77	1.48	1.43
3	f	1	NAG	O5-C5	2.76	1.48	1.43
6	K	4	MAN	C1-C2	2.76	1.58	1.52
2	d	3	BMA	C1-C2	2.75	1.58	1.52
2	H	3	BMA	C1-C2	2.73	1.58	1.52
2	D	1	NAG	C1-C2	2.73	1.56	1.52
2	O	1	NAG	C1-C2	2.73	1.56	1.52
2	Z	1	NAG	C1-C2	2.73	1.56	1.52
2	S	3	BMA	C1-C2	2.71	1.58	1.52
2	O	4	MAN	C1-C2	2.70	1.58	1.52
2	Z	4	MAN	C1-C2	2.69	1.58	1.52
2	D	4	MAN	C1-C2	2.69	1.58	1.52
2	O	2	NAG	O4-C4	-2.68	1.36	1.43
2	Z	2	NAG	O4-C4	-2.67	1.36	1.43
2	D	2	NAG	O4-C4	-2.67	1.36	1.43
4	b	5	MAN	O5-C5	2.64	1.48	1.43
6	K	5	MAN	C1-C2	2.64	1.58	1.52
4	F	5	MAN	O5-C5	2.64	1.48	1.43
6	g	5	MAN	C1-C2	2.61	1.58	1.52
6	V	5	MAN	C1-C2	2.60	1.58	1.52
4	Q	5	MAN	O5-C5	2.60	1.48	1.43
5	c	2	NAG	C4-C5	2.59	1.58	1.53
6	g	1	NAG	O4-C4	-2.59	1.36	1.43
5	G	2	NAG	C4-C5	2.59	1.58	1.53
5	R	2	NAG	C4-C5	2.59	1.58	1.53
2	Z	2	NAG	C1-C2	2.58	1.55	1.52
2	O	2	NAG	C1-C2	2.58	1.55	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	K	1	NAG	O4-C4	-2.58	1.36	1.43
2	D	2	NAG	C1-C2	2.57	1.55	1.52
6	V	1	NAG	O4-C4	-2.57	1.36	1.43
2	Z	1	NAG	O4-C4	-2.56	1.36	1.43
6	K	1	NAG	C1-C2	2.56	1.55	1.52
6	g	1	NAG	C1-C2	2.56	1.55	1.52
2	O	1	NAG	O4-C4	-2.55	1.36	1.43
2	D	1	NAG	O4-C4	-2.55	1.36	1.43
2	H	2	NAG	O4-C4	-2.54	1.36	1.43
6	K	1	NAG	O5-C5	2.54	1.48	1.43
6	V	1	NAG	O5-C5	2.53	1.48	1.43
6	g	1	NAG	O5-C5	2.53	1.48	1.43
3	M	1	NAG	O4-C4	-2.53	1.36	1.43
2	d	2	NAG	O4-C4	-2.53	1.36	1.43
6	V	1	NAG	C1-C2	2.52	1.55	1.52
3	i	1	NAG	O4-C4	-2.52	1.36	1.43
3	X	1	NAG	O4-C4	-2.52	1.36	1.43
2	H	1	NAG	C3-C2	2.52	1.57	1.52
2	S	2	NAG	O4-C4	-2.52	1.36	1.43
4	b	7	MAN	O5-C5	2.51	1.48	1.43
2	d	1	NAG	C3-C2	2.51	1.57	1.52
4	F	7	MAN	O5-C5	2.51	1.48	1.43
2	S	1	NAG	O4-C4	-2.51	1.36	1.43
4	Q	7	MAN	O5-C5	2.51	1.48	1.43
2	S	1	NAG	C3-C2	2.49	1.57	1.52
2	H	1	NAG	O4-C4	-2.49	1.36	1.43
3	X	1	NAG	C3-C2	2.48	1.57	1.52
3	i	1	NAG	C3-C2	2.48	1.57	1.52
3	M	1	NAG	C3-C2	2.47	1.57	1.52
2	d	1	NAG	O4-C4	-2.46	1.36	1.43
3	I	1	NAG	O5-C5	2.45	1.48	1.43
3	T	1	NAG	O5-C5	2.45	1.48	1.43
3	e	1	NAG	O5-C5	2.45	1.48	1.43
6	g	2	NAG	O4-C4	-2.44	1.36	1.43
6	V	2	NAG	O4-C4	-2.43	1.36	1.43
6	K	2	NAG	O4-C4	-2.43	1.36	1.43
6	h	2	NAG	C1-C2	2.42	1.55	1.52
6	W	2	NAG	C1-C2	2.41	1.55	1.52
6	L	2	NAG	C1-C2	2.40	1.55	1.52
6	K	3	BMA	C1-C2	2.40	1.57	1.52
6	V	3	BMA	C1-C2	2.39	1.57	1.52
6	g	3	BMA	C1-C2	2.39	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	I	1	NAG	O4-C4	-2.37	1.37	1.43
3	e	1	NAG	O4-C4	-2.37	1.37	1.43
4	Q	7	MAN	C1-C2	2.34	1.57	1.52
5	G	1	NAG	O5-C5	2.34	1.48	1.43
5	R	1	NAG	O5-C5	2.34	1.48	1.43
5	c	1	NAG	O5-C5	2.34	1.48	1.43
3	T	1	NAG	O4-C4	-2.34	1.37	1.43
4	F	7	MAN	C1-C2	2.32	1.57	1.52
5	c	2	NAG	O4-C4	-2.30	1.37	1.43
3	T	1	NAG	C3-C2	2.30	1.57	1.52
3	I	1	NAG	C3-C2	2.30	1.57	1.52
3	e	1	NAG	C3-C2	2.30	1.57	1.52
2	D	1	NAG	C4-C5	2.29	1.57	1.53
2	O	1	NAG	C4-C5	2.29	1.57	1.53
2	Z	1	NAG	C4-C5	2.29	1.57	1.53
4	b	7	MAN	C1-C2	2.29	1.57	1.52
6	V	1	NAG	C3-C2	2.29	1.57	1.52
5	G	2	NAG	O4-C4	-2.28	1.37	1.43
6	g	1	NAG	C3-C2	2.28	1.57	1.52
6	K	1	NAG	C3-C2	2.28	1.57	1.52
3	i	1	NAG	O5-C5	2.27	1.47	1.43
5	R	2	NAG	O4-C4	-2.27	1.37	1.43
3	X	1	NAG	O5-C5	2.27	1.47	1.43
3	M	1	NAG	O5-C5	2.26	1.47	1.43
2	d	2	NAG	C4-C5	2.24	1.57	1.53
2	S	2	NAG	C4-C5	2.23	1.57	1.53
2	H	2	NAG	C4-C5	2.23	1.57	1.53
2	H	3	BMA	O3-C3	-2.23	1.37	1.43
2	d	3	BMA	O3-C3	-2.22	1.37	1.43
5	R	1	NAG	C3-C2	2.22	1.57	1.52
5	G	1	NAG	C3-C2	2.22	1.57	1.52
7	N	2	SIA	O1A-C1	2.21	1.28	1.22
2	Z	1	NAG	O5-C5	2.20	1.47	1.43
7	j	2	SIA	O1A-C1	2.20	1.28	1.22
7	Y	2	SIA	O1A-C1	2.20	1.28	1.22
2	S	3	BMA	O3-C3	-2.20	1.37	1.43
2	O	3	BMA	O3-C3	-2.19	1.37	1.43
2	D	3	BMA	O3-C3	-2.19	1.37	1.43
5	c	1	NAG	C3-C2	2.18	1.57	1.52
3	P	1	NAG	O4-C4	-2.17	1.37	1.43
5	R	3	BMA	C1-C2	2.17	1.57	1.52
3	E	1	NAG	O4-C4	-2.17	1.37	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1	NAG	O5-C5	2.16	1.47	1.43
5	c	3	BMA	C1-C2	2.16	1.57	1.52
3	a	1	NAG	O4-C4	-2.16	1.37	1.43
5	G	3	BMA	C1-C2	2.16	1.57	1.52
3	f	1	NAG	O4-C4	-2.16	1.37	1.43
4	Q	5	MAN	C1-C2	2.15	1.57	1.52
3	J	1	NAG	O4-C4	-2.15	1.37	1.43
2	Z	3	BMA	O3-C3	-2.15	1.37	1.43
3	U	1	NAG	O4-C4	-2.15	1.37	1.43
2	O	1	NAG	O5-C5	2.15	1.47	1.43
4	b	5	MAN	C1-C2	2.13	1.57	1.52
4	F	5	MAN	C1-C2	2.13	1.57	1.52
3	U	1	NAG	C4-C5	2.07	1.57	1.53
3	J	1	NAG	C4-C5	2.07	1.57	1.53
3	X	1	NAG	C4-C3	2.06	1.57	1.52
3	f	1	NAG	C4-C5	2.06	1.57	1.53
3	M	1	NAG	C4-C3	2.05	1.57	1.52
6	L	1	NAG	C1-C2	2.05	1.55	1.52
6	W	1	NAG	C1-C2	2.04	1.55	1.52
4	b	5	MAN	C2-C3	2.04	1.55	1.52
4	F	5	MAN	C2-C3	2.03	1.55	1.52
6	h	1	NAG	C1-C2	2.03	1.55	1.52
2	d	4	MAN	O5-C5	2.02	1.47	1.43
3	i	1	NAG	C4-C3	2.02	1.57	1.52
5	c	1	NAG	C4-C3	2.01	1.57	1.52
2	S	1	NAG	C4-C5	2.00	1.57	1.53

All (189) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	S	1	NAG	C3-C4-C5	-6.42	98.59	110.23
2	H	1	NAG	C3-C4-C5	-6.42	98.59	110.23
2	d	1	NAG	C3-C4-C5	-6.40	98.63	110.23
2	d	3	BMA	C2-C3-C4	-6.39	99.63	110.86
2	S	3	BMA	C2-C3-C4	-6.39	99.63	110.86
2	H	3	BMA	C2-C3-C4	-6.38	99.65	110.86
3	U	1	NAG	C3-C4-C5	-6.11	99.15	110.23
3	J	1	NAG	C3-C4-C5	-6.11	99.16	110.23
3	f	1	NAG	C3-C4-C5	-6.09	99.20	110.23
2	O	3	BMA	C2-C3-C4	-5.84	100.59	110.86
2	D	3	BMA	C2-C3-C4	-5.82	100.62	110.86
2	Z	3	BMA	C2-C3-C4	-5.81	100.63	110.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	g	1	NAG	C3-C4-C5	-5.75	99.81	110.23
6	V	1	NAG	C3-C4-C5	-5.74	99.83	110.23
6	K	1	NAG	C3-C4-C5	-5.73	99.84	110.23
2	S	2	NAG	C3-C4-C5	-5.59	100.10	110.23
2	H	2	NAG	C3-C4-C5	-5.58	100.11	110.23
2	d	2	NAG	C3-C4-C5	-5.58	100.11	110.23
2	D	1	NAG	C3-C4-C5	-5.43	100.39	110.23
2	O	1	NAG	C3-C4-C5	-5.42	100.40	110.23
2	Z	1	NAG	C3-C4-C5	-5.41	100.42	110.23
3	X	1	NAG	C3-C4-C5	-5.28	100.66	110.23
3	M	1	NAG	C3-C4-C5	-5.26	100.69	110.23
3	i	1	NAG	C3-C4-C5	-5.25	100.72	110.23
5	R	1	NAG	C3-C4-C5	-5.22	100.77	110.23
5	c	1	NAG	C3-C4-C5	-5.21	100.78	110.23
5	G	1	NAG	C3-C4-C5	-5.20	100.80	110.23
2	D	2	NAG	C3-C4-C5	-5.17	100.86	110.23
2	Z	2	NAG	C3-C4-C5	-5.16	100.87	110.23
2	O	2	NAG	C3-C4-C5	-5.15	100.89	110.23
3	I	1	NAG	C3-C4-C5	-4.84	101.45	110.23
3	T	1	NAG	C3-C4-C5	-4.84	101.45	110.23
3	e	1	NAG	C3-C4-C5	-4.84	101.46	110.23
7	N	1	GAL	C4-C3-C2	-4.25	103.38	110.83
7	j	1	GAL	C4-C3-C2	-4.23	103.40	110.83
7	Y	1	GAL	C4-C3-C2	-4.23	103.40	110.83
5	G	2	NAG	C3-C4-C5	-4.17	102.67	110.23
5	R	2	NAG	C3-C4-C5	-4.16	102.69	110.23
5	c	2	NAG	C3-C4-C5	-4.16	102.70	110.23
6	W	2	NAG	C3-C4-C5	-3.88	103.19	110.23
6	L	2	NAG	C3-C4-C5	-3.87	103.21	110.23
6	h	2	NAG	C3-C4-C5	-3.87	103.22	110.23
6	V	2	NAG	C3-C4-C5	-3.86	103.24	110.23
6	g	2	NAG	C3-C4-C5	-3.85	103.26	110.23
6	K	2	NAG	C3-C4-C5	-3.84	103.27	110.23
7	Y	1	GAL	C3-C4-C5	-3.82	103.31	110.23
7	j	1	GAL	C3-C4-C5	-3.82	103.31	110.23
7	N	1	GAL	C3-C4-C5	-3.81	103.32	110.23
6	K	3	BMA	O6-C6-C5	-3.81	98.35	111.33
6	g	3	BMA	O6-C6-C5	-3.81	98.36	111.33
6	V	3	BMA	O6-C6-C5	-3.81	98.37	111.33
3	a	1	NAG	O4-C4-C5	3.75	118.56	109.32
3	E	1	NAG	O4-C4-C5	3.74	118.54	109.32
3	P	1	NAG	O4-C4-C5	3.73	118.50	109.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	P	1	NAG	O4-C4-C3	3.64	118.95	110.38
3	E	1	NAG	O4-C4-C3	3.62	118.92	110.38
3	a	1	NAG	O4-C4-C3	3.62	118.90	110.38
3	I	1	NAG	C1-O5-C5	3.60	117.01	112.19
3	e	1	NAG	C1-O5-C5	3.60	117.00	112.19
3	T	1	NAG	C1-O5-C5	3.59	116.99	112.19
3	I	1	NAG	O5-C1-C2	-3.56	105.78	111.29
3	e	1	NAG	O5-C1-C2	-3.55	105.80	111.29
3	T	1	NAG	O5-C1-C2	-3.53	105.82	111.29
2	H	1	NAG	C4-C3-C2	3.52	116.17	111.02
2	S	1	NAG	C4-C3-C2	3.51	116.17	111.02
2	d	1	NAG	C4-C3-C2	3.51	116.17	111.02
6	W	1	NAG	C3-C4-C5	-3.48	103.92	110.23
6	L	1	NAG	C3-C4-C5	-3.48	103.92	110.23
6	h	1	NAG	C3-C4-C5	-3.47	103.94	110.23
6	K	3	BMA	C2-C3-C4	-3.42	104.84	110.86
6	g	3	BMA	C2-C3-C4	-3.42	104.85	110.86
6	V	3	BMA	C2-C3-C4	-3.41	104.86	110.86
2	S	2	NAG	O5-C5-C4	3.15	118.50	110.83
2	H	2	NAG	O5-C5-C4	3.14	118.47	110.83
2	d	2	NAG	O5-C5-C4	3.13	118.45	110.83
3	P	1	NAG	C1-O5-C5	3.07	116.30	112.19
3	E	1	NAG	C1-O5-C5	3.06	116.29	112.19
3	a	1	NAG	C1-O5-C5	3.06	116.29	112.19
3	P	1	NAG	O5-C1-C2	-3.05	106.56	111.29
3	a	1	NAG	O5-C1-C2	-3.05	106.57	111.29
3	E	1	NAG	O5-C1-C2	-3.05	106.58	111.29
2	d	1	NAG	O4-C4-C3	-2.98	103.36	110.38
2	S	1	NAG	O4-C4-C3	-2.97	103.38	110.38
2	H	1	NAG	O4-C4-C3	-2.97	103.38	110.38
7	j	1	GAL	O1-C1-C2	-2.73	101.07	108.98
6	g	5	MAN	C1-O5-C5	2.72	115.84	112.19
7	N	1	GAL	O1-C1-C2	-2.72	101.08	108.98
6	V	5	MAN	C1-O5-C5	2.72	115.83	112.19
6	K	5	MAN	C1-O5-C5	2.72	115.83	112.19
7	Y	1	GAL	O1-C1-C2	-2.71	101.11	108.98
3	E	2	NAG	C4-C3-C2	-2.69	107.08	111.02
6	g	4	MAN	C1-O5-C5	2.69	115.79	112.19
6	V	4	MAN	C1-O5-C5	2.68	115.78	112.19
3	a	2	NAG	C4-C3-C2	-2.68	107.09	111.02
6	K	4	MAN	C1-O5-C5	2.68	115.78	112.19
7	Y	2	SIA	O1B-C1-C2	2.68	119.67	112.71

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	N	2	SIA	O1B-C1-C2	2.67	119.67	112.71
7	j	2	SIA	O1B-C1-C2	2.66	119.62	112.71
3	P	2	NAG	C4-C3-C2	-2.65	107.13	111.02
2	O	1	NAG	O5-C1-C2	-2.60	107.27	111.29
2	D	1	NAG	O5-C1-C2	-2.57	107.31	111.29
2	Z	1	NAG	O5-C1-C2	-2.57	107.32	111.29
5	c	1	NAG	O5-C1-C2	-2.52	107.39	111.29
2	d	4	MAN	C2-C3-C4	-2.52	106.44	110.86
2	S	4	MAN	C2-C3-C4	-2.51	106.45	110.86
5	R	1	NAG	O5-C1-C2	-2.51	107.42	111.29
2	H	4	MAN	C2-C3-C4	-2.50	106.46	110.86
5	G	1	NAG	O5-C1-C2	-2.49	107.44	111.29
2	D	1	NAG	O4-C4-C5	-2.39	103.44	109.32
2	O	1	NAG	O4-C4-C5	-2.39	103.44	109.32
2	Z	1	NAG	O4-C4-C5	-2.39	103.44	109.32
2	O	2	NAG	C4-C3-C2	2.38	114.51	111.02
2	D	2	NAG	C4-C3-C2	2.38	114.51	111.02
6	K	1	NAG	O5-C1-C2	-2.37	107.63	111.29
2	Z	2	NAG	C4-C3-C2	2.37	114.49	111.02
3	i	1	NAG	O5-C1-C2	-2.37	107.63	111.29
6	V	1	NAG	O5-C1-C2	-2.36	107.65	111.29
6	g	1	NAG	O5-C1-C2	-2.35	107.65	111.29
3	M	1	NAG	O5-C1-C2	-2.34	107.67	111.29
3	X	1	NAG	O5-C1-C2	-2.33	107.69	111.29
6	L	3	BMA	C2-C3-C4	-2.32	106.78	110.86
6	W	3	BMA	C2-C3-C4	-2.31	106.80	110.86
5	c	1	NAG	O4-C4-C3	-2.31	104.94	110.38
5	R	1	NAG	O4-C4-C3	-2.31	104.94	110.38
6	h	3	BMA	C2-C3-C4	-2.30	106.81	110.86
7	j	2	SIA	C11-C10-N5	2.30	119.93	116.12
5	G	1	NAG	O4-C4-C3	-2.30	104.97	110.38
7	N	2	SIA	C11-C10-N5	2.28	119.91	116.12
2	D	4	MAN	C2-C3-C4	-2.27	106.86	110.86
2	O	4	MAN	C2-C3-C4	-2.27	106.86	110.86
7	Y	2	SIA	C11-C10-N5	2.27	119.89	116.12
2	Z	4	MAN	C2-C3-C4	-2.26	106.89	110.86
2	d	1	NAG	O5-C5-C4	2.25	116.31	110.83
2	H	1	NAG	O5-C5-C4	2.25	116.30	110.83
2	S	1	NAG	O5-C5-C4	2.25	116.30	110.83
7	N	2	SIA	C4-C5-N5	-2.25	106.01	110.44
7	j	2	SIA	C4-C5-N5	-2.25	106.01	110.44
7	Y	2	SIA	C4-C5-N5	-2.24	106.03	110.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	O	1	NAG	O5-C5-C6	-2.23	103.32	107.66
3	U	1	NAG	O5-C1-C2	-2.23	107.84	111.29
3	J	1	NAG	O5-C1-C2	-2.23	107.84	111.29
2	D	1	NAG	O5-C5-C6	-2.23	103.33	107.66
2	Z	1	NAG	O5-C5-C6	-2.21	103.37	107.66
3	f	1	NAG	O5-C1-C2	-2.20	107.89	111.29
2	Z	2	NAG	C1-C2-N2	-2.18	106.99	110.43
2	O	2	NAG	C1-C2-N2	-2.16	107.02	110.43
3	a	1	NAG	C3-C4-C5	-2.16	106.31	110.23
2	D	2	NAG	C1-C2-N2	-2.16	107.03	110.43
3	E	1	NAG	C3-C4-C5	-2.16	106.32	110.23
6	W	2	NAG	O4-C4-C3	-2.16	105.29	110.38
6	L	2	NAG	O4-C4-C3	-2.15	105.30	110.38
3	P	1	NAG	C3-C4-C5	-2.15	106.33	110.23
6	h	2	NAG	O4-C4-C3	-2.15	105.31	110.38
2	O	1	NAG	O5-C5-C4	2.14	116.04	110.83
2	D	1	NAG	O5-C5-C4	2.14	116.04	110.83
2	Z	1	NAG	O5-C5-C4	2.14	116.03	110.83
7	N	1	GAL	O3-C3-C4	2.13	115.40	110.38
6	W	4	MAN	C2-C3-C4	-2.13	107.12	110.86
2	D	1	NAG	C4-C3-C2	2.13	114.14	111.02
3	X	2	NAG	C4-C3-C2	-2.12	107.91	111.02
7	Y	1	GAL	O3-C3-C4	2.12	115.38	110.38
7	j	1	GAL	O3-C3-C4	2.12	115.38	110.38
2	O	1	NAG	C4-C3-C2	2.12	114.12	111.02
2	S	4	MAN	C1-O5-C5	2.12	115.02	112.19
2	D	4	MAN	C1-O5-C5	2.12	115.02	112.19
2	O	4	MAN	C1-O5-C5	2.11	115.02	112.19
6	L	4	MAN	C2-C3-C4	-2.11	107.15	110.86
6	h	4	MAN	C2-C3-C4	-2.11	107.15	110.86
2	H	4	MAN	C1-O5-C5	2.11	115.01	112.19
2	Z	1	NAG	C4-C3-C2	2.11	114.10	111.02
3	M	2	NAG	C4-C3-C2	-2.10	107.95	111.02
2	Z	4	MAN	C1-O5-C5	2.10	114.99	112.19
2	d	4	MAN	C1-O5-C5	2.09	114.99	112.19
3	i	2	NAG	C4-C3-C2	-2.08	107.97	111.02
2	S	2	NAG	C6-C5-C4	-2.07	107.94	113.02
2	H	2	NAG	C6-C5-C4	-2.07	107.94	113.02
2	d	2	NAG	C6-C5-C4	-2.06	107.95	113.02
6	K	4	MAN	C1-C2-C3	2.06	112.65	109.64
6	W	2	NAG	C4-C3-C2	2.06	114.04	111.02
6	g	3	BMA	O3-C3-C2	-2.06	105.86	110.05

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	V	4	MAN	C1-C2-C3	2.05	112.63	109.64
6	L	2	NAG	C4-C3-C2	2.05	114.02	111.02
2	Z	4	MAN	O5-C1-C2	-2.05	105.90	110.79
6	K	3	BMA	O3-C3-C2	-2.05	105.88	110.05
6	h	2	NAG	C4-C3-C2	2.05	114.02	111.02
6	g	4	MAN	C1-C2-C3	2.04	112.62	109.64
6	V	3	BMA	O3-C3-C2	-2.04	105.89	110.05
2	D	4	MAN	O5-C1-C2	-2.04	105.92	110.79
2	O	4	MAN	O5-C1-C2	-2.03	105.94	110.79

There are no chirality outliers.

All (108) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	F	3	BMA	C4-C5-C6-O6
4	Q	3	BMA	C4-C5-C6-O6
4	b	3	BMA	C4-C5-C6-O6
6	K	3	BMA	O5-C5-C6-O6
6	V	3	BMA	O5-C5-C6-O6
6	g	3	BMA	O5-C5-C6-O6
5	G	2	NAG	O5-C5-C6-O6
5	R	2	NAG	O5-C5-C6-O6
5	c	2	NAG	O5-C5-C6-O6
6	L	2	NAG	O5-C5-C6-O6
6	W	2	NAG	O5-C5-C6-O6
6	h	2	NAG	O5-C5-C6-O6
2	D	1	NAG	C4-C5-C6-O6
2	O	1	NAG	C4-C5-C6-O6
2	Z	1	NAG	C4-C5-C6-O6
4	F	3	BMA	O5-C5-C6-O6
4	Q	3	BMA	O5-C5-C6-O6
4	b	3	BMA	O5-C5-C6-O6
6	K	3	BMA	C4-C5-C6-O6
6	V	3	BMA	C4-C5-C6-O6
6	g	3	BMA	C4-C5-C6-O6
5	G	2	NAG	C4-C5-C6-O6
5	R	2	NAG	C4-C5-C6-O6
5	c	2	NAG	C4-C5-C6-O6
2	H	4	MAN	O5-C5-C6-O6
2	S	4	MAN	O5-C5-C6-O6
2	d	4	MAN	O5-C5-C6-O6
6	K	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
6	V	1	NAG	O5-C5-C6-O6
6	g	1	NAG	O5-C5-C6-O6
2	D	1	NAG	O5-C5-C6-O6
2	O	1	NAG	O5-C5-C6-O6
2	Z	1	NAG	O5-C5-C6-O6
6	L	2	NAG	C4-C5-C6-O6
6	W	2	NAG	C4-C5-C6-O6
6	h	2	NAG	C4-C5-C6-O6
3	E	1	NAG	O5-C5-C6-O6
3	P	1	NAG	O5-C5-C6-O6
3	a	1	NAG	O5-C5-C6-O6
3	E	1	NAG	C4-C5-C6-O6
3	P	1	NAG	C4-C5-C6-O6
3	a	1	NAG	C4-C5-C6-O6
7	N	2	SIA	O8-C8-C9-O9
7	Y	2	SIA	O8-C8-C9-O9
7	j	2	SIA	O8-C8-C9-O9
4	F	4	MAN	O5-C5-C6-O6
4	Q	4	MAN	O5-C5-C6-O6
4	b	4	MAN	O5-C5-C6-O6
3	E	2	NAG	O5-C5-C6-O6
3	P	2	NAG	O5-C5-C6-O6
3	a	2	NAG	O5-C5-C6-O6
3	J	2	NAG	O5-C5-C6-O6
3	U	2	NAG	O5-C5-C6-O6
3	f	2	NAG	O5-C5-C6-O6
2	Z	4	MAN	O5-C5-C6-O6
2	D	4	MAN	O5-C5-C6-O6
2	O	4	MAN	O5-C5-C6-O6
4	F	6	MAN	O5-C5-C6-O6
4	Q	6	MAN	O5-C5-C6-O6
4	b	6	MAN	O5-C5-C6-O6
5	R	3	BMA	O5-C5-C6-O6
5	G	3	BMA	O5-C5-C6-O6
5	c	3	BMA	O5-C5-C6-O6
6	L	4	MAN	O5-C5-C6-O6
6	W	4	MAN	O5-C5-C6-O6
6	h	4	MAN	O5-C5-C6-O6
2	D	3	BMA	O5-C5-C6-O6
2	O	3	BMA	O5-C5-C6-O6
2	Z	3	BMA	O5-C5-C6-O6
3	I	2	NAG	O5-C5-C6-O6

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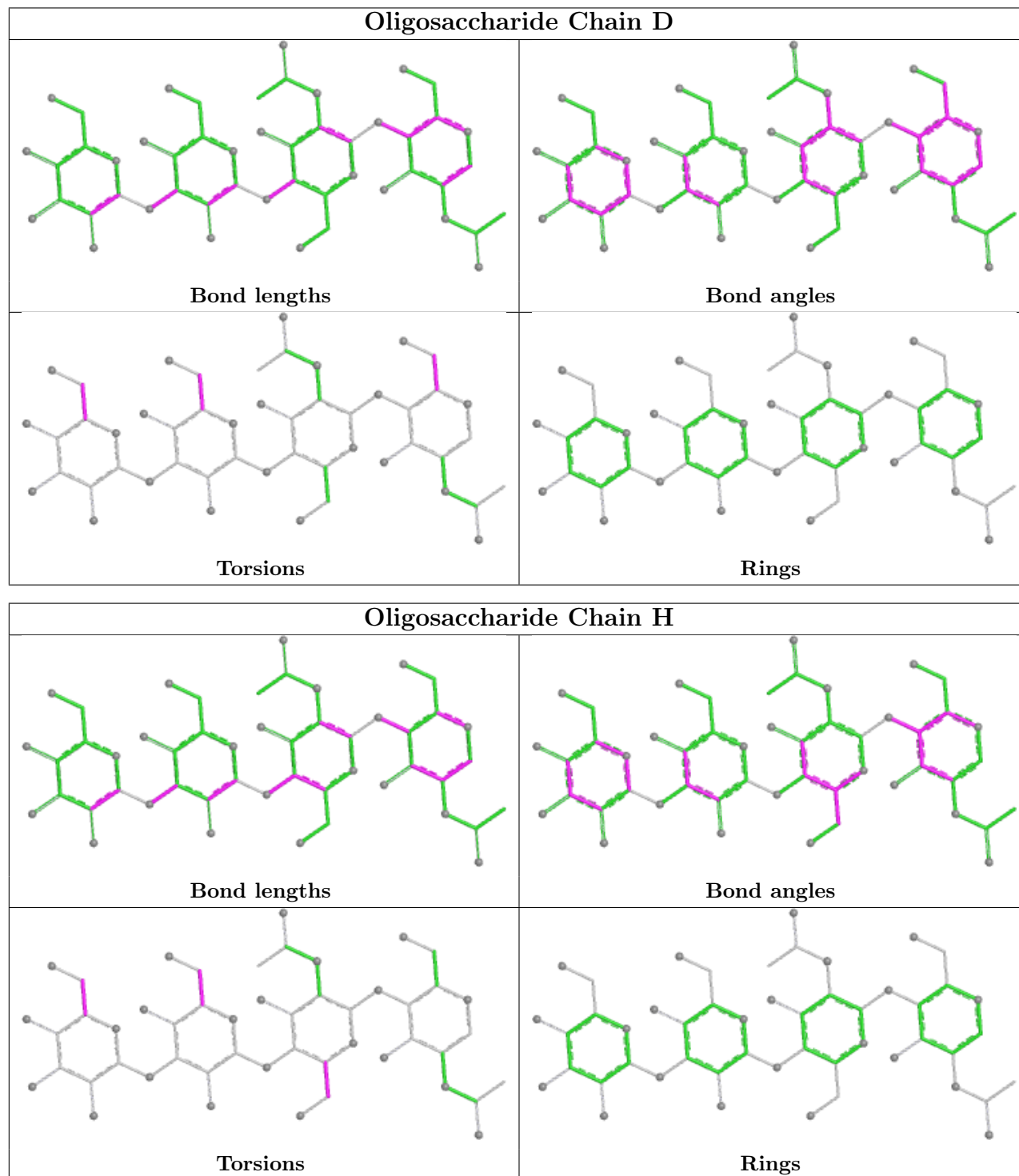
Mol	Chain	Res	Type	Atoms
3	M	2	NAG	O5-C5-C6-O6
3	T	2	NAG	O5-C5-C6-O6
3	X	2	NAG	O5-C5-C6-O6
3	e	2	NAG	O5-C5-C6-O6
3	i	2	NAG	O5-C5-C6-O6
6	L	5	MAN	O5-C5-C6-O6
6	W	5	MAN	O5-C5-C6-O6
6	h	5	MAN	O5-C5-C6-O6
2	H	3	BMA	O5-C5-C6-O6
2	S	3	BMA	O5-C5-C6-O6
2	d	3	BMA	O5-C5-C6-O6
6	L	3	BMA	O5-C5-C6-O6
6	W	3	BMA	O5-C5-C6-O6
6	h	3	BMA	O5-C5-C6-O6
3	e	1	NAG	C4-C5-C6-O6
3	I	1	NAG	C4-C5-C6-O6
3	T	1	NAG	C4-C5-C6-O6
5	R	1	NAG	O5-C5-C6-O6
5	c	1	NAG	O5-C5-C6-O6
5	G	1	NAG	O5-C5-C6-O6
6	V	1	NAG	C4-C5-C6-O6
6	K	1	NAG	C4-C5-C6-O6
6	g	1	NAG	C4-C5-C6-O6
7	N	2	SIA	C7-C8-C9-O9
7	Y	2	SIA	C7-C8-C9-O9
7	j	2	SIA	C7-C8-C9-O9
2	H	2	NAG	O5-C5-C6-O6
2	S	2	NAG	O5-C5-C6-O6
2	d	2	NAG	O5-C5-C6-O6
3	e	1	NAG	O5-C5-C6-O6
3	I	1	NAG	O5-C5-C6-O6
3	T	1	NAG	O5-C5-C6-O6
2	H	4	MAN	C4-C5-C6-O6
2	S	4	MAN	C4-C5-C6-O6
2	d	4	MAN	C4-C5-C6-O6
6	g	2	NAG	C4-C5-C6-O6
6	K	2	NAG	C4-C5-C6-O6
6	V	2	NAG	C4-C5-C6-O6

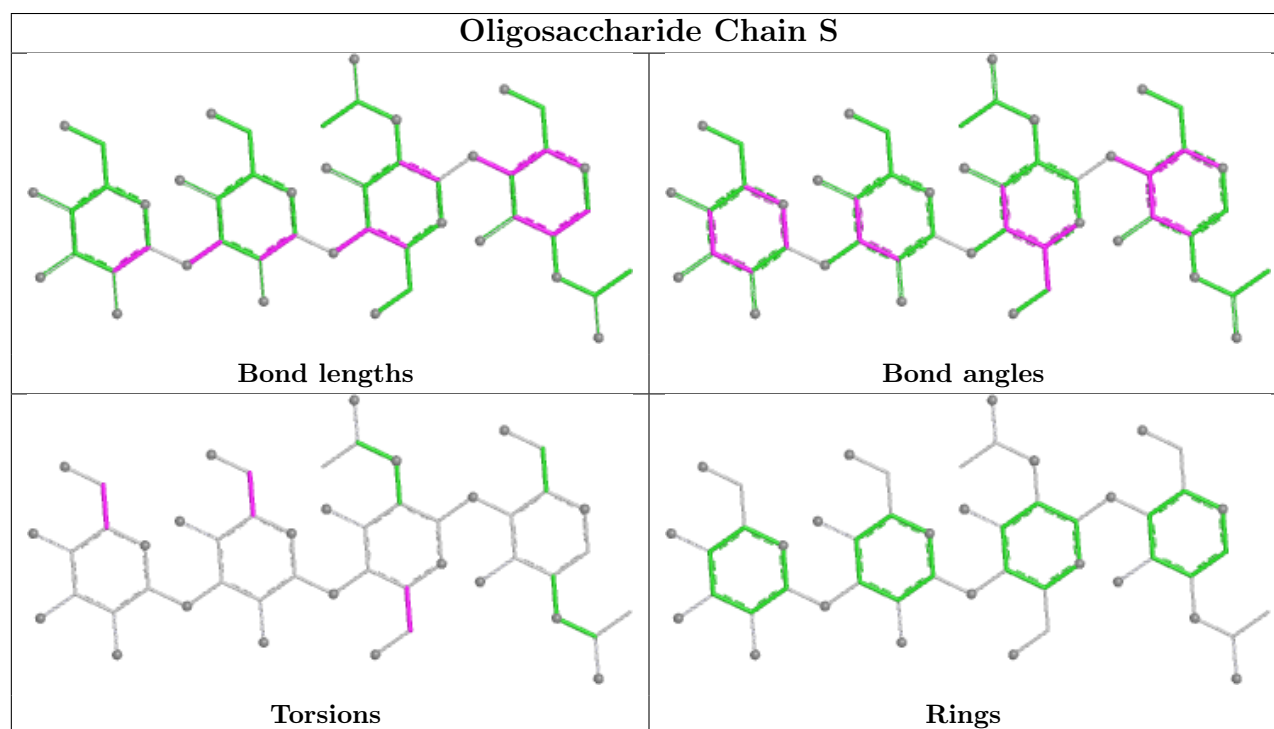
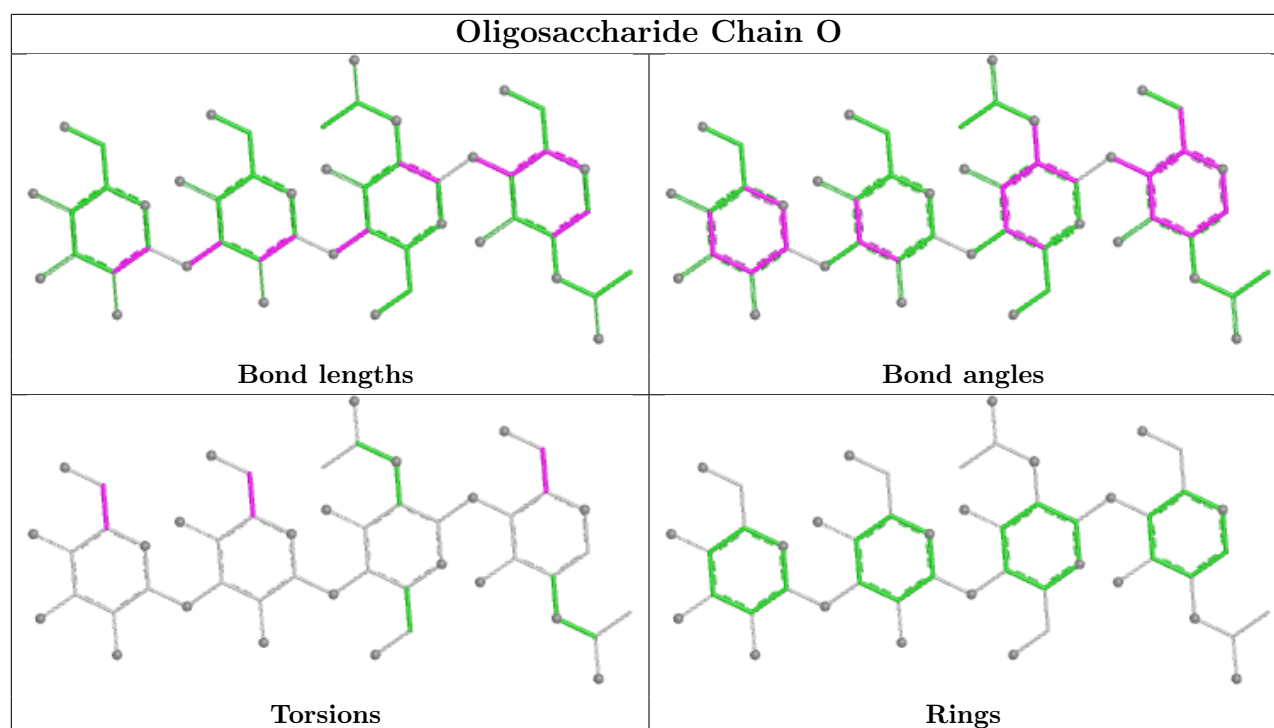
There are no ring outliers.

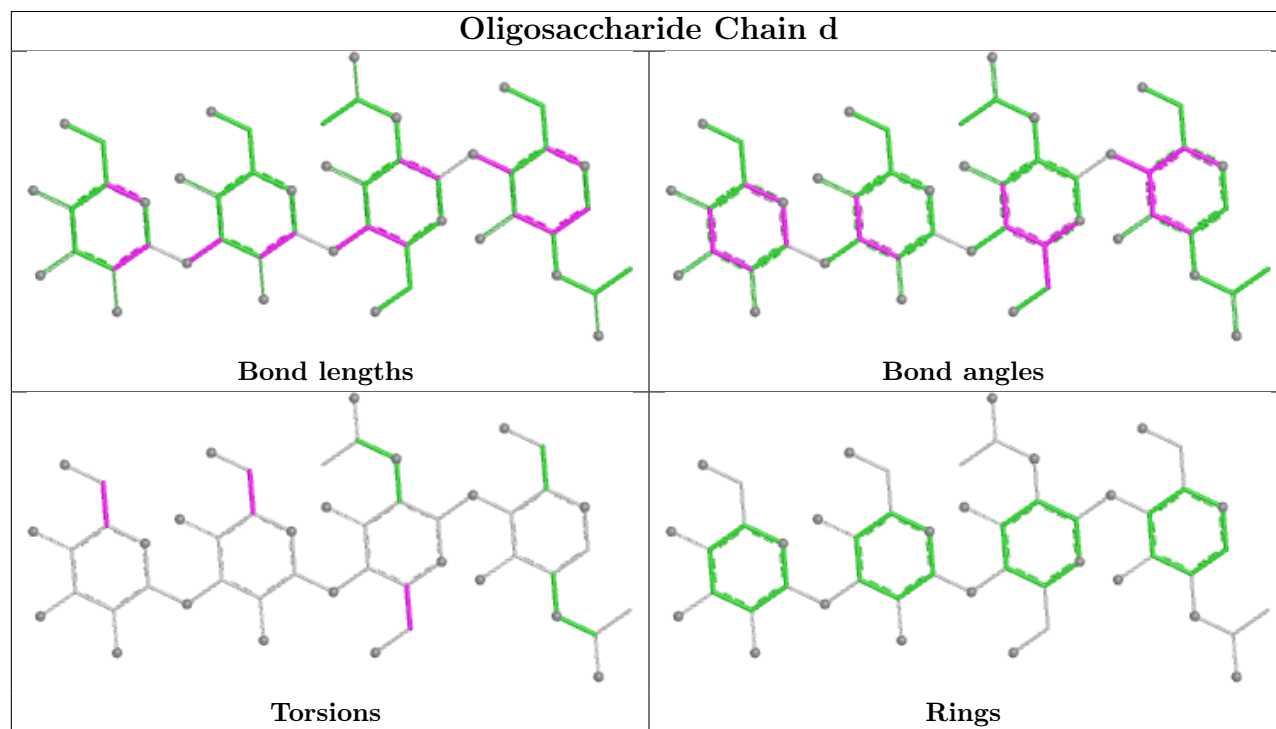
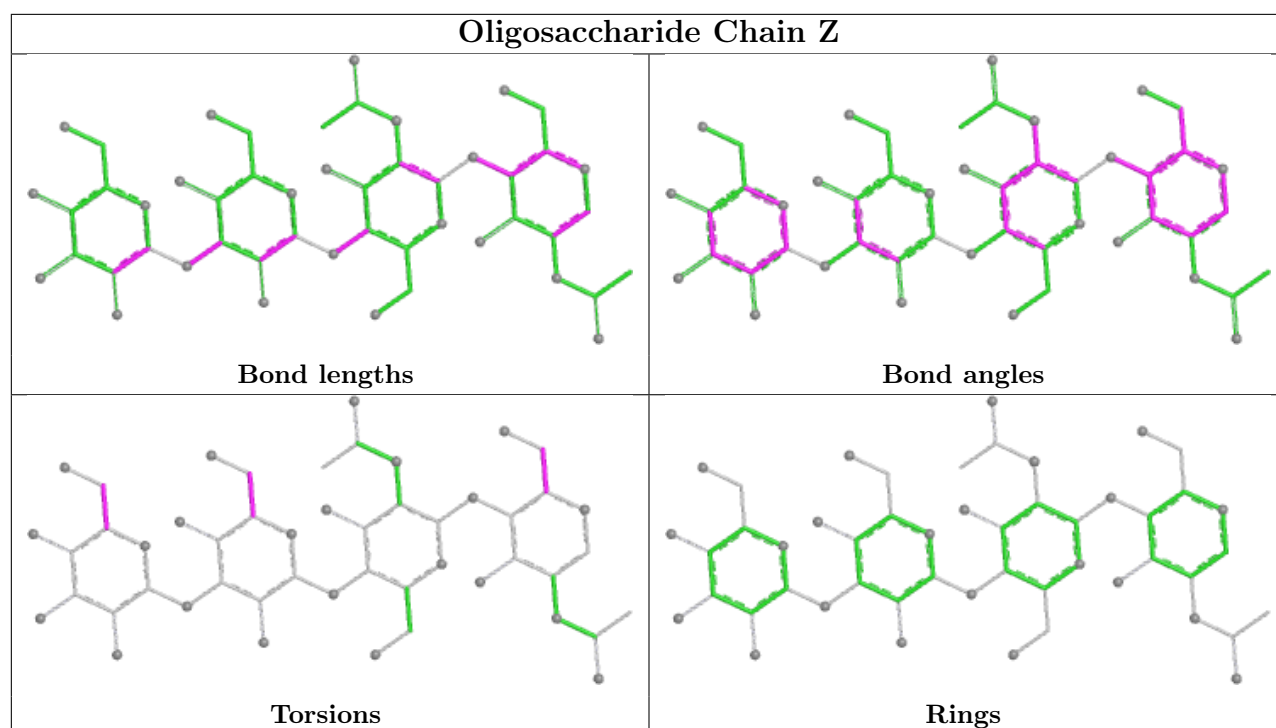
1 monomer is involved in 1 short contact:

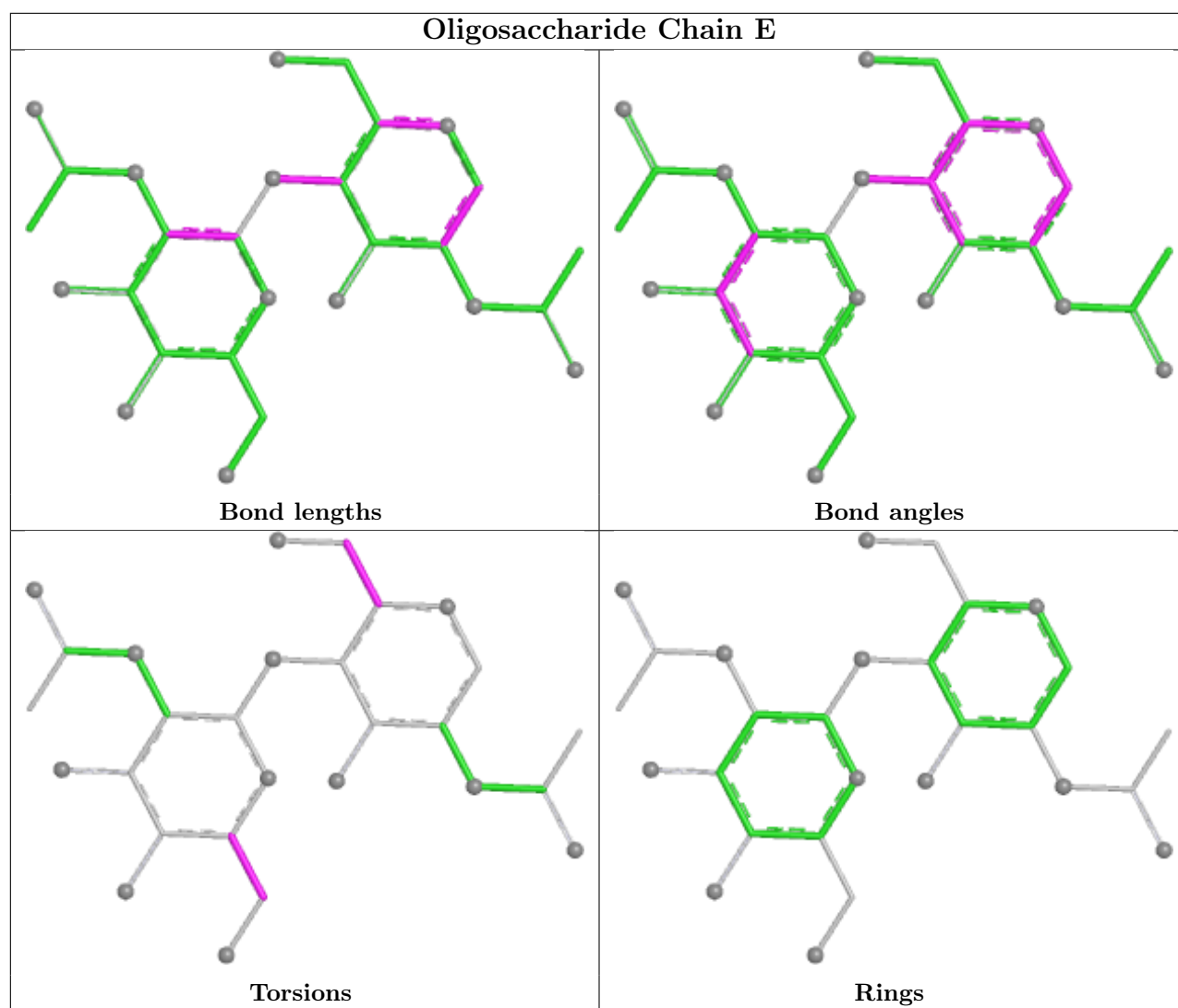
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	F	1	NAG	1	0

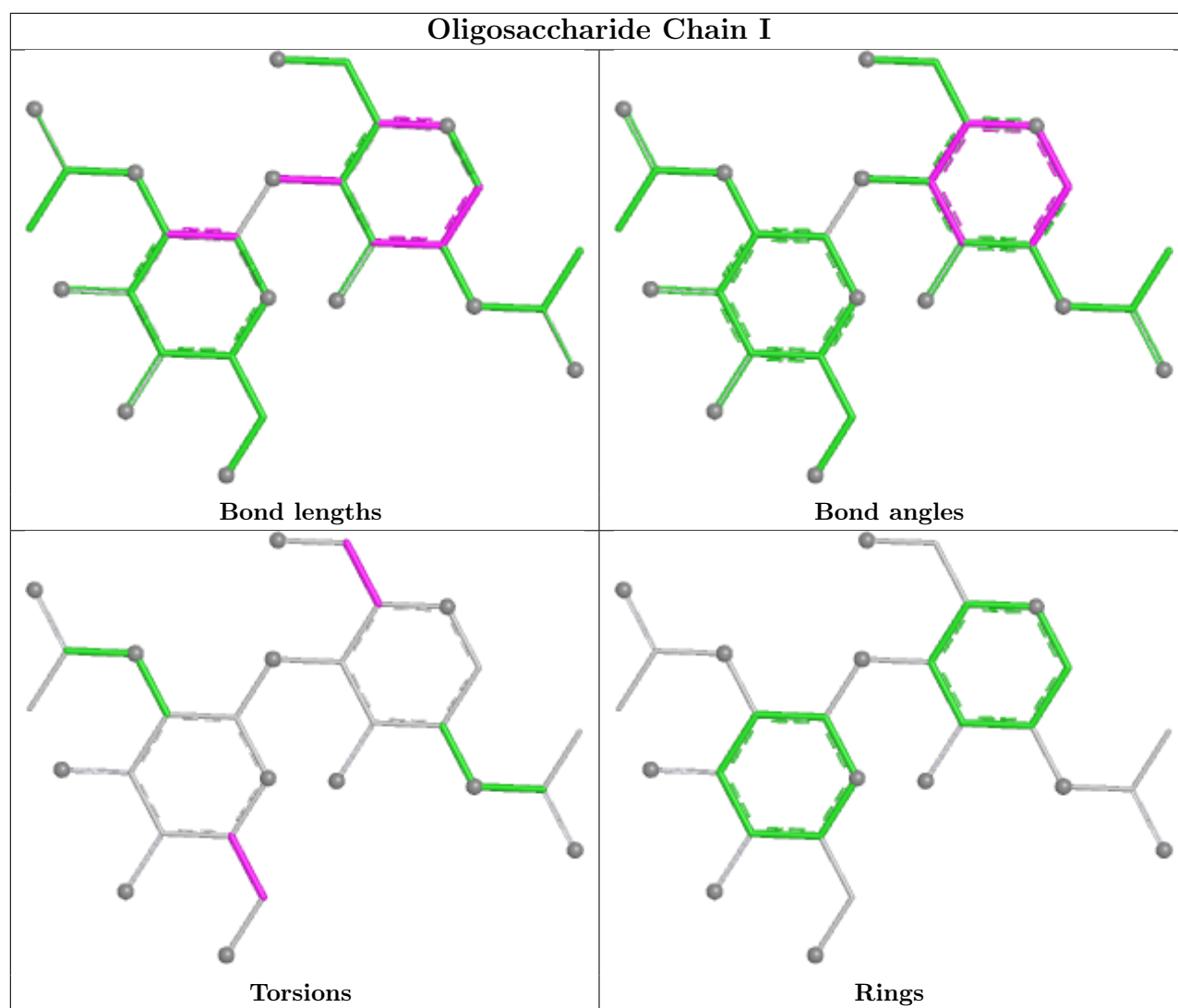
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

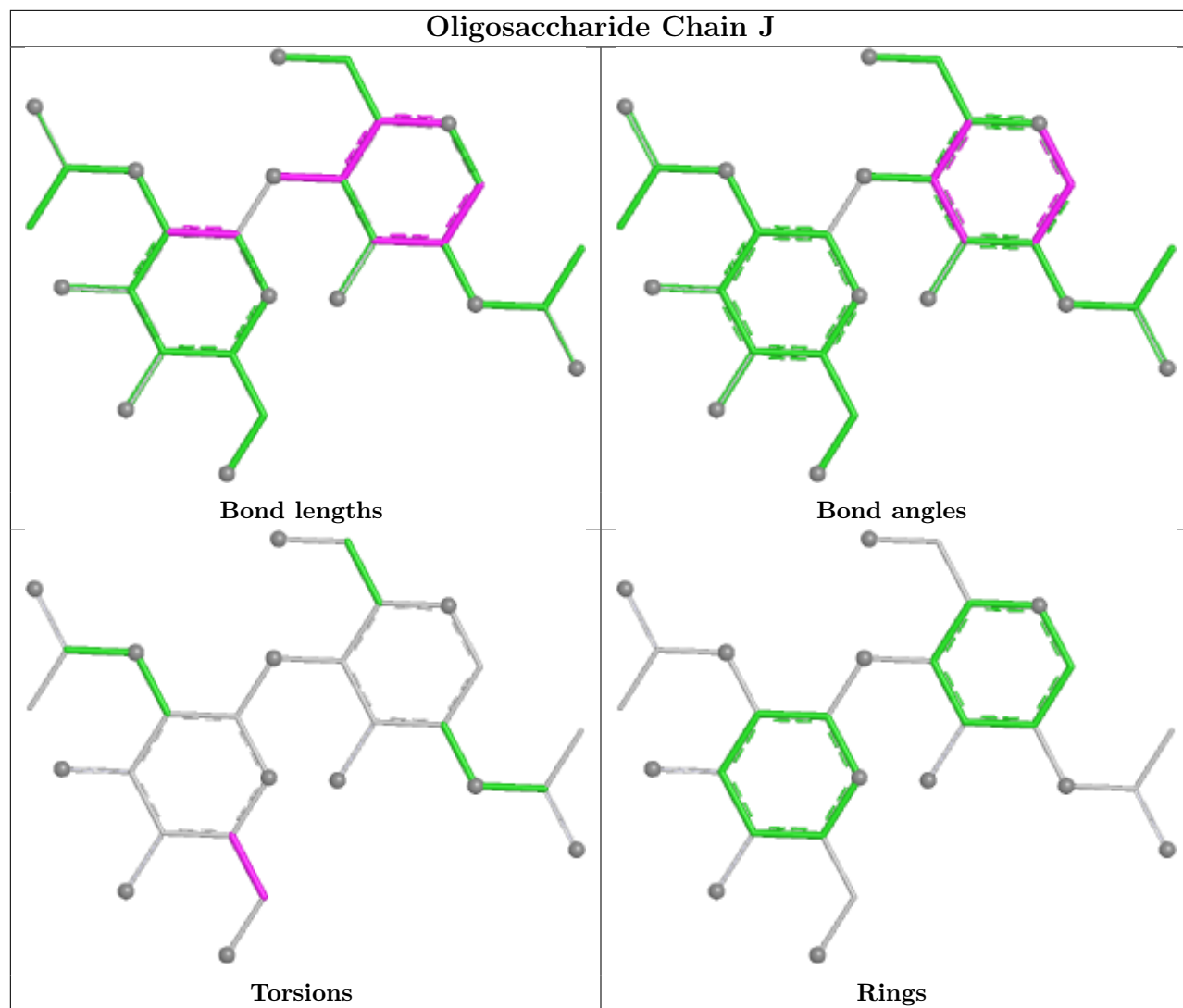


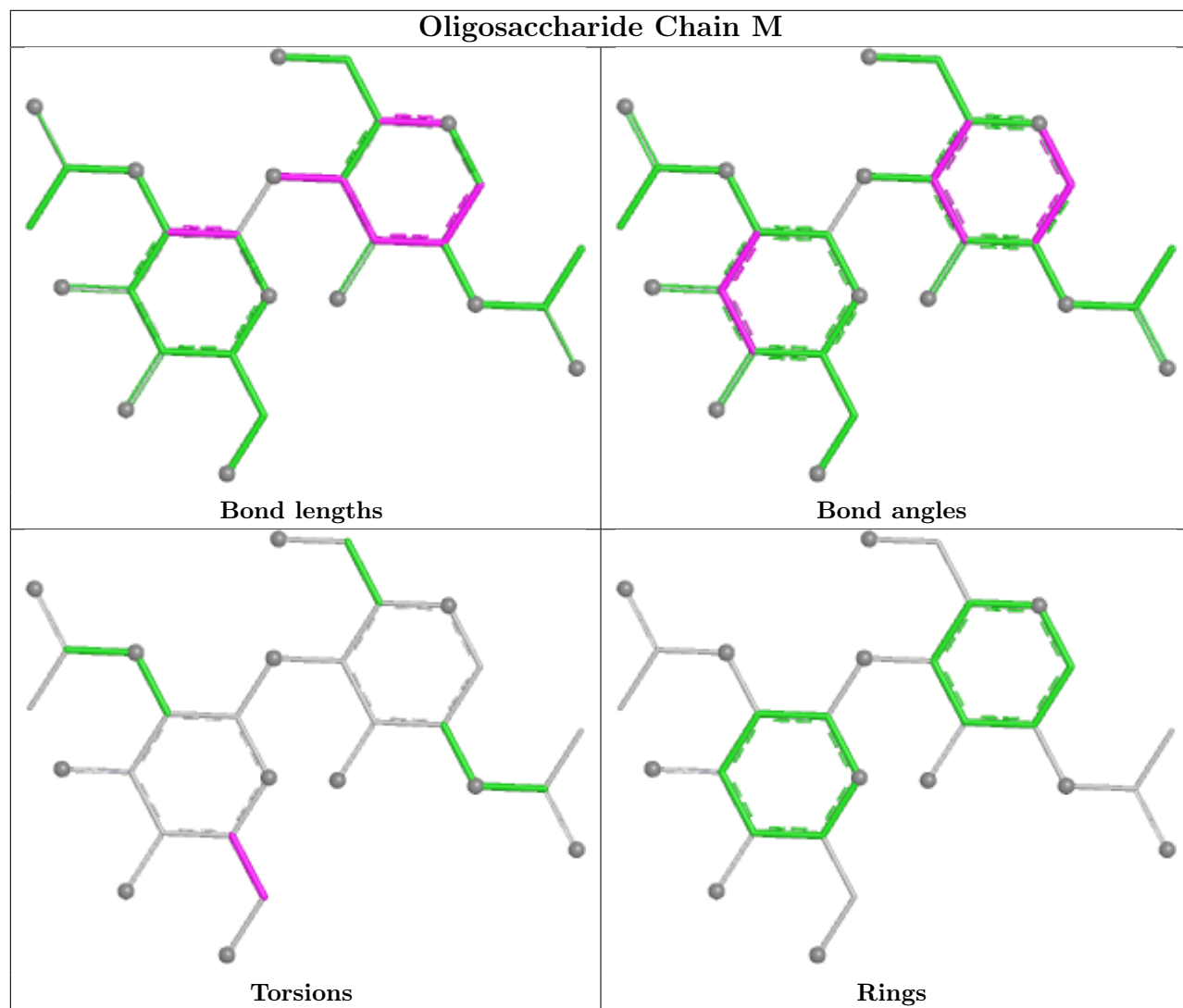


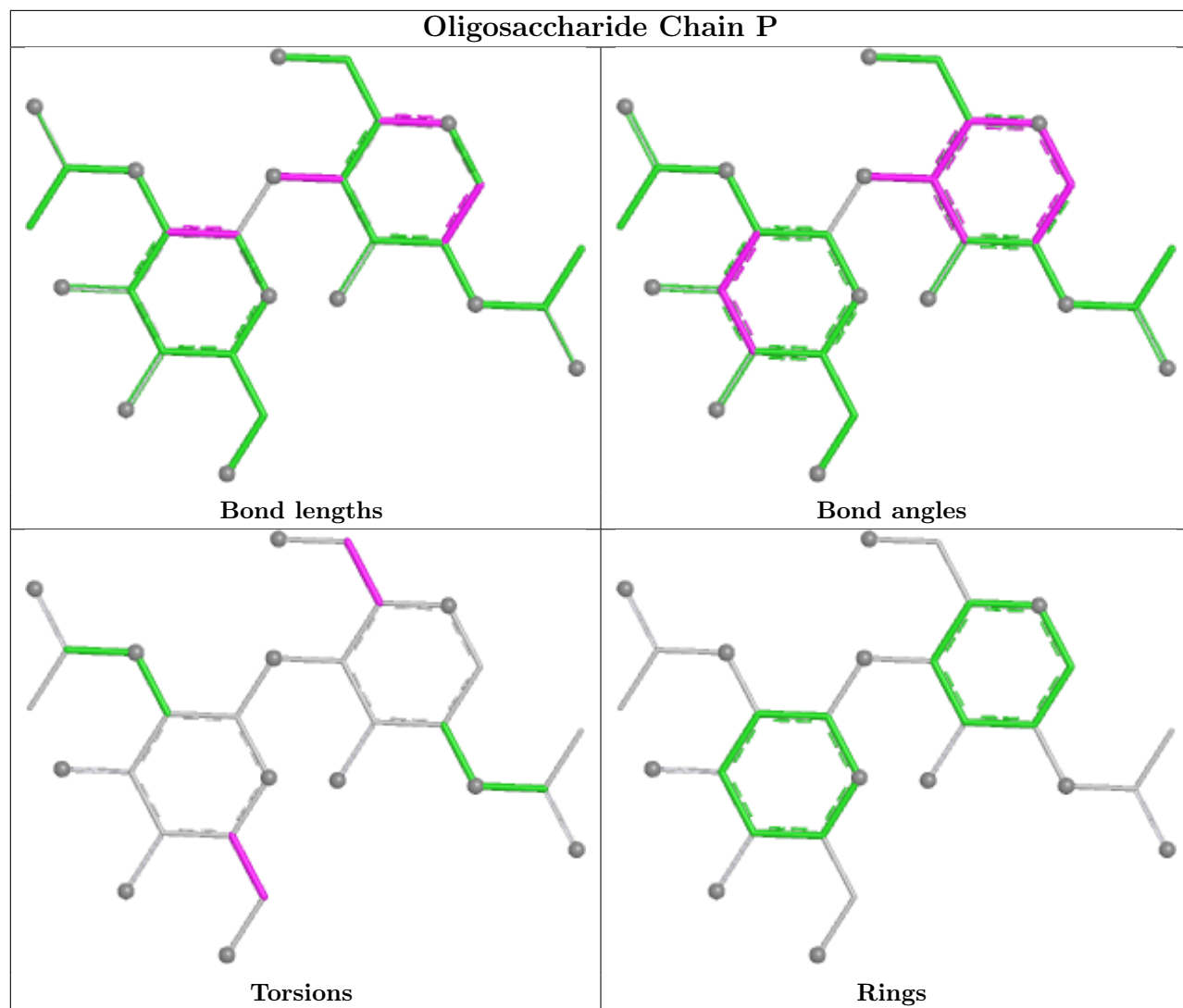


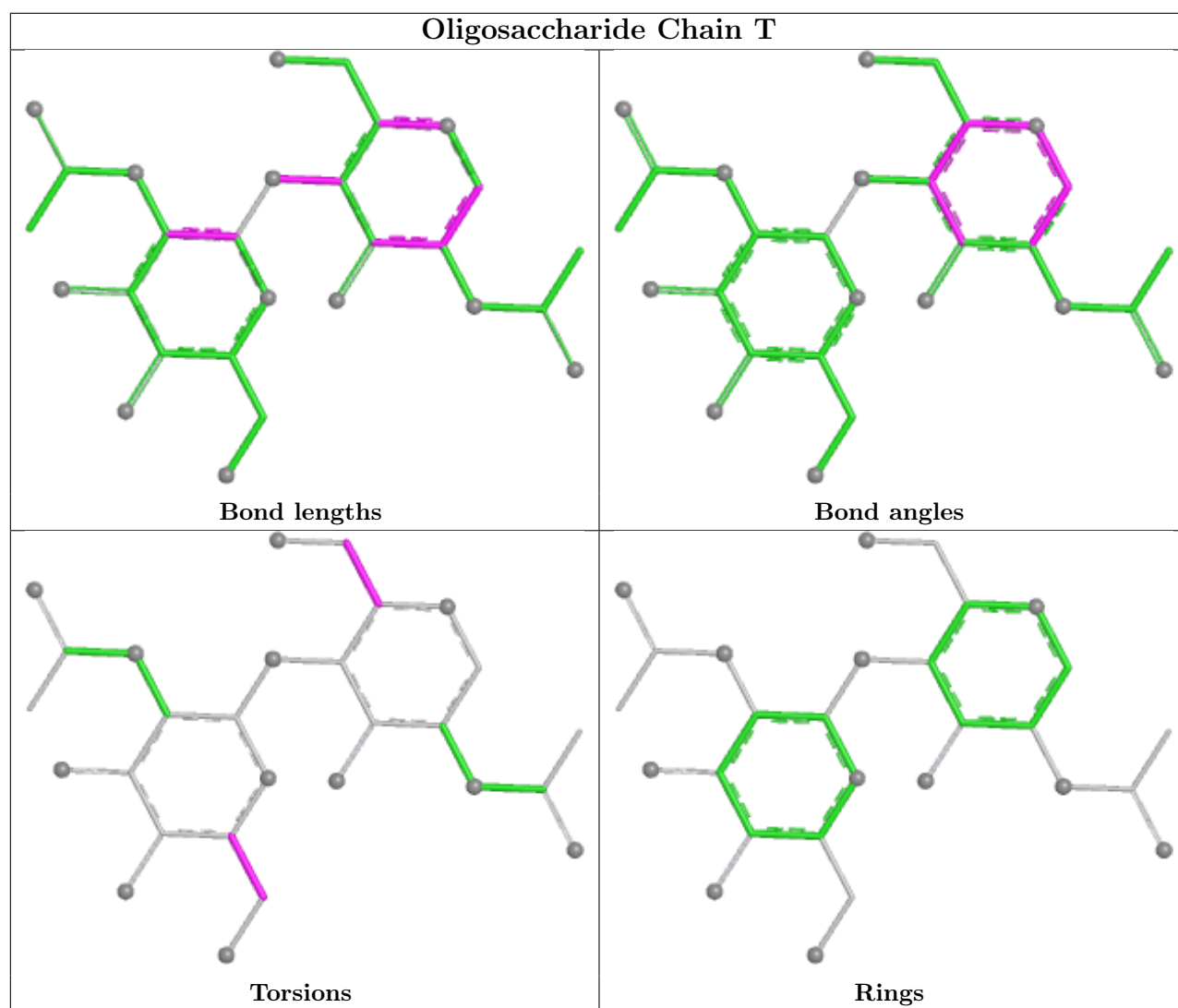


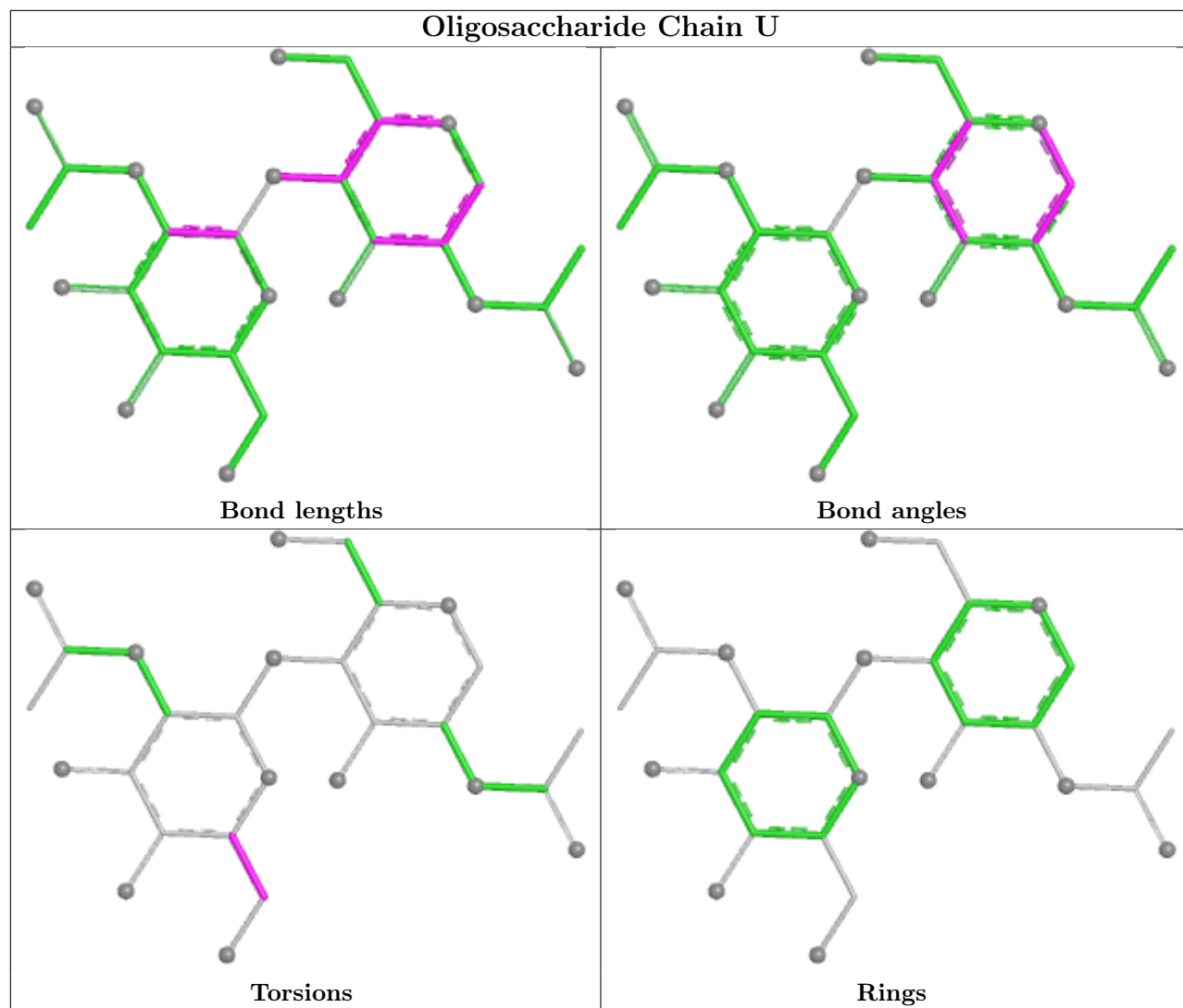


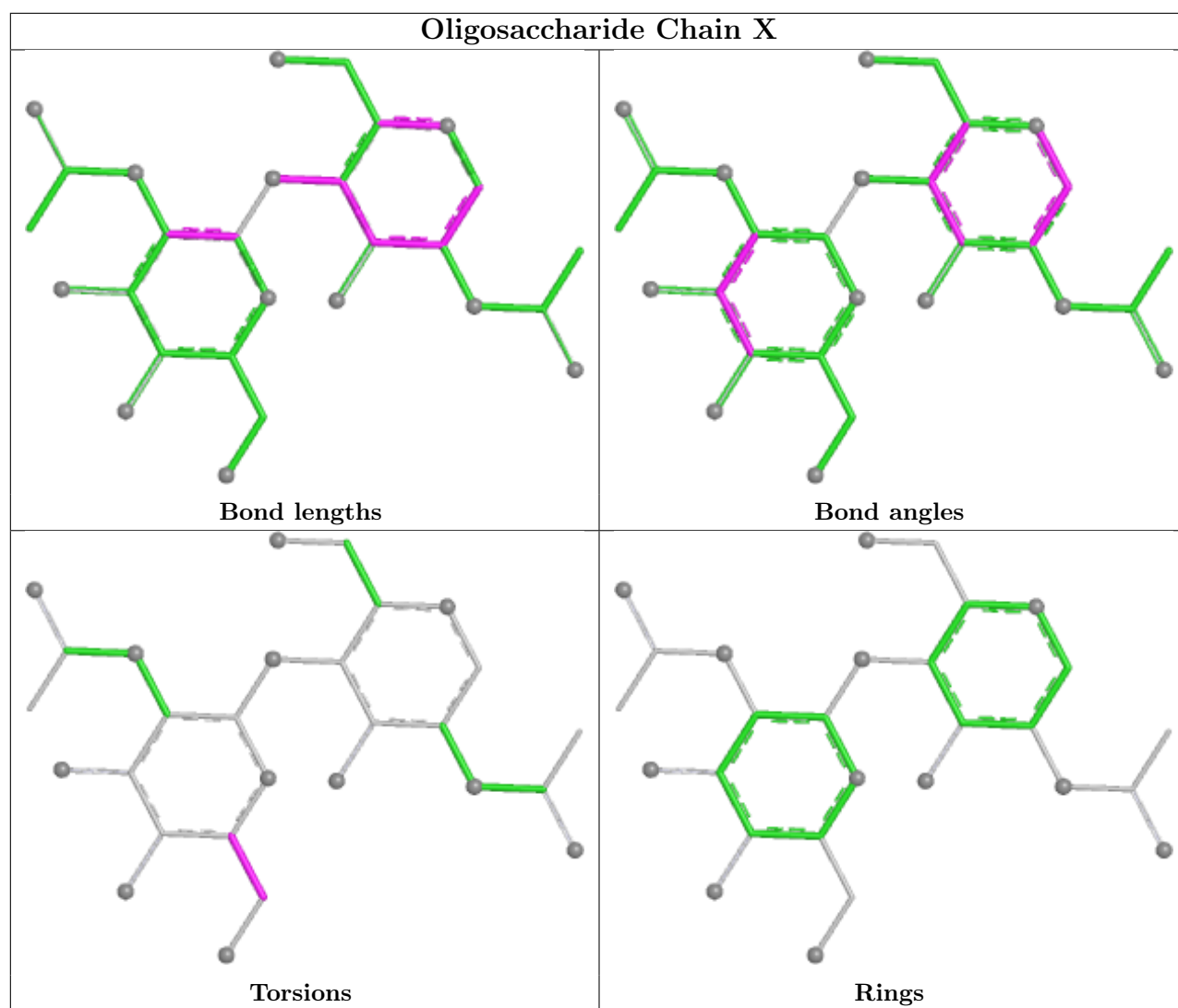


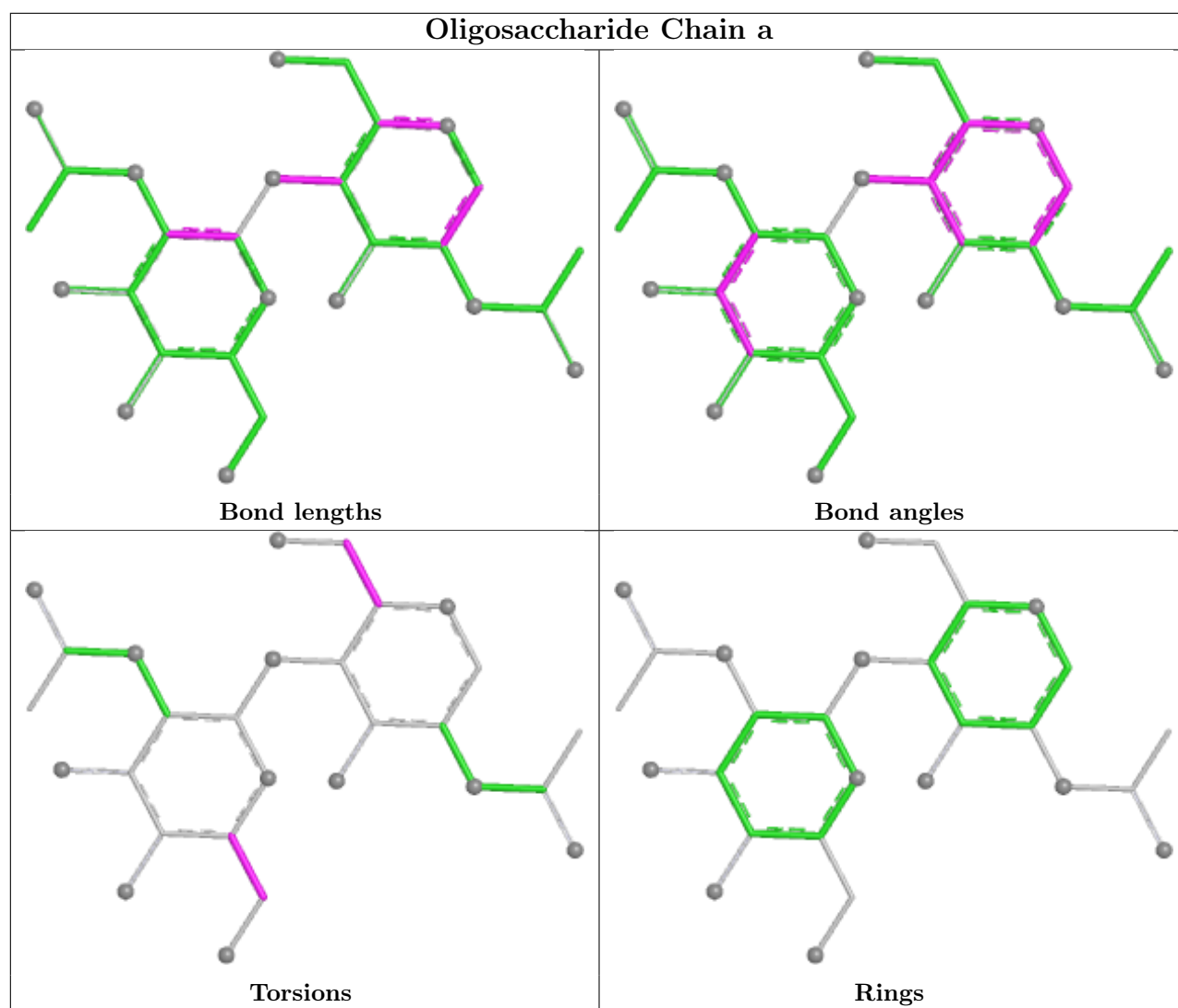


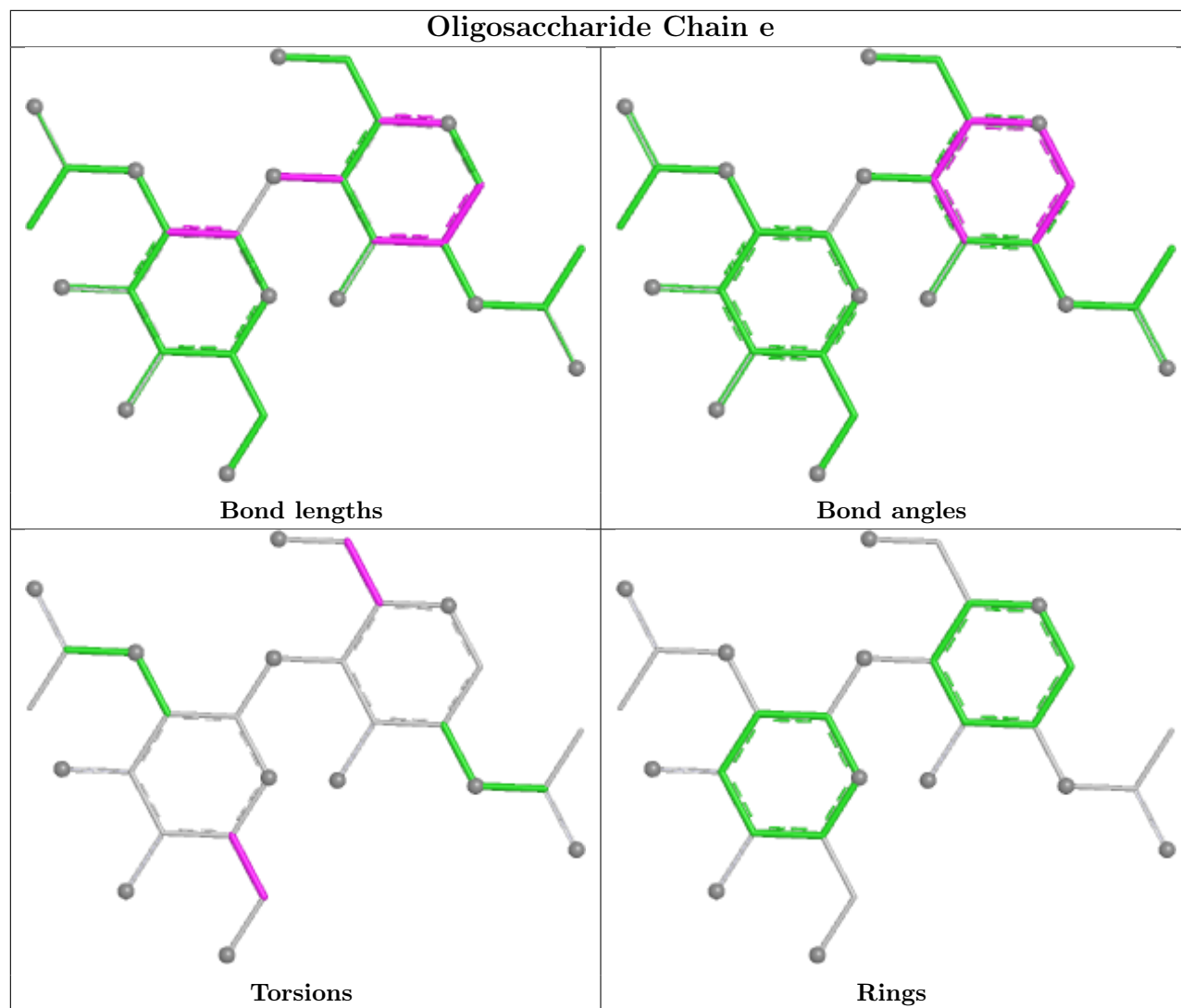


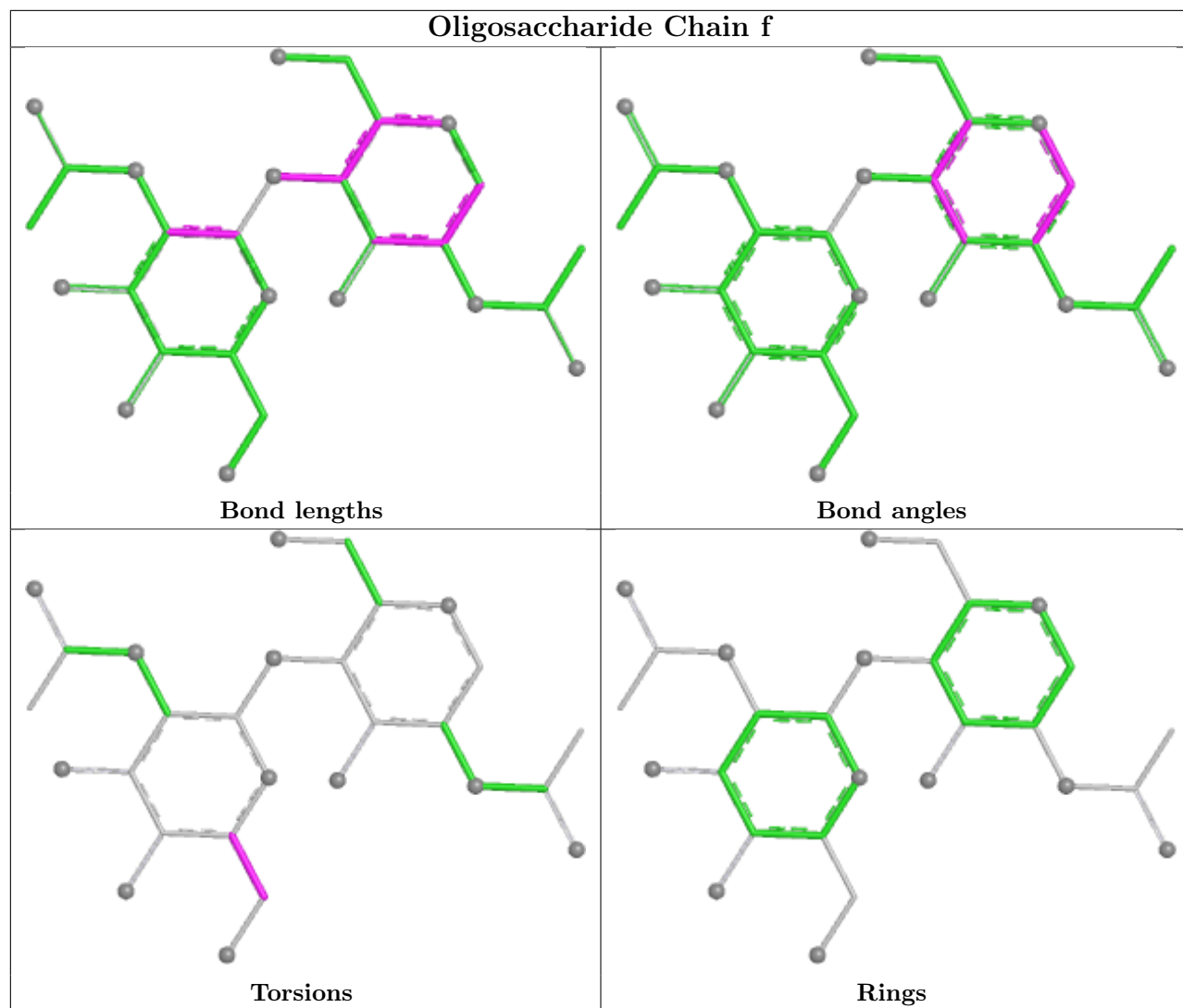


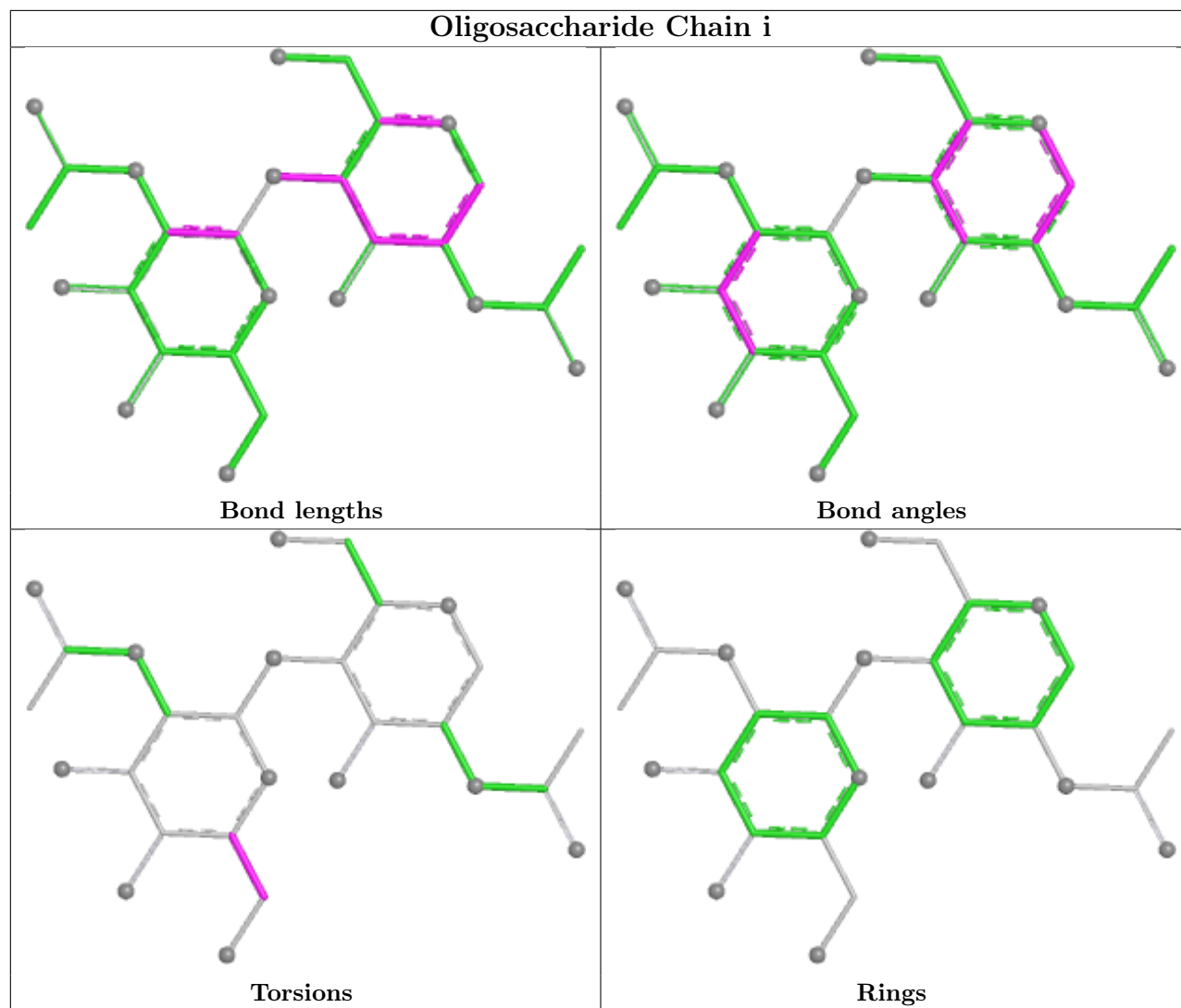


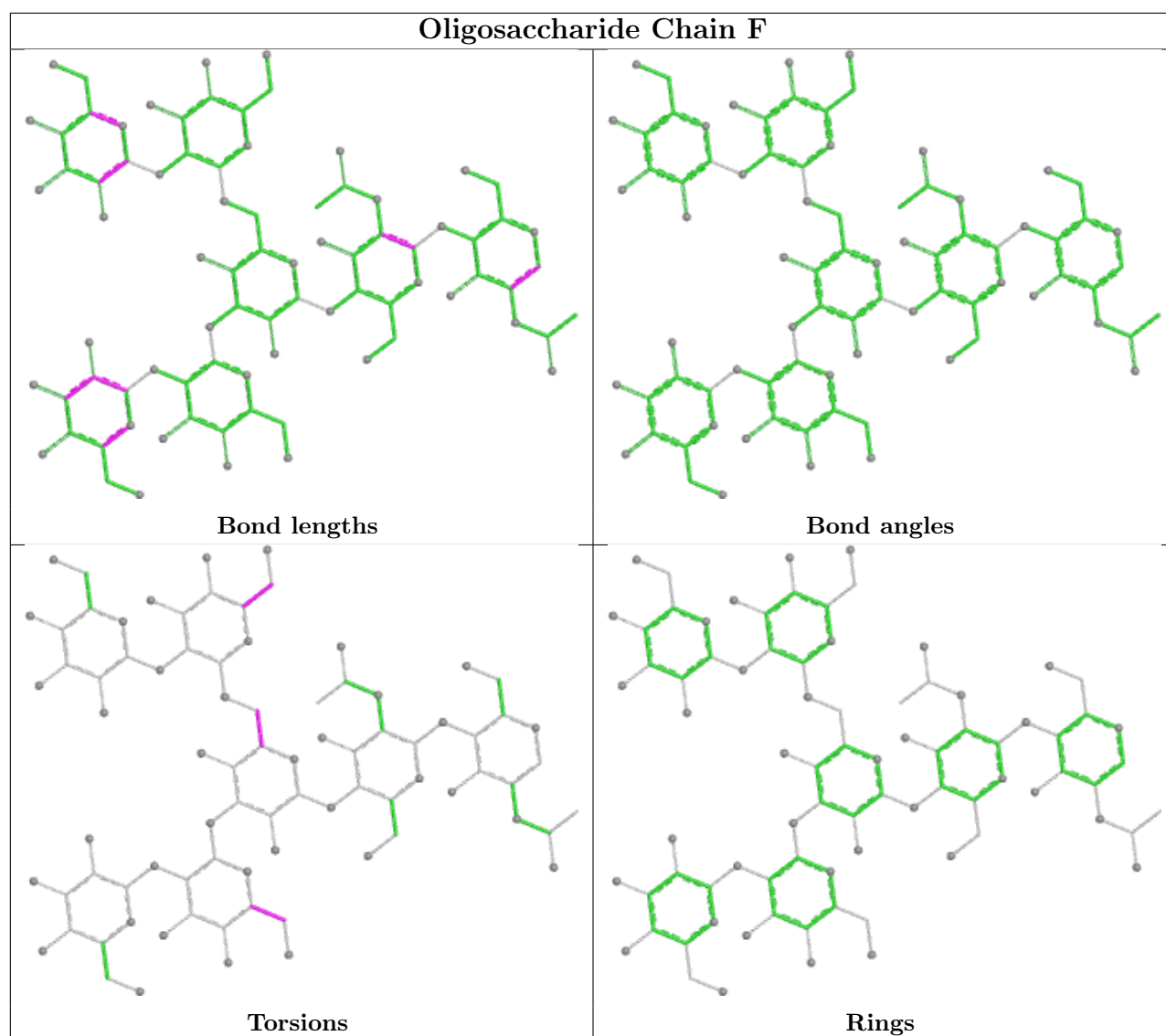


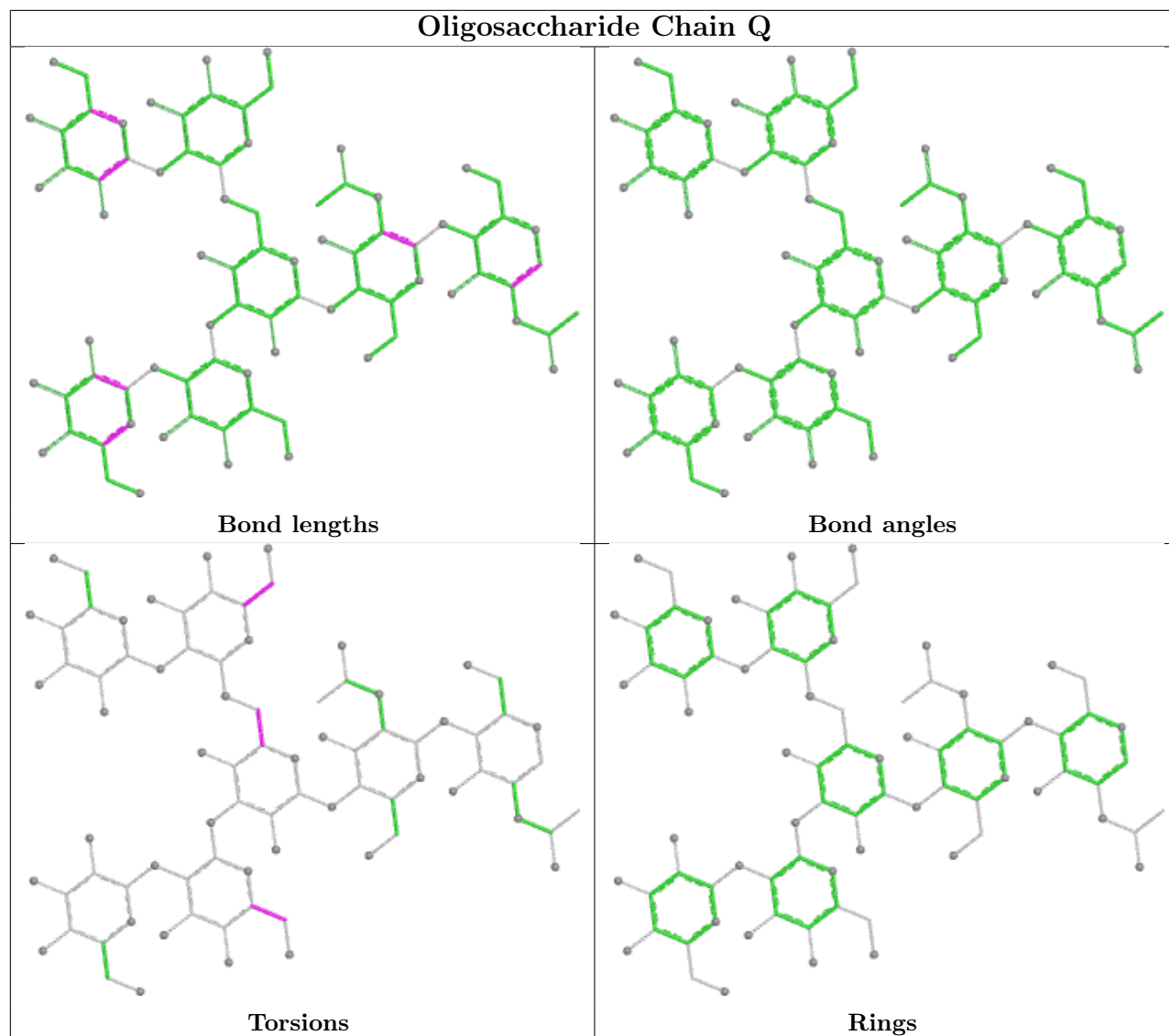


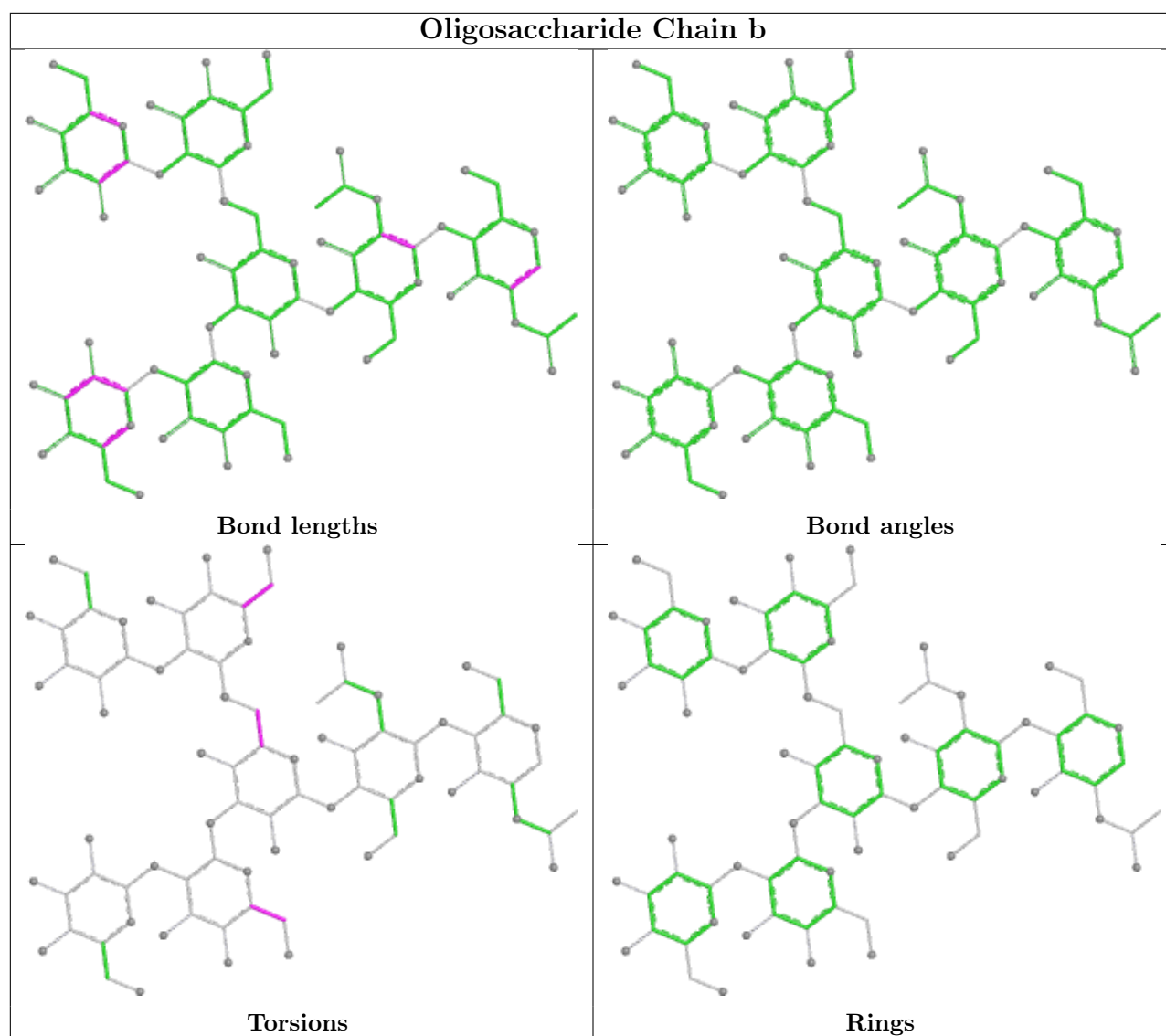


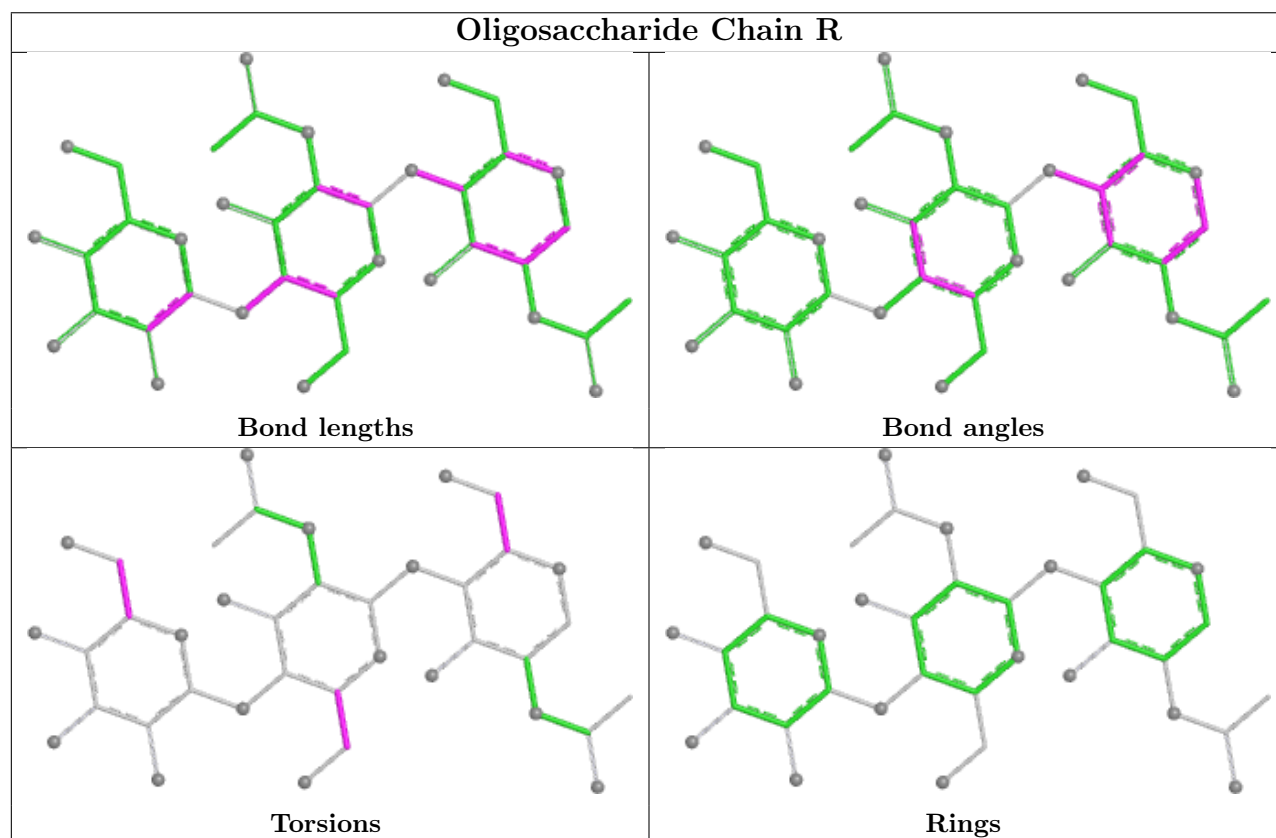
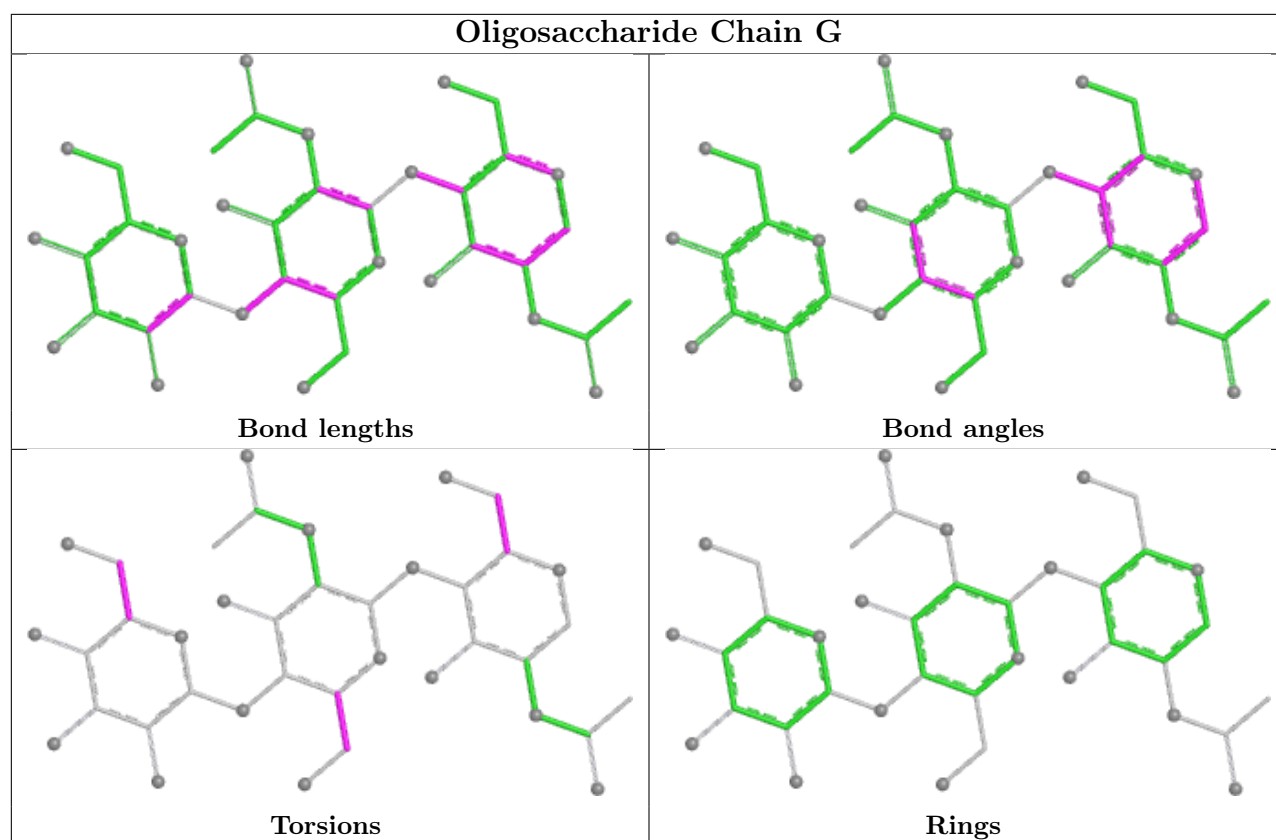


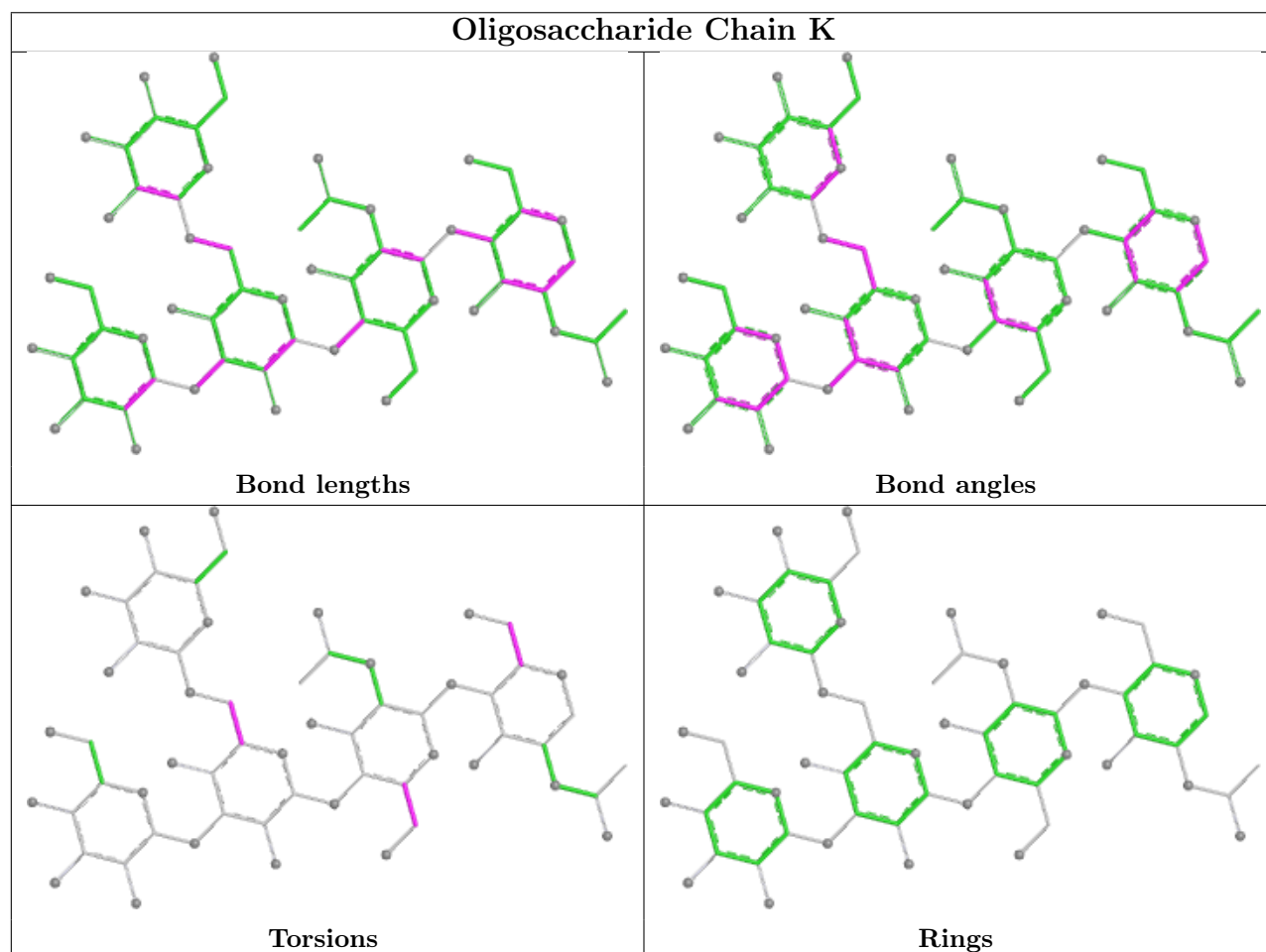
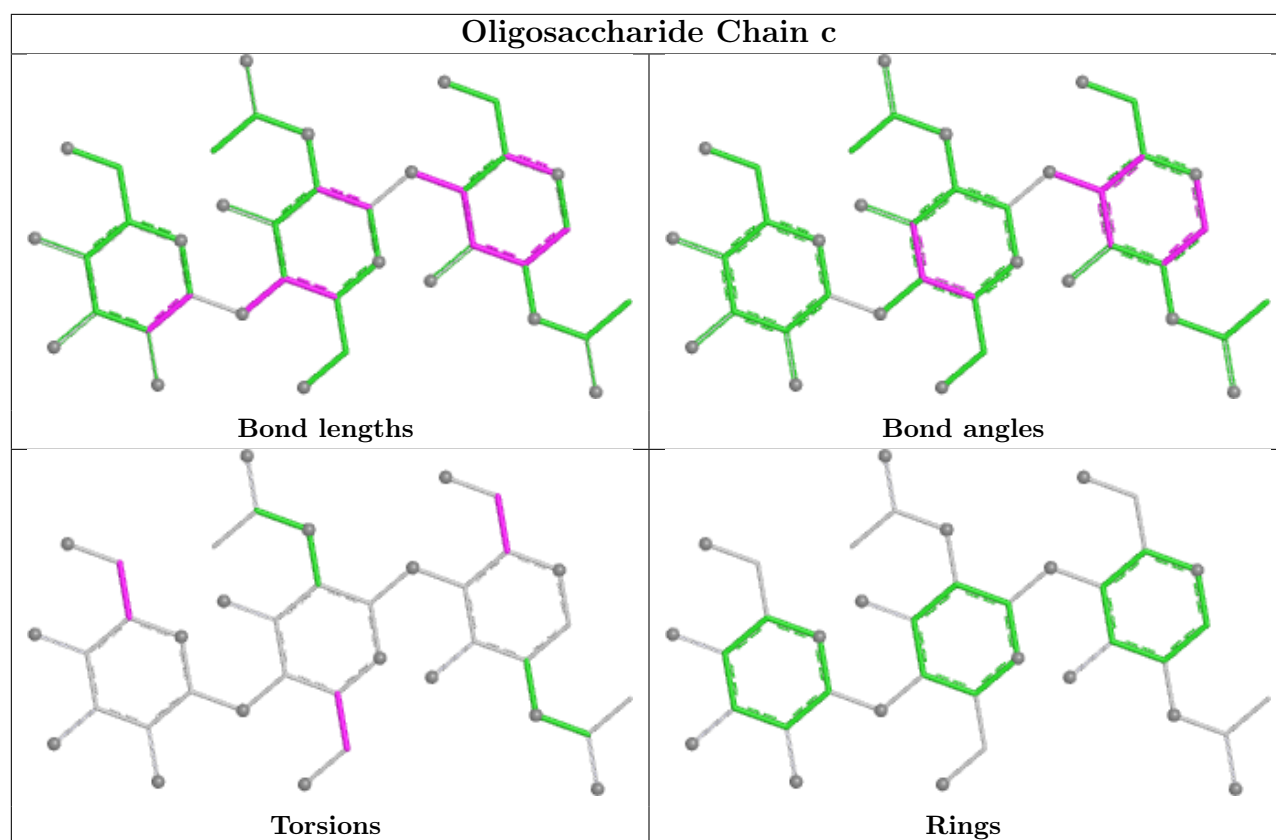


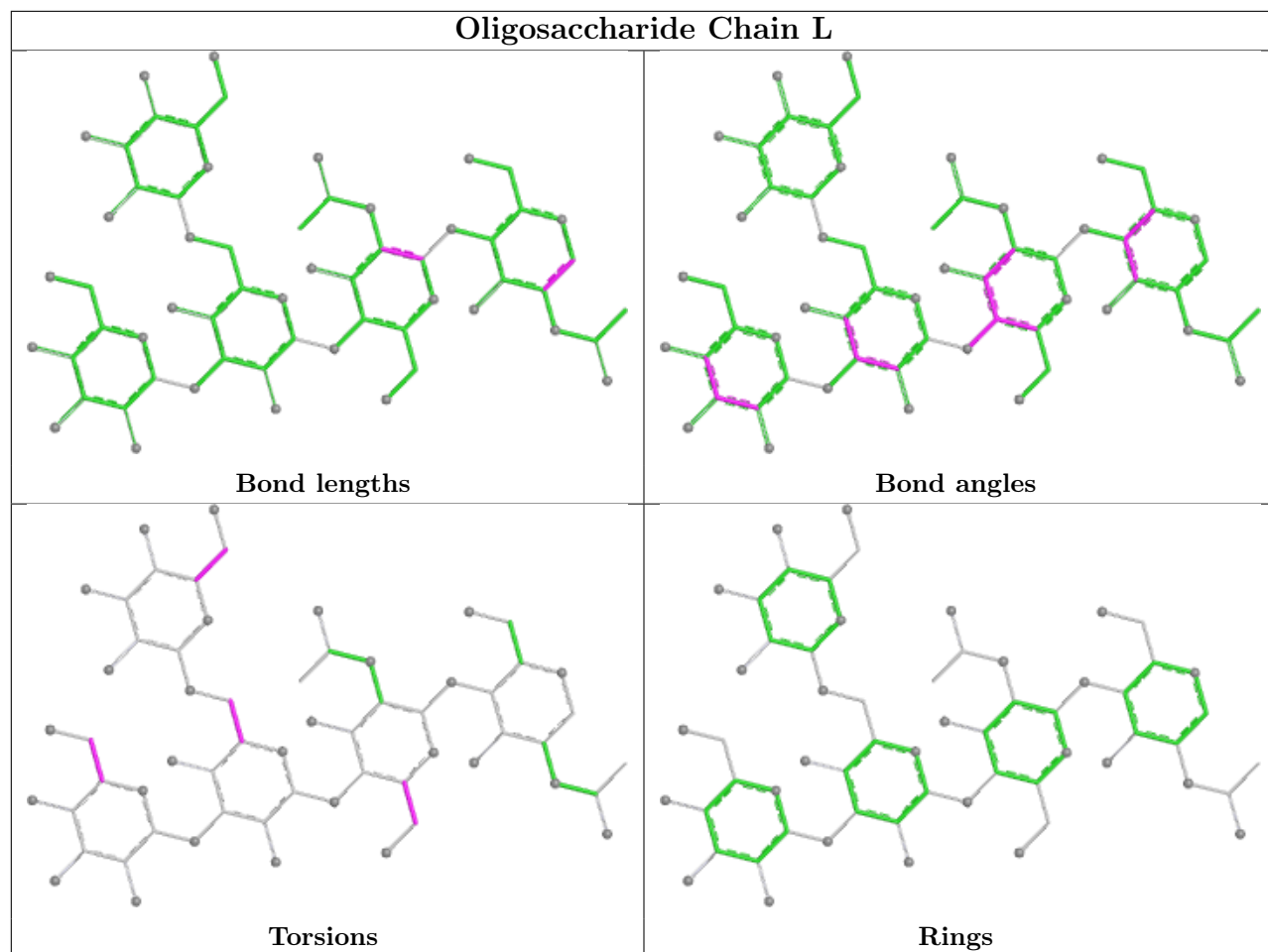


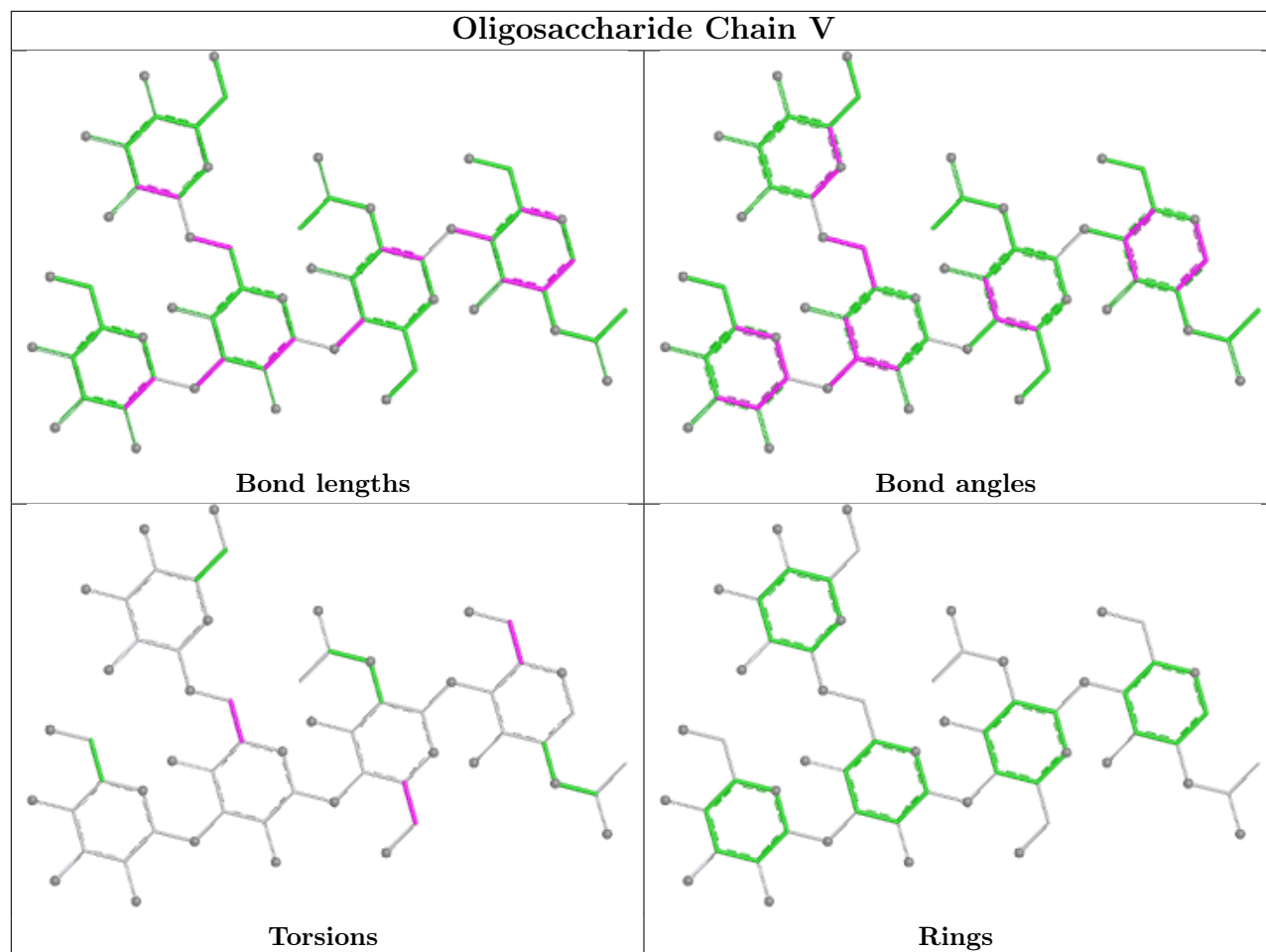


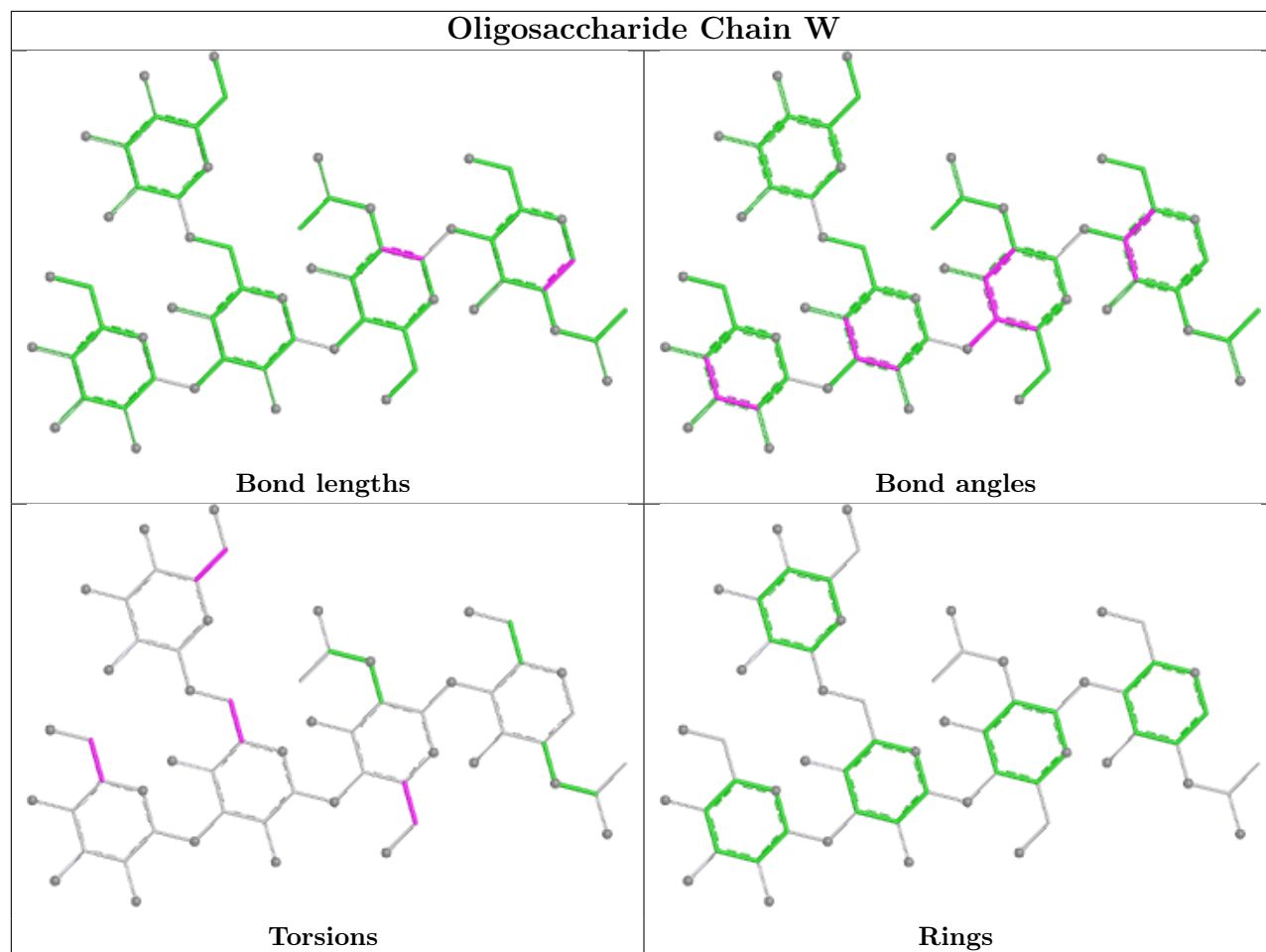


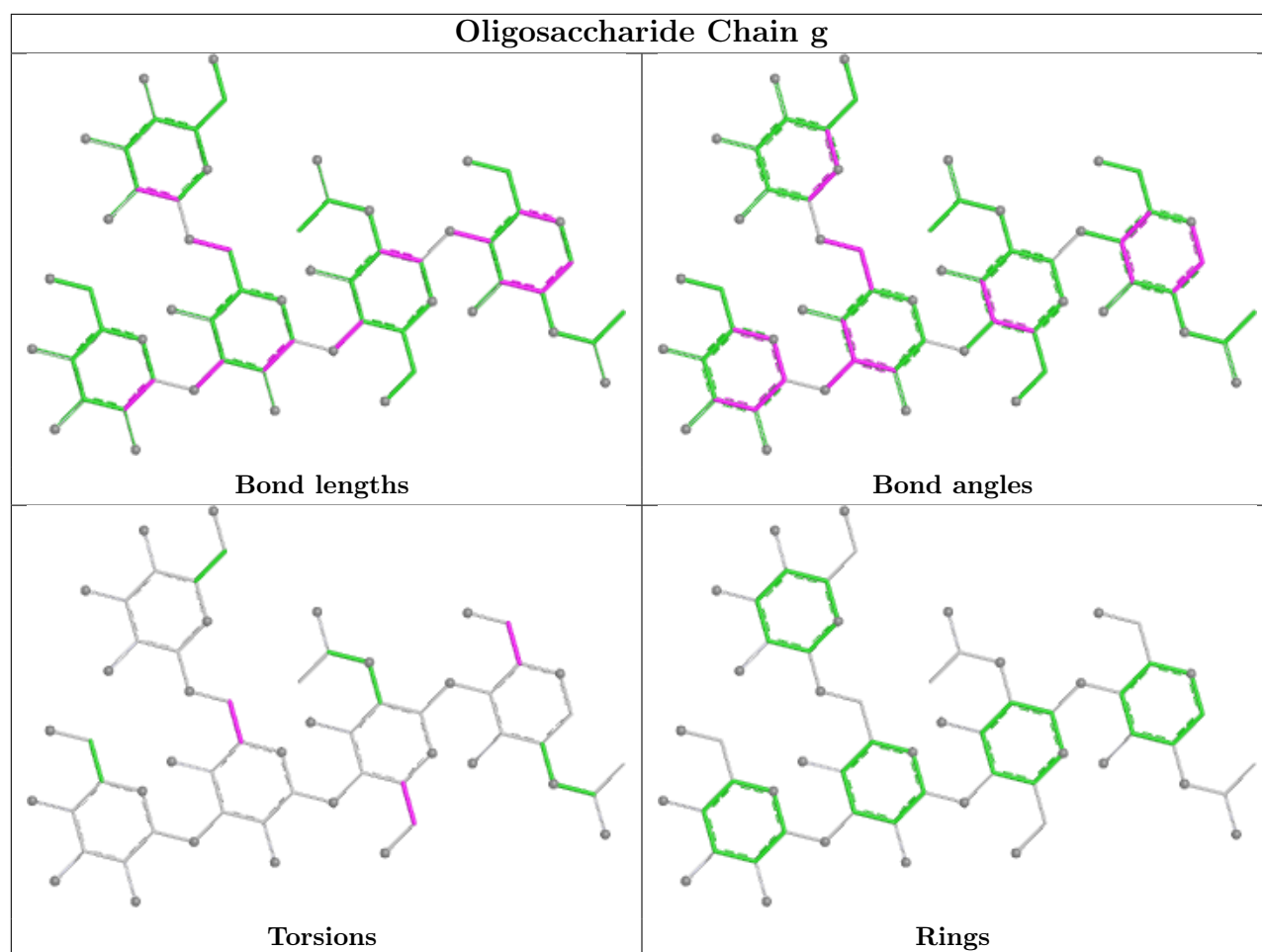


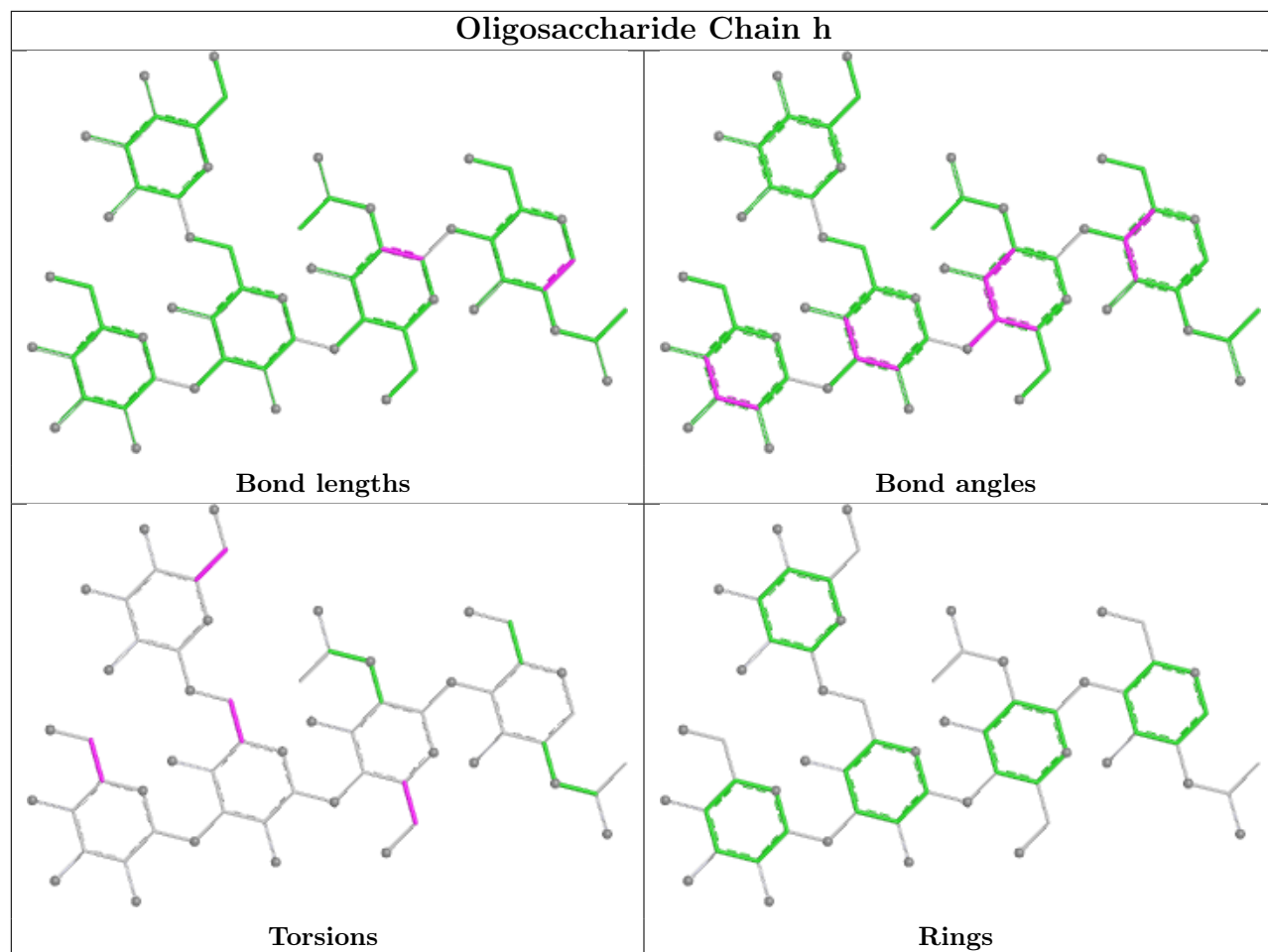


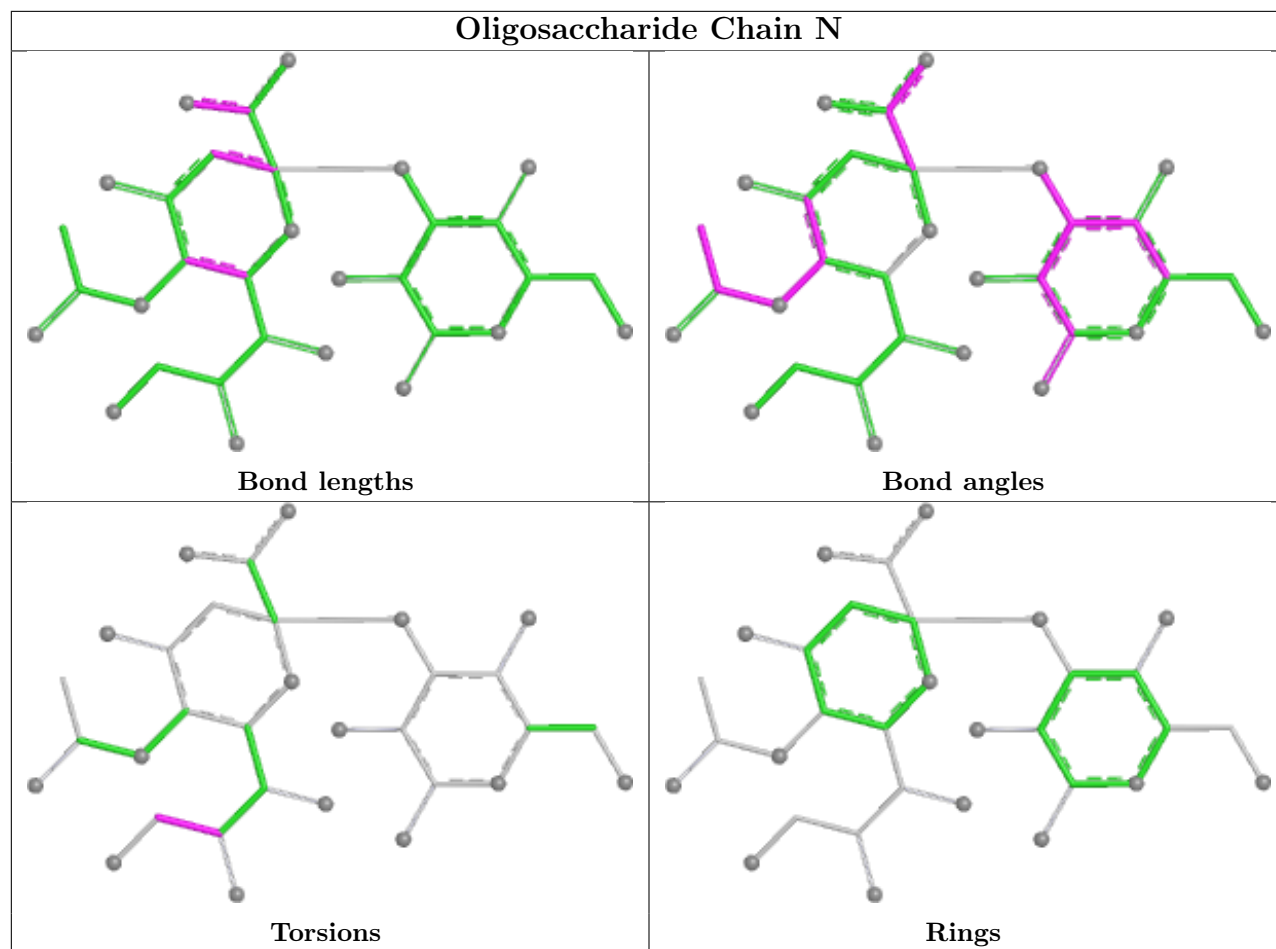


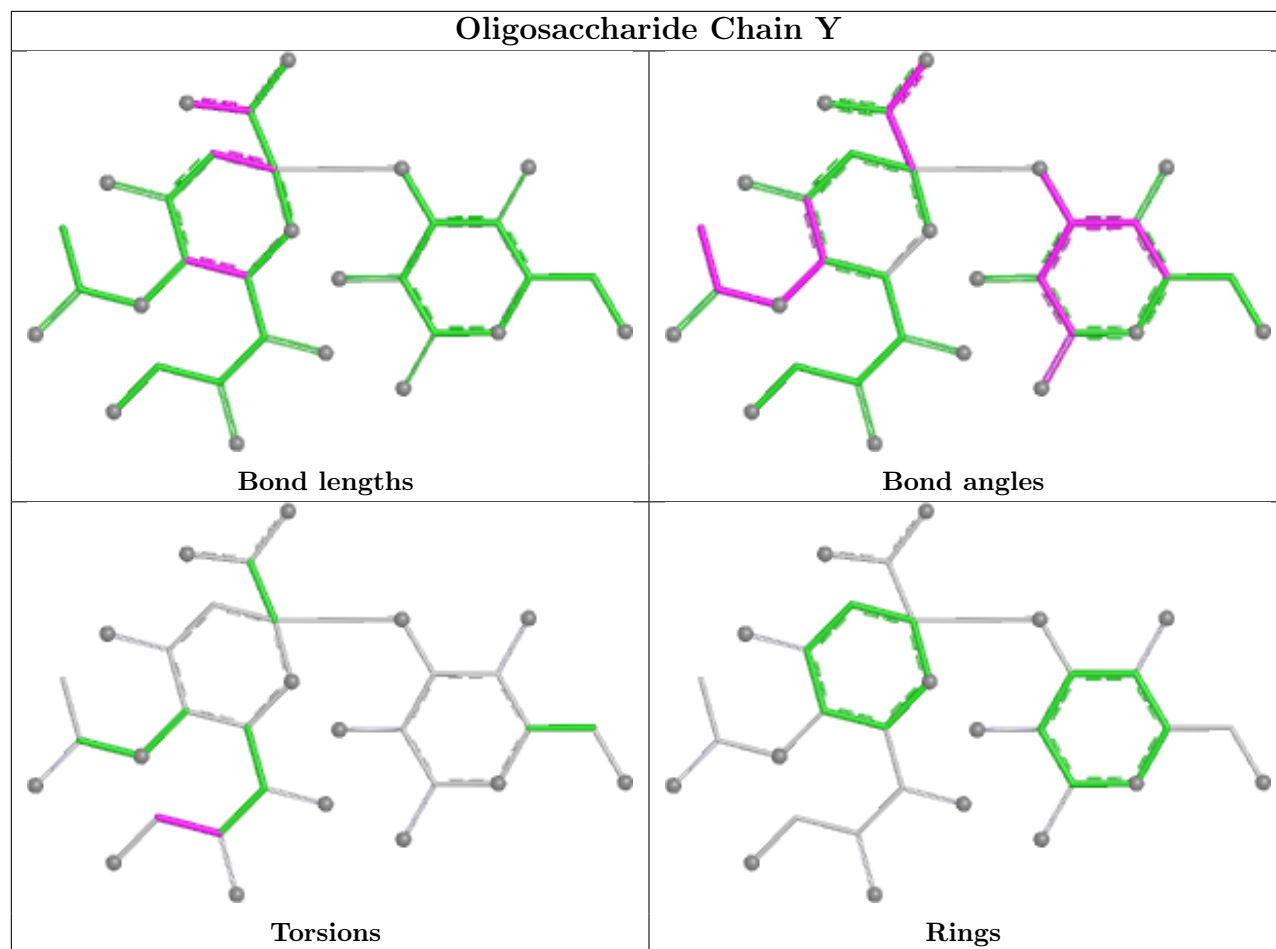


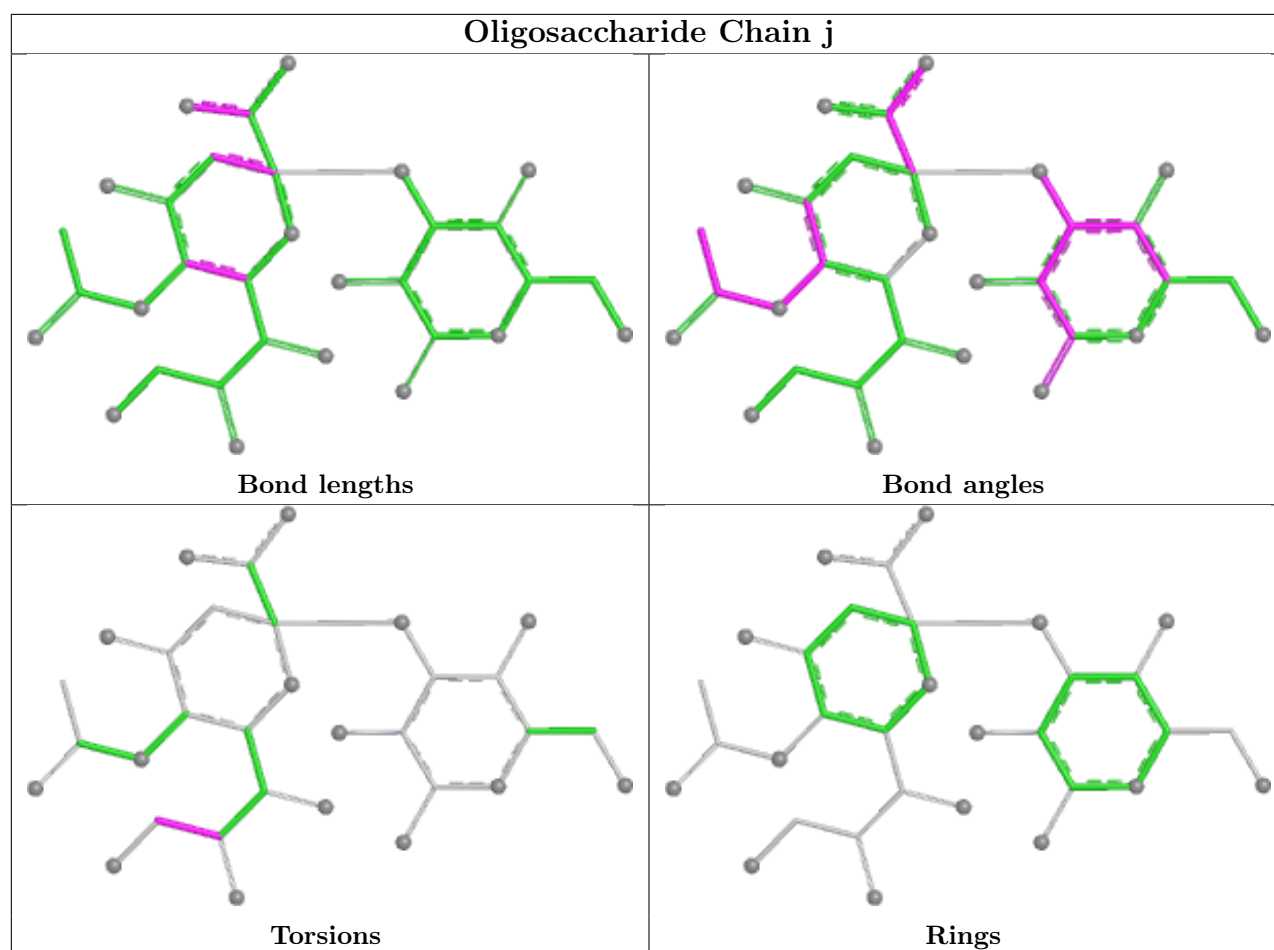












5.6 Ligand geometry [i](#)

24 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	$\# Z > 2$
8	NAG	B	1415	1	14,14,15	1.24	1 (7%)	17,19,21	1.12	2 (11%)
8	NAG	C	1419	1	14,14,15	1.16	1 (7%)	17,19,21	1.27	2 (11%)
8	NAG	B	1418	1	14,14,15	1.09	1 (7%)	17,19,21	1.13	1 (5%)
8	NAG	A	1419	1	14,14,15	1.15	1 (7%)	17,19,21	1.26	2 (11%)
9	FOL	A	1444	-	34,34,34	1.00	2 (5%)	43,47,47	1.38	4 (9%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	NAG	C	1416	1	14,14,15	1.65	3 (21%)	17,19,21	1.76	5 (29%)
8	NAG	B	1417	1	14,14,15	1.05	1 (7%)	17,19,21	1.09	2 (11%)
8	NAG	A	1415	1	14,14,15	1.24	1 (7%)	17,19,21	1.13	2 (11%)
8	NAG	A	1416	1	14,14,15	1.65	3 (21%)	17,19,21	1.77	5 (29%)
8	NAG	C	1414	1	14,14,15	1.20	2 (14%)	17,19,21	1.00	1 (5%)
8	NAG	C	1436	1	14,14,15	1.64	5 (35%)	17,19,21	1.93	4 (23%)
8	NAG	A	1414	1	14,14,15	1.20	2 (14%)	17,19,21	1.00	1 (5%)
8	NAG	B	1419	1	14,14,15	1.14	1 (7%)	17,19,21	1.25	2 (11%)
8	NAG	A	1436	1	14,14,15	1.65	5 (35%)	17,19,21	1.93	4 (23%)
8	NAG	B	1414	1	14,14,15	1.21	2 (14%)	17,19,21	1.00	1 (5%)
8	NAG	C	1418	1	14,14,15	1.10	1 (7%)	17,19,21	1.13	1 (5%)
9	FOL	B	1444	-	34,34,34	1.00	2 (5%)	43,47,47	1.38	4 (9%)
8	NAG	A	1417	1	14,14,15	1.05	1 (7%)	17,19,21	1.08	2 (11%)
8	NAG	C	1417	1	14,14,15	1.05	1 (7%)	17,19,21	1.08	2 (11%)
8	NAG	B	1436	1	14,14,15	1.66	5 (35%)	17,19,21	1.93	4 (23%)
8	NAG	C	1415	1	14,14,15	1.24	1 (7%)	17,19,21	1.13	2 (11%)
8	NAG	A	1418	1	14,14,15	1.09	1 (7%)	17,19,21	1.13	1 (5%)
9	FOL	C	1444	-	34,34,34	1.00	2 (5%)	43,47,47	1.38	4 (9%)
8	NAG	B	1416	1	14,14,15	1.66	3 (21%)	17,19,21	1.76	5 (29%)

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
8	NAG	B	1415	1	-	2/6/23/26	0/1/1/1
8	NAG	C	1419	1	-	2/6/23/26	0/1/1/1
8	NAG	B	1418	1	-	1/6/23/26	0/1/1/1
8	NAG	A	1419	1	-	2/6/23/26	0/1/1/1
9	FOL	A	1444	-	-	2/22/22/22	0/3/3/3
8	NAG	C	1416	1	-	2/6/23/26	0/1/1/1
8	NAG	B	1417	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1415	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1416	1	-	2/6/23/26	0/1/1/1
8	NAG	C	1414	1	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	NAG	C	1436	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1414	1	-	1/6/23/26	0/1/1/1
8	NAG	B	1419	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1436	1	-	2/6/23/26	0/1/1/1
8	NAG	B	1414	1	-	1/6/23/26	0/1/1/1
8	NAG	C	1418	1	-	1/6/23/26	0/1/1/1
9	FOL	B	1444	-	-	2/22/22/22	0/3/3/3
8	NAG	A	1417	1	-	2/6/23/26	0/1/1/1
8	NAG	C	1417	1	-	2/6/23/26	0/1/1/1
8	NAG	B	1436	1	-	2/6/23/26	0/1/1/1
8	NAG	C	1415	1	-	2/6/23/26	0/1/1/1
8	NAG	A	1418	1	-	1/6/23/26	0/1/1/1
9	FOL	C	1444	-	-	2/22/22/22	0/3/3/3
8	NAG	B	1416	1	-	2/6/23/26	0/1/1/1

All (48) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	B	1416	NAG	C1-C2	4.05	1.57	1.52
8	C	1416	NAG	C1-C2	4.04	1.57	1.52
8	A	1416	NAG	C1-C2	4.02	1.57	1.52
8	A	1415	NAG	C1-C2	4.01	1.57	1.52
8	C	1415	NAG	C1-C2	4.01	1.57	1.52
8	B	1415	NAG	C1-C2	3.99	1.57	1.52
8	B	1414	NAG	C1-C2	3.59	1.57	1.52
8	C	1414	NAG	C1-C2	3.54	1.57	1.52
8	A	1414	NAG	C1-C2	3.54	1.57	1.52
8	C	1419	NAG	C1-C2	3.50	1.57	1.52
8	A	1419	NAG	C1-C2	3.48	1.57	1.52
8	B	1419	NAG	C1-C2	3.44	1.57	1.52
8	A	1418	NAG	C1-C2	3.43	1.57	1.52
8	B	1418	NAG	C1-C2	3.43	1.57	1.52
8	C	1418	NAG	C1-C2	3.43	1.57	1.52
9	A	1444	FOL	C8A-N1	-3.21	1.34	1.38
9	B	1444	FOL	C8A-N1	-3.19	1.34	1.38
9	C	1444	FOL	C8A-N1	-3.18	1.34	1.38
8	B	1416	NAG	O5-C5	3.15	1.49	1.43
8	A	1416	NAG	O5-C5	3.12	1.49	1.43
8	C	1416	NAG	O5-C5	3.12	1.49	1.43
8	B	1436	NAG	C1-C2	3.11	1.56	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	C	1436	NAG	C1-C2	3.11	1.56	1.52
8	A	1436	NAG	C1-C2	3.10	1.56	1.52
8	C	1417	NAG	C1-C2	3.08	1.56	1.52
8	B	1417	NAG	C1-C2	3.08	1.56	1.52
8	A	1417	NAG	C1-C2	3.07	1.56	1.52
8	B	1436	NAG	O5-C5	2.52	1.48	1.43
8	B	1436	NAG	C3-C2	2.49	1.57	1.52
8	A	1436	NAG	O5-C5	2.49	1.48	1.43
8	C	1436	NAG	O5-C5	2.48	1.48	1.43
8	A	1436	NAG	C3-C2	2.47	1.57	1.52
8	B	1436	NAG	O4-C4	-2.47	1.36	1.43
8	C	1436	NAG	C3-C2	2.46	1.57	1.52
8	A	1436	NAG	O4-C4	-2.45	1.36	1.43
8	C	1436	NAG	O4-C4	-2.41	1.37	1.43
8	B	1436	NAG	C4-C3	2.20	1.58	1.52
8	A	1436	NAG	C4-C3	2.20	1.58	1.52
8	C	1436	NAG	C4-C3	2.19	1.58	1.52
8	C	1416	NAG	C3-C2	2.17	1.57	1.52
8	A	1416	NAG	C3-C2	2.17	1.57	1.52
8	B	1416	NAG	C3-C2	2.16	1.57	1.52
9	A	1444	FOL	C4A-C8A	2.05	1.48	1.42
9	C	1444	FOL	C4A-C8A	2.03	1.48	1.42
8	C	1414	NAG	O5-C5	2.03	1.47	1.43
8	B	1414	NAG	O5-C5	2.03	1.47	1.43
8	A	1414	NAG	O5-C5	2.03	1.47	1.43
9	B	1444	FOL	C4A-C8A	2.02	1.48	1.42

All (63) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	1436	NAG	C3-C4-C5	-5.08	101.02	110.23
8	B	1436	NAG	C3-C4-C5	-5.08	101.02	110.23
8	C	1436	NAG	C3-C4-C5	-5.07	101.03	110.23
8	B	1416	NAG	O4-C4-C5	4.36	120.07	109.32
8	A	1416	NAG	O4-C4-C5	4.35	120.04	109.32
8	C	1416	NAG	O4-C4-C5	4.34	120.00	109.32
9	A	1444	FOL	C8A-C4A-C4	-4.25	116.80	119.56
9	B	1444	FOL	C8A-C4A-C4	-4.24	116.81	119.56
9	C	1444	FOL	C8A-C4A-C4	-4.24	116.81	119.56
9	A	1444	FOL	N1-C8A-N8	3.61	121.77	116.38
9	C	1444	FOL	N1-C8A-N8	3.59	121.73	116.38
9	B	1444	FOL	N1-C8A-N8	3.58	121.72	116.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	B	1436	NAG	C1-O5-C5	3.55	116.95	112.19
8	A	1436	NAG	C1-O5-C5	3.54	116.93	112.19
8	C	1436	NAG	C1-O5-C5	3.54	116.92	112.19
8	A	1436	NAG	O5-C1-C2	-3.45	105.95	111.29
8	C	1436	NAG	O5-C1-C2	-3.45	105.95	111.29
8	B	1436	NAG	O5-C1-C2	-3.45	105.96	111.29
8	C	1415	NAG	C4-C3-C2	-3.39	106.05	111.02
8	A	1415	NAG	C4-C3-C2	-3.38	106.06	111.02
8	B	1415	NAG	C4-C3-C2	-3.35	106.11	111.02
8	B	1418	NAG	C4-C3-C2	-3.31	106.17	111.02
8	A	1418	NAG	C4-C3-C2	-3.30	106.18	111.02
8	C	1418	NAG	C4-C3-C2	-3.28	106.21	111.02
8	C	1419	NAG	C4-C3-C2	-3.15	106.40	111.02
9	A	1444	FOL	C4-C4A-N5	3.13	123.49	118.55
9	C	1444	FOL	C4-C4A-N5	3.12	123.47	118.55
9	B	1444	FOL	C4-C4A-N5	3.12	123.46	118.55
8	A	1419	NAG	C4-C3-C2	-3.11	106.45	111.02
8	B	1419	NAG	C4-C3-C2	-3.10	106.48	111.02
8	C	1419	NAG	O5-C1-C2	-2.94	106.73	111.29
8	A	1419	NAG	O5-C1-C2	-2.94	106.74	111.29
8	B	1419	NAG	O5-C1-C2	-2.93	106.77	111.29
8	B	1416	NAG	O5-C1-C2	-2.86	106.86	111.29
8	C	1416	NAG	O5-C1-C2	-2.86	106.87	111.29
8	A	1416	NAG	O5-C1-C2	-2.85	106.88	111.29
8	C	1416	NAG	O4-C4-C3	2.77	116.90	110.38
8	A	1416	NAG	O4-C4-C3	2.76	116.88	110.38
8	B	1416	NAG	O4-C4-C3	2.75	116.85	110.38
8	B	1414	NAG	O5-C1-C2	-2.57	107.32	111.29
8	A	1414	NAG	O5-C1-C2	-2.55	107.34	111.29
8	C	1414	NAG	O5-C1-C2	-2.54	107.37	111.29
8	C	1415	NAG	O5-C1-C2	-2.51	107.40	111.29
8	A	1415	NAG	O5-C1-C2	-2.51	107.40	111.29
8	B	1415	NAG	O5-C1-C2	-2.51	107.41	111.29
8	C	1416	NAG	C1-O5-C5	2.50	115.54	112.19
8	A	1416	NAG	C1-O5-C5	2.49	115.53	112.19
8	B	1416	NAG	C1-O5-C5	2.47	115.49	112.19
8	B	1417	NAG	O5-C1-C2	-2.44	107.52	111.29
8	C	1417	NAG	O5-C1-C2	-2.42	107.55	111.29
8	B	1416	NAG	C3-C4-C5	-2.42	105.85	110.23
8	A	1417	NAG	O5-C1-C2	-2.42	107.55	111.29
8	A	1416	NAG	C3-C4-C5	-2.41	105.87	110.23
8	B	1417	NAG	C4-C3-C2	-2.40	107.49	111.02

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	1417	NAG	C4-C3-C2	-2.38	107.53	111.02
8	A	1436	NAG	O5-C5-C6	-2.38	103.03	107.66
8	C	1417	NAG	C4-C3-C2	-2.38	107.53	111.02
8	C	1416	NAG	C3-C4-C5	-2.38	105.92	110.23
8	C	1436	NAG	O5-C5-C6	-2.37	103.04	107.66
8	B	1436	NAG	O5-C5-C6	-2.37	103.05	107.66
9	C	1444	FOL	C11-C-N	2.26	121.24	117.04
9	A	1444	FOL	C11-C-N	2.25	121.21	117.04
9	B	1444	FOL	C11-C-N	2.24	121.20	117.04

There are no chirality outliers.

All (42) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	1436	NAG	O5-C5-C6-O6
8	B	1436	NAG	O5-C5-C6-O6
8	C	1436	NAG	O5-C5-C6-O6
8	A	1416	NAG	O5-C5-C6-O6
8	B	1416	NAG	O5-C5-C6-O6
8	C	1416	NAG	O5-C5-C6-O6
8	A	1419	NAG	O5-C5-C6-O6
8	B	1419	NAG	O5-C5-C6-O6
8	C	1419	NAG	O5-C5-C6-O6
8	A	1436	NAG	C4-C5-C6-O6
8	B	1436	NAG	C4-C5-C6-O6
8	C	1436	NAG	C4-C5-C6-O6
8	A	1416	NAG	C4-C5-C6-O6
8	B	1416	NAG	C4-C5-C6-O6
8	C	1416	NAG	C4-C5-C6-O6
8	A	1417	NAG	O5-C5-C6-O6
8	B	1417	NAG	O5-C5-C6-O6
8	C	1417	NAG	O5-C5-C6-O6
8	C	1417	NAG	C4-C5-C6-O6
8	A	1415	NAG	O5-C5-C6-O6
8	B	1415	NAG	O5-C5-C6-O6
8	C	1415	NAG	O5-C5-C6-O6
8	A	1417	NAG	C4-C5-C6-O6
8	B	1417	NAG	C4-C5-C6-O6
8	A	1414	NAG	O5-C5-C6-O6
8	B	1414	NAG	O5-C5-C6-O6
8	C	1414	NAG	O5-C5-C6-O6
8	A	1419	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
8	B	1419	NAG	C4-C5-C6-O6
8	A	1418	NAG	O5-C5-C6-O6
8	B	1418	NAG	O5-C5-C6-O6
8	C	1419	NAG	C4-C5-C6-O6
8	C	1418	NAG	O5-C5-C6-O6
8	A	1415	NAG	C4-C5-C6-O6
8	B	1415	NAG	C4-C5-C6-O6
8	C	1415	NAG	C4-C5-C6-O6
9	A	1444	FOL	OE1-CD-CG-CB
9	B	1444	FOL	OE1-CD-CG-CB
9	C	1444	FOL	OE1-CD-CG-CB
9	A	1444	FOL	OE2-CD-CG-CB
9	C	1444	FOL	OE2-CD-CG-CB
9	B	1444	FOL	OE2-CD-CG-CB

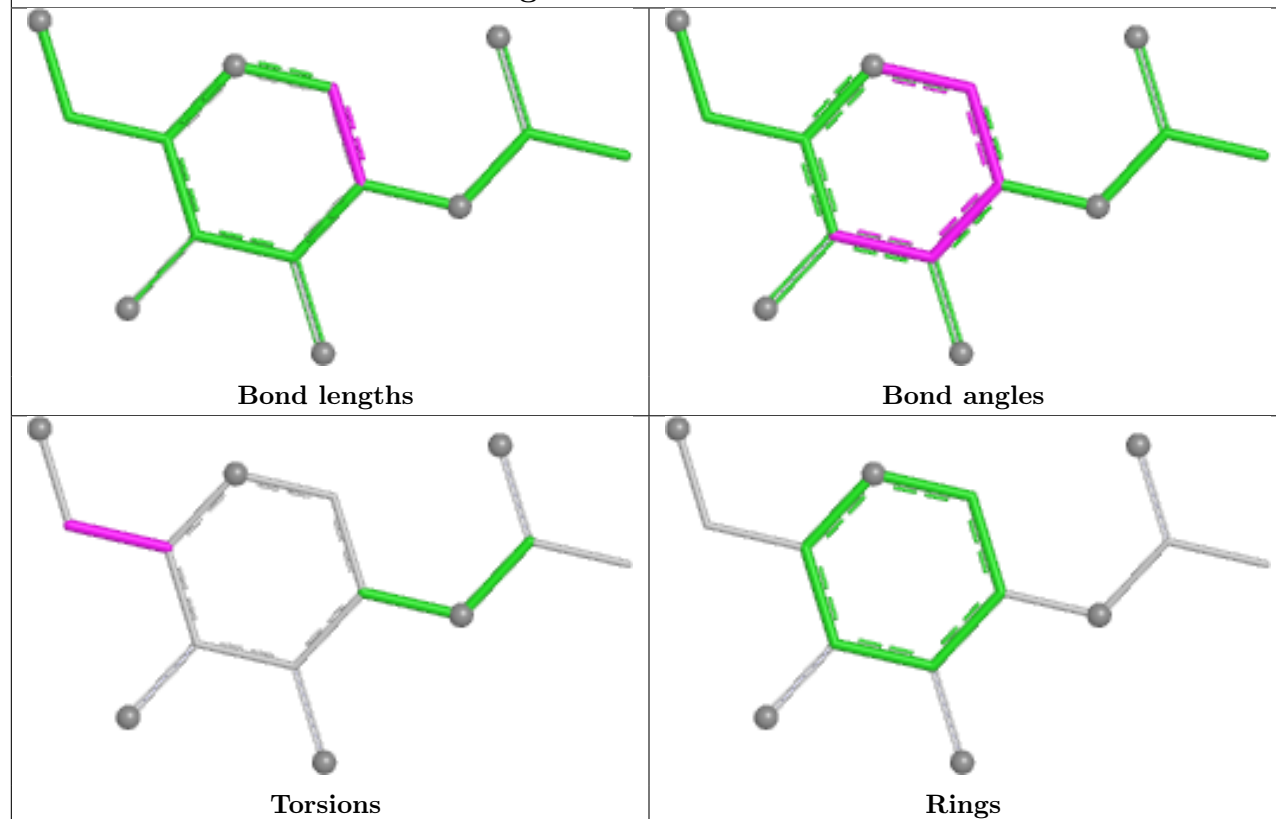
There are no ring outliers.

3 monomers are involved in 3 short contacts:

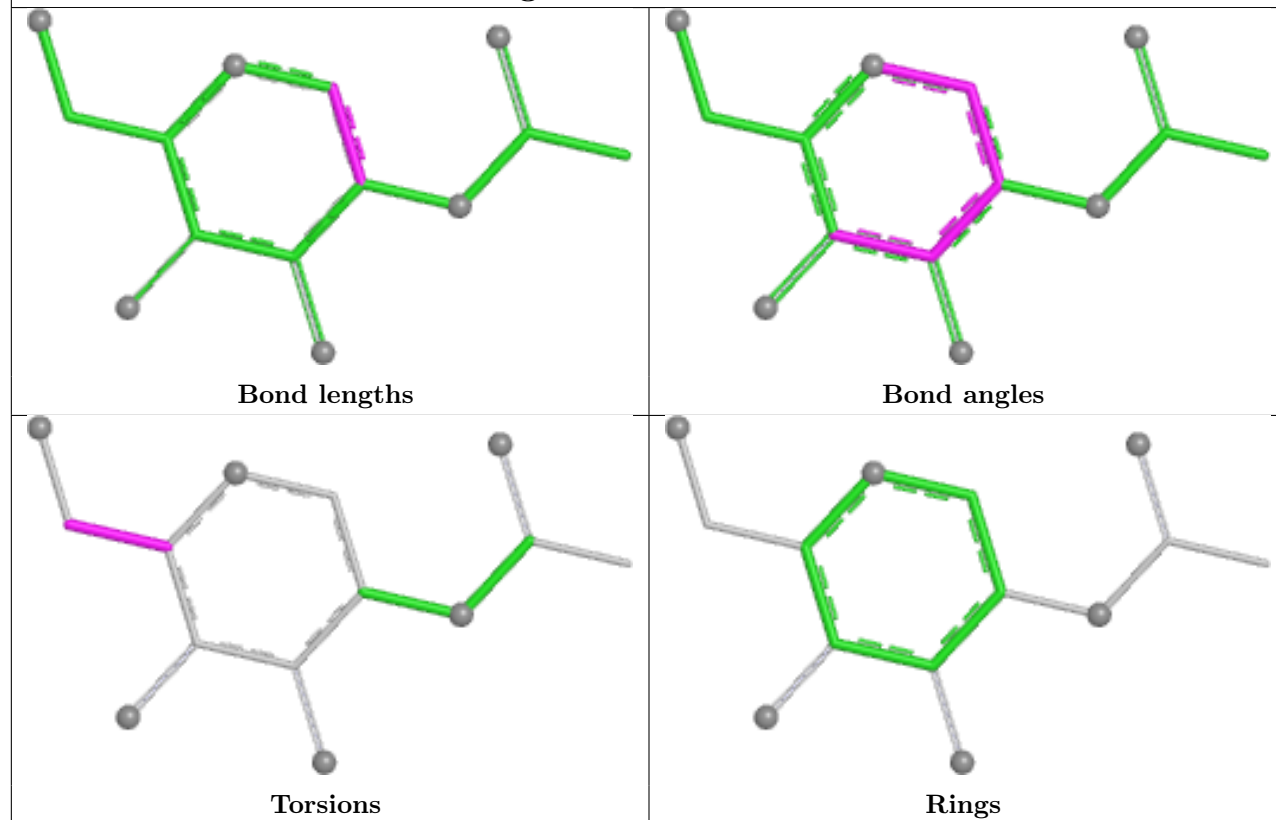
Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A	1444	FOL	1	0
9	B	1444	FOL	1	0
9	C	1444	FOL	1	0

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

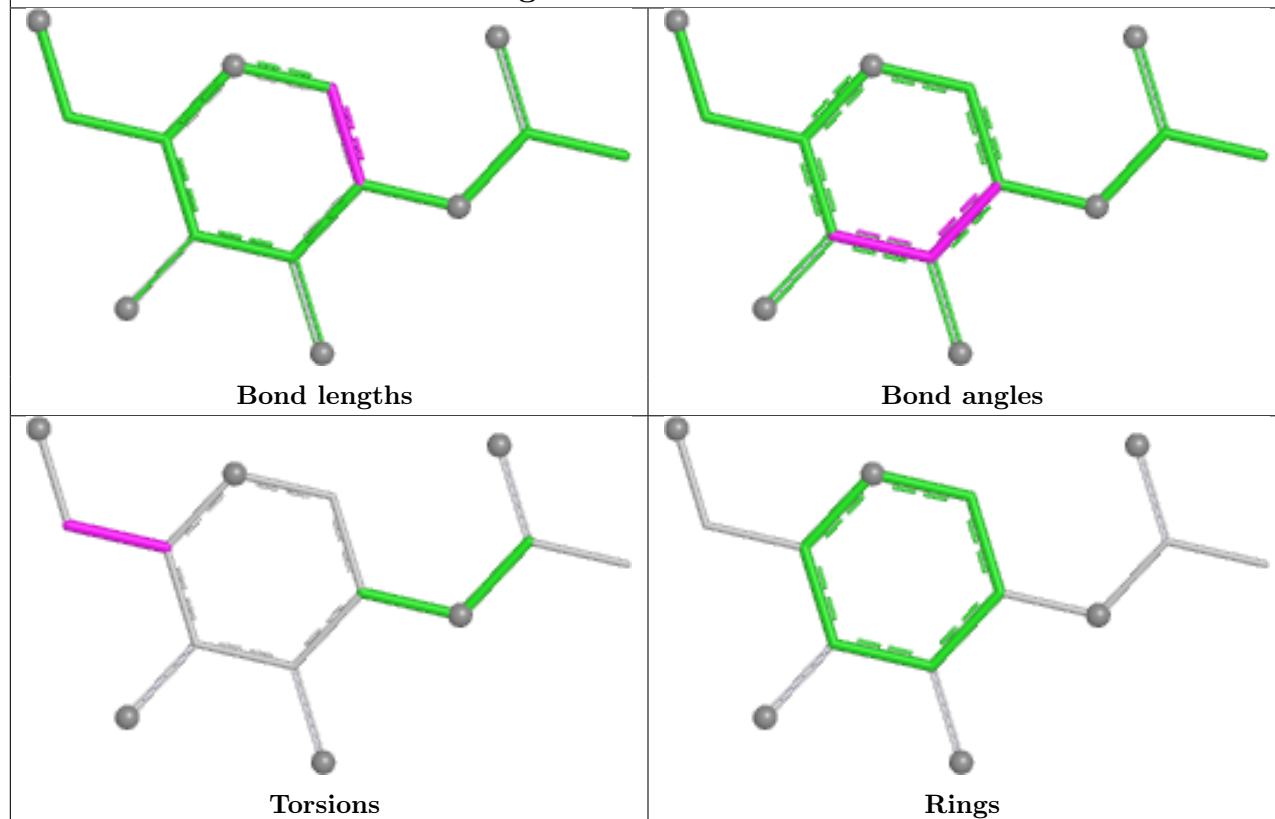
Ligand NAG B 1415



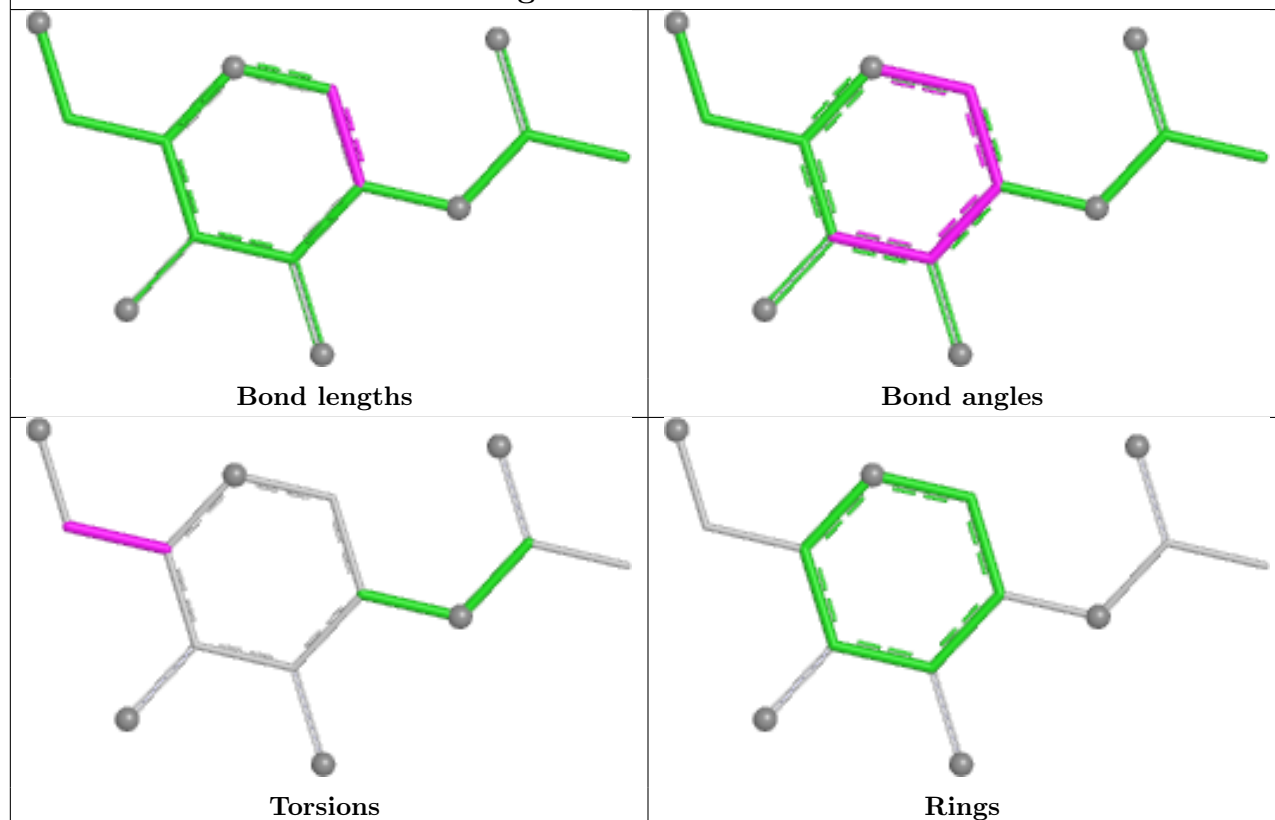
Ligand NAG C 1419



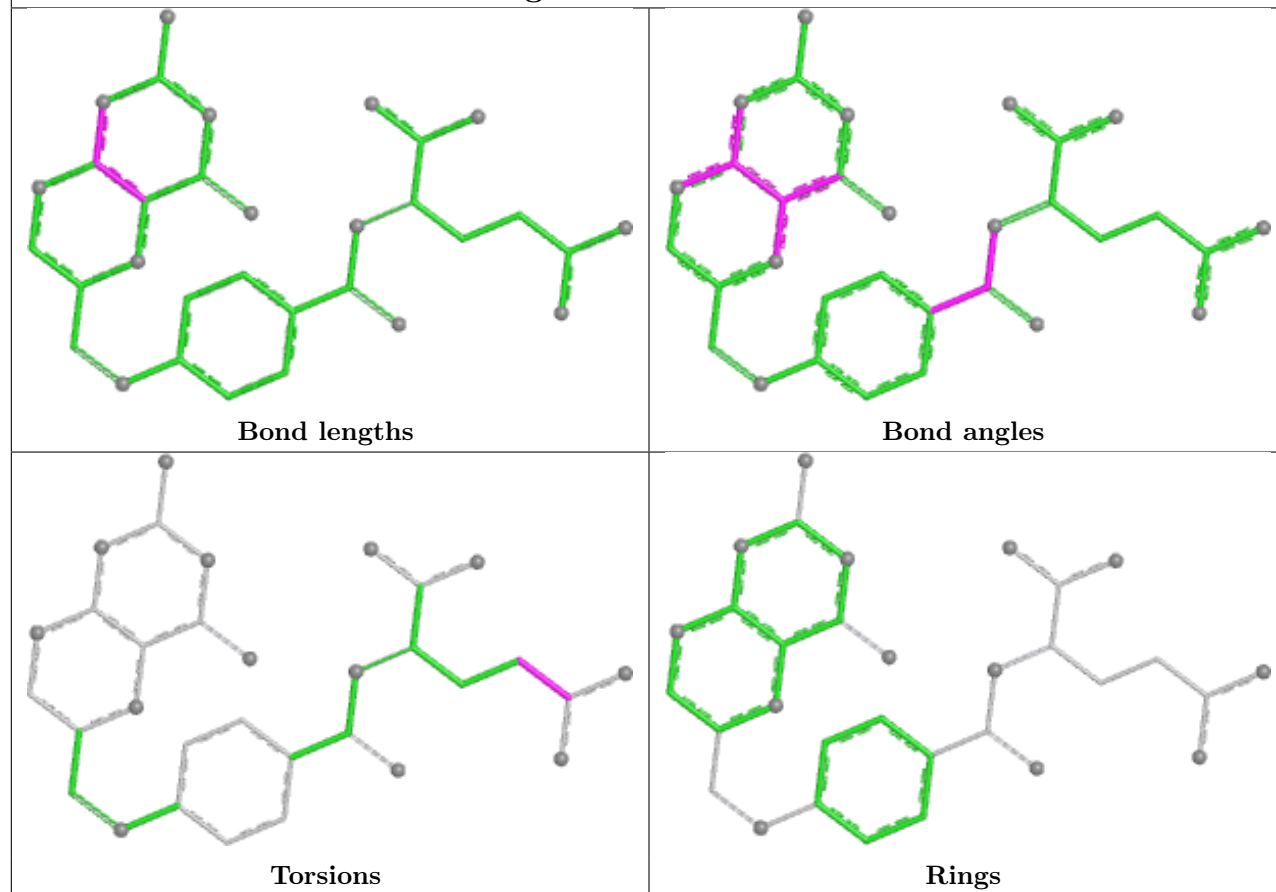
Ligand NAG B 1418



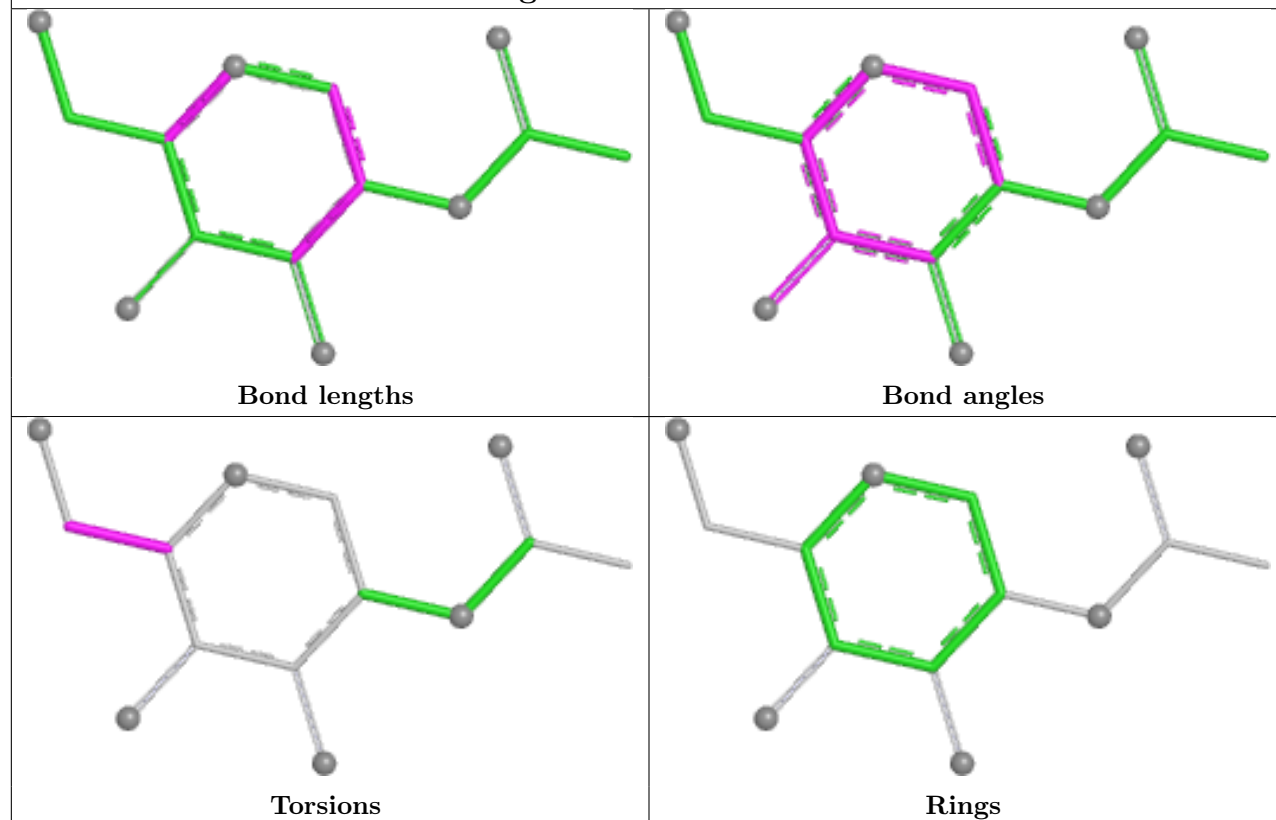
Ligand NAG A 1419

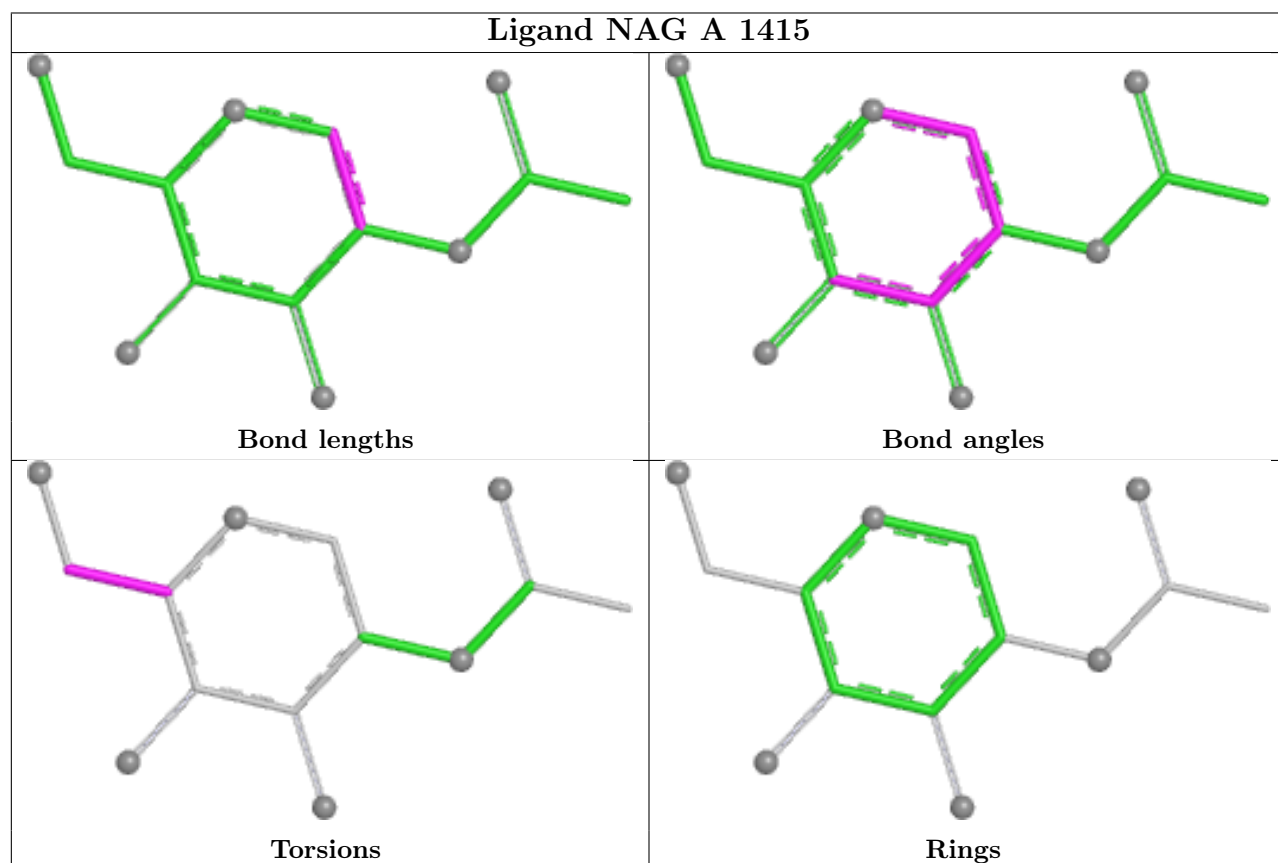
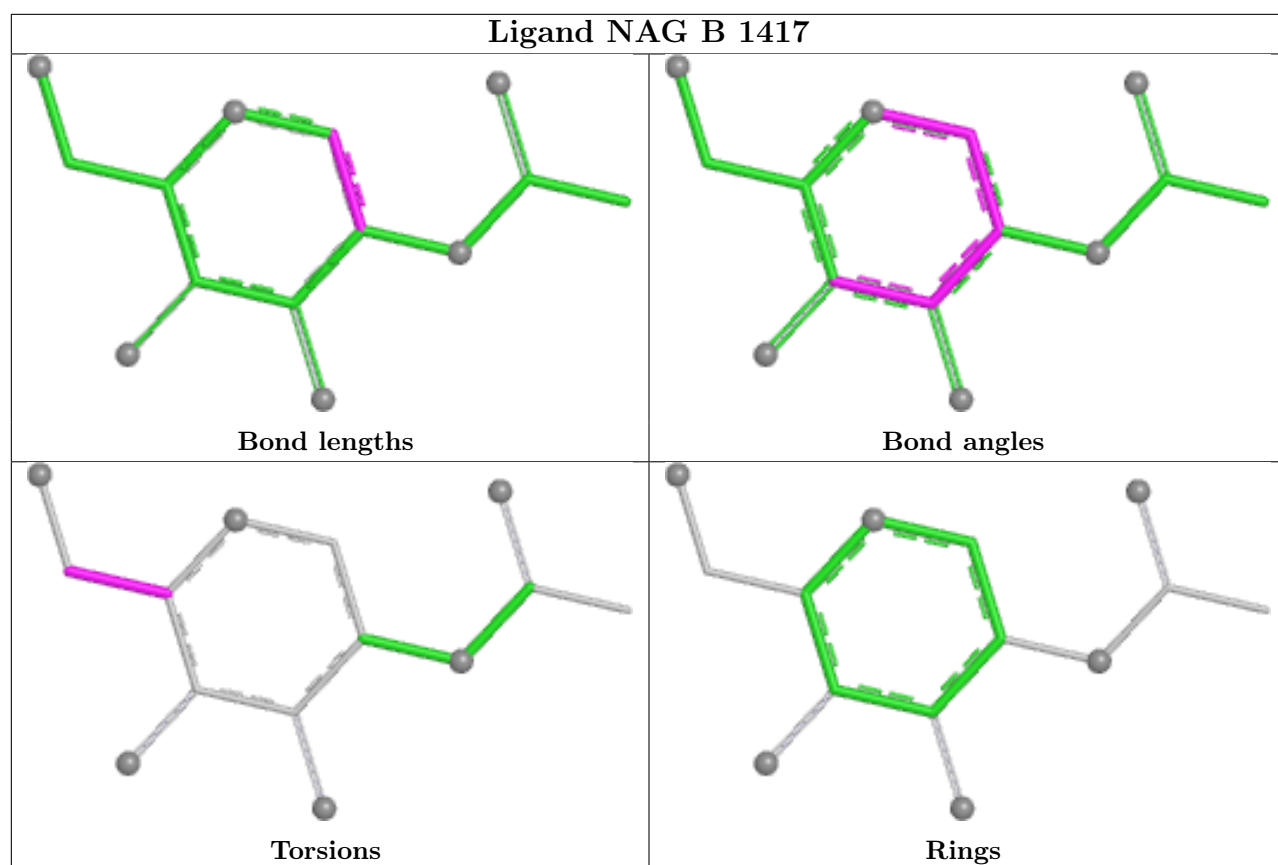


Ligand FOL A 1444

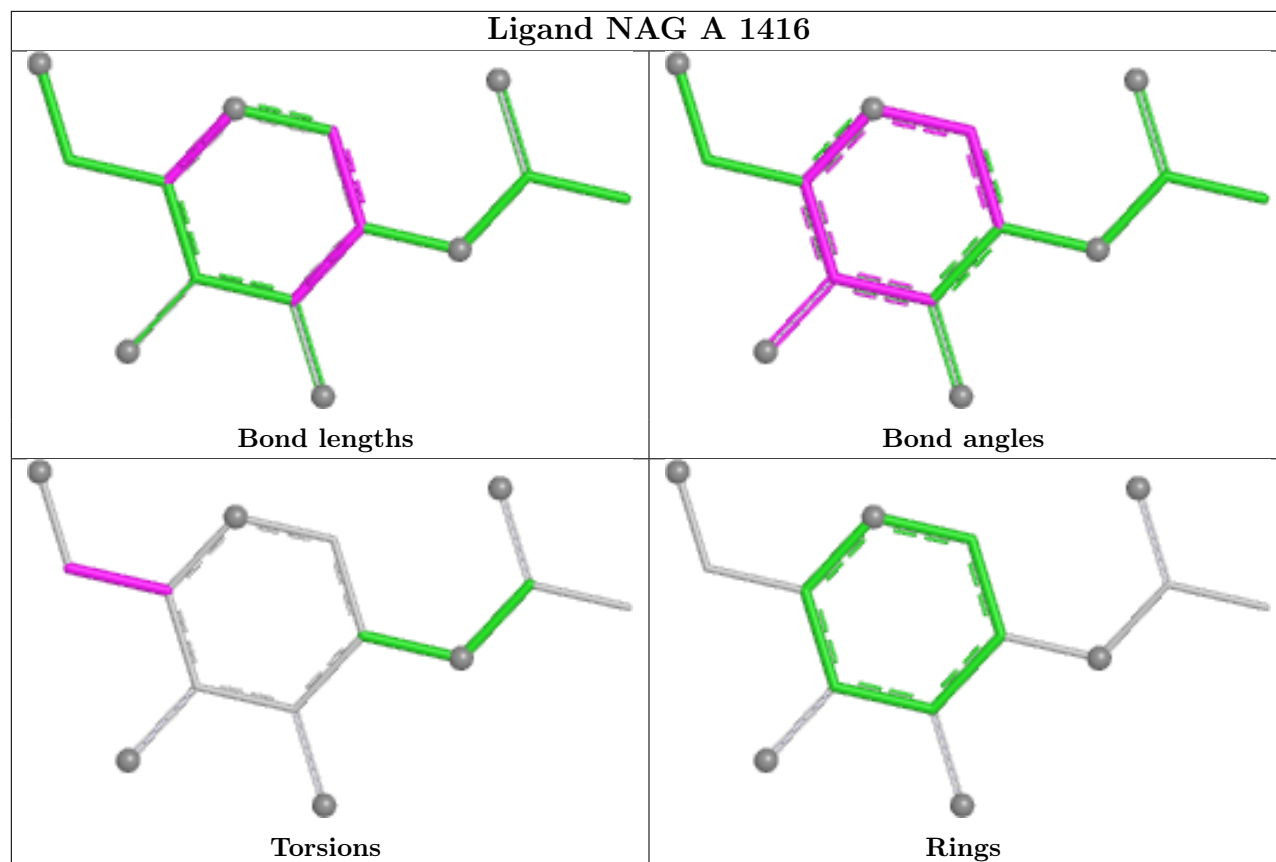


Ligand NAG C 1416

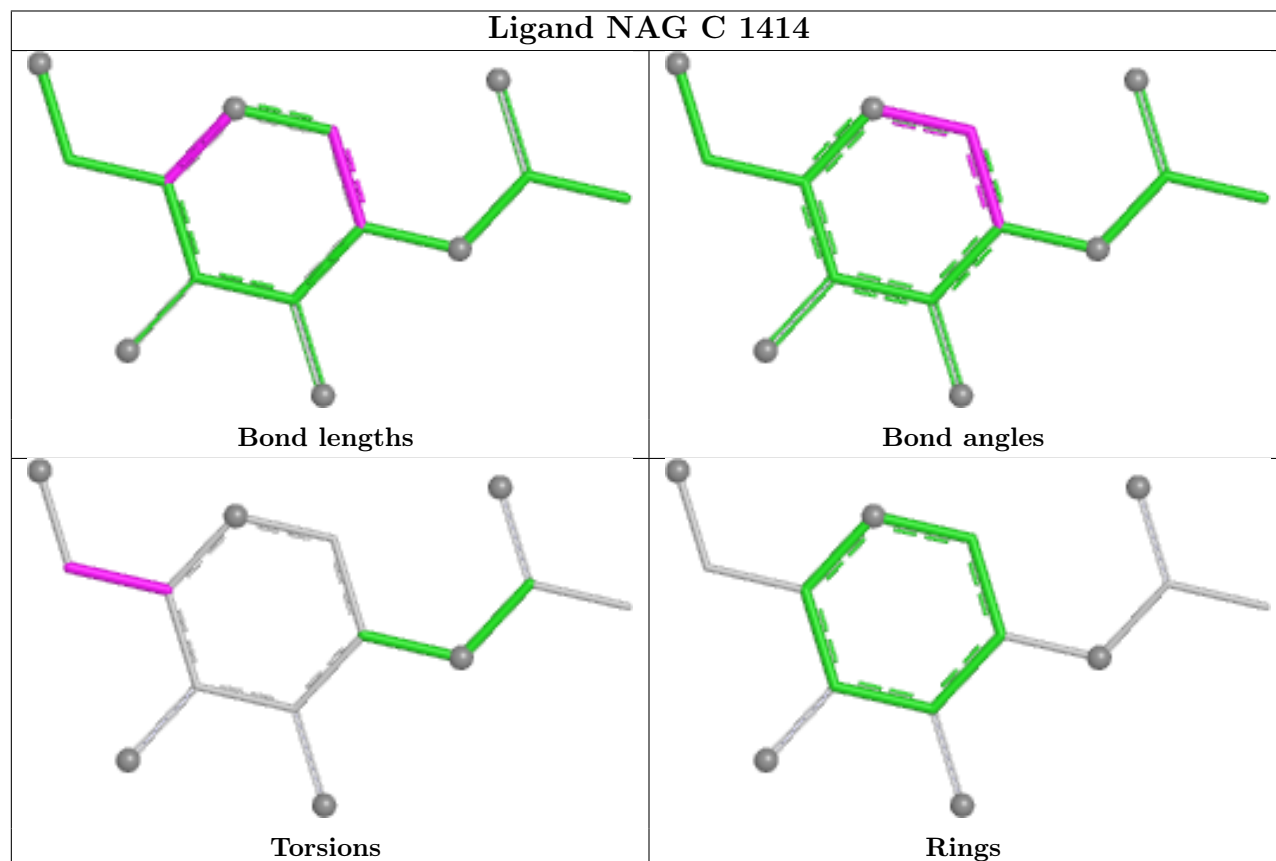




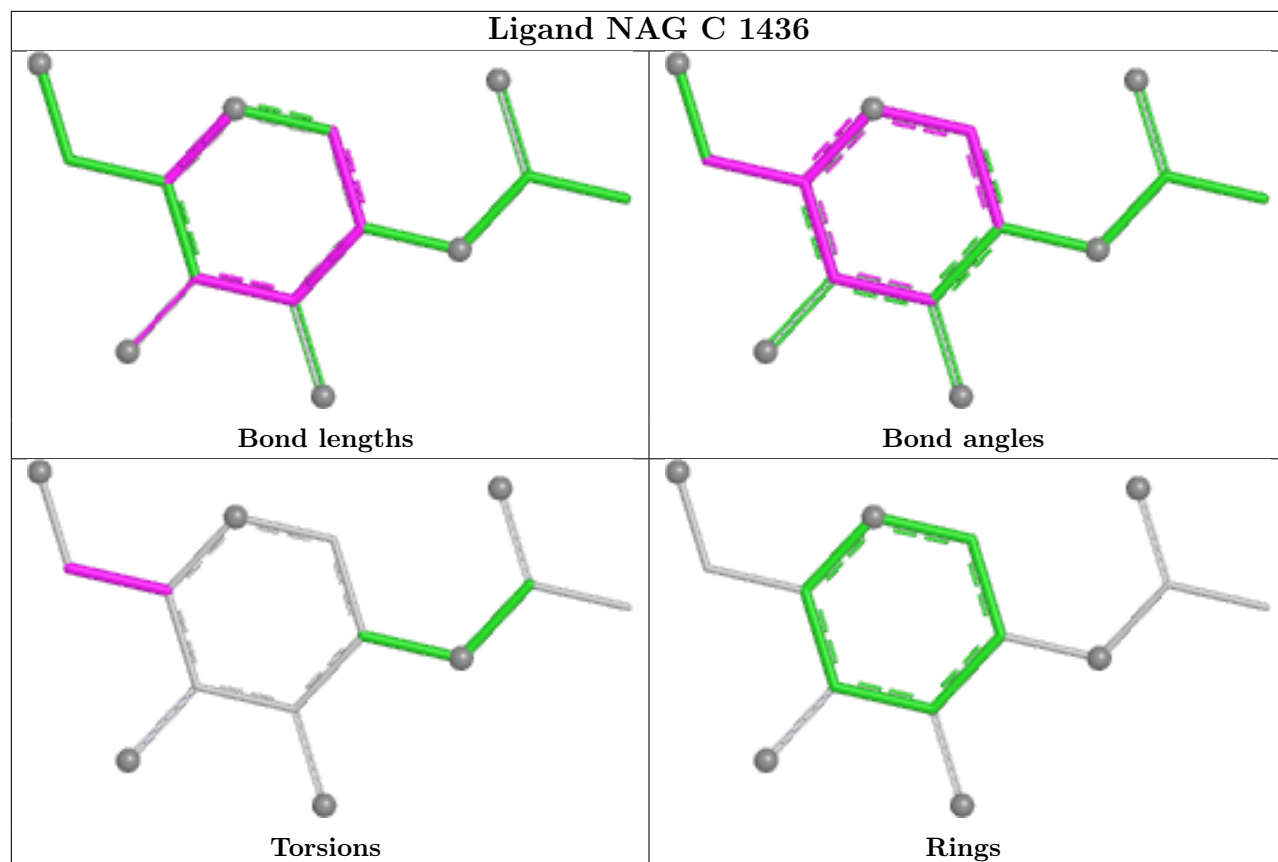
Ligand NAG A 1416



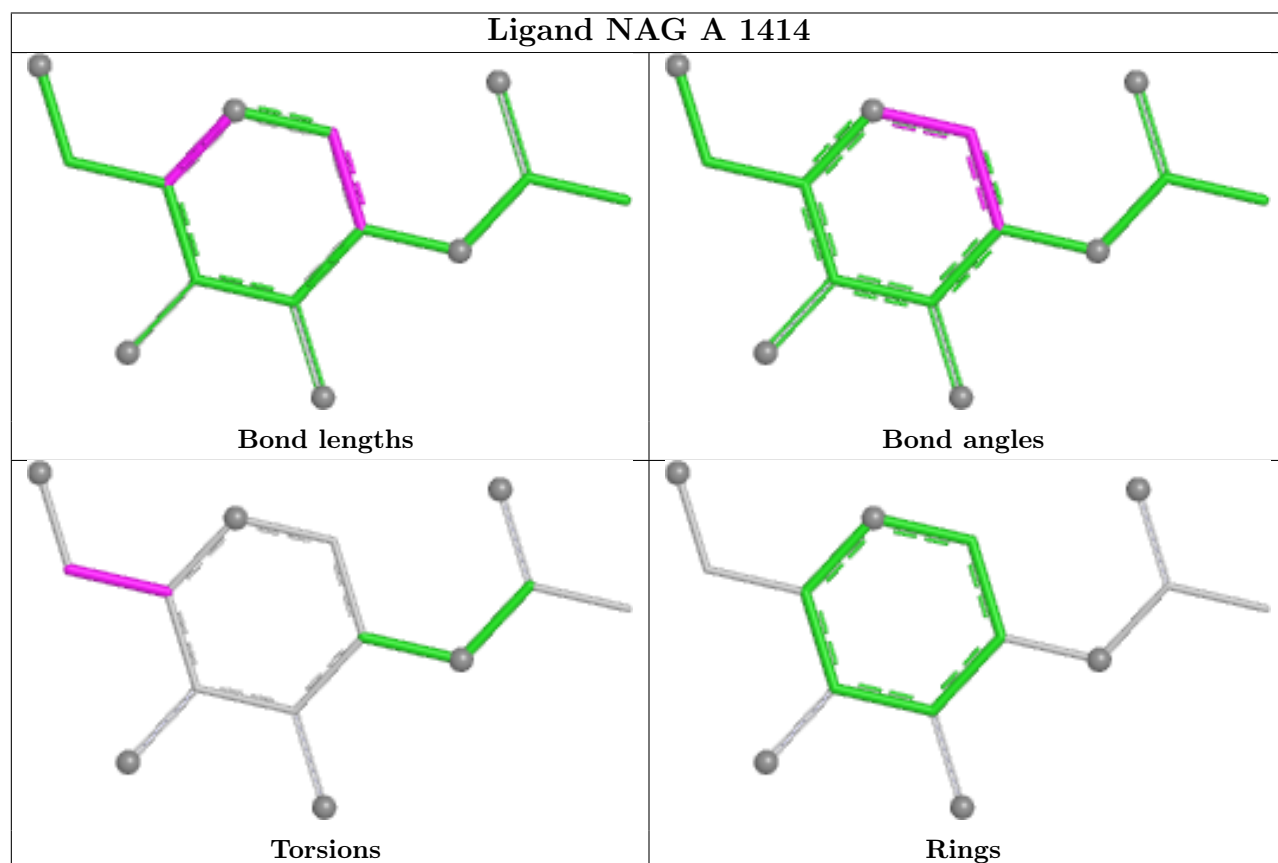
Ligand NAG C 1414



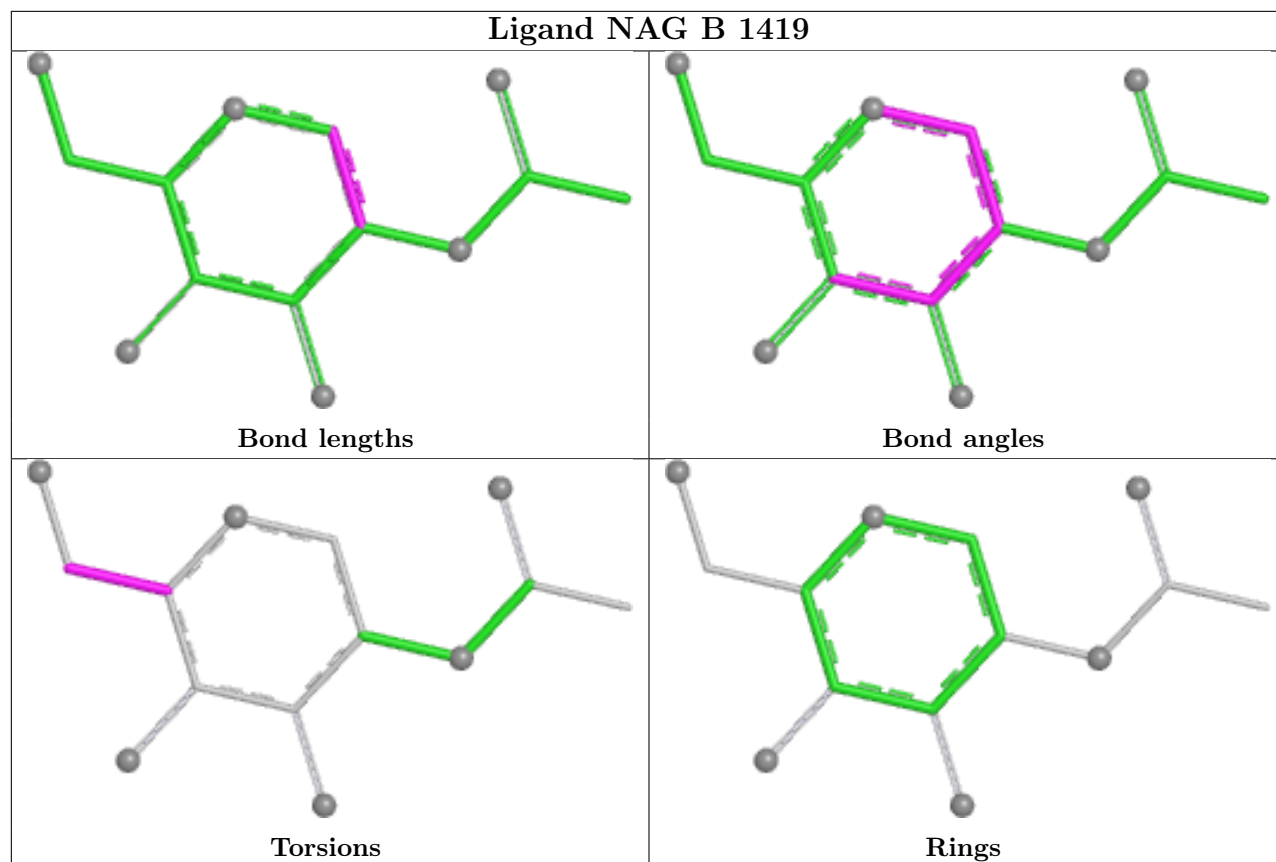
Ligand NAG C 1436



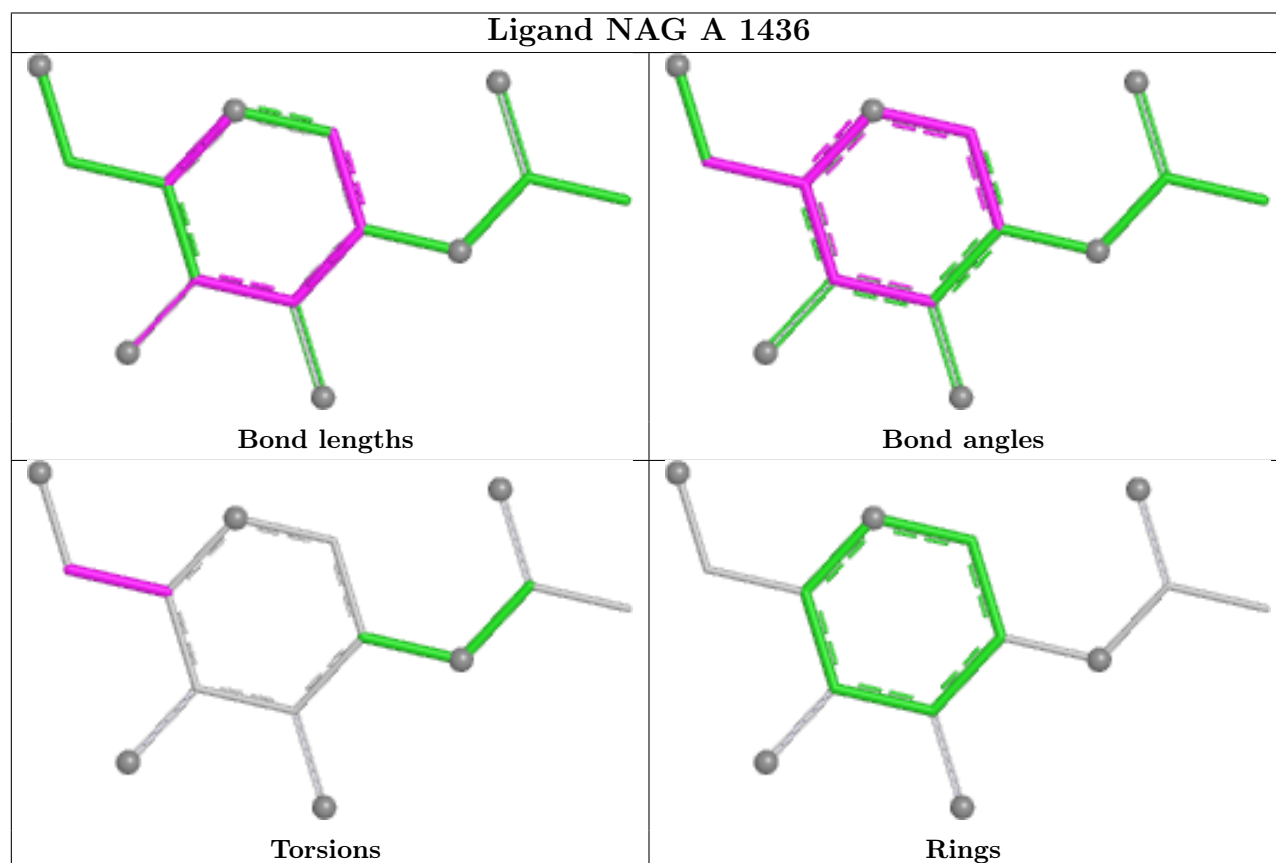
Ligand NAG A 1414

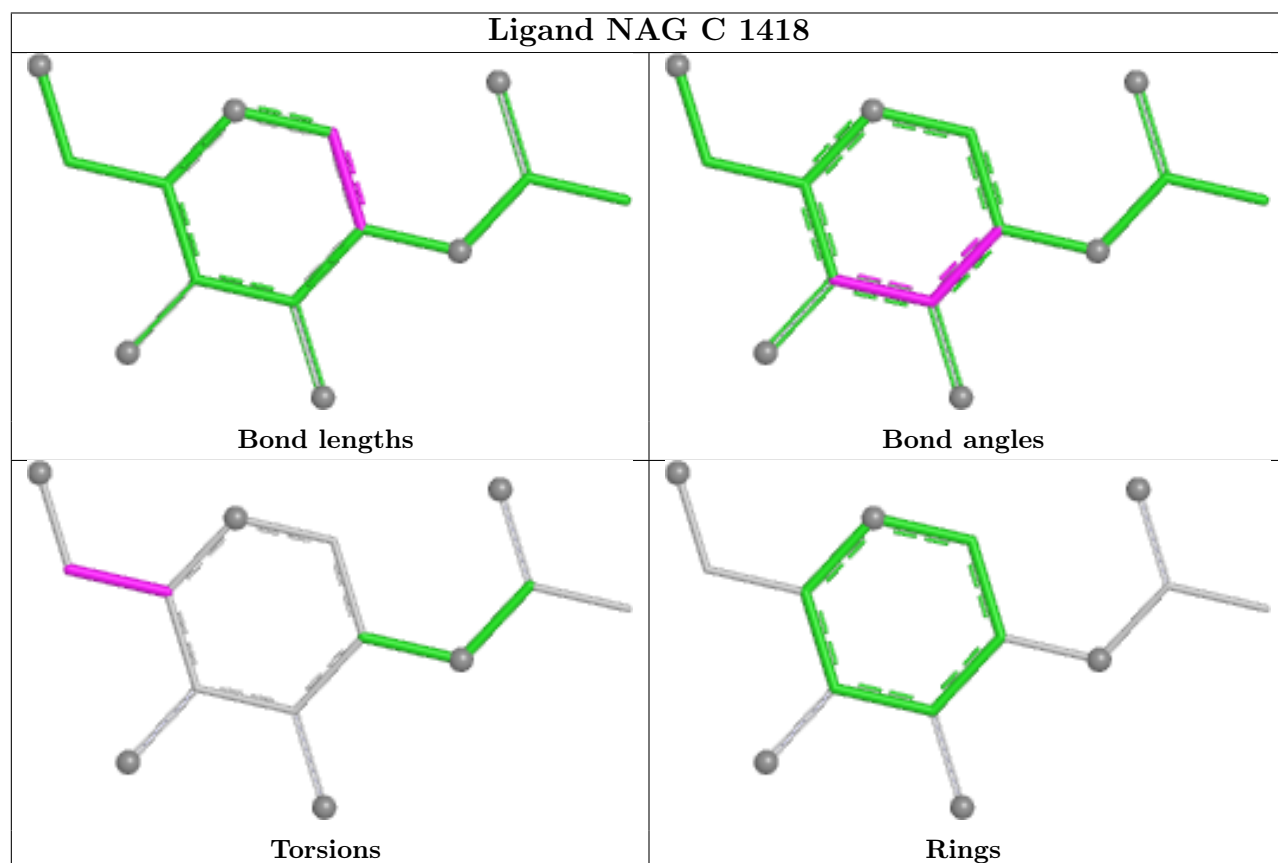
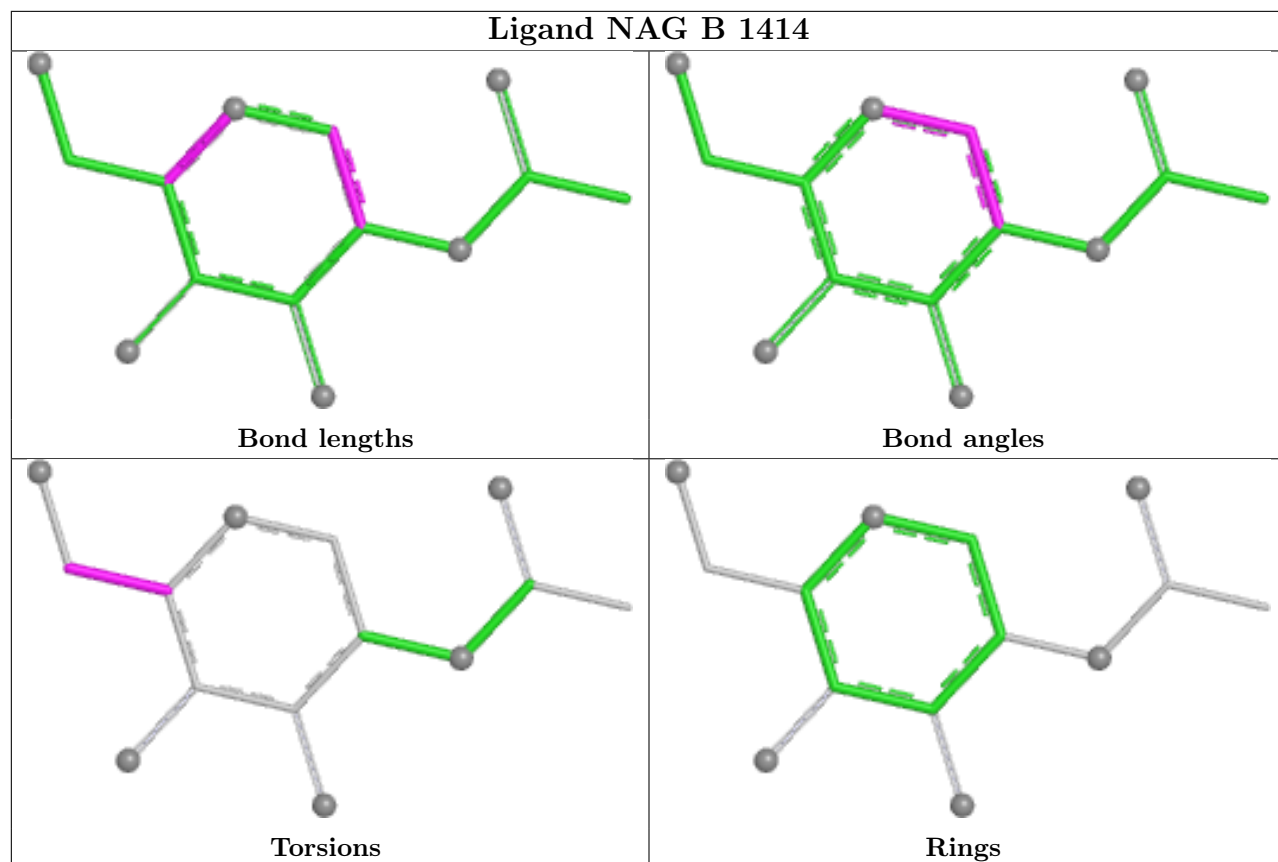


Ligand NAG B 1419

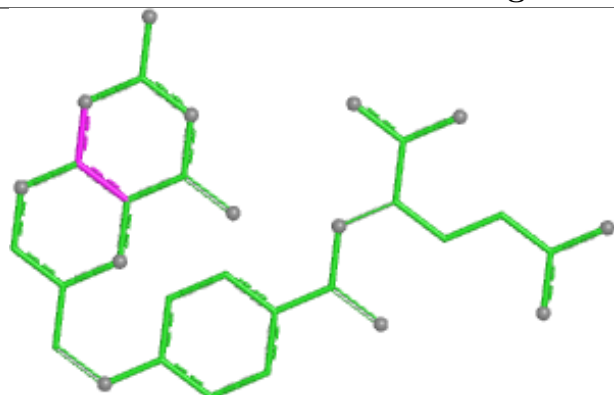


Ligand NAG A 1436

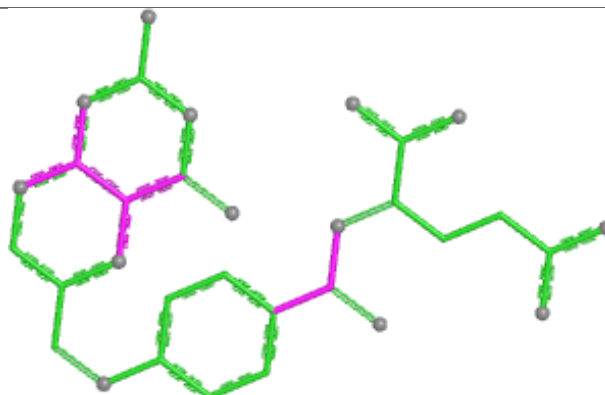




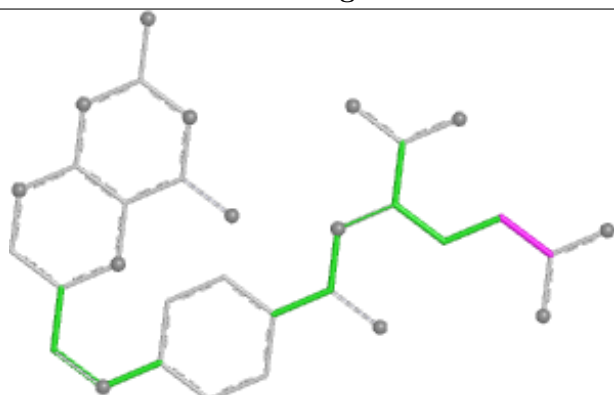
Ligand FOL B 1444



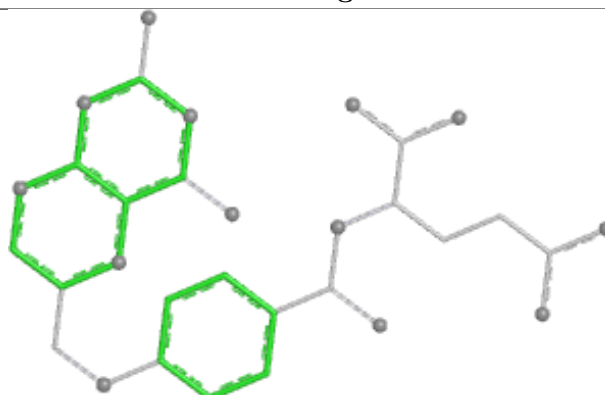
Bond lengths



Bond angles

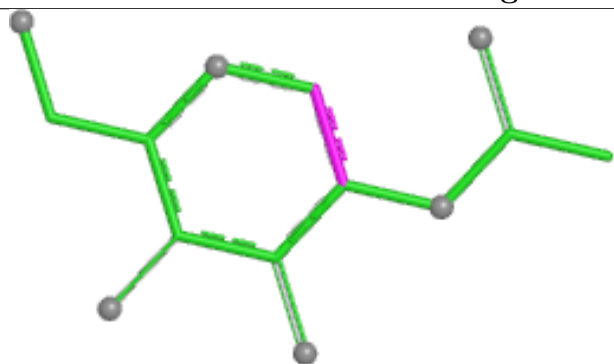


Torsions

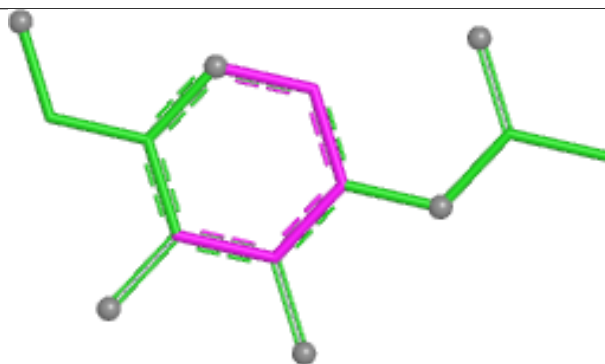


Rings

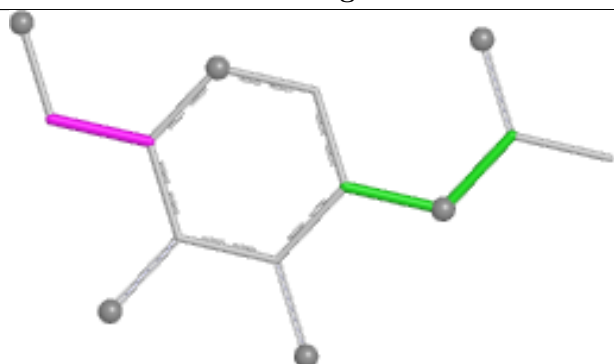
Ligand NAG A 1417



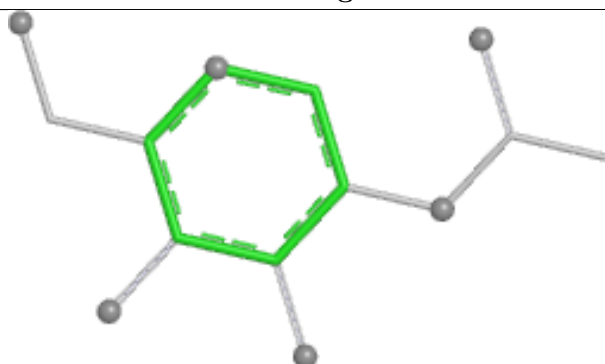
Bond lengths



Bond angles

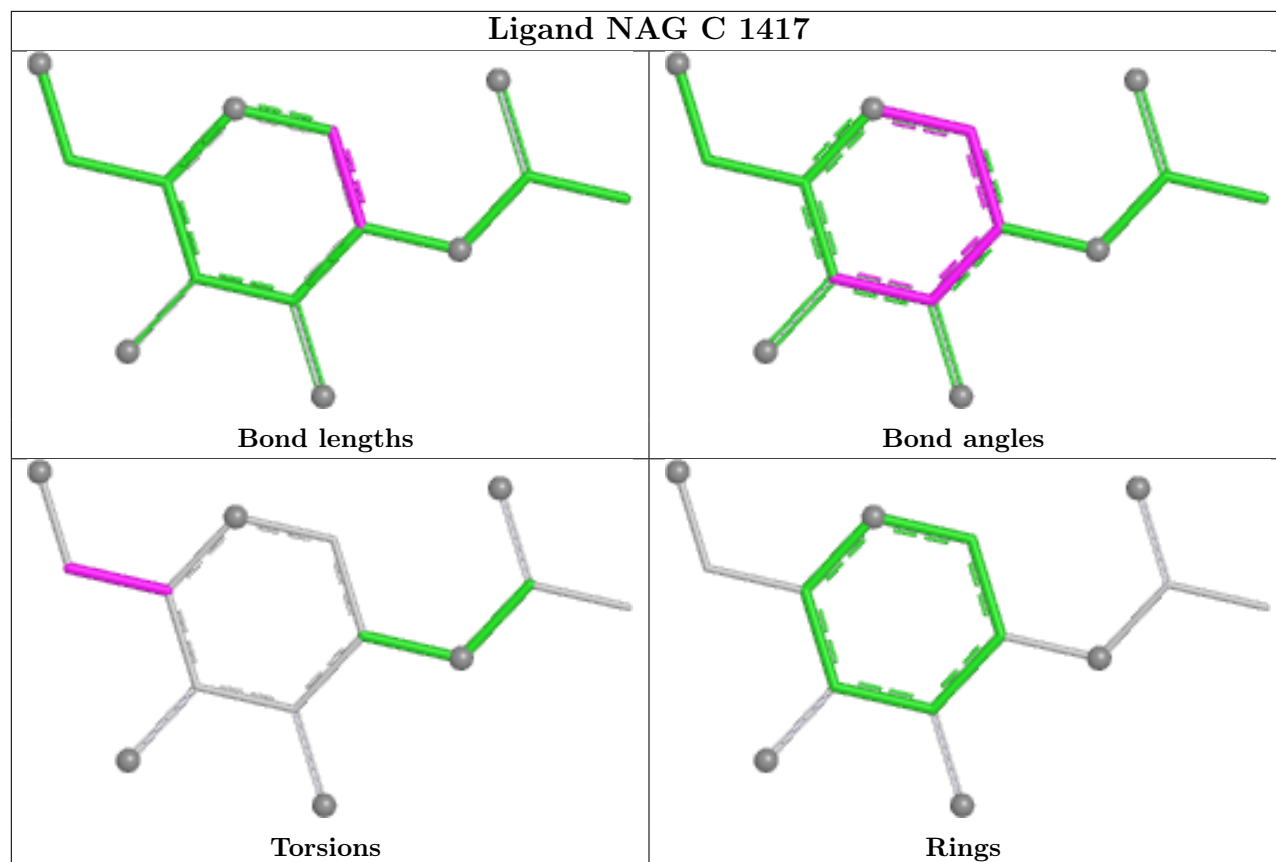


Torsions

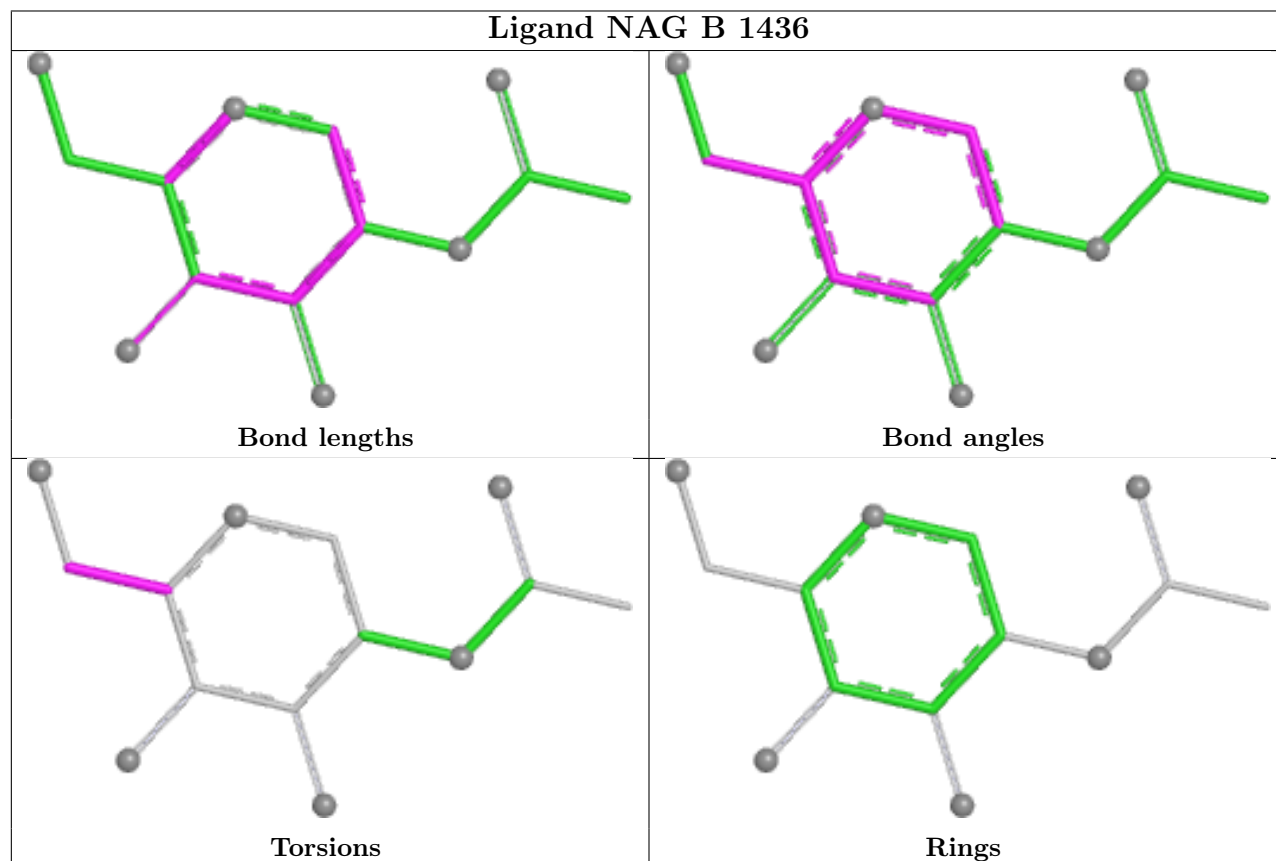


Rings

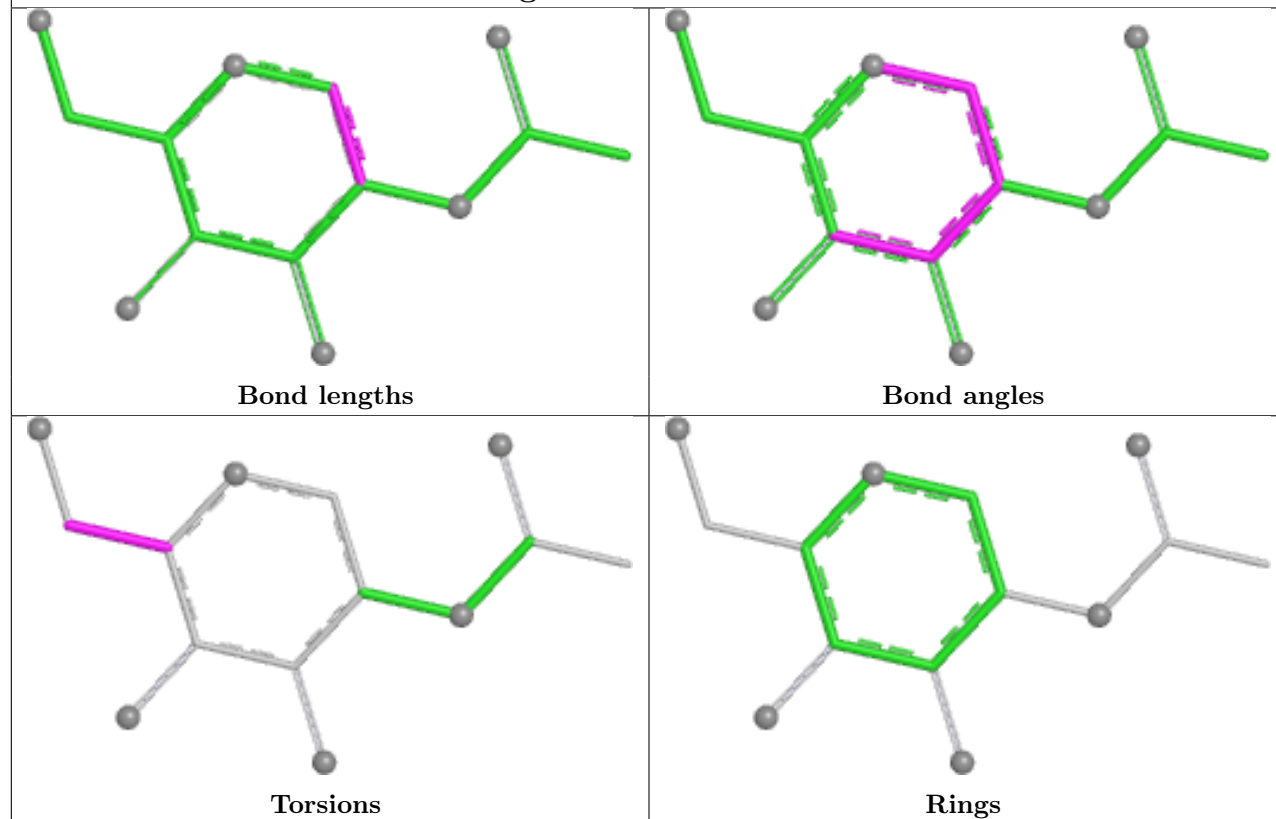
Ligand NAG C 1417



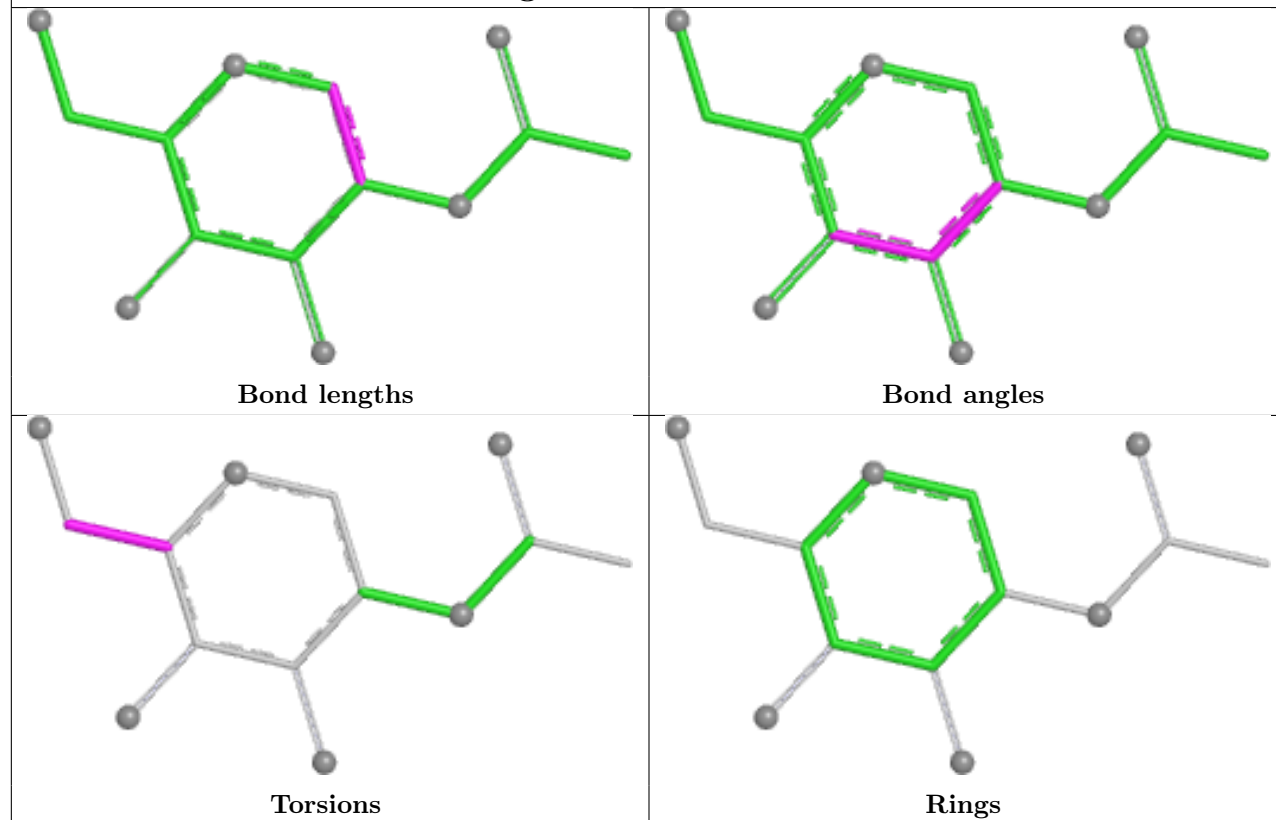
Ligand NAG B 1436



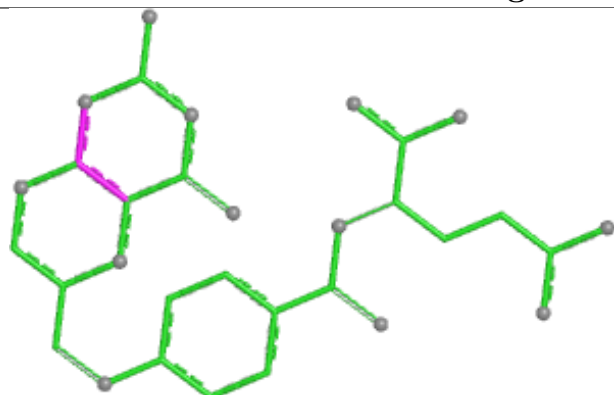
Ligand NAG C 1415



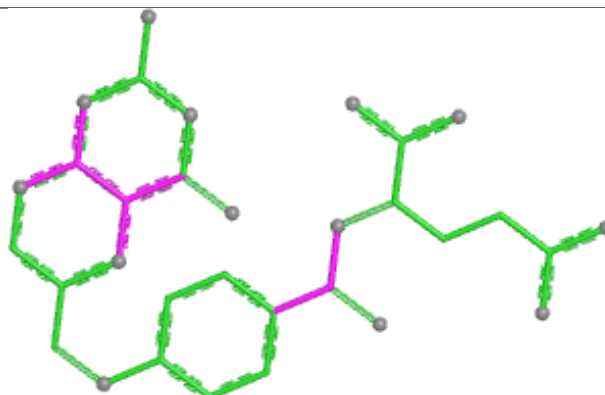
Ligand NAG A 1418



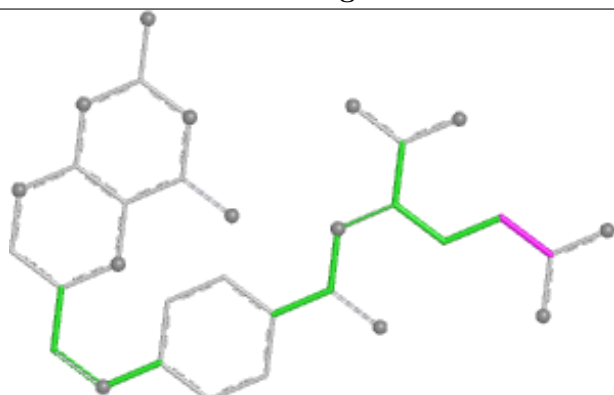
Ligand FOL C 1444



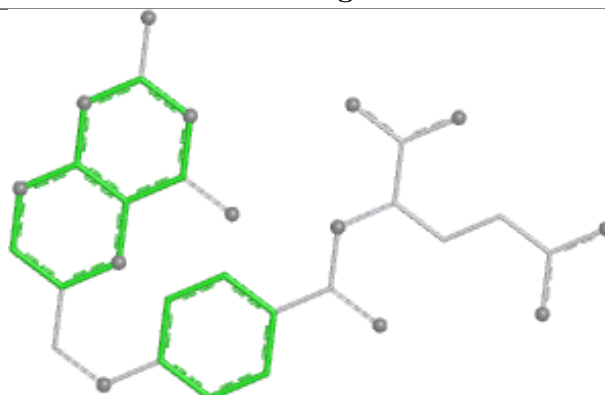
Bond lengths



Bond angles

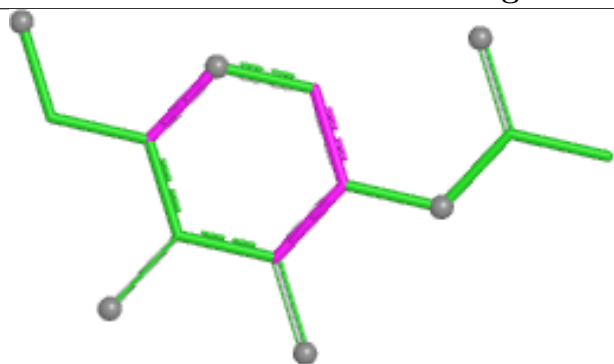


Torsions

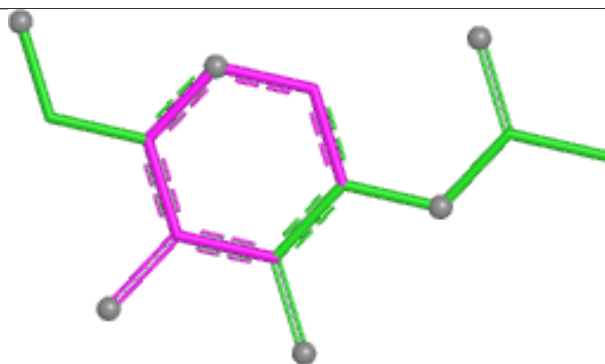


Rings

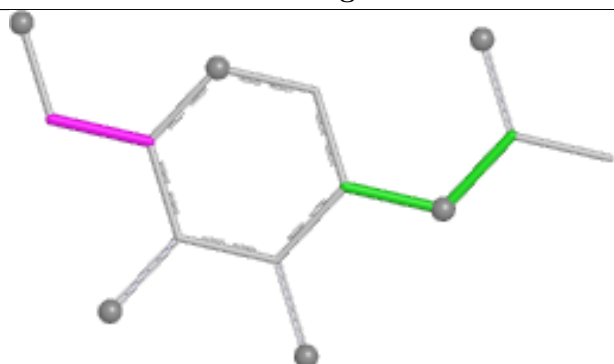
Ligand NAG B 1416



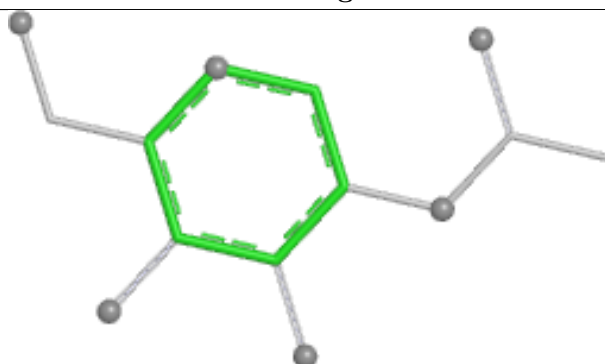
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

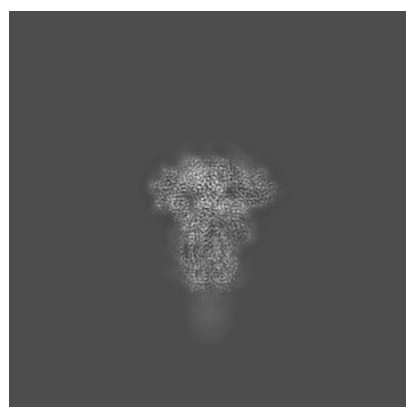
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20544. These allow visual inspection of the internal detail of the map and identification of artifacts.

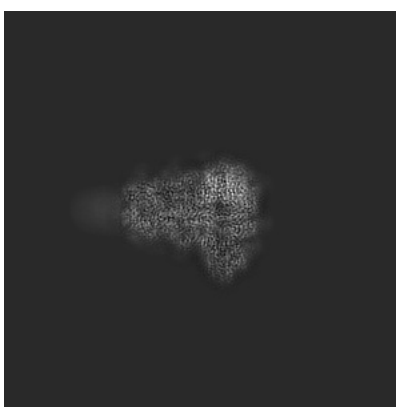
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

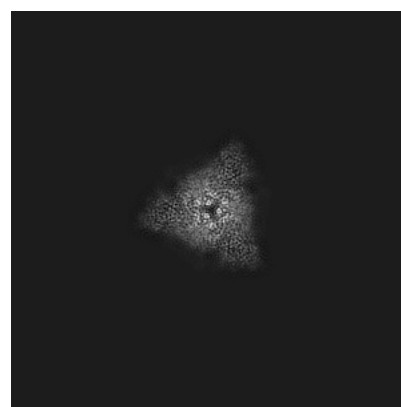
6.1.1 Primary map



X



Y

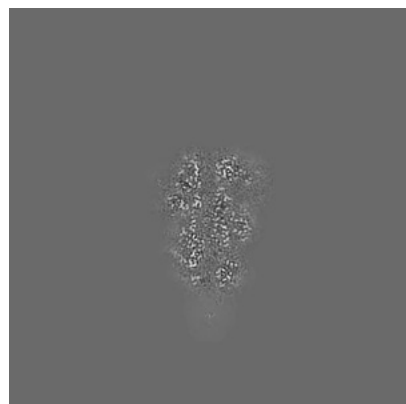


Z

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

6.2 Central slices [i](#)

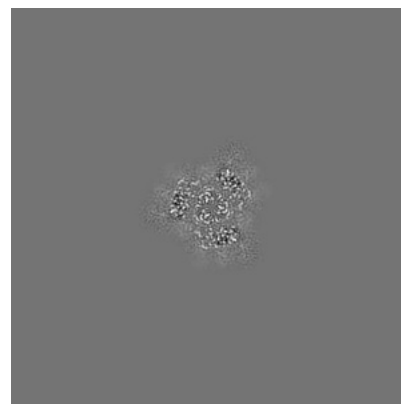
6.2.1 Primary map



X Index: 200



Y Index: 200



Z Index: 200

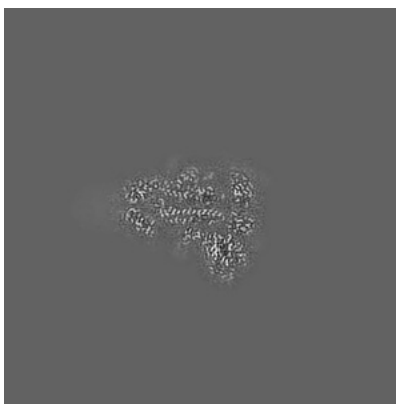
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

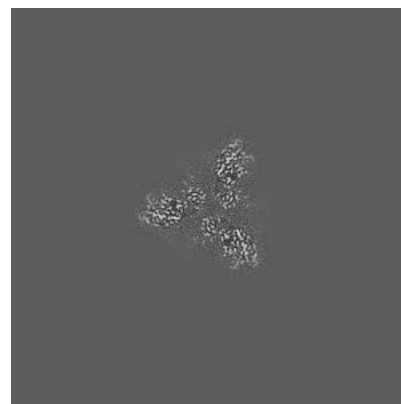
6.3.1 Primary map



X Index: 215



Y Index: 193

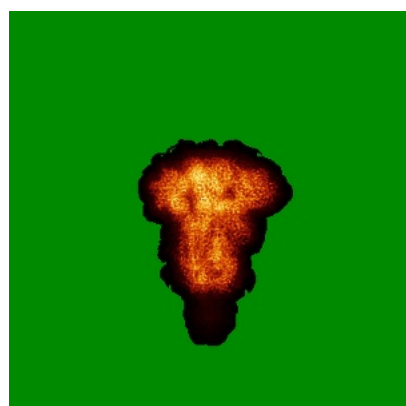


Z Index: 223

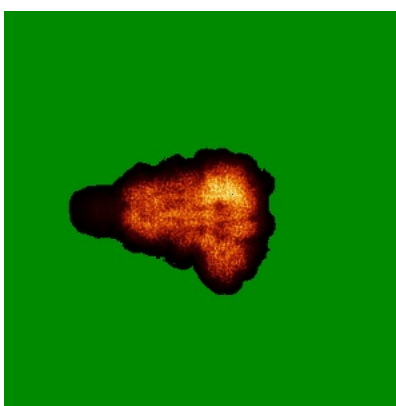
The images above show the largest variance slices of the map in three orthogonal directions.

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

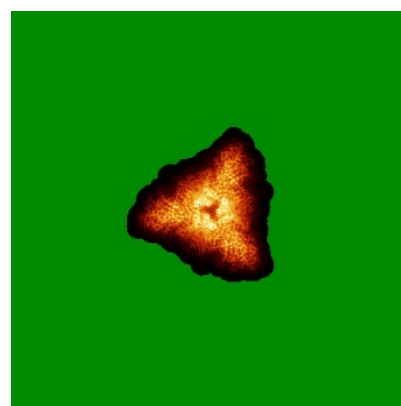
6.4.1 Primary map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views

This section was not generated.

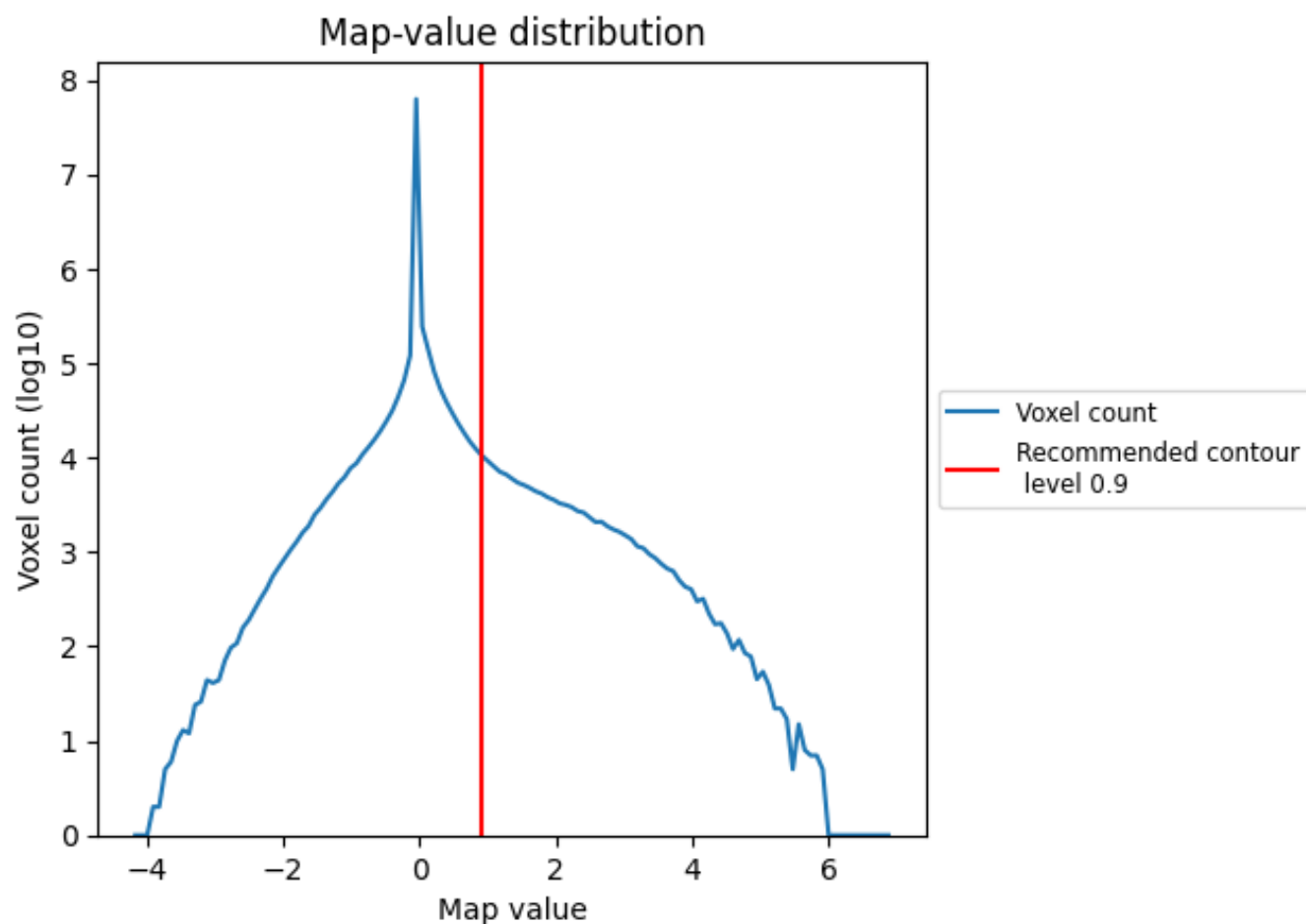
6.6 Mask visualisation

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

7 Map analysis [i](#)

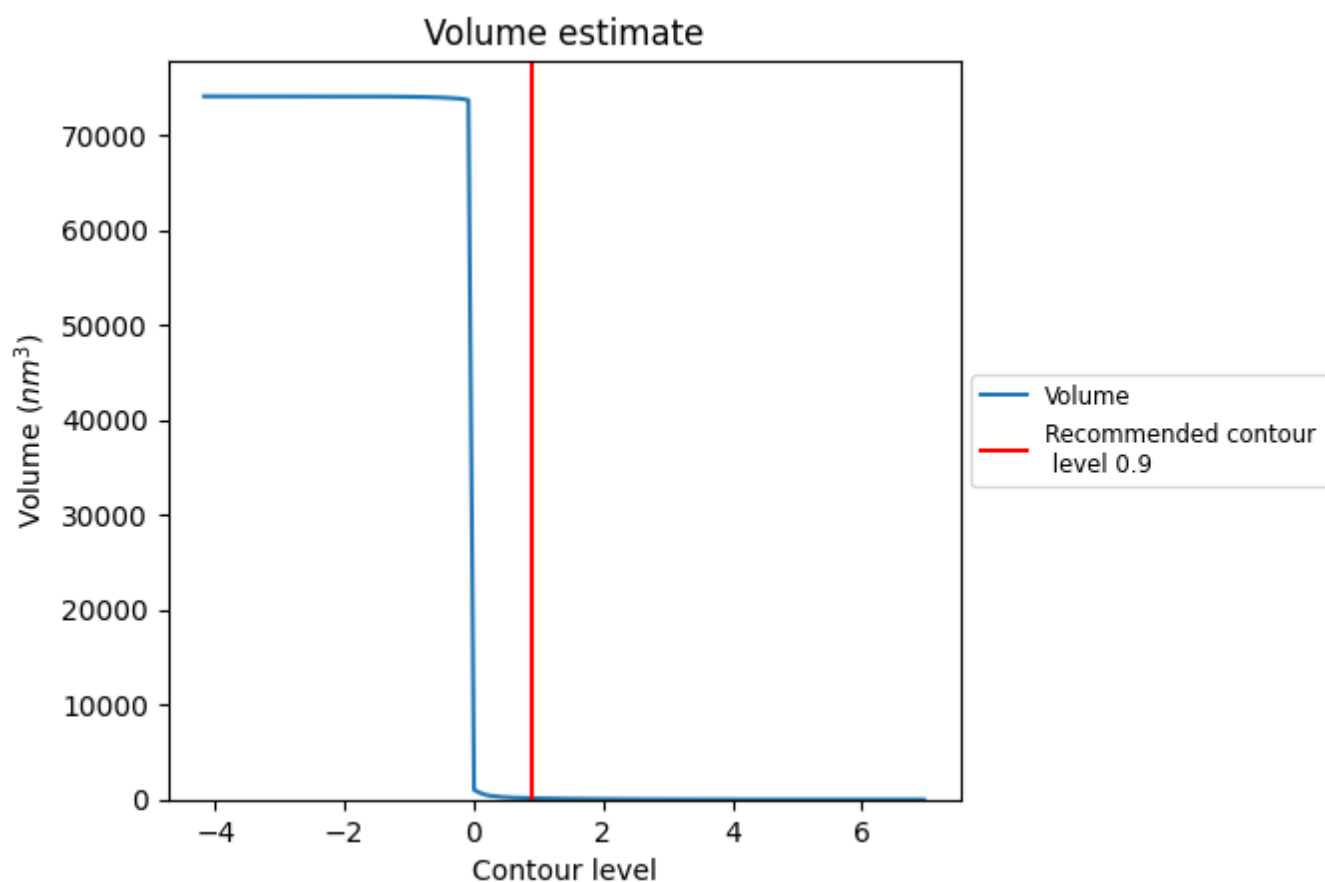
This section contains the results of statistical analysis of the map.

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.

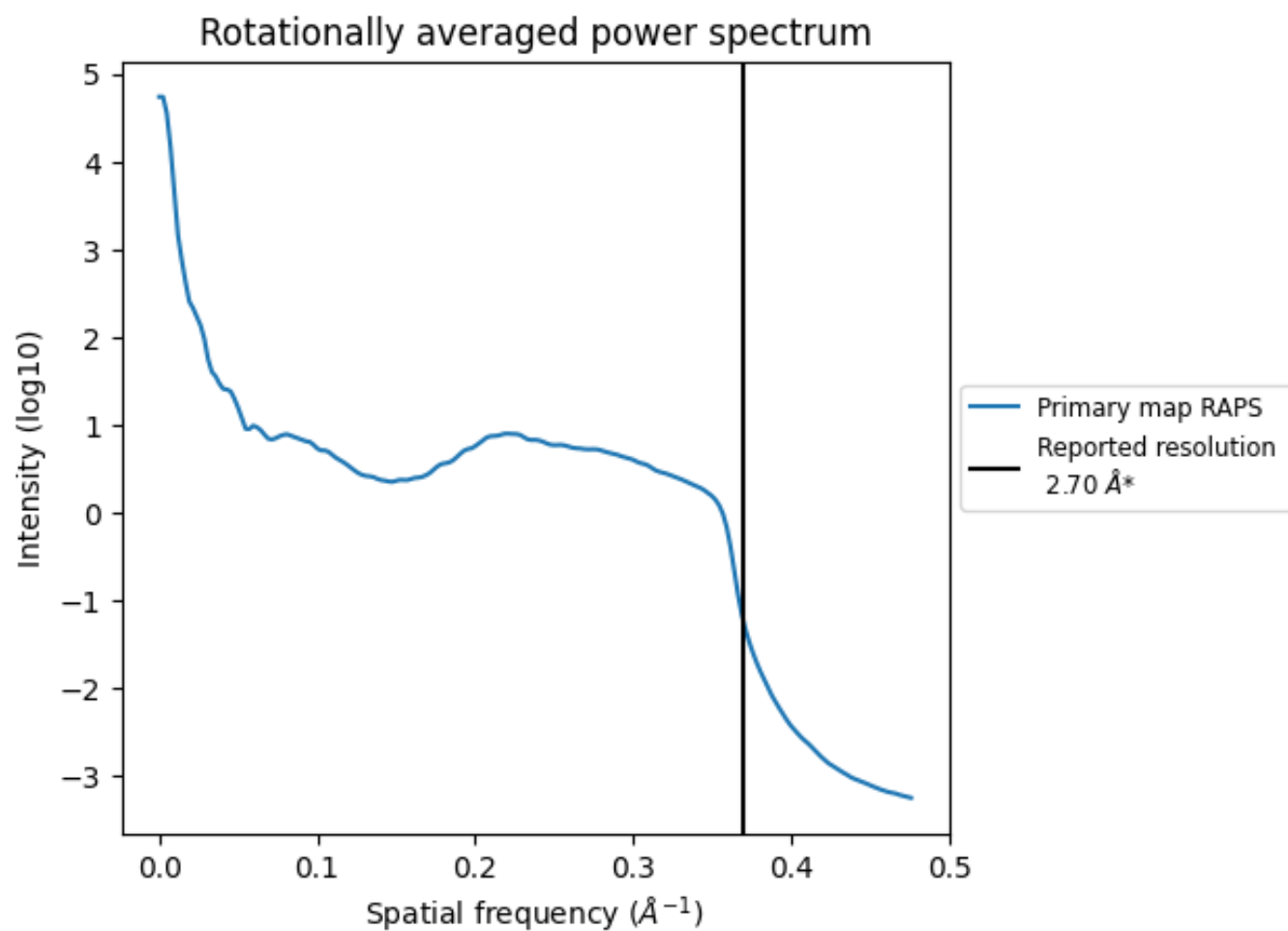
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 138 nm³; this corresponds to an approximate mass of 125 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.370 Å⁻¹

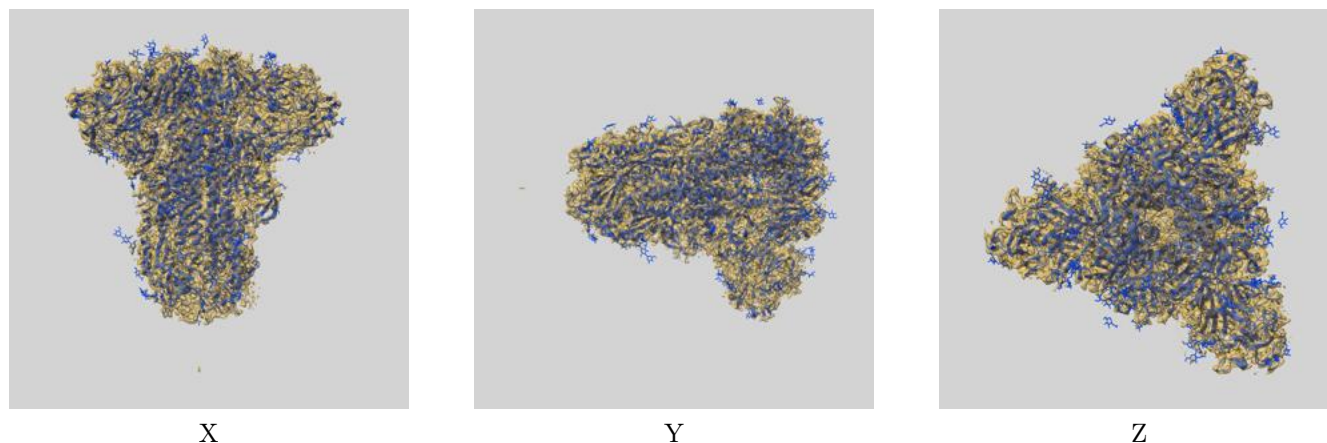
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

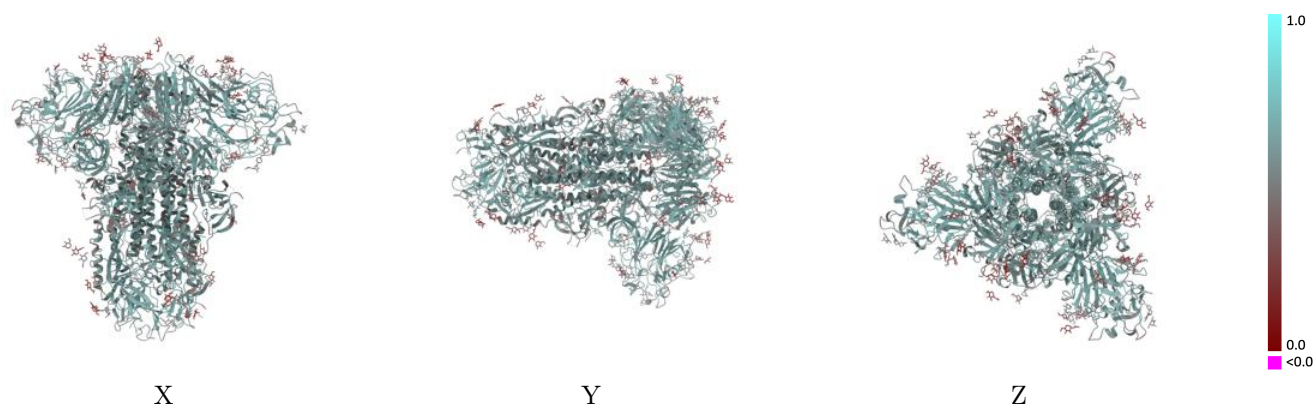
This section contains information regarding the fit between EMDB map EMD-20544 and PDB model 6Q06. Per-residue inclusion information can be found in [section 3](#) on [page 17](#).

9.1 Map-model overlay [i](#)



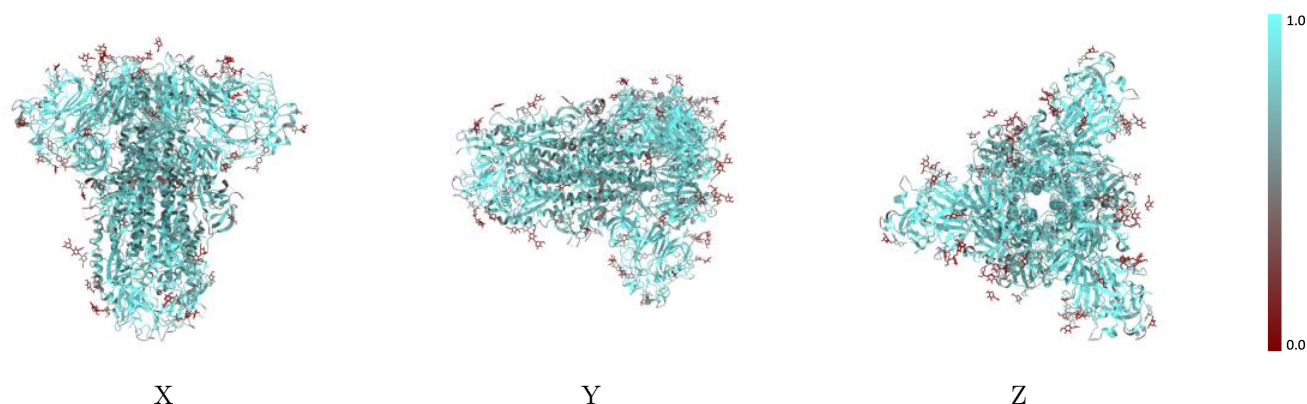
The images above show the 3D surface view of the map at the recommended contour level 0.9 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



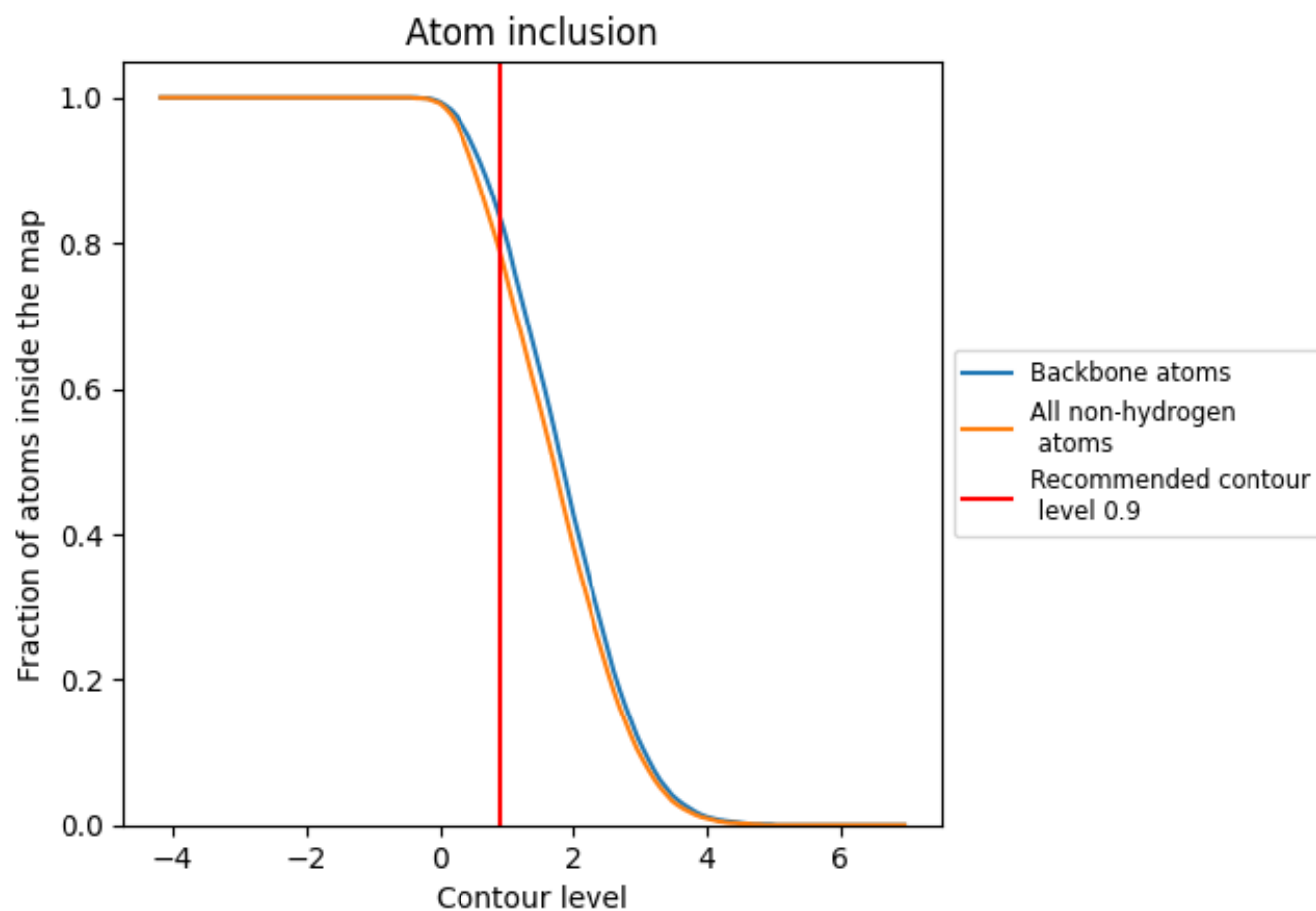
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.9).

9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 79% 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 (0.9) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7910	 0.5740
A	 0.8210	 0.5840
B	 0.8180	 0.5840
C	 0.8210	 0.5850
D	 0.4600	 0.4190
E	 0.2140	 0.3020
F	 0.3010	 0.3650
G	 0.1540	 0.3000
H	 0.2000	 0.3570
I	 0.2500	 0.4920
J	 0.2140	 0.2810
K	 0.4750	 0.4650
L	 0.3110	 0.3700
M	 0.3930	 0.3670
N	 0.3750	 0.4810
O	 0.4000	 0.4250
P	 0.2500	 0.2860
Q	 0.3130	 0.3580
R	 0.1280	 0.2820
S	 0.2200	 0.3570
T	 0.2860	 0.4780
U	 0.2500	 0.2930
V	 0.4590	 0.4630
W	 0.3280	 0.3710
X	 0.3210	 0.3700
Y	 0.3750	 0.4680
Z	 0.4400	 0.4190
a	 0.2140	 0.2690
b	 0.3130	 0.3590
c	 0.1540	 0.2820
d	 0.2000	 0.3560
e	 0.2860	 0.4660
f	 0.2140	 0.2730
g	 0.4750	 0.4590
h	 0.2950	 0.3650



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Chain	Atom inclusion	Q-score
i	 0.2860	 0.3770
j	 0.3120	 0.4810