



Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 08:51 AM UTC

PDB ID : 9JMH / pdb_00009jmh
EMDB ID : EMD-61602
Title : Cryo-EM structure of HKU25-BatCoV S-trimer stabilized with 2P and x1 disulfide bond
Authors : Yuan, H.; Xiong, X.
Deposited on : 2024-09-20
Resolution : 3.00 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

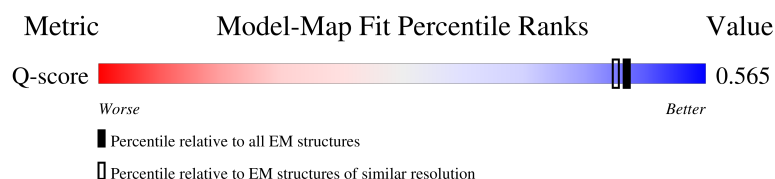
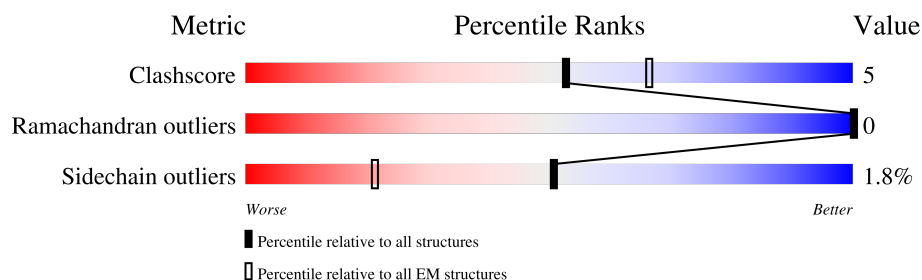
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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

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

The reported resolution of this entry is 3.00 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.



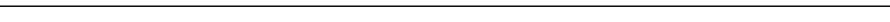
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14081 (2.50 - 3.50)

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	1368	 71% 10% • 18%
1	B	1368	 69% 11% • 18%
1	C	1368	 69% 12% • 18%
2	D	2	 50% 50%

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Mol	Chain	Length	Quality of chain
2	F	2	 100%
2	H	2	 100%
2	I	2	 50% 100%
2	J	2	 50% 50%
2	M	2	 100%
2	N	2	 100%
2	O	2	 100%
2	R	2	 100%
2	S	2	 100%
3	E	3	 67% 33%
3	G	3	 100%
3	K	3	 100%
3	L	3	 33% 67%
3	P	3	 100%
3	Q	3	 100%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 27452 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,Fibritin.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1121	Total	C	N	O	S	0	0
			8778	5568	1466	1696	48		
1	B	1121	Total	C	N	O	S	0	0
			8784	5571	1469	1696	48		
1	C	1121	Total	C	N	O	S	0	0
			8784	5571	1469	1696	48		

There are 171 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	437	CYS	SER	engineered mutation	UNP A0A2I4R888
A	1051	CYS	ASP	engineered mutation	UNP A0A2I4R888
A	1052	PRO	ALA	engineered mutation	UNP A0A2I4R888
A	1053	PRO	VAL	engineered mutation	UNP A0A2I4R888
A	1290	GLY	-	linker	UNP A0A2I4R888
A	1291	SER	-	linker	UNP A0A2I4R888
A	1313	LEU	PHE	conflict	UNP P10104
A	1319	LEU	-	expression tag	UNP P10104
A	1320	GLU	-	expression tag	UNP P10104
A	1321	VAL	-	expression tag	UNP P10104
A	1322	LEU	-	expression tag	UNP P10104
A	1323	PHE	-	expression tag	UNP P10104
A	1324	GLN	-	expression tag	UNP P10104
A	1325	GLY	-	expression tag	UNP P10104
A	1326	PRO	-	expression tag	UNP P10104
A	1327	GLY	-	expression tag	UNP P10104
A	1328	HIS	-	expression tag	UNP P10104
A	1329	HIS	-	expression tag	UNP P10104
A	1330	HIS	-	expression tag	UNP P10104
A	1331	HIS	-	expression tag	UNP P10104
A	1332	HIS	-	expression tag	UNP P10104
A	1333	HIS	-	expression tag	UNP P10104
A	1334	HIS	-	expression tag	UNP P10104
A	1335	HIS	-	expression tag	UNP P10104

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1336	SER	-	expression tag	UNP P10104
A	1337	ALA	-	expression tag	UNP P10104
A	1338	TRP	-	expression tag	UNP P10104
A	1339	SER	-	expression tag	UNP P10104
A	1340	HIS	-	expression tag	UNP P10104
A	1341	PRO	-	expression tag	UNP P10104
A	1342	GLN	-	expression tag	UNP P10104
A	1343	PHE	-	expression tag	UNP P10104
A	1344	GLU	-	expression tag	UNP P10104
A	1345	LYS	-	expression tag	UNP P10104
A	1346	GLY	-	expression tag	UNP P10104
A	1347	GLY	-	expression tag	UNP P10104
A	1348	GLY	-	expression tag	UNP P10104
A	1349	SER	-	expression tag	UNP P10104
A	1350	GLY	-	expression tag	UNP P10104
A	1351	GLY	-	expression tag	UNP P10104
A	1352	GLY	-	expression tag	UNP P10104
A	1353	GLY	-	expression tag	UNP P10104
A	1354	SER	-	expression tag	UNP P10104
A	1355	GLY	-	expression tag	UNP P10104
A	1356	GLY	-	expression tag	UNP P10104
A	1357	SER	-	expression tag	UNP P10104
A	1358	ALA	-	expression tag	UNP P10104
A	1359	TRP	-	expression tag	UNP P10104
A	1360	SER	-	expression tag	UNP P10104
A	1361	HIS	-	expression tag	UNP P10104
A	1362	PRO	-	expression tag	UNP P10104
A	1363	GLN	-	expression tag	UNP P10104
A	1364	PHE	-	expression tag	UNP P10104
A	1365	GLU	-	expression tag	UNP P10104
A	1366	LYS	-	expression tag	UNP P10104
A	1367	SER	-	expression tag	UNP P10104
A	1368	ALA	-	expression tag	UNP P10104
B	437	CYS	SER	engineered mutation	UNP A0A2I4R888
B	1051	CYS	ASP	engineered mutation	UNP A0A2I4R888
B	1052	PRO	ALA	engineered mutation	UNP A0A2I4R888
B	1053	PRO	VAL	engineered mutation	UNP A0A2I4R888
B	1290	GLY	-	linker	UNP A0A2I4R888
B	1291	SER	-	linker	UNP A0A2I4R888
B	1313	LEU	PHE	conflict	UNP P10104
B	1319	LEU	-	expression tag	UNP P10104
B	1320	GLU	-	expression tag	UNP P10104

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1321	VAL	-	expression tag	UNP P10104
B	1322	LEU	-	expression tag	UNP P10104
B	1323	PHE	-	expression tag	UNP P10104
B	1324	GLN	-	expression tag	UNP P10104
B	1325	GLY	-	expression tag	UNP P10104
B	1326	PRO	-	expression tag	UNP P10104
B	1327	GLY	-	expression tag	UNP P10104
B	1328	HIS	-	expression tag	UNP P10104
B	1329	HIS	-	expression tag	UNP P10104
B	1330	HIS	-	expression tag	UNP P10104
B	1331	HIS	-	expression tag	UNP P10104
B	1332	HIS	-	expression tag	UNP P10104
B	1333	HIS	-	expression tag	UNP P10104
B	1334	HIS	-	expression tag	UNP P10104
B	1335	HIS	-	expression tag	UNP P10104
B	1336	SER	-	expression tag	UNP P10104
B	1337	ALA	-	expression tag	UNP P10104
B	1338	TRP	-	expression tag	UNP P10104
B	1339	SER	-	expression tag	UNP P10104
B	1340	HIS	-	expression tag	UNP P10104
B	1341	PRO	-	expression tag	UNP P10104
B	1342	GLN	-	expression tag	UNP P10104
B	1343	PHE	-	expression tag	UNP P10104
B	1344	GLU	-	expression tag	UNP P10104
B	1345	LYS	-	expression tag	UNP P10104
B	1346	GLY	-	expression tag	UNP P10104
B	1347	GLY	-	expression tag	UNP P10104
B	1348	GLY	-	expression tag	UNP P10104
B	1349	SER	-	expression tag	UNP P10104
B	1350	GLY	-	expression tag	UNP P10104
B	1351	GLY	-	expression tag	UNP P10104
B	1352	GLY	-	expression tag	UNP P10104
B	1353	GLY	-	expression tag	UNP P10104
B	1354	SER	-	expression tag	UNP P10104
B	1355	GLY	-	expression tag	UNP P10104
B	1356	GLY	-	expression tag	UNP P10104
B	1357	SER	-	expression tag	UNP P10104
B	1358	ALA	-	expression tag	UNP P10104
B	1359	TRP	-	expression tag	UNP P10104
B	1360	SER	-	expression tag	UNP P10104
B	1361	HIS	-	expression tag	UNP P10104
B	1362	PRO	-	expression tag	UNP P10104

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1363	GLN	-	expression tag	UNP P10104
B	1364	PHE	-	expression tag	UNP P10104
B	1365	GLU	-	expression tag	UNP P10104
B	1366	LYS	-	expression tag	UNP P10104
B	1367	SER	-	expression tag	UNP P10104
B	1368	ALA	-	expression tag	UNP P10104
C	437	CYS	SER	engineered mutation	UNP A0A2I4R888
C	1051	CYS	ASP	engineered mutation	UNP A0A2I4R888
C	1052	PRO	ALA	engineered mutation	UNP A0A2I4R888
C	1053	PRO	VAL	engineered mutation	UNP A0A2I4R888
C	1290	GLY	-	linker	UNP A0A2I4R888
C	1291	SER	-	linker	UNP A0A2I4R888
C	1313	LEU	PHE	conflict	UNP P10104
C	1319	LEU	-	expression tag	UNP P10104
C	1320	GLU	-	expression tag	UNP P10104
C	1321	VAL	-	expression tag	UNP P10104
C	1322	LEU	-	expression tag	UNP P10104
C	1323	PHE	-	expression tag	UNP P10104
C	1324	GLN	-	expression tag	UNP P10104
C	1325	GLY	-	expression tag	UNP P10104
C	1326	PRO	-	expression tag	UNP P10104
C	1327	GLY	-	expression tag	UNP P10104
C	1328	HIS	-	expression tag	UNP P10104
C	1329	HIS	-	expression tag	UNP P10104
C	1330	HIS	-	expression tag	UNP P10104
C	1331	HIS	-	expression tag	UNP P10104
C	1332	HIS	-	expression tag	UNP P10104
C	1333	HIS	-	expression tag	UNP P10104
C	1334	HIS	-	expression tag	UNP P10104
C	1335	HIS	-	expression tag	UNP P10104
C	1336	SER	-	expression tag	UNP P10104
C	1337	ALA	-	expression tag	UNP P10104
C	1338	TRP	-	expression tag	UNP P10104
C	1339	SER	-	expression tag	UNP P10104
C	1340	HIS	-	expression tag	UNP P10104
C	1341	PRO	-	expression tag	UNP P10104
C	1342	GLN	-	expression tag	UNP P10104
C	1343	PHE	-	expression tag	UNP P10104
C	1344	GLU	-	expression tag	UNP P10104
C	1345	LYS	-	expression tag	UNP P10104
C	1346	GLY	-	expression tag	UNP P10104
C	1347	GLY	-	expression tag	UNP P10104

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1348	GLY	-	expression tag	UNP P10104
C	1349	SER	-	expression tag	UNP P10104
C	1350	GLY	-	expression tag	UNP P10104
C	1351	GLY	-	expression tag	UNP P10104
C	1352	GLY	-	expression tag	UNP P10104
C	1353	GLY	-	expression tag	UNP P10104
C	1354	SER	-	expression tag	UNP P10104
C	1355	GLY	-	expression tag	UNP P10104
C	1356	GLY	-	expression tag	UNP P10104
C	1357	SER	-	expression tag	UNP P10104
C	1358	ALA	-	expression tag	UNP P10104
C	1359	TRP	-	expression tag	UNP P10104
C	1360	SER	-	expression tag	UNP P10104
C	1361	HIS	-	expression tag	UNP P10104
C	1362	PRO	-	expression tag	UNP P10104
C	1363	GLN	-	expression tag	UNP P10104
C	1364	PHE	-	expression tag	UNP P10104
C	1365	GLU	-	expression tag	UNP P10104
C	1366	LYS	-	expression tag	UNP P10104
C	1367	SER	-	expression tag	UNP P10104
C	1368	ALA	-	expression tag	UNP P10104

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



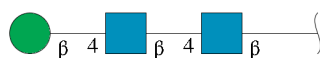
Mol	Chain	Residues	Atoms				AltConf	Trace
2	D	2	Total	C	N	O	0	0
			28	16	2	10		
2	F	2	Total	C	N	O	0	0
			28	16	2	10		
2	H	2	Total	C	N	O	0	0
			28	16	2	10		
2	I	2	Total	C	N	O	0	0
			28	16	2	10		
2	J	2	Total	C	N	O	0	0
			28	16	2	10		
2	M	2	Total	C	N	O	0	0
			28	16	2	10		

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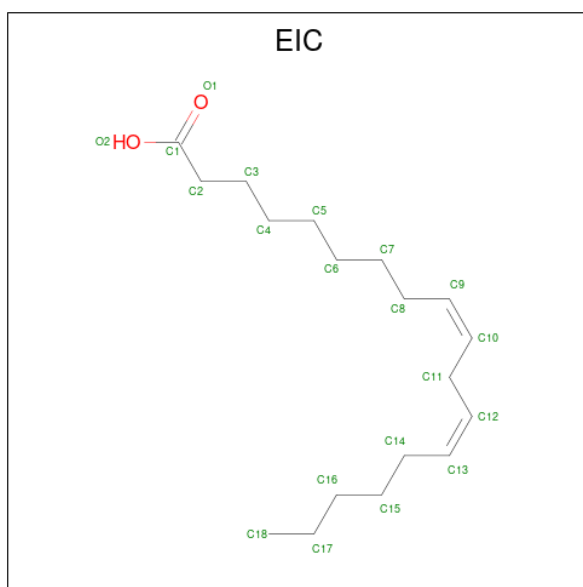
Mol	Chain	Residues	Atoms				AltConf	Trace
2	N	2	Total	C	N	O	0	0
			28	16	2	10		
2	O	2	Total	C	N	O	0	0
			28	16	2	10		
2	R	2	Total	C	N	O	0	0
			28	16	2	10		
2	S	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 3 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.



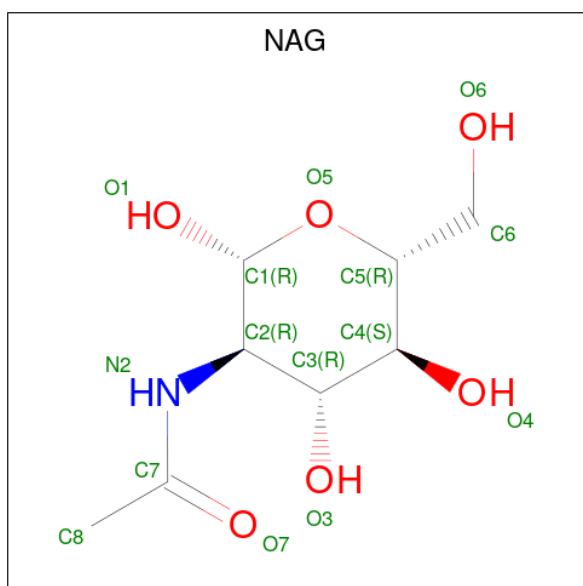
Mol	Chain	Residues	Atoms				AltConf	Trace
3	E	3	Total	C	N	O	0	0
			39	22	2	15		
3	G	3	Total	C	N	O	0	0
			39	22	2	15		
3	K	3	Total	C	N	O	0	0
			39	22	2	15		
3	L	3	Total	C	N	O	0	0
			39	22	2	15		
3	P	3	Total	C	N	O	0	0
			39	22	2	15		
3	Q	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 4 is LINOLEIC ACID (CCD ID: EIC) (formula: C₁₈H₃₂O₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total	C	O	0
			20	18	2	
4	A	1	Total	C	O	0
			20	18	2	
4	B	1	Total	C	O	0
			20	18	2	

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



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

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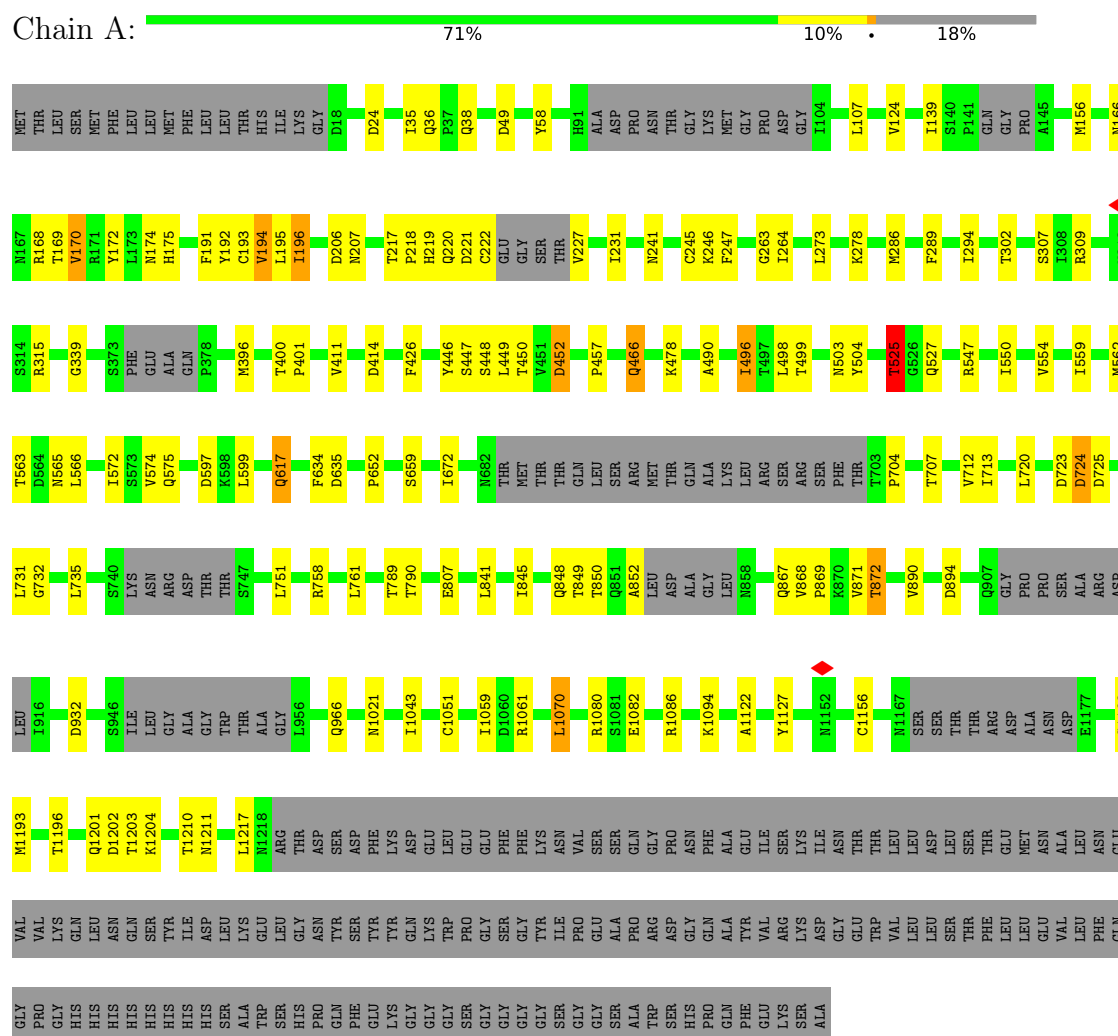
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Mol	Chain	Residues	Atoms				AltConf
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C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

3 Residue-property plots

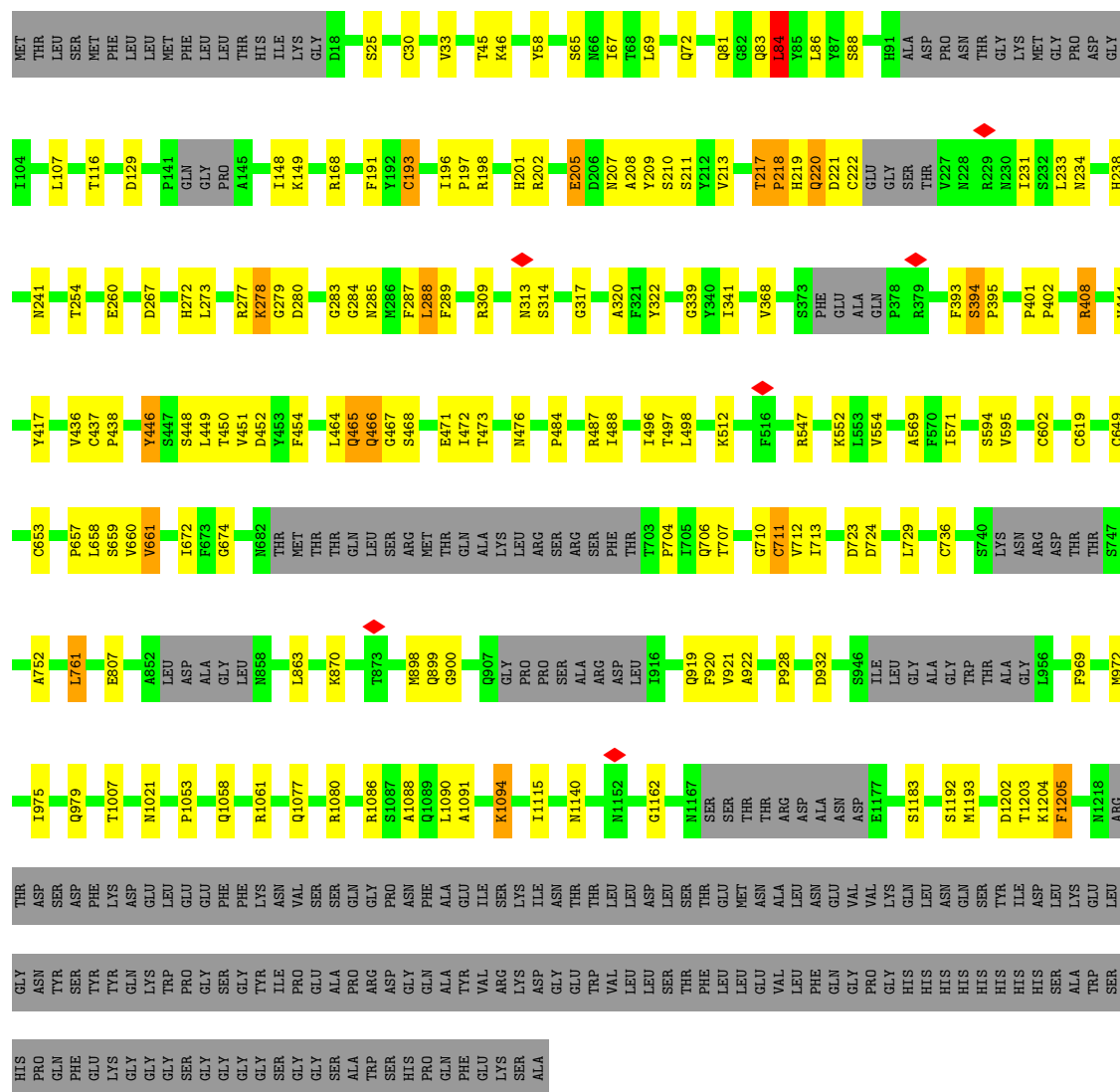
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Spike glycoprotein,Fibritin



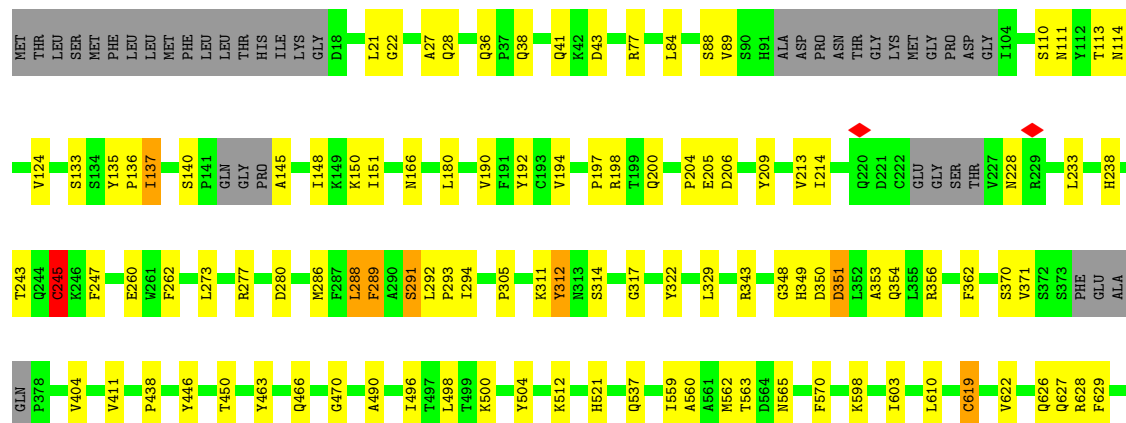
• Molecule 1: Spike glycoprotein,Fibritin

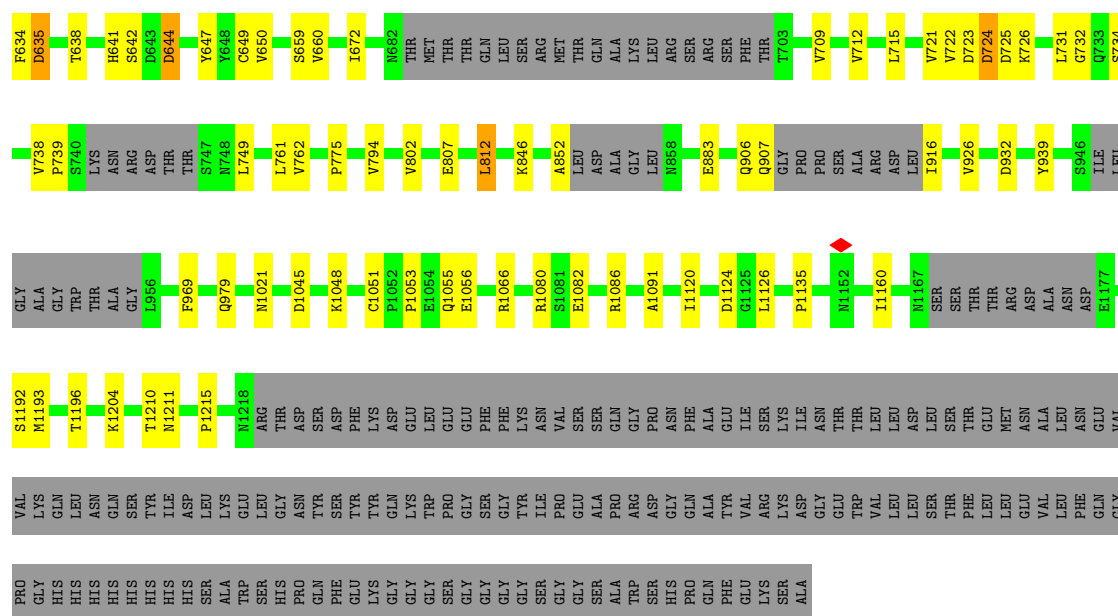




• Molecule 1: Spike glycoprotein,Fibritin

Chain C: 69% 12% 18%





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

Chain D: 50% 50%



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

Chain F: 100%



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

Chain H: 100%



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

Chain I: 50% 100%



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

Chain J:  50% 50%



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

Chain M:  100%



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

Chain N:  100%



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

Chain O:  100%



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

Chain R:  100%



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

Chain S:  100%



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

Chain E:  67% 33%



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

Chain G:  100%



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

Chain K:  100%



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

Chain L:  33% 67%



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

Chain P:  100%



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

Chain Q:  100%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	110266	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	7.167	Depositor
Minimum map value	-4.309	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.238	Depositor
Recommended contour level	0.779	Depositor
Map size (Å)	316.80002, 316.80002, 316.80002	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.32, 1.32, 1.32	Depositor

5 Model quality

5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.61	8/8981 (0.1%)	0.58	12/12219 (0.1%)
1	B	0.65	14/8987 (0.2%)	0.62	24/12226 (0.2%)
1	C	0.55	4/8987 (0.0%)	0.58	15/12226 (0.1%)
All	All	0.61	26/26955 (0.1%)	0.59	51/36671 (0.1%)

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	245	CYS	CA-C	-7.00	1.43	1.52
1	B	84	LEU	CA-C	-6.77	1.44	1.52
1	B	512	LYS	CA-C	-6.50	1.44	1.52
1	B	465	GLN	CA-C	-6.30	1.44	1.52
1	A	894	ASP	CA-C	-6.10	1.45	1.52
1	B	919	GLN	CA-C	-6.08	1.45	1.52
1	C	629	PHE	CA-C	-5.83	1.45	1.52
1	A	1061	ARG	CA-C	-5.83	1.45	1.52
1	A	263	GLY	CA-C	-5.82	1.46	1.51
1	A	1070	LEU	C-O	-5.69	1.17	1.24
1	A	192	TYR	CA-C	-5.67	1.45	1.52
1	A	192	TYR	CA-CB	-5.60	1.45	1.53
1	B	288	LEU	CA-C	-5.55	1.45	1.52
1	B	448	SER	C-O	-5.54	1.17	1.23
1	B	278	LYS	CA-C	-5.49	1.46	1.53
1	C	723	ASP	CA-C	-5.37	1.45	1.52
1	B	1091	ALA	CA-C	-5.33	1.45	1.52
1	B	280	ASP	CA-C	-5.30	1.46	1.52
1	B	471	GLU	N-CA	-5.24	1.39	1.46
1	B	451	VAL	C-O	-5.21	1.18	1.24
1	A	723	ASP	CA-C	-5.16	1.46	1.52
1	B	449	LEU	C-O	-5.14	1.17	1.24
1	B	1090	LEU	CA-C	-5.09	1.46	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	370	SER	CA-C	-5.07	1.46	1.52
1	A	890	VAL	CA-C	-5.06	1.46	1.52
1	B	1088	ALA	CA-CB	-5.03	1.45	1.53

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	642	SER	N-CA-C	10.10	123.86	110.53
1	C	348	GLY	N-CA-C	9.65	124.31	112.73
1	B	209	TYR	N-CA-C	8.47	122.51	110.23
1	B	920	PHE	N-CA-C	8.46	120.50	111.28
1	A	466	GLN	N-CA-C	7.56	123.84	111.37
1	B	900	GLY	N-CA-C	7.05	121.19	112.73
1	C	288	LEU	N-CA-C	7.01	121.14	108.17
1	C	88	SER	N-CA-C	6.97	120.32	109.52
1	B	1088	ALA	N-CA-C	-6.79	104.01	112.90
1	C	289	PHE	N-CA-C	6.71	118.68	111.36
1	C	724	ASP	N-CA-C	-6.56	100.72	110.23
1	A	871	VAL	N-CA-C	-6.46	99.07	108.11
1	A	848	GLN	N-CA-C	6.33	118.18	111.28
1	C	89	VAL	N-CA-C	6.31	119.56	110.09
1	C	349	HIS	N-CA-C	6.31	118.16	111.28
1	A	1196	THR	N-CA-C	6.30	119.45	109.50
1	B	512	LYS	CA-C-N	-6.27	116.90	122.73
1	B	512	LYS	C-N-CA	-6.27	116.90	122.73
1	C	1196	THR	N-CA-C	6.25	119.20	109.52
1	A	194	VAL	N-CA-C	-6.21	99.48	108.17
1	A	525	THR	N-CA-C	6.20	119.34	110.10
1	A	872	THR	N-CA-C	5.99	118.72	109.07
1	B	394	SER	CA-C-N	-5.96	112.44	119.05
1	B	394	SER	C-N-CA	-5.96	112.44	119.05
1	C	27	ALA	N-CA-C	5.96	118.98	110.10
1	B	922	ALA	N-CA-C	5.93	117.83	111.36
1	B	1094	LYS	N-CA-C	-5.83	105.06	111.82
1	B	512	LYS	N-CA-C	-5.65	100.18	109.40
1	A	867	GLN	N-CA-C	5.58	117.89	110.53
1	C	291	SER	N-CA-C	-5.55	99.86	108.90
1	B	283	GLY	N-CA-C	-5.53	103.06	112.51
1	C	312	TYR	N-CA-C	-5.50	105.28	111.28
1	B	919	GLN	N-CA-C	-5.49	105.21	111.14
1	B	594	SER	N-CA-C	5.46	117.74	110.53
1	C	22	GLY	N-CA-C	5.44	123.43	112.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	88	SER	N-CA-C	5.39	118.97	109.80
1	B	1205	PHE	N-CA-C	5.38	117.82	110.24
1	C	721	VAL	N-CA-C	5.38	115.70	108.17
1	A	447	SER	N-CA-C	5.29	117.05	111.28
1	A	724	ASP	N-CA-C	-5.27	103.07	110.50
1	B	72	GLN	N-CA-C	-5.27	100.59	109.07
1	B	393	PHE	N-CA-C	-5.26	106.63	113.16
1	A	191	PHE	N-CA-C	5.25	117.23	108.99
1	B	660	VAL	N-CA-C	5.20	115.61	108.12
1	B	473	THR	N-CA-C	5.19	117.02	111.36
1	B	205	GLU	N-CA-C	-5.14	99.85	110.80
1	B	218	PRO	N-CA-C	-5.12	106.42	113.53
1	B	83	GLN	N-CA-C	-5.09	100.74	109.24
1	B	88	SER	CB-CA-C	-5.09	105.18	113.37
1	A	414	ASP	N-CA-C	5.04	118.55	111.74
1	C	635	ASP	N-CA-C	5.01	118.51	111.74

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	8778	0	8404	88	0
1	B	8784	0	8415	99	0
1	C	8784	0	8415	111	0
2	D	28	0	25	1	0
2	F	28	0	25	0	0
2	H	28	0	25	0	0
2	I	28	0	25	0	0
2	J	28	0	25	1	0
2	M	28	0	25	0	0
2	N	28	0	25	0	0
2	O	28	0	25	0	0
2	R	28	0	25	0	0
2	S	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	39	0	34	1	0
3	G	39	0	34	0	0
3	K	39	0	34	0	0
3	L	39	0	34	0	0
3	P	39	0	34	0	0
3	Q	39	0	34	0	0
4	A	40	0	62	5	0
4	B	20	0	31	1	0
5	A	182	0	169	0	0
5	B	168	0	156	0	0
5	C	182	0	169	0	0
All	All	27452	0	26275	283	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 5.

All (283) 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:B:285:ASN:HD21	1:B:341:ILE:H	1.05	0.98
1:A:170:VAL:HG21	1:A:302:THR:HG21	1.52	0.91
1:B:285:ASN:ND2	1:B:341:ILE:H	1.69	0.90
1:A:869:PRO:HG2	1:A:872:THR:HG22	1.60	0.83
1:A:401:PRO:HG3	1:A:498:LEU:HD22	1.61	0.83
1:B:657:PRO:HB2	1:B:674:GLY:HA3	1.60	0.83
1:B:467:GLY:O	1:C:438:PRO:HD2	1.84	0.78
1:C:137:ILE:HD11	1:C:317:GLY:HA2	1.69	0.73
1:A:496:ILE:HG22	1:A:498:LEU:H	1.55	0.72
1:A:411:VAL:HG22	1:A:450:THR:HG23	1.72	0.72
1:A:219:HIS:O	1:A:220:GLN:HB3	1.89	0.71
1:C:135:TYR:CZ	1:C:148:ILE:HG13	2.26	0.70
1:A:196:ILE:HG13	1:A:241:ASN:HB2	1.72	0.70
1:C:148:ILE:CD1	1:C:317:GLY:HA3	2.22	0.69
1:B:285:ASN:HD21	1:B:341:ILE:N	1.84	0.69
1:A:634:PHE:O	1:A:635:ASP:HB2	1.92	0.68
1:B:168:ARG:NH2	1:B:207:ASN:O	2.28	0.67
1:B:704:PRO:HB3	1:B:713:ILE:HG12	1.78	0.66
1:A:572:ILE:HD11	4:A:1401:EIC:H141	1.78	0.65
1:B:472:ILE:HA	1:B:476:ASN:HD22	1.60	0.65
1:A:496:ILE:HG22	1:A:498:LEU:N	2.11	0.64
1:A:724:ASP:O	1:A:725:ASP:HB2	1.98	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:247:PHE:CE2	1:C:293:PRO:HG2	2.35	0.62
1:C:500:LYS:HB3	1:C:562:MET:HE2	1.82	0.62
1:C:659:SER:HB2	1:C:672:ILE:HB	1.81	0.61
1:B:1162:GLY:HA2	1:B:1183:SER:HB3	1.83	0.61
1:C:883:GLU:HG3	1:C:1120:ILE:HB	1.84	0.60
1:A:1043:ILE:HG23	1:A:1059:ILE:HD12	1.82	0.60
1:C:343:ARG:HG2	1:C:362:PHE:CE2	2.37	0.60
1:B:86:LEU:HD13	1:B:320:ALA:HB2	1.84	0.59
1:B:148:ILE:HG12	1:B:317:GLY:HA3	1.84	0.59
1:C:148:ILE:HD13	1:C:317:GLY:HA3	1.83	0.59
1:A:218:PRO:HD2	1:A:309:ARG:O	2.03	0.59
1:C:135:TYR:HB2	1:C:136:PRO:HD2	1.84	0.58
1:C:148:ILE:HD12	1:C:317:GLY:HA3	1.85	0.57
1:C:807:GLU:OE2	1:C:807:GLU:N	2.35	0.57
1:C:628:ARG:HG2	1:C:628:ARG:O	2.03	0.57
1:C:190:VAL:HG11	1:C:292:LEU:HD11	1.87	0.57
1:C:496:ILE:HG23	1:C:498:LEU:H	1.69	0.57
1:C:113:THR:HG22	1:C:114:ASN:H	1.70	0.57
1:B:368:VAL:HG22	1:B:661:VAL:HG13	1.86	0.56
1:A:841:LEU:O	1:A:845:ILE:HG23	2.06	0.56
1:C:135:TYR:OH	1:C:148:ILE:HG21	2.05	0.56
1:A:466:GLN:HB3	1:C:1053:PRO:HG3	1.87	0.55
1:B:401:PRO:HG3	1:B:498:LEU:HD22	1.87	0.55
1:B:595:VAL:HG13	1:B:595:VAL:O	2.05	0.55
1:B:279:GLY:HA3	1:B:287:PHE:CD1	2.42	0.55
1:B:221:ASP:O	1:B:222:CYS:SG	2.65	0.55
1:A:217:THR:O	1:A:221:ASP:HB2	2.06	0.55
1:A:849:THR:CG2	1:C:762:VAL:HG23	2.37	0.54
1:B:217:THR:O	1:B:221:ASP:HB2	2.08	0.54
1:A:247:PHE:HZ	1:A:294:ILE:HD11	1.72	0.54
1:B:65:SER:O	1:B:67:ILE:HG23	2.08	0.54
1:A:170:VAL:CG2	1:A:302:THR:HG21	2.33	0.54
1:C:351:ASP:OD1	1:C:351:ASP:N	2.41	0.54
1:A:449:LEU:HD12	1:A:574:VAL:HG12	1.90	0.54
1:C:1021:ASN:OD1	1:C:1080:ARG:NH2	2.41	0.53
1:C:213:VAL:HG12	1:C:305:PRO:HB2	1.89	0.53
1:C:504:TYR:HB2	1:C:560:ALA:HB3	1.89	0.53
1:B:932:ASP:OD1	1:B:932:ASP:N	2.42	0.53
1:B:1058:GLN:OE1	1:B:1061:ARG:NH2	2.41	0.53
1:C:353:ALA:O	1:C:354:GLN:C	2.50	0.53
1:C:627:GLN:O	1:C:628:ARG:HB3	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:906:GLN:HG2	1:C:907:GLN:HG2	1.91	0.53
1:B:33:VAL:HG12	1:B:107:LEU:HB2	1.91	0.53
1:B:46:LYS:NZ	1:B:129:ASP:OD1	2.39	0.52
1:C:280:ASP:N	1:C:280:ASP:OD1	2.41	0.52
1:C:150:LYS:NZ	1:C:260:GLU:OE2	2.42	0.52
1:A:174:ASN:C	1:A:194:VAL:HG22	2.35	0.52
1:C:722:VAL:HG23	1:C:726:LYS:HB2	1.90	0.52
1:C:638:THR:O	1:C:650:VAL:N	2.43	0.52
1:C:192:TYR:CZ	1:C:294:ILE:HG23	2.45	0.51
1:C:1091:ALA:HB1	1:C:1126:LEU:HD12	1.92	0.51
1:C:21:LEU:HG	1:C:245:CYS:SG	2.50	0.51
1:C:124:VAL:HG12	1:C:286:MET:HE1	1.93	0.51
1:C:619:CYS:HB3	1:C:647:TYR:HD2	1.74	0.51
1:B:1053:PRO:HG3	1:C:466:GLN:HB3	1.92	0.51
1:C:28:GLN:O	1:C:200:GLN:HG3	2.10	0.51
1:C:228:ASN:OD1	1:C:228:ASN:N	2.44	0.51
1:B:1192:SER:OG	1:B:1193:MET:N	2.44	0.51
1:C:77:ARG:HG2	1:C:329:LEU:HD11	1.91	0.51
1:A:220:GLN:O	1:A:220:GLN:HG2	2.11	0.51
1:B:1077:GLN:OE1	1:B:1080:ARG:NH1	2.44	0.51
1:B:218:PRO:HD2	1:B:309:ARG:O	2.10	0.50
1:C:353:ALA:O	1:C:356:ARG:N	2.44	0.50
1:B:736:CYS:HB3	1:B:752:ALA:HB3	1.93	0.50
1:B:205:GLU:OE1	1:B:205:GLU:HA	2.11	0.50
1:C:1192:SER:OG	1:C:1193:MET:N	2.43	0.50
1:A:401:PRO:HG2	1:A:566:LEU:HD21	1.93	0.50
1:B:197:PRO:HB2	1:B:205:GLU:HG2	1.92	0.50
1:C:812:LEU:HD11	1:C:1056:GLU:HG3	1.93	0.50
1:C:1051:CYS:O	1:C:1055:GLN:N	2.45	0.50
1:A:478:LYS:HG2	1:A:525:THR:HG23	1.94	0.50
1:B:30:CYS:O	1:B:202:ARG:NH1	2.44	0.50
1:C:110:SER:OG	1:C:111:ASN:N	2.44	0.50
4:A:1415:EIC:H52	1:B:438:PRO:HB3	1.94	0.49
1:C:133:SER:O	1:C:148:ILE:HG12	2.11	0.49
1:C:1193:MET:HE3	1:C:1215:PRO:HA	1.94	0.49
1:A:1051:CYS:SG	1:B:467:GLY:HA2	2.52	0.49
1:C:411:VAL:HG22	1:C:450:THR:HG23	1.94	0.49
1:C:812:LEU:HD21	1:C:1056:GLU:HB3	1.95	0.49
1:A:166:ASN:ND2	1:A:206:ASP:O	2.46	0.49
1:B:107:LEU:HD21	1:B:309:ARG:HE	1.77	0.49
1:B:278:LYS:HD3	1:B:289:PHE:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:652:PRO:HG2	1:B:921:VAL:CG2	2.43	0.49
1:B:659:SER:HB3	1:B:672:ILE:HB	1.94	0.49
1:B:84:LEU:HD13	1:B:322:TYR:CE2	2.48	0.48
1:A:139:ILE:HD11	1:A:315:ARG:CZ	2.42	0.48
1:A:704:PRO:HB3	1:A:713:ILE:HG12	1.94	0.48
1:B:1205:PHE:CD1	1:B:1205:PHE:N	2.81	0.48
1:C:724:ASP:O	1:C:725:ASP:CB	2.61	0.48
1:B:672:ILE:HA	1:B:712:VAL:HG12	1.95	0.48
1:C:84:LEU:HD13	1:C:322:TYR:CE2	2.48	0.48
1:B:707:THR:OG1	1:B:710:GLY:O	2.30	0.48
1:C:512:LYS:HG2	1:C:521:HIS:NE2	2.29	0.48
1:A:1202:ASP:OD2	1:A:1204:LYS:HE2	2.13	0.48
1:B:210:SER:O	1:B:211:SER:HB2	2.12	0.48
1:C:260:GLU:OE2	1:C:277:ARG:NH1	2.41	0.48
1:A:1021:ASN:OD1	1:A:1080:ARG:NH2	2.43	0.48
1:C:36:GLN:OE1	1:C:38:GLN:NE2	2.44	0.47
1:C:1056:GLU:OE1	1:C:1056:GLU:N	2.46	0.47
1:A:217:THR:OG1	1:A:309:ARG:NH1	2.47	0.47
1:C:722:VAL:CG2	1:C:726:LYS:HB2	2.44	0.47
1:A:932:ASP:OD1	1:C:734:SER:OG	2.28	0.47
1:B:724:ASP:OD1	1:B:724:ASP:N	2.47	0.47
1:A:849:THR:HG21	1:C:762:VAL:HG23	1.96	0.47
1:A:789:THR:HG22	1:A:790:THR:HG23	1.96	0.47
1:C:709:VAL:HG11	1:C:732:GLY:HA3	1.96	0.47
1:A:1192:SER:OG	1:A:1193:MET:N	2.48	0.47
1:A:724:ASP:O	1:A:725:ASP:CB	2.63	0.47
1:B:219:HIS:O	1:B:220:GLN:HB3	2.15	0.47
1:A:1122:ALA:HB2	1:A:1127:TYR:HB2	1.97	0.47
1:B:723:ASP:OD1	1:B:723:ASP:N	2.45	0.47
1:A:35:ILE:HG21	2:D:1:NAG:H81	1.97	0.46
1:B:201:HIS:O	1:B:208:ALA:HB3	2.15	0.46
1:C:197:PRO:HB2	1:C:205:GLU:HG2	1.97	0.46
1:C:802:VAL:O	1:C:1066:ARG:NH1	2.43	0.46
1:A:452:ASP:N	1:A:452:ASP:OD1	2.46	0.46
1:C:490:ALA:HB3	1:C:570:PHE:HE2	1.80	0.46
1:C:622:VAL:O	1:C:641:HIS:NE2	2.48	0.46
1:B:411:VAL:HG22	1:B:450:THR:HG23	1.96	0.46
1:C:204:PRO:HA	1:C:209:TYR:CG	2.51	0.46
1:B:402:PRO:HG3	1:B:408:ARG:HD3	1.97	0.46
1:A:503:ASN:HD22	1:A:559:ILE:HG23	1.80	0.46
1:B:260:GLU:CD	1:B:277:ARG:HD2	2.41	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:350:ASP:OD1	1:C:353:ALA:HB2	2.16	0.46
1:C:262:PHE:HE1	1:C:289:PHE:HZ	1.62	0.45
1:A:807:GLU:H	1:A:807:GLU:CD	2.24	0.45
1:A:868:VAL:HG23	1:A:869:PRO:HD2	1.98	0.45
1:C:137:ILE:HD11	1:C:317:GLY:CA	2.42	0.45
1:C:724:ASP:OD1	1:C:724:ASP:N	2.49	0.45
1:A:1086:ARG:HH21	1:B:1086:ARG:NH2	2.13	0.45
1:B:219:HIS:O	1:B:220:GLN:CB	2.63	0.45
1:A:175:HIS:CE1	1:A:246:LYS:HE3	2.51	0.45
1:A:1202:ASP:OD1	1:A:1203:THR:N	2.49	0.45
1:A:572:ILE:HD11	4:A:1401:EIC:C14	2.46	0.45
1:A:758:ARG:HA	1:A:758:ARG:HD3	1.76	0.45
1:C:906:GLN:CG	1:C:907:GLN:HG2	2.47	0.45
1:A:168:ARG:O	1:A:169:THR:OG1	2.31	0.45
1:A:222:CYS:HA	1:A:227:VAL:HG22	1.98	0.45
1:A:659:SER:HB2	1:A:672:ILE:HB	1.98	0.45
1:B:45:THR:OG1	1:B:81:GLN:OE1	2.34	0.45
1:A:525:THR:O	1:A:527:GLN:HG3	2.17	0.45
1:B:116:THR:O	1:B:116:THR:OG1	2.35	0.45
1:B:761:LEU:HD21	1:C:852:ALA:HB2	1.99	0.45
1:A:547:ARG:HG2	1:A:554:VAL:HG22	1.98	0.45
1:B:898:MET:HE3	1:B:899:GLN:CD	2.41	0.45
1:C:644:ASP:OD1	1:C:644:ASP:N	2.46	0.45
1:C:610:LEU:HD23	1:C:610:LEU:HA	1.85	0.44
1:A:156:MET:HE2	1:A:172:TYR:HD2	1.82	0.44
1:A:264:ILE:HG13	1:A:273:LEU:CD2	2.48	0.44
1:A:597:ASP:OD1	1:A:597:ASP:N	2.48	0.44
1:C:311:LYS:O	1:C:314:SER:N	2.47	0.44
1:C:563:THR:OG1	1:C:565:ASN:O	2.34	0.44
1:A:672:ILE:HD11	1:A:731:LEU:HD22	1.97	0.44
1:B:278:LYS:O	1:B:287:PHE:HB2	2.17	0.44
1:B:870:LYS:HD2	1:B:870:LYS:HA	1.59	0.44
1:A:1082:GLU:O	1:A:1086:ARG:HG3	2.17	0.44
1:B:196:ILE:HB	1:B:241:ASN:HB2	1.99	0.44
1:A:852:ALA:HB2	1:C:761:LEU:HD21	2.00	0.44
1:B:661:VAL:HG12	1:B:729:LEU:HD13	1.99	0.44
1:C:140:SER:O	1:C:140:SER:OG	2.32	0.44
1:A:1210:THR:OG1	1:A:1211:ASN:N	2.50	0.44
1:B:436:VAL:HB	1:B:484:PRO:HB3	1.99	0.44
1:B:619:CYS:HB2	1:B:649:CYS:HB2	1.30	0.44
1:C:166:ASN:ND2	1:C:206:ASP:O	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:278:LYS:HD3	1:B:289:PHE:CB	2.47	0.44
1:C:273:LEU:HB3	1:C:289:PHE:CZ	2.53	0.44
1:B:284:GLY:O	1:B:285:ASN:C	2.59	0.43
1:A:707:THR:O	1:B:898:MET:HG3	2.18	0.43
1:A:732:GLY:HA3	1:B:928:PRO:HG2	2.00	0.43
1:B:25:SER:OG	1:B:198:ARG:NH1	2.51	0.43
1:B:168:ARG:NH1	2:J:2:NAG:O7	2.51	0.43
1:C:198:ARG:NE	1:C:238:HIS:O	2.52	0.43
1:A:221:ASP:O	1:A:222:CYS:HB2	2.18	0.43
1:A:1156:CYS:SG	1:A:1201:GLN:HB2	2.58	0.43
4:A:1401:EIC:H141	4:A:1401:EIC:H112	1.71	0.43
1:B:1094:LYS:HE3	1:B:1094:LYS:HB2	1.86	0.43
1:C:715:LEU:HD23	1:C:749:LEU:HB3	1.99	0.43
1:C:137:ILE:HD13	1:C:137:ILE:HA	1.65	0.43
1:B:547:ARG:HG2	1:B:554:VAL:HG22	2.00	0.43
1:C:775:PRO:HB3	1:C:1135:PRO:HB3	2.01	0.43
1:A:563:THR:OG1	1:A:565:ASN:O	2.36	0.43
4:B:1413:EIC:H52	1:C:438:PRO:HB3	2.00	0.43
1:C:43:ASP:OD1	1:C:43:ASP:N	2.51	0.43
1:B:454:PHE:CE2	1:B:569:ALA:HB3	2.54	0.43
1:B:466:GLN:H	1:B:466:GLN:HG3	1.42	0.43
1:B:1202:ASP:OD2	1:B:1204:LYS:NZ	2.50	0.43
1:A:107:LEU:HD22	1:A:307:SER:HB3	2.01	0.43
1:B:267:ASP:OD1	1:B:272:HIS:NE2	2.51	0.43
1:B:394:SER:O	1:B:395:PRO:C	2.58	0.43
1:B:972:MET:HA	1:B:975:ILE:HG12	2.01	0.43
1:C:598:LYS:HG3	1:C:603:ILE:HD13	2.01	0.43
1:C:724:ASP:O	1:C:725:ASP:HB2	2.18	0.43
1:A:49:ASP:OD1	1:A:49:ASP:N	2.52	0.43
1:B:972:MET:HG2	1:B:1115:ILE:HD12	2.01	0.43
1:C:932:ASP:OD1	1:C:932:ASP:N	2.52	0.43
1:A:457:PRO:HD3	1:A:504:TYR:CG	2.54	0.43
1:B:464:LEU:HB3	1:B:487:ARG:HD3	2.00	0.43
1:B:552:LYS:HA	1:B:552:LYS:HD3	1.89	0.43
1:A:426:PHE:HB3	1:A:490:ALA:HB1	2.00	0.42
1:B:465:GLN:O	1:B:468:SER:HB2	2.19	0.42
1:A:735:LEU:HD22	1:A:751:LEU:HD11	2.01	0.42
1:A:966:GLN:HG3	1:C:1204:LYS:NZ	2.35	0.42
1:C:634:PHE:O	1:C:635:ASP:HB2	2.20	0.42
1:A:124:VAL:HG12	1:A:286:MET:HE1	2.01	0.42
1:B:234:ASN:O	1:B:238:HIS:ND1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:260:GLU:OE2	1:B:277:ARG:NH1	2.48	0.42
1:B:273:LEU:O	1:B:288:LEU:HD12	2.18	0.42
1:B:969:PHE:HZ	1:B:979:GLN:HG2	1.85	0.42
1:A:562:MET:HE2	1:A:562:MET:HB2	1.85	0.42
1:A:36:GLN:OE1	1:A:38:GLN:NE2	2.44	0.42
1:B:221:ASP:HB3	1:B:231:ILE:CD1	2.50	0.42
1:A:672:ILE:HG12	1:A:712:VAL:HG12	2.02	0.42
1:B:496:ILE:HG23	1:B:498:LEU:H	1.85	0.42
1:C:273:LEU:O	1:C:288:LEU:HD12	2.20	0.42
1:C:794:VAL:HG22	1:C:926:VAL:HG22	2.02	0.42
1:B:168:ARG:HH22	1:B:207:ASN:ND2	2.18	0.41
1:B:272:HIS:HB3	1:B:288:LEU:CD1	2.50	0.41
1:C:969:PHE:HZ	1:C:979:GLN:HG2	1.85	0.41
1:A:652:PRO:HG2	1:B:921:VAL:HG21	2.02	0.41
1:B:149:LYS:HB3	1:B:149:LYS:HE3	1.73	0.41
1:C:233:LEU:HD12	1:C:233:LEU:HA	1.88	0.41
1:C:350:ASP:OD1	1:C:353:ALA:CB	2.68	0.41
1:C:1210:THR:OG1	1:C:1211:ASN:N	2.53	0.41
1:A:278:LYS:HG3	1:A:289:PHE:HB3	2.01	0.41
1:C:1082:GLU:HG3	1:C:1086:ARG:HH21	1.85	0.41
1:A:1193:MET:HE2	1:A:1193:MET:HB2	1.97	0.41
1:B:1021:ASN:OD1	1:B:1080:ARG:NH2	2.52	0.41
1:C:463:TYR:HD2	1:C:470:GLY:HA3	1.86	0.41
1:C:846:LYS:HD3	1:C:939:TYR:HE1	1.84	0.41
1:C:1045:ASP:HA	1:C:1048:LYS:HG2	2.03	0.41
1:A:966:GLN:HE21	1:C:1204:LYS:HD3	1.86	0.41
1:B:602:CYS:HB2	1:B:653:CYS:HB2	1.74	0.41
1:C:135:TYR:C	1:C:145:ALA:N	2.79	0.41
1:C:738:VAL:HA	1:C:739:PRO:HD3	1.92	0.41
1:A:396:MET:HE1	4:A:1401:EIC:H151	2.03	0.41
1:C:151:ILE:HD12	1:C:151:ILE:HA	1.92	0.41
1:C:672:ILE:HD11	1:C:731:LEU:HG	2.02	0.41
1:A:448:SER:OG	1:A:575:GLN:HB2	2.21	0.41
1:B:807:GLU:OE2	1:B:807:GLU:N	2.46	0.41
1:A:264:ILE:HG13	1:A:273:LEU:HD23	2.03	0.41
1:B:58:TYR:OH	1:B:339:GLY:O	2.35	0.41
1:B:191:PHE:HD2	1:B:193:CYS:HB2	1.85	0.41
1:C:180:LEU:HD22	1:C:214:ILE:HD13	2.02	0.41
1:C:312:TYR:HD1	1:C:312:TYR:O	2.04	0.41
1:C:371:VAL:HG11	1:C:660:VAL:HG21	2.03	0.41
1:C:537:GLN:HB3	3:E:2:NAG:H61	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1094:LYS:HE3	1:A:1094:LYS:HB2	1.93	0.41
1:C:194:VAL:HB	1:C:243:THR:O	2.21	0.41
1:C:712:VAL:HG21	1:C:715:LEU:HD12	2.03	0.40
1:A:400:THR:HG22	1:A:499:THR:HB	2.03	0.40
1:A:1070:LEU:HD23	1:A:1070:LEU:HA	1.84	0.40
1:B:313:ASN:OD1	1:B:314:SER:N	2.54	0.40
1:B:417:TYR:HH	1:B:446:TYR:HH	1.56	0.40
1:B:452:ASP:OD1	1:B:571:ILE:O	2.39	0.40
1:A:599:LEU:HD22	1:A:617:GLN:HA	2.03	0.40
1:B:1140:ASN:OD1	1:B:1140:ASN:N	2.52	0.40
1:C:1021:ASN:ND2	1:C:1124:ASP:OD2	2.54	0.40
1:A:58:TYR:OH	1:A:339:GLY:O	2.34	0.40
1:A:849:THR:HG22	1:A:850:THR:N	2.37	0.40
1:B:233:LEU:HD12	1:B:233:LEU:HA	1.89	0.40
1:B:706:GLN:HA	1:B:711:CYS:HB2	2.03	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	1099/1368 (80%)	1067 (97%)	32 (3%)	0	100	100
1	B	1099/1368 (80%)	1058 (96%)	41 (4%)	0	100	100
1	C	1099/1368 (80%)	1067 (97%)	32 (3%)	0	100	100
All	All	3297/4104 (80%)	3192 (97%)	105 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	973/1178 (83%)	956 (98%)	17 (2%)	53	78
1	B	974/1178 (83%)	954 (98%)	20 (2%)	47	75
1	C	974/1178 (83%)	959 (98%)	15 (2%)	57	80
All	All	2921/3534 (83%)	2869 (98%)	52 (2%)	51	77

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	ASP
1	A	170	VAL
1	A	193	CYS
1	A	195	LEU
1	A	196	ILE
1	A	207	ASN
1	A	231	ILE
1	A	245	CYS
1	A	446	TYR
1	A	452	ASP
1	A	496	ILE
1	A	525	THR
1	A	550	ILE
1	A	617	GLN
1	A	720	LEU
1	A	761	LEU
1	A	1217	LEU
1	B	69	LEU
1	B	84	LEU
1	B	193	CYS
1	B	213	VAL
1	B	217	THR
1	B	220	GLN
1	B	254	THR
1	B	408	ARG
1	B	437	CYS

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Mol	Chain	Res	Type
1	B	446	TYR
1	B	466	GLN
1	B	488	ILE
1	B	497	THR
1	B	658	LEU
1	B	661	VAL
1	B	711	CYS
1	B	761	LEU
1	B	863	LEU
1	B	1007	THR
1	B	1203	THR
1	C	41	GLN
1	C	137	ILE
1	C	245	CYS
1	C	291	SER
1	C	351	ASP
1	C	404	VAL
1	C	446	TYR
1	C	559	ILE
1	C	619	CYS
1	C	626	GLN
1	C	644	ASP
1	C	649	CYS
1	C	812	LEU
1	C	916	ILE
1	C	1160	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (53) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	166	ASN
1	A	175	HIS
1	A	349	HIS
1	A	465	GLN
1	A	466	GLN
1	A	483	ASN
1	A	524	GLN
1	A	575	GLN
1	A	668	ASN
1	A	733	GLN
1	A	825	GLN
1	A	828	HIS

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Mol	Chain	Res	Type
1	A	848	GLN
1	A	851	GLN
1	A	875	GLN
1	A	966	GLN
1	A	988	GLN
1	A	998	ASN
1	A	1015	GLN
1	A	1121	ASN
1	A	1130	HIS
1	A	1218	ASN
1	B	175	HIS
1	B	207	ASN
1	B	220	GLN
1	B	285	ASN
1	B	434	HIS
1	B	682	ASN
1	B	733	GLN
1	B	828	HIS
1	B	899	GLN
1	B	934	ASN
1	B	1015	GLN
1	B	1064	ASN
1	B	1076	GLN
1	B	1130	HIS
1	B	1187	ASN
1	C	427	GLN
1	C	434	HIS
1	C	465	GLN
1	C	575	GLN
1	C	581	ASN
1	C	667	ASN
1	C	750	GLN
1	C	766	ASN
1	C	828	HIS
1	C	851	GLN
1	C	906	GLN
1	C	907	GLN
1	C	919	GLN
1	C	973	ASN
1	C	1001	GLN
1	C	1102	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

38 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	0.22	0	17,19,21	0.49	0
2	NAG	D	2	2	14,14,15	0.24	0	17,19,21	0.53	0
3	NAG	E	1	3,1	14,14,15	0.26	0	17,19,21	0.53	0
3	NAG	E	2	3	14,14,15	0.26	0	17,19,21	0.41	0
3	BMA	E	3	3	11,11,12	0.59	0	15,15,17	0.85	0
2	NAG	F	1	1,2	14,14,15	0.19	0	17,19,21	0.43	0
2	NAG	F	2	2	14,14,15	0.28	0	17,19,21	0.51	0
3	NAG	G	1	3,1	14,14,15	0.33	0	17,19,21	0.60	0
3	NAG	G	2	3	14,14,15	0.25	0	17,19,21	0.49	0
3	BMA	G	3	3	11,11,12	0.65	0	15,15,17	0.82	0
2	NAG	H	1	1,2	14,14,15	0.26	0	17,19,21	0.52	0
2	NAG	H	2	2	14,14,15	0.27	0	17,19,21	0.46	0
2	NAG	I	1	1,2	14,14,15	0.24	0	17,19,21	0.47	0
2	NAG	I	2	2	14,14,15	0.28	0	17,19,21	0.49	0
2	NAG	J	1	1,2	14,14,15	0.19	0	17,19,21	0.52	0
2	NAG	J	2	2	14,14,15	0.24	0	17,19,21	0.57	0
3	NAG	K	1	3,1	14,14,15	0.31	0	17,19,21	0.59	0
3	NAG	K	2	3	14,14,15	0.26	0	17,19,21	0.47	0
3	BMA	K	3	3	11,11,12	0.63	0	15,15,17	0.79	0
3	NAG	L	1	3,1	14,14,15	0.30	0	17,19,21	0.54	0
3	NAG	L	2	3	14,14,15	0.28	0	17,19,21	0.85	1 (5%)
3	BMA	L	3	3	11,11,12	0.59	0	15,15,17	0.84	1 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAG	M	1	1,2	14,14,15	0.22	0	17,19,21	0.44	0
2	NAG	M	2	2	14,14,15	0.26	0	17,19,21	0.53	0
2	NAG	N	1	1,2	14,14,15	0.23	0	17,19,21	0.52	0
2	NAG	N	2	2	14,14,15	0.28	0	17,19,21	0.47	0
2	NAG	O	1	1,2	14,14,15	0.23	0	17,19,21	0.51	0
2	NAG	O	2	2	14,14,15	0.27	0	17,19,21	0.55	0
3	NAG	P	1	3,1	14,14,15	0.32	0	17,19,21	0.54	0
3	NAG	P	2	3	14,14,15	0.27	0	17,19,21	0.48	0
3	BMA	P	3	3	11,11,12	0.66	0	15,15,17	0.84	0
3	NAG	Q	1	3,1	14,14,15	0.26	0	17,19,21	0.51	0
3	NAG	Q	2	3	14,14,15	0.29	0	17,19,21	0.42	0
3	BMA	Q	3	3	11,11,12	0.61	0	15,15,17	0.83	0
2	NAG	R	1	1,2	14,14,15	0.19	0	17,19,21	0.43	0
2	NAG	R	2	2	14,14,15	0.28	0	17,19,21	0.56	0
2	NAG	S	1	1,2	14,14,15	0.25	0	17,19,21	0.56	0
2	NAG	S	2	2	14,14,15	0.27	0	17,19,21	0.48	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	D	1	1,2	-	4/6/23/26	0/1/1/1
2	NAG	D	2	2	-	0/6/23/26	0/1/1/1
3	NAG	E	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	E	2	3	-	2/6/23/26	0/1/1/1
3	BMA	E	3	3	-	0/2/19/22	0/1/1/1
2	NAG	F	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	F	2	2	-	1/6/23/26	0/1/1/1
3	NAG	G	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	G	2	3	-	1/6/23/26	0/1/1/1
3	BMA	G	3	3	-	0/2/19/22	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	NAG	I	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	I	2	2	-	4/6/23/26	0/1/1/1
2	NAG	J	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	J	2	2	-	2/6/23/26	0/1/1/1
3	NAG	K	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	K	2	3	-	1/6/23/26	0/1/1/1

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

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	L	2	NAG	C2-N2-C7	2.62	126.42	122.90
3	L	3	BMA	C1-O5-C5	2.02	114.90	112.19

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	L	2	NAG	O5-C5-C6-O6
2	I	2	NAG	O5-C5-C6-O6
2	M	1	NAG	O5-C5-C6-O6
2	R	2	NAG	O5-C5-C6-O6
2	M	2	NAG	O5-C5-C6-O6
2	S	1	NAG	O5-C5-C6-O6
3	E	2	NAG	O5-C5-C6-O6

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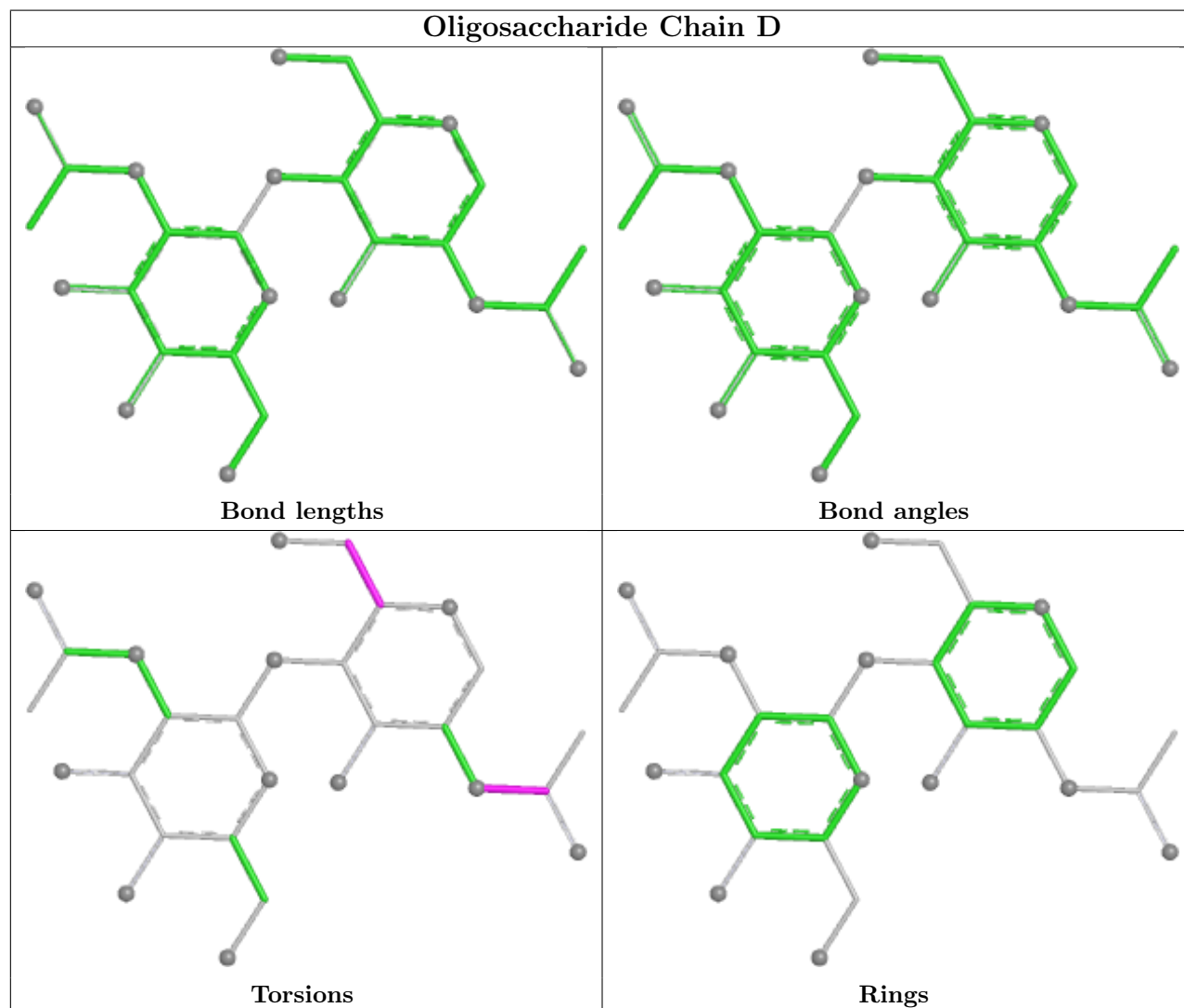
Mol	Chain	Res	Type	Atoms
3	L	2	NAG	C4-C5-C6-O6
2	M	1	NAG	C4-C5-C6-O6
2	J	1	NAG	C4-C5-C6-O6
2	M	2	NAG	C4-C5-C6-O6
3	E	2	NAG	C4-C5-C6-O6
2	S	1	NAG	C4-C5-C6-O6
2	J	2	NAG	C4-C5-C6-O6
2	I	2	NAG	C4-C5-C6-O6
2	I	1	NAG	C4-C5-C6-O6
2	D	1	NAG	C8-C7-N2-C2
2	D	1	NAG	O7-C7-N2-C2
2	I	2	NAG	C8-C7-N2-C2
2	I	2	NAG	O7-C7-N2-C2
3	Q	1	NAG	C8-C7-N2-C2
3	Q	1	NAG	O7-C7-N2-C2
2	J	1	NAG	O5-C5-C6-O6
3	Q	2	NAG	O5-C5-C6-O6
2	D	1	NAG	C4-C5-C6-O6
2	F	2	NAG	O5-C5-C6-O6
2	R	1	NAG	C4-C5-C6-O6
3	Q	2	NAG	C4-C5-C6-O6
2	I	1	NAG	O5-C5-C6-O6
2	D	1	NAG	O5-C5-C6-O6
2	J	2	NAG	O5-C5-C6-O6
3	K	2	NAG	O5-C5-C6-O6
2	R	2	NAG	C4-C5-C6-O6
2	R	1	NAG	O5-C5-C6-O6
3	G	2	NAG	O5-C5-C6-O6
3	K	1	NAG	O5-C5-C6-O6
3	G	1	NAG	O5-C5-C6-O6
3	P	1	NAG	O5-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	F	1	NAG	O5-C5-C6-O6
2	H	2	NAG	C1-C2-N2-C7
2	N	2	NAG	C1-C2-N2-C7
3	L	2	NAG	C1-C2-N2-C7
3	L	2	NAG	C3-C2-N2-C7

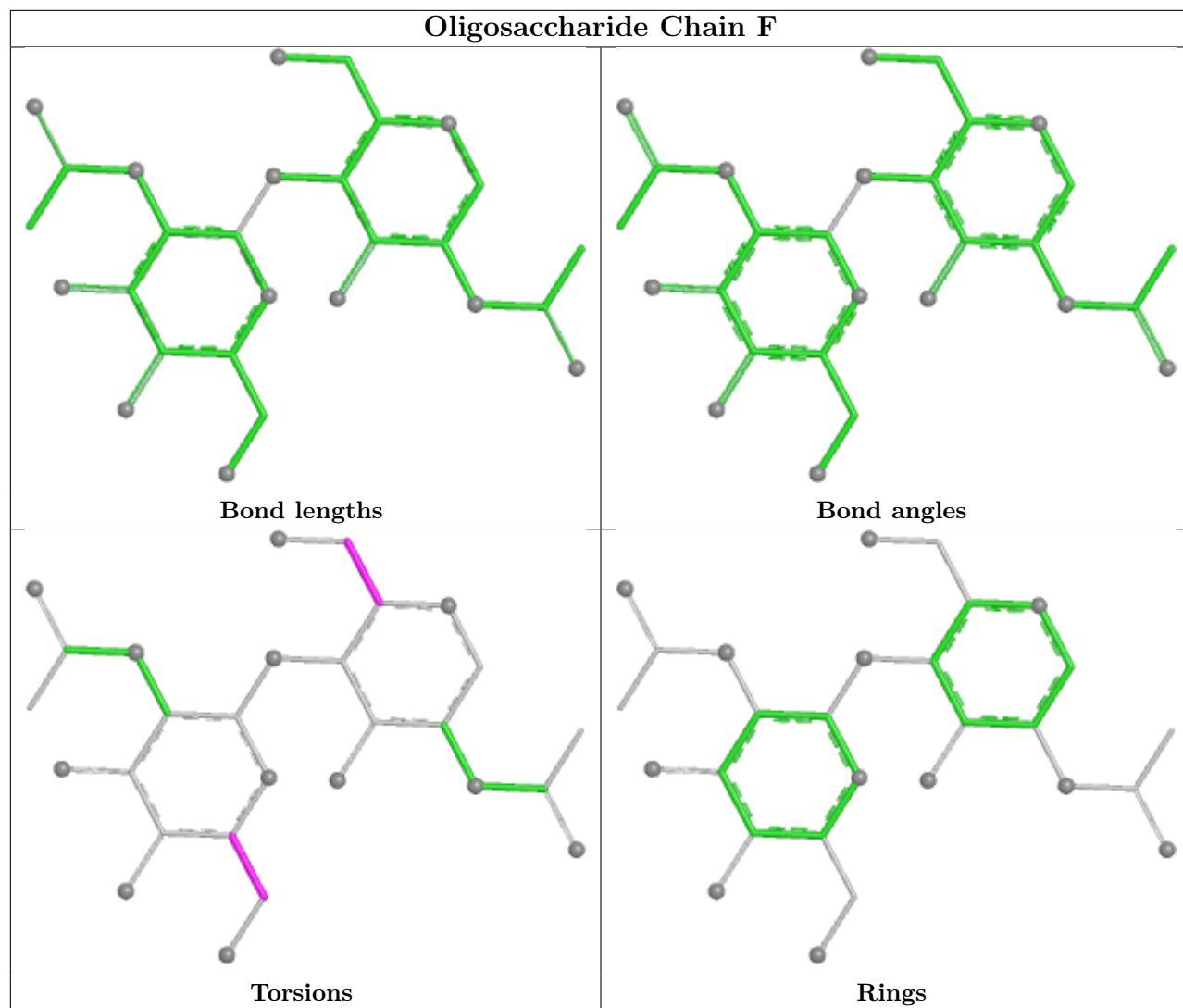
There are no ring outliers.

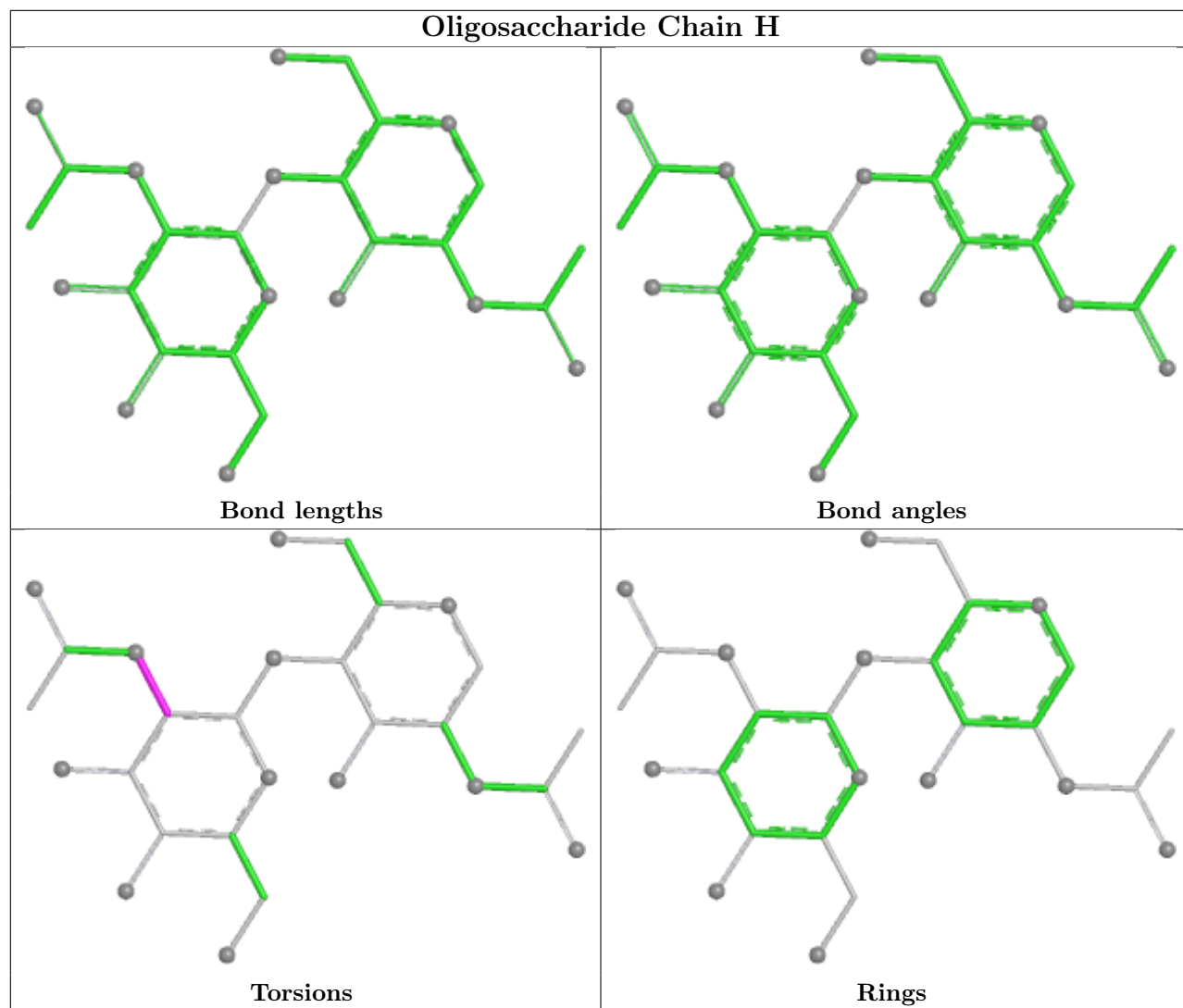
3 monomers are involved in 3 short contacts:

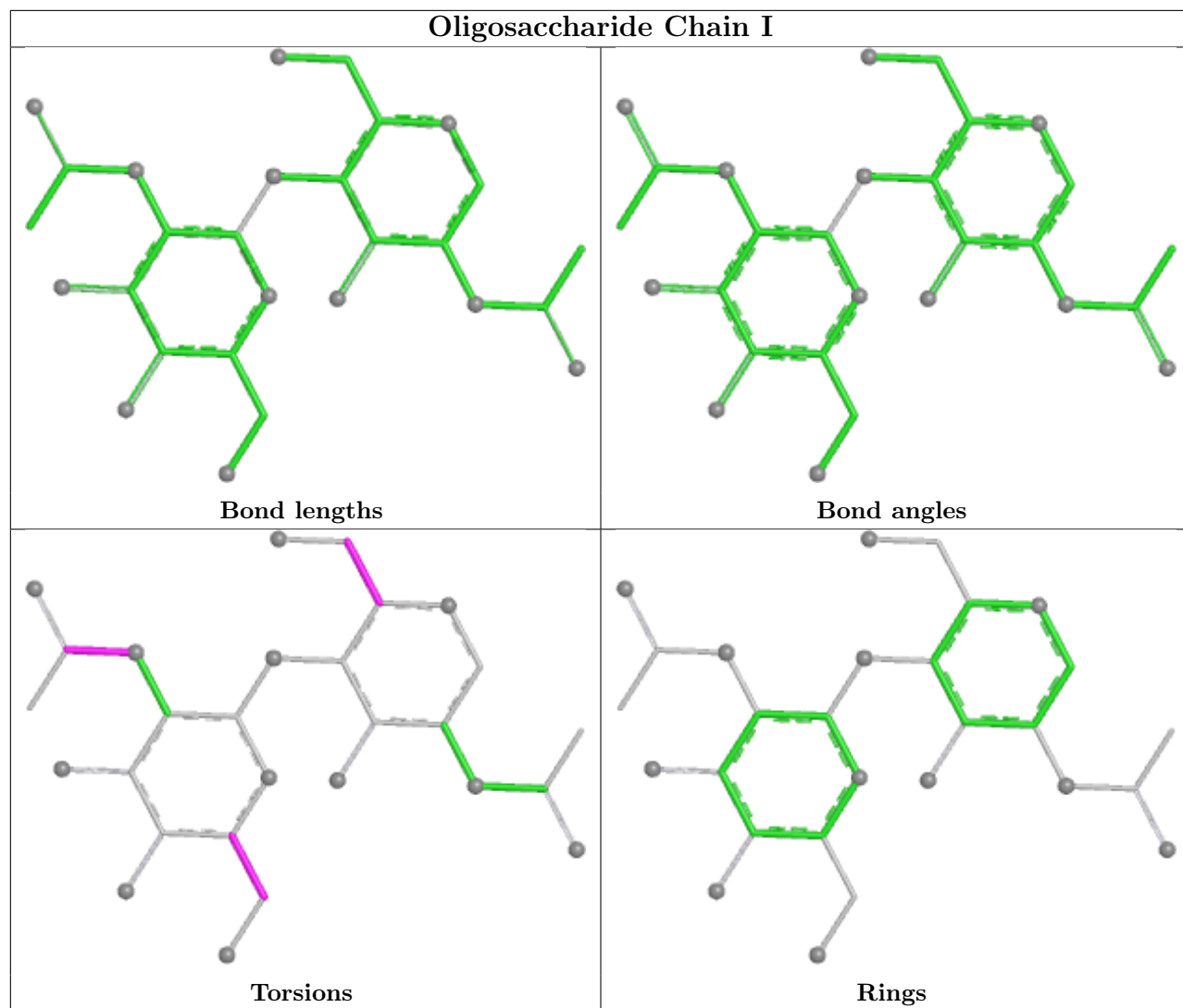
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1	NAG	1	0
3	E	2	NAG	1	0
2	J	2	NAG	1	0

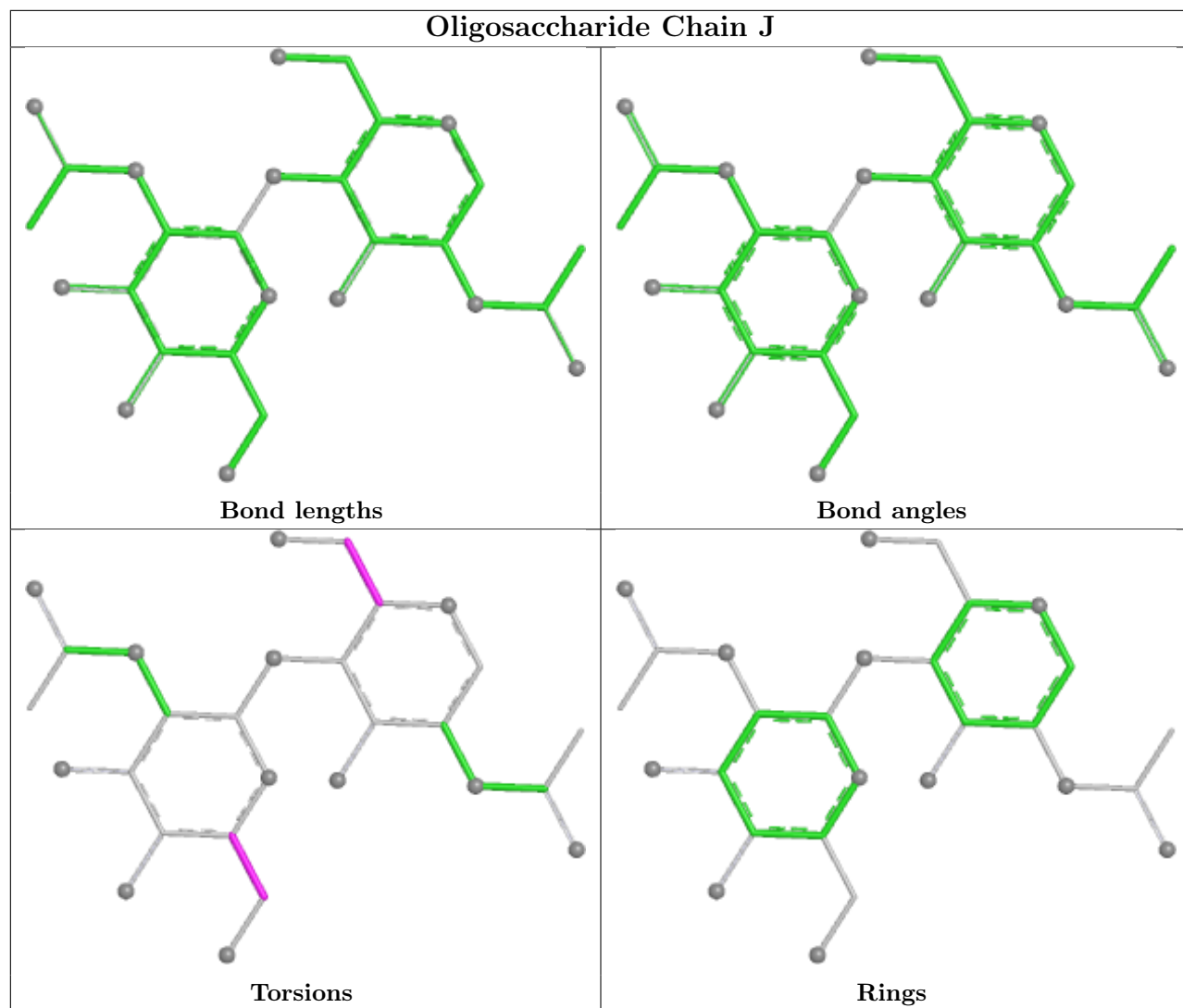
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

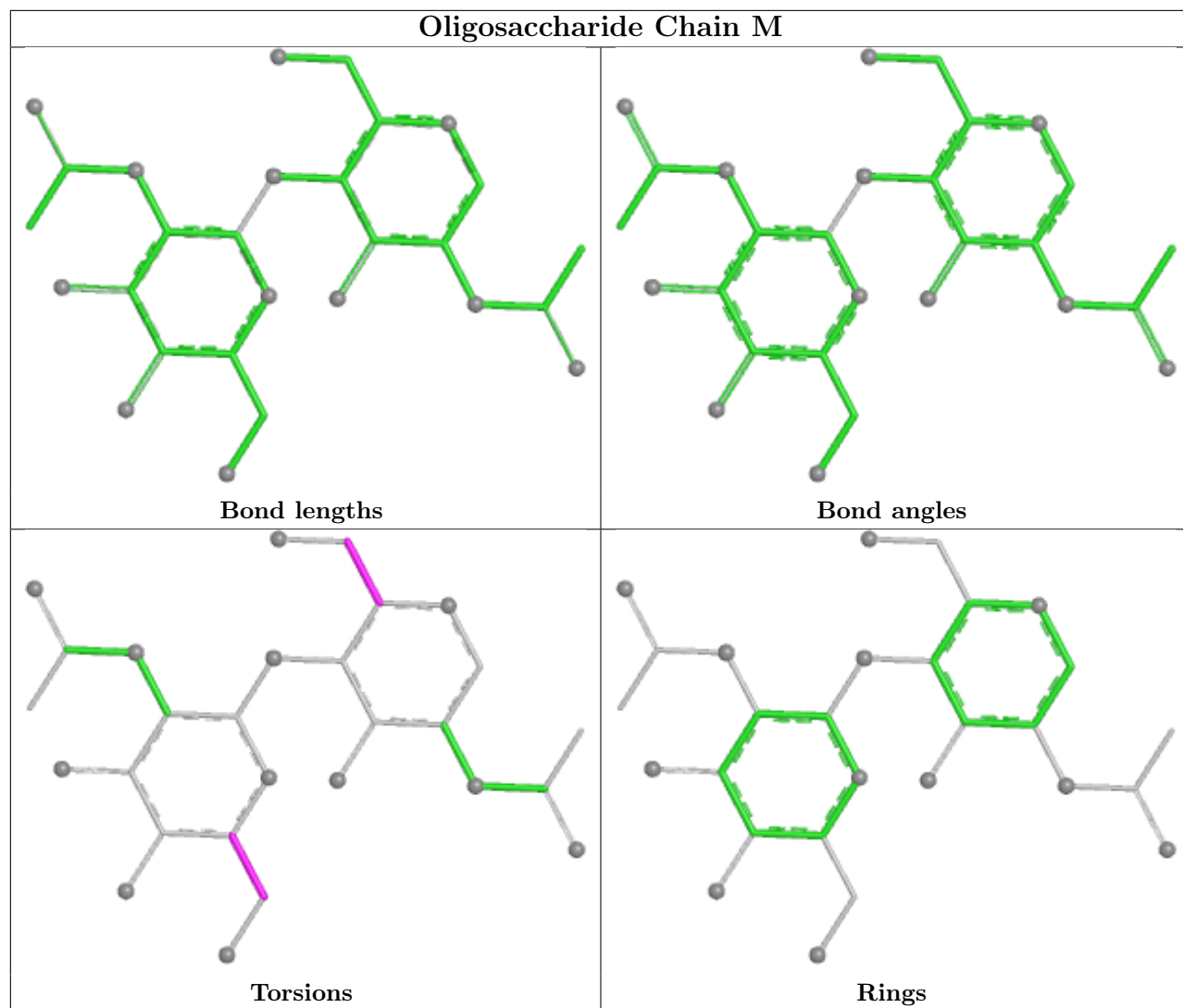


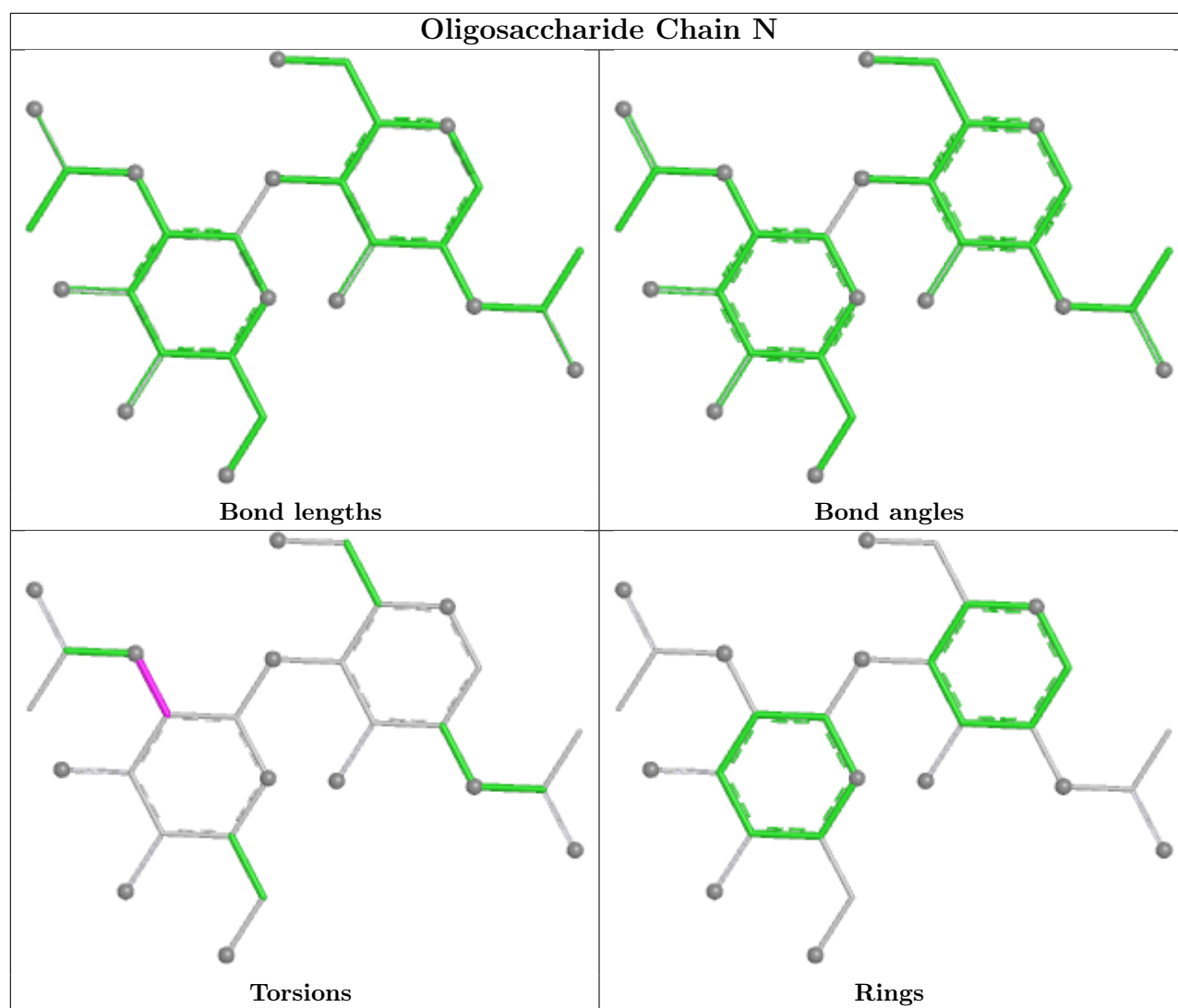


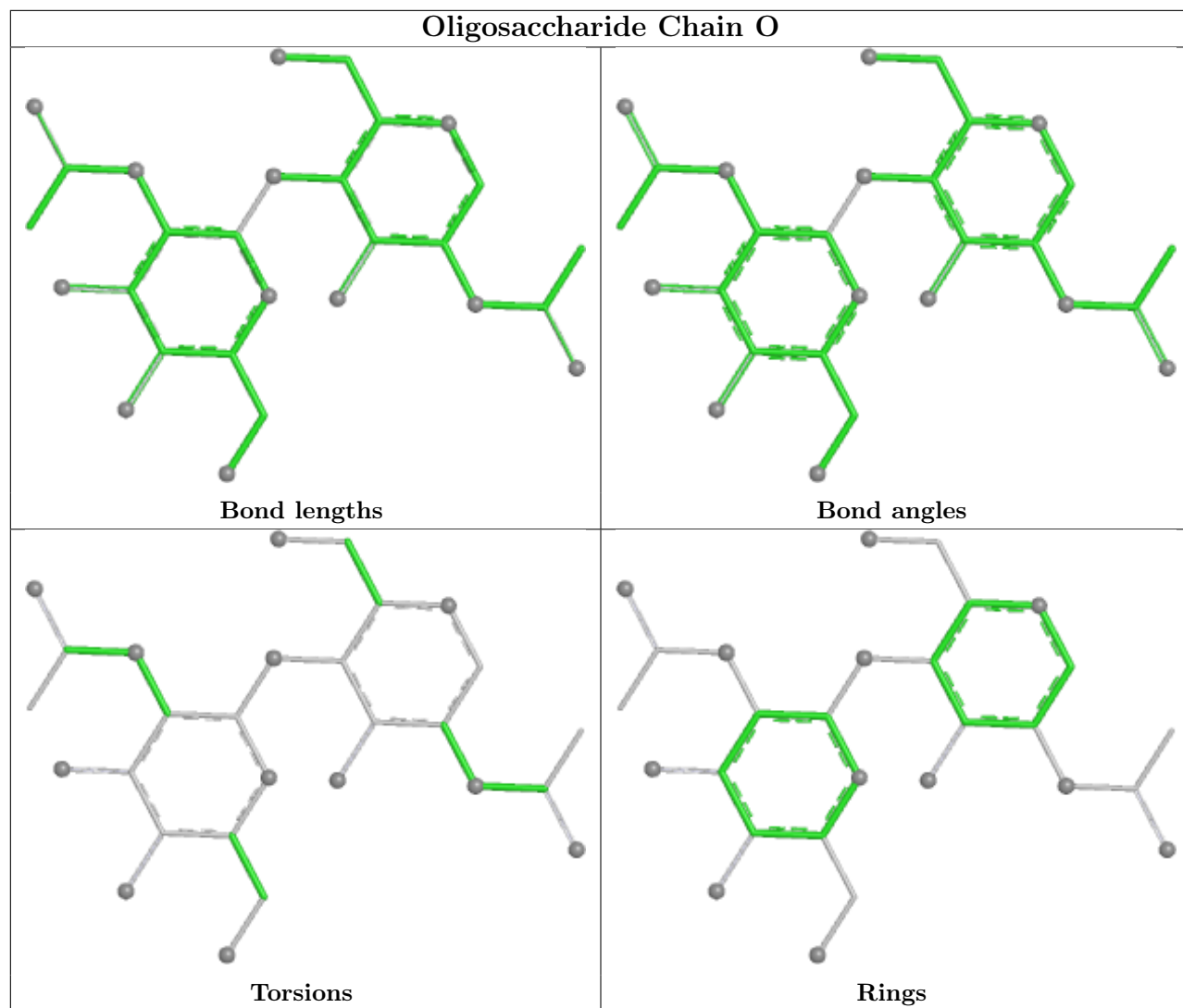


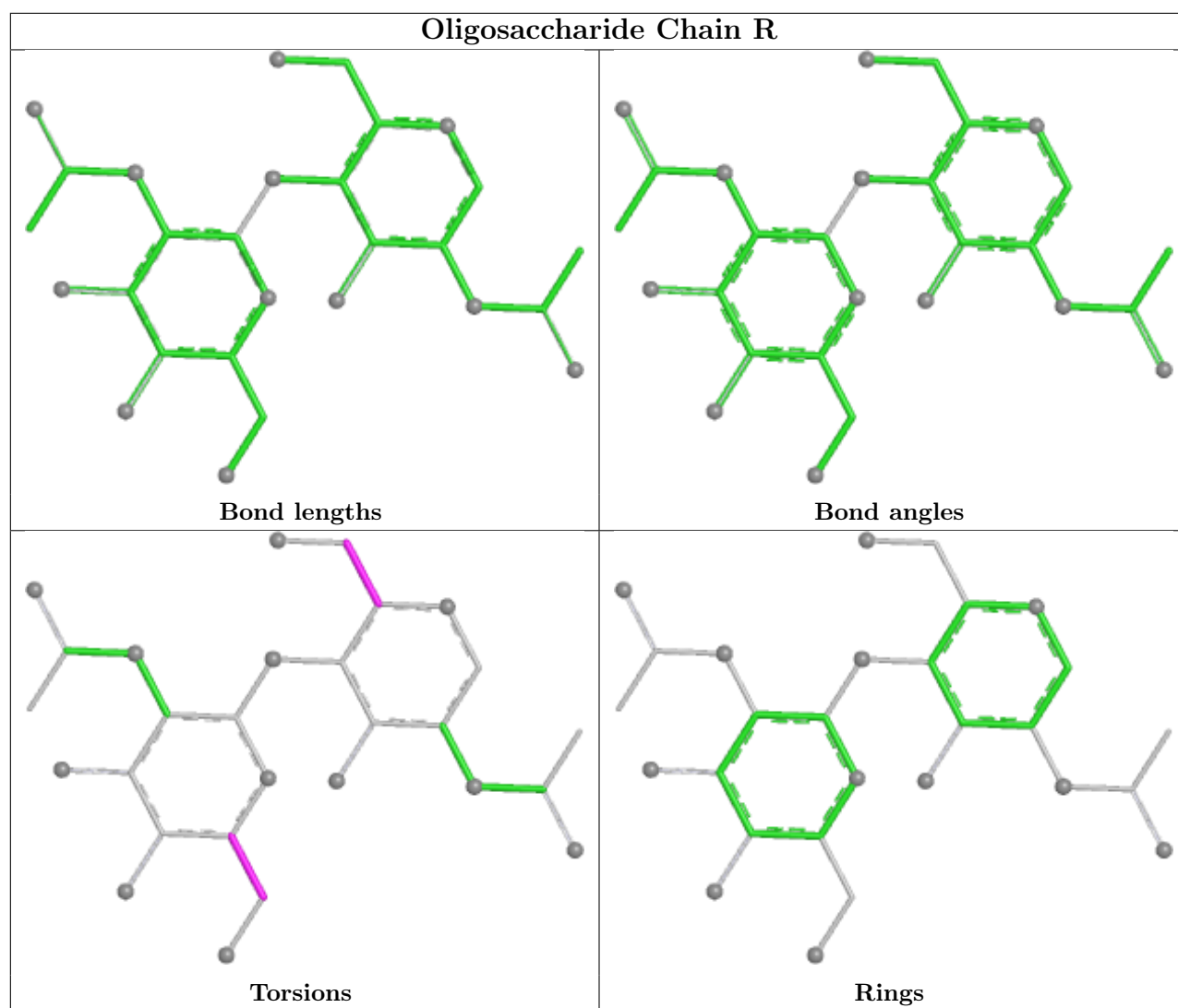


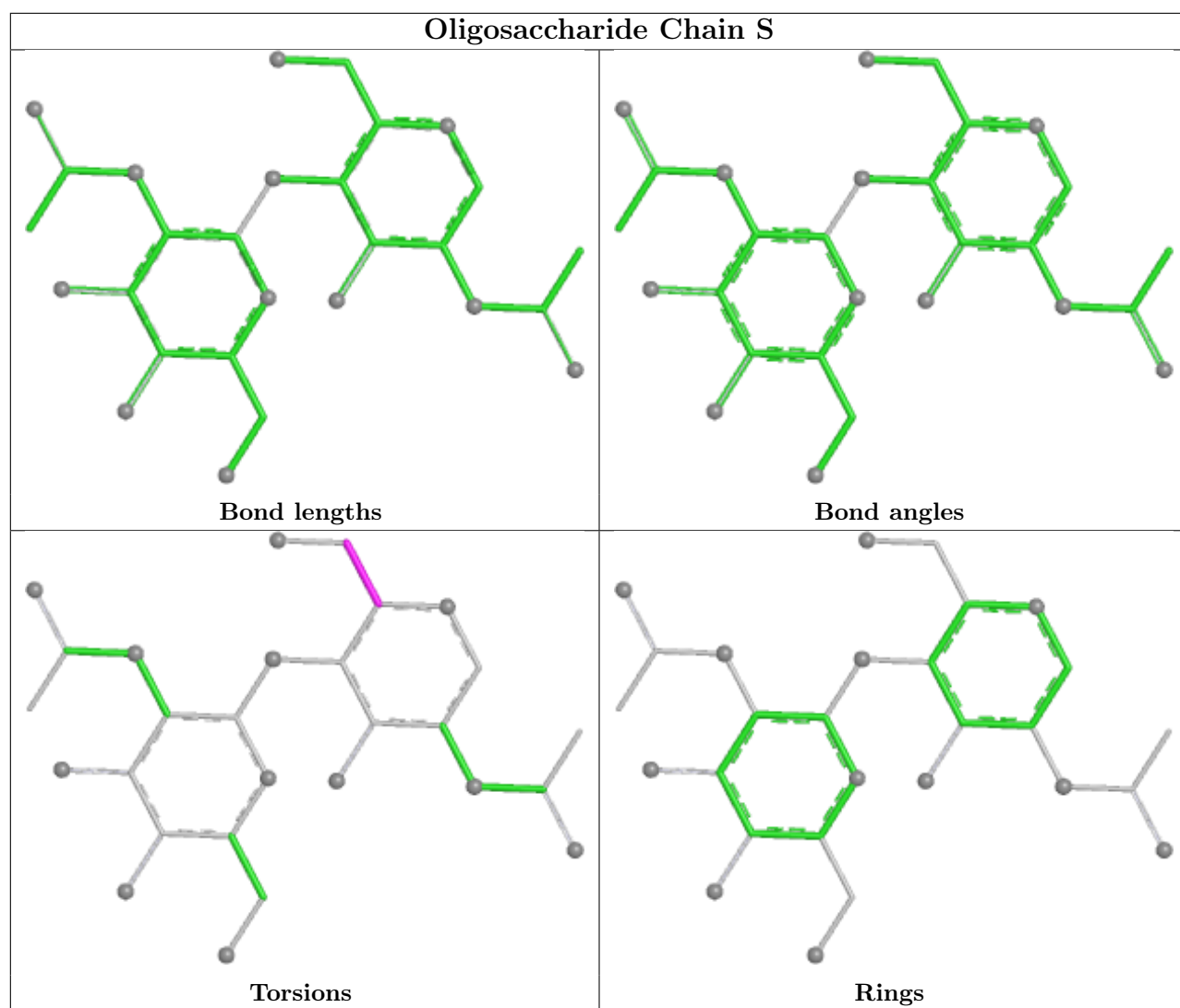


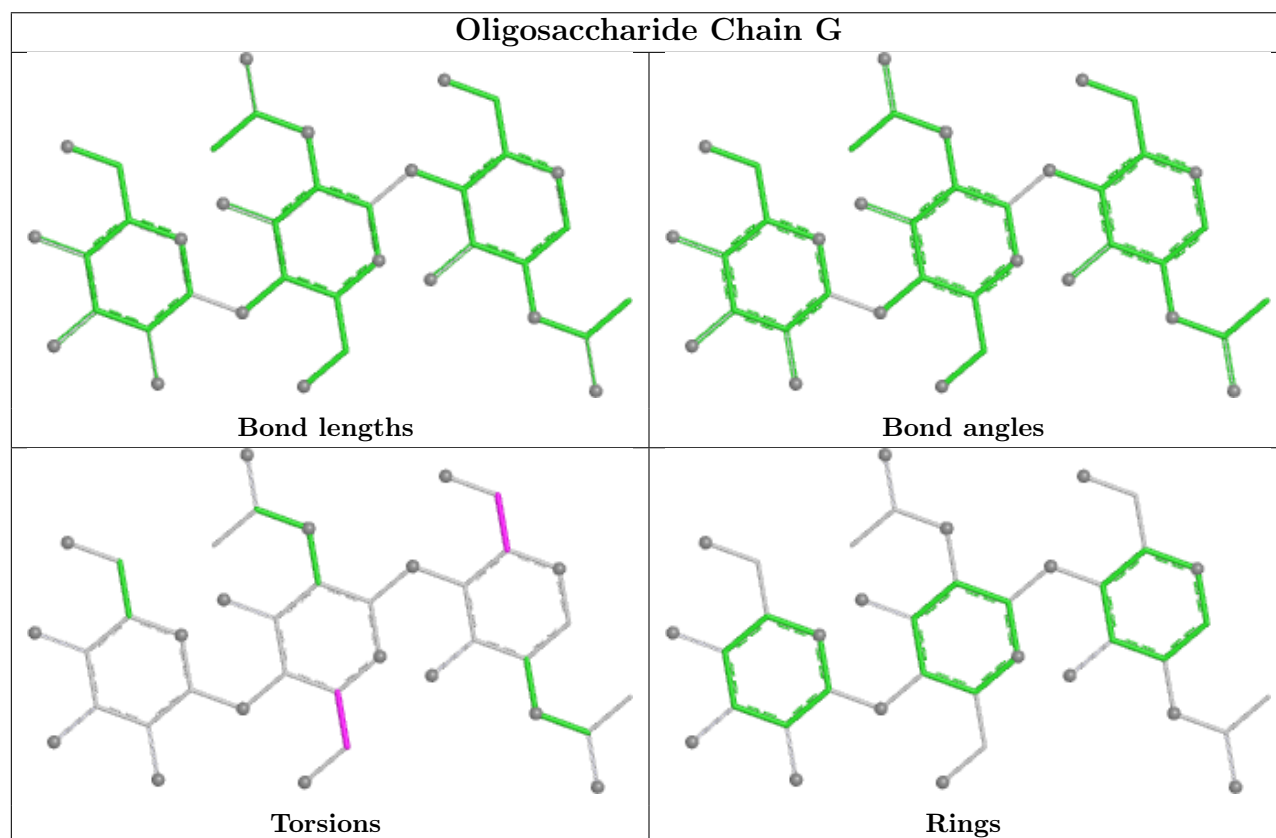
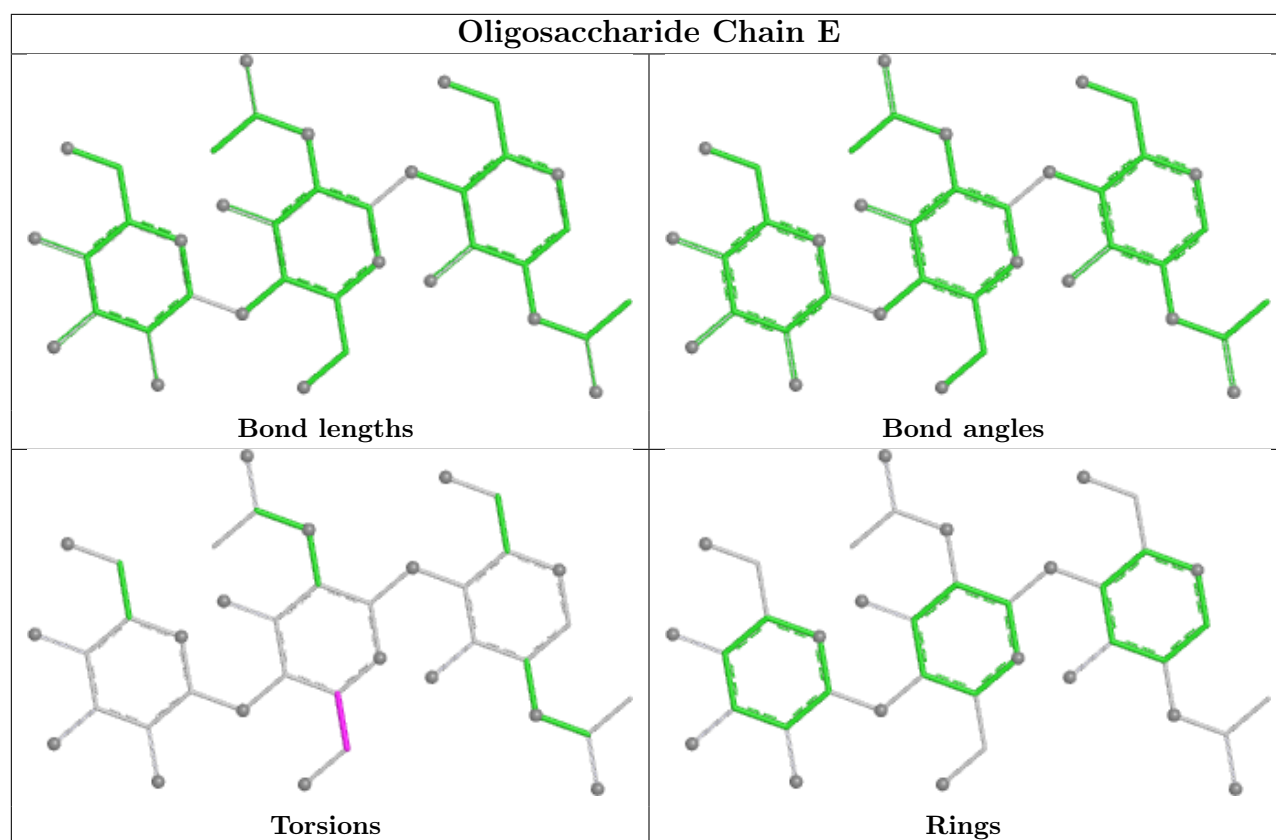


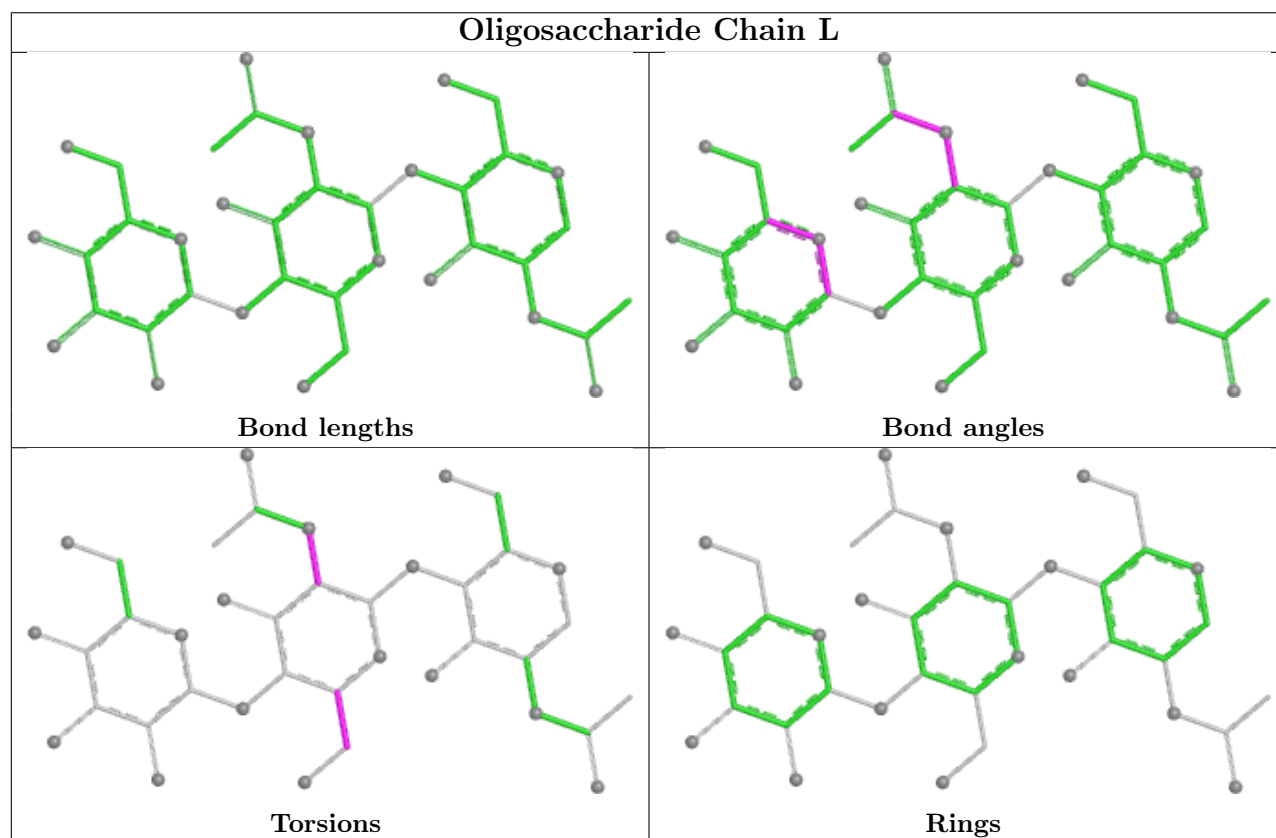
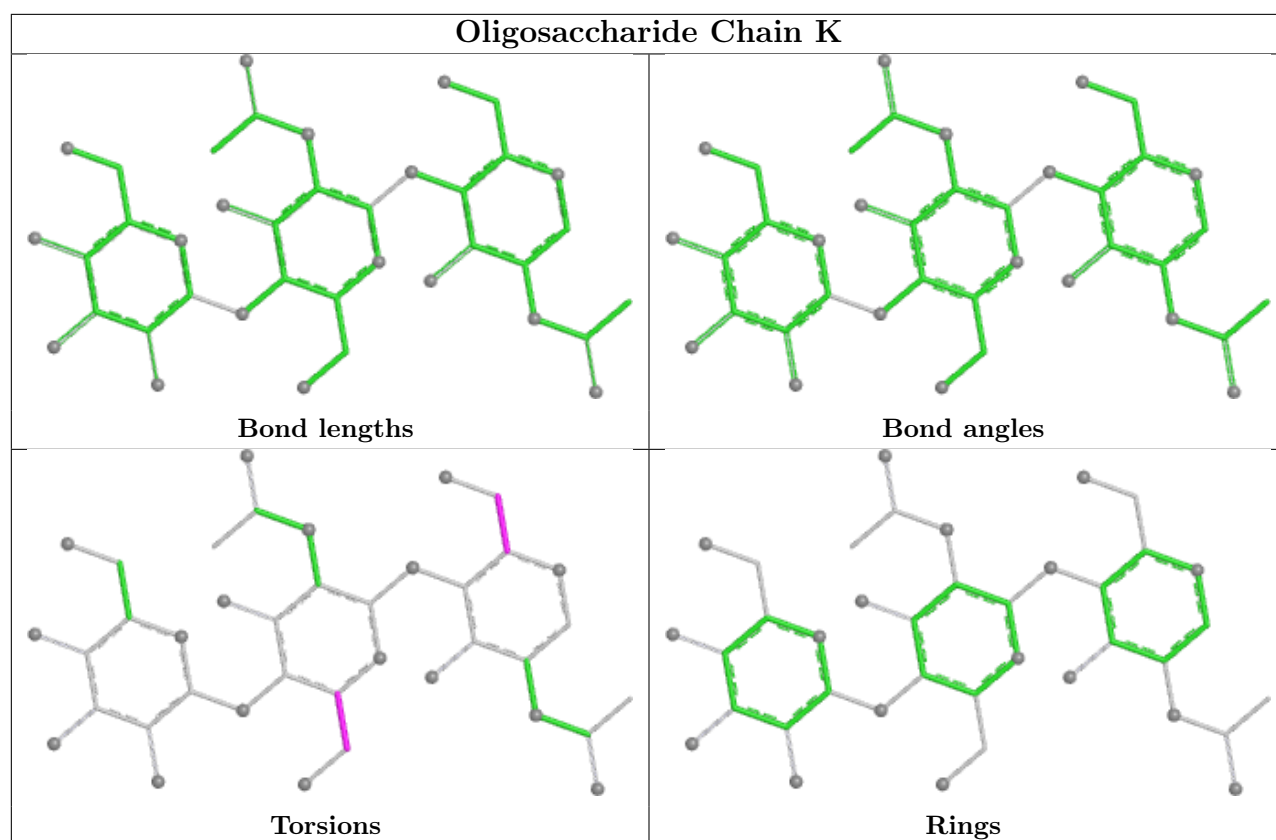


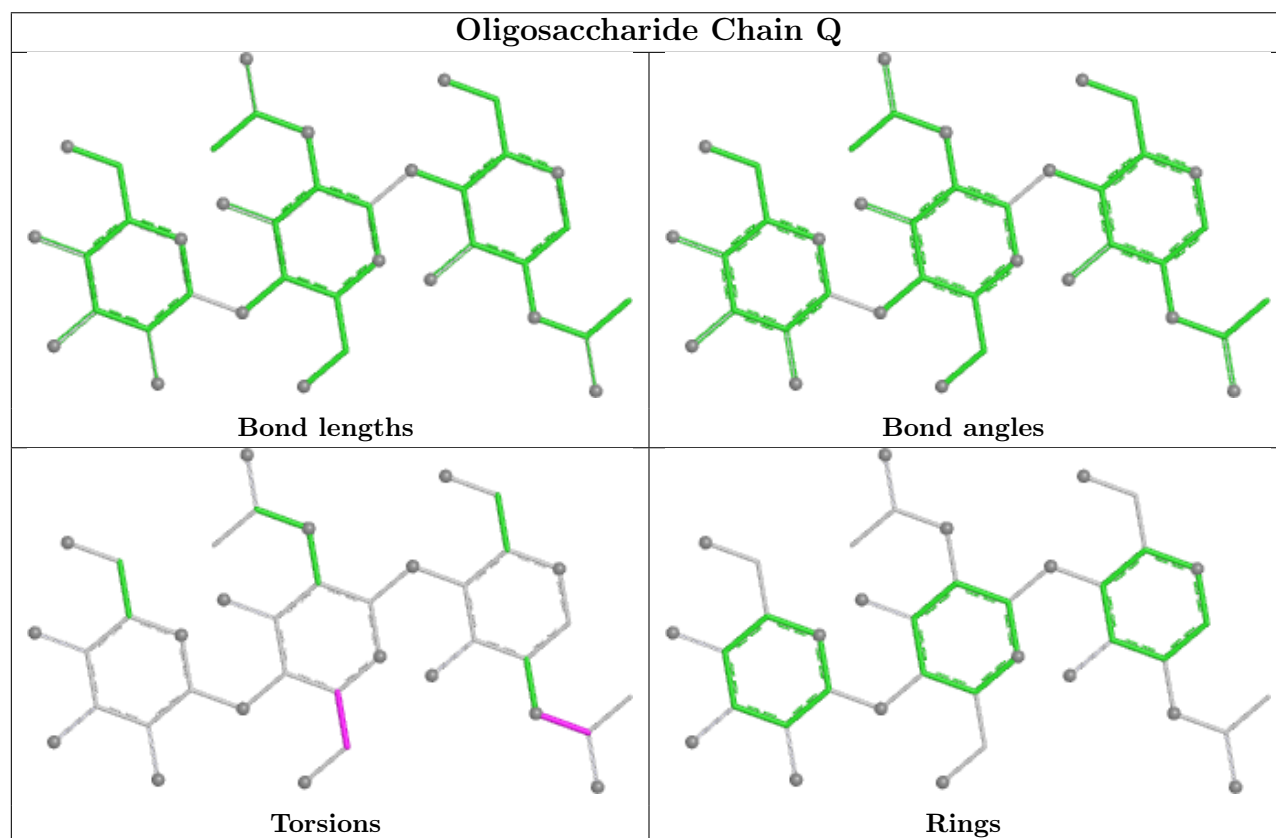
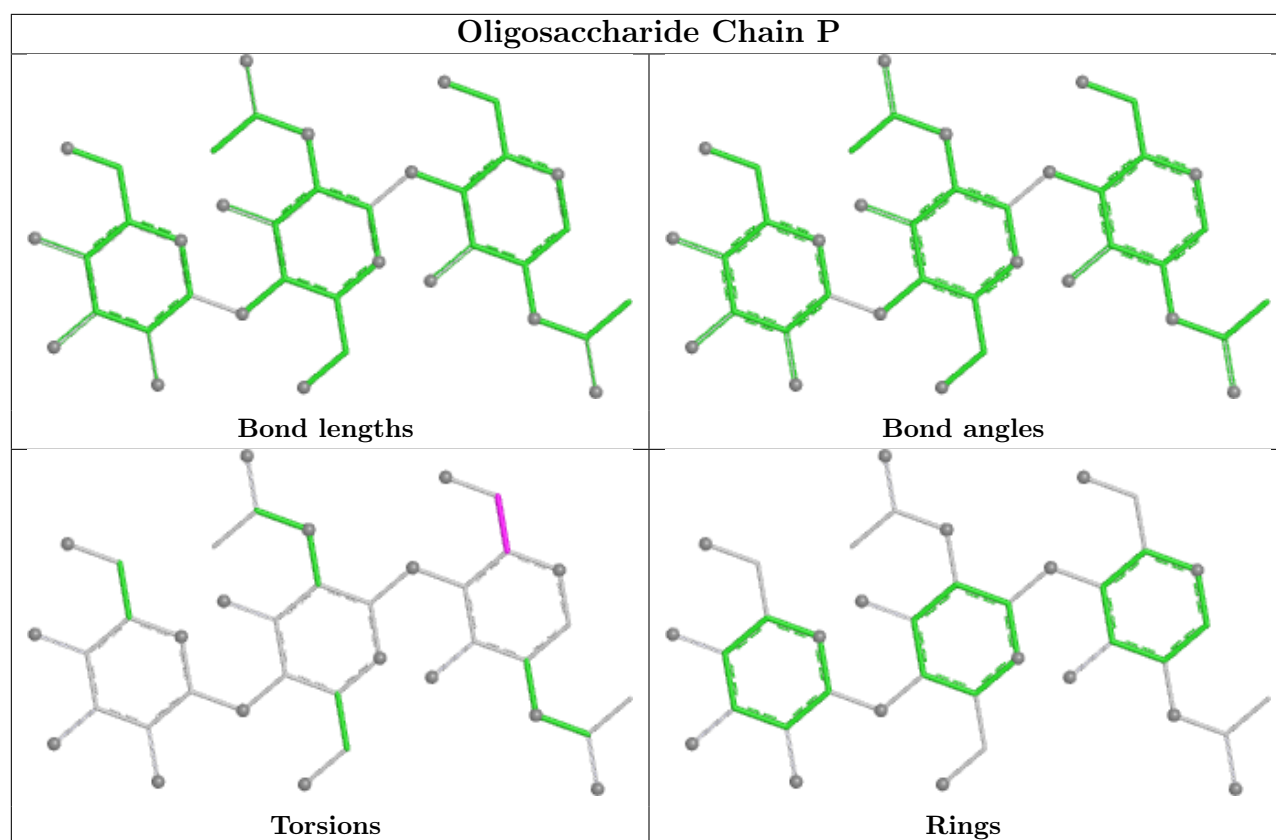












5.6 Ligand geometry

41 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	$\# Z > 2$
5	NAG	A	1409	1	14,14,15	0.30	0	17,19,21	0.47	0
5	NAG	B	1405	1	14,14,15	0.28	0	17,19,21	0.49	0
5	NAG	A	1408	1	14,14,15	0.35	0	17,19,21	0.48	0
5	NAG	C	1412	1	14,14,15	0.29	0	17,19,21	0.47	0
5	NAG	C	1404	1	14,14,15	0.28	0	17,19,21	0.47	0
5	NAG	C	1410	1	14,14,15	0.28	0	17,19,21	0.44	0
5	NAG	A	1405	1	14,14,15	0.29	0	17,19,21	0.49	0
5	NAG	A	1404	1	14,14,15	0.28	0	17,19,21	0.49	0
5	NAG	C	1406	1	14,14,15	0.29	0	17,19,21	0.47	0
5	NAG	A	1402	1	14,14,15	0.30	0	17,19,21	0.50	0
5	NAG	C	1407	1	14,14,15	0.33	0	17,19,21	0.47	0
4	EIC	A	1401	-	19,19,19	0.51	1 (5%)	19,19,19	0.88	0
5	NAG	B	1408	1	14,14,15	0.34	0	17,19,21	0.51	0
5	NAG	B	1401	1	14,14,15	0.28	0	17,19,21	0.50	0
5	NAG	C	1405	1	14,14,15	0.44	0	17,19,21	0.90	1 (5%)
5	NAG	B	1402	1	14,14,15	0.37	0	17,19,21	0.88	1 (5%)
4	EIC	A	1415	-	19,19,19	0.59	0	19,19,19	0.55	0
5	NAG	C	1409	1	14,14,15	0.33	0	17,19,21	0.51	0
5	NAG	B	1410	1	14,14,15	0.28	0	17,19,21	0.51	0
5	NAG	C	1408	1	14,14,15	0.28	0	17,19,21	0.47	0
5	NAG	B	1404	1	14,14,15	0.31	0	17,19,21	0.51	0
5	NAG	C	1401	1	14,14,15	0.33	0	17,19,21	0.90	1 (5%)
5	NAG	B	1403	1	14,14,15	0.27	0	17,19,21	0.47	0
5	NAG	B	1409	1	14,14,15	0.25	0	17,19,21	0.44	0
5	NAG	A	1403	1	14,14,15	0.22	0	17,19,21	0.55	0
5	NAG	A	1412	1	14,14,15	0.27	0	17,19,21	0.49	0
5	NAG	C	1403	1	14,14,15	0.32	0	17,19,21	0.50	0
5	NAG	A	1414	1	14,14,15	0.33	0	17,19,21	0.50	0
5	NAG	A	1413	1	14,14,15	0.28	0	17,19,21	0.49	0
5	NAG	A	1410	1	14,14,15	0.35	0	17,19,21	0.51	0
4	EIC	B	1413	-	19,19,19	0.59	0	19,19,19	0.56	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	B	1412	1	14,14,15	0.36	0	17,19,21	0.53	0
5	NAG	B	1411	1	14,14,15	0.27	0	17,19,21	0.54	0
5	NAG	A	1411	1	14,14,15	0.30	0	17,19,21	0.46	0
5	NAG	B	1407	1	14,14,15	0.34	0	17,19,21	0.49	0
5	NAG	C	1411	1	14,14,15	0.26	0	17,19,21	0.50	0
5	NAG	A	1407	1	14,14,15	0.27	0	17,19,21	0.47	0
5	NAG	C	1402	1	14,14,15	0.22	0	17,19,21	0.46	0
5	NAG	A	1406	1	14,14,15	0.30	0	17,19,21	0.52	0
5	NAG	C	1413	1	14,14,15	0.49	0	17,19,21	0.87	1 (5%)
5	NAG	B	1406	1	14,14,15	0.34	0	17,19,21	0.53	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	A	1409	1	-	1/6/23/26	0/1/1/1
5	NAG	B	1405	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1408	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1412	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1404	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1410	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1405	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1404	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1406	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1402	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1407	1	-	2/6/23/26	0/1/1/1
4	EIC	A	1401	-	-	6/17/17/17	-
5	NAG	B	1408	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1401	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1405	1	-	4/6/23/26	0/1/1/1
5	NAG	B	1402	1	-	4/6/23/26	0/1/1/1
4	EIC	A	1415	-	-	4/17/17/17	-
5	NAG	C	1409	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1410	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1408	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1404	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1401	1	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	B	1403	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1409	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1403	1	-	1/6/23/26	0/1/1/1
5	NAG	A	1412	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1403	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1414	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1413	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1410	1	-	2/6/23/26	0/1/1/1
4	EIC	B	1413	-	-	6/17/17/17	-
5	NAG	B	1412	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1411	1	-	4/6/23/26	0/1/1/1
5	NAG	A	1411	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1407	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1411	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1407	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1402	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1406	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1413	1	-	3/6/23/26	0/1/1/1
5	NAG	B	1406	1	-	3/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1401	EIC	O2-C1	-2.09	1.23	1.30

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	1401	NAG	C2-N2-C7	2.64	126.44	122.90
5	C	1405	NAG	C2-N2-C7	2.62	126.41	122.90
5	C	1413	NAG	C2-N2-C7	2.62	126.41	122.90
5	B	1402	NAG	C2-N2-C7	2.60	126.38	122.90

There are no chirality outliers.

All (88) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1402	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	A	1405	NAG	C4-C5-C6-O6
5	C	1408	NAG	O5-C5-C6-O6
5	B	1412	NAG	C4-C5-C6-O6
5	A	1411	NAG	O5-C5-C6-O6
5	A	1412	NAG	O5-C5-C6-O6
5	A	1413	NAG	O5-C5-C6-O6
5	B	1401	NAG	O5-C5-C6-O6
5	B	1402	NAG	O5-C5-C6-O6
5	B	1407	NAG	O5-C5-C6-O6
5	B	1409	NAG	O5-C5-C6-O6
5	B	1411	NAG	O5-C5-C6-O6
5	C	1411	NAG	O5-C5-C6-O6
5	A	1404	NAG	O5-C5-C6-O6
5	B	1405	NAG	O5-C5-C6-O6
5	B	1410	NAG	O5-C5-C6-O6
5	C	1401	NAG	O5-C5-C6-O6
5	C	1403	NAG	O5-C5-C6-O6
5	A	1402	NAG	C4-C5-C6-O6
5	B	1407	NAG	C4-C5-C6-O6
5	B	1409	NAG	C4-C5-C6-O6
5	A	1406	NAG	O5-C5-C6-O6
5	B	1401	NAG	C4-C5-C6-O6
5	B	1411	NAG	C4-C5-C6-O6
5	A	1411	NAG	C4-C5-C6-O6
5	C	1408	NAG	C4-C5-C6-O6
5	C	1411	NAG	C4-C5-C6-O6
5	C	1410	NAG	O5-C5-C6-O6
5	A	1405	NAG	O5-C5-C6-O6
5	A	1408	NAG	O5-C5-C6-O6
5	A	1410	NAG	C4-C5-C6-O6
5	C	1401	NAG	C4-C5-C6-O6
5	B	1412	NAG	O5-C5-C6-O6
5	C	1407	NAG	C4-C5-C6-O6
5	A	1412	NAG	C4-C5-C6-O6
5	B	1410	NAG	C4-C5-C6-O6
5	A	1408	NAG	C4-C5-C6-O6
5	A	1413	NAG	C4-C5-C6-O6
5	A	1410	NAG	O5-C5-C6-O6
5	A	1404	NAG	C4-C5-C6-O6
5	B	1402	NAG	C4-C5-C6-O6
5	C	1403	NAG	C4-C5-C6-O6
5	B	1406	NAG	C8-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
5	B	1406	NAG	O7-C7-N2-C2
5	B	1411	NAG	C8-C7-N2-C2
5	B	1411	NAG	O7-C7-N2-C2
5	C	1412	NAG	O5-C5-C6-O6
5	C	1407	NAG	O5-C5-C6-O6
5	C	1410	NAG	C4-C5-C6-O6
5	A	1414	NAG	C4-C5-C6-O6
5	C	1402	NAG	C4-C5-C6-O6
5	B	1405	NAG	C4-C5-C6-O6
4	A	1401	EIC	C1-C2-C3-C4
5	A	1406	NAG	C4-C5-C6-O6
5	C	1413	NAG	O5-C5-C6-O6
5	C	1402	NAG	O5-C5-C6-O6
5	A	1414	NAG	O5-C5-C6-O6
5	A	1409	NAG	O5-C5-C6-O6
4	A	1415	EIC	C6-C7-C8-C9
5	B	1408	NAG	C4-C5-C6-O6
5	B	1408	NAG	O5-C5-C6-O6
5	A	1403	NAG	O5-C5-C6-O6
4	A	1415	EIC	C2-C3-C4-C5
4	A	1401	EIC	C9-C10-C11-C12
4	B	1413	EIC	C2-C3-C4-C5
4	B	1413	EIC	C3-C4-C5-C6
4	A	1415	EIC	C3-C4-C5-C6
5	C	1405	NAG	C4-C5-C6-O6
5	C	1401	NAG	C3-C2-N2-C7
5	C	1413	NAG	C3-C2-N2-C7
4	B	1413	EIC	C6-C7-C8-C9
4	B	1413	EIC	C5-C6-C7-C8
4	A	1401	EIC	C10-C11-C12-C13
4	A	1415	EIC	C10-C11-C12-C13
4	B	1413	EIC	C10-C11-C12-C13
5	C	1405	NAG	O5-C5-C6-O6
5	B	1402	NAG	C1-C2-N2-C7
5	C	1401	NAG	C1-C2-N2-C7
5	C	1405	NAG	C1-C2-N2-C7
5	C	1413	NAG	C1-C2-N2-C7
4	A	1401	EIC	C5-C6-C7-C8
5	B	1402	NAG	C3-C2-N2-C7
5	C	1405	NAG	C3-C2-N2-C7
5	B	1406	NAG	C4-C5-C6-O6
4	A	1401	EIC	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
4	A	1401	EIC	O2-C1-C2-C3
5	C	1412	NAG	C4-C5-C6-O6
4	B	1413	EIC	O2-C1-C2-C3

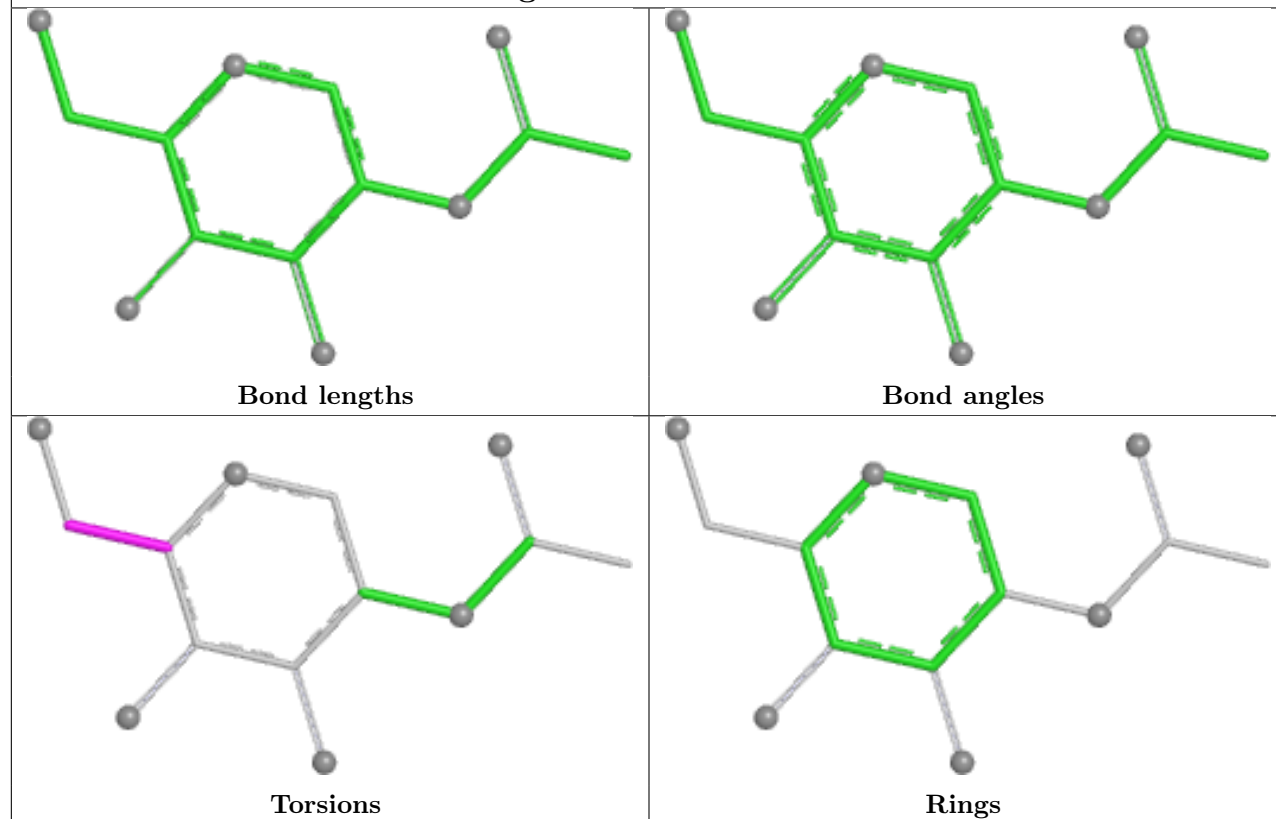
There are no ring outliers.

3 monomers are involved in 6 short contacts:

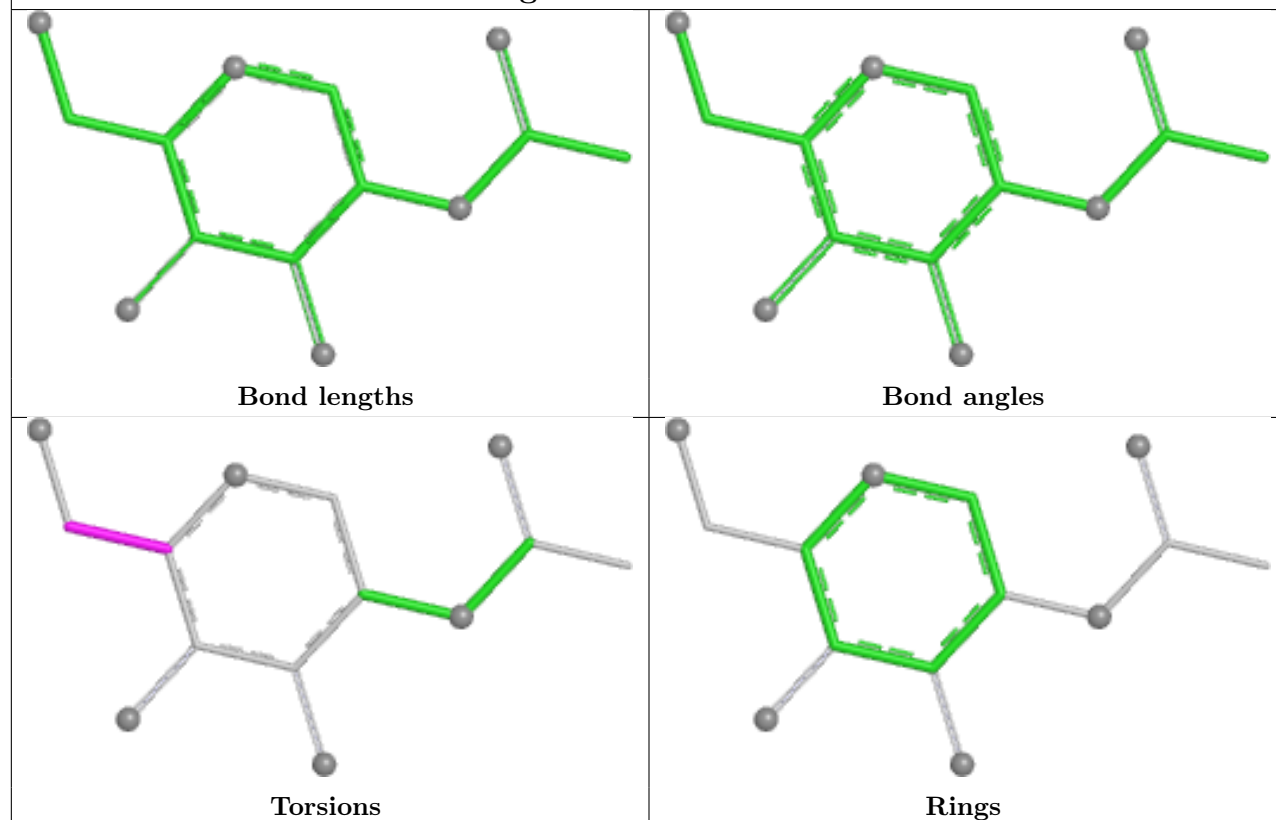
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1401	EIC	4	0
4	A	1415	EIC	1	0
4	B	1413	EIC	1	0

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.

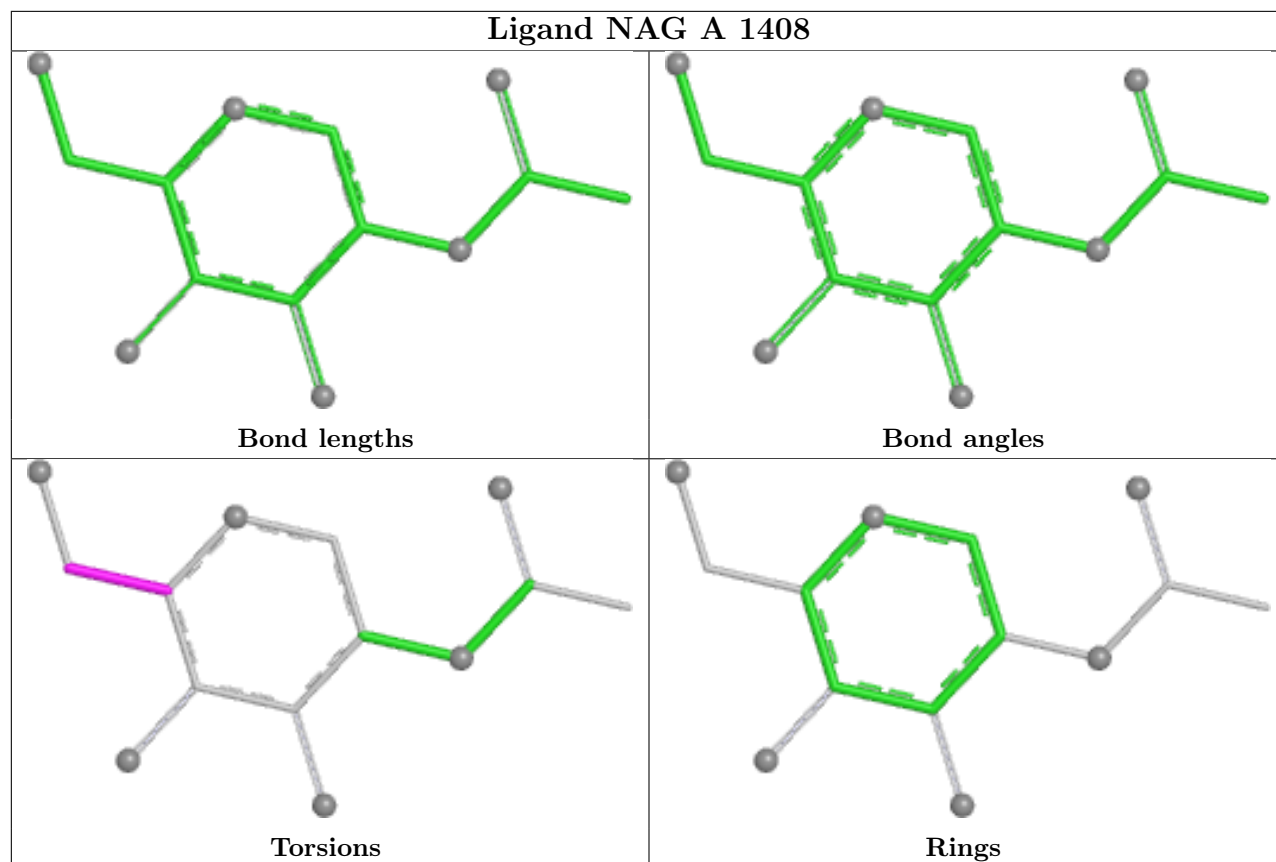
Ligand NAG A 1409



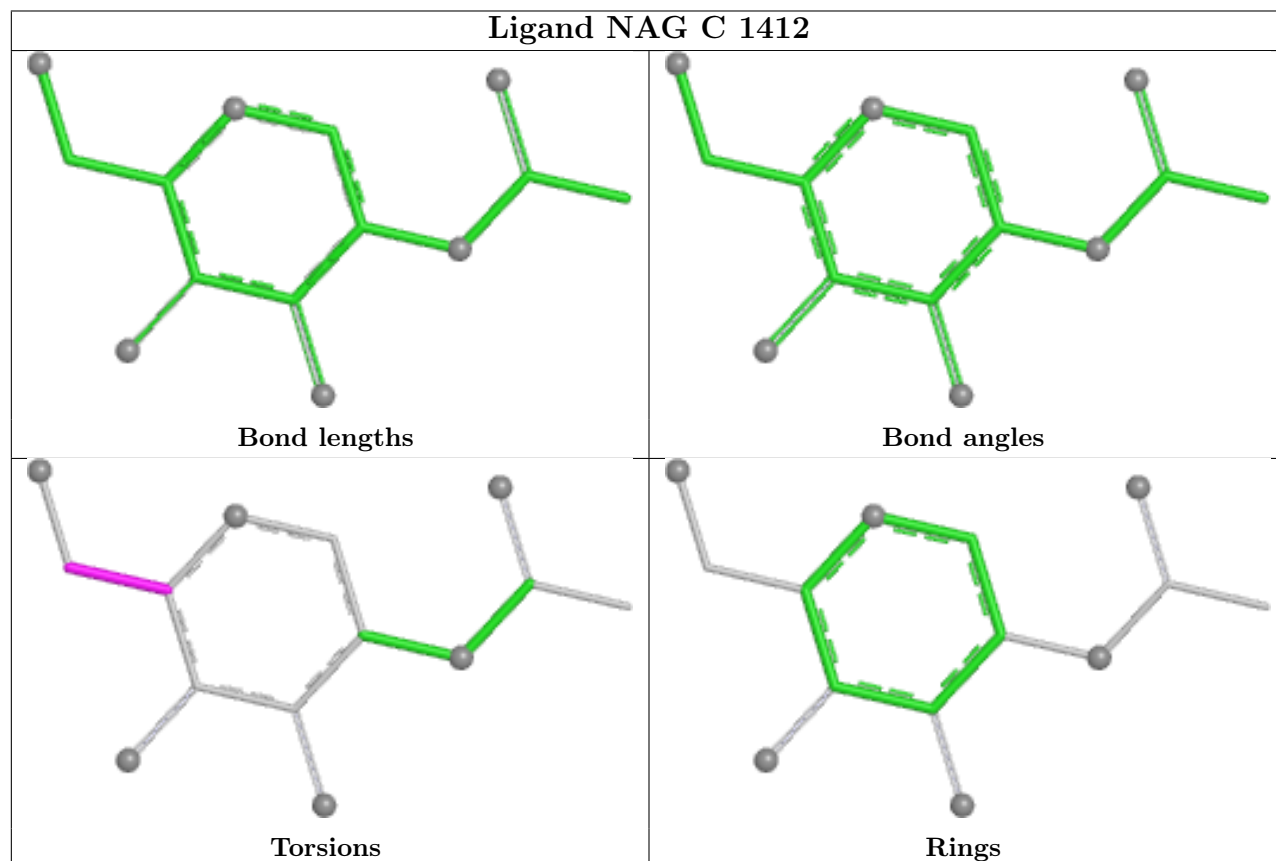
Ligand NAG B 1405

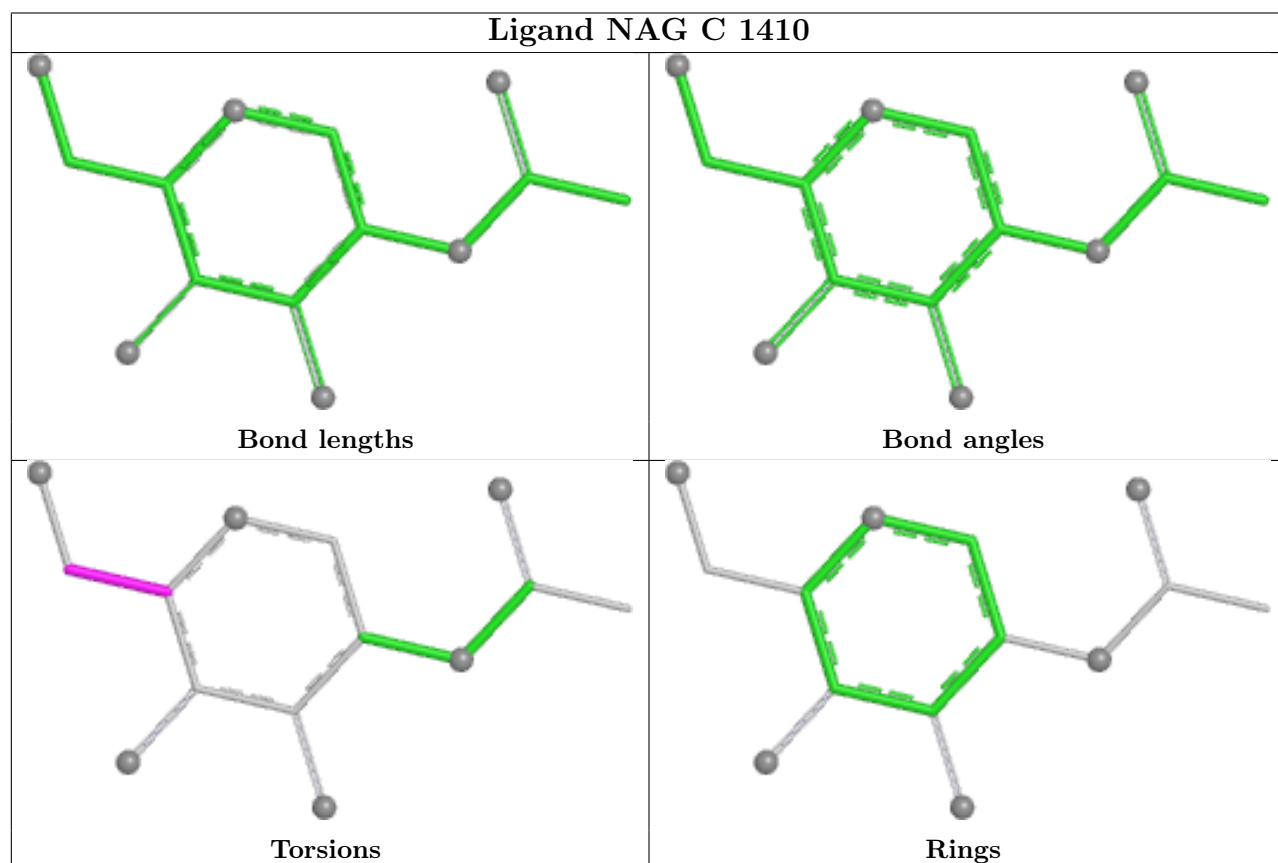
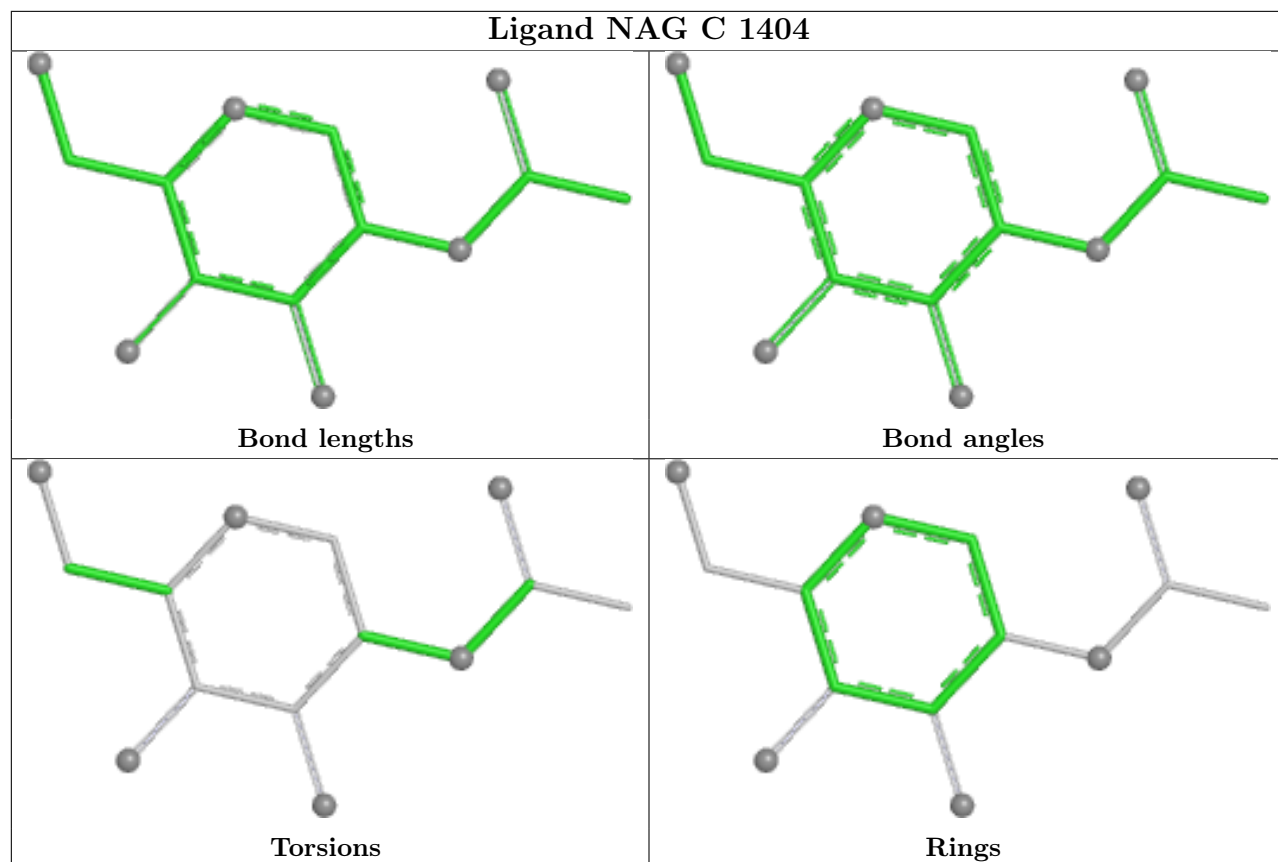


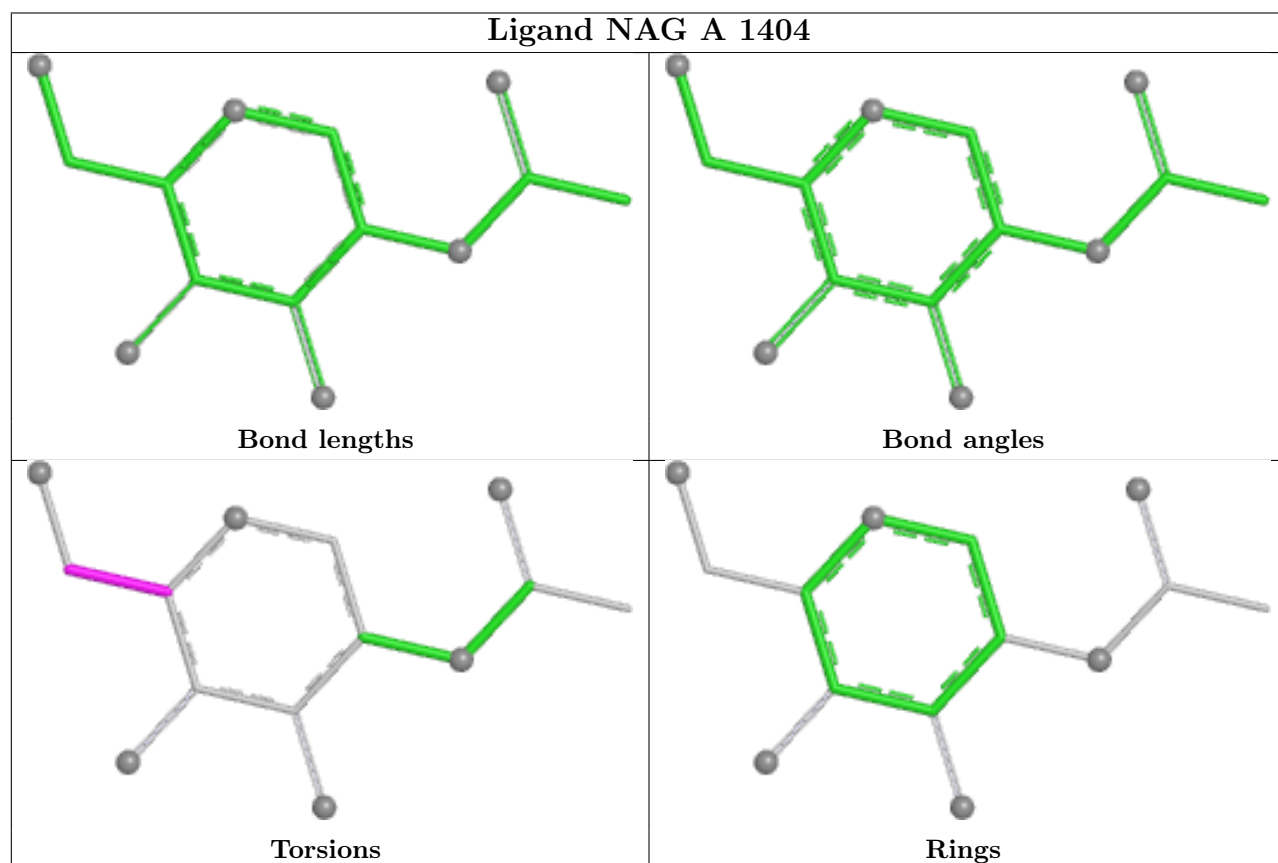
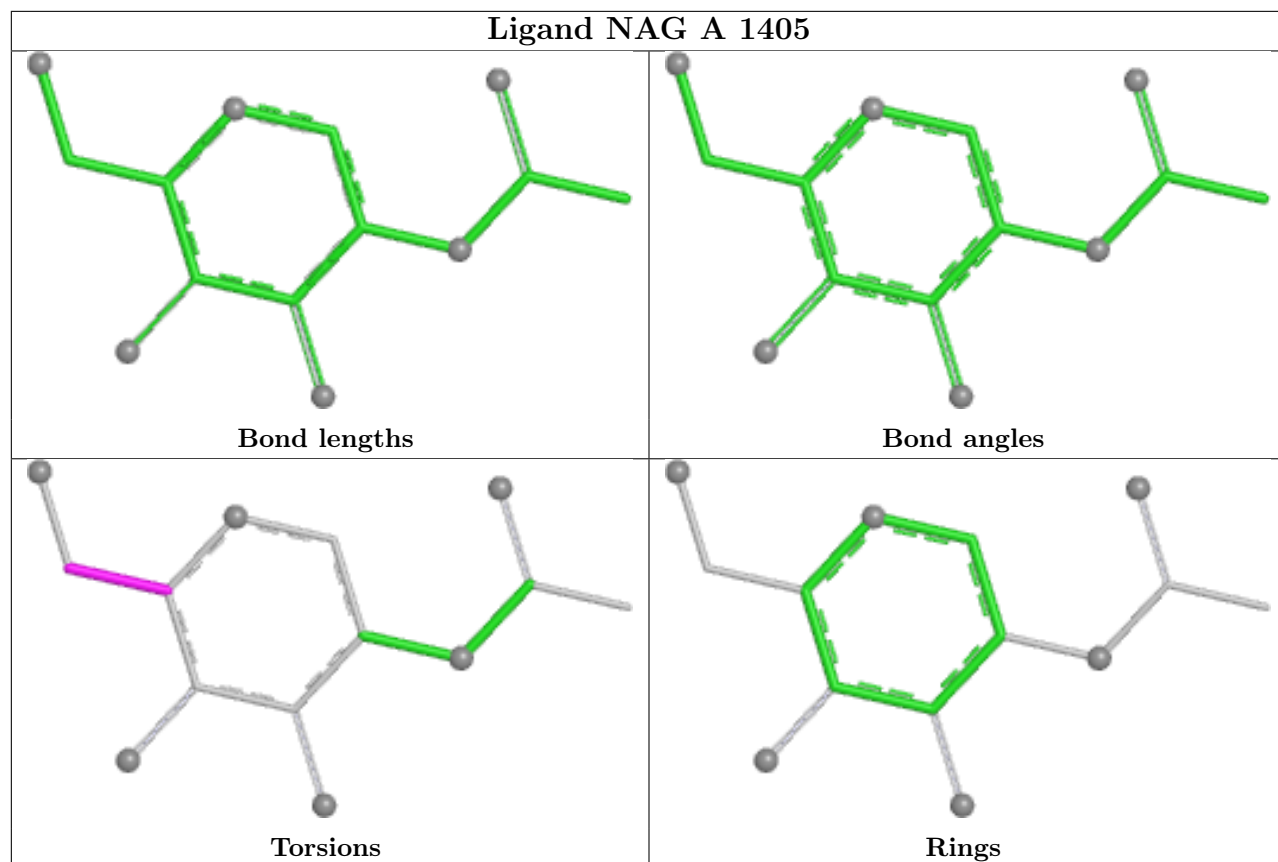
Ligand NAG A 1408

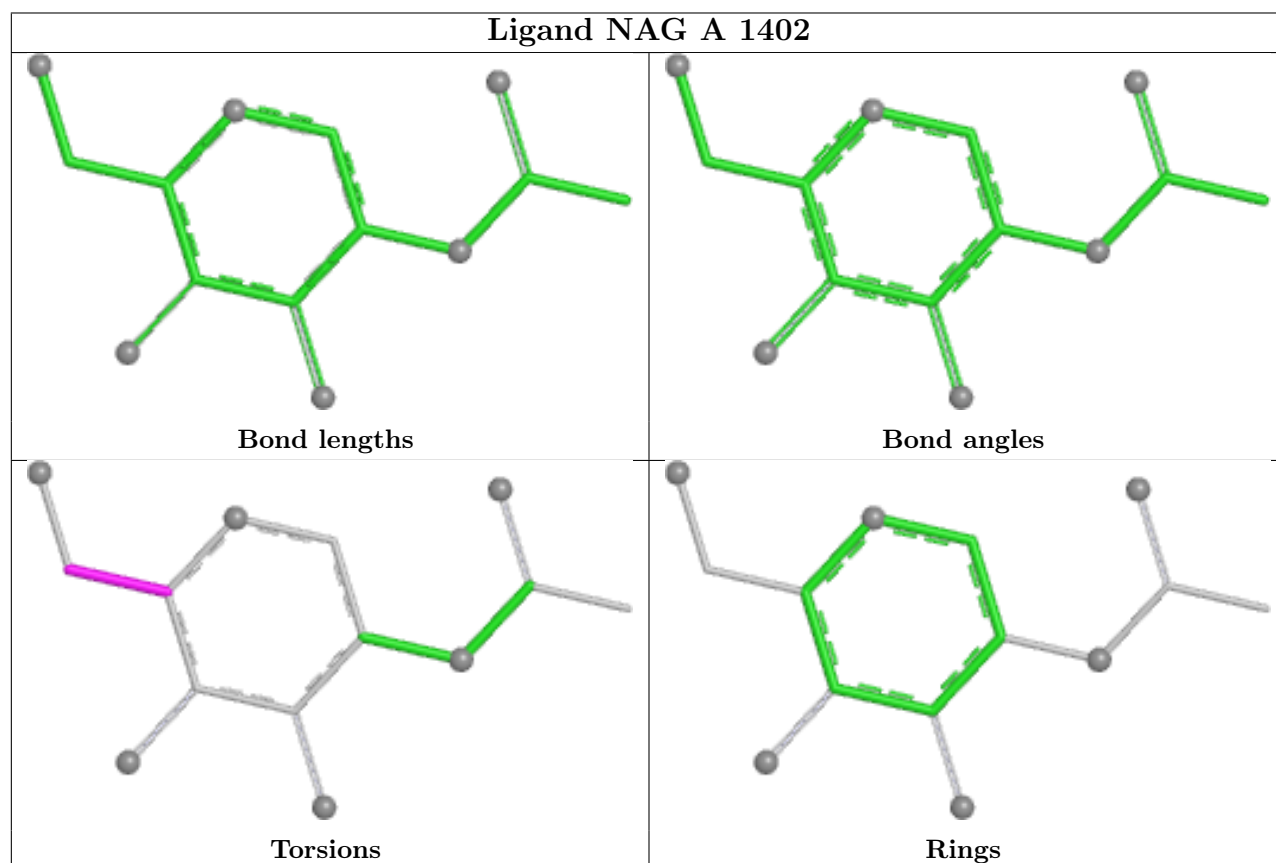
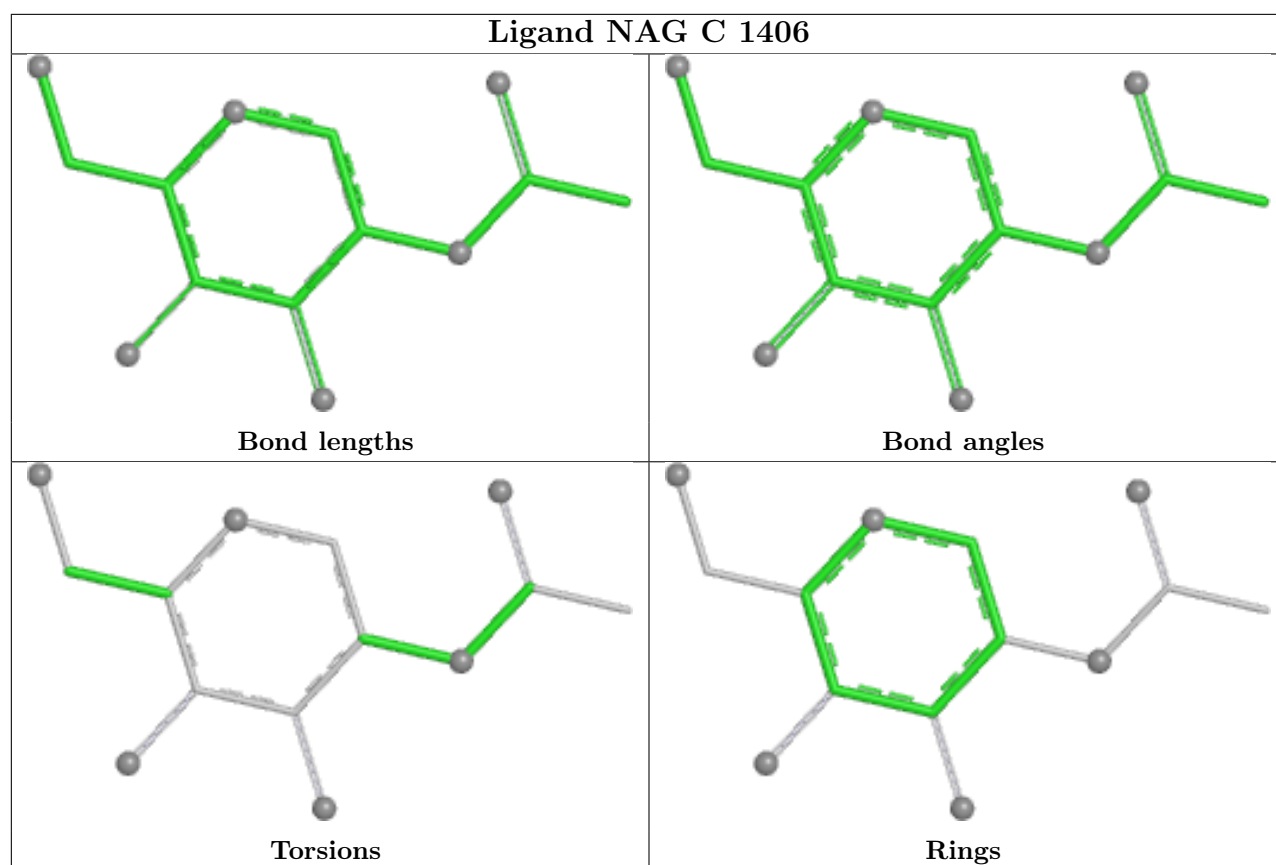


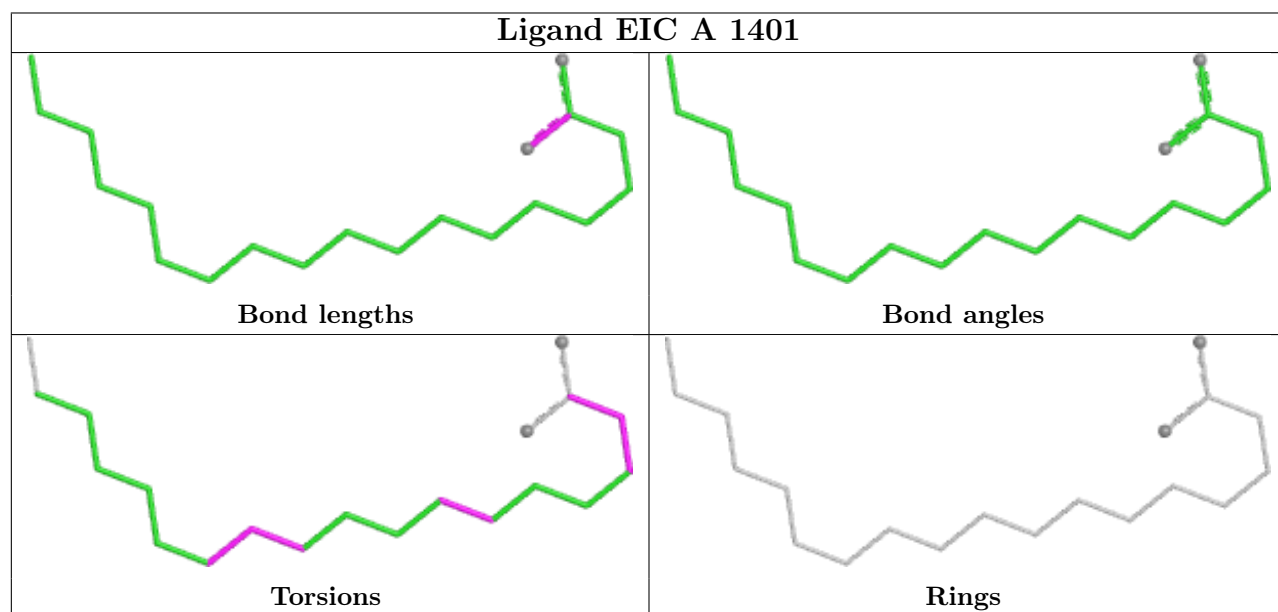
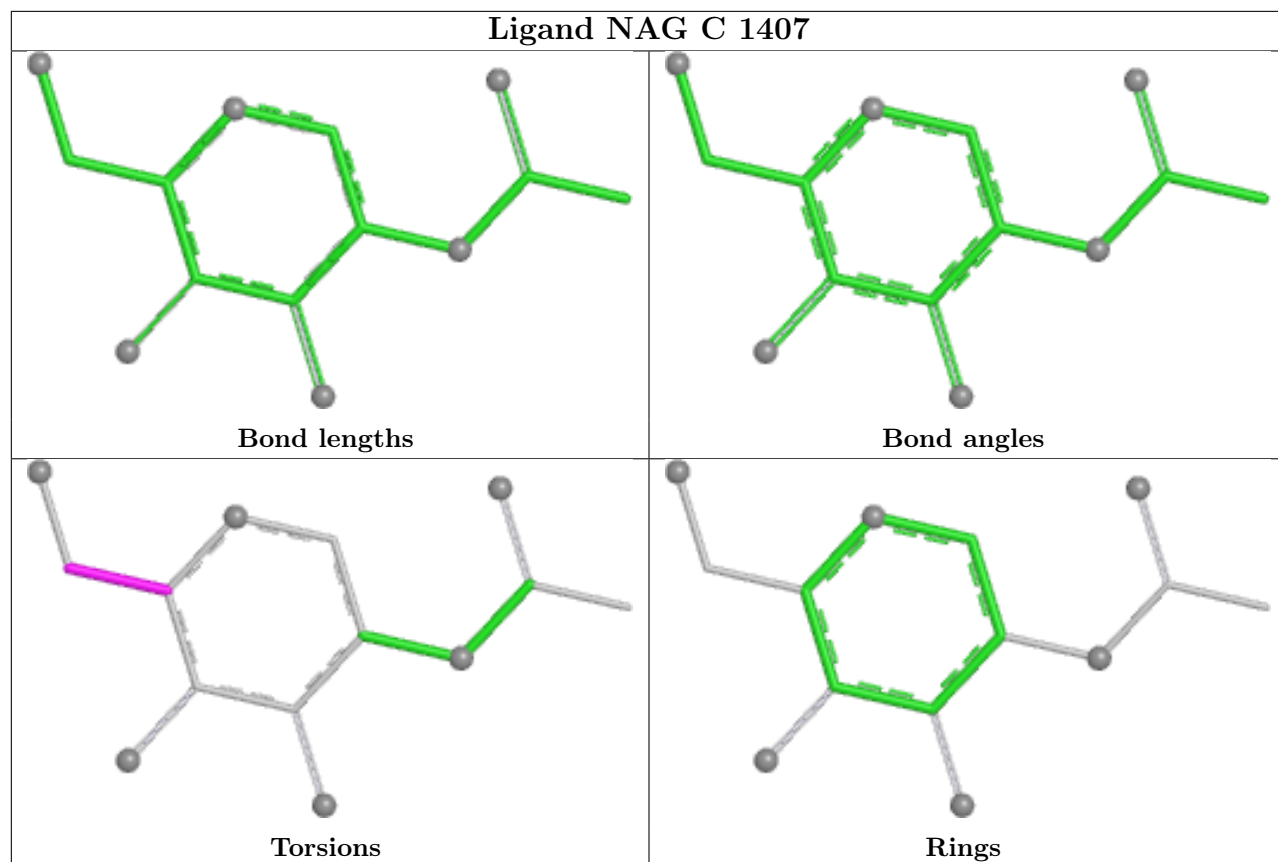
Ligand NAG C 1412

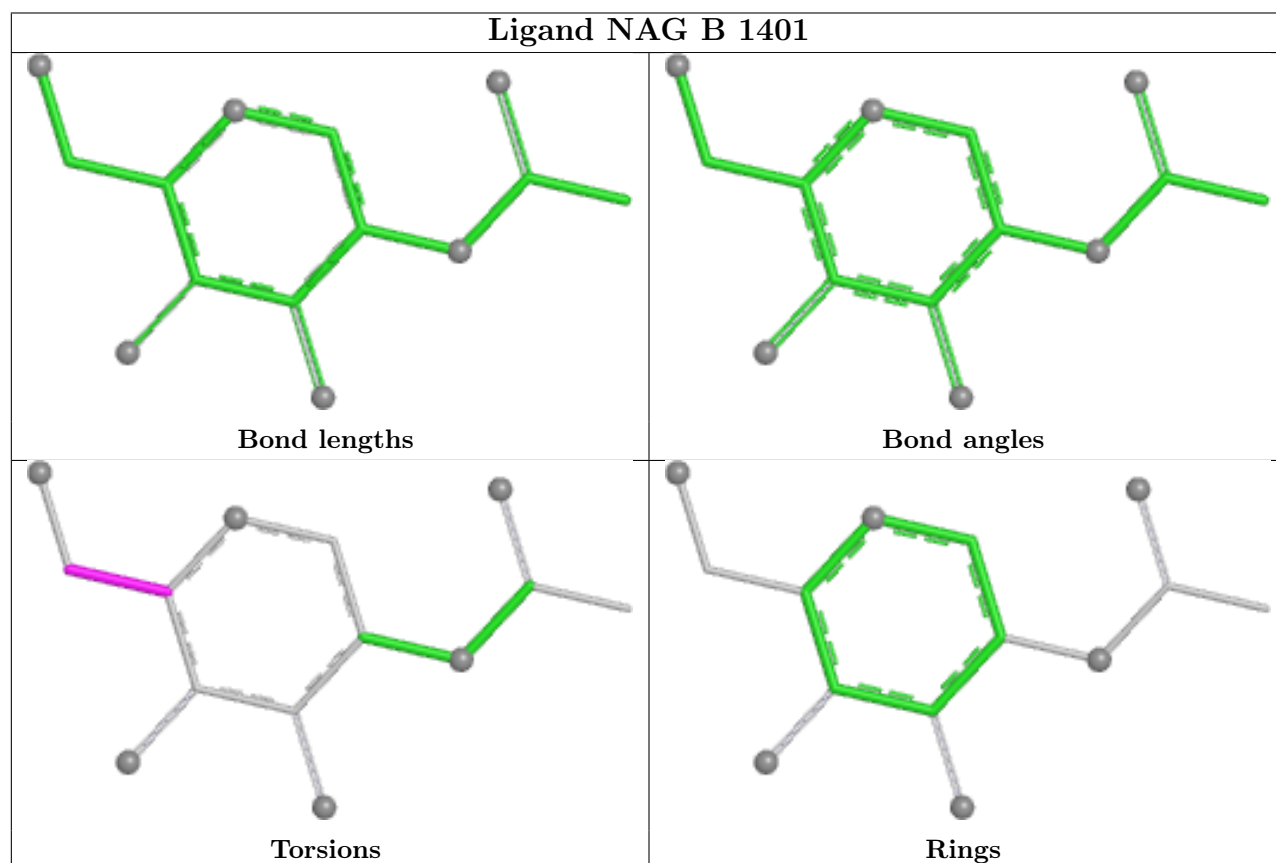
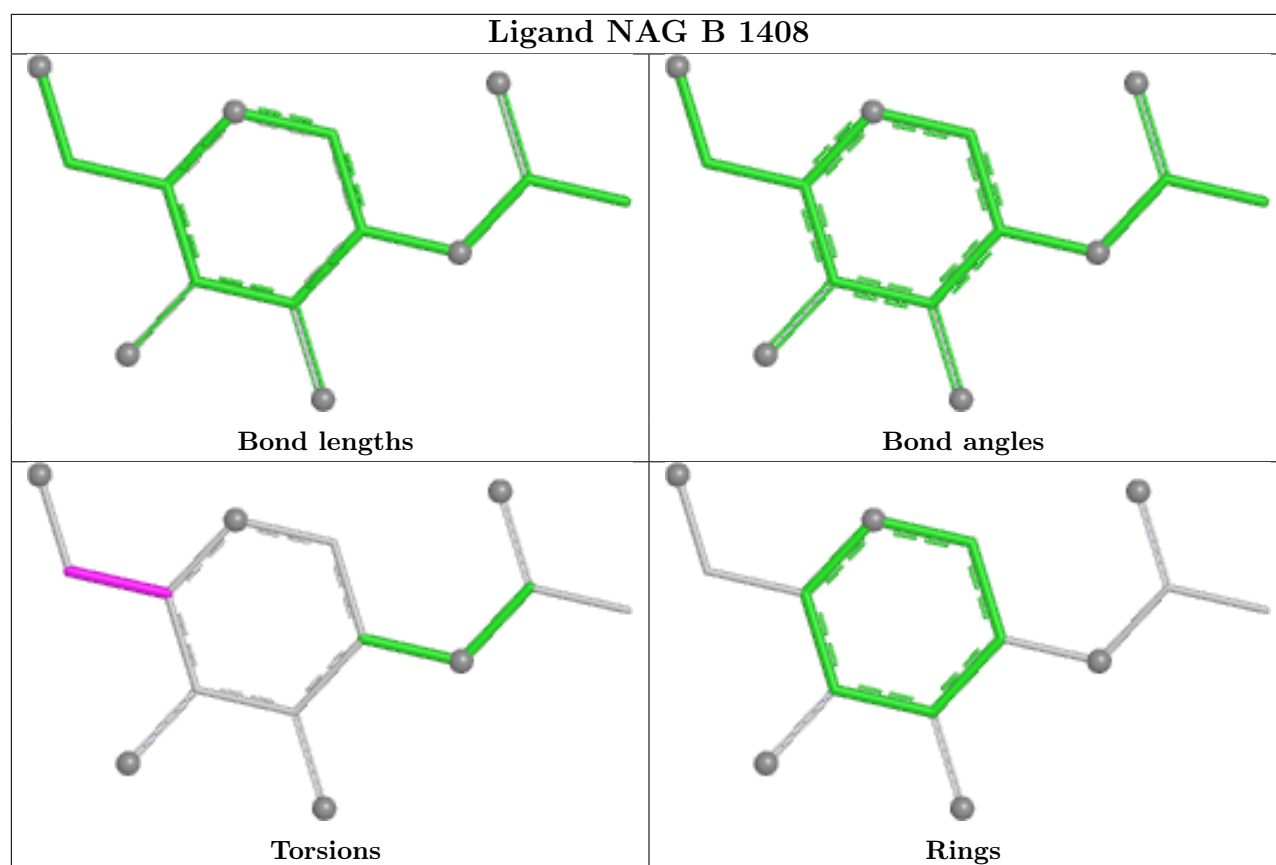




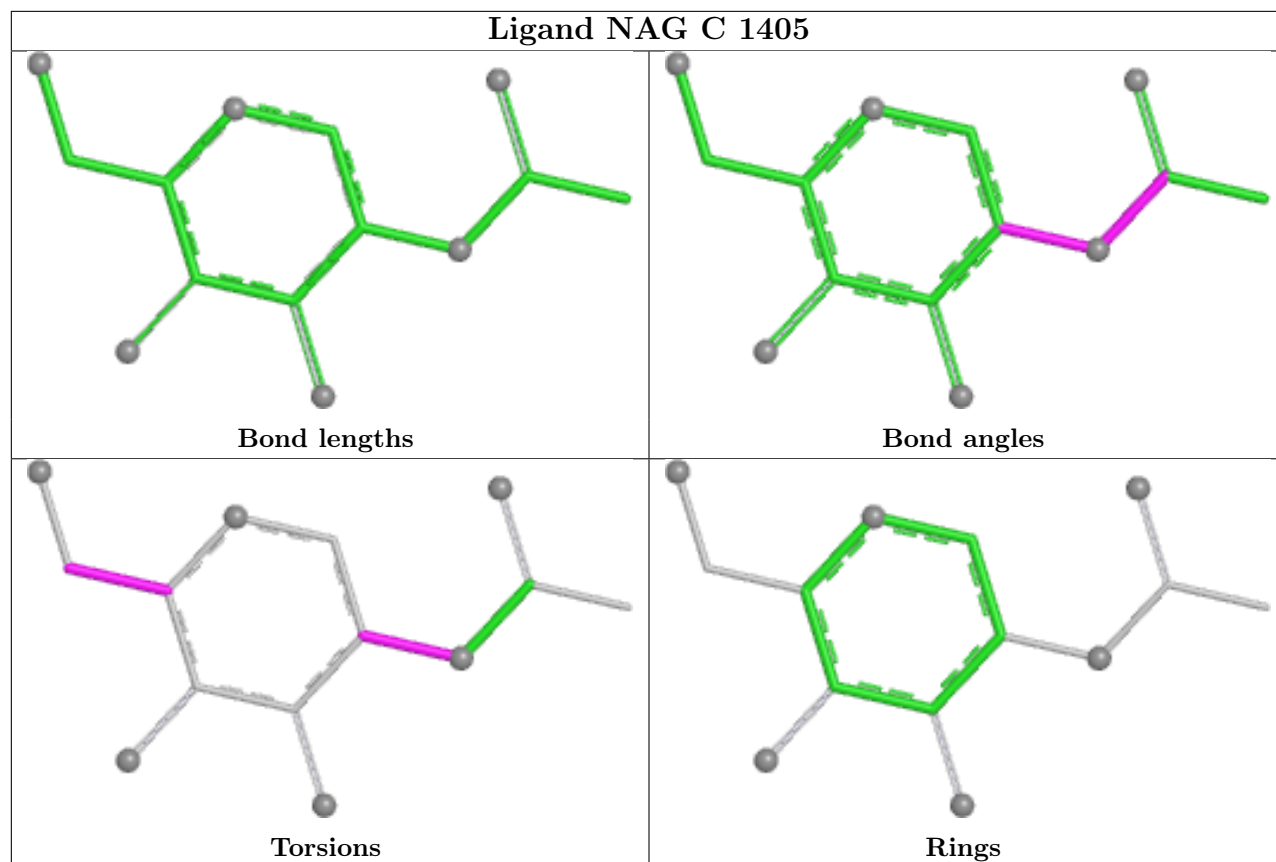




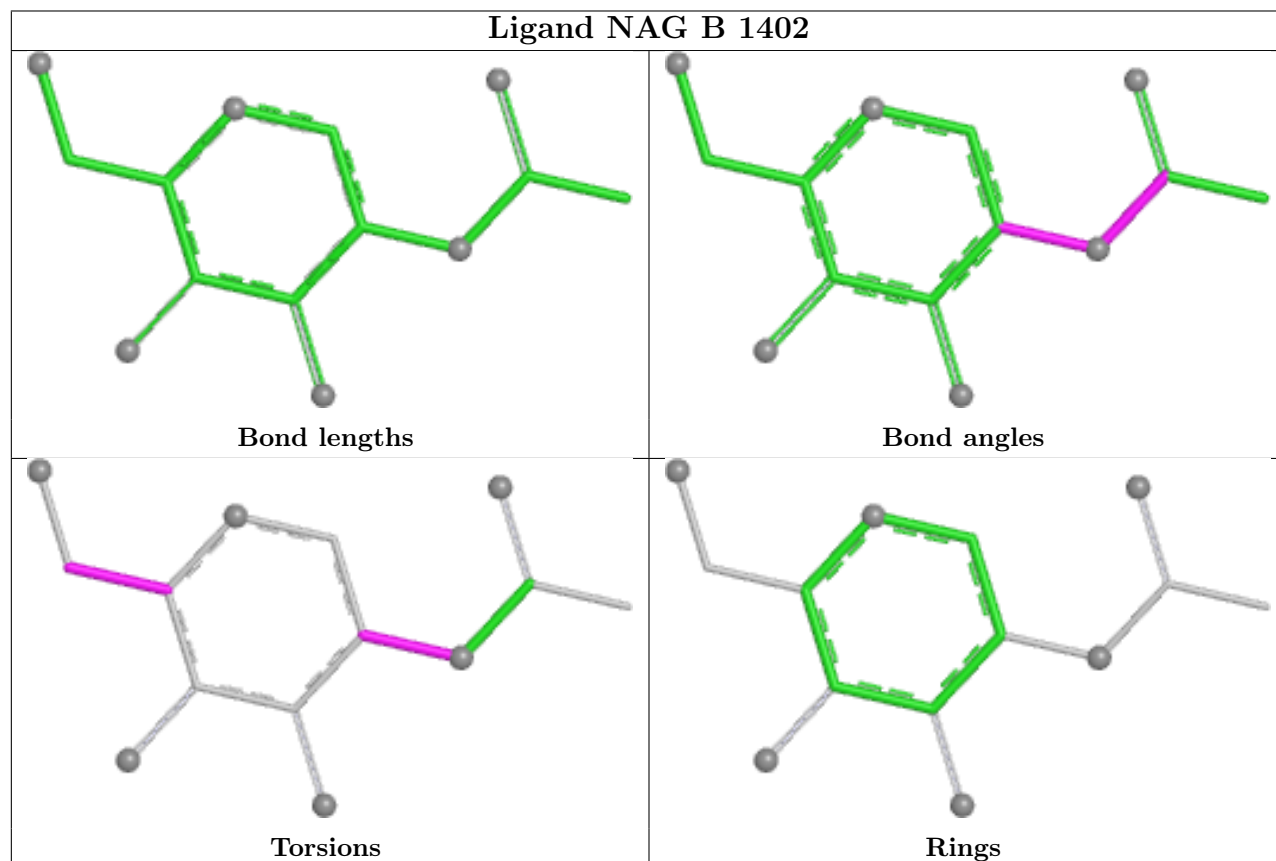


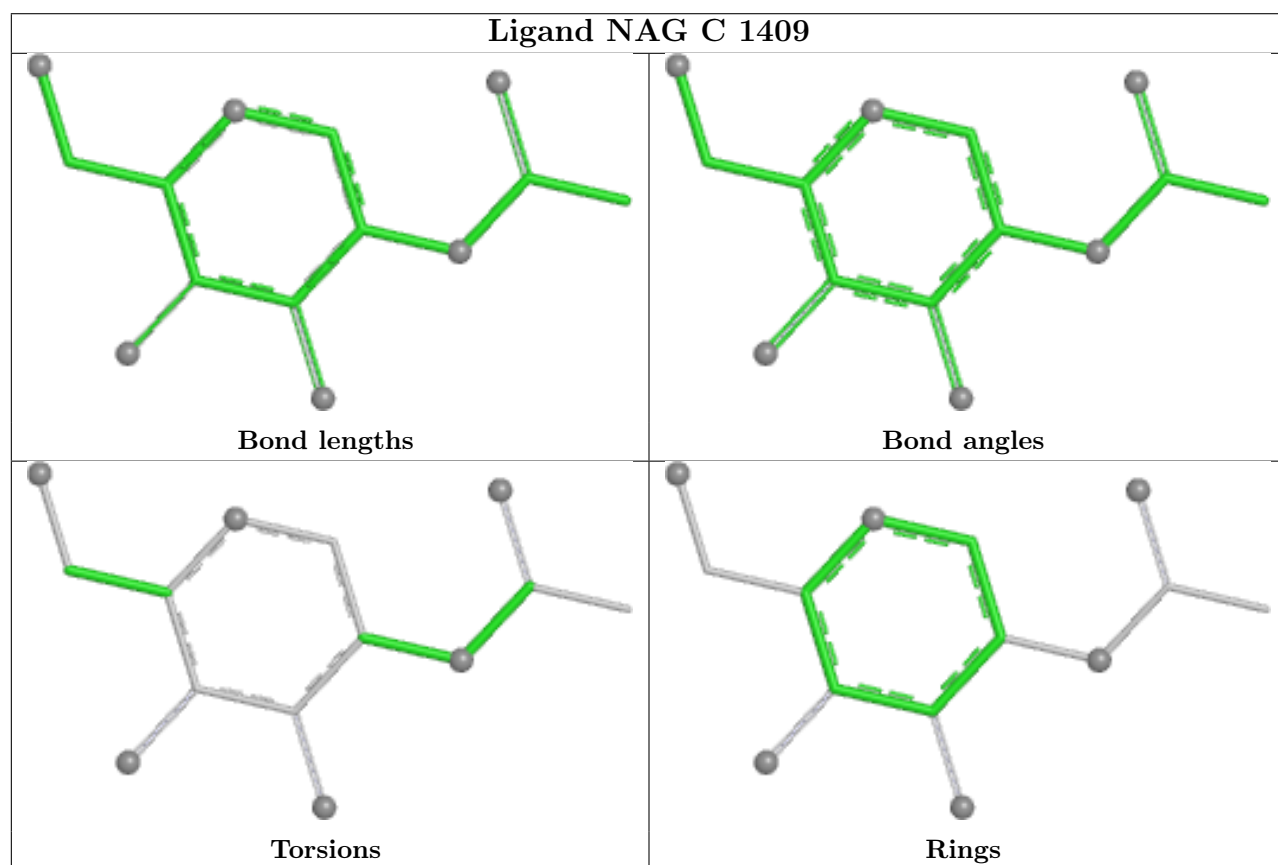
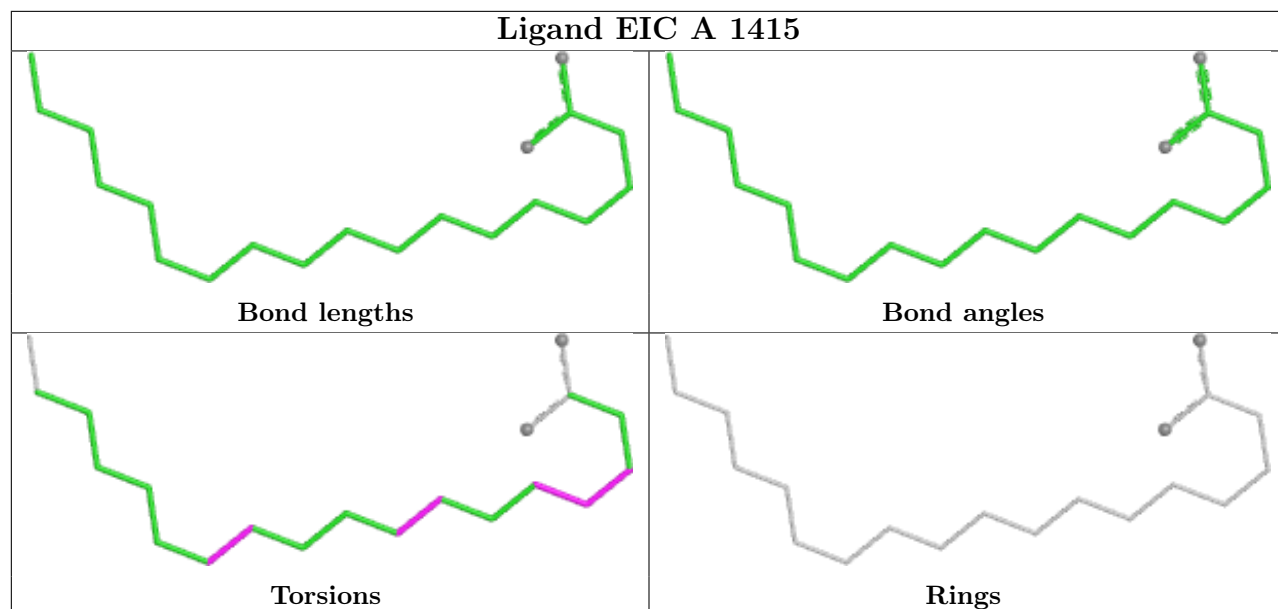


Ligand NAG C 1405

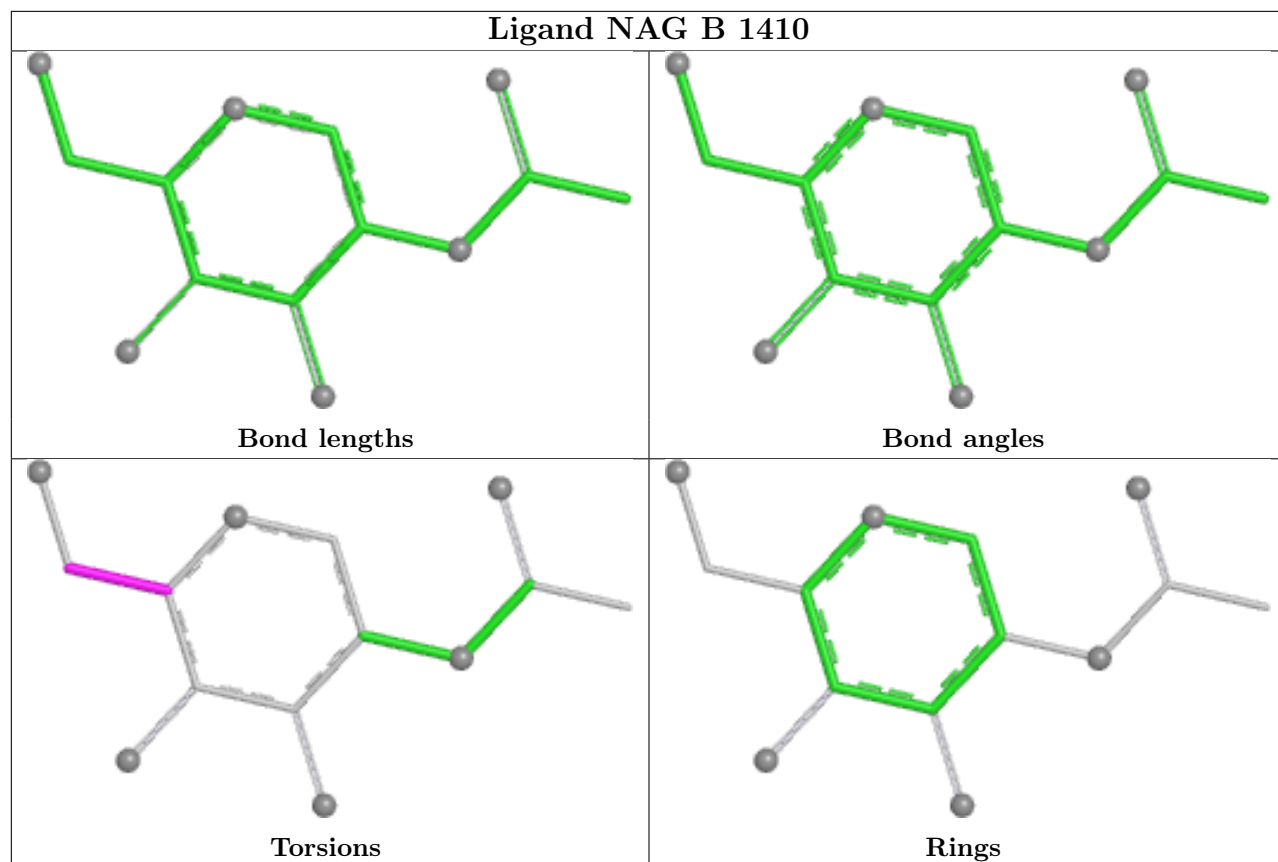


Ligand NAG B 1402

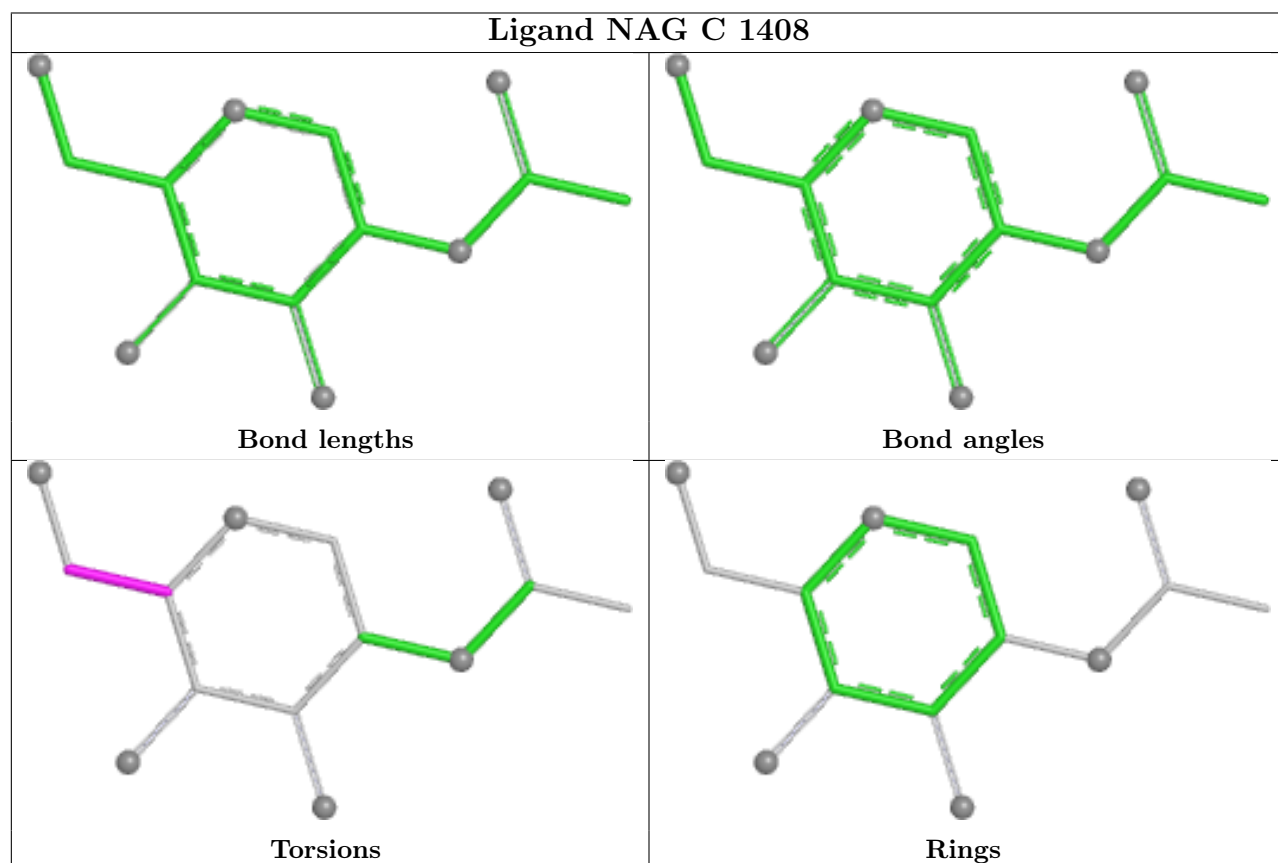




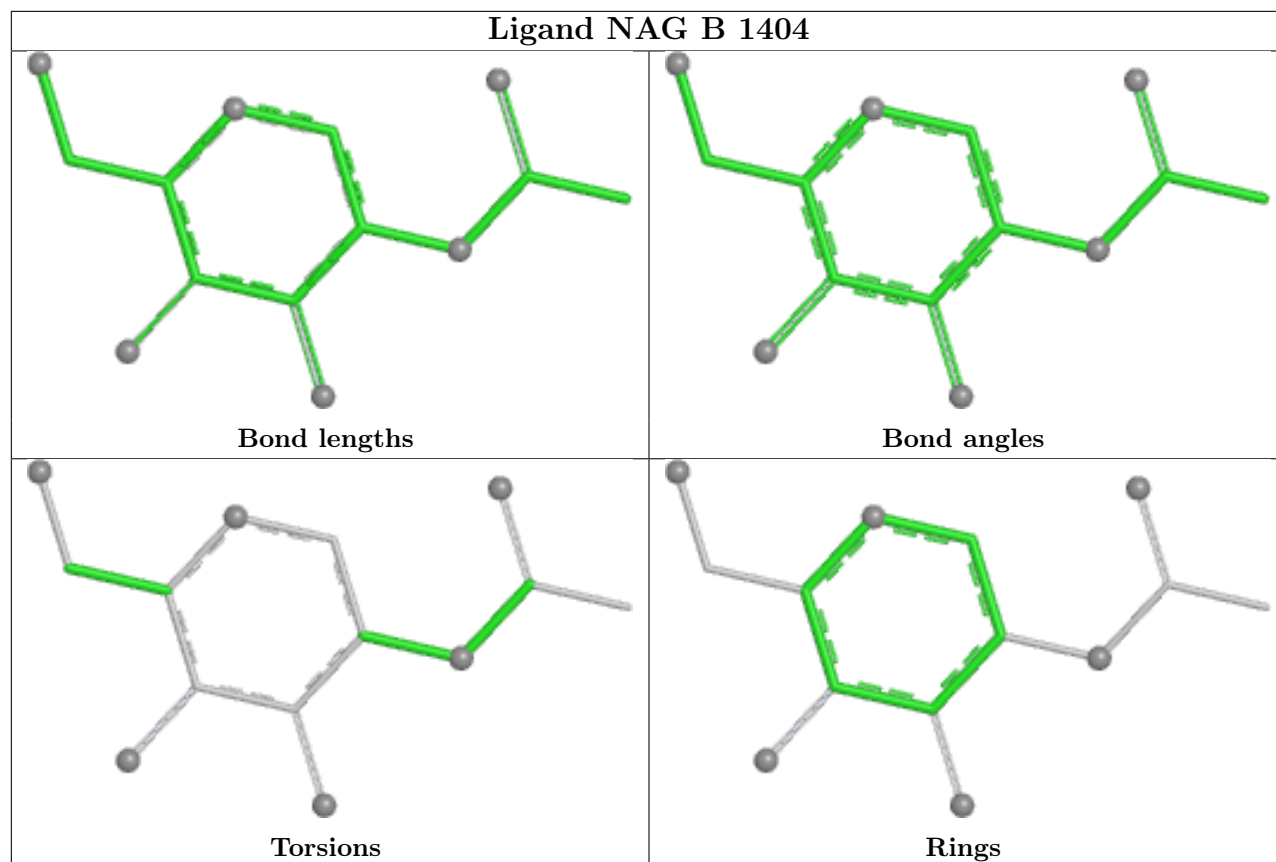
Ligand NAG B 1410



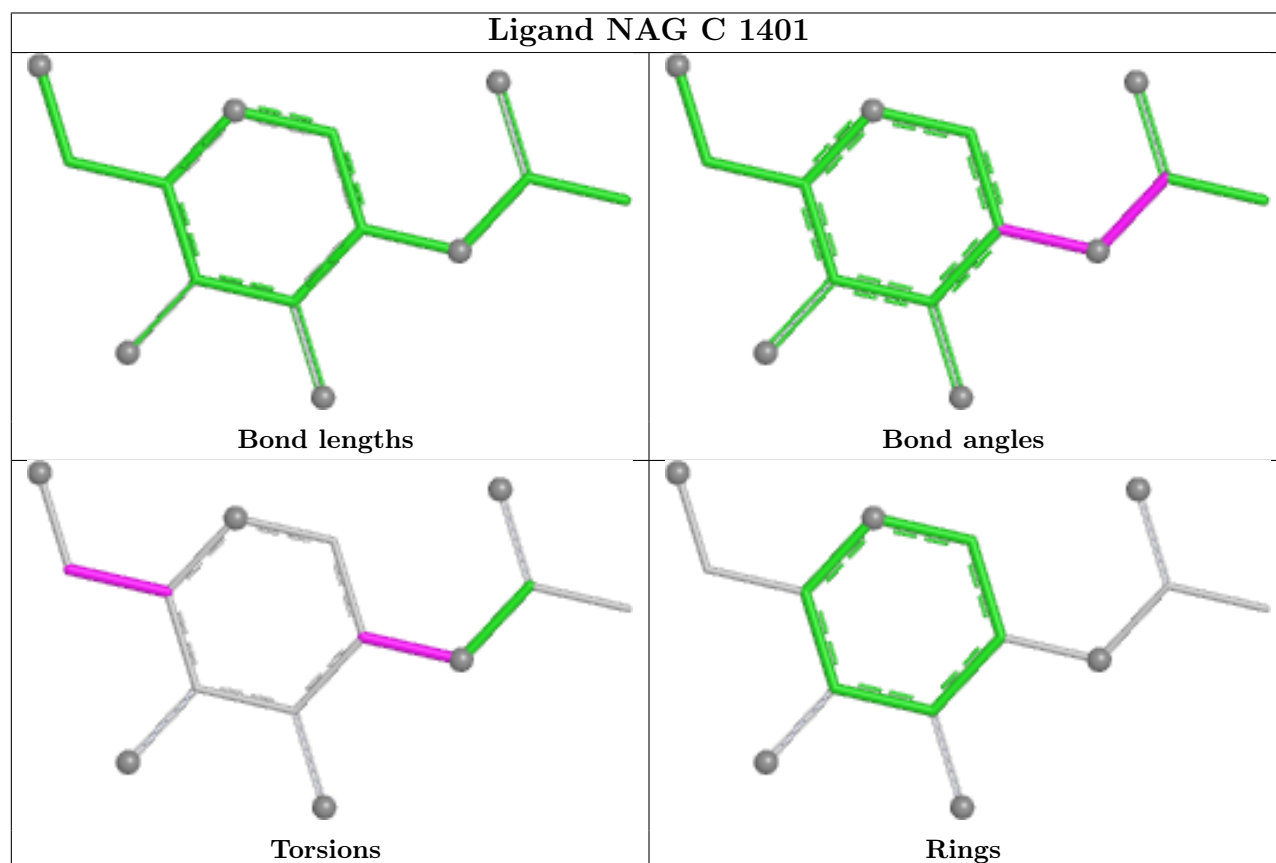
Ligand NAG C 1408



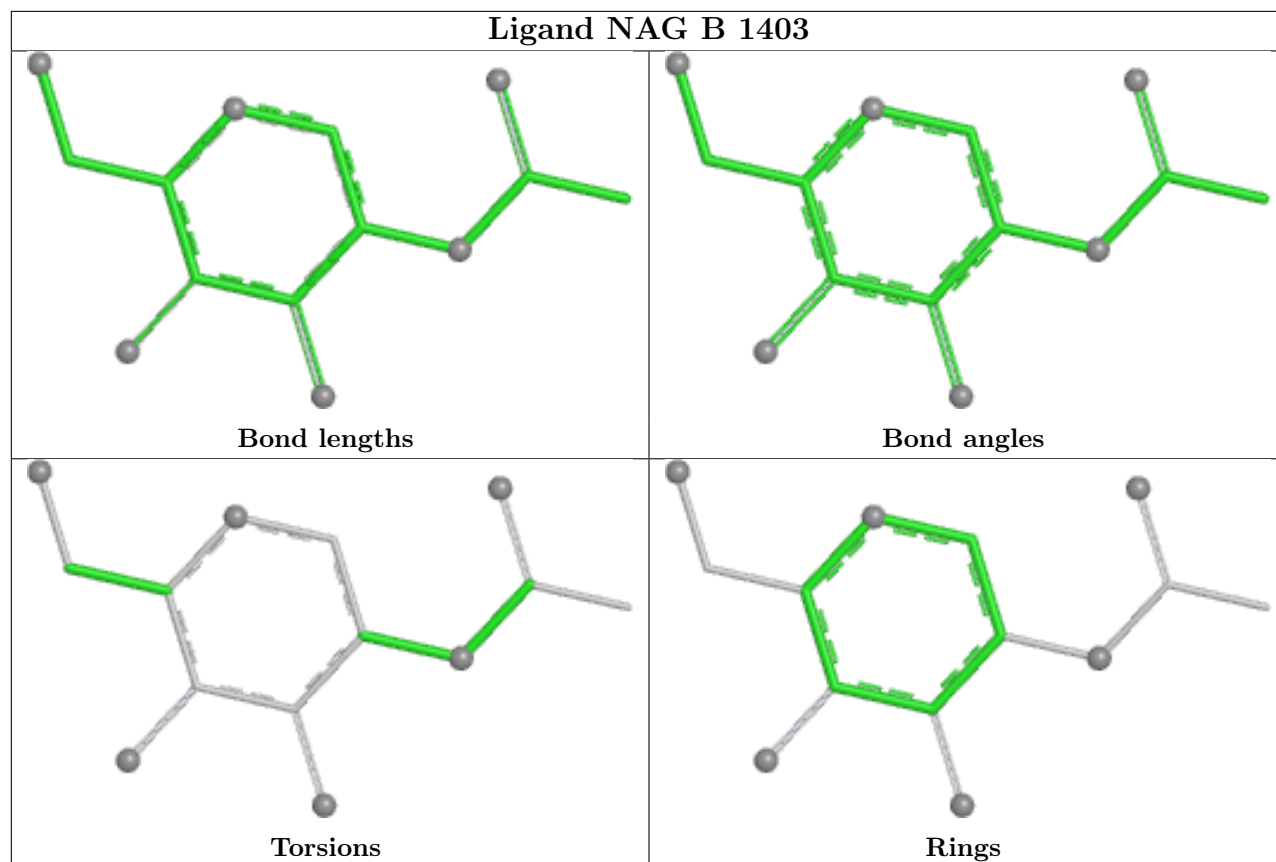
Ligand NAG B 1404



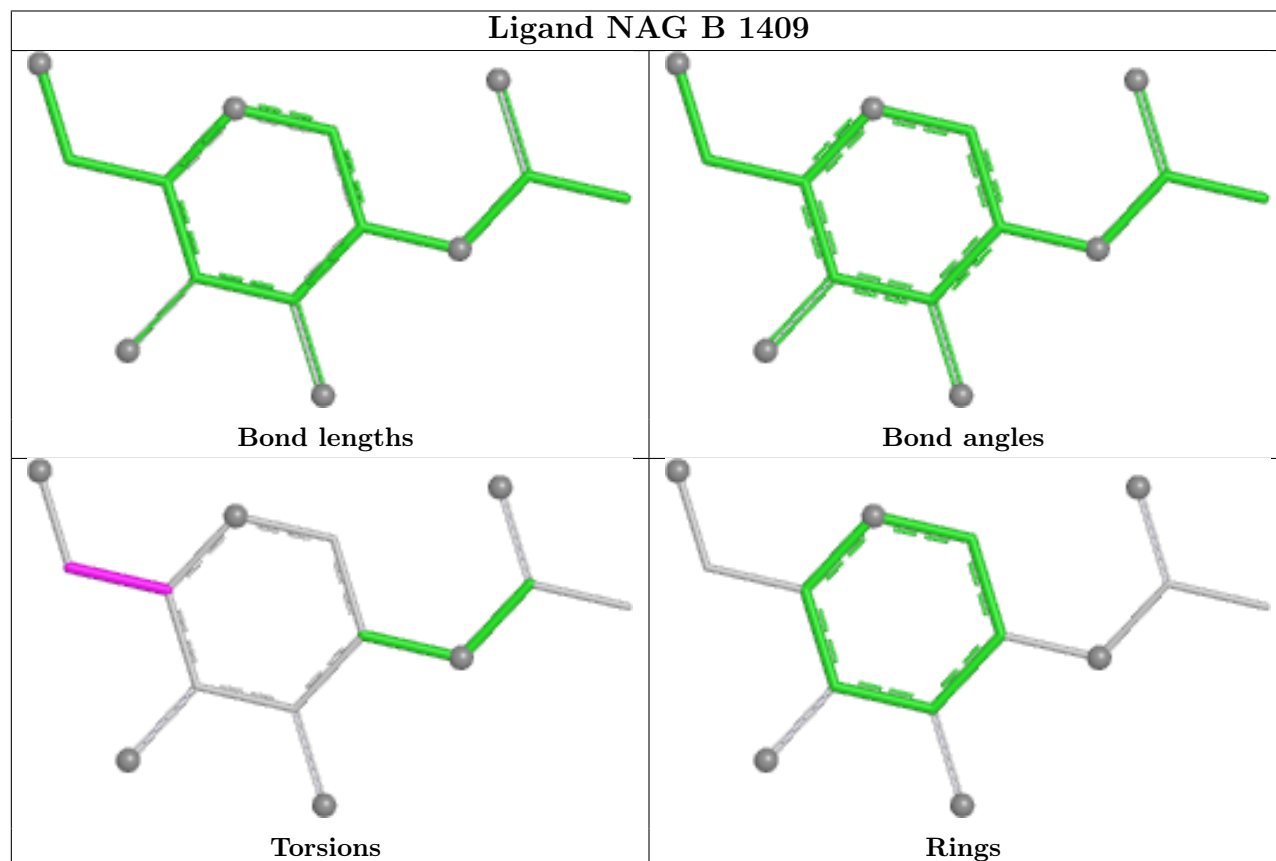
Ligand NAG C 1401



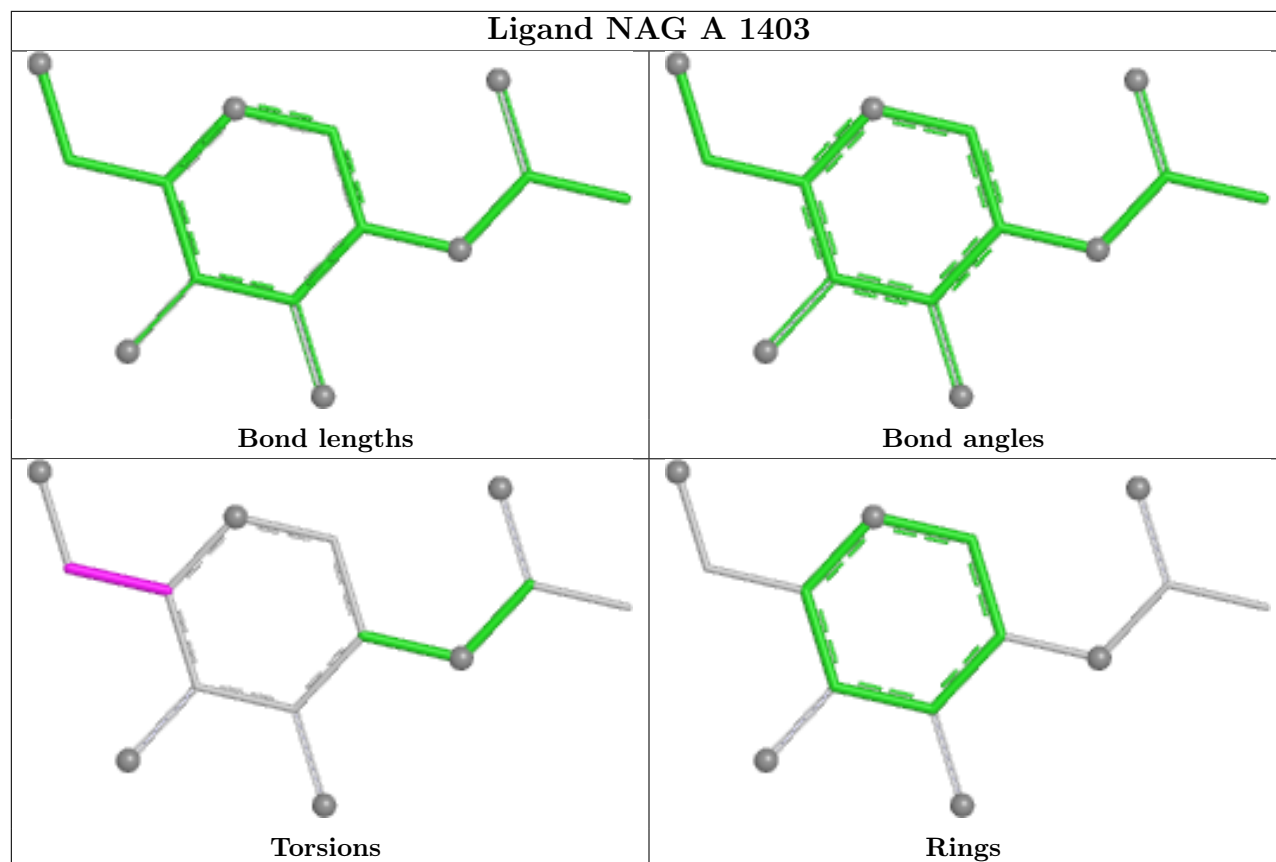
Ligand NAG B 1403



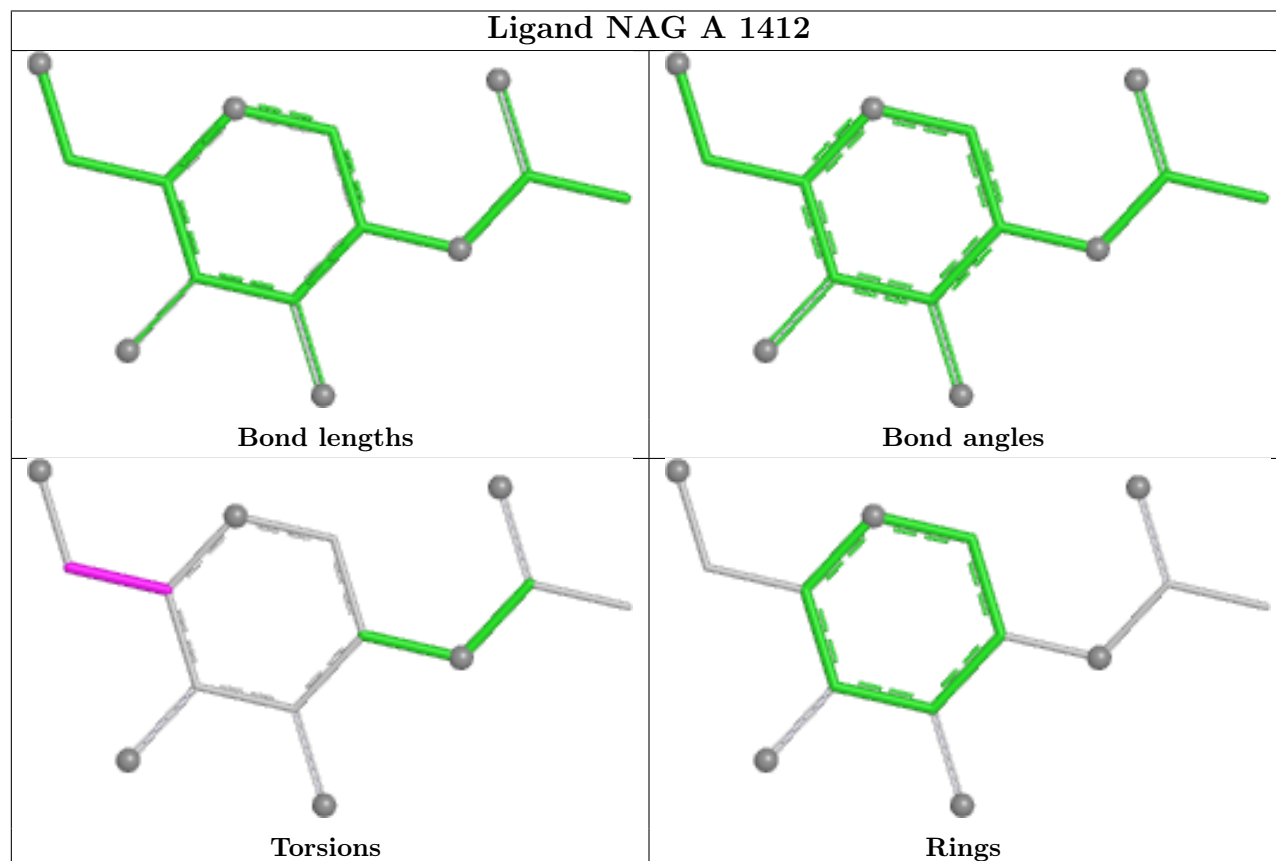
Ligand NAG B 1409



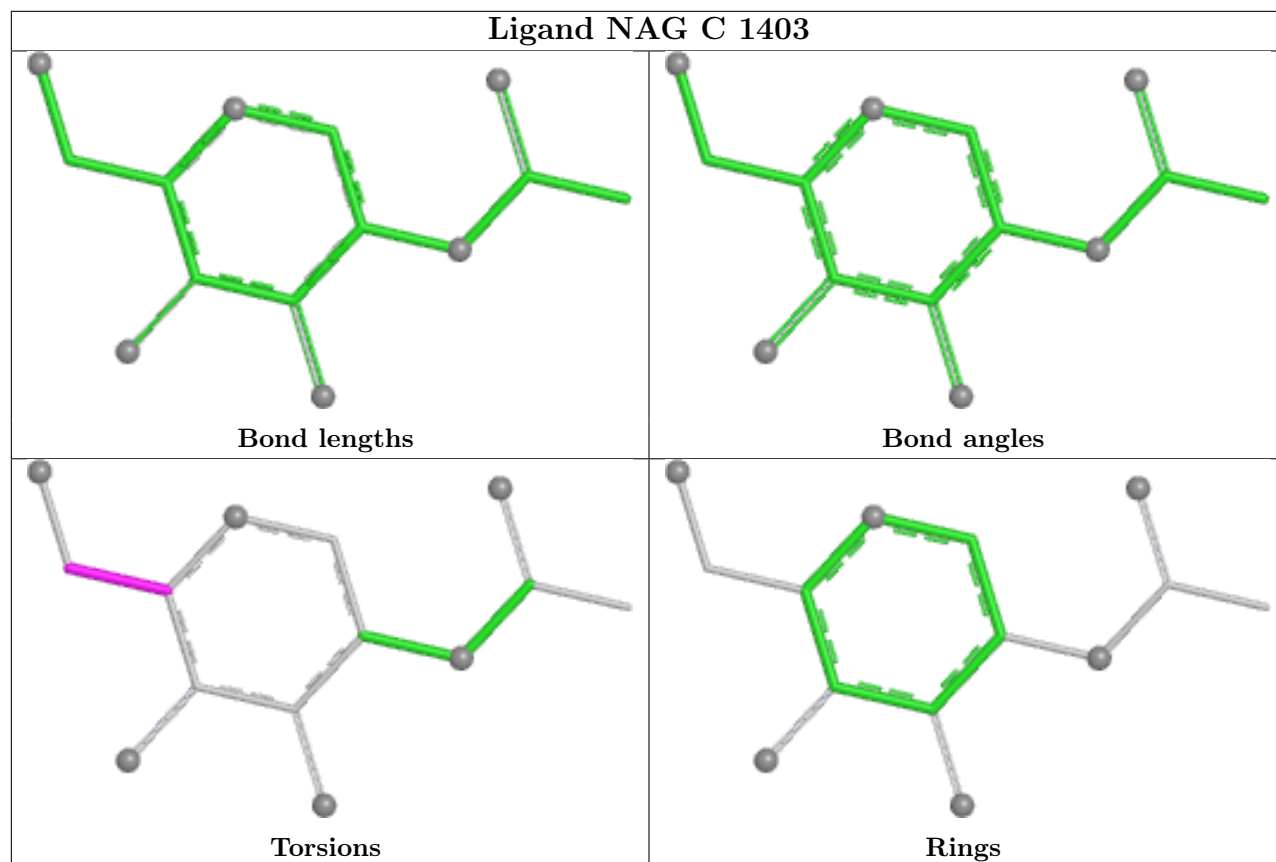
Ligand NAG A 1403



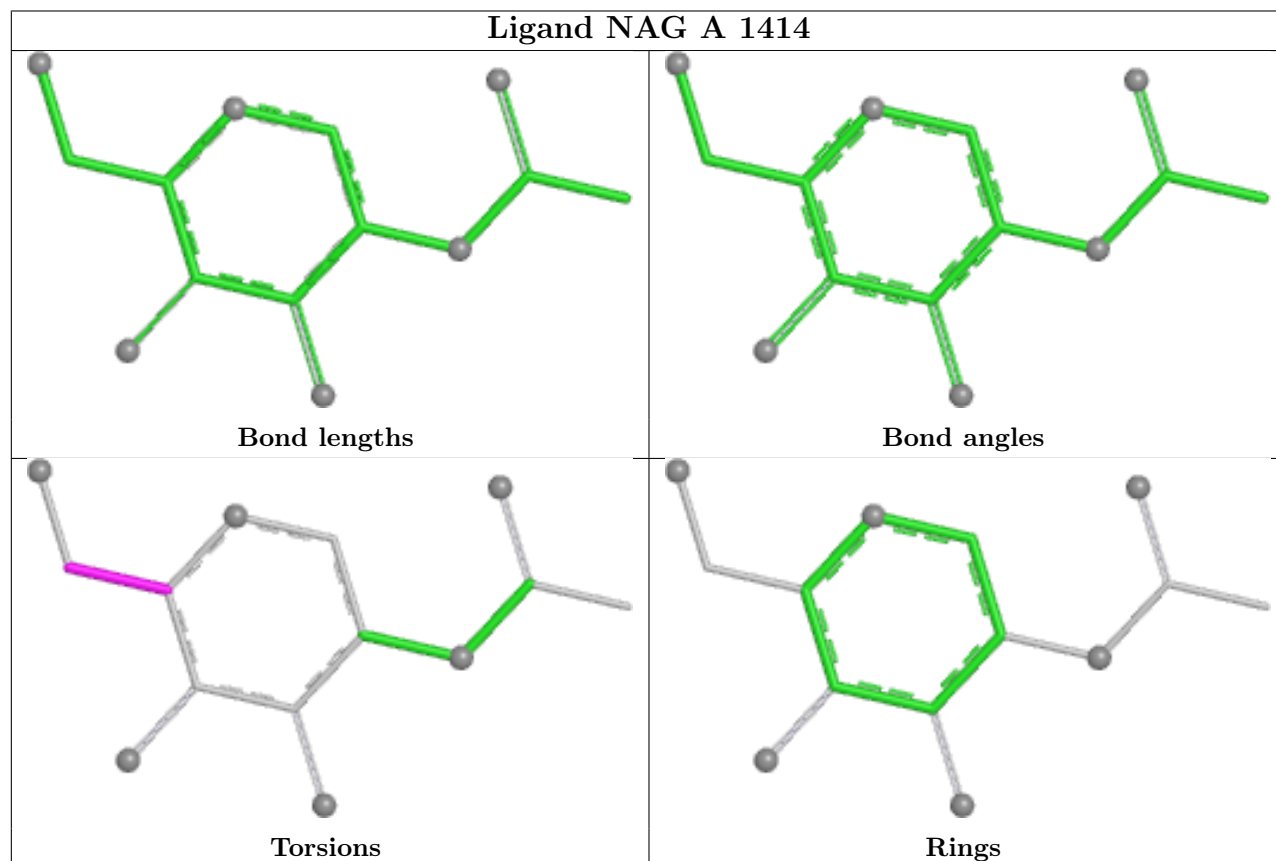
Ligand NAG A 1412



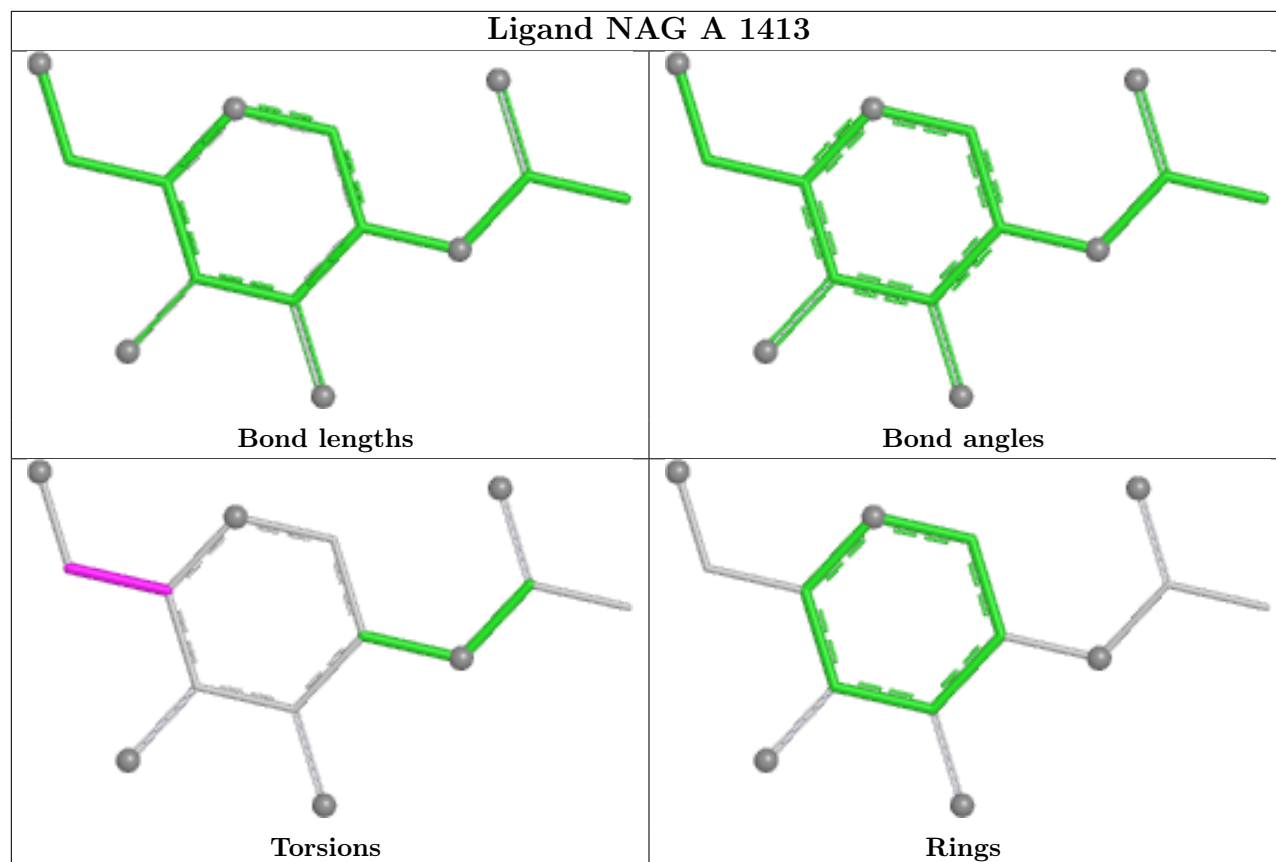
Ligand NAG C 1403



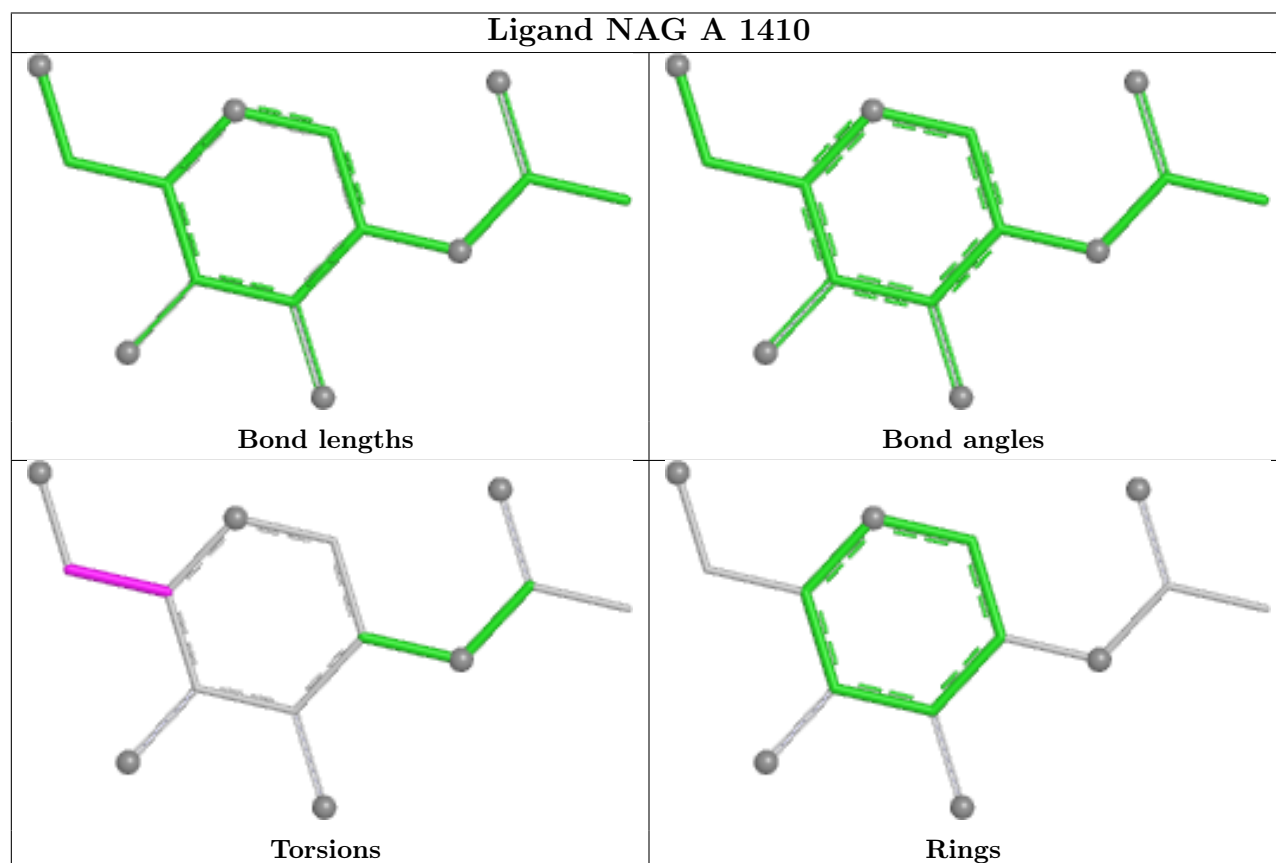
Ligand NAG A 1414

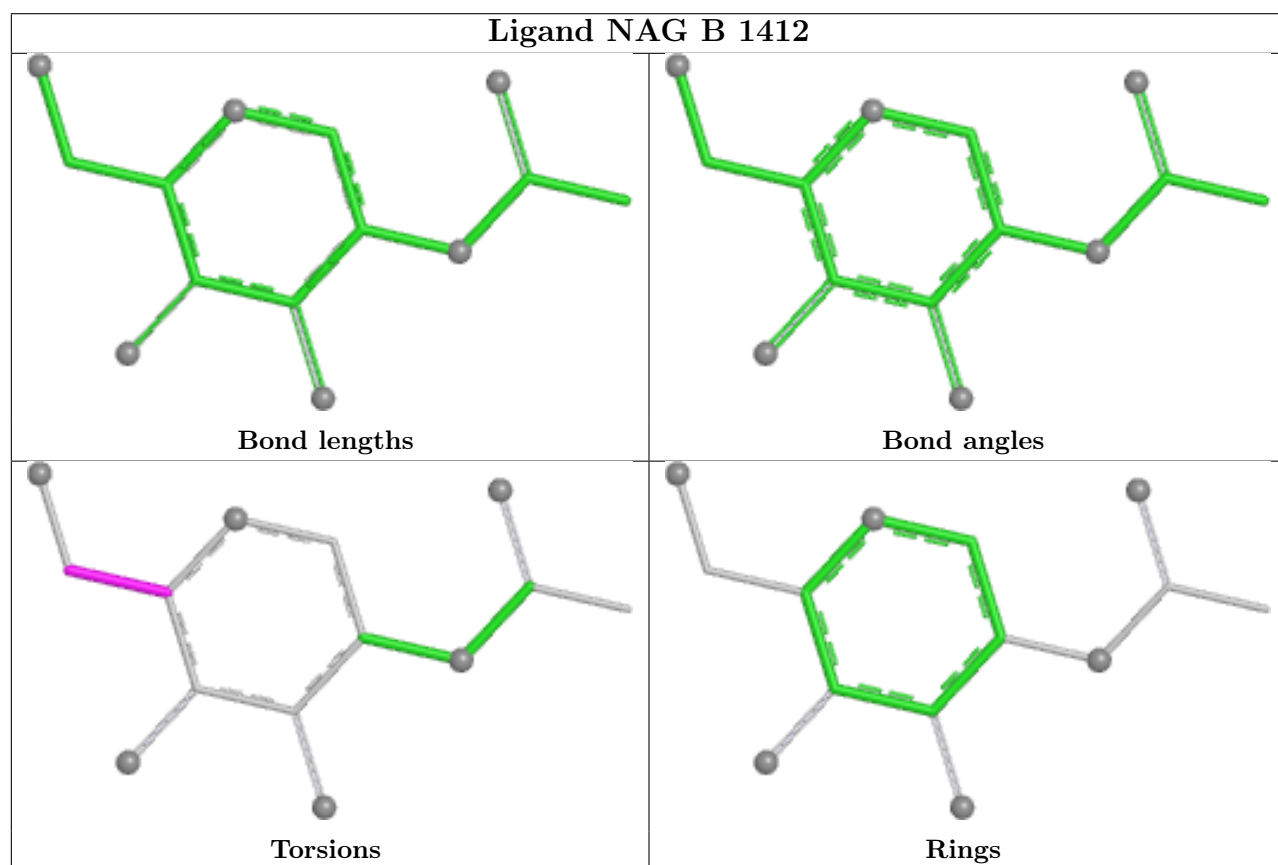
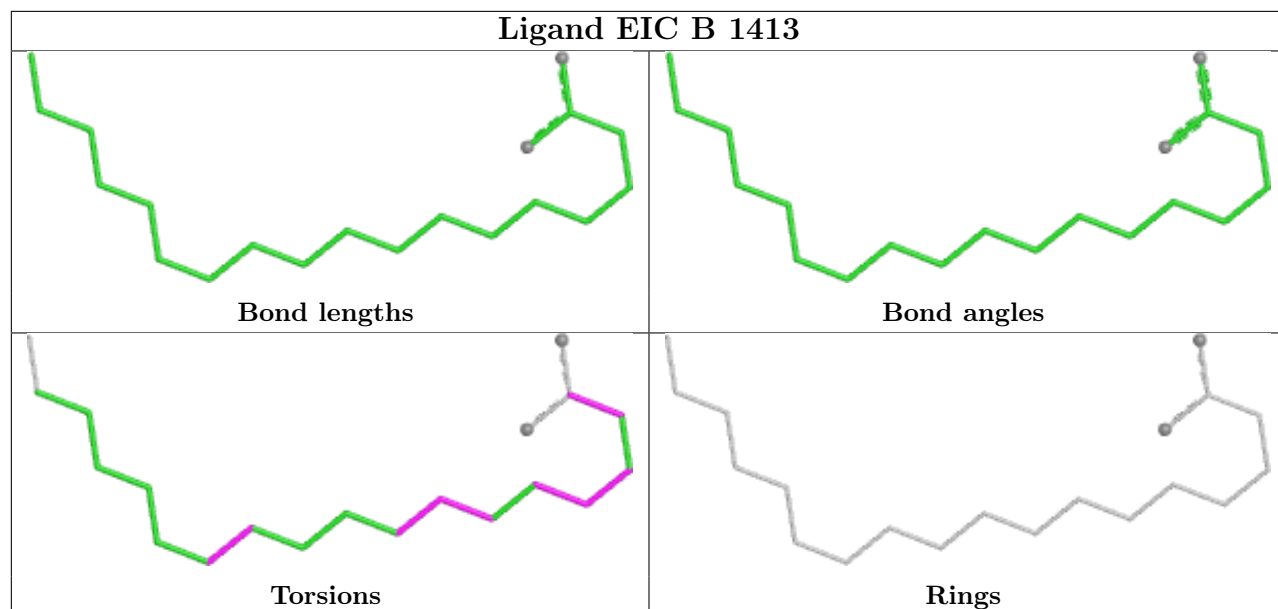


Ligand NAG A 1413

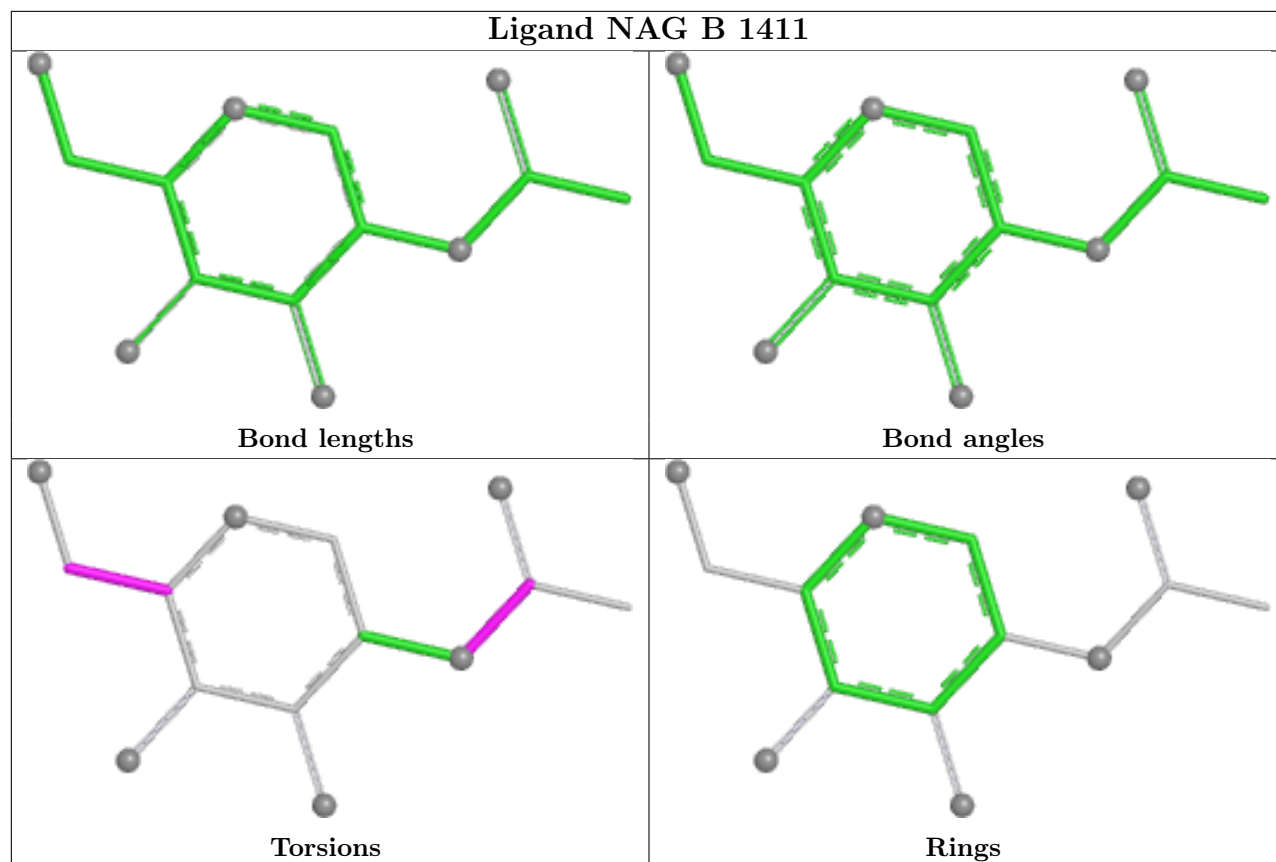


Ligand NAG A 1410

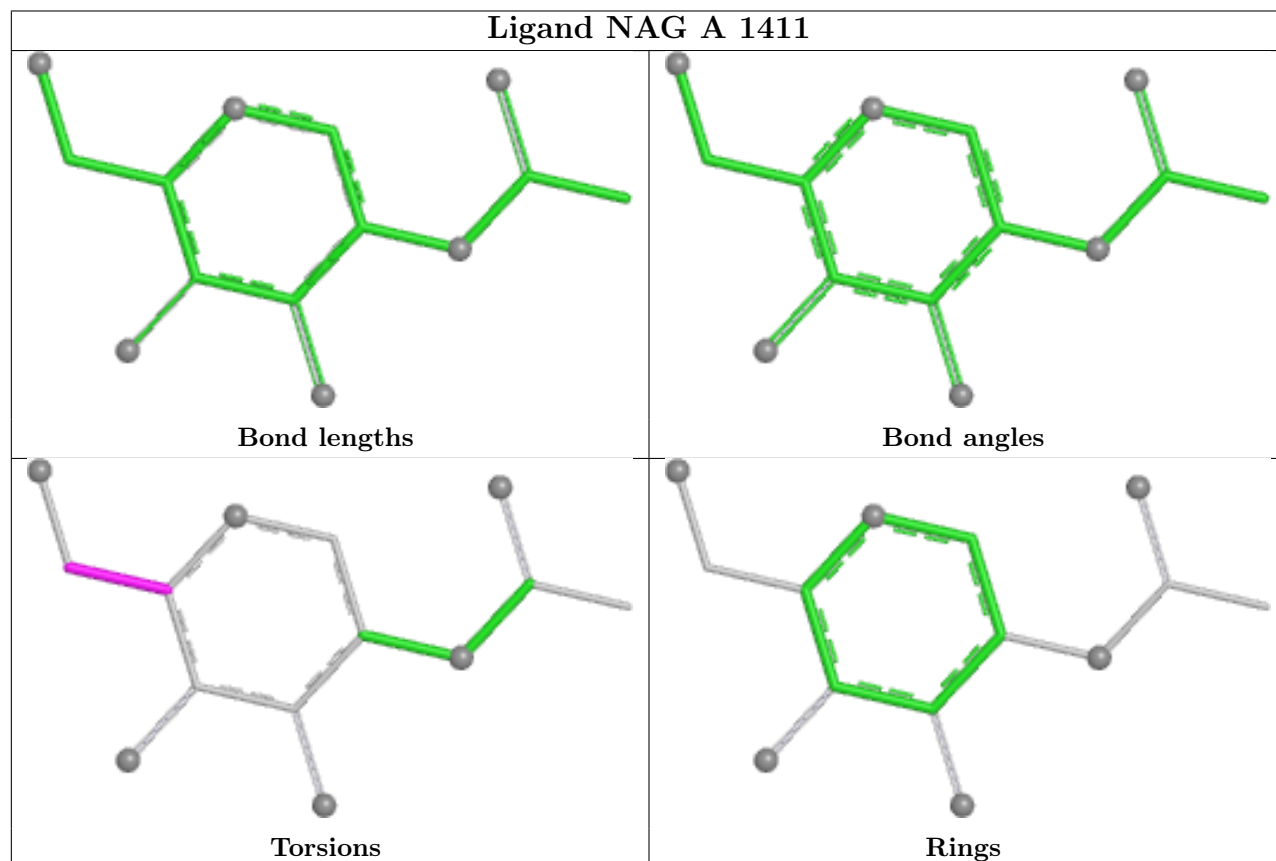




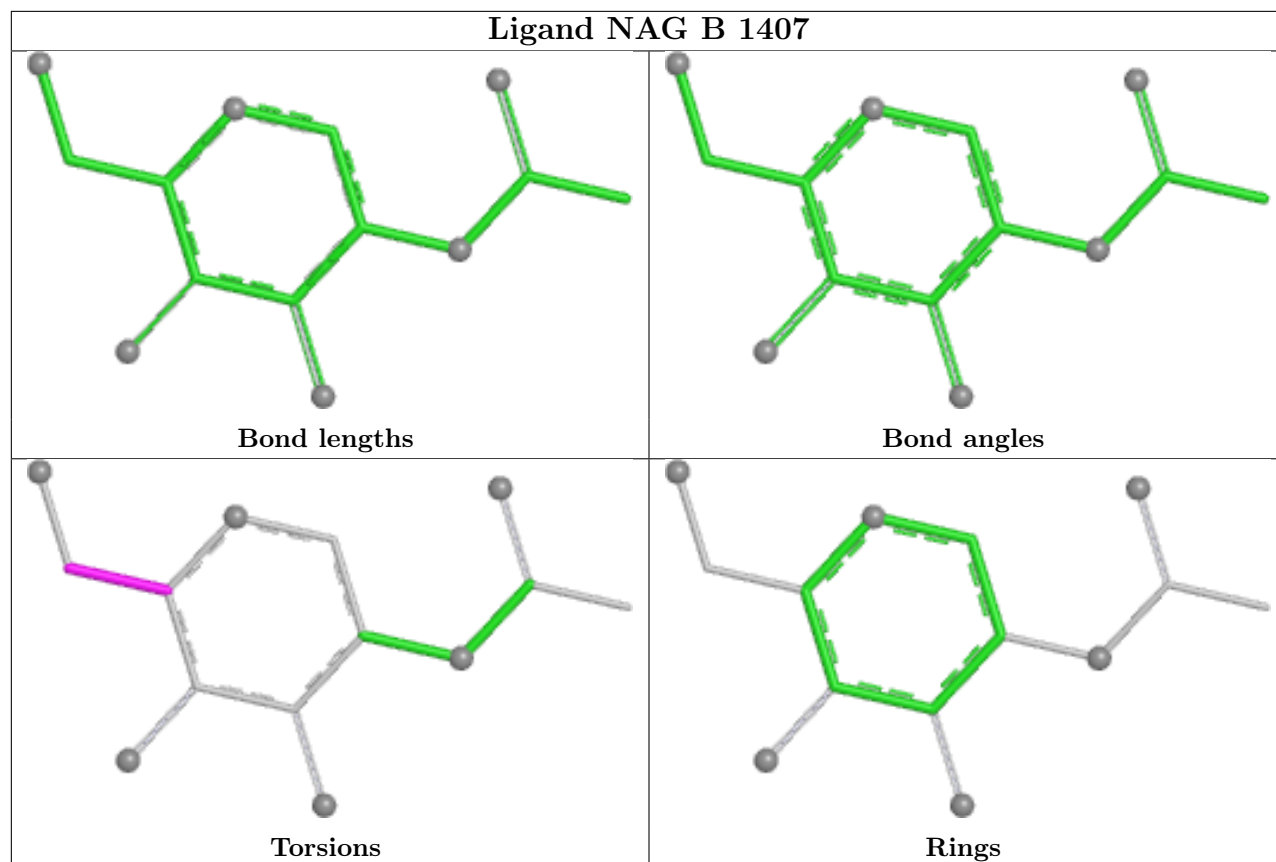
Ligand NAG B 1411



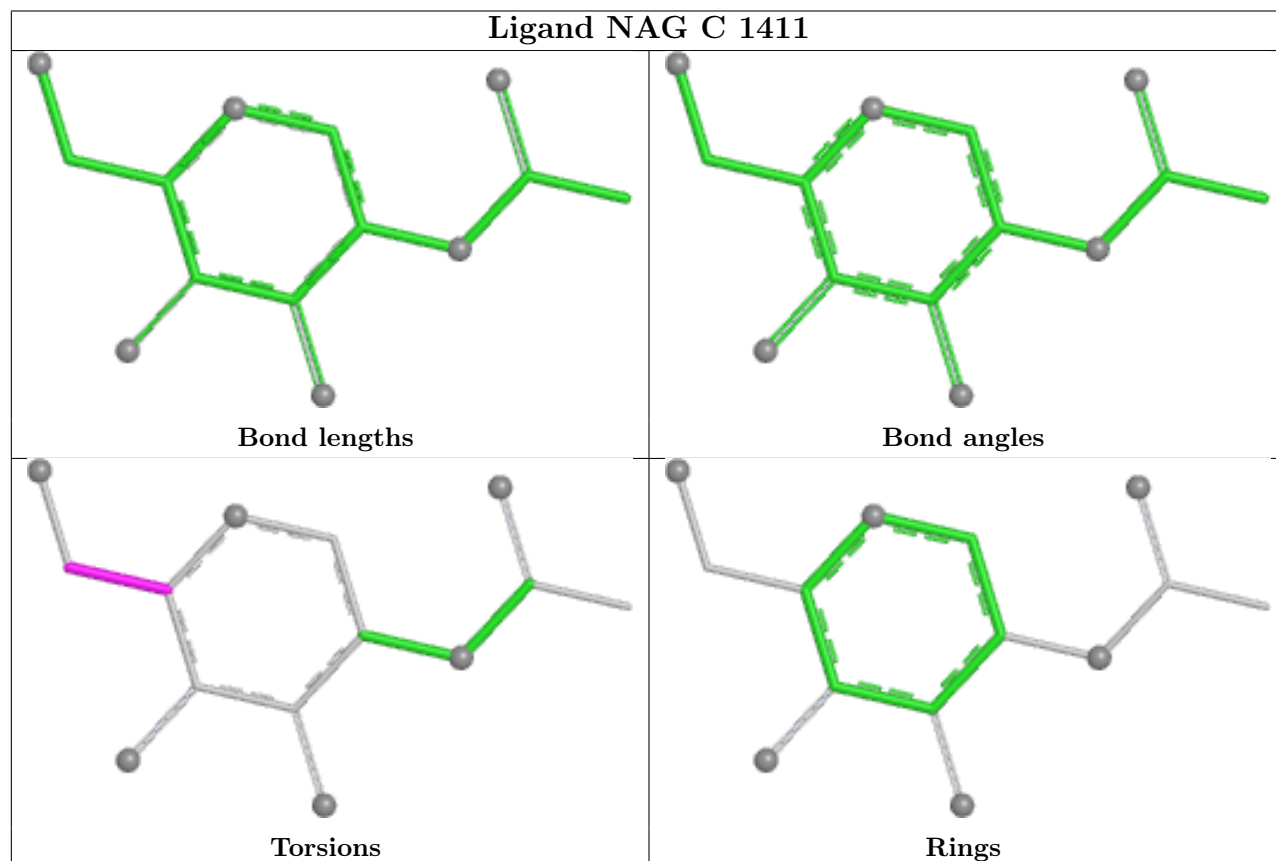
Ligand NAG A 1411

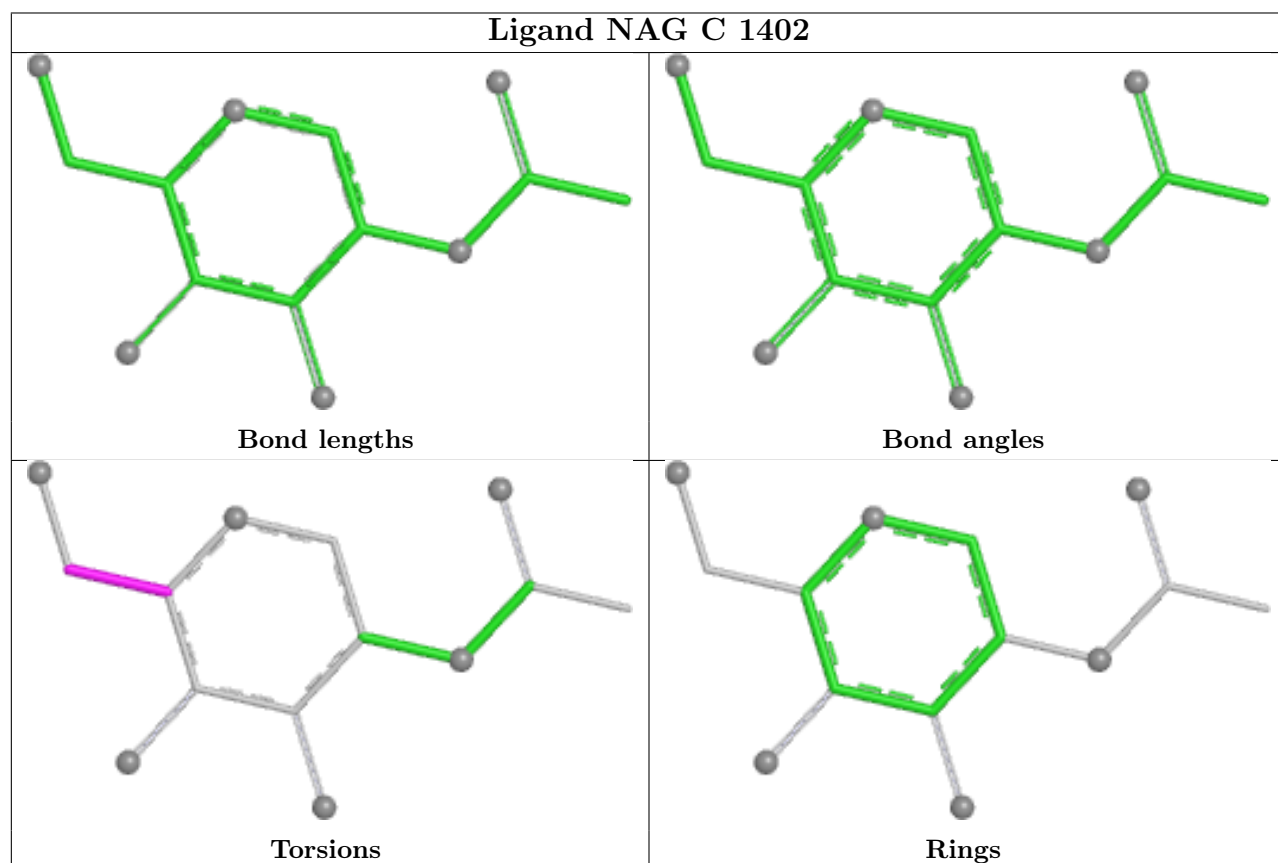
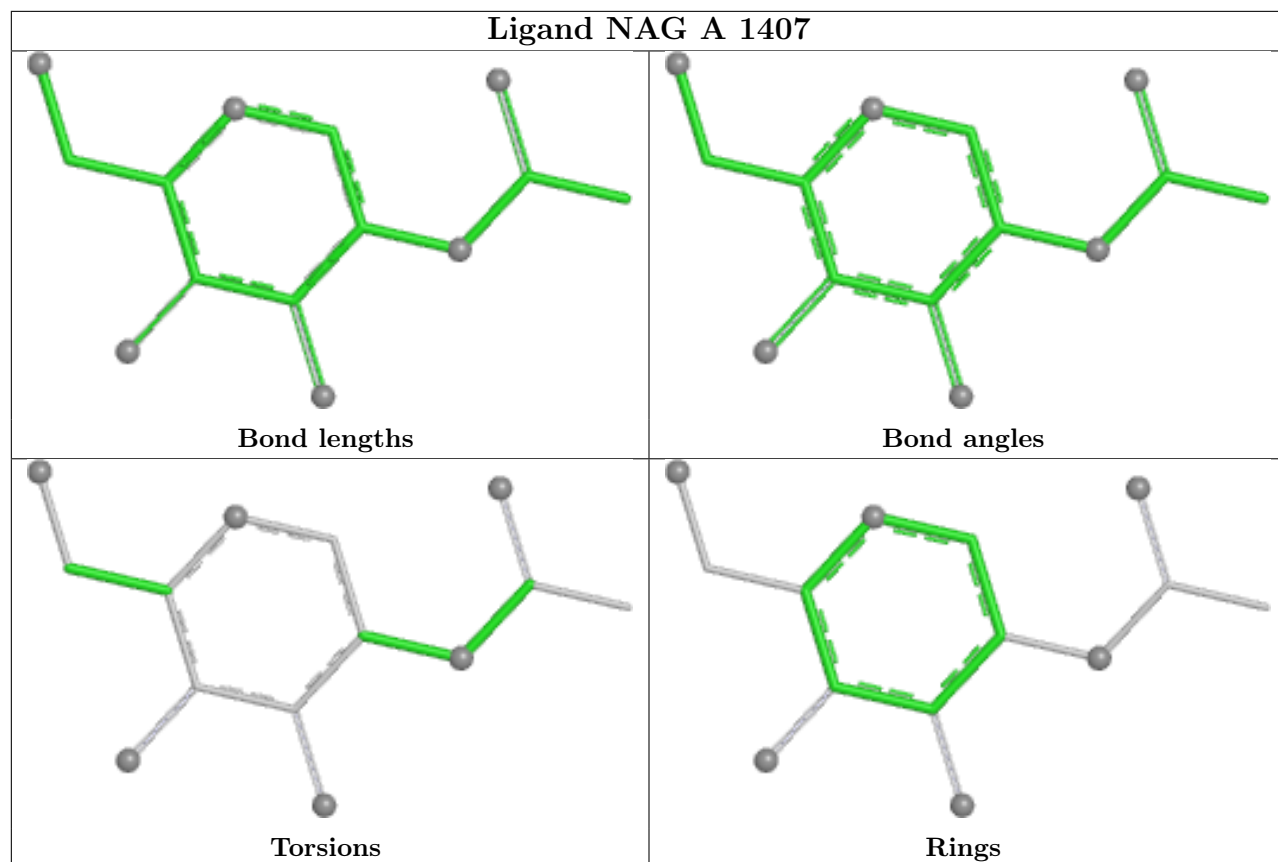


Ligand NAG B 1407

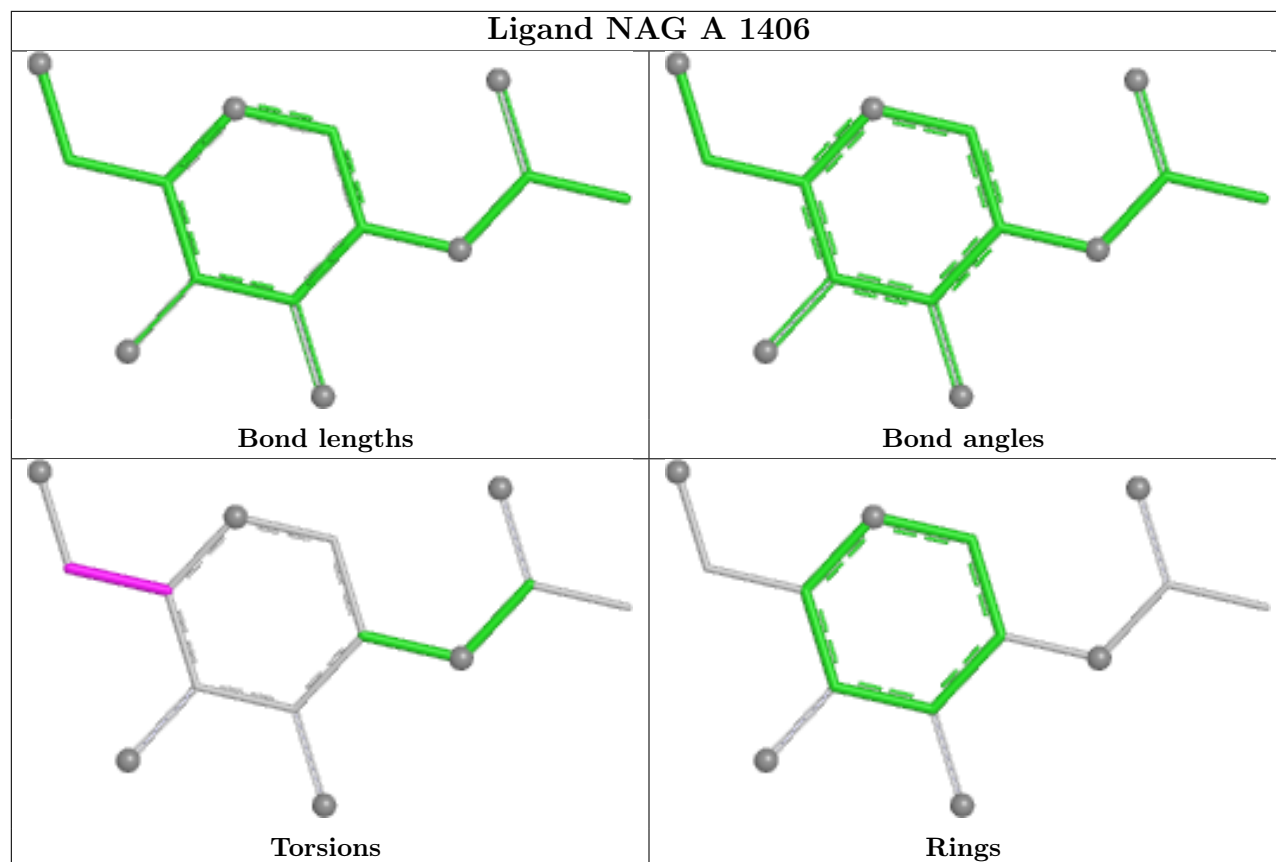


Ligand NAG C 1411

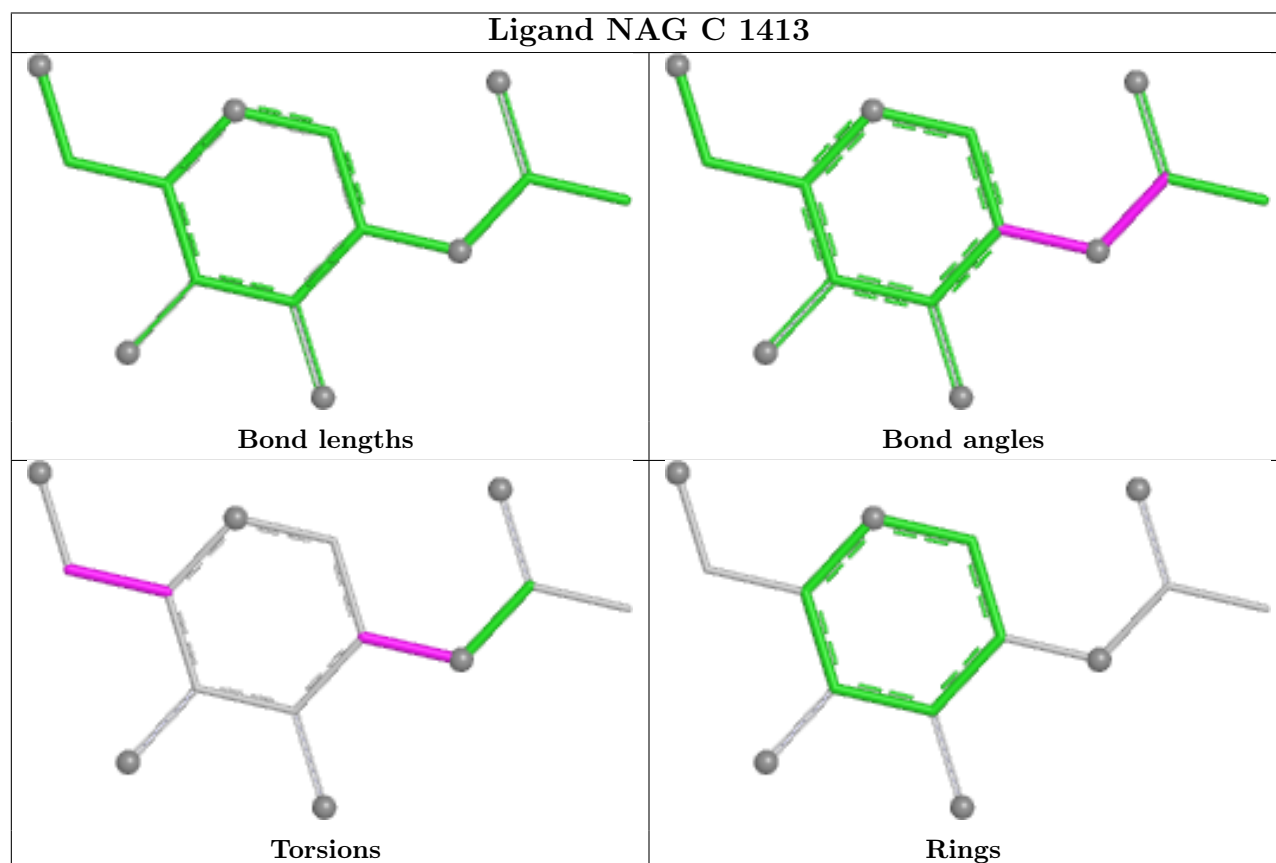


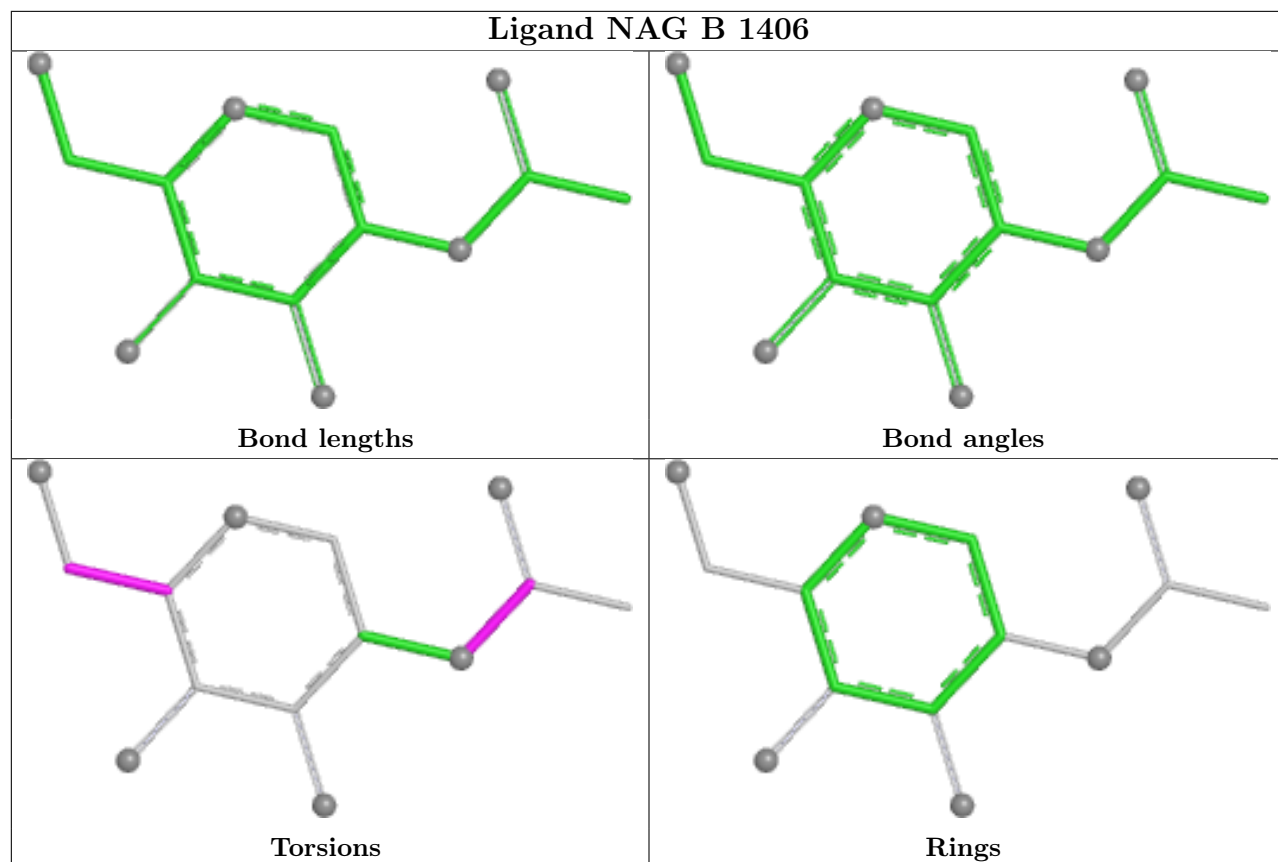


Ligand NAG A 1406



Ligand NAG C 1413





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.

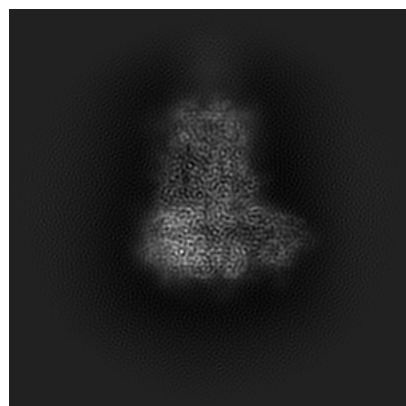
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-61602. These allow visual inspection of the internal detail of the map and identification of artifacts.

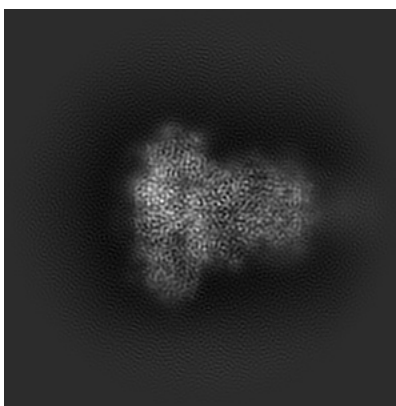
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

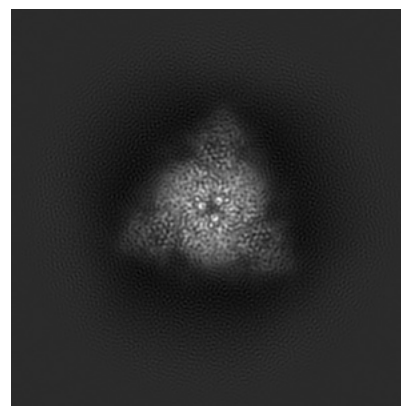
6.1.1 Primary map



X

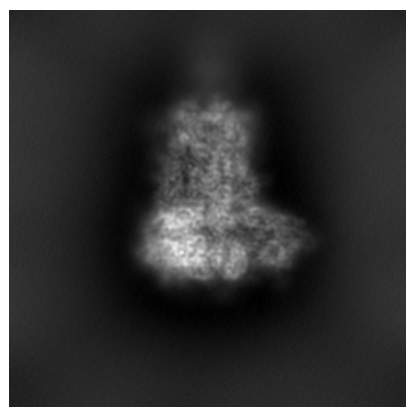


Y

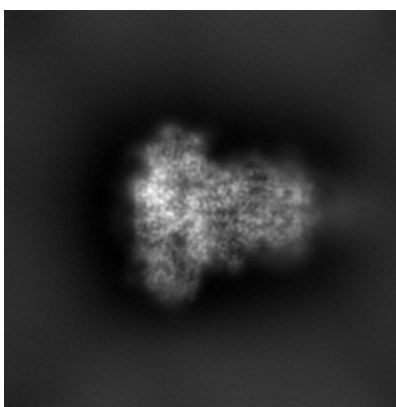


Z

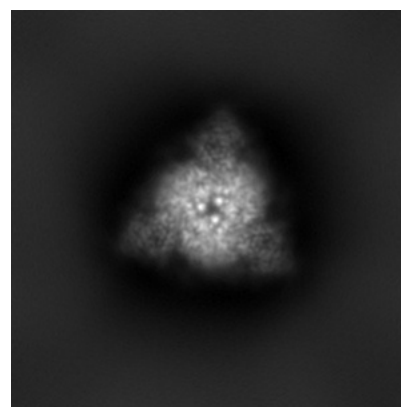
6.1.2 Raw map



X



Y

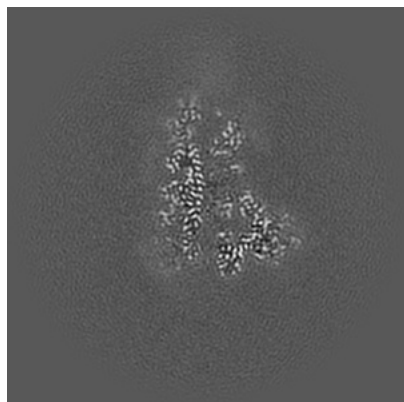


Z

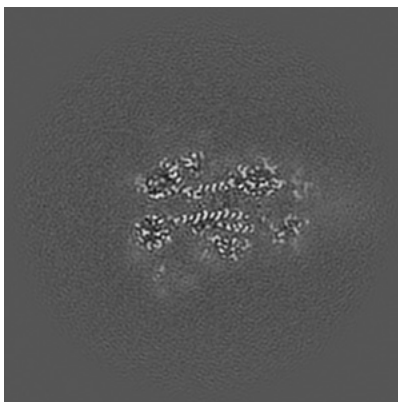
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

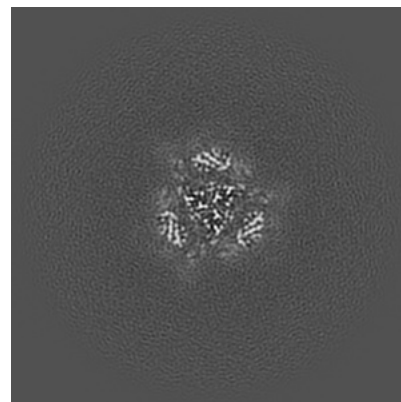
6.2.1 Primary map



X Index: 120

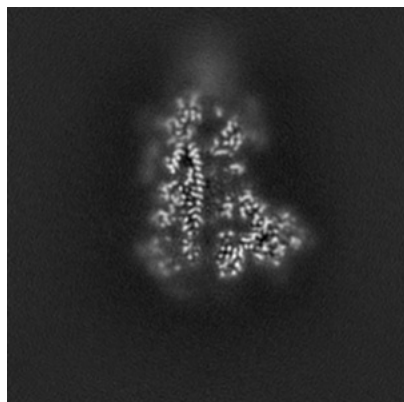


Y Index: 120

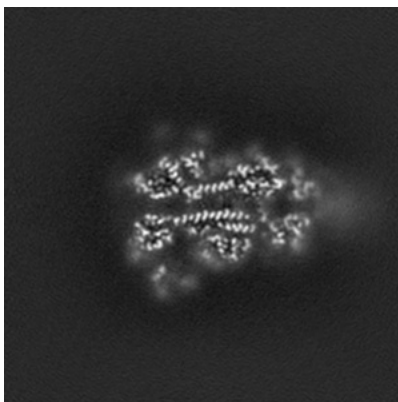


Z Index: 120

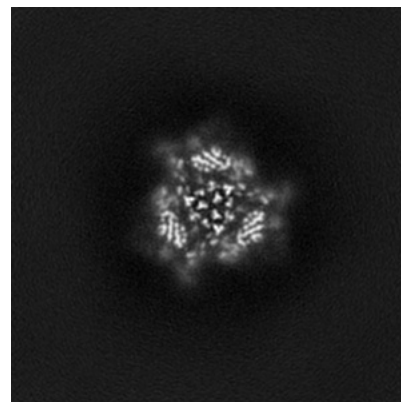
6.2.2 Raw map



X Index: 120



Y Index: 120

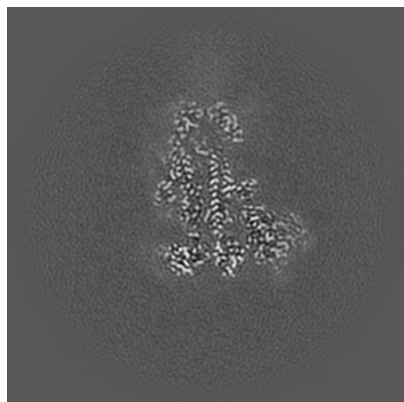


Z Index: 120

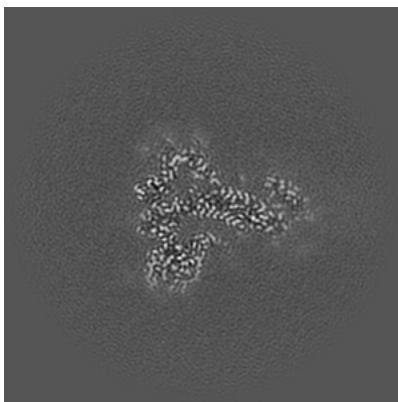
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

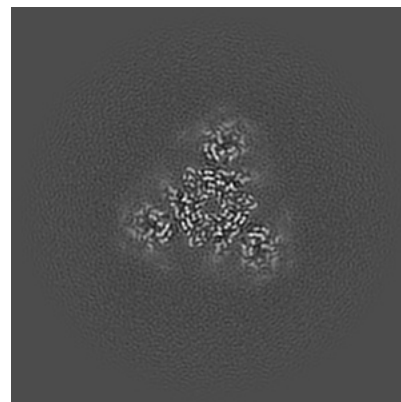
6.3.1 Primary map



X Index: 125

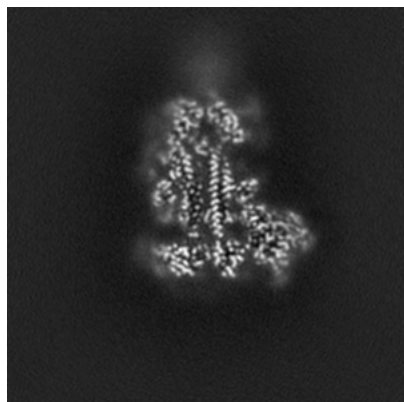


Y Index: 109

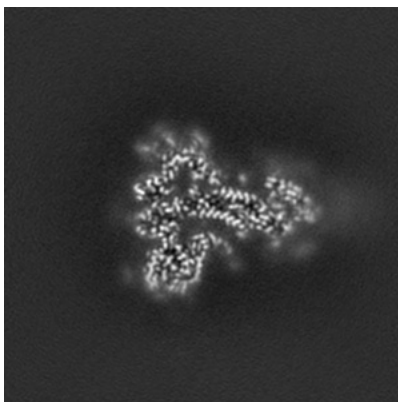


Z Index: 94

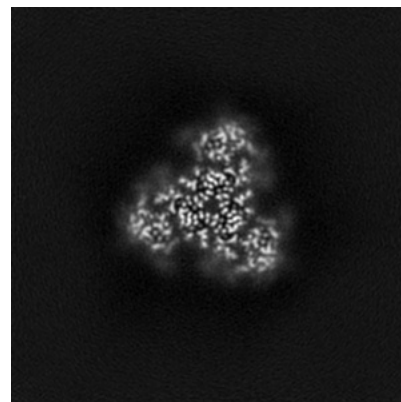
6.3.2 Raw map



X Index: 125



Y Index: 109

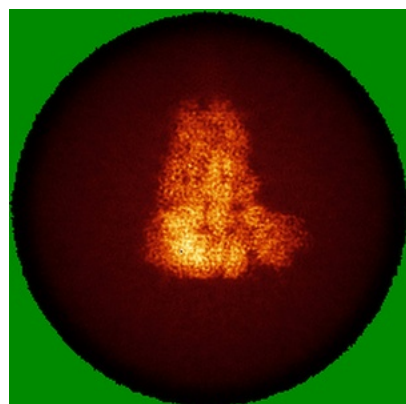


Z Index: 90

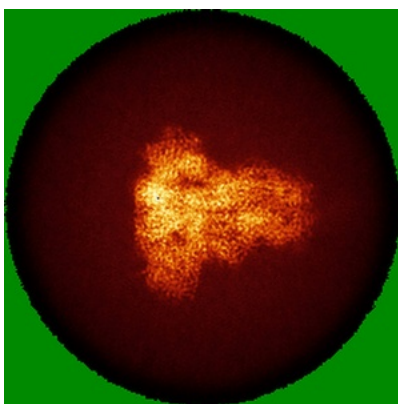
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

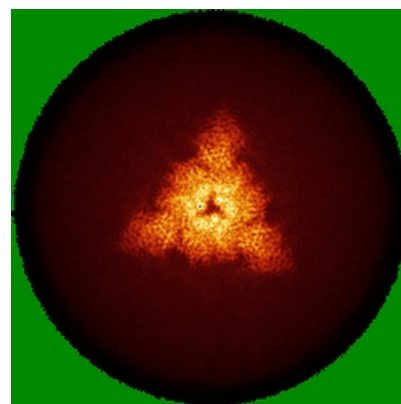
6.4.1 Primary map



X

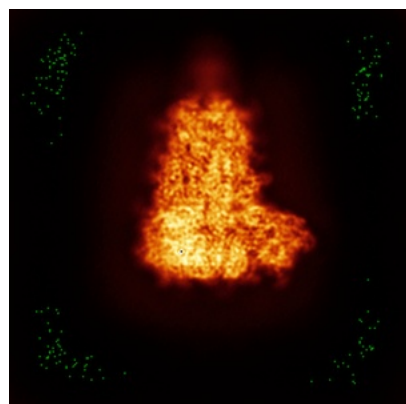


Y

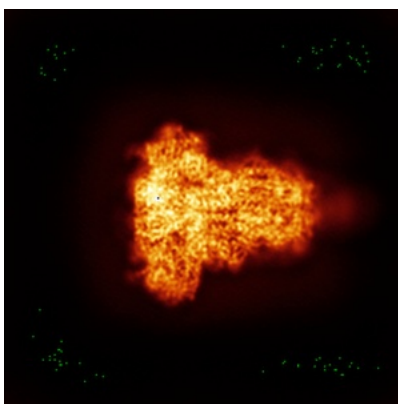


Z

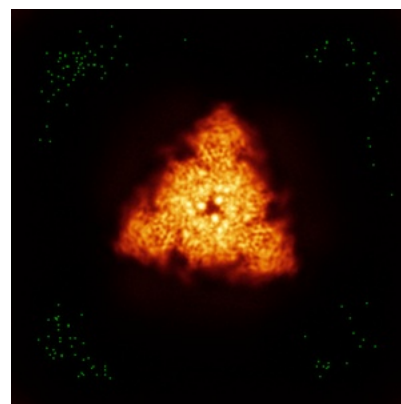
6.4.2 Raw map



X



Y

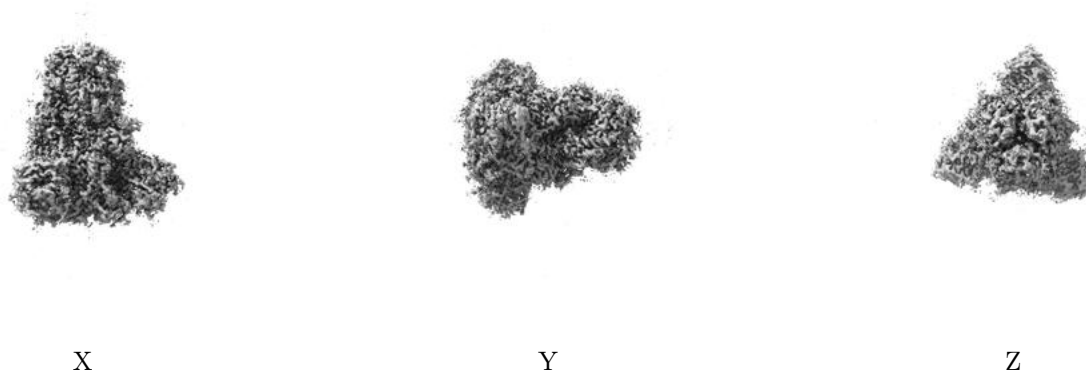


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.779. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

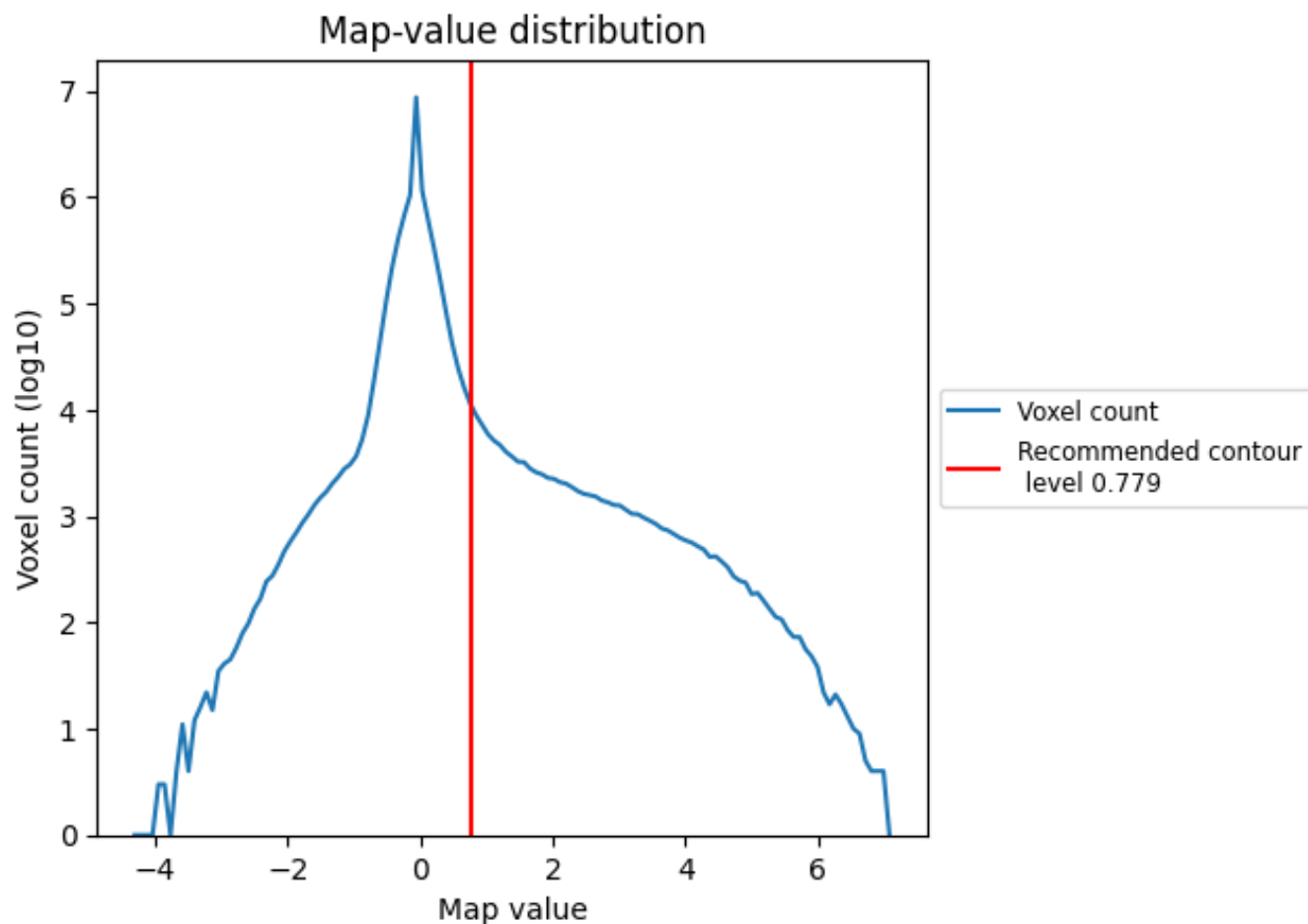
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

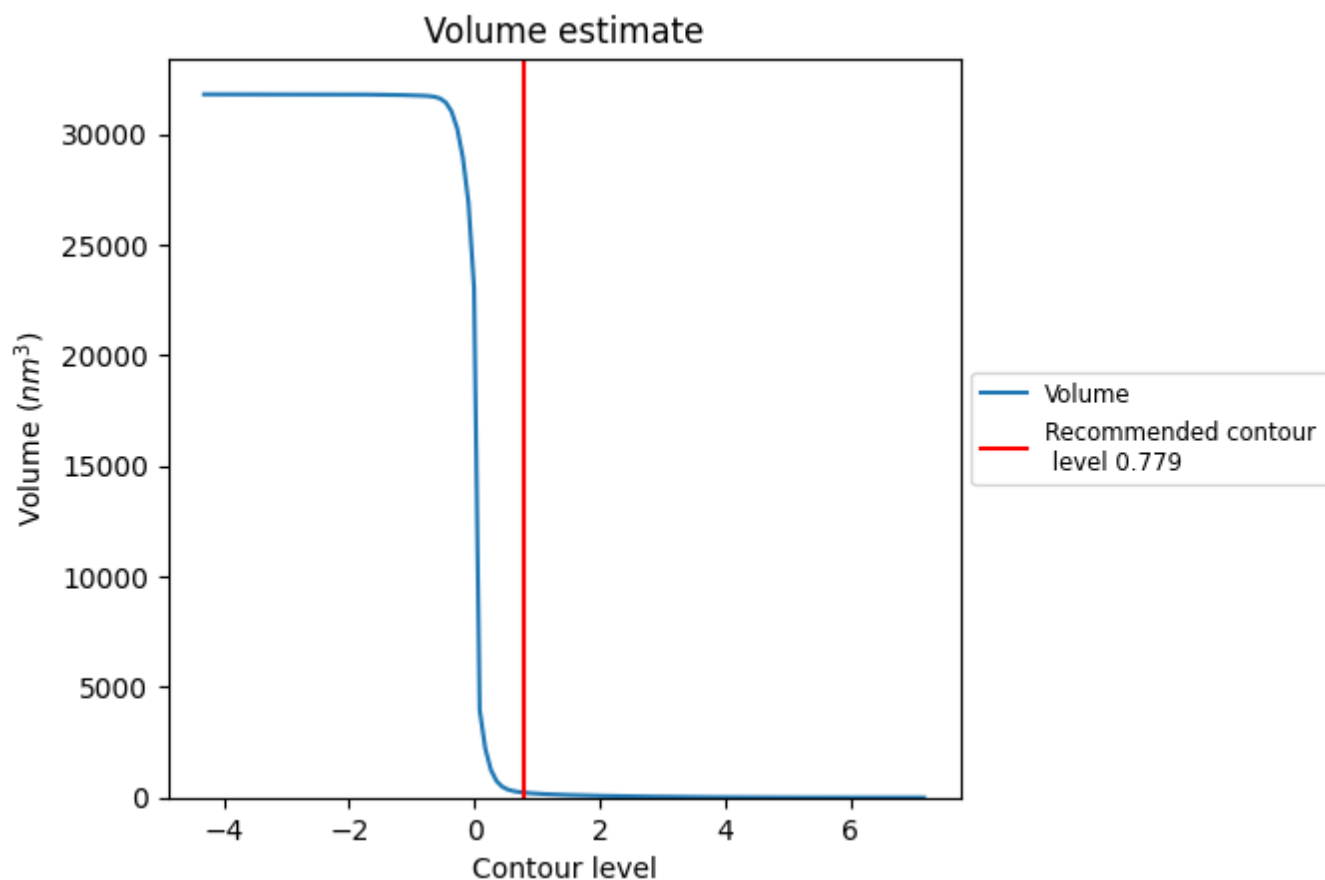
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

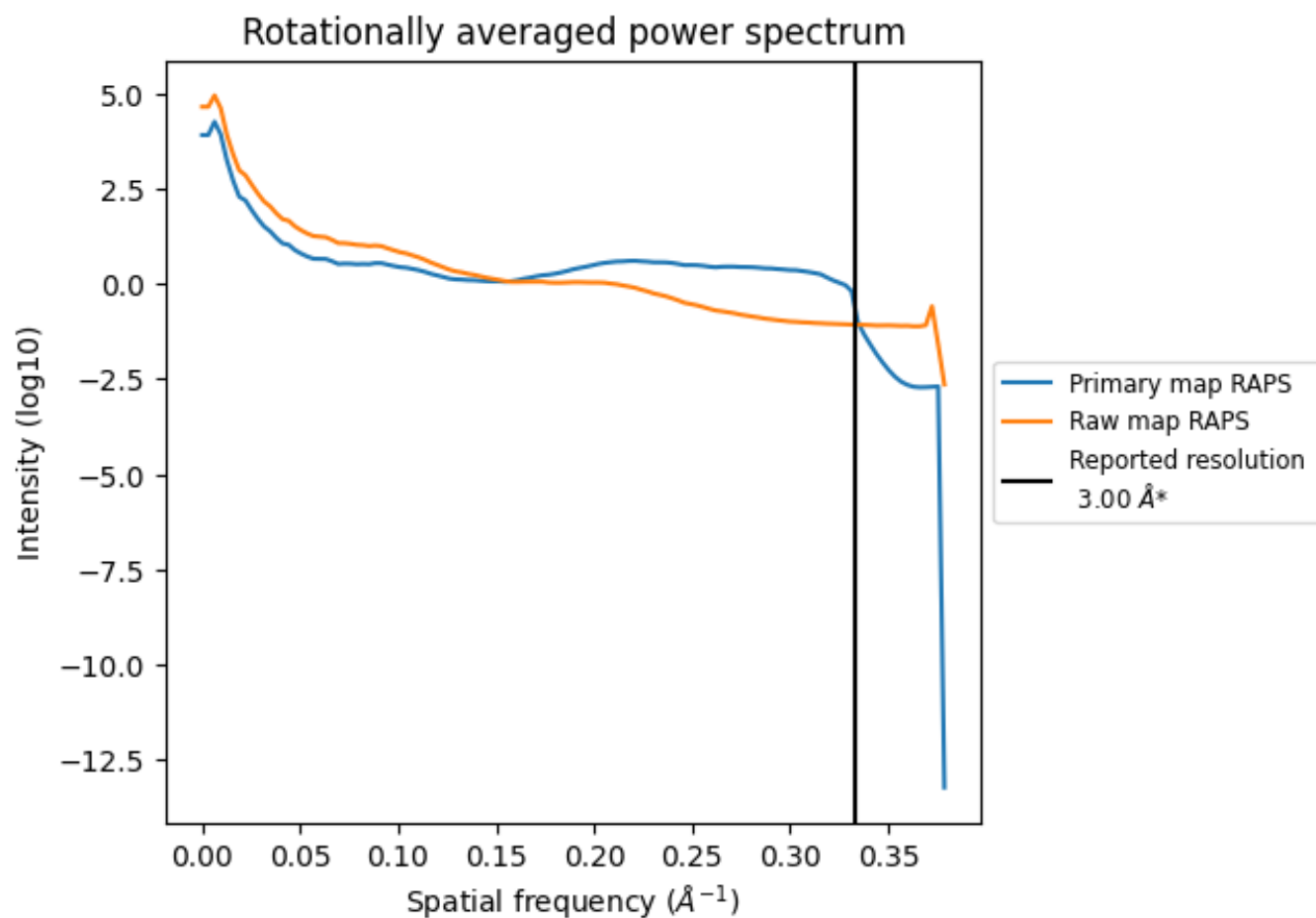
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 227 nm³; this corresponds to an approximate mass of 205 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 ⓘ

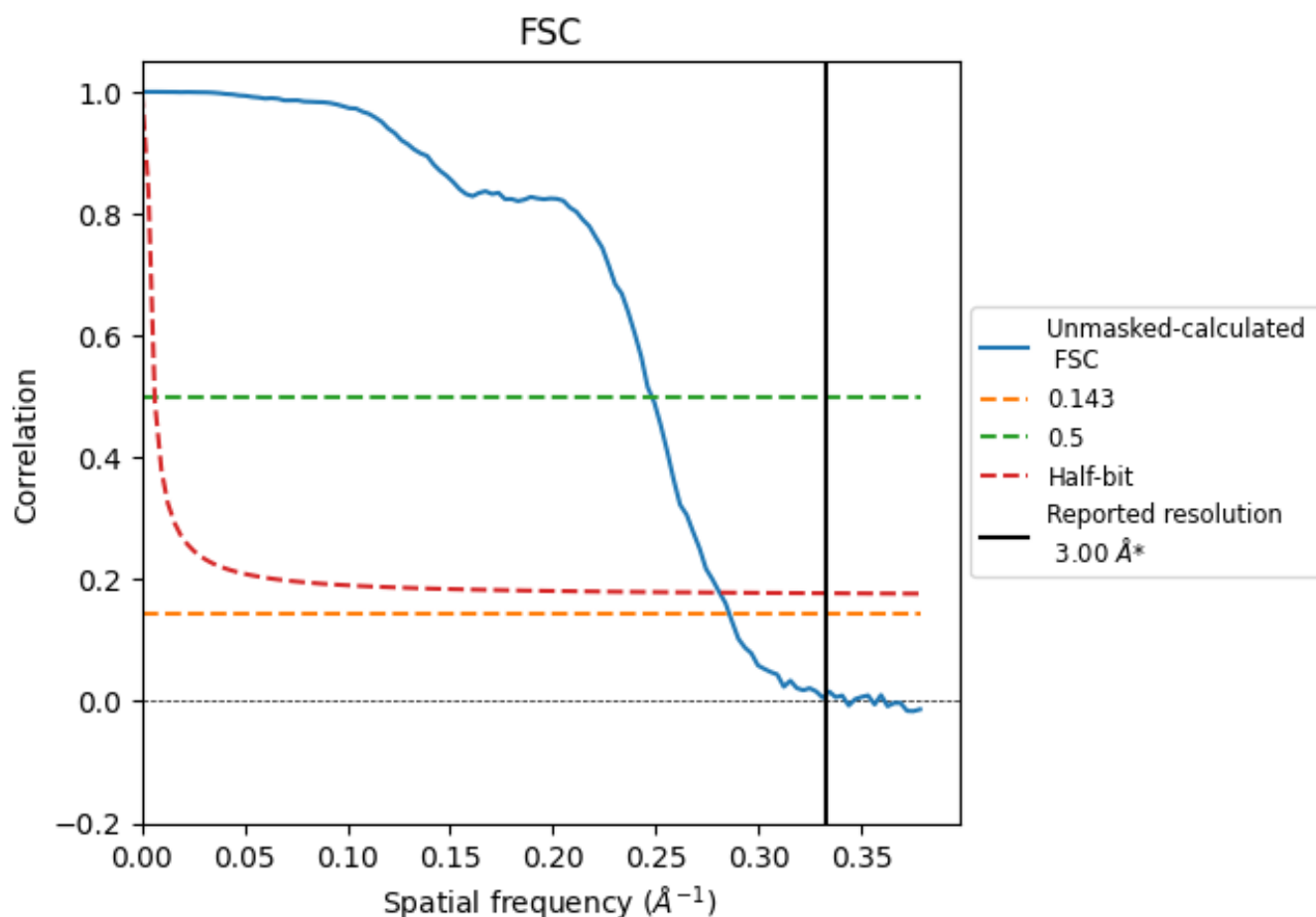


*Reported resolution corresponds to spatial frequency of 0.333 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.333 Å⁻¹

8.2 Resolution estimates [i](#)

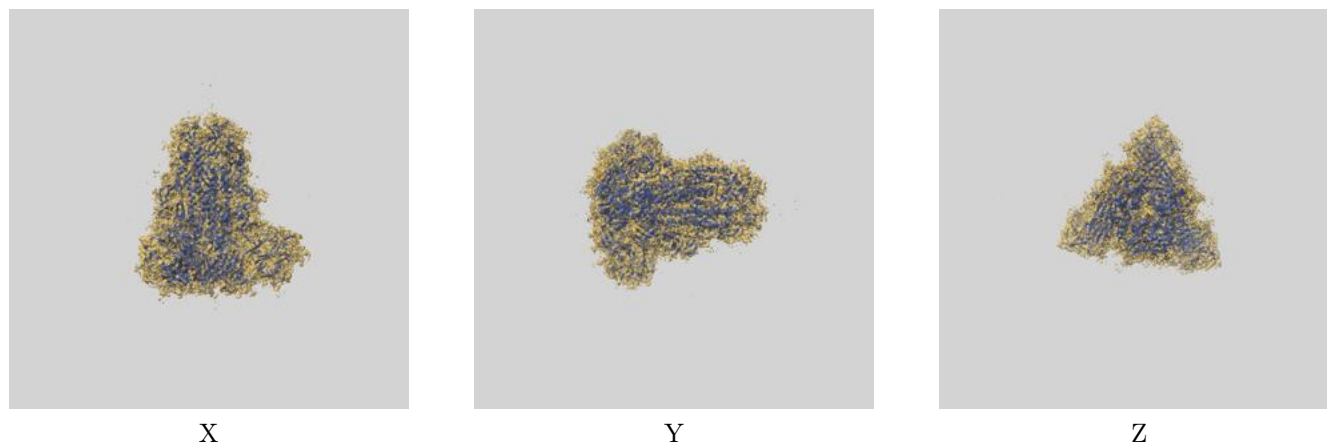
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.50	4.03	3.56

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.50 differs from the reported value 3.0 by more than 10 %

9 Map-model fit [i](#)

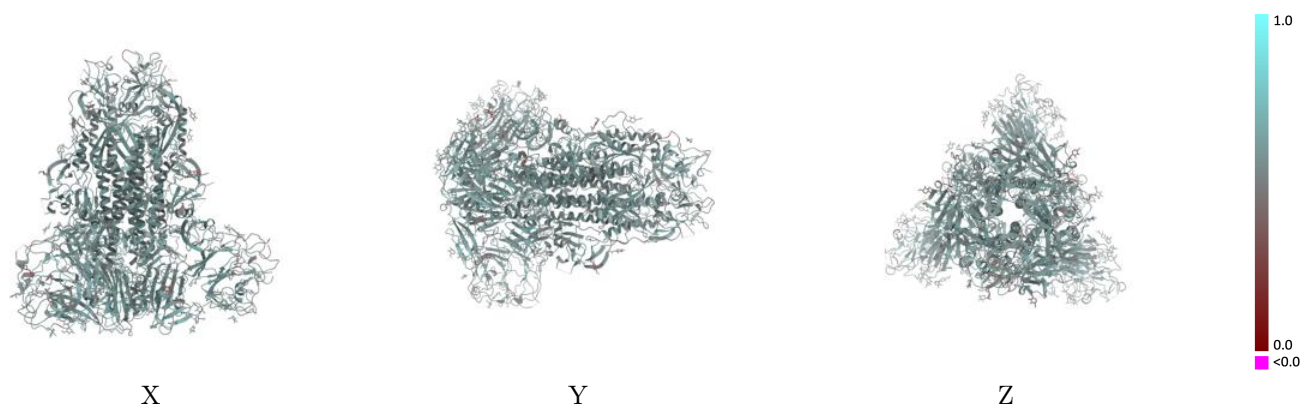
This section contains information regarding the fit between EMDB map EMD-61602 and PDB model 9JMH. Per-residue inclusion information can be found in section 3 on page 13.

9.1 Map-model overlay [i](#)



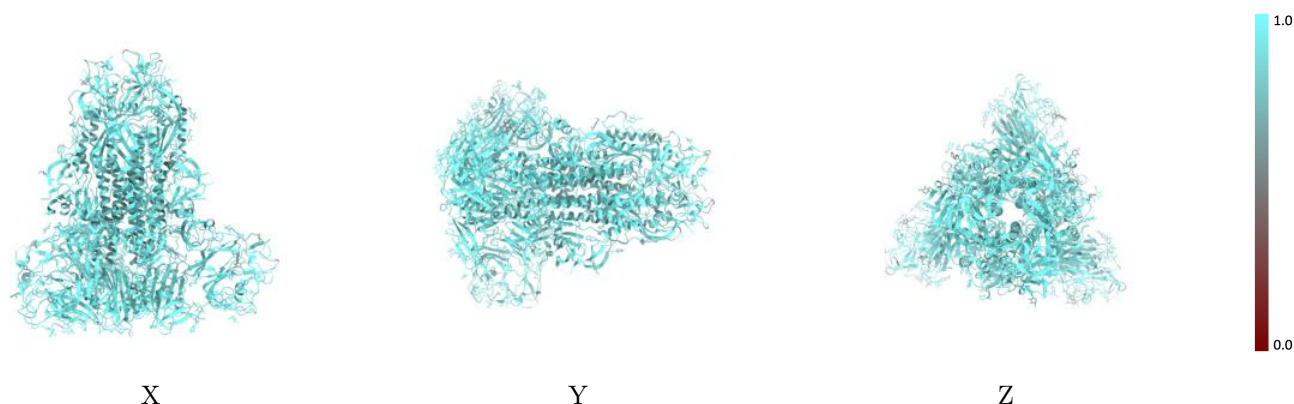
The images above show the 3D surface view of the map at the recommended contour level 0.779 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



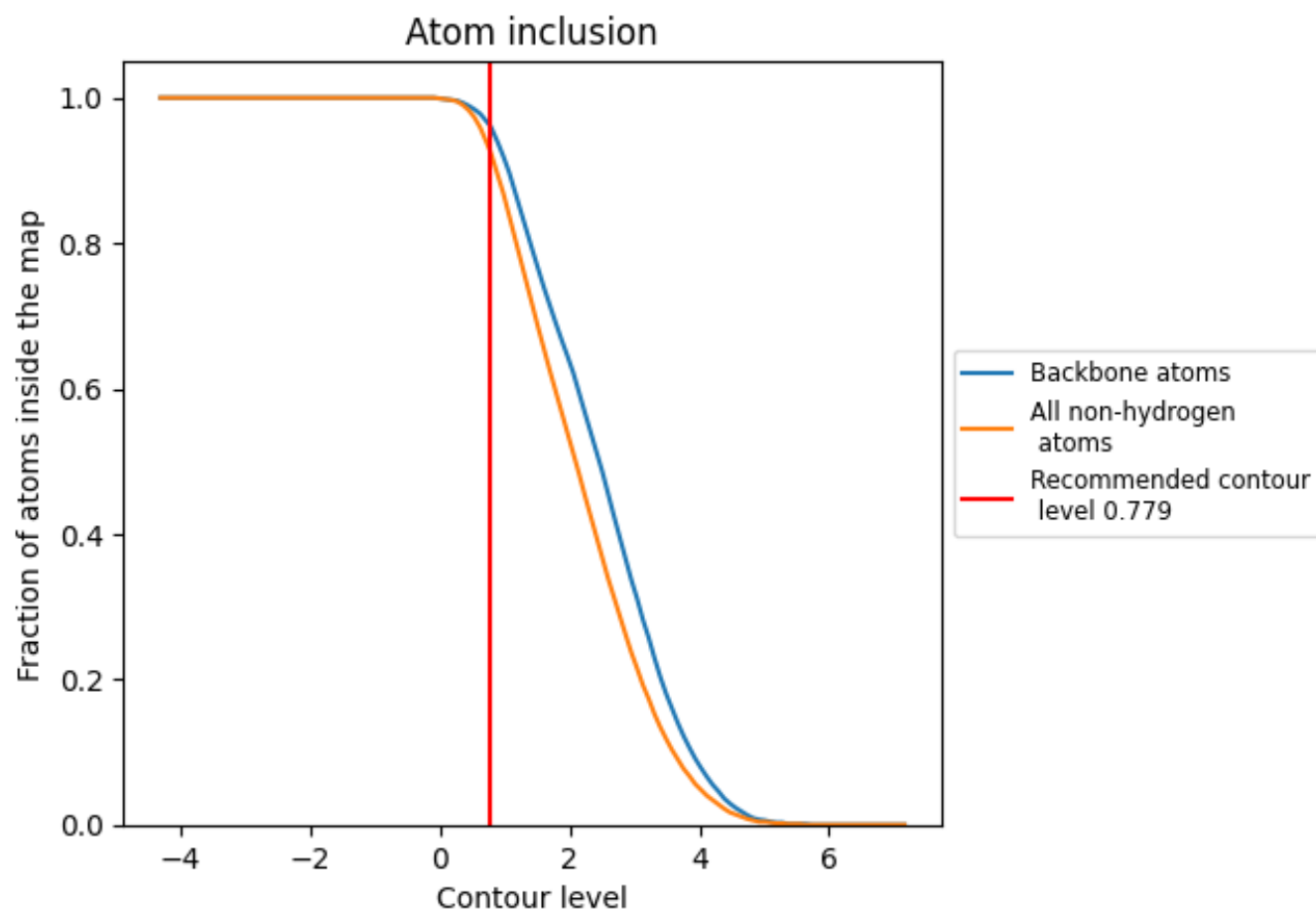
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.779).

9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 93% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.779) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9260	 0.5650
A	 0.9270	 0.5650
B	 0.9280	 0.5660
C	 0.9260	 0.5650
D	 0.8210	 0.5470
E	 0.9230	 0.5290
F	 0.8930	 0.5020
G	 0.9230	 0.5280
H	 0.9290	 0.5530
I	 0.5000	 0.4340
J	 0.8930	 0.5430
K	 0.8970	 0.5280
L	 0.9230	 0.5340
M	 0.8930	 0.5520
N	 0.8930	 0.5520
O	 0.7860	 0.5110
P	 0.8720	 0.5400
Q	 0.9490	 0.5260
R	 0.9290	 0.5470
S	 0.9290	 0.5390

