



wwPDB EM Validation Summary Report ⓘ

Nov 21, 2022 – 02:19 PM JST

PDB ID : 7CZW
EMDB ID : EMD-30519
Title : S protein of SARS-CoV-2 in complex bound with P5A-2G7
Authors : Yan, R.H.; Zhang, Y.Y.; Li, Y.N.; Zhou, Q.
Deposited on : 2020-09-09
Resolution : 2.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

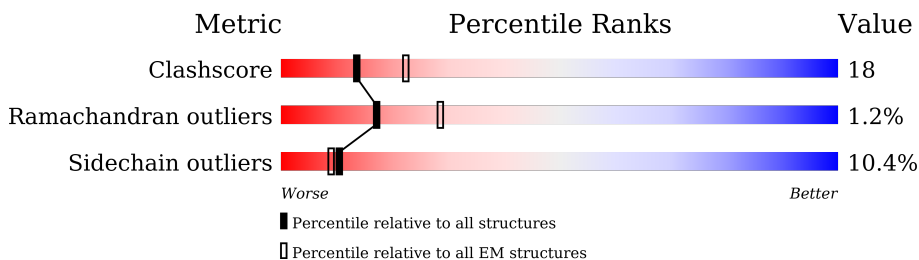
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance

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

The reported resolution of this entry is 2.80 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)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1283	12% (Poor fit), 56% (0 outliers), 20% (1 outlier), 22% (2+ outliers)
1	B	1283	7% (Poor fit), 57% (0 outliers), 17% (1 outlier), 23% (2+ outliers)
1	C	1283	18% (Poor fit), 57% (0 outliers), 18% (1 outlier), 22% (2+ outliers)
2	H	458	50% (Poor fit), 30% (0 outliers), 18% (1 outlier), 50% (2+ outliers)
2	J	458	50% (Poor fit), 29% (0 outliers), 18% (1 outlier), 50% (2+ outliers)
3	L	217	98% (Poor fit), 47% (0 outliers), 44% (1 outlier), 6% (2+ outliers)
3	N	217	99% (Poor fit), 47% (0 outliers), 44% (1 outlier), 6% (2+ outliers)
4	D	2	50% (Poor fit), 100% (0 outliers)

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Mol	Chain	Length	Quality of chain
4	E	2	100%
4	F	2	50% 50%
4	G	2	50% 50%
4	I	2	50% 50%
4	K	2	50% 50%
4	M	2	50% 50%
4	O	2	100% 50% 50%
4	P	2	50% 100%
4	Q	2	50% 50%
4	R	2	50% 50%
4	S	2	50% 50%
4	T	2	100%
4	U	2	50% 50% 50%
4	V	2	100% 100%
4	W	2	50% 50% 50%
4	X	2	50% 50%
4	Y	2	100%
4	Z	2	50% 50% 50%
4	a	2	100%
4	b	2	100%

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 31004 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1006	7863	5019	1308	1500	36	0	0
1	B	982	7696	4920	1279	1462	35	0	0
1	C	1004	7853	5014	1307	1496	36	0	0

There are 36 discrepancies between the modelled and reference sequences:

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

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

- Molecule 2 is a protein called Immunoglobulin heavy variable 4-61, chain H of P5A-2G7, Epididymis luminal protein 214.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	H	230	1727	1094	286	341	6	0	0
2	J	230	1727	1094	286	341	6	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	27	ASP	GLY	conflict	UNP A0A0C4DH41
J	27	ASP	GLY	conflict	UNP A0A0C4DH41

- Molecule 3 is a protein called IGL c2312_light_IGLV2-14_IGLJ2, IGL@ protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	L	214	1579	983	262	329	5	0	0
3	N	214	1579	983	262	329	5	0	0

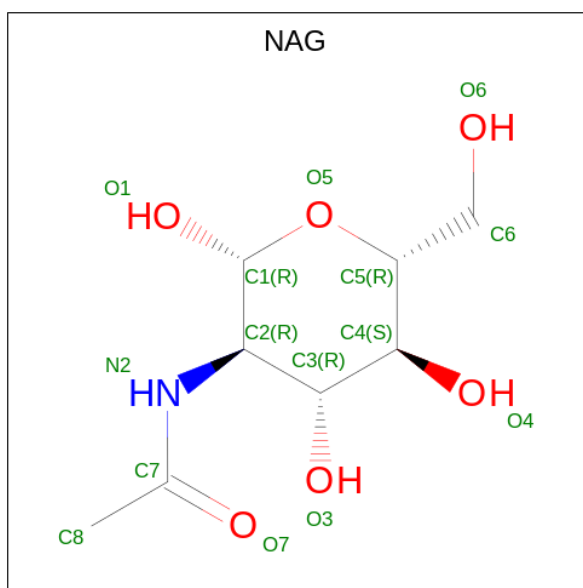
- Molecule 4 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
4	D	2	Total 28	C 16	N 2	O 10	0	0
4	E	2	Total 28	C 16	N 2	O 10	0	0
4	F	2	Total 28	C 16	N 2	O 10	0	0
4	G	2	Total 28	C 16	N 2	O 10	0	0
4	I	2	Total 28	C 16	N 2	O 10	0	0
4	K	2	Total 28	C 16	N 2	O 10	0	0
4	M	2	Total 28	C 16	N 2	O 10	0	0
4	O	2	Total 28	C 16	N 2	O 10	0	0
4	P	2	Total 28	C 16	N 2	O 10	0	0
4	Q	2	Total 28	C 16	N 2	O 10	0	0
4	R	2	Total 28	C 16	N 2	O 10	0	0
4	S	2	Total 28	C 16	N 2	O 10	0	0
4	T	2	Total 28	C 16	N 2	O 10	0	0
4	U	2	Total 28	C 16	N 2	O 10	0	0
4	V	2	Total 28	C 16	N 2	O 10	0	0
4	W	2	Total 28	C 16	N 2	O 10	0	0
4	X	2	Total 28	C 16	N 2	O 10	0	0
4	Y	2	Total 28	C 16	N 2	O 10	0	0
4	Z	2	Total 28	C 16	N 2	O 10	0	0
4	a	2	Total 28	C 16	N 2	O 10	0	0
4	b	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:

C₈H₁₅NO₆) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf	
			Total	C	N		O
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	A	1	126	72	9	45	0
5	B	1	154	88	11	55	0
5	B	1	154	88	11	55	0
5	B	1	154	88	11	55	0
5	B	1	154	88	11	55	0

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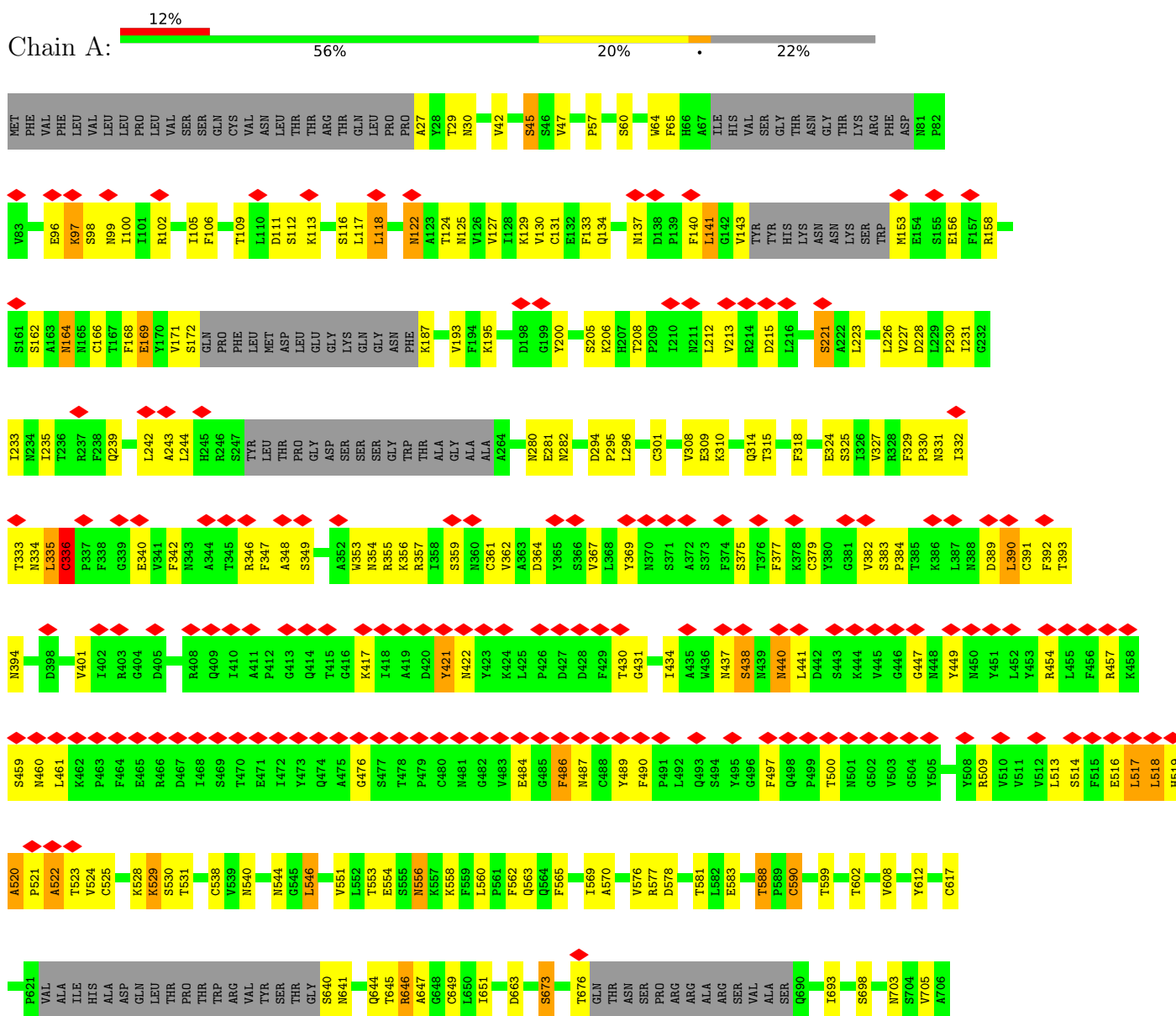
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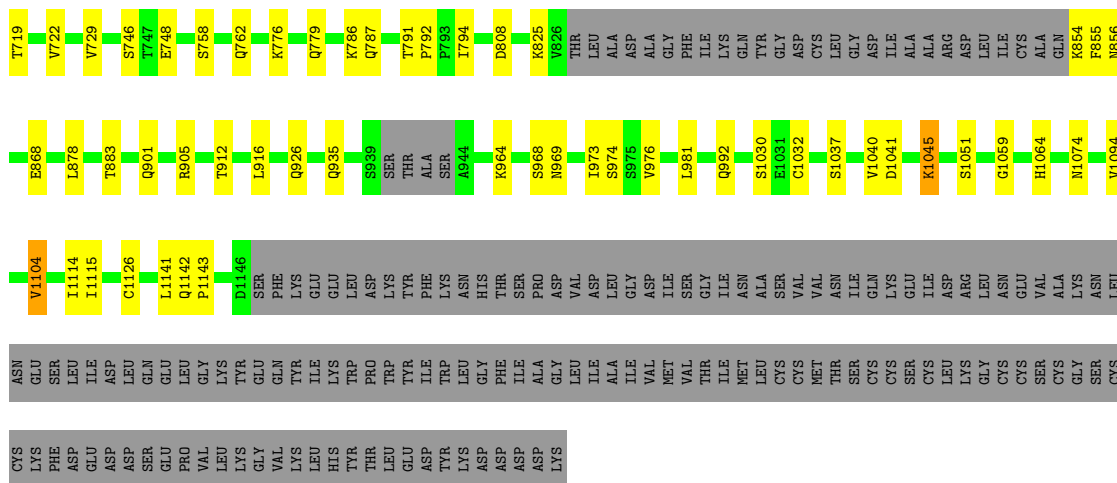
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	B	1	Total 154	88	11	55	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0
5	C	1	Total 112	64	8	40	0

3 Residue-property plots [i](#)

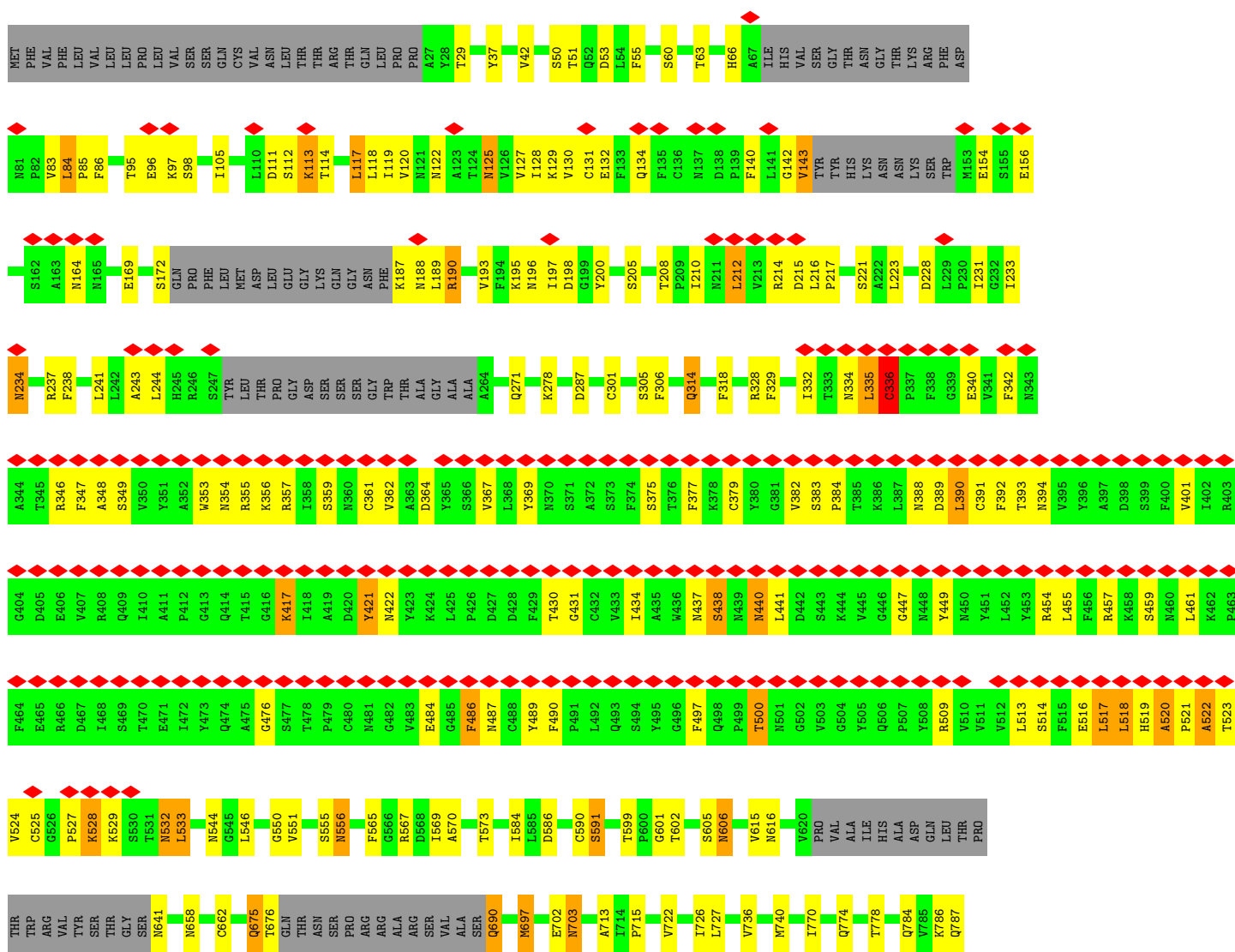
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

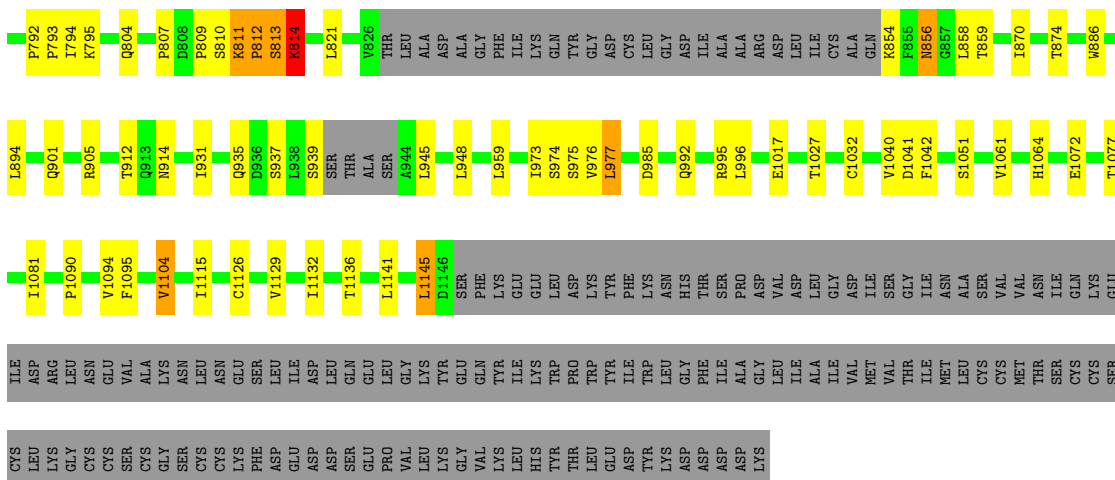
- Molecule 1: Spike glycoprotein



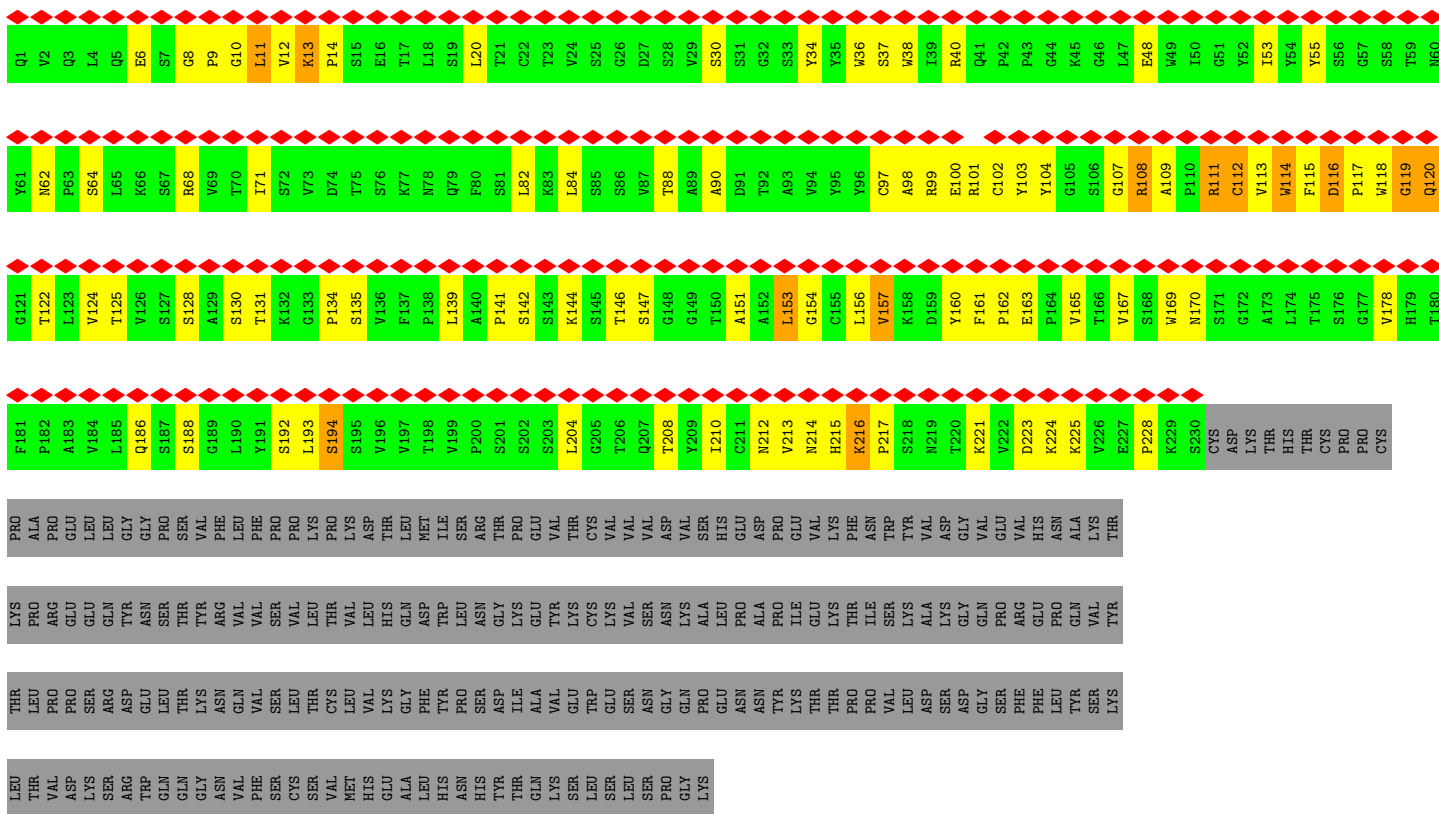
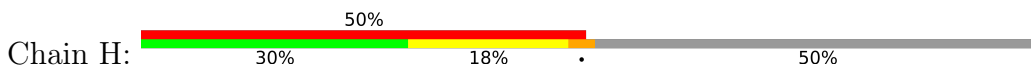


● Molecule 1: Spike glycoprotein

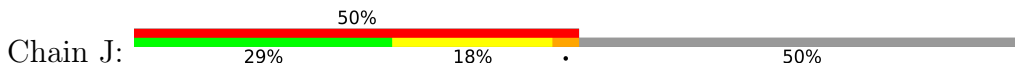




● Molecule 2: Immunoglobulin heavy variable 4-61, chain H of P5A-2G7, Epididymis luminal protein 214



● Molecule 2: Immunoglobulin heavy variable 4-61, chain H of P5A-2G7, Epididymis luminal protein 214



Q1	V2	Q3	L4	Q5	E6	S7	O8	P9	G10	L11	V12	K13	P14	S15	E16	L17	L18	S19	L20	T21	C22	T23	V24	S25	G26	D27	S28	V29	S30	S31	G32	S33	Y34	Y35	K36	S37	K38	I39	R40	Q41	P42	P43	Q44	K45	G46	L47	E48	M49	I50	G51	Y52	L53	Y55	S56	G57	S58	T59	M60	
V61	M62	F63	S64	L65	M66	S67	R68	V69	T70	I71	S72	V73	D74	T75	S76	K77	M78	Q79	F80	S81	L82	R83	L84	S85	L86	V87	T88	A89	A90	P91	T92	A93	V94	Y95	Y96	C97	K98	R99	E100	R101	C102	Y103	Y104	G105	S106	G107	R108	A109	P110	R111	C112	V113	W114	F115	D116	P117	G119	Q120	
G121	T122	L123	V124	T125	V126	S127	S128	A129	S130	T131	K132	G133	P134	S135	V136	F137	M138	L139	A140	P141	L142	S143	K144	S145	T146	S147	G148	G149	T150	A151	L152	A153	G154	C155	L156	V157	K158	D159	F160	F161	C102	E163	P164	T165	T166	V167	S168	M169	N170	S171	G172	A173	T175	S176	G177	H179	T180		
F181	P182	A183	V184	L185	Q186	S187	S188	G189	L190	Y191	S192	L193	S194	S195	V196	F197	T198	V199	P200	S201	S202	S203	L204	G205	T206	Q207	T208	Y209	I210	C211	N212	V213	N214	H215	K216	P217	M218	M219	T220	K221	D222	D223	K224	K225	V226	E227	P228	K229	S230	CYS	ASP	LYS	THR	THR	THR	CYS	PRO	PRO	CYS
PRO	ALA	PRO	GLU	LEU	LEU	GLY	PRO	SER	VAL	PRO	PHE	PRO	LYS	LYS	ASP	THR	LEU	ILE	ARG	THR	THR	GLU	VAL	CYS	VAL	VAL	VAL	VAL	ASN	ALA	PRO	PRO	GLU	VAL	LYS	PHE	ASN	TRP	TYR	VAL	ASP	GLY	VAL	ASP	GLY	VAL	GLY	VAL	GLN	PRO	THR								
LYS	PRO	ARG	GLU	LEU	LEU	GLN	TYR	THR	LYS	ASN	VAL	VAL	THR	VAL	LEU	LYS	GLY	PHE	THR	PRO	ASN	GLY	LYS	CYS	LYS	VAL	VAL	ASN	LYS	ALA	PRO	ALA	LYS	THR	THR	ILE	VAL	SER	ALA	LYS	ASP	GLY	VAL	GLY	GLN	PRO	THR	LYS	TYR										
THR	LEU	PRO	ASP	LYS	SER	ARG	TRP	GLN	GLY	GLY	ASN	VAL	PHE	VAL	THR	CYS	VAL	MET	HIS	VAL	GLU	THR	THR	THR	LEU	LEU	LEU	SER	ASN	ALA	PRO	GLY	THR	PRO	PRO	VAL	VAL	LEU	ASP	SER	ASP	GLY	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	LYS						
LEU	THR	VAL	ASP	LYS	SER	ARG	TRP	GLN	GLY	GLY	ASN	VAL	PHE	VAL	THR	CYS	VAL	MET	HIS	VAL	GLU	THR	THR	THR	LEU	LEU	LEU	SER	ASN	ALA	PRO	GLY	THR	PRO	PRO	VAL	VAL	LEU	ASP	SER	ASP	GLY	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	LYS						

• Molecule 3: IGL c2312_light_IGLV2-14_IGLJ2,IGL@ protein



Q1	S2	A3	L4	T5	Q6	P7	A8	S9	V10	S11	G12	S13	P14	G15	Q16	S17	I18	T19	I20	Q21	C22	T23	G24	E25	S26	S27	D28	V29	G30	G31	S32	R33	Y34	Y35	S36	W37	Y38	Q39	Q40	H41	P42	G43	K44	G45	G46	K47	L48	M49	I50	Y51	D52	V53	S54	M55	R56	F57	S58	G59	V60
S61	M62	R63	F64	S65	G66	S67	K68	G69	S70	M71	T72	A73	S74	L75	T76	I77	S78	G79	L80	Q81	A82	E83	D84	E85	A86	D87	Y88	Y89	C90	S91	S92	Y93	T94	S95	S96	S97	T98	L99	V100	V101	F102	G103	G104	G105	K107	L108	T109	V110	L111	G112	Q113	P114	K115	A116	A117	P118	S119	V120	
T121	L122	F123	P124	P125	S126	S127	E128	E129	L130	Q131	A132	M133	K134	A135	T136	L137	V138	C139	L140	I141	S142	D143	F144	Y145	Y146	G147	A148	Y149	T150	V151	A152	W153	K154	A155	D156	S157	S158	P159	V160	K161	A162	G163	V164	E165	T166	K167	T168	P169	S170	K171	Q172	S173	M174	M175	K176	Y177	A178	A179	S180
S181	Y182	L183	S184	L185	T186	P187	E188	Q189	W190	K191	S192	H193	R194	S195	Y196	S197	C198	Q199	V200	T201	H202	E203	G204	S205	T206	V207	E208	K209	T210	V211	A212	P213	T214	GLY	CYS	SER																							

• Molecule 3: IGL c2312_light_IGLV2-14_IGLJ2,IGL@ protein



Q1	S2	A3	L4	T5	Q6	P7	A8	S9	V10	S11	G12	S13	P14	G15	Q16	S17	I18	T19	I20	Q21	C22	T23	G24	E25	S26	S27	D28	V29	G30	G31	S32	R33	Y34	Y35	S36	W37	Y38	Q39	Q40	H41	P42	G43	K44	G45	G46	K47	L48	M49	I50	Y51	D52	V53	S54	M55	R56	F57	S58	G59	V60
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- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



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



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

Chain K:  50% 50%



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

Chain M:  50% 50%



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

Chain O:  50% 100% 50%



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

Chain P:  50% 100%



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

Chain Q:  50% 50%




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

Chain R:  50% 50%



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

Chain S:  50% 50%


MAG1
MAG2

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

Chain T:  100%


MAG1
MAG2

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

Chain U:  50% 50%


MAG1
MAG2

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

Chain V:  100% 100%


MAG1
MAG2

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

Chain W:  50% 50%


MAG1
MAG2

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

Chain X:  50% 50%


MAG1
MAG2

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

Chain Y:  100%

A vertical label with 'NAG1' in green and 'NAG2' in red.

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

Chain Z: A horizontal bar for Chain Z. The first 50% is green, the next 50% is red, and the final 50% is orange. Labels '50%' are placed above the green and red segments, and another '50%' is placed below the orange segment.

A vertical label with 'NAG1' in green and 'NAG2' in orange, with a red diamond symbol above it.

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

Chain a: A horizontal bar for Chain a that is entirely yellow, with '100%' centered below it.

A vertical label with 'NAG1' in yellow and 'NAG2' in yellow.

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

Chain b: A horizontal bar for Chain b that is entirely green, with '100%' centered below it.

A vertical label with 'NAG1' in green and 'NAG2' in green.

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	211771	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.267	Depositor
Minimum map value	-0.129	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	313.056, 313.056, 313.056	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.087, 1.087, 1.087	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.59	0/8039	0.55	0/10936
1	B	0.49	0/7864	0.55	0/10691
1	C	0.59	0/8028	0.55	0/10919
2	H	0.41	0/1774	0.54	0/2424
2	J	0.41	0/1774	0.54	0/2424
3	L	0.40	0/1616	0.53	0/2206
3	N	0.40	0/1616	0.53	0/2206
All	All	0.53	0/30711	0.55	0/41806

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	7863	0	7659	239	0
1	B	7696	0	7514	148	0
1	C	7853	0	7653	233	0
2	H	1727	0	1691	168	0
2	J	1727	0	1691	169	0
3	L	1579	0	1527	117	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	N	1579	0	1527	120	0
4	D	28	0	25	0	0
4	E	28	0	25	3	0
4	F	28	0	25	0	0
4	G	28	0	25	1	0
4	I	28	0	25	1	0
4	K	28	0	25	0	0
4	M	28	0	25	0	0
4	O	28	0	25	1	0
4	P	28	0	25	0	0
4	Q	28	0	25	0	0
4	R	28	0	25	0	0
4	S	28	0	25	1	0
4	T	28	0	25	0	0
4	U	28	0	25	0	0
4	V	28	0	25	3	0
4	W	28	0	25	1	0
4	X	28	0	25	0	0
4	Y	28	0	25	0	0
4	Z	28	0	25	1	0
4	a	28	0	25	0	0
4	b	28	0	25	0	0
5	A	126	0	117	4	0
5	B	154	0	142	10	0
5	C	112	0	104	2	0
All	All	31004	0	30150	1088	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 18.

The worst 5 of 1088 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)
2:H:116:ASP:HB3	2:H:117:PRO:CD	1.44	1.47
5:B:1410:NAG:O4	5:B:1411:NAG:C1	1.63	1.46
2:J:116:ASP:HB3	2:J:117:PRO:CD	1.44	1.43
1:A:335:LEU:HA	1:A:362:VAL:CG1	1.54	1.33
2:H:111:ARG:HB3	3:L:93:TYR:CZ	1.64	1.33

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	988/1283 (77%)	891 (90%)	90 (9%)	7 (1%)	22	53
1	B	958/1283 (75%)	868 (91%)	89 (9%)	1 (0%)	51	81
1	C	986/1283 (77%)	889 (90%)	86 (9%)	11 (1%)	14	41
2	H	228/458 (50%)	195 (86%)	27 (12%)	6 (3%)	5	18
2	J	228/458 (50%)	195 (86%)	27 (12%)	6 (3%)	5	18
3	L	212/217 (98%)	173 (82%)	31 (15%)	8 (4%)	3	10
3	N	212/217 (98%)	173 (82%)	31 (15%)	8 (4%)	3	10
All	All	3812/5199 (73%)	3384 (89%)	381 (10%)	47 (1%)	17	39

5 of 47 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	518	LEU
1	C	518	LEU
1	C	814	LYS
2	H	11	LEU
2	H	108	ARG

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	881/1122 (78%)	784 (89%)	97 (11%)	6	19
1	B	862/1122 (77%)	761 (88%)	101 (12%)	5	16

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	879/1122 (78%)	787 (90%)	92 (10%)	7	20
2	H	199/410 (48%)	186 (94%)	13 (6%)	17	44
2	J	199/410 (48%)	186 (94%)	13 (6%)	17	44
3	L	180/183 (98%)	163 (91%)	17 (9%)	8	26
3	N	180/183 (98%)	163 (91%)	17 (9%)	8	26
All	All	3380/4552 (74%)	3030 (90%)	350 (10%)	10	21

5 of 350 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	355	ARG
1	C	1129	VAL
1	C	430	THR
1	C	602	THR
2	H	212	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 96 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	321	GLN
1	C	804	GLN
1	C	360	ASN
1	C	606	ASN
1	C	926	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](#)

42 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	D	1	4	14,14,15	0.52	0	17,19,21	0.51	0
4	NAG	D	2	4	14,14,15	0.27	0	17,19,21	0.59	0
4	NAG	E	1	4,1	14,14,15	0.56	0	17,19,21	0.56	0
4	NAG	E	2	4	14,14,15	0.29	0	17,19,21	0.45	0
4	NAG	F	1	4,1	14,14,15	0.34	0	17,19,21	0.63	1 (5%)
4	NAG	F	2	4	14,14,15	0.52	0	17,19,21	0.47	0
4	NAG	G	1	4,1	14,14,15	0.38	0	17,19,21	0.73	0
4	NAG	G	2	4	14,14,15	0.29	0	17,19,21	1.31	2 (11%)
4	NAG	I	1	4,1	14,14,15	0.70	1 (7%)	17,19,21	0.70	0
4	NAG	I	2	4	14,14,15	0.41	0	17,19,21	1.40	3 (17%)
4	NAG	K	1	4,1	14,14,15	0.71	1 (7%)	17,19,21	0.67	0
4	NAG	K	2	4	14,14,15	0.30	0	17,19,21	0.64	0
4	NAG	M	1	4,1	14,14,15	0.24	0	17,19,21	0.70	1 (5%)
4	NAG	M	2	4	14,14,15	0.17	0	17,19,21	0.46	0
4	NAG	O	1	4,1	14,14,15	0.31	0	17,19,21	0.41	0
4	NAG	O	2	4	14,14,15	0.16	0	17,19,21	0.47	0
4	NAG	P	1	4,1	14,14,15	0.31	0	17,19,21	0.39	0
4	NAG	P	2	4	14,14,15	0.37	0	17,19,21	0.37	0
4	NAG	Q	1	4,1	14,14,15	0.34	0	17,19,21	1.11	1 (5%)
4	NAG	Q	2	4	14,14,15	0.29	0	17,19,21	0.47	0
4	NAG	R	1	4,1	14,14,15	0.29	0	17,19,21	0.69	1 (5%)
4	NAG	R	2	4	14,14,15	0.20	0	17,19,21	0.41	0
4	NAG	S	1	4,1	14,14,15	0.75	1 (7%)	17,19,21	0.90	1 (5%)
4	NAG	S	2	4	14,14,15	0.31	0	17,19,21	0.68	0
4	NAG	T	1	4,1	14,14,15	0.27	0	17,19,21	0.45	0
4	NAG	T	2	4	14,14,15	0.28	0	17,19,21	0.39	0
4	NAG	U	1	4,1	14,14,15	0.41	0	17,19,21	0.57	0
4	NAG	U	2	4	14,14,15	0.23	0	17,19,21	0.61	1 (5%)
4	NAG	V	1	4,1	14,14,15	0.55	0	17,19,21	0.56	0
4	NAG	V	2	4	14,14,15	0.29	0	17,19,21	0.46	0
4	NAG	W	1	4,1	14,14,15	0.23	0	17,19,21	1.35	1 (5%)
4	NAG	W	2	4	14,14,15	0.19	0	17,19,21	0.50	0
4	NAG	X	1	4,1	14,14,15	0.52	0	17,19,21	0.70	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	X	2	4	14,14,15	0.38	0	17,19,21	0.46	0
4	NAG	Y	1	4,1	14,14,15	0.35	0	17,19,21	0.41	0
4	NAG	Y	2	4	14,14,15	0.20	0	17,19,21	0.73	0
4	NAG	Z	1	4,1	14,14,15	0.37	0	17,19,21	0.47	0
4	NAG	Z	2	4	14,14,15	0.56	0	17,19,21	1.31	1 (5%)
4	NAG	a	1	4,1	14,14,15	0.65	1 (7%)	17,19,21	0.43	0
4	NAG	a	2	4	14,14,15	0.31	0	17,19,21	1.36	2 (11%)
4	NAG	b	1	4,1	14,14,15	0.43	0	17,19,21	0.43	0
4	NAG	b	2	4	14,14,15	0.25	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
4	NAG	D	1	4	-	1/6/23/26	0/1/1/1
4	NAG	D	2	4	-	2/6/23/26	0/1/1/1
4	NAG	E	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	E	2	4	-	4/6/23/26	0/1/1/1
4	NAG	F	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	F	2	4	-	2/6/23/26	0/1/1/1
4	NAG	G	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	G	2	4	-	3/6/23/26	0/1/1/1
4	NAG	I	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	I	2	4	-	5/6/23/26	0/1/1/1
4	NAG	K	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	K	2	4	-	3/6/23/26	0/1/1/1
4	NAG	M	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	M	2	4	-	0/6/23/26	0/1/1/1
4	NAG	O	1	4,1	-	4/6/23/26	0/1/1/1
4	NAG	O	2	4	-	2/6/23/26	0/1/1/1
4	NAG	P	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	P	2	4	-	1/6/23/26	0/1/1/1
4	NAG	Q	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	0/6/23/26	0/1/1/1
4	NAG	R	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	R	2	4	-	3/6/23/26	0/1/1/1
4	NAG	S	1	4,1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	S	2	4	-	3/6/23/26	0/1/1/1
4	NAG	T	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	T	2	4	-	2/6/23/26	0/1/1/1
4	NAG	U	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	U	2	4	-	2/6/23/26	0/1/1/1
4	NAG	V	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	V	2	4	-	4/6/23/26	0/1/1/1
4	NAG	W	1	4,1	-	6/6/23/26	0/1/1/1
4	NAG	W	2	4	-	2/6/23/26	0/1/1/1
4	NAG	X	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	X	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Y	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	Y	2	4	-	1/6/23/26	0/1/1/1
4	NAG	Z	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	Z	2	4	-	5/6/23/26	0/1/1/1
4	NAG	a	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	a	2	4	-	4/6/23/26	0/1/1/1
4	NAG	b	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	b	2	4	-	2/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	S	1	NAG	O5-C1	-2.70	1.39	1.43
4	K	1	NAG	O5-C1	-2.60	1.39	1.43
4	I	1	NAG	O5-C1	-2.37	1.39	1.43
4	a	1	NAG	O5-C1	-2.18	1.40	1.43

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	W	1	NAG	C2-N2-C7	4.64	129.50	122.90
4	a	2	NAG	C2-N2-C7	4.38	129.14	122.90
4	I	2	NAG	C2-N2-C7	4.36	129.11	122.90
4	G	2	NAG	C2-N2-C7	4.33	129.07	122.90
4	Z	2	NAG	C2-N2-C7	4.33	129.07	122.90

There are no chirality outliers.

5 of 86 torsion outliers are listed below:

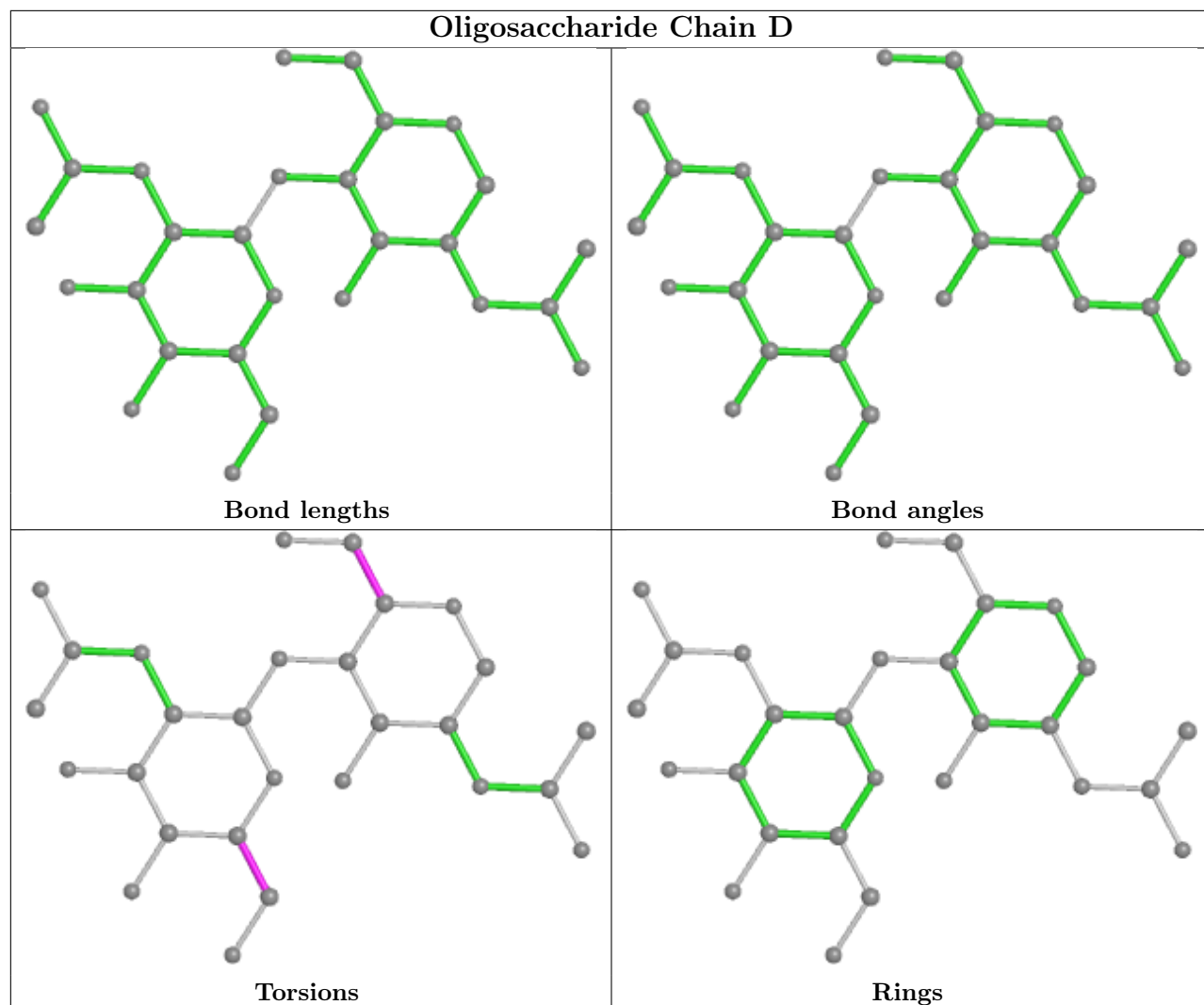
Mol	Chain	Res	Type	Atoms
4	W	2	NAG	O5-C5-C6-O6
4	X	2	NAG	O5-C5-C6-O6
4	Y	1	NAG	O5-C5-C6-O6
4	D	2	NAG	O5-C5-C6-O6
4	K	1	NAG	O5-C5-C6-O6

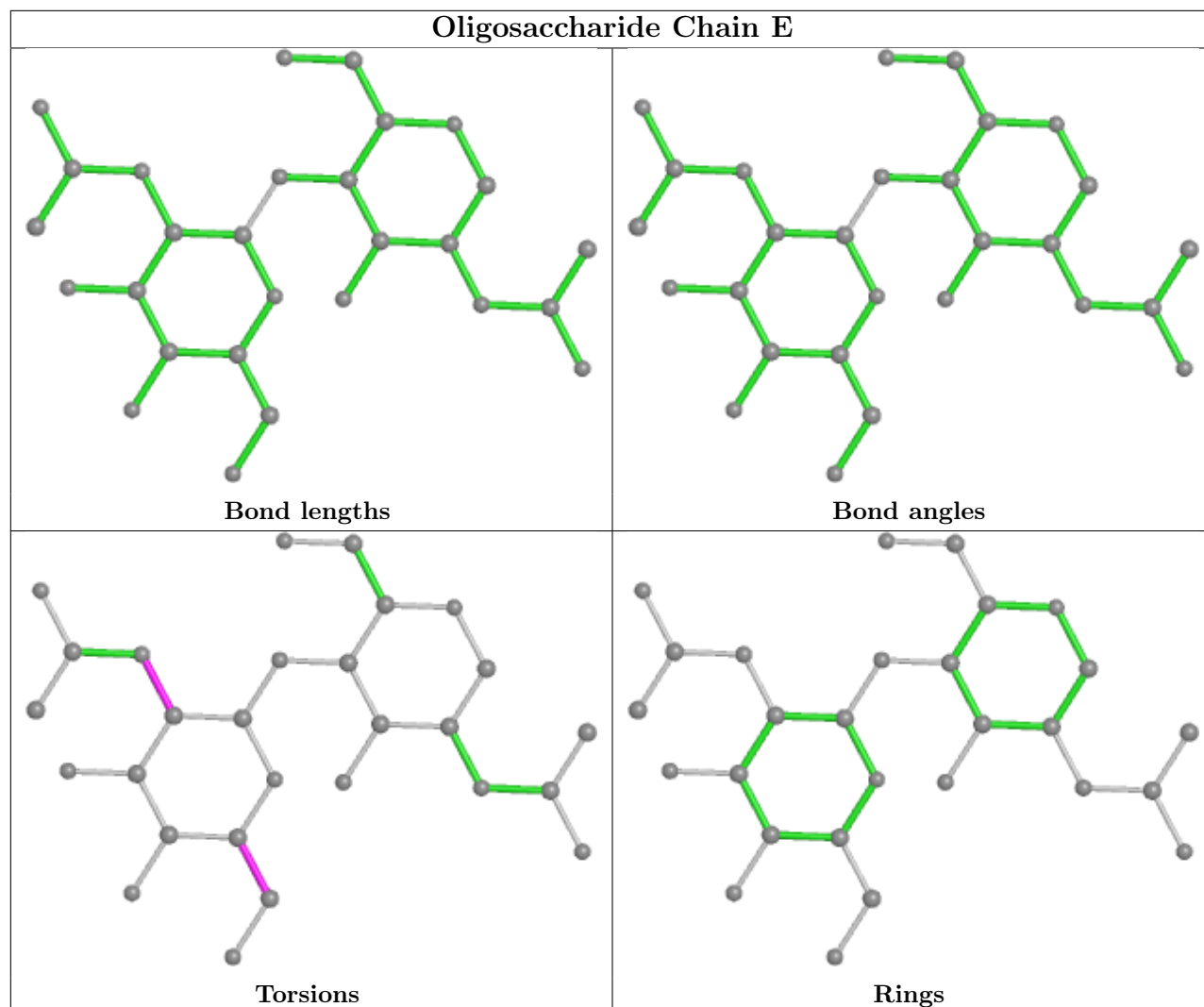
There are no ring outliers.

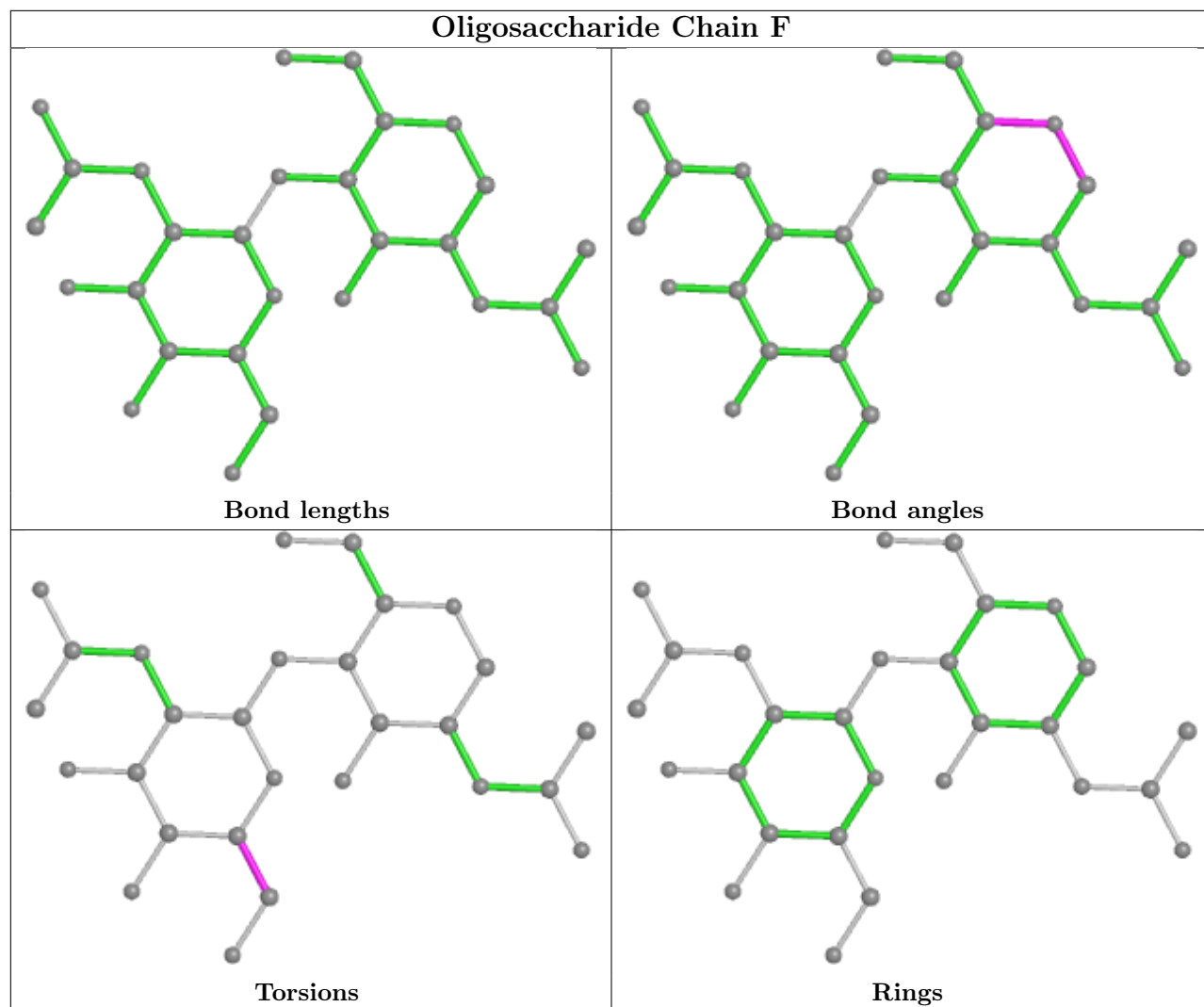
11 monomers are involved in 12 short contacts:

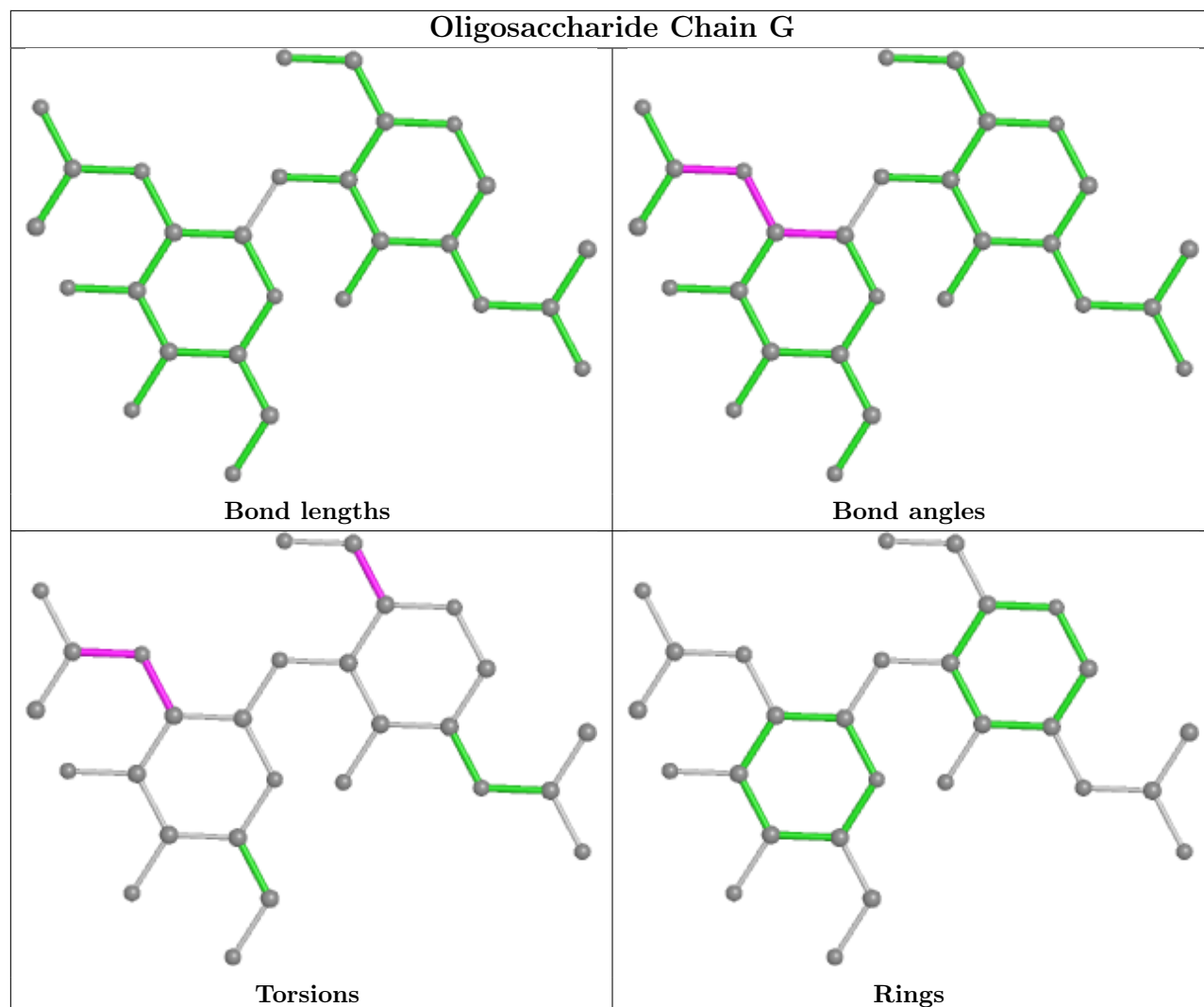
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	Z	2	NAG	1	0
4	S	1	NAG	1	0
4	V	1	NAG	3	0
4	E	1	NAG	3	0
4	E	2	NAG	2	0
4	W	1	NAG	1	0
4	V	2	NAG	2	0
4	I	2	NAG	1	0
4	O	1	NAG	1	0
4	S	2	NAG	1	0
4	G	2	NAG	1	0

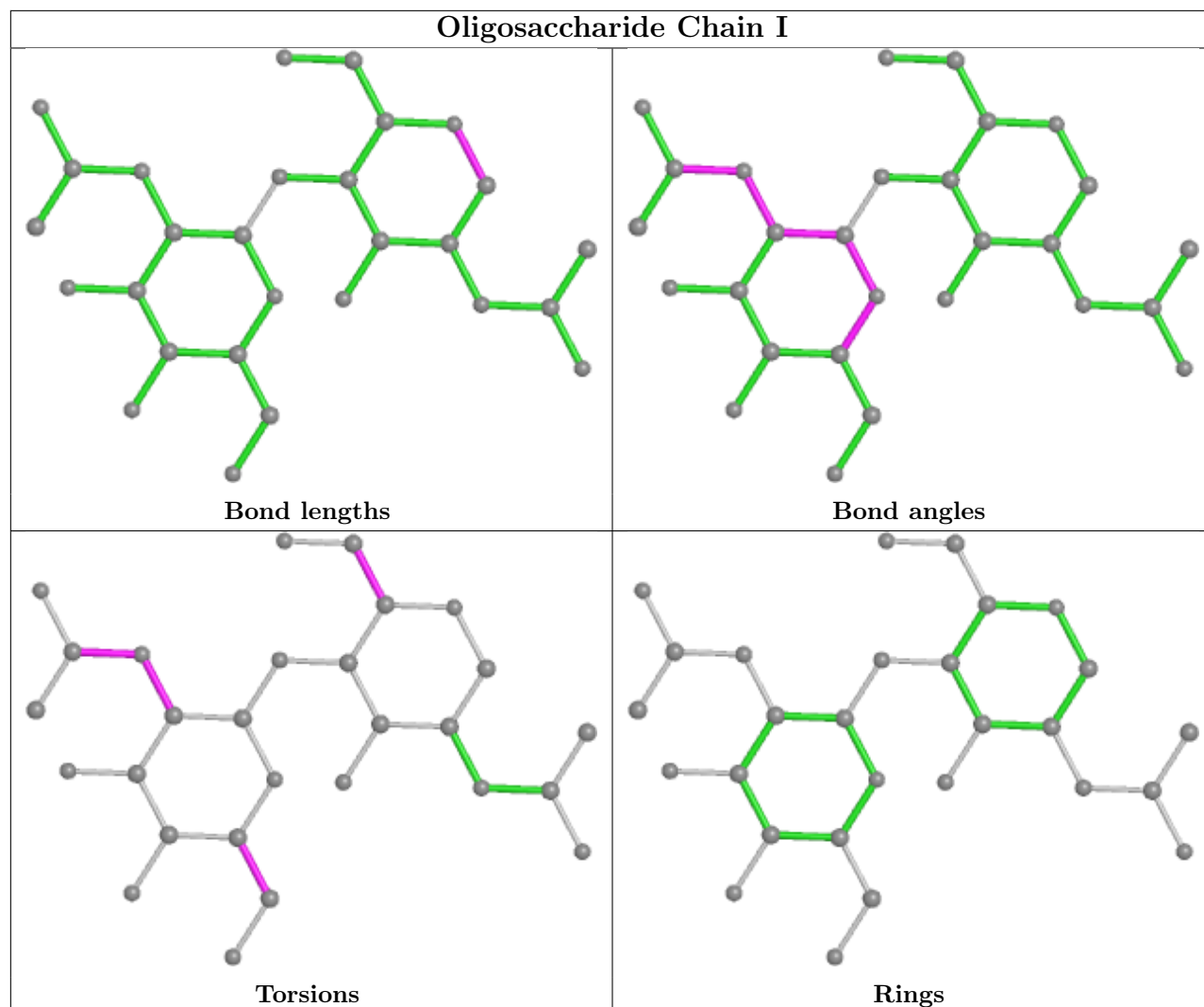
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

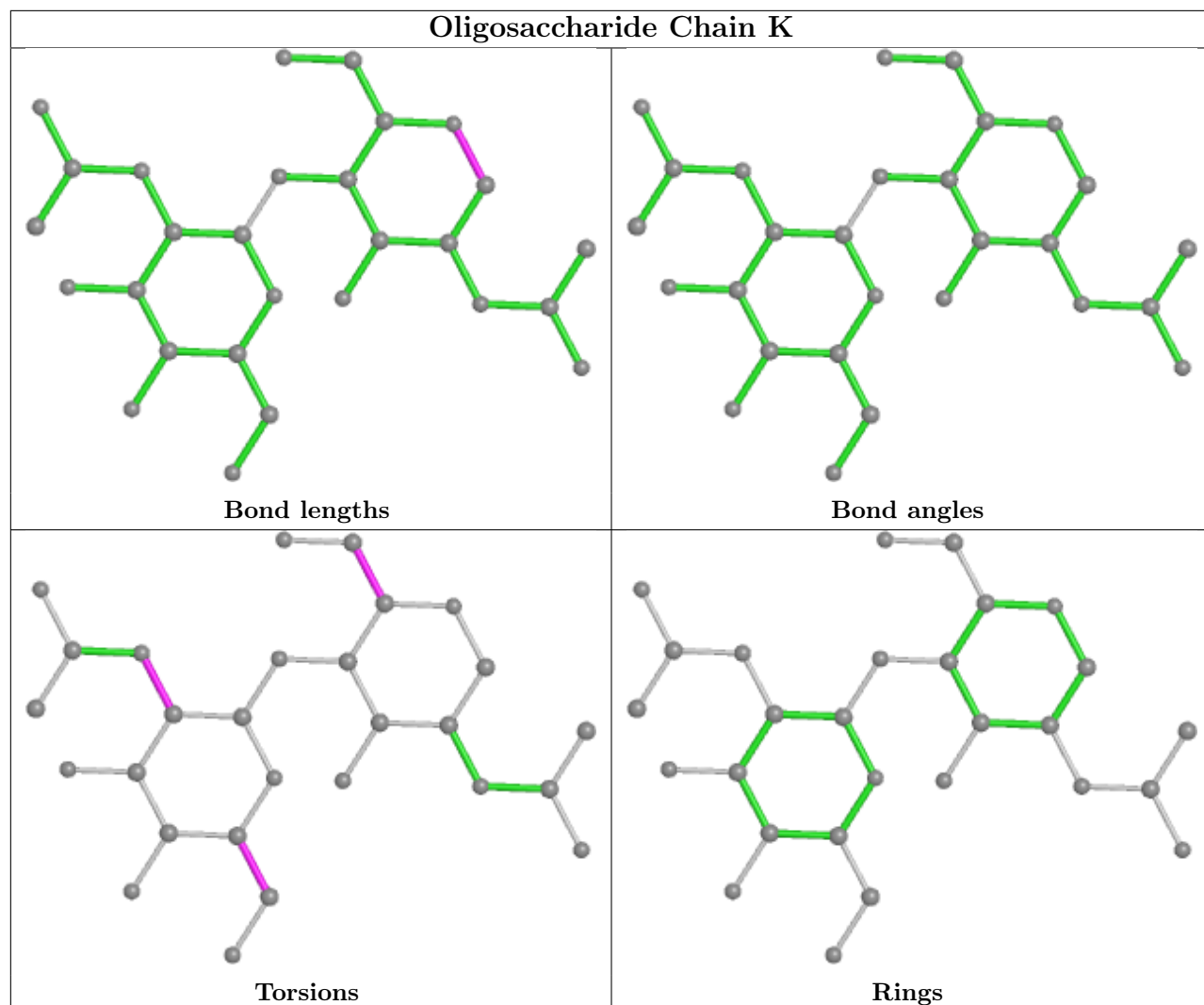


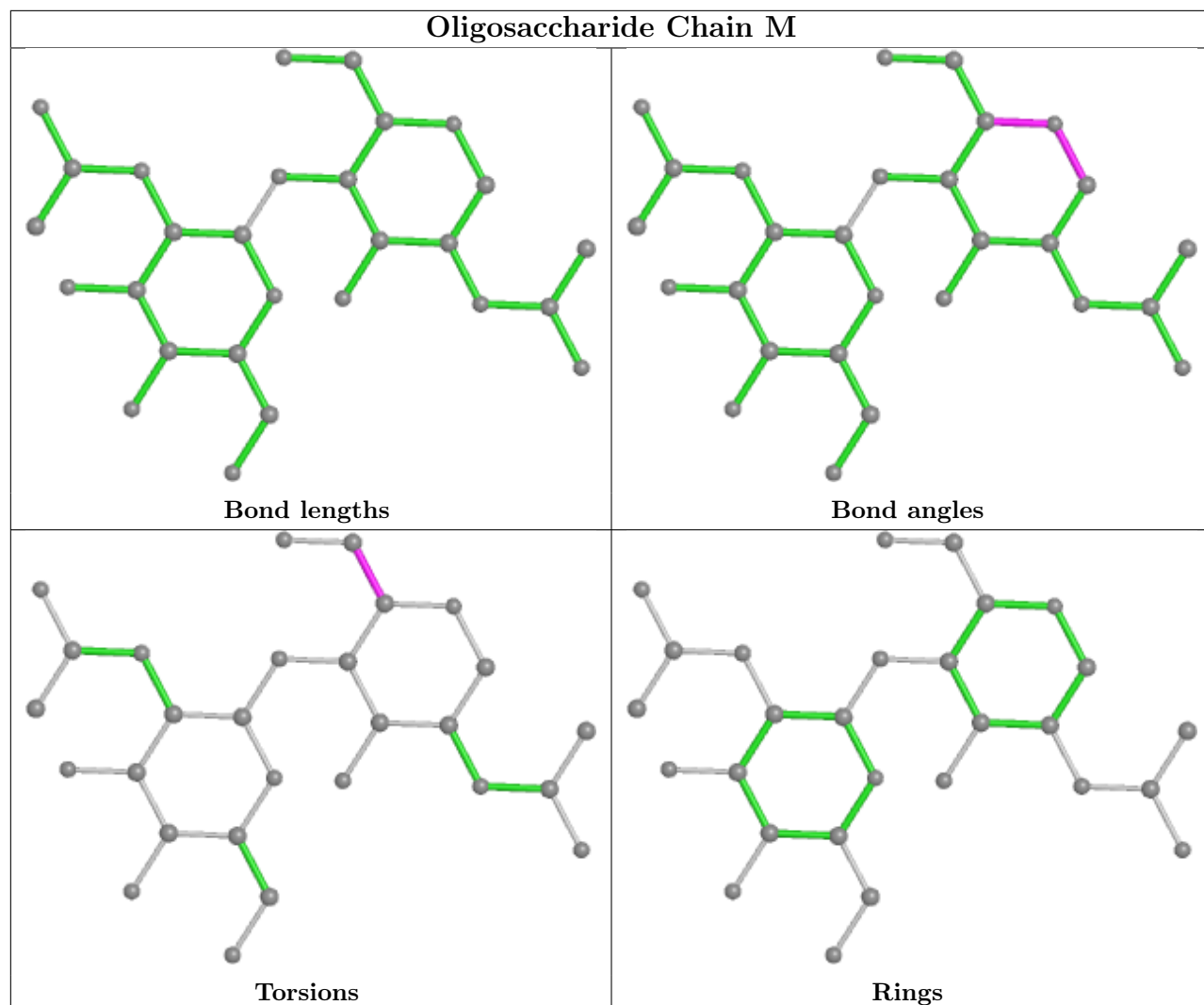


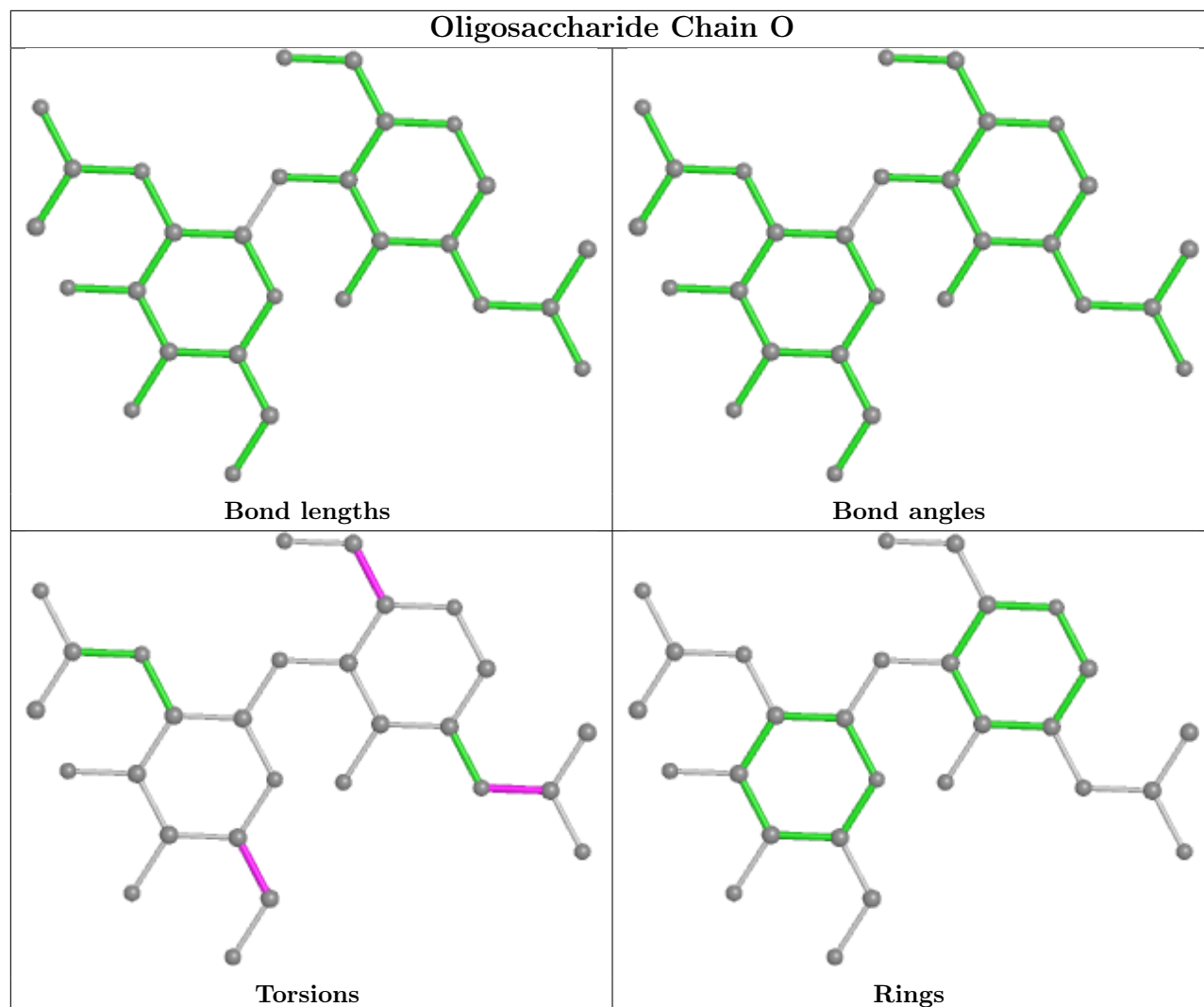


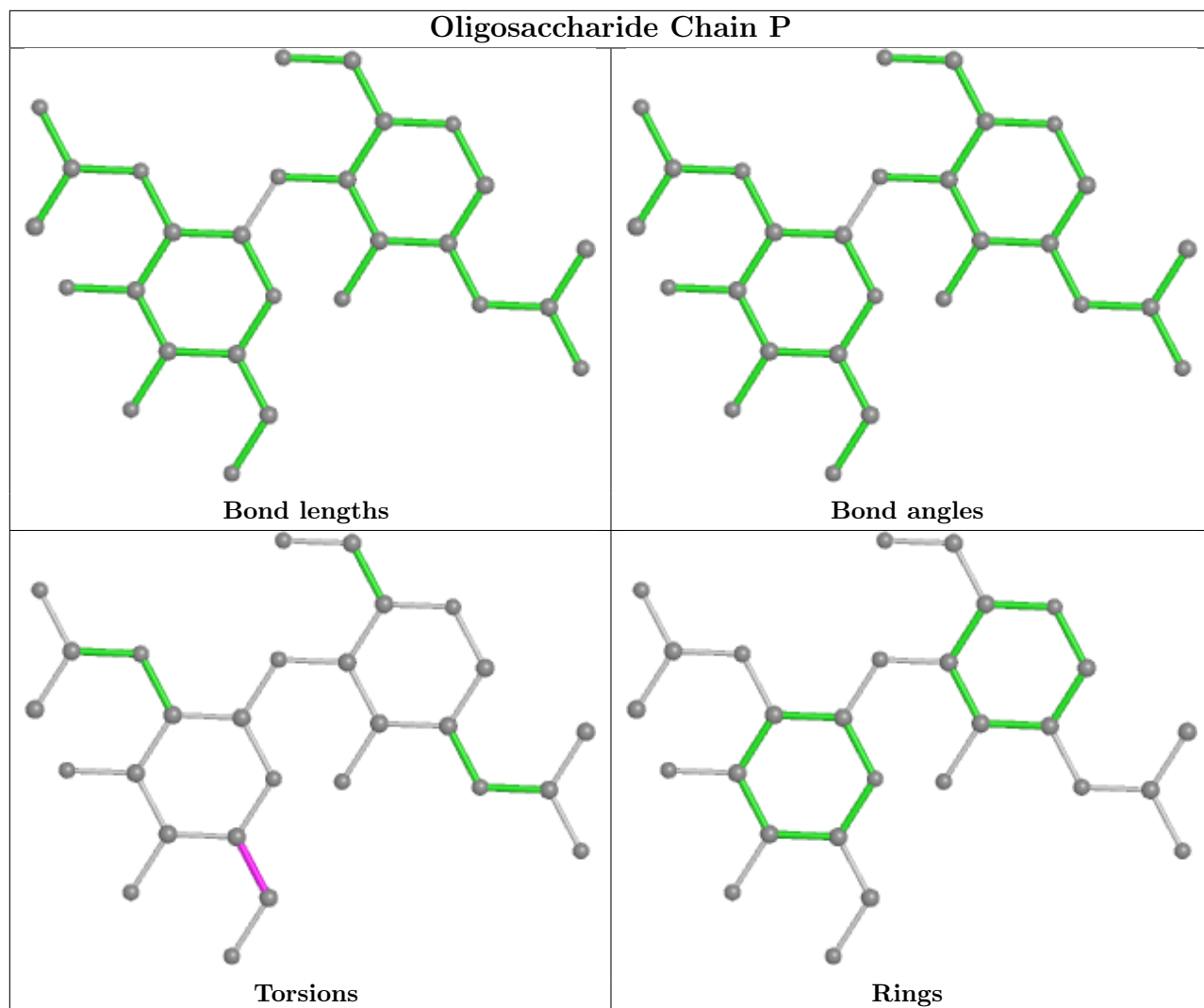


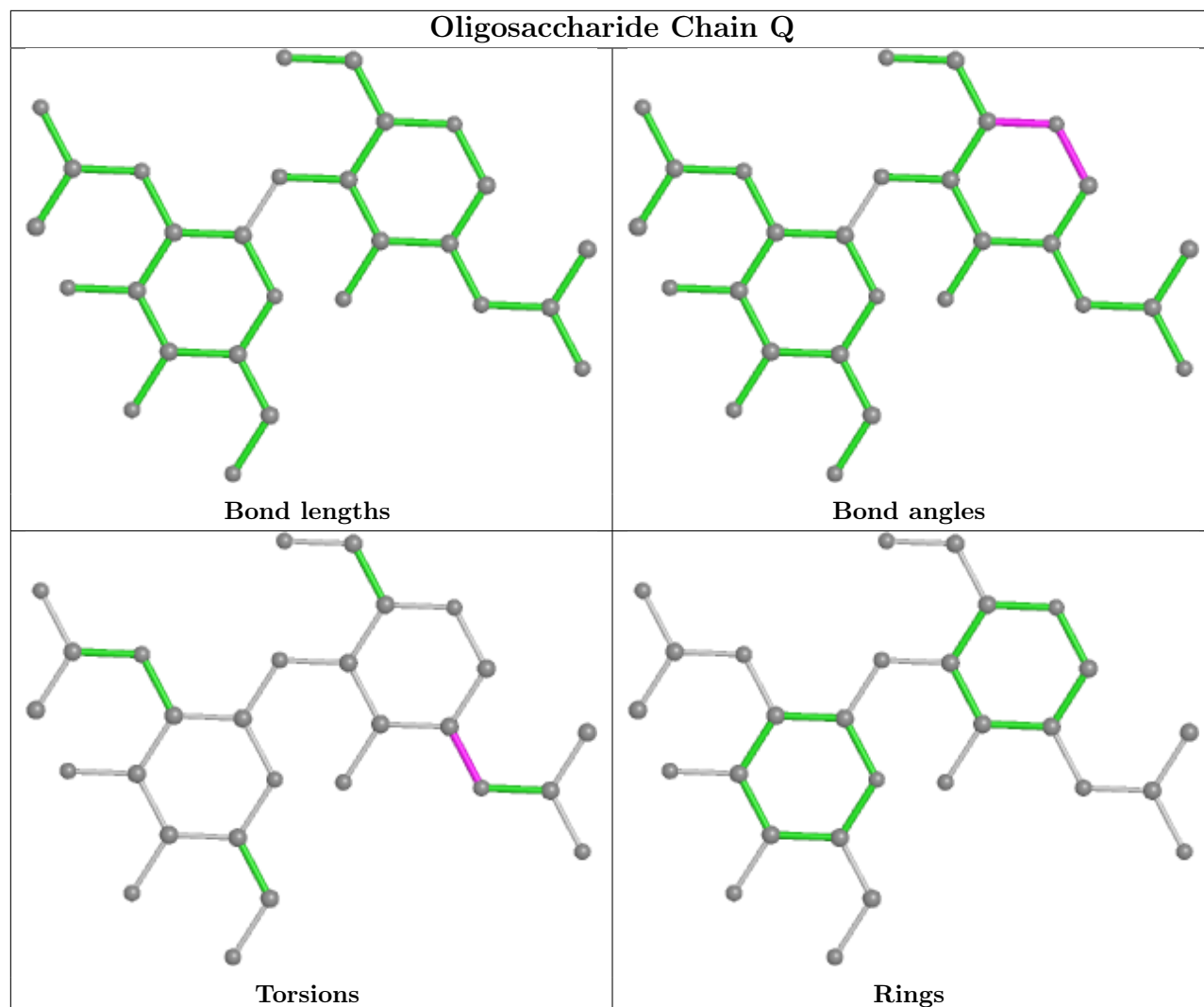


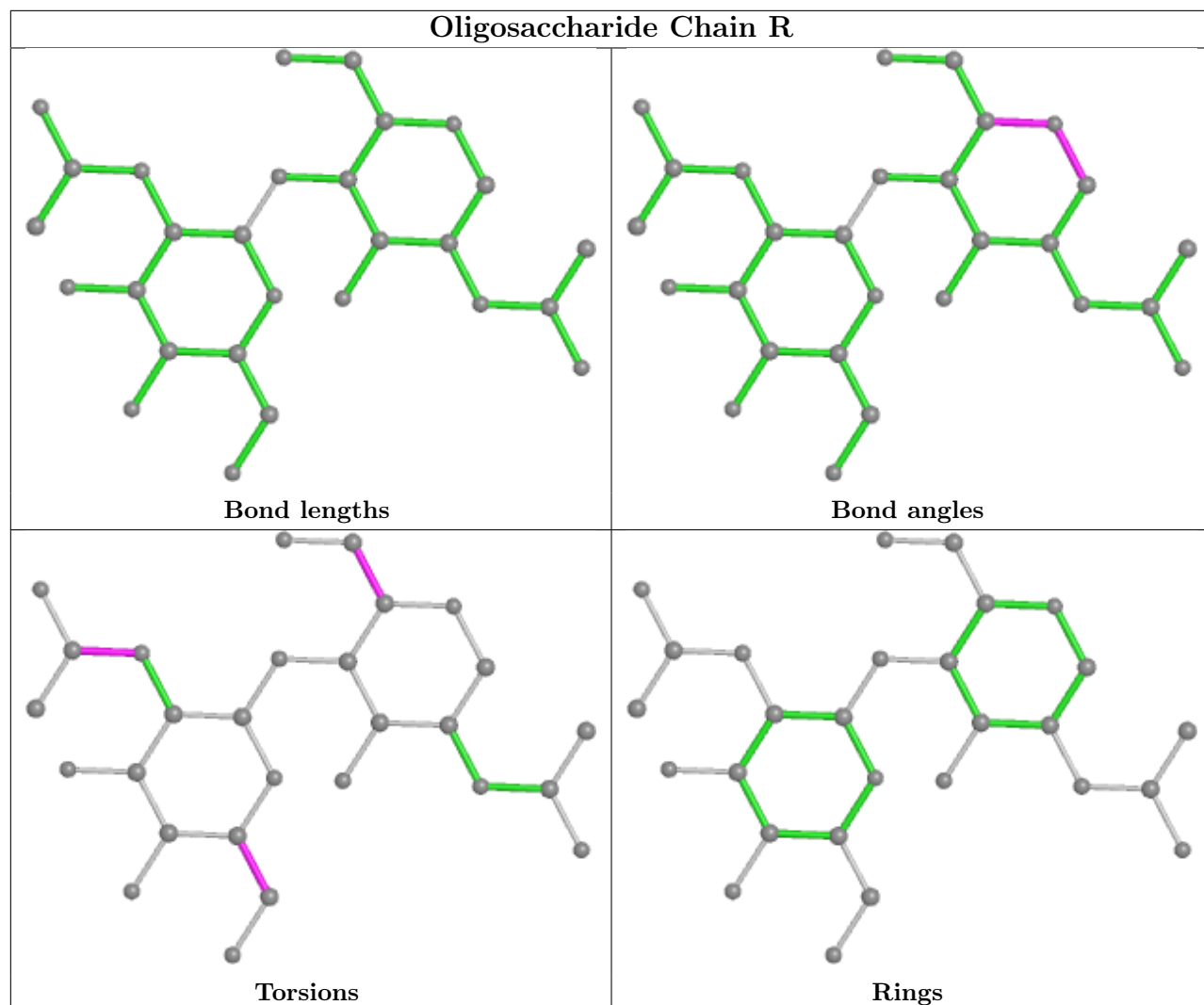


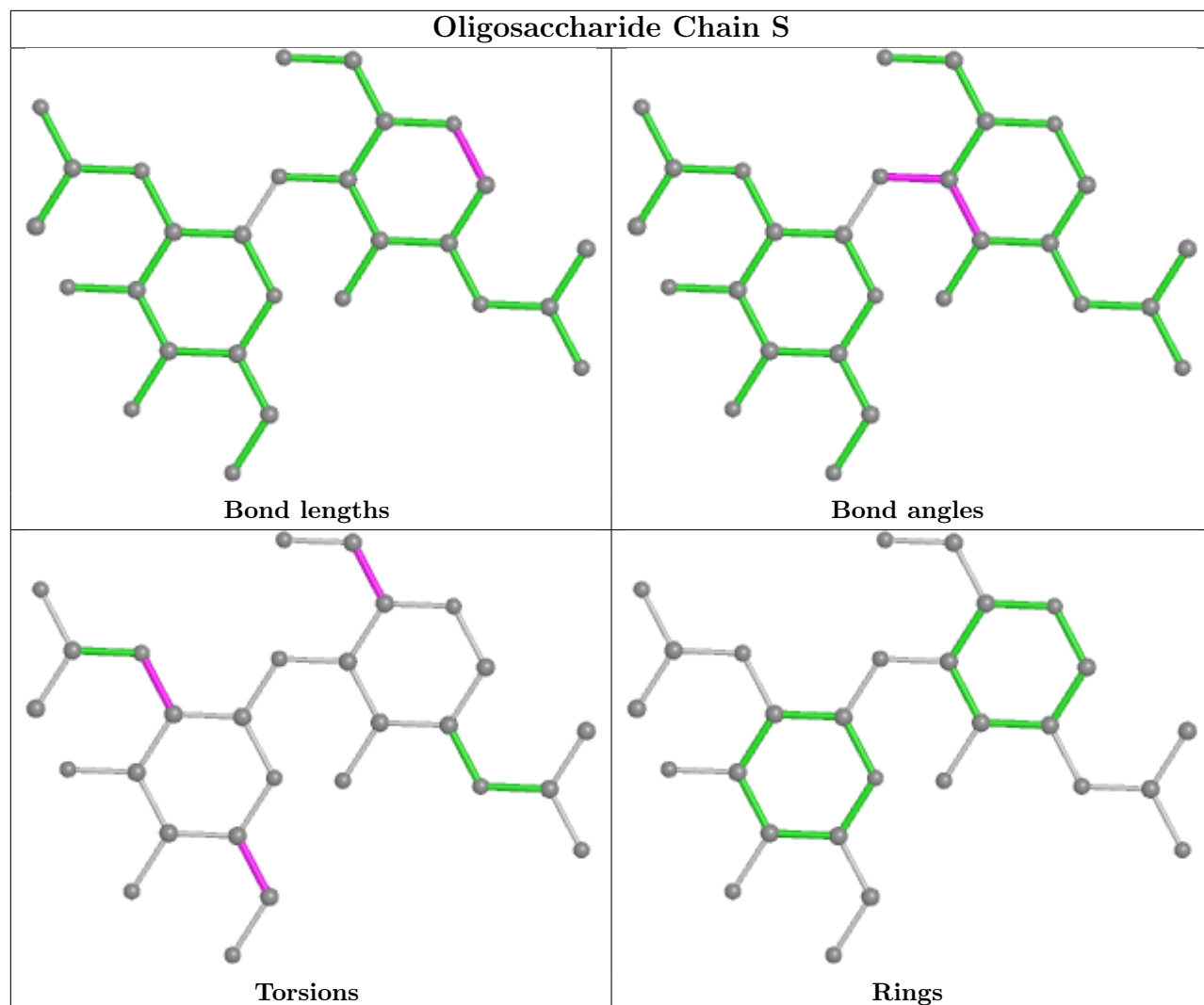


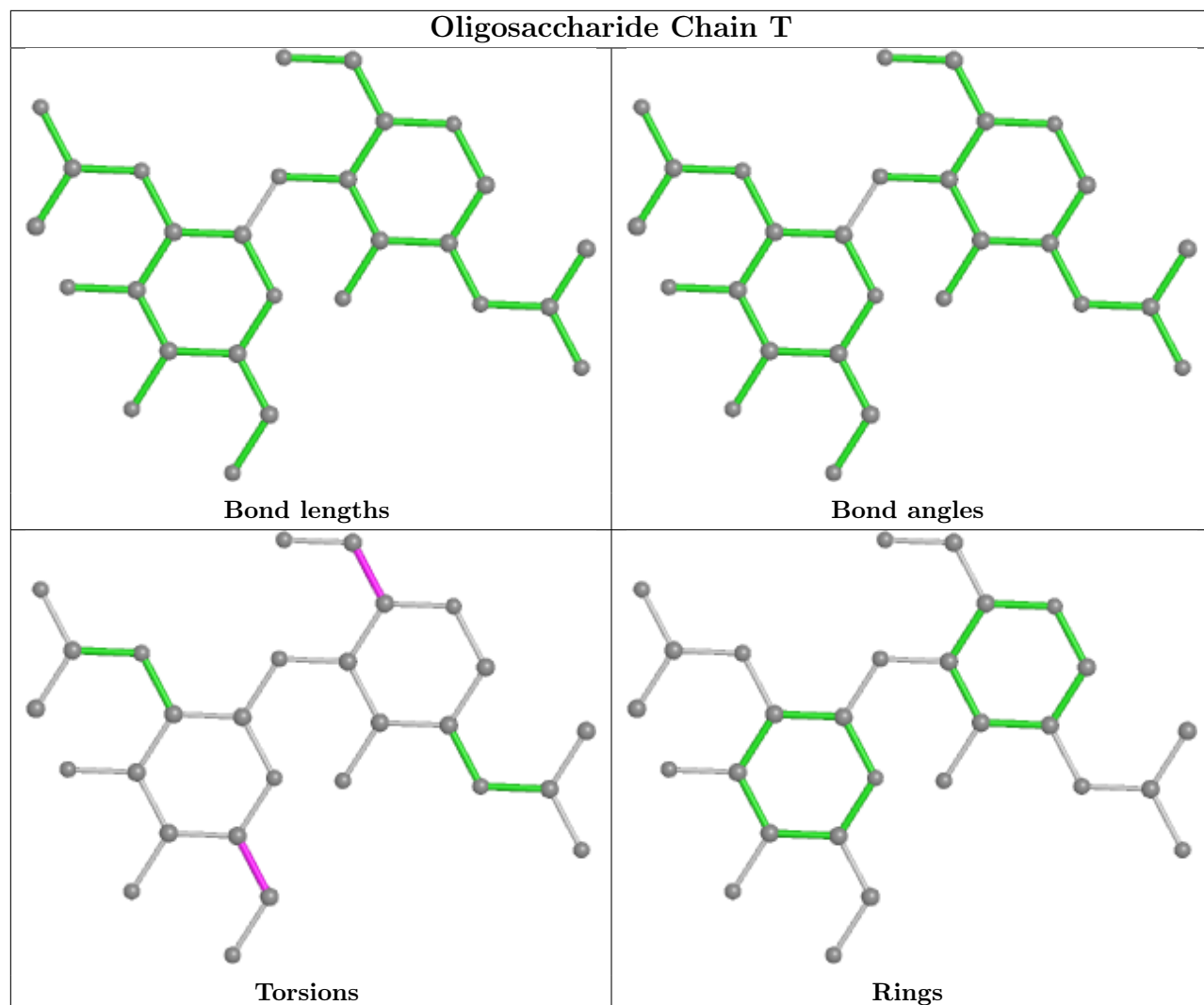


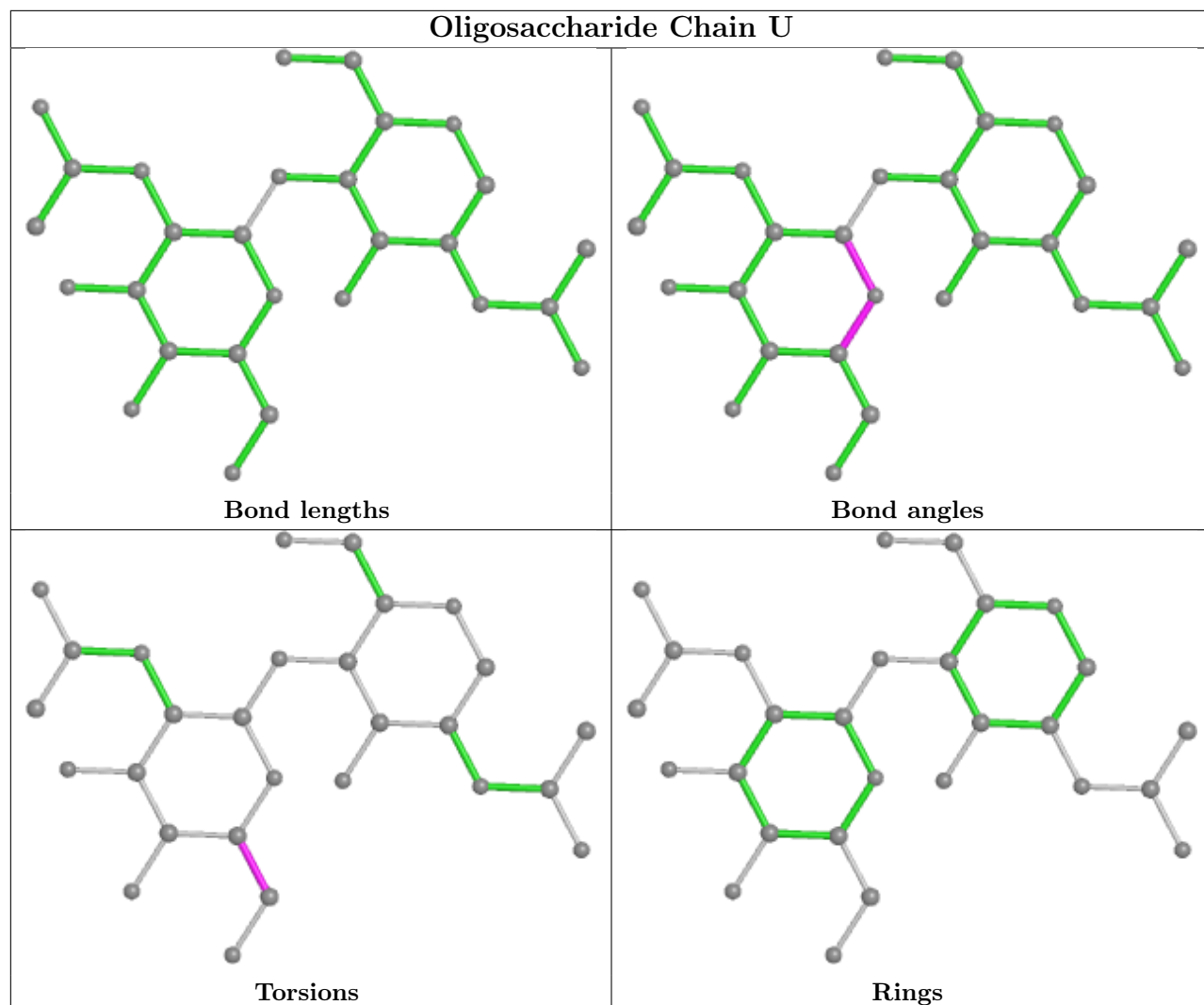


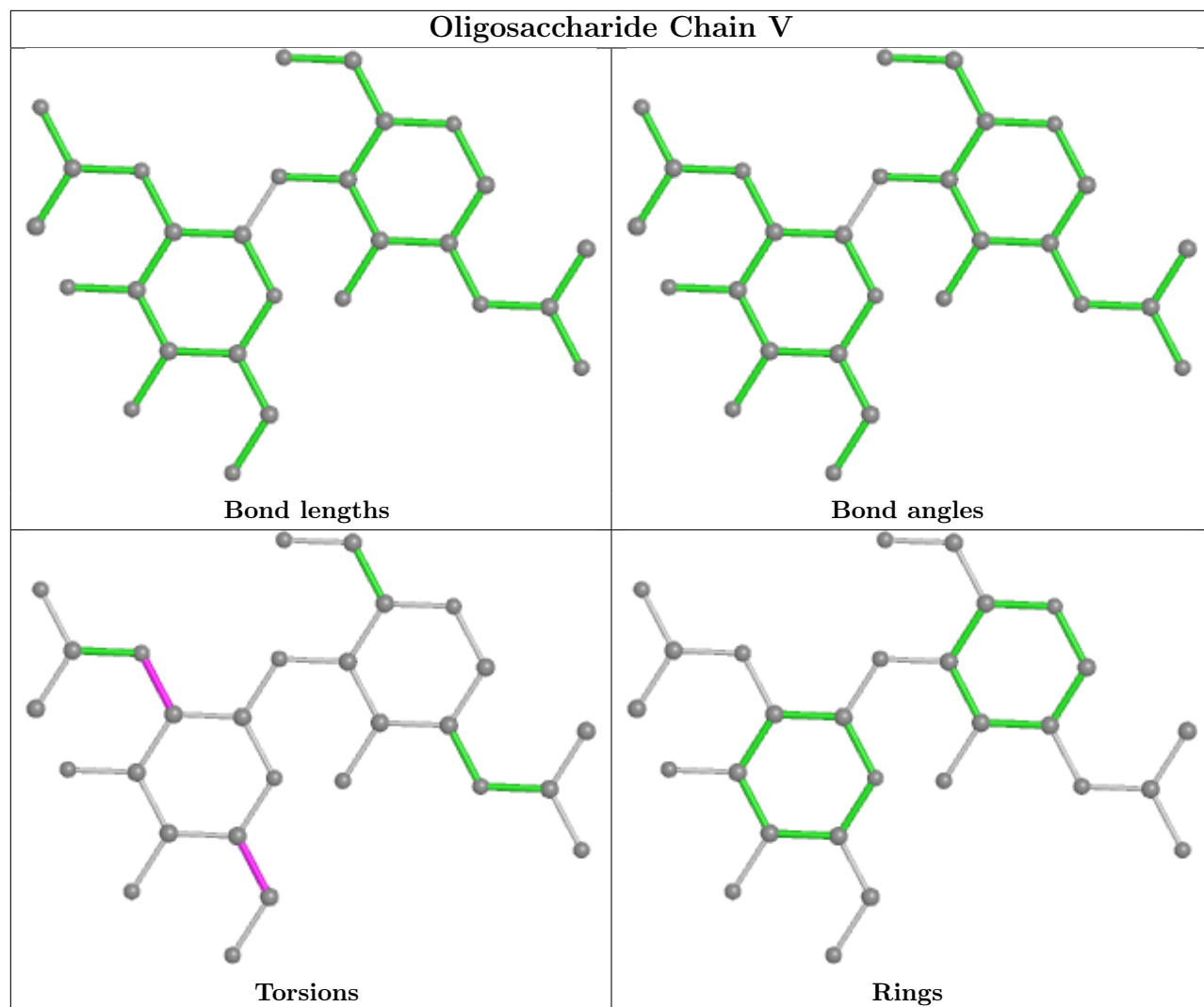


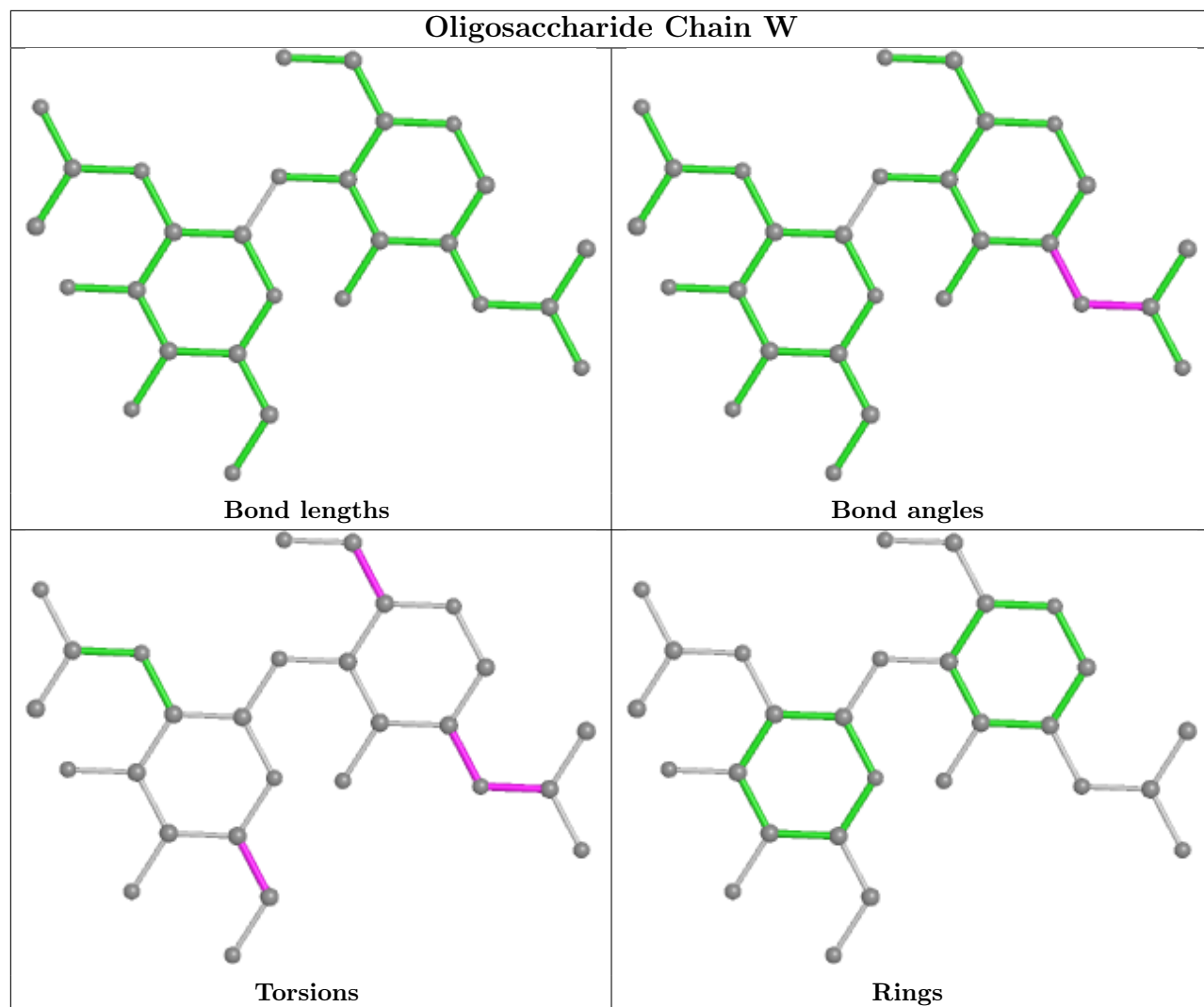


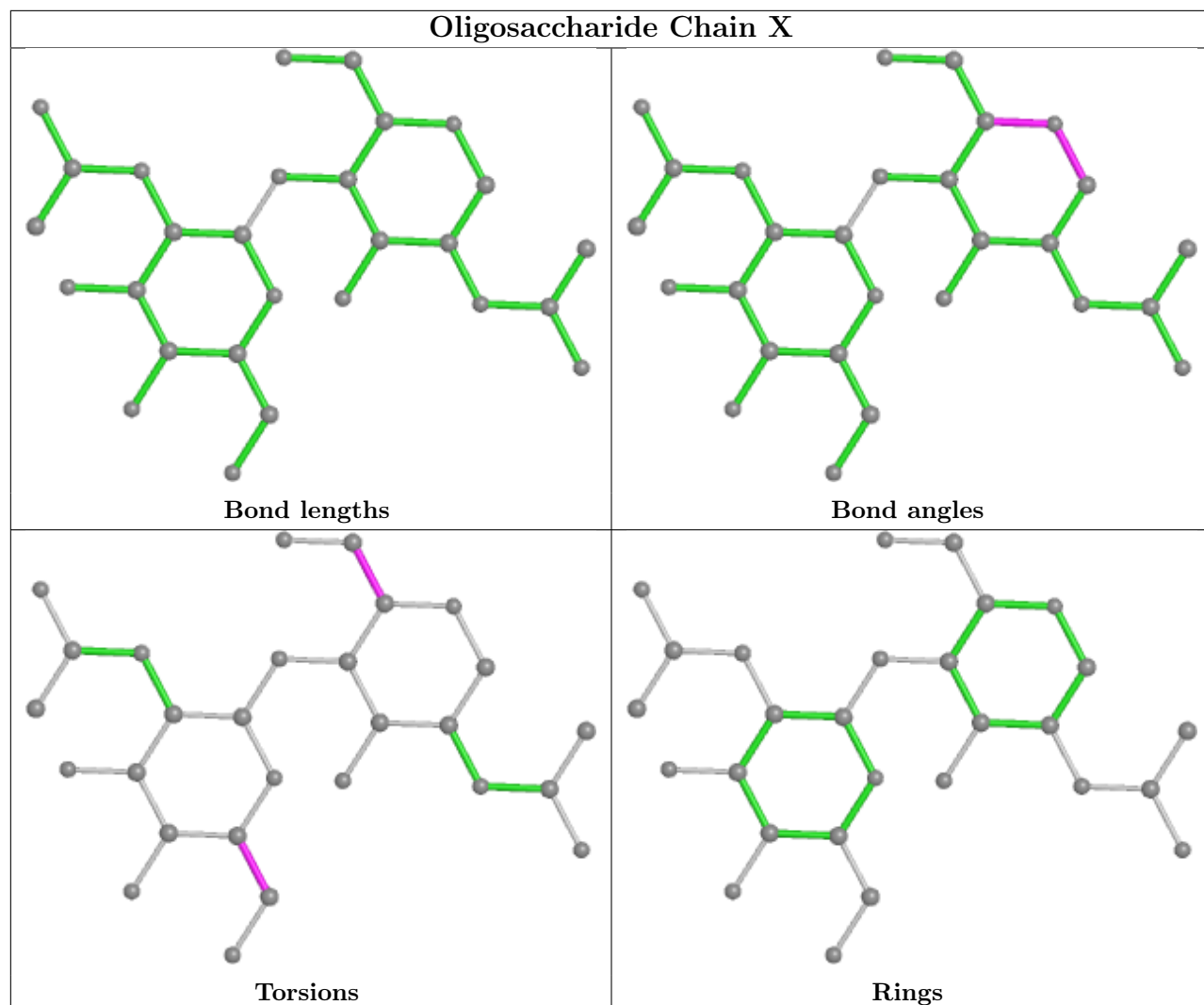


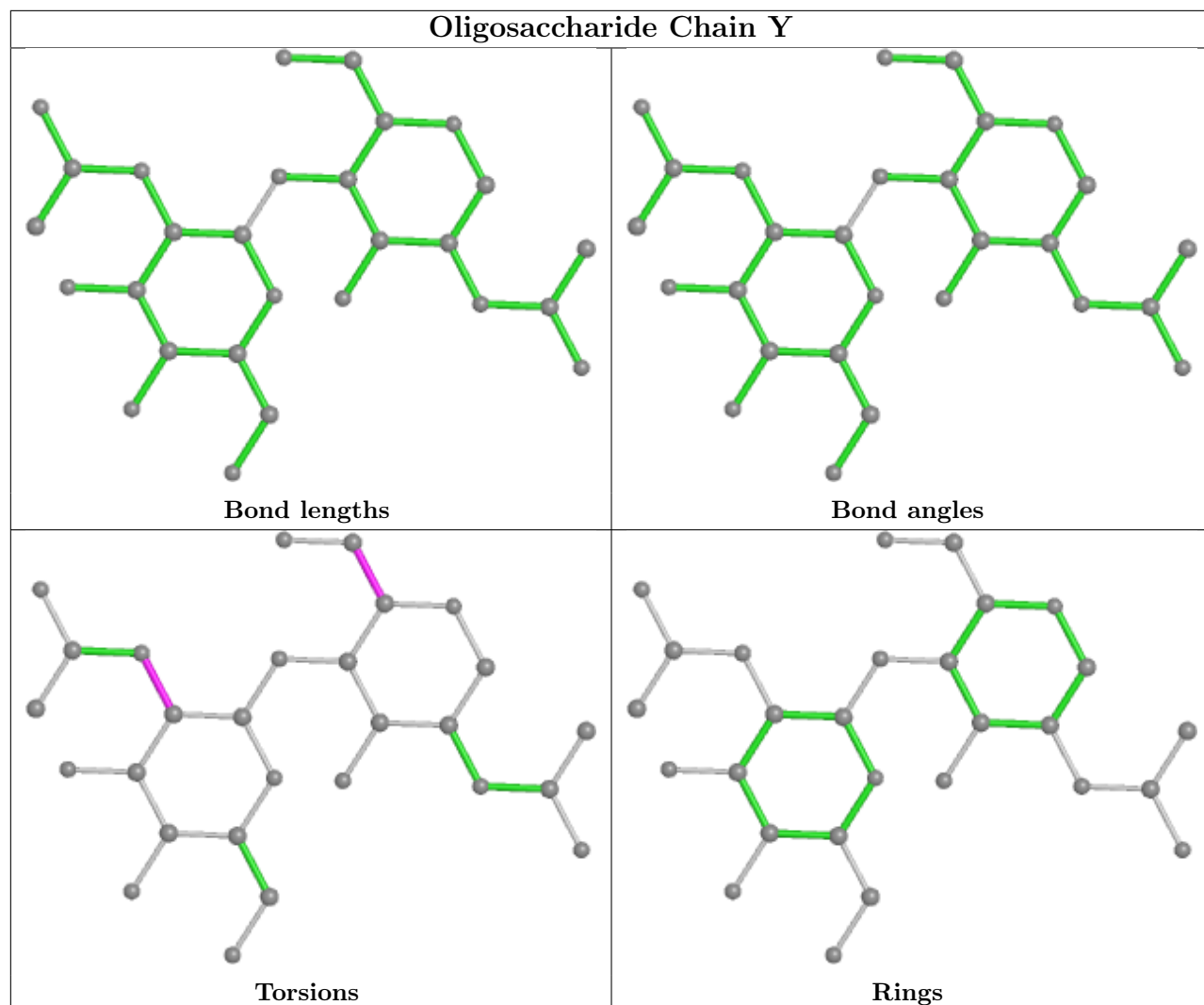


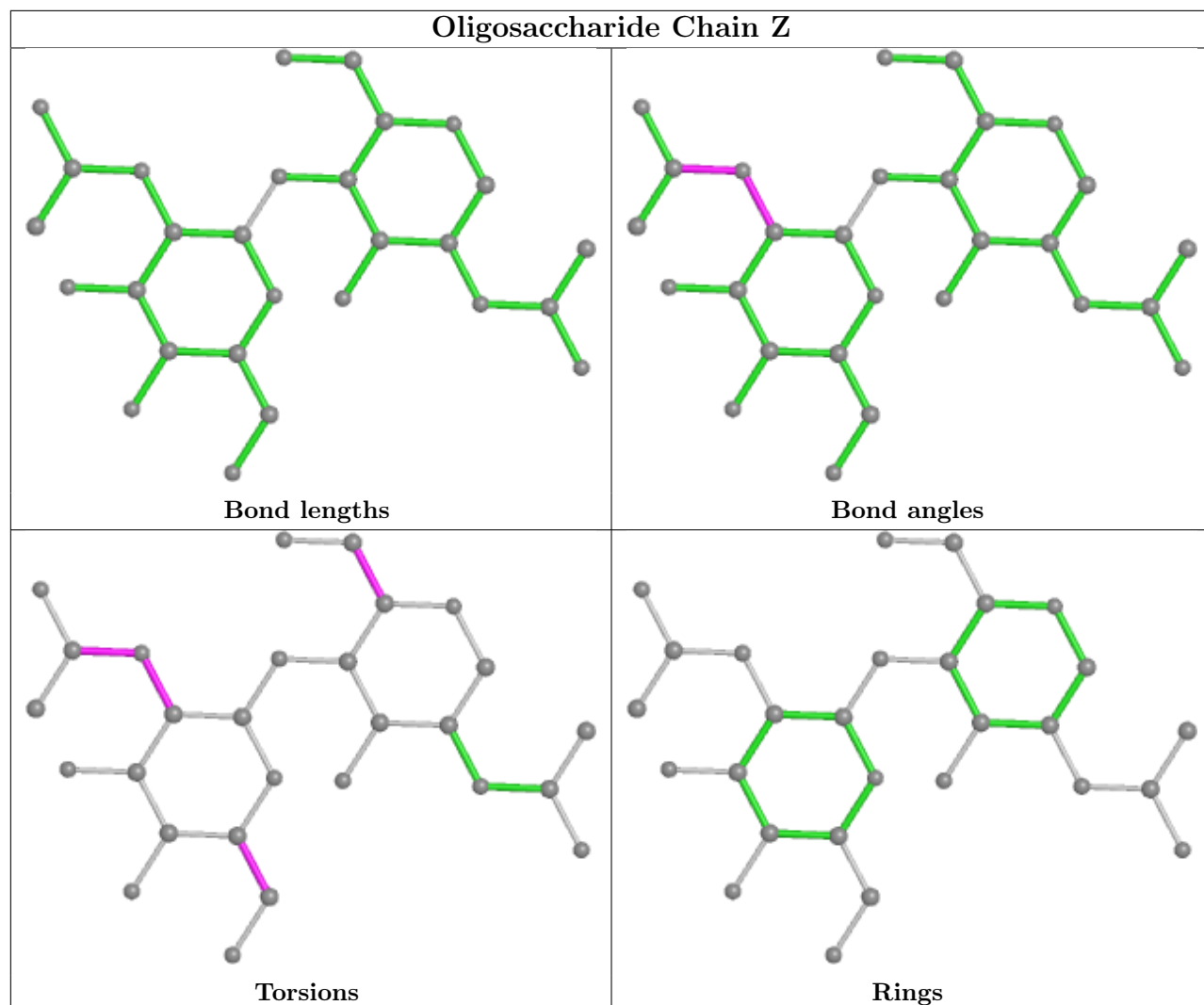


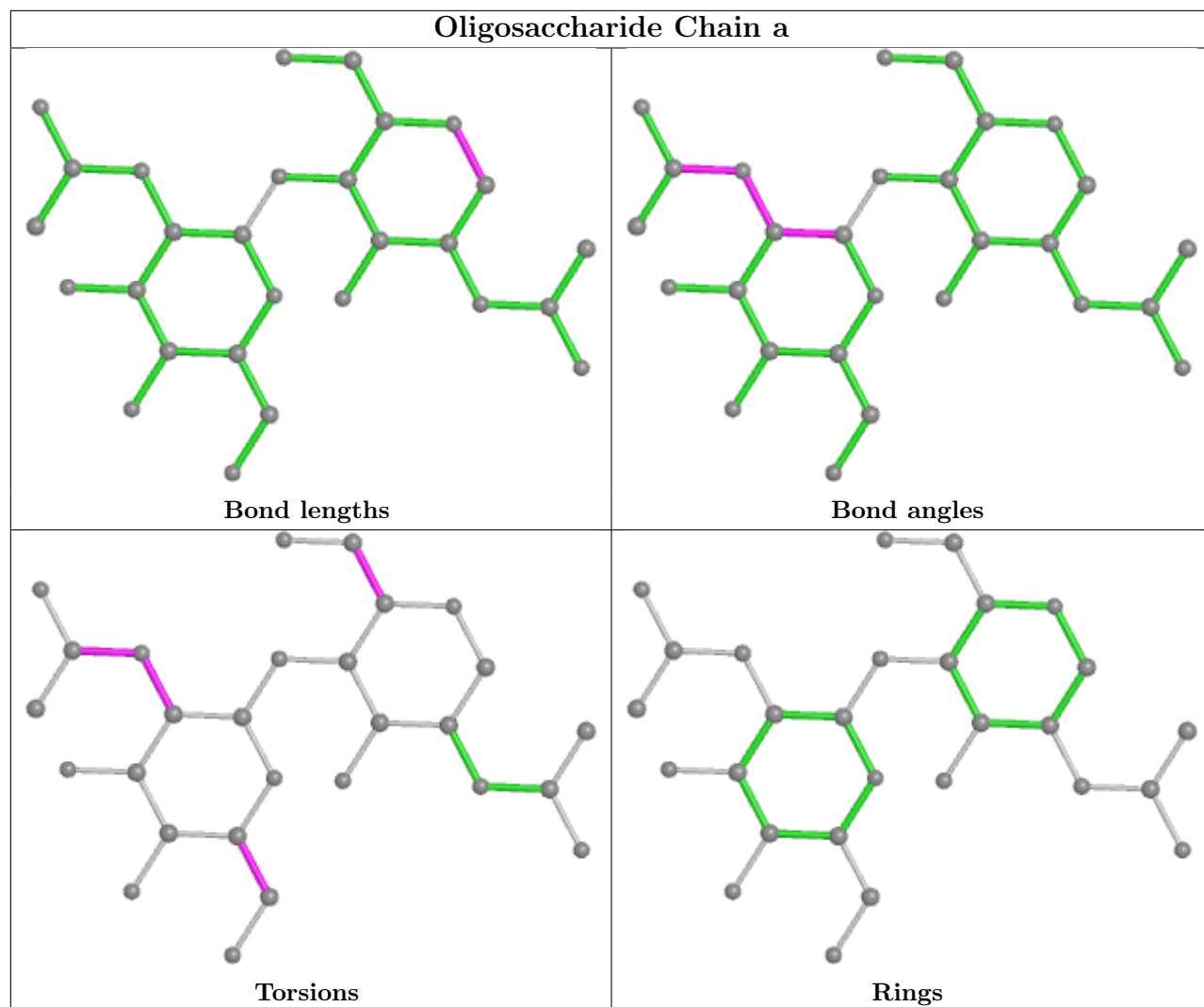


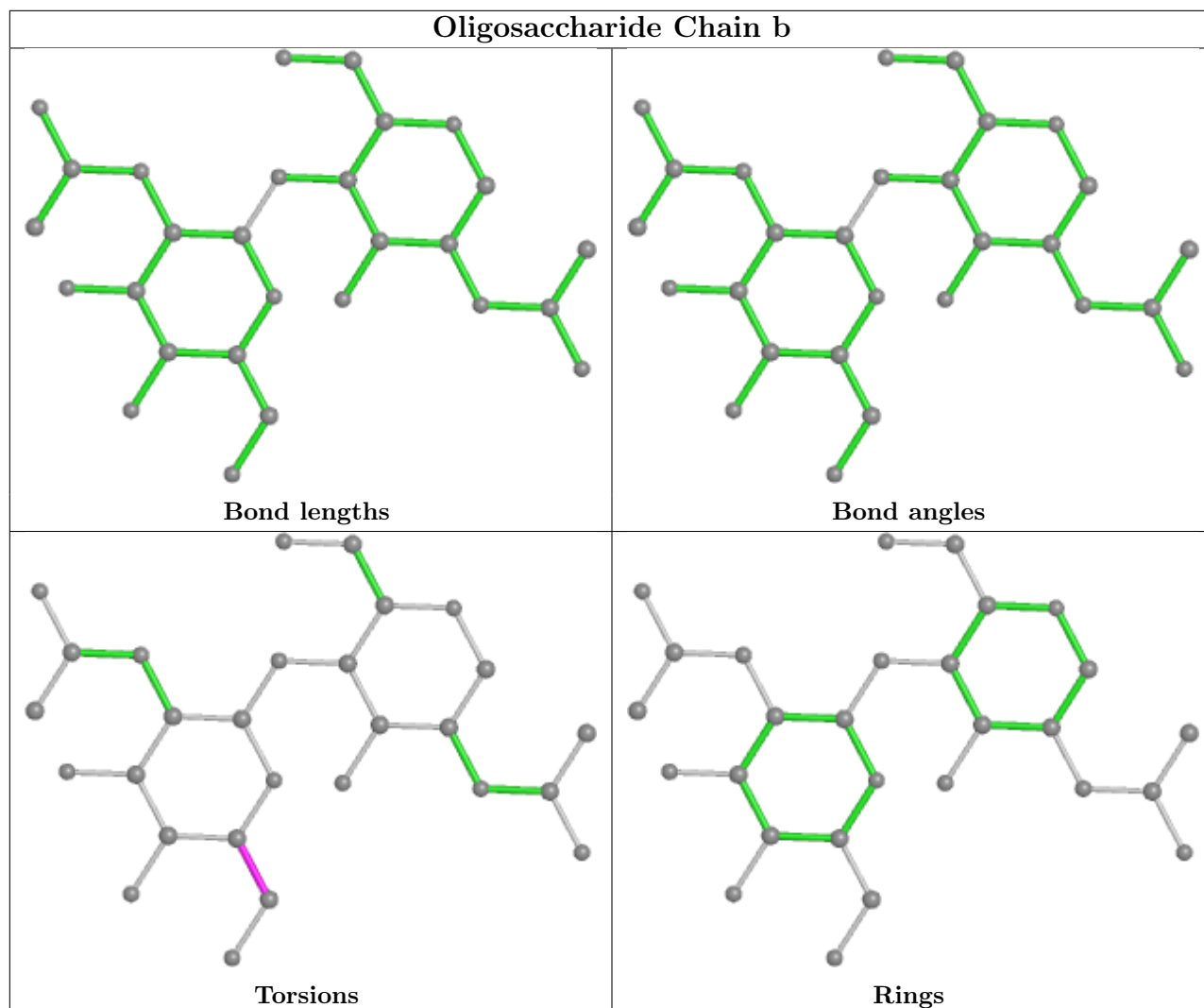












5.6 Ligand geometry [i](#)

28 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	C	1405	1	14,14,15	0.37	0	17,19,21	1.29	2 (11%)
5	NAG	A	1409	1	14,14,15	0.49	0	17,19,21	0.35	0
5	NAG	B	1410	1	14,14,15	0.42	0	17,19,21	1.16	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	B	1409	1	14,14,15	0.20	0	17,19,21	0.39	0
5	NAG	C	1401	1	14,14,15	0.42	0	17,19,21	0.79	1 (5%)
5	NAG	B	1406	1	14,14,15	0.39	0	17,19,21	0.80	1 (5%)
5	NAG	A	1401	1	14,14,15	0.29	0	17,19,21	0.34	0
5	NAG	A	1408	1	14,14,15	0.31	0	17,19,21	0.39	0
5	NAG	C	1403	1	14,14,15	0.54	0	17,19,21	0.46	0
5	NAG	B	1405	1	14,14,15	0.36	0	17,19,21	1.28	2 (11%)
5	NAG	B	1411	-	14,14,15	0.34	0	17,19,21	0.41	0
5	NAG	A	1407	1	14,14,15	0.23	0	17,19,21	0.49	0
5	NAG	A	1402	1	14,14,15	0.22	0	17,19,21	0.63	0
5	NAG	B	1401	1	14,14,15	0.30	0	17,19,21	0.54	0
5	NAG	A	1403	1	14,14,15	0.20	0	17,19,21	0.41	0
5	NAG	B	1408	1	14,14,15	0.33	0	17,19,21	0.41	0
5	NAG	B	1403	1	14,14,15	0.28	0	17,19,21	0.40	0
5	NAG	B	1407	1	14,14,15	0.43	0	17,19,21	0.74	1 (5%)
5	NAG	A	1404	1	14,14,15	0.46	0	17,19,21	0.53	0
5	NAG	B	1402	1	14,14,15	0.34	0	17,19,21	0.64	0
5	NAG	C	1408	1	14,14,15	0.16	0	17,19,21	0.57	0
5	NAG	C	1407	1	14,14,15	0.36	0	17,19,21	0.64	0
5	NAG	A	1406	1	14,14,15	0.29	0	17,19,21	0.38	0
5	NAG	C	1402	1	14,14,15	0.45	0	17,19,21	0.57	0
5	NAG	A	1405	1	14,14,15	0.56	0	17,19,21	1.26	1 (5%)
5	NAG	B	1404	1	14,14,15	0.33	0	17,19,21	0.58	0
5	NAG	C	1406	1	14,14,15	0.20	0	17,19,21	0.37	0
5	NAG	C	1404	1	14,14,15	0.29	0	17,19,21	0.37	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	C	1405	1	-	3/6/23/26	0/1/1/1
5	NAG	A	1409	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1410	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1409	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1401	1	-	1/6/23/26	0/1/1/1
5	NAG	B	1406	1	-	3/6/23/26	0/1/1/1
5	NAG	A	1401	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1408	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	C	1403	1	-	4/6/23/26	0/1/1/1
5	NAG	B	1405	1	-	5/6/23/26	0/1/1/1
5	NAG	B	1411	-	-	0/6/23/26	0/1/1/1
5	NAG	A	1407	1	-	1/6/23/26	0/1/1/1
5	NAG	A	1402	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1401	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1403	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1408	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1403	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1407	1	-	3/6/23/26	0/1/1/1
5	NAG	A	1404	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1402	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1408	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1407	1	-	3/6/23/26	0/1/1/1
5	NAG	A	1406	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1402	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1405	1	-	5/6/23/26	0/1/1/1
5	NAG	B	1404	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1406	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1404	1	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1405	NAG	C2-N2-C7	4.33	129.07	122.90
5	C	1405	NAG	C2-N2-C7	4.28	128.99	122.90
5	B	1405	NAG	C2-N2-C7	4.13	128.78	122.90
5	C	1401	NAG	C1-O5-C5	2.87	116.08	112.19
5	B	1406	NAG	C1-O5-C5	2.55	115.64	112.19

There are no chirality outliers.

5 of 59 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	1408	NAG	O5-C5-C6-O6
5	B	1401	NAG	O5-C5-C6-O6
5	A	1406	NAG	O5-C5-C6-O6

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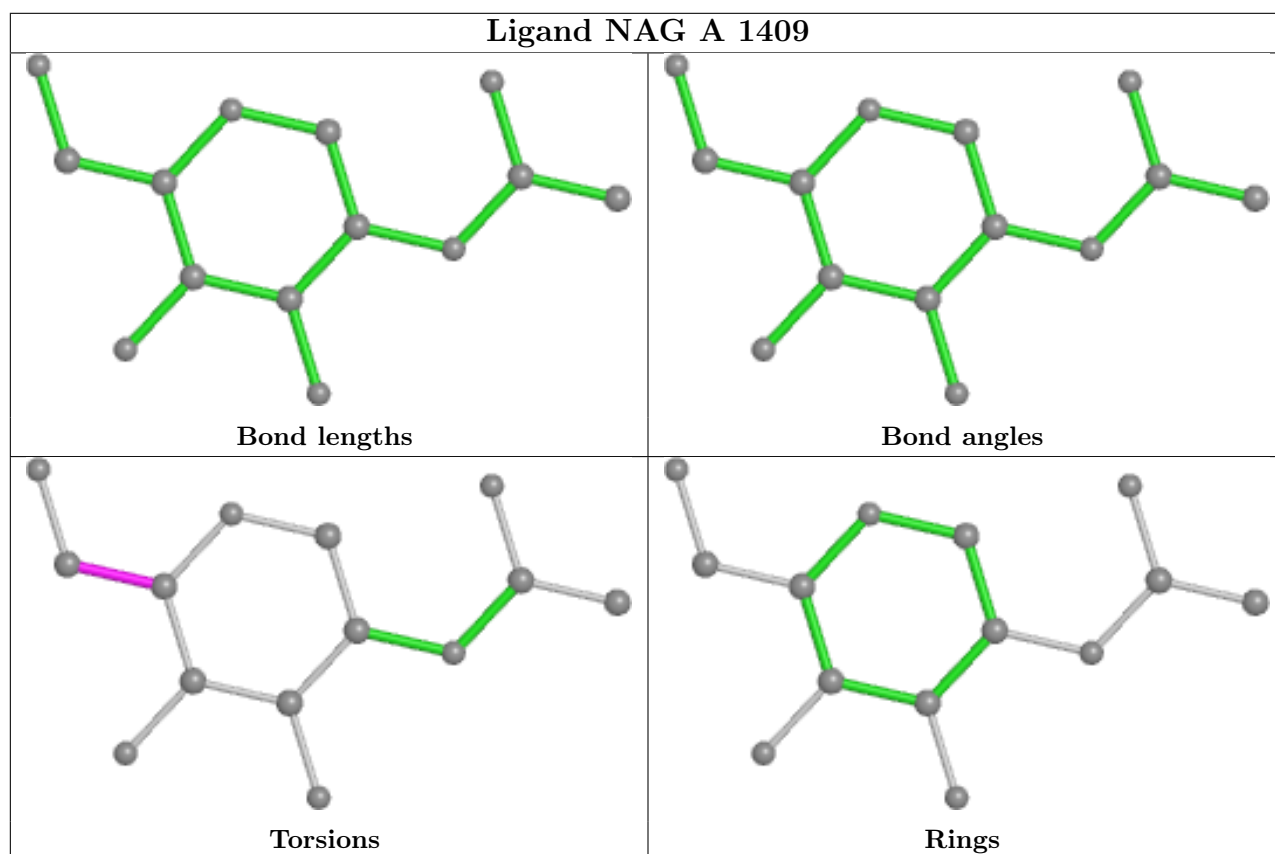
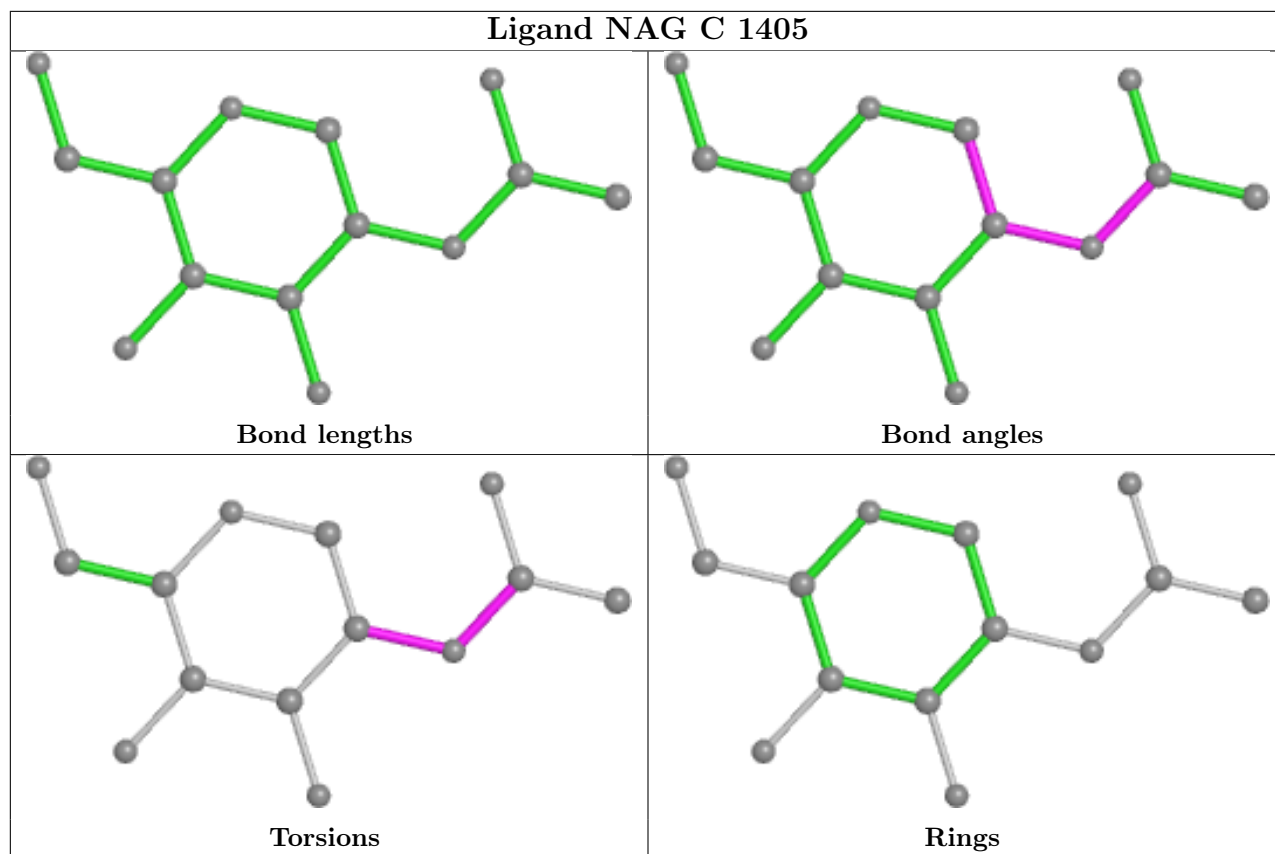
Mol	Chain	Res	Type	Atoms
5	B	1402	NAG	O5-C5-C6-O6
5	C	1408	NAG	O5-C5-C6-O6

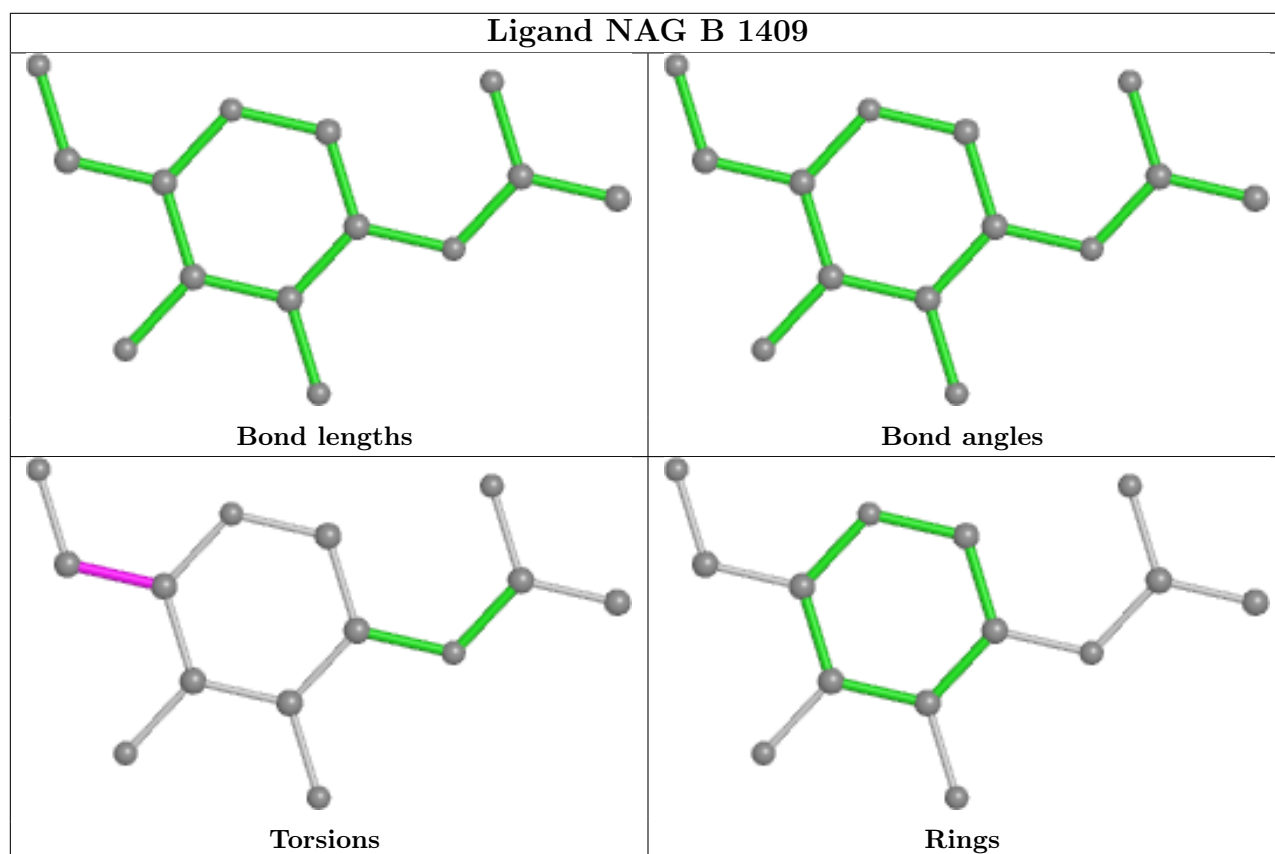
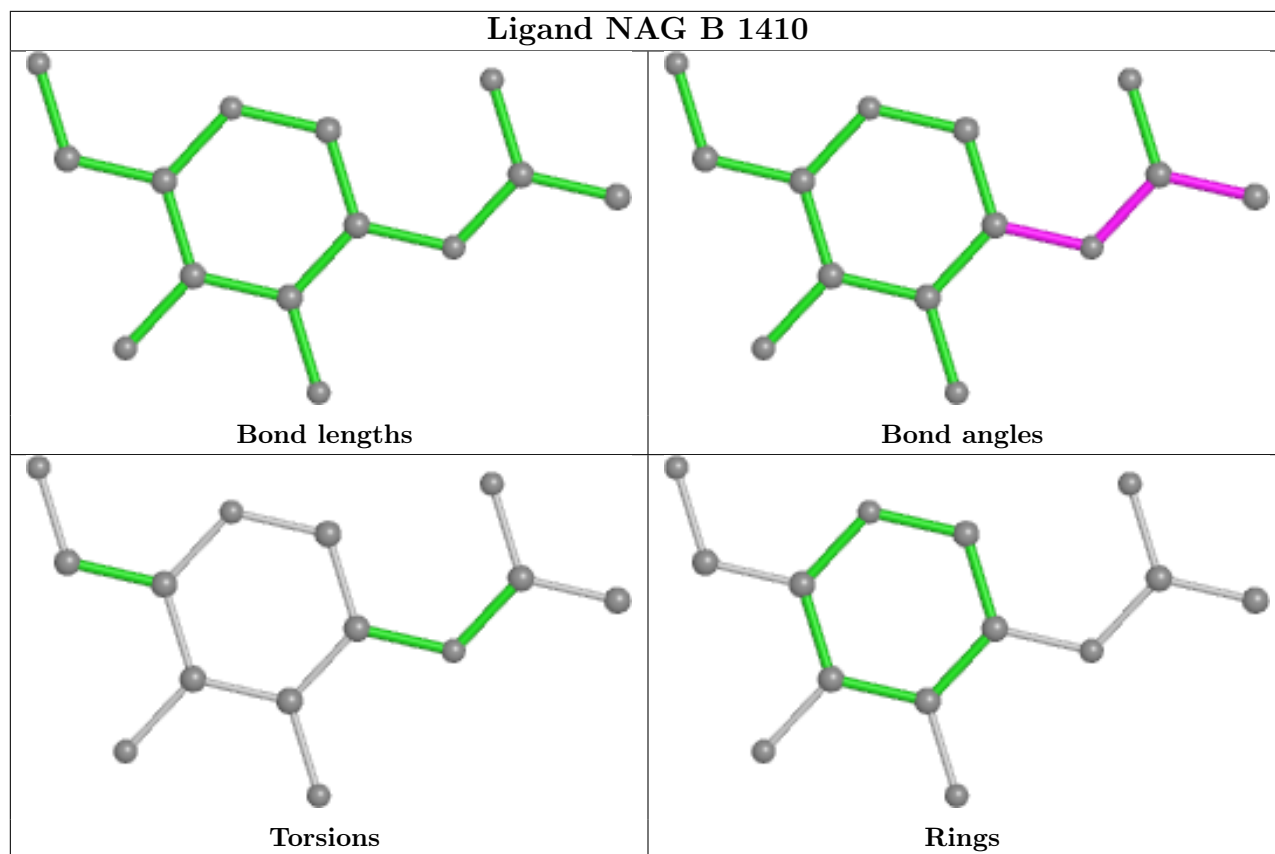
There are no ring outliers.

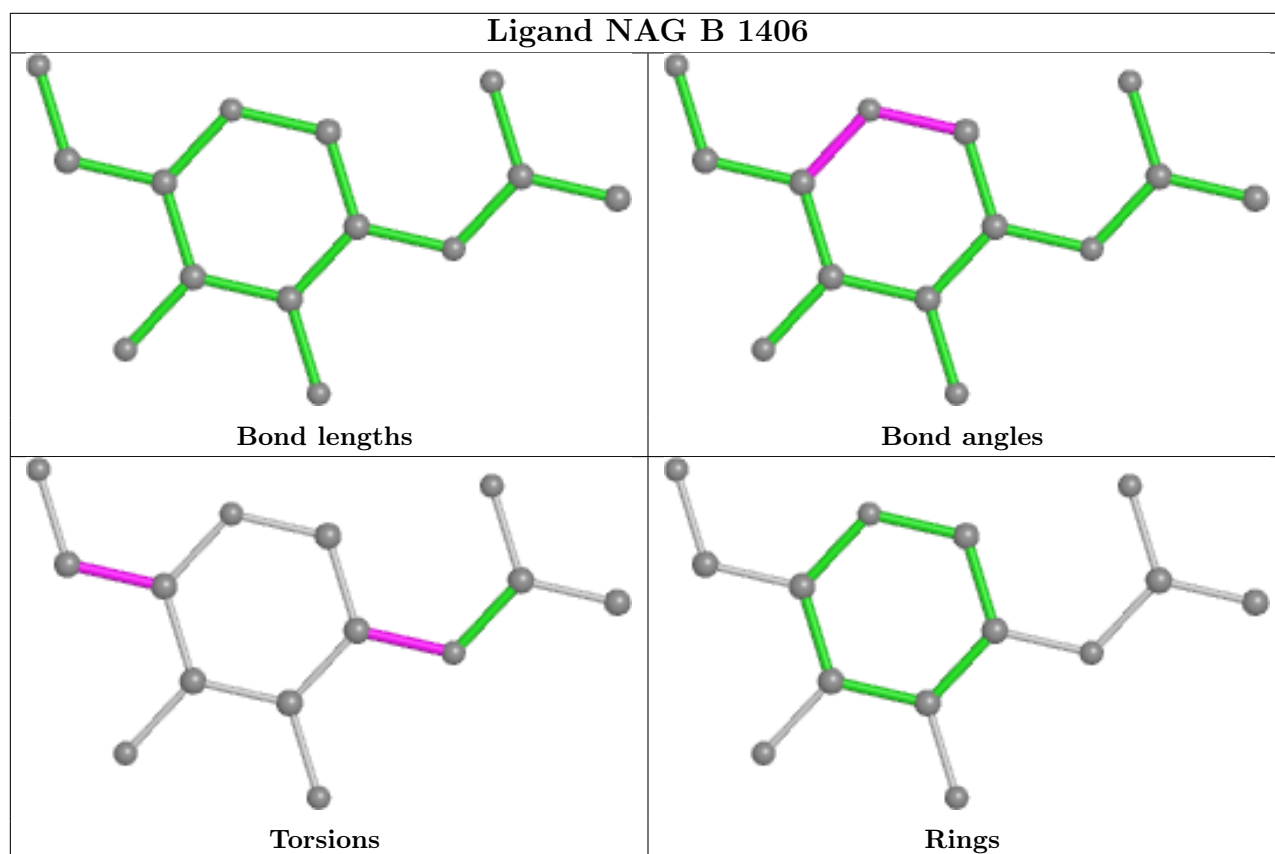
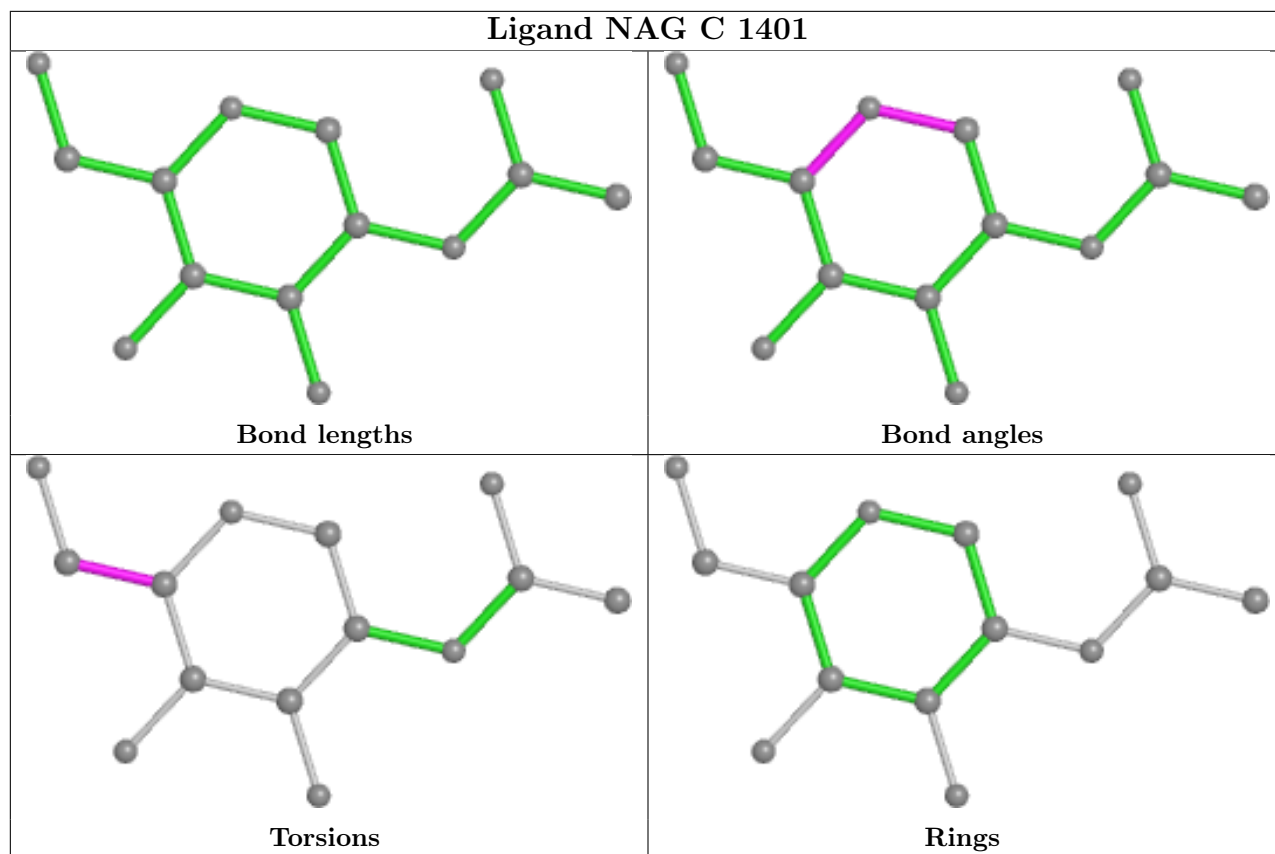
10 monomers are involved in 16 short contacts:

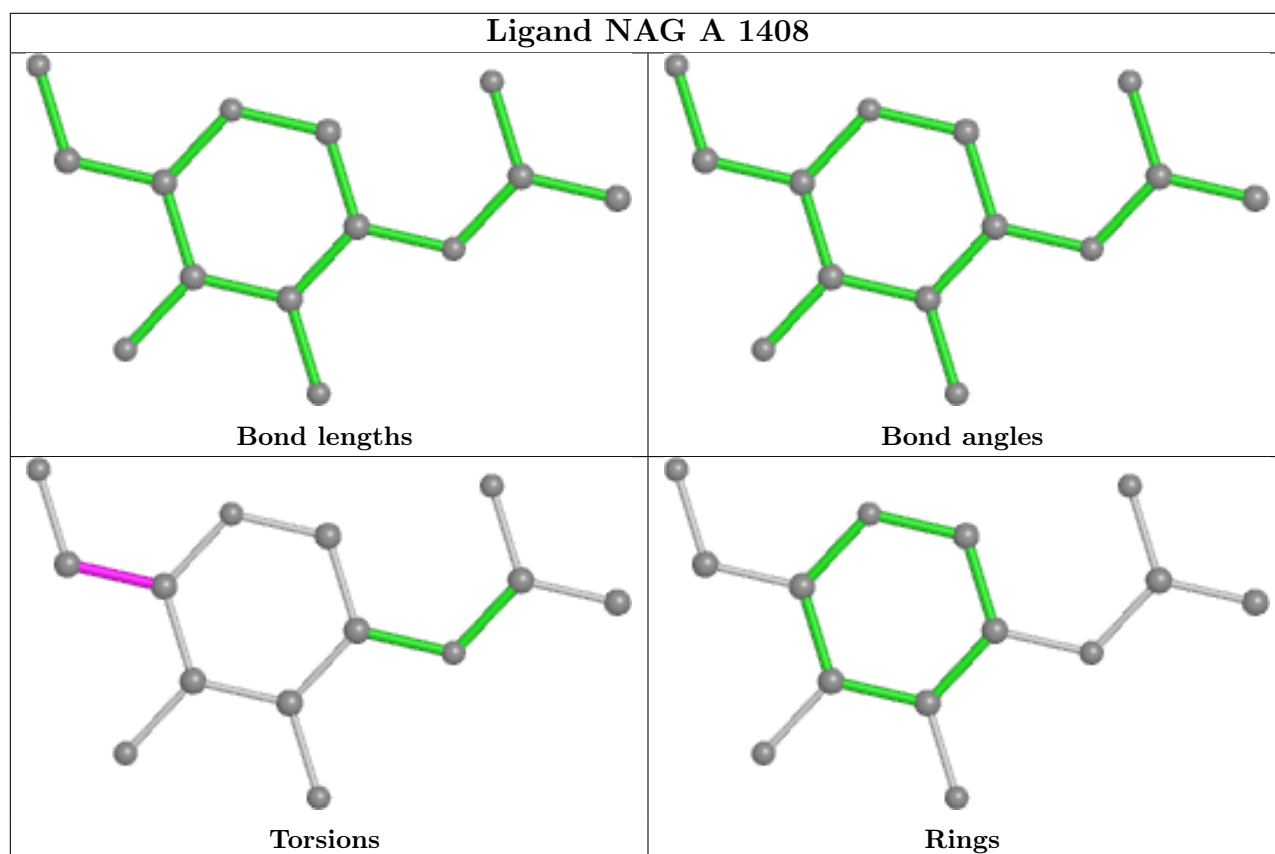
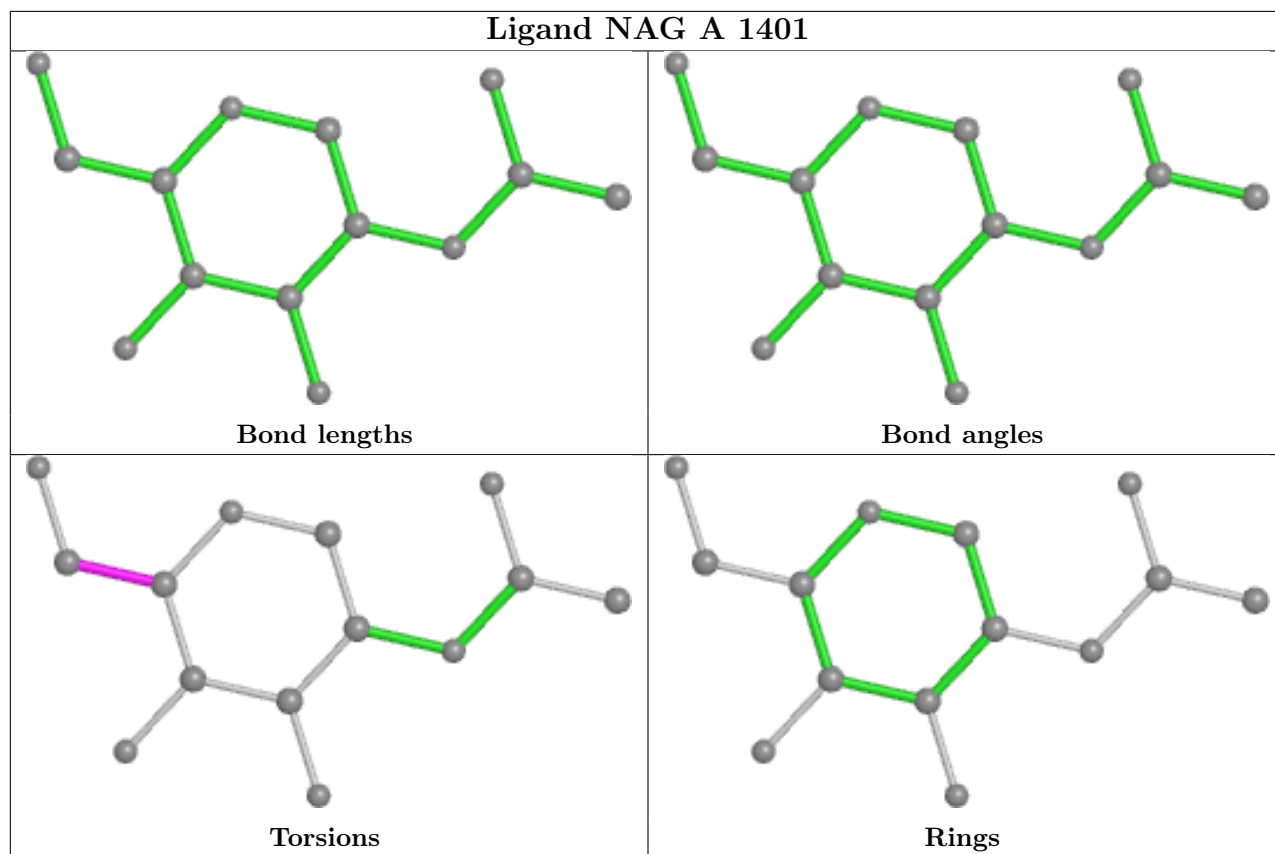
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	1405	NAG	1	0
5	B	1410	NAG	4	0
5	B	1405	NAG	2	0
5	B	1411	NAG	4	0
5	A	1402	NAG	3	0
5	B	1403	NAG	2	0
5	B	1407	NAG	1	0
5	B	1402	NAG	1	0
5	C	1402	NAG	1	0
5	A	1405	NAG	1	0

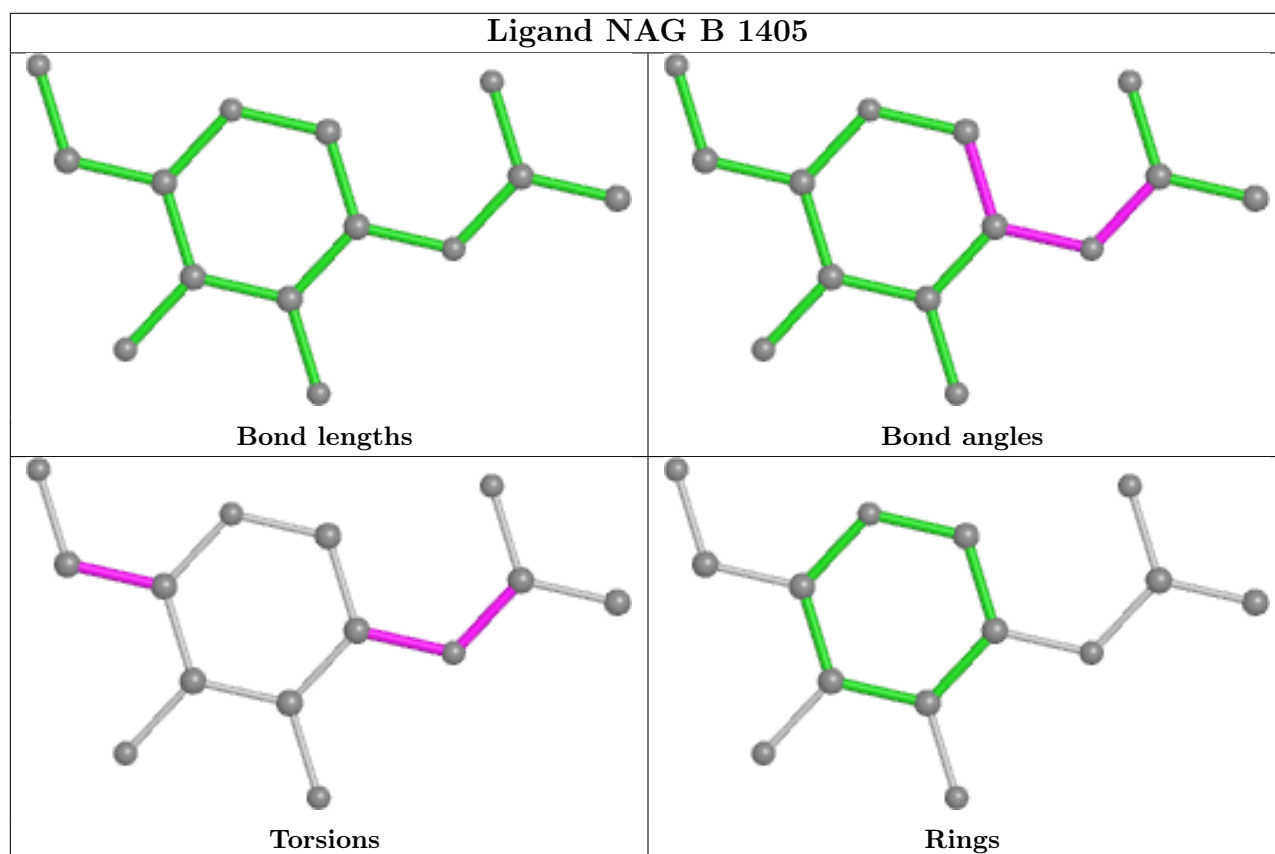
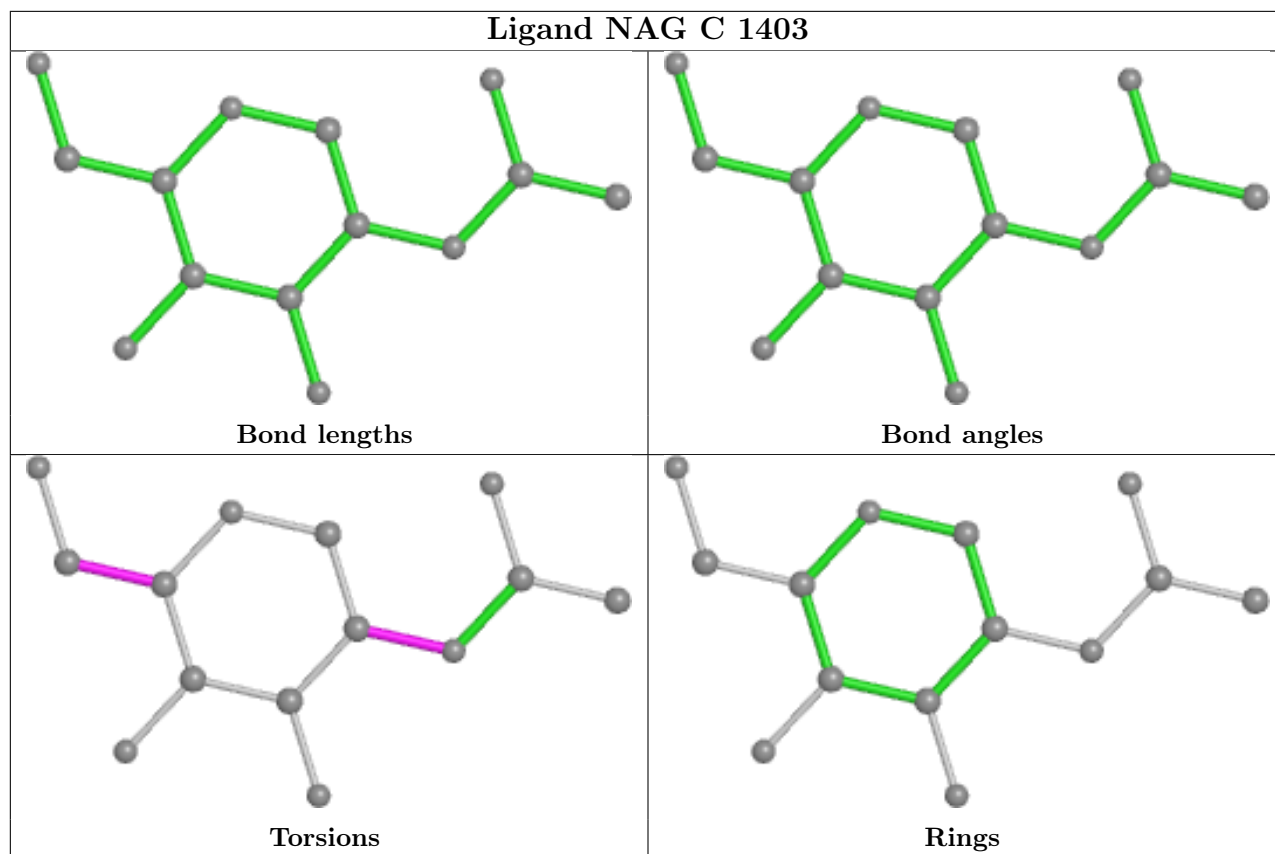
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

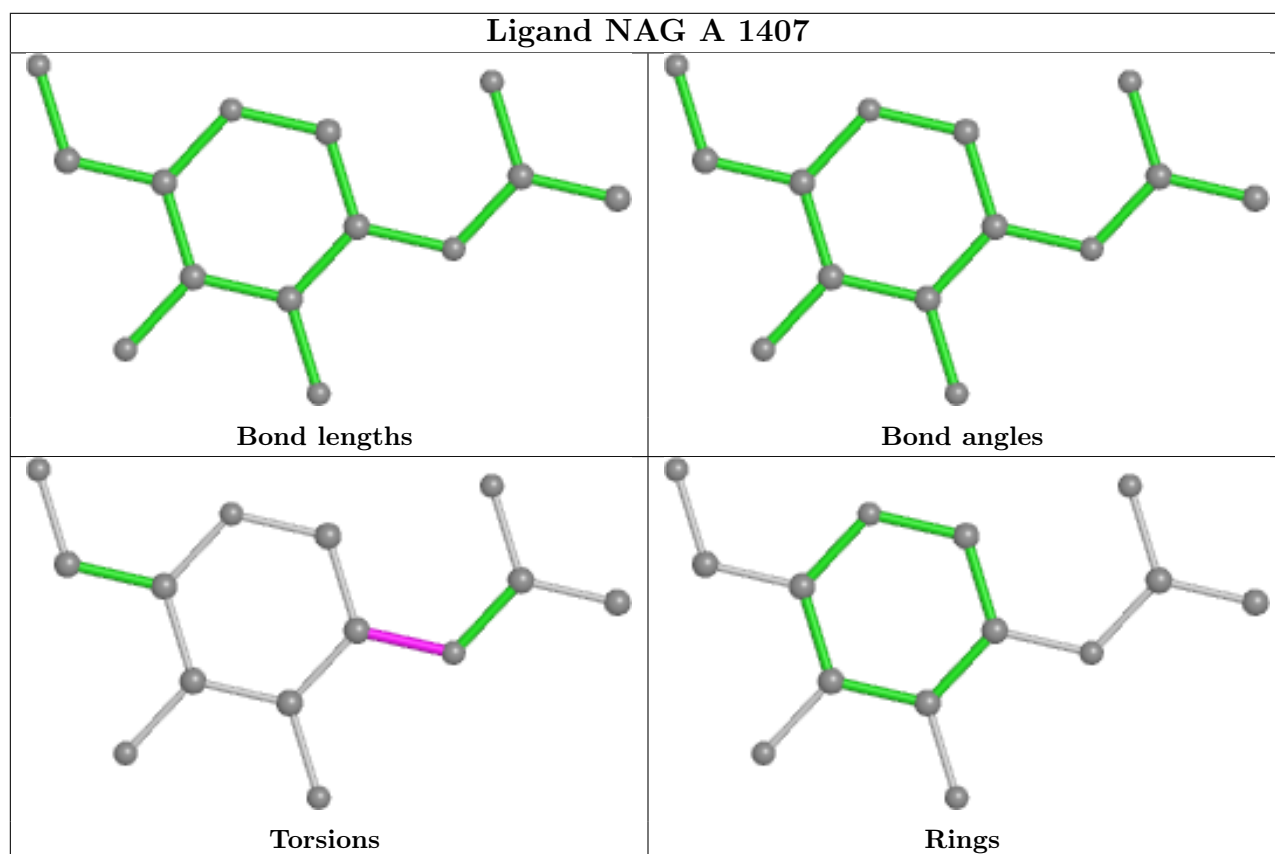
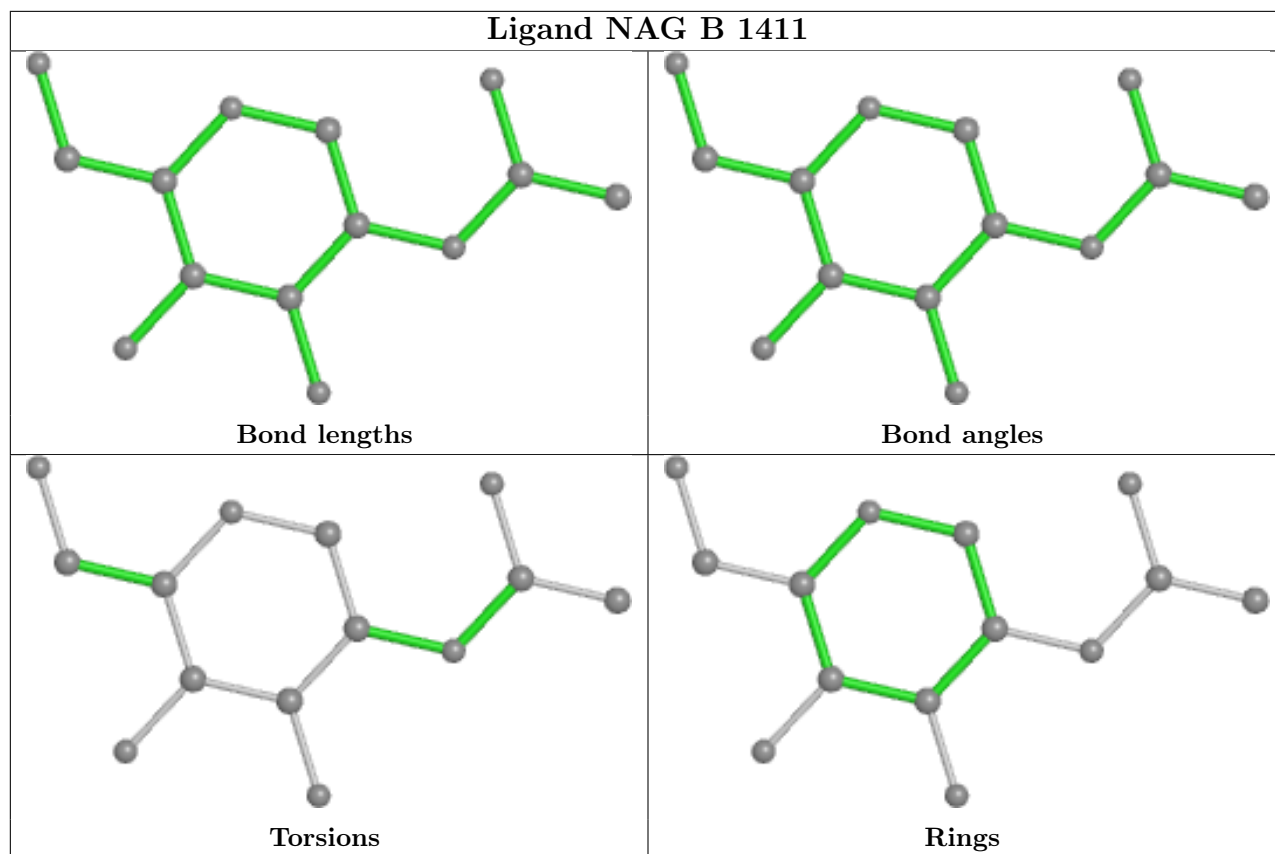


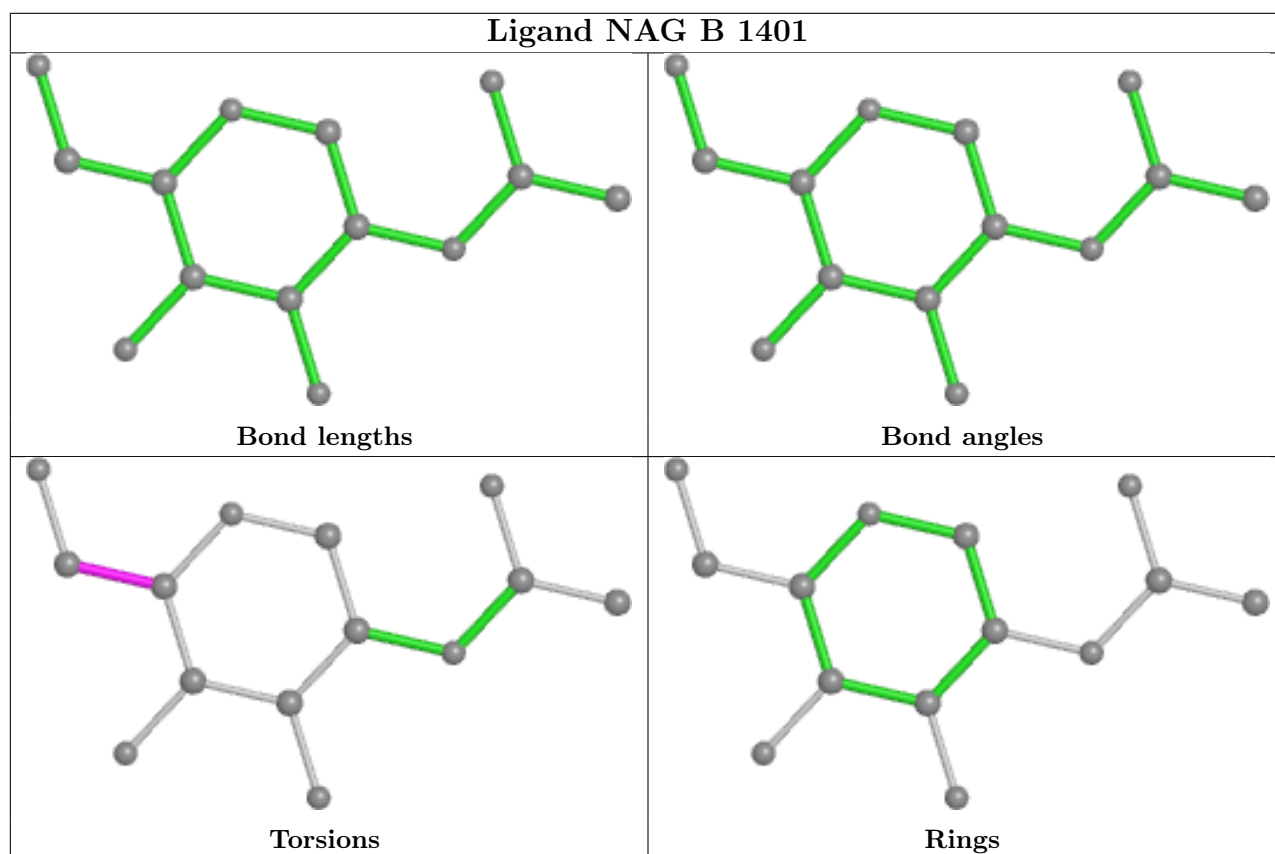
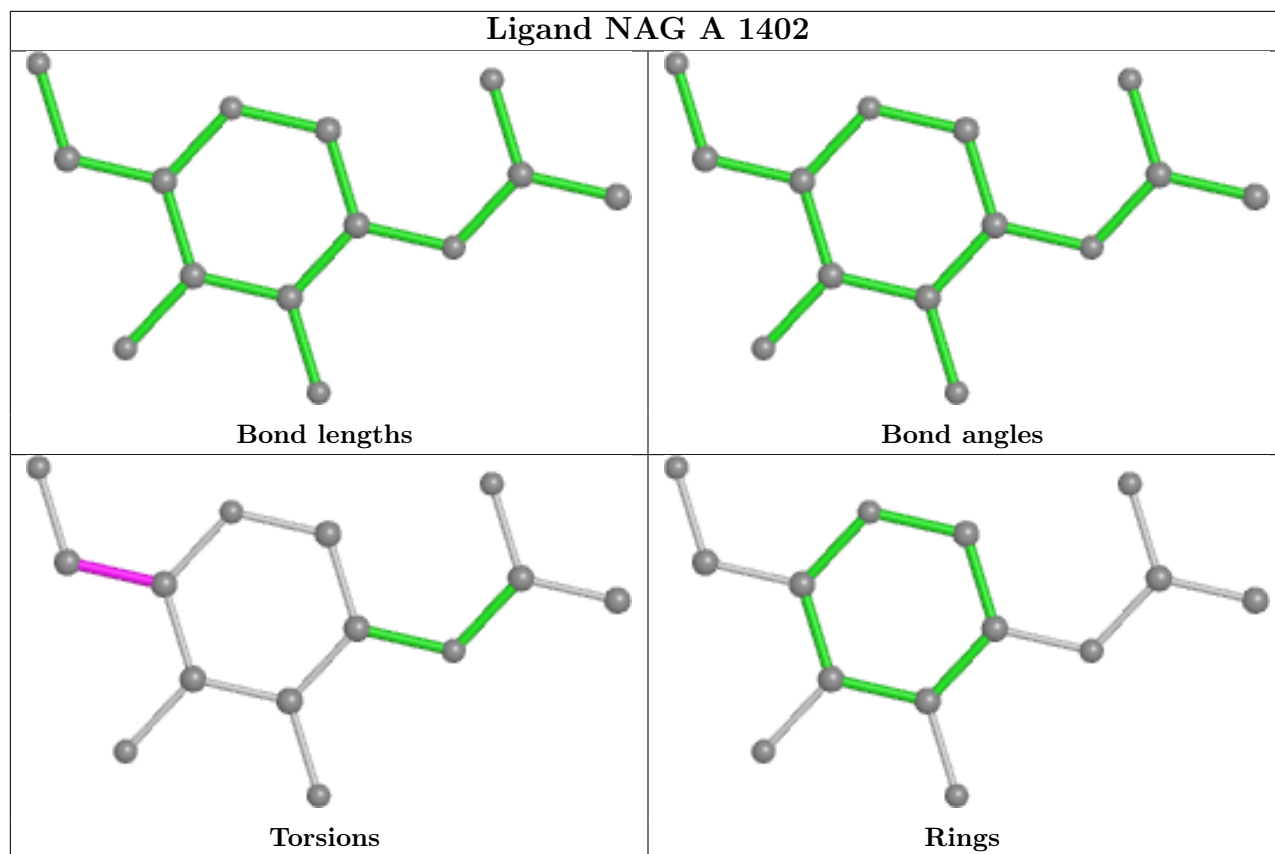


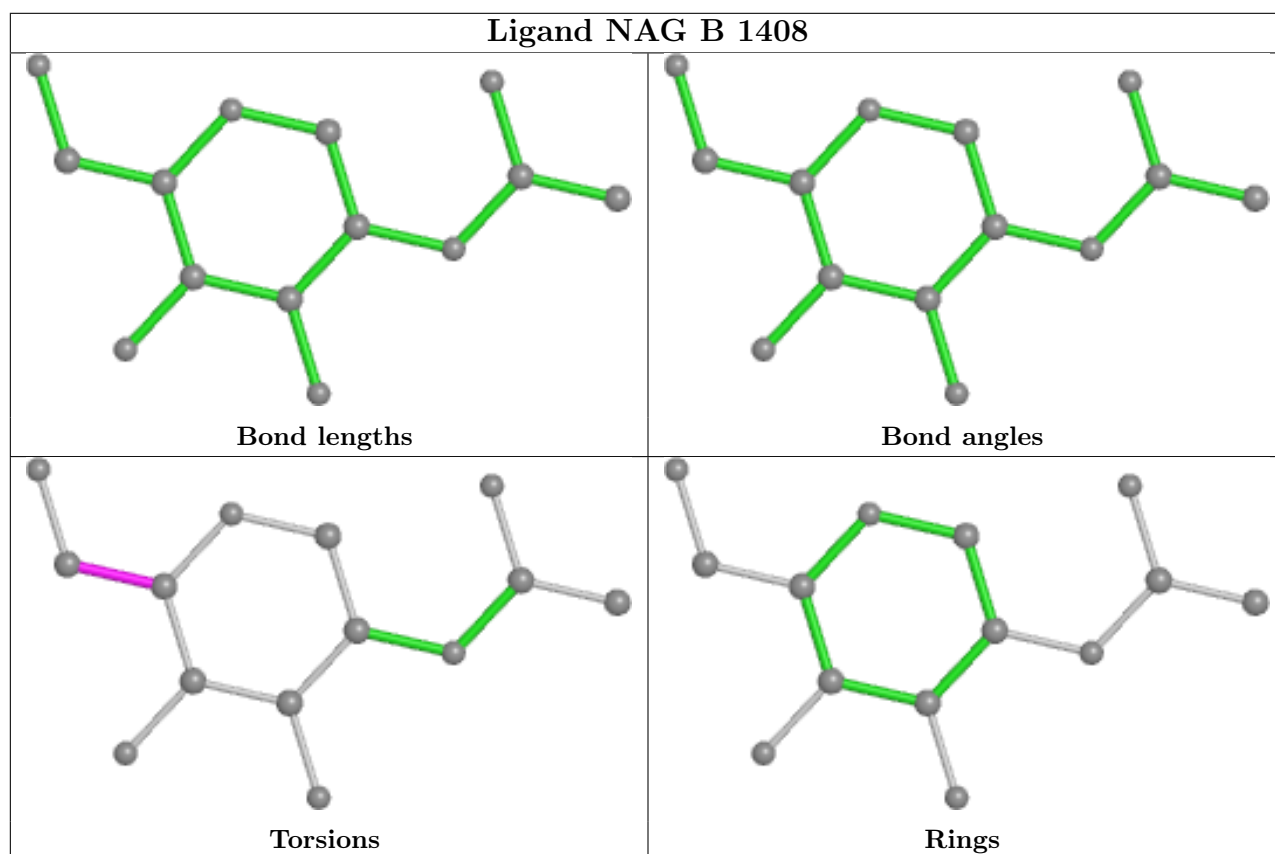
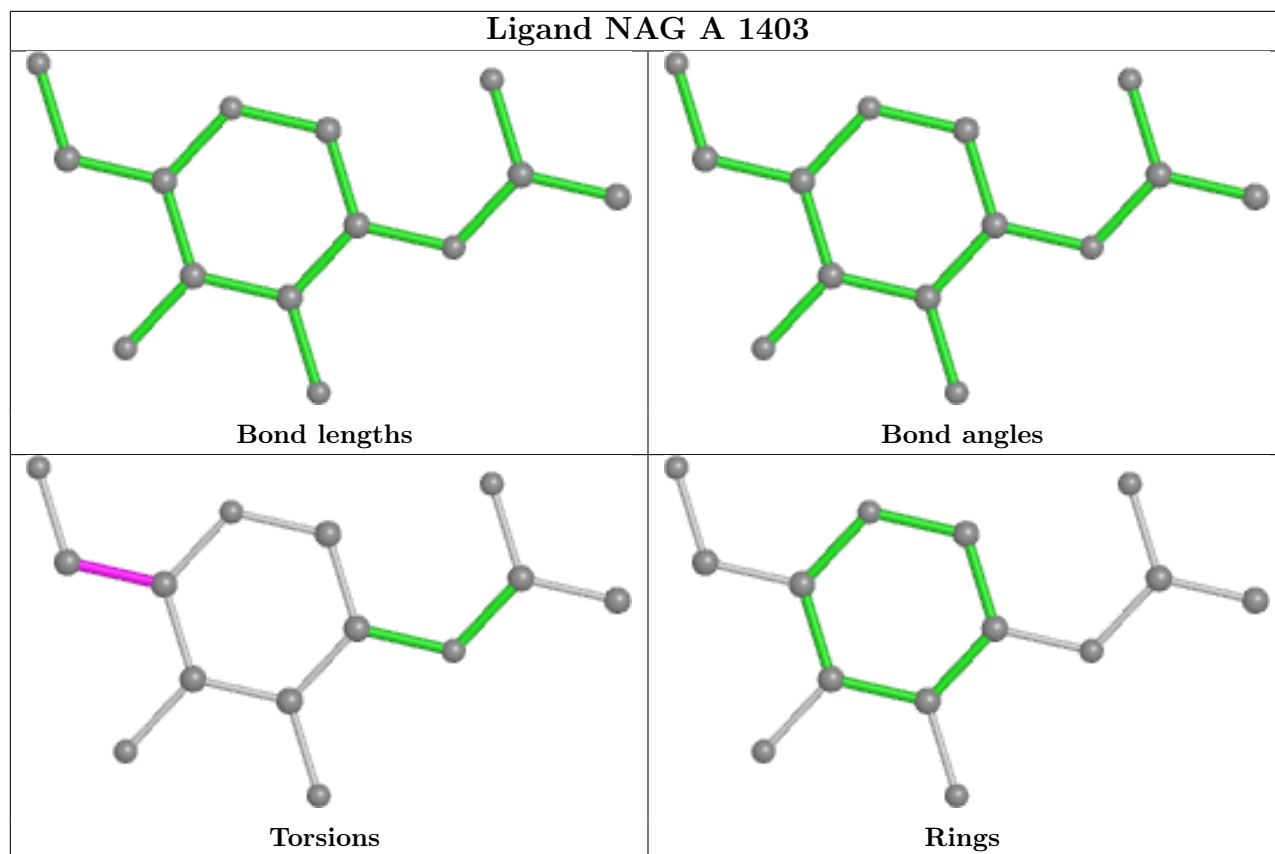


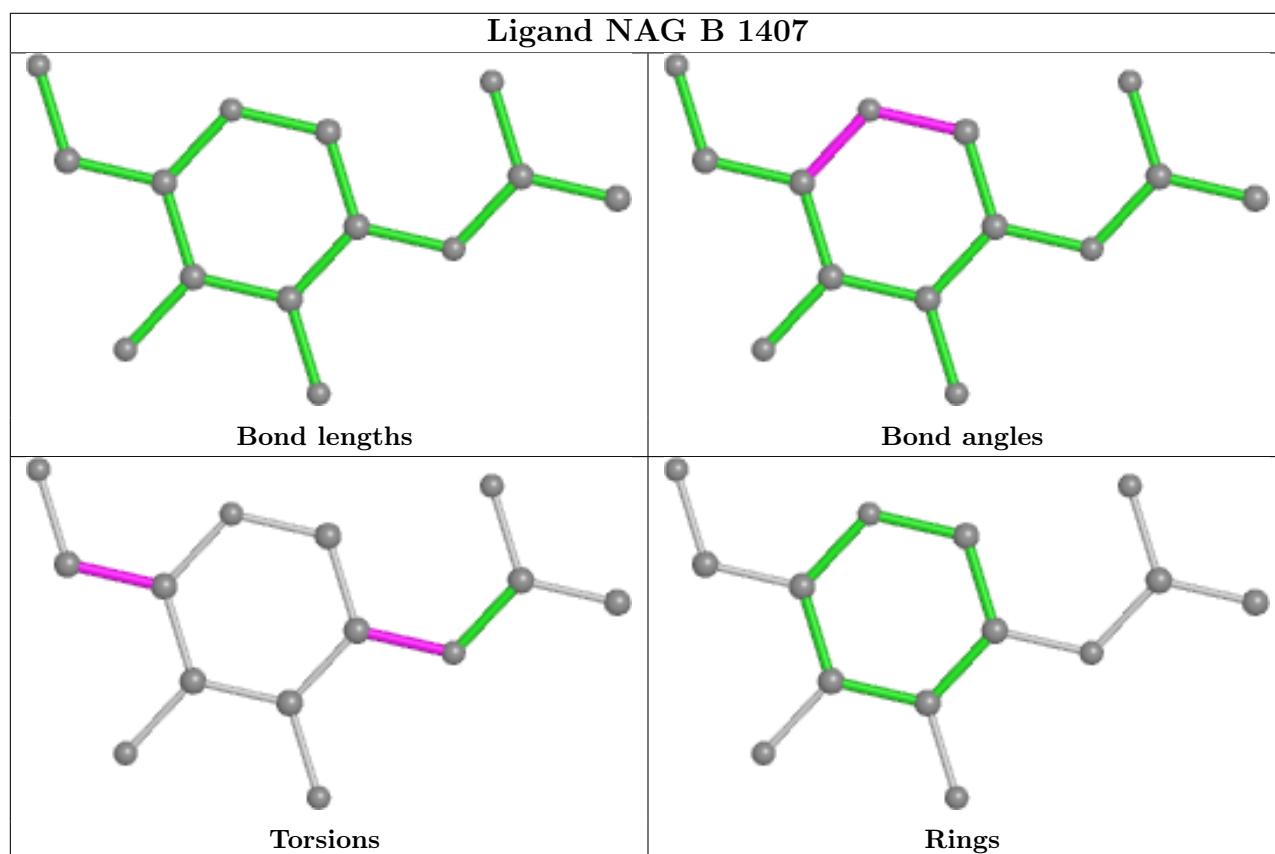
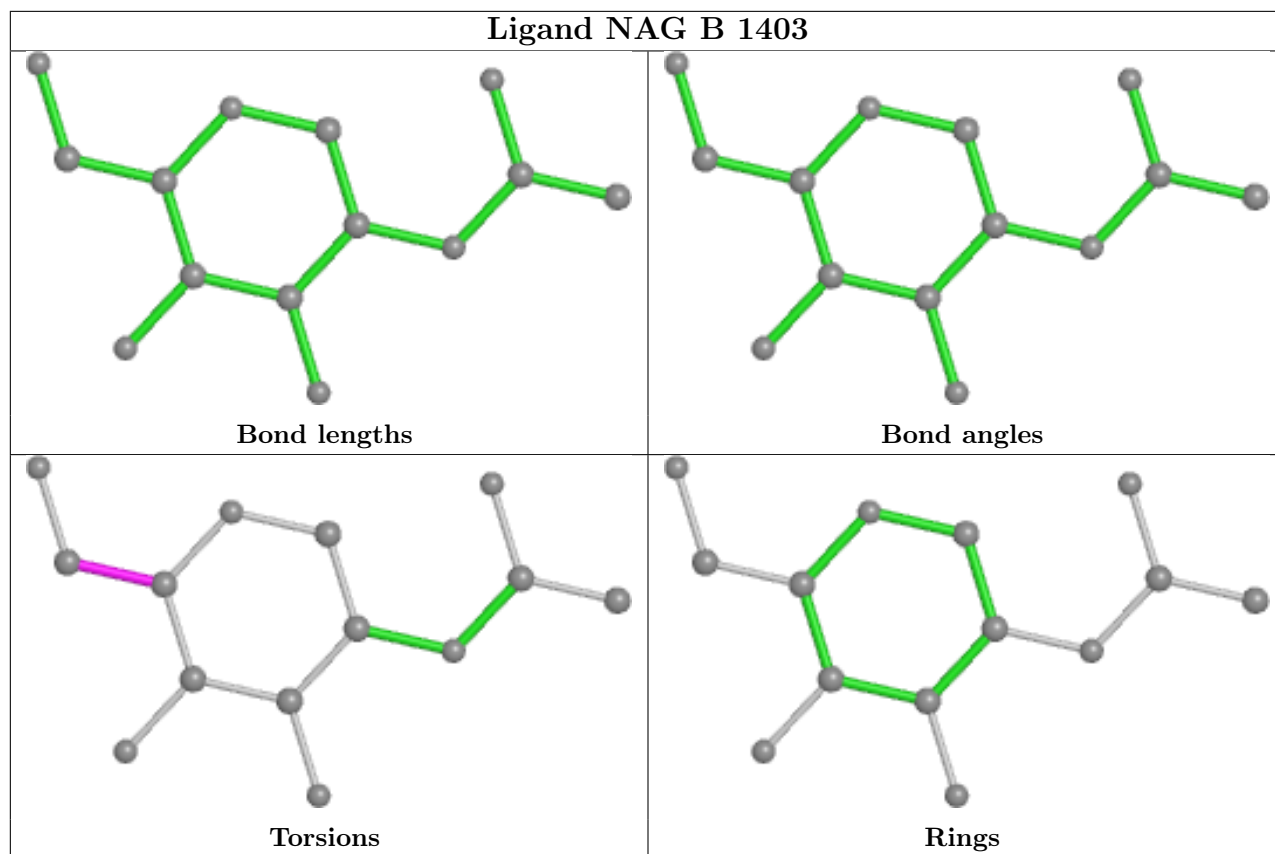


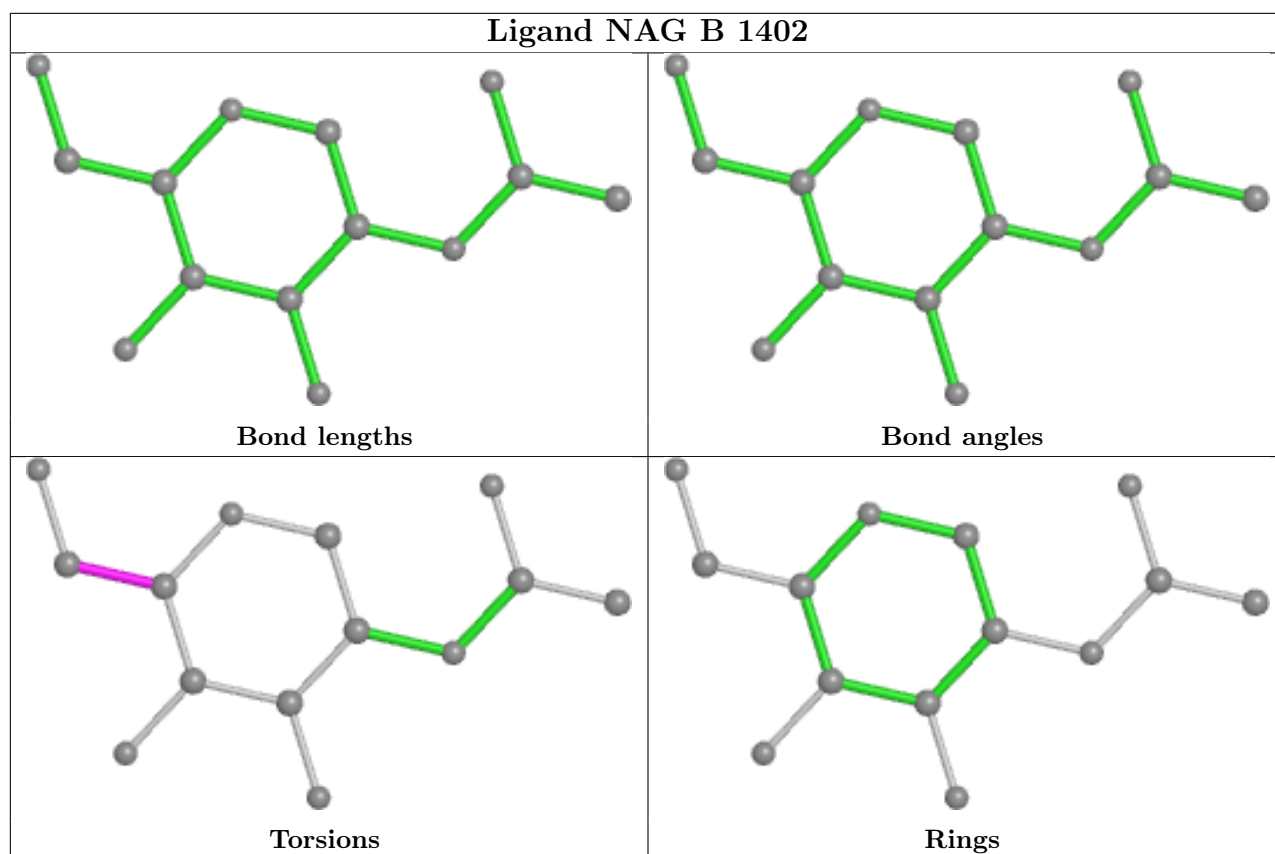
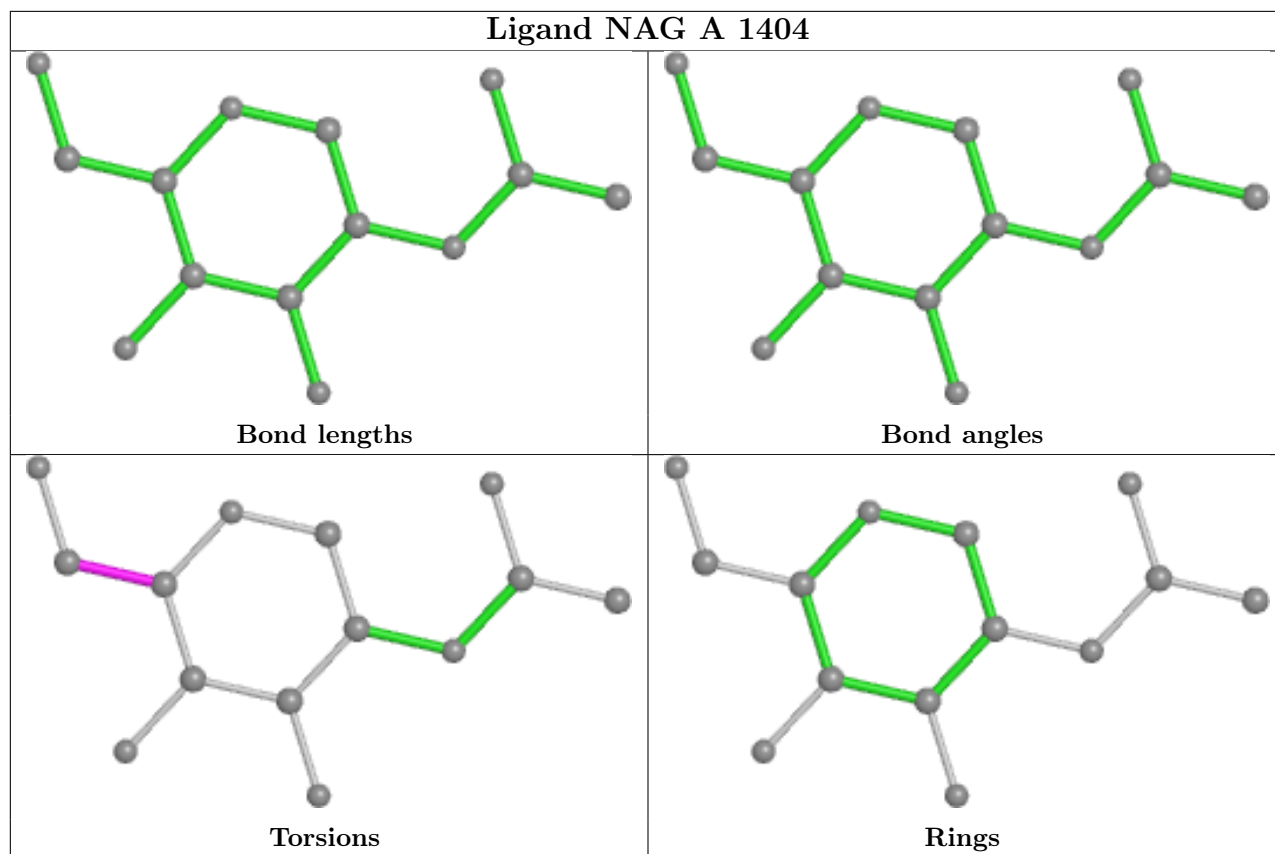


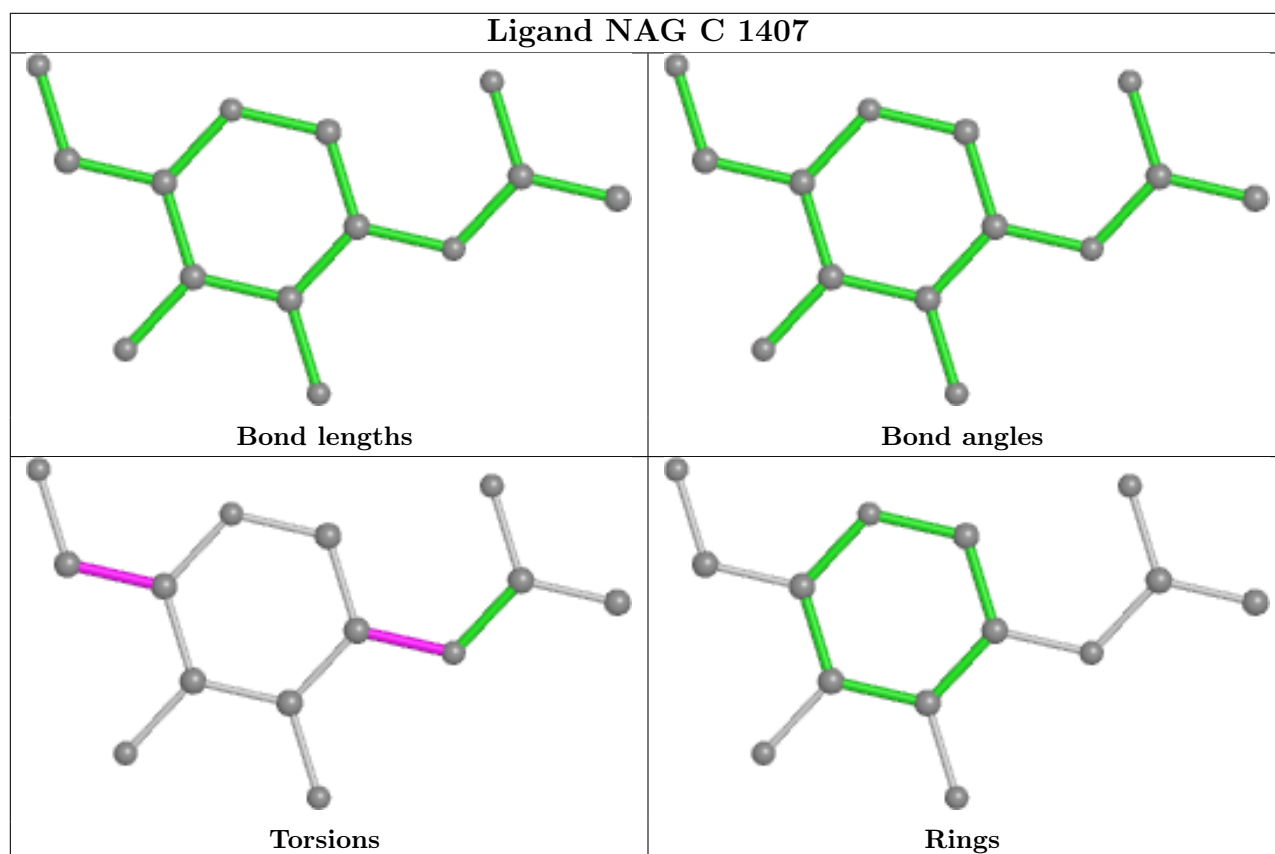
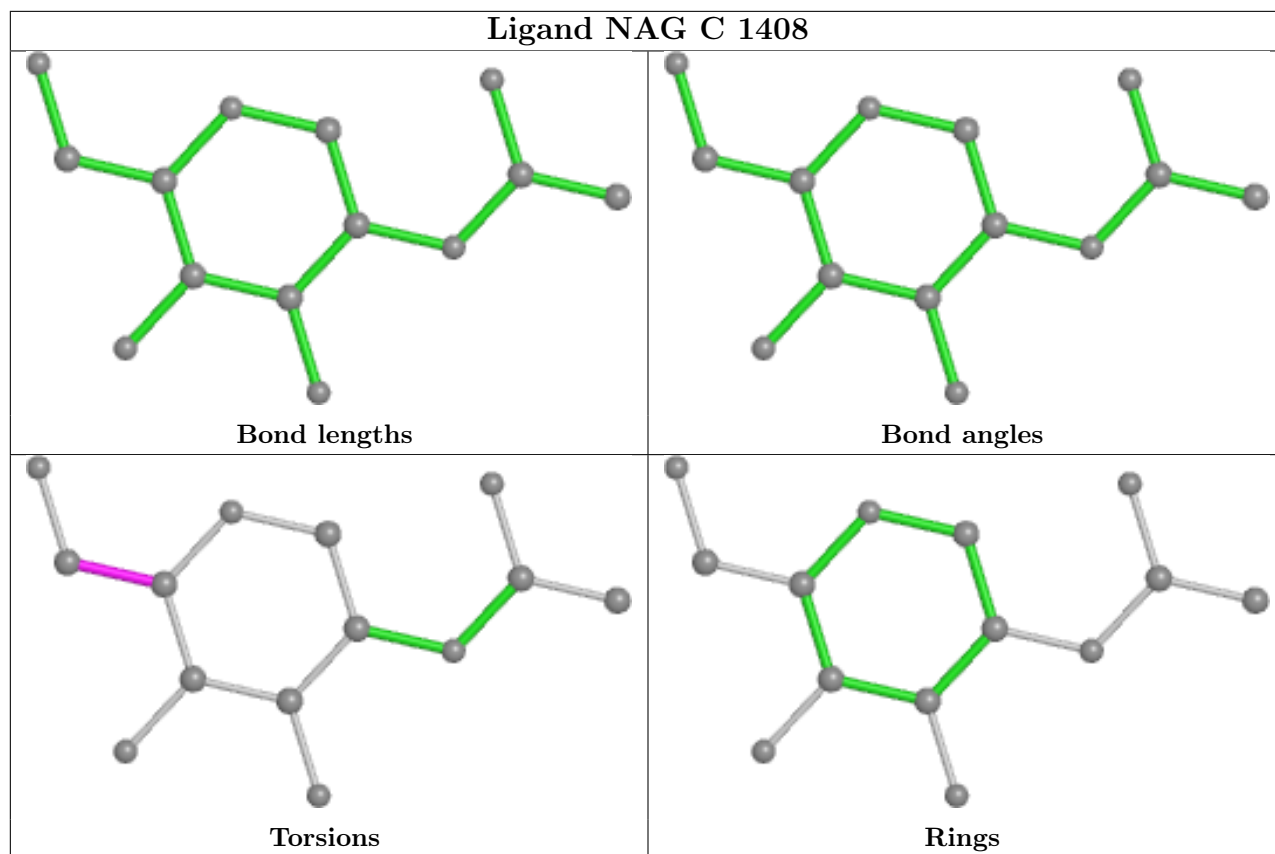


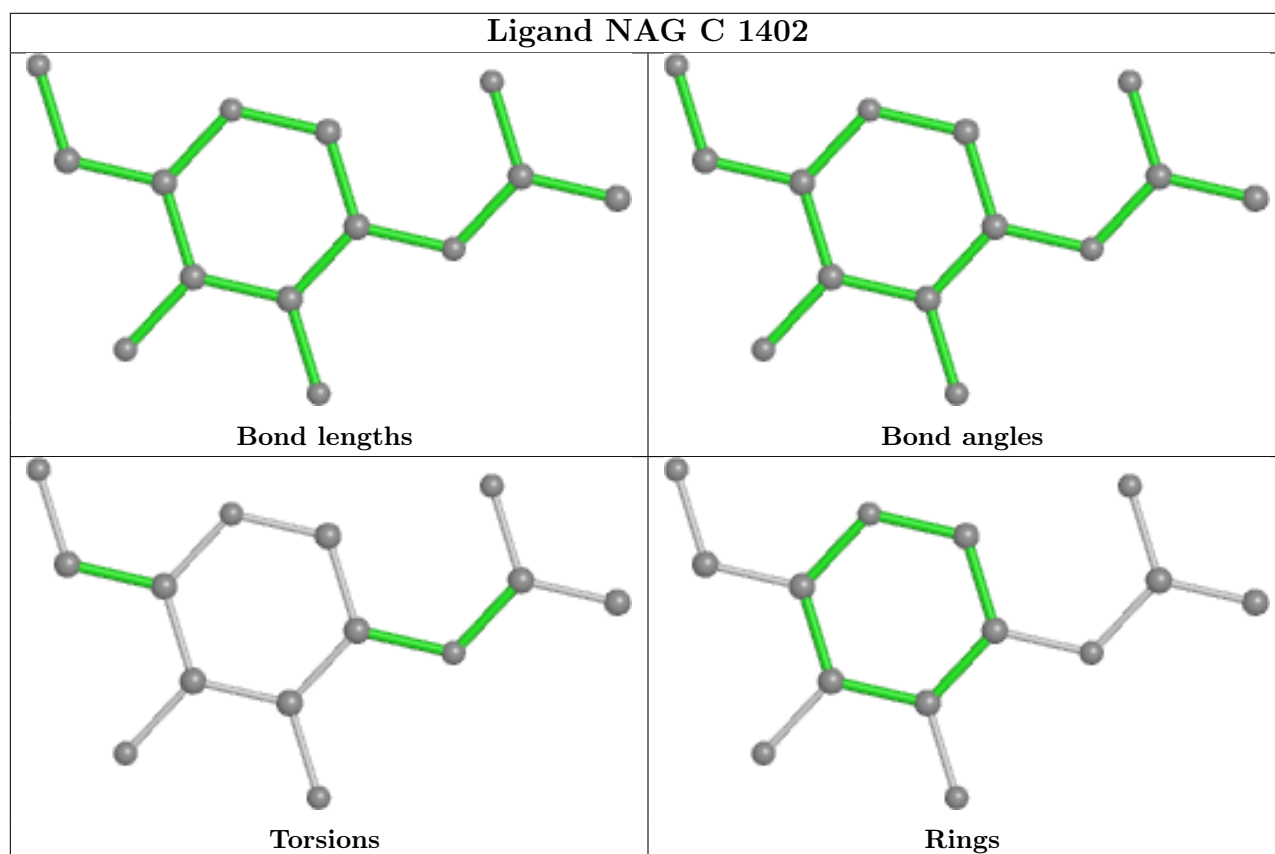
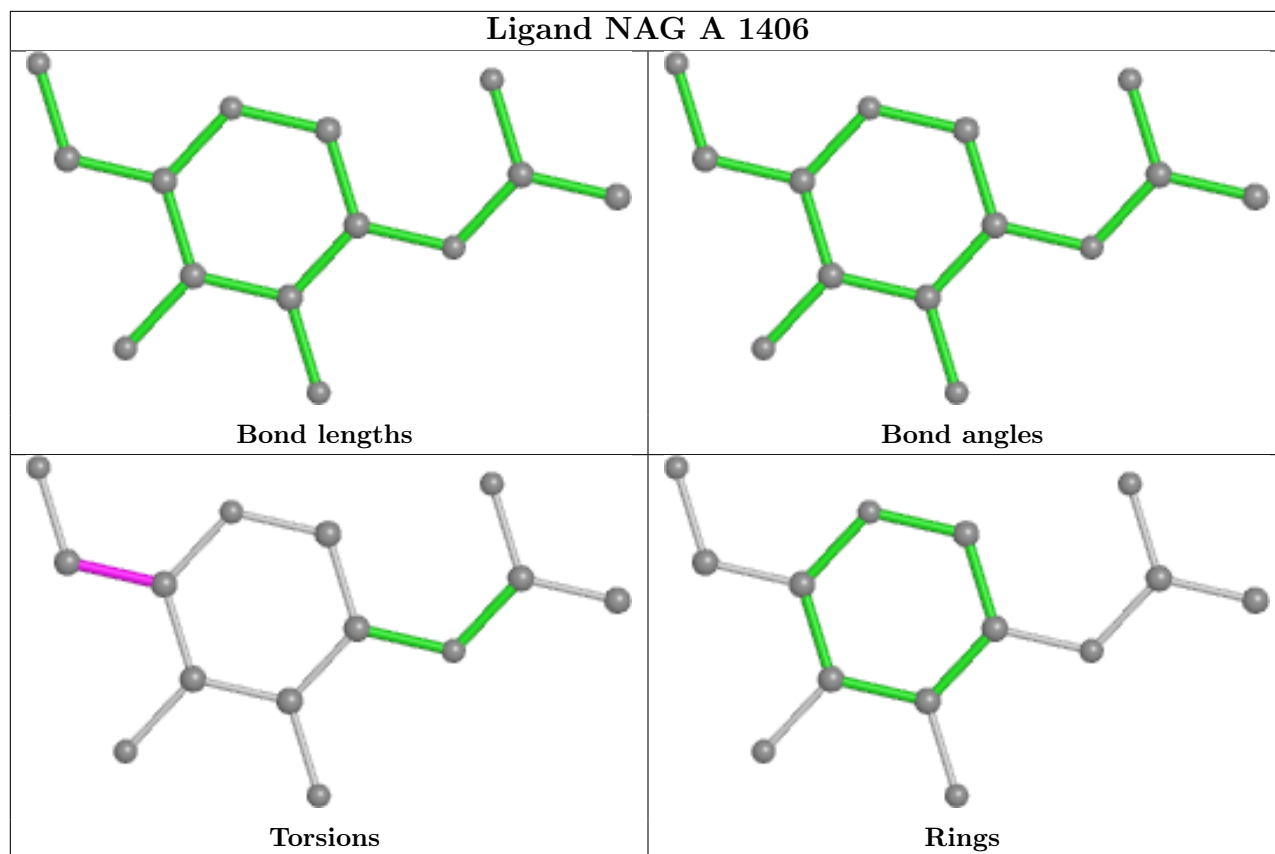


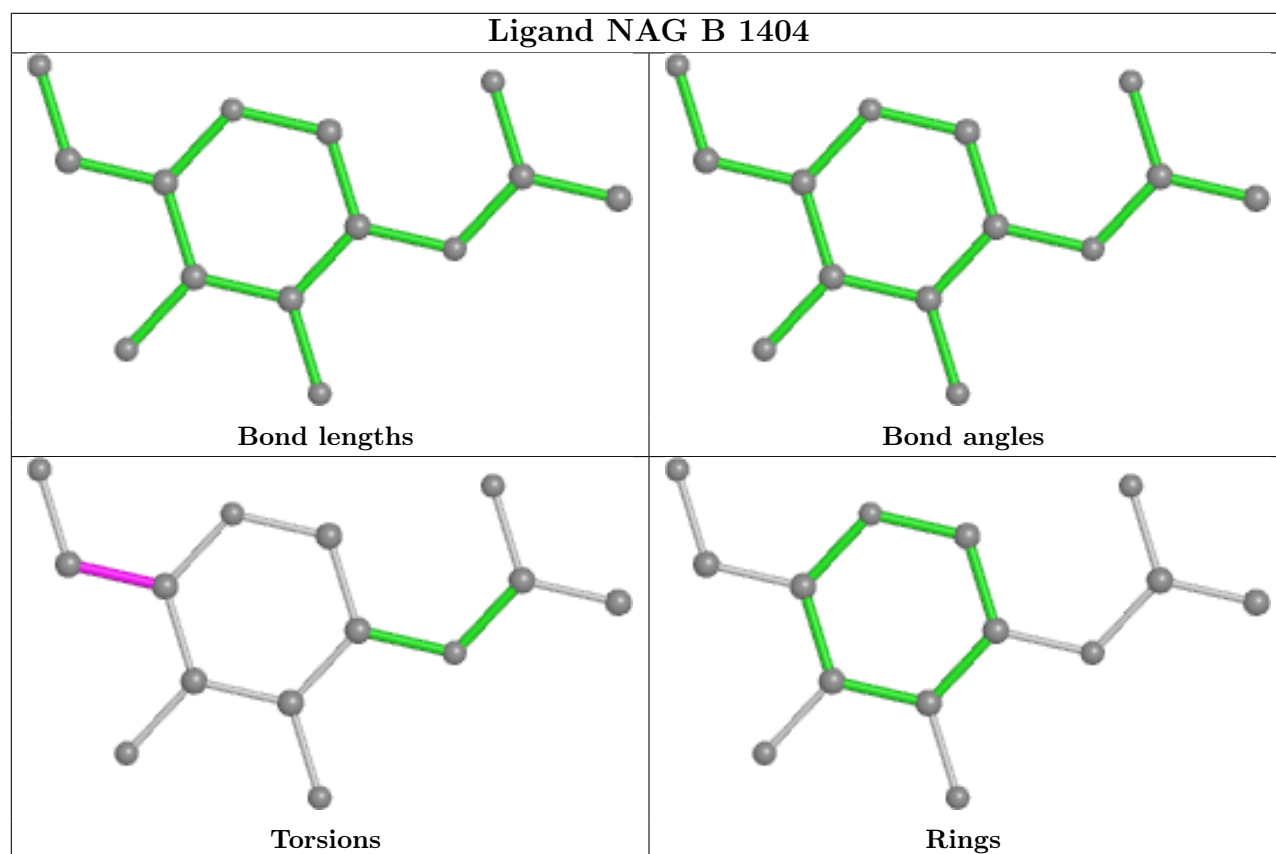
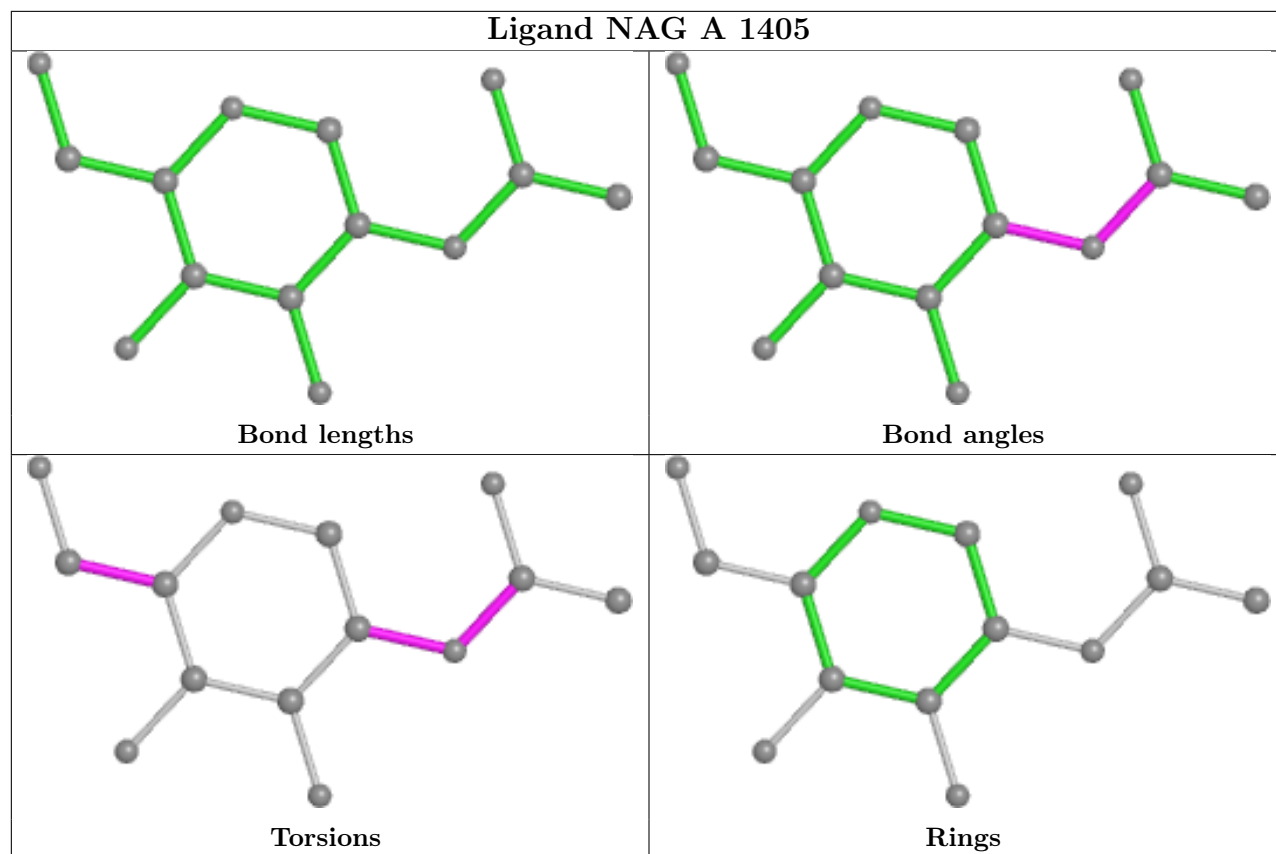


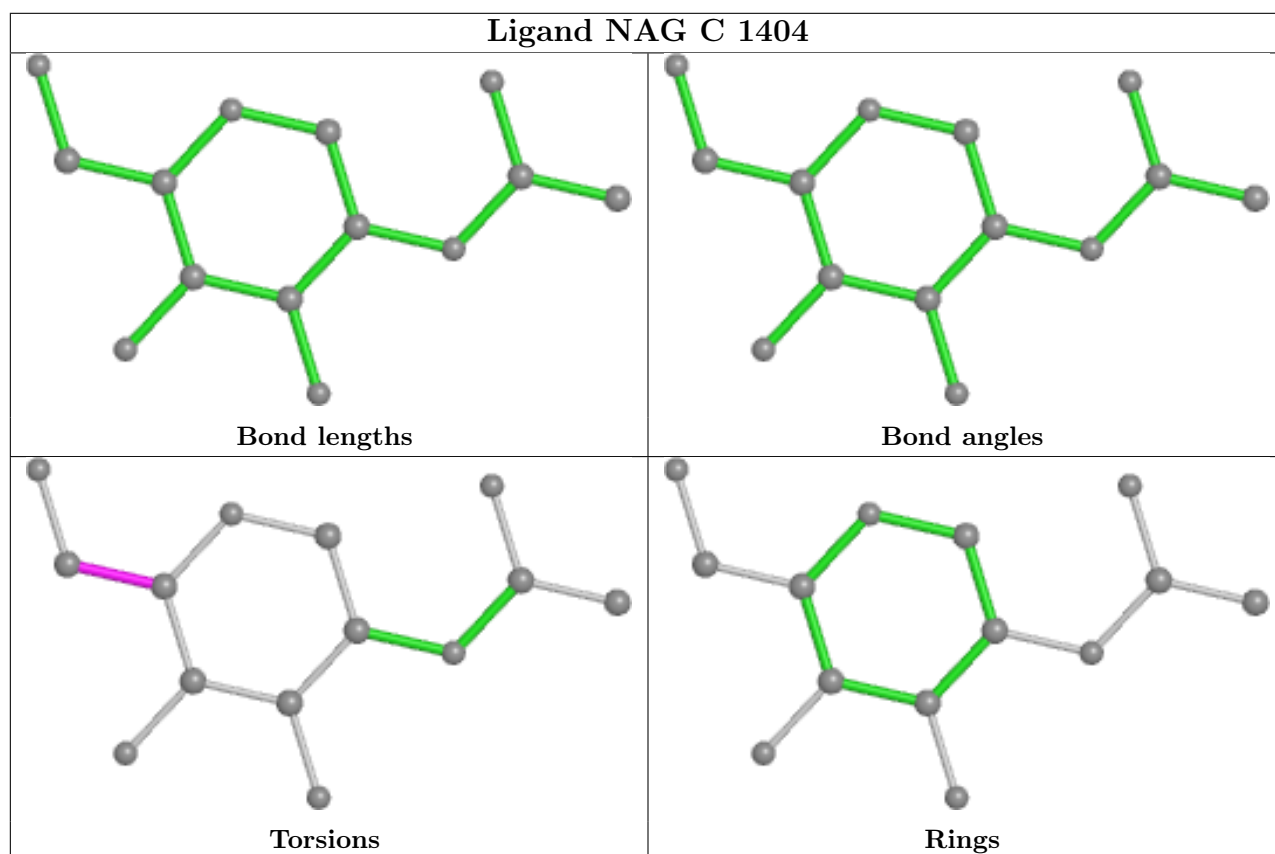
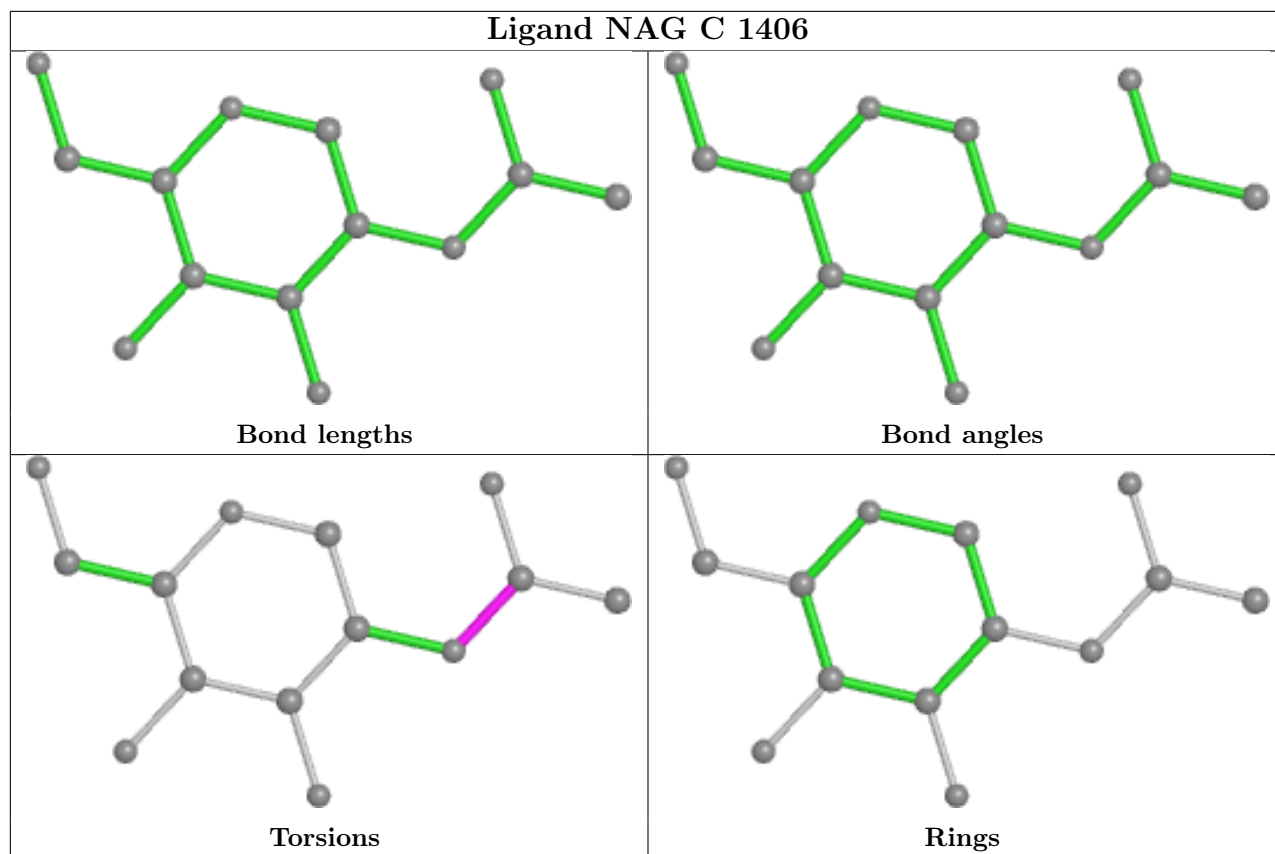












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

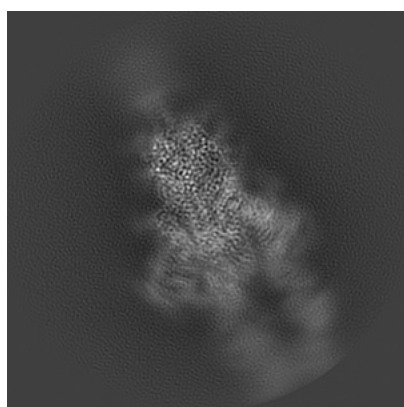
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30519. These allow visual inspection of the internal detail of the map and identification of artifacts.

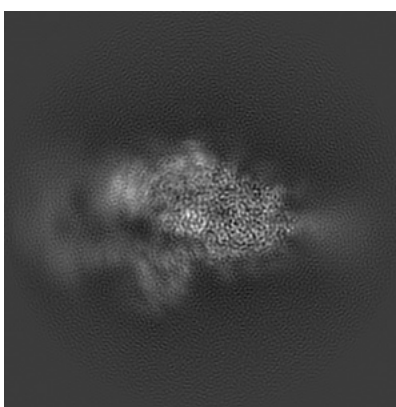
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

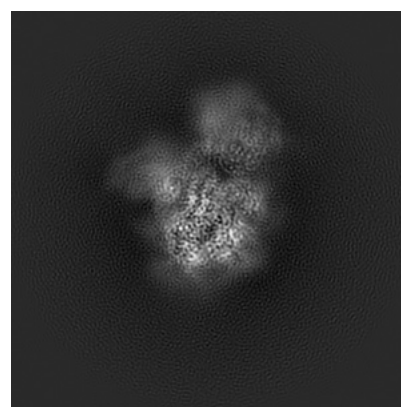
6.1.1 Primary map



X



Y

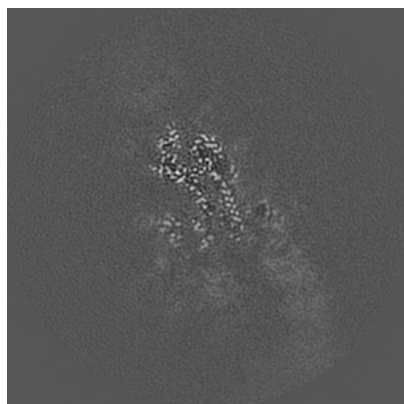


Z

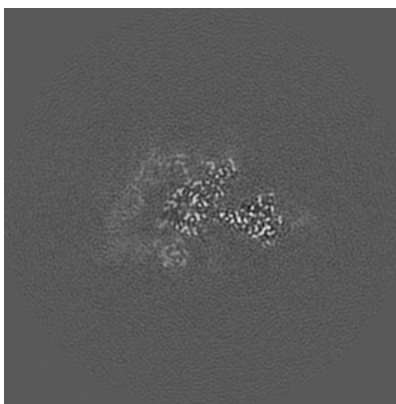
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

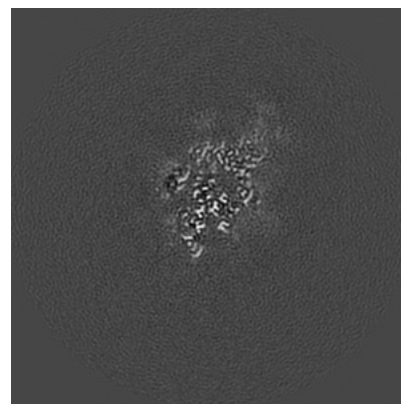
6.2.1 Primary map



X Index: 144



Y Index: 144

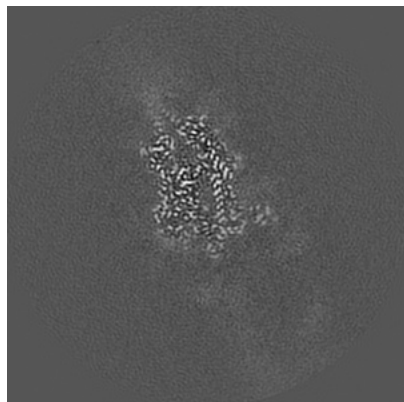


Z Index: 144

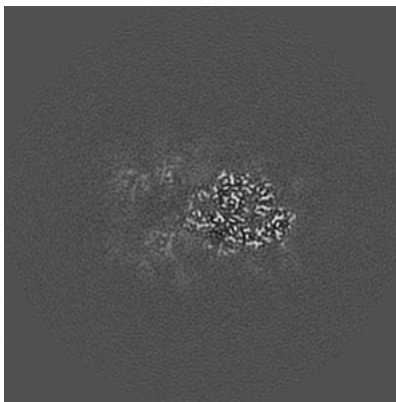
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

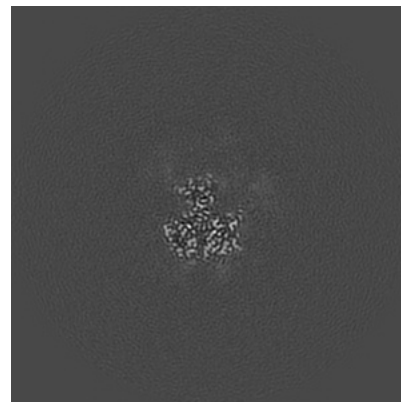
6.3.1 Primary map



X Index: 131



Y Index: 133

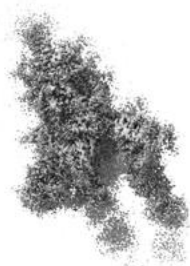


Z Index: 168

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

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

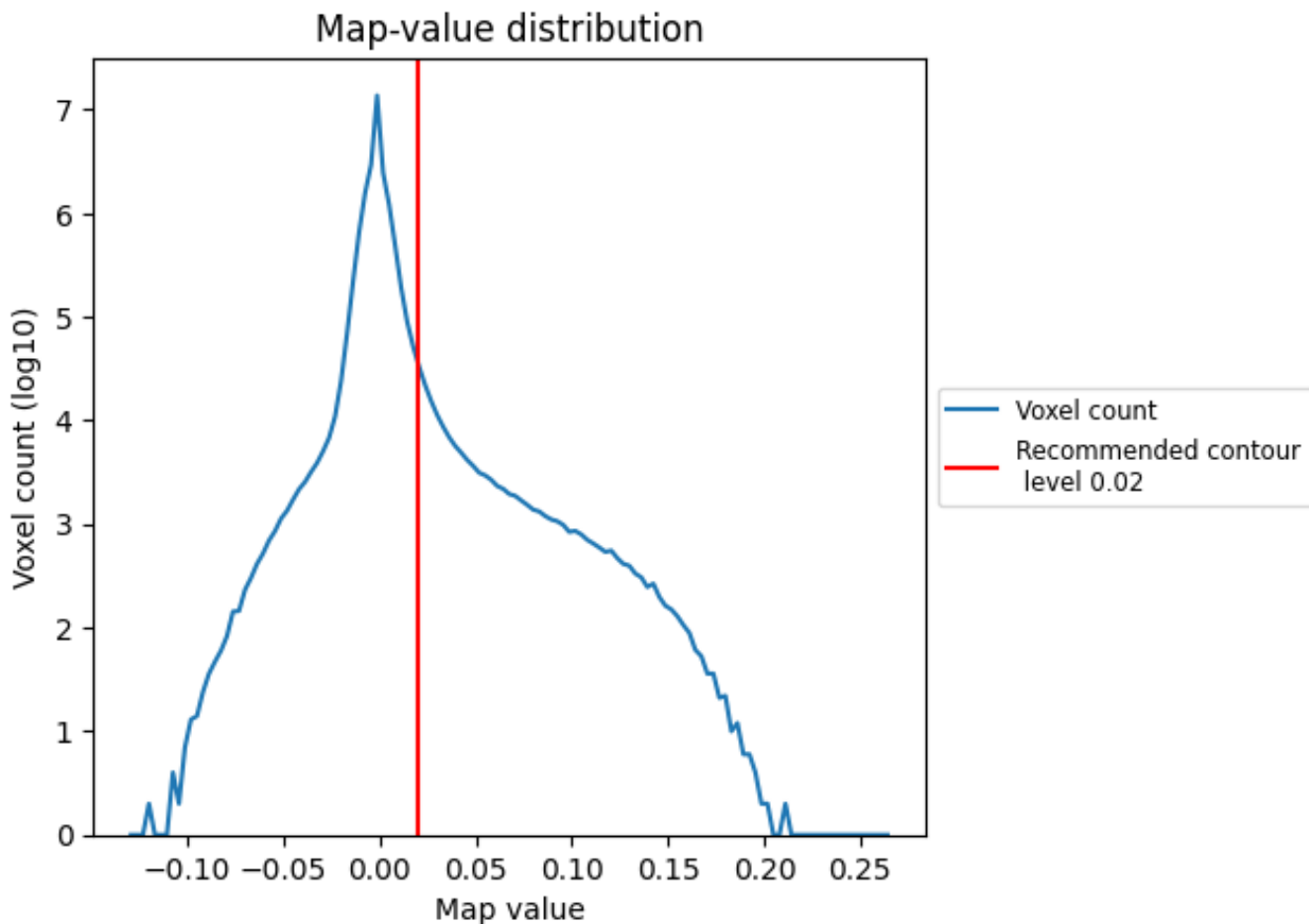
6.5 Mask visualisation

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

7 Map analysis [i](#)

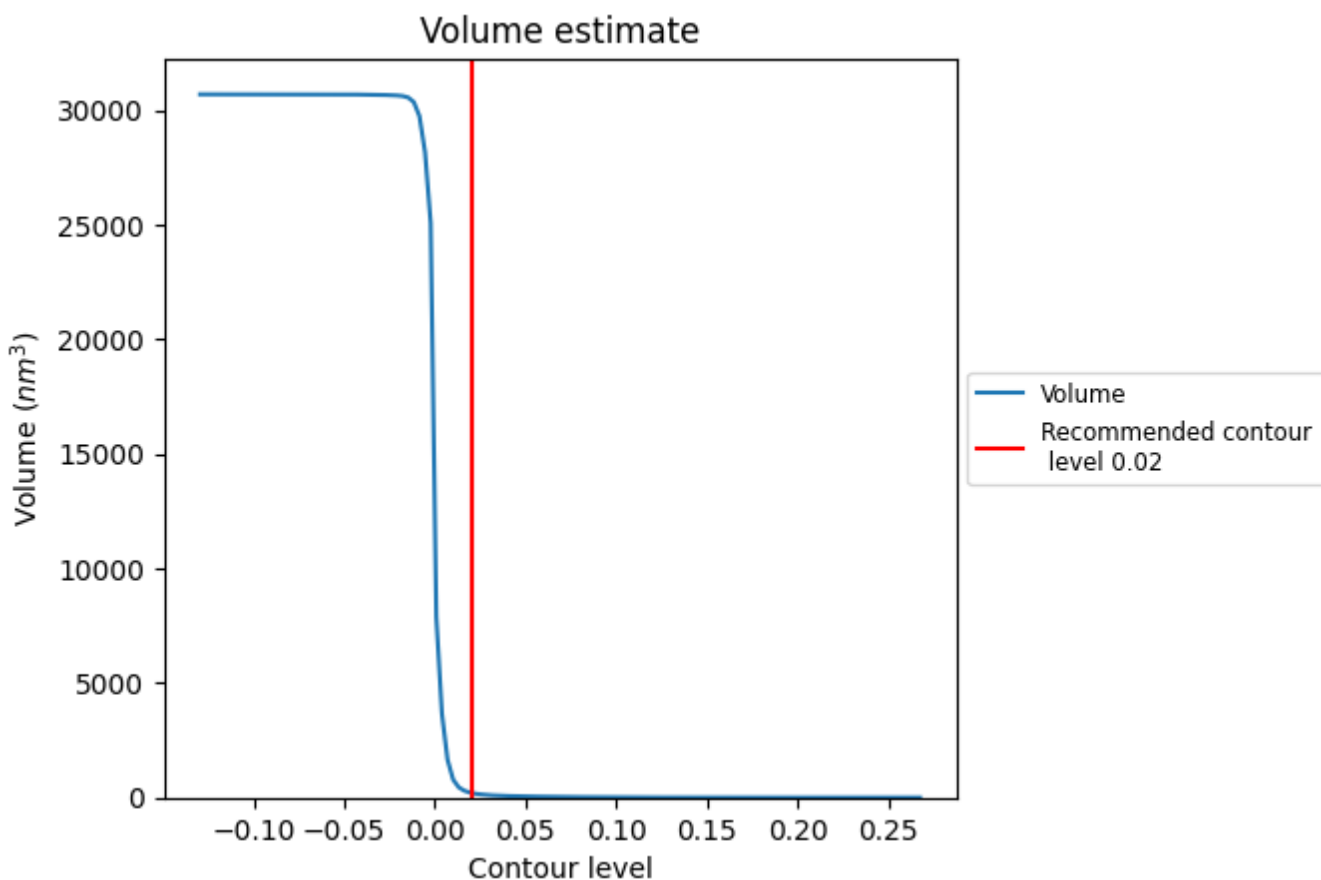
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

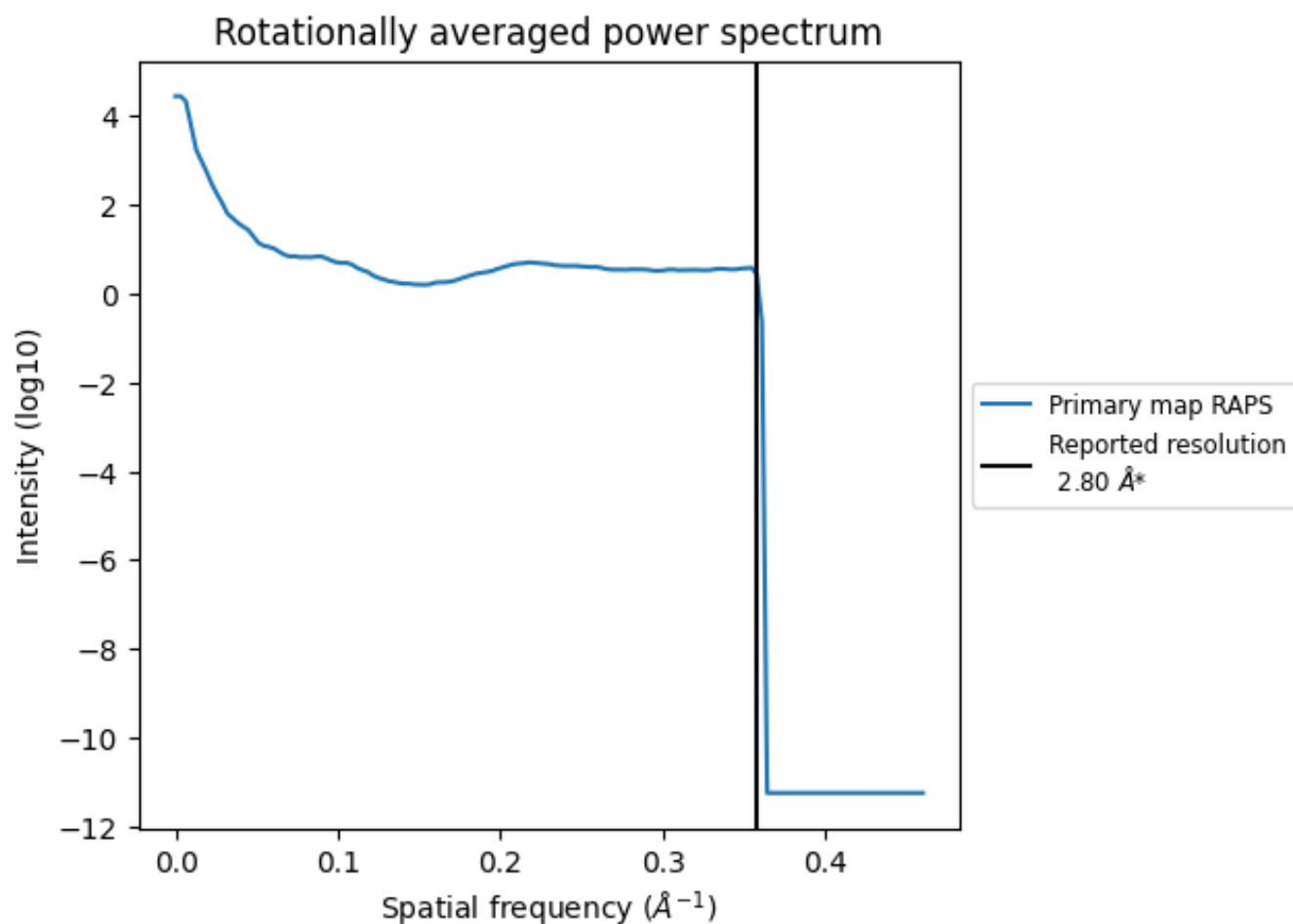
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 207 nm³; this corresponds to an approximate mass of 187 kDa.

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

7.3 Rotationally averaged power spectrum [\(i\)](#)



*Reported resolution corresponds to spatial frequency of 0.357 Å⁻¹

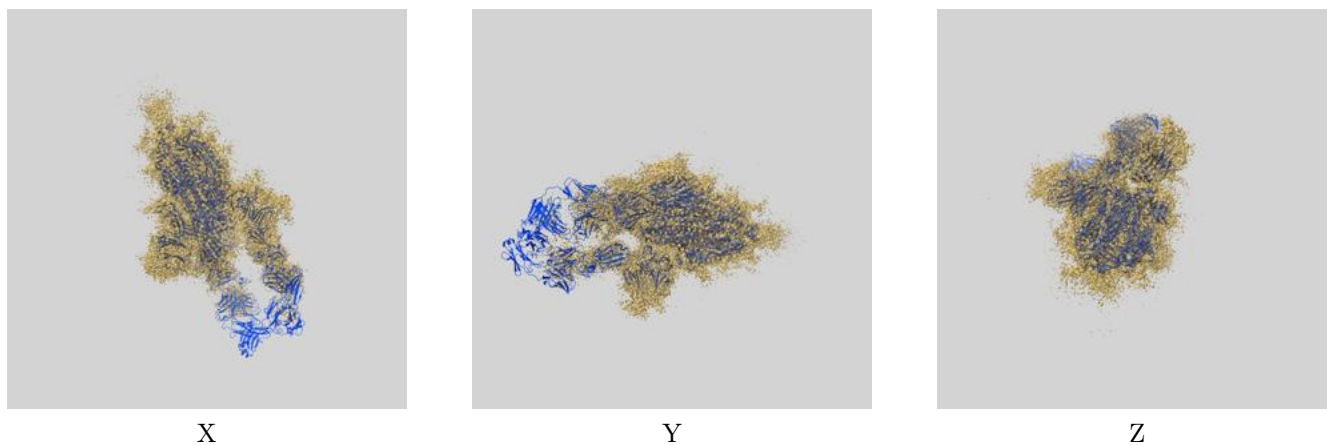
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

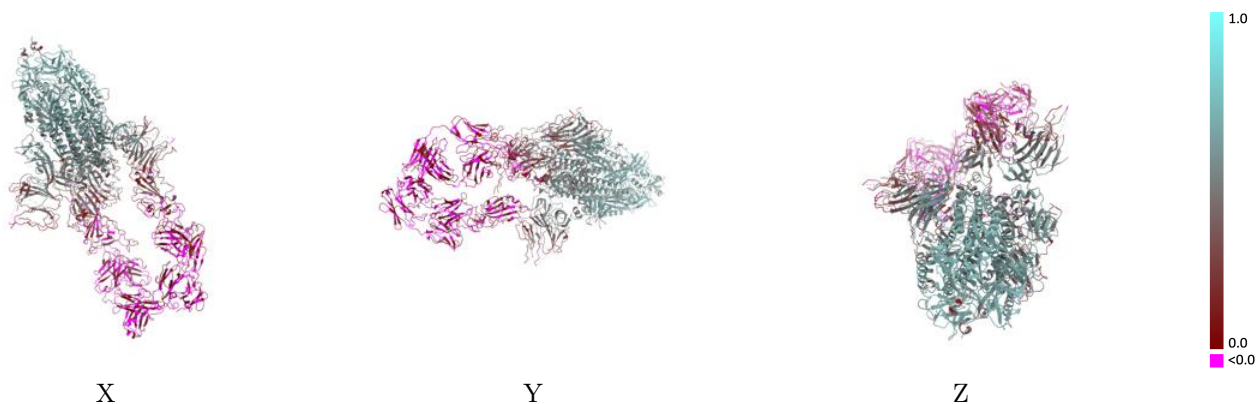
This section contains information regarding the fit between EMDB map EMD-30519 and PDB model 7CZW. Per-residue inclusion information can be found in section [3](#) on page [9](#).

9.1 Map-model overlay [i](#)



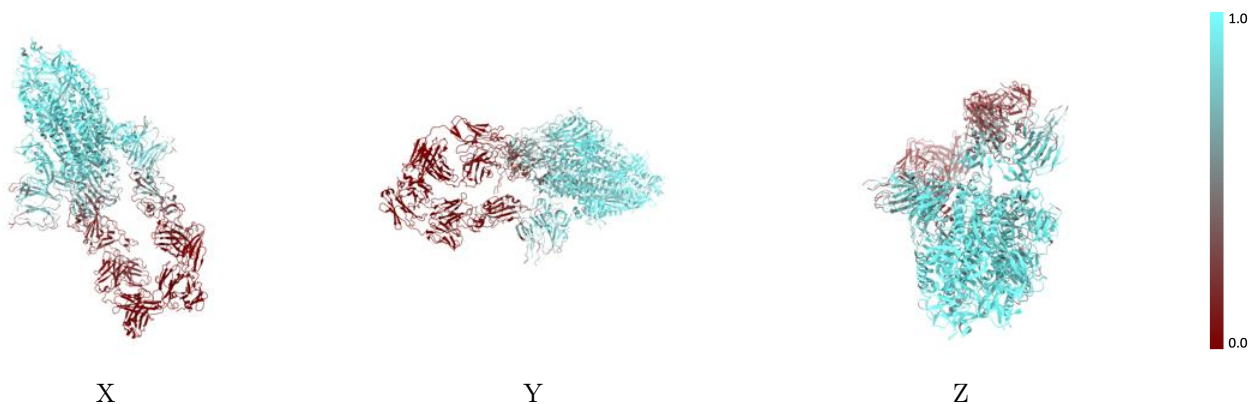
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



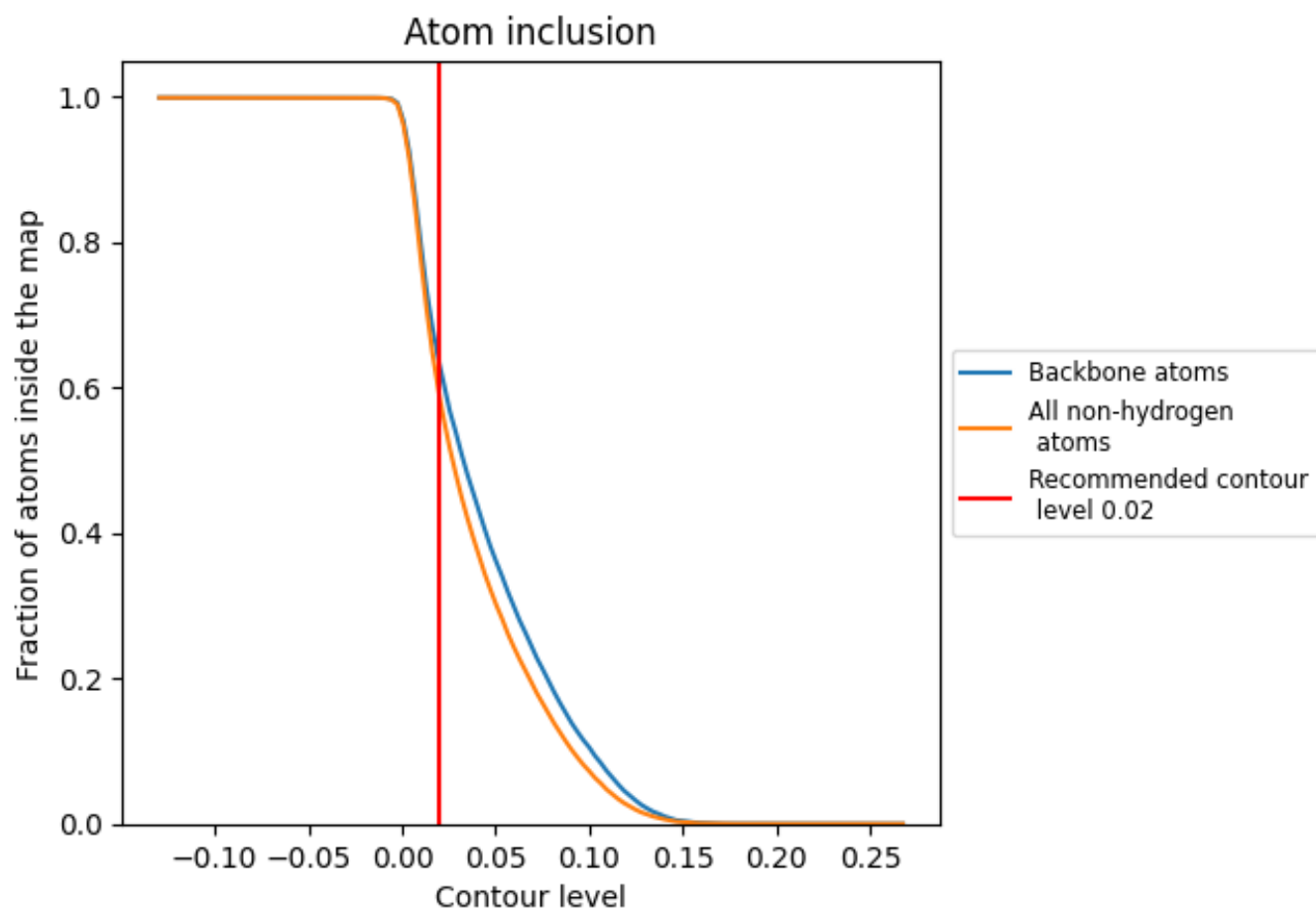
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [\(i\)](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).



























































9.4 Atom inclusion [i](#)



At the recommended contour level, 63% of all backbone atoms, 59% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5887	 0.3460
A	 0.7472	 0.4310
B	 0.7926	 0.4710
C	 0.6968	 0.4150
D	 0.6429	 0.2330
E	 0.2857	 0.1720
F	 0.8929	 0.5550
G	 0.7143	 0.3450
H	 0.0419	 0.0280
I	 0.7143	 0.4950
J	 0.0142	 0.0160
K	 0.8214	 0.5040
L	 0.0205	 0.0060
M	 0.7500	 0.4340
N	 0.0090	 -0.0050
O	 0.2500	 0.1880
P	 0.6071	 0.2710
Q	 0.8929	 0.5210
R	 0.7500	 0.3920
S	 0.8214	 0.4200
T	 0.6786	 0.4010
U	 0.3929	 0.2570
V	 0.0000	 0.0490
W	 0.4643	 0.3500
X	 0.8214	 0.4970
Y	 0.6786	 0.3910
Z	 0.5357	 0.2870
a	 0.7500	 0.4190
b	 0.6071	 0.3280

