



Full wwPDB EM Validation Report ⓘ

Jul 16, 2025 – 02:14 AM JST

PDB ID : 8ZHE / pdb_00008zhe
EMDB ID : EMD-60100
Title : SARS-CoV-2 spike trimer (6P) in complex with three R1-26 Fabs
Authors : Yan, Q.; Gao, X.; Liu, B.; Hou, R.; He, P.; Li, Z.; Chen, Q.; Wang, J.; He, J.;
Chen, L.; Zhao, J.; Xiong, X.
Deposited on : 2024-05-10
Resolution : 3.16 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 : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

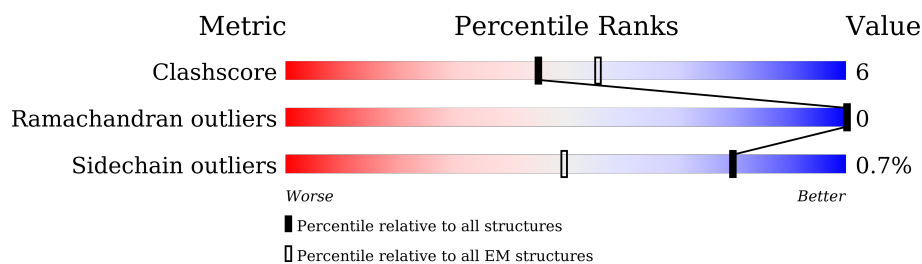
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.16 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.



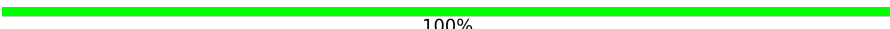
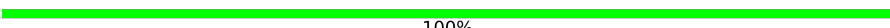
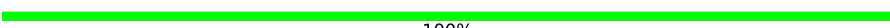
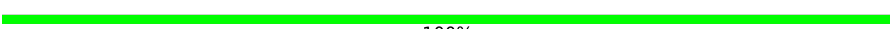
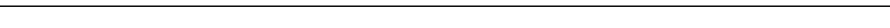
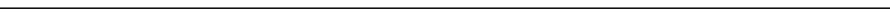
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	1278	72% 11% 17%
1	B	1278	70% 13% 17%
1	C	1278	70% 13% 17%
2	F	243	79% 12% 9%
2	H	243	79% 12% 9%
2	J	243	79% 12% 9%
3	G	240	71% 17% • 11%
3	K	240	82% 7% 11%
3	L	240	78% 10% 11%

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Mol	Chain	Length	Quality of chain
4	D	2	 50%50%
4	E	2	 100%
4	I	2	 100%
4	M	2	 100%
4	N	2	 100%
4	O	2	 100%
4	P	2	 50%50%
4	Q	2	 100%
4	R	2	 100%
4	S	2	 100%
4	T	2	 100%
4	U	2	 100%
4	V	2	 100%
4	W	2	 100%
4	X	2	 100%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 35541 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,Expression Tag.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1066	Total	C	N	O	S	0	0
			8320	5307	1388	1587	38		
1	B	1066	Total	C	N	O	S	0	0
			8320	5307	1388	1587	38		
1	C	1066	Total	C	N	O	S	0	0
			8320	5307	1388	1587	38		

There are 33 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	682	GLY	ARG	conflict	UNP P0DTC2
A	683	SER	ARG	conflict	UNP P0DTC2
A	685	SER	ARG	conflict	UNP P0DTC2
A	817	PRO	PHE	conflict	UNP P0DTC2
A	892	PRO	ALA	conflict	UNP P0DTC2
A	899	PRO	ALA	conflict	UNP P0DTC2
A	942	PRO	ALA	conflict	UNP P0DTC2
A	986	PRO	LYS	variant	UNP P0DTC2
A	987	PRO	VAL	variant	UNP P0DTC2
A	1209	GLY	-	linker	UNP P0DTC2
A	1210	SER	-	linker	UNP P0DTC2
B	682	GLY	ARG	conflict	UNP P0DTC2
B	683	SER	ARG	conflict	UNP P0DTC2
B	685	SER	ARG	conflict	UNP P0DTC2
B	817	PRO	PHE	conflict	UNP P0DTC2
B	892	PRO	ALA	conflict	UNP P0DTC2
B	899	PRO	ALA	conflict	UNP P0DTC2
B	942	PRO	ALA	conflict	UNP P0DTC2
B	986	PRO	LYS	variant	UNP P0DTC2
B	987	PRO	VAL	variant	UNP P0DTC2
B	1209	GLY	-	linker	UNP P0DTC2
B	1210	SER	-	linker	UNP P0DTC2
C	682	GLY	ARG	conflict	UNP P0DTC2
C	683	SER	ARG	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	685	SER	ARG	conflict	UNP P0DTC2
C	817	PRO	PHE	conflict	UNP P0DTC2
C	892	PRO	ALA	conflict	UNP P0DTC2
C	899	PRO	ALA	conflict	UNP P0DTC2
C	942	PRO	ALA	conflict	UNP P0DTC2
C	986	PRO	LYS	variant	UNP P0DTC2
C	987	PRO	VAL	variant	UNP P0DTC2
C	1209	GLY	-	linker	UNP P0DTC2
C	1210	SER	-	linker	UNP P0DTC2

- Molecule 2 is a protein called Heavy chain of R1-26 Fab.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	H	221	Total	C	N	O	S	0	0
			1656	1048	279	323	6		
2	F	221	Total	C	N	O	S	0	0
			1656	1048	279	323	6		
2	J	221	Total	C	N	O	S	0	0
			1656	1048	279	323	6		

- Molecule 3 is a protein called Light chain of R1-26 Fab.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	L	214	Total	C	N	O	S	0	0
			1591	987	260	339	5		
3	G	214	Total	C	N	O	S	0	0
			1591	987	260	339	5		
3	K	214	Total	C	N	O	S	0	0
			1591	987	260	339	5		

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



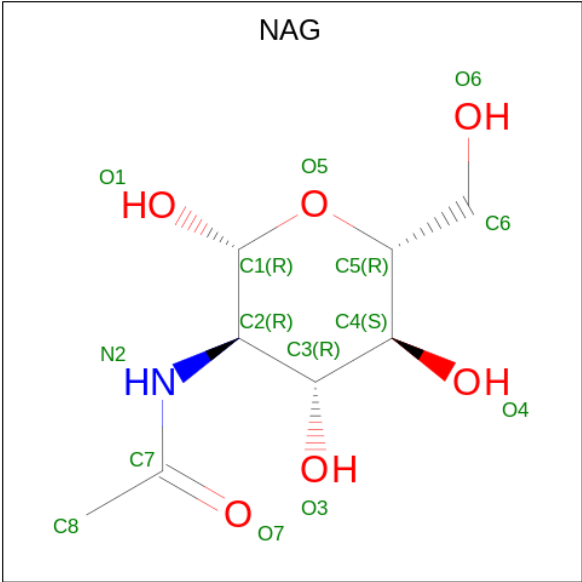
Mol	Chain	Residues	Atoms				AltConf	Trace
4	D	2	Total	C	N	O	0	0
			28	16	2	10		
4	E	2	Total	C	N	O	0	0
			28	16	2	10		

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Mol	Chain	Residues	Atoms				AltConf	Trace
4	I	2	Total	C	N	O	0	0
			28	16	2	10		
4	M	2	Total	C	N	O	0	0
			28	16	2	10		
4	N	2	Total	C	N	O	0	0
			28	16	2	10		
4	O	2	Total	C	N	O	0	0
			28	16	2	10		
4	P	2	Total	C	N	O	0	0
			28	16	2	10		
4	Q	2	Total	C	N	O	0	0
			28	16	2	10		
4	R	2	Total	C	N	O	0	0
			28	16	2	10		
4	S	2	Total	C	N	O	0	0
			28	16	2	10		
4	T	2	Total	C	N	O	0	0
			28	16	2	10		
4	U	2	Total	C	N	O	0	0
			28	16	2	10		
4	V	2	Total	C	N	O	0	0
			28	16	2	10		
4	W	2	Total	C	N	O	0	0
			28	16	2	10		
4	X	2	Total	C	N	O	0	0
			28	16	2	10		

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).

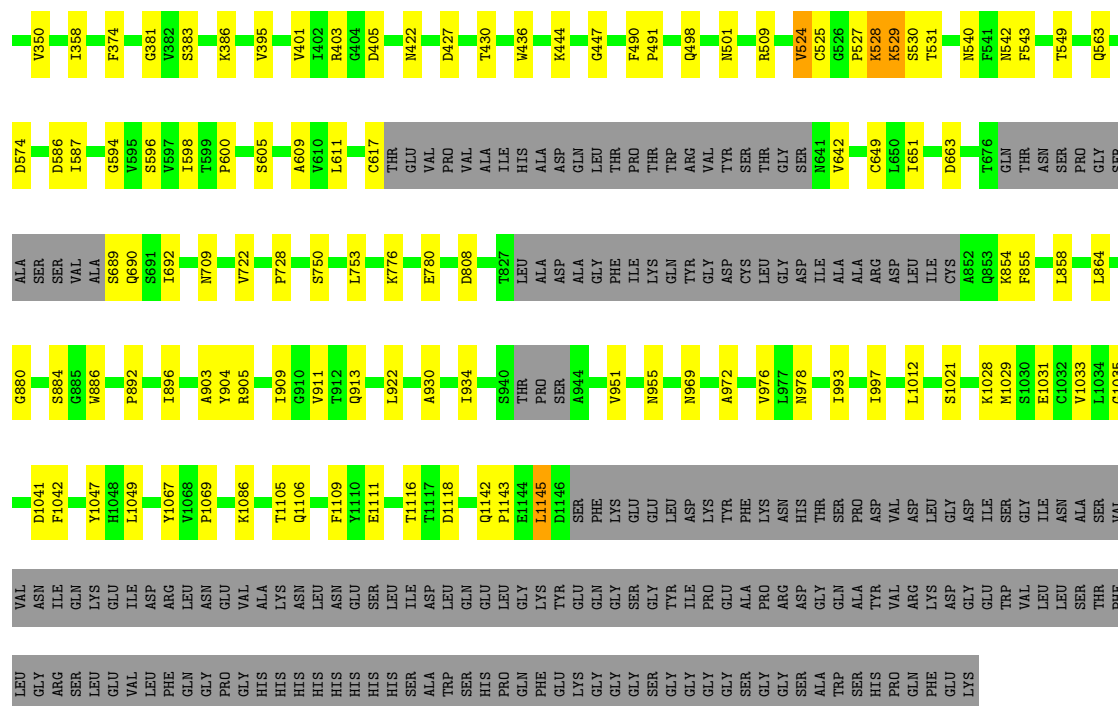


Mol	Chain	Residues	Atoms				AltConf
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5	A	1	Total	C	N	O	0
			14	8	1	5	
5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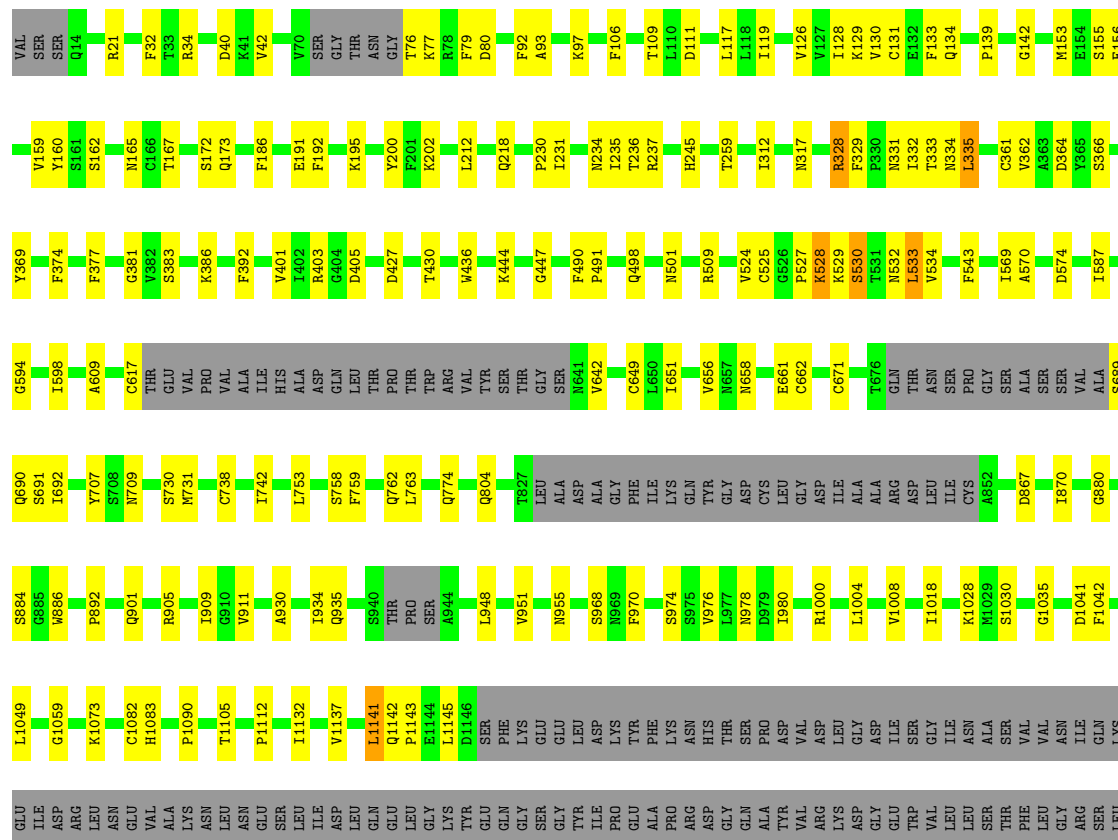
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Mol	Chain	Residues	Atoms				AltConf
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	B	1	Total	C	N	O	0
			14	8	1	5	
5	C	1	Total	C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



• Molecule 1: Spike glycoprotein, Fibrin, Expression Tag

Chain C: 70% 13% 17%



GLU VAL LEU PHE GLN GLY PRO GLY HIS HIS HIS HIS HIS HIS HIS SER ALA SER TRP SER HIS HIS PRO GLN PHE GLU LYS GLY GLY SER SER GLY GLY GLY GLY SER ALA TRP SER HIS HIS PRO GLN PHE GLU LYS

• Molecule 2: Heavy chain of R1-26 Fab

Chain H:  79% 12% 9%

MET GLY TRP SER LEU LEU LEU PHE LEU VAL VAL ALA ALA THR ARG VAL LEU SER SER E1 G8 L18 R19 L20 S35 A40 K43 N50 I51 I52 K52 V61 D62 S63 V64 R72 Y80 V93 A97 Q112 L115 S122 T123 K136 T142

L145 L166 Q178 L182 V189 N206 K213 K221 SER CYS ASP

• Molecule 2: Heavy chain of R1-26 Fab

Chain F:  79% 12% 9%

MET GLY TRP SER LEU LEU LEU PHE LEU VAL VAL ALA ALA THR ARG VAL LEU SER SER E1 E6 F27 M34 S35 A40 K43 N50 I51 I52 K52 V61 D62 S63 V64 R72 V93 A97 Q100 V107 W110 G111 Q112 L115 S122 T123

L145 L177 Q178 L182 V189 N206 K213 K221 SER CYS ASP

• Molecule 2: Heavy chain of R1-26 Fab

Chain J:  79% 12% 9%

MET GLY TRP SER LEU LEU LEU PHE LEU VAL VAL ALA ALA THR ARG VAL LEU SER SER E1 L18 R19 L20 S35 R38 Q39 A40 K43 N50 I51 I52 K52 V61 V64 R72 L81 E89 V93 A97 Q100 D108 L115 S122 T123

K136 T142 L145 Q178 L182 V189 N206 K213 K221 SER CYS ASP

• Molecule 3: Light chain of R1-26 Fab

Chain L:  78% 10% 11%

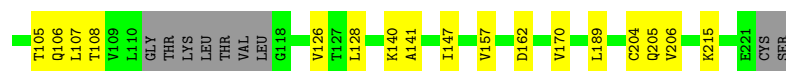
MET GLY TRP SER CYS ILE ILE LEU PHE LEU LEU VAL VAL THR ALA THR GLY VAL N1 F2 Q6 P7 H8 S13 K16 S26 W36 Y37 Q38 Q39 R40 V48 I49 P60 F63 E66 C91 T105 L110 GLY THR LYS LEU THR VAL LEU G118 V126

T127 L128 I147 D162 V170 L189 C204 Q205 V206 K215 E221 CYS SER

• Molecule 3: Light chain of R1-26 Fab

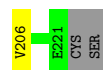
Chain G:  71% 17% 11%

MET GLY TRP SER CYS ILE ILE LEU PHE LEU VAL VAL THR ALA THR GLY VAL N1 F2 Q6 P7 H8 K16 S26 W36 Y37 Q38 Q39 R40 A44 P45 T46 T47 V48 I49 R62 F63 I78 S79 G80 L81 K82 T83 E84 D85 E86 A87 D88 Y89 Y90 C91 W99



- Molecule 3: Light chain of R1-26 Fab

Chain K: 82% 7% 11%



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

Chain D: 50% 50%



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

Chain E: 100%



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

Chain I: 100%



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

Chain M: 100%



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

Chain N: 100%



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

Chain O:  100%



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

Chain P:  50% 50%



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

Chain Q:  100%



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

Chain R:  100%



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

Chain S:  100%



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

Chain T:  100%



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

Chain U:  100%



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

Chain V:  100%



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

Chain W:  100%



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

Chain X:  100%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	388973	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)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	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	0.13	0/8515	0.31	0/11595
1	B	0.13	0/8515	0.32	0/11595
1	C	0.13	0/8515	0.33	0/11595
2	F	0.17	0/1697	0.40	0/2311
2	H	0.15	0/1697	0.41	0/2311
2	J	0.15	0/1697	0.37	0/2311
3	G	0.18	0/1630	0.44	0/2232
3	K	0.12	0/1630	0.32	0/2232
3	L	0.13	0/1630	0.35	0/2232
All	All	0.14	0/35526	0.34	0/48414

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	8320	0	8074	89	0
1	B	8320	0	8074	113	0
1	C	8320	0	8074	118	0
2	F	1656	0	1626	17	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	1656	0	1626	20	0
2	J	1656	0	1626	17	0
3	G	1591	0	1482	41	0
3	K	1591	0	1482	10	0
3	L	1591	0	1482	15	0
4	D	28	0	25	1	0
4	E	28	0	25	0	0
4	I	28	0	25	0	0
4	M	28	0	25	0	0
4	N	28	0	25	0	0
4	O	28	0	25	0	0
4	P	28	0	25	1	0
4	Q	28	0	25	0	0
4	R	28	0	25	0	0
4	S	28	0	25	0	0
4	T	28	0	25	0	0
4	U	28	0	25	0	0
4	V	28	0	25	0	0
4	W	28	0	25	0	0
4	X	28	0	25	0	0
5	A	140	0	130	0	0
5	B	140	0	130	1	0
5	C	140	0	130	1	0
All	All	35541	0	34311	423	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 6.

All (423) 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)
3:G:40:ARG:CD	3:G:85:ASP:OD2	1.93	1.16
3:G:86:GLU:HB2	3:G:108:THR:HA	1.34	1.06
3:G:86:GLU:OE2	3:G:108:THR:HG22	1.56	1.05
1:B:333:THR:CG2	1:B:527:PRO:HG3	1.93	0.98
3:G:40:ARG:HD2	3:G:85:ASP:OD2	1.71	0.89
3:G:40:ARG:HD3	3:G:85:ASP:OD2	1.78	0.84
1:C:328:ARG:HE	1:C:530:SER:HB3	1.50	0.76
1:C:328:ARG:HA	1:C:530:SER:HA	1.67	0.75
3:G:204:CYS:HB3	3:G:215:LYS:HE3	1.69	0.75
3:G:40:ARG:NE	3:G:85:ASP:OD2	2.20	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:86:GLU:CB	3:G:108:THR:HA	2.13	0.74
1:C:332:ILE:HG23	1:C:362:VAL:HB	1.71	0.72
2:H:166:LEU:HD12	2:H:166:LEU:O	1.90	0.71
2:J:145:LEU:HD22	2:J:189:VAL:H	1.56	0.70
2:F:145:LEU:HD22	2:F:189:VAL:H	1.56	0.70
2:H:145:LEU:HD22	2:H:189:VAL:H	1.54	0.69
1:B:1116:THR:HG23	1:B:1118:ASP:H	1.58	0.69
1:C:106:PHE:HB2	1:C:117:LEU:HB2	1.75	0.69
3:L:204:CYS:HB3	3:L:215:LYS:HE3	1.76	0.66
1:C:328:ARG:HB2	1:C:543:PHE:HE1	1.61	0.65
3:G:147:ILE:HG21	3:G:206:VAL:HG11	1.78	0.65
3:G:39:GLN:O	3:G:87:ALA:HB1	1.97	0.64
1:C:332:ILE:HG12	1:C:362:VAL:HG11	1.80	0.64
1:A:123:ALA:HA	1:A:177:MET:HB2	1.81	0.63
1:C:731:MET:HG2	1:C:774:GLN:HE22	1.63	0.63
3:G:36:TRP:HB2	3:G:49:ILE:HB	1.80	0.63
1:A:1126:CYS:HB2	1:A:1132:ILE:HG12	1.81	0.62
1:A:246:ARG:HH22	1:A:254:SER:HB3	1.64	0.62
1:A:667:GLY:HA2	1:B:864:LEU:HA	1.82	0.62
1:B:142:GLY:HA3	1:B:156:GLU:HB2	1.82	0.62
1:C:1141:LEU:HG	1:C:1145:LEU:HD23	1.80	0.62
1:A:328:ARG:HH21	1:A:580:GLN:HB2	1.64	0.62
1:A:383:SER:OG	1:A:386:LYS:NZ	2.33	0.62
1:B:1047:TYR:HB2	1:B:1067:TYR:HB3	1.82	0.61
1:C:142:GLY:HA3	1:C:156:GLU:HB2	1.83	0.61
1:B:922:LEU:HD11	4:P:1:NAG:H3	1.83	0.61
1:A:444:LYS:NZ	1:A:447:GLY:O	2.34	0.60
1:B:119:ILE:HG23	1:B:128:ILE:HG12	1.83	0.60
1:B:642:VAL:HG22	1:B:651:ILE:HG13	1.84	0.60
1:C:332:ILE:HG21	1:C:335:LEU:HD23	1.83	0.59
1:C:383:SER:OG	1:C:386:LYS:NZ	2.35	0.59
2:H:112:GLN:H	2:H:112:GLN:CD	2.10	0.59
3:G:126:VAL:HG22	3:G:147:ILE:HG22	1.83	0.59
1:B:327:VAL:HG23	1:B:542:ASN:HB3	1.85	0.59
3:G:39:GLN:HG3	3:G:45:PRO:HG3	1.84	0.59
1:C:867:ASP:HA	1:C:870:ILE:HD12	1.84	0.59
2:H:178:GLN:HE21	2:H:182:LEU:HB3	1.68	0.59
1:B:333:THR:HG21	1:B:527:PRO:HG3	1.84	0.58
1:B:444:LYS:NZ	1:B:447:GLY:O	2.35	0.58
1:C:1082:CYS:HB2	1:C:1132:ILE:HG12	1.86	0.58
1:C:901:GLN:HG2	1:C:905:ARG:HE	1.67	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:147:ILE:HG21	3:L:206:VAL:HG11	1.84	0.58
1:A:792:PRO:HG3	1:C:707:TYR:HD2	1.69	0.58
1:A:97:LYS:HB2	1:A:186:PHE:HA	1.85	0.58
1:B:32:PHE:HB3	1:B:218:GLN:HG3	1.84	0.58
1:B:106:PHE:HB2	1:B:117:LEU:HB3	1.86	0.57
1:C:598:ILE:HB	1:C:609:ALA:HB3	1.87	0.57
2:J:52:LYS:O	2:J:72:ARG:NH1	2.37	0.57
1:B:383:SER:OG	1:B:386:LYS:NZ	2.35	0.57
1:C:742:ILE:HG12	1:C:1000:ARG:HB3	1.87	0.57
1:A:1030:SER:HB3	1:C:1041:ASP:HB3	1.87	0.57
1:B:905:ARG:NH1	1:B:1049:LEU:O	2.36	0.57
1:B:1105:THR:HG22	1:B:1111:GLU:H	1.70	0.57
1:C:444:LYS:NZ	1:C:447:GLY:O	2.34	0.57
1:A:974:SER:HB3	1:A:980:ILE:HD11	1.86	0.57
2:H:52:LYS:O	2:H:72:ARG:NH1	2.38	0.57
1:A:1028:LYS:NZ	1:A:1042:PHE:O	2.38	0.56
1:B:24:LEU:HB2	1:B:78:ARG:HD3	1.88	0.56
1:A:32:PHE:HB3	1:A:218:GLN:HG3	1.86	0.56
1:B:119:ILE:HG12	1:B:128:ILE:HG23	1.88	0.56
1:B:574:ASP:HA	1:B:587:ILE:HB	1.88	0.56
1:A:805:ILE:HD12	1:A:878:LEU:HD11	1.87	0.56
2:F:61:VAL:HG12	2:F:64:VAL:HG22	1.88	0.56
1:A:714:ILE:HD11	1:A:1096:VAL:HG11	1.86	0.55
1:C:381:GLY:HA3	1:C:430:THR:HA	1.89	0.55
1:C:609:ALA:HB2	1:C:692:ILE:HD12	1.88	0.55
1:B:329:PHE:HD2	1:B:528:LYS:HB3	1.71	0.55
1:B:1028:LYS:NZ	1:B:1042:PHE:O	2.39	0.55
2:H:61:VAL:HG12	2:H:64:VAL:HG22	1.88	0.55
2:F:40:ALA:HB3	2:F:43:LYS:HB2	1.89	0.55
1:B:329:PHE:HD1	1:B:330:PRO:HD2	1.70	0.55
1:B:381:GLY:HA3	1:B:430:THR:HA	1.89	0.55
3:L:38:GLN:HE21	3:L:48:VAL:HB	1.71	0.55
3:L:126:VAL:HG22	3:L:147:ILE:HG22	1.87	0.55
2:F:178:GLN:HE21	2:F:182:LEU:HB3	1.70	0.55
1:A:963:VAL:HG11	1:C:570:ALA:HB1	1.88	0.55
1:C:574:ASP:HA	1:C:587:ILE:HB	1.89	0.55
2:H:19:ARG:NH1	2:H:20:LEU:O	2.40	0.55
1:B:528:LYS:HE2	1:B:529:LYS:N	2.22	0.55
3:K:147:ILE:HG21	3:K:206:VAL:HG11	1.89	0.55
1:B:153:MET:HE1	1:B:155:SER:HB3	1.89	0.54
1:B:1049:LEU:HD11	1:B:1067:TYR:HB2	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:178:GLN:HE21	2:J:182:LEU:HB3	1.72	0.54
1:B:134:GLN:HB2	1:B:161:SER:HB2	1.88	0.54
2:J:40:ALA:HB3	2:J:43:LYS:HB2	1.89	0.54
1:C:329:PHE:CG	1:C:528:LYS:HB2	2.43	0.54
1:A:328:ARG:NH2	1:A:578:ASP:OD2	2.41	0.54
1:B:976:VAL:HG22	1:B:978:ASN:H	1.73	0.54
1:C:374:PHE:HA	1:C:436:TRP:HB3	1.89	0.54
1:C:126:VAL:HB	1:C:172:SER:HB3	1.89	0.54
2:H:40:ALA:HB3	2:H:43:LYS:HB2	1.90	0.54
3:G:78:ILE:HG22	3:G:81:LEU:H	1.72	0.54
1:B:201:PHE:HB3	1:B:229:LEU:HB2	1.89	0.53
1:C:328:ARG:HB2	1:C:543:PHE:CE1	2.41	0.53
1:A:282:ASN:OD1	1:A:282:ASN:N	2.41	0.53
1:A:342:PHE:HB2	4:D:1:NAG:H82	1.89	0.53
1:C:951:VAL:O	1:C:955:ASN:ND2	2.42	0.53
1:A:574:ASP:HA	1:A:587:ILE:HB	1.90	0.53
1:B:529:LYS:HE3	1:B:531:THR:H	1.72	0.53
3:G:62:ARG:HB3	3:G:80:GLY:HA3	1.90	0.53
1:B:37:TYR:OH	1:B:54:LEU:O	2.25	0.53
1:B:117:LEU:HD13	1:B:130:VAL:HB	1.90	0.53
1:B:329:PHE:CE2	1:B:528:LYS:HD3	2.43	0.53
2:F:6:GLU:OE1	2:F:112:GLN:NE2	2.41	0.53
1:B:97:LYS:HB2	1:B:186:PHE:HA	1.89	0.53
1:B:333:THR:HG23	1:B:527:PRO:HG3	1.87	0.53
2:F:35:SER:HB2	2:F:97:ALA:HB3	1.89	0.53
1:A:381:GLY:HA3	1:A:430:THR:HA	1.90	0.53
1:C:32:PHE:HB3	1:C:218:GLN:HG3	1.90	0.53
1:C:92:PHE:O	1:C:192:PHE:N	2.41	0.53
1:C:159:VAL:HG23	1:C:160:TYR:HD1	1.74	0.53
1:A:808:ASP:OD1	1:A:808:ASP:N	2.42	0.53
2:F:52:LYS:O	2:F:72:ARG:NH1	2.42	0.53
1:A:108:THR:HA	1:A:236:THR:HG22	1.92	0.52
1:A:119:ILE:HG12	1:A:128:ILE:HG23	1.90	0.52
2:H:166:LEU:HD12	2:H:166:LEU:C	2.33	0.52
3:G:40:ARG:HE	3:G:87:ALA:HB2	1.74	0.52
1:A:106:PHE:HB2	1:A:117:LEU:HB2	1.90	0.52
1:A:897:PRO:HA	1:C:707:TYR:HE1	1.74	0.52
1:B:1106:GLN:HE21	1:B:1109:PHE:HB3	1.75	0.52
3:G:87:ALA:N	3:G:107:LEU:O	2.43	0.52
1:B:317:ASN:HA	1:B:594:GLY:HA2	1.92	0.52
1:C:21:ARG:NH2	1:C:79:PHE:O	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:GLN:HE22	1:A:175:PHE:HD2	1.58	0.52
1:B:689:SER:OG	1:B:690:GLN:N	2.43	0.52
1:C:369:TYR:HB3	1:C:377:PHE:HE2	1.74	0.52
1:B:329:PHE:CD2	1:B:528:LYS:HB3	2.45	0.52
1:C:80:ASP:OD1	1:C:80:ASP:N	2.43	0.52
1:B:21:ARG:NH2	1:B:79:PHE:O	2.43	0.52
1:B:34:ARG:NH1	1:B:191:GLU:OE2	2.43	0.52
1:C:362:VAL:HG13	1:C:527:PRO:HD2	1.92	0.52
3:L:6:GLN:NE2	3:L:91:CYS:SG	2.83	0.51
1:C:34:ARG:NH1	1:C:191:GLU:OE2	2.43	0.51
1:C:948:LEU:HD21	1:C:1059:GLY:HA3	1.92	0.51
3:K:6:GLN:NE2	3:K:91:CYS:SG	2.84	0.51
1:B:143:VAL:HG13	1:B:153:MET:O	2.11	0.51
1:B:333:THR:HG22	1:B:527:PRO:HG3	1.84	0.51
1:A:976:VAL:HG22	1:A:978:ASN:H	1.75	0.51
1:B:37:TYR:OH	1:B:53:ASP:OD2	2.29	0.51
1:A:98:SER:HB3	1:A:181:GLY:HA2	1.92	0.51
1:C:691:SER:OG	1:C:692:ILE:N	2.42	0.51
2:J:19:ARG:NH1	2:J:20:LEU:O	2.38	0.51
1:A:78:ARG:HE	1:A:80:ASP:HB2	1.75	0.51
1:A:661:GLU:N	1:A:661:GLU:OE2	2.43	0.51
3:G:6:GLN:NE2	3:G:91:CYS:SG	2.84	0.51
3:G:38:GLN:HE22	3:G:47:THR:C	2.18	0.51
1:B:195:LYS:HB2	1:B:202:LYS:HB2	1.93	0.50
1:C:40:ASP:N	1:C:40:ASP:OD1	2.43	0.50
2:F:206:ASN:HB2	2:F:213:LYS:HD3	1.93	0.50
1:A:742:ILE:HD13	1:A:753:LEU:HD11	1.94	0.50
2:J:136:LYS:NZ	2:J:142:THR:O	2.44	0.50
1:A:617:CYS:N	1:A:649:CYS:SG	2.85	0.50
1:C:661:GLU:OE1	1:C:661:GLU:N	2.44	0.50
2:F:35:SER:HA	2:F:50:ASN:HA	1.93	0.50
1:C:763:LEU:HD22	1:C:1008:VAL:HG21	1.93	0.50
3:L:2:PHE:HD1	3:L:26:SER:HB3	1.76	0.50
1:B:903:ALA:HB1	1:B:913:GLN:HB2	1.93	0.50
2:H:206:ASN:HB2	2:H:213:LYS:HD3	1.94	0.50
1:B:329:PHE:CD2	1:B:528:LYS:HD3	2.47	0.50
2:F:110:TRP:CE3	3:G:45:PRO:HB2	2.47	0.49
1:A:131:CYS:HA	1:A:166:CYS:HB3	1.94	0.49
1:A:663:ASP:OD1	1:A:663:ASP:N	2.43	0.49
1:C:1105:THR:HG22	1:C:1112:PRO:HA	1.94	0.49
1:A:913:GLN:NE2	1:C:1090:PRO:O	2.43	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:529:LYS:NZ	1:B:530:SER:H	2.10	0.49
1:C:328:ARG:HD2	1:C:533:LEU:HD23	1.95	0.49
1:B:993:ILE:O	1:B:997:ILE:HG13	2.13	0.49
1:B:236:THR:HG23	1:B:237:ARG:HG3	1.95	0.49
1:C:909:ILE:HD13	1:C:1049:LEU:HD21	1.95	0.49
1:A:1069:PRO:HG2	1:B:892:PRO:HD2	1.95	0.49
1:A:88:ASP:N	1:A:88:ASP:OD1	2.45	0.48
1:A:689:SER:OG	1:A:690:GLN:N	2.44	0.48
1:B:395:VAL:HG23	1:B:524:VAL:HG21	1.95	0.48
1:C:758:SER:O	1:C:762:GLN:HG3	2.13	0.48
1:A:126:VAL:HB	1:A:172:SER:HB3	1.94	0.48
1:B:728:PRO:O	1:B:1021:SER:OG	2.27	0.48
1:C:97:LYS:HB2	1:C:186:PHE:HA	1.95	0.48
3:G:2:PHE:HD1	3:G:26:SER:HB3	1.77	0.48
3:G:170:VAL:HG22	3:G:189:LEU:HD13	1.95	0.48
3:G:86:GLU:OE2	3:G:108:THR:CG2	2.47	0.48
1:C:93:ALA:HA	1:C:191:GLU:HA	1.94	0.48
3:L:36:TRP:HB2	3:L:49:ILE:HB	1.95	0.48
1:C:106:PHE:HB3	1:C:235:ILE:HG21	1.95	0.48
1:C:236:THR:HG23	1:C:237:ARG:HG3	1.96	0.48
1:C:498:GLN:HB2	1:C:501:ASN:HB3	1.96	0.48
1:B:127:VAL:HG21	5:B:1302:NAG:H5	1.96	0.48
1:C:332:ILE:HG23	1:C:362:VAL:CB	2.42	0.48
1:C:335:LEU:HD21	1:C:364:ASP:HB2	1.96	0.48
1:C:1142:GLN:O	1:C:1145:LEU:HG	2.14	0.48
3:K:2:PHE:HD1	3:K:26:SER:HB3	1.77	0.48
1:B:498:GLN:HB2	1:B:501:ASN:HB3	1.96	0.47
2:H:61:VAL:HG13	2:H:63:SER:H	1.79	0.47
2:J:35:SER:HA	2:J:50:ASN:HA	1.96	0.47
1:A:138:ASP:N	1:A:138:ASP:OD1	2.47	0.47
1:B:80:ASP:N	1:B:80:ASP:OD1	2.47	0.47
1:B:337:PRO:HG2	1:B:358:ILE:HG12	1.96	0.47
1:B:969:ASN:ND2	1:B:972:ALA:O	2.47	0.47
1:C:153:MET:HE1	1:C:155:SER:HB3	1.96	0.47
1:B:596:SER:HB2	1:B:611:LEU:HB3	1.96	0.47
1:B:855:PHE:HB2	1:B:858:LEU:HD12	1.96	0.47
1:B:880:GLY:O	1:B:884:SER:OG	2.26	0.47
1:C:642:VAL:HG22	1:C:651:ILE:HG12	1.95	0.47
1:C:334:ASN:OD1	1:C:361:CYS:HA	2.14	0.47
3:K:39:GLN:HG3	3:K:45:PRO:HG3	1.95	0.47
1:C:131:CYS:SG	1:C:167:THR:N	2.75	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:663:ASP:OD1	1:B:663:ASP:N	2.48	0.47
3:K:36:TRP:HB2	3:K:49:ILE:HB	1.97	0.47
1:A:498:GLN:HB2	1:A:501:ASN:HB3	1.97	0.47
1:B:709:ASN:OD1	1:B:709:ASN:N	2.45	0.47
1:B:1086:LYS:HB2	1:B:1086:LYS:HE2	1.71	0.47
1:C:234:ASN:OD1	1:C:234:ASN:N	2.47	0.47
2:F:110:TRP:HH2	3:G:37:TYR:CG	2.33	0.47
2:H:35:SER:HB2	2:H:97:ALA:HB3	1.97	0.47
2:J:206:ASN:HB2	2:J:213:LYS:HD3	1.97	0.47
1:A:24:LEU:HB2	1:A:78:ARG:HH11	1.80	0.47
1:B:563:GLN:NE2	1:C:42:VAL:O	2.48	0.47
1:B:193:VAL:HB	1:B:204:TYR:HB2	1.96	0.47
1:B:930:ALA:O	1:B:934:ILE:HG23	2.15	0.47
1:B:245:HIS:HB2	1:B:259:THR:HG23	1.95	0.46
1:C:328:ARG:HE	1:C:530:SER:CB	2.26	0.46
2:F:61:VAL:HG13	2:F:63:SER:H	1.80	0.46
1:B:328:ARG:NH1	1:B:530:SER:OG	2.48	0.46
1:B:333:THR:HG22	1:B:527:PRO:CG	2.44	0.46
2:J:61:VAL:HG12	2:J:64:VAL:HG22	1.96	0.46
1:A:363:ALA:N	1:A:525:CYS:O	2.46	0.46
1:B:540:ASN:HB2	1:B:549:THR:HG22	1.97	0.46
1:C:1028:LYS:NZ	1:C:1042:PHE:O	2.48	0.46
2:J:35:SER:HB2	2:J:97:ALA:HB3	1.98	0.46
2:F:27:PHE:HE2	2:F:34:MET:HE1	1.80	0.46
1:A:99:ASN:HB3	1:A:177:MET:HE1	1.97	0.46
1:B:609:ALA:HB2	1:B:692:ILE:HD12	1.97	0.46
1:B:951:VAL:O	1:B:955:ASN:ND2	2.48	0.46
1:A:645:THR:HG23	1:A:647:ALA:H	1.80	0.46
1:B:81:ASN:HB3	1:B:239:GLN:HE21	1.81	0.46
1:B:57:PRO:HB3	1:B:273:ARG:HH12	1.81	0.46
3:K:192:THR:HG1	3:K:195:GLN:HE21	1.59	0.46
1:A:563:GLN:NE2	1:B:42:VAL:O	2.48	0.46
1:C:109:THR:OG1	1:C:111:ASP:OD1	2.33	0.46
2:J:38:ARG:NH2	2:J:89:GLU:OE2	2.49	0.46
2:J:100:GLN:NE2	2:J:108:ASP:OD2	2.48	0.46
1:B:88:ASP:OD1	1:B:88:ASP:N	2.49	0.45
1:B:1069:PRO:HG2	1:C:892:PRO:HD2	1.98	0.45
1:C:119:ILE:HG12	1:C:128:ILE:HG23	1.96	0.45
3:G:38:GLN:N	3:G:38:GLN:OE1	2.49	0.45
1:A:47:VAL:HG22	1:C:569:ILE:HD13	1.98	0.45
1:A:102:ARG:HG3	1:A:141:LEU:HD12	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:804:GLN:O	1:A:816:SER:OG	2.34	0.45
1:B:529:LYS:HA	1:B:529:LYS:HD2	1.84	0.45
2:F:107:VAL:HG22	3:G:99:TRP:CZ3	2.51	0.45
1:A:545:GLY:HA3	1:A:565:PHE:HZ	1.81	0.45
1:B:109:THR:OG1	1:B:111:ASP:OD1	2.31	0.45
1:B:246:ARG:HH22	1:B:254:SER:HB3	1.81	0.45
1:C:329:PHE:CD2	1:C:528:LYS:HB2	2.51	0.45
1:B:598:ILE:HB	1:B:609:ALA:HB3	1.98	0.45
1:C:245:HIS:HB2	1:C:259:THR:HG23	1.99	0.45
1:C:689:SER:OG	1:C:690:GLN:N	2.48	0.45
1:B:617:CYS:N	1:B:649:CYS:SG	2.90	0.45
3:L:39:GLN:HE21	3:L:39:GLN:HB3	1.63	0.45
1:C:886:TRP:HB3	1:C:1035:GLY:HA2	1.99	0.45
3:K:170:VAL:HG22	3:K:189:LEU:HD13	1.97	0.45
1:A:127:VAL:HG12	1:A:171:VAL:HG22	1.98	0.45
1:A:128:ILE:HG21	1:A:229:LEU:HD13	1.99	0.45
1:C:804:GLN:OE1	1:C:935:GLN:NE2	2.45	0.45
1:B:92:PHE:O	1:B:192:PHE:N	2.42	0.44
1:B:162:SER:OG	1:B:163:ALA:N	2.48	0.44
1:B:427:ASP:OD1	1:B:427:ASP:N	2.49	0.44
1:C:427:ASP:OD1	1:C:427:ASP:N	2.50	0.44
3:G:38:GLN:HB2	3:G:40:ARG:HH22	1.83	0.44
3:G:89:TYR:OH	3:G:107:LEU:HD23	2.17	0.44
1:B:1142:GLN:O	1:B:1143:PRO:C	2.59	0.44
3:G:162:ASP:OD1	3:G:162:ASP:N	2.50	0.44
1:A:363:ALA:HB2	1:A:524:VAL:HG12	2.00	0.44
1:C:974:SER:HB3	1:C:980:ILE:HD11	1.98	0.44
1:B:401:VAL:HG22	1:B:509:ARG:HG2	1.99	0.44
1:C:134:GLN:HB3	1:C:162:SER:H	1.81	0.44
1:A:117:LEU:HA	1:A:130:VAL:HG23	2.00	0.44
1:A:1047:TYR:HB2	1:A:1067:TYR:HB3	1.98	0.44
1:C:656:VAL:HG12	1:C:658:ASN:H	1.83	0.44
1:C:1142:GLN:HA	1:C:1145:LEU:CD2	2.47	0.44
1:A:273:ARG:NH1	1:A:290:ASP:OD2	2.51	0.44
1:A:742:ILE:HD11	1:A:997:ILE:HA	2.00	0.44
1:B:854:LYS:HD2	1:B:854:LYS:HA	1.86	0.44
2:H:8:GLY:HA3	2:H:20:LEU:HA	1.99	0.44
2:H:18:LEU:HD12	2:H:19:ARG:H	1.82	0.44
1:A:427:ASP:N	1:A:427:ASP:OD1	2.50	0.44
1:A:1083:HIS:ND1	1:A:1136:THR:HA	2.32	0.44
1:A:92:PHE:O	1:A:192:PHE:N	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:697:MET:HE3	1:A:697:MET:HB2	1.80	0.44
1:B:66:HIS:HB2	1:B:78:ARG:HG2	2.00	0.44
1:C:172:SER:OG	1:C:173:GLN:N	2.51	0.44
1:C:333:THR:H	1:C:362:VAL:HG21	1.81	0.44
3:L:170:VAL:HG22	3:L:189:LEU:HD13	2.00	0.44
1:A:156:GLU:OE1	1:A:158:ARG:NE	2.39	0.44
1:A:759:PHE:O	1:A:763:LEU:HG	2.18	0.43
1:B:886:TRP:HB3	1:B:1035:GLY:HA2	2.01	0.43
1:C:328:ARG:HH11	1:C:533:LEU:HD23	1.83	0.43
1:B:328:ARG:HD2	1:B:543:PHE:HE1	1.83	0.43
1:C:662:CYS:HB2	1:C:671:CYS:HB3	1.93	0.43
1:B:776:LYS:O	1:B:780:GLU:HG2	2.19	0.43
1:A:763:LEU:HD22	1:A:1008:VAL:HG21	2.00	0.43
2:H:19:ARG:NH1	2:H:80:TYR:HA	2.33	0.43
3:G:8:HIS:O	3:G:106:GLN:N	2.48	0.43
2:J:35:SER:N	2:J:97:ALA:O	2.51	0.43
1:B:1142:GLN:O	1:B:1145:LEU:N	2.51	0.43
1:A:1001:LEU:HD23	1:A:1001:LEU:HA	1.89	0.43
1:B:722:VAL:HG11	1:B:934:ILE:HD13	2.01	0.43
1:C:880:GLY:O	1:C:884:SER:OG	2.28	0.43
2:H:136:LYS:NZ	2:H:142:THR:O	2.51	0.43
3:L:162:ASP:OD1	3:L:162:ASP:N	2.52	0.43
3:K:162:ASP:OD1	3:K:162:ASP:N	2.52	0.43
1:C:195:LYS:HB2	1:C:202:LYS:HB2	2.01	0.43
1:C:212:LEU:HD12	1:C:212:LEU:HA	1.86	0.43
2:F:93:VAL:HG22	2:F:115:LEU:HD13	2.01	0.43
3:G:40:ARG:HH21	3:G:87:ALA:CB	2.32	0.43
1:A:374:PHE:HA	1:A:436:TRP:HB3	2.01	0.43
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.52	0.43
1:A:144:TYR:HE1	1:A:156:GLU:HG2	1.84	0.43
1:A:709:ASN:OD1	1:A:709:ASN:N	2.52	0.43
3:G:84:GLU:H	3:G:84:GLU:HG3	1.64	0.43
3:K:39:GLN:HA	3:K:45:PRO:HA	2.00	0.43
1:A:76:THR:OG1	1:A:77:LYS:N	2.52	0.42
1:C:403:ARG:HG3	1:C:405:ASP:H	1.84	0.42
3:G:80:GLY:C	3:G:82:LYS:H	2.26	0.42
2:J:19:ARG:NH1	2:J:81:LEU:H	2.16	0.42
1:C:366:SER:HA	1:C:369:TYR:CZ	2.54	0.42
1:C:730:SER:OG	1:C:731:MET:N	2.52	0.42
1:C:930:ALA:O	1:C:934:ILE:HG22	2.19	0.42
2:J:93:VAL:HG22	2:J:115:LEU:HD13	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:130:VAL:HG11	1:C:231:ILE:HG12	2.02	0.42
1:C:312:ILE:HD13	1:C:312:ILE:HA	1.86	0.42
1:C:1073:LYS:HB3	1:C:1073:LYS:HE2	1.75	0.42
2:H:122:SER:OG	2:H:123:THR:N	2.53	0.42
3:G:16:LYS:O	3:G:81:LEU:HG	2.19	0.42
1:A:403:ARG:HG3	1:A:405:ASP:H	1.84	0.42
1:A:691:SER:OG	1:A:692:ILE:N	2.50	0.42
1:C:709:ASN:OD1	1:C:709:ASN:N	2.52	0.42
1:C:1083:HIS:CD2	1:C:1137:VAL:HG22	2.54	0.42
1:C:617:CYS:N	1:C:649:CYS:SG	2.93	0.42
1:C:331:ASN:C	1:C:331:ASN:OD1	2.62	0.42
1:C:909:ILE:HG13	1:C:911:VAL:HG23	2.00	0.42
1:A:451:TYR:HD1	1:A:495:TYR:HB2	1.83	0.42
2:F:122:SER:OG	2:F:123:THR:N	2.53	0.42
3:G:128:LEU:HB2	3:G:215:LYS:NZ	2.35	0.42
3:G:140:LYS:HZ2	3:G:141:ALA:C	2.28	0.42
1:A:350:VAL:HG22	1:A:422:ASN:HB3	2.01	0.42
1:A:599:THR:HG22	1:A:601:GLY:H	1.85	0.42
1:C:200:TYR:CE1	1:C:230:PRO:HB3	2.55	0.42
1:C:759:PHE:O	1:C:763:LEU:HG	2.20	0.42
1:C:1142:GLN:HB3	1:C:1143:PRO:HD3	2.01	0.42
3:L:8:HIS:HA	3:L:105:THR:HA	2.01	0.42
2:J:122:SER:OG	2:J:123:THR:N	2.53	0.42
1:A:1006:THR:O	1:A:1010:GLN:HG2	2.20	0.42
1:B:600:PRO:HG2	1:B:605:SER:HB2	2.02	0.42
1:B:1029:MET:O	1:B:1033:VAL:HB	2.20	0.42
2:H:93:VAL:HG22	2:H:115:LEU:HD13	2.01	0.42
3:L:40:ARG:NH1	3:L:86:GLU:O	2.53	0.42
1:B:117:LEU:HD12	1:B:118:LEU:H	1.85	0.41
1:C:76:THR:OG1	1:C:77:LYS:N	2.53	0.41
1:C:392:PHE:O	1:C:524:VAL:HG22	2.20	0.41
1:C:976:VAL:HG22	1:C:978:ASN:H	1.85	0.41
2:H:19:ARG:HH12	2:H:80:TYR:HA	1.85	0.41
3:L:13:SER:HB2	3:L:16:LYS:HZ3	1.85	0.41
3:L:60:PRO:HD2	3:L:63:PHE:HE2	1.85	0.41
1:A:529:LYS:HE2	1:A:529:LYS:HB2	1.87	0.41
2:H:35:SER:HA	2:H:50:ASN:HA	2.03	0.41
1:A:662:CYS:HB2	1:A:671:CYS:HB2	1.66	0.41
1:B:403:ARG:HG3	1:B:405:ASP:H	1.85	0.41
1:C:129:LYS:HB3	1:C:133:PHE:HZ	1.85	0.41
1:A:825:LYS:HD3	1:A:825:LYS:HA	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:750:SER:HA	1:B:753:LEU:HB2	2.02	0.41
1:C:490:PHE:HD1	1:C:491:PRO:HD2	1.86	0.41
1:C:951:VAL:HG21	1:C:1018:ILE:HD11	2.01	0.41
1:A:216:LEU:HA	1:A:217:PRO:HD3	1.92	0.41
1:A:1013:ILE:HD13	1:B:1012:LEU:HD13	2.02	0.41
1:B:374:PHE:HA	1:B:436:TRP:HB3	2.03	0.41
1:B:896:ILE:HD11	1:B:904:TYR:HE2	1.86	0.41
1:C:1018:ILE:HD13	1:C:1018:ILE:HA	1.90	0.41
1:A:37:TYR:OH	1:A:53:ASP:OD1	2.39	0.41
1:B:909:ILE:HG13	1:B:911:VAL:HG23	2.03	0.41
1:C:401:VAL:HG22	1:C:509:ARG:HG2	2.03	0.41
3:G:157:VAL:HG22	3:G:206:VAL:HG12	2.03	0.41
1:B:312:ILE:HD13	1:B:312:ILE:HA	1.90	0.41
1:B:350:VAL:HG22	1:B:422:ASN:HB3	2.02	0.41
1:B:808:ASP:OD1	1:B:808:ASP:N	2.52	0.41
1:C:333:THR:N	1:C:362:VAL:HG21	2.36	0.41
3:G:8:HIS:HA	3:G:105:THR:HA	2.02	0.41
3:G:44:ALA:HA	3:G:45:PRO:HD3	1.89	0.41
3:K:8:HIS:HA	3:K:105:THR:HA	2.03	0.41
1:A:1039:ARG:NE	1:B:1031:GLU:OE2	2.43	0.41
1:A:1132:ILE:HD12	1:A:1132:ILE:HA	1.83	0.41
1:B:490:PHE:HD1	1:B:491:PRO:HD2	1.86	0.41
1:B:1041:ASP:HB3	1:C:1030:SER:HB3	2.03	0.41
3:G:63:PHE:CD1	3:G:78:ILE:HG23	2.56	0.41
2:J:18:LEU:HD12	2:J:19:ARG:H	1.86	0.41
1:C:139:PRO:HB3	1:C:159:VAL:HA	2.03	0.40
1:C:753:LEU:HD12	1:C:753:LEU:HA	1.88	0.40
1:A:490:PHE:HD1	1:A:491:PRO:HD2	1.86	0.40
1:B:54:LEU:HD23	1:B:272:PRO:HB3	2.02	0.40
1:B:76:THR:OG1	1:B:77:LYS:N	2.54	0.40
1:C:165:ASN:HD22	5:C:1303:NAG:C7	2.34	0.40
1:C:317:ASN:HA	1:C:594:GLY:HA2	2.02	0.40
1:A:645:THR:HG23	1:A:647:ALA:N	2.35	0.40
1:A:749:CYS:O	1:A:753:LEU:HD23	2.22	0.40
1:B:106:PHE:CD2	1:B:235:ILE:HD11	2.57	0.40
1:C:328:ARG:NH1	1:C:532:ASN:HA	2.36	0.40
1:C:738:CYS:HB3	1:C:742:ILE:HD12	2.04	0.40
3:L:128:LEU:HB2	3:L:215:LYS:HZ2	1.86	0.40
2:F:177:LEU:HD12	2:F:177:LEU:HA	1.95	0.40
3:G:38:GLN:HB2	3:G:40:ARG:NH2	2.37	0.40
1:A:454:ARG:HH12	1:A:467:ASP:HB3	1.86	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:758:SER:O	1:A:762:GLN:HG3	2.21	0.40
1:C:968:SER:HB3	1:C:970:PHE:CE1	2.56	0.40
1:C:1004:LEU:HD12	1:C:1004:LEU:HA	1.90	0.40

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	1054/1278 (82%)	1022 (97%)	32 (3%)	0	100	100
1	B	1054/1278 (82%)	1020 (97%)	34 (3%)	0	100	100
1	C	1054/1278 (82%)	1017 (96%)	37 (4%)	0	100	100
2	F	219/243 (90%)	205 (94%)	14 (6%)	0	100	100
2	H	219/243 (90%)	203 (93%)	16 (7%)	0	100	100
2	J	219/243 (90%)	204 (93%)	15 (7%)	0	100	100
3	G	210/240 (88%)	197 (94%)	13 (6%)	0	100	100
3	K	210/240 (88%)	197 (94%)	13 (6%)	0	100	100
3	L	210/240 (88%)	199 (95%)	11 (5%)	0	100	100
All	All	4449/5283 (84%)	4264 (96%)	185 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	929/1106 (84%)	927 (100%)	2 (0%)	92	96
1	B	929/1106 (84%)	921 (99%)	8 (1%)	75	87
1	C	929/1106 (84%)	920 (99%)	9 (1%)	73	85
2	F	184/203 (91%)	182 (99%)	2 (1%)	70	84
2	H	184/203 (91%)	183 (100%)	1 (0%)	86	92
2	J	184/203 (91%)	183 (100%)	1 (0%)	86	92
3	G	181/206 (88%)	177 (98%)	4 (2%)	47	70
3	K	181/206 (88%)	181 (100%)	0	100	100
3	L	181/206 (88%)	180 (99%)	1 (1%)	84	91
All	All	3882/4545 (85%)	3854 (99%)	28 (1%)	80	90

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	282	ASN
1	A	1005	GLN
1	B	95	THR
1	B	331	ASN
1	B	524	VAL
1	B	525	CYS
1	B	528	LYS
1	B	529	LYS
1	B	586	ASP
1	B	1145	LEU
1	C	328	ARG
1	C	335	LEU
1	C	525	CYS
1	C	528	LYS
1	C	529	LYS
1	C	530	SER
1	C	533	LEU
1	C	534	VAL
1	C	1141	LEU
2	H	61	VAL
3	L	38	GLN
2	F	1	GLU
2	F	100	GLN
3	G	81	LEU

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Mol	Chain	Res	Type
3	G	84	GLU
3	G	85	ASP
3	G	205	GLN
2	J	1	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (58) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	87	ASN
1	A	137	ASN
1	A	173	GLN
1	A	317	ASN
1	A	354	ASN
1	A	437	ASN
1	A	493	GLN
1	A	542	ASN
1	A	655	HIS
1	A	762	GLN
1	A	804	GLN
1	A	856	ASN
1	A	919	ASN
1	A	935	GLN
1	A	969	ASN
1	A	1108	ASN
1	A	1125	ASN
1	B	437	ASN
1	B	655	HIS
1	B	755	GLN
1	B	949	GLN
1	B	1058	HIS
1	B	1142	GLN
1	C	52	GLN
1	C	134	GLN
1	C	188	ASN
1	C	239	GLN
1	C	360	ASN
1	C	437	ASN
1	C	544	ASN
1	C	580	GLN
1	C	613	GLN
1	C	655	HIS
1	C	762	GLN

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Mol	Chain	Res	Type
1	C	856	ASN
1	C	872	GLN
1	C	895	GLN
1	C	919	ASN
1	C	1058	HIS
1	C	1101	HIS
1	C	1142	GLN
2	H	77	ASN
2	H	84	ASN
2	H	211	ASN
3	L	35	GLN
3	L	195	GLN
2	F	77	ASN
2	F	84	ASN
2	F	112	GLN
2	F	178	GLN
2	F	211	ASN
3	G	178	GLN
3	G	205	GLN
2	J	77	ASN
2	J	84	ASN
2	J	206	ASN
2	J	211	ASN
3	K	195	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](#)

30 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	1,4	14,14,15	0.30	0	17,19,21	0.65	0
4	NAG	D	2	4	14,14,15	0.31	0	17,19,21	0.65	0
4	NAG	E	1	1,4	14,14,15	0.24	0	17,19,21	0.43	0
4	NAG	E	2	4	14,14,15	0.25	0	17,19,21	0.43	0
4	NAG	I	1	1,4	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	I	2	4	14,14,15	0.28	0	17,19,21	0.42	0
4	NAG	M	1	1,4	14,14,15	0.21	0	17,19,21	0.47	0
4	NAG	M	2	4	14,14,15	0.24	0	17,19,21	0.44	0
4	NAG	N	1	1,4	14,14,15	0.24	0	17,19,21	0.43	0
4	NAG	N	2	4	14,14,15	0.24	0	17,19,21	0.44	0
4	NAG	O	1	1,4	14,14,15	0.27	0	17,19,21	0.48	0
4	NAG	O	2	4	14,14,15	0.28	0	17,19,21	0.42	0
4	NAG	P	1	1,4	14,14,15	0.24	0	17,19,21	0.42	0
4	NAG	P	2	4	14,14,15	0.23	0	17,19,21	0.43	0
4	NAG	Q	1	1,4	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	Q	2	4	14,14,15	0.28	0	17,19,21	0.42	0
4	NAG	R	1	1,4	14,14,15	0.22	0	17,19,21	0.41	0
4	NAG	R	2	4	14,14,15	0.26	0	17,19,21	0.39	0
4	NAG	S	1	1,4	14,14,15	0.23	0	17,19,21	0.43	0
4	NAG	S	2	4	14,14,15	0.27	0	17,19,21	0.44	0
4	NAG	T	1	1,4	14,14,15	0.26	0	17,19,21	0.48	0
4	NAG	T	2	4	14,14,15	0.26	0	17,19,21	0.43	0
4	NAG	U	1	1,4	14,14,15	0.25	0	17,19,21	0.44	0
4	NAG	U	2	4	14,14,15	0.26	0	17,19,21	0.44	0
4	NAG	V	1	1,4	14,14,15	0.23	0	17,19,21	0.44	0
4	NAG	V	2	4	14,14,15	0.26	0	17,19,21	0.40	0
4	NAG	W	1	1,4	14,14,15	0.21	0	17,19,21	0.45	0
4	NAG	W	2	4	14,14,15	0.26	0	17,19,21	0.42	0
4	NAG	X	1	1,4	14,14,15	0.22	0	17,19,21	0.46	0
4	NAG	X	2	4	14,14,15	0.26	0	17,19,21	0.42	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	1,4	-	1/6/23/26	0/1/1/1
4	NAG	D	2	4	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	E	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1
4	NAG	I	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	I	2	4	-	0/6/23/26	0/1/1/1
4	NAG	M	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	M	2	4	-	2/6/23/26	0/1/1/1
4	NAG	N	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	N	2	4	-	2/6/23/26	0/1/1/1
4	NAG	O	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	O	2	4	-	1/6/23/26	0/1/1/1
4	NAG	P	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	P	2	4	-	2/6/23/26	0/1/1/1
4	NAG	Q	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	2/6/23/26	0/1/1/1
4	NAG	R	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	R	2	4	-	2/6/23/26	0/1/1/1
4	NAG	S	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	S	2	4	-	2/6/23/26	0/1/1/1
4	NAG	T	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	T	2	4	-	1/6/23/26	0/1/1/1
4	NAG	U	1	1,4	-	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	1,4	-	2/6/23/26	0/1/1/1
4	NAG	V	2	4	-	2/6/23/26	0/1/1/1
4	NAG	W	1	1,4	-	0/6/23/26	0/1/1/1
4	NAG	W	2	4	-	2/6/23/26	0/1/1/1
4	NAG	X	1	1,4	-	2/6/23/26	0/1/1/1
4	NAG	X	2	4	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (38) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	X	2	NAG	O5-C5-C6-O6
4	R	2	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	N	2	NAG	O5-C5-C6-O6
4	S	2	NAG	O5-C5-C6-O6
4	S	1	NAG	O5-C5-C6-O6
4	X	1	NAG	O5-C5-C6-O6
4	X	2	NAG	C4-C5-C6-O6
4	E	2	NAG	O5-C5-C6-O6
4	I	1	NAG	O5-C5-C6-O6
4	N	2	NAG	C4-C5-C6-O6
4	M	2	NAG	O5-C5-C6-O6
4	Q	1	NAG	O5-C5-C6-O6
4	S	2	NAG	C4-C5-C6-O6
4	W	2	NAG	C4-C5-C6-O6
4	U	2	NAG	O5-C5-C6-O6
4	V	1	NAG	O5-C5-C6-O6
4	E	2	NAG	C4-C5-C6-O6
4	U	2	NAG	C4-C5-C6-O6
4	I	1	NAG	C4-C5-C6-O6
4	S	1	NAG	C4-C5-C6-O6
4	X	1	NAG	C4-C5-C6-O6
4	Q	1	NAG	C4-C5-C6-O6
4	V	1	NAG	C4-C5-C6-O6
4	P	2	NAG	O5-C5-C6-O6
4	M	2	NAG	C4-C5-C6-O6
4	R	2	NAG	O5-C5-C6-O6
4	N	1	NAG	O5-C5-C6-O6
4	O	2	NAG	O5-C5-C6-O6
4	T	2	NAG	O5-C5-C6-O6
4	P	2	NAG	C4-C5-C6-O6
4	N	1	NAG	C4-C5-C6-O6
4	Q	2	NAG	C4-C5-C6-O6
4	W	2	NAG	O5-C5-C6-O6
4	V	2	NAG	C4-C5-C6-O6
4	D	2	NAG	O5-C5-C6-O6
4	Q	2	NAG	O5-C5-C6-O6
4	V	2	NAG	O5-C5-C6-O6
4	D	1	NAG	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 2 short contacts:

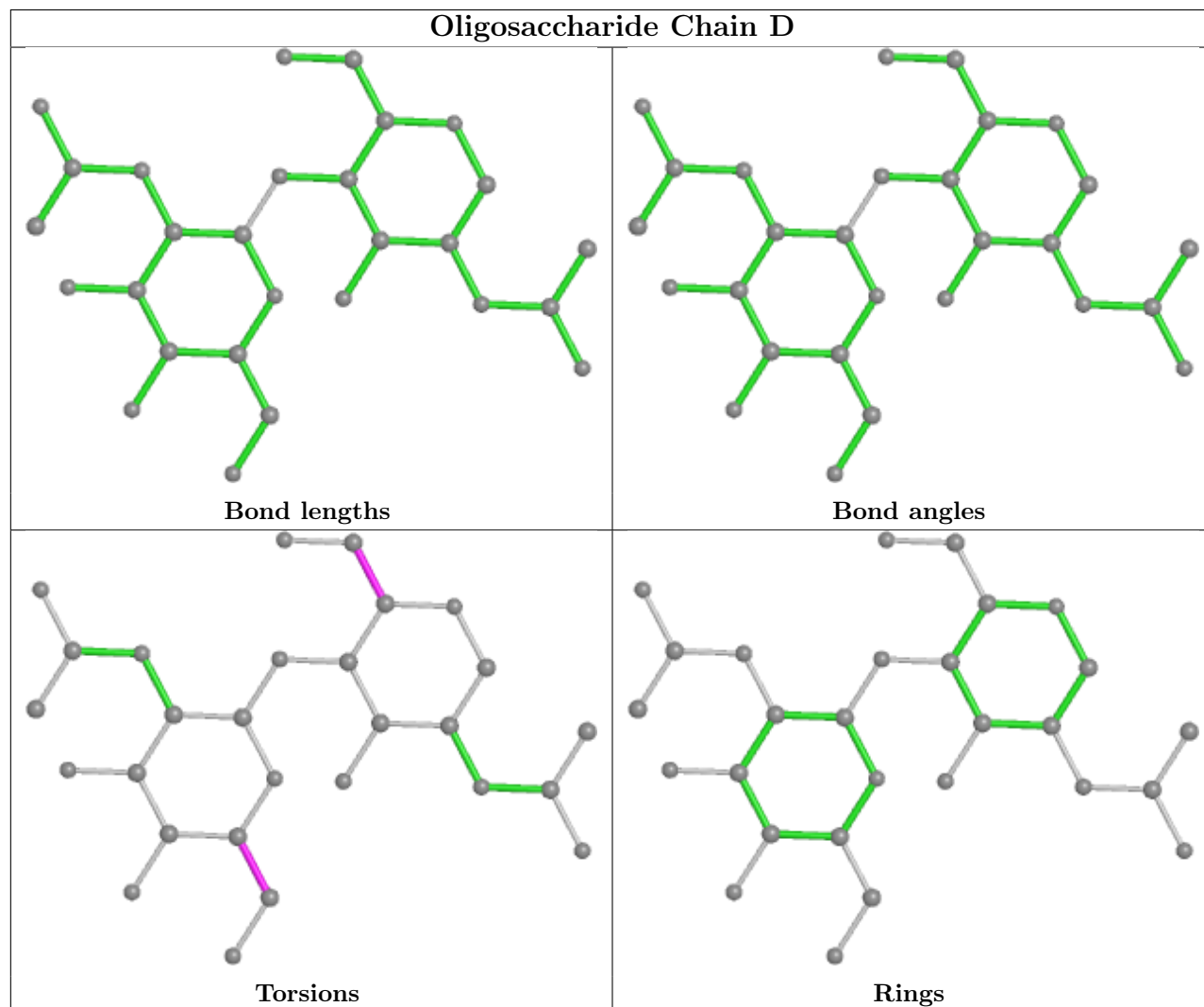
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	P	1	NAG	1	0

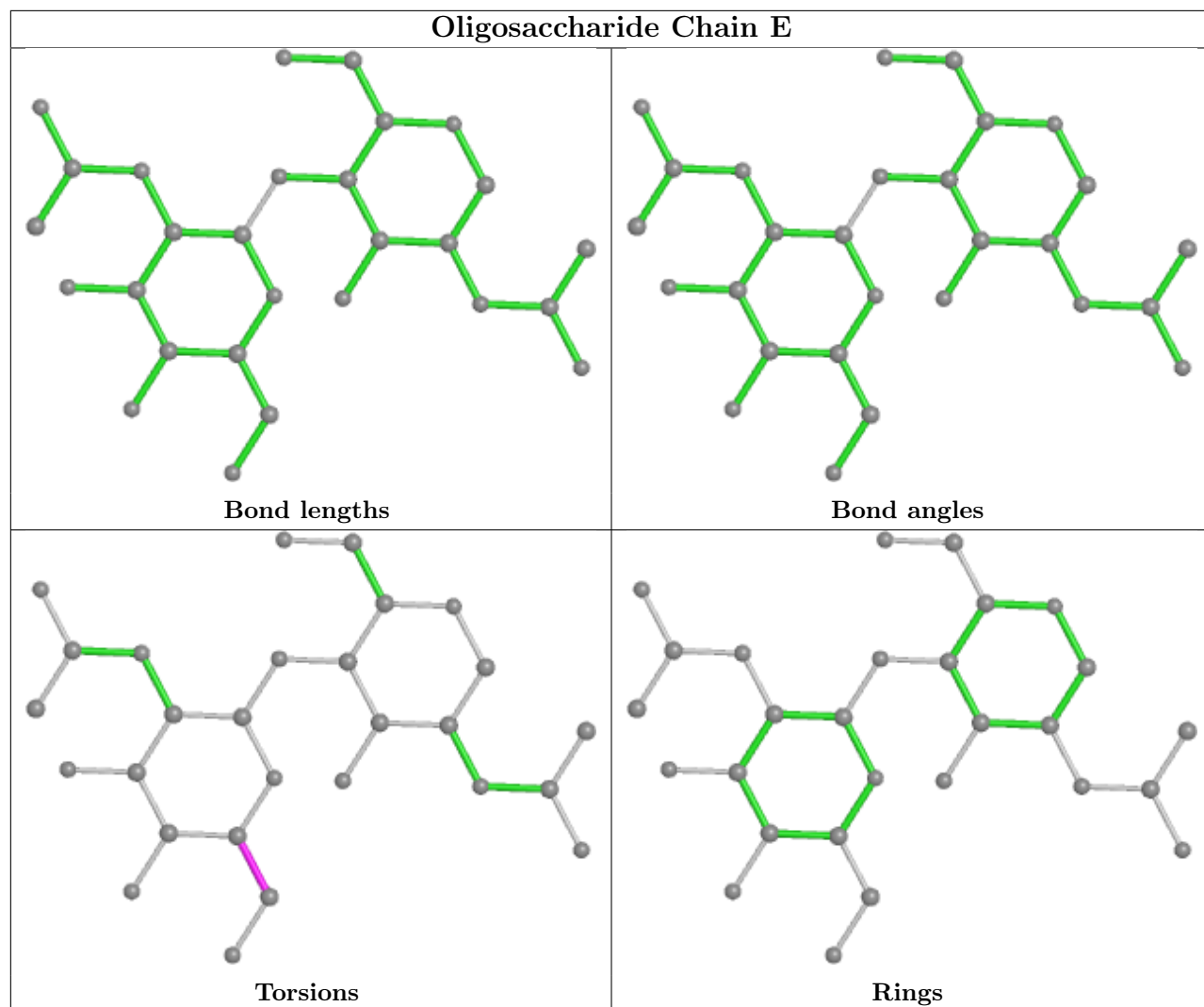
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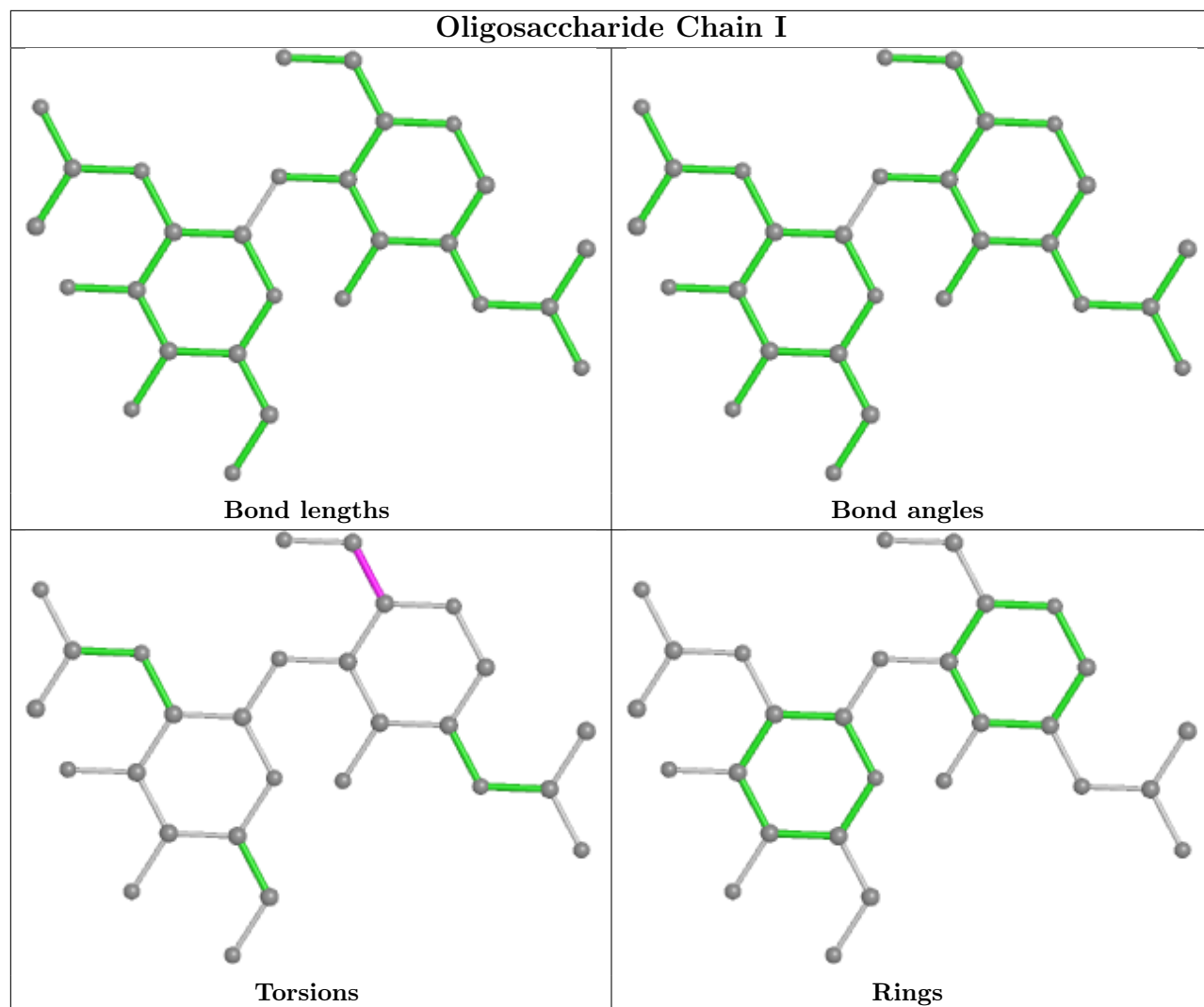
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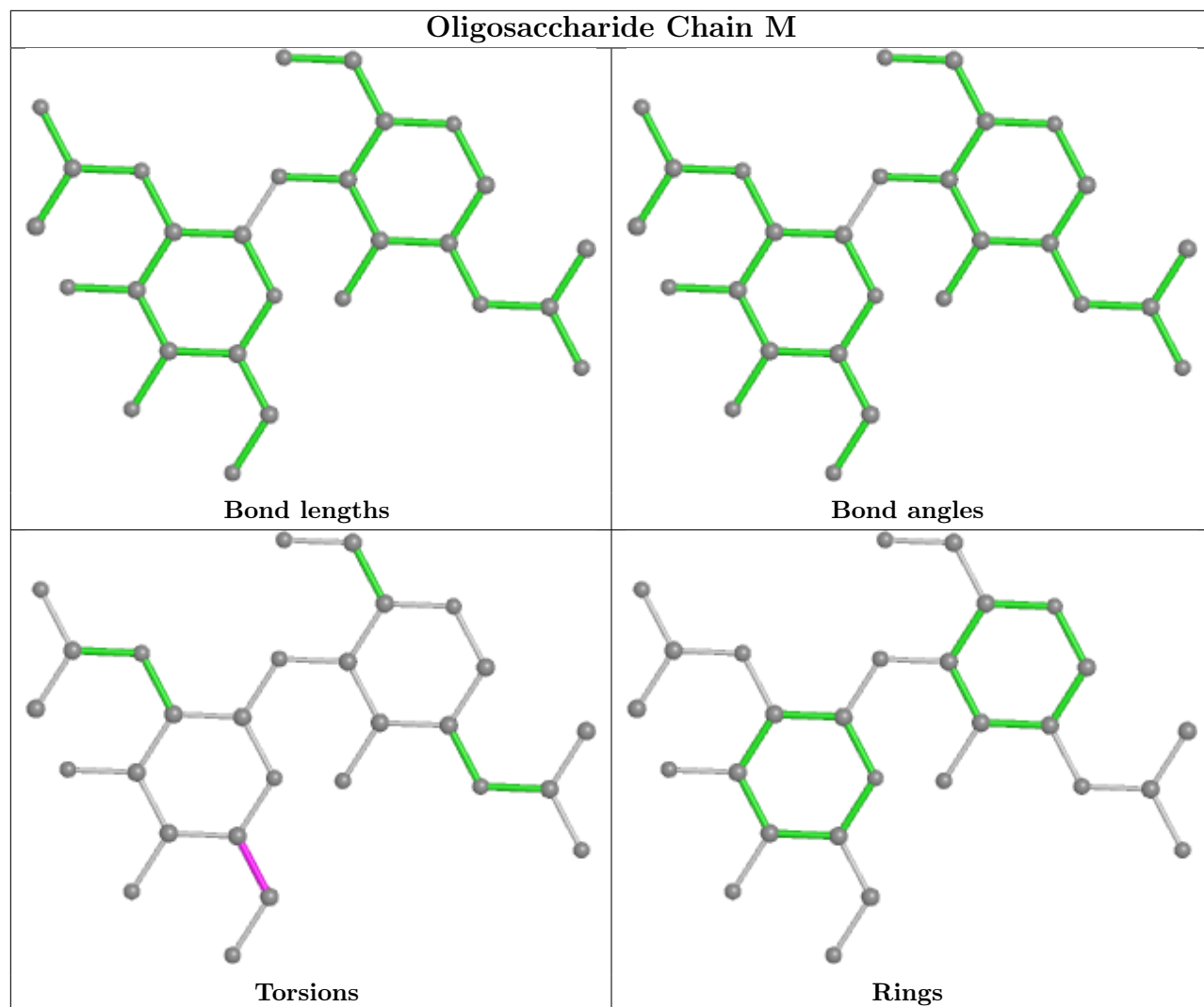
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	1	NAG	1	0

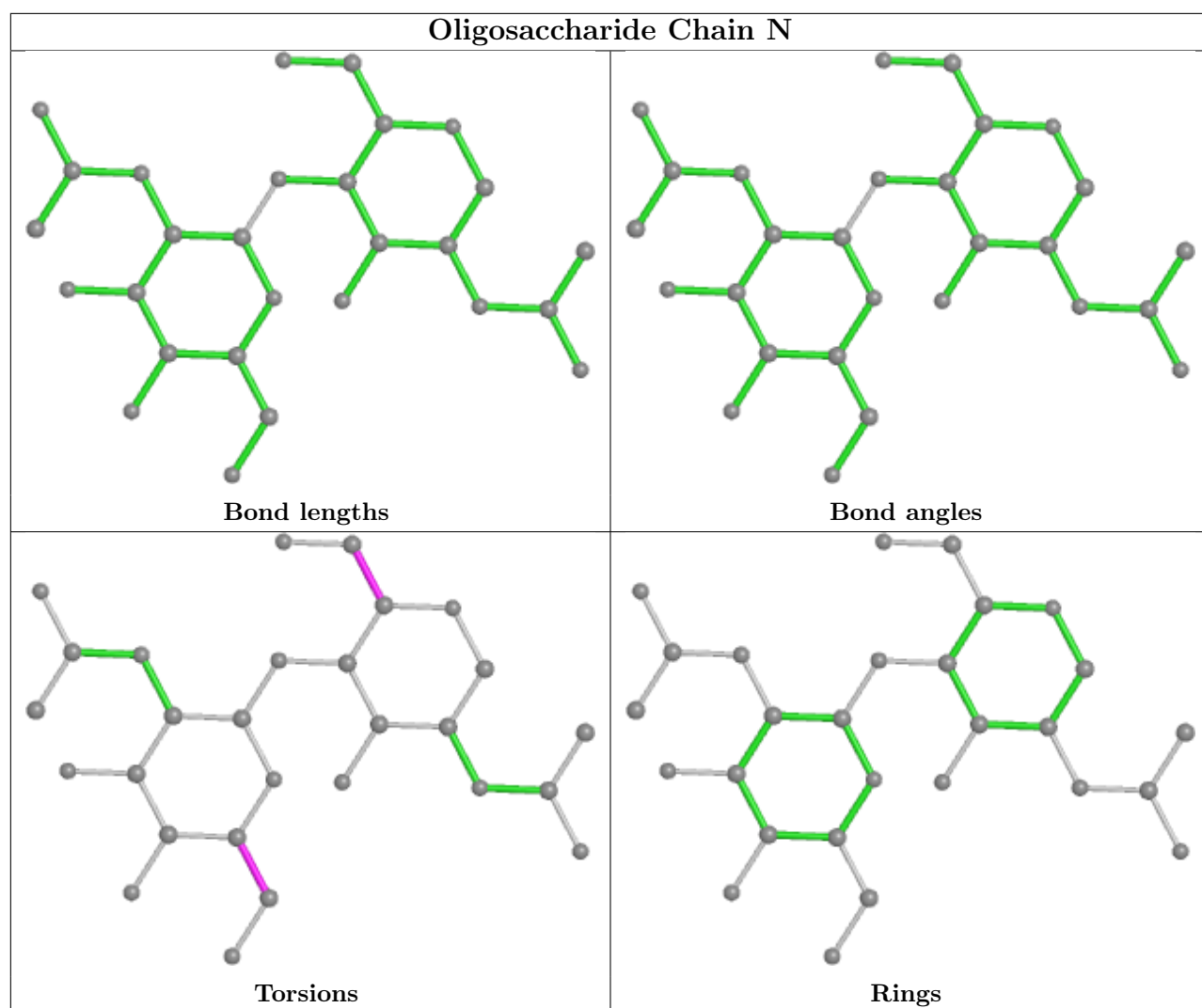
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

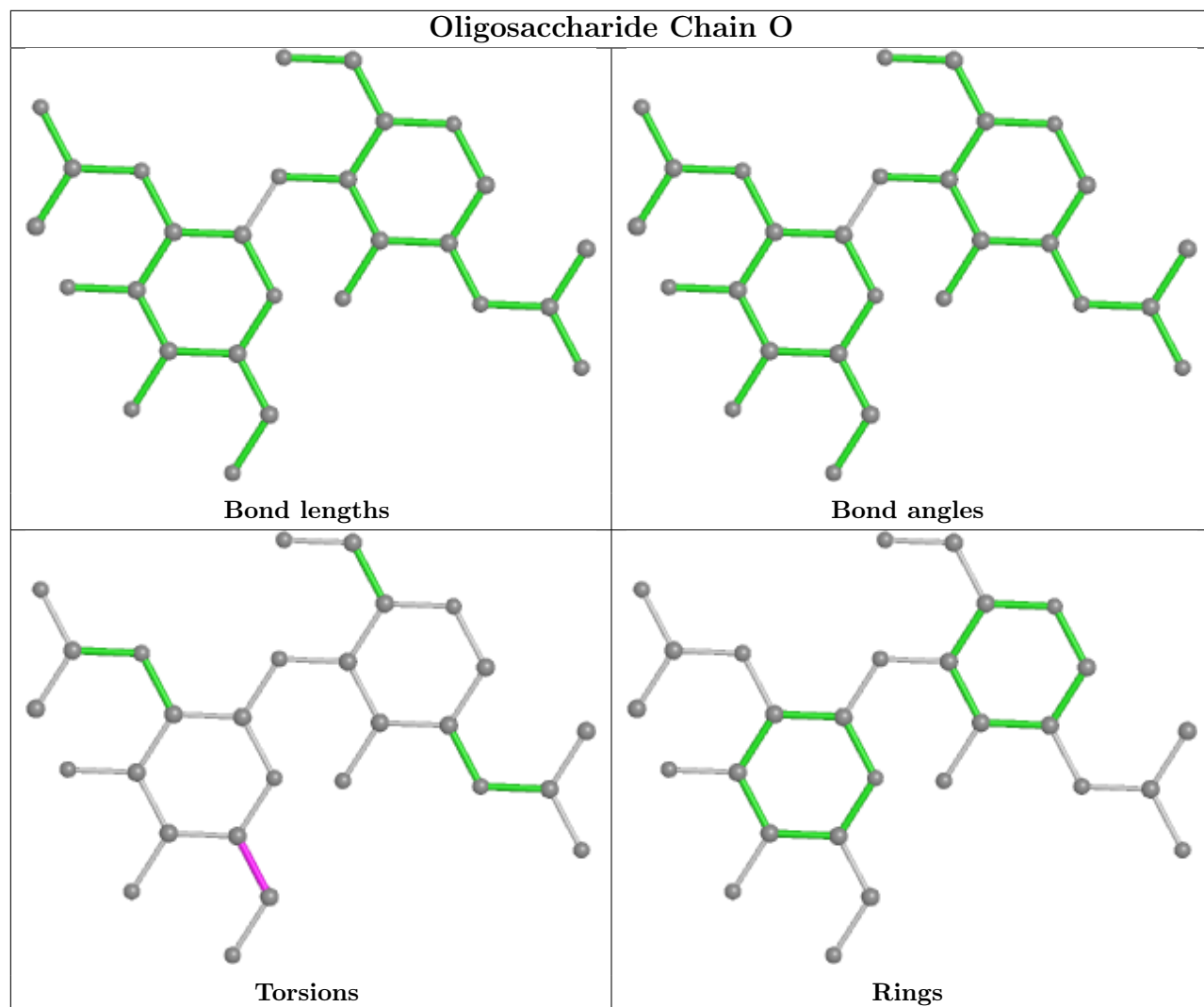


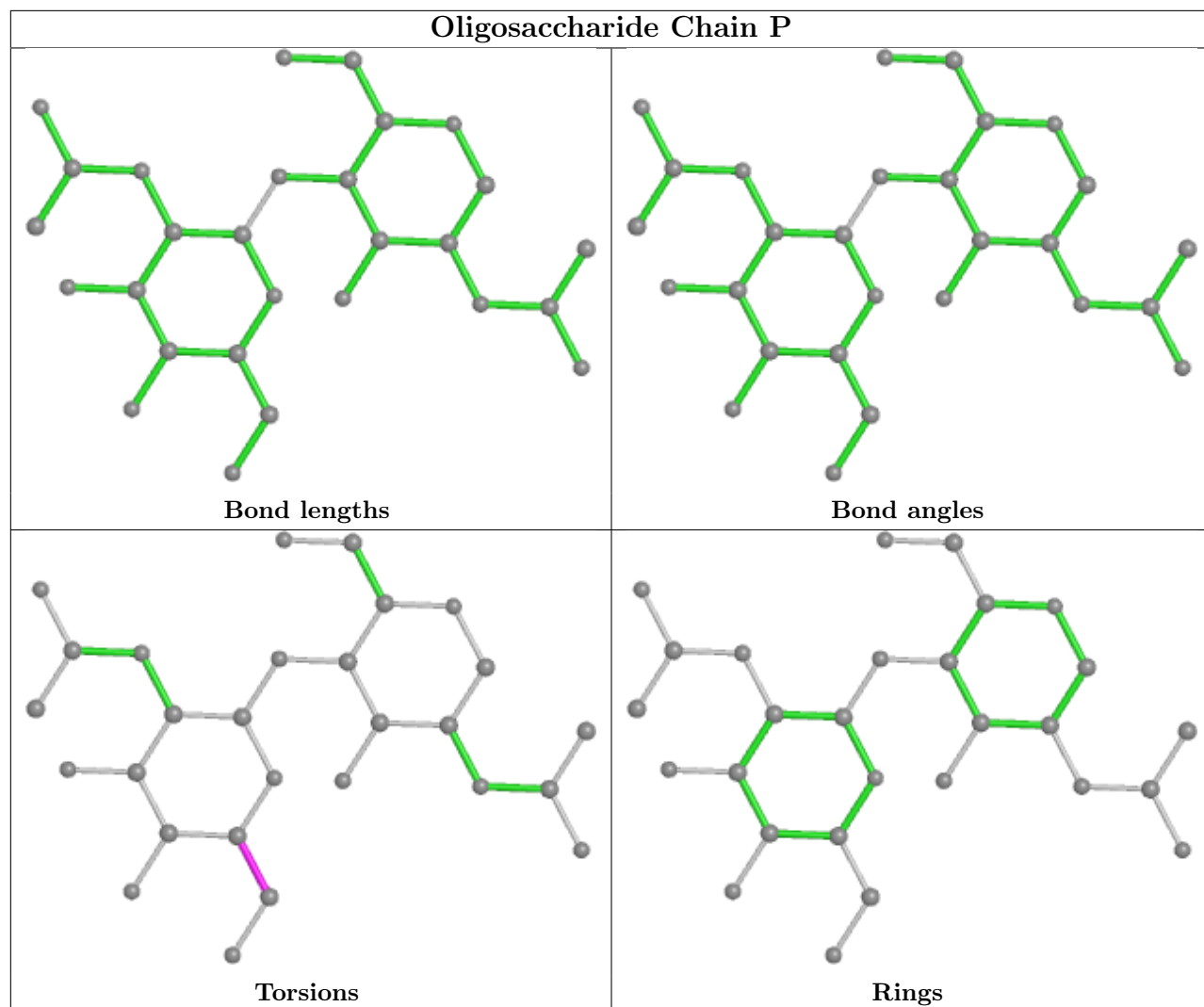


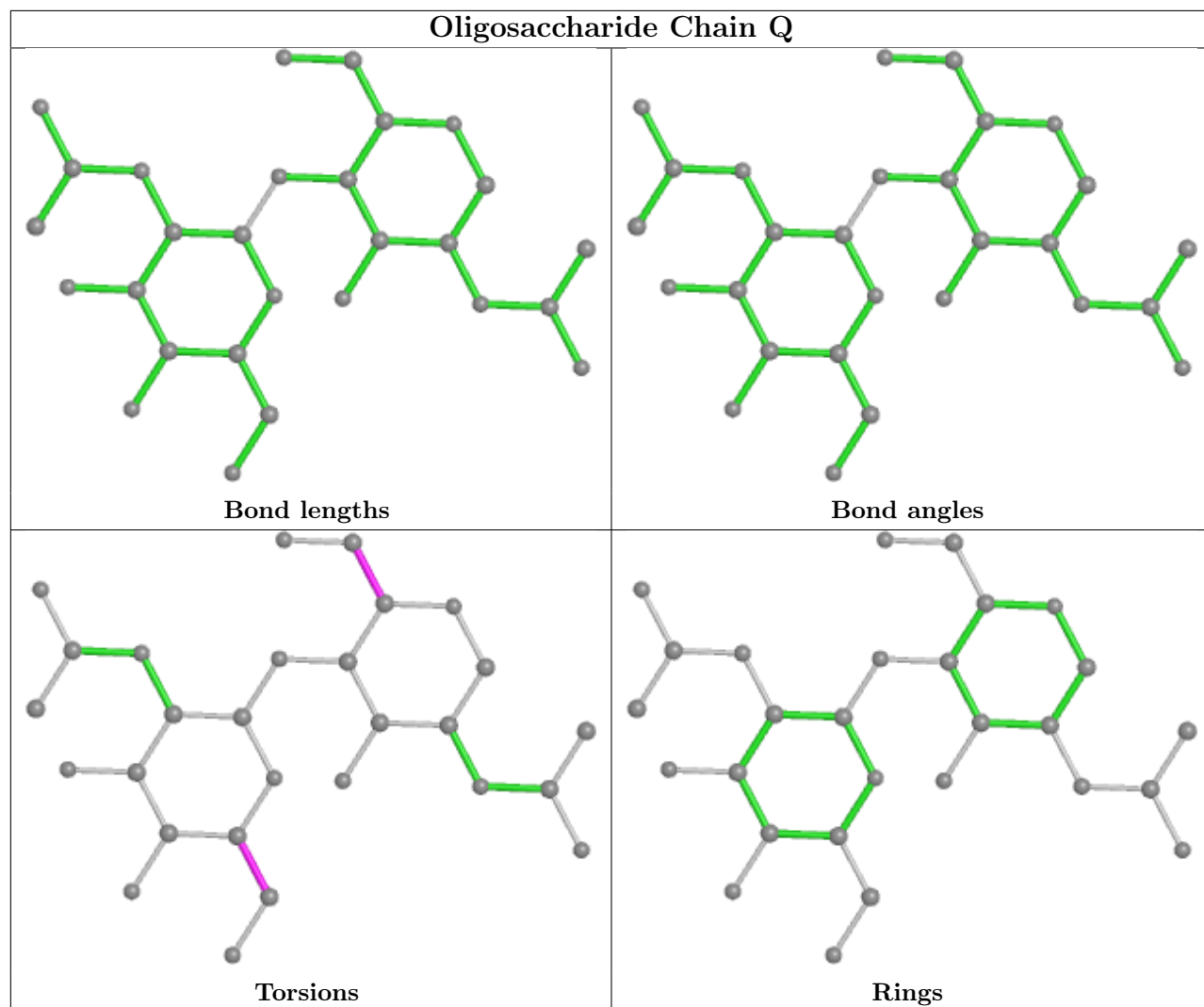


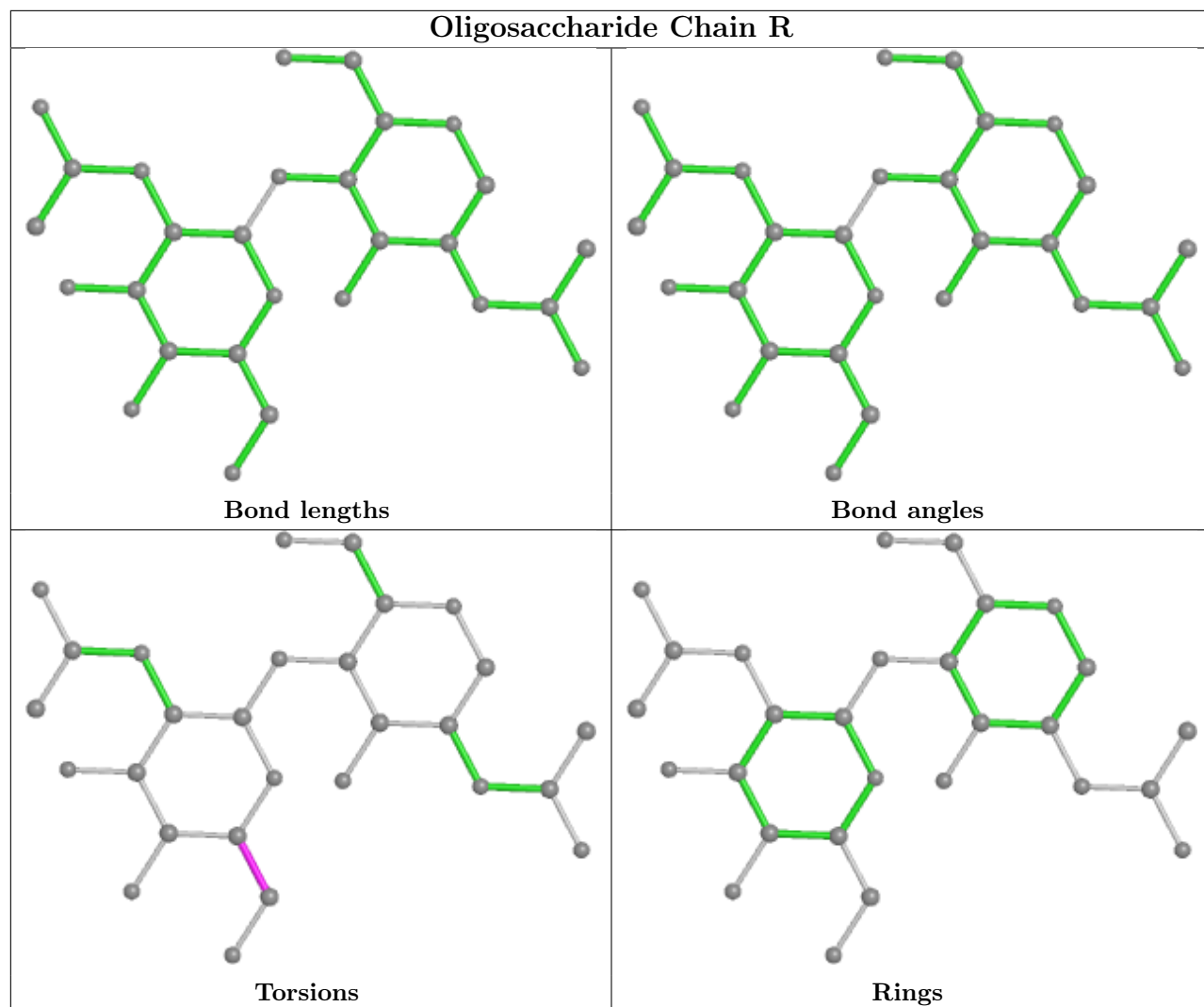


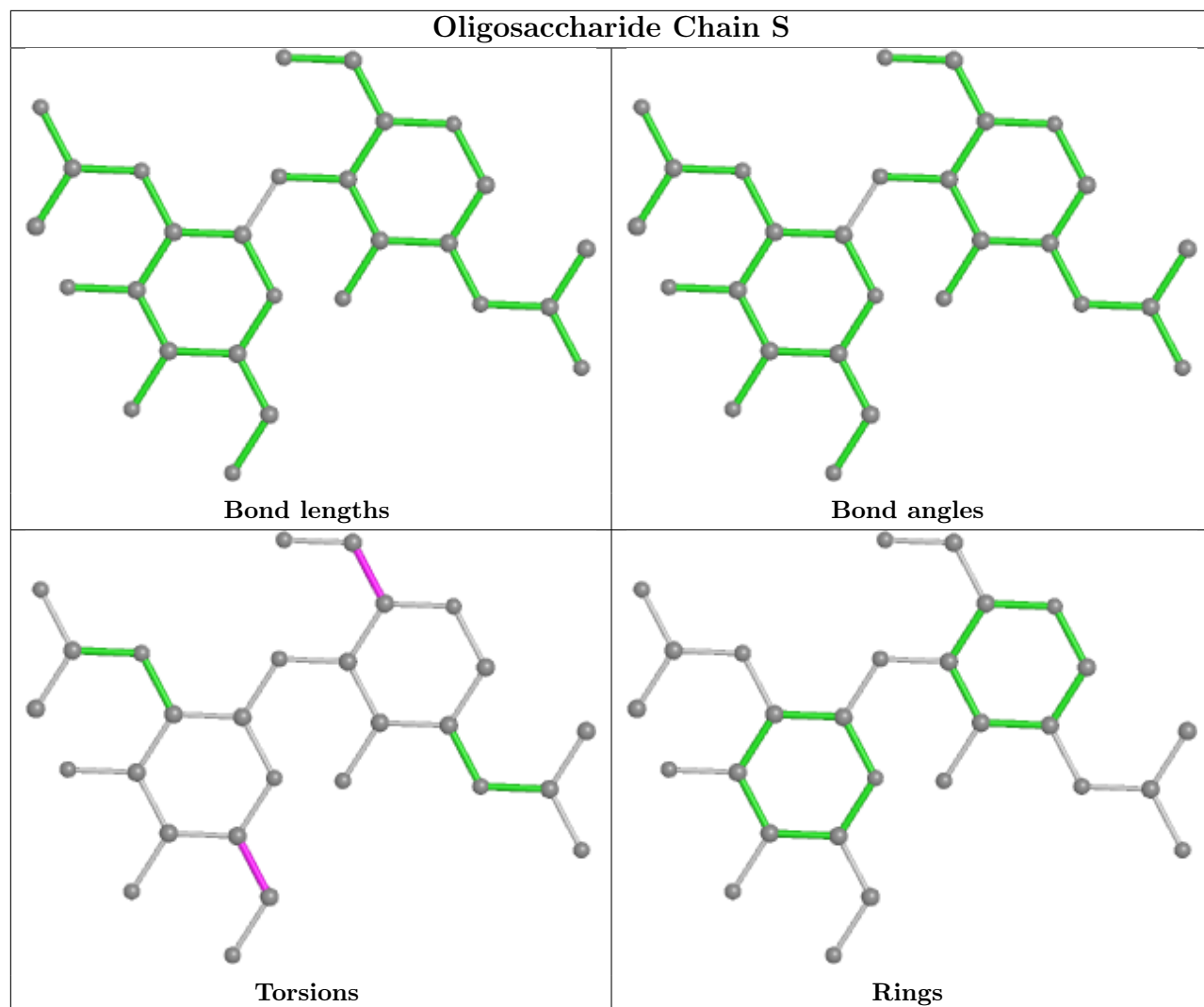


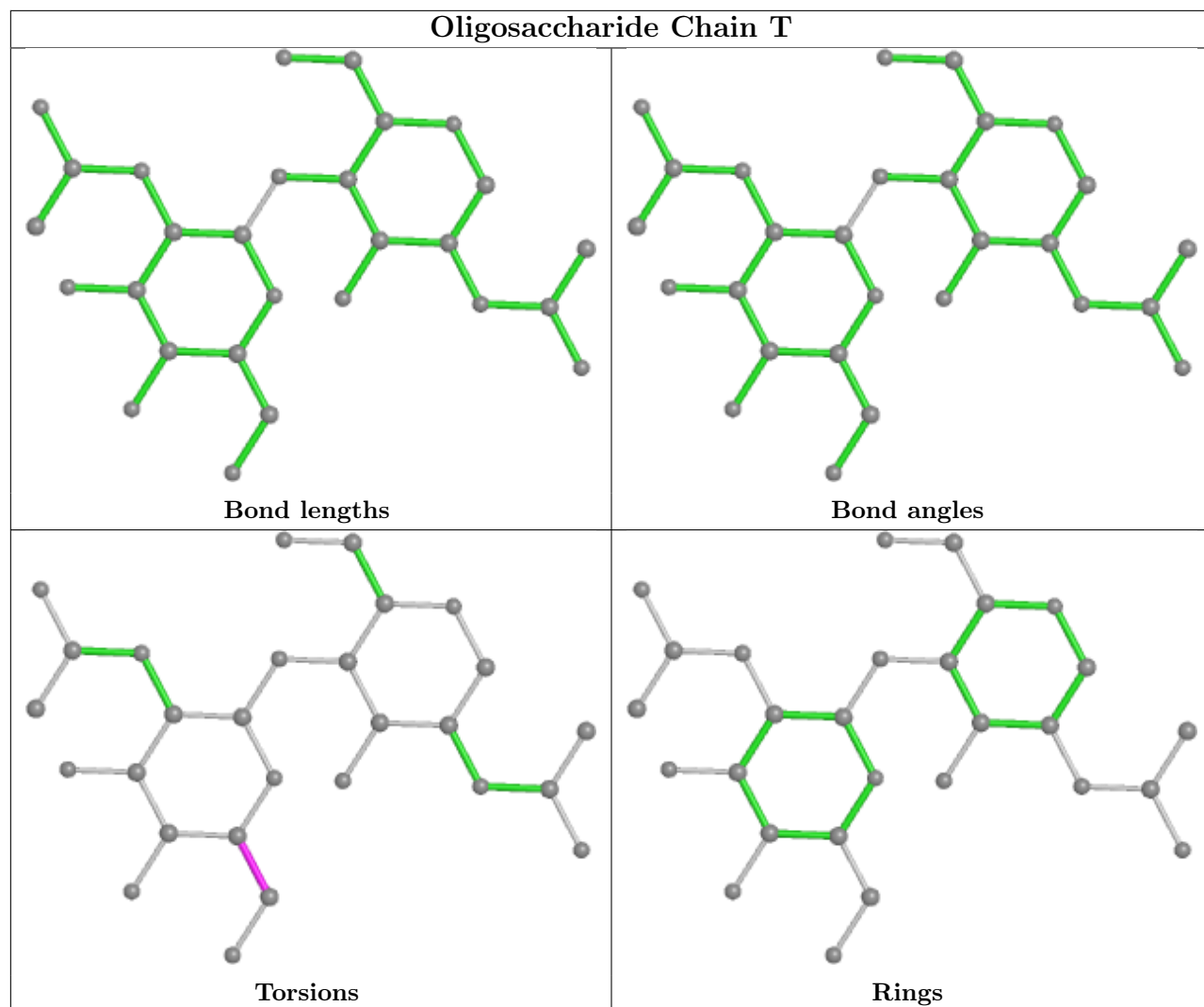


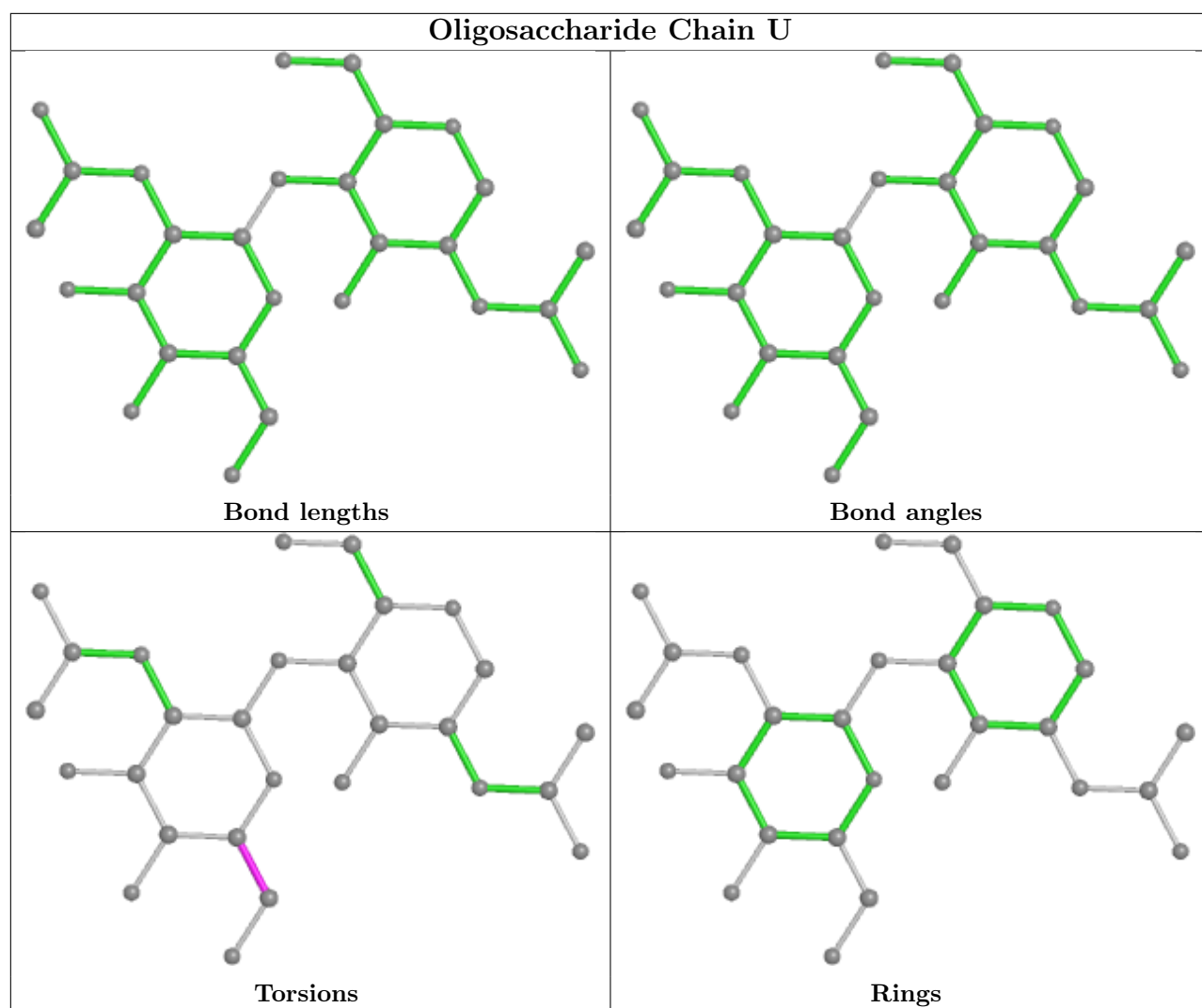


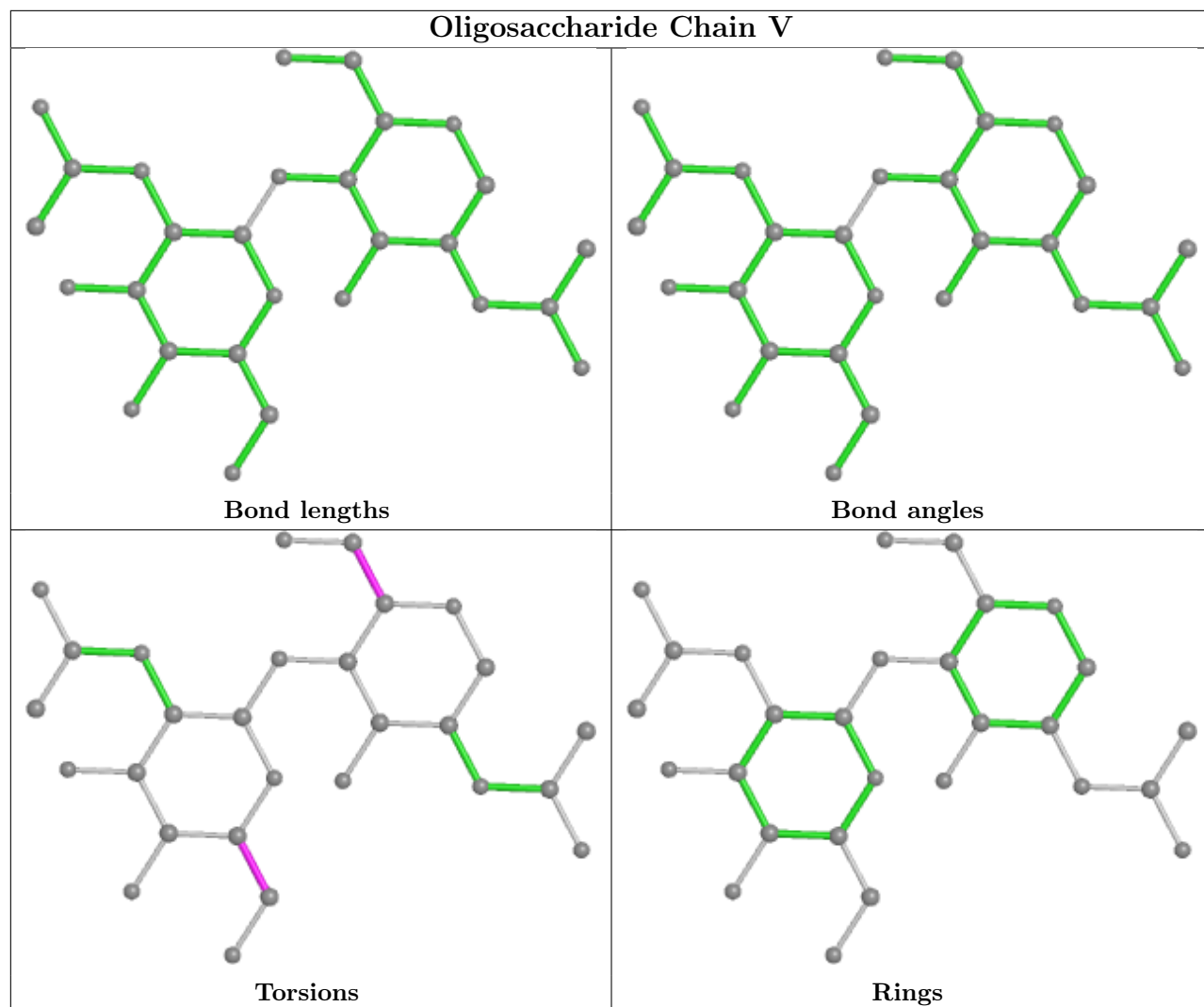


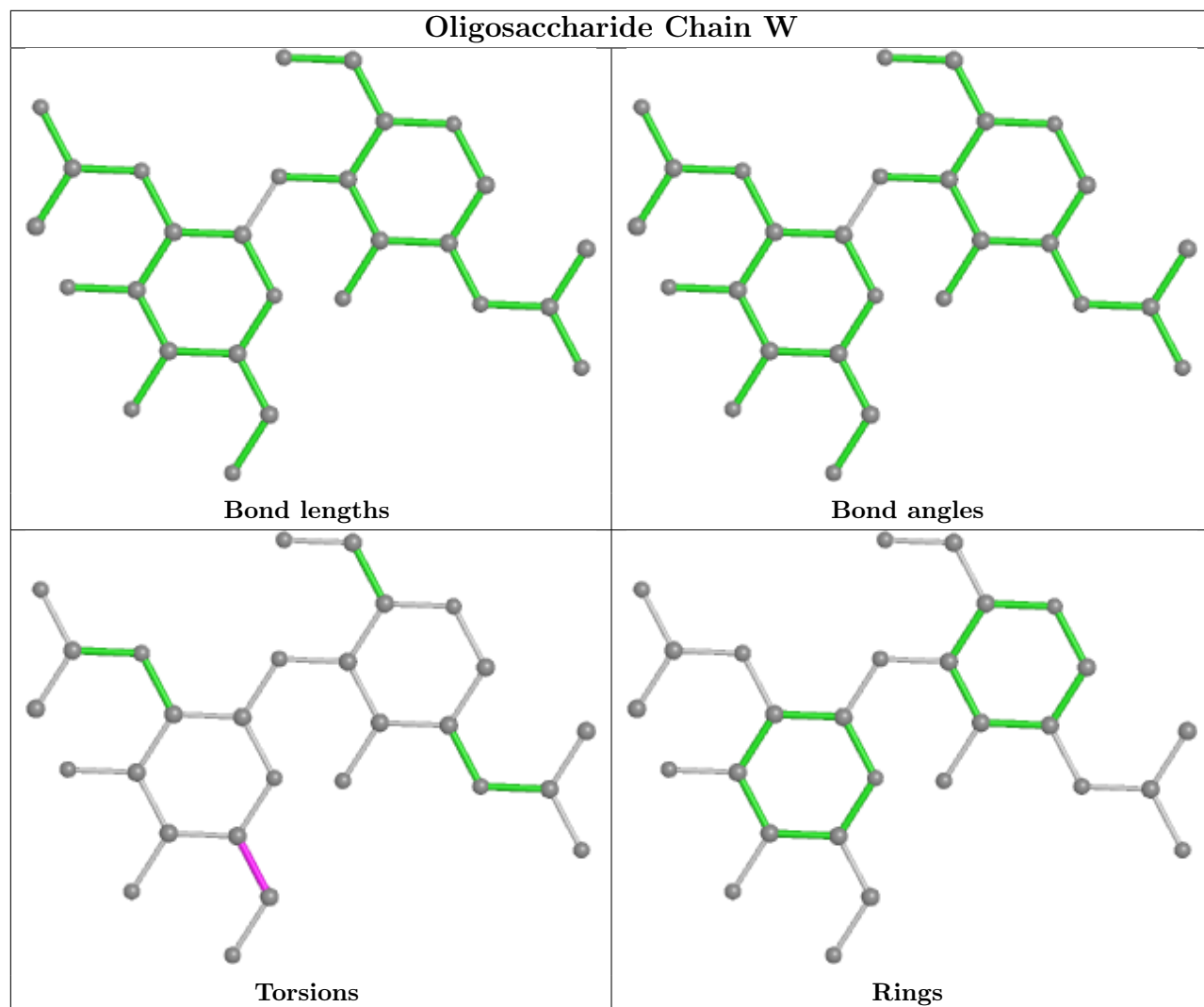


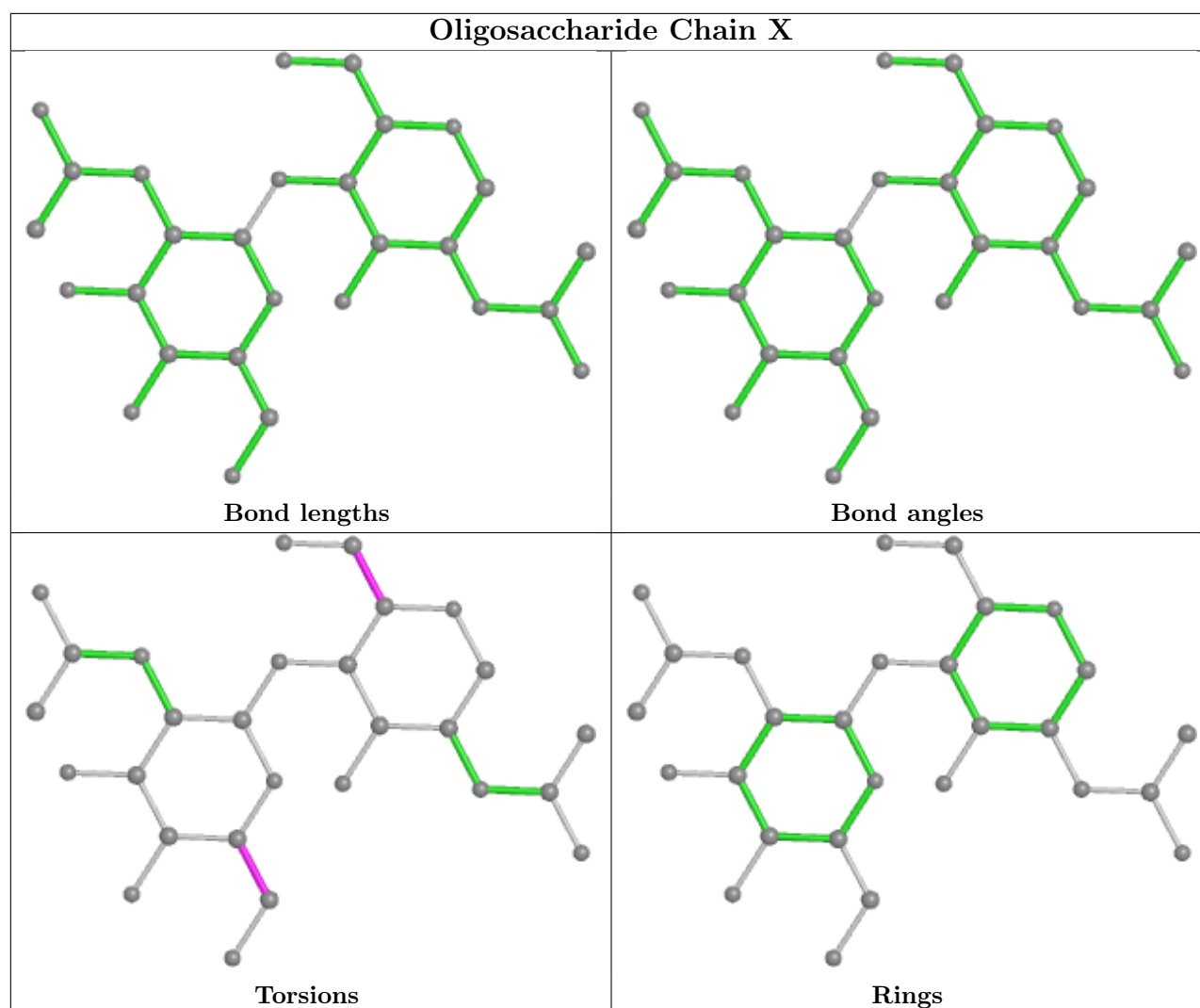












5.6 Ligand geometry [i](#)

30 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	B	1302	1	14,14,15	0.23	0	17,19,21	0.48	0
5	NAG	A	1304	1	14,14,15	0.20	0	17,19,21	0.43	0
5	NAG	C	1303	1	14,14,15	0.24	0	17,19,21	0.60	0
5	NAG	C	1301	1	14,14,15	0.25	0	17,19,21	0.43	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	B	1310	1	14,14,15	0.34	0	17,19,21	0.51	0
5	NAG	B	1307	1	14,14,15	0.25	0	17,19,21	0.45	0
5	NAG	B	1304	1	14,14,15	0.20	0	17,19,21	0.43	0
5	NAG	A	1302	1	14,14,15	0.25	0	17,19,21	0.46	0
5	NAG	A	1310	1	14,14,15	0.25	0	17,19,21	0.45	0
5	NAG	B	1301	1	14,14,15	0.44	0	17,19,21	0.43	0
5	NAG	C	1310	1	14,14,15	0.35	0	17,19,21	0.36	0
5	NAG	C	1305	1	14,14,15	0.31	0	17,19,21	0.45	0
5	NAG	A	1308	1	14,14,15	0.25	0	17,19,21	0.42	0
5	NAG	B	1309	1	14,14,15	0.26	0	17,19,21	0.45	0
5	NAG	C	1302	1	14,14,15	0.37	0	17,19,21	0.33	0
5	NAG	A	1306	1	14,14,15	0.24	0	17,19,21	0.46	0
5	NAG	B	1306	1	14,14,15	0.31	0	17,19,21	0.50	0
5	NAG	A	1301	1	14,14,15	0.29	0	17,19,21	0.46	0
5	NAG	B	1308	1	14,14,15	0.24	0	17,19,21	0.42	0
5	NAG	C	1307	1	14,14,15	0.27	0	17,19,21	0.45	0
5	NAG	A	1309	1	14,14,15	0.23	0	17,19,21	0.44	0
5	NAG	C	1304	1	14,14,15	0.26	0	17,19,21	0.42	0
5	NAG	C	1306	1	14,14,15	0.28	0	17,19,21	0.48	0
5	NAG	B	1305	1	14,14,15	0.24	0	17,19,21	0.42	0
5	NAG	A	1305	1	14,14,15	0.26	0	17,19,21	0.43	0
5	NAG	B	1303	1	14,14,15	0.23	0	17,19,21	0.39	0
5	NAG	C	1309	1	14,14,15	0.24	0	17,19,21	0.42	0
5	NAG	C	1308	1	14,14,15	0.27	0	17,19,21	0.44	0
5	NAG	A	1307	1	14,14,15	0.26	0	17,19,21	0.44	0
5	NAG	A	1303	1	14,14,15	0.45	0	17,19,21	0.47	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	B	1302	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1304	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1303	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1301	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1310	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1307	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1304	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1302	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	A	1310	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1301	1	-	1/6/23/26	0/1/1/1
5	NAG	C	1310	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1305	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1308	1	-	1/6/23/26	0/1/1/1
5	NAG	B	1309	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1302	1	-	1/6/23/26	0/1/1/1
5	NAG	A	1306	1	-	3/6/23/26	0/1/1/1
5	NAG	B	1306	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1301	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1308	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1307	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1309	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1304	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1306	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1305	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1303	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1309	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1308	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1307	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1303	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (42) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1302	NAG	C4-C5-C6-O6
5	A	1301	NAG	O5-C5-C6-O6
5	B	1304	NAG	O5-C5-C6-O6
5	B	1310	NAG	O5-C5-C6-O6
5	A	1302	NAG	O5-C5-C6-O6
5	A	1307	NAG	O5-C5-C6-O6
5	C	1301	NAG	O5-C5-C6-O6
5	A	1301	NAG	C4-C5-C6-O6
5	B	1308	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	C	1310	NAG	O5-C5-C6-O6
5	B	1310	NAG	C4-C5-C6-O6
5	B	1307	NAG	O5-C5-C6-O6
5	C	1307	NAG	O5-C5-C6-O6
5	B	1303	NAG	C4-C5-C6-O6
5	B	1304	NAG	C4-C5-C6-O6
5	B	1303	NAG	O5-C5-C6-O6
5	C	1301	NAG	C4-C5-C6-O6
5	C	1305	NAG	C4-C5-C6-O6
5	B	1307	NAG	C4-C5-C6-O6
5	C	1307	NAG	C4-C5-C6-O6
5	A	1306	NAG	C8-C7-N2-C2
5	A	1306	NAG	O7-C7-N2-C2
5	B	1306	NAG	C8-C7-N2-C2
5	B	1306	NAG	O7-C7-N2-C2
5	C	1306	NAG	C8-C7-N2-C2
5	C	1306	NAG	O7-C7-N2-C2
5	A	1307	NAG	C4-C5-C6-O6
5	C	1308	NAG	O5-C5-C6-O6
5	C	1305	NAG	O5-C5-C6-O6
5	A	1304	NAG	O5-C5-C6-O6
5	A	1304	NAG	C4-C5-C6-O6
5	A	1308	NAG	O5-C5-C6-O6
5	C	1310	NAG	C4-C5-C6-O6
5	C	1302	NAG	O5-C5-C6-O6
5	A	1305	NAG	C4-C5-C6-O6
5	B	1308	NAG	C4-C5-C6-O6
5	A	1306	NAG	O5-C5-C6-O6
5	A	1305	NAG	O5-C5-C6-O6
5	A	1310	NAG	C4-C5-C6-O6
5	A	1310	NAG	O5-C5-C6-O6
5	B	1301	NAG	C4-C5-C6-O6
5	C	1308	NAG	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	1302	NAG	1	0
5	C	1303	NAG	1	0

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.