



Full wwPDB EM Validation Report ⓘ

Oct 27, 2024 – 11:32 AM EDT

PDB ID : 7T77
EMDB ID : EMD-25736
Title : HIV-1 Envelope ApexGT3.N130 in complex with PG9 Fab
Authors : Berndsen, Z.T.; Ward, A.B.
Deposited on : 2021-12-14
Resolution : 4.75 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev113
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

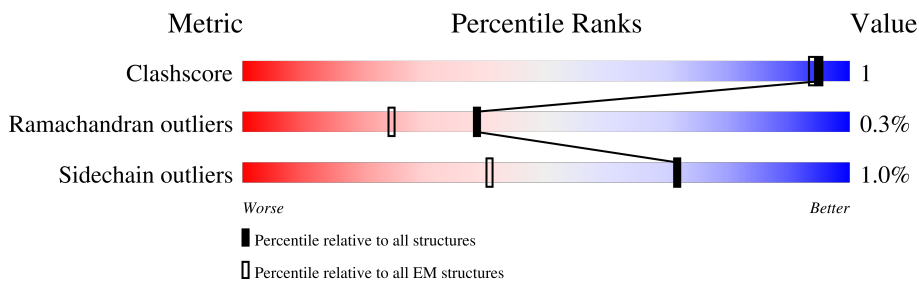
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.75 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 $\leq 5\%$. 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	506	
1	C	506	
1	E	506	
2	B	162	
2	D	162	
2	F	162	
3	H	248	
4	L	216	




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Mol	Chain	Length	Quality of chain
5	G	2	
5	I	2	
5	J	2	
5	K	2	
5	M	2	
5	N	2	
5	O	2	
5	P	2	
5	Q	2	
5	S	2	
5	U	2	
5	V	2	
5	W	2	
5	Y	2	
5	Z	2	
5	c	2	
5	d	2	
5	e	2	
5	f	2	
5	g	2	
6	R	5	
7	T	3	
7	X	3	
7	a	3	
7	b	3	

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Mol	Chain	Length	Quality of chain
7	i	3	 33% 67%
8	h	7	 86% 14%
9	j	6	 67% 33%

2 Entry composition i

There are 10 unique types of molecules in this entry. The entry contains 16832 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 HIV Envelope ApexGT3.N130 gp120.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	447	Total	C	N	O	S	0	0
			3518	2207	623	662	26		
1	C	447	Total	C	N	O	S	0	0
			3518	2207	623	662	26		
1	E	447	Total	C	N	O	S	0	0
			3518	2207	623	662	26		

- Molecule 2 is a protein called HIV Envelope ApexGT3.N130 gp41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	124	Total	C	N	O	S	0	0
			990	624	172	188	6		
2	D	124	Total	C	N	O	S	0	0
			990	624	172	188	6		
2	F	124	Total	C	N	O	S	0	0
			990	624	172	188	6		

- Molecule 3 is a protein called PG9 Fab Heavy Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	H	133	Total	C	N	O	S	0	0
			1077	676	184	210	7		

- Molecule 4 is a protein called PG9 Fab Light Chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	L	110	Total	C	N	O	S	0	0
			812	498	144	168	2		

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



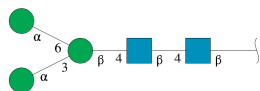
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	G	2	28	16	2	10	0	0
5	I	2	28	16	2	10	0	0
5	J	2	28	16	2	10	0	0
5	K	2	28	16	2	10	0	0
5	M	2	28	16	2	10	0	0
5	N	2	28	16	2	10	0	0
5	O	2	28	16	2	10	0	0
5	P	2	28	16	2	10	0	0
5	Q	2	28	16	2	10	0	0
5	S	2	28	16	2	10	0	0
5	U	2	28	16	2	10	0	0
5	V	2	28	16	2	10	0	0
5	W	2	28	16	2	10	0	0
5	Y	2	28	16	2	10	0	0
5	Z	2	28	16	2	10	0	0
5	c	2	28	16	2	10	0	0
5	d	2	28	16	2	10	0	0
5	e	2	28	16	2	10	0	0
5	f	2	28	16	2	10	0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	g	2	28	16	2	10	0	0

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



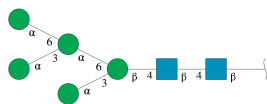
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	R	5	61	34	2	25	0	0

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



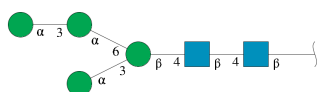
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	T	3	39	22	2	15	0	0
7	X	3	39	22	2	15	0	0
7	a	3	39	22	2	15	0	0
7	b	3	39	22	2	15	0	0
7	i	3	39	22	2	15	0	0

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



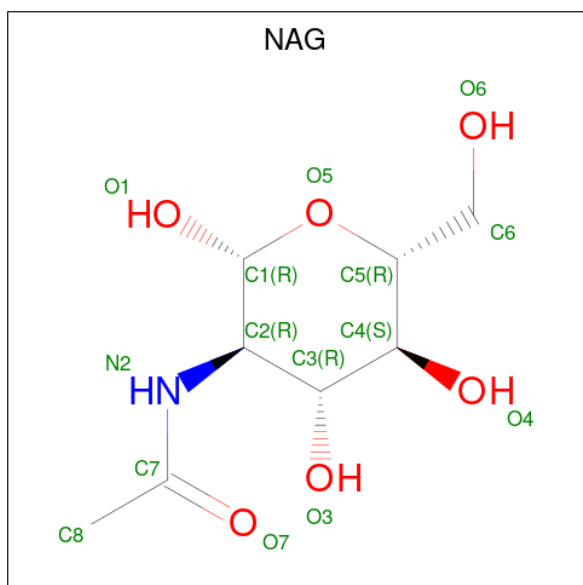
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	h	7	83	46	2	35	0	0

- Molecule 9 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	j	6	72	40	2	30	0	0

- Molecule 10 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

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

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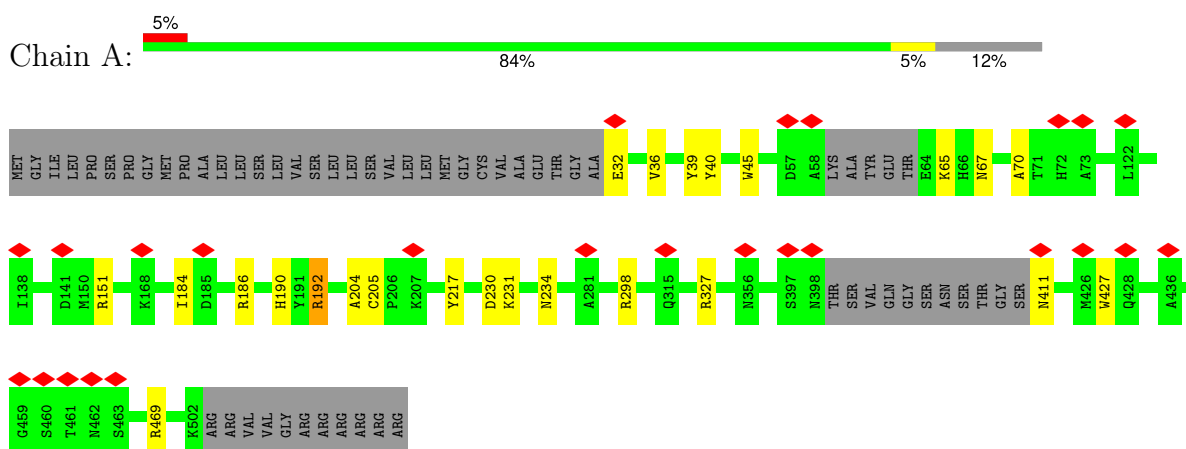
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	E	1	Total 14	8	1	5	0
10	F	1	Total 14	8	1	5	0
10	F	1	Total 14	8	1	5	0
10	F	1	Total 14	8	1	5	0

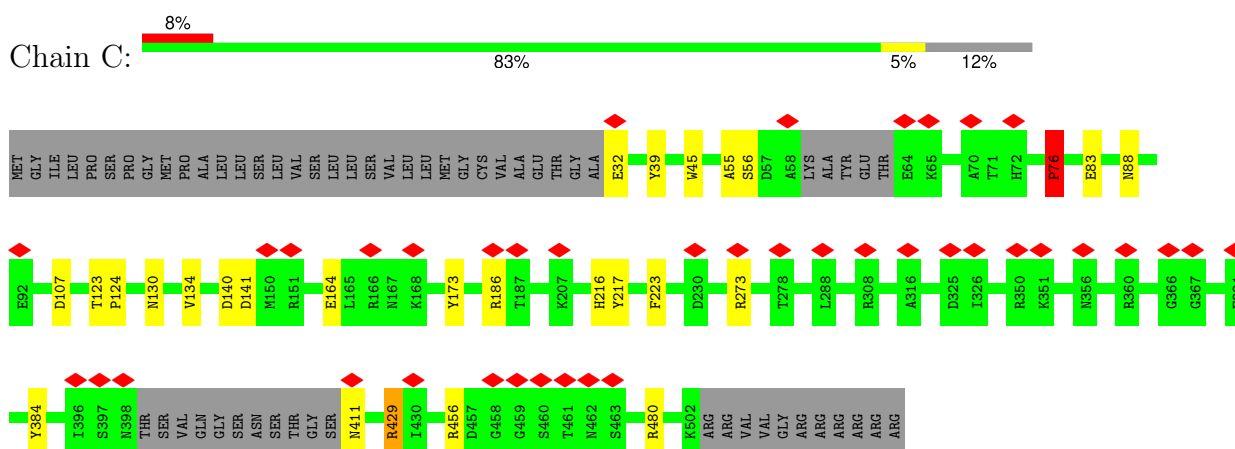
3 Residue-property plots

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

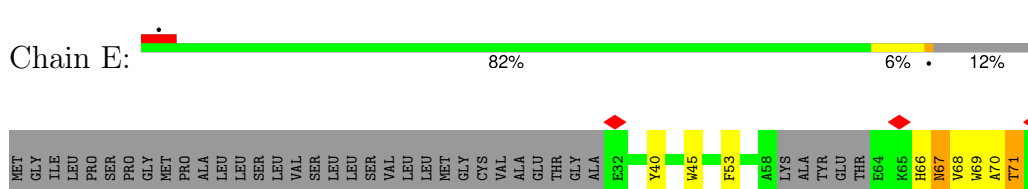
- Molecule 1: HIV Envelope ApexGT3.N130 gp120

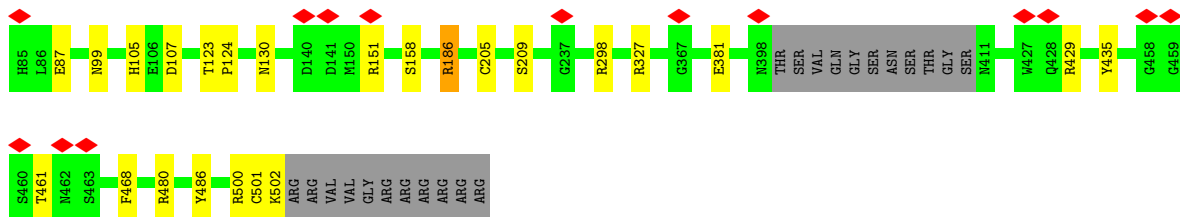


- Molecule 1: HIV Envelope ApexGT3.N130 gp120

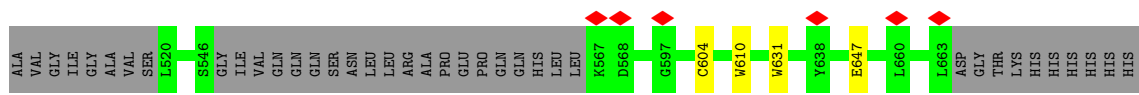


- Molecule 1: HIV Envelope ApexGT3.N130 gp120

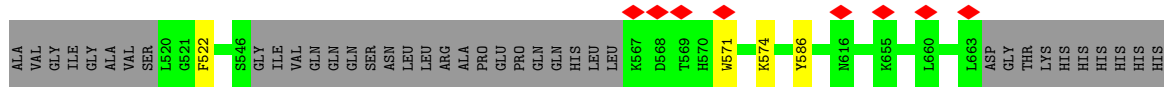
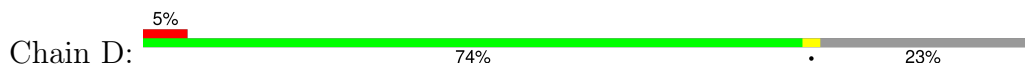




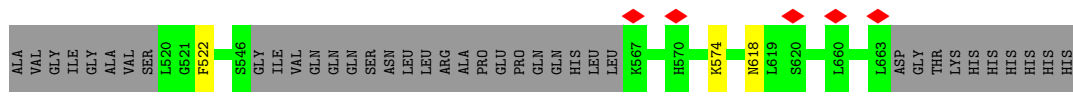
• Molecule 2: HIV Envelope ApexGT3.N130 gp41



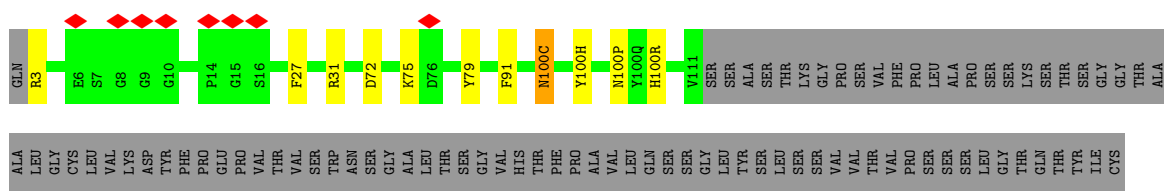
• Molecule 2: HIV Envelope ApexGT3.N130 gp41



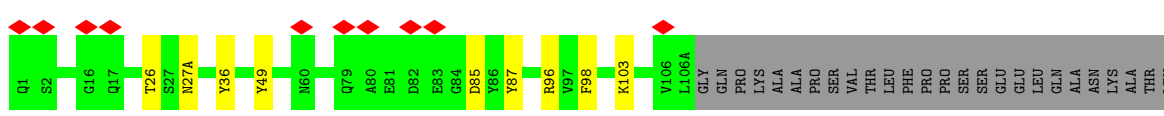
• Molecule 2: HIV Envelope ApexGT3.N130 gp41



• Molecule 3: PG9 Fab Heavy Chain



• Molecule 4: PG9 Fab Light Chain



VAL CYS
LEU VAL
ILE THR
SER HIS
ASP GLU
PHE GLY
TYR SER
THR THR
PRO GLY
ALA VAL
VAL THR
ALA VAL
ALA TRP
TRP THR
LYS LYS
ALA LYS
ASP ASP
SER SER
SER SER
VAL VAL
VAL LYS
ALA LYS
GLY GLY
VAL VAL
GLU GLU
THR THR
THR THR
PRO PRO
SER SER
LYS LYS
GLN GLN
SER SER
ASN ASN
ASN ASN
LYS LYS
TYR TYR
ALA ALA
ALA ALA
SER SER
SER SER
TYR TYR
LEU LEU
SER SER
THR THR
THR THR
PRO PRO
GLU GLU
GLN GLN
TRP TRP
SER SER
LYS LYS
HIS HIS
LYS LYS
SER SER
TYR TYR
SER SER

CYS
GLN VAL
THR THR
HIS HIS
SER SER
GLU GLY
SER SER
THR THR
VAL VAL
GLU GLU
LYS LYS
THR THR
VAL VAL
ALA ALA
ALA TRP
TRP THR
LYS LYS
GLU GLU
CYS CYS
SER SER

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



MAG1
MAG2

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



MAG1
MAG2

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MAG1
MAG2

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MAG2

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



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



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



- Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





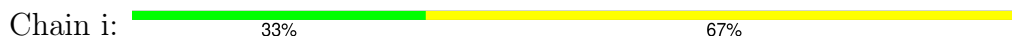
- Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



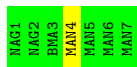
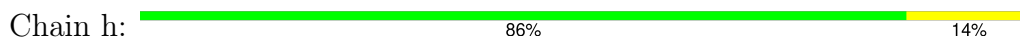
- Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



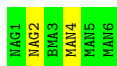
- Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: alpha-D-mannopyranose-(1-3)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	110183	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	2.828	Depositor
Minimum map value	-1.265	Depositor
Average map value	0.010	Depositor
Map value standard deviation	0.100	Depositor
Recommended contour level	0.749	Depositor
Map size (Å)	322.0, 322.0, 322.0	wwPDB
Map dimensions	280, 280, 280	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.15, 1.15, 1.15	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, MAN, TYS, BMA

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.99	6/3592 (0.2%)	0.92	8/4881 (0.2%)
1	C	0.98	5/3592 (0.1%)	0.93	10/4881 (0.2%)
1	E	1.04	9/3592 (0.3%)	0.94	8/4881 (0.2%)
2	B	1.14	3/1009 (0.3%)	0.81	0/1368
2	D	1.09	2/1009 (0.2%)	0.83	0/1368
2	F	1.11	1/1009 (0.1%)	0.81	0/1368
3	H	1.05	2/1073 (0.2%)	0.91	2/1451 (0.1%)
4	L	0.98	4/826 (0.5%)	0.88	1/1118 (0.1%)
All	All	1.03	32/15702 (0.2%)	0.90	29/21316 (0.1%)

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	604	CYS	CB-SG	-8.57	1.67	1.82
1	E	87	GLU	CG-CD	-7.45	1.40	1.51
1	A	45	TRP	CB-CG	-7.25	1.37	1.50
1	E	53	PHE	CB-CG	-6.85	1.39	1.51
1	E	45	TRP	CB-CG	-6.52	1.38	1.50
1	C	45	TRP	CB-CG	-6.16	1.39	1.50
2	B	647	GLU	CD-OE2	-5.94	1.19	1.25
2	F	522	PHE	CB-CG	-5.79	1.41	1.51
1	C	411	ASN	CB-CG	5.75	1.64	1.51
1	A	32	GLU	CB-CG	5.71	1.62	1.52
2	D	586	TYR	CB-CG	-5.63	1.43	1.51
1	E	381	GLU	CD-OE2	-5.60	1.19	1.25
1	A	40	TYR	CB-CG	-5.59	1.43	1.51
1	E	435	TYR	CB-CG	-5.55	1.43	1.51
2	B	631	TRP	CB-CG	-5.39	1.40	1.50
3	H	3	ARG	NE-CZ	5.37	1.40	1.33
4	L	49	TYR	CD2-CE2	-5.37	1.31	1.39
4	L	36	TYR	CB-CG	-5.32	1.43	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	205	CYS	CB-SG	5.28	1.91	1.82
4	L	98	PHE	CB-CG	-5.25	1.42	1.51
1	E	468	PHE	CB-CG	-5.23	1.42	1.51
1	A	205	CYS	CB-SG	5.20	1.91	1.82
1	A	39	TYR	CB-CG	-5.20	1.43	1.51
1	E	105	HIS	CB-CG	-5.18	1.40	1.50
1	E	486	TYR	CB-CG	-5.17	1.44	1.51
4	L	87	TYR	CB-CG	-5.17	1.43	1.51
3	H	91	PHE	CB-CG	-5.14	1.42	1.51
1	A	411	ASN	CB-CG	5.08	1.62	1.51
2	D	522	PHE	CB-CG	-5.06	1.42	1.51
1	C	32	GLU	CB-CG	5.06	1.61	1.52
1	C	223	PHE	CB-CG	-5.03	1.42	1.51
1	C	83	GLU	CD-OE2	-5.02	1.20	1.25

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	298	ARG	NE-CZ-NH2	-10.97	114.81	120.30
1	A	469	ARG	NE-CZ-NH2	-8.95	115.83	120.30
1	E	151	ARG	NE-CZ-NH2	-8.36	116.12	120.30
3	H	31	ARG	NE-CZ-NH2	-7.70	116.45	120.30
1	C	480	ARG	NE-CZ-NH2	-7.30	116.65	120.30
1	C	384	TYR	CB-CG-CD2	-7.20	116.68	121.00
1	E	327	ARG	NE-CZ-NH2	-6.97	116.81	120.30
1	A	327	ARG	NE-CZ-NH2	-6.95	116.83	120.30
1	A	192	ARG	NE-CZ-NH2	-6.93	116.83	120.30
1	A	151	ARG	NE-CZ-NH2	-6.48	117.06	120.30
4	L	49	TYR	CB-CG-CD2	-6.29	117.23	121.00
1	E	480	ARG	NE-CZ-NH1	6.19	123.39	120.30
1	E	500	ARG	NE-CZ-NH2	-6.08	117.26	120.30
3	H	79	TYR	CB-CG-CD1	-5.97	117.42	121.00
1	A	298	ARG	NE-CZ-NH2	-5.96	117.32	120.30
1	C	39	TYR	CB-CG-CD2	-5.94	117.44	121.00
1	A	298	ARG	NE-CZ-NH1	5.77	123.19	120.30
1	C	273	ARG	NE-CZ-NH2	-5.74	117.43	120.30
1	E	429	ARG	NE-CZ-NH2	-5.70	117.45	120.30
1	C	141	ASP	CB-CG-OD2	5.70	123.43	118.30
1	C	456	ARG	NE-CZ-NH1	5.64	123.12	120.30
1	A	217	TYR	CB-CG-CD2	-5.44	117.73	121.00
1	C	429	ARG	NE-CZ-NH2	-5.40	117.60	120.30
1	A	469	ARG	NE-CZ-NH1	5.35	122.98	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	40	TYR	CB-CG-CD2	-5.23	117.86	121.00
1	E	298	ARG	NE-CZ-NH1	5.18	122.89	120.30
1	C	217	TYR	CB-CG-CD2	-5.09	117.94	121.00
1	C	39	TYR	CB-CG-CD1	5.08	124.05	121.00
1	C	173	TYR	CB-CG-CD2	-5.07	117.96	121.00

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	3518	0	3448	4	0
1	C	3518	0	3450	8	0
1	E	3518	0	3448	15	0
2	B	990	0	959	2	0
2	D	990	0	959	1	0
2	F	990	0	959	1	0
3	H	1077	0	978	3	0
4	L	812	0	796	2	0
5	G	28	0	25	0	0
5	I	28	0	25	0	0
5	J	28	0	25	0	0
5	K	28	0	25	0	0
5	M	28	0	25	0	0
5	N	28	0	25	0	0
5	O	28	0	25	0	0
5	P	28	0	25	0	0
5	Q	28	0	25	0	0
5	S	28	0	25	0	0
5	U	28	0	25	0	0
5	V	28	0	25	0	0
5	W	28	0	25	0	0
5	Y	28	0	25	1	0
5	Z	28	0	25	0	0
5	c	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	d	28	0	25	0	0
5	e	28	0	25	0	0
5	f	28	0	25	0	0
5	g	28	0	25	0	0
6	R	61	0	52	0	0
7	T	39	0	34	0	0
7	X	39	0	34	0	0
7	a	39	0	34	0	0
7	b	39	0	34	0	0
7	i	39	0	34	0	0
8	h	83	0	70	0	0
9	j	72	0	61	0	0
10	A	98	0	90	0	0
10	B	42	0	39	0	0
10	C	126	0	117	0	0
10	D	42	0	38	0	0
10	E	98	0	90	1	0
10	F	42	0	39	0	0
All	All	16832	0	16263	31	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 1.

All (31) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:71:THR:HG23	1:E:74:CYS:HB2	1.69	0.73
1:C:186:ARG:HH22	3:H:27:PHE:HA	1.61	0.64
1:E:67:ASN:HD21	1:E:209:SER:H	1.50	0.59
1:E:69:TRP:O	1:E:71:THR:N	2.30	0.57
1:E:107:ASP:OD1	2:F:574:LYS:NZ	2.39	0.56
1:C:56:SER:O	1:C:76:PRO:HA	2.07	0.54
1:C:107:ASP:OD1	2:D:574:LYS:NZ	2.44	0.50
1:E:69:TRP:O	1:E:71:THR:HG22	2.13	0.49
3:H:72:ASP:HB3	3:H:75:LYS:HB2	1.95	0.49
1:C:55:ALA:HB3	1:C:216:HIS:HB2	1.96	0.48
1:A:67:ASN:HB3	1:A:70:ALA:HB3	1.97	0.46
1:E:69:TRP:C	1:E:71:THR:H	2.19	0.45
1:C:123:THR:N	1:C:124:PRO:CD	2.80	0.45
1:E:99:ASN:N	1:E:99:ASN:OD1	2.49	0.45
1:E:69:TRP:C	1:E:71:THR:N	2.71	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:100(C):ASN:HD22	3:H:100(C):ASN:HA	1.54	0.44
1:A:192:ARG:HH22	1:C:164:GLU:HG3	1.83	0.44
1:A:36:VAL:HG23	2:B:610:TRP:CD1	2.54	0.43
1:A:230:ASP:OD1	1:A:231:LYS:N	2.52	0.42
1:E:67:ASN:H	1:E:70:ALA:HB3	1.85	0.42
1:E:186:ARG:HD3	1:E:186:ARG:HA	1.87	0.42
2:B:610:TRP:CD1	2:B:610:TRP:N	2.87	0.42
1:C:140:ASP:OD1	1:C:140:ASP:N	2.52	0.41
1:E:123:THR:N	1:E:124:PRO:CD	2.83	0.41
1:E:130:ASN:HB3	1:E:158:SER:OG	2.20	0.41
1:E:461:THR:HA	10:E:605:NAG:H83	2.01	0.41
4:L:26:THR:HG23	4:L:27(A):ASN:H	1.86	0.41
1:E:67:ASN:O	1:E:68:VAL:C	2.59	0.41
1:C:134:VAL:HG13	5:Y:1:NAG:H81	2.04	0.40
4:L:85:ASP:OD2	4:L:103:LYS:NZ	2.52	0.40
1:E:501:CYS:O	1:E:502:LYS:C	2.60	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	441/506 (87%)	429 (97%)	10 (2%)	2 (0%)	25	64
1	C	441/506 (87%)	426 (97%)	14 (3%)	1 (0%)	44	78
1	E	441/506 (87%)	422 (96%)	19 (4%)	0	100	100
2	B	120/162 (74%)	120 (100%)	0	0	100	100
2	D	120/162 (74%)	119 (99%)	0	1 (1%)	16	53
2	F	120/162 (74%)	118 (98%)	2 (2%)	0	100	100
3	H	129/248 (52%)	124 (96%)	4 (3%)	1 (1%)	16	53

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	L	108/216 (50%)	105 (97%)	3 (3%)	0	100	100
All	All	1920/2468 (78%)	1863 (97%)	52 (3%)	5 (0%)	38	72

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	427	TRP
1	A	204	ALA
2	D	571	TRP
3	H	100(R)	HIS
1	C	76	PRO

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	400/448 (89%)	395 (99%)	5 (1%)	65	77
1	C	400/448 (89%)	396 (99%)	4 (1%)	73	82
1	E	400/448 (89%)	396 (99%)	4 (1%)	73	82
2	B	107/138 (78%)	107 (100%)	0	100	100
2	D	107/138 (78%)	107 (100%)	0	100	100
2	F	107/138 (78%)	106 (99%)	1 (1%)	75	83
3	H	108/208 (52%)	106 (98%)	2 (2%)	52	70
4	L	92/183 (50%)	91 (99%)	1 (1%)	70	80
All	All	1721/2149 (80%)	1704 (99%)	17 (1%)	71	82

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	65	LYS
1	A	184	ILE
1	A	186	ARG

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Mol	Chain	Res	Type
1	A	190	HIS
1	A	234	ASN
1	C	76	PRO
1	C	88	ASN
1	C	130	ASN
1	C	429	ARG
1	E	66	HIS
1	E	67	ASN
1	E	71	THR
1	E	186	ARG
2	F	618	ASN
3	H	100(C)	ASN
3	H	100(P)	ASN
4	L	96	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	67	ASN
3	H	100(C)	ASN
3	H	100(P)	ASN
3	H	100(R)	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues 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	$\# Z > 2$
3	TYS	H	100(G)	3	15,16,17	0.65	0	15,22,24	0.92	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	TYS	H	100(H)	3	15,16,17	3.02	7 (46%)	15,22,24	0.79	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
3	TYS	H	100(G)	3	-	5/10/11/13	0/1/1/1
3	TYS	H	100(H)	3	-	3/10/11/13	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	100(H)	TYS	CD1-CG	5.80	1.50	1.38
3	H	100(H)	TYS	CE1-CD1	5.01	1.46	1.38
3	H	100(H)	TYS	CE1-CZ	4.84	1.47	1.38
3	H	100(H)	TYS	CE2-CZ	4.60	1.47	1.38
3	H	100(H)	TYS	CD2-CG	4.29	1.47	1.38
3	H	100(H)	TYS	CE2-CD2	2.49	1.42	1.38
3	H	100(H)	TYS	CB-CG	2.27	1.56	1.51

There are no bond angle outliers.

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	H	100(G)	TYS	CE1-CZ-OH-S
3	H	100(G)	TYS	CE2-CZ-OH-S
3	H	100(H)	TYS	CZ-OH-S-O1
3	H	100(G)	TYS	N-CA-CB-CG
3	H	100(H)	TYS	CZ-OH-S-O3
3	H	100(H)	TYS	CZ-OH-S-O2
3	H	100(G)	TYS	C-CA-CB-CG
3	H	100(G)	TYS	CZ-OH-S-O3

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates i

73 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	G	1	5,1	14,14,15	2.15	5 (35%)	17,19,21	1.19	2 (11%)
5	NAG	G	2	5	14,14,15	1.98	6 (42%)	17,19,21	0.99	0
5	NAG	I	1	5,1	14,14,15	2.18	7 (50%)	17,19,21	1.25	3 (17%)
5	NAG	I	2	5	14,14,15	2.07	7 (50%)	17,19,21	0.95	1 (5%)
5	NAG	J	1	5,1	14,14,15	2.25	5 (35%)	17,19,21	2.42	4 (23%)
5	NAG	J	2	5	14,14,15	2.16	5 (35%)	17,19,21	0.92	1 (5%)
5	NAG	K	1	5,1	14,14,15	2.28	6 (42%)	17,19,21	1.37	3 (17%)
5	NAG	K	2	5	14,14,15	1.99	6 (42%)	17,19,21	0.97	2 (11%)
5	NAG	M	1	5,1	14,14,15	2.25	5 (35%)	17,19,21	1.15	1 (5%)
5	NAG	M	2	5	14,14,15	2.06	6 (42%)	17,19,21	0.91	1 (5%)
5	NAG	N	1	5,1	14,14,15	2.26	6 (42%)	17,19,21	1.01	0
5	NAG	N	2	5	14,14,15	2.08	6 (42%)	17,19,21	0.87	1 (5%)
5	NAG	O	1	5,1	14,14,15	2.18	5 (35%)	17,19,21	1.06	1 (5%)
5	NAG	O	2	5	14,14,15	2.06	6 (42%)	17,19,21	0.87	1 (5%)
5	NAG	P	1	5,1	14,14,15	2.19	5 (35%)	17,19,21	0.99	1 (5%)
5	NAG	P	2	5	14,14,15	2.04	5 (35%)	17,19,21	0.86	1 (5%)
5	NAG	Q	1	5,1	14,14,15	2.26	5 (35%)	17,19,21	1.34	4 (23%)
5	NAG	Q	2	5	14,14,15	2.37	6 (42%)	17,19,21	1.17	2 (11%)
6	NAG	R	1	6,1	14,14,15	2.22	6 (42%)	17,19,21	1.16	2 (11%)
6	NAG	R	2	6	14,14,15	2.06	7 (50%)	17,19,21	1.49	3 (17%)
6	BMA	R	3	6	11,11,12	1.42	3 (27%)	15,15,17	0.66	0
6	MAN	R	4	6	11,11,12	1.97	6 (54%)	15,15,17	0.71	0
6	MAN	R	5	6	11,11,12	2.14	6 (54%)	15,15,17	1.09	1 (6%)
5	NAG	S	1	5,1	14,14,15	2.29	6 (42%)	17,19,21	1.31	3 (17%)
5	NAG	S	2	5	14,14,15	2.15	7 (50%)	17,19,21	0.88	1 (5%)
7	NAG	T	1	7,1	14,14,15	2.22	5 (35%)	17,19,21	1.20	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	NAG	T	2	7	14,14,15	2.02	5 (35%)	17,19,21	0.97	1 (5%)
7	BMA	T	3	7	11,11,12	1.92	5 (45%)	15,15,17	0.81	0
5	NAG	U	1	5,1	14,14,15	2.23	7 (50%)	17,19,21	1.06	1 (5%)
5	NAG	U	2	5	14,14,15	2.10	6 (42%)	17,19,21	0.87	1 (5%)
5	NAG	V	1	5,1	14,14,15	2.20	6 (42%)	17,19,21	0.97	1 (5%)
5	NAG	V	2	5	14,14,15	2.01	4 (28%)	17,19,21	0.99	1 (5%)
5	NAG	W	1	5,1	14,14,15	2.32	7 (50%)	17,19,21	1.07	1 (5%)
5	NAG	W	2	5	14,14,15	2.06	5 (35%)	17,19,21	0.85	1 (5%)
7	NAG	X	1	7,1	14,14,15	0.34	0	17,19,21	0.59	0
7	NAG	X	2	7	14,14,15	0.29	0	17,19,21	0.65	0
7	BMA	X	3	7	11,11,12	0.19	0	15,15,17	0.54	0
5	NAG	Y	1	5,1	14,14,15	2.23	7 (50%)	17,19,21	1.04	2 (11%)
5	NAG	Y	2	5	14,14,15	2.01	6 (42%)	17,19,21	0.98	1 (5%)
5	NAG	Z	1	5,1	14,14,15	2.22	6 (42%)	17,19,21	1.03	1 (5%)
5	NAG	Z	2	5	14,14,15	2.06	6 (42%)	17,19,21	0.86	0
7	NAG	a	1	7,1	14,14,15	2.12	5 (35%)	17,19,21	1.11	2 (11%)
7	NAG	a	2	7	14,14,15	2.19	6 (42%)	17,19,21	1.23	2 (11%)
7	BMA	a	3	7	11,11,12	1.99	4 (36%)	15,15,17	0.63	0
7	NAG	b	1	7,1	14,14,15	2.11	6 (42%)	17,19,21	0.97	0
7	NAG	b	2	7	14,14,15	1.91	5 (35%)	17,19,21	0.92	1 (5%)
7	BMA	b	3	7	11,11,12	1.90	5 (45%)	15,15,17	0.70	0
5	NAG	c	1	5,1	14,14,15	2.05	6 (42%)	17,19,21	1.14	1 (5%)
5	NAG	c	2	5	14,14,15	2.07	6 (42%)	17,19,21	0.85	1 (5%)
5	NAG	d	1	5,1	14,14,15	2.23	6 (42%)	17,19,21	3.13	5 (29%)
5	NAG	d	2	5	14,14,15	1.99	5 (35%)	17,19,21	0.93	1 (5%)
5	NAG	e	1	5,1	14,14,15	2.22	5 (35%)	17,19,21	1.00	1 (5%)
5	NAG	e	2	5	14,14,15	2.12	6 (42%)	17,19,21	1.06	2 (11%)
5	NAG	f	1	5,1	14,14,15	2.35	7 (50%)	17,19,21	1.32	3 (17%)
5	NAG	f	2	5	14,14,15	2.09	5 (35%)	17,19,21	0.96	1 (5%)
5	NAG	g	1	5,1	14,14,15	2.19	5 (35%)	17,19,21	1.05	0
5	NAG	g	2	5	14,14,15	2.00	6 (42%)	17,19,21	0.99	2 (11%)
8	NAG	h	1	8,1	14,14,15	0.61	0	17,19,21	0.64	0
8	NAG	h	2	8	14,14,15	0.47	0	17,19,21	0.72	0
8	BMA	h	3	8	11,11,12	0.22	0	15,15,17	0.64	0
8	MAN	h	4	8	11,11,12	0.32	0	15,15,17	0.95	1 (6%)
8	MAN	h	5	8	11,11,12	0.29	0	15,15,17	0.60	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	MAN	h	6	8	11,11,12	0.25	0	15,15,17	0.69	0
8	MAN	h	7	8	11,11,12	0.23	0	15,15,17	0.60	0
7	NAG	i	1	7,1	14,14,15	0.57	0	17,19,21	1.25	1 (5%)
7	NAG	i	2	7	14,14,15	0.57	0	17,19,21	0.76	0
7	BMA	i	3	7	11,11,12	0.34	0	15,15,17	0.88	1 (6%)
9	NAG	j	1	9,1	14,14,15	0.33	0	17,19,21	0.71	0
9	NAG	j	2	9	14,14,15	0.34	0	17,19,21	1.10	1 (5%)
9	BMA	j	3	9	11,11,12	0.26	0	15,15,17	0.75	0
9	MAN	j	4	9	11,11,12	0.19	0	15,15,17	0.71	1 (6%)
9	MAN	j	5	9	11,11,12	0.21	0	15,15,17	0.54	0
9	MAN	j	6	9	11,11,12	0.19	0	15,15,17	0.60	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	G	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	G	2	5	-	0/6/23/26	0/1/1/1
5	NAG	I	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	I	2	5	-	0/6/23/26	0/1/1/1
5	NAG	J	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	J	2	5	-	0/6/23/26	0/1/1/1
5	NAG	K	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	K	2	5	-	0/6/23/26	0/1/1/1
5	NAG	M	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	M	2	5	-	1/6/23/26	0/1/1/1
5	NAG	N	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	N	2	5	-	0/6/23/26	0/1/1/1
5	NAG	O	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	O	2	5	-	0/6/23/26	0/1/1/1
5	NAG	P	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	P	2	5	-	0/6/23/26	0/1/1/1
5	NAG	Q	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Q	2	5	-	0/6/23/26	0/1/1/1
6	NAG	R	1	6,1	-	1/6/23/26	0/1/1/1
6	NAG	R	2	6	-	0/6/23/26	0/1/1/1
6	BMA	R	3	6	-	1/2/19/22	0/1/1/1
6	MAN	R	4	6	-	0/2/19/22	0/1/1/1
6	MAN	R	5	6	-	1/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	S	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	S	2	5	-	0/6/23/26	0/1/1/1
7	NAG	T	1	7,1	-	1/6/23/26	0/1/1/1
7	NAG	T	2	7	-	0/6/23/26	0/1/1/1
7	BMA	T	3	7	-	1/2/19/22	0/1/1/1
5	NAG	U	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	U	2	5	-	0/6/23/26	0/1/1/1
5	NAG	V	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	V	2	5	-	1/6/23/26	0/1/1/1
5	NAG	W	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	W	2	5	-	1/6/23/26	0/1/1/1
7	NAG	X	1	7,1	-	3/6/23/26	0/1/1/1
7	NAG	X	2	7	-	0/6/23/26	0/1/1/1
7	BMA	X	3	7	-	0/2/19/22	0/1/1/1
5	NAG	Y	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	Y	2	5	-	1/6/23/26	0/1/1/1
5	NAG	Z	1	5,1	-	2/6/23/26	0/1/1/1
5	NAG	Z	2	5	-	0/6/23/26	0/1/1/1
7	NAG	a	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	a	2	7	-	2/6/23/26	0/1/1/1
7	BMA	a	3	7	-	0/2/19/22	0/1/1/1
7	NAG	b	1	7,1	-	0/6/23/26	0/1/1/1
7	NAG	b	2	7	-	0/6/23/26	0/1/1/1
7	BMA	b	3	7	-	0/2/19/22	0/1/1/1
5	NAG	c	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	c	2	5	-	0/6/23/26	0/1/1/1
5	NAG	d	1	5,1	-	3/6/23/26	0/1/1/1
5	NAG	d	2	5	-	0/6/23/26	0/1/1/1
5	NAG	e	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	e	2	5	-	2/6/23/26	0/1/1/1
5	NAG	f	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	f	2	5	-	0/6/23/26	0/1/1/1
5	NAG	g	1	5,1	-	0/6/23/26	0/1/1/1
5	NAG	g	2	5	-	1/6/23/26	0/1/1/1
8	NAG	h	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	h	2	8	-	2/6/23/26	0/1/1/1
8	BMA	h	3	8	-	2/2/19/22	0/1/1/1
8	MAN	h	4	8	-	2/2/19/22	0/1/1/1
8	MAN	h	5	8	-	0/2/19/22	0/1/1/1
8	MAN	h	6	8	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	MAN	h	7	8	-	0/2/19/22	0/1/1/1
7	NAG	i	1	7,1	-	5/6/23/26	0/1/1/1
7	NAG	i	2	7	-	4/6/23/26	0/1/1/1
7	BMA	i	3	7	-	1/2/19/22	0/1/1/1
9	NAG	j	1	9,1	-	2/6/23/26	0/1/1/1
9	NAG	j	2	9	-	2/6/23/26	0/1/1/1
9	BMA	j	3	9	-	2/2/19/22	0/1/1/1
9	MAN	j	4	9	-	0/2/19/22	0/1/1/1
9	MAN	j	5	9	-	1/2/19/22	0/1/1/1
9	MAN	j	6	9	-	0/2/19/22	0/1/1/1

All (306) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	Q	2	NAG	C1-C2	6.59	1.61	1.52
5	W	1	NAG	C1-C2	6.08	1.60	1.52
5	M	1	NAG	C1-C2	6.03	1.60	1.52
7	T	1	NAG	C1-C2	5.82	1.60	1.52
6	R	1	NAG	C1-C2	5.79	1.60	1.52
5	N	1	NAG	C1-C2	5.78	1.60	1.52
5	f	1	NAG	C1-C2	5.76	1.60	1.52
5	K	1	NAG	C1-C2	5.75	1.60	1.52
5	e	1	NAG	C1-C2	5.73	1.60	1.52
5	g	1	NAG	C1-C2	5.70	1.60	1.52
5	S	1	NAG	C1-C2	5.63	1.60	1.52
5	J	2	NAG	C1-C2	5.61	1.60	1.52
5	Y	1	NAG	C1-C2	5.60	1.60	1.52
5	V	1	NAG	C1-C2	5.60	1.60	1.52
5	U	1	NAG	C1-C2	5.59	1.60	1.52
5	P	1	NAG	C1-C2	5.57	1.59	1.52
5	Q	1	NAG	C1-C2	5.55	1.59	1.52
7	a	1	NAG	C1-C2	5.42	1.59	1.52
5	O	1	NAG	C1-C2	5.41	1.59	1.52
5	d	1	NAG	C1-C2	5.40	1.59	1.52
5	J	1	NAG	C1-C2	5.40	1.59	1.52
5	Z	1	NAG	C1-C2	5.39	1.59	1.52
7	b	1	NAG	C1-C2	5.23	1.59	1.52
5	G	1	NAG	C1-C2	5.19	1.59	1.52
5	f	2	NAG	C1-C2	5.11	1.59	1.52
5	c	1	NAG	C1-C2	5.08	1.59	1.52
5	I	1	NAG	C1-C2	5.08	1.59	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	c	2	NAG	C1-C2	5.07	1.59	1.52
5	U	2	NAG	C1-C2	5.05	1.59	1.52
5	S	2	NAG	C1-C2	5.04	1.59	1.52
5	N	2	NAG	C1-C2	5.00	1.59	1.52
5	O	2	NAG	C1-C2	4.91	1.59	1.52
5	M	2	NAG	C1-C2	4.91	1.59	1.52
5	V	2	NAG	C1-C2	4.88	1.59	1.52
5	P	2	NAG	C1-C2	4.84	1.58	1.52
5	Z	2	NAG	C1-C2	4.84	1.58	1.52
5	d	2	NAG	C1-C2	4.79	1.58	1.52
5	W	2	NAG	C1-C2	4.77	1.58	1.52
5	e	2	NAG	C1-C2	4.74	1.58	1.52
5	g	2	NAG	C1-C2	4.69	1.58	1.52
5	Y	2	NAG	C1-C2	4.66	1.58	1.52
5	K	2	NAG	C1-C2	4.65	1.58	1.52
7	b	2	NAG	C1-C2	4.63	1.58	1.52
5	G	2	NAG	C1-C2	4.61	1.58	1.52
7	a	2	NAG	C1-C2	4.56	1.58	1.52
5	I	2	NAG	C1-C2	4.54	1.58	1.52
7	T	2	NAG	C1-C2	4.46	1.58	1.52
6	R	2	NAG	C1-C2	4.45	1.58	1.52
5	J	1	NAG	O5-C5	3.50	1.50	1.43
5	Q	1	NAG	O5-C5	3.45	1.50	1.43
5	G	1	NAG	O5-C5	3.45	1.50	1.43
6	R	5	MAN	O5-C5	3.37	1.50	1.43
6	R	2	NAG	O5-C5	3.37	1.50	1.43
5	I	2	NAG	O5-C5	3.36	1.50	1.43
5	e	2	NAG	O5-C5	3.36	1.50	1.43
5	W	2	NAG	O5-C5	3.34	1.49	1.43
7	a	3	BMA	O5-C5	3.33	1.49	1.43
5	Z	1	NAG	O5-C5	3.32	1.49	1.43
5	K	1	NAG	O5-C5	3.31	1.49	1.43
5	N	1	NAG	O5-C5	3.31	1.49	1.43
5	U	2	NAG	O5-C5	3.30	1.49	1.43
5	S	2	NAG	O5-C5	3.27	1.49	1.43
6	R	4	MAN	O5-C5	3.27	1.49	1.43
5	N	2	NAG	O5-C5	3.27	1.49	1.43
5	P	1	NAG	O5-C5	3.26	1.49	1.43
6	R	5	MAN	C2-C3	3.26	1.57	1.52
5	O	1	NAG	O5-C5	3.25	1.49	1.43
5	S	1	NAG	O5-C5	3.24	1.49	1.43
5	Z	2	NAG	O5-C5	3.23	1.49	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	a	2	NAG	O5-C5	3.23	1.49	1.43
5	O	2	NAG	O5-C5	3.23	1.49	1.43
6	R	4	MAN	C2-C3	3.22	1.57	1.52
5	Y	2	NAG	O5-C5	3.21	1.49	1.43
5	f	1	NAG	O5-C5	3.20	1.49	1.43
5	c	2	NAG	O5-C5	3.20	1.49	1.43
5	P	2	NAG	O5-C5	3.19	1.49	1.43
5	e	1	NAG	O5-C5	3.17	1.49	1.43
7	b	1	NAG	O5-C5	3.15	1.49	1.43
7	T	3	BMA	C2-C3	3.15	1.57	1.52
7	a	3	BMA	C2-C3	3.15	1.57	1.52
5	M	2	NAG	O5-C5	3.11	1.49	1.43
7	a	1	NAG	O5-C5	3.09	1.49	1.43
5	G	2	NAG	O5-C5	3.09	1.49	1.43
5	Q	2	NAG	O5-C5	3.09	1.49	1.43
5	U	1	NAG	O5-C5	3.09	1.49	1.43
7	T	2	NAG	O5-C5	3.08	1.49	1.43
7	b	3	BMA	O5-C5	3.07	1.49	1.43
7	b	3	BMA	C2-C3	3.06	1.57	1.52
5	g	1	NAG	O5-C5	3.05	1.49	1.43
5	J	2	NAG	O5-C5	3.05	1.49	1.43
5	V	2	NAG	O5-C5	3.04	1.49	1.43
7	T	3	BMA	O5-C5	3.03	1.49	1.43
5	I	1	NAG	O5-C5	3.02	1.49	1.43
7	T	1	NAG	O5-C5	3.01	1.49	1.43
5	f	2	NAG	O5-C5	3.01	1.49	1.43
5	g	2	NAG	O5-C5	3.00	1.49	1.43
5	Y	1	NAG	O5-C5	2.98	1.49	1.43
5	d	1	NAG	O5-C5	2.98	1.49	1.43
6	R	1	NAG	O5-C5	2.98	1.49	1.43
6	R	5	MAN	C1-C2	2.96	1.59	1.52
5	K	2	NAG	O5-C5	2.91	1.49	1.43
5	S	1	NAG	C4-C5	2.91	1.59	1.53
5	M	1	NAG	O5-C5	2.88	1.49	1.43
5	d	1	NAG	C2-N2	2.88	1.51	1.46
5	S	2	NAG	C3-C2	2.85	1.58	1.52
5	K	2	NAG	C3-C2	2.85	1.58	1.52
5	d	2	NAG	O5-C5	2.83	1.49	1.43
5	W	1	NAG	O5-C5	2.82	1.48	1.43
5	f	2	NAG	C3-C2	2.82	1.58	1.52
7	a	3	BMA	C1-C2	2.82	1.58	1.52
5	V	1	NAG	O5-C5	2.78	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	G	1	NAG	O5-C1	2.78	1.48	1.43
7	a	2	NAG	C4-C5	2.77	1.58	1.53
5	f	1	NAG	C4-C5	2.77	1.58	1.53
7	T	3	BMA	C1-C2	2.76	1.58	1.52
5	e	2	NAG	C3-C2	2.75	1.58	1.52
7	b	2	NAG	O5-C5	2.75	1.48	1.43
6	R	5	MAN	C4-C5	2.71	1.58	1.53
5	Q	1	NAG	O5-C1	2.70	1.48	1.43
7	a	2	NAG	C2-N2	2.69	1.50	1.46
7	b	3	BMA	C1-C2	2.69	1.58	1.52
5	V	1	NAG	C3-C2	2.68	1.58	1.52
5	J	1	NAG	C4-C5	2.67	1.58	1.53
6	R	2	NAG	C4-C5	2.67	1.58	1.53
5	I	1	NAG	C3-C2	2.64	1.58	1.52
7	a	2	NAG	C3-C2	2.64	1.58	1.52
5	g	2	NAG	C3-C2	2.64	1.58	1.52
5	Q	2	NAG	C3-C2	2.63	1.58	1.52
5	J	2	NAG	C3-C2	2.63	1.58	1.52
7	a	2	NAG	C4-C3	2.62	1.59	1.52
7	T	2	NAG	C4-C5	2.62	1.58	1.53
5	Z	2	NAG	C3-C2	2.61	1.58	1.52
5	J	1	NAG	O5-C1	2.60	1.48	1.43
5	c	1	NAG	O5-C5	2.60	1.48	1.43
5	d	2	NAG	C3-C2	2.59	1.57	1.52
5	Y	1	NAG	O5-C1	2.59	1.48	1.43
5	I	2	NAG	C3-C2	2.58	1.57	1.52
7	b	2	NAG	C3-C2	2.58	1.57	1.52
5	O	1	NAG	O5-C1	2.56	1.48	1.43
7	b	1	NAG	O5-C1	2.56	1.48	1.43
5	N	1	NAG	C4-C5	2.55	1.58	1.53
5	I	2	NAG	C2-N2	2.55	1.50	1.46
5	P	1	NAG	C4-C5	2.55	1.58	1.53
5	W	1	NAG	C4-C5	2.53	1.58	1.53
5	U	2	NAG	C3-C2	2.53	1.57	1.52
5	Z	1	NAG	C4-C5	2.53	1.58	1.53
5	e	1	NAG	O5-C1	2.52	1.47	1.43
5	V	2	NAG	C3-C2	2.52	1.57	1.52
5	Z	1	NAG	O5-C1	2.52	1.47	1.43
7	T	2	NAG	C3-C2	2.52	1.57	1.52
6	R	4	MAN	C1-C2	2.52	1.58	1.52
5	M	2	NAG	C3-C2	2.51	1.57	1.52
5	U	1	NAG	C4-C5	2.49	1.58	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	b	3	BMA	C4-C5	2.48	1.58	1.53
5	Y	1	NAG	C3-C2	2.48	1.57	1.52
5	Q	1	NAG	C4-C5	2.48	1.58	1.53
6	R	1	NAG	C3-C2	2.48	1.57	1.52
7	T	3	BMA	C4-C5	2.48	1.58	1.53
5	W	2	NAG	C3-C2	2.48	1.57	1.52
6	R	5	MAN	O5-C1	2.48	1.47	1.43
7	T	1	NAG	O5-C1	2.48	1.47	1.43
5	N	2	NAG	C3-C2	2.48	1.57	1.52
5	O	2	NAG	C3-C2	2.47	1.57	1.52
5	P	2	NAG	C3-C2	2.46	1.57	1.52
5	c	2	NAG	C3-C2	2.46	1.57	1.52
5	e	2	NAG	C4-C5	2.46	1.58	1.53
5	G	2	NAG	C3-C2	2.45	1.57	1.52
5	K	1	NAG	O5-C1	2.44	1.47	1.43
5	d	1	NAG	C4-C5	2.44	1.58	1.53
5	O	1	NAG	C4-C5	2.43	1.58	1.53
5	c	1	NAG	C4-C5	2.43	1.58	1.53
5	W	2	NAG	C4-C5	2.42	1.58	1.53
5	Y	2	NAG	C3-C2	2.41	1.57	1.52
5	Y	2	NAG	C4-C5	2.40	1.58	1.53
7	a	3	BMA	C4-C5	2.40	1.58	1.53
5	V	2	NAG	C4-C5	2.39	1.58	1.53
5	g	1	NAG	O5-C1	2.39	1.47	1.43
5	e	1	NAG	C4-C5	2.39	1.58	1.53
5	f	1	NAG	O5-C1	2.38	1.47	1.43
5	M	2	NAG	C4-C5	2.38	1.58	1.53
5	K	1	NAG	C3-C2	2.38	1.57	1.52
7	a	1	NAG	C4-C5	2.37	1.58	1.53
5	Q	2	NAG	C2-N2	2.37	1.50	1.46
5	e	2	NAG	C2-N2	2.37	1.50	1.46
5	W	1	NAG	C3-C2	2.37	1.57	1.52
5	U	1	NAG	O5-C1	2.37	1.47	1.43
5	K	1	NAG	C4-C5	2.37	1.58	1.53
5	M	1	NAG	C4-C5	2.36	1.58	1.53
7	T	1	NAG	C3-C2	2.36	1.57	1.52
5	M	1	NAG	O5-C1	2.36	1.47	1.43
5	I	1	NAG	C4-C5	2.36	1.58	1.53
5	f	1	NAG	C3-C2	2.35	1.57	1.52
5	g	2	NAG	C4-C5	2.34	1.58	1.53
5	I	1	NAG	C2-N2	2.34	1.50	1.46
5	N	2	NAG	C4-C5	2.34	1.58	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	2	NAG	C4-C5	2.33	1.58	1.53
5	O	2	NAG	C4-C5	2.31	1.58	1.53
5	c	1	NAG	C3-C2	2.31	1.57	1.52
6	R	3	BMA	O5-C5	2.31	1.47	1.43
5	f	1	NAG	C4-C3	2.30	1.58	1.52
5	Y	1	NAG	C4-C5	2.30	1.57	1.53
5	I	2	NAG	C4-C5	2.30	1.57	1.53
5	Q	2	NAG	C4-C5	2.30	1.57	1.53
5	c	2	NAG	C4-C5	2.29	1.57	1.53
5	S	2	NAG	C4-C5	2.29	1.57	1.53
5	N	1	NAG	O5-C1	2.28	1.47	1.43
5	G	2	NAG	C4-C5	2.28	1.57	1.53
5	d	1	NAG	C3-C2	2.28	1.57	1.52
5	P	1	NAG	O5-C1	2.28	1.47	1.43
7	a	1	NAG	O5-C1	2.28	1.47	1.43
5	W	1	NAG	C2-N2	2.28	1.50	1.46
5	g	1	NAG	C4-C5	2.27	1.57	1.53
5	G	1	NAG	C4-C5	2.27	1.57	1.53
5	I	1	NAG	O5-C1	2.26	1.47	1.43
6	R	4	MAN	C4-C5	2.26	1.57	1.53
5	V	1	NAG	C4-C5	2.26	1.57	1.53
5	f	1	NAG	O4-C4	2.25	1.48	1.43
5	e	2	NAG	O5-C1	2.25	1.47	1.43
5	S	1	NAG	C4-C3	2.25	1.58	1.52
6	R	4	MAN	O5-C1	2.25	1.47	1.43
5	U	2	NAG	C4-C5	2.24	1.57	1.53
5	d	2	NAG	C4-C5	2.24	1.57	1.53
5	N	1	NAG	C3-C2	2.24	1.57	1.52
5	Z	2	NAG	C4-C5	2.23	1.57	1.53
5	V	1	NAG	C4-C3	2.23	1.58	1.52
5	W	1	NAG	C4-C3	2.23	1.58	1.52
6	R	5	MAN	C4-C3	2.23	1.58	1.52
7	T	2	NAG	C4-C3	2.22	1.58	1.52
5	Q	1	NAG	C4-C3	2.22	1.58	1.52
5	g	1	NAG	C4-C3	2.21	1.58	1.52
5	S	1	NAG	C3-C2	2.21	1.57	1.52
5	I	1	NAG	C4-C3	2.21	1.58	1.52
5	c	1	NAG	C4-C3	2.21	1.58	1.52
6	R	1	NAG	O5-C1	2.20	1.47	1.43
5	S	1	NAG	O5-C1	2.20	1.47	1.43
5	W	1	NAG	O5-C1	2.20	1.47	1.43
5	M	1	NAG	C3-C2	2.19	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	R	1	NAG	C4-C5	2.19	1.57	1.53
7	b	1	NAG	C4-C5	2.19	1.57	1.53
5	U	1	NAG	C3-C2	2.19	1.57	1.52
7	b	2	NAG	C4-C5	2.18	1.57	1.53
5	J	2	NAG	C4-C5	2.18	1.57	1.53
5	d	1	NAG	C4-C3	2.18	1.58	1.52
5	g	2	NAG	C2-N2	2.18	1.49	1.46
6	R	2	NAG	C4-C3	2.17	1.58	1.52
5	K	2	NAG	C4-C5	2.17	1.57	1.53
6	R	2	NAG	C3-C2	2.17	1.57	1.52
5	S	2	NAG	C2-N2	2.17	1.49	1.46
5	e	1	NAG	C3-C2	2.17	1.57	1.52
5	J	2	NAG	C2-N2	2.16	1.49	1.46
5	U	2	NAG	C2-N2	2.16	1.49	1.46
5	K	1	NAG	C4-C3	2.15	1.57	1.52
5	Q	2	NAG	C4-C3	2.15	1.57	1.52
6	R	3	BMA	C2-C3	2.15	1.55	1.52
5	O	1	NAG	C3-C2	2.15	1.57	1.52
5	f	2	NAG	C4-C5	2.14	1.57	1.53
6	R	3	BMA	C1-C2	2.14	1.57	1.52
7	b	1	NAG	C3-C2	2.14	1.57	1.52
5	N	2	NAG	C2-N2	2.12	1.49	1.46
5	S	2	NAG	O5-C1	2.12	1.47	1.43
5	c	2	NAG	C2-N2	2.12	1.49	1.46
5	U	1	NAG	C4-C3	2.11	1.57	1.52
5	M	2	NAG	C2-N2	2.11	1.49	1.46
5	G	2	NAG	C4-C3	2.10	1.57	1.52
5	P	2	NAG	C2-N2	2.09	1.49	1.46
6	R	2	NAG	C2-N2	2.09	1.49	1.46
6	R	1	NAG	C4-C3	2.09	1.57	1.52
5	V	1	NAG	O5-C1	2.09	1.47	1.43
5	Z	1	NAG	C2-N2	2.09	1.49	1.46
5	K	2	NAG	C2-N2	2.09	1.49	1.46
5	Y	2	NAG	C2-N2	2.09	1.49	1.46
5	J	1	NAG	O4-C4	2.08	1.48	1.43
7	a	1	NAG	C4-C3	2.07	1.57	1.52
5	d	2	NAG	C2-N2	2.07	1.49	1.46
5	U	1	NAG	C2-N2	2.07	1.49	1.46
5	O	2	NAG	C2-N2	2.07	1.49	1.46
5	Y	2	NAG	C4-C3	2.07	1.57	1.52
5	I	2	NAG	O5-C1	2.07	1.47	1.43
5	Z	1	NAG	C3-C2	2.07	1.56	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	Z	2	NAG	C2-N2	2.06	1.49	1.46
5	c	1	NAG	C2-N2	2.06	1.49	1.46
5	K	2	NAG	C4-C3	2.06	1.57	1.52
5	N	1	NAG	C4-C3	2.05	1.57	1.52
5	g	2	NAG	C4-C3	2.05	1.57	1.52
6	R	4	MAN	C4-C3	2.05	1.57	1.52
5	S	2	NAG	C4-C3	2.05	1.57	1.52
5	M	2	NAG	C4-C3	2.05	1.57	1.52
5	O	2	NAG	C4-C3	2.05	1.57	1.52
5	U	2	NAG	C4-C3	2.05	1.57	1.52
5	Y	1	NAG	C4-C3	2.04	1.57	1.52
5	N	2	NAG	C4-C3	2.04	1.57	1.52
5	P	1	NAG	C3-C2	2.04	1.56	1.52
5	W	2	NAG	C2-N2	2.04	1.49	1.46
5	Y	1	NAG	C2-N2	2.03	1.49	1.46
7	b	3	BMA	C4-C3	2.03	1.57	1.52
5	f	2	NAG	C2-N2	2.03	1.49	1.46
5	c	2	NAG	C4-C3	2.03	1.57	1.52
7	b	2	NAG	C4-C3	2.02	1.57	1.52
5	G	2	NAG	C2-N2	2.02	1.49	1.46
7	T	1	NAG	C4-C3	2.02	1.57	1.52
5	G	1	NAG	C3-C2	2.02	1.56	1.52
6	R	2	NAG	O5-C1	2.02	1.47	1.43
5	I	2	NAG	C4-C3	2.01	1.57	1.52
5	Z	2	NAG	C4-C3	2.01	1.57	1.52
7	b	1	NAG	C4-C3	2.01	1.57	1.52
7	T	3	BMA	C4-C3	2.00	1.57	1.52

All (79) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	d	1	NAG	C8-C7-N2	8.47	130.16	116.12
5	J	1	NAG	C8-C7-N2	7.15	127.97	116.12
5	d	1	NAG	C2-N2-C7	5.84	130.72	122.90
5	d	1	NAG	O7-C7-N2	-5.20	112.79	121.98
5	J	1	NAG	O7-C7-N2	-5.05	113.06	121.98
5	K	1	NAG	C2-N2-C7	3.84	128.05	122.90
5	d	1	NAG	C1-C2-N2	3.81	116.44	110.43
6	R	5	MAN	C1-O5-C5	3.48	116.86	112.19
6	R	2	NAG	C8-C7-N2	3.28	121.56	116.12
5	Q	2	NAG	C8-C7-N2	3.16	121.36	116.12
6	R	2	NAG	O4-C4-C5	3.09	116.93	109.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	J	1	NAG	O4-C4-C5	3.04	116.81	109.32
5	G	1	NAG	C8-C7-N2	2.84	120.83	116.12
5	d	1	NAG	O7-C7-C8	-2.81	117.05	122.05
5	f	1	NAG	O4-C4-C5	2.79	116.19	109.32
7	T	1	NAG	C8-C7-N2	2.73	120.65	116.12
5	I	2	NAG	C8-C7-N2	2.69	120.58	116.12
5	M	1	NAG	C8-C7-N2	2.63	120.48	116.12
5	Y	1	NAG	C8-C7-N2	2.56	120.37	116.12
9	j	2	NAG	C4-C3-C2	-2.56	107.27	111.02
5	U	1	NAG	C8-C7-N2	2.52	120.31	116.12
5	Q	2	NAG	O7-C7-C8	-2.49	117.63	122.05
5	S	1	NAG	C8-C7-N2	2.44	120.17	116.12
5	I	1	NAG	C1-C2-N2	-2.43	106.61	110.43
5	f	1	NAG	C8-C7-N2	2.42	120.13	116.12
5	G	1	NAG	O7-C7-C8	-2.41	117.76	122.05
5	O	1	NAG	C8-C7-N2	2.35	120.01	116.12
5	Q	1	NAG	C8-C7-N2	2.33	119.98	116.12
7	T	2	NAG	C8-C7-N2	2.33	119.98	116.12
7	a	1	NAG	C8-C7-N2	2.31	119.95	116.12
5	Z	1	NAG	C8-C7-N2	2.30	119.93	116.12
5	Q	1	NAG	O7-C7-C8	-2.29	117.98	122.05
5	W	1	NAG	C8-C7-N2	2.25	119.85	116.12
5	e	1	NAG	C8-C7-N2	2.24	119.83	116.12
7	i	1	NAG	O5-C1-C2	-2.23	107.84	111.29
7	a	2	NAG	C8-C7-N2	2.22	119.81	116.12
5	f	2	NAG	C8-C7-N2	2.22	119.80	116.12
7	i	3	BMA	C1-O5-C5	2.21	115.15	112.19
5	S	2	NAG	C8-C7-N2	2.21	119.78	116.12
5	I	1	NAG	C8-C7-N2	2.17	119.72	116.12
5	K	2	NAG	C8-C7-N2	2.15	119.68	116.12
5	Q	1	NAG	C1-O5-C5	2.14	115.06	112.19
5	N	2	NAG	C8-C7-N2	2.14	119.67	116.12
5	M	2	NAG	C8-C7-N2	2.14	119.67	116.12
5	J	2	NAG	C8-C7-N2	2.14	119.66	116.12
5	S	1	NAG	C1-C2-N2	-2.14	107.07	110.43
5	K	1	NAG	C1-O5-C5	2.13	115.04	112.19
5	U	2	NAG	C8-C7-N2	2.13	119.65	116.12
5	g	2	NAG	C1-O5-C5	2.13	115.04	112.19
5	K	2	NAG	C1-O5-C5	2.13	115.04	112.19
5	I	1	NAG	O3-C3-C2	-2.12	105.00	109.40
5	c	1	NAG	C8-C7-N2	2.12	119.63	116.12
6	R	2	NAG	O7-C7-C8	-2.11	118.30	122.05

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	R	1	NAG	C8-C7-N2	2.10	119.61	116.12
5	g	2	NAG	C8-C7-N2	2.10	119.60	116.12
5	f	1	NAG	O7-C7-C8	-2.10	118.32	122.05
5	e	2	NAG	C8-C7-N2	2.09	119.58	116.12
5	S	1	NAG	O7-C7-C8	-2.08	118.34	122.05
5	J	1	NAG	C2-N2-C7	2.08	125.69	122.90
5	V	1	NAG	C8-C7-N2	2.08	119.56	116.12
7	T	1	NAG	O7-C7-C8	-2.08	118.36	122.05
5	e	2	NAG	C2-N2-C7	2.07	125.68	122.90
5	K	1	NAG	O5-C1-C2	-2.07	108.08	111.29
8	h	4	MAN	C6-C5-C4	-2.07	107.93	113.02
5	V	2	NAG	O7-C7-C8	-2.07	118.37	122.05
7	a	2	NAG	O4-C4-C3	2.07	115.25	110.38
5	O	2	NAG	C8-C7-N2	2.06	119.54	116.12
5	d	2	NAG	O7-C7-C8	-2.06	118.38	122.05
6	R	1	NAG	O5-C1-C2	-2.06	108.10	111.29
5	P	2	NAG	C8-C7-N2	2.06	119.53	116.12
5	Y	2	NAG	C8-C7-N2	2.05	119.53	116.12
5	c	2	NAG	C8-C7-N2	2.05	119.52	116.12
7	b	2	NAG	C8-C7-N2	2.05	119.52	116.12
5	P	1	NAG	C8-C7-N2	2.03	119.48	116.12
5	Y	1	NAG	O7-C7-C8	-2.02	118.45	122.05
5	Q	1	NAG	O4-C4-C5	2.02	114.29	109.32
7	a	1	NAG	C1-C2-N2	-2.01	107.27	110.43
9	j	4	MAN	C1-O5-C5	2.00	114.87	112.19
5	W	2	NAG	C8-C7-N2	2.00	119.44	116.12

There are no chirality outliers.

All (53) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	d	1	NAG	C1-C2-N2-C7
7	i	1	NAG	C1-C2-N2-C7
7	i	1	NAG	O7-C7-N2-C2
7	i	2	NAG	C8-C7-N2-C2
7	i	2	NAG	O7-C7-N2-C2
8	h	1	NAG	C8-C7-N2-C2
8	h	1	NAG	O7-C7-N2-C2
8	h	2	NAG	O7-C7-N2-C2
9	j	1	NAG	C8-C7-N2-C2
9	j	1	NAG	O7-C7-N2-C2
9	j	2	NAG	C8-C7-N2-C2

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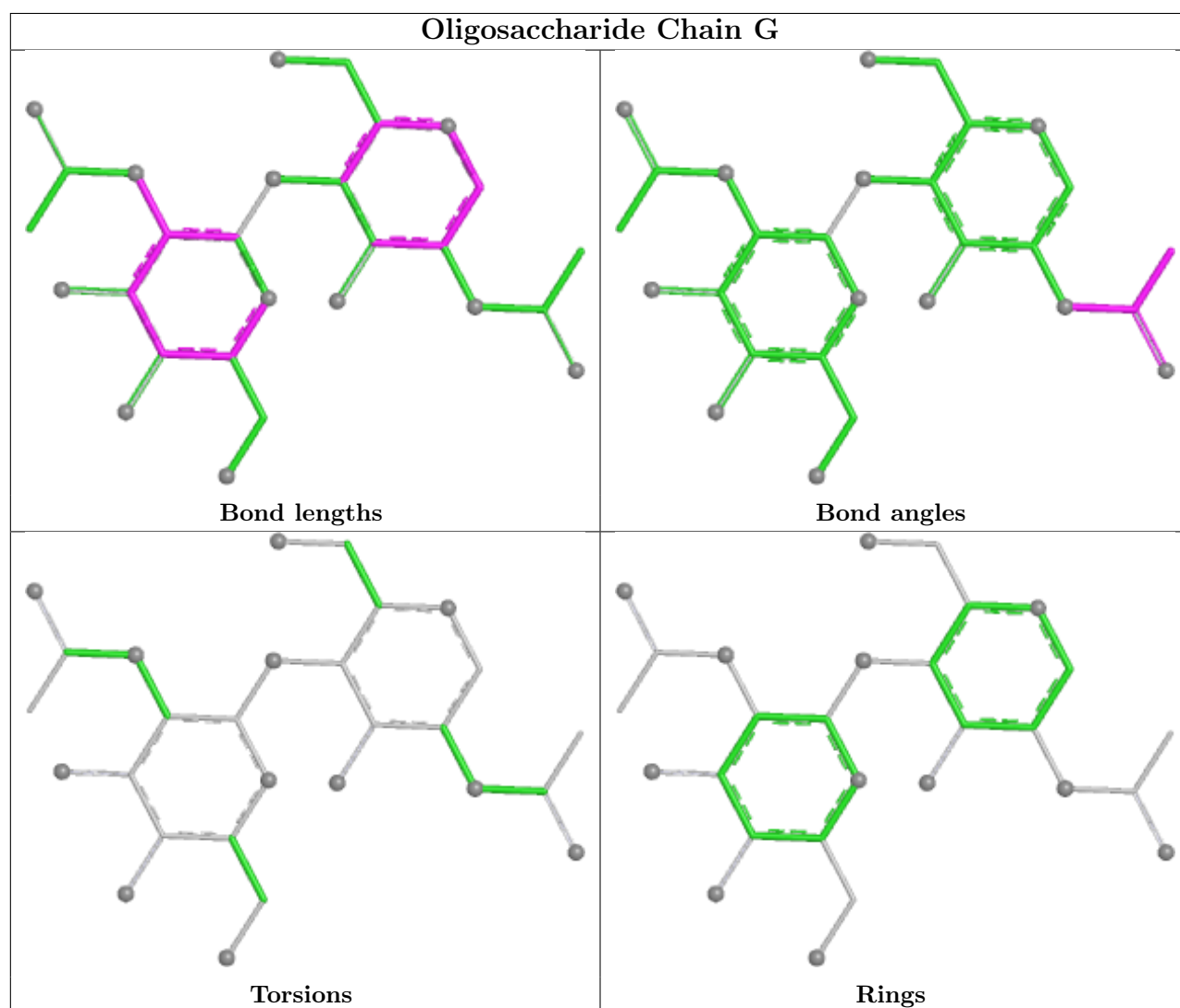
Mol	Chain	Res	Type	Atoms
9	j	2	NAG	O7-C7-N2-C2
7	i	1	NAG	C8-C7-N2-C2
8	h	2	NAG	C8-C7-N2-C2
5	J	1	NAG	C8-C7-N2-C2
5	J	1	NAG	O7-C7-N2-C2
5	d	1	NAG	C8-C7-N2-C2
5	d	1	NAG	O7-C7-N2-C2
8	h	3	BMA	O5-C5-C6-O6
8	h	3	BMA	C4-C5-C6-O6
7	i	2	NAG	O5-C5-C6-O6
5	Q	1	NAG	O5-C5-C6-O6
7	i	1	NAG	O5-C5-C6-O6
8	h	4	MAN	C4-C5-C6-O6
5	V	2	NAG	O5-C5-C6-O6
5	W	2	NAG	O5-C5-C6-O6
5	g	2	NAG	O5-C5-C6-O6
5	M	2	NAG	O5-C5-C6-O6
5	e	2	NAG	O5-C5-C6-O6
6	R	5	MAN	O5-C5-C6-O6
5	Z	1	NAG	C4-C5-C6-O6
7	X	1	NAG	C8-C7-N2-C2
9	j	3	BMA	C4-C5-C6-O6
5	Y	2	NAG	O5-C5-C6-O6
6	R	3	BMA	O5-C5-C6-O6
7	T	3	BMA	O5-C5-C6-O6
9	j	5	MAN	O5-C5-C6-O6
5	Z	1	NAG	O5-C5-C6-O6
5	Q	1	NAG	C4-C5-C6-O6
9	j	3	BMA	O5-C5-C6-O6
7	X	1	NAG	O7-C7-N2-C2
8	h	4	MAN	O5-C5-C6-O6
7	i	3	BMA	O5-C5-C6-O6
5	K	1	NAG	C3-C2-N2-C7
5	e	2	NAG	C3-C2-N2-C7
7	a	2	NAG	C3-C2-N2-C7
7	i	1	NAG	C4-C5-C6-O6
7	i	2	NAG	C4-C5-C6-O6
5	K	1	NAG	C1-C2-N2-C7
6	R	1	NAG	C1-C2-N2-C7
7	T	1	NAG	C1-C2-N2-C7
7	X	1	NAG	C1-C2-N2-C7
7	a	2	NAG	C1-C2-N2-C7

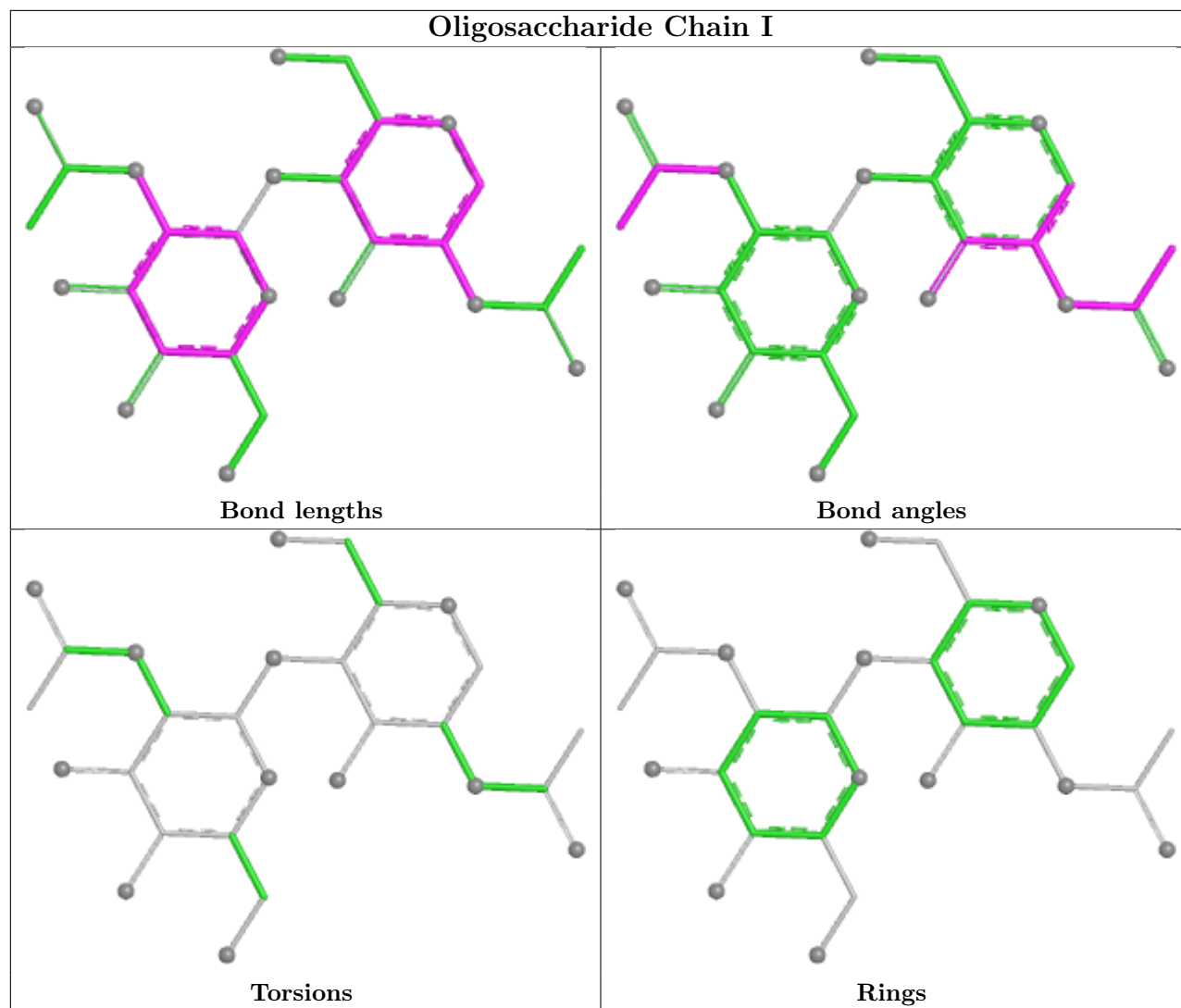
There are no ring outliers.

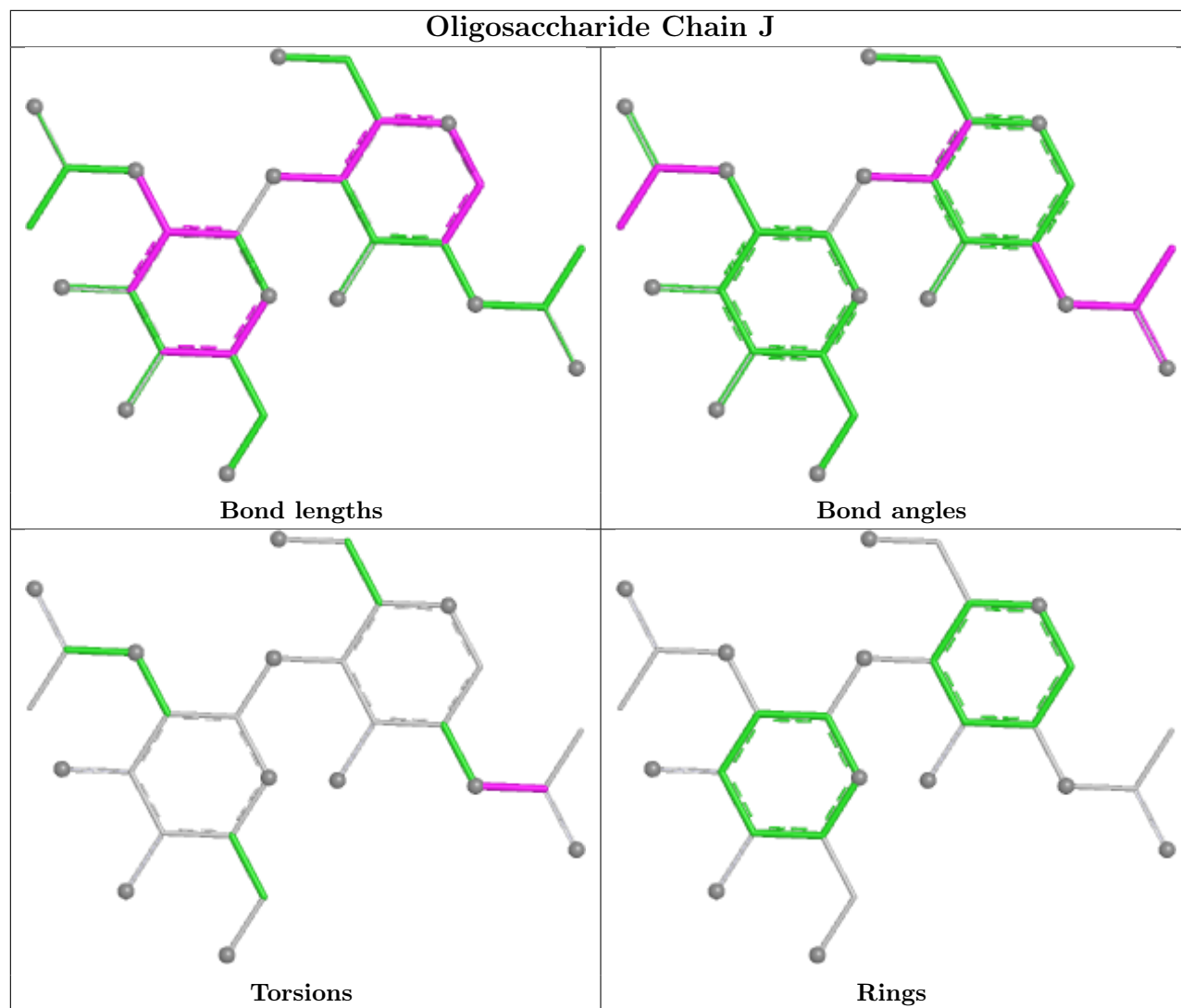
1 monomer is involved in 1 short contact:

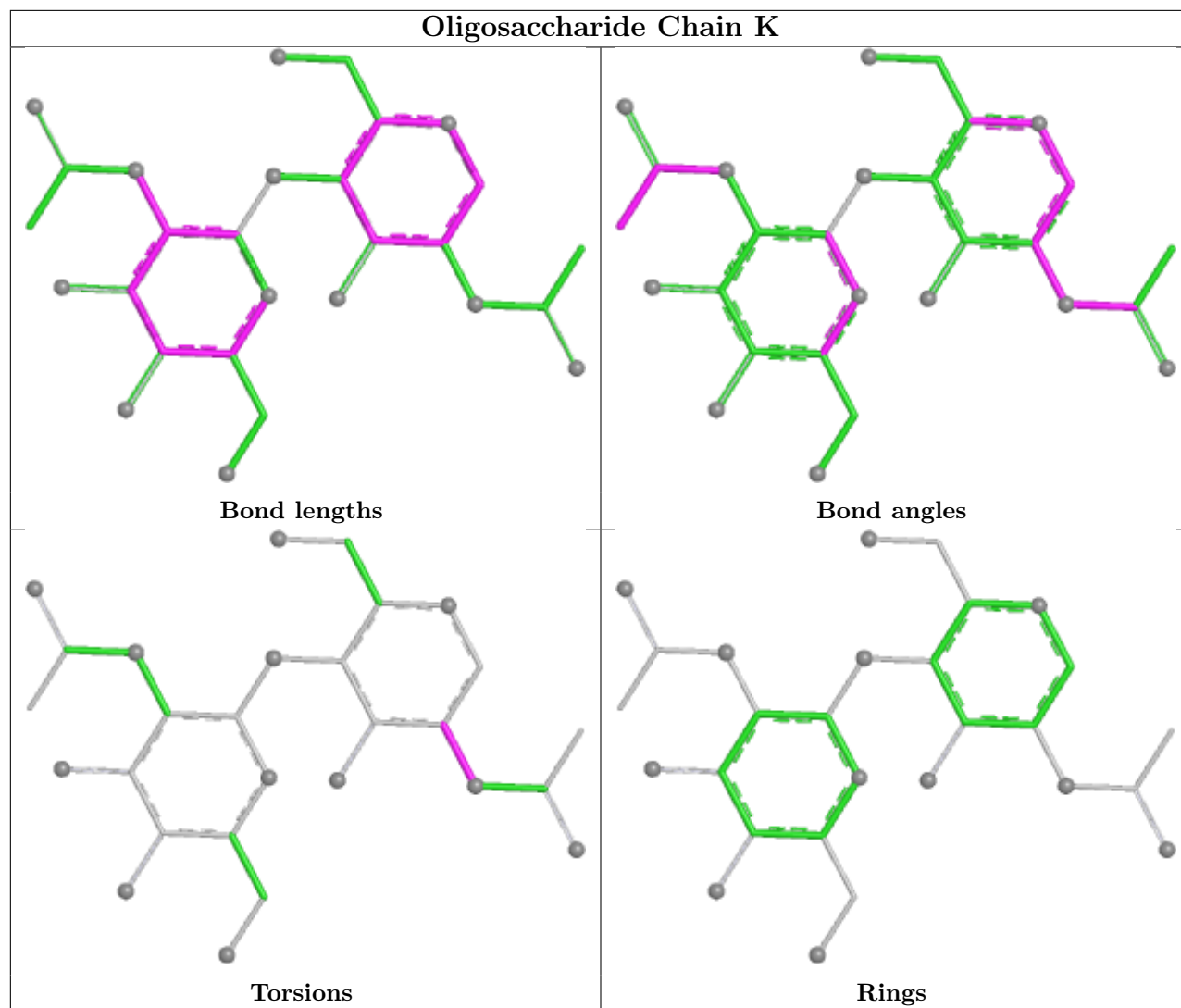
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	Y	1	NAG	1	0

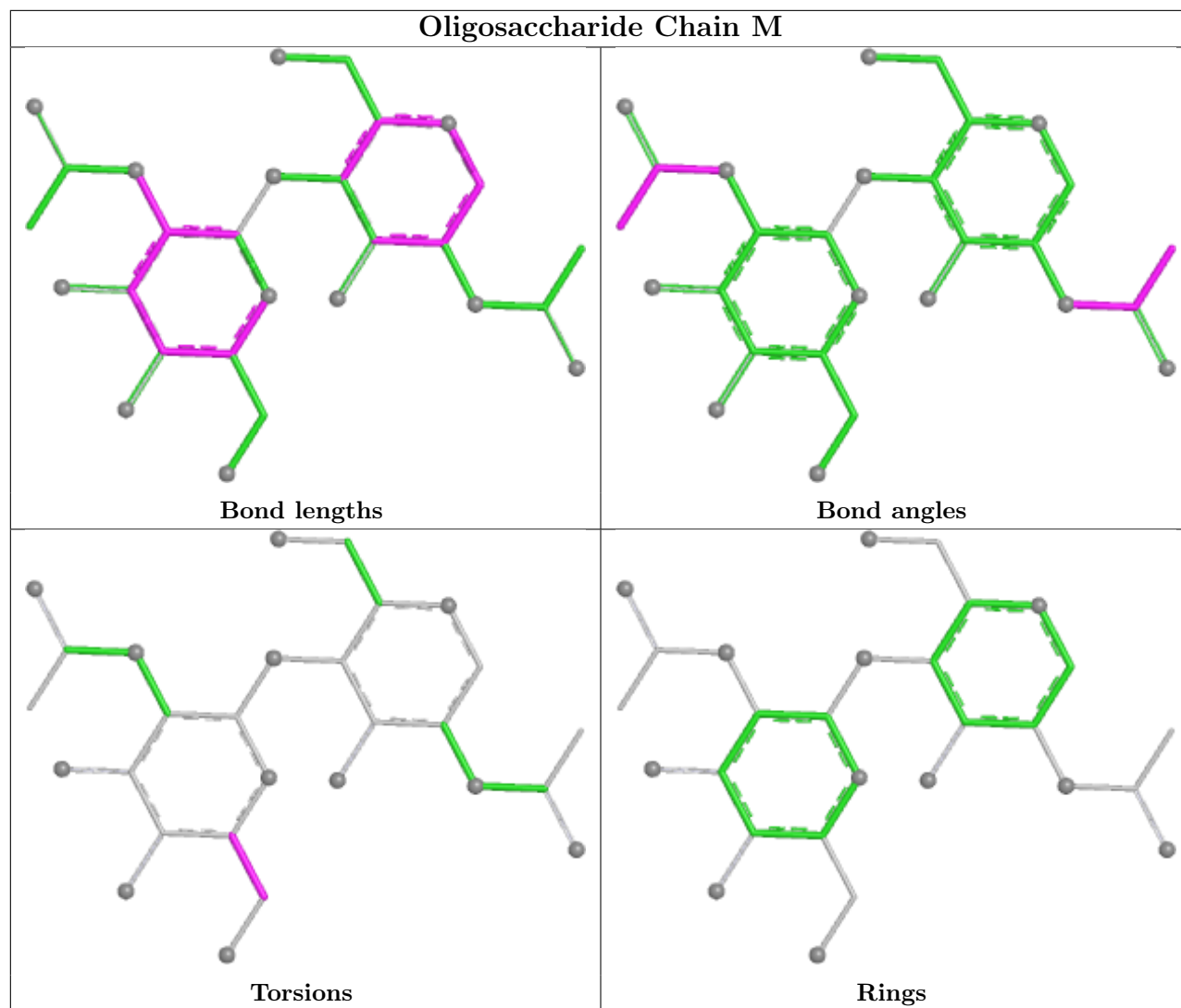
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

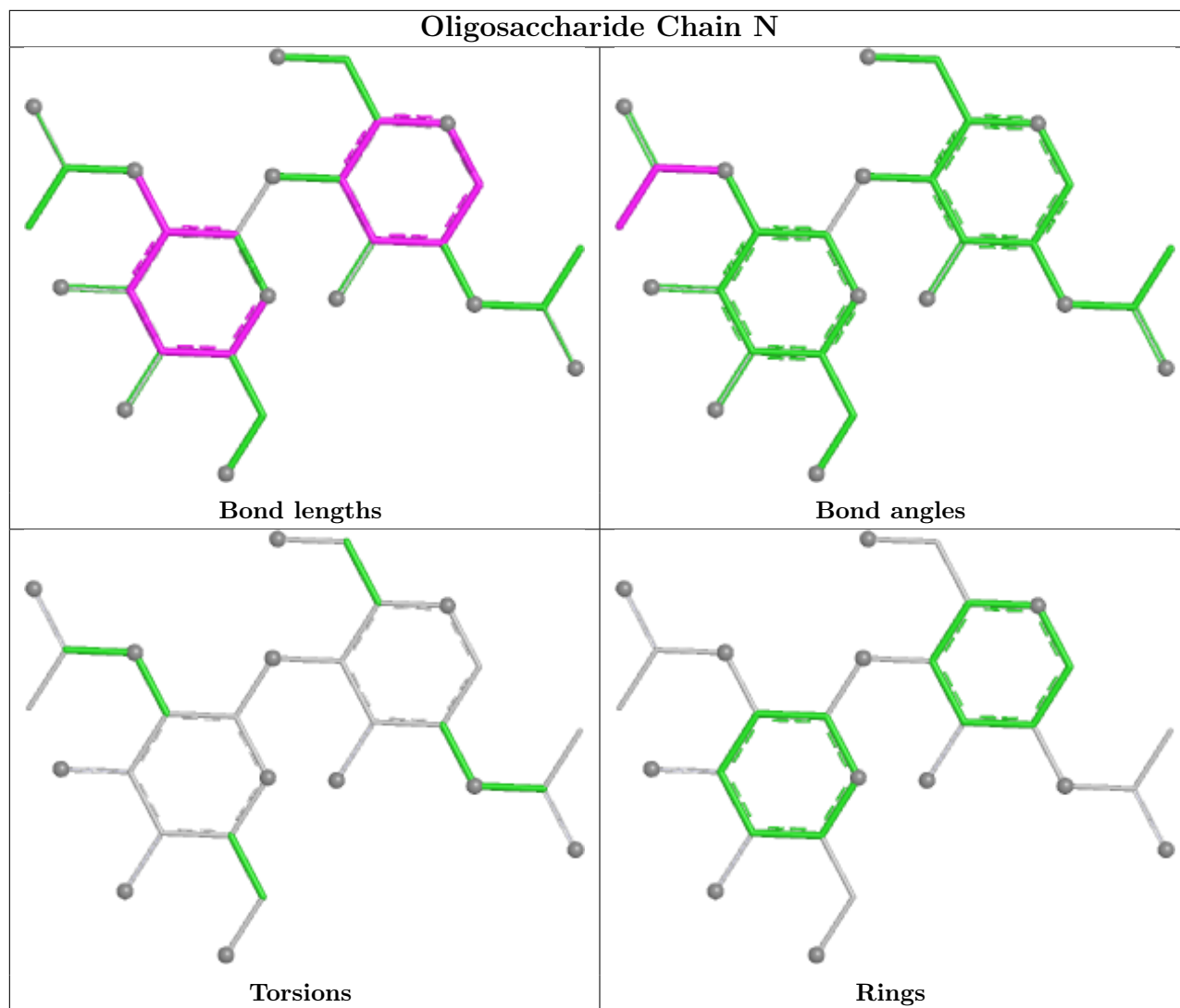


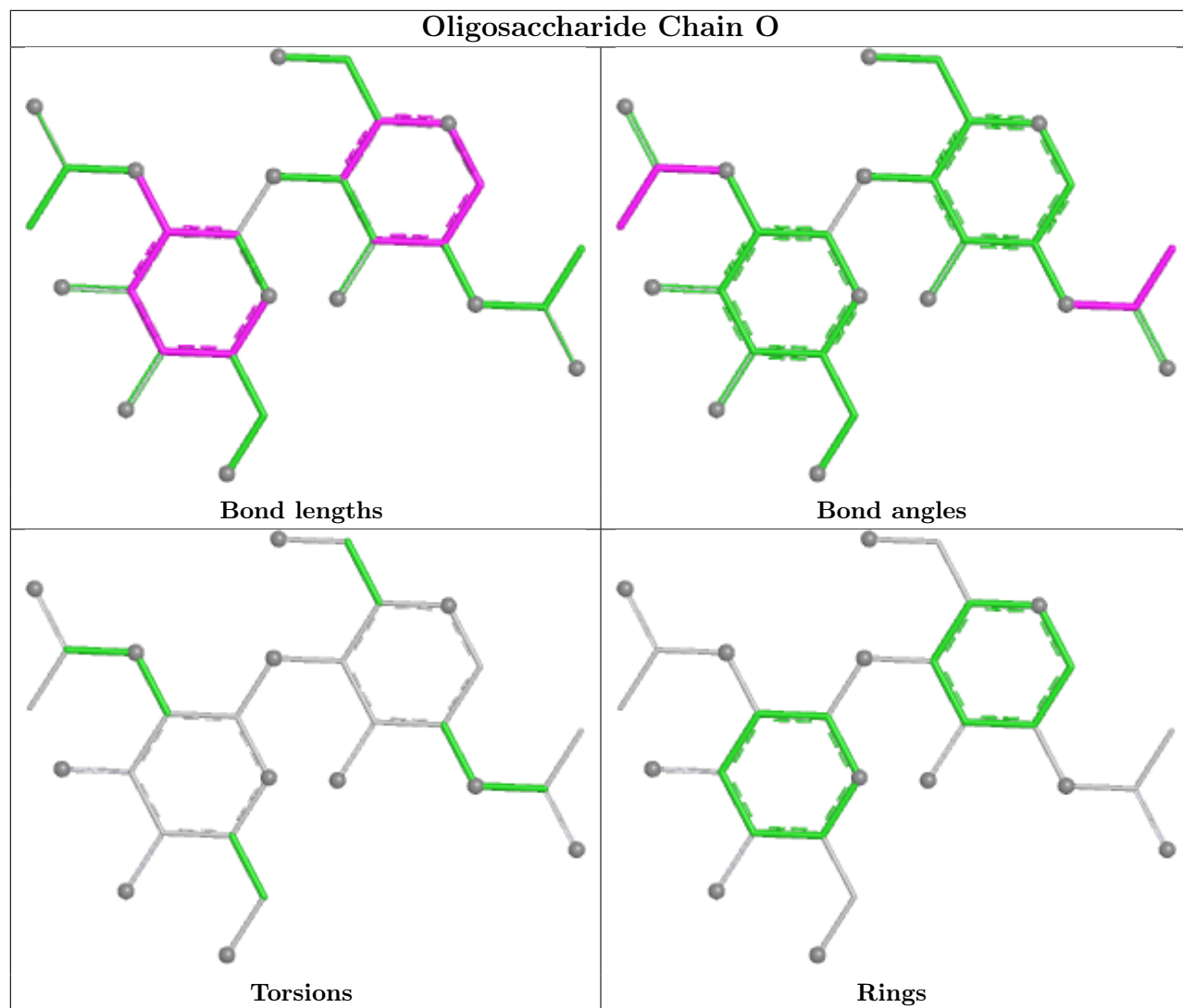


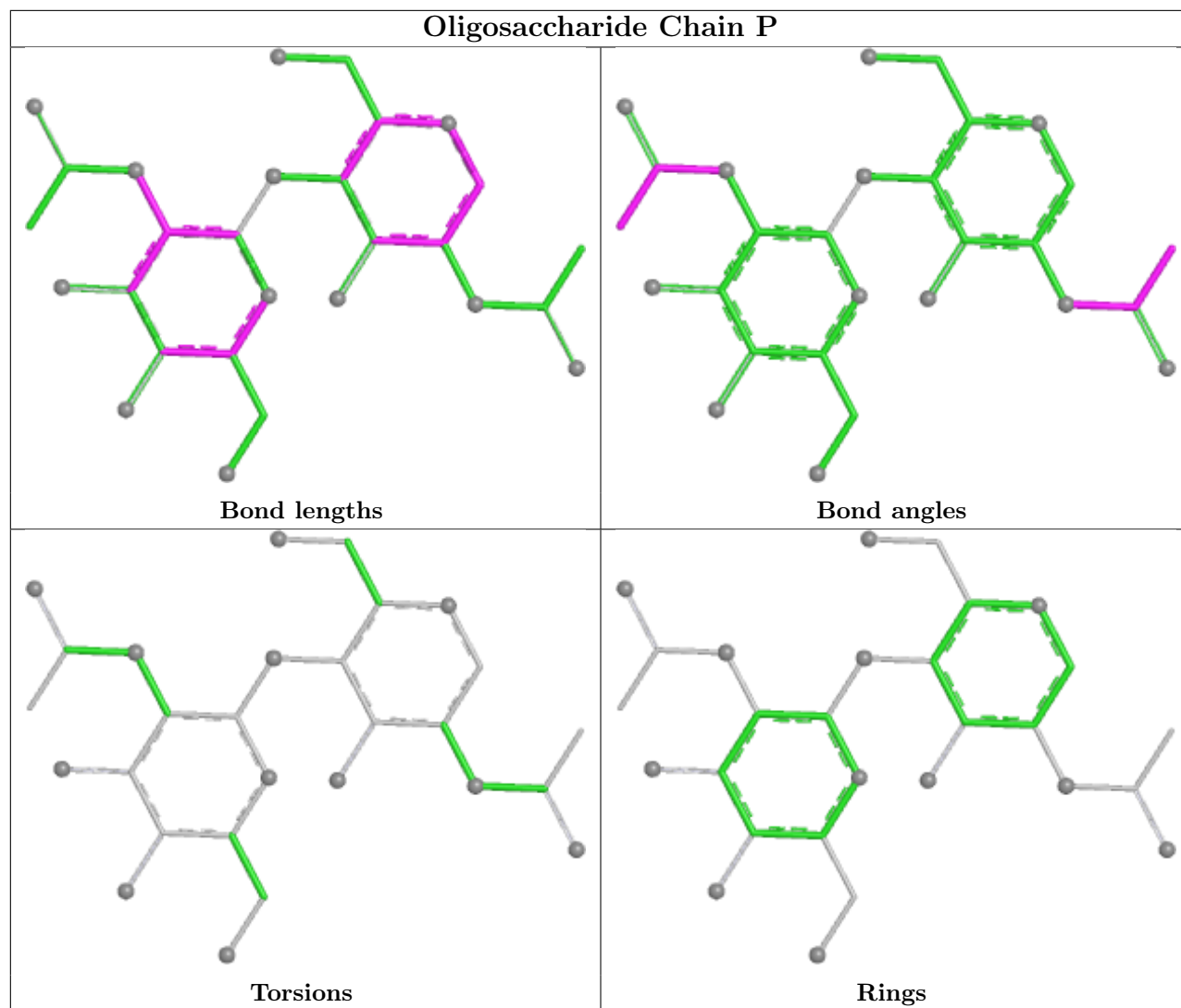


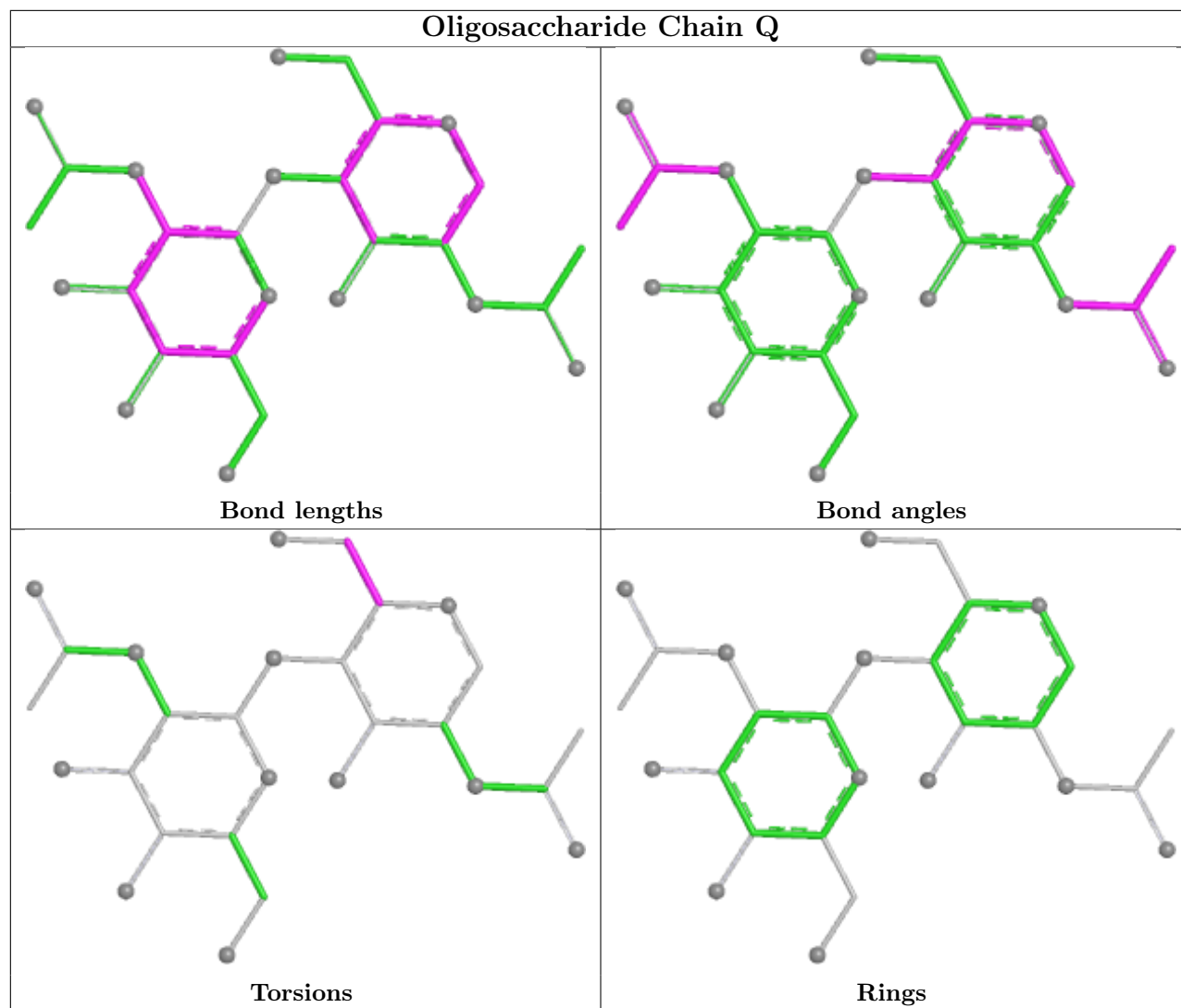


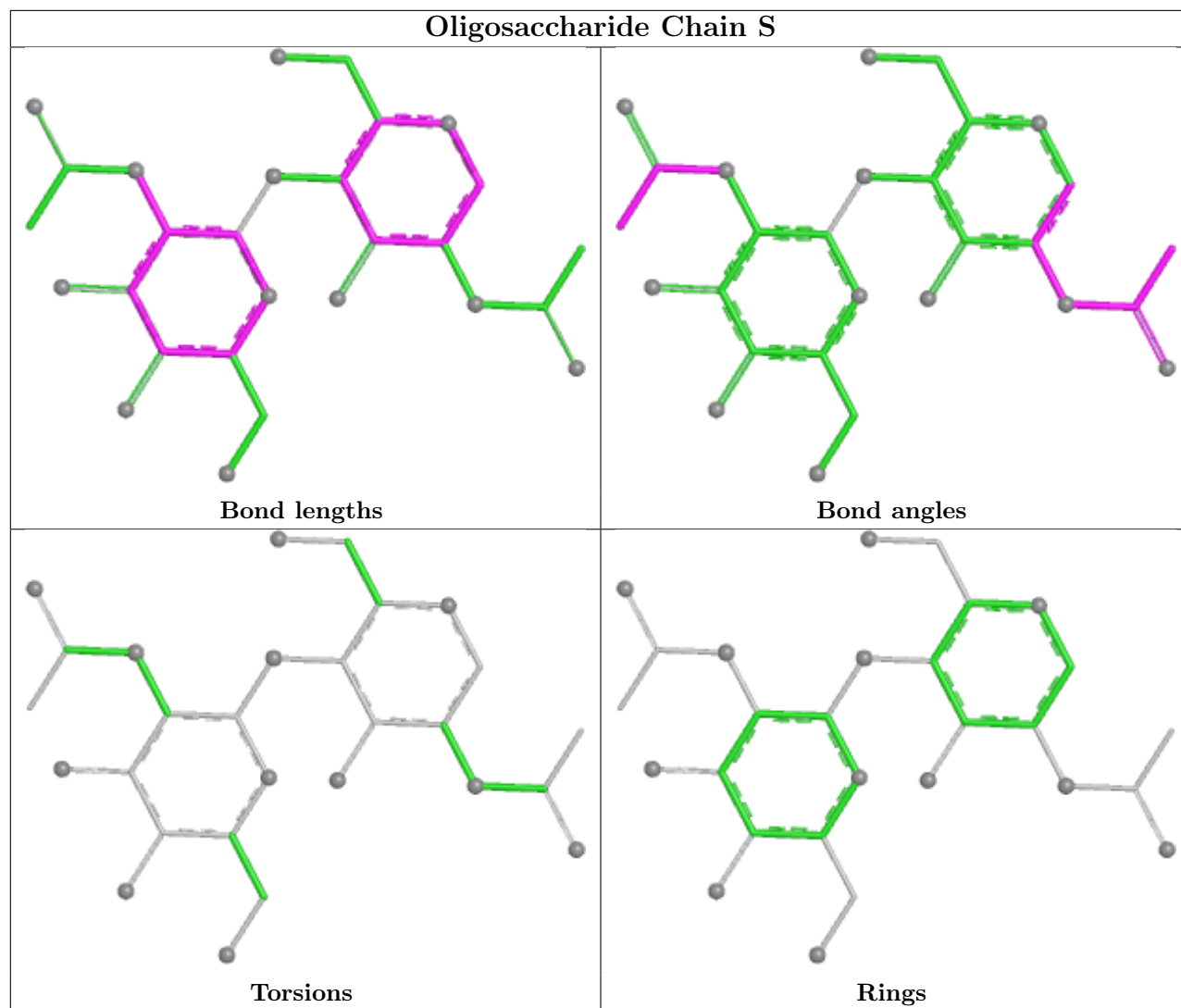


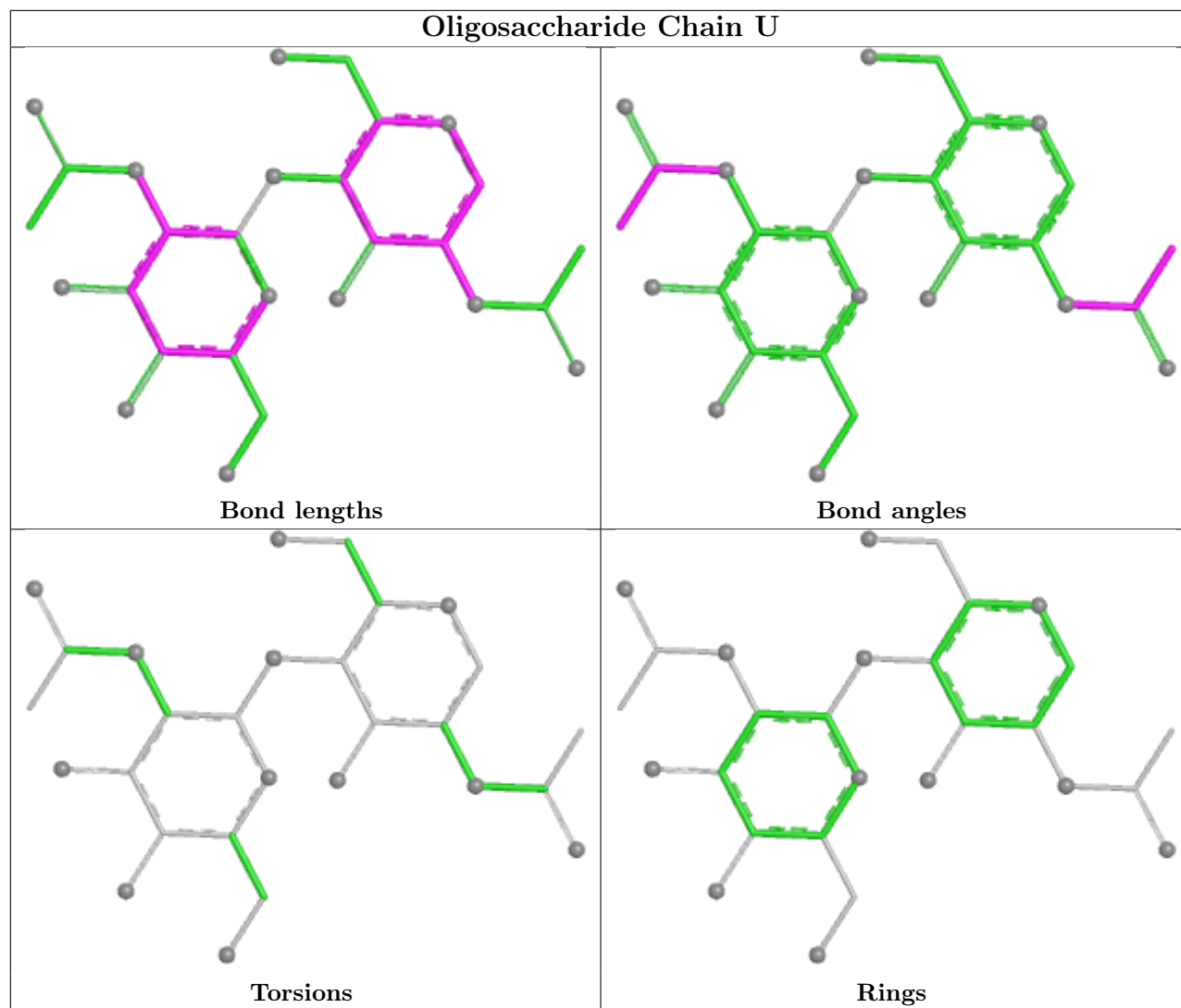


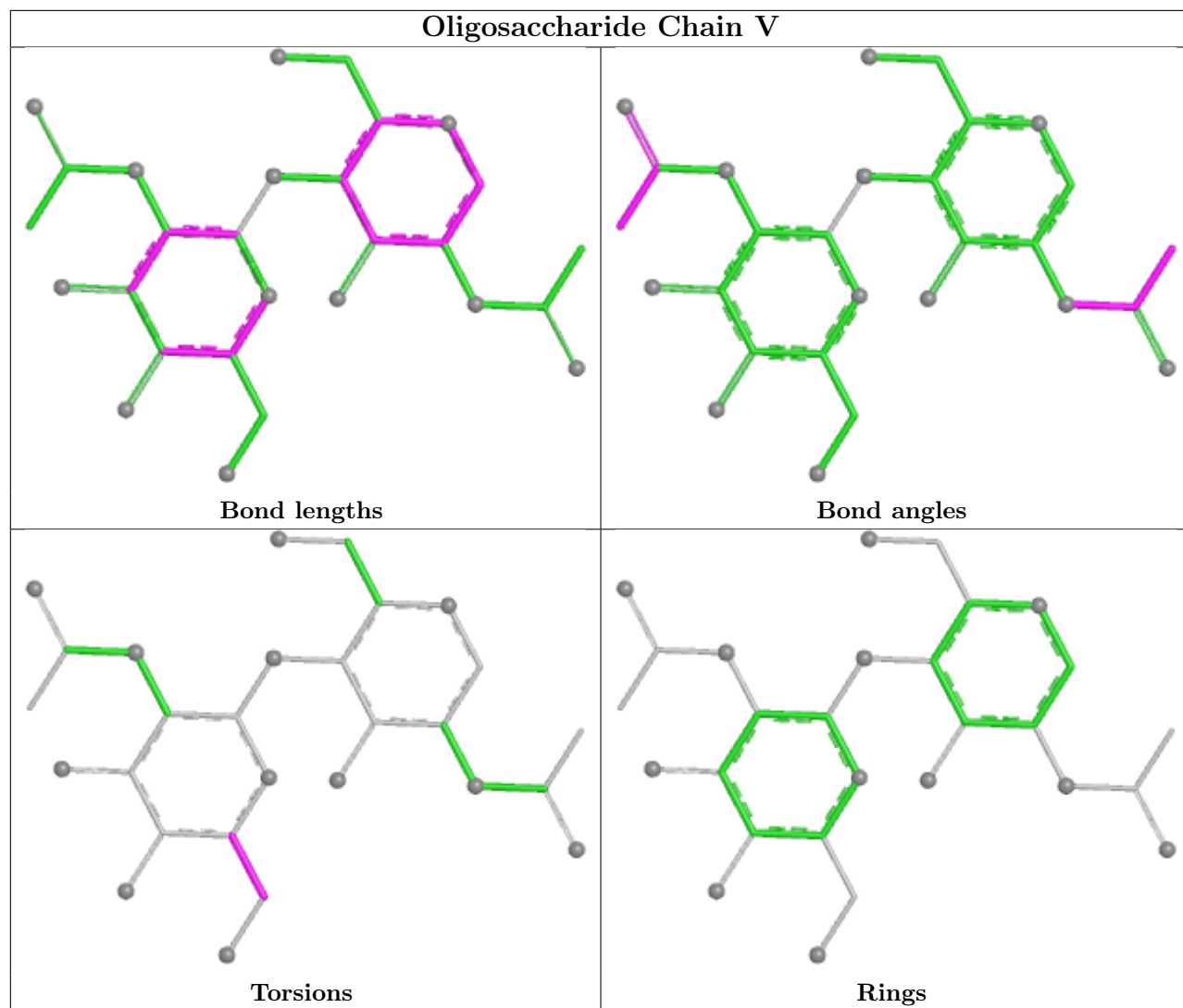


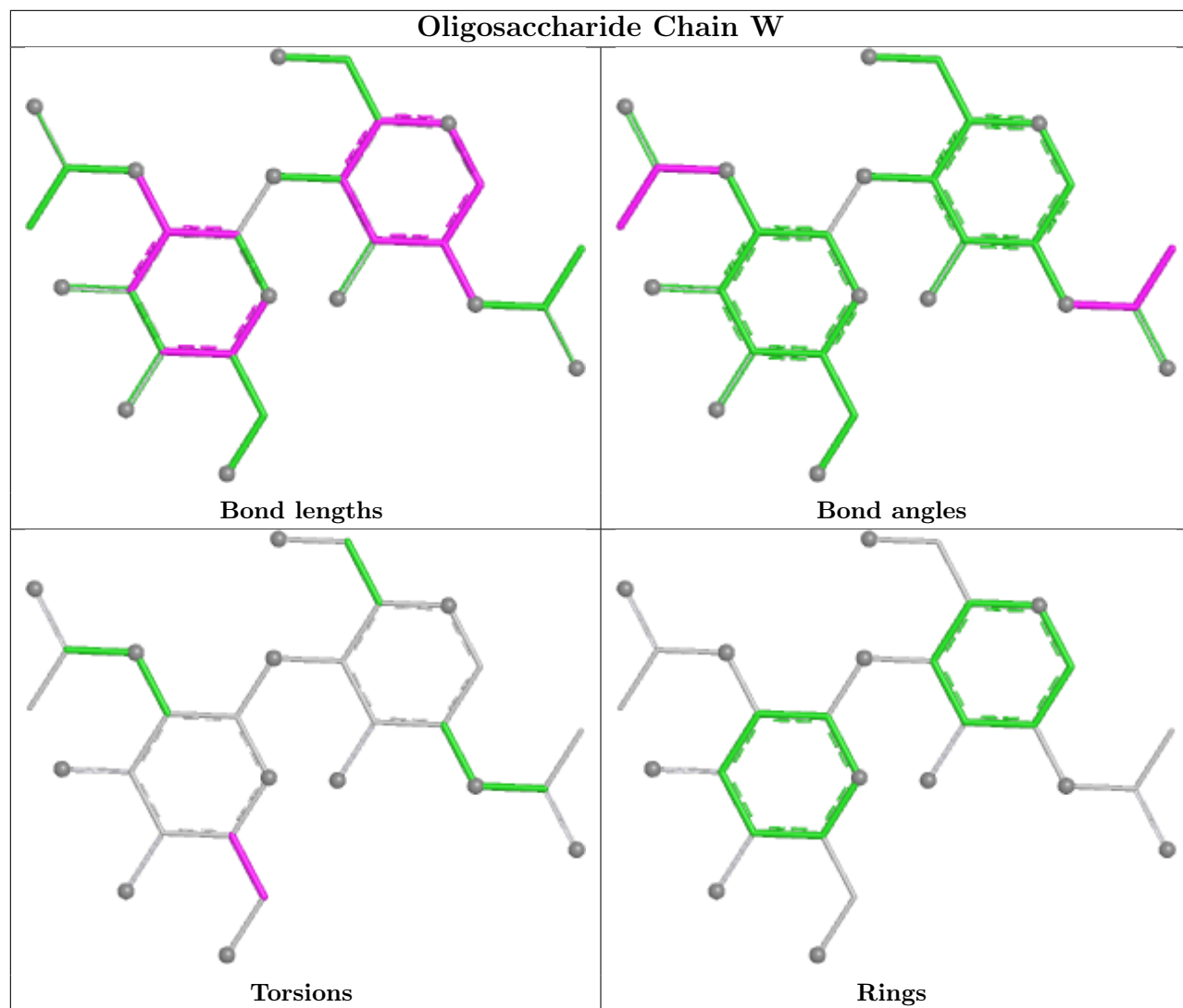


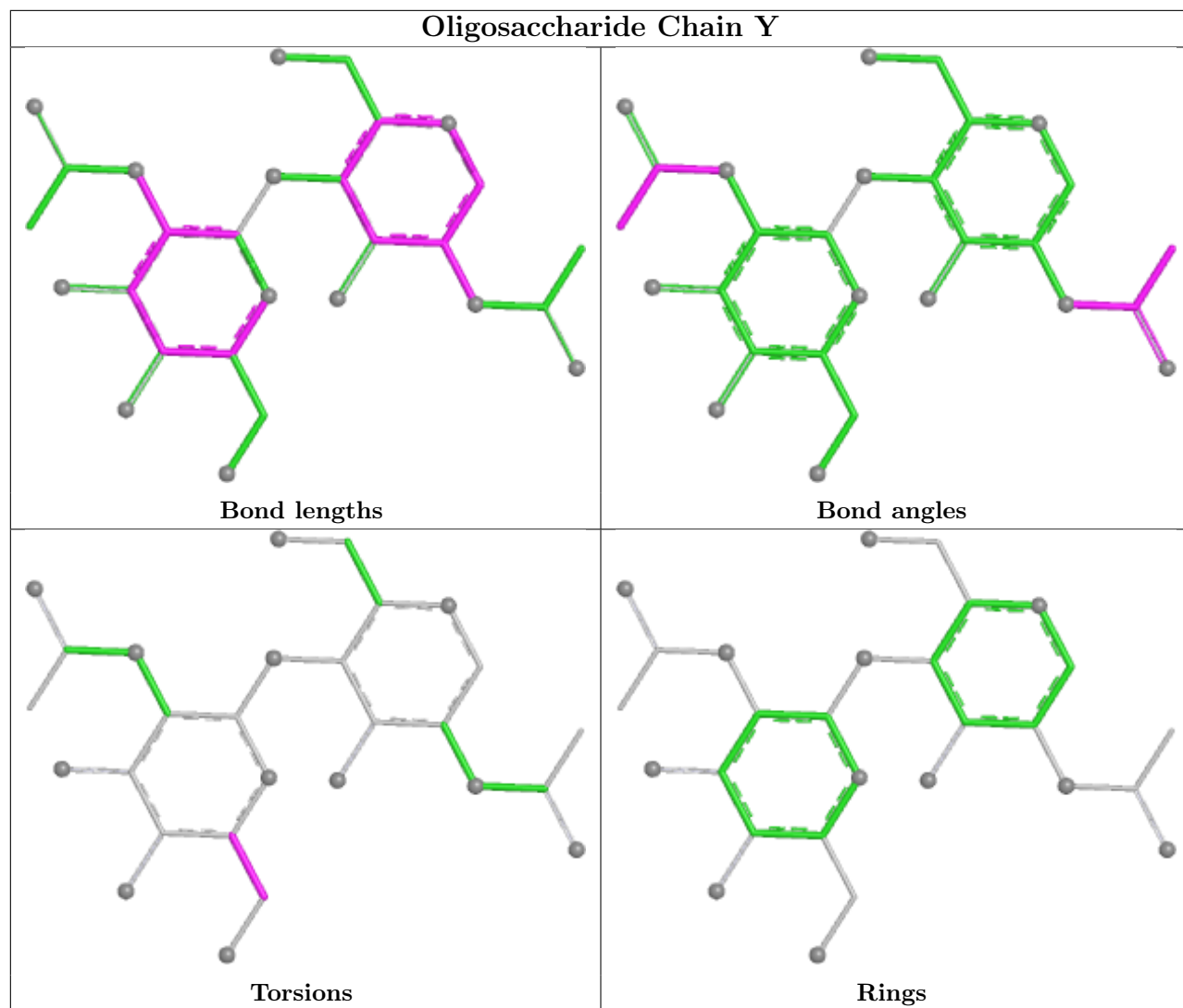


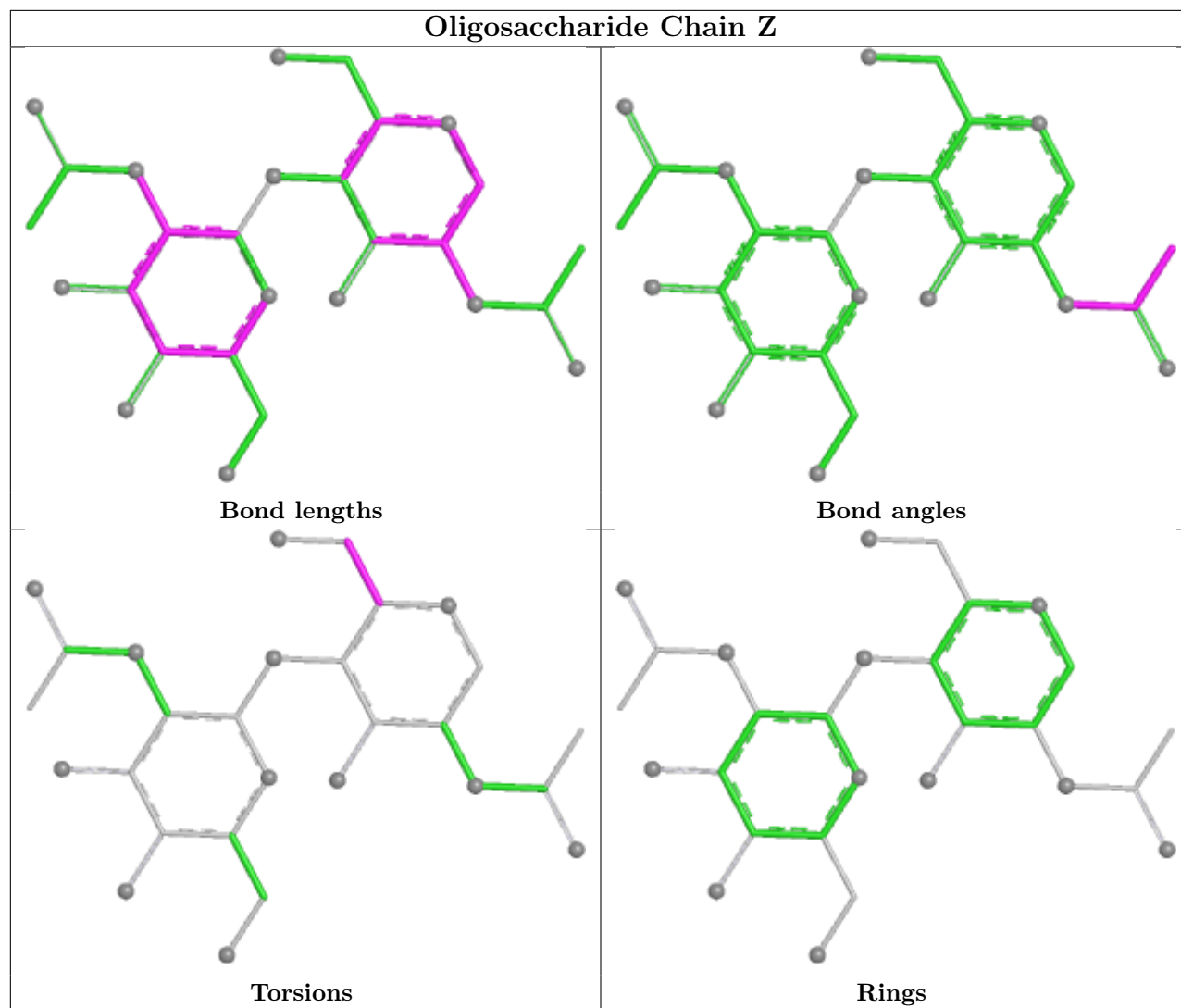


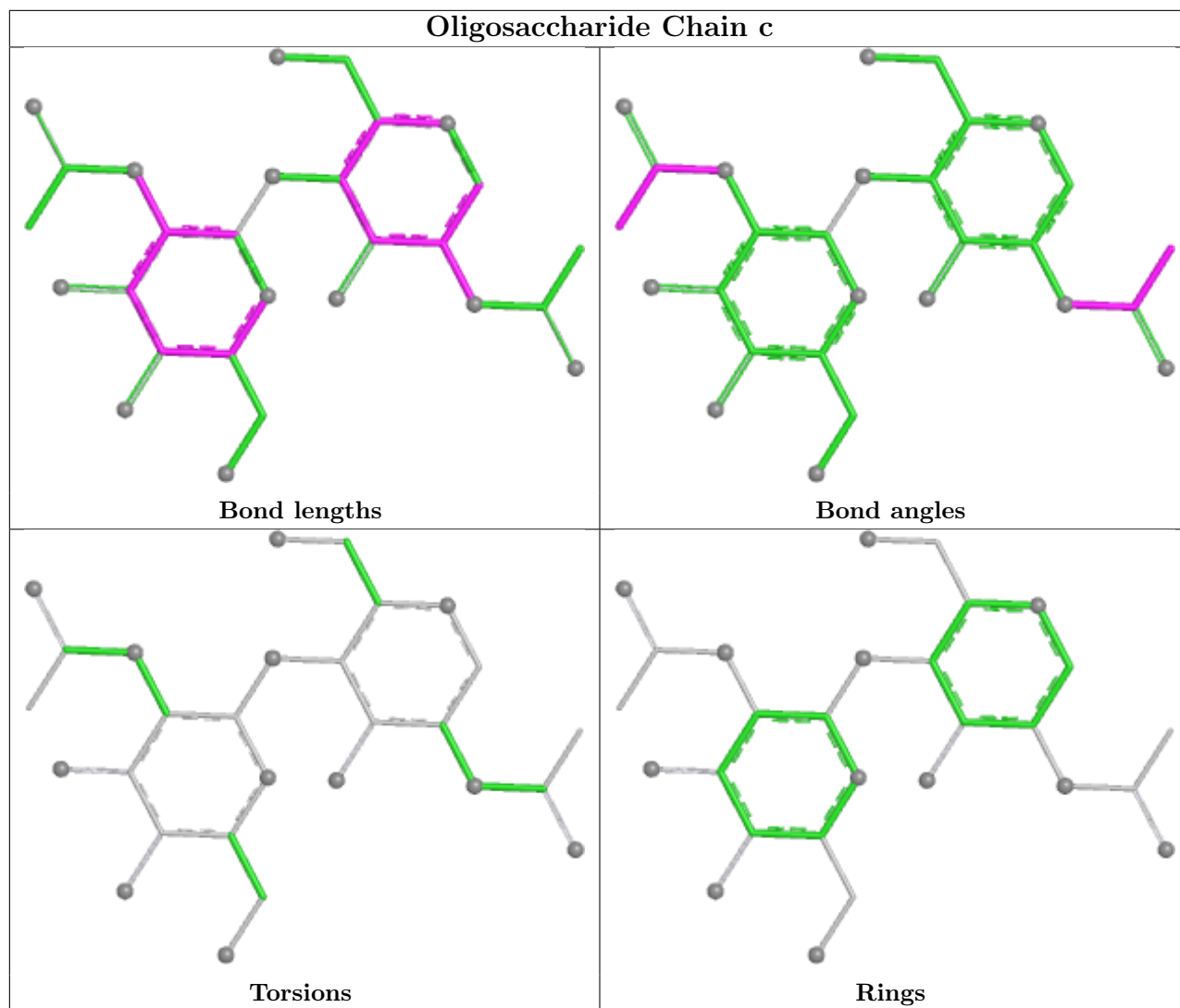


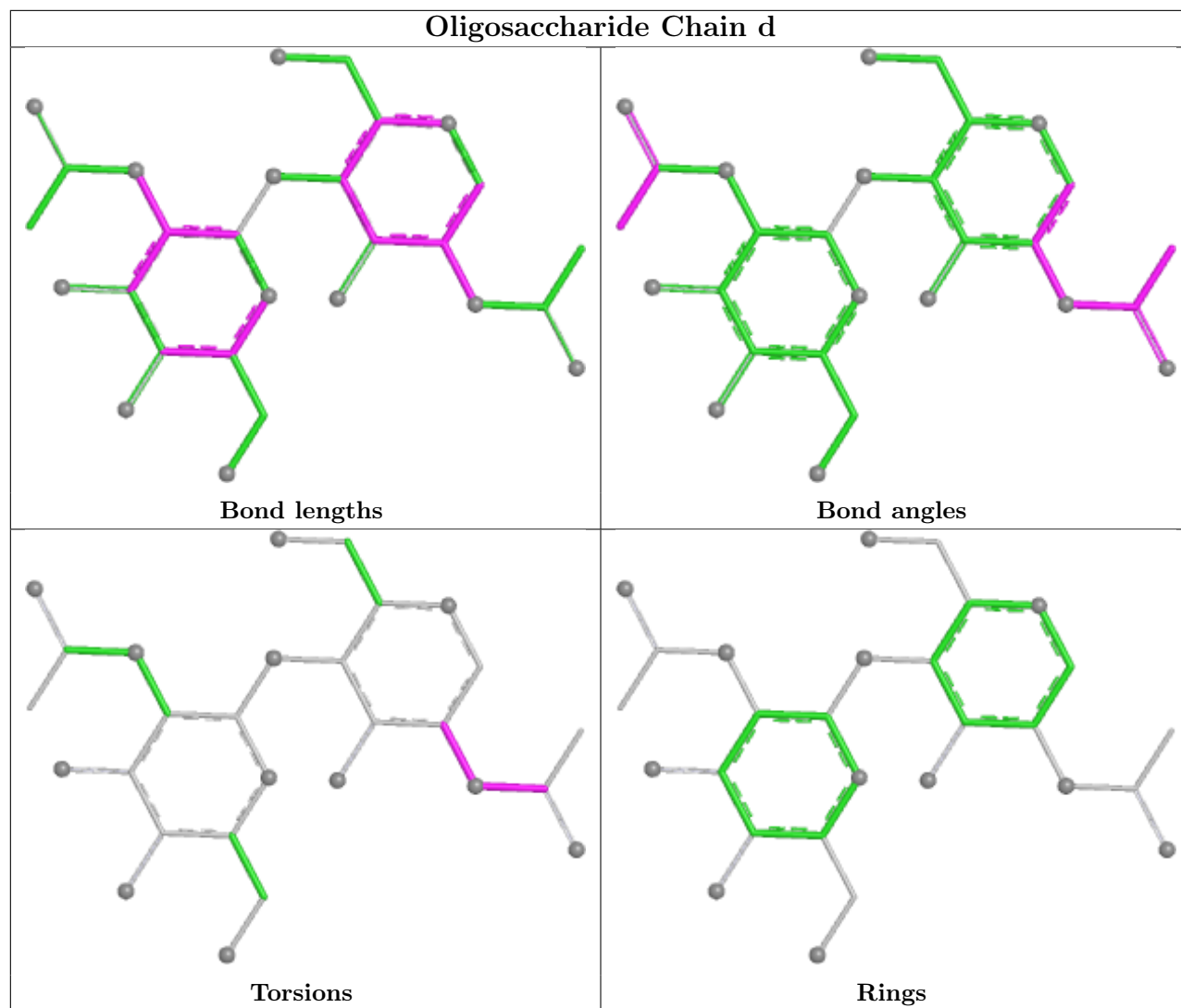


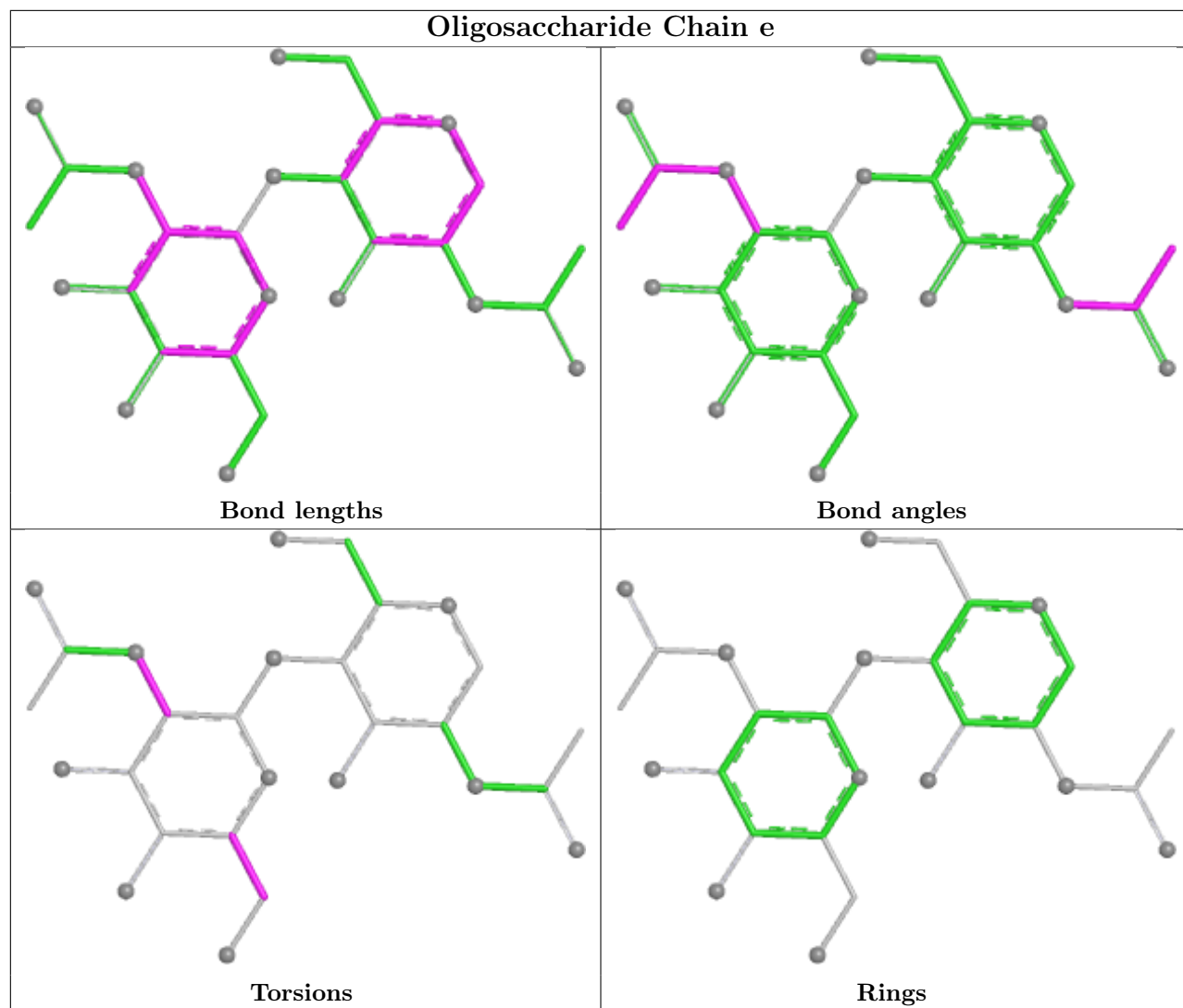


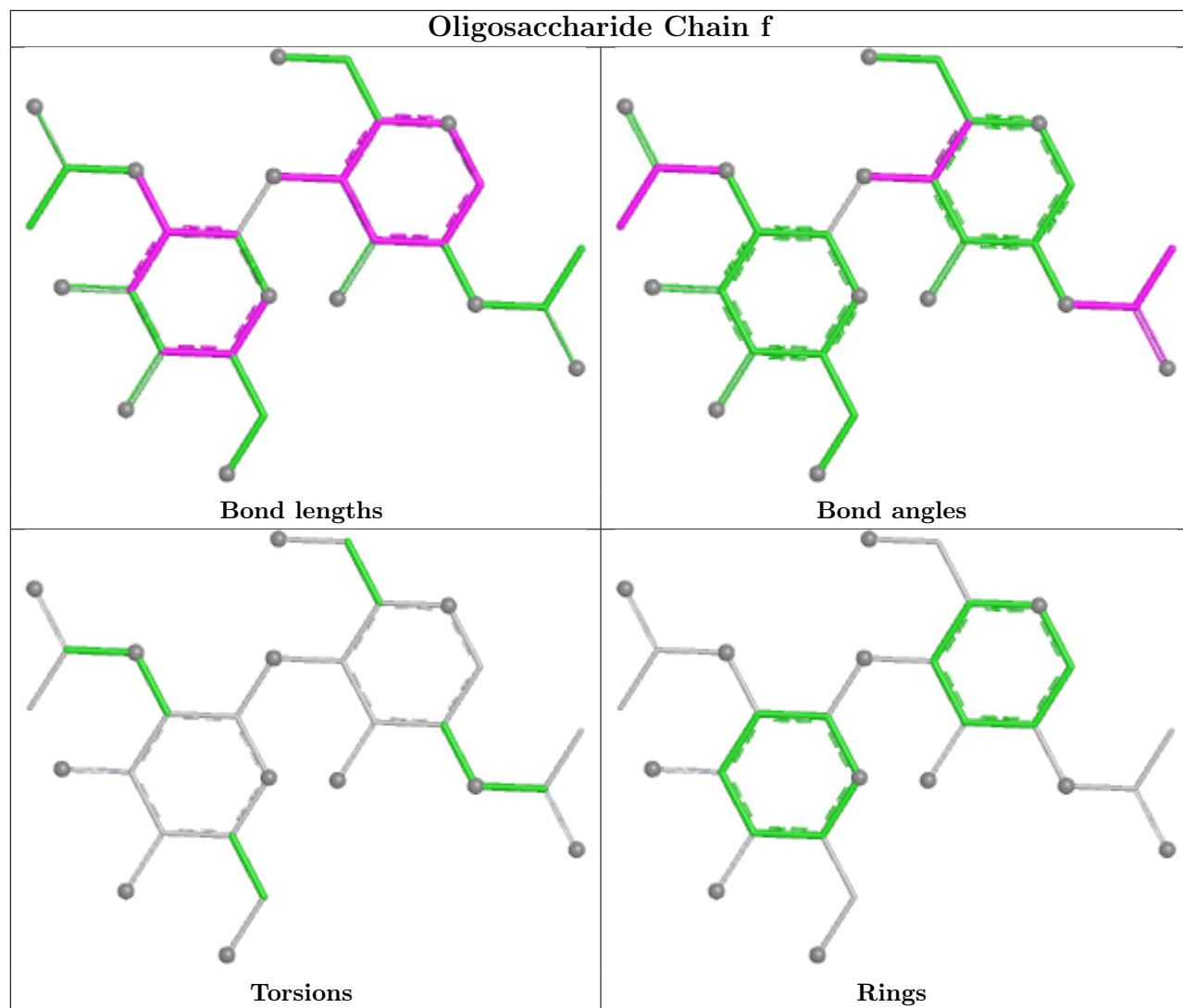


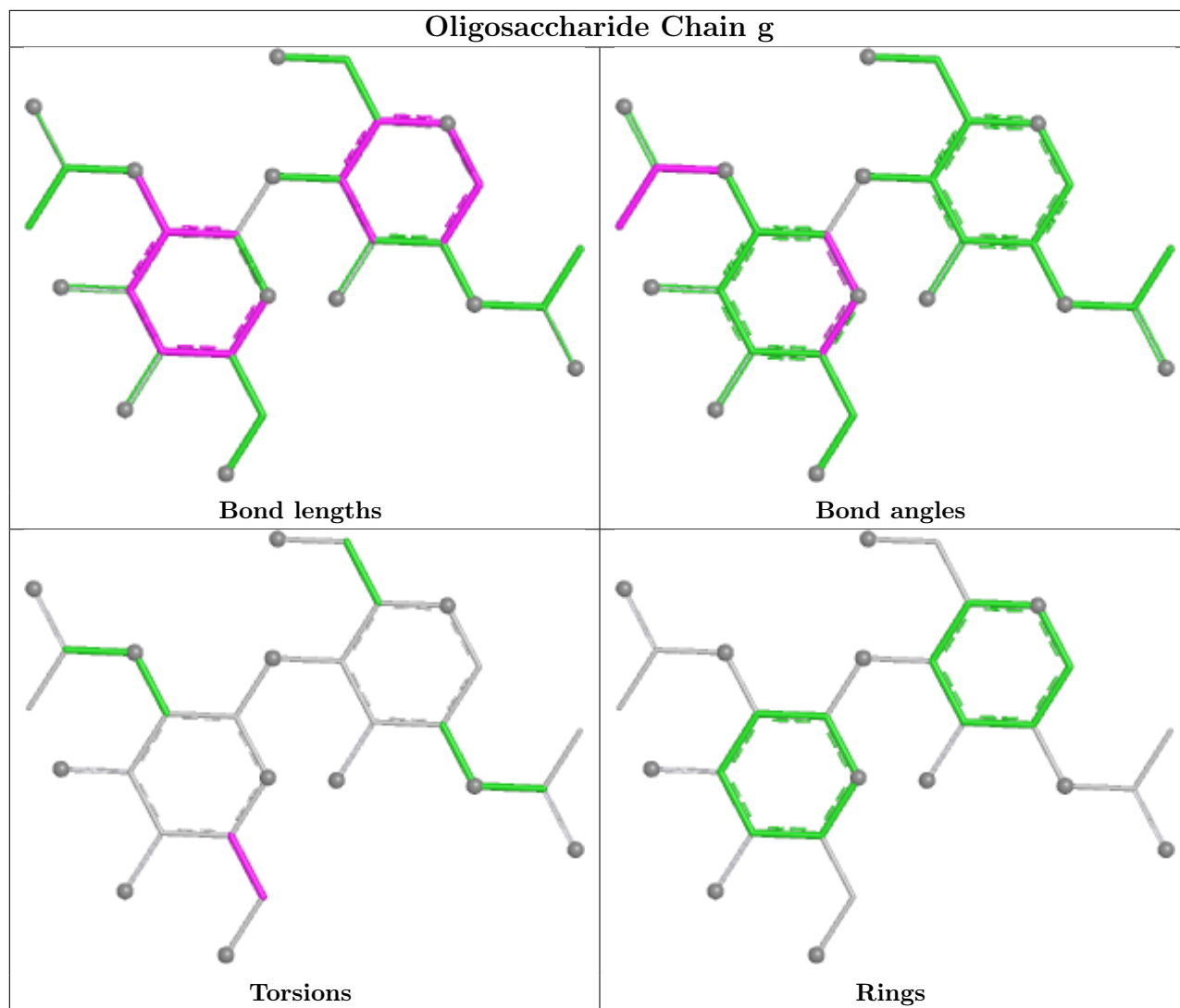


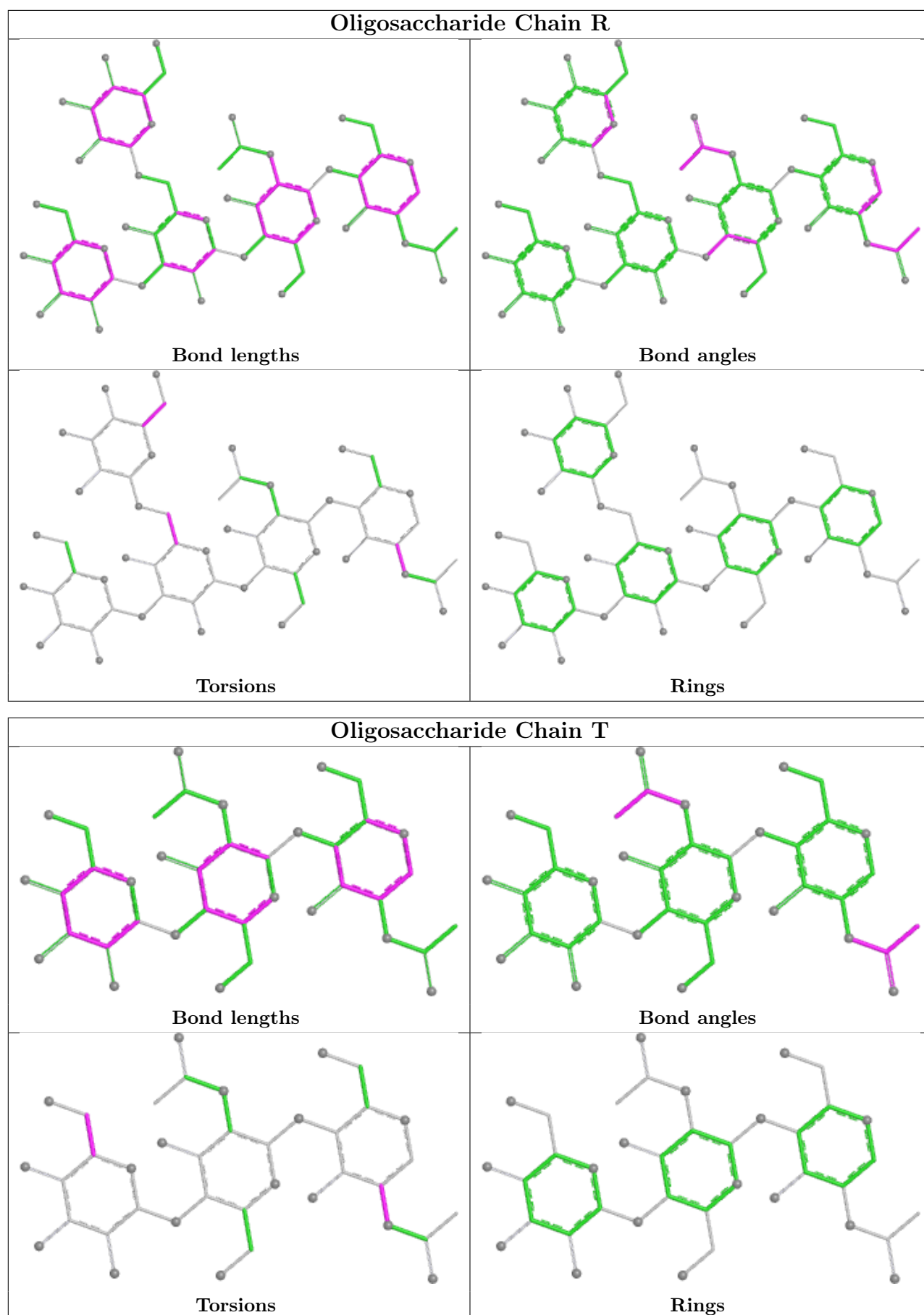


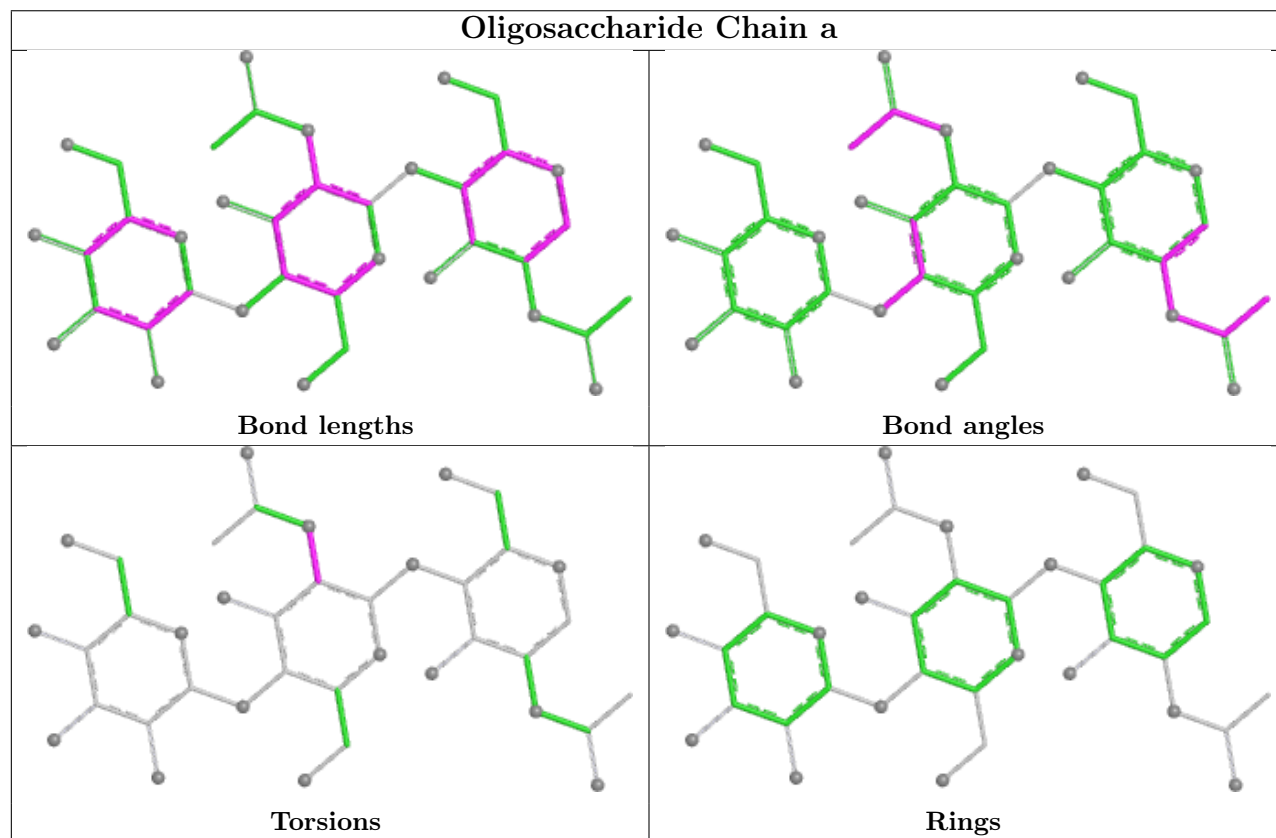
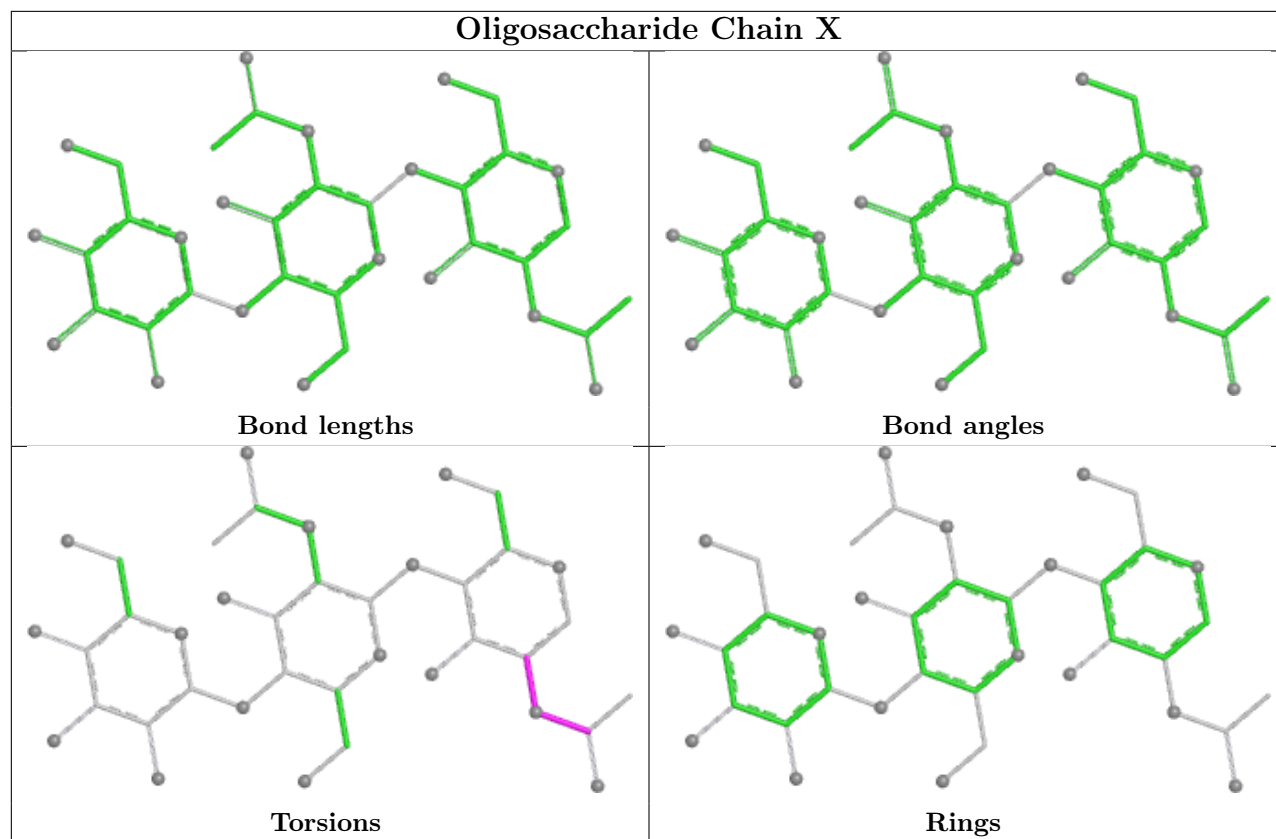


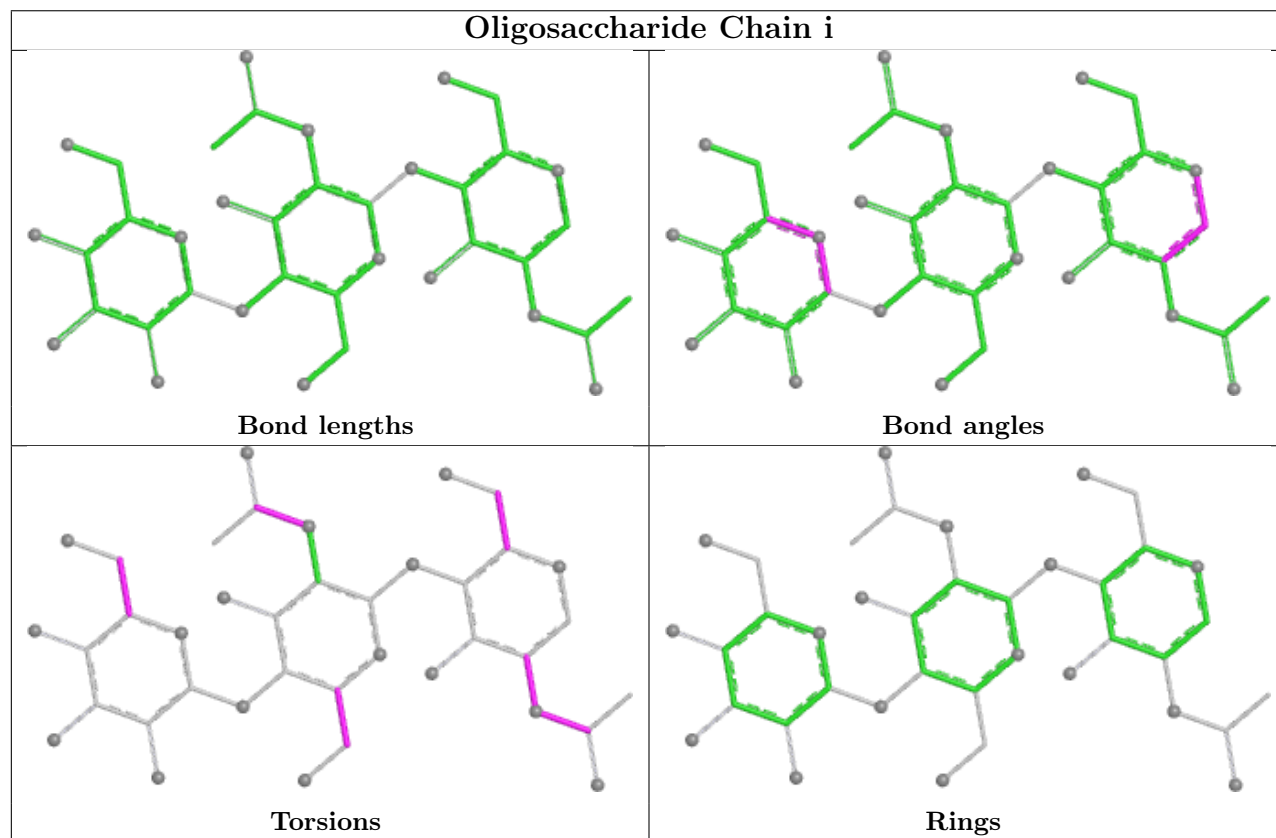
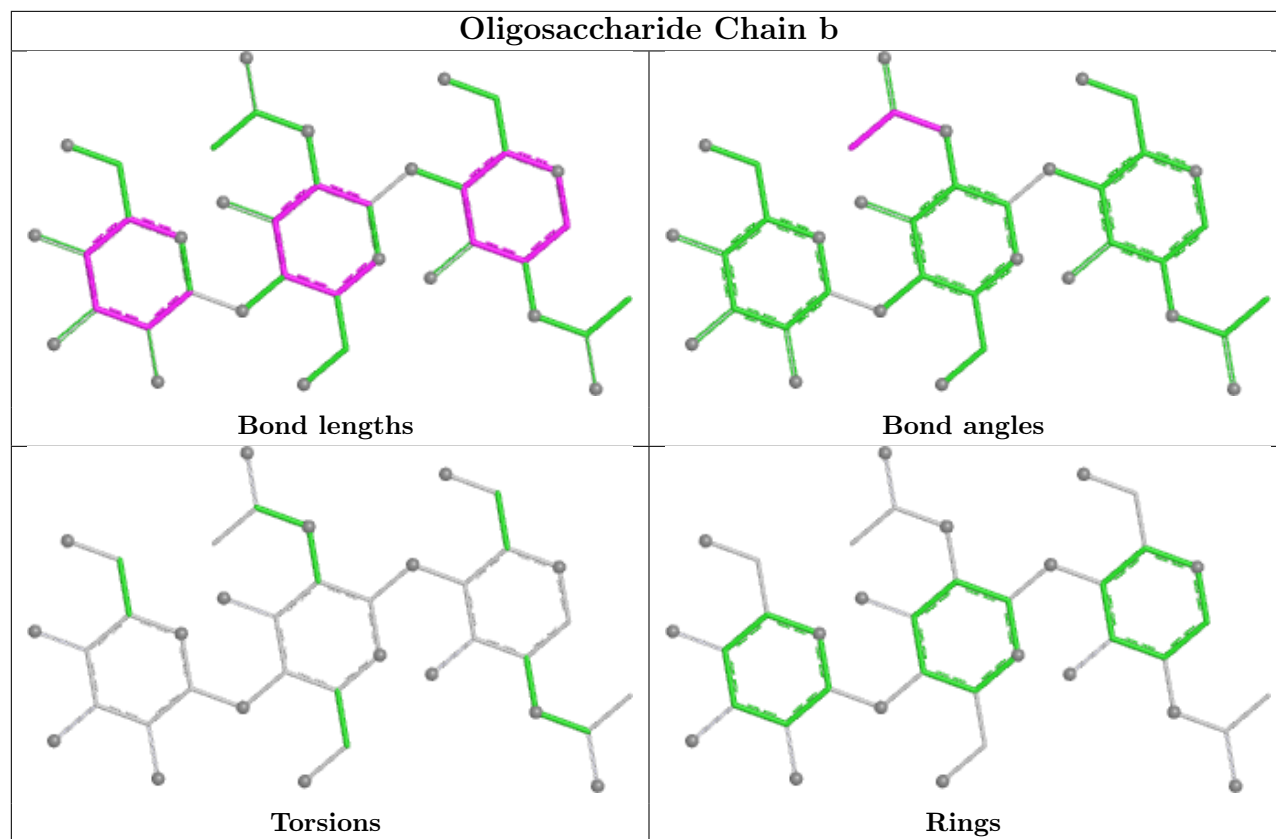


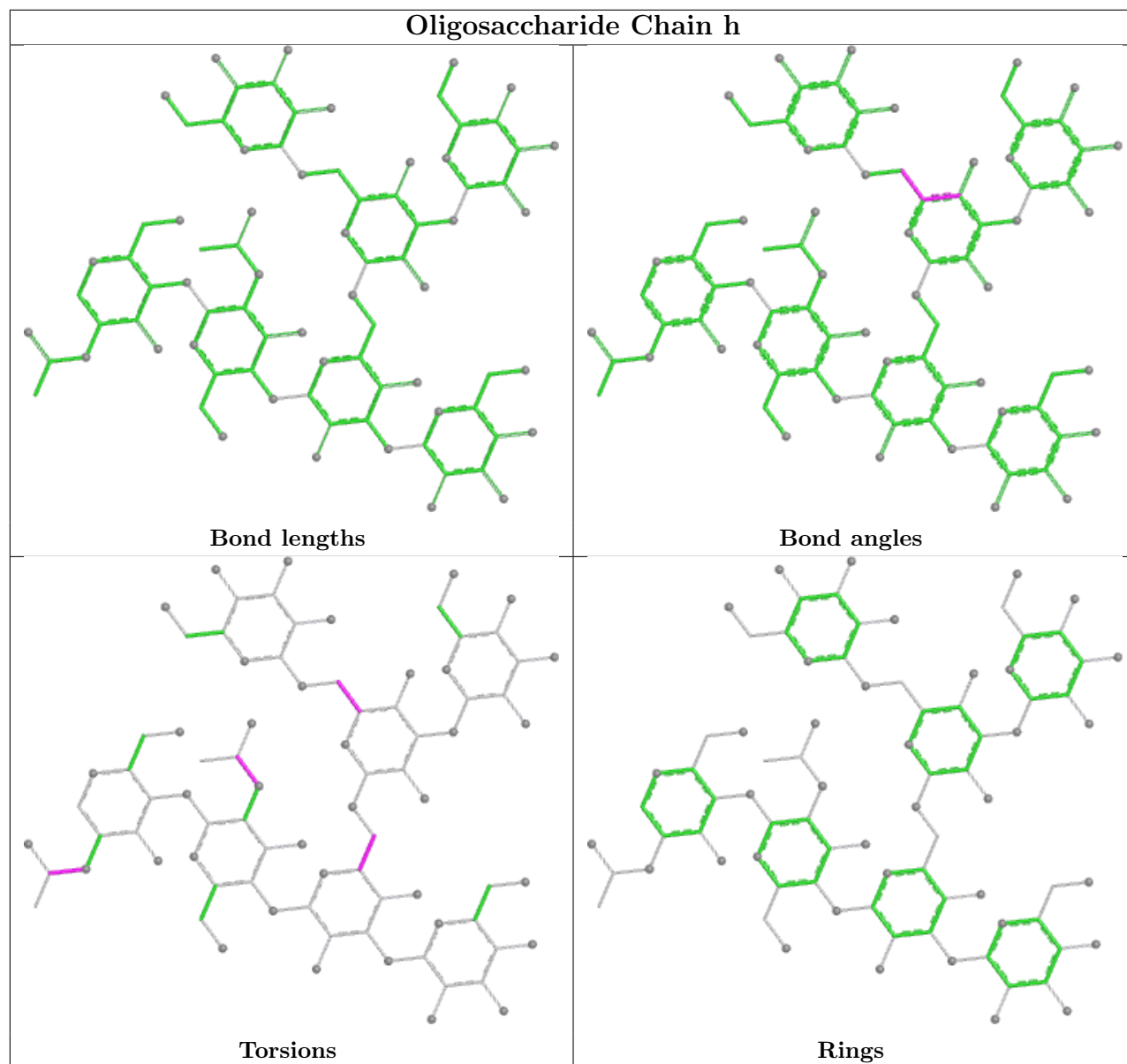


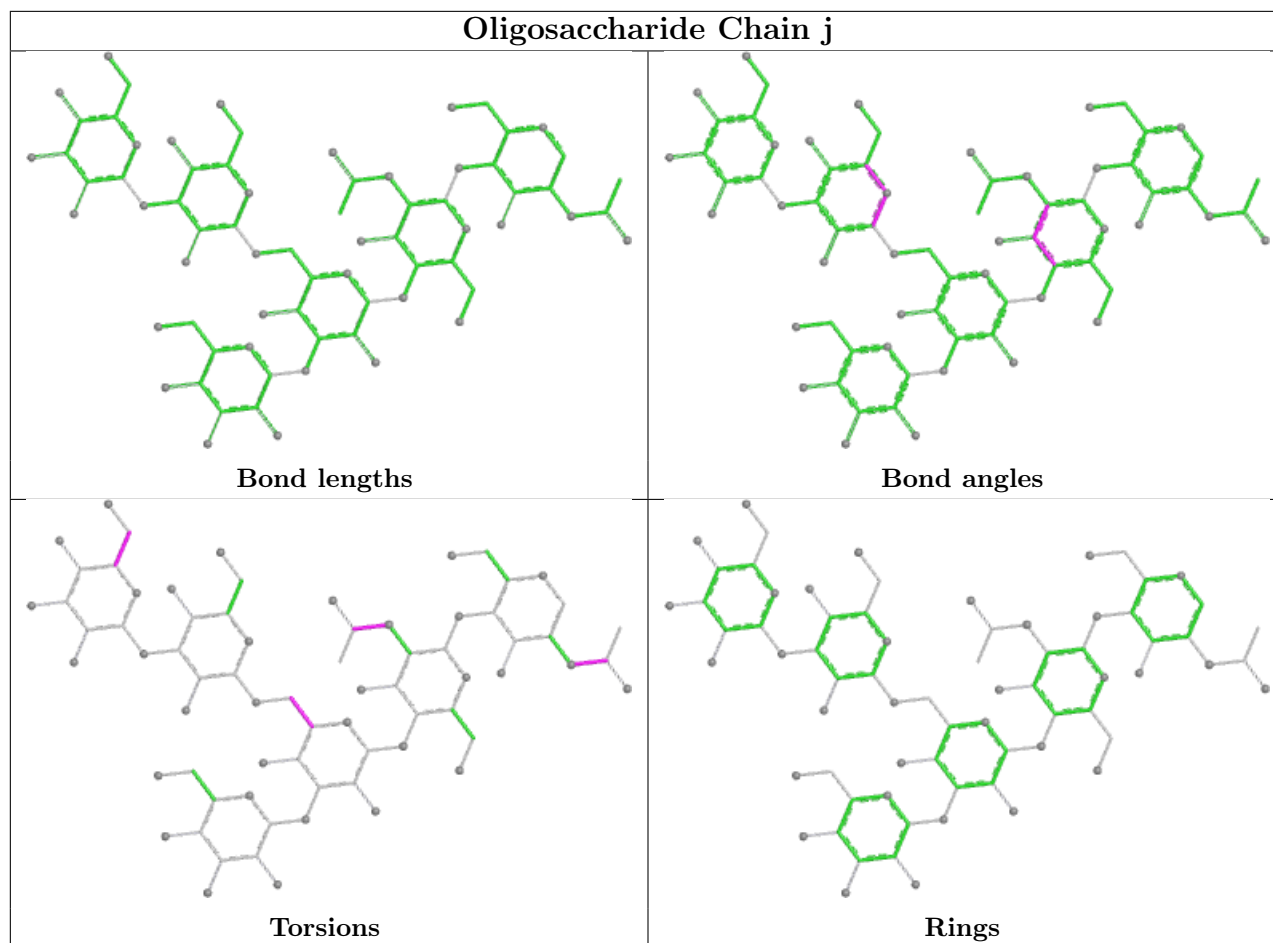












5.6 Ligand geometry [i](#)

32 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
10	NAG	A	607	1	14,14,15	2.30	7 (50%)	17,19,21	1.03	1 (5%)
10	NAG	C	609	1	14,14,15	0.26	0	17,19,21	0.57	0
10	NAG	F	701	2	14,14,15	2.23	5 (35%)	17,19,21	1.01	1 (5%)
10	NAG	E	607	1	14,14,15	0.28	0	17,19,21	0.62	0
10	NAG	F	703	2	14,14,15	2.24	7 (50%)	17,19,21	1.17	3 (17%)
10	NAG	A	605	1	14,14,15	2.30	5 (35%)	17,19,21	0.96	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
10	NAG	E	605	1	14,14,15	2.20	5 (35%)	17,19,21	6.92	2 (11%)
10	NAG	E	604	1	14,14,15	2.26	6 (42%)	17,19,21	0.94	1 (5%)
10	NAG	C	607	1	14,14,15	2.24	5 (35%)	17,19,21	0.95	1 (5%)
10	NAG	E	602	1	14,14,15	2.16	5 (35%)	17,19,21	0.99	1 (5%)
10	NAG	B	702	2	14,14,15	2.27	7 (50%)	17,19,21	0.95	1 (5%)
10	NAG	D	701	2	14,14,15	2.25	6 (42%)	17,19,21	0.97	1 (5%)
10	NAG	C	604	1	14,14,15	2.29	6 (42%)	17,19,21	1.13	2 (11%)
10	NAG	D	702	2	14,14,15	2.16	6 (42%)	17,19,21	6.84	3 (17%)
10	NAG	A	603	1	14,14,15	2.26	6 (42%)	17,19,21	1.12	2 (11%)
10	NAG	E	603	1	14,14,15	2.22	5 (35%)	17,19,21	1.18	2 (11%)
10	NAG	A	604	1	14,14,15	2.27	7 (50%)	17,19,21	1.12	2 (11%)
10	NAG	E	601	1	14,14,15	2.34	6 (42%)	17,19,21	0.94	1 (5%)
10	NAG	B	701	2	14,14,15	2.20	6 (42%)	17,19,21	0.95	0
10	NAG	C	606	1	14,14,15	2.32	4 (28%)	17,19,21	1.08	1 (5%)
10	NAG	A	602	1	14,14,15	2.09	6 (42%)	17,19,21	1.09	2 (11%)
10	NAG	F	702	2	14,14,15	2.25	5 (35%)	17,19,21	1.20	2 (11%)
10	NAG	C	601	1	14,14,15	2.29	7 (50%)	17,19,21	1.07	2 (11%)
10	NAG	C	608	1	14,14,15	2.13	6 (42%)	17,19,21	0.98	1 (5%)
10	NAG	D	703	2	14,14,15	2.27	6 (42%)	17,19,21	1.04	1 (5%)
10	NAG	C	605	1	14,14,15	2.18	5 (35%)	17,19,21	1.05	1 (5%)
10	NAG	C	602	1	14,14,15	2.27	5 (35%)	17,19,21	1.10	1 (5%)
10	NAG	C	603	1	14,14,15	2.23	6 (42%)	17,19,21	1.10	2 (11%)
10	NAG	E	606	1	14,14,15	2.19	5 (35%)	17,19,21	0.95	0
10	NAG	A	601	1	14,14,15	2.15	5 (35%)	17,19,21	7.02	2 (11%)
10	NAG	A	606	1	14,14,15	2.20	7 (50%)	17,19,21	1.22	2 (11%)
10	NAG	B	703	2	14,14,15	2.26	6 (42%)	17,19,21	1.07	2 (11%)

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
10	NAG	A	607	1	-	0/6/23/26	0/1/1/1
10	NAG	C	609	1	-	3/6/23/26	0/1/1/1
10	NAG	F	701	2	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	NAG	E	607	1	-	2/6/23/26	0/1/1/1
10	NAG	F	703	2	-	0/6/23/26	0/1/1/1
10	NAG	A	605	1	-	1/6/23/26	0/1/1/1
10	NAG	E	605	1	-	2/6/23/26	0/1/1/1
10	NAG	E	604	1	-	0/6/23/26	0/1/1/1
10	NAG	C	607	1	-	2/6/23/26	0/1/1/1
10	NAG	E	602	1	-	1/6/23/26	0/1/1/1
10	NAG	B	702	2	-	0/6/23/26	0/1/1/1
10	NAG	D	701	2	-	0/6/23/26	0/1/1/1
10	NAG	C	604	1	-	0/6/23/26	0/1/1/1
10	NAG	D	702	2	-	2/6/23/26	0/1/1/1
10	NAG	A	603	1	-	0/6/23/26	0/1/1/1
10	NAG	E	603	1	-	0/6/23/26	0/1/1/1
10	NAG	A	604	1	-	0/6/23/26	0/1/1/1
10	NAG	E	601	1	-	1/6/23/26	0/1/1/1
10	NAG	B	701	2	-	0/6/23/26	0/1/1/1
10	NAG	C	606	1	-	0/6/23/26	0/1/1/1
10	NAG	A	602	1	-	0/6/23/26	0/1/1/1
10	NAG	F	702	2	-	0/6/23/26	0/1/1/1
10	NAG	C	601	1	-	0/6/23/26	0/1/1/1
10	NAG	C	608	1	-	2/6/23/26	0/1/1/1
10	NAG	D	703	2	-	0/6/23/26	0/1/1/1
10	NAG	C	605	1	-	1/6/23/26	0/1/1/1
10	NAG	C	602	1	-	0/6/23/26	0/1/1/1
10	NAG	C	603	1	-	0/6/23/26	0/1/1/1
10	NAG	E	606	1	-	0/6/23/26	0/1/1/1
10	NAG	A	601	1	-	2/6/23/26	0/1/1/1
10	NAG	A	606	1	-	1/6/23/26	0/1/1/1
10	NAG	B	703	2	-	1/6/23/26	0/1/1/1

All (173) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	605	NAG	C1-C2	6.32	1.60	1.52
10	C	606	NAG	C1-C2	6.28	1.60	1.52
10	E	601	NAG	C1-C2	6.06	1.60	1.52
10	C	604	NAG	C1-C2	6.02	1.60	1.52
10	C	602	NAG	C1-C2	6.00	1.60	1.52
10	E	603	NAG	C1-C2	5.96	1.60	1.52
10	A	607	NAG	C1-C2	5.95	1.60	1.52
10	D	701	NAG	C1-C2	5.93	1.60	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	F	701	NAG	C1-C2	5.93	1.60	1.52
10	C	607	NAG	C1-C2	5.86	1.60	1.52
10	B	703	NAG	C1-C2	5.82	1.60	1.52
10	F	702	NAG	C1-C2	5.81	1.60	1.52
10	A	601	NAG	C1-C2	5.80	1.60	1.52
10	D	703	NAG	C1-C2	5.79	1.60	1.52
10	B	702	NAG	C1-C2	5.78	1.60	1.52
10	A	604	NAG	C1-C2	5.76	1.60	1.52
10	E	604	NAG	C1-C2	5.75	1.60	1.52
10	A	603	NAG	C1-C2	5.69	1.60	1.52
10	B	701	NAG	C1-C2	5.67	1.60	1.52
10	E	606	NAG	C1-C2	5.65	1.60	1.52
10	A	606	NAG	C1-C2	5.58	1.59	1.52
10	E	605	NAG	C1-C2	5.54	1.59	1.52
10	C	605	NAG	C1-C2	5.51	1.59	1.52
10	D	702	NAG	C1-C2	5.49	1.59	1.52
10	C	603	NAG	C1-C2	5.48	1.59	1.52
10	F	703	NAG	C1-C2	5.43	1.59	1.52
10	C	601	NAG	C1-C2	5.40	1.59	1.52
10	C	608	NAG	C1-C2	5.38	1.59	1.52
10	E	602	NAG	C1-C2	5.30	1.59	1.52
10	A	602	NAG	C1-C2	4.48	1.58	1.52
10	F	703	NAG	O5-C5	3.56	1.50	1.43
10	A	602	NAG	O5-C5	3.54	1.50	1.43
10	C	601	NAG	O5-C5	3.46	1.50	1.43
10	D	702	NAG	O5-C5	3.45	1.50	1.43
10	E	602	NAG	O5-C5	3.43	1.50	1.43
10	E	604	NAG	O5-C5	3.42	1.50	1.43
10	E	605	NAG	O5-C5	3.42	1.50	1.43
10	D	703	NAG	O5-C5	3.41	1.50	1.43
10	A	603	NAG	O5-C5	3.38	1.50	1.43
10	B	702	NAG	O5-C5	3.37	1.50	1.43
10	A	604	NAG	O5-C5	3.35	1.50	1.43
10	C	603	NAG	O5-C5	3.34	1.49	1.43
10	C	602	NAG	O5-C5	3.33	1.49	1.43
10	E	601	NAG	O5-C5	3.30	1.49	1.43
10	A	606	NAG	O5-C5	3.30	1.49	1.43
10	E	606	NAG	O5-C5	3.29	1.49	1.43
10	A	607	NAG	O5-C5	3.29	1.49	1.43
10	C	606	NAG	O5-C5	3.27	1.49	1.43
10	B	703	NAG	O5-C5	3.26	1.49	1.43
10	F	702	NAG	O5-C5	3.26	1.49	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	E	603	NAG	O5-C5	3.21	1.49	1.43
10	D	701	NAG	O5-C5	3.20	1.49	1.43
10	B	701	NAG	O5-C5	3.18	1.49	1.43
10	C	604	NAG	O5-C5	3.16	1.49	1.43
10	C	605	NAG	O5-C5	3.14	1.49	1.43
10	A	605	NAG	O5-C5	3.14	1.49	1.43
10	F	701	NAG	O5-C5	3.14	1.49	1.43
10	A	601	NAG	O5-C5	3.11	1.49	1.43
10	C	607	NAG	O5-C5	3.10	1.49	1.43
10	C	608	NAG	O5-C5	2.97	1.49	1.43
10	C	601	NAG	O5-C1	2.88	1.48	1.43
10	F	703	NAG	O5-C1	2.79	1.48	1.43
10	A	602	NAG	O5-C1	2.77	1.48	1.43
10	E	605	NAG	O5-C1	2.77	1.48	1.43
10	C	603	NAG	O5-C1	2.77	1.48	1.43
10	E	602	NAG	O5-C1	2.76	1.48	1.43
10	F	702	NAG	O5-C1	2.75	1.48	1.43
10	C	606	NAG	O5-C1	2.71	1.48	1.43
10	A	603	NAG	O5-C1	2.70	1.48	1.43
10	E	601	NAG	O5-C1	2.70	1.48	1.43
10	C	602	NAG	O5-C1	2.69	1.48	1.43
10	E	604	NAG	O5-C1	2.69	1.48	1.43
10	B	702	NAG	O5-C1	2.67	1.48	1.43
10	A	607	NAG	O5-C1	2.66	1.48	1.43
10	E	606	NAG	O5-C1	2.66	1.48	1.43
10	A	604	NAG	O5-C1	2.65	1.48	1.43
10	D	701	NAG	O5-C1	2.65	1.48	1.43
10	D	703	NAG	O5-C1	2.65	1.48	1.43
10	B	703	NAG	O5-C1	2.62	1.48	1.43
10	A	605	NAG	O5-C1	2.62	1.48	1.43
10	C	605	NAG	O5-C1	2.61	1.48	1.43
10	C	601	NAG	C2-N2	2.59	1.50	1.46
10	A	606	NAG	O5-C1	2.58	1.48	1.43
10	C	604	NAG	C2-N2	2.58	1.50	1.46
10	F	701	NAG	O5-C1	2.57	1.48	1.43
10	E	603	NAG	O5-C1	2.55	1.48	1.43
10	C	607	NAG	O5-C1	2.53	1.48	1.43
10	B	701	NAG	O5-C1	2.51	1.47	1.43
10	D	702	NAG	O5-C1	2.51	1.47	1.43
10	C	607	NAG	C3-C2	2.50	1.57	1.52
10	E	601	NAG	C3-C2	2.48	1.57	1.52
10	C	608	NAG	C3-C2	2.48	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	601	NAG	O5-C1	2.47	1.47	1.43
10	A	602	NAG	C4-C5	2.45	1.58	1.53
10	C	606	NAG	C3-C2	2.44	1.57	1.52
10	A	601	NAG	C3-C2	2.43	1.57	1.52
10	C	601	NAG	C3-C2	2.43	1.57	1.52
10	A	605	NAG	C3-C2	2.41	1.57	1.52
10	C	602	NAG	C3-C2	2.41	1.57	1.52
10	C	604	NAG	O5-C1	2.41	1.47	1.43
10	C	603	NAG	C3-C2	2.39	1.57	1.52
10	C	604	NAG	C3-C2	2.39	1.57	1.52
10	E	601	NAG	C2-N2	2.37	1.50	1.46
10	F	703	NAG	C4-C5	2.37	1.58	1.53
10	A	604	NAG	C3-C2	2.36	1.57	1.52
10	C	601	NAG	C4-C5	2.34	1.58	1.53
10	D	702	NAG	C4-C5	2.33	1.58	1.53
10	C	608	NAG	C4-C5	2.33	1.58	1.53
10	E	605	NAG	C4-C5	2.33	1.58	1.53
10	E	605	NAG	C3-C2	2.33	1.57	1.52
10	A	607	NAG	C3-C2	2.33	1.57	1.52
10	A	606	NAG	C4-C5	2.32	1.58	1.53
10	A	602	NAG	C3-C2	2.32	1.57	1.52
10	E	604	NAG	C3-C2	2.32	1.57	1.52
10	C	605	NAG	C4-C5	2.31	1.58	1.53
10	C	608	NAG	O5-C1	2.31	1.47	1.43
10	D	703	NAG	C4-C5	2.31	1.57	1.53
10	F	702	NAG	C3-C2	2.29	1.57	1.52
10	C	605	NAG	C3-C2	2.29	1.57	1.52
10	B	702	NAG	C3-C2	2.29	1.57	1.52
10	A	603	NAG	C2-N2	2.28	1.50	1.46
10	B	701	NAG	C3-C2	2.27	1.57	1.52
10	B	703	NAG	C3-C2	2.26	1.57	1.52
10	B	702	NAG	C4-C5	2.26	1.57	1.53
10	B	703	NAG	C4-C5	2.26	1.57	1.53
10	F	701	NAG	C3-C2	2.25	1.57	1.52
10	D	702	NAG	C3-C2	2.23	1.57	1.52
10	D	703	NAG	C3-C2	2.23	1.57	1.52
10	C	603	NAG	C4-C5	2.23	1.57	1.53
10	D	701	NAG	C3-C2	2.22	1.57	1.52
10	A	607	NAG	C4-C5	2.22	1.57	1.53
10	E	603	NAG	C3-C2	2.22	1.57	1.52
10	E	606	NAG	C3-C2	2.22	1.57	1.52
10	A	603	NAG	C3-C2	2.22	1.57	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	603	NAG	C4-C5	2.21	1.57	1.53
10	A	604	NAG	C4-C5	2.21	1.57	1.53
10	E	601	NAG	C4-C5	2.21	1.57	1.53
10	A	602	NAG	C4-C3	2.20	1.58	1.52
10	E	602	NAG	C3-C2	2.19	1.57	1.52
10	A	604	NAG	C2-N2	2.18	1.49	1.46
10	F	702	NAG	C4-C5	2.18	1.57	1.53
10	E	602	NAG	C4-C5	2.18	1.57	1.53
10	C	607	NAG	C4-C5	2.17	1.57	1.53
10	C	603	NAG	C2-N2	2.17	1.49	1.46
10	A	605	NAG	C4-C5	2.16	1.57	1.53
10	F	703	NAG	C2-N2	2.15	1.49	1.46
10	B	701	NAG	C2-N2	2.15	1.49	1.46
10	F	701	NAG	C4-C5	2.15	1.57	1.53
10	A	607	NAG	C2-N2	2.15	1.49	1.46
10	E	604	NAG	C4-C5	2.13	1.57	1.53
10	F	703	NAG	C3-C2	2.13	1.57	1.52
10	B	701	NAG	C4-C5	2.13	1.57	1.53
10	B	703	NAG	C2-N2	2.12	1.49	1.46
10	D	701	NAG	C4-C5	2.12	1.57	1.53
10	E	604	NAG	C2-N2	2.10	1.49	1.46
10	C	601	NAG	C4-C3	2.09	1.57	1.52
10	F	703	NAG	C4-C3	2.09	1.57	1.52
10	A	601	NAG	C4-C5	2.09	1.57	1.53
10	B	702	NAG	C2-N2	2.08	1.49	1.46
10	A	607	NAG	C4-C3	2.08	1.57	1.52
10	D	703	NAG	C2-N2	2.08	1.49	1.46
10	B	702	NAG	C4-C3	2.06	1.57	1.52
10	E	606	NAG	C4-C5	2.06	1.57	1.53
10	C	608	NAG	C4-C3	2.06	1.57	1.52
10	E	603	NAG	C4-C5	2.05	1.57	1.53
10	D	701	NAG	C2-N2	2.05	1.49	1.46
10	A	606	NAG	C3-C2	2.05	1.56	1.52
10	C	602	NAG	C4-C5	2.04	1.57	1.53
10	D	702	NAG	C4-C3	2.04	1.57	1.52
10	A	606	NAG	C2-N2	2.03	1.49	1.46
10	C	604	NAG	C4-C5	2.03	1.57	1.53
10	A	606	NAG	C4-C3	2.02	1.57	1.52
10	A	604	NAG	C4-C3	2.02	1.57	1.52

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	A	601	NAG	C2-N2-C7	28.57	161.19	122.90
10	E	605	NAG	C2-N2-C7	28.12	160.59	122.90
10	D	702	NAG	C2-N2-C7	27.39	159.60	122.90
10	D	702	NAG	C8-C7-N2	5.07	124.53	116.12
10	E	605	NAG	C8-C7-N2	3.29	121.58	116.12
10	F	702	NAG	C8-C7-N2	3.21	121.44	116.12
10	D	702	NAG	O7-C7-N2	-3.19	116.34	121.98
10	A	603	NAG	C8-C7-N2	2.90	120.93	116.12
10	A	606	NAG	O7-C7-C8	-2.88	116.93	122.05
10	C	601	NAG	C8-C7-N2	2.85	120.84	116.12
10	A	601	NAG	C8-C7-N2	2.78	120.73	116.12
10	A	606	NAG	C8-C7-N2	2.74	120.66	116.12
10	A	604	NAG	C8-C7-N2	2.72	120.63	116.12
10	C	603	NAG	C8-C7-N2	2.72	120.62	116.12
10	F	703	NAG	C8-C7-N2	2.71	120.62	116.12
10	B	703	NAG	C8-C7-N2	2.64	120.49	116.12
10	C	604	NAG	C8-C7-N2	2.59	120.41	116.12
10	E	603	NAG	C8-C7-N2	2.58	120.40	116.12
10	C	606	NAG	C8-C7-N2	2.52	120.29	116.12
10	A	602	NAG	C1-C2-N2	-2.47	106.54	110.43
10	F	702	NAG	O7-C7-C8	-2.44	117.70	122.05
10	D	703	NAG	C8-C7-N2	2.41	120.12	116.12
10	A	602	NAG	C8-C7-N2	2.37	120.05	116.12
10	C	602	NAG	C8-C7-N2	2.36	120.04	116.12
10	A	607	NAG	C8-C7-N2	2.32	119.97	116.12
10	A	604	NAG	O7-C7-C8	-2.29	117.98	122.05
10	E	601	NAG	C8-C7-N2	2.27	119.89	116.12
10	F	703	NAG	O7-C7-C8	-2.27	118.01	122.05
10	C	603	NAG	O7-C7-C8	-2.26	118.03	122.05
10	C	605	NAG	C8-C7-N2	2.24	119.84	116.12
10	F	703	NAG	C1-C2-N2	-2.22	106.93	110.43
10	C	608	NAG	C8-C7-N2	2.21	119.79	116.12
10	F	701	NAG	C8-C7-N2	2.21	119.78	116.12
10	A	603	NAG	O7-C7-C8	-2.21	118.12	122.05
10	C	601	NAG	O7-C7-C8	-2.20	118.14	122.05
10	E	604	NAG	C8-C7-N2	2.19	119.75	116.12
10	E	602	NAG	C8-C7-N2	2.19	119.75	116.12
10	E	603	NAG	C1-C2-N2	-2.16	107.03	110.43
10	C	604	NAG	C1-O5-C5	2.12	115.03	112.19
10	D	701	NAG	C8-C7-N2	2.11	119.62	116.12
10	B	702	NAG	C8-C7-N2	2.09	119.59	116.12
10	B	703	NAG	O7-C7-C8	-2.05	118.41	122.05
10	C	607	NAG	C8-C7-N2	2.02	119.47	116.12

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	E	607	NAG	C8-C7-N2-C2
10	E	607	NAG	O7-C7-N2-C2
10	C	609	NAG	C8-C7-N2-C2
10	C	609	NAG	O7-C7-N2-C2
10	D	702	NAG	C8-C7-N2-C2
10	D	702	NAG	O7-C7-N2-C2
10	C	607	NAG	O5-C5-C6-O6
10	A	605	NAG	O5-C5-C6-O6
10	C	608	NAG	O5-C5-C6-O6
10	B	703	NAG	O5-C5-C6-O6
10	E	602	NAG	O5-C5-C6-O6
10	A	606	NAG	O5-C5-C6-O6
10	C	605	NAG	O5-C5-C6-O6
10	C	609	NAG	O5-C5-C6-O6
10	E	605	NAG	C1-C2-N2-C7
10	A	601	NAG	C3-C2-N2-C7
10	E	605	NAG	C3-C2-N2-C7
10	A	601	NAG	C1-C2-N2-C7
10	C	608	NAG	C1-C2-N2-C7
10	E	601	NAG	C1-C2-N2-C7
10	C	607	NAG	C4-C5-C6-O6

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	E	605	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.

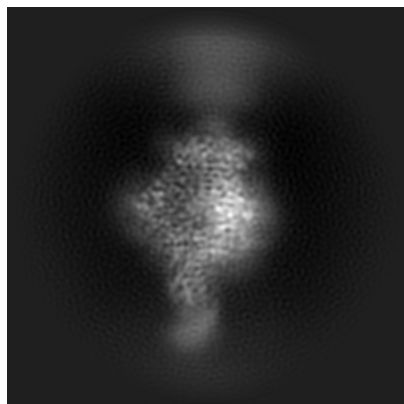
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25736. These allow visual inspection of the internal detail of the map and identification of artifacts.

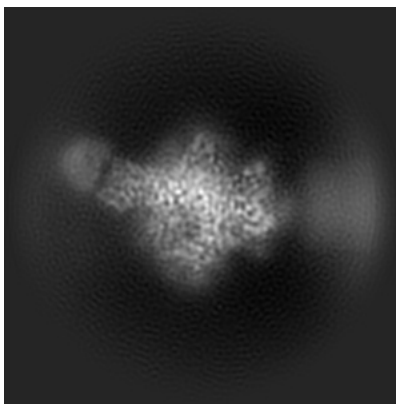
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

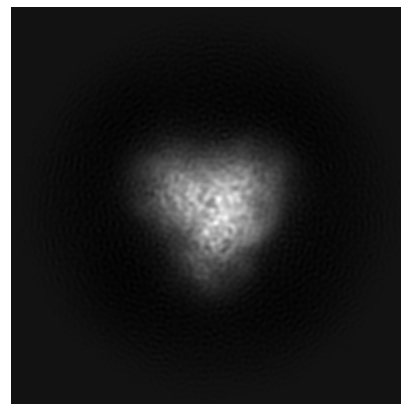
6.1.1 Primary map



X

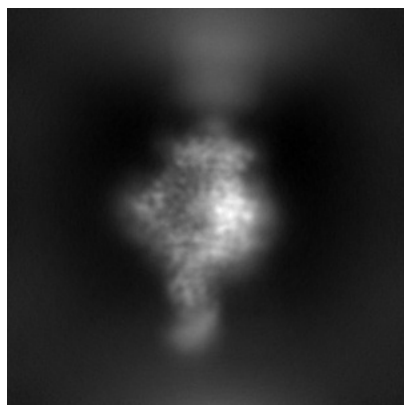


Y

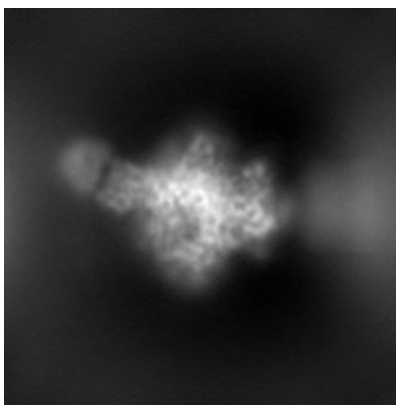


Z

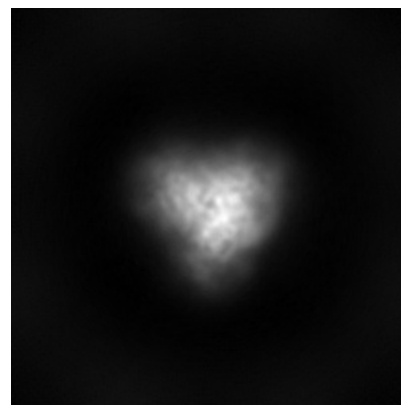
6.1.2 Raw map



X



Y

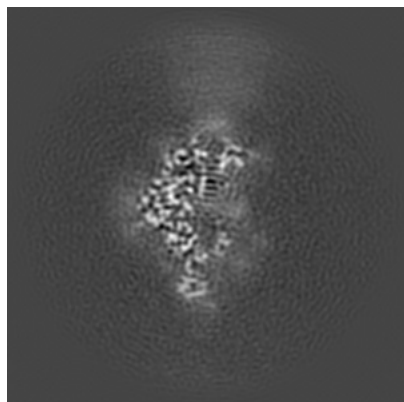


Z

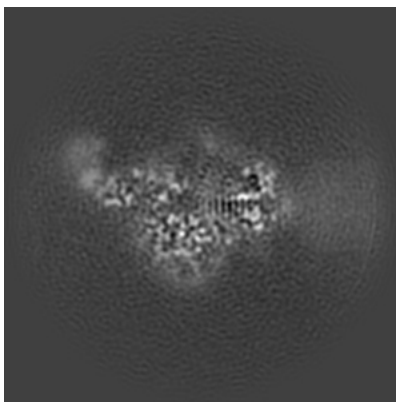
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

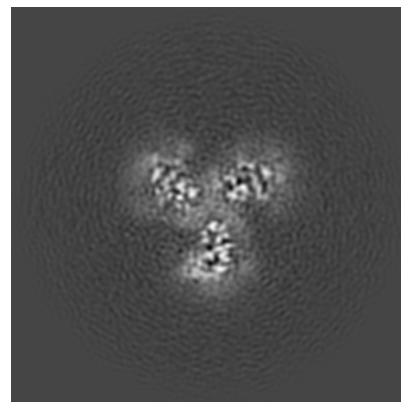
6.2.1 Primary map



X Index: 140

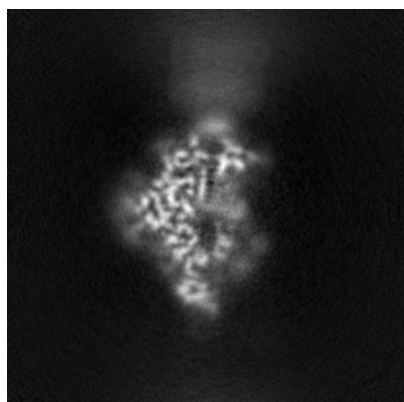


Y Index: 140

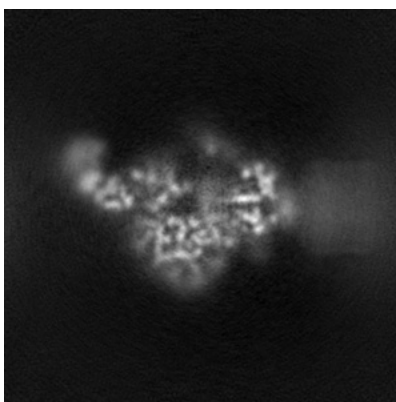


Z Index: 140

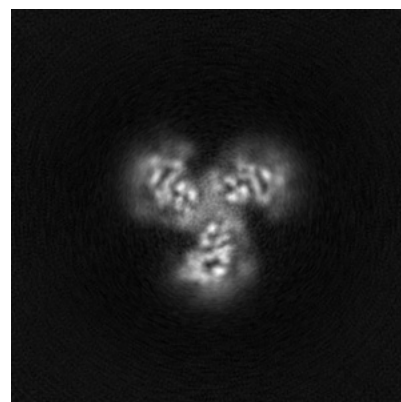
6.2.2 Raw map



X Index: 140



Y Index: 140

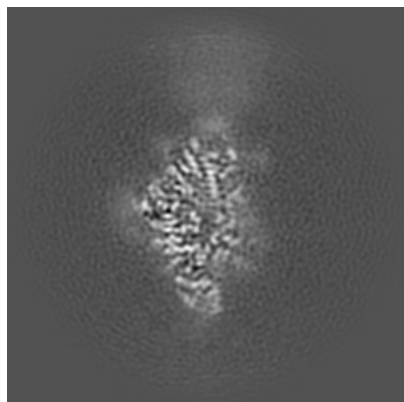


Z Index: 140

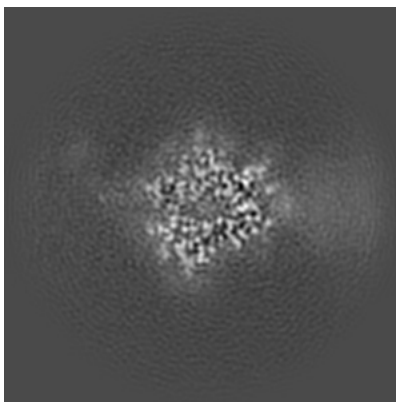
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

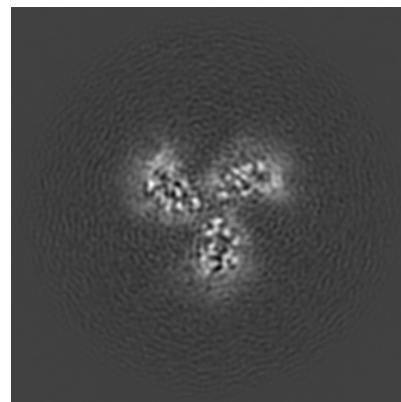
6.3.1 Primary map



X Index: 145

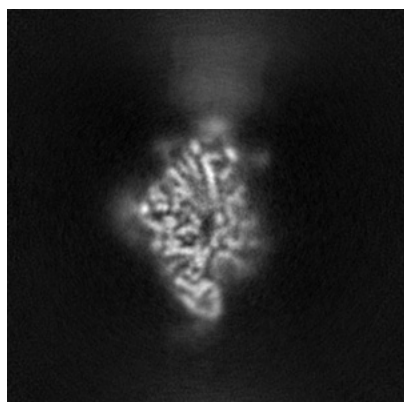


Y Index: 150

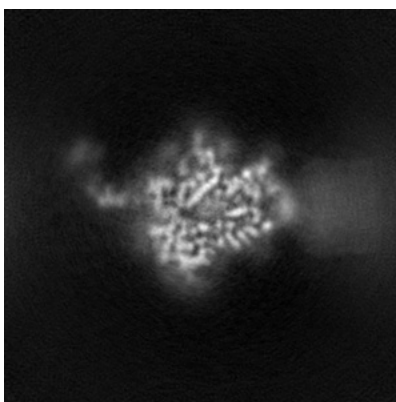


Z Index: 135

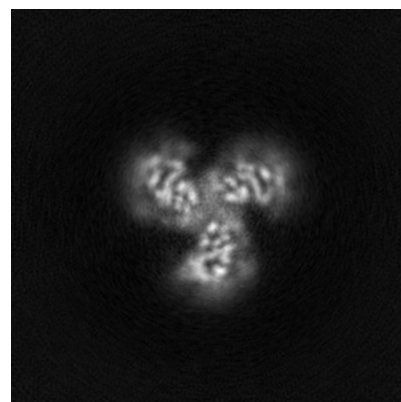
6.3.2 Raw map



X Index: 146



Y Index: 148

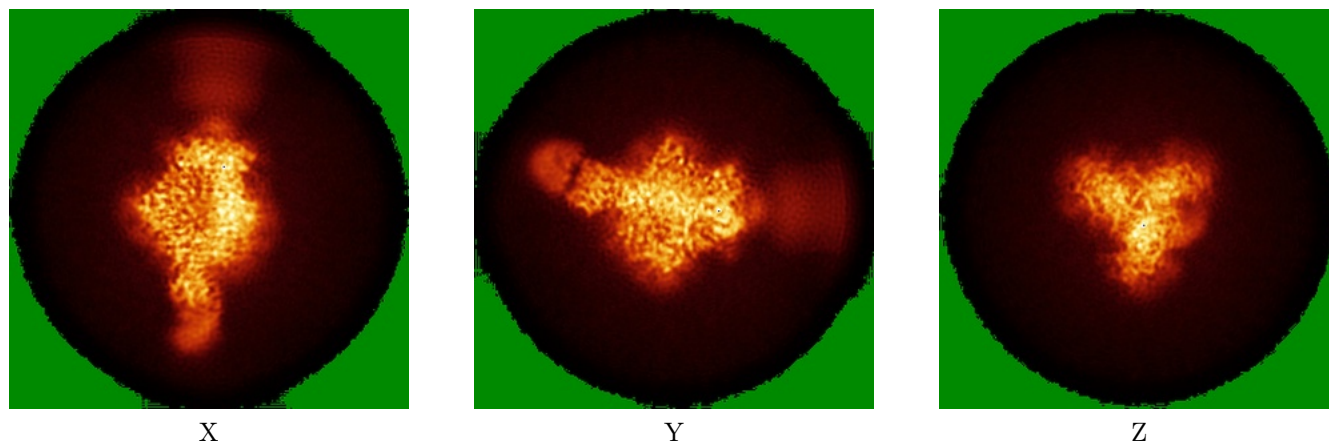


Z Index: 139

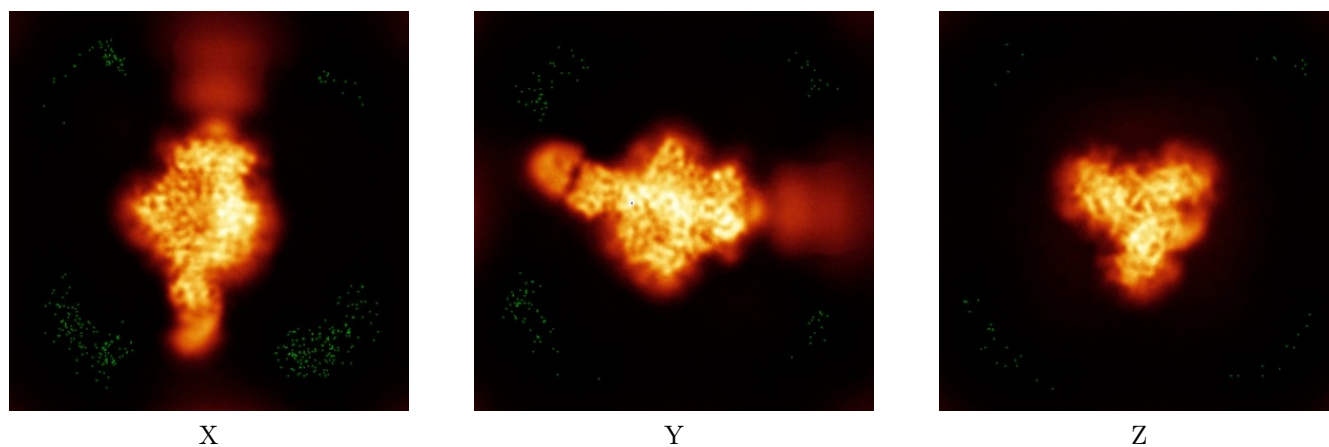
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



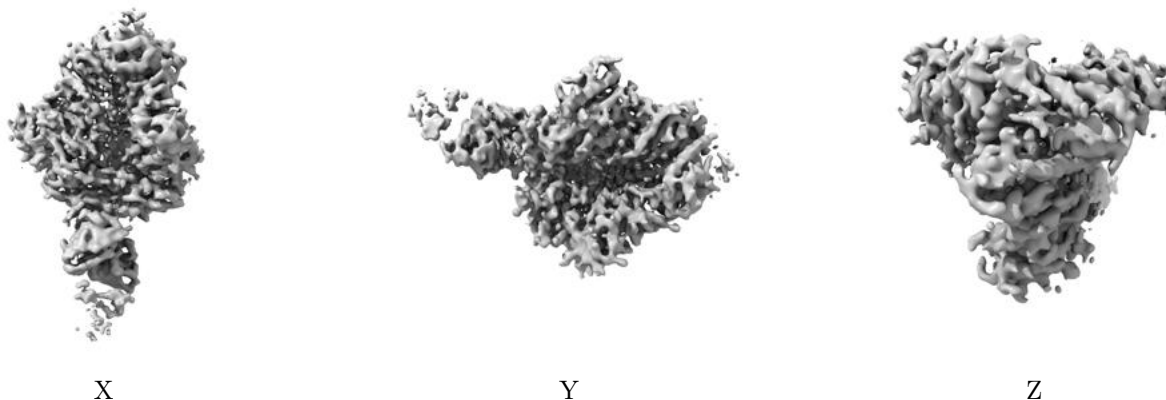
6.4.2 Raw map



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

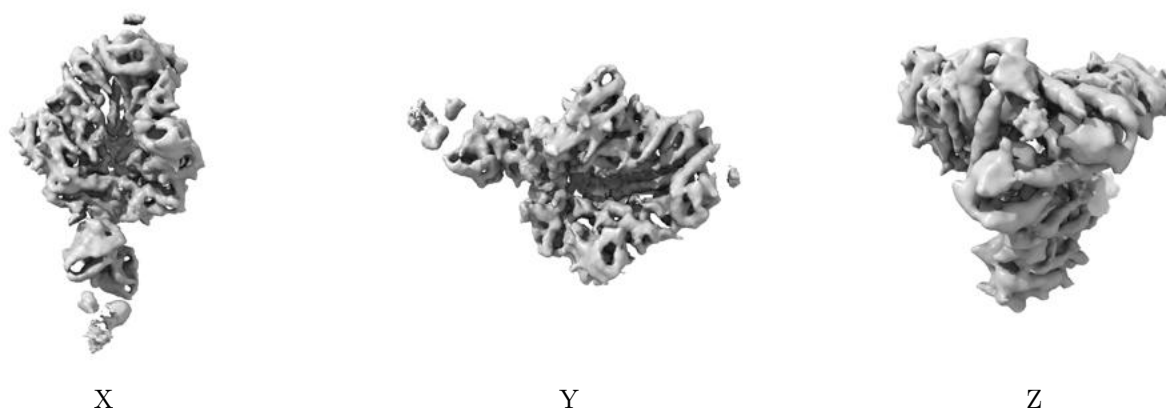
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.749. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

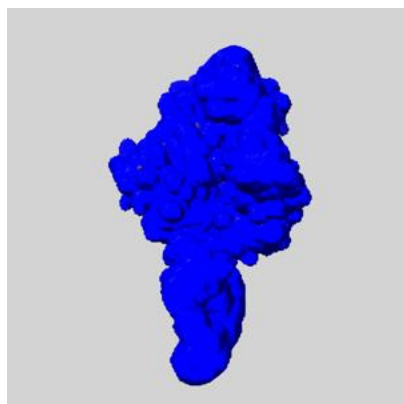
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

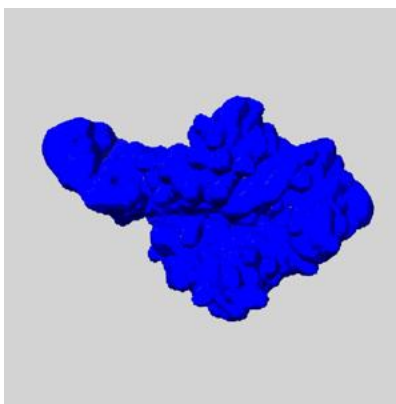
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

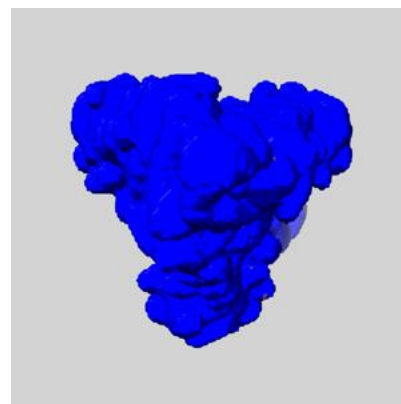
6.6.1 emd_25736_msk_1.map [i](#)



X



Y

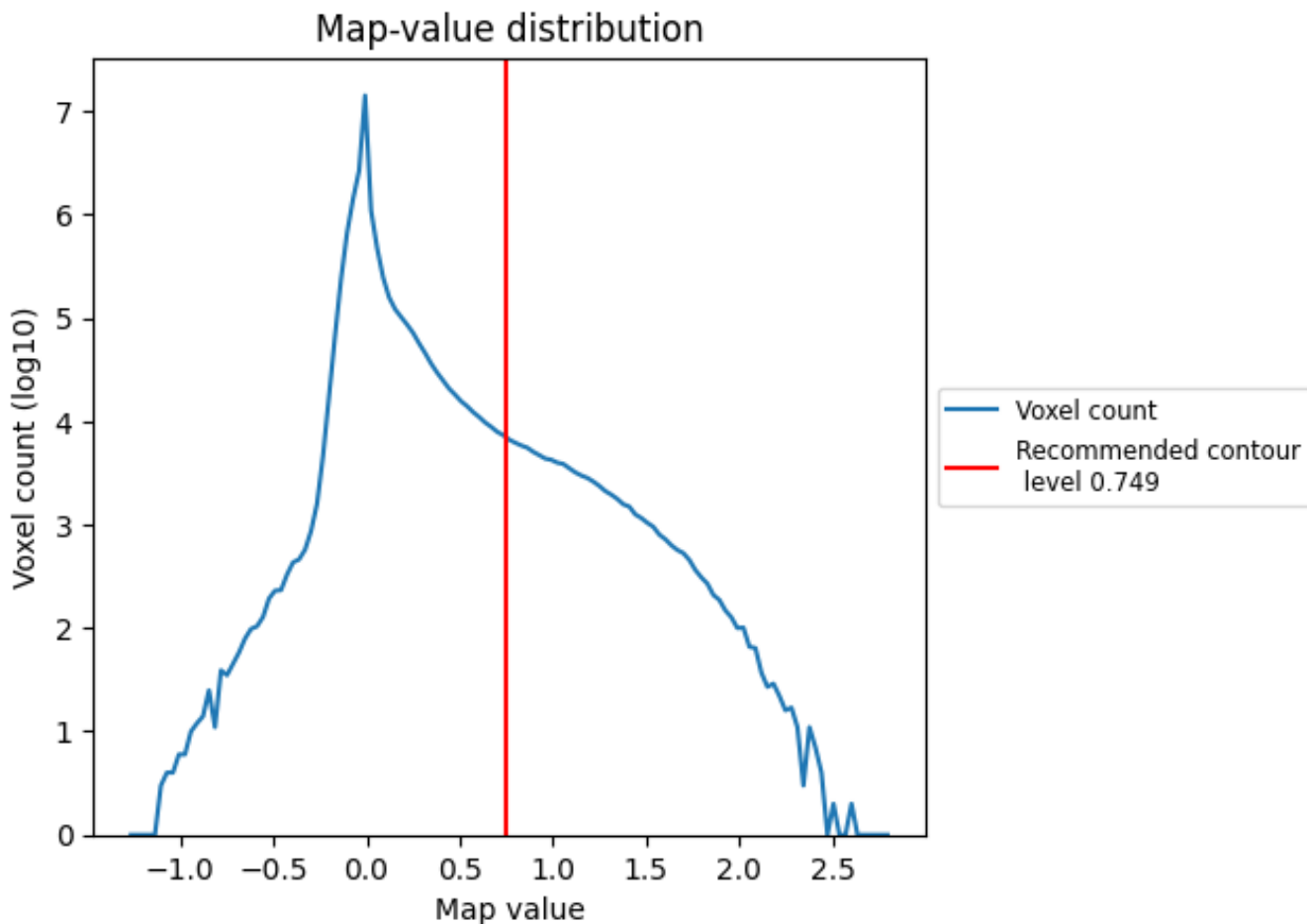


Z

7 Map analysis [i](#)

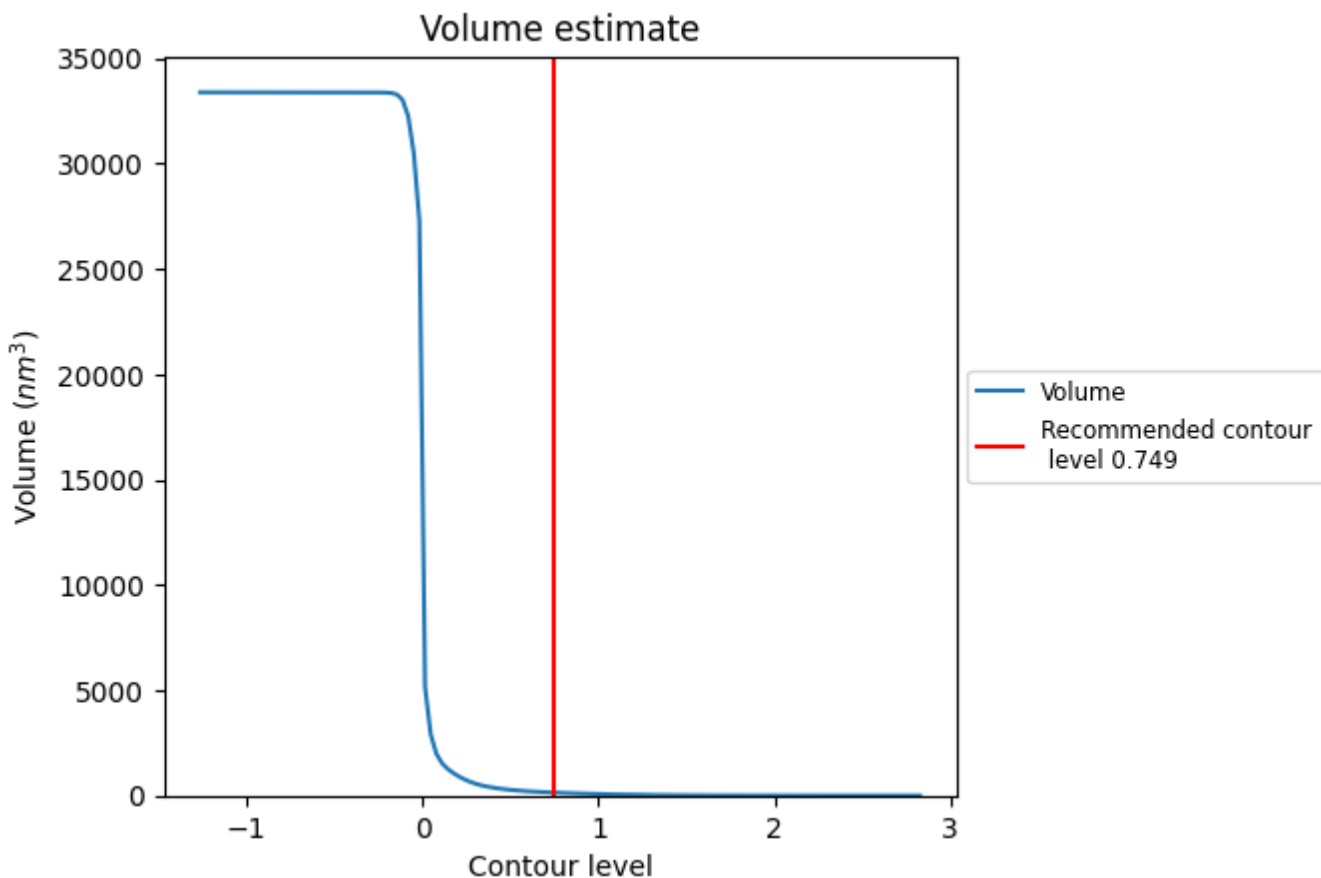
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

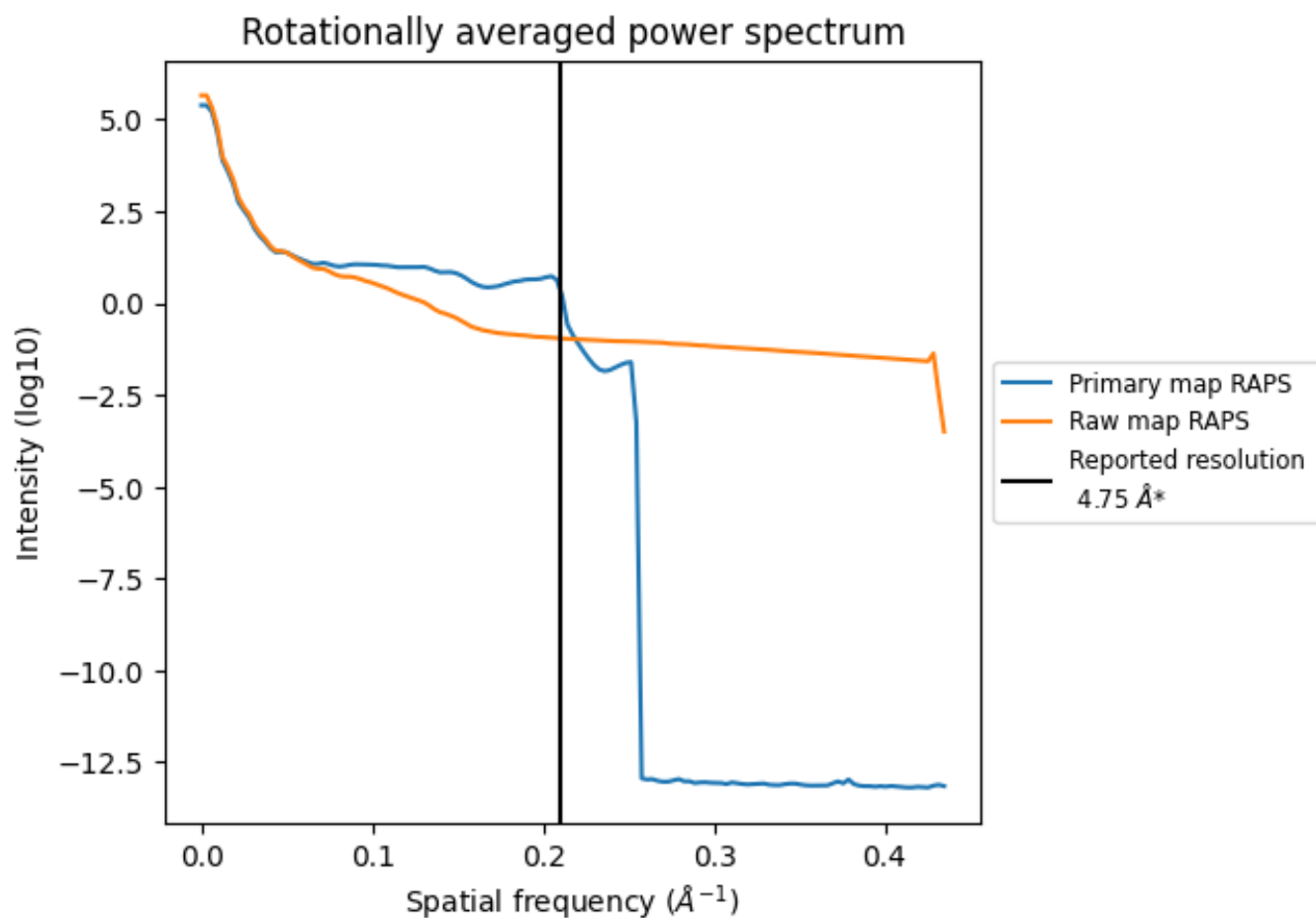
7.2 Volume estimate [i](#)



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

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

7.3 Rotationally averaged power spectrum [i](#)

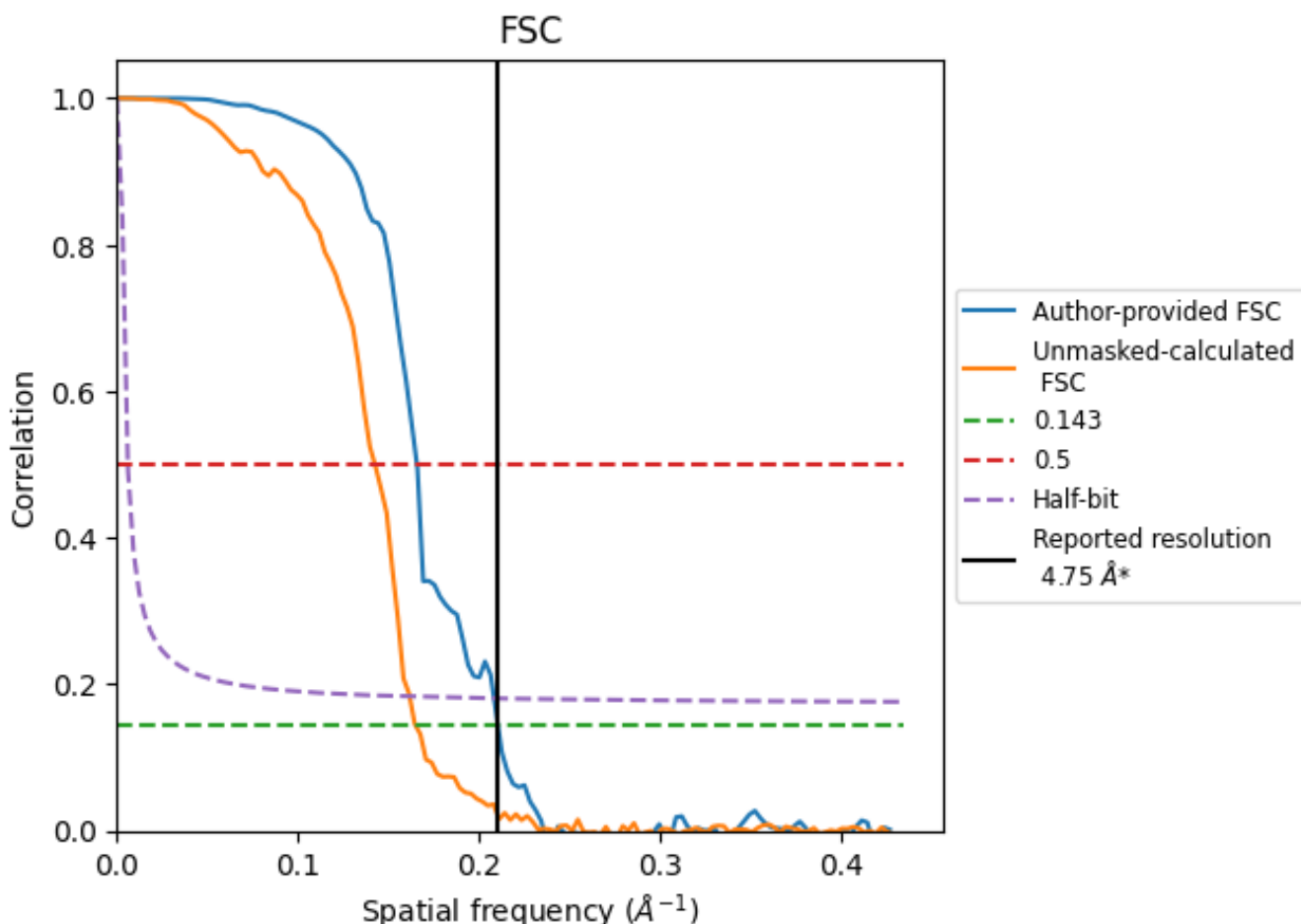


*Reported resolution corresponds to spatial frequency of 0.211 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.211 Å⁻¹

8.2 Resolution estimates [i](#)

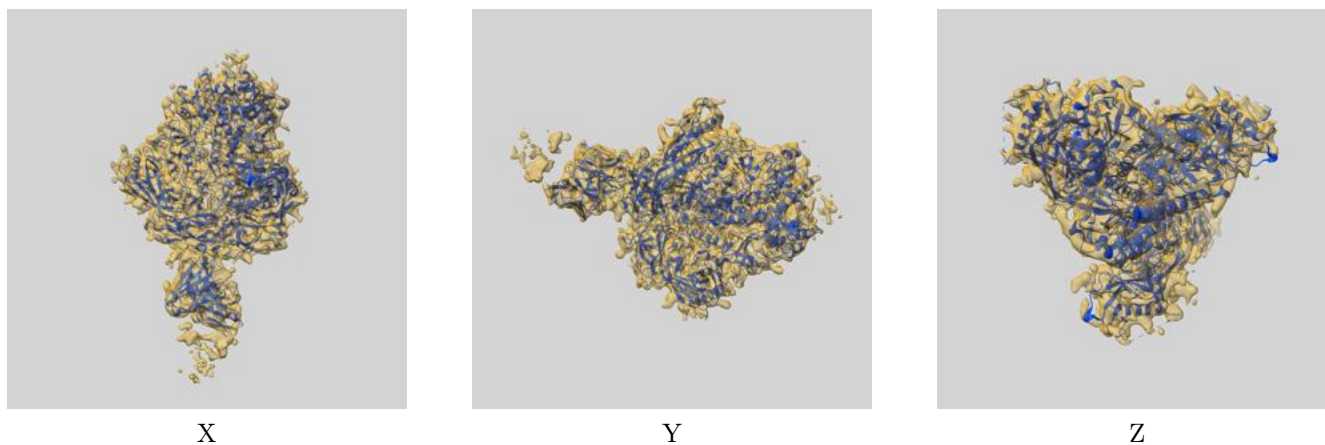
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.75	-	-
Author-provided FSC curve	4.75	6.03	4.80
Unmasked-calculated*	6.06	7.02	6.18

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.06 differs from the reported value 4.75 by more than 10 %

9 Map-model fit [i](#)

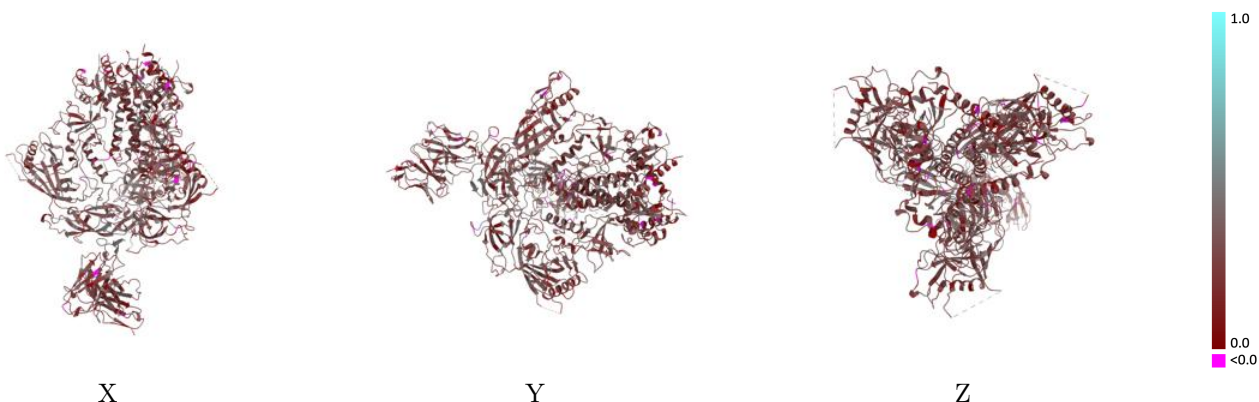
This section contains information regarding the fit between EMDB map EMD-25736 and PDB model 7T77. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



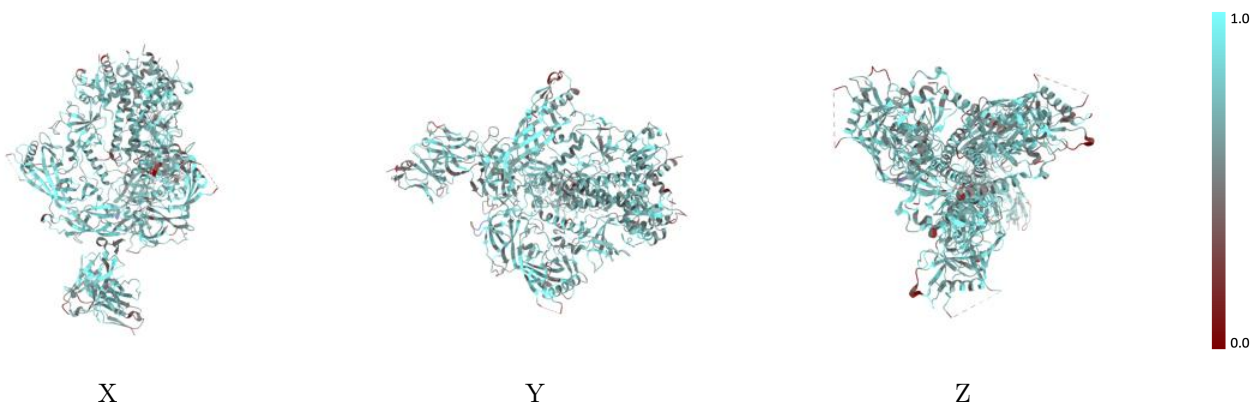
The images above show the 3D surface view of the map at the recommended contour level 0.749 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



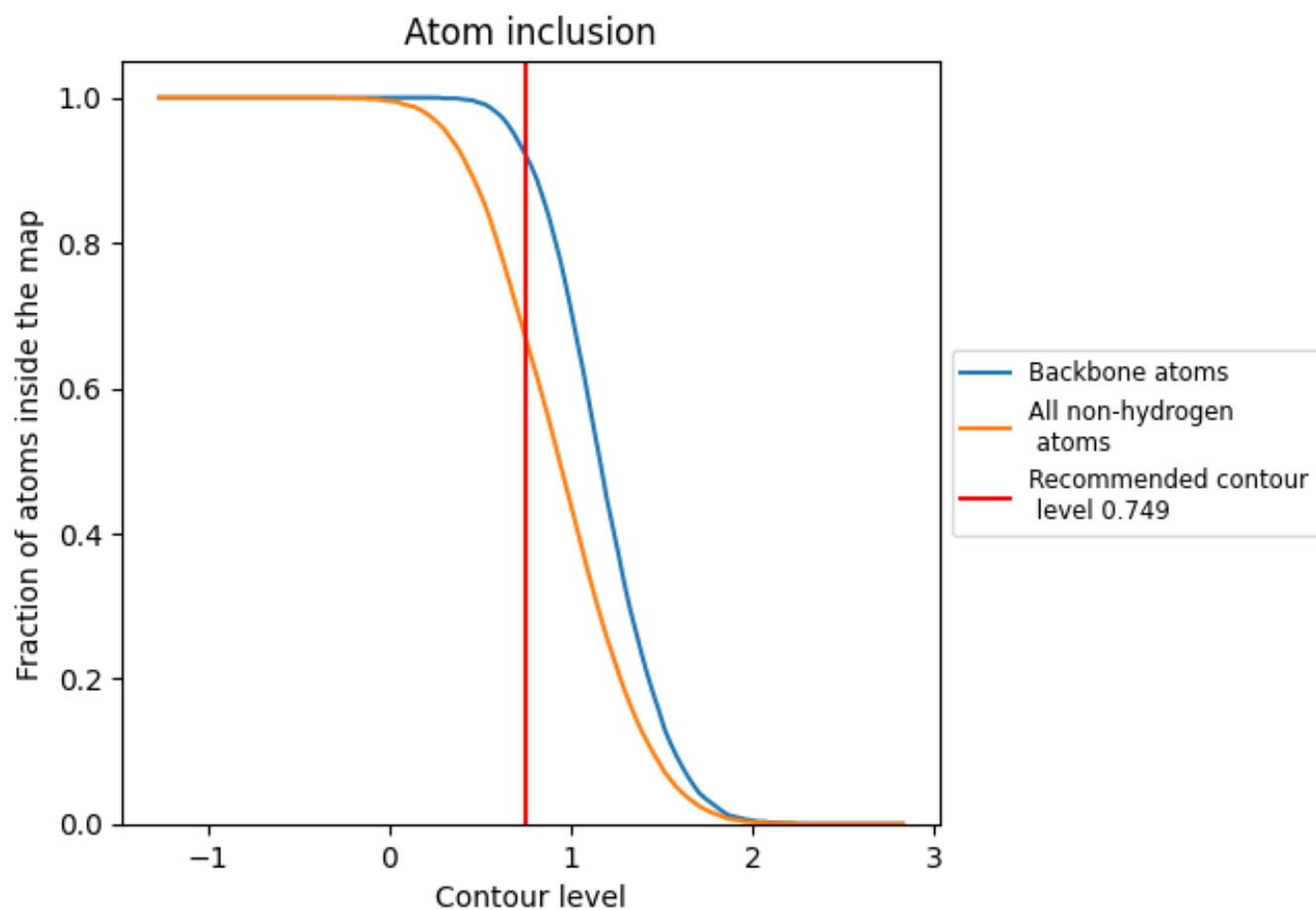
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.749).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 67% 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 (0.749) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6700	 0.2820
A	 0.6860	 0.2930
B	 0.6390	 0.2540
C	 0.6580	 0.2760
D	 0.6370	 0.2320
E	 0.7150	 0.3030
F	 0.6740	 0.2590
G	 0.5360	 0.2710
H	 0.7210	 0.2850
I	 0.4290	 0.2550
J	 0.3570	 0.2110
K	 0.3930	 0.2830
L	 0.6510	 0.2550
M	 0.5000	 0.3380
N	 0.2140	 0.3160
O	 0.5000	 0.3130
P	 0.5710	 0.3380
Q	 0.3210	 0.1510
R	 0.5250	 0.3150
S	 0.2860	 0.1910
T	 0.7180	 0.3700
U	 0.4290	 0.2910
V	 0.5710	 0.3130
W	 0.3570	 0.2980
X	 0.2560	 0.3780
Y	 0.5000	 0.3190
Z	 0.3210	 0.2880
a	 0.4360	 0.2200
b	 0.7440	 0.3670
c	 0.4290	 0.3550
d	 0.5360	 0.2530
e	 0.6430	 0.3700
f	 0.2860	 0.2990
g	 0.5710	 0.3070
h	 0.7710	 0.3960



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Chain	Atom inclusion	Q-score
i	 0.6920	 0.3610
j	 0.7220	 0.3620