



# wwPDB EM Validation Summary Report ⓘ

Nov 9, 2022 – 05:50 PM EST

PDB ID : 6P65  
EMDB ID : EMD-20260  
Title : HIV Env 16055 NFL TD 2CC+ in complex with antibody 1C2 fragment anti-gen binding  
Authors : Ozorowski, G.; Torres, J.L.; Ward, A.B.  
Deposited on : 2019-05-31  
Resolution : 3.94 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

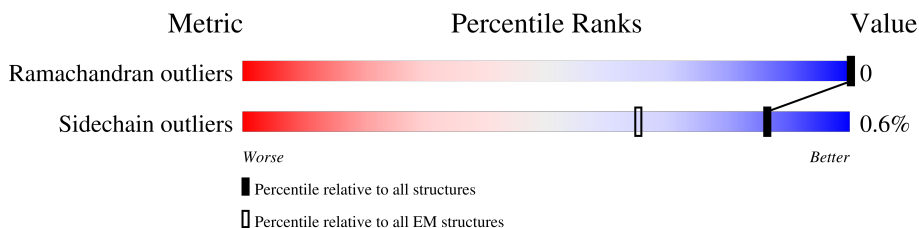
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

# 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 3.94 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.



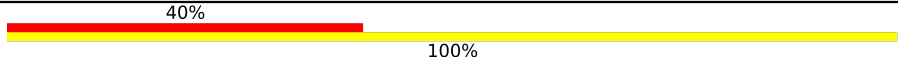
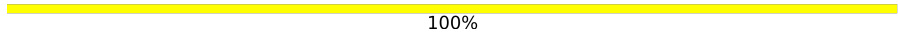
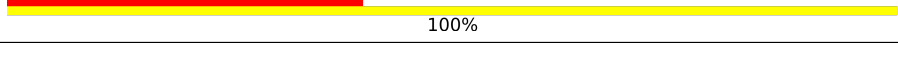
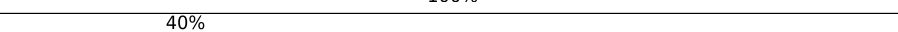
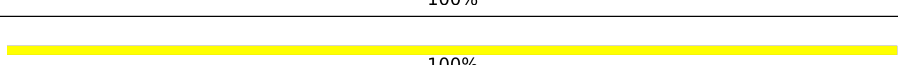
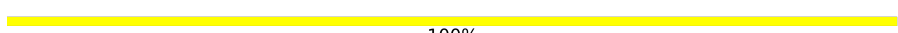




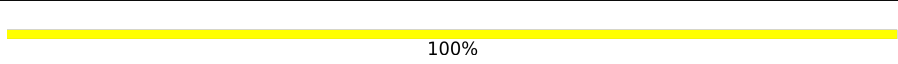
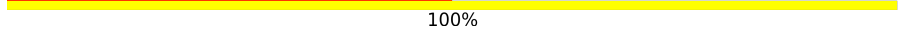
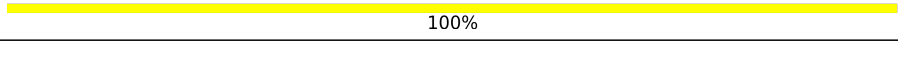

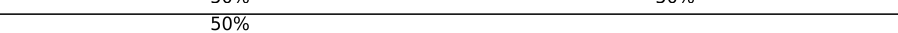
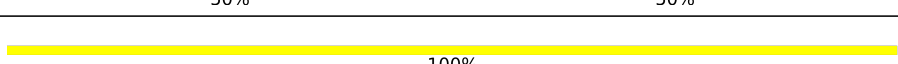
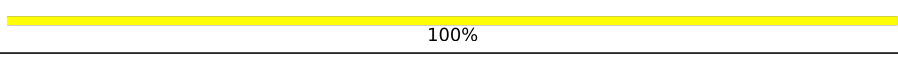
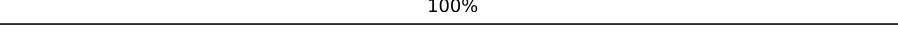
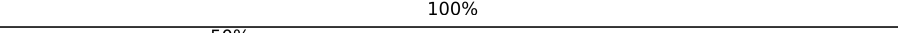
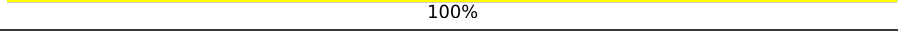
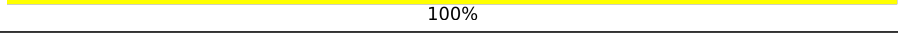
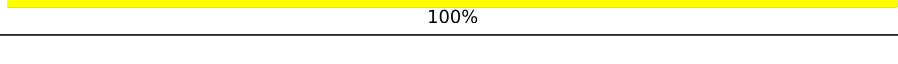



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	680	
1	B	680	
1	E	680	
2	C	259	
2	F	259	
2	H	259	
3	D	235	
3	G	235	
3	L	235	

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Mol	Chain	Length	Quality of chain
4	I	5	40%  100%
4	Q	5	 100%
4	Y	5	40%  100%
4	f	5	 100%
4	n	5	40%  100%
4	u	5	 100%
5	0	2	 100%
5	J	2	 100%
5	K	2	 100%
5	M	2	 100%
5	N	2	50%  100%
5	O	2	 100%
5	P	2	50%  100%
5	R	2	 100%
5	T	2	 100%
5	U	2	50%  50%
5	V	2	50%  50%
5	W	2	 100%
5	Z	2	 100%
5	a	2	 100%
5	b	2	 100%
5	c	2	50%  100%
5	d	2	 100%
5	e	2	 100%
5	g	2	 100%

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Mol	Chain	Length	Quality of chain
5	i	2	100%
5	j	2	50%
5	k	2	50%
5	l	2	100%
5	o	2	100%
5	p	2	100%
5	q	2	100%
5	r	2	50%
5	s	2	100%
5	t	2	100%
5	v	2	100%
5	x	2	100%
5	y	2	50%
5	z	2	50%
6	S	3	33%
6	h	3	33%
6	w	3	33%
7	1	3	67%
7	X	3	33%
7	m	3	67%

## 2 Entry composition i

There are 8 unique types of molecules in this entry. The entry contains 20319 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 Env 16055 NFL TD 2CC+.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	557	Total	C	N	O	S	0	0
			4405	2772	771	828	34		
1	B	557	Total	C	N	O	S	0	0
			4405	2772	771	828	34		
1	E	557	Total	C	N	O	S	0	0
			4405	2772	771	828	34		

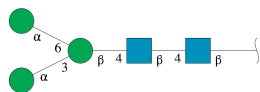
- Molecule 2 is a protein called Rabbit antibody 1C2 heavy chain fragment antigen binding.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	H	126	Total	C	N	O	S	0	0
			943	600	156	182	5		
2	C	126	Total	C	N	O	S	0	0
			943	600	156	182	5		
2	F	126	Total	C	N	O	S	0	0
			943	600	156	182	5		

- Molecule 3 is a protein called Rabbit antibody 1C2 kappa chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	L	110	Total	C	N	O	S	0	0
			820	519	133	164	4		
3	D	110	Total	C	N	O	S	0	0
			820	519	133	164	4		
3	G	110	Total	C	N	O	S	0	0
			820	519	133	164	4		

- Molecule 4 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		
4	I	5	61	34	2	25	0	0
4	Q	5	61	34	2	25	0	0
4	Y	5	61	34	2	25	0	0
4	f	5	61	34	2	25	0	0
4	n	5	61	34	2	25	0	0
4	u	5	61	34	2	25	0	0

- 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	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	R	2	28	16	2	10	0	0
5	T	2	28	16	2	10	0	0
5	U	2	28	16	2	10	0	0

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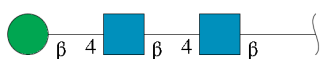
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	V	2	28	16	2	10	0	0
5	W	2	28	16	2	10	0	0
5	Z	2	28	16	2	10	0	0
5	a	2	28	16	2	10	0	0
5	b	2	28	16	2	10	0	0
5	c	2	28	16	2	10	0	0
5	d	2	28	16	2	10	0	0
5	e	2	28	16	2	10	0	0
5	g	2	28	16	2	10	0	0
5	i	2	28	16	2	10	0	0
5	j	2	28	16	2	10	0	0
5	k	2	28	16	2	10	0	0
5	l	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	r	2	28	16	2	10	0	0
5	s	2	28	16	2	10	0	0
5	t	2	28	16	2	10	0	0
5	v	2	28	16	2	10	0	0
5	x	2	28	16	2	10	0	0

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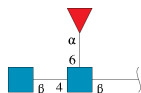
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	y	2	28	16	2	10	0	0
5	z	2	28	16	2	10	0	0
5	0	2	28	16	2	10	0	0

- Molecule 6 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		
6	S	3	39	22	2	15	0	0
6	h	3	39	22	2	15	0	0
6	w	3	39	22	2	15	0	0

- Molecule 7 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	X	3	38	22	2	14	0	0
7	m	3	38	22	2	14	0	0
7	1	3	38	22	2	14	0	0

- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).





Mol	Chain	Residues	Atoms			AltConf	
			Total	C	N		O
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	A	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0
8	B	1	98	56	7	35	0

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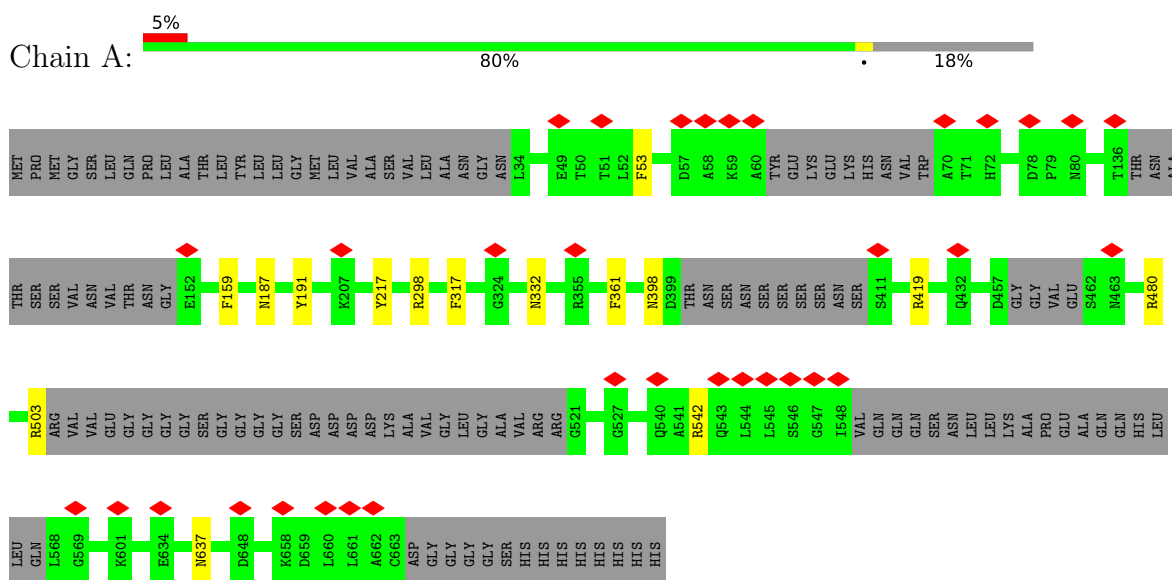
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0
8	E	1	Total 98	56	7	35	0

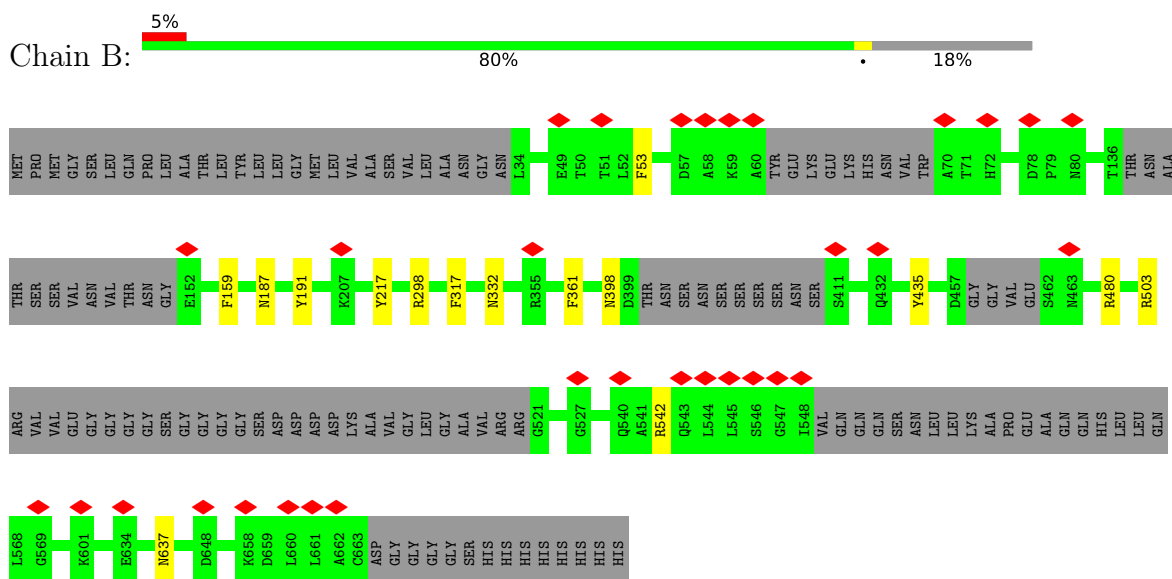
### 3 Residue-property plots [i](#)

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

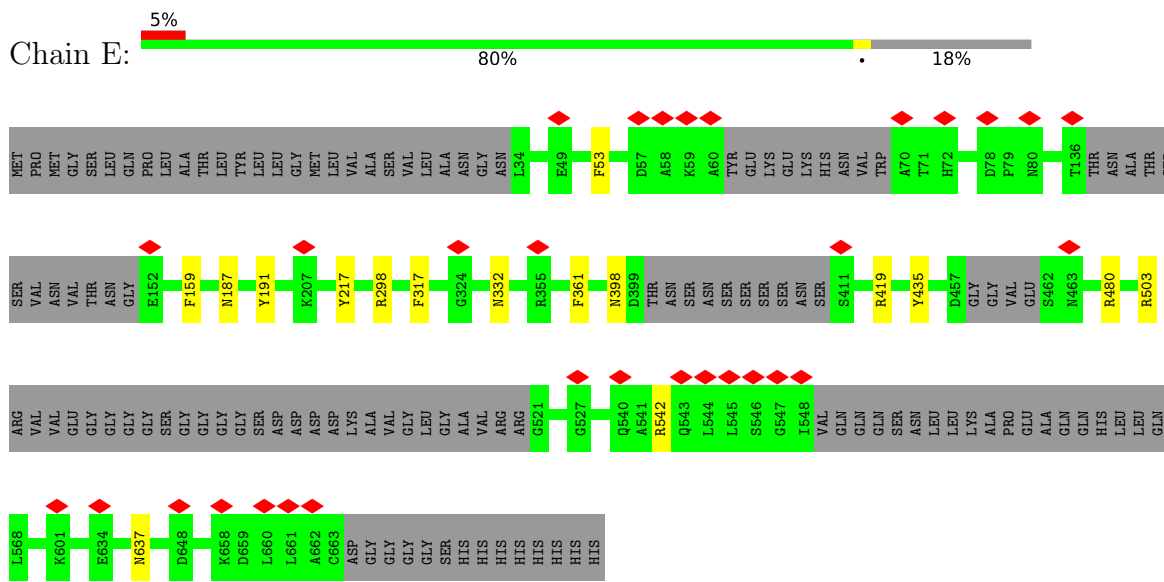
- Molecule 1: HIV Env 16055 NFL TD 2CC+



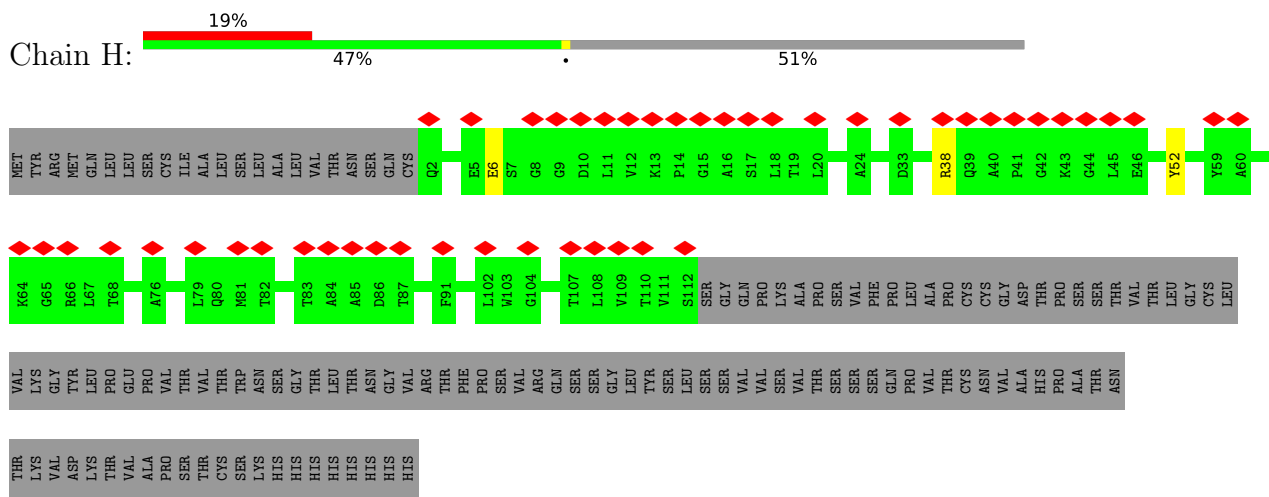
- Molecule 1: HIV Env 16055 NFL TD 2CC+



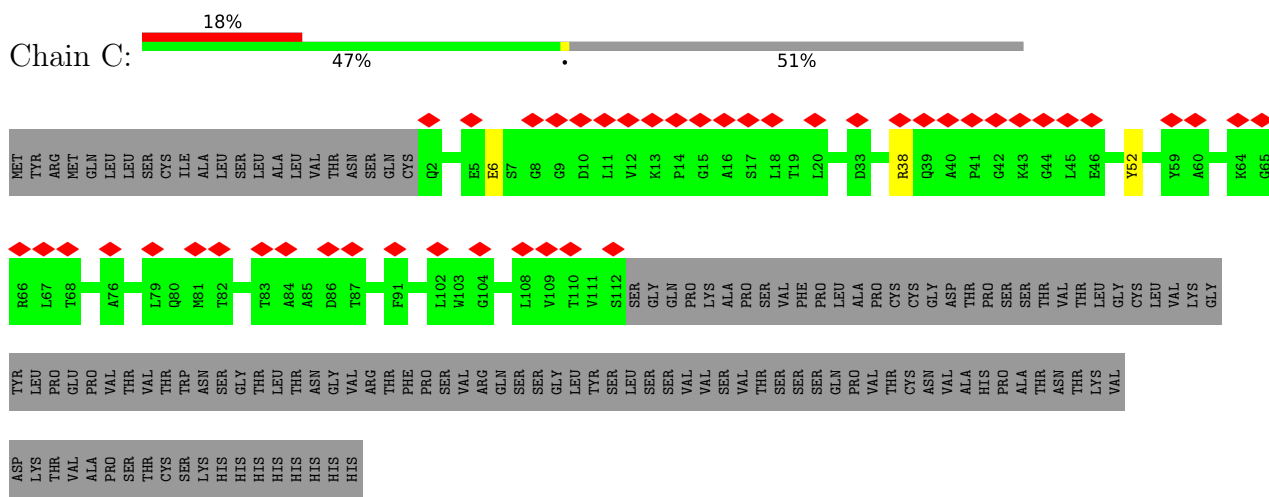
- Molecule 1: HIV Env 16055 NFL TD 2CC+



• Molecule 2: Rabbit antibody 1C2 heavy chain fragment antigen binding

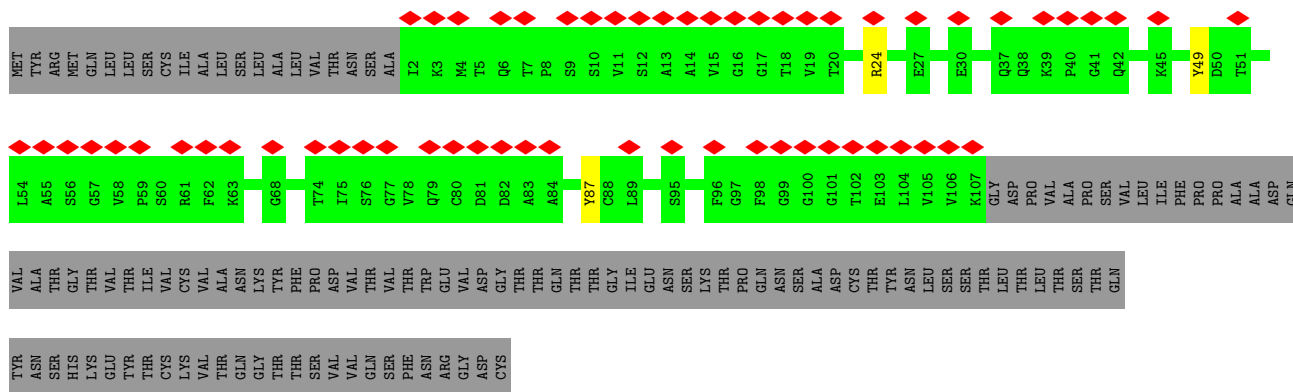


• Molecule 2: Rabbit antibody 1C2 heavy chain fragment antigen binding



• Molecule 2: Rabbit antibody 1C2 heavy chain fragment antigen binding





- Molecule 4: 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



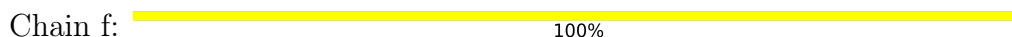
- Molecule 4: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: 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 4: 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 4: 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

se-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: 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 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



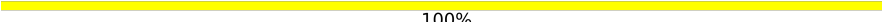
- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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

Chain O:  100%

  
NAG1  
NAG2

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

Chain P:  50%  
 100%

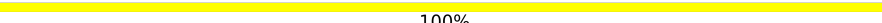
  
NAG1  
NAG2

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

Chain R:  100%

  
NAG1  
NAG2

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

Chain T:  100%

  
NAG1  
NAG2

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

Chain U:  50%  
 50%  
 50%

  
NAG1  
NAG2

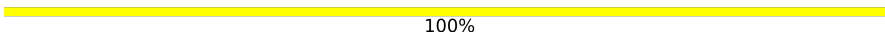
- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:  50%  
 50%  
 50%

  
NAG1  
NAG2

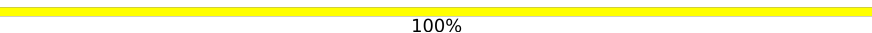


- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:  100%

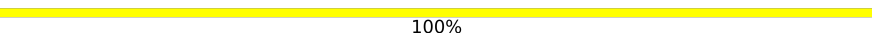
MAG1  
MAG2

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

Chain Z:  100%

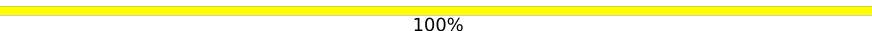
MAG1  
MAG2

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

Chain a:  100%

MAG1  
MAG2

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

Chain b:  100%

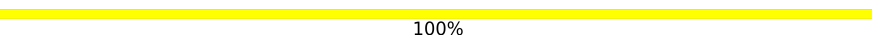
MAG1  
MAG2

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

Chain c:  50% 100%


♦  
MAG1  
MAG2

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

Chain d:  100%


MAG1  
MAG2

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

Chain e:  100%

MAG1  
MAG2

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

Chain g:  100%

MAG1  
MAG2

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

Chain i:  100%

MAG1  
MAG2

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

Chain j:  50%

MAG1  
MAG2

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

Chain k:  50%

MAG1  
MAG2

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

Chain l:  100%

MAG1  
MAG2

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

Chain o:  100%

MAG1  
MAG2

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

Chain p: 100%

MAG1  
MAG2

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

Chain q: 100%

MAG1  
MAG2

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

Chain r: 50%  
100%MAG1  
MAG2

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

Chain s: 100%

MAG1  
MAG2

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

Chain t: 100%


MAG1  
MAG2

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

Chain v: 100%

MAG1  
MAG2

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

Chain x:  100%

MAG1  
MAG2

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

Chain y:  50% 50%


MAG1  
MAG2

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

Chain z:  50% 50%

MAG1  
MAG2

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

Chain 0:  100%

MAG1  
MAG2

- Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain S:  33% 100%

MAG1  
MAG2  
BMA3

- Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain h:  33% 100%

MAG1  
MAG2  
BMA3

- Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 7: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	23702	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 ( $e^-/\text{\AA}^2$ )	48	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	36000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.266	Depositor
Minimum map value	-0.156	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	331.19998, 331.19998, 331.19998	wwPDB
Map dimensions	288, 288, 288	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: MAN, FUC, BMA, NAG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	1.12	6/4492 (0.1%)	0.90	7/6094 (0.1%)
1	B	1.12	7/4492 (0.2%)	0.90	6/6094 (0.1%)
1	E	1.12	7/4492 (0.2%)	0.90	7/6094 (0.1%)
2	C	1.02	1/967 (0.1%)	0.99	2/1317 (0.2%)
2	F	1.02	1/967 (0.1%)	0.99	1/1317 (0.1%)
2	H	1.02	1/967 (0.1%)	1.00	2/1317 (0.2%)
3	D	1.11	2/837 (0.2%)	1.10	1/1135 (0.1%)
3	G	1.11	2/837 (0.2%)	1.10	1/1135 (0.1%)
3	L	1.11	2/837 (0.2%)	1.10	1/1135 (0.1%)
All	All	1.11	29/18888 (0.2%)	0.94	28/25638 (0.1%)

The worst 5 of 29 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	159	PHE	CB-CG	-8.50	1.36	1.51
1	E	159	PHE	CB-CG	-8.45	1.36	1.51
1	A	159	PHE	CB-CG	-8.45	1.36	1.51
3	D	49	TYR	CB-CG	-7.68	1.40	1.51
3	G	49	TYR	CB-CG	-7.67	1.40	1.51

The worst 5 of 28 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	298	ARG	NE-CZ-NH2	-8.58	116.01	120.30
1	B	298	ARG	NE-CZ-NH2	-8.53	116.04	120.30
1	A	298	ARG	NE-CZ-NH2	-8.48	116.06	120.30
1	B	542	ARG	NE-CZ-NH2	-7.97	116.32	120.30
1	A	542	ARG	NE-CZ-NH2	-7.94	116.33	120.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 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	543/680 (80%)	533 (98%)	10 (2%)	0	100	100
1	B	543/680 (80%)	533 (98%)	10 (2%)	0	100	100
1	E	543/680 (80%)	533 (98%)	10 (2%)	0	100	100
2	C	124/259 (48%)	120 (97%)	4 (3%)	0	100	100
2	F	124/259 (48%)	120 (97%)	4 (3%)	0	100	100
2	H	124/259 (48%)	120 (97%)	4 (3%)	0	100	100
3	D	108/235 (46%)	106 (98%)	2 (2%)	0	100	100
3	G	108/235 (46%)	106 (98%)	2 (2%)	0	100	100
3	L	108/235 (46%)	106 (98%)	2 (2%)	0	100	100
All	All	2325/3522 (66%)	2277 (98%)	48 (2%)	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	494/589 (84%)	490 (99%)	4 (1%)	81	88
1	B	494/589 (84%)	490 (99%)	4 (1%)	81	88
1	E	494/589 (84%)	490 (99%)	4 (1%)	81	88
2	C	97/216 (45%)	97 (100%)	0	100	100
2	F	97/216 (45%)	97 (100%)	0	100	100
2	H	97/216 (45%)	97 (100%)	0	100	100
3	D	89/199 (45%)	89 (100%)	0	100	100
3	G	89/199 (45%)	89 (100%)	0	100	100
3	L	89/199 (45%)	89 (100%)	0	100	100
All	All	2040/3012 (68%)	2028 (99%)	12 (1%)	86	91

5 of 12 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	637	ASN
1	E	187	ASN
1	E	637	ASN
1	E	332	ASN
1	A	637	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	540	GLN
1	B	540	GLN
1	E	540	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates i

114 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z  > 2$	Counts	RMSZ	# $ Z  > 2$
5	NAG	0	1	1,5	14,14,15	0.73	0	17,19,21	1.07	1 (5%)
5	NAG	0	2	5	14,14,15	0.81	0	17,19,21	0.92	1 (5%)
7	NAG	1	1	1,7	14,14,15	0.75	0	17,19,21	0.93	0
7	NAG	1	2	7	14,14,15	0.86	0	17,19,21	0.88	1 (5%)
7	FUC	1	3	7	10,10,11	0.63	0	14,14,16	1.01	1 (7%)
4	NAG	I	1	4,1	14,14,15	0.81	0	17,19,21	1.16	2 (11%)
4	NAG	I	2	4	14,14,15	0.81	0	17,19,21	1.19	1 (5%)
4	BMA	I	3	4	11,11,12	1.88	2 (18%)	15,15,17	0.94	0
4	MAN	I	4	4	11,11,12	1.77	2 (18%)	15,15,17	1.30	2 (13%)
4	MAN	I	5	4	11,11,12	1.81	2 (18%)	15,15,17	1.10	2 (13%)
5	NAG	J	1	1,5	14,14,15	0.67	0	17,19,21	1.36	3 (17%)
5	NAG	J	2	5	14,14,15	0.74	0	17,19,21	1.34	2 (11%)
5	NAG	K	1	1,5	14,14,15	0.83	1 (7%)	17,19,21	1.06	2 (11%)
5	NAG	K	2	5	14,14,15	0.82	0	17,19,21	0.92	1 (5%)
5	NAG	M	1	1,5	14,14,15	0.83	1 (7%)	17,19,21	1.10	1 (5%)
5	NAG	M	2	5	14,14,15	0.85	0	17,19,21	0.95	1 (5%)
5	NAG	N	1	1,5	14,14,15	0.76	0	17,19,21	1.60	5 (29%)
5	NAG	N	2	5	14,14,15	0.79	0	17,19,21	0.96	1 (5%)
5	NAG	O	1	1,5	14,14,15	0.77	1 (7%)	17,19,21	1.06	1 (5%)
5	NAG	O	2	5	14,14,15	0.80	0	17,19,21	0.92	1 (5%)
5	NAG	P	1	1,5	14,14,15	0.68	0	17,19,21	1.03	1 (5%)
5	NAG	P	2	5	14,14,15	0.77	0	17,19,21	0.89	1 (5%)
4	NAG	Q	1	4,1	14,14,15	0.87	1 (7%)	17,19,21	1.06	1 (5%)
4	NAG	Q	2	4	14,14,15	0.80	1 (7%)	17,19,21	1.15	1 (5%)
4	BMA	Q	3	4	11,11,12	1.82	2 (18%)	15,15,17	1.08	1 (6%)
4	MAN	Q	4	4	11,11,12	1.75	2 (18%)	15,15,17	1.10	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	MAN	Q	5	4	11,11,12	1.85	3 (27%)	15,15,17	1.14	3 (20%)
5	NAG	R	1	1,5	14,14,15	0.86	0	17,19,21	1.33	3 (17%)
5	NAG	R	2	5	14,14,15	0.78	0	17,19,21	1.03	1 (5%)
6	NAG	S	1	6,1	14,14,15	0.87	1 (7%)	17,19,21	1.15	0
6	NAG	S	2	6	14,14,15	0.87	1 (7%)	17,19,21	0.98	0
6	BMA	S	3	6	11,11,12	1.81	2 (18%)	15,15,17	1.02	1 (6%)
5	NAG	T	1	1,5	14,14,15	1.14	2 (14%)	17,19,21	1.43	3 (17%)
5	NAG	T	2	5	14,14,15	0.82	0	17,19,21	1.23	2 (11%)
5	NAG	U	1	1,5	14,14,15	0.76	0	17,19,21	0.77	0
5	NAG	U	2	5	14,14,15	0.75	0	17,19,21	0.90	1 (5%)
5	NAG	V	1	1,5	14,14,15	0.64	0	17,19,21	0.91	0
5	NAG	V	2	5	14,14,15	0.80	0	17,19,21	0.84	1 (5%)
5	NAG	W	1	1,5	14,14,15	0.72	0	17,19,21	1.07	1 (5%)
5	NAG	W	2	5	14,14,15	0.81	0	17,19,21	0.93	1 (5%)
7	NAG	X	1	1,7	14,14,15	0.76	0	17,19,21	0.93	0
7	NAG	X	2	7	14,14,15	0.86	0	17,19,21	0.88	1 (5%)
7	FUC	X	3	7	10,10,11	0.65	0	14,14,16	1.01	1 (7%)
4	NAG	Y	1	4,1	14,14,15	0.80	0	17,19,21	1.16	2 (11%)
4	NAG	Y	2	4	14,14,15	0.81	0	17,19,21	1.19	1 (5%)
4	BMA	Y	3	4	11,11,12	1.87	2 (18%)	15,15,17	0.93	0
4	MAN	Y	4	4	11,11,12	1.76	2 (18%)	15,15,17	1.30	2 (13%)
4	MAN	Y	5	4	11,11,12	1.81	2 (18%)	15,15,17	1.11	2 (13%)
5	NAG	Z	1	1,5	14,14,15	0.66	0	17,19,21	1.36	3 (17%)
5	NAG	Z	2	5	14,14,15	0.74	0	17,19,21	1.33	2 (11%)
5	NAG	a	1	1,5	14,14,15	0.83	1 (7%)	17,19,21	1.07	2 (11%)
5	NAG	a	2	5	14,14,15	0.83	0	17,19,21	0.91	1 (5%)
5	NAG	b	1	1,5	14,14,15	0.82	1 (7%)	17,19,21	1.10	1 (5%)
5	NAG	b	2	5	14,14,15	0.84	0	17,19,21	0.95	1 (5%)
5	NAG	c	1	1,5	14,14,15	0.76	0	17,19,21	1.60	5 (29%)
5	NAG	c	2	5	14,14,15	0.78	0	17,19,21	0.96	1 (5%)
5	NAG	d	1	1,5	14,14,15	0.78	1 (7%)	17,19,21	1.05	1 (5%)
5	NAG	d	2	5	14,14,15	0.79	0	17,19,21	0.92	1 (5%)
5	NAG	e	1	1,5	14,14,15	0.67	0	17,19,21	1.03	1 (5%)
5	NAG	e	2	5	14,14,15	0.76	0	17,19,21	0.90	1 (5%)
4	NAG	f	1	4,1	14,14,15	0.87	1 (7%)	17,19,21	1.06	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	NAG	f	2	4	14,14,15	0.80	1 (7%)	17,19,21	1.15	1 (5%)
4	BMA	f	3	4	11,11,12	1.83	2 (18%)	15,15,17	1.07	1 (6%)
4	MAN	f	4	4	11,11,12	1.76	2 (18%)	15,15,17	1.10	2 (13%)
4	MAN	f	5	4	11,11,12	1.85	3 (27%)	15,15,17	1.14	3 (20%)
5	NAG	g	1	1,5	14,14,15	0.87	0	17,19,21	1.33	3 (17%)
5	NAG	g	2	5	14,14,15	0.79	0	17,19,21	1.04	1 (5%)
6	NAG	h	1	6,1	14,14,15	0.88	1 (7%)	17,19,21	1.15	0
6	NAG	h	2	6	14,14,15	0.87	1 (7%)	17,19,21	0.98	0
6	BMA	h	3	6	11,11,12	1.81	2 (18%)	15,15,17	1.02	1 (6%)
5	NAG	i	1	1,5	14,14,15	1.14	2 (14%)	17,19,21	1.43	3 (17%)
5	NAG	i	2	5	14,14,15	0.82	0	17,19,21	1.24	2 (11%)
5	NAG	j	1	1,5	14,14,15	0.75	0	17,19,21	0.77	0
5	NAG	j	2	5	14,14,15	0.76	0	17,19,21	0.91	1 (5%)
5	NAG	k	1	1,5	14,14,15	0.63	0	17,19,21	0.91	0
5	NAG	k	2	5	14,14,15	0.80	0	17,19,21	0.84	1 (5%)
5	NAG	l	1	1,5	14,14,15	0.73	0	17,19,21	1.07	1 (5%)
5	NAG	l	2	5	14,14,15	0.81	0	17,19,21	0.92	1 (5%)
7	NAG	m	1	1,7	14,14,15	0.75	0	17,19,21	0.93	0
7	NAG	m	2	7	14,14,15	0.85	0	17,19,21	0.88	1 (5%)
7	FUC	m	3	7	10,10,11	0.63	0	14,14,16	1.01	1 (7%)
4	NAG	n	1	4,1	14,14,15	0.80	0	17,19,21	1.16	2 (11%)
4	NAG	n	2	4	14,14,15	0.80	0	17,19,21	1.19	1 (5%)
4	BMA	n	3	4	11,11,12	1.88	2 (18%)	15,15,17	0.94	0
4	MAN	n	4	4	11,11,12	1.77	2 (18%)	15,15,17	1.30	2 (13%)
4	MAN	n	5	4	11,11,12	1.81	2 (18%)	15,15,17	1.10	2 (13%)
5	NAG	o	1	1,5	14,14,15	0.67	0	17,19,21	1.36	3 (17%)
5	NAG	o	2	5	14,14,15	0.74	0	17,19,21	1.33	2 (11%)
5	NAG	p	1	1,5	14,14,15	0.83	1 (7%)	17,19,21	1.06	2 (11%)
5	NAG	p	2	5	14,14,15	0.84	0	17,19,21	0.92	1 (5%)
5	NAG	q	1	1,5	14,14,15	0.82	1 (7%)	17,19,21	1.10	1 (5%)
5	NAG	q	2	5	14,14,15	0.84	0	17,19,21	0.96	1 (5%)
5	NAG	r	1	1,5	14,14,15	0.78	0	17,19,21	1.61	5 (29%)
5	NAG	r	2	5	14,14,15	0.79	0	17,19,21	0.96	1 (5%)
5	NAG	s	1	1,5	14,14,15	0.78	1 (7%)	17,19,21	1.05	1 (5%)
5	NAG	s	2	5	14,14,15	0.79	0	17,19,21	0.92	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	NAG	t	1	1,5	14,14,15	0.68	0	17,19,21	1.04	1 (5%)
5	NAG	t	2	5	14,14,15	0.77	0	17,19,21	0.89	1 (5%)
4	NAG	u	1	4,1	14,14,15	0.86	1 (7%)	17,19,21	1.06	1 (5%)
4	NAG	u	2	4	14,14,15	0.80	1 (7%)	17,19,21	1.15	1 (5%)
4	BMA	u	3	4	11,11,12	1.82	2 (18%)	15,15,17	1.08	1 (6%)
4	MAN	u	4	4	11,11,12	1.75	2 (18%)	15,15,17	1.10	2 (13%)
4	MAN	u	5	4	11,11,12	1.84	2 (18%)	15,15,17	1.14	3 (20%)
5	NAG	v	1	1,5	14,14,15	0.86	0	17,19,21	1.33	3 (17%)
5	NAG	v	2	5	14,14,15	0.77	0	17,19,21	1.04	1 (5%)
6	NAG	w	1	6,1	14,14,15	0.87	1 (7%)	17,19,21	1.14	0
6	NAG	w	2	6	14,14,15	0.87	1 (7%)	17,19,21	0.98	0
6	BMA	w	3	6	11,11,12	1.81	2 (18%)	15,15,17	1.01	1 (6%)
5	NAG	x	1	1,5	14,14,15	1.14	2 (14%)	17,19,21	1.43	3 (17%)
5	NAG	x	2	5	14,14,15	0.83	0	17,19,21	1.23	2 (11%)
5	NAG	y	1	1,5	14,14,15	0.76	0	17,19,21	0.77	0
5	NAG	y	2	5	14,14,15	0.75	0	17,19,21	0.90	1 (5%)
5	NAG	z	1	1,5	14,14,15	0.63	0	17,19,21	0.91	0
5	NAG	z	2	5	14,14,15	0.79	0	17,19,21	0.84	1 (5%)

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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	0	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	0	2	5	-	1/6/23/26	0/1/1/1
7	NAG	1	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	1	2	7	-	1/6/23/26	0/1/1/1
7	FUC	1	3	7	-	-	0/1/1/1
4	NAG	I	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	I	2	4	-	0/6/23/26	0/1/1/1
4	BMA	I	3	4	-	0/2/19/22	0/1/1/1
4	MAN	I	4	4	-	1/2/19/22	0/1/1/1
4	MAN	I	5	4	-	1/2/19/22	0/1/1/1
5	NAG	J	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	J	2	5	-	3/6/23/26	0/1/1/1
5	NAG	K	1	1,5	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	K	2	5	-	1/6/23/26	0/1/1/1
5	NAG	M	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	M	2	5	-	2/6/23/26	0/1/1/1
5	NAG	N	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	N	2	5	-	2/6/23/26	0/1/1/1
5	NAG	O	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	O	2	5	-	2/6/23/26	0/1/1/1
5	NAG	P	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	P	2	5	-	2/6/23/26	0/1/1/1
4	NAG	Q	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	Q	2	4	-	0/6/23/26	0/1/1/1
4	BMA	Q	3	4	-	0/2/19/22	0/1/1/1
4	MAN	Q	4	4	-	1/2/19/22	0/1/1/1
4	MAN	Q	5	4	-	1/2/19/22	0/1/1/1
5	NAG	R	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	R	2	5	-	2/6/23/26	0/1/1/1
6	NAG	S	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	S	2	6	-	0/6/23/26	0/1/1/1
6	BMA	S	3	6	-	1/2/19/22	0/1/1/1
5	NAG	T	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	T	2	5	-	2/6/23/26	0/1/1/1
5	NAG	U	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	U	2	5	-	2/6/23/26	0/1/1/1
5	NAG	V	1	1,5	-	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	1,5	-	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	1,7	-	2/6/23/26	0/1/1/1
7	NAG	X	2	7	-	1/6/23/26	0/1/1/1
7	FUC	X	3	7	-	-	0/1/1/1
4	NAG	Y	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	Y	2	4	-	0/6/23/26	0/1/1/1
4	BMA	Y	3	4	-	0/2/19/22	0/1/1/1
4	MAN	Y	4	4	-	1/2/19/22	0/1/1/1
4	MAN	Y	5	4	-	1/2/19/22	0/1/1/1
5	NAG	Z	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	Z	2	5	-	3/6/23/26	0/1/1/1
5	NAG	a	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	a	2	5	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	b	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	b	2	5	-	2/6/23/26	0/1/1/1
5	NAG	c	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	c	2	5	-	2/6/23/26	0/1/1/1
5	NAG	d	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	d	2	5	-	2/6/23/26	0/1/1/1
5	NAG	e	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	e	2	5	-	2/6/23/26	0/1/1/1
4	NAG	f	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	f	2	4	-	0/6/23/26	0/1/1/1
4	BMA	f	3	4	-	0/2/19/22	0/1/1/1
4	MAN	f	4	4	-	1/2/19/22	0/1/1/1
4	MAN	f	5	4	-	1/2/19/22	0/1/1/1
5	NAG	g	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	g	2	5	-	2/6/23/26	0/1/1/1
6	NAG	h	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	h	2	6	-	0/6/23/26	0/1/1/1
6	BMA	h	3	6	-	1/2/19/22	0/1/1/1
5	NAG	i	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	i	2	5	-	2/6/23/26	0/1/1/1
5	NAG	j	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	j	2	5	-	2/6/23/26	0/1/1/1
5	NAG	k	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	k	2	5	-	1/6/23/26	0/1/1/1
5	NAG	l	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	l	2	5	-	1/6/23/26	0/1/1/1
7	NAG	m	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	m	2	7	-	1/6/23/26	0/1/1/1
7	FUC	m	3	7	-	-	0/1/1/1
4	NAG	n	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	n	2	4	-	0/6/23/26	0/1/1/1
4	BMA	n	3	4	-	0/2/19/22	0/1/1/1
4	MAN	n	4	4	-	1/2/19/22	0/1/1/1
4	MAN	n	5	4	-	1/2/19/22	0/1/1/1
5	NAG	o	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	o	2	5	-	3/6/23/26	0/1/1/1
5	NAG	p	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	p	2	5	-	1/6/23/26	0/1/1/1
5	NAG	q	1	1,5	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	q	2	5	-	2/6/23/26	0/1/1/1
5	NAG	r	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	r	2	5	-	2/6/23/26	0/1/1/1
5	NAG	s	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	s	2	5	-	2/6/23/26	0/1/1/1
5	NAG	t	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	t	2	5	-	2/6/23/26	0/1/1/1
4	NAG	u	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	u	2	4	-	0/6/23/26	0/1/1/1
4	BMA	u	3	4	-	0/2/19/22	0/1/1/1
4	MAN	u	4	4	-	1/2/19/22	0/1/1/1
4	MAN	u	5	4	-	1/2/19/22	0/1/1/1
5	NAG	v	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	v	2	5	-	2/6/23/26	0/1/1/1
6	NAG	w	1	6,1	-	0/6/23/26	0/1/1/1
6	NAG	w	2	6	-	0/6/23/26	0/1/1/1
6	BMA	w	3	6	-	1/2/19/22	0/1/1/1
5	NAG	x	1	1,5	-	2/6/23/26	0/1/1/1
5	NAG	x	2	5	-	2/6/23/26	0/1/1/1
5	NAG	y	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	y	2	5	-	2/6/23/26	0/1/1/1
5	NAG	z	1	1,5	-	0/6/23/26	0/1/1/1
5	NAG	z	2	5	-	1/6/23/26	0/1/1/1

The worst 5 of 71 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	Q	5	MAN	O2-C2	-4.21	1.34	1.43
4	I	3	BMA	O2-C2	-4.21	1.34	1.43
4	u	5	MAN	O2-C2	-4.21	1.34	1.43
4	f	5	MAN	O2-C2	-4.20	1.34	1.43
4	n	3	BMA	O2-C2	-4.17	1.34	1.43

The worst 5 of 153 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	J	2	NAG	C4-C3-C2	-4.22	104.84	111.02
5	o	2	NAG	C4-C3-C2	-4.20	104.86	111.02
5	Z	2	NAG	C4-C3-C2	-4.20	104.86	111.02
5	r	1	NAG	O5-C5-C6	-4.14	100.71	107.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	N	1	NAG	O5-C5-C6	-4.13	100.73	107.20

There are no chirality outliers.

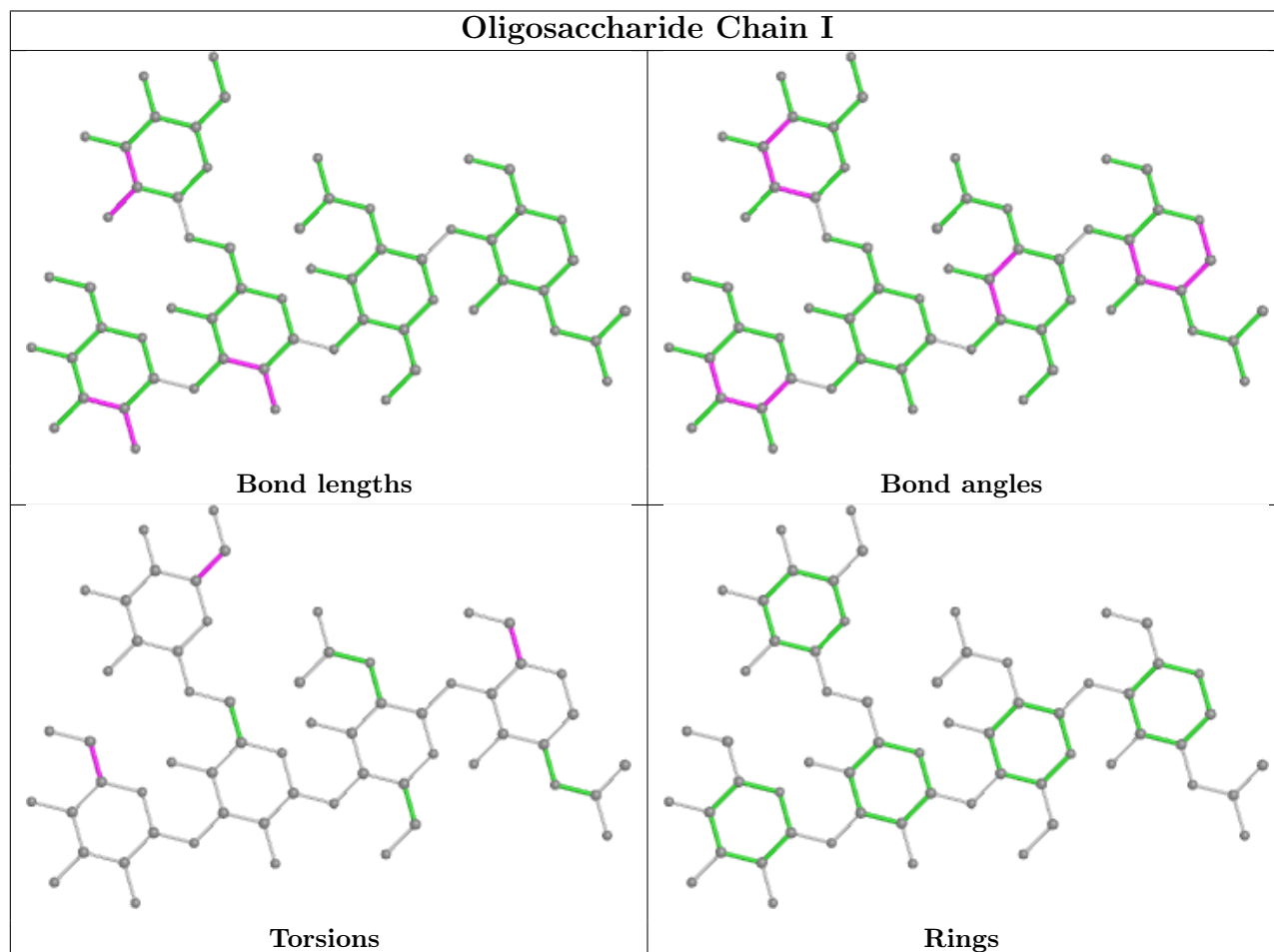
5 of 117 torsion outliers are listed below:

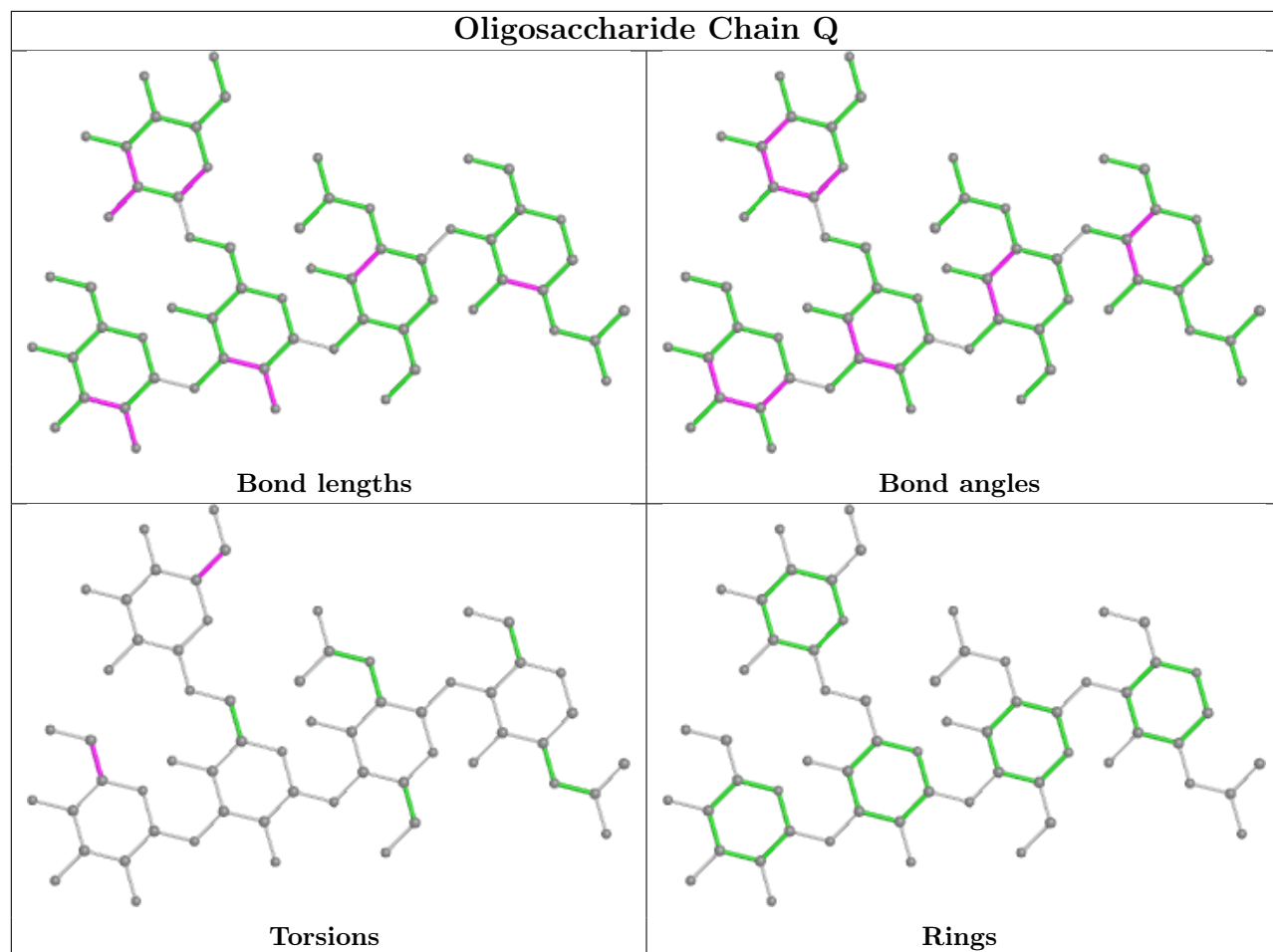
Mol	Chain	Res	Type	Atoms
5	J	1	NAG	O5-C5-C6-O6
5	M	2	NAG	O5-C5-C6-O6
5	T	2	NAG	O5-C5-C6-O6
5	Z	1	NAG	O5-C5-C6-O6
5	b	2	NAG	O5-C5-C6-O6

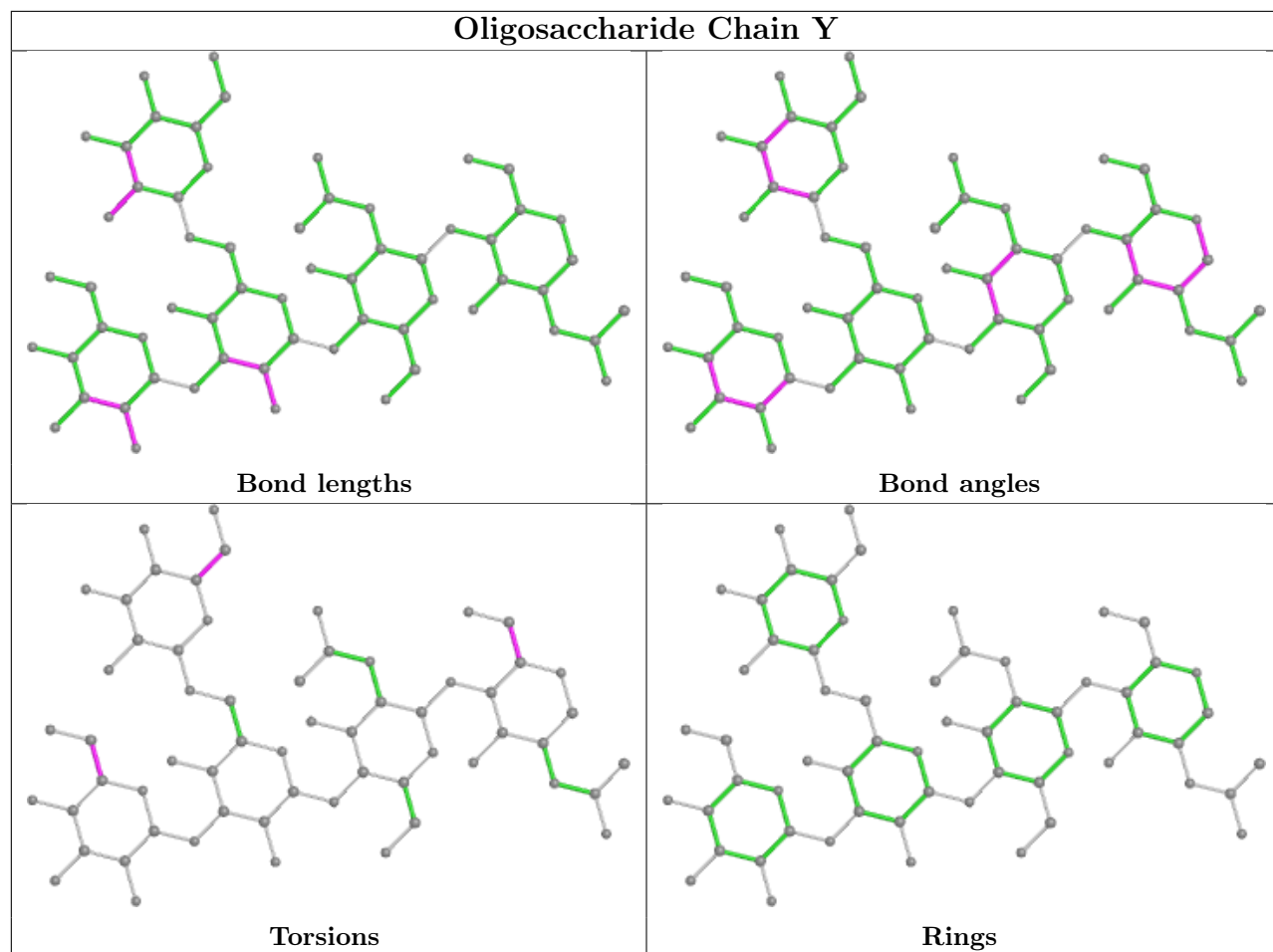
There are no ring outliers.

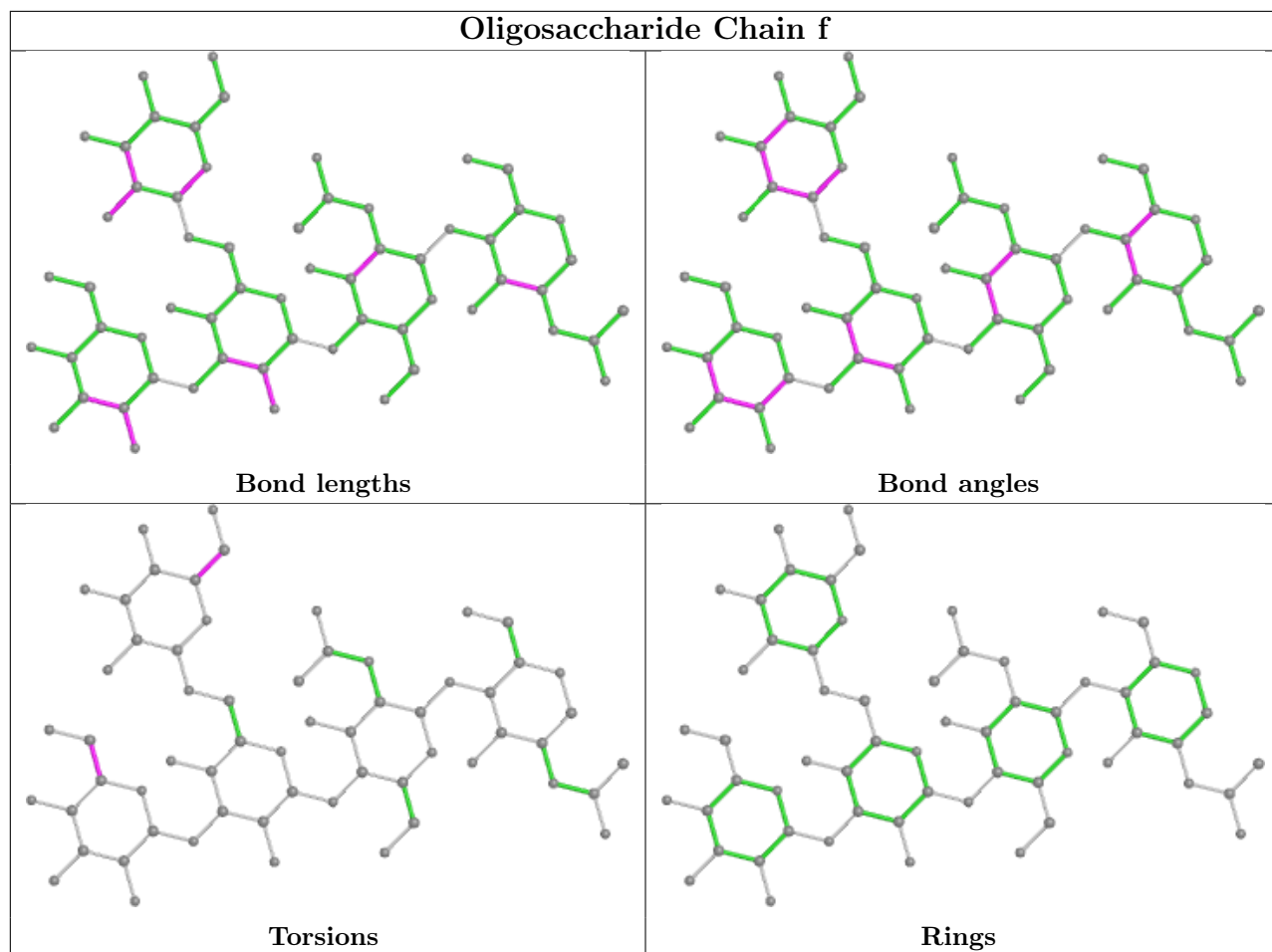
No monomer is involved in short contacts.

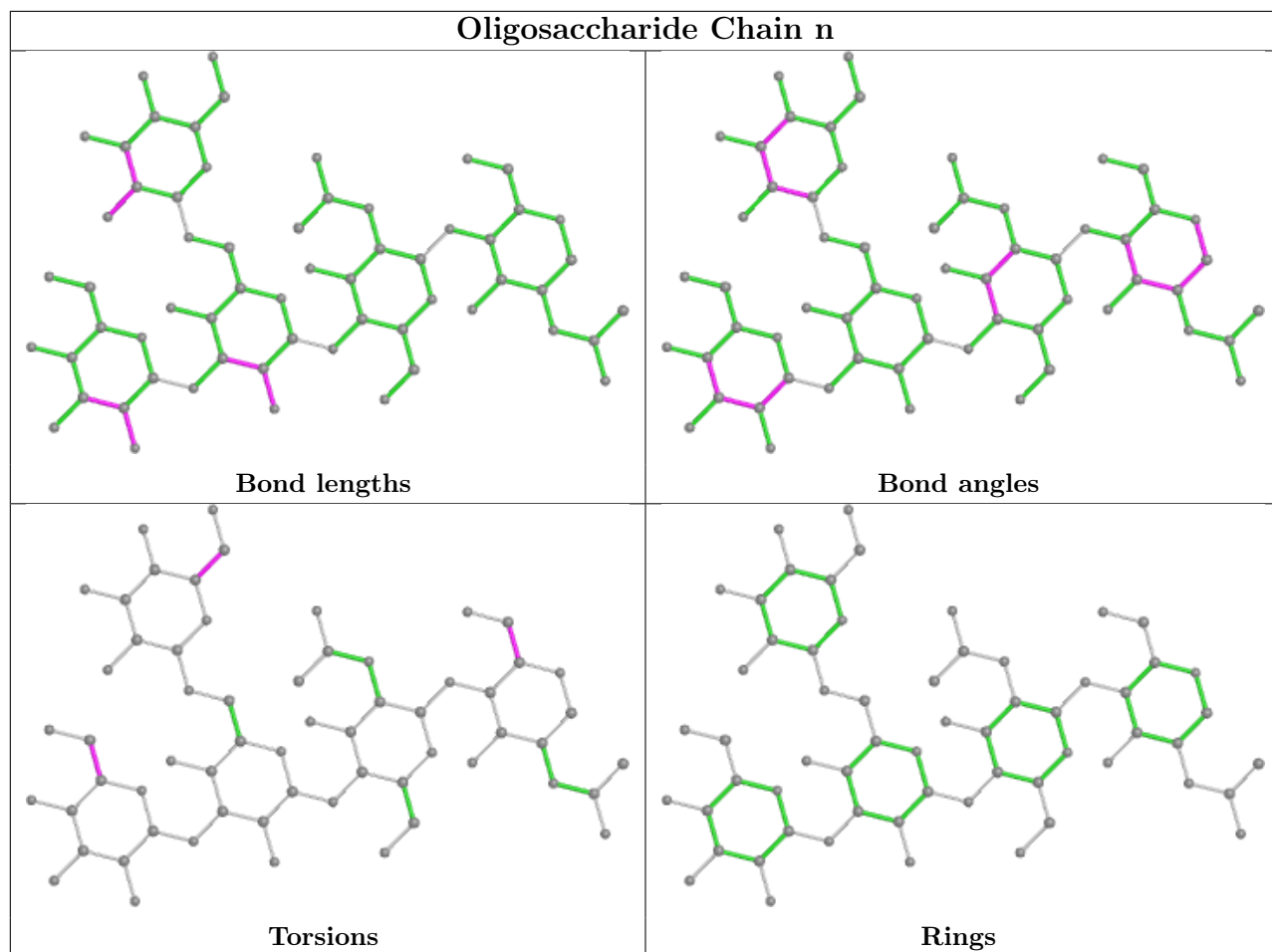
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

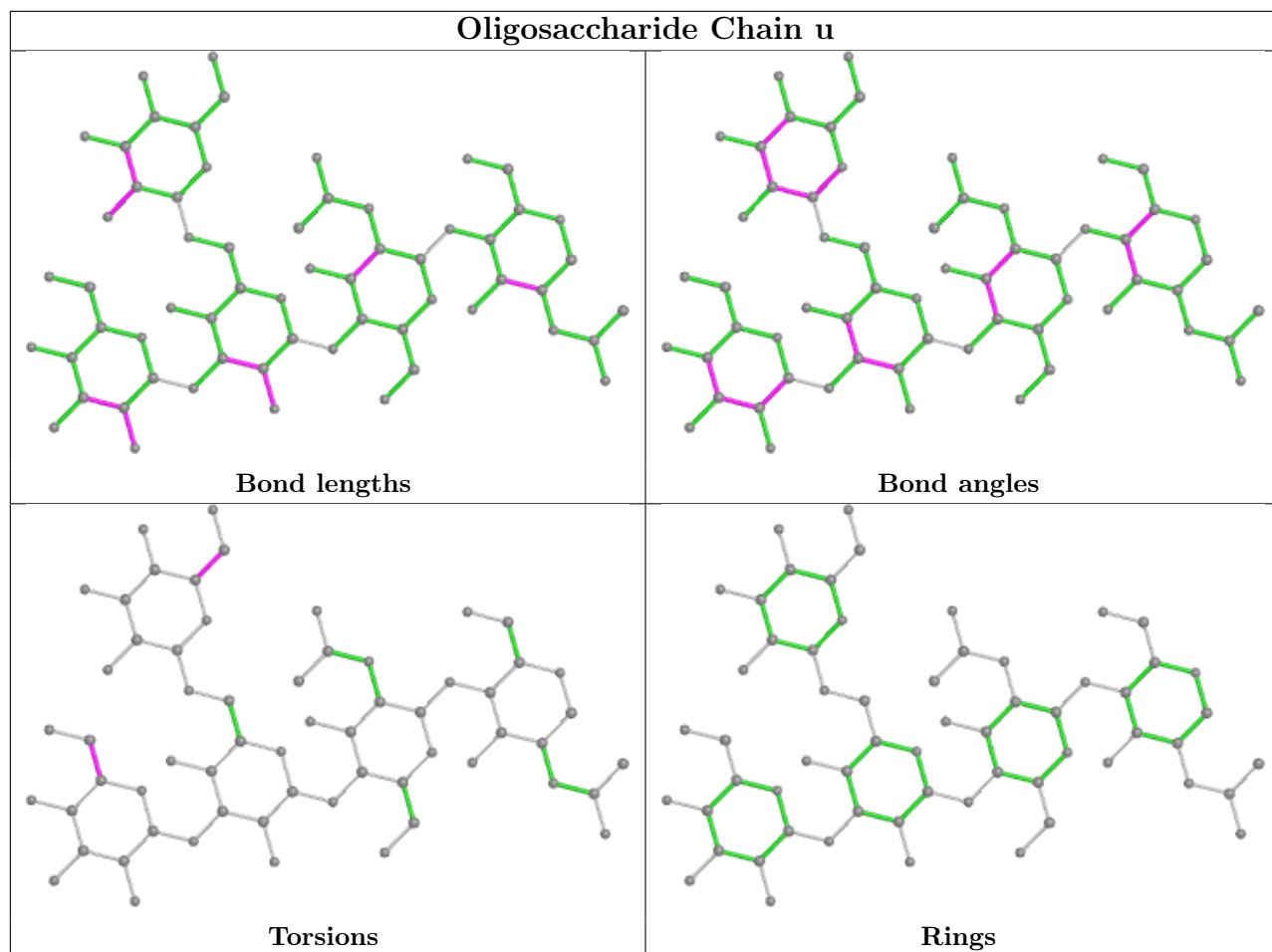


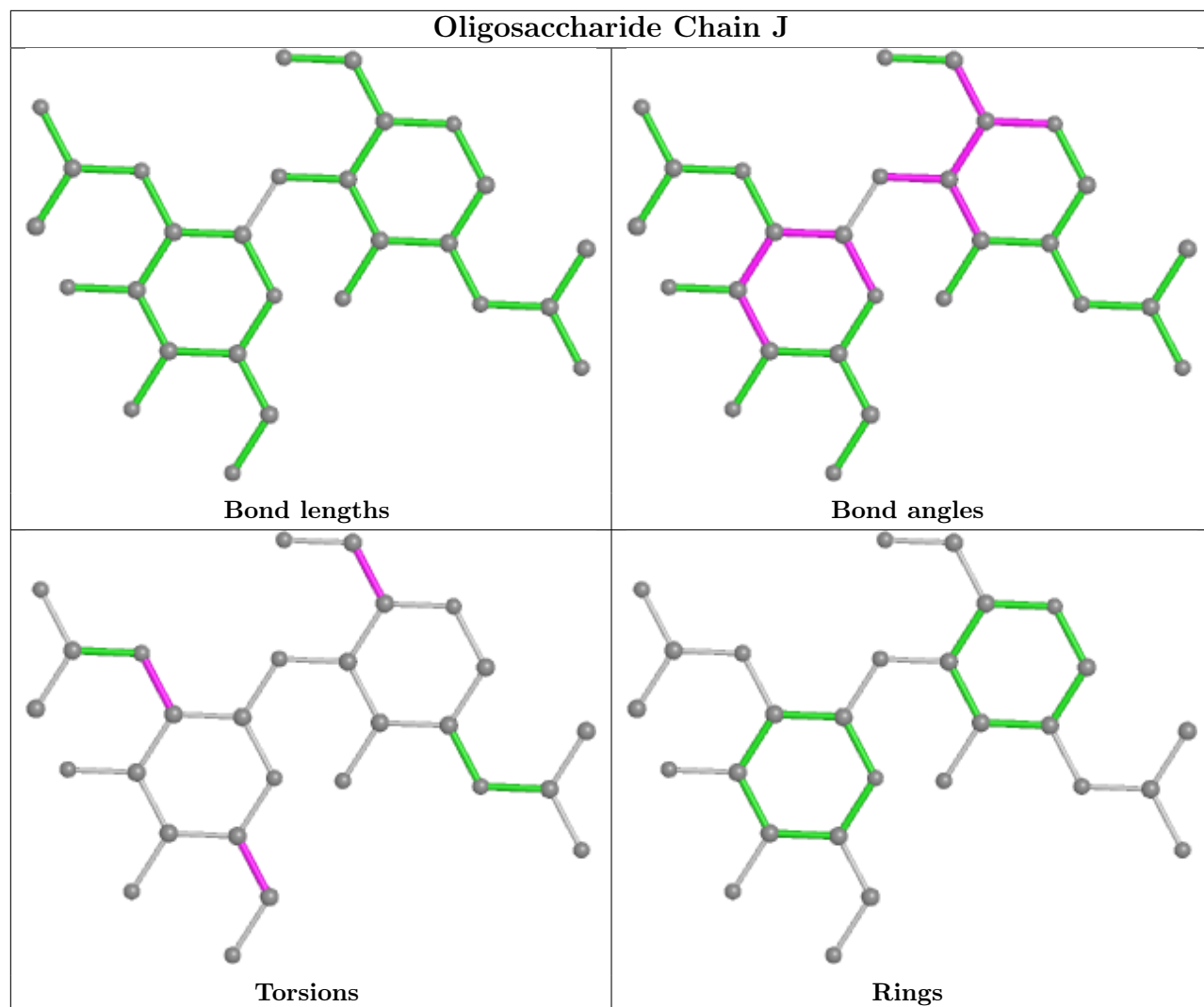


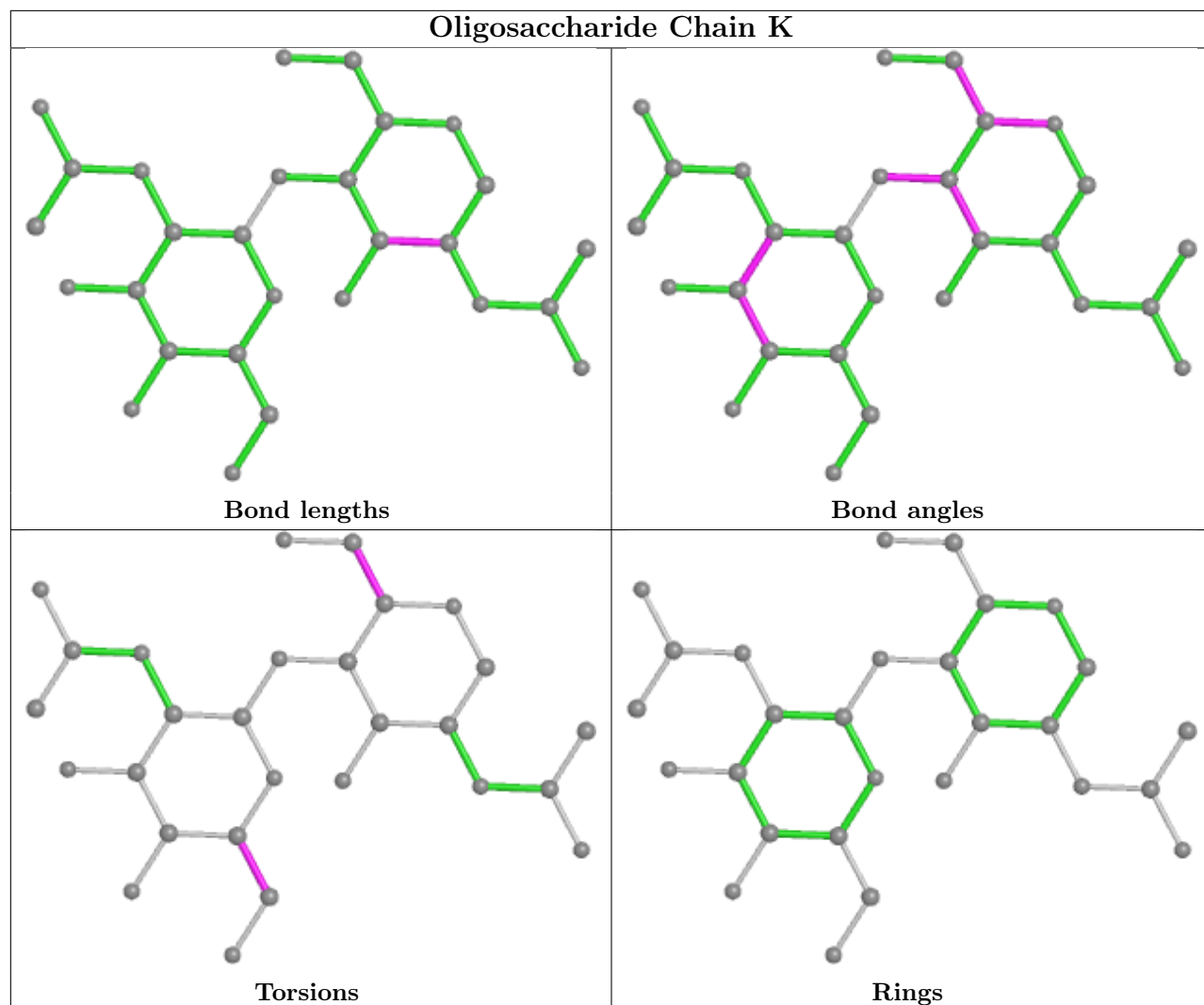




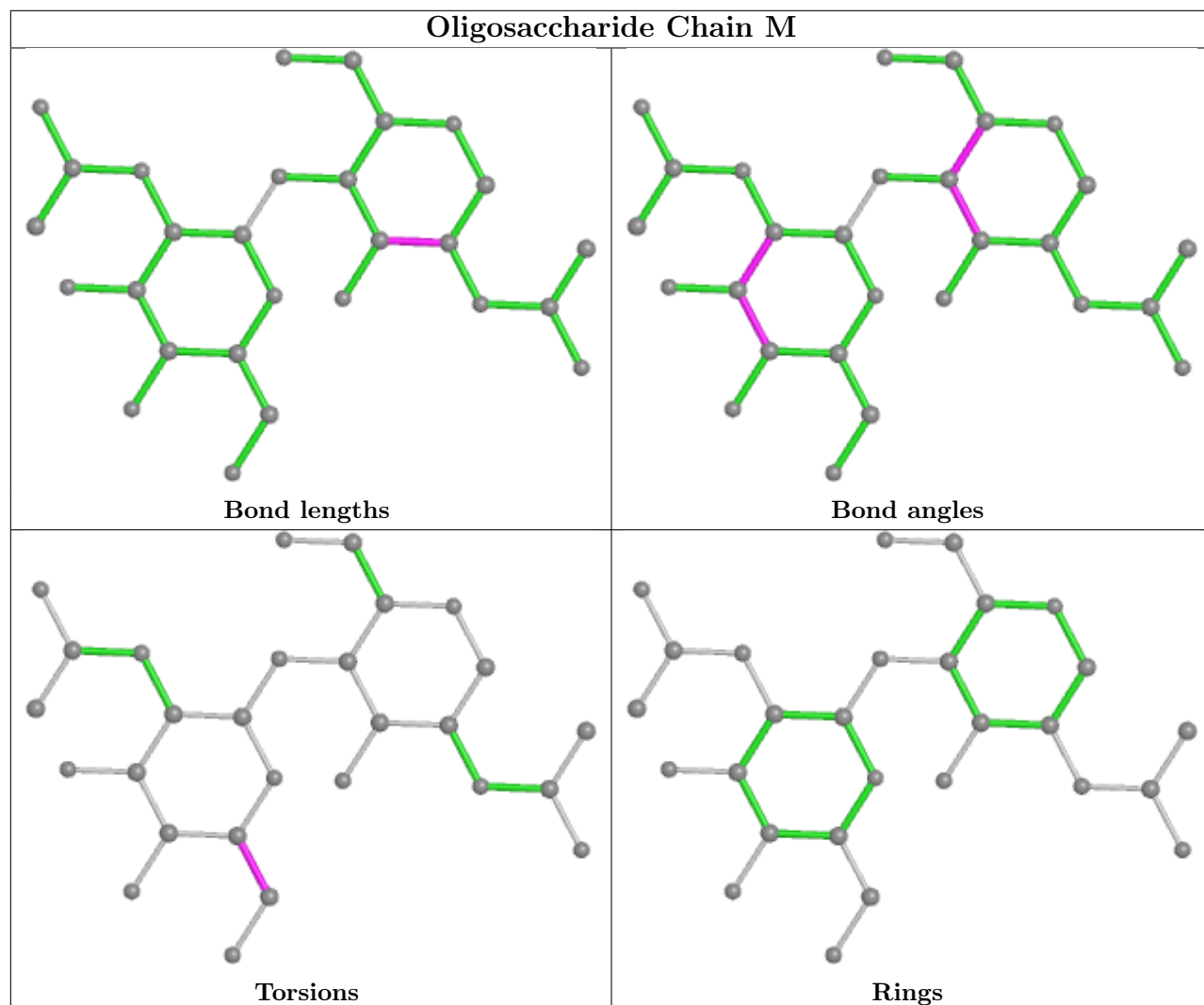


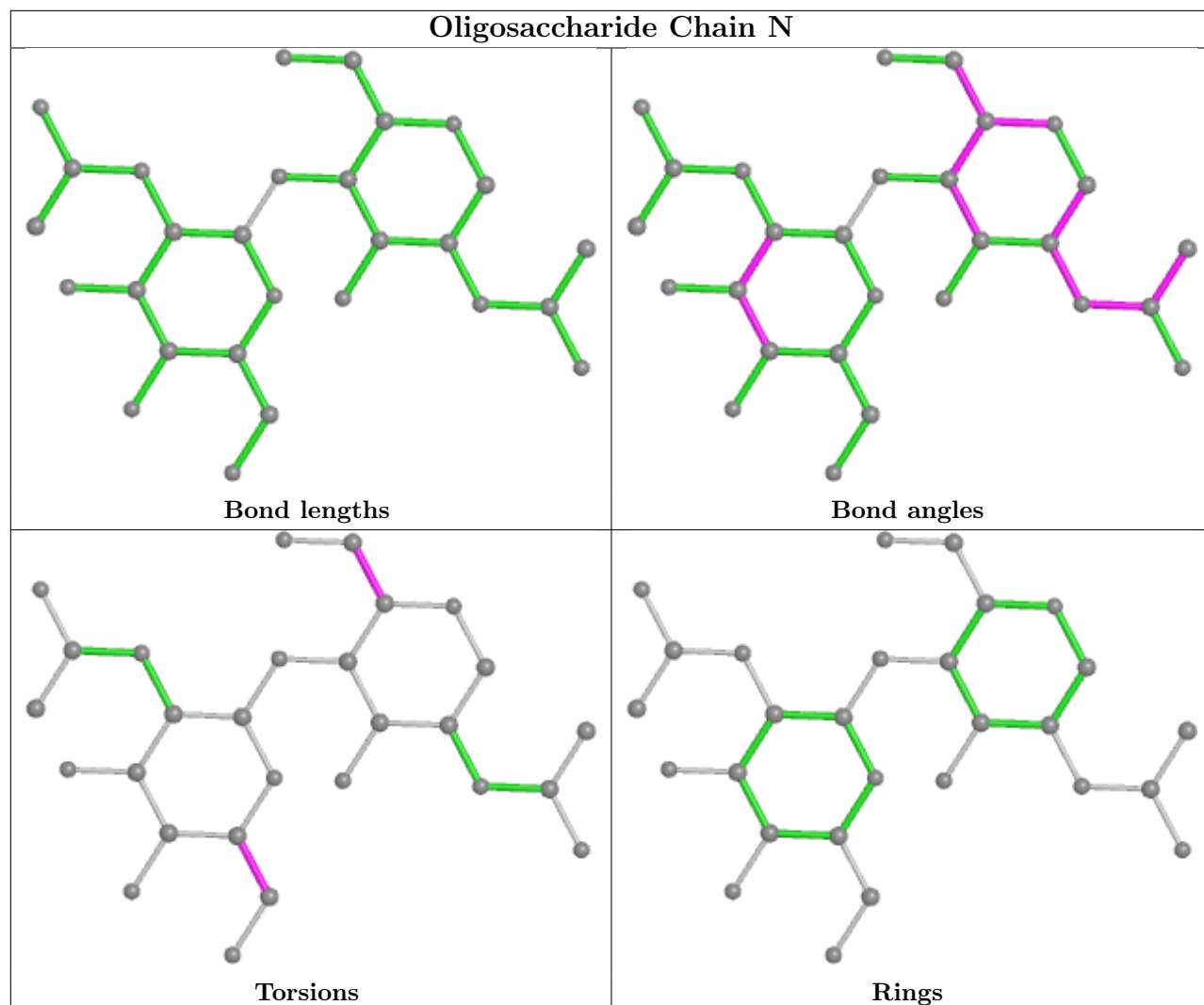


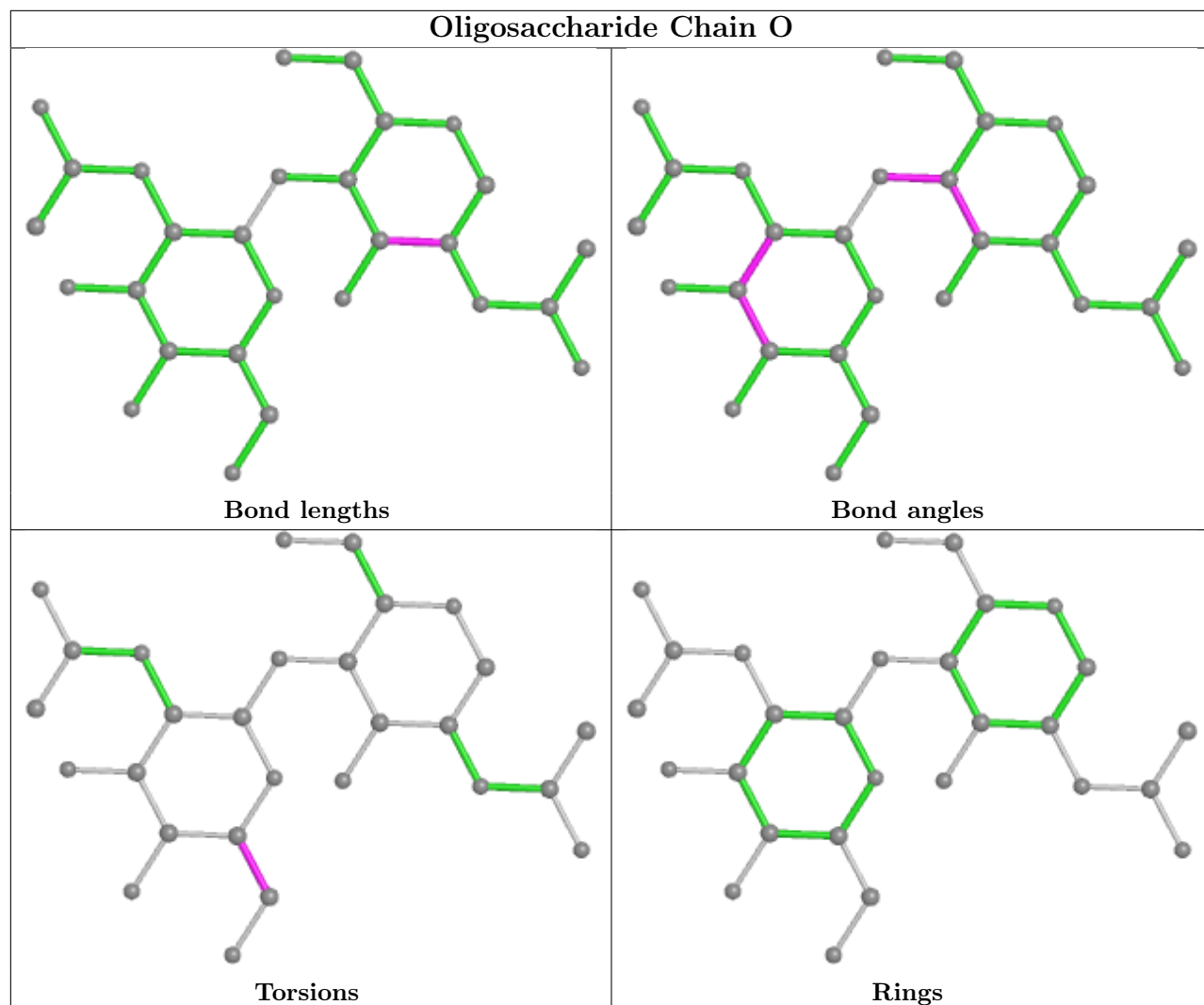


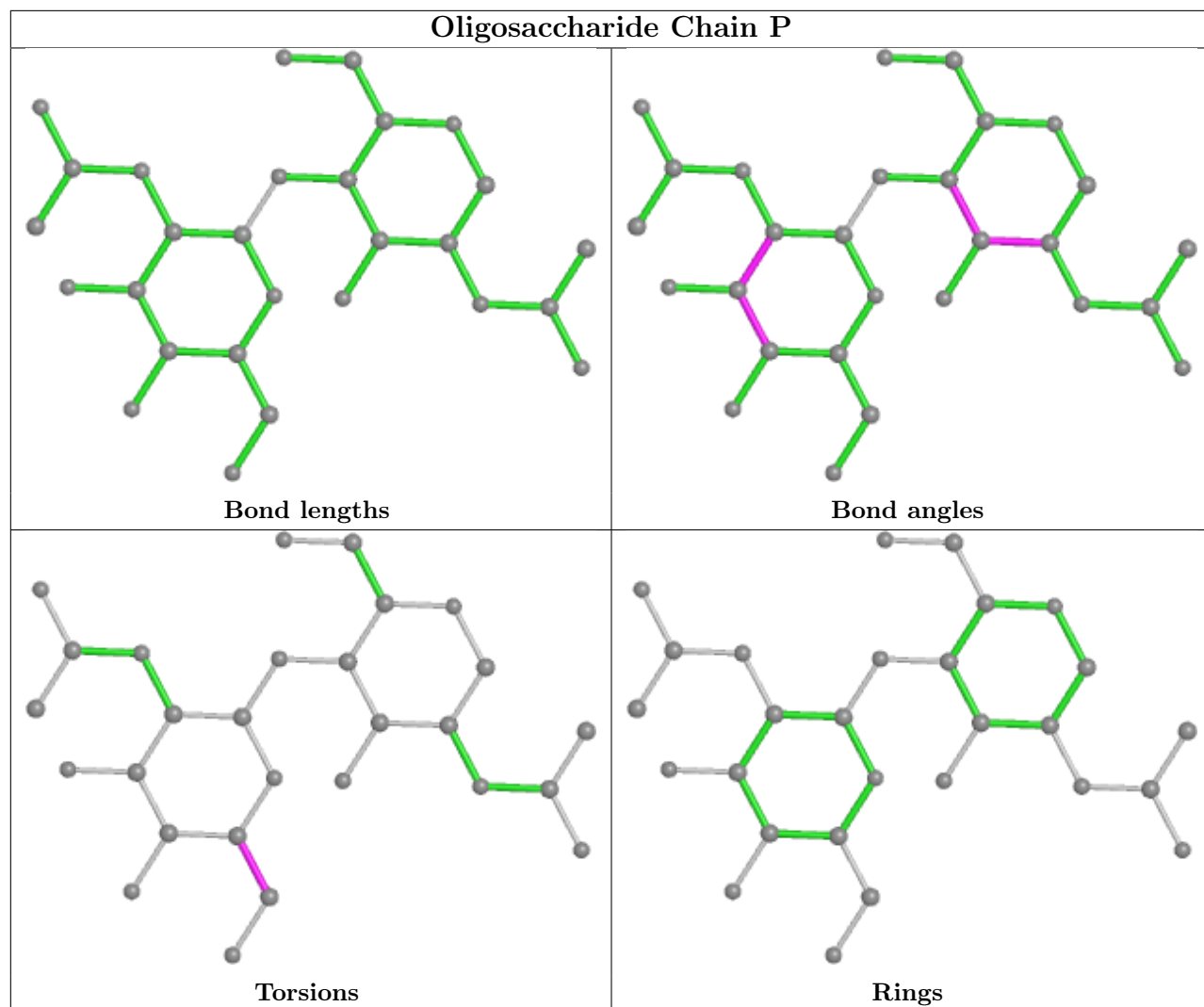


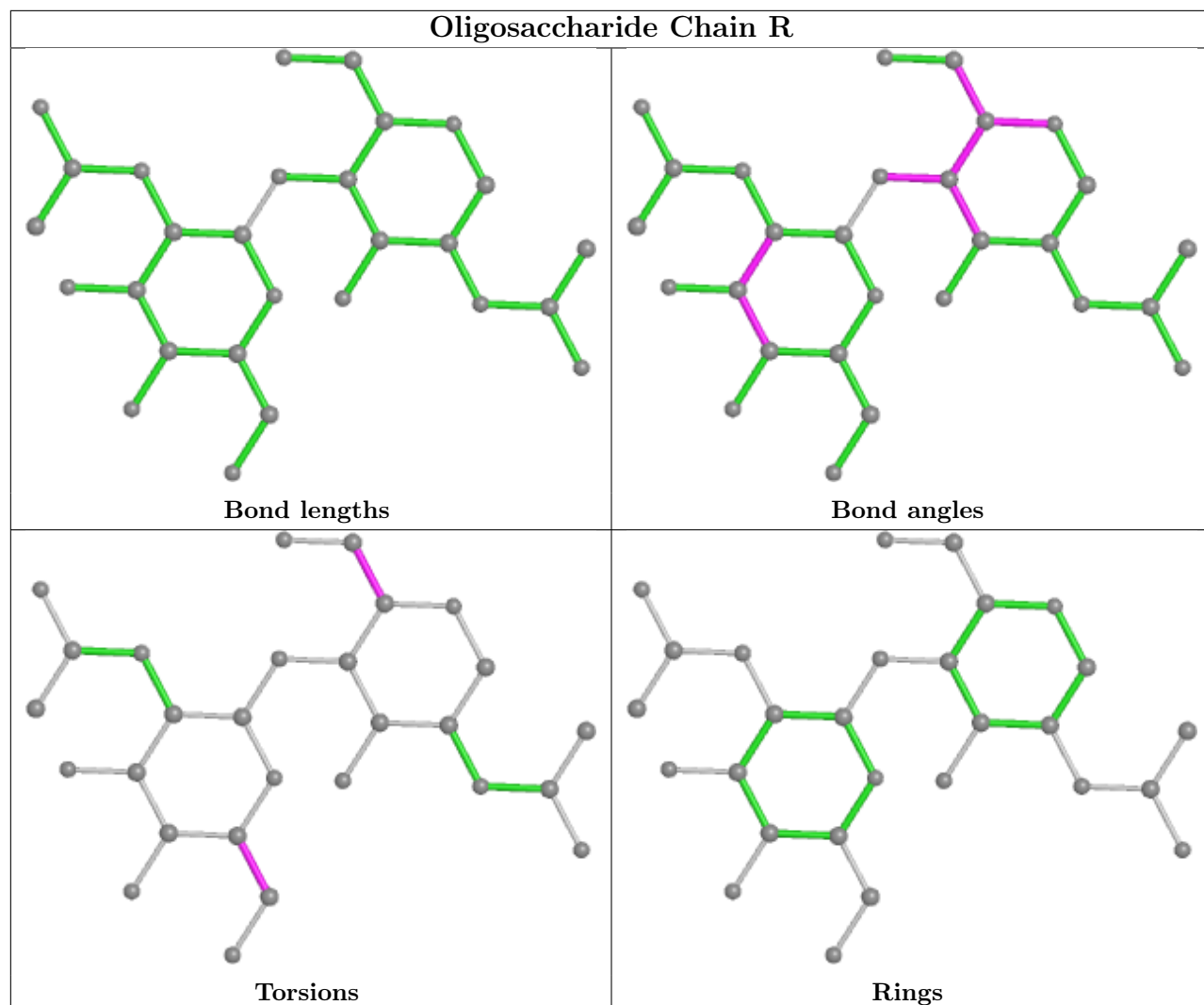


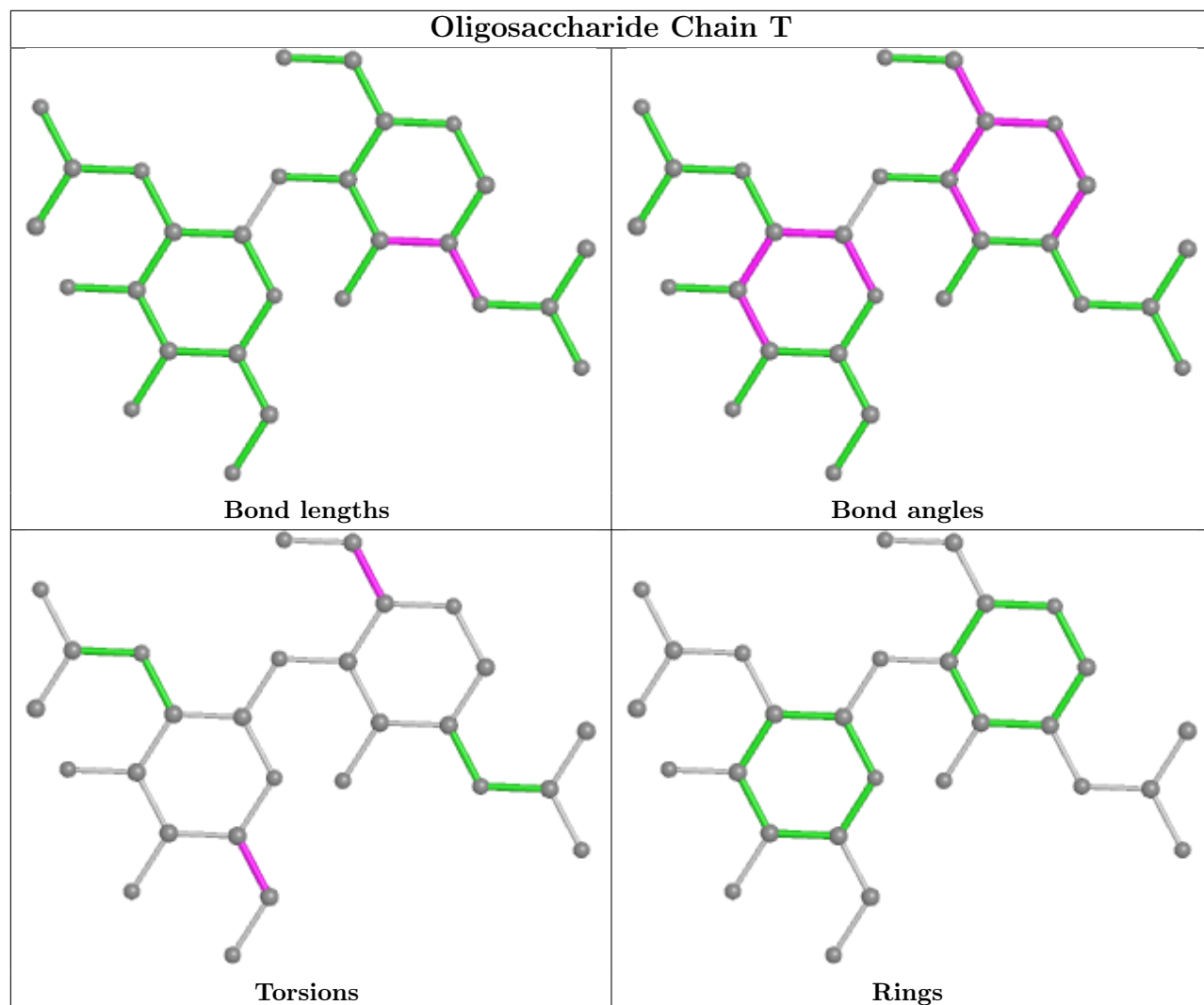


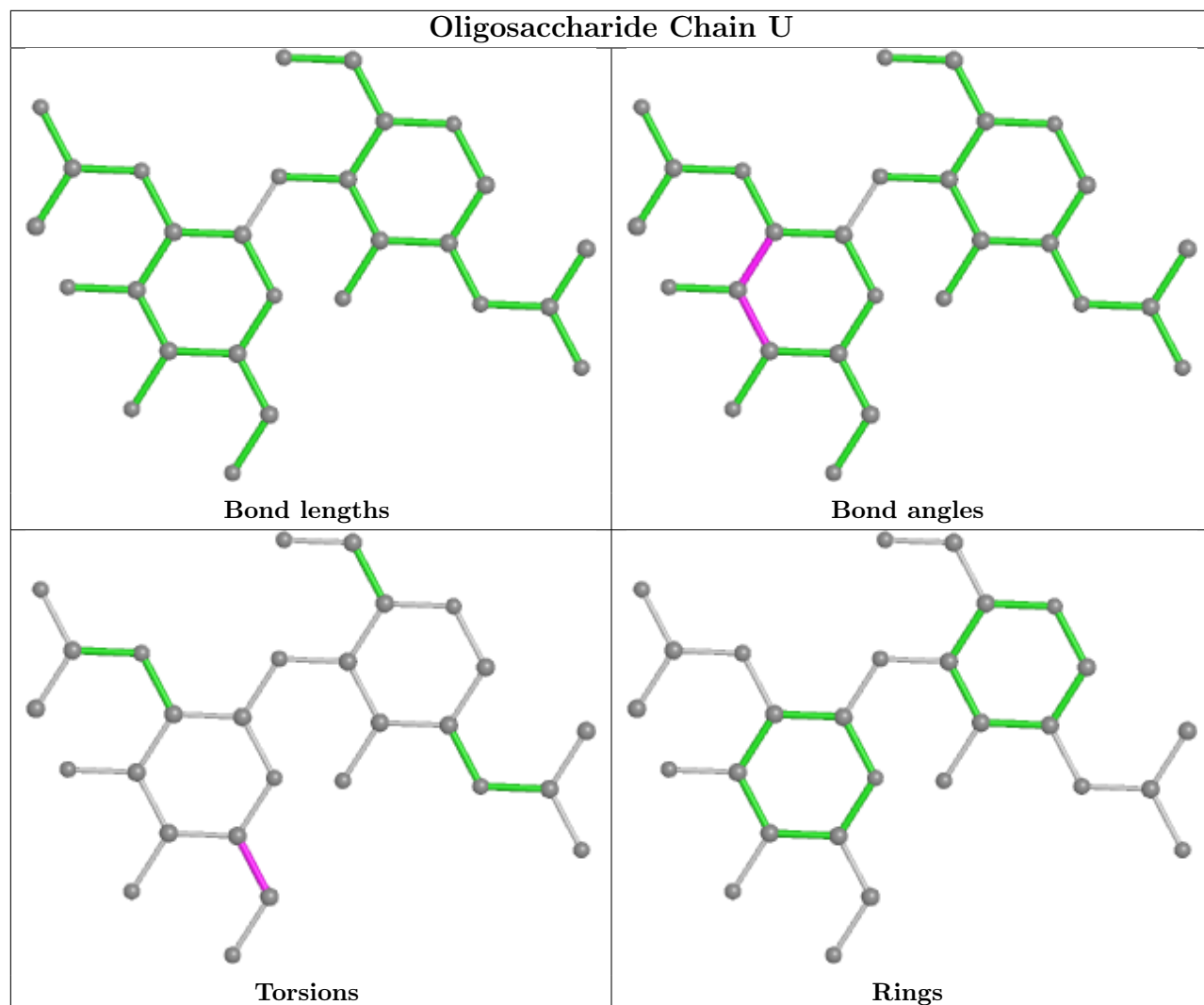


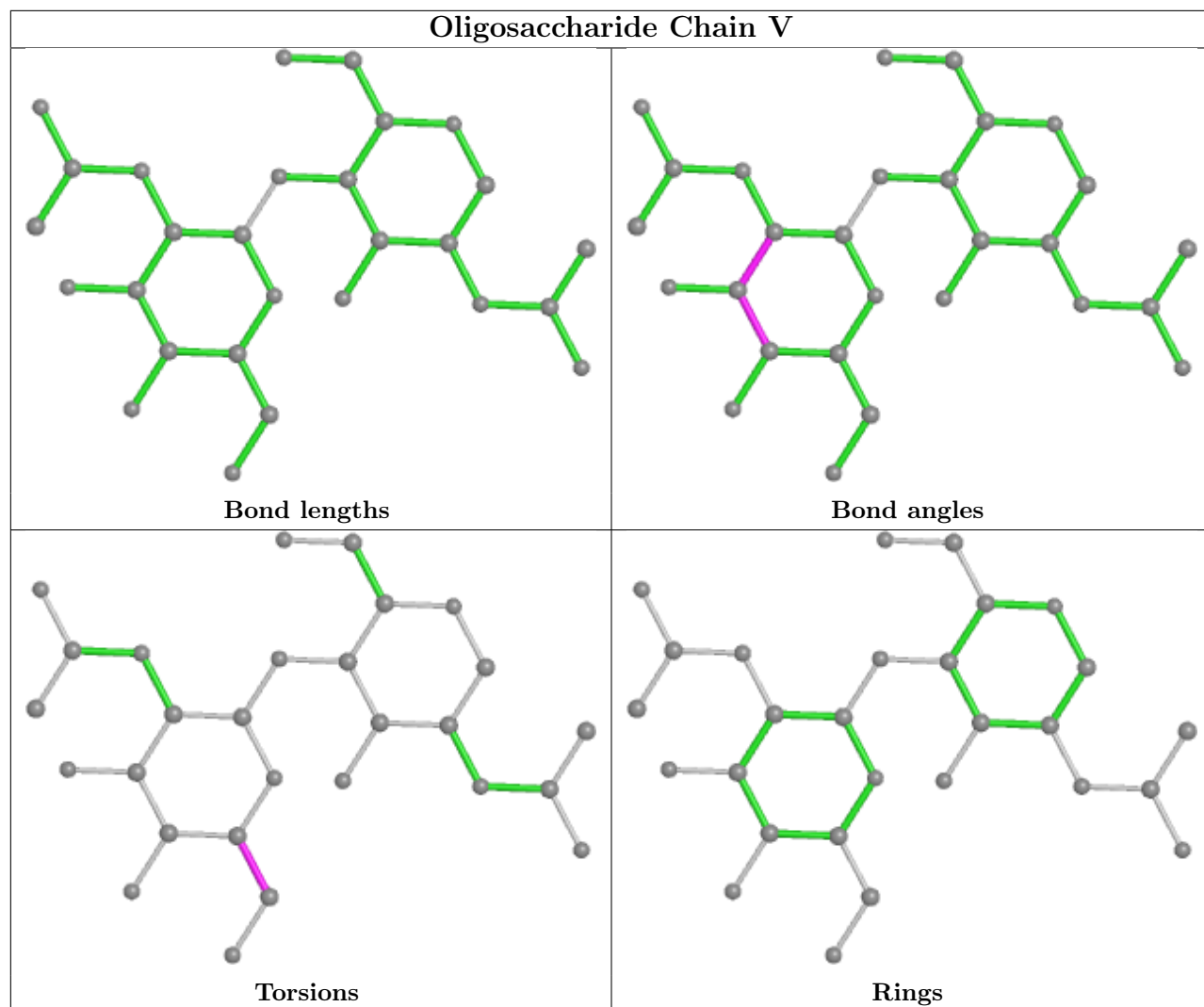




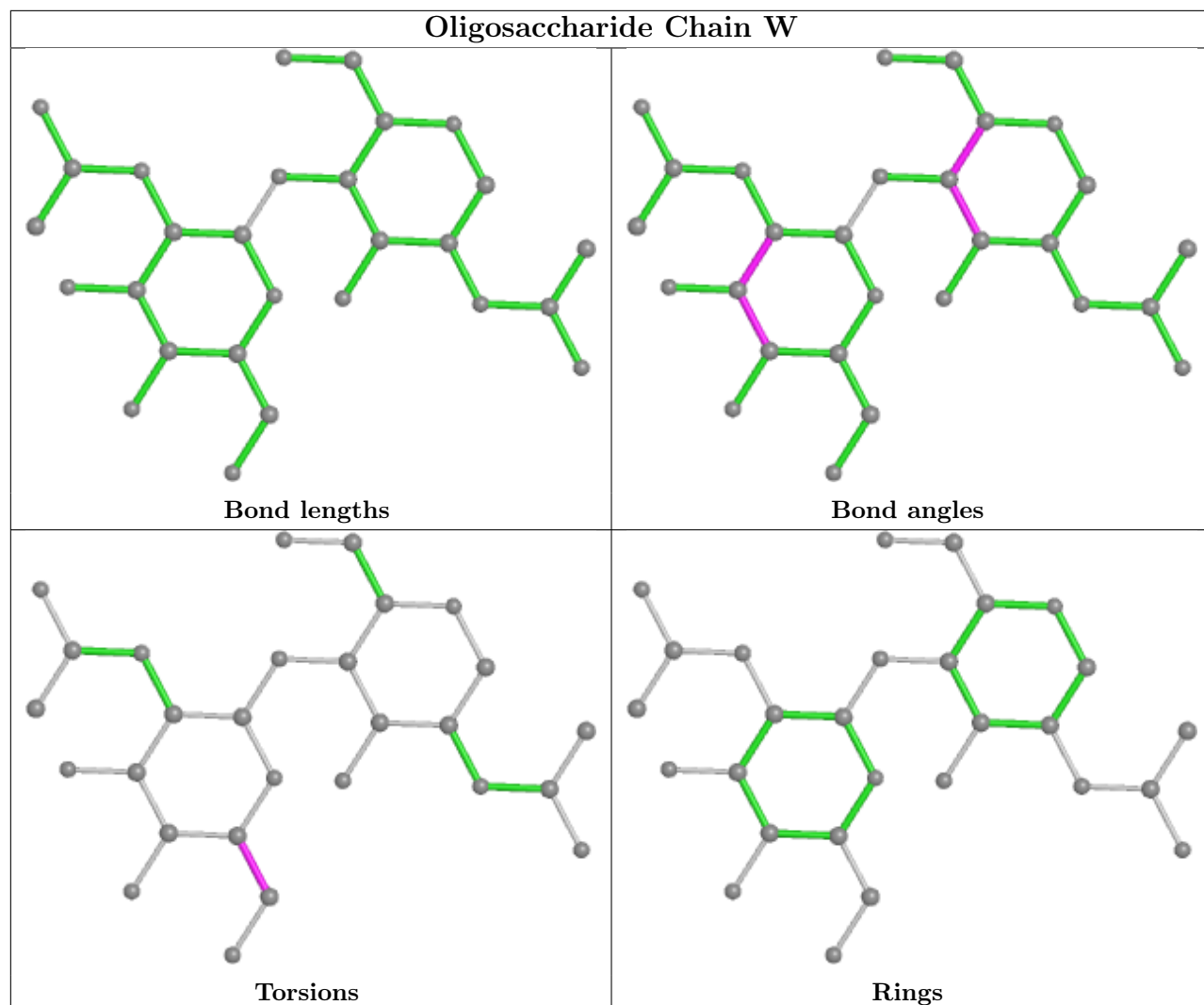


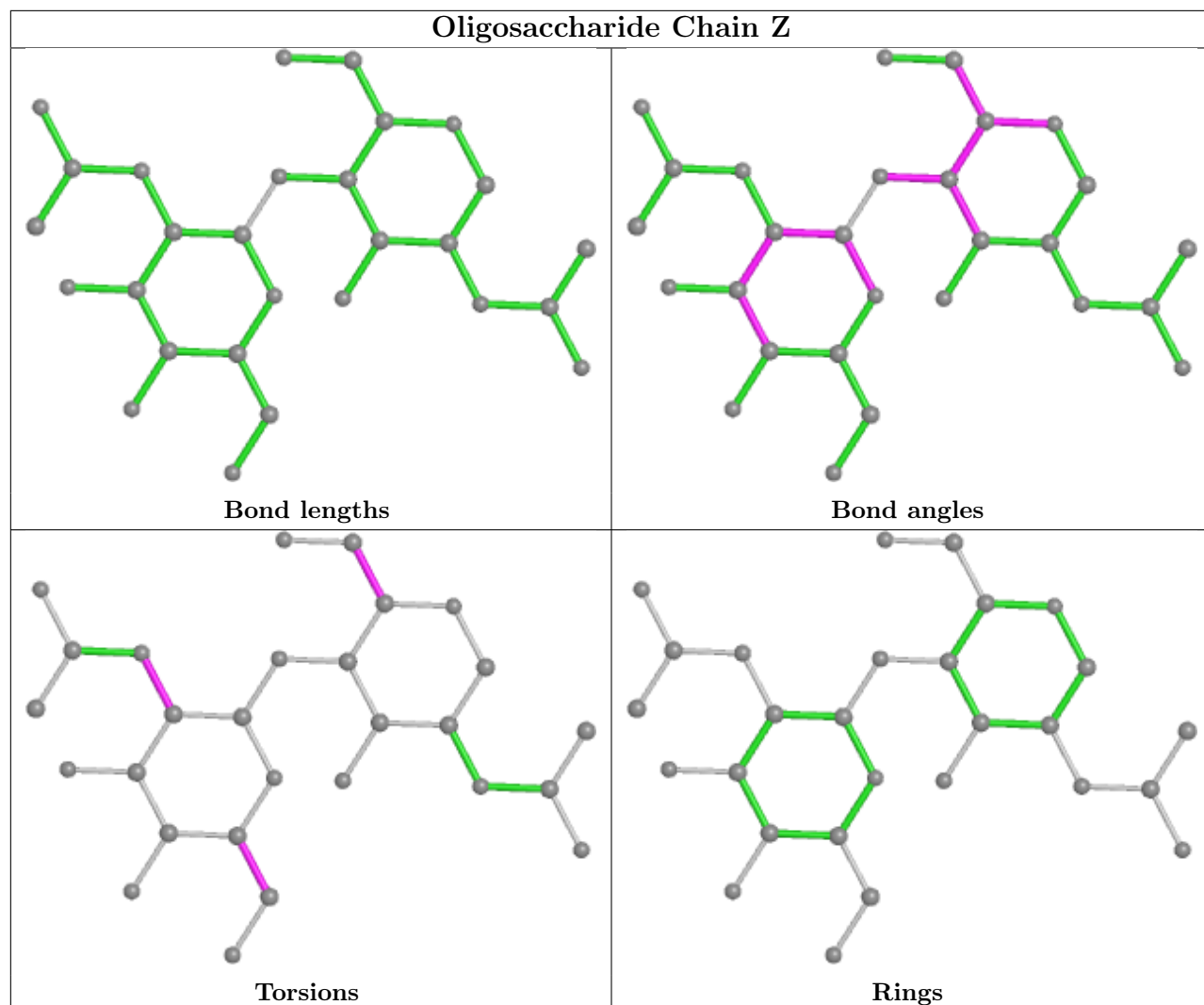


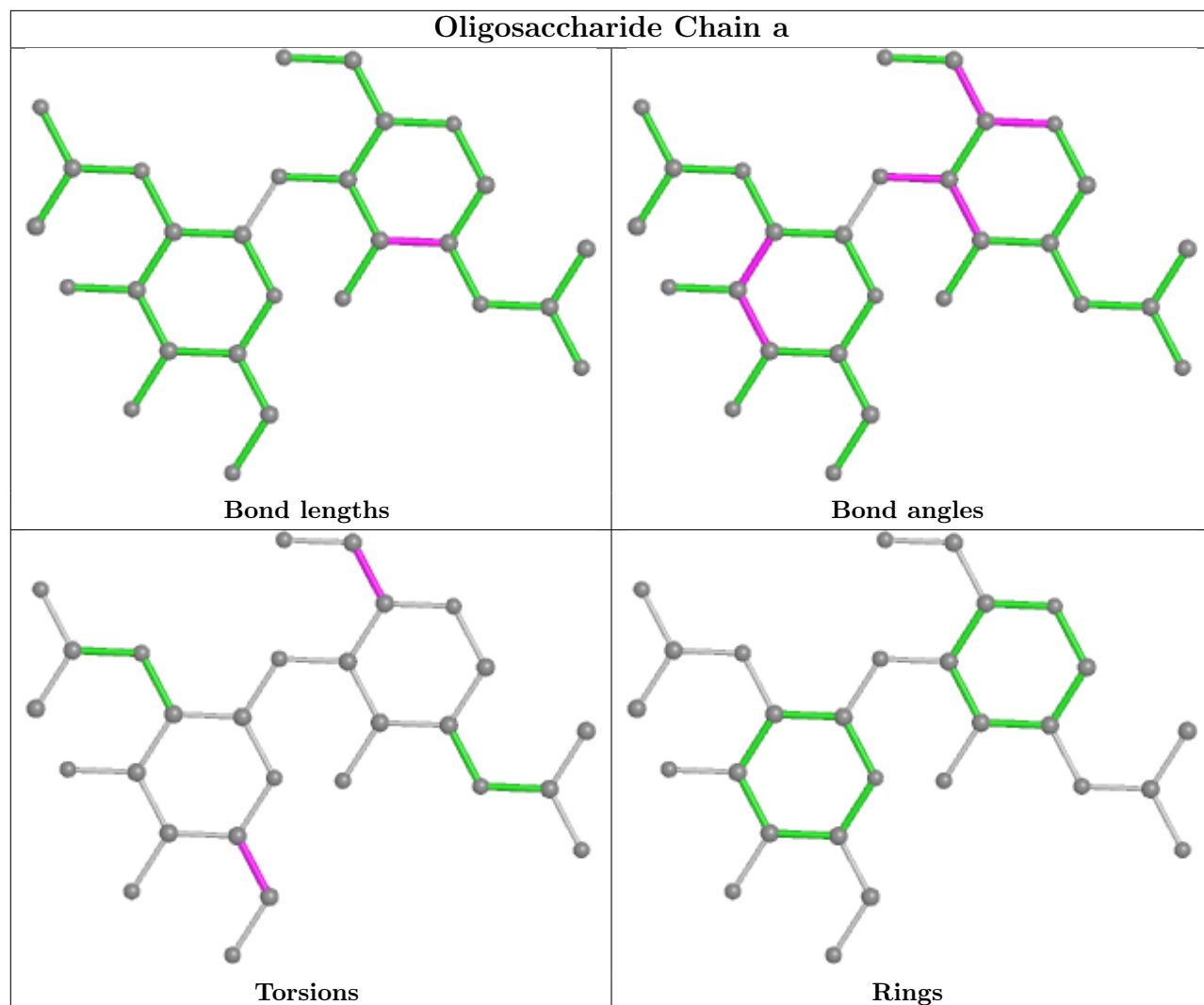


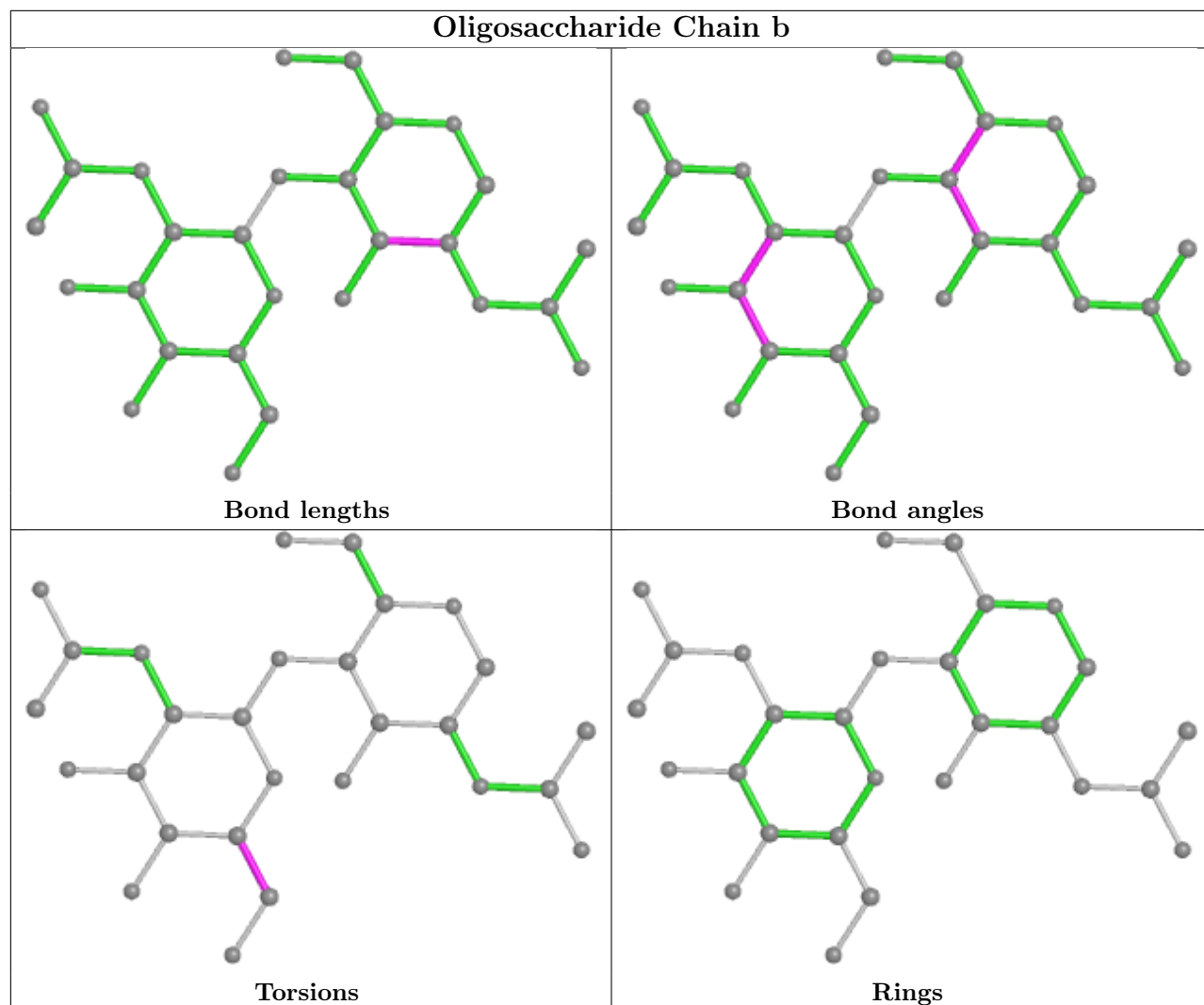


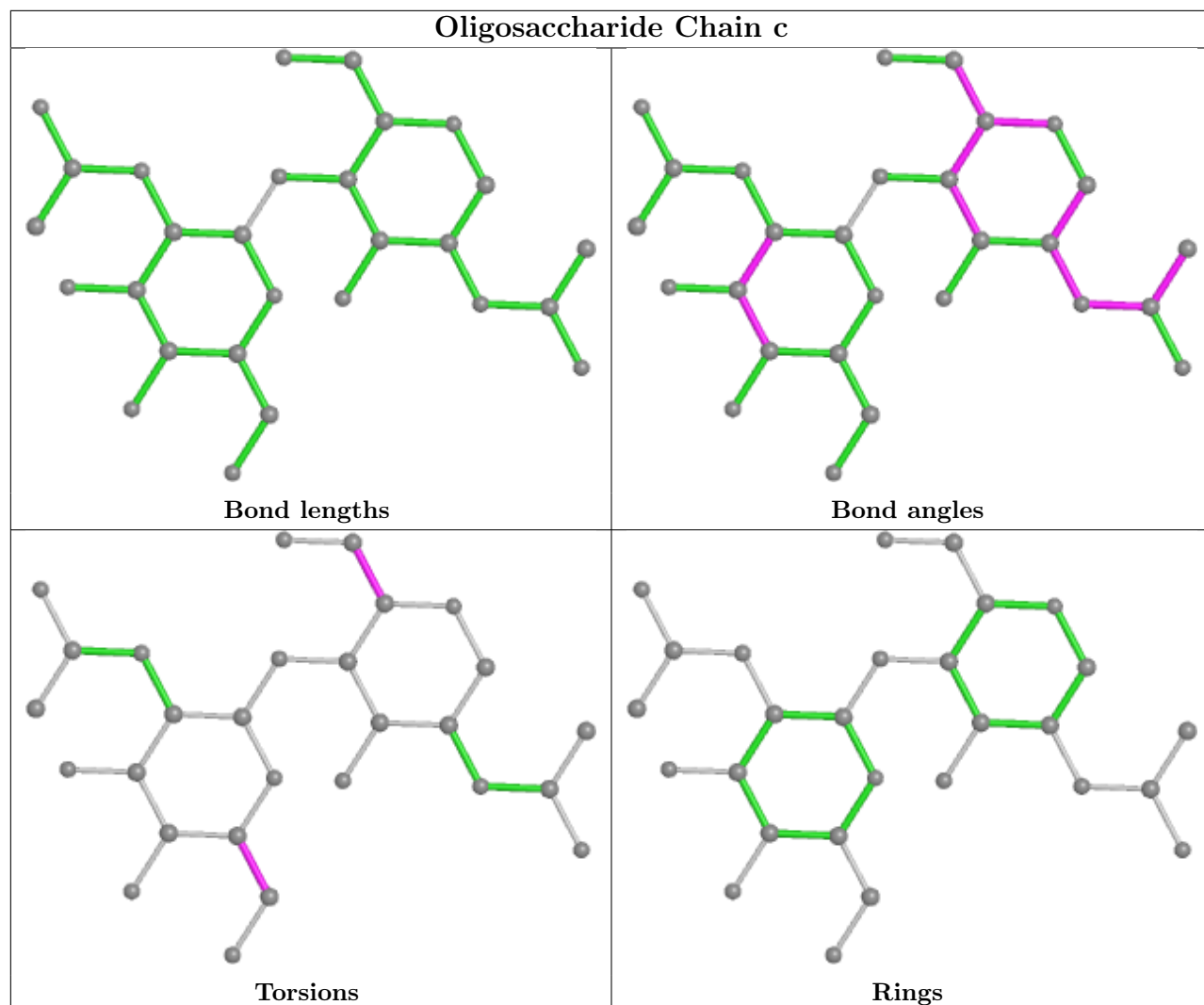


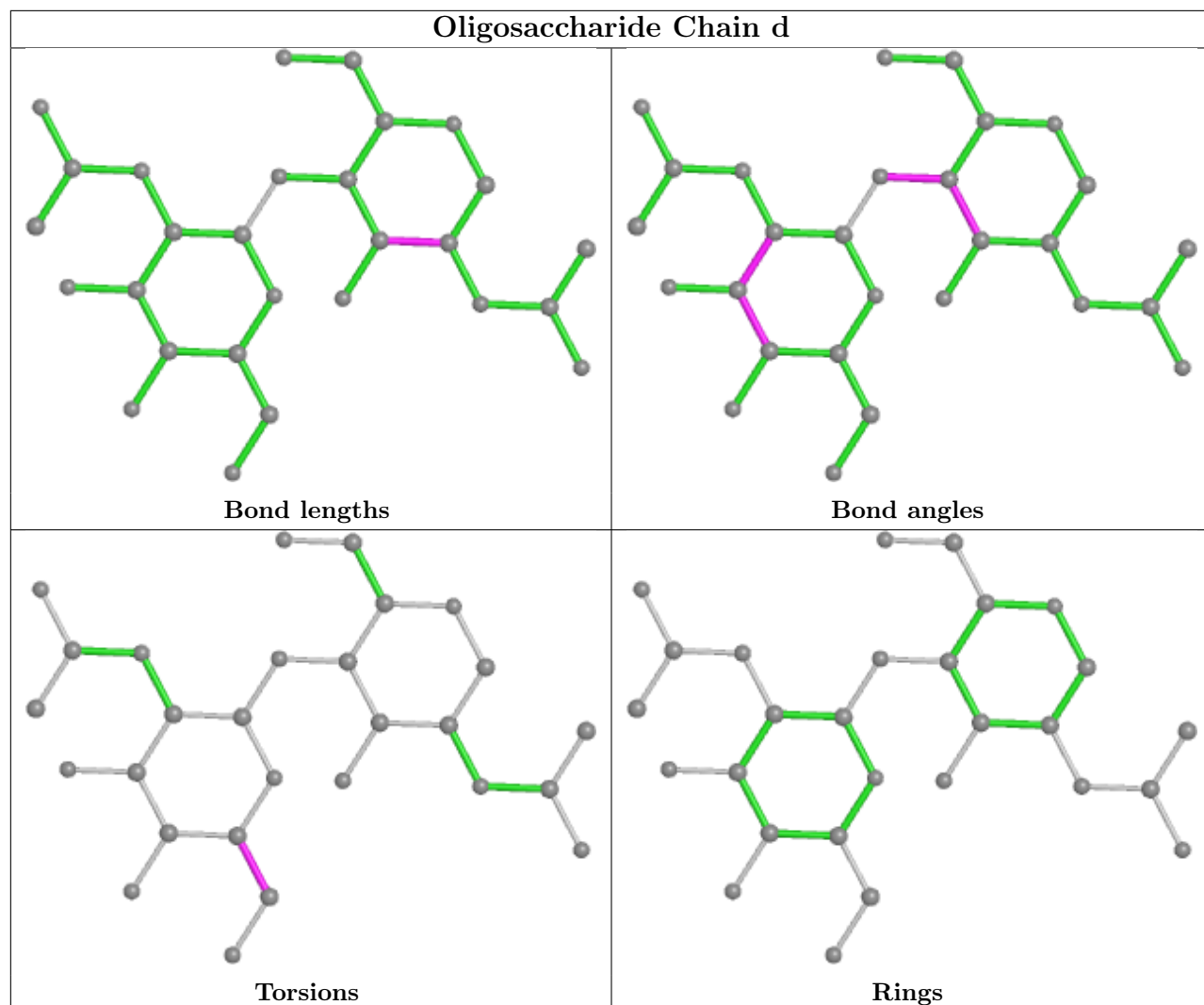


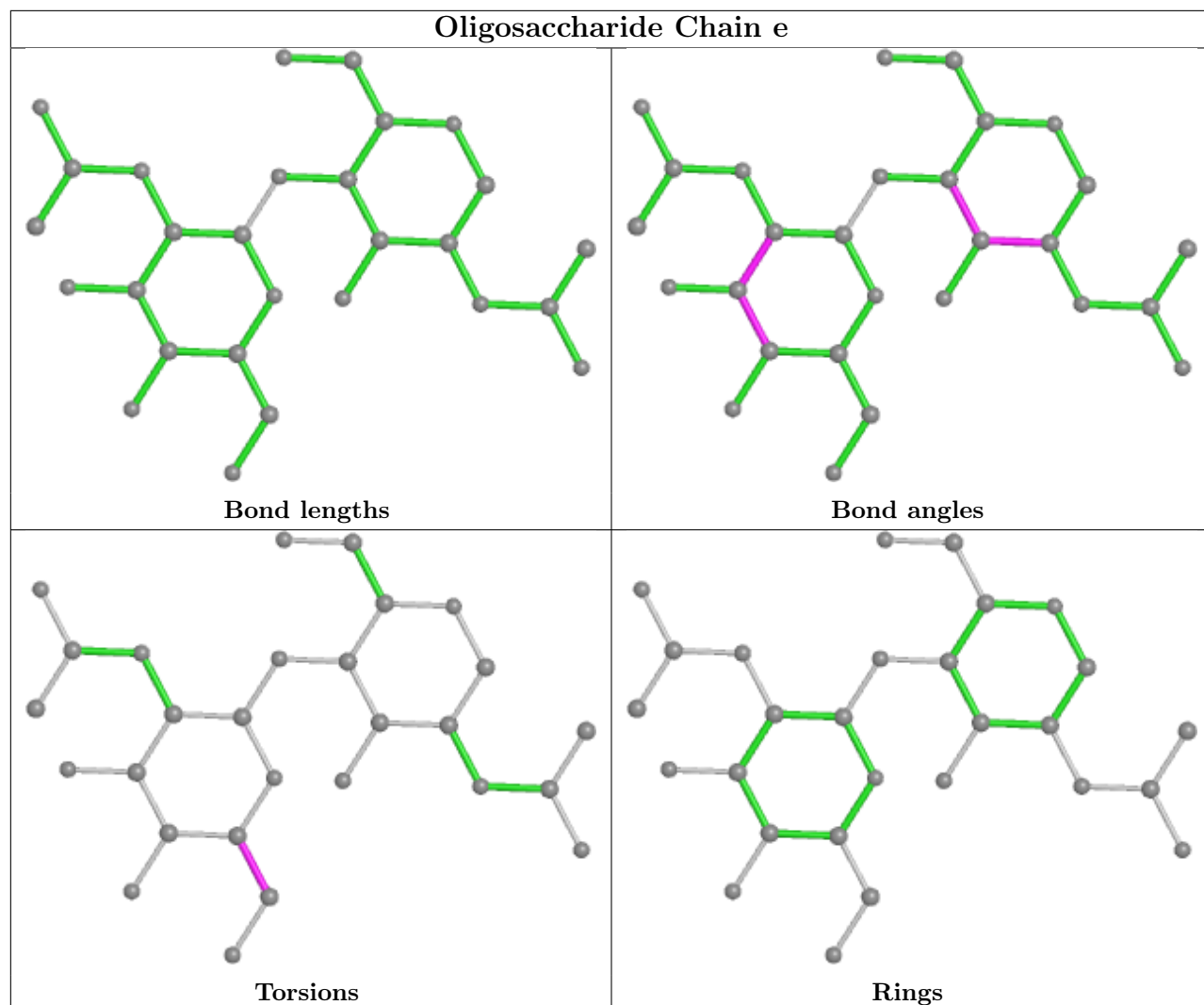


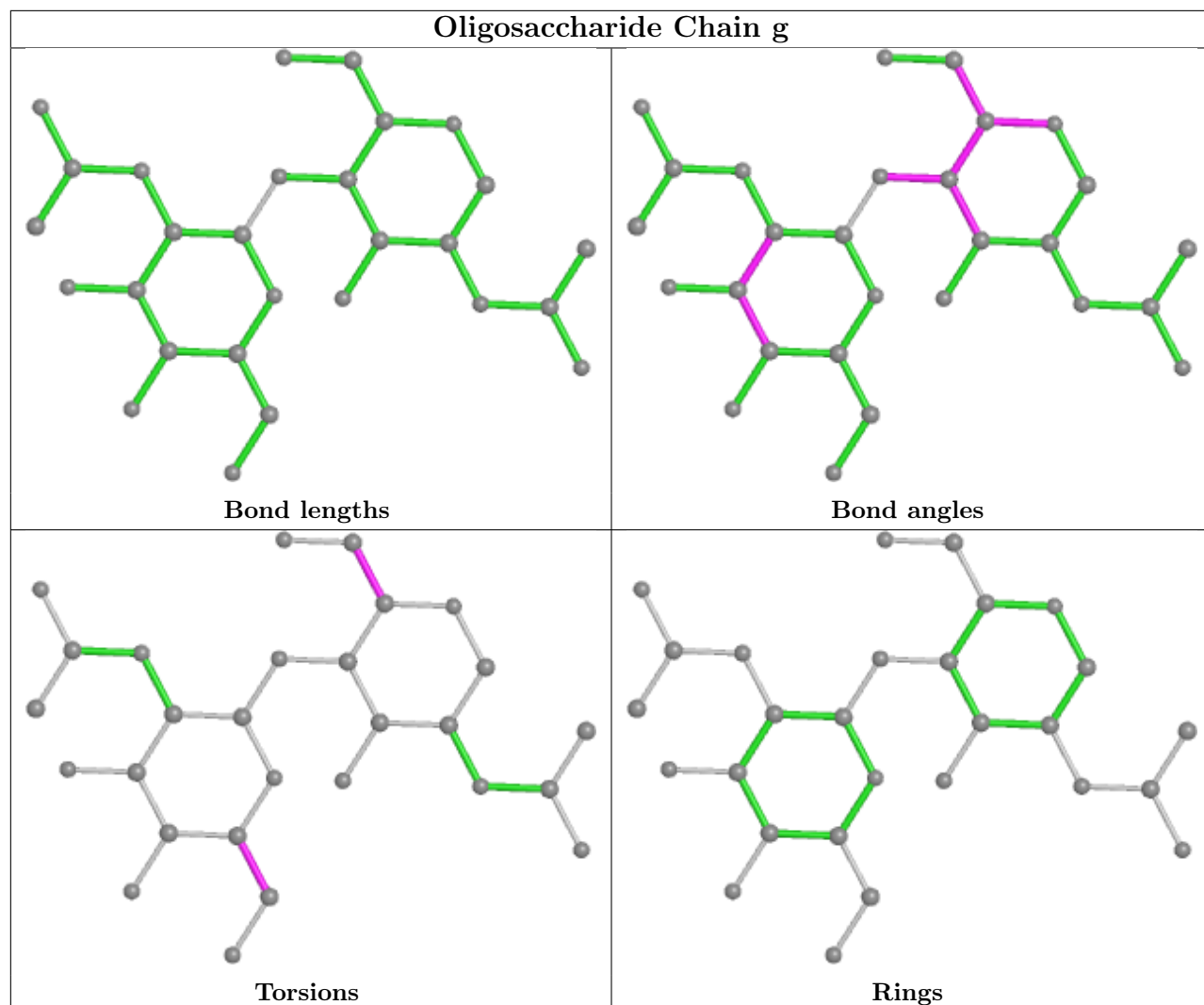




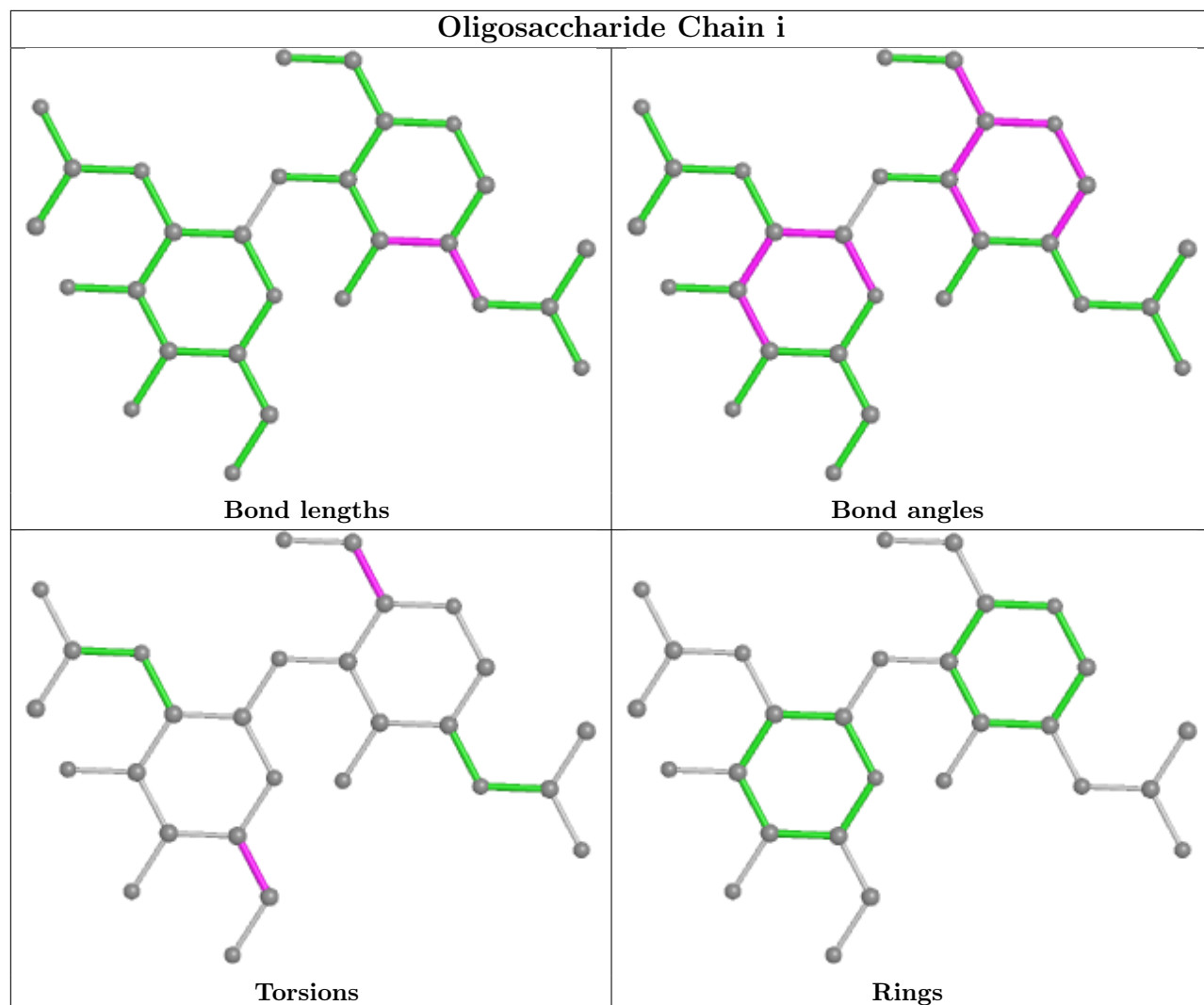


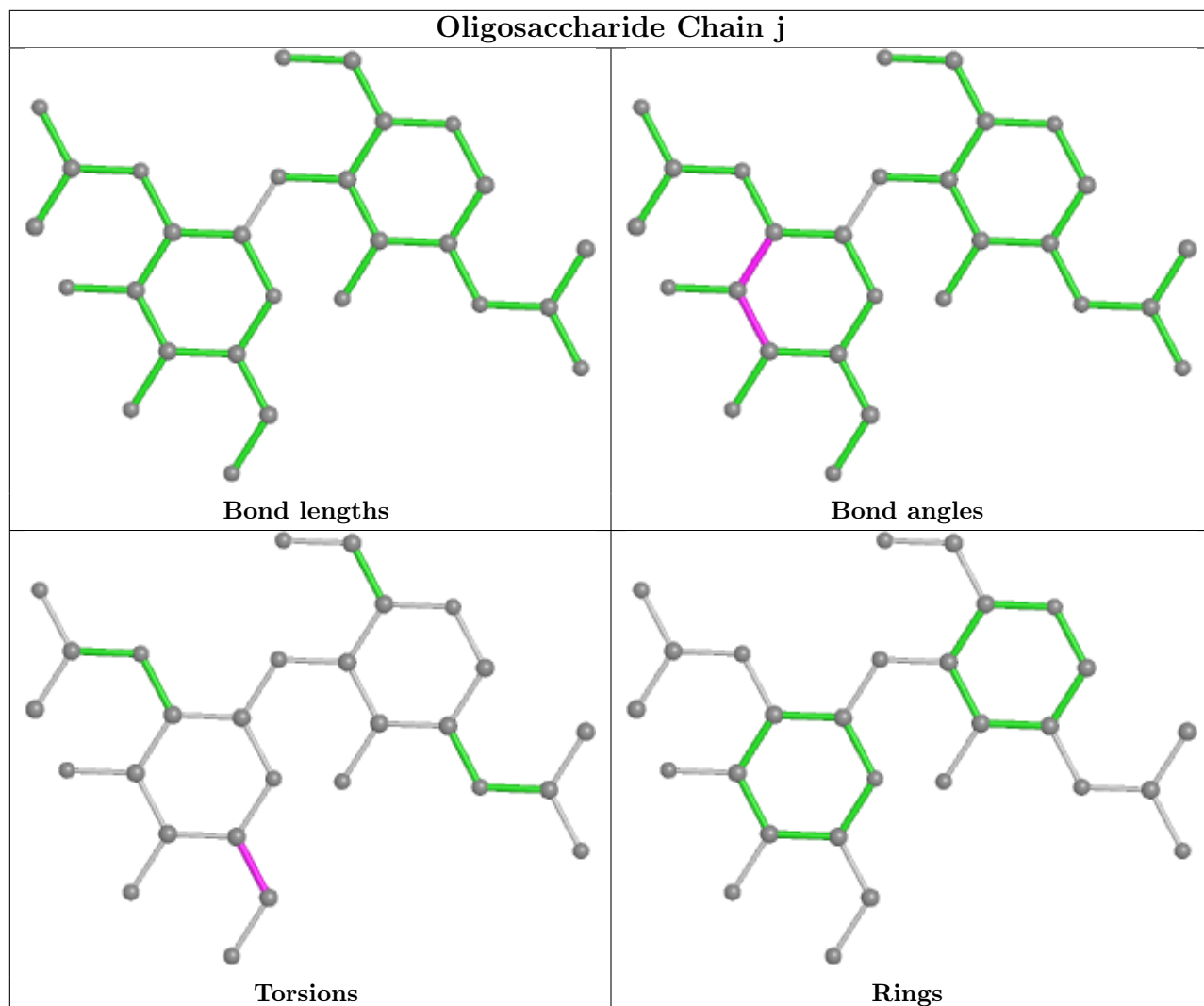


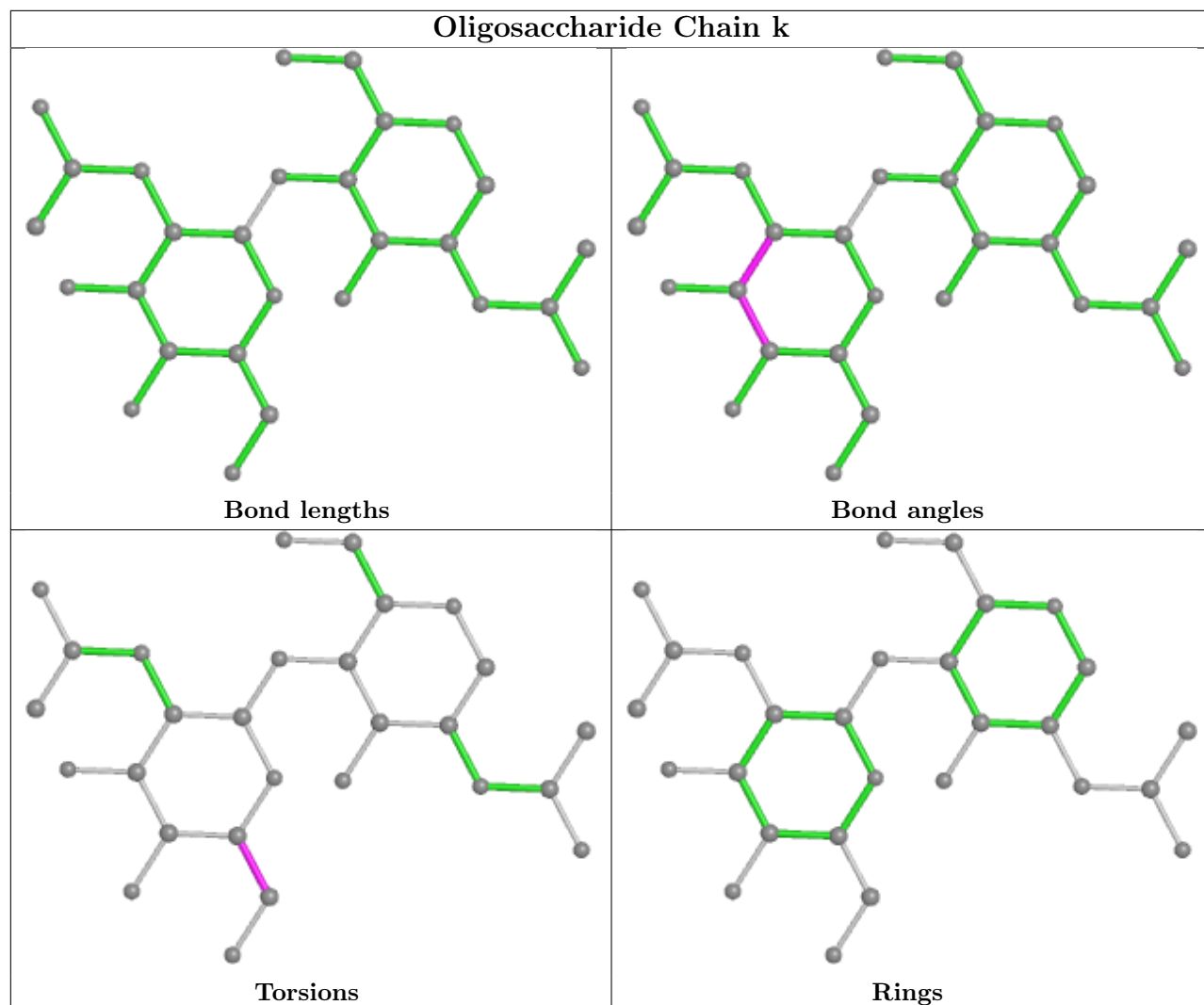


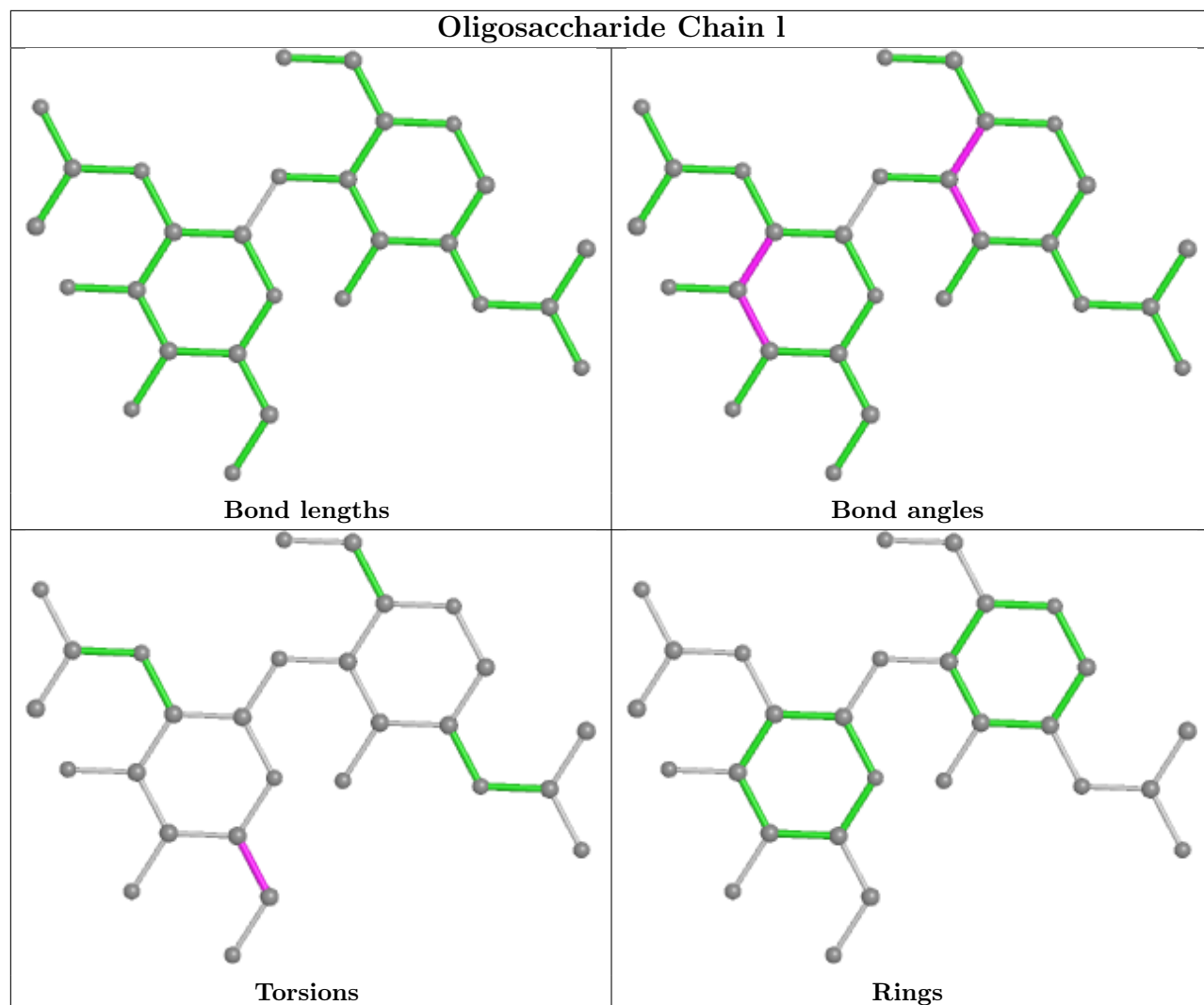


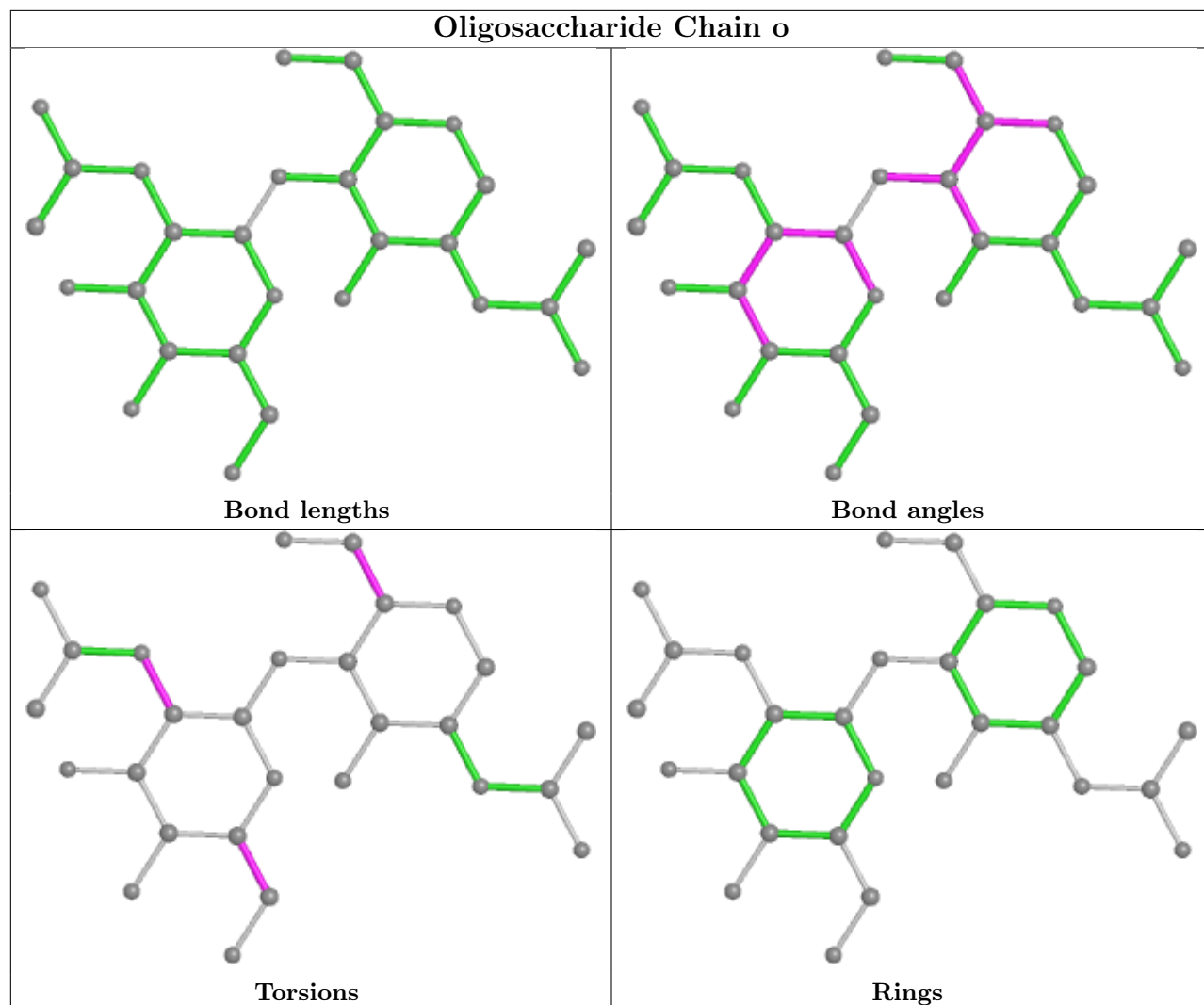


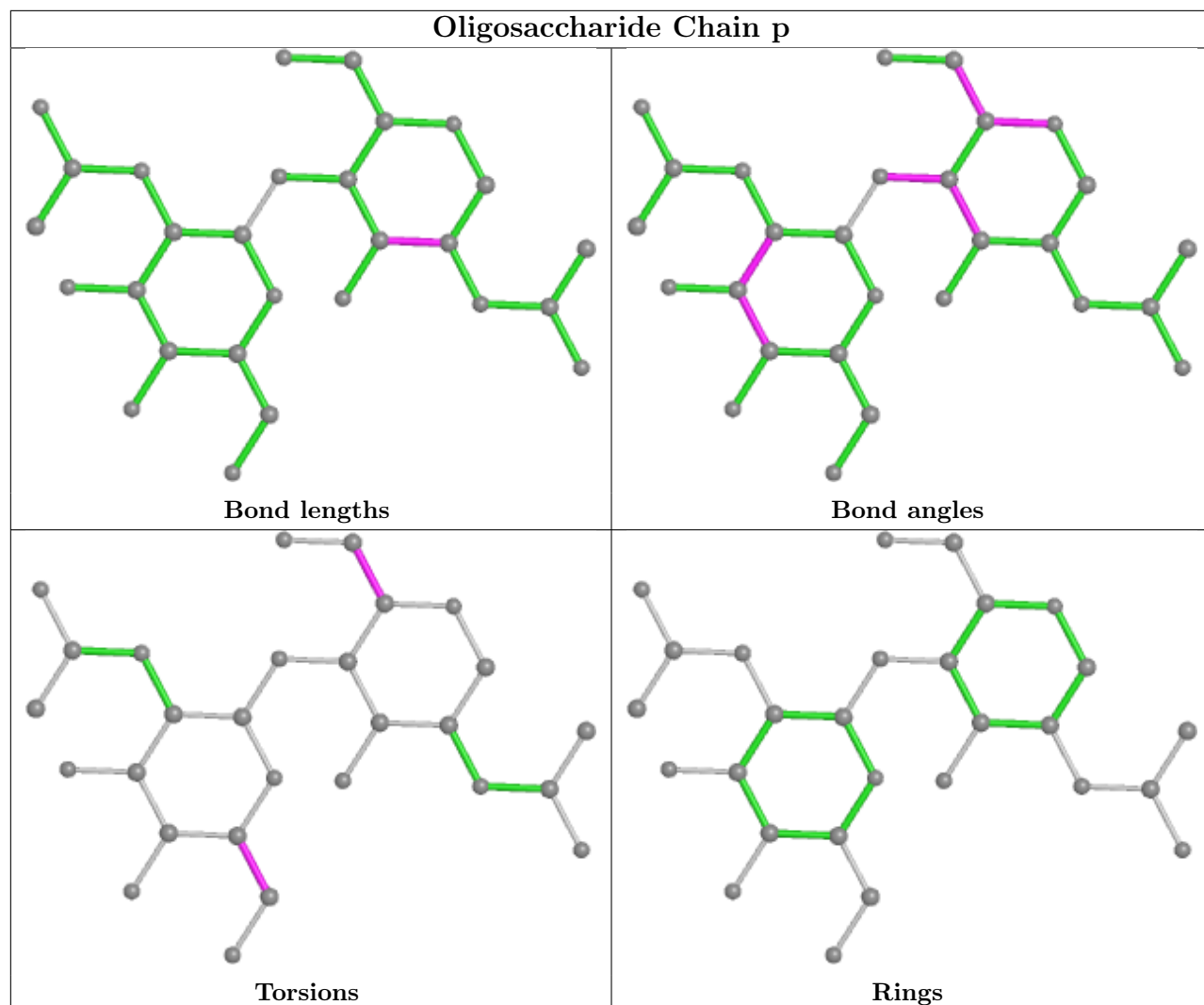


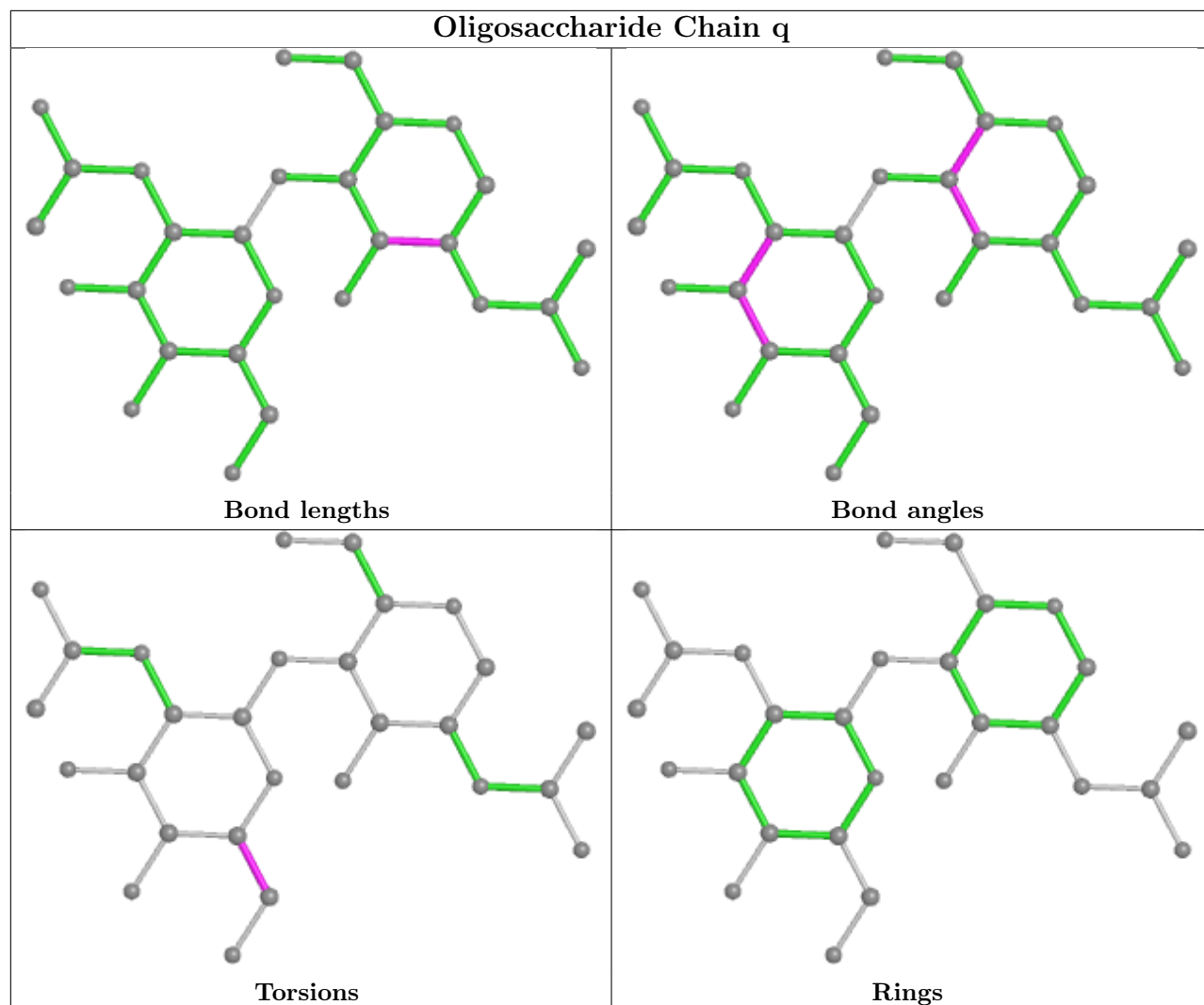


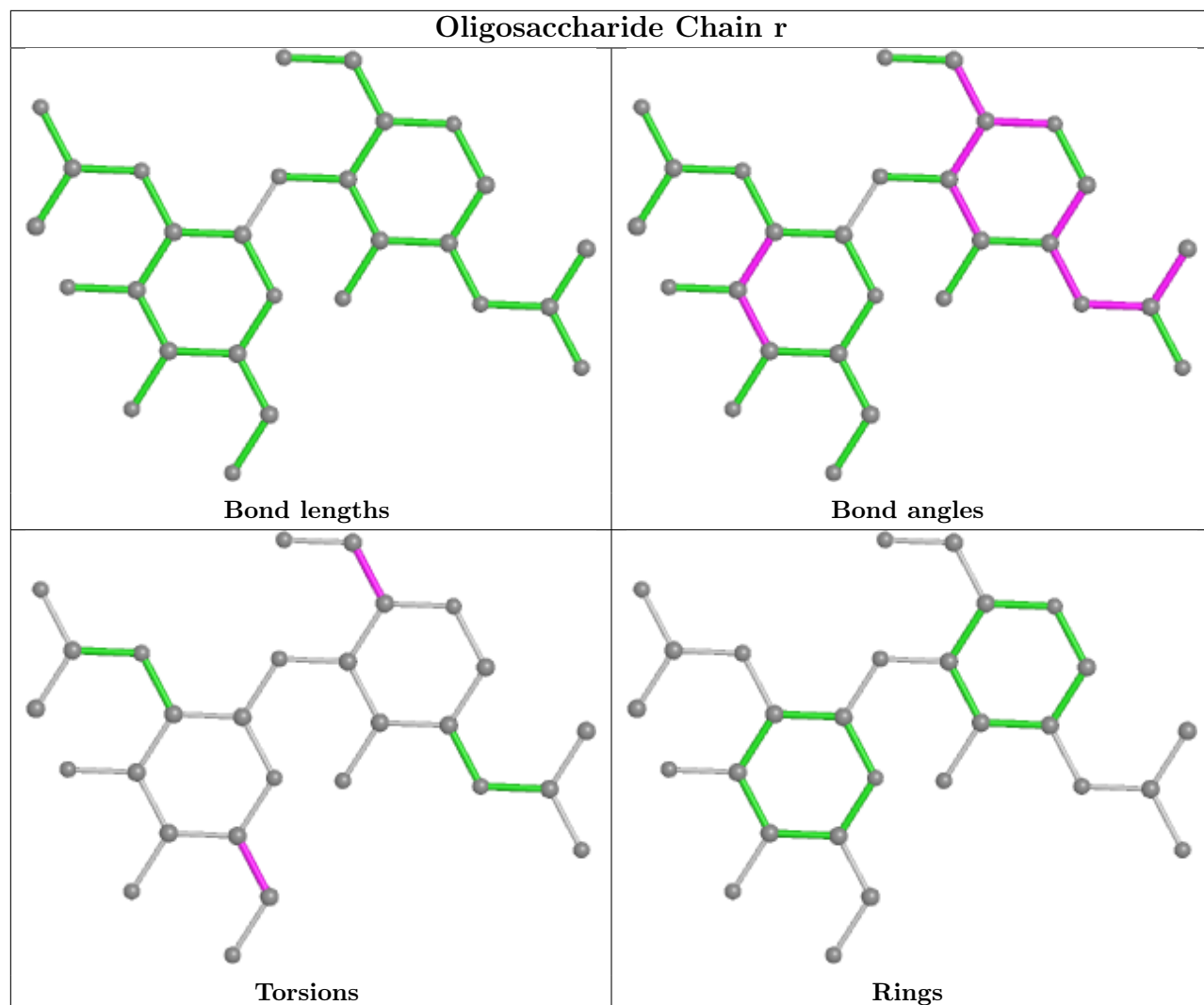




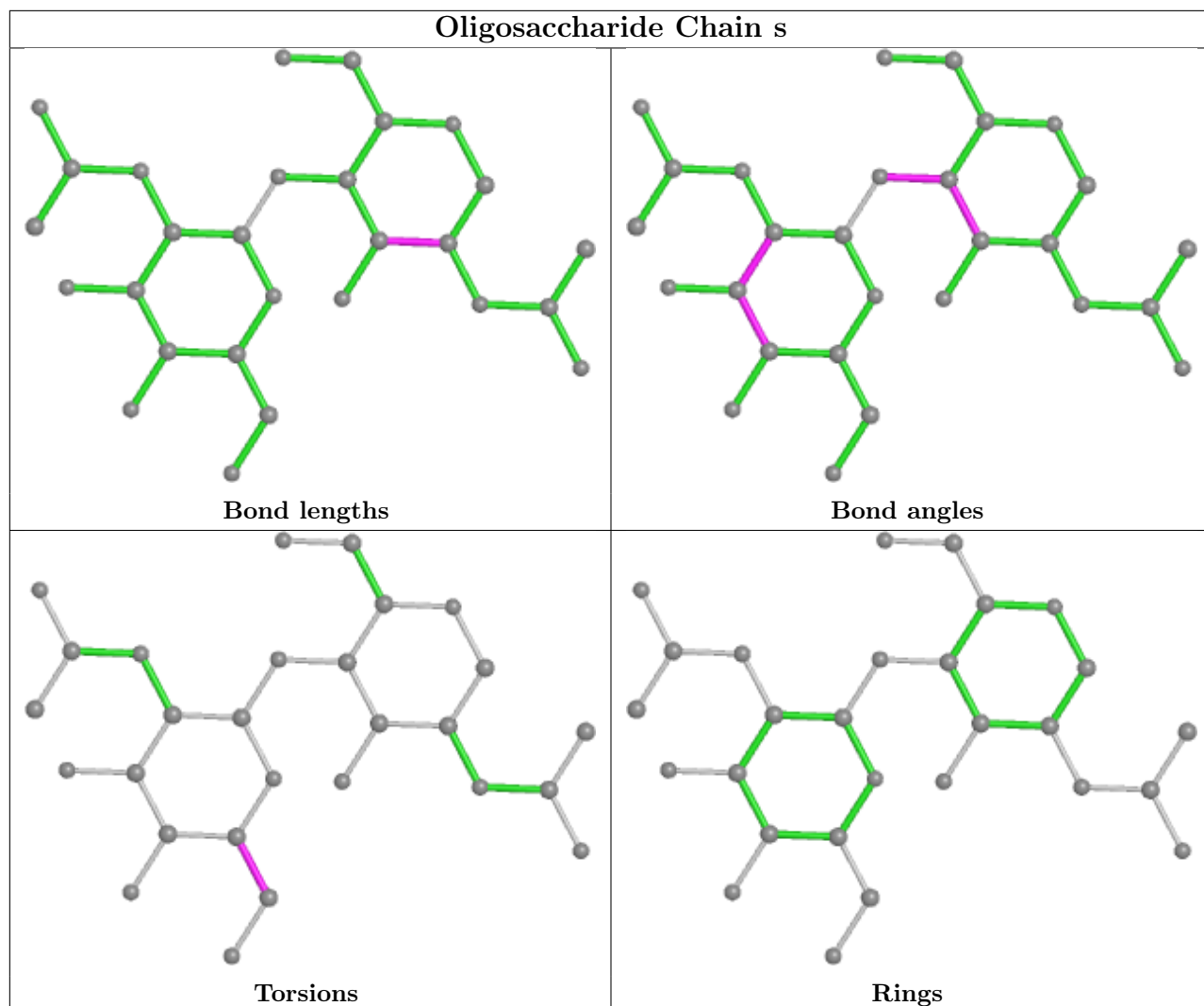


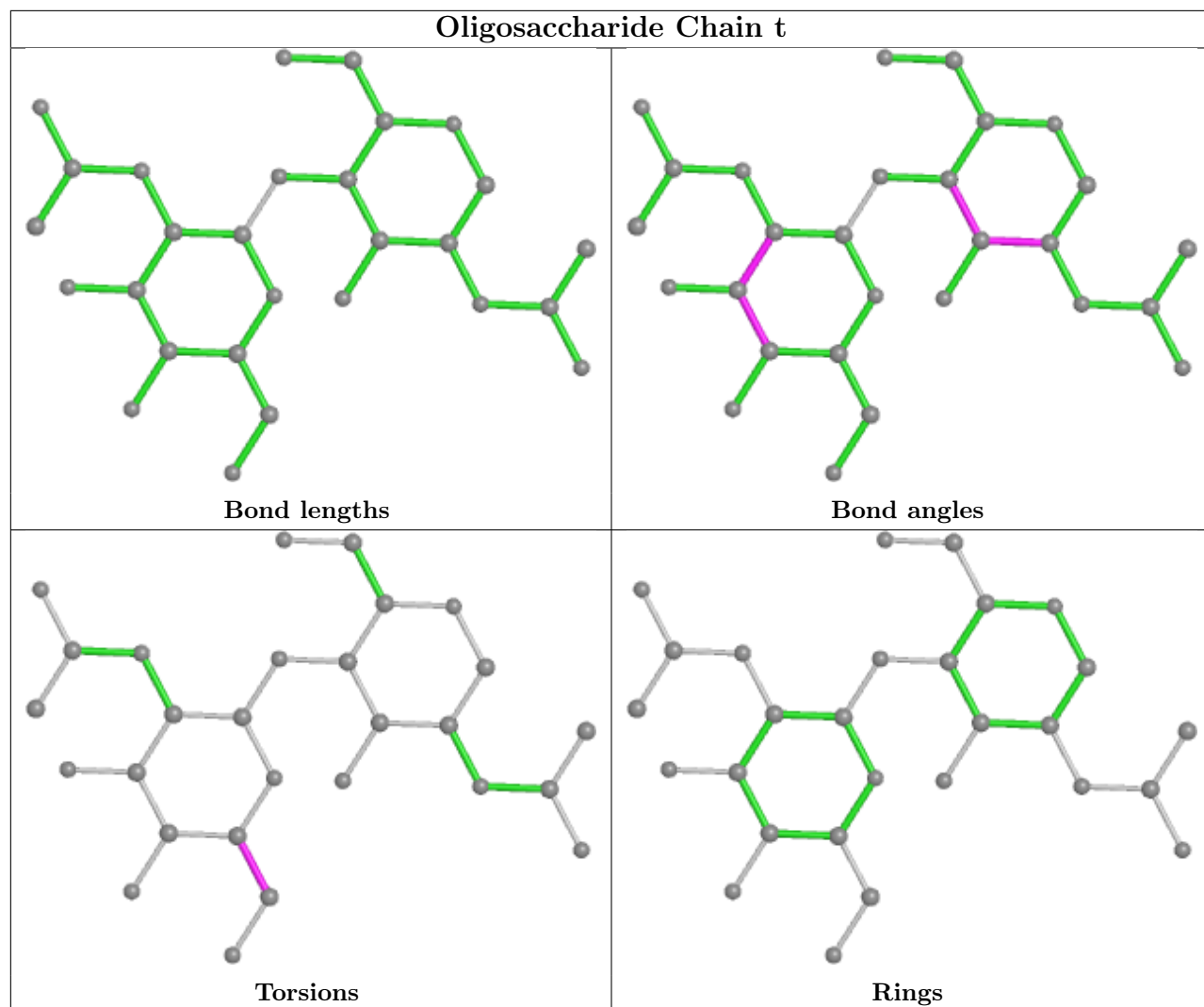


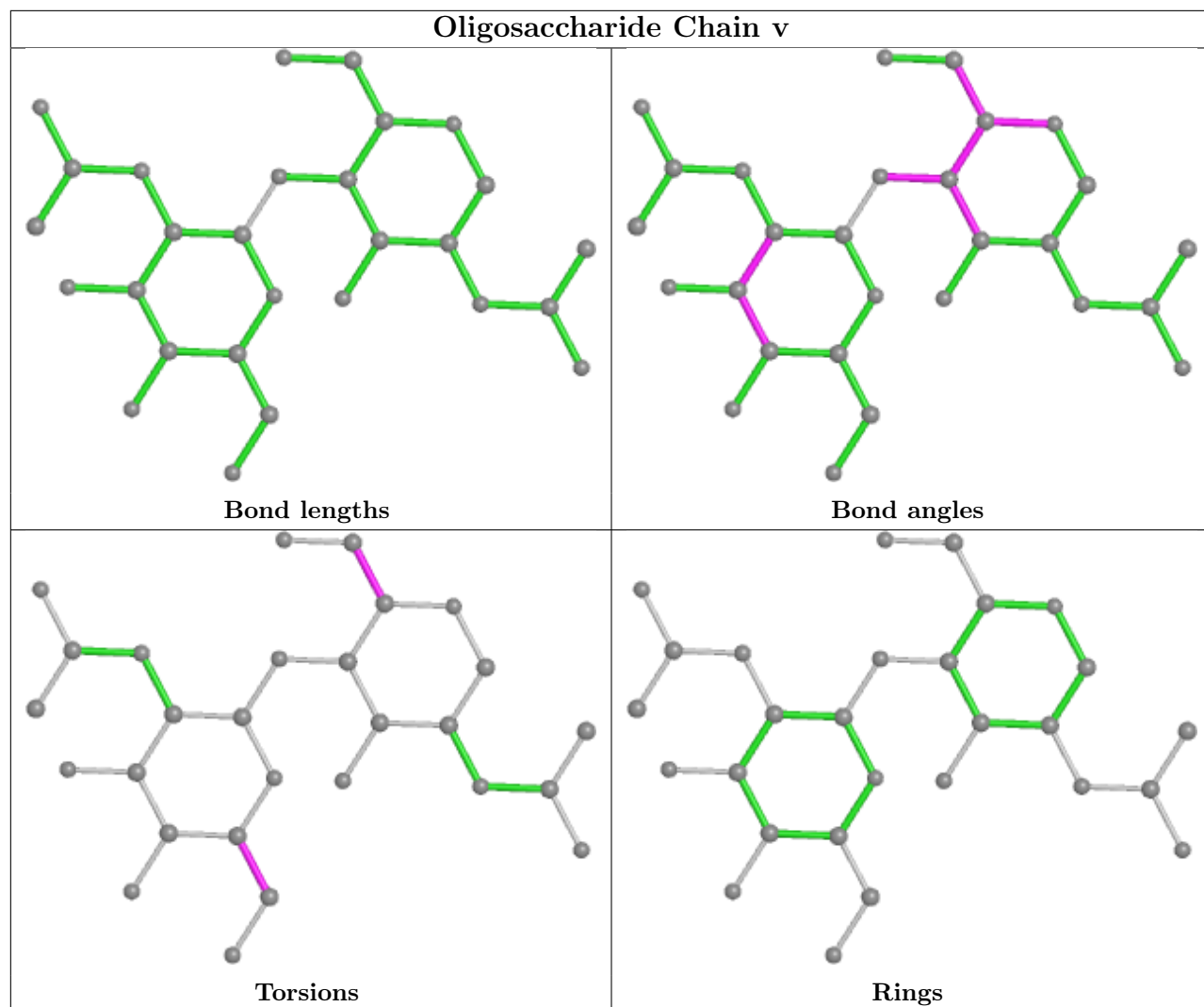


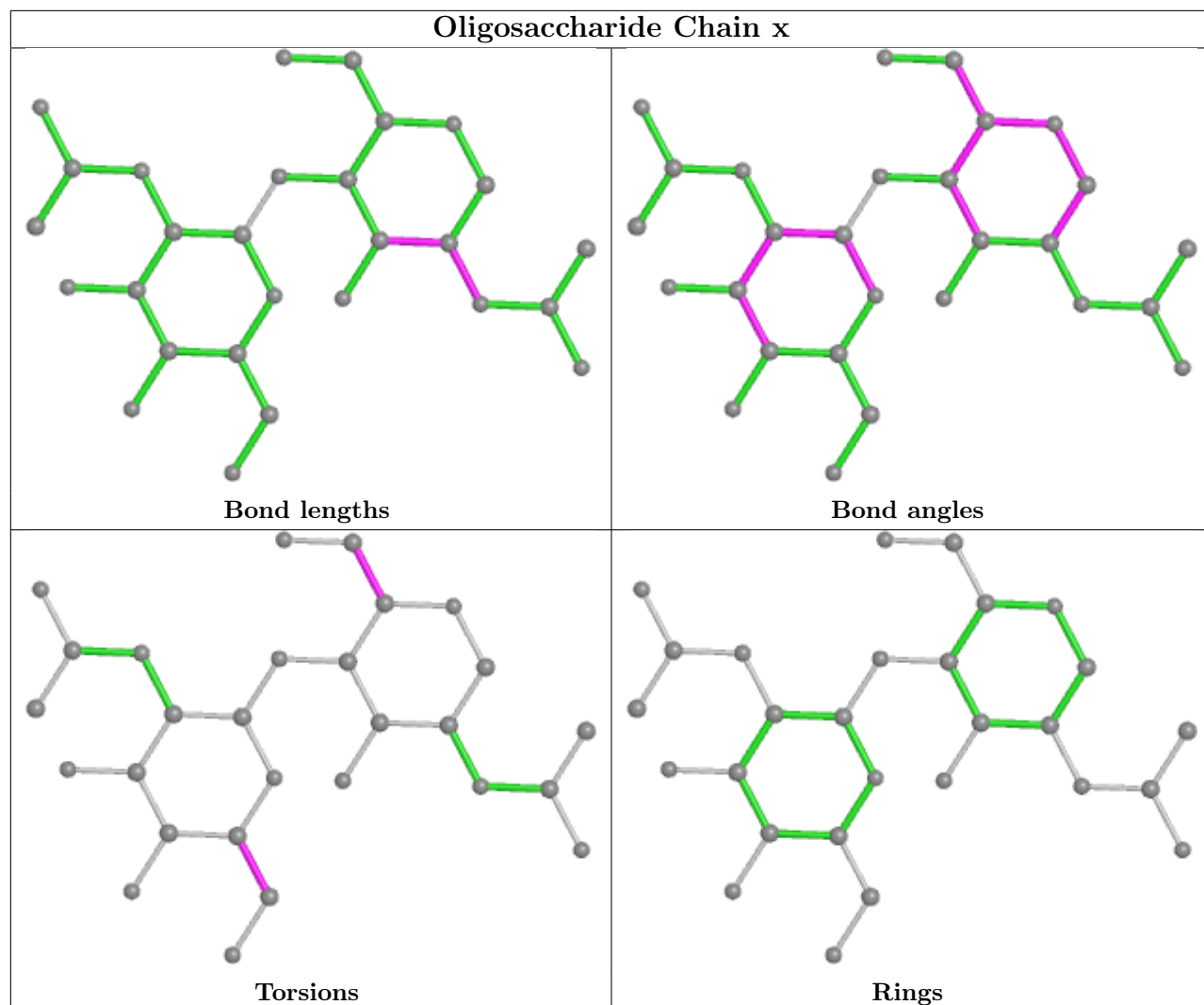


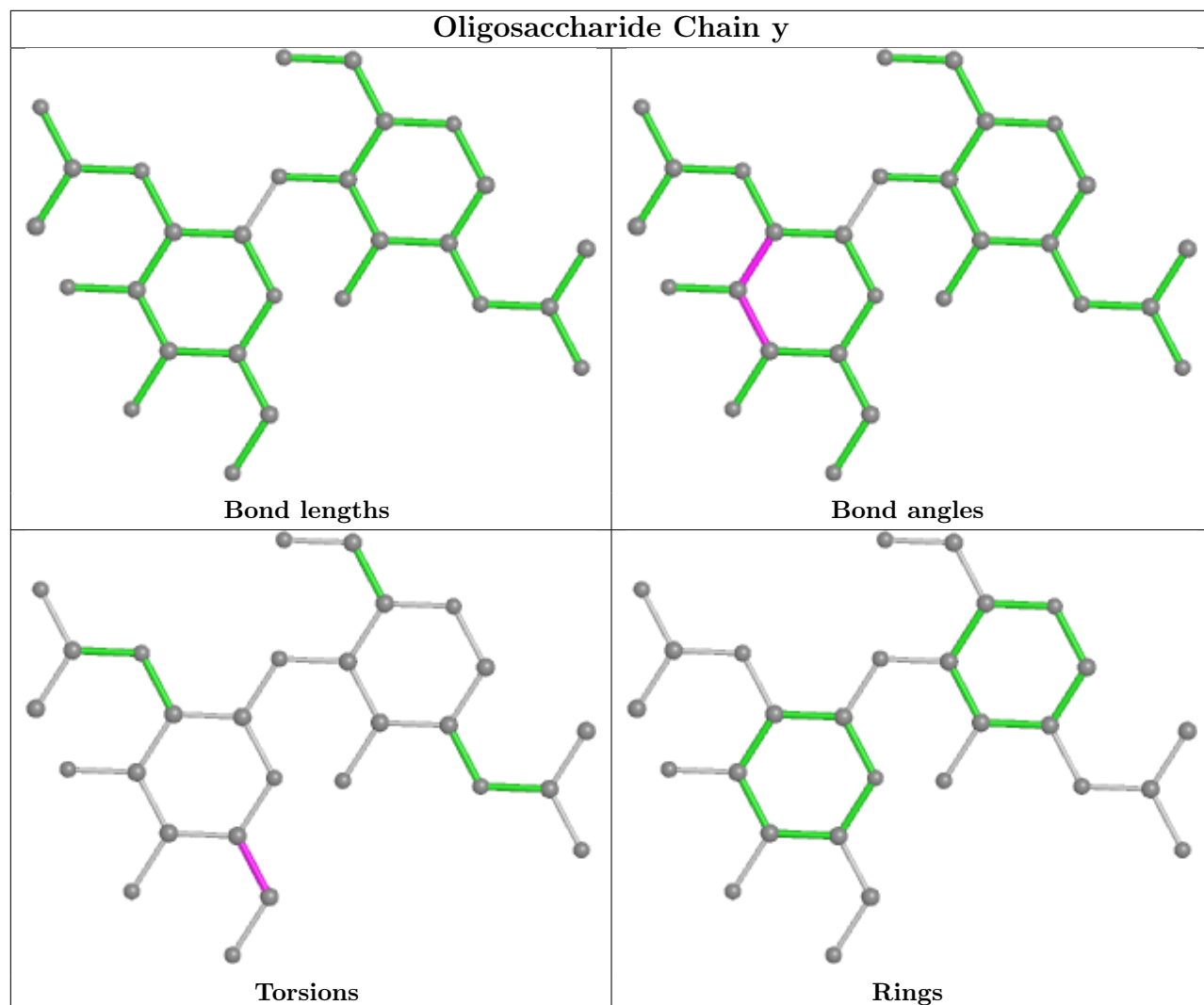


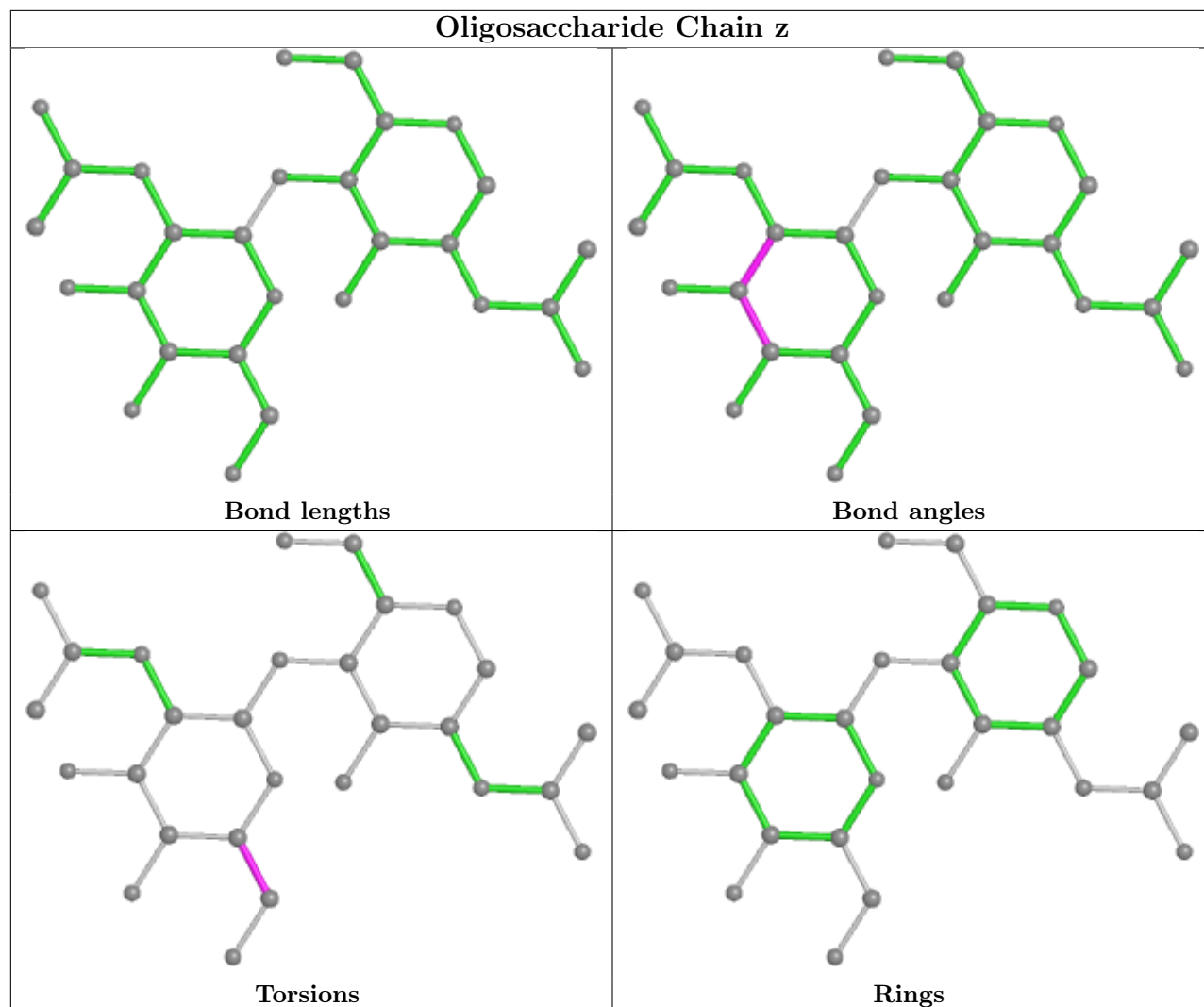


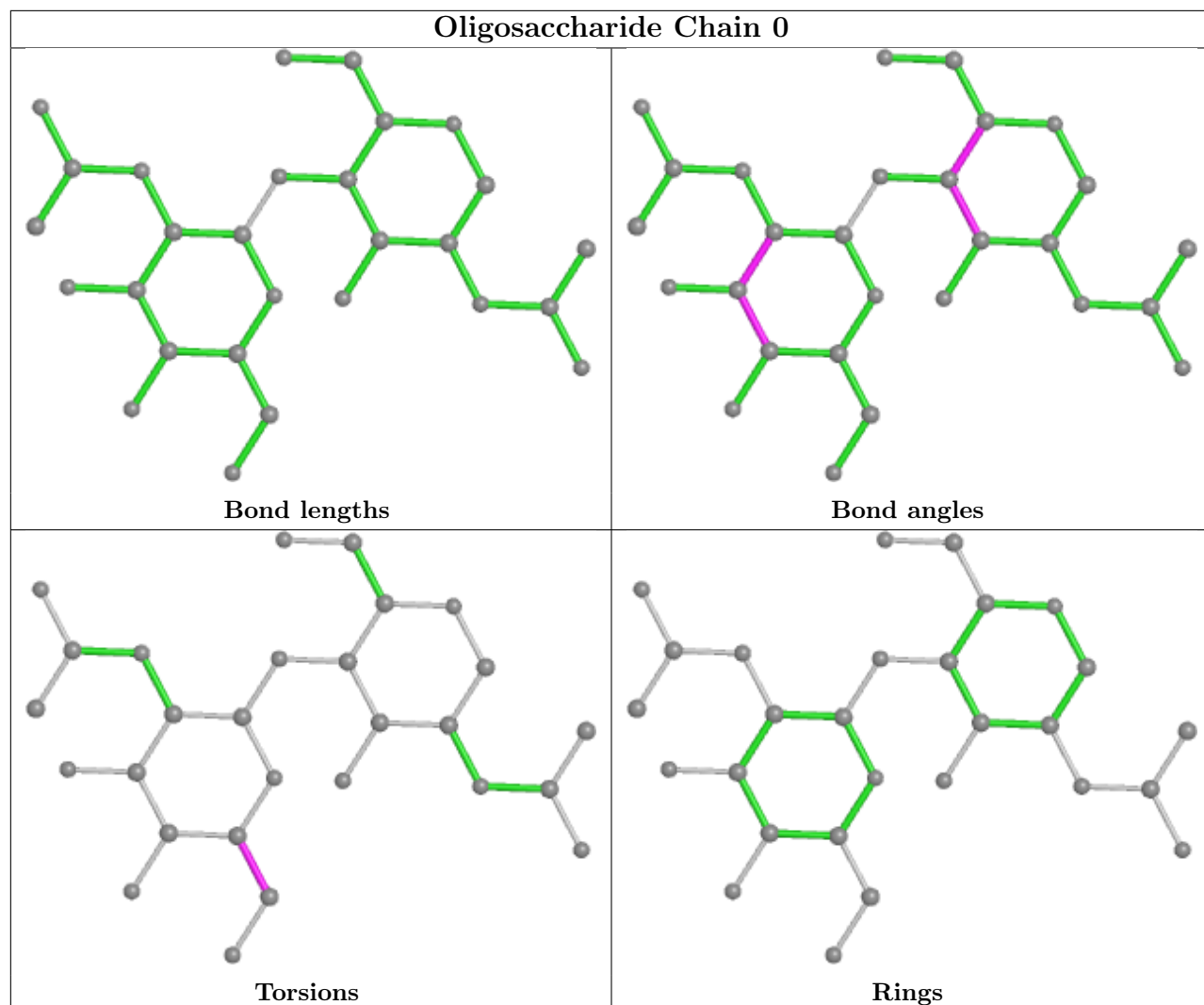


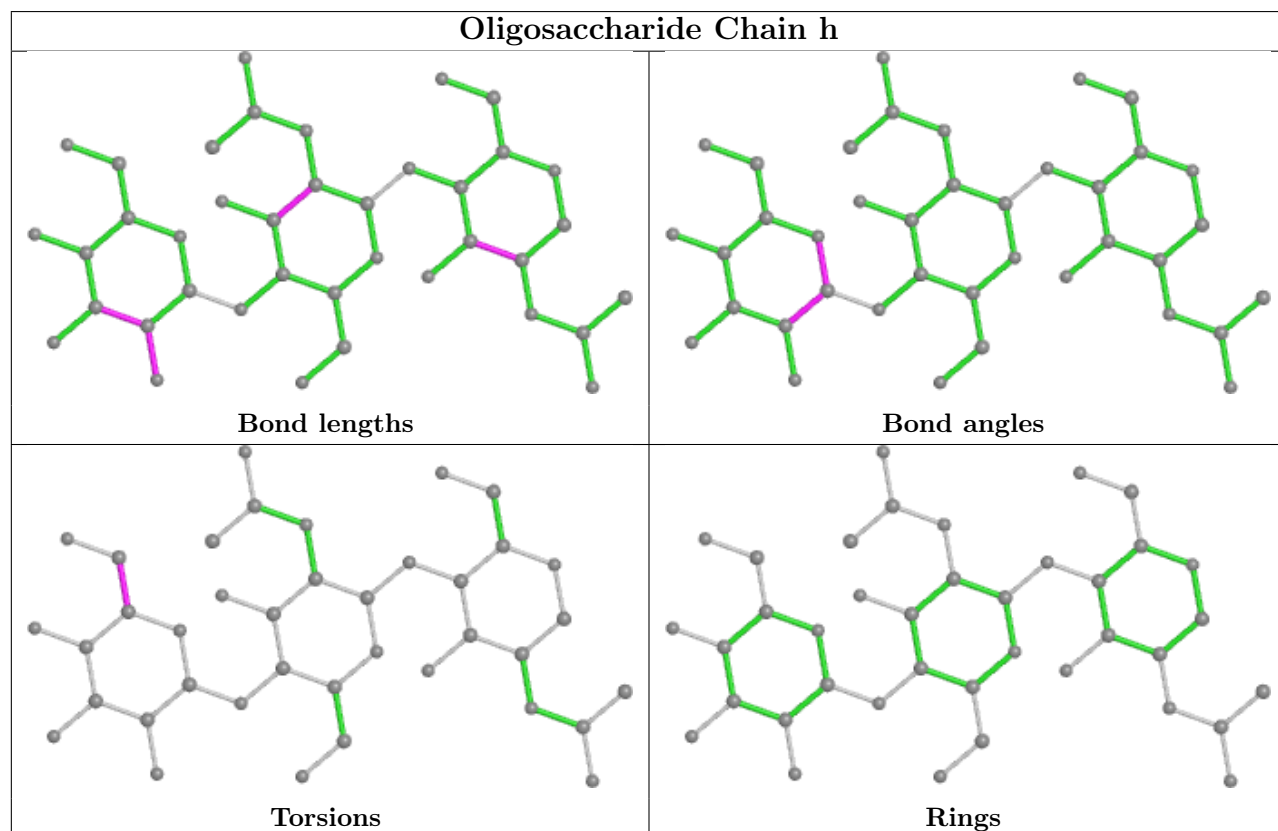
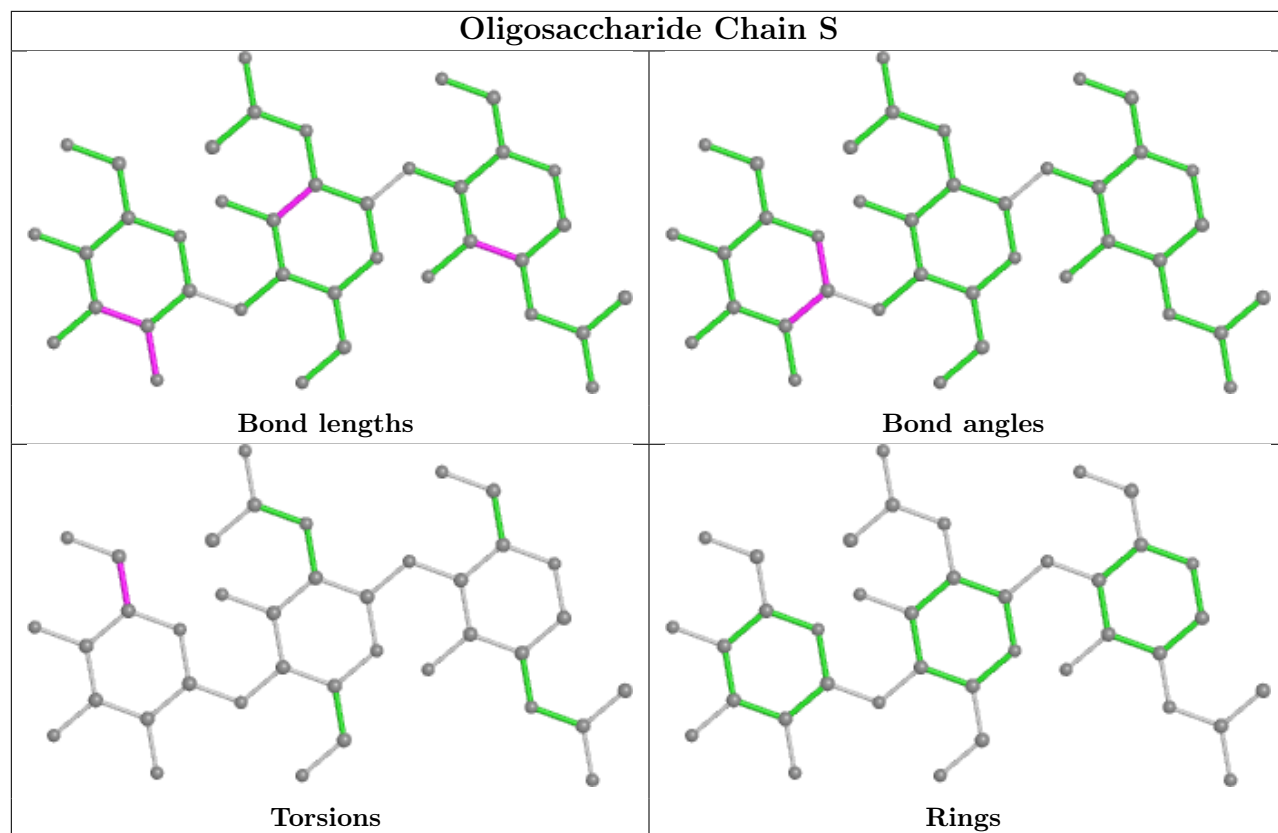




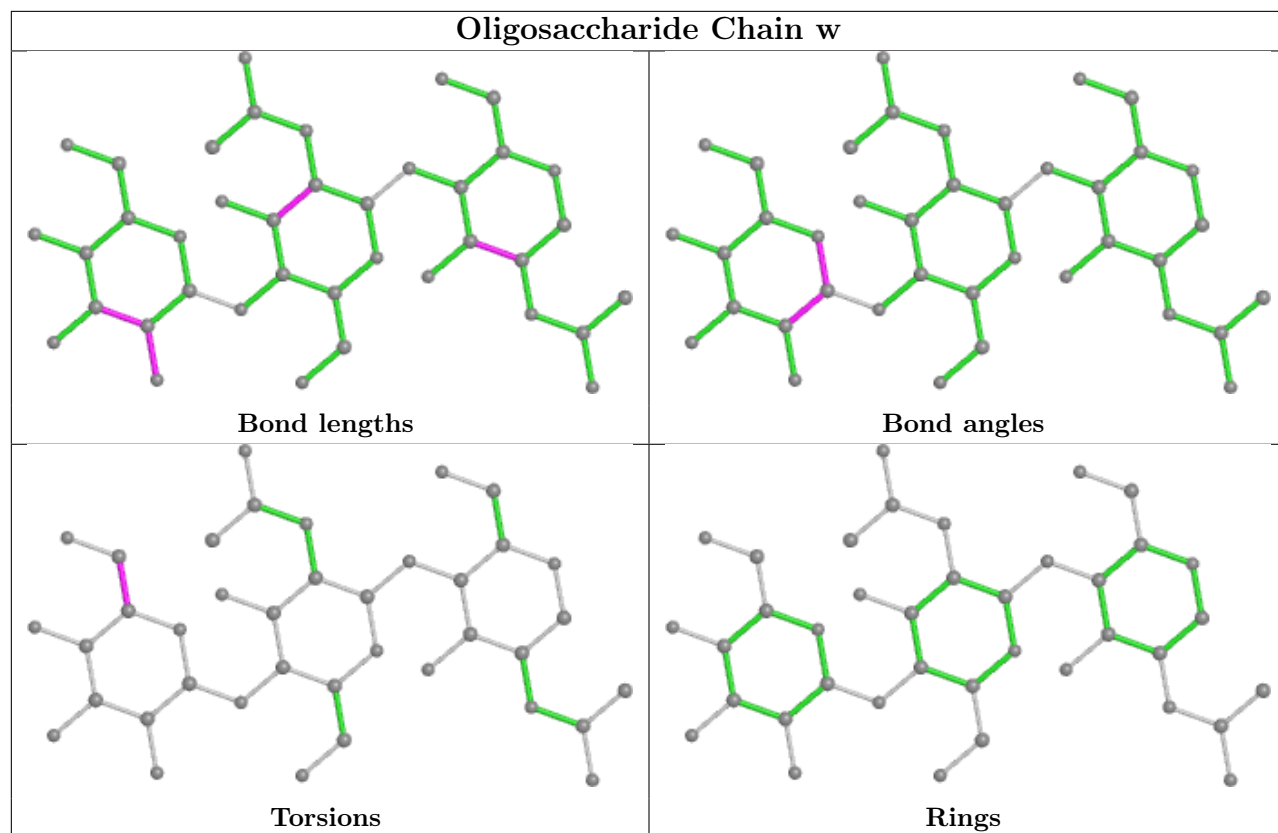


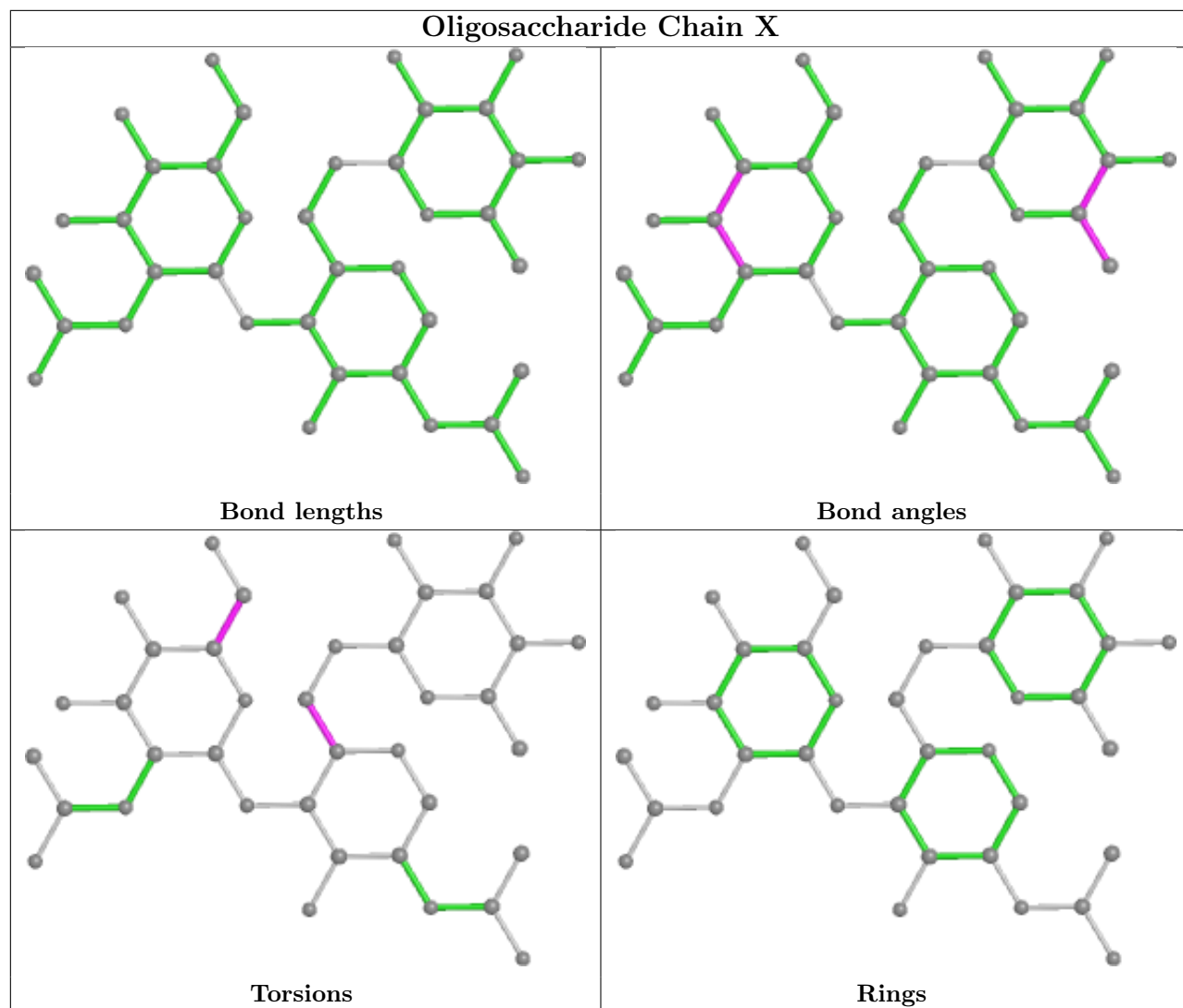


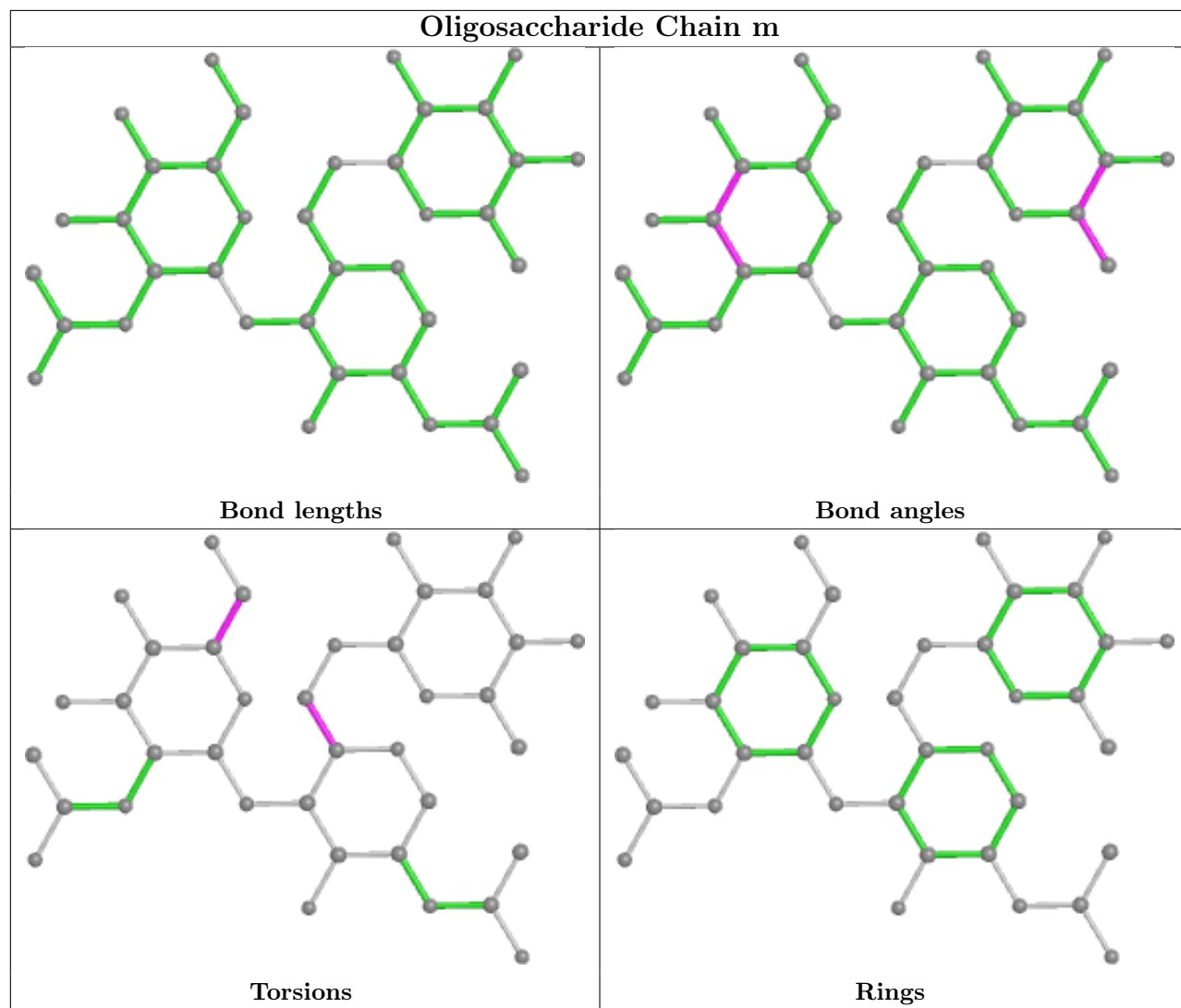


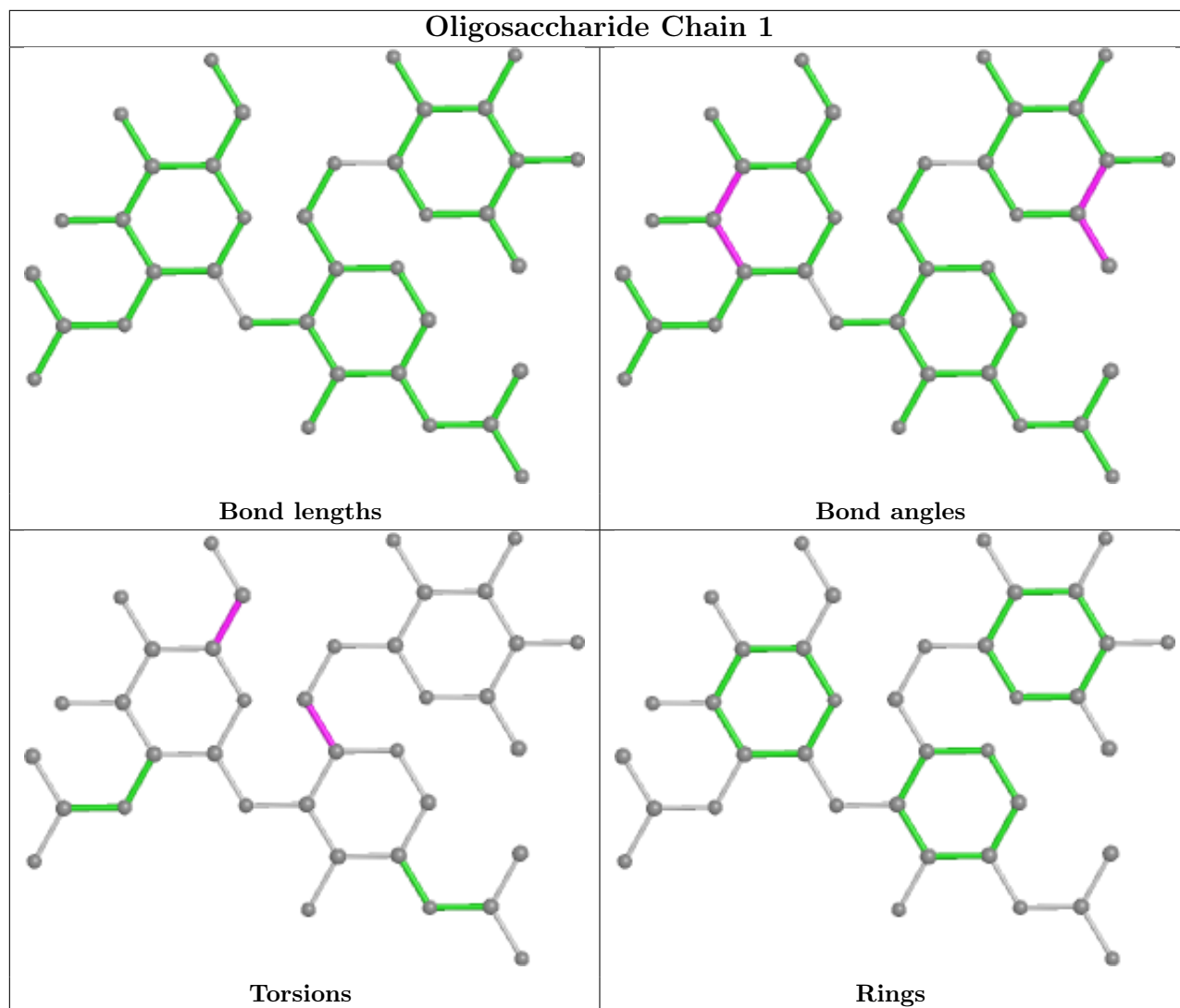












## 5.6 Ligand geometry [i](#)

21 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
8	NAG	E	741	1	14,14,15	0.80	0	17,19,21	1.09	1 (5%)
8	NAG	A	738	1	14,14,15	0.86	0	17,19,21	0.90	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
8	NAG	A	741	1	14,14,15	0.79	0	17,19,21	1.10	1 (5%)
8	NAG	A	740	1	14,14,15	0.78	0	17,19,21	0.97	1 (5%)
8	NAG	E	740	1	14,14,15	0.78	0	17,19,21	0.97	1 (5%)
8	NAG	E	745	1	14,14,15	0.92	0	17,19,21	1.03	1 (5%)
8	NAG	A	729	1	14,14,15	0.80	0	17,19,21	0.76	1 (5%)
8	NAG	B	739	1	14,14,15	0.82	0	17,19,21	0.99	1 (5%)
8	NAG	E	710	1	14,14,15	0.92	0	17,19,21	0.88	1 (5%)
8	NAG	B	738	1	14,14,15	0.85	0	17,19,21	0.89	1 (5%)
8	NAG	B	745	1	14,14,15	0.92	0	17,19,21	1.03	1 (5%)
8	NAG	B	741	1	14,14,15	0.80	0	17,19,21	1.10	1 (5%)
8	NAG	B	729	1	14,14,15	0.81	0	17,19,21	0.77	1 (5%)
8	NAG	B	740	1	14,14,15	0.77	0	17,19,21	0.97	1 (5%)
8	NAG	E	739	1	14,14,15	0.82	0	17,19,21	0.99	1 (5%)
8	NAG	E	729	1	14,14,15	0.80	0	17,19,21	0.77	1 (5%)
8	NAG	A	745	1	14,14,15	0.92	0	17,19,21	1.03	1 (5%)
8	NAG	A	739	1	14,14,15	0.82	0	17,19,21	1.00	1 (5%)
8	NAG	B	710	1	14,14,15	0.92	0	17,19,21	0.88	1 (5%)
8	NAG	E	738	1	14,14,15	0.85	0	17,19,21	0.90	1 (5%)
8	NAG	A	710	1	14,14,15	0.92	0	17,19,21	0.88	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	NAG	E	741	1	-	1/6/23/26	0/1/1/1
8	NAG	A	738	1	-	1/6/23/26	0/1/1/1
8	NAG	A	741	1	-	1/6/23/26	0/1/1/1
8	NAG	A	740	1	-	1/6/23/26	0/1/1/1
8	NAG	E	740	1	-	1/6/23/26	0/1/1/1
8	NAG	E	745	1	-	1/6/23/26	0/1/1/1
8	NAG	A	729	1	-	1/6/23/26	0/1/1/1
8	NAG	B	739	1	-	2/6/23/26	0/1/1/1
8	NAG	E	710	1	-	2/6/23/26	0/1/1/1
8	NAG	B	738	1	-	1/6/23/26	0/1/1/1
8	NAG	B	745	1	-	1/6/23/26	0/1/1/1
8	NAG	B	741	1	-	1/6/23/26	0/1/1/1

Continued on next page...

*Continued from previous page...*

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	NAG	B	729	1	-	1/6/23/26	0/1/1/1
8	NAG	B	740	1	-	1/6/23/26	0/1/1/1
8	NAG	E	739	1	-	2/6/23/26	0/1/1/1
8	NAG	E	729	1	-	1/6/23/26	0/1/1/1
8	NAG	A	745	1	-	1/6/23/26	0/1/1/1
8	NAG	A	739	1	-	2/6/23/26	0/1/1/1
8	NAG	B	710	1	-	2/6/23/26	0/1/1/1
8	NAG	E	738	1	-	1/6/23/26	0/1/1/1
8	NAG	A	710	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 21 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
8	B	741	NAG	C4-C3-C2	-3.36	106.09	111.02
8	A	741	NAG	C4-C3-C2	-3.36	106.10	111.02
8	E	741	NAG	C4-C3-C2	-3.34	106.12	111.02
8	A	739	NAG	C4-C3-C2	-3.09	106.49	111.02
8	E	739	NAG	C4-C3-C2	-3.08	106.50	111.02

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	739	NAG	O5-C5-C6-O6
8	B	739	NAG	O5-C5-C6-O6
8	E	739	NAG	O5-C5-C6-O6
8	B	710	NAG	O5-C5-C6-O6
8	A	710	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

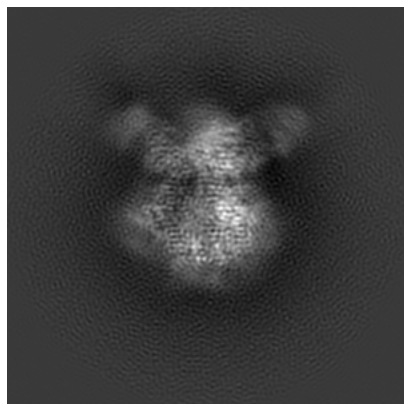
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20260. These allow visual inspection of the internal detail of the map and identification of artifacts.

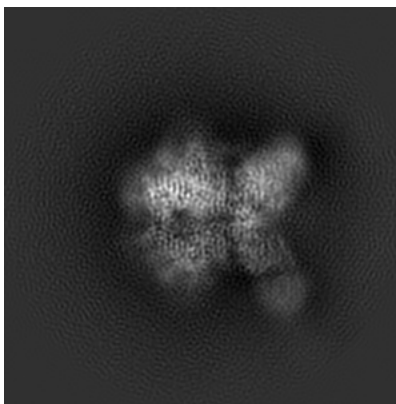
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

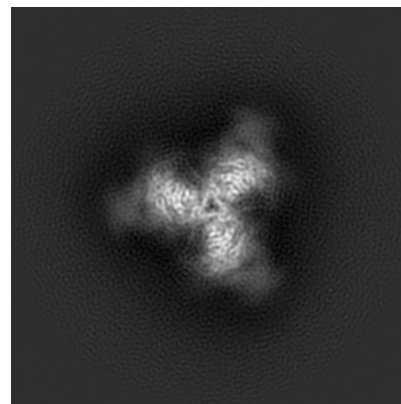
#### 6.1.1 Primary map



X

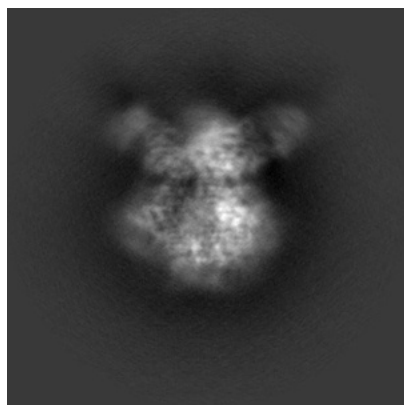


Y

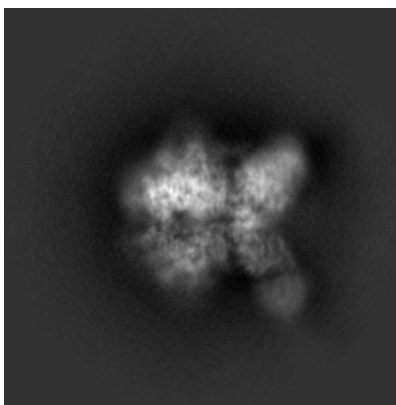


Z

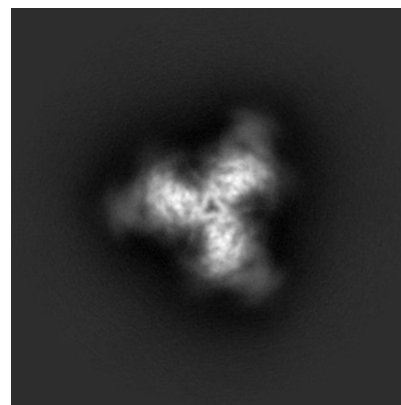
#### 6.1.2 Raw map



X



Y



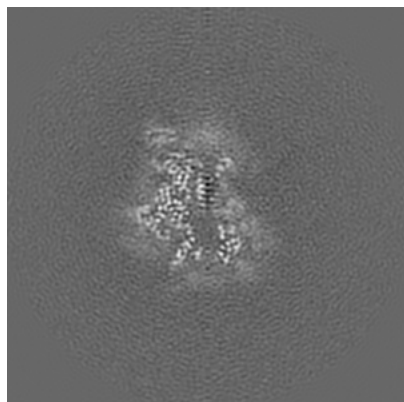
Z

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

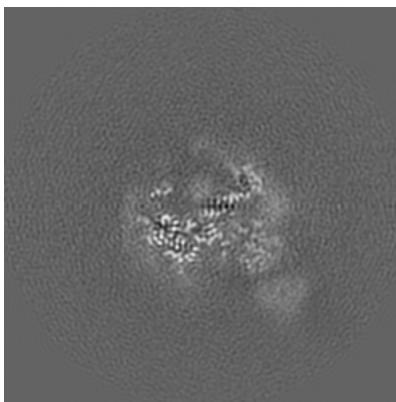


## 6.2 Central slices [i](#)

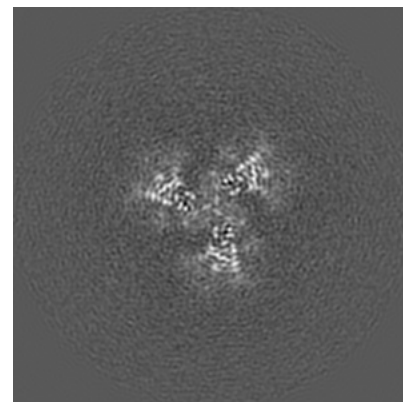
### 6.2.1 Primary map



X Index: 144

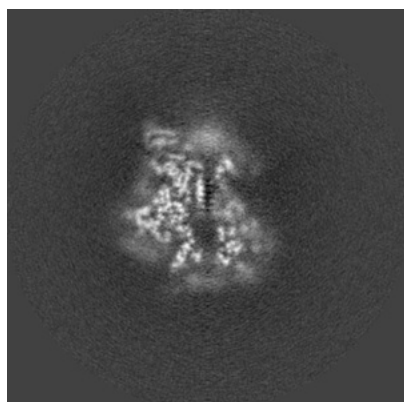


Y Index: 144

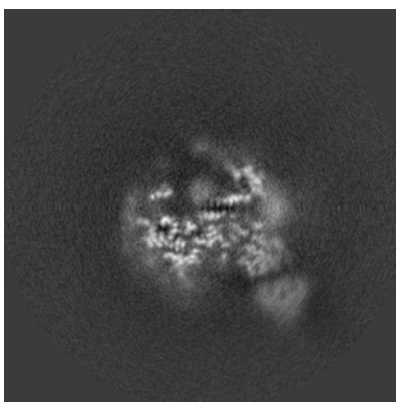


Z Index: 144

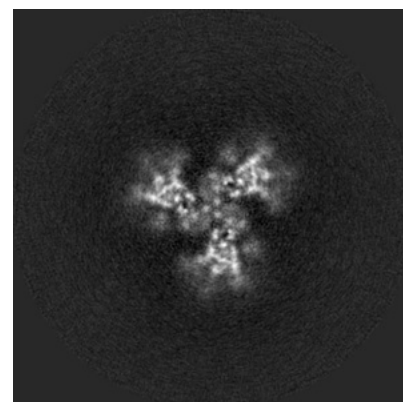
### 6.2.2 Raw map



X Index: 144



Y Index: 144

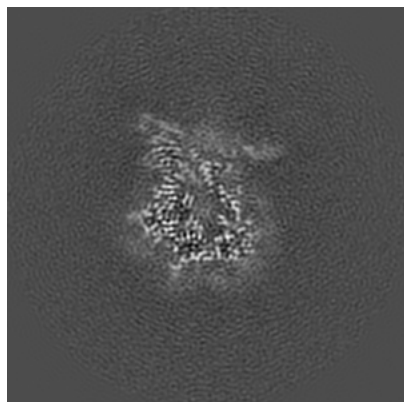


Z Index: 144

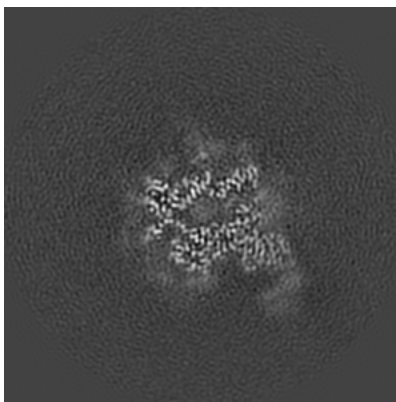
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

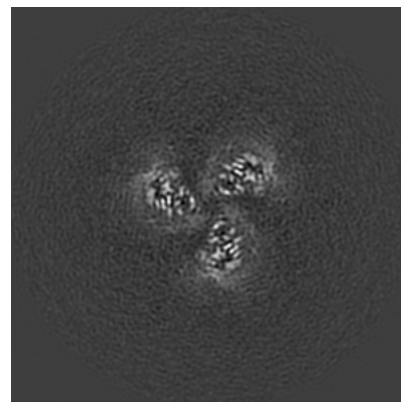
### 6.3.1 Primary map



X Index: 152

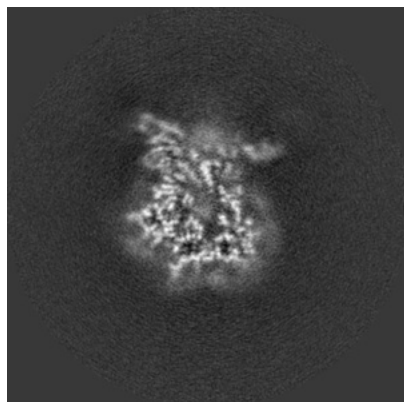


Y Index: 154

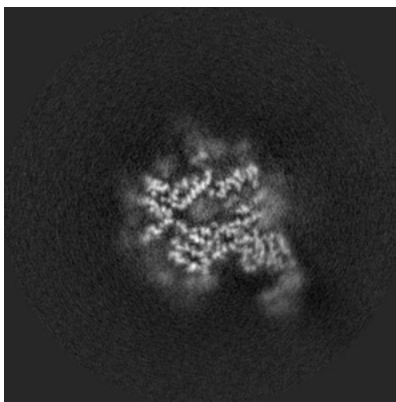


Z Index: 135

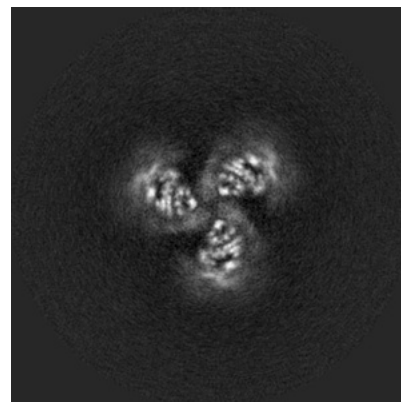
### 6.3.2 Raw map



X Index: 152



Y Index: 154

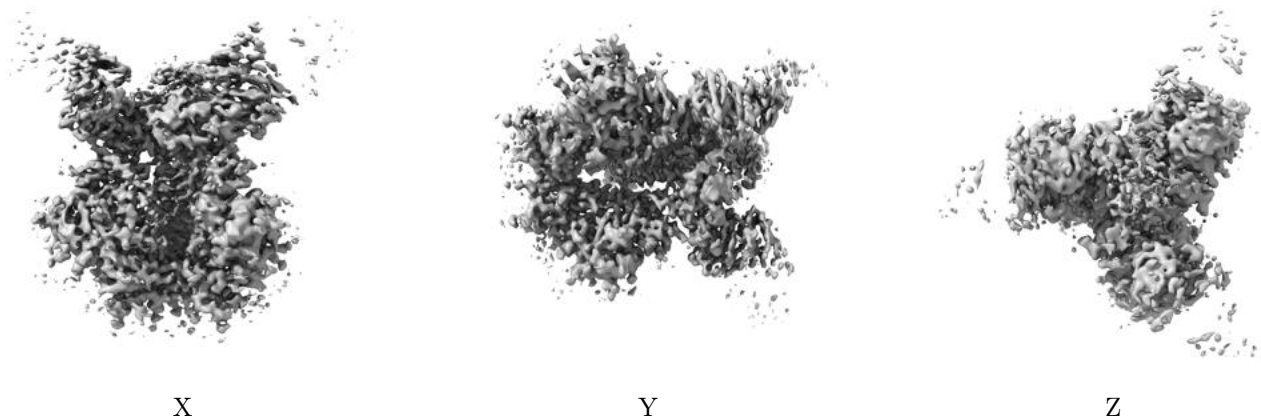


Z Index: 136

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

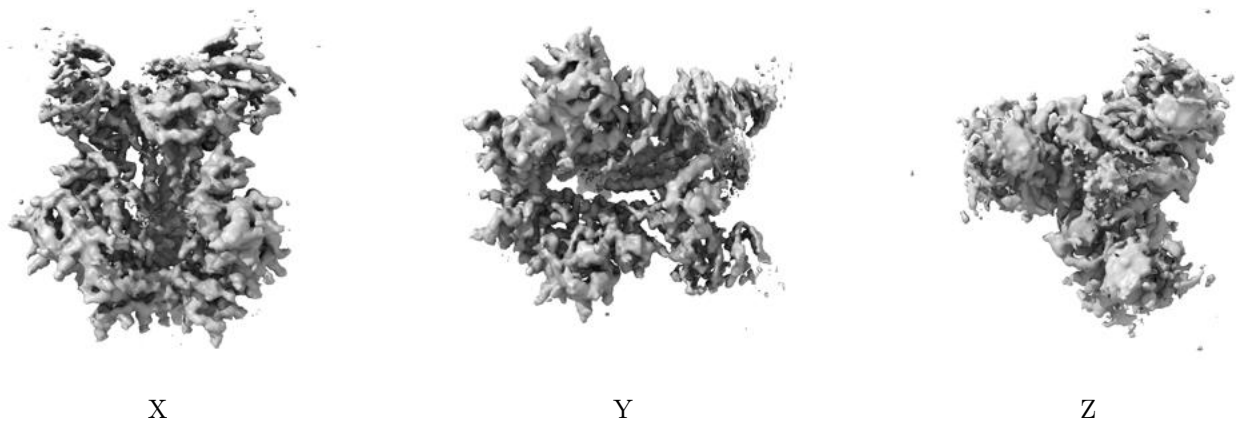
## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.4.2 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.

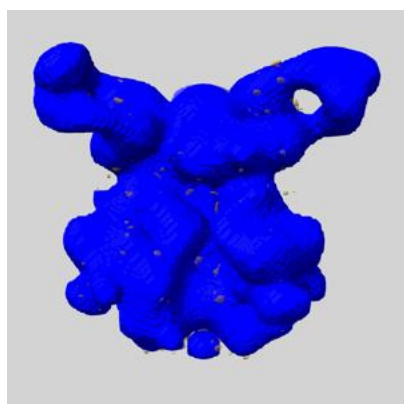
## 6.5 Mask visualisation [i](#)

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

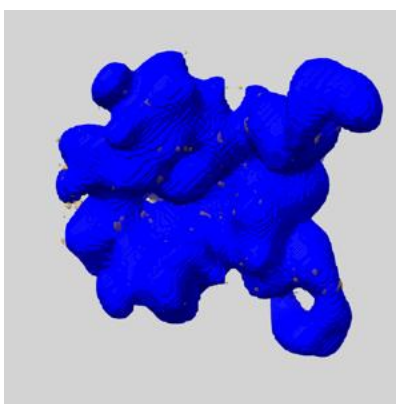
A mask typically either:

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

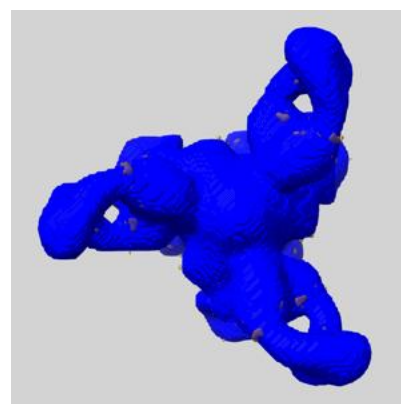
### 6.5.1 emd\_20260\_msk\_1.map [i](#)



X



Y

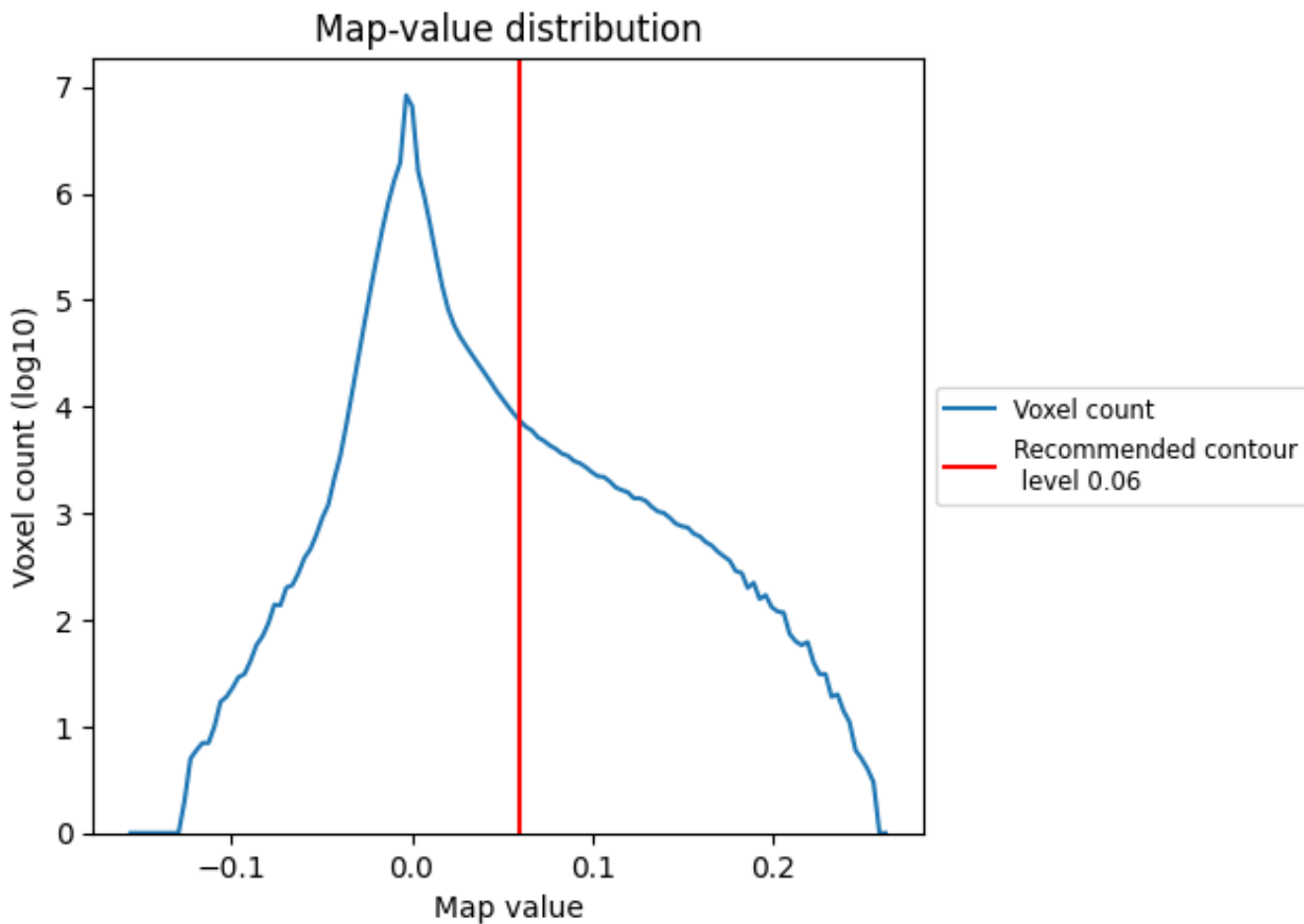


Z

## 7 Map analysis [i](#)

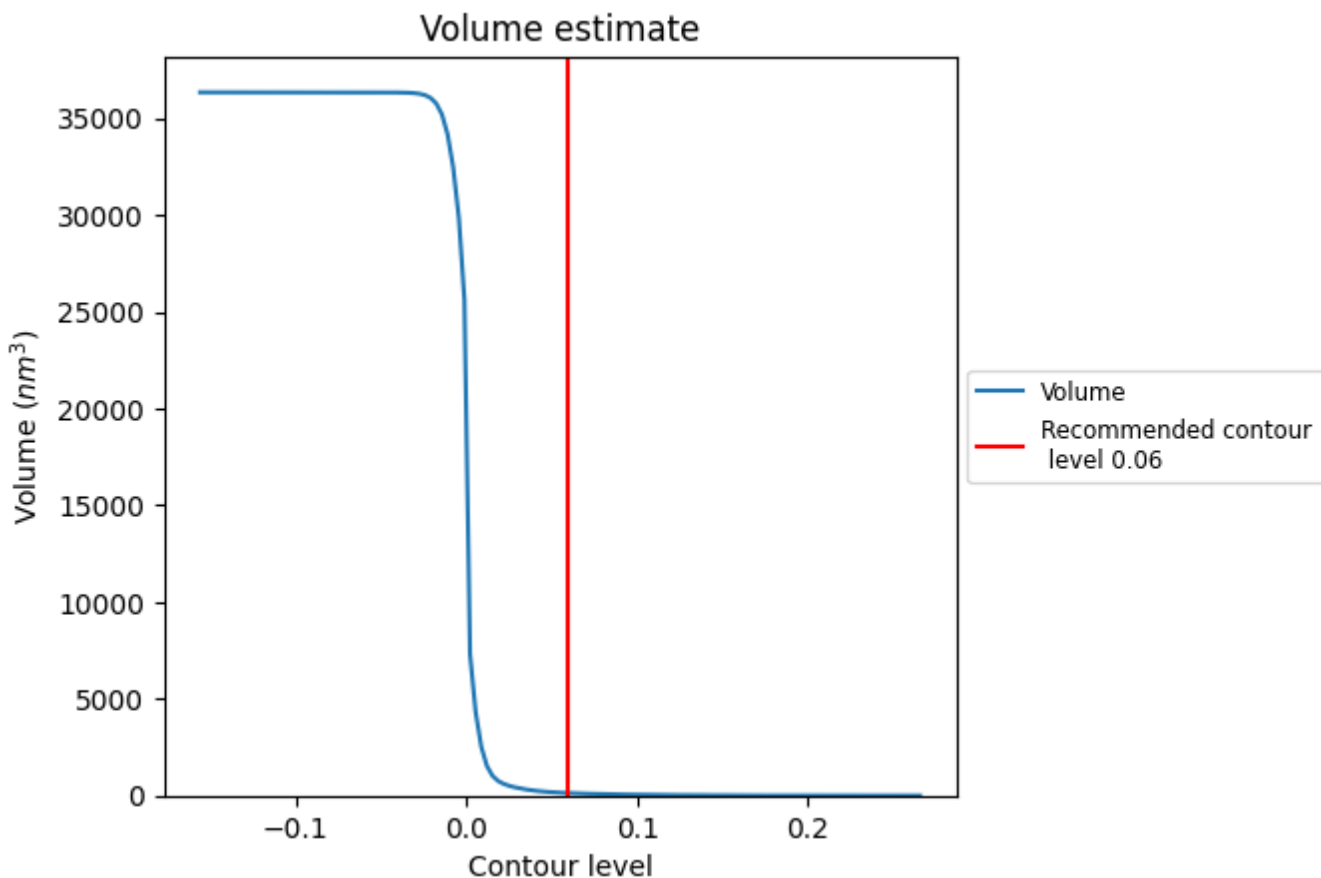
This section contains the results of statistical analysis of the map.

### 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.

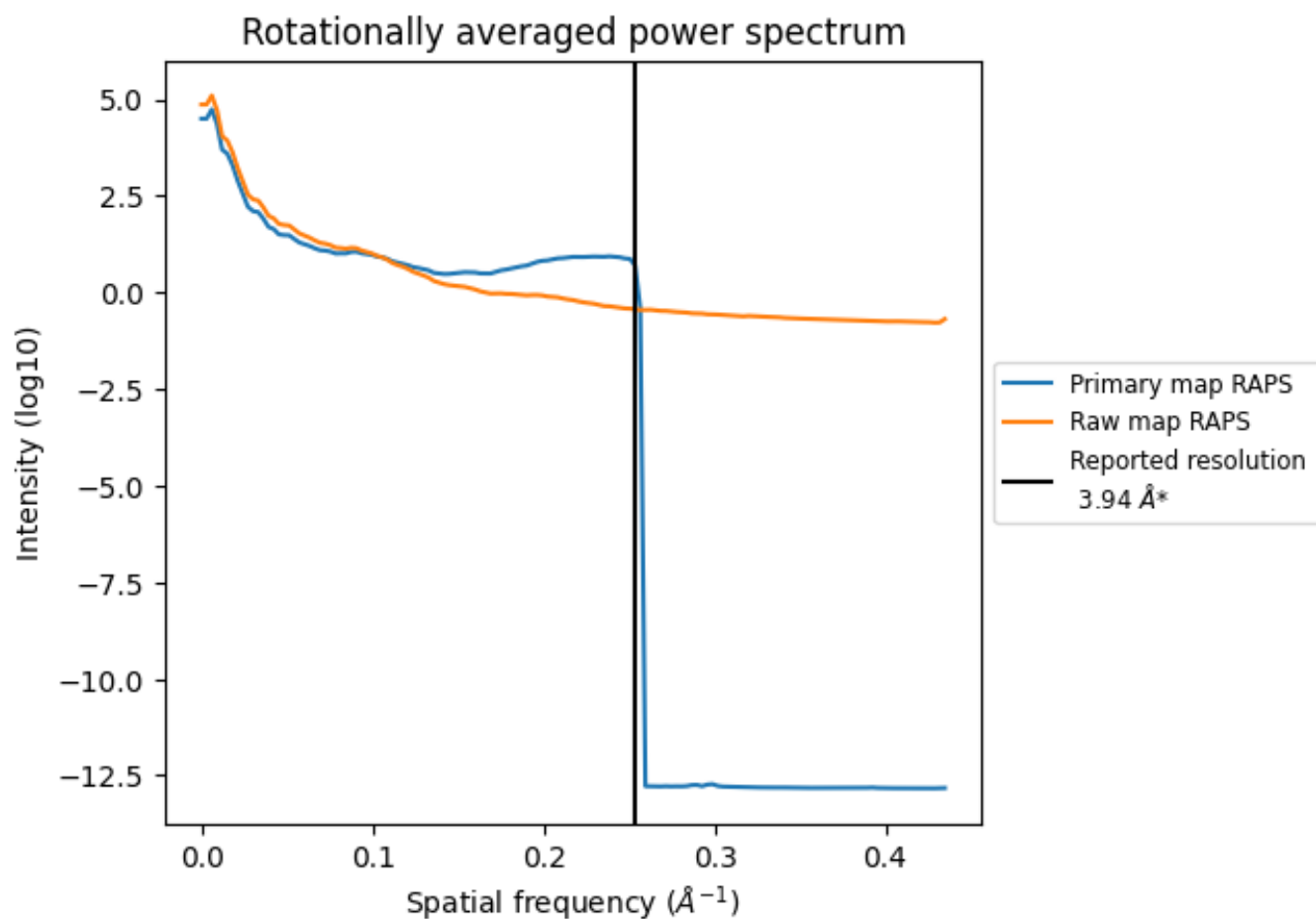
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 128 nm<sup>3</sup>; this corresponds to an approximate mass of 115 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

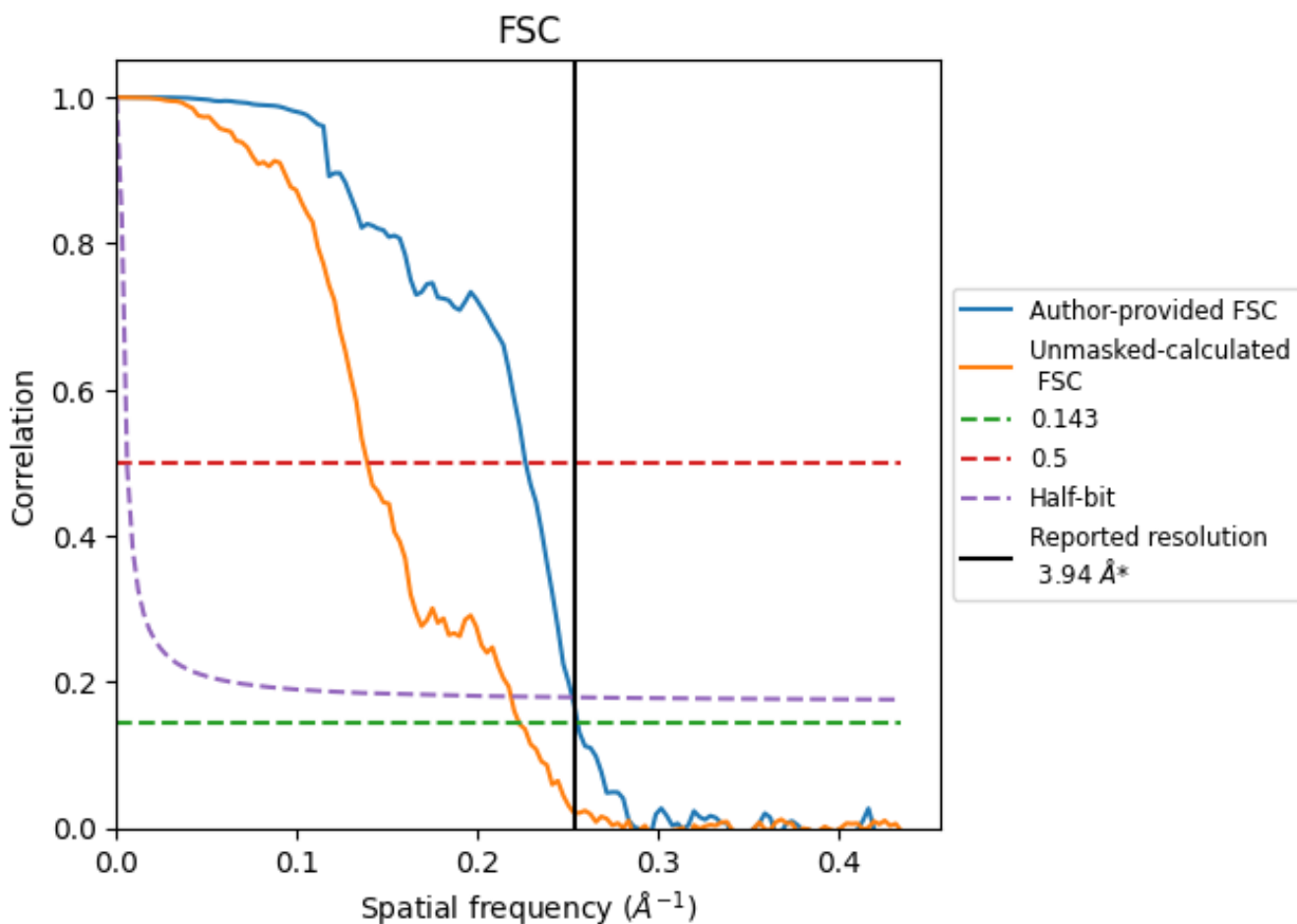


\*Reported resolution corresponds to spatial frequency of  $0.254 \text{ \AA}^{-1}$

## 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 0.254 Å<sup>-1</sup>



## 8.2 Resolution estimates [i](#)

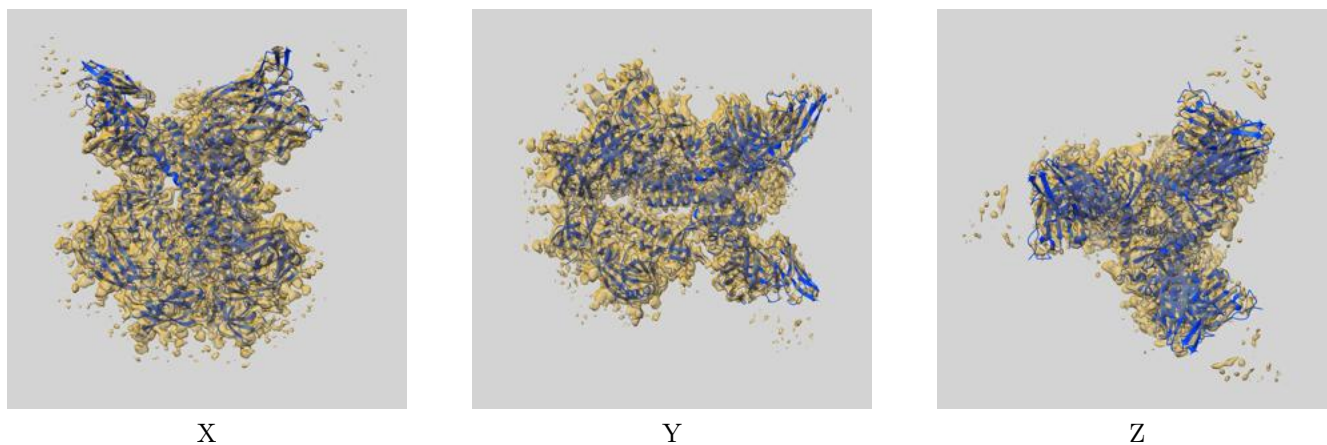
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.94	-	-
Author-provided FSC curve	3.91	4.41	3.96
Unmasked-calculated*	4.48	7.19	4.57

\*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 4.48 differs from the reported value 3.94 by more than 10 %

## 9 Map-model fit [i](#)

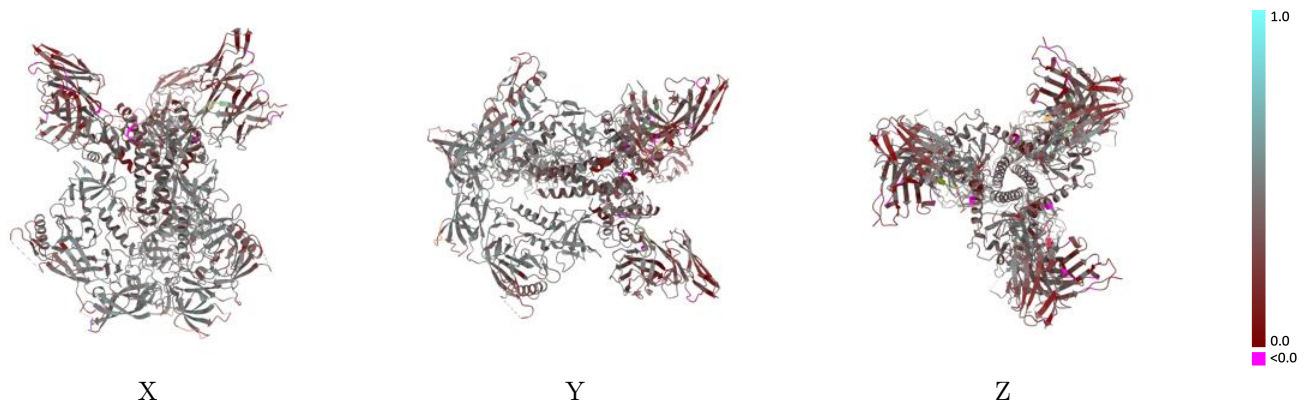
This section contains information regarding the fit between EMDB map EMD-20260 and PDB model 6P65. Per-residue inclusion information can be found in section 3 on page 11.

### 9.1 Map-model overlay [i](#)



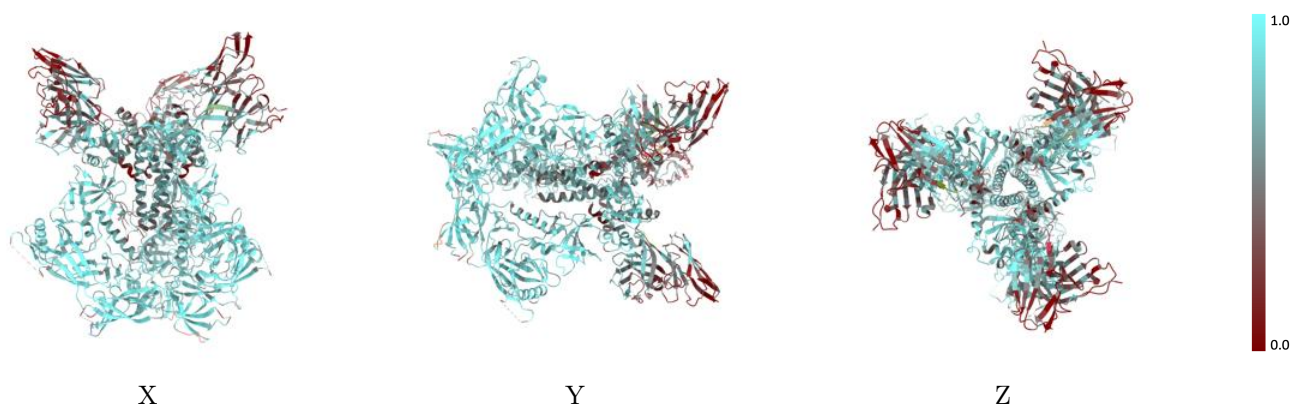
The images above show the 3D surface view of the map at the recommended contour level 0.06 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



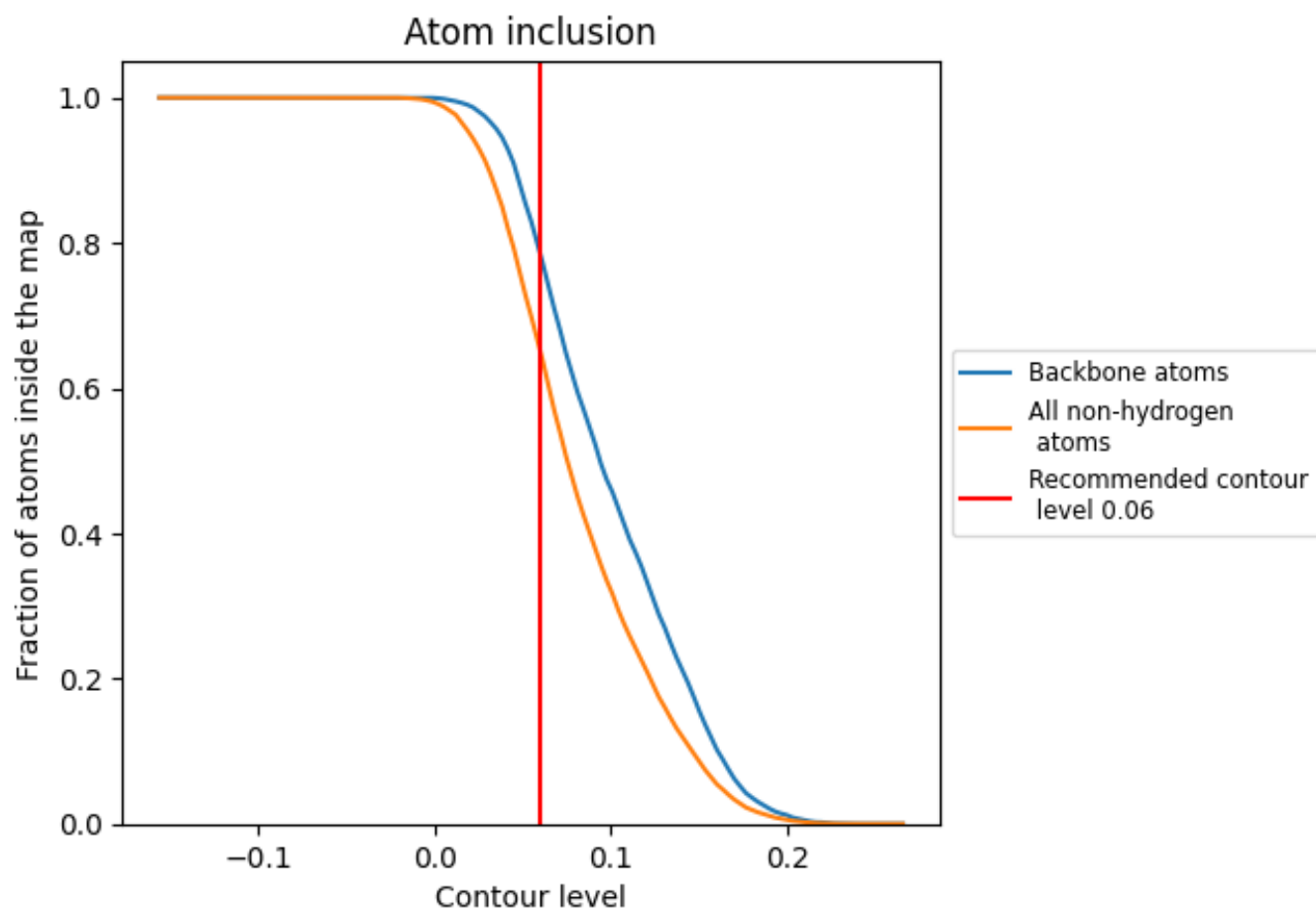
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.06).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 79% of all backbone atoms, 65% 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 (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6533	 0.3880
0	 0.6071	 0.3880
1	 0.3947	 0.3600
A	 0.7434	 0.4180
B	 0.7438	 0.4170
C	 0.4886	 0.3180
D	 0.3747	 0.2980
E	 0.7422	 0.4180
F	 0.4854	 0.3140
G	 0.3797	 0.2990
H	 0.4810	 0.3170
I	 0.5410	 0.4030
J	 0.8214	 0.4370
K	 0.6786	 0.4380
L	 0.3759	 0.2980
M	 0.5714	 0.4340
N	 0.5000	 0.3110
O	 0.6429	 0.3920
P	 0.5714	 0.4430
Q	 0.8689	 0.4660
R	 0.5000	 0.3110
S	 0.6410	 0.4120
T	 0.7143	 0.4030
U	 0.4286	 0.3720
V	 0.6071	 0.3990
W	 0.6071	 0.4000
X	 0.3947	 0.3680
Y	 0.5410	 0.4000
Z	 0.8214	 0.4150
a	 0.6786	 0.4410
b	 0.5714	 0.4330
c	 0.5000	 0.3140
d	 0.6429	 0.3970
e	 0.6071	 0.4550
f	 0.8689	 0.4590



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Chain	Atom inclusion	Q-score
g	 0.4643	 0.2870
h	 0.6667	 0.4160
i	 0.6786	 0.4050
j	 0.4643	 0.3860
k	 0.6071	 0.4160
l	 0.6071	 0.3950
m	 0.4211	 0.3570
n	 0.5410	 0.4090
o	 0.8214	 0.4160
p	 0.6786	 0.4510
q	 0.5714	 0.4300
r	 0.5000	 0.3200
s	 0.6786	 0.4020
t	 0.6071	 0.4530
u	 0.8689	 0.4700
v	 0.4643	 0.2950
w	 0.6410	 0.4280
x	 0.6786	 0.3950
y	 0.4286	 0.3620
z	 0.6071	 0.4230