



wwPDB EM Validation Summary Report ⓘ

Jun 12, 2024 – 10:47 AM JST

PDB ID : 8JUJ
EMDB ID : EMD-36664
Title : rat megalin
Authors : Goto, S.; Tsutsumi, A.; Lee, Y.; Hosojima, M.; Kabasawa, H.; Komochi, K.; Yun-san, L.; Nagatoshi, S.; Tsumoto, K.; Nishizawa, T.; Kikkawa, M.; Saito, A.
Deposited on : 2023-06-27
Resolution : 3.80 Å (reported)
Based on initial model : .

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

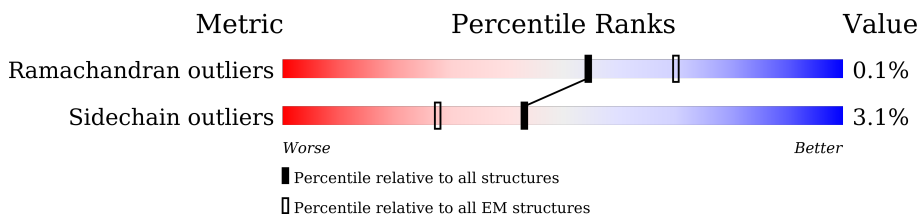
EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

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 3.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



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

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

Mol	Chain	Length	Quality of chain
1	A	4660	
1	B	4660	
2	C	6	
2	I	6	
3	D	3	
3	J	3	
4	G	5	
4	K	5	
5	H	5	

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Mol	Chain	Length	Quality of chain
5	L	5	100%
5	O	5	100%
5	R	5	100%
6	M	6	83%
6	P	6	67%
7	N	5	100%
7	Q	5	100%
8	E	3	67%
8	T	3	67%
8	b	3	100%
8	c	3	33%
8	l	3	100%
8	o	3	67%
8	w	3	67%
8	x	3	33%
9	0	2	100%
9	3	2	100%
9	5	2	100%
9	F	2	100%
9	S	2	50%
9	U	2	100%
9	V	2	50%
9	X	2	50%
9	Z	2	50%
9	a	2	50%

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Mol	Chain	Length	Quality of chain
9	e	2	100% 100%
9	f	2	50% 100%
9	i	2	100% 100%
9	k	2	100% 100%
9	m	2	50% 50%
9	n	2	50% 100%
9	p	2	50% 50%
9	q	2	100% 100%
9	s	2	50% 100%
9	u	2	50% 100%
9	v	2	50% 100%
9	z	2	100% 100%
10	1	5	100% 20% 80%
10	2	5	80% 100%
10	W	5	60% 80% 20%
10	Y	5	100%
10	d	5	60% 80% 20%
10	g	5	100% 60% 40%
10	h	5	80% 60% 40%
10	r	5	80% 40% 60%
10	t	5	100%
10	y	5	40% 80% 20%
11	4	3	100% 67% 33%
11	j	3	100% 100%

2 Entry composition [i](#)

There are 15 unique types of molecules in this entry. The entry contains 70018 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 LDL receptor related protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	4308	33638	20708	5950	6605	375	0	0
1	B	4308	33638	20708	5950	6605	375	0	0

- Molecule 2 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	C	6	33	21	6	6	0	0
2	I	6	33	21	6	6	0	0

- Molecule 3 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	3	16	9	3	3	1	0	0
3	J	3	16	9	3	3	1	0	0

- Molecule 4 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	G	5	33	19	5	9	0	0
4	K	5	33	19	5	9	0	0

- Molecule 5 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	H	5	Total	C	N	O	0	0
			28	16	6	6		
5	L	5	Total	C	N	O	0	0
			28	16	6	6		
5	O	5	Total	C	N	O	0	0
			28	16	6	6		
5	R	5	Total	C	N	O	0	0
			28	16	6	6		

- Molecule 6 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	M	6	Total	C	N	O	0	0
			30	18	6	6		
6	P	6	Total	C	N	O	0	0
			30	18	6	6		

- Molecule 7 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	N	5	Total	C	N	O	0	0
			28	16	6	6		
7	Q	5	Total	C	N	O	0	0
			28	16	6	6		

- Molecule 8 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
8	E	3	Total	C	N	O	0	0
			39	22	2	15		
8	T	3	Total	C	N	O	0	0
			39	22	2	15		
8	b	3	Total	C	N	O	0	0
			39	22	2	15		
8	c	3	Total	C	N	O	0	0
			39	22	2	15		
8	l	3	Total	C	N	O	0	0
			39	22	2	15		

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	o	3	Total 39	C 22	N 2	O 15	0	0
8	w	3	Total 39	C 22	N 2	O 15	0	0
8	x	3	Total 39	C 22	N 2	O 15	0	0

- Molecule 9 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



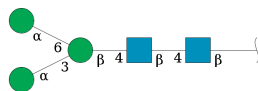
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	F	2	Total 28	C 16	N 2	O 10	0	0
9	S	2	Total 28	C 16	N 2	O 10	0	0
9	U	2	Total 28	C 16	N 2	O 10	0	0
9	V	2	Total 28	C 16	N 2	O 10	0	0
9	X	2	Total 28	C 16	N 2	O 10	0	0
9	Z	2	Total 28	C 16	N 2	O 10	0	0
9	a	2	Total 28	C 16	N 2	O 10	0	0
9	e	2	Total 28	C 16	N 2	O 10	0	0
9	f	2	Total 28	C 16	N 2	O 10	0	0
9	i	2	Total 28	C 16	N 2	O 10	0	0
9	k	2	Total 28	C 16	N 2	O 10	0	0
9	m	2	Total 28	C 16	N 2	O 10	0	0
9	n	2	Total 28	C 16	N 2	O 10	0	0
9	p	2	Total 28	C 16	N 2	O 10	0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	q	2	28	16	2	10	0	0
9	s	2	28	16	2	10	0	0
9	u	2	28	16	2	10	0	0
9	v	2	28	16	2	10	0	0
9	z	2	28	16	2	10	0	0
9	0	2	28	16	2	10	0	0
9	3	2	28	16	2	10	0	0
9	5	2	28	16	2	10	0	0

- Molecule 10 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		
10	W	5	61	34	2	25	0	0
10	Y	5	61	34	2	25	0	0
10	d	5	61	34	2	25	0	0
10	g	5	61	34	2	25	0	0
10	h	5	61	34	2	25	0	0
10	r	5	61	34	2	25	0	0
10	t	5	61	34	2	25	0	0
10	y	5	61	34	2	25	0	0

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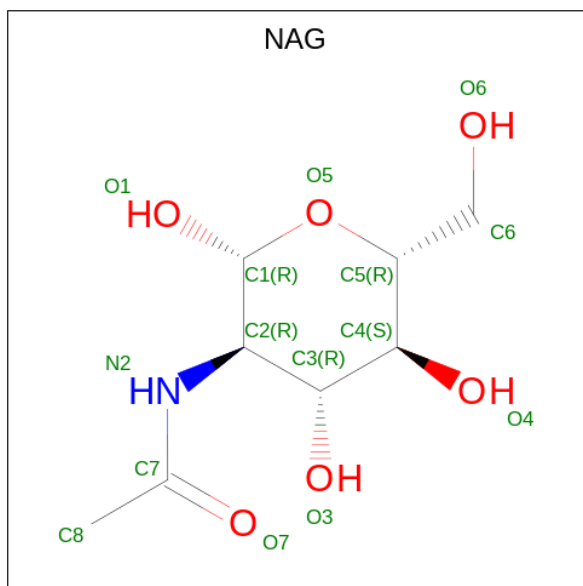
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	1	5	61	34	2	25	0	0
10	2	5	61	34	2	25	0	0

- Molecule 11 is an oligosaccharide called beta-D-mannopyranose-(1-3)-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		
11	j	3	39	22	2	15	0	0
11	4	3	39	22	2	15	0	0

- Molecule 12 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

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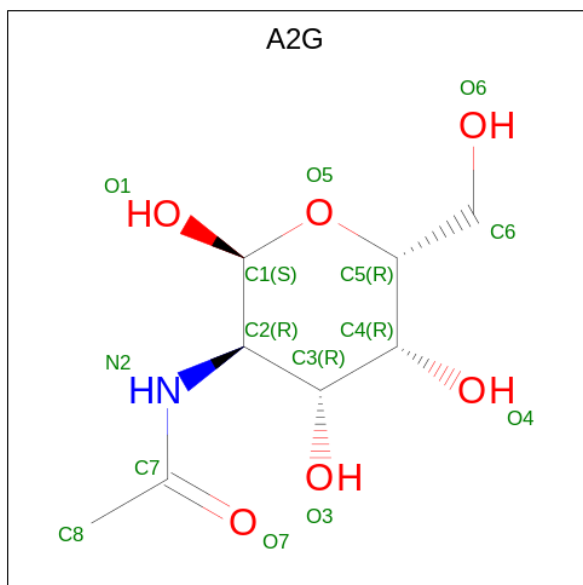
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total 14	8	1	5	0
12	A	1	Total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

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

- Molecule 13 is 2-acetamido-2-deoxy-alpha-D-galactopyranose (three-letter code: A2G) (formula: C₈H₁₅NO₆).



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

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

- Molecule 14 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
14	A	44	Total	Ca	0
			44	44	
14	B	44	Total	Ca	0
			44	44	

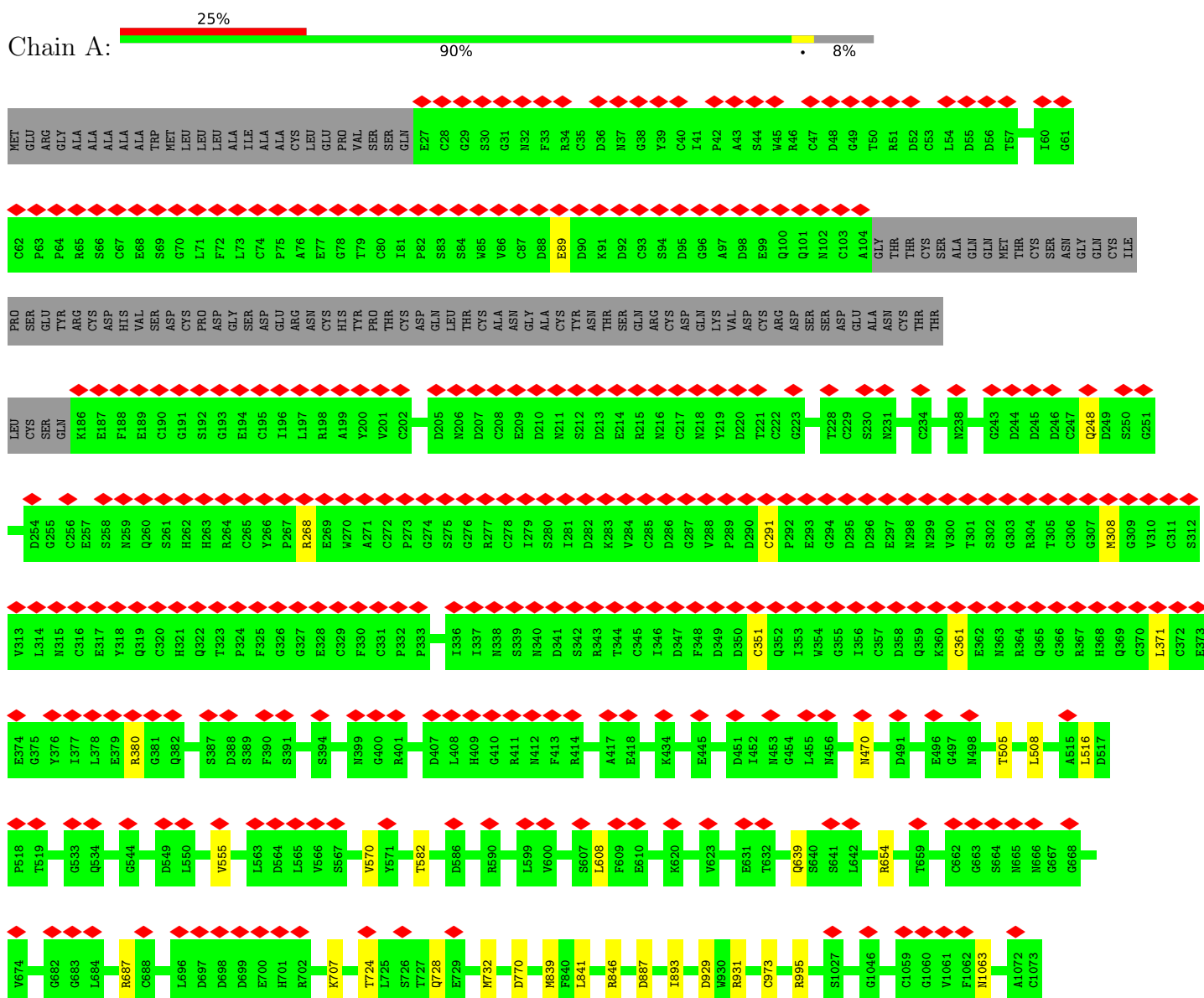
- Molecule 15 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

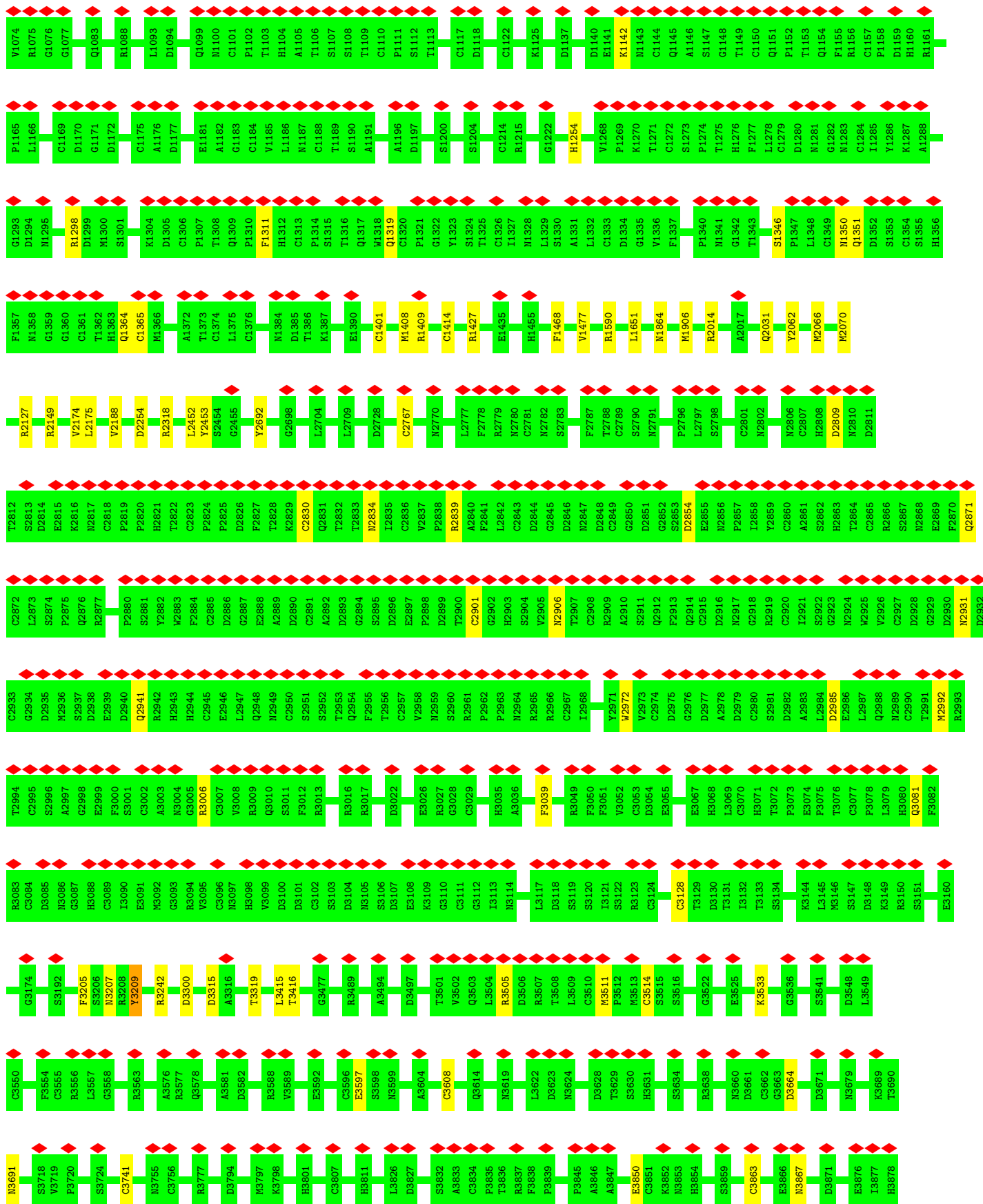
Mol	Chain	Residues	Atoms		AltConf
15	A	1	Total	Ni	0
			1	1	
15	B	1	Total	Ni	0
			1	1	

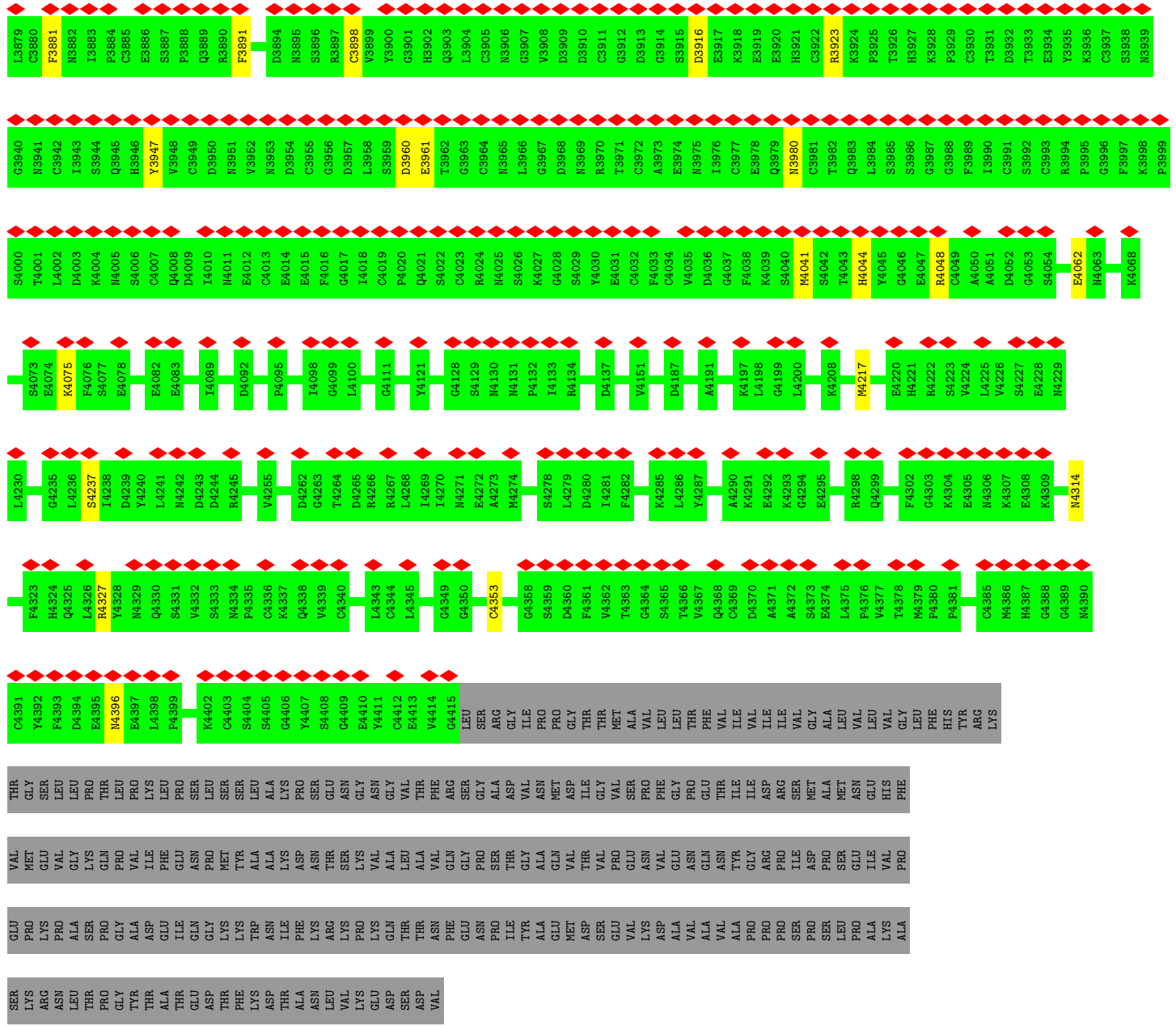
3 Residue-property plots

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.

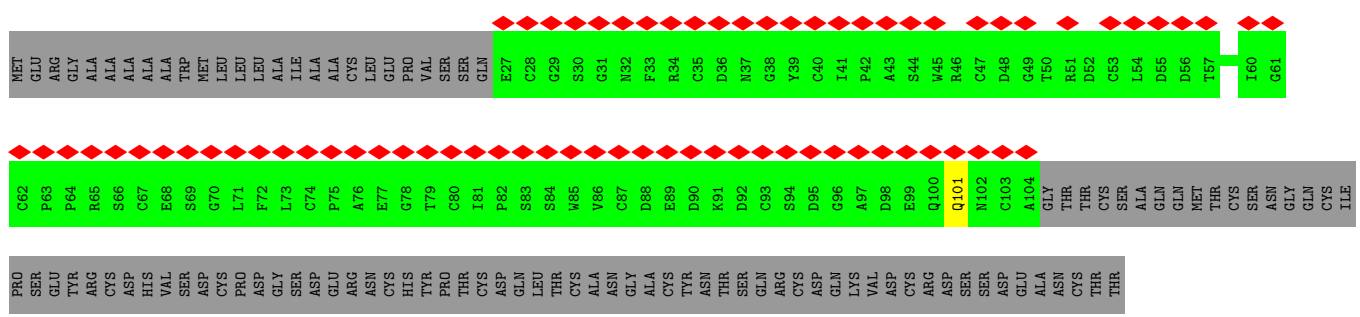
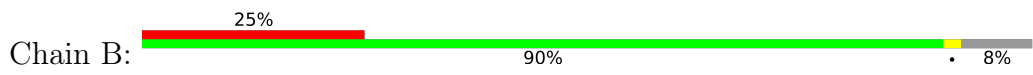
- Molecule 1: LDL receptor related protein 2







● Molecule 1: LDL receptor related protein 2



ALA	A4051	F3860	A3677	S5515	T3129	Q3066	Q2988
ALA	D4052	I3990	Y3678	S5516	D3130	E3067	H2989
ALA	G4053	C3991	N3679	G3522	T3131	H3068	C2990
ALA	P4054	S3992	C3680	G3523	I3132	L3069	T2991
ALA	P4055	C3993	E3685	N3524	T3133	C3070	H2992
ALA	P4056	R3994	E3686	N3524	S3134	H3071	H2993
ALA	L4057	N3967	N3693	E3525	F3135	T3072	T2994
ALA	E4062	D3871	Q3714	C5534	S3138	P3073	C2995
ALA	R4065	E3876	G3715	K3538	E3074	E3074	S2996
ALA	S4072	I3877	C3716	L3145	P3075	P3075	A2997
ALA	S4073	H3878	E3717	M3146	T3076	T3076	G2998
ALA	E4074	H3879	S3718	D3548	C3077	C3077	E2999
ALA	E4078	C3880	V3719	L3549	P3078	P3078	F3000
ALA	E4081	F3881	P3720	C3550	L3079	L3079	A3003
ALA	E4082	I3882	C3734	P3551	H3080	H3080	N3004
ALA	D4092	I3883	F3554	E3160	Q3081	Q3081	G3005
ALA	P4095	P3884	D3746	L3164	R3083	R3083	R3006
ALA	E4096	C3885	C3747	N3207	C3084	C3084	R3009
ALA	H4097	E3886	G3748	D3235	D3085	D3085	A3010
ALA	I4098	S3887	A3769	E3249	N3086	N3086	S3011
ALA	G4099	I3888	Q3772	L3271	G3087	G3087	R3017
ALA	L4100	H3889	G3787	D3290	H3088	H3088	N3018
ALA	A4109	F3890	M3797	R3588	I3090	I3090	D3019
ALA	Q4110	P3891	H3801	V3589	M3092	M3092	D3022
ALA	G4111	R3892	P3802	L3590	G3093	G3093	Y3023
ALA	Y4121	C3893	H3804	C3591	R3094	R3094	S3024
ALA	F4125	D3894	F3805	E3592	V3095	V3095	R3027
ALA	E4126	I3900	A3818	H3593	C3096	C3096	G3028
ALA	G4128	H3901	C3819	R3595	N3097	N3097	C3029
ALA	S4127	G3902	R3822	A3604	H3098	H3098	C3034
ALA	S4129	I3903	L3826	L3622	D3100	D3100	H3035
ALA	M4130	L3904	S3832	D5623	D3101	D3101	A3036
ALA	M4131	C3905	A3833	D3420	D3102	D3102	N3037
ALA	S4132	C3906	C3834	T3473	S3103	S3103	F3039
ALA	M4133	N3906	P3835	L3481	D3104	D3104	G3042
ALA	M4134	G3907	T3836	R3489	N3105	N3105	H3043
ALA	M4135	L3908	R3837	D3498	S3106	S3106	G3044
ALA	A4150	D3909	G3841	T3501	D3107	D3107	R3045
ALA	V4151	D3910	P3845	V3502	K3109	K3109	R3049
ALA	D4152	D3911	A3846	Q3503	G3110	G3110	F3050
ALA	D4157	C3912	M3848	L3504	F3051	F3051	F3052
ALA	A4159	G3914	K3852	R3505	I3113	I3113	C3053
ALA	V4159	S3915	K3918	N3645	N3114	N3114	D3054
ALA	L4173	E3917	E3919	I3670	R3506	R3506	E3055
ALA	Q4185	E3920	E3920	T3671	C3111	C3111	D3056
ALA	L4186	E3921	E3921	E3672	G3112	G3112	D3057
ALA	D4187	E3922	E3922	T3675	I3113	I3113	D3061
ALA	A4190	C3981	C3922	A3676	E3115	E3115	E3065
ALA	A4193	T3982	C3923		C3116	C3116	
ALA	V4194	Q3983	C3924		D3117	D3117	
ALA	M4195	L3984	P3925		D3118	D3118	
ALA	P4196	S3985	T3926		S3119	S3119	
ALA	K4197	S3986	G3987		S3120	S3120	
ALA	K4208	G3987	G3987		R3123	R3123	
ALA	Q4209	I3976	I3976		C3128	C3128	
ALA	P4210	M4041	M4041				
ALA	M4217	S4042	S4042				
ALA	E4220	T4043	T4043				
ALA	H4221	H4044	H4044				
ALA	R4222	Y4045	Y4045				
ALA	S4223	Y4046	Y4046				
ALA	V4224	E4047	E4047				
ALA	L4225	R4048	R4048				
ALA	V4226	C4049	C4049				
ALA	S4227	A4050	A4050				
ALA	E4228	S4040	S4040				
ALA	M4229	M4041	M4041				
ALA	G4235	S4042	S4042				
ALA	D4239	T4043	T4043				
ALA	M4242	H4044	H4044				
ALA	D4243	Y4045	Y4045				
ALA	D4244	E4047	E4047				
ALA	Y4247	L4018	L4018				
ALA	D4262	C4019	C4019				
ALA	G4263	P4020	P4020				
ALA	T4264	Q4021	Q4021				
ALA	D4265	S4022	S4022				
ALA	R4266	C4023	C4023				
ALA	R4267	R4024	R4024				
ALA	L4268	M4025	M4025				
ALA	M4271	S4026	S4026				
ALA	L4343	K4027	K4027				
ALA	L4345	G4028	G4028				
ALA	L4346	L3966	L3966				
ALA	R4347	G3967	G3967				
ALA	P4348	D3968	D3968				
ALA	G4349	N3969	N3969				
ALA	C4353	R3970	R3970				
ALA	A4354	T3971	T3971				
ALA	Q4357	G3912	G3912				
ALA	G4358	D3913	D3913				
ALA	S4359	G3914	G3914				
ALA	D4360	S3915	S3915				
ALA	F4361	K3918	K3918				
ALA	V4362	E3919	E3919				
ALA	T4363	E3920	E3920				
ALA	G4364	E3921	E3921				
ALA	LEU	E3922	E3922				
ALA	SER	M4041	M4041				
ALA	ARG	S4042	S4042				
ALA	GLY	T4043	T4043				
ALA	PRO	H4044	H4044				
ALA	PRO	Y4045	Y4045				
ALA	THR	E4047	E4047				
ALA	THR	R4048	R4048				
ALA	THR	C4049	C4049				
ALA	THR	A4050	A4050				
ASP							



- Molecule 5: unclear peptide

Chain L: 100%

There are no outlier residues recorded for this chain.

- Molecule 5: unclear peptide

Chain O: 100%

There are no outlier residues recorded for this chain.

- Molecule 5: unclear peptide

Chain R: 100%

There are no outlier residues recorded for this chain.

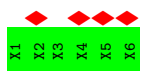
- Molecule 6: unclear peptide

Chain M: 83%
100%



- Molecule 6: unclear peptide

Chain P: 67%
100%



- Molecule 7: unclear peptide

Chain N: 100%

There are no outlier residues recorded for this chain.

- Molecule 7: unclear peptide

Chain Q: 100%

There are no outlier residues recorded for this chain.

- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 67%
67% 33%



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



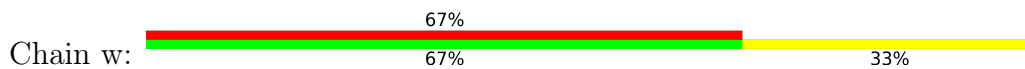
- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

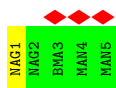
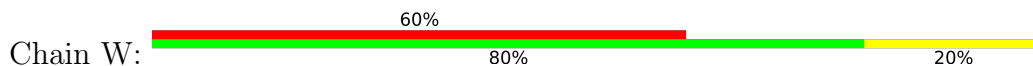


- Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





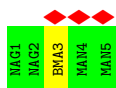
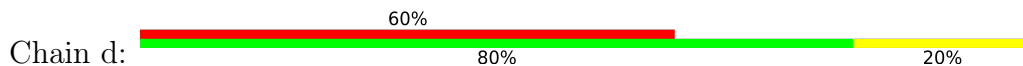
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



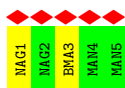
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



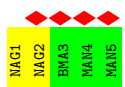
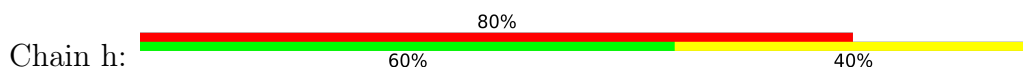
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



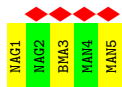
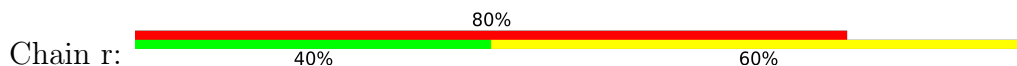
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 10: 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



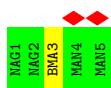
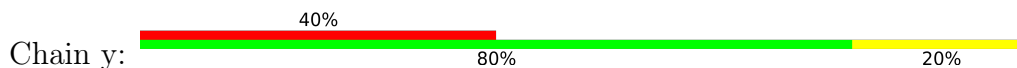
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 10: 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



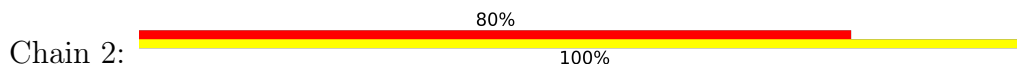
- Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 10: 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 10: 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 11: beta-D-mannopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 11: beta-D-mannopyranose-(1-3)-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, C1	Depositor
Number of particles used	101096	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1600	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.214	Depositor
Minimum map value	-0.116	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.03	Depositor
Map size (\AA)	366.86002, 366.86002, 366.86002	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.411, 1.411, 1.411	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: NI, CA, MAN, BMA, A2G, NAG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.31	0/34456	0.58	0/46804
1	B	0.64	0/34456	0.66	0/46804
2	C	0.61	0/7	0.76	0/8
2	I	0.65	0/7	0.99	0/8
3	D	1.22	0/5	0.59	0/5
3	J	0.98	0/5	0.46	0/5
4	G	0.79	0/17	0.54	0/21
4	K	0.86	0/17	0.58	0/21
5	H	0.93	0/7	0.64	0/8
5	L	0.92	0/7	0.79	0/8
5	O	0.75	0/7	0.76	0/8
5	R	0.73	0/7	0.62	0/8
7	N	1.04	0/7	1.32	0/8
7	Q	0.46	0/7	1.79	0/8
All	All	0.51	0/69012	0.62	0/93724

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	B	0	1
All	All	0	2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	3242	ARG	Sidechain
1	B	2839	ARG	Sidechain

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	4304/4660 (92%)	3970 (92%)	332 (8%)	2 (0%)	100	100
1	B	4304/4660 (92%)	3979 (92%)	322 (8%)	3 (0%)	51	83
2	C	1/6 (17%)	1 (100%)	0	0	100	100
2	I	1/6 (17%)	1 (100%)	0	0	100	100
3	D	1/3 (33%)	1 (100%)	0	0	100	100
3	J	1/3 (33%)	0	1 (100%)	0	100	100
4	G	2/5 (40%)	0	2 (100%)	0	100	100
4	K	2/5 (40%)	1 (50%)	1 (50%)	0	100	100
5	H	1/5 (20%)	1 (100%)	0	0	100	100
5	L	1/5 (20%)	1 (100%)	0	0	100	100
5	O	1/5 (20%)	0	1 (100%)	0	100	100
5	R	1/5 (20%)	1 (100%)	0	0	100	100
7	N	1/5 (20%)	1 (100%)	0	0	100	100
7	Q	1/5 (20%)	1 (100%)	0	0	100	100
All	All	8622/9378 (92%)	7958 (92%)	659 (8%)	5 (0%)	54	83

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	2840	ALA
1	B	2860	CYS
1	A	3209	TYR
1	A	846	ARG
1	B	1152	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	3791/4089 (93%)	3663 (97%)	128 (3%)	37	64
1	B	3791/4089 (93%)	3684 (97%)	107 (3%)	43	68
2	C	1/1 (100%)	1 (100%)	0	100	100
2	I	1/1 (100%)	1 (100%)	0	100	100
3	D	1/1 (100%)	1 (100%)	0	100	100
3	J	1/1 (100%)	1 (100%)	0	100	100
4	G	2/2 (100%)	2 (100%)	0	100	100
4	K	2/2 (100%)	2 (100%)	0	100	100
5	H	1/1 (100%)	1 (100%)	0	100	100
5	L	1/1 (100%)	1 (100%)	0	100	100
5	O	1/1 (100%)	1 (100%)	0	100	100
5	R	1/1 (100%)	1 (100%)	0	100	100
7	N	1/1 (100%)	1 (100%)	0	100	100
7	Q	1/1 (100%)	1 (100%)	0	100	100
All	All	7596/8192 (93%)	7361 (97%)	235 (3%)	43	65

5 of 235 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3961	GLU
1	B	4044	HIS
1	B	489	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	4008	GLN
1	B	3108	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 31 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	4390	ASN
1	B	4131	ASN
1	B	1367	GLN
1	B	4390	ASN
1	B	3066	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](#)

124 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	$\# Z > 2$
9	NAG	0	1	1,9	14,14,15	0.40	0	17,19,21	0.51	0
9	NAG	0	2	9	14,14,15	0.40	0	17,19,21	0.58	0
10	NAG	1	1	10,1	14,14,15	0.45	0	17,19,21	0.73	0
10	NAG	1	2	10	14,14,15	0.57	0	17,19,21	0.97	1 (5%)
10	BMA	1	3	10	11,11,12	1.00	1 (9%)	15,15,17	1.11	1 (6%)
10	MAN	1	4	10	11,11,12	0.95	1 (9%)	15,15,17	1.00	2 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
10	MAN	1	5	10	11,11,12	0.80	0	15,15,17	0.88	1 (6%)
10	NAG	2	1	10,1	14,14,15	0.51	0	17,19,21	1.03	1 (5%)
10	NAG	2	2	10	14,14,15	0.58	0	17,19,21	0.81	1 (5%)
10	BMA	2	3	10	11,11,12	1.14	1 (9%)	15,15,17	1.30	2 (13%)
10	MAN	2	4	10	11,11,12	0.89	1 (9%)	15,15,17	0.86	1 (6%)
10	MAN	2	5	10	11,11,12	0.82	0	15,15,17	1.27	2 (13%)
9	NAG	3	1	1,9	14,14,15	0.41	0	17,19,21	0.51	0
9	NAG	3	2	9	14,14,15	0.39	0	17,19,21	0.55	0
11	NAG	4	1	11,1	14,14,15	0.43	0	17,19,21	0.41	0
11	NAG	4	2	11	14,14,15	0.39	0	17,19,21	0.45	0
11	BMA	4	3	11	11,11,12	0.80	1 (9%)	15,15,17	0.82	1 (6%)
9	NAG	5	1	1,9	14,14,15	0.55	0	17,19,21	0.81	1 (5%)
9	NAG	5	2	9	14,14,15	0.56	0	17,19,21	0.89	1 (5%)
8	NAG	E	1	1,8	14,14,15	0.40	0	17,19,21	0.48	0
8	NAG	E	2	8	14,14,15	0.41	0	17,19,21	0.82	1 (5%)
8	BMA	E	3	8	11,11,12	0.21	0	15,15,17	0.56	0
9	NAG	F	1	1,9	14,14,15	0.40	0	17,19,21	0.41	0
9	NAG	F	2	9	14,14,15	0.40	0	17,19,21	0.35	0
9	NAG	S	1	1,9	14,14,15	0.42	0	17,19,21	0.55	0
9	NAG	S	2	9	14,14,15	0.41	0	17,19,21	0.81	1 (5%)
8	NAG	T	1	1,8	14,14,15	0.36	0	17,19,21	0.66	0
8	NAG	T	2	8	14,14,15	0.50	0	17,19,21	0.75	0
8	BMA	T	3	8	11,11,12	0.25	0	15,15,17	0.62	0
9	NAG	U	1	1,9	14,14,15	0.41	0	17,19,21	0.45	0
9	NAG	U	2	9	14,14,15	0.39	0	17,19,21	0.42	0
9	NAG	V	1	1,9	14,14,15	0.63	0	17,19,21	1.10	2 (11%)
9	NAG	V	2	9	14,14,15	0.61	0	17,19,21	1.08	1 (5%)
10	NAG	W	1	10,1	14,14,15	0.40	0	17,19,21	0.99	2 (11%)
10	NAG	W	2	10	14,14,15	0.39	0	17,19,21	0.54	0
10	BMA	W	3	10	11,11,12	0.27	0	15,15,17	0.76	0
10	MAN	W	4	10	11,11,12	0.24	0	15,15,17	0.52	0
10	MAN	W	5	10	11,11,12	0.29	0	15,15,17	0.59	0
9	NAG	X	1	1,9	14,14,15	0.39	0	17,19,21	0.44	0
9	NAG	X	2	9	14,14,15	0.40	0	17,19,21	0.75	0
10	NAG	Y	1	10,1	14,14,15	0.47	0	17,19,21	0.63	0
10	NAG	Y	2	10	14,14,15	0.41	0	17,19,21	0.61	0
10	BMA	Y	3	10	11,11,12	0.38	0	15,15,17	0.62	0
10	MAN	Y	4	10	11,11,12	0.21	0	15,15,17	0.58	0
10	MAN	Y	5	10	11,11,12	0.30	0	15,15,17	0.58	0
9	NAG	Z	1	1,9	14,14,15	0.41	0	17,19,21	0.50	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
9	NAG	Z	2	9	14,14,15	0.41	0	17,19,21	0.75	1 (5%)
9	NAG	a	1	1,9	14,14,15	0.38	0	17,19,21	0.42	0
9	NAG	a	2	9	14,14,15	0.39	0	17,19,21	0.49	0
8	NAG	b	1	1,8	14,14,15	0.44	0	17,19,21	0.44	0
8	NAG	b	2	8	14,14,15	0.39	0	17,19,21	0.40	0
8	BMA	b	3	8	11,11,12	0.20	0	15,15,17	0.56	0
8	NAG	c	1	1,8	14,14,15	0.46	0	17,19,21	0.56	0
8	NAG	c	2	8	14,14,15	0.43	0	17,19,21	0.57	0
8	BMA	c	3	8	11,11,12	0.28	0	15,15,17	0.61	0
10	NAG	d	1	10,1	14,14,15	0.44	0	17,19,21	0.42	0
10	NAG	d	2	10	14,14,15	0.39	0	17,19,21	0.42	0
10	BMA	d	3	10	11,11,12	0.27	0	15,15,17	0.75	1 (6%)
10	MAN	d	4	10	11,11,12	0.26	0	15,15,17	0.62	0
10	MAN	d	5	10	11,11,12	0.27	0	15,15,17	0.53	0
9	NAG	e	1	1,9	14,14,15	0.59	0	17,19,21	1.26	2 (11%)
9	NAG	e	2	9	14,14,15	0.55	0	17,19,21	0.93	1 (5%)
9	NAG	f	1	1,9	14,14,15	0.43	0	17,19,21	0.40	0
9	NAG	f	2	9	14,14,15	0.41	0	17,19,21	0.49	0
10	NAG	g	1	10,1	14,14,15	0.50	0	17,19,21	1.40	2 (11%)
10	NAG	g	2	10	14,14,15	0.43	0	17,19,21	0.43	0
10	BMA	g	3	10	11,11,12	0.24	0	15,15,17	0.71	1 (6%)
10	MAN	g	4	10	11,11,12	0.29	0	15,15,17	0.53	0
10	MAN	g	5	10	11,11,12	0.29	0	15,15,17	0.52	0
10	NAG	h	1	10,1	14,14,15	0.45	0	17,19,21	1.16	1 (5%)
10	NAG	h	2	10	14,14,15	0.49	0	17,19,21	0.77	1 (5%)
10	BMA	h	3	10	11,11,12	0.37	0	15,15,17	0.72	0
10	MAN	h	4	10	11,11,12	0.30	0	15,15,17	0.60	0
10	MAN	h	5	10	11,11,12	0.31	0	15,15,17	0.54	0
9	NAG	i	1	1,9	14,14,15	0.41	0	17,19,21	0.55	0
9	NAG	i	2	9	14,14,15	0.41	0	17,19,21	0.55	0
11	NAG	j	1	11,1	14,14,15	0.41	0	17,19,21	0.39	0
11	NAG	j	2	11	14,14,15	0.40	0	17,19,21	0.46	0
11	BMA	j	3	11	11,11,12	0.27	0	15,15,17	0.53	0
9	NAG	k	1	1,9	14,14,15	0.64	0	17,19,21	1.10	1 (5%)
9	NAG	k	2	9	14,14,15	0.67	0	17,19,21	1.30	1 (5%)
8	NAG	l	1	1,8	14,14,15	0.50	0	17,19,21	1.00	1 (5%)
8	NAG	l	2	8	14,14,15	0.57	0	17,19,21	0.75	1 (5%)
8	BMA	l	3	8	11,11,12	0.84	1 (9%)	15,15,17	1.03	2 (13%)
9	NAG	m	1	1,9	14,14,15	0.47	0	17,19,21	0.85	0
9	NAG	m	2	9	14,14,15	0.53	0	17,19,21	0.87	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
9	NAG	n	1	1,9	14,14,15	0.55	0	17,19,21	0.93	1 (5%)
9	NAG	n	2	9	14,14,15	0.56	0	17,19,21	0.92	1 (5%)
8	NAG	o	1	1,8	14,14,15	0.43	0	17,19,21	0.54	0
8	NAG	o	2	8	14,14,15	0.42	0	17,19,21	0.41	0
8	BMA	o	3	8	11,11,12	0.28	0	15,15,17	0.64	0
9	NAG	p	1	1,9	14,14,15	0.38	0	17,19,21	0.79	1 (5%)
9	NAG	p	2	9	14,14,15	0.42	0	17,19,21	0.54	0
9	NAG	q	1	1,9	14,14,15	0.40	0	17,19,21	0.59	0
9	NAG	q	2	9	14,14,15	0.40	0	17,19,21	0.38	0
10	NAG	r	1	10,1	14,14,15	0.48	0	17,19,21	0.90	1 (5%)
10	NAG	r	2	10	14,14,15	0.42	0	17,19,21	0.66	0
10	BMA	r	3	10	11,11,12	0.28	0	15,15,17	0.73	1 (6%)
10	MAN	r	4	10	11,11,12	0.26	0	15,15,17	0.59	0
10	MAN	r	5	10	11,11,12	0.95	1 (9%)	15,15,17	0.92	1 (6%)
9	NAG	s	1	1,9	14,14,15	0.45	0	17,19,21	0.70	0
9	NAG	s	2	9	14,14,15	0.40	0	17,19,21	0.49	0
10	NAG	t	1	10,1	14,14,15	0.44	0	17,19,21	0.98	0
10	NAG	t	2	10	14,14,15	0.41	0	17,19,21	0.70	0
10	BMA	t	3	10	11,11,12	0.28	0	15,15,17	0.45	0
10	MAN	t	4	10	11,11,12	0.31	0	15,15,17	0.57	0
10	MAN	t	5	10	11,11,12	0.27	0	15,15,17	0.57	0
9	NAG	u	1	1,9	14,14,15	0.59	0	17,19,21	0.83	1 (5%)
9	NAG	u	2	9	14,14,15	0.57	0	17,19,21	1.00	1 (5%)
9	NAG	v	1	1,9	14,14,15	0.42	0	17,19,21	0.60	0
9	NAG	v	2	9	14,14,15	0.39	0	17,19,21	0.42	0
8	NAG	w	1	1,8	14,14,15	0.52	0	17,19,21	1.04	1 (5%)
8	NAG	w	2	8	14,14,15	0.38	0	17,19,21	0.66	0
8	BMA	w	3	8	11,11,12	0.22	0	15,15,17	0.63	0
8	NAG	x	1	1,8	14,14,15	0.48	0	17,19,21	0.74	0
8	NAG	x	2	8	14,14,15	0.40	0	17,19,21	0.99	1 (5%)
8	BMA	x	3	8	11,11,12	0.30	0	15,15,17	0.57	0
10	NAG	y	1	10,1	14,14,15	0.46	0	17,19,21	0.50	0
10	NAG	y	2	10	14,14,15	0.44	0	17,19,21	0.53	0
10	BMA	y	3	10	11,11,12	0.29	0	15,15,17	0.80	1 (6%)
10	MAN	y	4	10	11,11,12	0.28	0	15,15,17	0.52	0
10	MAN	y	5	10	11,11,12	0.27	0	15,15,17	0.52	0
9	NAG	z	1	1,9	14,14,15	0.54	0	17,19,21	1.14	1 (5%)
9	NAG	z	2	9	14,14,15	0.63	0	17,19,21	1.00	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
9	NAG	0	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	0	2	9	-	2/6/23/26	0/1/1/1
10	NAG	1	1	10,1	-	2/6/23/26	0/1/1/1
10	NAG	1	2	10	-	0/6/23/26	0/1/1/1
10	BMA	1	3	10	-	0/2/19/22	0/1/1/1
10	MAN	1	4	10	-	0/2/19/22	0/1/1/1
10	MAN	1	5	10	-	0/2/19/22	0/1/1/1
10	NAG	2	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	2	2	10	-	0/6/23/26	0/1/1/1
10	BMA	2	3	10	-	2/2/19/22	0/1/1/1
10	MAN	2	4	10	-	0/2/19/22	0/1/1/1
10	MAN	2	5	10	-	0/2/19/22	0/1/1/1
9	NAG	3	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	3	2	9	-	3/6/23/26	0/1/1/1
11	NAG	4	1	11,1	-	0/6/23/26	0/1/1/1
11	NAG	4	2	11	-	2/6/23/26	0/1/1/1
11	BMA	4	3	11	-	0/2/19/22	0/1/1/1
9	NAG	5	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	5	2	9	-	0/6/23/26	0/1/1/1
8	NAG	E	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	E	2	8	-	3/6/23/26	0/1/1/1
8	BMA	E	3	8	-	0/2/19/22	0/1/1/1
9	NAG	F	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	F	2	9	-	3/6/23/26	0/1/1/1
9	NAG	S	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	S	2	9	-	3/6/23/26	0/1/1/1
8	NAG	T	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	T	2	8	-	0/6/23/26	0/1/1/1
8	BMA	T	3	8	-	0/2/19/22	0/1/1/1
9	NAG	U	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	U	2	9	-	0/6/23/26	0/1/1/1
9	NAG	V	1	1,9	-	1/6/23/26	0/1/1/1
9	NAG	V	2	9	-	1/6/23/26	0/1/1/1
10	NAG	W	1	10,1	-	2/6/23/26	0/1/1/1
10	NAG	W	2	10	-	0/6/23/26	0/1/1/1
10	BMA	W	3	10	-	0/2/19/22	0/1/1/1
10	MAN	W	4	10	-	0/2/19/22	0/1/1/1
10	MAN	W	5	10	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	X	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	X	2	9	-	2/6/23/26	0/1/1/1
10	NAG	Y	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	Y	2	10	-	1/6/23/26	0/1/1/1
10	BMA	Y	3	10	-	0/2/19/22	0/1/1/1
10	MAN	Y	4	10	-	0/2/19/22	0/1/1/1
10	MAN	Y	5	10	-	0/2/19/22	0/1/1/1
9	NAG	Z	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	Z	2	9	-	1/6/23/26	0/1/1/1
9	NAG	a	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	a	2	9	-	0/6/23/26	0/1/1/1
8	NAG	b	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	b	2	8	-	0/6/23/26	0/1/1/1
8	BMA	b	3	8	-	0/2/19/22	0/1/1/1
8	NAG	c	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	c	2	8	-	0/6/23/26	0/1/1/1
8	BMA	c	3	8	-	0/2/19/22	0/1/1/1
10	NAG	d	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	d	2	10	-	0/6/23/26	0/1/1/1
10	BMA	d	3	10	-	0/2/19/22	0/1/1/1
10	MAN	d	4	10	-	0/2/19/22	0/1/1/1
10	MAN	d	5	10	-	0/2/19/22	0/1/1/1
9	NAG	e	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	e	2	9	-	0/6/23/26	0/1/1/1
9	NAG	f	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	f	2	9	-	0/6/23/26	0/1/1/1
10	NAG	g	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	g	2	10	-	0/6/23/26	0/1/1/1
10	BMA	g	3	10	-	1/2/19/22	0/1/1/1
10	MAN	g	4	10	-	0/2/19/22	0/1/1/1
10	MAN	g	5	10	-	0/2/19/22	0/1/1/1
10	NAG	h	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	h	2	10	-	0/6/23/26	0/1/1/1
10	BMA	h	3	10	-	0/2/19/22	0/1/1/1
10	MAN	h	4	10	-	0/2/19/22	0/1/1/1
10	MAN	h	5	10	-	1/2/19/22	0/1/1/1
9	NAG	i	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	i	2	9	-	3/6/23/26	0/1/1/1
11	NAG	j	1	11,1	-	0/6/23/26	0/1/1/1
11	NAG	j	2	11	-	2/6/23/26	0/1/1/1
11	BMA	j	3	11	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	NAG	k	1	1,9	-	1/6/23/26	0/1/1/1
9	NAG	k	2	9	-	1/6/23/26	0/1/1/1
8	NAG	l	1	1,8	-	2/6/23/26	0/1/1/1
8	NAG	l	2	8	-	0/6/23/26	0/1/1/1
8	BMA	l	3	8	-	0/2/19/22	0/1/1/1
9	NAG	m	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	m	2	9	-	1/6/23/26	0/1/1/1
9	NAG	n	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	n	2	9	-	0/6/23/26	0/1/1/1
8	NAG	o	1	1,8	-	1/6/23/26	0/1/1/1
8	NAG	o	2	8	-	0/6/23/26	0/1/1/1
8	BMA	o	3	8	-	0/2/19/22	0/1/1/1
9	NAG	p	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	p	2	9	-	1/6/23/26	0/1/1/1
9	NAG	q	1	1,9	-	4/6/23/26	0/1/1/1
9	NAG	q	2	9	-	2/6/23/26	0/1/1/1
10	NAG	r	1	10,1	-	0/6/23/26	0/1/1/1
10	NAG	r	2	10	-	1/6/23/26	0/1/1/1
10	BMA	r	3	10	-	2/2/19/22	0/1/1/1
10	MAN	r	4	10	-	0/2/19/22	0/1/1/1
10	MAN	r	5	10	-	0/2/19/22	0/1/1/1
9	NAG	s	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	s	2	9	-	0/6/23/26	0/1/1/1
10	NAG	t	1	10,1	-	1/6/23/26	0/1/1/1
10	NAG	t	2	10	-	0/6/23/26	0/1/1/1
10	BMA	t	3	10	-	0/2/19/22	0/1/1/1
10	MAN	t	4	10	-	0/2/19/22	0/1/1/1
10	MAN	t	5	10	-	0/2/19/22	0/1/1/1
9	NAG	u	1	1,9	-	2/6/23/26	0/1/1/1
9	NAG	u	2	9	-	0/6/23/26	0/1/1/1
9	NAG	v	1	1,9	-	1/6/23/26	0/1/1/1
9	NAG	v	2	9	-	2/6/23/26	0/1/1/1
8	NAG	w	1	1,8	-	0/6/23/26	0/1/1/1
8	NAG	w	2	8	-	4/6/23/26	0/1/1/1
8	BMA	w	3	8	-	0/2/19/22	0/1/1/1
8	NAG	x	1	1,8	-	2/6/23/26	0/1/1/1
8	NAG	x	2	8	-	0/6/23/26	0/1/1/1
8	BMA	x	3	8	-	0/2/19/22	0/1/1/1
10	NAG	y	1	10,1	-	2/6/23/26	0/1/1/1
10	NAG	y	2	10	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	BMA	y	3	10	-	0/2/19/22	0/1/1/1
10	MAN	y	4	10	-	0/2/19/22	0/1/1/1
10	MAN	y	5	10	-	0/2/19/22	0/1/1/1
9	NAG	z	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	z	2	9	-	3/6/23/26	0/1/1/1

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	1	3	BMA	O5-C5	2.42	1.48	1.43
10	1	4	MAN	O5-C5	2.24	1.48	1.43
10	2	3	BMA	O5-C5	2.24	1.48	1.43
10	r	5	MAN	O5-C5	2.24	1.48	1.43
10	2	4	MAN	O5-C5	2.14	1.47	1.43

The worst 5 of 52 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	k	2	NAG	C1-O5-C5	4.06	117.69	112.19
9	e	1	NAG	C1-O5-C5	3.69	117.20	112.19
10	2	1	NAG	C1-O5-C5	3.68	117.18	112.19
10	1	3	BMA	C1-O5-C5	3.62	117.10	112.19
9	V	2	NAG	C1-O5-C5	3.57	117.03	112.19

There are no chirality outliers.

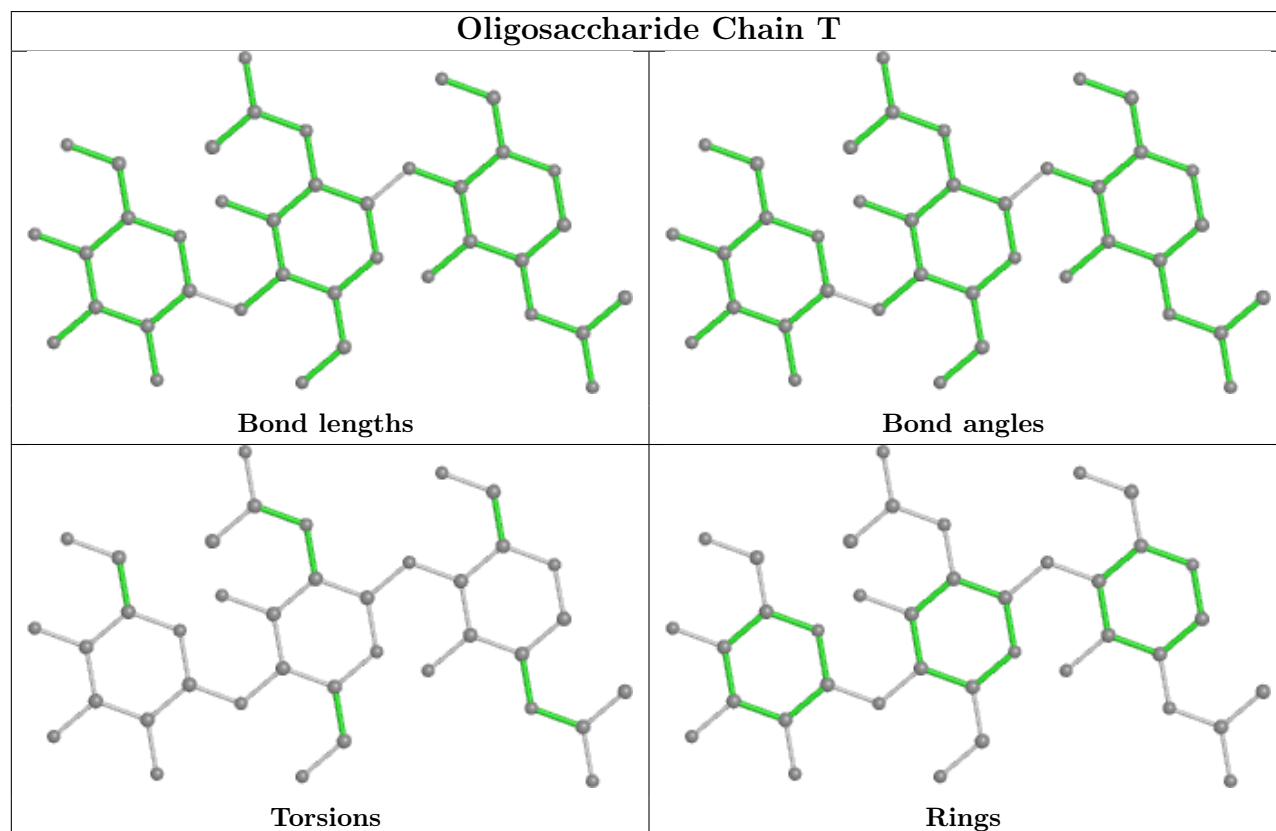
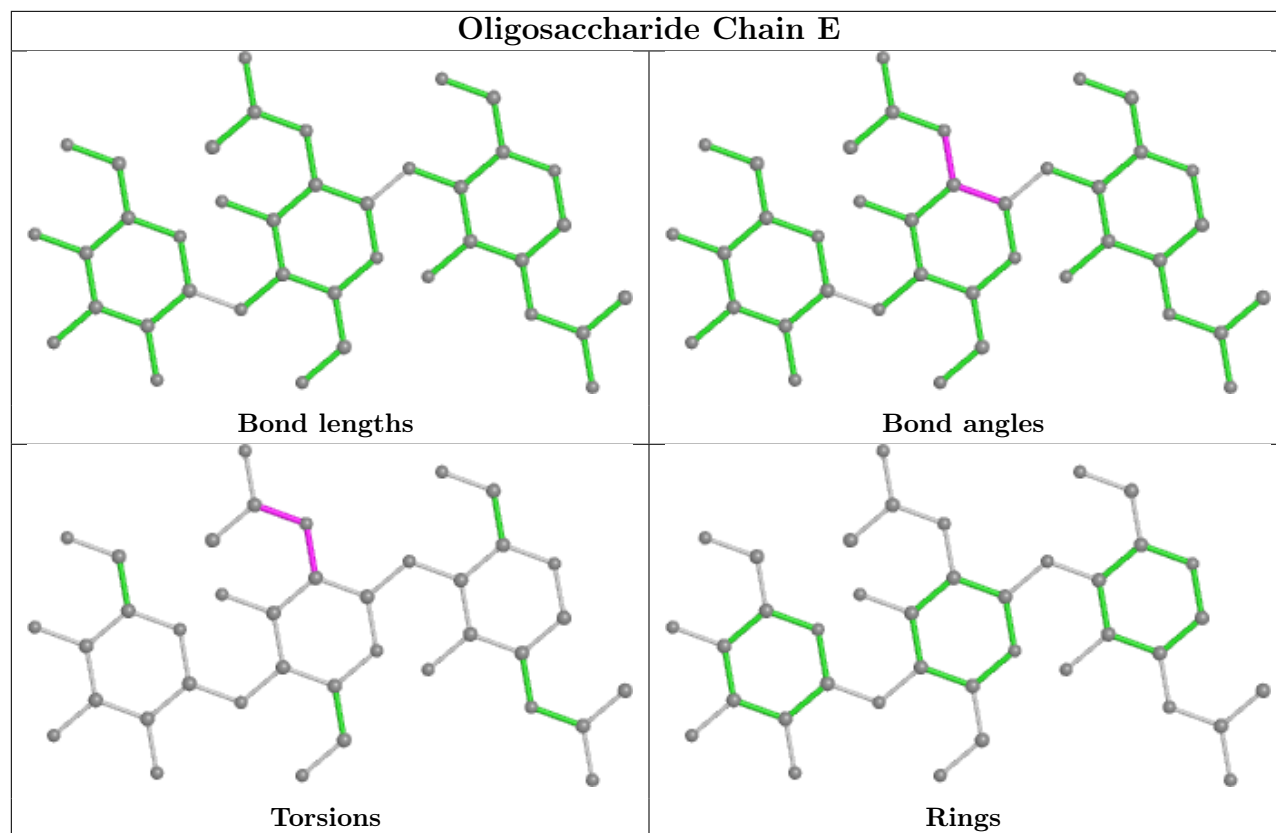
5 of 78 torsion outliers are listed below:

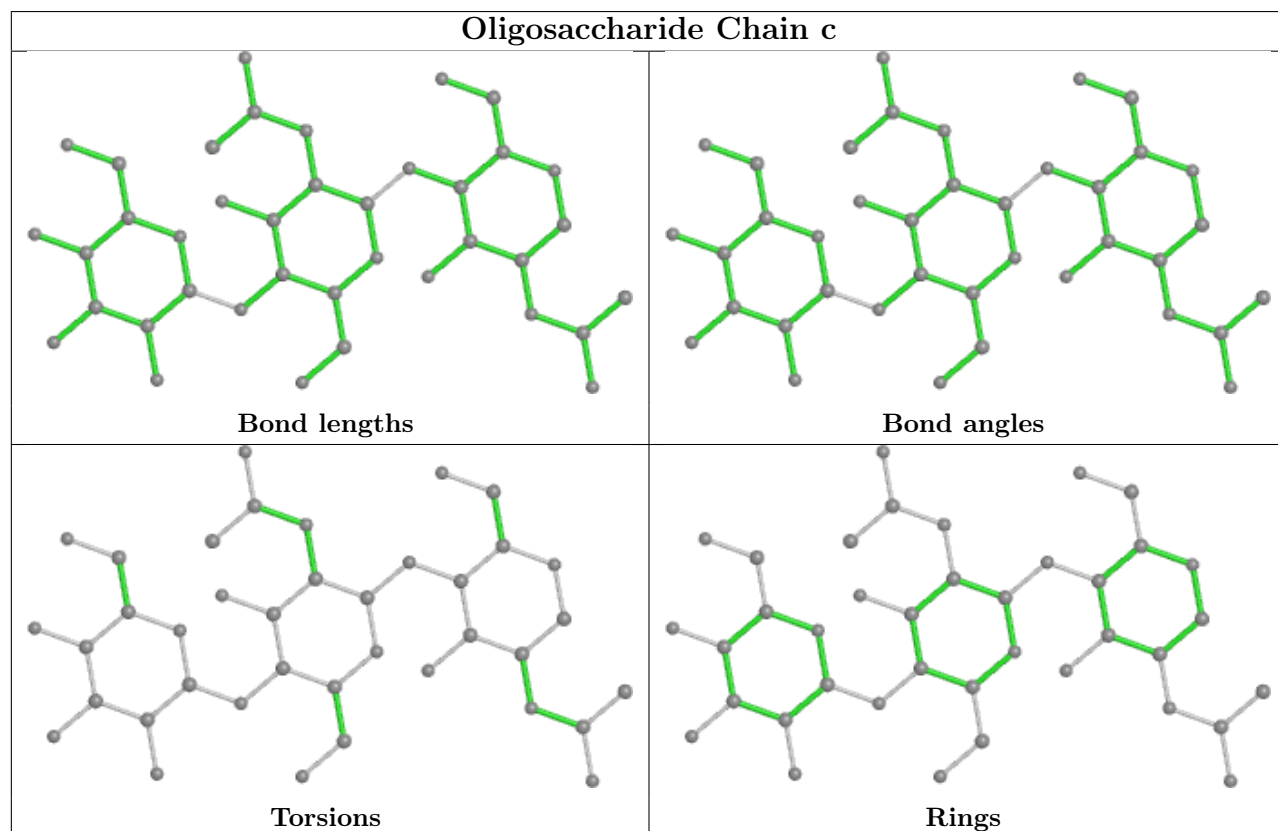
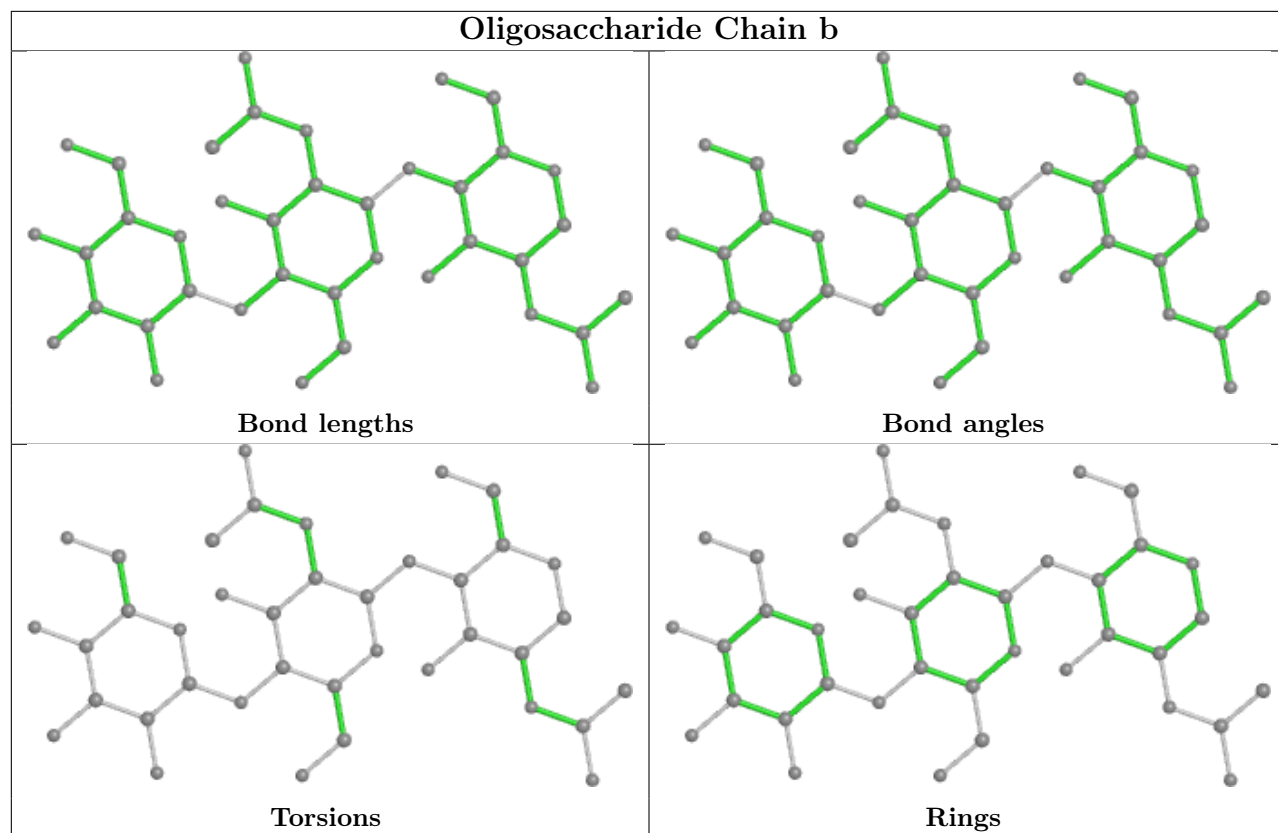
Mol	Chain	Res	Type	Atoms
9	F	2	NAG	C3-C2-N2-C7
9	F	2	NAG	C8-C7-N2-C2
9	F	2	NAG	O7-C7-N2-C2
10	y	2	NAG	C8-C7-N2-C2
10	y	2	NAG	O7-C7-N2-C2

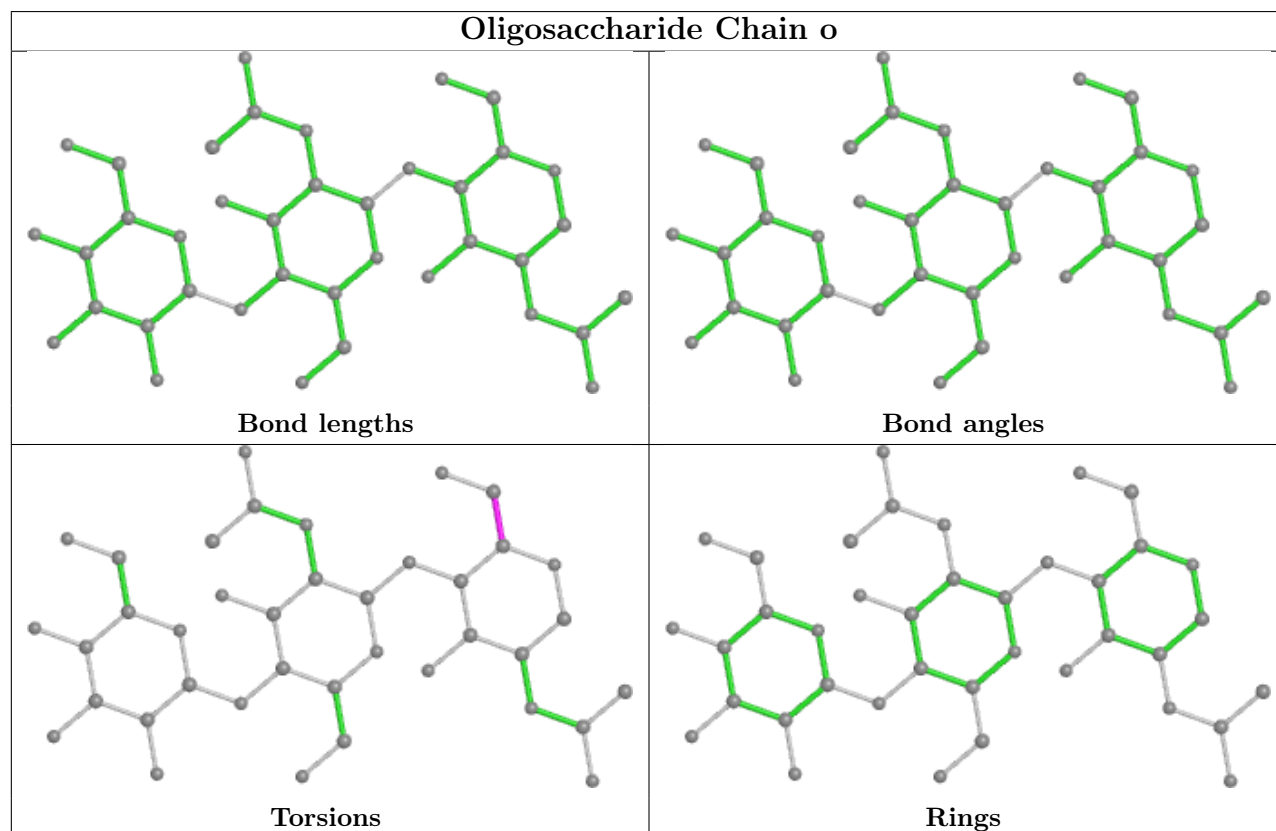
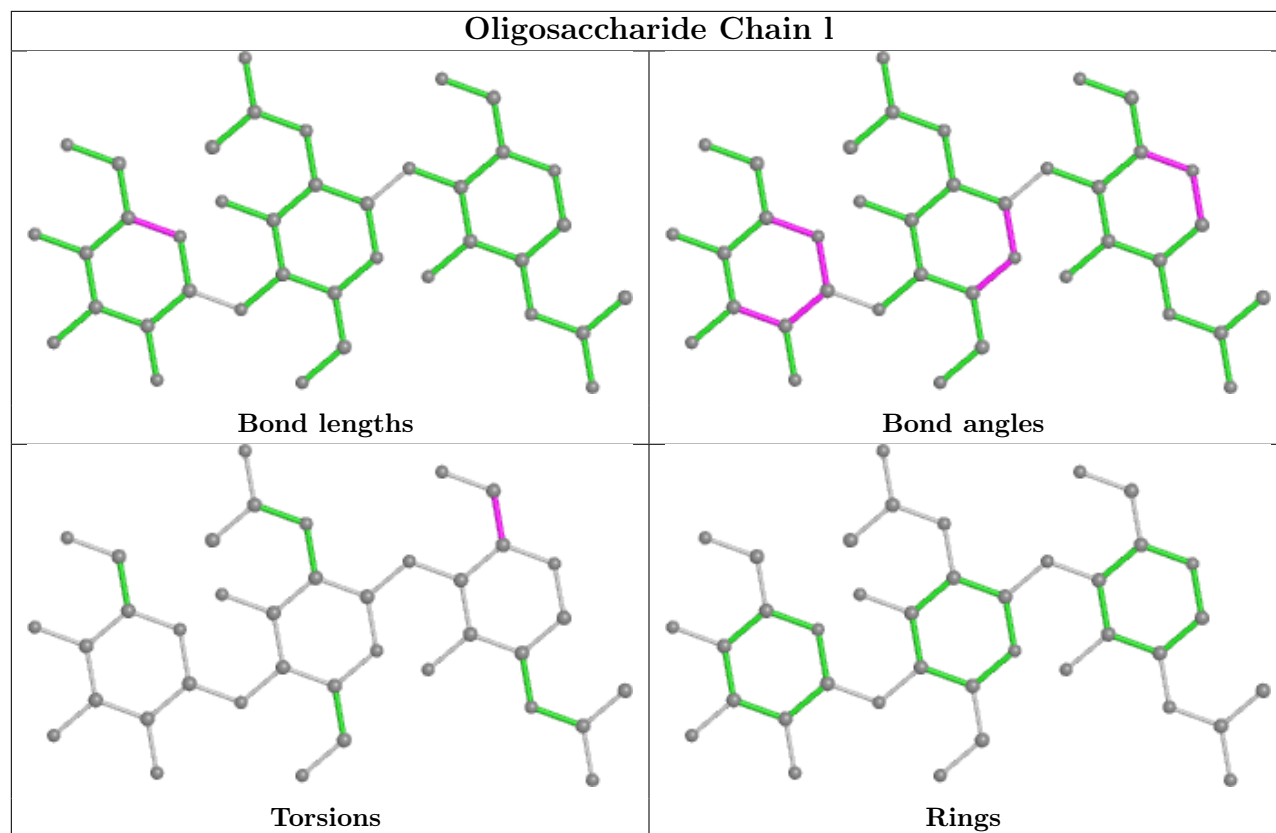
There are no ring outliers.

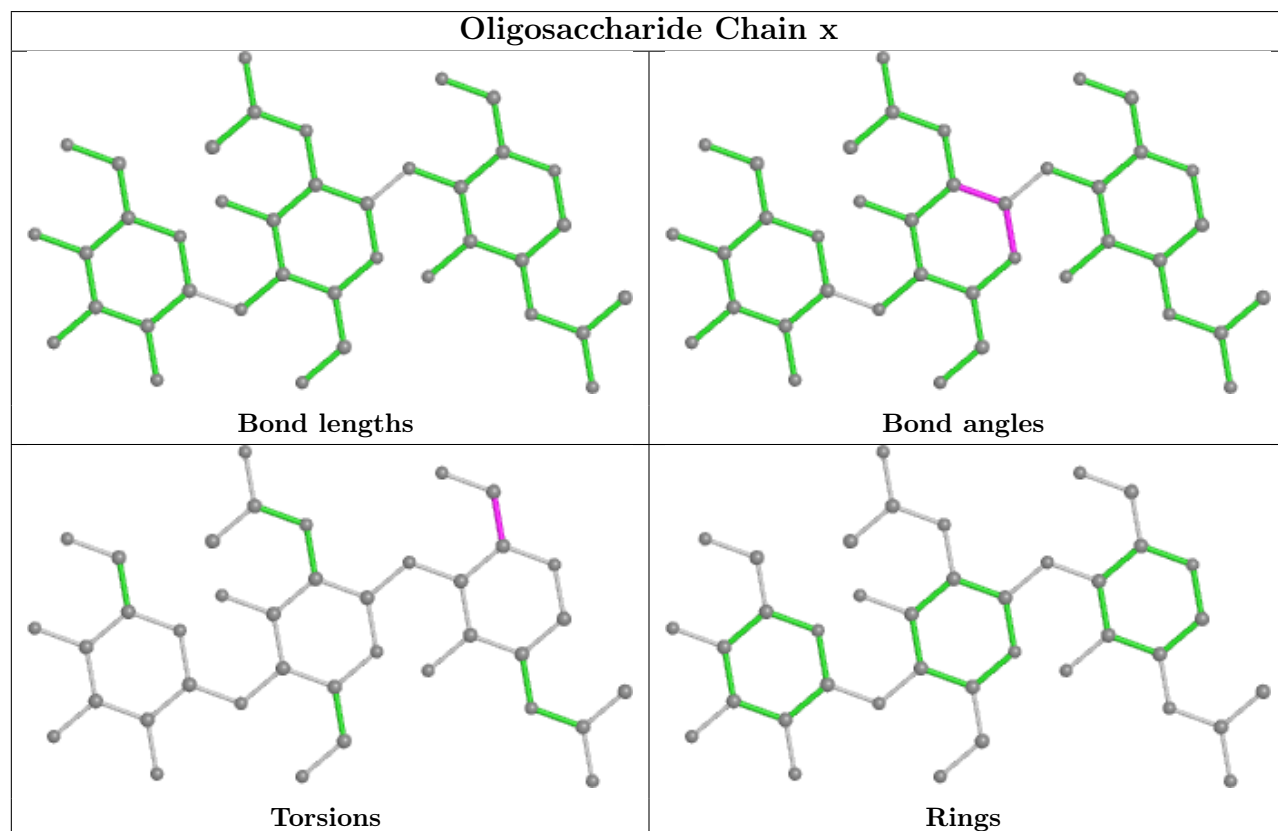
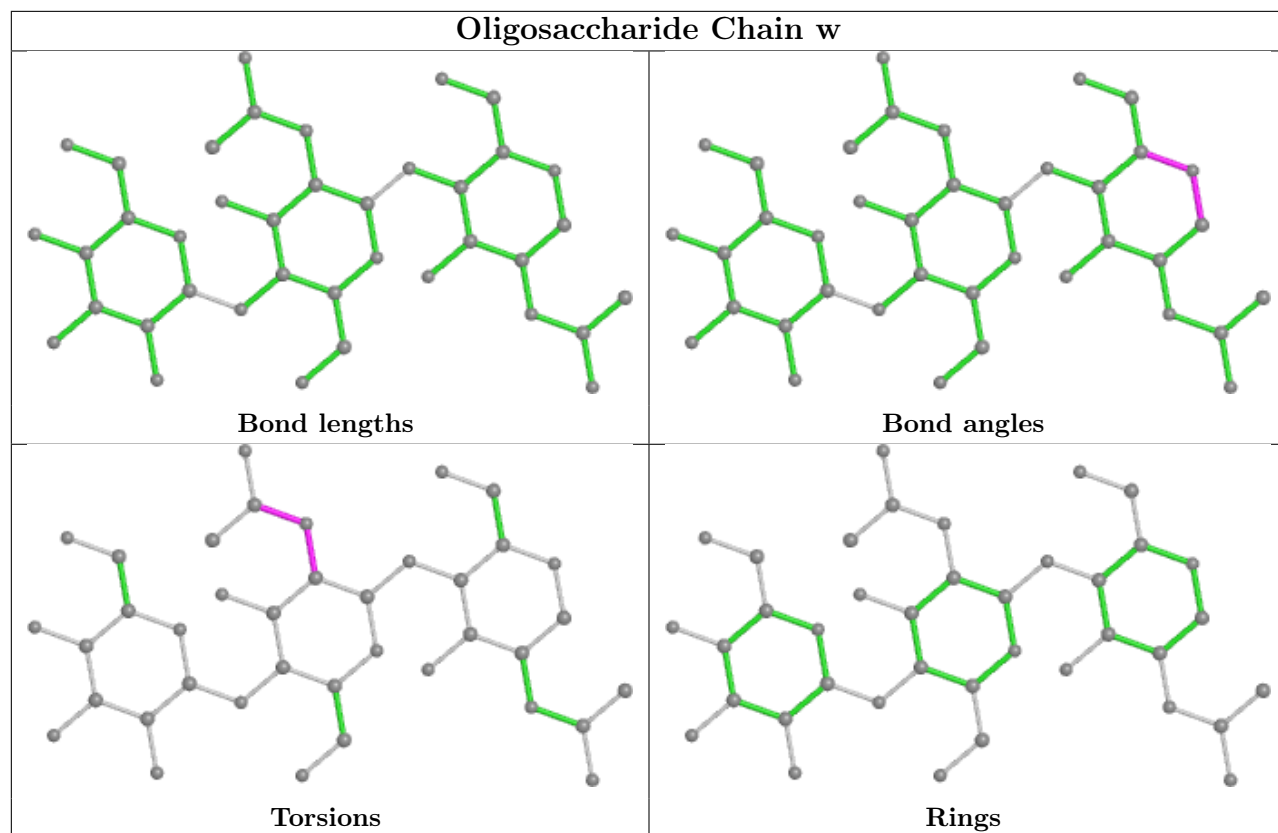
No monomer is involved in short contacts.

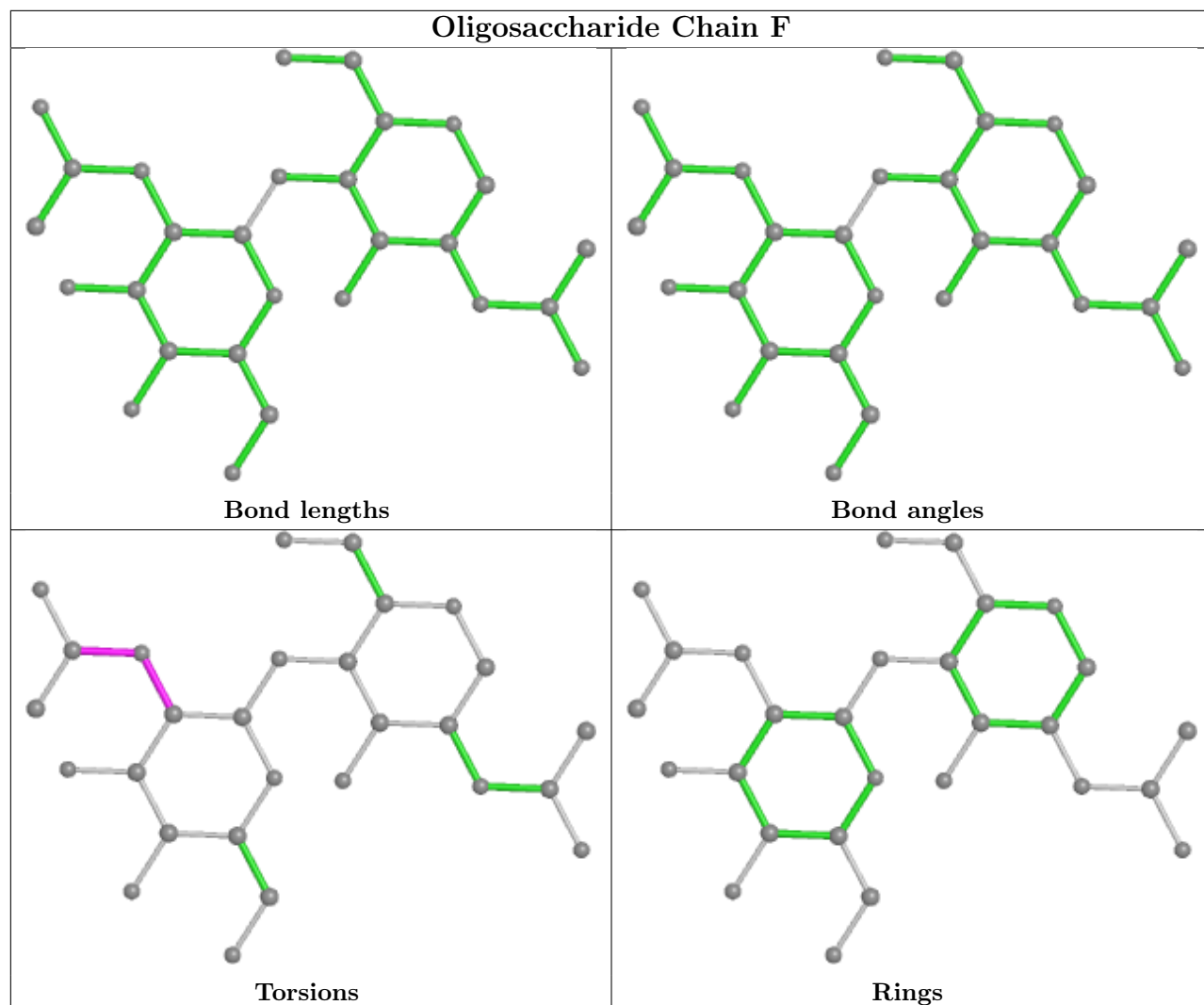
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

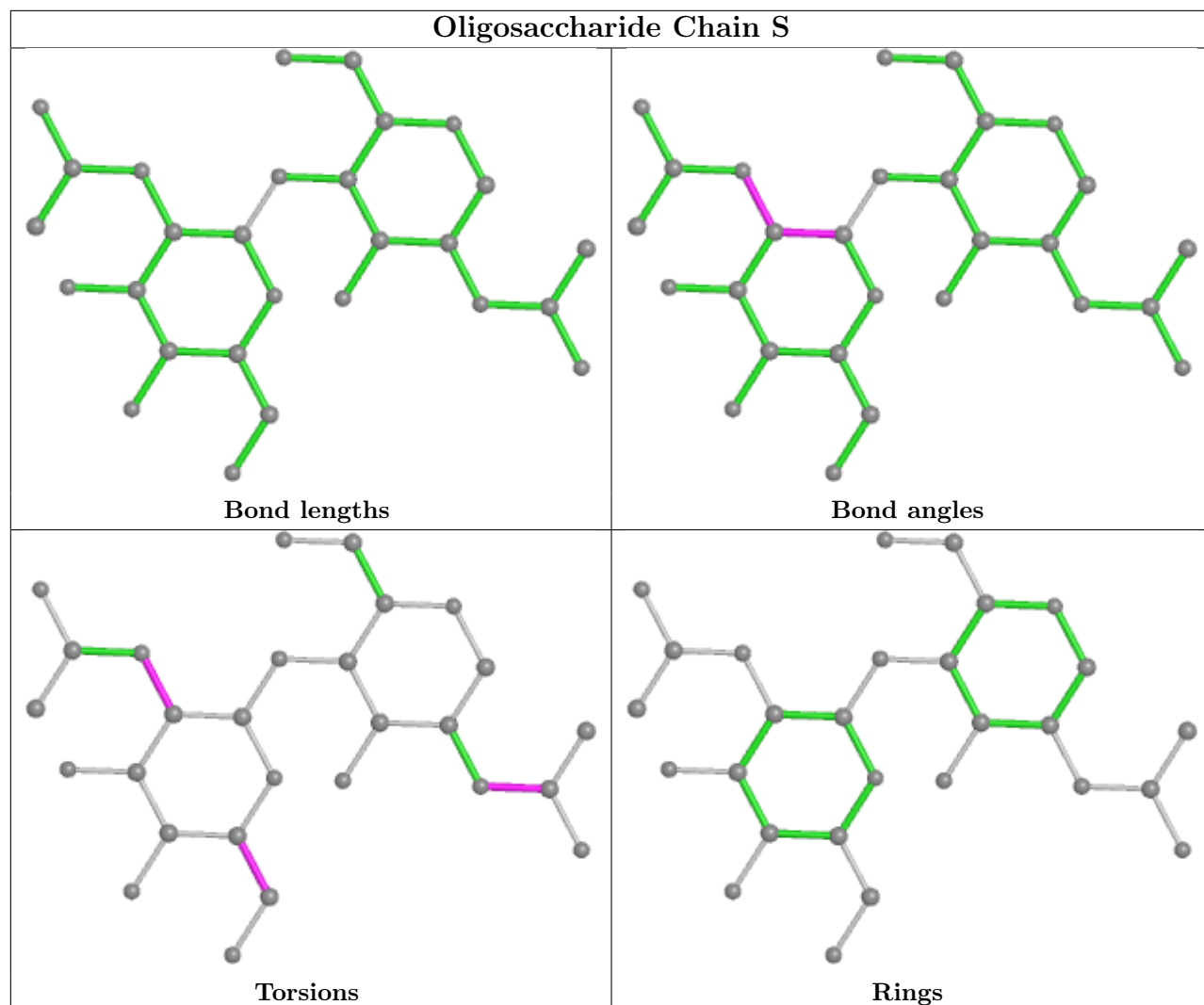


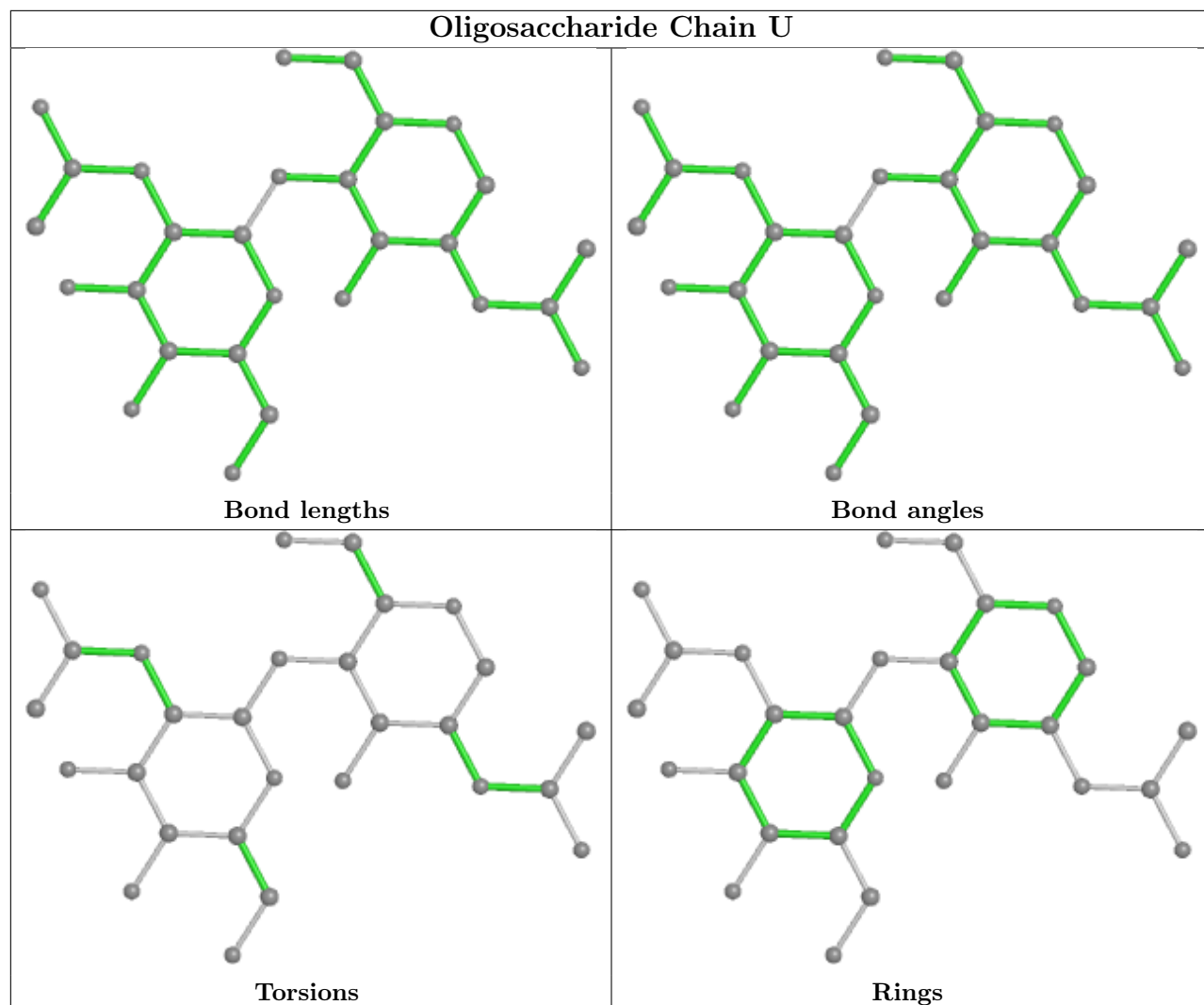


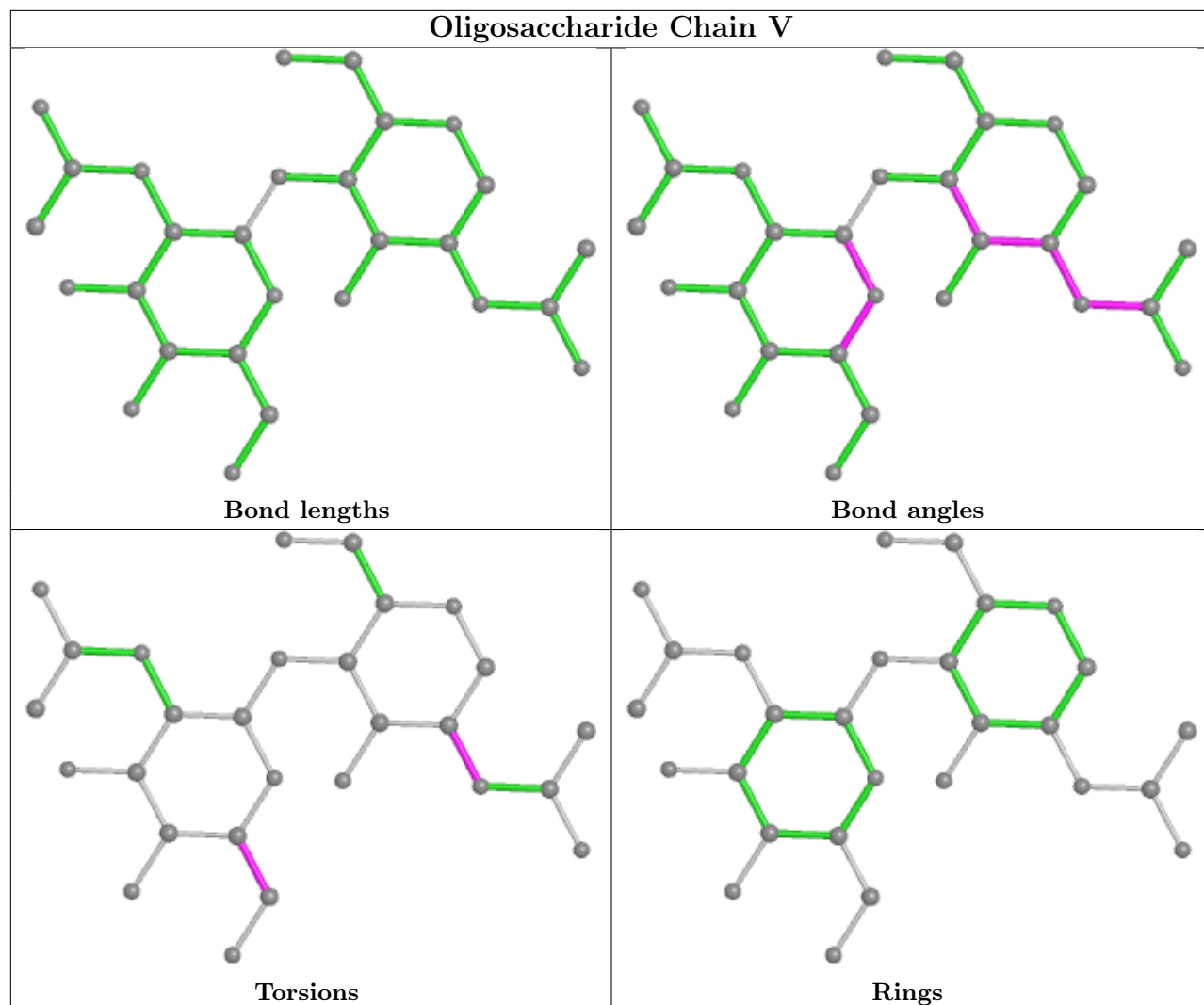


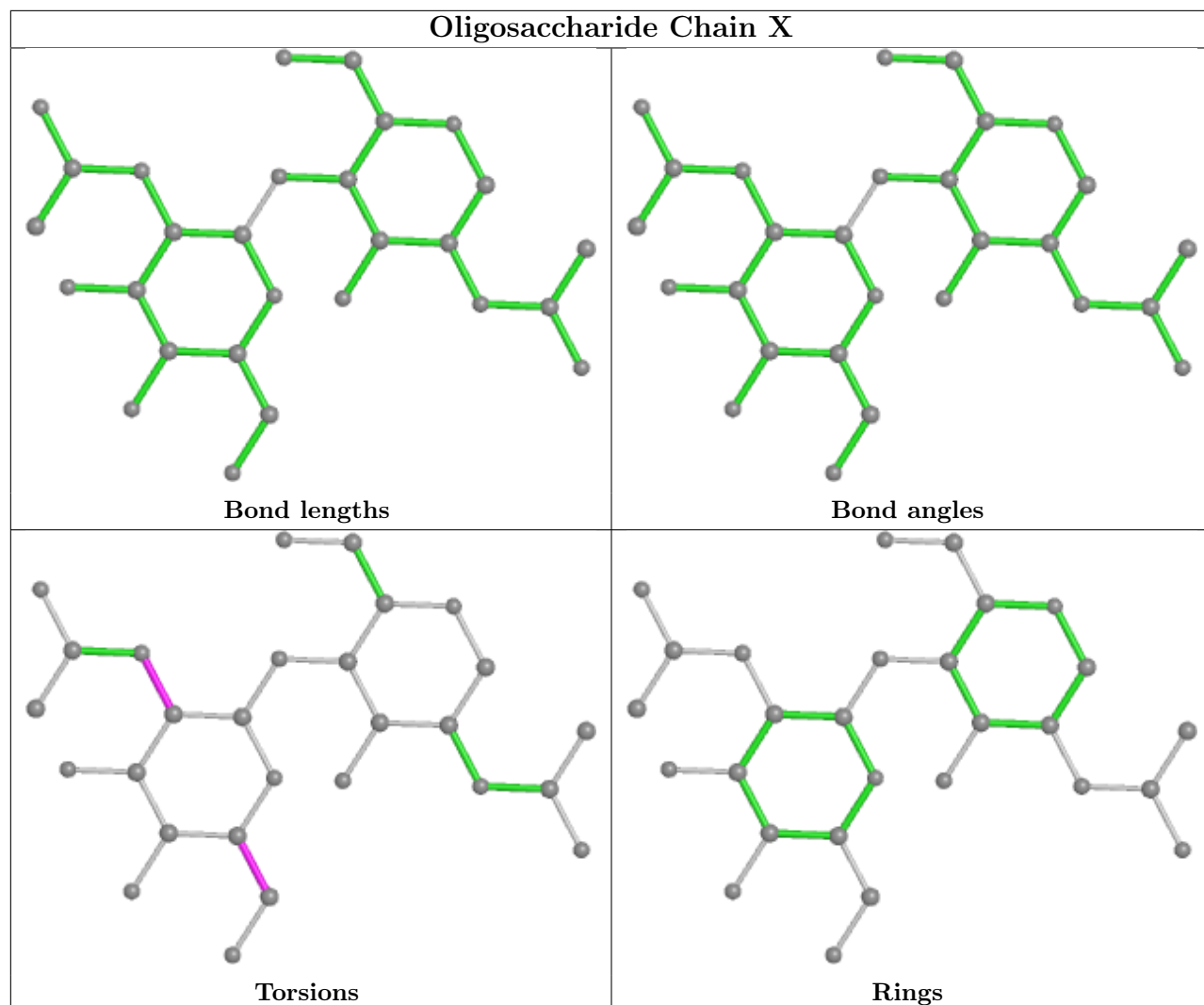


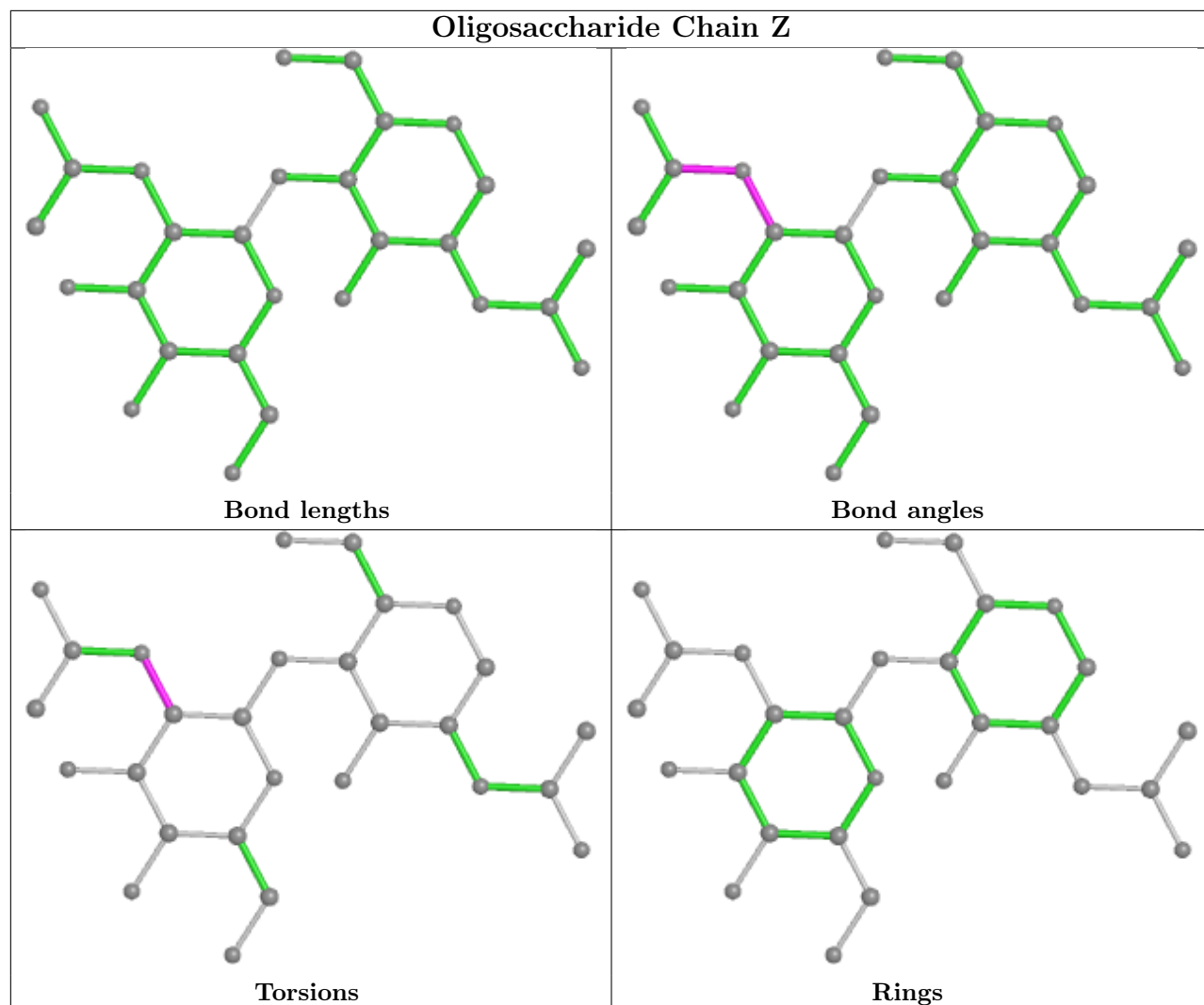


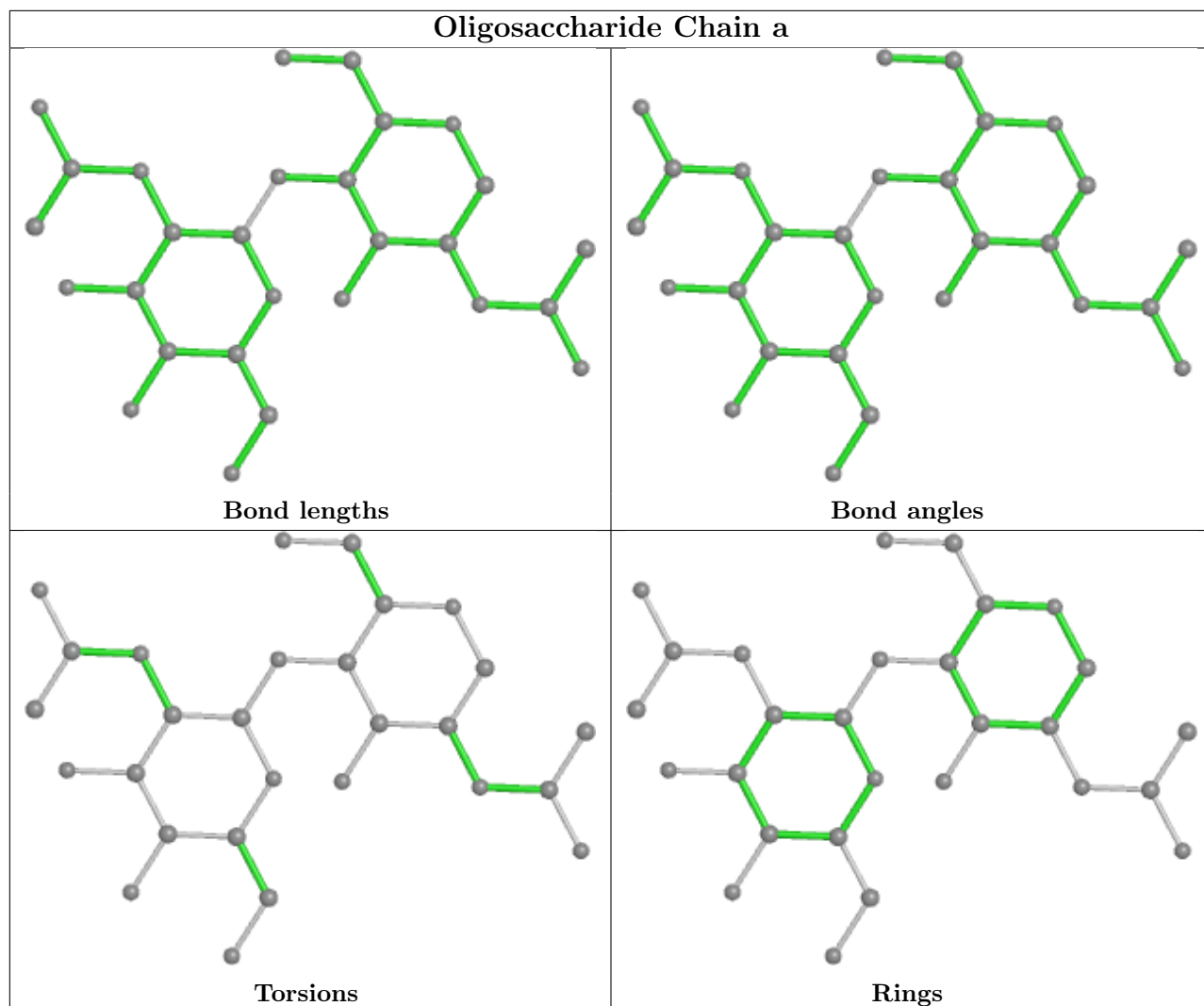


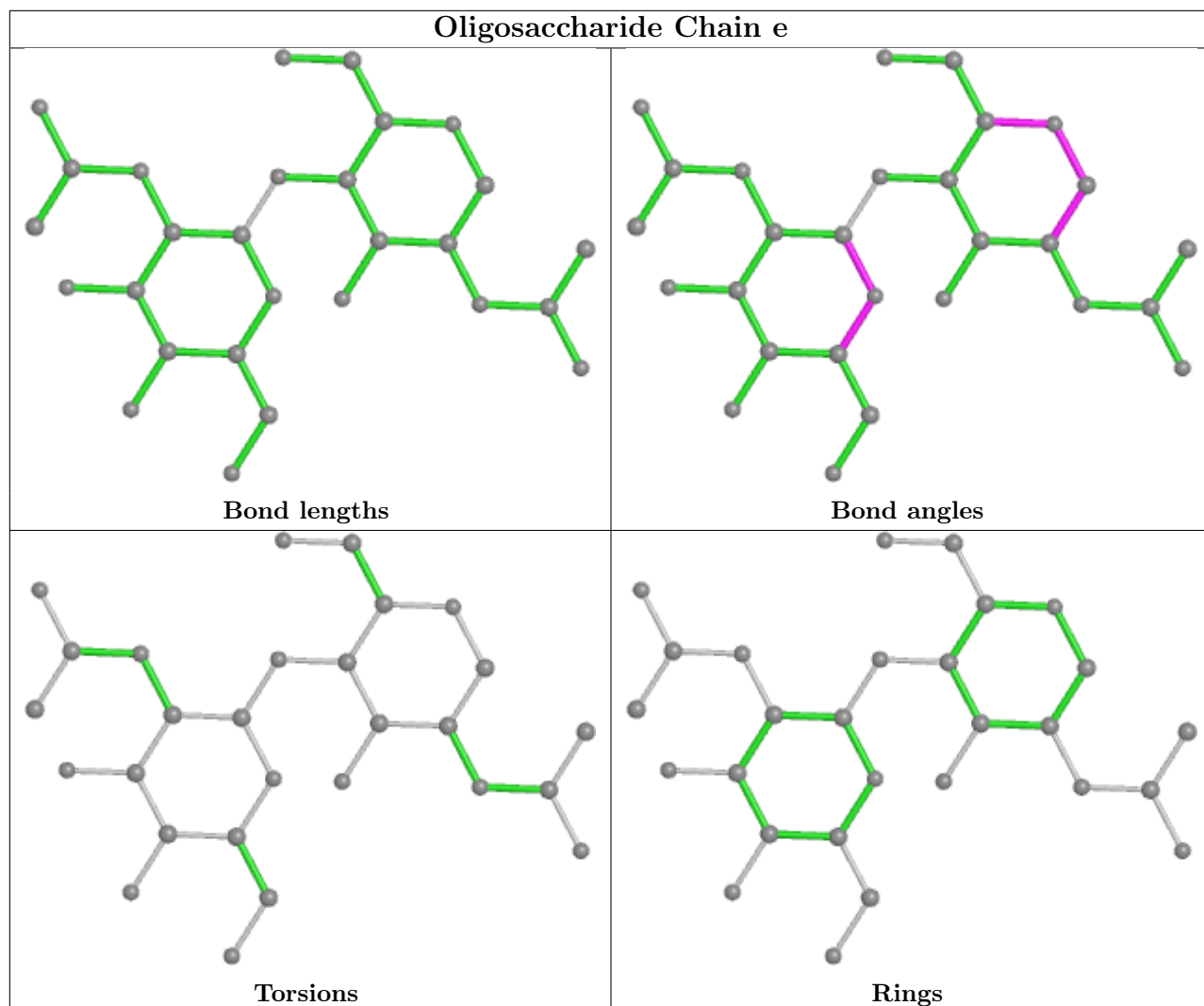


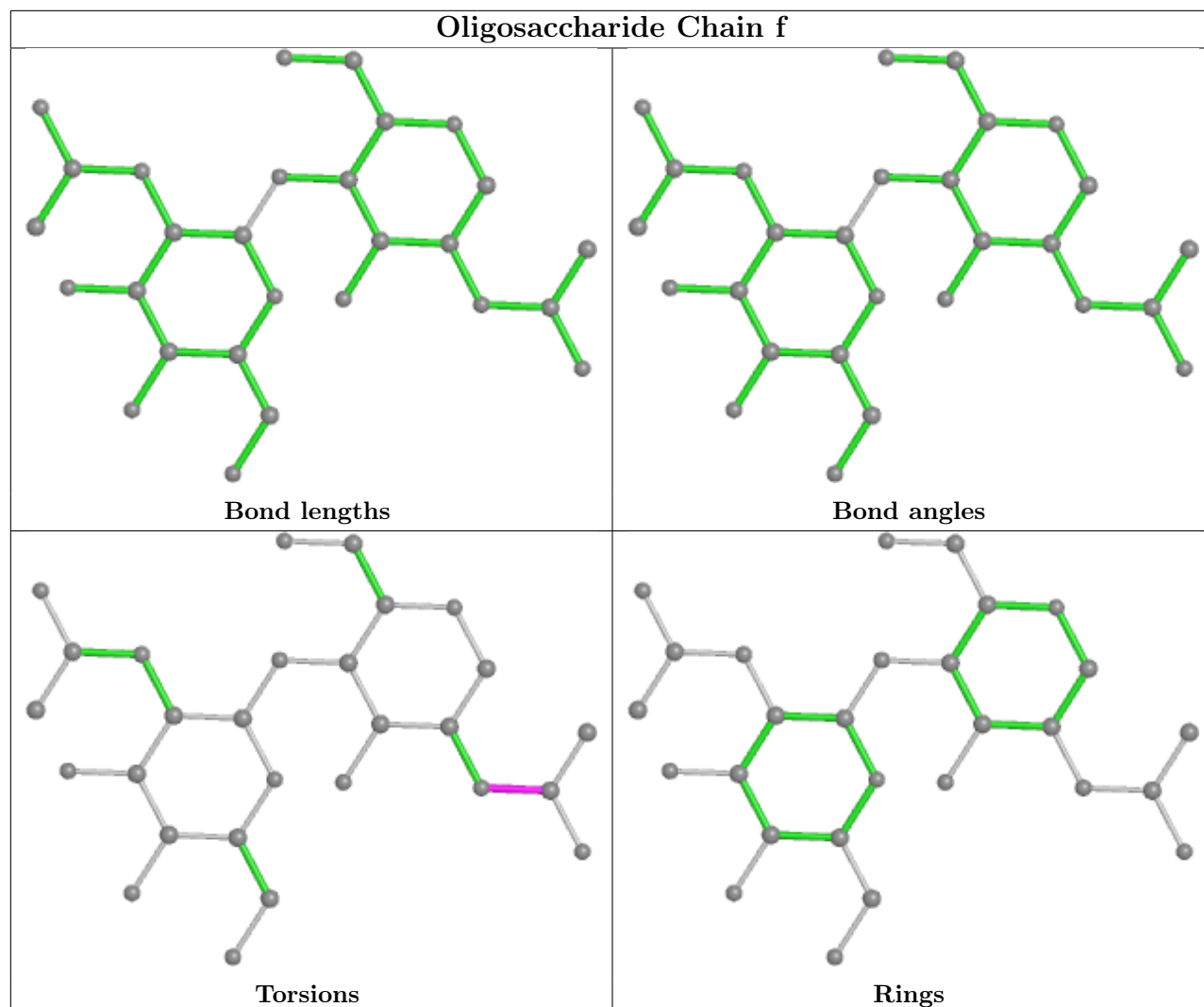


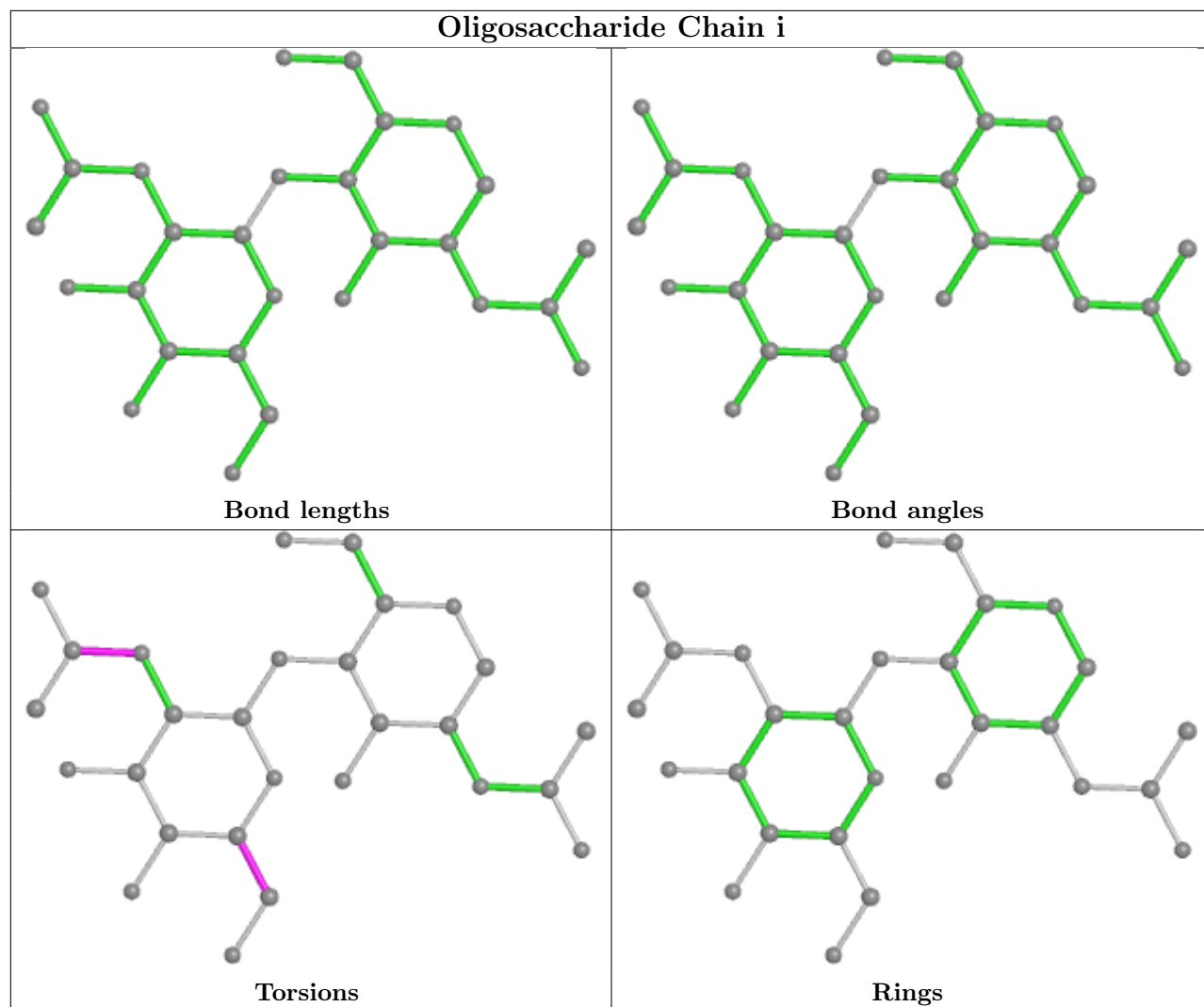


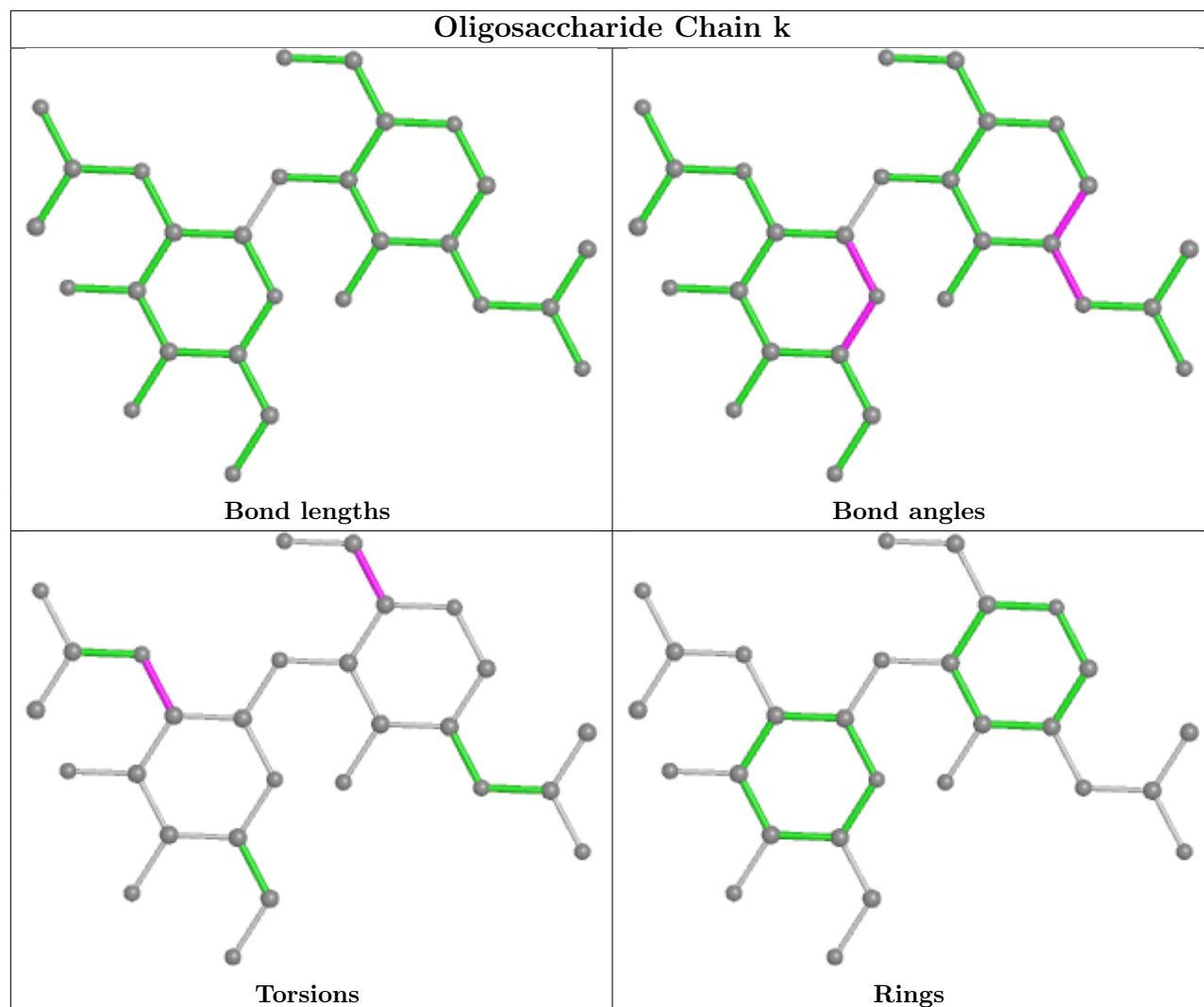


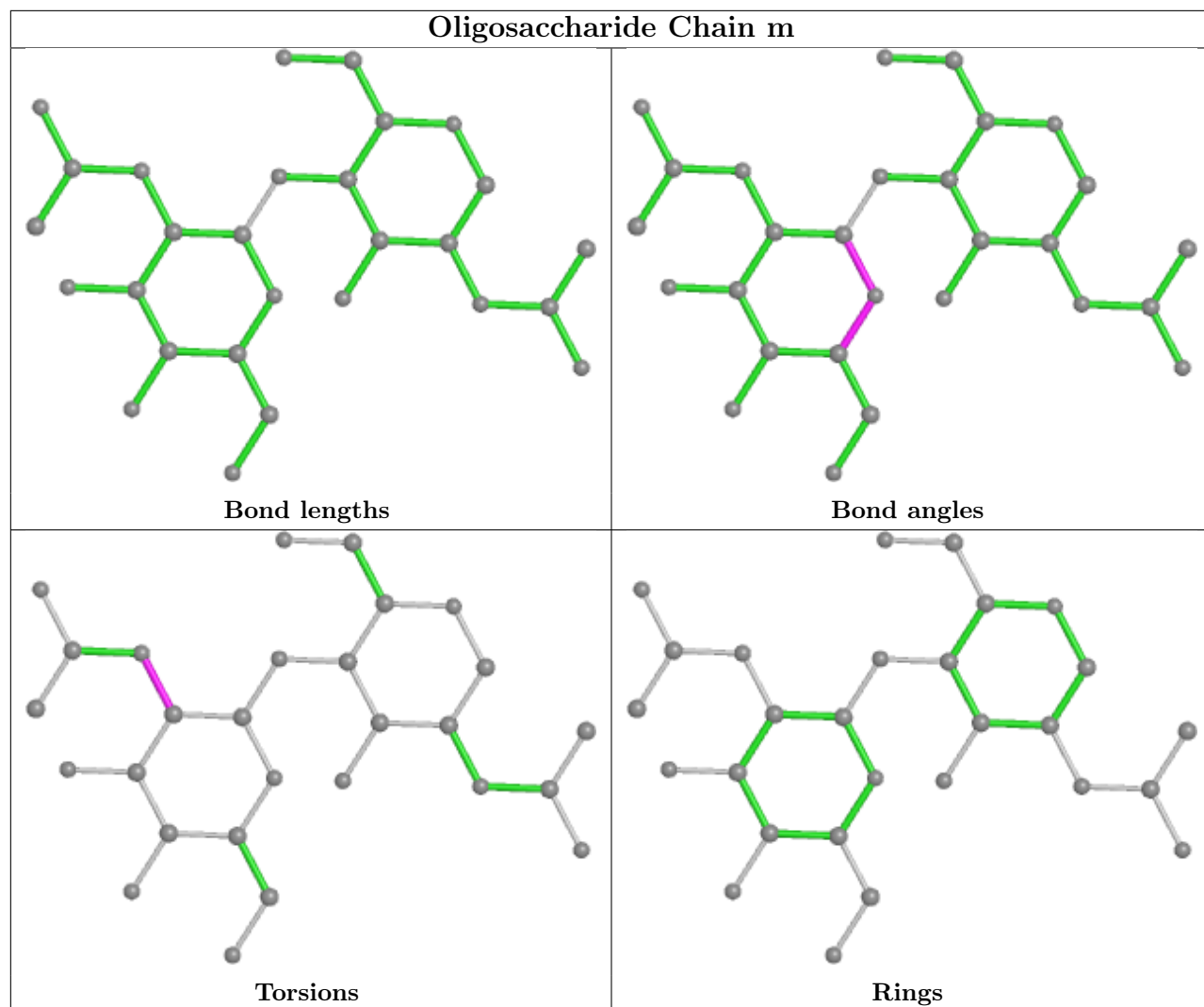


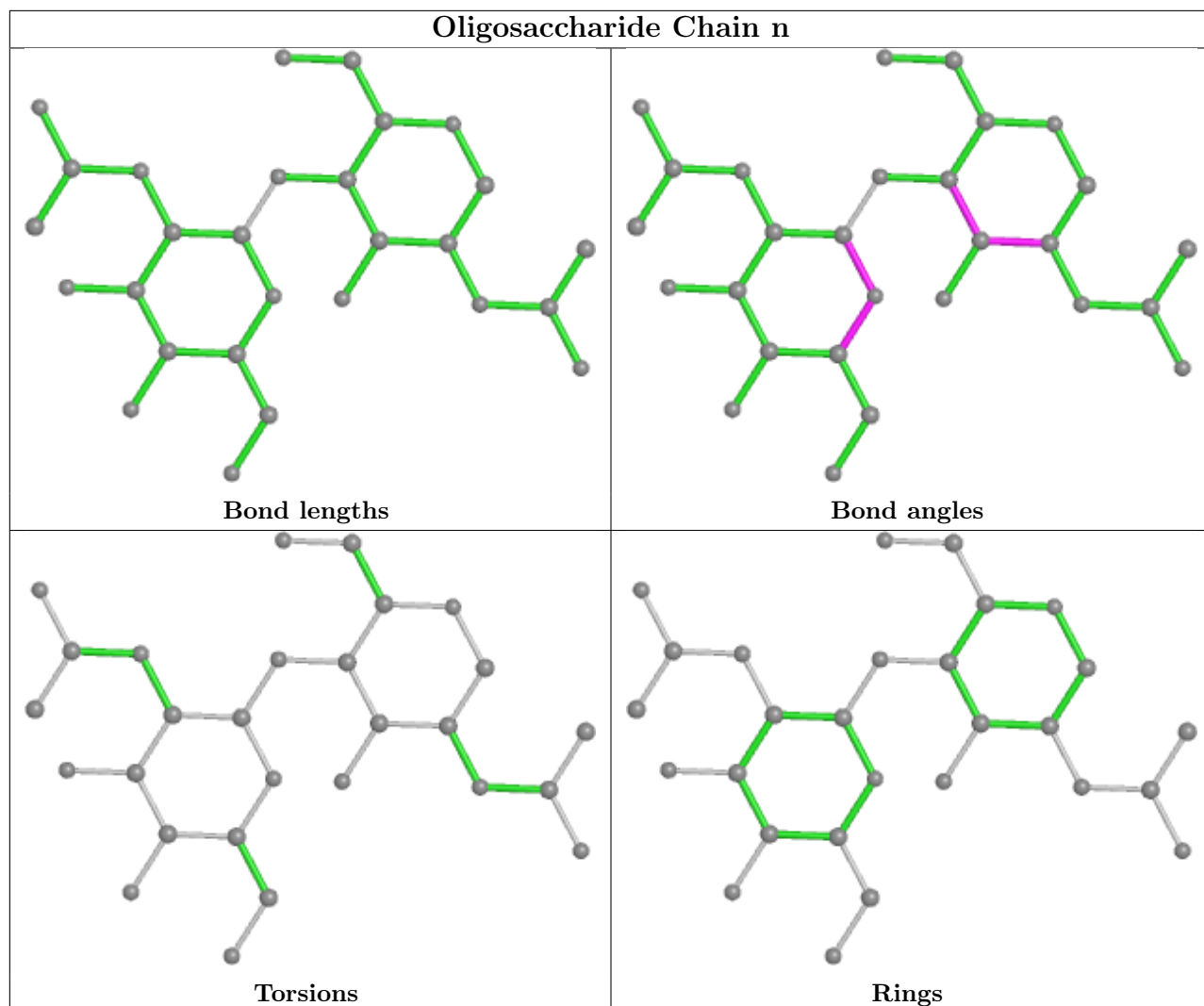


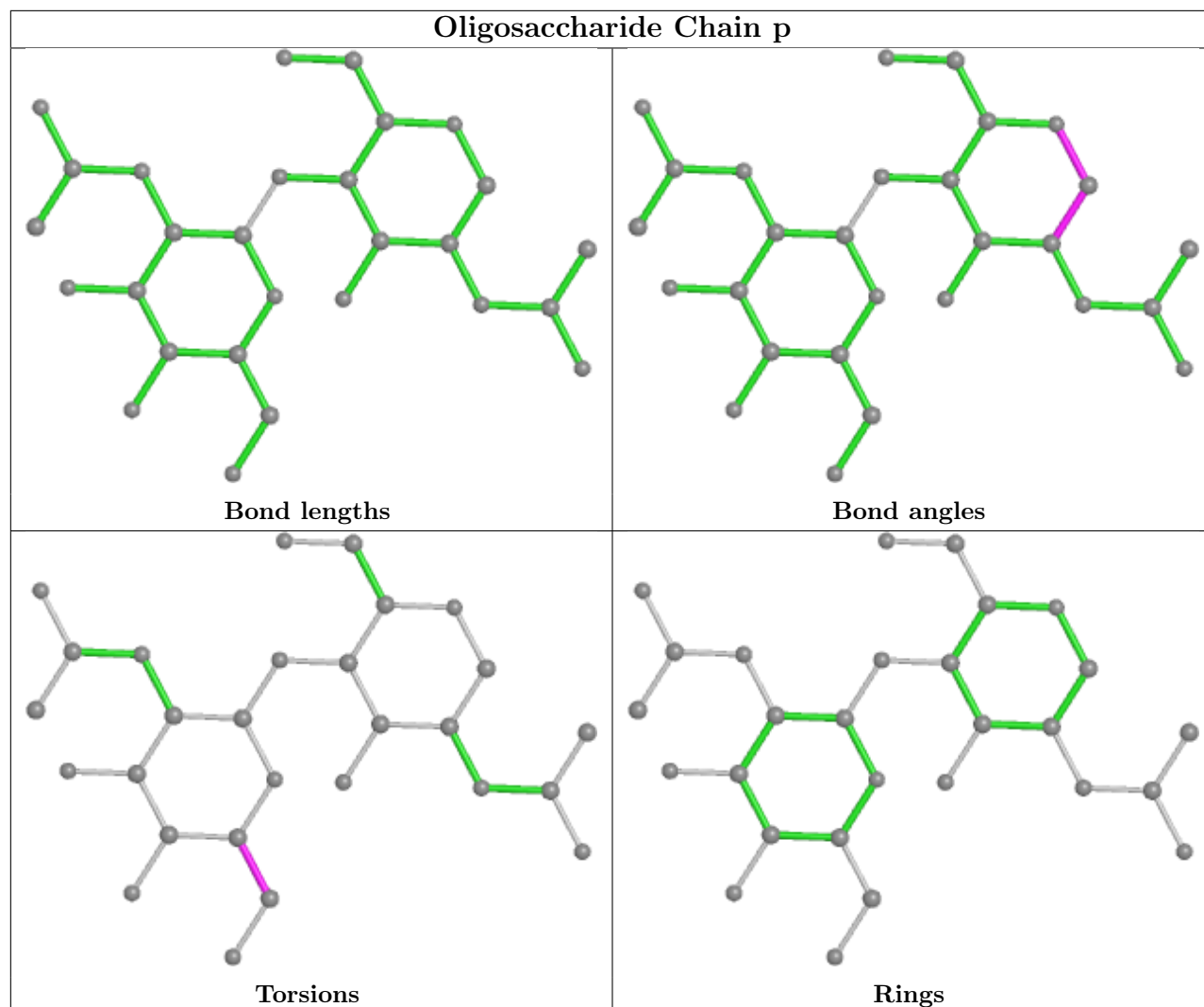


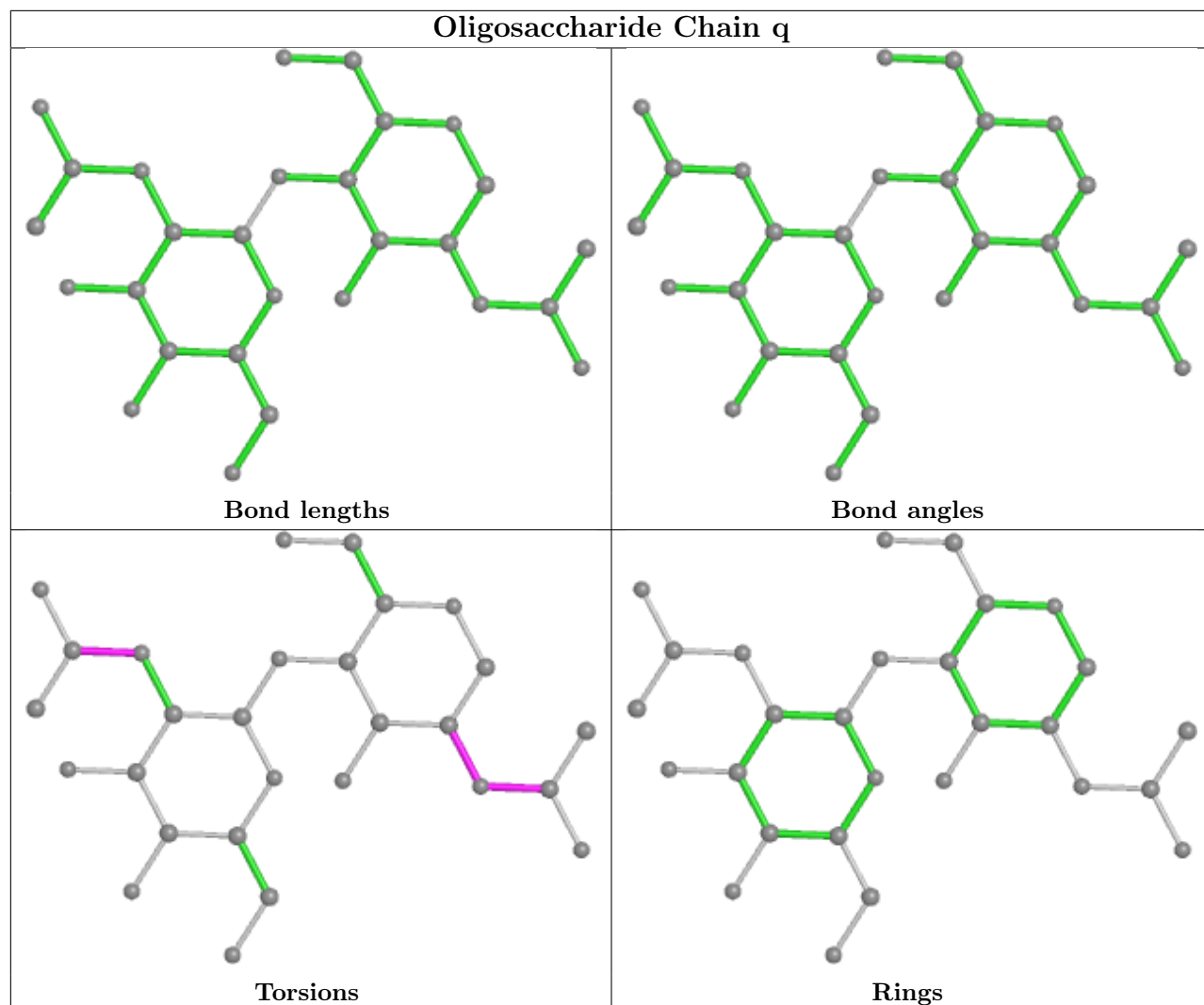


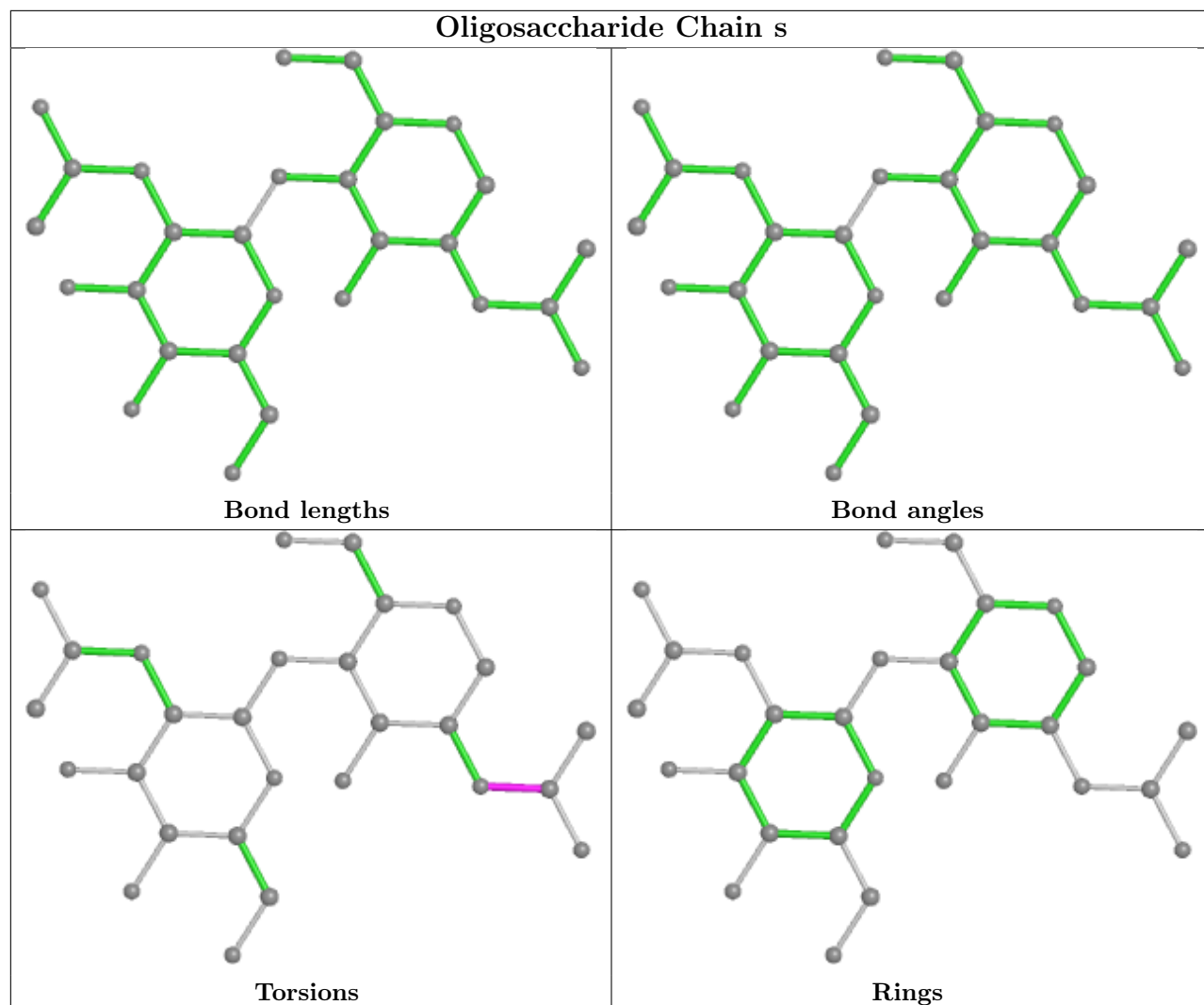


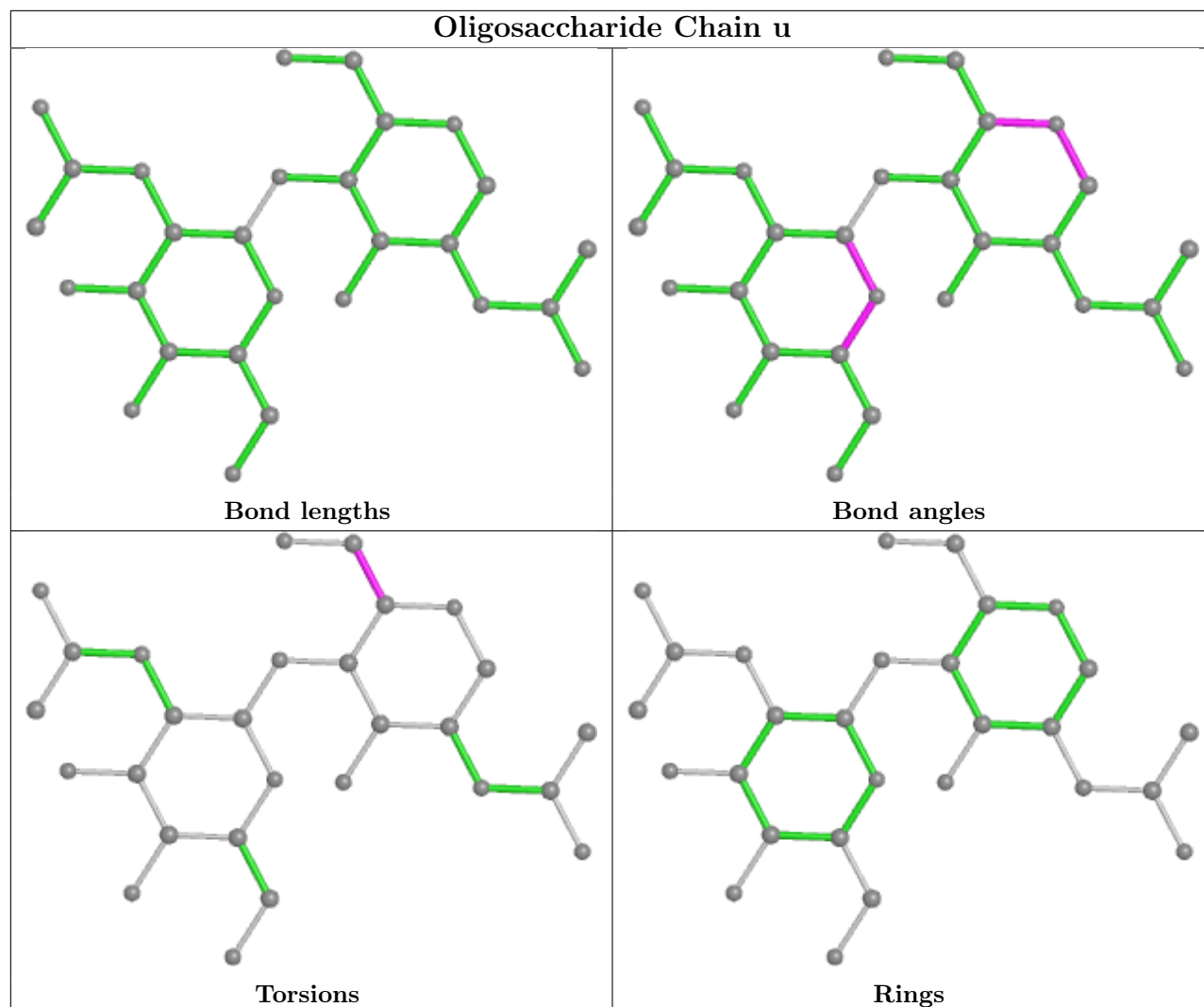


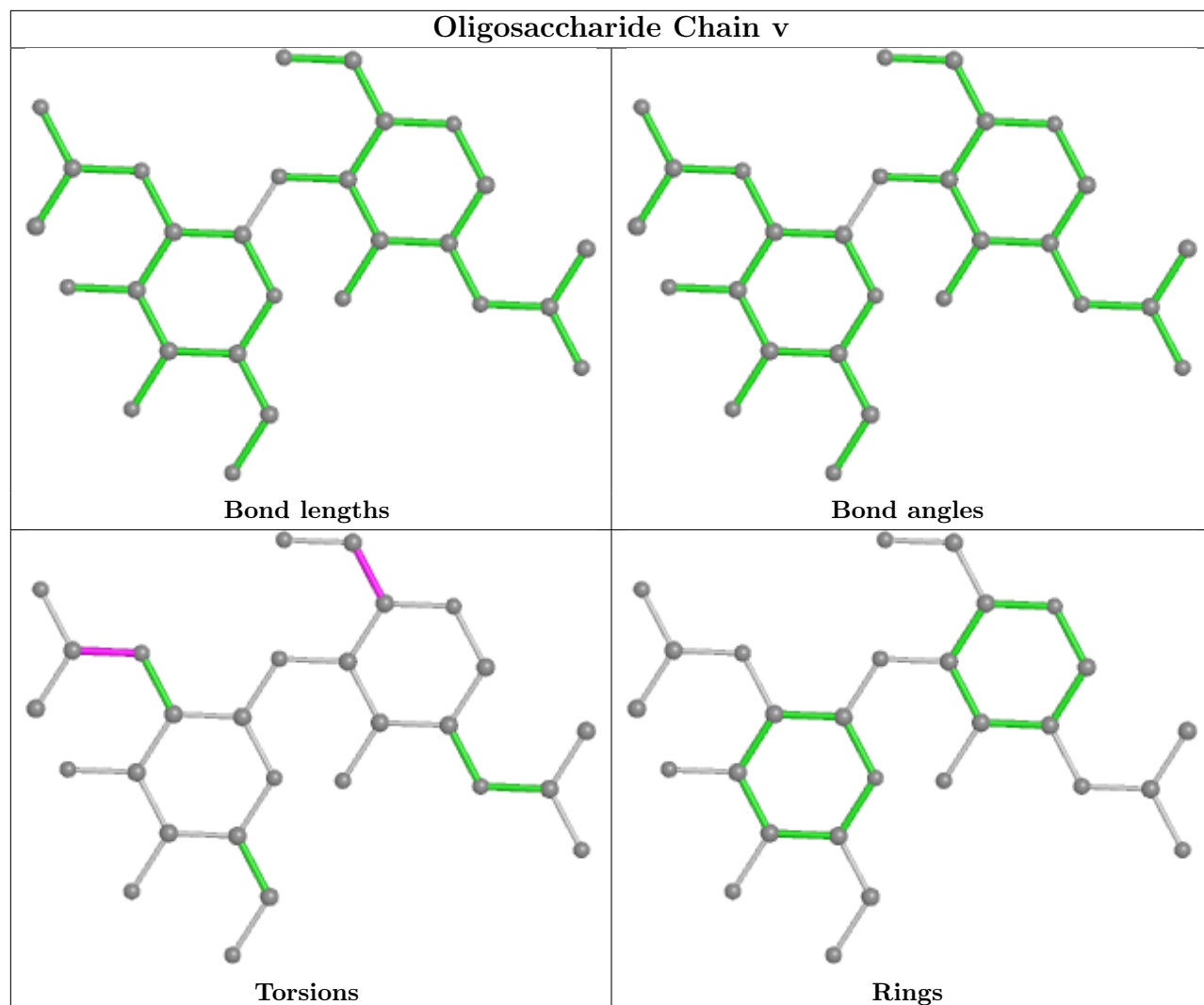


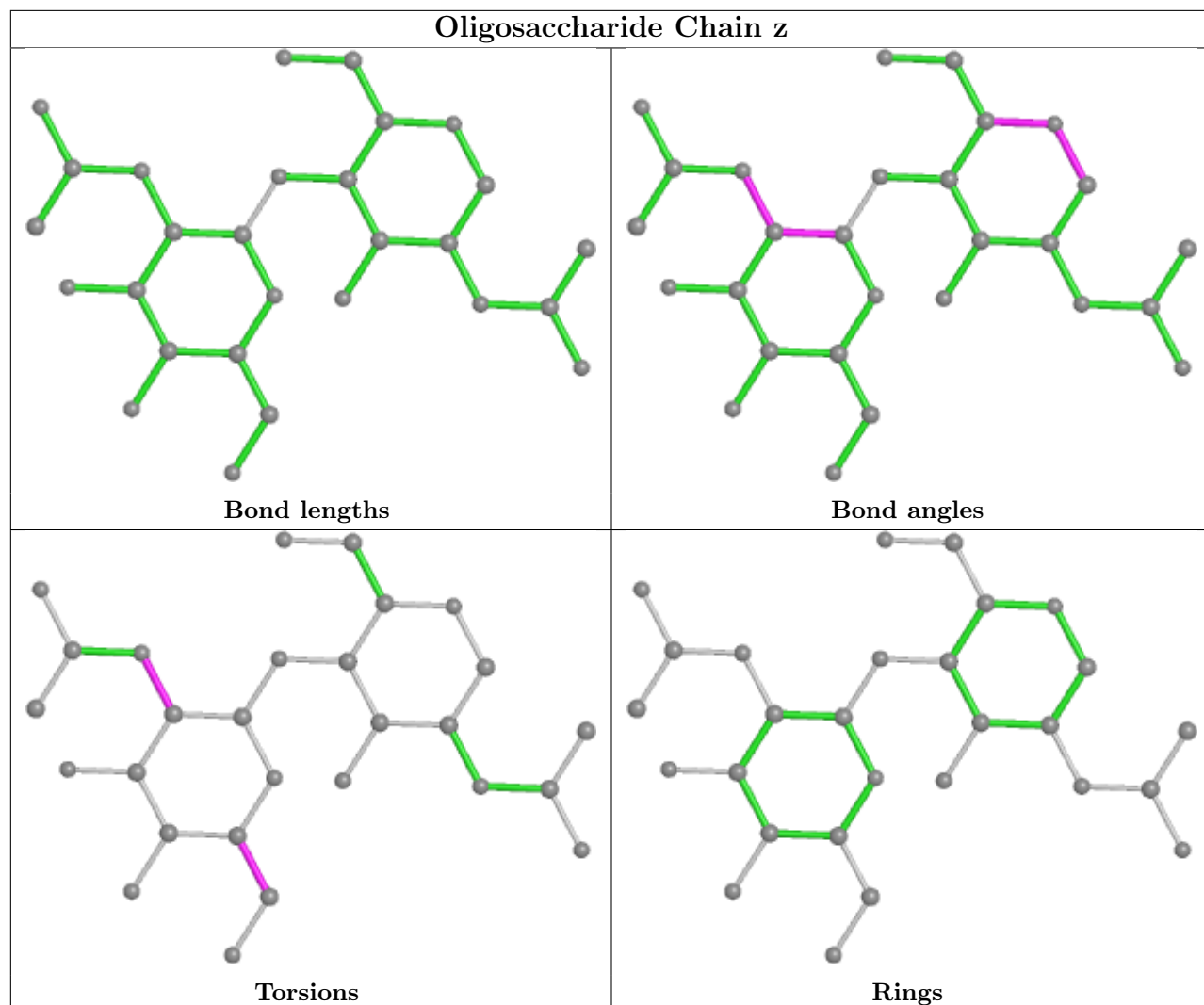


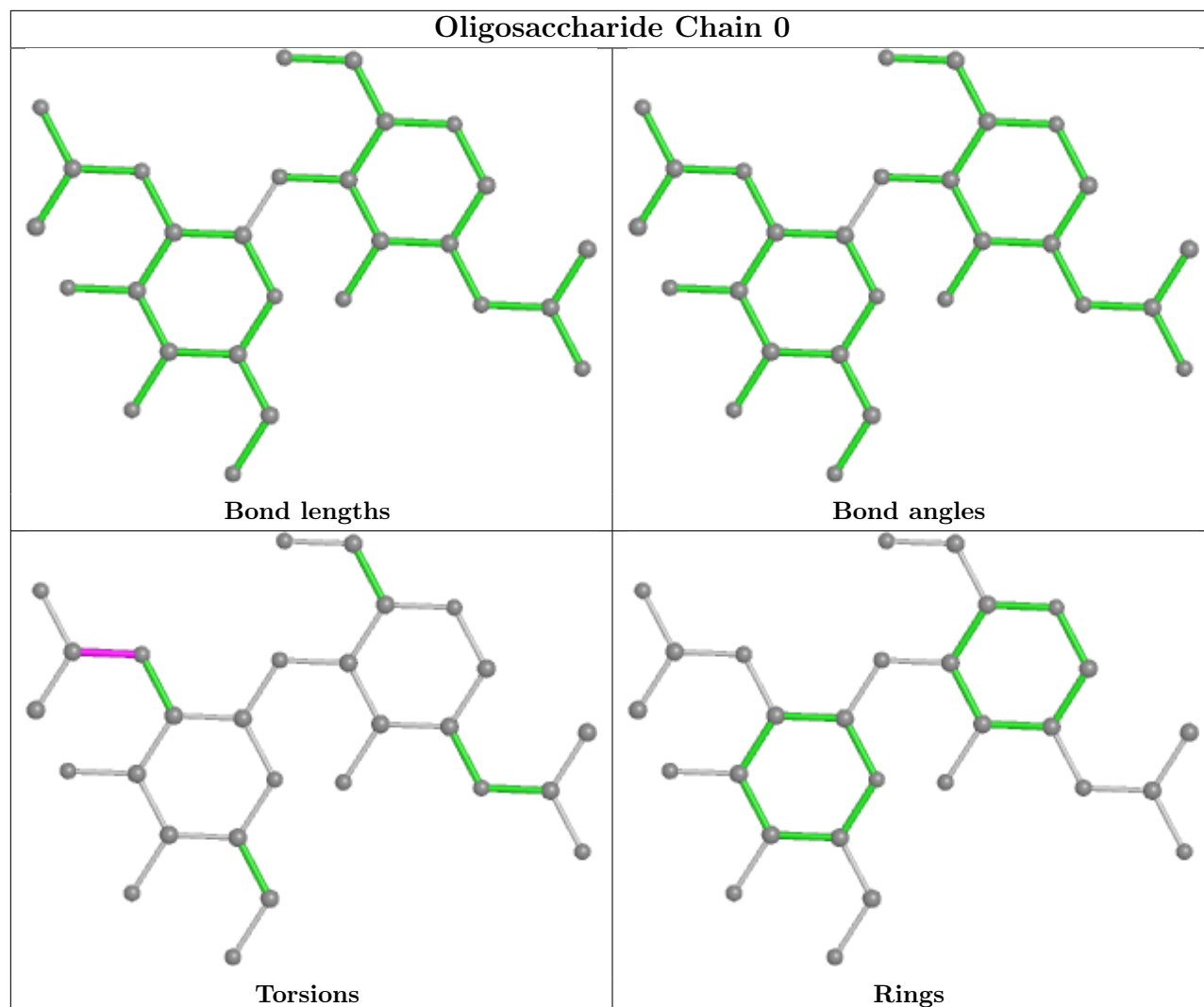


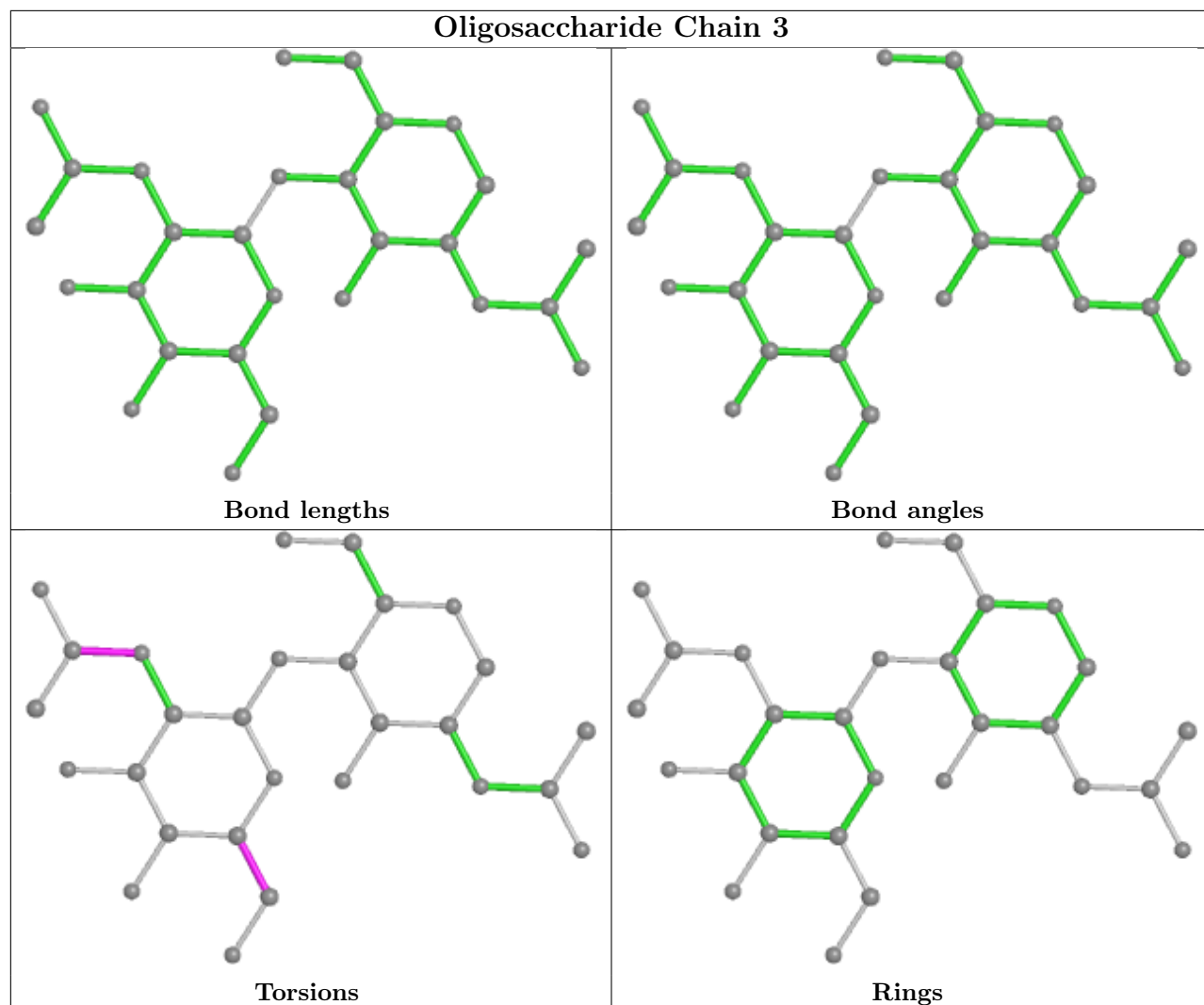


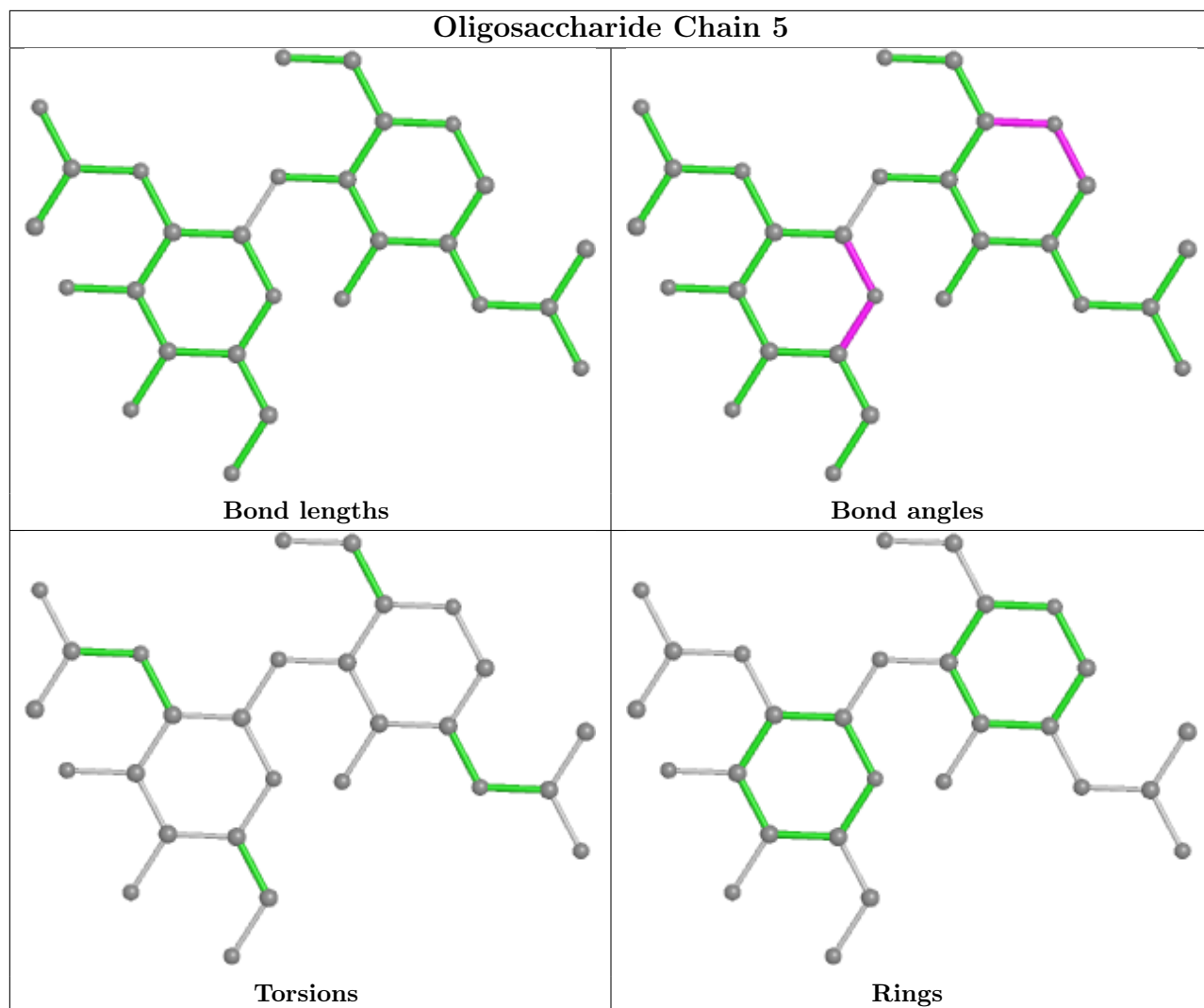


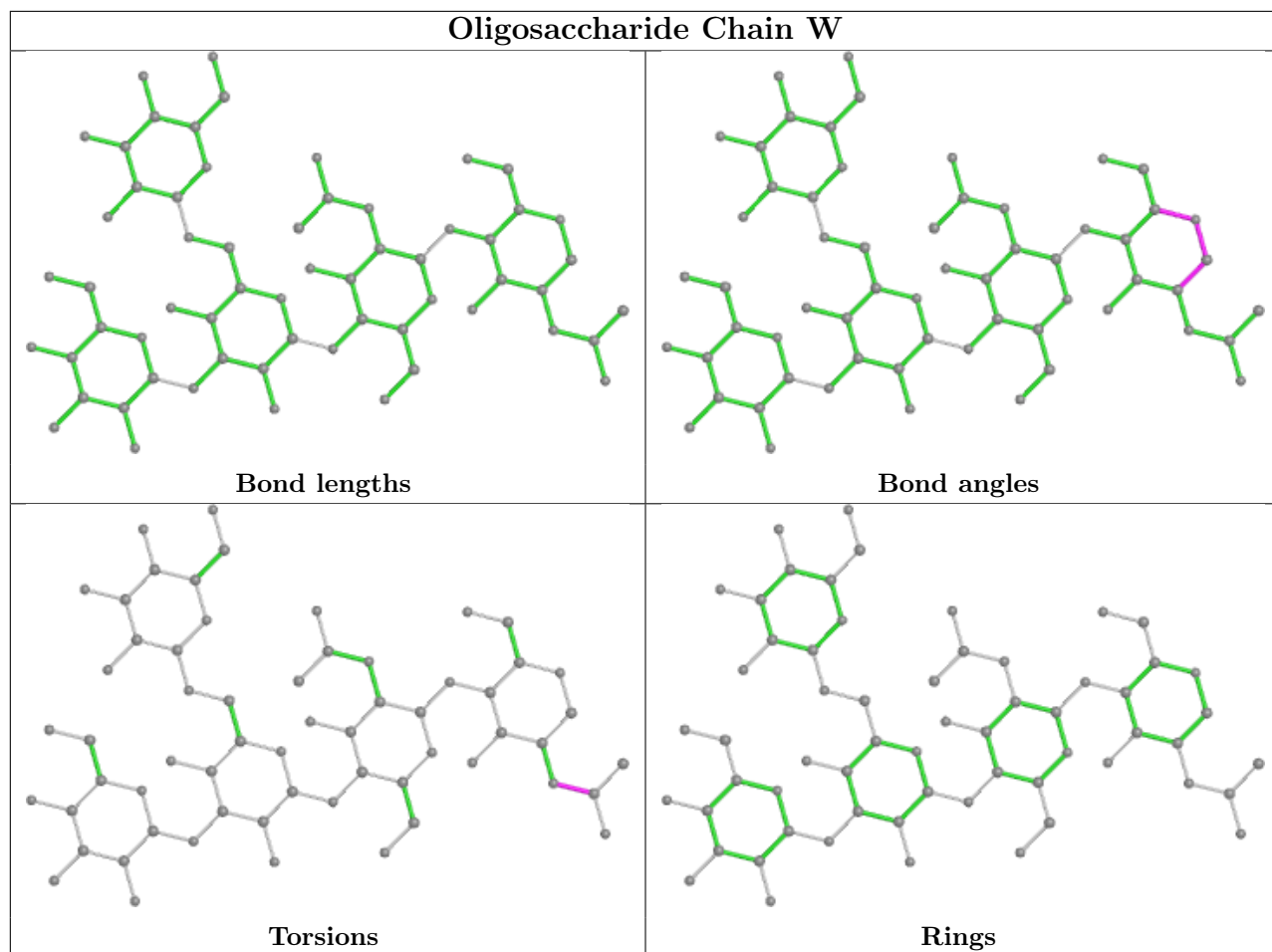


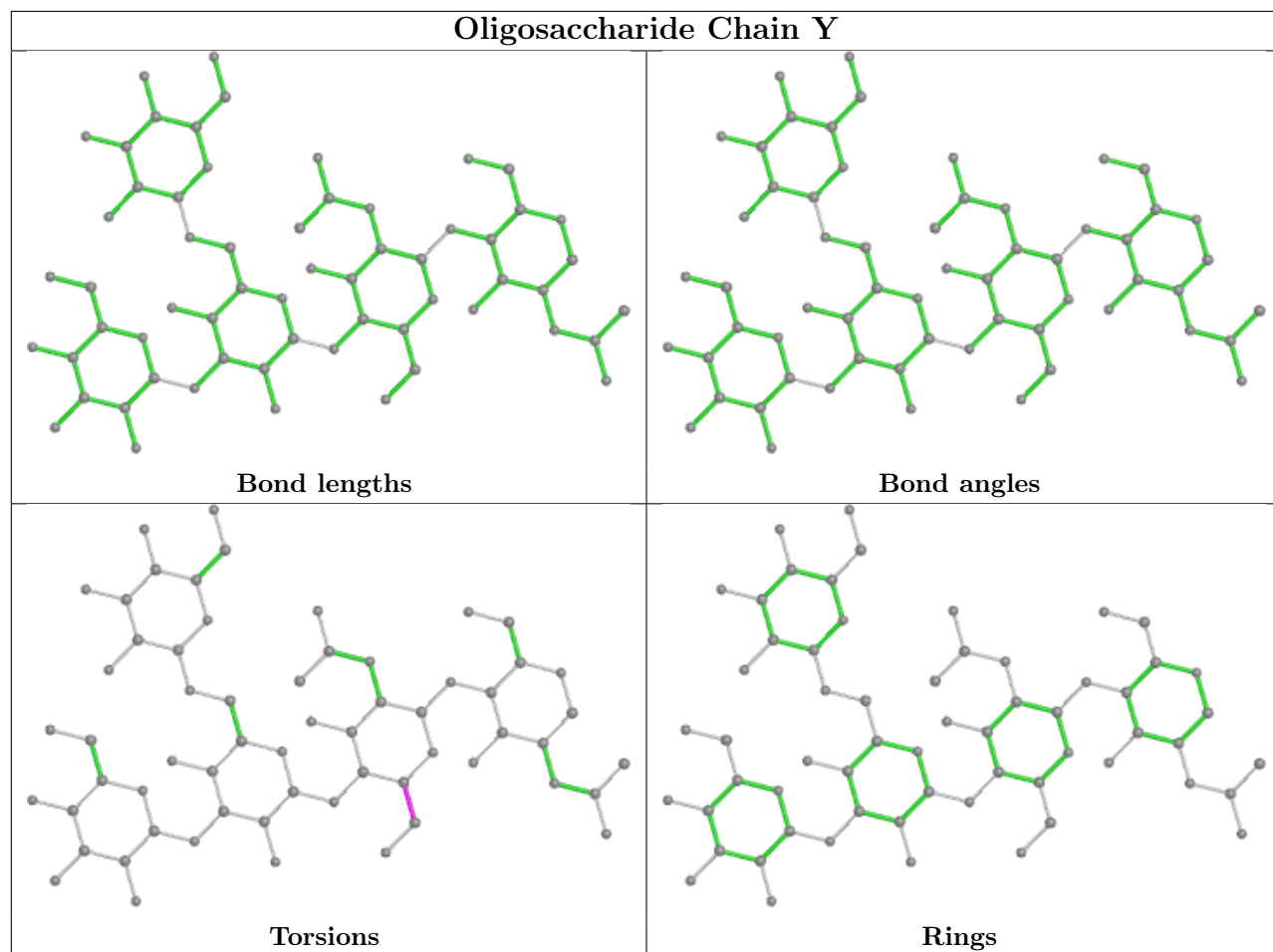


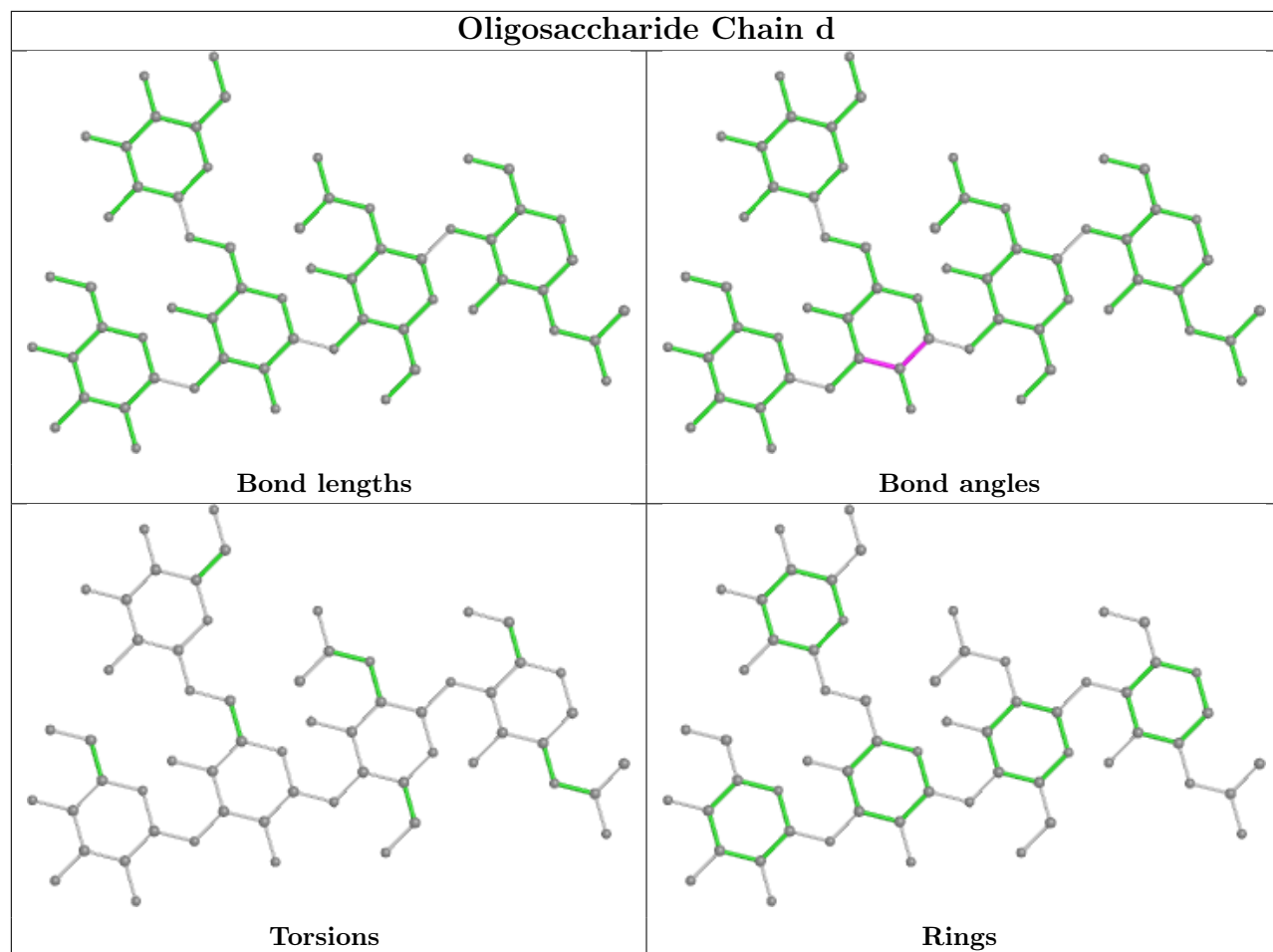


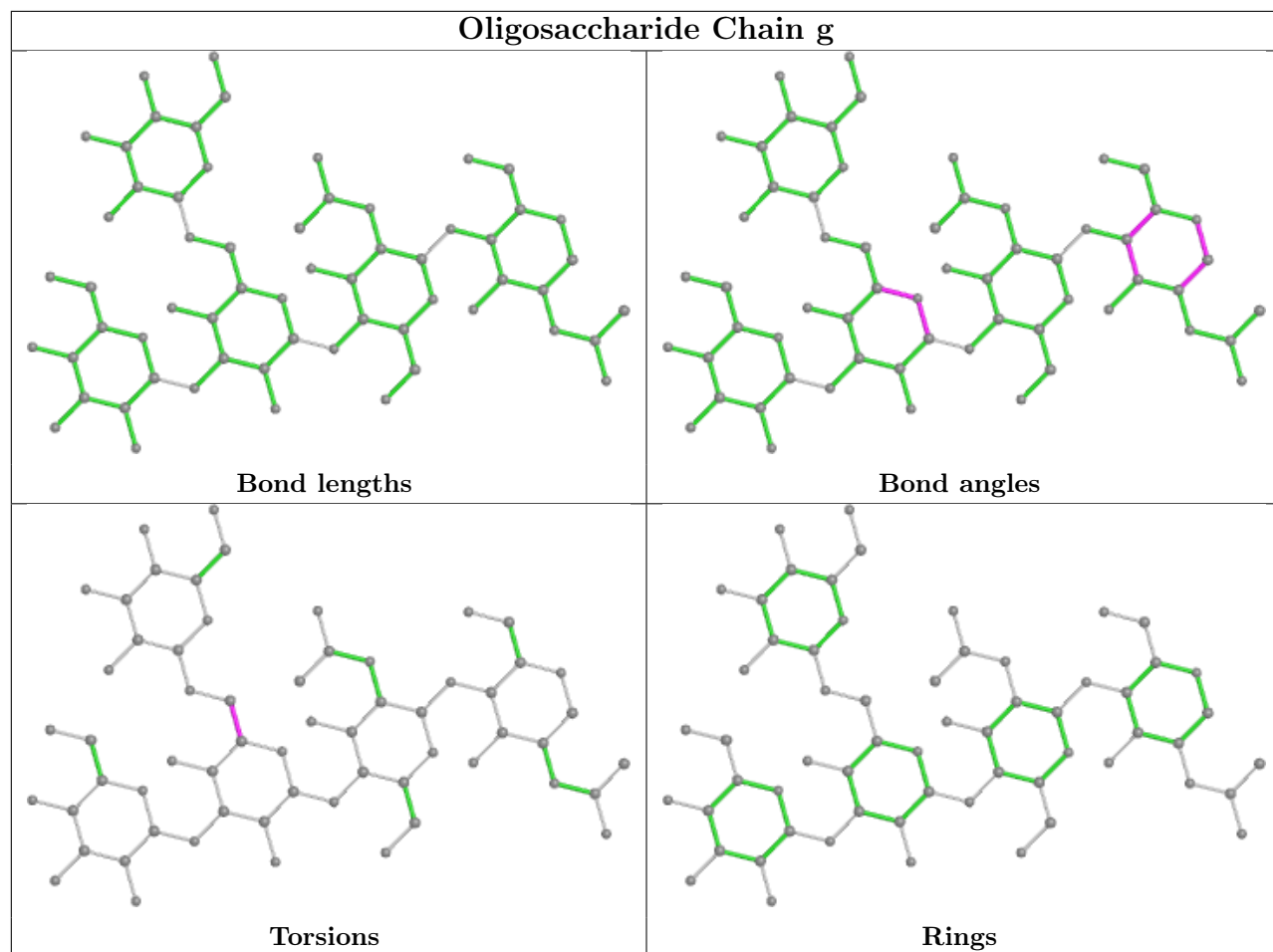


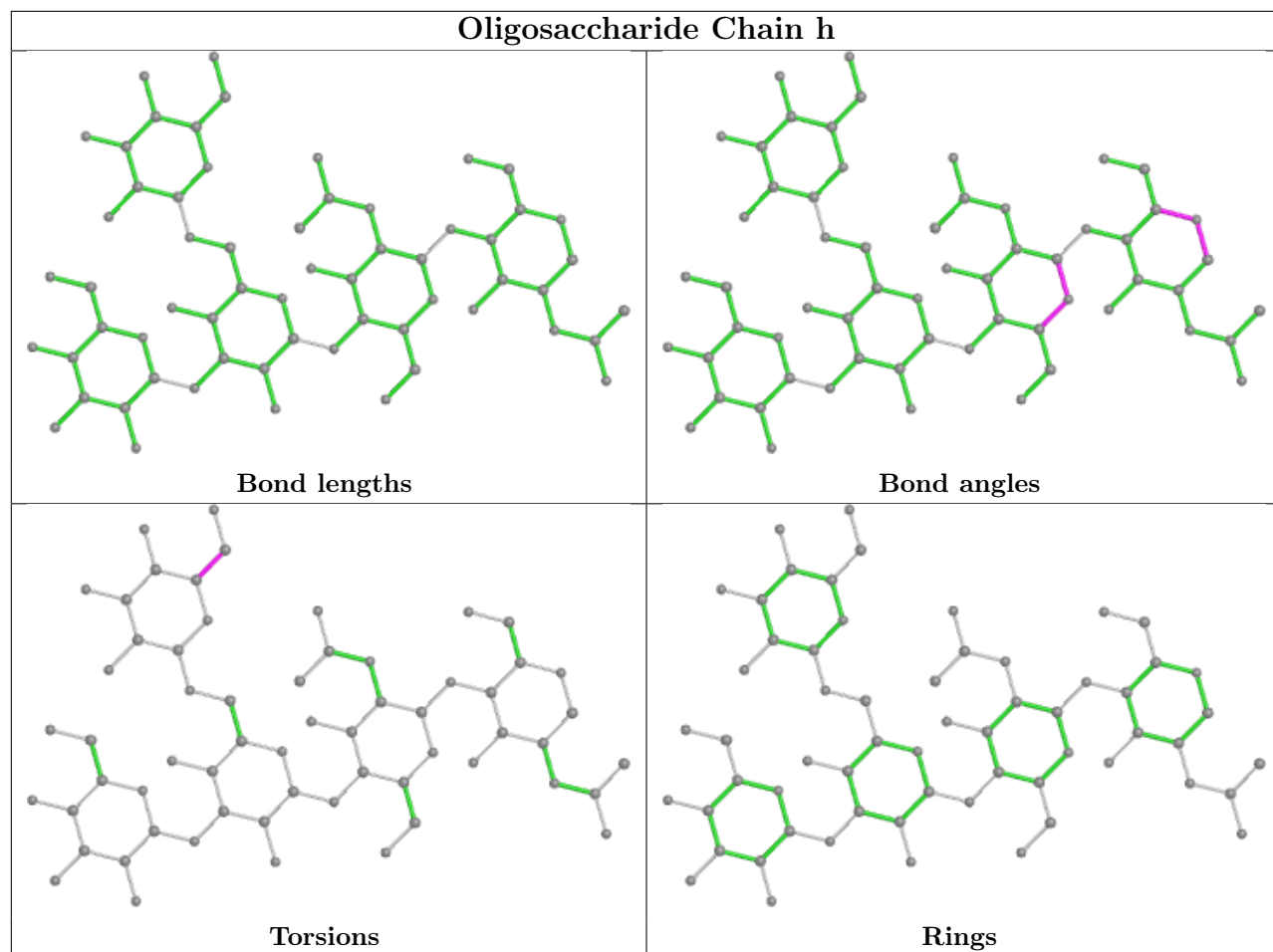


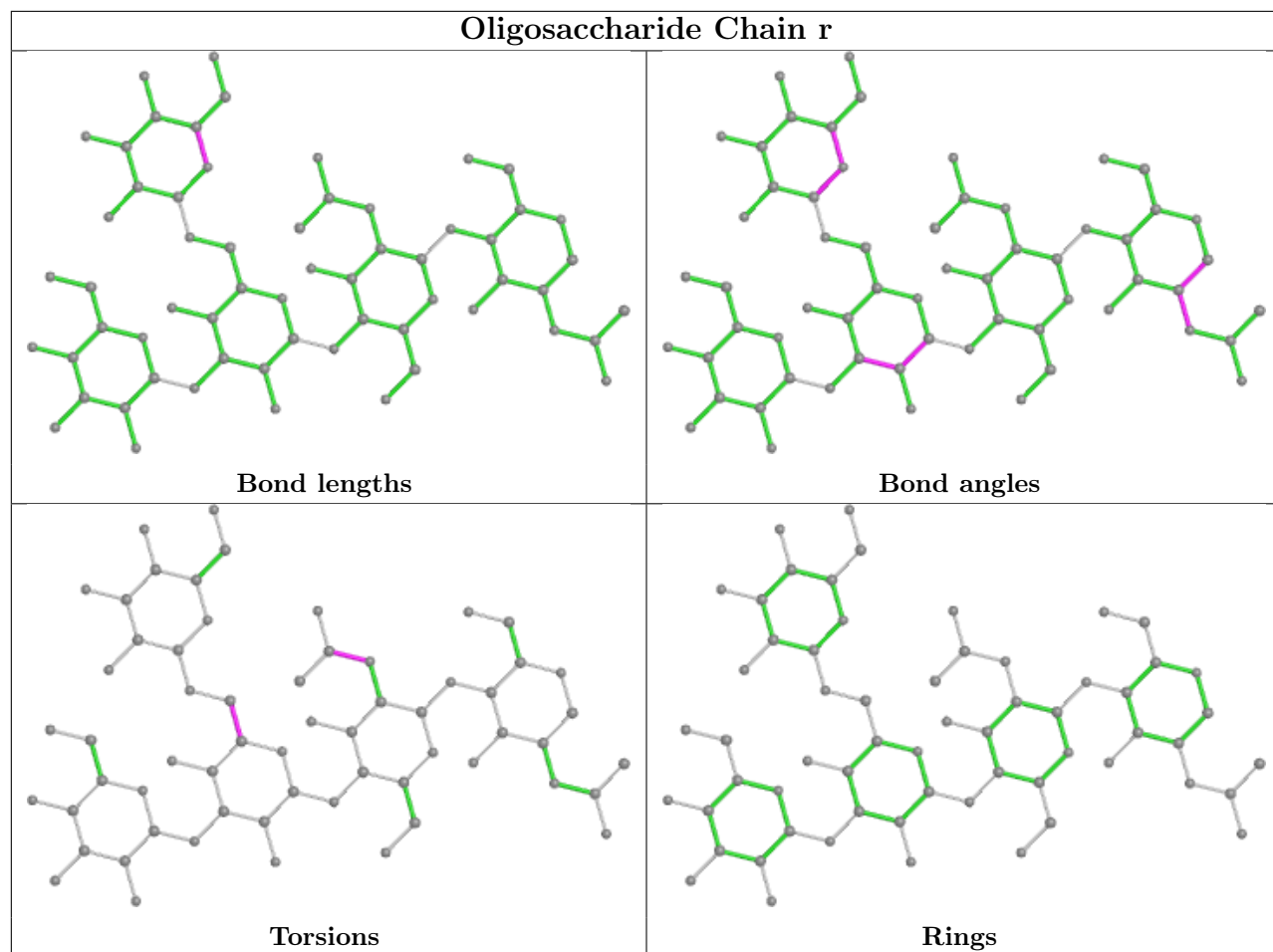


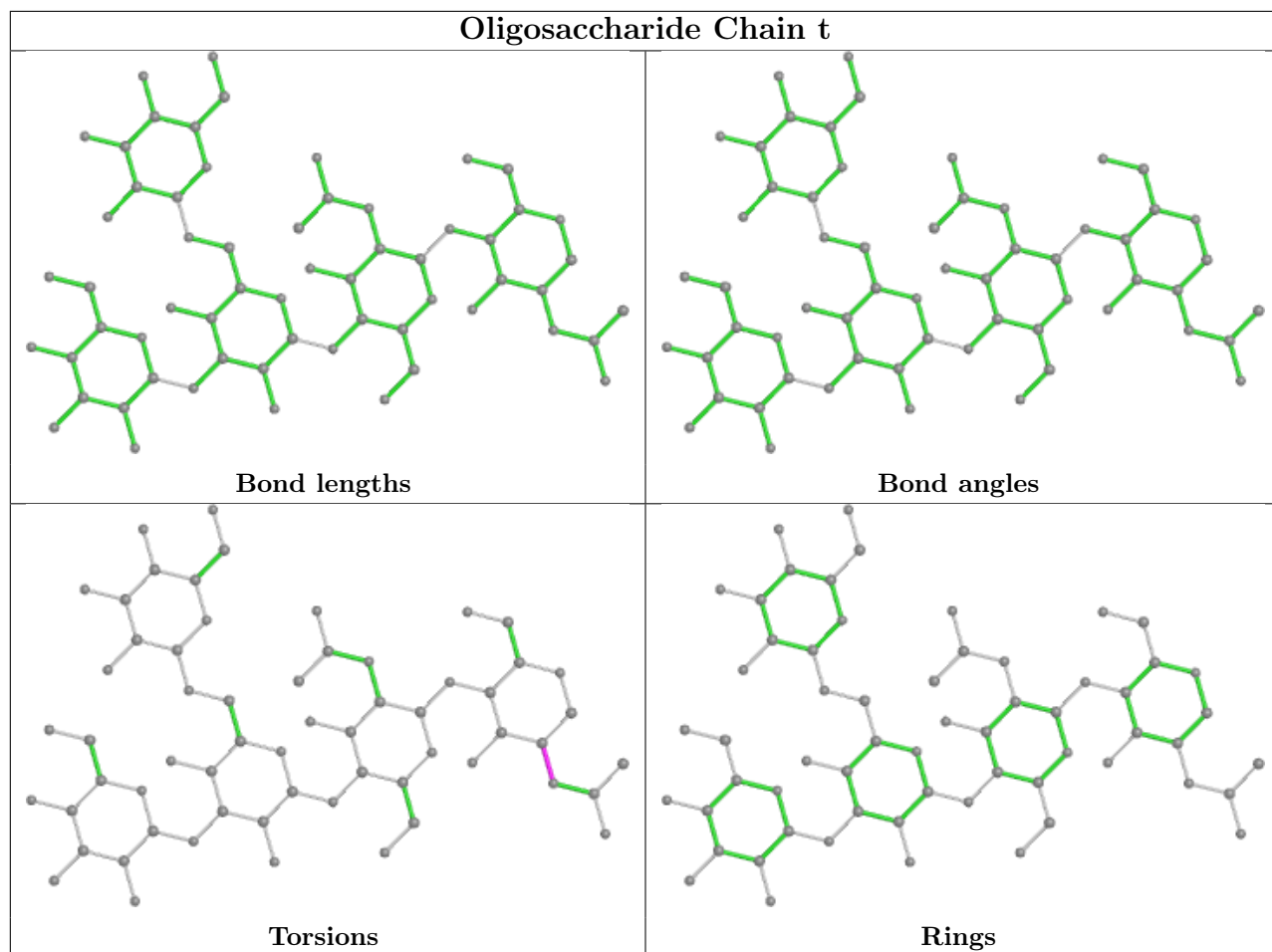


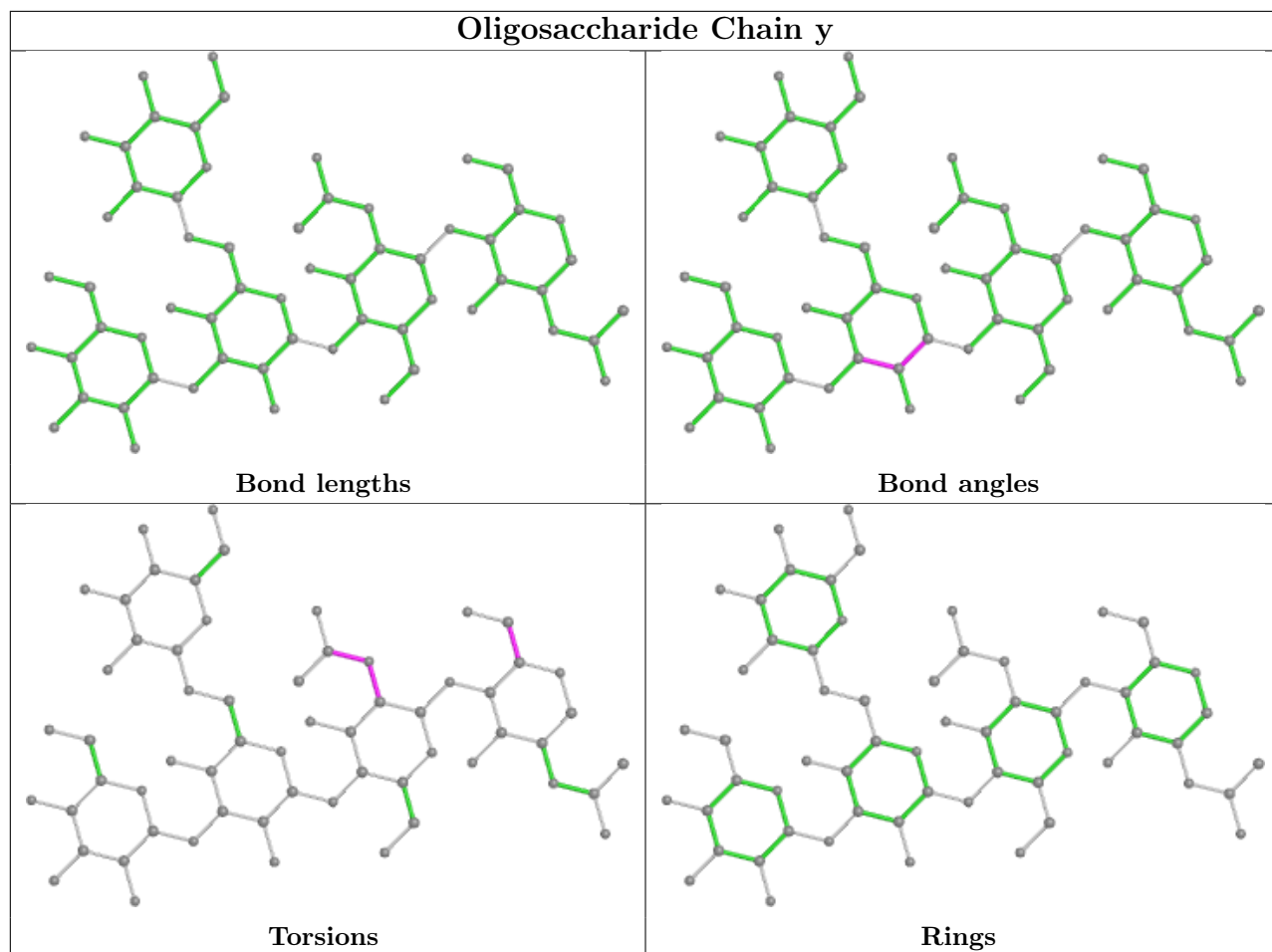


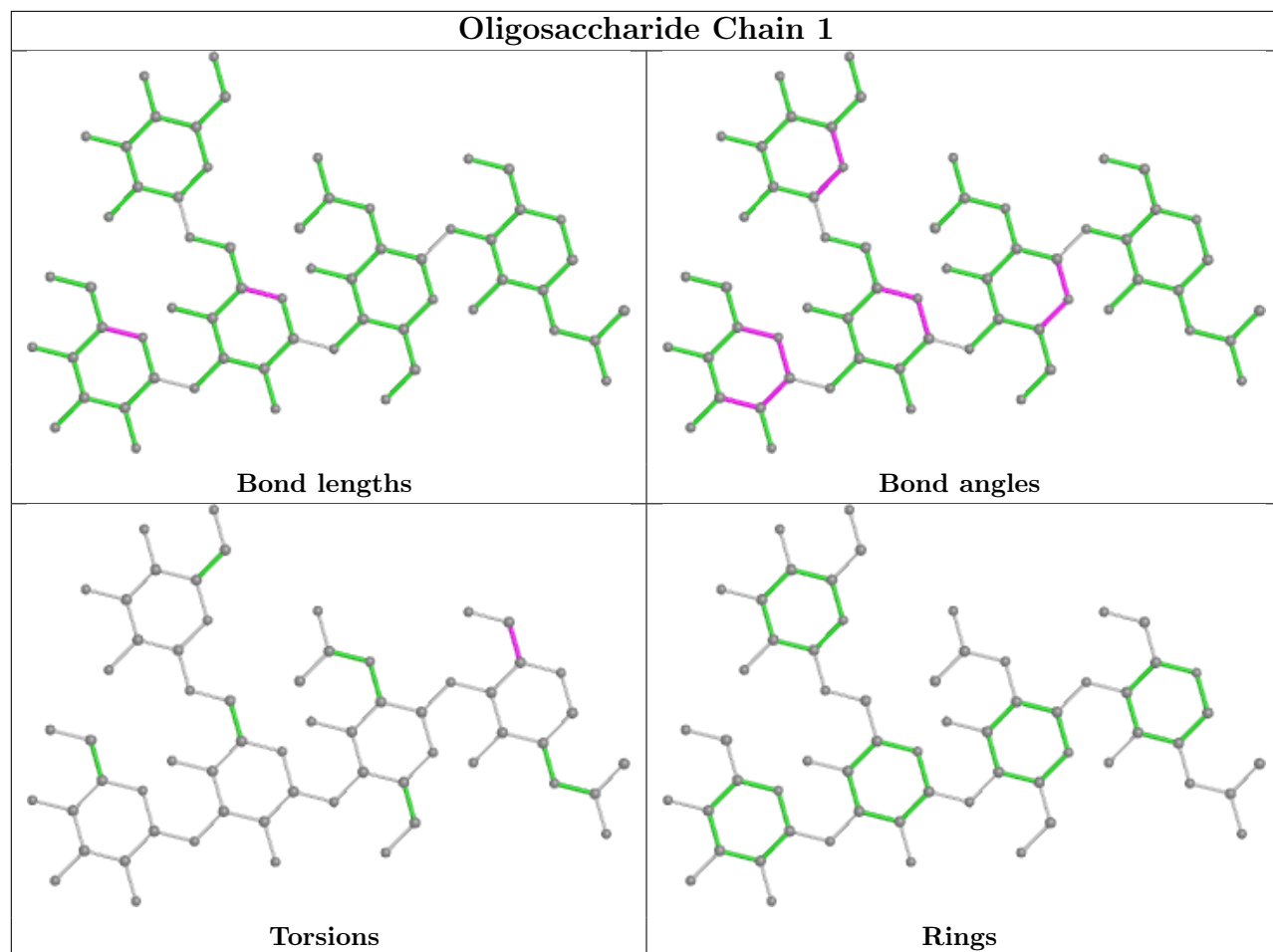


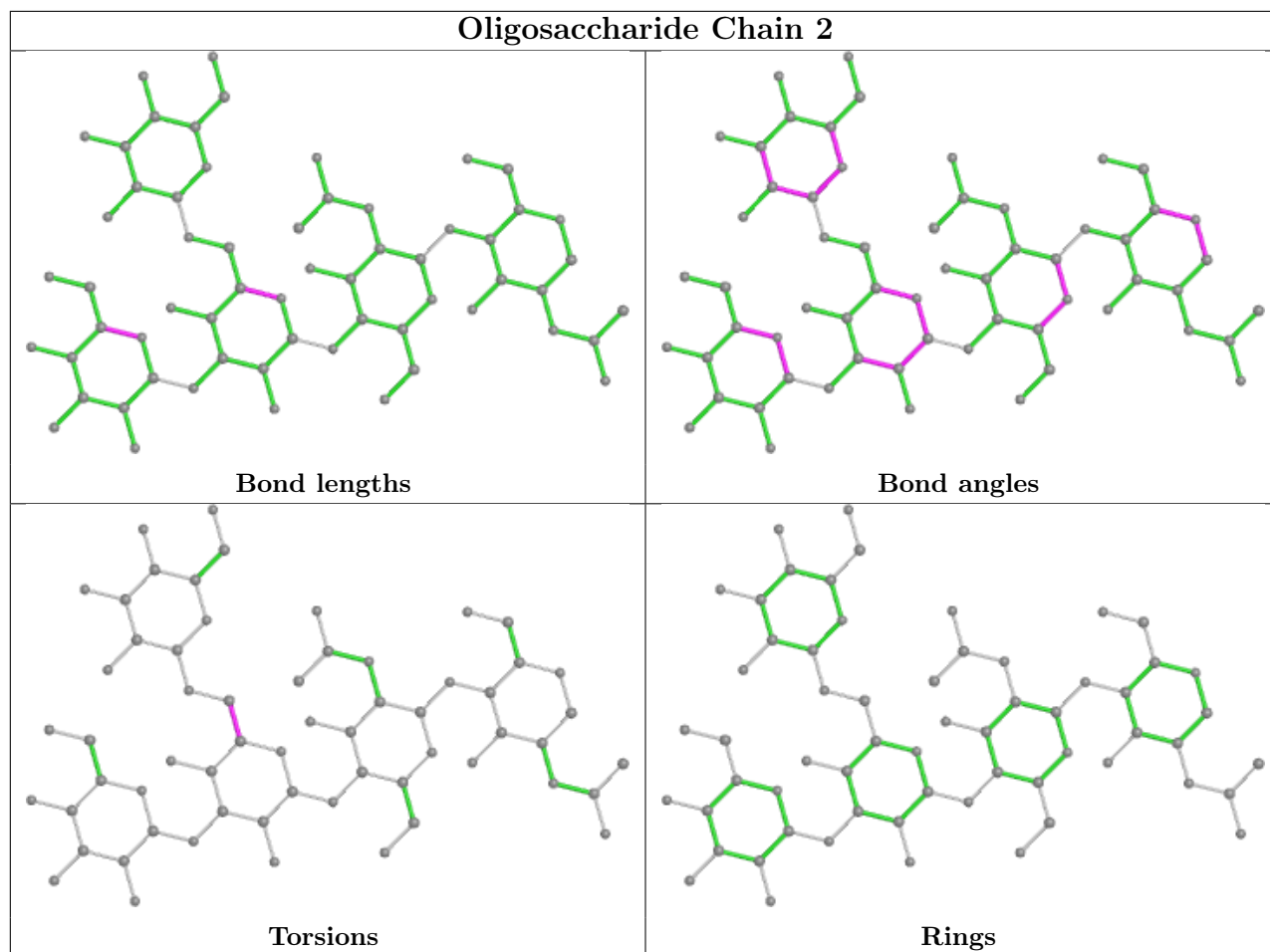


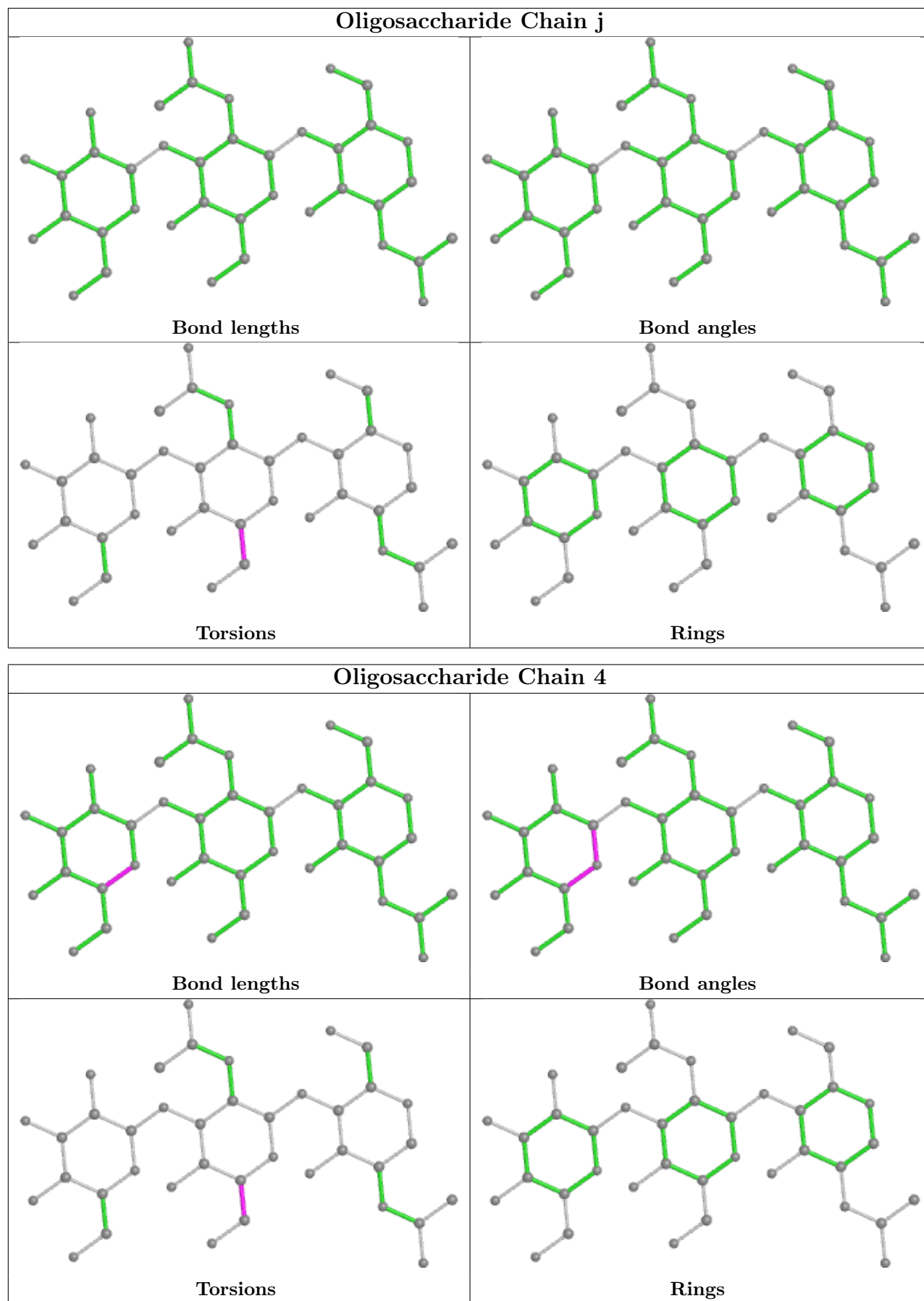












5.6 Ligand geometry

Of 136 ligands modelled in this entry, 90 are monoatomic - leaving 46 for Mogul analysis.

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
12	NAG	A	4701	1	14,14,15	0.40	0	17,19,21	0.38	0
12	NAG	A	4705	1	14,14,15	0.61	0	17,19,21	1.05	1 (5%)
12	NAG	A	4711	1	14,14,15	0.54	0	17,19,21	0.77	0
12	NAG	A	4710	1	14,14,15	0.38	0	17,19,21	0.53	0
12	NAG	A	4703	1	14,14,15	0.59	0	17,19,21	0.99	1 (5%)
13	A2G	B	4721	1	14,14,15	1.18	1 (7%)	17,19,21	1.60	6 (35%)
12	NAG	A	4702	1	14,14,15	0.39	0	17,19,21	0.51	0
13	A2G	A	4713	1	14,14,15	0.50	0	17,19,21	1.11	1 (5%)
13	A2G	A	4716	1	14,14,15	0.46	0	17,19,21	1.04	2 (11%)
12	NAG	A	4704	1	14,14,15	0.42	0	17,19,21	0.78	1 (5%)
12	NAG	B	4701	1	14,14,15	0.41	0	17,19,21	0.41	0
12	NAG	B	4708	1	14,14,15	0.59	0	17,19,21	1.06	2 (11%)
12	NAG	B	4705	1	14,14,15	0.40	0	17,19,21	0.63	0
13	A2G	B	4713	1	14,14,15	0.60	0	17,19,21	1.44	3 (17%)
13	A2G	B	4723	1	14,14,15	0.47	0	17,19,21	0.65	0
12	NAG	B	4711	1	14,14,15	0.63	0	17,19,21	1.14	2 (11%)
13	A2G	A	4714	1	14,14,15	0.62	0	17,19,21	0.66	0
13	A2G	B	4717	1	14,14,15	0.53	0	17,19,21	1.00	2 (11%)
13	A2G	B	4718	1	14,14,15	0.59	0	17,19,21	1.05	2 (11%)
12	NAG	A	4709	1	14,14,15	0.53	0	17,19,21	0.92	1 (5%)
12	NAG	A	4706	1	14,14,15	0.46	0	17,19,21	1.18	1 (5%)
12	NAG	B	4703	1	14,14,15	0.62	0	17,19,21	1.15	2 (11%)
13	A2G	A	4719	1	14,14,15	0.49	0	17,19,21	1.01	1 (5%)
13	A2G	B	4719	1	14,14,15	0.50	0	17,19,21	0.91	0
12	NAG	B	4702	1	14,14,15	0.42	0	17,19,21	0.51	0
12	NAG	B	4707	1	14,14,15	0.40	0	17,19,21	0.46	0
13	A2G	A	4715	1	14,14,15	0.61	0	17,19,21	1.51	2 (11%)
13	A2G	A	4721	1	14,14,15	0.45	0	17,19,21	1.13	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
12	NAG	B	4712	1	14,14,15	0.40	0	17,19,21	0.53	0
13	A2G	B	4714	1	14,14,15	0.46	0	17,19,21	0.74	0
13	A2G	A	4723	1	14,14,15	0.48	0	17,19,21	1.06	2 (11%)
13	A2G	B	4716	1	14,14,15	0.54	0	17,19,21	1.05	1 (5%)
13	A2G	A	4720	1	14,14,15	0.55	0	17,19,21	1.30	1 (5%)
13	A2G	B	4722	1	14,14,15	0.56	0	17,19,21	0.77	0
12	NAG	B	4710	1	14,14,15	0.69	0	17,19,21	0.90	1 (5%)
13	A2G	A	4717	1	14,14,15	0.62	1 (7%)	17,19,21	1.58	4 (23%)
13	A2G	A	4722	1	14,14,15	0.60	0	17,19,21	1.32	2 (11%)
13	A2G	B	4715	1	14,14,15	0.44	0	17,19,21	1.18	2 (11%)
13	A2G	B	4720	1	14,14,15	0.58	0	17,19,21	1.35	2 (11%)
13	A2G	A	4718	1	14,14,15	0.63	0	17,19,21	0.97	0
12	NAG	B	4704	1	14,14,15	0.55	0	17,19,21	1.03	1 (5%)
12	NAG	A	4712	1	14,14,15	0.54	0	17,19,21	1.39	2 (11%)
12	NAG	B	4706	1	14,14,15	0.60	0	17,19,21	1.04	1 (5%)
12	NAG	A	4708	1	14,14,15	0.41	0	17,19,21	0.53	0
12	NAG	A	4707	1	14,14,15	0.57	0	17,19,21	1.06	1 (5%)
12	NAG	B	4709	1	14,14,15	0.62	0	17,19,21	0.96	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
12	NAG	A	4701	1	-	1/6/23/26	0/1/1/1
12	NAG	A	4705	1	-	1/6/23/26	0/1/1/1
12	NAG	A	4711	1	-	2/6/23/26	0/1/1/1
12	NAG	A	4710	1	-	3/6/23/26	0/1/1/1
12	NAG	A	4703	1	-	0/6/23/26	0/1/1/1
13	A2G	B	4721	1	-	1/6/23/26	0/1/1/1
12	NAG	A	4702	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4713	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4716	1	-	0/6/23/26	0/1/1/1
12	NAG	A	4704	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4701	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4708	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4705	1	-	3/6/23/26	0/1/1/1
13	A2G	B	4713	1	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
13	A2G	B	4723	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4711	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4714	1	-	0/6/23/26	0/1/1/1
13	A2G	B	4717	1	-	0/6/23/26	0/1/1/1
13	A2G	B	4718	1	-	0/6/23/26	0/1/1/1
12	NAG	A	4709	1	-	0/6/23/26	0/1/1/1
12	NAG	A	4706	1	-	2/6/23/26	0/1/1/1
12	NAG	B	4703	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4719	1	-	1/6/23/26	0/1/1/1
13	A2G	B	4719	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4702	1	-	3/6/23/26	0/1/1/1
12	NAG	B	4707	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4715	1	-	2/6/23/26	0/1/1/1
13	A2G	A	4721	1	-	1/6/23/26	0/1/1/1
12	NAG	B	4712	1	-	3/6/23/26	0/1/1/1
13	A2G	B	4714	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4723	1	-	1/6/23/26	0/1/1/1
13	A2G	B	4716	1	-	0/6/23/26	0/1/1/1
13	A2G	A	4720	1	-	0/6/23/26	0/1/1/1
13	A2G	B	4722	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4710	1	-	1/6/23/26	0/1/1/1
13	A2G	A	4717	1	-	2/6/23/26	0/1/1/1
13	A2G	A	4722	1	-	0/6/23/26	0/1/1/1
13	A2G	B	4715	1	-	2/6/23/26	0/1/1/1
13	A2G	B	4720	1	-	2/6/23/26	0/1/1/1
13	A2G	A	4718	1	-	1/6/23/26	0/1/1/1
12	NAG	B	4704	1	-	1/6/23/26	0/1/1/1
12	NAG	A	4712	1	-	0/6/23/26	0/1/1/1
12	NAG	B	4706	1	-	3/6/23/26	0/1/1/1
12	NAG	A	4708	1	-	0/6/23/26	0/1/1/1
12	NAG	A	4707	1	-	1/6/23/26	0/1/1/1
12	NAG	B	4709	1	-	0/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	B	4721	A2G	O5-C1	-2.83	1.39	1.43
13	A	4717	A2G	O5-C1	-2.05	1.40	1.43

The worst 5 of 53 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	A	4717	A2G	C1-O5-C5	-4.68	105.85	112.19
13	A	4715	A2G	C2-N2-C7	4.65	129.52	122.90
13	A	4722	A2G	C1-O5-C5	-4.38	106.25	112.19
13	B	4720	A2G	C1-O5-C5	-4.14	106.58	112.19
12	A	4706	NAG	C1-O5-C5	4.04	117.66	112.19

There are no chirality outliers.

5 of 38 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
12	A	4710	NAG	C8-C7-N2-C2
12	A	4710	NAG	O7-C7-N2-C2
12	B	4702	NAG	C8-C7-N2-C2
12	B	4702	NAG	O7-C7-N2-C2
12	B	4706	NAG	C3-C2-N2-C7

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 [i](#)

There are no chain breaks in this entry.

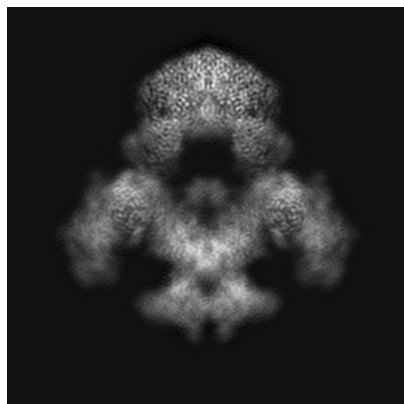
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36664. These allow visual inspection of the internal detail of the map and identification of artifacts.

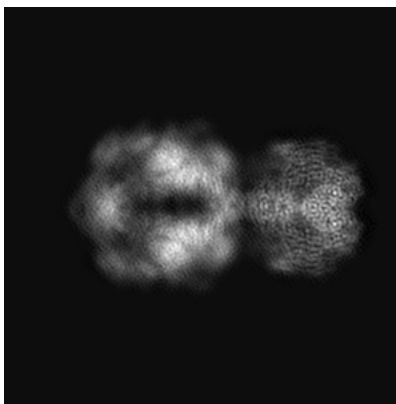
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

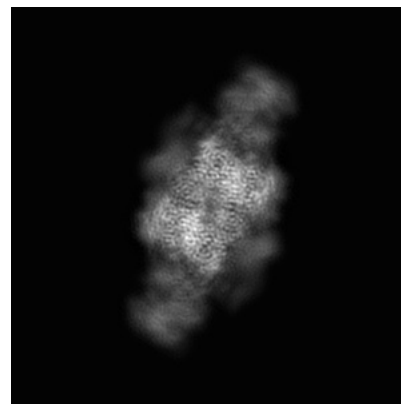
6.1.1 Primary map



X

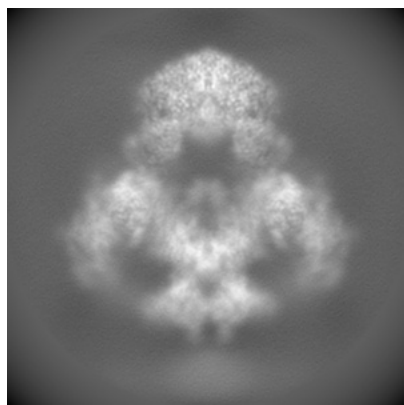


Y

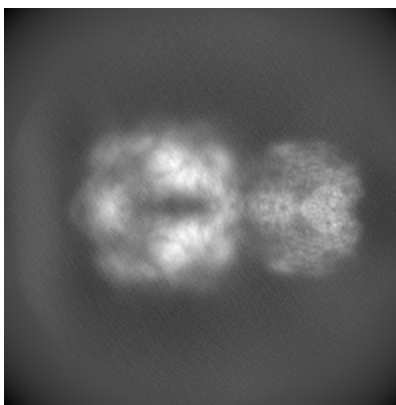


Z

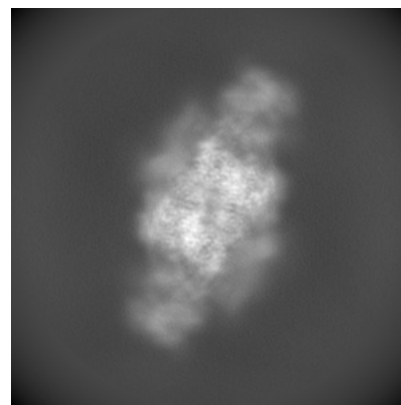
6.1.2 Raw map



X



Y

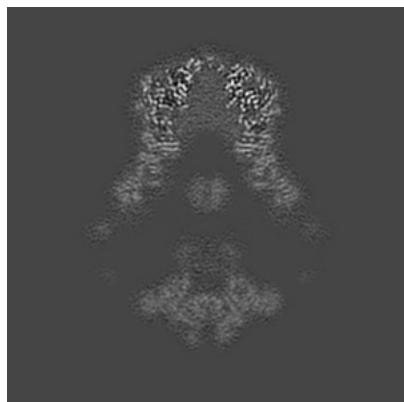


Z

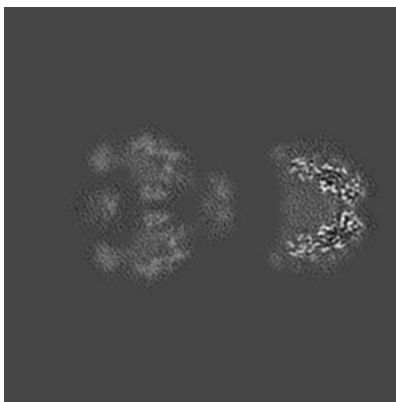
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 130

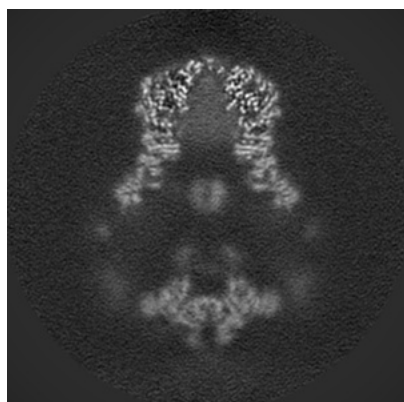


Y Index: 130

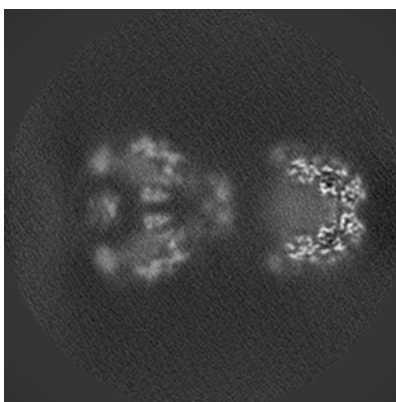


Z Index: 130

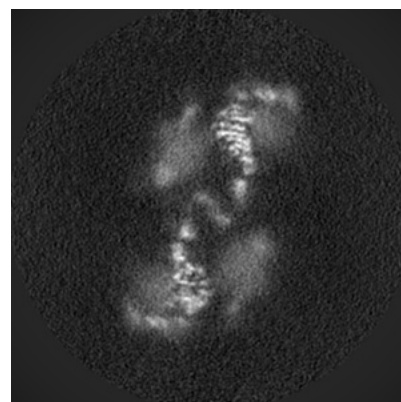
6.2.2 Raw map



X Index: 130



Y Index: 130

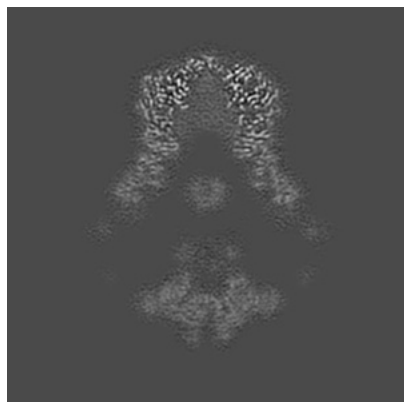


Z Index: 130

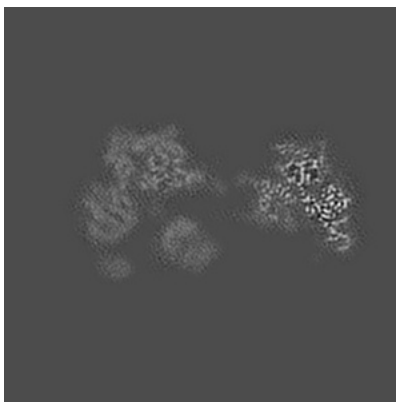
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

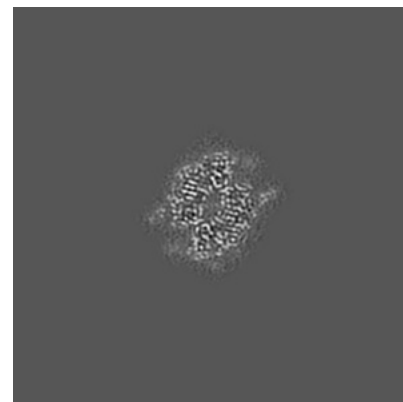
6.3.1 Primary map



X Index: 131

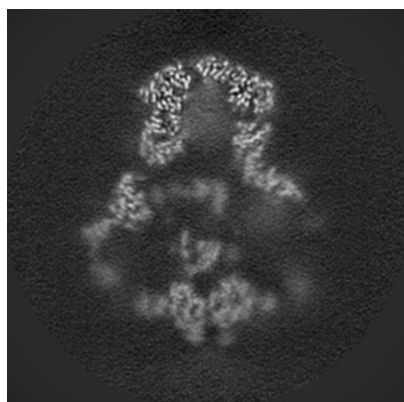


Y Index: 149

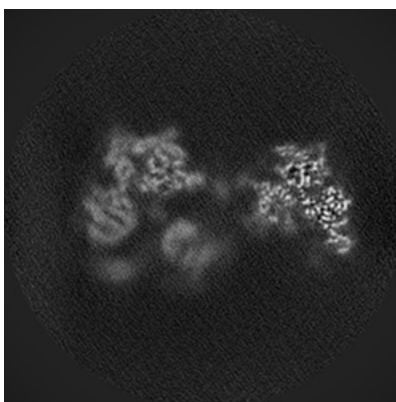


Z Index: 215

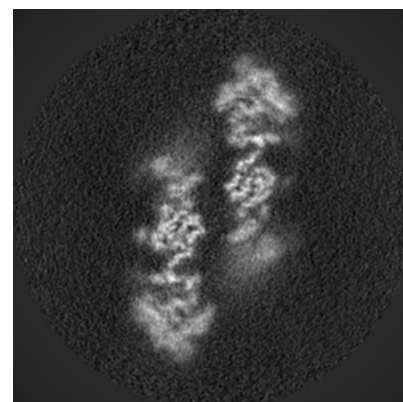
6.3.2 Raw map



X Index: 124



Y Index: 149

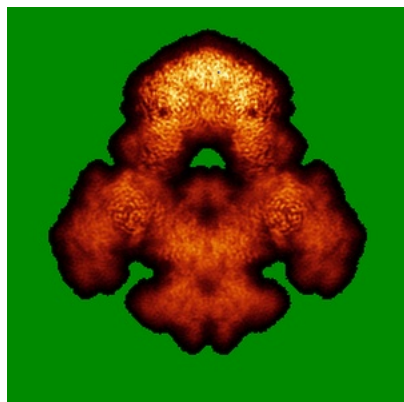


Z Index: 113

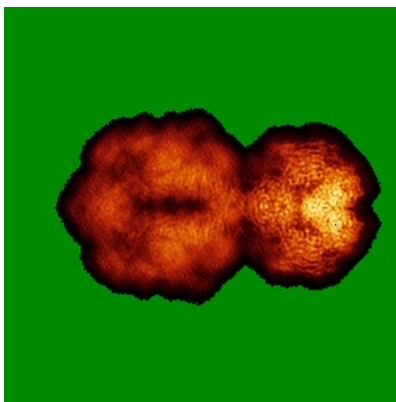
The images above show the largest variance slices of the map in three orthogonal directions.

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

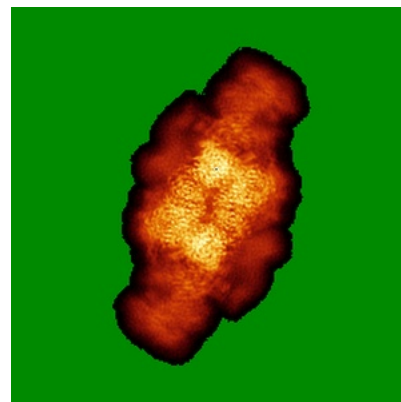
6.4.1 Primary map



X

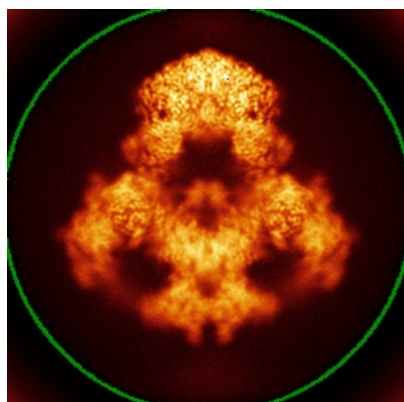


Y

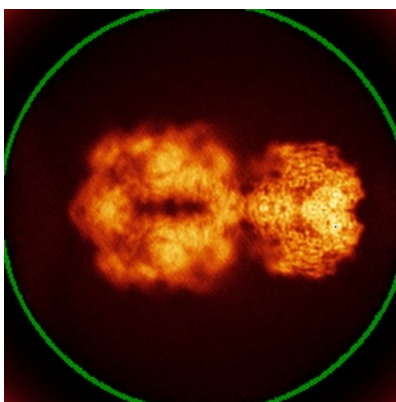


Z

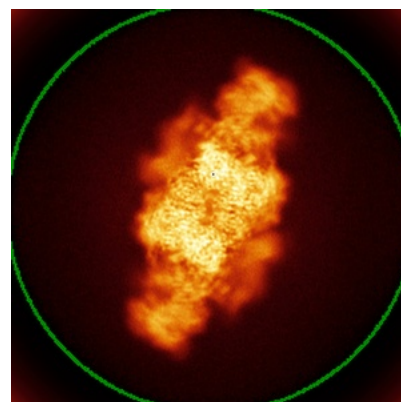
6.4.2 Raw map



X



Y

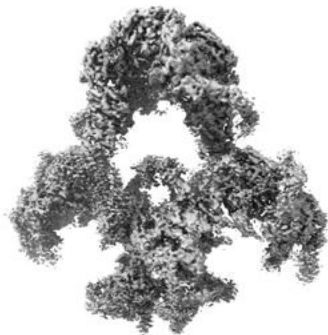


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



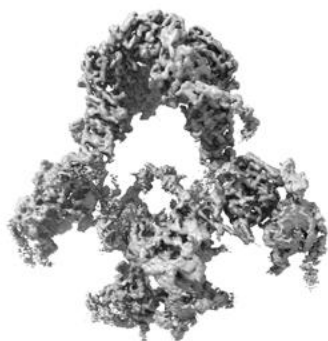
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. 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



X



Y



Z

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.

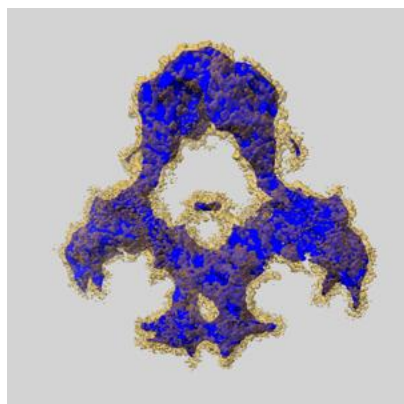
6.6 Mask visualisation [i](#)

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

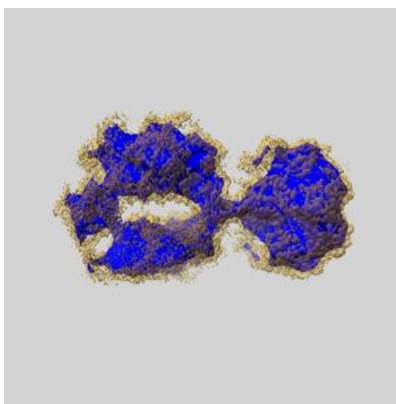
A mask typically either:

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

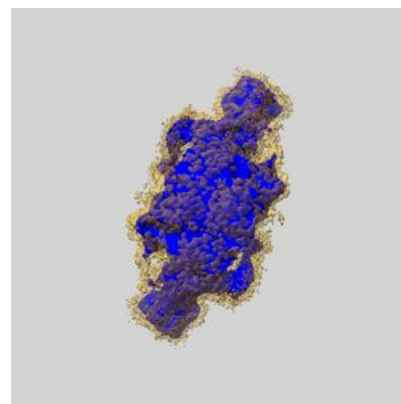
6.6.1 emd_36664_msk_1.map [i](#)



X



Y

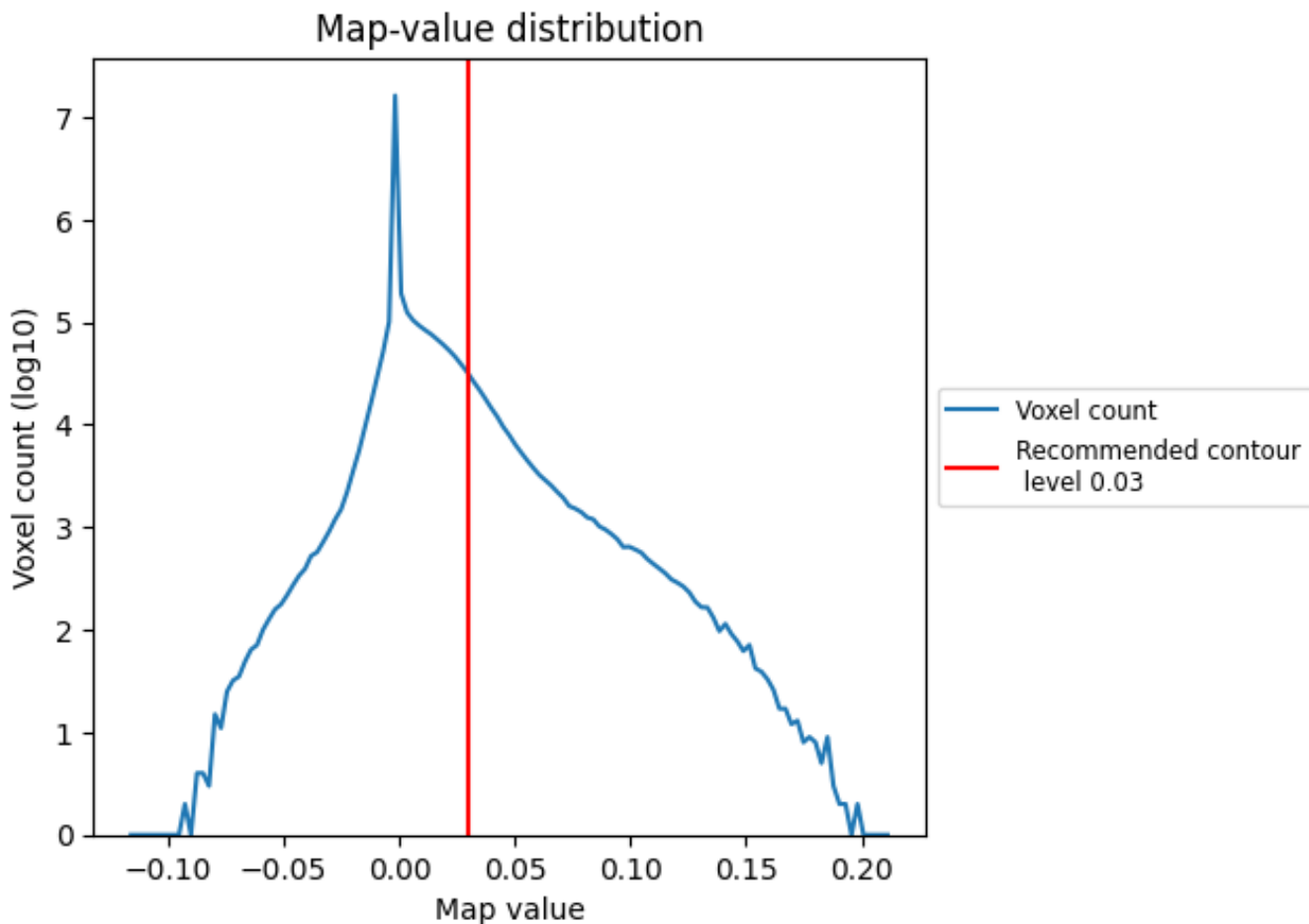


Z

7 Map analysis [i](#)

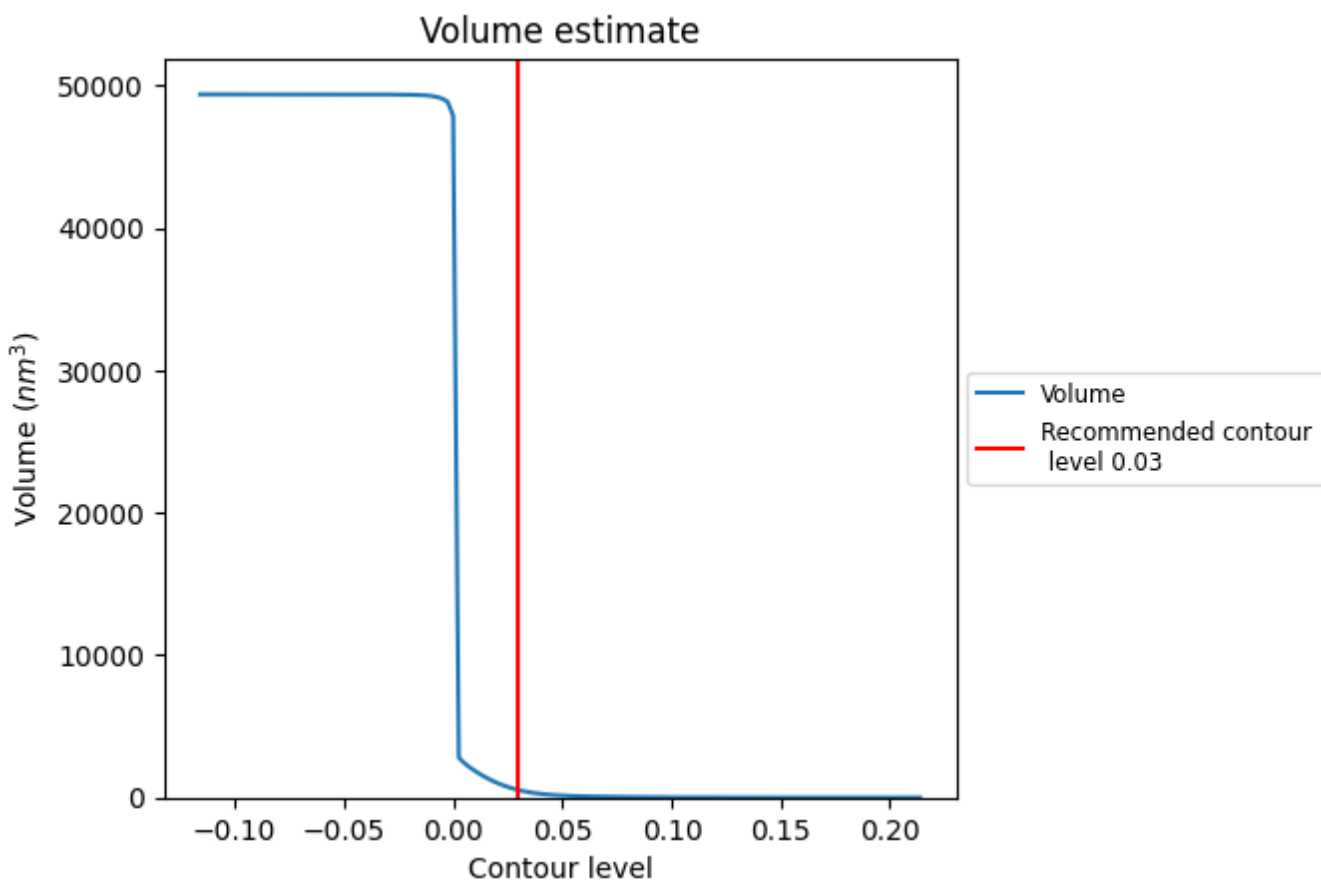
This section contains the results of statistical analysis of the map.

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.

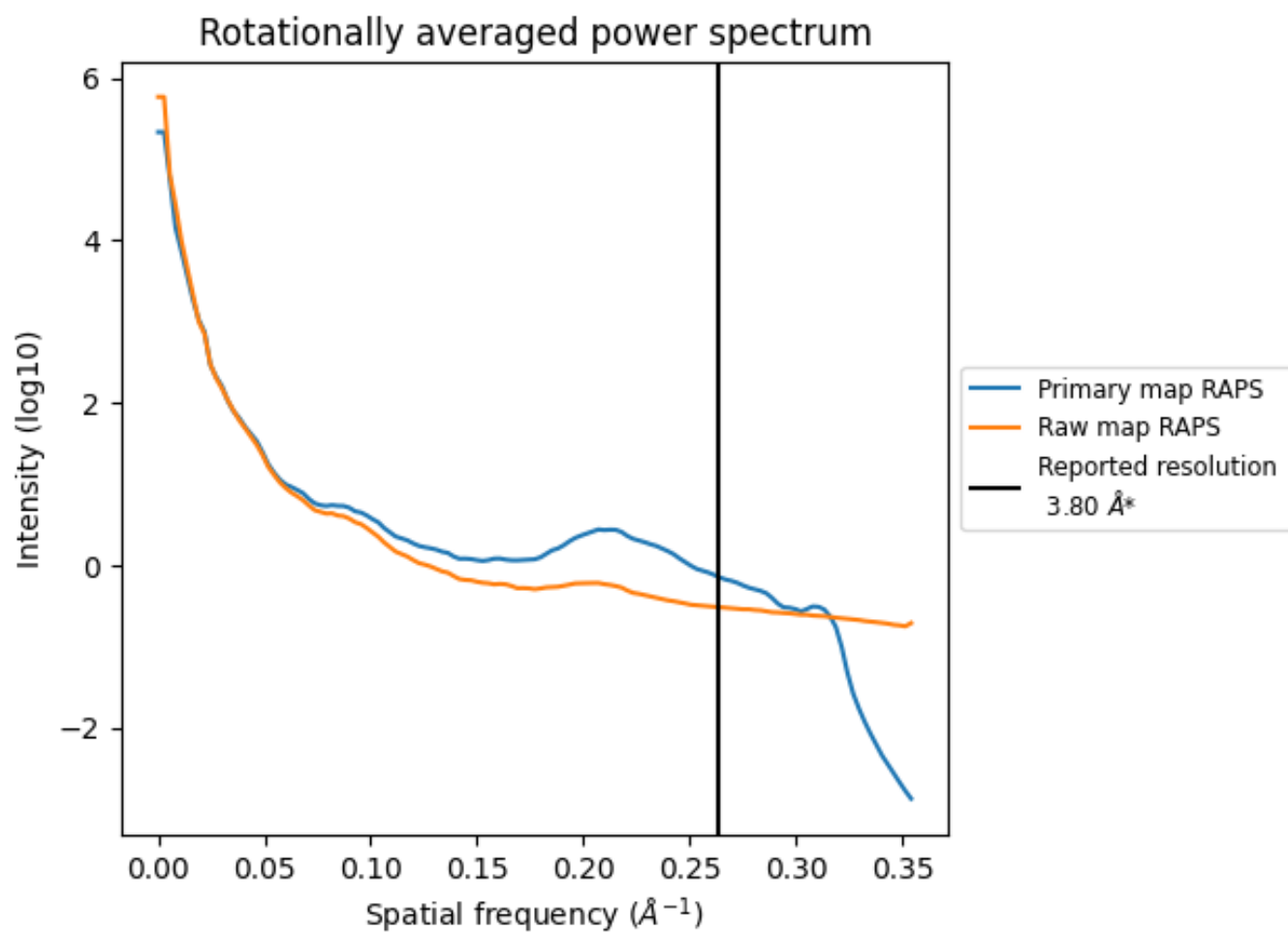
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 525 nm³; this corresponds to an approximate mass of 474 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](#)

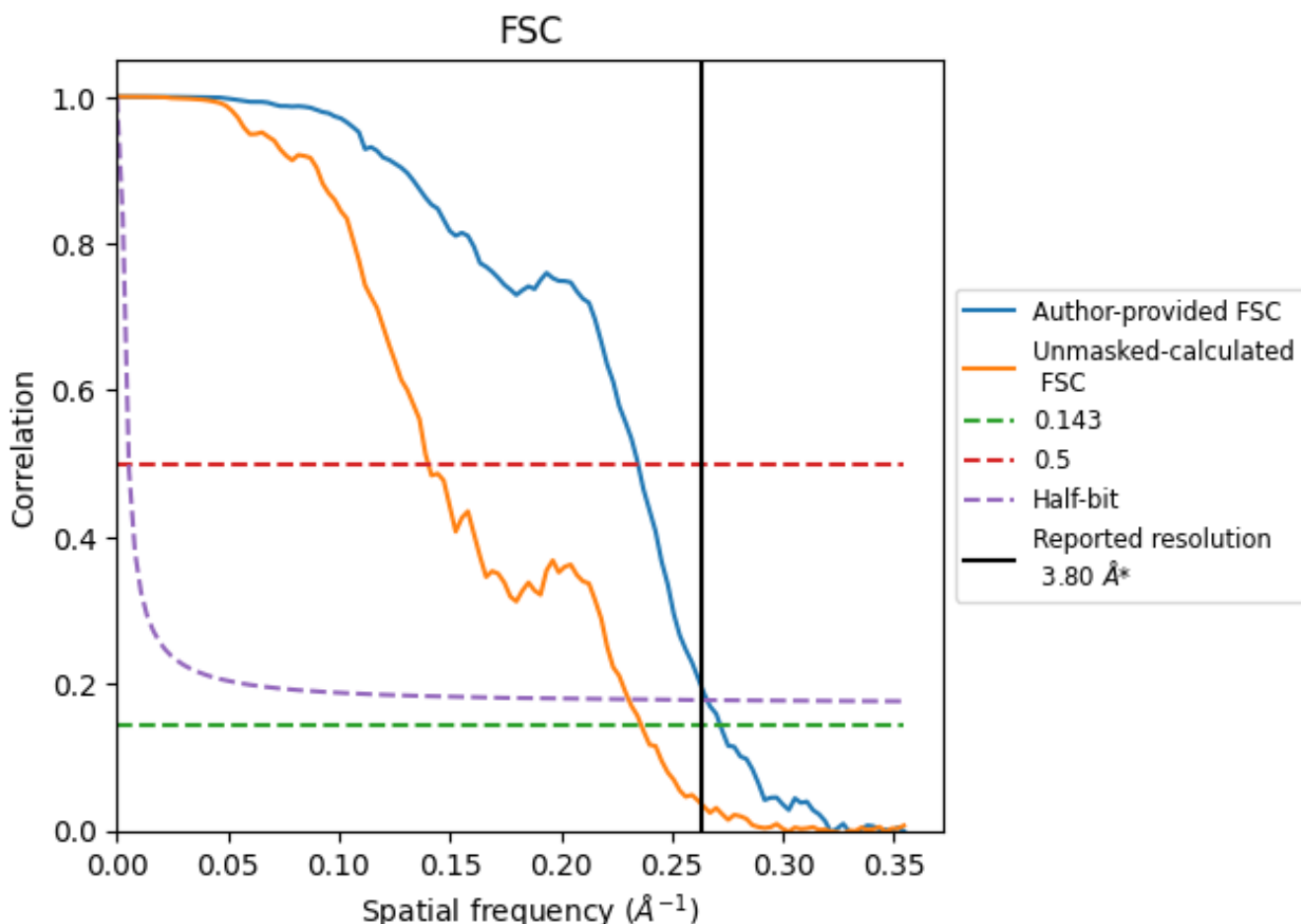


*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

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 0.263 Å⁻¹

8.2 Resolution estimates [i](#)

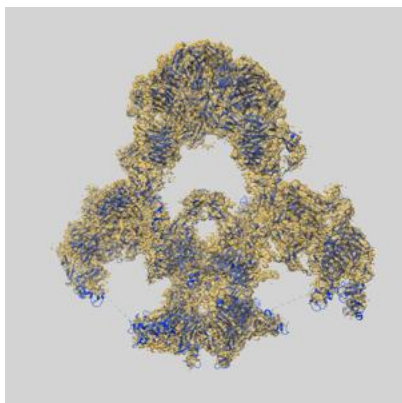
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.68	4.26	3.76
Unmasked-calculated*	4.23	7.13	4.34

*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 4.23 differs from the reported value 3.8 by more than 10 %

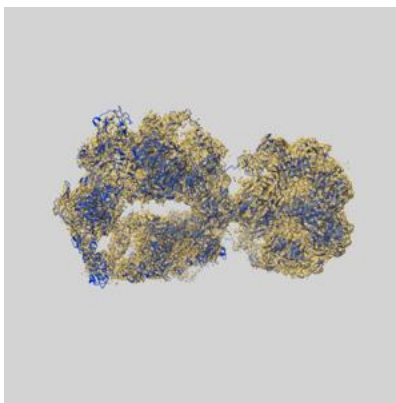
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-36664 and PDB model 8JUU. Per-residue inclusion information can be found in section 3 on page 13.

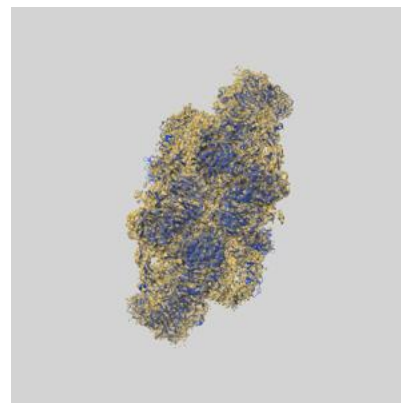
9.1 Map-model overlay [i](#)



X



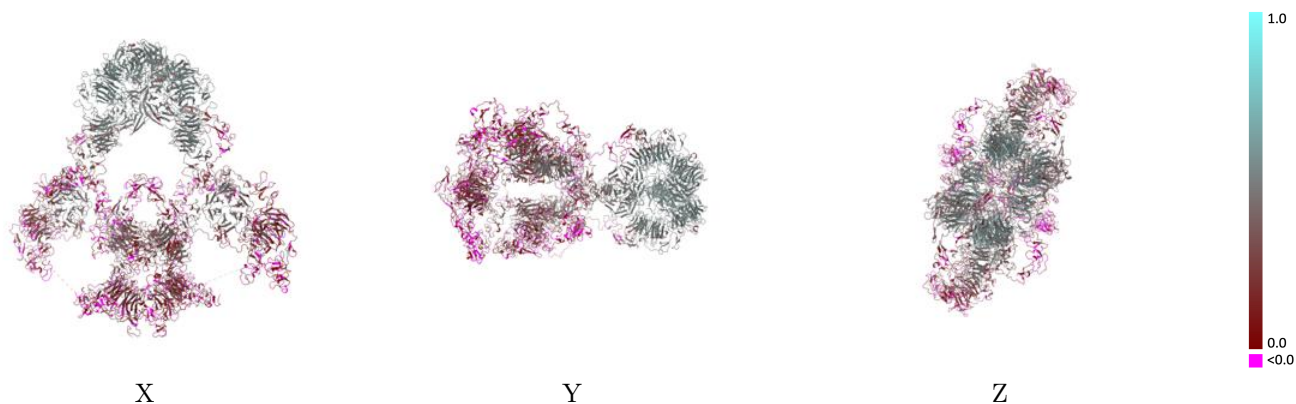
Y



Z

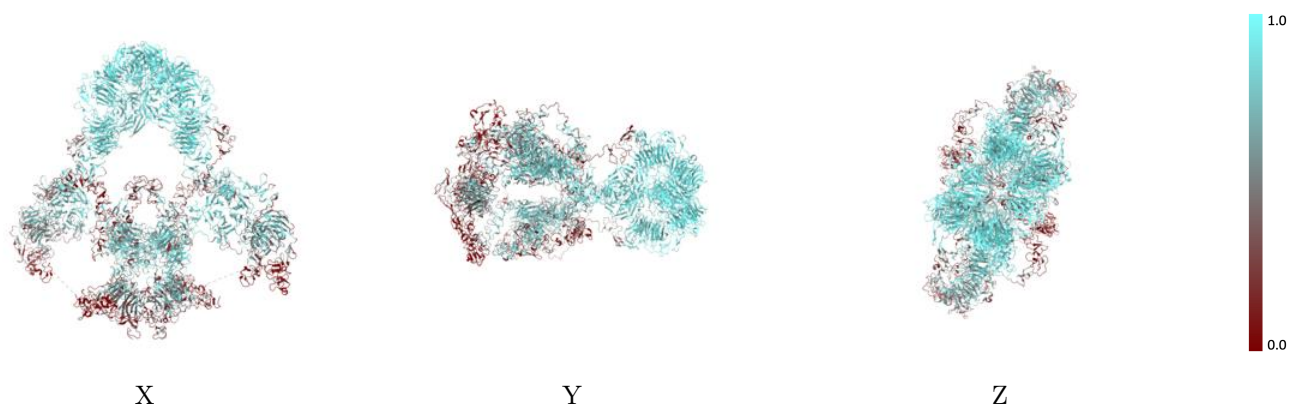
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



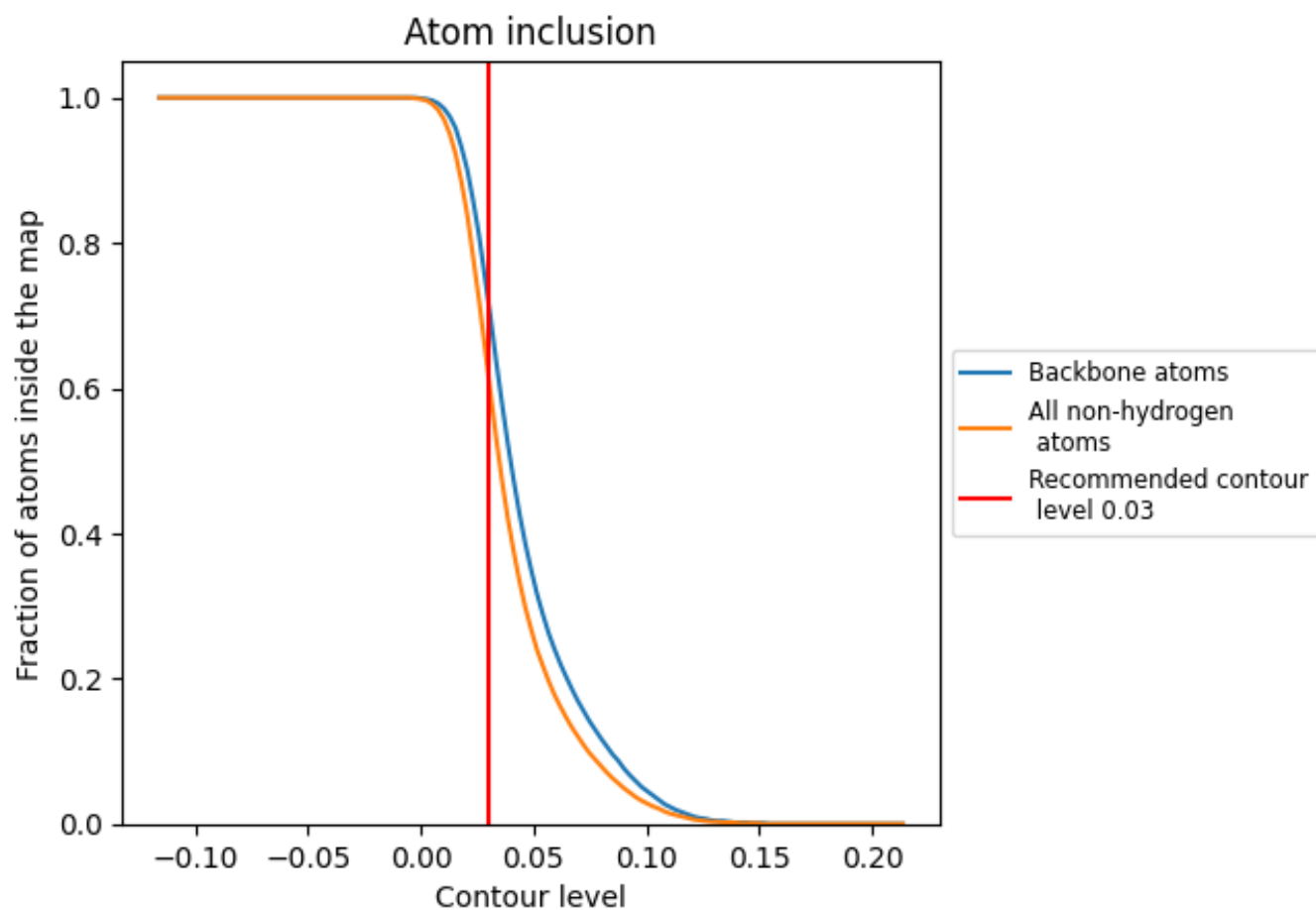
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 62% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6160	 0.2910
0	 0.1790	 0.1980
1	 0.1470	 0.0530
2	 0.2130	 0.1250
3	 0.0000	 0.0110
4	 0.1280	 0.0760
5	 0.1430	 0.2140
A	 0.6200	 0.2900
B	 0.6210	 0.2940
C	 0.9090	 0.4680
D	 0.7500	 0.3370
E	 0.1540	 0.0630
F	 0.7500	 0.3140
G	 0.8180	 0.4800
H	 0.7140	 0.3330
I	 0.9090	 0.4880
J	 0.7500	 0.3780
K	 0.7580	 0.3720
L	 0.7860	 0.4220
M	 0.3330	 0.1600
N	 0.8930	 0.4140
O	 0.9640	 0.4720
P	 0.4670	 0.1510
Q	 1.0000	 0.4880
R	 0.9290	 0.3910
S	 0.2500	 0.1690
T	 0.5130	 0.2980
U	 0.6430	 0.3810
V	 0.4290	 0.2320
W	 0.4430	 0.3610
X	 0.5000	 0.2450
Y	 0.8690	 0.4650
Z	 0.5360	 0.3450
a	 0.5000	 0.3060
b	 0.1790	 0.2150



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Chain	Atom inclusion	Q-score
c	 0.4620	 0.2950
d	 0.4590	 0.2960
e	 0.1790	 0.2740
f	 0.3930	 0.2000
g	 0.0980	 0.1360
h	 0.2460	 0.1010
i	 0.1430	 0.1490
j	 0.1280	 0.1430
k	 0.1430	 0.1040
l	 0.1280	 0.0670
m	 0.6790	 0.3170
n	 0.3210	 0.2720
o	 0.4360	 0.3370
p	 0.6790	 0.3510
q	 0.2140	 0.2240
r	 0.3280	 0.3190
s	 0.5360	 0.3350
t	 0.8850	 0.4900
u	 0.5000	 0.3300
v	 0.3930	 0.3380
w	 0.1540	 0.1440
x	 0.5380	 0.2900
y	 0.4750	 0.2590
z	 0.0710	 0.0560