



wwPDB EM Validation Summary Report ⓘ

Mar 8, 2026 – 11:53 AM UTC

PDB ID : 6V35 / pdb_00006v35
EMDB ID : EMD-21028
Title : Cryo-EM structure of Ca²⁺-free hsSlo1-beta4 channel complex
Authors : Tao, X.; MacKinnon, R.
Deposited on : 2019-11-25
Resolution : 3.50 Å(reported)
Based on initial model : 6V22

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.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

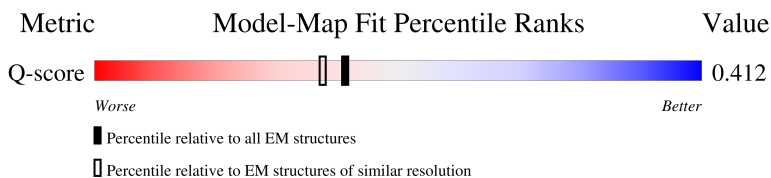
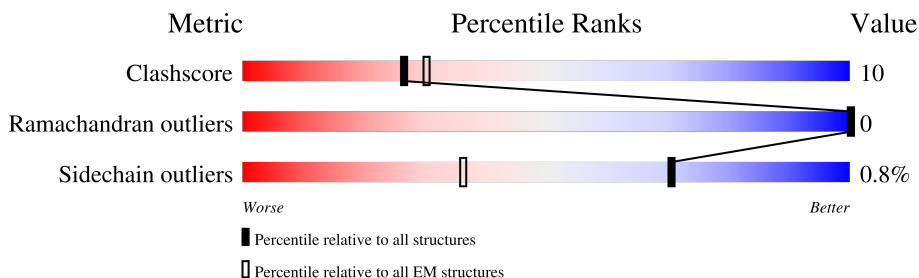
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	13950 (3.00 - 4.00)

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	1065	17% 67% 18% • 14%
1	B	1065	17% 67% 18% • 14%
1	C	1065	16% 67% 18% • 14%
1	D	1065	17% 67% 18% 14%

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Mol	Chain	Length	Quality of chain			
2	E	219	37%	77%	13%	10%
2	F	219	36%	78%	13%	10%
2	G	219	37%	77%	13%	10%
2	H	219	34%	77%	13%	10%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 36488 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 Calcium-activated potassium channel subunit alpha-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	914	Total	C	N	O	S	0	0
			7287	4726	1193	1319	49		
1	B	914	Total	C	N	O	S	0	0
			7287	4726	1193	1319	49		
1	C	914	Total	C	N	O	S	0	0
			7287	4726	1193	1319	49		
1	D	914	Total	C	N	O	S	0	0
			7287	4726	1193	1319	49		

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1057	SER	-	expression tag	UNP Q12791
A	1058	ASN	-	expression tag	UNP Q12791
A	1059	SER	-	expression tag	UNP Q12791
A	1060	LEU	-	expression tag	UNP Q12791
A	1061	GLU	-	expression tag	UNP Q12791
A	1062	VAL	-	expression tag	UNP Q12791
A	1063	LEU	-	expression tag	UNP Q12791
A	1064	PHE	-	expression tag	UNP Q12791
A	1065	GLN	-	expression tag	UNP Q12791
B	1057	SER	-	expression tag	UNP Q12791
B	1058	ASN	-	expression tag	UNP Q12791
B	1059	SER	-	expression tag	UNP Q12791
B	1060	LEU	-	expression tag	UNP Q12791
B	1061	GLU	-	expression tag	UNP Q12791
B	1062	VAL	-	expression tag	UNP Q12791
B	1063	LEU	-	expression tag	UNP Q12791
B	1064	PHE	-	expression tag	UNP Q12791
B	1065	GLN	-	expression tag	UNP Q12791
C	1057	SER	-	expression tag	UNP Q12791
C	1058	ASN	-	expression tag	UNP Q12791
C	1059	SER	-	expression tag	UNP Q12791
C	1060	LEU	-	expression tag	UNP Q12791

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1061	GLU	-	expression tag	UNP Q12791
C	1062	VAL	-	expression tag	UNP Q12791
C	1063	LEU	-	expression tag	UNP Q12791
C	1064	PHE	-	expression tag	UNP Q12791
C	1065	GLN	-	expression tag	UNP Q12791
D	1057	SER	-	expression tag	UNP Q12791
D	1058	ASN	-	expression tag	UNP Q12791
D	1059	SER	-	expression tag	UNP Q12791
D	1060	LEU	-	expression tag	UNP Q12791
D	1061	GLU	-	expression tag	UNP Q12791
D	1062	VAL	-	expression tag	UNP Q12791
D	1063	LEU	-	expression tag	UNP Q12791
D	1064	PHE	-	expression tag	UNP Q12791
D	1065	GLN	-	expression tag	UNP Q12791

- Molecule 2 is a protein called Calcium-activated potassium channel subunit beta-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	198	Total	C	N	O	S	0	0
			1581	1012	262	294	13		
2	F	198	Total	C	N	O	S	0	0
			1581	1012	262	294	13		
2	G	198	Total	C	N	O	S	0	0
			1581	1012	262	294	13		
2	H	198	Total	C	N	O	S	0	0
			1581	1012	262	294	13		

There are 36 discrepancies between the modelled and reference sequences:

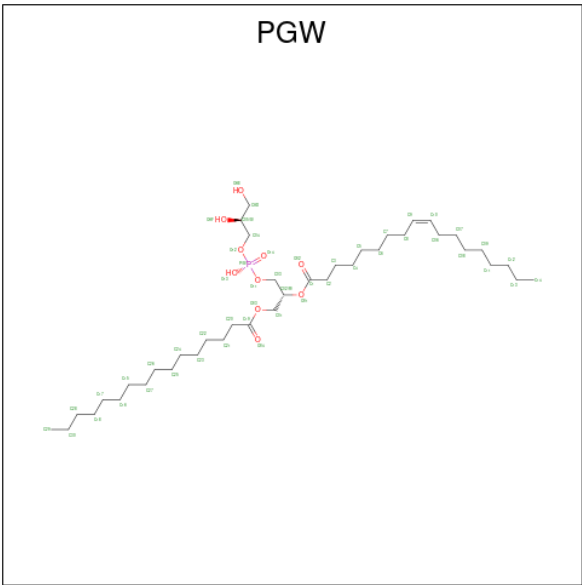
Chain	Residue	Modelled	Actual	Comment	Reference
E	2211	SER	-	expression tag	UNP Q86W47
E	2212	ASN	-	expression tag	UNP Q86W47
E	2213	SER	-	expression tag	UNP Q86W47
E	2214	LEU	-	expression tag	UNP Q86W47
E	2215	GLU	-	expression tag	UNP Q86W47
E	2216	VAL	-	expression tag	UNP Q86W47
E	2217	LEU	-	expression tag	UNP Q86W47
E	2218	PHE	-	expression tag	UNP Q86W47
E	2219	GLN	-	expression tag	UNP Q86W47
F	2211	SER	-	expression tag	UNP Q86W47
F	2212	ASN	-	expression tag	UNP Q86W47
F	2213	SER	-	expression tag	UNP Q86W47

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Chain	Residue	Modelled	Actual	Comment	Reference
F	2214	LEU	-	expression tag	UNP Q86W47
F	2215	GLU	-	expression tag	UNP Q86W47
F	2216	VAL	-	expression tag	UNP Q86W47
F	2217	LEU	-	expression tag	UNP Q86W47
F	2218	PHE	-	expression tag	UNP Q86W47
F	2219	GLN	-	expression tag	UNP Q86W47
G	2211	SER	-	expression tag	UNP Q86W47
G	2212	ASN	-	expression tag	UNP Q86W47
G	2213	SER	-	expression tag	UNP Q86W47
G	2214	LEU	-	expression tag	UNP Q86W47
G	2215	GLU	-	expression tag	UNP Q86W47
G	2216	VAL	-	expression tag	UNP Q86W47
G	2217	LEU	-	expression tag	UNP Q86W47
G	2218	PHE	-	expression tag	UNP Q86W47
G	2219	GLN	-	expression tag	UNP Q86W47
H	2211	SER	-	expression tag	UNP Q86W47
H	2212	ASN	-	expression tag	UNP Q86W47
H	2213	SER	-	expression tag	UNP Q86W47
H	2214	LEU	-	expression tag	UNP Q86W47
H	2215	GLU	-	expression tag	UNP Q86W47
H	2216	VAL	-	expression tag	UNP Q86W47
H	2217	LEU	-	expression tag	UNP Q86W47
H	2218	PHE	-	expression tag	UNP Q86W47
H	2219	GLN	-	expression tag	UNP Q86W47

- Molecule 3 is (1R)-2-{[(S)-{[(2S)-2,3-dihydroxypropyl]oxy}(hydroxy)phosphoryl]oxy}-1-[(hexadecanoyloxy)methyl]ethyl (9Z)-octadec-9-enoate (CCD ID: PGW) (formula: C₄₀H₇₇O₁₀P).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	O	P	0
			29	20	8	1	
3	A	1	Total	C	O	P	0
			46	35	10	1	
3	A	1	Total	C			0
			9	9			
3	A	1	Total	C			0
			12	12			
3	A	1	Total	C			0
			12	12			
3	A	1	Total	C	O	P	0
			27	18	8	1	
3	A	1	Total	C	O		0
			13	11	2		
3	A	1	Total	C			0
			12	12			
3	E	1	Total	C			0
			7	7			
3	E	1	Total	C			0
			6	6			
3	B	1	Total	C	O	P	0
			27	18	8	1	
3	B	1	Total	C	O		0
			13	11	2		
3	B	1	Total	C			0
			9	9			
3	B	1	Total	C	O	P	0
			29	20	8	1	

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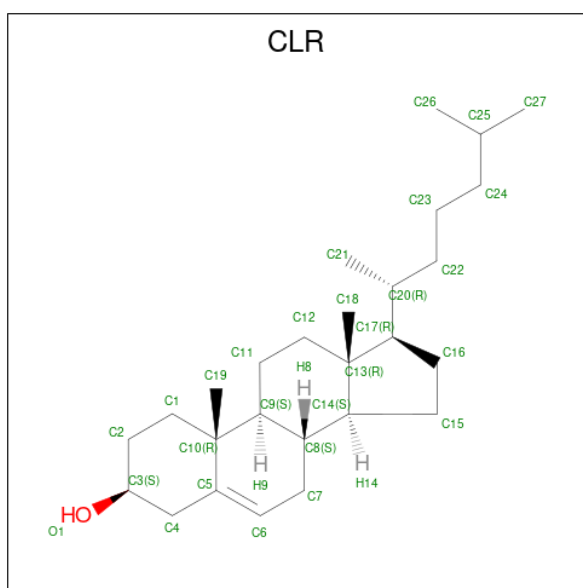
Mol	Chain	Residues	Atoms				AltConf
3	B	1	Total	C	O	P	0
			27	18	8	1	
3	B	1	Total	C	O	P	0
			46	35	10	1	
3	B	1	Total	C			0
			9	9			
3	B	1	Total	C			0
			12	12			
3	B	1	Total	C			0
			12	12			
3	F	1	Total	C			0
			9	9			
3	F	1	Total	C			0
			7	7			
3	F	1	Total	C			0
			6	6			
3	C	1	Total	C	O		0
			13	11	2		
3	C	1	Total	C	O	P	0
			29	20	8	1	
3	C	1	Total	C	O	P	0
			46	35	10	1	
3	C	1	Total	C			0
			9	9			
3	C	1	Total	C			0
			12	12			
3	C	1	Total	C			0
			12	12			
3	G	1	Total	C			0
			7	7			
3	G	1	Total	C			0
			6	6			
3	D	1	Total	C	O	P	0
			27	18	8	1	
3	D	1	Total	C	O		0
			13	11	2		
3	D	1	Total	C			0
			9	9			
3	D	1	Total	C	O	P	0
			29	20	8	1	
3	D	1	Total	C	O	P	0
			46	35	10	1	

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Mol	Chain	Residues	Atoms		AltConf
3	D	1	Total	C	0
			9	9	
3	D	1	Total	C	0
			12	12	
3	H	1	Total	C	0
			9	9	
3	H	1	Total	C	0
			7	7	
3	H	1	Total	C	0
			6	6	

- Molecule 4 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$).



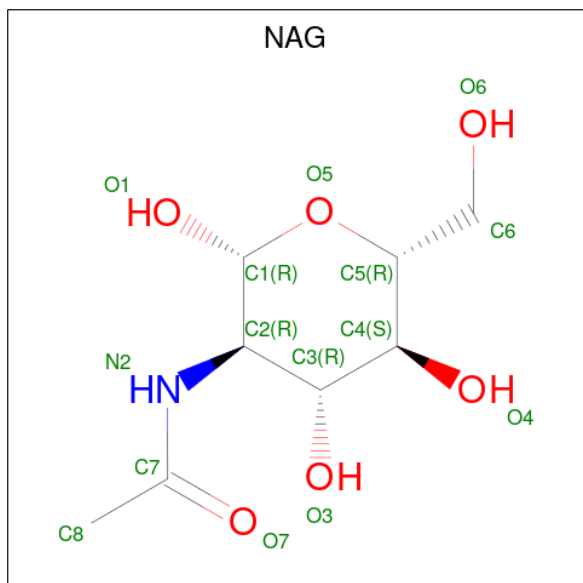
Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	C O	0
			28	27 1	
4	E	1	Total	C O	0
			28	27 1	
4	B	1	Total	C O	0
			28	27 1	
4	F	1	Total	C O	0
			28	27 1	
4	C	1	Total	C O	0
			28	27 1	
4	G	1	Total	C O	0
			28	27 1	

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Mol	Chain	Residues	Atoms			AltConf
4	D	1	Total	C	O	0
			28	27	1	
4	H	1	Total	C	O	0
			28	27	1	

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).

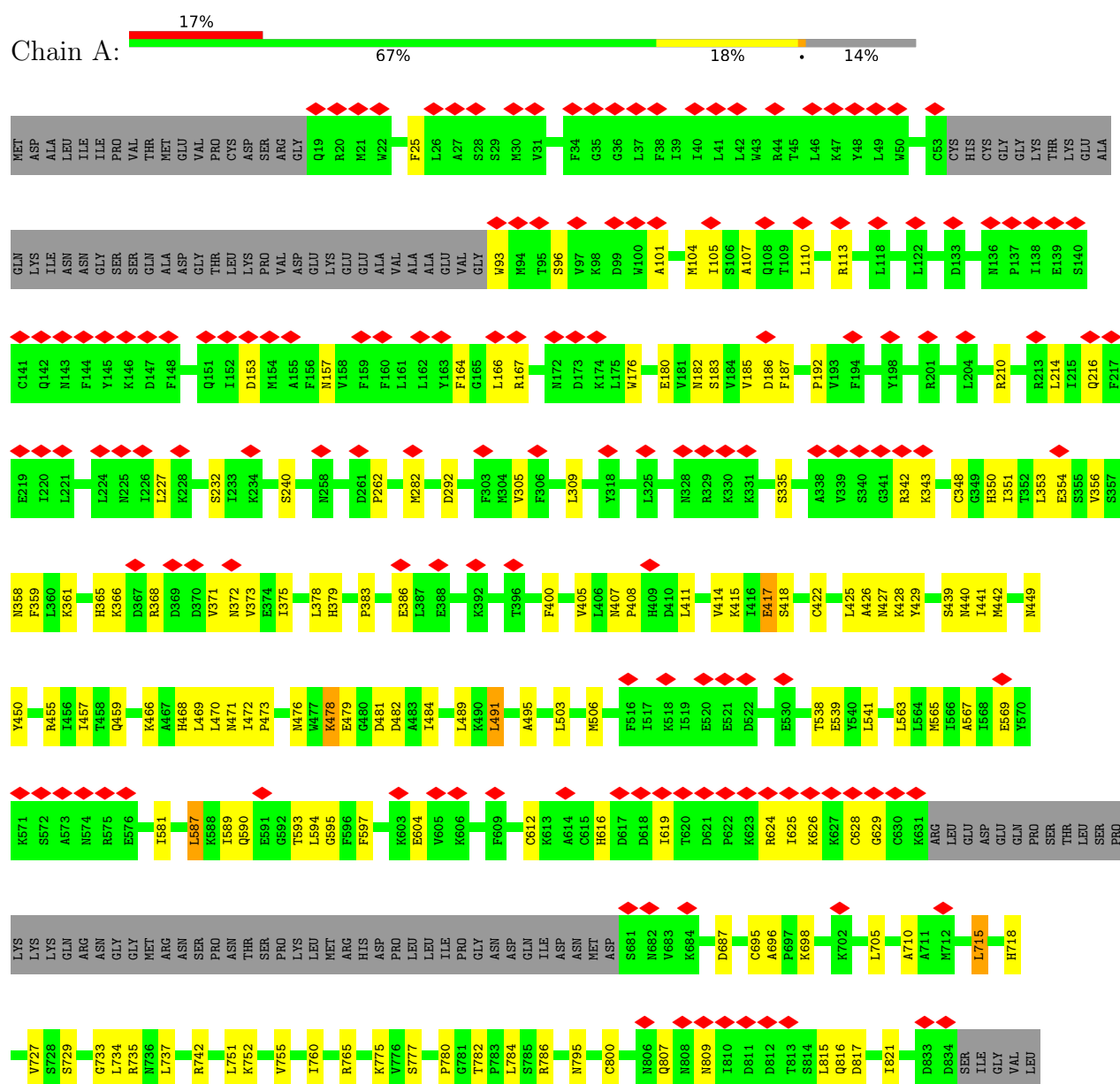


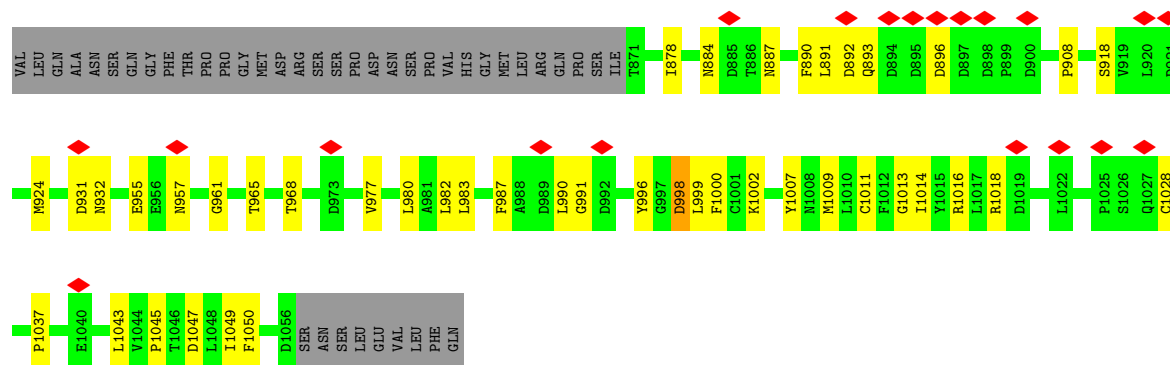
Mol	Chain	Residues	Atoms				AltConf
5	E	1	Total	C	N	O	0
			14	8	1	5	
5	E	1	Total	C	N	O	0
			14	8	1	5	
5	F	1	Total	C	N	O	0
			14	8	1	5	
5	F	1	Total	C	N	O	0
			14	8	1	5	
5	G	1	Total	C	N	O	0
			14	8	1	5	
5	G	1	Total	C	N	O	0
			14	8	1	5	
5	H	1	Total	C	N	O	0
			14	8	1	5	
5	H	1	Total	C	N	O	0
			14	8	1	5	

3 Residue-property plots

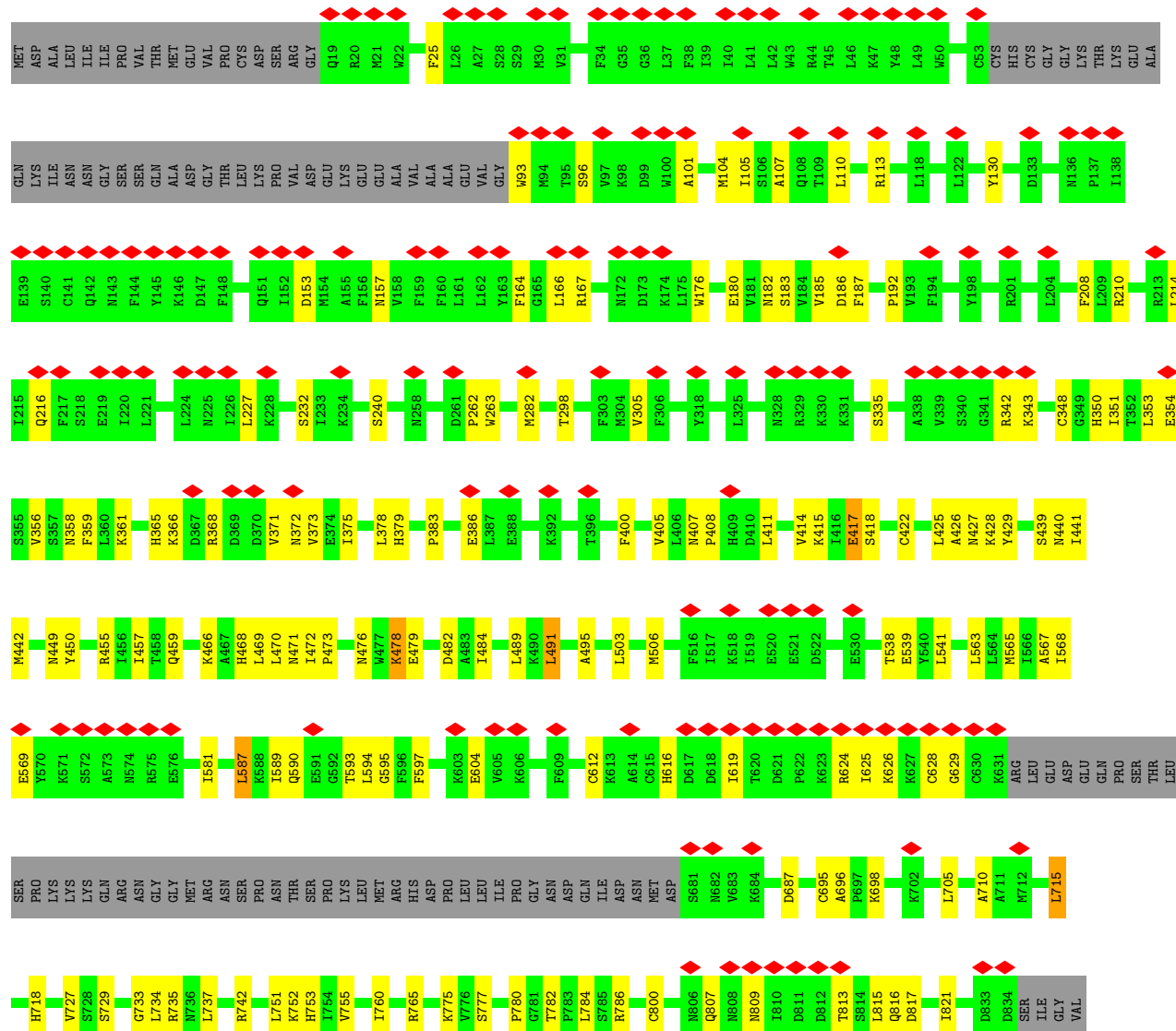
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

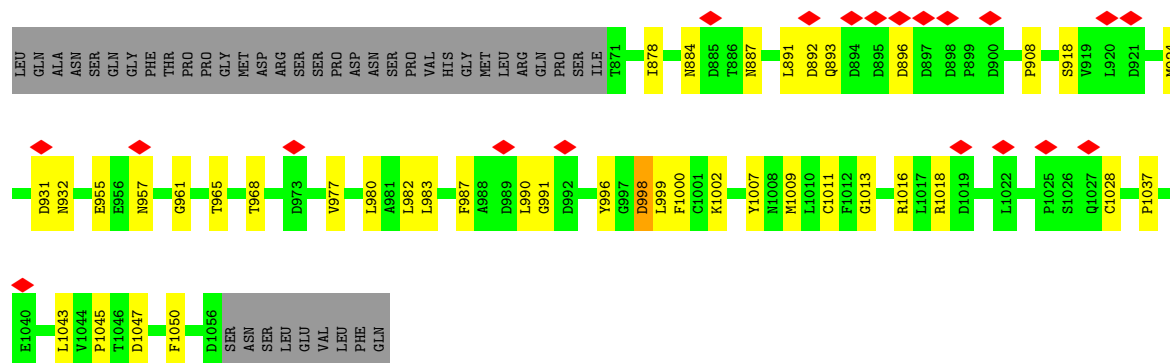
- Molecule 1: Calcium-activated potassium channel subunit alpha-1



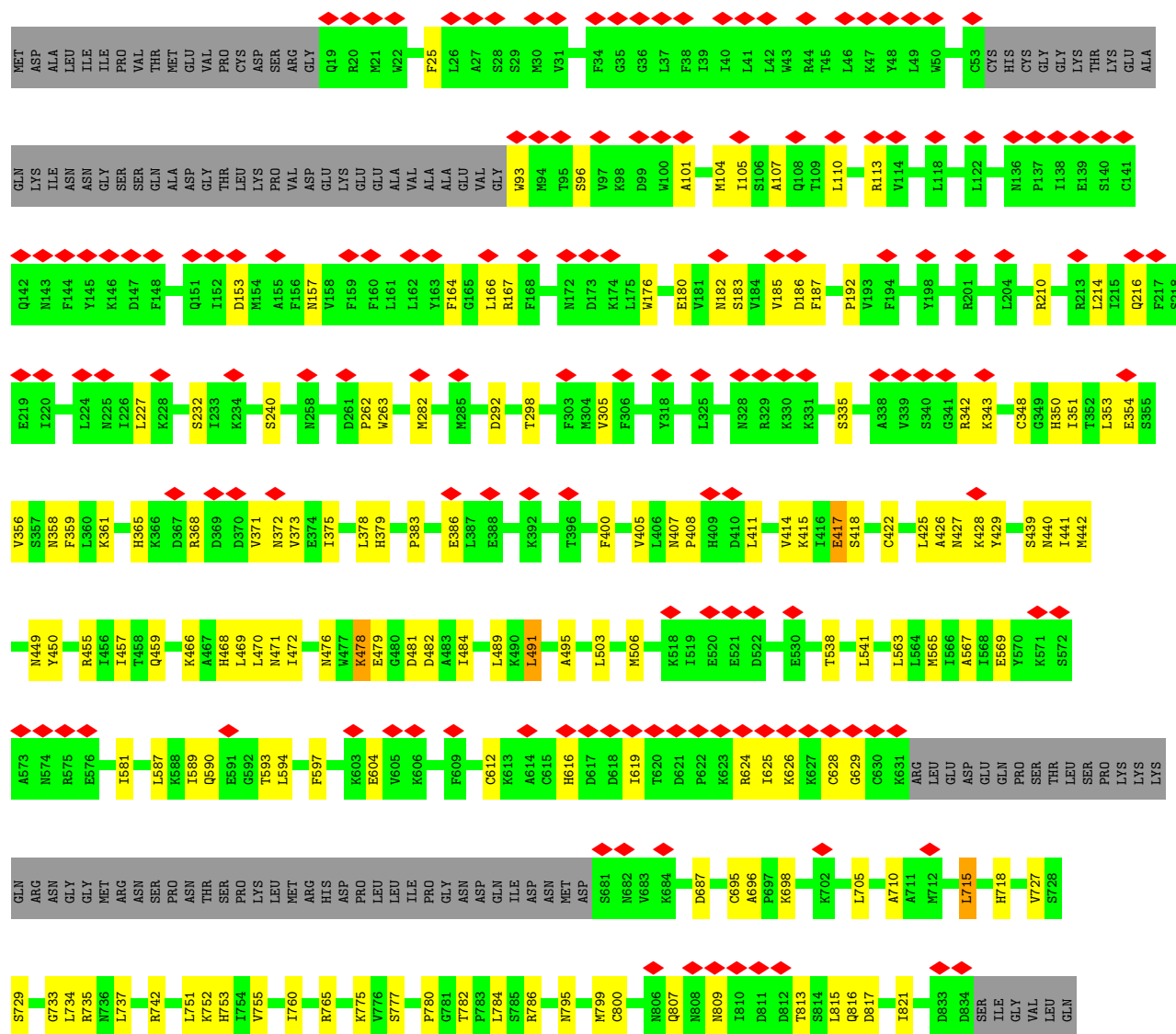


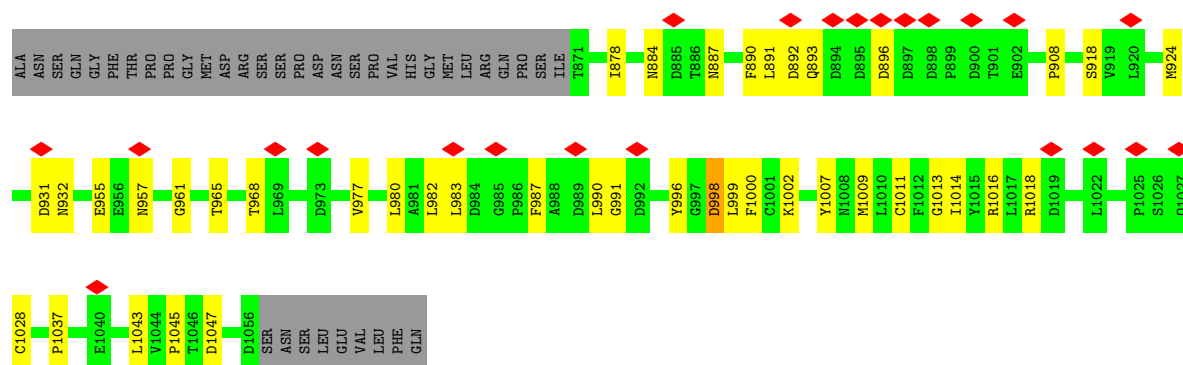
• Molecule 1: Calcium-activated potassium channel subunit alpha-1



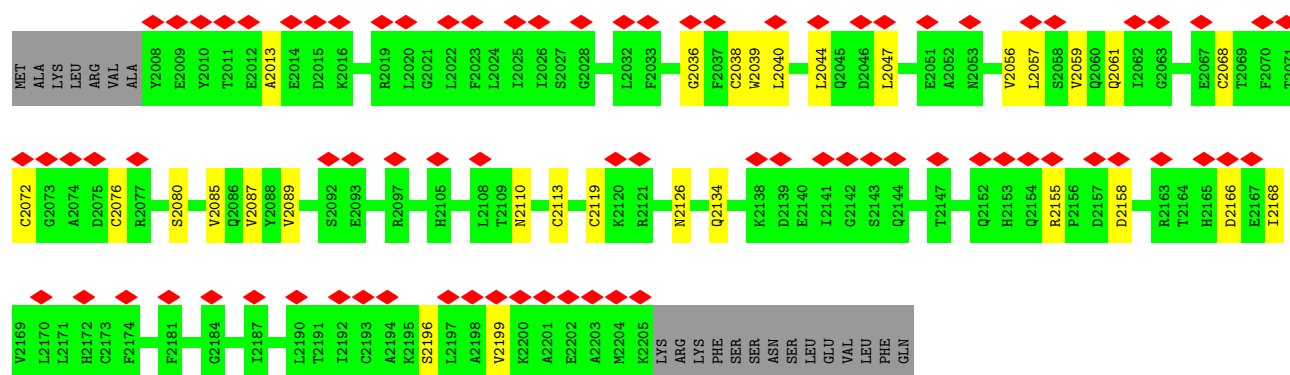
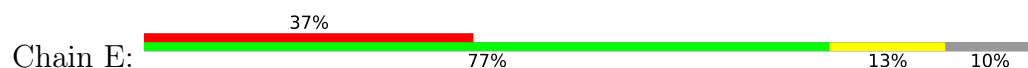


• Molecule 1: Calcium-activated potassium channel subunit alpha-1

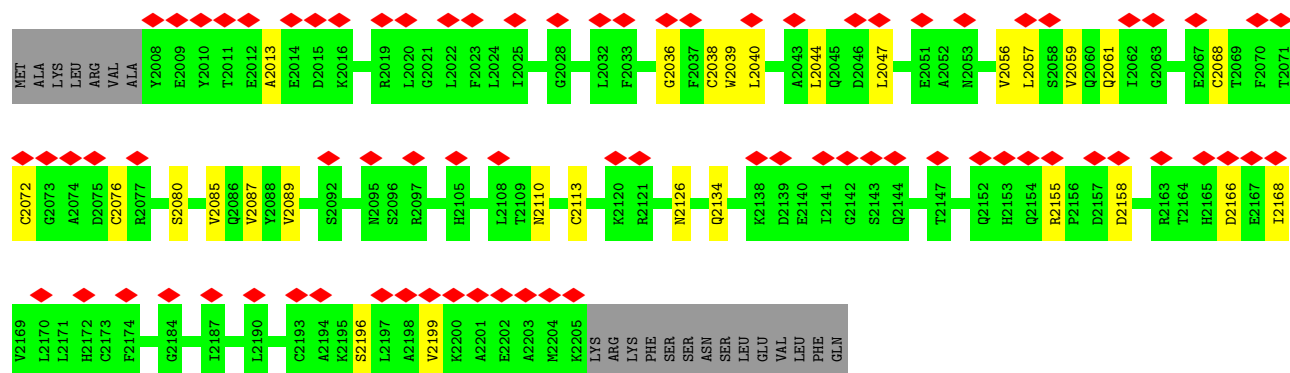
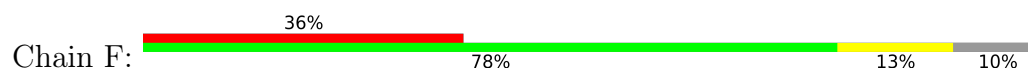




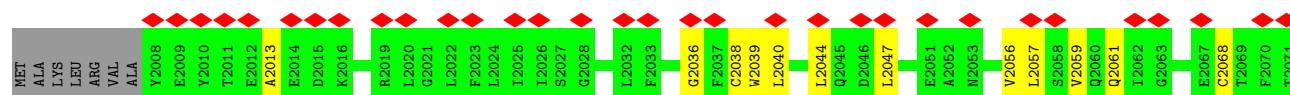
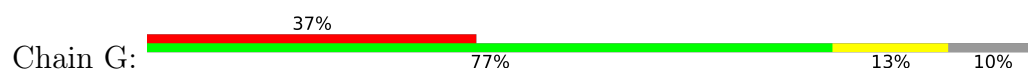
• Molecule 2: Calcium-activated potassium channel subunit beta-4

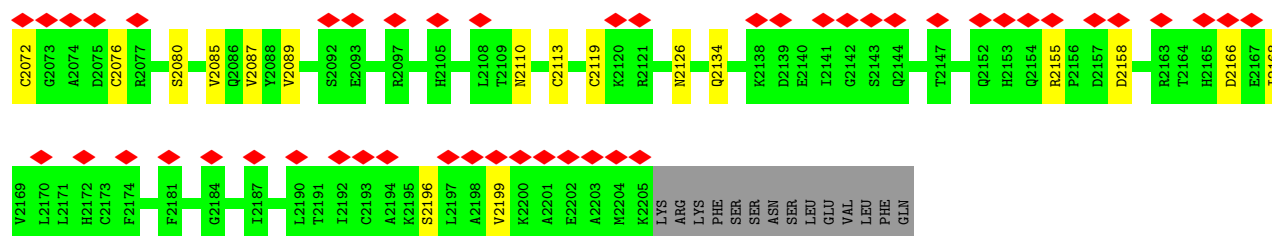


• Molecule 2: Calcium-activated potassium channel subunit beta-4

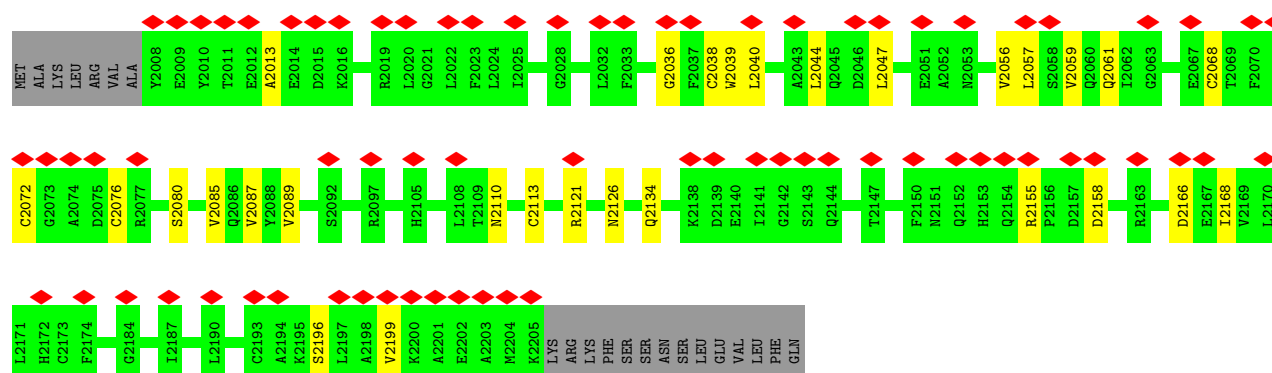
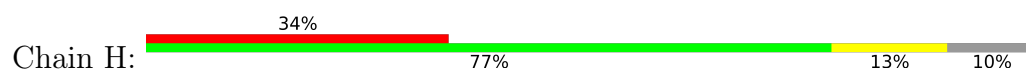


• Molecule 2: Calcium-activated potassium channel subunit beta-4





• Molecule 2: Calcium-activated potassium channel subunit beta-4



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	42842	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	89	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	21.471	Depositor
Minimum map value	-9.618	Depositor
Average map value	-0.342	Depositor
Map value standard deviation	1.078	Depositor
Recommended contour level	6.7	Depositor
Map size ($\text{\AA}$)	332.8, 332.8, 332.8	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.3, 1.3, 1.3	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.47	0/7456	0.70	0/10119
1	B	0.47	0/7456	0.70	0/10119
1	C	0.47	0/7456	0.70	0/10119
1	D	0.47	0/7456	0.70	0/10119
2	E	0.23	0/1619	0.49	1/2204 (0.0%)
2	F	0.24	0/1619	0.49	1/2204 (0.0%)
2	G	0.24	0/1619	0.49	1/2204 (0.0%)
2	H	0.24	0/1619	0.49	1/2204 (0.0%)
All	All	0.43	0/36300	0.67	4/49292 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	2038	CYS	N-CA-C	-5.44	107.30	114.31
2	E	2038	CYS	N-CA-C	-5.40	107.34	114.31
2	F	2038	CYS	N-CA-C	-5.40	107.35	114.31
2	H	2038	CYS	N-CA-C	-5.38	107.36	114.31

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7287	0	7277	160	0
1	B	7287	0	7277	161	0
1	C	7287	0	7277	155	0
1	D	7287	0	7277	161	0
2	E	1581	0	1538	17	0
2	F	1581	0	1538	16	0
2	G	1581	0	1538	20	0
2	H	1581	0	1538	19	0
3	A	160	0	215	1	0
3	B	184	0	236	2	0
3	C	121	0	168	1	0
3	D	145	0	189	3	0
3	E	13	0	18	0	0
3	F	22	0	32	0	0
3	G	13	0	18	0	0
3	H	22	0	32	0	0
4	A	28	0	44	6	0
4	B	28	0	44	6	0
4	C	28	0	44	5	0
4	D	28	0	44	6	0
4	E	28	0	45	5	0
4	F	28	0	45	8	0
4	G	28	0	45	8	0
4	H	28	0	45	7	0
5	E	28	0	26	0	0
5	F	28	0	26	0	0
5	G	28	0	26	0	0
5	H	28	0	26	0	0
All	All	36488	0	36628	733	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

The worst 5 of 733 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:2305:CLR:C16	4:E:2305:CLR:C17	1.74	1.61
4:G:2305:CLR:C16	4:G:2305:CLR:C17	1.74	1.59
4:B:1110:CLR:C16	4:B:1110:CLR:C17	1.75	1.56
4:F:2306:CLR:C16	4:F:2306:CLR:C17	1.74	1.56
4:C:1107:CLR:C16	4:C:1107:CLR:C17	1.75	1.51

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	906/1065 (85%)	842 (93%)	64 (7%)	0	100	100
1	B	906/1065 (85%)	842 (93%)	64 (7%)	0	100	100
1	C	906/1065 (85%)	842 (93%)	64 (7%)	0	100	100
1	D	906/1065 (85%)	842 (93%)	64 (7%)	0	100	100
2	E	196/219 (90%)	183 (93%)	13 (7%)	0	100	100
2	F	196/219 (90%)	183 (93%)	13 (7%)	0	100	100
2	G	196/219 (90%)	183 (93%)	13 (7%)	0	100	100
2	H	196/219 (90%)	183 (93%)	13 (7%)	0	100	100
All	All	4408/5136 (86%)	4100 (93%)	308 (7%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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	804/937 (86%)	796 (99%)	8 (1%)	68	75
1	B	792/937 (84%)	784 (99%)	8 (1%)	68	75
1	C	804/937 (86%)	796 (99%)	8 (1%)	68	75
1	D	757/937 (81%)	750 (99%)	7 (1%)	70	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	E	180/199 (90%)	180 (100%)	0	100	100
2	F	180/199 (90%)	180 (100%)	0	100	100
2	G	180/199 (90%)	180 (100%)	0	100	100
2	H	180/199 (90%)	180 (100%)	0	100	100
All	All	3877/4544 (85%)	3846 (99%)	31 (1%)	70	77

5 of 31 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	715	LEU
1	D	478	LYS
1	C	417	GLU
1	D	715	LEU
1	D	185	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 84 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	745	ASN
1	D	440	ASN
1	C	807	GLN
1	D	157	ASN
1	D	501	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

56 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	NAG	E	2304	2	14,14,15	0.48	0	17,19,21	1.89	3 (17%)
3	PGW	H	2303	-	5,5,50	0.31	0	4,4,56	0.63	0
4	CLR	B	1110	-	31,31,31	4.38	14 (45%)	48,48,48	2.64	17 (35%)
5	NAG	H	2305	2	14,14,15	0.48	0	17,19,21	1.88	3 (17%)
3	PGW	G	2302	-	5,5,50	0.31	0	4,4,56	0.63	0
4	CLR	G	2305	-	31,31,31	4.33	13 (41%)	48,48,48	2.82	19 (39%)
5	NAG	H	2304	2	14,14,15	0.55	0	17,19,21	2.12	3 (17%)
4	CLR	F	2306	-	31,31,31	4.32	13 (41%)	48,48,48	2.82	19 (39%)
3	PGW	F	2302	-	6,6,50	0.31	0	5,5,56	0.67	0
3	PGW	C	1103	-	45,45,50	1.13	4 (8%)	48,51,56	1.13	3 (6%)
3	PGW	E	2302	-	5,5,50	0.31	0	4,4,56	0.63	0
3	PGW	D	1106	-	8,8,50	0.29	0	7,7,56	0.81	0
3	PGW	D	1105	-	45,45,50	1.13	5 (11%)	48,51,56	1.13	3 (6%)
3	PGW	B	1101	-	26,26,50	1.34	5 (19%)	29,31,56	1.49	4 (13%)
4	CLR	C	1107	-	31,31,31	4.39	14 (45%)	48,48,48	2.64	17 (35%)
3	PGW	A	3001	-	28,28,50	1.20	2 (7%)	30,32,56	1.07	2 (6%)
3	PGW	B	1107	-	8,8,50	0.29	0	7,7,56	0.81	0
3	PGW	A	3004	-	11,11,50	0.24	0	10,10,56	0.84	0
3	PGW	D	1107	-	11,11,50	0.24	0	10,10,56	0.84	0
3	PGW	B	1103	-	8,8,50	0.27	0	7,7,56	0.79	0
5	NAG	F	2304	2	14,14,15	0.55	0	17,19,21	2.13	3 (17%)
3	PGW	D	1103	-	8,8,50	0.27	0	7,7,56	0.79	0
3	PGW	D	1104	-	28,28,50	1.20	2 (7%)	30,32,56	1.07	2 (6%)
3	PGW	H	2302	-	6,6,50	0.31	0	5,5,56	0.67	0
3	PGW	B	1108	-	11,11,50	0.25	0	10,10,56	0.84	0
3	PGW	C	1101	-	12,12,50	0.96	1 (8%)	12,12,56	1.16	0
4	CLR	A	3006	-	31,31,31	4.39	14 (45%)	48,48,48	2.64	17 (35%)
4	CLR	D	1108	-	31,31,31	4.39	14 (45%)	48,48,48	2.63	17 (35%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	CLR	H	2306	-	31,31,31	4.33	13 (41%)	48,48,48	2.83	19 (39%)
5	NAG	G	2303	2	14,14,15	0.54	0	17,19,21	2.13	3 (17%)
3	PGW	C	1106	-	11,11,50	0.29	0	10,10,56	0.75	0
3	PGW	A	3009	-	11,11,50	0.29	0	10,10,56	0.75	0
3	PGW	C	1105	-	11,11,50	0.24	0	10,10,56	0.84	0
5	NAG	E	2303	2	14,14,15	0.55	0	17,19,21	2.13	3 (17%)
3	PGW	D	1101	-	26,26,50	1.34	5 (19%)	29,31,56	1.49	4 (13%)
3	PGW	H	2301	-	8,8,50	0.27	0	7,7,56	0.79	0
3	PGW	B	1102	-	12,12,50	0.95	1 (8%)	12,12,56	1.16	0
4	CLR	E	2305	-	31,31,31	4.33	13 (41%)	48,48,48	2.82	19 (39%)
3	PGW	E	2301	-	6,6,50	0.31	0	5,5,56	0.67	0
3	PGW	B	1105	-	26,26,50	1.35	5 (19%)	29,31,56	1.49	4 (13%)
3	PGW	C	1104	-	8,8,50	0.29	0	7,7,56	0.81	0
3	PGW	B	1109	-	11,11,50	0.29	0	10,10,56	0.75	0
5	NAG	G	2304	2	14,14,15	0.49	0	17,19,21	1.89	3 (17%)
3	PGW	B	1106	-	45,45,50	1.13	4 (8%)	48,51,56	1.13	3 (6%)
3	PGW	A	3003	-	8,8,50	0.29	0	7,7,56	0.81	0
3	PGW	A	3005	-	11,11,50	0.29	0	10,10,56	0.75	0
3	PGW	F	2303	-	5,5,50	0.31	0	4,4,56	0.63	0
3	PGW	G	2301	-	6,6,50	0.31	0	5,5,56	0.67	0
3	PGW	B	1104	-	28,28,50	1.20	2 (7%)	30,32,56	1.07	2 (6%)
3	PGW	A	3008	-	12,12,50	0.94	1 (8%)	12,12,56	1.16	0
3	PGW	F	2301	-	8,8,50	0.27	0	7,7,56	0.79	0
3	PGW	A	3002	-	45,45,50	1.13	4 (8%)	48,51,56	1.13	3 (6%)
3	PGW	C	1102	-	28,28,50	1.20	2 (7%)	30,32,56	1.08	2 (6%)
3	PGW	A	3007	-	26,26,50	1.34	5 (19%)	29,31,56	1.49	4 (13%)
3	PGW	D	1102	-	12,12,50	0.95	1 (8%)	12,12,56	1.16	0
5	NAG	F	2305	2	14,14,15	0.47	0	17,19,21	1.88	3 (17%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	E	2304	2	-	2/6/23/26	0/1/1/1
3	PGW	H	2303	-	-	2/3/3/55	-
4	CLR	B	1110	-	-	6/10/68/68	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	H	2305	2	-	2/6/23/26	0/1/1/1
3	PGW	G	2302	-	-	2/3/3/55	-
4	CLR	G	2305	-	-	9/10/68/68	0/4/4/4
5	NAG	H	2304	2	-	0/6/23/26	0/1/1/1
4	CLR	F	2306	-	-	9/10/68/68	0/4/4/4
3	PGW	F	2302	-	-	0/4/4/55	-
3	PGW	C	1103	-	-	14/50/50/55	-
3	PGW	E	2302	-	-	2/3/3/55	-
3	PGW	D	1106	-	-	2/6/6/55	-
3	PGW	D	1105	-	-	14/50/50/55	-
3	PGW	B	1101	-	-	11/28/28/55	-
4	CLR	C	1107	-	-	6/10/68/68	0/4/4/4
3	PGW	A	3001	-	-	10/30/30/55	-
3	PGW	B	1107	-	-	2/6/6/55	-
3	PGW	A	3004	-	-	5/9/9/55	-
3	PGW	D	1107	-	-	5/9/9/55	-
3	PGW	B	1103	-	-	3/6/6/55	-
5	NAG	F	2304	2	-	0/6/23/26	0/1/1/1
3	PGW	D	1103	-	-	3/6/6/55	-
3	PGW	D	1104	-	-	10/30/30/55	-
3	PGW	H	2302	-	-	0/4/4/55	-
3	PGW	B	1108	-	-	5/9/9/55	-
3	PGW	C	1101	-	-	5/10/10/55	-
4	CLR	A	3006	-	-	6/10/68/68	0/4/4/4
4	CLR	D	1108	-	-	6/10/68/68	0/4/4/4
4	CLR	H	2306	-	-	9/10/68/68	0/4/4/4
5	NAG	G	2303	2	-	0/6/23/26	0/1/1/1
3	PGW	C	1106	-	-	4/9/9/55	-
3	PGW	A	3009	-	-	4/9/9/55	-
3	PGW	C	1105	-	-	5/9/9/55	-
5	NAG	E	2303	2	-	0/6/23/26	0/1/1/1
3	PGW	D	1101	-	-	11/28/28/55	-
3	PGW	H	2301	-	-	3/6/6/55	-
3	PGW	B	1102	-	-	5/10/10/55	-
4	CLR	E	2305	-	-	9/10/68/68	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PGW	E	2301	-	-	0/4/4/55	-
3	PGW	B	1105	-	-	11/28/28/55	-
3	PGW	C	1104	-	-	2/6/6/55	-
3	PGW	B	1109	-	-	4/9/9/55	-
5	NAG	G	2304	2	-	2/6/23/26	0/1/1/1
3	PGW	B	1106	-	-	14/50/50/55	-
3	PGW	A	3003	-	-	2/6/6/55	-
3	PGW	A	3005	-	-	4/9/9/55	-
3	PGW	F	2303	-	-	2/3/3/55	-
3	PGW	G	2301	-	-	0/4/4/55	-
3	PGW	B	1104	-	-	10/30/30/55	-
3	PGW	A	3008	-	-	5/10/10/55	-
3	PGW	F	2301	-	-	3/6/6/55	-
3	PGW	A	3002	-	-	14/50/50/55	-
3	PGW	C	1102	-	-	10/30/30/55	-
3	PGW	A	3007	-	-	11/28/28/55	-
3	PGW	D	1102	-	-	5/10/10/55	-
5	NAG	F	2305	2	-	2/6/23/26	0/1/1/1

The worst 5 of 157 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	H	2306	CLR	C6-C5	12.08	1.57	1.33
4	E	2305	CLR	C6-C5	12.08	1.57	1.33
4	G	2305	CLR	C6-C5	12.08	1.57	1.33
4	F	2306	CLR	C6-C5	12.06	1.57	1.33
4	A	3006	CLR	C6-C5	11.67	1.57	1.33

The worst 5 of 204 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	1110	CLR	C4-C5-C6	-9.07	108.27	120.57
4	A	3006	CLR	C4-C5-C6	-9.07	108.27	120.57
4	C	1107	CLR	C4-C5-C6	-9.07	108.27	120.57
4	D	1108	CLR	C4-C5-C6	-9.04	108.32	120.57
4	H	2306	CLR	C4-C5-C6	-8.51	109.04	120.57

There are no chirality outliers.

5 of 292 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	3001	PGW	C04-C05-CAD-OAE
3	A	3001	PGW	C03-O11-P-O12
3	A	3001	PGW	C03-O11-P-O13
3	A	3001	PGW	C03-O11-P-O14
3	A	3001	PGW	O01-C02-C03-O11

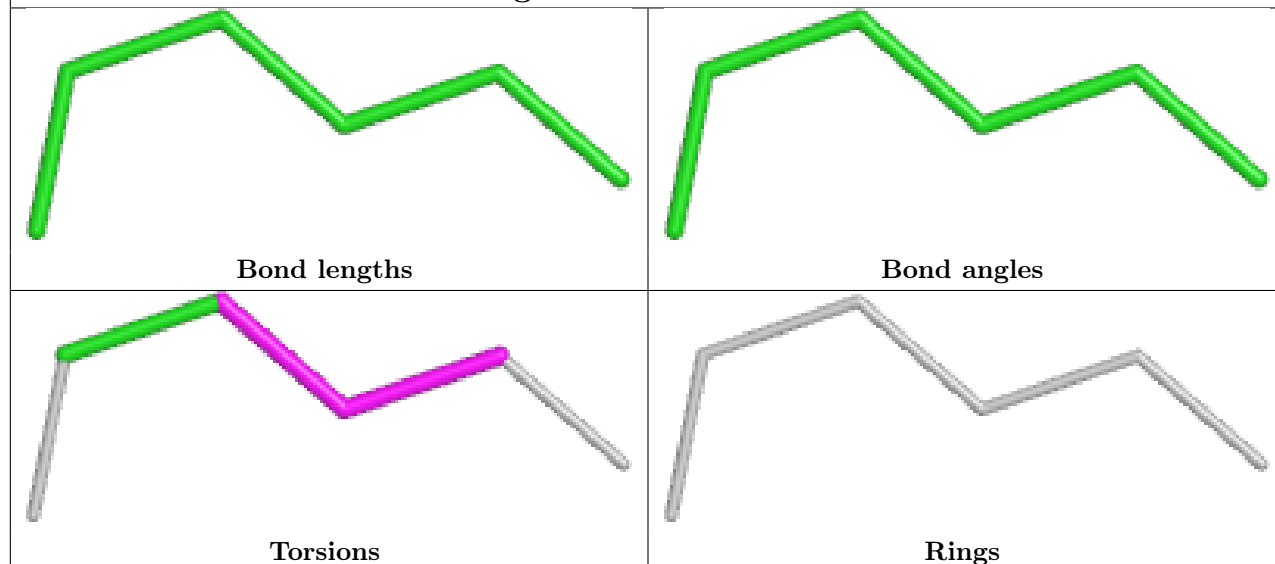
There are no ring outliers.

13 monomers are involved in 58 short contacts:

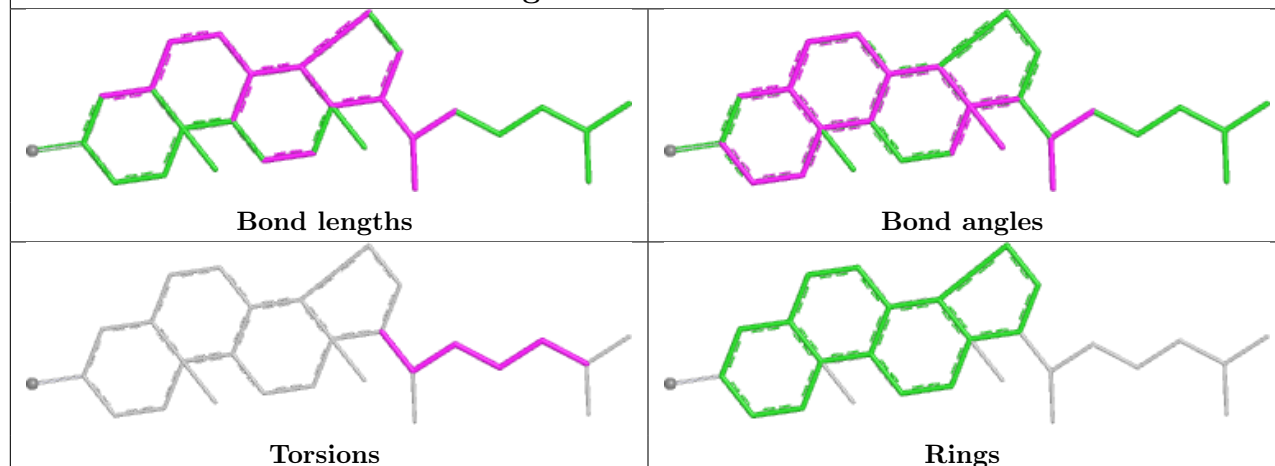
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	1110	CLR	6	0
4	G	2305	CLR	8	0
4	F	2306	CLR	8	0
3	C	1103	PGW	1	0
3	D	1105	PGW	2	0
4	C	1107	CLR	5	0
3	D	1104	PGW	1	0
4	A	3006	CLR	6	0
4	D	1108	CLR	6	0
4	H	2306	CLR	7	0
4	E	2305	CLR	5	0
3	B	1106	PGW	2	0
3	A	3002	PGW	1	0

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

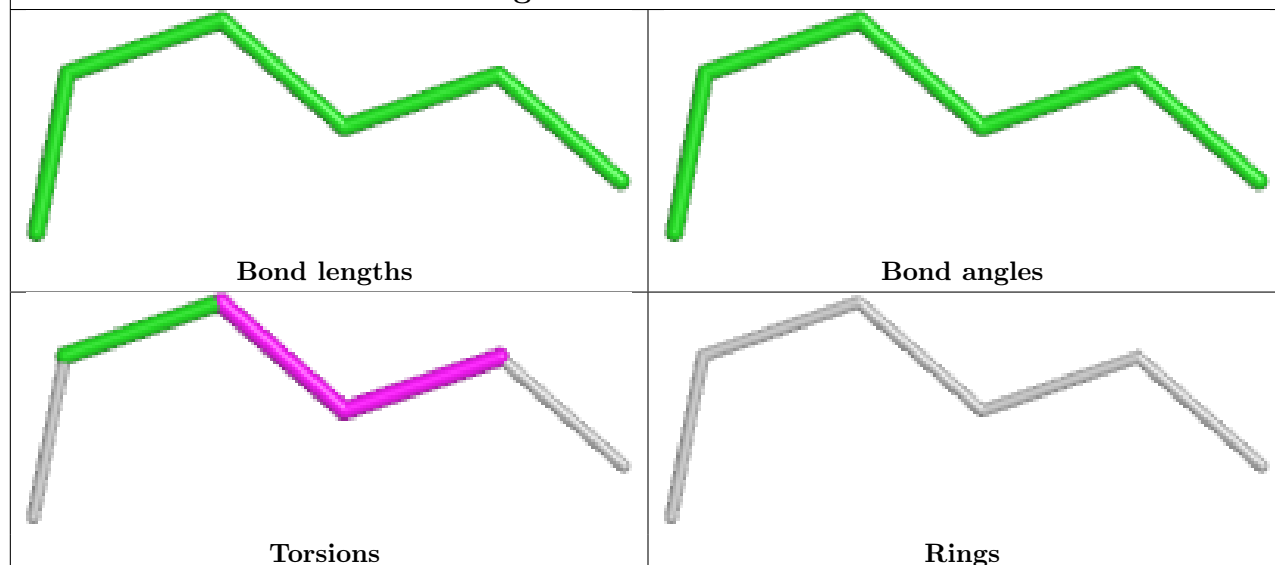
Ligand PGW H 2303

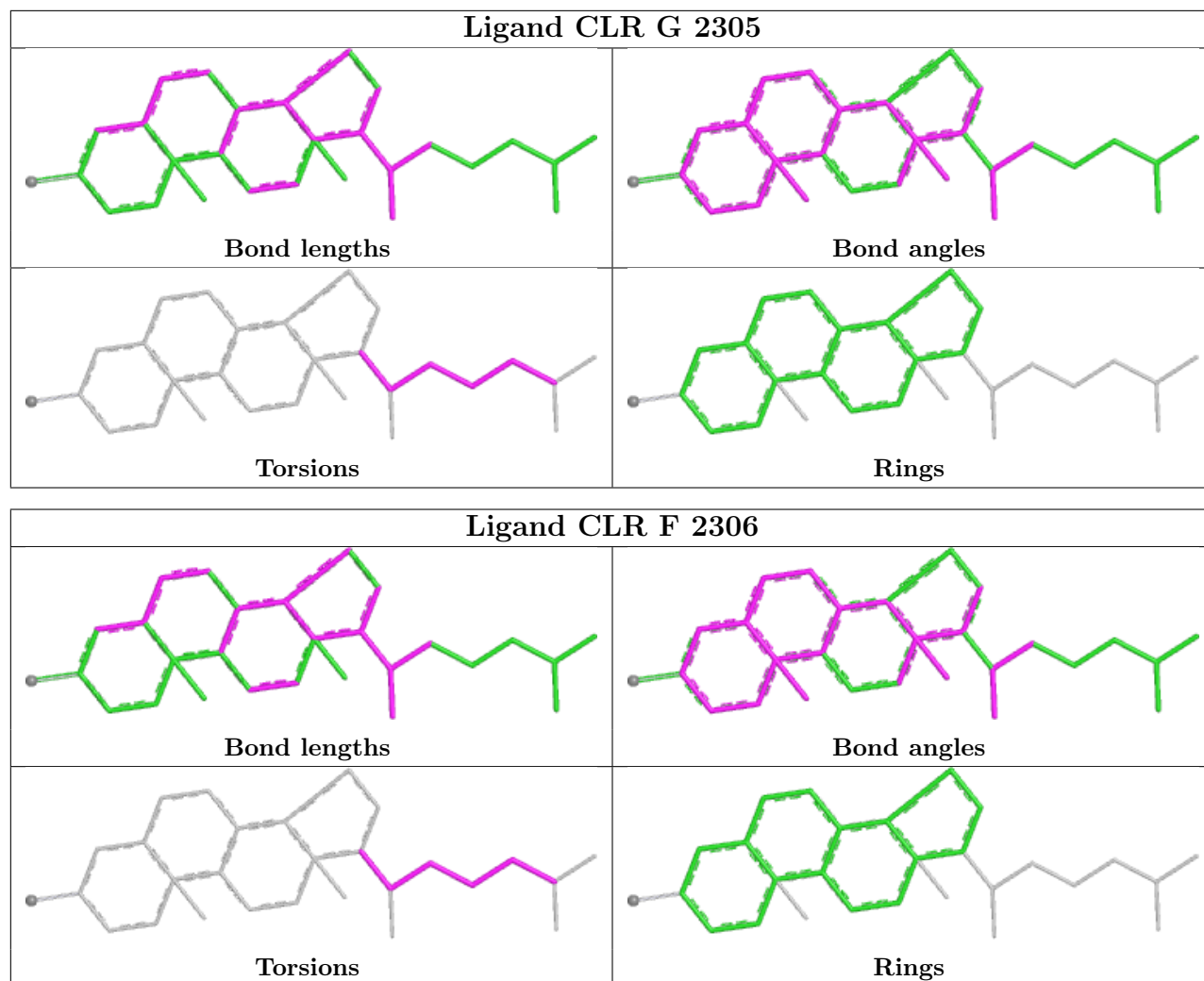


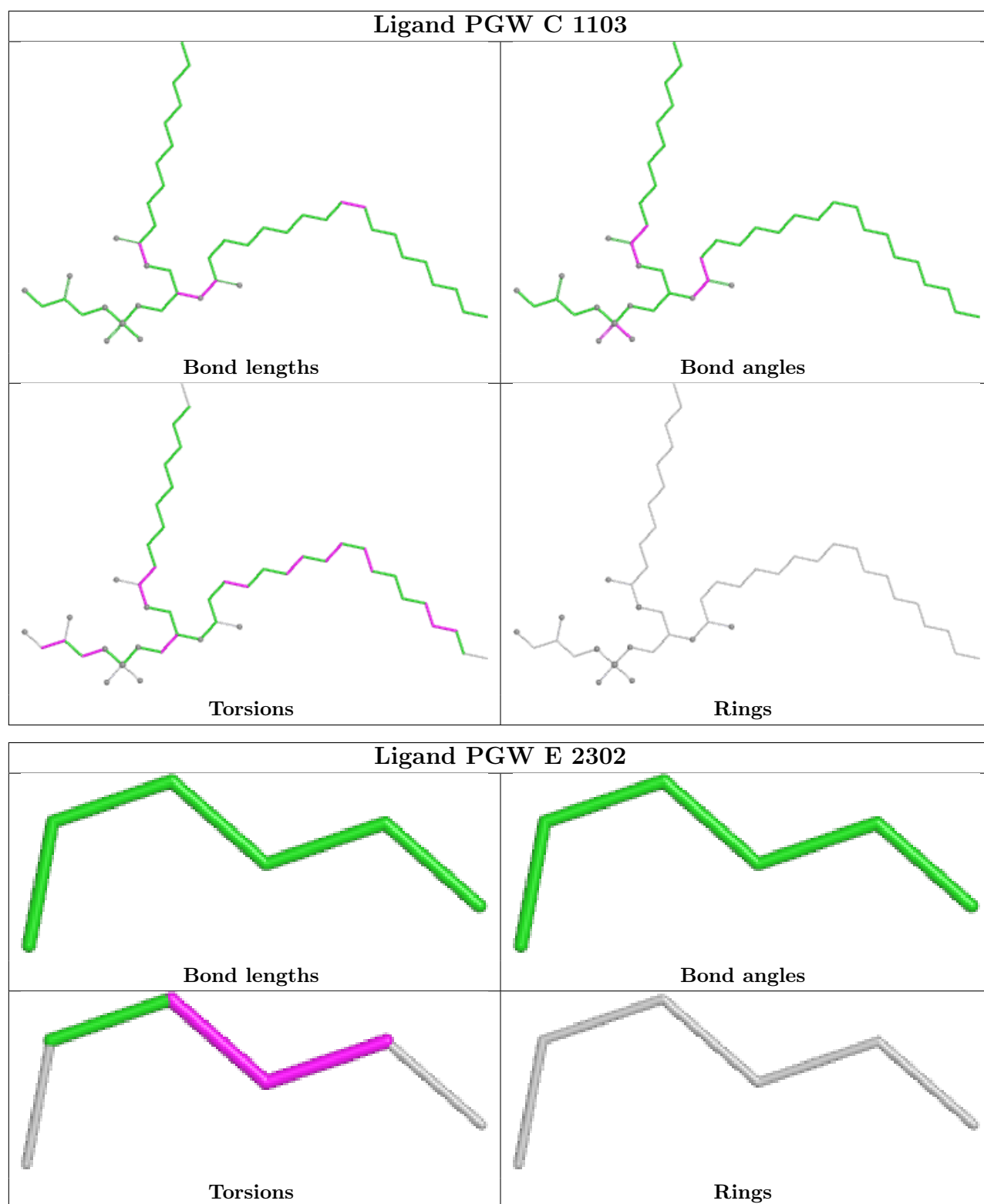
Ligand CLR B 1110

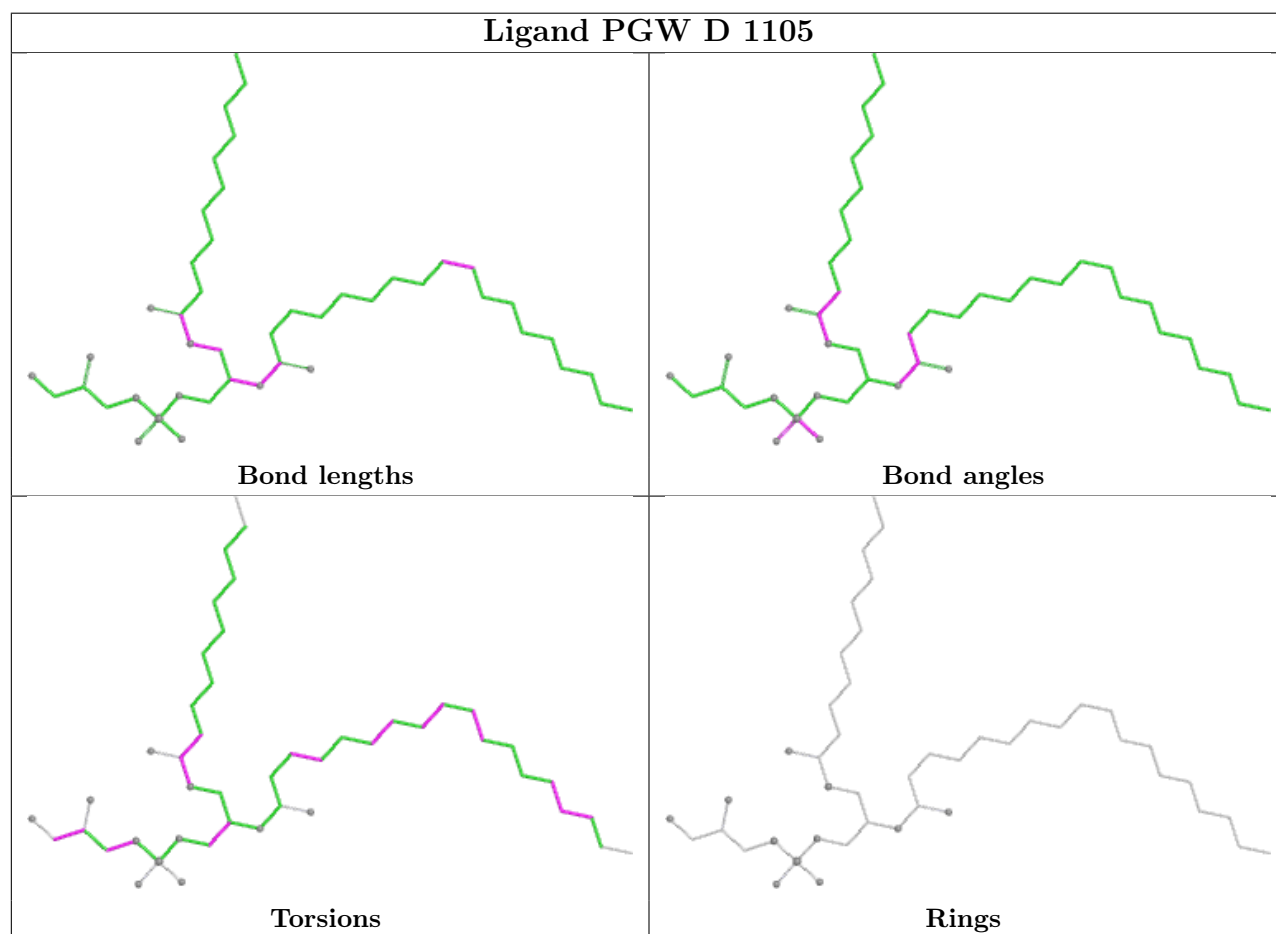
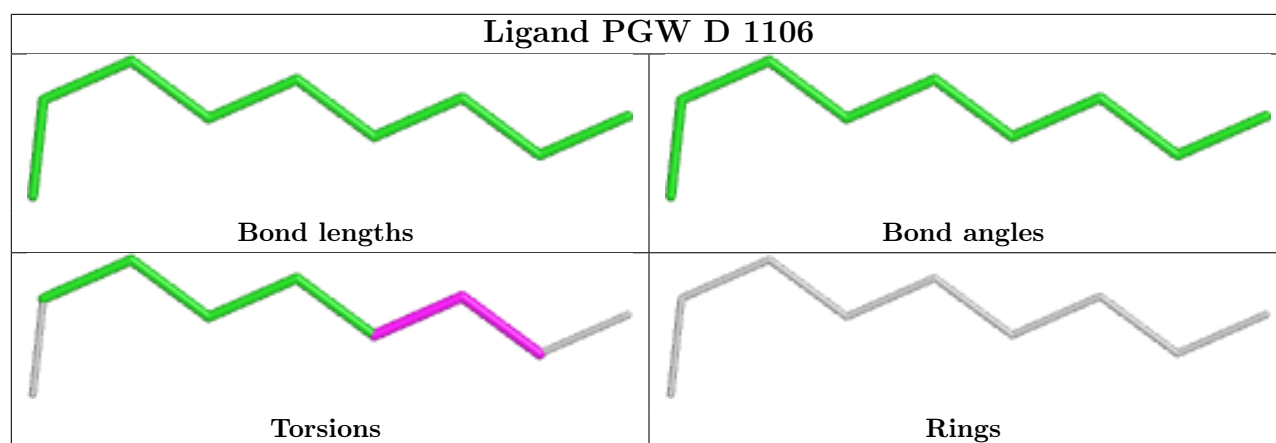


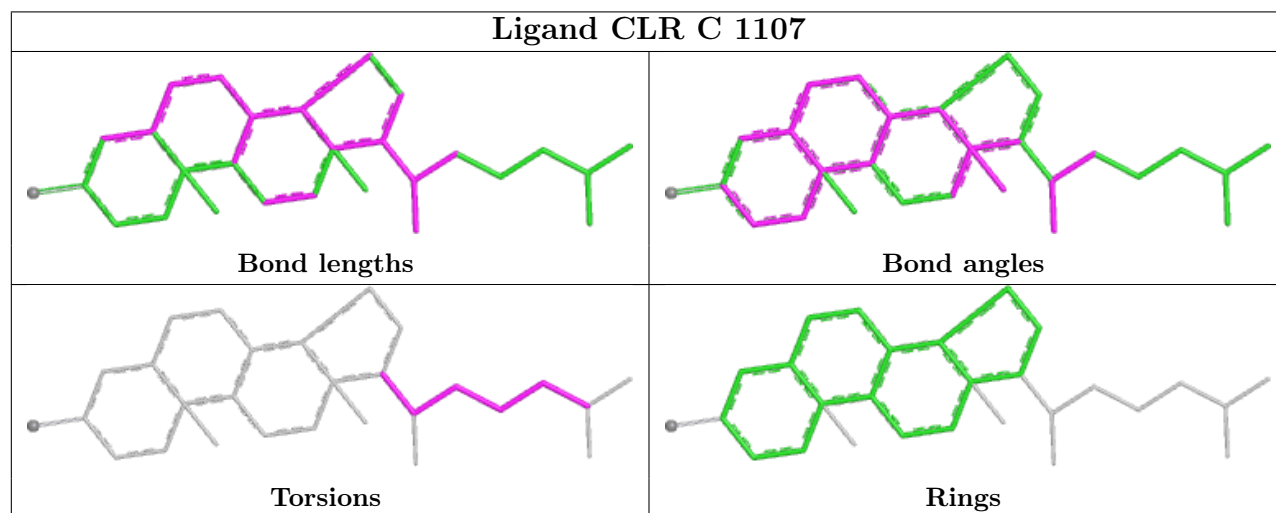
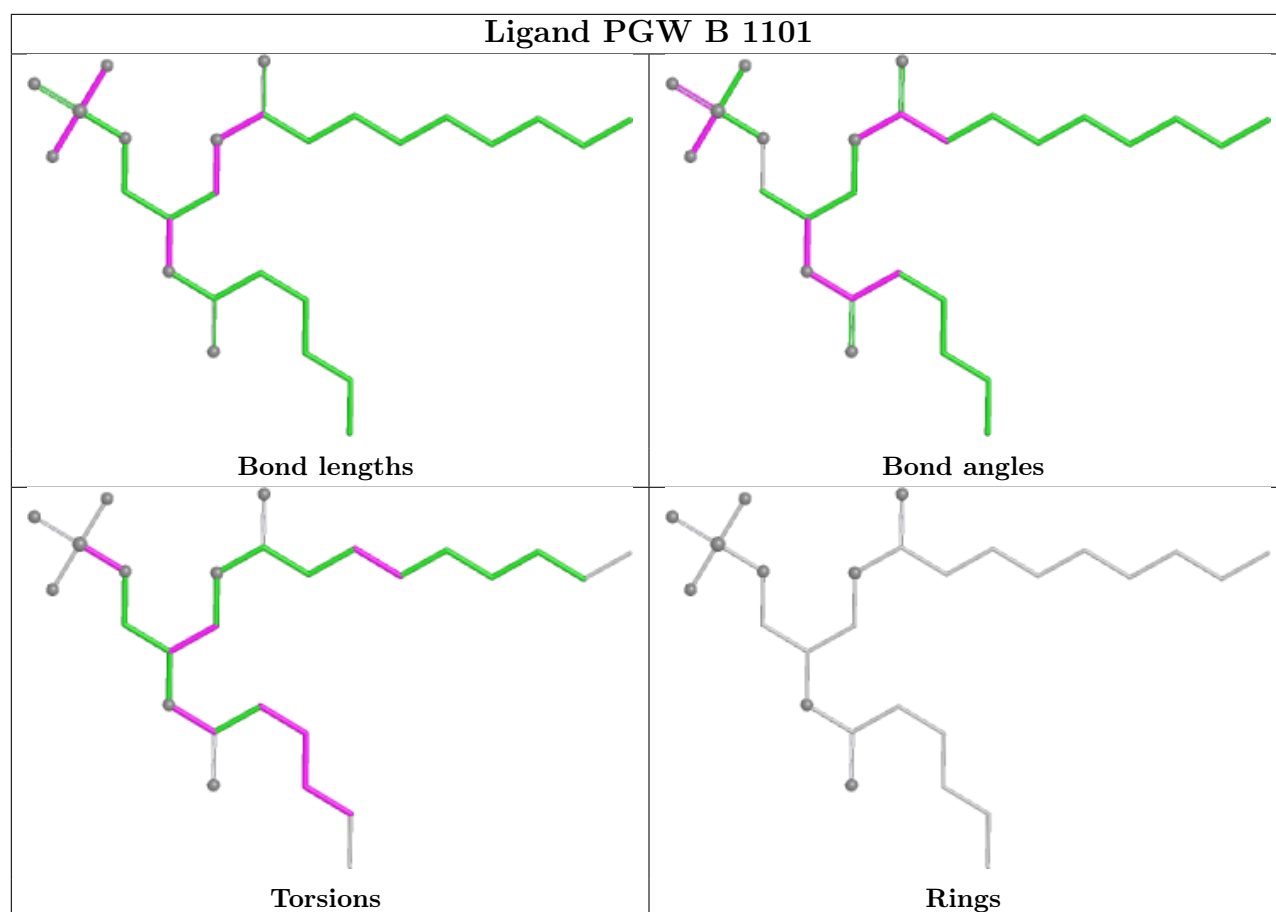
Ligand PGW G 2302

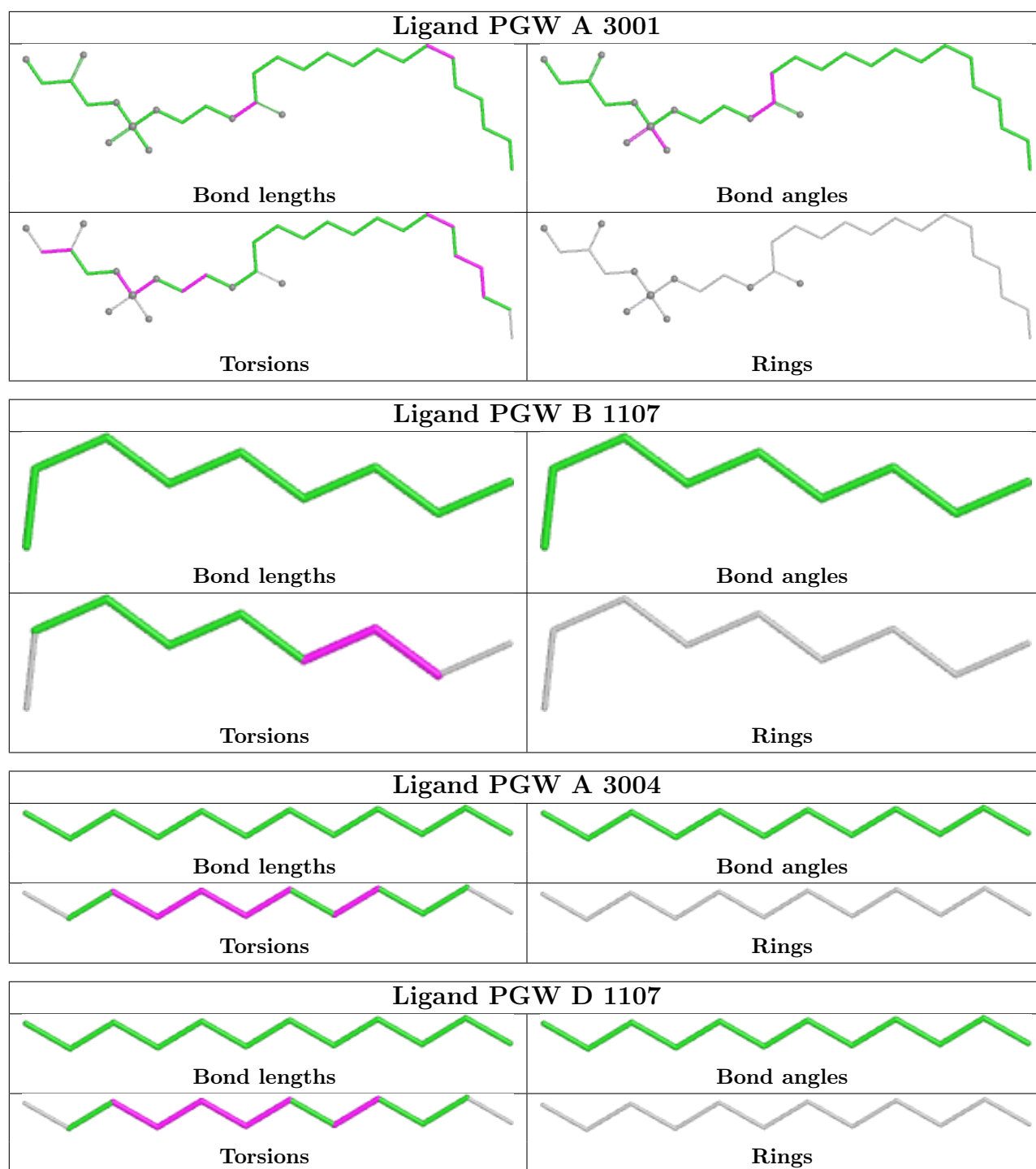


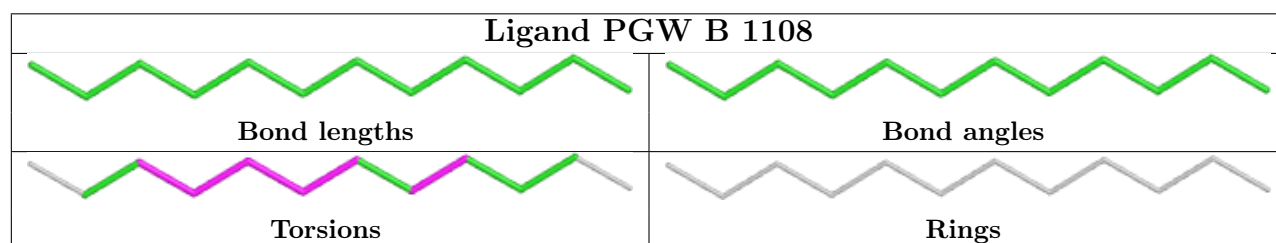
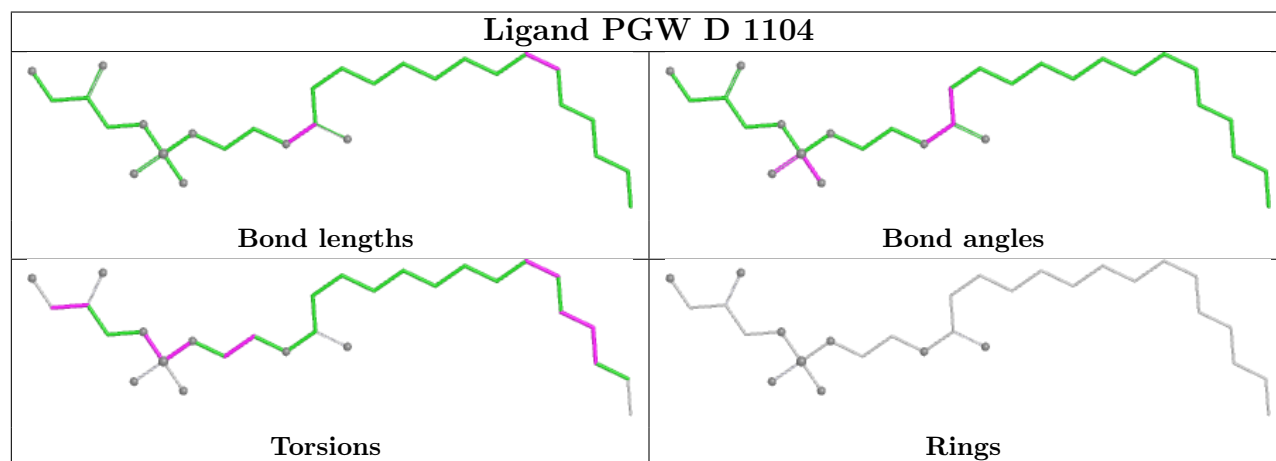
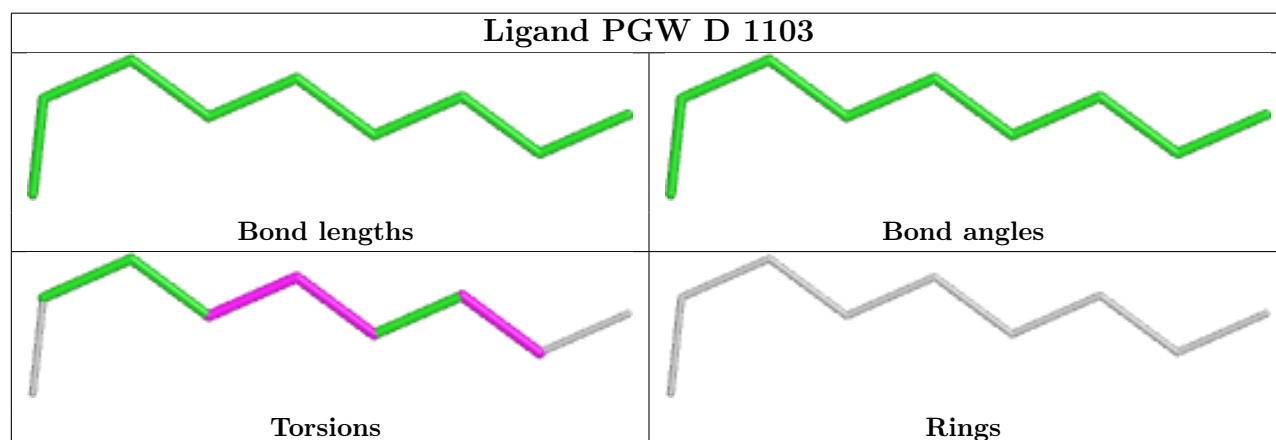
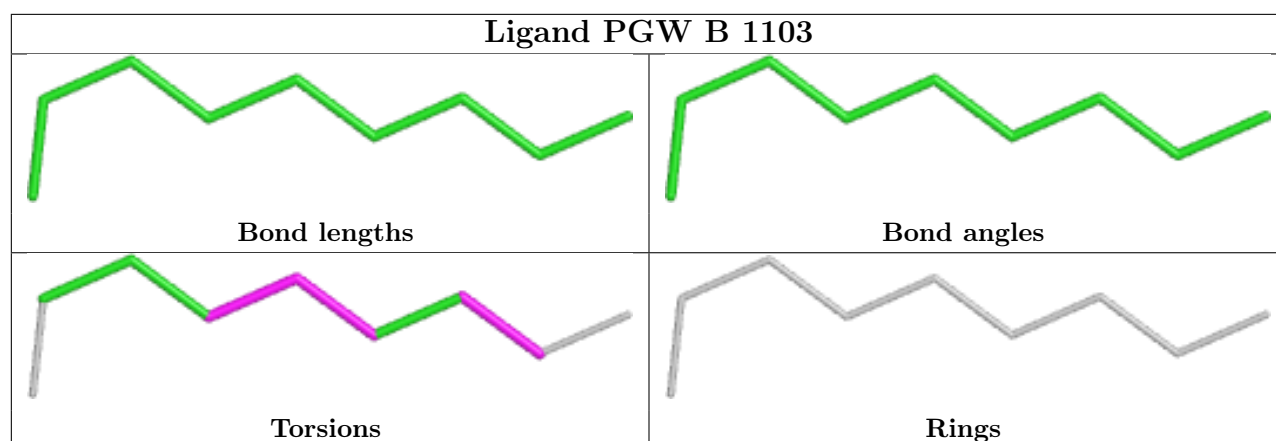


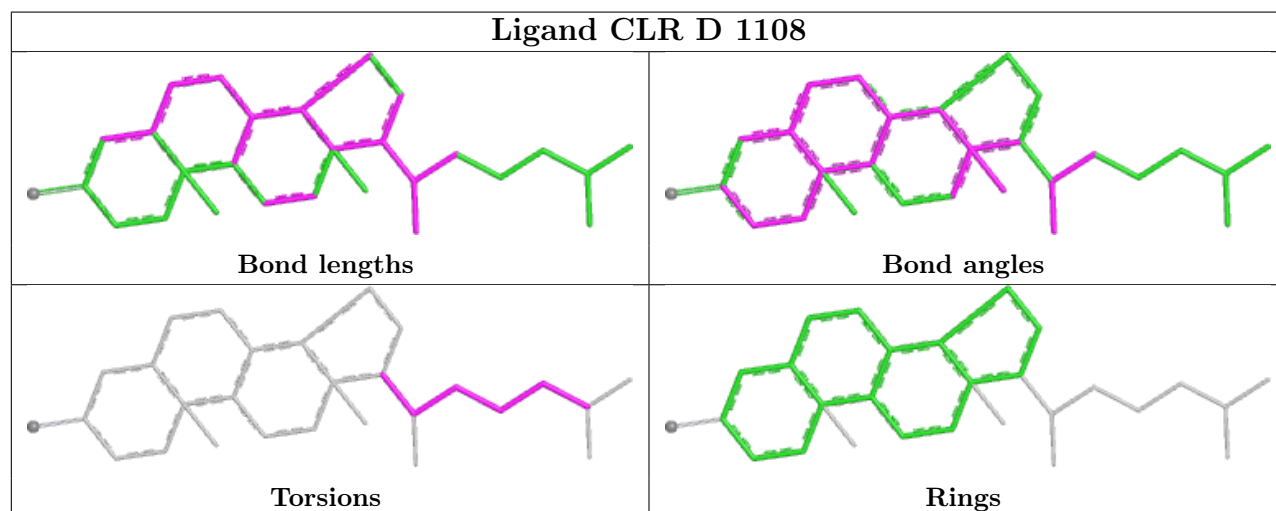
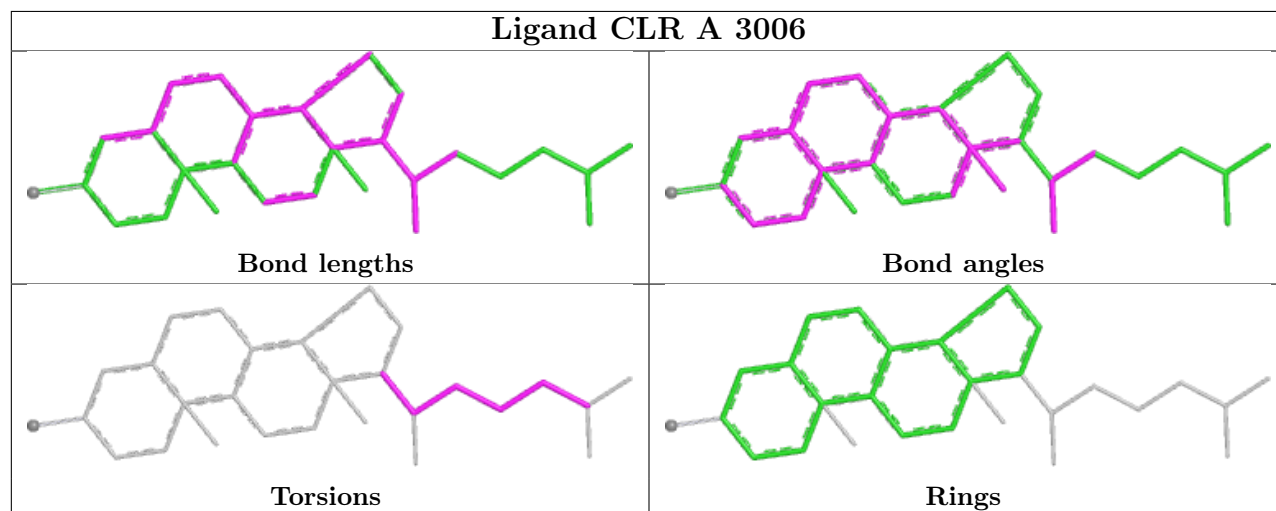
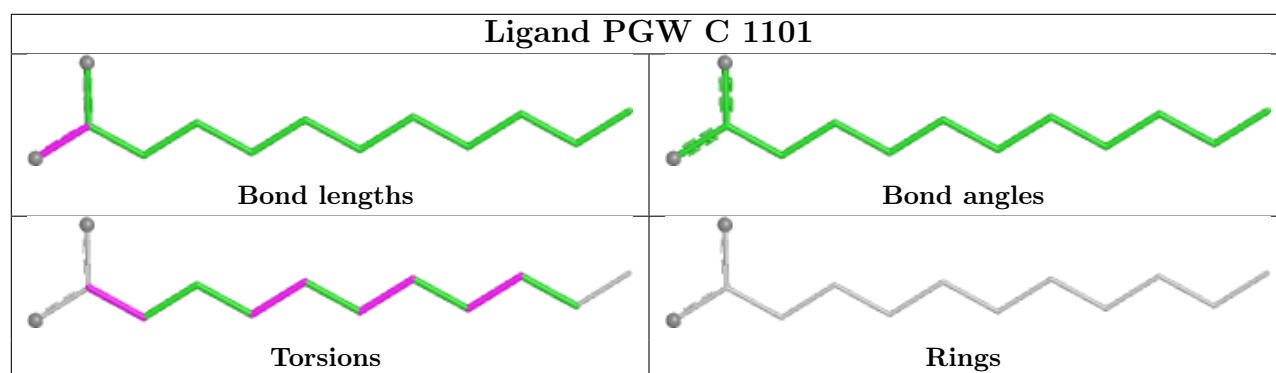


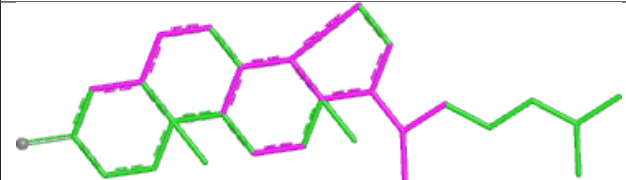
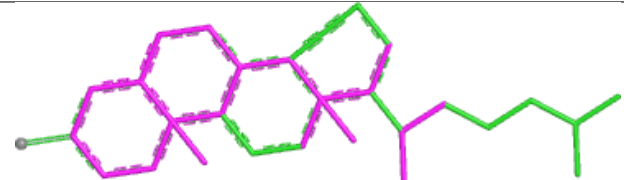
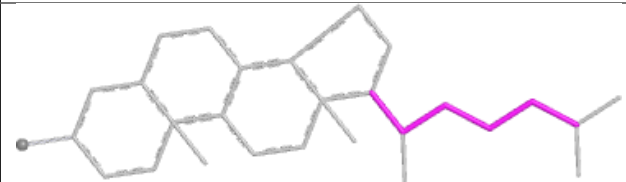
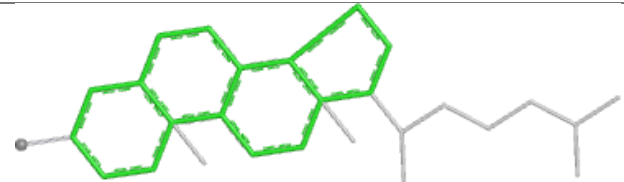








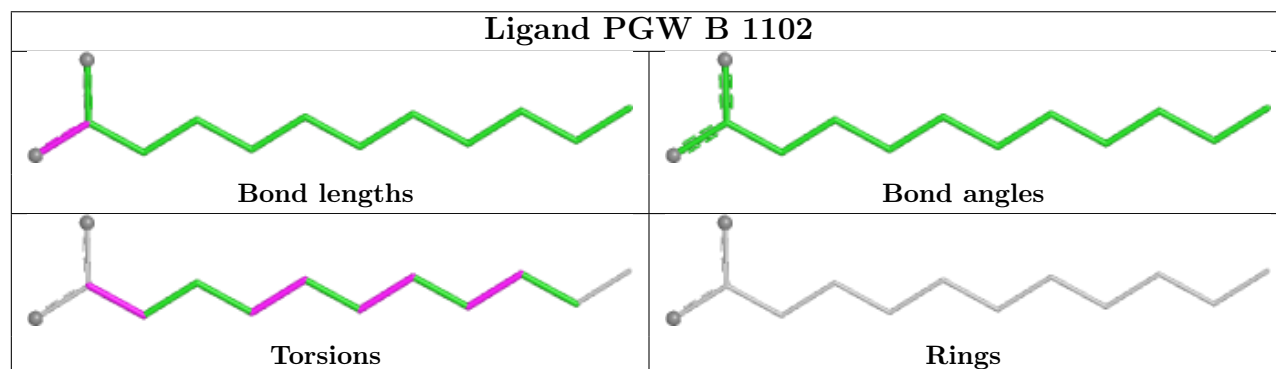
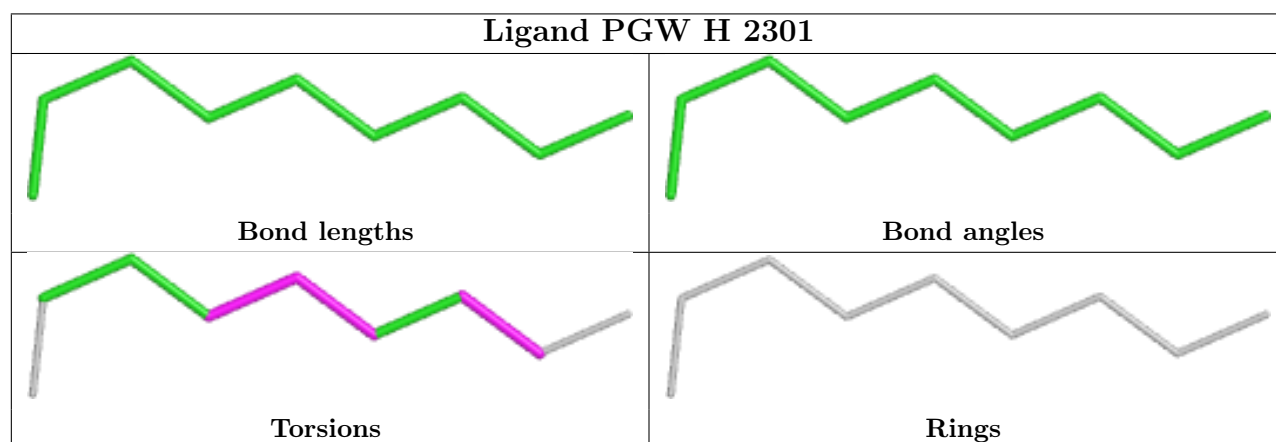
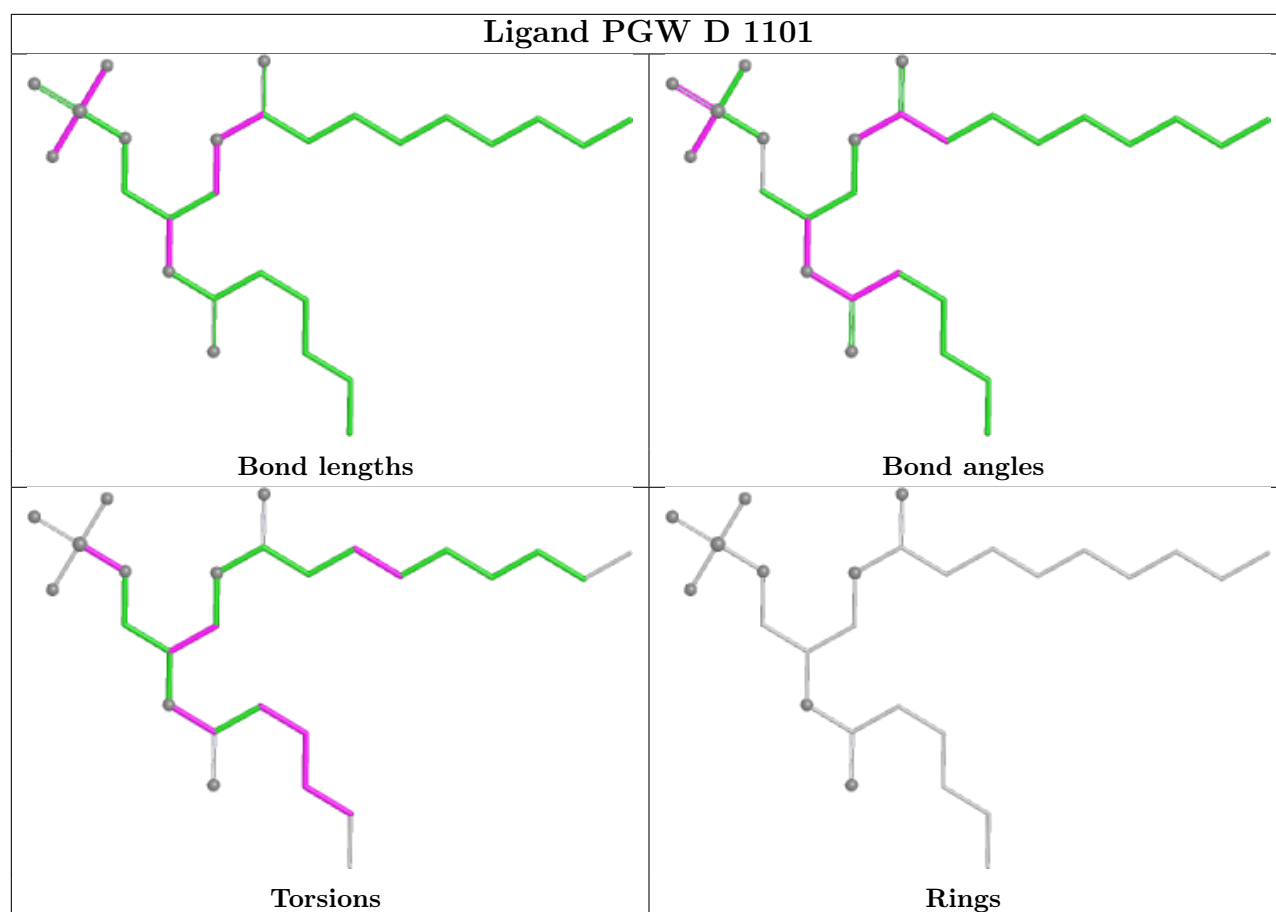


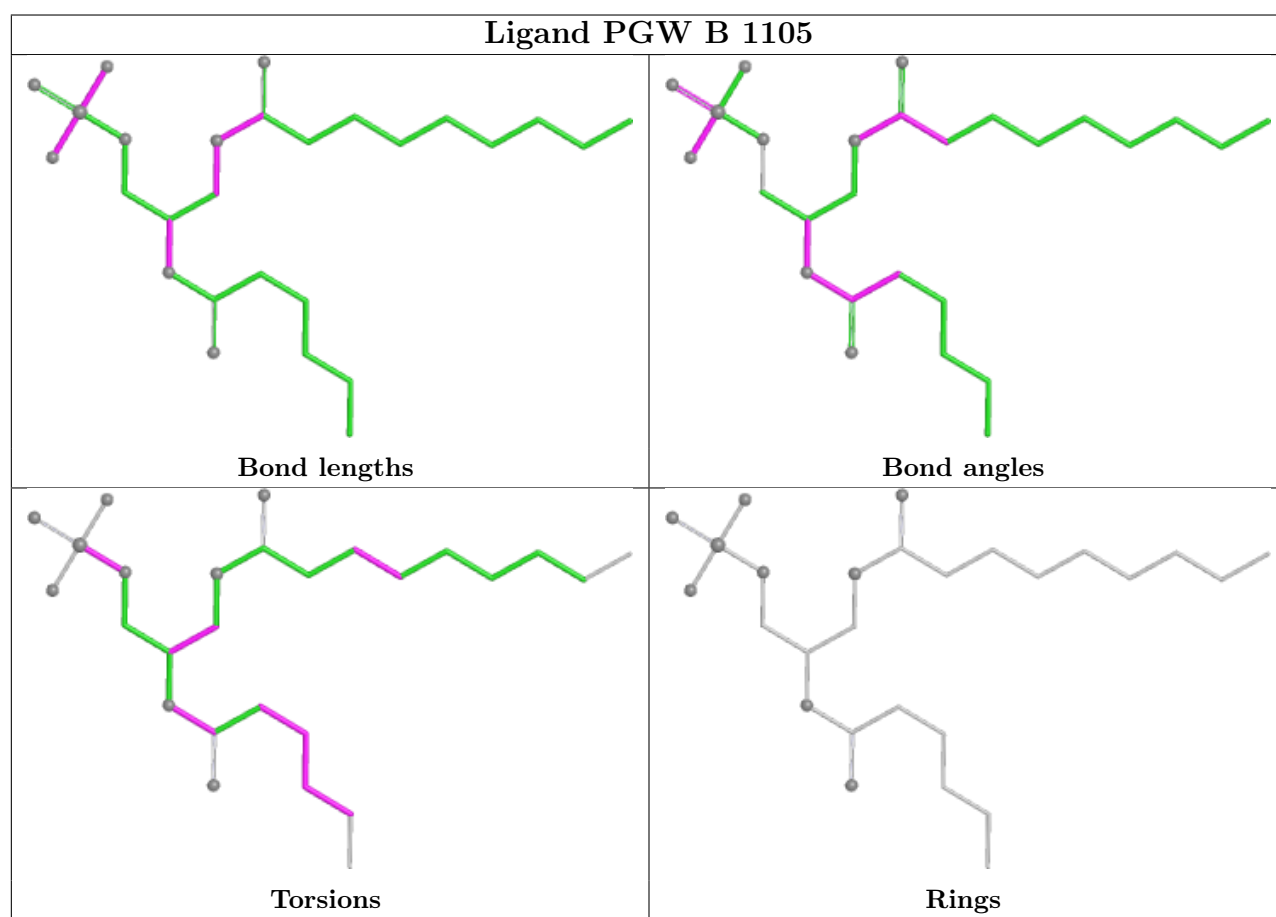
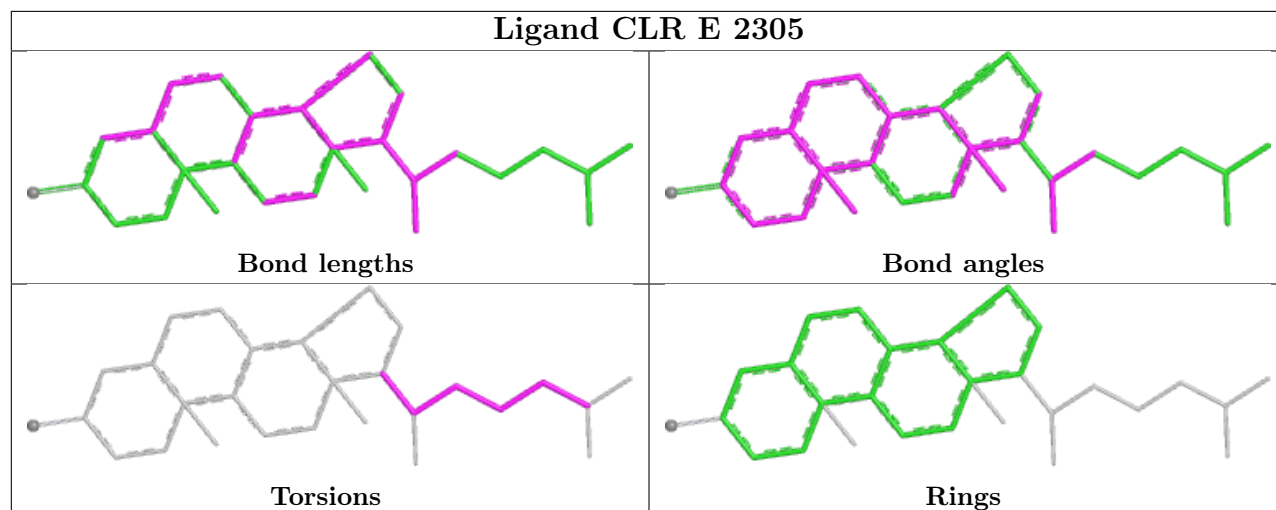
Ligand CLR H 2306	
	
Bond lengths	Bond angles
	
Torsions	Rings

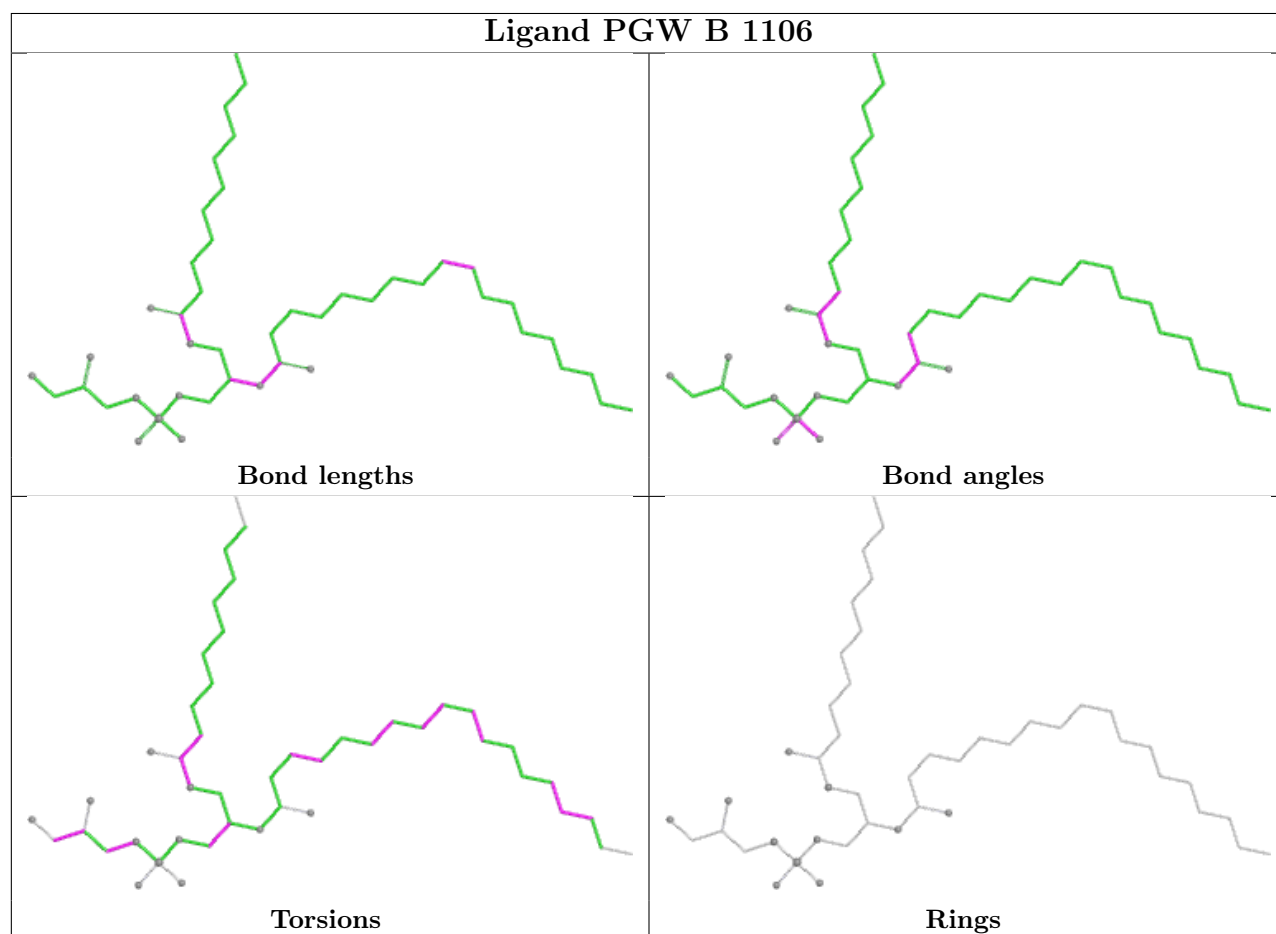
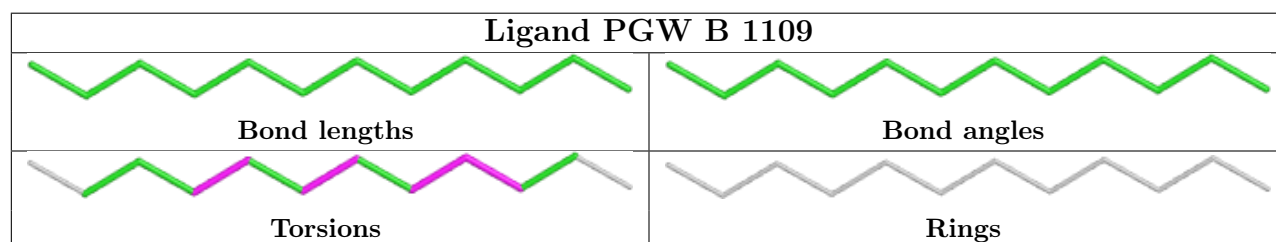
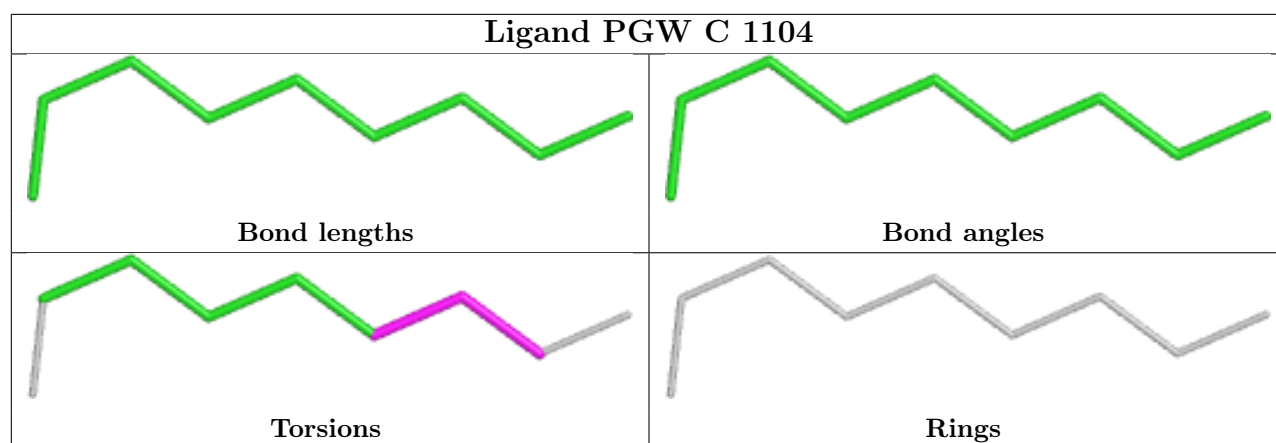
Ligand PGW C 1106	
	
Bond lengths	Bond angles
	
Torsions	Rings

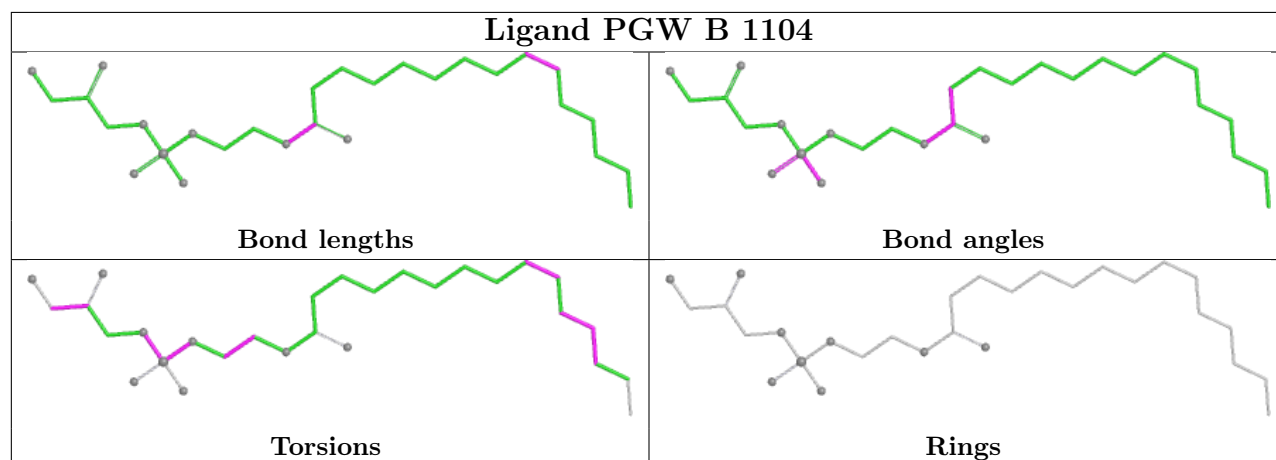
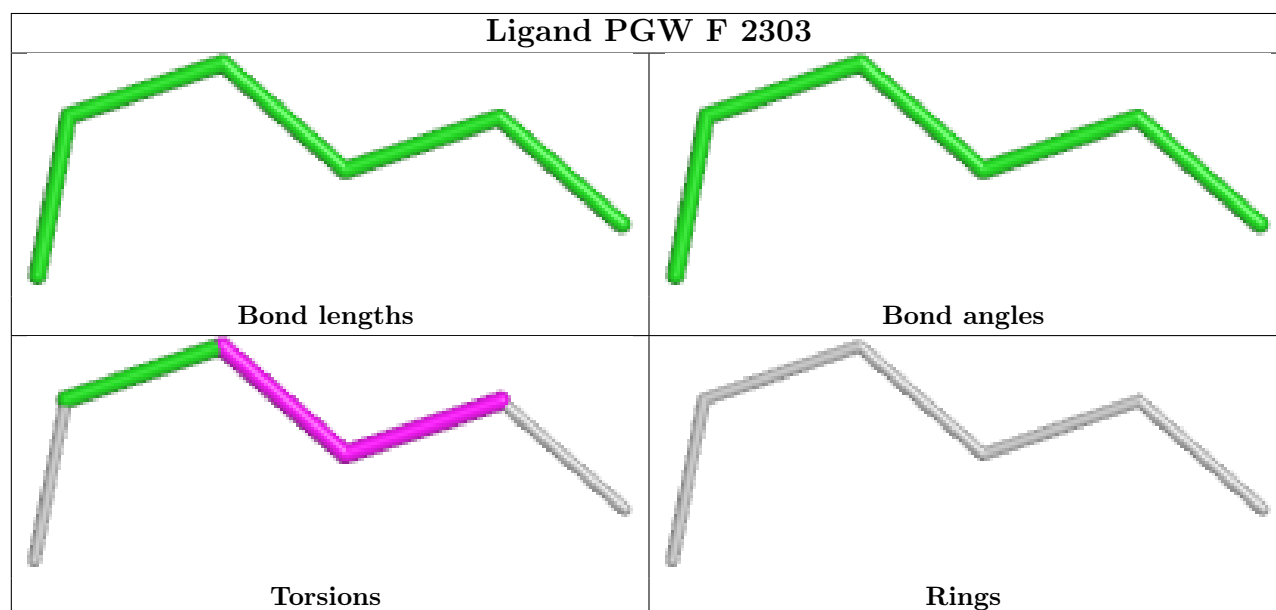
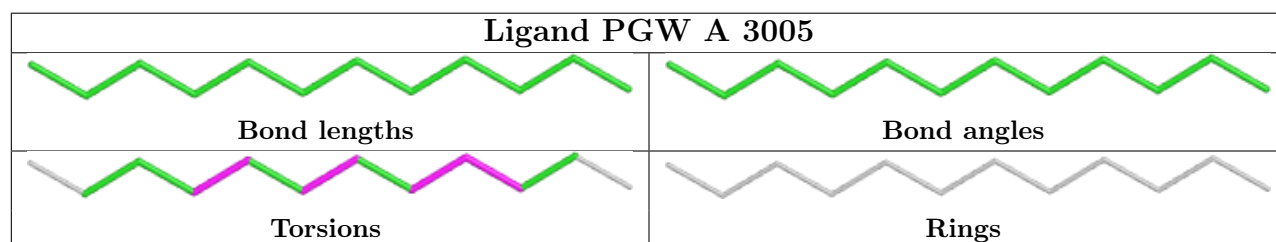
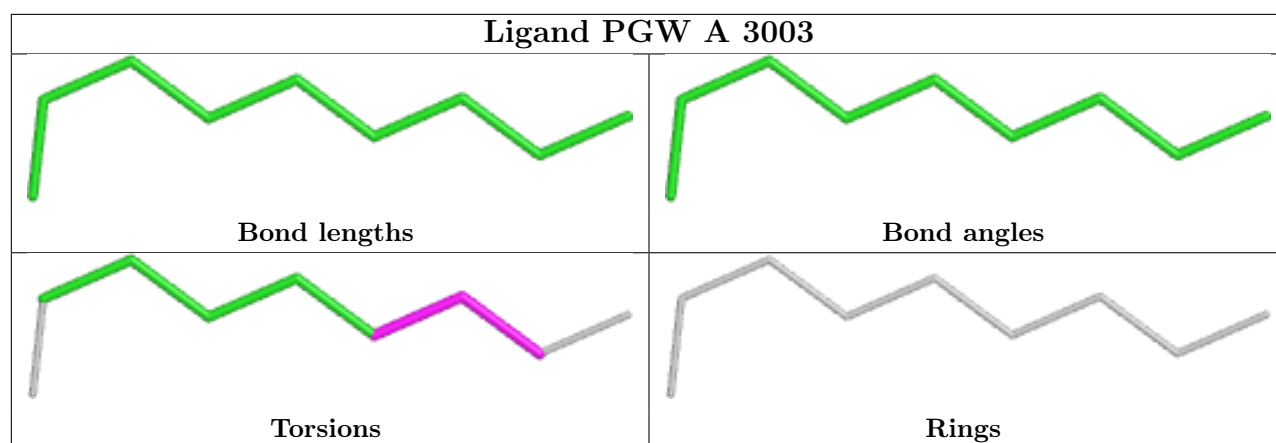
Ligand PGW A 3009	
	
Bond lengths	Bond angles
	
Torsions	Rings

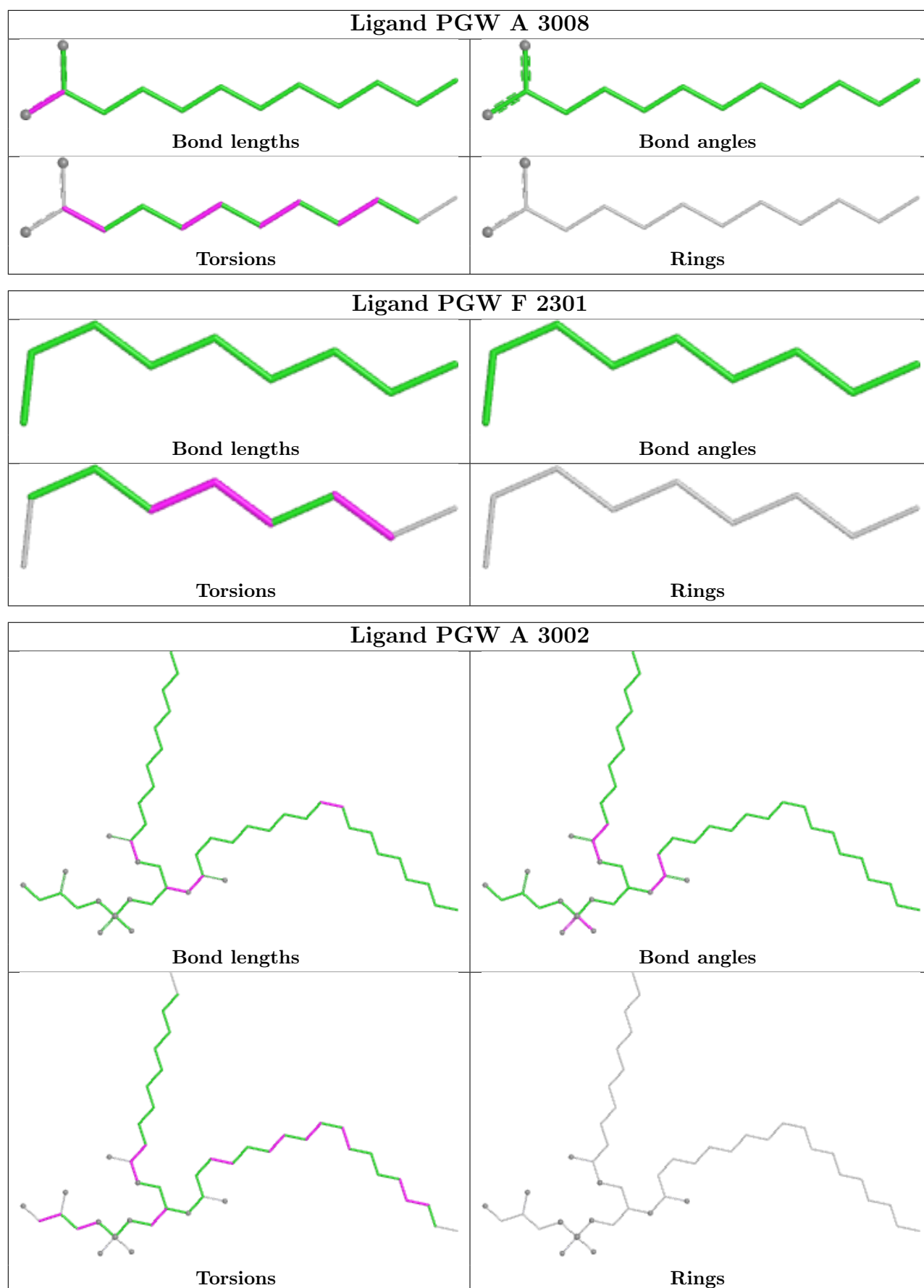
Ligand PGW C 1105	
	
Bond lengths	Bond angles
	
Torsions	Rings

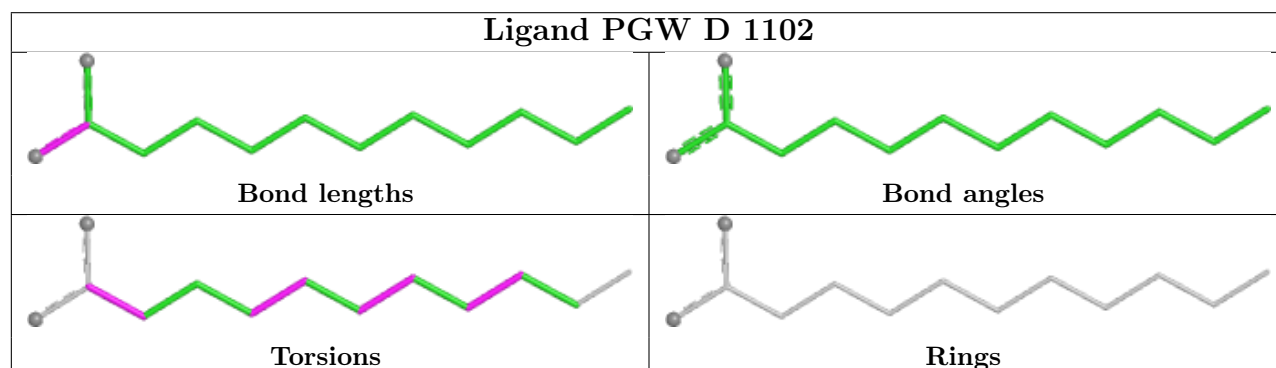
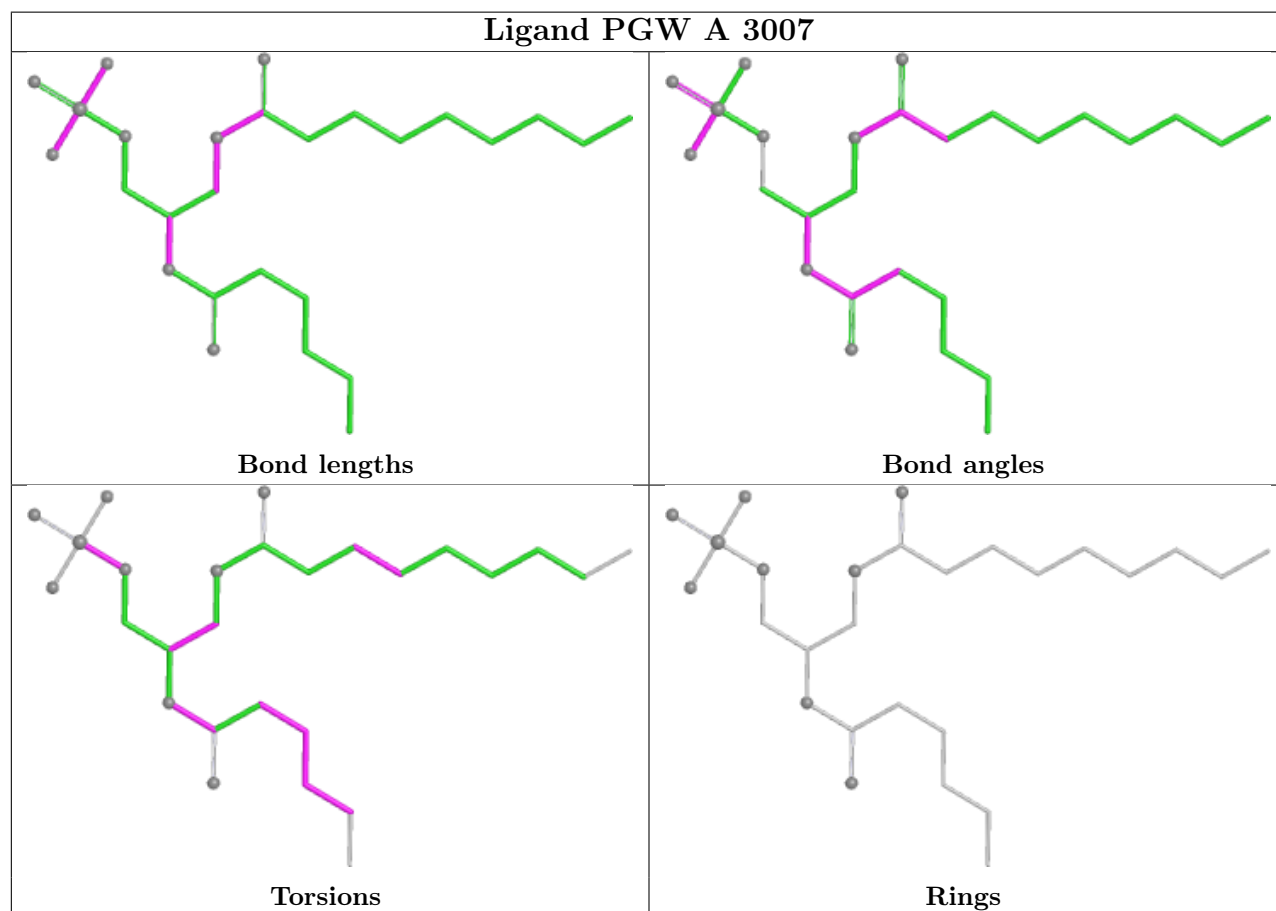
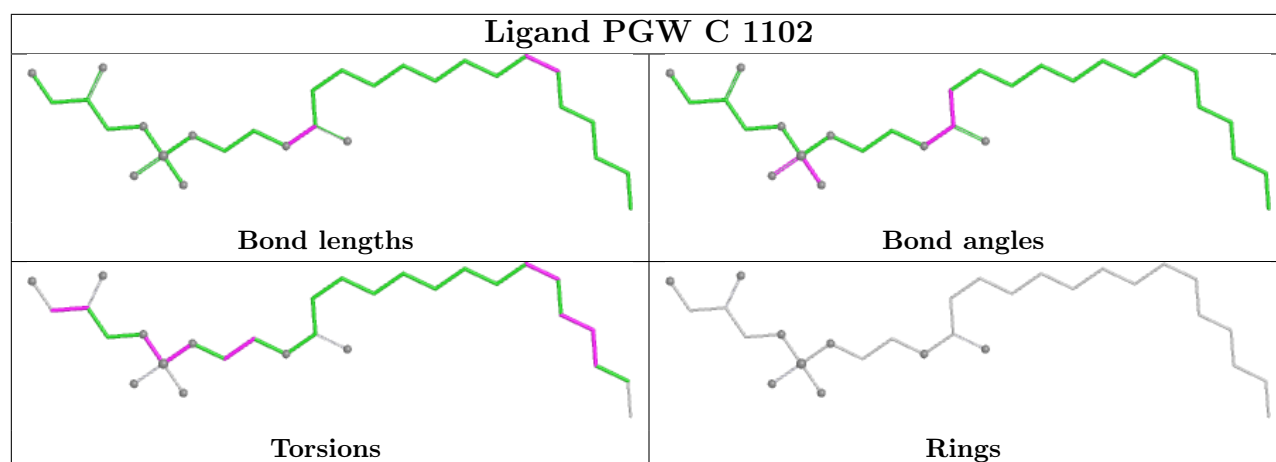












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

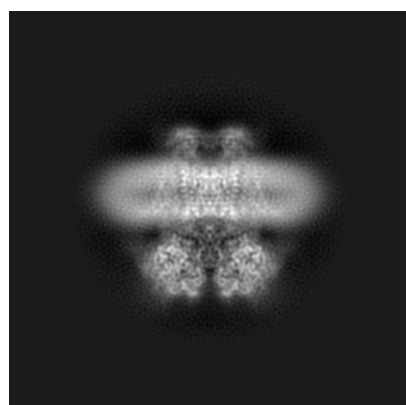
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-21028. These allow visual inspection of the internal detail of the map and identification of artifacts.

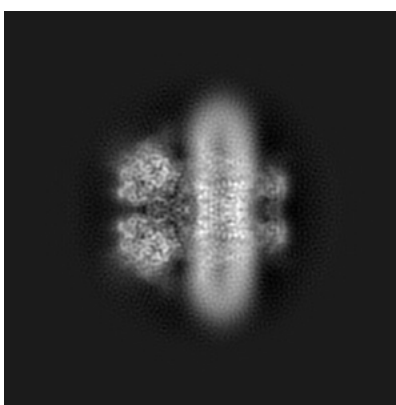
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

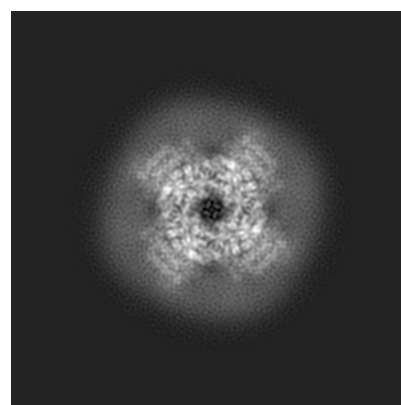
6.1.1 Primary map



X



Y

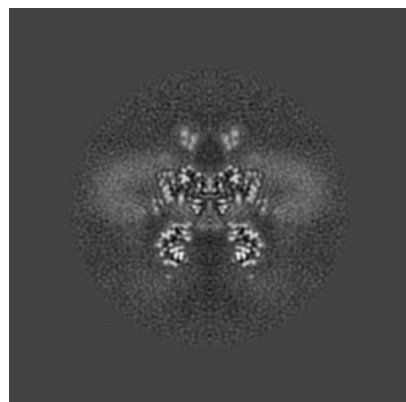


Z

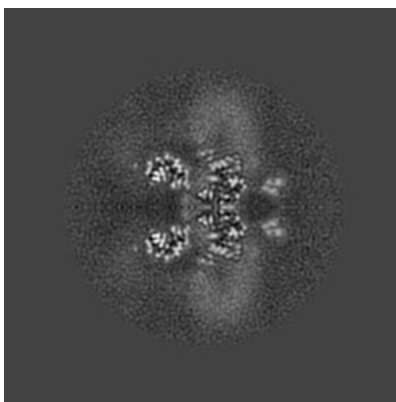
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

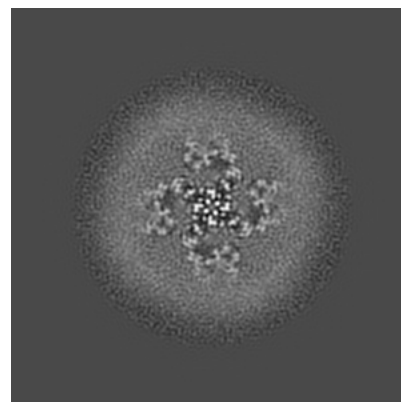
6.2.1 Primary map



X Index: 128



Y Index: 128

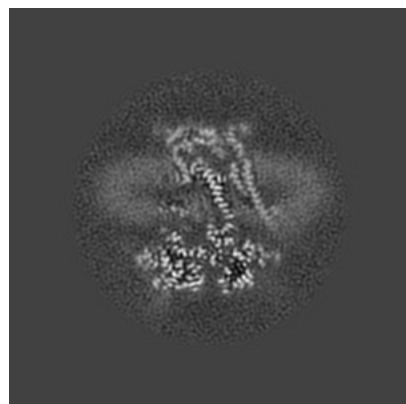


Z Index: 128

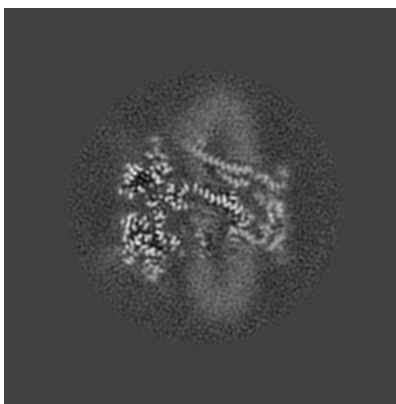
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

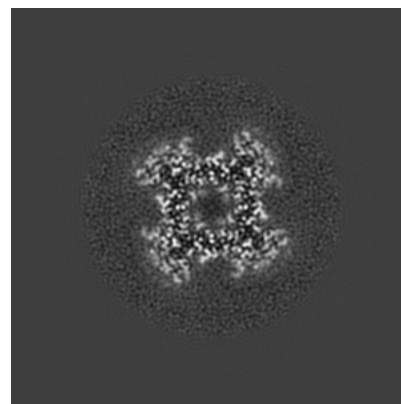
6.3.1 Primary map



X Index: 112



Y Index: 144

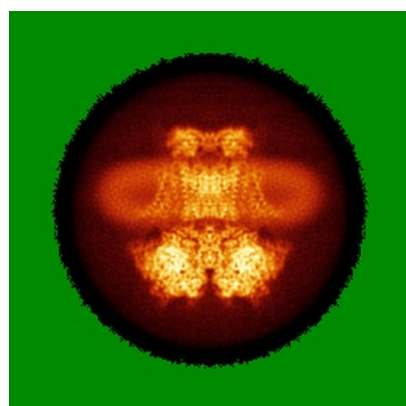


Z Index: 97

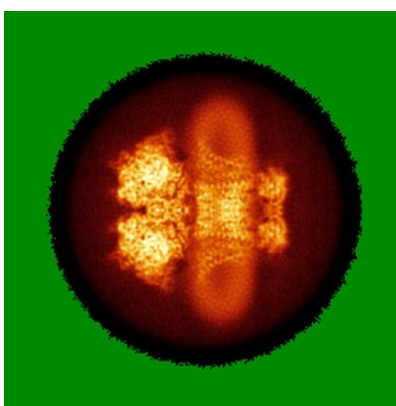
The images above show the largest variance slices of the map in three orthogonal directions.

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

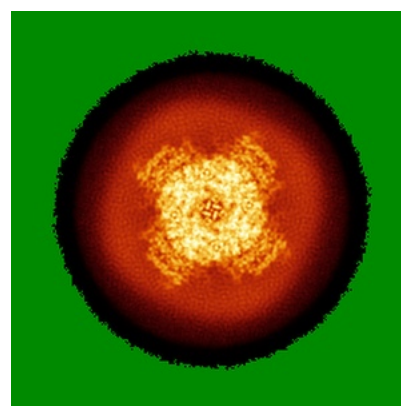
6.4.1 Primary map



X



Y

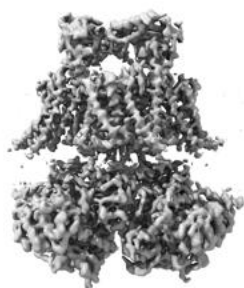


Z

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](#)

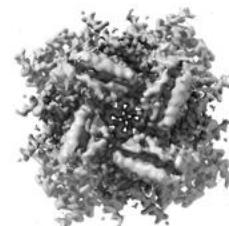
6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 6.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

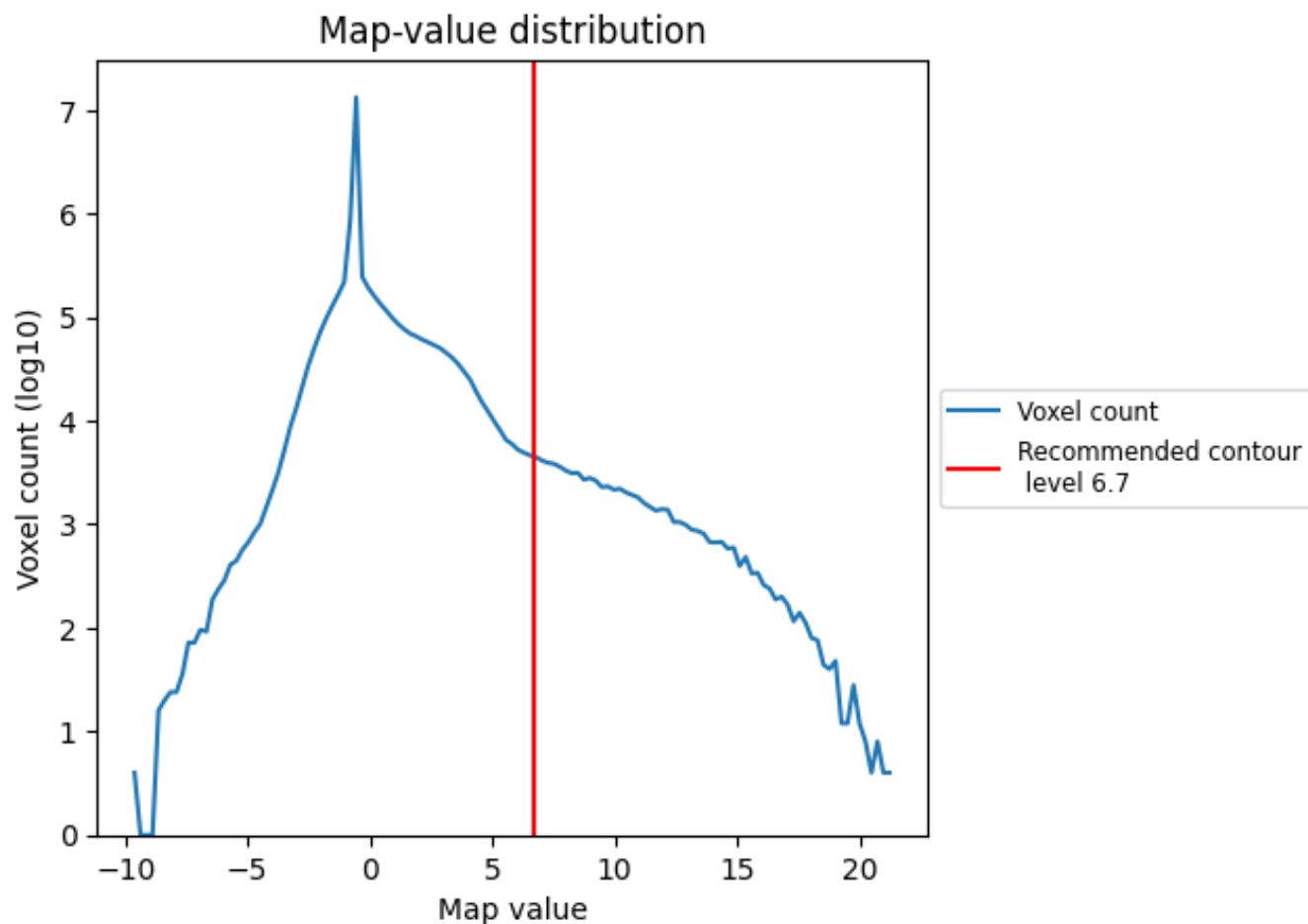
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

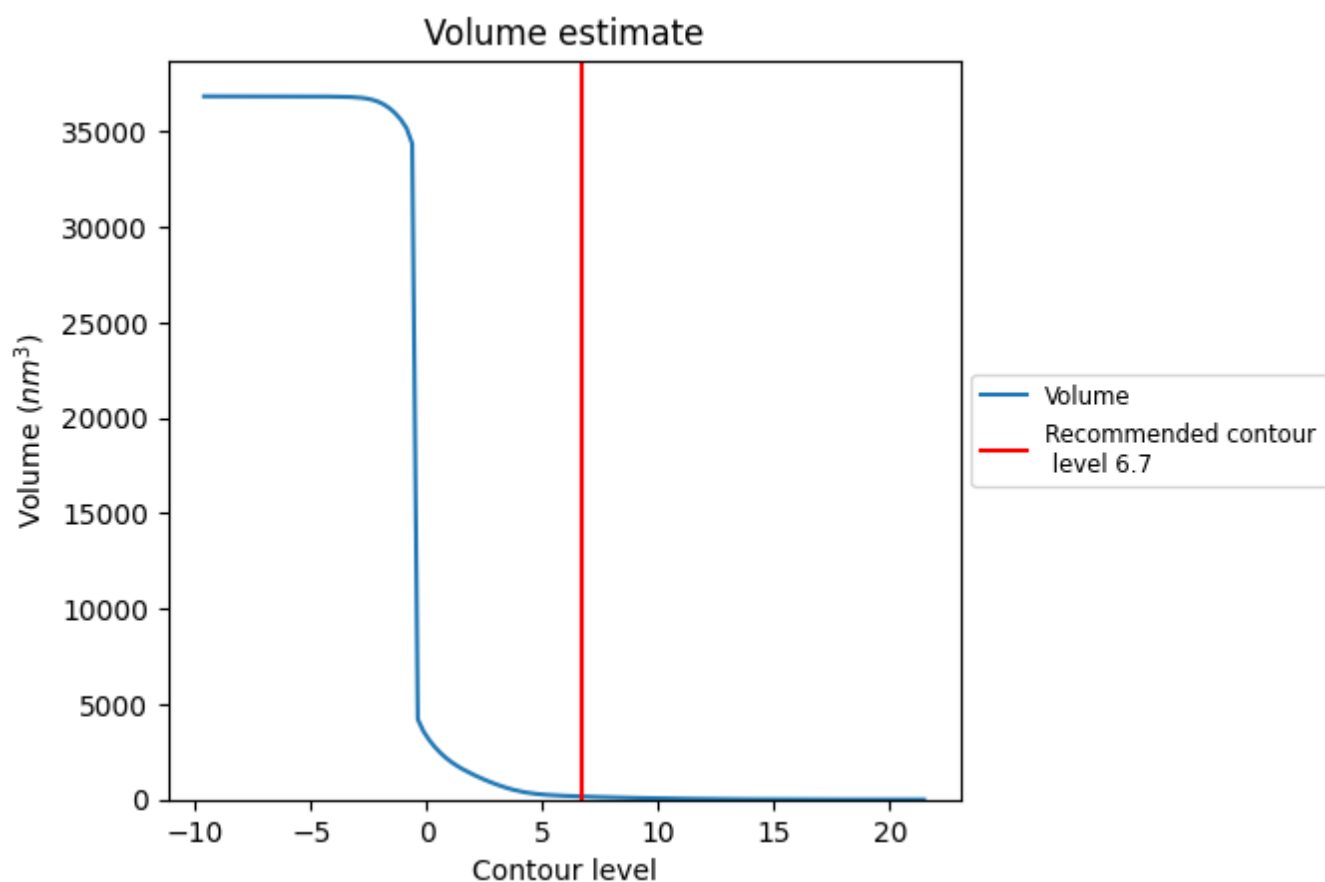
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

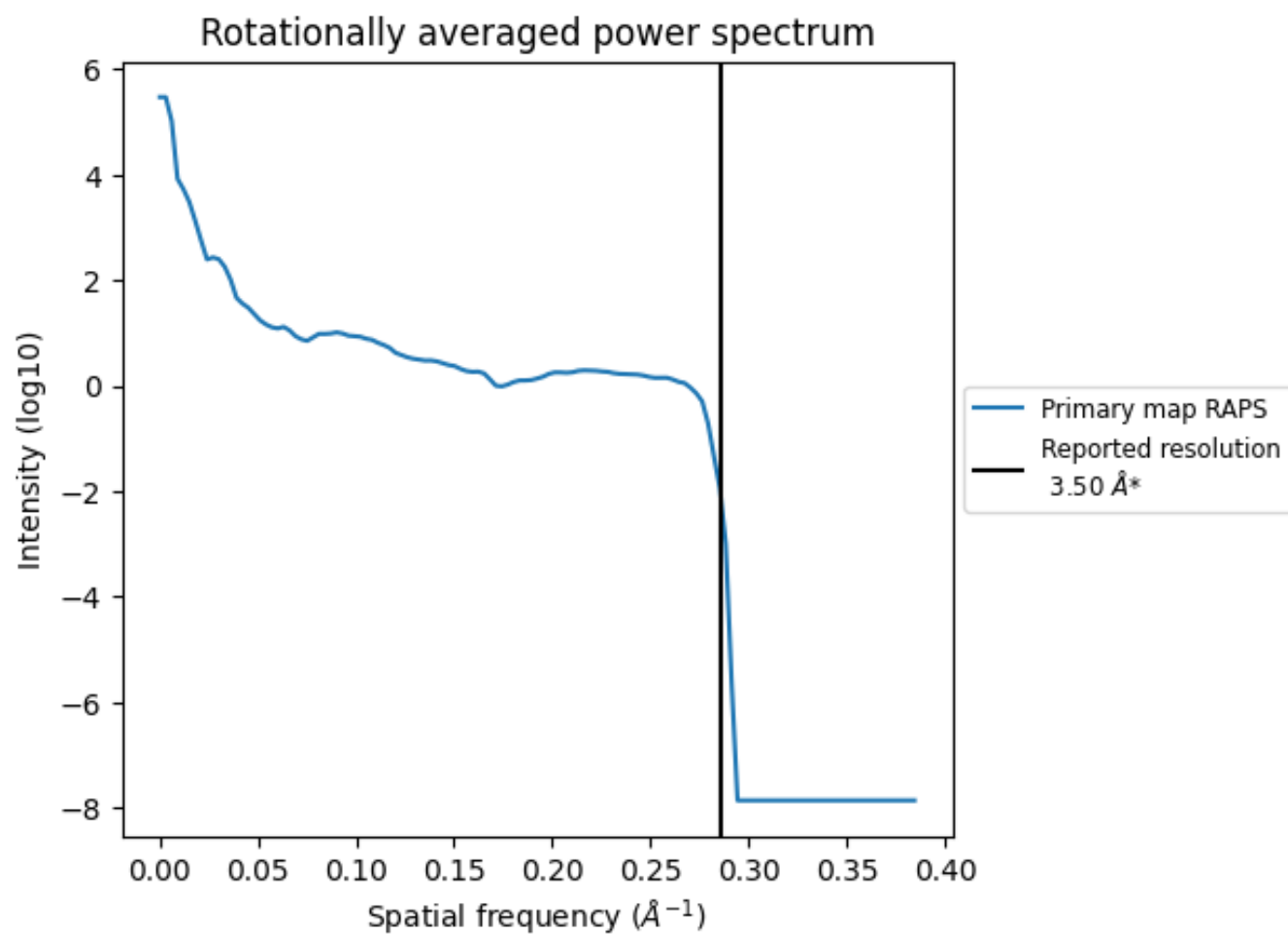
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 161 nm³; this corresponds to an approximate mass of 146 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.286 Å⁻¹

8 Fourier-Shell correlation

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

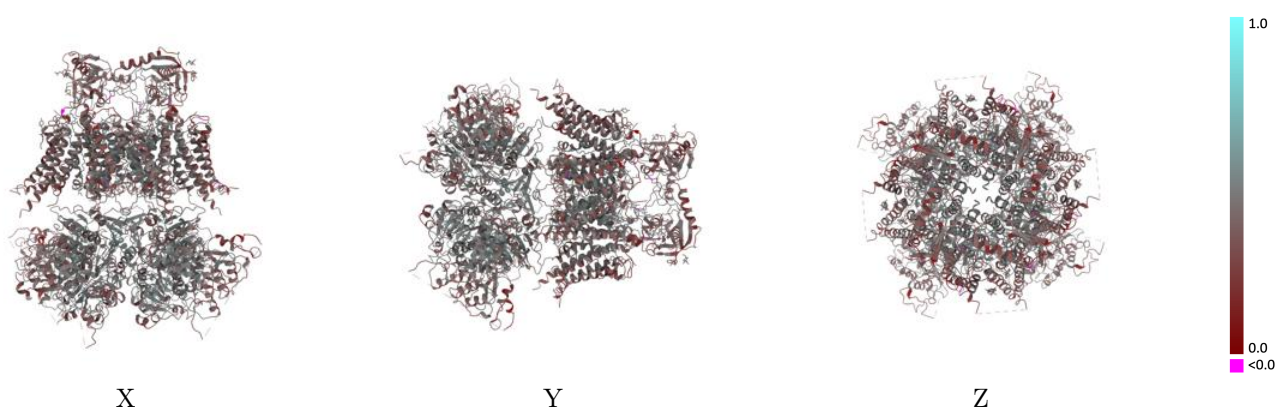
9 Map-model fit [i](#)

This section contains information regarding the fit between EMD map EMD-21028 and PDB model 6V35. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)

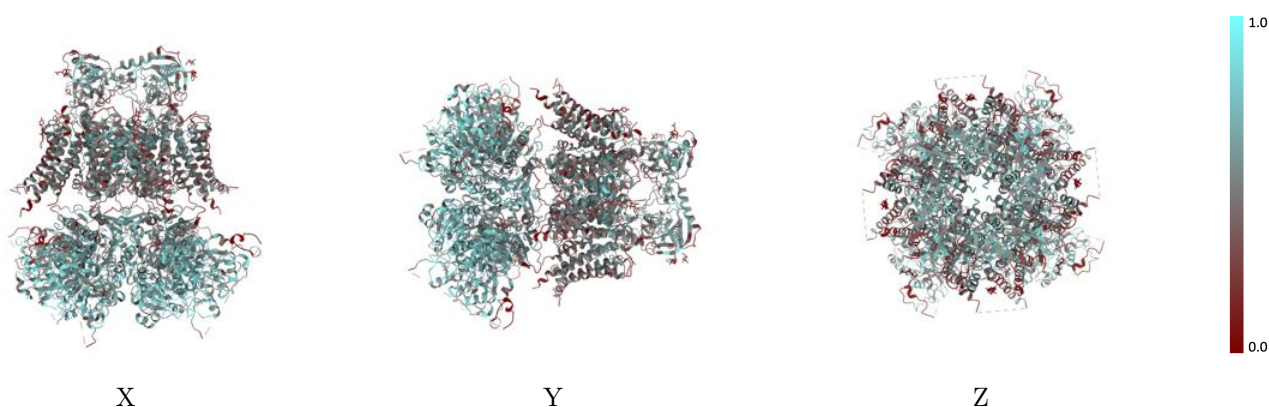
This section was not generated.

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



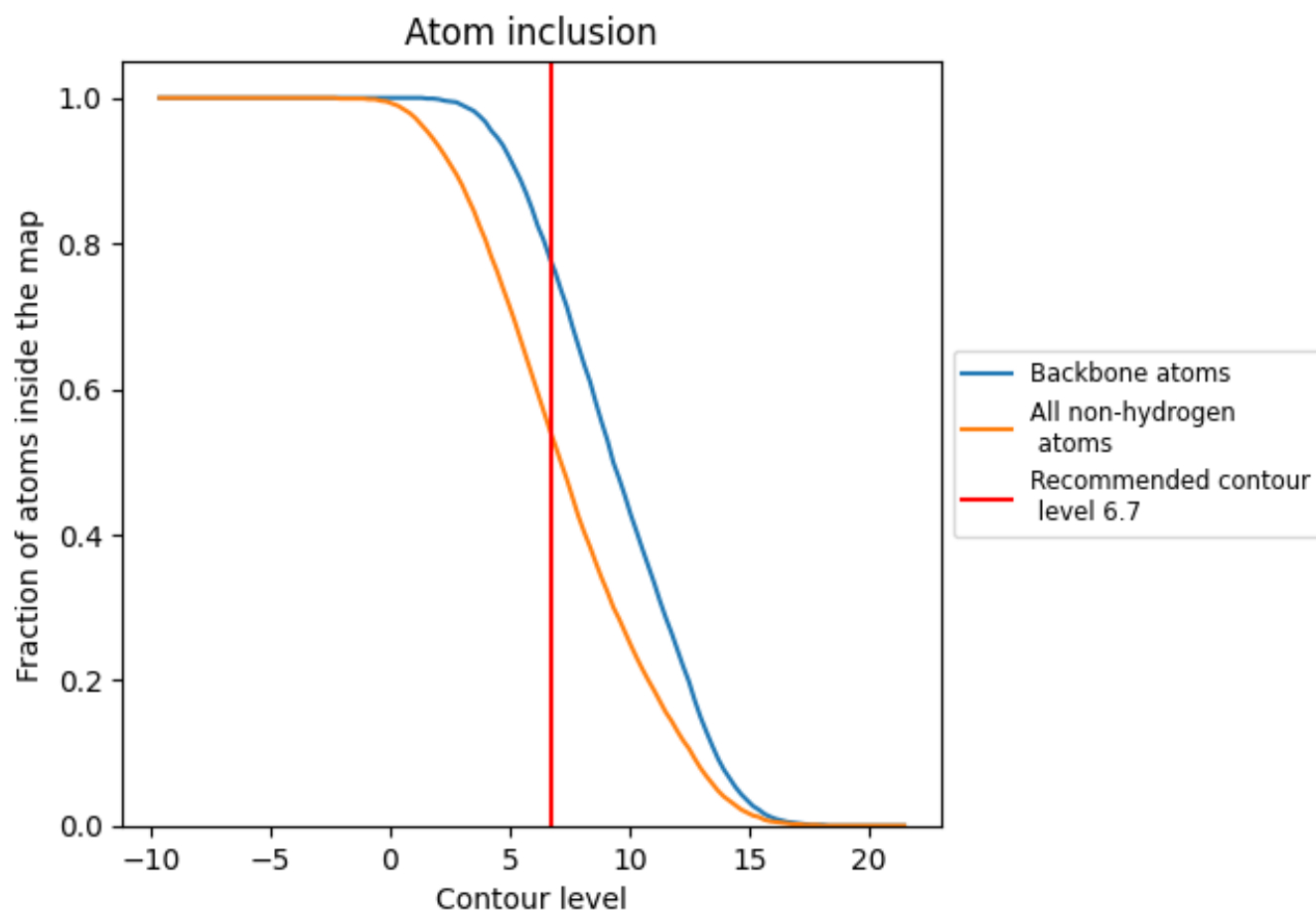
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (6.7).

9.4 Atom inclusion [i](#)



At the recommended contour level, 78% of all backbone atoms, 54% 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 (6.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5410	0.4120
A	0.5640	0.4240
B	0.5650	0.4240
C	0.5660	0.4220
D	0.5660	0.4230
E	0.4310	0.3620
F	0.4300	0.3650
G	0.4310	0.3610
H	0.4330	0.3620

1.0

0.0

<0.0