



## wwPDB EM Validation Summary Report ⓘ

May 6, 2025 – 12:18 PM EDT

PDB ID : 7K4A / pdb\_00007k4a  
EMDB ID : EMD-22662  
Title : Cryo-EM structure of human TRPV6 in the open state  
Authors : Neuberger, A.; Nadezhdin, K.D.; Singh, A.K.; Sobolevsky, A.I.  
Deposited on : 2020-09-15  
Resolution : 3.26 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev118  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0rc1  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.43.1

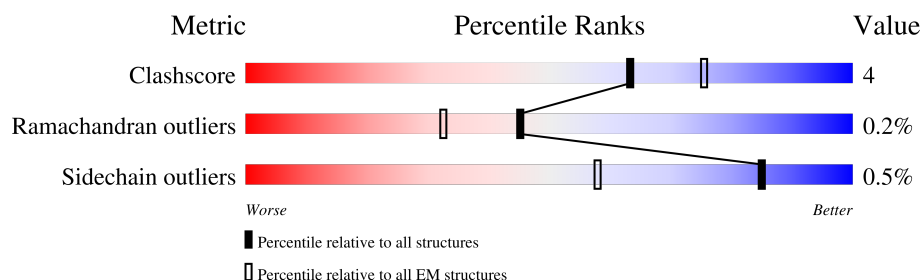
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.26 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	670	<div> <div>14%</div> <div>80%</div> <div>10%</div> <div>10%</div> </div>
1	B	670	<div> <div>14%</div> <div>80%</div> <div>10%</div> <div>10%</div> </div>
1	C	670	<div> <div>14%</div> <div>80%</div> <div>10%</div> <div>10%</div> </div>
1	D	670	<div> <div>14%</div> <div>80%</div> <div>10%</div> <div>10%</div> </div>

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 20825 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 Transient receptor potential cation channel subfamily V member 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	605	Total	C	N	O	S	0	0
			4868	3140	829	859	40		
1	B	605	Total	C	N	O	S	0	0
			4868	3140	829	859	40		
1	C	605	Total	C	N	O	S	0	0
			4868	3140	829	859	40		
1	D	605	Total	C	N	O	S	0	0
			4868	3140	829	859	40		

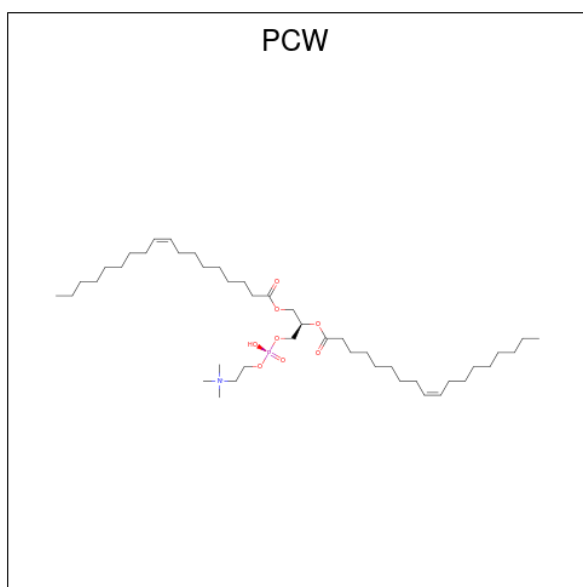
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	668	VAL	-	expression tag	UNP Q9H1D0
A	669	PRO	-	expression tag	UNP Q9H1D0
A	670	ARG	-	expression tag	UNP Q9H1D0
B	668	VAL	-	expression tag	UNP Q9H1D0
B	669	PRO	-	expression tag	UNP Q9H1D0
B	670	ARG	-	expression tag	UNP Q9H1D0
C	668	VAL	-	expression tag	UNP Q9H1D0
C	669	PRO	-	expression tag	UNP Q9H1D0
C	670	ARG	-	expression tag	UNP Q9H1D0
D	668	VAL	-	expression tag	UNP Q9H1D0
D	669	PRO	-	expression tag	UNP Q9H1D0
D	670	ARG	-	expression tag	UNP Q9H1D0

- Molecule 2 is CHOLESTEROL HEMISUCCINATE (CCD ID: Y01) (formula: C<sub>31</sub>H<sub>50</sub>O<sub>4</sub>).



- Molecule 3 is 1,2-DIOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PCW) (formula:  $C_{44}H_{85}NO_8P$ ).



Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
3	A	1	Total	C				0
			16	16				
3	A	1	Total	C				0
			13	13				
3	A	1	Total	C				0
			11	11				
3	A	1	Total	C				0
			8	8				
3	A	1	Total	C				0
			8	8				
3	A	1	Total	C				0
			16	16				
3	A	1	Total	C				0
			8	8				
3	A	1	Total	C	N	O	P	0
			43	33	1	8	1	
3	A	1	Total	C				0
			11	11				
3	A	1	Total	C				0
			16	16				
3	A	1	Total	C				0
			16	16				
3	A	1	Total	C				0
			16	16				
3	B	1	Total	C				0
			16	16				

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Mol	Chain	Residues	Atoms	AltConf
3	B	1	Total C 16 16	0
3	B	1	Total C N O P 51 41 1 8 1	0
3	B	1	Total C 16 16	0
3	B	1	Total C 13 13	0
3	B	1	Total C 11 11	0
3	B	1	Total C 8 8	0
3	B	1	Total C 8 8	0
3	B	1	Total C 16 16	0
3	B	1	Total C 8 8	0
3	B	1	Total C N O P 43 33 1 8 1	0
3	B	1	Total C 11 11	0
3	B	1	Total C 16 16	0
3	C	1	Total C 16 16	0
3	C	1	Total C 16 16	0
3	C	1	Total C N O P 51 41 1 8 1	0
3	C	1	Total C 16 16	0
3	C	1	Total C 13 13	0
3	C	1	Total C 11 11	0
3	C	1	Total C 8 8	0
3	C	1	Total C 8 8	0
3	C	1	Total C 16 16	0

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Mol	Chain	Residues	Atoms	AltConf
3	C	1	Total C 8 8	0
3	C	1	Total C N O P 43 33 1 8 1	0
3	C	1	Total C 11 11	0
3	C	1	Total C 16 16	0
3	D	1	Total C N O P 43 33 1 8 1	0
3	D	1	Total C 11 11	0
3	D	1	Total C 16 16	0
3	D	1	Total C 16 16	0
3	D	1	Total C 16 16	0
3	D	1	Total C N O P 51 41 1 8 1	0
3	D	1	Total C 16 16	0
3	D	1	Total C 13 13	0
3	D	1	Total C 11 11	0
3	D	1	Total C 8 8	0
3	D	1	Total C 8 8	0
3	D	1	Total C 16 16	0
3	D	1	Total C 8 8	0

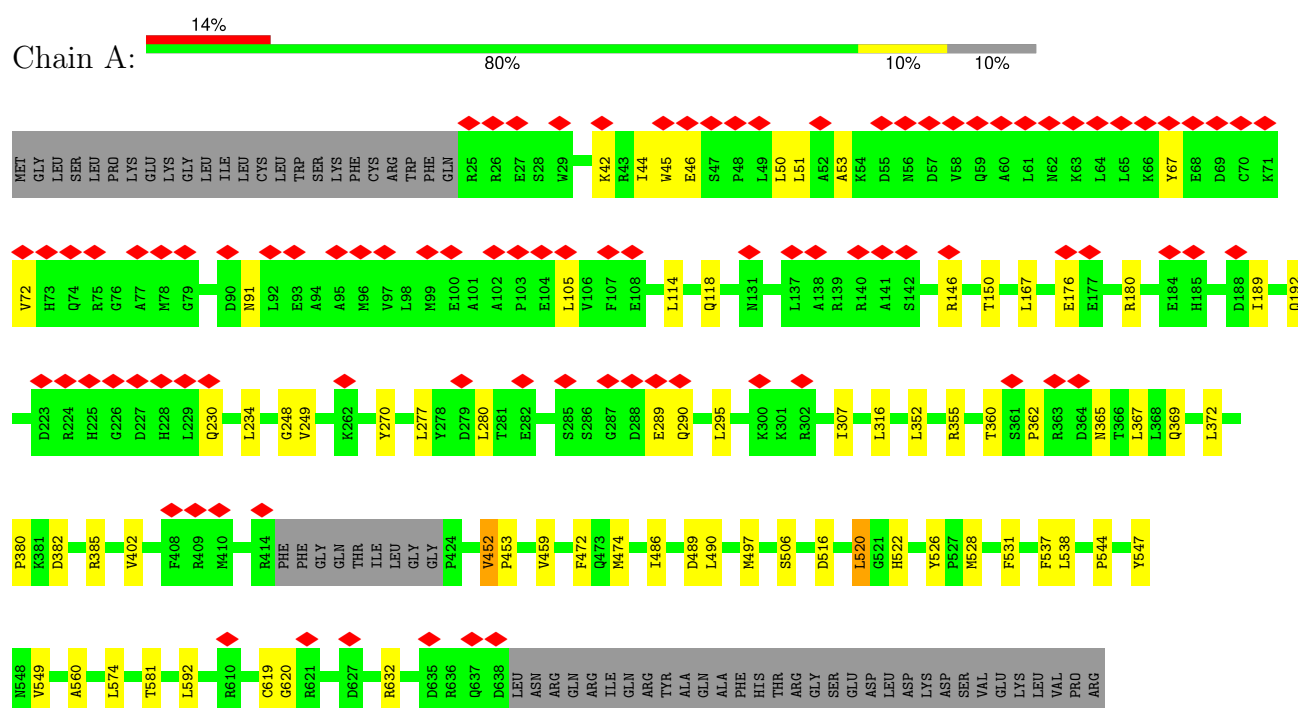
- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	AltConf
4	A	1	Total Ca 1 1	0

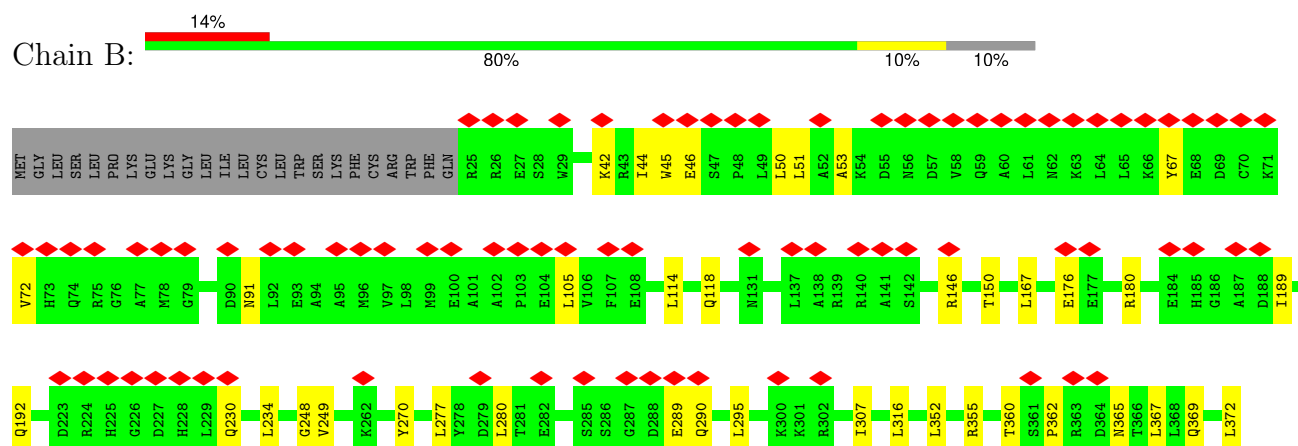
### 3 Residue-property plots

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

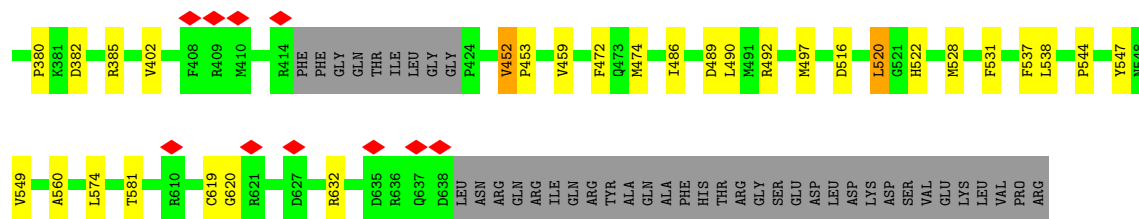
- Molecule 1: Transient receptor potential cation channel subfamily V member 6



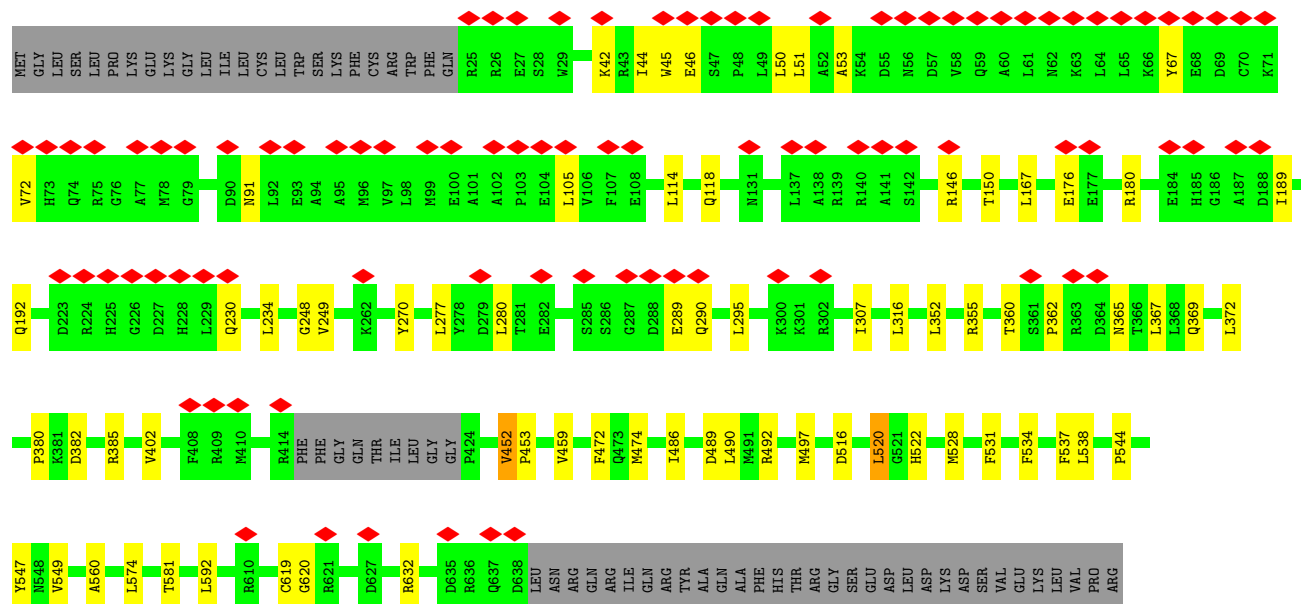
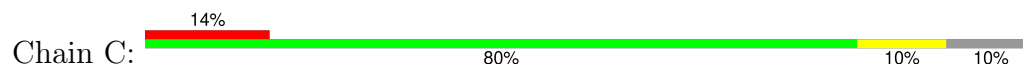
- Molecule 1: Transient receptor potential cation channel subfamily V member 6



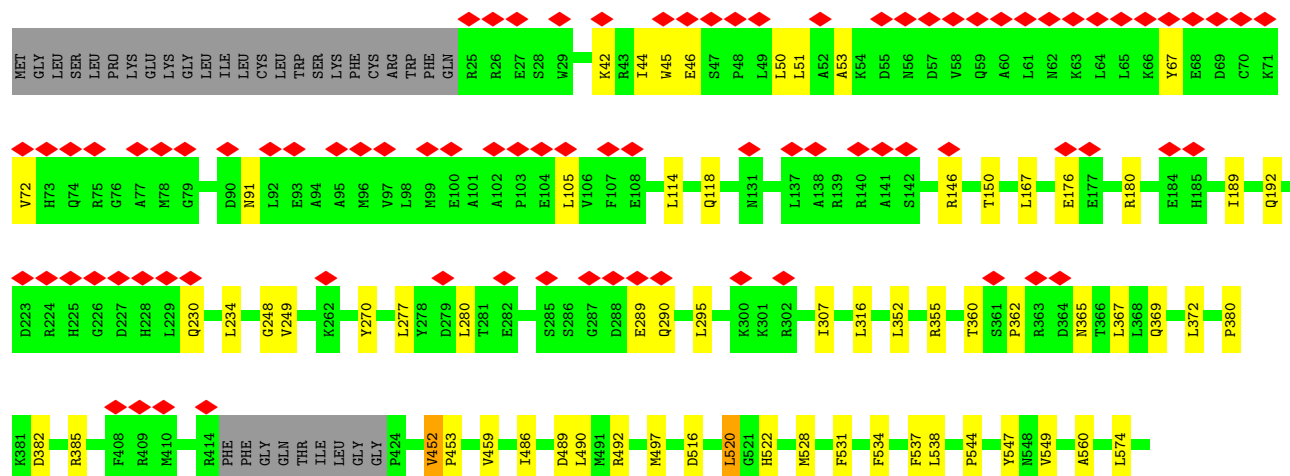
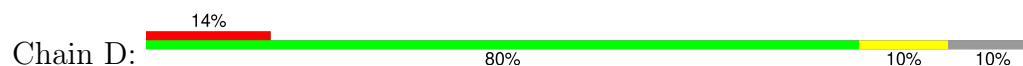


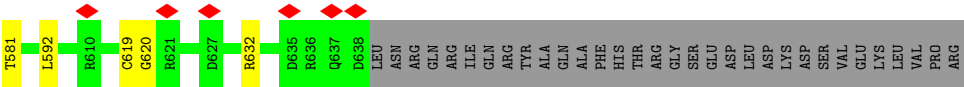


- Molecule 1: Transient receptor potential cation channel subfamily V member 6



- Molecule 1: Transient receptor potential cation channel subfamily V member 6





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	261133	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	58	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.405	Depositor
Minimum map value	-0.811	Depositor
Average map value	0.019	Depositor
Map value standard deviation	0.056	Depositor
Recommended contour level	0.2	Depositor
Map size ( $\text{\AA}$ )	216.064, 216.064, 216.064	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.844, 0.844, 0.844	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: PCW, Y01, CA

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	0.32	0/4978	0.67	0/6751
1	B	0.32	0/4978	0.67	0/6751
1	C	0.32	0/4978	0.67	0/6751
1	D	0.32	0/4978	0.67	0/6751
All	All	0.32	0/19912	0.67	0/27004

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
1	C	0	1
1	D	0	1
All	All	0	4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	67	TYR	Peptide
1	B	67	TYR	Peptide
1	C	67	TYR	Peptide
1	D	67	TYR	Peptide

## 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	4868	0	4926	43	0
1	B	4868	0	4926	43	0
1	C	4868	0	4926	44	0
1	D	4868	0	4926	41	0
2	A	105	0	147	9	0
2	B	140	0	196	11	0
2	C	105	0	147	7	0
2	D	70	0	98	3	0
3	A	233	0	349	3	0
3	B	233	0	349	3	0
3	C	233	0	349	3	0
3	D	233	0	349	2	0
4	A	1	0	0	0	0
All	All	20825	0	21688	169	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 4.

The worst 5 of 169 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:452:VAL:HG13	1:B:453:PRO:HD3	1.83	0.61
1:C:452:VAL:HG13	1:C:453:PRO:HD3	1.82	0.60
1:A:452:VAL:HG13	1:A:453:PRO:HD3	1.83	0.60
1:D:452:VAL:HG13	1:D:453:PRO:HD3	1.83	0.60
1:A:118:GLN:NE2	1:D:270:TYR:OH	2.36	0.58

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	601/670 (90%)	537 (89%)	63 (10%)	1 (0%)	44	71
1	B	601/670 (90%)	537 (89%)	63 (10%)	1 (0%)	44	71
1	C	601/670 (90%)	537 (89%)	63 (10%)	1 (0%)	44	71
1	D	601/670 (90%)	537 (89%)	63 (10%)	1 (0%)	44	71
All	All	2404/2680 (90%)	2148 (89%)	252 (10%)	4 (0%)	45	71

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	380	PRO
1	B	380	PRO
1	C	380	PRO
1	D	380	PRO

### 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	527/584 (90%)	524 (99%)	3 (1%)	84	89
1	B	527/584 (90%)	525 (100%)	2 (0%)	89	92
1	C	527/584 (90%)	524 (99%)	3 (1%)	84	89
1	D	527/584 (90%)	524 (99%)	3 (1%)	84	89
All	All	2108/2336 (90%)	2097 (100%)	11 (0%)	85	90

5 of 11 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	592	LEU
1	D	452	VAL
1	D	592	LEU

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Mol	Chain	Res	Type
1	D	520	LEU
1	B	520	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 40 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	290	GLN
1	D	206	GLN
1	C	426	HIS
1	D	127	ASN
1	D	237	ASN

### 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](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 65 ligands modelled in this entry, 1 is monoatomic - leaving 64 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	$\# Z  > 2$
3	PCW	A	810	-	7,7,53	0.94	0	6,6,61	0.23	0
3	PCW	A	806	-	10,10,53	0.94	0	9,9,61	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PCW	C	708	-	12,12,53	0.84	0	11,11,61	0.47	0
3	PCW	D	710	-	12,12,53	0.83	0	11,11,61	0.46	0
3	PCW	D	704	-	15,15,53	1.56	2 (13%)	14,14,61	0.61	0
2	Y01	D	706	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	B	709	-	12,12,53	0.83	0	11,11,61	0.46	0
3	PCW	A	803	-	50,50,53	1.22	6 (12%)	56,58,61	1.02	4 (7%)
3	PCW	B	716	-	10,10,53	0.98	0	9,9,61	0.49	0
3	PCW	C	707	-	15,15,53	1.54	2 (13%)	14,14,61	0.73	0
3	PCW	C	709	-	10,10,53	0.94	0	9,9,61	0.49	0
3	PCW	D	708	-	50,50,53	1.22	6 (12%)	56,58,61	1.03	4 (7%)
2	Y01	C	703	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	A	813	-	15,15,53	1.54	2 (13%)	14,14,61	0.74	0
3	PCW	C	702	-	15,15,53	1.53	2 (13%)	14,14,61	0.70	0
3	PCW	B	713	-	15,15,53	1.52	2 (13%)	14,14,61	0.73	0
3	PCW	B	710	-	10,10,53	0.94	0	9,9,61	0.49	0
2	Y01	C	704	-	38,38,38	0.45	0	57,57,57	0.45	0
3	PCW	D	709	-	15,15,53	1.54	2 (13%)	14,14,61	0.73	0
3	PCW	C	713	-	7,7,53	0.95	0	6,6,61	0.24	0
2	Y01	B	705	-	38,38,38	0.45	0	57,57,57	0.45	0
3	PCW	B	711	-	7,7,53	0.91	0	6,6,61	0.34	0
3	PCW	A	804	-	15,15,53	1.54	2 (13%)	14,14,61	0.73	0
3	PCW	D	701	-	42,42,53	1.32	6 (14%)	48,50,61	1.03	3 (6%)
3	PCW	B	712	-	7,7,53	0.93	0	6,6,61	0.32	0
3	PCW	A	815	-	15,15,53	1.56	2 (13%)	14,14,61	0.60	0
3	PCW	C	701	-	15,15,53	1.56	2 (13%)	14,14,61	0.60	0
3	PCW	C	711	-	7,7,53	0.93	0	6,6,61	0.31	0
3	PCW	A	811	-	42,42,53	1.31	6 (14%)	48,50,61	1.03	3 (6%)
3	PCW	D	713	-	7,7,53	0.93	0	6,6,61	0.31	0
2	Y01	B	701	-	38,38,38	0.47	0	57,57,57	0.63	0
3	PCW	A	807	-	7,7,53	0.91	0	6,6,61	0.34	0
3	PCW	B	715	-	42,42,53	1.32	6 (14%)	48,50,61	1.03	3 (6%)
3	PCW	D	702	-	10,10,53	0.98	0	9,9,61	0.48	0
3	PCW	D	714	-	15,15,53	1.52	2 (13%)	14,14,61	0.73	0
3	PCW	C	714	-	42,42,53	1.31	6 (14%)	48,50,61	1.03	3 (6%)
3	PCW	D	705	-	15,15,53	1.53	2 (13%)	14,14,61	0.70	0
2	Y01	A	802	-	38,38,38	0.45	0	57,57,57	0.45	0
3	PCW	D	703	-	15,15,53	1.53	2 (13%)	14,14,61	0.74	0
3	PCW	D	715	-	7,7,53	0.94	0	6,6,61	0.23	0



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PCW	B	717	-	15,15,53	1.53	2 (13%)	14,14,61	0.74	0
3	PCW	D	712	-	7,7,53	0.91	0	6,6,61	0.34	0
2	Y01	C	705	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	C	715	-	10,10,53	0.98	0	9,9,61	0.49	0
2	Y01	B	704	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	B	702	-	15,15,53	1.56	2 (13%)	14,14,61	0.60	0
3	PCW	C	716	-	15,15,53	1.53	2 (13%)	14,14,61	0.73	0
3	PCW	C	712	-	15,15,53	1.53	2 (13%)	14,14,61	0.73	0
2	Y01	A	801	-	38,38,38	0.47	0	57,57,57	0.63	0
3	PCW	D	711	-	10,10,53	0.94	0	9,9,61	0.49	0
3	PCW	B	708	-	15,15,53	1.54	2 (13%)	14,14,61	0.73	0
3	PCW	B	703	-	15,15,53	1.53	2 (13%)	14,14,61	0.70	0
3	PCW	A	805	-	12,12,53	0.83	0	11,11,61	0.46	0
3	PCW	C	706	-	50,50,53	1.22	6 (12%)	56,58,61	1.03	4 (7%)
2	Y01	B	706	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	C	710	-	7,7,53	0.91	0	6,6,61	0.34	0
3	PCW	B	707	-	50,50,53	1.22	5 (10%)	56,58,61	1.01	4 (7%)
3	PCW	A	809	-	15,15,53	1.52	2 (13%)	14,14,61	0.73	0
3	PCW	A	816	-	15,15,53	1.53	2 (13%)	14,14,61	0.70	0
3	PCW	A	812	-	10,10,53	0.98	0	9,9,61	0.48	0
2	Y01	A	814	-	38,38,38	0.47	0	57,57,57	0.64	0
3	PCW	B	714	-	7,7,53	0.95	0	6,6,61	0.24	0
3	PCW	A	808	-	7,7,53	0.92	0	6,6,61	0.31	0
2	Y01	D	707	-	38,38,38	0.45	0	57,57,57	0.45	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PCW	A	810	-	-	3/5/5/57	-
3	PCW	A	806	-	-	5/8/8/57	-
3	PCW	C	708	-	-	4/10/10/57	-
3	PCW	D	710	-	-	4/10/10/57	-
3	PCW	D	704	-	-	8/13/13/57	-
2	Y01	D	706	-	-	11/19/77/77	0/4/4/4
3	PCW	B	709	-	-	4/10/10/57	-
3	PCW	A	803	-	-	27/54/54/57	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PCW	B	716	-	-	4/8/8/57	-
3	PCW	C	707	-	-	9/13/13/57	-
3	PCW	C	709	-	-	5/8/8/57	-
3	PCW	D	708	-	-	26/54/54/57	-
2	Y01	C	703	-	-	11/19/77/77	0/4/4/4
3	PCW	A	813	-	-	5/13/13/57	-
3	PCW	C	702	-	-	9/13/13/57	-
3	PCW	B	713	-	-	8/13/13/57	-
3	PCW	B	710	-	-	5/8/8/57	-
2	Y01	C	704	-	-	10/19/77/77	0/4/4/4
3	PCW	D	709	-	-	9/13/13/57	-
3	PCW	C	713	-	-	3/5/5/57	-
2	Y01	B	705	-	-	10/19/77/77	0/4/4/4
3	PCW	B	711	-	-	3/5/5/57	-
3	PCW	A	804	-	-	9/13/13/57	-
3	PCW	D	701	-	-	21/46/46/57	-
3	PCW	B	712	-	-	3/5/5/57	-
3	PCW	A	815	-	-	8/13/13/57	-
3	PCW	C	701	-	-	8/13/13/57	-
3	PCW	C	711	-	-	3/5/5/57	-
3	PCW	A	811	-	-	22/46/46/57	-
3	PCW	D	713	-	-	3/5/5/57	-
2	Y01	B	701	-	-	15/19/77/77	0/4/4/4
3	PCW	A	807	-	-	3/5/5/57	-
3	PCW	B	715	-	-	22/46/46/57	-
3	PCW	D	702	-	-	4/8/8/57	-
3	PCW	D	714	-	-	8/13/13/57	-
3	PCW	C	714	-	-	22/46/46/57	-
3	PCW	D	705	-	-	9/13/13/57	-
2	Y01	A	802	-	-	10/19/77/77	0/4/4/4
3	PCW	D	703	-	-	5/13/13/57	-
3	PCW	D	715	-	-	3/5/5/57	-
3	PCW	B	717	-	-	5/13/13/57	-
3	PCW	D	712	-	-	3/5/5/57	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	Y01	C	705	-	-	15/19/77/77	0/4/4/4
3	PCW	C	715	-	-	4/8/8/57	-
2	Y01	B	704	-	-	11/19/77/77	0/4/4/4
3	PCW	B	702	-	-	8/13/13/57	-
3	PCW	C	716	-	-	5/13/13/57	-
3	PCW	C	712	-	-	8/13/13/57	-
2	Y01	A	801	-	-	11/19/77/77	0/4/4/4
3	PCW	D	711	-	-	5/8/8/57	-
3	PCW	B	708	-	-	9/13/13/57	-
3	PCW	B	703	-	-	9/13/13/57	-
3	PCW	A	805	-	-	4/10/10/57	-
3	PCW	C	706	-	-	26/54/54/57	-
2	Y01	B	706	-	-	15/19/77/77	0/4/4/4
3	PCW	C	710	-	-	3/5/5/57	-
3	PCW	B	707	-	-	26/54/54/57	-
3	PCW	A	809	-	-	8/13/13/57	-
3	PCW	A	816	-	-	10/13/13/57	-
3	PCW	A	812	-	-	4/8/8/57	-
2	Y01	A	814	-	-	15/19/77/77	0/4/4/4
3	PCW	B	714	-	-	3/5/5/57	-
3	PCW	A	808	-	-	3/5/5/57	-
2	Y01	D	707	-	-	10/19/77/77	0/4/4/4

The worst 5 of 87 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	701	PCW	C20-C19	4.23	1.55	1.31
3	D	704	PCW	C20-C19	4.23	1.55	1.31
3	A	815	PCW	C20-C19	4.23	1.55	1.31
3	B	702	PCW	C20-C19	4.22	1.55	1.31
3	A	813	PCW	C20-C19	4.21	1.55	1.31

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	803	PCW	O2-C31-C32	4.20	120.57	111.48
3	D	708	PCW	O2-C31-C32	4.18	120.52	111.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	707	PCW	O2-C31-C32	4.18	120.52	111.48
3	C	706	PCW	O2-C31-C32	4.17	120.50	111.48
3	C	714	PCW	O2-C31-C32	3.57	119.20	111.48

There are no chirality outliers.

5 of 581 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	814	Y01	CAV-CBC-OAW-CAY
2	A	814	Y01	CAM-CAY-OAW-CBC
2	B	701	Y01	CAV-CBC-OAW-CAY
2	B	701	Y01	CAM-CAY-OAW-CBC
2	B	706	Y01	CAV-CBC-OAW-CAY

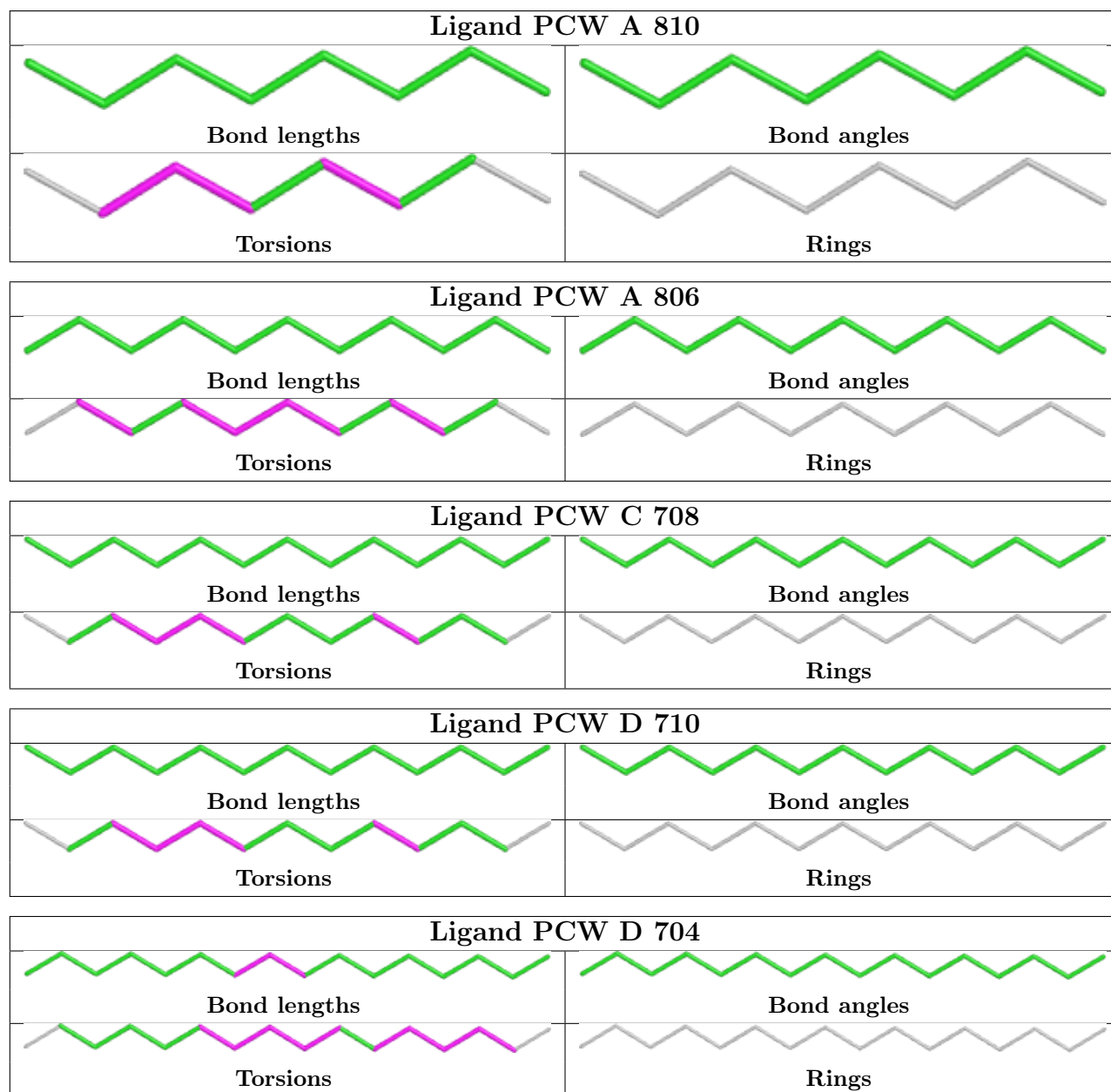
There are no ring outliers.

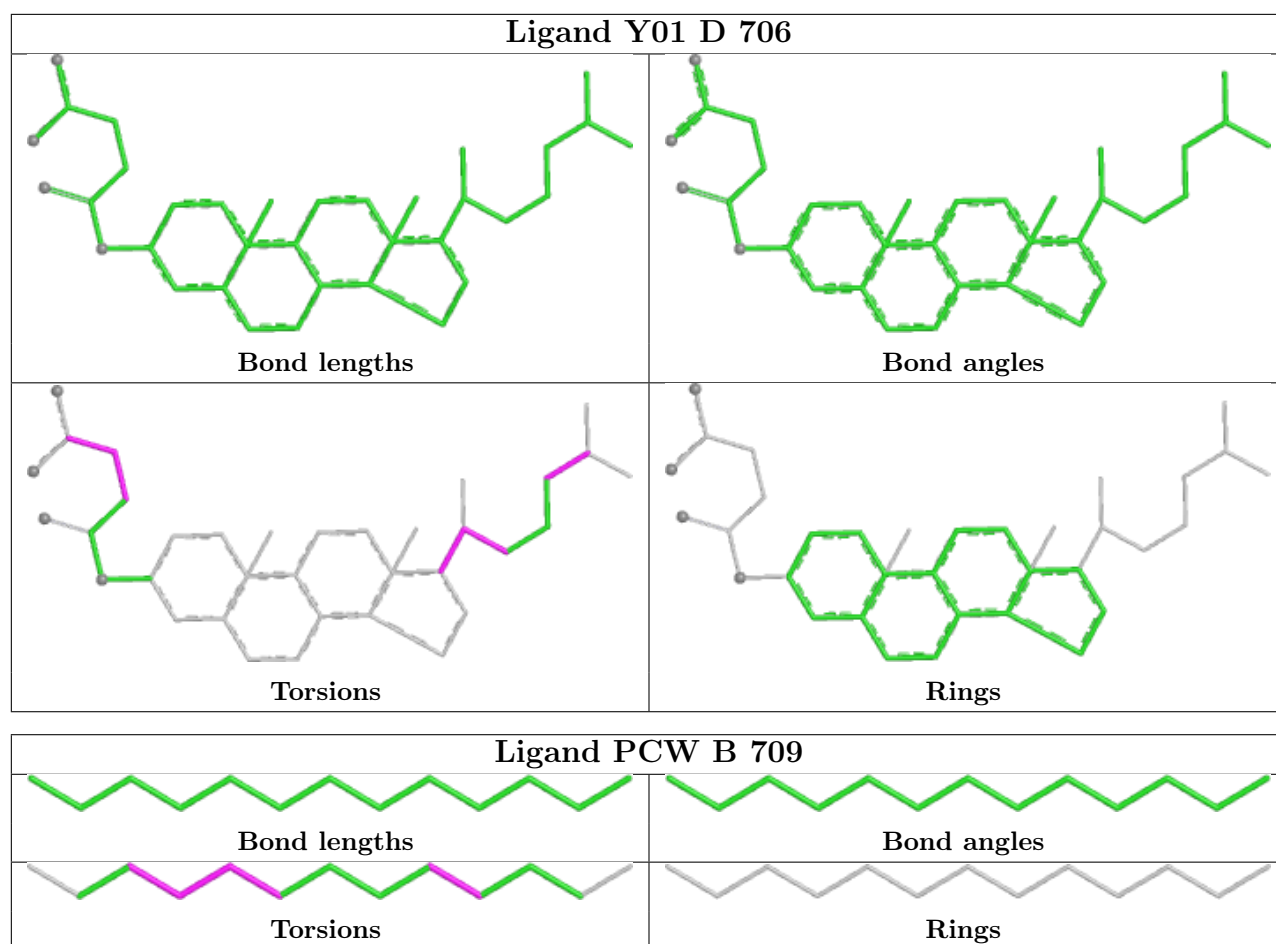
20 monomers are involved in 41 short contacts:

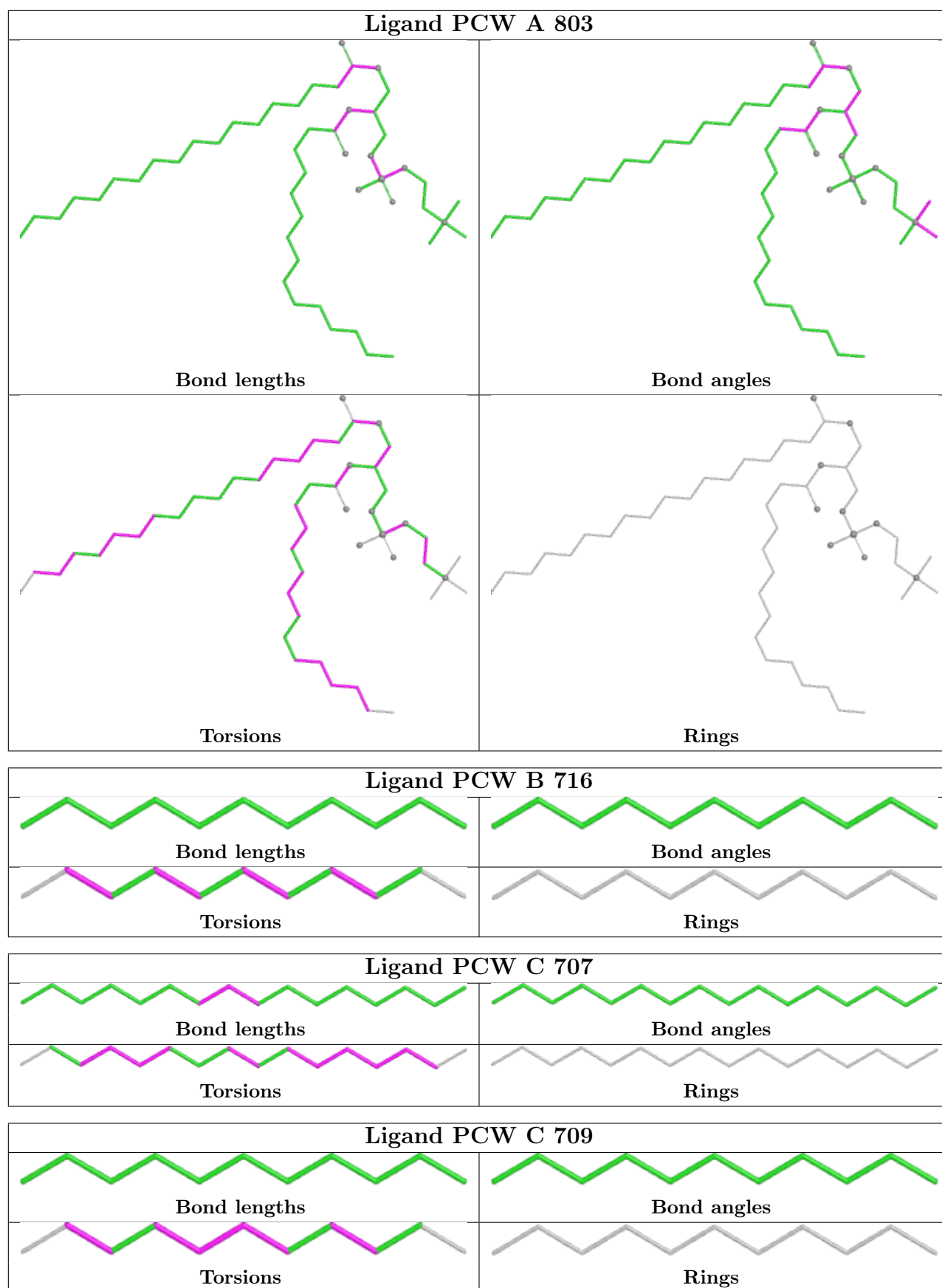
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	706	Y01	1	0
3	A	803	PCW	1	0
3	D	708	PCW	1	0
2	C	703	Y01	1	0
2	C	704	Y01	2	0
2	B	705	Y01	2	0
3	D	701	PCW	1	0
3	A	811	PCW	2	0
2	B	701	Y01	4	0
3	B	715	PCW	2	0
3	C	714	PCW	2	0
2	A	802	Y01	2	0
2	C	705	Y01	4	0
2	B	704	Y01	2	0
2	A	801	Y01	2	0
3	C	706	PCW	1	0
2	B	706	Y01	3	0
3	B	707	PCW	1	0
2	A	814	Y01	5	0
2	D	707	Y01	2	0

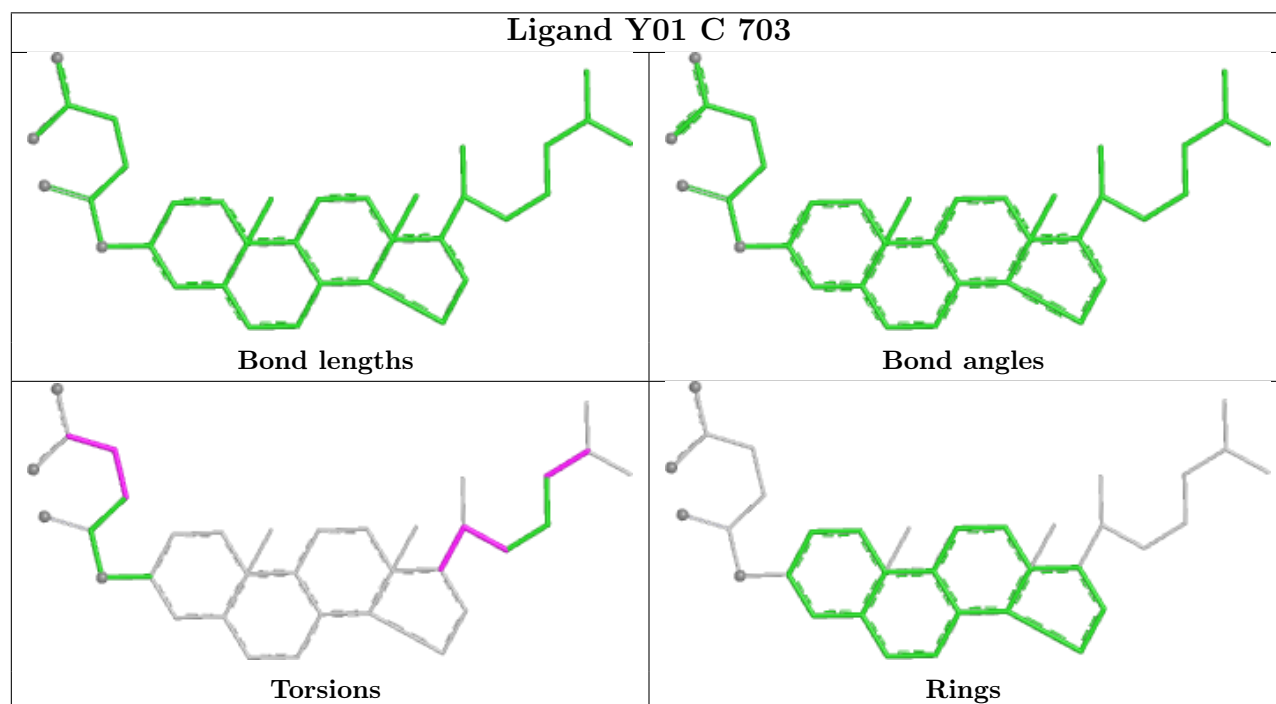
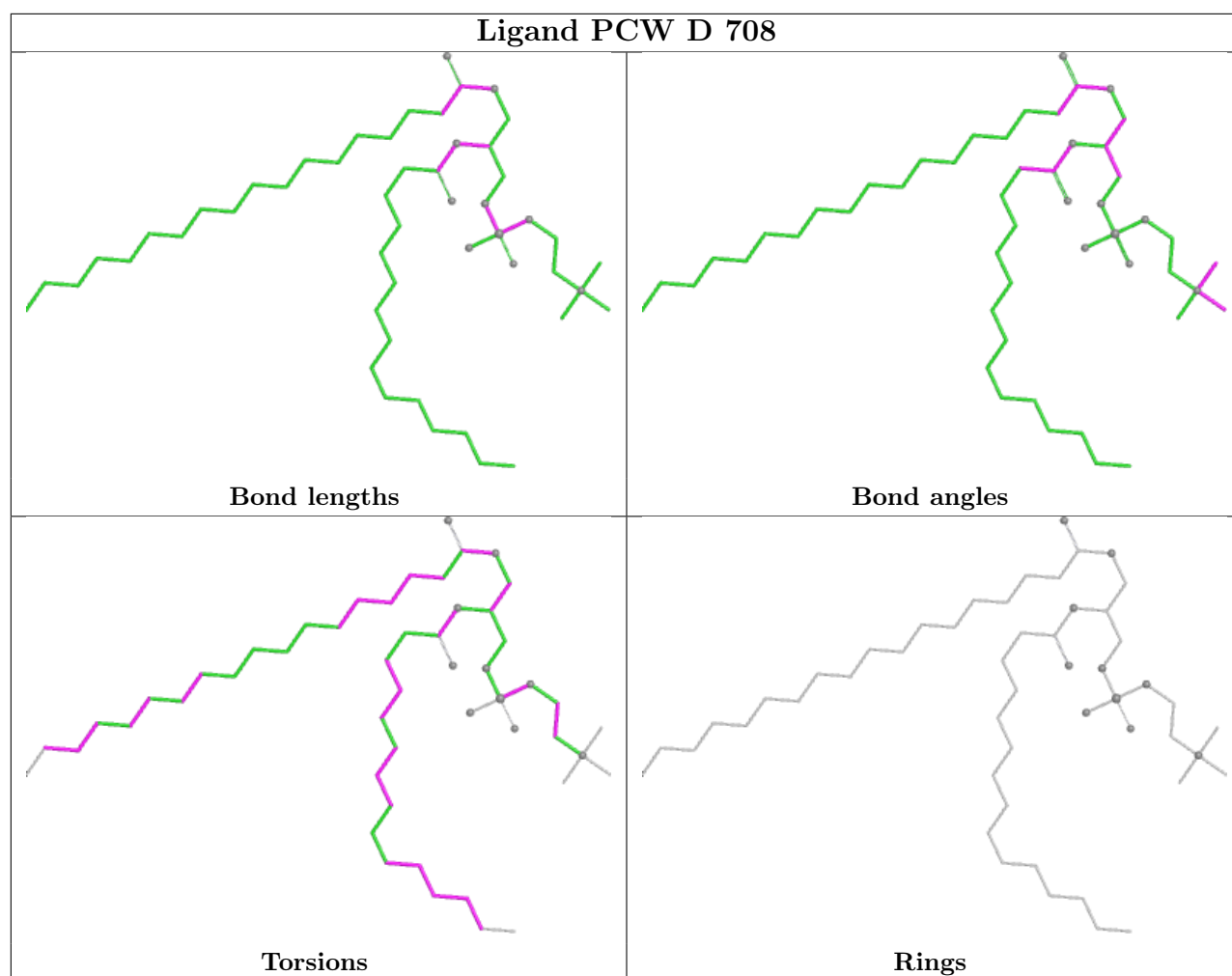
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

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.














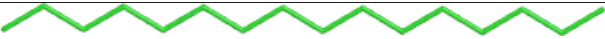






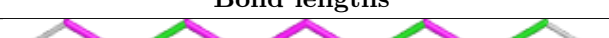
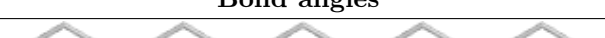


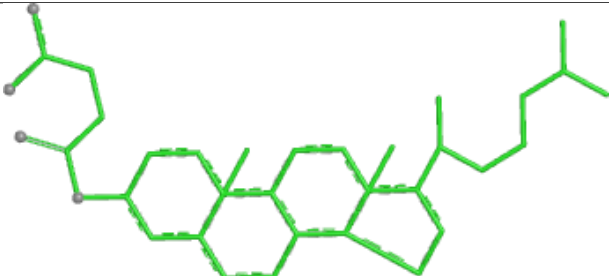
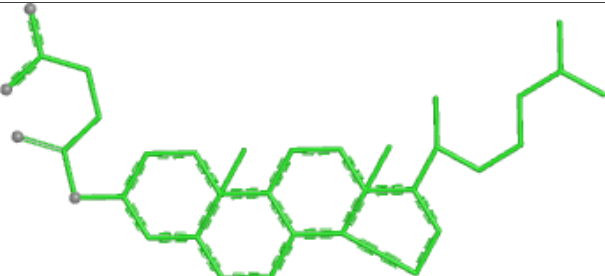
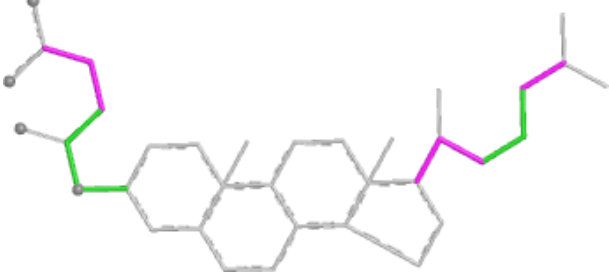
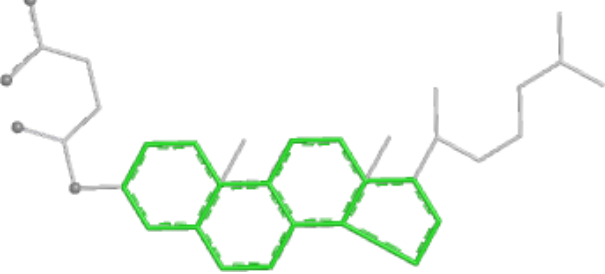


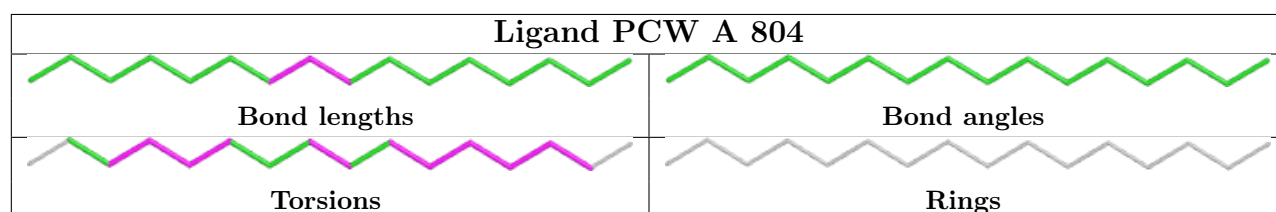
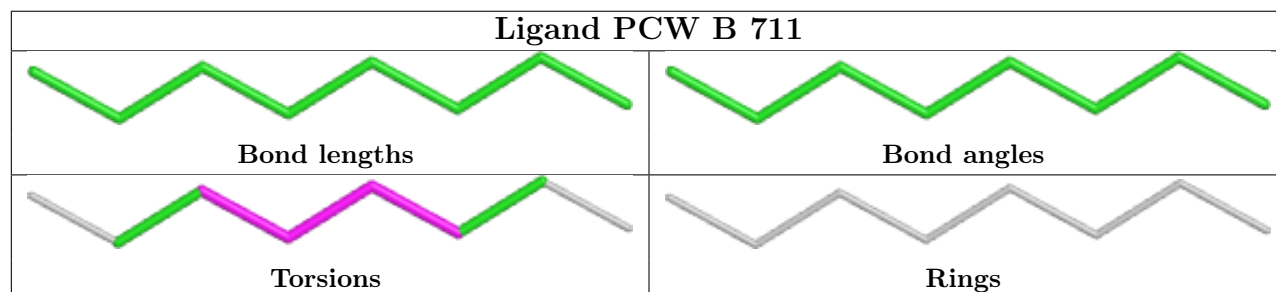
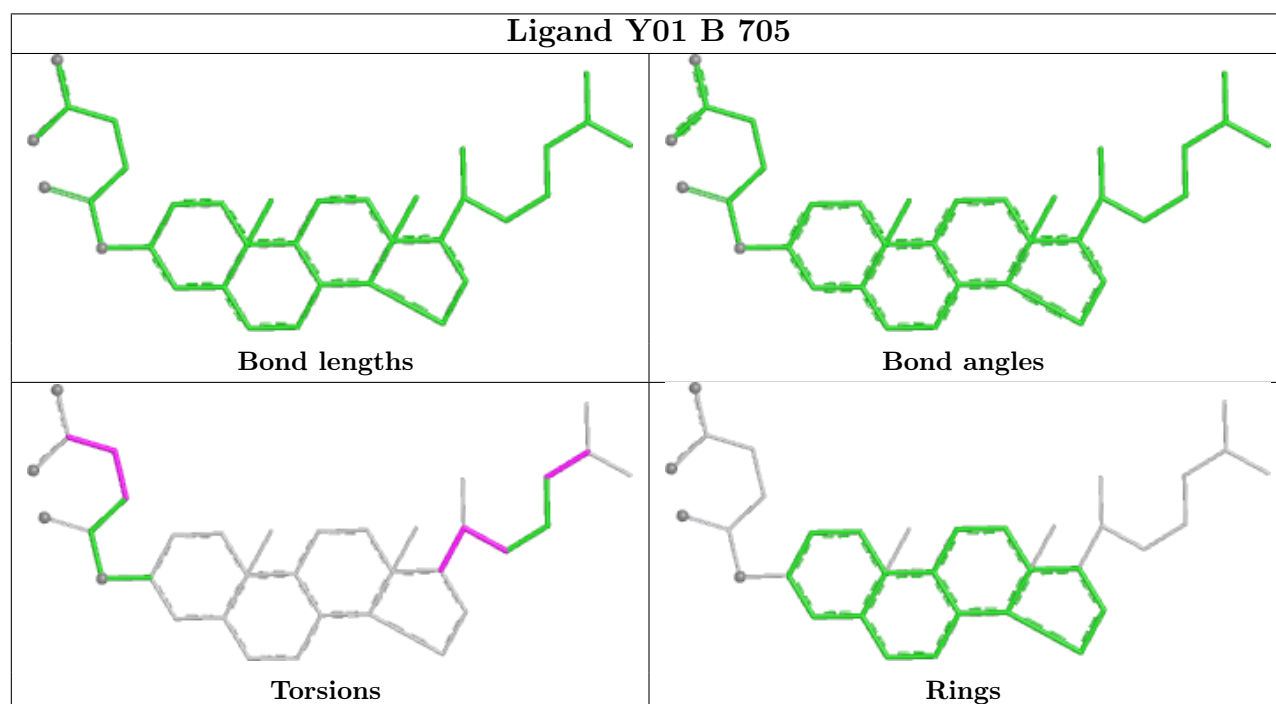
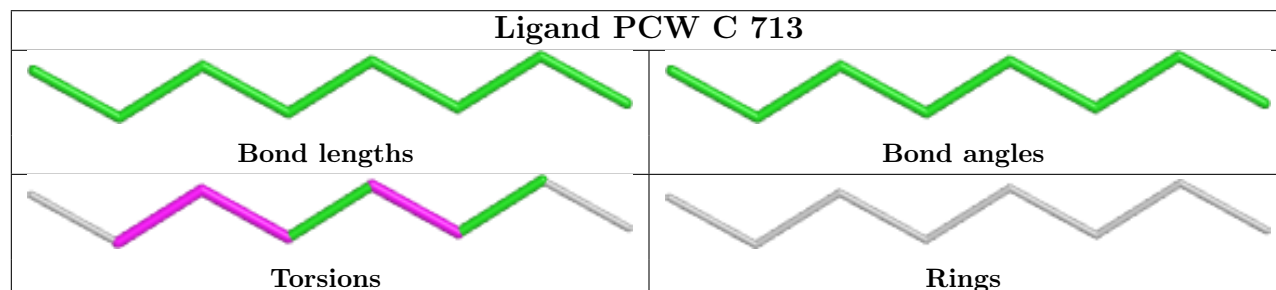
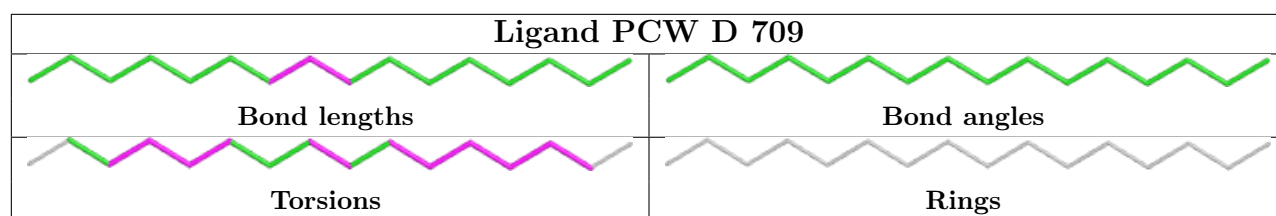
Ligand PCW A 813	
 Bond lengths	 Bond angles
 Torsions	 Rings

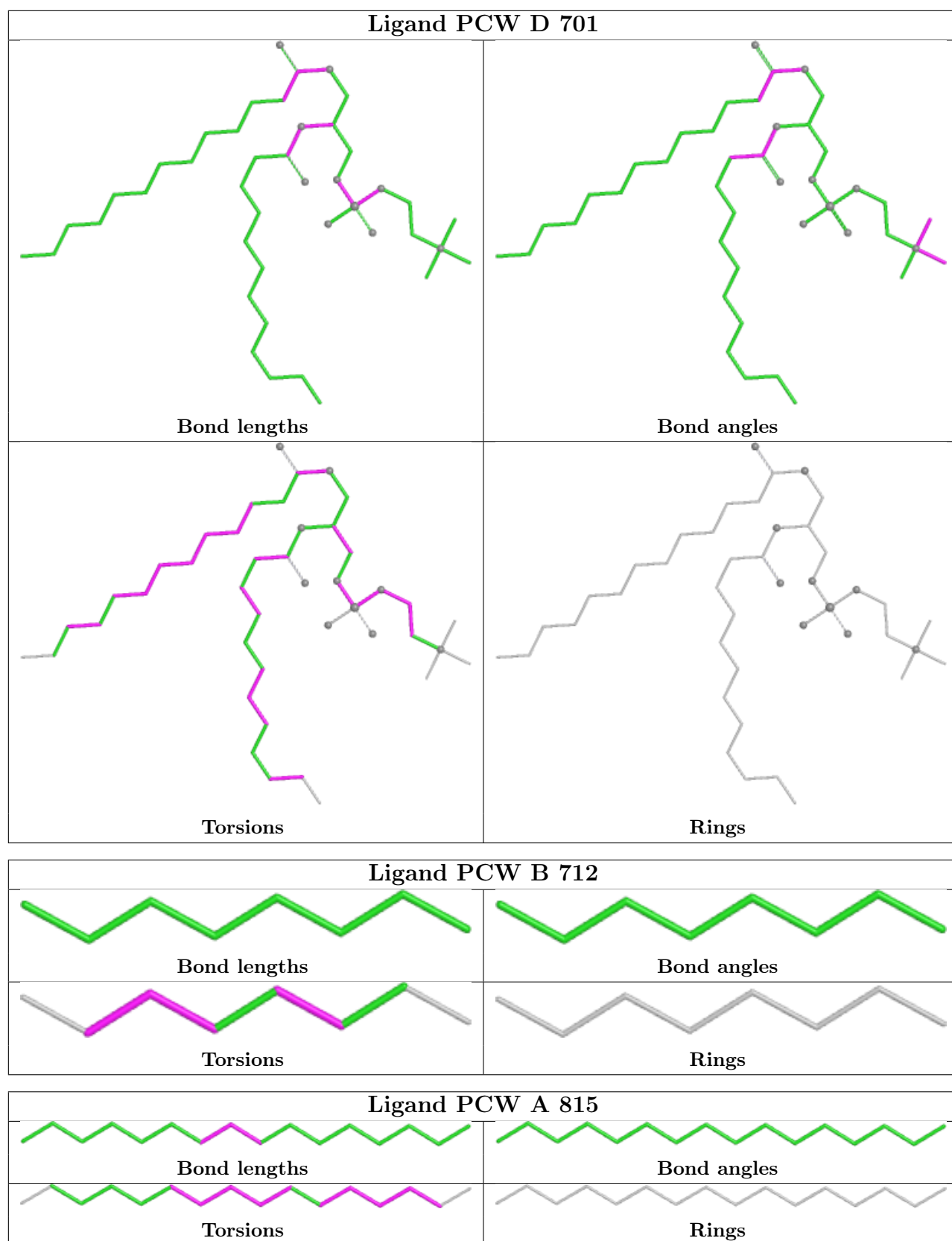
Ligand PCW C 702	
 Bond lengths	 Bond angles
 Torsions	 Rings

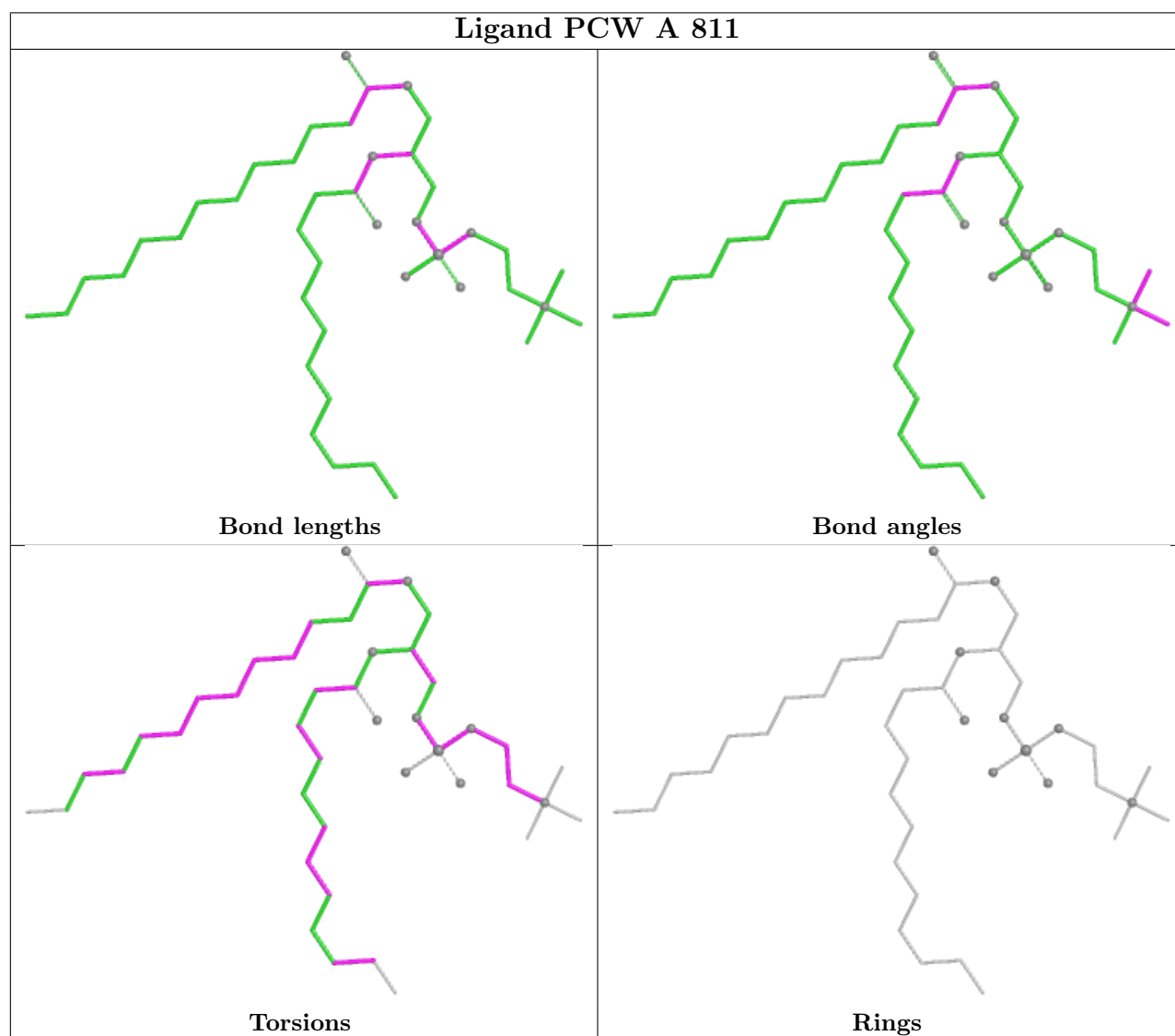
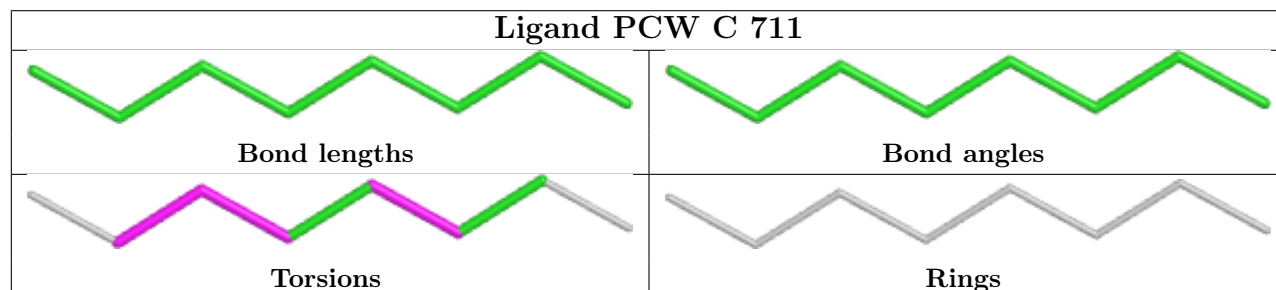
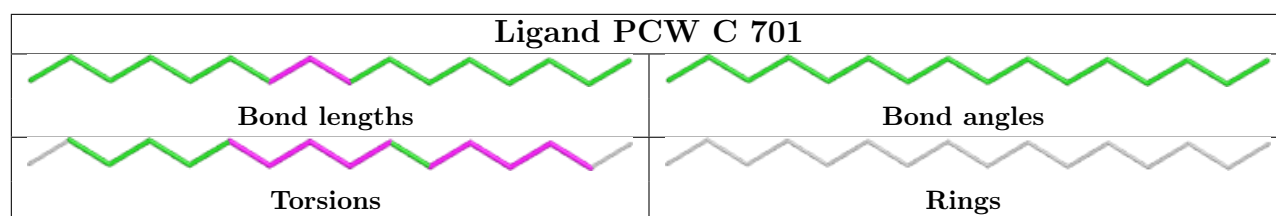
Ligand PCW B 713	
 Bond lengths	 Bond angles
 Torsions	 Rings

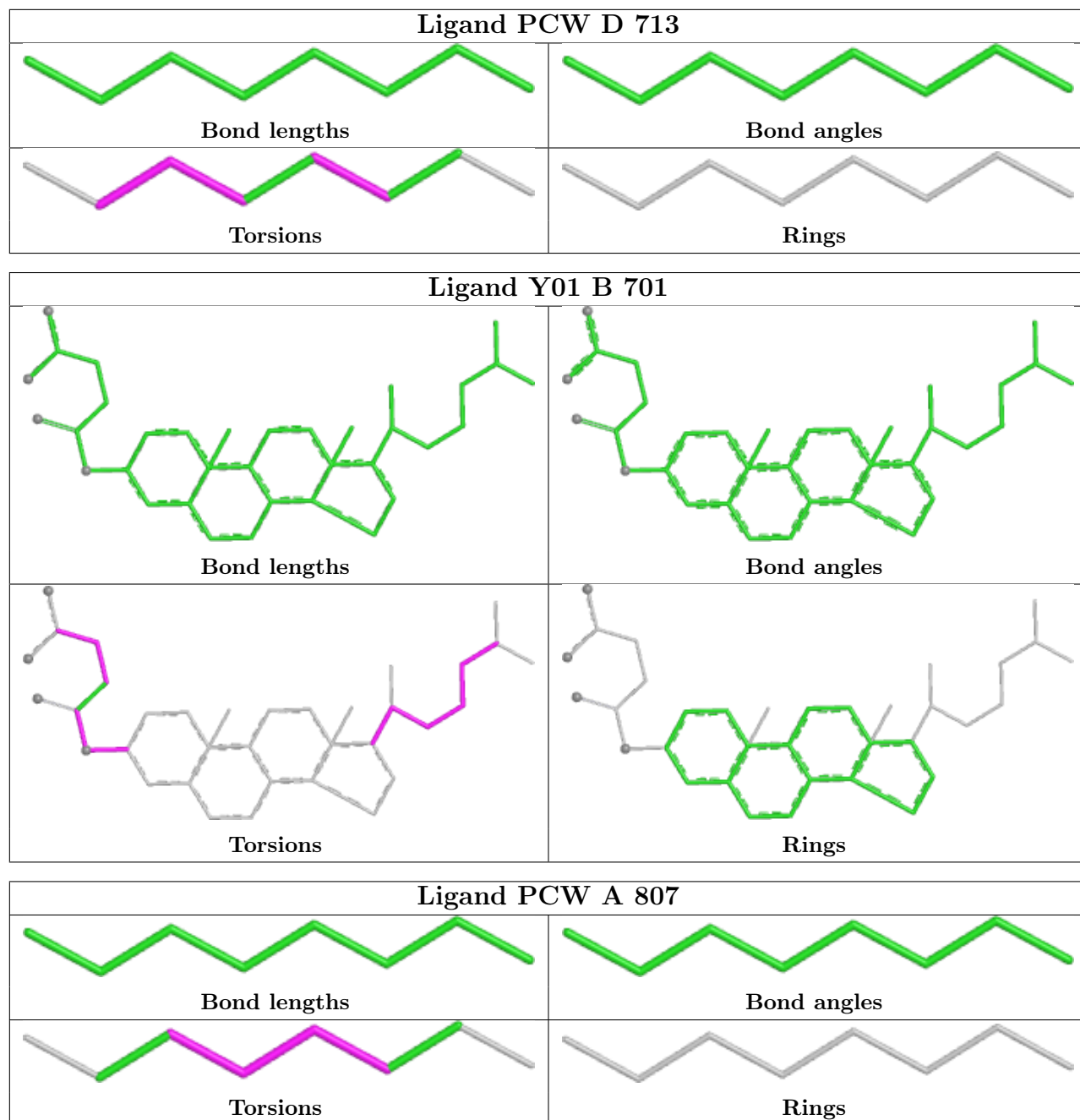
Ligand PCW B 710	
 Bond lengths	 Bond angles
 Torsions	 Rings

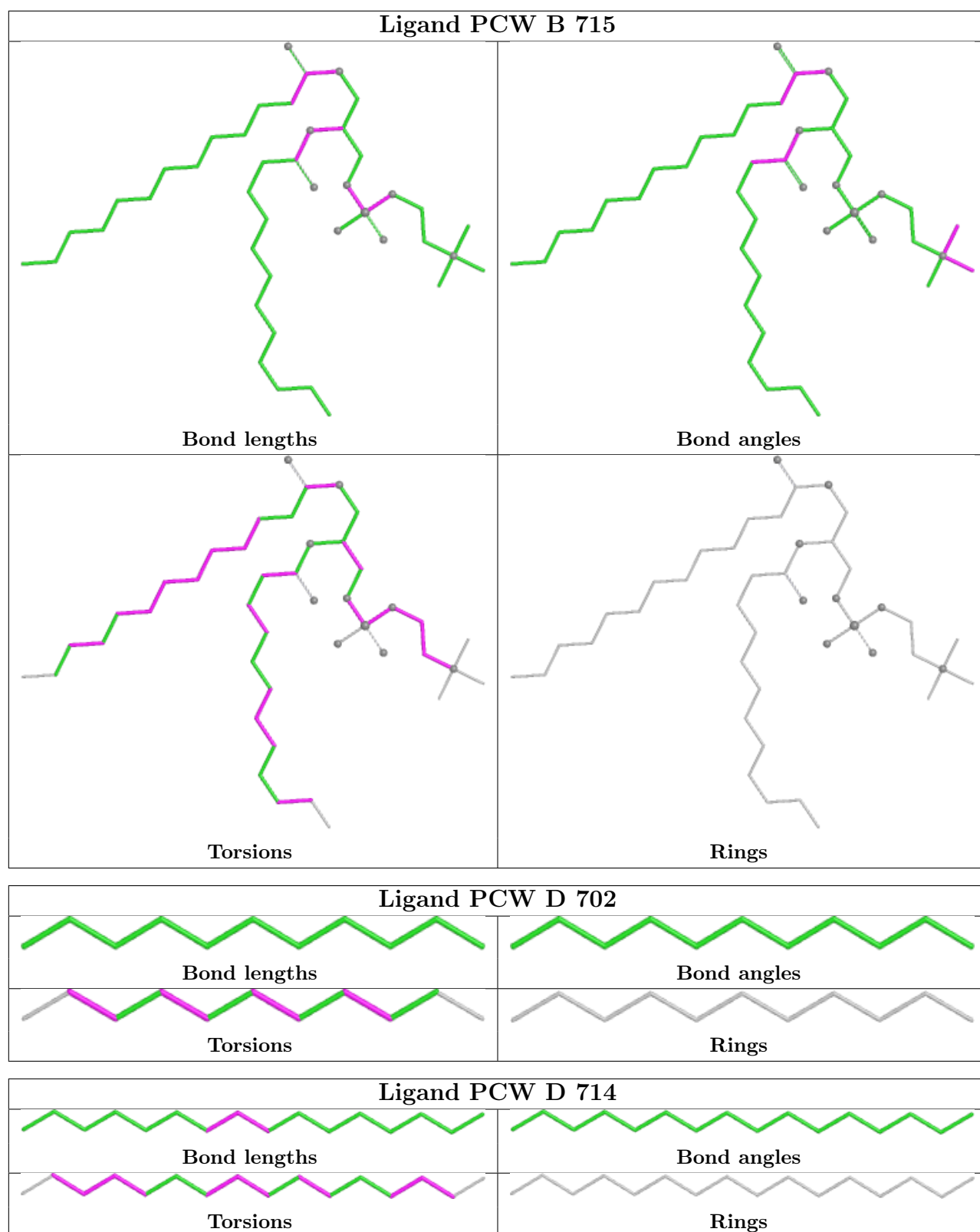
Ligand Y01 C 704	
 Bond lengths	 Bond angles
 Torsions	 Rings

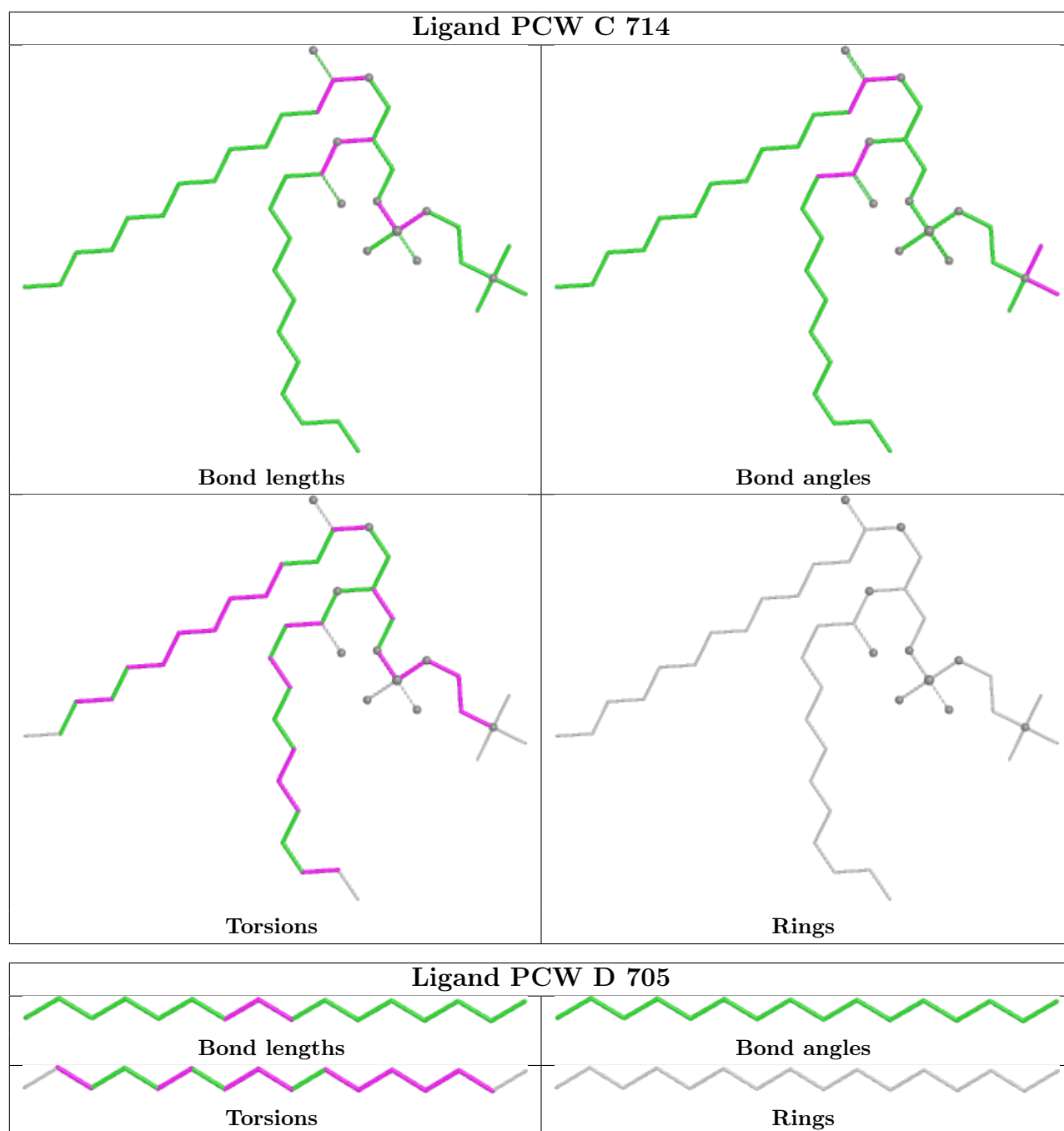


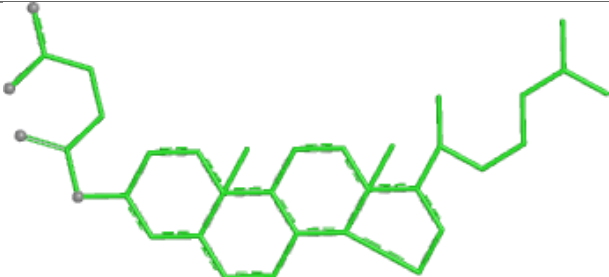
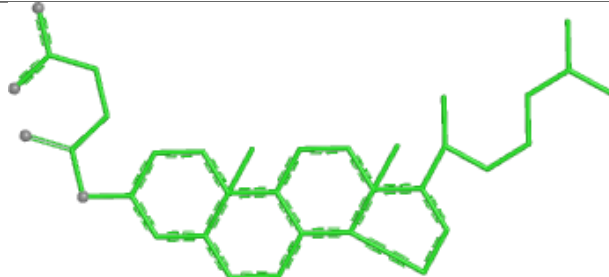
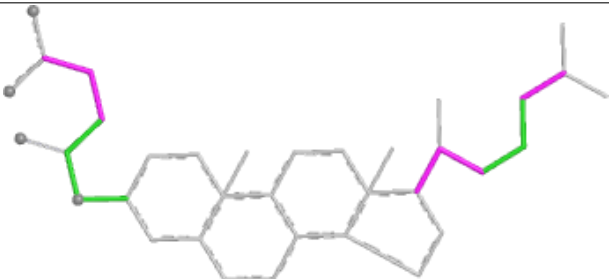
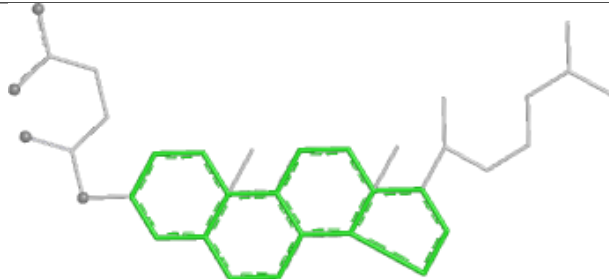




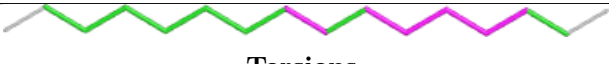
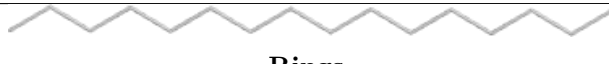




















Ligand Y01 A 802	
	
Bond lengths	Bond angles
	
Torsions	Rings

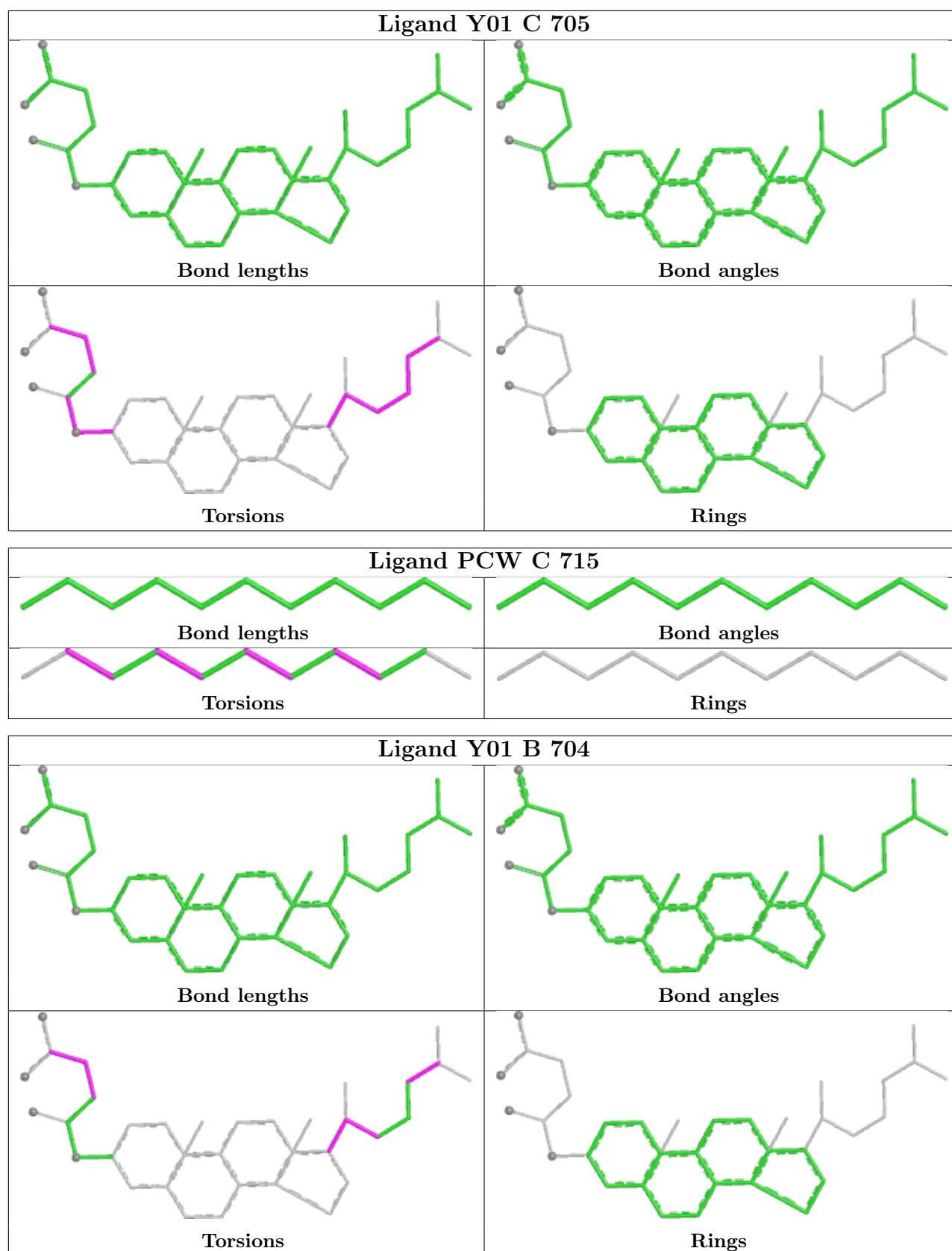
Ligand PCW D 703	
	
Bond lengths	Bond angles
	
Torsions	Rings

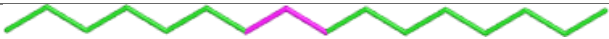
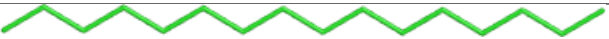


Ligand PCW D 715	
	
Bond lengths	Bond angles
	
Torsions	Rings





Ligand PCW B 717	
	
Bond lengths	Bond angles
	
Torsions	Rings


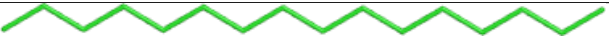


Ligand PCW D 712	
	
Bond lengths	Bond angles
	
Torsions	Rings

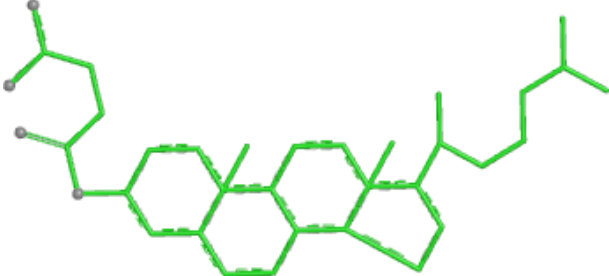
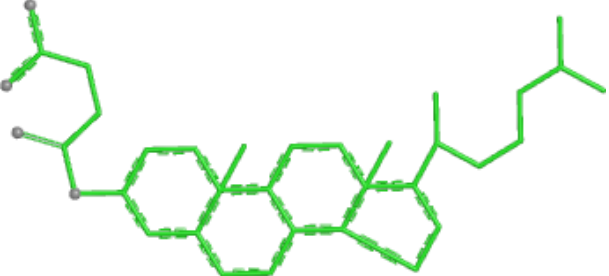

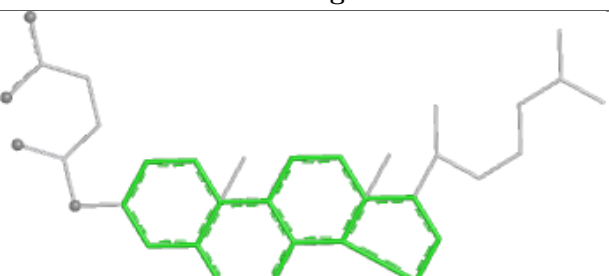








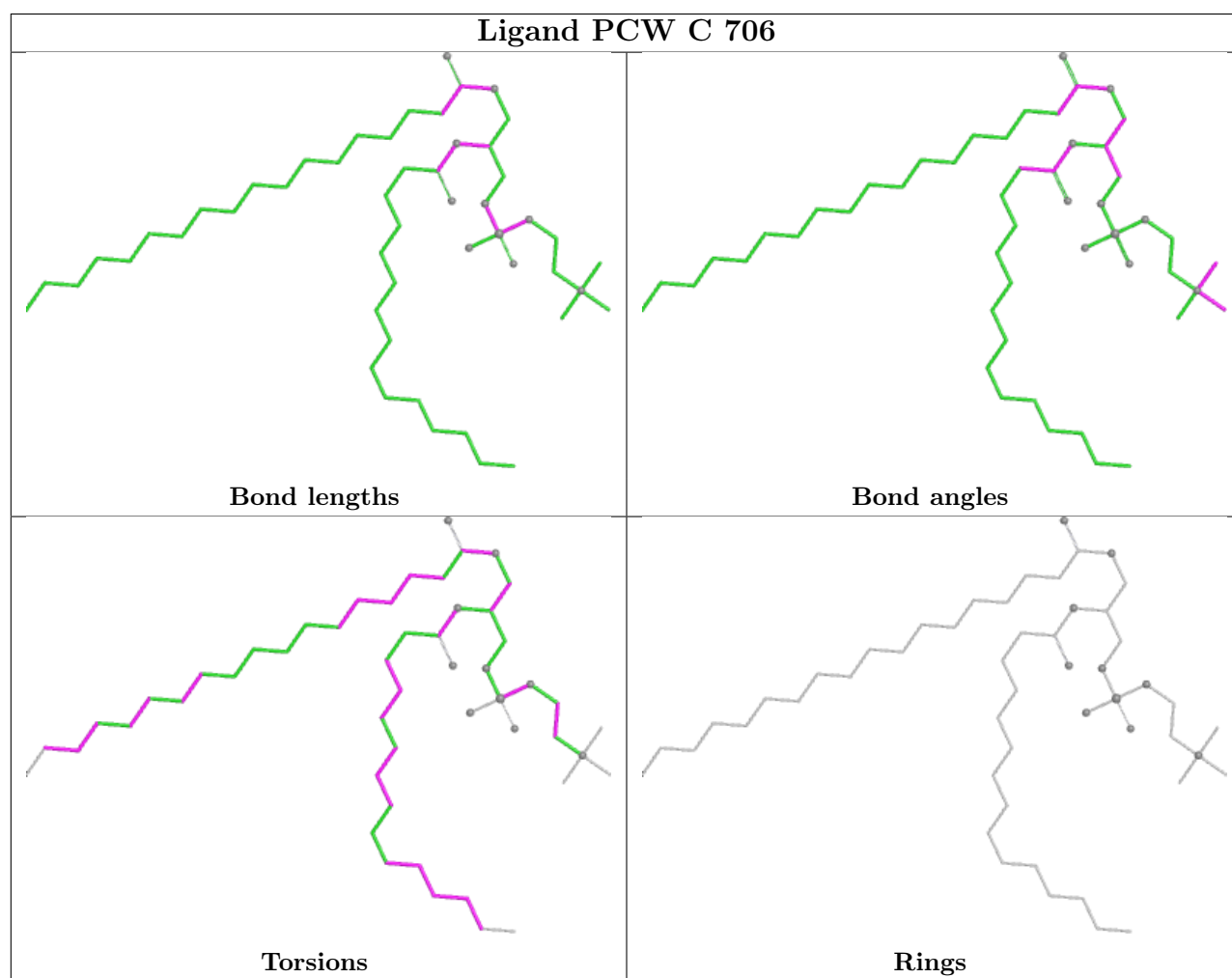
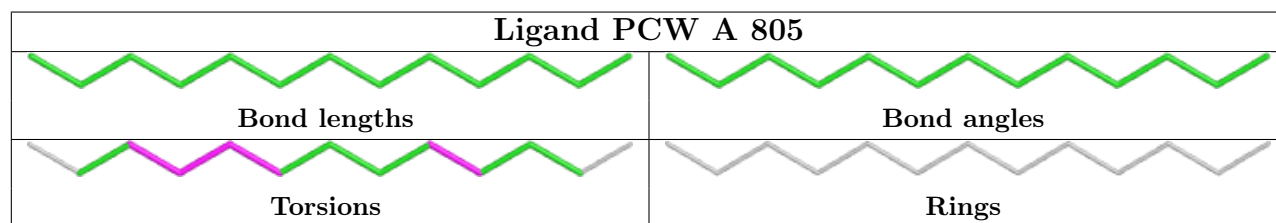
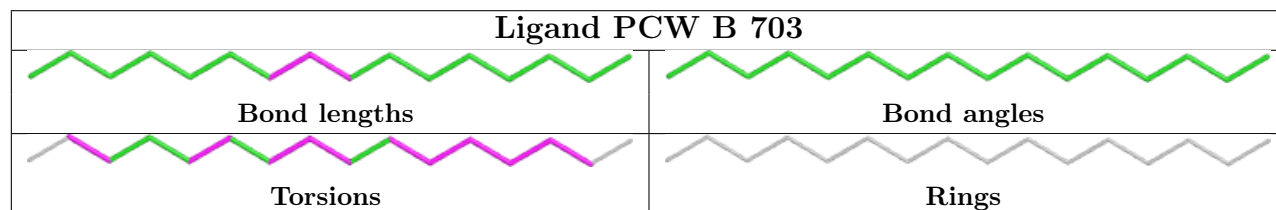
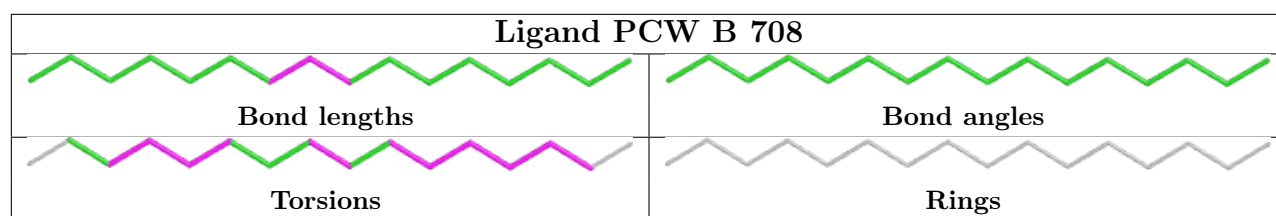
Ligand PCW B 702	
 Bond lengths	 Bond angles
 Torsions	 Rings

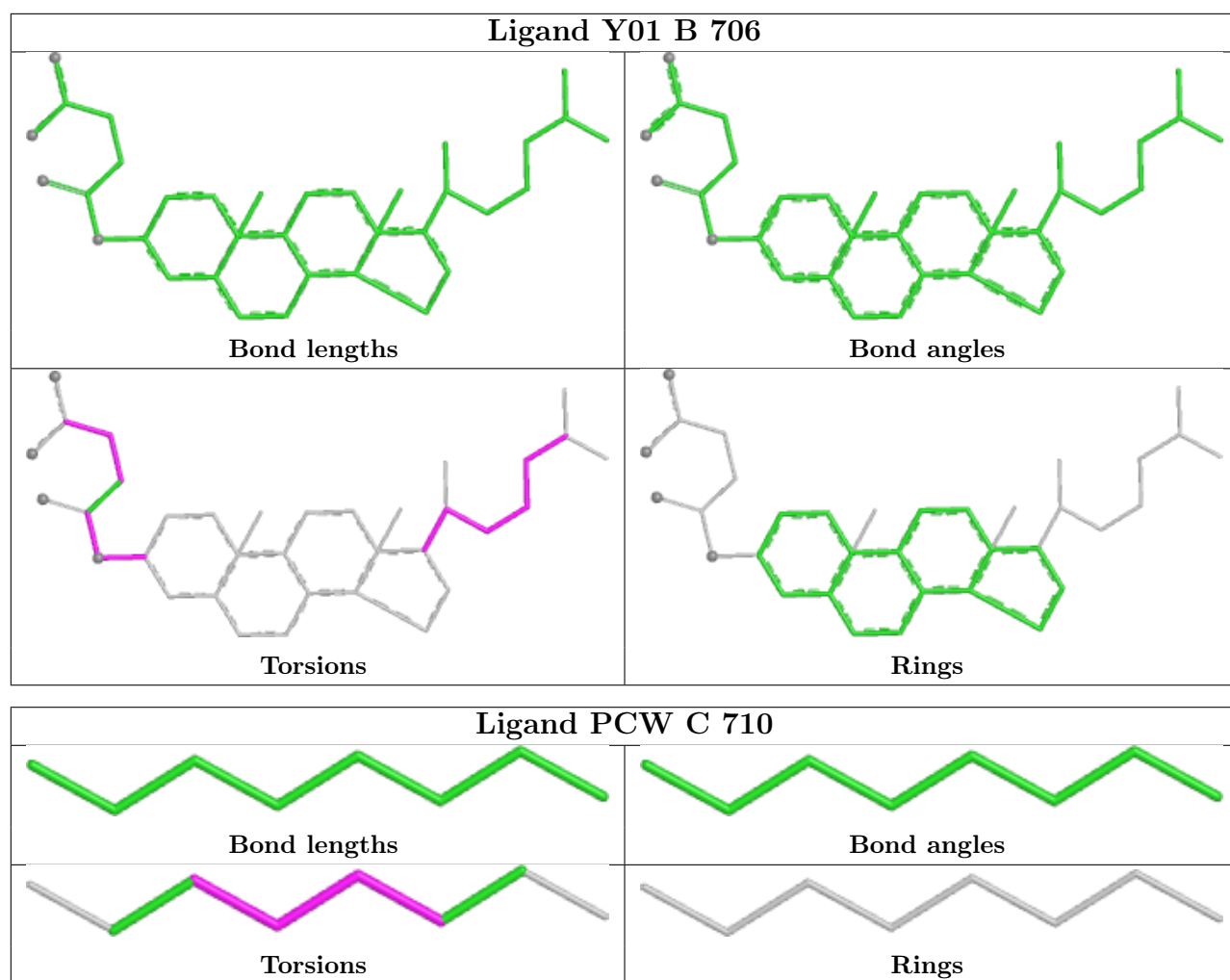
Ligand PCW C 716	
 Bond lengths	 Bond angles
 Torsions	 Rings

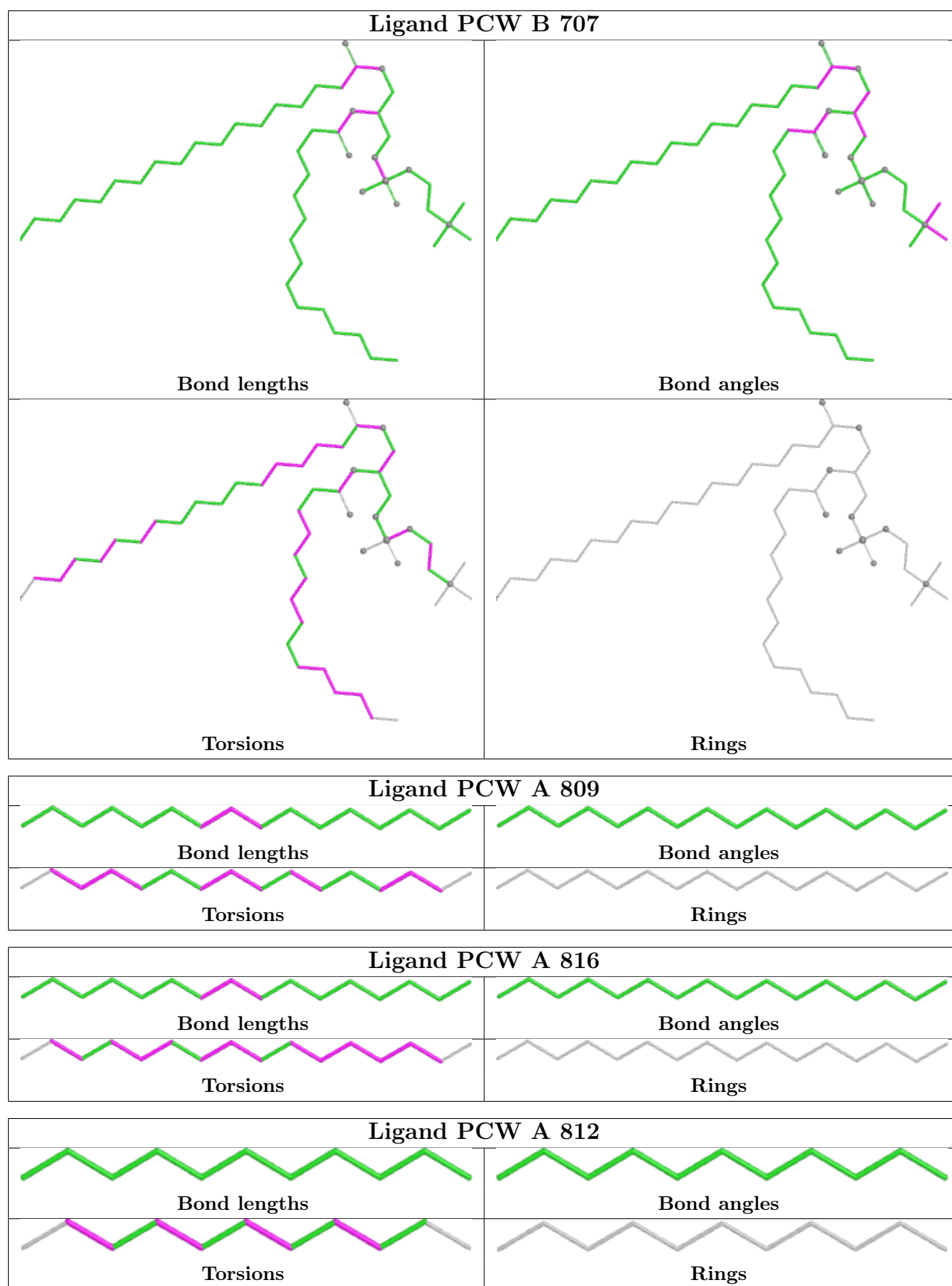
Ligand PCW C 712	
 Bond lengths	 Bond angles
 Torsions	 Rings

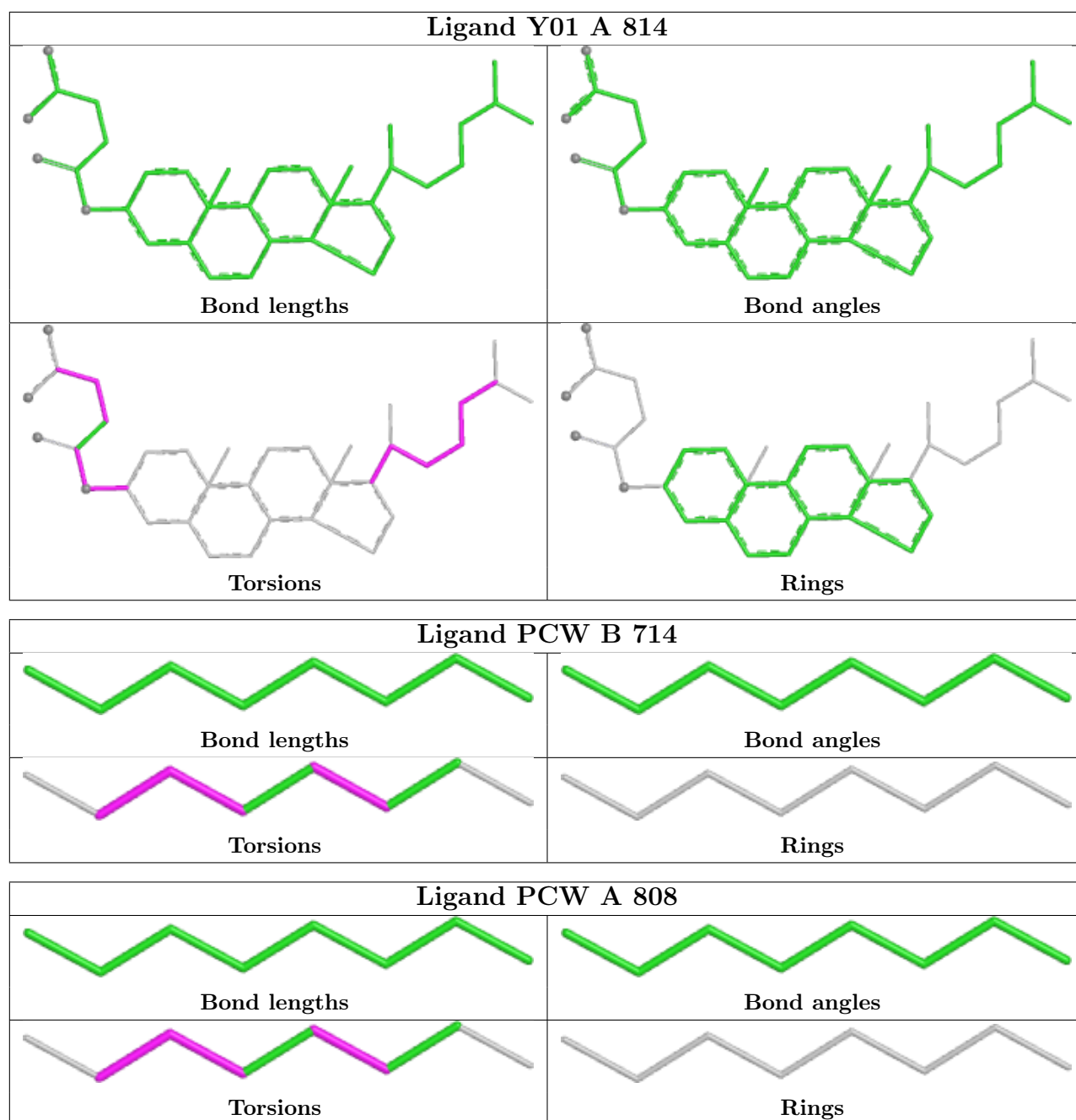
Ligand Y01 A 801	
 Bond lengths	 Bond angles
 Torsions	 Rings

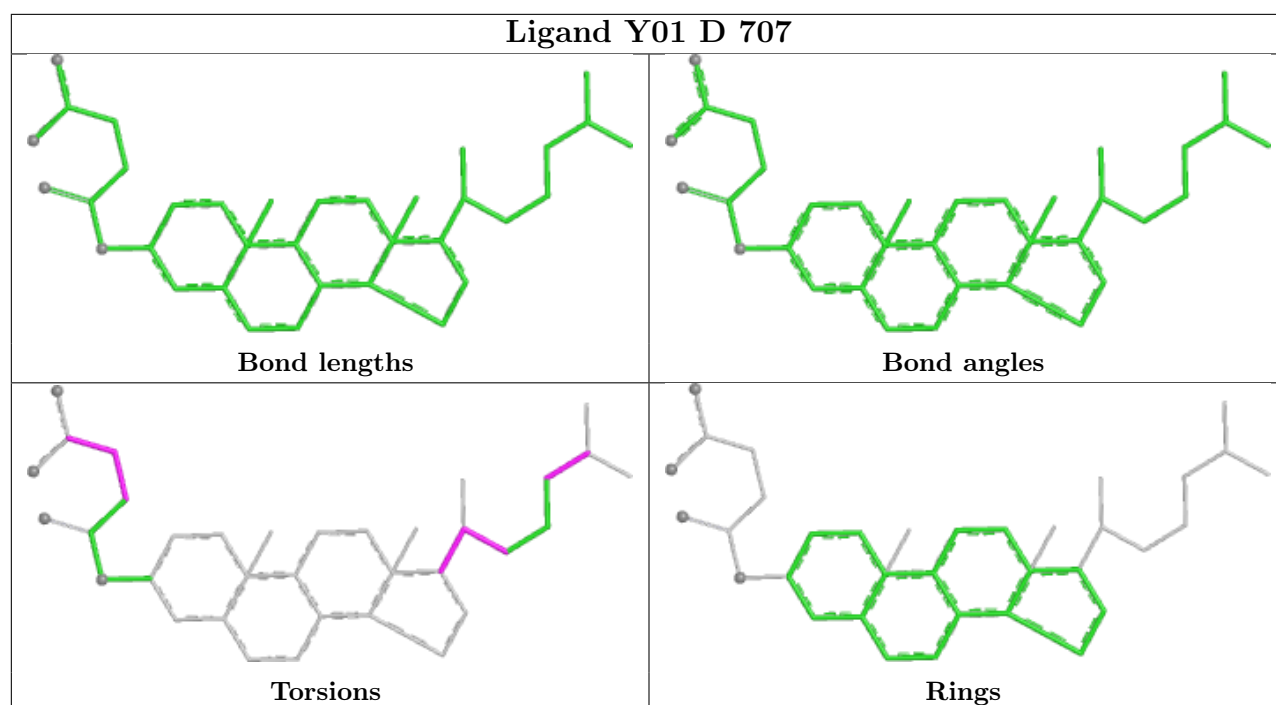
Ligand PCW D 711	
 Bond lengths	 Bond angles
 Torsions	 Rings











## 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.

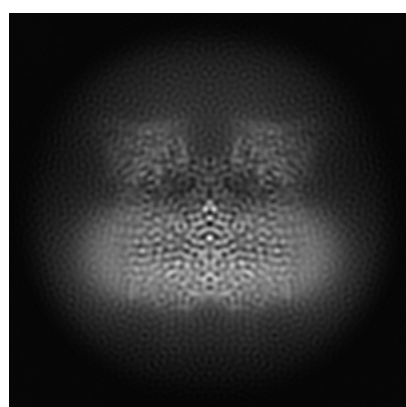
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-22662. These allow visual inspection of the internal detail of the map and identification of artifacts.

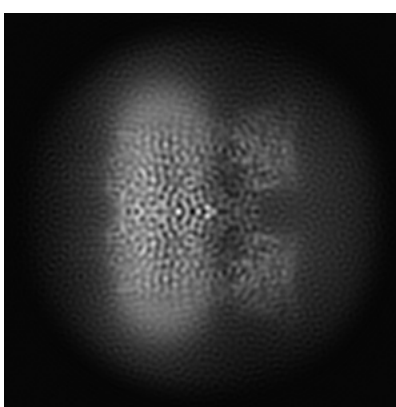
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

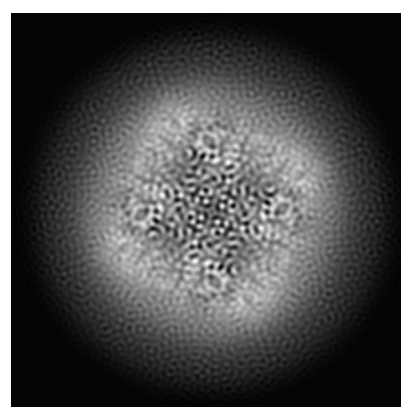
#### 6.1.1 Primary map



X



Y

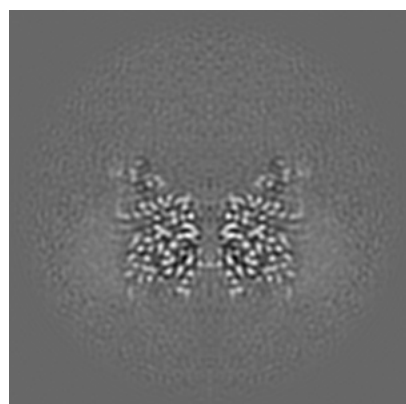


Z

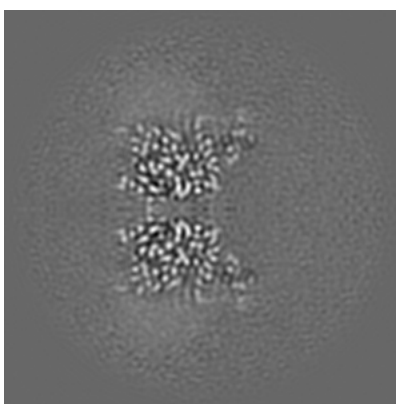
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

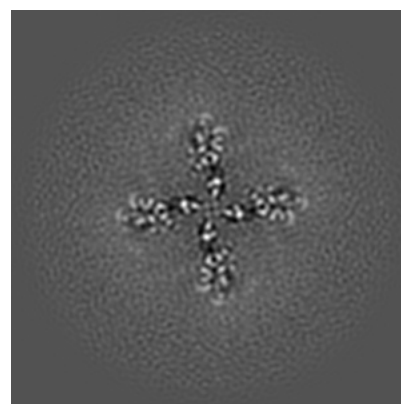
#### 6.2.1 Primary map



X Index: 128



Y Index: 128



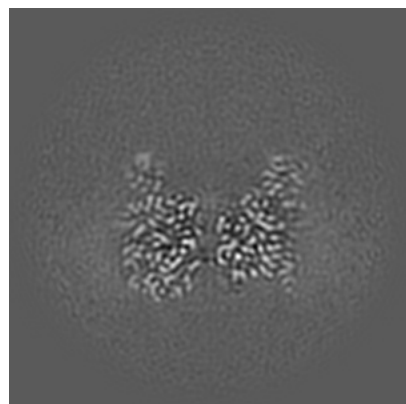
Z Index: 128



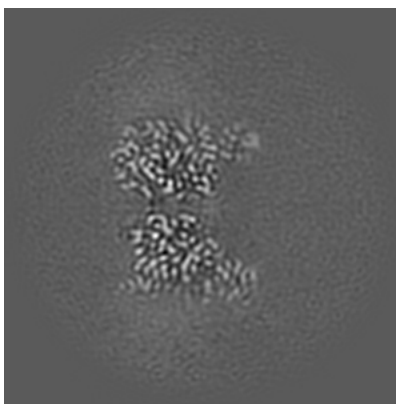
The images above show central slices of the map in three orthogonal directions.

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

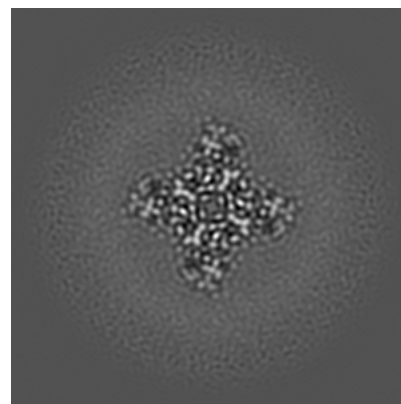
### 6.3.1 Primary map



X Index: 125



Y Index: 125

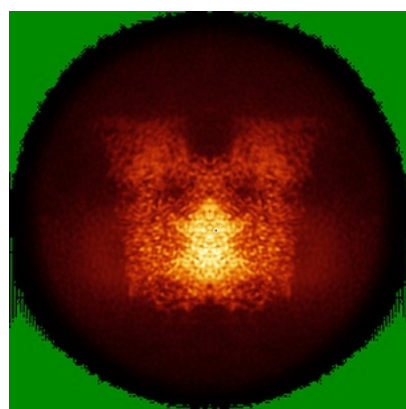


Z Index: 96

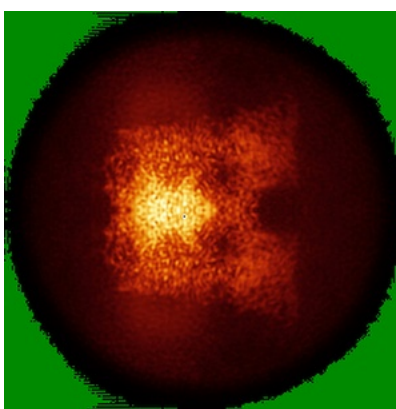
The images above show the largest variance slices of the map in three orthogonal directions.

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

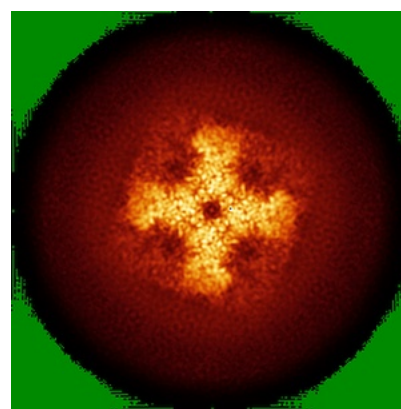
### 6.4.1 Primary map



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



The images above show the 3D surface view of the map at the recommended contour level 0.2. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

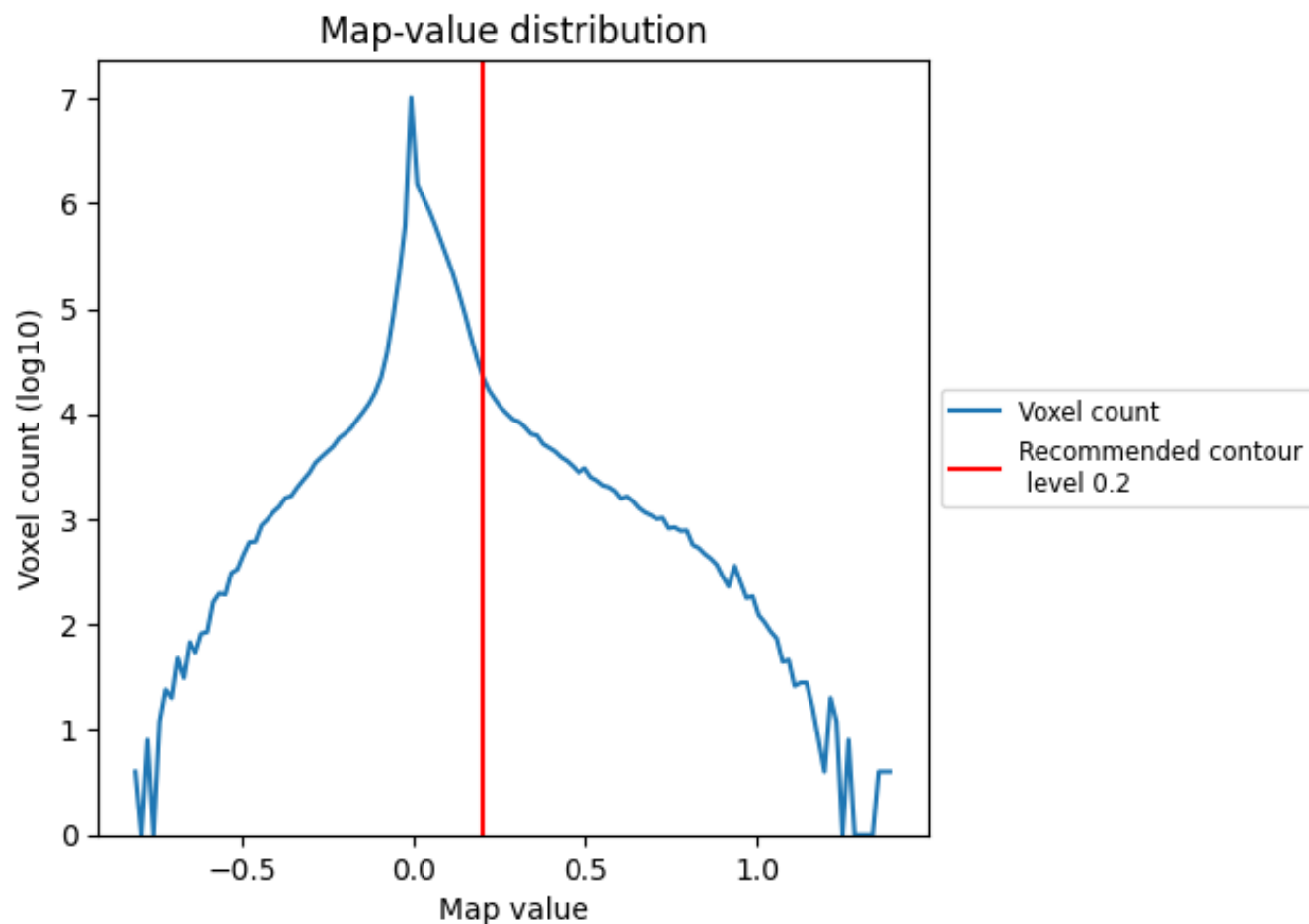
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

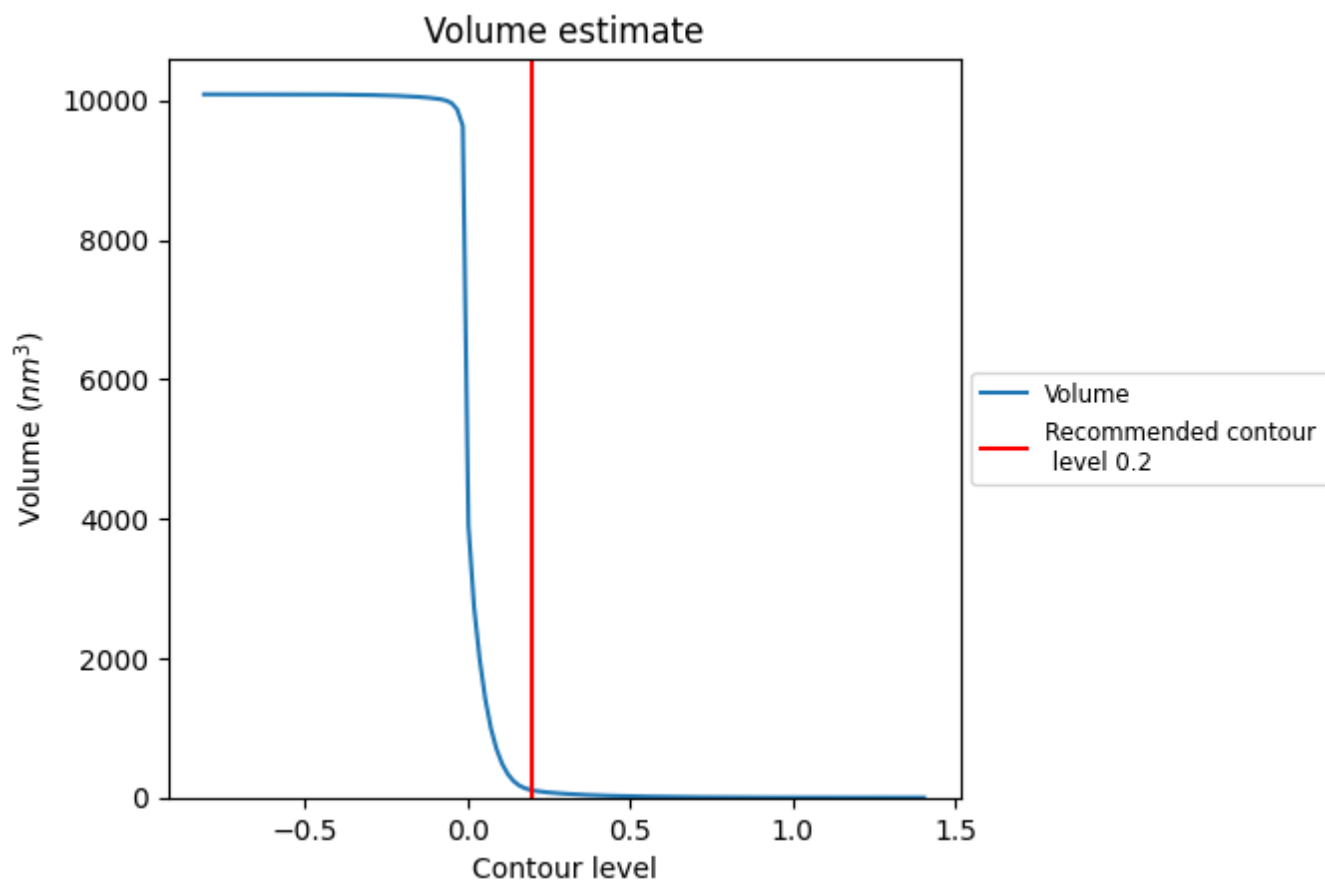
This section contains the results of statistical analysis of the map.

### 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.

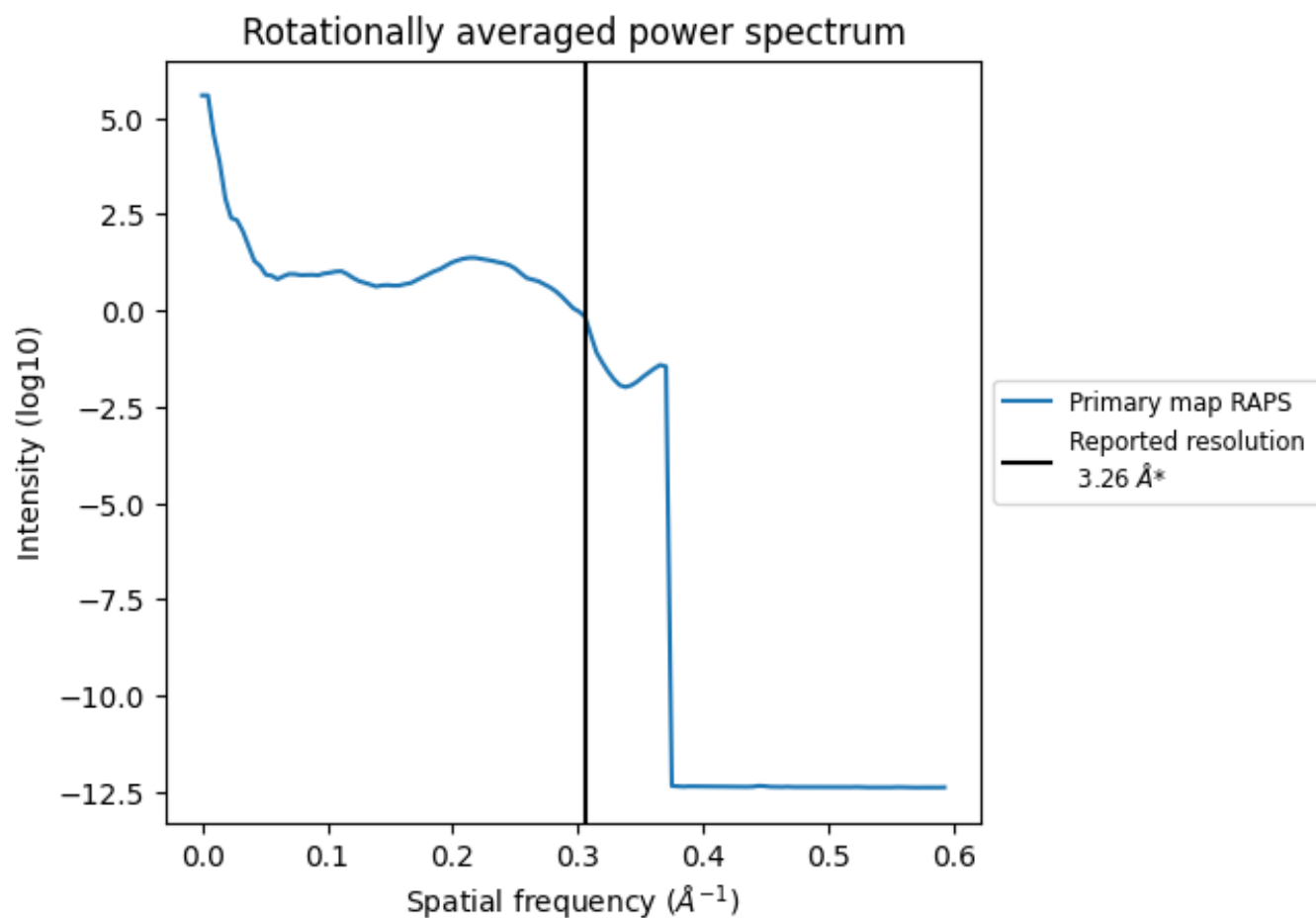
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 105 nm<sup>3</sup>; this corresponds to an approximate mass of 95 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 0.307 Å<sup>-1</sup>

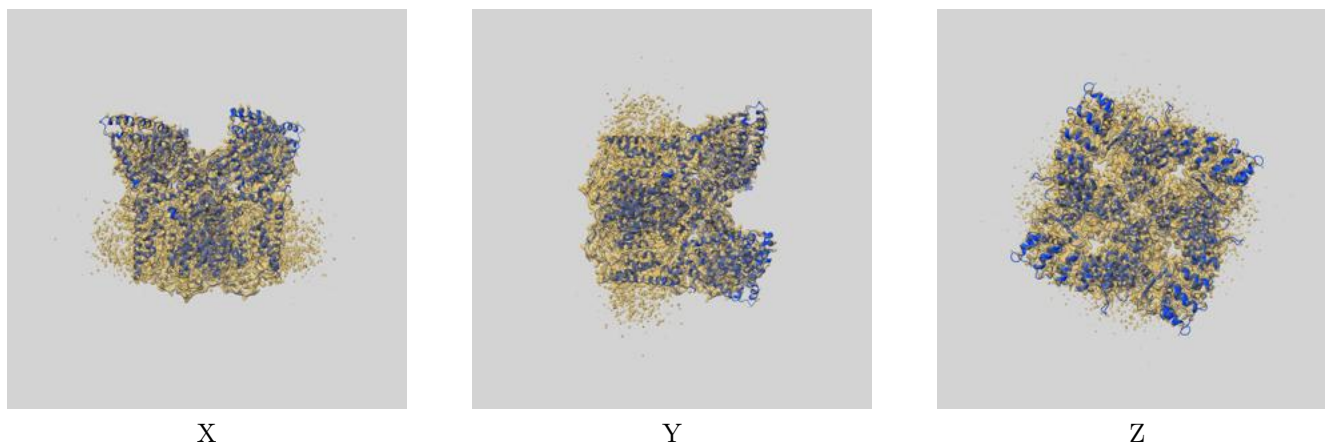
## 8 Fourier-Shell correlation

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

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

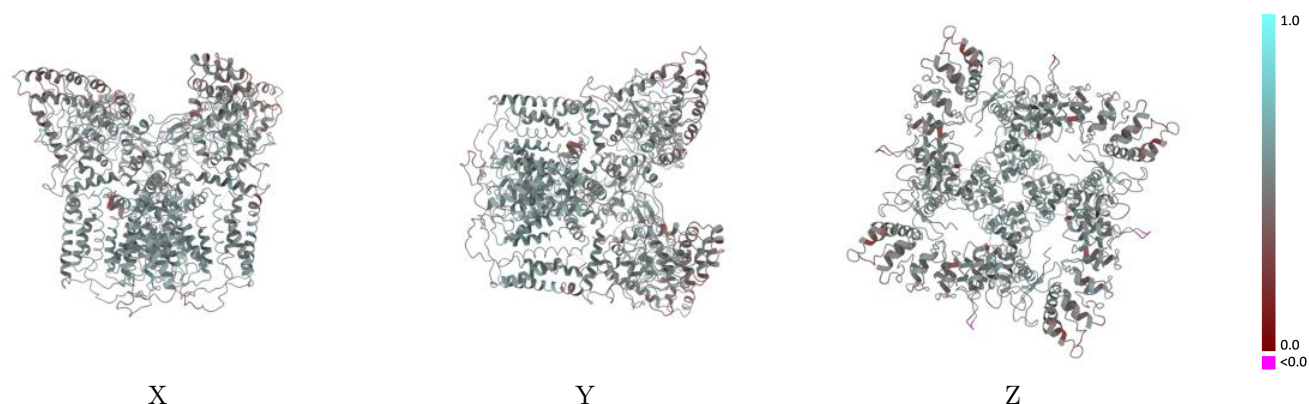
This section contains information regarding the fit between EMDB map EMD-22662 and PDB model 7K4A. Per-residue inclusion information can be found in section [3](#) on page [8](#).

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



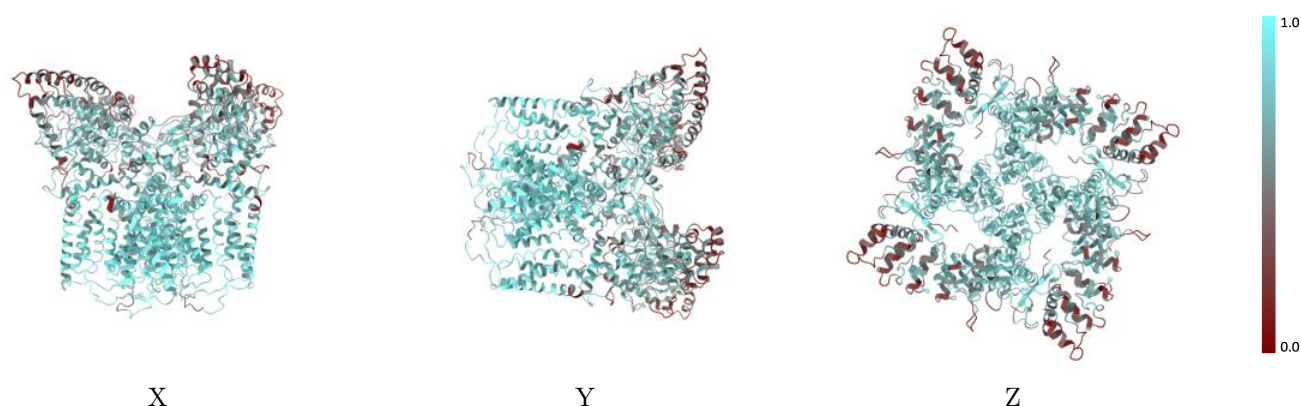
The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



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

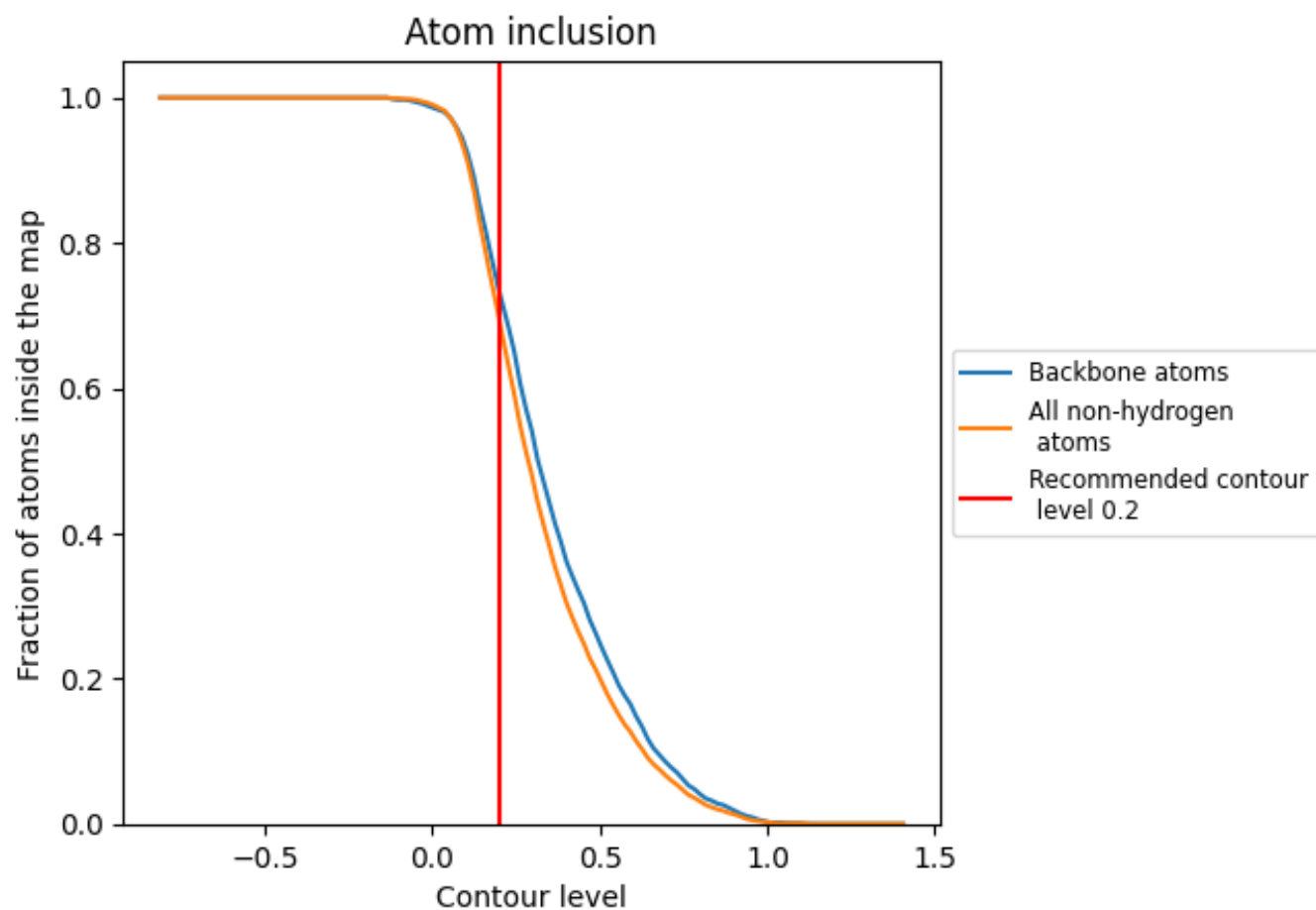
## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.2).



## 9.4 Atom inclusion [i](#)



At the recommended contour level, 73% of all backbone atoms, 70% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.6960	<div></div> 0.5120
A	<div></div> 0.6960	<div></div> 0.5120
B	<div></div> 0.6960	<div></div> 0.5120
C	<div></div> 0.6960	<div></div> 0.5120
D	<div></div> 0.6950	<div></div> 0.5110

