



## wwPDB EM Validation Summary Report ⓘ

Mar 8, 2026 – 11:04 AM UTC

PDB ID : 9UC6 / pdb\_00009uc6  
EMDB ID : EMD-64036  
Title : Cryo-EM structure of the Lhcp trimer from *Ostreococcus tauri* at 1.94 angstrom resolution  
Authors : Seki, S.; Kubota, M.; Ishii, A.; Kim, E.; Tanaka, H.; Miyata, T.; Namba, K.; Kurisu, G.; Minagawa, J.; Fujii, R.  
Deposited on : 2025-04-03  
Resolution : 1.94 Å (reported)  
Based on initial model : 8HG3

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:

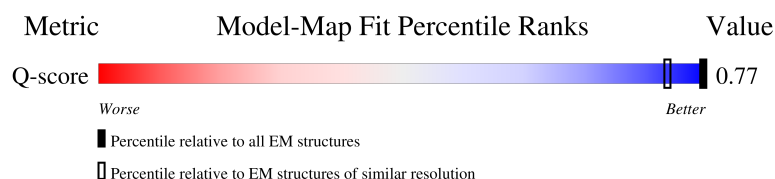
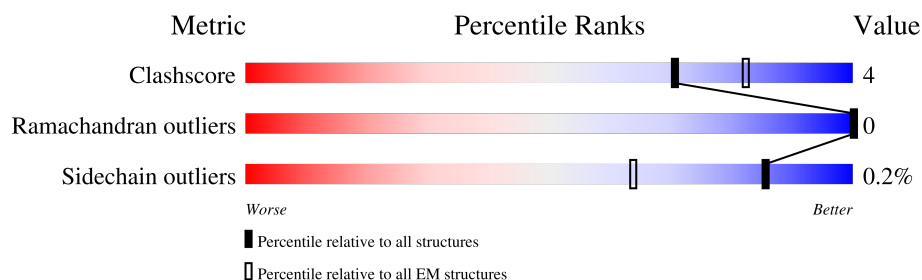
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (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*

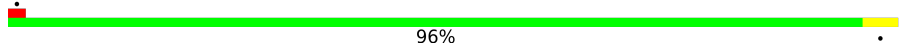
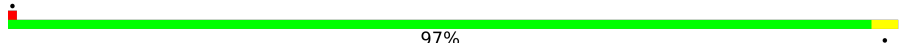
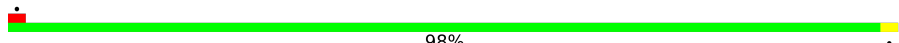
The reported resolution of this entry is 1.94 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	1283 ( 1.45 - 2.44 )

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	202	 96% .
1	B	202	 97% .
1	C	202	 98% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
12	A1LYW	B	323	X	-	-	-
2	CLA	A	301	X	-	-	-
2	CLA	A	303	X	-	-	-
2	CLA	A	307	X	-	-	-
2	CLA	A	309	X	-	-	-
2	CLA	A	310	X	-	-	-
2	CLA	A	311	X	-	-	-
2	CLA	A	312	X	-	-	-
2	CLA	B	302	X	-	-	-
2	CLA	B	304	X	-	-	-
2	CLA	B	308	X	-	-	-
2	CLA	B	310	X	-	-	-
2	CLA	B	311	X	-	-	-
2	CLA	B	312	X	-	-	-
2	CLA	B	313	X	-	-	-
2	CLA	C	302	X	-	-	-
2	CLA	C	304	X	-	-	-
2	CLA	C	308	X	-	-	-
2	CLA	C	310	X	-	-	-
2	CLA	C	311	X	-	-	-
2	CLA	C	312	X	-	-	-
2	CLA	C	313	X	-	-	-
3	CHL	A	302	X	-	-	-
3	CHL	A	304	X	-	-	-
3	CHL	A	305	X	-	-	-
3	CHL	A	306	X	-	-	-
3	CHL	A	313	X	-	-	-
3	CHL	A	314	X	-	-	-
3	CHL	B	303	X	-	-	-
3	CHL	B	305	X	-	-	-
3	CHL	B	306	X	-	-	-
3	CHL	B	307	X	-	-	-
3	CHL	B	314	X	-	-	-
3	CHL	B	315	X	-	-	-
3	CHL	C	303	X	-	-	-
3	CHL	C	305	X	-	-	-
3	CHL	C	306	X	-	-	-
3	CHL	C	307	X	-	-	-
3	CHL	C	314	X	-	-	-
3	CHL	C	315	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	A1L0F	A	308	X	-	-	-
4	A1L0F	B	309	X	-	-	-
4	A1L0F	C	309	X	-	-	-
5	IWJ	A	315	X	-	-	-
5	IWJ	A	318	X	-	-	-
5	IWJ	B	316	X	-	-	-
5	IWJ	B	319	X	-	-	-
5	IWJ	C	316	X	-	-	-
5	IWJ	C	319	X	-	-	-

## 2 Entry composition [i](#)

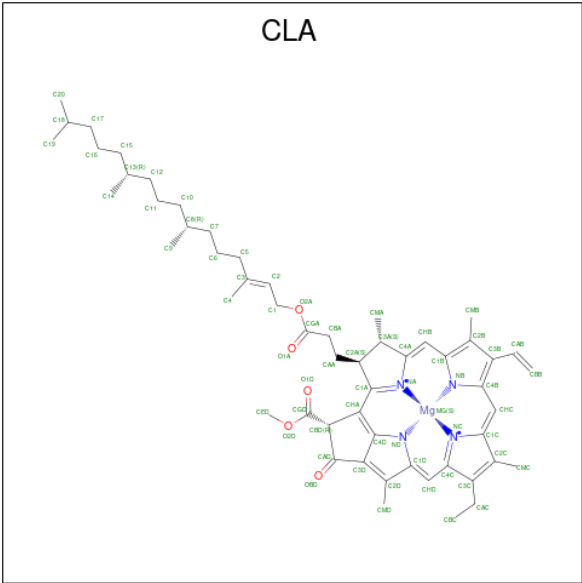
There are 13 unique types of molecules in this entry. The entry contains 8379 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Chlorophyll a-b binding protein, chloroplastic.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	202	Total	C	N	O	S	0	0
			1512	971	247	288	6		
1	B	202	Total	C	N	O	S	0	0
			1512	971	247	288	6		
1	C	202	Total	C	N	O	S	0	0
			1512	971	247	288	6		

- Molecule 2 is CHLOROPHYLL A (CCD ID: CLA) (formula: C<sub>55</sub>H<sub>72</sub>MgN<sub>4</sub>O<sub>5</sub>) (labeled as "Ligand of Interest" by depositor).



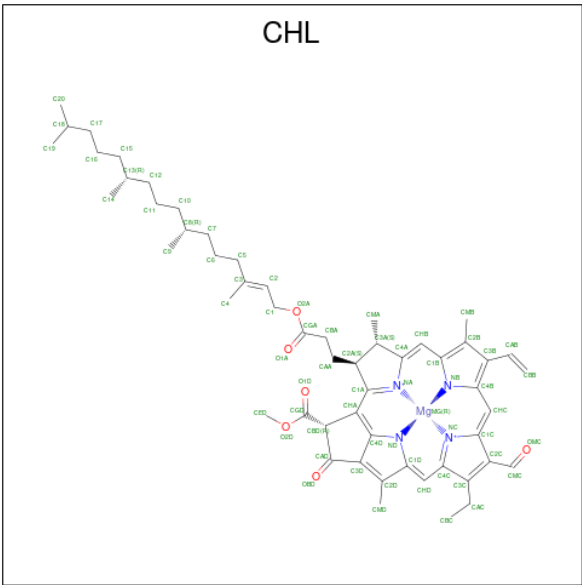
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	

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Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	A	1	Total	C	Mg	N	O	0
			61	51	1	4	5	
2	A	1	Total	C	Mg	N	O	0
			46	36	1	4	5	
2	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			61	51	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			46	36	1	4	5	
2	B	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			61	51	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			46	36	1	4	5	
2	C	1	Total	C	Mg	N	O	0
			65	55	1	4	5	

- Molecule 3 is CHLOROPHYLL B (CCD ID: CHL) (formula:  $C_{55}H_{70}MgN_4O_6$ ) (labeled as "Ligand of Interest" by depositor).



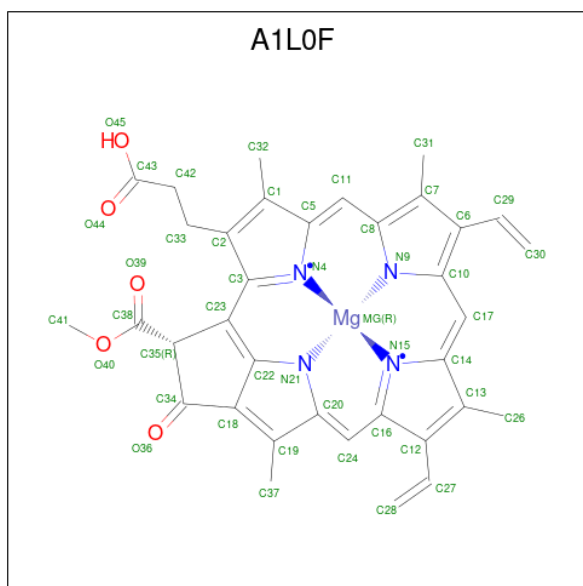
Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total 63	C 52	Mg 1	N 4	O 6	0
3	A	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	A	1	Total 48	C 37	Mg 1	N 4	O 6	0
3	A	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	A	1	Total 53	C 42	Mg 1	N 4	O 6	0
3	A	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	B	1	Total 63	C 52	Mg 1	N 4	O 6	0
3	B	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	B	1	Total 48	C 37	Mg 1	N 4	O 6	0
3	B	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	B	1	Total 53	C 42	Mg 1	N 4	O 6	0
3	B	1	Total 66	C 55	Mg 1	N 4	O 6	0
3	C	1	Total 63	C 52	Mg 1	N 4	O 6	0
3	C	1	Total 66	C 55	Mg 1	N 4	O 6	0

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Mol	Chain	Residues	Atoms					AltConf
3	C	1	Total	C	Mg	N	O	0
			48	37	1	4	6	
3	C	1	Total	C	Mg	N	O	0
			66	55	1	4	6	
3	C	1	Total	C	Mg	N	O	0
			53	42	1	4	6	
3	C	1	Total	C	Mg	N	O	0
			66	55	1	4	6	

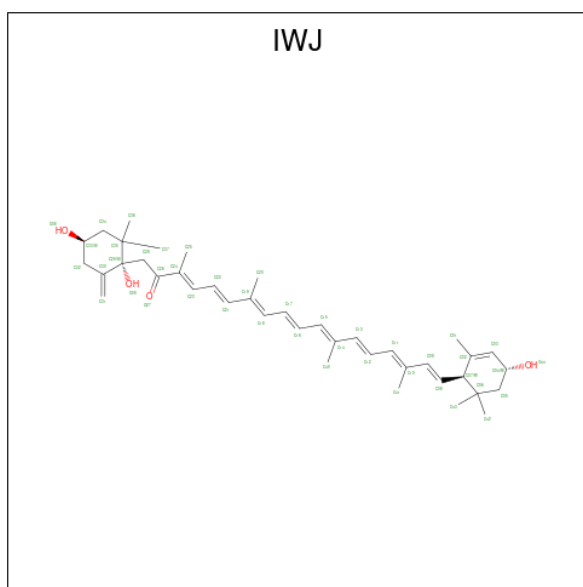
- Molecule 4 is Mg-2,4-divinyl-phaeoporphyrin a5-monomethyl ester (CCD ID: A1L0F) (formula:  $C_{35}H_{30}MgN_4O_5$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
4	B	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
4	C	1	Total	C	Mg	N	O	0
			45	35	1	4	5	

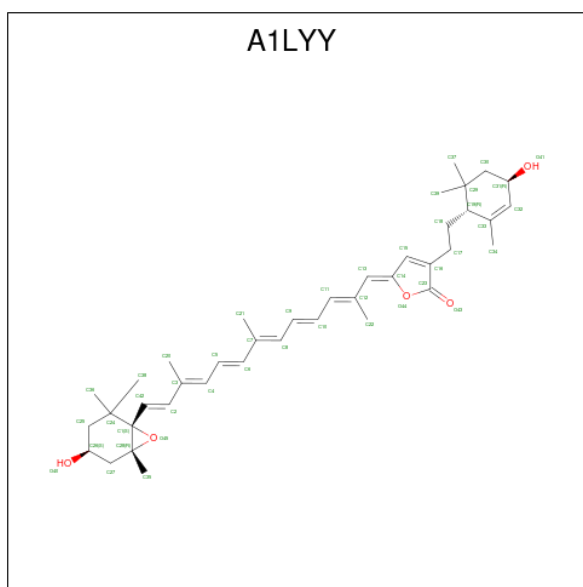
- Molecule 5 is (3 {E},5 {E},7 {E},9 {E},11 {E},13 {E},15 {E},17 {E})-1-[(1 {S},4 {S})-2,2-dimethyl-6-methylidene-1,4-bis(oxidanyl)cyclohexyl]-3,7,12,16-tetramethyl-18-[(1 {R},4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohex-2-en-1-yl]octadeca-3,5,7,9,11,13,15,17-octaen-2-one (CCD ID: IWJ) (formula:  $C_{40}H_{56}O_4$ ) (labeled as "Ligand of Interest" by depositor).





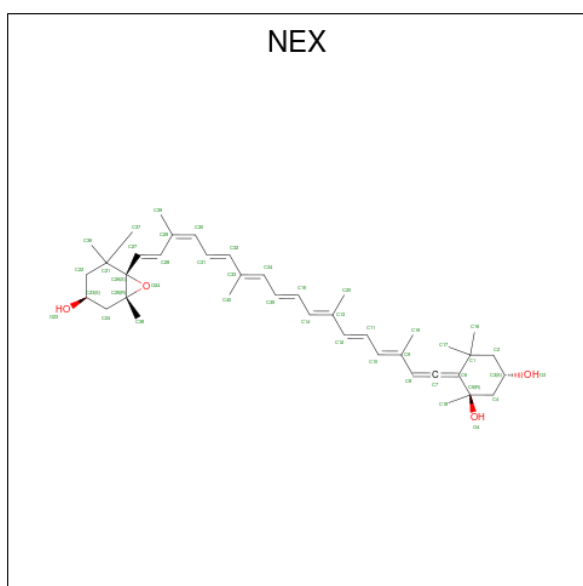
Mol	Chain	Residues	Atoms			AltConf
5	A	1	Total	C	O	0
			44	40	4	
5	A	1	Total	C	O	0
			44	40	4	
5	B	1	Total	C	O	0
			44	40	4	
5	B	1	Total	C	O	0
			44	40	4	
5	C	1	Total	C	O	0
			44	40	4	
5	C	1	Total	C	O	0
			44	40	4	

- Molecule 6 is (5 {Z})-3-[2-[(1 {R},4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohex-2-en-1-yl]ethyl]-5-[(2 {E},4 {E},6 {E},8 {E},10 {E},12 {E})-2,7,11-trimethyl-13-[(1 {S},4 {S},6 {R})-2,2,6-trimethyl-4-oxidanyl-7-oxabicyclo[4.1.0]heptan-1-yl]trideca-2,4,6,8,10,12-hexaenylidene]furan-2-one (CCD ID: A1LYY) (formula: C<sub>40</sub>H<sub>54</sub>O<sub>5</sub>) (labeled as "Ligand of Interest" by depositor).



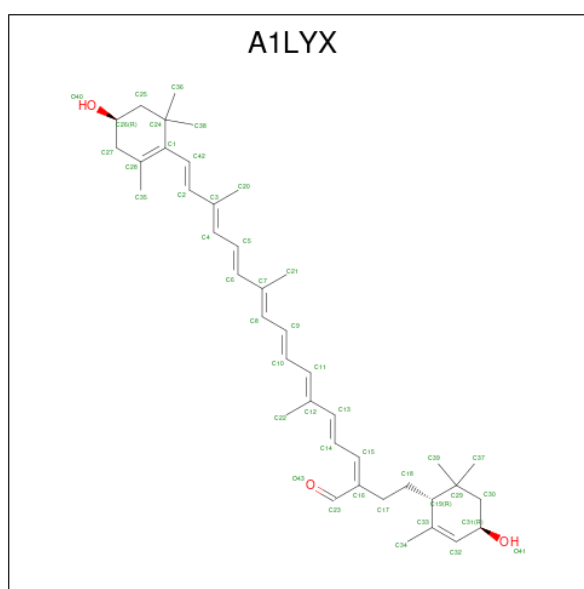
Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total	C	O	0
			45	40	5	
6	B	1	Total	C	O	0
			45	40	5	
6	C	1	Total	C	O	0
			45	40	5	

- Molecule 7 is (1R,3R)-6-[(3E,5E,7E,9E,11E,13E,15E,17E)-18-[(1S,4R,6R)-4-HYDROXY-2,2,6-TRIMETHYL-7-OXABICYCLO[4.1.0]HEPT-1-YL]-3,7,12,16-TETRAMETHYLOCTA DECA-1,3,5,7,9,11,13,15,17-NONAENYLIDENE]-1,5,5-TRIMETHYLCYCLOHEXANE-1,3-DIOL (CCD ID: NEX) (formula: C<sub>40</sub>H<sub>56</sub>O<sub>4</sub>).



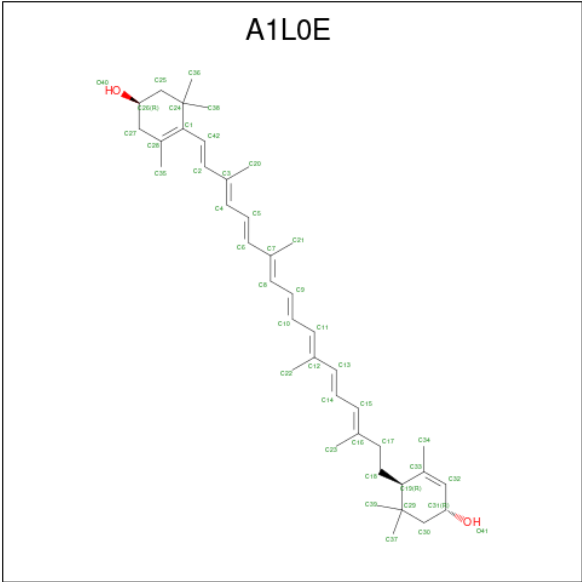
Mol	Chain	Residues	Atoms			AltConf
7	A	1	Total	C	O	0
			44	40	4	
7	B	1	Total	C	O	0
			44	40	4	
7	C	1	Total	C	O	0
			44	40	4	

- Molecule 8 is (2 {Z},4 {E},6 {E},8 {E},10 {E},12 {E},14 {E},16 {E})-6,11,15-trimethyl-17-[(4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohexen-1-yl]-2-[2-[(1 {R},4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohex-2-en-1-yl]ethyl]heptadeca-2,4,6,8,10,12,14,16-octaenal (CCD ID: A1LYX) (formula: C<sub>40</sub>H<sub>56</sub>O<sub>3</sub>) (labeled as "Ligand of Interest" by depositor).



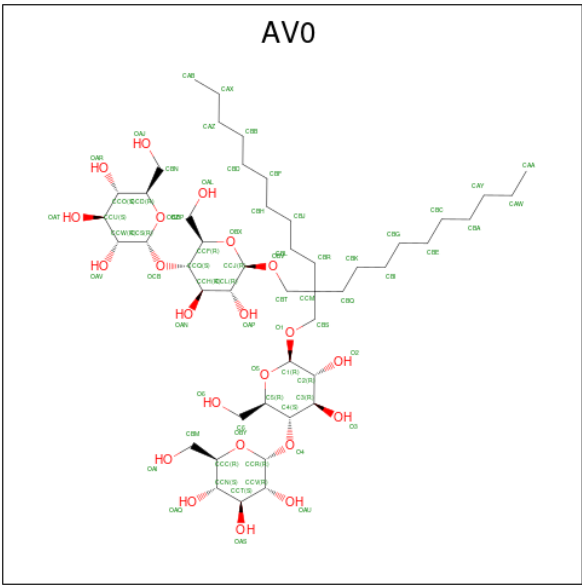
Mol	Chain	Residues	Atoms			AltConf
8	A	1	Total	C	O	0
			43	40	3	
8	B	1	Total	C	O	0
			43	40	3	
8	C	1	Total	C	O	0
			43	40	3	

- Molecule 9 is (1 {R})-3,5,5-trimethyl-4-[(1 {E},3 {E},5 {E},7 {E},9 {E},11 {E},13 {E},15 {E})-3,7,12,16-tetramethyl-18-[(1 {R},4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohex-2-en-1-yl]octadeca-1,3,5,7,9,11,13,15-octaenyl]cyclohex-3-en-1-ol (CCD ID: A1L0E) (formula: C<sub>40</sub>H<sub>58</sub>O<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
9	A	1	Total	C	O	0
			42	40	2	
9	A	1	Total	C	O	0
			42	40	2	
9	C	1	Total	C	O	0
			42	40	2	

- Molecule 10 is Lauryl Maltose Neopentyl Glycol (CCD ID: AV0) (formula: C<sub>47</sub>H<sub>88</sub>O<sub>22</sub>).



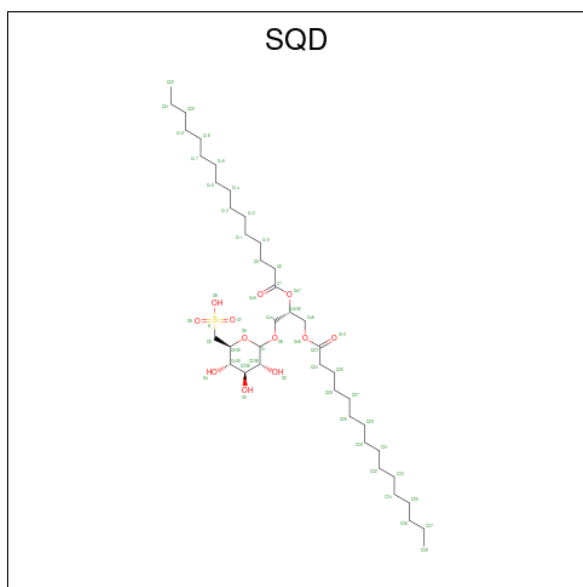
Mol	Chain	Residues	Atoms			AltConf
10	A	1	Total	C	O	0
			25	23	2	

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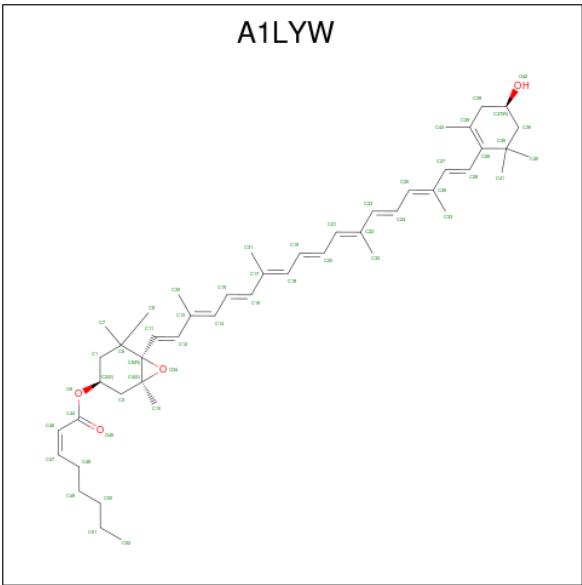
Mol	Chain	Residues	Atoms			AltConf
10	B	1	Total	C	O	0
			25	23	2	
10	C	1	Total	C	O	0
			25	23	2	

- Molecule 11 is 1,2-DI-O-ACYL-3-O-[6-DEOXY-6-SULFO-ALPHA-D-GLUCOPYRANOSYL]-SN-GLYCEROL (CCD ID: SQD) (formula:  $C_{41}H_{78}O_{12}S$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
11	A	1	Total	C	O	0
			41	36	5	
11	B	1	Total	C	O	0
			41	36	5	
11	C	1	Total	C	O	0
			41	36	5	

- Molecule 12 is [(1 {S},3 {S},6 {R})-1,5,5-trimethyl-6-[(1 {E},3 {E},5 {E},7 {E},9 {E},11 {E},13 {E},15 {E},17 {E})-3,7,12,16-tetramethyl-18-[(4 {R})-2,6,6-trimethyl-4-oxidanyl-cyclohexen-1-yl]octadeca-1,3,5,7,9,11,13,15,17-nonaenyl]-7-oxabicyclo[4.1.0]heptan-3-yl] ( {Z} )-oct-2-enoate (CCD ID: A1LYW) (formula:  $C_{48}H_{68}O_4$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
12	A	1	Total	C	O	0
			52	48	4	
12	B	1	Total	C	O	0
			52	48	4	
12	B	1	Total	C	O	0
			52	48	4	

- Molecule 13 is water.

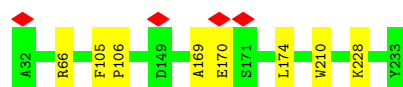
Mol	Chain	Residues	Atoms		AltConf
13	A	62	Total	O	0
			62	62	
13	B	62	Total	O	0
			62	62	
13	C	62	Total	O	0
			62	62	

### 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.

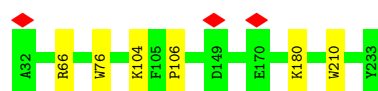
- Molecule 1: Chlorophyll a-b binding protein, chloroplastic

Chain A:  96%



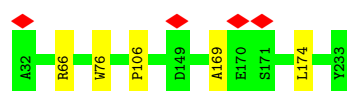
- Molecule 1: Chlorophyll a-b binding protein, chloroplastic

Chain B:  97%



- Molecule 1: Chlorophyll a-b binding protein, chloroplastic

Chain C:  98%



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	1153594	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	80	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	60000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.771	Depositor
Minimum map value	-1.904	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.084	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	219.904, 219.904, 219.904	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.859, 0.859, 0.859	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: CHL, CLA, A1LYX, A1L0E, A1LYW, A1LYY, AV0, IWJ, NEX, A1L0F, SQD

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	0.18	0/1558	0.36	0/2129
1	B	0.18	0/1558	0.37	0/2129
1	C	0.18	0/1558	0.37	0/2129
All	All	0.18	0/4674	0.37	0/6387

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1512	0	1434	6	0
1	B	1512	0	1434	7	0
1	C	1512	0	1434	4	0
2	A	432	0	454	11	0
2	B	432	0	454	9	0
2	C	432	0	454	11	0
3	A	362	0	345	5	0
3	B	362	0	345	7	0
3	C	362	0	345	8	0
4	A	45	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	45	0	0	0	0
4	C	45	0	0	0	0
5	A	88	0	0	1	0
5	B	88	0	0	0	0
5	C	88	0	0	0	0
6	A	45	0	0	0	0
6	B	45	0	0	0	0
6	C	45	0	0	0	0
7	A	44	0	56	0	0
7	B	44	0	56	0	0
7	C	44	0	56	0	0
8	A	43	0	0	0	0
8	B	43	0	0	0	0
8	C	43	0	0	0	0
9	A	84	0	0	0	0
9	C	42	0	0	0	0
10	A	25	0	0	0	0
10	B	25	0	0	0	0
10	C	25	0	0	0	0
11	A	41	0	67	2	0
11	B	41	0	67	4	0
11	C	41	0	67	3	0
12	A	52	0	0	0	0
12	B	104	0	0	0	0
13	A	62	0	0	0	0
13	B	62	0	0	0	0
13	C	62	0	0	0	0
All	All	8379	0	7068	54	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 54 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)
2:C:304:CLA:HMA2	3:C:306:CHL:HBC3	1.70	0.72
2:B:304:CLA:HMA2	3:B:306:CHL:HBC3	1.79	0.64
3:C:305:CHL:H203	2:C:308:CLA:H193	1.79	0.63
2:A:303:CLA:HMA2	3:A:305:CHL:HBC3	1.81	0.62
1:A:210:TRP:CE2	11:A:322:SQD:H101	2.40	0.56

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	200/202 (99%)	198 (99%)	2 (1%)	0	100	100
1	B	200/202 (99%)	199 (100%)	1 (0%)	0	100	100
1	C	200/202 (99%)	197 (98%)	3 (2%)	0	100	100
All	All	600/606 (99%)	594 (99%)	6 (1%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	153/153 (100%)	152 (99%)	1 (1%)	76	74
1	B	153/153 (100%)	153 (100%)	0	100	100
1	C	153/153 (100%)	153 (100%)	0	100	100
All	All	459/459 (100%)	458 (100%)	1 (0%)	85	87

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	170	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	211	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](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

69 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	$\# Z  > 2$
3	CHL	A	304	1	60,74,74	1.39	4 (6%)	58,114,114	1.85	8 (13%)
6	A1LYY	B	317	-	45,48,48	0.55	1 (2%)	58,73,73	0.99	3 (5%)
3	CHL	C	303	1	57,71,74	1.40	5 (8%)	54,110,114	1.80	8 (14%)
9	A1L0E	C	301	-	43,43,43	0.14	0	54,60,60	0.45	0
5	IWJ	A	318	-	43,45,45	0.46	1 (2%)	47,65,65	1.39	3 (6%)
12	A1LYW	B	301	-	51,54,54	0.37	0	66,77,77	1.28	7 (10%)
5	IWJ	A	315	-	43,45,45	0.57	1 (2%)	47,65,65	1.33	3 (6%)
8	A1LYX	A	319	-	43,44,44	0.46	1 (2%)	52,61,61	2.05	4 (7%)
11	SQD	B	322	-	40,40,54	0.20	0	42,42,65	0.21	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
12	A1LYW	B	323	-	51,54,54	0.39	0	66,77,77	1.27	6 (9%)
2	CLA	A	307	13	69,73,73	1.56	8 (11%)	82,113,113	1.02	9 (10%)
3	CHL	B	305	1	60,74,74	1.37	4 (6%)	58,114,114	1.90	9 (15%)
7	NEX	A	317	-	40,46,46	1.53	5 (12%)	50,70,70	0.72	2 (4%)
2	CLA	A	310	1	65,69,73	1.60	8 (12%)	77,108,113	1.03	9 (11%)
9	A1L0E	A	320	-	43,43,43	0.19	0	54,60,60	0.45	0
2	CLA	B	308	-	69,73,73	1.54	9 (13%)	82,113,113	1.02	9 (10%)
7	NEX	B	318	-	40,46,46	1.93	6 (15%)	50,70,70	0.75	3 (6%)
9	A1L0E	A	324	-	43,43,43	0.20	0	54,60,60	0.44	0
10	AV0	C	321	-	24,24,72	0.14	0	26,26,98	0.69	1 (3%)
11	SQD	C	322	-	40,40,54	0.20	0	42,42,65	0.19	0
3	CHL	B	306	-	42,56,74	1.61	5 (11%)	36,92,114	2.37	8 (22%)
2	CLA	B	302	1	69,73,73	1.57	9 (13%)	82,113,113	0.96	6 (7%)
3	CHL	B	315	1	60,74,74	1.38	4 (6%)	58,114,114	1.81	8 (13%)
4	A1L0F	B	309	1	50,53,53	1.96	11 (22%)	60,89,89	2.45	11 (18%)
3	CHL	B	303	1	57,71,74	1.42	5 (8%)	54,110,114	1.89	9 (16%)
3	CHL	A	314	1	60,74,74	1.37	4 (6%)	58,114,114	1.81	8 (13%)
6	A1LYY	A	316	-	45,48,48	0.51	1 (2%)	58,73,73	0.92	3 (5%)
3	CHL	C	306	-	42,56,74	1.64	5 (11%)	36,92,114	2.41	7 (19%)
5	IWJ	C	316	-	43,45,45	0.56	1 (2%)	47,65,65	1.33	3 (6%)
4	A1L0F	C	309	1	50,53,53	1.99	11 (22%)	60,89,89	2.70	11 (18%)
3	CHL	B	314	1	47,61,74	1.54	4 (8%)	41,98,114	2.05	6 (14%)
2	CLA	C	308	-	69,73,73	1.53	9 (13%)	82,113,113	1.05	9 (10%)
2	CLA	A	301	1	69,73,73	1.59	9 (13%)	82,113,113	0.97	7 (8%)
2	CLA	C	302	1	69,73,73	1.60	10 (14%)	82,113,113	0.96	6 (7%)
2	CLA	C	310	1	69,73,73	1.54	10 (14%)	82,113,113	1.00	9 (10%)
2	CLA	C	312	1	50,54,73	1.82	9 (18%)	59,90,113	1.22	9 (15%)
3	CHL	C	315	1	60,74,74	1.41	4 (6%)	58,114,114	1.81	8 (13%)
2	CLA	B	311	1	65,69,73	1.60	8 (12%)	77,108,113	1.01	9 (11%)
11	SQD	A	322	-	40,40,54	0.22	0	42,42,65	0.20	0
3	CHL	A	305	13	42,56,74	1.73	5 (11%)	36,92,114	2.38	7 (19%)
2	CLA	B	313	1	69,73,73	1.51	9 (13%)	82,113,113	0.97	8 (9%)
10	AV0	A	321	-	24,24,72	0.14	0	26,26,98	0.70	1 (3%)
2	CLA	C	313	1	69,73,73	1.53	9 (13%)	82,113,113	0.97	8 (9%)
5	IWJ	B	316	-	43,45,45	0.53	1 (2%)	47,65,65	1.32	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	CHL	B	307	-	60,74,74	1.35	4 (6%)	58,114,114	1.80	8 (13%)
3	CHL	A	306	13	60,74,74	1.35	3 (5%)	58,114,114	1.82	8 (13%)
5	IWJ	B	319	-	43,45,45	0.46	1 (2%)	47,65,65	1.40	3 (6%)
8	A1LYX	B	320	-	43,44,44	0.37	0	52,61,61	2.11	4 (7%)
10	AV0	B	321	-	24,24,72	0.13	0	26,26,98	0.70	1 (3%)
2	CLA	A	303	13	69,73,73	1.54	9 (13%)	82,113,113	0.95	8 (9%)
2	CLA	C	311	1	65,69,73	1.60	9 (13%)	77,108,113	1.03	8 (10%)
2	CLA	A	309	1	69,73,73	1.56	9 (13%)	82,113,113	1.03	7 (8%)
2	CLA	A	312	1	69,73,73	1.53	9 (13%)	82,113,113	0.96	8 (9%)
2	CLA	B	304	-	69,73,73	1.54	9 (13%)	82,113,113	0.97	8 (9%)
6	A1LYY	C	317	-	45,48,48	0.54	1 (2%)	58,73,73	0.89	3 (5%)
8	A1LYX	C	320	-	43,44,44	0.53	1 (2%)	52,61,61	2.01	4 (7%)
3	CHL	A	302	1	57,71,74	1.38	6 (10%)	54,110,114	1.86	8 (14%)
2	CLA	B	310	1	69,73,73	1.57	9 (13%)	82,113,113	0.99	8 (9%)
2	CLA	B	312	1	50,54,73	1.81	8 (16%)	59,90,113	1.23	9 (15%)
4	A1L0F	A	308	1	50,53,53	1.90	10 (20%)	60,89,89	2.57	13 (21%)
12	A1LYW	A	323	-	51,54,54	0.40	0	66,77,77	1.26	6 (9%)
5	IWJ	C	319	-	43,45,45	0.45	1 (2%)	47,65,65	1.37	3 (6%)
2	CLA	A	311	1	50,54,73	1.81	9 (18%)	59,90,113	1.21	8 (13%)
3	CHL	C	307	-	60,74,74	1.34	4 (6%)	58,114,114	1.82	7 (12%)
3	CHL	A	313	1	47,61,74	1.59	5 (10%)	41,98,114	1.95	7 (17%)
3	CHL	C	305	1	60,74,74	1.41	5 (8%)	58,114,114	1.84	9 (15%)
2	CLA	C	304	-	69,73,73	1.55	8 (11%)	82,113,113	0.96	8 (9%)
7	NEX	C	318	-	40,46,46	1.53	7 (17%)	50,70,70	0.75	2 (4%)
3	CHL	C	314	1	47,61,74	1.57	5 (10%)	41,98,114	1.99	6 (14%)

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	CHL	A	304	1	4/4/20/26	8/39/137/137	-
6	A1LYY	B	317	-	-	0/27/90/90	0/4/4/4
3	CHL	C	303	1	4/4/19/26	5/36/134/137	-
9	A1L0E	C	301	-	-	1/29/67/67	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	IWJ	A	318	-	1/1/13/26	1/33/76/76	0/2/2/2
12	A1LYW	B	301	-	-	2/41/91/91	0/3/3/3
5	IWJ	A	315	-	1/1/13/26	1/33/76/76	0/2/2/2
12	A1LYW	B	323	-	1/1/13/29	2/41/91/91	0/3/3/3
8	A1LYX	A	319	-	-	2/31/69/69	0/2/2/2
11	SQD	B	322	-	-	6/42/42/69	-
2	CLA	A	307	13	2/2/15/20	3/39/115/115	-
3	CHL	B	305	1	4/4/20/26	7/39/137/137	-
7	NEX	A	317	-	-	2/27/83/83	0/3/3/3
2	CLA	A	310	1	2/2/14/20	6/35/111/115	-
9	A1L0E	A	320	-	-	1/29/67/67	0/2/2/2
2	CLA	B	308	-	2/2/15/20	6/39/115/115	-
7	NEX	B	318	-	-	2/27/83/83	0/3/3/3
9	A1L0E	A	324	-	-	1/29/67/67	0/2/2/2
10	AV0	C	321	-	-	1/28/28/130	-
11	SQD	C	322	-	-	11/42/42/69	-
3	CHL	B	306	-	3/3/16/26	2/18/116/137	-
2	CLA	B	302	1	2/2/15/20	6/39/115/115	-
3	CHL	B	315	1	4/4/20/26	9/39/137/137	-
4	A1L0F	B	309	1	1/1/6/11	1/15/71/71	-
3	CHL	B	303	1	4/4/19/26	6/36/134/137	-
3	CHL	A	314	1	4/4/20/26	9/39/137/137	-
6	A1LYY	A	316	-	-	0/27/90/90	0/4/4/4
3	CHL	C	306	-	3/3/16/26	1/18/116/137	-
5	IWJ	C	316	-	1/1/13/26	1/33/76/76	0/2/2/2
4	A1L0F	C	309	1	1/1/6/11	5/15/71/71	-
3	CHL	B	314	1	3/3/17/26	4/24/122/137	-
2	CLA	C	308	-	2/2/15/20	5/39/115/115	-
2	CLA	A	301	1	2/2/15/20	5/39/115/115	-
2	CLA	C	302	1	2/2/15/20	5/39/115/115	-
2	CLA	C	310	1	2/2/15/20	3/39/115/115	-
2	CLA	C	312	1	1/1/11/20	2/17/93/115	-
3	CHL	C	315	1	4/4/20/26	11/39/137/137	-
2	CLA	B	311	1	2/2/14/20	7/35/111/115	-
11	SQD	A	322	-	-	8/42/42/69	-
3	CHL	A	305	13	3/3/16/26	2/18/116/137	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CLA	B	313	1	2/2/15/20	10/39/115/115	-
10	AV0	A	321	-	-	1/28/28/130	-
2	CLA	C	313	1	2/2/15/20	10/39/115/115	-
5	IWJ	B	316	-	1/1/13/26	1/33/76/76	0/2/2/2
3	CHL	B	307	-	4/4/20/26	12/39/137/137	-
3	CHL	A	306	13	4/4/20/26	8/39/137/137	-
5	IWJ	B	319	-	1/1/13/26	2/33/76/76	0/2/2/2
8	A1LYX	B	320	-	-	3/31/69/69	0/2/2/2
10	AV0	B	321	-	-	1/28/28/130	-
2	CLA	A	303	13	2/2/15/20	0/39/115/115	-
2	CLA	C	311	1	2/2/14/20	7/35/111/115	-
2	CLA	A	309	1	2/2/15/20	4/39/115/115	-
2	CLA	A	312	1	2/2/15/20	10/39/115/115	-
2	CLA	B	304	-	2/2/15/20	1/39/115/115	-
6	A1LYY	C	317	-	-	0/27/90/90	0/4/4/4
8	A1LYX	C	320	-	-	3/31/69/69	0/2/2/2
3	CHL	A	302	1	4/4/19/26	5/36/134/137	-
2	CLA	B	310	1	2/2/15/20	5/39/115/115	-
2	CLA	B	312	1	1/1/11/20	2/17/93/115	-
4	A1LOF	A	308	1	1/1/6/11	1/15/71/71	-
12	A1LYW	A	323	-	-	2/41/91/91	0/3/3/3
5	IWJ	C	319	-	1/1/13/26	1/33/76/76	0/2/2/2
2	CLA	A	311	1	1/1/11/20	4/17/93/115	-
3	CHL	C	307	-	4/4/20/26	11/39/137/137	-
3	CHL	A	313	1	3/3/17/26	4/24/122/137	-
3	CHL	C	305	1	4/4/20/26	7/39/137/137	-
2	CLA	C	304	-	2/2/15/20	2/39/115/115	-
7	NEX	C	318	-	-	2/27/83/83	0/3/3/3
3	CHL	C	314	1	3/3/17/26	4/24/122/137	-

The worst 5 of 328 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	301	CLA	C4B-NB	8.77	1.49	1.37
2	C	302	CLA	C4B-NB	8.59	1.49	1.37
2	B	302	CLA	C4B-NB	8.31	1.48	1.37
3	A	305	CHL	C1B-C2B	8.21	1.48	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	303	CLA	C4B-NB	7.91	1.48	1.37

The worst 5 of 411 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	309	A1L0F	C5-N4-C3	16.70	114.30	106.68
4	A	308	A1L0F	C5-N4-C3	15.28	113.65	106.68
4	B	309	A1L0F	C5-N4-C3	14.80	113.43	106.68
3	C	306	CHL	C1B-CHB-C4A	11.80	128.91	121.32
3	A	305	CHL	C1B-CHB-C4A	11.53	128.74	121.32

5 of 115 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	301	CLA	C8
2	A	301	CLA	ND
2	A	303	CLA	C8
2	A	303	CLA	ND
2	A	307	CLA	C8

5 of 283 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	310	CLA	C2B-C3B-CAB-CBB
2	A	310	CLA	C4B-C3B-CAB-CBB
2	B	311	CLA	C2B-C3B-CAB-CBB
2	B	311	CLA	C4B-C3B-CAB-CBB
2	B	313	CLA	C6-C7-C8-C10

There are no ring outliers.

35 monomers are involved in 49 short contacts:

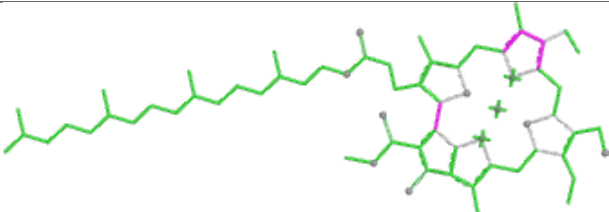
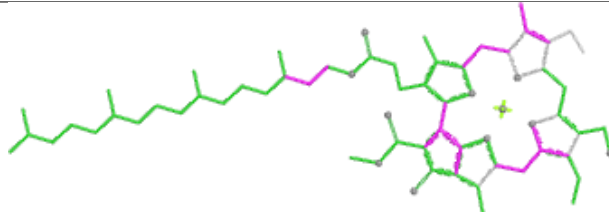
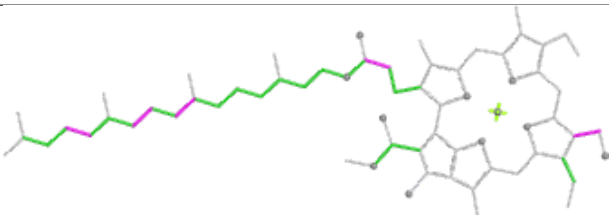
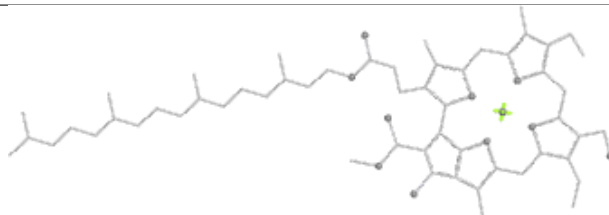
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	304	CHL	2	0
3	C	303	CHL	1	0
5	A	318	IWJ	1	0
11	B	322	SQD	4	0
2	A	307	CLA	3	0
3	B	305	CHL	3	0
2	A	310	CLA	2	0
2	B	308	CLA	2	0

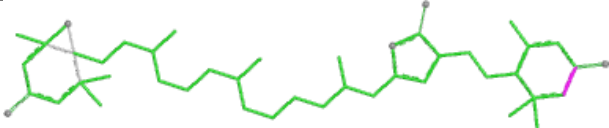
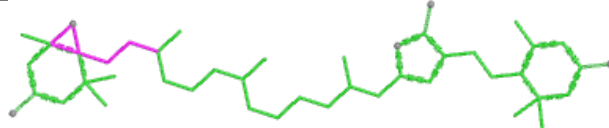
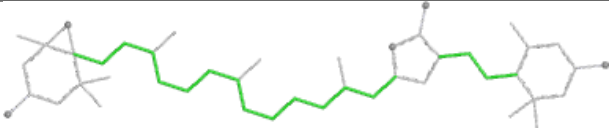
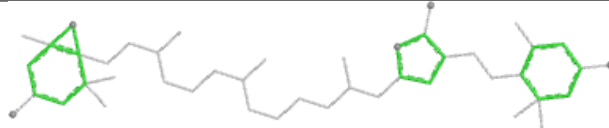
*Continued on next page...*

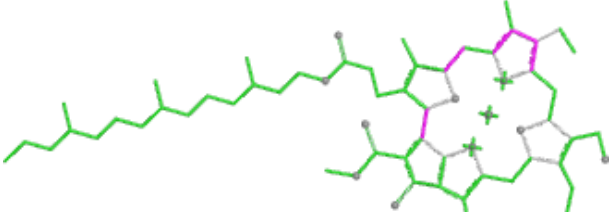
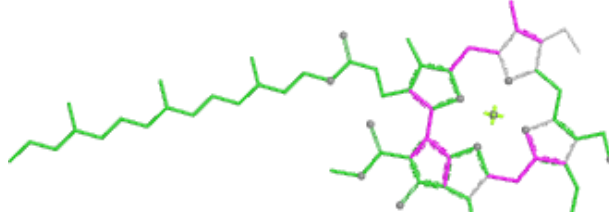
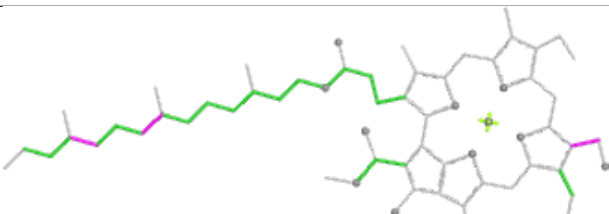
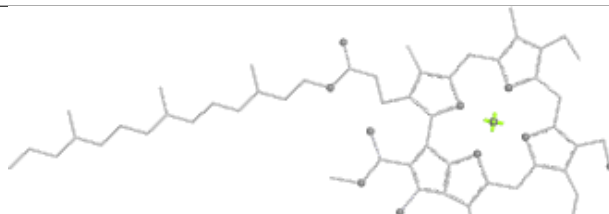
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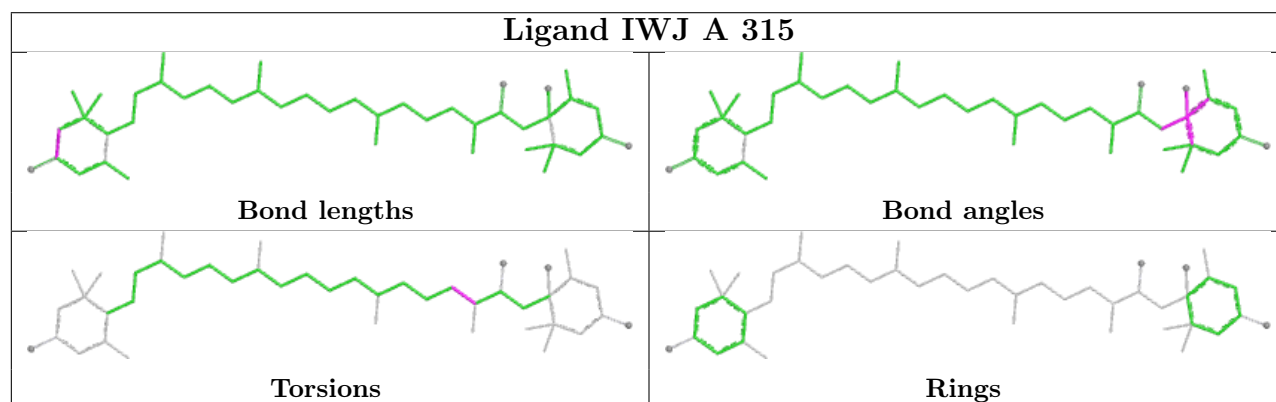
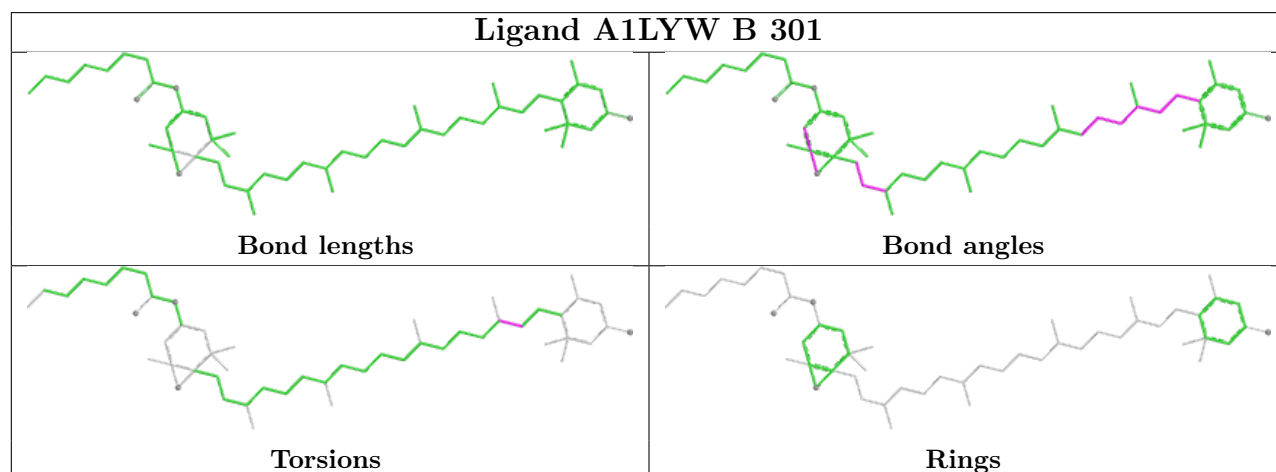
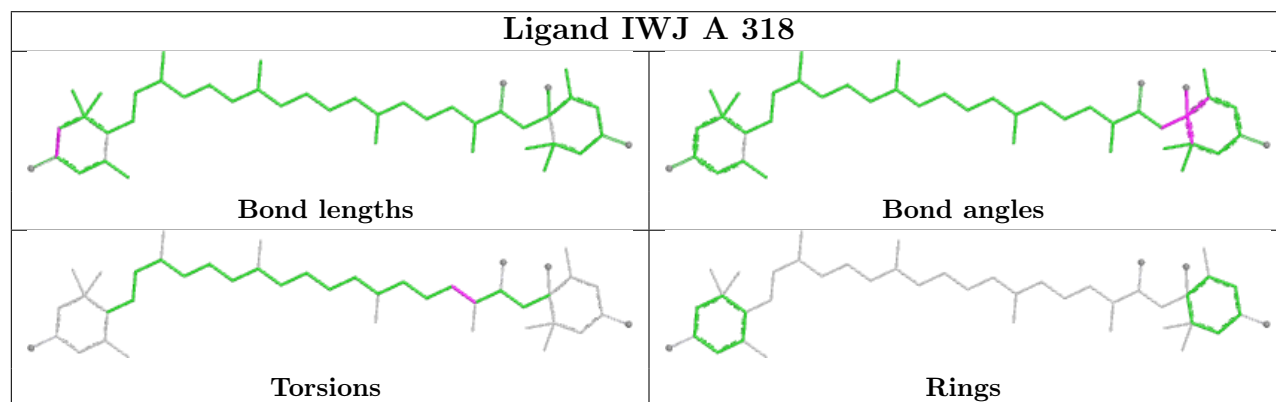
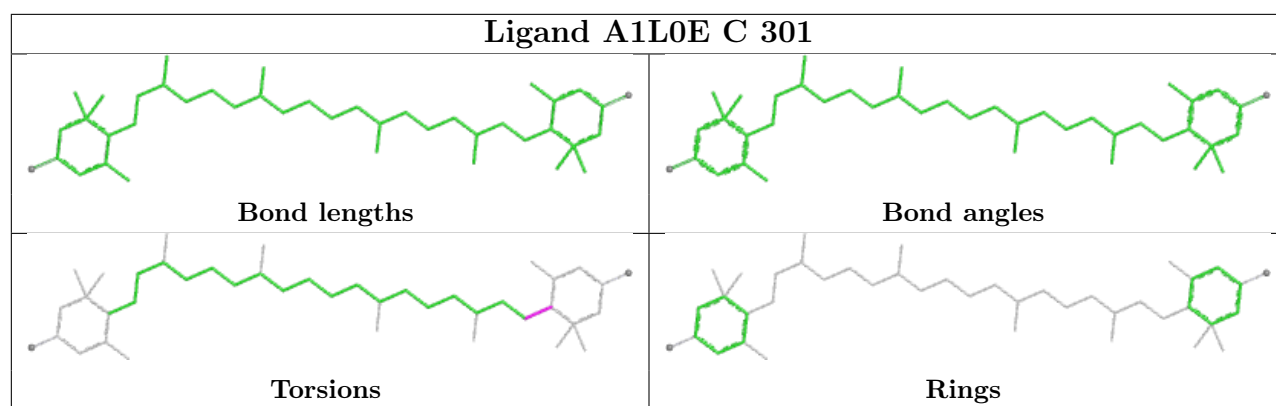
Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	C	322	SQD	3	0
3	B	306	CHL	2	0
3	B	315	CHL	3	0
3	A	314	CHL	2	0
3	C	306	CHL	2	0
2	C	308	CLA	3	0
2	C	310	CLA	2	0
2	C	312	CLA	2	0
3	C	315	CHL	2	0
2	B	311	CLA	1	0
11	A	322	SQD	2	0
3	A	305	CHL	2	0
2	B	313	CLA	1	0
2	C	313	CLA	2	0
3	B	307	CHL	2	0
3	A	306	CHL	1	0
2	A	303	CLA	2	0
2	C	311	CLA	1	0
2	A	309	CLA	2	0
2	A	312	CLA	2	0
2	B	304	CLA	3	0
2	B	310	CLA	2	0
2	B	312	CLA	1	0
2	A	311	CLA	1	0
3	C	307	CHL	3	0
3	C	305	CHL	3	0
2	C	304	CLA	2	0

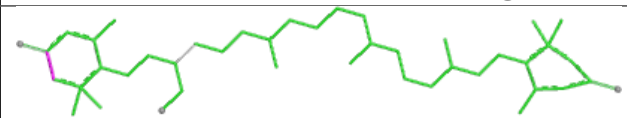
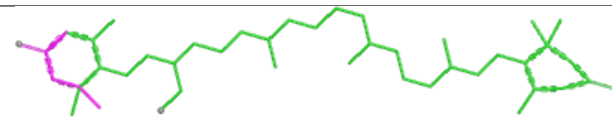
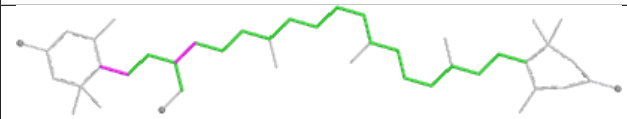
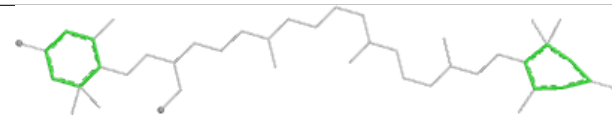
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

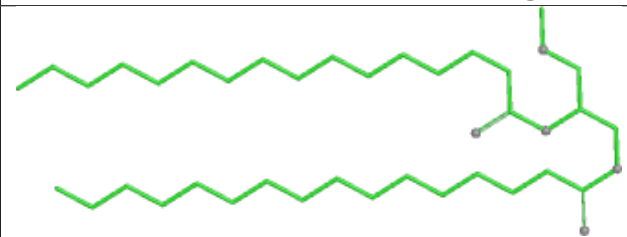
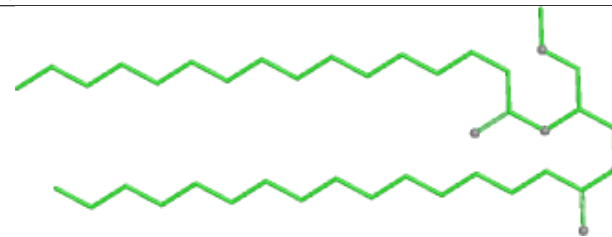
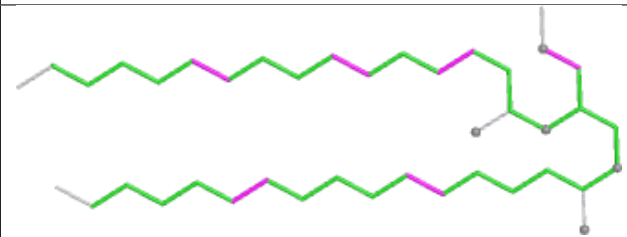
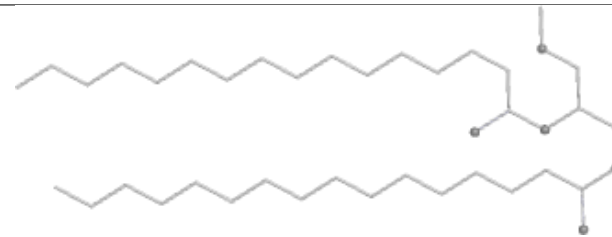
Ligand CHL A 304	
	
Bond lengths	Bond angles
	
Torsions	Rings

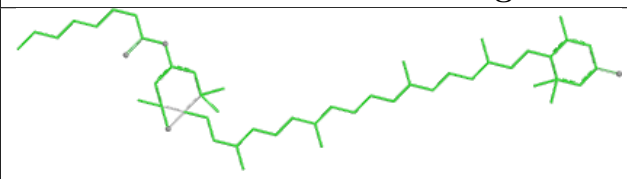
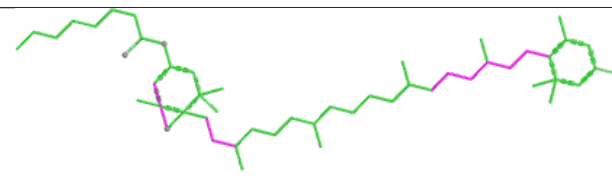

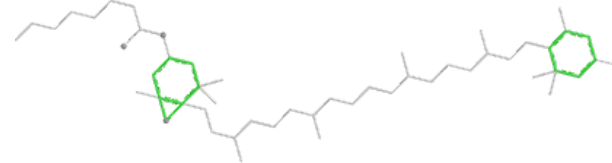
Ligand A1LYY B 317	
	
Bond lengths	Bond angles
	
Torsions	Rings

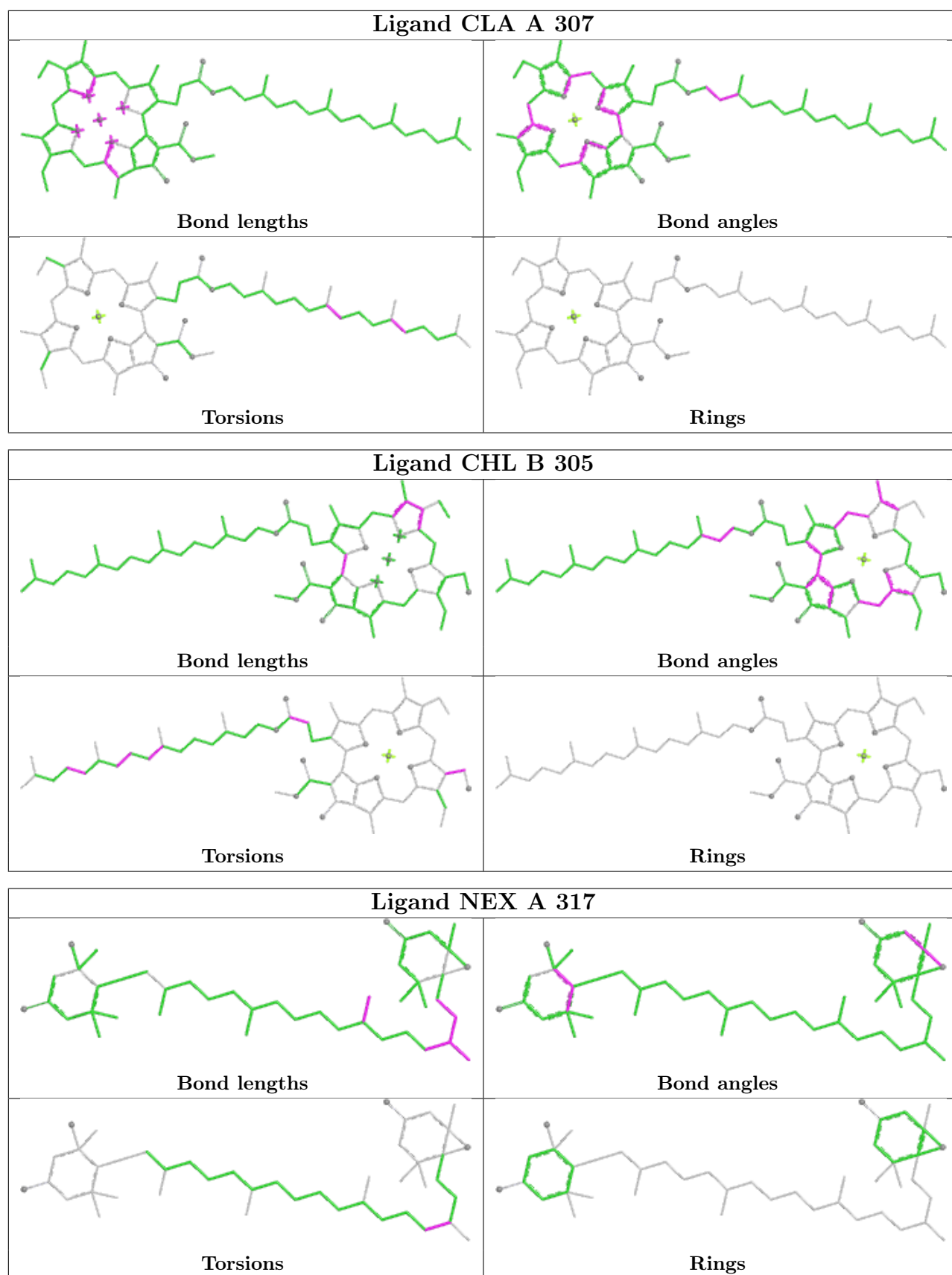
Ligand CHL C 303	
	
Bond lengths	Bond angles
	
Torsions	Rings

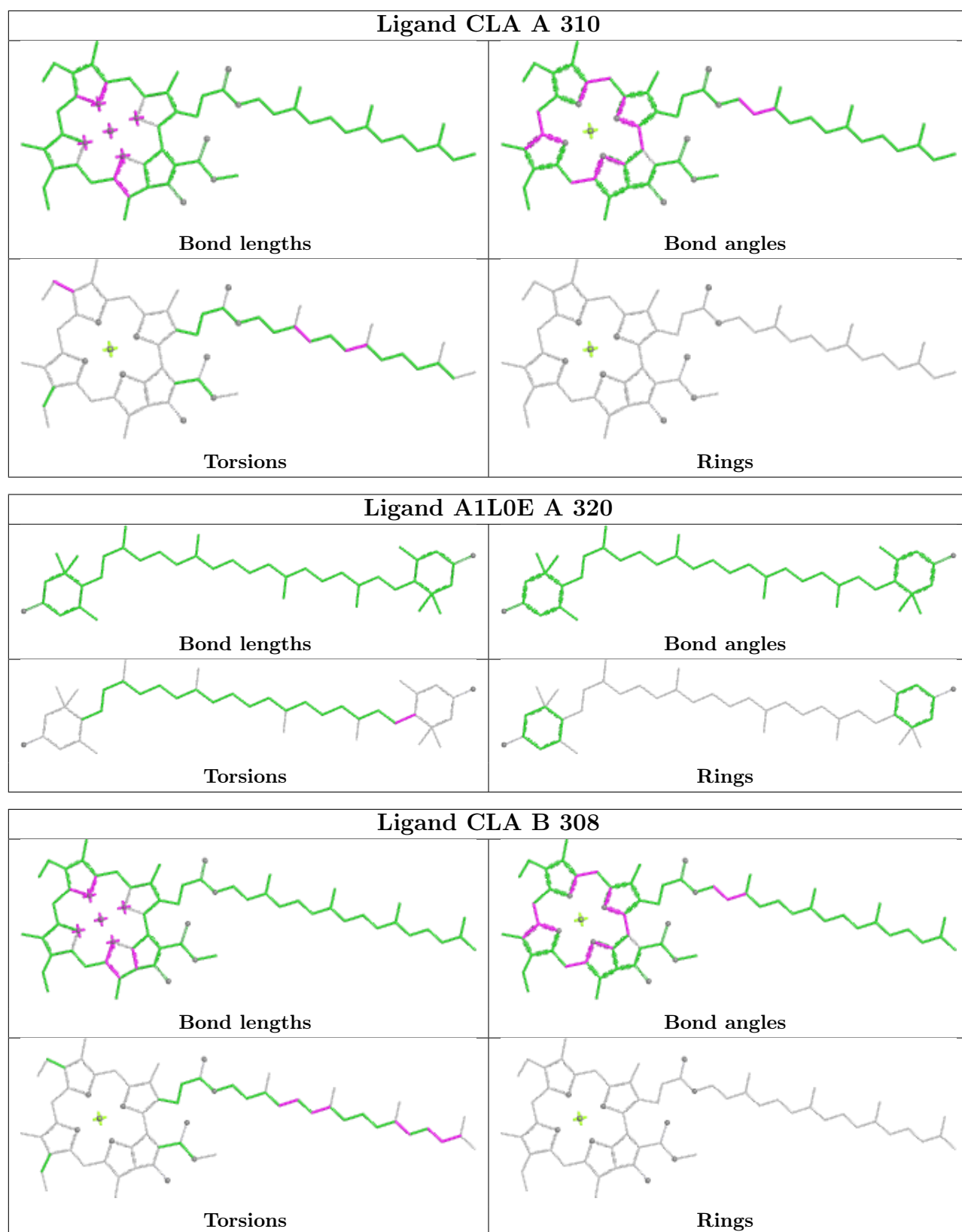


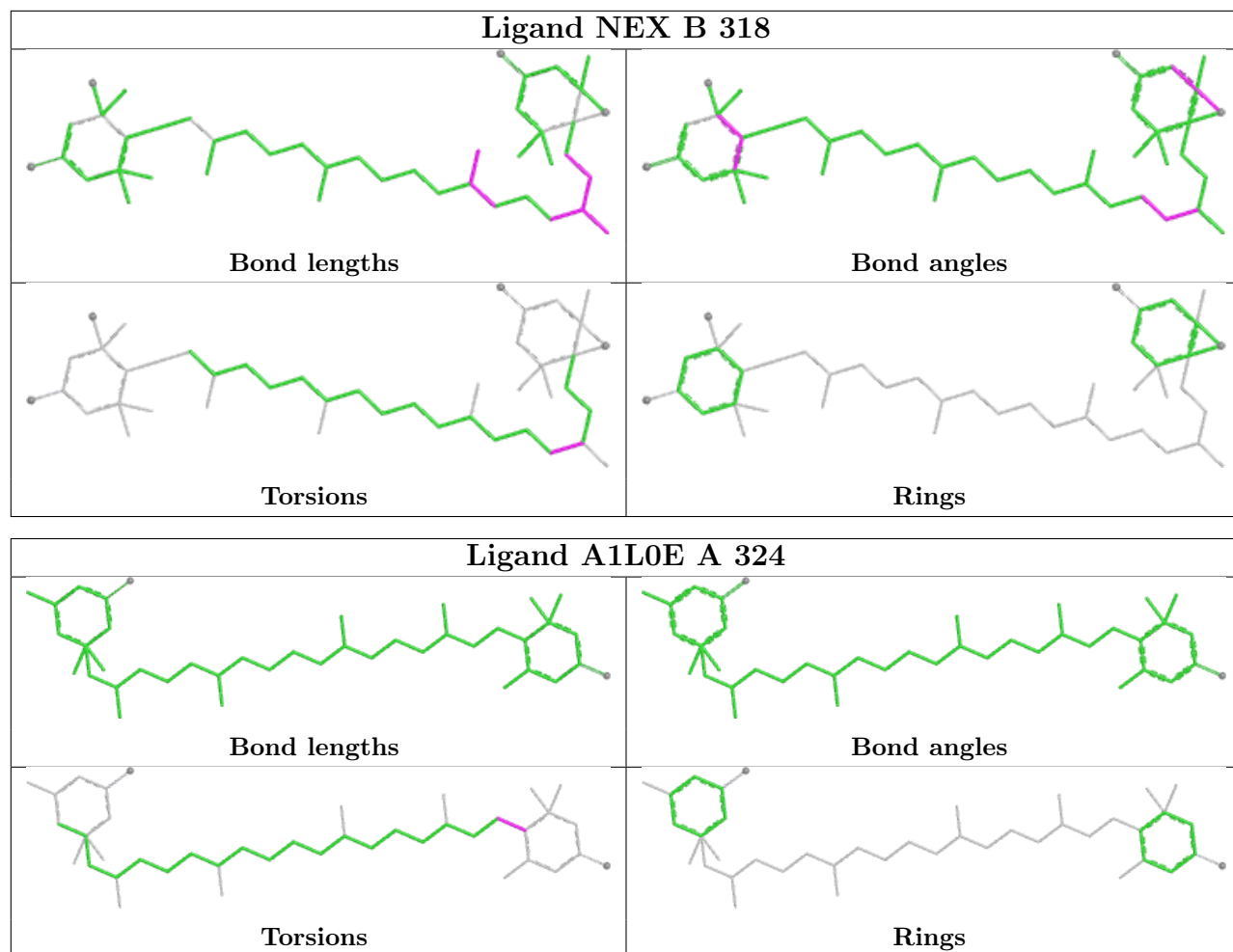
Ligand A1LYX A 319	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand SQD B 322	
	
Bond lengths	Bond angles
	
Torsions	Rings

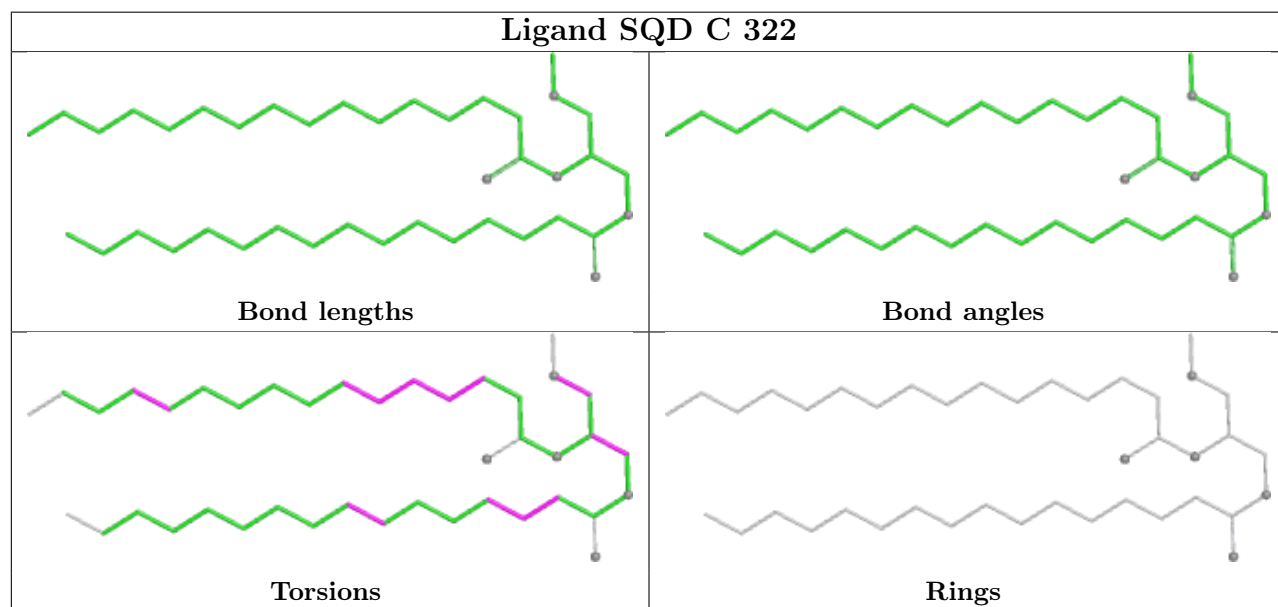
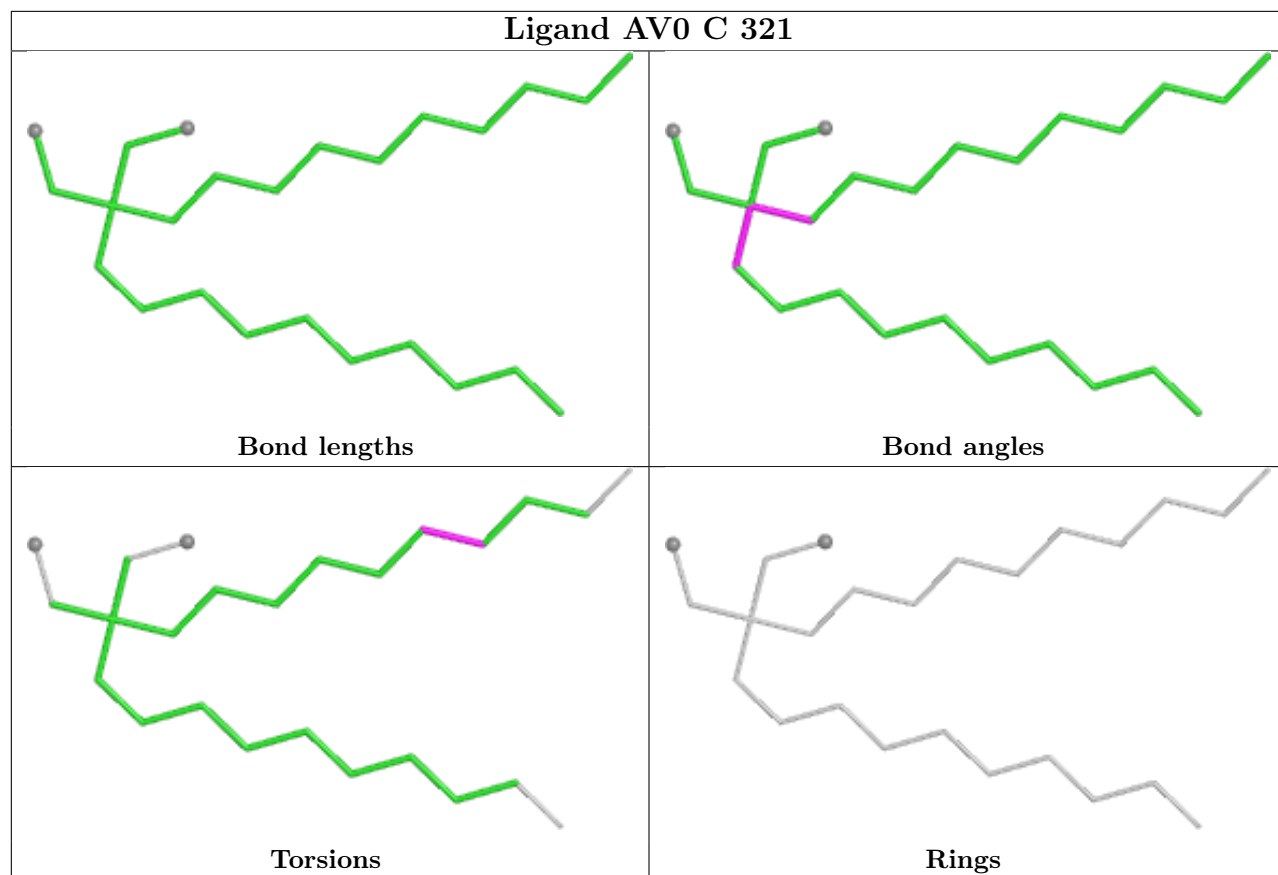
Ligand A1LYW B 323	
	
Bond lengths	Bond angles
	
Torsions	Rings



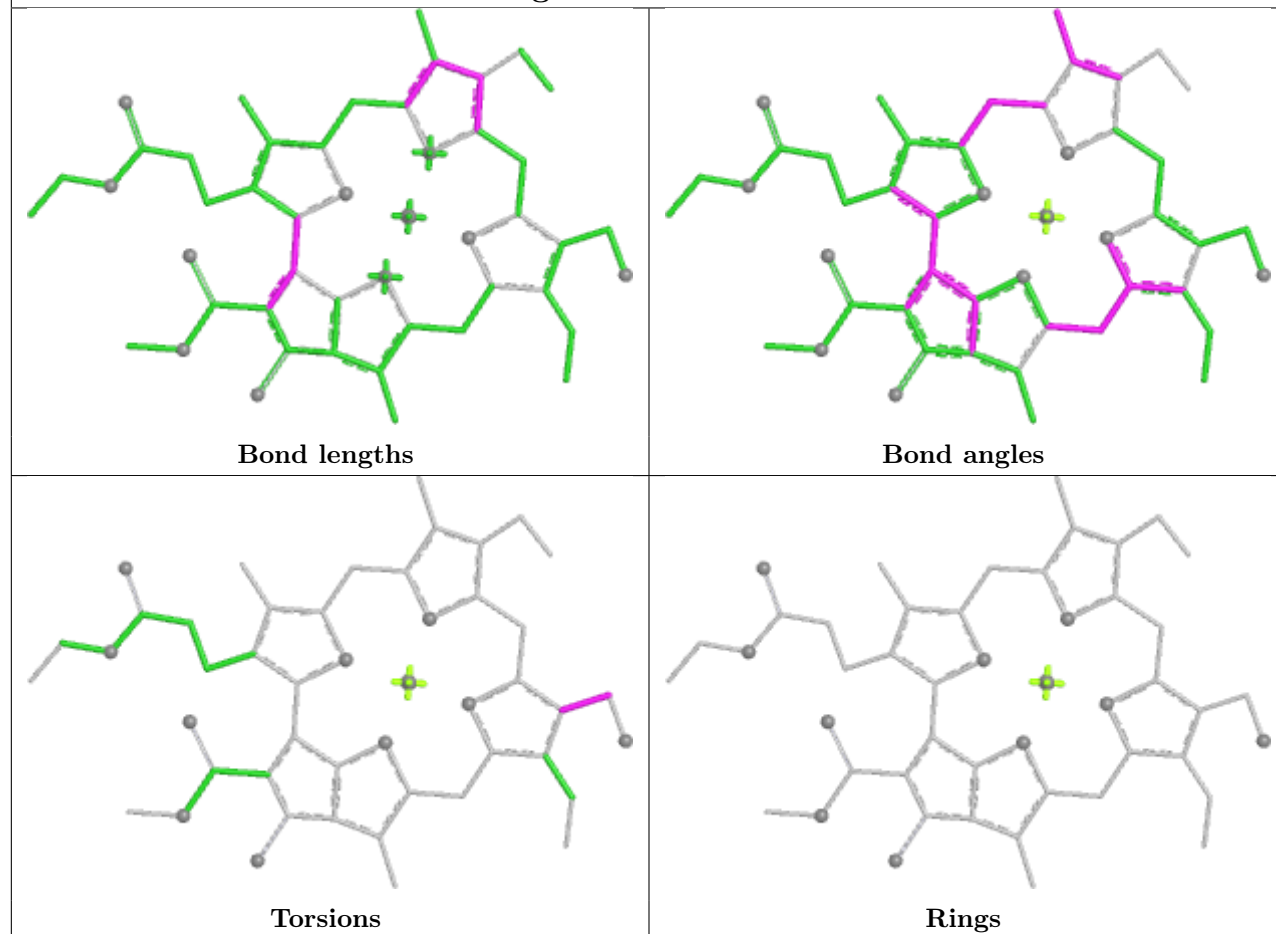




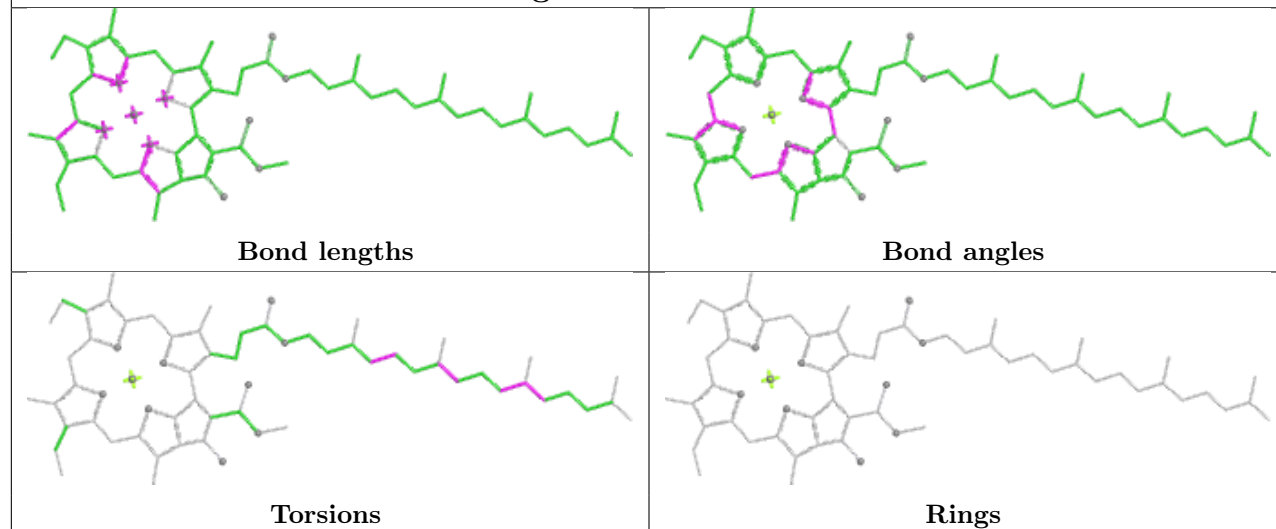


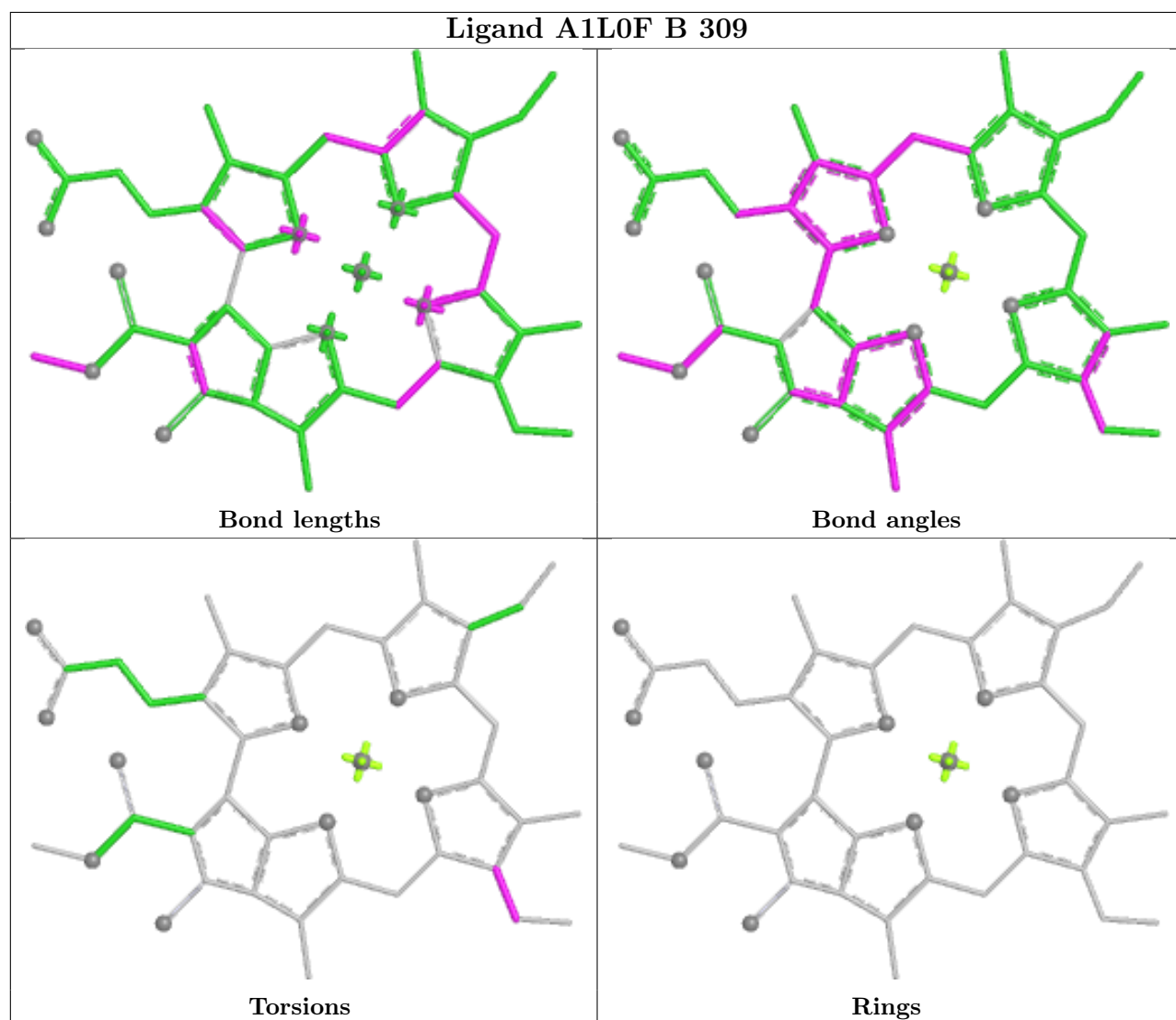
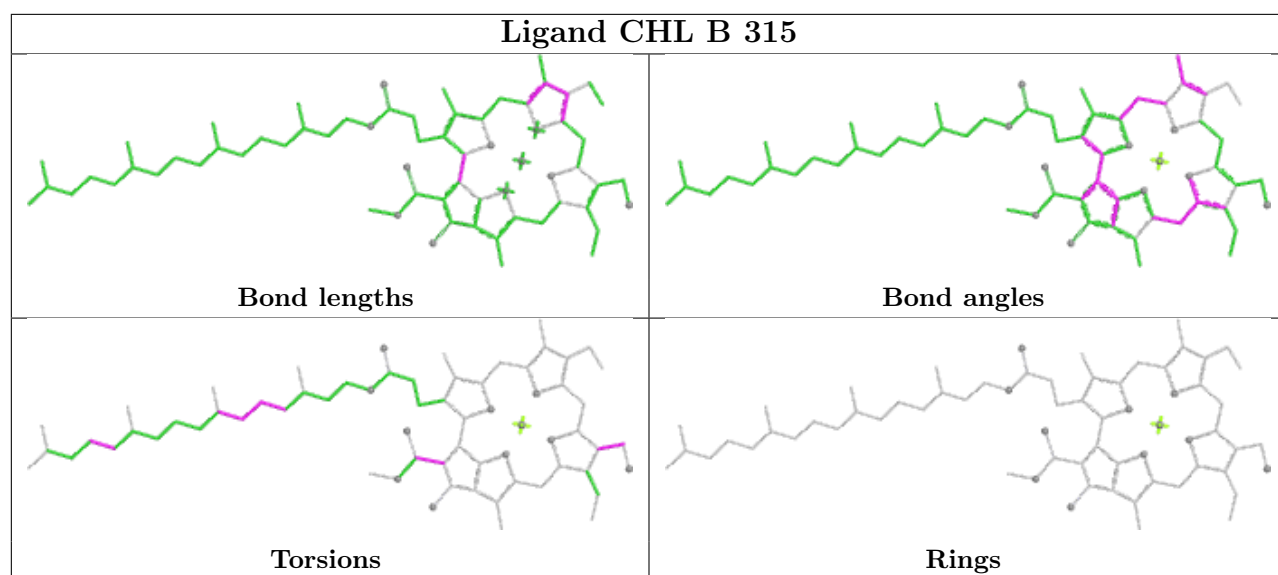


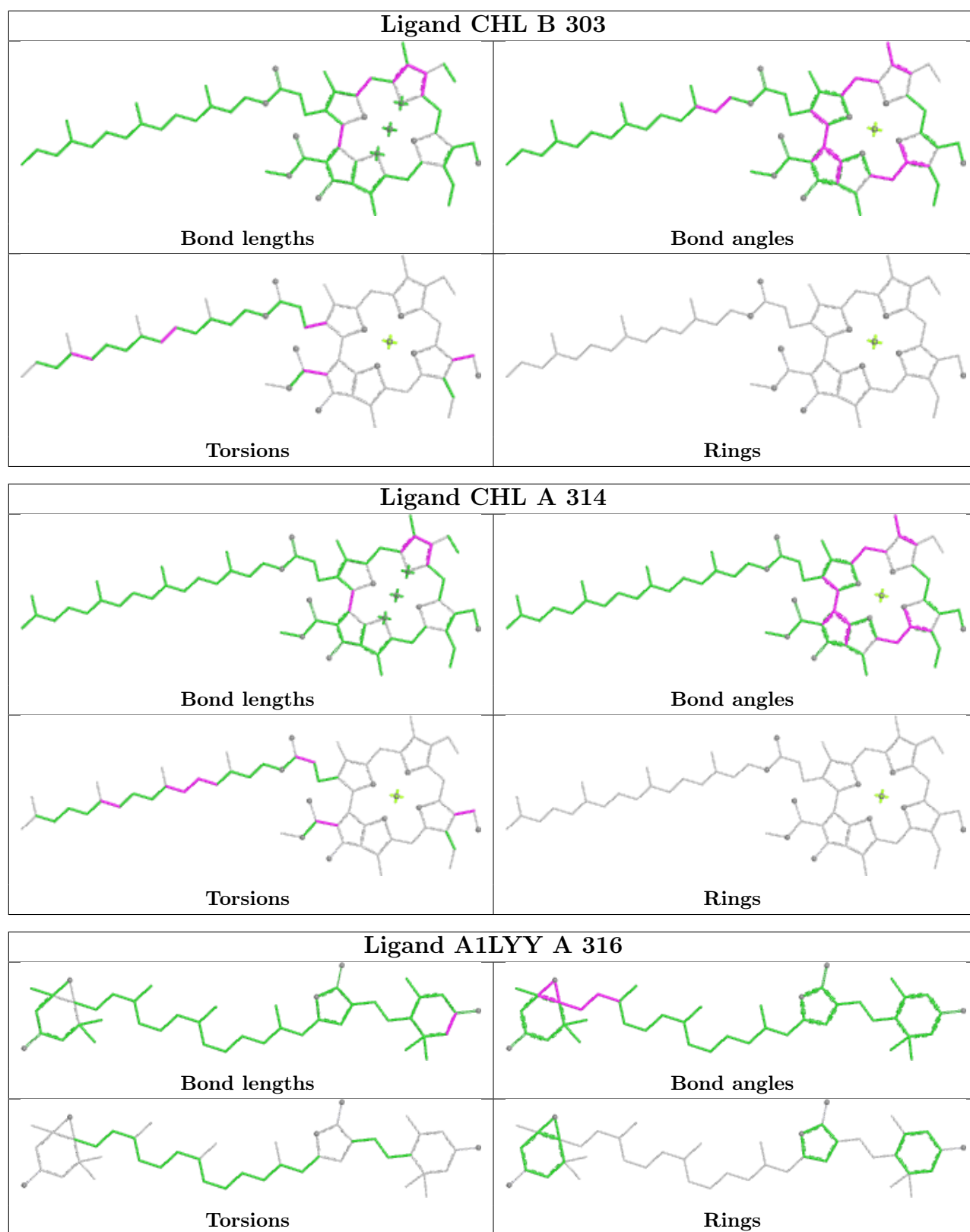
## Ligand CHL B 306

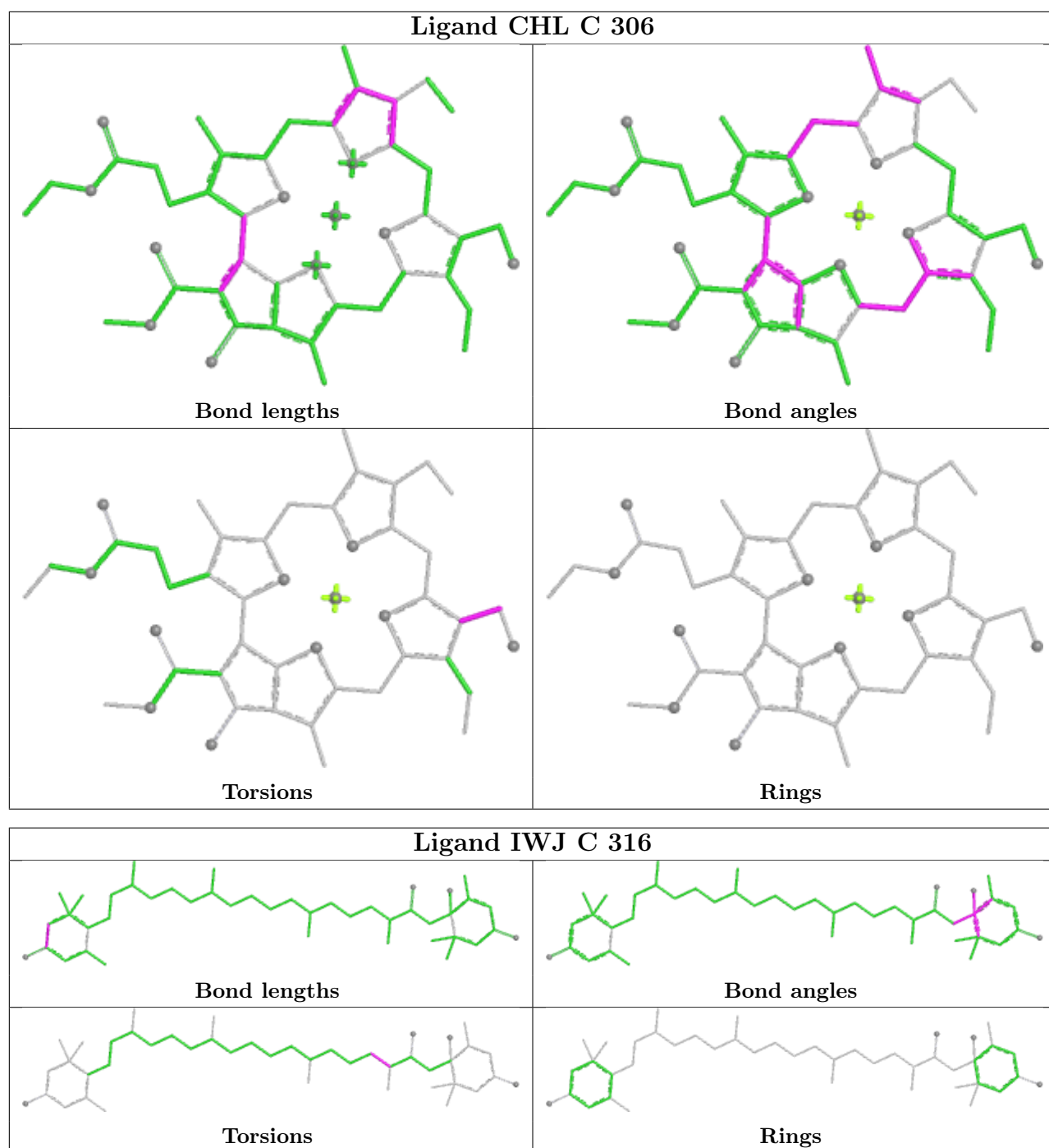


## Ligand CLA B 302

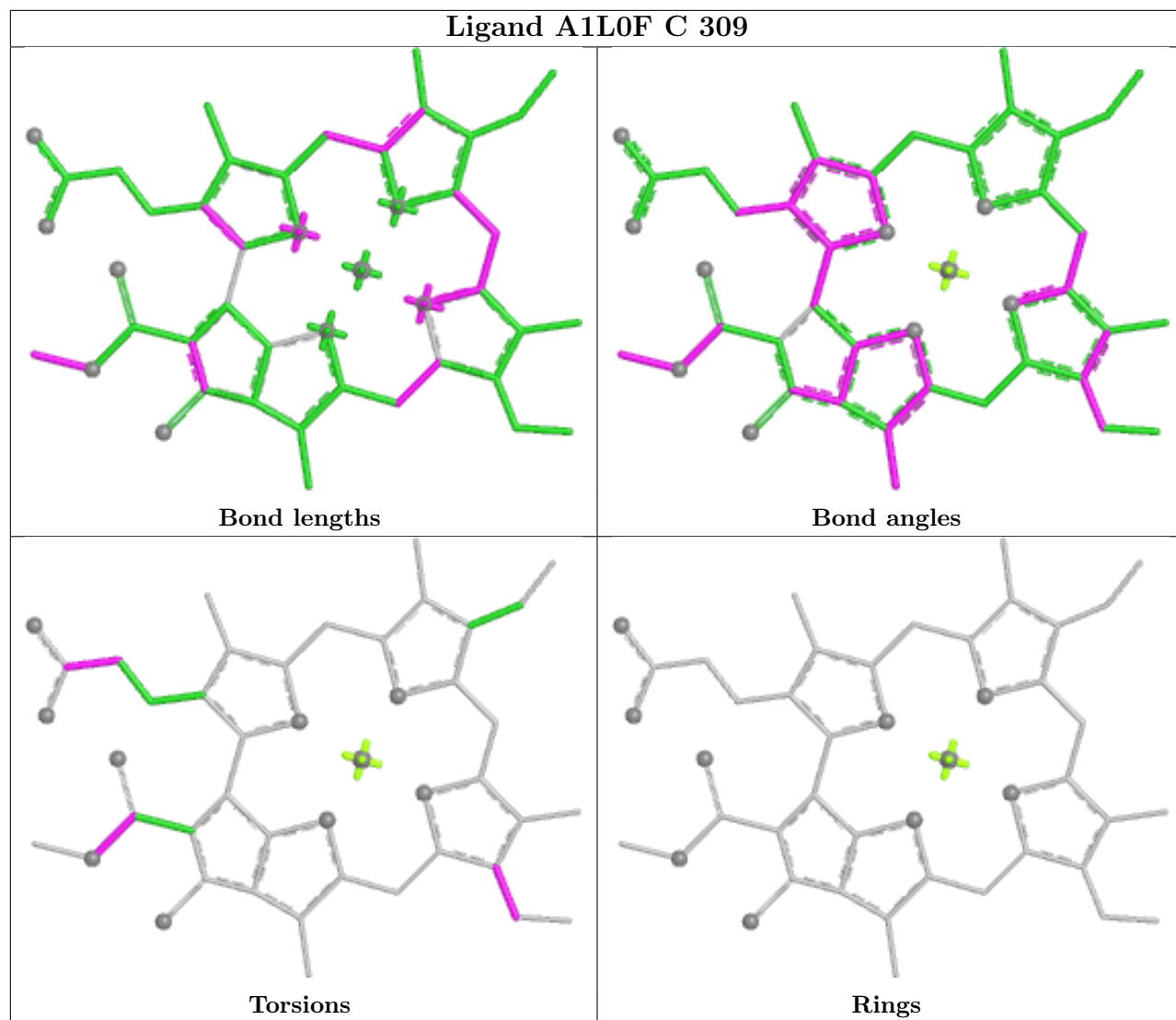


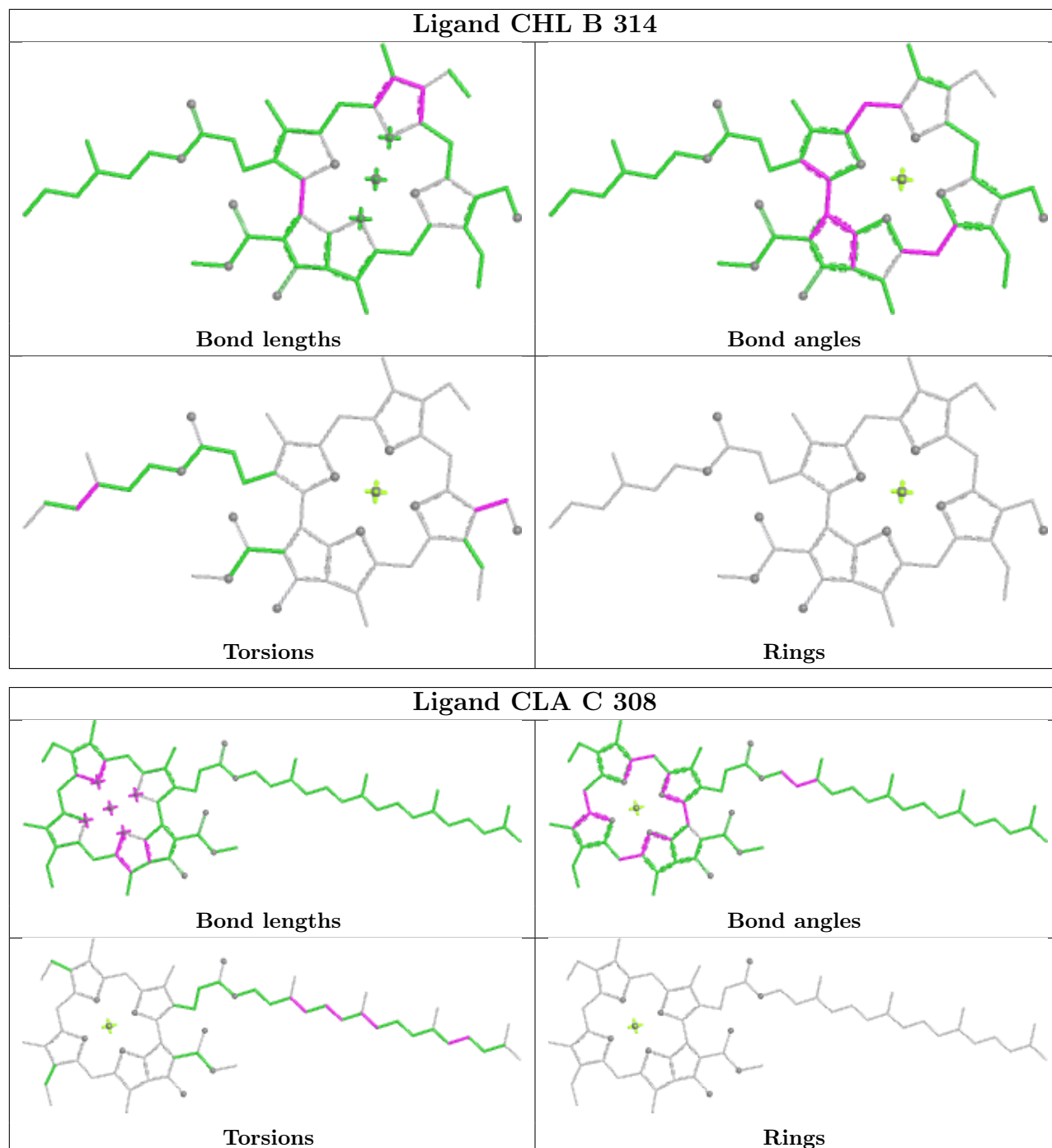


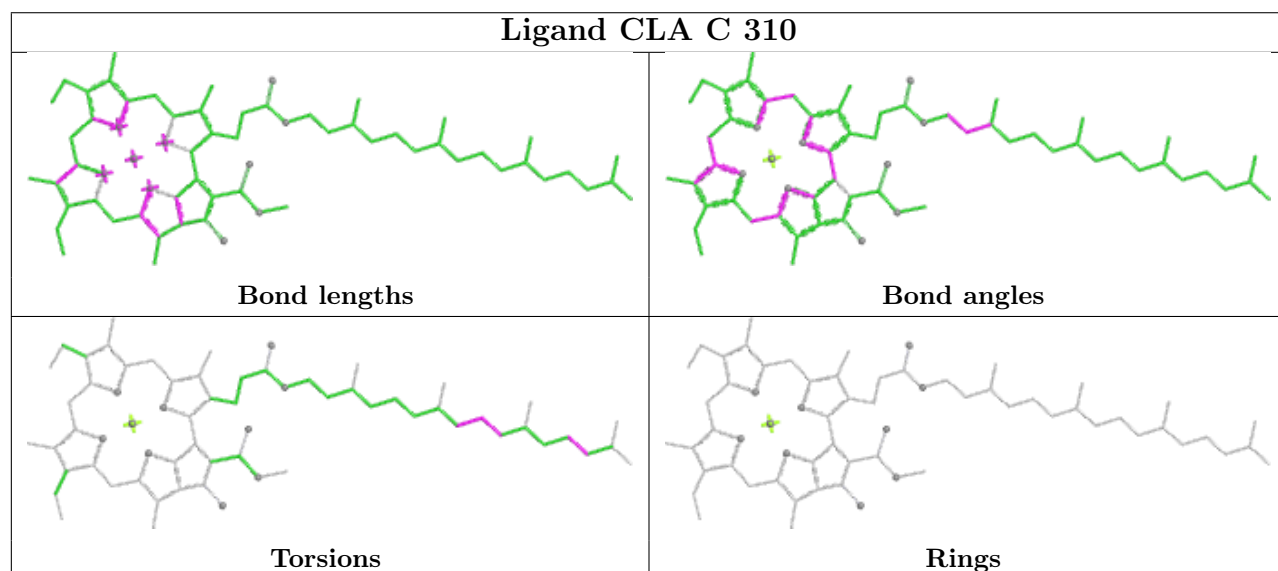
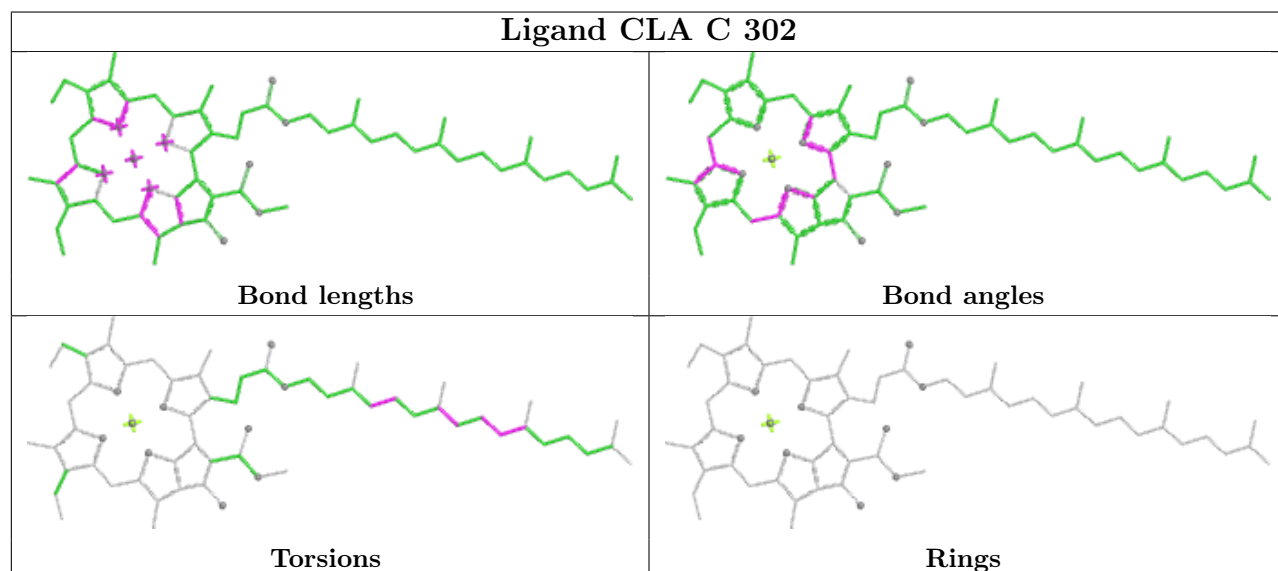
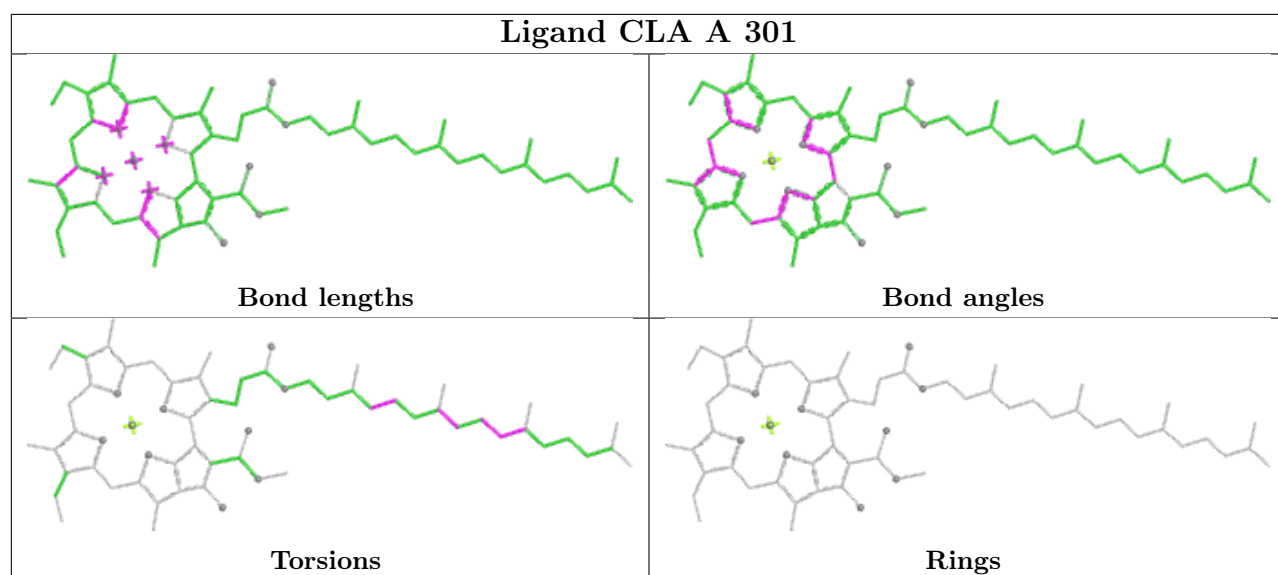




## Ligand A1L0F C 309

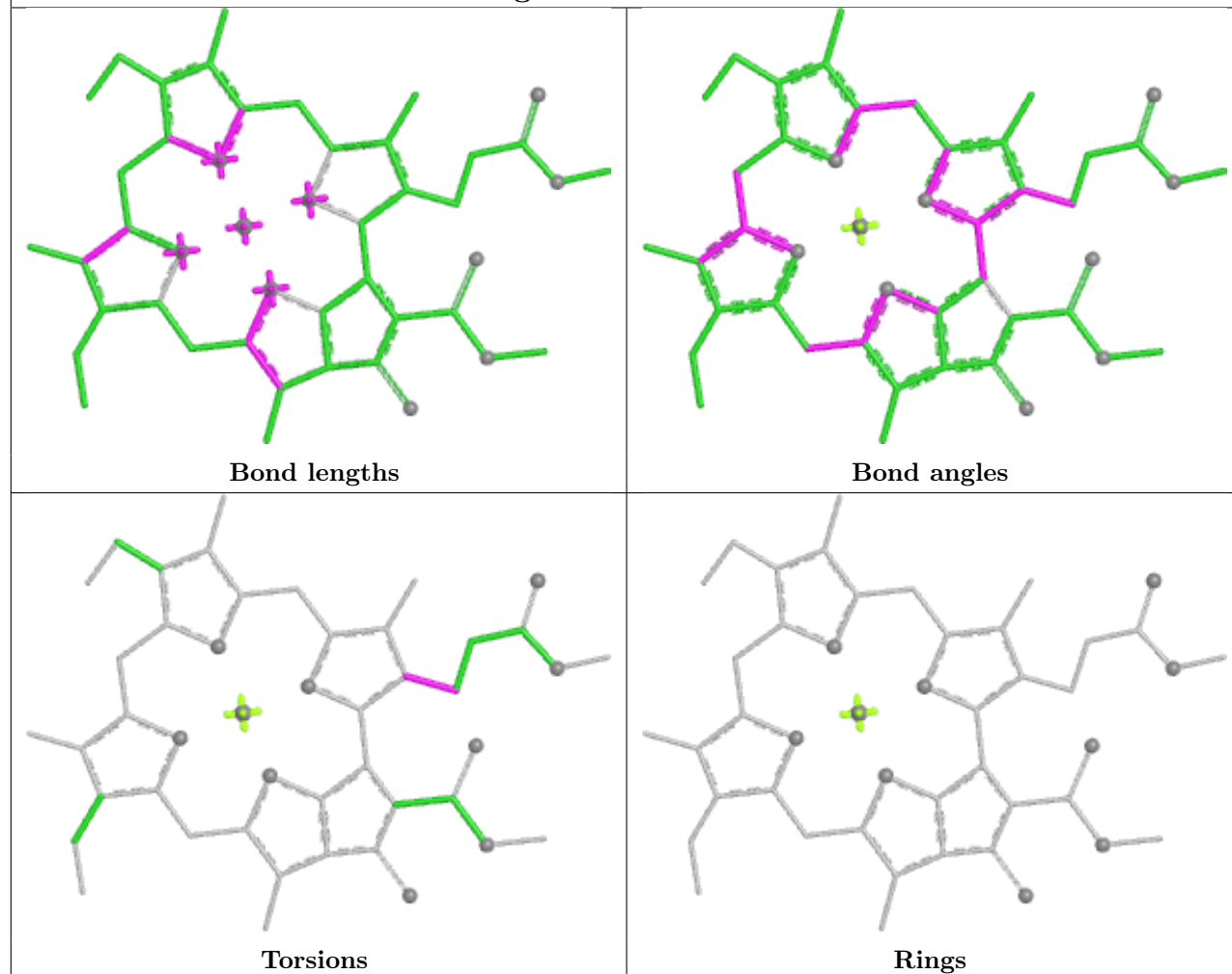




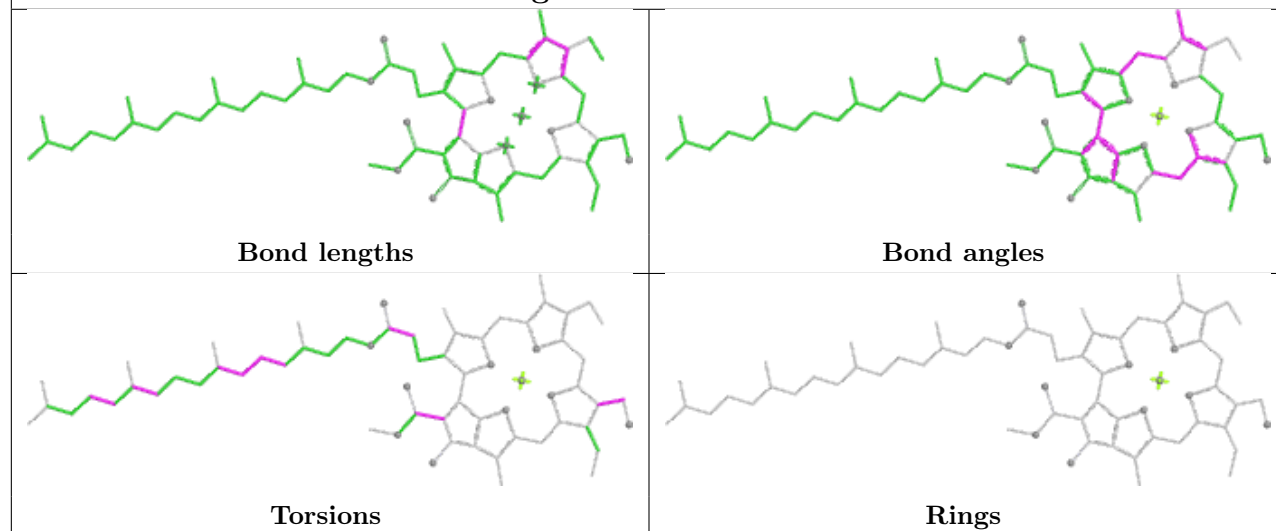


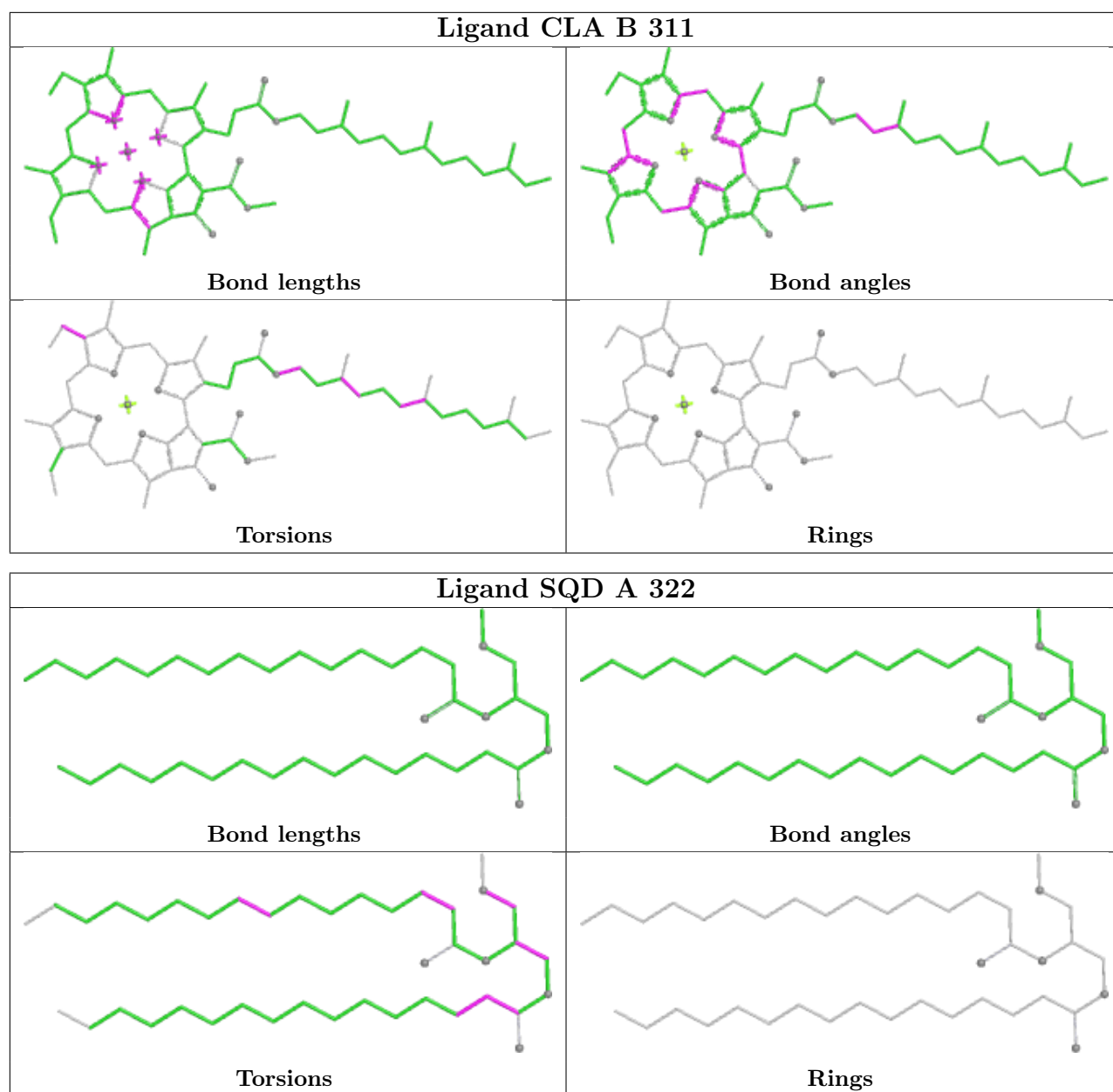


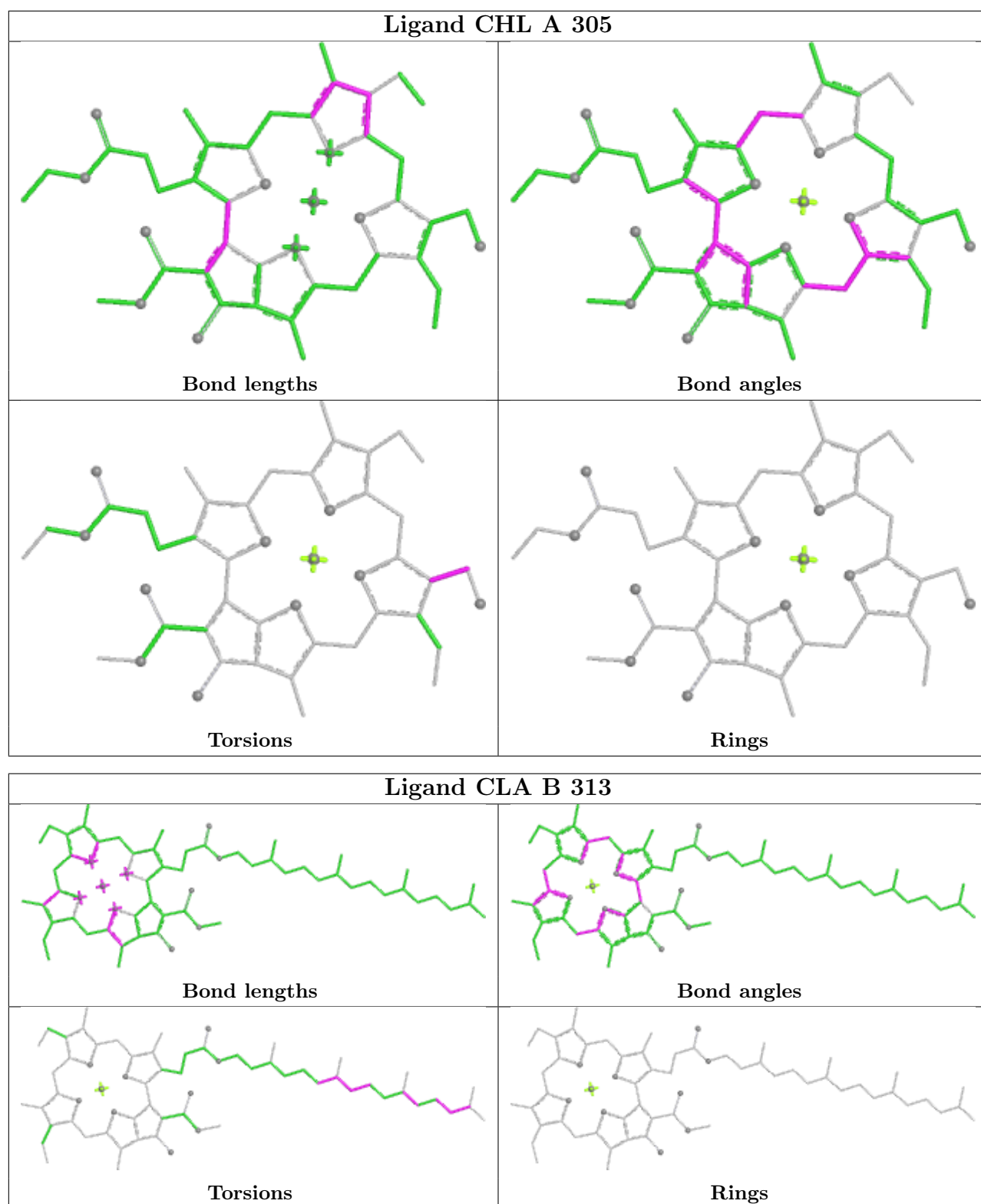
## Ligand CLA C 312

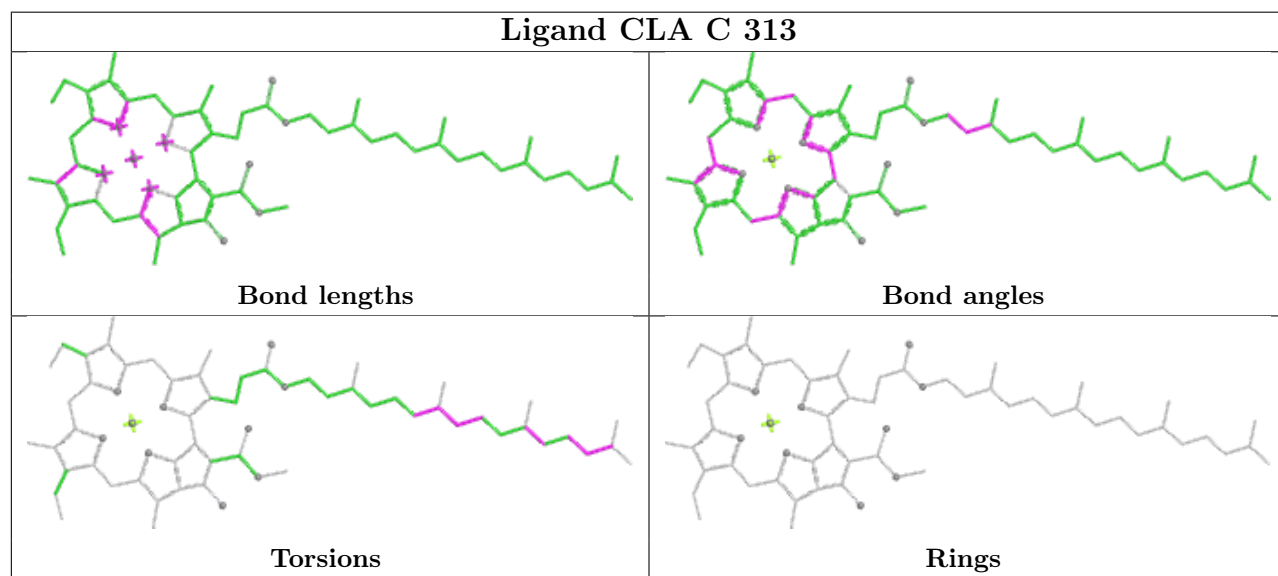
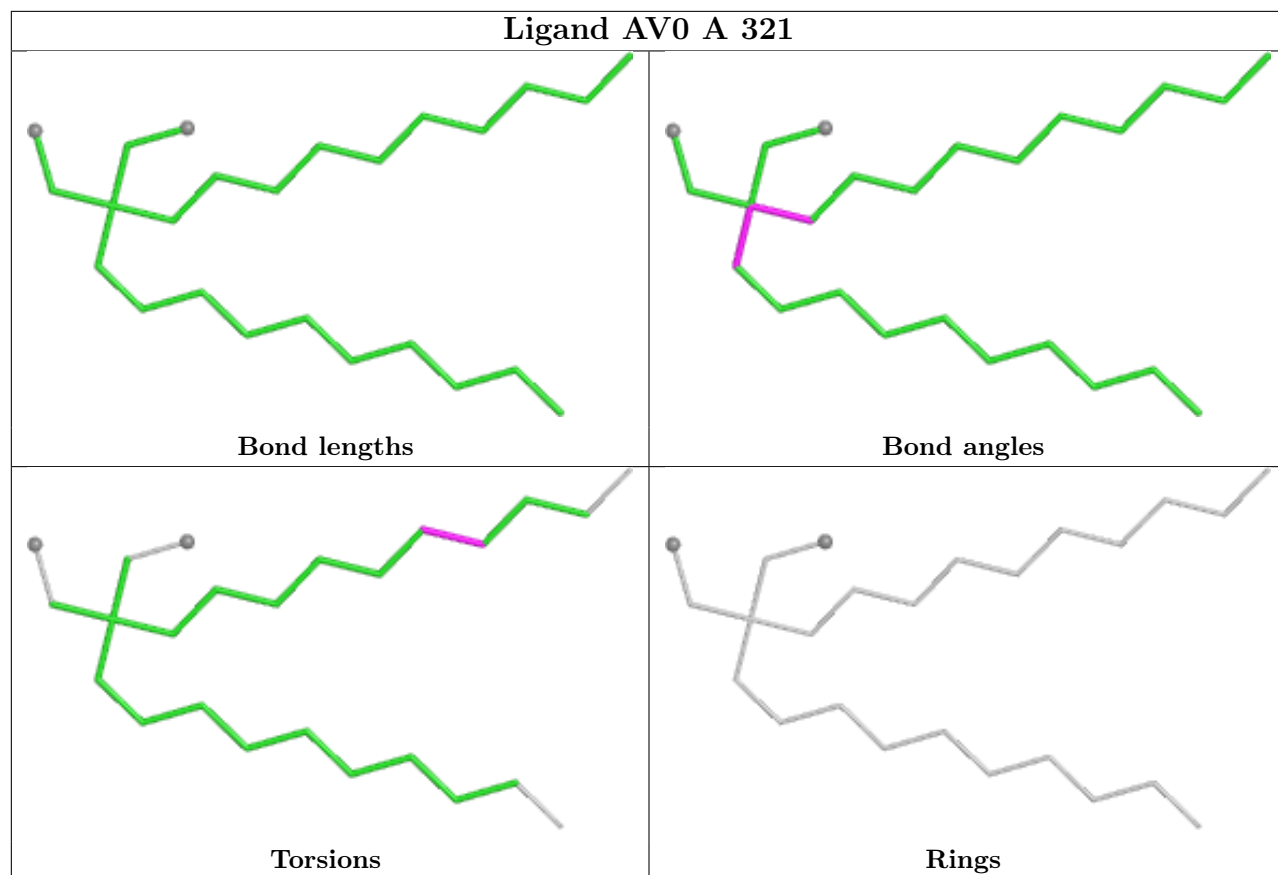


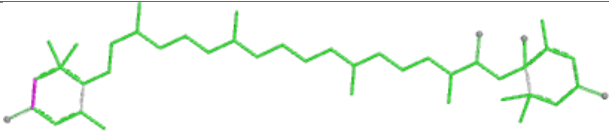
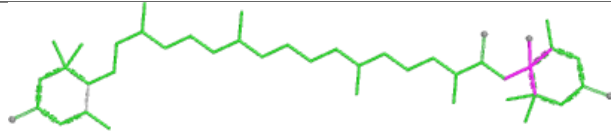
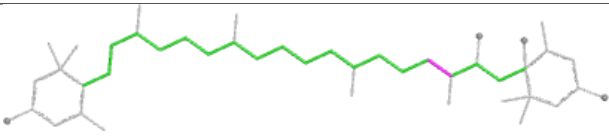
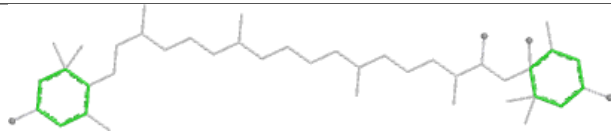
## Ligand CHL C 315

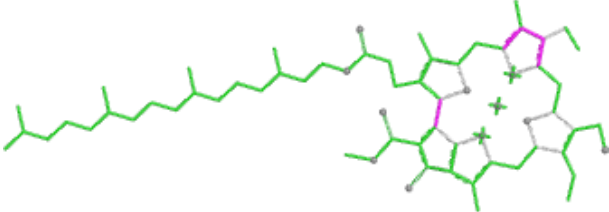
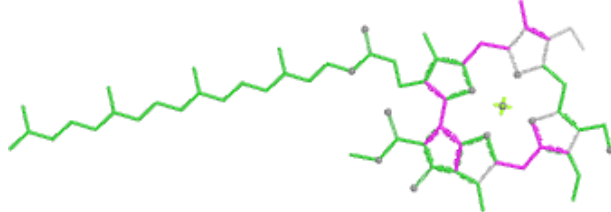
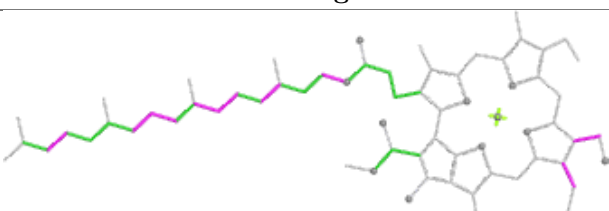
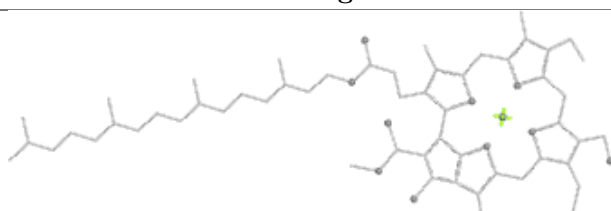


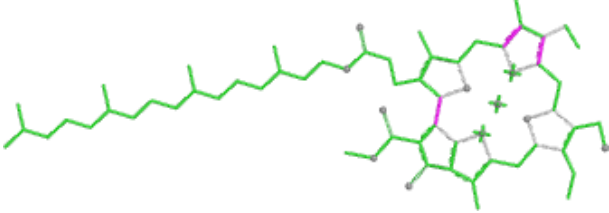
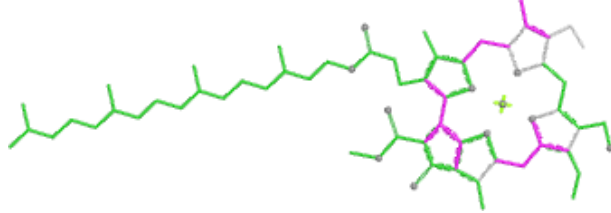
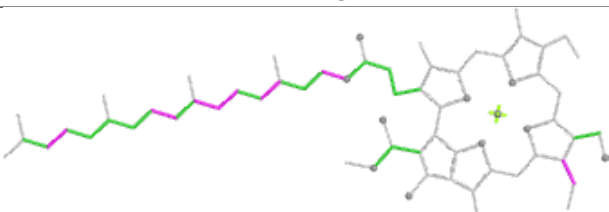
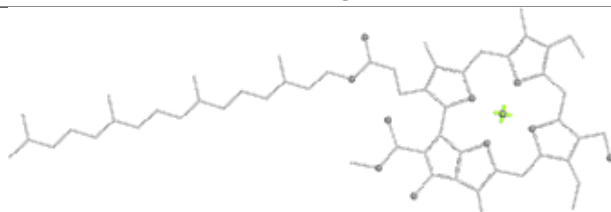


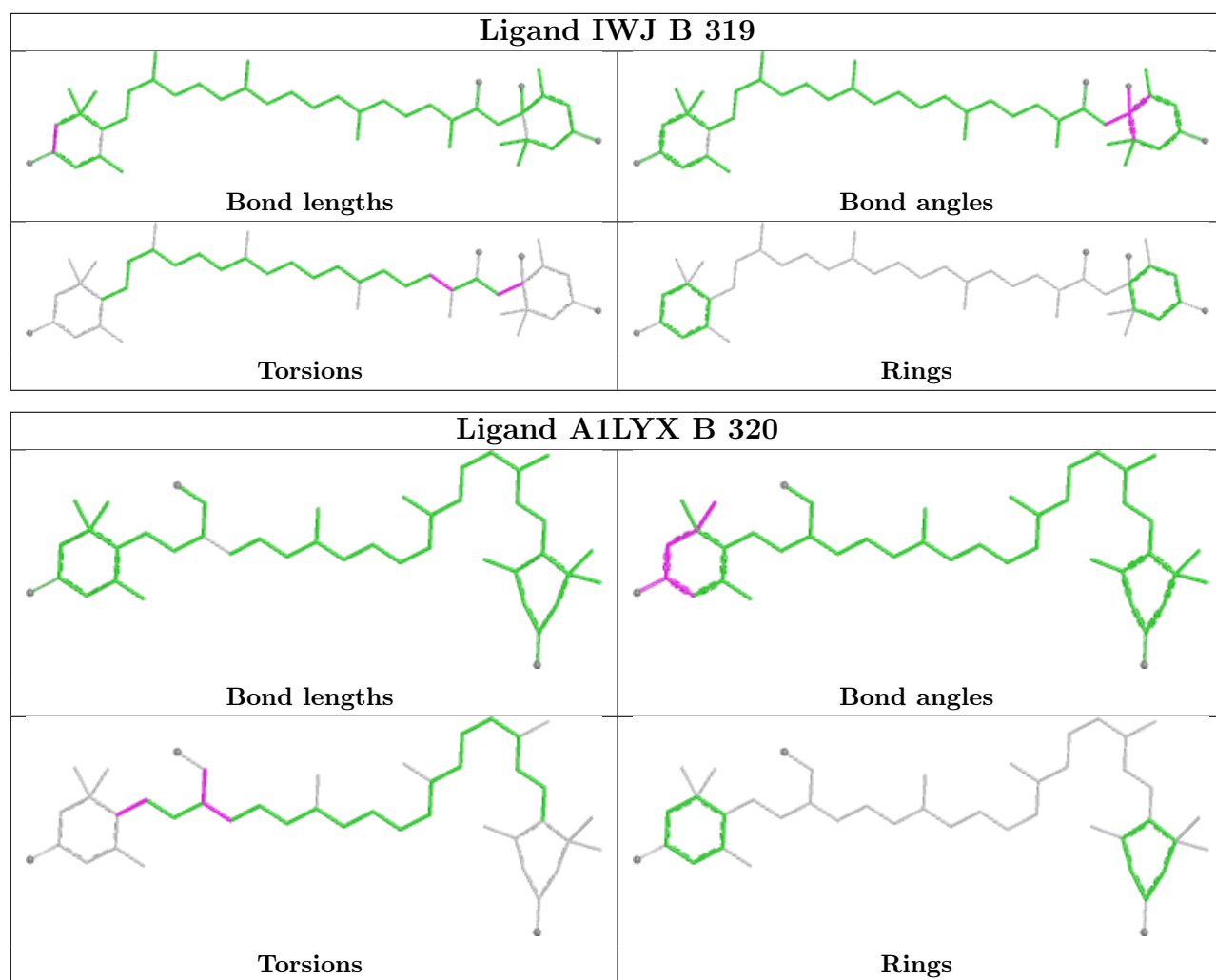


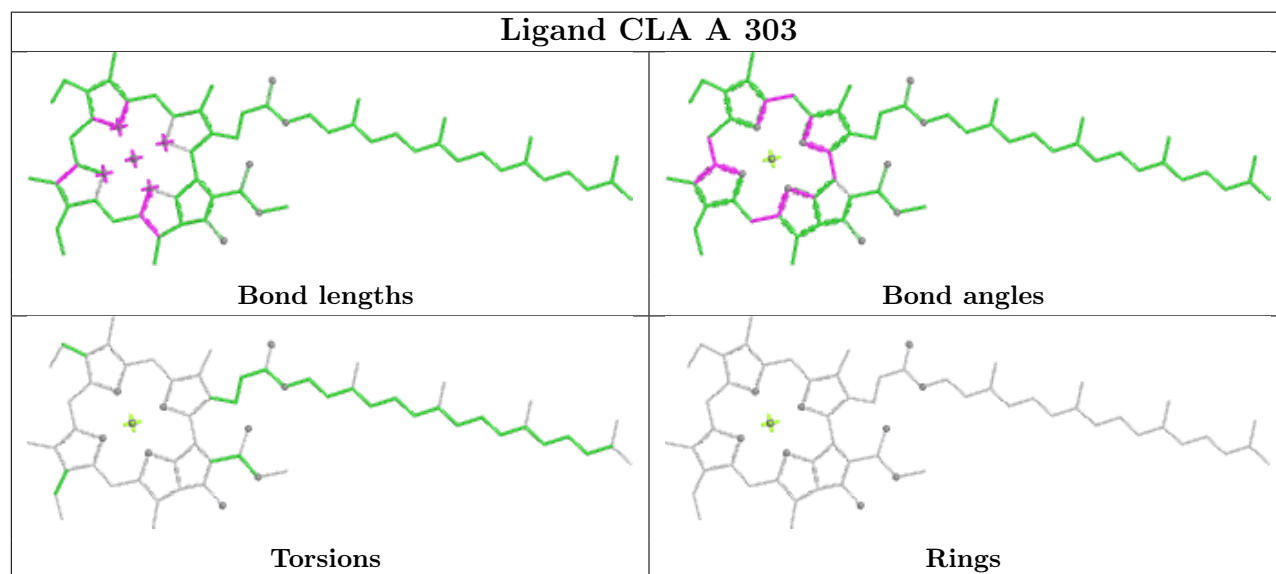
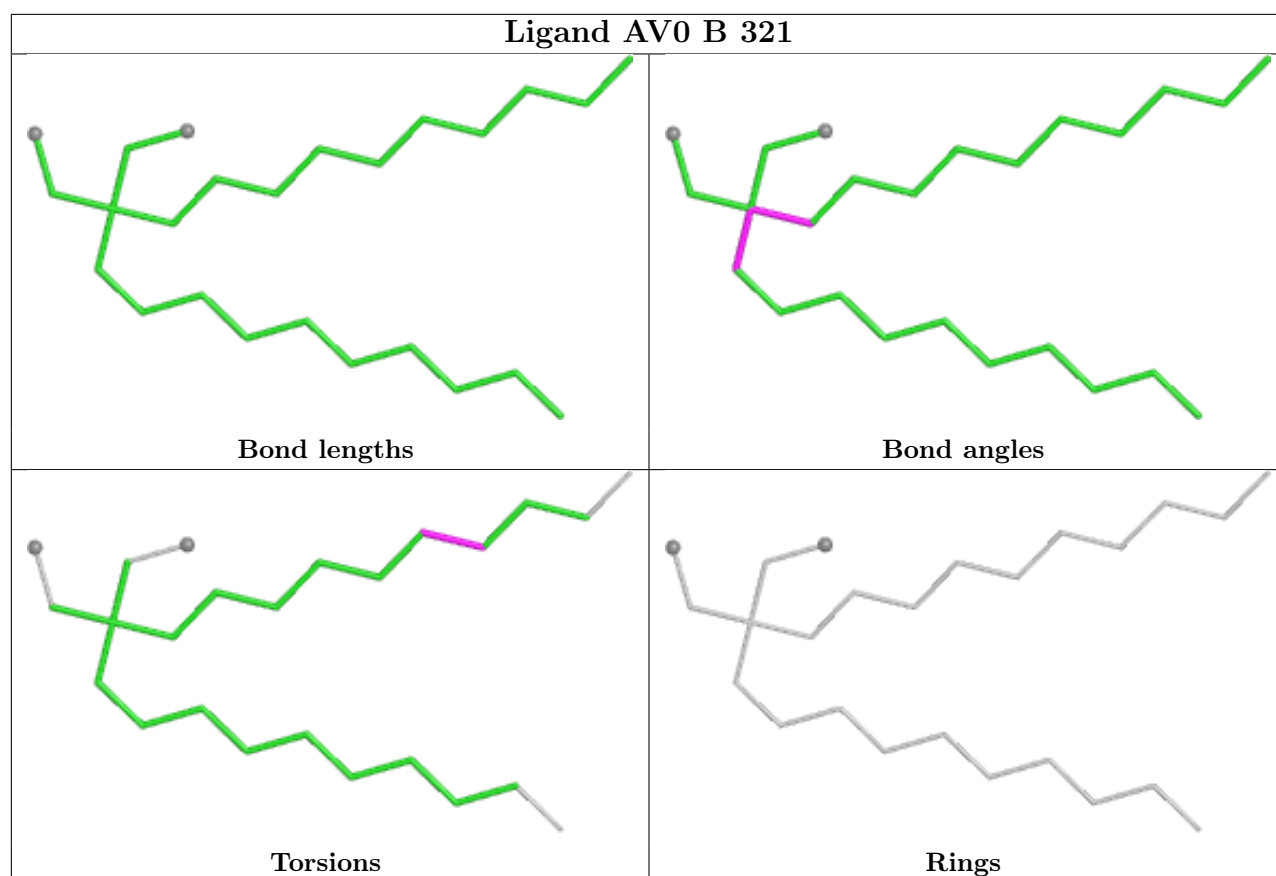


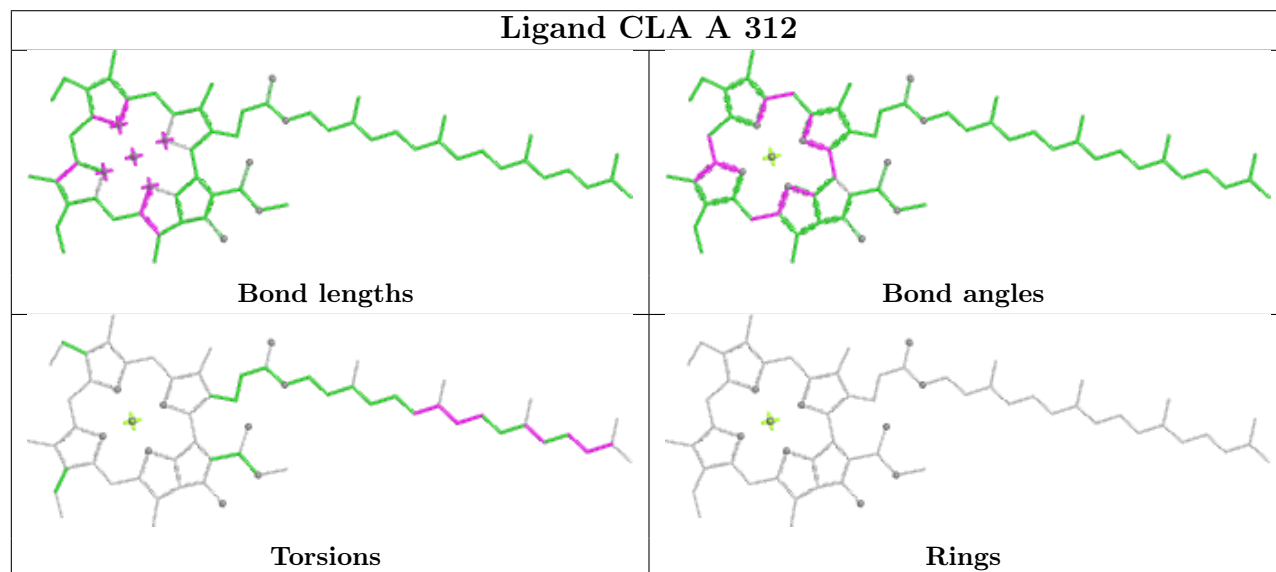
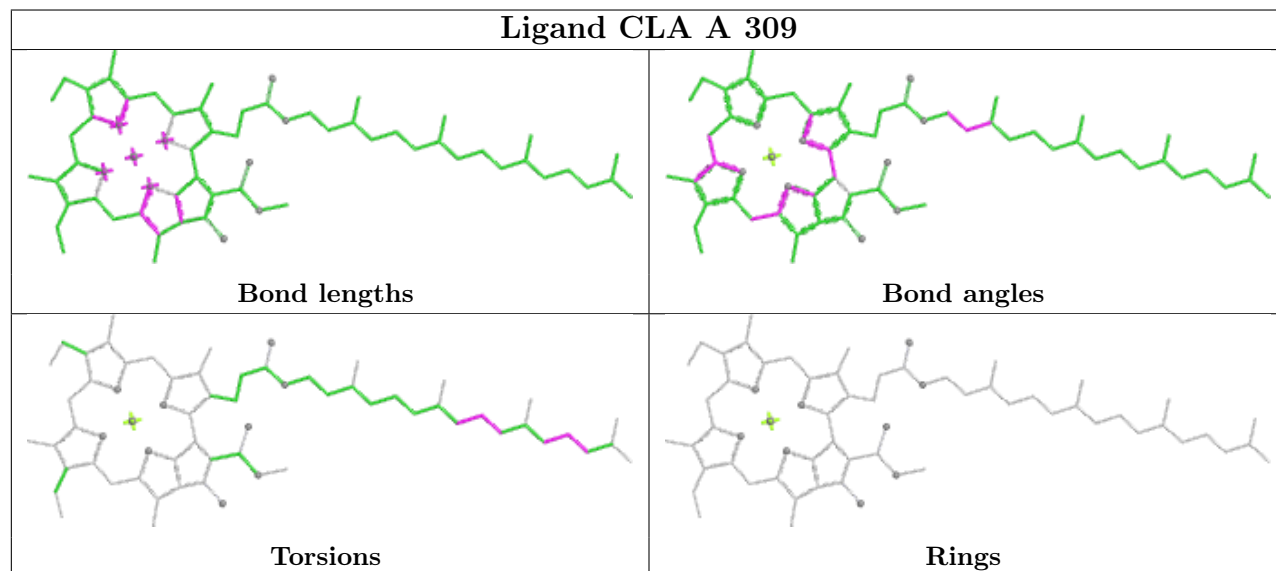
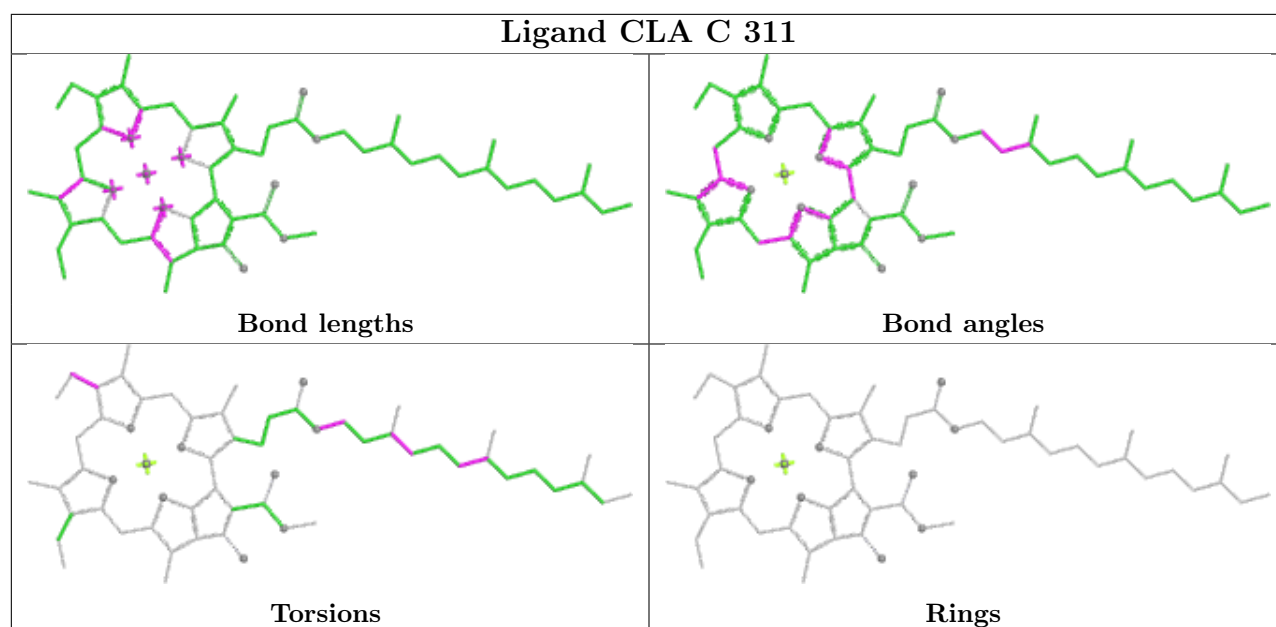
Ligand IWJ B 316	
	
Bond lengths	Bond angles
	
Torsions	Rings

Ligand CHL B 307	
	
Bond lengths	Bond angles
	
Torsions	Rings

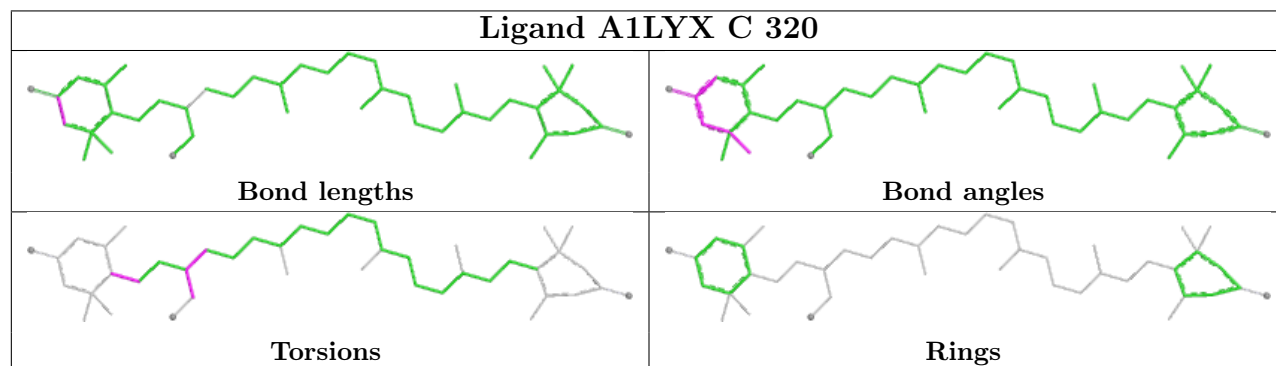
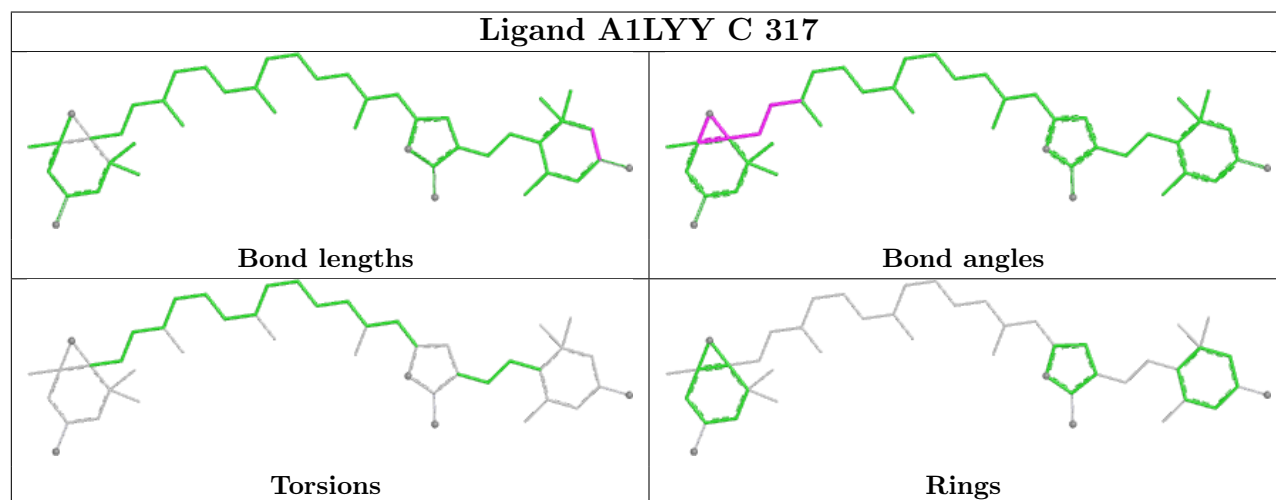
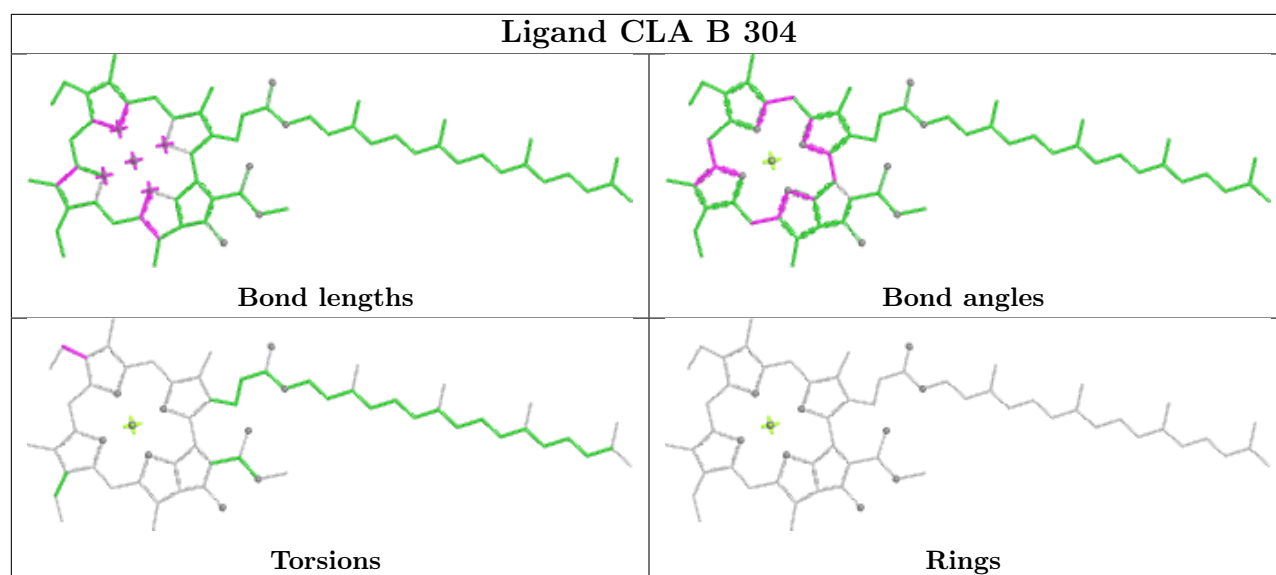
Ligand CHL A 306	
	
Bond lengths	Bond angles
	
Torsions	Rings

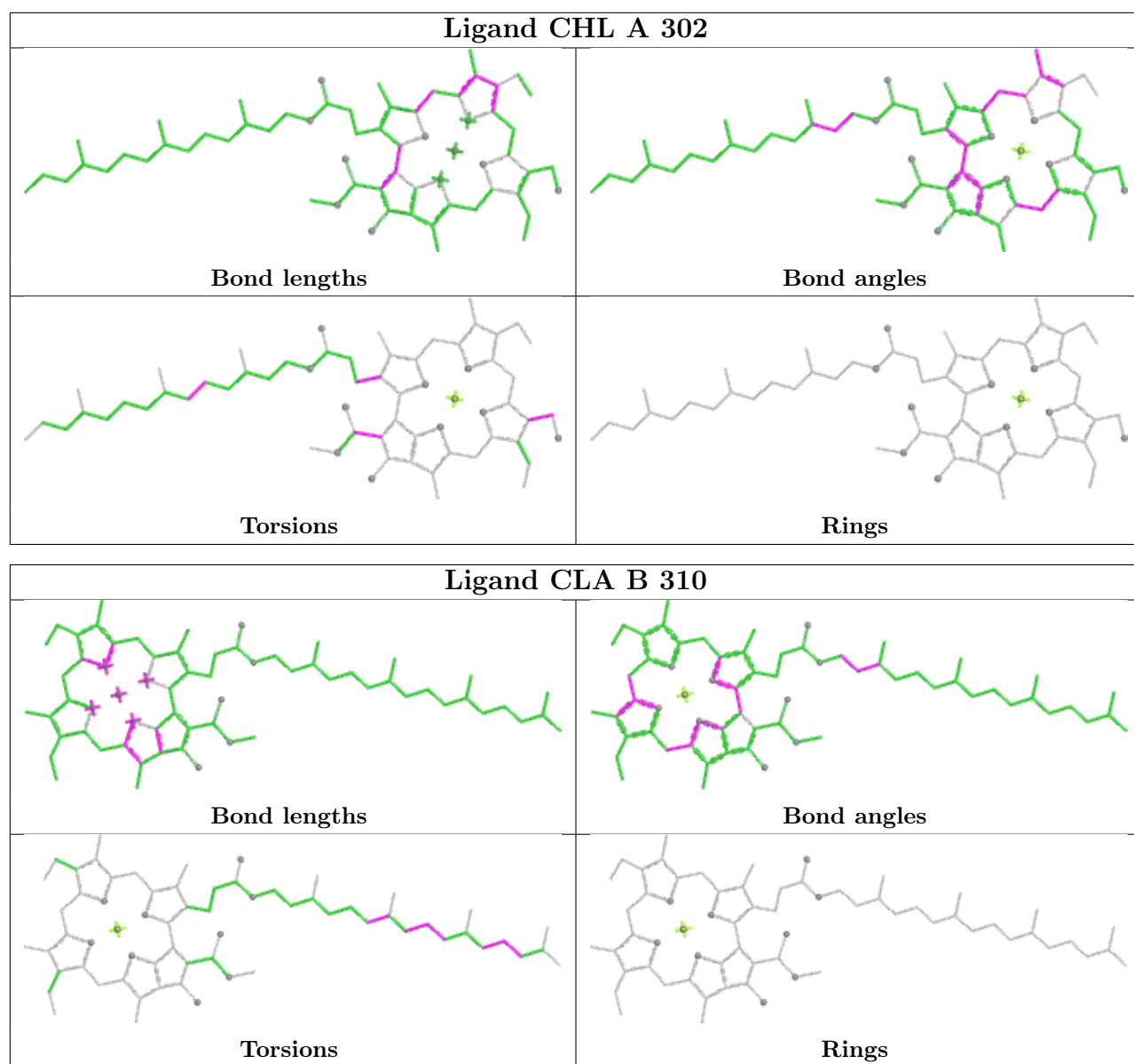


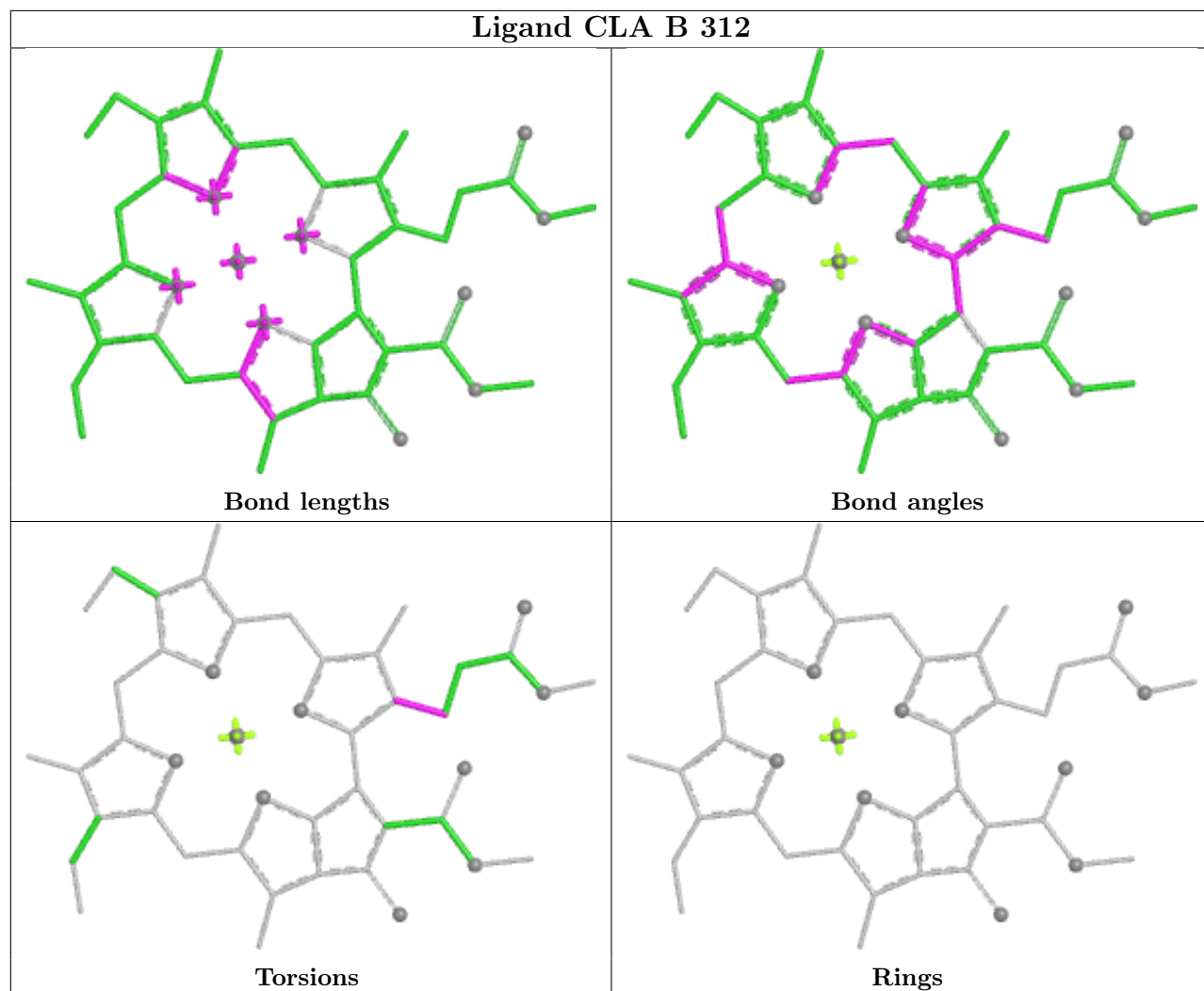




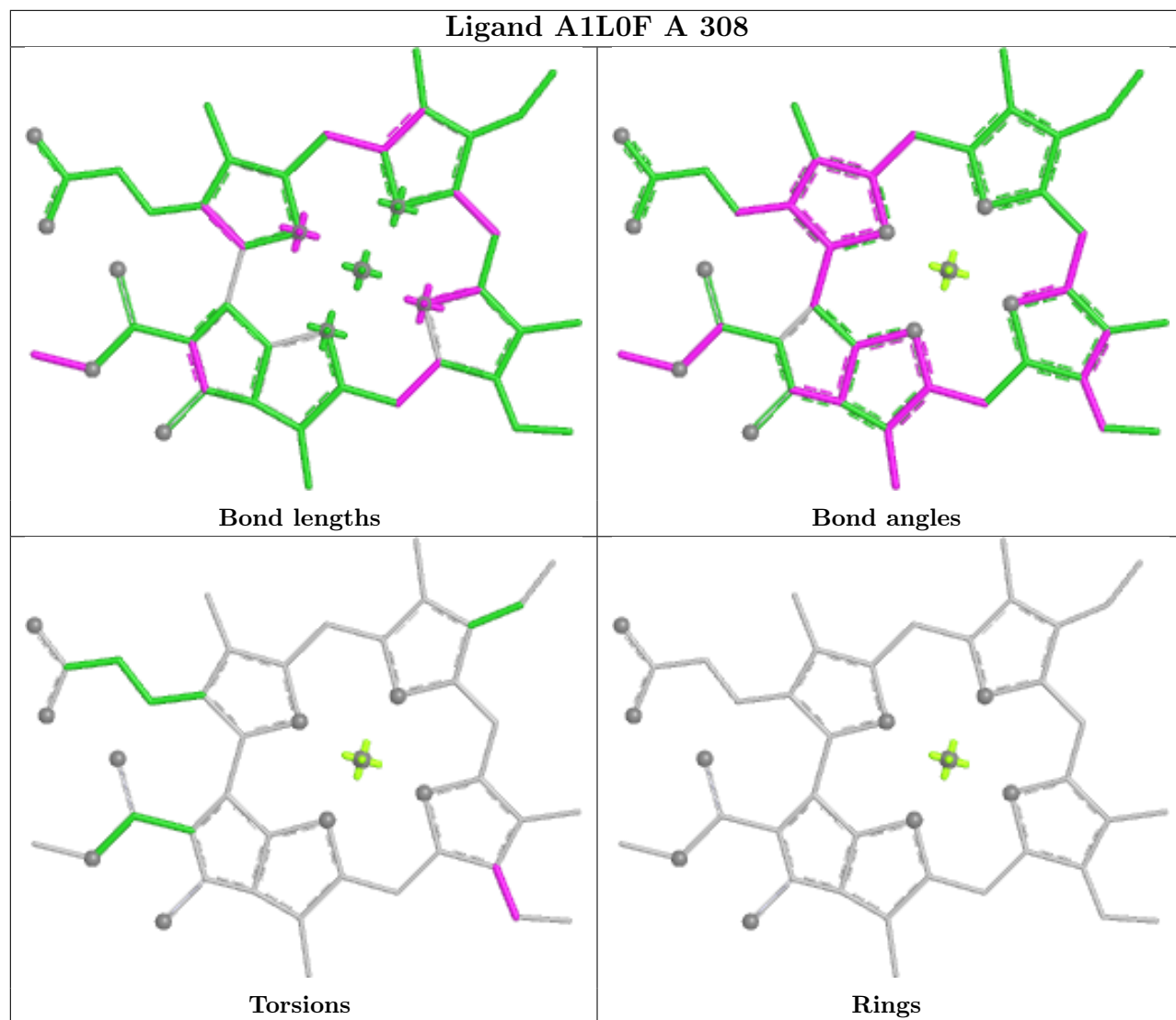


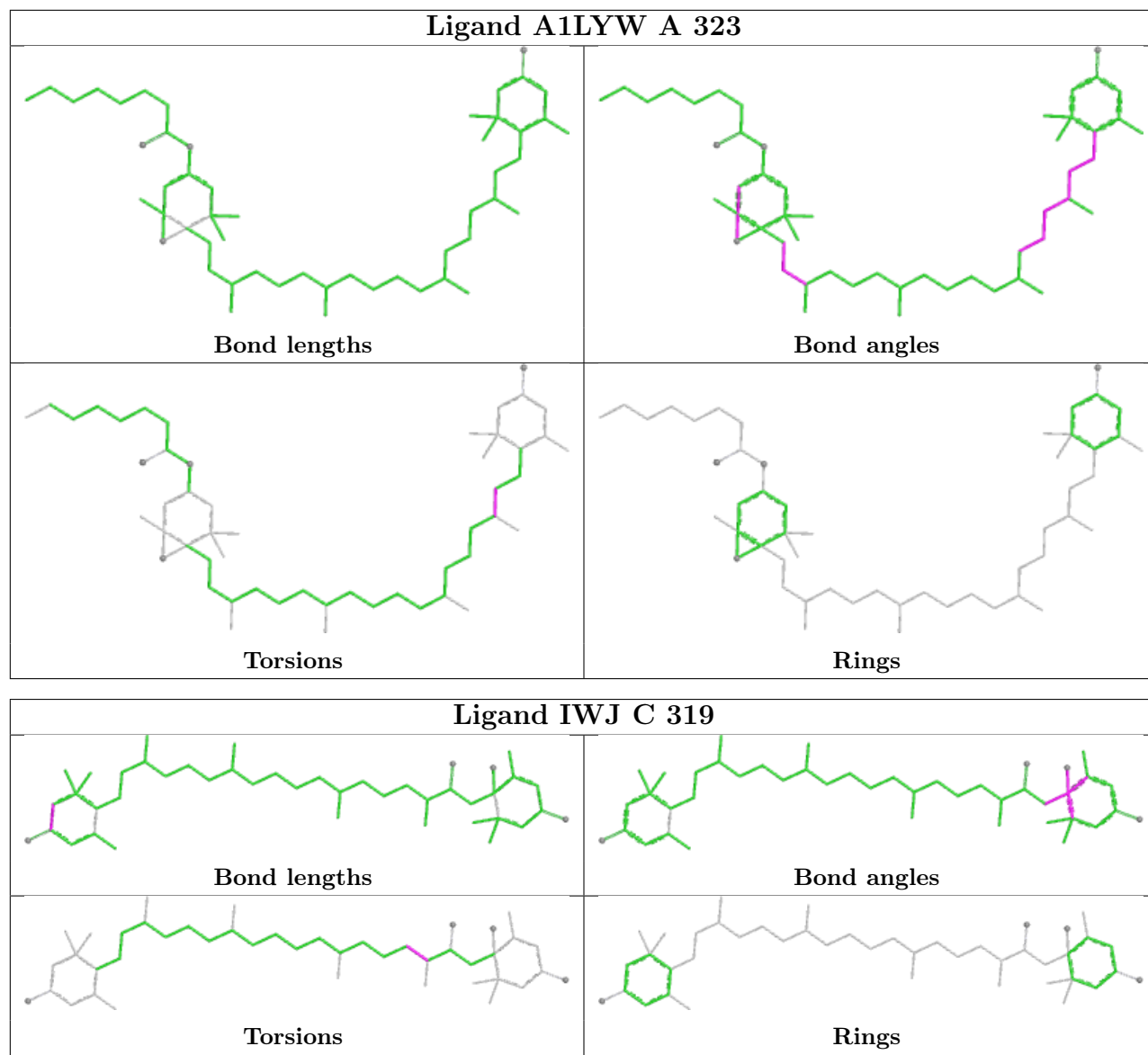




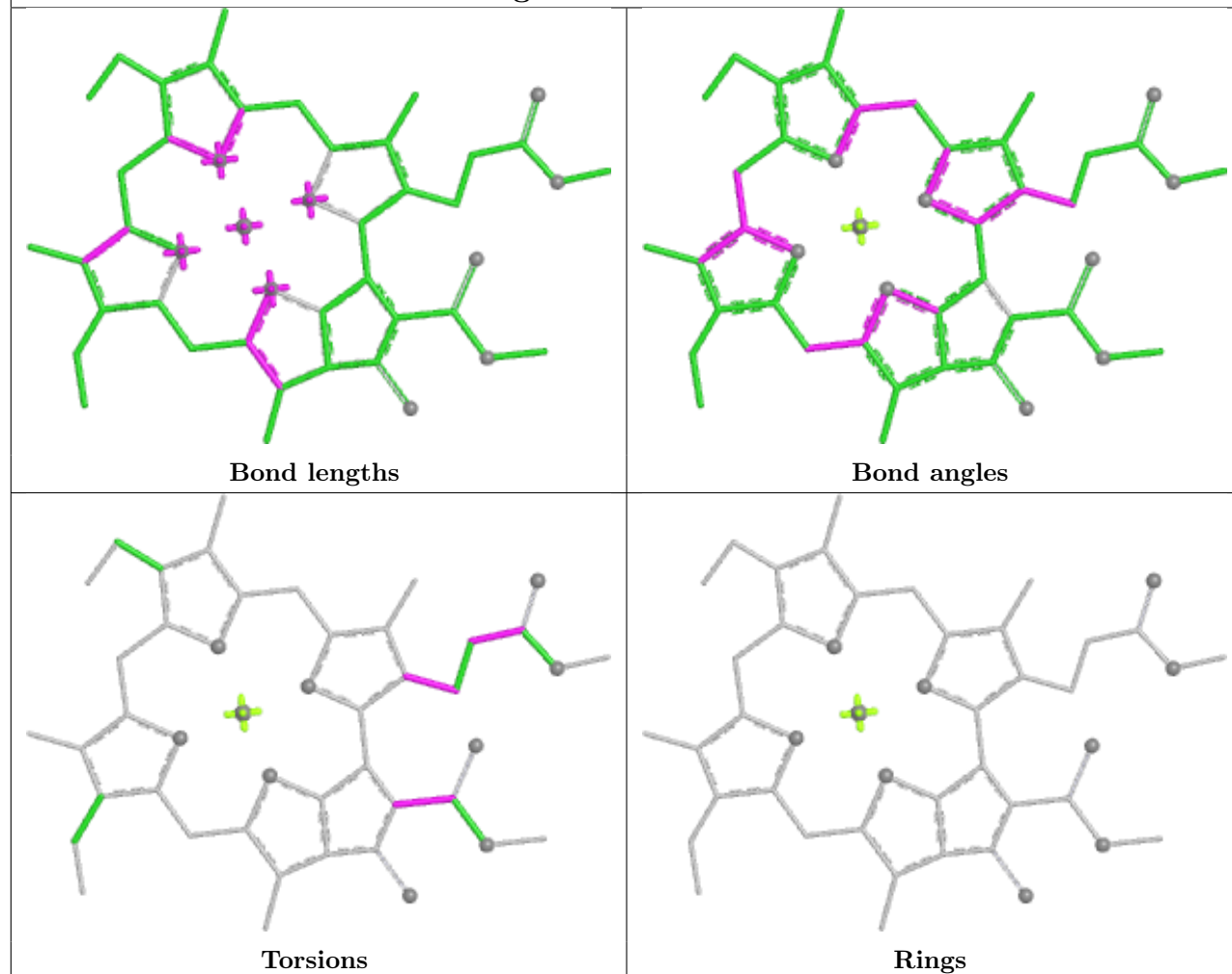


## Ligand A1L0F A 308

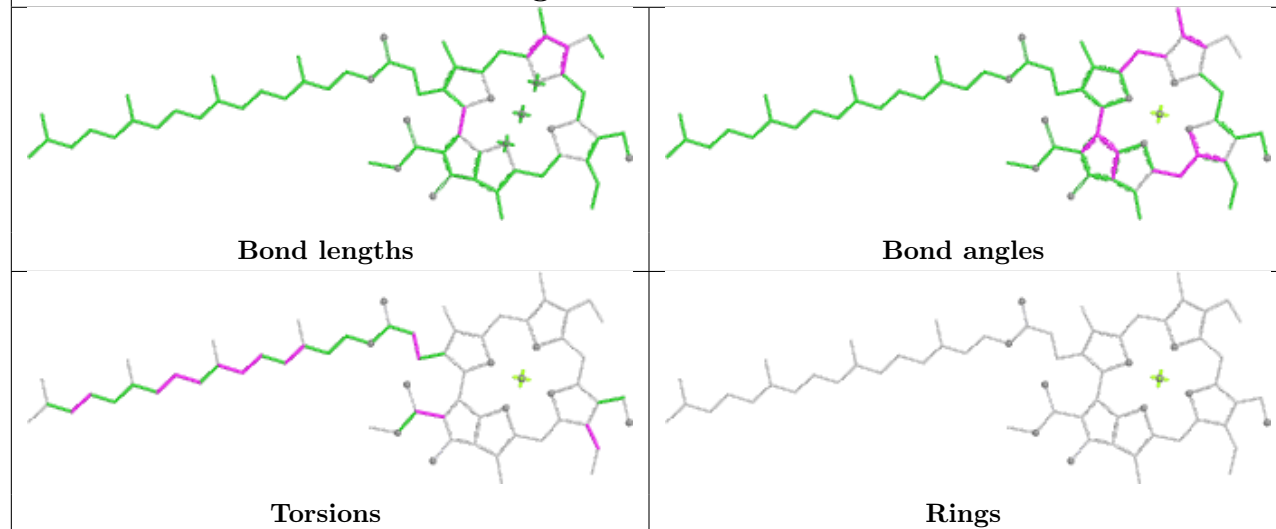


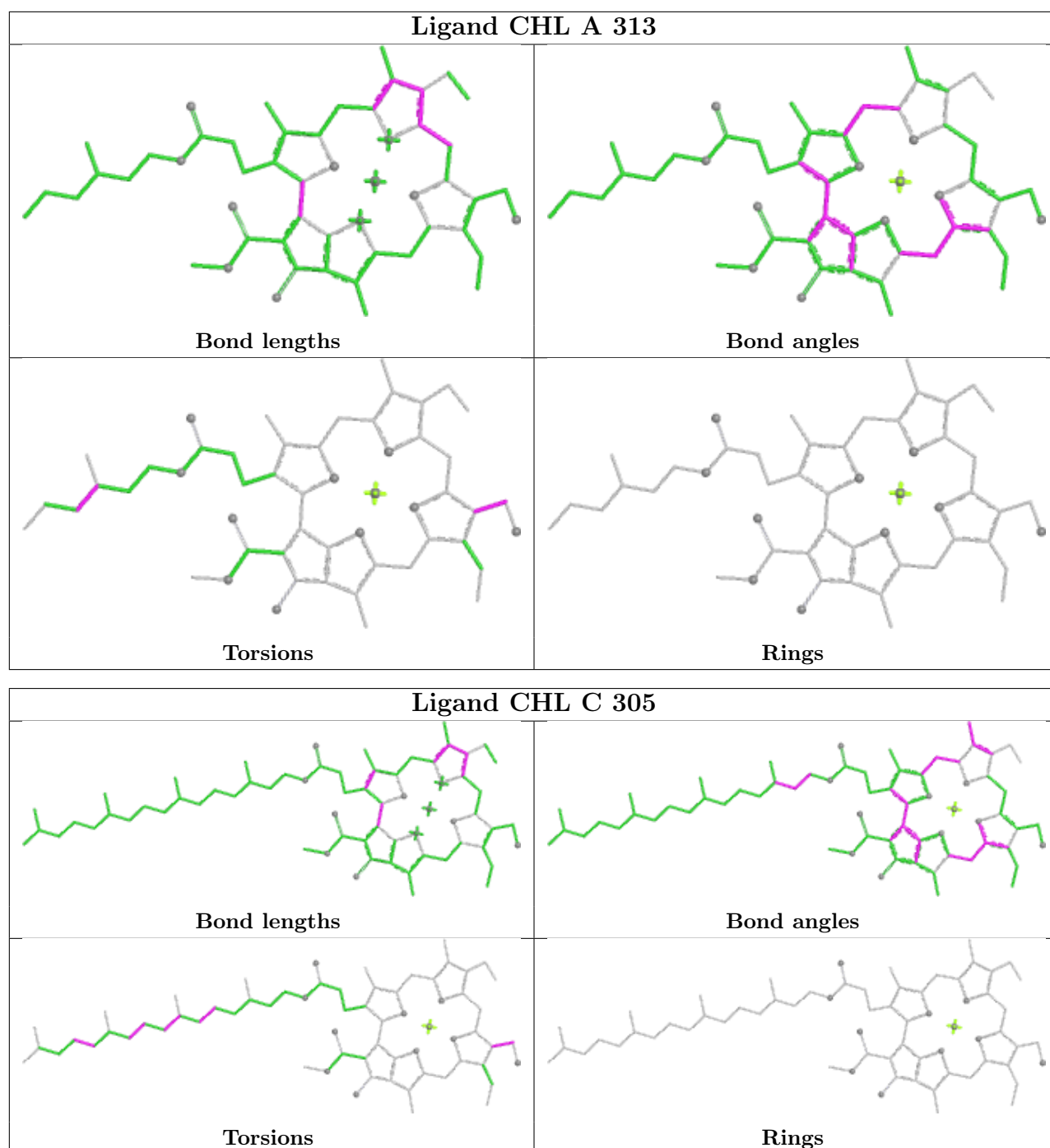


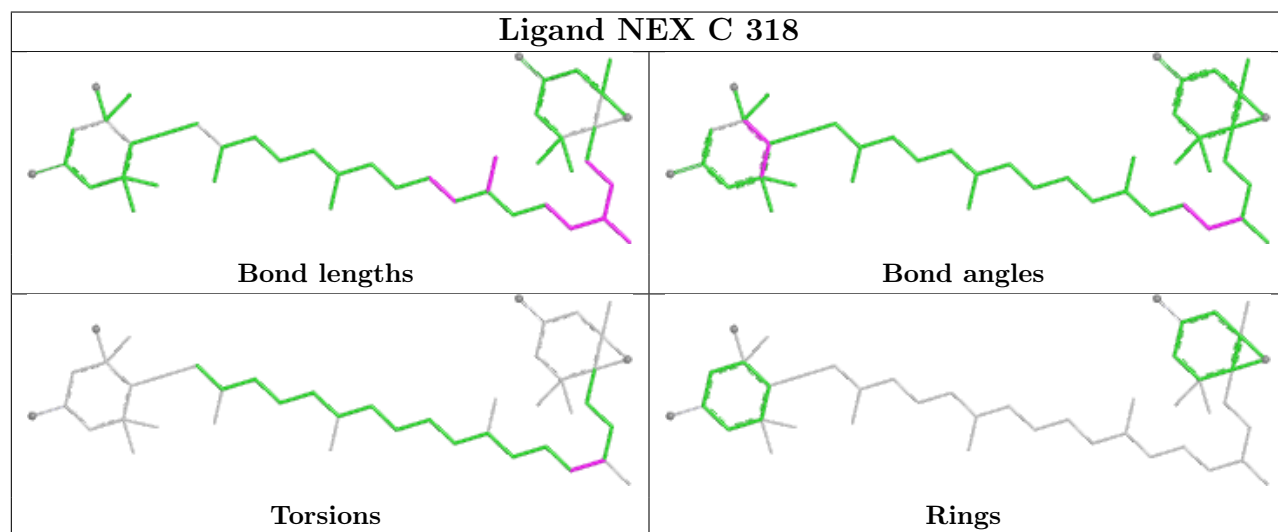
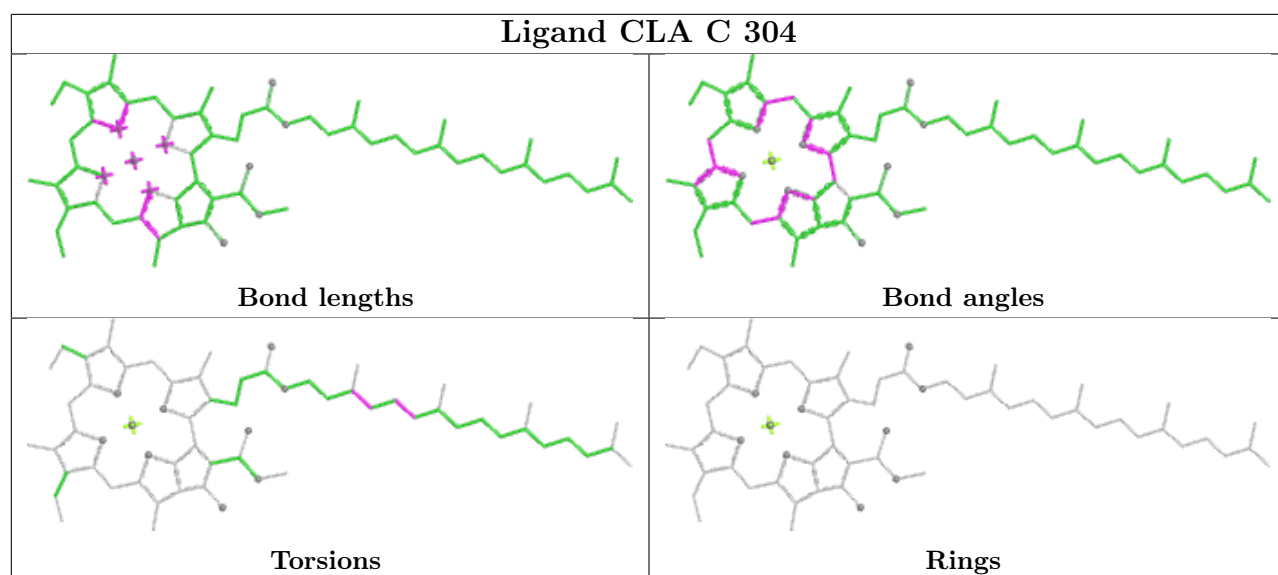
## Ligand CLA A 311



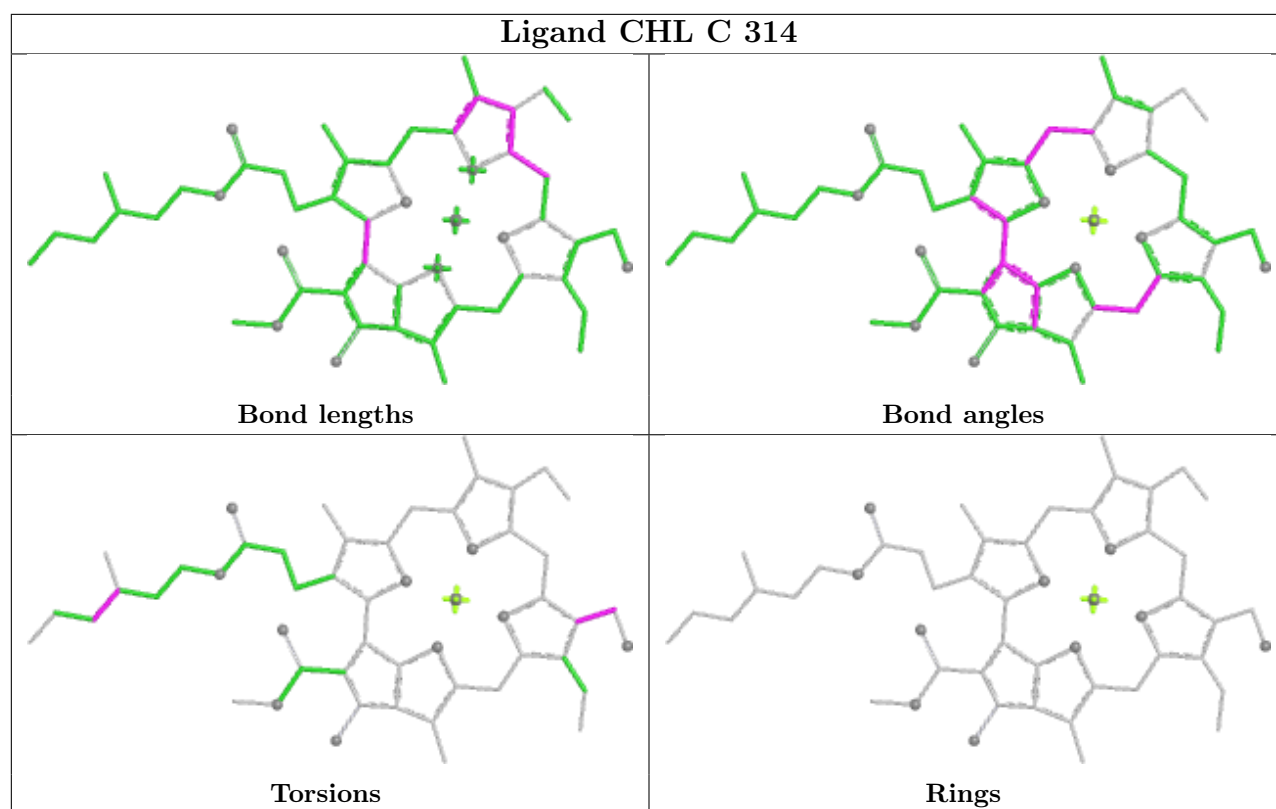
## Ligand CHL C 307











## 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.

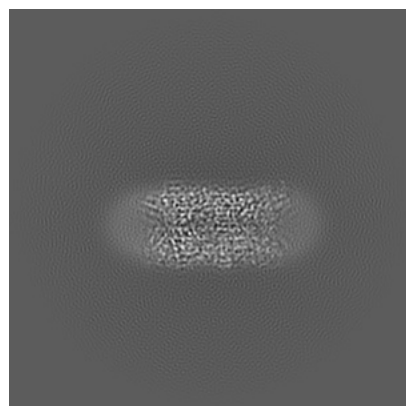
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-64036. These allow visual inspection of the internal detail of the map and identification of artifacts.

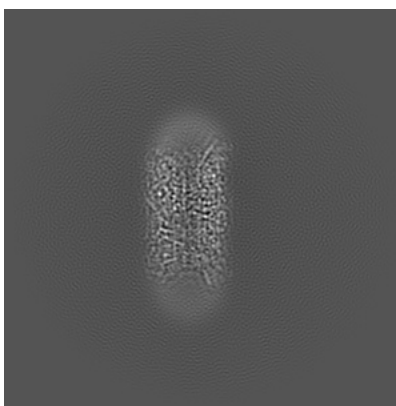
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

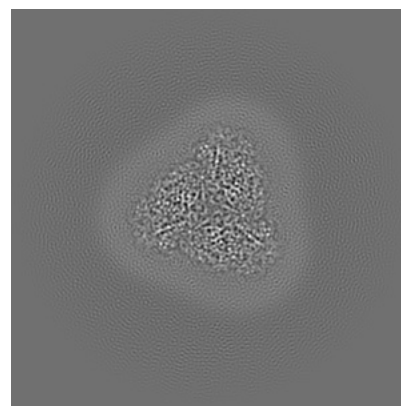
#### 6.1.1 Primary map



X

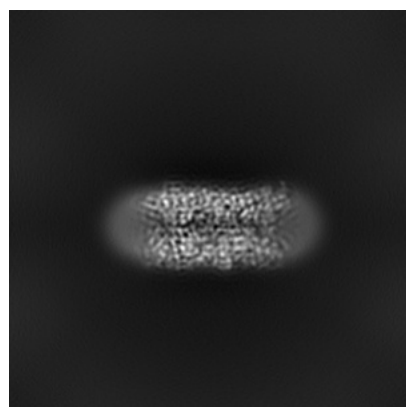


Y

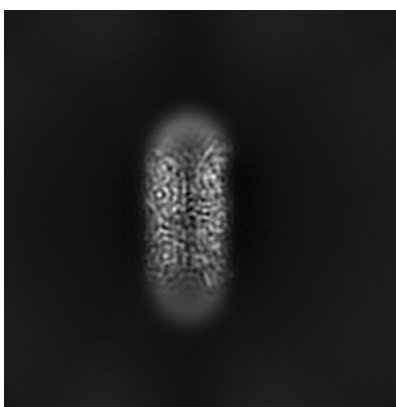


Z

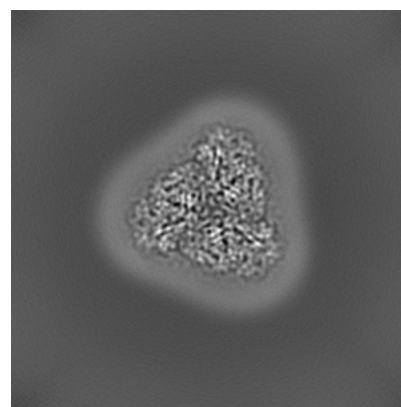
#### 6.1.2 Raw map



X



Y

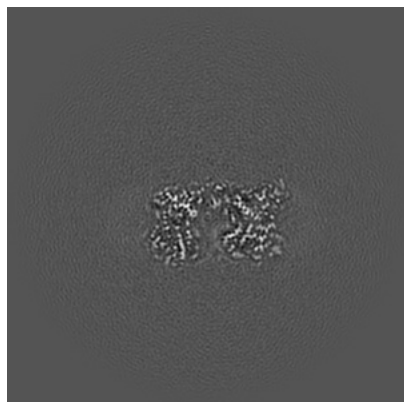


Z

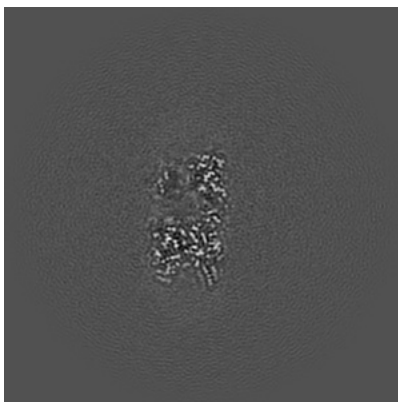
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

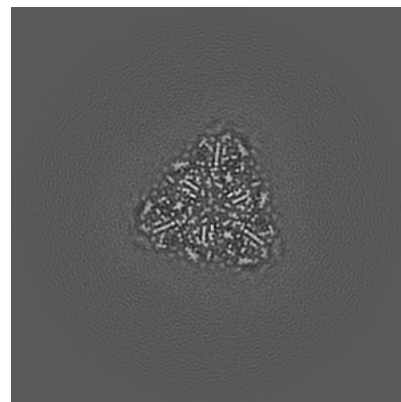
### 6.2.1 Primary map



X Index: 128

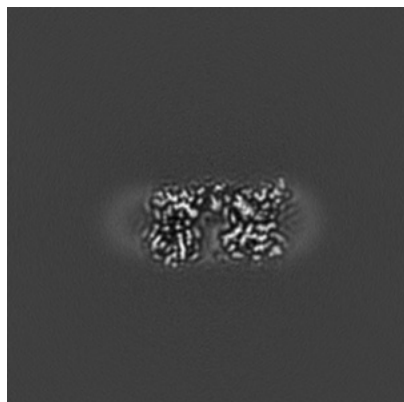


Y Index: 128

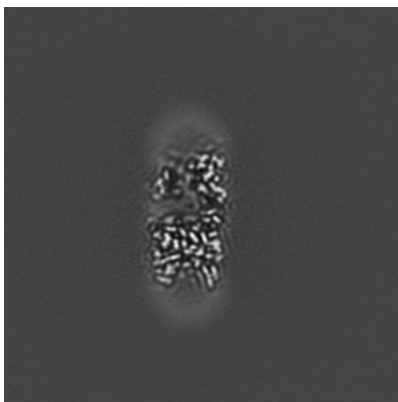


Z Index: 128

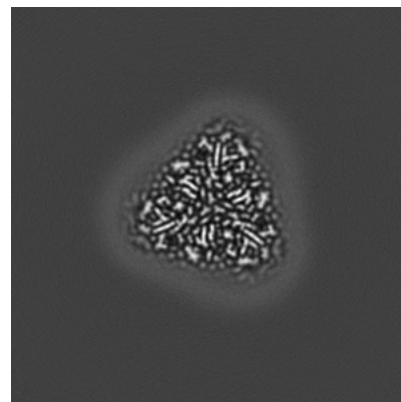
### 6.2.2 Raw map



X Index: 128



Y Index: 128

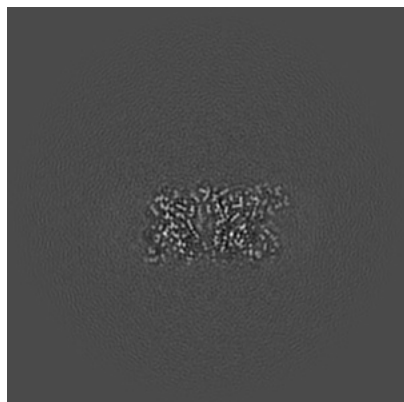


Z Index: 128

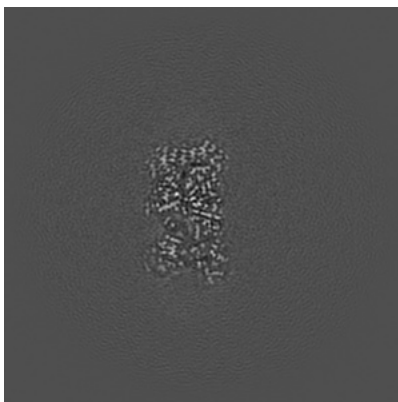
The images above show central slices of the map in three orthogonal directions.

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

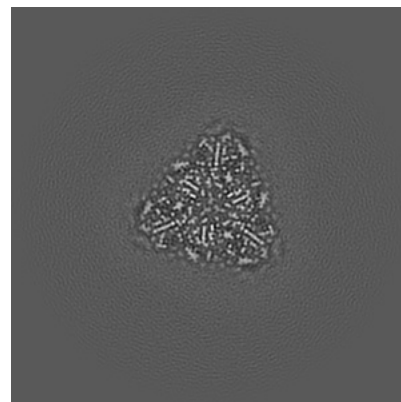
### 6.3.1 Primary map



X Index: 139

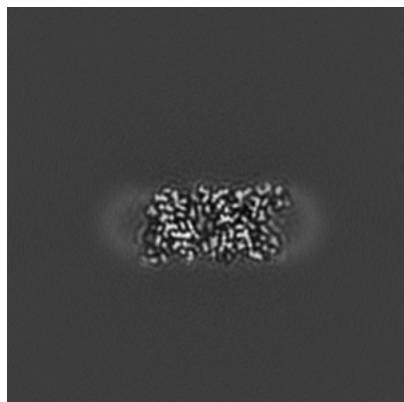


Y Index: 111

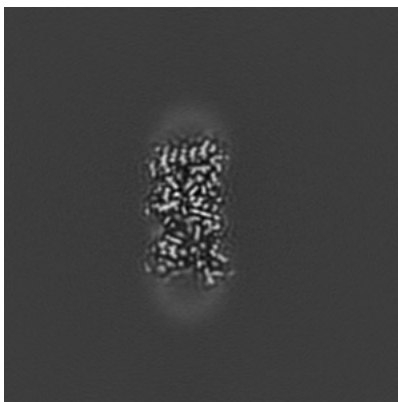


Z Index: 128

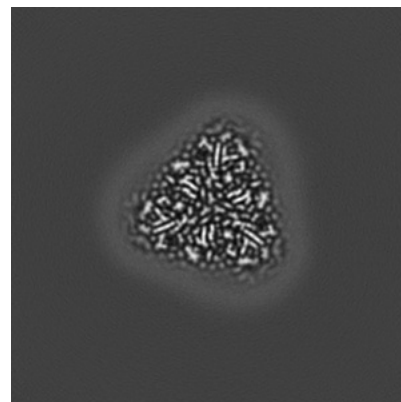
### 6.3.2 Raw map



X Index: 140



Y Index: 111

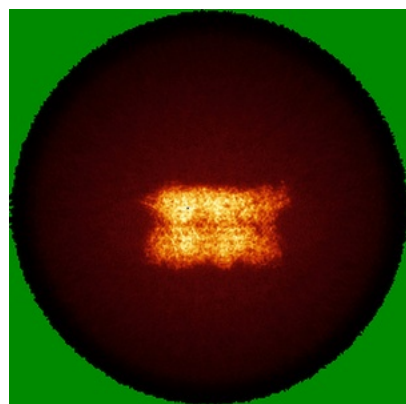


Z Index: 128

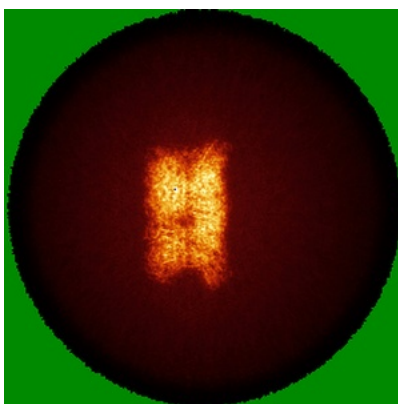
The images above show the largest variance slices of the map in three orthogonal directions.

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

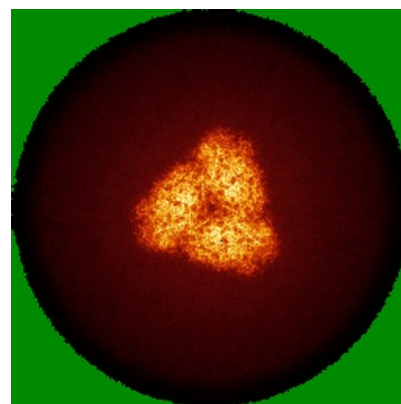
### 6.4.1 Primary map



X

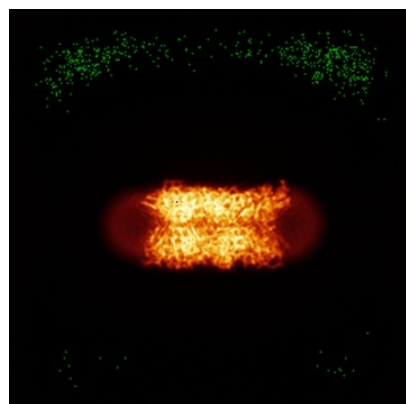


Y

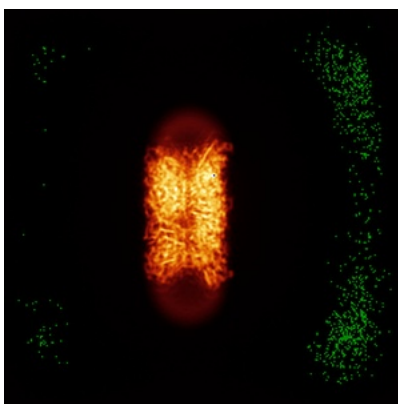


Z

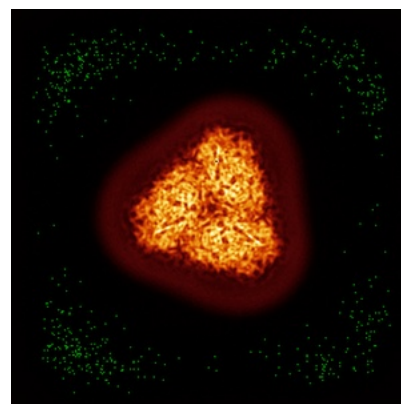
### 6.4.2 Raw map



X



Y

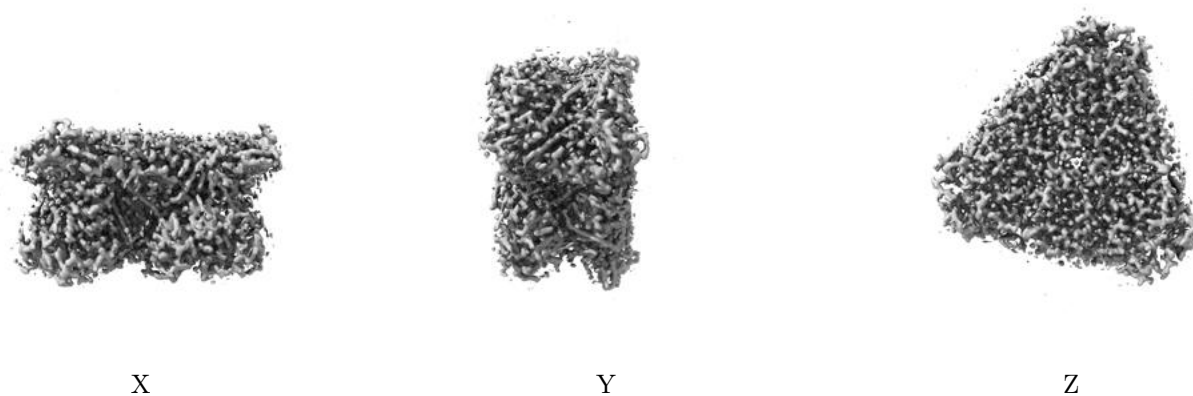


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

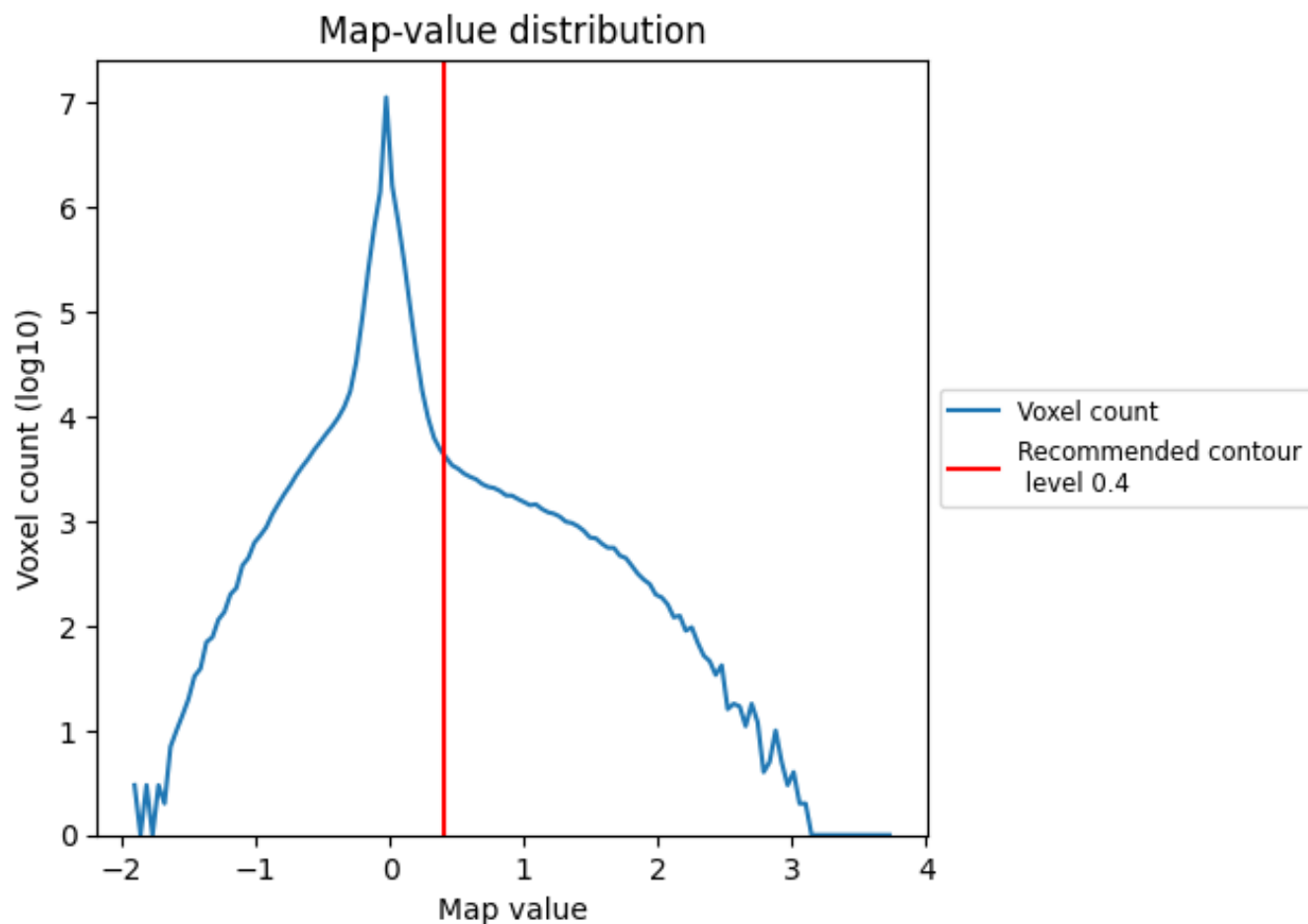
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

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

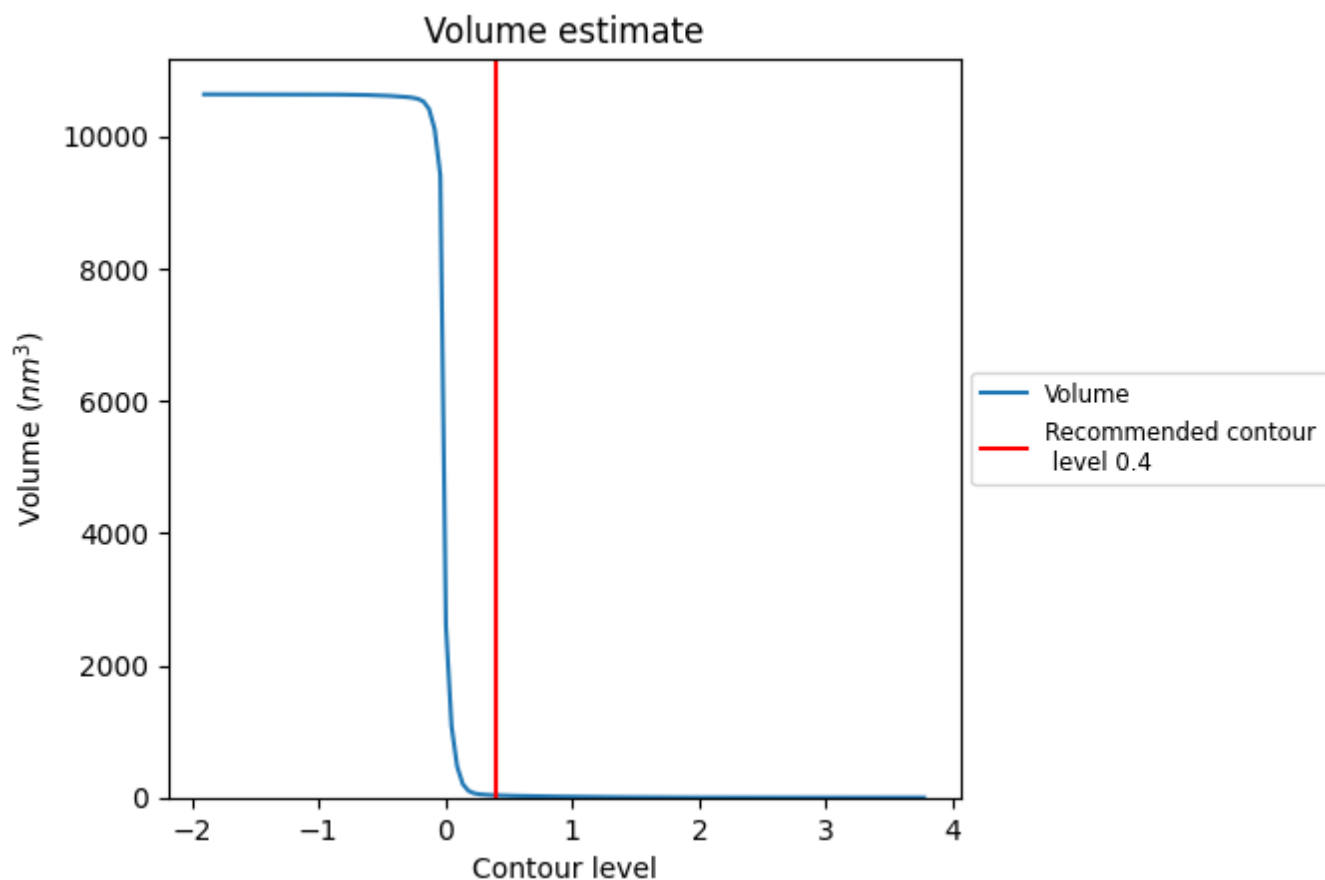
### 7.1 Map-value distribution [i](#)



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](#)

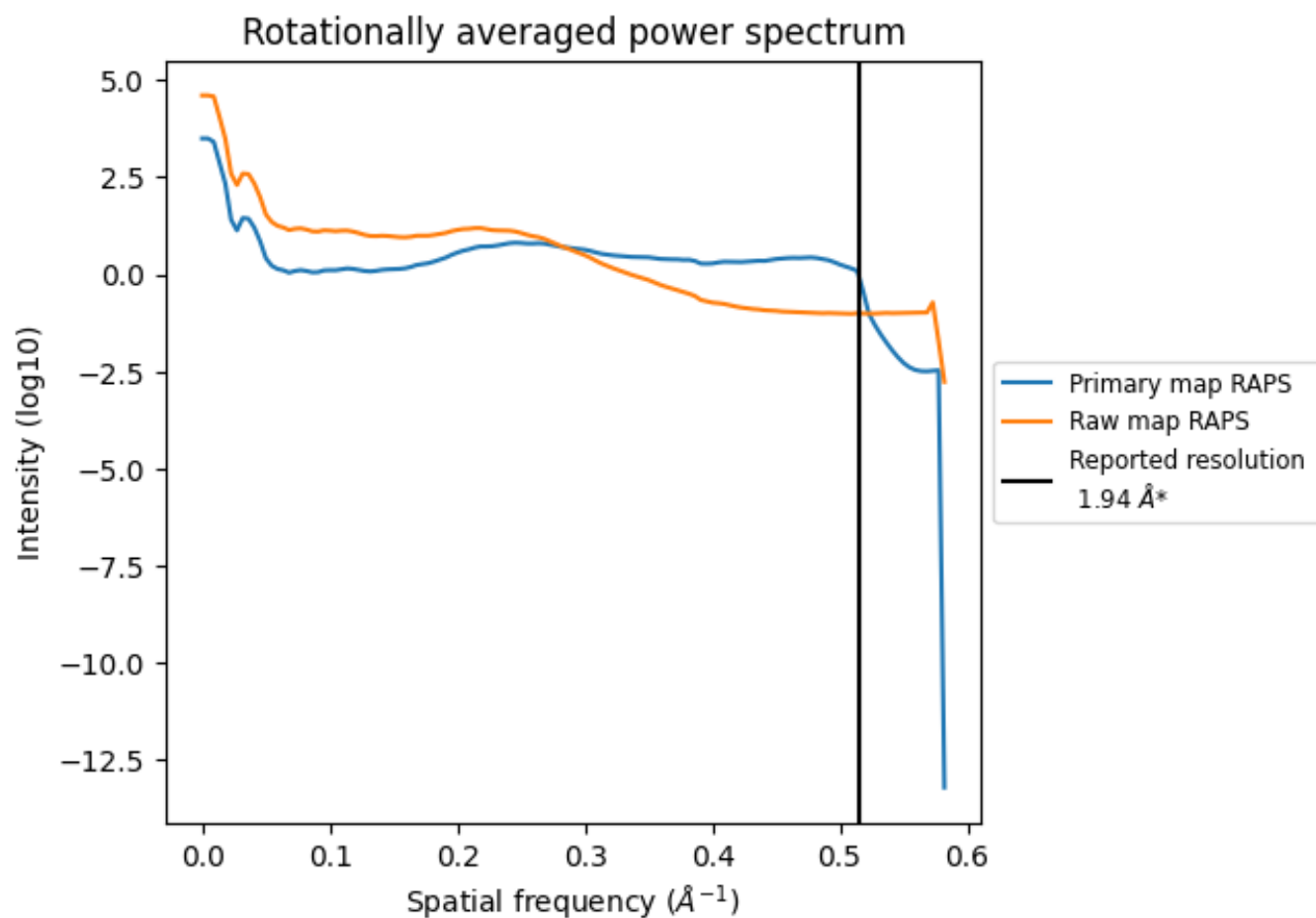


The volume at the recommended contour level is 34  $\text{nm}^3$ ; this corresponds to an approximate mass of 31 kDa.

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 ⓘ

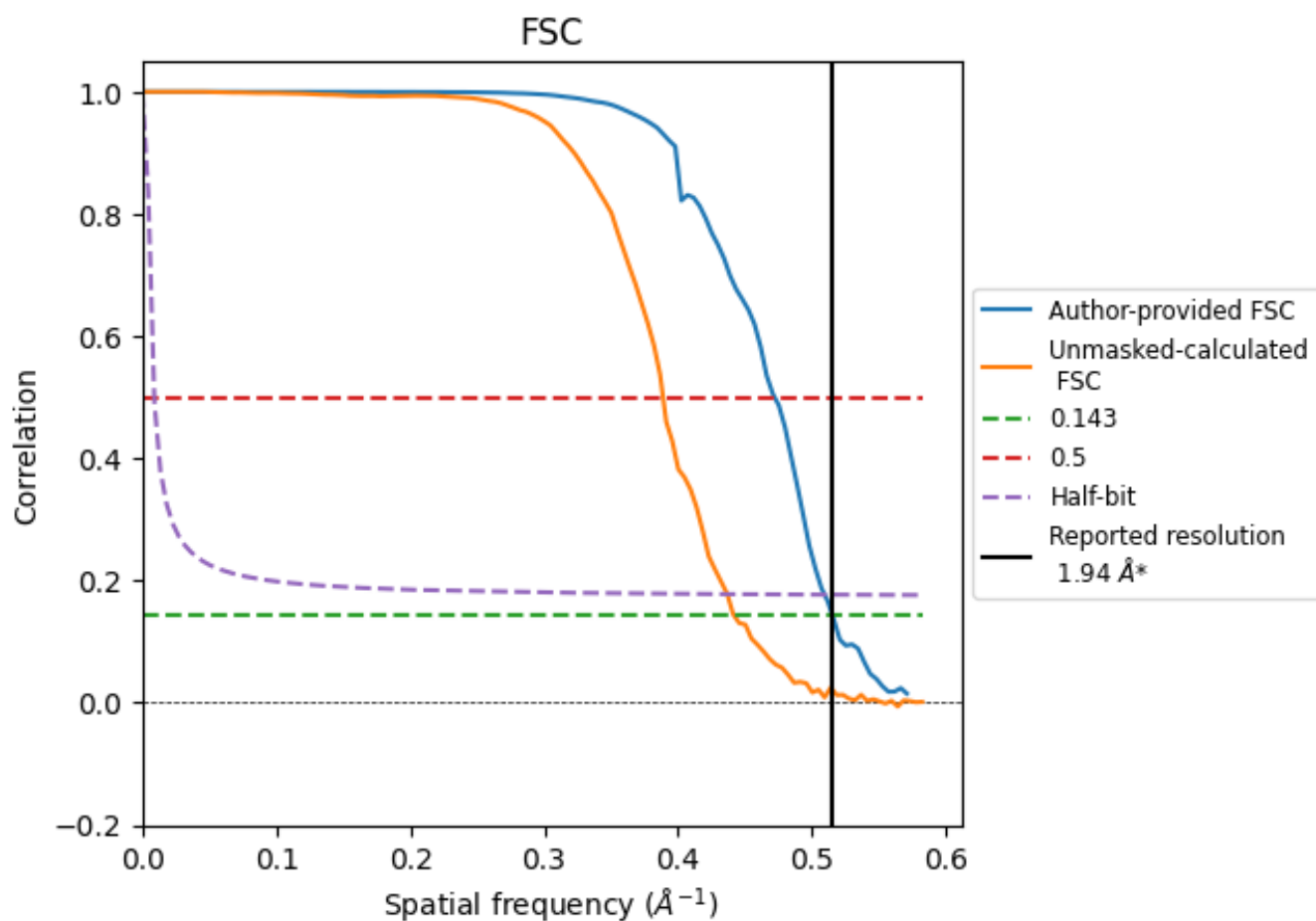


\*Reported resolution corresponds to spatial frequency of 0.515 Å<sup>-1</sup>

## 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 0.515  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	1.94	-	-
Author-provided FSC curve	1.94	2.12	1.96
Unmasked-calculated*	2.26	2.57	2.29

\*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 2.26 differs from the reported value 1.94 by more than 10 %

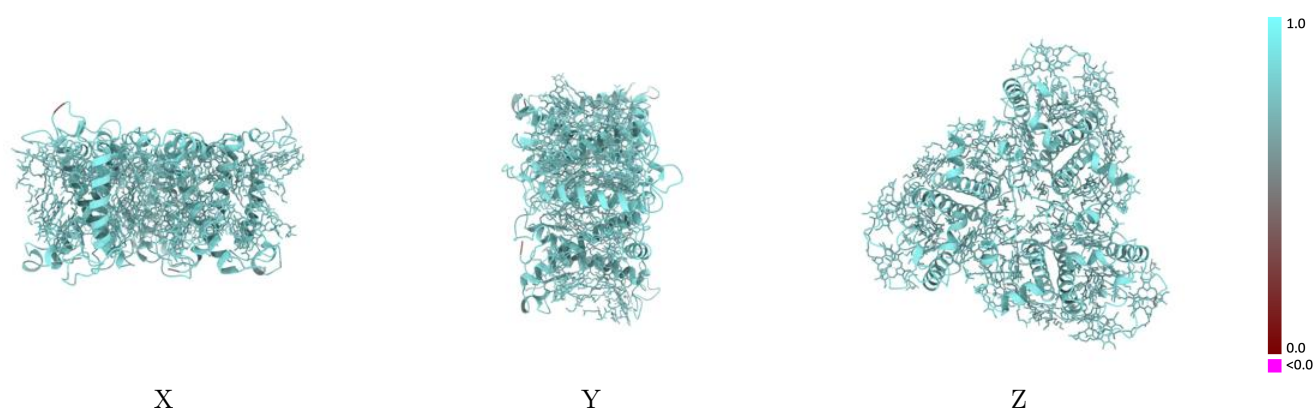
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-64036 and PDB model 9UC6. Per-residue inclusion information can be found in section 3 on page 15.

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

This section was not generated.

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

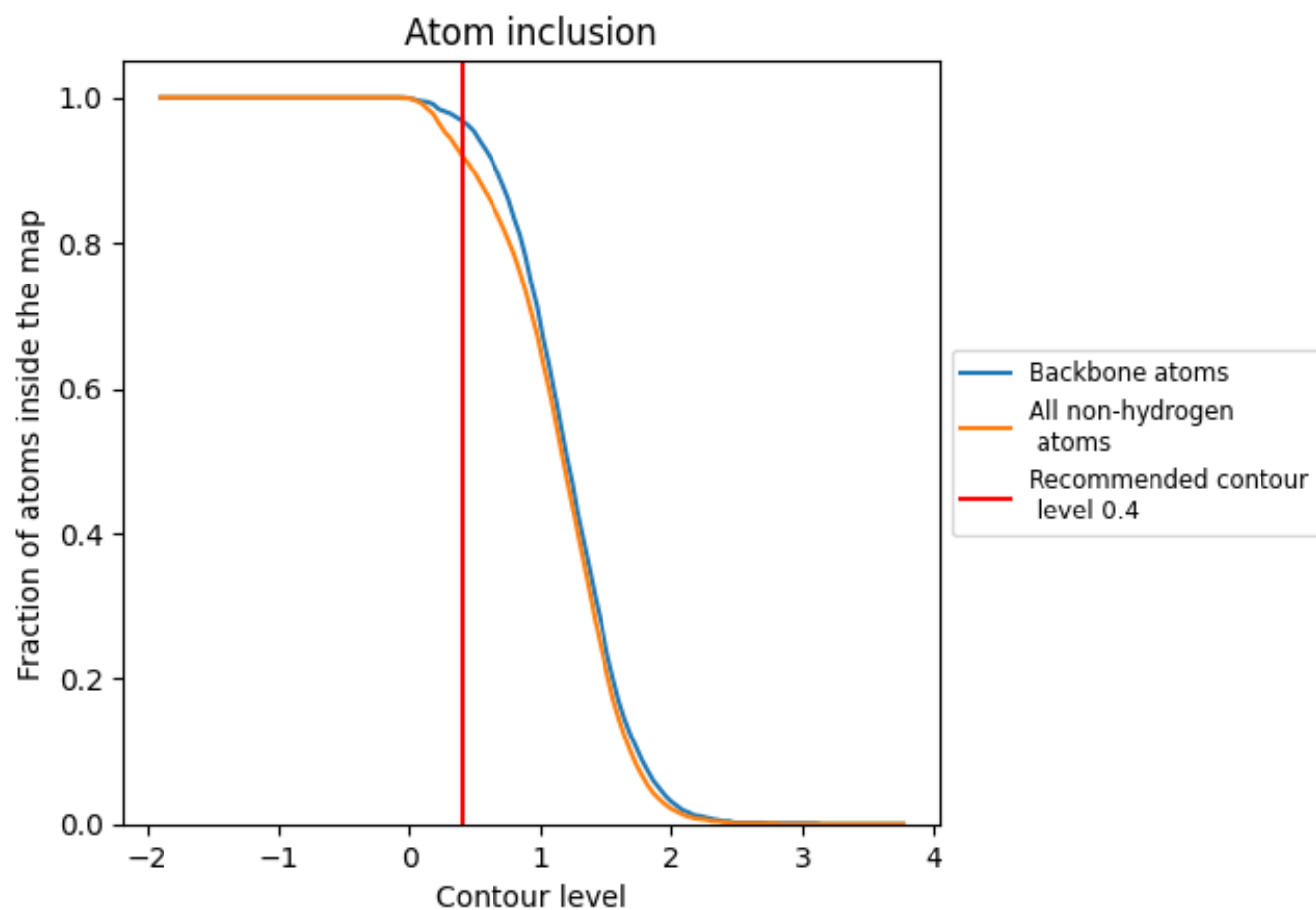


The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

This section was not generated.

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 92% 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 (0.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.9210	<div></div> 0.7700
A	<div></div> 0.9200	<div></div> 0.7710
B	<div></div> 0.9140	<div></div> 0.7690
C	<div></div> 0.9170	<div></div> 0.7700

