



Full wwPDB EM Validation Report ⓘ

Aug 12, 2025 – 12:15 PM JST

PDB ID : 9ITI / pdb_00009iti
EMDB ID : EMD-60867
Title : Nav1.7 with mutations that eliminate beta1 binding
Authors : Yan, N.; Li, Z.; Wu, T.
Deposited on : 2024-07-20
Resolution : 2.92 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev126
Mogul : 1.8.5 (274361), CSD as541be (2020)
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) : 2.45.1

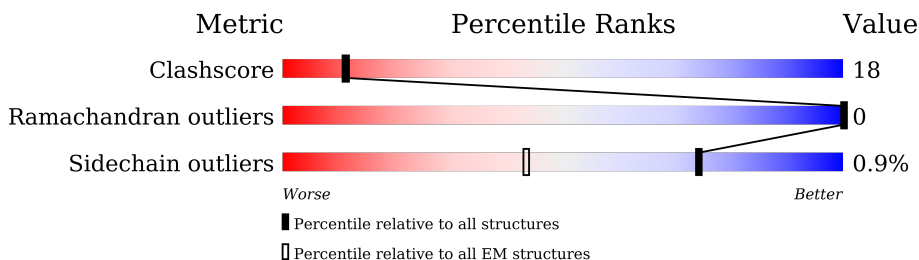
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.92 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 ≥ 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	2030	 40% 22% 38%
2	B	2	 50% 50%
2	C	2	 50% 50%

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 11086 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 Sodium channel protein type 9 subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1268	Total	C	N	O	S	1	0
			10250	6798	1615	1760	77		

There are 55 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-42	MET	-	initiating methionine	UNP Q15858
A	-41	ALA	-	expression tag	UNP Q15858
A	-40	SER	-	expression tag	UNP Q15858
A	-39	TRP	-	expression tag	UNP Q15858
A	-38	SER	-	expression tag	UNP Q15858
A	-37	HIS	-	expression tag	UNP Q15858
A	-36	PRO	-	expression tag	UNP Q15858
A	-35	GLN	-	expression tag	UNP Q15858
A	-34	PHE	-	expression tag	UNP Q15858
A	-33	GLU	-	expression tag	UNP Q15858
A	-32	LYS	-	expression tag	UNP Q15858
A	-31	GLY	-	expression tag	UNP Q15858
A	-30	GLY	-	expression tag	UNP Q15858
A	-29	GLY	-	expression tag	UNP Q15858
A	-28	ALA	-	expression tag	UNP Q15858
A	-27	ARG	-	expression tag	UNP Q15858
A	-26	GLY	-	expression tag	UNP Q15858
A	-25	GLY	-	expression tag	UNP Q15858
A	-24	SER	-	expression tag	UNP Q15858
A	-23	GLY	-	expression tag	UNP Q15858
A	-22	GLY	-	expression tag	UNP Q15858
A	-21	GLY	-	expression tag	UNP Q15858
A	-20	SER	-	expression tag	UNP Q15858
A	-19	TRP	-	expression tag	UNP Q15858
A	-18	SER	-	expression tag	UNP Q15858
A	-17	HIS	-	expression tag	UNP Q15858
A	-16	PRO	-	expression tag	UNP Q15858
A	-15	GLN	-	expression tag	UNP Q15858

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-14	PHE	-	expression tag	UNP Q15858
A	-13	GLU	-	expression tag	UNP Q15858
A	-12	LYS	-	expression tag	UNP Q15858
A	-11	GLY	-	expression tag	UNP Q15858
A	-10	PHE	-	expression tag	UNP Q15858
A	-9	ASP	-	expression tag	UNP Q15858
A	-8	TYR	-	expression tag	UNP Q15858
A	-7	LYS	-	expression tag	UNP Q15858
A	-6	ASP	-	expression tag	UNP Q15858
A	-5	ASP	-	expression tag	UNP Q15858
A	-4	ASP	-	expression tag	UNP Q15858
A	-3	ASP	-	expression tag	UNP Q15858
A	-2	LYS	-	expression tag	UNP Q15858
A	-1	GLY	-	expression tag	UNP Q15858
A	0	THR	-	expression tag	UNP Q15858
A	304	LEU	TYR	engineered mutation	UNP Q15858
A	365	ARG	ASN	engineered mutation	UNP Q15858
A	1671	TRP	LYS	engineered mutation	UNP Q15858
A	1718	THR	LYS	engineered mutation	UNP Q15858
A	1719	LEU	LYS	engineered mutation	UNP Q15858
A	1720	PRO	VAL	engineered mutation	UNP Q15858
A	1721	ASN	HIS	engineered mutation	UNP Q15858
A	1722	SER	PRO	engineered mutation	UNP Q15858
A	1723	ASN	GLY	engineered mutation	UNP Q15858
A	1724	GLY	SER	engineered mutation	UNP Q15858
A	?	-	VAL	deletion	UNP Q15858
A	1726	ARG	GLU	engineered mutation	UNP Q15858

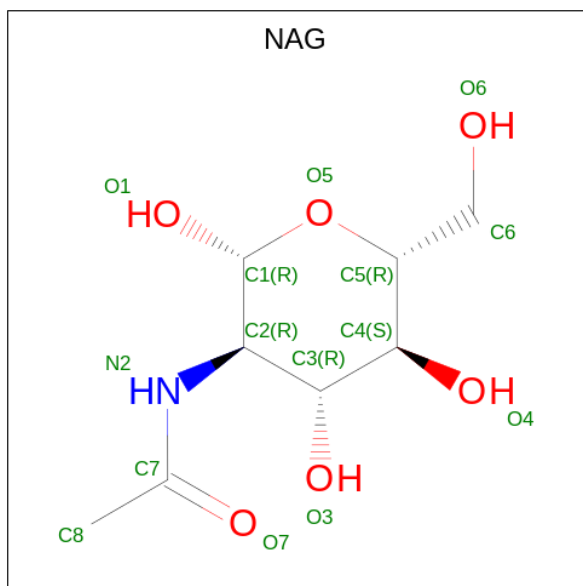
- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
2	B	2	Total	C	N	O	0	0
			28	16	2	10		
2	C	2	Total	C	N	O	0	0
			28	16	2	10		

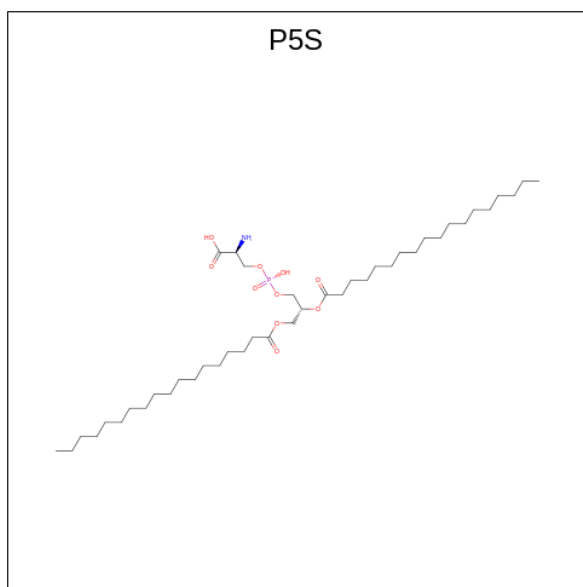
- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula:

C₈H₁₅NO₆).



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

- Molecule 4 is O-[(R)-{[(2R)-2,3-bis(octadecanoyloxy)propyl]oxy}(hydroxy)phosphoryl]-L-serine (CCD ID: P5S) (formula: C₄₂H₈₂NO₁₀P).

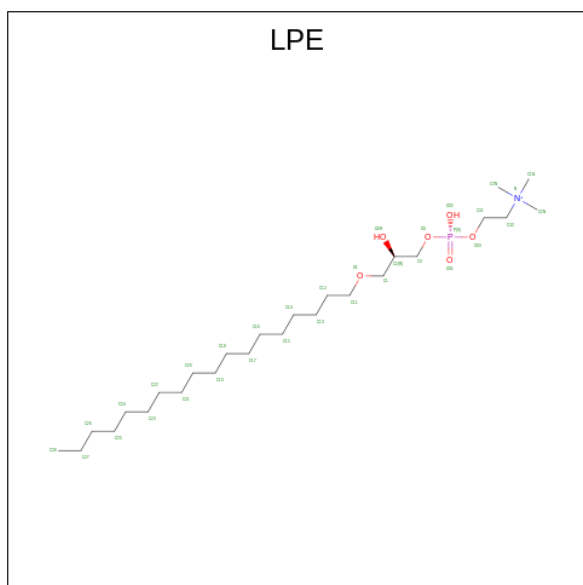


Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			35	24	1	9	1	
4	A	1	Total	C	N	O	P	0
			36	26	1	8	1	

- Molecule 5 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		AltConf
5	A	1	Total	Na	0
			1	1	

- Molecule 6 is 1-O-OCTADECYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: LPE) (formula: C₂₆H₅₇NO₆P).



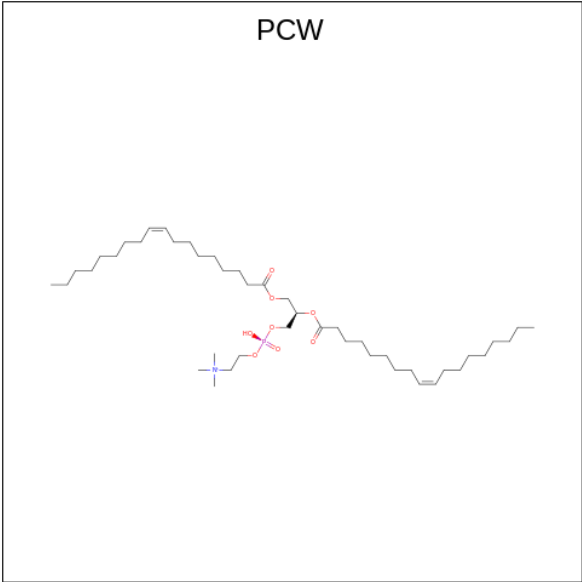
Mol	Chain	Residues	Atoms					AltConf
6	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
6	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
6	A	1	Total	C	N	O	P	0
			20	12	1	6	1	
6	A	1	Total	C	N	O	P	0
			22	14	1	6	1	
6	A	1	Total	C	N	O	P	0
			28	20	1	6	1	
6	A	1	Total	C	N	O	P	0
			25	17	1	6	1	

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Mol	Chain	Residues	Atoms					AltConf
6	A	1	Total 25	C 17	N 1	O 6	P 1	0
6	A	1	Total 25	C 17	N 1	O 6	P 1	0
6	A	1	Total 25	C 17	N 1	O 6	P 1	0
6	A	1	Total 25	C 17	N 1	O 6	P 1	0

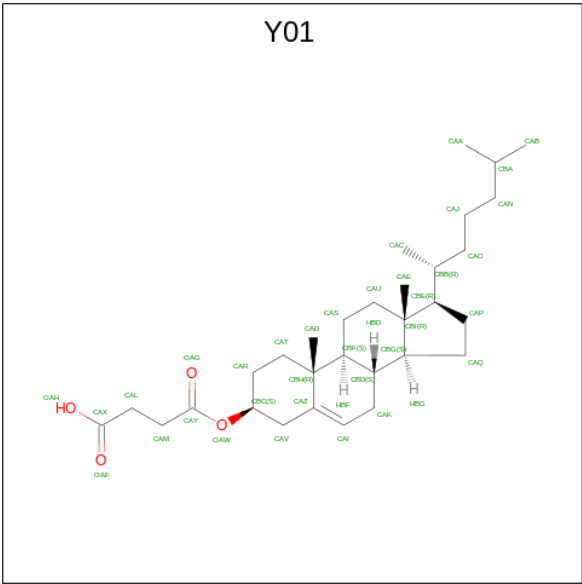
- # 1PW

- Molecule 8 is 1,2-DIOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PCW) (formula: $C_{44}H_{85}NO_8P$).



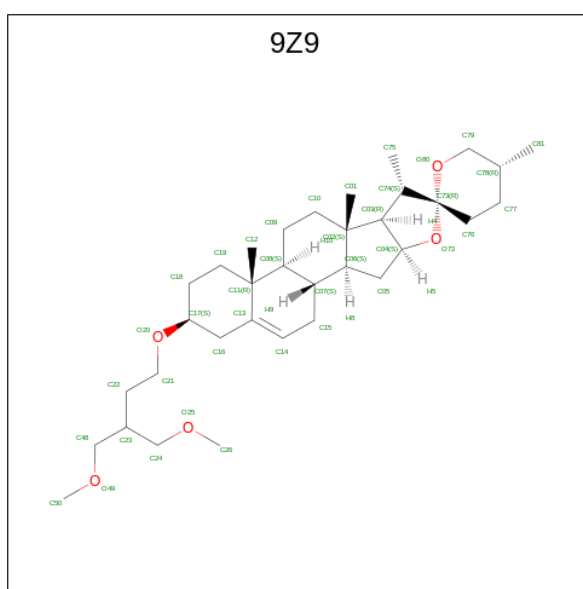
Mol	Chain	Residues	Atoms					AltConf
8	A	1	Total	C	N	O	P	0
			53	43	1	8	1	
8	A	1	Total	C	N	O	P	0
			47	37	1	8	1	
8	A	1	Total	C	N	O	P	0
			44	34	1	8	1	
8	A	1	Total	C	N	O	P	0
			44	34	1	8	1	
8	A	1	Total	C	N	O	P	0
			44	34	1	8	1	

- Molecule 9 is CHOLESTEROL HEMISUCCINATE (CCD ID: Y01) (formula: C₃₁H₅₀O₄).



Mol	Chain	Residues	Atoms			AltConf
9	A	1	Total	C	O	0
			35	31	4	
9	A	1	Total	C	O	0
			35	31	4	
9	A	1	Total	C	O	0
			35	31	4	
9	A	1	Total	C	O	0
			35	31	4	

- Molecule 10 is (3beta,14beta,17beta,25R)-3-[4-methoxy-3-(methoxymethyl)butoxy]spirost-5-en (CCD ID: 9Z9) (formula: C₃₄H₅₆O₅).



Mol	Chain	Residues	Atoms			AltConf
10	A	1	Total	C	O	0
			39	34	5	

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

Chain C:  50% 50%

MAG1
MAG2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	193309	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	3.929	Depositor
Minimum map value	-2.443	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.082	Depositor
Recommended contour level	0.236	Depositor
Map size (Å)	281.0624, 281.0624, 281.0624	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0979, 1.0979, 1.0979	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: NA, LPE, Y01, PCW, 1PW, NAG, P5S, 9Z9

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.47	10/10500 (0.1%)	0.58	4/14222 (0.0%)

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1212	GLU	CA-C	-7.28	1.44	1.53
1	A	1738	TYR	CA-C	-5.93	1.45	1.52
1	A	304	LEU	CA-C	-5.91	1.45	1.52
1	A	1677	ASP	CA-C	-5.91	1.44	1.52
1	A	1384	ASN	C-O	-5.59	1.16	1.23
1	A	1384	ASN	CA-C	-5.44	1.46	1.52
1	A	1436	TYR	CA-C	-5.39	1.45	1.52
1	A	1741	SER	CA-C	-5.12	1.46	1.52
1	A	1417	ASP	CA-C	-5.03	1.45	1.52
1	A	215	THR	CA-C	-5.02	1.46	1.52

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	344	PHE	N-CA-C	-7.39	100.74	111.30
1	A	1481	TYR	CB-CA-C	-5.83	101.73	110.88
1	A	1568	SER	N-CA-C	5.49	117.34	111.36
1	A	341	TYR	N-CA-C	5.33	119.88	113.17

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	10250	0	10484	366	0
2	B	28	0	25	1	0
2	C	28	0	25	0	0
3	A	28	0	26	2	0
4	A	71	0	86	4	0
5	A	1	0	0	0	0
6	A	245	0	337	15	0
7	A	24	0	33	6	0
8	A	232	0	323	22	0
9	A	140	0	196	53	0
10	A	39	0	0	15	0
All	All	11086	0	11535	402	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 18.

All (402) 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:A:1758:ILE:HG21	10:A:2024:9Z9:C10	1.63	1.27
1:A:398:LEU:HD23	10:A:2024:9Z9:C75	1.71	1.19
1:A:765:HIS:CD2	9:A:2026:Y01:HAR1	1.80	1.17
1:A:1333:LEU:HD22	9:A:2026:Y01:HAA1	1.30	1.10
1:A:1312:ASN:HD21	6:A:2011:LPE:H1N2	1.07	1.10
1:A:1322:MET:HE1	7:A:2007:1PW:H3	1.28	1.06
1:A:1322:MET:CE	7:A:2007:1PW:H3	1.87	1.04
1:A:1333:LEU:HD22	9:A:2026:Y01:CAA	1.93	0.98
1:A:968:LEU:HD11	10:A:2024:9Z9:C14	1.95	0.96
1:A:1491:LYS:CE	8:A:2014:PCW:H72	1.96	0.95
1:A:765:HIS:HD2	9:A:2026:Y01:HAR1	1.28	0.94
1:A:963:PHE:CE1	10:A:2024:9Z9:C81	2.51	0.92
1:A:765:HIS:CD2	9:A:2026:Y01:CAR	2.55	0.90
1:A:1260:TRP:CD1	9:A:2022:Y01:HAD3	2.08	0.89
1:A:842:VAL:HG13	9:A:2023:Y01:HAA2	1.52	0.88
1:A:963:PHE:CZ	10:A:2024:9Z9:C81	2.57	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:765:HIS:HD2	9:A:2026:Y01:CAR	1.87	0.87
1:A:1491:LYS:CE	8:A:2014:PCW:C7	2.53	0.87
1:A:1312:ASN:ND2	6:A:2011:LPE:H1N2	1.90	0.85
1:A:842:VAL:CG1	9:A:2023:Y01:HAA2	2.06	0.85
1:A:1491:LYS:HE2	8:A:2014:PCW:H72	1.59	0.84
1:A:1260:TRP:CD1	9:A:2022:Y01:CAD	2.63	0.82
1:A:1491:LYS:HE3	8:A:2014:PCW:C7	2.10	0.81
1:A:1312:ASN:HD21	6:A:2011:LPE:C1N	1.89	0.81
1:A:195:VAL:HG21	1:A:220:ARG:HG2	1.63	0.80
1:A:1758:ILE:CG2	10:A:2024:9Z9:C10	2.53	0.79
1:A:968:LEU:HD11	10:A:2024:9Z9:C15	2.14	0.78
1:A:963:PHE:CE1	10:A:2024:9Z9:C77	2.67	0.78
1:A:1322:MET:CE	7:A:2007:1PW:CAA	2.63	0.76
1:A:1488:LEU:HD11	8:A:2014:PCW:O1P	1.86	0.76
1:A:1333:LEU:CD2	9:A:2026:Y01:HAA1	2.15	0.74
1:A:1330:ILE:HG23	9:A:2023:Y01:HAB2	1.70	0.72
1:A:1529:MET:HG2	1:A:1533:MET:HE3	1.71	0.72
1:A:251:LEU:HD13	1:A:1630:ILE:HG23	1.71	0.71
1:A:19:SER:O	1:A:23:ILE:HG13	1.91	0.71
1:A:942:ALA:O	1:A:946:ILE:HD12	1.91	0.71
1:A:782:VAL:O	1:A:786:ILE:HD12	1.92	0.69
1:A:1595:LEU:O	1:A:1599:ILE:HG12	1.92	0.69
1:A:744:PRO:HG3	1:A:994:ARG:HD3	1.75	0.69
1:A:167:SER:O	1:A:171:ILE:HD12	1.91	0.69
1:A:109:LEU:HD21	1:A:115:LEU:HD12	1.73	0.69
1:A:273:HIS:HB3	1:A:315:CYS:SG	2.33	0.68
1:A:838:ARG:O	1:A:841:ARG:HG2	1.94	0.68
1:A:1260:TRP:CG	9:A:2022:Y01:HAD3	2.29	0.68
1:A:963:PHE:HE1	10:A:2024:9Z9:C77	2.07	0.68
1:A:1546:VAL:O	1:A:1550:ILE:HG13	1.95	0.67
1:A:1330:ILE:HG23	9:A:2023:Y01:CAB	2.24	0.67
1:A:932:MET:O	1:A:936:MET:HG3	1.95	0.66
1:A:1491:LYS:HE3	8:A:2014:PCW:H71	1.76	0.66
1:A:1737:PHE:CD1	6:A:2010:LPE:H1N3	2.30	0.66
1:A:158:THR:O	1:A:162:ILE:HD12	1.94	0.66
1:A:760:PHE:HE2	1:A:776:LEU:HA	1.59	0.66
1:A:765:HIS:CD2	9:A:2026:Y01:CBC	2.79	0.66
1:A:1758:ILE:CD1	10:A:2024:9Z9:C75	2.73	0.65
1:A:1374:MET:HE3	1:A:1381:ARG:HA	1.77	0.65
1:A:357:LEU:HD23	1:A:363:TRP:HB2	1.79	0.65
1:A:803:TYR:CE1	1:A:809:ASN:HB3	2.32	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:348:SER:HB2	8:A:2012:PCW:H332	1.79	0.64
1:A:1400:LEU:HD21	1:A:1743:ILE:HD11	1.80	0.63
1:A:1331:PHE:HE2	1:A:1335:PHE:HE2	1.47	0.62
1:A:866:LEU:HD12	1:A:966:LEU:HD23	1.81	0.62
1:A:1264:LEU:HD11	9:A:2022:Y01:HAC3	1.82	0.62
1:A:26:ARG:HB3	1:A:30:ARG:NH2	2.15	0.62
1:A:1583:PHE:O	1:A:1587:ILE:HG12	2.00	0.61
1:A:1475:THR:OG1	1:A:1478:GLN:HG3	2.00	0.61
1:A:1532:MET:HG2	1:A:1616:ARG:HH11	1.66	0.61
1:A:1499:ARG:HH22	1:A:1506:GLY:HA2	1.64	0.60
9:A:2023:Y01:HAC1	9:A:2023:Y01:HAE2	1.84	0.60
1:A:1553:VAL:O	1:A:1557:LEU:HD12	2.02	0.60
1:A:272:LYS:HB2	1:A:332:LYS:HG3	1.83	0.60
1:A:403:MET:HE1	1:A:1765:ALA:HB3	1.82	0.60
1:A:872:VAL:O	1:A:876:ILE:HG13	2.01	0.60
9:A:2022:Y01:HAE2	9:A:2022:Y01:HAC1	1.83	0.60
9:A:2025:Y01:HAC1	9:A:2025:Y01:HAE2	1.84	0.60
1:A:1608:LEU:O	1:A:1612:ILE:HG12	2.00	0.59
1:A:1521:ILE:O	1:A:1525:ILE:HG13	2.02	0.59
1:A:1551:ASN:O	1:A:1555:ILE:HG13	2.02	0.59
1:A:275:CYS:HB3	1:A:328:TYR:HB3	1.85	0.59
1:A:1731:ASN:HD21	1:A:1734:VAL:HG23	1.67	0.59
1:A:417:LYS:O	1:A:421:LEU:HG	2.03	0.59
1:A:1541:GLN:CD	1:A:1541:GLN:H	2.11	0.59
1:A:1497:ILE:HD13	1:A:1569:LEU:HD23	1.85	0.59
1:A:831:LEU:HD23	1:A:833:VAL:H	1.68	0.58
1:A:1529:MET:O	1:A:1533:MET:HG3	2.03	0.58
4:A:2013:P5S:HB	4:A:2013:P5S:H3A	1.86	0.58
1:A:834:LEU:HD13	1:A:837:PHE:HE1	1.68	0.58
1:A:1260:TRP:CD1	9:A:2022:Y01:HAD1	2.38	0.58
1:A:1752:ASN:C	1:A:1752:ASN:HD22	2.11	0.58
1:A:116:ARG:O	1:A:120:ILE:HG12	2.03	0.58
1:A:1580:ILE:H	1:A:1580:ILE:HD12	1.69	0.57
6:A:2005:LPE:H112	6:A:2008:LPE:H2N2	1.86	0.57
1:A:1515:GLN:O	1:A:1519:ILE:HG12	2.05	0.57
1:A:1460:PHE:HD1	1:A:1755:ILE:HG21	1.70	0.57
1:A:1228:TYR:O	1:A:1232:ILE:HG13	2.05	0.56
1:A:187:PRO:HA	1:A:190[A]:TRP:HE3	1.71	0.56
1:A:1336:SER:O	1:A:1340:VAL:HG23	2.05	0.56
1:A:765:HIS:NE2	9:A:2026:Y01:HAR1	2.19	0.56
1:A:876:ILE:HD12	1:A:958:VAL:HG21	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1581:PHE:O	1:A:1585:VAL:HG23	2.05	0.56
1:A:1726:ARG:HG2	1:A:1726:ARG:HH11	1.71	0.56
1:A:20:LEU:HA	1:A:23:ILE:HD12	1.85	0.56
1:A:834:LEU:HD13	1:A:837:PHE:CE1	2.40	0.56
1:A:95:LYS:O	1:A:95:LYS:HG2	2.05	0.56
1:A:284:GLU:HB3	1:A:289:ILE:HD11	1.86	0.56
1:A:287:GLU:OE2	1:A:287:GLU:N	2.37	0.56
1:A:988:LEU:O	1:A:992:VAL:HG23	2.05	0.56
1:A:105:ALA:HB3	1:A:109:LEU:HB2	1.87	0.56
1:A:1364:VAL:HA	1:A:1369:GLU:HB3	1.88	0.56
1:A:360:GLN:HE21	1:A:390:SER:HB3	1.69	0.56
1:A:748:LEU:HD11	1:A:988:LEU:HD12	1.87	0.56
1:A:362:TYR:CE2	1:A:365:ARG:HD3	2.41	0.56
1:A:1541:GLN:O	1:A:1545:GLU:HG2	2.05	0.56
1:A:1754:TYR:O	1:A:1758:ILE:HG13	2.05	0.56
1:A:55:ALA:HA	1:A:97:ILE:HG13	1.88	0.56
1:A:364:GLU:O	1:A:368:GLN:HG3	2.05	0.55
1:A:25:GLN:O	1:A:29:GLU:HG3	2.06	0.55
1:A:1003:LYS:O	1:A:1003:LYS:NZ	2.40	0.55
1:A:403:MET:HE3	1:A:1762:PHE:HA	1.89	0.55
1:A:1365:PRO:HD2	1:A:1369:GLU:HG3	1.89	0.55
1:A:729:TYR:HA	1:A:732:LYS:NZ	2.21	0.55
1:A:379:MET:HE1	6:A:2017:LPE:H142	1.89	0.55
1:A:778:ILE:O	1:A:782:VAL:HG23	2.07	0.55
1:A:1758:ILE:HD11	10:A:2024:9Z9:C75	2.37	0.55
1:A:922:ARG:HG2	1:A:927:GLU:HB2	1.89	0.54
1:A:1206:SER:O	1:A:1209:LEU:HB2	2.07	0.54
1:A:1198:ILE:O	1:A:1202:ILE:HG13	2.07	0.54
1:A:765:HIS:CD2	9:A:2026:Y01:HBC	2.41	0.54
1:A:754:ILE:O	1:A:758:THR:HG23	2.08	0.54
1:A:1333:LEU:O	1:A:1337:ILE:HG13	2.08	0.54
1:A:23:ILE:HA	1:A:26:ARG:CZ	2.38	0.53
1:A:1517:PHE:O	1:A:1521:ILE:HG12	2.07	0.53
1:A:1707:ILE:HD12	1:A:1739:PHE:HE2	1.73	0.53
1:A:1375:ASN:OD1	3:A:2002:NAG:H4	2.09	0.53
1:A:1549:TRP:O	1:A:1553:VAL:HG23	2.08	0.53
1:A:1000:ASN:O	1:A:1004:GLN:HG2	2.08	0.53
1:A:1391:ASN:HD21	8:A:2009:PCW:H2	1.73	0.53
1:A:215:THR:O	1:A:218:VAL:HG22	2.09	0.53
1:A:283:ASN:HB2	3:A:2001:NAG:H2	1.90	0.53
1:A:1333:LEU:CD2	9:A:2026:Y01:CAA	2.78	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1007:ARG:O	1:A:1011:LEU:HG	2.09	0.53
1:A:1573:TYR:CE1	1:A:1579:ASN:HB3	2.43	0.53
1:A:1621:LEU:O	1:A:1624:VAL:HG22	2.09	0.52
1:A:1719:LEU:HD12	1:A:1720:PRO:HD2	1.91	0.52
1:A:198:PHE:O	1:A:202:THR:HG23	2.08	0.52
1:A:304:LEU:HD23	1:A:313:LEU:HD23	1.90	0.52
1:A:189:ASN:HA	1:A:192:ASP:OD2	2.08	0.52
1:A:811:PHE:CE1	1:A:815:ILE:HD11	2.44	0.52
1:A:1419:VAL:HG13	1:A:1423:LYS:HB2	1.91	0.52
1:A:1651:LEU:O	1:A:1655:MET:HG3	2.10	0.52
1:A:280:LEU:HG	1:A:284:GLU:HB2	1.91	0.52
1:A:964:LEU:HD11	10:A:2024:9Z9:C04	2.40	0.52
1:A:164:THR:HG21	1:A:200:TYR:OH	2.10	0.52
1:A:1751:VAL:O	1:A:1755:ILE:HG12	2.10	0.52
1:A:188:TRP:CD1	1:A:232:LYS:HE2	2.45	0.52
1:A:1280:TYR:HB3	1:A:1283:LEU:HG	1.91	0.52
1:A:1587:ILE:O	1:A:1591:VAL:HG23	2.10	0.52
1:A:149:PRO:O	1:A:152:THR:HG22	2.09	0.52
1:A:1434:TYR:O	1:A:1438:VAL:HG23	2.09	0.52
1:A:226:SER:HA	1:A:232:LYS:HE3	1.92	0.52
1:A:888:PHE:CE2	1:A:947:VAL:HG11	2.44	0.52
1:A:1261:LEU:O	1:A:1265:ILE:HG13	2.10	0.51
1:A:224:THR:HA	1:A:227:VAL:HG12	1.92	0.51
1:A:851:THR:HG22	1:A:1327:VAL:HG21	1.93	0.51
1:A:12:PHE:C	1:A:70:MET:HE1	2.36	0.51
1:A:1499:ARG:NH2	1:A:1506:GLY:HA2	2.25	0.51
1:A:1260:TRP:CZ3	9:A:2022:Y01:HAE3	2.46	0.51
1:A:934:ASP:O	1:A:938:VAL:HG22	2.09	0.51
1:A:272:LYS:HG2	1:A:336:ASN:HD21	1.76	0.51
1:A:964:LEU:HG	10:A:2024:9Z9:C05	2.41	0.51
1:A:1179:TRP:HA	1:A:1182:ARG:HB2	1.93	0.51
9:A:2022:Y01:HAE2	9:A:2022:Y01:CAC	2.41	0.51
1:A:307:GLU:CD	1:A:307:GLU:H	2.18	0.51
1:A:744:PRO:HA	1:A:991:ALA:HB2	1.92	0.51
1:A:888:PHE:HE2	1:A:947:VAL:HG11	1.76	0.51
1:A:98:PHE:CD2	1:A:124:VAL:HG22	2.46	0.50
1:A:1406:LYS:HE2	1:A:1698:ALA:HA	1.93	0.50
1:A:1607:THR:O	1:A:1611:VAL:HG23	2.11	0.50
1:A:86:LYS:HB3	1:A:102:ALA:HB3	1.93	0.50
1:A:298:ASP:OD1	1:A:298:ASP:N	2.44	0.50
1:A:1321:ILE:CG2	7:A:2007:1PW:H9	2.41	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:15:PHE:HD2	1:A:76:GLU:HG3	1.77	0.50
1:A:163:TYR:O	1:A:166:GLU:HG3	2.11	0.50
1:A:1652:PHE:HE1	1:A:1688:MET:HE1	1.77	0.50
1:A:1186:TYR:HA	1:A:1247:ALA:HB1	1.93	0.50
1:A:92:ASN:OD1	1:A:96:THR:OG1	2.21	0.50
1:A:1331:PHE:CE2	1:A:1335:PHE:HE2	2.28	0.50
1:A:1195:GLU:O	1:A:1199:VAL:HG23	2.12	0.49
1:A:1322:MET:HE2	7:A:2007:1PW:CAA	2.42	0.49
1:A:744:PRO:HB3	1:A:991:ALA:HA	1.93	0.49
1:A:843:PHE:CD1	1:A:856:ILE:HD11	2.47	0.49
1:A:963:PHE:CD1	10:A:2024:9Z9:C81	2.96	0.49
1:A:1373:LEU:HA	1:A:1376:VAL:HG12	1.95	0.49
1:A:1432:TYR:CZ	9:A:2025:Y01:HAU1	2.48	0.49
9:A:2025:Y01:HAE2	9:A:2025:Y01:CAC	2.41	0.49
1:A:114:PRO:HA	1:A:117:ARG:NH1	2.28	0.49
1:A:806:VAL:HB	1:A:809:ASN:OD1	2.13	0.49
1:A:1584:VAL:O	1:A:1588:ILE:HG23	2.13	0.49
1:A:74:PRO:HB3	1:A:88:PHE:CD2	2.48	0.48
1:A:842:VAL:HG11	9:A:2023:Y01:HAA2	1.93	0.48
1:A:1526:CYS:O	1:A:1530:VAL:HG23	2.13	0.48
1:A:99:ARG:HH11	1:A:99:ARG:HB3	1.78	0.48
1:A:214:ARG:HH11	1:A:217:ARG:HH21	1.59	0.48
1:A:1353:THR:HB	1:A:1379:ASN:OD1	2.12	0.48
1:A:1737:PHE:HD1	6:A:2010:LPE:H1N3	1.75	0.48
1:A:1260:TRP:CE3	9:A:2022:Y01:CAE	2.96	0.48
1:A:1250:TYR:O	1:A:1254:PHE:HB2	2.13	0.48
1:A:1260:TRP:CG	9:A:2022:Y01:CAD	2.95	0.48
1:A:1262:ASP:O	1:A:1266:VAL:HG22	2.13	0.48
9:A:2025:Y01:HAC1	9:A:2025:Y01:HAU2	1.96	0.48
1:A:23:ILE:HG22	1:A:86:LYS:NZ	2.28	0.48
9:A:2023:Y01:OAG	9:A:2023:Y01:HAV2	2.14	0.48
1:A:357:LEU:HD13	1:A:385:VAL:HG11	1.95	0.48
1:A:1381:ARG:HG2	1:A:1383:LYS:HB2	1.96	0.48
1:A:23:ILE:HG23	1:A:26:ARG:NH2	2.29	0.47
1:A:812:ASP:O	1:A:816:VAL:HG23	2.14	0.47
9:A:2025:Y01:OAG	9:A:2025:Y01:HAV2	2.14	0.47
1:A:417:LYS:HB2	1:A:417:LYS:HE2	1.62	0.47
1:A:779:GLY:O	1:A:783:PHE:HD1	1.97	0.47
1:A:23:ILE:HG22	1:A:86:LYS:HZ2	1.78	0.47
1:A:762:ALA:O	9:A:2026:Y01:HAU1	2.14	0.47
1:A:1396:TYR:OH	9:A:2026:Y01:HAA2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:A:2023:Y01:HAC1	9:A:2023:Y01:HAU2	1.96	0.47
1:A:873:LEU:O	1:A:877:VAL:HG23	2.14	0.47
1:A:333:ILE:HG12	1:A:334:GLY:N	2.30	0.47
1:A:372:ARG:NH2	1:A:1677:ASP:OD2	2.47	0.47
8:A:2020:PCW:H63	8:A:2020:PCW:H42	1.59	0.47
9:A:2023:Y01:HAE2	9:A:2023:Y01:CAC	2.41	0.47
1:A:729:TYR:HA	1:A:732:LYS:HZ1	1.79	0.47
1:A:941:GLN:O	1:A:945:LEU:HG	2.15	0.47
1:A:191:LEU:O	1:A:195:VAL:HG12	2.14	0.47
1:A:209:ASN:O	1:A:213:LEU:HD12	2.15	0.47
1:A:1562:CYS:O	1:A:1566:LEU:HG	2.15	0.47
1:A:971:PHE:HA	1:A:974:ASP:OD2	2.15	0.47
1:A:1435:ILE:O	1:A:1439:VAL:HG23	2.14	0.47
8:A:2009:PCW:H182	8:A:2009:PCW:H211	1.74	0.46
9:A:2022:Y01:HAC1	9:A:2022:Y01:HAU2	1.96	0.46
1:A:316:GLY:HA3	1:A:321:SER:HB3	1.98	0.46
1:A:772:PHE:HA	1:A:775:VAL:HG12	1.97	0.46
1:A:1580:ILE:O	1:A:1584:VAL:HG23	2.15	0.46
1:A:87:THR:HA	1:A:101:ASN:HA	1.97	0.46
1:A:114:PRO:HA	1:A:117:ARG:HH12	1.81	0.46
1:A:736:CYS:O	1:A:740:ILE:HG12	2.16	0.46
1:A:11:SER:C	1:A:12:PHE:HD1	2.24	0.46
1:A:287:GLU:HA	1:A:290:MET:HB2	1.96	0.46
1:A:1330:ILE:CG2	9:A:2023:Y01:HAB2	2.41	0.46
1:A:1617:ILE:HD13	1:A:1620:ILE:HD12	1.98	0.46
1:A:106:LEU:HA	1:A:178:VAL:HG11	1.98	0.46
1:A:1441:ILE:O	1:A:1445:SER:HB3	2.16	0.46
8:A:2014:PCW:H73	8:A:2014:PCW:H41	1.51	0.46
1:A:748:LEU:O	1:A:752:ILE:HG12	2.16	0.46
1:A:1333:LEU:HB2	9:A:2026:Y01:HAA1	1.96	0.46
1:A:1477:GLU:HA	1:A:1480:LYS:HE3	1.97	0.46
9:A:2026:Y01:HAE2	9:A:2026:Y01:HBB	1.60	0.46
9:A:2026:Y01:HAP1	9:A:2026:Y01:HAO2	1.36	0.46
1:A:99:ARG:HB3	1:A:99:ARG:NH1	2.32	0.46
1:A:1412:MET:O	1:A:1416:VAL:HG22	2.16	0.46
1:A:187:PRO:HA	1:A:190[A]:TRP:CE3	2.51	0.45
1:A:987:ASN:HA	1:A:990:ILE:HD12	1.97	0.45
1:A:92:ASN:ND2	1:A:124:VAL:HG13	2.32	0.45
1:A:270:ASN:HA	1:A:273:HIS:CE1	2.51	0.45
1:A:380:ILE:O	1:A:384:VAL:HG12	2.16	0.45
1:A:1652:PHE:CE1	1:A:1688:MET:HE1	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:756:LEU:O	1:A:760:PHE:HB2	2.16	0.45
1:A:758:THR:HG21	1:A:842:VAL:HG22	1.98	0.45
1:A:1528:ASN:O	1:A:1532:MET:HG3	2.16	0.45
1:A:1655:MET:HG2	1:A:1742:TYR:OH	2.16	0.45
1:A:29:GLU:O	1:A:32:SER:OG	2.21	0.45
1:A:1419:VAL:HG13	1:A:1420:ASN:N	2.32	0.45
6:A:2006:LPE:H311	8:A:2009:PCW:H83	1.98	0.45
1:A:1499:ARG:NH2	1:A:1500:PRO:O	2.50	0.45
1:A:217:ARG:O	1:A:220:ARG:HG3	2.17	0.45
1:A:1350:CYS:HB2	1:A:1382:TRP:HE3	1.81	0.45
1:A:336:ASN:HD22	1:A:336:ASN:HA	1.53	0.45
1:A:963:PHE:CE1	10:A:2024:9Z9:C78	3.00	0.45
1:A:1656:PHE:O	1:A:1660:ILE:HG12	2.17	0.45
1:A:361:ASP:OD2	1:A:927:GLU:HA	2.17	0.45
1:A:154:ASN:HA	1:A:157:TYR:HD2	1.82	0.44
1:A:1359:PHE:HZ	2:B:1:NAG:H82	1.82	0.44
1:A:1597:ASP:HA	1:A:1600:GLU:OE2	2.18	0.44
1:A:774:ASN:O	1:A:778:ILE:HG23	2.18	0.44
1:A:1596:ALA:HB1	1:A:1609:PHE:CE2	2.52	0.44
8:A:2021:PCW:H232	8:A:2021:PCW:H20	1.67	0.44
9:A:2025:Y01:HAS2	9:A:2025:Y01:HAE1	1.81	0.44
1:A:1522:MET:HE3	1:A:1522:MET:HB3	1.78	0.44
1:A:1645:PHE:HB2	6:A:2015:LPE:H321	1.99	0.44
9:A:2023:Y01:HAN2	9:A:2023:Y01:HAC3	2.00	0.44
1:A:74:PRO:O	1:A:75:LEU:HD23	2.18	0.44
1:A:1355:ASP:OD1	1:A:1355:ASP:N	2.51	0.44
4:A:2003:P5S:H42A	4:A:2003:P5S:H48A	2.00	0.44
1:A:844:LYS:HE3	1:A:844:LYS:HB2	1.71	0.44
6:A:2018:LPE:H122	6:A:2018:LPE:H152	1.89	0.44
8:A:2020:PCW:H341	8:A:2020:PCW:H371	1.56	0.44
1:A:1488:LEU:HD13	8:A:2020:PCW:H51	2.00	0.44
1:A:1643:ALA:O	1:A:1647:ILE:HG13	2.18	0.44
1:A:1007:ARG:O	1:A:1010:ILE:HG12	2.18	0.43
1:A:252:THR:O	1:A:256:LEU:HG	2.18	0.43
1:A:849:TRP:HB2	9:A:2023:Y01:HAD3	1.99	0.43
6:A:2006:LPE:H212	6:A:2006:LPE:H181	1.69	0.43
6:A:2011:LPE:H2N2	6:A:2011:LPE:H312	1.61	0.43
1:A:816:VAL:O	1:A:820:LEU:HD23	2.19	0.43
1:A:1181:ILE:HA	1:A:1184:THR:HG22	1.99	0.43
1:A:1184:THR:O	1:A:1188:ILE:HG12	2.18	0.43
1:A:1348:TYR:CE1	1:A:1384:ASN:HB2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1442:ILE:O	1:A:1446:PHE:HB3	2.19	0.43
1:A:1671:TRP:CD1	1:A:1675:ILE:HG22	2.53	0.43
9:A:2025:Y01:HAN2	9:A:2025:Y01:HAC3	2.00	0.43
1:A:177:CYS:HA	1:A:182:THR:HG21	1.99	0.43
8:A:2014:PCW:H121	8:A:2014:PCW:H152	1.57	0.43
1:A:180:GLU:HG3	1:A:181:PHE:CD1	2.54	0.43
1:A:1333:LEU:HD22	9:A:2026:Y01:CBA	2.49	0.43
9:A:2023:Y01:HAS2	9:A:2023:Y01:HAE1	1.81	0.43
1:A:166:GLU:OE1	1:A:170:LYS:HE3	2.18	0.43
1:A:766:HIS:HB3	1:A:767:PRO:HD3	1.99	0.43
1:A:1514:ASN:OD1	1:A:1515:GLN:N	2.51	0.43
1:A:1750:VAL:O	1:A:1754:TYR:HD2	2.02	0.43
1:A:187:PRO:O	1:A:190[B]:TRP:HB2	2.18	0.43
1:A:320:ASP:O	1:A:375:GLY:HA2	2.18	0.43
1:A:822:GLU:OE2	1:A:834:LEU:HB3	2.18	0.43
1:A:1577:GLY:H	8:A:2014:PCW:H51	1.83	0.43
1:A:1726:ARG:HG2	1:A:1726:ARG:NH1	2.32	0.43
1:A:1732:PRO:O	1:A:1736:ILE:HG13	2.19	0.43
8:A:2014:PCW:H182	8:A:2014:PCW:H211	1.66	0.42
8:A:2021:PCW:H211	8:A:2021:PCW:H182	1.76	0.42
1:A:766:HIS:ND1	1:A:1345:GLY:HA3	2.34	0.42
1:A:1177:ILE:O	1:A:1181:ILE:HG12	2.19	0.42
1:A:1405:PHE:O	1:A:1406:LYS:HD3	2.19	0.42
1:A:1431:LEU:HD23	1:A:1431:LEU:O	2.20	0.42
1:A:1593:MET:HE2	1:A:1593:MET:HB3	1.86	0.42
1:A:850:PRO:HD3	9:A:2023:Y01:HAV1	2.02	0.42
1:A:996:LYS:HA	1:A:999:ILE:HG22	2.02	0.42
1:A:1325:LEU:HD22	7:A:2007:1PW:H6	2.02	0.42
1:A:1330:ILE:CG2	9:A:2023:Y01:CAB	2.97	0.42
1:A:1474:MET:HE3	1:A:1642:PRO:HB2	2.00	0.42
1:A:50:SER:HB3	1:A:53:LEU:HB2	2.01	0.42
1:A:831:LEU:HD22	1:A:834:LEU:HD23	2.01	0.42
1:A:986:ASN:OD1	1:A:988:LEU:HB3	2.19	0.42
1:A:1264:LEU:HD11	9:A:2022:Y01:CAC	2.48	0.42
1:A:1704:LEU:O	1:A:1704:LEU:HD12	2.20	0.42
1:A:392:TYR:CE1	1:A:1637:LEU:HD13	2.54	0.42
1:A:1477:GLU:H	1:A:1477:GLU:CD	2.28	0.42
1:A:1485:MET:SD	1:A:1639:MET:HA	2.59	0.42
1:A:1330:ILE:HG23	9:A:2023:Y01:HAB3	2.02	0.42
1:A:1388:ASN:OD1	1:A:1394:LEU:HD13	2.20	0.42
1:A:1661:PHE:CD2	6:A:2010:LPE:H2N2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:27:ILE:HG21	1:A:86:LYS:HZ3	1.85	0.42
1:A:77:ASP:OD2	1:A:78:LEU:N	2.53	0.42
1:A:831:LEU:HD23	1:A:832:SER:N	2.35	0.42
1:A:1666:PHE:O	1:A:1669:VAL:HG22	2.20	0.42
1:A:1758:ILE:O	1:A:1762:PHE:HD1	2.02	0.42
1:A:1304:PHE:HB2	1:A:1307:MET:CE	2.50	0.41
1:A:1578:TRP:HB3	1:A:1625:LYS:NZ	2.34	0.41
4:A:2003:P5S:H40A	4:A:2003:P5S:H43	1.71	0.41
1:A:84:ASP:OD1	1:A:85:LYS:HG3	2.20	0.41
1:A:1528:ASN:HA	1:A:1531:THR:HG22	2.02	0.41
1:A:1532:MET:CG	1:A:1616:ARG:HH11	2.31	0.41
1:A:1354:THR:HG22	1:A:1379:ASN:ND2	2.35	0.41
1:A:1731:ASN:HD21	1:A:1734:VAL:CG2	2.33	0.41
1:A:30:ARG:N	1:A:30:ARG:HD3	2.35	0.41
1:A:994:ARG:HH11	1:A:994:ARG:HB2	1.86	0.41
1:A:109:LEU:HD23	1:A:109:LEU:HA	1.76	0.41
1:A:136:ILE:HG21	1:A:224:THR:HG22	2.03	0.41
1:A:1644:LEU:HD23	1:A:1753:MET:HG2	2.02	0.41
1:A:910:MET:HG2	1:A:919:ILE:HD12	2.03	0.41
1:A:1631:ARG:O	1:A:1632:THR:C	2.61	0.41
1:A:1432:TYR:CD1	9:A:2025:Y01:HBF	2.56	0.41
1:A:1499:ARG:HH22	1:A:1506:GLY:CA	2.32	0.41
4:A:2003:P5S:H49A	4:A:2003:P5S:H52	1.82	0.41
6:A:2016:LPE:H2N3	6:A:2016:LPE:H312	1.74	0.41
1:A:50:SER:OG	1:A:53:LEU:HD23	2.21	0.41
1:A:79:ASP:OD1	1:A:81:TYR:N	2.50	0.41
1:A:835:ARG:CZ	1:A:835:ARG:HB3	2.51	0.41
1:A:1491:LYS:NZ	8:A:2014:PCW:H72	2.34	0.41
1:A:1552:VAL:O	1:A:1556:ILE:HG12	2.21	0.41
1:A:54:GLU:H	1:A:54:GLU:CD	2.29	0.41
1:A:88:PHE:CE1	1:A:100:PHE:HB2	2.55	0.41
1:A:162:ILE:HD12	1:A:162:ILE:H	1.86	0.41
1:A:1350:CYS:HB3	1:A:1424:GLN:OE1	2.21	0.41
1:A:1755:ILE:O	1:A:1759:LEU:HD23	2.21	0.41
1:A:396:LEU:HD23	1:A:396:LEU:HA	1.84	0.41
1:A:869:LEU:HD22	1:A:962:LEU:HB2	2.03	0.41
1:A:949:MET:O	1:A:953:VAL:HG23	2.20	0.41
1:A:360:GLN:HE21	1:A:390:SER:CB	2.33	0.40
1:A:379:MET:SD	6:A:2017:LPE:H21	2.61	0.40
1:A:1624:VAL:HG12	1:A:1630:ILE:HG21	2.03	0.40
1:A:1671:TRP:HD1	1:A:1675:ILE:HG22	1.85	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:A:2012:PCW:H232	8:A:2012:PCW:H20	1.80	0.40
1:A:12:PHE:CE2	1:A:66:ILE:HD12	2.55	0.40
1:A:1451:LEU:O	1:A:1455:VAL:HG23	2.21	0.40
1:A:23:ILE:HA	1:A:26:ARG:NH2	2.35	0.40
1:A:143:MET:HB3	1:A:882:VAL:HG21	2.03	0.40
1:A:267:PHE:HA	1:A:270:ASN:OD1	2.21	0.40
1:A:782:VAL:HG12	1:A:786:ILE:HD11	2.03	0.40
1:A:1408:TRP:H	1:A:1408:TRP:CD1	2.39	0.40
1:A:811:PHE:CZ	1:A:815:ILE:HD11	2.56	0.40
1:A:834:LEU:HA	1:A:837:PHE:CE1	2.56	0.40
1:A:895:CYS:HB2	1:A:938:VAL:HG12	2.03	0.40
1:A:1426:LYS:HB2	1:A:1429:TYR:HB2	2.03	0.40
1:A:1491:LYS:CE	8:A:2014:PCW:H71	2.37	0.40
1:A:34:GLU:OE1	1:A:34:GLU:N	2.54	0.40
1:A:833:VAL:HG12	1:A:837:PHE:CZ	2.57	0.40
1:A:1285:PRO:O	1:A:1289:LEU:HD23	2.21	0.40
1:A:1497:ILE:HG13	1:A:1498:PRO:HD2	2.04	0.40

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	1255/2030 (62%)	1226 (98%)	29 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1133/1808 (63%)	1122 (99%)	11 (1%)	73	90

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	139	ASN
1	A	184	LEU
1	A	190[A]	TRP
1	A	190[B]	TRP
1	A	226	SER
1	A	240	GLN
1	A	280	LEU
1	A	281	GLU
1	A	288	SER
1	A	333	ILE
1	A	336	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	HIS
1	A	18	GLN
1	A	240	GLN
1	A	273	HIS
1	A	323	GLN
1	A	336	ASN
1	A	360	GLN
1	A	395	ASN
1	A	765	HIS
1	A	1312	ASN
1	A	1363	GLN
1	A	1420	ASN
1	A	1483	ASN
1	A	1731	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

4 monosaccharides are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	NAG	B	1	2,1	14,14,15	0.54	0	17,19,21	0.53	0
2	NAG	B	2	2	14,14,15	0.25	0	17,19,21	0.36	0
2	NAG	C	1	2,1	14,14,15	1.06	1 (7%)	17,19,21	1.28	1 (5%)
2	NAG	C	2	2	14,14,15	0.21	0	17,19,21	0.49	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
2	NAG	B	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	B	2	2	-	2/6/23/26	0/1/1/1
2	NAG	C	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	C	2	2	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1	NAG	O5-C1	3.55	1.49	1.43

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1	NAG	C1-O5-C5	4.77	118.66	112.19

There are no chirality outliers.

All (6) torsion outliers are listed below:

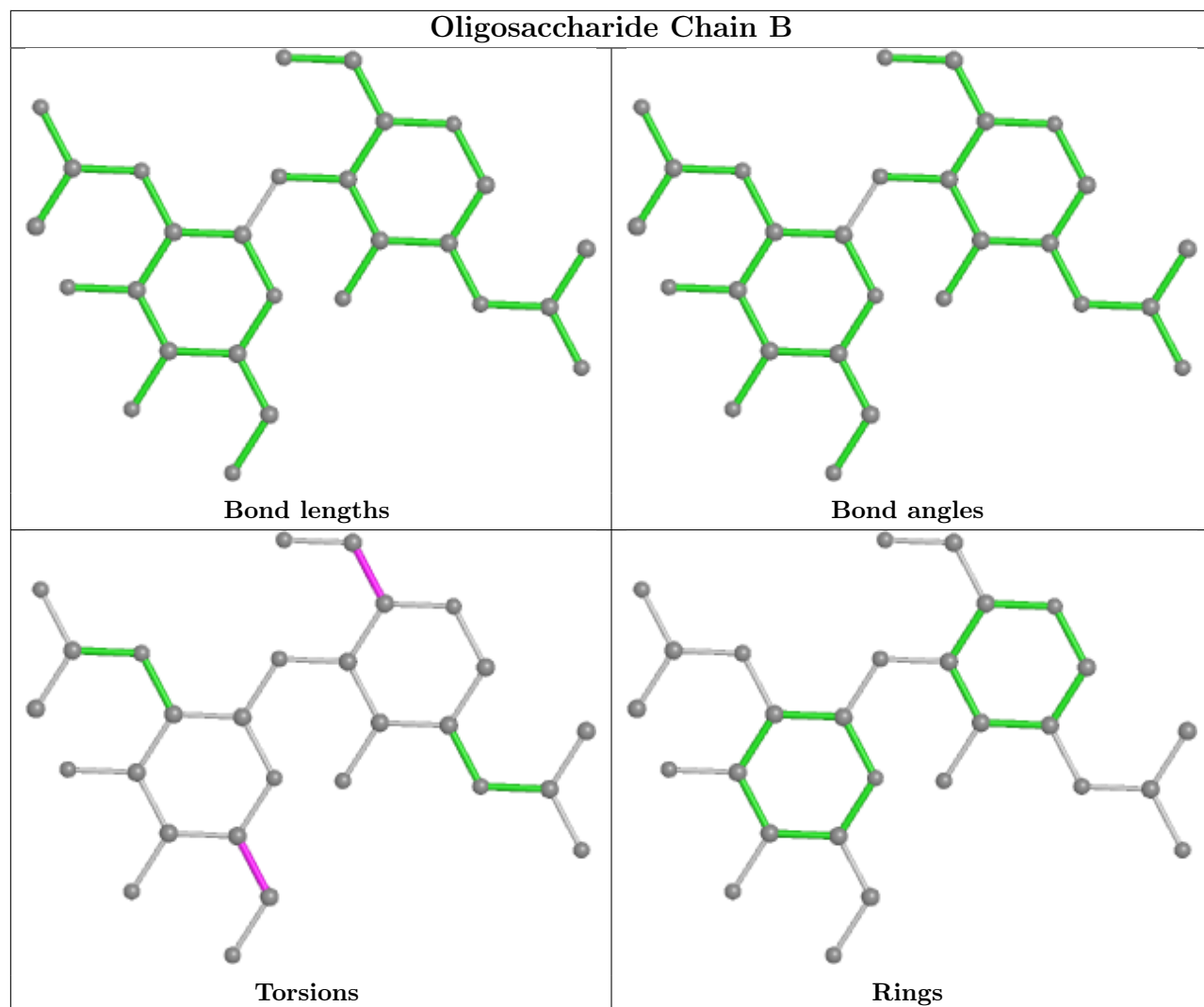
Mol	Chain	Res	Type	Atoms
2	B	2	NAG	O5-C5-C6-O6
2	B	1	NAG	O5-C5-C6-O6
2	B	2	NAG	C4-C5-C6-O6
2	C	1	NAG	O5-C5-C6-O6
2	B	1	NAG	C4-C5-C6-O6
2	C	1	NAG	C4-C5-C6-O6

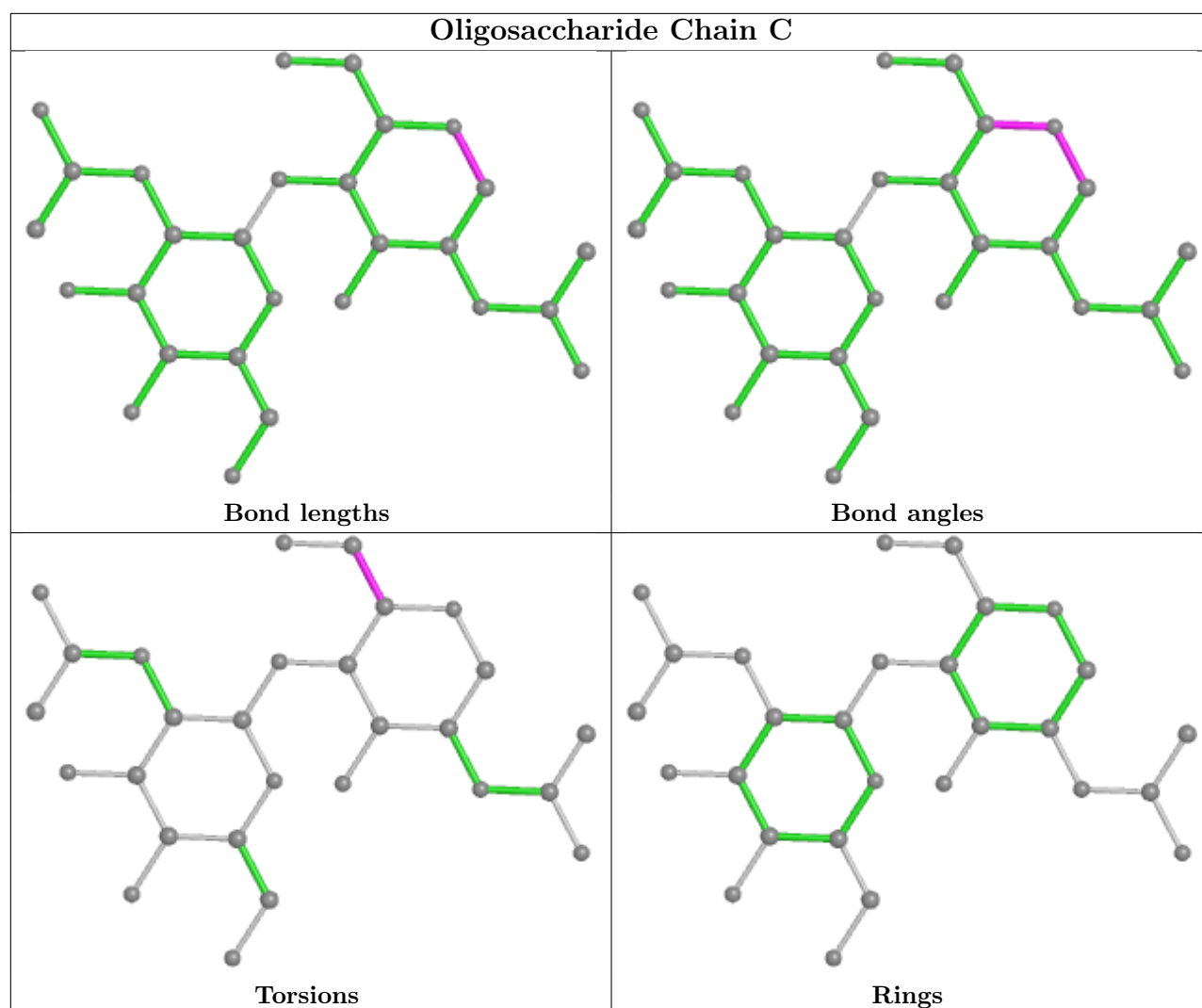
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1	NAG	1	0

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





5.6 Ligand geometry [i](#)

Of 26 ligands modelled in this entry, 1 is monoatomic - leaving 25 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	$\# Z > 2$
6	LPE	A	2005	-	24,24,33	0.53	0	28,30,39	0.63	0
6	LPE	A	2010	-	21,21,33	0.75	0	25,27,39	0.95	1 (4%)
6	LPE	A	2006	-	24,24,33	0.32	0	25,27,39	0.91	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	P5S	A	2003	-	33,34,53	0.84	1 (3%)	36,40,60	1.18	4 (11%)
10	9Z9	A	2024	-	44,44,44	0.70	1 (2%)	66,68,68	1.45	12 (18%)
6	LPE	A	2011	-	27,27,33	0.56	0	31,33,39	0.75	1 (3%)
6	LPE	A	2018	-	24,24,33	0.64	0	28,30,39	0.79	1 (3%)
6	LPE	A	2015	-	24,24,33	0.65	0	28,30,39	0.88	1 (3%)
9	Y01	A	2023	-	38,38,38	1.15	4 (10%)	57,57,57	1.74	12 (21%)
3	NAG	A	2001	1	14,14,15	0.27	0	17,19,21	0.33	0
8	PCW	A	2014	-	43,43,53	1.02	2 (4%)	49,51,61	1.17	4 (8%)
8	PCW	A	2021	-	43,43,53	1.03	2 (4%)	49,51,61	1.00	2 (4%)
6	LPE	A	2017	-	24,24,33	0.57	0	28,30,39	0.66	0
6	LPE	A	2019	-	24,24,33	0.55	0	28,30,39	0.81	1 (3%)
6	LPE	A	2008	-	19,19,33	0.68	0	23,25,39	0.63	1 (4%)
9	Y01	A	2025	-	38,38,38	1.16	4 (10%)	57,57,57	1.74	11 (19%)
9	Y01	A	2026	-	38,38,38	1.62	7 (18%)	57,57,57	1.63	10 (17%)
9	Y01	A	2022	-	38,38,38	0.66	1 (2%)	57,57,57	1.79	11 (19%)
8	PCW	A	2012	-	46,46,53	0.96	2 (4%)	52,54,61	1.38	6 (11%)
3	NAG	A	2002	1	14,14,15	1.37	2 (14%)	17,19,21	1.18	1 (5%)
8	PCW	A	2020	-	43,43,53	1.03	2 (4%)	49,51,61	0.94	2 (4%)
4	P5S	A	2013	-	35,35,53	1.09	2 (5%)	38,40,60	1.29	4 (10%)
8	PCW	A	2009	-	52,52,53	0.95	2 (3%)	58,60,61	1.14	5 (8%)
6	LPE	A	2016	-	24,24,33	0.59	0	28,30,39	0.66	1 (3%)
7	1PW	A	2007	-	23,23,27	0.43	0	24,26,32	0.46	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
6	LPE	A	2005	-	-	14/25/25/34	-
6	LPE	A	2010	-	-	13/22/22/34	-
6	LPE	A	2006	-	-	12/25/25/34	-
4	P5S	A	2003	-	-	20/39/39/59	-
10	9Z9	A	2024	-	-	0/12/100/100	0/6/6/6
6	LPE	A	2011	-	-	9/28/28/34	-
6	LPE	A	2018	-	-	13/25/25/34	-
6	LPE	A	2015	-	-	12/25/25/34	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	Y01	A	2023	-	-	4/19/77/77	0/4/4/4
3	NAG	A	2001	1	-	2/6/23/26	0/1/1/1
8	PCW	A	2014	-	-	14/47/47/57	-
8	PCW	A	2021	-	-	13/47/47/57	-
6	LPE	A	2017	-	-	18/25/25/34	-
6	LPE	A	2019	-	-	13/25/25/34	-
6	LPE	A	2008	-	-	7/20/20/34	-
9	Y01	A	2025	-	-	4/19/77/77	0/4/4/4
9	Y01	A	2026	-	-	7/19/77/77	0/4/4/4
9	Y01	A	2022	-	-	0/19/77/77	0/4/4/4
8	PCW	A	2012	-	-	17/50/50/57	-
3	NAG	A	2002	1	-	0/6/23/26	0/1/1/1
8	PCW	A	2020	-	-	16/47/47/57	-
4	P5S	A	2013	-	-	9/39/39/59	-
8	PCW	A	2009	-	-	15/56/56/57	-
6	LPE	A	2016	-	-	7/25/25/34	-
7	1PW	A	2007	-	-	4/22/22/29	-

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	2009	PCW	O3-C11	4.49	1.46	1.33
8	A	2020	PCW	O3-C11	4.41	1.46	1.33
8	A	2021	PCW	O3-C11	4.41	1.46	1.33
8	A	2014	PCW	O2-C31	4.40	1.46	1.34
9	A	2026	Y01	CBB-CBE	-4.37	1.46	1.54
9	A	2026	Y01	CAR-CBC	-4.16	1.39	1.51
4	A	2013	P5S	O37-C38	4.11	1.45	1.34
4	A	2013	P5S	O19-C17	4.07	1.45	1.33
3	A	2002	NAG	O5-C1	4.00	1.50	1.43
4	A	2003	P5S	O37-C38	3.96	1.45	1.34
8	A	2021	PCW	O2-C31	3.94	1.45	1.34
8	A	2012	PCW	O3-C11	3.91	1.44	1.33
8	A	2020	PCW	O2-C31	3.90	1.45	1.34
8	A	2014	PCW	O3-C11	3.69	1.44	1.33
9	A	2026	Y01	OAW-CAY	3.68	1.44	1.34
8	A	2009	PCW	O2-C31	3.66	1.44	1.34
9	A	2025	Y01	OAW-CAY	3.65	1.44	1.34
9	A	2023	Y01	OAW-CAY	3.60	1.44	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	2012	PCW	O2-C31	3.50	1.44	1.34
3	A	2002	NAG	C1-C2	3.06	1.56	1.52
9	A	2026	Y01	CAV-CBC	2.89	1.59	1.52
9	A	2026	Y01	CAM-CAY	2.39	1.57	1.50
9	A	2023	Y01	CAM-CAY	2.38	1.57	1.50
9	A	2025	Y01	CAM-CAY	2.35	1.57	1.50
9	A	2025	Y01	CAL-CAX	2.28	1.55	1.50
9	A	2023	Y01	CAL-CAX	2.21	1.55	1.50
9	A	2022	Y01	CBH-CBF	-2.21	1.52	1.56
9	A	2026	Y01	CAL-CAX	2.20	1.55	1.50
10	A	2024	9Z9	C11-C08	-2.17	1.52	1.56
9	A	2023	Y01	CBH-CBF	-2.14	1.52	1.56
9	A	2026	Y01	CBH-CBF	-2.14	1.52	1.56
9	A	2025	Y01	CBH-CBF	-2.13	1.52	1.56

All (91) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	2025	Y01	CBI-CBE-CBB	-5.96	110.16	119.49
9	A	2022	Y01	CBI-CBE-CBB	-5.93	110.20	119.49
9	A	2023	Y01	CBI-CBE-CBB	-5.91	110.23	119.49
8	A	2012	PCW	O2-C31-C32	5.44	123.22	111.50
9	A	2022	Y01	CBI-CBG-CBD	-4.76	107.34	114.38
9	A	2026	Y01	CBI-CBG-CBD	-4.74	107.37	114.38
9	A	2025	Y01	CBI-CBG-CBD	-4.73	107.37	114.38
9	A	2023	Y01	CBI-CBG-CBD	-4.73	107.38	114.38
3	A	2002	NAG	C1-O5-C5	4.64	118.47	112.19
8	A	2009	PCW	O2-C31-C32	4.58	121.38	111.50
4	A	2013	P5S	O37-C38-C39	4.36	120.90	111.50
10	A	2024	9Z9	C02-C06-C07	-4.35	107.93	114.38
9	A	2026	Y01	CBI-CBE-CBB	-4.14	113.00	119.49
4	A	2003	P5S	O37-C38-C39	4.09	120.31	111.50
9	A	2022	Y01	OAW-CAY-CAM	3.98	120.08	111.50
9	A	2025	Y01	OAW-CAY-CAM	3.74	119.56	111.50
9	A	2023	Y01	OAW-CAY-CAM	3.74	119.56	111.50
8	A	2021	PCW	O2-C31-C32	3.64	119.34	111.50
9	A	2026	Y01	OAW-CAY-CAM	3.57	119.20	111.50
10	A	2024	9Z9	C21-C22-C23	-3.51	109.44	113.88
8	A	2014	PCW	O2-C31-C32	3.45	118.94	111.50
9	A	2025	Y01	CAS-CAU-CBI	-3.34	107.05	112.78
9	A	2023	Y01	CAS-CAU-CBI	-3.33	107.08	112.78
9	A	2022	Y01	CAS-CAU-CBI	-3.32	107.08	112.78

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	2026	Y01	CAS-CAU-CBI	-3.32	107.09	112.78
10	A	2024	9Z9	C09-C10-C02	-3.28	107.15	112.78
8	A	2009	PCW	O3-C11-C12	3.25	122.11	111.91
10	A	2024	9Z9	C02-C03-C74	-3.25	109.52	120.56
8	A	2020	PCW	O2-C31-C32	3.24	118.47	111.50
8	A	2012	PCW	O3-C11-C12	3.21	121.98	111.91
8	A	2012	PCW	O2-C31-O31	-3.20	115.96	123.70
8	A	2012	PCW	C4-C5-N	-3.19	105.12	115.78
8	A	2014	PCW	C3-C2-C1	-3.14	104.36	111.79
6	A	2010	LPE	C31-C32-N	-3.13	105.33	115.78
8	A	2021	PCW	O3-C11-C12	3.05	121.49	111.91
4	A	2013	P5S	O19-C17-C20	3.00	121.33	111.91
9	A	2022	Y01	CAD-CBH-CBF	-2.96	108.16	111.68
6	A	2015	LPE	C31-C32-N	-2.93	106.01	115.78
9	A	2025	Y01	CAD-CBH-CBF	-2.92	108.20	111.68
9	A	2023	Y01	CAD-CBH-CBF	-2.92	108.20	111.68
9	A	2026	Y01	CAD-CBH-CBF	-2.90	108.22	111.68
8	A	2012	PCW	C2-O2-C31	-2.87	110.72	117.79
10	A	2024	9Z9	C12-C11-C08	-2.85	108.29	111.68
10	A	2024	9Z9	C76-C73-C74	-2.79	109.96	115.69
6	A	2019	LPE	C31-C32-N	-2.74	106.64	115.78
9	A	2026	Y01	CBG-CBI-CBE	2.70	103.27	100.07
9	A	2023	Y01	CBG-CBI-CBE	2.70	103.27	100.07
9	A	2022	Y01	CBG-CBI-CBE	2.69	103.26	100.07
9	A	2025	Y01	CBG-CBI-CBE	2.68	103.24	100.07
8	A	2009	PCW	C33-C32-C31	-2.59	104.22	113.62
9	A	2026	Y01	CAS-CBF-CBH	-2.56	109.71	113.08
6	A	2011	LPE	C31-C32-N	-2.54	107.31	115.78
4	A	2003	P5S	OXT-C-O	-2.52	118.38	124.09
10	A	2024	9Z9	C75-C74-C73	-2.51	110.33	114.92
9	A	2023	Y01	CAS-CBF-CBH	-2.49	109.79	113.08
9	A	2022	Y01	CBD-CAK-CAI	-2.48	109.17	112.73
9	A	2025	Y01	CAS-CBF-CBH	-2.48	109.81	113.08
10	A	2024	9Z9	C09-C08-C11	-2.48	109.82	113.08
9	A	2022	Y01	CAS-CBF-CBH	-2.46	109.84	113.08
9	A	2025	Y01	CBD-CAK-CAI	-2.45	109.22	112.73
9	A	2023	Y01	CBD-CAK-CAI	-2.44	109.22	112.73
6	A	2018	LPE	C31-C32-N	-2.44	107.64	115.78
9	A	2026	Y01	CBD-CAK-CAI	-2.41	109.27	112.73
10	A	2024	9Z9	C07-C15-C14	-2.40	109.28	112.73
9	A	2022	Y01	CBF-CBH-CAZ	2.39	113.39	109.65
8	A	2009	PCW	O3-C11-O11	-2.38	117.58	123.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	A	2025	Y01	CBF-CBH-CAZ	2.32	113.29	109.65
8	A	2020	PCW	O3-C11-C12	2.32	119.18	111.91
9	A	2026	Y01	CBF-CBH-CAZ	2.31	113.27	109.65
9	A	2023	Y01	CBF-CBH-CAZ	2.30	113.26	109.65
10	A	2024	9Z9	C08-C11-C13	2.27	113.22	109.65
8	A	2014	PCW	O3-C11-C12	2.26	119.01	111.91
8	A	2012	PCW	O3-C11-O11	-2.26	117.89	123.59
6	A	2016	LPE	C31-C32-N	-2.26	108.25	115.78
9	A	2022	Y01	CAC-CBB-CBE	-2.23	109.51	112.92
4	A	2003	P5S	O37-C38-O47	-2.21	118.35	123.70
9	A	2025	Y01	CAC-CBB-CBE	-2.21	109.53	112.92
9	A	2023	Y01	CAC-CBB-CBE	-2.20	109.55	112.92
4	A	2013	P5S	C3-C2-C1	-2.18	106.64	111.79
8	A	2009	PCW	O2-C31-O31	-2.12	118.57	123.70
4	A	2003	P5S	OXT-C-CA	2.06	120.39	113.38
9	A	2022	Y01	CAQ-CBG-CBD	-2.04	115.72	119.08
10	A	2024	9Z9	O80-C79-C78	-2.04	109.25	112.18
4	A	2013	P5S	O19-C17-O18	-2.03	118.46	123.59
6	A	2008	LPE	C31-C32-N	-2.03	108.99	115.78
8	A	2014	PCW	C13-C12-C11	-2.02	106.26	113.62
9	A	2023	Y01	CAQ-CBG-CBD	-2.02	115.75	119.08
9	A	2025	Y01	CAQ-CBG-CBD	-2.02	115.75	119.08
10	A	2024	9Z9	C17-C16-C13	-2.02	108.38	111.52
9	A	2023	Y01	CBC-CAV-CAZ	-2.01	108.39	111.52
9	A	2026	Y01	CAQ-CBG-CBD	-2.01	115.78	119.08

There are no chirality outliers.

All (243) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	2003	P5S	O-C-CA-N
4	A	2003	P5S	O-C-CA-CB
4	A	2003	P5S	C3-O16-P12-OG
4	A	2003	P5S	C3-O16-P12-O13
4	A	2003	P5S	O47-C38-O37-C2
4	A	2013	P5S	C39-C38-O37-C2
6	A	2005	LPE	C31-O33-P-O3
6	A	2005	LPE	C31-O33-P-O31
6	A	2006	LPE	C3-O3-P-O31
6	A	2006	LPE	C31-O33-P-O3
6	A	2008	LPE	C3-O3-P-O32
6	A	2008	LPE	C31-O33-P-O3

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Mol	Chain	Res	Type	Atoms
6	A	2010	LPE	O1-C1-C2-O2H
6	A	2010	LPE	C3-O3-P-O33
6	A	2010	LPE	C31-O33-P-O32
6	A	2011	LPE	O2H-C2-C3-O3
6	A	2011	LPE	C3-O3-P-O31
6	A	2011	LPE	C3-O3-P-O33
6	A	2015	LPE	O1-C1-C2-O2H
6	A	2015	LPE	C3-O3-P-O33
6	A	2015	LPE	C31-O33-P-O32
6	A	2016	LPE	C31-O33-P-O3
6	A	2016	LPE	C31-O33-P-O31
6	A	2016	LPE	C31-O33-P-O32
6	A	2017	LPE	C3-O3-P-O31
6	A	2017	LPE	C31-O33-P-O31
6	A	2017	LPE	O33-C31-C32-N
6	A	2018	LPE	C3-O3-P-O31
6	A	2019	LPE	C3-O3-P-O33
6	A	2019	LPE	C31-O33-P-O3
6	A	2019	LPE	C31-O33-P-O31
7	A	2007	1PW	CAK-CAH-CAI-CAZ
8	A	2009	PCW	C32-C31-O2-C2
8	A	2009	PCW	C4-O4P-P-O1P
8	A	2009	PCW	C4-O4P-P-O2P
8	A	2009	PCW	C4-O4P-P-O3P
8	A	2012	PCW	C1-O3P-P-O2P
8	A	2012	PCW	C4-O4P-P-O1P
8	A	2012	PCW	C4-O4P-P-O2P
8	A	2012	PCW	C4-O4P-P-O3P
8	A	2014	PCW	O4P-C4-C5-N
8	A	2014	PCW	C1-O3P-P-O2P
8	A	2020	PCW	O4P-C4-C5-N
8	A	2020	PCW	C1-O3P-P-O2P
8	A	2021	PCW	O4P-C4-C5-N
8	A	2021	PCW	C1-O3P-P-O2P
8	A	2021	PCW	C1-O3P-P-O4P
8	A	2021	PCW	C4-O4P-P-O1P
8	A	2021	PCW	C4-O4P-P-O2P
8	A	2009	PCW	O11-C11-O3-C3
9	A	2026	Y01	CAC-CBB-CBE-CAP
9	A	2026	Y01	CAC-CBB-CBE-CBI
4	A	2013	P5S	O47-C38-O37-C2
8	A	2009	PCW	O31-C31-O2-C2

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Mol	Chain	Res	Type	Atoms
8	A	2009	PCW	C12-C11-O3-C3
4	A	2003	P5S	C39-C38-O37-C2
9	A	2026	Y01	CAJ-CAO-CBB-CAC
9	A	2026	Y01	CAO-CBB-CBE-CBI
3	A	2001	NAG	O5-C5-C6-O6
8	A	2020	PCW	O11-C11-O3-C3
8	A	2020	PCW	C12-C11-O3-C3
9	A	2026	Y01	CAO-CBB-CBE-CAP
3	A	2001	NAG	C4-C5-C6-O6
9	A	2023	Y01	CAR-CBC-OAW-CAY
6	A	2010	LPE	C1-C2-C3-O3
6	A	2011	LPE	C1-C2-C3-O3
8	A	2012	PCW	C4-C5-N-C7
8	A	2012	PCW	C4-C5-N-C8
4	A	2013	P5S	C20-C17-O19-C1
8	A	2021	PCW	C12-C11-O3-C3
9	A	2025	Y01	CAR-CBC-OAW-CAY
9	A	2026	Y01	CAJ-CAO-CBB-CBE
6	A	2005	LPE	O2H-C2-C3-O3
6	A	2006	LPE	O2H-C2-C3-O3
8	A	2021	PCW	O11-C11-O3-C3
6	A	2010	LPE	C31-C32-N-C3N
6	A	2016	LPE	C31-C32-N-C1N
6	A	2018	LPE	C31-C32-N-C1N
8	A	2014	PCW	C4-C5-N-C7
4	A	2013	P5S	O18-C17-O19-C1
6	A	2017	LPE	O1-C11-C12-C13
6	A	2005	LPE	C3-O3-P-O33
6	A	2008	LPE	C3-O3-P-O33
6	A	2010	LPE	C31-O33-P-O3
6	A	2011	LPE	C31-O33-P-O3
6	A	2015	LPE	C31-O33-P-O3
6	A	2018	LPE	C3-O3-P-O33
6	A	2018	LPE	C31-O33-P-O3
8	A	2014	PCW	C4-O4P-P-O3P
8	A	2021	PCW	C4-O4P-P-O3P
4	A	2003	P5S	OXT-C-CA-N
8	A	2014	PCW	O31-C31-O2-C2
9	A	2023	Y01	CAV-CBC-OAW-CAY
9	A	2025	Y01	CAV-CBC-OAW-CAY
6	A	2005	LPE	C31-C32-N-C2N
6	A	2015	LPE	C31-C32-N-C1N

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Mol	Chain	Res	Type	Atoms
6	A	2015	LPE	C31-C32-N-C3N
6	A	2016	LPE	C31-C32-N-C2N
8	A	2014	PCW	C4-C5-N-C8
8	A	2014	PCW	C32-C31-O2-C2
6	A	2010	LPE	O2H-C2-C3-O3
6	A	2017	LPE	O2H-C2-C3-O3
4	A	2003	P5S	C44-C45-C46-C48
4	A	2003	P5S	C43-C44-C45-C46
6	A	2005	LPE	C31-C32-N-C1N
6	A	2015	LPE	C31-C32-N-C2N
6	A	2016	LPE	C31-C32-N-C3N
8	A	2014	PCW	C4-C5-N-C6
6	A	2018	LPE	C13-C14-C15-C16
8	A	2020	PCW	C33-C34-C35-C36
6	A	2005	LPE	C31-C32-N-C3N
6	A	2018	LPE	C31-C32-N-C3N
8	A	2012	PCW	C4-C5-N-C6
8	A	2021	PCW	C11-C12-C13-C14
8	A	2020	PCW	C31-C32-C33-C34
8	A	2014	PCW	C14-C15-C16-C17
8	A	2012	PCW	C32-C31-O2-C2
8	A	2021	PCW	C32-C31-O2-C2
8	A	2012	PCW	O31-C31-O2-C2
8	A	2021	PCW	O31-C31-O2-C2
6	A	2010	LPE	C31-C32-N-C1N
6	A	2018	LPE	C31-C32-N-C2N
4	A	2003	P5S	OXT-C-CA-CB
6	A	2017	LPE	C3-O3-P-O33
6	A	2006	LPE	C18-C19-C20-C21
6	A	2011	LPE	C2-C1-O1-C11
6	A	2005	LPE	O1-C11-C12-C13
9	A	2026	Y01	CAN-CAJ-CAO-CBB
6	A	2006	LPE	C13-C14-C15-C16
4	A	2003	P5S	C40-C41-C42-C43
8	A	2009	PCW	O2-C2-C3-O3
6	A	2006	LPE	C2-C1-O1-C11
7	A	2007	1PW	CAN-CAP-CAR-CAT
6	A	2010	LPE	C31-C32-N-C2N
4	A	2003	P5S	C38-C39-C40-C41
4	A	2013	P5S	C22-C23-C24-C25
4	A	2003	P5S	C2-C3-O16-P12
6	A	2010	LPE	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
6	A	2015	LPE	O1-C1-C2-C3
6	A	2019	LPE	C14-C15-C16-C17
8	A	2012	PCW	C35-C36-C37-C38
7	A	2007	1PW	CAM-CAO-CAQ-CAS
6	A	2006	LPE	C1-C2-C3-O3
6	A	2006	LPE	O1-C1-C2-O2H
9	A	2023	Y01	CAO-CAJ-CAN-CBA
9	A	2025	Y01	CAO-CAJ-CAN-CBA
8	A	2012	PCW	C20-C21-C22-C23
6	A	2015	LPE	C12-C11-O1-C1
6	A	2017	LPE	C2-C1-O1-C11
6	A	2019	LPE	C2-C1-O1-C11
6	A	2019	LPE	C12-C13-C14-C15
8	A	2009	PCW	C35-C36-C37-C38
4	A	2003	P5S	N-CA-CB-OG
6	A	2017	LPE	O1-C1-C2-O2H
8	A	2020	PCW	O31-C31-O2-C2
8	A	2020	PCW	C1-O3P-P-O4P
8	A	2014	PCW	C2-C1-O3P-P
6	A	2005	LPE	C3-O3-P-O31
6	A	2005	LPE	C3-O3-P-O32
6	A	2006	LPE	C31-O33-P-O32
6	A	2008	LPE	C3-O3-P-O31
6	A	2008	LPE	C31-O33-P-O32
6	A	2010	LPE	C3-O3-P-O32
6	A	2011	LPE	C31-O33-P-O31
6	A	2015	LPE	C3-O3-P-O32
6	A	2015	LPE	C31-O33-P-O31
6	A	2017	LPE	C3-O3-P-O32
6	A	2018	LPE	C3-O3-P-O32
6	A	2018	LPE	C31-O33-P-O31
6	A	2019	LPE	C3-O3-P-O32
6	A	2019	LPE	C31-C32-N-C2N
8	A	2014	PCW	C4-O4P-P-O2P
8	A	2020	PCW	C4-O4P-P-O2P
6	A	2019	LPE	C13-C14-C15-C16
6	A	2018	LPE	C2-C1-O1-C11
8	A	2020	PCW	C34-C35-C36-C37
6	A	2005	LPE	O33-C31-C32-N
6	A	2006	LPE	O1-C11-C12-C13
6	A	2008	LPE	O33-C31-C32-N
6	A	2010	LPE	O33-C31-C32-N

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Mol	Chain	Res	Type	Atoms
6	A	2011	LPE	O33-C31-C32-N
6	A	2015	LPE	O33-C31-C32-N
6	A	2016	LPE	O33-C31-C32-N
6	A	2018	LPE	O33-C31-C32-N
6	A	2019	LPE	O33-C31-C32-N
8	A	2009	PCW	C1-C2-C3-O3
8	A	2009	PCW	O4P-C4-C5-N
8	A	2012	PCW	O4P-C4-C5-N
6	A	2011	LPE	C12-C11-O1-C1
6	A	2008	LPE	C2-C3-O3-P
6	A	2018	LPE	C12-C13-C14-C15
6	A	2017	LPE	C12-C11-O1-C1
4	A	2003	P5S	C42-C43-C44-C45
4	A	2013	P5S	C23-C24-C25-C26
6	A	2019	LPE	C31-C32-N-C3N
8	A	2020	PCW	C32-C31-O2-C2
4	A	2003	P5S	CB-OG-P12-O16
6	A	2017	LPE	C31-O33-P-O3
8	A	2012	PCW	C1-O3P-P-O4P
8	A	2014	PCW	C1-O3P-P-O4P
8	A	2020	PCW	C4-O4P-P-O3P
6	A	2017	LPE	C31-C32-N-C2N
8	A	2020	PCW	C11-C12-C13-C14
6	A	2005	LPE	C12-C11-O1-C1
4	A	2003	P5S	C48-C49-C50-C51
6	A	2005	LPE	C1-C2-C3-O3
8	A	2009	PCW	C34-C35-C36-C37
8	A	2009	PCW	C42-C43-C44-C45
4	A	2013	P5S	O19-C1-C2-C3
6	A	2017	LPE	O1-C1-C2-C3
6	A	2019	LPE	C31-C32-N-C1N
4	A	2003	P5S	C41-C42-C43-C44
6	A	2010	LPE	C13-C14-C15-C16
8	A	2009	PCW	C44-C45-C46-C47
8	A	2012	PCW	C32-C33-C34-C35
8	A	2014	PCW	C12-C13-C14-C15
8	A	2021	PCW	C20-C21-C22-C23
6	A	2006	LPE	C16-C17-C18-C19
8	A	2020	PCW	C21-C22-C23-C24
6	A	2019	LPE	C2-C3-O3-P
6	A	2017	LPE	C1-C2-C3-O3
8	A	2012	PCW	C37-C38-C39-C40

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Mol	Chain	Res	Type	Atoms
6	A	2006	LPE	O1-C1-C2-C3
8	A	2012	PCW	C17-C18-C19-C20
8	A	2012	PCW	C39-C40-C41-C42
6	A	2017	LPE	C2-C3-O3-P
8	A	2009	PCW	C16-C17-C18-C19
4	A	2013	P5S	C43-C44-C45-C46
8	A	2021	PCW	C22-C23-C24-C25
6	A	2017	LPE	C31-C32-N-C1N
6	A	2005	LPE	C11-C12-C13-C14
7	A	2007	1PW	CAP-CAR-CAT-CAU
6	A	2017	LPE	C15-C16-C17-C18
6	A	2017	LPE	C31-C32-N-C3N
8	A	2020	PCW	C4-C5-N-C6
4	A	2003	P5S	C51-C52-C53-C54
8	A	2014	PCW	C5-C4-O4P-P
8	A	2020	PCW	O3-C11-C12-C13
4	A	2003	P5S	O37-C38-C39-C40
6	A	2018	LPE	C12-C11-O1-C1
4	A	2013	P5S	O37-C38-C39-C40
9	A	2025	Y01	CAN-CAJ-CAO-CBB
9	A	2023	Y01	CAN-CAJ-CAO-CBB

There are no ring outliers.

24 monomers are involved in 116 short contacts:

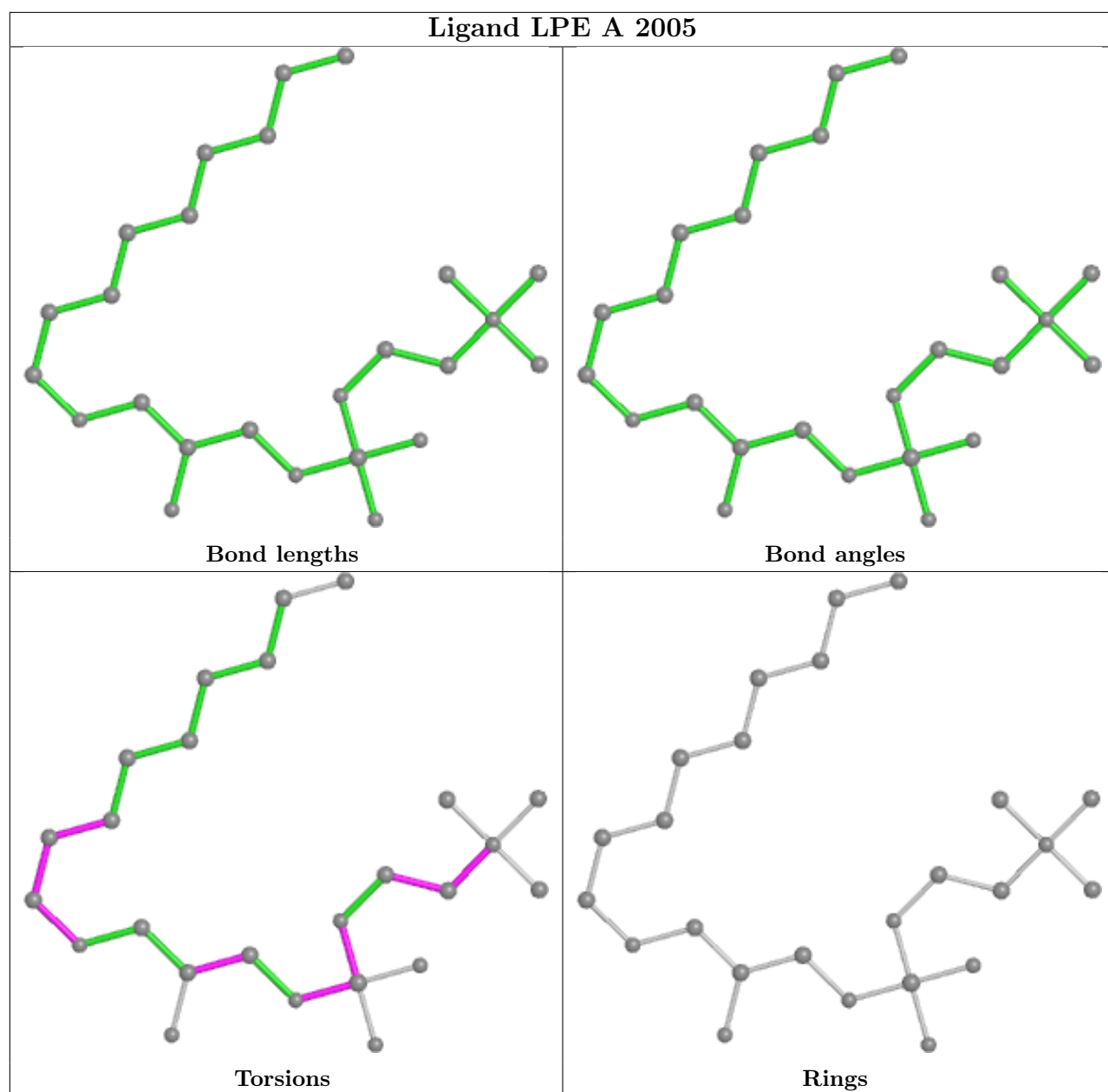
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	2005	LPE	1	0
6	A	2010	LPE	3	0
6	A	2006	LPE	2	0
4	A	2003	P5S	3	0
10	A	2024	9Z9	15	0
6	A	2011	LPE	4	0
6	A	2018	LPE	1	0
6	A	2015	LPE	1	0
9	A	2023	Y01	16	0
3	A	2001	NAG	1	0
8	A	2014	PCW	12	0
8	A	2021	PCW	2	0
6	A	2017	LPE	2	0
6	A	2008	LPE	1	0
9	A	2025	Y01	8	0
9	A	2026	Y01	17	0

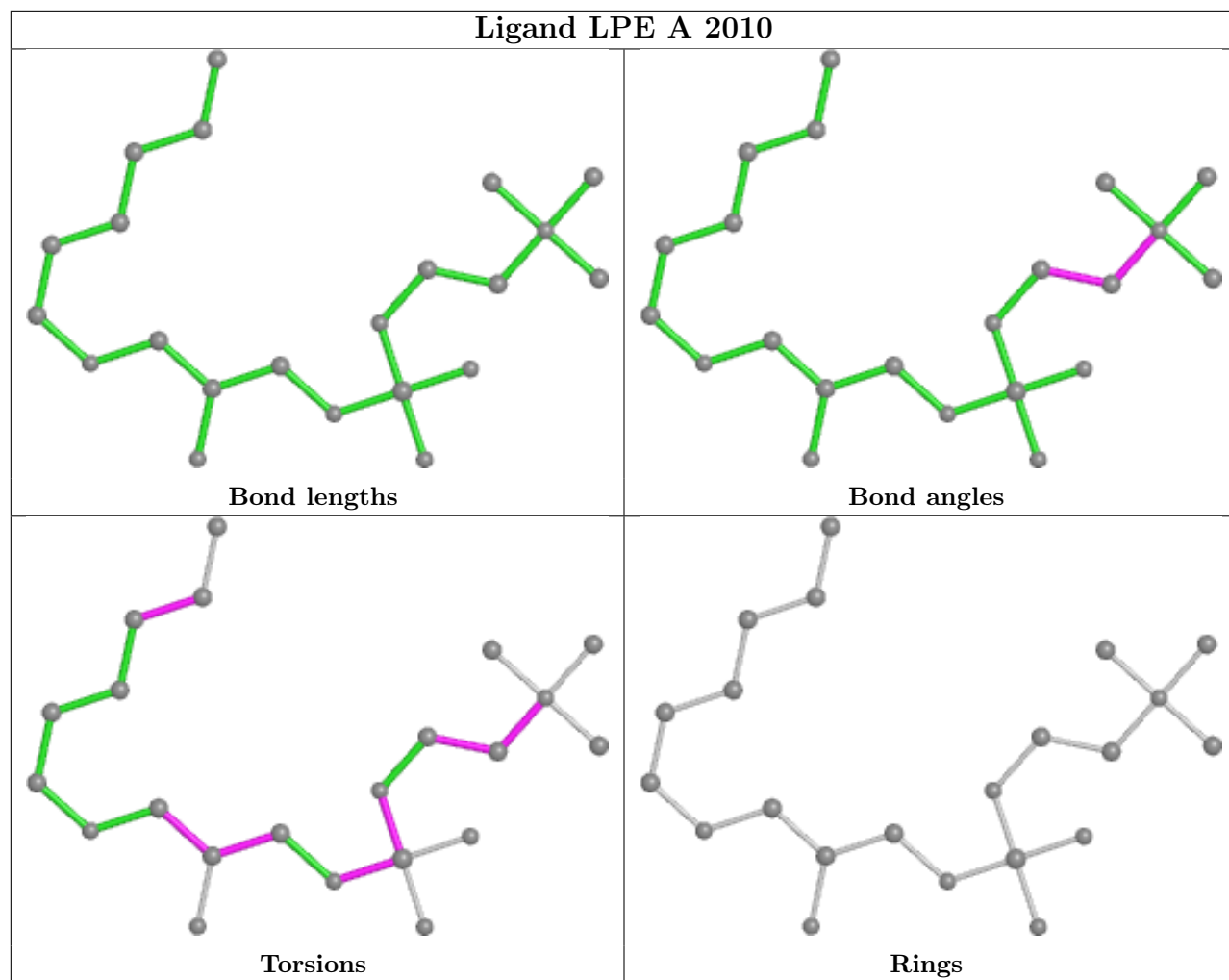
Continued on next page...

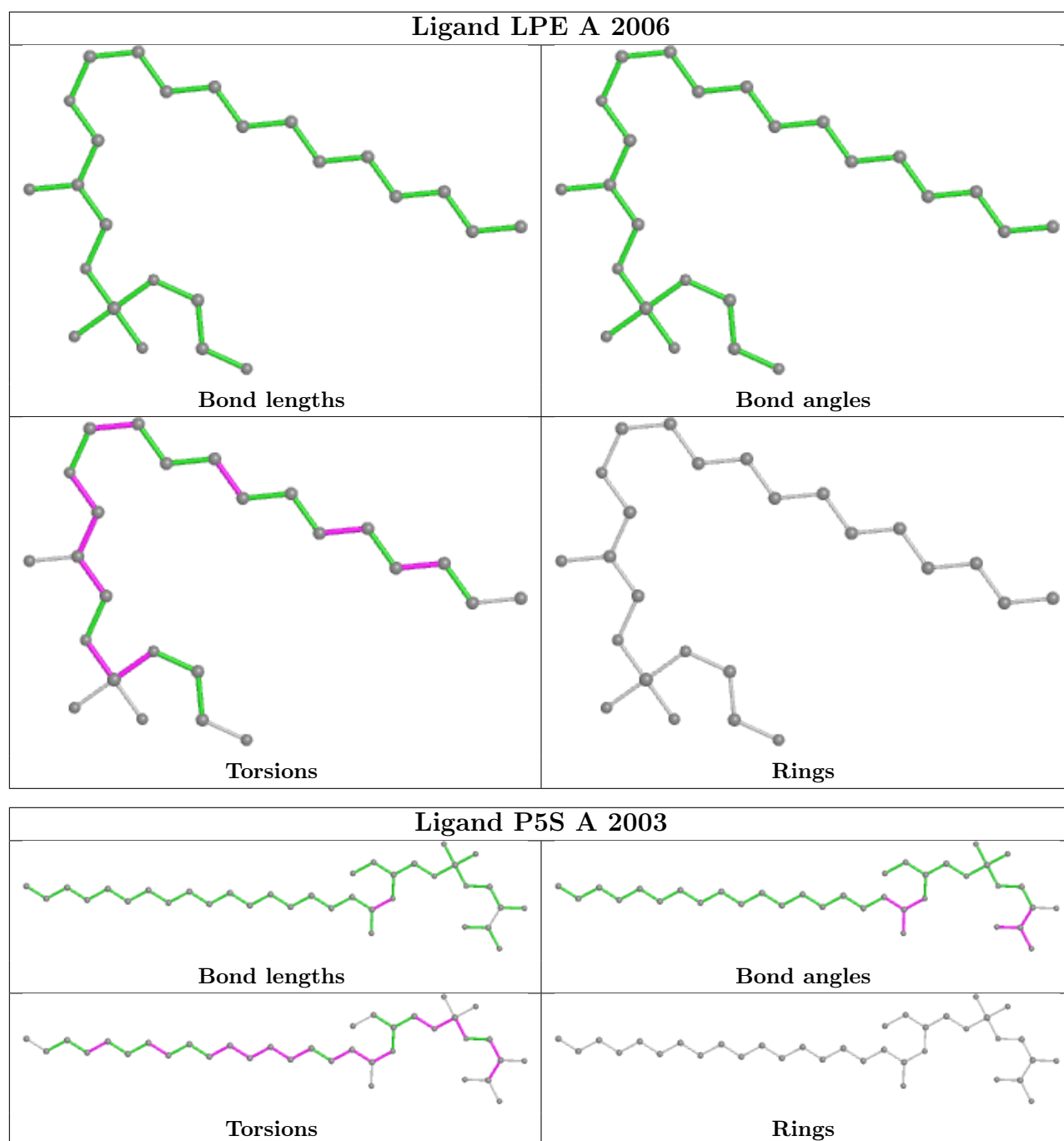
Continued from previous page...

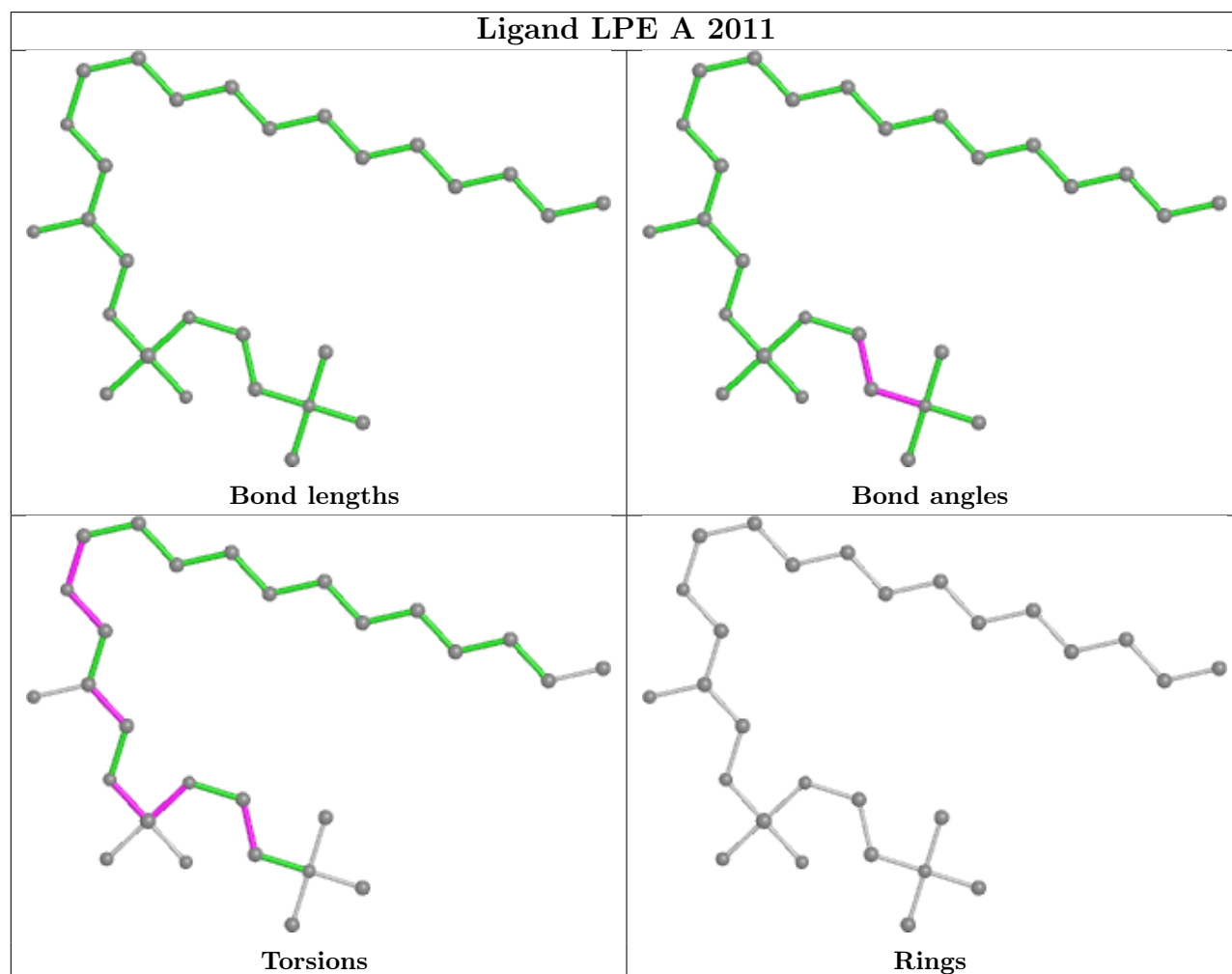
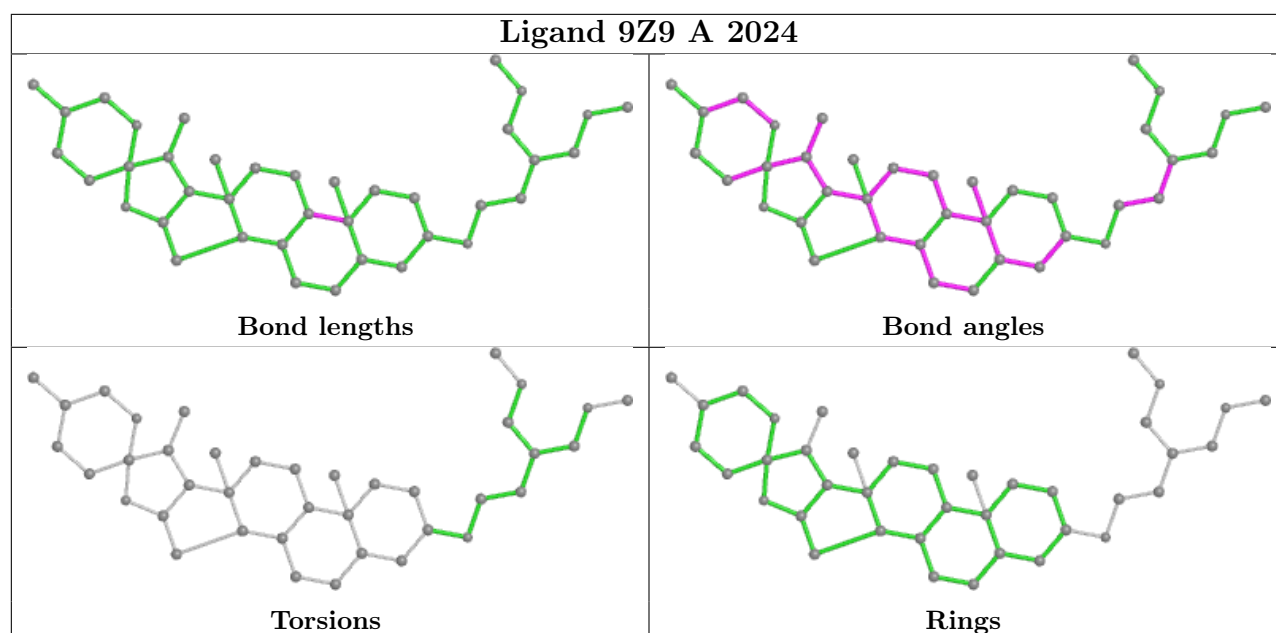
Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A	2022	Y01	12	0
8	A	2012	PCW	2	0
3	A	2002	NAG	1	0
8	A	2020	PCW	3	0
4	A	2013	P5S	1	0
8	A	2009	PCW	3	0
6	A	2016	LPE	1	0
7	A	2007	1PW	6	0

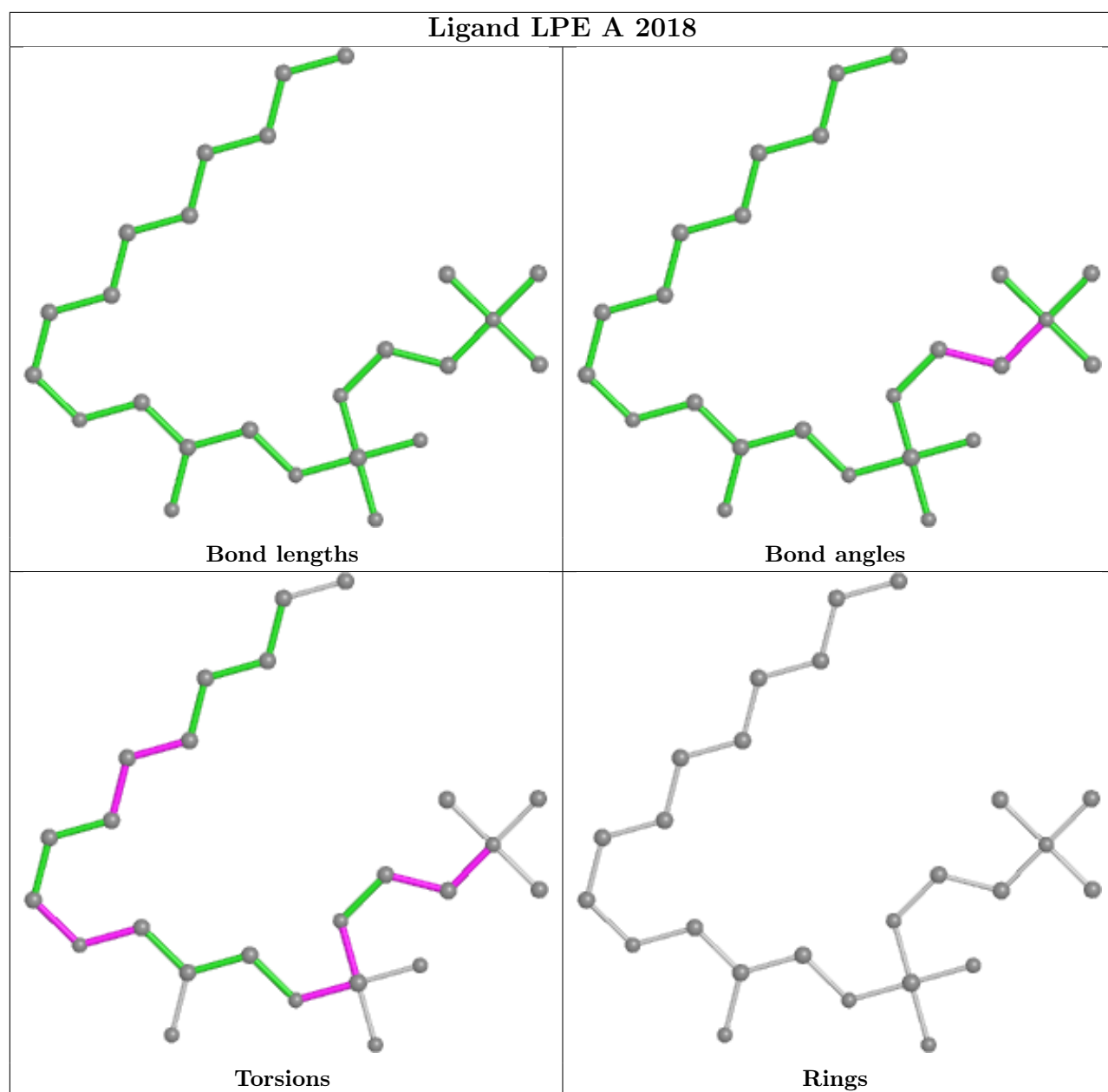
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

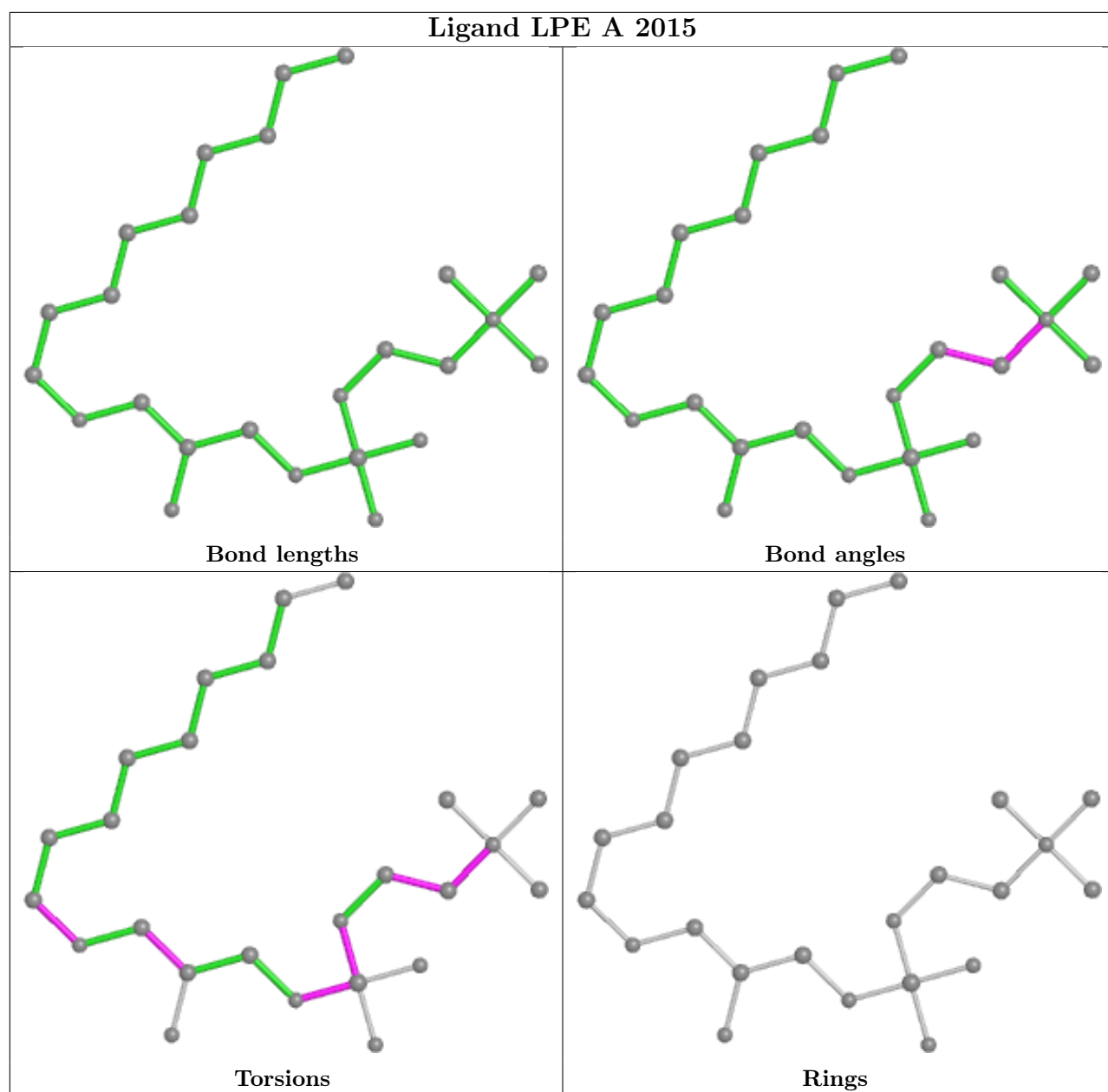


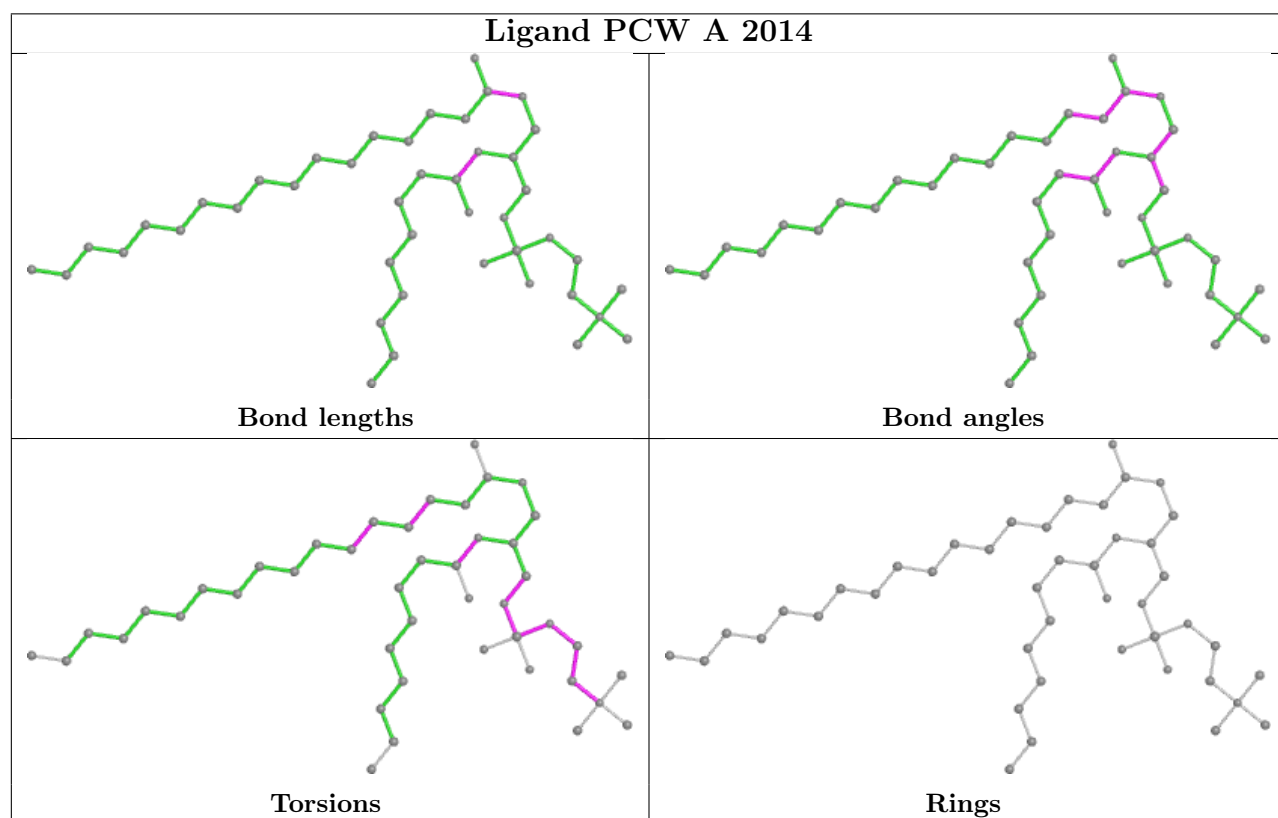
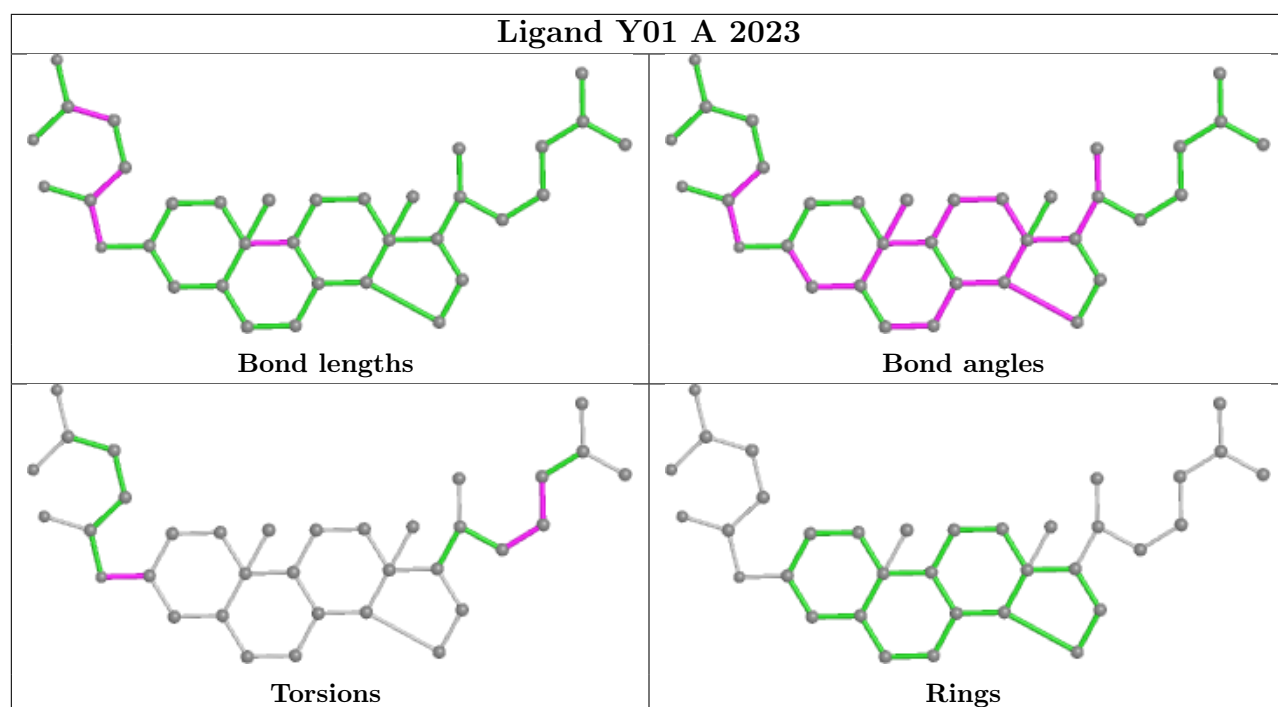


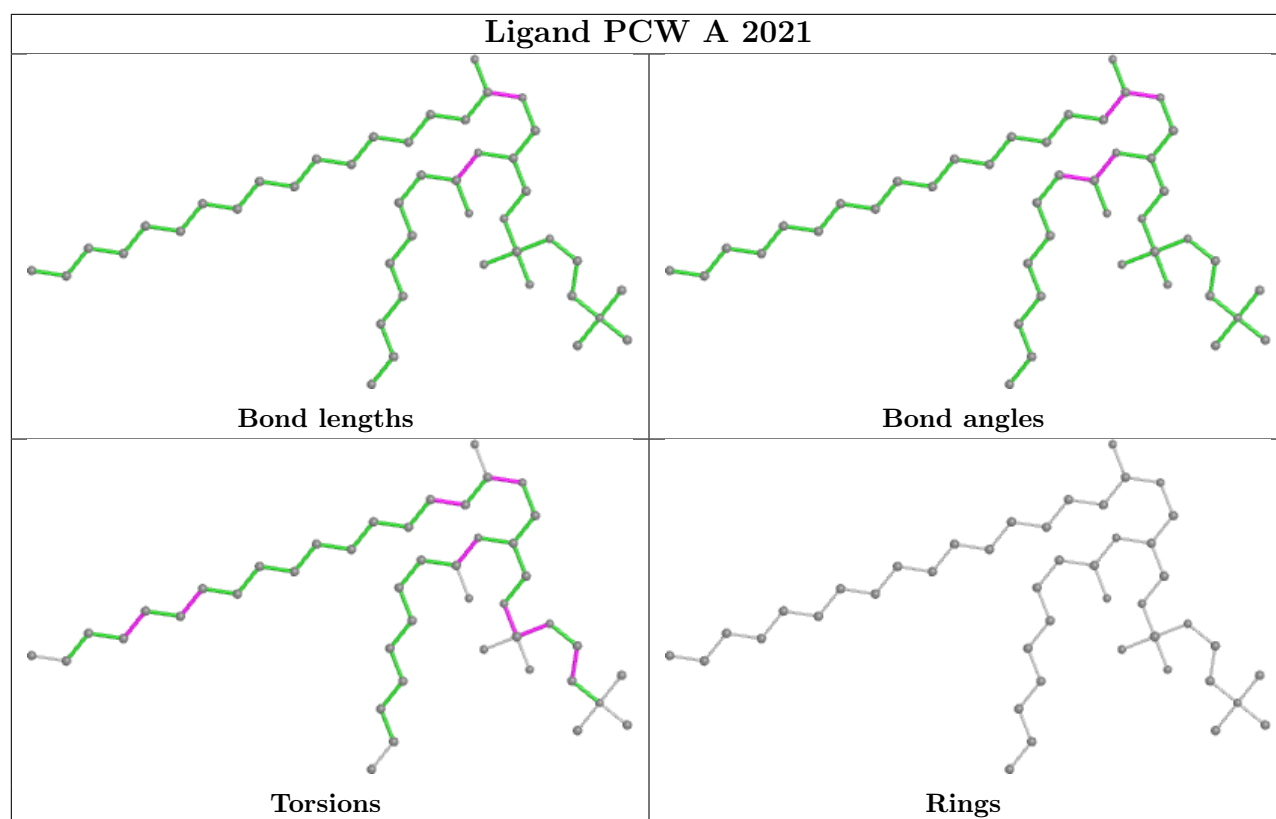


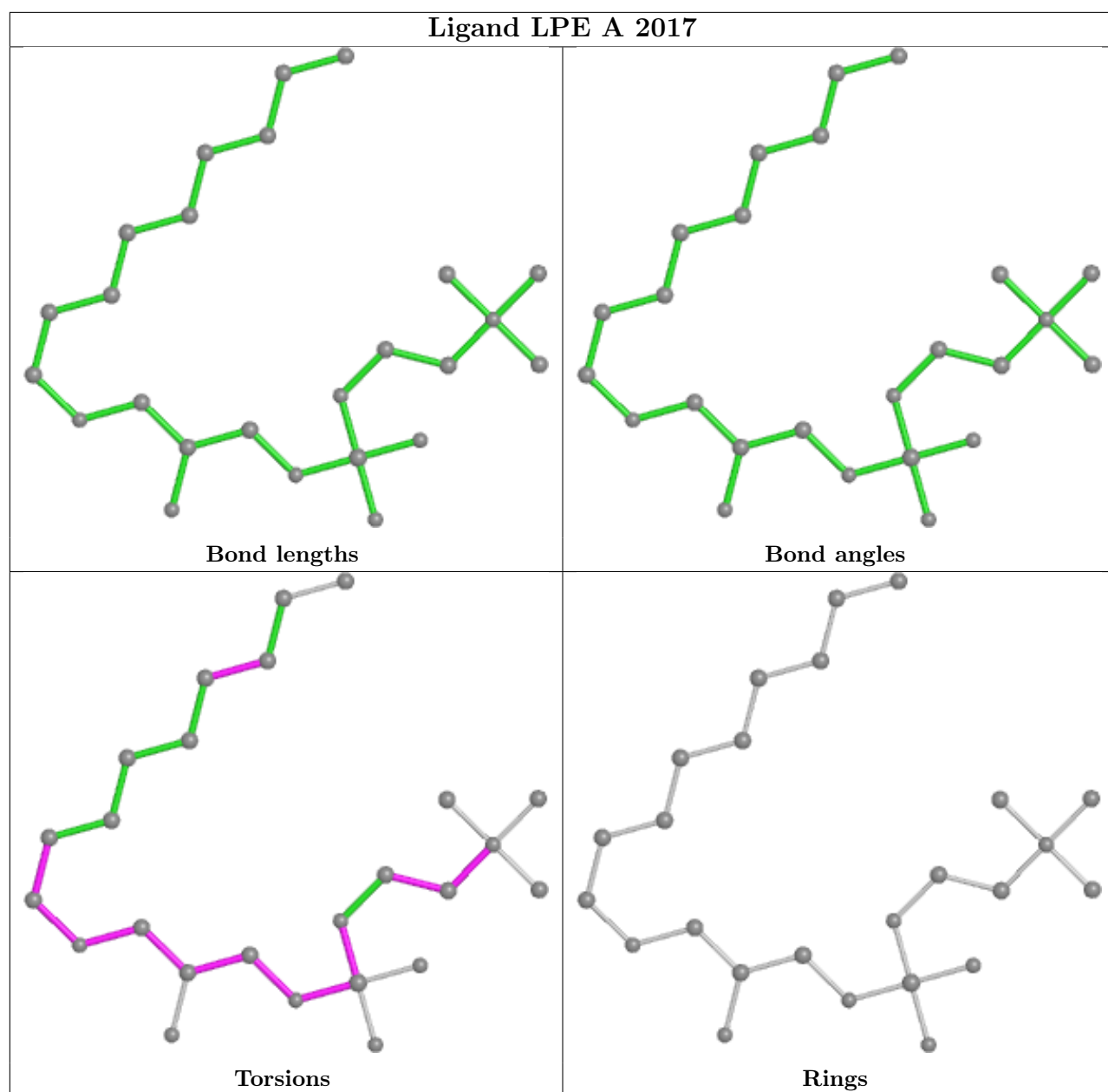


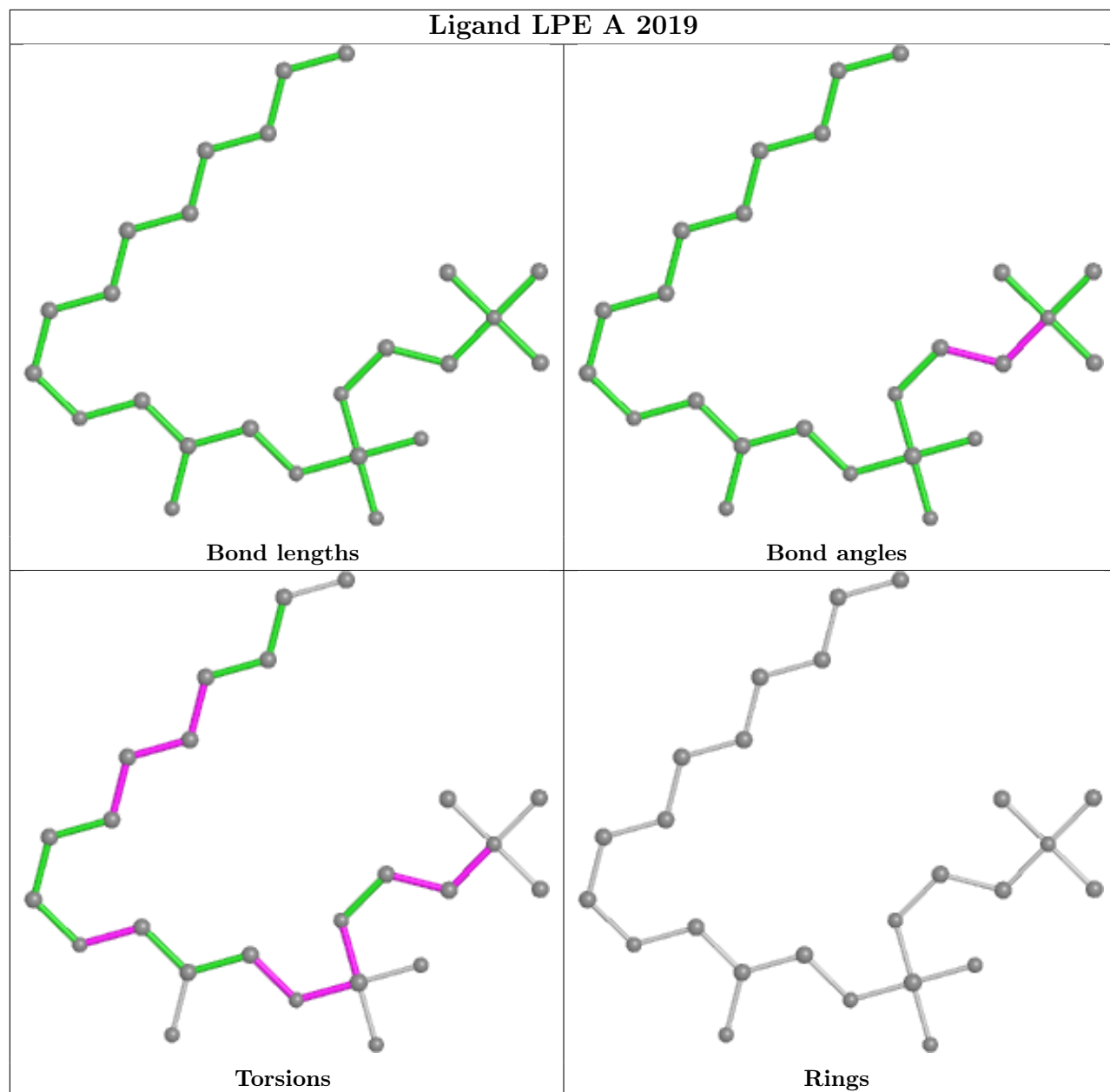


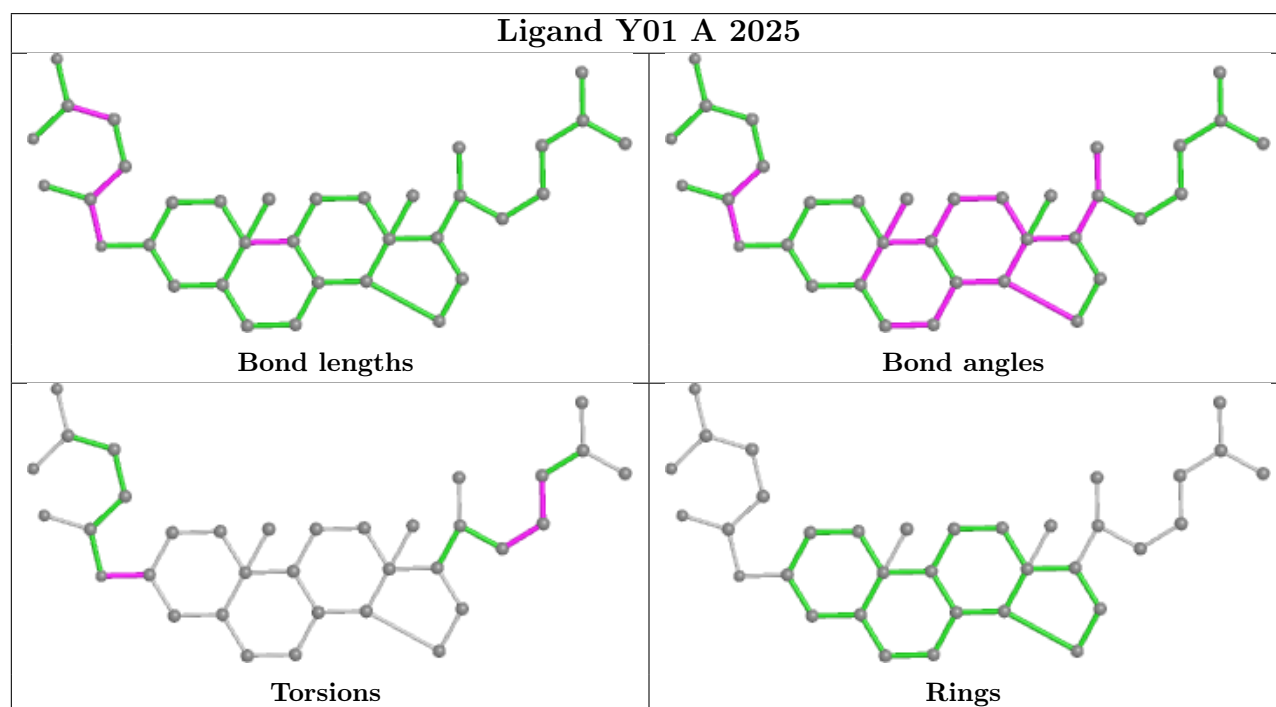
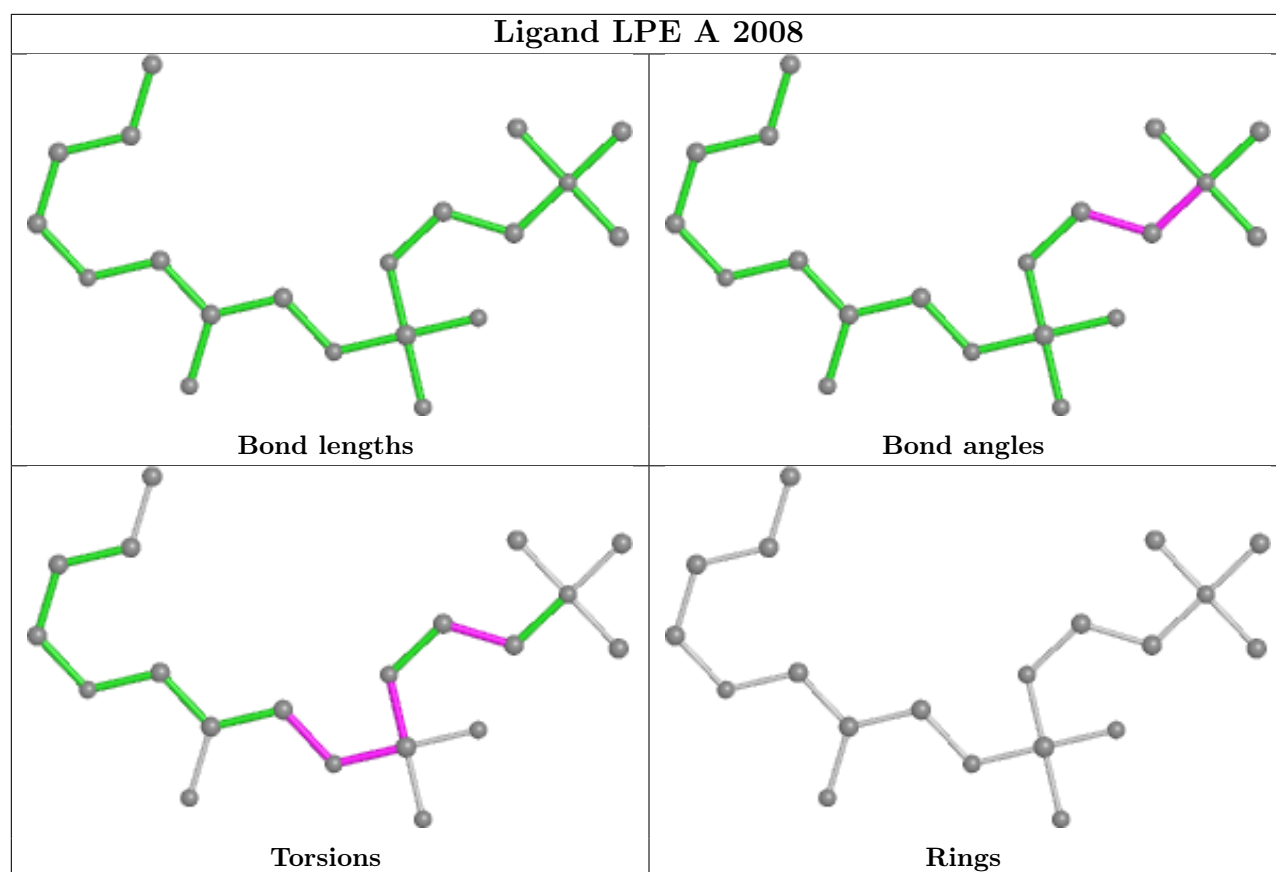


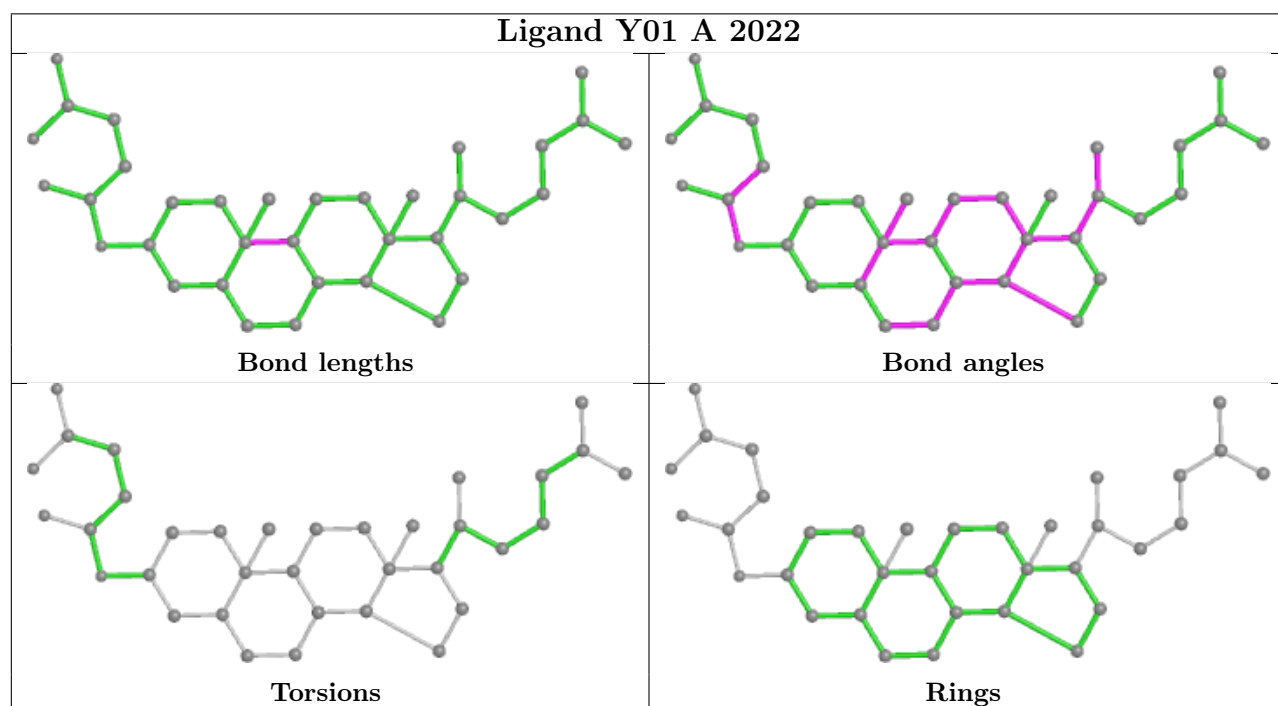
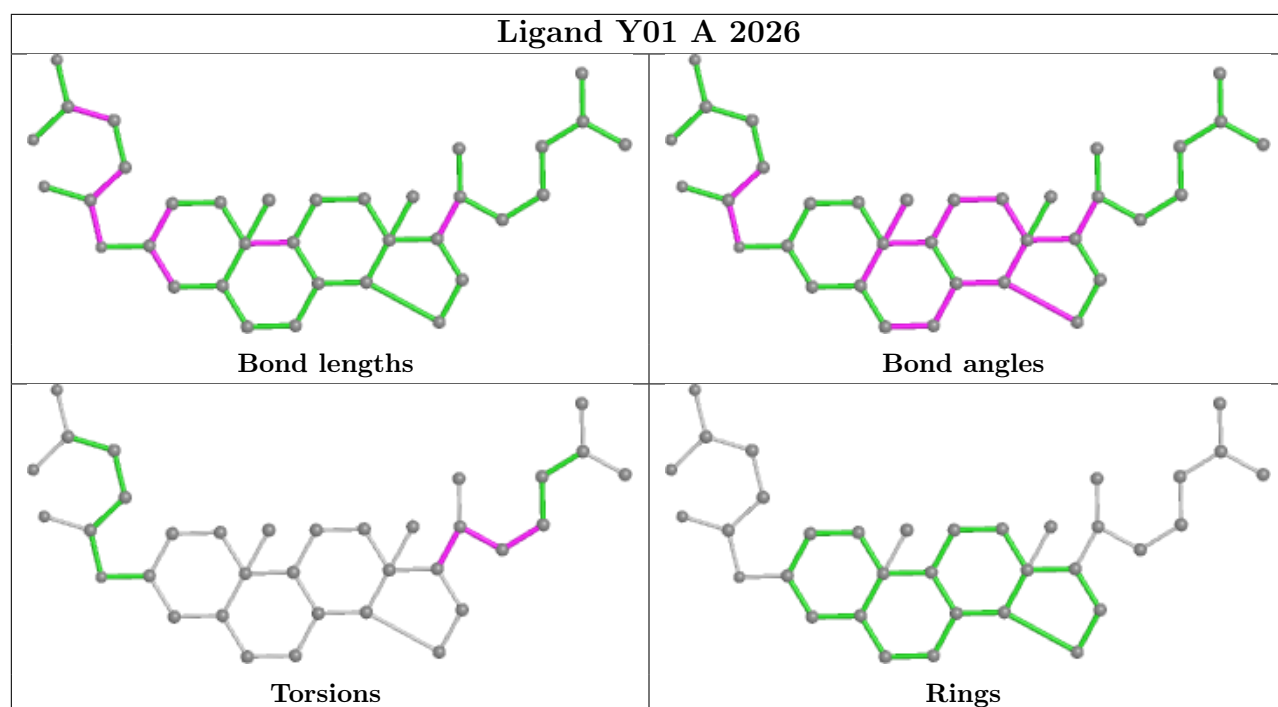


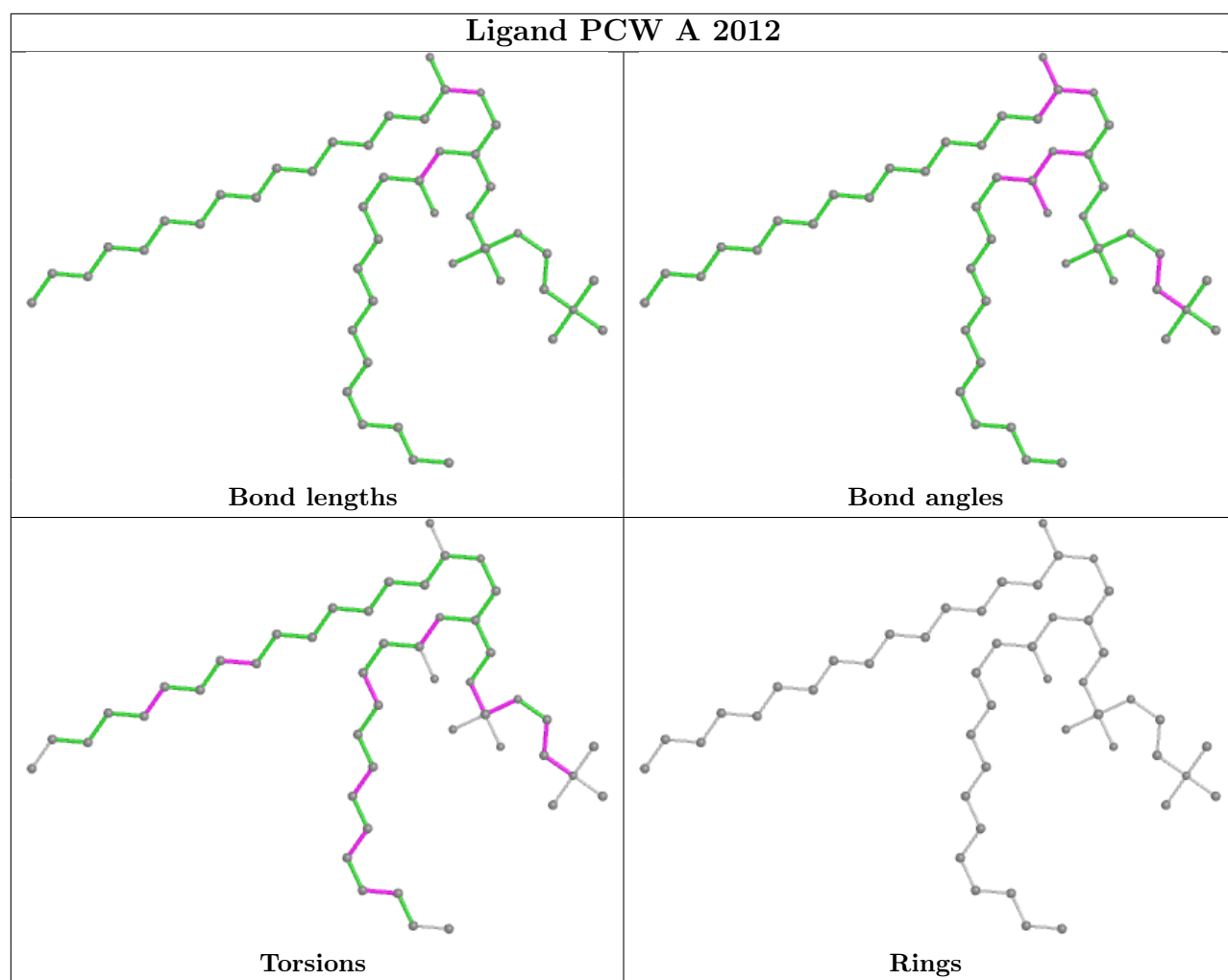


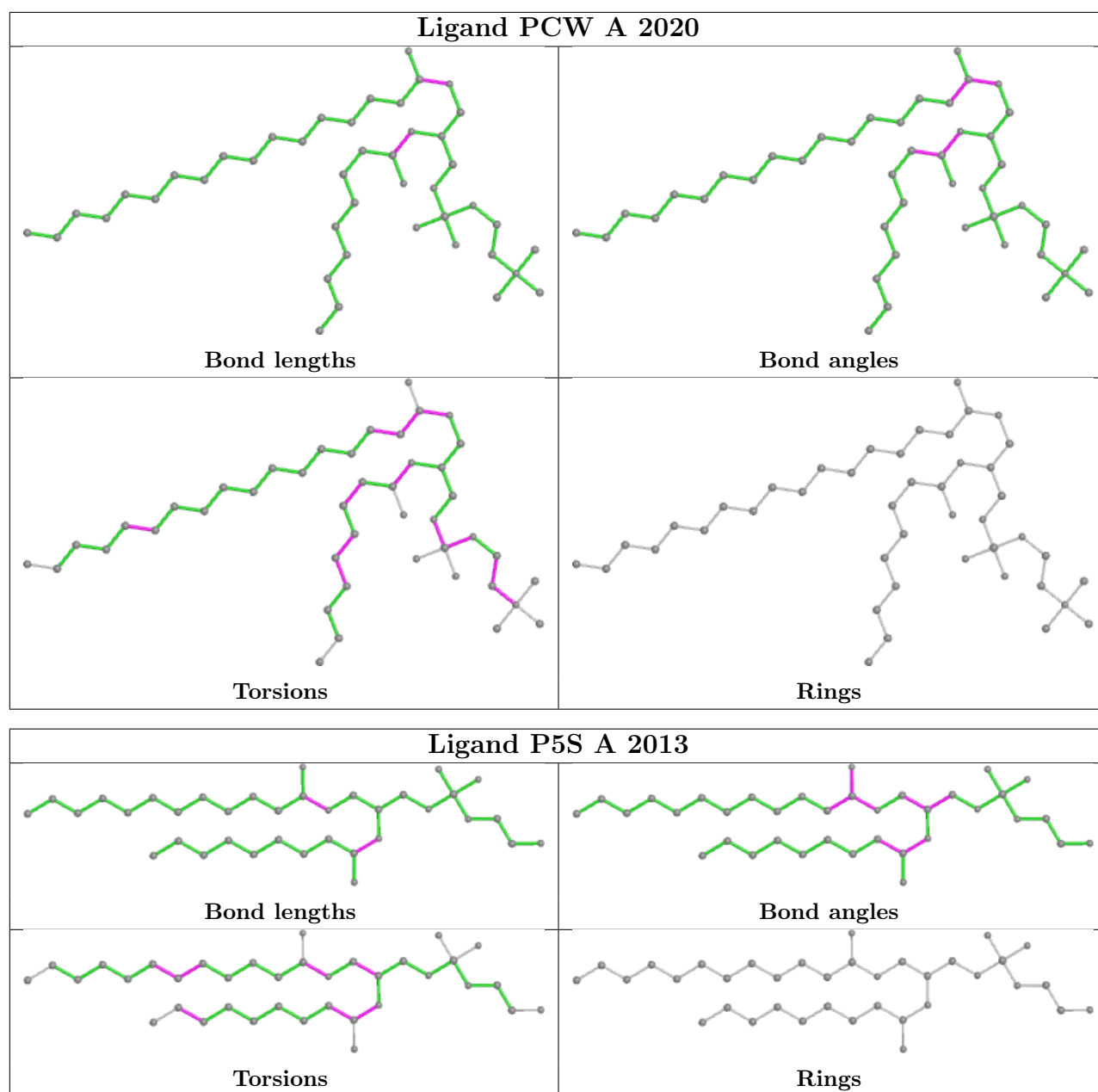


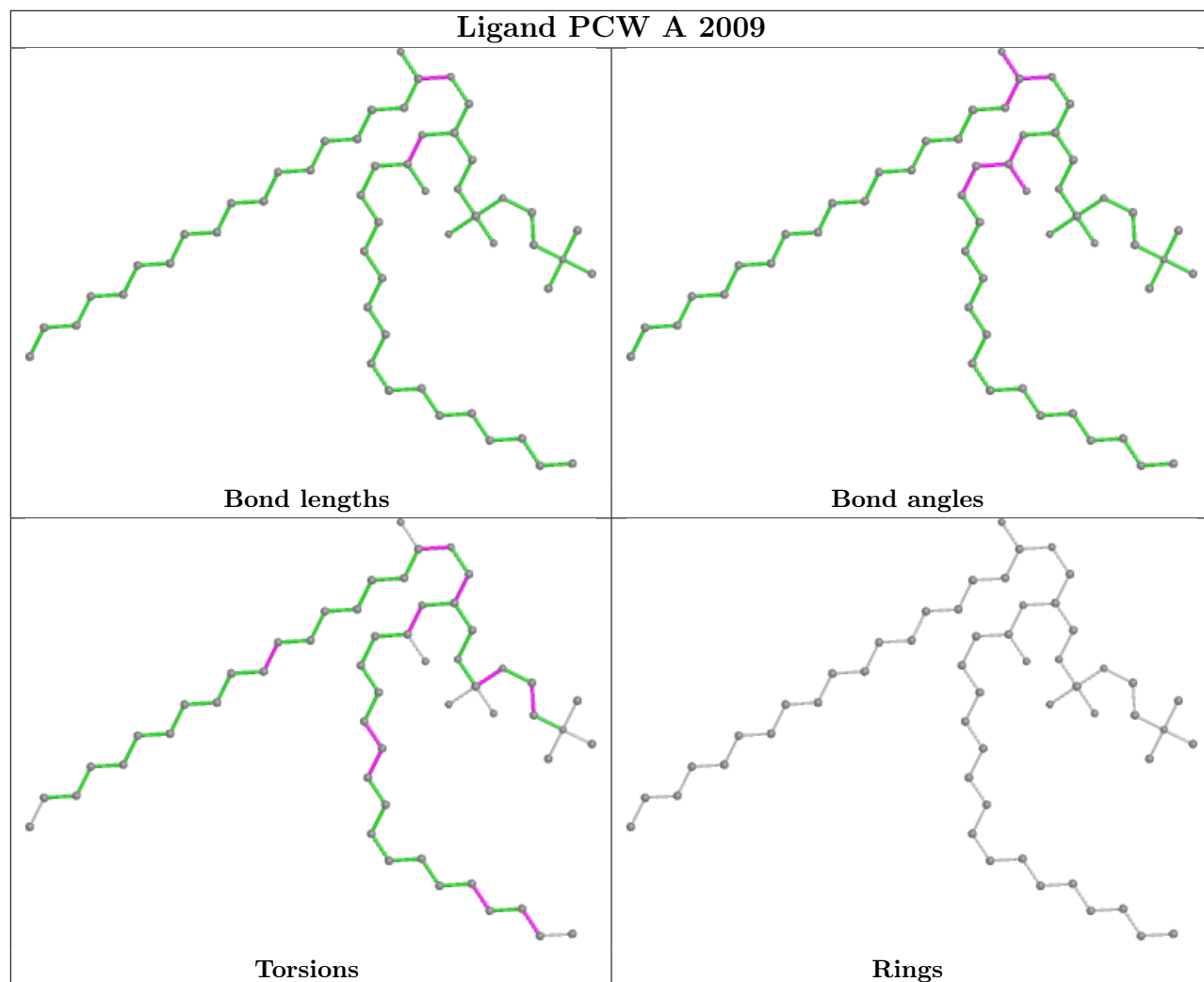


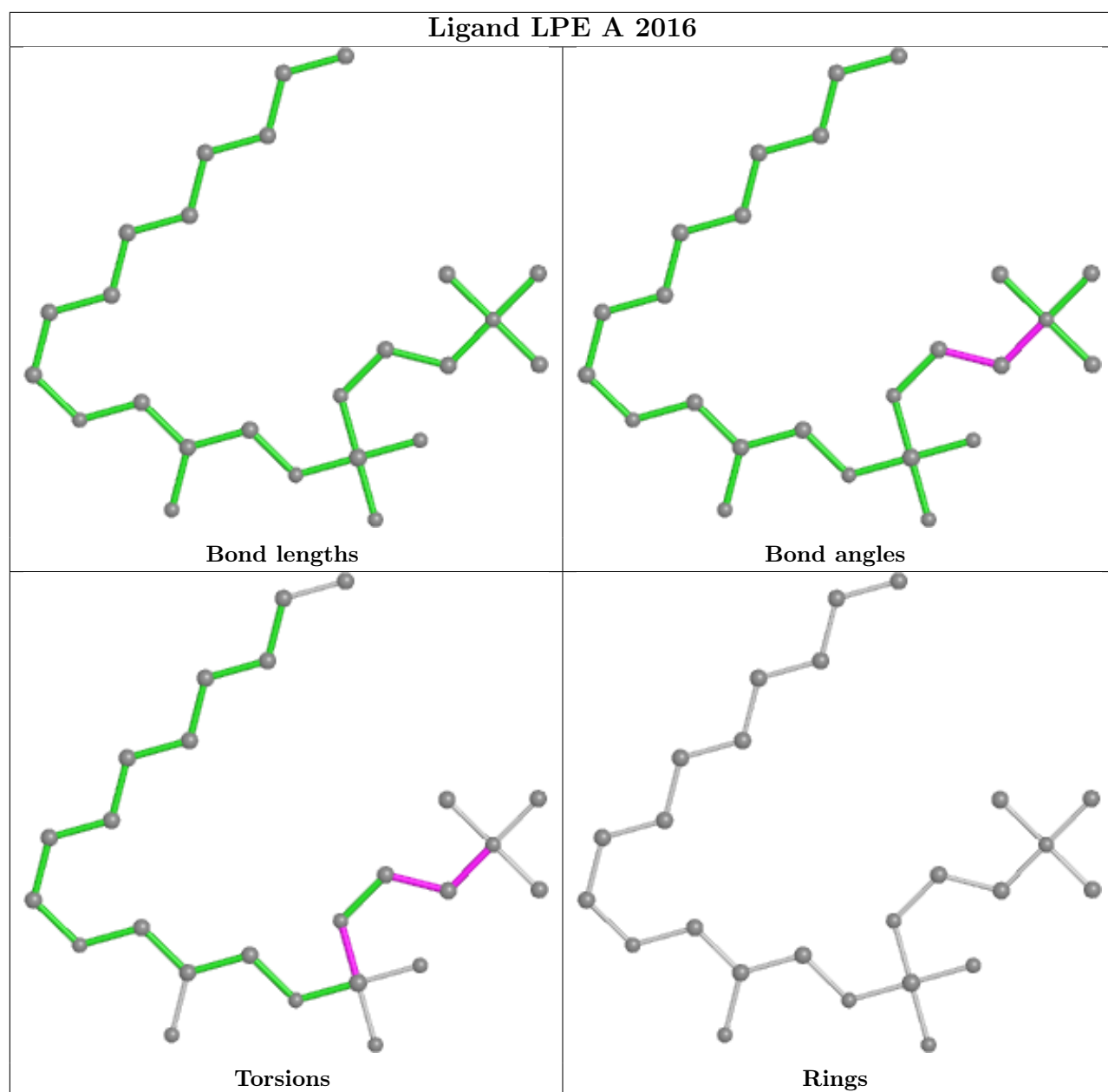


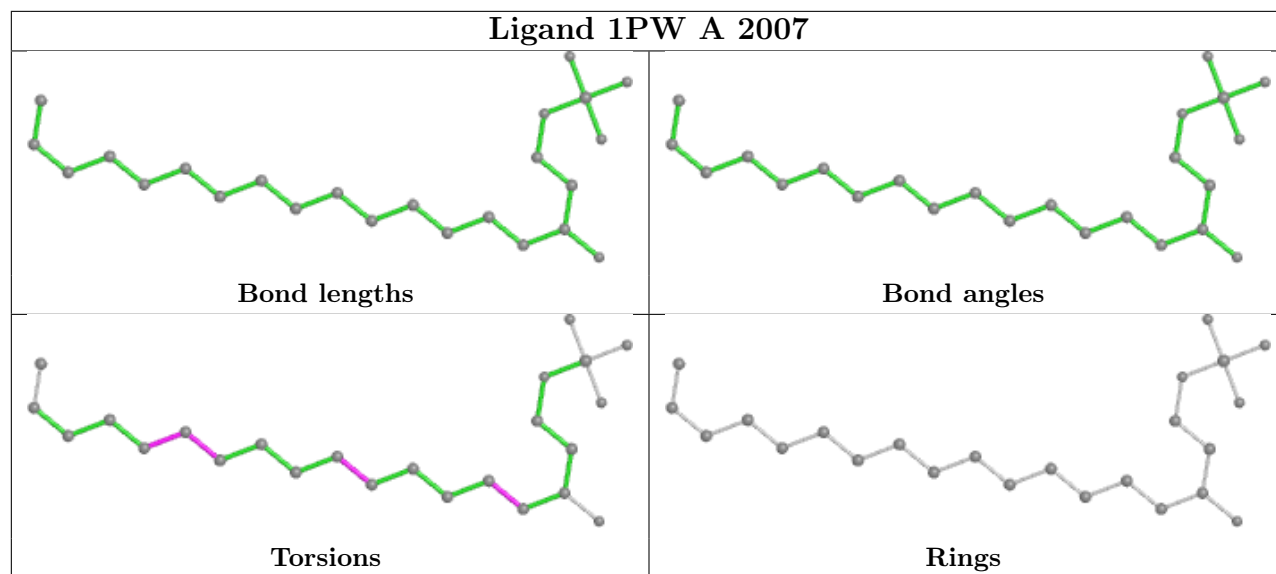












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

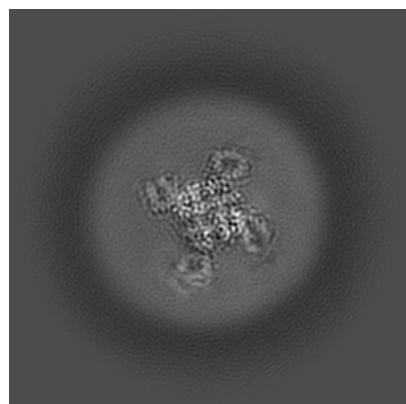
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-60867. These allow visual inspection of the internal detail of the map and identification of artifacts.

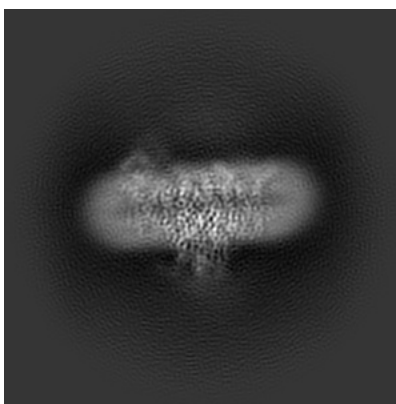
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

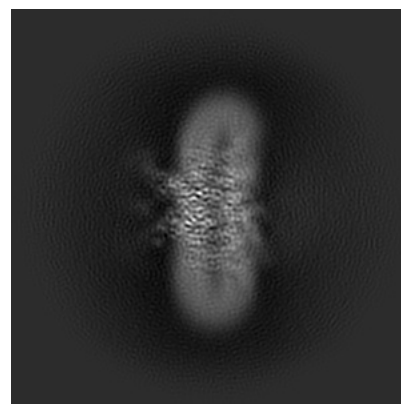
6.1.1 Primary map



X

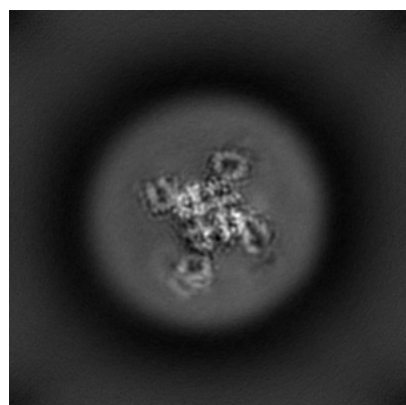


Y

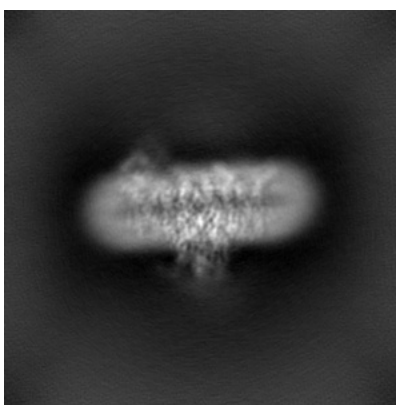


Z

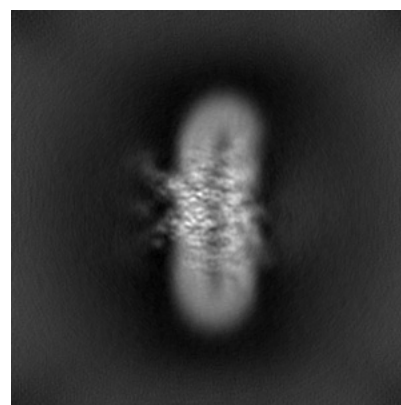
6.1.2 Raw map



X



Y

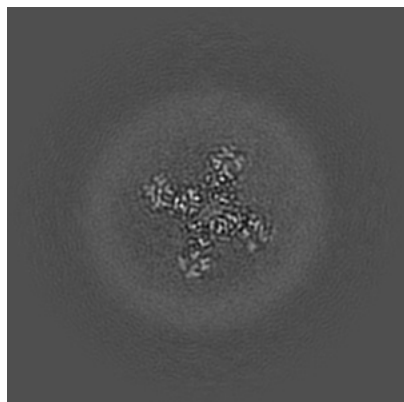


Z

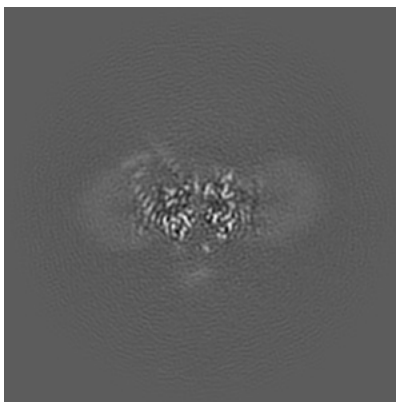
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

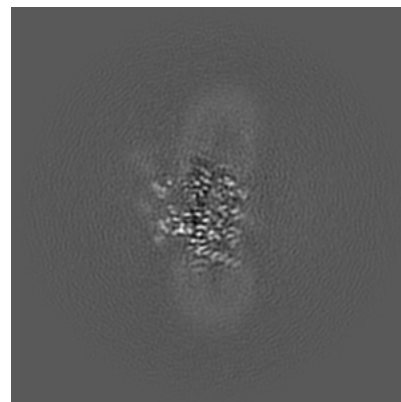
6.2.1 Primary map



X Index: 128

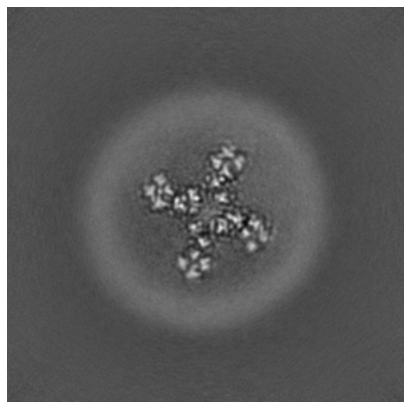


Y Index: 128

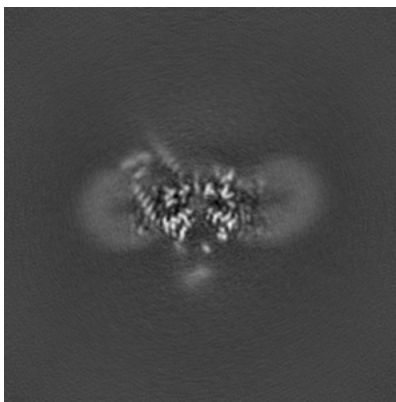


Z Index: 128

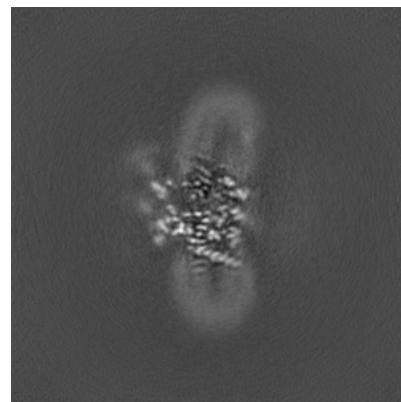
6.2.2 Raw map



X Index: 128



Y Index: 128

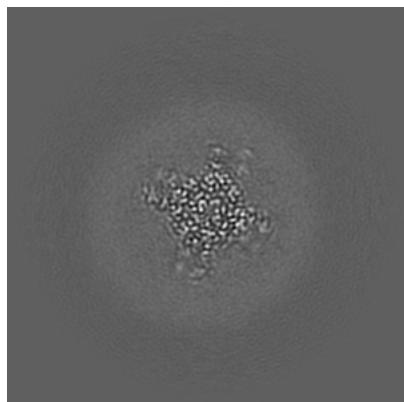


Z Index: 128

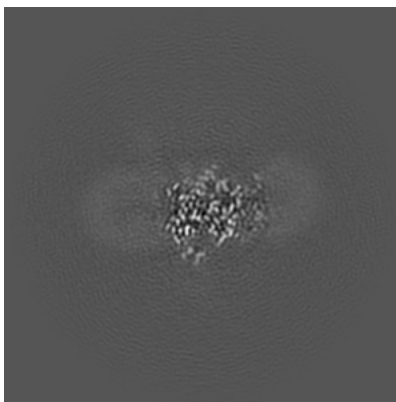
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

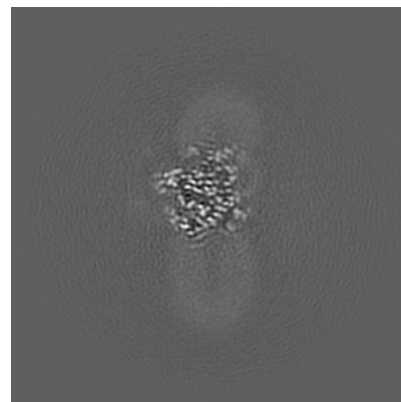
6.3.1 Primary map



X Index: 118

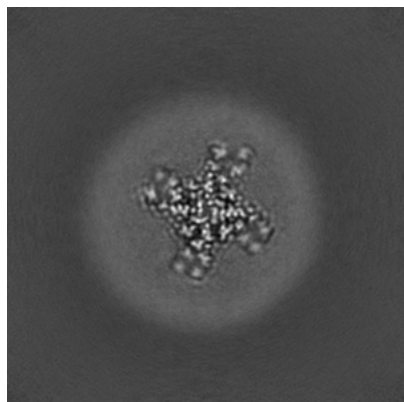


Y Index: 137

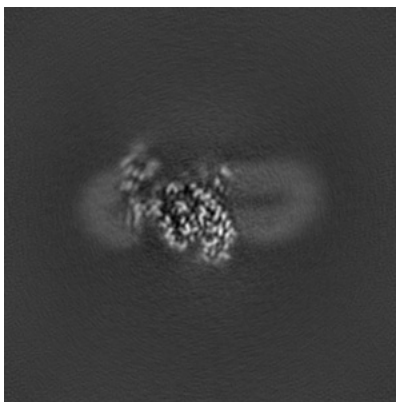


Z Index: 115

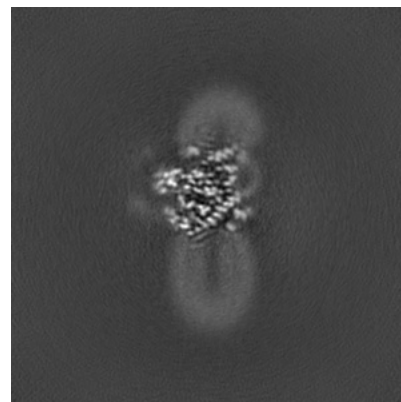
6.3.2 Raw map



X Index: 120



Y Index: 119

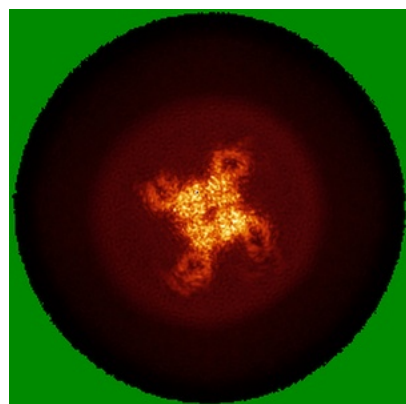


Z Index: 115

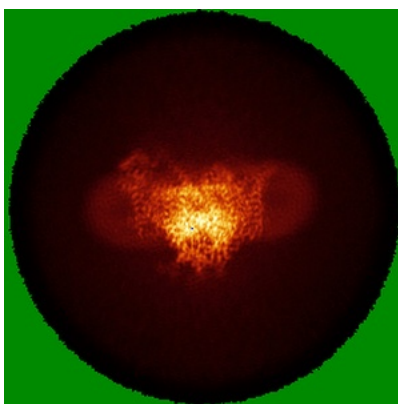
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

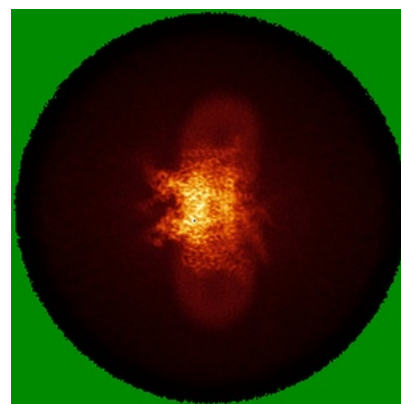
6.4.1 Primary map



X

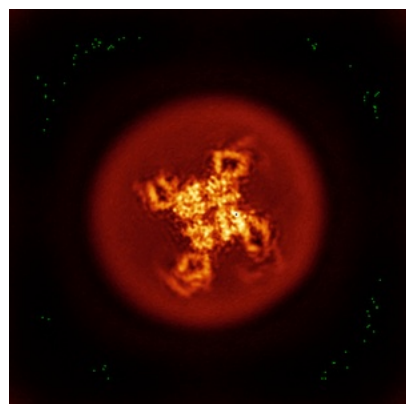


Y

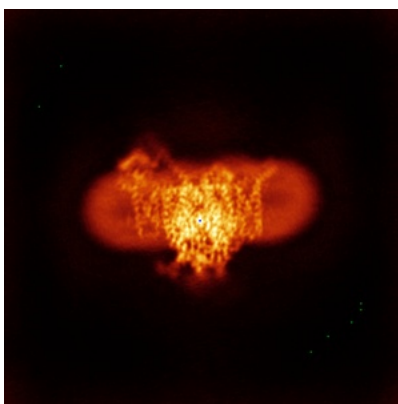


Z

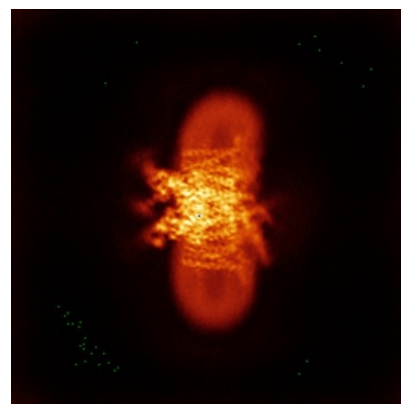
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



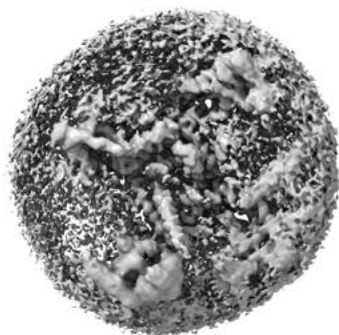
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.236. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X



Y



Z

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

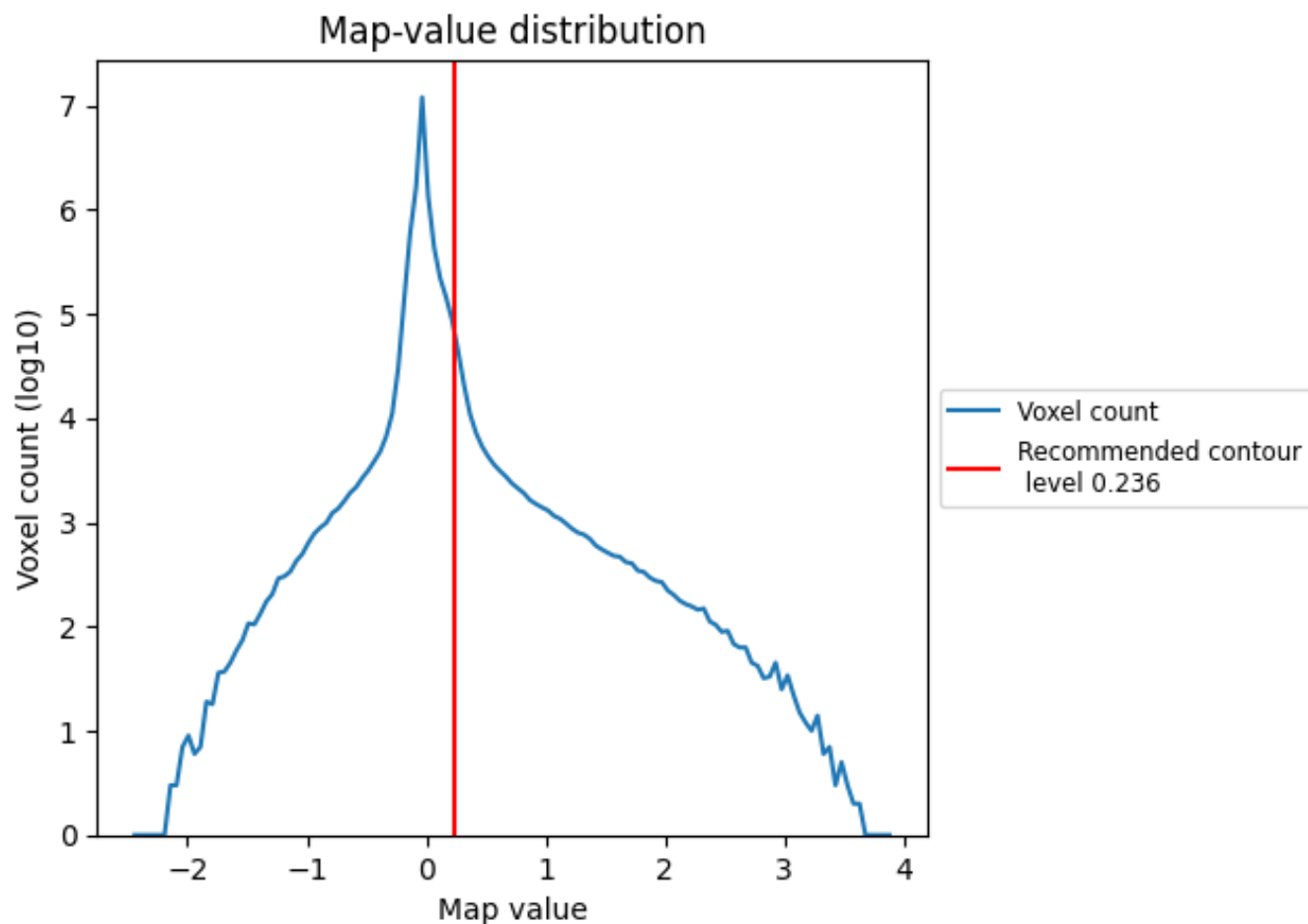
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

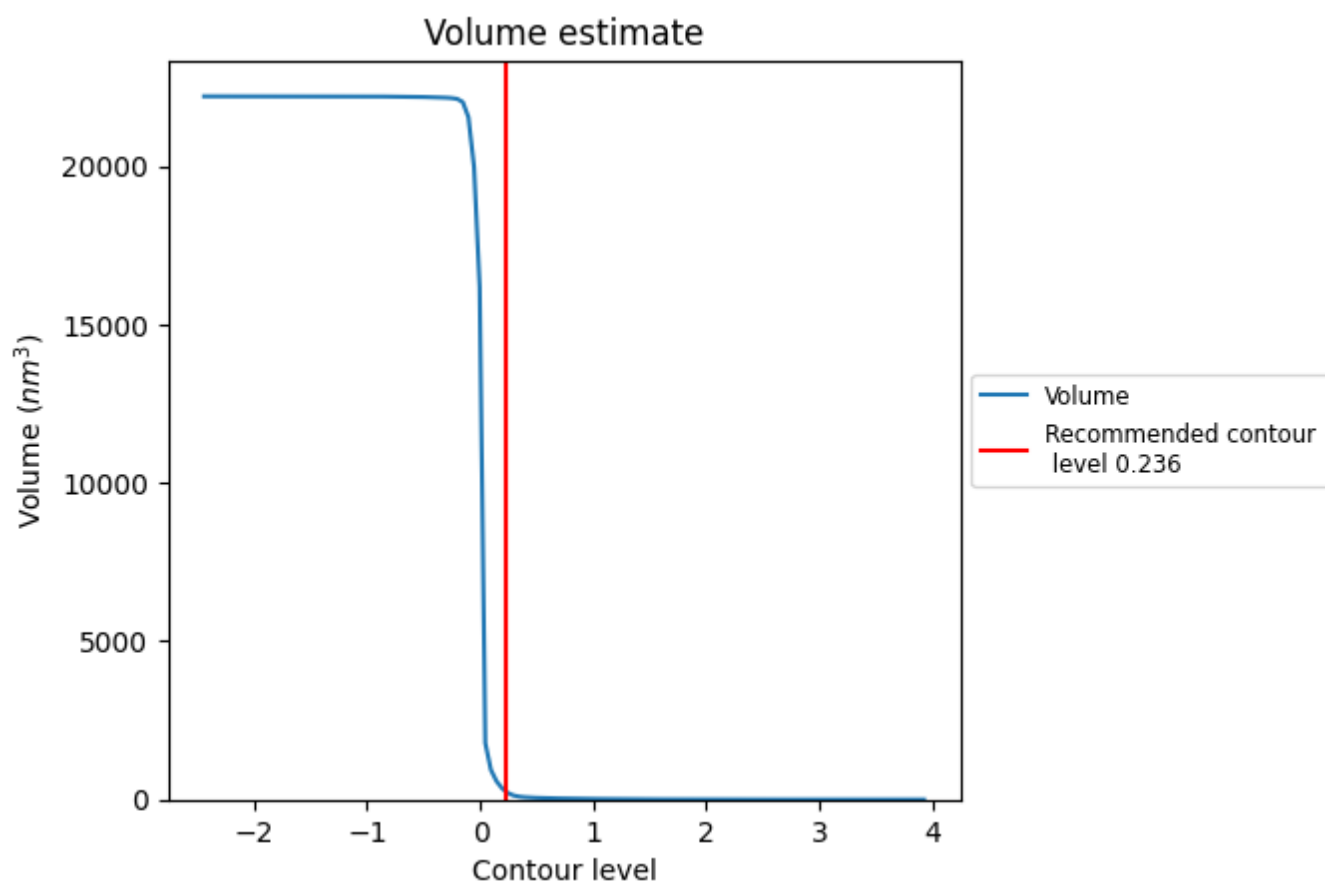
This section contains the results of statistical analysis of the map.

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.

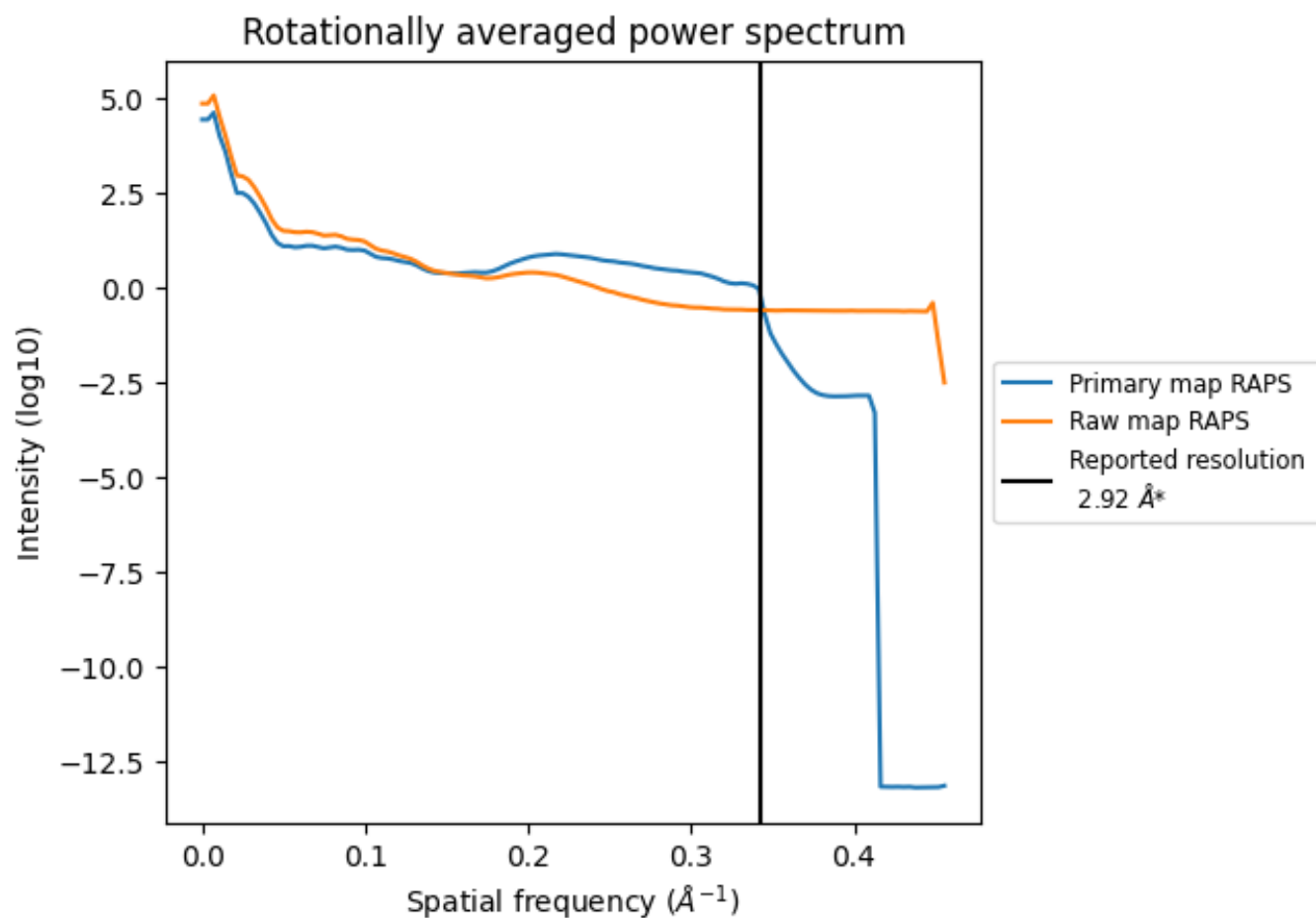
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 236 nm³; this corresponds to an approximate mass of 213 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 ⓘ

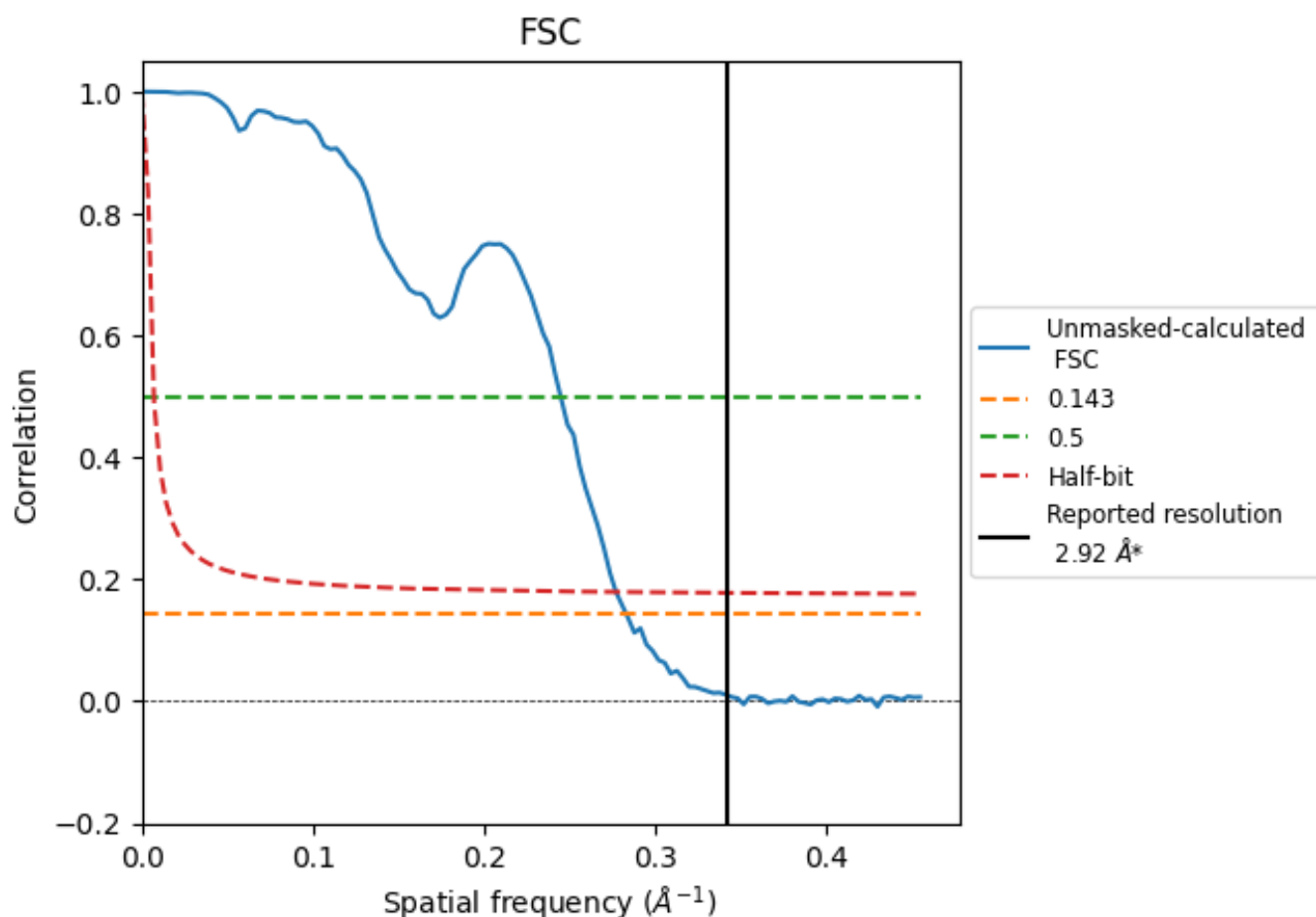


*Reported resolution corresponds to spatial frequency of 0.342 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.342 Å⁻¹

8.2 Resolution estimates [i](#)

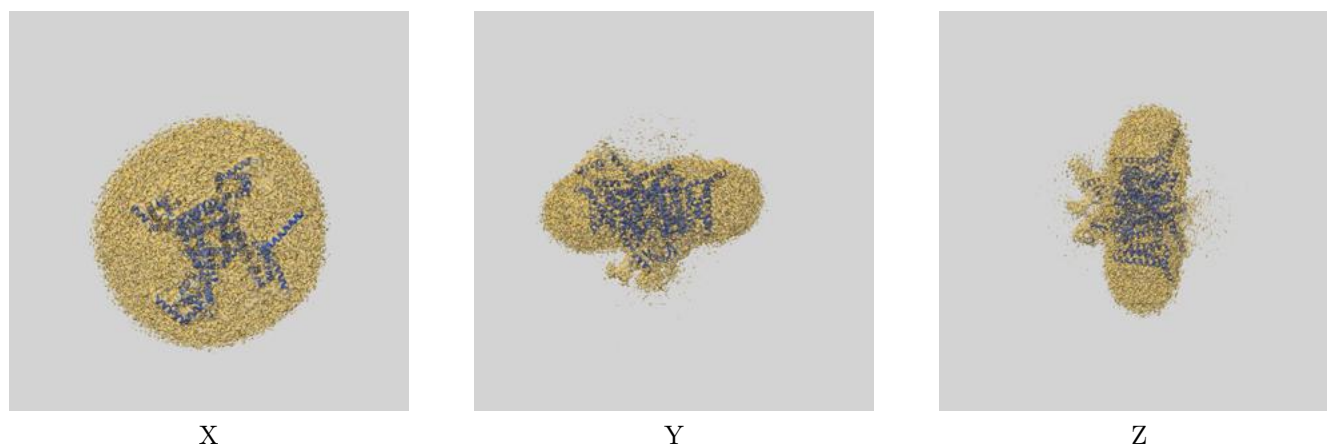
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.92	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.53	4.08	3.60

*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 3.53 differs from the reported value 2.92 by more than 10 %

9 Map-model fit [i](#)

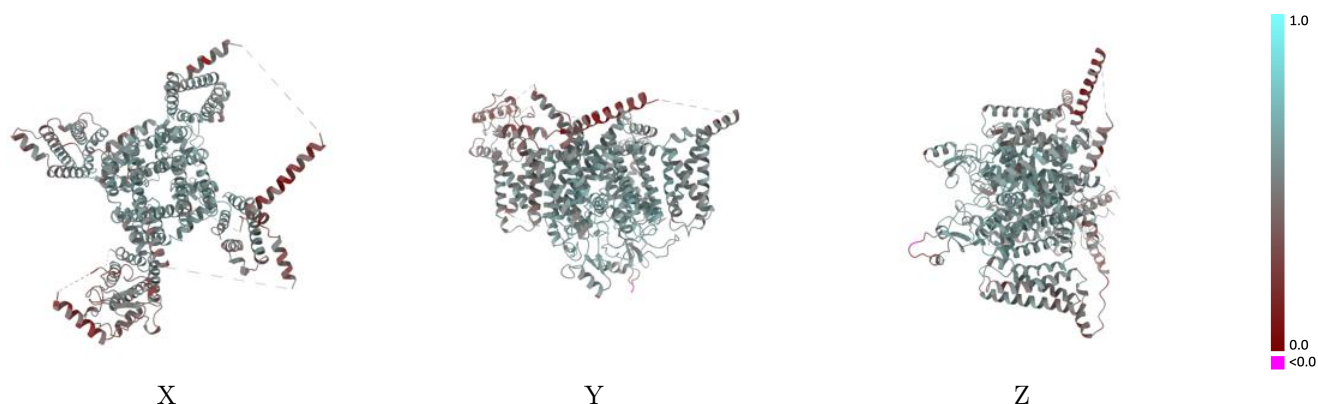
This section contains information regarding the fit between EMDB map EMD-60867 and PDB model 9ITI. Per-residue inclusion information can be found in section [3](#) on page [10](#).

9.1 Map-model overlay [i](#)



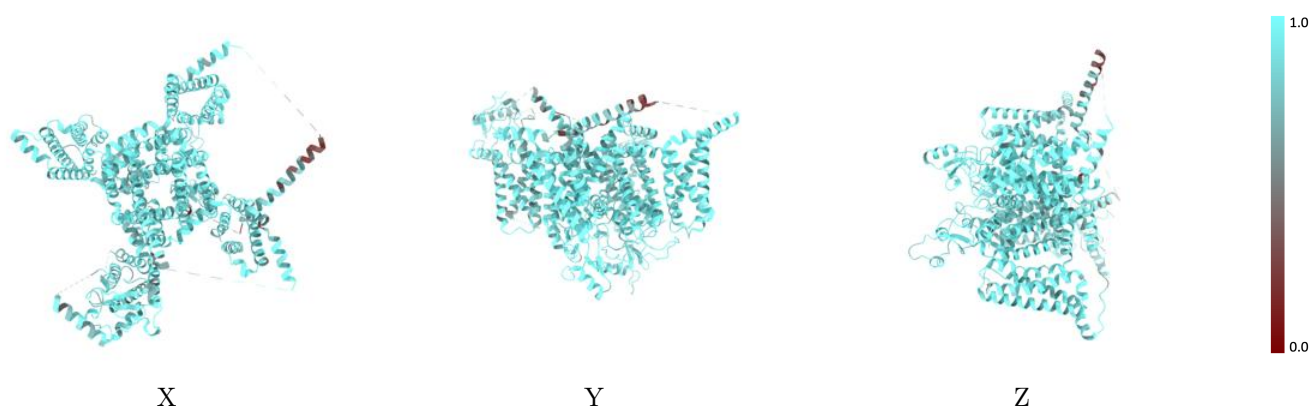
The images above show the 3D surface view of the map at the recommended contour level 0.236 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



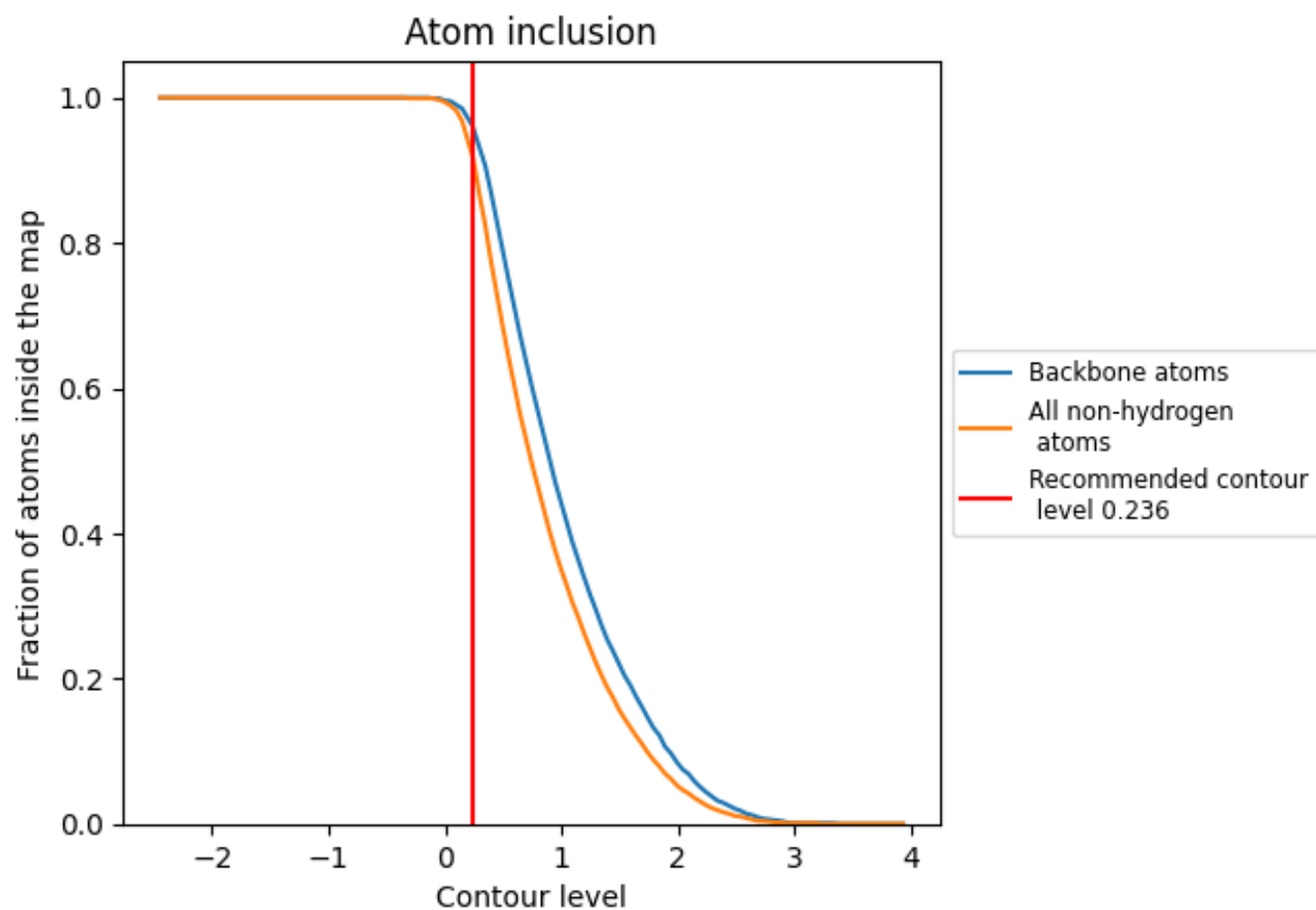
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.236).

9.4 Atom inclusion [i](#)



At the recommended contour level, 96% 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 (0.236) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9190	0.5170
A	0.9190	0.5170
B	0.8930	0.4580
C	0.9290	0.4600

