



# Full wwPDB EM Validation Report ⓘ

Oct 21, 2024 – 03:37 PM JST

PDB ID : 7W9T  
EMDB ID : EMD-32372  
Title : Cryo-EM structure of human Nav1.7(E406K) in complex with auxiliary beta subunits, huwentoxin-IV and saxitoxin (S6IV alpha helix conformer)  
Authors : Yan, N.; Huang, G.; Liu, D.; Wei, P.  
Deposited on : 2021-12-10  
Resolution : 3.00 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](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:

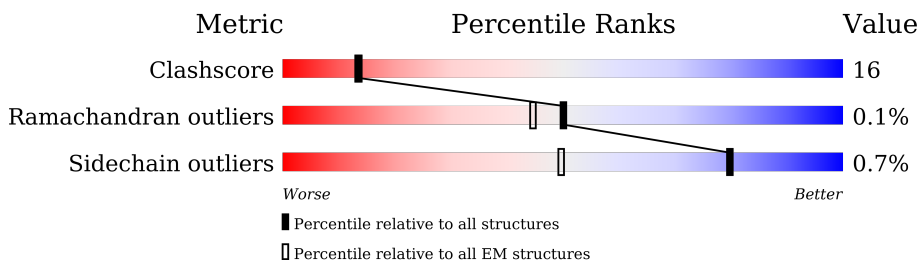
EMDB validation analysis : 0.0.1.dev113  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.00 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	2031	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">25%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 25%, orange 25%, yellow 25%, green 25%, grey 25%);"></div> <div style="text-align: center;">50%</div> <div style="text-align: center;">20%</div> <div style="text-align: center;">30%</div> </div>
2	B	218	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">8%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 8%, orange 8%, yellow 8%, green 8%, grey 8%);"></div> <div style="text-align: center;">56%</div> <div style="text-align: center;">22%</div> <div style="text-align: center;">• 21%</div> </div>
3	C	215	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">48%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 48%, orange 48%, yellow 48%, green 48%, grey 48%);"></div> <div style="text-align: center;">51%</div> <div style="text-align: center;">5%</div> <div style="text-align: center;">45%</div> </div>
4	D	2	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">50%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 50%, orange 50%, yellow 50%, green 50%, grey 50%);"></div> <div style="text-align: center;">100%</div> </div>
4	E	2	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">50%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 50%, orange 50%, yellow 50%, green 50%, grey 50%);"></div> <div style="text-align: center;">100%</div> </div>
4	F	2	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">100%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, yellow 100%, green 100%, grey 100%);"></div> </div>

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:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
11	PCW	A	2013	-	-	X	-
6	NAG	A	2008	-	-	X	-

## 2 Entry composition i

There are 11 unique types of molecules in this entry. The entry contains 14841 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
			Total	C	N	O	S		
1	A	1417	11419	7539	1798	1997	85	0	0

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-42	MET	-	expression tag	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	406	LYS	GLU	engineered mutation	UNP Q15858

- Molecule 2 is a protein called Sodium channel subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	173	1416	902	232	272	10	0	0

- Molecule 3 is a protein called Sodium channel subunit beta-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	119	980	615	172	183	10	4	0

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



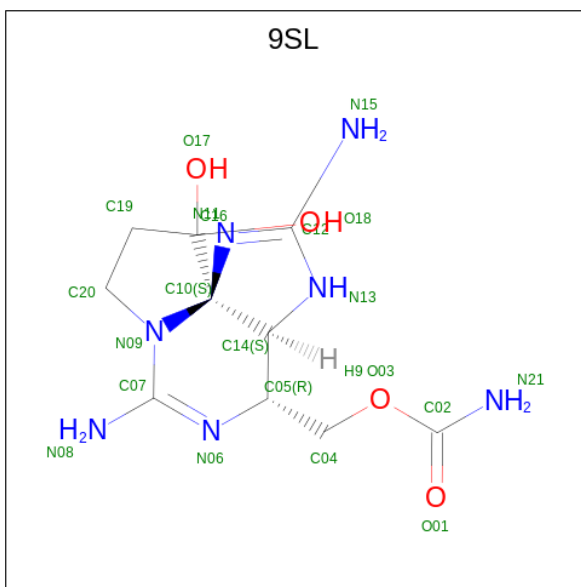
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	D	2	28	16	2	10	0	0
4	E	2	28	16	2	10	0	0

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

- Molecule 5 is [(3a*S*,4*R*,10a*S*)-2,6-diamino-10,10-dihydroxy-3a,4,9,10-tetrahydro-3*H*,8*H*-pyrrolo[1,2-*c*]purin-4-yl]methyl carbamate (three-letter code: 9SL) (formula: C<sub>10</sub>H<sub>17</sub>N<sub>7</sub>O<sub>4</sub>) (labeled as "Ligand of Interest" by depositor).



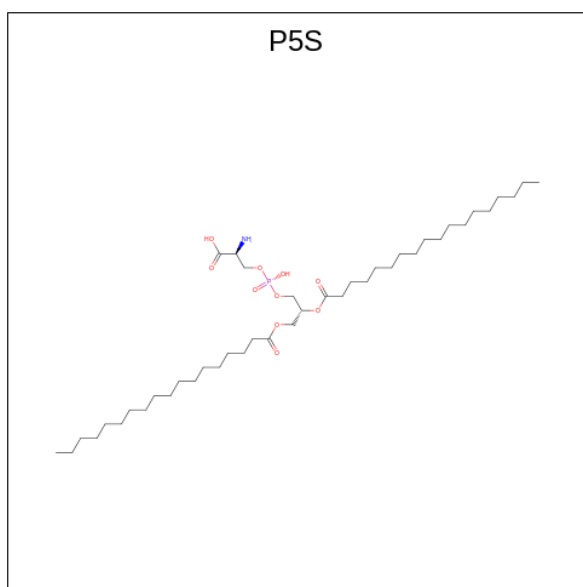
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	A	1	21	10	7	4	0

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>) (labeled as "Ligand of Interest" by depositor).



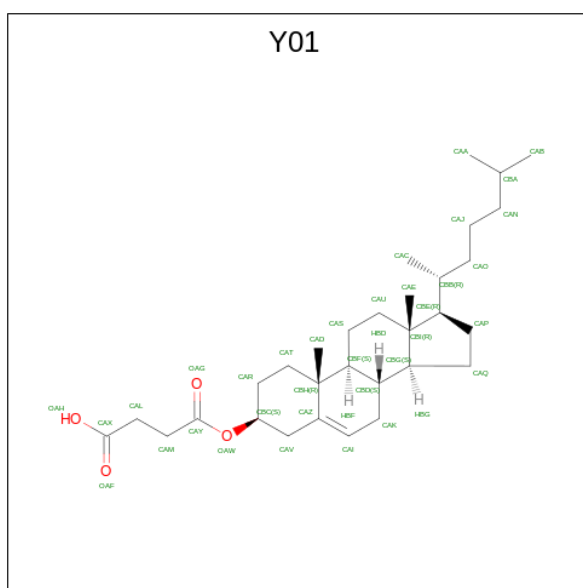
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
6	A	1	Total 14	C 8	N 1	O 5	0
6	A	1	Total 14	C 8	N 1	O 5	0
6	B	1	Total 14	C 8	N 1	O 5	0
6	B	1	Total 14	C 8	N 1	O 5	0
6	B	1	Total 14	C 8	N 1	O 5	0

- Molecule 7 is O-[(R)-{[(2R)-2,3-bis(octadecanoyloxy)propyl]oxy}(hydroxy)phosphoryl]-L-serine (three-letter code: P5S) (formula: C<sub>42</sub>H<sub>82</sub>NO<sub>10</sub>P).



Mol	Chain	Residues	Atoms					AltConf
7	A	1	Total	C	N	O	P	0
			35	24	1	9	1	
7	A	1	Total	C	N	O	P	0
			41	31	1	8	1	

- Molecule 8 is CHOLESTEROL HEMISUCCINATE (three-letter code: Y01) (formula:  $C_{31}H_{50}O_4$ ).



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

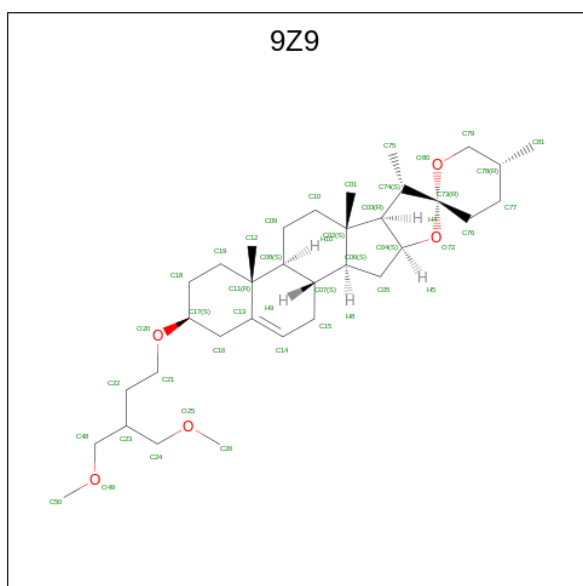
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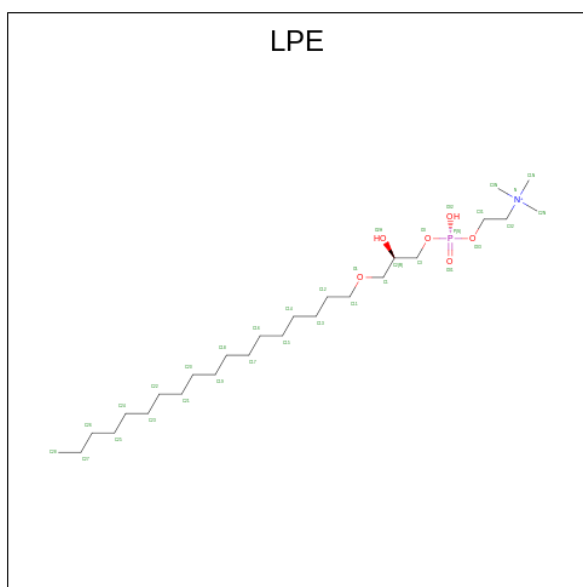
Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
8	A	1	35	31	4	0
8	A	1	35	31	4	0
8	A	1	35	31	4	0

- Molecule 9 is (3beta,14beta,17beta,25R)-3-[4-methoxy-3-(methoxymethyl)butoxy]spirost-5-en (three-letter code: 9Z9) (formula: C<sub>34</sub>H<sub>56</sub>O<sub>5</sub>).



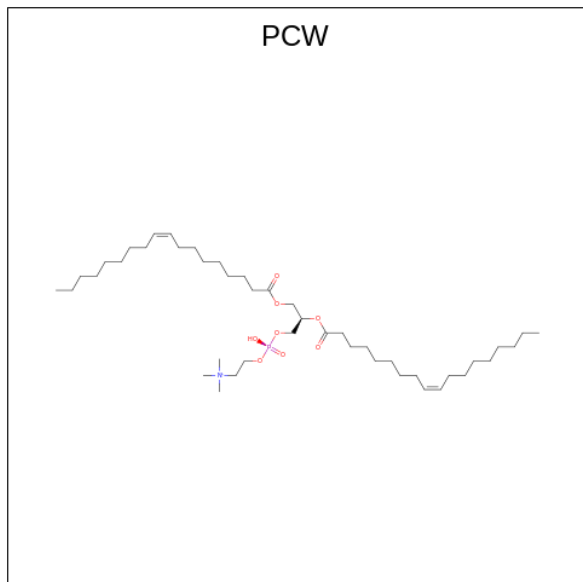
Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
9	A	1	39	34	5	0

- Molecule 10 is 1-O-OCTADECYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: LPE) (formula: C<sub>26</sub>H<sub>57</sub>NO<sub>6</sub>P).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			20	12	1	6	1	
10	A	1	Total	C	N	O	P	0
			22	14	1	6	1	
10	A	1	Total	C	N	O	P	0
			28	20	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			25	17	1	6	1	
10	A	1	Total	C	N	O	P	0
			17	9	1	6	1	
10	B	1	Total	C	N	O	P	0
			17	9	1	6	1	

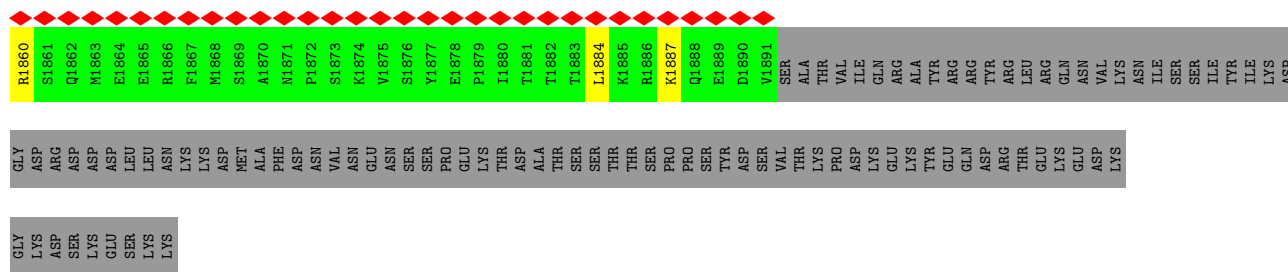
- Molecule 11 is 1,2-DIOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PCW) (formula:  $C_{44}H_{85}NO_8P$ ).



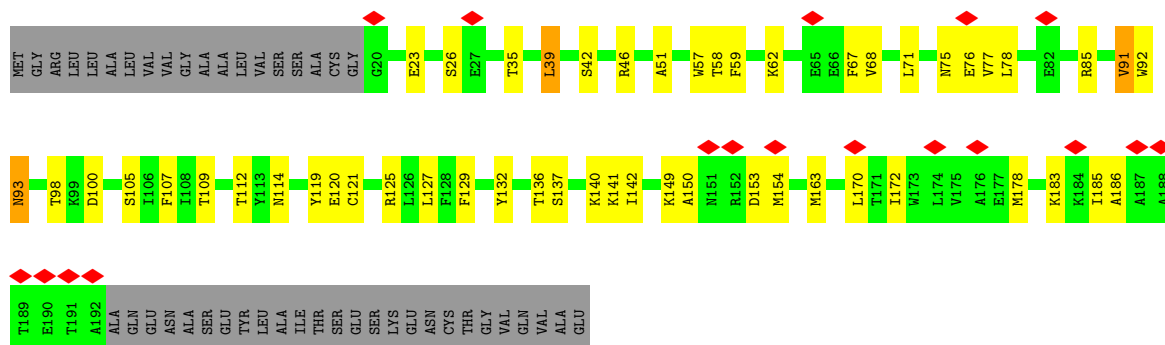
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
11	A	1	Total 53	43	1	8	1	0
11	A	1	Total 47	37	1	8	1	0
11	A	1	Total 44	34	1	8	1	0
11	A	1	Total 44	34	1	8	1	0
11	A	1	Total 44	34	1	8	1	0



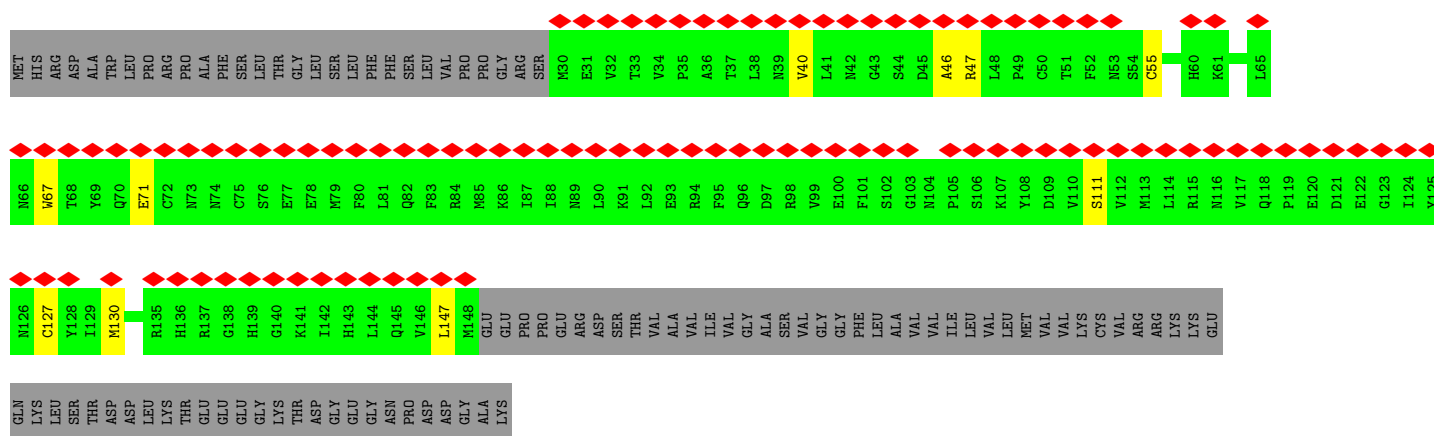
S1800	V1735	T1607	T1531	M1461	F1331	L1243	PRO	ILE	ASN	F971	V816	C736	SER
K1801	G1736	L1608	M1532	Q1462	W1332	K1244	GLU	ALA	THR	S972	T817	I737	GLU
L1802	I1737	F1609	E1537	K1466	L1333	W1245	ALA	PRO	LYS	S973	L818	Y738	ASP
S1803	F1738	R1610	E1543	L1467	S1336	I1246	GLY	GLY	GLU	D974	S819	F739	LEU
D1804	Y1739	V1611	M1543	G1468	V1340	A1247	PHE	GLU	ASN	N975	L820	I740	ASN
F1805	I1612	R1613	E1544	G1469	V1348	Y1248	THR	ASP	TYR	N976	V821	V741	ASP
A1806	R1614	L1614	E1545	Q1470	Y1348	I1250	GLY	LEU	ILE	T977	E822	M742	PRO
A1807	A1615	L1614	V1546	Q1471	P1360	T1252	VAL	ASN	ASN	A978	L823	D743	ASN
A1808	W1616	R1616	M1549	D1471	P1360	Y1253	TRP	MET	HIS	A978	F824	F744	ARG
A1809	W1619	R1619	V1553	E1477	Q1363	F1254	ARG	ASN	THR	E980	L825	F745	GLM
D1810	M1622	R1622	F1558	Q1478	Y1364	A1257	PHE	LEU	LEU	E981	L826	V746	ARG
P1811	T1622	R1622	F1558	Q1478	Y1364	A1257	THR	GLU	ALA	E981	A826	V746	ALA
P1812	Y1755	L1623	T1559	K1479	P1365	W1260	CYS	GLU	GLU	D982	D827	D747	MET
P1813	I1756	V1624	G1560	K1480	M1366	I1260	GLY	LEU	MET	D982	V828	L748	SER
L1814	A1757	L1624	G1560	Y1481	R1367	V1268	VAL	SER	SER	D983	E829	L748	ARG
L1814	Y1758	K1628	E1561	Y1481	S1368	V1268	VAL	SER	GLY	D984	G830	A749	ALA
I1815	I1759	G1629	L1564	M1485	E1369	V1274	ILE	SER	ASN	A985	G830	I750	SER
A1816	L1760	I1630	K1565	K1486	M1375	A1275	GLU	ASP	ASN	N986	L831	I751	LEU
K1817	E1761	L1637	K1566	K1487	V1376	M1276	GLY	ASP	PHE	N987	S832	E770	THR
P1818	F1763	L1641	I1567	L1488	S1377	T1277	GLY	GLU	LEU	N987	V833	E771	ASN
M1819	S1764	L1641	S1568	L1488	Q1378	T1277	TYR	GLU	LYS	N988	L834	F772	THR
K1820	V1765	M1646	L1569	S1490	M1384	G1279	LYS	SER	GLU	N989	R835	F773	VAL
V1821	A1766	M1646	R1570	K1491	M1388	Y1280	VAL	ASP	LYS	I990	S836	M774	GLU
Q1822	T1767	L1649	H1571	K1492	M1388	Y1280	ARG	ASP	ASP	A991	R837	V775	GLU
L1823	E1768	L1650	Y1572	P1493	V1392	S1281	LEU	LEU	ILE	N992	R838	L776	LEU
L1824	E1769	L1653	Y1573	Q1494	G1393	L1283	ASN	ASN	ILE	N993	L839	A777	GLU
A1825	S1770	L1657	G1577	Q1495	L1394	L1283	ARG	GLY	PHE	N994	V842	I778	SER
M1826	I1771	I1657	P1496	P1496	L1398	P1285	SER	SER	GLY	I995	F843	G779	ARG
D1827	E1772	F1666	I1497	I1497	S1398	I1286	SER	SER	SER	A997	K844	L781	GLM
L1828	L1773	K1670	P1498	P1498	I1411	K1287	GLU	VAL	VAL	G998	K847	G785	CYS
P1829	L1774	K1670	R1499	R1499	M1412	C1288	GLU	GLU	ASP	I999	N861	A788	PRO
M1830	S1775	D1673	F1581	F1581	Y1413	L1289	SER	THR	LYS	M1000	N861	A788	TRP
S1832	E1776	D1677	D1582	G1501	Y1413	R1290	CYS	THR	LYS	Y1001	I879	A789	TRP
D1833	D1777	D1677	D1582	G1501	Y1413	L1291	VAL	VAL	HIS	Y1002	I879	A789	TYR
D1834	D1778	I1689	V1584	K1502	D1417	L1292	ASP	ASP	GLU	V1003	V883	E790	ARG
R1835	F1779	I1689	V1584	K1503	Y1427	R1293	ASN	MET	GLU	V1003	V883	E790	PHE
I1836	E1780	I1694	S1589	K1504	Y1427	R1293	PRO	PRO	ASP	Q1003	D901	M791	ALA
I1837	M1781	S1697	V1591	I1504	Y1427	A1294	LEU	LEU	SER	Q1004	D901	V792	HIS
C1838	F1782	S1697	V1591	I1504	Y1427	A1294	PRO	PRO	ASP	T1005	R907	L793	LYS
D1839	Y1783	W1700	M1593	F1509	G1443	L1298	GLY	GLY	GLY	T1006	R907	L793	PHE
I1840	E1784	D1702	F1594	D1510	G1444	L1298	GLY	GLY	GLN	L1006	W908	K794	LEU
L1841	V1785	G1702	L1595	D1510	S1445	R1218	GLY	GLY	SER	R1007	H909	L795	ILE
L1842	W1786	L1703	L1595	L1511	S1445	R1218	GLY	GLY	PHE	E1008	H910	L796	TRP
F1843	I1787	P1706	D1597	L1511	I1453	T1221	ALA	ALA	ILE	F1009	N911	A797	ASN
A1844	L1788	I1707	L1598	L1512	G1454	I1225	ALA	ALA	HIS	I1010	L918	M798	ASN
F1845	K1788	L1707	L1598	L1512	G1454	I1225	ALA	ALA	PRO	L1011	L918	D799	P800
L1846	F1789	M1709	L1599	T1513	V1455	V1309	GLU	GLU	SER	K1012	L924	P800	P800
K1847	D1790	C1730	E1600	I1457	V1456	V1310	PRO	PRO	LEU	A1013	E827	Y801	Y729
R1848	P1791	C1730	E1600	I1457	V1456	V1310	MET	MET	THR	F1014	E827	Y801	Y729
V1849	D1792	C1730	E1600	I1457	V1456	V1310	ASN	ASN	VAL	SER	E802	Y802	I731
L1850	D1792	C1730	E1600	I1457	V1456	V1310	THR	THR	VAL	LYS	N952	Y803	K732
G1851	D1792	C1730	E1600	I1457	V1456	V1310	VAL	VAL	VAL	LYS	N956	F804	K733
E1852	I1797	L1525	G1526	L1527	M1528	L1326	ASP	ASP	PRO	LYS	N956	Q805	F734
G1853	I1797	L1525	G1526	L1527	M1528	L1326	PRO	PRO	PRO	LYS	N956	Q805	F734
G1854	I1797	L1525	G1526	L1527	M1528	L1326	ILE	ILE	ILE	LYS	N956	Q805	F734
E1855	I1797	L1525	G1526	L1527	M1528	L1326	SER	SER	SER	ILE	F963	G807	K734
M1856	I1797	L1525	G1526	L1527	M1528	L1326	ARG	ARG	ARG	GLU	L968	W808	K734
D1857	I1797	L1525	G1526	L1527	M1528	L1326	GLU	GLU	GLU	ILE	S969	W808	K734
S1858	I1797	L1525	G1526	L1527	M1528	L1326	ILE	ILE	ILE	ILE	S970	N809	K735
L1859	I1797	L1525	G1526	L1527	M1528	L1326	LEU	LEU	LEU	ASP	S970	N809	K735



• Molecule 2: Sodium channel subunit beta-1



• Molecule 3: Sodium channel subunit beta-2



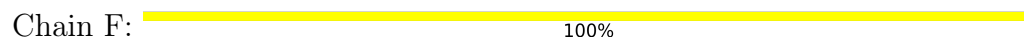
• Molecule 4: 2-acetamido-2-deoxy-beta-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucofuranose



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



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



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	165021	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)	1500	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.876	Depositor
Minimum map value	-1.308	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.098	Depositor
Recommended contour level	0.63	Depositor
Map size (Å)	261.84, 261.84, 261.84	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.091, 1.091, 1.091	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: NAG, Y01, 9Z9, 9SL, LPE, PCW, P5S

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	0.41	0/11693	0.52	1/15834 (0.0%)
2	B	0.41	0/1442	0.50	0/1949
3	C	0.36	0/1011	0.58	0/1367
All	All	0.40	0/14146	0.53	1/19150 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	275	CYS	CA-CB-SG	5.84	124.52	114.00

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	11419	0	11645	357	0
2	B	1416	0	1380	45	0
3	C	980	0	935	3	0
4	D	28	0	25	0	0
4	E	28	0	25	0	0
4	F	28	0	25	0	0
5	A	21	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	A	28	0	26	9	0
6	B	42	0	39	0	0
7	A	76	0	96	21	0
8	A	175	0	245	48	0
9	A	39	0	0	9	0
10	A	312	0	426	79	0
10	B	17	0	19	10	0
11	A	232	0	321	35	0
All	All	14841	0	15207	473	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 16.

All (473) 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:1602:TYR:CE2	1:A:1603:PHE:CE1	1.76	1.65
1:A:1602:TYR:CE2	1:A:1603:PHE:HE1	1.04	1.64
1:A:1602:TYR:CD2	1:A:1603:PHE:CE1	1.92	1.53
1:A:1602:TYR:CD2	1:A:1603:PHE:CD1	2.18	1.28
1:A:1602:TYR:HD2	1:A:1603:PHE:CD1	1.52	1.26
2:B:178:MET:CE	10:B:304:LPE:H12	1.70	1.21
1:A:1738:PHE:CD2	10:A:2014:LPE:H1N2	1.75	1.20
1:A:1330:ILE:CD1	8:A:2006:Y01:HAB2	1.71	1.18
1:A:1738:PHE:CE2	10:A:2014:LPE:H1N2	1.81	1.15
1:A:1330:ILE:HD12	8:A:2006:Y01:HAB2	1.34	1.09
1:A:963:PHE:CE1	9:A:2007:9Z9:C77	2.37	1.08
1:A:1257:ALA:CB	10:A:2015:LPE:H31	1.84	1.07
1:A:1330:ILE:HD12	8:A:2006:Y01:CAB	1.85	1.07
2:B:178:MET:HE3	10:B:304:LPE:C1	1.86	1.04
11:A:2013:PCW:C37	8:A:2029:Y01:HAQ1	1.89	1.02
1:A:1602:TYR:HE2	1:A:1603:PHE:CE1	1.30	1.02
2:B:178:MET:CE	10:B:304:LPE:C1	2.37	1.02
1:A:1375:ASN:ND2	6:A:2008:NAG:C2	2.23	1.00
11:A:2013:PCW:H371	8:A:2029:Y01:HAQ1	1.45	0.99
11:A:2013:PCW:C37	8:A:2029:Y01:CAQ	2.45	0.94
1:A:1307:MET:CE	10:A:2023:LPE:C19	2.46	0.93
2:B:178:MET:HE3	10:B:304:LPE:H12	0.95	0.93
1:A:1375:ASN:CG	6:A:2008:NAG:C1	2.36	0.92
10:A:2021:LPE:H1N3	10:A:2022:LPE:O32	1.70	0.92
1:A:1301:LEU:HD11	10:A:2014:LPE:H151	1.55	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:A:2012:LPE:H1N1	11:A:2013:PCW:C8	2.04	0.88
1:A:1738:PHE:CE2	10:A:2014:LPE:C1N	2.56	0.88
1:A:1307:MET:HE1	10:A:2023:LPE:C19	2.04	0.88
1:A:1457:ILE:HD13	9:A:2007:9Z9:C12	2.04	0.87
1:A:364:GLU:OE2	5:A:2001:9SL:N11	2.07	0.86
1:A:1624:VAL:HG21	7:A:2017:P5S:H29A	1.57	0.85
1:A:1179:TRP:CZ3	10:A:2025:LPE:H321	2.13	0.84
1:A:1324:VAL:HG21	1:A:1455:VAL:HG21	1.57	0.84
1:A:1653:LEU:HD23	10:A:2014:LPE:C16	2.07	0.84
1:A:1257:ALA:HB1	10:A:2015:LPE:H31	1.60	0.83
1:A:1307:MET:HE3	10:A:2023:LPE:C19	2.08	0.83
10:A:2012:LPE:H1N1	11:A:2013:PCW:H83	1.59	0.82
1:A:1735:VAL:HG23	10:A:2014:LPE:H2N1	1.62	0.82
1:A:1301:LEU:HD11	10:A:2014:LPE:C15	2.10	0.81
1:A:1457:ILE:CD1	9:A:2007:9Z9:C12	2.59	0.80
1:A:1477:GLU:HG3	10:A:2019:LPE:H1N1	1.65	0.79
2:B:178:MET:HE1	10:B:304:LPE:C1	2.11	0.78
1:A:1578:TRP:CH2	7:A:2017:P5S:H26	2.19	0.77
1:A:1330:ILE:CD1	8:A:2006:Y01:CAB	2.52	0.77
1:A:963:PHE:HE1	9:A:2007:9Z9:C77	1.95	0.76
1:A:1375:ASN:O	6:A:2008:NAG:H82	1.85	0.76
1:A:1738:PHE:HD2	10:A:2014:LPE:H1N2	1.43	0.75
11:A:2013:PCW:H372	8:A:2029:Y01:CAQ	2.16	0.75
1:A:1508:ILE:HA	1:A:1511:LEU:HD12	1.69	0.74
2:B:178:MET:HE1	10:B:304:LPE:O2H	1.88	0.74
1:A:1735:VAL:CG2	10:A:2014:LPE:H2N1	2.18	0.74
11:A:2013:PCW:H381	8:A:2029:Y01:HAQ2	1.71	0.73
1:A:1384:ASN:OD1	1:A:1388:ASN:ND2	2.22	0.72
1:A:1781:MET:HA	1:A:1784:GLU:HG2	1.69	0.72
10:A:2021:LPE:C32	10:A:2022:LPE:H31	2.19	0.72
1:A:1477:GLU:HG3	10:A:2019:LPE:C1N	2.20	0.72
1:A:1785:VAL:HA	1:A:1788:LYS:HD2	1.72	0.72
1:A:1282:ASP:HA	1:A:1287:LYS:HG3	1.70	0.71
1:A:1738:PHE:HE2	10:A:2014:LPE:C1N	2.02	0.71
11:A:2013:PCW:H381	8:A:2029:Y01:CAQ	2.21	0.71
1:A:1477:GLU:CG	10:A:2019:LPE:H1N1	2.21	0.70
1:A:1257:ALA:HB3	10:A:2015:LPE:H31	1.71	0.69
1:A:1330:ILE:HD12	8:A:2006:Y01:CAA	2.22	0.69
1:A:1578:TRP:CH2	7:A:2017:P5S:C26	2.75	0.69
11:A:2013:PCW:H372	8:A:2029:Y01:HAQ1	1.71	0.68
11:A:2013:PCW:C38	8:A:2029:Y01:CAQ	2.73	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:909:HIS:HD2	1:A:911:ASN:H	1.43	0.67
7:A:2003:P5S:H54A	10:A:2025:LPE:H171	1.76	0.67
10:A:2021:LPE:H321	10:A:2022:LPE:H31	1.77	0.67
1:A:1677:ASP:OD2	2:B:46:ARG:NH2	2.27	0.67
1:A:1558:PHE:O	1:A:1561:GLU:HG2	1.95	0.66
1:A:1653:LEU:CD2	10:A:2014:LPE:C16	2.74	0.66
10:A:2012:LPE:H1N1	11:A:2013:PCW:H82	1.77	0.66
1:A:9:PRO:HA	1:A:63:TYR:HA	1.78	0.66
1:A:1251:LYS:CE	10:A:2026:LPE:H312	2.26	0.65
11:A:2013:PCW:C37	8:A:2029:Y01:HAQ2	2.27	0.65
1:A:293:LEU:HD22	1:A:298:ASP:HB3	1.79	0.65
1:A:1366:ASN:OD1	1:A:1368:SER:OG	2.11	0.64
1:A:1330:ILE:HD13	8:A:2006:Y01:HAB2	1.74	0.64
1:A:64:GLY:O	1:A:95:LYS:NZ	2.30	0.64
1:A:1602:TYR:CE2	1:A:1603:PHE:CZ	2.73	0.64
1:A:1375:ASN:OD1	6:A:2008:NAG:C1	2.46	0.64
1:A:1330:ILE:HD11	8:A:2006:Y01:HAJ1	1.80	0.63
1:A:1179:TRP:CZ3	10:A:2025:LPE:C32	2.81	0.63
1:A:324:CYS:SG	1:A:328:TYR:HB2	2.38	0.63
2:B:51:ALA:HB2	2:B:127:LEU:HD13	1.80	0.63
1:A:230:GLY:O	1:A:234:ILE:HG12	1.99	0.62
1:A:1759:ILE:CD1	9:A:2007:9Z9:C03	2.78	0.62
1:A:927:GLU:OE2	5:A:2001:9SL:C04	2.48	0.62
1:A:1298:LEU:CD2	10:A:2014:LPE:H151	2.30	0.62
1:A:1330:ILE:HD12	8:A:2006:Y01:HAA3	1.82	0.62
10:A:2021:LPE:H321	10:A:2022:LPE:O32	1.99	0.62
11:A:2013:PCW:C38	8:A:2029:Y01:HAQ2	2.30	0.61
1:A:1257:ALA:CB	10:A:2015:LPE:C3	2.72	0.61
2:B:178:MET:CE	10:B:304:LPE:O2H	2.48	0.61
1:A:816:VAL:O	1:A:820:LEU:HG	2.01	0.60
1:A:388:LEU:HD11	7:A:2017:P5S:H34	1.83	0.60
1:A:99:ARG:HG2	1:A:181:PHE:CE2	2.36	0.60
8:A:2009:Y01:HAC1	8:A:2009:Y01:HAE2	1.83	0.60
1:A:1218:ARG:NH2	2:B:23:GLU:O	2.28	0.60
1:A:1578:TRP:CZ3	7:A:2017:P5S:H26	2.36	0.60
8:A:2004:Y01:HAC1	8:A:2004:Y01:HAE2	1.84	0.60
8:A:2005:Y01:HAE2	8:A:2005:Y01:HAC1	1.83	0.60
1:A:1375:ASN:ND2	6:A:2008:NAG:H2	2.16	0.60
1:A:1375:ASN:HD22	6:A:2008:NAG:C7	2.15	0.60
1:A:730:TRP:HA	1:A:733:PHE:CZ	2.36	0.59
1:A:65:ASP:OD1	1:A:66:ILE:N	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:149:PRO:HB2	1:A:151:TRP:HD1	1.67	0.59
1:A:1250:TYR:H	7:A:2003:P5S:H45	1.67	0.59
8:A:2006:Y01:HAC1	8:A:2006:Y01:HAE2	1.83	0.59
1:A:27:ILE:HA	1:A:30:ARG:HD2	1.84	0.59
2:B:129:PHE:HB2	2:B:132:TYR:HB3	1.84	0.59
1:A:183:PHE:HD2	1:A:184:LEU:HD22	1.68	0.59
1:A:1257:ALA:HB3	10:A:2015:LPE:C3	2.32	0.59
1:A:1577:GLY:H	11:A:2018:PCW:H51	1.68	0.58
1:A:1673:ASP:OD1	1:A:1673:ASP:O	2.21	0.58
11:A:2013:PCW:H381	8:A:2029:Y01:CAP	2.33	0.58
11:A:2018:PCW:H19	11:A:2027:PCW:H261	1.85	0.58
2:B:136:THR:HG22	2:B:137:SER:H	1.68	0.58
2:B:91:VAL:HG23	2:B:107:PHE:HB3	1.85	0.58
1:A:1304:PHE:CE2	10:A:2023:LPE:C19	2.87	0.58
11:A:2013:PCW:H371	8:A:2029:Y01:CAQ	2.21	0.58
1:A:1513:THR:HG22	1:A:1513:THR:O	2.02	0.58
11:A:2013:PCW:H372	8:A:2029:Y01:HAQ2	1.83	0.58
1:A:1641:LEU:HB3	10:A:2019:LPE:H11	1.85	0.57
1:A:1771:THR:HG23	1:A:1773:PRO:HD3	1.85	0.57
1:A:1850:LEU:HD23	1:A:1856:MET:HG2	1.86	0.57
1:A:86:LYS:NZ	1:A:86:LYS:H	2.01	0.57
1:A:1430:SER:HB3	1:A:1433:MET:HG2	1.86	0.57
7:A:2003:P5S:H42	10:A:2026:LPE:O32	2.05	0.57
2:B:23:GLU:OE1	2:B:140:LYS:NZ	2.37	0.57
1:A:388:LEU:O	1:A:392:TYR:HB3	2.04	0.57
7:A:2017:P5S:C35	7:A:2017:P5S:C46	2.83	0.57
1:A:179:GLY:H	1:A:182:THR:HG21	1.69	0.57
1:A:834:LEU:HD21	1:A:835:ARG:HH11	1.69	0.57
10:A:2010:LPE:O32	10:A:2012:LPE:H3N1	2.05	0.56
1:A:1331:PHE:CZ	1:A:1443:PHE:HB3	2.40	0.56
1:A:1375:ASN:ND2	6:A:2008:NAG:C7	2.68	0.56
1:A:318:SER:OG	1:A:319:THR:N	2.39	0.56
1:A:1607:THR:HA	1:A:1610:ARG:HH11	1.71	0.56
1:A:1348:TYR:CE2	1:A:1384:ASN:HB2	2.41	0.56
7:A:2003:P5S:H46	10:A:2025:LPE:H11	1.88	0.56
10:A:2011:LPE:H21	11:A:2013:PCW:H131	1.88	0.56
1:A:1628:LYS:NZ	7:A:2017:P5S:O13	2.33	0.56
2:B:153:ASP:OD1	2:B:154:MET:N	2.40	0.55
1:A:1521:ILE:HD12	1:A:1561:GLU:OE2	2.05	0.55
1:A:1251:LYS:HE2	10:A:2026:LPE:C31	2.36	0.55
1:A:1304:PHE:HE2	10:A:2023:LPE:C19	2.20	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1602:TYR:CE2	1:A:1603:PHE:CD1	2.62	0.55
1:A:223:LYS:O	1:A:227:VAL:HG22	2.06	0.54
2:B:57:TRP:HB2	2:B:71:LEU:HG	1.89	0.54
2:B:93:ASN:HB3	2:B:105:SER:OG	2.07	0.54
2:B:98:THR:C	2:B:100:ASP:H	2.09	0.54
1:A:226:SER:HA	1:A:232:LYS:HE2	1.90	0.54
1:A:1307:MET:HE1	10:A:2023:LPE:C18	2.37	0.54
1:A:1824:ILE:HG21	1:A:1887:LYS:HD3	1.89	0.54
1:A:1457:ILE:HD12	9:A:2007:9Z9:C12	2.36	0.54
1:A:1184:THR:O	1:A:1188:ILE:HG12	2.08	0.53
1:A:737:ILE:HA	1:A:740:ILE:HB	1.89	0.53
1:A:1375:ASN:OD1	6:A:2008:NAG:O5	2.27	0.53
2:B:178:MET:CE	10:B:304:LPE:C2	2.87	0.53
1:A:812:ASP:OD1	1:A:844:LYS:NZ	2.31	0.53
1:A:998:GLY:O	1:A:1002:VAL:HG23	2.08	0.53
1:A:1491:LYS:NZ	11:A:2027:PCW:H72	2.22	0.53
1:A:1737:ILE:O	1:A:1741:VAL:HG12	2.07	0.53
1:A:1580:ILE:O	1:A:1584:VAL:HG23	2.09	0.53
1:A:335:ARG:NH1	1:A:336:ASN:O	2.40	0.53
1:A:1250:TYR:OH	10:A:2025:LPE:H172	2.09	0.53
1:A:1478:GLN:HG2	10:A:2019:LPE:H311	1.90	0.53
1:A:1602:TYR:HD2	1:A:1603:PHE:CE1	1.63	0.53
10:A:2021:LPE:C3N	10:A:2022:LPE:H31	2.39	0.52
1:A:1331:PHE:HZ	1:A:1443:PHE:HB3	1.72	0.52
10:A:2012:LPE:C1N	11:A:2013:PCW:H82	2.39	0.52
7:A:2003:P5S:H42	10:A:2026:LPE:P	2.49	0.52
1:A:778:ILE:HG13	1:A:779:GLY:N	2.24	0.52
1:A:861:ASN:ND2	1:A:969:SER:OG	2.43	0.52
1:A:1567:ILE:HD12	1:A:1568:SER:N	2.25	0.52
1:A:1588:ILE:HG22	1:A:1615:ALA:HB1	1.91	0.52
1:A:1179:TRP:HZ3	10:A:2025:LPE:H321	1.68	0.52
1:A:1298:LEU:HD23	10:A:2014:LPE:C16	2.40	0.52
1:A:1251:LYS:HZ1	10:A:2026:LPE:H3N2	1.75	0.52
1:A:1577:GLY:HA2	1:A:1580:ILE:HD12	1.91	0.52
10:A:2010:LPE:O32	10:A:2012:LPE:C3N	2.58	0.52
1:A:149:PRO:HB2	1:A:151:TRP:CD1	2.44	0.52
1:A:1499:ARG:HD2	1:A:1500:PRO:HD2	1.92	0.52
1:A:804:PHE:O	1:A:810:ILE:HD11	2.10	0.51
1:A:1294:ALA:O	1:A:1657:ILE:HG23	2.10	0.51
8:A:2004:Y01:HAE2	8:A:2004:Y01:CAC	2.41	0.51
1:A:101:ASN:OD1	1:A:101:ASN:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:47:ARG:NH2	3:C:111[B]:SER:OG	2.43	0.51
1:A:729:TYR:HA	1:A:732:LYS:HD2	1.93	0.51
1:A:1838:CYS:SG	1:A:1839:LEU:N	2.84	0.51
1:A:151:TRP:O	1:A:155:VAL:HG23	2.11	0.51
1:A:1377:SER:OG	1:A:1378:GLN:N	2.44	0.51
1:A:165:PHE:O	1:A:169:VAL:HG23	2.11	0.51
1:A:1365:PRO:HD2	1:A:1369:GLU:HG3	1.92	0.51
1:A:324:CYS:SG	1:A:325:PRO:HD2	2.51	0.51
1:A:1330:ILE:CD1	8:A:2006:Y01:HAA3	2.41	0.50
1:A:86:LYS:H	1:A:86:LYS:HZ2	1.59	0.50
1:A:1250:TYR:HD2	7:A:2003:P5S:H45A	1.77	0.50
1:A:1624:VAL:HG21	7:A:2017:P5S:C29	2.33	0.50
1:A:1570:ARG:HG3	1:A:1571:HIS:H	1.75	0.50
1:A:72:SER:OG	1:A:121:LYS:HE3	2.10	0.50
1:A:834:LEU:O	1:A:838:ARG:HG2	2.12	0.50
1:A:1301:LEU:HD11	10:A:2014:LPE:H152	1.92	0.50
1:A:1417:ASP:OD1	1:A:1427:TYR:HA	2.12	0.50
1:A:211:SER:O	1:A:215:THR:HG23	2.12	0.50
1:A:1251:LYS:HZ3	10:A:2026:LPE:H1N3	1.76	0.50
7:A:2003:P5S:H50	10:A:2025:LPE:H122	1.94	0.50
8:A:2006:Y01:HAE2	8:A:2006:Y01:CAC	2.41	0.50
10:A:2012:LPE:C1N	11:A:2013:PCW:C8	2.86	0.50
1:A:167:SER:O	1:A:171:ILE:HG13	2.12	0.49
1:A:811:PHE:CZ	1:A:815:ILE:HD11	2.47	0.49
1:A:995:ILE:O	1:A:999:ILE:HG12	2.12	0.49
2:B:178:MET:HE1	10:B:304:LPE:C2	2.42	0.49
1:A:1235:TYR:HE2	2:B:170:LEU:HD11	1.77	0.49
1:A:1250:TYR:CE2	7:A:2003:P5S:H49	2.47	0.49
1:A:1307:MET:HE1	10:A:2023:LPE:H182	1.93	0.49
1:A:50:SER:N	1:A:79:ASP:OD2	2.43	0.49
2:B:78:LEU:HD12	2:B:92:TRP:HB2	1.94	0.49
10:A:2021:LPE:H3N2	10:A:2022:LPE:H31	1.94	0.49
1:A:1738:PHE:HE2	10:A:2014:LPE:H1N3	1.78	0.49
1:A:221:ALA:O	1:A:224:THR:OG1	2.28	0.49
7:A:2003:P5S:H46	10:A:2025:LPE:C1	2.42	0.48
1:A:1453:ILE:HG21	9:A:2007:9Z9:C76	2.43	0.48
2:B:185:ILE:HG13	2:B:186:ALA:N	2.28	0.48
1:A:1330:ILE:HD12	8:A:2006:Y01:CBA	2.41	0.48
1:A:1179:TRP:CD1	1:A:1183:LYS:HE2	2.48	0.48
8:A:2029:Y01:HAE2	8:A:2029:Y01:HBB	1.60	0.48
1:A:1584:VAL:O	1:A:1588:ILE:HG13	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1491:LYS:C	1:A:1493:PRO:HD3	2.34	0.48
1:A:1549:TRP:O	1:A:1553:VAL:HG23	2.12	0.48
1:A:73:GLU:H	1:A:90:VAL:HG23	1.77	0.48
1:A:812:ASP:O	1:A:816:VAL:HG23	2.13	0.48
1:A:1310:VAL:HG23	1:A:1650:LEU:HD22	1.95	0.48
1:A:1653:LEU:HD13	10:A:2023:LPE:H182	1.95	0.48
8:A:2005:Y01:HAC1	8:A:2005:Y01:HAU2	1.96	0.48
1:A:1185:CYS:SG	1:A:1246:ILE:HG21	2.54	0.48
1:A:1333:LEU:HD22	8:A:2029:Y01:HAA1	1.95	0.48
11:A:2018:PCW:C19	11:A:2027:PCW:H261	2.44	0.48
1:A:1525:ILE:HD13	1:A:1622:ARG:HB2	1.95	0.48
1:A:1752:VAL:O	1:A:1756:ILE:HG12	2.13	0.48
8:A:2004:Y01:HAC1	8:A:2004:Y01:HAU2	1.96	0.48
1:A:276:PHE:CE1	1:A:302:TYR:HB3	2.49	0.48
8:A:2009:Y01:OAG	8:A:2009:Y01:HAV2	2.14	0.48
1:A:364:GLU:OE2	5:A:2001:9SL:C12	2.61	0.47
1:A:1251:LYS:CE	10:A:2026:LPE:C31	2.92	0.47
1:A:392:TYR:CZ	1:A:1637:LEU:HB2	2.50	0.47
2:B:178:MET:HE1	10:B:304:LPE:O1	2.12	0.47
8:A:2006:Y01:HAC1	8:A:2006:Y01:HAU2	1.96	0.47
11:A:2018:PCW:H31	11:A:2027:PCW:H31	1.95	0.47
1:A:228:ILE:HD12	1:A:231:LEU:HD22	1.95	0.47
1:A:90:VAL:HG12	1:A:100:PHE:HE2	1.79	0.47
1:A:1289:LEU:HD13	1:A:1292:LEU:HD12	1.96	0.47
8:A:2006:Y01:HAV2	8:A:2006:Y01:OAG	2.14	0.47
8:A:2009:Y01:HAC1	8:A:2009:Y01:HAU2	1.96	0.47
11:A:2018:PCW:H31	11:A:2027:PCW:C3	2.45	0.47
1:A:324:CYS:SG	1:A:328:TYR:CB	3.03	0.47
1:A:1478:GLN:HG2	10:A:2019:LPE:C31	2.45	0.47
1:A:1260:TRP:CE3	8:A:2004:Y01:CAE	2.98	0.47
1:A:320:ASP:HB3	10:A:2021:LPE:H1N2	1.97	0.47
7:A:2003:P5S:H43A	10:A:2026:LPE:H12	1.96	0.47
1:A:1392:VAL:HB	8:A:2029:Y01:HBG	1.97	0.46
1:A:747:ASP:OD1	1:A:987:ASN:HB2	2.14	0.46
1:A:1186:TYR:HA	1:A:1247:ALA:HB1	1.97	0.46
1:A:1260:TRP:CE3	8:A:2004:Y01:HAE3	2.50	0.46
1:A:1586:VAL:O	1:A:1590:ILE:HG22	2.15	0.46
1:A:817:THR:O	1:A:821:VAL:HG23	2.15	0.46
1:A:822:GLU:HG2	1:A:834:LEU:HD22	1.95	0.46
1:A:1260:TRP:CZ3	8:A:2004:Y01:HAE3	2.49	0.46
1:A:53:LEU:HD13	1:A:78:LEU:HB3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:ASP:OD1	1:A:85:LYS:N	2.48	0.46
1:A:271:LEU:HD12	1:A:343:SER:HA	1.97	0.46
1:A:13:VAL:HG23	1:A:76:GLU:HB2	1.97	0.46
1:A:907:ARG:HD2	1:A:1413:TYR:CD1	2.50	0.46
1:A:972:SER:O	1:A:976:LEU:HG	2.16	0.46
1:A:1251:LYS:NZ	10:A:2026:LPE:H1N3	2.31	0.46
1:A:139:ASN:HD21	1:A:220:ARG:HD2	1.81	0.46
1:A:972:SER:HB2	1:A:975:ASN:ND2	2.31	0.46
1:A:1280:TYR:HB3	1:A:1283:LEU:CD1	2.46	0.46
1:A:125:HIS:CE1	1:A:127:LEU:HD23	2.51	0.46
1:A:128:PHE:CG	1:A:128:PHE:O	2.69	0.46
1:A:148:PRO:HB3	1:A:152:THR:HG21	1.97	0.46
1:A:839:LEU:O	1:A:842:VAL:HG23	2.16	0.46
1:A:1677:ASP:OD1	1:A:1677:ASP:N	2.48	0.46
1:A:332:LYS:NZ	1:A:1537:GLU:OE2	2.41	0.46
1:A:798:MET:HG2	1:A:802:GLU:HB2	1.97	0.46
1:A:1243:LEU:HA	1:A:1243:LEU:HD23	1.77	0.46
1:A:1822:GLN:O	1:A:1826:MET:HG3	2.16	0.46
1:A:259:PHE:HZ	1:A:388:LEU:HD13	1.81	0.45
1:A:820:LEU:HA	1:A:823:LEU:HG	1.98	0.45
1:A:1275:ALA:HB1	1:A:1286:ILE:HD13	1.98	0.45
1:A:1491:LYS:HZ1	11:A:2027:PCW:H72	1.81	0.45
1:A:1709:ASN:O	1:A:1730:CYS:HB2	2.17	0.45
2:B:26:SER:HB2	2:B:39:LEU:H	1.80	0.45
1:A:212:ALA:O	1:A:215:THR:OG1	2.29	0.45
1:A:1179:TRP:CH2	10:A:2025:LPE:H321	2.52	0.45
1:A:1232:ILE:HG13	2:B:163:MET:HG3	1.98	0.45
1:A:1298:LEU:CD2	10:A:2014:LPE:C15	2.93	0.45
8:A:2009:Y01:HAE2	8:A:2009:Y01:CAC	2.41	0.45
1:A:811:PHE:O	1:A:815:ILE:HG13	2.16	0.45
1:A:1748:PHE:O	1:A:1752:VAL:HG23	2.16	0.45
1:A:88:PHE:CE1	1:A:100:PHE:HB2	2.52	0.45
1:A:1754:MET:O	1:A:1758:VAL:HG23	2.17	0.45
1:A:374:ALA:HB1	1:A:378:TYR:CD2	2.51	0.45
1:A:963:PHE:CD1	9:A:2007:9Z9:C77	2.97	0.45
1:A:1330:ILE:HD13	8:A:2029:Y01:HAA3	1.97	0.45
1:A:1177:ILE:O	1:A:1181:ILE:HG12	2.17	0.45
2:B:42:SER:O	2:B:42:SER:OG	2.33	0.45
1:A:367:TYR:OH	1:A:1689:ILE:HG23	2.17	0.45
1:A:15:PHE:HA	1:A:76:GLU:HG3	1.99	0.44
1:A:1457:ILE:HG13	1:A:1458:ASP:N	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1509:PHE:CD2	1:A:1509:PHE:C	2.90	0.44
10:A:2014:LPE:O32	10:A:2015:LPE:H201	2.16	0.44
1:A:168:LEU:O	1:A:172:LEU:HB2	2.17	0.44
1:A:189:ASN:HA	1:A:192:ASP:OD1	2.17	0.44
1:A:1326:LEU:HD23	1:A:1326:LEU:HA	1.79	0.44
2:B:42:SER:OG	2:B:125:ARG:NH2	2.49	0.44
1:A:14:HIS:O	1:A:16:THR:HG23	2.16	0.44
1:A:1375:ASN:O	6:A:2008:NAG:C8	2.59	0.44
2:B:121:CYS:HB3	2:B:140:LYS:HB2	1.99	0.44
1:A:1623:LEU:HD23	1:A:1623:LEU:HA	1.82	0.44
1:A:1697:SER:O	1:A:1700:TRP:HD1	2.00	0.44
1:A:289:ILE:HD13	1:A:289:ILE:HA	1.81	0.44
1:A:338:ASP:HB2	1:A:342:THR:HG22	1.99	0.44
1:A:847:LYS:HD3	1:A:847:LYS:HA	1.72	0.44
11:A:2028:PCW:H322	11:A:2028:PCW:H351	1.81	0.44
8:A:2009:Y01:HAN2	8:A:2009:Y01:HAC3	2.00	0.44
1:A:774:ASN:O	1:A:778:ILE:HG23	2.18	0.44
1:A:1333:LEU:HA	1:A:1336:SER:OG	2.18	0.44
1:A:193:PHE:O	1:A:197:VAL:HG23	2.18	0.44
1:A:1268:VAL:HG13	1:A:1289:LEU:HD12	2.00	0.44
1:A:1792:ASP:N	1:A:1792:ASP:OD2	2.44	0.44
2:B:35:THR:HG22	2:B:109:THR:HA	1.99	0.44
1:A:772:PHE:O	1:A:776:LEU:HG	2.18	0.44
1:A:776:LEU:O	1:A:780:ASN:ND2	2.51	0.44
1:A:988:LEU:C	1:A:988:LEU:HD23	2.38	0.44
1:A:816:VAL:O	1:A:819:SER:OG	2.28	0.43
1:A:986:ASN:O	1:A:989:GLN:N	2.50	0.43
1:A:1216:ILE:HD12	1:A:1216:ILE:HA	1.89	0.43
1:A:1666:PHE:CD1	1:A:1707:ILE:HD13	2.53	0.43
11:A:2013:PCW:H63	11:A:2013:PCW:H41	1.69	0.43
2:B:119:TYR:HB2	2:B:142:ILE:HB	2.00	0.43
1:A:1282:ASP:HA	1:A:1287:LYS:CG	2.43	0.43
1:A:1412:MET:O	1:A:1416:VAL:HG13	2.19	0.43
10:A:2026:LPE:H312	10:A:2026:LPE:H3N2	1.72	0.43
1:A:251:LEU:HB2	1:A:1630:ILE:HD12	1.99	0.43
1:A:1481:TYR:CD2	10:A:2019:LPE:H321	2.53	0.43
1:A:1528:ASN:HD21	1:A:1619:ARG:HH11	1.67	0.43
1:A:1694:ILE:HG21	1:A:1703:LEU:HD12	1.99	0.43
1:A:427:LEU:O	1:A:431:LYS:HG2	2.17	0.43
1:A:830:GLY:O	1:A:833:VAL:HG22	2.18	0.43
1:A:1670:LYS:HB3	1:A:1670:LYS:HE2	1.77	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1759:ILE:HD13	9:A:2007:9Z9:C03	2.48	0.43
1:A:19:SER:O	1:A:23:ILE:HG13	2.17	0.43
1:A:23:ILE:HG12	1:A:26:ARG:NH2	2.33	0.43
1:A:139:ASN:ND2	1:A:220:ARG:HD2	2.33	0.43
1:A:244:LYS:HE3	1:A:244:LYS:HB3	1.84	0.43
1:A:1248:TYR:O	1:A:1252:THR:OG1	2.36	0.43
10:A:2019:LPE:H311	10:A:2019:LPE:H2N3	1.61	0.43
1:A:333:ILE:HD12	1:A:333:ILE:HA	1.78	0.43
1:A:1179:TRP:HZ3	10:A:2025:LPE:O31	2.01	0.43
1:A:1517:PHE:O	1:A:1521:ILE:HG12	2.17	0.43
1:A:1707:ILE:HD12	1:A:1740:PHE:HE2	1.84	0.43
1:A:215:THR:O	1:A:218:VAL:HG12	2.19	0.43
10:A:2021:LPE:C1N	10:A:2022:LPE:O32	2.55	0.43
1:A:736:CYS:O	1:A:740:ILE:HG13	2.19	0.43
1:A:1798:GLU:HB3	1:A:1801:LYS:HE2	2.00	0.43
1:A:1824:ILE:HG22	1:A:1884:LEU:HD12	2.01	0.43
8:A:2005:Y01:HAE2	8:A:2005:Y01:CAC	2.41	0.43
1:A:23:ILE:HG21	1:A:86:LYS:HA	2.01	0.42
1:A:918:LEU:HD23	1:A:918:LEU:HA	1.85	0.42
2:B:58:THR:O	2:B:120:GLU:N	2.46	0.42
2:B:178:MET:HE2	2:B:178:MET:HB3	1.83	0.42
1:A:1250:TYR:CE2	7:A:2003:P5S:C49	3.02	0.42
1:A:1250:TYR:HD1	1:A:1254:PHE:HE2	1.67	0.42
2:B:58:THR:CG2	2:B:67:PHE:HB3	2.49	0.42
1:A:153:LYS:HE2	1:A:153:LYS:HB3	1.86	0.42
1:A:389:GLY:O	1:A:393:LEU:HB2	2.19	0.42
1:A:1250:TYR:HE2	10:A:2025:LPE:H152	1.84	0.42
2:B:172:ILE:HD13	2:B:172:ILE:HA	1.86	0.42
1:A:1602:TYR:CD2	1:A:1603:PHE:CZ	2.86	0.42
1:A:57:LYS:HE3	1:A:57:LYS:HB3	1.83	0.42
1:A:396:LEU:HD23	1:A:396:LEU:HA	1.75	0.42
8:A:2006:Y01:HAC3	8:A:2006:Y01:HAN2	2.00	0.42
1:A:14:HIS:HD1	1:A:73:GLU:CD	2.22	0.42
1:A:952:MET:O	1:A:956:ASN:ND2	2.31	0.42
1:A:1221:THR:O	1:A:1225:ILE:HG12	2.19	0.42
1:A:1498:PRO:HG2	1:A:1572:TYR:CZ	2.55	0.42
2:B:59:PHE:HE2	2:B:85:ARG:HH21	1.68	0.42
2:B:119:TYR:O	2:B:141:LYS:HA	2.20	0.42
1:A:743:ASP:N	1:A:744:PRO:HD2	2.35	0.42
1:A:819:SER:O	1:A:823:LEU:HG	2.17	0.42
1:A:1798:GLU:HG2	1:A:1800:SER:H	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:A:2012:LPE:H1N3	11:A:2013:PCW:O4P	2.20	0.42
1:A:1284:GLY:HA3	1:A:1285:PRO:HD3	1.92	0.41
1:A:1843:PHE:CZ	1:A:1860:ARG:HB2	2.55	0.41
1:A:1856:MET:SD	1:A:1859:LEU:HD21	2.60	0.41
7:A:2003:P5S:H56A	7:A:2003:P5S:H53	1.86	0.41
8:A:2029:Y01:HAP1	8:A:2029:Y01:HAO2	1.36	0.41
1:A:11:SER:OG	1:A:78:LEU:HD11	2.20	0.41
1:A:1336:SER:O	1:A:1340:VAL:HG23	2.20	0.41
1:A:1388:ASN:OD1	1:A:1394:LEU:HD13	2.20	0.41
1:A:1741:VAL:HG13	10:A:2011:LPE:H171	2.02	0.41
2:B:149:LYS:HD2	2:B:149:LYS:HA	1.76	0.41
1:A:171:ILE:HG12	1:A:183:PHE:CD1	2.55	0.41
1:A:799:ASP:HB3	1:A:802:GLU:HG2	2.02	0.41
1:A:1274:VAL:HA	1:A:1277:THR:HG22	2.03	0.41
1:A:1706:PRO:HA	1:A:1709:ASN:HD21	1.85	0.41
3:C:40:VAL:HG11	3:C:46:ALA:HB2	2.03	0.41
1:A:996:LYS:HA	1:A:999:ILE:HG12	2.02	0.41
1:A:1280:TYR:HB3	1:A:1283:LEU:HD12	2.02	0.41
1:A:1543:MET:HA	1:A:1546:VAL:HG22	2.02	0.41
2:B:183:LYS:HD2	2:B:183:LYS:HA	1.87	0.41
1:A:1587:ILE:O	1:A:1591:VAL:HG12	2.21	0.41
1:A:1597:ASP:HA	1:A:1600:GLU:OE1	2.20	0.41
11:A:2027:PCW:H42	11:A:2027:PCW:H63	1.59	0.41
2:B:112:THR:HG23	2:B:114:ASN:H	1.83	0.41
1:A:29:GLU:HB3	1:A:33:LYS:NZ	2.35	0.41
1:A:1301:LEU:HD23	1:A:1301:LEU:HA	1.89	0.41
1:A:49:PRO:HB3	1:A:82:TYR:CE2	2.55	0.41
1:A:1186:TYR:CA	1:A:1247:ALA:HB1	2.51	0.41
1:A:1532:MET:HE2	1:A:1616:ARG:HG3	2.03	0.41
1:A:1740:PHE:O	1:A:1744:ILE:HG23	2.20	0.41
8:A:2006:Y01:HAS2	8:A:2006:Y01:HAE1	1.81	0.41
2:B:58:THR:HG23	2:B:68:VAL:C	2.41	0.41
1:A:67:PRO:HA	1:A:68:PRO:HD3	1.92	0.41
1:A:748:LEU:HA	1:A:751:THR:HG22	2.02	0.41
1:A:1398:SER:HB3	1:A:1411:ILE:HD13	2.02	0.41
1:A:1460:PHE:HD2	1:A:1756:ILE:HG21	1.84	0.41
1:A:1820:LYS:O	1:A:1824:ILE:HG12	2.20	0.41
3:C:67:TRP:CZ2	3:C:127:CYS:HB3	2.55	0.41
1:A:104:PRO:HA	1:A:109:LEU:O	2.20	0.41
1:A:224:THR:HA	1:A:227:VAL:CG2	2.51	0.41
1:A:354:LEU:HD12	1:A:354:LEU:HA	1.79	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:998:GLY:O	1:A:1001:TYR:HB3	2.21	0.41
1:A:1360:PRO:HD2	1:A:1363:GLN:HE21	1.86	0.41
1:A:1487:LYS:HE3	1:A:1487:LYS:HB2	1.82	0.41
1:A:1491:LYS:O	1:A:1493:PRO:HD3	2.20	0.41
7:A:2017:P5S:O18	11:A:2018:PCW:O2P	2.39	0.41
1:A:879:ILE:O	1:A:883:VAL:HG12	2.20	0.41
1:A:1527:LEU:O	1:A:1531:THR:HG23	2.21	0.41
1:A:1588:ILE:HG12	11:A:2028:PCW:H252	2.01	0.41
11:A:2027:PCW:H341	11:A:2027:PCW:H371	1.56	0.41
2:B:59:PHE:HB2	2:B:119:TYR:CD1	2.56	0.41
1:A:315:CYS:O	1:A:373:ALA:HA	2.21	0.40
1:A:429:ARG:HA	1:A:432:LYS:HE2	2.02	0.40
1:A:730:TRP:HA	1:A:733:PHE:CE2	2.56	0.40
1:A:924:LEU:HA	1:A:924:LEU:HD23	1.76	0.40
1:A:1182:ARG:HG2	1:A:1246:ILE:O	2.21	0.40
1:A:1478:GLN:HE22	1:A:1646:ASN:HD21	1.68	0.40
1:A:818:LEU:HG	1:A:837:PHE:CD2	2.55	0.40
1:A:1309:VAL:HA	1:A:1312:ASN:ND2	2.37	0.40
1:A:1701:ASP:N	1:A:1701:ASP:OD1	2.54	0.40
1:A:1776:GLU:O	1:A:1780:GLU:HG2	2.21	0.40
1:A:1819:ASN:O	1:A:1823:LEU:HG	2.21	0.40
10:A:2012:LPE:C1N	11:A:2013:PCW:O4P	2.69	0.40
2:B:75:ASN:O	2:B:77:VAL:N	2.54	0.40
1:A:29:GLU:O	1:A:33:LYS:HG3	2.22	0.40
1:A:171:ILE:HG12	1:A:183:PHE:CG	2.56	0.40
1:A:1545:GLU:HG2	1:A:1549:TRP:CD1	2.57	0.40
10:A:2021:LPE:H2N3	10:A:2021:LPE:H311	1.78	0.40
1:A:187:PRO:O	1:A:190:TRP:HB2	2.21	0.40
1:A:235:VAL:O	1:A:239:ILE:HG12	2.21	0.40
1:A:337:PRO:HG2	1:A:342:THR:HG23	2.04	0.40
1:A:1240:GLU:O	1:A:1244:LYS:HG3	2.22	0.40
11:A:2016:PCW:H42	11:A:2016:PCW:H83	1.62	0.40
2:B:62:LYS:HE2	2:B:62:LYS:HB3	1.89	0.40
2:B:149:LYS:HZ3	2:B:150:ALA:HB3	1.87	0.40
1:A:104:PRO:HB2	1:A:107:TYR:HA	2.03	0.40
1:A:1305:GLU:H	1:A:1305:GLU:CD	2.23	0.40
1:A:1649:LEU:HA	1:A:1649:LEU:HD23	1.79	0.40
1:A:1803:SER:O	1:A:1819:ASN:ND2	2.53	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	1409/2031 (69%)	1337 (95%)	71 (5%)	1 (0%)	48	81
2	B	171/218 (78%)	156 (91%)	14 (8%)	1 (1%)	22	57
3	C	120/215 (56%)	116 (97%)	4 (3%)	0	100	100
All	All	1700/2464 (69%)	1609 (95%)	89 (5%)	2 (0%)	50	81

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1492	LYS
2	B	76	GLU

### 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	1266/1809 (70%)	1262 (100%)	4 (0%)	91	96
2	B	157/190 (83%)	154 (98%)	3 (2%)	52	79
3	C	114/193 (59%)	110 (96%)	4 (4%)	31	65
All	All	1537/2192 (70%)	1526 (99%)	11 (1%)	80	91

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

Mol	Chain	Res	Type
1	A	151	TRP

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Mol	Chain	Res	Type
1	A	409	ASN
1	A	412	ASN
1	A	1445	SER
2	B	39	LEU
2	B	91	VAL
2	B	93	ASN
3	C	55	CYS
3	C	71	GLU
3	C	130	MET
3	C	147	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	139	ASN
1	A	278	ASN
1	A	323	GLN
1	A	365	ASN
1	A	408	GLN
1	A	409	ASN
1	A	412	ASN
1	A	425	GLN
1	A	757	ASN
1	A	780	ASN
1	A	809	ASN
1	A	861	ASN
1	A	909	HIS
1	A	911	ASN
1	A	941	GLN
1	A	961	ASN
1	A	975	ASN
1	A	987	ASN
1	A	1363	GLN
1	A	1378	GLN
1	A	1478	GLN
1	A	1494	GLN
1	A	1502	ASN
1	A	1528	ASN
1	A	1721	HIS
1	A	1871	ASN
2	B	102	GLN
2	B	115	HIS

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Mol	Chain	Res	Type
3	C	53	ASN
3	C	82	GLN
3	C	118	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](#)

6 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
4	NAG	D	1	4,1	14,14,15	0.25	0	17,19,21	0.46	0
4	NAG	D	2	4	14,14,15	0.24	0	17,19,21	0.38	0
4	NAG	E	1	4,1	14,14,15	0.18	0	17,19,21	0.46	0
4	NAG	E	2	4	14,14,15	0.45	0	17,19,21	0.66	0
4	NAG	F	1	2,4	14,14,15	0.57	0	17,19,21	1.19	2 (11%)
4	NAG	F	2	4	14,14,15	0.65	0	17,19,21	1.20	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	D	1	4,1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	D	2	4	-	0/6/23/26	0/1/1/1
4	NAG	E	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	E	2	4	-	2/6/23/26	0/1/1/1
4	NAG	F	1	2,4	-	2/6/23/26	0/1/1/1
4	NAG	F	2	4	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	1	NAG	C1-O5-C5	2.72	115.87	112.19
4	F	1	NAG	C3-C4-C5	-2.65	105.52	110.24
4	F	2	NAG	C4-C3-C2	-2.42	107.47	111.02

There are no chirality outliers.

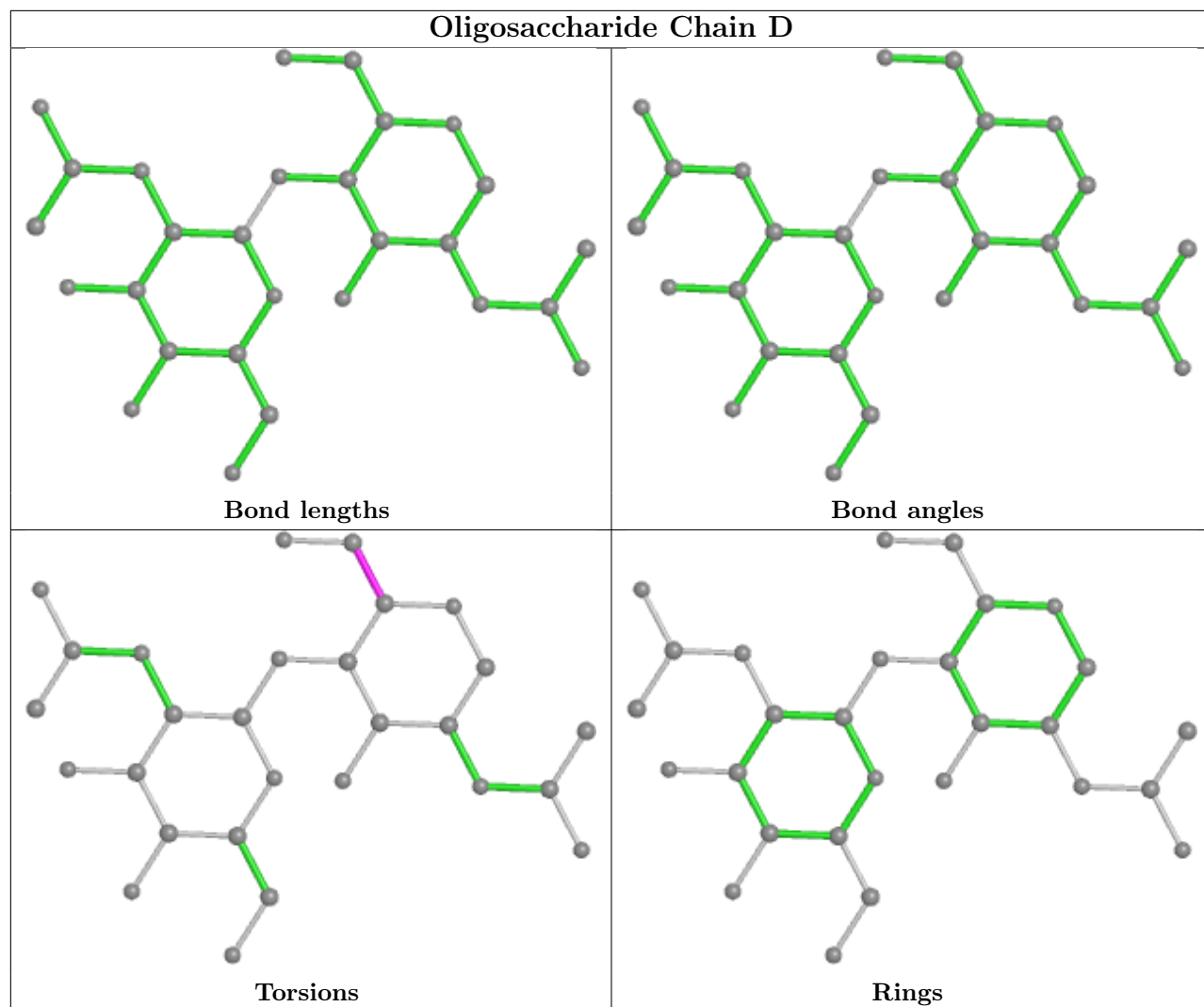
All (10) torsion outliers are listed below:

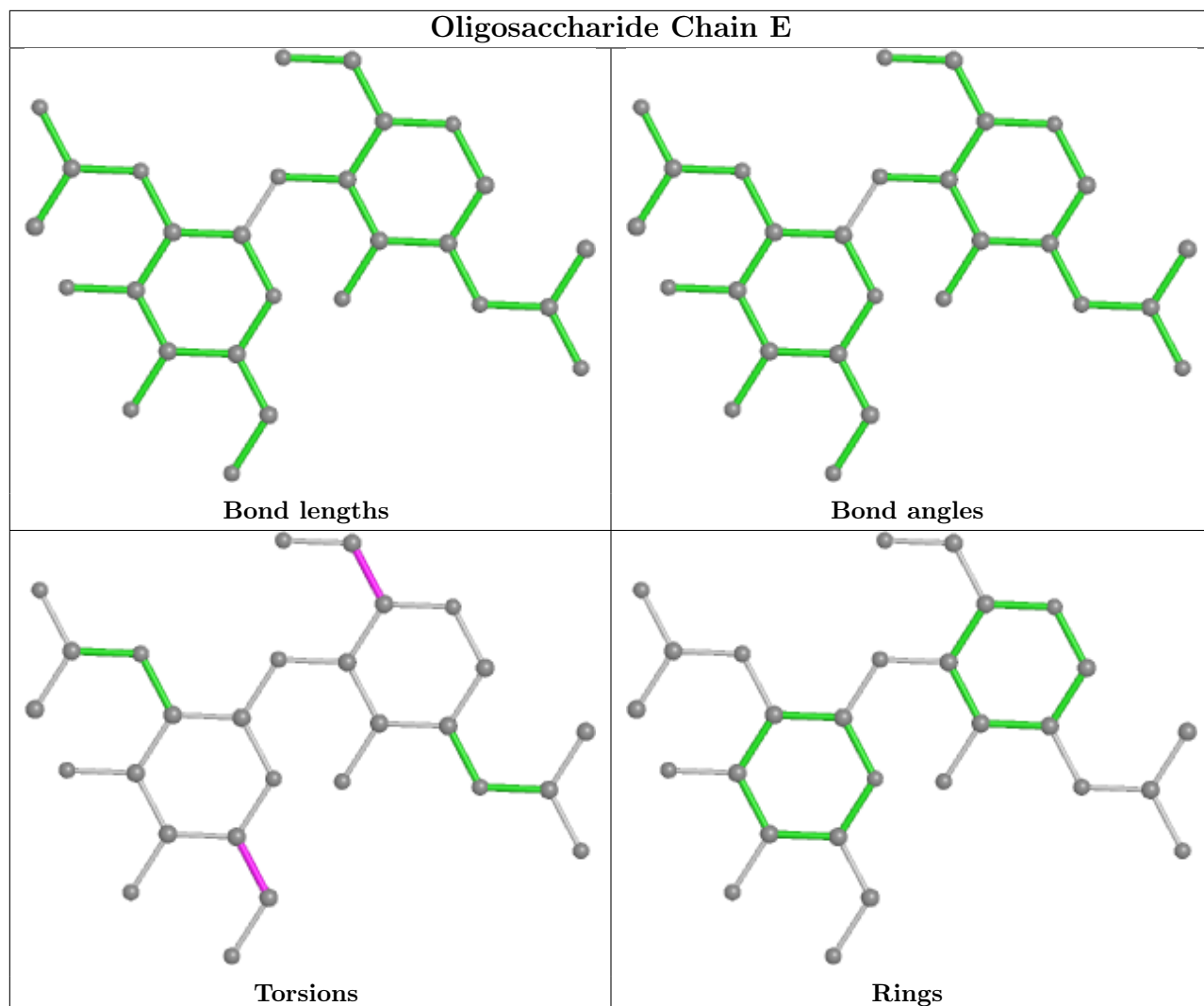
Mol	Chain	Res	Type	Atoms
4	E	1	NAG	O5-C5-C6-O6
4	F	2	NAG	C4-C5-C6-O6
4	F	2	NAG	O5-C5-C6-O6
4	E	1	NAG	C4-C5-C6-O6
4	E	2	NAG	C4-C5-C6-O6
4	D	1	NAG	C4-C5-C6-O6
4	F	1	NAG	C4-C5-C6-O6
4	D	1	NAG	O5-C5-C6-O6
4	E	2	NAG	O5-C5-C6-O6
4	F	1	NAG	O5-C5-C6-O6

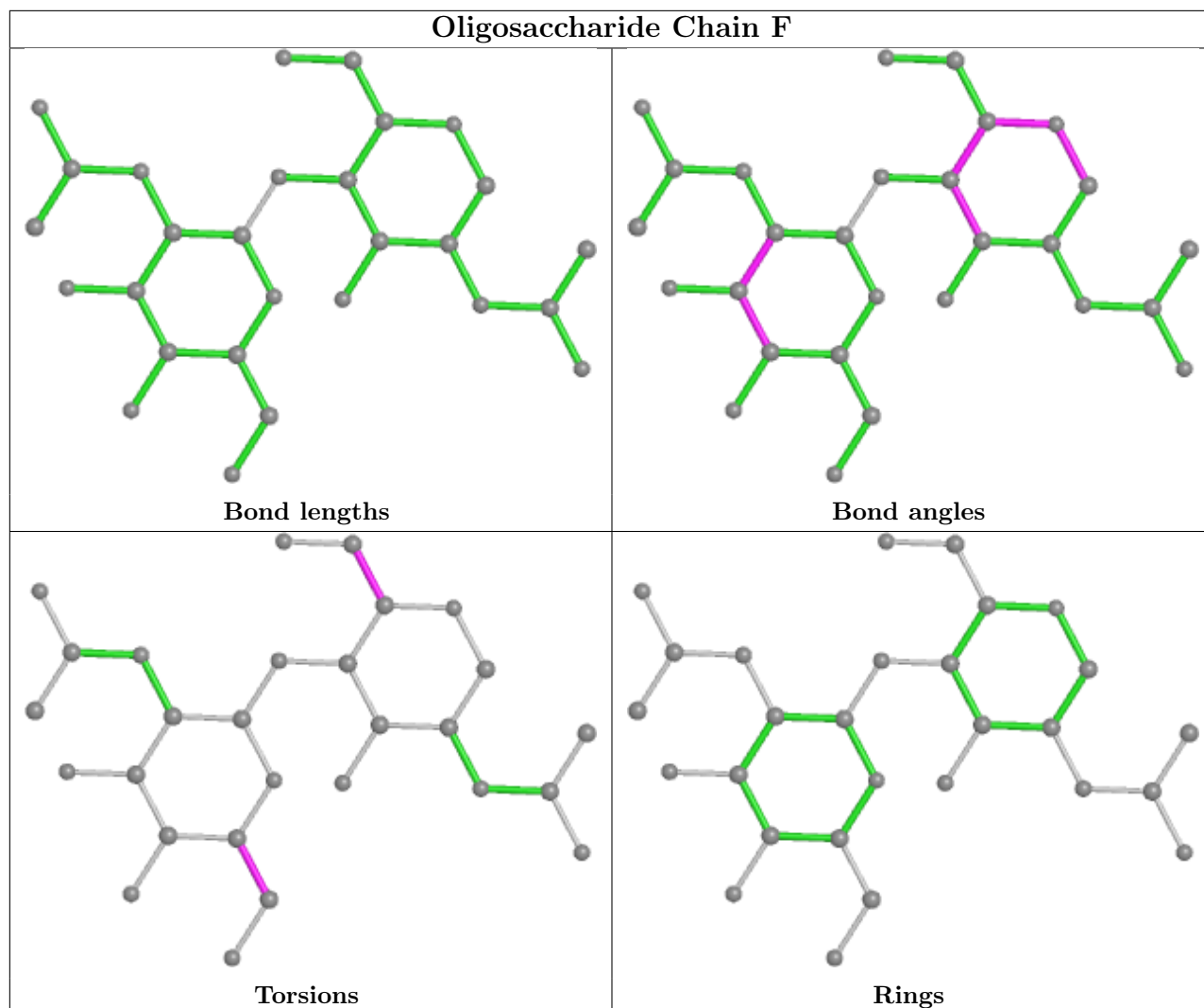
There are no ring outliers.

No monomer is involved in short contacts.

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







## 5.6 Ligand geometry [i](#)

33 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z  > 2$	Counts	RMSZ	# $ Z  > 2$
5	9SL	A	2001	-	17,23,23	3.61	8 (47%)	13,37,37	3.02	6 (46%)
8	Y01	A	2004	-	38,38,38	0.66	1 (2%)	57,57,57	1.79	11 (19%)
10	LPE	A	2015	-	27,27,33	0.54	0	31,33,39	0.61	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
11	PCW	A	2027	-	43,43,53	1.03	2 (4%)	49,51,61	0.94	2 (4%)
11	PCW	A	2016	-	46,46,53	0.99	3 (6%)	52,54,61	1.18	4 (7%)
10	LPE	A	2022	-	24,24,33	0.53	0	28,30,39	0.63	0
10	LPE	A	2025	-	24,24,33	0.54	0	28,30,39	0.50	0
6	NAG	B	302	2	14,14,15	0.18	0	17,19,21	0.41	0
9	9Z9	A	2007	-	44,44,44	0.70	1 (2%)	66,68,68	1.45	12 (18%)
6	NAG	B	301	2	14,14,15	0.64	0	17,19,21	0.98	0
10	LPE	A	2010	-	24,24,33	0.52	0	28,30,39	0.60	0
11	PCW	A	2028	-	43,43,53	0.99	2 (4%)	49,51,61	2.90	6 (12%)
11	PCW	A	2013	-	52,52,53	0.93	2 (3%)	58,60,61	0.97	2 (3%)
6	NAG	A	2002	1	14,14,15	0.34	0	17,19,21	0.44	0
8	Y01	A	2029	-	38,38,38	1.62	7 (18%)	57,57,57	1.63	10 (17%)
10	LPE	A	2019	-	24,24,33	0.60	0	28,30,39	0.89	1 (3%)
10	LPE	A	2021	-	24,24,33	0.54	0	28,30,39	0.68	1 (3%)
10	LPE	A	2024	-	24,24,33	0.52	0	28,30,39	0.62	0
7	P5S	A	2003	-	33,34,53	0.76	1 (3%)	36,40,60	1.80	5 (13%)
10	LPE	A	2011	-	24,24,33	0.33	0	25,27,39	0.60	0
7	P5S	A	2017	-	40,40,53	1.14	3 (7%)	43,45,60	1.37	3 (6%)
8	Y01	A	2005	-	38,38,38	0.66	1 (2%)	57,57,57	1.79	11 (19%)
11	PCW	A	2018	-	43,43,53	1.01	2 (4%)	49,51,61	1.12	5 (10%)
6	NAG	B	303	2	14,14,15	0.25	0	17,19,21	0.42	0
8	Y01	A	2009	-	38,38,38	1.15	4 (10%)	57,57,57	1.74	10 (17%)
10	LPE	A	2020	-	24,24,33	0.85	0	28,30,39	0.92	1 (3%)
6	NAG	A	2008	1	14,14,15	0.30	0	17,19,21	1.00	1 (5%)
10	LPE	A	2012	-	19,19,33	0.62	0	23,25,39	0.51	0
10	LPE	A	2026	-	16,16,33	0.68	0	20,22,39	0.67	0
10	LPE	B	304	-	16,16,33	0.67	0	20,22,39	0.60	0
8	Y01	A	2006	-	38,38,38	1.15	4 (10%)	57,57,57	1.74	12 (21%)
10	LPE	A	2023	-	24,24,33	0.53	0	28,30,39	0.54	0
10	LPE	A	2014	-	21,21,33	0.68	0	25,27,39	1.03	2 (8%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	9SL	A	2001	-	-	4/5/53/53	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	Y01	A	2004	-	-	0/19/77/77	0/4/4/4
10	LPE	A	2015	-	-	10/28/28/34	-
11	PCW	A	2027	-	-	16/47/47/57	-
11	PCW	A	2016	-	-	13/50/50/57	-
10	LPE	A	2022	-	-	3/25/25/34	-
10	LPE	A	2025	-	-	10/25/25/34	-
6	NAG	B	302	2	-	0/6/23/26	0/1/1/1
9	9Z9	A	2007	-	-	0/12/100/100	0/6/6/6
6	NAG	B	301	2	-	0/6/23/26	0/1/1/1
10	LPE	A	2010	-	-	10/25/25/34	-
11	PCW	A	2028	-	-	12/47/47/57	-
11	PCW	A	2013	-	-	16/56/56/57	-
6	NAG	A	2002	1	-	2/6/23/26	0/1/1/1
8	Y01	A	2029	-	-	7/19/77/77	0/4/4/4
10	LPE	A	2019	-	-	7/25/25/34	-
10	LPE	A	2021	-	-	3/25/25/34	-
10	LPE	A	2024	-	-	6/25/25/34	-
7	P5S	A	2003	-	-	28/39/39/59	-
10	LPE	A	2011	-	-	8/25/25/34	-
7	P5S	A	2017	-	-	8/44/44/59	-
8	Y01	A	2005	-	-	0/19/77/77	0/4/4/4
11	PCW	A	2018	-	-	12/47/47/57	-
6	NAG	B	303	2	-	0/6/23/26	0/1/1/1
8	Y01	A	2009	-	-	4/19/77/77	0/4/4/4
10	LPE	A	2020	-	-	12/25/25/34	-
6	NAG	A	2008	1	-	2/6/23/26	0/1/1/1
10	LPE	A	2012	-	-	10/20/20/34	-
10	LPE	A	2026	-	-	7/17/17/34	-
10	LPE	B	304	-	-	9/17/17/34	-
8	Y01	A	2006	-	-	4/19/77/77	0/4/4/4
10	LPE	A	2023	-	-	8/25/25/34	-
10	LPE	A	2014	-	-	15/22/22/34	-

All (41) bond length outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	2001	9SL	C12-N13	8.85	1.49	1.35
5	A	2001	9SL	C07-N08	6.10	1.45	1.34
5	A	2001	9SL	C02-N21	5.95	1.44	1.33
5	A	2001	9SL	C12-N15	4.57	1.45	1.34
7	A	2017	P5S	O37-C38	4.42	1.46	1.34
11	A	2027	PCW	O3-C11	4.41	1.46	1.33
8	A	2029	Y01	CBB-CBE	-4.36	1.46	1.54
11	A	2028	PCW	O3-C11	4.28	1.45	1.33
11	A	2013	PCW	O2-C31	4.17	1.46	1.34
11	A	2013	PCW	O3-C11	4.15	1.45	1.33
8	A	2029	Y01	CAR-CBC	-4.15	1.40	1.51
11	A	2028	PCW	O2-C31	4.10	1.45	1.34
11	A	2018	PCW	O2-C31	3.96	1.45	1.34
7	A	2017	P5S	O19-C17	3.94	1.44	1.33
11	A	2027	PCW	O2-C31	3.88	1.45	1.34
11	A	2018	PCW	O3-C11	3.87	1.44	1.33
11	A	2016	PCW	O3-C11	3.85	1.44	1.33
8	A	2029	Y01	OAW-CAY	3.70	1.44	1.34
11	A	2016	PCW	O2-C31	3.67	1.44	1.34
5	A	2001	9SL	C05-C14	3.64	1.60	1.52
8	A	2006	Y01	OAW-CAY	3.62	1.44	1.34
8	A	2009	Y01	OAW-CAY	3.59	1.44	1.34
5	A	2001	9SL	O01-C02	-3.45	1.17	1.21
7	A	2003	P5S	O37-C38	3.41	1.43	1.34
7	A	2017	P5S	C28-C27	-3.35	1.32	1.51
5	A	2001	9SL	O03-C02	2.94	1.39	1.35
8	A	2029	Y01	CAV-CBC	2.91	1.59	1.52
5	A	2001	9SL	C05-N06	-2.44	1.43	1.47
8	A	2009	Y01	CAM-CAY	2.39	1.57	1.50
8	A	2006	Y01	CAM-CAY	2.39	1.57	1.50
8	A	2029	Y01	CAM-CAY	2.38	1.57	1.50
8	A	2006	Y01	CAL-CAX	2.23	1.55	1.50
8	A	2009	Y01	CAL-CAX	2.22	1.55	1.50
8	A	2004	Y01	CBH-CBF	-2.22	1.52	1.56
8	A	2029	Y01	CBH-CBF	-2.21	1.52	1.56
8	A	2009	Y01	CBH-CBF	-2.19	1.52	1.56
9	A	2007	9Z9	C11-C08	-2.17	1.52	1.56
8	A	2029	Y01	CAL-CAX	2.16	1.55	1.50
11	A	2016	PCW	C6-N	-2.15	1.43	1.50
8	A	2006	Y01	CBH-CBF	-2.12	1.52	1.56
8	A	2005	Y01	CBH-CBF	-2.12	1.52	1.56

All (105) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	A	2028	PCW	C8-N-C6	-12.10	77.88	108.97
11	A	2028	PCW	C8-N-C7	-12.03	78.04	108.97
5	A	2001	9SL	O03-C02-N21	7.82	120.78	111.08
11	A	2028	PCW	C8-N-C5	-7.81	77.97	109.92
7	A	2003	P5S	OG-CB-CA	7.06	114.22	108.06
8	A	2006	Y01	CBI-CBE-CBB	-5.93	110.19	119.49
8	A	2004	Y01	CBI-CBE-CBB	-5.92	110.22	119.49
8	A	2009	Y01	CBI-CBE-CBB	-5.92	110.22	119.49
8	A	2005	Y01	CBI-CBE-CBB	-5.90	110.24	119.49
7	A	2017	P5S	O37-C38-C39	5.47	123.29	111.50
11	A	2016	PCW	O2-C31-C32	4.84	121.93	111.50
8	A	2005	Y01	CBI-CBG-CBD	-4.83	107.22	114.38
8	A	2004	Y01	CBI-CBG-CBD	-4.78	107.30	114.38
8	A	2029	Y01	CBI-CBG-CBD	-4.75	107.35	114.38
8	A	2009	Y01	CBI-CBG-CBD	-4.73	107.38	114.38
8	A	2006	Y01	CBI-CBG-CBD	-4.73	107.38	114.38
9	A	2007	9Z9	C02-C06-C07	-4.38	107.90	114.38
5	A	2001	9SL	O01-C02-N21	-4.26	118.48	125.51
8	A	2029	Y01	CBI-CBE-CBB	-4.18	112.94	119.49
7	A	2003	P5S	OXT-C-O	-4.09	114.81	124.09
8	A	2005	Y01	OAW-CAY-CAM	3.98	120.08	111.50
8	A	2004	Y01	OAW-CAY-CAM	3.98	120.08	111.50
10	A	2020	LPE	C3N-N-C2N	3.93	119.07	108.97
11	A	2013	PCW	O2-C31-C32	3.88	119.86	111.50
8	A	2009	Y01	OAW-CAY-CAM	3.74	119.56	111.50
8	A	2006	Y01	OAW-CAY-CAM	3.74	119.55	111.50
11	A	2028	PCW	O2-C31-C32	3.70	119.47	111.50
7	A	2003	P5S	O37-C38-C39	3.67	119.41	111.50
8	A	2029	Y01	OAW-CAY-CAM	3.59	119.24	111.50
9	A	2007	9Z9	C21-C22-C23	-3.50	109.45	113.88
8	A	2009	Y01	CAS-CAU-CBI	-3.35	107.04	112.78
8	A	2006	Y01	CAS-CAU-CBI	-3.32	107.08	112.78
8	A	2005	Y01	CAS-CAU-CBI	-3.32	107.08	112.78
8	A	2004	Y01	CAS-CAU-CBI	-3.32	107.09	112.78
8	A	2029	Y01	CAS-CAU-CBI	-3.32	107.09	112.78
9	A	2007	9Z9	C09-C10-C02	-3.30	107.12	112.78
5	A	2001	9SL	N09-C07-N06	-3.29	120.83	125.42
11	A	2027	PCW	O2-C31-C32	3.26	118.52	111.50
9	A	2007	9Z9	C02-C03-C74	-3.25	109.52	120.56
5	A	2001	9SL	N13-C12-N11	-3.08	107.66	115.45
11	A	2016	PCW	O3-C11-C12	3.05	121.49	111.91
8	A	2004	Y01	CAD-CBH-CBF	-2.99	108.12	111.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	2005	Y01	CAD-CBH-CBF	-2.95	108.17	111.68
8	A	2009	Y01	CAD-CBH-CBF	-2.94	108.18	111.68
8	A	2006	Y01	CAD-CBH-CBF	-2.94	108.18	111.68
7	A	2003	P5S	OXT-C-CA	2.91	123.31	113.38
11	A	2018	PCW	C3-C2-C1	-2.90	104.92	111.79
6	A	2008	NAG	C4-C3-C2	-2.90	106.77	111.02
8	A	2029	Y01	CAD-CBH-CBF	-2.89	108.23	111.68
10	A	2014	LPE	C3-C2-C1	-2.85	104.41	112.79
9	A	2007	9Z9	C12-C11-C08	-2.84	108.29	111.68
9	A	2007	9Z9	C76-C73-C74	-2.81	109.92	115.69
11	A	2018	PCW	O2-C31-C32	2.78	117.50	111.50
11	A	2028	PCW	O3-C11-C12	2.76	120.57	111.91
8	A	2029	Y01	CBG-CBI-CBE	2.71	103.28	100.07
8	A	2005	Y01	CBG-CBI-CBE	2.70	103.27	100.07
8	A	2009	Y01	CBG-CBI-CBE	2.69	103.26	100.07
8	A	2004	Y01	CBG-CBI-CBE	2.69	103.26	100.07
8	A	2006	Y01	CBG-CBI-CBE	2.68	103.25	100.07
11	A	2028	PCW	C7-N-C6	2.67	115.83	108.97
10	A	2014	LPE	C31-C32-N	-2.56	107.24	115.78
8	A	2005	Y01	CAS-CBF-CBH	-2.53	109.75	113.08
11	A	2018	PCW	O3-C11-C12	2.52	119.81	111.91
9	A	2007	9Z9	C75-C74-C73	-2.51	110.33	114.92
9	A	2007	9Z9	C09-C08-C11	-2.50	109.78	113.08
8	A	2029	Y01	CAS-CBF-CBH	-2.49	109.80	113.08
8	A	2006	Y01	CAS-CBF-CBH	-2.47	109.82	113.08
5	A	2001	9SL	O03-C02-O01	-2.46	120.74	123.07
8	A	2009	Y01	CBD-CAK-CAI	-2.46	109.19	112.73
8	A	2004	Y01	CAS-CBF-CBH	-2.46	109.84	113.08
8	A	2004	Y01	CBD-CAK-CAI	-2.46	109.20	112.73
8	A	2009	Y01	CAS-CBF-CBH	-2.46	109.84	113.08
11	A	2013	PCW	O3-C11-C12	2.43	119.54	111.91
8	A	2005	Y01	CBD-CAK-CAI	-2.43	109.24	112.73
9	A	2007	9Z9	C07-C15-C14	-2.42	109.25	112.73
8	A	2006	Y01	CBD-CAK-CAI	-2.42	109.26	112.73
8	A	2029	Y01	CBD-CAK-CAI	-2.41	109.26	112.73
7	A	2017	P5S	C41-C40-C39	-2.36	104.70	113.19
8	A	2004	Y01	CBF-CBH-CAZ	2.35	113.33	109.65
8	A	2029	Y01	CBF-CBH-CAZ	2.35	113.33	109.65
8	A	2009	Y01	CBF-CBH-CAZ	2.34	113.31	109.65
8	A	2006	Y01	CBF-CBH-CAZ	2.32	113.29	109.65
5	A	2001	9SL	O03-C04-C05	2.31	112.95	108.40
11	A	2027	PCW	O3-C11-C12	2.31	119.14	111.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	A	2003	P5S	C2-O37-C38	-2.30	112.14	117.79
8	A	2005	Y01	CAC-CBB-CBE	-2.27	109.45	112.92
8	A	2005	Y01	CBF-CBH-CAZ	2.27	113.20	109.65
9	A	2007	9Z9	C08-C11-C13	2.25	113.18	109.65
8	A	2006	Y01	CAC-CBB-CBE	-2.23	109.51	112.92
8	A	2009	Y01	CAC-CBB-CBE	-2.22	109.53	112.92
8	A	2004	Y01	CAC-CBB-CBE	-2.21	109.54	112.92
10	A	2021	LPE	C31-C32-N	-2.17	108.53	115.78
11	A	2018	PCW	C34-C33-C32	-2.16	105.44	113.19
10	A	2019	LPE	C31-C32-N	-2.13	108.68	115.78
11	A	2016	PCW	O2-C31-O31	-2.12	118.58	123.70
7	A	2017	P5S	O15-P12-O13	2.11	122.65	112.24
9	A	2007	9Z9	O80-C79-C78	-2.07	109.20	112.18
11	A	2018	PCW	O3-C3-C2	2.06	114.44	108.43
8	A	2004	Y01	CAQ-CBG-CBD	-2.04	115.72	119.08
8	A	2005	Y01	CAQ-CBG-CBD	-2.04	115.73	119.08
11	A	2016	PCW	O3-C11-O11	-2.04	118.45	123.59
8	A	2006	Y01	CAQ-CBG-CBD	-2.03	115.73	119.08
9	A	2007	9Z9	C17-C16-C13	-2.03	108.37	111.52
8	A	2006	Y01	CBC-CAV-CAZ	-2.02	108.37	111.52
8	A	2029	Y01	CAQ-CBG-CBD	-2.02	115.76	119.08

There are no chirality outliers.

All (246) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2001	9SL	O01-C02-O03-C04
5	A	2001	9SL	N21-C02-O03-C04
5	A	2001	9SL	O03-C04-C05-N06
5	A	2001	9SL	O03-C04-C05-C14
7	A	2003	P5S	C-CA-CB-OG
7	A	2003	P5S	N-CA-CB-OG
7	A	2003	P5S	CB-OG-P12-O13
7	A	2003	P5S	C3-O16-P12-OG
7	A	2003	P5S	C3-O16-P12-O13
7	A	2003	P5S	C3-O16-P12-O15
7	A	2017	P5S	CB-OG-P12-O15
7	A	2017	P5S	C3-O16-P12-OG
7	A	2017	P5S	C3-O16-P12-O13
7	A	2017	P5S	C3-O16-P12-O15
10	A	2010	LPE	C3-O3-P-O31
10	A	2011	LPE	C3-O3-P-O31

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Mol	Chain	Res	Type	Atoms
10	A	2012	LPE	C3-O3-P-O32
10	A	2012	LPE	C31-O33-P-O31
10	A	2014	LPE	O1-C1-C2-C3
10	A	2014	LPE	C3-O3-P-O32
10	A	2014	LPE	C31-O33-P-O3
10	A	2014	LPE	C31-O33-P-O31
10	A	2014	LPE	C32-C31-O33-P
10	A	2014	LPE	O33-C31-C32-N
10	A	2015	LPE	C3-O3-P-O32
10	A	2019	LPE	C31-O33-P-O31
10	A	2019	LPE	O33-C31-C32-N
10	A	2020	LPE	C31-O33-P-O31
10	A	2021	LPE	C31-O33-P-O31
10	A	2023	LPE	C31-O33-P-O32
10	A	2024	LPE	C31-O33-P-O31
10	A	2025	LPE	O1-C1-C2-C3
10	A	2025	LPE	C3-O3-P-O32
10	A	2025	LPE	C31-O33-P-O3
10	A	2025	LPE	C31-O33-P-O31
10	A	2025	LPE	C31-O33-P-O32
10	B	304	LPE	C3-O3-P-O31
10	B	304	LPE	C3-O3-P-O32
10	B	304	LPE	C3-O3-P-O33
11	A	2016	PCW	O4P-C4-C5-N
11	A	2018	PCW	C32-C31-O2-C2
11	A	2027	PCW	O4P-C4-C5-N
11	A	2027	PCW	C1-O3P-P-O2P
8	A	2029	Y01	CAC-CBB-CBE-CAP
8	A	2029	Y01	CAC-CBB-CBE-CBI
11	A	2018	PCW	O31-C31-O2-C2
8	A	2029	Y01	CAJ-CAO-CBB-CAC
8	A	2029	Y01	CAO-CBB-CBE-CBI
11	A	2027	PCW	O11-C11-O3-C3
11	A	2027	PCW	C12-C11-O3-C3
6	A	2002	NAG	O5-C5-C6-O6
8	A	2029	Y01	CAO-CBB-CBE-CAP
10	A	2025	LPE	O1-C1-C2-O2H
6	A	2002	NAG	C4-C5-C6-O6
6	A	2008	NAG	C8-C7-N2-C2
8	A	2006	Y01	CAR-CBC-OAW-CAY
10	A	2023	LPE	C31-C32-N-C2N
10	A	2023	LPE	C31-C32-N-C3N

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Mol	Chain	Res	Type	Atoms
11	A	2016	PCW	C4-C5-N-C8
11	A	2018	PCW	C4-C5-N-C7
11	A	2028	PCW	C12-C11-O3-C3
8	A	2009	Y01	CAR-CBC-OAW-CAY
8	A	2029	Y01	CAJ-CAO-CBB-CBE
6	A	2008	NAG	O7-C7-N2-C2
11	A	2028	PCW	O11-C11-O3-C3
10	A	2014	LPE	O1-C1-C2-O2H
10	A	2026	LPE	C31-C32-N-C3N
11	A	2016	PCW	C4-C5-N-C7
7	A	2003	P5S	C38-C39-C40-C41
10	A	2014	LPE	O1-C11-C12-C13
10	A	2020	LPE	O1-C1-C2-O2H
7	A	2003	P5S	CB-OG-P12-O16
10	A	2011	LPE	C3-O3-P-O33
10	A	2011	LPE	C31-O33-P-O3
10	A	2014	LPE	C3-O3-P-O33
10	A	2015	LPE	C3-O3-P-O33
10	A	2022	LPE	C3-O3-P-O33
10	A	2023	LPE	C31-O33-P-O3
10	A	2025	LPE	C3-O3-P-O33
10	A	2026	LPE	C31-O33-P-O3
10	B	304	LPE	C31-O33-P-O3
11	A	2013	PCW	C4-O4P-P-O3P
11	A	2016	PCW	C4-O4P-P-O3P
11	A	2018	PCW	C4-O4P-P-O3P
8	A	2006	Y01	CAV-CBC-OAW-CAY
8	A	2009	Y01	CAV-CBC-OAW-CAY
10	A	2010	LPE	O1-C11-C12-C13
10	A	2014	LPE	C31-C32-N-C1N
10	A	2014	LPE	C31-C32-N-C2N
10	A	2014	LPE	C31-C32-N-C3N
11	A	2018	PCW	C4-C5-N-C6
11	A	2028	PCW	C4-C5-N-C8
10	A	2020	LPE	O1-C1-C2-C3
7	A	2003	P5S	C46-C48-C49-C50
7	A	2017	P5S	C25-C26-C27-C28
10	A	2011	LPE	O1-C11-C12-C13
10	A	2023	LPE	C31-C32-N-C1N
10	A	2020	LPE	C12-C13-C14-C15
7	A	2003	P5S	C51-C52-C53-C54
7	A	2017	P5S	C27-C28-C29-C30

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Mol	Chain	Res	Type	Atoms
7	A	2003	P5S	C41-C42-C43-C44
11	A	2027	PCW	C33-C34-C35-C36
7	A	2003	P5S	C52-C53-C54-C55
10	A	2020	LPE	C14-C15-C16-C17
11	A	2016	PCW	C4-C5-N-C6
11	A	2013	PCW	C24-C25-C26-C27
11	A	2013	PCW	C32-C31-O2-C2
11	A	2013	PCW	C32-C33-C34-C35
7	A	2003	P5S	C48-C49-C50-C51
11	A	2027	PCW	C31-C32-C33-C34
10	A	2024	LPE	C13-C14-C15-C16
10	A	2011	LPE	C13-C14-C15-C16
10	A	2026	LPE	C31-C32-N-C1N
10	A	2026	LPE	C31-C32-N-C2N
11	A	2018	PCW	C4-C5-N-C8
11	A	2013	PCW	O31-C31-O2-C2
7	A	2003	P5S	C39-C38-O37-C2
11	A	2028	PCW	C32-C31-O2-C2
11	A	2016	PCW	C35-C36-C37-C38
10	A	2010	LPE	C2-C1-O1-C11
8	A	2029	Y01	CAN-CAJ-CAO-CBB
11	A	2013	PCW	C41-C42-C43-C44
11	A	2016	PCW	C34-C35-C36-C37
7	A	2003	P5S	O47-C38-O37-C2
7	A	2003	P5S	C1-C2-C3-O16
11	A	2028	PCW	O31-C31-O2-C2
10	B	304	LPE	C2-C3-O3-P
10	A	2026	LPE	C2-C1-O1-C11
10	A	2015	LPE	O1-C1-C2-C3
10	A	2015	LPE	O1-C1-C2-O2H
10	A	2012	LPE	C3-O3-P-O33
10	A	2020	LPE	C16-C17-C18-C19
10	A	2020	LPE	C11-C12-C13-C14
7	A	2003	P5S	C2-C3-O16-P12
11	A	2018	PCW	C2-C1-O3P-P
10	A	2019	LPE	C2-C1-O1-C11
8	A	2006	Y01	CAO-CAJ-CAN-CBA
8	A	2009	Y01	CAO-CAJ-CAN-CBA
7	A	2003	P5S	O37-C2-C3-O16
10	A	2020	LPE	C12-C11-O1-C1
7	A	2003	P5S	C40-C41-C42-C43
11	A	2027	PCW	O31-C31-O2-C2

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Mol	Chain	Res	Type	Atoms
10	B	304	LPE	C2-C1-O1-C11
10	A	2012	LPE	C12-C11-O1-C1
10	A	2012	LPE	C31-O33-P-O3
10	A	2020	LPE	C31-O33-P-O3
10	A	2021	LPE	C31-O33-P-O3
10	A	2024	LPE	C31-O33-P-O3
11	A	2027	PCW	C1-O3P-P-O4P
10	A	2010	LPE	C2-C3-O3-P
10	A	2012	LPE	C2-C3-O3-P
7	A	2003	P5S	CB-OG-P12-O15
10	A	2011	LPE	C3-O3-P-O32
10	A	2011	LPE	C31-O33-P-O31
10	A	2012	LPE	C3-O3-P-O31
10	A	2020	LPE	C3-O3-P-O32
10	A	2022	LPE	C3-O3-P-O31
10	A	2023	LPE	C31-O33-P-O31
10	A	2025	LPE	C3-O3-P-O31
10	A	2026	LPE	C31-O33-P-O31
10	B	304	LPE	C31-O33-P-O31
11	A	2013	PCW	C4-C5-N-C6
11	A	2013	PCW	C4-C5-N-C7
11	A	2013	PCW	C4-O4P-P-O2P
11	A	2016	PCW	C4-O4P-P-O2P
11	A	2018	PCW	C4-O4P-P-O2P
11	A	2027	PCW	C4-O4P-P-O2P
10	A	2011	LPE	C32-C31-O33-P
10	B	304	LPE	C32-C31-O33-P
10	A	2019	LPE	C12-C11-O1-C1
10	A	2010	LPE	C11-C12-C13-C14
10	A	2024	LPE	C2-C1-O1-C11
10	A	2014	LPE	C13-C14-C15-C16
11	A	2027	PCW	C34-C35-C36-C37
10	A	2010	LPE	O33-C31-C32-N
10	A	2012	LPE	O33-C31-C32-N
10	A	2015	LPE	O33-C31-C32-N
10	A	2020	LPE	O33-C31-C32-N
10	A	2021	LPE	O33-C31-C32-N
10	A	2022	LPE	O33-C31-C32-N
10	A	2023	LPE	O33-C31-C32-N
10	A	2024	LPE	O33-C31-C32-N
10	A	2025	LPE	O33-C31-C32-N
10	B	304	LPE	O33-C31-C32-N

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Mol	Chain	Res	Type	Atoms
11	A	2028	PCW	O4P-C4-C5-N
10	A	2014	LPE	C12-C11-O1-C1
7	A	2003	P5S	C50-C51-C52-C53
10	A	2015	LPE	C12-C11-O1-C1
11	A	2013	PCW	C4-C5-N-C8
11	A	2027	PCW	C32-C31-O2-C2
11	A	2028	PCW	C19-C20-C21-C22
7	A	2017	P5S	CB-OG-P12-O16
10	A	2010	LPE	C3-O3-P-O33
10	A	2015	LPE	C31-O33-P-O3
10	A	2019	LPE	C31-O33-P-O3
10	A	2024	LPE	C3-O3-P-O33
10	A	2026	LPE	C3-O3-P-O33
11	A	2016	PCW	C1-O3P-P-O4P
11	A	2018	PCW	C1-O3P-P-O4P
11	A	2027	PCW	C4-O4P-P-O3P
11	A	2028	PCW	C1-O3P-P-O4P
11	A	2028	PCW	C4-O4P-P-O3P
11	A	2016	PCW	C17-C18-C19-C20
11	A	2016	PCW	C37-C38-C39-C40
11	A	2013	PCW	C23-C24-C25-C26
11	A	2027	PCW	C11-C12-C13-C14
10	A	2025	LPE	C2-C1-O1-C11
10	A	2014	LPE	C11-C12-C13-C14
7	A	2003	P5S	C43-C44-C45-C46
11	A	2013	PCW	C44-C45-C46-C47
7	A	2003	P5S	C39-C40-C41-C42
11	A	2027	PCW	C21-C22-C23-C24
7	A	2003	P5S	O19-C1-C2-O37
7	A	2003	P5S	C53-C54-C55-C56
10	A	2015	LPE	C2-C3-O3-P
11	A	2013	PCW	C13-C14-C15-C16
11	A	2013	PCW	C17-C18-C19-C20
11	A	2013	PCW	C39-C40-C41-C42
11	A	2028	PCW	C17-C18-C19-C20
10	A	2010	LPE	C31-C32-N-C2N
11	A	2016	PCW	C39-C40-C41-C42
11	A	2018	PCW	O3-C11-C12-C13
10	A	2012	LPE	C1-C2-C3-O3
10	A	2020	LPE	C13-C14-C15-C16
10	A	2010	LPE	C16-C17-C18-C19
11	A	2013	PCW	C19-C20-C21-C22

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms
7	A	2017	P5S	CB-OG-P12-O13
10	A	2015	LPE	C31-O33-P-O31
10	A	2019	LPE	C3-O3-P-O31
11	A	2016	PCW	C1-O3P-P-O2P
11	A	2018	PCW	C1-O3P-P-O2P
11	A	2027	PCW	C4-C5-N-C6
11	A	2028	PCW	C1-O3P-P-O2P
11	A	2028	PCW	C4-O4P-P-O2P
10	A	2010	LPE	C32-C31-O33-P
10	A	2015	LPE	C32-C31-O33-P
10	A	2019	LPE	C32-C31-O33-P
10	A	2023	LPE	C32-C31-O33-P
11	A	2018	PCW	C5-C4-O4P-P
7	A	2003	P5S	C49-C50-C51-C52
10	A	2012	LPE	C31-C32-N-C2N
11	A	2027	PCW	O3-C11-C12-C13
7	A	2003	P5S	O37-C38-C39-C40
8	A	2006	Y01	CAN-CAJ-CAO-CBB
8	A	2009	Y01	CAN-CAJ-CAO-CBB
7	A	2003	P5S	O47-C38-C39-C40

There are no ring outliers.

27 monomers are involved in 185 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2001	9SL	3	0
8	A	2004	Y01	6	0
10	A	2015	LPE	6	0
11	A	2027	PCW	8	0
11	A	2016	PCW	1	0
10	A	2022	LPE	7	0
10	A	2025	LPE	11	0
9	A	2007	9Z9	9	0
10	A	2010	LPE	2	0
11	A	2028	PCW	2	0
11	A	2013	PCW	22	0
8	A	2029	Y01	18	0
10	A	2019	LPE	8	0
10	A	2021	LPE	9	0
7	A	2003	P5S	12	0
10	A	2011	LPE	2	0
7	A	2017	P5S	9	0

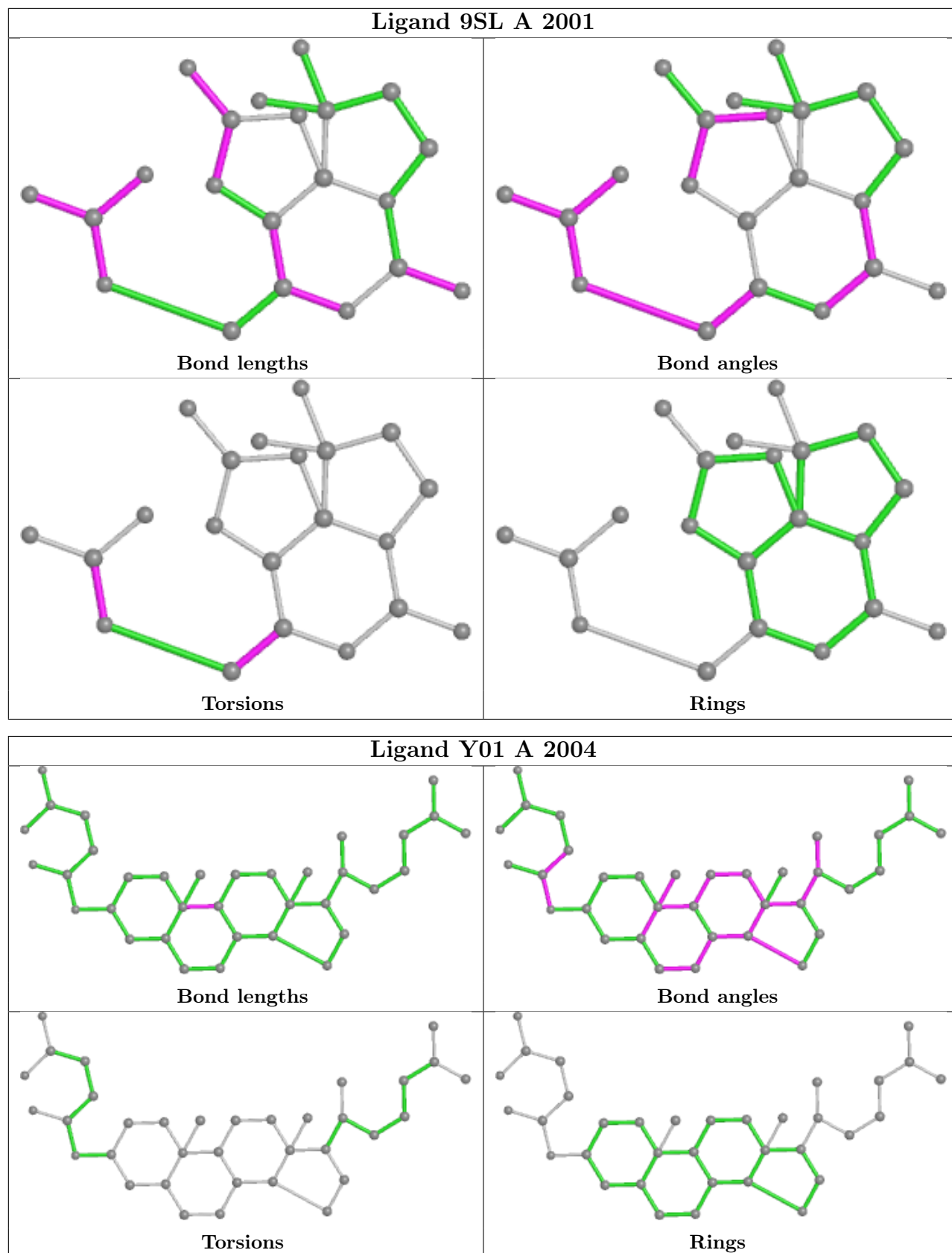
*Continued on next page...*

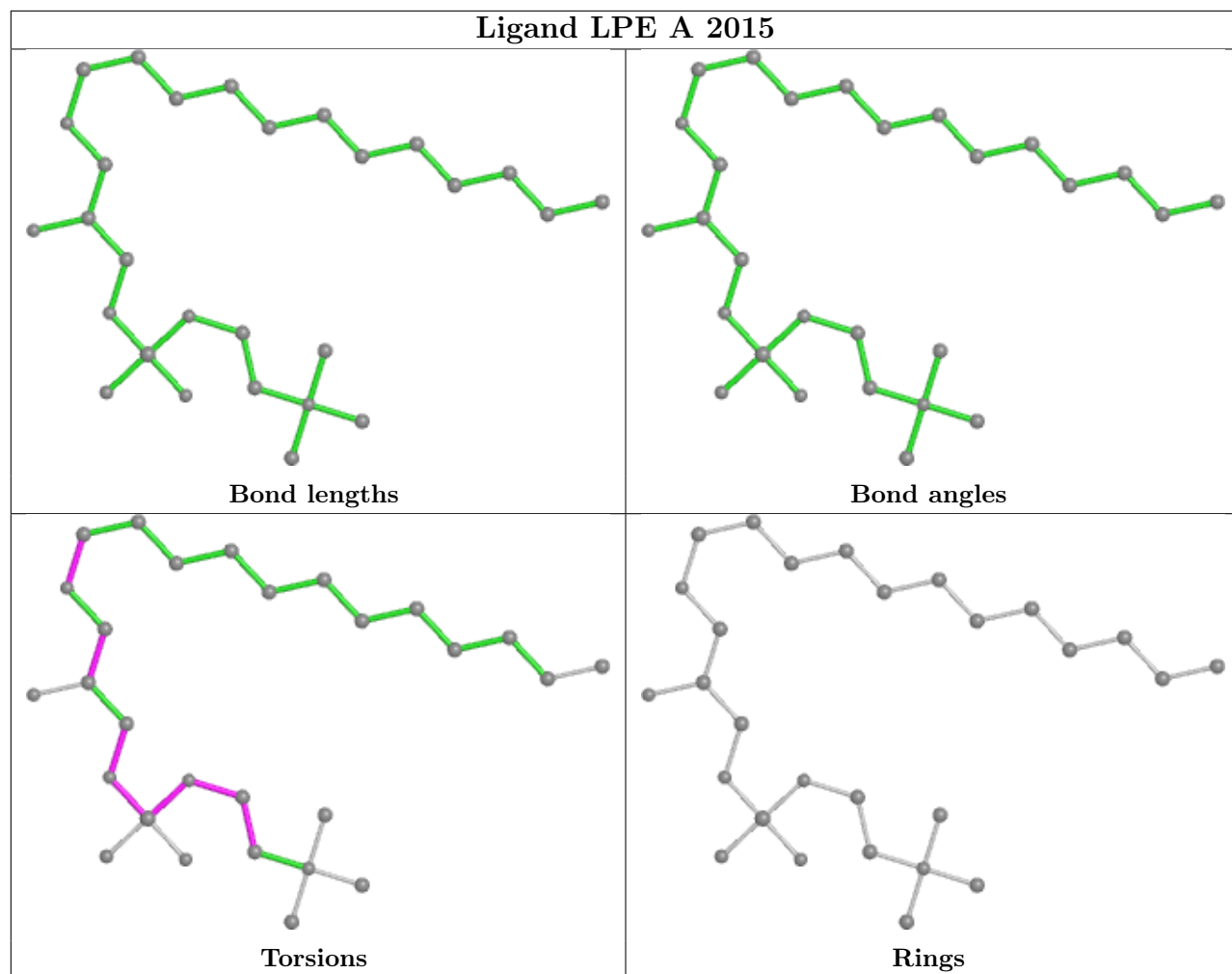


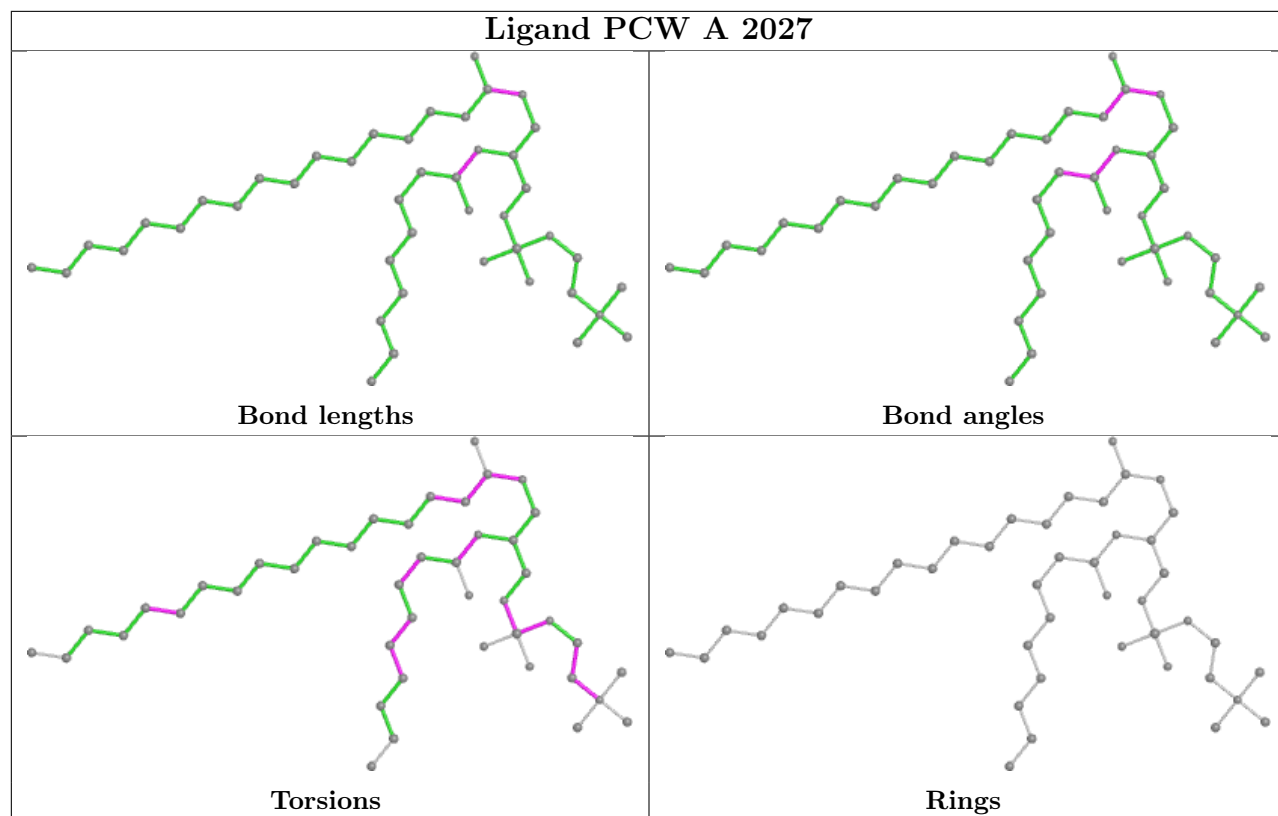
*Continued from previous page...*

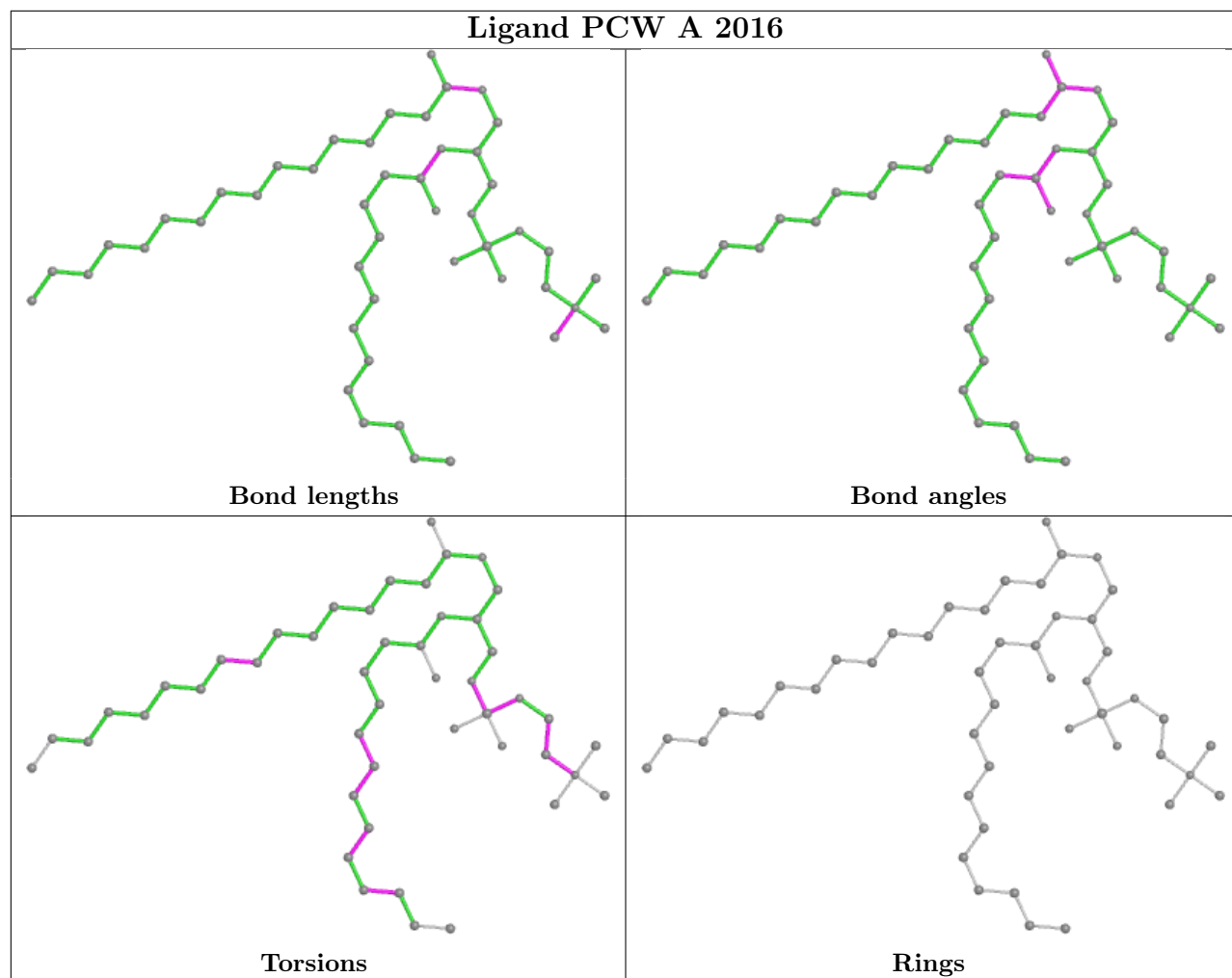
Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	2005	Y01	3	0
11	A	2018	PCW	6	0
8	A	2009	Y01	5	0
6	A	2008	NAG	9	0
10	A	2012	LPE	9	0
10	A	2026	LPE	10	0
10	B	304	LPE	10	0
8	A	2006	Y01	16	0
10	A	2023	LPE	8	0
10	A	2014	LPE	17	0

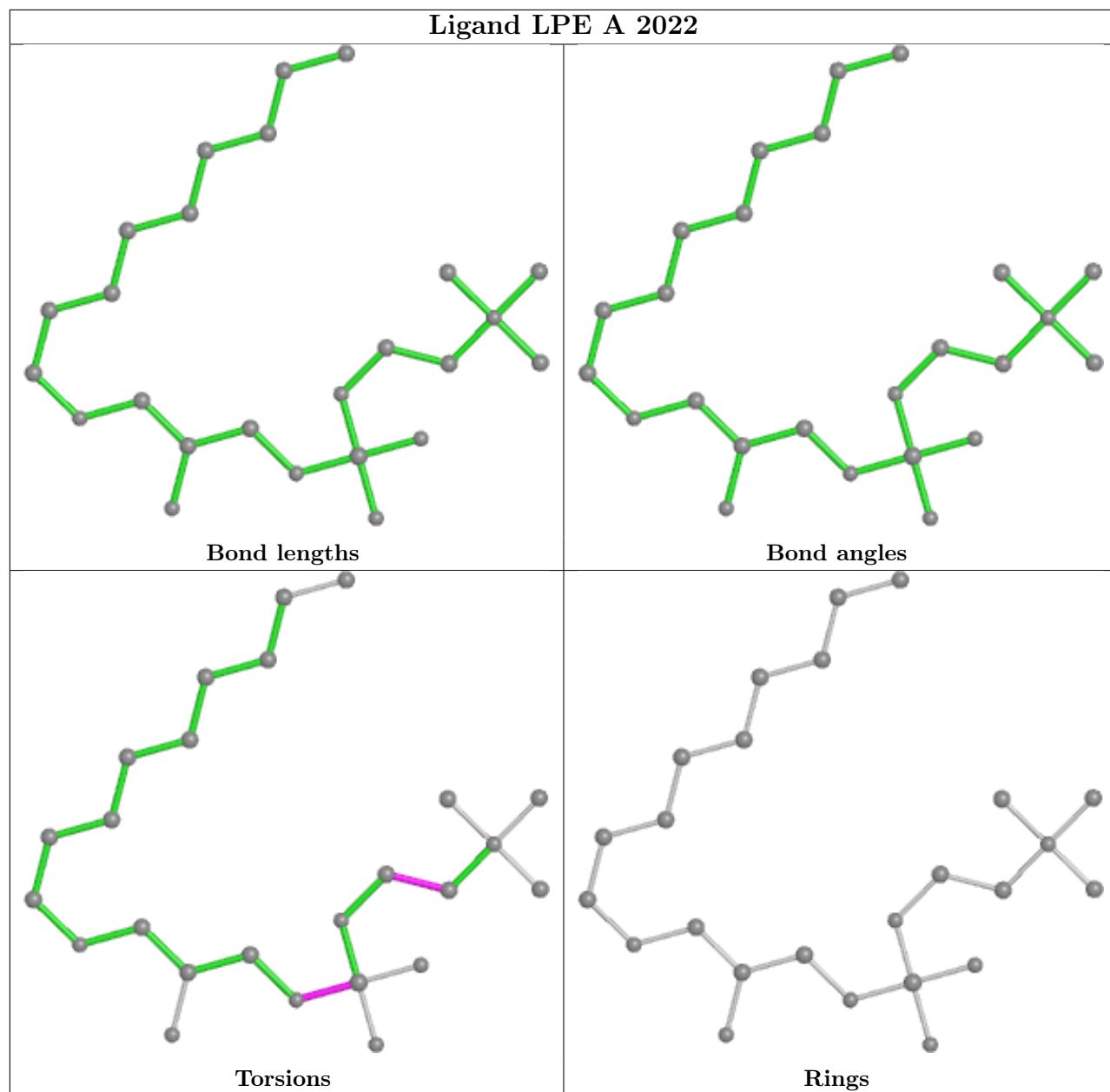
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

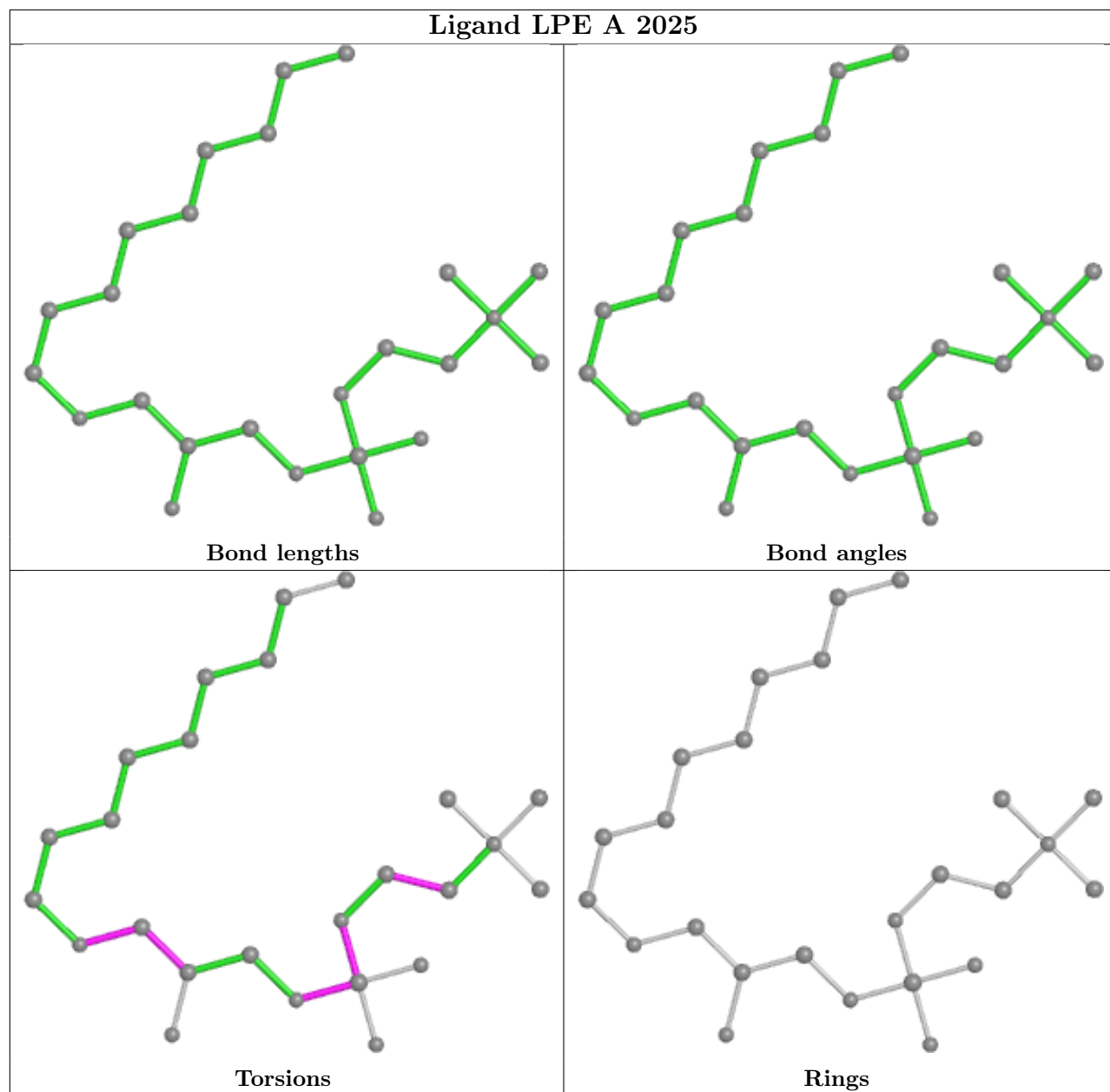


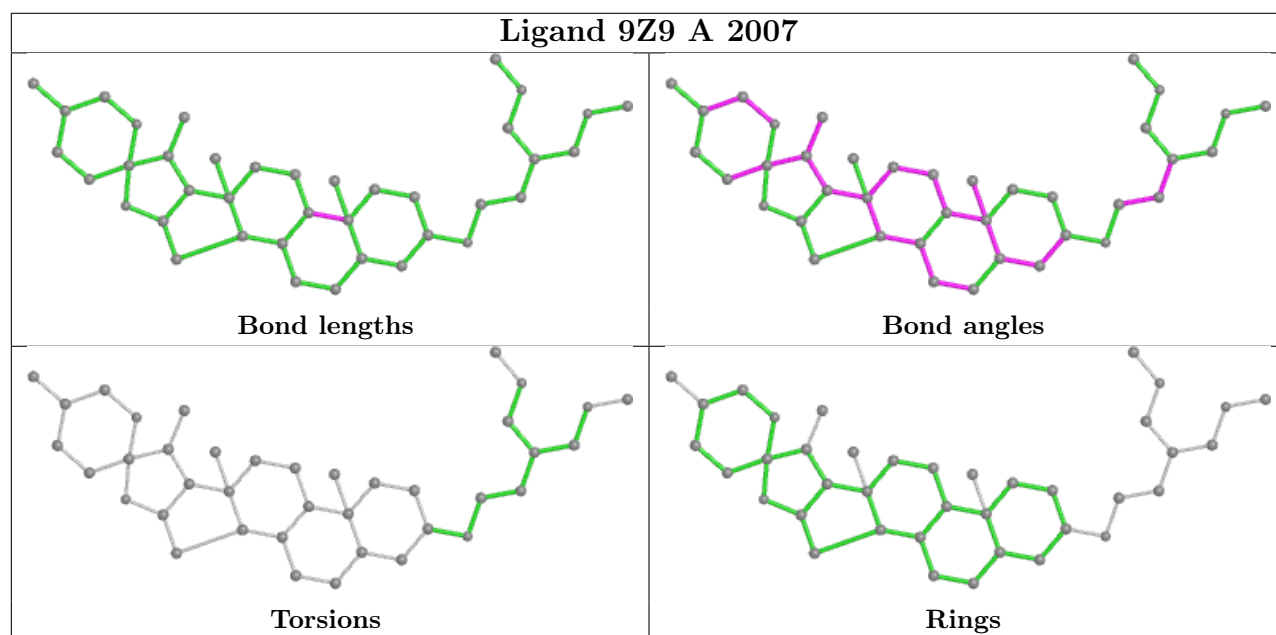
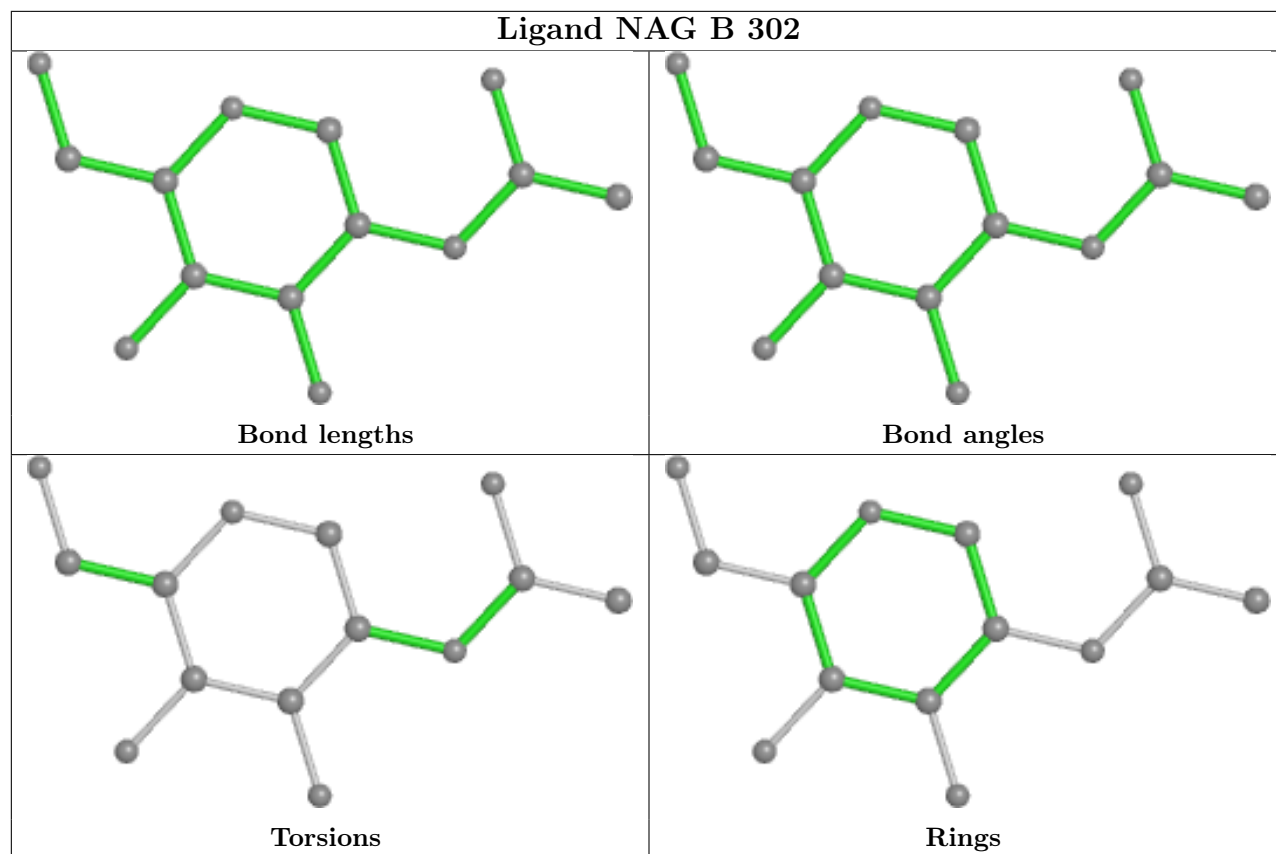




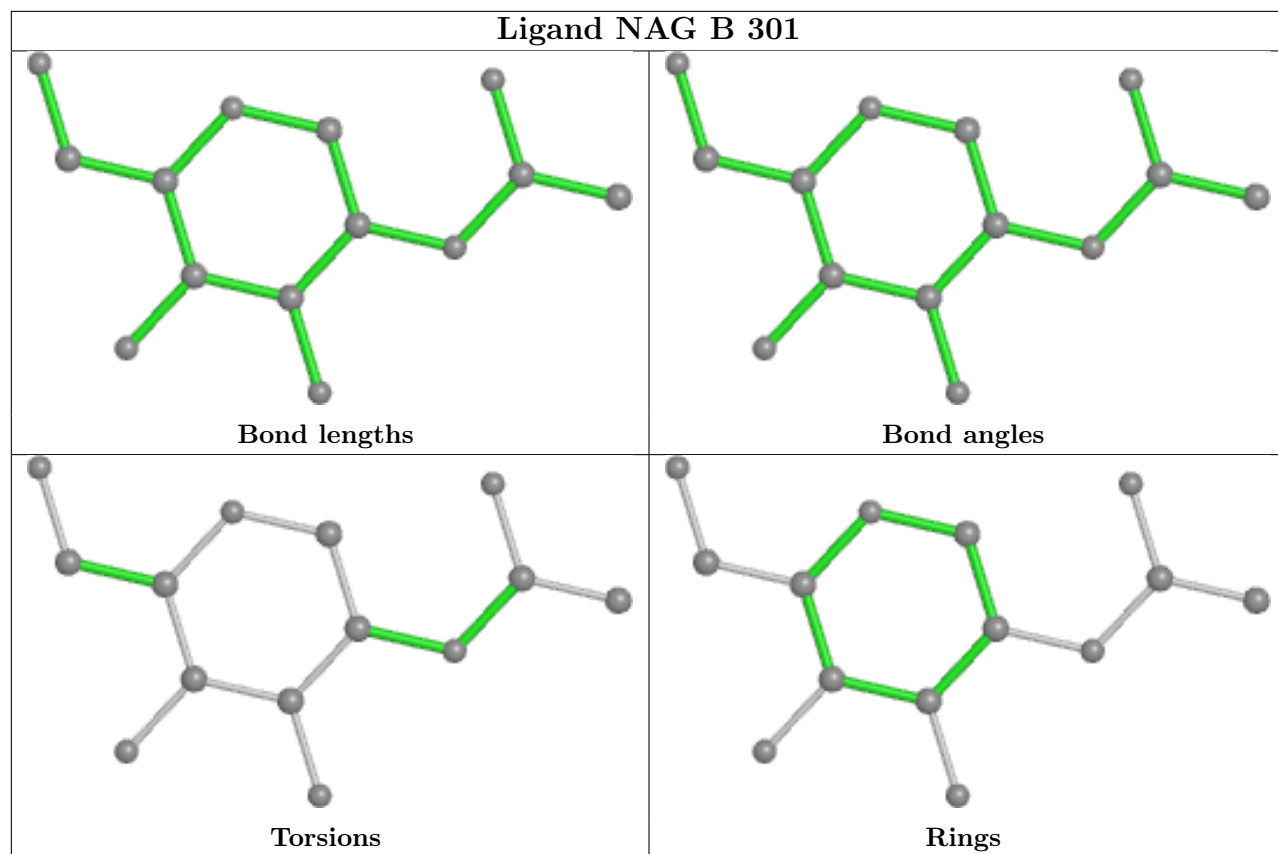


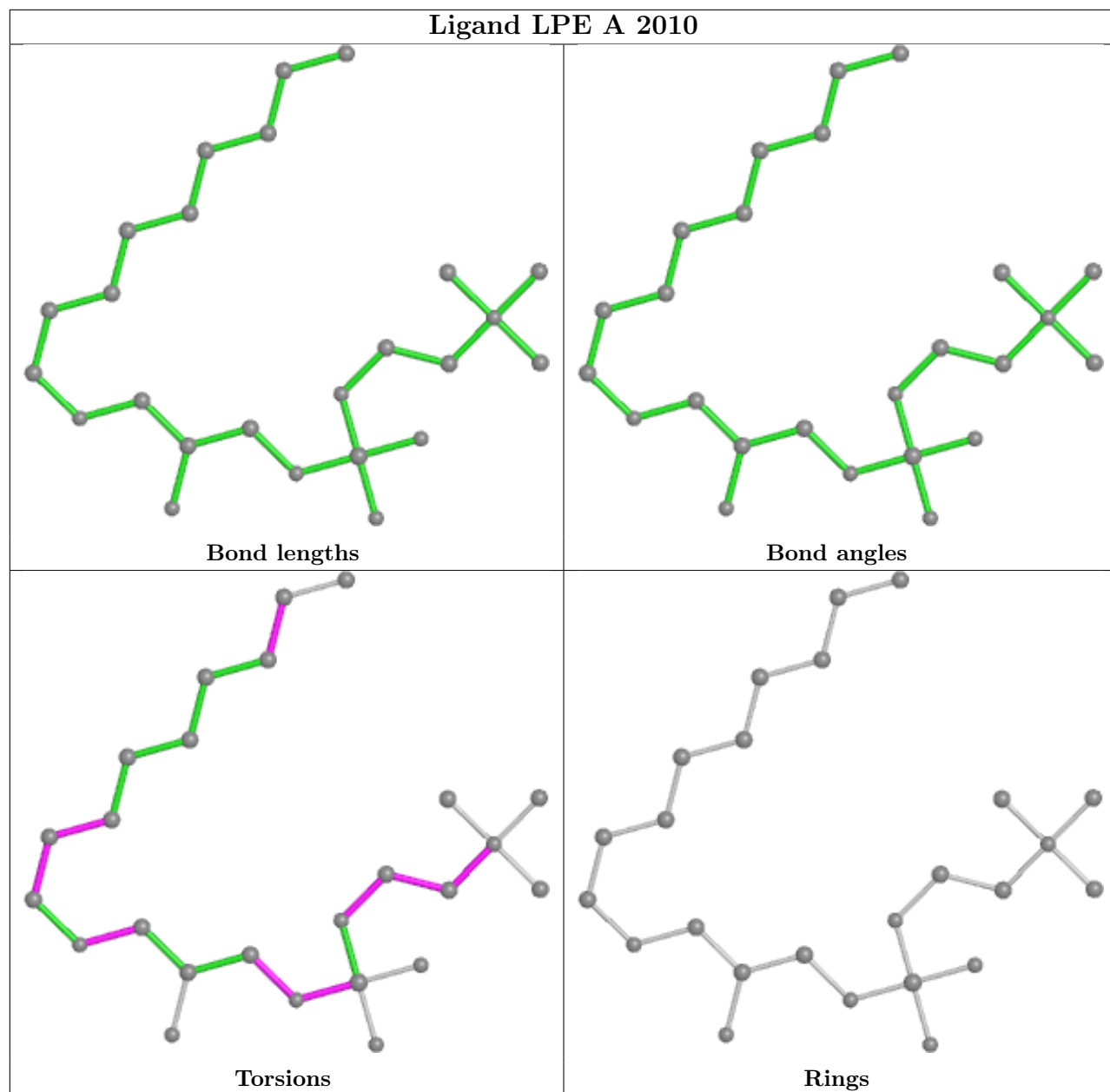


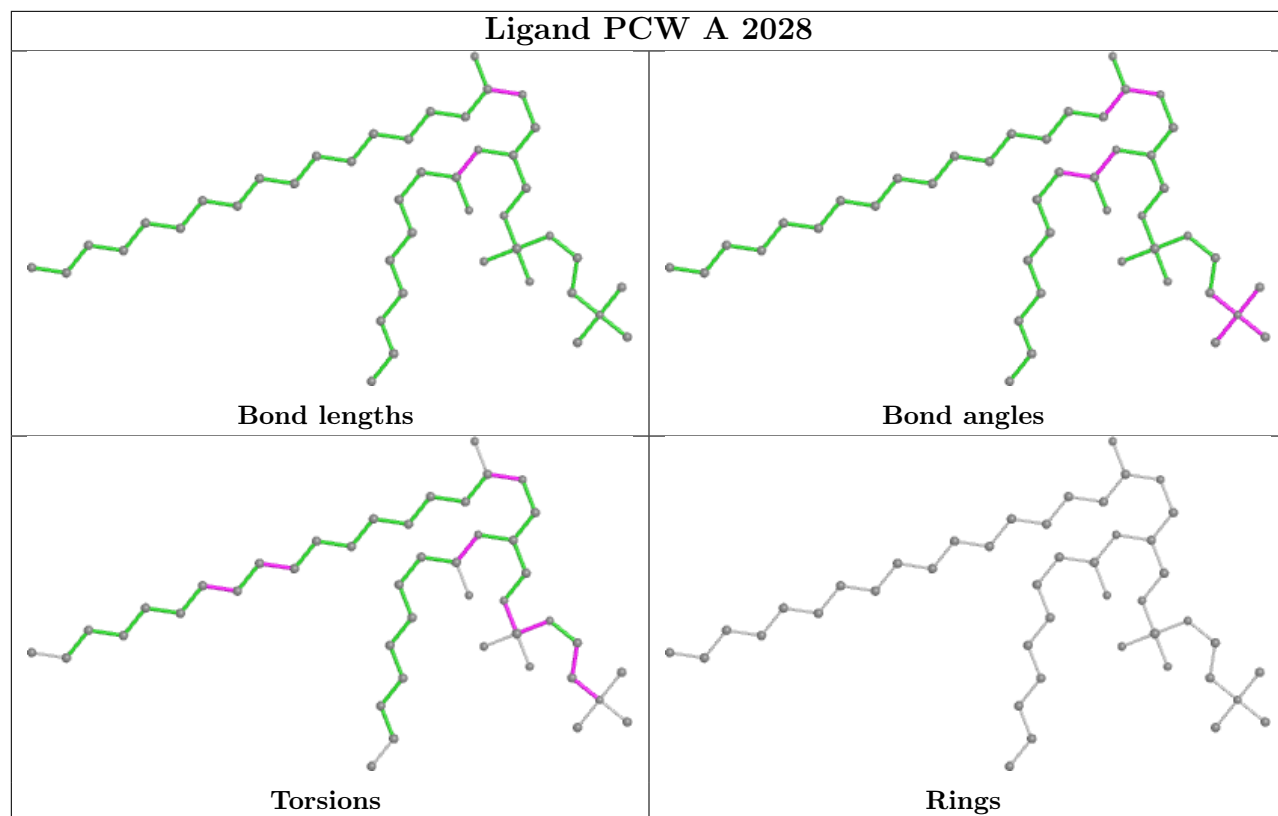


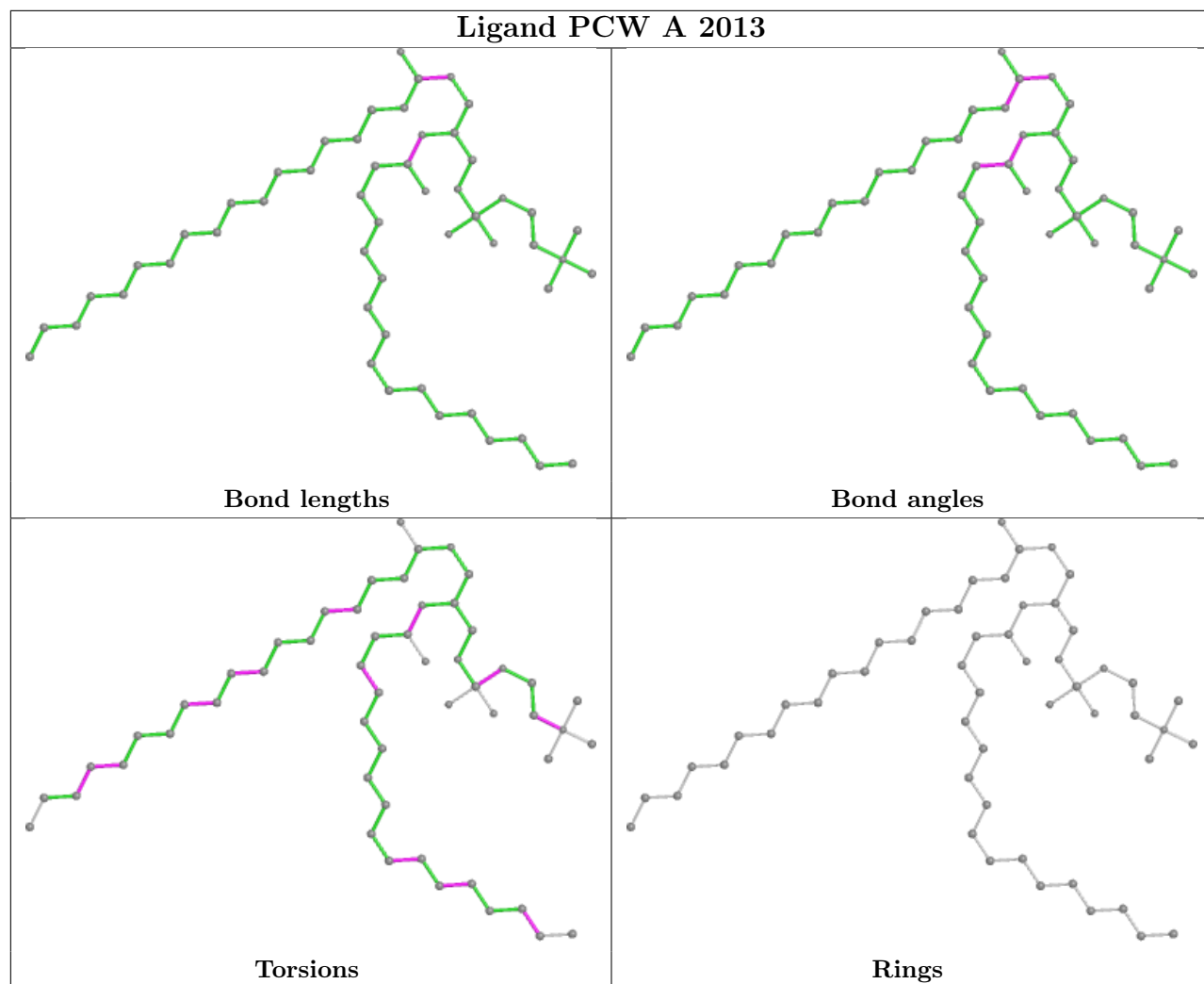


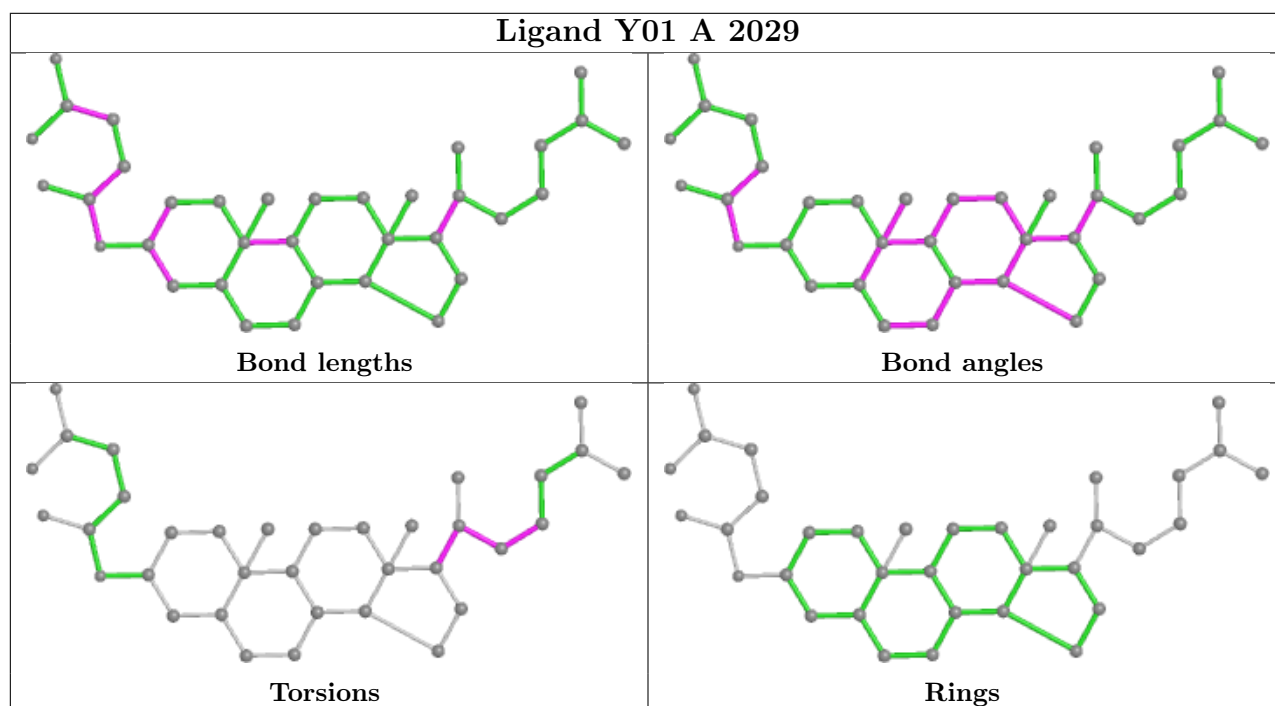
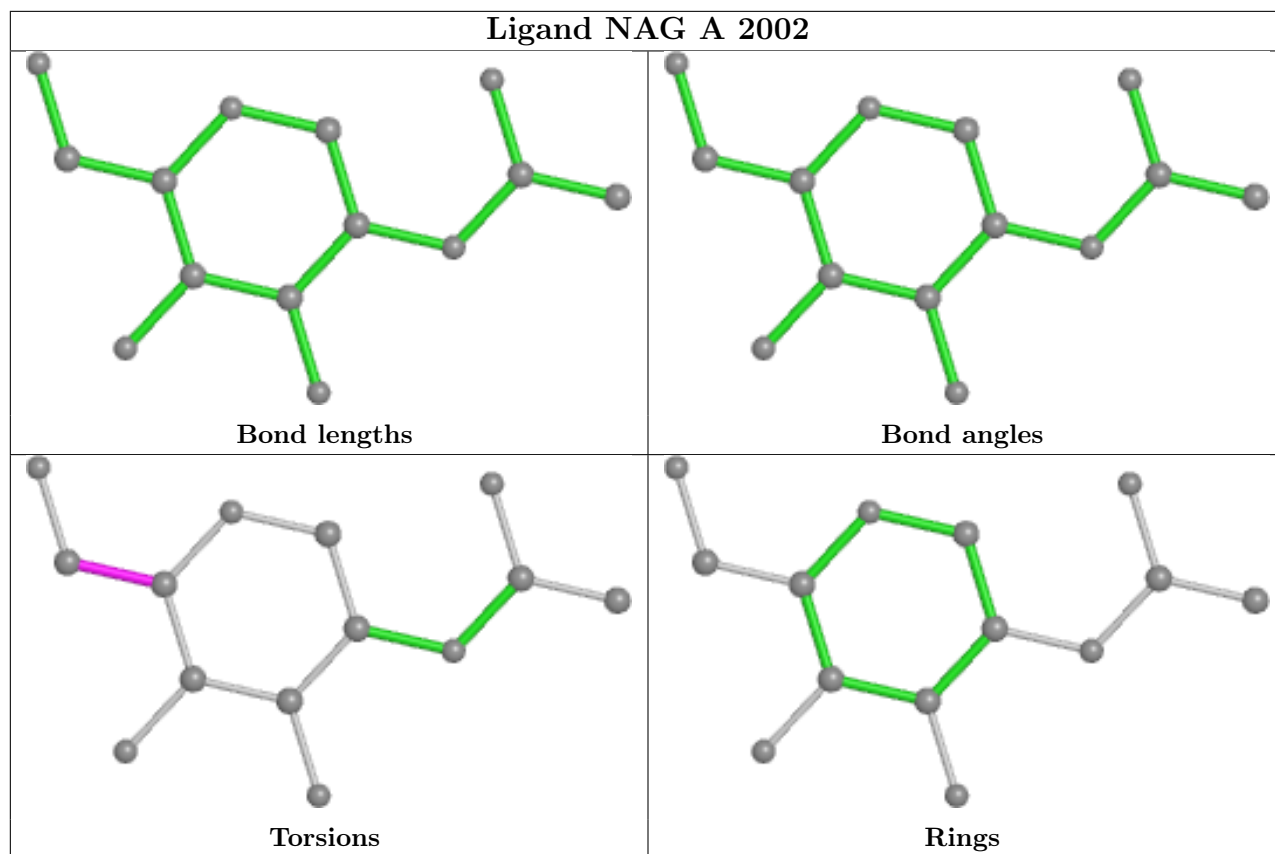


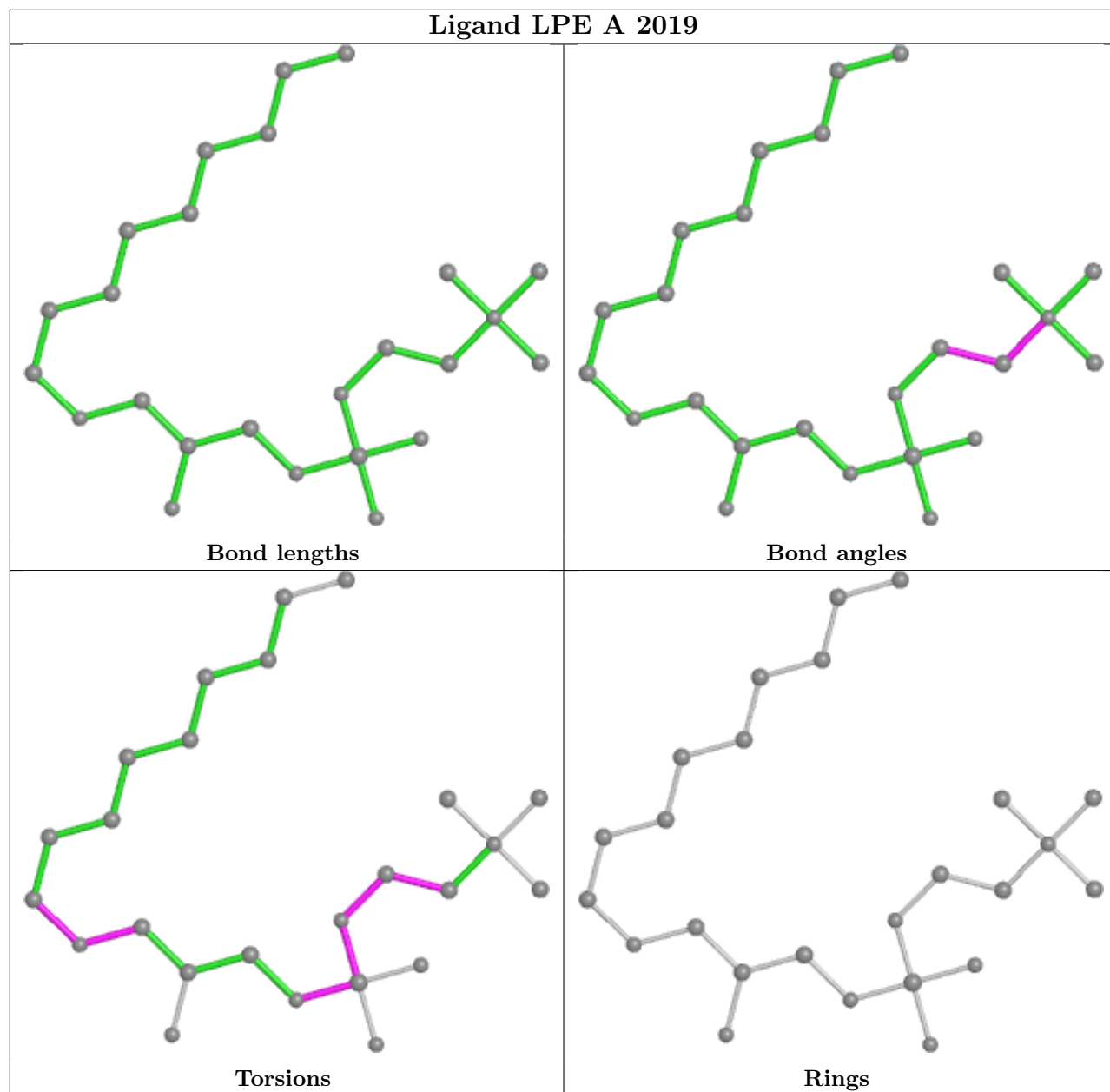


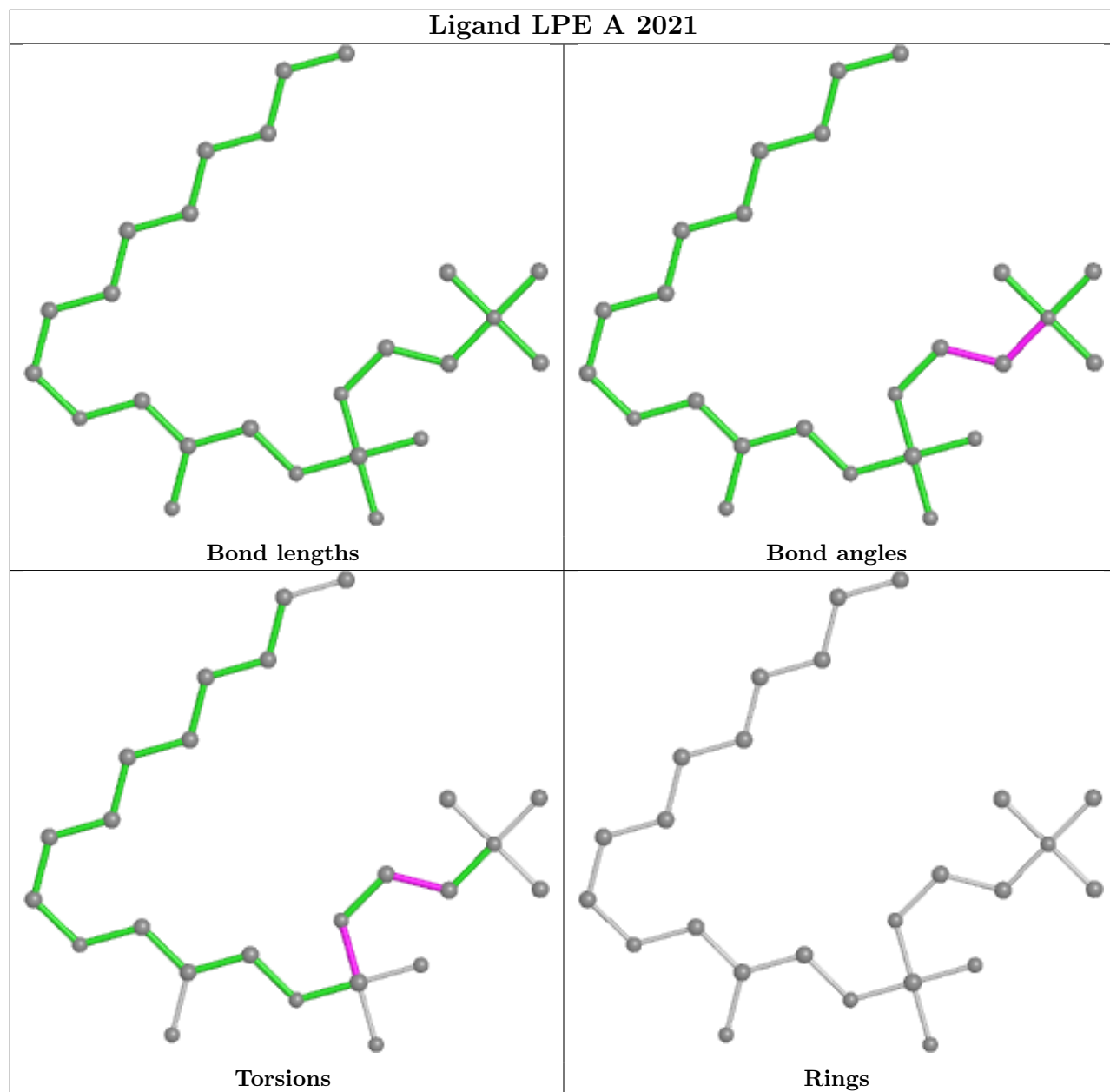


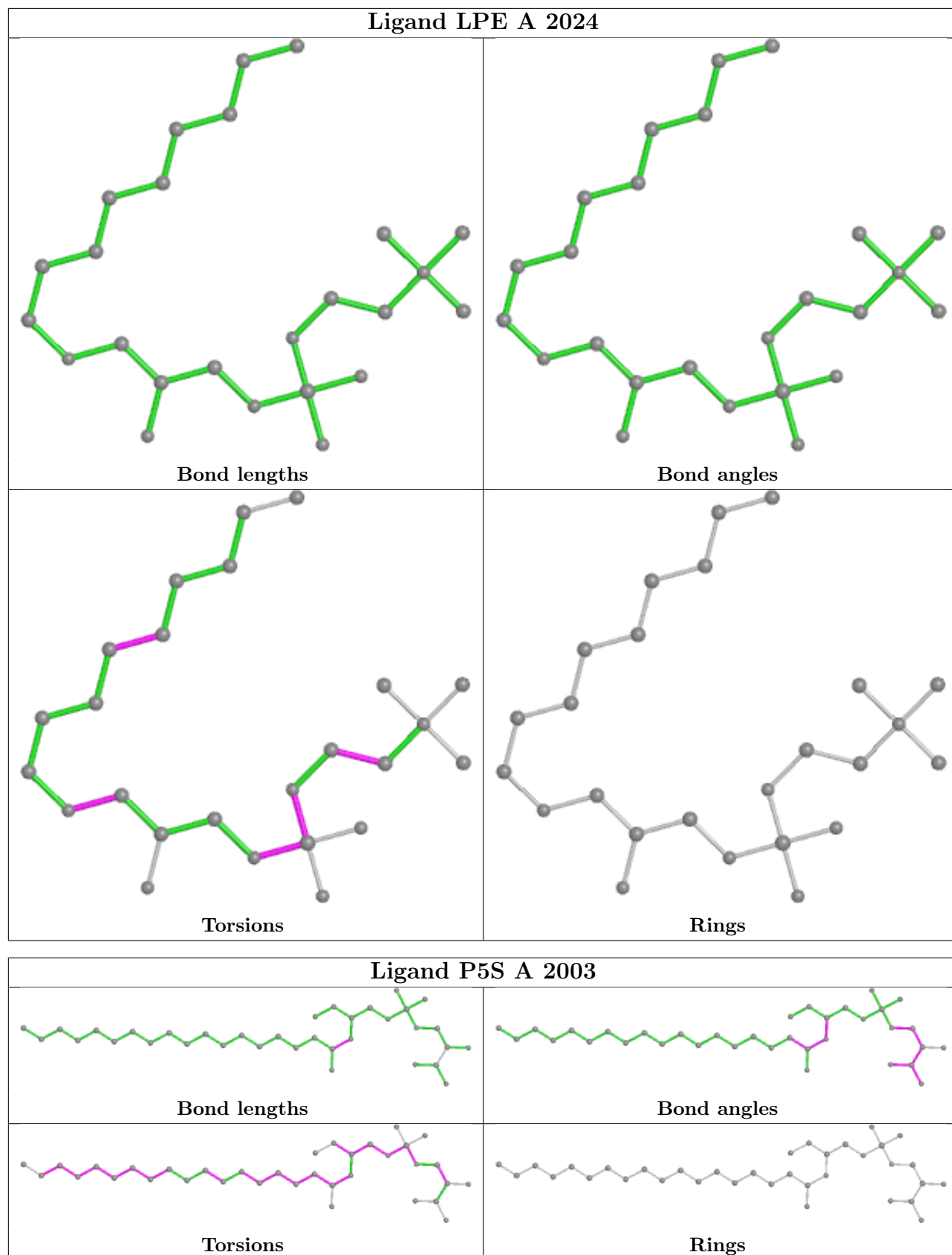




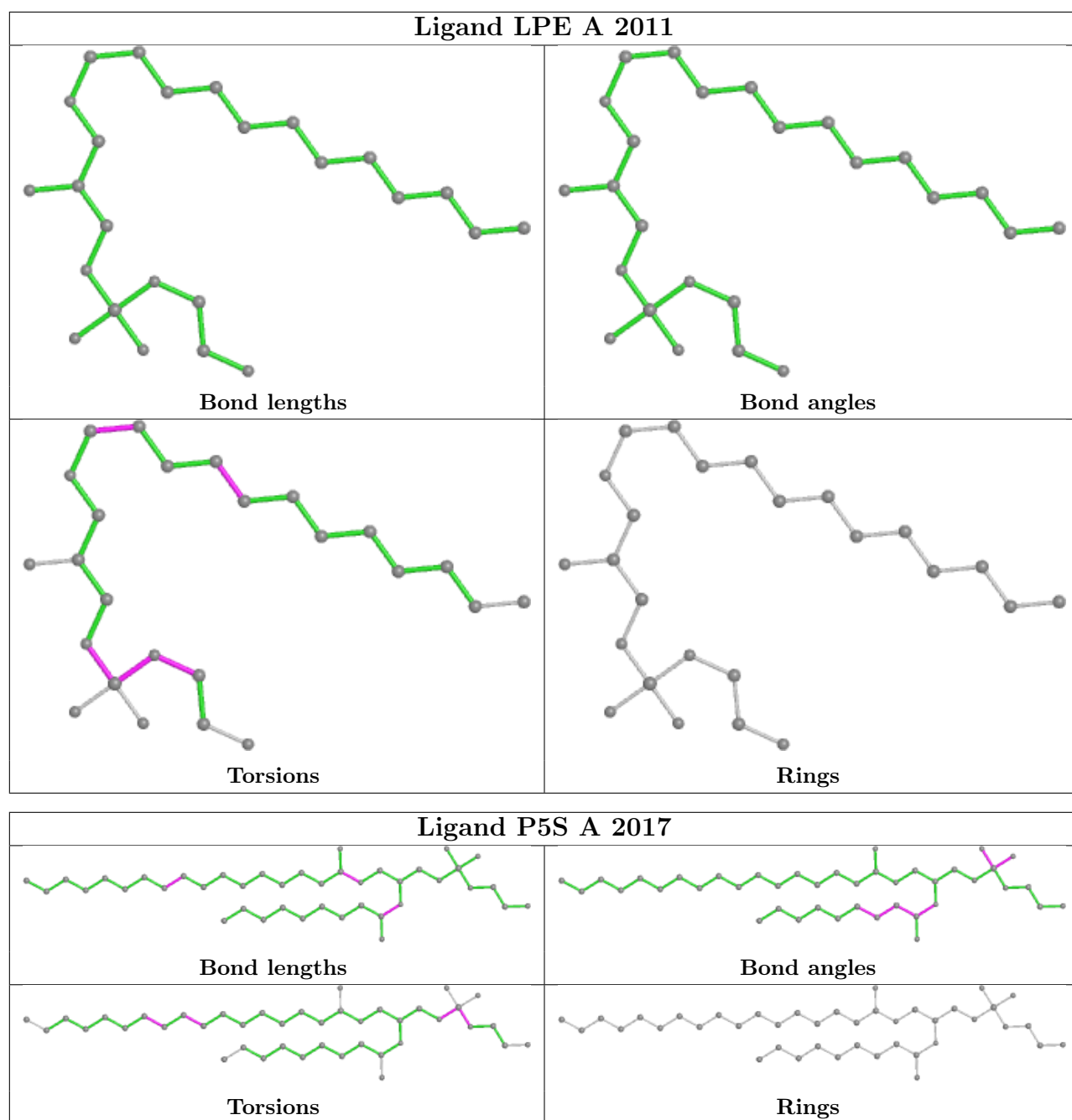


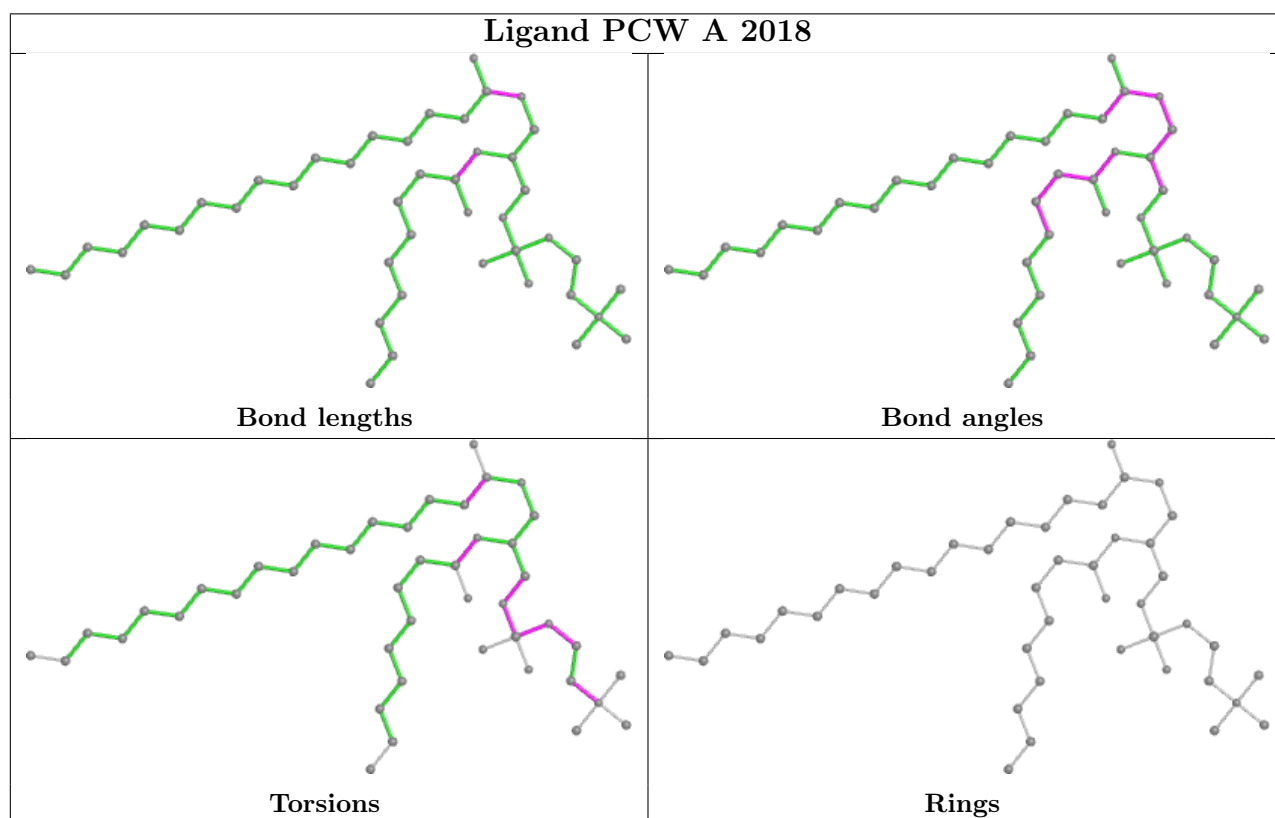
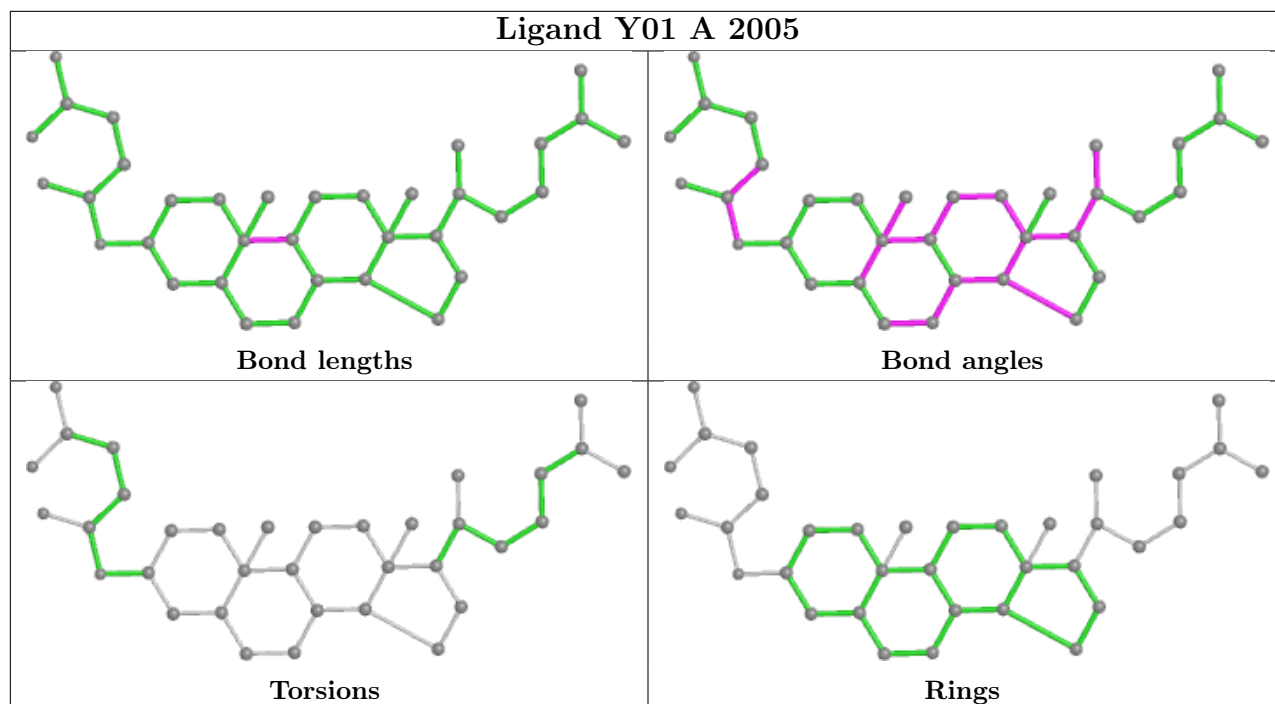


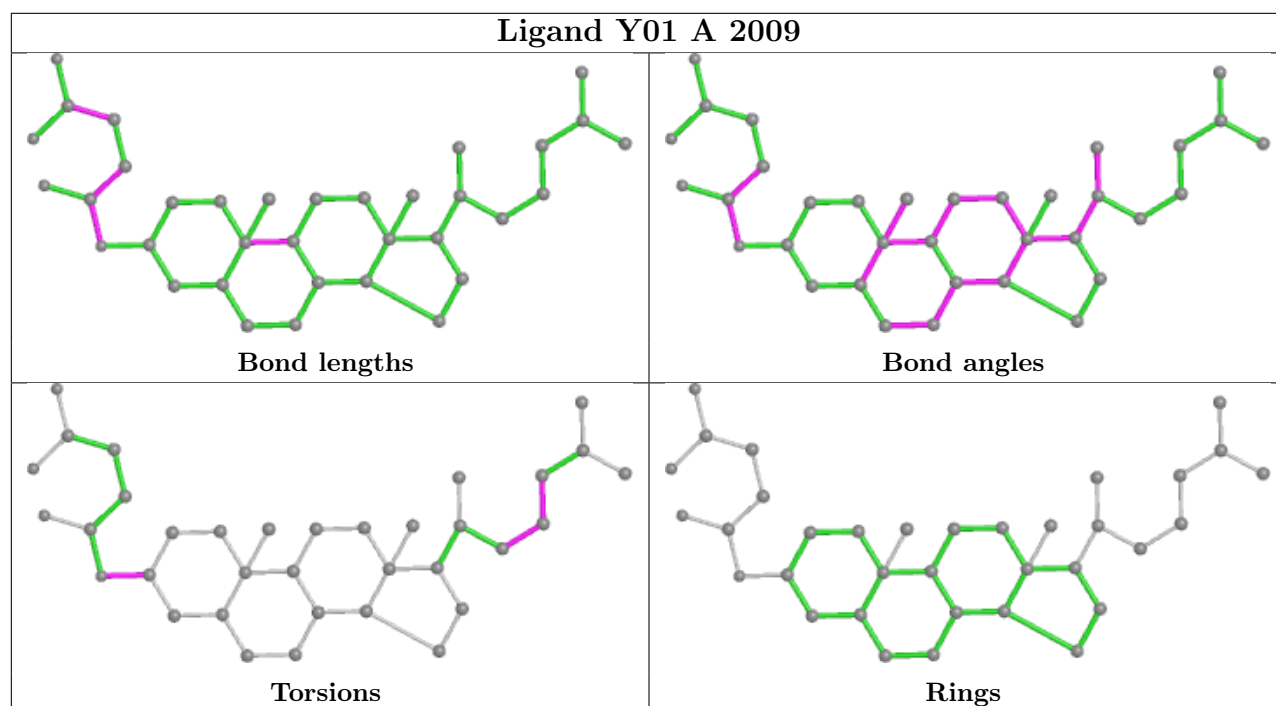
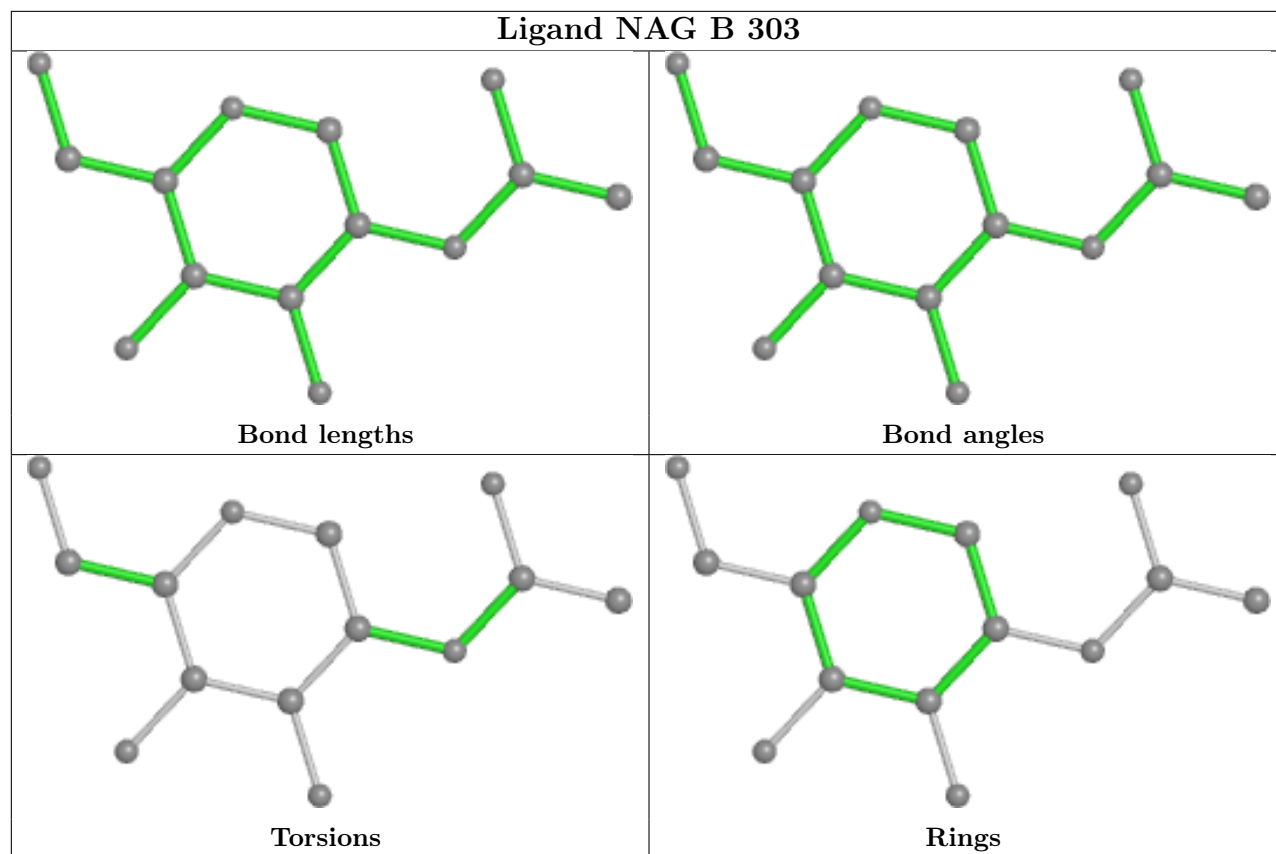


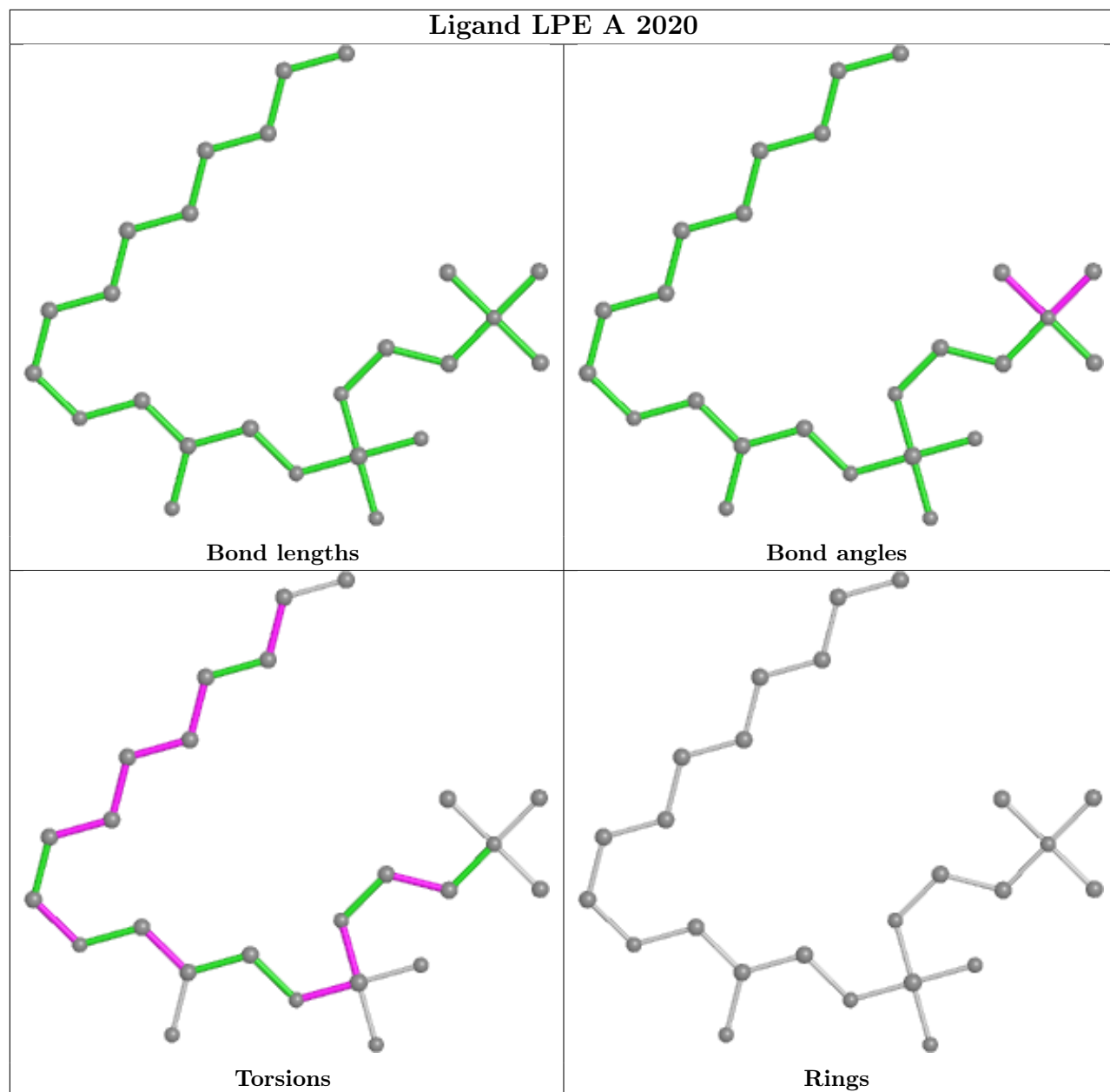


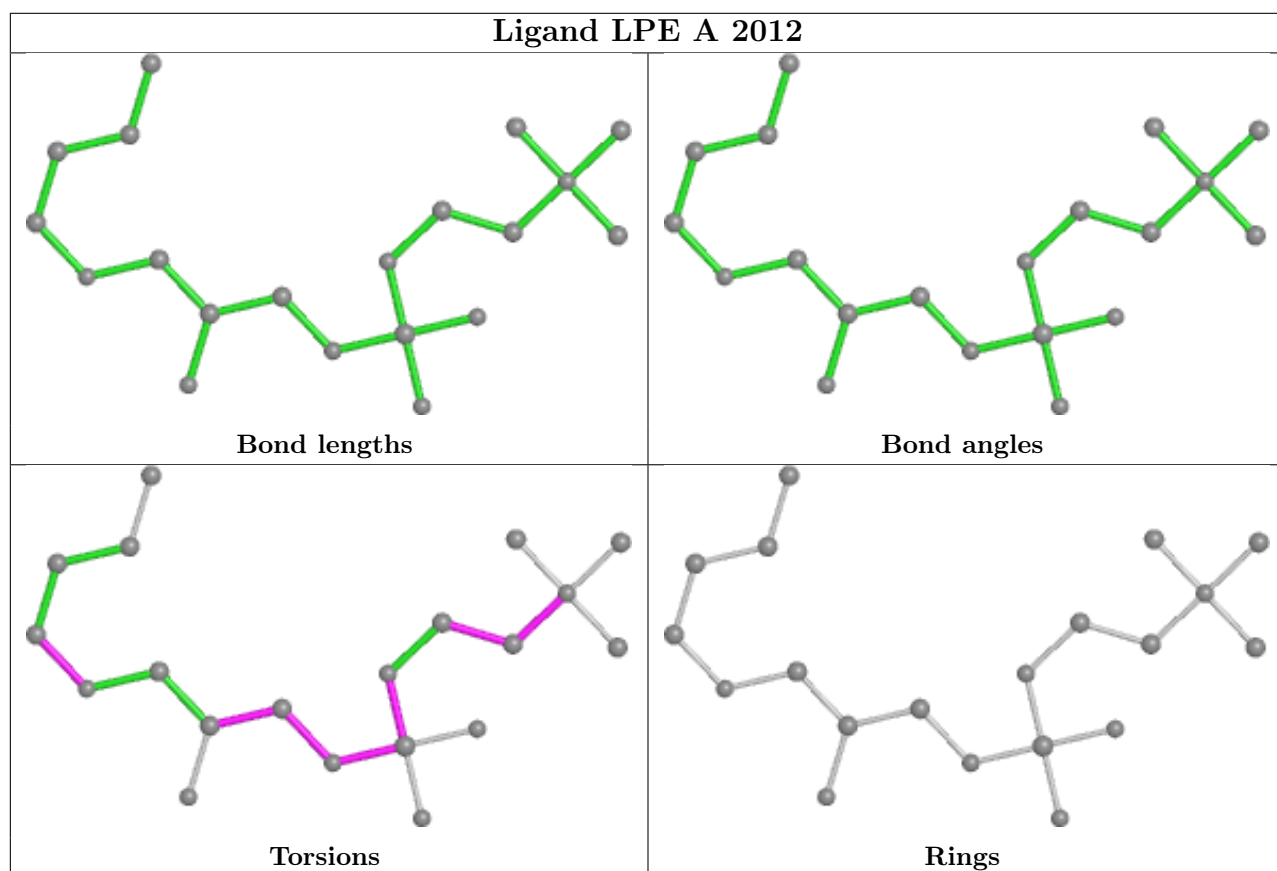
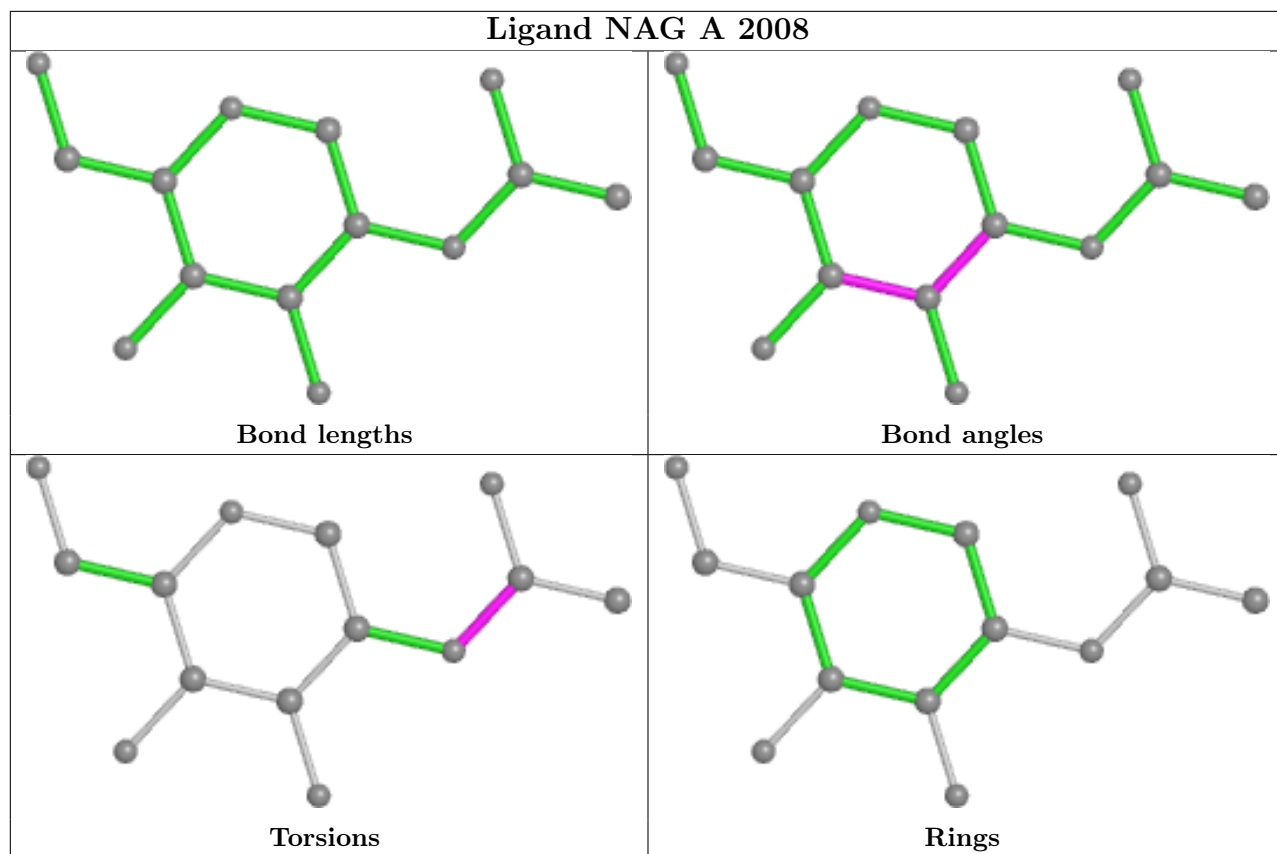


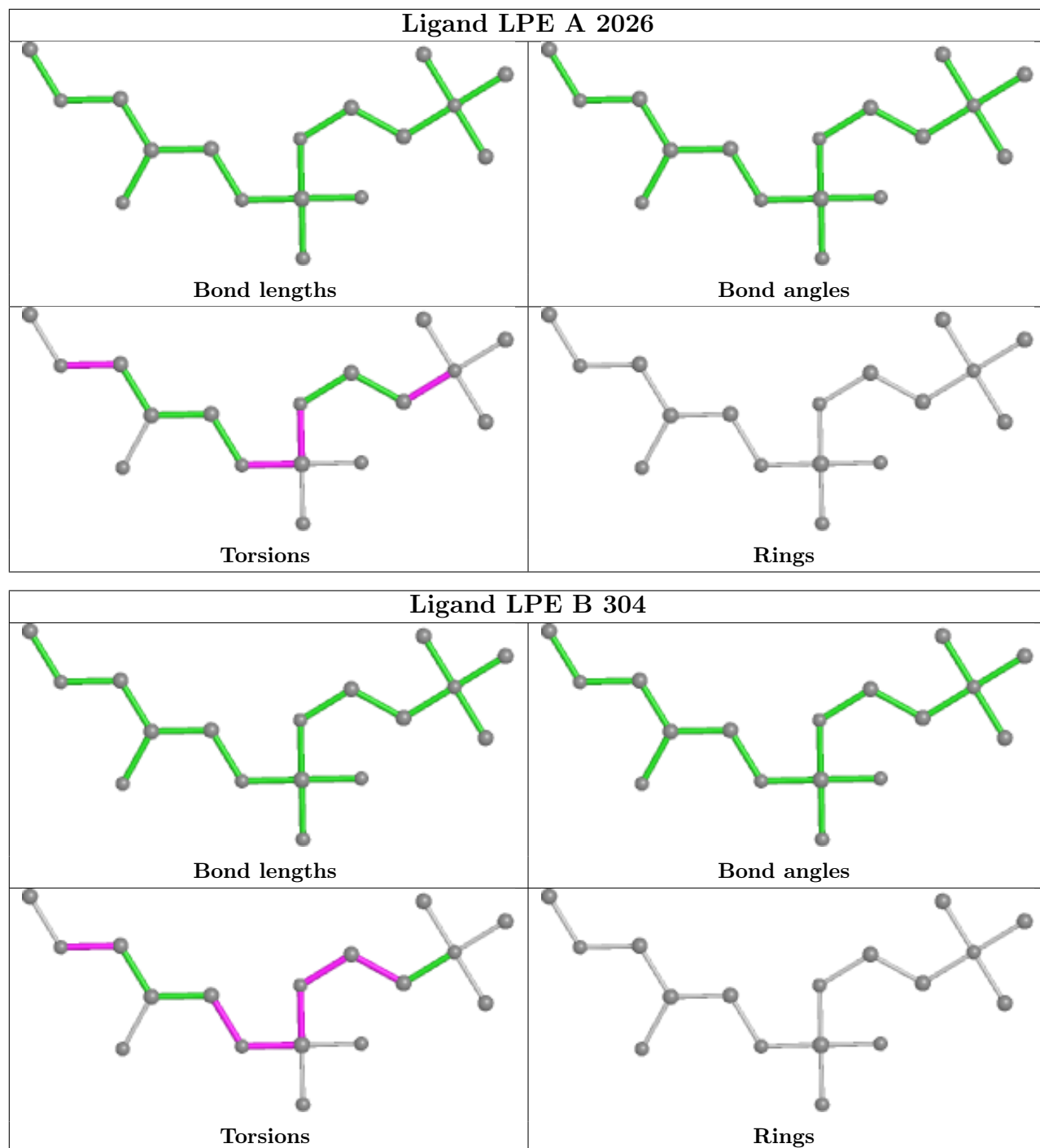


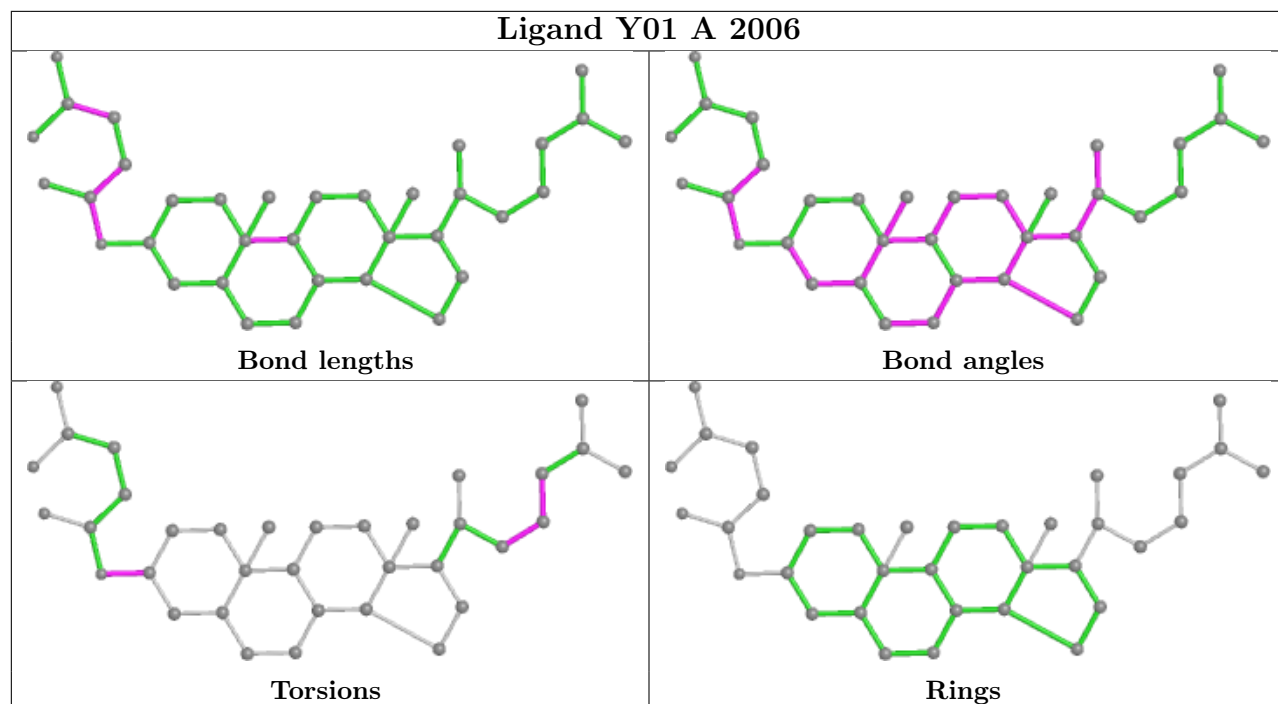


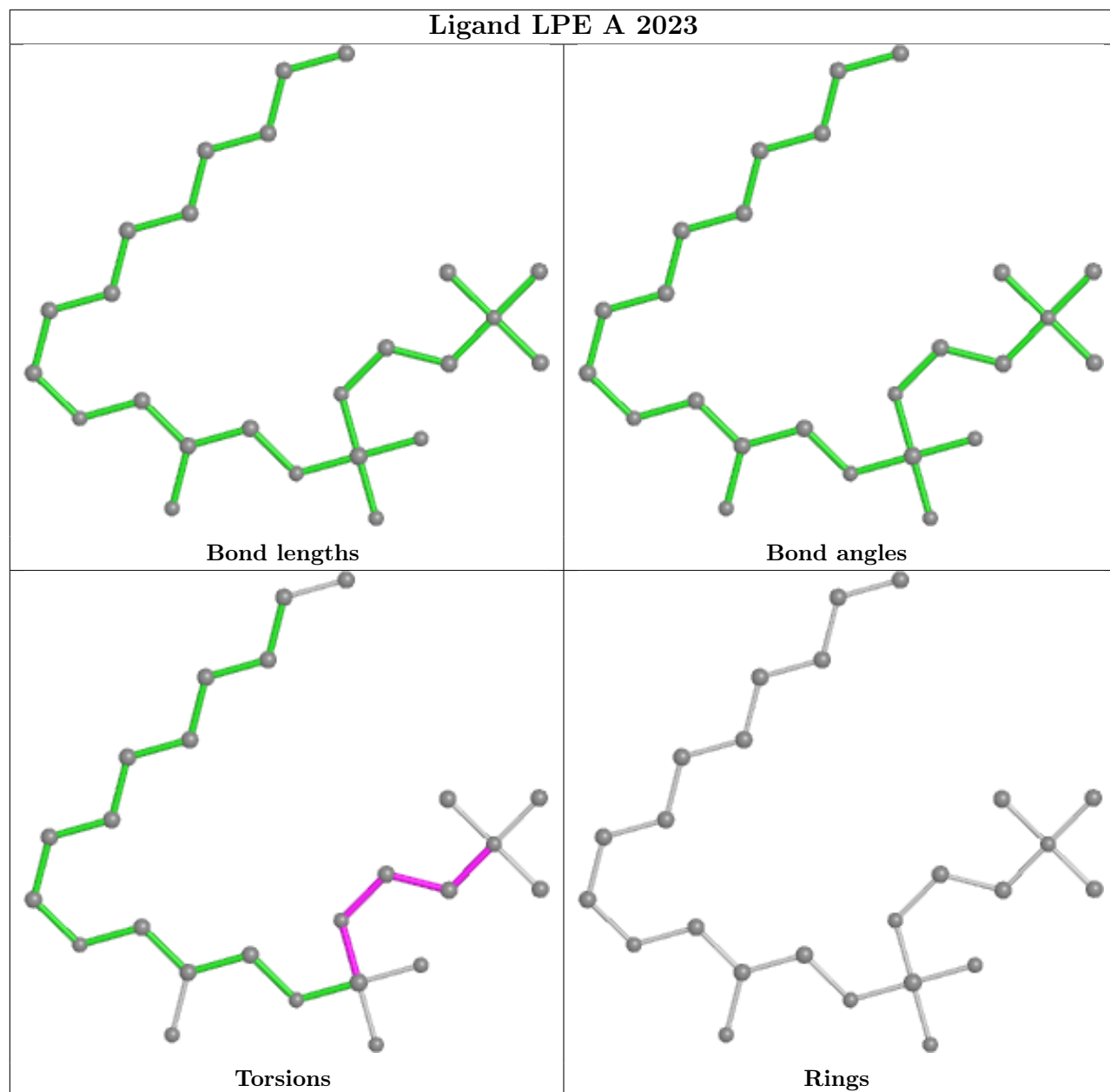




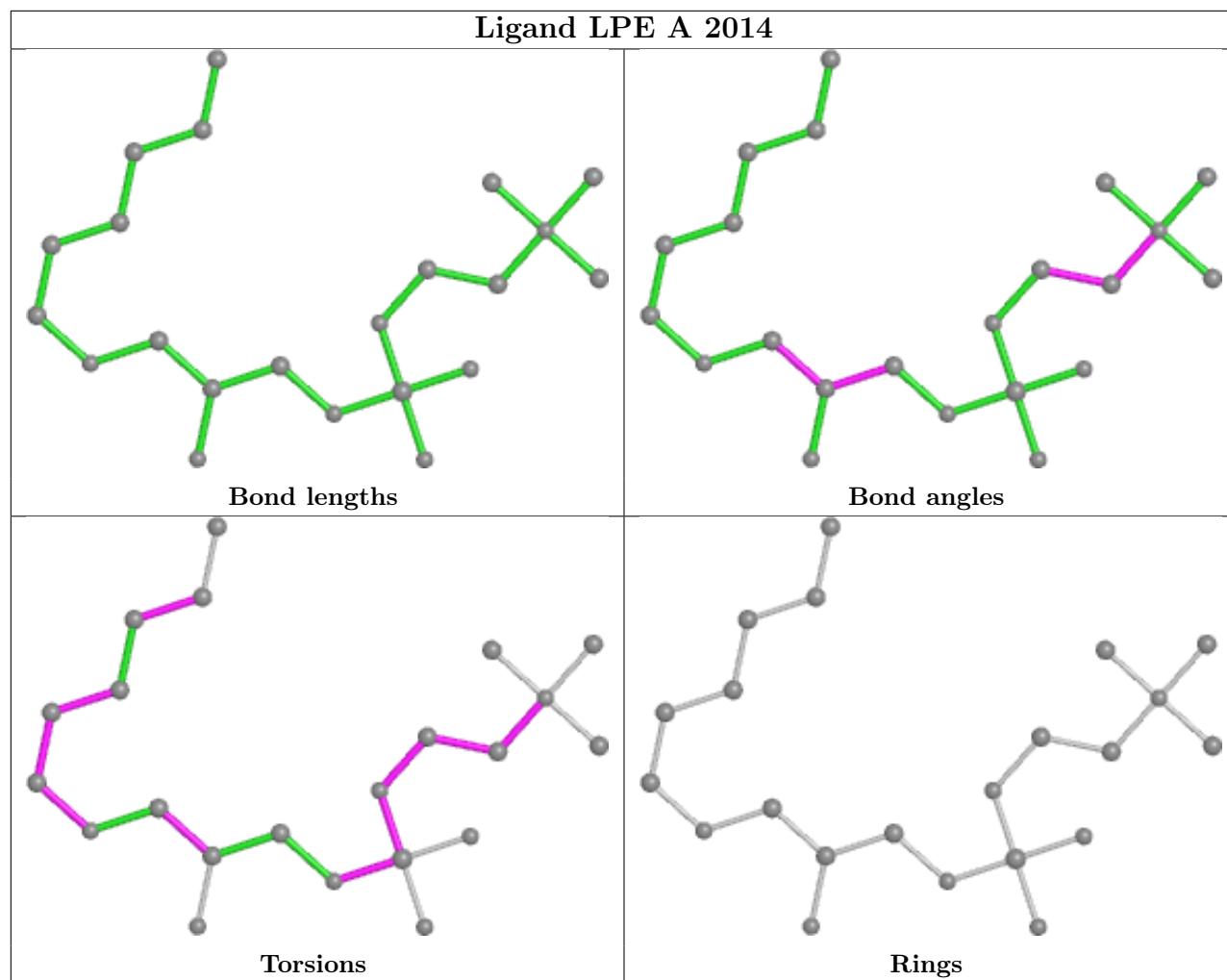












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [\(i\)](#)

There are no chain breaks in this entry.

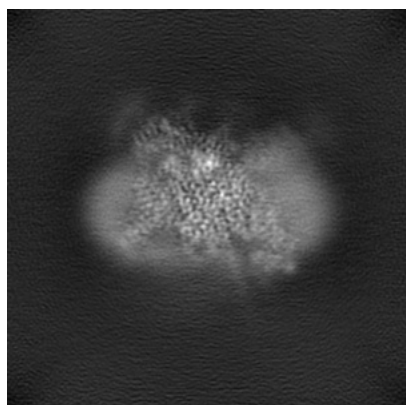
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32372. These allow visual inspection of the internal detail of the map and identification of artifacts.

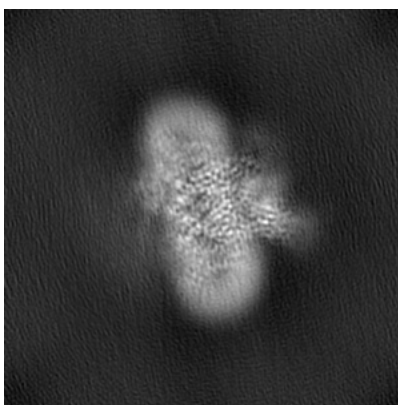
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

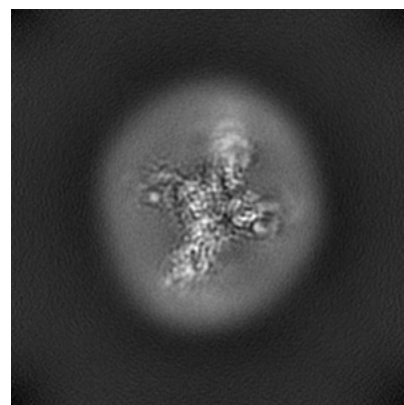
#### 6.1.1 Primary map



X



Y

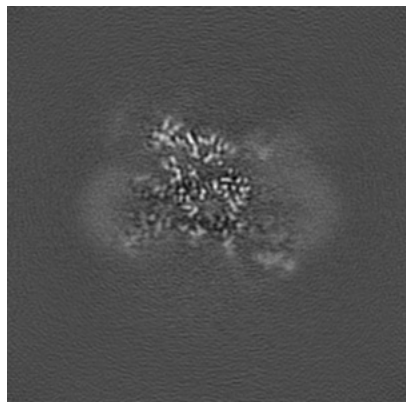


Z

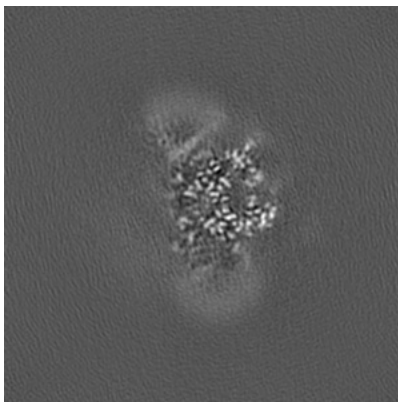
The images above show the map projected in three orthogonal directions.

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

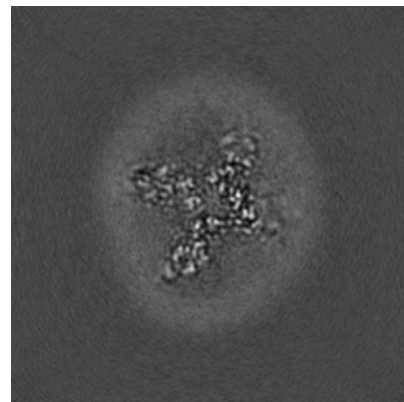
#### 6.2.1 Primary map



X Index: 120



Y Index: 120

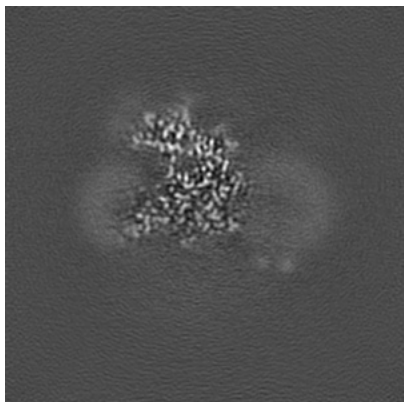


Z Index: 120

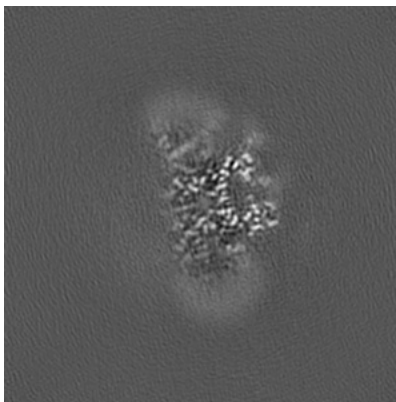
The images above show central slices of the map in three orthogonal directions.

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

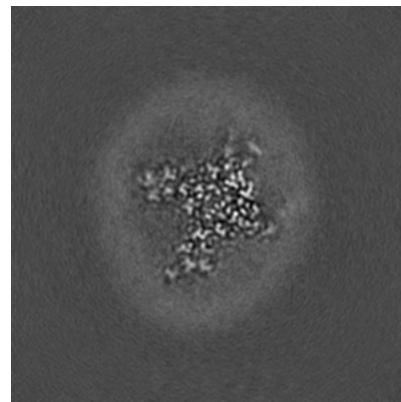
### 6.3.1 Primary map



X Index: 112



Y Index: 122

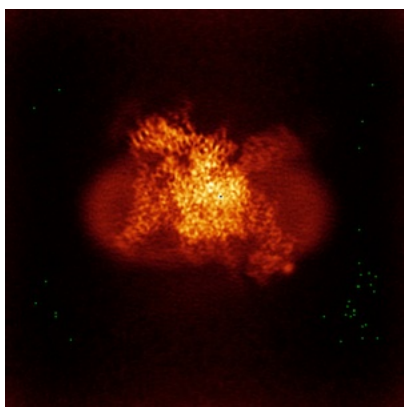


Z Index: 126

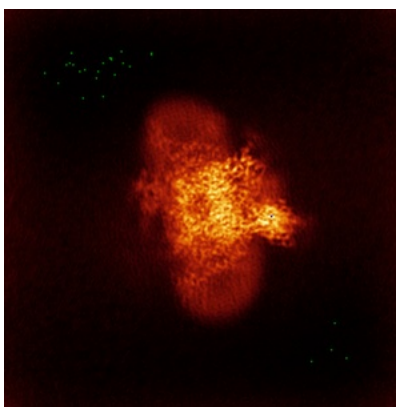
The images above show the largest variance slices of the map in three orthogonal directions.

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

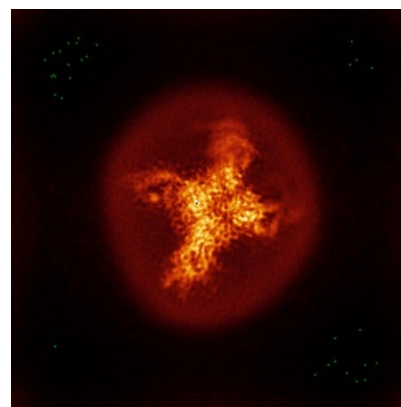
### 6.4.1 Primary map



X



Y



Z

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

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.63. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

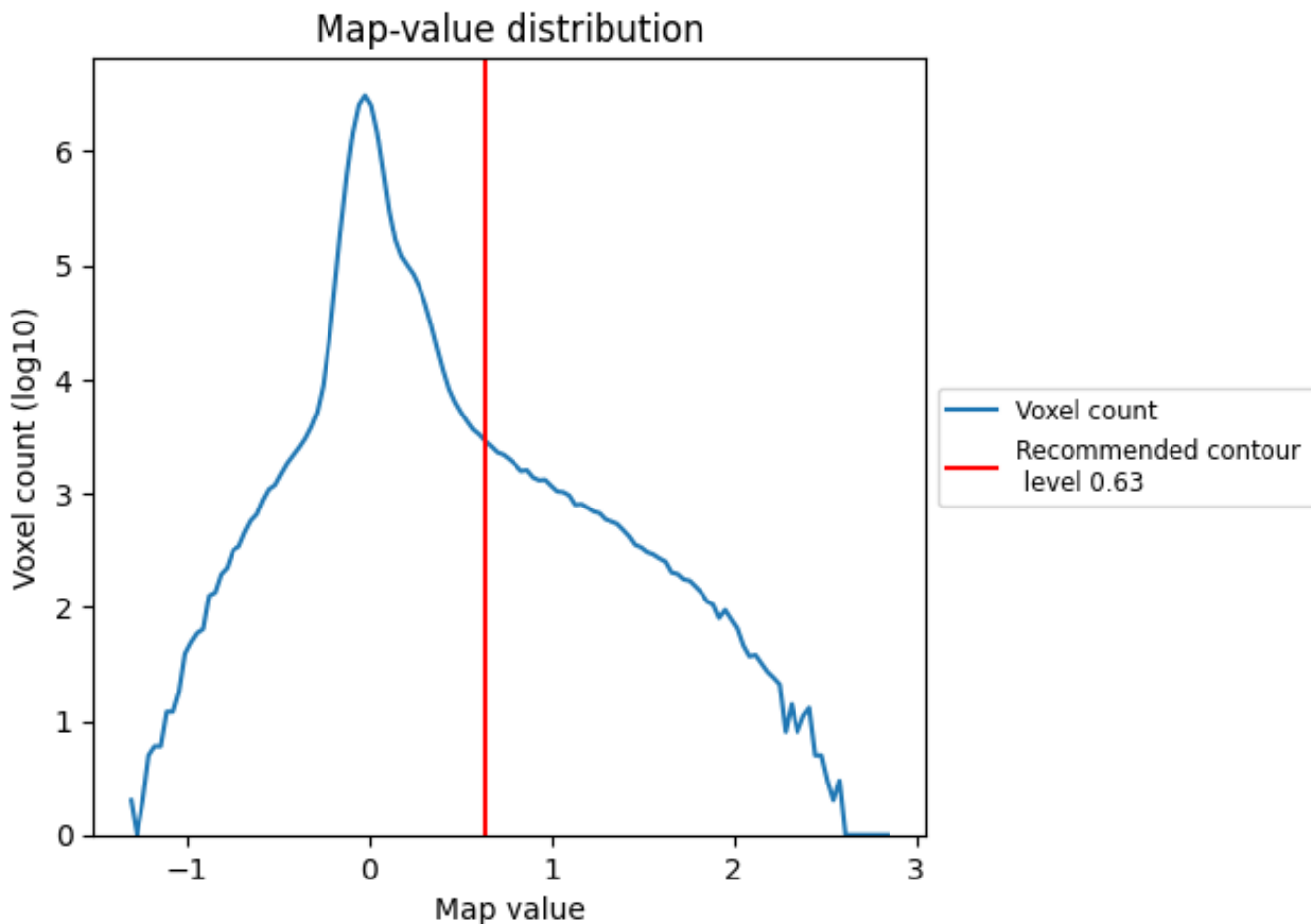
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

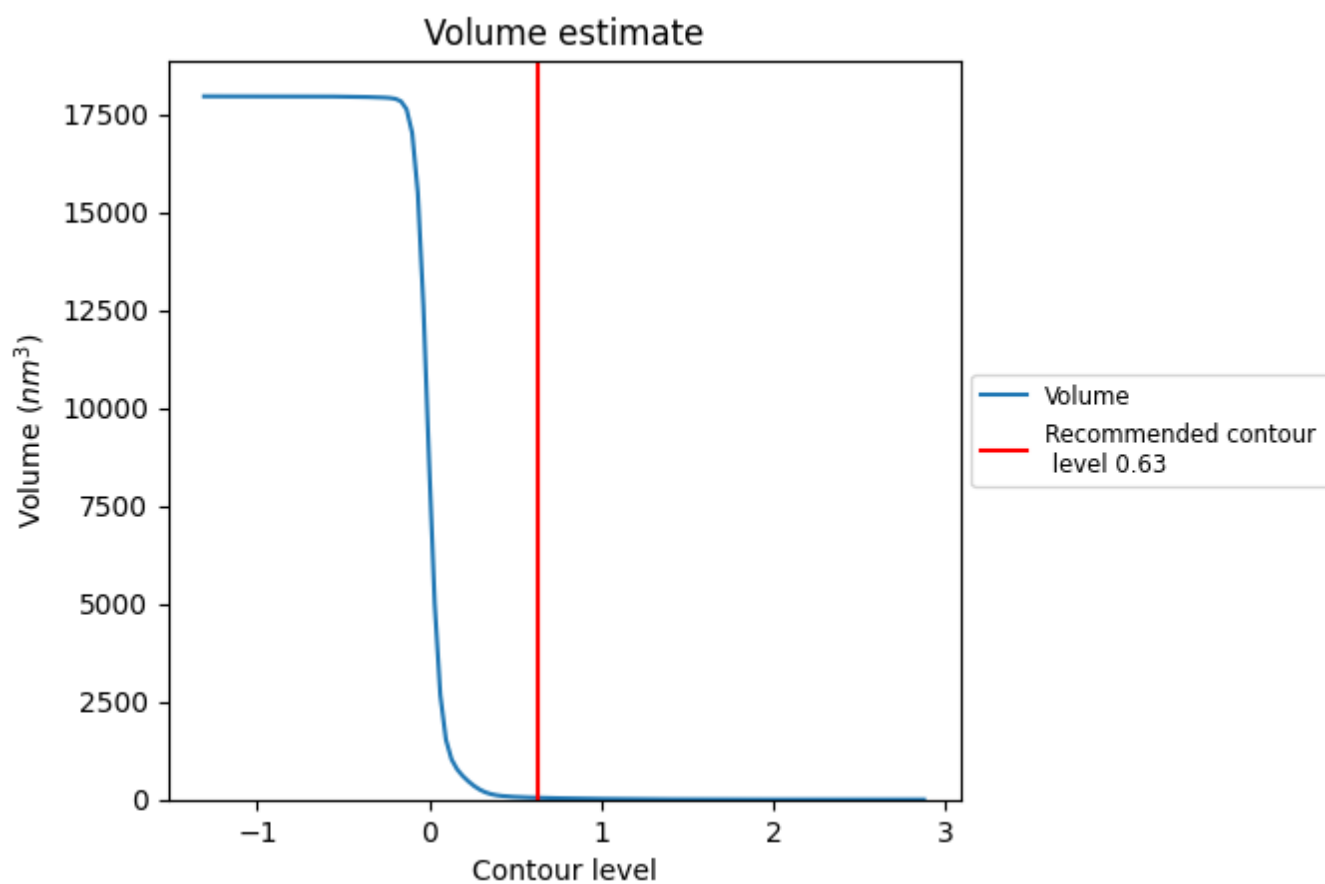
This section contains the results of statistical analysis of the map.

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



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

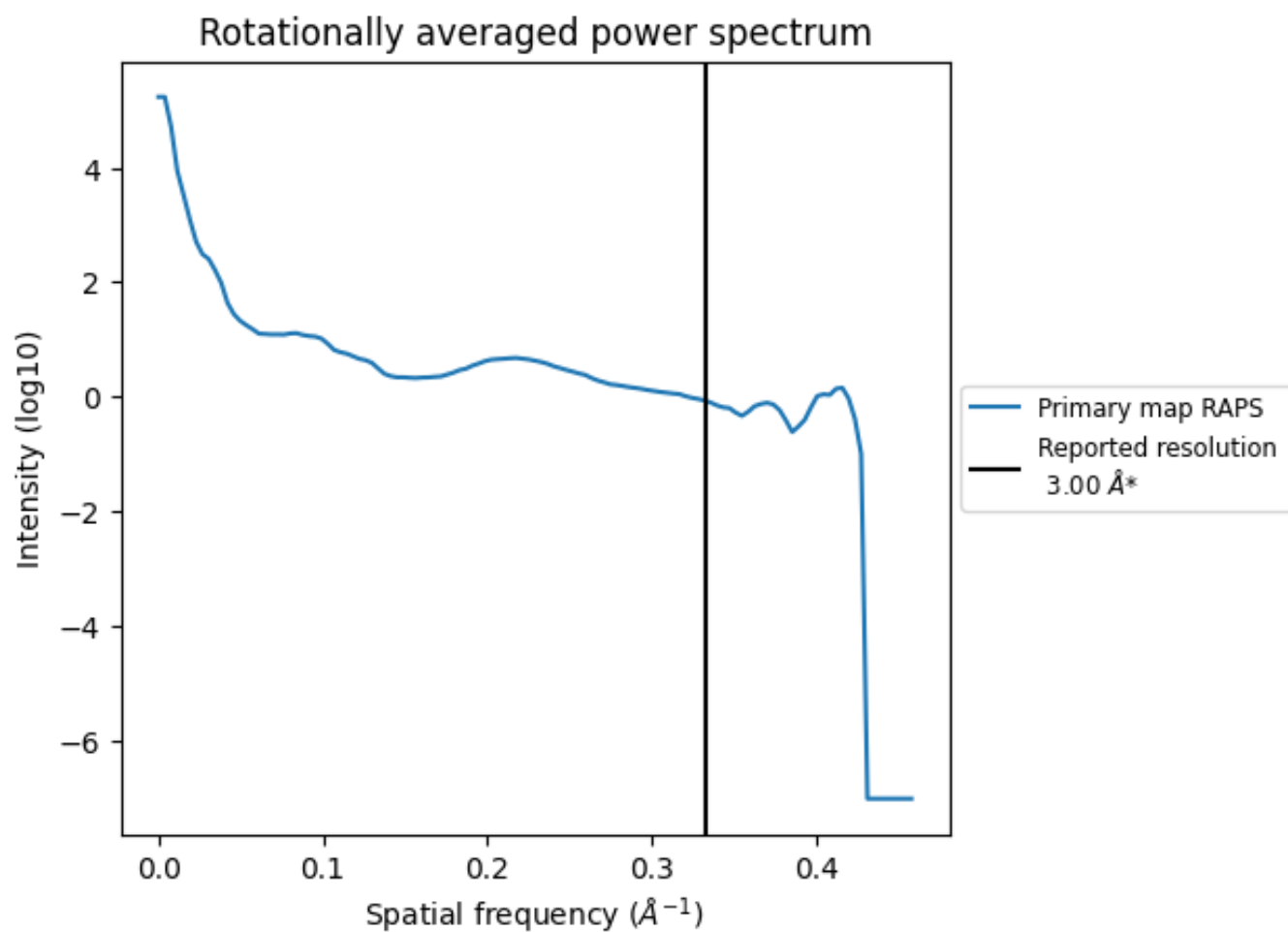
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 46 nm<sup>3</sup>; this corresponds to an approximate mass of 42 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum [i](#)



\*Reported resolution corresponds to spatial frequency of 0.333 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

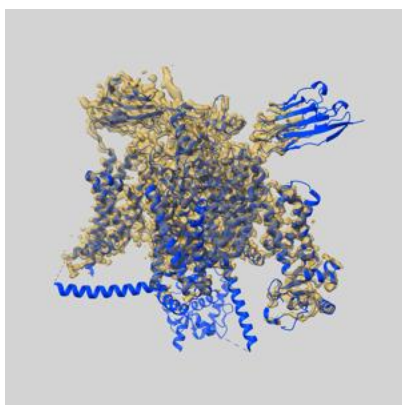
This section was not generated. No FSC curve or half-maps provided.



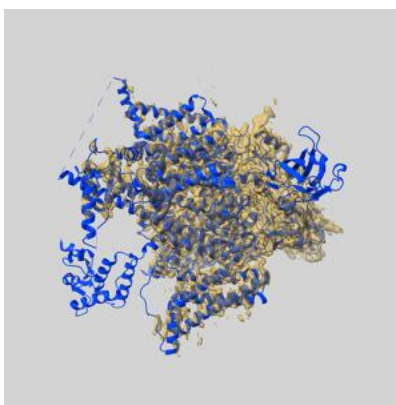
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-32372 and PDB model 7W9T. Per-residue inclusion information can be found in section [3](#) on page [12](#).

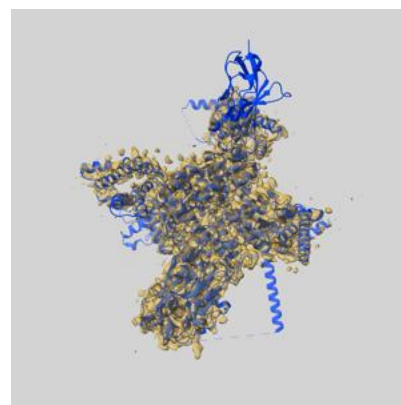
### 9.1 Map-model overlay [i](#)



X



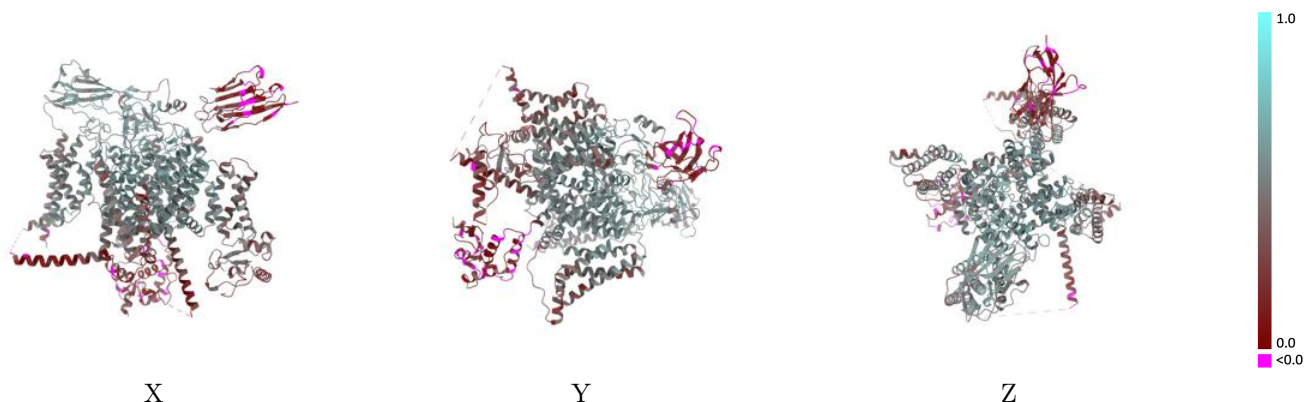
Y



Z

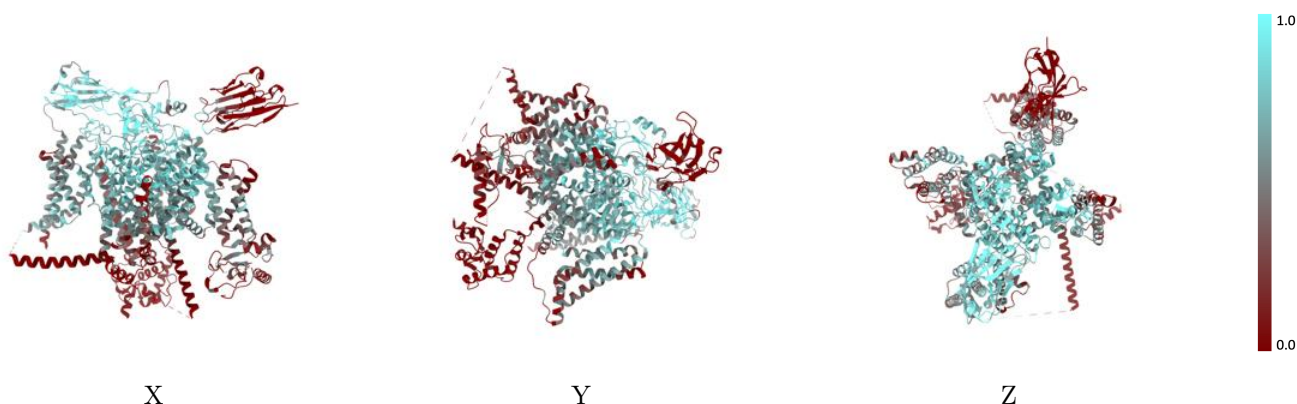
The images above show the 3D surface view of the map at the recommended contour level 0.63 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



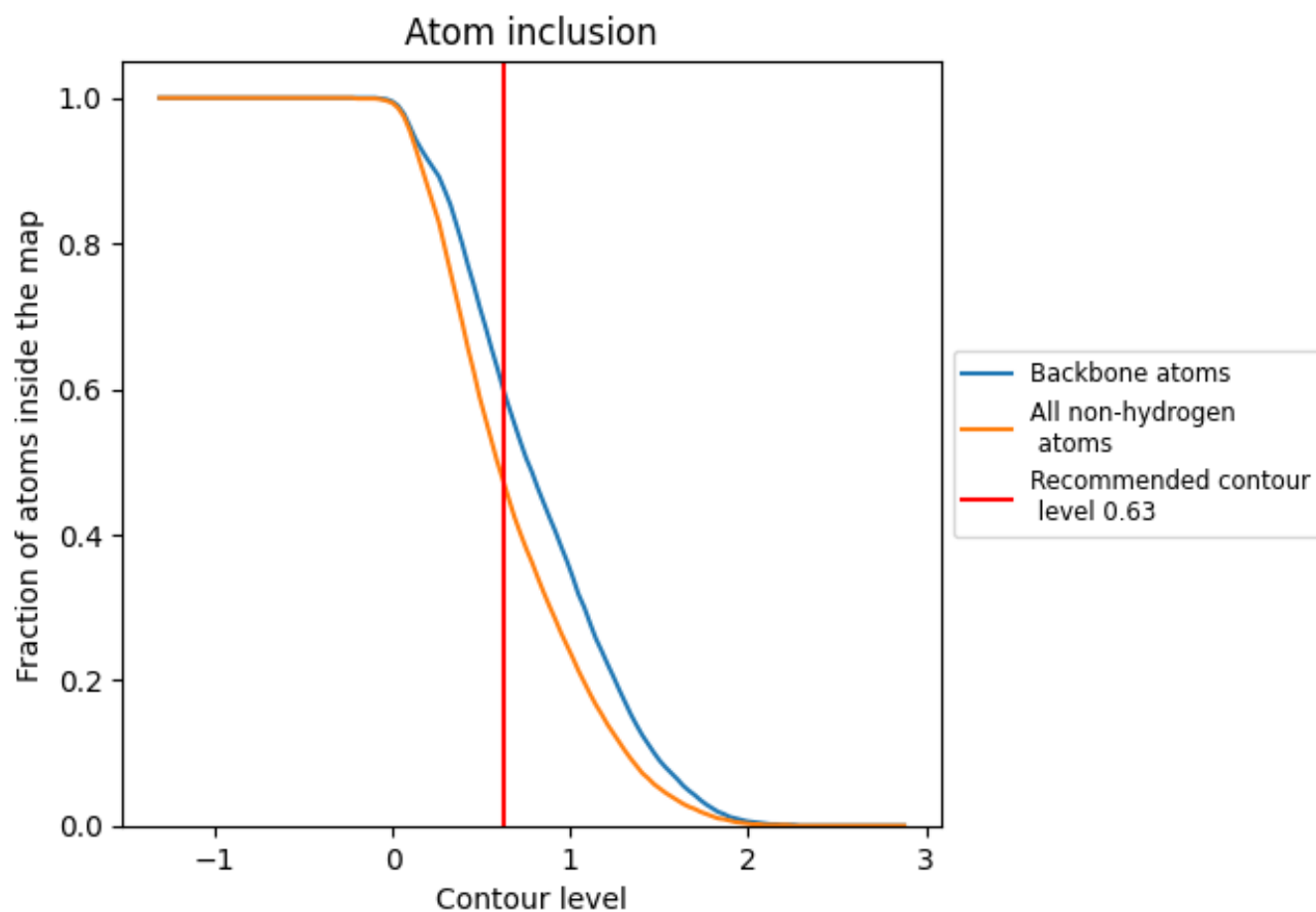
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.63).















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 59% of all backbone atoms, 47% 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 (0.63) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4680	 0.4310
A	 0.4680	 0.4410
B	 0.6940	 0.5070
C	 0.1130	 0.1840
D	 0.4640	 0.4680
E	 0.5710	 0.4350
F	 0.6790	 0.4410

