



Full wwPDB EM Validation Report ⓘ

Mar 15, 2026 – 12:09 AM JST

PDB ID : 9WZV / pdb_00009wzv
EMDB ID : EMD-66410
Title : Cryo-EM structure of Fks1 with intact active site
Authors : Bai, L.; Wang, L.X.
Deposited on : 2025-09-29
Resolution : 3.35 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 : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : **NOT EXECUTED**
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.48.1

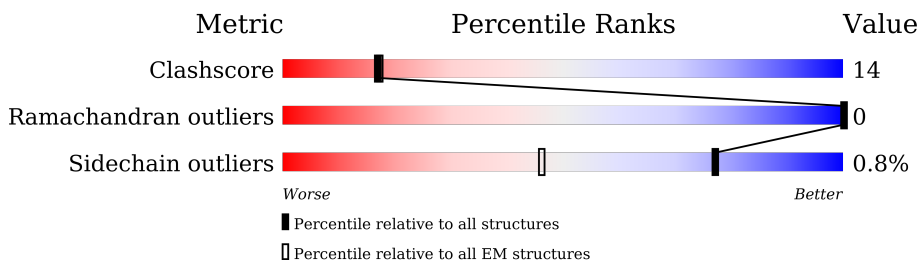
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.35 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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	1876	 62% 19% 18%
2	B	2	 100%

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 14046 atoms, of which 851 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 1,3-beta-glucan synthase component FKS1.

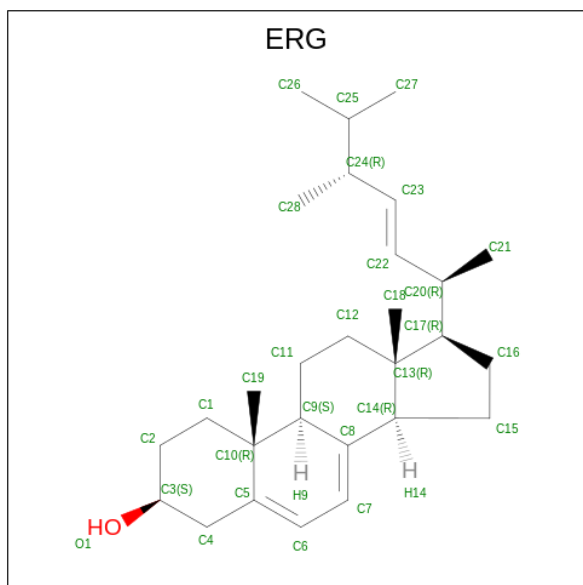
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1529	12456	8130	2089	2164	73	0	0

- 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
			Total	C	N	O		
2	B	2	28	16	2	10	0	0

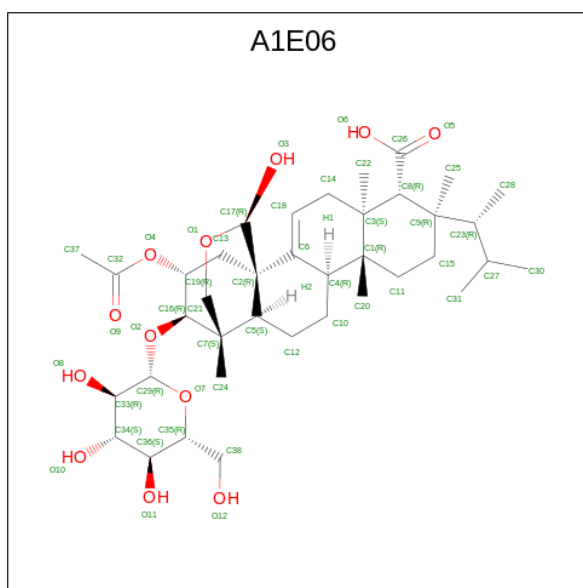
- Molecule 3 is ERGOSTEROL (CCD ID: ERG) (formula: C₂₈H₄₄O).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	O	0	
			29	28	1		
3	A	1	Total	C	O	0	
			29	28	1		
3	A	1	Total	C	O	0	
			29	28	1		
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	
3	A	1	Total	C	H	O	0
			73	28	44	1	

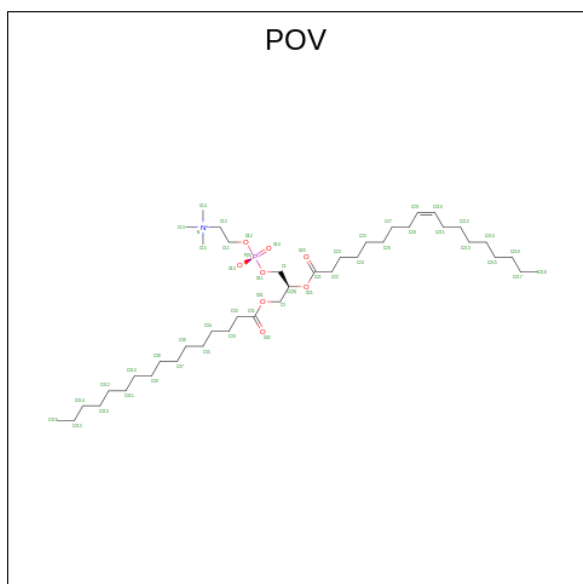
- Molecule 4 is Enfumafungin (CCD ID: A1E06) (formula: $C_{38}H_{60}O_{12}$) (labeled as "Ligand of

Interest" by depositor).

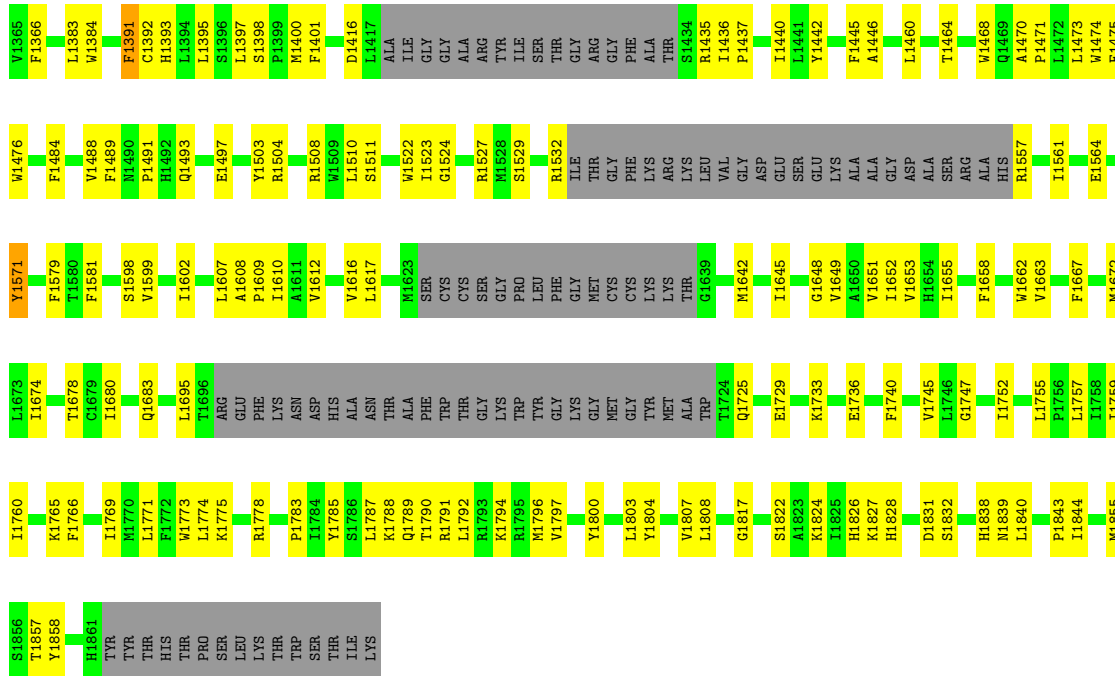


Mol	Chain	Residues	Atoms				AltConf
			Total	C	H	O	
4	A	1	109	38	59	12	0

- Molecule 5 is (2S)-3-(hexadecanoyloxy)-2-[(9Z)-octadec-9-enoyloxy]propyl 2-(trimethylammnio)ethyl phosphate (CCD ID: POV) (formula: $C_{42}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
5	A	1	52	42	1	8	1	0



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

Chain B: 100%

MAG1
MAG2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	37478	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	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, ERG, POV, A1E06

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	0.38	0/12790	0.55	1/17343 (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	1221	GLU	N-CA-C	-5.28	107.21	113.97

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	12456	0	12417	327	0
2	B	28	0	25	0	0
3	A	609	792	924	70	0
4	A	50	59	0	1	0
5	A	52	0	82	3	0
All	All	13195	851	13448	362	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 14.

All (362) 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)
3:A:1915:ERG:H151	3:A:1923:ERG:H271	1.24	1.12
1:A:1164:VAL:H	1:A:1774:LEU:HD22	1.18	1.06
1:A:1164:VAL:HG23	1:A:1165:LEU:HD12	1.41	1.02
1:A:639:PHE:CE2	3:A:1916:ERG:H122	1.95	1.00
1:A:1383:LEU:HD11	3:A:1919:ERG:C27	1.94	0.98
1:A:1168:VAL:HG22	1:A:1398:SER:HB2	1.44	0.97
1:A:1164:VAL:HG23	1:A:1165:LEU:CD1	1.96	0.96
3:A:1915:ERG:H151	3:A:1923:ERG:C27	1.96	0.96
1:A:720:ARG:NH2	1:A:800:ASP:O	1.99	0.93
1:A:1384:TRP:CZ3	3:A:1912:ERG:H3	2.06	0.91
1:A:1219:LEU:HD21	1:A:1261:LYS:HB3	1.50	0.90
1:A:369:VAL:HG13	1:A:370:TYR:HD1	1.35	0.90
3:A:1915:ERG:C15	3:A:1923:ERG:H271	2.03	0.87
1:A:472:PRO:HG2	3:A:1906:ERG:H121	1.58	0.85
1:A:1384:TRP:CH2	3:A:1912:ERG:H3	2.13	0.84
1:A:1504:ARG:NH1	1:A:1796:MET:SD	2.52	0.82
1:A:514:GLU:OE1	1:A:531:ARG:NH2	2.13	0.82
1:A:1164:VAL:N	1:A:1774:LEU:HD22	1.95	0.82
1:A:1102:ASP:OD1	1:A:1103:ALA:N	2.13	0.81
1:A:863:GLU:H	1:A:871:THR:HB	1.47	0.79
1:A:369:VAL:HG13	1:A:370:TYR:CD1	2.18	0.79
1:A:1817:GLY:HA3	3:A:1921:ERG:H211	1.65	0.79
1:A:1163:GLY:HA3	1:A:1774:LEU:HD23	1.64	0.77
1:A:639:PHE:CE2	3:A:1916:ERG:C12	2.68	0.76
1:A:1792:LEU:HG	1:A:1796:MET:HE3	1.68	0.75
1:A:1788:LYS:HE3	1:A:1788:LYS:HA	1.67	0.75
1:A:855:LEU:HD22	1:A:859:GLU:HG2	1.68	0.74
1:A:1464:THR:HG21	1:A:1476:TRP:HE1	1.53	0.73
1:A:1616:VAL:HG21	1:A:1649:VAL:HG11	1.71	0.73
1:A:497:ALA:HB3	1:A:546:ILE:HD11	1.71	0.72
1:A:1334:LYS:HD2	1:A:1336:LYS:HB3	1.72	0.72
1:A:1219:LEU:HD21	1:A:1261:LYS:CB	2.20	0.72
1:A:1256:LEU:HD13	1:A:1445:PHE:HZ	1.55	0.71
1:A:711:LEU:HD23	1:A:713:ILE:HG13	1.71	0.71
1:A:656:MET:HE2	1:A:1581:PHE:HZ	1.55	0.71
1:A:1165:LEU:HB3	1:A:1250:LEU:HD13	1.72	0.70
1:A:1164:VAL:HA	1:A:1168:VAL:HG23	1.71	0.70
1:A:1165:LEU:HB3	1:A:1250:LEU:CD1	2.22	0.70
1:A:719:TRP:HE1	1:A:802:ASN:ND2	1.90	0.69
1:A:1310:MET:HE3	3:A:1904:ERG:H191	1.74	0.69

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1383:LEU:HD11	3:A:1919:ERG:H273	1.72	0.68
1:A:734:ILE:HG12	1:A:826:LEU:HD11	1.76	0.68
1:A:718:PRO:HB2	1:A:721:ASN:HB2	1.76	0.68
1:A:661:GLU:OE2	1:A:1598:SER:OG	2.11	0.66
1:A:1340:LEU:HD12	1:A:1340:LEU:H	1.61	0.66
1:A:1484:PHE:O	1:A:1488:VAL:HG23	1.96	0.65
1:A:821:PHE:CE2	1:A:1243:GLN:HG2	2.31	0.65
1:A:843:THR:OG1	1:A:1094:ARG:O	2.14	0.65
1:A:1165:LEU:HD11	1:A:1775:LYS:HE2	1.78	0.65
1:A:472:PRO:HG2	3:A:1906:ERG:C12	2.26	0.65
1:A:1167:ASP:OD2	1:A:1393:HIS:HA	1.97	0.65
1:A:1787:LEU:HA	1:A:1790:THR:HB	1.78	0.65
1:A:934:GLU:HB3	1:A:938:ARG:HH12	1.60	0.65
1:A:387:ILE:O	1:A:437:LYS:NZ	2.29	0.64
1:A:383:ASP:OD1	1:A:386:LYS:HD3	1.97	0.64
1:A:639:PHE:HE2	3:A:1916:ERG:H17	1.62	0.64
1:A:656:MET:HE2	1:A:1581:PHE:CZ	2.33	0.63
1:A:775:LEU:HD12	1:A:775:LEU:O	1.99	0.63
1:A:1164:VAL:CG2	1:A:1165:LEU:CD1	2.74	0.63
1:A:1391:PHE:O	1:A:1395:LEU:HG	1.99	0.63
1:A:1769:ILE:HG22	3:A:1923:ERG:H211	1.80	0.62
1:A:1227:MET:CE	1:A:1274:GLU:HB3	2.29	0.62
1:A:1436:ILE:H	1:A:1436:ILE:HD12	1.65	0.61
1:A:1164:VAL:HG12	1:A:1168:VAL:HG21	1.81	0.61
1:A:745:LYS:HB2	1:A:748:VAL:HG23	1.82	0.61
1:A:1172:LYS:HA	1:A:1175:THR:HG22	1.83	0.60
3:A:1909:ERG:H181	3:A:1921:ERG:H7	1.82	0.60
1:A:603:SER:O	1:A:607:THR:OG1	2.19	0.60
1:A:771:HIS:HA	1:A:774:LYS:HG2	1.82	0.60
1:A:1564:GLU:OE1	3:A:1907:ERG:O1	2.20	0.60
1:A:1256:LEU:HD13	1:A:1445:PHE:CZ	2.35	0.60
1:A:420:GLU:OE1	1:A:420:GLU:N	2.34	0.60
1:A:1828:HIS:HB2	1:A:1831:ASP:HB2	1.84	0.59
1:A:1253:GLY:HA2	1:A:1256:LEU:HD12	1.84	0.59
1:A:1267:GLY:HA3	1:A:1416:ASP:CG	2.27	0.59
3:A:1909:ERG:H191	3:A:1909:ERG:H182	1.84	0.59
1:A:493:TRP:HB2	1:A:566:ALA:HB1	1.84	0.58
1:A:876:LEU:O	1:A:879:LEU:HB2	2.03	0.58
1:A:195:SER:OG	1:A:1096:GLU:OE1	2.21	0.58
1:A:888:VAL:O	1:A:892:LYS:HB2	2.03	0.58
1:A:343:GLN:O	1:A:343:GLN:HG2	2.02	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1227:MET:HE3	1:A:1274:GLU:HB3	1.86	0.57
1:A:530:ARG:NH2	1:A:592:TYR:HB2	2.18	0.57
1:A:1783:PRO:HB2	1:A:1785:TYR:CE2	2.40	0.57
1:A:1328:CYS:SG	1:A:1340:LEU:HD23	2.45	0.57
1:A:1773:TRP:CD1	3:A:1923:ERG:H182	2.39	0.57
3:A:1916:ERG:H183	3:A:1916:ERG:H212	1.86	0.57
1:A:768:ALA:HB3	1:A:771:HIS:HD1	1.69	0.57
1:A:1356:ARG:NH1	1:A:1471:PRO:HG3	2.20	0.57
1:A:1497:GLU:HG2	1:A:1797:VAL:HG21	1.87	0.57
1:A:1085:ASN:HA	1:A:1088:HIS:HD2	1.70	0.56
1:A:1571:TYR:HE1	3:A:1904:ERG:H192	1.69	0.56
1:A:1197:ASP:OD1	1:A:1197:ASP:N	2.37	0.56
1:A:731:TYR:HE1	1:A:744:TYR:HE1	1.52	0.56
1:A:687:LEU:HD21	1:A:1358:TYR:HE1	1.71	0.56
1:A:1579:PHE:HD1	1:A:1674:ILE:HG23	1.69	0.55
1:A:1612:VAL:HG11	1:A:1653:VAL:HG21	1.89	0.55
1:A:736:ALA:HB2	1:A:833:PRO:HG2	1.87	0.55
1:A:526:GLN:N	1:A:526:GLN:OE1	2.39	0.55
1:A:720:ARG:HB3	1:A:799:GLN:CG	2.37	0.55
1:A:646:ASP:HB3	1:A:647:PRO:HD3	1.87	0.55
1:A:1165:LEU:HD21	1:A:1775:LYS:HG2	1.88	0.55
1:A:370:TYR:HD2	1:A:377:PHE:HB3	1.72	0.55
1:A:383:ASP:OD1	1:A:383:ASP:N	2.39	0.55
1:A:1101:ILE:HG22	1:A:1102:ASP:O	2.07	0.55
1:A:802:ASN:O	1:A:803:ASN:C	2.49	0.54
1:A:860:ILE:HA	1:A:872:LEU:HD23	1.88	0.54
1:A:1617:LEU:HD11	1:A:1733:LYS:CG	2.37	0.54
1:A:1329:ILE:HD11	1:A:1341:VAL:HG23	1.90	0.54
3:A:1913:ERG:H212	3:A:1913:ERG:H183	1.90	0.54
1:A:369:VAL:CG1	1:A:370:TYR:HD1	2.16	0.54
1:A:1329:ILE:HD11	1:A:1341:VAL:CG2	2.38	0.54
1:A:720:ARG:NH2	1:A:800:ASP:C	2.66	0.54
1:A:1663:VAL:HG11	3:A:1909:ERG:H7	1.90	0.54
1:A:740:MET:HE2	1:A:740:MET:HA	1.91	0.53
3:A:1907:ERG:H121	3:A:1907:ERG:H212	1.90	0.53
1:A:1162:SER:HB2	1:A:1165:LEU:HB2	1.90	0.53
3:A:1913:ERG:H212	3:A:1913:ERG:H121	1.90	0.53
1:A:821:PHE:CG	1:A:1243:GLN:NE2	2.77	0.52
1:A:1642:MET:O	1:A:1645:ILE:HG22	2.10	0.52
1:A:639:PHE:CD2	3:A:1916:ERG:C12	2.93	0.52
1:A:1254:THR:HA	1:A:1257:ASN:HD21	1.74	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1341:VAL:HB	1:A:1342:PRO:HD3	1.91	0.52
1:A:1464:THR:HB	1:A:1468:TRP:HE3	1.75	0.52
1:A:1617:LEU:HD11	1:A:1733:LYS:HG3	1.90	0.52
1:A:1773:TRP:NE1	3:A:1923:ERG:H182	2.25	0.52
1:A:1473:LEU:HD23	1:A:1473:LEU:O	2.10	0.52
1:A:1651:VAL:O	1:A:1655:ILE:HG13	2.10	0.52
1:A:1356:ARG:HB2	1:A:1356:ARG:CZ	2.39	0.52
1:A:1607:LEU:O	1:A:1608:ALA:C	2.53	0.52
1:A:1579:PHE:HE2	1:A:1598:SER:HB2	1.75	0.51
1:A:1752:ILE:CD1	1:A:1808:LEU:HD12	2.40	0.51
1:A:1680:ILE:HG23	5:A:1905:POV:H22A	1.93	0.51
1:A:872:LEU:O	1:A:876:LEU:HG	2.11	0.51
5:A:1905:POV:H214	5:A:1905:POV:H39A	1.91	0.51
1:A:1294:HIS:HB2	1:A:1295:PRO:HD3	1.93	0.51
1:A:1855:MET:C	1:A:1857:THR:H	2.19	0.51
1:A:720:ARG:HB3	1:A:799:GLN:HG3	1.92	0.50
1:A:875:TYR:CZ	1:A:1778:ARG:HB2	2.46	0.50
1:A:1165:LEU:CD1	1:A:1165:LEU:N	2.74	0.50
1:A:1522:TRP:CE3	1:A:1523:ILE:HA	2.46	0.50
1:A:1309:GLN:OE1	3:A:1904:ERG:H21	2.11	0.50
1:A:719:TRP:HE1	1:A:802:ASN:HD21	1.57	0.50
1:A:1571:TYR:CE1	3:A:1904:ERG:H42	2.47	0.50
1:A:1165:LEU:CB	1:A:1250:LEU:HD13	2.41	0.50
1:A:1383:LEU:HD11	3:A:1919:ERG:H271	1.90	0.50
1:A:1397:LEU:O	1:A:1400:MET:HG2	2.12	0.50
1:A:1163:GLY:HA3	1:A:1774:LEU:CD2	2.37	0.50
1:A:1164:VAL:O	1:A:1169:ALA:N	2.32	0.49
1:A:1662:TRP:CD1	1:A:1667:PHE:HA	2.46	0.49
1:A:731:TYR:HE1	1:A:744:TYR:CE1	2.29	0.49
1:A:947:SER:OG	1:A:948:GLN:N	2.46	0.49
1:A:1791:ARG:HH21	1:A:1794:LYS:HB3	1.77	0.49
1:A:1803:LEU:O	1:A:1807:VAL:HG23	2.12	0.49
3:A:1918:ERG:H121	3:A:1918:ERG:H212	1.94	0.49
1:A:1121:GLU:OE2	1:A:1121:GLU:HA	2.12	0.49
1:A:720:ARG:HH21	1:A:800:ASP:CA	2.26	0.49
1:A:1579:PHE:CE2	1:A:1598:SER:HB2	2.48	0.49
1:A:761:MET:HE1	1:A:819:ILE:HG12	1.94	0.49
1:A:1765:LYS:HD3	1:A:1765:LYS:N	2.27	0.49
1:A:1508:ARG:O	1:A:1511:SER:N	2.46	0.49
1:A:1571:TYR:CD1	3:A:1904:ERG:H42	2.48	0.49
1:A:1755:LEU:O	1:A:1759:ILE:HG13	2.13	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1437:PRO:HG2	1:A:1440:ILE:HG12	1.95	0.49
1:A:1489:PHE:O	1:A:1771:LEU:HD21	2.13	0.48
1:A:778:HIS:O	1:A:791:ARG:HB2	2.13	0.48
1:A:1310:MET:CE	3:A:1904:ERG:H191	2.42	0.48
3:A:1906:ERG:H121	3:A:1906:ERG:H212	1.94	0.48
1:A:698:ILE:O	1:A:702:ILE:HG13	2.14	0.48
1:A:845:LEU:HD13	1:A:1001:LEU:HD23	1.95	0.48
1:A:1474:TRP:HE3	3:A:1914:ERG:H121	1.78	0.48
1:A:1773:TRP:CD1	3:A:1923:ERG:C18	2.97	0.48
1:A:1831:ASP:O	1:A:1832:SER:HB3	2.13	0.48
1:A:639:PHE:CD2	3:A:1916:ERG:H121	2.48	0.48
1:A:1757:LEU:O	1:A:1760:ILE:HB	2.13	0.48
1:A:859:GLU:HG3	1:A:872:LEU:CD2	2.43	0.48
1:A:1165:LEU:HB3	1:A:1250:LEU:HD12	1.96	0.48
1:A:1219:LEU:HD12	1:A:1219:LEU:N	2.28	0.48
1:A:1608:ALA:N	1:A:1609:PRO:HD2	2.29	0.48
1:A:720:ARG:HH21	1:A:800:ASP:HA	1.78	0.48
1:A:1667:PHE:HZ	3:A:1921:ERG:H191	1.78	0.48
1:A:857:LEU:O	1:A:861:ILE:HG12	2.14	0.48
1:A:1442:TYR:O	1:A:1446:ALA:HB2	2.14	0.48
1:A:1733:LYS:HA	1:A:1736:GLU:OE1	2.14	0.48
1:A:875:TYR:OH	1:A:1778:ARG:HB2	2.13	0.48
1:A:1318:LEU:HD21	1:A:1352:VAL:HA	1.96	0.48
1:A:443:ARG:HA	1:A:1271:LEU:CD2	2.44	0.47
1:A:443:ARG:HA	1:A:1271:LEU:HD21	1.95	0.47
1:A:984:GLU:O	1:A:988:ARG:HG2	2.15	0.47
1:A:1193:TYR:HD2	1:A:1225:ALA:HB3	1.79	0.47
1:A:1524:GLY:HA2	1:A:1527:ARG:HG2	1.95	0.47
1:A:714:SER:OG	1:A:715:ILE:N	2.47	0.47
1:A:1168:VAL:HG22	1:A:1398:SER:CB	2.28	0.47
1:A:1283:PRO:HG2	1:A:1286:ARG:HG3	1.96	0.47
1:A:770:ASP:O	1:A:774:LYS:HG2	2.15	0.47
1:A:1435:ARG:NH1	1:A:1493:GLN:OE1	2.47	0.47
1:A:1100:LEU:HD11	1:A:1193:TYR:CZ	2.49	0.47
3:A:1910:ERG:H193	3:A:1912:ERG:H181	1.96	0.47
1:A:653:THR:HG22	3:A:1906:ERG:H11	1.97	0.47
1:A:1057:GLU:OE1	1:A:1065:ARG:NH1	2.46	0.47
1:A:1267:GLY:O	1:A:1271:LEU:HD13	2.15	0.47
1:A:1384:TRP:CH2	3:A:1912:ERG:C3	2.94	0.47
1:A:1395:LEU:HD13	3:A:1923:ERG:H152	1.95	0.47
1:A:371:GLU:OE2	1:A:372:ILE:N	2.47	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1828:HIS:CE1	1:A:1843:PRO:HA	2.50	0.47
1:A:1464:THR:HB	1:A:1468:TRP:CE3	2.51	0.46
1:A:687:LEU:HD21	1:A:1358:TYR:CE1	2.50	0.46
1:A:884:TRP:CE3	1:A:884:TRP:HA	2.50	0.46
1:A:1248:ARG:HD2	1:A:1250:LEU:HD21	1.97	0.46
1:A:1356:ARG:HH12	1:A:1471:PRO:HG3	1.80	0.46
3:A:1901:ERG:H213	3:A:1901:ERG:H25	1.96	0.46
1:A:1194:GLY:N	1:A:1197:ASP:OD2	2.48	0.46
3:A:1906:ERG:H272	3:A:1906:ERG:C22	2.45	0.46
1:A:303:ARG:NH2	1:A:337:ASP:OD1	2.48	0.46
1:A:317:GLN:HG3	1:A:362:TYR:HD1	1.81	0.46
1:A:1219:LEU:N	1:A:1219:LEU:CD1	2.78	0.46
1:A:1219:LEU:CD2	1:A:1261:LYS:HB3	2.35	0.46
1:A:1435:ARG:H	1:A:1491:PRO:HG2	1.81	0.46
1:A:1672:MET:HE3	1:A:1672:MET:HB3	1.82	0.46
1:A:884:TRP:O	1:A:888:VAL:HG23	2.16	0.46
1:A:1383:LEU:HD11	3:A:1919:ERG:H272	1.94	0.46
1:A:936:THR:O	1:A:940:ARG:HG2	2.15	0.46
1:A:1164:VAL:CG2	1:A:1165:LEU:HD13	2.45	0.46
1:A:1168:VAL:HG13	1:A:1398:SER:OG	2.14	0.46
1:A:1783:PRO:HB2	1:A:1785:TYR:CZ	2.50	0.46
3:A:1912:ERG:H161	3:A:1918:ERG:C23	2.46	0.46
1:A:657:ARG:NH2	1:A:1344:GLY:O	2.30	0.46
1:A:1333:ASN:O	1:A:1335:PRO:HD3	2.15	0.46
1:A:1356:ARG:HH11	1:A:1356:ARG:HG3	1.80	0.46
1:A:1752:ILE:HD11	1:A:1808:LEU:HB2	1.98	0.46
3:A:1914:ERG:H121	3:A:1914:ERG:H212	1.98	0.46
1:A:747:LYS:O	1:A:748:VAL:C	2.58	0.45
1:A:977:GLN:OE1	1:A:978:MET:N	2.50	0.45
1:A:1163:GLY:O	1:A:1166:GLY:N	2.47	0.45
1:A:1252:PHE:O	1:A:1256:LEU:HG	2.16	0.45
1:A:720:ARG:NH2	1:A:800:ASP:HA	2.32	0.45
1:A:768:ALA:HB3	1:A:771:HIS:ND1	2.30	0.45
1:A:1769:ILE:CG2	3:A:1923:ERG:H211	2.44	0.45
3:A:1902:ERG:H212	3:A:1902:ERG:H121	1.99	0.45
3:A:1920:ERG:H121	3:A:1920:ERG:H212	1.98	0.45
1:A:365:ILE:HD13	1:A:390:TYR:HE1	1.82	0.45
1:A:1264:ALA:HA	1:A:1416:ASP:OD2	2.17	0.45
1:A:1745:VAL:C	1:A:1747:GLY:N	2.74	0.45
3:A:1912:ERG:H183	3:A:1912:ERG:H212	1.99	0.45
1:A:634:SER:HB3	4:A:1903:A1E06:C25	2.47	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:740:MET:HE3	1:A:835:PRO:HB3	2.00	0.45
1:A:1392:CYS:HA	1:A:1395:LEU:HD12	1.99	0.45
1:A:1648:GLY:O	1:A:1652:ILE:HG13	2.17	0.45
3:A:1909:ERG:H181	3:A:1921:ERG:C7	2.47	0.45
3:A:1910:ERG:C19	3:A:1912:ERG:H181	2.46	0.45
1:A:233:ASP:OD1	1:A:605:THR:OG1	2.34	0.44
1:A:1165:LEU:CD2	1:A:1775:LYS:HG2	2.47	0.44
1:A:1348:PHE:O	1:A:1352:VAL:HG23	2.17	0.44
1:A:1383:LEU:HD21	3:A:1919:ERG:H271	1.99	0.44
1:A:1745:VAL:C	1:A:1747:GLY:H	2.25	0.44
3:A:1910:ERG:H211	3:A:1912:ERG:H283	2.00	0.44
1:A:772:VAL:O	1:A:776:LEU:HB2	2.17	0.44
1:A:1157:ILE:HG21	1:A:1248:ARG:NE	2.32	0.44
1:A:1766:PHE:CE2	3:A:1915:ERG:C6	3.00	0.44
1:A:1102:ASP:OD2	1:A:1246:LYS:NZ	2.49	0.44
1:A:474:PHE:CD2	1:A:492:LYS:HG3	2.53	0.44
1:A:1254:THR:HA	1:A:1257:ASN:ND2	2.32	0.44
1:A:1256:LEU:O	1:A:1259:THR:OG1	2.33	0.44
1:A:1460:LEU:O	1:A:1464:THR:HG23	2.18	0.44
1:A:1522:TRP:CE3	1:A:1523:ILE:CA	3.01	0.44
1:A:1557:ARG:O	1:A:1561:ILE:HG13	2.18	0.44
1:A:464:TRP:CD1	1:A:464:TRP:C	2.95	0.44
1:A:860:ILE:HD13	1:A:872:LEU:HD23	1.99	0.44
1:A:946:ARG:NH1	1:A:946:ARG:HG2	2.32	0.44
1:A:1609:PRO:HG3	1:A:1683:GLN:NE2	2.32	0.44
1:A:1791:ARG:NE	1:A:1791:ARG:HA	2.32	0.44
1:A:538:ILE:HA	1:A:541:ILE:HG22	1.98	0.44
1:A:661:GLU:OE1	1:A:1599:VAL:HG23	2.18	0.44
1:A:853:ILE:HG23	1:A:1021:LEU:HD11	2.00	0.44
1:A:241:MET:SD	1:A:241:MET:C	3.01	0.43
1:A:620:MET:HE2	1:A:620:MET:HB2	1.89	0.43
1:A:859:GLU:HG3	1:A:872:LEU:HD23	2.00	0.43
1:A:1771:LEU:HD12	1:A:1774:LEU:HD12	2.00	0.43
1:A:569:MET:HE3	1:A:569:MET:HA	2.00	0.43
1:A:863:GLU:HA	1:A:872:LEU:HB2	2.00	0.43
1:A:946:ARG:HG2	1:A:946:ARG:HH11	1.82	0.43
1:A:1212:LYS:HG3	1:A:1224:TYR:HB3	1.99	0.43
1:A:947:SER:O	1:A:952:ARG:NH1	2.51	0.43
1:A:1264:ALA:O	1:A:1268:GLU:HG2	2.18	0.43
1:A:1826:HIS:O	1:A:1827:LYS:C	2.61	0.43
1:A:1258:PHE:O	1:A:1262:ILE:HG13	2.18	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1817:GLY:CA	3:A:1921:ERG:H211	2.41	0.43
1:A:1322:ALA:HB1	1:A:1327:MET:HE1	2.00	0.43
1:A:1602:ILE:HD13	1:A:1678:THR:HG21	2.01	0.43
1:A:1607:LEU:O	1:A:1610:ILE:N	2.52	0.43
1:A:795:PHE:HD2	1:A:796:PHE:HE1	1.67	0.43
1:A:796:PHE:N	1:A:796:PHE:CD1	2.86	0.43
3:A:1914:ERG:H212	3:A:1914:ERG:H183	2.01	0.43
1:A:315:ALA:O	1:A:316:ASN:HB3	2.19	0.43
1:A:1150:ILE:HD13	1:A:1193:TYR:HB2	2.00	0.43
1:A:1792:LEU:HG	1:A:1796:MET:CE	2.42	0.43
3:A:1919:ERG:H121	3:A:1919:ERG:H212	2.01	0.42
1:A:986:LEU:O	1:A:990:LEU:HG	2.20	0.42
1:A:1006:ARG:O	1:A:1006:ARG:HG3	2.17	0.42
1:A:677:LEU:O	1:A:681:ILE:HG12	2.19	0.42
1:A:1227:MET:CE	1:A:1274:GLU:CB	2.95	0.42
1:A:1366:PHE:CD1	1:A:1366:PHE:C	2.97	0.42
1:A:1510:LEU:HD22	1:A:1740:PHE:CE2	2.53	0.42
1:A:1529:SER:HA	1:A:1532:ARG:HE	1.85	0.42
3:A:1908:ERG:H183	3:A:1908:ERG:H212	2.00	0.42
3:A:1912:ERG:H161	3:A:1918:ERG:H283	2.01	0.42
1:A:1725:GLN:O	1:A:1729:GLU:HG2	2.19	0.42
1:A:1789:GLN:HA	1:A:1792:LEU:HB2	2.01	0.42
1:A:1838:HIS:O	1:A:1840:LEU:N	2.53	0.42
1:A:1061:ASN:O	1:A:1061:ASN:ND2	2.52	0.42
1:A:733:LYS:HD3	1:A:830:ILE:HD12	2.00	0.42
3:A:1908:ERG:H212	3:A:1908:ERG:H121	2.02	0.42
1:A:639:PHE:CD2	3:A:1916:ERG:H122	2.47	0.42
3:A:1910:ERG:H121	3:A:1910:ERG:H212	2.01	0.42
1:A:848:HIS:HD2	1:A:1004:MET:HG2	1.84	0.42
1:A:1011:LYS:HB3	1:A:1011:LYS:HE3	1.89	0.42
1:A:1039:LEU:HD12	1:A:1039:LEU:HA	1.88	0.42
1:A:1007:LEU:HA	1:A:1010:PHE:CD2	2.55	0.41
1:A:1222:ASP:O	1:A:1223:ILE:C	2.62	0.41
1:A:564:VAL:O	1:A:568:VAL:HG13	2.21	0.41
5:A:1905:POV:H11A	5:A:1905:POV:H14A	1.81	0.41
1:A:1828:HIS:HE1	1:A:1844:ILE:H	1.68	0.41
1:A:697:ILE:O	1:A:701:THR:HG22	2.20	0.41
1:A:959:ASN:OD1	1:A:962:ARG:NH2	2.53	0.41
1:A:1504:ARG:HE	1:A:1504:ARG:HB3	1.63	0.41
1:A:1579:PHE:CD2	1:A:1602:ILE:HD11	2.55	0.41
3:A:1911:ERG:H121	3:A:1911:ERG:H212	2.01	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1917:ERG:H212	3:A:1917:ERG:H183	2.02	0.41
1:A:720:ARG:HH21	1:A:800:ASP:C	2.29	0.41
1:A:1771:LEU:HD12	1:A:1771:LEU:HA	1.84	0.41
1:A:976:VAL:HG22	1:A:986:LEU:HD21	2.03	0.41
1:A:1100:LEU:HD11	1:A:1193:TYR:OH	2.21	0.41
1:A:1154:ARG:HH22	1:A:1240:GLU:HG3	1.86	0.41
1:A:1255:ILE:HG21	1:A:1401:PHE:HZ	1.86	0.41
1:A:1838:HIS:O	1:A:1839:ASN:C	2.64	0.41
3:A:1908:ERG:C22	3:A:1908:ERG:H272	2.50	0.41
1:A:694:LEU:HD21	1:A:1364:ILE:HG22	2.03	0.41
1:A:1170:ALA:C	1:A:1172:LYS:H	2.29	0.41
1:A:1475:PHE:O	1:A:1476:TRP:C	2.64	0.41
1:A:1695:LEU:HD23	1:A:1695:LEU:C	2.46	0.41
3:A:1909:ERG:H182	3:A:1909:ERG:C19	2.49	0.41
3:A:1912:ERG:C22	3:A:1912:ERG:H272	2.51	0.41
1:A:967:LEU:HD23	1:A:967:LEU:HA	1.77	0.40
1:A:1658:PHE:HE1	1:A:1672:MET:SD	2.44	0.40
1:A:385:ASN:OD1	1:A:385:ASN:N	2.45	0.40
1:A:638:TYR:C	1:A:639:PHE:HD1	2.29	0.40
1:A:761:MET:HE1	1:A:819:ILE:CG1	2.52	0.40
1:A:1106:ASP:HB3	1:A:1158:PHE:CE1	2.57	0.40
1:A:1223:ILE:O	1:A:1224:TYR:C	2.64	0.40
1:A:1470:ALA:N	1:A:1471:PRO:HD2	2.36	0.40
1:A:325:LEU:HD12	1:A:325:LEU:HA	1.93	0.40
1:A:824:GLN:O	1:A:827:SER:HB3	2.21	0.40
1:A:828:THR:O	1:A:830:ILE:HG13	2.21	0.40
1:A:1504:ARG:HG2	1:A:1800:TYR:CD2	2.56	0.40
1:A:1322:ALA:O	1:A:1327:MET:HE2	2.22	0.40
1:A:1474:TRP:CE3	3:A:1914:ERG:C21	3.05	0.40
1:A:453:ASN:OD1	1:A:507:GLN:NE2	2.38	0.40
1:A:657:ARG:HG2	1:A:1858:TYR:CE1	2.57	0.40
1:A:1193:TYR:CE1	1:A:1199:ILE:HG21	2.56	0.40
1:A:1252:PHE:CE1	1:A:1256:LEU:HD11	2.56	0.40
1:A:1383:LEU:HD12	1:A:1383:LEU:H	1.86	0.40
1:A:1503:TYR:CE2	1:A:1804:TYR:HB2	2.57	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	1503/1876 (80%)	1421 (94%)	82 (6%)	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	1340/1620 (83%)	1329 (99%)	11 (1%)	79 88

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

Mol	Chain	Res	Type
1	A	474	PHE
1	A	701	THR
1	A	711	LEU
1	A	1061	ASN
1	A	1165	LEU
1	A	1218	HIS
1	A	1219	LEU
1	A	1391	PHE
1	A	1571	TYR
1	A	1822	SER
1	A	1824	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	204	GLN
1	A	220	ASN
1	A	368	GLN
1	A	459	HIS
1	A	527	HIS
1	A	765	HIS
1	A	802	ASN
1	A	848	HIS
1	A	1075	ASN
1	A	1088	HIS
1	A	1195	HIS
1	A	1269	GLN
1	A	1300	ASN
1	A	1305	GLN
1	A	1388	GLN
1	A	1407	GLN
1	A	1469	GLN
1	A	1515	ASN
1	A	1683	GLN
1	A	1754	GLN
1	A	1828	HIS

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](#)

2 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	1,2	14,14,15	0.36	0	17,19,21	0.42	0
2	NAG	B	2	2	14,14,15	0.35	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	1,2	-	4/6/23/26	0/1/1/1
2	NAG	B	2	2	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

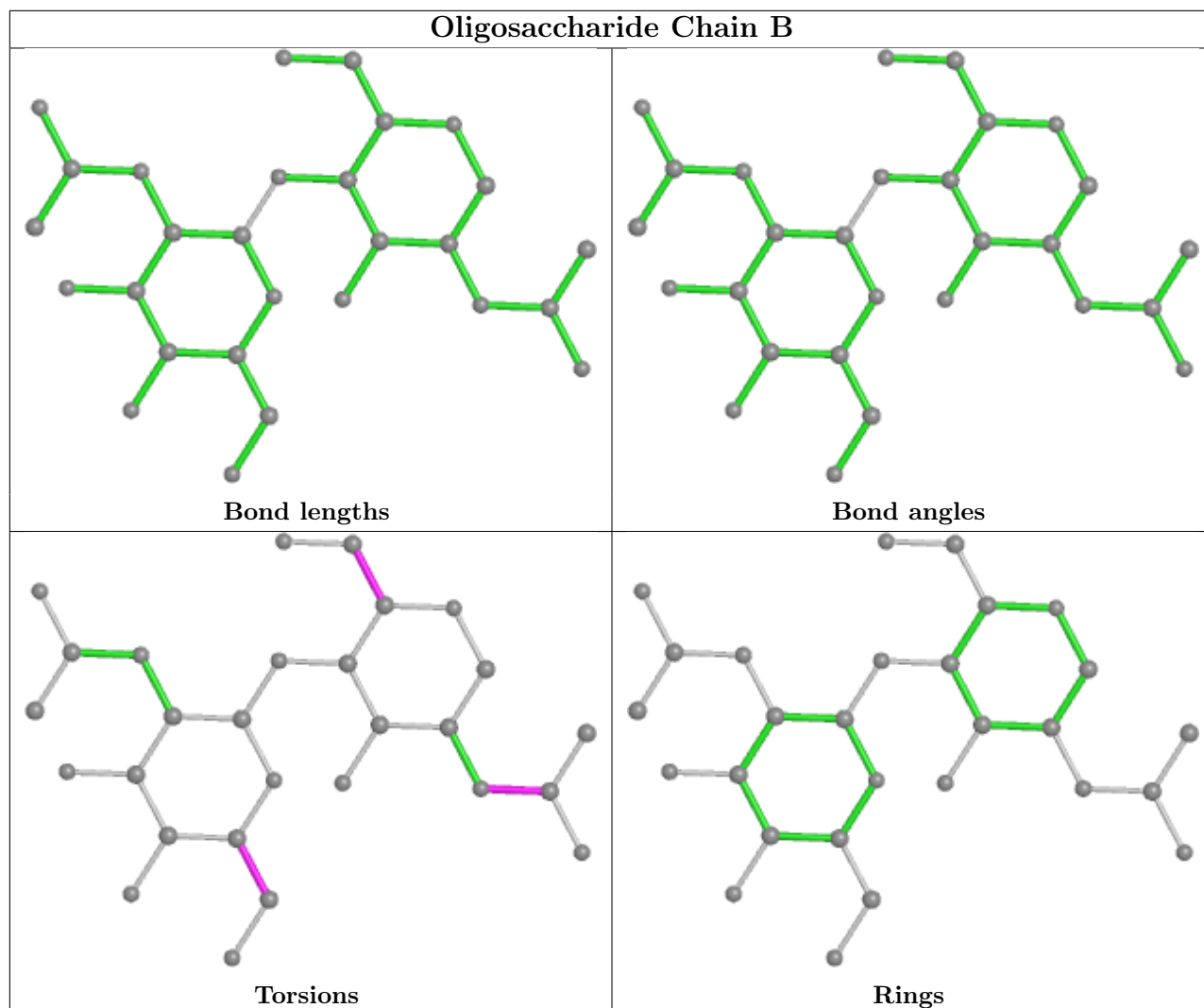
All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	2	NAG	C4-C5-C6-O6
2	B	2	NAG	O5-C5-C6-O6
2	B	1	NAG	C4-C5-C6-O6
2	B	1	NAG	O5-C5-C6-O6
2	B	1	NAG	C8-C7-N2-C2
2	B	1	NAG	O7-C7-N2-C2

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](#)

23 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	ERG	A	1909	-	31,32,32	0.71	1 (3%)	47,50,50	0.99	2 (4%)
3	ERG	A	1911	-	31,32,32	0.83	1 (3%)	47,50,50	1.19	4 (8%)
3	ERG	A	1920	-	31,32,32	0.87	1 (3%)	47,50,50	1.17	4 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	ERG	A	1922	-	31,32,32	0.65	1 (3%)	47,50,50	0.56	0
3	ERG	A	1914	-	31,32,32	0.87	1 (3%)	47,50,50	1.11	3 (6%)
3	ERG	A	1923	-	31,32,32	0.61	1 (3%)	47,50,50	0.76	1 (2%)
3	ERG	A	1904	-	31,32,32	0.63	0	47,50,50	1.57	8 (17%)
3	ERG	A	1921	-	31,32,32	0.65	1 (3%)	47,50,50	0.57	0
3	ERG	A	1919	-	31,32,32	0.89	1 (3%)	47,50,50	1.18	4 (8%)
3	ERG	A	1910	-	31,32,32	0.84	1 (3%)	47,50,50	1.24	5 (10%)
3	ERG	A	1901	-	31,32,32	0.53	0	47,50,50	1.15	4 (8%)
3	ERG	A	1907	-	31,32,32	0.89	1 (3%)	47,50,50	1.26	6 (12%)
3	ERG	A	1908	-	31,32,32	0.87	1 (3%)	47,50,50	1.12	4 (8%)
3	ERG	A	1915	-	31,32,32	0.91	1 (3%)	47,50,50	1.27	7 (14%)
3	ERG	A	1916	-	31,32,32	0.84	1 (3%)	47,50,50	1.18	3 (6%)
4	A1E06	A	1903	-	52,55,55	0.37	0	69,91,91	1.43	5 (7%)
3	ERG	A	1912	-	31,32,32	1.11	3 (9%)	47,50,50	1.44	7 (14%)
3	ERG	A	1906	-	31,32,32	0.87	1 (3%)	47,50,50	1.14	3 (6%)
3	ERG	A	1917	-	31,32,32	0.85	1 (3%)	47,50,50	1.16	5 (10%)
3	ERG	A	1913	-	31,32,32	0.97	1 (3%)	47,50,50	1.84	8 (17%)
5	POV	A	1905	-	51,51,51	0.49	0	57,59,59	0.46	0
3	ERG	A	1918	-	31,32,32	0.81	1 (3%)	47,50,50	1.11	4 (8%)
3	ERG	A	1902	-	31,32,32	1.10	3 (9%)	47,50,50	1.57	8 (17%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ERG	A	1909	-	-	4/13/71/71	0/4/4/4
3	ERG	A	1911	-	-	1/13/71/71	0/4/4/4
3	ERG	A	1920	-	-	0/13/71/71	0/4/4/4
3	ERG	A	1922	-	-	3/13/71/71	0/4/4/4
3	ERG	A	1914	-	-	1/13/71/71	0/4/4/4
3	ERG	A	1923	-	-	9/13/71/71	0/4/4/4
3	ERG	A	1904	-	-	11/13/71/71	0/4/4/4
3	ERG	A	1921	-	-	6/13/71/71	0/4/4/4
3	ERG	A	1919	-	-	4/13/71/71	0/4/4/4
3	ERG	A	1910	-	-	4/13/71/71	0/4/4/4

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ERG	A	1901	-	-	8/13/71/71	0/4/4/4
3	ERG	A	1907	-	-	0/13/71/71	0/4/4/4
3	ERG	A	1908	-	-	5/13/71/71	0/4/4/4
3	ERG	A	1915	-	-	4/13/71/71	0/4/4/4
3	ERG	A	1916	-	-	3/13/71/71	0/4/4/4
4	A1E06	A	1903	-	-	5/24/138/138	0/7/6/6
3	ERG	A	1912	-	-	2/13/71/71	0/4/4/4
3	ERG	A	1906	-	-	4/13/71/71	0/4/4/4
3	ERG	A	1917	-	-	1/13/71/71	0/4/4/4
3	ERG	A	1913	-	-	0/13/71/71	0/4/4/4
5	POV	A	1905	-	-	14/55/55/55	-
3	ERG	A	1918	-	-	4/13/71/71	0/4/4/4
3	ERG	A	1902	-	-	0/13/71/71	0/4/4/4

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1913	ERG	C10-C9	-3.77	1.50	1.55
3	A	1909	ERG	C10-C9	3.38	1.60	1.55
3	A	1922	ERG	C10-C9	3.17	1.60	1.55
3	A	1921	ERG	C10-C9	3.16	1.60	1.55
3	A	1907	ERG	C13-C14	-3.14	1.50	1.56
3	A	1915	ERG	C13-C14	-3.11	1.50	1.56
3	A	1902	ERG	C13-C14	-3.02	1.51	1.56
3	A	1914	ERG	C13-C14	-3.01	1.51	1.56
3	A	1920	ERG	C13-C14	-3.00	1.51	1.56
3	A	1917	ERG	C13-C14	-2.95	1.51	1.56
3	A	1919	ERG	C13-C14	-2.95	1.51	1.56
3	A	1923	ERG	C10-C9	2.95	1.59	1.55
3	A	1906	ERG	C13-C14	-2.94	1.51	1.56
3	A	1916	ERG	C13-C14	-2.93	1.51	1.56
3	A	1908	ERG	C13-C14	-2.92	1.51	1.56
3	A	1910	ERG	C13-C14	-2.90	1.51	1.56
3	A	1911	ERG	C13-C14	-2.87	1.51	1.56
3	A	1902	ERG	C4-C3	2.86	1.57	1.52
3	A	1918	ERG	C13-C14	-2.84	1.51	1.56
3	A	1912	ERG	C13-C14	-2.82	1.51	1.56
3	A	1912	ERG	C4-C3	2.78	1.57	1.52
3	A	1912	ERG	C2-C3	2.35	1.57	1.51
3	A	1902	ERG	C2-C3	2.32	1.57	1.51

All (95) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1903	A1E06	C7-C5-C2	-8.65	105.76	115.07
3	A	1904	ERG	C19-C10-C1	-7.49	97.60	109.43
3	A	1913	ERG	C13-C17-C20	-7.06	110.33	119.43
4	A	1903	A1E06	C29-O2-C16	4.84	124.65	116.25
3	A	1902	ERG	C2-C3-C4	4.60	116.61	110.31
3	A	1912	ERG	C2-C3-C4	4.34	116.26	110.31
3	A	1913	ERG	C13-C14-C8	-3.96	105.82	113.48
3	A	1902	ERG	C14-C13-C17	3.86	103.84	99.72
3	A	1909	ERG	C14-C8-C9	3.63	120.12	114.66
3	A	1902	ERG	C13-C17-C20	-3.48	114.94	119.43
3	A	1907	ERG	C13-C17-C20	-3.44	114.99	119.43
3	A	1913	ERG	C15-C14-C13	-3.22	101.34	104.21
3	A	1901	ERG	C20-C22-C23	3.18	135.56	125.67
3	A	1904	ERG	C19-C10-C5	-3.18	103.20	108.34
3	A	1902	ERG	C13-C14-C8	-3.16	107.35	113.48
3	A	1913	ERG	C14-C13-C17	3.12	103.05	99.72
3	A	1915	ERG	C13-C17-C20	-3.09	115.45	119.43
3	A	1915	ERG	C13-C14-C8	-3.06	107.56	113.48
3	A	1910	ERG	C3-C4-C5	-3.03	106.88	112.03
3	A	1901	ERG	C24-C23-C22	3.00	134.98	125.67
3	A	1919	ERG	C3-C4-C5	-2.95	107.03	112.03
3	A	1910	ERG	C13-C14-C8	-2.94	107.78	113.48
3	A	1923	ERG	C14-C8-C9	-2.92	110.26	114.66
3	A	1916	ERG	C3-C4-C5	-2.92	107.08	112.03
3	A	1904	ERG	C19-C10-C9	2.91	115.91	111.03
3	A	1910	ERG	C13-C17-C20	-2.86	115.74	119.43
3	A	1913	ERG	C19-C10-C9	-2.86	106.23	111.03
3	A	1911	ERG	C13-C14-C8	-2.84	107.98	113.48
3	A	1901	ERG	C14-C13-C17	2.83	102.74	99.72
3	A	1912	ERG	C13-C14-C8	-2.79	108.08	113.48
3	A	1909	ERG	C14-C8-C7	-2.77	118.92	124.38
3	A	1915	ERG	C14-C13-C17	2.75	102.66	99.72
3	A	1913	ERG	C11-C12-C13	-2.74	108.08	112.78
4	A	1903	A1E06	C22-C3-C8	2.74	113.23	110.39
3	A	1912	ERG	C24-C23-C22	-2.66	117.40	125.67
3	A	1904	ERG	C1-C10-C5	2.66	113.63	108.75
3	A	1912	ERG	O1-C3-C4	2.65	115.36	109.68
3	A	1911	ERG	C13-C17-C20	-2.64	116.03	119.43
3	A	1913	ERG	C15-C14-C8	-2.61	116.48	120.44
3	A	1919	ERG	C17-C20-C22	-2.61	105.31	110.27
3	A	1907	ERG	C13-C14-C8	-2.60	108.45	113.48
3	A	1911	ERG	C14-C13-C17	2.57	102.46	99.72

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1906	ERG	C13-C17-C20	-2.55	116.14	119.43
3	A	1920	ERG	C13-C14-C8	-2.55	108.54	113.48
3	A	1901	ERG	C16-C15-C14	-2.54	101.11	105.30
3	A	1902	ERG	O1-C3-C4	2.52	115.09	109.68
3	A	1907	ERG	C20-C22-C23	-2.51	117.89	125.67
3	A	1902	ERG	C11-C12-C13	-2.51	108.48	112.78
4	A	1903	A1E06	C3-C8-C9	-2.50	116.27	118.10
3	A	1916	ERG	C13-C14-C8	-2.49	108.67	113.48
3	A	1908	ERG	C17-C20-C22	-2.49	105.54	110.27
3	A	1902	ERG	C20-C22-C23	-2.48	117.98	125.67
3	A	1906	ERG	C3-C4-C5	-2.46	107.85	112.03
3	A	1920	ERG	C13-C17-C20	-2.45	116.27	119.43
3	A	1907	ERG	C14-C13-C17	2.44	102.33	99.72
3	A	1917	ERG	C13-C14-C8	-2.43	108.78	113.48
3	A	1906	ERG	C13-C14-C8	-2.41	108.81	113.48
3	A	1918	ERG	C13-C17-C20	-2.36	116.38	119.43
3	A	1917	ERG	C3-C4-C5	-2.30	108.12	112.03
3	A	1907	ERG	C11-C12-C13	-2.30	108.84	112.78
3	A	1916	ERG	C24-C23-C22	-2.29	118.57	125.67
3	A	1914	ERG	C13-C17-C20	-2.28	116.49	119.43
3	A	1919	ERG	C13-C14-C8	-2.27	109.08	113.48
3	A	1918	ERG	C3-C4-C5	-2.26	108.19	112.03
3	A	1915	ERG	C24-C23-C22	-2.25	118.69	125.67
3	A	1917	ERG	C24-C23-C22	-2.25	118.70	125.67
3	A	1917	ERG	C13-C17-C20	-2.24	116.54	119.43
3	A	1912	ERG	O1-C3-C2	2.24	115.85	110.16
3	A	1920	ERG	C3-C4-C5	-2.23	108.25	112.03
3	A	1904	ERG	C1-C10-C9	2.23	112.89	108.28
3	A	1904	ERG	C3-C4-C5	2.22	115.79	112.03
3	A	1910	ERG	C14-C13-C17	2.21	102.08	99.72
3	A	1908	ERG	C3-C4-C5	-2.21	108.27	112.03
3	A	1907	ERG	C3-C4-C5	-2.20	108.29	112.03
3	A	1908	ERG	C24-C23-C22	-2.20	118.84	125.67
3	A	1914	ERG	C20-C22-C23	-2.20	118.84	125.67
3	A	1915	ERG	C20-C22-C23	-2.18	118.90	125.67
3	A	1920	ERG	C14-C13-C17	2.17	102.04	99.72
3	A	1913	ERG	C3-C4-C5	-2.16	108.36	112.03
3	A	1912	ERG	C17-C20-C22	-2.15	106.17	110.27
3	A	1912	ERG	C14-C13-C17	2.15	102.01	99.72
3	A	1919	ERG	C24-C23-C22	-2.14	119.03	125.67
3	A	1902	ERG	O1-C3-C2	2.14	115.61	110.16
3	A	1915	ERG	C11-C12-C13	-2.14	109.12	112.78

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1908	ERG	C16-C15-C14	-2.12	101.80	105.30
3	A	1917	ERG	C14-C13-C17	2.11	101.97	99.72
3	A	1914	ERG	C3-C4-C5	-2.11	108.45	112.03
4	A	1903	A1E06	C12-C5-C2	2.11	113.98	111.18
3	A	1910	ERG	C24-C23-C22	-2.10	119.16	125.67
3	A	1915	ERG	C3-C4-C5	-2.06	108.53	112.03
3	A	1911	ERG	C24-C23-C22	-2.06	119.29	125.67
3	A	1904	ERG	C10-C5-C6	-2.03	119.02	122.58
3	A	1918	ERG	C13-C14-C8	-2.02	109.58	113.48
3	A	1918	ERG	C20-C22-C23	-2.01	119.42	125.67
3	A	1904	ERG	C2-C1-C10	-2.01	108.39	112.74

There are no chirality outliers.

All (93) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1901	ERG	C16-C17-C20-C22
3	A	1901	ERG	C22-C23-C24-C25
3	A	1904	ERG	C13-C17-C20-C21
3	A	1904	ERG	C16-C17-C20-C21
3	A	1904	ERG	C16-C17-C20-C22
3	A	1904	ERG	C23-C24-C25-C27
3	A	1904	ERG	C28-C24-C25-C26
3	A	1904	ERG	C28-C24-C25-C27
3	A	1906	ERG	C17-C20-C22-C23
3	A	1918	ERG	C22-C23-C24-C25
3	A	1923	ERG	C13-C17-C20-C21
3	A	1923	ERG	C20-C22-C23-C24
5	A	1905	POV	C1-O11-P-O13
4	A	1903	A1E06	O7-C29-O2-C16
4	A	1903	A1E06	C33-C29-O2-C16
3	A	1922	ERG	C22-C23-C24-C28
3	A	1923	ERG	C21-C20-C22-C23
5	A	1905	POV	C310-C311-C312-C313
3	A	1904	ERG	C22-C23-C24-C25
3	A	1918	ERG	C17-C20-C22-C23
3	A	1921	ERG	C22-C23-C24-C25
3	A	1922	ERG	C22-C23-C24-C25
3	A	1923	ERG	C17-C20-C22-C23
3	A	1923	ERG	C22-C23-C24-C25
3	A	1904	ERG	C22-C23-C24-C28
3	A	1904	ERG	C23-C24-C25-C26

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
5	A	1905	POV	C22-C21-O21-C2
5	A	1905	POV	O22-C21-O21-C2
3	A	1922	ERG	C20-C22-C23-C24
5	A	1905	POV	C311-C310-C39-C38
5	A	1905	POV	C210-C211-C212-C213
3	A	1901	ERG	C13-C17-C20-C22
3	A	1904	ERG	C13-C17-C20-C22
3	A	1923	ERG	C16-C17-C20-C22
3	A	1904	ERG	C17-C20-C22-C23
3	A	1909	ERG	C17-C20-C22-C23
3	A	1914	ERG	C17-C20-C22-C23
3	A	1901	ERG	C21-C20-C22-C23
3	A	1916	ERG	C21-C20-C22-C23
5	A	1905	POV	C35-C36-C37-C38
3	A	1910	ERG	C23-C24-C25-C26
3	A	1921	ERG	C23-C24-C25-C27
4	A	1903	A1E06	O7-C35-C38-O12
3	A	1910	ERG	C22-C23-C24-C25
3	A	1906	ERG	C22-C23-C24-C28
3	A	1908	ERG	C21-C20-C22-C23
5	A	1905	POV	C311-C312-C313-C314
3	A	1908	ERG	C16-C17-C20-C22
3	A	1916	ERG	C16-C17-C20-C22
3	A	1923	ERG	C16-C17-C20-C21
3	A	1909	ERG	C23-C24-C25-C27
3	A	1910	ERG	C28-C24-C25-C26
3	A	1915	ERG	C23-C24-C25-C27
5	A	1905	POV	C214-C215-C216-C217
4	A	1903	A1E06	C13-C19-O4-C32
4	A	1903	A1E06	C16-C19-O4-C32
3	A	1901	ERG	C16-C17-C20-C21
5	A	1905	POV	C34-C35-C36-C37
3	A	1908	ERG	C17-C20-C22-C23
3	A	1916	ERG	C17-C20-C22-C23
3	A	1908	ERG	C22-C23-C24-C28
3	A	1915	ERG	C22-C23-C24-C28
3	A	1919	ERG	C21-C20-C22-C23
3	A	1901	ERG	C20-C22-C23-C24
5	A	1905	POV	C11-O12-P-O11
3	A	1910	ERG	C23-C24-C25-C27
3	A	1923	ERG	C23-C24-C25-C27
3	A	1906	ERG	C22-C23-C24-C25

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	A	1915	ERG	C22-C23-C24-C25
5	A	1905	POV	C37-C38-C39-C310
3	A	1901	ERG	C13-C17-C20-C21
3	A	1923	ERG	C13-C17-C20-C22
3	A	1919	ERG	C22-C23-C24-C28
3	A	1921	ERG	C21-C20-C22-C23
3	A	1901	ERG	C17-C20-C22-C23
3	A	1908	ERG	C22-C23-C24-C25
3	A	1919	ERG	C17-C20-C22-C23
3	A	1919	ERG	C22-C23-C24-C25
3	A	1912	ERG	C22-C23-C24-C28
3	A	1909	ERG	C23-C24-C25-C26
3	A	1915	ERG	C23-C24-C25-C26
3	A	1909	ERG	C20-C22-C23-C24
3	A	1921	ERG	C23-C24-C25-C26
3	A	1912	ERG	C22-C23-C24-C25
3	A	1911	ERG	C22-C23-C24-C28
3	A	1917	ERG	C22-C23-C24-C28
3	A	1921	ERG	C28-C24-C25-C26
5	A	1905	POV	C1-O11-P-O14
5	A	1905	POV	C11-O12-P-O14
3	A	1906	ERG	C21-C20-C22-C23
3	A	1918	ERG	C21-C20-C22-C23
3	A	1918	ERG	C22-C23-C24-C28
3	A	1921	ERG	C22-C23-C24-C28

There are no ring outliers.

22 monomers are involved in 74 short contacts:

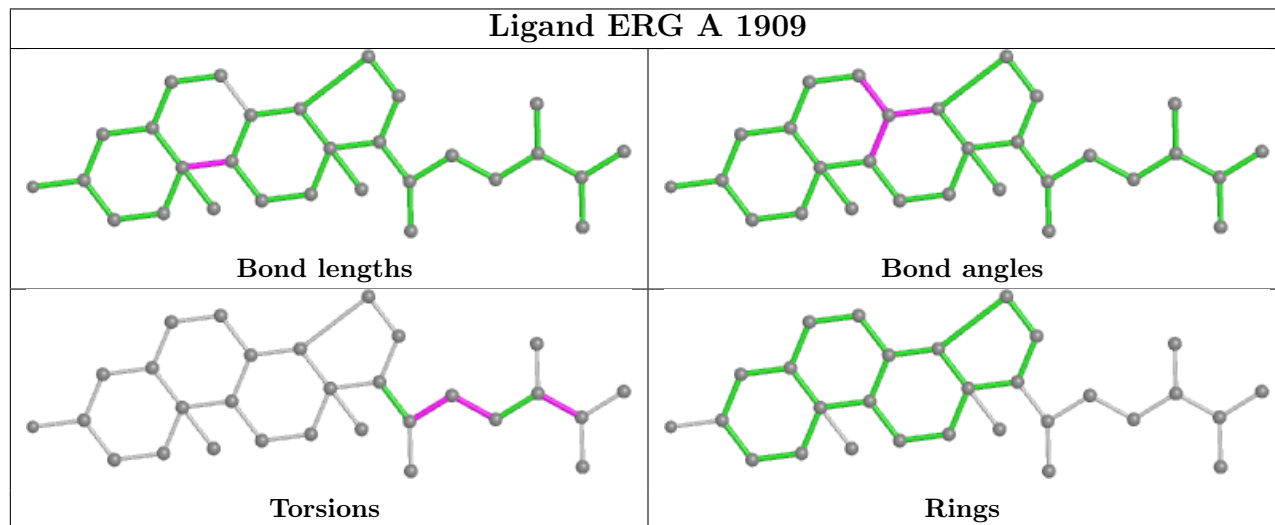
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1909	ERG	5	0
3	A	1911	ERG	1	0
3	A	1920	ERG	1	0
3	A	1914	ERG	4	0
3	A	1923	ERG	9	0
3	A	1904	ERG	6	0
3	A	1921	ERG	5	0
3	A	1919	ERG	6	0
3	A	1910	ERG	4	0
3	A	1901	ERG	1	0
3	A	1907	ERG	2	0
3	A	1908	ERG	3	0

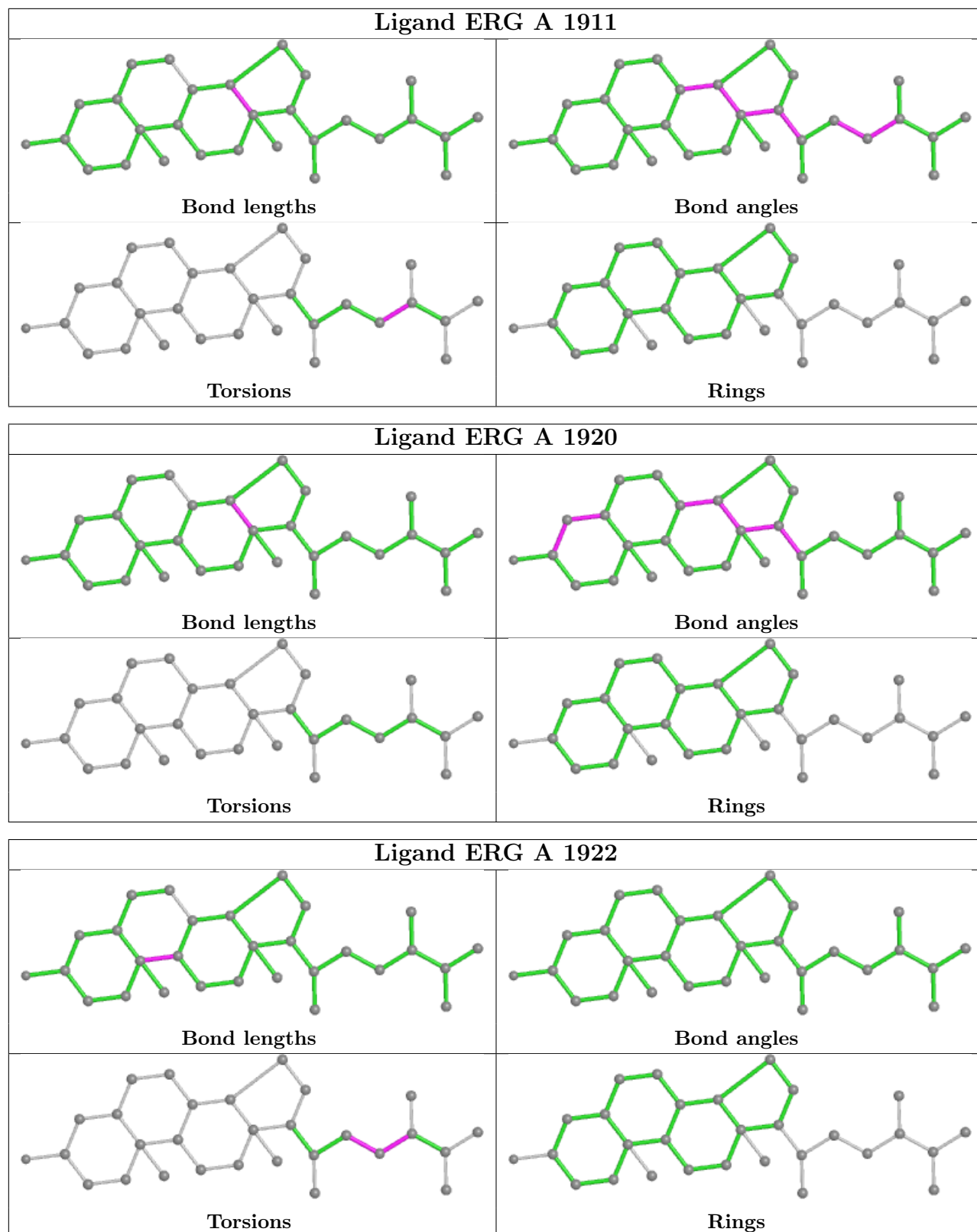
Continued on next page...

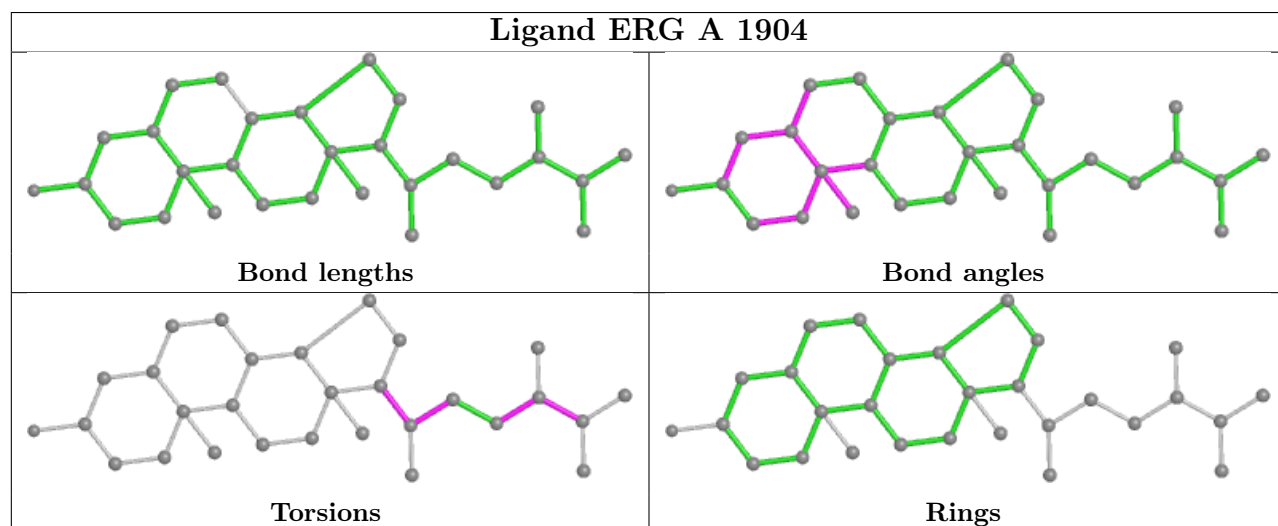
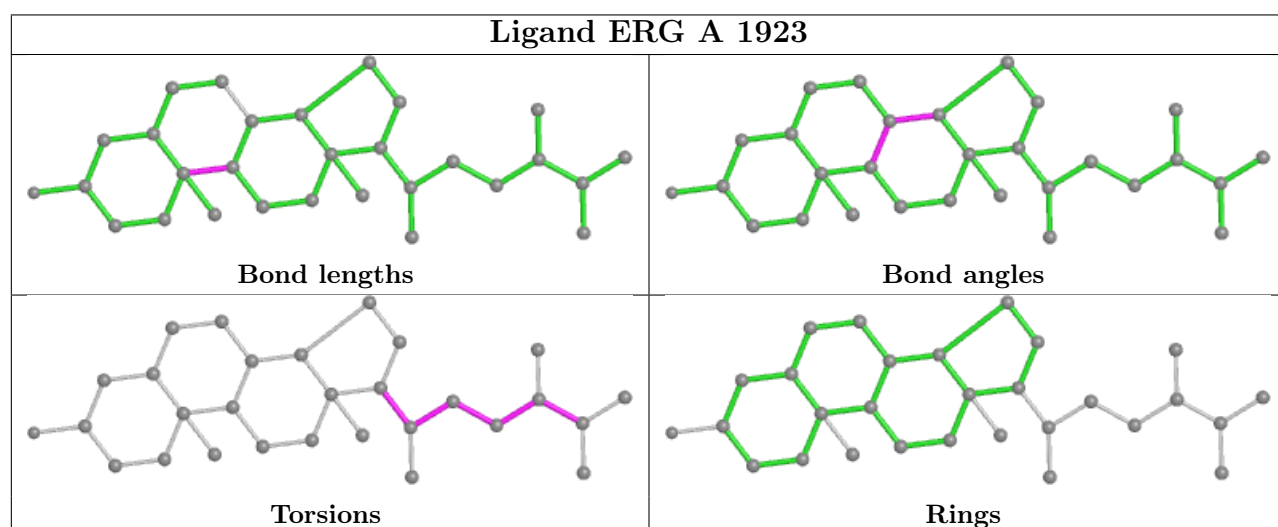
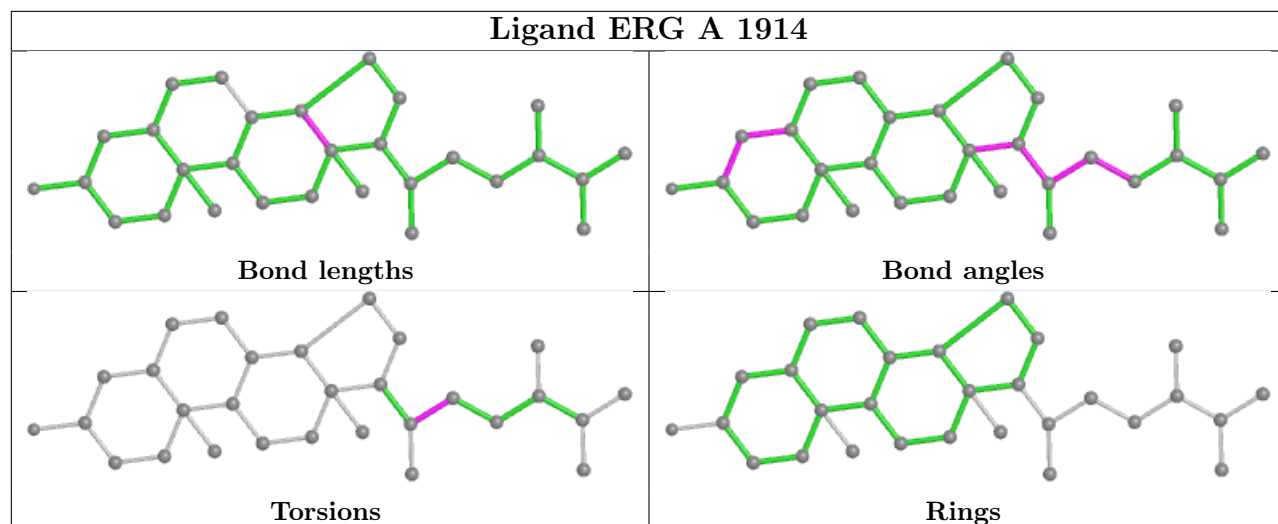
Continued from previous page...

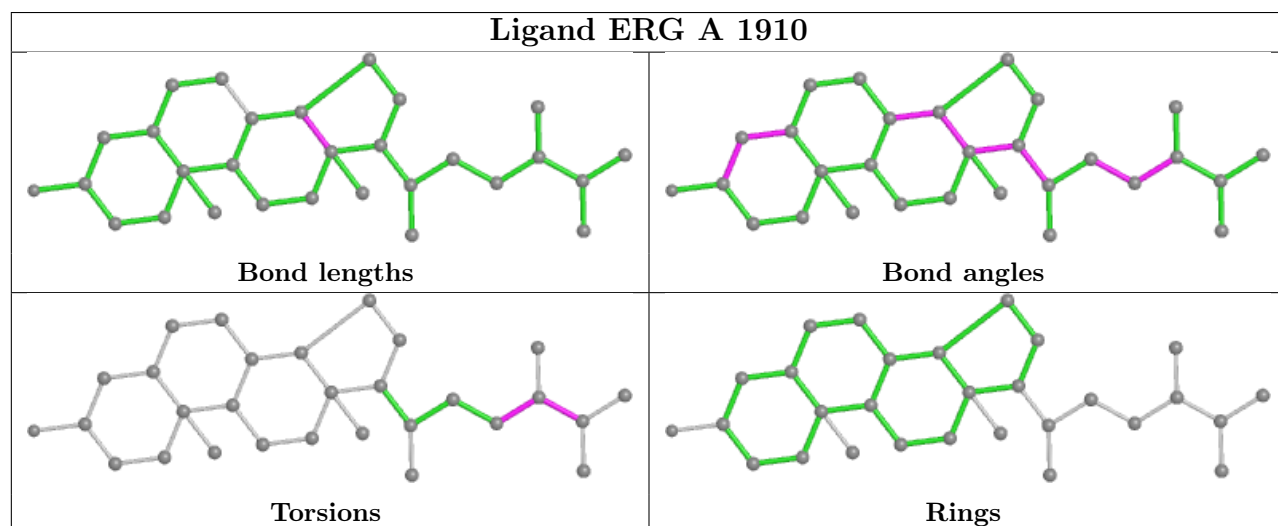
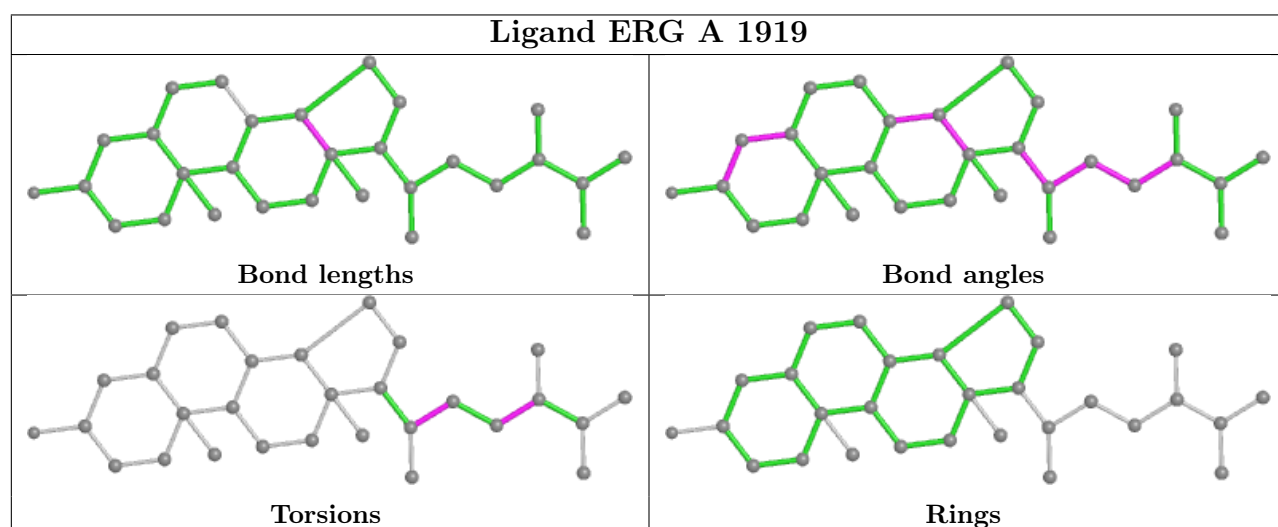
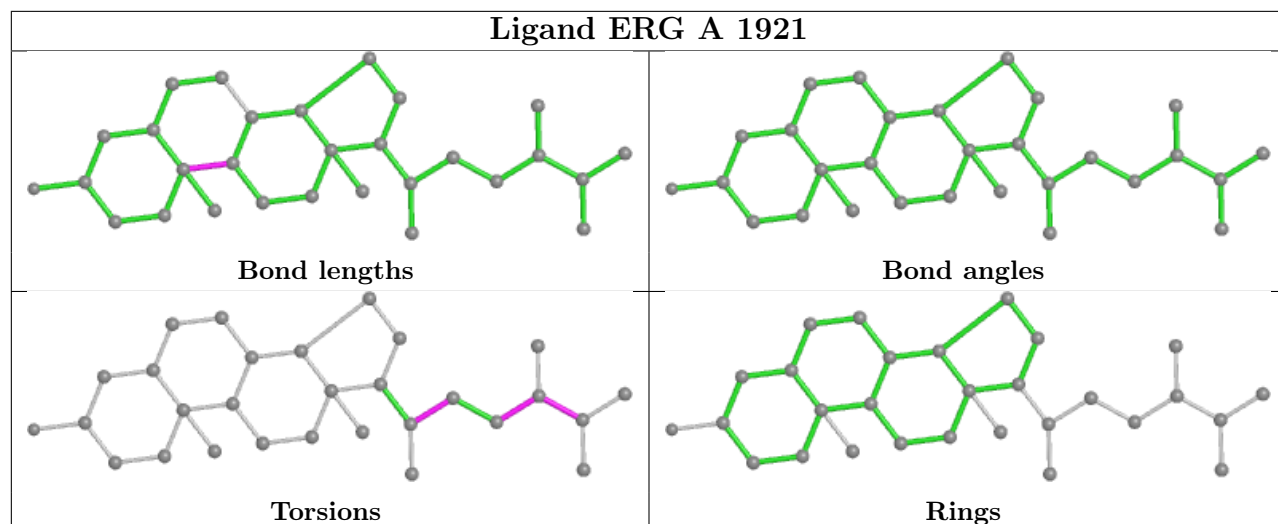
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1915	ERG	4	0
3	A	1916	ERG	7	0
4	A	1903	A1E06	1	0
3	A	1912	ERG	10	0
3	A	1906	ERG	5	0
3	A	1917	ERG	1	0
3	A	1913	ERG	2	0
5	A	1905	POV	3	0
3	A	1918	ERG	3	0
3	A	1902	ERG	1	0

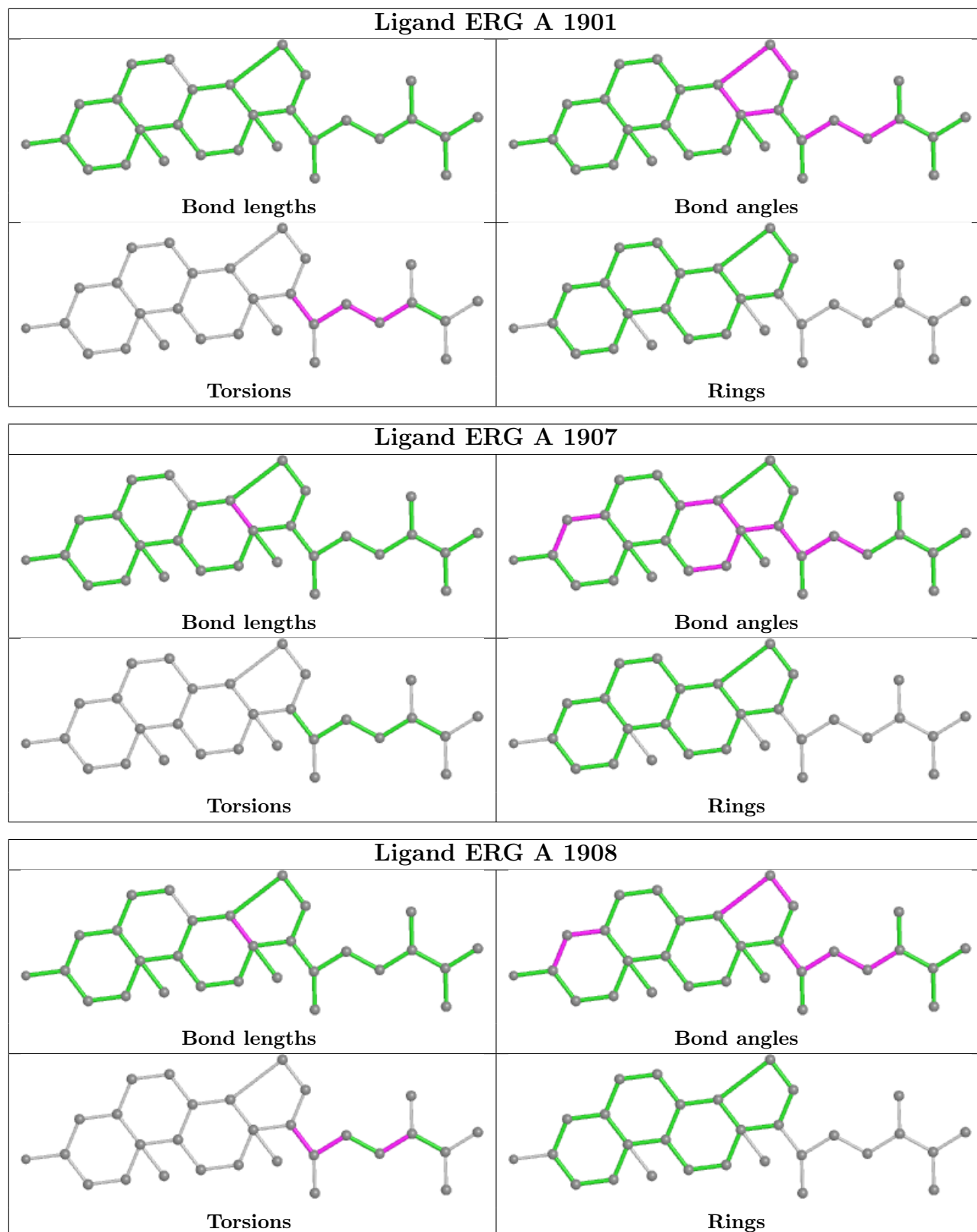
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

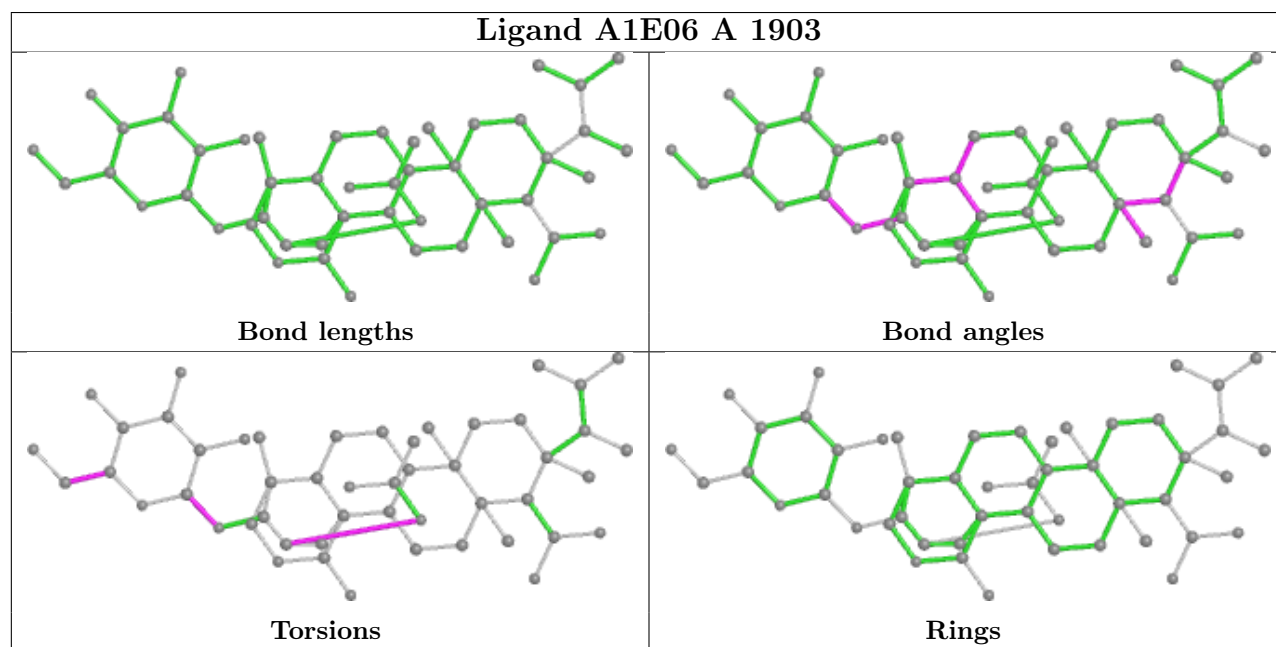
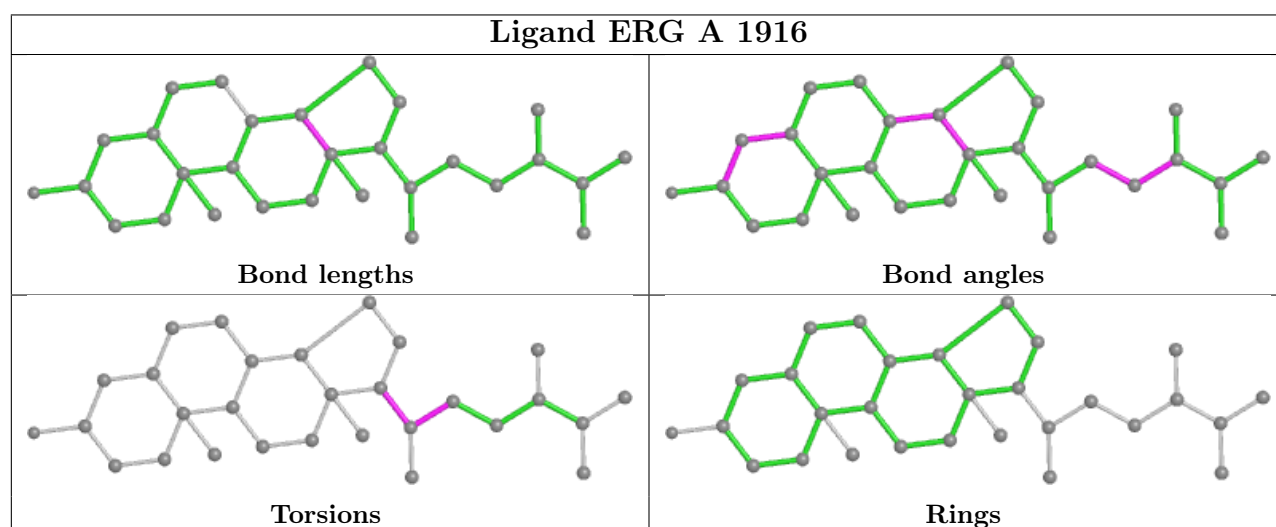
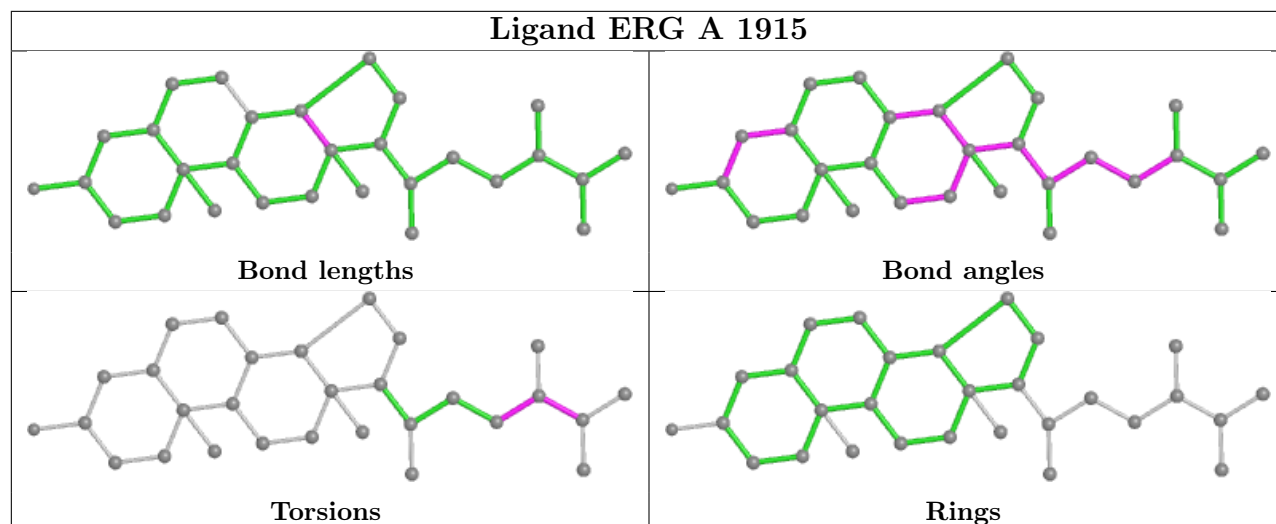


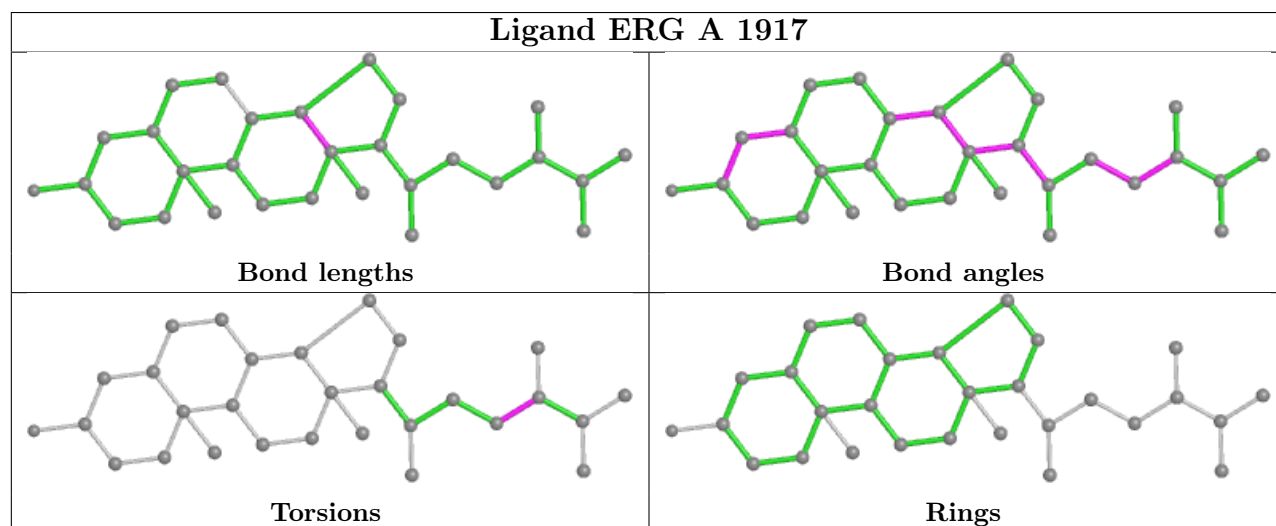
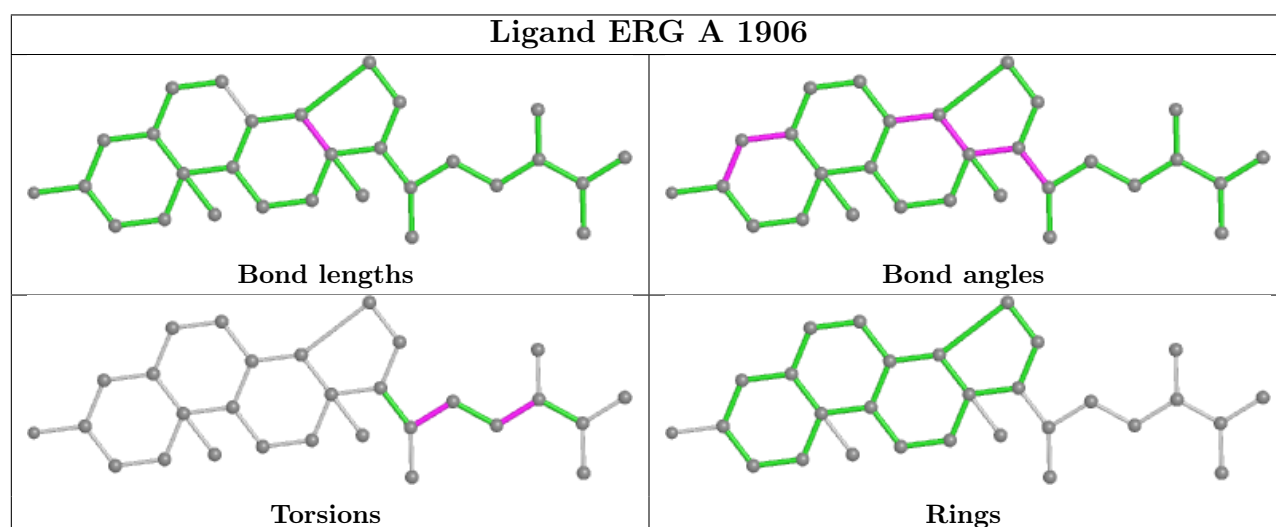
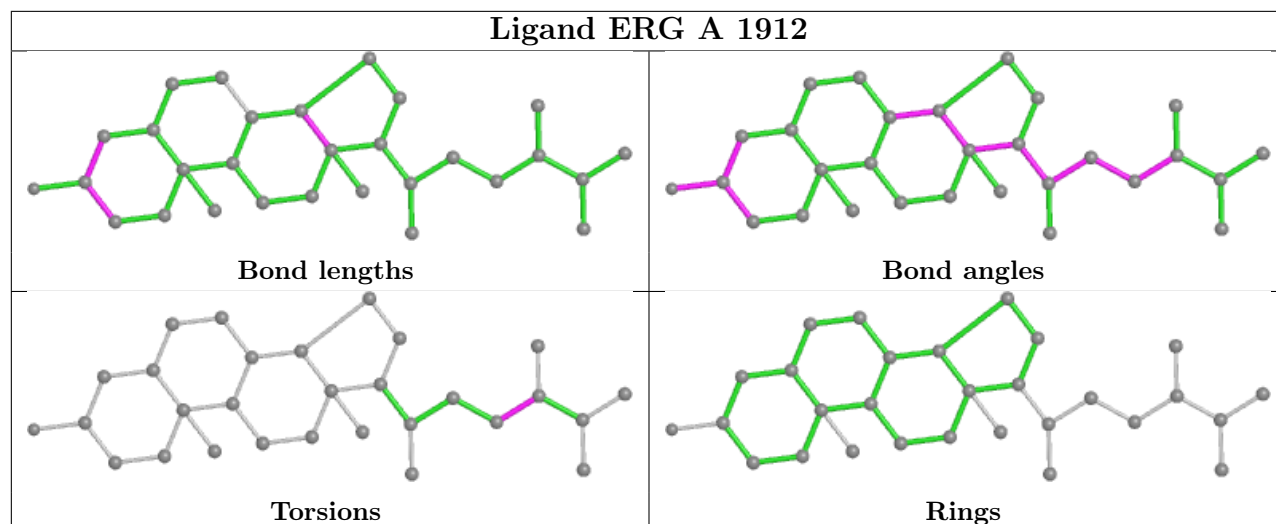


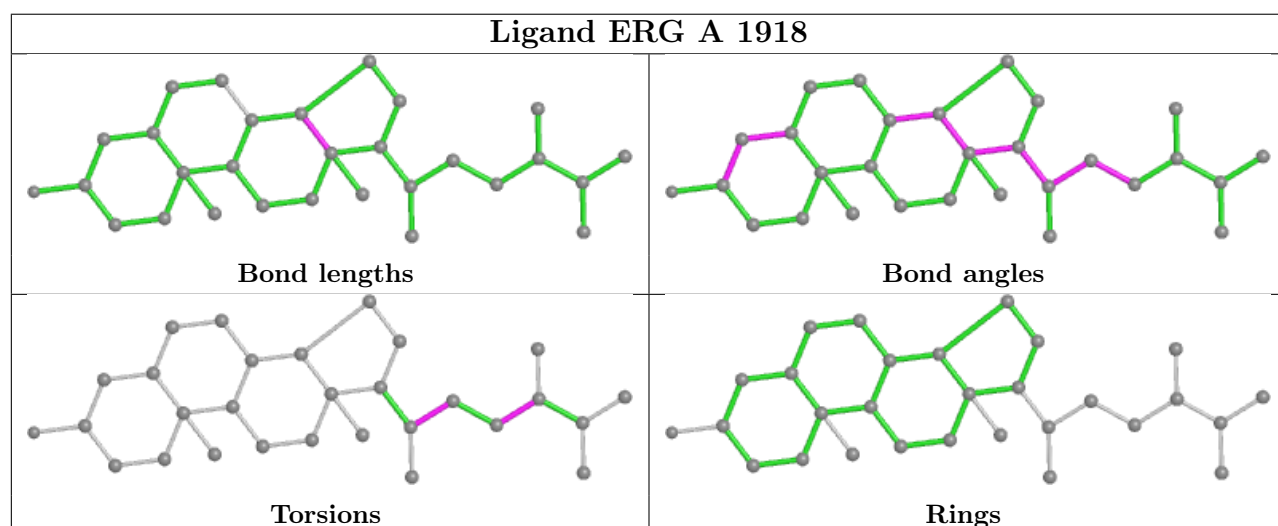
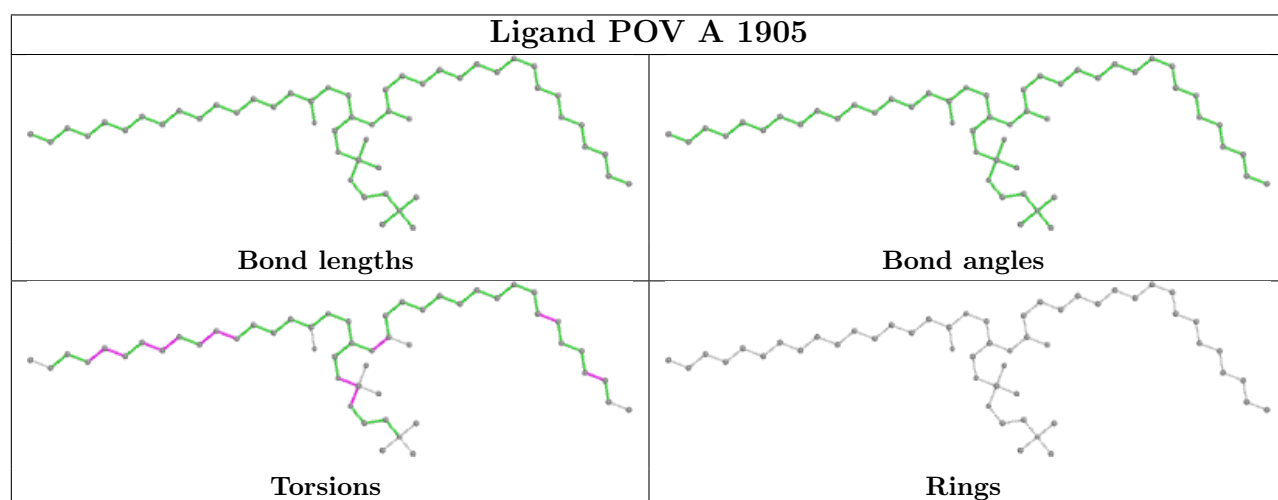
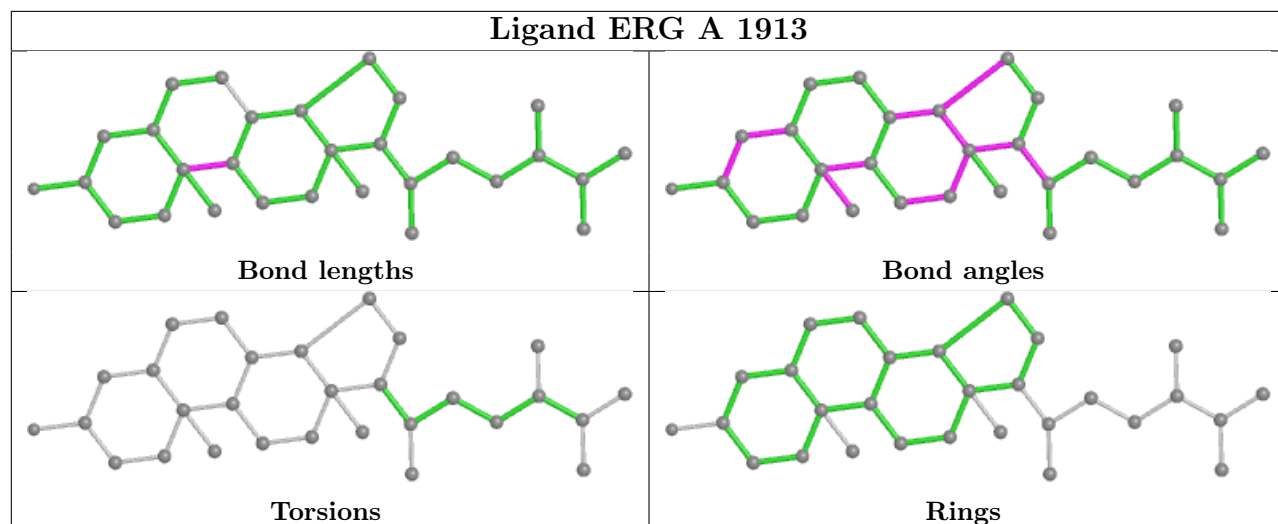


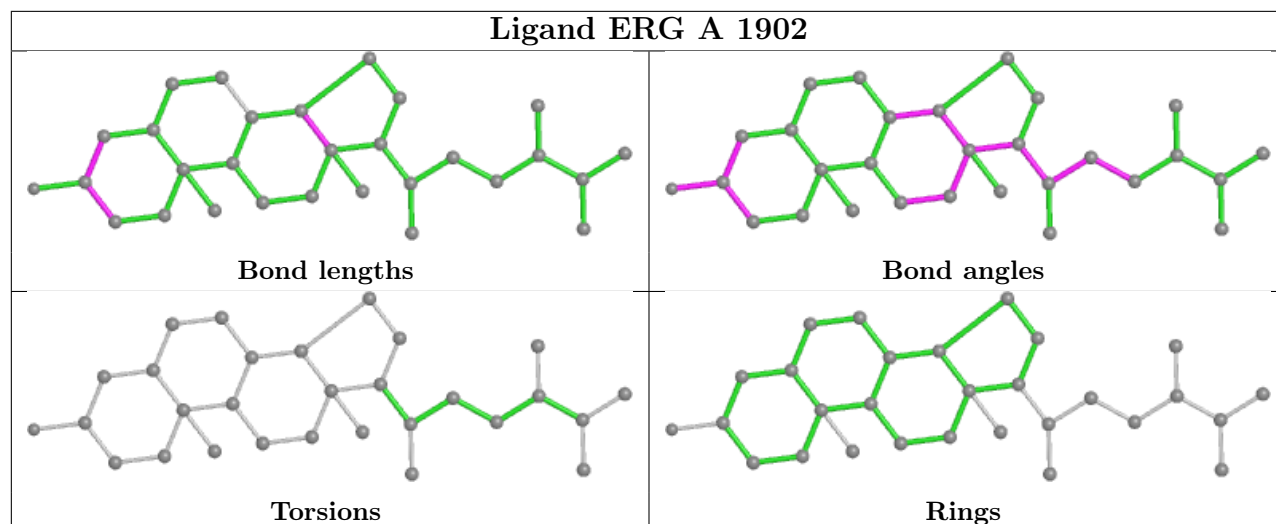












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.