



Full wwPDB X-ray Structure Validation Report ⓘ

May 24, 2020 – 06:34 am BST

PDB ID : 1F99
Title : CRYSTAL STRUCTURE OF R-PHYCOCYANIN FROM POLYSIPHONIA
AT 2.4 Å RESOLUTION
Authors : Liang, D.C.; Jiang, T.; Chang, W.R.
Deposited on : 2000-07-09
Resolution : 2.40 Å (reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

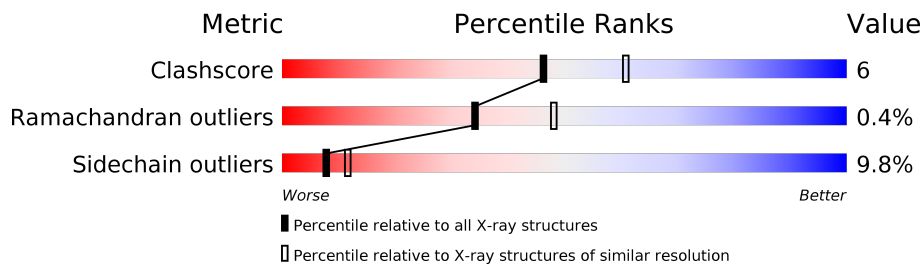
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower 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 $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	162	
1	K	162	
1	M	162	
2	B	172	
2	L	172	
2	N	172	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	CYC	K	386	X	-	-	-
5	PEB	B	355	X	-	-	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 8209 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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.

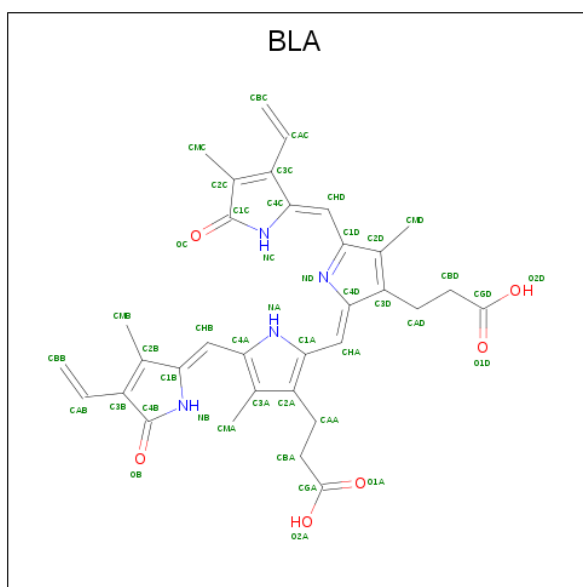
- Molecule 1 is a protein called R-PHYCOCYANIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	162	1235	776	208	245	6	0	0	0
1	K	162	1235	776	208	245	6	0	0	0
1	M	162	1235	776	208	245	6	0	0	0

- Molecule 2 is a protein called R-PHYCOCYANIN.

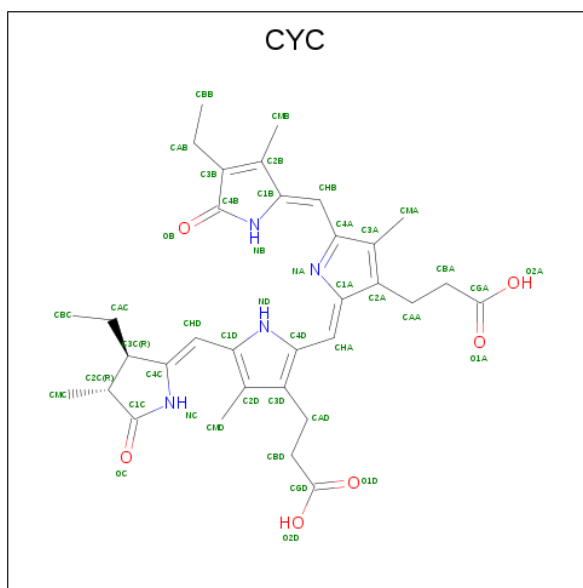
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	172	1259	781	222	248	8	0	0	0
2	L	172	1259	781	222	248	8	0	0	0
2	N	172	1259	781	222	248	8	0	0	0

- Molecule 3 is BILIVERDINE IX ALPHA (three-letter code: BLA) (formula: $C_{33}H_{34}N_4O_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	43	33	4	6	0	0

- Molecule 4 is PHYCOCYANOBILIN (three-letter code: CYC) (formula: $C_{33}H_{40}N_4O_6$).



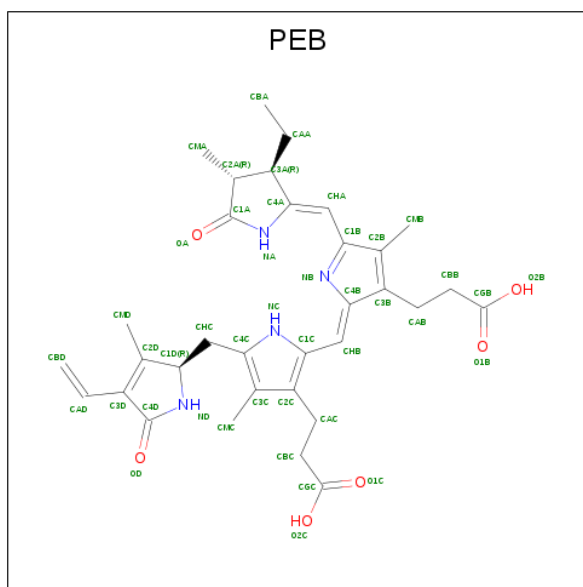
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
4	B	1	43	33	4	6	0	0
4	K	1	43	33	4	6	0	0
4	L	1	43	33	4	6	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	M	1	Total	C	N	O	0	0
			43	33	4	6		
4	N	1	Total	C	N	O	0	0
			43	33	4	6		

- Molecule 5 is PHYCOERYTHROBILIN (three-letter code: PEB) (formula: $C_{33}H_{40}N_4O_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	1	Total	C	N	O	0	0
			43	33	4	6		
5	L	1	Total	C	N	O	0	0
			43	33	4	6		
5	N	1	Total	C	N	O	0	0
			43	33	4	6		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	56	Total	O	0	0
			56	56		
6	B	51	Total	O	0	0
			51	51		
6	K	59	Total	O	0	0
			59	59		
6	L	62	Total	O	0	0
			62	62		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	M	46	Total	O	0	0
			46	46		
6	N	66	Total	O	0	0
			66	66		

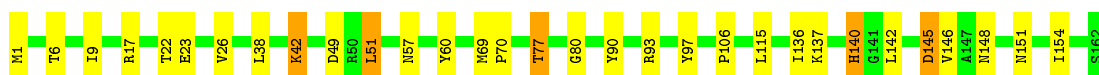
3 Residue-property plots [i](#)

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


Note EDS was not executed.

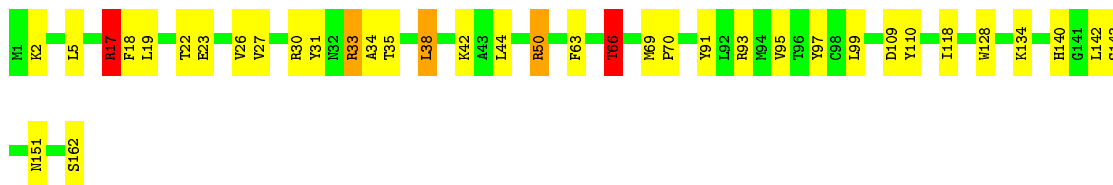
- Molecule 1: R-PHYCOCYANIN

Chain A:  81% 16%




- Molecule 1: R-PHYCOCYANIN

Chain K:  77% 20%



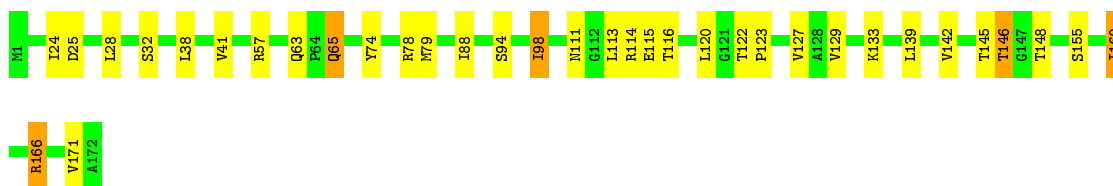
- Molecule 1: R-PHYCOCYANIN

Chain M:  82% 15%




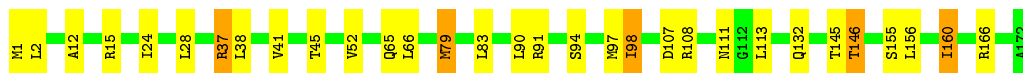
- Molecule 2: R-PHYCOCYANIN

Chain B:  80% 17%



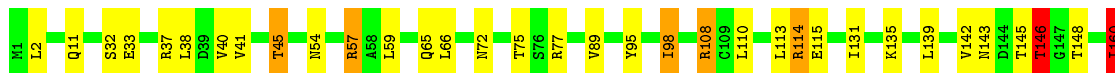
- Molecule 2: R-PHYCOCYANIN

Chain L:  82% 15%



- Molecule 2: R-PHYCOCYANIN

Chain N: 79% 17% ..



4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	135.10Å 135.10Å 210.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.40	Depositor
% Data completeness (in resolution range)	75.5 (8.00-2.40)	Depositor
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.189 , 0.239	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	8209	wwPDB-VP
Average B, all atoms (Å ²)	25.0	wwPDB-VP

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: CYC, BLA, PEB

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	0.58	0/1258	1.22	5/1709 (0.3%)
1	K	0.58	0/1258	1.36	14/1709 (0.8%)
1	M	0.58	0/1258	1.27	7/1709 (0.4%)
2	B	0.54	0/1271	1.26	9/1725 (0.5%)
2	L	0.55	0/1271	1.36	8/1725 (0.5%)
2	N	0.56	0/1271	1.33	11/1725 (0.6%)
All	All	0.57	0/7587	1.30	54/10302 (0.5%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	N	0	1

There are no bond length outliers.

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	L	37	ARG	NE-CZ-NH2	-13.57	113.51	120.30
1	K	93	ARG	NE-CZ-NH2	-11.72	114.44	120.30
2	L	37	ARG	NE-CZ-NH1	11.52	126.06	120.30
2	B	166	ARG	NE-CZ-NH1	-10.37	115.12	120.30
2	N	114	ARG	NE-CZ-NH2	-9.97	115.32	120.30
1	K	93	ARG	NE-CZ-NH1	9.87	125.24	120.30
1	K	33	ARG	NE-CZ-NH1	9.42	125.01	120.30
1	M	86	ARG	NE-CZ-NH2	-9.11	115.74	120.30
1	K	33	ARG	NE-CZ-NH2	-8.89	115.86	120.30
1	M	86	ARG	NE-CZ-NH1	8.85	124.72	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	M	33	ARG	NE-CZ-NH1	8.38	124.49	120.30
2	N	95	TYR	CB-CG-CD2	-8.33	116.00	121.00
2	B	166	ARG	NE-CZ-NH2	8.22	124.41	120.30
1	A	97	TYR	CB-CG-CD2	-7.56	116.46	121.00
2	N	114	ARG	NE-CZ-NH1	7.30	123.95	120.30
2	B	79	MET	CG-SD-CE	-7.14	88.77	100.20
1	K	50	ARG	NE-CZ-NH2	-6.92	116.84	120.30
1	K	50	ARG	NE-CZ-NH1	6.84	123.72	120.30
1	K	66	THR	N-CA-CB	-6.58	97.80	110.30
2	L	108	ARG	NE-CZ-NH1	6.56	123.58	120.30
1	A	60	TYR	CB-CG-CD2	-6.53	117.08	121.00
1	A	90	TYR	CB-CG-CD2	-6.35	117.19	121.00
2	B	166	ARG	CG-CD-NE	-6.35	98.46	111.80
2	N	57	ARG	NE-CZ-NH1	6.27	123.44	120.30
2	L	45	THR	N-CA-CB	-6.14	98.63	110.30
1	K	30	ARG	NE-CZ-NH1	6.11	123.36	120.30
1	A	93	ARG	NE-CZ-NH2	-6.09	117.26	120.30
2	N	108	ARG	NE-CZ-NH1	-6.07	117.27	120.30
2	N	37	ARG	NE-CZ-NH1	6.00	123.30	120.30
1	M	1	MET	CA-CB-CG	5.97	123.45	113.30
2	N	146	THR	CA-CB-CG2	5.95	120.72	112.40
2	L	79	MET	CG-SD-CE	-5.84	90.86	100.20
2	N	160	ILE	CB-CA-C	-5.81	99.97	111.60
1	K	110	TYR	CB-CG-CD2	-5.70	117.58	121.00
1	M	31	TYR	CB-CG-CD1	-5.68	117.59	121.00
2	N	45	THR	O-C-N	-5.58	113.77	122.70
2	L	166	ARG	NE-CZ-NH1	5.53	123.06	120.30
2	L	1	MET	CA-CB-CG	5.50	122.65	113.30
1	M	17	ARG	NE-CZ-NH1	5.50	123.05	120.30
1	K	31	TYR	CB-CG-CD1	-5.45	117.73	121.00
1	M	100	VAL	O-C-N	-5.44	113.99	122.70
1	K	128	TRP	CD1-CG-CD2	5.34	110.57	106.30
2	N	77	ARG	NE-CZ-NH1	5.33	122.97	120.30
1	K	97	TYR	CB-CG-CD2	-5.28	117.83	121.00
1	A	17	ARG	NE-CZ-NH2	-5.28	117.66	120.30
2	B	114	ARG	CA-C-N	5.28	128.81	117.20
2	B	74	TYR	C-N-CA	5.19	134.67	121.70
2	B	114	ARG	NE-CZ-NH2	-5.17	117.71	120.30
2	N	160	ILE	N-CA-CB	5.17	122.69	110.80
2	B	78	ARG	NE-CZ-NH1	5.14	122.87	120.30
1	K	17	ARG	N-CA-CB	-5.08	101.46	110.60
2	L	37	ARG	CG-CD-NE	-5.07	101.16	111.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	K	30	ARG	NE-CZ-NH2	-5.06	117.77	120.30
2	B	160	ILE	CB-CA-C	-5.03	101.54	111.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	N	45	THR	Mainchain

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1235	0	1212	14	0
1	K	1235	0	1212	13	0
1	M	1235	0	1212	10	0
2	B	1259	0	1271	18	0
2	L	1259	0	1271	9	0
2	N	1259	0	1271	14	0
3	A	43	0	33	3	0
4	B	43	0	38	6	0
4	K	43	0	38	6	0
4	L	43	0	38	4	0
4	M	43	0	38	6	0
4	N	43	0	38	4	0
5	B	43	0	38	1	0
5	L	43	0	38	2	0
5	N	43	0	38	2	0
6	A	56	0	0	0	0
6	B	51	0	0	0	0
6	K	59	0	0	1	0
6	L	62	0	0	0	0
6	M	46	0	0	0	0
6	N	66	0	0	1	0
All	All	8209	0	7786	98	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 6.

All (98) 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)
4:B:385:CYC:HMD2	4:B:385:CYC:HC	1.41	0.83
2:N:89:VAL:HG11	2:N:131:ILE:HD12	1.61	0.82
4:M:388:CYC:HC	4:M:388:CYC:HMD2	1.51	0.76
4:L:387:CYC:HB	4:L:387:CYC:HMA1	1.49	0.75
4:B:385:CYC:HMA1	4:B:385:CYC:HB	1.52	0.73
4:K:386:CYC:HC	4:K:386:CYC:HMD2	1.54	0.72
1:M:142:LEU:HG	1:M:146:VAL:HG12	1.71	0.71
1:A:38:LEU:HD22	2:B:28:LEU:HG	1.73	0.71
3:A:384:BLA:HMD2	3:A:384:BLA:HC	1.57	0.70
4:L:387:CYC:HC	4:L:387:CYC:HMD2	1.57	0.68
4:B:385:CYC:NB	4:B:385:CYC:HMA1	2.08	0.68
5:L:356:PEB:HMB2	5:L:356:PEB:HNA	1.59	0.67
4:K:386:CYC:HB	4:K:386:CYC:HMA1	1.62	0.65
1:M:137:LYS:HG3	1:M:154:ILE:HG21	1.78	0.65
2:N:113:LEU:HD21	4:N:389:CYC:HMB3	1.78	0.65
3:A:384:BLA:HMA1	3:A:384:BLA:HB	1.63	0.64
2:N:54:ASN:HD22	2:N:57:ARG:HH21	1.46	0.63
4:N:389:CYC:HC	4:N:389:CYC:HMD2	1.63	0.62
5:N:357:PEB:HMB2	5:N:357:PEB:HNA	1.63	0.62
4:L:387:CYC:HMA1	4:L:387:CYC:NB	2.15	0.62
2:N:54:ASN:ND2	2:N:57:ARG:HH21	1.98	0.61
1:K:140:HIS:HD2	1:K:142:LEU:H	1.50	0.59
1:A:22:THR:O	1:A:26:VAL:HG13	2.03	0.59
1:A:42:LYS:HG3	2:B:24:ILE:HG21	1.85	0.58
1:K:34:ALA:O	1:K:38:LEU:HD22	2.03	0.58
2:B:88:ILE:HG21	4:B:385:CYC:HAB1	1.86	0.57
2:L:156:LEU:O	2:L:160:ILE:HG22	2.04	0.56
3:A:384:BLA:NB	3:A:384:BLA:HMA1	2.21	0.55
1:K:63:PHE:O	1:K:66:THR:HB	2.07	0.55
1:A:142:LEU:HB3	1:A:146:VAL:HG23	1.89	0.54
1:A:145:ASP:HA	1:A:148:ASN:HB2	1.90	0.53
1:A:140:HIS:HE1	1:A:151:ASN:OD1	1.92	0.52
1:A:51:LEU:HG	1:A:136:ILE:HG23	1.91	0.52
2:L:41:VAL:HG21	2:L:98:ILE:HG12	1.91	0.52
1:A:23:GLU:O	1:A:26:VAL:HG22	2.10	0.51
1:M:140:HIS:HE1	1:M:151:ASN:OD1	1.93	0.51
1:M:86:ARG:HD3	1:M:90:TYR:CE2	2.46	0.50
1:A:1:MET:SD	1:A:106:PRO:HG3	2.52	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:142:VAL:HG21	2:N:160:ILE:HD11	1.93	0.49
4:K:386:CYC:NB	4:K:386:CYC:HMA1	2.27	0.49
2:N:108:ARG:HG2	6:N:446:HOH:O	2.12	0.49
5:L:356:PEB:HMB2	5:L:356:PEB:NA	2.25	0.49
2:L:113:LEU:HD11	4:L:387:CYC:HMB3	1.94	0.48
1:K:17:ARG:HG2	1:K:18:PHE:O	2.13	0.48
4:N:389:CYC:HMA1	4:N:389:CYC:NB	2.28	0.48
1:A:77:THR:HG23	1:A:80:GLY:HA3	1.96	0.48
1:M:140:HIS:HD2	1:M:142:LEU:H	1.61	0.47
2:B:63:GLN:HB3	2:B:65:GLN:HE21	1.79	0.47
2:L:79:MET:HE2	2:L:83:LEU:HG	1.96	0.47
2:N:135:LYS:O	2:N:139:LEU:HG	2.14	0.47
2:N:110:LEU:HG	2:N:170:ALA:HB3	1.95	0.47
4:K:386:CYC:HBB2	2:N:75:THR:HA	1.95	0.47
1:M:95:VAL:HG21	1:M:154:ILE:HD13	1.97	0.46
2:B:145:THR:O	2:B:146:THR:CB	2.64	0.46
2:B:145:THR:O	2:B:146:THR:OG1	2.23	0.46
1:K:5:LEU:HD22	1:K:27:VAL:HG13	1.97	0.46
1:A:9:ILE:HD11	2:B:98:ILE:HG22	1.99	0.45
1:M:134:LYS:HE2	1:M:158:ILE:HD13	2.00	0.44
4:K:386:CYC:HAC2	4:K:386:CYC:HMC1	1.76	0.44
2:L:113:LEU:HA	2:L:113:LEU:HD12	1.78	0.43
1:K:140:HIS:HE1	1:K:151:ASN:OD1	2.00	0.43
1:K:2:LYS:HG2	6:K:427:HOH:O	2.18	0.43
2:L:97:MET:SD	2:L:160:ILE:HB	2.58	0.43
1:K:22:THR:O	1:K:26:VAL:HG23	2.17	0.43
5:N:357:PEB:HMB2	5:N:357:PEB:NA	2.31	0.43
2:B:123:PRO:O	2:B:127:VAL:HG23	2.19	0.43
4:M:388:CYC:HMC1	4:M:388:CYC:HAC2	1.82	0.43
4:M:388:CYC:NC	4:M:388:CYC:HMD2	2.26	0.43
2:B:129:VAL:O	2:B:133:LYS:HG2	2.19	0.43
1:K:91:TYR:O	1:K:95:VAL:HG23	2.18	0.43
1:M:108:ASP:HA	1:M:112:VAL:HB	2.00	0.43
1:M:74:TYR:HA	4:M:388:CYC:OC	2.17	0.43
2:B:120:LEU:HD11	4:B:385:CYC:HAA2	2.00	0.42
1:K:23:GLU:O	1:K:26:VAL:HB	2.19	0.42
4:M:388:CYC:NB	4:M:388:CYC:HMA1	2.34	0.42
2:N:114:ARG:HG3	2:N:172:ALA:HB2	2.01	0.42
2:N:40:VAL:HG22	2:N:142:VAL:HG13	2.02	0.42
2:B:116:THR:O	2:B:120:LEU:HG	2.20	0.42
2:B:25:ASP:HA	2:B:28:LEU:HD12	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:113:LEU:HD11	4:B:385:CYC:HMB3	2.02	0.42
1:A:69:MET:HA	1:A:70:PRO:HD3	1.80	0.41
2:B:57:ARG:NH2	4:M:388:CYC:O2D	2.53	0.41
2:B:113:LEU:HD23	2:B:171:VAL:HG12	2.02	0.41
2:N:160:ILE:HD13	2:N:160:ILE:HG21	1.80	0.41
1:A:1:MET:O	1:A:6:THR:HG21	2.21	0.41
2:B:41:VAL:HG11	2:B:98:ILE:HG12	2.01	0.41
2:L:91:ARG:O	2:L:94:SER:HB2	2.21	0.41
2:N:72:ASN:HD22	4:N:389:CYC:HC	1.68	0.41
1:K:118:ILE:HD12	4:K:386:CYC:HMA2	2.03	0.41
1:K:69:MET:HA	1:K:70:PRO:HD3	1.89	0.41
2:B:122:THR:HA	2:B:123:PRO:HD3	1.92	0.41
2:B:142:VAL:HG21	2:B:160:ILE:HD11	2.03	0.40
1:M:91:TYR:O	1:M:95:VAL:HG23	2.22	0.40
2:N:41:VAL:HG21	2:N:98:ILE:HG12	2.02	0.40
1:A:137:LYS:HD3	1:A:154:ILE:CG2	2.52	0.40
5:B:355:PEB:HNA	5:B:355:PEB:HMB2	1.85	0.40
2:L:12:ALA:HA	2:L:15:ARG:HE	1.86	0.40
1:K:42:LYS:HE3	2:L:24:ILE:HG21	2.03	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 X-ray entries followed by that with respect to entries of similar resolution.

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	160/162 (99%)	157 (98%)	3 (2%)	0	100	100
1	K	160/162 (99%)	156 (98%)	4 (2%)	0	100	100
1	M	160/162 (99%)	158 (99%)	2 (1%)	0	100	100
2	B	170/172 (99%)	164 (96%)	5 (3%)	1 (1%)	25	36
2	L	170/172 (99%)	164 (96%)	4 (2%)	2 (1%)	13	19

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	N	170/172 (99%)	166 (98%)	3 (2%)	1 (1%)	25	36
All	All	990/1002 (99%)	965 (98%)	21 (2%)	4 (0%)	34	48

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	146	THR
2	N	146	THR
2	L	111	ASN
2	L	146	THR

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 X-ray entries followed by that with respect to entries of similar resolution.

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	129/129 (100%)	121 (94%)	8 (6%)	18	29
1	K	129/129 (100%)	116 (90%)	13 (10%)	7	11
1	M	129/129 (100%)	116 (90%)	13 (10%)	7	11
2	B	127/127 (100%)	116 (91%)	11 (9%)	10	15
2	L	127/127 (100%)	112 (88%)	15 (12%)	5	7
2	N	127/127 (100%)	112 (88%)	15 (12%)	5	7
All	All	768/768 (100%)	693 (90%)	75 (10%)	8	11

All (75) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	42	LYS
1	A	49	ASP
1	A	51	LEU
1	A	57	ASN
1	A	77	THR
1	A	115	LEU
1	A	140	HIS

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Mol	Chain	Res	Type
1	A	145	ASP
2	B	32	SER
2	B	38	LEU
2	B	65	GLN
2	B	94	SER
2	B	98	ILE
2	B	111	ASN
2	B	115	GLU
2	B	139	LEU
2	B	148	THR
2	B	155	SER
2	B	166	ARG
1	K	17	ARG
1	K	19	LEU
1	K	33	ARG
1	K	35	THR
1	K	38	LEU
1	K	44	LEU
1	K	50	ARG
1	K	66	THR
1	K	99	LEU
1	K	109	ASP
1	K	134	LYS
1	K	143	SER
1	K	162	SER
2	L	2	LEU
2	L	28	LEU
2	L	37	ARG
2	L	38	LEU
2	L	52	VAL
2	L	65	GLN
2	L	66	LEU
2	L	90	LEU
2	L	98	ILE
2	L	107	ASP
2	L	132	GLN
2	L	145	THR
2	L	146	THR
2	L	155	SER
2	L	160	ILE
1	M	1	MET
1	M	19	LEU

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Mol	Chain	Res	Type
1	M	23	GLU
1	M	32	ASN
1	M	33	ARG
1	M	76	SER
1	M	99	LEU
1	M	100	VAL
1	M	124	LEU
1	M	133	LEU
1	M	136	ILE
1	M	139	ASN
1	M	142	LEU
2	N	2	LEU
2	N	11	GLN
2	N	32	SER
2	N	33	GLU
2	N	38	LEU
2	N	59	LEU
2	N	65	GLN
2	N	66	LEU
2	N	98	ILE
2	N	115	GLU
2	N	143	ASN
2	N	145	THR
2	N	146	THR
2	N	148	THR
2	N	160	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	GLN
1	A	140	HIS
2	B	46	ASN
2	B	65	GLN
2	B	72	ASN
2	B	143	ASN
1	K	139	ASN
1	K	140	HIS
2	L	35	ASN
2	L	72	ASN
1	M	21	ASN
1	M	119	ASN

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Mol	Chain	Res	Type
1	M	140	HIS
2	N	11	GLN
2	N	35	ASN
2	N	54	ASN
2	N	72	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

9 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	$\# Z > 2$
4	CYC	N	389	2	36,46,46	2.98	9 (25%)	44,67,67	2.71	23 (52%)
4	CYC	M	388	1	36,46,46	3.14	14 (38%)	44,67,67	3.16	20 (45%)
5	PEB	B	355	2	37,46,46	3.12	13 (35%)	39,67,67	2.22	17 (43%)
3	BLA	A	384	1	36,46,46	2.93	18 (50%)	47,67,67	2.21	16 (34%)
4	CYC	B	385	2	36,46,46	3.30	13 (36%)	44,67,67	3.19	25 (56%)
4	CYC	K	386	1	36,46,46	3.20	13 (36%)	44,67,67	3.41	19 (43%)
5	PEB	N	357	2	37,46,46	2.92	11 (29%)	39,67,67	2.59	17 (43%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	PEB	L	356	2	37,46,46	2.96	13 (35%)	39,67,67	2.29	15 (38%)
4	CYC	L	387	2	36,46,46	3.13	13 (36%)	44,67,67	3.00	25 (56%)

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	CYC	N	389	2	-	9/21/74/74	0/4/4/4
4	CYC	M	388	1	-	9/21/74/74	0/4/4/4
5	PEB	B	355	2	1/1/14/19	3/20/74/74	0/4/4/4
3	BLA	A	384	1	-	5/22/74/74	0/4/4/4
4	CYC	B	385	2	-	11/21/74/74	0/4/4/4
4	CYC	K	386	1	1/1/14/19	10/21/74/74	0/4/4/4
5	PEB	N	357	2	-	4/20/74/74	0/4/4/4
5	PEB	L	356	2	-	5/20/74/74	0/4/4/4
4	CYC	L	387	2	-	9/21/74/74	0/4/4/4

All (117) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	K	386	CYC	C2C-C1C	-13.21	1.40	1.52
4	N	389	CYC	C2C-C1C	-13.12	1.40	1.52
4	L	387	CYC	C2C-C1C	-13.12	1.40	1.52
4	B	385	CYC	C2C-C1C	-12.85	1.40	1.52
5	B	355	PEB	C2A-C1A	-12.81	1.40	1.52
4	M	388	CYC	C2C-C1C	-12.78	1.40	1.52
5	L	356	PEB	C2A-C1A	-12.30	1.41	1.52
5	N	357	PEB	C2A-C1A	-11.43	1.41	1.52
3	A	384	BLA	CHA-C4D	8.47	1.42	1.35
4	N	389	CYC	CHA-C1A	6.99	1.41	1.35
5	N	357	PEB	CHB-C4B	6.93	1.40	1.35
4	B	385	CYC	C1A-C2A	-6.65	1.35	1.45
3	A	384	BLA	C3C-C2C	6.57	1.50	1.37
4	K	386	CYC	CHA-C1A	6.48	1.40	1.35
5	L	356	PEB	CHB-C4B	6.27	1.40	1.35
4	M	388	CYC	CHA-C1A	6.24	1.40	1.35
4	L	387	CYC	CHA-C1A	5.88	1.40	1.35
4	B	385	CYC	CHA-C1A	5.82	1.40	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	L	387	CYC	C1A-C2A	-5.80	1.36	1.45
5	N	357	PEB	C2D-C3D	5.66	1.41	1.34
5	L	356	PEB	C2D-C3D	5.45	1.41	1.34
5	B	355	PEB	CHB-C4B	5.30	1.39	1.35
4	B	385	CYC	C4B-C3B	-5.29	1.38	1.48
5	B	355	PEB	C2D-C3D	5.29	1.41	1.34
4	M	388	CYC	C4B-C3B	-5.27	1.38	1.48
5	B	355	PEB	CAC-C2C	-5.23	1.44	1.52
4	M	388	CYC	C1A-C2A	-5.00	1.37	1.45
3	A	384	BLA	CBB-CAB	4.98	1.55	1.30
3	A	384	BLA	CAA-C2A	4.95	1.59	1.52
4	K	386	CYC	C2A-C3A	4.80	1.46	1.36
4	B	385	CYC	C4A-C3A	4.77	1.56	1.45
5	L	356	PEB	CBD-CAD	4.73	1.53	1.30
5	N	357	PEB	CBD-CAD	4.72	1.53	1.30
5	B	355	PEB	CBD-CAD	4.68	1.53	1.30
4	K	386	CYC	C4B-C3B	-4.59	1.39	1.48
4	L	387	CYC	C4B-C3B	-4.57	1.39	1.48
3	A	384	BLA	CBC-CAC	4.26	1.51	1.30
4	K	386	CYC	C1A-C2A	-4.23	1.39	1.45
4	N	389	CYC	C4B-C3B	-4.21	1.40	1.48
4	M	388	CYC	C2A-C3A	4.14	1.45	1.36
3	A	384	BLA	C3C-C4C	4.01	1.52	1.45
4	K	386	CYC	C4A-NA	3.85	1.45	1.36
4	N	389	CYC	CMA-C3A	3.83	1.58	1.50
4	B	385	CYC	C1C-NC	-3.81	1.32	1.37
3	A	384	BLA	CHB-C1B	3.73	1.42	1.34
5	B	355	PEB	CHC-C4C	-3.61	1.42	1.50
5	N	357	PEB	C1A-NA	-3.55	1.33	1.37
5	N	357	PEB	CHC-C4C	-3.55	1.42	1.50
4	L	387	CYC	C2A-C3A	3.49	1.44	1.36
5	B	355	PEB	C1A-NA	-3.47	1.33	1.37
5	L	356	PEB	C1A-NA	-3.44	1.33	1.37
4	B	385	CYC	C4B-NB	-3.39	1.30	1.38
5	L	356	PEB	CHC-C4C	-3.35	1.43	1.50
4	K	386	CYC	C4A-C3A	3.32	1.53	1.45
4	B	385	CYC	C2A-C3A	3.31	1.43	1.36
3	A	384	BLA	C3D-C2D	3.28	1.43	1.36
4	N	389	CYC	C3B-C2B	3.20	1.43	1.36
3	A	384	BLA	C3B-C4B	-3.19	1.38	1.47
4	M	388	CYC	C4A-C3A	3.18	1.52	1.45
4	L	387	CYC	C4B-NB	-3.18	1.31	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	L	387	CYC	C3B-C2B	3.18	1.43	1.36
4	B	385	CYC	C3B-C2B	3.12	1.43	1.36
4	B	385	CYC	CAA-C2A	3.09	1.59	1.51
4	L	387	CYC	C1C-NC	-3.06	1.33	1.37
4	K	386	CYC	C1C-NC	-3.03	1.33	1.37
4	M	388	CYC	C4A-NA	3.00	1.43	1.36
5	B	355	PEB	C3B-C2B	2.98	1.43	1.36
3	A	384	BLA	C3B-C2B	2.94	1.43	1.37
5	N	357	PEB	C3C-C4C	2.92	1.46	1.42
4	M	388	CYC	CAA-C2A	2.89	1.58	1.51
4	K	386	CYC	CHB-C4A	2.87	1.47	1.40
4	L	387	CYC	C4A-C3A	2.85	1.52	1.45
5	B	355	PEB	CMC-C3C	2.84	1.57	1.51
3	A	384	BLA	C1C-C2C	-2.83	1.40	1.47
4	N	389	CYC	C1C-NC	-2.80	1.34	1.37
4	N	389	CYC	C4B-NB	-2.79	1.32	1.38
4	M	388	CYC	C3B-C2B	2.75	1.42	1.36
4	K	386	CYC	C3B-C2B	2.71	1.42	1.36
5	L	356	PEB	CAA-C3A	-2.67	1.48	1.54
3	A	384	BLA	C4C-NC	2.66	1.42	1.37
5	L	356	PEB	C3B-C2B	2.66	1.42	1.36
3	A	384	BLA	C4B-NB	-2.65	1.32	1.38
4	B	385	CYC	C4A-NA	2.65	1.42	1.36
5	N	357	PEB	C3B-C2B	2.60	1.42	1.36
4	K	386	CYC	C4B-NB	-2.56	1.32	1.38
4	M	388	CYC	C4C-NC	2.53	1.42	1.37
5	B	355	PEB	C3C-C4C	-2.52	1.38	1.42
4	M	388	CYC	C1C-NC	-2.50	1.34	1.37
5	N	357	PEB	C3D-C4D	-2.48	1.40	1.47
5	L	356	PEB	CHA-C4A	2.47	1.41	1.36
4	M	388	CYC	CHD-C4C	2.41	1.44	1.38
5	B	355	PEB	CHA-C4A	2.40	1.41	1.36
4	K	386	CYC	C4C-NC	2.37	1.42	1.37
4	N	389	CYC	C2A-C3A	2.36	1.41	1.36
5	B	355	PEB	C4A-NA	2.34	1.42	1.37
3	A	384	BLA	C1D-ND	2.31	1.41	1.36
4	L	387	CYC	C4A-NA	2.26	1.41	1.36
4	B	385	CYC	CMA-C3A	-2.23	1.46	1.50
4	M	388	CYC	C4B-NB	-2.22	1.33	1.38
4	L	387	CYC	CAA-C2A	2.21	1.57	1.51
4	M	388	CYC	C1B-NB	2.20	1.41	1.37
5	L	356	PEB	C3D-C4D	-2.19	1.41	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	N	389	CYC	C4C-NC	2.15	1.41	1.37
4	K	386	CYC	CAA-C2A	2.14	1.56	1.51
3	A	384	BLA	CHD-C4C	2.11	1.43	1.38
5	N	357	PEB	C4A-NA	2.10	1.41	1.37
5	L	356	PEB	C3C-C4C	2.09	1.45	1.42
3	A	384	BLA	CAB-C3B	2.07	1.53	1.47
3	A	384	BLA	C2A-C3A	2.07	1.43	1.37
5	B	355	PEB	C4B-C3B	-2.06	1.42	1.45
4	L	387	CYC	C4C-NC	2.06	1.41	1.37
4	L	387	CYC	CHD-C4C	2.06	1.43	1.38
5	L	356	PEB	C4B-C3B	-2.06	1.42	1.45
5	L	356	PEB	C4A-NA	2.05	1.41	1.37
3	A	384	BLA	CMA-C3A	-2.05	1.47	1.51
4	B	385	CYC	C4C-NC	2.02	1.41	1.37
5	N	357	PEB	CHA-C4A	2.01	1.40	1.36

All (177) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	K	386	CYC	C4A-C3A-C2A	-10.57	94.37	106.51
4	K	386	CYC	CAA-C2A-C3A	-8.08	112.83	127.88
4	M	388	CYC	C4A-C3A-C2A	-8.06	97.25	106.51
4	M	388	CYC	CAC-C3C-C4C	7.90	132.96	112.67
4	B	385	CYC	C4A-C3A-C2A	-7.87	97.47	106.51
4	K	386	CYC	CAC-C3C-C4C	7.75	132.58	112.67
3	A	384	BLA	CAC-C3C-C2C	-7.59	103.59	128.60
4	M	388	CYC	C3B-C4B-NB	7.17	112.57	106.78
5	N	357	PEB	OD-C4D-ND	-6.84	115.80	125.93
4	K	386	CYC	C1A-C2A-C3A	6.74	114.25	106.78
4	B	385	CYC	C1A-C2A-C3A	6.67	114.17	106.78
4	M	388	CYC	CAA-C2A-C3A	-6.45	115.87	127.88
4	K	386	CYC	CMC-C2C-C1C	6.43	126.27	112.40
4	M	388	CYC	CMC-C2C-C1C	6.43	126.27	112.40
4	L	387	CYC	CAC-C3C-C2C	-6.37	98.34	114.26
4	B	385	CYC	CAA-C2A-C3A	-6.09	116.53	127.88
4	N	389	CYC	CAC-C3C-C2C	-5.97	99.34	114.26
5	L	356	PEB	OD-C4D-ND	-5.96	117.10	125.93
4	B	385	CYC	C3B-C4B-NB	5.73	111.40	106.78
4	L	387	CYC	C4A-C3A-C2A	-5.65	100.02	106.51
4	M	388	CYC	C1A-C2A-C3A	5.58	112.96	106.78
5	B	355	PEB	CMA-C2A-C1A	5.50	124.25	112.40
4	B	385	CYC	CAC-C3C-C2C	-5.44	100.67	114.26

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	N	389	CYC	CHB-C4A-NA	-5.37	113.71	124.93
4	K	386	CYC	CHB-C4A-NA	-5.32	113.81	124.93
4	L	387	CYC	C3B-C4B-NB	5.23	111.00	106.78
4	L	387	CYC	C1A-C2A-C3A	5.21	112.56	106.78
4	B	385	CYC	CAC-C3C-C4C	5.20	126.03	112.67
4	N	389	CYC	C3B-C4B-NB	5.17	110.95	106.78
4	N	389	CYC	CMC-C2C-C1C	5.16	123.53	112.40
4	K	386	CYC	C3B-C4B-NB	5.14	110.93	106.78
5	L	356	PEB	CHC-C1D-ND	-5.00	108.14	113.95
4	L	387	CYC	CAA-C2A-C3A	-4.97	118.62	127.88
4	L	387	CYC	CMC-C2C-C1C	4.95	123.07	112.40
4	N	389	CYC	CAC-C3C-C4C	4.85	125.13	112.67
3	A	384	BLA	C3B-C4B-NB	4.82	111.63	106.19
5	N	357	PEB	CHC-C1D-ND	-4.79	108.39	113.95
4	N	389	CYC	CBC-CAC-C3C	-4.76	102.86	113.47
4	L	387	CYC	CHB-C4A-NA	-4.60	115.31	124.93
5	N	357	PEB	OA-C1A-NA	-4.60	119.38	124.94
5	B	355	PEB	OD-C4D-ND	-4.57	119.15	125.93
4	N	389	CYC	C1B-C2B-C3B	-4.51	103.17	107.87
5	L	356	PEB	CMA-C2A-C1A	4.51	122.12	112.40
4	M	388	CYC	CHB-C4A-NA	-4.49	115.54	124.93
5	N	357	PEB	CAC-CBC-CGC	-4.43	105.24	112.67
5	N	357	PEB	CMA-C2A-C1A	4.39	121.87	112.40
4	B	385	CYC	CMB-C2B-C1B	4.31	129.56	124.17
3	A	384	BLA	CBC-CAC-C3C	-4.28	106.35	127.62
4	K	386	CYC	CAC-C3C-C2C	-4.20	103.76	114.26
4	L	387	CYC	CMB-C2B-C1B	4.07	129.24	124.17
4	N	389	CYC	C2C-C1C-NC	4.03	111.75	108.27
4	B	385	CYC	C1B-C2B-C3B	-3.99	103.71	107.87
4	L	387	CYC	CBD-CAD-C3D	3.99	119.84	112.49
4	L	387	CYC	C1B-C2B-C3B	-3.97	103.72	107.87
5	N	357	PEB	OA-C1A-C2A	3.90	129.28	126.17
4	B	385	CYC	CMC-C2C-C1C	3.85	120.70	112.40
4	B	385	CYC	CHB-C1B-NB	-3.72	118.08	126.06
3	A	384	BLA	CHD-C1D-ND	-3.67	117.26	124.93
4	B	385	CYC	OC-C1C-NC	-3.67	120.50	124.94
4	B	385	CYC	CHB-C4A-NA	-3.63	117.33	124.93
5	L	356	PEB	OA-C1A-NA	-3.62	120.56	124.94
5	N	357	PEB	CBC-CAC-C2C	3.62	119.17	112.49
4	L	387	CYC	C4D-CHA-C1A	-3.59	124.52	128.81
4	B	385	CYC	CBB-CAB-C3B	3.58	122.29	112.43
4	M	388	CYC	C1B-NB-C4B	-3.58	106.12	110.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	N	357	PEB	C3D-C4D-ND	3.57	114.27	107.26
4	N	389	CYC	OC-C1C-NC	-3.56	120.63	124.94
4	K	386	CYC	CBC-CAC-C3C	-3.56	105.55	113.47
4	L	387	CYC	OC-C1C-NC	-3.54	120.65	124.94
5	N	357	PEB	C2A-C1A-NA	3.52	111.31	108.27
4	L	387	CYC	CBB-CAB-C3B	3.44	121.91	112.43
4	L	387	CYC	CAC-C3C-C4C	3.40	121.42	112.67
4	L	387	CYC	OB-C4B-NB	-3.40	117.17	125.08
4	K	386	CYC	CBB-CAB-C3B	3.39	121.79	112.43
4	M	388	CYC	CAC-C3C-C2C	-3.39	105.80	114.26
4	L	387	CYC	CBC-CAC-C3C	-3.38	105.95	113.47
5	B	355	PEB	CHC-C1D-ND	-3.35	110.05	113.95
4	K	386	CYC	C2C-C1C-NC	3.33	111.15	108.27
4	M	388	CYC	C2C-C1C-NC	3.32	111.14	108.27
4	B	385	CYC	OB-C4B-NB	-3.31	117.37	125.08
5	L	356	PEB	C2A-C1A-NA	3.29	111.11	108.27
4	B	385	CYC	C2C-C1C-NC	3.29	111.11	108.27
3	A	384	BLA	CAA-C2A-C3A	-3.28	117.82	127.25
4	N	389	CYC	CBB-CAB-C3B	3.27	121.44	112.43
4	L	387	CYC	C2C-C1C-NC	3.22	111.05	108.27
5	B	355	PEB	CHA-C1B-NB	-3.19	118.26	124.93
5	B	355	PEB	CAA-C3A-C2A	-3.19	106.30	114.26
3	A	384	BLA	CAC-C3C-C4C	3.17	132.73	123.54
5	N	357	PEB	CBA-CAA-C3A	-3.16	106.43	113.47
4	L	387	CYC	CHB-C1B-NB	-3.16	119.28	126.06
4	L	387	CYC	OB-C4B-C3B	3.11	131.42	128.04
5	B	355	PEB	CHB-C4B-NB	-3.11	124.51	128.83
5	L	356	PEB	CAA-C3A-C2A	-3.09	106.53	114.26
5	B	355	PEB	CAB-CBB-CGB	3.05	117.79	112.67
4	M	388	CYC	C1B-C2B-C3B	-3.03	104.70	107.87
4	B	385	CYC	CBC-CAC-C3C	-3.02	106.75	113.47
4	K	386	CYC	OB-C4B-NB	-3.01	118.08	125.08
5	B	355	PEB	CAA-C3A-C4A	3.00	120.39	112.67
5	B	355	PEB	CMA-C2A-C3A	2.99	125.89	113.83
4	B	385	CYC	C4D-CHA-C1A	-2.97	125.26	128.81
4	N	389	CYC	OB-C4B-NB	-2.96	118.20	125.08
4	M	388	CYC	CBB-CAB-C3B	2.96	120.58	112.43
3	A	384	BLA	C3B-C2B-C1B	-2.94	104.47	108.03
5	L	356	PEB	C3D-C4D-ND	2.92	113.00	107.26
4	K	386	CYC	CMC-C2C-C3C	2.91	125.57	113.83
5	L	356	PEB	CAB-CBB-CGB	2.89	117.52	112.67
5	L	356	PEB	CHA-C1B-NB	-2.87	118.92	124.93

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	M	388	CYC	CBC-CAC-C3C	-2.86	107.09	113.47
4	B	385	CYC	OB-C4B-C3B	2.85	131.13	128.04
4	B	385	CYC	CHA-C1A-NA	-2.84	124.89	128.83
3	A	384	BLA	OB-C4B-NB	-2.82	118.53	125.08
5	N	357	PEB	CHA-C1B-NB	-2.80	119.08	124.93
4	B	385	CYC	CAB-C3B-C4B	2.79	125.78	121.38
4	M	388	CYC	OB-C4B-NB	-2.78	118.61	125.08
4	B	385	CYC	OC-C1C-C2C	2.78	128.38	126.17
3	A	384	BLA	CHD-C1D-C2D	2.75	131.98	124.90
3	A	384	BLA	CMB-C2B-C1B	2.74	127.59	124.17
5	N	357	PEB	CMB-C2B-C1B	2.74	129.28	125.06
5	B	355	PEB	C3D-C4D-ND	2.73	112.61	107.26
5	L	356	PEB	OA-C1A-C2A	2.72	128.33	126.17
4	K	386	CYC	CMB-C2B-C1B	2.71	127.56	124.17
4	N	389	CYC	CMA-C3A-C4A	2.71	129.24	125.06
4	N	389	CYC	C1B-NB-C4B	-2.69	107.24	110.67
5	B	355	PEB	C2A-C1A-NA	2.67	110.57	108.27
4	L	387	CYC	OC-C1C-C2C	2.67	128.29	126.17
5	N	357	PEB	CHC-C4C-C3C	-2.66	125.81	130.34
5	N	357	PEB	CHB-C4B-NB	-2.62	125.19	128.83
4	M	388	CYC	OC-C1C-NC	-2.61	121.78	124.94
4	N	389	CYC	CHB-C1B-NB	-2.60	120.48	126.06
5	B	355	PEB	OA-C1A-NA	-2.60	121.80	124.94
4	M	388	CYC	CMB-C2B-C1B	2.60	127.41	124.17
4	L	387	CYC	CAB-C3B-C4B	2.58	125.46	121.38
4	M	388	CYC	CMC-C2C-C3C	2.58	124.25	113.83
4	N	389	CYC	OB-C4B-C3B	2.58	130.84	128.04
4	K	386	CYC	OB-C4B-C3B	2.57	130.83	128.04
5	L	356	PEB	CMB-C2B-C1B	2.56	129.01	125.06
3	A	384	BLA	CMD-C2D-C1D	2.55	128.99	125.06
3	A	384	BLA	CBA-CAA-C2A	2.54	117.17	112.49
4	L	387	CYC	CHA-C1A-NA	-2.54	125.31	128.83
5	B	355	PEB	CMD-C2D-C3D	-2.53	126.50	130.06
4	K	386	CYC	C1B-C2B-C3B	-2.49	105.27	107.87
5	L	356	PEB	CMD-C2D-C3D	-2.48	126.56	130.06
4	K	386	CYC	OC-C1C-NC	-2.48	121.94	124.94
4	N	389	CYC	CHB-C4A-C3A	2.47	131.25	124.90
3	A	384	BLA	CMA-C3A-C2A	2.43	129.52	124.94
5	B	355	PEB	CMB-C2B-C1B	2.42	128.79	125.06
5	L	356	PEB	CBA-CAA-C3A	-2.42	108.09	113.47
3	A	384	BLA	CAA-CBA-CGA	2.40	116.70	112.67
4	B	385	CYC	CAD-CBD-CGD	2.39	116.68	112.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	384	BLA	C1B-NB-C4B	-2.37	107.66	110.67
4	N	389	CYC	CMB-C2B-C1B	2.35	127.11	124.17
4	N	389	CYC	CBD-CAD-C3D	2.35	116.82	112.49
4	N	389	CYC	CAD-CBD-CGD	2.35	116.61	112.67
5	B	355	PEB	C1C-CHB-C4B	-2.32	126.04	128.81
4	L	387	CYC	CMC-C2C-C3C	2.27	122.97	113.83
4	K	386	CYC	CHB-C4A-C3A	2.26	130.72	124.90
4	B	385	CYC	CAA-C2A-C1A	2.25	128.99	125.01
4	B	385	CYC	CAA-CBA-CGA	2.25	116.44	112.67
5	L	356	PEB	CHA-C4A-NA	2.25	127.88	125.20
4	M	388	CYC	CHA-C1A-NA	-2.18	125.80	128.83
4	N	389	CYC	C2B-C1B-NB	2.16	110.15	106.99
5	N	357	PEB	CMD-C2D-C3D	-2.15	127.04	130.06
5	N	357	PEB	C2C-C3C-C4C	-2.13	102.82	111.33
3	A	384	BLA	CHB-C1B-NB	-2.11	123.30	130.40
4	N	389	CYC	CHA-C1A-NA	-2.11	125.91	128.83
4	M	388	CYC	CAD-CBD-CGD	2.10	116.20	112.67
5	B	355	PEB	CHA-C1B-C2B	2.09	130.27	124.90
4	K	386	CYC	CAB-C3B-C4B	2.08	124.67	121.38
5	L	356	PEB	CHB-C4B-NB	-2.06	125.97	128.83
4	N	389	CYC	CMC-C2C-C3C	2.05	122.12	113.83
4	L	387	CYC	CMA-C3A-C4A	2.05	128.22	125.06
4	M	388	CYC	CHB-C4A-C3A	2.05	130.17	124.90
4	N	389	CYC	C4D-CHA-C1A	-2.05	126.36	128.81
5	N	357	PEB	C1C-CHB-C4B	-2.03	126.38	128.81
4	L	387	CYC	CHB-C4A-C3A	2.02	130.10	124.90
5	B	355	PEB	CBA-CAA-C3A	-2.02	108.97	113.47
4	B	385	CYC	CMC-C2C-C3C	2.01	121.92	113.83

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	B	355	PEB	C2A
4	K	386	CYC	C2C

All (65) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	N	389	CYC	NA-C4A-CHB-C1B
4	N	389	CYC	C3A-C4A-CHB-C1B
4	N	389	CYC	C2B-C3B-CAB-CBB
4	N	389	CYC	C4B-C3B-CAB-CBB

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Mol	Chain	Res	Type	Atoms
4	N	389	CYC	C4C-C3C-CAC-CBC
4	N	389	CYC	ND-C1D-CHD-C4C
4	N	389	CYC	C2D-C1D-CHD-C4C
4	M	388	CYC	NA-C4A-CHB-C1B
4	M	388	CYC	C3A-C4A-CHB-C1B
4	M	388	CYC	C2C-C3C-CAC-CBC
4	M	388	CYC	ND-C1D-CHD-C4C
4	M	388	CYC	C2D-C1D-CHD-C4C
5	B	355	PEB	NB-C1B-CHA-C4A
5	B	355	PEB	C2B-C1B-CHA-C4A
3	A	384	BLA	C3A-C2A-CAA-CBA
3	A	384	BLA	NA-C4A-CHB-C1B
3	A	384	BLA	C4C-C3C-CAC-CBC
4	B	385	CYC	C3A-C4A-CHB-C1B
4	B	385	CYC	C4C-C3C-CAC-CBC
4	B	385	CYC	ND-C1D-CHD-C4C
4	B	385	CYC	C2D-C1D-CHD-C4C
4	K	386	CYC	C3A-C2A-CAA-CBA
4	K	386	CYC	C3A-C4A-CHB-C1B
4	K	386	CYC	C2C-C3C-CAC-CBC
4	K	386	CYC	C4C-C3C-CAC-CBC
4	K	386	CYC	ND-C1D-CHD-C4C
4	K	386	CYC	C2D-C1D-CHD-C4C
5	N	357	PEB	C2A-C3A-CAA-CBA
5	N	357	PEB	C4A-C3A-CAA-CBA
5	N	357	PEB	NB-C1B-CHA-C4A
5	N	357	PEB	C2B-C1B-CHA-C4A
5	L	356	PEB	C2A-C3A-CAA-CBA
5	L	356	PEB	C4A-C3A-CAA-CBA
5	L	356	PEB	NB-C1B-CHA-C4A
5	L	356	PEB	C2B-C1B-CHA-C4A
4	L	387	CYC	C3A-C4A-CHB-C1B
4	L	387	CYC	C2B-C3B-CAB-CBB
4	L	387	CYC	C4C-C3C-CAC-CBC
4	L	387	CYC	ND-C1D-CHD-C4C
4	L	387	CYC	C2D-C1D-CHD-C4C
4	L	387	CYC	C2D-C3D-CAD-CBD
4	B	385	CYC	C2B-C3B-CAB-CBB
4	K	386	CYC	C2B-C3B-CAB-CBB
4	M	388	CYC	C3A-C2A-CAA-CBA
4	M	388	CYC	C2B-C3B-CAB-CBB
4	N	389	CYC	C2A-CAA-CBA-CGA

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Mol	Chain	Res	Type	Atoms
4	M	388	CYC	C4B-C3B-CAB-CBB
4	B	385	CYC	C4B-C3B-CAB-CBB
4	K	386	CYC	C4B-C3B-CAB-CBB
4	L	387	CYC	C4B-C3B-CAB-CBB
3	A	384	BLA	ND-C1D-CHD-C4C
4	B	385	CYC	NA-C4A-CHB-C1B
4	K	386	CYC	NA-C4A-CHB-C1B
4	L	387	CYC	NA-C4A-CHB-C1B
3	A	384	BLA	C2D-C1D-CHD-C4C
4	N	389	CYC	C2C-C3C-CAC-CBC
4	B	385	CYC	C2C-C3C-CAC-CBC
4	L	387	CYC	C2C-C3C-CAC-CBC
4	K	386	CYC	NA-C1A-CHA-C4D
4	M	388	CYC	C4C-C3C-CAC-CBC
5	B	355	PEB	C4A-C3A-CAA-CBA
4	B	385	CYC	C2A-CAA-CBA-CGA
4	B	385	CYC	NA-C1A-CHA-C4D
5	L	356	PEB	C3C-C2C-CAC-CBC
4	B	385	CYC	C3A-C2A-CAA-CBA

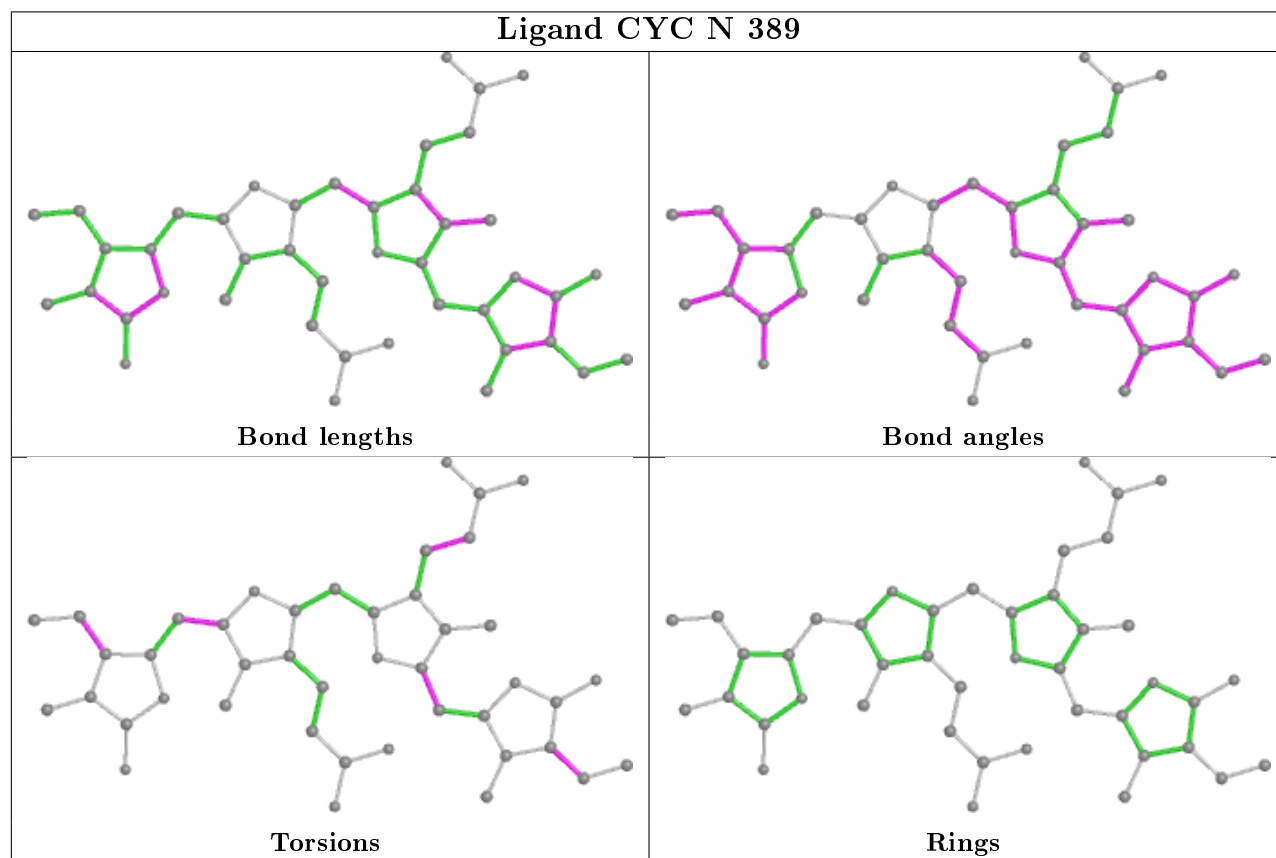
There are no ring outliers.

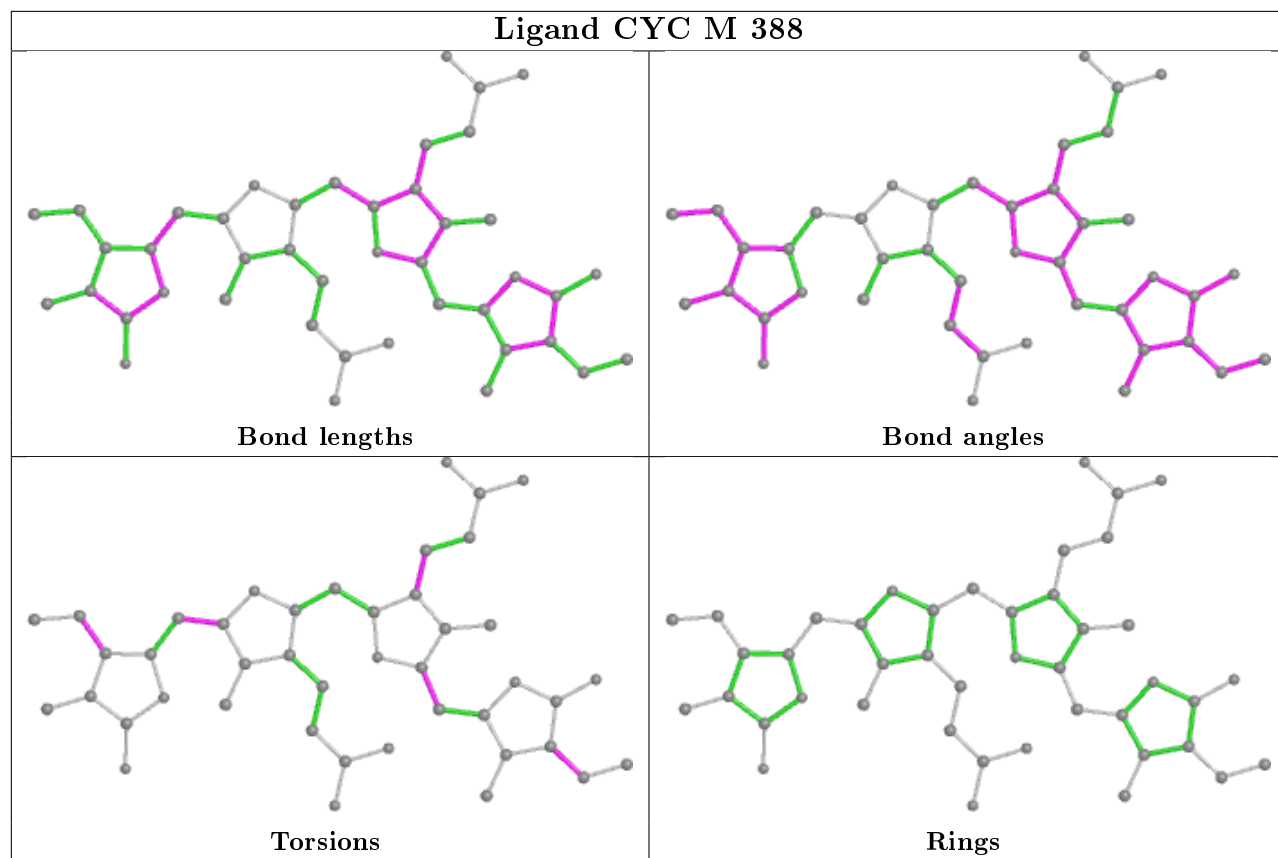
9 monomers are involved in 34 short contacts:

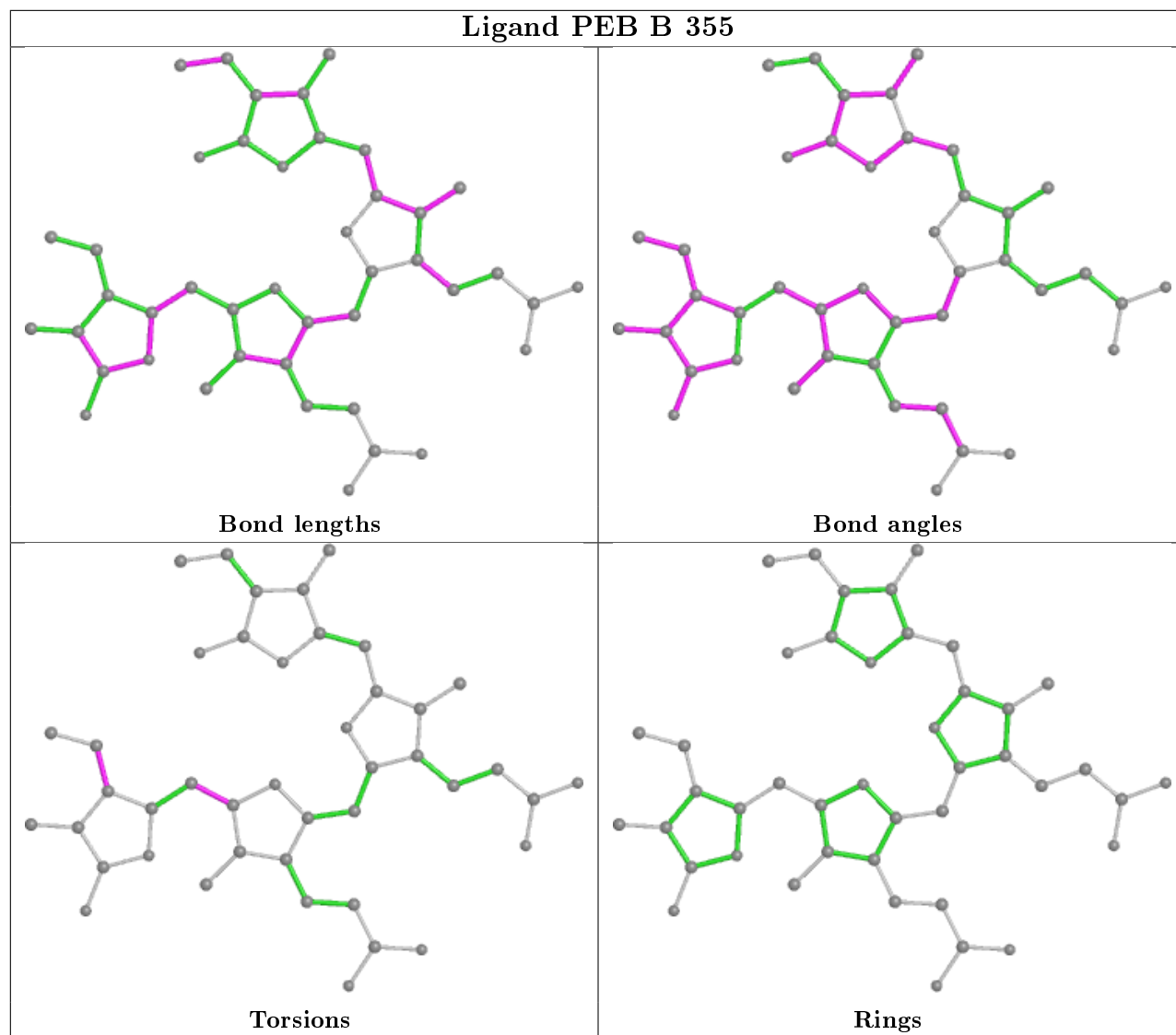
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	N	389	CYC	4	0
4	M	388	CYC	6	0
5	B	355	PEB	1	0
3	A	384	BLA	3	0
4	B	385	CYC	6	0
4	K	386	CYC	6	0
5	N	357	PEB	2	0
5	L	356	PEB	2	0
4	L	387	CYC	4	0

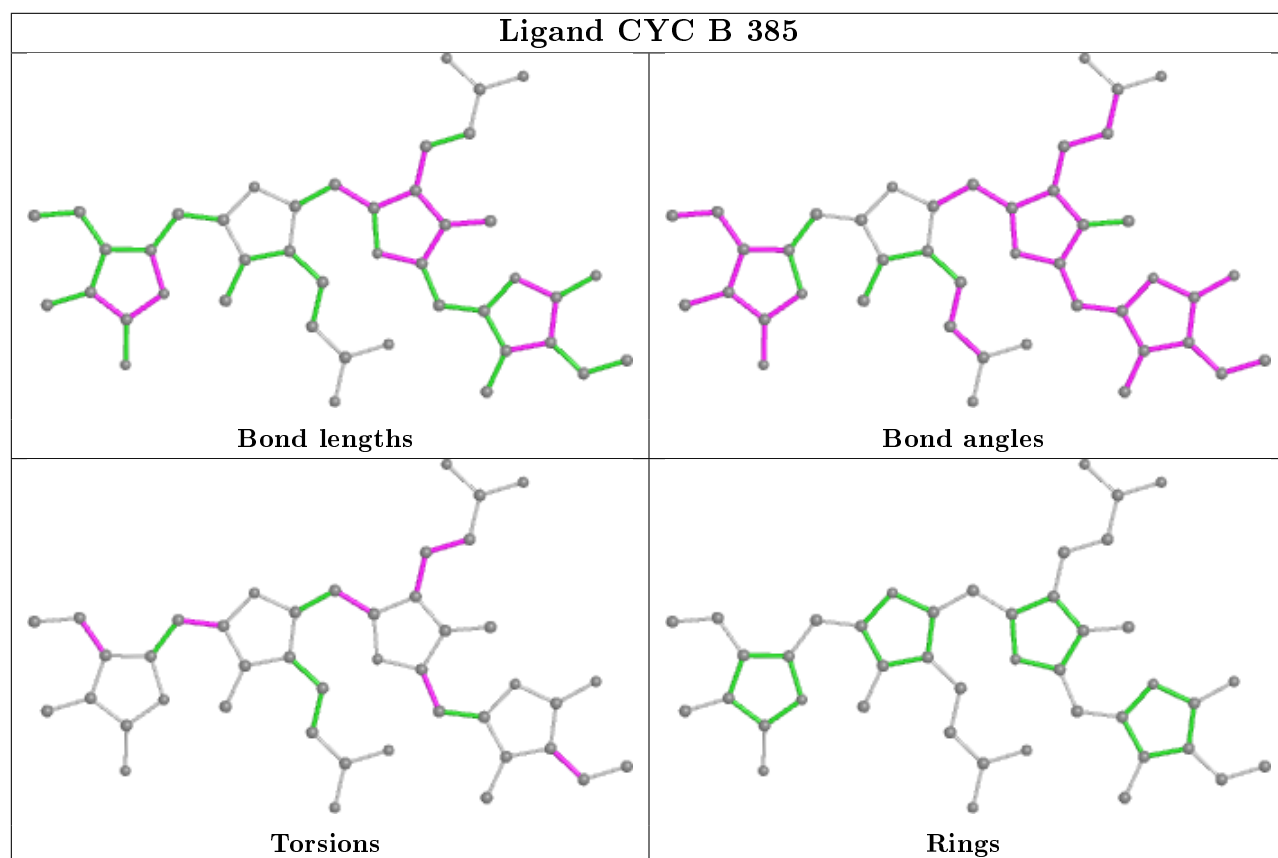
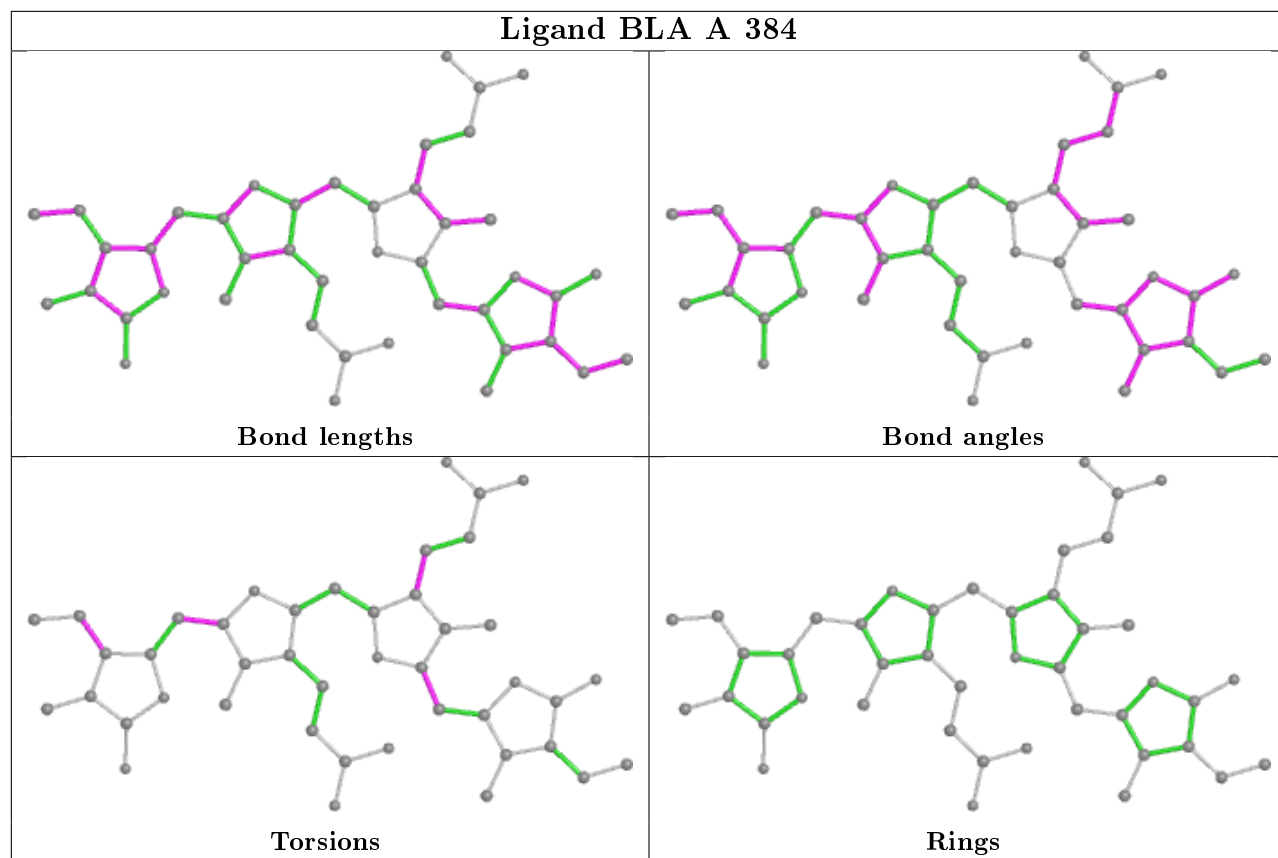
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

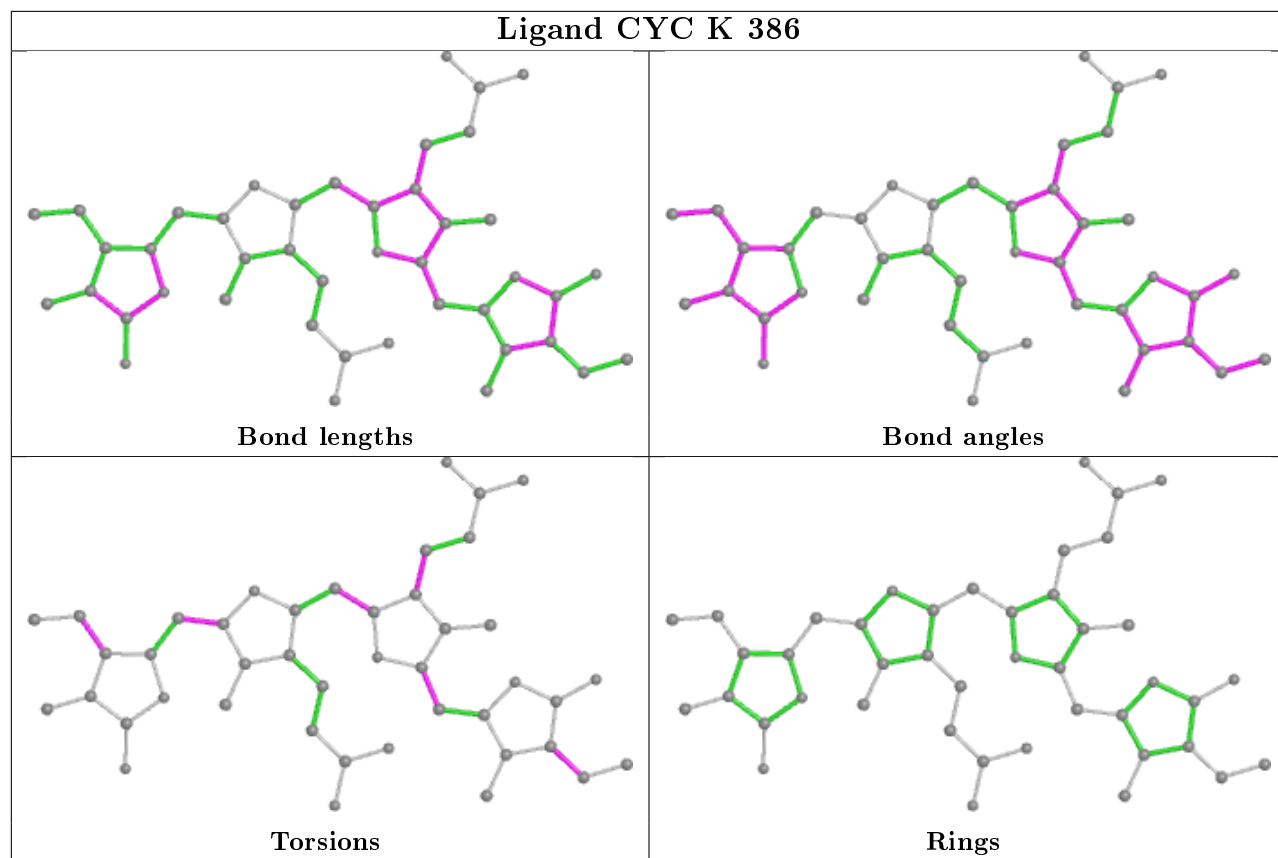
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

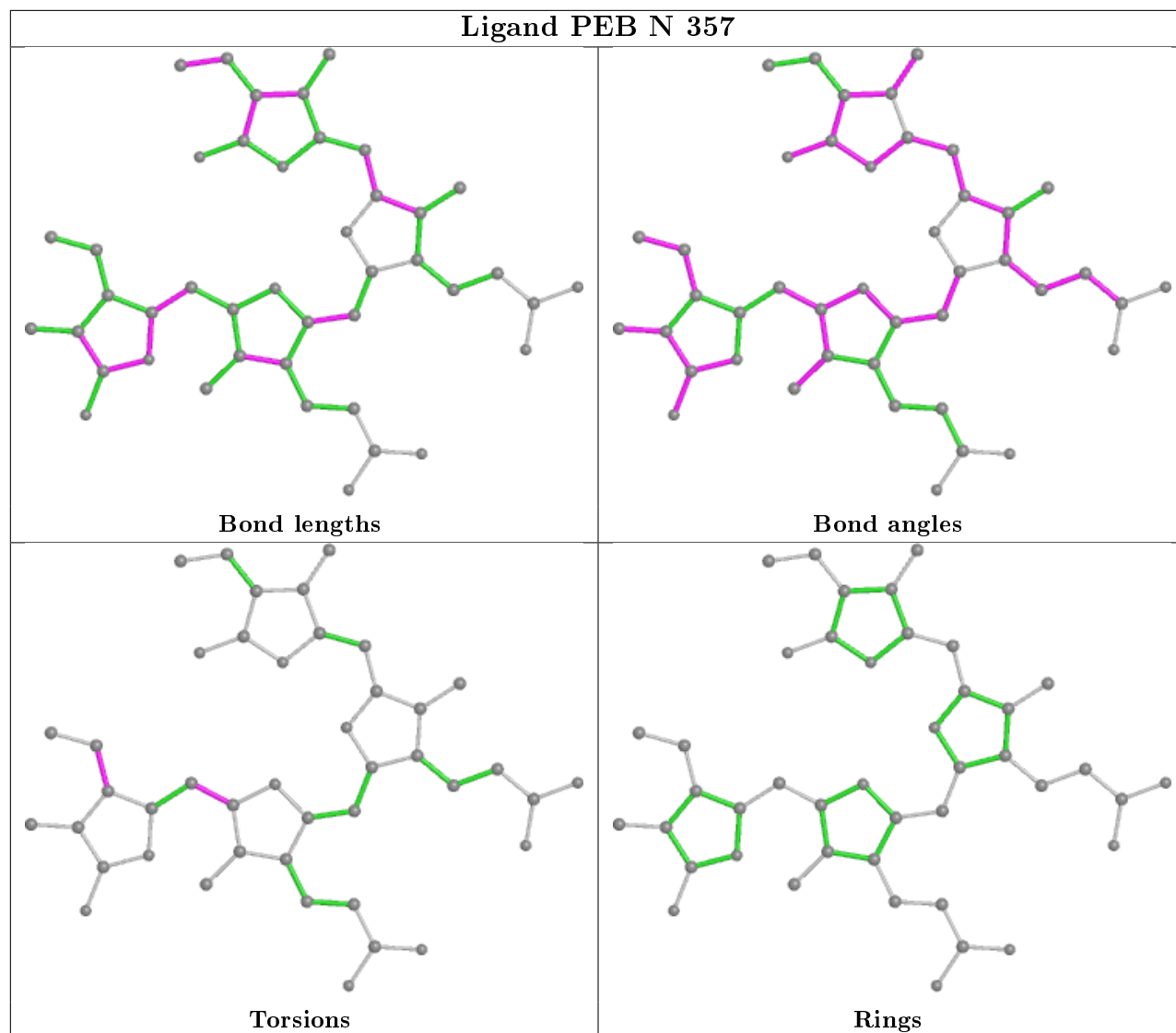


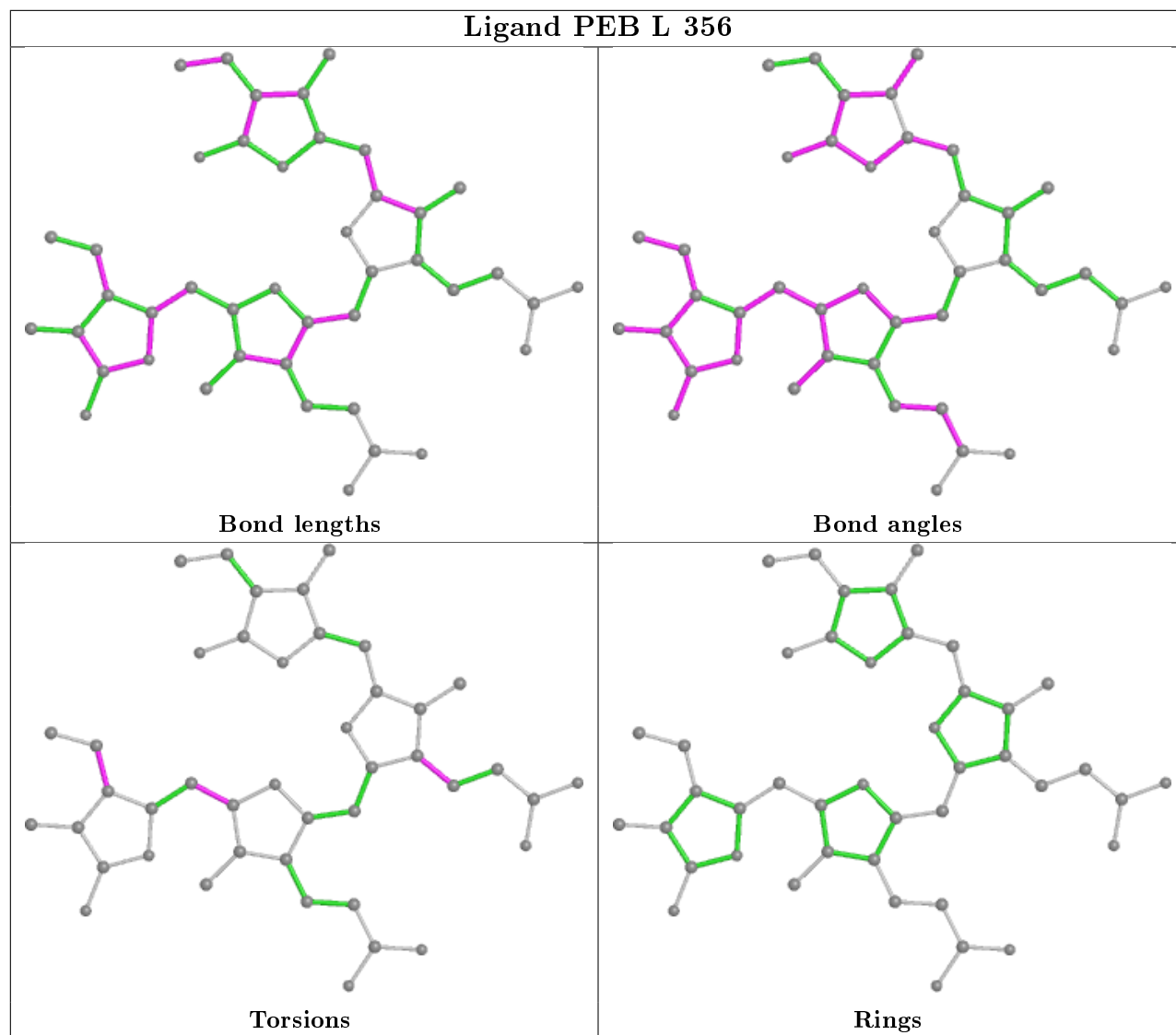


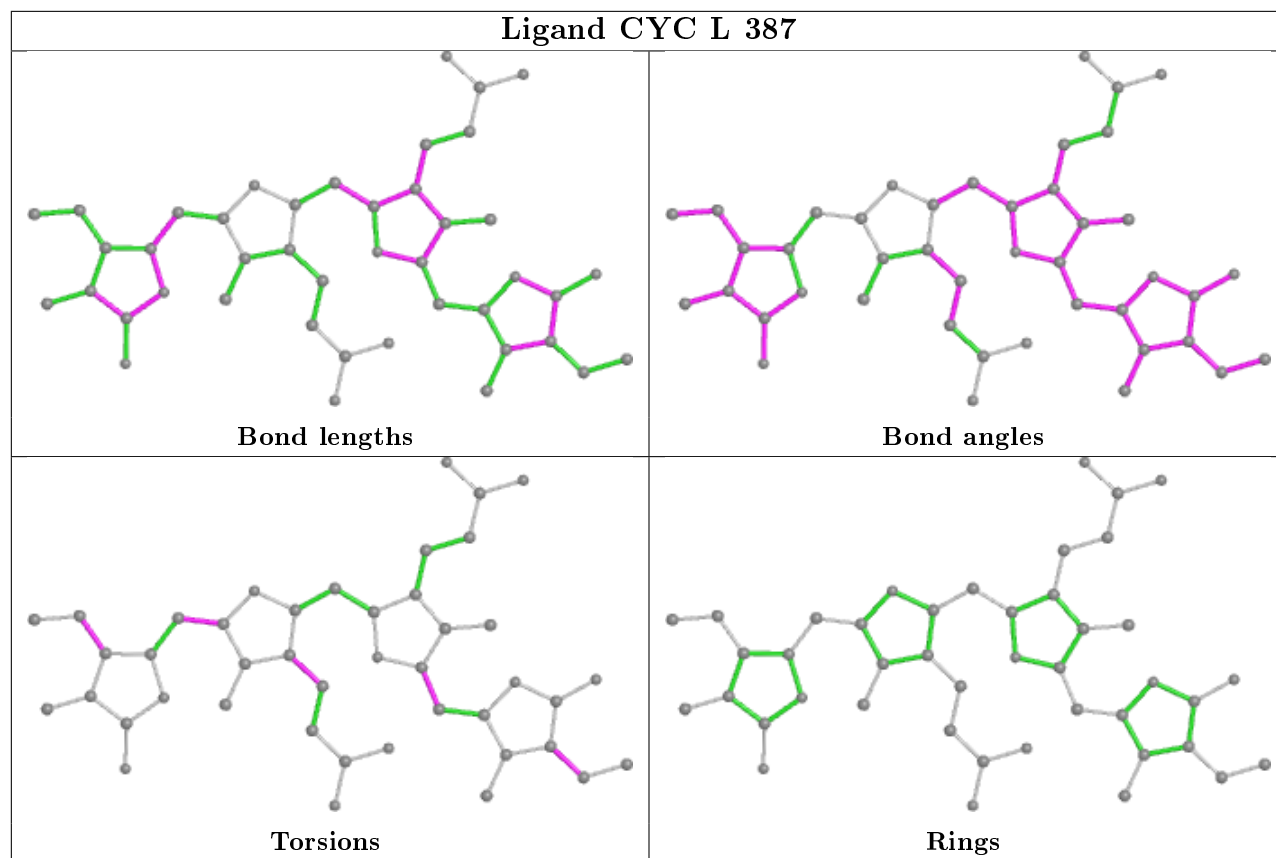












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.