



Full wwPDB EM Validation Report ⓘ

Mar 31, 2026 – 12:12 AM EDT

PDB ID : 9OLK / pdb_00009olk
EMDB ID : EMD-70595
Title : Structure of wild-type human TRPC3
Authors : Bell, B.; Baker, M.L.; Cordero-Morales, J.F.
Deposited on : 2025-05-12
Resolution : 2.80 Å (reported)
Based on initial model : 7DXD

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 : 2022.3.0, CSD as543be (2022)
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

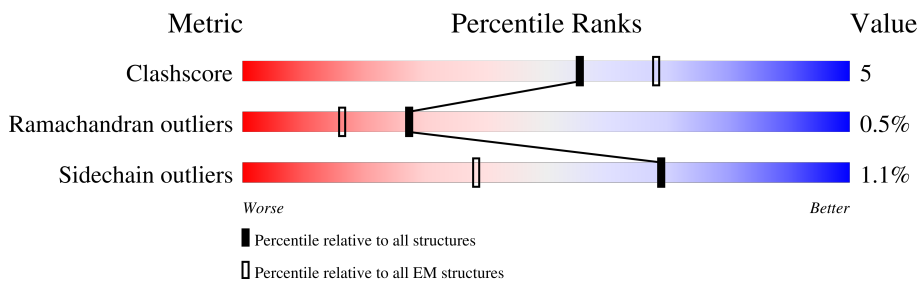
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.80 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	848	
1	B	848	
1	C	848	
1	D	848	

2 Entry composition [i](#)

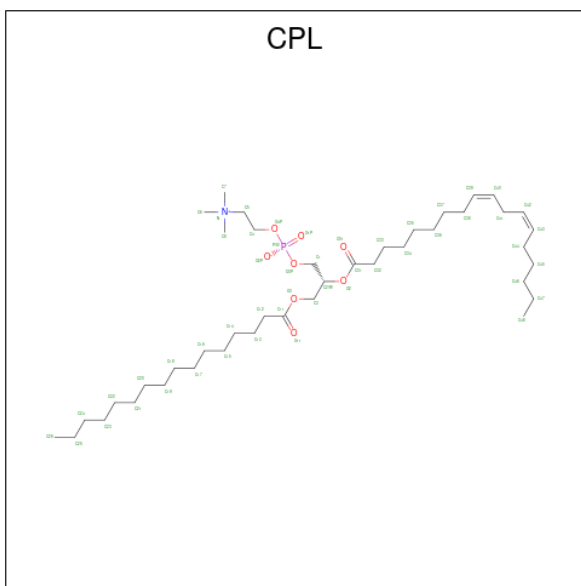
There are 2 unique types of molecules in this entry. The entry contains 24568 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Short transient receptor potential channel 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	745	Total	C	N	O	S	0	0
			5997	3896	970	1098	33		
1	B	745	Total	C	N	O	S	0	0
			5997	3896	970	1098	33		
1	C	745	Total	C	N	O	S	0	0
			5997	3896	970	1098	33		
1	D	745	Total	C	N	O	S	0	0
			5997	3896	970	1098	33		

- Molecule 2 is 1-PALMITOYL-2-LINOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: CPL) (formula: C₄₂H₈₀NO₈P).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
2	A	1	Total	C	N	O	P	0
			45	35	1	8	1	

Continued on next page...

Continued from previous page...

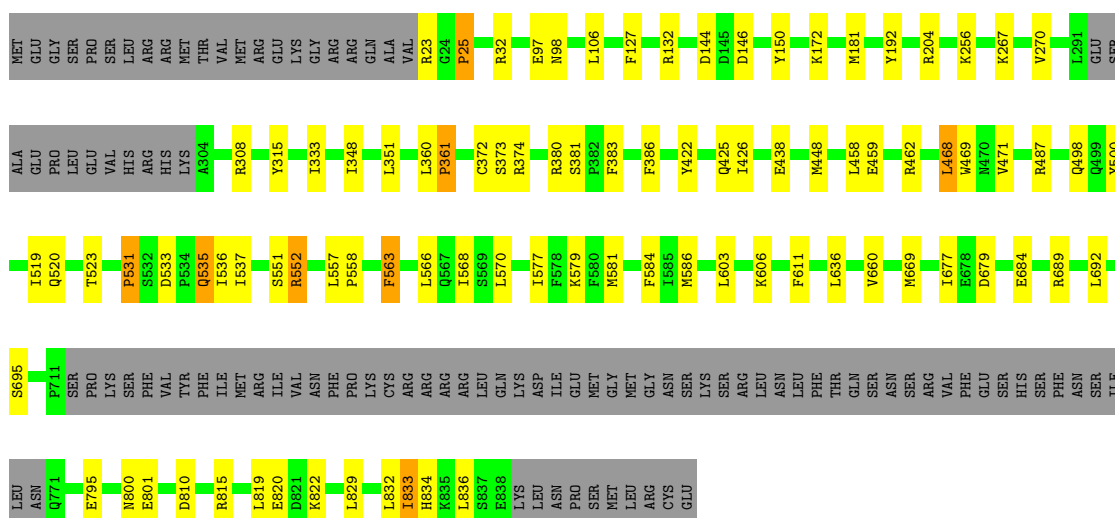
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			49	39	1	8	1	
2	A	1	Total	C	N	O	P	0
			45	35	1	8	1	
2	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
2	B	1	Total	C	N	O	P	0
			49	39	1	8	1	
2	B	1	Total	C	N	O	P	0
			45	35	1	8	1	
2	C	1	Total	C	N	O	P	0
			51	41	1	8	1	
2	C	1	Total	C	N	O	P	0
			49	39	1	8	1	
2	C	1	Total	C	N	O	P	0
			45	35	1	8	1	
2	D	1	Total	C	N	O	P	0
			51	41	1	8	1	
2	D	1	Total	C	N	O	P	0
			49	39	1	8	1	

3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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.

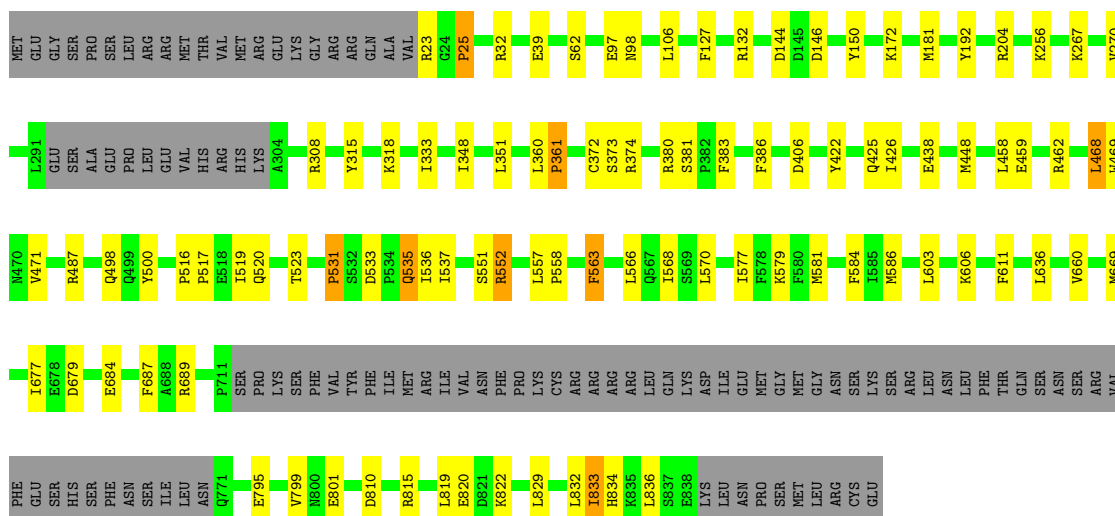
- Molecule 1: Short transient receptor potential channel 3

Chain A: 



- Molecule 1: Short transient receptor potential channel 3

Chain B: 



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	127478	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k 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: CPL

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	0.75	2/6129 (0.0%)	1.07	20/8298 (0.2%)
1	B	0.75	2/6129 (0.0%)	1.07	20/8298 (0.2%)
1	C	0.75	2/6129 (0.0%)	1.07	20/8298 (0.2%)
1	D	0.75	2/6129 (0.0%)	1.07	20/8298 (0.2%)
All	All	0.75	8/24516 (0.0%)	1.07	80/33192 (0.2%)

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
1	A	0	11
1	B	0	11
1	C	0	11
1	D	0	11
All	All	0	44

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	256	LYS	C-O	-5.53	1.17	1.24
1	A	256	LYS	C-O	-5.50	1.17	1.24
1	B	256	LYS	C-O	-5.50	1.17	1.24
1	C	256	LYS	C-O	-5.50	1.17	1.24
1	B	25	PRO	N-CD	-5.21	1.40	1.47
1	D	25	PRO	N-CD	-5.21	1.40	1.47
1	A	25	PRO	N-CD	-5.18	1.40	1.47
1	C	25	PRO	N-CD	-5.18	1.40	1.47

All (80) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	383	PHE	CA-C-O	-7.81	112.27	120.55
1	A	383	PHE	CA-C-O	-7.78	112.31	120.55
1	C	383	PHE	CA-C-O	-7.78	112.31	120.55
1	D	383	PHE	CA-C-O	-7.77	112.32	120.55
1	C	381	SER	CA-C-N	7.04	126.87	119.05
1	C	381	SER	C-N-CA	7.04	126.87	119.05
1	A	381	SER	CA-C-N	6.99	126.81	119.05
1	A	381	SER	C-N-CA	6.99	126.81	119.05
1	B	381	SER	CA-C-N	6.99	126.81	119.05
1	B	381	SER	C-N-CA	6.99	126.81	119.05
1	D	381	SER	CA-C-N	6.99	126.81	119.05
1	D	381	SER	C-N-CA	6.99	126.81	119.05
1	C	820	GLU	N-CA-C	-6.97	104.77	113.55
1	D	820	GLU	N-CA-C	-6.97	104.77	113.55
1	A	820	GLU	N-CA-C	-6.95	104.79	113.55
1	B	820	GLU	N-CA-C	-6.95	104.79	113.55
1	C	611	PHE	CA-CB-CG	6.35	120.15	113.80
1	D	611	PHE	CA-CB-CG	6.35	120.15	113.80
1	A	611	PHE	CA-CB-CG	6.33	120.13	113.80
1	B	611	PHE	CA-CB-CG	6.30	120.10	113.80
1	A	146	ASP	CA-CB-CG	6.12	118.72	112.60
1	B	146	ASP	CA-CB-CG	6.12	118.72	112.60
1	D	146	ASP	CA-CB-CG	6.10	118.70	112.60
1	C	146	ASP	CA-CB-CG	6.07	118.67	112.60
1	D	584	PHE	CA-C-O	-6.06	113.99	120.42
1	A	584	PHE	CA-C-O	-6.01	114.05	120.42
1	B	584	PHE	CA-C-O	-6.01	114.05	120.42
1	C	584	PHE	CA-C-O	-6.01	114.05	120.42
1	A	315	TYR	N-CA-C	-5.76	106.33	113.19
1	B	315	TYR	N-CA-C	-5.76	106.33	113.19
1	C	315	TYR	N-CA-C	-5.76	106.33	113.19
1	D	315	TYR	N-CA-C	-5.75	106.35	113.19
1	B	815	ARG	O-C-N	-5.69	116.09	122.12
1	D	815	ARG	O-C-N	-5.68	116.10	122.12
1	A	815	ARG	O-C-N	-5.68	116.10	122.12
1	C	815	ARG	O-C-N	-5.68	116.10	122.12
1	D	531	PRO	N-CA-CB	-5.64	97.12	103.44
1	A	531	PRO	N-CA-CB	-5.61	97.16	103.44
1	B	531	PRO	N-CA-CB	-5.61	97.16	103.44
1	C	531	PRO	N-CA-CB	-5.61	97.16	103.44
1	B	172	LYS	CA-C-O	-5.54	114.86	120.84
1	C	172	LYS	CA-C-O	-5.54	114.86	120.84
1	A	172	LYS	CA-C-O	-5.52	114.88	120.84

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	172	LYS	CA-C-O	-5.52	114.88	120.84
1	D	677	ILE	N-CA-C	-5.50	107.12	112.29
1	B	192	TYR	N-CA-CB	-5.49	101.77	110.28
1	A	677	ILE	N-CA-C	-5.49	107.13	112.29
1	B	677	ILE	N-CA-C	-5.49	107.13	112.29
1	A	192	TYR	N-CA-CB	-5.49	101.77	110.28
1	A	819	LEU	N-CA-C	-5.49	106.43	113.02
1	B	819	LEU	N-CA-C	-5.49	106.43	113.02
1	C	192	TYR	N-CA-CB	-5.49	101.77	110.28
1	D	819	LEU	N-CA-C	-5.49	106.43	113.02
1	D	192	TYR	N-CA-CB	-5.48	101.78	110.28
1	C	819	LEU	N-CA-C	-5.47	106.46	113.02
1	C	677	ILE	N-CA-C	-5.46	107.16	112.29
1	D	535	GLN	N-CA-CB	5.26	119.12	110.39
1	C	535	GLN	N-CA-CB	5.21	119.18	110.32
1	B	386	PHE	CB-CA-C	-5.20	102.16	110.79
1	D	386	PHE	CB-CA-C	-5.20	102.16	110.79
1	A	535	GLN	N-CA-CB	5.19	119.14	110.32
1	B	535	GLN	N-CA-CB	5.19	119.14	110.32
1	A	386	PHE	CB-CA-C	-5.19	102.18	110.79
1	C	386	PHE	CB-CA-C	-5.19	102.18	110.79
1	C	570	LEU	CA-C-O	-5.12	115.12	120.55
1	D	810	ASP	CA-CB-CG	5.09	117.69	112.60
1	A	810	ASP	CA-CB-CG	5.08	117.68	112.60
1	B	810	ASP	CA-CB-CG	5.08	117.68	112.60
1	B	563	PHE	N-CA-CB	-5.07	103.06	110.47
1	A	570	LEU	CA-C-O	-5.07	115.17	120.55
1	B	570	LEU	CA-C-O	-5.07	115.17	120.55
1	C	810	ASP	CA-CB-CG	5.07	117.67	112.60
1	D	256	LYS	CA-C-O	-5.06	115.49	120.70
1	A	563	PHE	N-CA-CB	-5.05	103.10	110.47
1	D	563	PHE	N-CA-CB	-5.05	103.10	110.47
1	D	570	LEU	CA-C-O	-5.05	115.20	120.55
1	C	563	PHE	N-CA-CB	-5.04	103.11	110.47
1	C	256	LYS	CA-C-O	-5.03	115.52	120.70
1	A	256	LYS	CA-C-O	-5.03	115.52	120.70
1	B	256	LYS	CA-C-O	-5.02	115.53	120.70

There are no chirality outliers.

All (44) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	132	ARG	Sidechain
1	A	204	ARG	Sidechain
1	A	23	ARG	Sidechain
1	A	308	ARG	Sidechain
1	A	32	ARG	Sidechain
1	A	374	ARG	Sidechain
1	A	380	ARG	Sidechain
1	A	462	ARG	Sidechain
1	A	487	ARG	Sidechain
1	A	552	ARG	Sidechain
1	A	689	ARG	Sidechain
1	B	132	ARG	Sidechain
1	B	204	ARG	Sidechain
1	B	23	ARG	Sidechain
1	B	308	ARG	Sidechain
1	B	32	ARG	Sidechain
1	B	374	ARG	Sidechain
1	B	380	ARG	Sidechain
1	B	462	ARG	Sidechain
1	B	487	ARG	Sidechain
1	B	552	ARG	Sidechain
1	B	689	ARG	Sidechain
1	C	132	ARG	Sidechain
1	C	204	ARG	Sidechain
1	C	23	ARG	Sidechain
1	C	308	ARG	Sidechain
1	C	32	ARG	Sidechain
1	C	374	ARG	Sidechain
1	C	380	ARG	Sidechain
1	C	462	ARG	Sidechain
1	C	487	ARG	Sidechain
1	C	552	ARG	Sidechain
1	C	689	ARG	Sidechain
1	D	132	ARG	Sidechain
1	D	204	ARG	Sidechain
1	D	23	ARG	Sidechain
1	D	308	ARG	Sidechain
1	D	32	ARG	Sidechain
1	D	374	ARG	Sidechain
1	D	380	ARG	Sidechain
1	D	462	ARG	Sidechain
1	D	487	ARG	Sidechain
1	D	552	ARG	Sidechain

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
1	D	689	ARG	Sidechain

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	5997	0	6041	50	0
1	B	5997	0	6041	54	0
1	C	5997	0	6041	51	0
1	D	5997	0	6041	51	0
2	A	190	0	272	27	0
2	B	145	0	209	25	0
2	C	145	0	209	24	0
2	D	100	0	146	17	0
All	All	24568	0	25000	238	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 5.

All (238) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:903:CPL:H181	2:D:902:CPL:C45	1.67	1.23
2:B:903:CPL:H181	2:C:902:CPL:C45	1.67	1.23
2:A:902:CPL:H181	2:A:903:CPL:C45	1.67	1.22
2:A:904:CPL:H181	2:B:902:CPL:C45	1.67	1.21
1:C:520:GLN:O	1:C:523:THR:HG22	1.45	1.17
1:B:520:GLN:O	1:B:523:THR:HG22	1.45	1.16
1:D:520:GLN:O	1:D:523:THR:HG22	1.45	1.16
1:A:520:GLN:O	1:A:523:THR:HG22	1.45	1.14
2:C:901:CPL:H132	2:C:901:CPL:HC32	1.46	0.98
2:A:901:CPL:H132	2:A:901:CPL:HC32	1.46	0.97
2:D:901:CPL:H132	2:D:901:CPL:HC32	1.46	0.97
2:B:901:CPL:H132	2:B:901:CPL:HC32	1.46	0.96
2:D:901:CPL:H43	2:D:901:CPL:H263	1.60	0.83
2:B:901:CPL:H43	2:B:901:CPL:H263	1.61	0.82

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:901:CPL:H43	2:C:901:CPL:H263	1.60	0.81
2:A:901:CPL:H43	2:A:901:CPL:H263	1.61	0.80
1:A:448:MET:SD	1:A:552:ARG:NH1	2.56	0.79
1:C:448:MET:SD	1:C:552:ARG:NH1	2.56	0.79
1:D:448:MET:SD	1:D:552:ARG:NH1	2.56	0.79
1:B:448:MET:SD	1:B:552:ARG:NH1	2.56	0.78
2:B:903:CPL:H322	2:B:903:CPL:HC31	1.65	0.78
2:C:903:CPL:H322	2:C:903:CPL:HC31	1.65	0.78
2:D:901:CPL:H132	2:D:901:CPL:C3	2.14	0.78
1:B:833:ILE:HG22	1:C:832:LEU:HD21	1.67	0.77
1:A:833:ILE:HG22	1:B:832:LEU:HD21	1.66	0.77
2:A:901:CPL:H132	2:A:901:CPL:C3	2.14	0.77
2:A:904:CPL:H322	2:A:904:CPL:HC31	1.65	0.77
1:C:833:ILE:HG22	1:D:832:LEU:HD21	1.67	0.77
2:A:902:CPL:H322	2:A:902:CPL:HC31	1.65	0.76
2:B:903:CPL:O4P	2:C:901:CPL:H341	1.85	0.76
2:C:901:CPL:H132	2:C:901:CPL:C3	2.14	0.76
2:B:901:CPL:H132	2:B:901:CPL:C3	2.14	0.76
2:A:904:CPL:O4P	2:B:901:CPL:H341	1.85	0.76
2:C:903:CPL:O4P	2:D:901:CPL:H341	1.85	0.76
1:A:832:LEU:HD21	1:D:833:ILE:HG22	1.68	0.75
2:B:903:CPL:C18	2:C:902:CPL:C45	2.59	0.75
2:A:901:CPL:H341	2:A:902:CPL:O4P	1.85	0.74
2:C:903:CPL:C18	2:D:902:CPL:C45	2.59	0.73
2:A:904:CPL:C18	2:B:902:CPL:C45	2.59	0.73
1:D:348:ILE:HA	1:D:351:LEU:HD12	1.71	0.73
1:A:348:ILE:HA	1:A:351:LEU:HD12	1.71	0.71
1:B:348:ILE:HA	1:B:351:LEU:HD12	1.71	0.71
1:C:348:ILE:HA	1:C:351:LEU:HD12	1.71	0.71
1:A:520:GLN:O	1:A:523:THR:CG2	2.34	0.69
1:D:520:GLN:O	1:D:523:THR:CG2	2.34	0.69
2:A:902:CPL:C18	2:A:903:CPL:C45	2.59	0.69
1:C:520:GLN:O	1:C:523:THR:CG2	2.34	0.68
1:B:520:GLN:O	1:B:523:THR:CG2	2.34	0.65
1:A:181:MET:HE2	1:D:25:PRO:HD2	1.79	0.64
1:A:25:PRO:HD2	1:B:181:MET:HE2	1.79	0.64
1:C:25:PRO:HD2	1:D:181:MET:HE2	1.79	0.64
1:A:181:MET:HE2	1:D:25:PRO:CD	2.28	0.63
2:A:903:CPL:O1P	2:A:903:CPL:HC51	1.98	0.63
1:C:25:PRO:CD	1:D:181:MET:HE2	2.27	0.63
1:B:25:PRO:CD	1:C:181:MET:HE2	2.27	0.63

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:902:CPL:O1P	2:D:902:CPL:HC51	1.98	0.63
1:A:25:PRO:CD	1:B:181:MET:HE2	2.28	0.63
1:B:25:PRO:HD2	1:C:181:MET:HE2	1.79	0.63
2:A:901:CPL:HC32	2:A:901:CPL:C13	2.15	0.63
1:B:579:LYS:HD2	1:C:566:LEU:HD21	1.81	0.62
2:C:902:CPL:O1P	2:C:902:CPL:HC51	1.98	0.62
1:C:579:LYS:HD2	1:D:566:LEU:HD21	1.81	0.62
2:B:902:CPL:O1P	2:B:902:CPL:HC51	1.98	0.62
2:D:901:CPL:HC32	2:D:901:CPL:C13	2.15	0.61
1:A:579:LYS:HD2	1:B:566:LEU:HD21	1.82	0.61
1:A:566:LEU:HD21	1:D:579:LYS:HD2	1.82	0.60
2:B:901:CPL:HC32	2:B:901:CPL:C13	2.15	0.60
2:B:901:CPL:O31	2:B:901:CPL:HC11	2.03	0.59
2:C:901:CPL:HC32	2:C:901:CPL:C13	2.15	0.59
1:C:537:ILE:HD11	2:C:901:CPL:H122	1.85	0.59
1:B:537:ILE:HD11	2:B:901:CPL:H122	1.85	0.58
2:C:903:CPL:HC31	2:C:903:CPL:C32	2.33	0.58
1:A:106:LEU:HD22	1:A:127:PHE:CZ	2.39	0.58
2:A:901:CPL:O31	2:A:901:CPL:HC11	2.03	0.58
1:B:106:LEU:HD22	1:B:127:PHE:CZ	2.39	0.58
1:D:106:LEU:HD22	1:D:127:PHE:CZ	2.39	0.58
1:D:537:ILE:HD11	2:D:901:CPL:H122	1.85	0.58
1:A:537:ILE:HD11	2:A:901:CPL:H122	1.86	0.57
2:C:901:CPL:HC11	2:C:901:CPL:O31	2.03	0.57
2:D:901:CPL:O31	2:D:901:CPL:HC11	2.03	0.57
1:C:106:LEU:HD22	1:C:127:PHE:CZ	2.39	0.56
1:C:520:GLN:OE1	1:C:523:THR:CG2	2.53	0.56
2:B:903:CPL:HC31	2:B:903:CPL:C32	2.33	0.56
1:D:520:GLN:OE1	1:D:523:THR:CG2	2.53	0.56
1:B:520:GLN:OE1	1:B:523:THR:CG2	2.53	0.56
1:A:577:ILE:HG13	1:A:669:MET:HE1	1.88	0.56
1:D:577:ILE:HG13	1:D:669:MET:HE1	1.88	0.56
1:A:520:GLN:OE1	1:A:523:THR:CG2	2.53	0.56
1:D:468:LEU:O	1:D:471:VAL:HG22	2.06	0.56
1:C:577:ILE:HG13	1:C:669:MET:HE1	1.88	0.56
1:A:468:LEU:O	1:A:471:VAL:HG22	2.06	0.56
1:B:577:ILE:HG13	1:B:669:MET:HE1	1.88	0.55
1:C:468:LEU:O	1:C:471:VAL:HG22	2.06	0.55
2:A:902:CPL:HC31	2:A:902:CPL:C32	2.33	0.55
1:B:468:LEU:O	1:B:471:VAL:HG22	2.06	0.55
1:C:579:LYS:HG2	1:D:566:LEU:HD11	1.89	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:579:LYS:HG2	1:C:566:LEU:HD11	1.89	0.54
2:A:904:CPL:HC31	2:A:904:CPL:C32	2.33	0.53
1:A:579:LYS:HG2	1:B:566:LEU:HD11	1.89	0.53
1:A:566:LEU:HD11	1:D:579:LYS:HG2	1.89	0.53
1:B:426:ILE:N	1:B:498:GLN:OE1	2.41	0.49
1:A:426:ILE:N	1:A:498:GLN:OE1	2.41	0.49
1:D:426:ILE:N	1:D:498:GLN:OE1	2.41	0.48
1:A:557:LEU:N	1:A:558:PRO:CD	2.77	0.48
1:C:563:PHE:HA	1:C:566:LEU:HD12	1.96	0.48
1:D:557:LEU:N	1:D:558:PRO:CD	2.77	0.48
1:A:563:PHE:HA	1:A:566:LEU:HD12	1.96	0.48
1:A:801:GLU:HG3	1:B:795:GLU:HA	1.96	0.48
2:B:903:CPL:H321	2:B:903:CPL:H352	1.60	0.48
1:C:557:LEU:N	1:C:558:PRO:CD	2.77	0.47
1:B:801:GLU:HG3	1:C:795:GLU:HA	1.96	0.47
1:D:563:PHE:HA	1:D:566:LEU:HD12	1.96	0.47
2:A:903:CPL:O1P	2:A:903:CPL:HC32	2.15	0.47
1:A:795:GLU:HA	1:D:801:GLU:HG3	1.96	0.47
2:B:902:CPL:O1P	2:B:902:CPL:HC32	2.15	0.47
1:B:557:LEU:N	1:B:558:PRO:CD	2.77	0.47
1:B:563:PHE:HA	1:B:566:LEU:HD12	1.96	0.47
1:C:801:GLU:HG3	1:D:795:GLU:HA	1.96	0.47
2:C:902:CPL:O1P	2:C:902:CPL:HC32	2.15	0.47
1:D:500:TYR:CE2	1:D:519:ILE:HD13	2.50	0.47
1:D:606:LYS:HG2	1:D:636:LEU:HD23	1.98	0.46
1:A:500:TYR:CE2	1:A:519:ILE:HD13	2.50	0.46
1:A:606:LYS:HG2	1:A:636:LEU:HD23	1.98	0.46
1:C:333:ILE:O	1:C:333:ILE:HG22	2.15	0.46
1:C:426:ILE:N	1:C:498:GLN:OE1	2.41	0.46
2:D:902:CPL:O1P	2:D:902:CPL:HC32	2.15	0.46
2:B:902:CPL:H382	2:B:902:CPL:H351	1.80	0.46
1:C:500:TYR:CE2	1:C:519:ILE:HD13	2.50	0.46
2:C:903:CPL:HC63	2:C:903:CPL:HC41	1.65	0.46
1:C:606:LYS:HG2	1:C:636:LEU:HD23	1.98	0.46
1:A:333:ILE:HG22	1:A:333:ILE:O	2.15	0.46
1:D:333:ILE:HG22	1:D:333:ILE:O	2.15	0.45
2:A:901:CPL:H342	2:A:901:CPL:H371	1.35	0.45
1:B:606:LYS:HG2	1:B:636:LEU:HD23	1.98	0.45
1:B:500:TYR:CE2	1:B:519:ILE:HD13	2.50	0.45
1:D:533:ASP:HB3	1:D:536:ILE:HD12	1.99	0.45
1:B:551:SER:HA	2:B:902:CPL:H201	1.99	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:533:ASP:HB3	1:C:536:ILE:HD12	1.99	0.45
2:B:903:CPL:HC63	2:B:903:CPL:HC41	1.65	0.45
1:D:551:SER:HA	2:D:902:CPL:H201	1.99	0.44
1:B:333:ILE:HG22	1:B:333:ILE:O	2.15	0.44
1:C:822:LYS:HE2	1:D:822:LYS:HZ2	1.82	0.44
1:C:551:SER:HA	2:C:902:CPL:H201	1.99	0.44
1:A:533:ASP:HB3	1:A:536:ILE:HD12	1.99	0.44
2:C:902:CPL:H351	2:C:902:CPL:H382	1.80	0.44
1:A:551:SER:HA	2:A:903:CPL:H201	2.00	0.44
1:A:586:MET:HE1	1:B:557:LEU:HD21	2.00	0.44
1:A:829:LEU:O	1:A:833:ILE:HG23	2.18	0.44
1:A:566:LEU:HD11	1:D:579:LYS:CG	2.48	0.44
1:A:577:ILE:HD13	1:D:660:VAL:HG22	2.00	0.44
1:B:660:VAL:HG22	1:C:577:ILE:HD13	2.00	0.44
1:B:829:LEU:O	1:B:833:ILE:HG23	2.18	0.44
1:C:586:MET:HE1	1:D:557:LEU:HD21	2.00	0.44
1:C:660:VAL:HG22	1:D:577:ILE:HD13	2.00	0.44
1:A:579:LYS:CG	1:B:566:LEU:HD11	2.48	0.44
1:B:406:ASP:OD1	1:B:406:ASP:N	2.46	0.44
1:B:533:ASP:HB3	1:B:536:ILE:HD12	1.99	0.44
1:A:557:LEU:HD21	1:D:586:MET:HE1	2.00	0.43
1:B:586:MET:HE1	1:C:557:LEU:HD21	2.00	0.43
1:C:579:LYS:CG	1:D:566:LEU:HD11	2.47	0.43
1:D:829:LEU:O	1:D:833:ILE:HG23	2.18	0.43
1:A:660:VAL:HG22	1:B:577:ILE:HD13	2.01	0.43
1:C:829:LEU:O	1:C:833:ILE:HG23	2.18	0.43
1:C:577:ILE:CG1	1:C:669:MET:HE1	2.49	0.43
1:B:577:ILE:CG1	1:B:669:MET:HE1	2.49	0.43
1:B:834:HIS:C	1:B:836:LEU:N	2.77	0.42
1:A:692:LEU:O	1:A:695:SER:OG	2.30	0.42
2:C:903:CPL:H321	2:C:903:CPL:H352	1.60	0.42
1:A:577:ILE:CG1	1:A:669:MET:HE1	2.49	0.42
2:A:902:CPL:HC63	2:A:902:CPL:HC41	1.65	0.42
2:A:904:CPL:H321	2:A:904:CPL:H352	1.60	0.42
1:B:579:LYS:CG	1:C:566:LEU:HD11	2.47	0.42
1:D:97:GLU:HG3	1:D:98:ASN:H	1.84	0.42
1:C:97:GLU:HG3	1:C:98:ASN:H	1.84	0.42
1:D:834:HIS:C	1:D:836:LEU:N	2.77	0.42
1:C:360:LEU:N	1:C:361:PRO:HD2	2.34	0.42
2:D:902:CPL:C3	2:D:902:CPL:P	3.08	0.42
1:B:39:GLU:OE2	1:B:62:SER:OG	2.37	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:372:CYS:SG	1:C:373:SER:N	2.92	0.42
1:D:577:ILE:CG1	1:D:669:MET:HE1	2.49	0.42
2:D:902:CPL:O11	2:D:902:CPL:C1	2.68	0.42
1:A:531:PRO:CB	2:A:901:CPL:O1P	2.68	0.42
2:C:902:CPL:C1	2:C:902:CPL:O11	2.68	0.42
1:B:458:LEU:HD12	1:B:459:GLU:HG2	2.01	0.42
2:B:902:CPL:O11	2:B:902:CPL:C1	2.68	0.42
1:C:458:LEU:HD12	1:C:459:GLU:HG2	2.01	0.42
1:A:360:LEU:N	1:A:361:PRO:HD2	2.34	0.42
1:B:531:PRO:CB	2:B:901:CPL:O1P	2.67	0.42
2:B:902:CPL:C3	2:B:902:CPL:P	3.08	0.42
2:C:901:CPL:H342	2:C:901:CPL:H371	1.35	0.42
2:C:902:CPL:P	2:C:902:CPL:C3	3.08	0.42
2:D:901:CPL:H172	2:D:901:CPL:H141	1.76	0.42
1:A:834:HIS:C	1:A:836:LEU:N	2.77	0.42
1:B:97:GLU:HG3	1:B:98:ASN:H	1.84	0.42
1:D:360:LEU:N	1:D:361:PRO:HD2	2.35	0.42
1:C:531:PRO:CB	2:C:901:CPL:O1P	2.67	0.41
1:D:372:CYS:SG	1:D:373:SER:N	2.92	0.41
1:B:568:ILE:HG21	1:B:684:GLU:HG3	2.02	0.41
1:D:531:PRO:CB	2:D:901:CPL:O1P	2.67	0.41
1:D:267:LYS:O	1:D:270:VAL:HG12	2.21	0.41
1:A:97:GLU:HG3	1:A:98:ASN:H	1.84	0.41
2:A:903:CPL:C1	2:A:903:CPL:O11	2.68	0.41
2:A:903:CPL:P	2:A:903:CPL:C3	3.08	0.41
1:D:568:ILE:HG21	1:D:684:GLU:HG3	2.02	0.41
1:A:150:TYR:H	1:A:150:TYR:HD1	1.69	0.41
1:B:360:LEU:N	1:B:361:PRO:HD2	2.34	0.41
1:B:422:TYR:HB2	1:B:425:GLN:HB2	2.03	0.41
1:C:579:LYS:CD	1:D:566:LEU:HD21	2.51	0.41
1:B:150:TYR:H	1:B:150:TYR:HD1	1.69	0.41
2:B:902:CPL:HC73	2:B:902:CPL:HC41	1.91	0.41
1:A:458:LEU:HD12	1:A:459:GLU:HG2	2.01	0.41
2:A:904:CPL:HC41	2:A:904:CPL:HC63	1.65	0.41
1:C:422:TYR:HB2	1:C:425:GLN:HB2	2.03	0.41
1:A:267:LYS:O	1:A:270:VAL:HG12	2.21	0.41
1:A:800:ASN:O	1:B:799:VAL:CG1	2.69	0.41
1:B:372:CYS:SG	1:B:373:SER:N	2.92	0.41
2:B:901:CPL:H342	2:B:901:CPL:H371	1.35	0.41
1:C:568:ILE:HG21	1:C:684:GLU:HG3	2.02	0.41
1:D:458:LEU:HD12	1:D:459:GLU:HG2	2.01	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:520:GLN:OE1	1:B:523:THR:HG23	2.21	0.41
2:A:903:CPL:H351	2:A:903:CPL:H382	1.80	0.40
1:C:206:ASP:OD2	1:C:209:SER:OG	2.32	0.40
1:C:834:HIS:C	1:C:836:LEU:N	2.77	0.40
1:D:436:TRP:O	1:D:437:THR:C	2.64	0.40
1:A:333:ILE:O	1:A:333:ILE:CG2	2.70	0.40
1:A:568:ILE:HG21	1:A:684:GLU:HG3	2.02	0.40
1:C:267:LYS:O	1:C:270:VAL:HG12	2.21	0.40
1:D:520:GLN:OE1	1:D:523:THR:HG23	2.21	0.40
2:D:902:CPL:H351	2:D:902:CPL:H382	1.80	0.40
1:A:372:CYS:SG	1:A:373:SER:N	2.92	0.40
1:A:422:TYR:HB2	1:A:425:GLN:HB2	2.03	0.40
1:B:579:LYS:CD	1:C:566:LEU:HD21	2.51	0.40
1:D:150:TYR:HD1	1:D:150:TYR:H	1.69	0.40
1:D:422:TYR:HB2	1:D:425:GLN:HB2	2.03	0.40
1:B:267:LYS:O	1:B:270:VAL:HG12	2.21	0.40
1:B:318:LYS:HA	1:B:687:PHE:CD1	2.57	0.40
1:B:516:PRO:O	1:B:517:PRO:C	2.65	0.40
1:C:150:TYR:HD1	1:C:150:TYR:H	1.69	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	739/848 (87%)	692 (94%)	43 (6%)	4 (0%)	25 56
1	B	739/848 (87%)	692 (94%)	43 (6%)	4 (0%)	25 56
1	C	739/848 (87%)	692 (94%)	43 (6%)	4 (0%)	25 56
1	D	739/848 (87%)	692 (94%)	43 (6%)	4 (0%)	25 56
All	All	2956/3392 (87%)	2768 (94%)	172 (6%)	16 (0%)	27 56

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	144	ASP
1	A	468	LEU
1	A	679	ASP
1	B	144	ASP
1	B	468	LEU
1	B	679	ASP
1	C	144	ASP
1	C	468	LEU
1	C	679	ASP
1	D	144	ASP
1	D	468	LEU
1	D	679	ASP
1	A	361	PRO
1	B	361	PRO
1	C	361	PRO
1	D	361	PRO

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	657/755 (87%)	650 (99%)	7 (1%)	70	90
1	B	657/755 (87%)	650 (99%)	7 (1%)	70	90
1	C	657/755 (87%)	650 (99%)	7 (1%)	70	90
1	D	657/755 (87%)	650 (99%)	7 (1%)	70	90
All	All	2628/3020 (87%)	2600 (99%)	28 (1%)	69	90

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	438	GLU
1	A	469	TRP
1	A	535	GLN
1	A	581	MET

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	603	LEU
1	A	822	LYS
1	A	833	ILE
1	B	438	GLU
1	B	469	TRP
1	B	535	GLN
1	B	581	MET
1	B	603	LEU
1	B	822	LYS
1	B	833	ILE
1	C	438	GLU
1	C	469	TRP
1	C	535	GLN
1	C	581	MET
1	C	603	LEU
1	C	822	LYS
1	C	833	ILE
1	D	438	GLU
1	D	469	TRP
1	D	535	GLN
1	D	581	MET
1	D	603	LEU
1	D	822	LYS
1	D	833	ILE

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

Mol	Chain	Res	Type
1	B	467	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

12 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
2	CPL	C	902	-	48,48,51	0.93	2 (4%)	54,56,59	1.11	7 (12%)
2	CPL	C	901	-	50,50,51	0.98	3 (6%)	56,58,59	2.24	10 (17%)
2	CPL	D	902	-	48,48,51	0.93	2 (4%)	54,56,59	1.11	8 (14%)
2	CPL	C	903	-	44,44,51	0.97	2 (4%)	50,52,59	1.23	5 (10%)
2	CPL	A	903	-	48,48,51	0.93	2 (4%)	54,56,59	1.11	8 (14%)
2	CPL	B	902	-	48,48,51	0.93	2 (4%)	54,56,59	1.11	8 (14%)
2	CPL	B	901	-	50,50,51	0.98	3 (6%)	56,58,59	2.24	10 (17%)
2	CPL	A	901	-	50,50,51	0.98	3 (6%)	56,58,59	2.24	10 (17%)
2	CPL	A	904	-	44,44,51	0.97	2 (4%)	50,52,59	1.22	5 (10%)
2	CPL	B	903	-	44,44,51	0.97	2 (4%)	50,52,59	1.22	5 (10%)
2	CPL	D	901	-	50,50,51	0.98	3 (6%)	56,58,59	2.24	10 (17%)
2	CPL	A	902	-	44,44,51	0.97	2 (4%)	50,52,59	1.22	5 (10%)

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	CPL	C	902	-	-	35/52/52/55	-
2	CPL	C	901	-	-	19/54/54/55	-
2	CPL	D	902	-	-	36/52/52/55	-
2	CPL	C	903	-	-	26/48/48/55	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CPL	A	903	-	-	35/52/52/55	-
2	CPL	B	902	-	-	35/52/52/55	-
2	CPL	B	901	-	-	19/54/54/55	-
2	CPL	A	901	-	-	19/54/54/55	-
2	CPL	A	904	-	-	26/48/48/55	-
2	CPL	B	903	-	-	26/48/48/55	-
2	CPL	D	901	-	-	19/54/54/55	-
2	CPL	A	902	-	-	26/48/48/55	-

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	904	CPL	O3-C11	4.27	1.45	1.33
2	C	903	CPL	O3-C11	4.27	1.45	1.33
2	A	902	CPL	O3-C11	4.27	1.45	1.33
2	B	903	CPL	O3-C11	4.27	1.45	1.33
2	A	901	CPL	O3-C11	4.21	1.45	1.33
2	D	901	CPL	O3-C11	4.21	1.45	1.33
2	B	901	CPL	O3-C11	4.21	1.45	1.33
2	C	901	CPL	O3-C11	4.21	1.45	1.33
2	A	903	CPL	O2-C31	3.73	1.44	1.34
2	B	902	CPL	O2-C31	3.73	1.44	1.34
2	C	902	CPL	O2-C31	3.73	1.44	1.34
2	D	902	CPL	O2-C31	3.73	1.44	1.34
2	B	901	CPL	O2-C31	3.47	1.44	1.34
2	A	901	CPL	O2-C31	3.46	1.44	1.34
2	A	902	CPL	O2-C31	3.45	1.44	1.34
2	A	904	CPL	O2-C31	3.45	1.44	1.34
2	B	903	CPL	O2-C31	3.45	1.44	1.34
2	C	903	CPL	O2-C31	3.45	1.44	1.34
2	D	901	CPL	O2-C31	3.44	1.44	1.34
2	C	901	CPL	O2-C31	3.42	1.44	1.34
2	B	902	CPL	O3-C11	3.35	1.43	1.33
2	D	902	CPL	O3-C11	3.35	1.43	1.33
2	A	903	CPL	O3-C11	3.34	1.43	1.33
2	C	902	CPL	O3-C11	3.34	1.43	1.33
2	D	901	CPL	O2-C2	-2.73	1.40	1.46
2	A	901	CPL	O2-C2	-2.71	1.40	1.46
2	B	901	CPL	O2-C2	-2.69	1.40	1.46
2	C	901	CPL	O2-C2	-2.67	1.40	1.46

All (91) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	901	CPL	C8-N-C7	-9.05	85.20	108.98
2	D	901	CPL	C8-N-C7	-9.05	85.20	108.98
2	B	901	CPL	C8-N-C7	-9.05	85.21	108.98
2	A	901	CPL	C8-N-C7	-9.05	85.21	108.98
2	C	901	CPL	C8-N-C6	-8.58	86.43	108.98
2	D	901	CPL	C8-N-C6	-8.58	86.43	108.98
2	A	901	CPL	C8-N-C6	-8.57	86.46	108.98
2	B	901	CPL	C8-N-C6	-8.57	86.46	108.98
2	B	901	CPL	C8-N-C5	-5.65	87.46	109.91
2	A	901	CPL	C8-N-C5	-5.65	87.47	109.91
2	D	901	CPL	C8-N-C5	-5.64	87.50	109.91
2	C	901	CPL	C8-N-C5	-5.64	87.50	109.91
2	C	903	CPL	O2-C31-C32	4.82	121.90	111.48
2	B	903	CPL	O2-C31-C32	4.81	121.88	111.48
2	A	902	CPL	O2-C31-C32	4.80	121.87	111.48
2	A	904	CPL	O2-C31-C32	4.80	121.87	111.48
2	B	901	CPL	C2-O2-C31	-3.73	108.87	117.80
2	A	901	CPL	C2-O2-C31	-3.73	108.87	117.80
2	C	901	CPL	C2-O2-C31	-3.72	108.88	117.80
2	D	901	CPL	C2-O2-C31	-3.72	108.89	117.80
2	A	901	CPL	C7-N-C6	3.63	118.51	108.98
2	B	901	CPL	C7-N-C6	3.63	118.51	108.98
2	C	901	CPL	C7-N-C6	3.63	118.51	108.98
2	D	901	CPL	C7-N-C6	3.63	118.51	108.98
2	A	902	CPL	C3-C2-C1	-3.35	103.98	111.78
2	A	904	CPL	C3-C2-C1	-3.35	103.98	111.78
2	B	903	CPL	C3-C2-C1	-3.35	103.98	111.78
2	C	903	CPL	C3-C2-C1	-3.35	103.98	111.78
2	B	902	CPL	O2-C31-C32	2.99	117.96	111.48
2	D	902	CPL	O2-C31-C32	2.99	117.96	111.48
2	A	903	CPL	O2-C31-C32	2.98	117.93	111.48
2	C	902	CPL	O2-C31-C32	2.98	117.93	111.48
2	D	901	CPL	C7-N-C5	2.85	121.25	109.91
2	A	901	CPL	C7-N-C5	2.85	121.24	109.91
2	B	901	CPL	C7-N-C5	2.85	121.24	109.91
2	C	901	CPL	C7-N-C5	2.85	121.24	109.91
2	B	902	CPL	O3-C11-C12	2.83	120.46	111.83
2	C	902	CPL	O3-C11-C12	2.82	120.44	111.83
2	A	903	CPL	O3-C11-C12	2.81	120.41	111.83
2	D	902	CPL	O3-C11-C12	2.81	120.40	111.83
2	B	901	CPL	O3-C3-C2	2.70	116.18	108.40
2	A	901	CPL	O3-C3-C2	2.70	116.17	108.40

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	901	CPL	O3-C3-C2	2.68	116.12	108.40
2	D	901	CPL	O3-C3-C2	2.68	116.11	108.40
2	A	901	CPL	O2-C31-C32	2.55	117.00	111.48
2	A	902	CPL	O3-C11-C12	2.54	119.57	111.83
2	B	903	CPL	O3-C11-C12	2.54	119.57	111.83
2	C	901	CPL	O2-C31-C32	2.54	116.97	111.48
2	D	901	CPL	O2-C31-C32	2.53	116.96	111.48
2	A	904	CPL	O3-C11-C12	2.53	119.55	111.83
2	C	903	CPL	O3-C11-C12	2.53	119.54	111.83
2	B	901	CPL	O2-C31-C32	2.52	116.94	111.48
2	A	903	CPL	O2-C31-O31	-2.52	117.83	123.70
2	B	902	CPL	O2-C31-O31	-2.52	117.83	123.70
2	C	902	CPL	O2-C31-O31	-2.52	117.83	123.70
2	D	902	CPL	O2-C31-O31	-2.52	117.83	123.70
2	A	902	CPL	O2-C31-O31	-2.45	117.97	123.70
2	A	904	CPL	O2-C31-O31	-2.45	117.97	123.70
2	B	903	CPL	O2-C31-O31	-2.45	117.97	123.70
2	C	903	CPL	O2-C31-O31	-2.45	117.97	123.70
2	B	902	CPL	C14-C13-C12	-2.36	104.46	113.13
2	A	903	CPL	C14-C13-C12	-2.35	104.47	113.13
2	C	902	CPL	C14-C13-C12	-2.35	104.49	113.13
2	D	902	CPL	C14-C13-C12	-2.35	104.50	113.13
2	A	901	CPL	C6-N-C5	2.30	119.07	109.91
2	B	901	CPL	C6-N-C5	2.30	119.07	109.91
2	C	901	CPL	C6-N-C5	2.30	119.07	109.91
2	D	901	CPL	C6-N-C5	2.30	119.05	109.91
2	A	903	CPL	O2P-P-O1P	2.27	123.00	112.44
2	B	902	CPL	O2P-P-O1P	2.26	122.97	112.44
2	D	902	CPL	O2P-P-O1P	2.26	122.95	112.44
2	C	902	CPL	O2P-P-O1P	2.26	122.94	112.44
2	A	901	CPL	C34-C33-C32	-2.19	105.07	113.13
2	B	901	CPL	C34-C33-C32	-2.19	105.07	113.13
2	C	901	CPL	C34-C33-C32	-2.19	105.07	113.13
2	D	901	CPL	C34-C33-C32	-2.19	105.07	113.13
2	C	903	CPL	C34-C33-C32	-2.17	105.15	113.13
2	B	903	CPL	C34-C33-C32	-2.17	105.16	113.13
2	A	902	CPL	C34-C33-C32	-2.16	105.18	113.13
2	A	904	CPL	C34-C33-C32	-2.16	105.18	113.13
2	B	902	CPL	O3-C11-O11	-2.15	118.25	123.63
2	A	903	CPL	O3-C11-O11	-2.14	118.26	123.63
2	C	902	CPL	O3-C11-O11	-2.13	118.30	123.63
2	D	902	CPL	O3-C11-O11	-2.11	118.34	123.63

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	902	CPL	C3-C2-C1	2.03	116.51	111.78
2	A	903	CPL	C3-C2-C1	2.03	116.51	111.78
2	C	902	CPL	C3-C2-C1	2.03	116.51	111.78
2	B	902	CPL	O3-C3-C2	2.02	114.23	108.40
2	D	902	CPL	O3-C3-C2	2.02	114.23	108.40
2	A	903	CPL	O3-C3-C2	2.02	114.22	108.40
2	D	902	CPL	C3-C2-C1	2.01	116.48	111.78

There are no chirality outliers.

All (321) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	901	CPL	C12-C11-O3-C3
2	A	901	CPL	O11-C11-O3-C3
2	A	901	CPL	C4-O4P-P-O1P
2	A	902	CPL	O4P-C4-C5-N
2	A	902	CPL	C12-C11-O3-C3
2	A	902	CPL	C32-C31-O2-C2
2	A	902	CPL	O31-C31-O2-C2
2	A	902	CPL	C1-O3P-P-O2P
2	A	902	CPL	C1-O3P-P-O4P
2	A	902	CPL	C4-O4P-P-O1P
2	A	902	CPL	C4-O4P-P-O2P
2	A	902	CPL	C4-O4P-P-O3P
2	A	903	CPL	C2-C1-O3P-P
2	A	903	CPL	O4P-C4-C5-N
2	A	903	CPL	O31-C31-O2-C2
2	A	903	CPL	C1-O3P-P-O4P
2	A	904	CPL	O4P-C4-C5-N
2	A	904	CPL	C12-C11-O3-C3
2	A	904	CPL	C32-C31-O2-C2
2	A	904	CPL	O31-C31-O2-C2
2	A	904	CPL	C1-O3P-P-O2P
2	A	904	CPL	C1-O3P-P-O4P
2	A	904	CPL	C4-O4P-P-O1P
2	A	904	CPL	C4-O4P-P-O2P
2	A	904	CPL	C4-O4P-P-O3P
2	B	901	CPL	C12-C11-O3-C3
2	B	901	CPL	O11-C11-O3-C3
2	B	901	CPL	C4-O4P-P-O1P
2	B	902	CPL	C2-C1-O3P-P
2	B	902	CPL	O4P-C4-C5-N

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	B	902	CPL	O31-C31-O2-C2
2	B	902	CPL	C1-O3P-P-O4P
2	B	903	CPL	O4P-C4-C5-N
2	B	903	CPL	C12-C11-O3-C3
2	B	903	CPL	C32-C31-O2-C2
2	B	903	CPL	O31-C31-O2-C2
2	B	903	CPL	C1-O3P-P-O2P
2	B	903	CPL	C1-O3P-P-O4P
2	B	903	CPL	C4-O4P-P-O1P
2	B	903	CPL	C4-O4P-P-O2P
2	B	903	CPL	C4-O4P-P-O3P
2	C	901	CPL	C12-C11-O3-C3
2	C	901	CPL	O11-C11-O3-C3
2	C	901	CPL	C4-O4P-P-O1P
2	C	902	CPL	C2-C1-O3P-P
2	C	902	CPL	O4P-C4-C5-N
2	C	902	CPL	O31-C31-O2-C2
2	C	902	CPL	C1-O3P-P-O4P
2	C	903	CPL	O4P-C4-C5-N
2	C	903	CPL	C12-C11-O3-C3
2	C	903	CPL	C32-C31-O2-C2
2	C	903	CPL	O31-C31-O2-C2
2	C	903	CPL	C1-O3P-P-O2P
2	C	903	CPL	C1-O3P-P-O4P
2	C	903	CPL	C4-O4P-P-O1P
2	C	903	CPL	C4-O4P-P-O2P
2	C	903	CPL	C4-O4P-P-O3P
2	D	901	CPL	C12-C11-O3-C3
2	D	901	CPL	O11-C11-O3-C3
2	D	901	CPL	C4-O4P-P-O1P
2	D	902	CPL	C2-C1-O3P-P
2	D	902	CPL	O4P-C4-C5-N
2	D	902	CPL	O31-C31-O2-C2
2	D	902	CPL	C1-O3P-P-O4P
2	A	902	CPL	O11-C11-O3-C3
2	A	904	CPL	O11-C11-O3-C3
2	B	903	CPL	O11-C11-O3-C3
2	C	903	CPL	O11-C11-O3-C3
2	A	903	CPL	C2-C3-O3-C11
2	B	902	CPL	C2-C3-O3-C11
2	C	902	CPL	C2-C3-O3-C11
2	D	902	CPL	C2-C3-O3-C11

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	903	CPL	C32-C31-O2-C2
2	B	902	CPL	C32-C31-O2-C2
2	C	902	CPL	C32-C31-O2-C2
2	D	902	CPL	C32-C31-O2-C2
2	A	903	CPL	C12-C11-O3-C3
2	B	902	CPL	C12-C11-O3-C3
2	C	902	CPL	C12-C11-O3-C3
2	D	902	CPL	C12-C11-O3-C3
2	A	903	CPL	O11-C11-O3-C3
2	B	902	CPL	O11-C11-O3-C3
2	C	902	CPL	O11-C11-O3-C3
2	D	902	CPL	O11-C11-O3-C3
2	A	903	CPL	C4-C5-N-C7
2	B	902	CPL	C4-C5-N-C7
2	C	902	CPL	C4-C5-N-C7
2	D	902	CPL	C4-C5-N-C7
2	A	901	CPL	C16-C17-C18-C19
2	B	901	CPL	C16-C17-C18-C19
2	C	901	CPL	C16-C17-C18-C19
2	D	901	CPL	C16-C17-C18-C19
2	A	901	CPL	C32-C31-O2-C2
2	B	901	CPL	C32-C31-O2-C2
2	C	901	CPL	C32-C31-O2-C2
2	D	901	CPL	C32-C31-O2-C2
2	A	903	CPL	C12-C13-C14-C15
2	B	902	CPL	C12-C13-C14-C15
2	C	902	CPL	C12-C13-C14-C15
2	D	902	CPL	C12-C13-C14-C15
2	A	902	CPL	C11-C12-C13-C14
2	A	904	CPL	C11-C12-C13-C14
2	B	903	CPL	C11-C12-C13-C14
2	C	903	CPL	C11-C12-C13-C14
2	A	901	CPL	C14-C15-C16-C17
2	B	901	CPL	C14-C15-C16-C17
2	D	901	CPL	C14-C15-C16-C17
2	C	901	CPL	C14-C15-C16-C17
2	A	901	CPL	O31-C31-O2-C2
2	B	901	CPL	O31-C31-O2-C2
2	C	901	CPL	O31-C31-O2-C2
2	D	901	CPL	O31-C31-O2-C2
2	A	903	CPL	C4-C5-N-C6
2	A	903	CPL	C4-C5-N-C8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	B	902	CPL	C4-C5-N-C6
2	B	902	CPL	C4-C5-N-C8
2	C	902	CPL	C4-C5-N-C6
2	C	902	CPL	C4-C5-N-C8
2	D	902	CPL	C4-C5-N-C6
2	D	902	CPL	C4-C5-N-C8
2	A	901	CPL	C4-C5-N-C6
2	B	901	CPL	C4-C5-N-C6
2	C	901	CPL	C4-C5-N-C6
2	D	901	CPL	C4-C5-N-C6
2	A	903	CPL	C15-C16-C17-C18
2	A	903	CPL	C21-C22-C23-C24
2	B	902	CPL	C21-C22-C23-C24
2	C	902	CPL	C15-C16-C17-C18
2	C	902	CPL	C21-C22-C23-C24
2	D	902	CPL	C21-C22-C23-C24
2	B	902	CPL	C15-C16-C17-C18
2	D	902	CPL	C15-C16-C17-C18
2	A	901	CPL	C22-C23-C24-C25
2	B	901	CPL	C22-C23-C24-C25
2	C	901	CPL	C22-C23-C24-C25
2	D	901	CPL	C22-C23-C24-C25
2	D	902	CPL	C18-C19-C20-C21
2	A	902	CPL	C34-C35-C36-C37
2	A	903	CPL	C18-C19-C20-C21
2	A	903	CPL	C33-C34-C35-C36
2	A	904	CPL	C34-C35-C36-C37
2	B	902	CPL	C18-C19-C20-C21
2	B	902	CPL	C33-C34-C35-C36
2	B	902	CPL	C34-C35-C36-C37
2	C	902	CPL	C18-C19-C20-C21
2	C	902	CPL	C33-C34-C35-C36
2	D	902	CPL	C33-C34-C35-C36
2	D	902	CPL	C34-C35-C36-C37
2	A	903	CPL	C31-C32-C33-C34
2	C	902	CPL	C31-C32-C33-C34
2	D	902	CPL	C31-C32-C33-C34
2	A	903	CPL	C34-C35-C36-C37
2	B	903	CPL	C34-C35-C36-C37
2	C	902	CPL	C34-C35-C36-C37
2	C	903	CPL	C34-C35-C36-C37
2	B	902	CPL	C31-C32-C33-C34

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	902	CPL	C12-C13-C14-C15
2	A	904	CPL	C12-C13-C14-C15
2	B	903	CPL	C12-C13-C14-C15
2	C	903	CPL	C12-C13-C14-C15
2	A	902	CPL	C32-C33-C34-C35
2	A	904	CPL	C32-C33-C34-C35
2	B	903	CPL	C32-C33-C34-C35
2	C	903	CPL	C32-C33-C34-C35
2	A	901	CPL	C19-C20-C21-C22
2	B	901	CPL	C19-C20-C21-C22
2	C	901	CPL	C19-C20-C21-C22
2	D	901	CPL	C19-C20-C21-C22
2	A	903	CPL	C16-C17-C18-C19
2	B	902	CPL	C16-C17-C18-C19
2	C	902	CPL	C16-C17-C18-C19
2	D	902	CPL	C16-C17-C18-C19
2	C	903	CPL	C15-C16-C17-C18
2	A	902	CPL	C15-C16-C17-C18
2	A	904	CPL	C15-C16-C17-C18
2	B	903	CPL	C15-C16-C17-C18
2	A	902	CPL	C36-C37-C38-C39
2	A	904	CPL	C36-C37-C38-C39
2	B	903	CPL	C36-C37-C38-C39
2	C	903	CPL	C36-C37-C38-C39
2	A	904	CPL	C35-C36-C37-C38
2	B	903	CPL	C35-C36-C37-C38
2	A	902	CPL	C35-C36-C37-C38
2	C	903	CPL	C35-C36-C37-C38
2	A	902	CPL	C13-C14-C15-C16
2	A	904	CPL	C13-C14-C15-C16
2	C	903	CPL	C13-C14-C15-C16
2	B	903	CPL	C13-C14-C15-C16
2	C	903	CPL	C14-C15-C16-C17
2	A	902	CPL	C14-C15-C16-C17
2	A	904	CPL	C14-C15-C16-C17
2	B	903	CPL	C14-C15-C16-C17
2	A	903	CPL	C23-C24-C25-C26
2	B	902	CPL	C23-C24-C25-C26
2	C	902	CPL	C23-C24-C25-C26
2	D	902	CPL	C23-C24-C25-C26
2	C	901	CPL	C32-C33-C34-C35
2	A	901	CPL	C32-C33-C34-C35

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	B	901	CPL	C32-C33-C34-C35
2	D	901	CPL	C32-C33-C34-C35
2	A	903	CPL	C35-C36-C37-C38
2	C	902	CPL	C35-C36-C37-C38
2	B	902	CPL	C35-C36-C37-C38
2	D	902	CPL	C35-C36-C37-C38
2	A	901	CPL	C40-C41-C42-C43
2	A	903	CPL	C39-C40-C41-C42
2	B	901	CPL	C40-C41-C42-C43
2	B	902	CPL	C39-C40-C41-C42
2	C	901	CPL	C40-C41-C42-C43
2	C	902	CPL	C39-C40-C41-C42
2	D	901	CPL	C40-C41-C42-C43
2	D	902	CPL	C39-C40-C41-C42
2	A	901	CPL	C35-C36-C37-C38
2	B	901	CPL	C35-C36-C37-C38
2	C	901	CPL	C35-C36-C37-C38
2	D	901	CPL	C35-C36-C37-C38
2	A	903	CPL	C5-C4-O4P-P
2	B	902	CPL	C5-C4-O4P-P
2	C	902	CPL	C5-C4-O4P-P
2	D	902	CPL	C5-C4-O4P-P
2	A	901	CPL	O4P-C4-C5-N
2	B	901	CPL	O4P-C4-C5-N
2	C	901	CPL	O4P-C4-C5-N
2	D	901	CPL	O4P-C4-C5-N
2	A	903	CPL	O3P-C1-C2-C3
2	B	902	CPL	O3P-C1-C2-C3
2	C	902	CPL	O3P-C1-C2-C3
2	D	902	CPL	O3P-C1-C2-C3
2	A	903	CPL	O3P-C1-C2-O2
2	B	902	CPL	O3P-C1-C2-O2
2	C	902	CPL	O3P-C1-C2-O2
2	D	902	CPL	O3P-C1-C2-O2
2	A	902	CPL	C4-C5-N-C6
2	A	904	CPL	C4-C5-N-C6
2	B	903	CPL	C4-C5-N-C6
2	C	903	CPL	C4-C5-N-C6
2	A	903	CPL	O2-C2-C3-O3
2	B	902	CPL	O2-C2-C3-O3
2	C	902	CPL	O2-C2-C3-O3
2	D	902	CPL	O2-C2-C3-O3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	903	CPL	C1-O3P-P-O1P
2	B	902	CPL	C1-O3P-P-O1P
2	C	902	CPL	C1-O3P-P-O1P
2	D	902	CPL	C1-O3P-P-O1P
2	A	902	CPL	C4-C5-N-C7
2	A	904	CPL	C4-C5-N-C7
2	B	903	CPL	C4-C5-N-C7
2	C	903	CPL	C4-C5-N-C7
2	A	903	CPL	C42-C43-C44-C45
2	B	902	CPL	C42-C43-C44-C45
2	C	902	CPL	C42-C43-C44-C45
2	D	902	CPL	C42-C43-C44-C45
2	A	901	CPL	C37-C38-C39-C40
2	B	901	CPL	C37-C38-C39-C40
2	A	903	CPL	C14-C15-C16-C17
2	D	902	CPL	C14-C15-C16-C17
2	B	902	CPL	C14-C15-C16-C17
2	C	901	CPL	C37-C38-C39-C40
2	D	901	CPL	C37-C38-C39-C40
2	C	902	CPL	C14-C15-C16-C17
2	A	902	CPL	C37-C38-C39-C40
2	A	904	CPL	C37-C38-C39-C40
2	B	903	CPL	C37-C38-C39-C40
2	C	903	CPL	C37-C38-C39-C40
2	A	903	CPL	C22-C23-C24-C25
2	B	902	CPL	C22-C23-C24-C25
2	D	902	CPL	C22-C23-C24-C25
2	C	902	CPL	C22-C23-C24-C25
2	A	902	CPL	C43-C44-C45-C46
2	A	904	CPL	C43-C44-C45-C46
2	B	903	CPL	C43-C44-C45-C46
2	C	903	CPL	C43-C44-C45-C46
2	A	901	CPL	C43-C44-C45-C46
2	B	901	CPL	C43-C44-C45-C46
2	C	901	CPL	C43-C44-C45-C46
2	D	901	CPL	C43-C44-C45-C46
2	A	902	CPL	C3-C2-O2-C31
2	A	904	CPL	C3-C2-O2-C31
2	B	903	CPL	C3-C2-O2-C31
2	C	903	CPL	C3-C2-O2-C31
2	A	902	CPL	C4-C5-N-C8
2	A	904	CPL	C4-C5-N-C8

Continued on next page...

Continued from previous page...

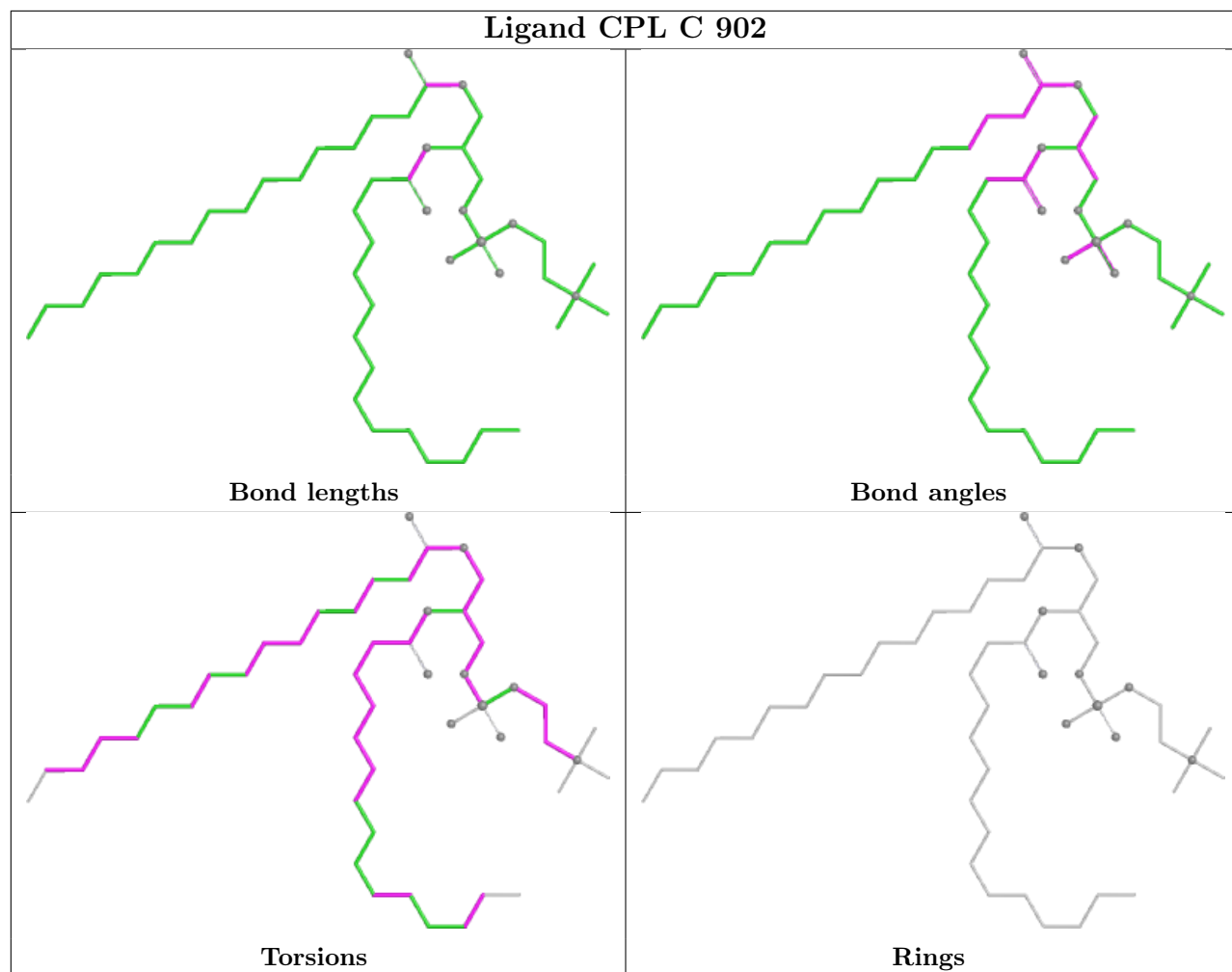
Mol	Chain	Res	Type	Atoms
2	B	903	CPL	C4-C5-N-C8
2	C	903	CPL	C4-C5-N-C8
2	A	902	CPL	C40-C41-C42-C43
2	A	904	CPL	C40-C41-C42-C43
2	B	903	CPL	C40-C41-C42-C43
2	C	903	CPL	C40-C41-C42-C43
2	B	901	CPL	C42-C43-C44-C45
2	A	901	CPL	C42-C43-C44-C45
2	C	901	CPL	C42-C43-C44-C45
2	D	901	CPL	C42-C43-C44-C45
2	A	903	CPL	O3-C11-C12-C13
2	B	902	CPL	O3-C11-C12-C13
2	C	902	CPL	O3-C11-C12-C13
2	D	902	CPL	O3-C11-C12-C13
2	B	901	CPL	C12-C13-C14-C15
2	D	901	CPL	C12-C13-C14-C15
2	C	901	CPL	C12-C13-C14-C15
2	A	901	CPL	C12-C13-C14-C15
2	A	903	CPL	C1-C2-C3-O3
2	B	902	CPL	C1-C2-C3-O3
2	C	902	CPL	C1-C2-C3-O3
2	D	902	CPL	C1-C2-C3-O3
2	B	902	CPL	C32-C33-C34-C35
2	C	902	CPL	C32-C33-C34-C35
2	D	902	CPL	C32-C33-C34-C35
2	A	903	CPL	C32-C33-C34-C35
2	A	903	CPL	O2-C31-C32-C33
2	B	902	CPL	O2-C31-C32-C33
2	C	902	CPL	O2-C31-C32-C33
2	D	902	CPL	O2-C31-C32-C33
2	D	901	CPL	C34-C35-C36-C37
2	A	901	CPL	C34-C35-C36-C37
2	B	901	CPL	C34-C35-C36-C37
2	C	901	CPL	C34-C35-C36-C37
2	A	903	CPL	O11-C11-C12-C13
2	B	902	CPL	O11-C11-C12-C13
2	C	902	CPL	O11-C11-C12-C13
2	D	902	CPL	O11-C11-C12-C13
2	D	902	CPL	O31-C31-C32-C33

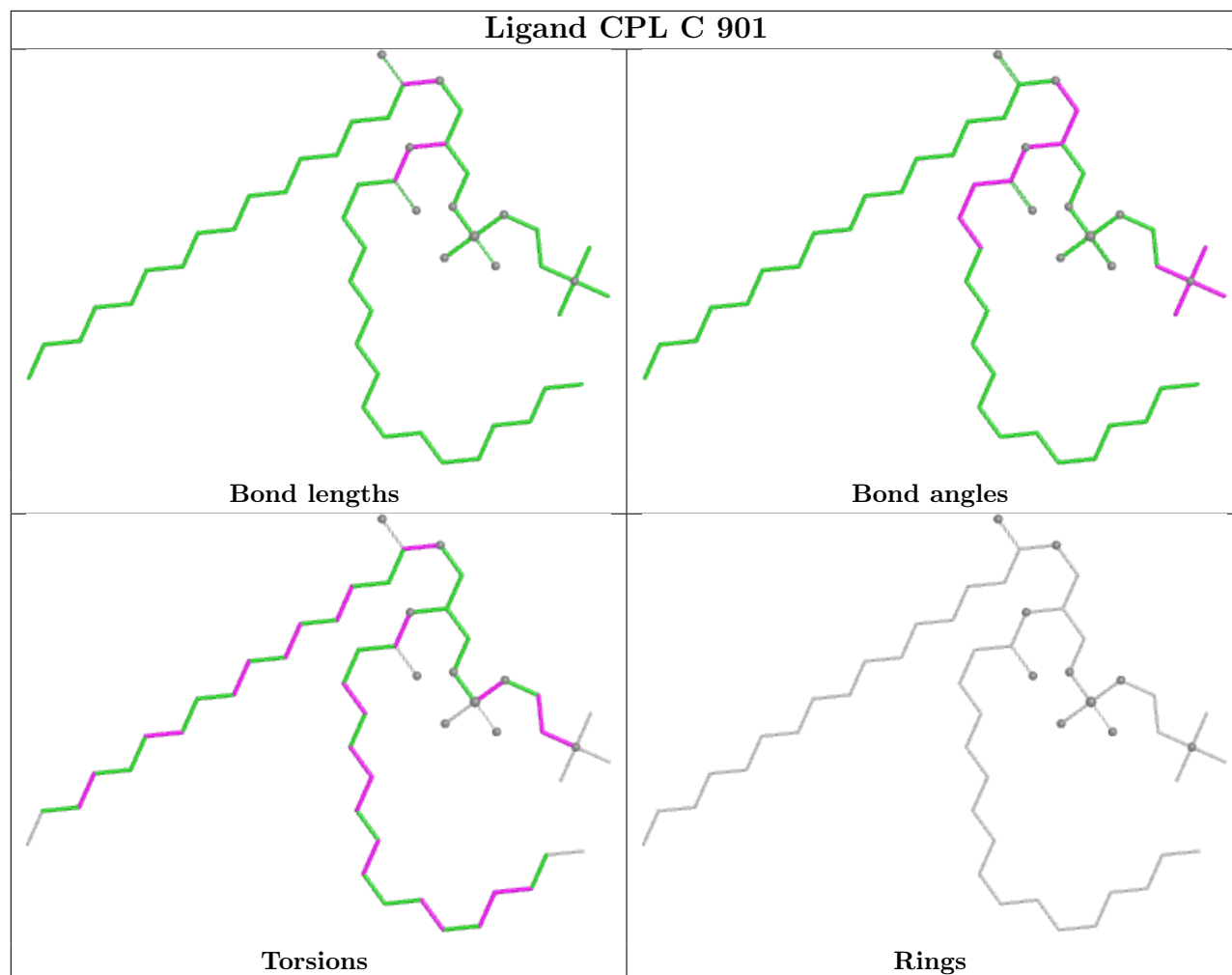
There are no ring outliers.

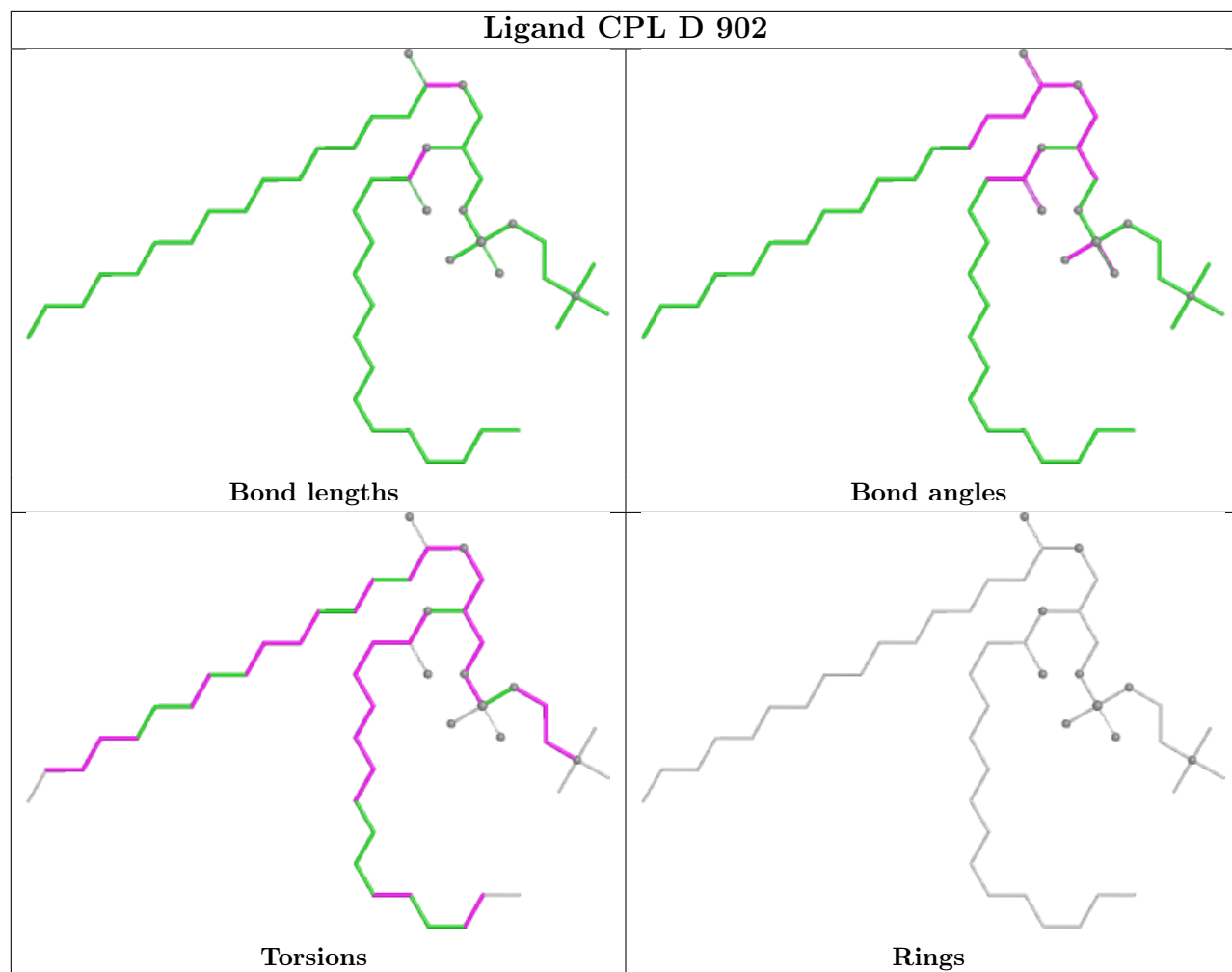
12 monomers are involved in 84 short contacts:

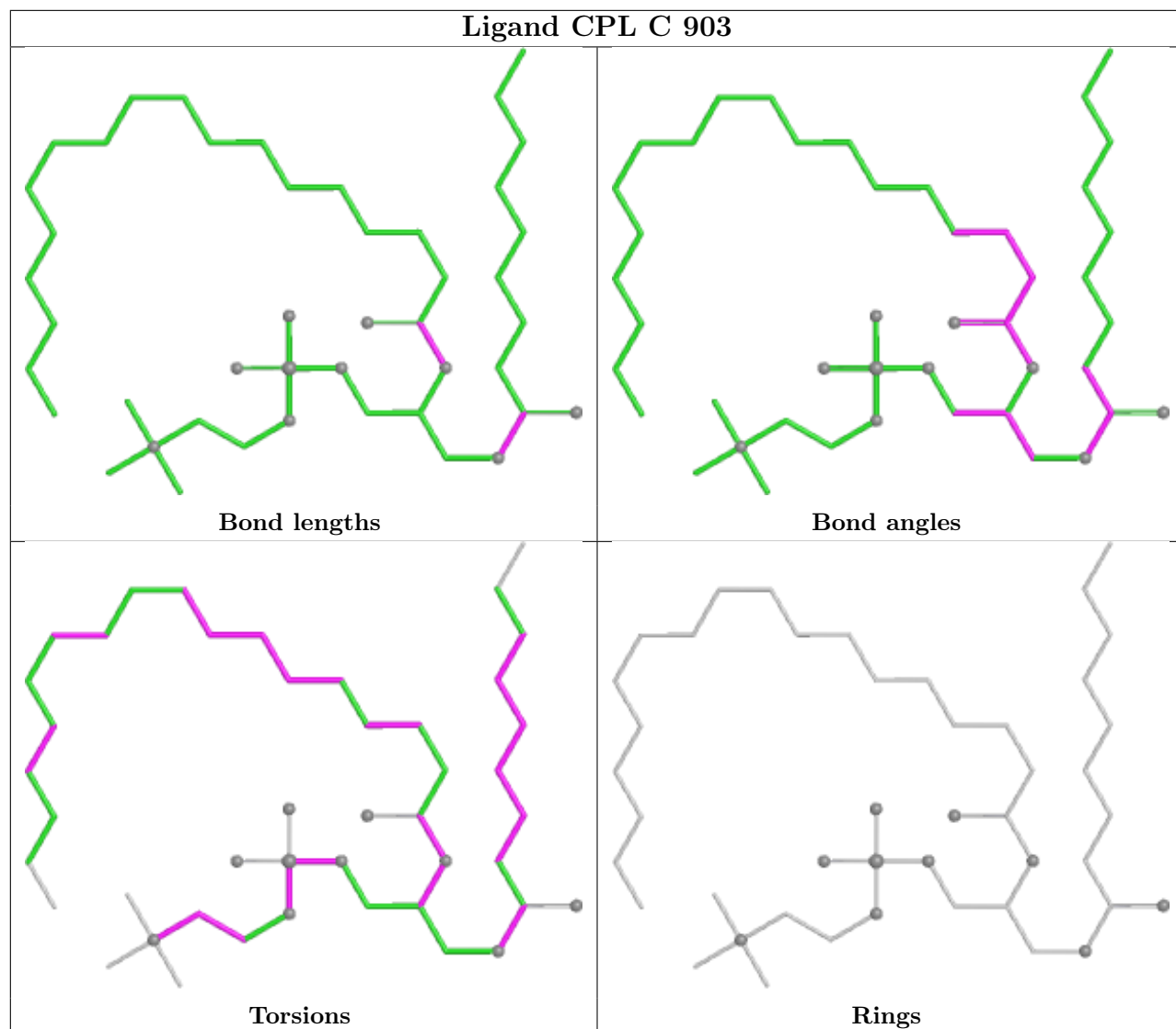
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	902	CPL	8	0
2	C	901	CPL	9	0
2	D	902	CPL	8	0
2	C	903	CPL	7	0
2	A	903	CPL	8	0
2	B	902	CPL	9	0
2	B	901	CPL	9	0
2	A	901	CPL	9	0
2	A	904	CPL	7	0
2	B	903	CPL	7	0
2	D	901	CPL	9	0
2	A	902	CPL	6	0

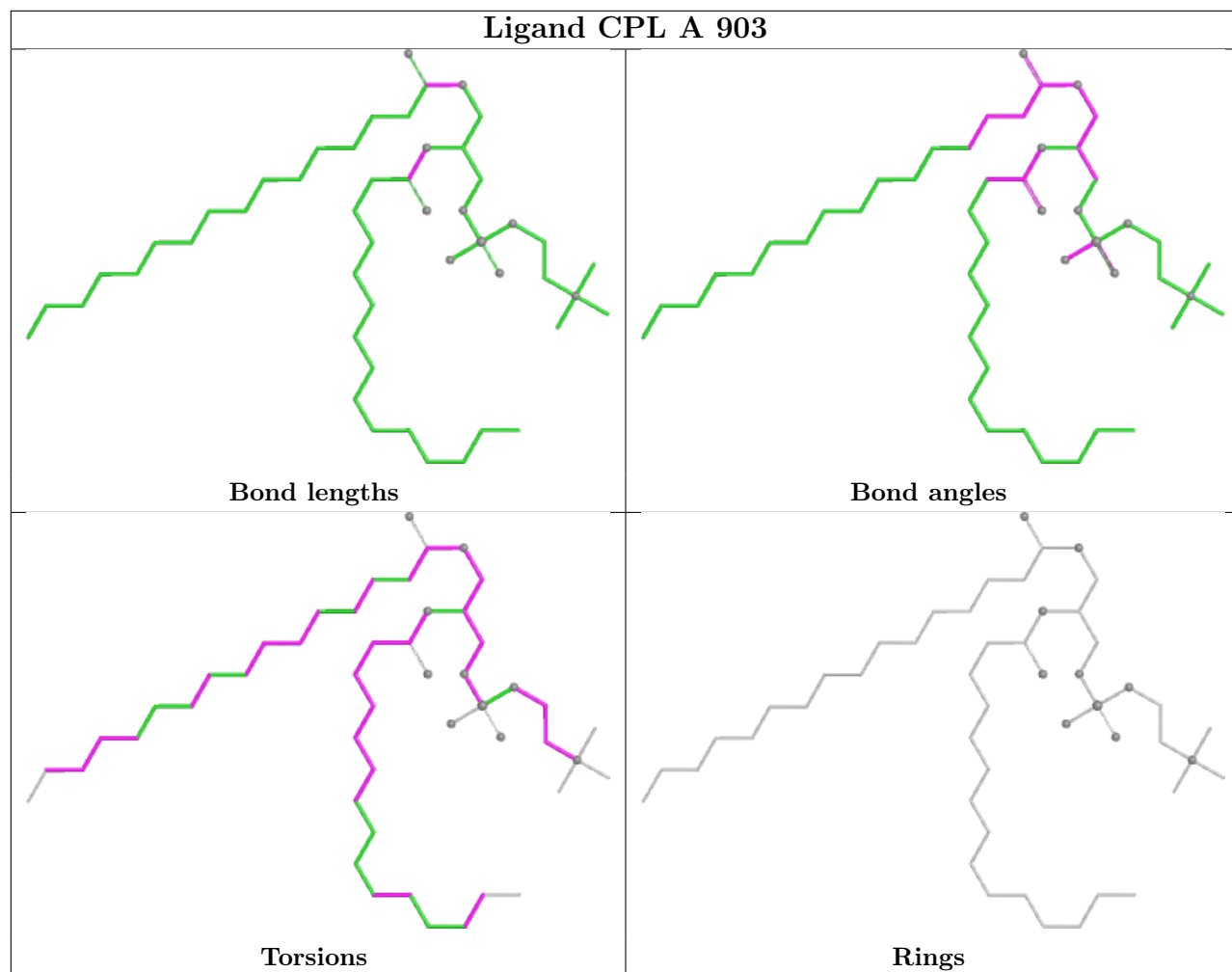
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

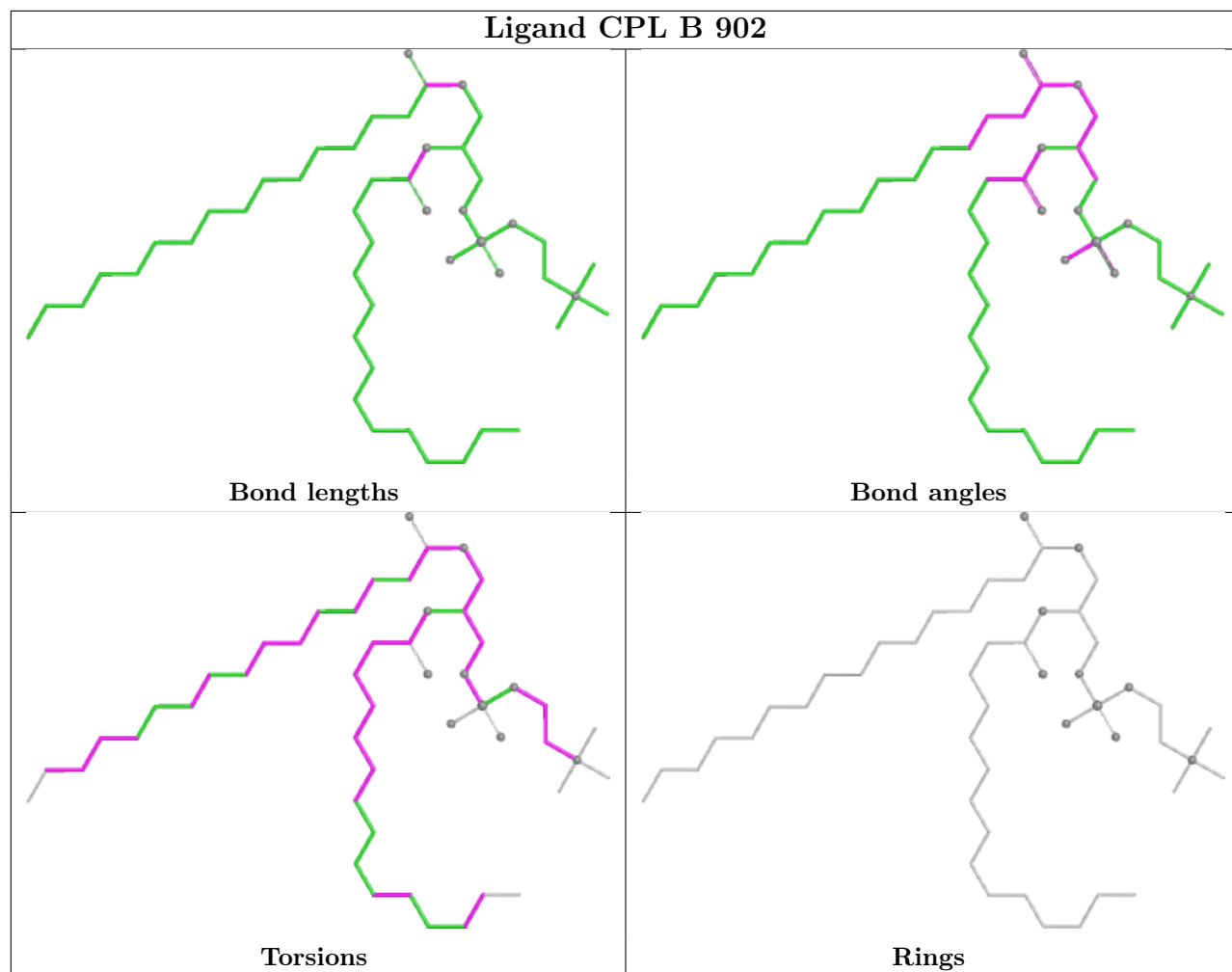


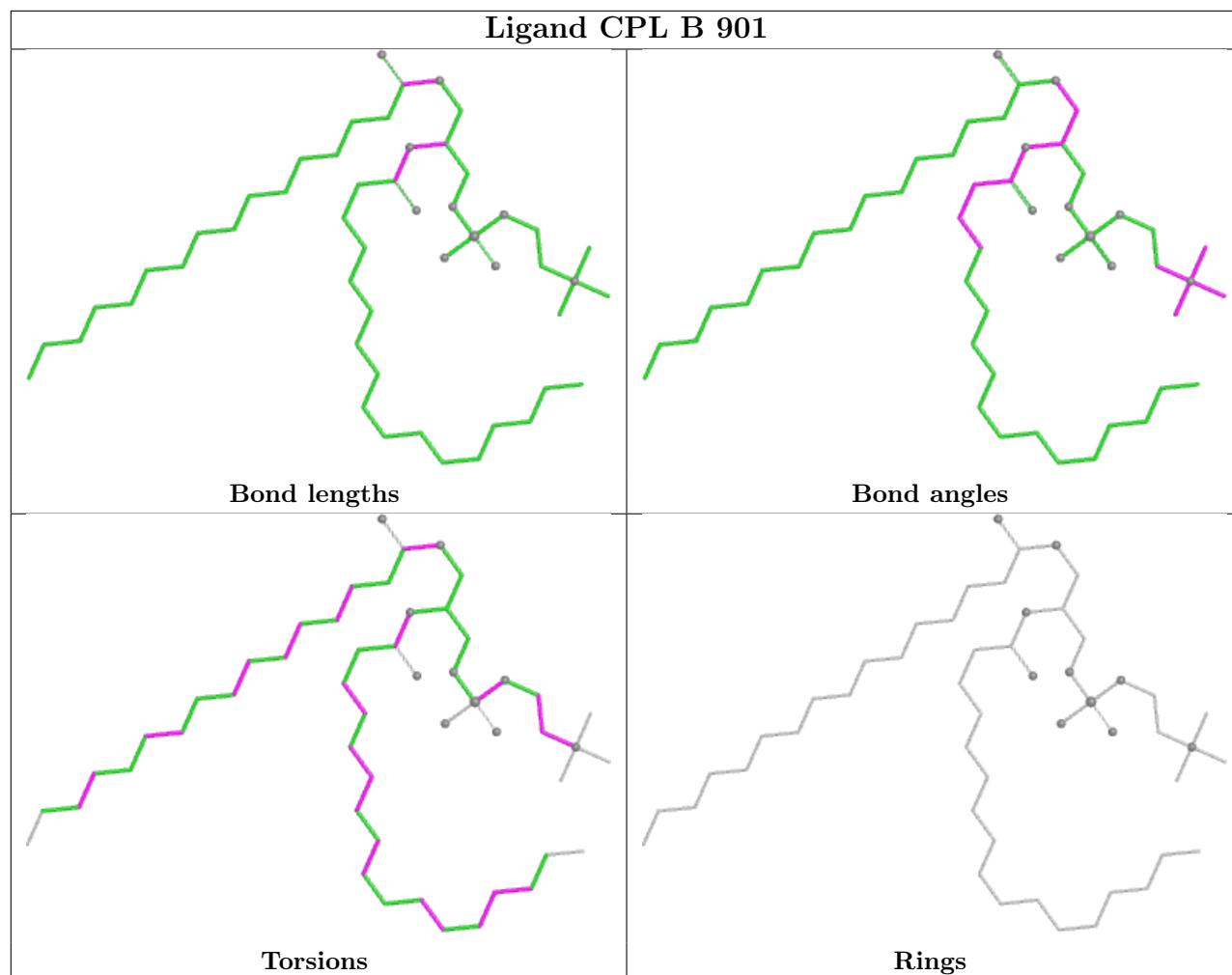


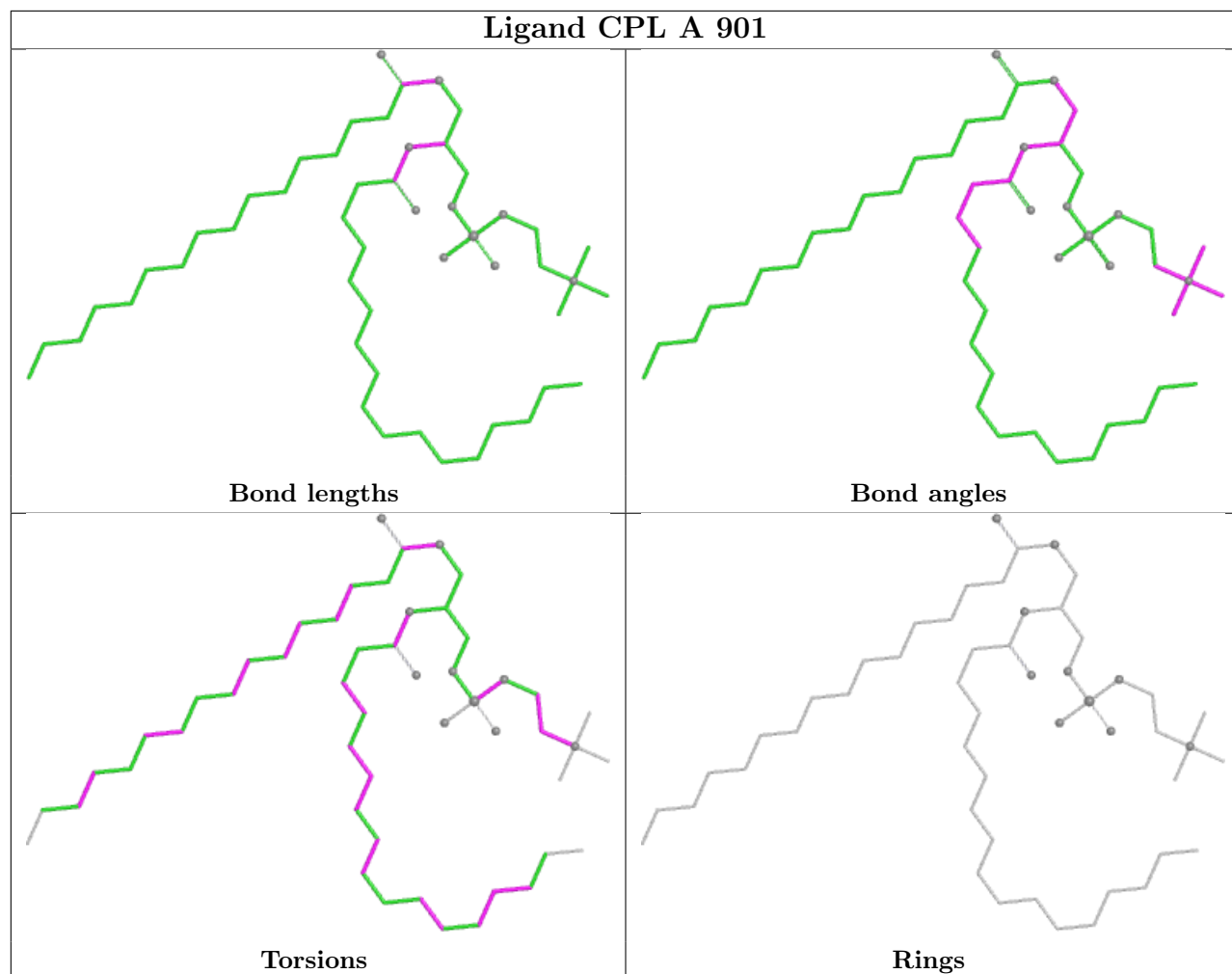


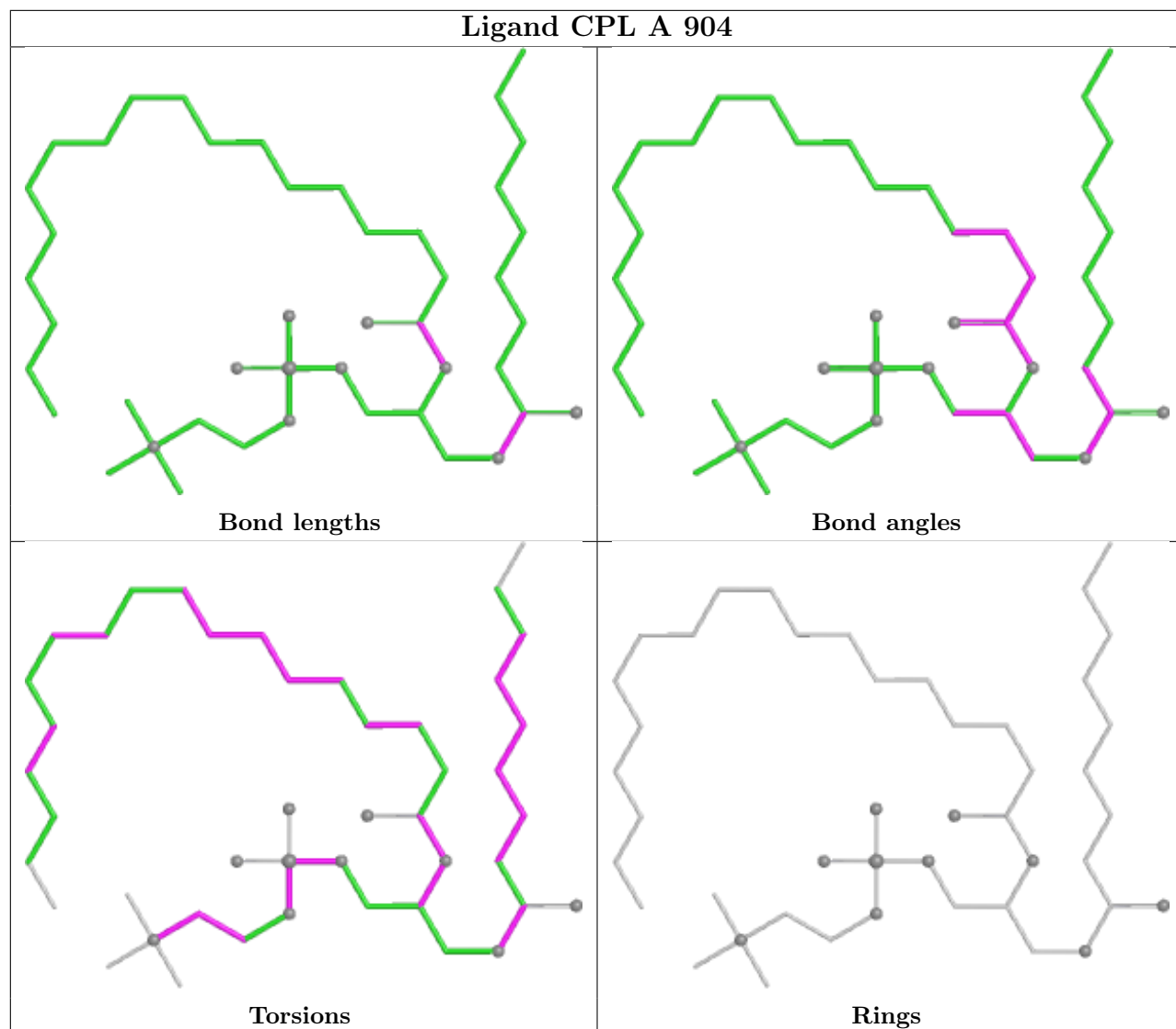


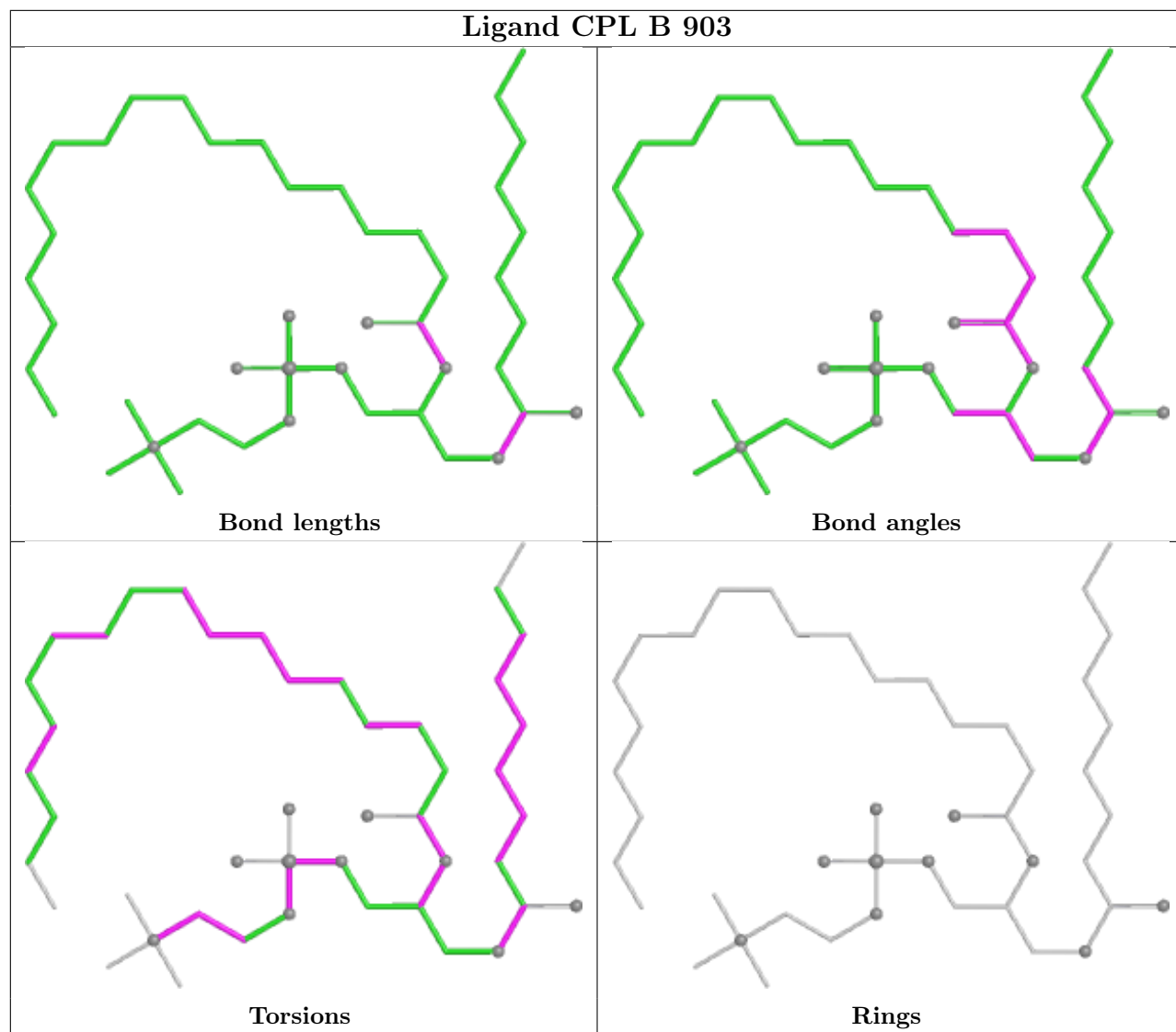


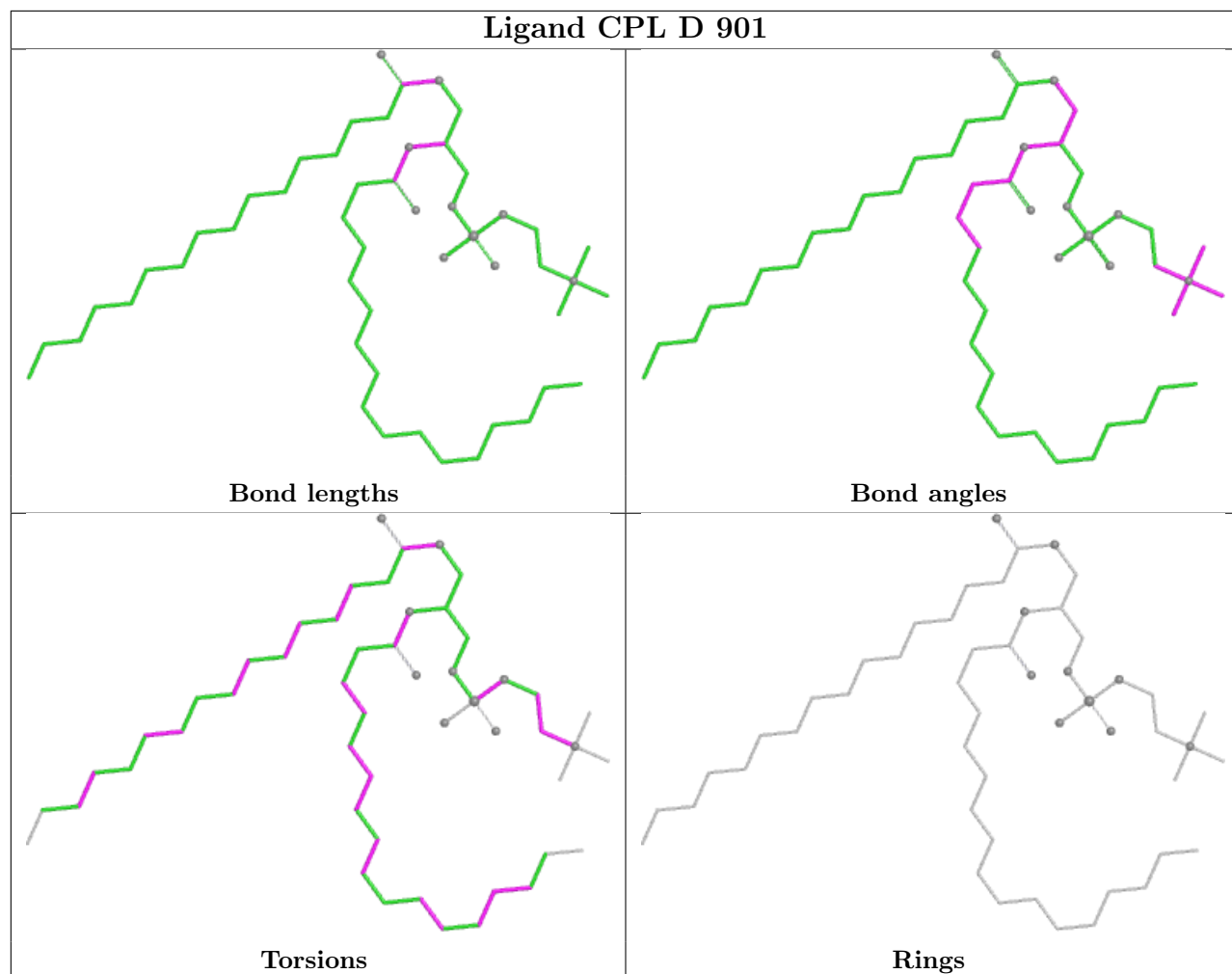


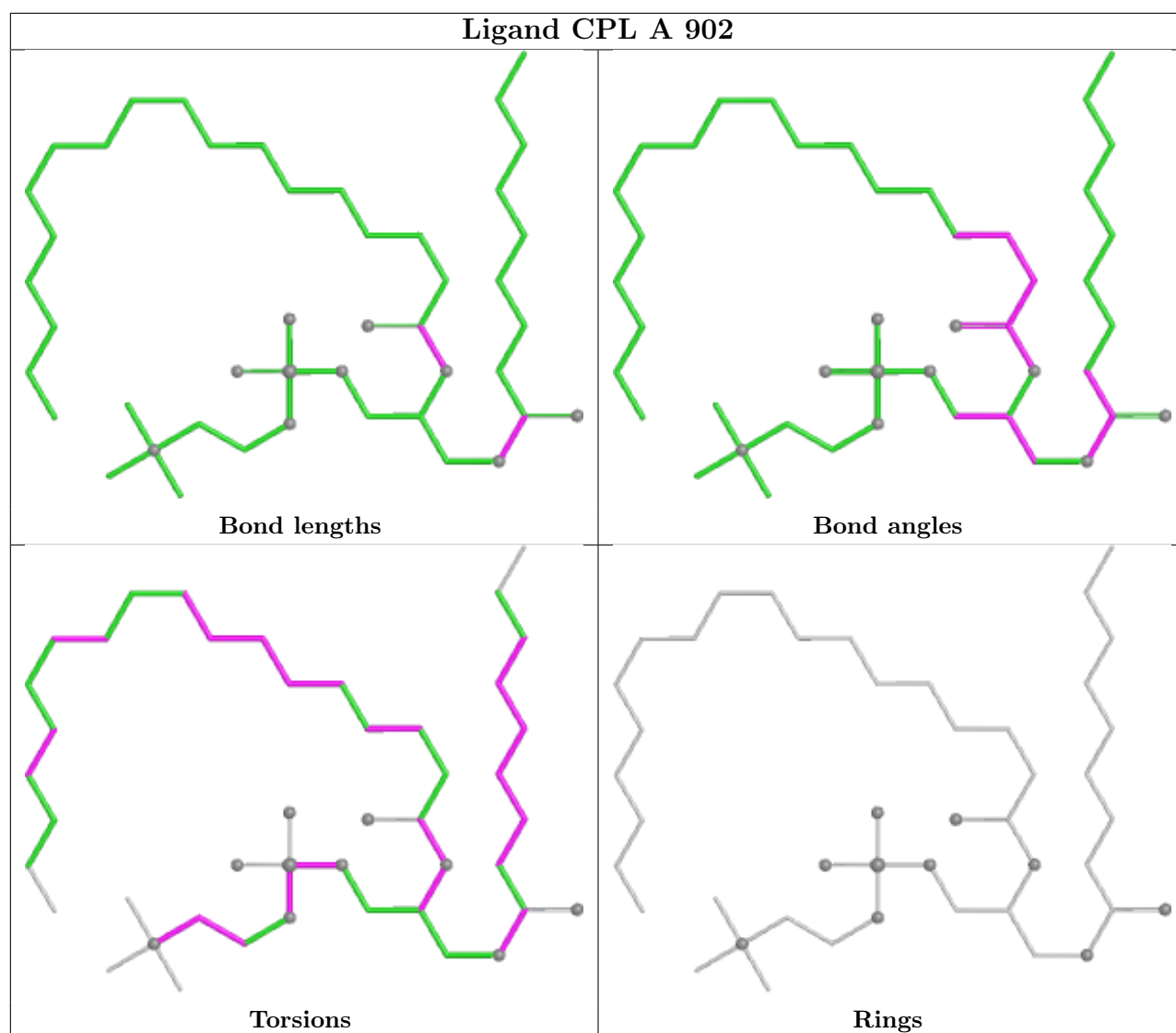












5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.