



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 23, 2024 – 10:21 pm BST

PDB ID : 8QOC
Title : Crystal structure of Staphylococcus aureus PLP Synthase (Pdx1)
Authors : Ullah, N.; Wrenger, C.; Betzel, C.
Deposited on : 2023-09-28
Resolution : 2.83 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 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:

MolProbity : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.002 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.38.2

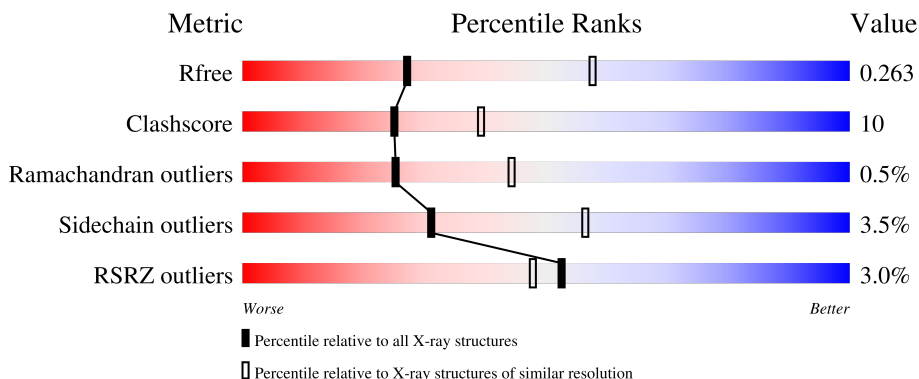
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION


The reported resolution of this entry is 2.83 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))
R_{free}	164625	1367 (2.86-2.82)
Clashscore	180529	1455 (2.86-2.82)
Ramachandran outliers	177936	1422 (2.86-2.82)
Sidechain outliers	177891	1423 (2.86-2.82)
RSRZ outliers	164620	1368 (2.86-2.82)

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 of 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	274	 3% 82% 17%
1	B	274	 4% 76% 21% ..
1	C	274	 % 77% 22% .
1	D	274	 3% 79% 20% .
1	E	274	 4% 71% 24% ..

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Mol	Chain	Length	Quality of chain
1	F	274	<p>4% 72% 25% ..</p>
1	G	274	<p>3% 69% 28% ..</p>
1	H	274	<p>2% 74% 25% .</p>

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
2	PO4	G	302	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 16416 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 Pyridoxal 5'-phosphate synthase subunit PdxS.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	273	2046	1270	365	394	17	0	1	0
1	B	266	2010	1248	357	388	17	0	1	0
1	C	274	2055	1275	366	397	17	0	0	0
1	D	273	2047	1270	365	395	17	0	0	0
1	E	266	1996	1238	357	385	16	0	0	0
1	F	269	2018	1251	360	391	16	0	0	0
1	G	271	2026	1257	362	391	16	0	0	0
1	H	272	2024	1255	362	391	16	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	278	GLY	-	expression tag	UNP P60798
B	278	GLY	-	expression tag	UNP P60798
C	278	GLY	-	expression tag	UNP P60798
D	278	GLY	-	expression tag	UNP P60798
E	278	GLY	-	expression tag	UNP P60798
F	278	GLY	-	expression tag	UNP P60798
G	278	GLY	-	expression tag	UNP P60798
H	278	GLY	-	expression tag	UNP P60798

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O P 5 4 1	0	0
2	A	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0
2	C	1	Total O P 5 4 1	0	0
2	C	1	Total O P 5 4 1	0	0
2	D	1	Total O P 5 4 1	0	0
2	D	1	Total O P 5 4 1	0	0
2	E	1	Total O P 5 4 1	0	0
2	E	1	Total O P 5 4 1	0	0
2	F	1	Total O P 5 4 1	0	0
2	F	1	Total O P 5 4 1	0	0
2	G	1	Total O P 5 4 1	0	0
2	G	1	Total O P 5 4 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	H	1	Total O P 5 4 1	0	0
2	H	1	Total O P 5 4 1	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Cl 1 1	0	0
4	B	1	Total Cl 1 1	0	0
4	C	1	Total Cl 1 1	0	0
4	D	1	Total Cl 1 1	0	0
4	E	2	Total Cl 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	F	1	Total Cl 1 1	0	0
4	H	1	Total Cl 1 1	0	0

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Mg 1 1	0	0
5	E	1	Total Mg 1 1	0	0
5	G	1	Total Mg 1 1	0	0

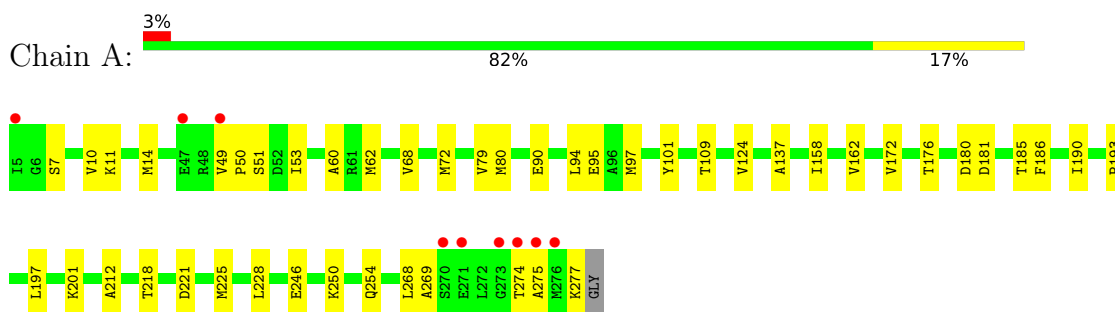
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	21	Total O 21 21	0	0
6	B	10	Total O 10 10	0	0
6	C	8	Total O 8 8	0	0
6	D	15	Total O 15 15	0	0
6	E	15	Total O 15 15	0	0
6	F	7	Total O 7 7	0	0
6	G	12	Total O 12 12	0	0
6	H	7	Total O 7 7	0	0

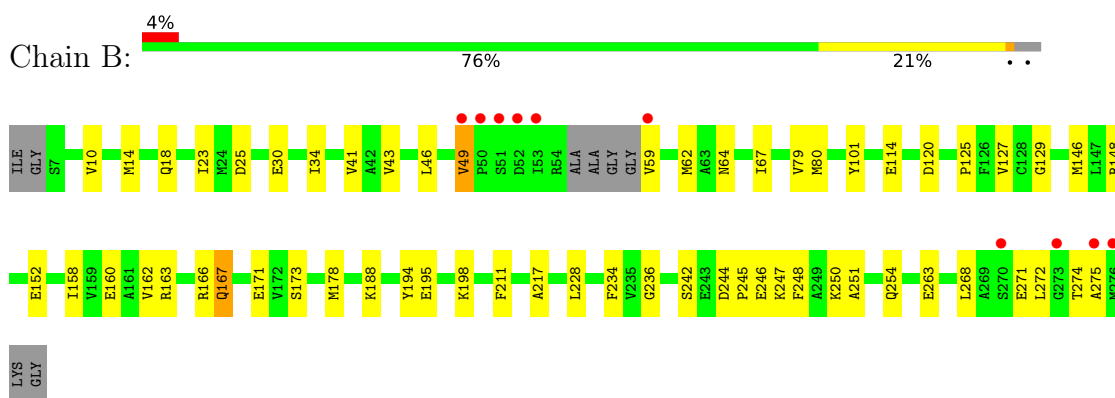
3 Residue-property plots [i](#)

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 and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

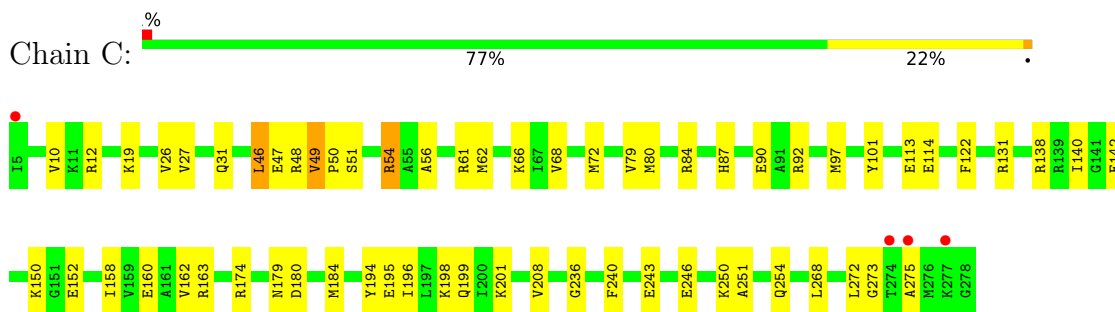
- Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS



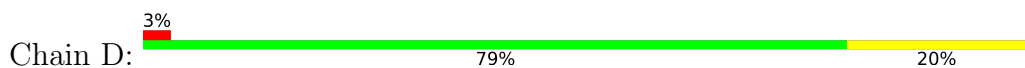
- Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS

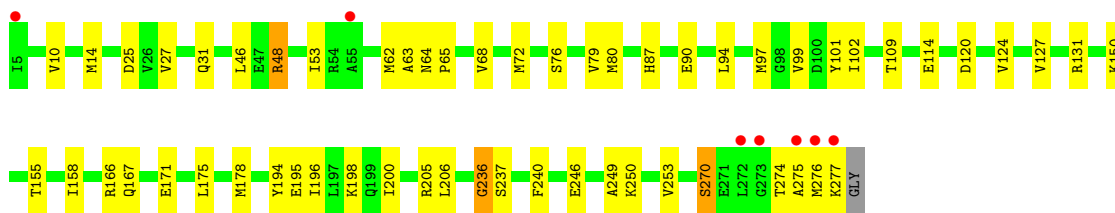


- Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS

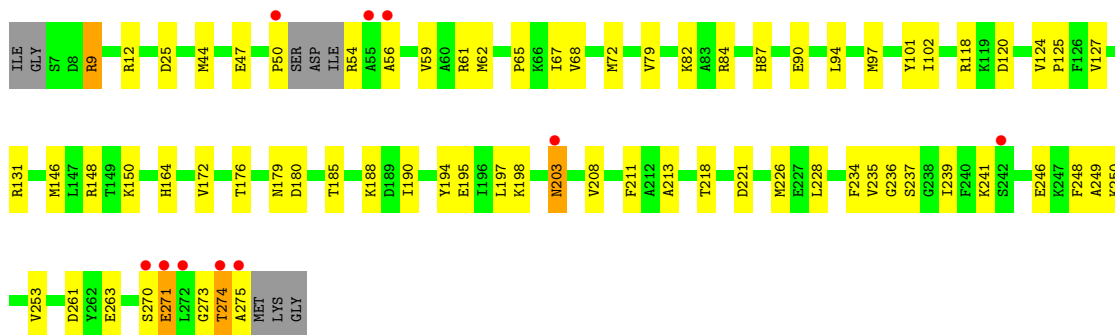


- Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS

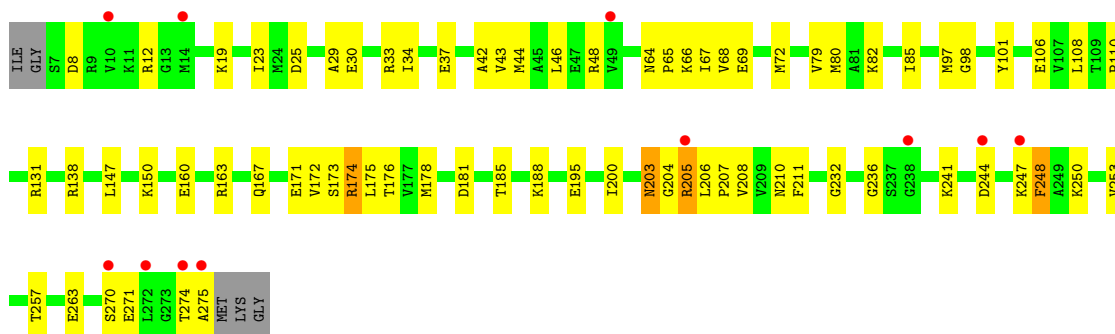




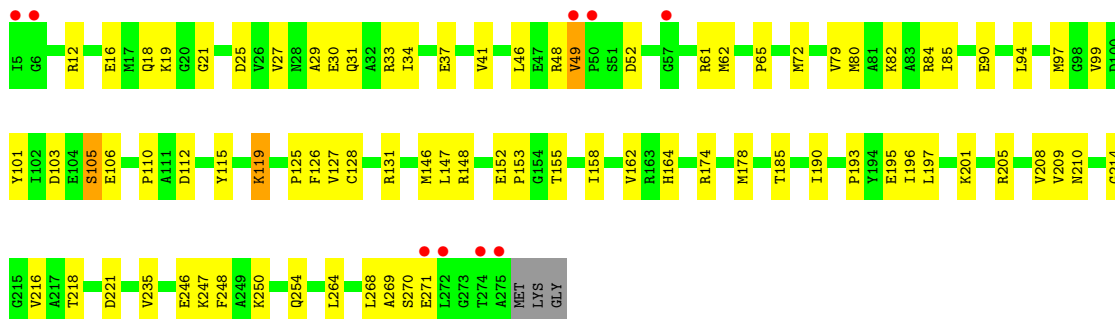
• Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS



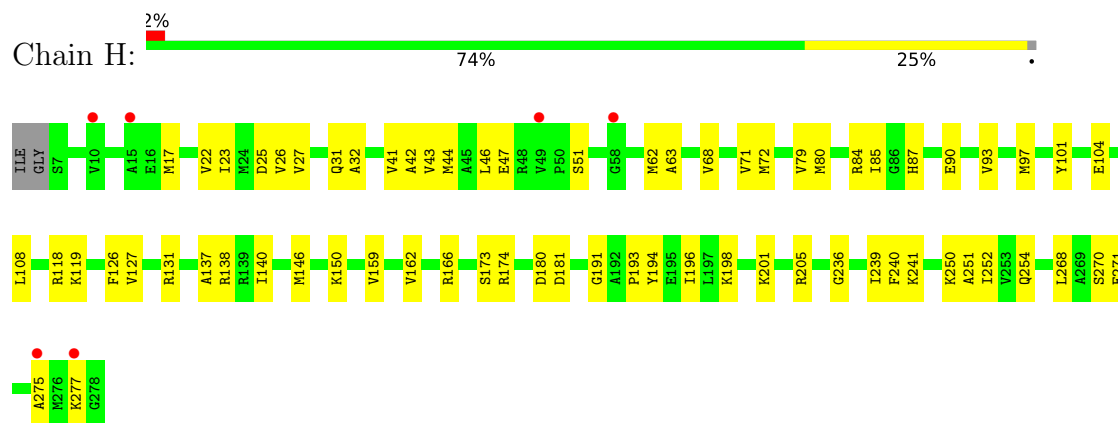
• Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS



• Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS



● Molecule 1: Pyridoxal 5'-phosphate synthase subunit PdxS



4 Data and refinement statistics i

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α , β , γ	192.42Å 192.42Å 448.20Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.80 – 2.83 49.80 – 2.83	Depositor EDS
% Data completeness (in resolution range)	99.6 (49.80-2.83) 99.8 (49.80-2.83)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.38 (at 2.81Å)	Xtrriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.202 , 0.260 0.201 , 0.263	Depositor DCC
R_{free} test set	3808 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	56.3	Xtrriage
Anisotropy	0.973	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 46.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.000 for -h,1/3*h-1/3*k-1/3*l,-4/3*h-8/3*k +1/3*l 0.000 for -1/3*h+1/3*k+1/3*l,-k,8/3*h+4/ 3*k+1/3*l 0.000 for -2/3*h-1/3*k-1/3*l,-1/3*h-2/3*k+ 1/3*l,-4/3*h+4/3*k+1/3*l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16416	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.37% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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: EDO, MG, CL, PO4

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	0.46	0/2074	0.68	0/2795
1	B	0.44	0/2037	0.66	0/2745
1	C	0.43	0/2080	0.65	0/2801
1	D	0.44	0/2072	0.65	0/2792
1	E	0.47	0/2020	0.67	0/2722
1	F	0.44	0/2043	0.66	0/2755
1	G	0.43	0/2051	0.63	0/2766
1	H	0.40	0/2049	0.63	0/2764
All	All	0.44	0/16426	0.65	0/22140

There are no bond length outliers.

There are no bond angle outliers.

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	2046	0	2057	34	0
1	B	2010	0	2014	35	0
1	C	2055	0	2068	39	0
1	D	2047	0	2056	38	0
1	E	1996	0	1999	53	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2018	0	2020	47	0
1	G	2026	0	2030	53	0
1	H	2024	0	2017	37	0
2	A	10	0	0	0	0
2	B	10	0	0	0	0
2	C	10	0	0	0	0
2	D	10	0	0	0	0
2	E	10	0	0	1	0
2	F	10	0	0	0	0
2	G	10	0	0	2	0
2	H	10	0	0	0	0
3	A	4	0	6	0	0
3	B	4	0	6	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	2	0	0	0	0
4	F	1	0	0	0	0
4	H	1	0	0	0	0
5	A	1	0	0	0	0
5	E	1	0	0	0	0
5	G	1	0	0	0	0
6	A	21	0	0	1	0
6	B	10	0	0	0	0
6	C	8	0	0	0	0
6	D	15	0	0	0	0
6	E	15	0	0	0	0
6	F	7	0	0	0	0
6	G	12	0	0	0	0
6	H	7	0	0	0	0
All	All	16416	0	16273	314	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 10.

All (314) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:80:MET:HG2	1:B:101:TYR:HB2	1.42	1.01
1:E:54:ARG:HG3	1:E:56:ALA:H	1.28	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:80:MET:HG2	1:H:101:TYR:HB2	1.51	0.92
1:A:80:MET:HG2	1:A:101:TYR:HB2	1.55	0.89
1:D:80:MET:HG2	1:D:101:TYR:HB2	1.58	0.86
1:C:195:GLU:HG3	1:F:195:GLU:HG3	1.61	0.83
1:F:85:ILE:HD11	1:F:106:GLU:HA	1.60	0.81
1:C:80:MET:HG2	1:C:101:TYR:HB2	1.63	0.81
1:A:250:LYS:O	1:A:254:GLN:HG3	1.89	0.73
1:G:85:ILE:HD11	1:G:106:GLU:HA	1.72	0.71
1:E:203:ASN:ND2	1:E:203:ASN:O	2.24	0.70
1:F:65:PRO:HG2	1:G:269:ALA:HB3	1.73	0.70
1:F:174:ARG:HD2	1:H:174:ARG:HD2	1.73	0.69
1:A:49:VAL:HG12	1:A:50:PRO:HD2	1.72	0.69
1:F:85:ILE:HD12	1:F:85:ILE:H	1.57	0.69
1:A:62:MET:HE1	1:A:94:LEU:HG	1.74	0.69
1:F:64:ASN:HD21	1:F:66:LYS:HD2	1.59	0.67
1:D:274:THR:HG22	1:D:275:ALA:H	1.60	0.67
1:A:7:SER:HB3	1:A:10:VAL:HG23	1.76	0.66
1:E:249:ALA:O	1:E:253:VAL:HG23	1.95	0.66
1:G:119:LYS:HE3	1:G:128:CYS:SG	2.36	0.66
1:C:48:ARG:NH1	1:C:56:ALA:HB3	2.12	0.65
1:D:48:ARG:HH21	1:D:53:ILE:HA	1.62	0.64
1:C:31:GLN:HG2	1:C:240:PHE:CZ	2.33	0.63
1:F:65:PRO:HB3	1:F:97:MET:HE3	1.79	0.63
1:C:10:VAL:HG11	1:D:10:VAL:HA	1.81	0.63
1:F:66:LYS:HE2	1:G:270:SER:HA	1.81	0.62
1:G:85:ILE:HD12	1:G:85:ILE:H	1.64	0.62
1:C:243:GLU:OE1	1:C:273:GLY:HA3	1.99	0.62
1:H:131:ARG:HD3	1:H:150:LYS:HD2	1.80	0.62
1:H:180:ASP:OD1	1:H:201:LYS:NZ	2.33	0.62
1:C:195:GLU:HG3	1:F:195:GLU:CG	2.30	0.61
1:H:140:ILE:HG22	1:H:196:ILE:HD12	1.83	0.61
1:B:274:THR:HG22	1:B:275:ALA:H	1.66	0.61
1:H:250:LYS:O	1:H:254:GLN:HG3	2.01	0.61
1:G:33:ARG:O	1:G:37:GLU:HG3	2.00	0.61
1:H:68:VAL:O	1:H:72:MET:HG3	2.00	0.61
1:C:246:GLU:O	1:C:250:LYS:HG3	2.00	0.60
1:C:27:VAL:HG22	1:C:31:GLN:OE1	2.00	0.60
1:C:31:GLN:HG2	1:C:240:PHE:CE2	2.36	0.60
1:E:12:ARG:HG2	1:E:208:VAL:HG12	1.83	0.60
1:F:80:MET:HG2	1:F:101:TYR:HB2	1.84	0.60
1:F:205:ARG:HD2	1:F:206:LEU:O	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:16:GLU:HG3	1:G:19:LYS:HE3	1.85	0.59
1:A:14:MET:HE2	1:A:14:MET:HA	1.85	0.58
1:C:131:ARG:HD3	1:C:150:LYS:HD2	1.84	0.58
1:E:194:TYR:CZ	1:E:198:LYS:HE2	2.37	0.58
1:E:131:ARG:HD3	1:E:150:LYS:HD2	1.84	0.58
1:C:195:GLU:O	1:C:199:GLN:HG3	2.04	0.58
1:F:131:ARG:HG3	1:F:150:LYS:HD3	1.86	0.58
1:G:25:ASP:HB3	1:G:46:LEU:HD21	1.86	0.58
1:B:254:GLN:HB3	1:B:268:LEU:HD11	1.85	0.57
1:E:62:MET:HG2	1:E:90:GLU:HG2	1.86	0.57
1:D:205:ARG:NH1	1:D:206:LEU:O	2.37	0.57
1:G:216:VAL:HB	1:G:235:VAL:HG22	1.84	0.57
1:G:80:MET:HG2	1:G:101:TYR:HB2	1.87	0.57
1:F:65:PRO:HB3	1:F:97:MET:CE	2.34	0.57
1:F:195:GLU:H	1:F:195:GLU:CD	2.08	0.57
1:B:251:ALA:HA	1:B:268:LEU:HD22	1.85	0.57
1:A:68:VAL:HB	1:A:97:MET:HE1	1.87	0.57
1:A:72:MET:HA	1:A:79:VAL:HG21	1.88	0.56
1:D:31:GLN:HG2	1:D:240:PHE:CE1	2.41	0.56
1:H:23:ILE:HG12	1:H:42:ALA:HB3	1.88	0.56
1:C:113:GLU:HG3	1:H:159:VAL:HG21	1.87	0.56
1:B:160:GLU:OE1	1:B:163:ARG:NH1	2.39	0.55
1:D:10:VAL:O	1:D:14:MET:HG3	2.06	0.55
1:E:248:PHE:HZ	1:E:273:GLY:HA2	1.71	0.55
1:B:167:GLN:O	1:B:171:GLU:HG3	2.05	0.55
1:B:194:TYR:CE2	1:B:198:LYS:HE2	2.41	0.55
1:G:190:ILE:HD11	1:G:197:LEU:HD11	1.89	0.55
1:C:49:VAL:HG12	1:C:50:PRO:HD2	1.87	0.55
1:G:119:LYS:HB3	1:G:126:PHE:CD2	2.42	0.55
1:E:194:TYR:CE2	1:E:198:LYS:HE2	2.42	0.55
1:E:62:MET:HE2	1:E:94:LEU:HG	1.88	0.55
1:F:203:ASN:ND2	1:F:204:GLY:H	2.05	0.55
1:B:162:VAL:O	1:B:166:ARG:HG3	2.08	0.54
1:E:68:VAL:O	1:E:72:MET:HG3	2.08	0.54
1:C:250:LYS:O	1:C:254:GLN:HG2	2.08	0.54
1:F:33:ARG:O	1:F:37:GLU:HG3	2.08	0.54
1:D:195:GLU:HG3	1:E:195:GLU:HG3	1.88	0.54
1:F:12:ARG:HG2	1:F:208:VAL:HG12	1.89	0.53
1:A:218:THR:O	1:A:221:ASP:HB2	2.08	0.53
1:D:27:VAL:HG22	1:D:31:GLN:OE1	2.08	0.53
1:G:264:LEU:O	1:G:268:LEU:HG	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:131:ARG:HG2	1:E:164:HIS:NE2	2.23	0.53
1:E:270:SER:C	1:E:271:GLU:HG2	2.26	0.53
1:H:239:ILE:HD11	1:H:252:ILE:HD12	1.91	0.53
1:D:167:GLN:O	1:D:171:GLU:HG3	2.09	0.53
1:H:62:MET:HE3	1:H:90:GLU:HG2	1.89	0.53
1:B:163:ARG:O	1:B:167:GLN:HB2	2.08	0.53
1:B:263:GLU:H	1:B:263:GLU:CD	2.12	0.53
1:C:251:ALA:HA	1:C:268:LEU:HD22	1.89	0.53
1:C:254:GLN:HB2	1:C:268:LEU:HD11	1.91	0.53
1:D:68:VAL:O	1:D:72:MET:HG3	2.08	0.52
1:E:172:VAL:O	1:E:176:THR:HG23	2.09	0.52
1:E:47:GLU:HG3	1:E:67:ILE:HD12	1.92	0.52
1:E:190:ILE:HD11	1:E:197:LEU:HD11	1.90	0.52
1:G:30:GLU:O	1:G:34:ILE:HG13	2.08	0.52
1:G:72:MET:HE1	1:G:99:VAL:HA	1.92	0.52
1:F:25:ASP:HA	1:F:44:MET:HB3	1.92	0.52
1:F:248:PHE:CE2	1:F:271:GLU:HG3	2.44	0.52
1:C:140:ILE:HG22	1:C:196:ILE:HD12	1.92	0.52
1:F:82:LYS:HB3	1:F:108:LEU:HD11	1.92	0.52
1:C:72:MET:HA	1:C:79:VAL:HG21	1.91	0.52
1:E:235:VAL:HG13	1:E:239:ILE:HD12	1.92	0.52
1:G:250:LYS:O	1:G:254:GLN:HG3	2.10	0.52
1:B:127:VAL:HA	1:B:146:MET:O	2.10	0.51
1:G:85:ILE:HD13	1:G:110:PRO:HG3	1.91	0.51
1:H:251:ALA:HA	1:H:268:LEU:HD22	1.93	0.51
1:B:64:ASN:HB3	1:B:67:ILE:HD12	1.91	0.51
1:C:54:ARG:HH22	1:C:152:GLU:HG2	1.75	0.51
1:F:263:GLU:CD	1:F:263:GLU:H	2.14	0.51
1:C:114:GLU:O	1:F:185:THR:HG21	2.11	0.51
1:C:180:ASP:OD1	1:C:201:LYS:NZ	2.40	0.51
1:F:160:GLU:OE1	1:F:163:ARG:NH1	2.42	0.51
1:D:195:GLU:OE1	1:E:195:GLU:HB2	2.11	0.51
1:G:205:ARG:NH2	1:G:208:VAL:O	2.43	0.51
1:B:10:VAL:O	1:B:14:MET:HG3	2.10	0.51
1:D:120:ASP:N	1:D:120:ASP:OD1	2.45	0.50
1:H:194:TYR:CZ	1:H:198:LYS:HE2	2.47	0.50
1:D:249:ALA:O	1:D:253:VAL:HG23	2.11	0.50
1:F:270:SER:N	1:F:271:GLU:OE2	2.35	0.50
1:H:26:VAL:HB	1:H:31:GLN:HB2	1.93	0.50
1:F:72:MET:HA	1:F:79:VAL:HG21	1.93	0.50
1:F:30:GLU:O	1:F:34:ILE:HG13	2.09	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:85:ILE:HD13	1:F:110:PRO:HG3	1.93	0.50
1:F:203:ASN:HD22	1:F:204:GLY:H	1.59	0.50
1:G:82:LYS:HG2	1:G:105:SER:HB2	1.94	0.50
1:F:241:LYS:HB2	1:F:275:ALA:HB1	1.94	0.50
1:A:277:LYS:HB2	1:E:59:VAL:HG23	1.93	0.50
1:E:9:ARG:H	1:E:9:ARG:CD	2.25	0.50
1:H:138:ARG:NH1	1:H:191:GLY:O	2.39	0.50
1:C:158:ILE:O	1:C:162:VAL:HG23	2.11	0.49
1:B:59:VAL:HG23	1:D:277:LYS:HB2	1.94	0.49
1:E:237:SER:O	1:E:241:LYS:HB2	2.12	0.49
1:E:274:THR:OG1	1:E:275:ALA:N	2.42	0.49
1:G:246:GLU:O	1:G:250:LYS:HG3	2.11	0.49
1:A:186:PHE:O	1:A:190:ILE:HG12	2.12	0.49
1:E:127:VAL:HG23	1:E:146:MET:HB3	1.94	0.49
1:G:127:VAL:HA	1:G:146:MET:O	2.13	0.49
1:A:254:GLN:HB2	1:A:268:LEU:HD11	1.95	0.48
1:D:25:ASP:HB2	1:D:236:GLY:CA	2.43	0.48
1:E:44:MET:HG2	1:E:82:LYS:HE2	1.95	0.48
1:F:253:VAL:O	1:F:257:THR:HG23	2.13	0.48
1:A:60:ALA:H	1:A:109:THR:HG23	1.78	0.48
1:G:29:ALA:O	1:G:33:ARG:HG3	2.13	0.48
1:A:185:THR:HG21	1:B:114:GLU:O	2.14	0.48
1:B:195:GLU:CD	1:B:195:GLU:H	2.16	0.48
1:F:19:LYS:NZ	1:F:205:ARG:HH21	2.11	0.48
1:C:87:HIS:HB3	1:C:90:GLU:HB2	1.95	0.48
1:E:226:MET:HE3	1:E:226:MET:HA	1.96	0.48
1:C:184:MET:HE3	1:F:138:ARG:HA	1.95	0.48
1:A:97:MET:HE3	1:A:97:MET:HB3	1.72	0.48
1:A:274:THR:OG1	1:A:275:ALA:N	2.47	0.48
1:A:277:LYS:HB2	1:E:59:VAL:CG2	2.44	0.48
1:D:72:MET:HA	1:D:79:VAL:HG21	1.95	0.48
1:G:72:MET:HA	1:G:79:VAL:HG21	1.96	0.47
1:F:66:LYS:HA	1:F:69:GLU:HG2	1.95	0.47
1:B:148:ARG:HA	1:B:211:PHE:O	2.14	0.47
1:G:153:PRO:HA	2:G:302:PO4:O3	2.14	0.47
1:G:101:TYR:CD1	1:G:125:PRO:HG2	2.50	0.47
1:D:194:TYR:CZ	1:D:198:LYS:HD3	2.50	0.47
1:F:19:LYS:HZ3	1:F:205:ARG:HH21	1.62	0.47
1:F:64:ASN:ND2	1:F:66:LYS:HD2	2.27	0.47
1:G:103:ASP:HA	1:G:127:VAL:HG13	1.97	0.47
1:B:152:GLU:HG2	1:B:160:GLU:HG3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:68:VAL:O	1:C:72:MET:HG3	2.15	0.47
1:E:131:ARG:HG2	1:E:164:HIS:CE1	2.50	0.47
1:D:87:HIS:CG	1:D:90:GLU:HG3	2.50	0.46
1:D:246:GLU:O	1:D:250:LYS:HG3	2.16	0.46
1:E:72:MET:HA	1:E:79:VAL:HG21	1.97	0.46
1:H:93:VAL:O	1:H:97:MET:HG3	2.15	0.46
1:A:137:ALA:HB1	1:A:193:PRO:HD2	1.97	0.46
1:G:247:LYS:HA	1:G:247:LYS:HD3	1.67	0.46
1:H:25:ASP:HA	1:H:44:MET:HB3	1.97	0.46
1:B:43:VAL:HG23	1:B:79:VAL:HG22	1.97	0.46
1:B:242:SER:O	1:B:245:PRO:HD3	2.16	0.46
1:C:48:ARG:HH11	1:C:56:ALA:HB3	1.80	0.46
1:H:87:HIS:CE1	1:H:90:GLU:HG3	2.50	0.46
1:H:194:TYR:CE2	1:H:198:LYS:HE2	2.50	0.46
1:A:172:VAL:O	1:A:176:THR:HG23	2.16	0.46
1:C:92:ARG:HD3	1:C:122:PHE:CE2	2.51	0.46
1:E:65:PRO:HB3	1:E:97:MET:SD	2.56	0.46
1:E:102:ILE:HD12	1:E:124:VAL:HG11	1.98	0.46
1:E:118:ARG:HD2	1:E:118:ARG:HA	1.72	0.46
1:F:64:ASN:HB3	1:F:67:ILE:HD13	1.97	0.46
1:B:46:LEU:HD11	1:B:49:VAL:HA	1.98	0.46
1:C:27:VAL:HG12	1:C:46:LEU:O	2.15	0.46
1:C:26:VAL:HB	1:C:31:GLN:HB3	1.98	0.46
1:E:246:GLU:O	1:E:250:LYS:HG3	2.16	0.46
1:G:158:ILE:HD11	1:G:216:VAL:HG22	1.98	0.46
1:G:46:LEU:HD13	1:G:48:ARG:O	2.16	0.45
1:E:261:ASP:OD1	1:E:263:GLU:HG3	2.15	0.45
1:G:18:GLN:HG3	1:G:41:VAL:HG22	1.98	0.45
1:H:127:VAL:HG23	1:H:146:MET:HG2	1.97	0.45
1:G:49:VAL:HG23	1:G:52:ASP:OD1	2.17	0.45
1:A:62:MET:CE	1:A:94:LEU:HG	2.46	0.45
1:A:95:GLU:HB2	1:A:124:VAL:HG11	1.98	0.45
1:B:244:ASP:CG	1:B:247:LYS:HG3	2.36	0.45
1:D:87:HIS:CE1	1:D:90:GLU:HG3	2.52	0.45
1:E:188:LYS:HB3	1:E:188:LYS:HE2	1.75	0.45
1:E:218:THR:O	1:E:221:ASP:HB2	2.17	0.45
1:A:62:MET:HG2	1:A:90:GLU:CD	2.37	0.45
1:B:129:GLY:HA2	1:B:148:ARG:O	2.17	0.45
1:G:94:LEU:HD23	1:G:94:LEU:HA	1.80	0.45
1:A:180:ASP:OD1	1:A:201:LYS:NZ	2.48	0.44
1:A:269:ALA:HB3	1:E:65:PRO:HG2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:87:HIS:CD2	1:D:90:GLU:HG3	2.53	0.44
1:E:131:ARG:HG2	1:E:164:HIS:CD2	2.53	0.44
1:F:72:MET:HE1	1:F:98:GLY:O	2.17	0.44
1:F:147:LEU:O	1:F:210:ASN:HA	2.18	0.44
1:H:62:MET:HG3	1:H:63:ALA:O	2.17	0.44
1:D:94:LEU:O	1:D:99:VAL:HG22	2.17	0.44
1:F:68:VAL:O	1:F:72:MET:HG3	2.18	0.44
1:G:131:ARG:HG2	1:G:164:HIS:CE1	2.53	0.44
1:H:27:VAL:HG22	1:H:31:GLN:OE1	2.17	0.44
1:A:190:ILE:HD11	1:A:197:LEU:HD11	1.99	0.44
1:G:158:ILE:O	1:G:162:VAL:HG23	2.18	0.44
1:D:155:THR:O	1:D:277:LYS:HA	2.18	0.44
1:E:9:ARG:H	1:E:9:ARG:HD3	1.83	0.44
1:F:200:ILE:HG12	1:F:207:PRO:HD3	2.00	0.44
1:B:30:GLU:O	1:B:34:ILE:HG13	2.18	0.44
1:E:101:TYR:CD2	1:E:125:PRO:HG2	2.52	0.44
1:C:68:VAL:HB	1:C:97:MET:HE1	1.99	0.44
1:C:160:GLU:OE2	1:C:163:ARG:NH1	2.51	0.44
1:D:25:ASP:HB2	1:D:236:GLY:HA2	2.00	0.44
1:F:175:LEU:HA	1:F:178:MET:HE3	2.00	0.44
1:H:241:LYS:HA	1:H:241:LYS:HD3	1.74	0.44
1:C:138:ARG:O	1:C:142:GLU:HG3	2.18	0.43
1:B:271:GLU:HB2	1:B:272:LEU:H	1.67	0.43
1:F:66:LYS:CE	1:G:270:SER:HA	2.47	0.43
1:C:12:ARG:HG2	1:C:208:VAL:HG12	1.99	0.43
1:D:196:ILE:O	1:D:200:ILE:HG13	2.18	0.43
1:A:212:ALA:HB1	1:A:225:MET:HG3	2.00	0.43
1:D:102:ILE:HD12	1:D:124:VAL:HG11	2.00	0.43
1:E:50:PRO:HG2	2:E:302:PO4:O4	2.19	0.43
1:F:211:PHE:CE2	1:F:232:GLY:HA3	2.53	0.43
1:H:32:ALA:HB2	1:H:71:VAL:HG13	2.00	0.43
1:B:18:GLN:HB3	1:B:41:VAL:HG21	2.00	0.43
1:G:119:LYS:HZ3	1:G:119:LYS:HG3	1.79	0.43
1:H:118:ARG:HD2	1:H:118:ARG:HA	1.69	0.43
1:B:188:LYS:HB3	1:B:188:LYS:HE3	1.59	0.43
1:E:87:HIS:HB3	1:E:90:GLU:HB2	2.01	0.43
1:E:97:MET:HE3	1:E:97:MET:HB3	1.79	0.43
1:H:62:MET:HE3	1:H:90:GLU:CG	2.49	0.43
1:H:137:ALA:HB1	1:H:193:PRO:HD2	2.01	0.43
1:C:268:LEU:O	1:C:272:LEU:HD13	2.19	0.43
1:E:62:MET:HG2	1:E:90:GLU:CG	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:21:GLY:HA3	1:G:41:VAL:HG11	2.01	0.43
1:B:101:TYR:CD1	1:B:125:PRO:HG2	2.54	0.42
1:D:175:LEU:HA	1:D:178:MET:HE3	2.00	0.42
1:A:68:VAL:O	1:A:72:MET:HG3	2.19	0.42
1:B:246:GLU:O	1:B:250:LYS:HG3	2.19	0.42
1:C:174:ARG:HG3	1:G:174:ARG:HG3	2.00	0.42
1:F:172:VAL:O	1:F:176:THR:HG23	2.19	0.42
1:H:25:ASP:HB3	1:H:46:LEU:HD21	2.02	0.42
1:G:61:ARG:HG2	1:G:84:ARG:CZ	2.48	0.42
1:D:65:PRO:HB3	1:D:97:MET:SD	2.58	0.42
1:F:29:ALA:O	1:F:33:ARG:HG3	2.20	0.42
1:H:85:ILE:HA	1:H:104:GLU:HG2	2.00	0.42
1:B:120:ASP:N	1:B:120:ASP:OD1	2.52	0.42
1:C:174:ARG:HD2	1:G:174:ARG:HD2	2.01	0.42
1:D:62:MET:HG3	1:D:63:ALA:O	2.20	0.42
1:D:158:ILE:HA	1:D:158:ILE:HD12	1.80	0.42
1:F:23:ILE:HG23	1:F:42:ALA:HB3	2.01	0.42
1:G:12:ARG:HG2	1:G:208:VAL:HG12	2.01	0.42
1:H:31:GLN:HB3	1:H:240:PHE:CZ	2.54	0.42
1:D:131:ARG:HG3	1:D:150:LYS:HD2	2.02	0.42
1:H:22:VAL:H	1:H:41:VAL:HG22	1.85	0.42
1:H:84:ARG:HG2	1:H:108:LEU:HB3	2.00	0.42
1:H:162:VAL:O	1:H:166:ARG:HG3	2.20	0.42
1:D:114:GLU:O	1:E:185:THR:HG21	2.20	0.42
1:D:195:GLU:CD	1:E:195:GLU:HB2	2.39	0.42
1:E:228:LEU:HD23	1:E:228:LEU:HA	1.84	0.42
1:G:152:GLU:HG2	1:G:155:THR:HG21	2.02	0.42
1:H:119:LYS:HG2	1:H:126:PHE:CD2	2.55	0.42
1:D:64:ASN:OD1	1:D:65:PRO:HD2	2.20	0.42
1:E:120:ASP:OD1	1:E:120:ASP:N	2.53	0.42
1:G:218:THR:O	1:G:221:ASP:HB2	2.20	0.42
1:G:248:PHE:HE1	1:G:271:GLU:HB2	1.85	0.42
1:B:25:ASP:HB3	1:B:46:LEU:HD21	2.02	0.41
1:B:228:LEU:HD23	1:B:228:LEU:HA	1.83	0.41
1:E:25:ASP:HA	1:E:44:MET:HB3	2.02	0.41
1:G:27:VAL:HG22	1:G:31:GLN:OE1	2.20	0.41
1:H:87:HIS:HB3	1:H:90:GLU:HB2	2.03	0.41
1:C:194:TYR:CE2	1:C:198:LYS:HE2	2.54	0.41
1:G:147:LEU:O	1:G:210:ASN:HA	2.20	0.41
1:G:178:MET:O	1:G:201:LYS:NZ	2.46	0.41
1:A:162:VAL:HG13	1:A:228:LEU:HD13	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:43:VAL:HG23	1:H:79:VAL:HG22	2.03	0.41
1:B:217:ALA:O	1:B:274:THR:HG21	2.21	0.41
1:G:112:ASP:OD1	1:G:115:TYR:N	2.46	0.41
1:A:158:ILE:HA	1:A:158:ILE:HD12	1.86	0.41
1:E:61:ARG:HD3	1:E:84:ARG:NH2	2.35	0.41
1:E:148:ARG:HA	1:E:211:PHE:O	2.21	0.41
1:G:65:PRO:HB3	1:G:97:MET:SD	2.61	0.41
1:G:214:GLY:HA2	2:G:302:PO4:O3	2.20	0.41
1:A:11:LYS:HE2	6:A:402:HOH:O	2.21	0.41
1:B:158:ILE:HD12	1:B:158:ILE:HA	1.80	0.41
1:C:61:ARG:HG2	1:C:84:ARG:CZ	2.51	0.41
1:D:25:ASP:HB2	1:D:236:GLY:HA3	2.03	0.41
1:E:213:ALA:HB2	1:E:234:PHE:HB2	2.02	0.41
1:F:167:GLN:O	1:F:171:GLU:HG3	2.21	0.41
1:A:212:ALA:CB	1:A:225:MET:HG3	2.50	0.41
1:E:47:GLU:CG	1:E:67:ILE:HD12	2.51	0.41
1:G:62:MET:SD	1:G:90:GLU:HG2	2.60	0.41
1:G:146:MET:HG3	1:G:209:VAL:CG2	2.51	0.41
1:A:181:ASP:OD1	1:D:166:ARG:NH2	2.54	0.40
1:G:193:PRO:HB2	1:G:196:ILE:HG12	2.02	0.40
1:A:50:PRO:HA	1:A:53:ILE:HD12	2.02	0.40
1:A:246:GLU:O	1:A:250:LYS:HG3	2.22	0.40
1:H:44:MET:HG3	1:H:46:LEU:HD23	2.04	0.40
1:B:23:ILE:HD12	1:B:234:PHE:CZ	2.56	0.40
1:D:48:ARG:HB2	1:D:53:ILE:HG12	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	272/274 (99%)	263 (97%)	9 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	263/274 (96%)	247 (94%)	15 (6%)	1 (0%)	30	49
1	C	272/274 (99%)	257 (94%)	13 (5%)	2 (1%)	19	36
1	D	271/274 (99%)	258 (95%)	11 (4%)	2 (1%)	19	36
1	E	262/274 (96%)	240 (92%)	20 (8%)	2 (1%)	16	32
1	F	267/274 (97%)	249 (93%)	17 (6%)	1 (0%)	30	49
1	G	269/274 (98%)	258 (96%)	11 (4%)	0	100	100
1	H	270/274 (98%)	256 (95%)	11 (4%)	3 (1%)	12	24
All	All	2146/2192 (98%)	2028 (94%)	107 (5%)	11 (0%)	25	44

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	271	GLU
1	H	236	GLY
1	H	275	ALA
1	C	275	ALA
1	D	236	GLY
1	F	236	GLY
1	H	17	MET
1	C	236	GLY
1	D	270	SER
1	B	236	GLY
1	E	236	GLY

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	210/211 (100%)	209 (100%)	1 (0%)	86	94
1	B	208/211 (99%)	202 (97%)	6 (3%)	37	62
1	C	211/211 (100%)	202 (96%)	9 (4%)	25	48
1	D	210/211 (100%)	202 (96%)	8 (4%)	28	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	204/211 (97%)	199 (98%)	5 (2%)	42	68
1	F	207/211 (98%)	192 (93%)	15 (7%)	12	25
1	G	207/211 (98%)	201 (97%)	6 (3%)	37	62
1	H	205/211 (97%)	197 (96%)	8 (4%)	27	52
All	All	1662/1688 (98%)	1604 (96%)	58 (4%)	31	56

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	SER
1	B	49	VAL
1	B	62	MET
1	B	167	GLN
1	B	173	SER
1	B	178	MET
1	B	248	PHE
1	C	19	LYS
1	C	46	LEU
1	C	47	GLU
1	C	49	VAL
1	C	51	SER
1	C	54	ARG
1	C	62	MET
1	C	66	LYS
1	C	179	ASN
1	D	46	LEU
1	D	48	ARG
1	D	76	SER
1	D	109	THR
1	D	127	VAL
1	D	237	SER
1	D	270	SER
1	D	276	MET
1	E	9	ARG
1	E	179	ASN
1	E	180	ASP
1	E	203	ASN
1	E	274	THR
1	F	8	ASP
1	F	43	VAL
1	F	46	LEU

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Mol	Chain	Res	Type
1	F	48	ARG
1	F	173	SER
1	F	174	ARG
1	F	181	ASP
1	F	188	LYS
1	F	203	ASN
1	F	205	ARG
1	F	244	ASP
1	F	247	LYS
1	F	248	PHE
1	F	250	LYS
1	F	274	THR
1	G	49	VAL
1	G	105	SER
1	G	119	LYS
1	G	148	ARG
1	G	185	THR
1	G	195	GLU
1	H	47	GLU
1	H	51	SER
1	H	173	SER
1	H	181	ASP
1	H	205	ARG
1	H	270	SER
1	H	271	GLU
1	H	277	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	121	GLN
1	C	179	ASN
1	E	179	ASN
1	F	121	GLN
1	F	203	ASN
1	G	121	GLN
1	H	169	ASN

5.3.3 RNA

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](#)

Of 29 ligands modelled in this entry, 11 are monoatomic - leaving 18 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	PO4	H	301	-	4,4,4	0.69	0	6,6,6	0.83	0
2	PO4	H	302	-	4,4,4	0.68	0	6,6,6	0.42	0
2	PO4	E	302	-	4,4,4	0.84	0	6,6,6	0.43	0
2	PO4	F	301	-	4,4,4	0.94	0	6,6,6	0.46	0
2	PO4	A	301	-	4,4,4	0.91	0	6,6,6	0.68	0
2	PO4	D	301	-	4,4,4	0.90	0	6,6,6	0.39	0
2	PO4	E	301	-	4,4,4	1.06	0	6,6,6	0.80	0
2	PO4	G	302	-	4,4,4	0.68	0	6,6,6	0.73	0
2	PO4	A	302	-	4,4,4	0.72	0	6,6,6	0.73	0
2	PO4	F	302	-	4,4,4	0.64	0	6,6,6	0.71	0
3	EDO	A	303	-	3,3,3	0.53	0	2,2,2	0.34	0
2	PO4	C	301	-	4,4,4	1.07	0	6,6,6	0.73	0
2	PO4	B	301	-	4,4,4	1.08	0	6,6,6	0.40	0
2	PO4	D	302	-	4,4,4	0.62	0	6,6,6	0.61	0
2	PO4	G	301	-	4,4,4	0.87	0	6,6,6	0.47	0
2	PO4	B	302	-	4,4,4	0.73	0	6,6,6	0.67	0
2	PO4	C	302	-	4,4,4	0.77	0	6,6,6	0.37	0
3	EDO	B	303	-	3,3,3	0.59	0	2,2,2	0.17	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
3	EDO	B	303	-	-	0/1/1/1	-
3	EDO	A	303	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

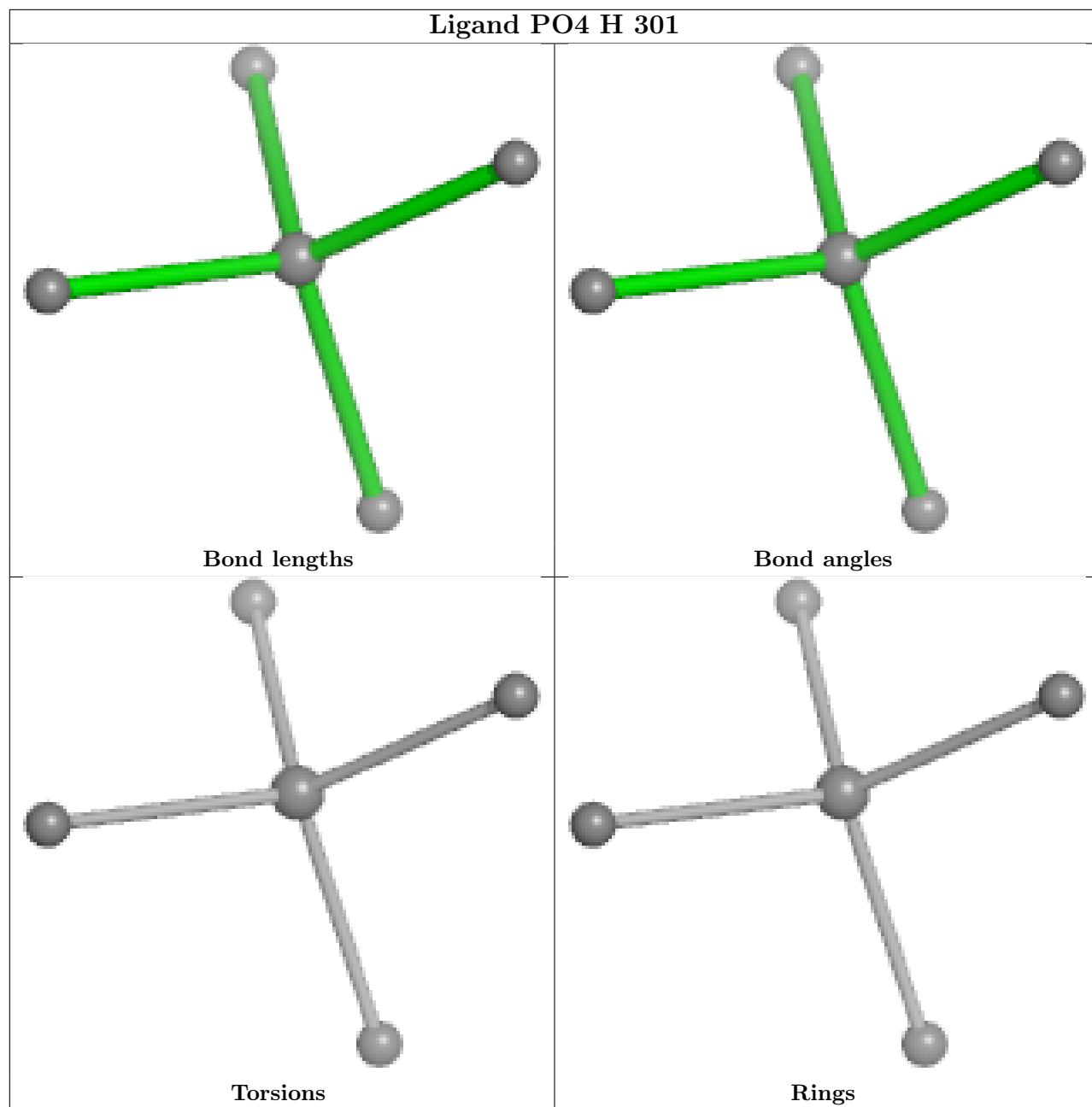
There are no torsion outliers.

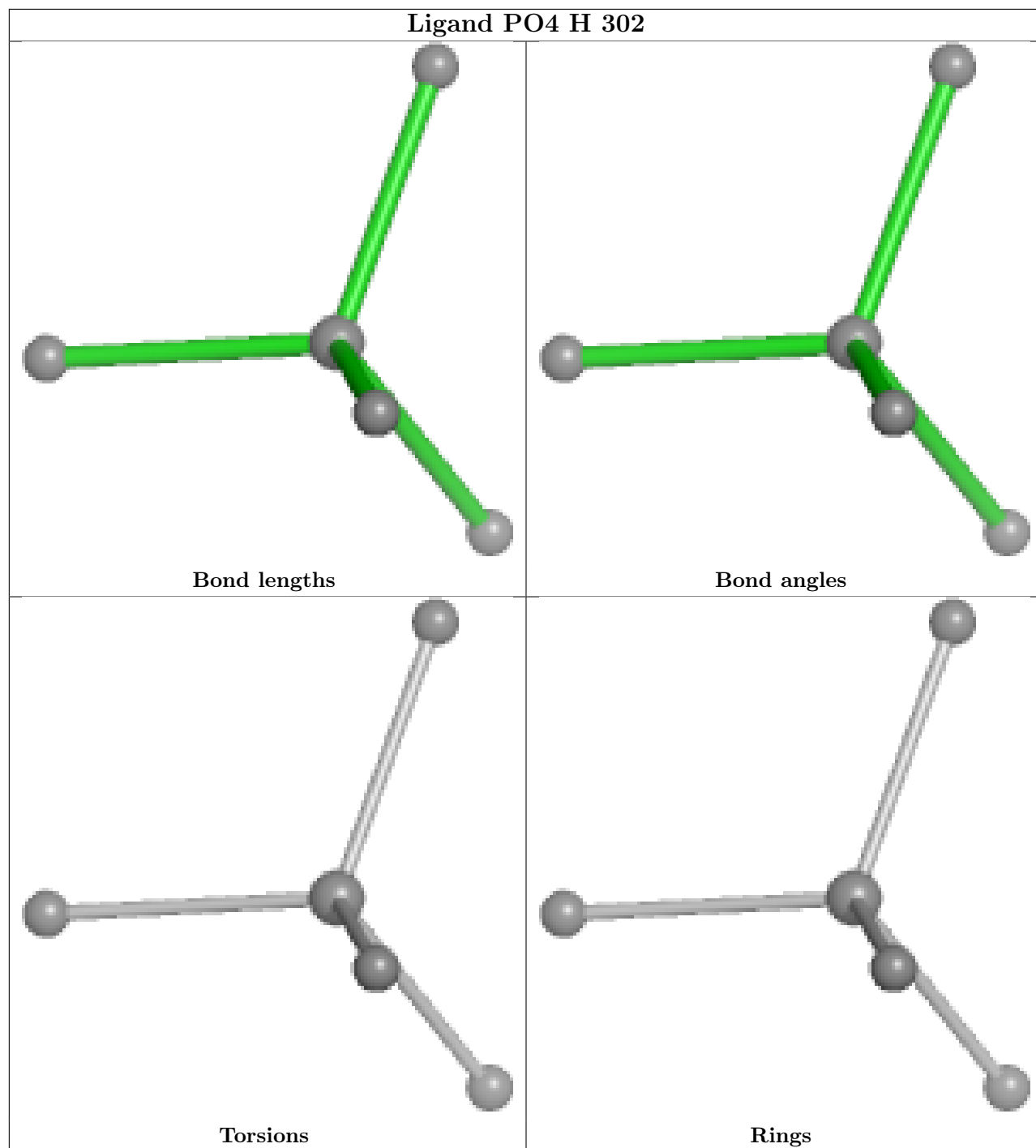
There are no ring outliers.

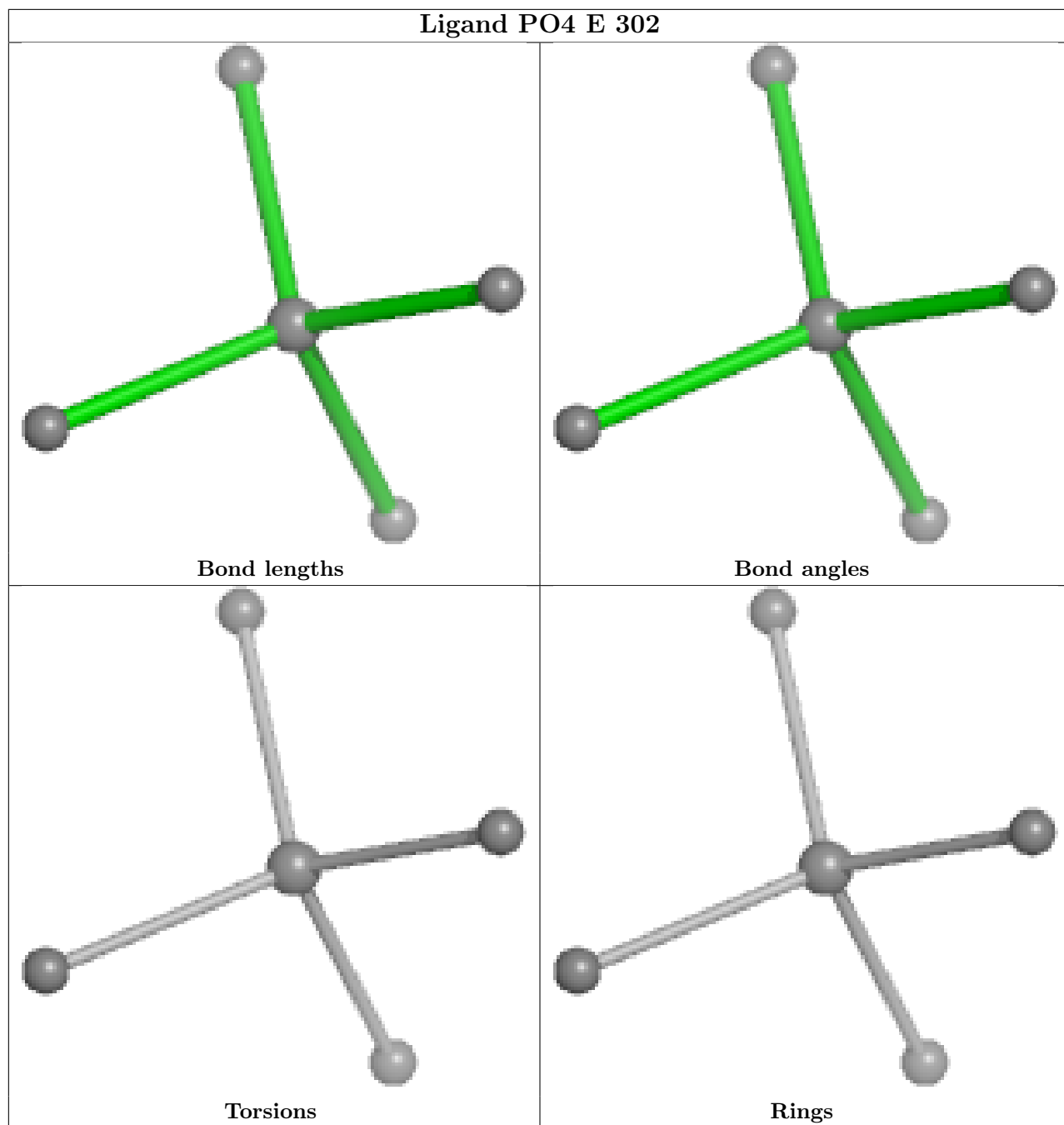
2 monomers are involved in 3 short contacts:

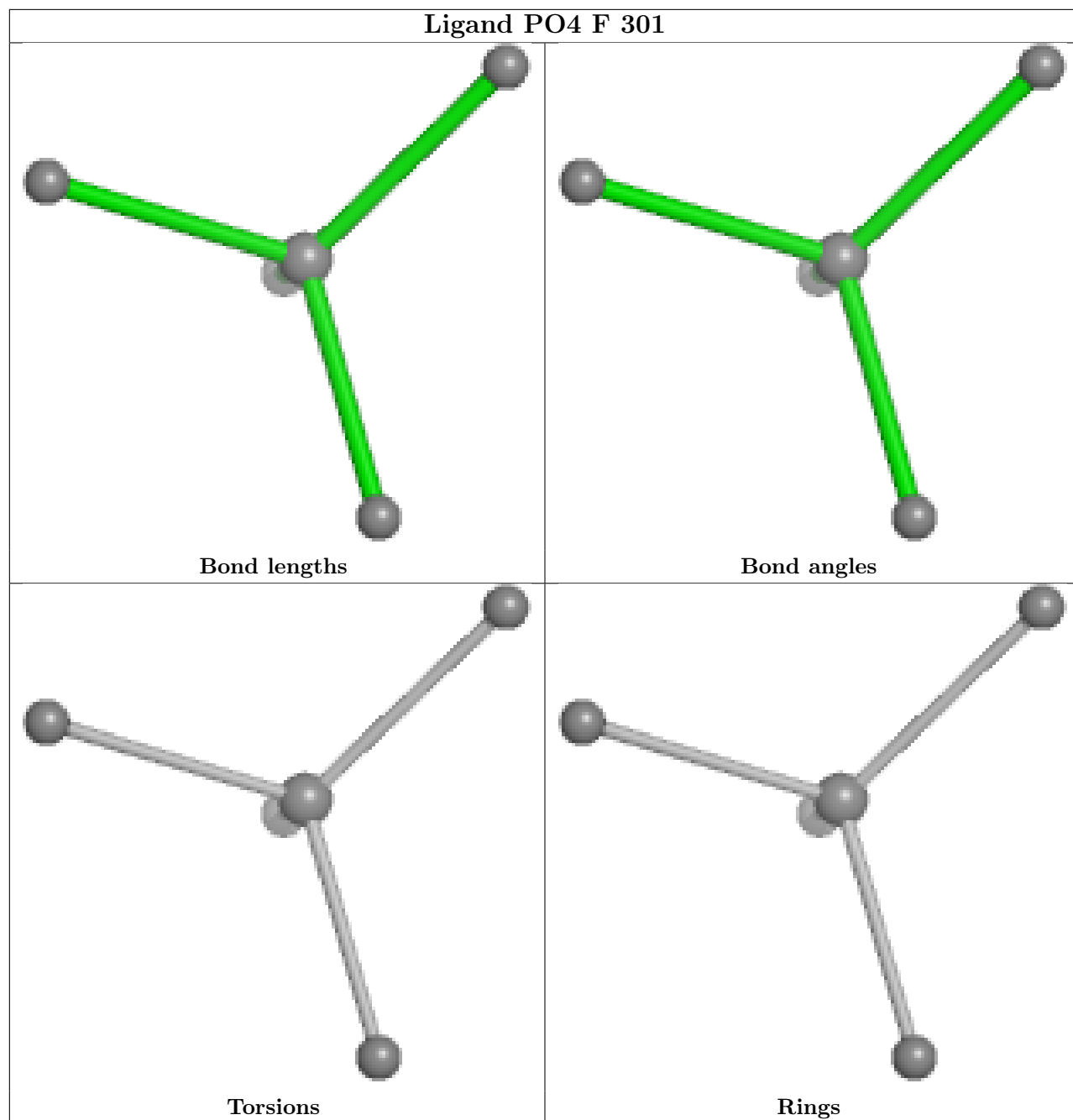
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	302	PO4	1	0
2	G	302	PO4	2	0

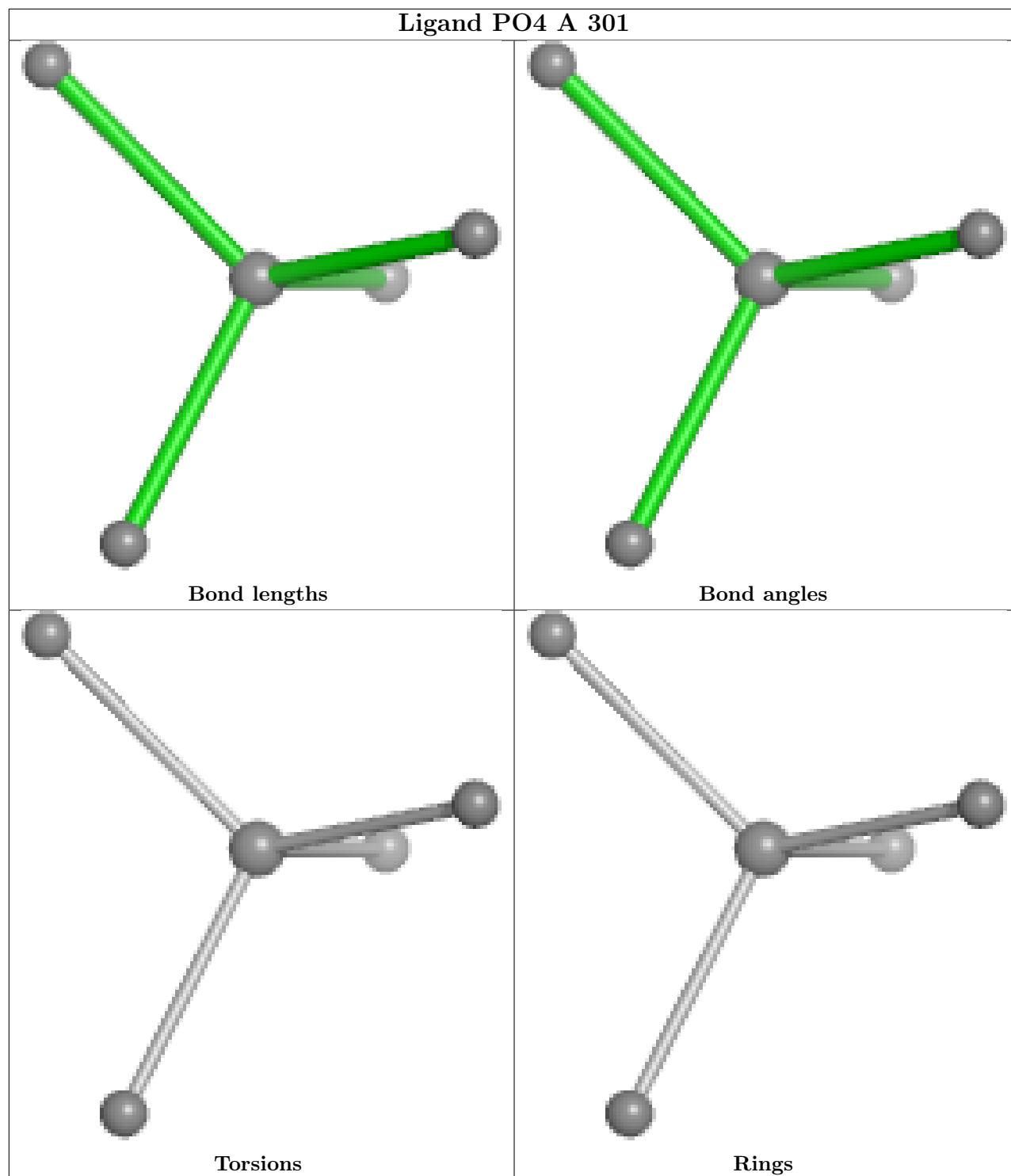
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

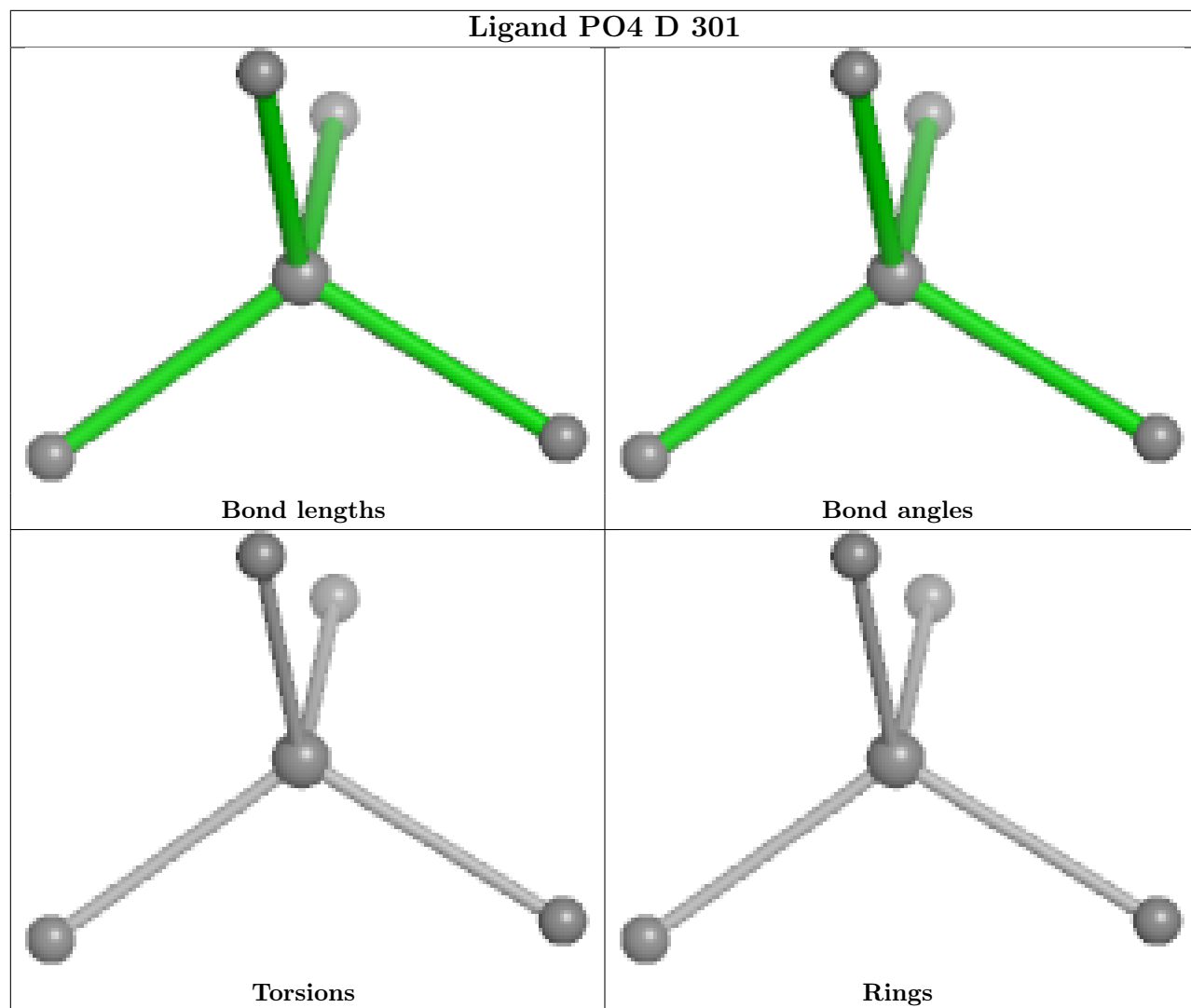


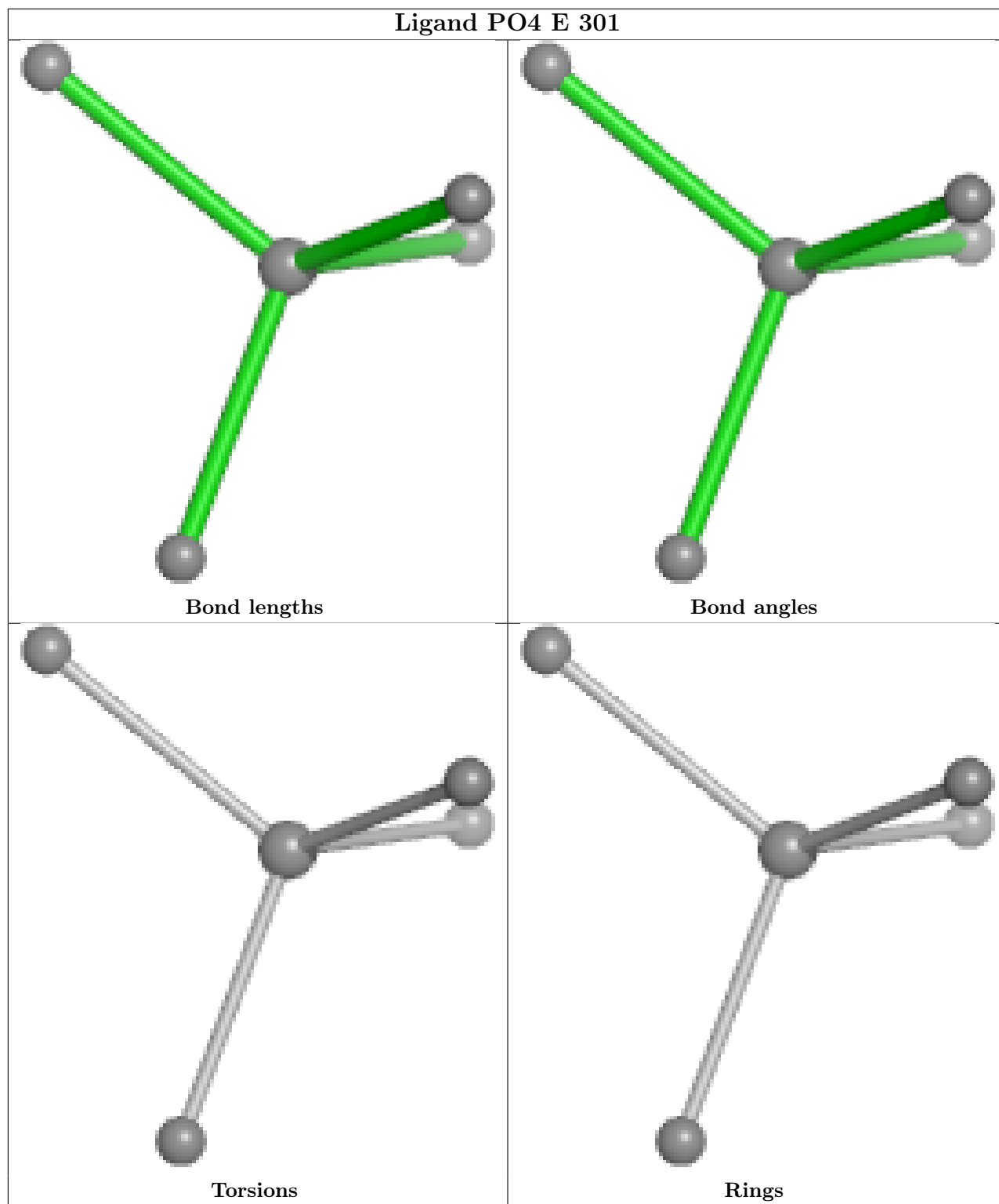


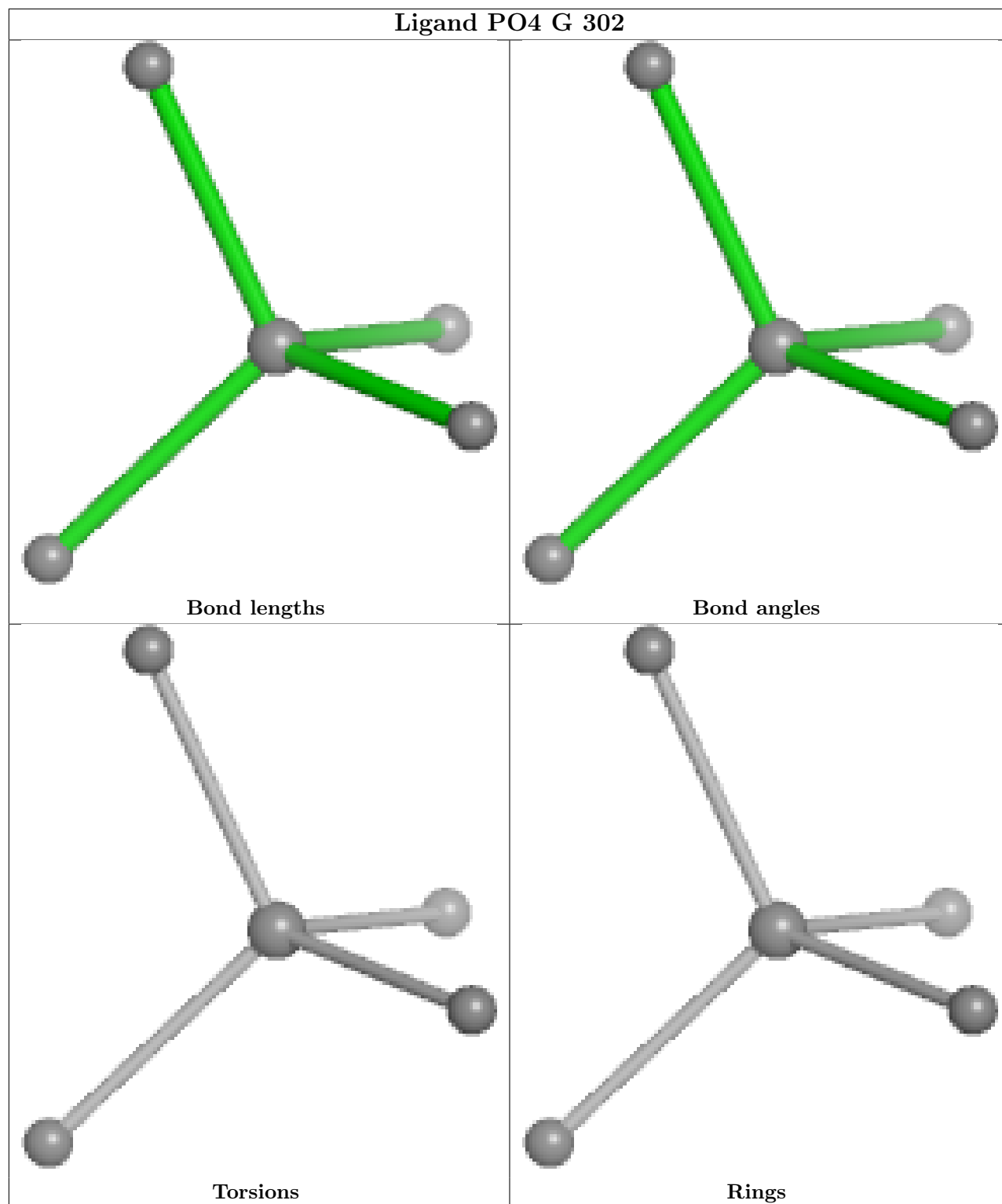


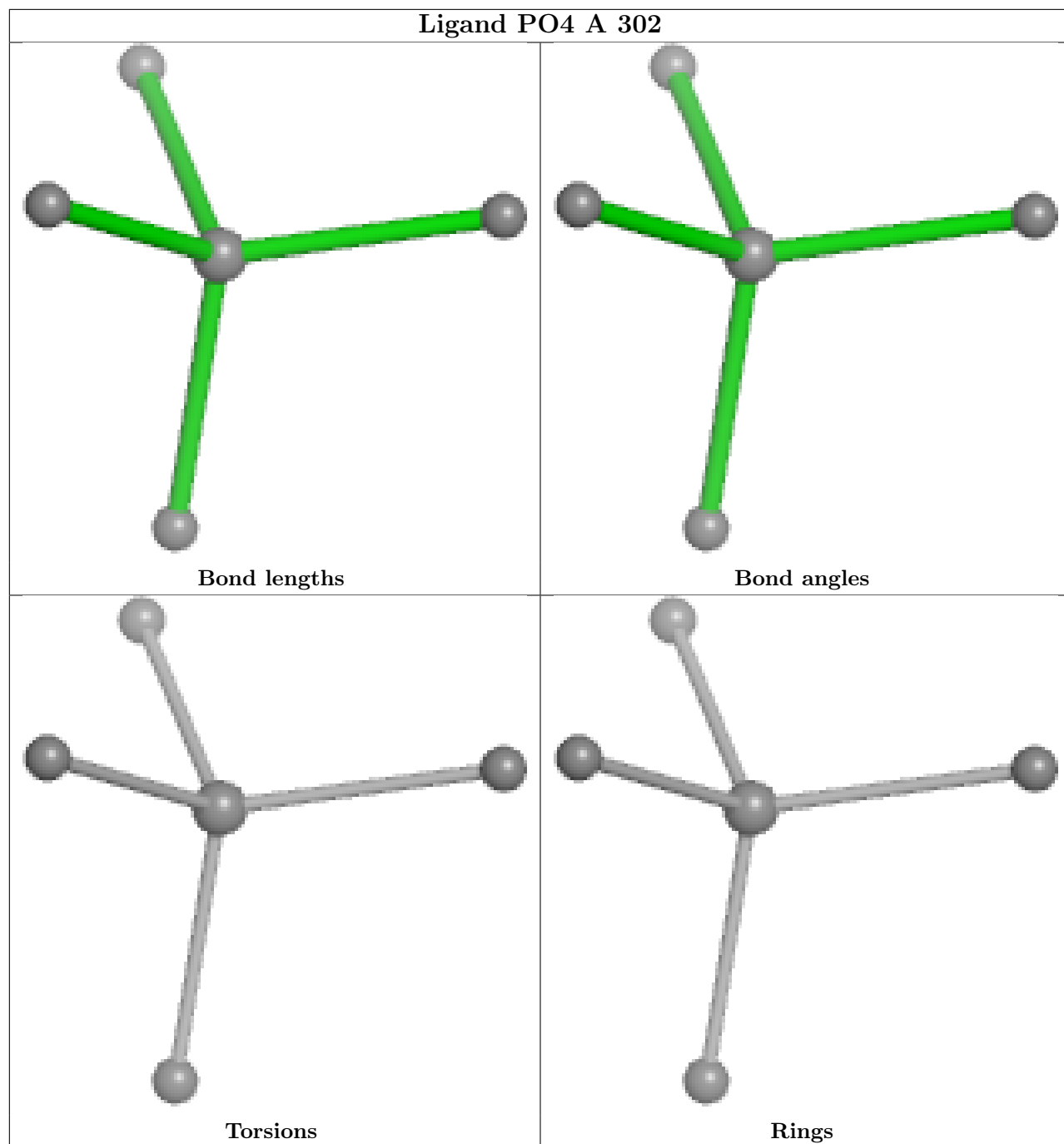


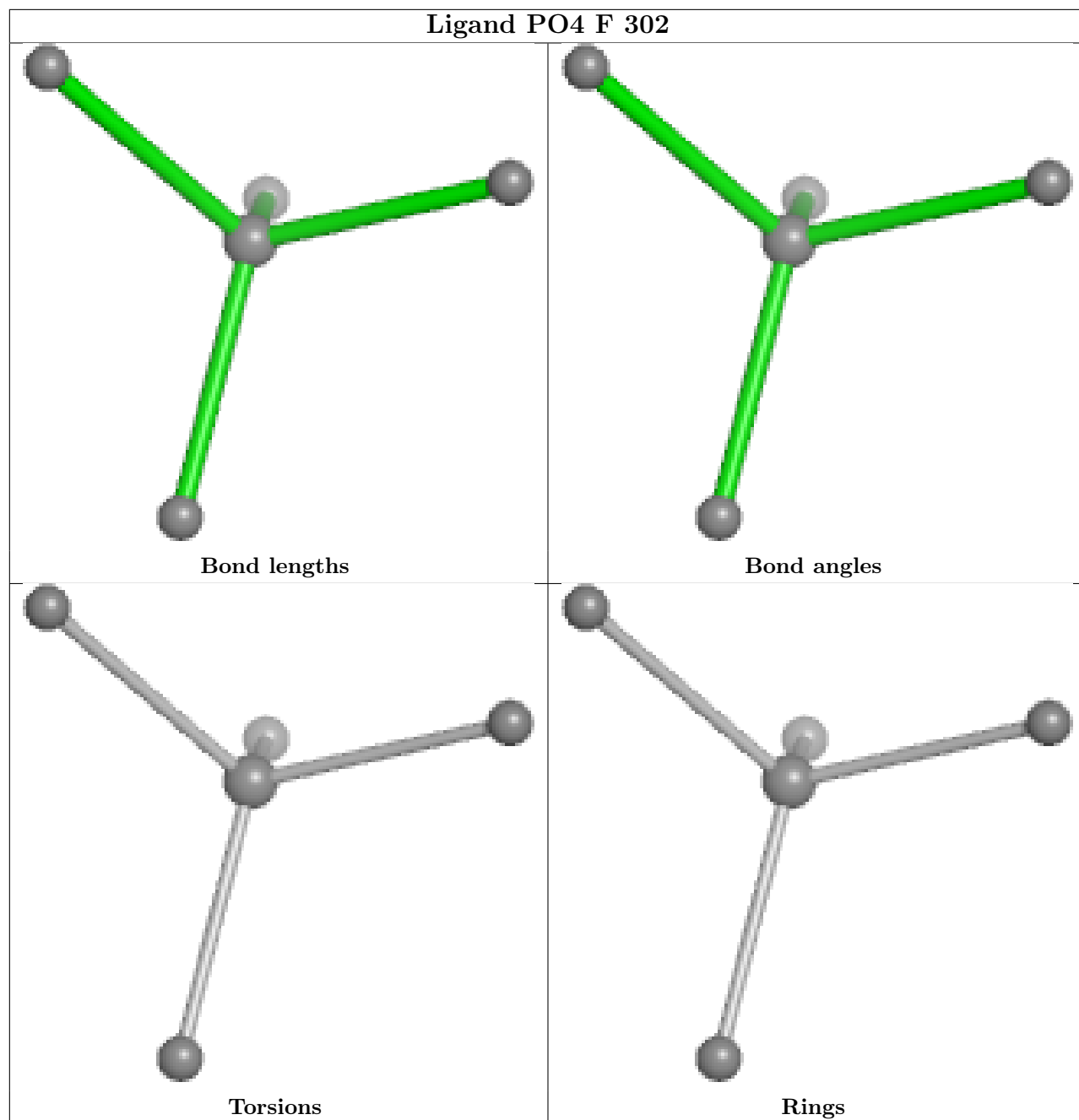


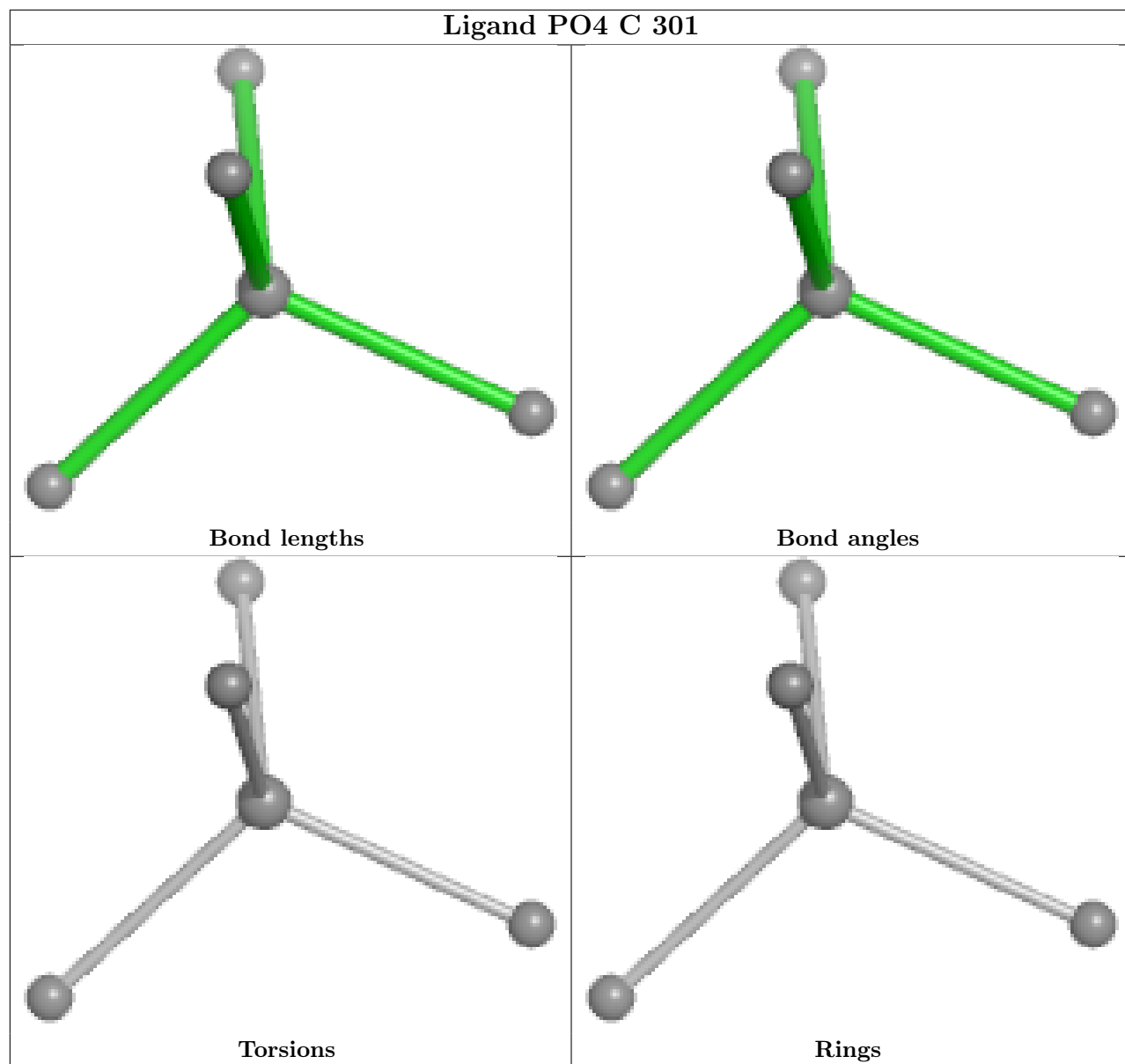


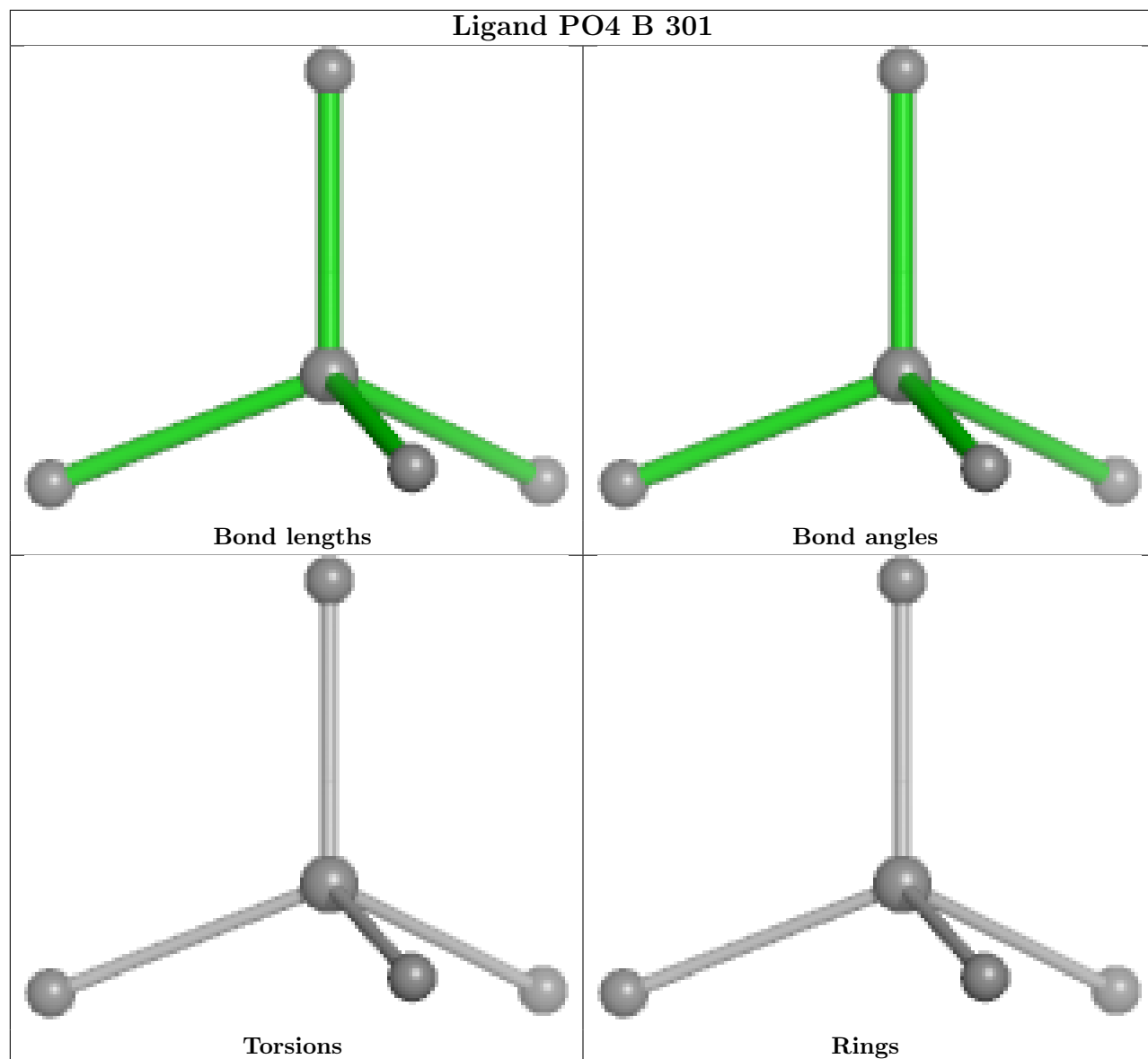


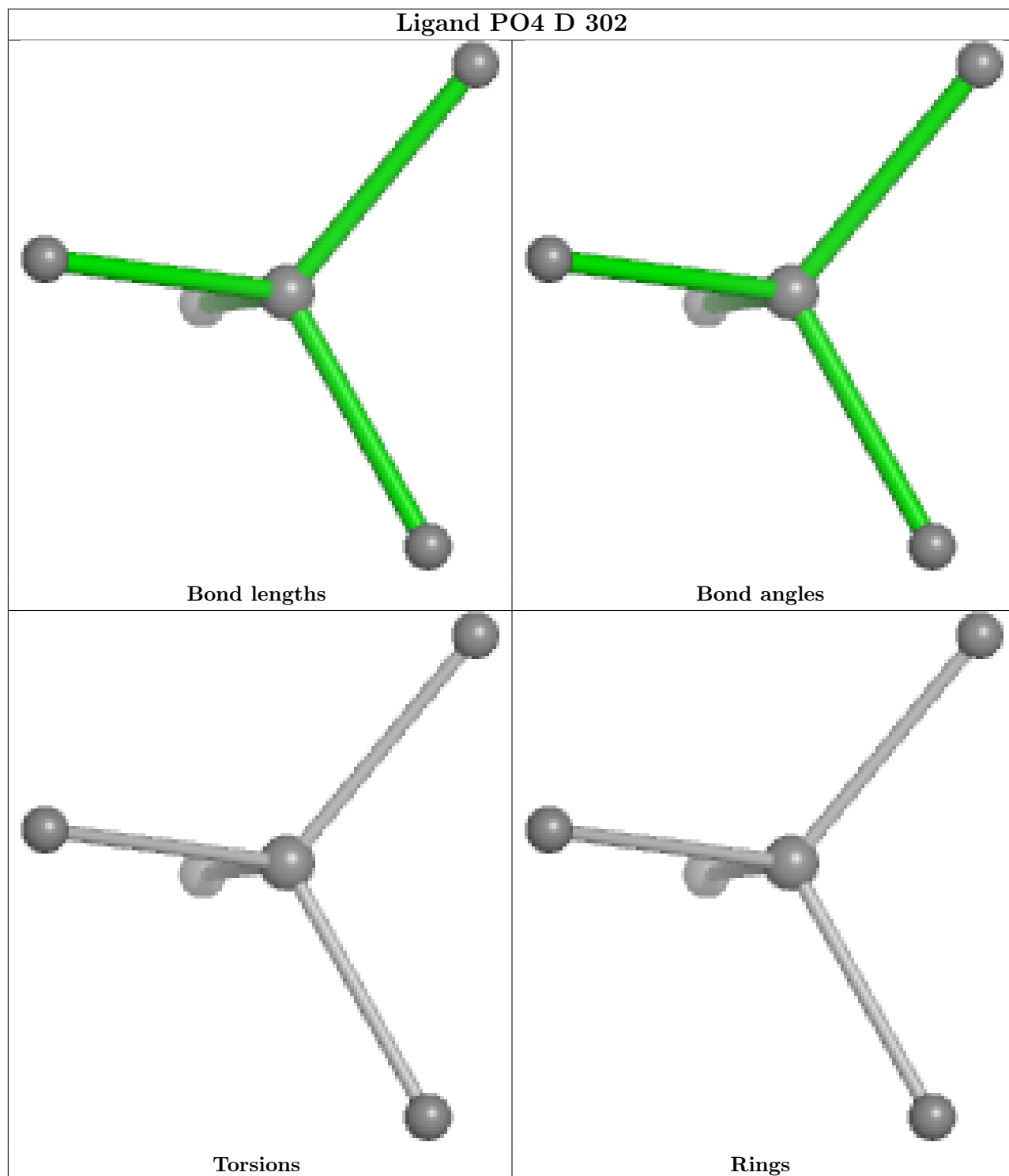


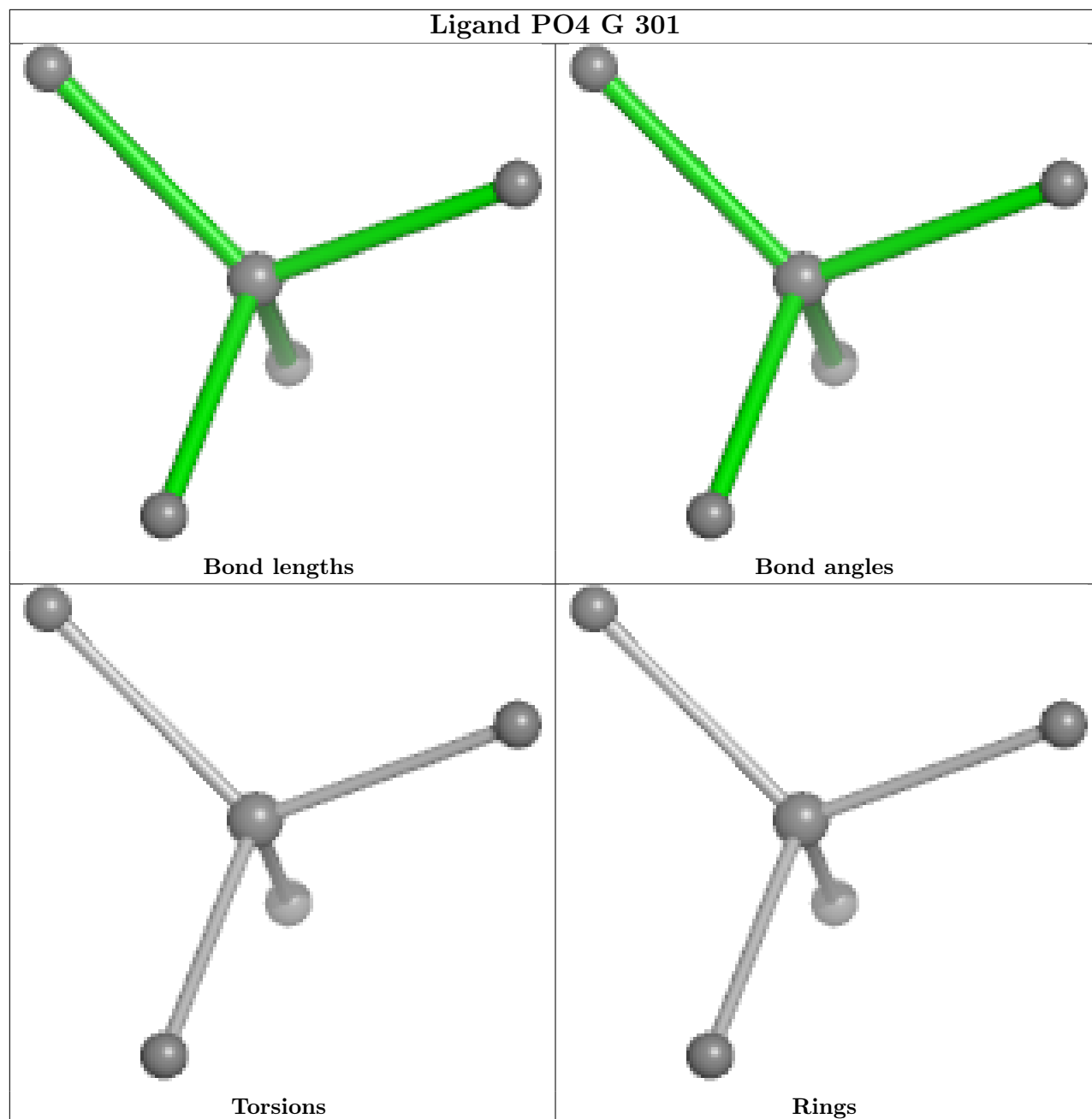


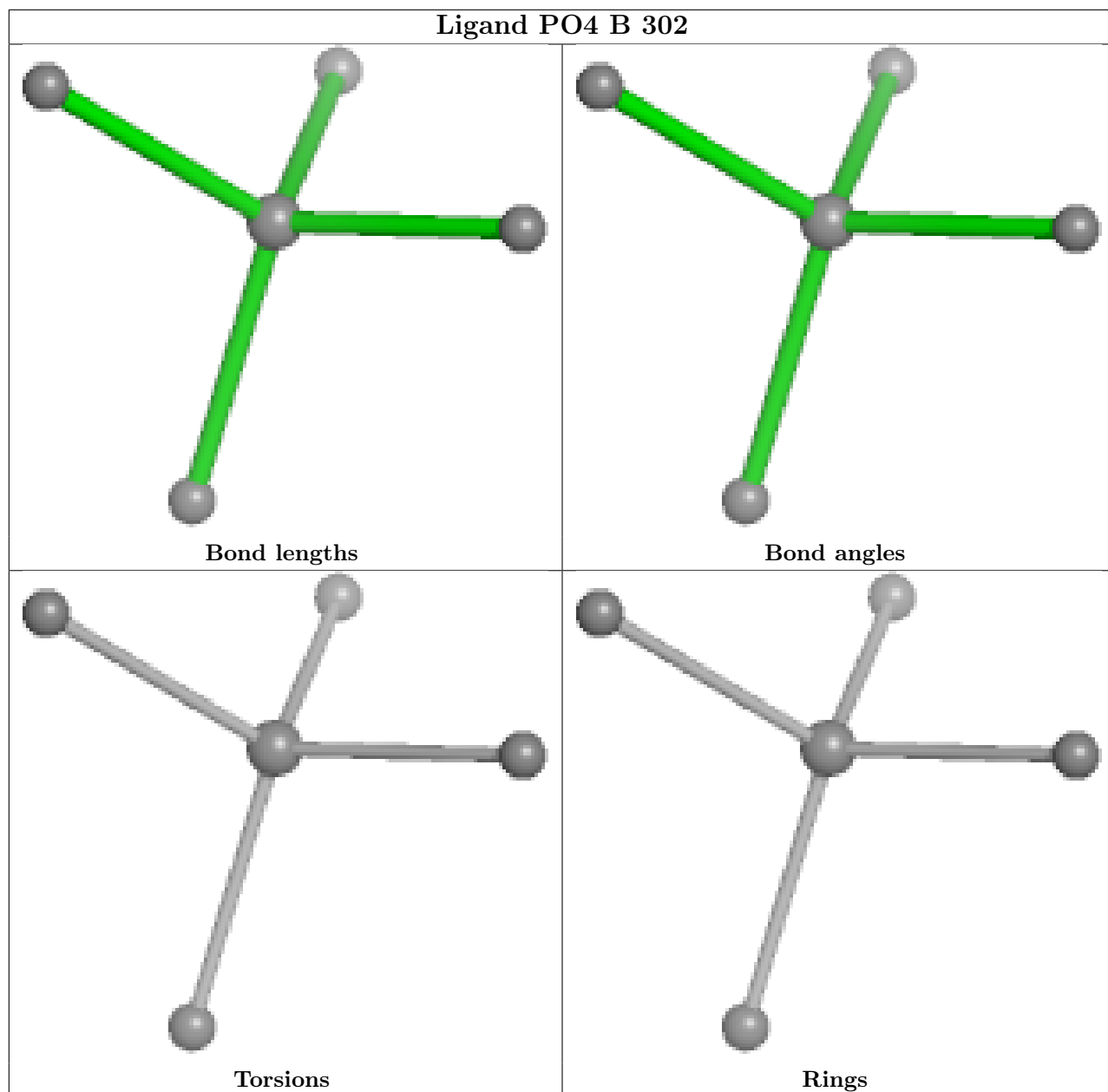


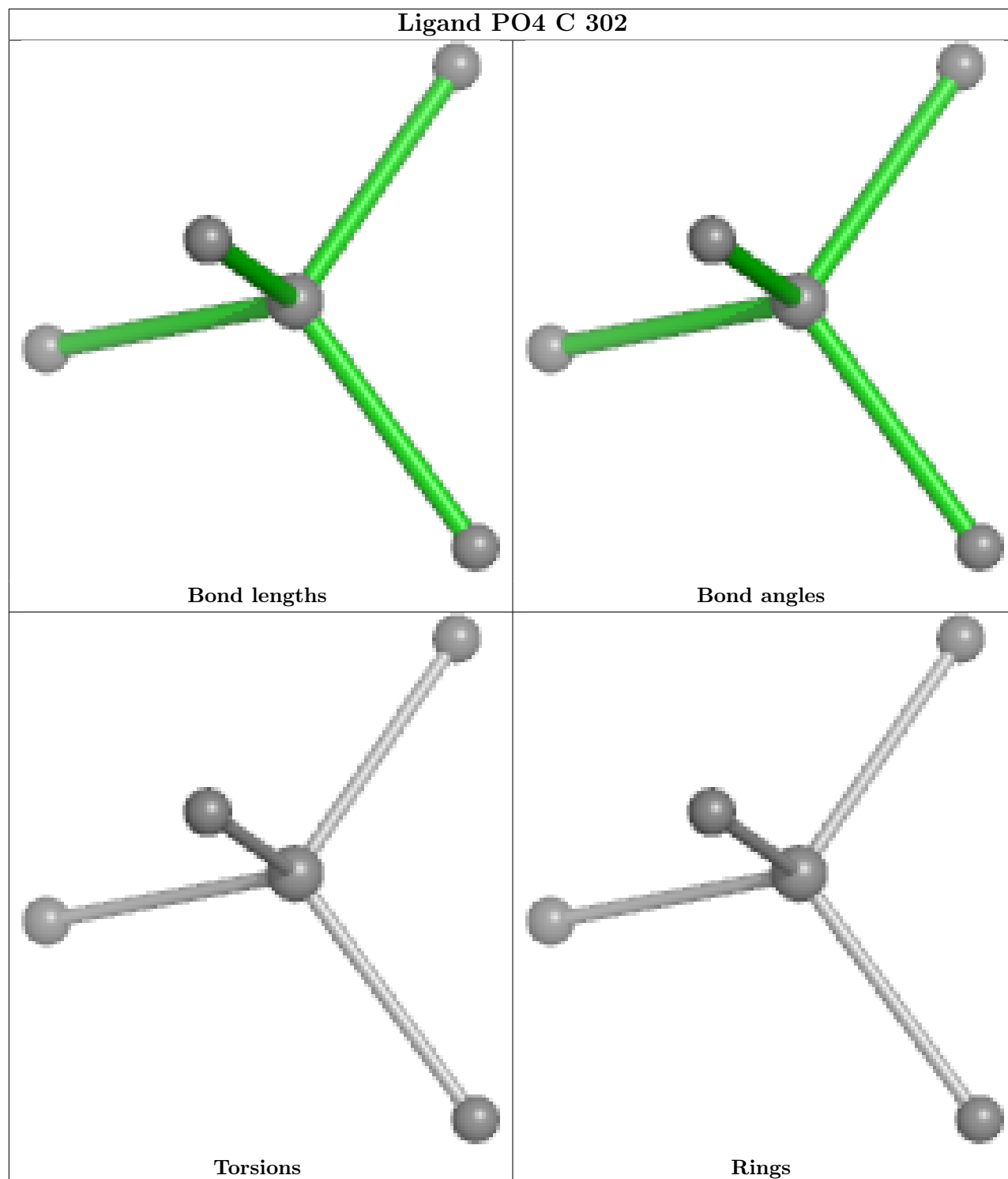












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	273/274 (99%)	-0.12	9 (3%) 49 44	40, 52, 86, 100	1 (0%)
1	B	266/274 (97%)	0.05	10 (3%) 44 38	30, 58, 95, 104	1 (0%)
1	C	274/274 (100%)	-0.09	4 (1%) 71 68	44, 57, 91, 102	0
1	D	273/274 (99%)	-0.07	7 (2%) 57 53	42, 56, 90, 107	0
1	E	266/274 (97%)	-0.02	10 (3%) 44 38	43, 55, 88, 97	0
1	F	269/274 (98%)	0.17	11 (4%) 42 36	45, 62, 97, 112	0
1	G	271/274 (98%)	0.05	9 (3%) 49 44	45, 58, 93, 105	0
1	H	272/274 (99%)	0.06	6 (2%) 62 59	46, 59, 97, 110	0
All	All	2164/2192 (98%)	0.00	66 (3%) 52 48	30, 57, 93, 112	2 (0%)

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	275	ALA	5.5
1	E	275	ALA	5.4
1	G	274	THR	5.1
1	F	275	ALA	4.9
1	A	275	ALA	4.8
1	G	275	ALA	4.8
1	G	5	ILE	4.5
1	D	5	ILE	3.7
1	B	51	SER	3.6
1	A	270	SER	3.5
1	G	272	LEU	3.5
1	B	49	VAL	3.4
1	B	270	SER	3.4
1	G	271	GLU	3.3
1	D	277	LYS	3.2
1	A	5	ILE	3.1

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Mol	Chain	Res	Type	RSRZ
1	D	273	GLY	3.1
1	C	5	ILE	3.1
1	E	56	ALA	3.1
1	E	272	LEU	3.1
1	E	50	PRO	3.0
1	F	49	VAL	2.9
1	G	49	VAL	2.9
1	A	273	GLY	2.8
1	D	275	ALA	2.8
1	C	275	ALA	2.7
1	E	271	GLU	2.7
1	B	50	PRO	2.7
1	F	272	LEU	2.7
1	D	276	MET	2.7
1	F	10	VAL	2.7
1	A	276	MET	2.7
1	E	55	ALA	2.7
1	H	49	VAL	2.6
1	A	271	GLU	2.6
1	A	47	GLU	2.6
1	F	270	SER	2.6
1	F	14	MET	2.5
1	F	247	LYS	2.5
1	A	274	THR	2.5
1	H	275	ALA	2.5
1	D	272	LEU	2.4
1	B	59	VAL	2.4
1	C	277	LYS	2.4
1	E	270	SER	2.3
1	C	274	THR	2.2
1	H	58	GLY	2.2
1	H	15	ALA	2.2
1	E	242	SER	2.2
1	E	274	THR	2.2
1	F	274	THR	2.2
1	B	53	ILE	2.2
1	F	205	ARG	2.1
1	B	276	MET	2.1
1	A	49	VAL	2.1
1	B	52	ASP	2.1
1	H	10	VAL	2.1
1	F	238	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	E	203	ASN	2.1
1	B	273	GLY	2.1
1	D	55	ALA	2.1
1	G	50	PRO	2.1
1	G	6	GLY	2.1
1	F	244	ASP	2.0
1	H	277	LYS	2.0
1	G	57	GLY	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	CL	D	303	1/1	0.78	0.37	97,97,97,97	0
5	MG	A	305	1/1	0.79	0.11	30,30,30,30	0
5	MG	E	305	1/1	0.81	0.13	30,30,30,30	0
4	CL	F	303	1/1	0.84	0.23	86,86,86,86	0
4	CL	C	303	1/1	0.84	0.27	82,82,82,82	0
4	CL	E	303	1/1	0.84	0.27	88,88,88,88	0
4	CL	A	304	1/1	0.85	0.15	78,78,78,78	0
3	EDO	A	303	4/4	0.86	0.15	51,56,60,61	0
4	CL	B	304	1/1	0.86	0.23	82,82,82,82	0
4	CL	H	303	1/1	0.88	0.24	78,78,78,78	0
4	CL	E	304	1/1	0.89	0.16	81,81,81,81	0
3	EDO	B	303	4/4	0.90	0.16	52,60,65,73	0
5	MG	G	303	1/1	0.91	0.09	30,30,30,30	0
2	PO4	C	302	5/5	0.92	0.09	68,72,75,79	0
2	PO4	B	302	5/5	0.92	0.10	73,74,76,80	0

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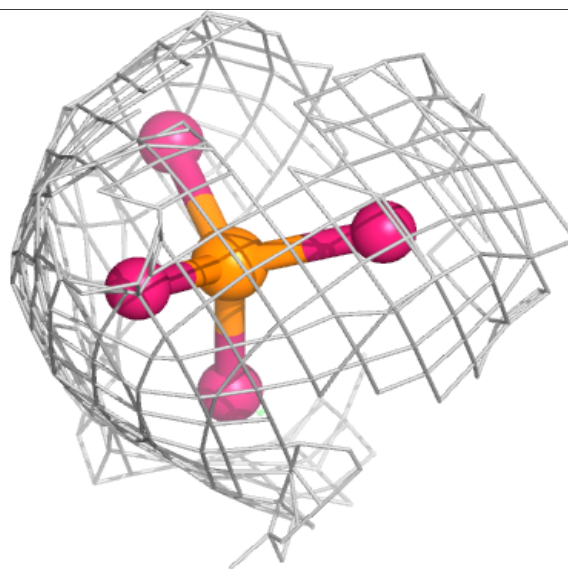
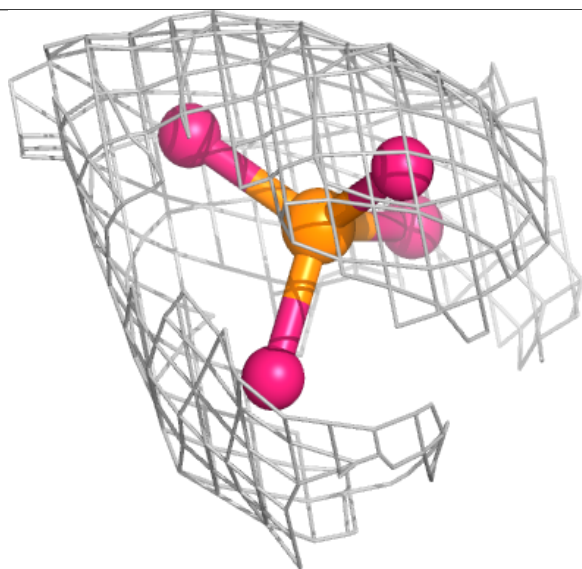
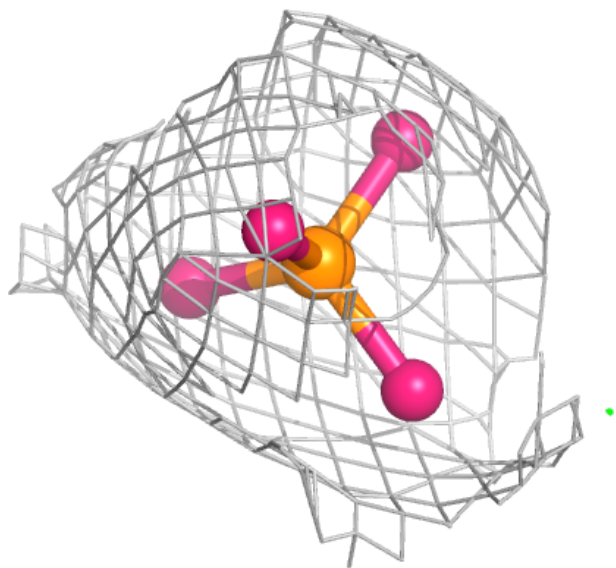
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	PO4	G	302	5/5	0.93	0.08	63,68,75,76	0
2	PO4	D	302	5/5	0.93	0.09	65,67,70,71	0
2	PO4	A	302	5/5	0.94	0.09	60,68,70,73	0
2	PO4	F	302	5/5	0.94	0.07	65,67,78,78	0
2	PO4	E	302	5/5	0.95	0.07	68,69,70,76	0
2	PO4	H	302	5/5	0.95	0.08	70,71,74,76	0
2	PO4	B	301	5/5	0.95	0.08	43,46,58,60	0
2	PO4	D	301	5/5	0.96	0.07	39,44,51,54	0
2	PO4	F	301	5/5	0.96	0.07	46,52,57,61	0
2	PO4	C	301	5/5	0.97	0.07	49,49,55,57	0
2	PO4	A	301	5/5	0.97	0.09	49,50,57,62	0
2	PO4	E	301	5/5	0.97	0.07	45,49,54,55	0
2	PO4	G	301	5/5	0.98	0.06	46,47,52,67	0
2	PO4	H	301	5/5	0.98	0.05	45,48,51,55	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

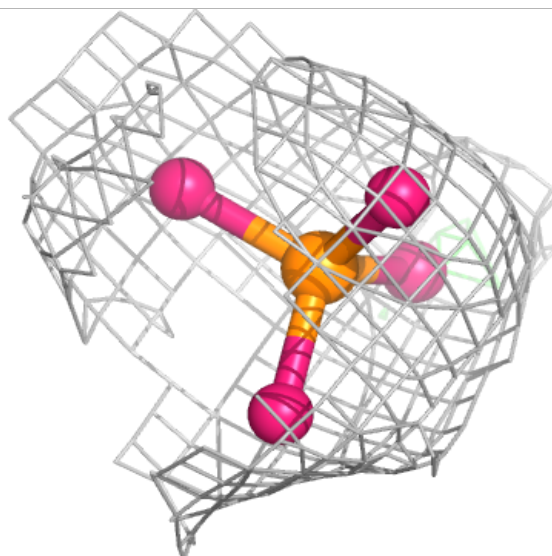
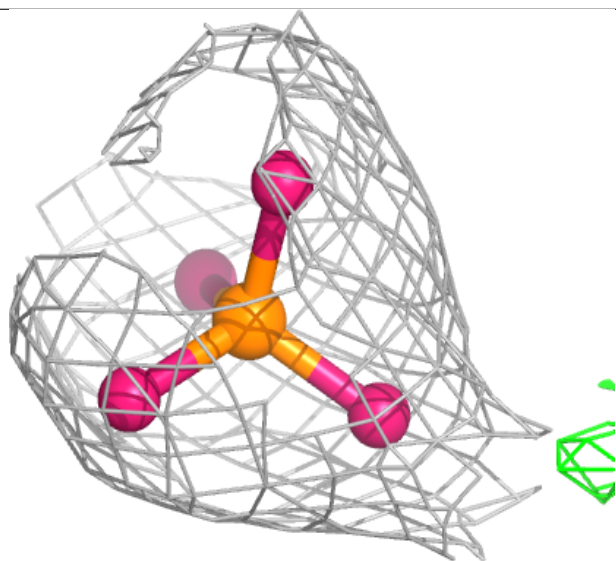
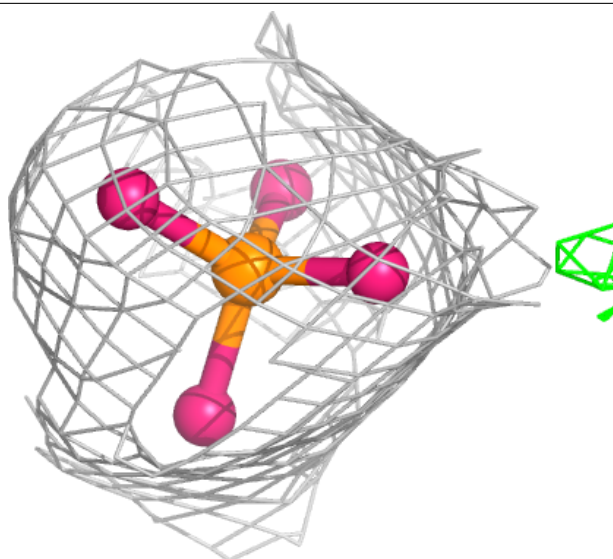
Electron density around PO4 C 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



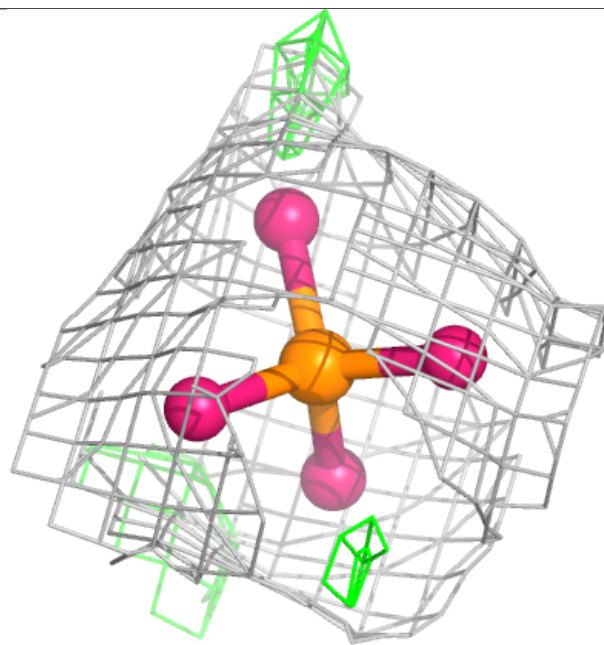
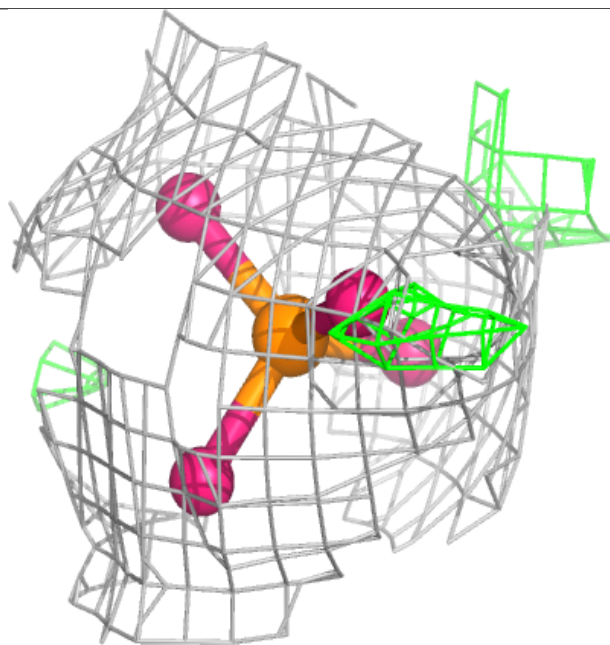
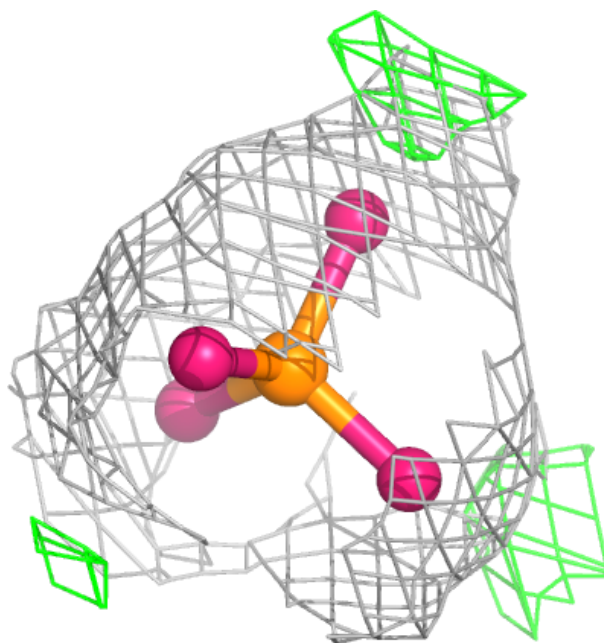
Electron density around PO4 B 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



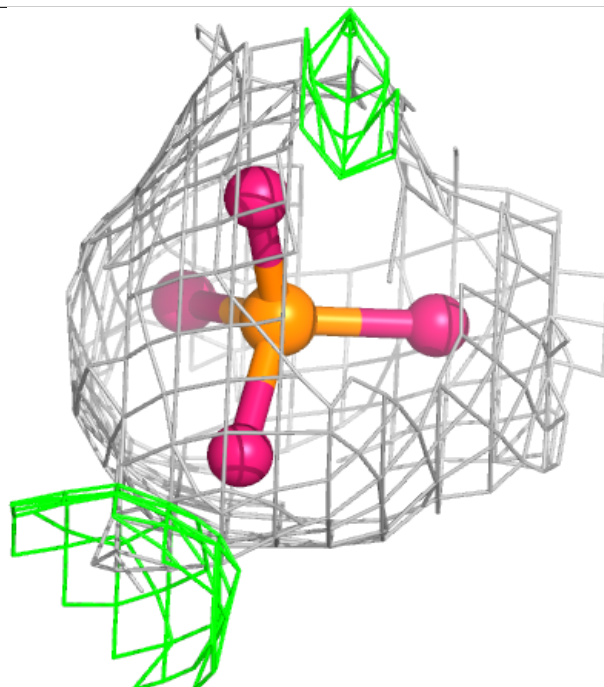
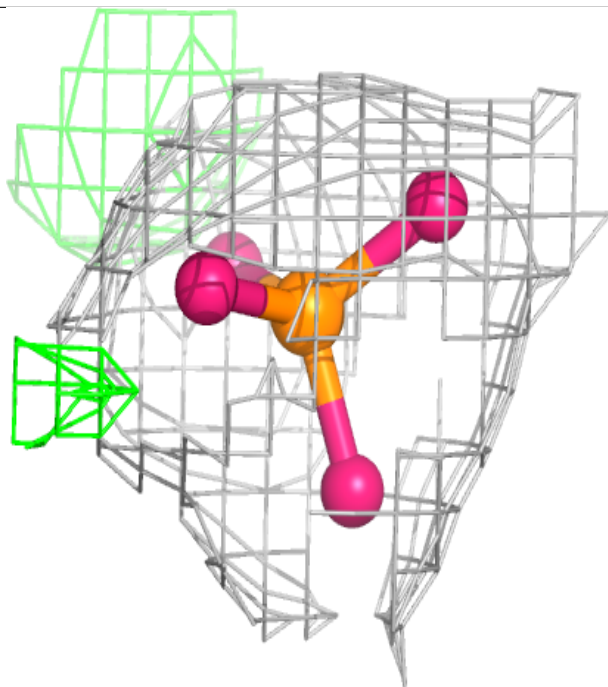
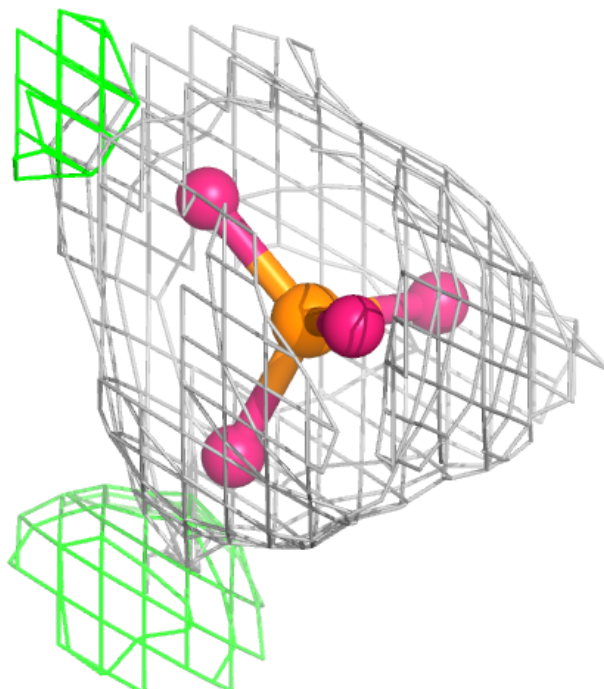
Electron density around PO4 G 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



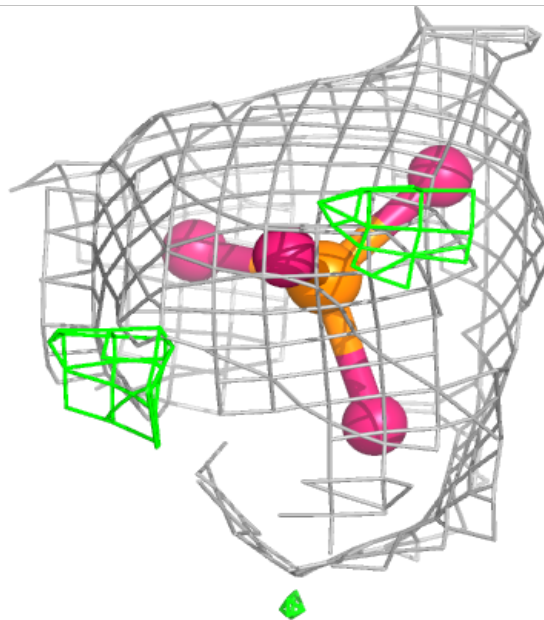
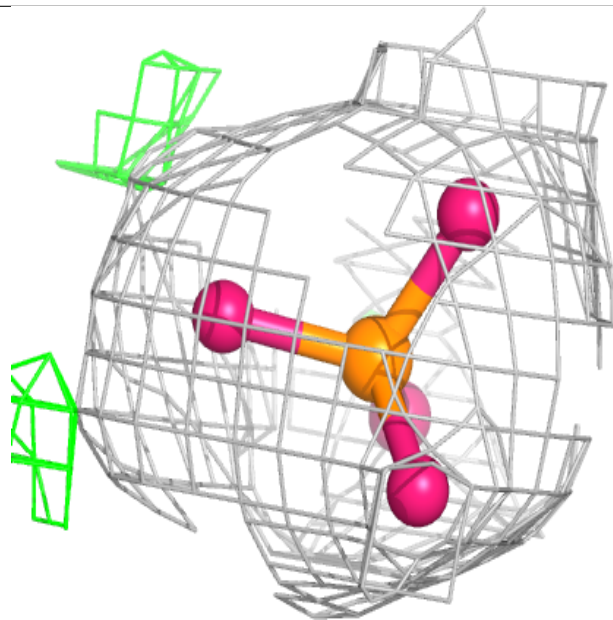
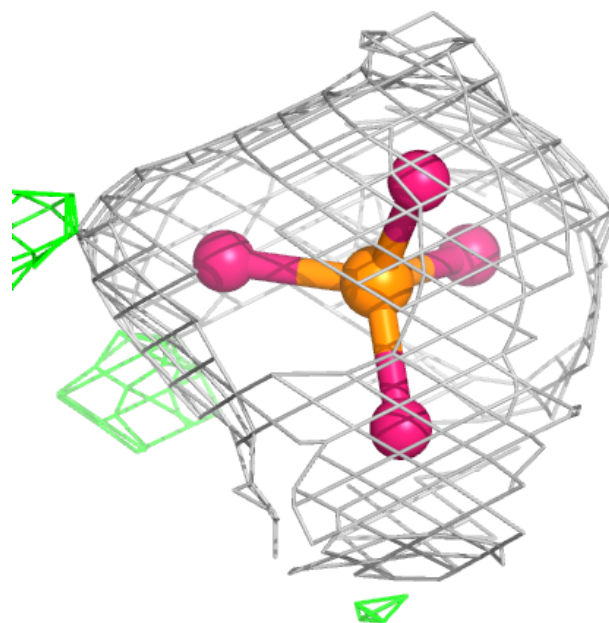
Electron density around PO4 D 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



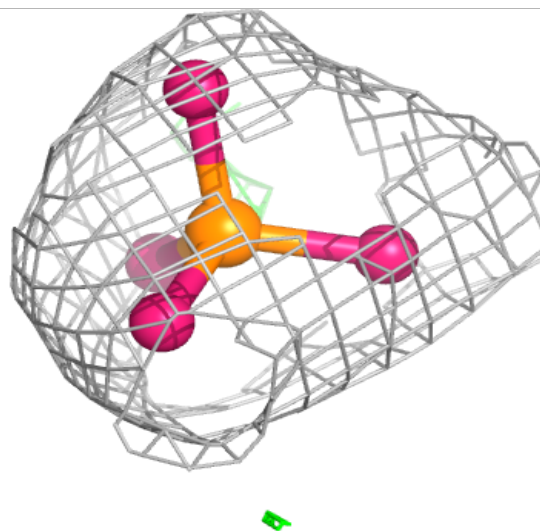
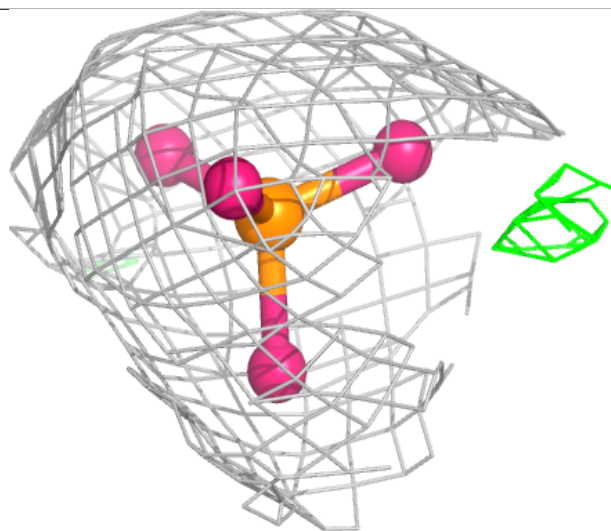
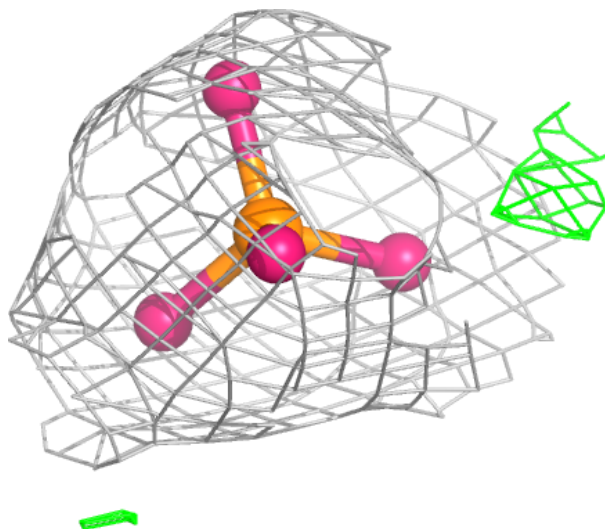
Electron density around PO4 A 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



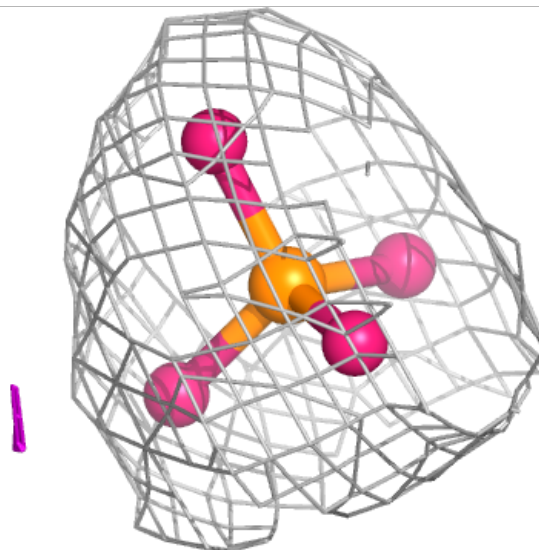
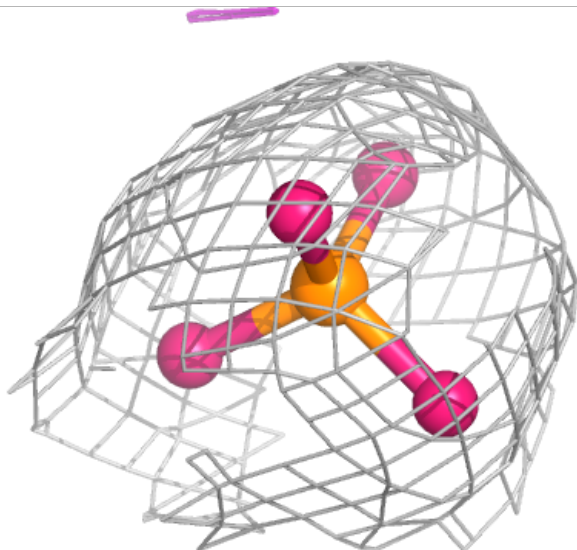
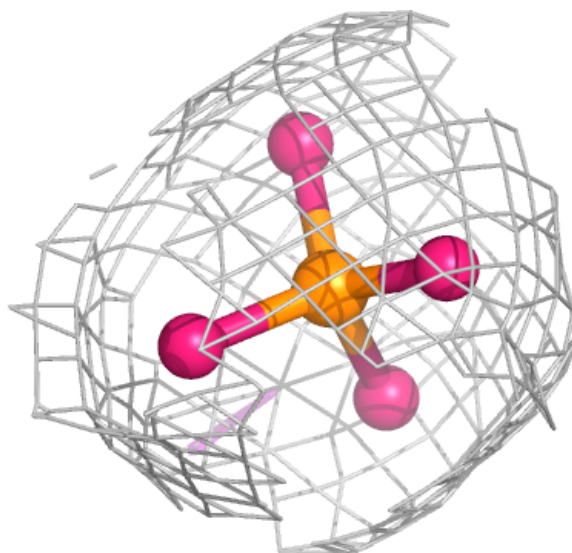
Electron density around PO4 F 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



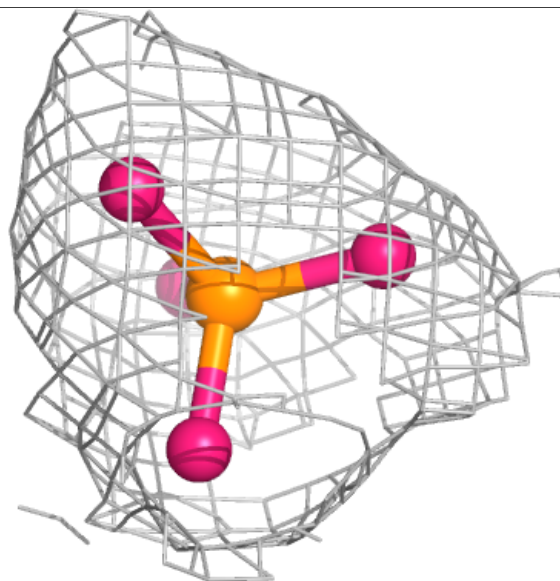
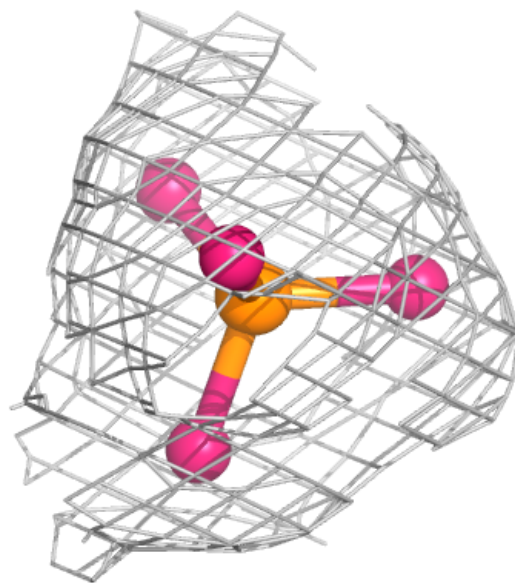
Electron density around PO4 E 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



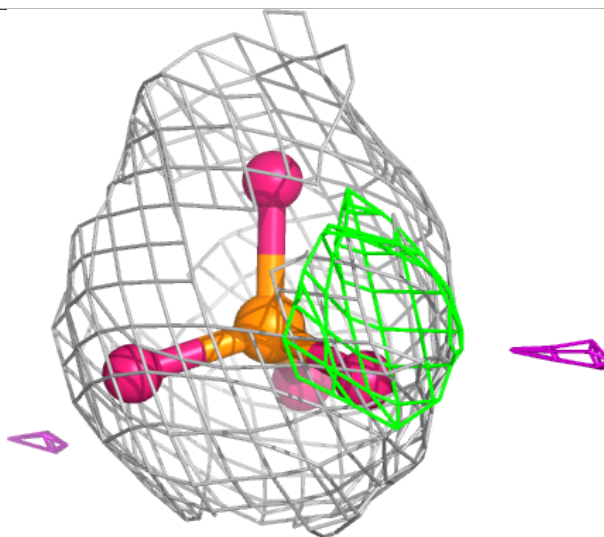
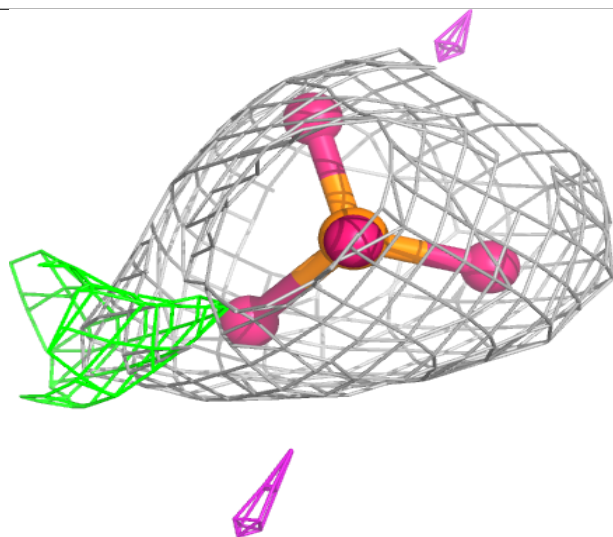
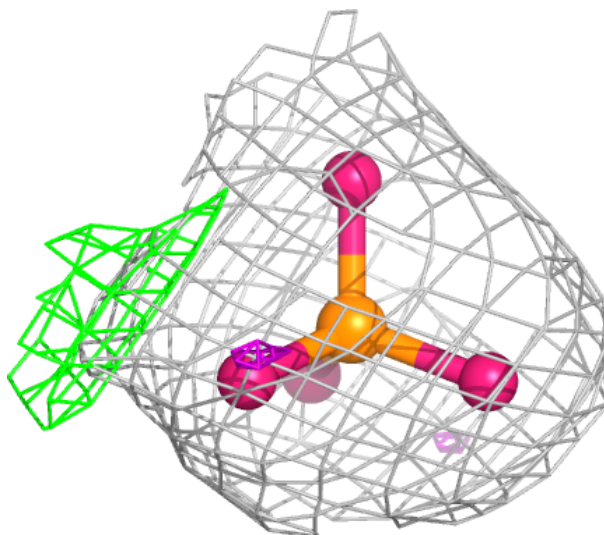
Electron density around PO4 H 302:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



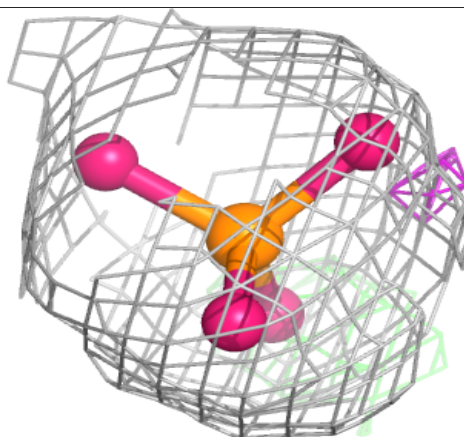
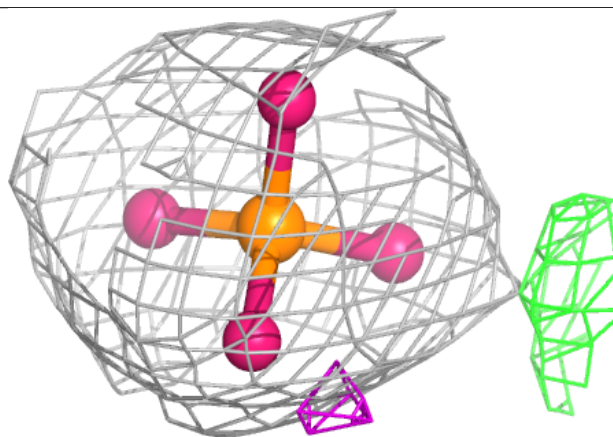
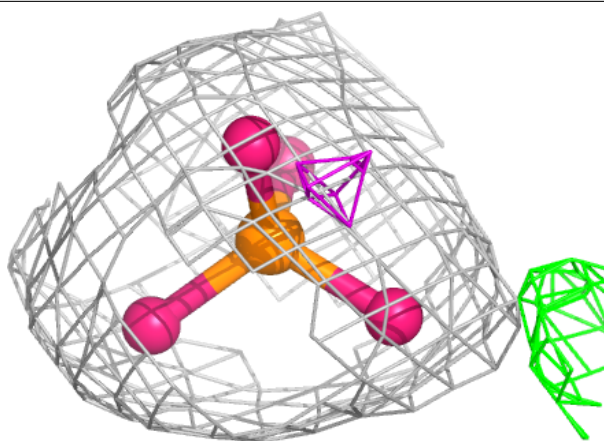
Electron density around PO4 B 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



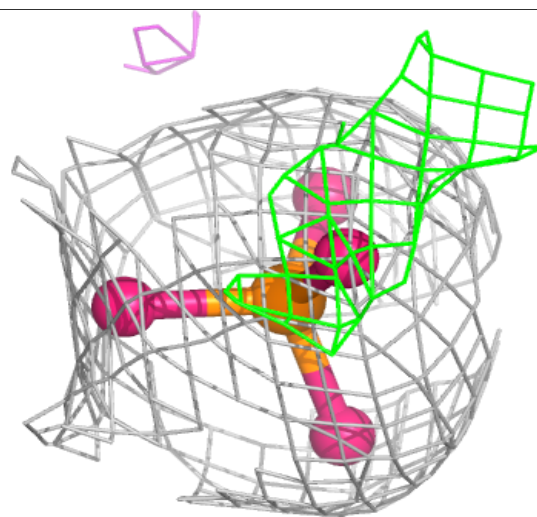
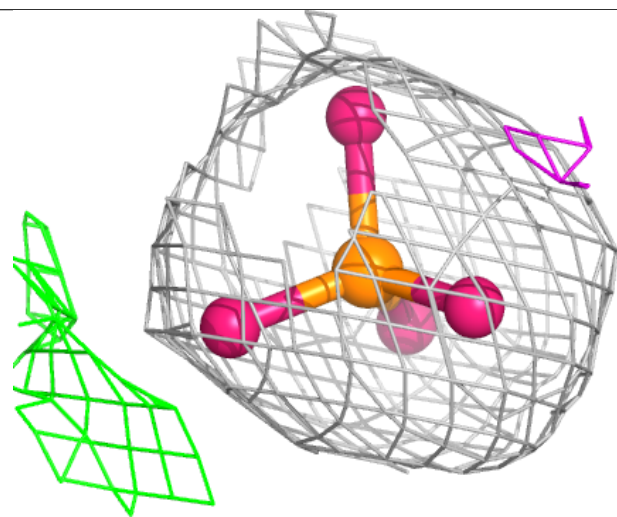
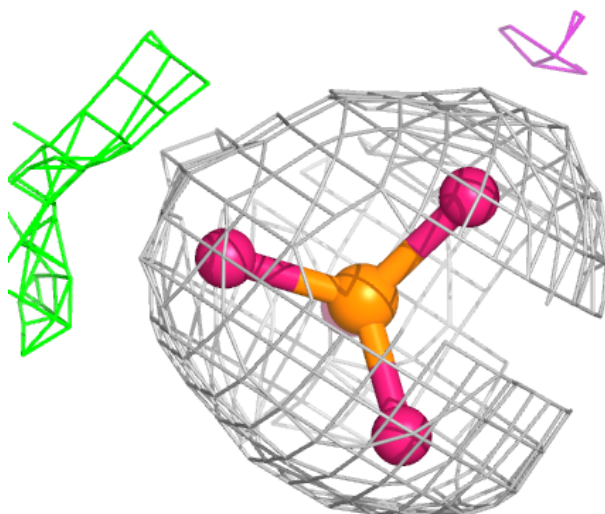
Electron density around PO4 D 301:

$2mF_o-DF_c$ (at 0.7 rnsd) in gray
 mF_o-DF_c (at 3 rnsd) in purple (negative)
and green (positive)



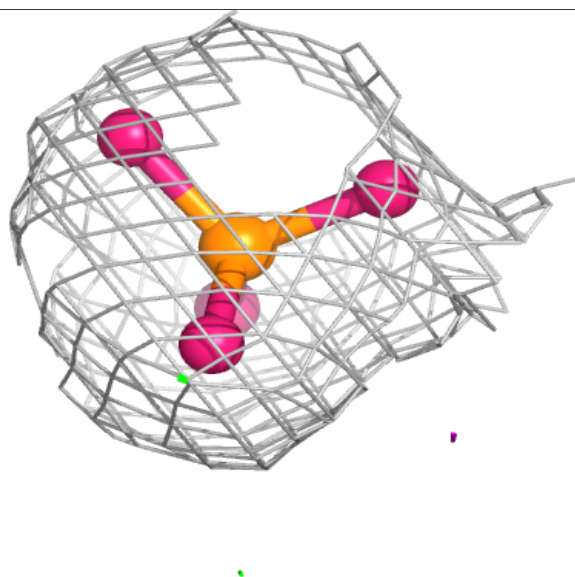
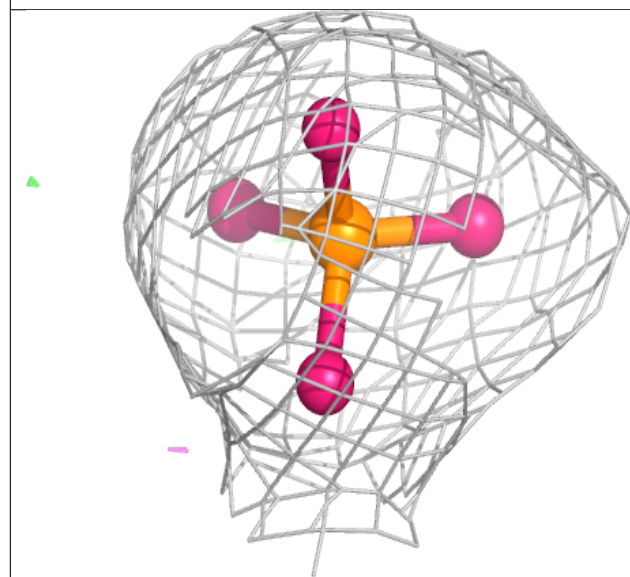
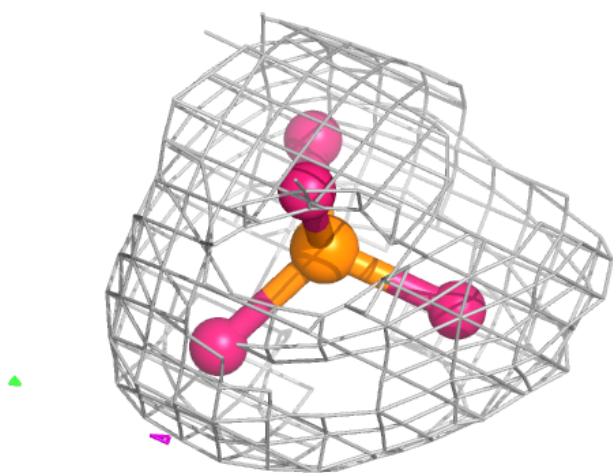
Electron density around PO4 F 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



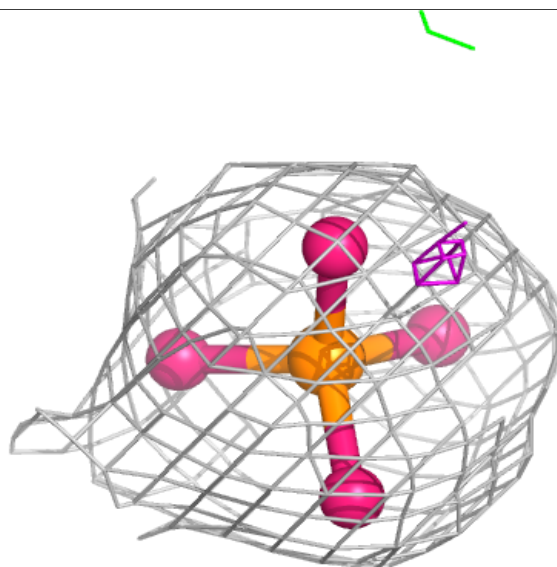
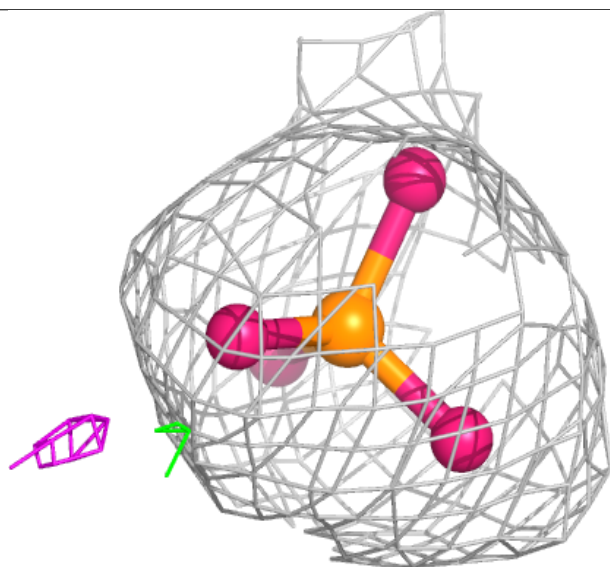
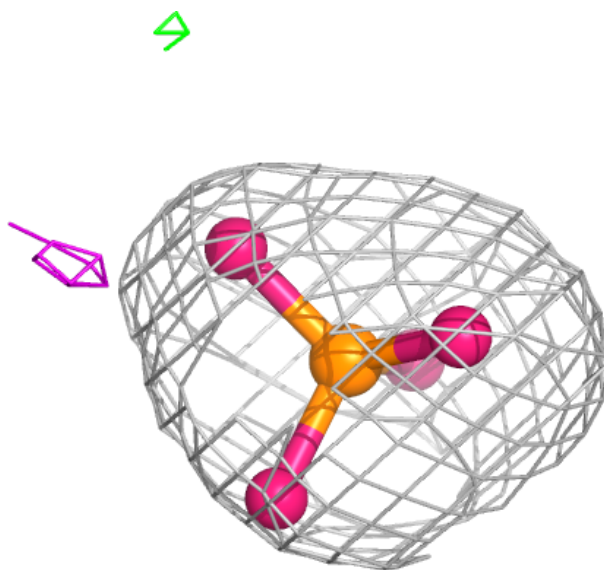
Electron density around PO4 C 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



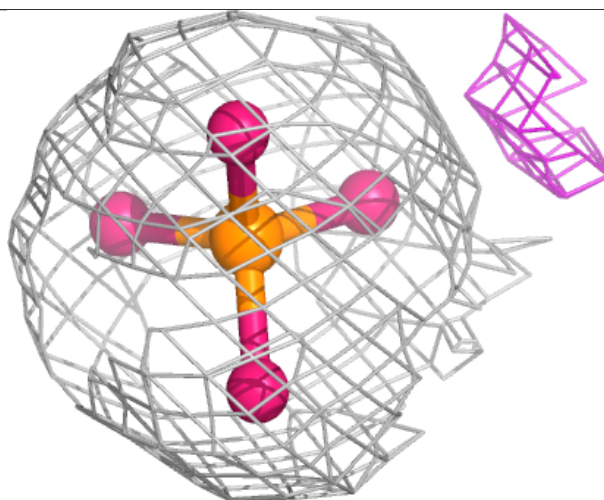
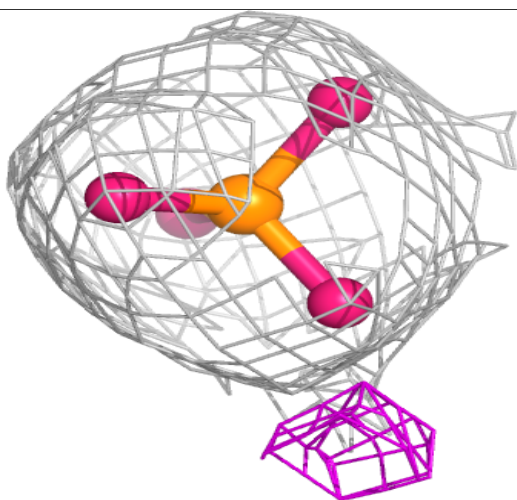
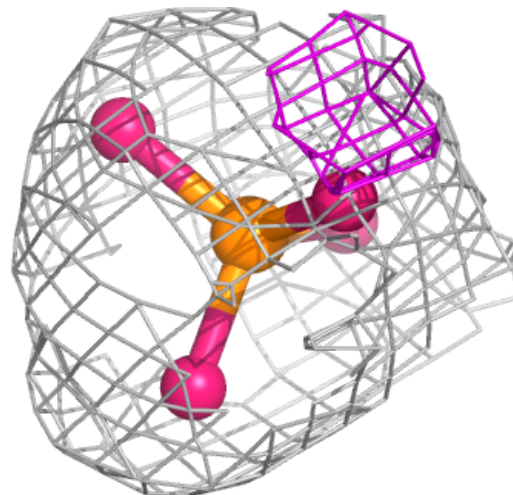
Electron density around PO4 A 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



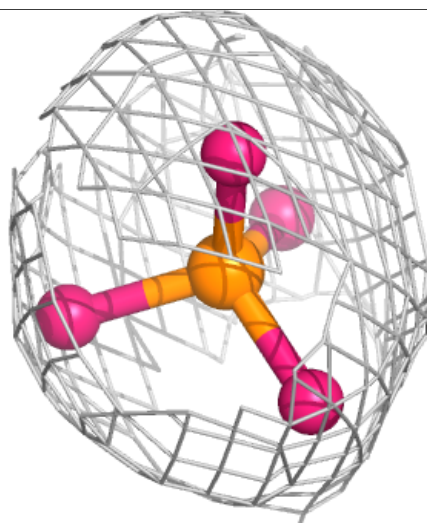
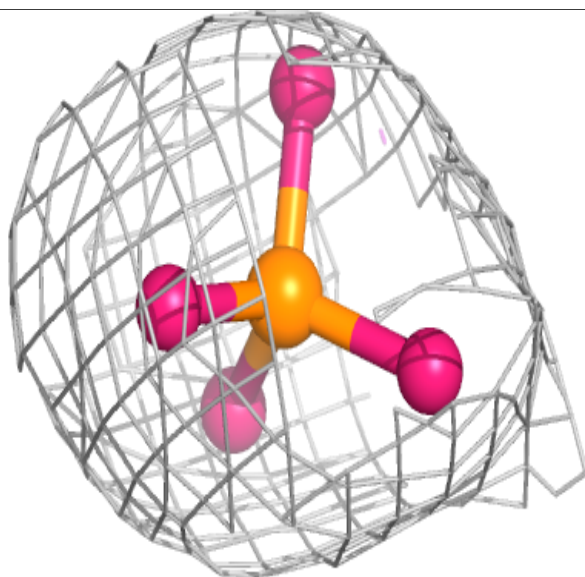
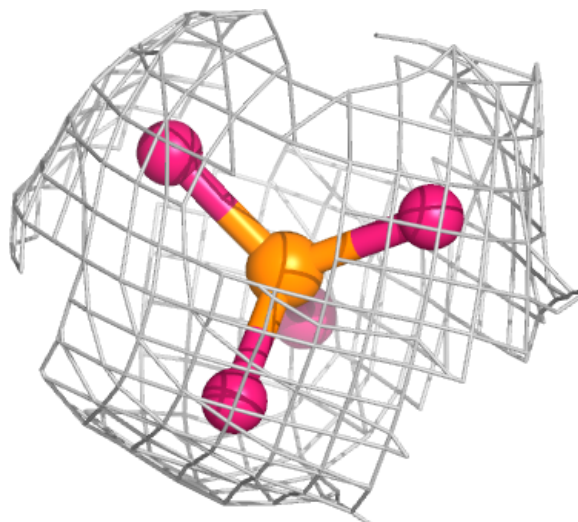
Electron density around PO4 E 301:

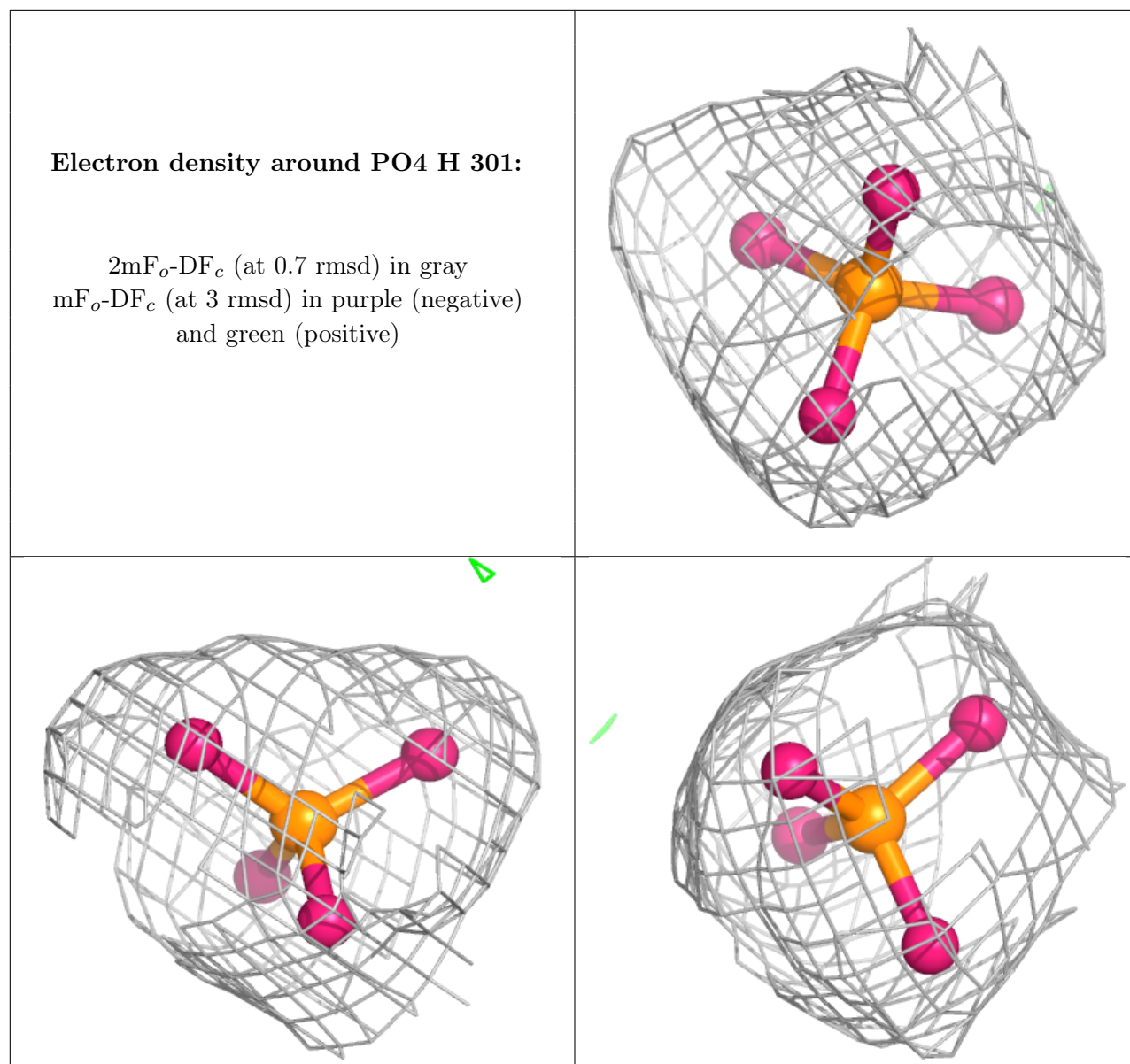
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around PO4 G 301:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.