Full wwPDB X-ray Structure Validation Report ⓘ

Jan 20, 2024 – 02:18 pm GMT

PDB ID	:	6ZMB
Title	:	Structure of the native tRNA-Monooxygenase enzyme MiaE
Authors	:	Carpentier, P.; Atta, M.
Deposited on	:	2020-07-02
Resolution	:	1.70 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:

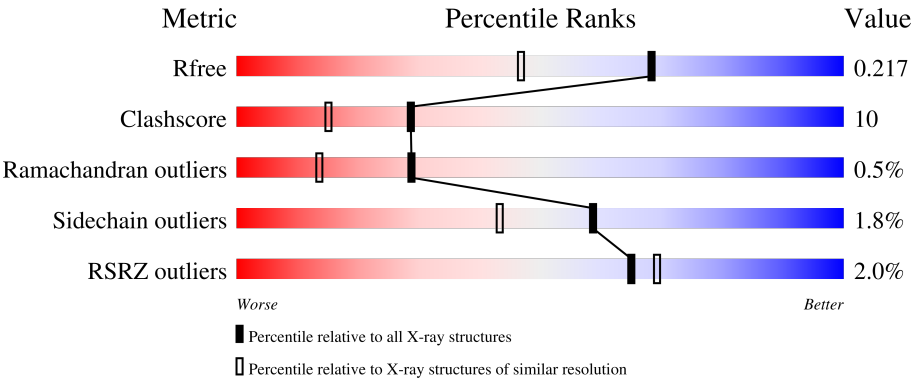
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.70 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}	130704	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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 <=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	B	200	3% 82% 16%
1	C	200	% 82% 17%

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
9	PG6	C	307	-	-	X	-

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 3573 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 tRNA hydroxylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	199	Total	C	N	O	S	16	9	0
			1654	1047	305	295	7			
1	C	200	Total	C	N	O	S	18	5	0
			1614	1023	293	290	8			

- Molecule 2 is FE (III) ION (three-letter code: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	2	Total	Fe	0	0
			2	2		
2	C	2	Total	Fe	0	0
			2	2		

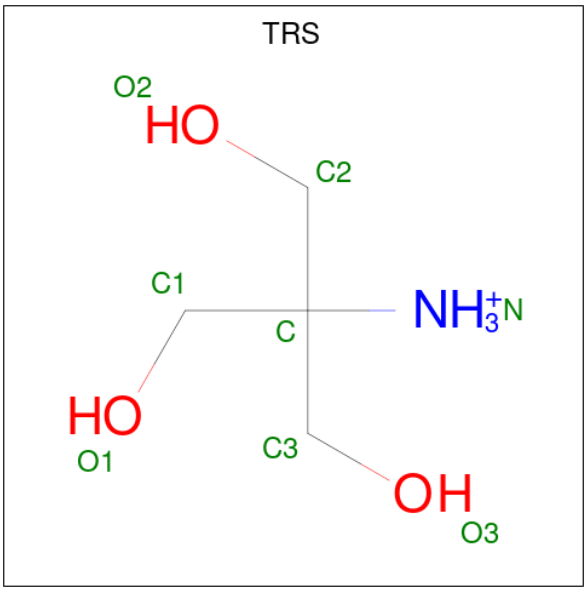
- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	2	Total	Cl	0	0
			2	2		

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

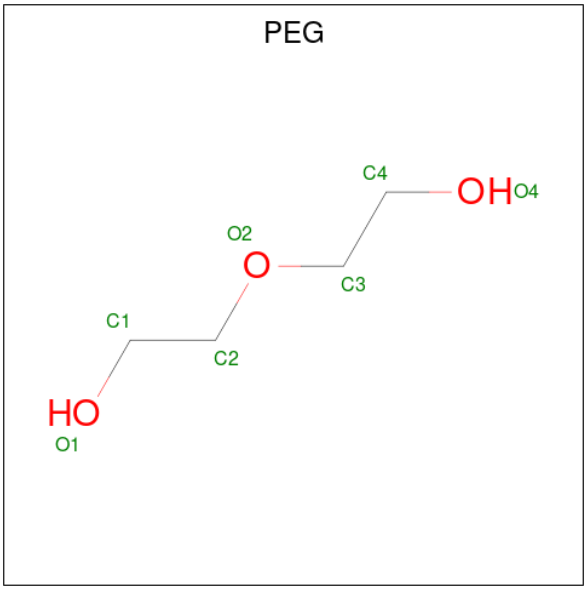
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	1	Total	Ca	0	0
			1	1		

- Molecule 5 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: $C_4H_{12}NO_3$).



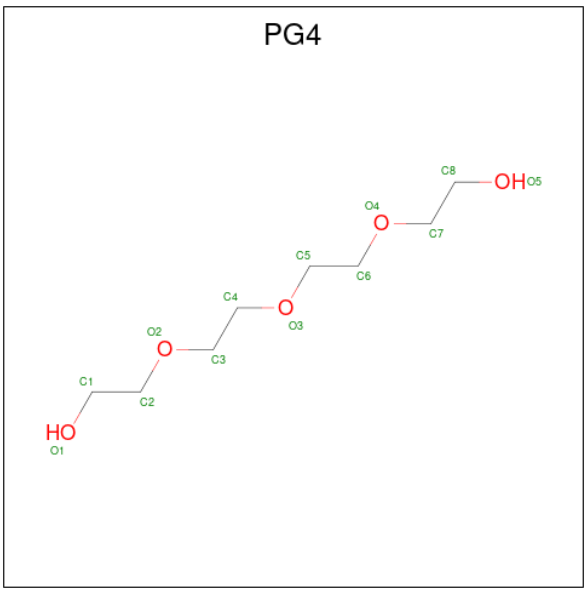
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C N O 8 4 1 3	0	0
5	C	1	Total C N O 8 4 1 3	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



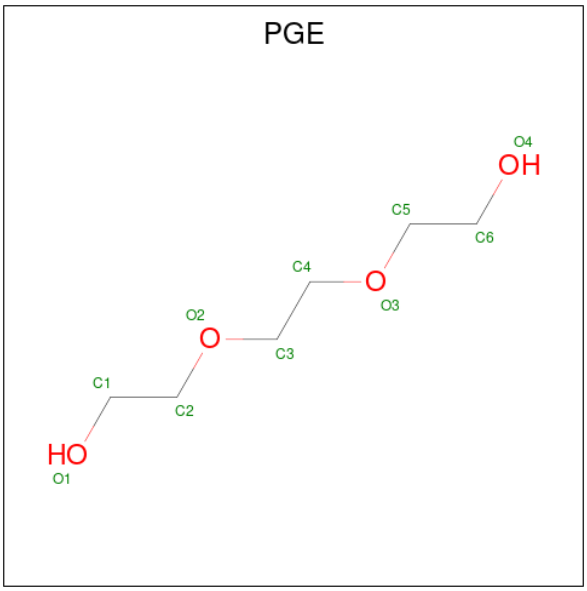
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total C O 7 4 3	0	0
6	C	1	Total C O 7 4 3	0	0

- Molecule 7 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



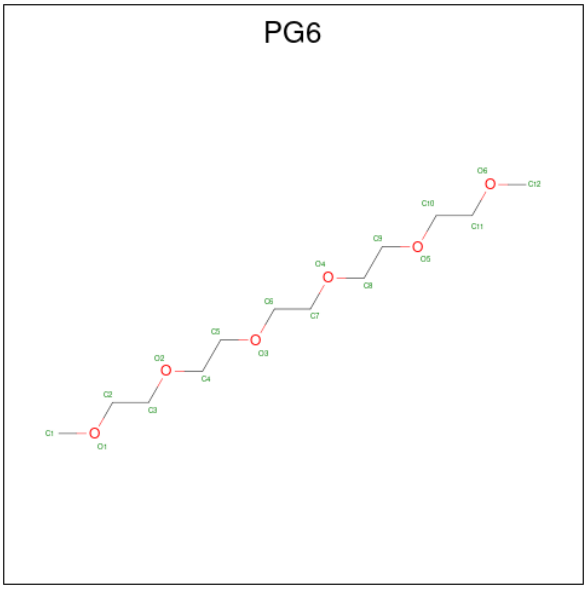
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	B	1	Total C O 13 8 5	0	0

- Molecule 8 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	C	1	Total C O 10 6 4	0	0
8	C	1	Total C O 10 6 4	0	0

- Molecule 9 is 1-(2-METHOXY-ETHOXY)-2-{2-[2-(2-METHOXY-ETHOXY]-ETHOXY}-ETHANE (three-letter code: PG6) (formula: $C_{12}H_{26}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	C	1	Total C O 18 12 6	0	0

- Molecule 10 is water.

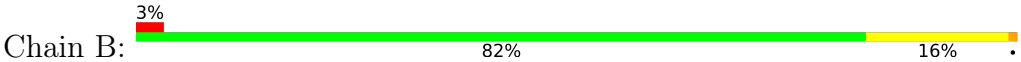
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	B	97	Total O 97 97	0	0
10	C	120	Total O 120 120	0	0

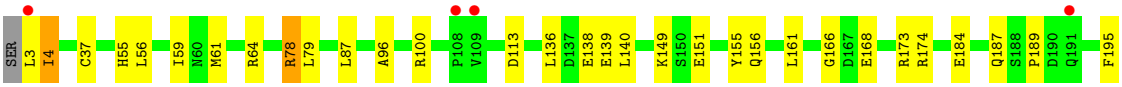
3 Residue-property plots (i)

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: tRNA hydroxylase

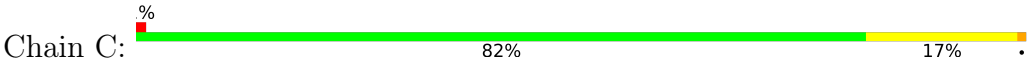
Chain B:

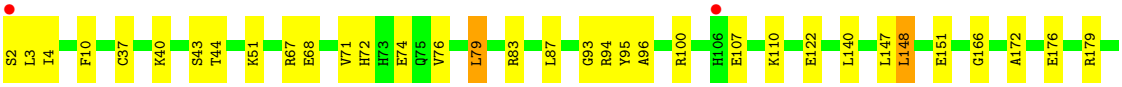




• Molecule 1: tRNA hydroxylase

Chain C:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	116.80Å 50.93Å 76.26Å 90.00° 91.00° 90.00°	Depositor
Resolution (Å)	46.75 – 1.70 46.75 – 1.70	Depositor EDS
% Data completeness (in resolution range)	97.3 (46.75-1.70) 97.3 (46.75-1.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.19 (at 1.70Å)	Xtriage
Refinement program	PHENIX 1.1	Depositor
R, R_{free}	0.188 , 0.217 0.188 , 0.217	Depositor DCC
R_{free} test set	2501 reflections (5.19%)	wwPDB-VP
Wilson B-factor (Å^2)	30.9	Xtriage
Anisotropy	0.403	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 54.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.022 for -h,-k,l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	3573	wwPDB-VP
Average B, all atoms (Å^2)	37.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.41% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL, TRS, FE, CA, PGE, PEG, PG4, PG6

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	B	0.36	0/1689	0.55	0/2284
1	C	0.36	0/1652	0.57	2/2232 (0.1%)
All	All	0.36	0/3341	0.56	2/4516 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	79	LEU	CA-CB-CG	7.39	132.31	115.30
1	C	148	LEU	CA-CB-CG	6.14	129.41	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1654	0	1670	27	1
1	C	1614	0	1619	35	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
3	B	2	0	0	0	0
4	B	1	0	0	0	0
5	B	8	0	11	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	C	8	0	11	3	0
6	B	7	0	10	1	0
6	C	7	0	10	0	0
7	B	13	0	18	1	0
8	C	20	0	28	4	0
9	C	18	0	26	15	0
10	B	97	0	0	7	1
10	C	120	0	0	5	3
All	All	3573	0	3403	65	3

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 (65) 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:C:93:GLY:HA3	9:C:307:PG6:H31	1.41	1.03
1:C:100:ARG:NH1	10:C:401:HOH:O	2.08	0.76
1:C:95:TYR:HB2	9:C:307:PG6:H22	1.68	0.74
1:C:96:ALA:H	9:C:307:PG6:H51	1.58	0.69
1:C:107:GLU:OE2	1:C:110:LYS:HE3	1.95	0.65
1:B:61:MET:HE2	1:B:161:LEU:HD22	1.79	0.64
1:C:93:GLY:CA	9:C:307:PG6:H31	2.22	0.64
5:B:306:TRS:O2	5:B:306:TRS:O3	2.16	0.63
1:B:151:GLU:OE2	5:B:306:TRS:O2	2.16	0.62
5:C:303:TRS:O1	5:C:303:TRS:O3	2.15	0.61
1:C:166:GLY:O	10:C:402:HOH:O	2.17	0.60
1:B:113:ASP:OD1	1:B:174:ARG:HG3	2.02	0.59
1:C:67:ARG:HH12	8:C:305:PGE:H5	1.68	0.58
1:B:78[B]:ARG:NH1	10:B:407:HOH:O	2.36	0.57
1:B:149:LYS:NZ	10:B:409:HOH:O	2.35	0.56
1:C:96:ALA:HB2	9:C:307:PG6:H62	1.87	0.55
1:C:51:LYS:NZ	10:C:403:HOH:O	2.38	0.55
1:B:4:ILE:HG21	1:B:156:GLN:HG2	1.88	0.55
1:C:94:ARG:N	9:C:307:PG6:O1	2.40	0.53
1:C:95:TYR:CB	9:C:307:PG6:H22	2.37	0.53
1:B:138:GLU:HG3	1:B:139:GLU:N	2.25	0.52
1:C:197:SER:HA	9:C:307:PG6:H21	1.91	0.51
1:B:78[A]:ARG:NH2	10:B:407:HOH:O	2.32	0.51
1:B:37:CYS:HB3	5:B:306:TRS:H11	1.92	0.50
1:B:56:LEU:HD12	1:B:59[B]:ILE:HD11	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:68:GLU:HA	8:C:305:PGE:H2	1.93	0.49
1:C:96:ALA:O	1:C:100:ARG:HG3	2.12	0.48
1:B:61:MET:HE1	1:B:161:LEU:HB2	1.94	0.48
1:C:44:THR:HG21	9:C:307:PG6:H112	1.94	0.48
1:C:79:LEU:HD13	1:C:83[B]:ARG:HD2	1.96	0.48
9:C:307:PG6:H122	10:C:401:HOH:O	2.13	0.47
1:C:147:LEU:O	1:C:151:GLU:HG2	2.15	0.47
1:B:64[B]:ARG:NH1	1:C:74:GLU:OE1	2.48	0.47
1:C:10:PHE:O	1:C:179[A]:ARG:HD3	2.15	0.47
1:C:79:LEU:HD13	1:C:83[A]:ARG:HD3	1.97	0.46
1:B:195:PHE:HD2	1:B:196:HIS:CE1	2.33	0.46
1:B:166:GLY:O	10:B:403:HOH:O	2.20	0.46
1:C:37:CYS:HB3	5:C:303:TRS:H21	1.98	0.45
1:B:136:LEU:HD13	1:B:140:LEU:HG	1.98	0.45
7:B:308:PG4:H31	1:C:43:SER:HB2	1.99	0.45
1:C:194:ARG:HB2	9:C:307:PG6:H32	1.99	0.44
1:B:168:GLU:OE2	10:B:404:HOH:O	2.21	0.44
1:B:184:GLU:OE1	10:B:402:HOH:O	2.20	0.44
1:C:194:ARG:CB	9:C:307:PG6:H32	2.47	0.44
8:C:305:PGE:H3	8:C:305:PGE:H12	1.77	0.44
1:B:96:ALA:O	1:B:100[A]:ARG:HG3	2.18	0.43
1:C:122:GLU:OE2	5:C:303:TRS:O3	2.35	0.43
1:B:56:LEU:HD13	1:C:87:LEU:HD11	1.99	0.43
1:B:96:ALA:O	1:B:100[B]:ARG:HG3	2.18	0.43
1:B:189:PRO:HA	1:B:199:ILE:O	2.18	0.43
1:B:196:HIS:HE1	5:B:306:TRS:O1	2.01	0.43
1:B:187:GLN:O	1:B:199:ILE:HD12	2.19	0.42
1:C:95:TYR:HB3	9:C:307:PG6:H51	2.01	0.42
1:B:55:HIS:HD2	10:B:460:HOH:O	2.02	0.42
1:B:56:LEU:HA	1:B:59[B]:ILE:HG12	2.01	0.42
6:B:307:PEG:H42	6:B:307:PEG:H22	1.94	0.42
1:C:172:ALA:O	1:C:176:GLU:HG3	2.20	0.42
1:C:40:LYS:NZ	10:C:407:HOH:O	2.47	0.42
1:B:78[A]:ARG:HD2	1:B:79:LEU:N	2.34	0.41
1:B:87:LEU:HD12	1:B:87:LEU:HA	1.77	0.41
1:C:95:TYR:H	9:C:307:PG6:H22	1.86	0.41
1:C:71:VAL:HG21	8:C:305:PGE:H22	2.02	0.41
1:C:72:HIS:O	1:C:76:VAL:HG23	2.20	0.40
1:C:2:SER:O	1:C:4:ILE:N	2.55	0.40
1:C:100:ARG:HH22	9:C:307:PG6:H111	1.87	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3:LEU:CD2	10:C:518:HOH:O[3_545]	1.82	0.38
10:C:462:HOH:O	10:C:474:HOH:O[4_456]	2.16	0.04
10:B:482:HOH:O	10:C:516:HOH:O[4_446]	2.19	0.01

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	B	206/200 (103%)	201 (98%)	4 (2%)	1 (0%)	29	13
1	C	203/200 (102%)	199 (98%)	3 (2%)	1 (0%)	29	13
All	All	409/400 (102%)	400 (98%)	7 (2%)	2 (0%)	29	13

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	3	LEU
1	B	4	ILE

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	B	173/167 (104%)	168 (97%)	5 (3%)	42	23
1	C	168/167 (101%)	166 (99%)	2 (1%)	71	59

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	341/334 (102%)	334 (98%)	7 (2%)	59 36

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	78[A]	ARG
1	B	78[B]	ARG
1	B	155	TYR
1	B	173	ARG
1	B	201	GLN
1	C	140	LEU
1	C	148	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 15 ligands modelled in this entry, 7 are monoatomic - leaving 8 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	$\#\|Z\|>2$
6	PEG	B	307	-	6,6,6	0.46	0	5,5,5	0.41	0
6	PEG	C	304	-	6,6,6	0.49	0	5,5,5	0.40	0
8	PGE	C	305	-	9,9,9	0.30	0	8,8,8	0.28	0
8	PGE	C	306	-	9,9,9	0.33	0	8,8,8	0.28	0
5	TRS	B	306	2	7,7,7	0.44	0	9,9,9	0.95	0
9	PG6	C	307	-	17,17,17	0.53	0	16,16,16	0.60	0
7	PG4	B	308	-	12,12,12	0.52	0	11,11,11	0.23	0
5	TRS	C	303	2	7,7,7	0.41	0	9,9,9	0.94	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
6	PEG	B	307	-	-	3/4/4/4	-
6	PEG	C	304	-	-	2/4/4/4	-
8	PGE	C	305	-	-	1/7/7/7	-
8	PGE	C	306	-	-	0/7/7/7	-
5	TRS	B	306	2	-	3/9/9/9	-
9	PG6	C	307	-	-	6/15/15/15	-
7	PG4	B	308	-	-	9/10/10/10	-
5	TRS	C	303	2	-	5/9/9/9	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	306	TRS	C1-C-C2-O2
5	B	306	TRS	C3-C-C2-O2
5	B	306	TRS	N-C-C2-O2
5	C	303	TRS	C1-C-C3-O3
5	C	303	TRS	C2-C-C3-O3
5	C	303	TRS	N-C-C3-O3
6	B	307	PEG	C4-C3-O2-C2
9	C	307	PG6	O1-C2-C3-O2
9	C	307	PG6	O5-C10-C11-O6

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Mol	Chain	Res	Type	Atoms
7	B	308	PG4	O3-C5-C6-O4
7	B	308	PG4	C3-C4-O3-C5
7	B	308	PG4	O4-C7-C8-O5
6	C	304	PEG	C4-C3-O2-C2
9	C	307	PG6	C11-C10-O5-C9
7	B	308	PG4	O2-C3-C4-O3
6	B	307	PEG	C1-C2-O2-C3
7	B	308	PG4	C4-C3-O2-C2
7	B	308	PG4	C5-C6-O4-C7
6	B	307	PEG	O2-C3-C4-O4
6	C	304	PEG	C1-C2-O2-C3
9	C	307	PG6	C7-C6-O3-C5
7	B	308	PG4	C1-C2-O2-C3
8	C	305	PGE	C1-C2-O2-C3
7	B	308	PG4	O1-C1-C2-O2
9	C	307	PG6	O3-C6-C7-O4
5	C	303	TRS	C3-C-C1-O1
5	C	303	TRS	N-C-C1-O1
9	C	307	PG6	C2-C3-O2-C4
7	B	308	PG4	C8-C7-O4-C6

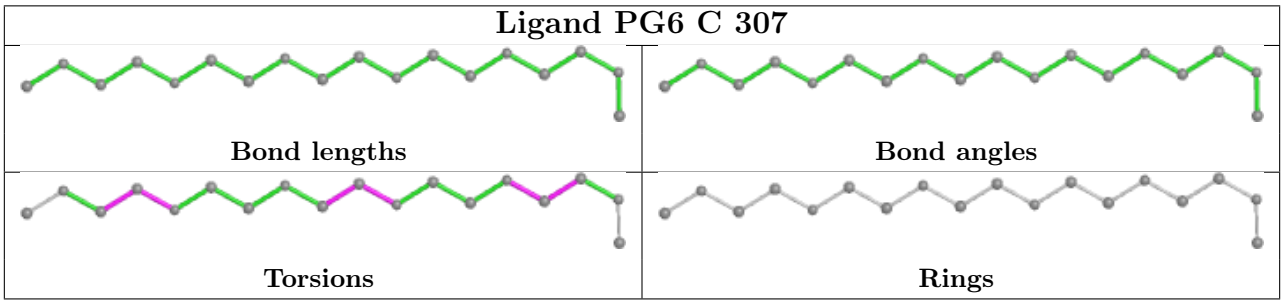
There are no ring outliers.

6 monomers are involved in 28 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	307	PEG	1	0
8	C	305	PGE	4	0
5	B	306	TRS	4	0
9	C	307	PG6	15	0
7	B	308	PG4	1	0
5	C	303	TRS	3	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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier.

The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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, 95^{th} 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	B	199/200 (99%)	0.09	6 (3%)	50	54	23, 34, 61, 73	7 (3%)
1	C	200/200 (100%)	-0.04	2 (1%)	82	85	22, 32, 51, 76	7 (3%)
All	All	399/400 (99%)	0.03	8 (2%)	65	69	22, 33, 55, 76	14 (3%)

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	106	HIS	4.0
1	B	109	VAL	3.5
1	B	191	GLN	3.2
1	B	3	LEU	3.1
1	B	201	GLN	3.0
1	C	2	SER	2.4
1	B	200	PRO	2.3
1	B	108	PRO	2.1

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

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

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,

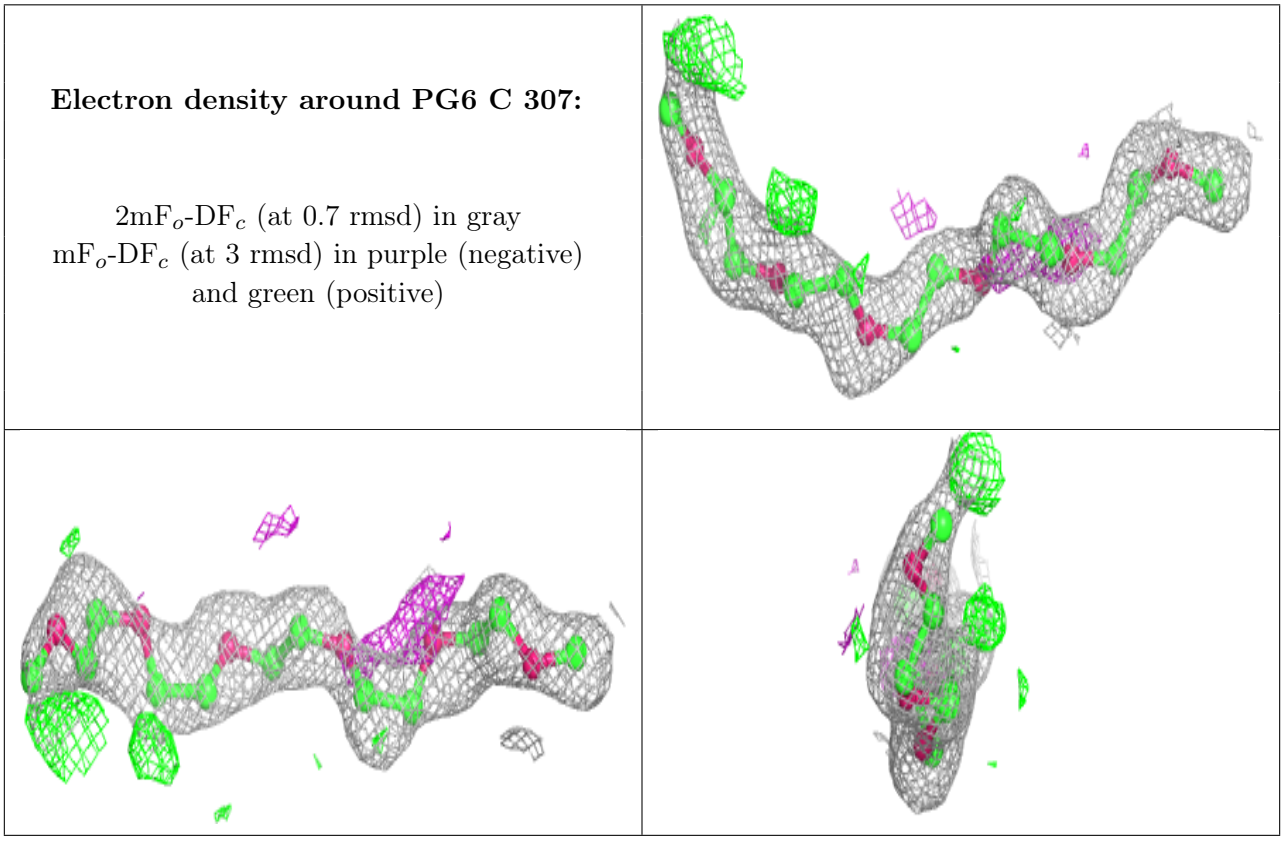
median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
9	PG6	C	307	18/18	0.81	0.22	24,48,57,58	0
8	PGE	C	306	10/10	0.85	0.12	43,50,56,63	0
5	TRS	B	306	8/8	0.86	0.17	30,40,47,50	0
3	CL	B	303	1/1	0.87	0.27	72,72,72,72	0
7	PG4	B	308	13/13	0.90	0.14	41,46,59,60	0
8	PGE	C	305	10/10	0.90	0.16	45,55,59,63	0
5	TRS	C	303	8/8	0.91	0.13	31,45,48,51	0
6	PEG	B	307	7/7	0.92	0.10	47,49,59,59	0
6	PEG	C	304	7/7	0.93	0.10	42,48,51,57	0
2	FE	C	302	1/1	0.99	0.10	31,31,31,31	0
2	FE	B	301	1/1	0.99	0.06	31,31,31,31	0
3	CL	B	304	1/1	0.99	0.10	38,38,38,38	0
4	CA	B	305	1/1	0.99	0.11	28,28,28,28	0
2	FE	B	302	1/1	0.99	0.03	35,35,35,35	0
2	FE	C	301	1/1	0.99	0.10	29,29,29,29	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.

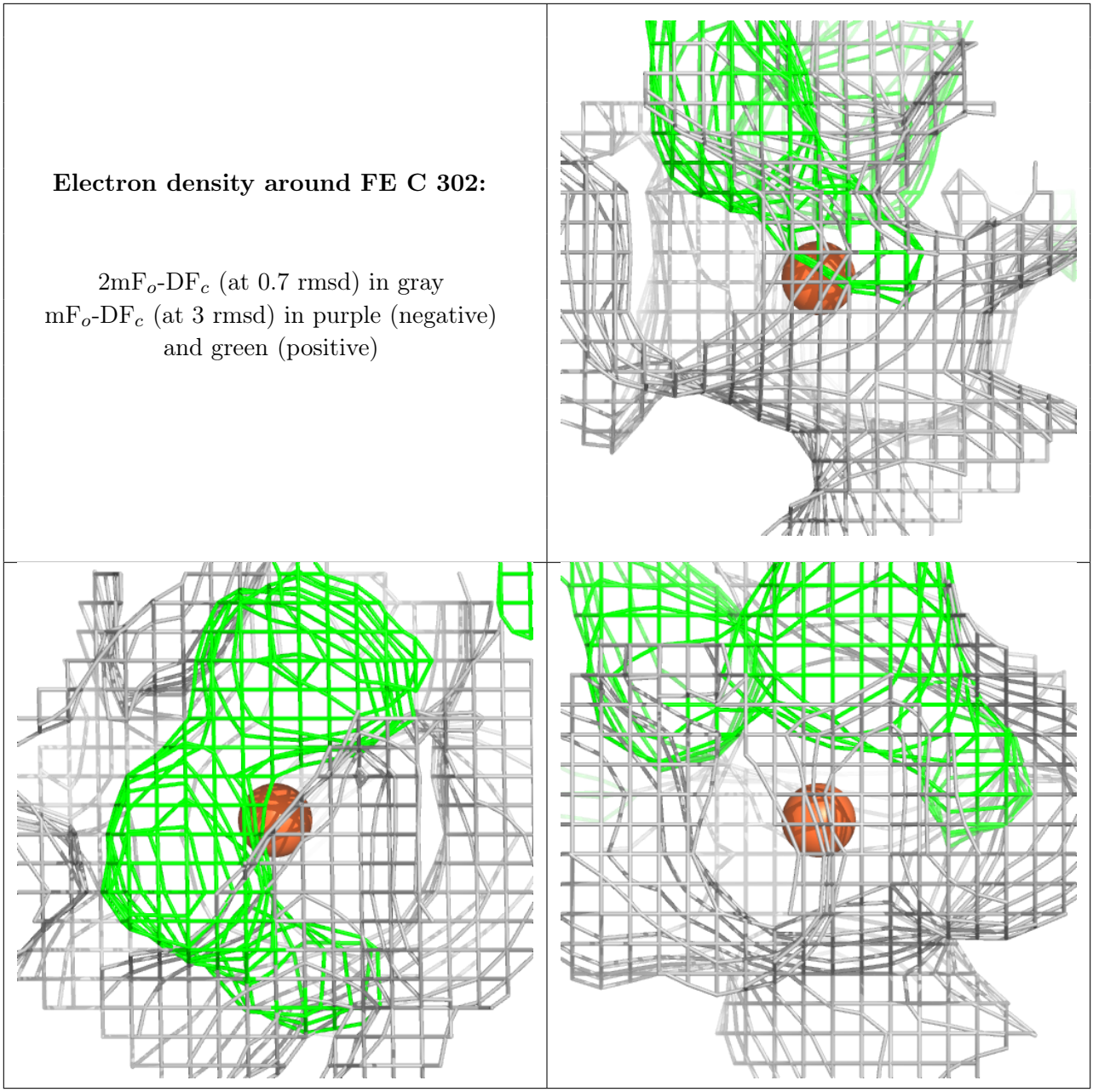
Electron density around PG6 C 307:

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



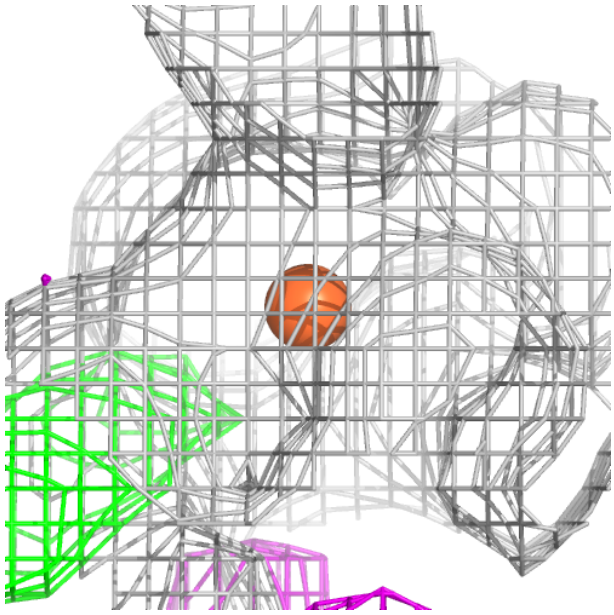
Electron density around FE C 302:

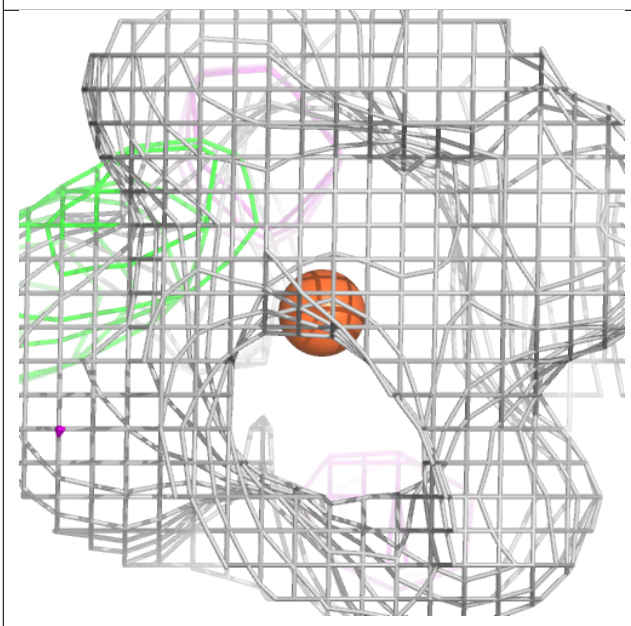
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

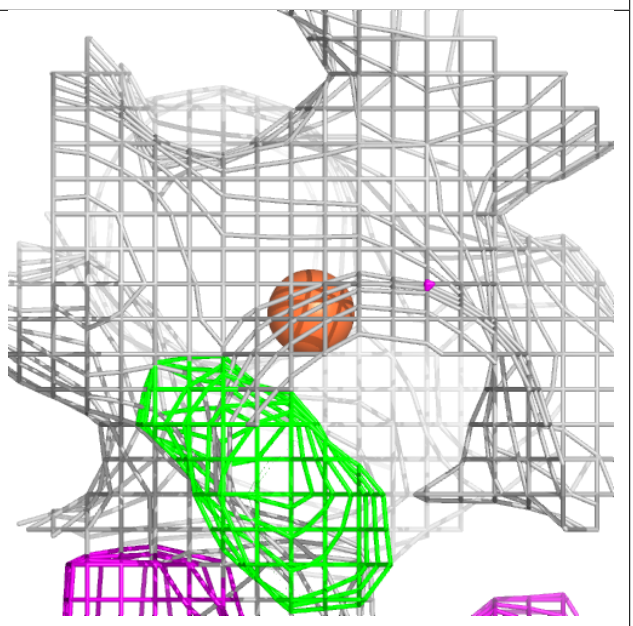


Electron density around FE B 301:

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

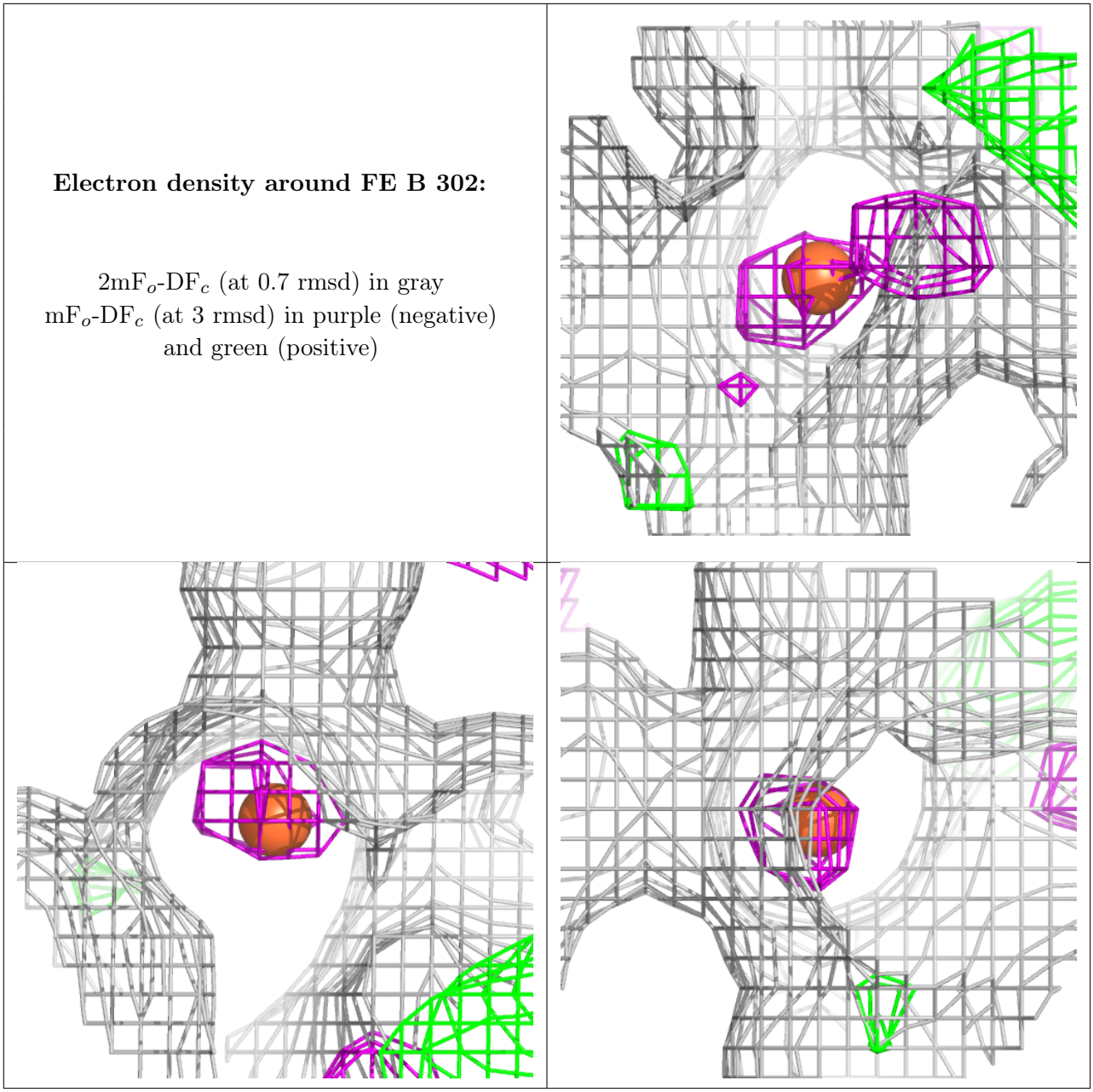






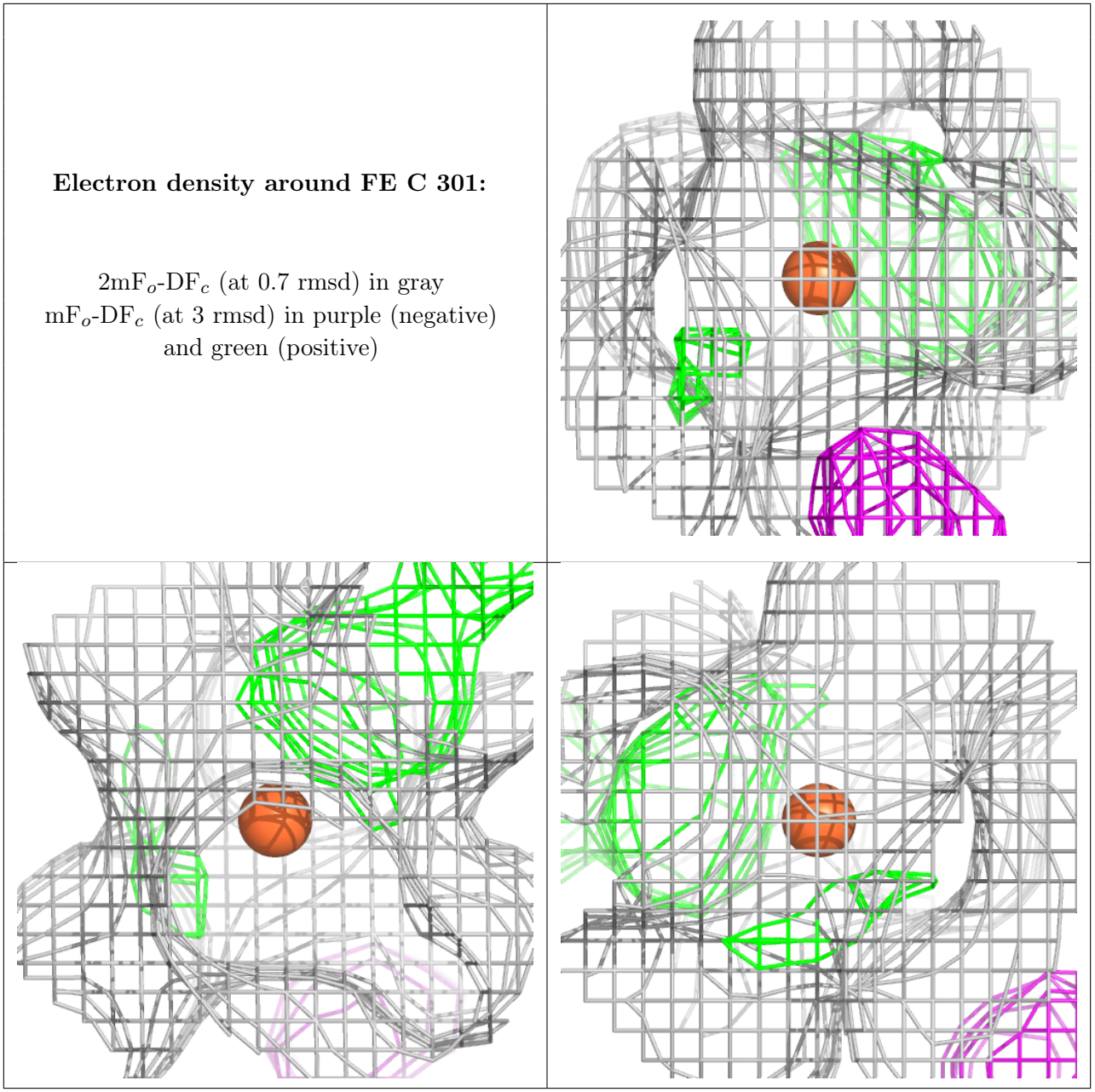
Electron density around FE B 302:

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



Electron density around FE 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)



6.5 Other polymers

There are no such residues in this entry.