



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 08:08 PM UTC

PDB ID : 6L9I / pdb_00006l9i
Title : Crystal Structure of Lactobacillus farciminis Oxalate Decarboxylase Formate Complex
Authors : Wu, F.; Cheng, L.K.; Wang, C.Y.
Deposited on : 2019-11-10
Resolution : 2.79 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:

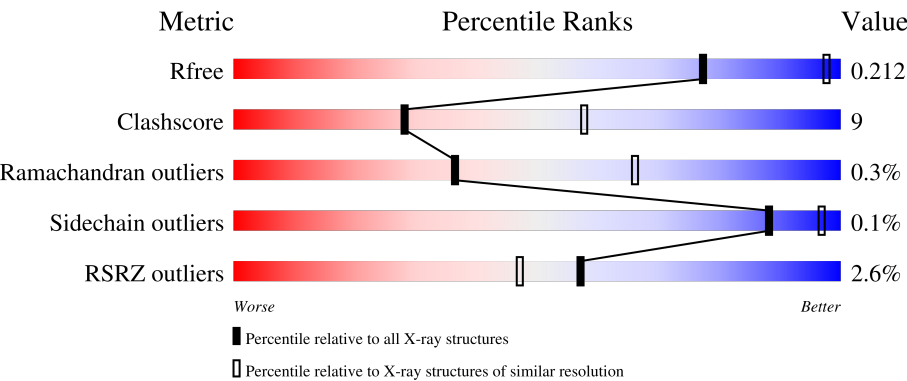
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 2.79 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}	180053	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	360	%74%18%• 6%
1	B	360	2%75%19%6%
1	C	360	2%73%20%• 6%
1	D	360	2%71%22%• 6%
1	E	360	3%77%16%• 6%

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Mol	Chain	Length	Quality of chain
1	F	360	

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	FMT	D	401	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 16298 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 Oxalate decarboxylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			
1	B	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			
1	C	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			
1	D	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			
1	E	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			
1	F	338	Total	C	N	O	S	4	0	0
			2670	1714	447	501	8			

There are 48 discrepancies between the modelled and reference sequences:

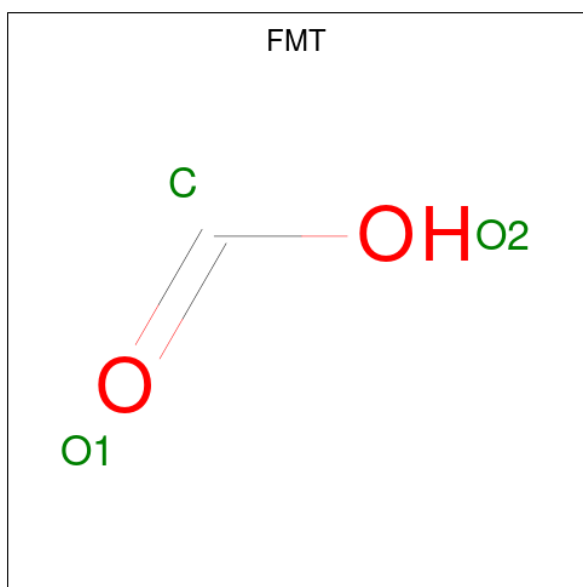
Chain	Residue	Modelled	Actual	Comment	Reference
A	374	LEU	-	expression tag	UNP A0A0H4LHD1
A	375	GLU	-	expression tag	UNP A0A0H4LHD1
A	376	HIS	-	expression tag	UNP A0A0H4LHD1
A	377	HIS	-	expression tag	UNP A0A0H4LHD1
A	378	HIS	-	expression tag	UNP A0A0H4LHD1
A	379	HIS	-	expression tag	UNP A0A0H4LHD1
A	380	HIS	-	expression tag	UNP A0A0H4LHD1
A	381	HIS	-	expression tag	UNP A0A0H4LHD1
B	374	LEU	-	expression tag	UNP A0A0H4LHD1
B	375	GLU	-	expression tag	UNP A0A0H4LHD1
B	376	HIS	-	expression tag	UNP A0A0H4LHD1
B	377	HIS	-	expression tag	UNP A0A0H4LHD1
B	378	HIS	-	expression tag	UNP A0A0H4LHD1
B	379	HIS	-	expression tag	UNP A0A0H4LHD1
B	380	HIS	-	expression tag	UNP A0A0H4LHD1
B	381	HIS	-	expression tag	UNP A0A0H4LHD1
C	374	LEU	-	expression tag	UNP A0A0H4LHD1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	375	GLU	-	expression tag	UNP A0A0H4LHD1
C	376	HIS	-	expression tag	UNP A0A0H4LHD1
C	377	HIS	-	expression tag	UNP A0A0H4LHD1
C	378	HIS	-	expression tag	UNP A0A0H4LHD1
C	379	HIS	-	expression tag	UNP A0A0H4LHD1
C	380	HIS	-	expression tag	UNP A0A0H4LHD1
C	381	HIS	-	expression tag	UNP A0A0H4LHD1
D	374	LEU	-	expression tag	UNP A0A0H4LHD1
D	375	GLU	-	expression tag	UNP A0A0H4LHD1
D	376	HIS	-	expression tag	UNP A0A0H4LHD1
D	377	HIS	-	expression tag	UNP A0A0H4LHD1
D	378	HIS	-	expression tag	UNP A0A0H4LHD1
D	379	HIS	-	expression tag	UNP A0A0H4LHD1
D	380	HIS	-	expression tag	UNP A0A0H4LHD1
D	381	HIS	-	expression tag	UNP A0A0H4LHD1
E	374	LEU	-	expression tag	UNP A0A0H4LHD1
E	375	GLU	-	expression tag	UNP A0A0H4LHD1
E	376	HIS	-	expression tag	UNP A0A0H4LHD1
E	377	HIS	-	expression tag	UNP A0A0H4LHD1
E	378	HIS	-	expression tag	UNP A0A0H4LHD1
E	379	HIS	-	expression tag	UNP A0A0H4LHD1
E	380	HIS	-	expression tag	UNP A0A0H4LHD1
E	381	HIS	-	expression tag	UNP A0A0H4LHD1
F	374	LEU	-	expression tag	UNP A0A0H4LHD1
F	375	GLU	-	expression tag	UNP A0A0H4LHD1
F	376	HIS	-	expression tag	UNP A0A0H4LHD1
F	377	HIS	-	expression tag	UNP A0A0H4LHD1
F	378	HIS	-	expression tag	UNP A0A0H4LHD1
F	379	HIS	-	expression tag	UNP A0A0H4LHD1
F	380	HIS	-	expression tag	UNP A0A0H4LHD1
F	381	HIS	-	expression tag	UNP A0A0H4LHD1

- Molecule 2 is FORMIC ACID (CCD ID: FMT) (formula: CH₂O₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			3	1	2		
2	B	1	Total	C	O	0	0
			3	1	2		
2	C	1	Total	C	O	0	0
			3	1	2		
2	D	1	Total	C	O	0	0
			3	1	2		
2	E	1	Total	C	O	0	0
			3	1	2		
2	F	1	Total	C	O	0	0
			3	1	2		

- Molecule 3 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total	Mn	0	0
			2	2		
3	B	2	Total	Mn	0	0
			2	2		
3	C	2	Total	Mn	0	0
			2	2		
3	D	2	Total	Mn	0	0
			2	2		
3	E	2	Total	Mn	0	0
			2	2		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	F	2	Total 2	Mn 2	0	0

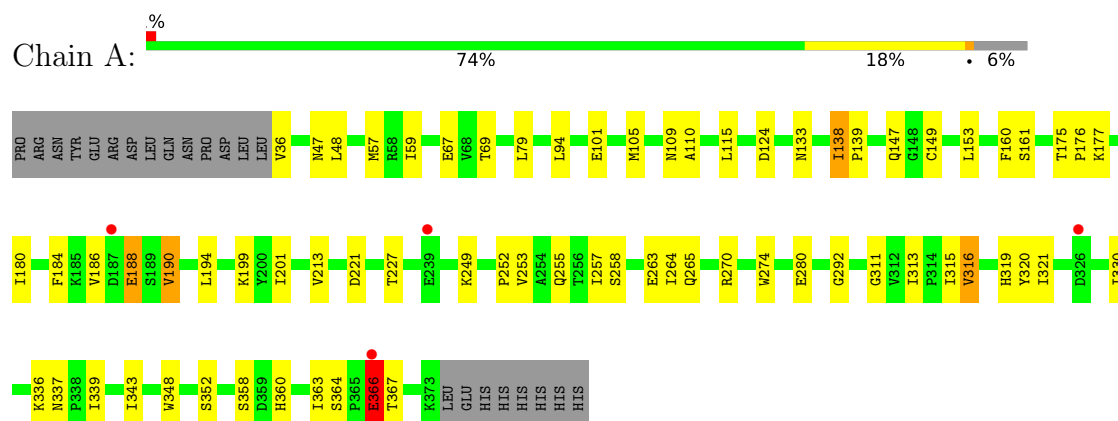
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	43	Total 43	O 43	0	0
4	B	61	Total 61	O 61	0	0
4	C	39	Total 39	O 39	0	0
4	D	43	Total 43	O 43	0	0
4	E	35	Total 35	O 35	0	0
4	F	27	Total 27	O 27	0	0

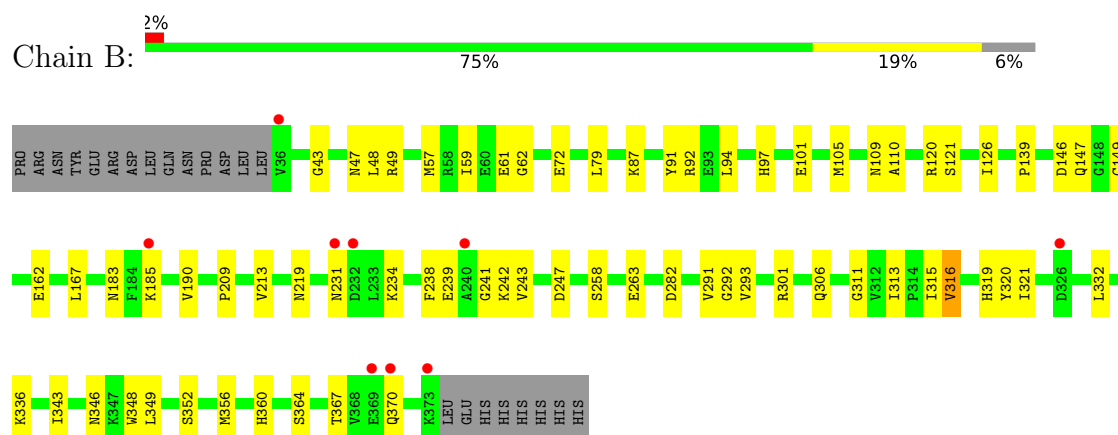
3 Residue-property plots

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 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.

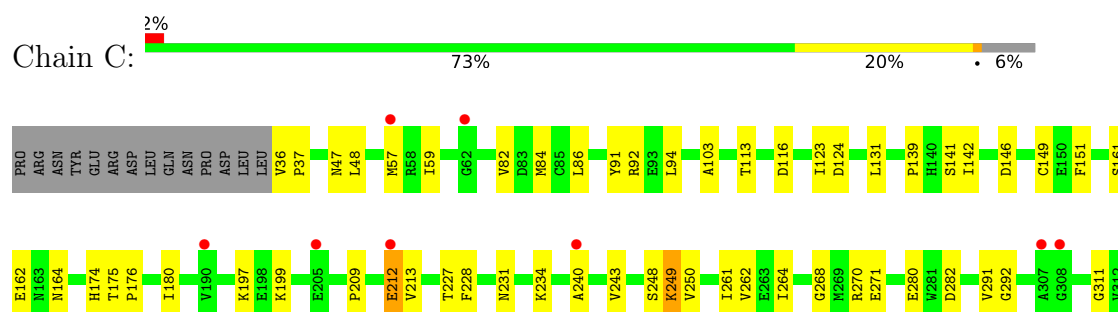
• Molecule 1: Oxalate decarboxylase



• Molecule 1: Oxalate decarboxylase

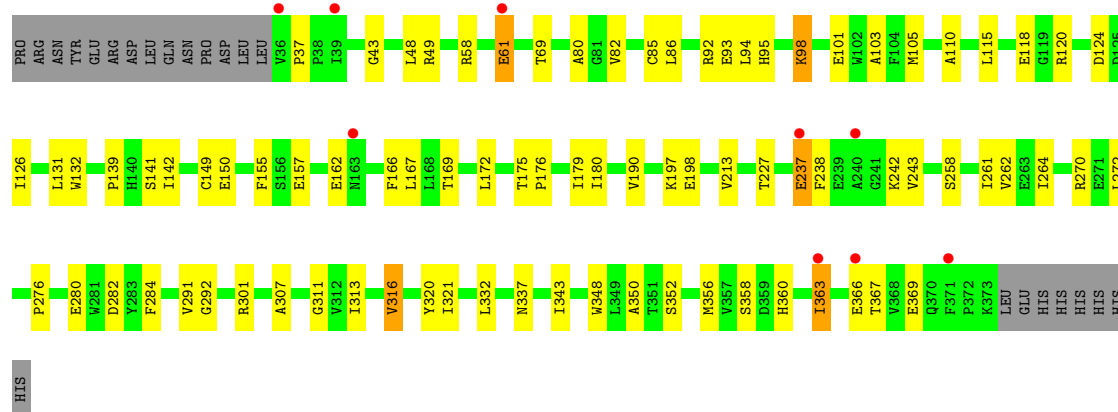


• Molecule 1: Oxalate decarboxylase

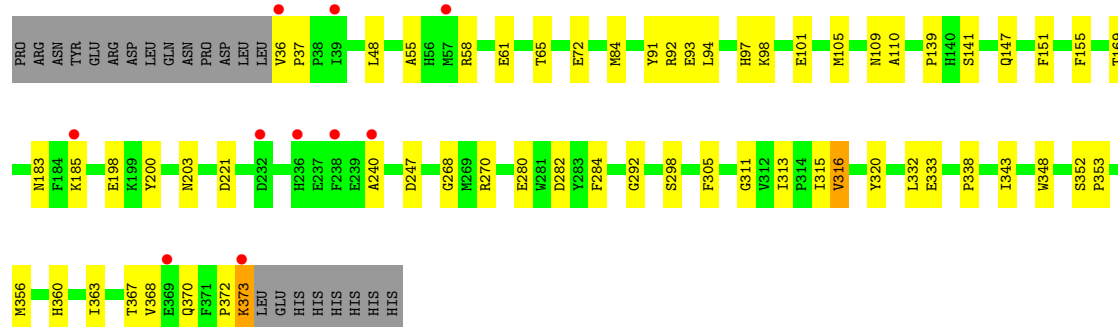
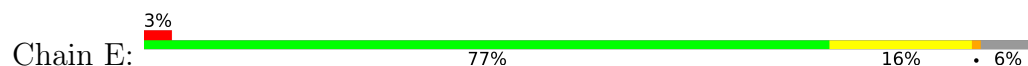




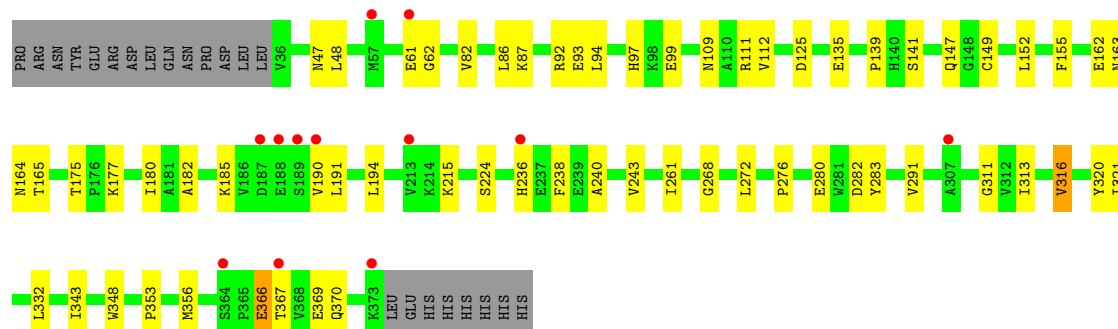
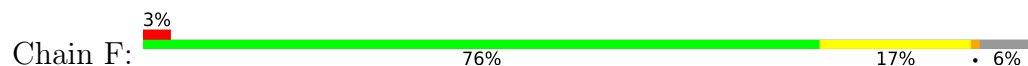
• Molecule 1: Oxalate decarboxylase



• Molecule 1: Oxalate decarboxylase



• Molecule 1: Oxalate decarboxylase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	92.96Å 122.84Å 115.22Å 90.00° 92.47° 90.00°	Depositor
Resolution (Å)	48.00 – 2.79 48.00 – 2.79	Depositor EDS
% Data completeness (in resolution range)	96.9 (48.00-2.79) 96.9 (48.00-2.79)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.04 (at 2.81Å)	Xtriage
Refinement program	PHENIX 1.17_3644	Depositor
R, R_{free}	0.197 , 0.229 (Not available) , 0.212	Depositor DCC
R_{free} test set	3106 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å ²)	35.8	Xtriage
Anisotropy	0.690	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 36.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.058 for h,-k,-l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	16298	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.06% 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: MN, FMT

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	0.36	1/2751 (0.0%)	0.67	6/3750 (0.2%)
1	B	0.35	1/2751 (0.0%)	0.69	6/3750 (0.2%)
1	C	0.32	0/2751	0.68	9/3750 (0.2%)
1	D	0.33	1/2751 (0.0%)	0.66	5/3750 (0.1%)
1	E	0.31	0/2751	0.61	3/3750 (0.1%)
1	F	0.30	0/2751	0.66	3/3750 (0.1%)
All	All	0.33	3/16506 (0.0%)	0.66	32/22500 (0.1%)

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	1
1	B	0	1
1	C	0	1
All	All	0	3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	138	ILE	CA-C	6.74	1.59	1.52
1	B	234	LYS	CG-CD	6.73	1.72	1.52
1	D	363	ILE	CG1-CD1	5.32	1.72	1.51

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	234	LYS	CB-CG-CD	10.63	135.75	111.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	234	LYS	CA-CB-CG	10.33	134.75	114.10
1	B	234	LYS	CG-CD-CE	8.37	130.56	111.30
1	E	373	LYS	CD-CE-NZ	-7.59	87.59	111.90
1	A	366	GLU	CG-CD-OE2	-7.26	101.70	118.40
1	E	185	LYS	CB-CG-CD	7.01	127.42	111.30
1	B	234	LYS	CD-CE-NZ	-6.98	89.57	111.90
1	C	231	ASN	CB-CA-C	-6.89	95.90	110.31
1	F	61	GLU	CA-CB-CG	6.89	127.88	114.10
1	C	234	LYS	CB-CA-C	6.74	119.01	108.63
1	C	249	LYS	CG-CD-CE	-6.64	96.03	111.30
1	B	239	GLU	CA-CB-CG	6.57	127.23	114.10
1	D	363	ILE	CA-CB-CG1	6.51	121.47	110.40
1	D	98	LYS	CG-CD-CE	6.23	125.62	111.30
1	C	249	LYS	CA-CB-CG	-6.21	101.68	114.10
1	D	98	LYS	CD-CE-NZ	-6.20	92.05	111.90
1	E	373	LYS	CA-CB-CG	-6.03	102.05	114.10
1	C	234	LYS	CB-CG-CD	-6.02	97.45	111.30
1	A	366	GLU	CA-C-N	6.01	128.82	120.29
1	A	366	GLU	C-N-CA	6.01	128.82	120.29
1	A	366	GLU	CG-CD-OE1	5.74	131.61	118.40
1	B	61	GLU	CA-CB-CG	5.68	125.47	114.10
1	D	237	GLU	CA-CB-CG	-5.65	102.80	114.10
1	C	248	SER	CA-C-N	5.62	130.11	120.72
1	C	248	SER	C-N-CA	5.62	130.11	120.72
1	A	190	VAL	N-CA-CB	5.53	120.10	110.65
1	A	188	GLU	N-CA-C	5.46	117.99	111.71
1	C	231	ASN	N-CA-CB	5.46	119.45	110.39
1	C	234	LYS	CD-CE-NZ	-5.46	94.44	111.90
1	F	236	HIS	N-CA-CB	5.41	117.91	109.85
1	D	363	ILE	CG1-CB-CG2	-5.29	94.84	110.70
1	F	366	GLU	CA-CB-CG	-5.26	103.58	114.10

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	366	GLU	Sidechain
1	B	231	ASN	Sidechain
1	C	212	GLU	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2670	0	2552	54	0
1	B	2670	0	2552	53	0
1	C	2670	0	2552	58	0
1	D	2670	0	2552	63	0
1	E	2670	0	2552	47	0
1	F	2670	0	2552	48	0
2	A	3	0	1	0	0
2	B	3	0	1	1	0
2	C	3	0	1	0	0
2	D	3	0	1	2	0
2	E	3	0	1	1	0
2	F	3	0	1	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	2	0	0	0	0
4	A	43	0	0	6	0
4	B	61	0	0	8	0
4	C	39	0	0	4	0
4	D	43	0	0	5	0
4	E	35	0	0	4	0
4	F	27	0	0	3	0
All	All	16298	0	15318	278	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 9.

All (278) 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:F:47:ASN:O	4:F:501:HOH:O	1.91	0.87
1:E:55:ALA:O	4:E:501:HOH:O	1.95	0.84
1:D:213:VAL:O	4:D:501:HOH:O	1.96	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:367:THR:O	1:B:370:GLN:HB2	1.82	0.80
1:B:349:LEU:O	4:B:501:HOH:O	2.05	0.74
1:E:198:GLU:OE2	4:E:502:HOH:O	2.04	0.74
1:E:221:ASP:OD1	4:E:503:HOH:O	2.06	0.72
1:D:237:GLU:HG3	1:D:238:PHE:N	2.03	0.71
1:A:221:ASP:OD1	4:A:501:HOH:O	2.09	0.71
1:B:242:LYS:NZ	4:B:505:HOH:O	2.21	0.71
1:C:315:ILE:HG12	1:C:316:VAL:HG13	1.74	0.70
1:F:135:GLU:O	4:F:502:HOH:O	2.11	0.69
1:B:146:ASP:OD1	4:B:502:HOH:O	2.12	0.68
1:A:364:SER:HB2	1:A:366:GLU:HG2	1.74	0.68
1:B:238:PHE:HE1	1:B:243:VAL:HG23	1.57	0.68
1:B:49:ARG:NH1	4:B:504:HOH:O	2.27	0.68
1:A:352:SER:OG	4:A:502:HOH:O	2.11	0.68
1:A:358:SER:OG	1:A:363:ILE:O	2.08	0.67
1:A:265:GLN:NE2	4:A:505:HOH:O	2.24	0.67
1:F:238:PHE:HE1	1:F:243:VAL:HG23	1.60	0.67
1:A:36:VAL:N	4:A:506:HOH:O	2.27	0.67
1:C:47:ASN:O	4:C:501:HOH:O	2.13	0.67
1:D:343:ILE:HD13	1:F:139:PRO:HD3	1.76	0.66
1:A:188:GLU:O	4:A:504:HOH:O	2.13	0.66
1:C:352:SER:HB3	1:C:356:MET:HE2	1.79	0.64
1:E:92:ARG:NH2	2:E:401:FMT:O2	2.30	0.64
1:C:261:ILE:HG12	1:C:332:LEU:HD22	1.79	0.63
1:D:358:SER:OG	1:D:363:ILE:O	2.13	0.63
1:C:36:VAL:N	4:C:508:HOH:O	2.31	0.63
1:C:249:LYS:HE3	1:C:339:ILE:HD12	1.80	0.63
1:D:237:GLU:OE1	1:D:242:LYS:HG2	1.99	0.62
1:C:291:VAL:HG22	1:C:321:ILE:HG12	1.81	0.62
1:D:261:ILE:HG12	1:D:332:LEU:HD22	1.81	0.62
1:D:49:ARG:NH1	4:D:509:HOH:O	2.33	0.62
1:B:306:GLN:NE2	4:B:510:HOH:O	2.31	0.61
1:C:199:LYS:NZ	1:E:360:HIS:O	2.30	0.61
1:A:67:GLU:OE1	1:A:161:SER:HB2	2.00	0.61
1:B:315:ILE:HG12	1:B:316:VAL:HG13	1.83	0.61
1:B:183:ASN:O	1:B:185:LYS:NZ	2.33	0.61
1:B:185:LYS:HD2	1:C:372:PRO:HG3	1.84	0.60
1:D:175:THR:HB	1:D:180:ILE:HD11	1.83	0.60
1:C:240:ALA:HB1	1:C:268:GLY:HA3	1.83	0.60
1:D:61:GLU:HG3	1:D:61:GLU:O	2.02	0.60
1:B:348:TRP:CE2	1:E:139:PRO:HB2	2.36	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:243:VAL:HG23	1:C:262:VAL:HG22	1.85	0.59
1:A:249:LYS:HE3	1:A:339:ILE:HD12	1.85	0.59
1:C:146:ASP:OD1	4:C:502:HOH:O	2.17	0.59
1:A:315:ILE:HG12	1:A:316:VAL:HG13	1.84	0.58
1:E:372:PRO:C	1:E:373:LYS:HG2	2.27	0.58
1:B:110:ALA:HB3	1:B:126:ILE:HD11	1.85	0.58
1:C:270:ARG:NH2	1:C:333:GLU:OE1	2.35	0.58
1:D:118:GLU:OE1	1:D:120:ARG:NH2	2.37	0.58
1:F:62:GLY:HA2	1:F:87:LYS:HD2	1.85	0.58
1:C:209:PRO:HD2	1:C:212:GLU:OE1	2.04	0.57
1:B:247:ASP:HA	1:B:258:SER:HB2	1.87	0.57
1:F:92:ARG:HH22	1:F:165:THR:HG21	1.68	0.57
1:F:175:THR:HB	1:F:180:ILE:HD11	1.85	0.56
1:F:238:PHE:CE1	1:F:243:VAL:HG23	2.40	0.56
1:D:86:LEU:HB2	1:D:149:CYS:SG	2.46	0.56
1:D:115:LEU:O	1:D:139:PRO:HD2	2.06	0.56
1:C:59:ILE:HD11	1:D:37:PRO:HD2	1.86	0.56
1:A:47:ASN:HB2	1:B:72:GLU:HG3	1.88	0.55
1:D:101:GLU:HG3	1:D:155:PHE:CE2	2.41	0.55
1:E:61:GLU:HG2	1:E:203:ASN:ND2	2.22	0.55
1:B:94:LEU:HD11	1:C:356:MET:HE3	1.89	0.55
1:C:91:TYR:CE1	1:E:356:MET:HG3	2.42	0.55
1:E:352:SER:HB3	1:E:356:MET:HE2	1.89	0.55
1:E:372:PRO:O	1:E:373:LYS:HG2	2.07	0.55
1:C:175:THR:HB	1:C:180:ILE:HD11	1.87	0.55
1:A:315:ILE:HG21	1:D:98:LYS:HD2	1.90	0.54
1:B:190:VAL:HG11	1:C:367:THR:HG21	1.90	0.54
1:D:172:LEU:HD22	1:D:180:ILE:HD13	1.90	0.54
1:E:280:GLU:HB3	1:E:313:ILE:HB	1.88	0.54
1:D:258:SER:OG	1:D:337:ASN:O	2.21	0.54
1:F:163:ASN:C	1:F:164:ASN:HD22	2.15	0.54
1:F:240:ALA:HB1	1:F:268:GLY:HA3	1.90	0.54
1:A:57:MET:HG2	1:A:59:ILE:HG13	1.91	0.53
1:B:47:ASN:OD1	4:B:504:HOH:O	2.18	0.53
1:B:190:VAL:CG1	1:C:367:THR:HG21	2.38	0.53
1:A:366:GLU:HG3	1:A:367:THR:H	1.73	0.53
1:B:282:ASP:HA	1:B:332:LEU:O	2.09	0.53
1:F:280:GLU:HB3	1:F:313:ILE:HB	1.90	0.53
1:E:292:GLY:HA3	1:E:320:TYR:CE1	2.44	0.53
1:A:124:ASP:OD2	1:A:227:THR:HG21	2.08	0.53
1:A:139:PRO:HD3	1:F:343:ILE:HD13	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:124:ASP:OD2	1:C:227:THR:HG21	2.08	0.53
1:D:157:GLU:OE2	4:D:504:HOH:O	2.19	0.53
1:A:264:ILE:HD11	1:A:270:ARG:HB2	1.91	0.53
1:A:366:GLU:HG3	1:A:367:THR:N	2.24	0.53
1:C:161:SER:HB3	1:C:164:ASN:HD22	1.74	0.53
1:E:72:GLU:HG3	1:F:47:ASN:HB2	1.91	0.53
1:A:258:SER:OG	1:A:337:ASN:O	2.15	0.52
1:E:97:HIS:CE1	1:E:101:GLU:HG3	2.44	0.52
1:A:348:TRP:CE2	1:D:139:PRO:HB2	2.44	0.52
1:C:280:GLU:HB3	1:C:313:ILE:HB	1.91	0.52
1:F:291:VAL:HG22	1:F:321:ILE:HG12	1.92	0.52
1:B:43:GLY:O	1:B:301:ARG:NH2	2.40	0.51
1:C:271:GLU:OE1	4:C:503:HOH:O	2.19	0.51
1:D:367:THR:HG21	1:F:190:VAL:CG1	2.39	0.51
1:F:177:LYS:HE3	1:F:191:LEU:HB2	1.92	0.51
1:F:272:LEU:HD23	1:F:320:TYR:HB3	1.92	0.51
1:E:97:HIS:HE1	1:E:101:GLU:HG3	1.74	0.51
1:F:224:SER:OG	4:F:503:HOH:O	2.12	0.51
1:B:79:LEU:HD21	1:B:336:LYS:HB2	1.93	0.51
1:A:263:GLU:HG3	1:A:330:ILE:HG12	1.93	0.51
1:A:343:ILE:HD12	1:D:139:PRO:HD3	1.91	0.51
1:D:264:ILE:HD11	1:D:270:ARG:HB2	1.92	0.51
1:D:291:VAL:HG22	1:D:321:ILE:HG23	1.93	0.51
1:B:97:HIS:CE1	1:B:101:GLU:HG3	2.45	0.51
1:C:103:ALA:O	1:C:131:LEU:HA	2.11	0.51
1:A:94:LEU:HD21	1:F:356:MET:HE3	1.93	0.50
1:C:94:LEU:HD21	1:E:356:MET:HE3	1.93	0.50
1:C:176:PRO:O	1:C:180:ILE:HG13	2.11	0.50
1:F:86:LEU:HB2	1:F:149:CYS:SG	2.52	0.50
1:F:97:HIS:NE2	1:F:155:PHE:HE2	2.09	0.50
1:C:94:LEU:HD23	1:C:141:SER:HB3	1.93	0.49
1:D:280:GLU:HB3	1:D:313:ILE:HB	1.94	0.49
1:E:282:ASP:HA	1:E:332:LEU:O	2.12	0.49
1:E:284:PHE:CE1	1:E:305:PHE:CD2	3.00	0.49
1:C:213:VAL:HG22	1:E:353:PRO:HB3	1.94	0.49
1:C:352:SER:HB3	1:C:356:MET:CE	2.43	0.49
1:D:162:GLU:OE1	2:D:401:FMT:O2	2.29	0.49
1:B:105:MET:SD	1:B:126:ILE:HD13	2.51	0.49
1:B:139:PRO:HD3	1:C:343:ILE:HD13	1.95	0.49
1:E:94:LEU:HD23	1:E:141:SER:HB3	1.94	0.49
1:F:261:ILE:HG12	1:F:332:LEU:HD23	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:175:THR:HB	1:A:180:ILE:HD11	1.93	0.49
1:B:343:ILE:HD12	1:E:139:PRO:HD3	1.94	0.49
1:C:86:LEU:HB2	1:C:149:CYS:SG	2.52	0.49
1:A:280:GLU:HB3	1:A:313:ILE:HB	1.96	0.48
1:C:139:PRO:HD3	1:E:343:ILE:HD13	1.95	0.48
1:C:57:MET:HE3	1:C:59:ILE:HG12	1.96	0.48
1:B:139:PRO:HB2	1:C:348:TRP:CE2	2.48	0.48
1:D:85:CYS:HB2	1:D:150:GLU:HG3	1.95	0.48
1:B:105:MET:HE3	1:B:149:CYS:HB2	1.95	0.48
1:B:92:ARG:HH12	1:B:167:LEU:HD21	1.77	0.48
1:E:270:ARG:NH2	1:E:333:GLU:OE1	2.45	0.48
1:A:105:MET:HE1	1:A:110:ALA:CB	2.44	0.48
1:B:48:LEU:O	1:B:311:GLY:HA2	2.14	0.48
1:C:366:GLU:CD	1:C:366:GLU:H	2.22	0.48
1:A:213:VAL:HG13	1:F:353:PRO:HB3	1.96	0.48
1:D:352:SER:HB3	1:D:356:MET:HE2	1.96	0.48
1:B:352:SER:O	4:B:501:HOH:O	2.20	0.47
1:B:352:SER:HB3	1:B:356:MET:HE2	1.95	0.47
1:F:82:VAL:HG11	1:F:162:GLU:HG3	1.95	0.47
1:C:197:LYS:HB3	1:C:197:LYS:HE2	1.52	0.47
1:A:360:HIS:CD2	1:D:93:GLU:HG3	2.49	0.47
1:D:92:ARG:HH12	1:D:167:LEU:HD21	1.79	0.47
1:E:93:GLU:OE2	1:E:169:THR:OG1	2.23	0.47
1:E:240:ALA:HB1	1:E:268:GLY:HA3	1.97	0.47
1:C:94:LEU:CD2	1:C:141:SER:HB3	2.45	0.47
1:C:264:ILE:HD12	1:C:331:PHE:HE1	1.80	0.47
1:D:124:ASP:OD2	1:D:227:THR:HG21	2.15	0.47
1:D:197:LYS:HG3	4:D:528:HOH:O	2.14	0.47
1:D:356:MET:HE3	1:F:94:LEU:HD11	1.96	0.47
1:D:276:PRO:HA	1:D:316:VAL:HG12	1.96	0.46
1:D:348:TRP:CE2	1:F:139:PRO:HB2	2.50	0.46
1:D:126:ILE:HD11	1:D:132:TRP:HE3	1.80	0.46
1:D:126:ILE:HD11	1:D:132:TRP:CE3	2.50	0.46
1:D:243:VAL:HG13	1:D:262:VAL:HG22	1.96	0.46
1:A:252:PRO:O	1:A:255:GLN:NE2	2.41	0.46
1:E:315:ILE:HG12	1:E:316:VAL:HG13	1.97	0.46
1:B:109:ASN:OD1	1:B:147:GLN:HB2	2.16	0.46
1:B:291:VAL:HG22	1:B:321:ILE:HG23	1.98	0.46
1:B:292:GLY:HA3	1:B:320:TYR:CE1	2.51	0.46
1:C:174:HIS:CE1	1:E:298:SER:HB3	2.50	0.46
1:F:111:ARG:HE	1:F:125:ASP:CG	2.24	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:292:GLY:HA3	1:A:320:TYR:CE1	2.51	0.46
1:E:109:ASN:OD1	1:E:147:GLN:HB2	2.16	0.46
1:C:361:LEU:HB2	1:C:363:ILE:HG12	1.98	0.45
1:F:48:LEU:O	1:F:311:GLY:HA2	2.17	0.45
1:F:282:ASP:HA	1:F:332:LEU:O	2.17	0.45
1:A:184:PHE:O	1:A:186:VAL:HG13	2.16	0.45
1:D:43:GLY:O	1:D:301:ARG:NH2	2.49	0.45
1:A:48:LEU:O	1:A:311:GLY:HA2	2.16	0.45
1:A:274:TRP:CH2	1:D:139:PRO:HB3	2.51	0.45
1:B:346:ASN:OD1	1:E:183:ASN:ND2	2.49	0.45
1:F:191:LEU:HD22	1:F:194:LEU:HD11	1.99	0.45
1:A:270:ARG:HB3	1:A:321:ILE:HB	1.99	0.45
1:E:36:VAL:HA	1:E:37:PRO:HD3	1.85	0.45
1:F:182:ALA:O	1:F:185:LYS:HD3	2.17	0.45
1:B:57:MET:HG2	1:B:59:ILE:HG12	1.98	0.45
1:F:152:LEU:HD22	1:F:283:TYR:CD2	2.51	0.45
1:E:363:ILE:HG13	1:E:368:VAL:HG23	1.99	0.45
1:F:366:GLU:O	1:F:370:GLN:HG3	2.17	0.45
1:D:366:GLU:HA	1:D:369:GLU:OE1	2.17	0.45
1:C:92:ARG:HB3	1:C:142:ILE:HB	1.98	0.44
1:D:103:ALA:O	1:D:131:LEU:HA	2.16	0.44
1:D:82:VAL:HG21	1:D:162:GLU:HG2	1.98	0.44
1:A:79:LEU:HD21	1:A:336:LYS:HB2	1.98	0.44
1:E:91:TYR:OH	4:E:504:HOH:O	2.16	0.44
1:C:228:PHE:CE2	1:C:250:VAL:HG12	2.53	0.44
1:D:284:PHE:O	1:D:307:ALA:O	2.34	0.44
1:F:177:LYS:HB3	1:F:177:LYS:HE2	1.56	0.44
1:C:292:GLY:O	1:C:319:HIS:HA	2.17	0.44
1:F:62:GLY:CA	1:F:87:LYS:HD2	2.47	0.44
1:F:353:PRO:HD2	1:F:356:MET:HE2	1.99	0.44
1:A:177:LYS:HE3	1:A:194:LEU:HD12	2.00	0.44
1:B:162:GLU:OE1	2:B:401:FMT:O2	2.34	0.44
1:B:48:LEU:CD1	1:B:293:VAL:HG11	2.48	0.44
1:B:291:VAL:HG13	1:B:321:ILE:HG12	1.99	0.44
1:A:115:LEU:O	1:A:139:PRO:HD2	2.18	0.43
1:A:176:PRO:O	1:A:180:ILE:HG13	2.17	0.43
1:B:91:TYR:OH	4:B:503:HOH:O	2.16	0.43
1:B:62:GLY:HA2	1:B:87:LYS:HD2	2.00	0.43
1:D:272:LEU:HD23	1:D:320:TYR:HB3	2.01	0.43
1:A:105:MET:HE3	1:A:149:CYS:HB2	1.99	0.43
1:A:364:SER:CB	1:A:366:GLU:HG2	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:ILE:HG21	1:A:319:HIS:CE1	2.53	0.43
1:B:126:ILE:HD12	1:B:126:ILE:O	2.19	0.43
1:B:209:PRO:O	1:B:213:VAL:HG22	2.19	0.43
1:C:249:LYS:CE	1:C:339:ILE:HD12	2.46	0.43
1:D:94:LEU:HD23	1:D:141:SER:HB3	1.99	0.43
1:F:112:VAL:HA	1:F:141:SER:O	2.18	0.43
1:A:190:VAL:HG11	1:F:367:THR:HG21	2.00	0.43
1:A:364:SER:OG	1:A:366:GLU:OE2	2.22	0.43
1:E:247:ASP:HB2	1:E:338:PRO:O	2.19	0.43
1:B:315:ILE:HD13	1:E:98:LYS:HG3	2.01	0.43
1:E:48:LEU:O	1:E:311:GLY:HA2	2.18	0.43
1:D:176:PRO:HB2	1:D:179:ILE:HG12	2.01	0.42
1:D:360:HIS:CD2	1:F:93:GLU:HG3	2.54	0.42
1:D:69:THR:HG22	1:D:80:ALA:HB1	2.00	0.42
1:B:185:LYS:HD2	1:C:372:PRO:CG	2.49	0.42
1:C:36:VAL:HA	1:C:37:PRO:HD3	1.84	0.42
1:B:348:TRP:CZ2	1:E:94:LEU:HD22	2.54	0.42
1:B:360:HIS:CD2	1:E:93:GLU:HG3	2.53	0.42
1:D:348:TRP:CZ2	1:F:94:LEU:HB3	2.54	0.42
1:B:364:SER:OG	1:B:367:THR:HG23	2.20	0.42
1:C:82:VAL:HG11	1:C:162:GLU:HG3	2.01	0.42
1:F:109:ASN:OD1	1:F:147:GLN:HB2	2.19	0.42
1:A:69:THR:HG21	1:A:160:PHE:O	2.20	0.42
1:A:343:ILE:HG21	1:D:139:PRO:HG3	2.01	0.42
1:B:313:ILE:HG21	1:B:319:HIS:CE1	2.54	0.42
1:D:105:MET:HE1	1:D:110:ALA:HB3	2.01	0.42
1:D:282:ASP:HA	1:D:332:LEU:O	2.18	0.42
1:E:367:THR:O	1:E:370:GLN:HB2	2.20	0.42
1:E:84:MET:HB3	1:E:151:PHE:CE1	2.54	0.42
1:E:94:LEU:CD2	1:E:141:SER:HB3	2.49	0.42
1:C:139:PRO:HB2	1:E:348:TRP:CE2	2.55	0.42
1:A:115:LEU:O	1:A:138:ILE:HG23	2.19	0.41
1:B:120:ARG:HG2	1:B:219:ASN:O	2.20	0.41
1:B:121:SER:HB3	1:C:351:THR:HB	2.02	0.41
1:F:366:GLU:HA	1:F:369:GLU:OE1	2.20	0.41
1:C:48:LEU:O	1:C:311:GLY:HA2	2.20	0.41
1:C:113:THR:HG22	1:C:123:ILE:HG13	2.03	0.41
1:D:292:GLY:HA3	1:D:320:TYR:CE2	2.54	0.41
1:D:367:THR:HG21	1:F:190:VAL:HG11	2.01	0.41
1:B:139:PRO:HD3	1:C:343:ILE:CD1	2.50	0.41
1:C:116:ASP:OD1	1:C:116:ASP:C	2.64	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:48:LEU:O	1:D:311:GLY:HA2	2.21	0.41
1:D:95:HIS:NE2	2:D:401:FMT:H	2.34	0.41
1:D:94:LEU:CD2	1:D:141:SER:HB3	2.50	0.41
1:A:105:MET:HE1	1:A:110:ALA:HB2	2.02	0.41
1:C:161:SER:HB3	1:C:164:ASN:ND2	2.34	0.41
1:F:97:HIS:ND1	1:F:99:GLU:O	2.54	0.41
1:A:94:LEU:HB3	1:F:348:TRP:CZ2	2.56	0.41
1:A:101:GLU:OE1	1:A:153:LEU:HD22	2.20	0.41
1:A:199:LYS:O	1:A:201:ILE:N	2.54	0.41
1:D:58:ARG:NH2	1:D:198:GLU:OE1	2.50	0.41
1:D:93:GLU:OE2	1:D:169:THR:OG1	2.20	0.41
1:E:65:THR:HG21	1:E:200:TYR:OH	2.21	0.41
1:A:109:ASN:ND2	1:A:147:GLN:HG3	2.35	0.40
1:A:257:ILE:N	4:A:503:HOH:O	2.13	0.40
1:D:166:PHE:HA	4:D:512:HOH:O	2.20	0.40
1:D:350:ALA:O	1:F:215:LYS:HD3	2.21	0.40
1:F:111:ARG:NH2	1:F:125:ASP:OD1	2.50	0.40
1:F:276:PRO:HA	1:F:316:VAL:HG12	2.03	0.40
1:A:367:THR:HG21	1:D:190:VAL:CG1	2.51	0.40
1:B:241:GLY:HA3	1:B:263:GLU:O	2.21	0.40
1:E:58:ARG:NH2	1:E:198:GLU:OE1	2.50	0.40
1:E:93:GLU:OE1	1:E:200:TYR:N	2.39	0.40
1:E:97:HIS:CE1	1:E:155:PHE:HE2	2.40	0.40
1:A:133:ASN:HD22	1:A:253:VAL:HG23	1.86	0.40
1:C:292:GLY:HA3	1:C:320:TYR:CE2	2.57	0.40
1:D:92:ARG:HB3	1:D:142:ILE:HB	2.03	0.40
1:E:105:MET:HE1	1:E:110:ALA:CB	2.51	0.40
1:C:84:MET:HB3	1:C:151:PHE:CE1	2.57	0.40
1:C:282:ASP:HA	1:C:332:LEU:O	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	336/360 (93%)	328 (98%)	7 (2%)	1 (0%)	36	66
1	B	336/360 (93%)	327 (97%)	8 (2%)	1 (0%)	36	66
1	C	336/360 (93%)	325 (97%)	10 (3%)	1 (0%)	36	66
1	D	336/360 (93%)	328 (98%)	7 (2%)	1 (0%)	36	66
1	E	336/360 (93%)	325 (97%)	10 (3%)	1 (0%)	36	66
1	F	336/360 (93%)	329 (98%)	6 (2%)	1 (0%)	36	66
All	All	2016/2160 (93%)	1962 (97%)	48 (2%)	6 (0%)	36	66

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	316	VAL
1	D	316	VAL
1	F	316	VAL
1	A	316	VAL
1	E	316	VAL
1	B	316	VAL

5.3.2 Protein sidechains ⓘ

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	288/310 (93%)	288 (100%)	0	100	100
1	B	288/310 (93%)	288 (100%)	0	100	100
1	C	288/310 (93%)	288 (100%)	0	100	100
1	D	288/310 (93%)	287 (100%)	1 (0%)	86	95
1	E	288/310 (93%)	288 (100%)	0	100	100
1	F	288/310 (93%)	288 (100%)	0	100	100
All	All	1728/1860 (93%)	1727 (100%)	1 (0%)	88	97

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	61	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	47	ASN
1	A	133	ASN
1	A	147	GLN
1	B	47	ASN
1	B	133	ASN
1	B	231	ASN
1	B	286	GLN
1	B	370	GLN
1	C	164	ASN
1	D	56	HIS
1	D	219	ASN
1	D	265	GLN
1	D	355	GLN
1	E	56	HIS
1	E	203	ASN
1	E	265	GLN
1	E	286	GLN
1	F	133	ASN
1	F	147	GLN
1	F	164	ASN
1	F	203	ASN
1	F	265	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

Of 18 ligands modelled in this entry, 12 are monoatomic - leaving 6 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	FMT	C	401	3	2,2,2	0.74	0	1,1,1	0.25	0
2	FMT	E	401	3	2,2,2	0.76	0	1,1,1	0.35	0
2	FMT	A	401	3	2,2,2	0.72	0	1,1,1	0.28	0
2	FMT	D	401	3	2,2,2	0.77	0	1,1,1	0.38	0
2	FMT	B	401	3	2,2,2	0.73	0	1,1,1	0.22	0
2	FMT	F	401	3	2,2,2	0.75	0	1,1,1	0.18	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

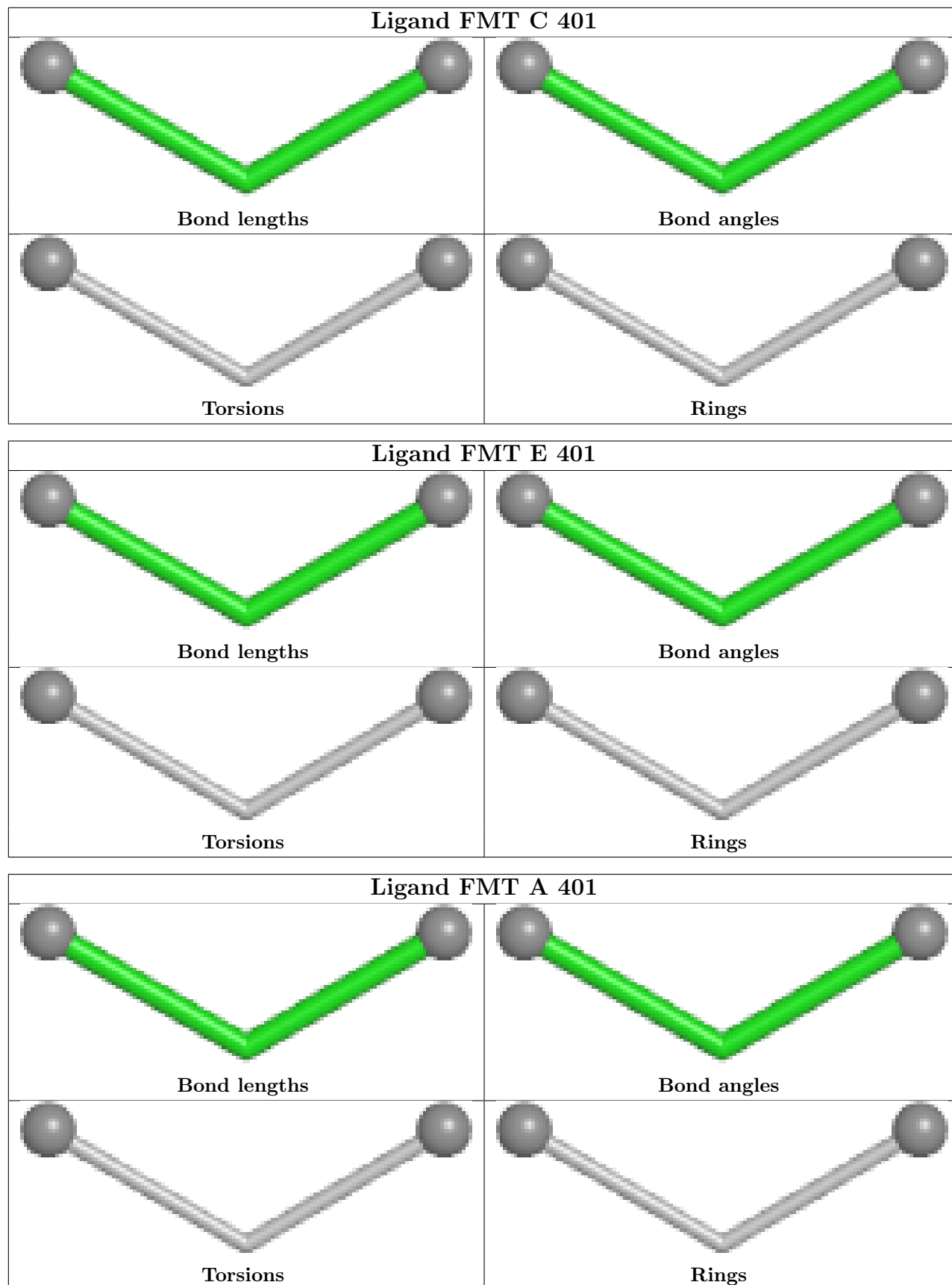
There are no ring outliers.

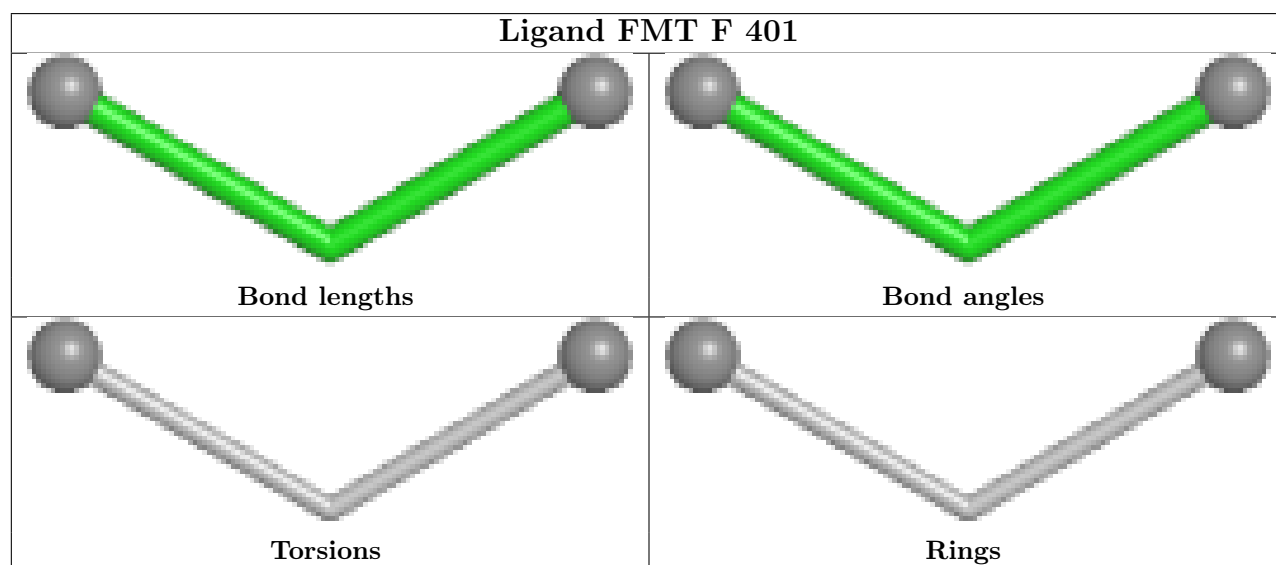
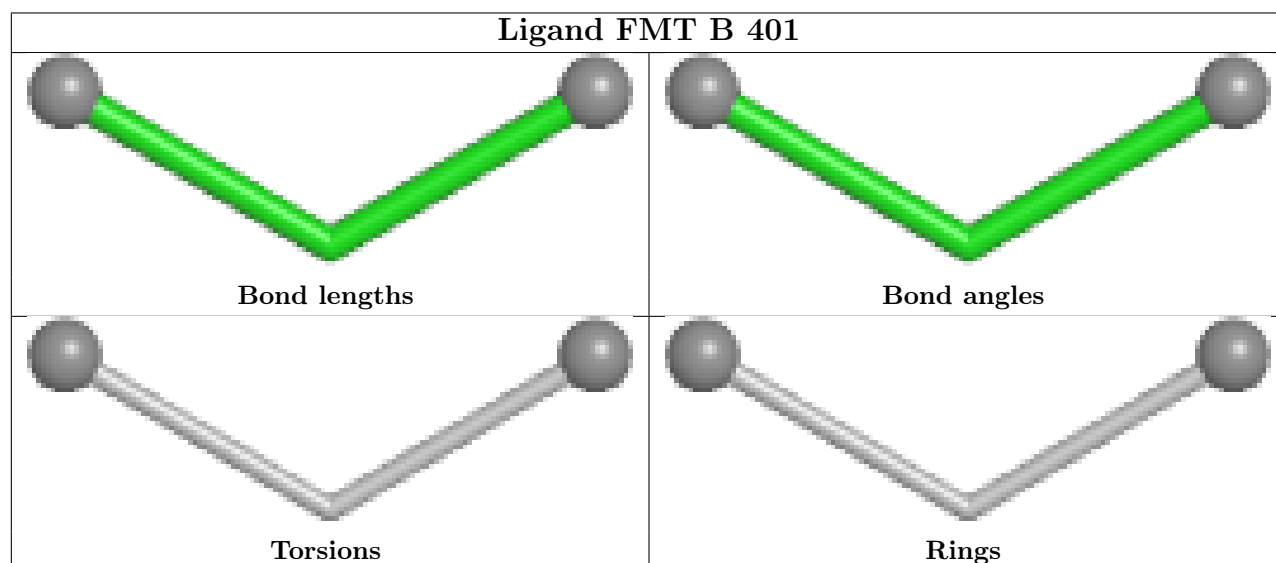
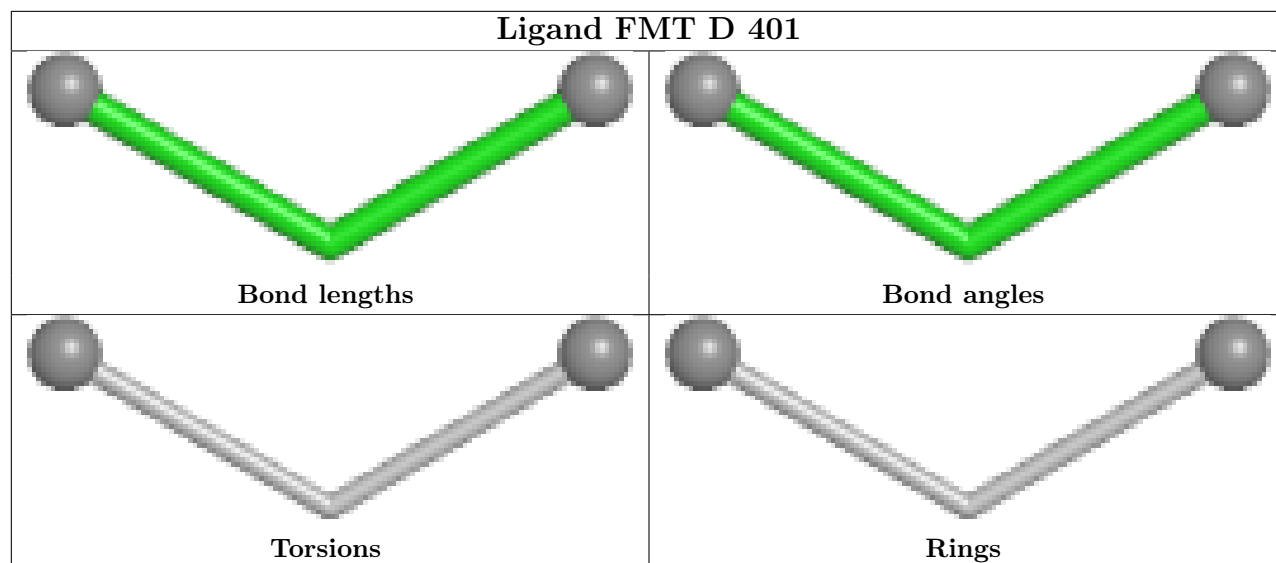
3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	401	FMT	1	0
2	D	401	FMT	2	0
2	B	401	FMT	1	0

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

equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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	338/360 (93%)	0.08	4 (1%) 76 68	16, 26, 49, 69	1 (0%)
1	B	338/360 (93%)	0.10	9 (2%) 56 46	14, 26, 45, 63	1 (0%)
1	C	338/360 (93%)	0.24	8 (2%) 59 49	17, 34, 53, 70	1 (0%)
1	D	338/360 (93%)	0.22	9 (2%) 56 46	17, 30, 57, 90	1 (0%)
1	E	338/360 (93%)	0.25	10 (2%) 52 42	19, 31, 58, 75	1 (0%)
1	F	338/360 (93%)	0.36	12 (3%) 46 37	18, 36, 60, 77	1 (0%)
All	All	2028/2160 (93%)	0.21	52 (2%) 57 47	14, 30, 55, 90	6 (0%)

All (52) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	238	PHE	3.9
1	E	373	LYS	3.7
1	F	307	ALA	3.4
1	F	373	LYS	3.3
1	A	187	ASP	3.3
1	E	240	ALA	3.2
1	B	240	ALA	3.1
1	D	240	ALA	3.1
1	A	239	GLU	3.1
1	B	326	ASP	3.0
1	F	57	MET	3.0
1	F	367	THR	3.0
1	E	36	VAL	3.0
1	E	39	ILE	2.9
1	D	371	PHE	2.9
1	F	236	HIS	2.9
1	F	61	GLU	2.8
1	A	326	ASP	2.8
1	C	212	GLU	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	231	ASN	2.8
1	F	188	GLU	2.8
1	E	232	ASP	2.7
1	D	366	GLU	2.7
1	B	370	GLN	2.6
1	F	187	ASP	2.6
1	E	185	LYS	2.5
1	C	308	GLY	2.5
1	C	57	MET	2.5
1	D	39	ILE	2.5
1	B	369	GLU	2.4
1	D	237	GLU	2.4
1	E	369	GLU	2.4
1	F	189	SER	2.4
1	C	205	GLU	2.4
1	F	364	SER	2.4
1	E	236	HIS	2.3
1	C	190	VAL	2.3
1	F	213	VAL	2.3
1	B	373	LYS	2.3
1	B	232	ASP	2.3
1	C	62	GLY	2.3
1	C	307	ALA	2.2
1	E	57	MET	2.2
1	D	36	VAL	2.2
1	D	163	ASN	2.2
1	B	185	LYS	2.2
1	F	190	VAL	2.1
1	D	363	ILE	2.1
1	A	366	GLU	2.0
1	C	240	ALA	2.0
1	D	61	GLU	2.0
1	B	36	VAL	2.0

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 oligosaccharides in this entry.

6.4 Ligands ⓘ

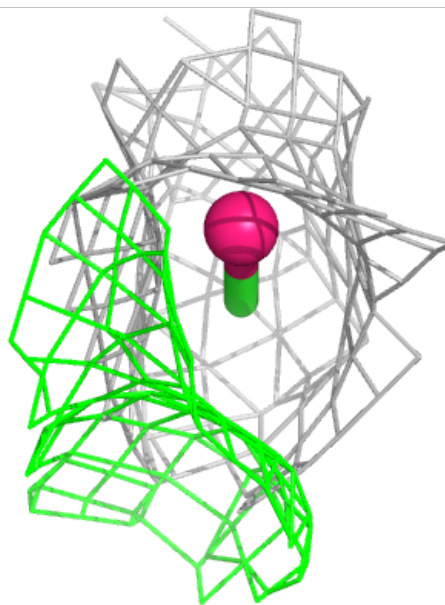
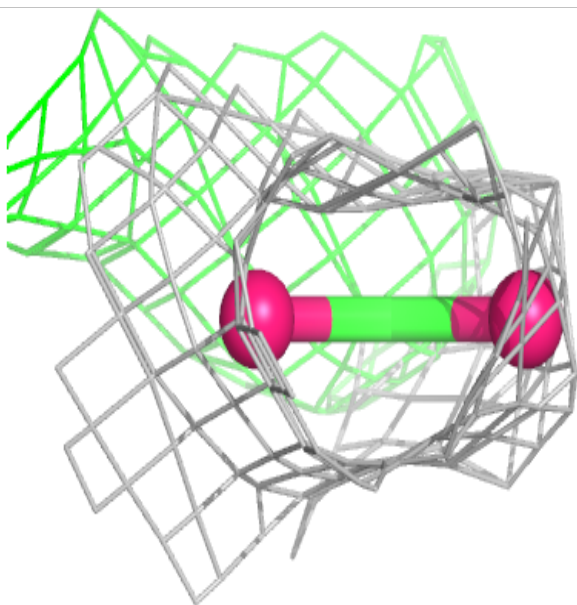
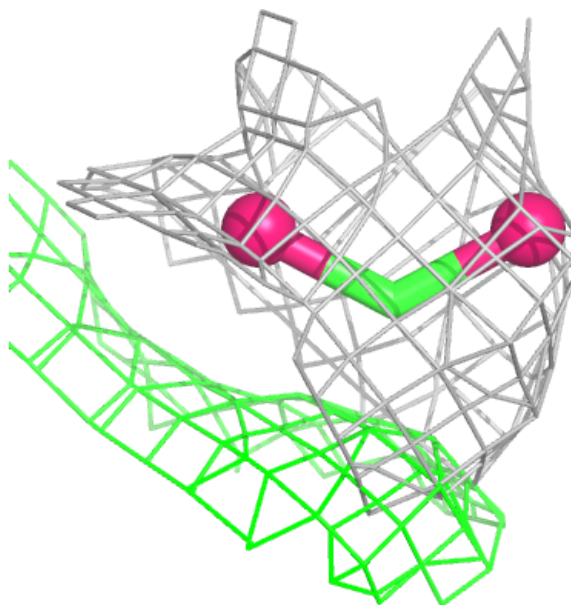
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	FMT	C	401	3/3	0.73	0.15	46,46,50,50	0
2	FMT	F	401	3/3	0.80	0.17	42,42,48,49	0
2	FMT	A	401	3/3	0.86	0.19	31,31,41,41	0
2	FMT	D	401	3/3	0.87	0.21	40,40,46,46	0
2	FMT	B	401	3/3	0.88	0.18	18,18,33,35	0
2	FMT	E	401	3/3	0.89	0.21	65,65,68,74	0
3	MN	C	402	1/1	0.94	0.08	41,41,41,41	0
3	MN	F	402	1/1	0.94	0.07	46,46,46,46	0
3	MN	B	402	1/1	0.97	0.04	23,23,23,23	0
3	MN	D	402	1/1	0.97	0.04	28,28,28,28	0
3	MN	B	403	1/1	0.97	0.03	36,36,36,36	0
3	MN	A	403	1/1	0.98	0.04	32,32,32,32	0
3	MN	D	403	1/1	0.98	0.03	44,44,44,44	0
3	MN	E	403	1/1	0.98	0.03	49,49,49,49	0
3	MN	A	402	1/1	0.98	0.03	30,30,30,30	0
3	MN	C	403	1/1	0.99	0.03	39,39,39,39	0
3	MN	E	402	1/1	0.99	0.03	28,28,28,28	0
3	MN	F	403	1/1	0.99	0.03	43,43,43,43	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.

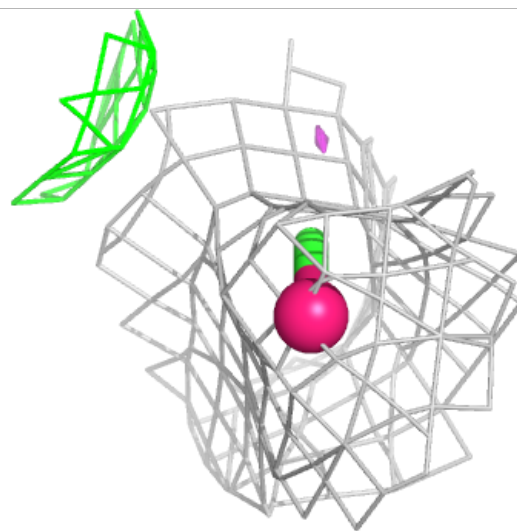
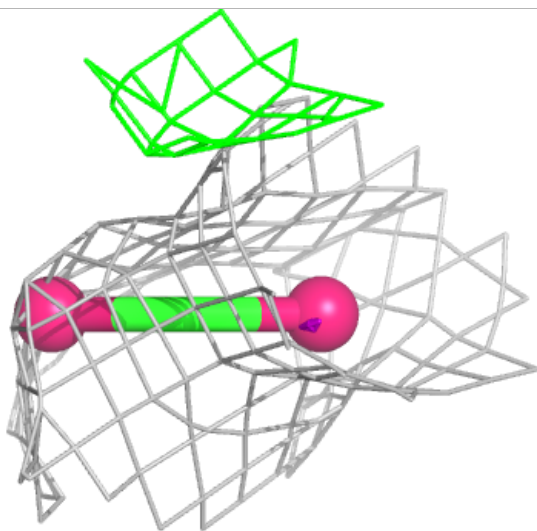
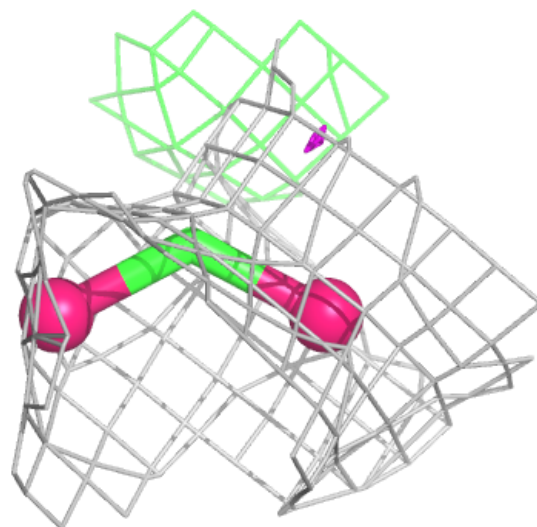
Electron density around FMT C 401:

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



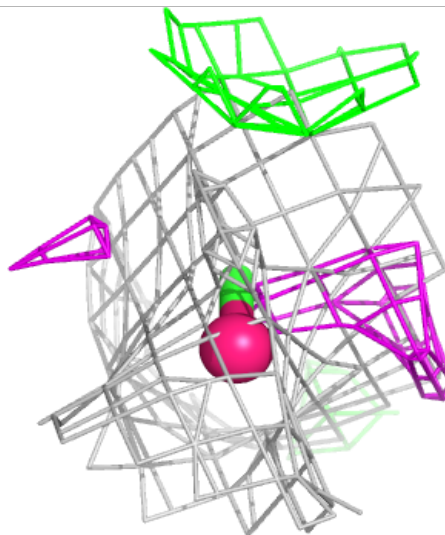
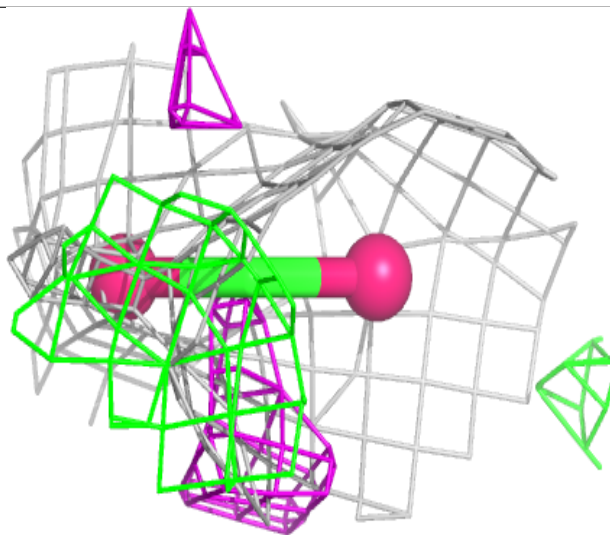
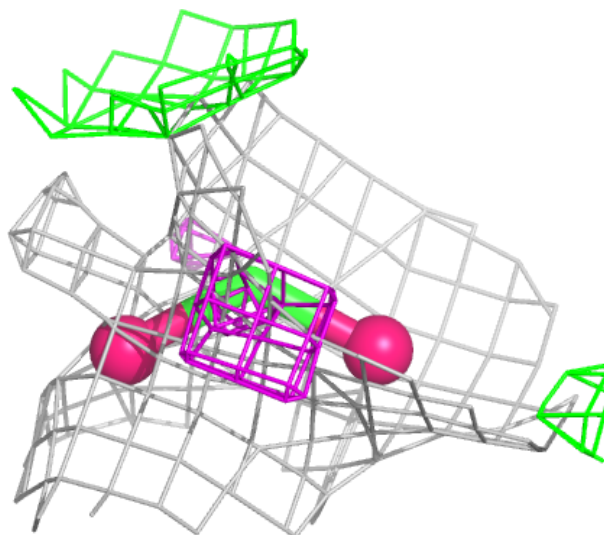
Electron density around FMT F 401:

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and green (positive)



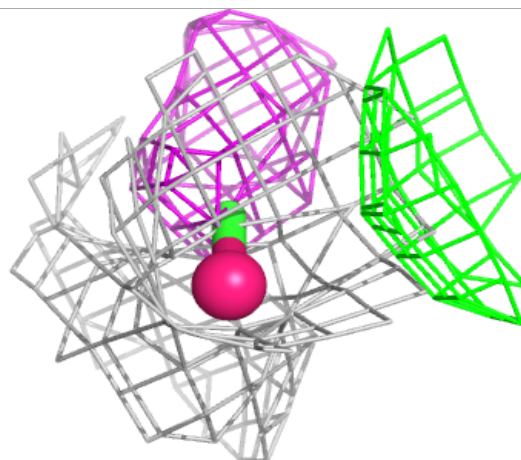
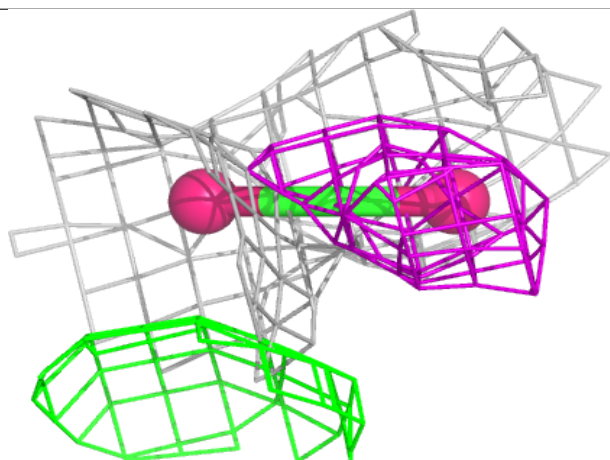
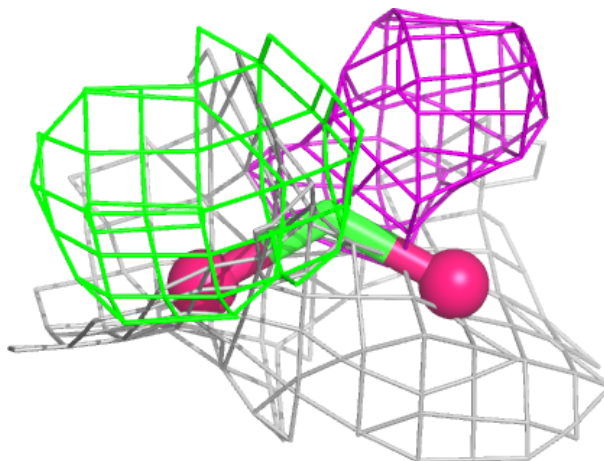
Electron density around FMT A 401:

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and green (positive)



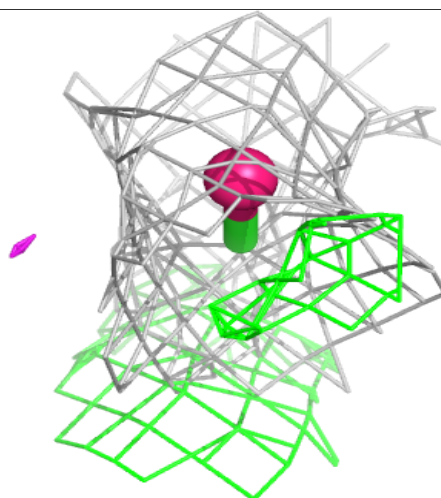
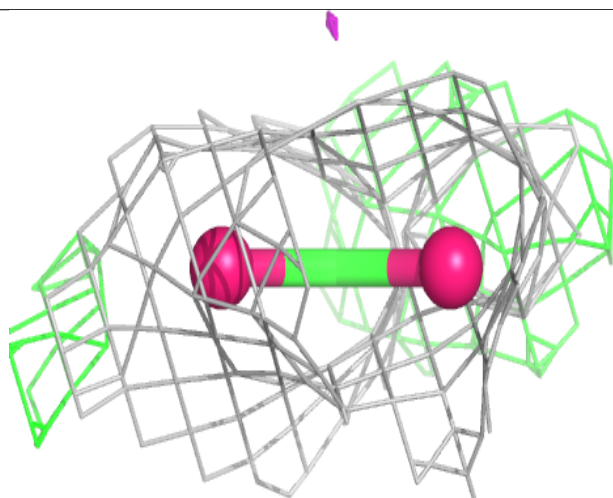
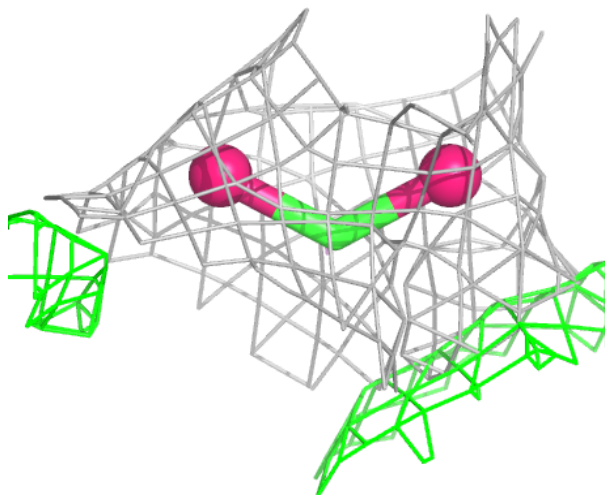
Electron density around FMT D 401:

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and green (positive)



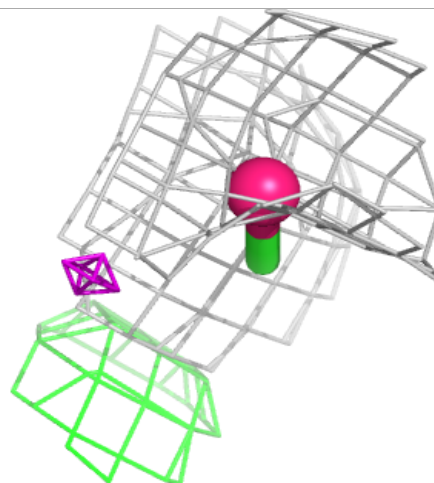
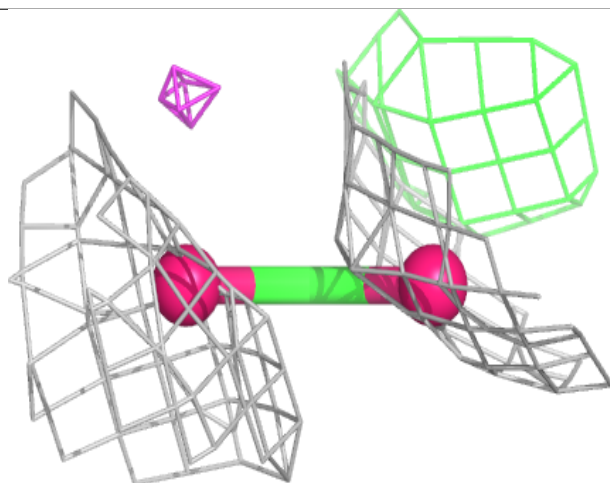
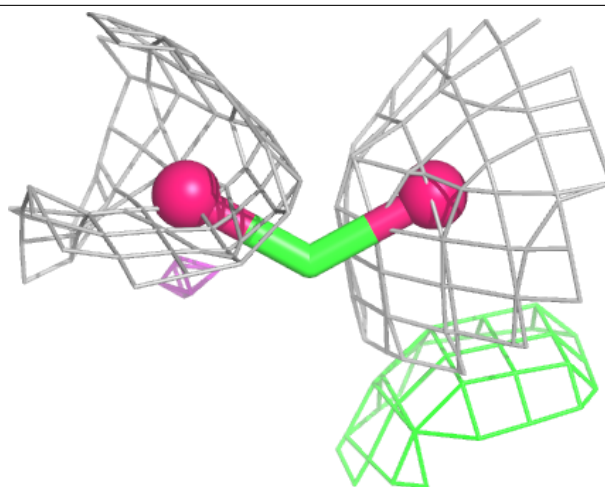
Electron density around FMT B 401:

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and green (positive)



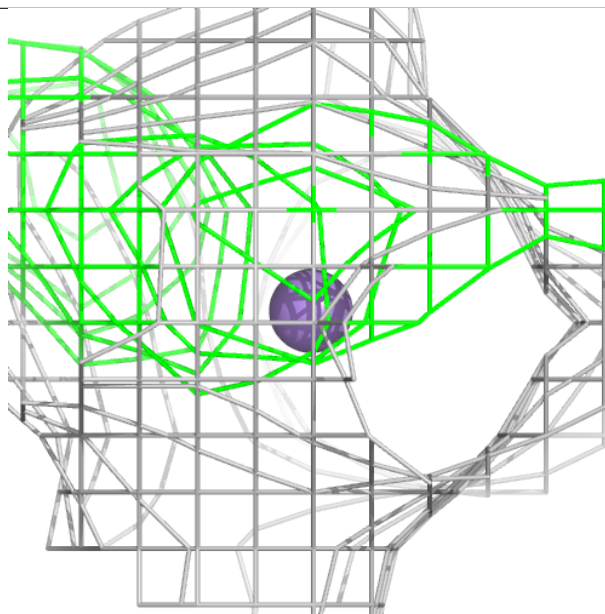
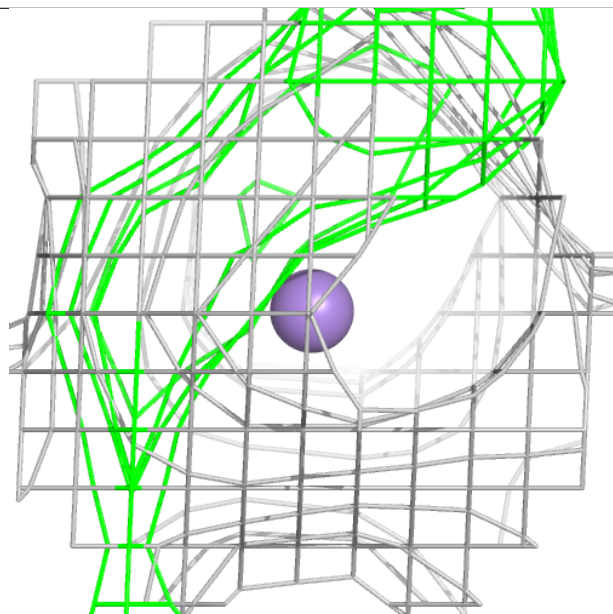
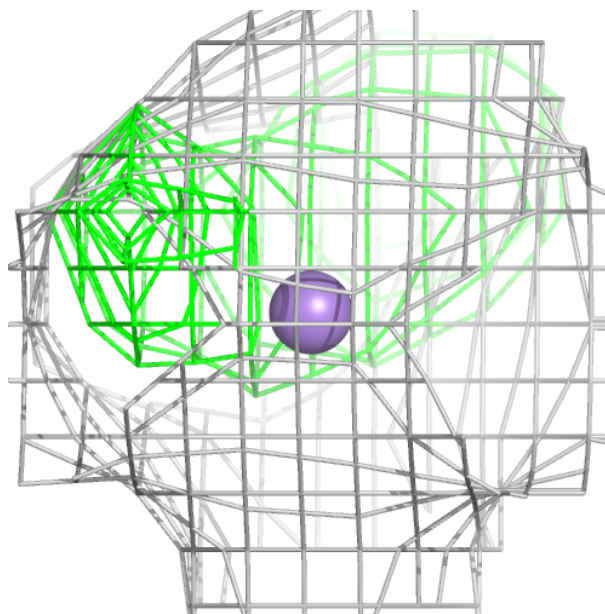
Electron density around FMT E 401:

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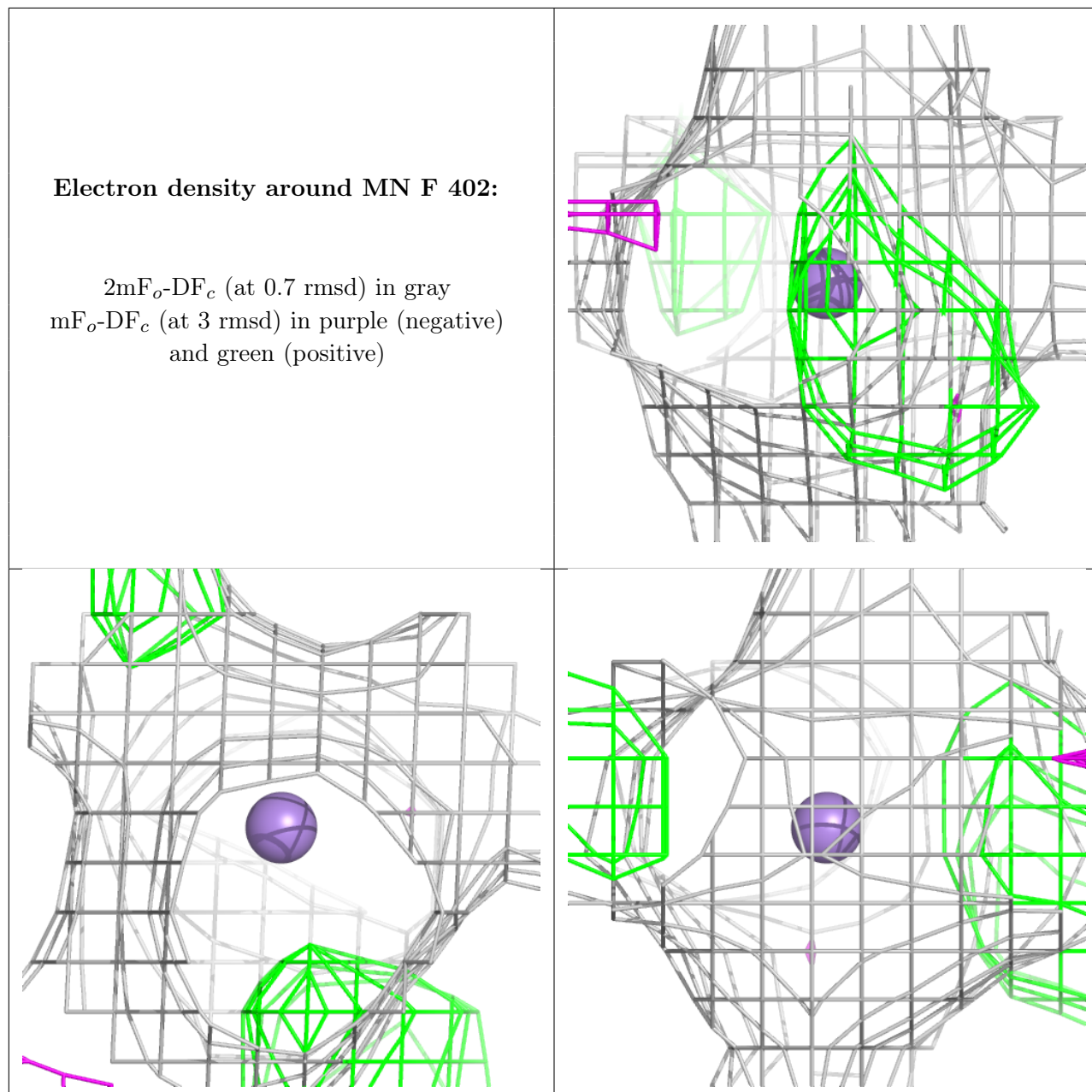
Electron density around MN C 402:

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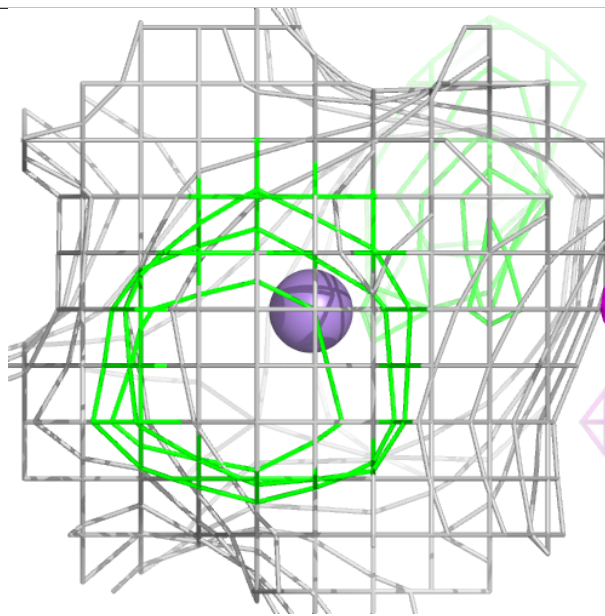
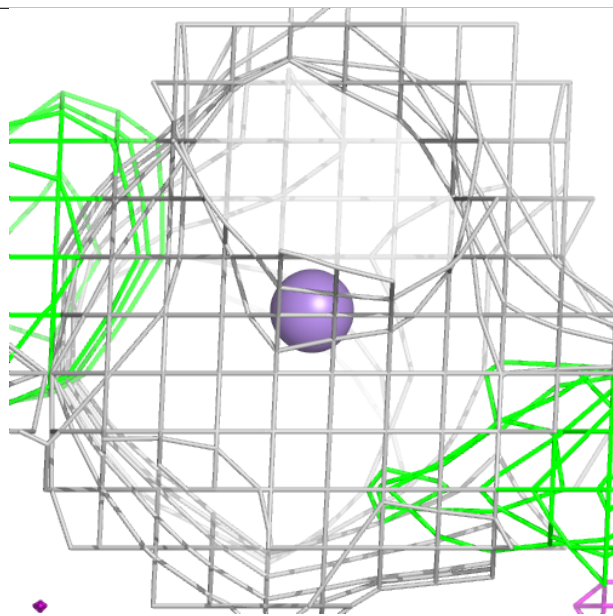
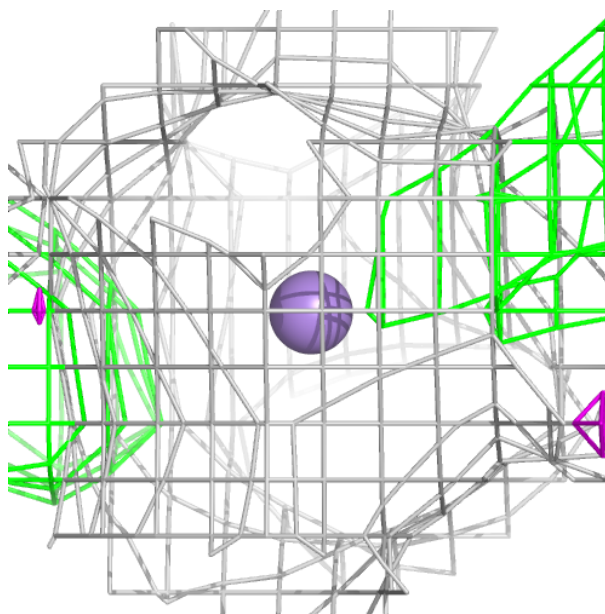
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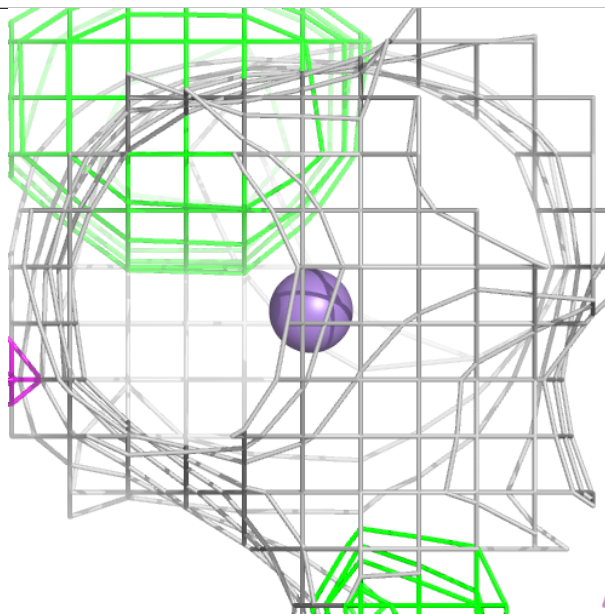
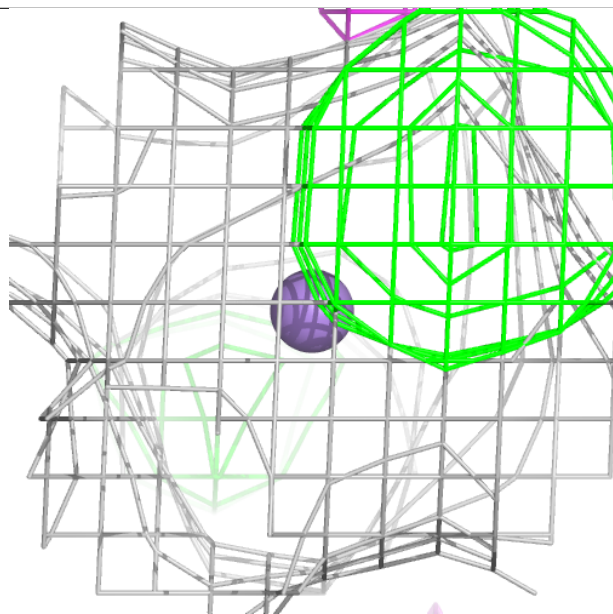
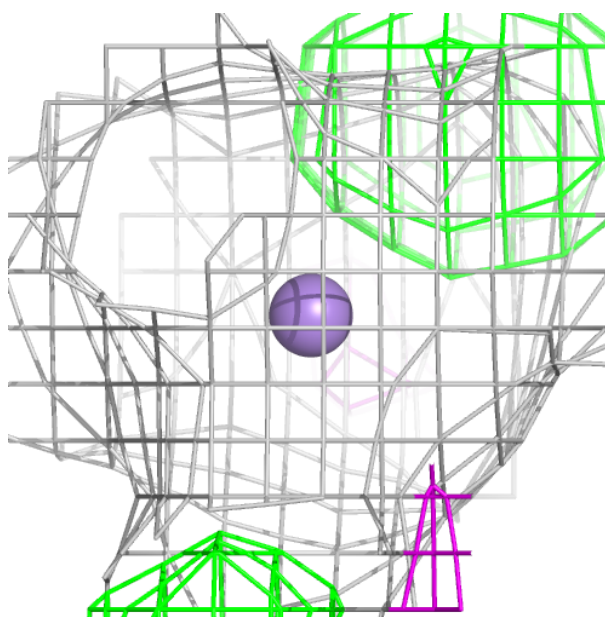
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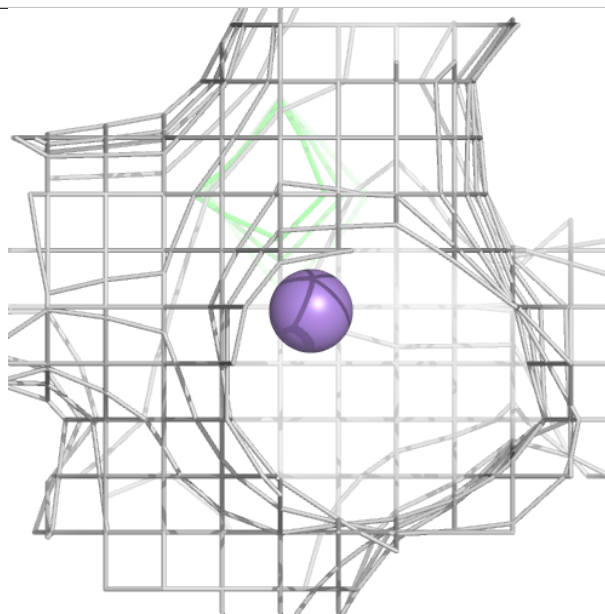
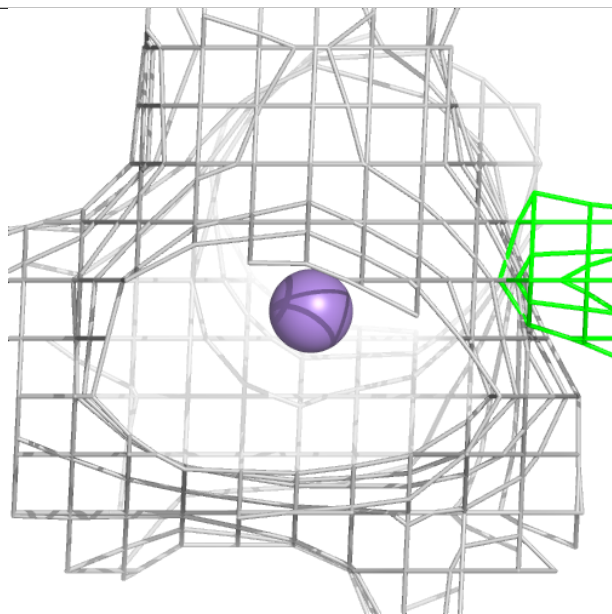
Electron density around MN D 402:

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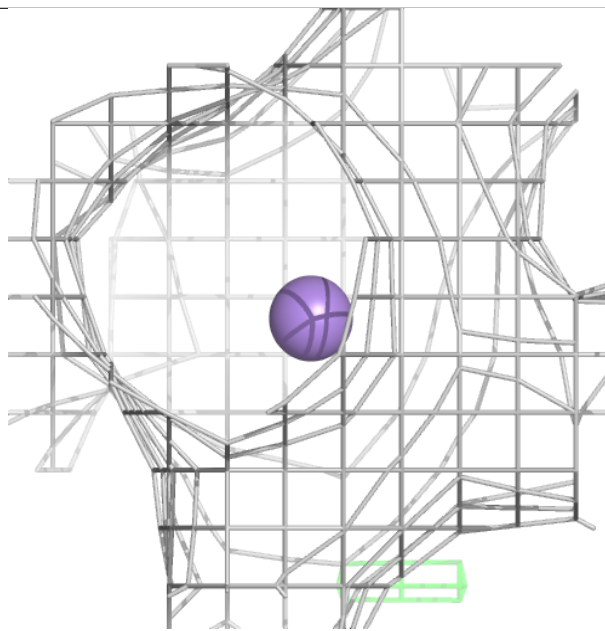
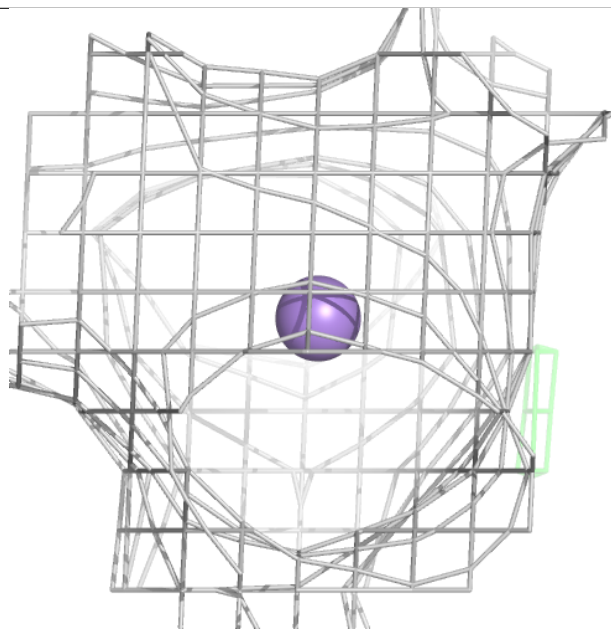
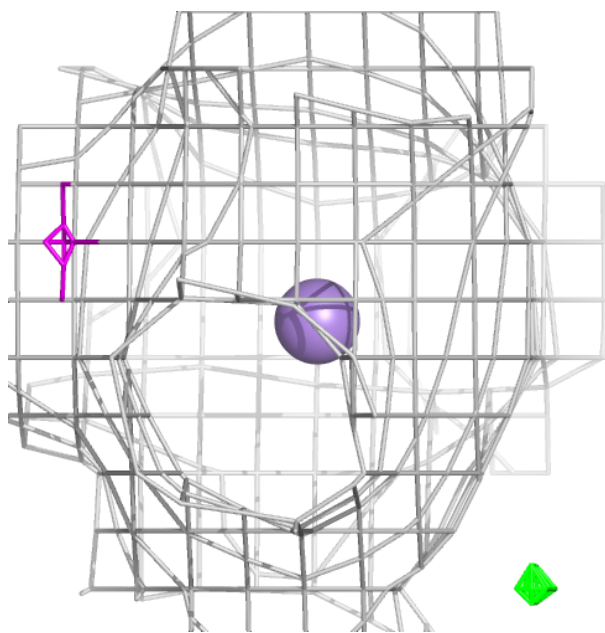
Electron density around MN B 403:

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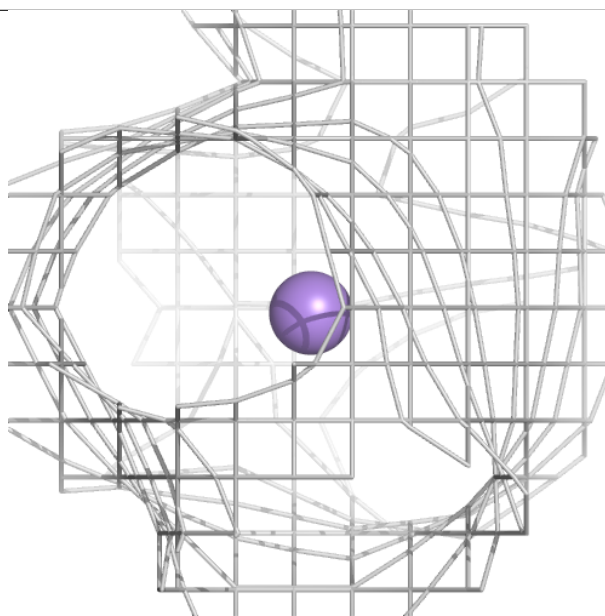
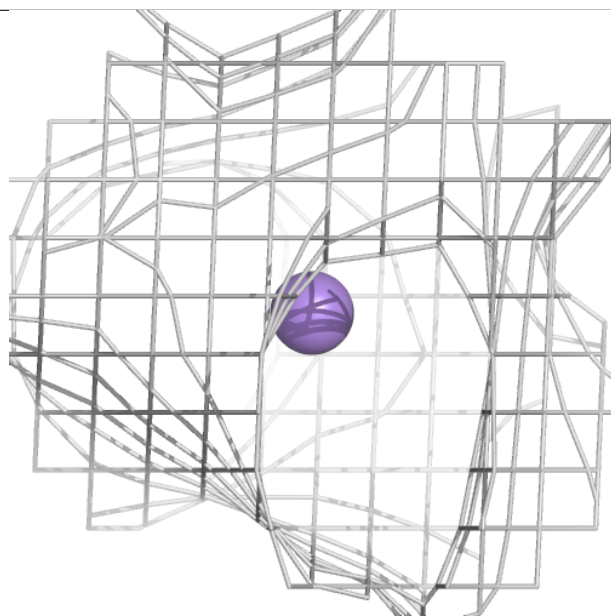
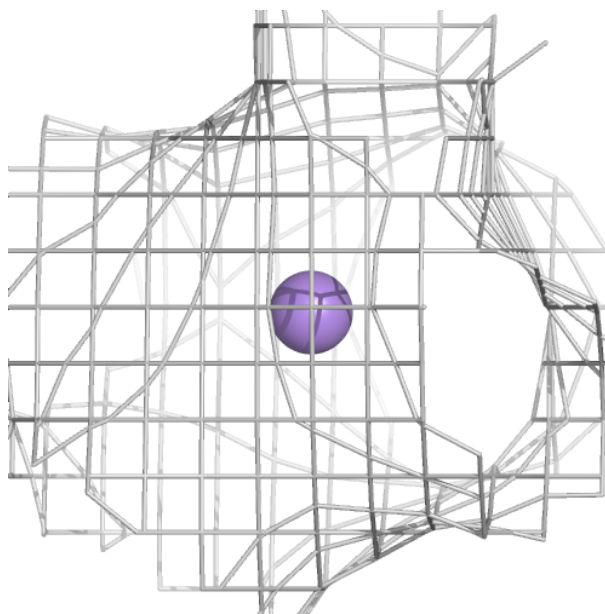
Electron density around MN A 403:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



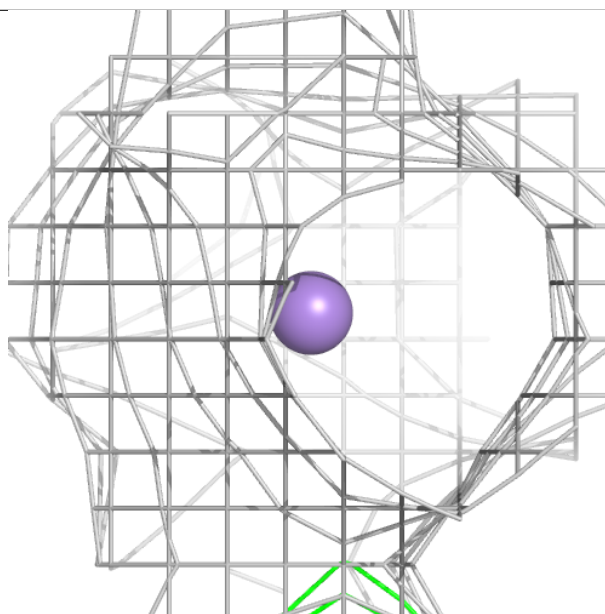
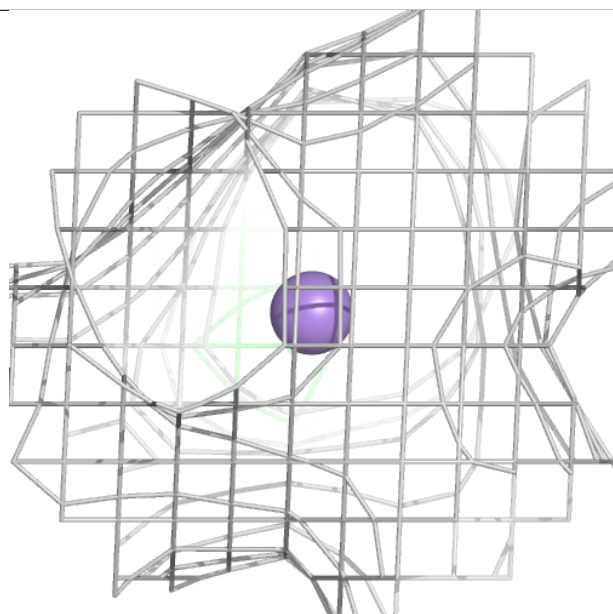
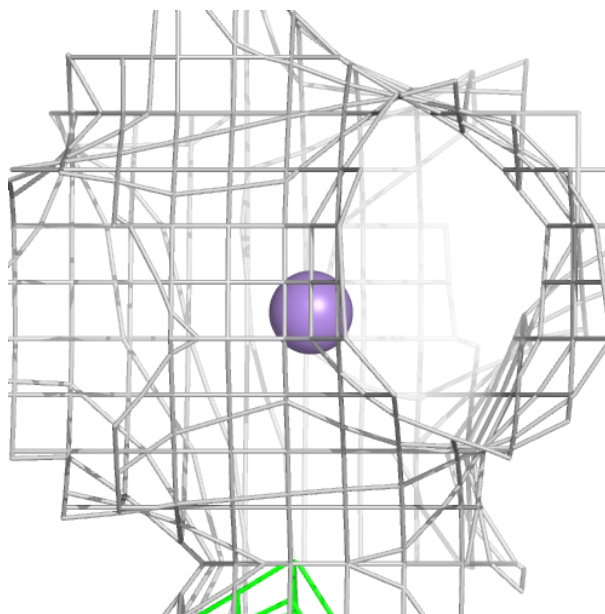
Electron density around MN D 403:

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



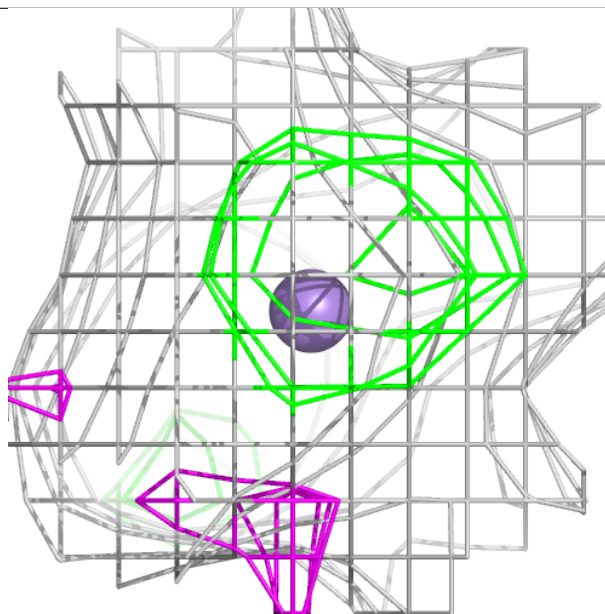
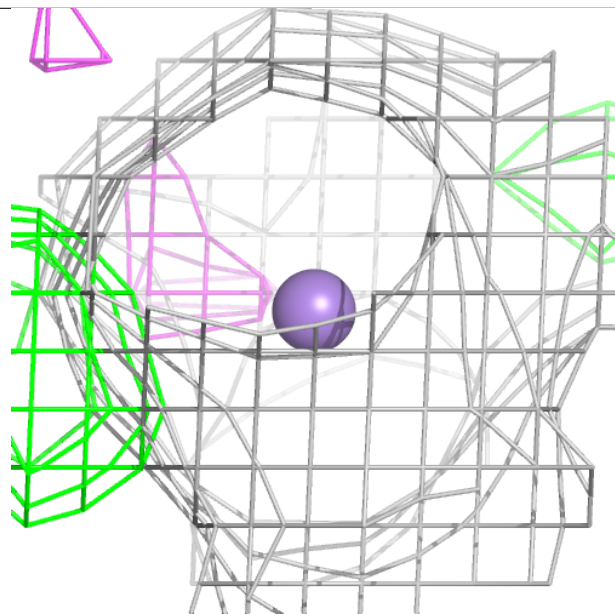
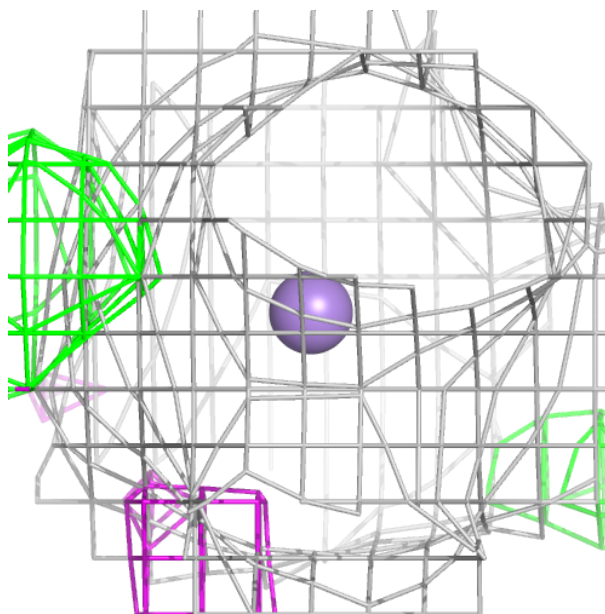
Electron density around MN E 403:

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



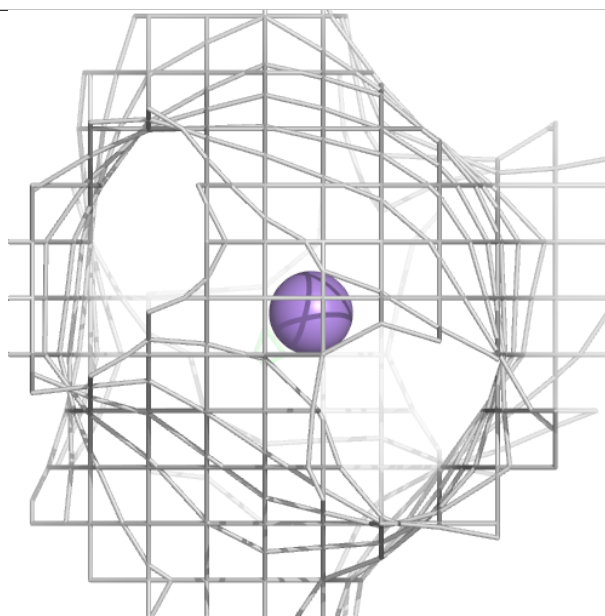
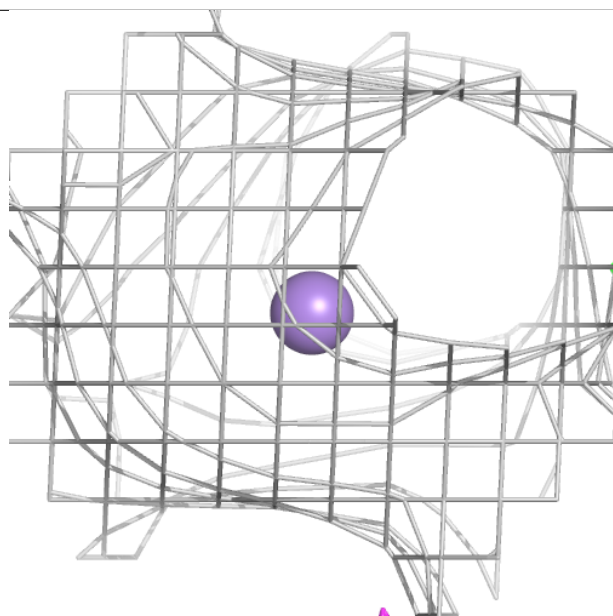
Electron density around MN A 402:

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



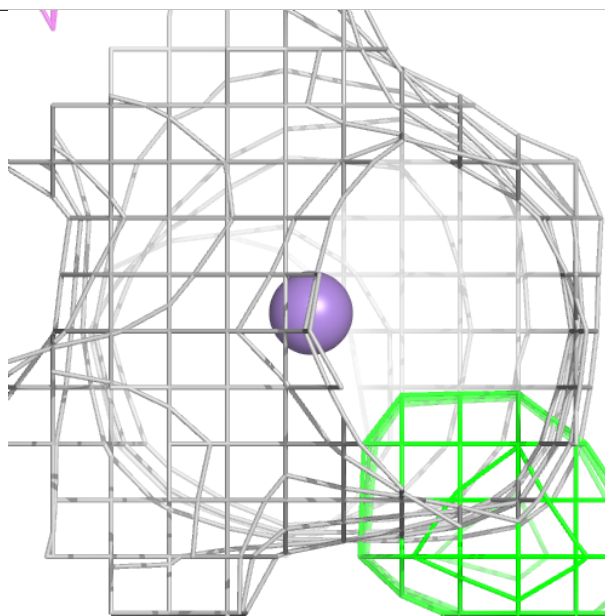
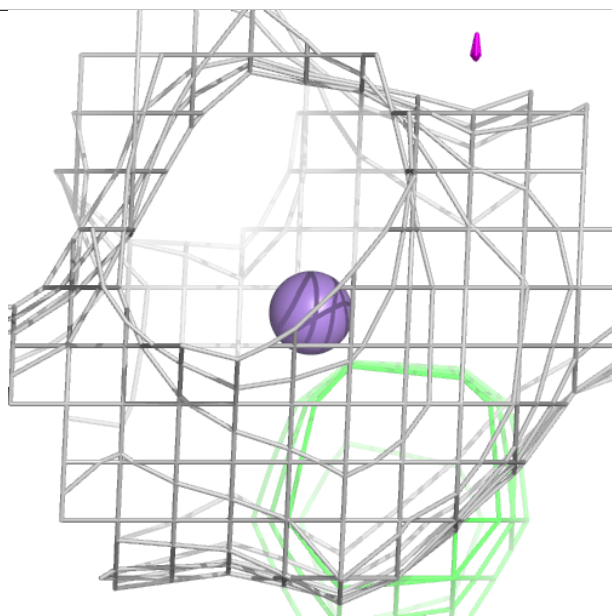
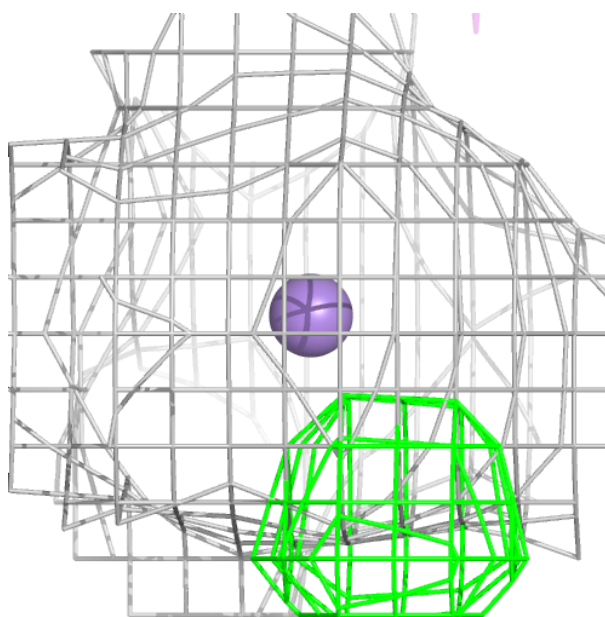
Electron density around MN C 403:

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



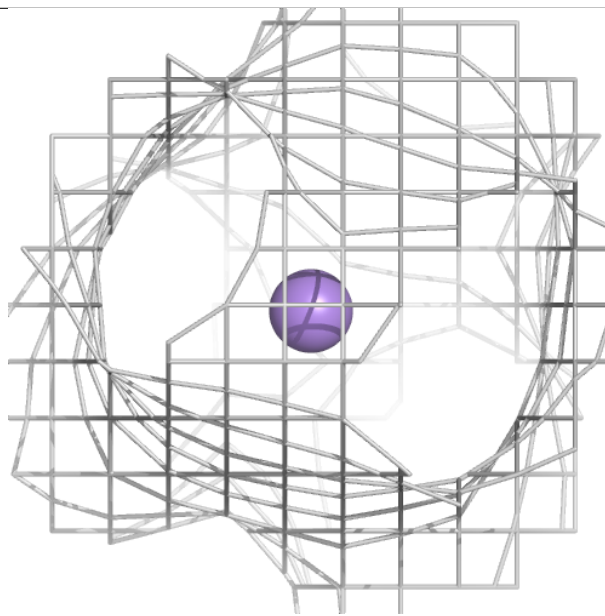
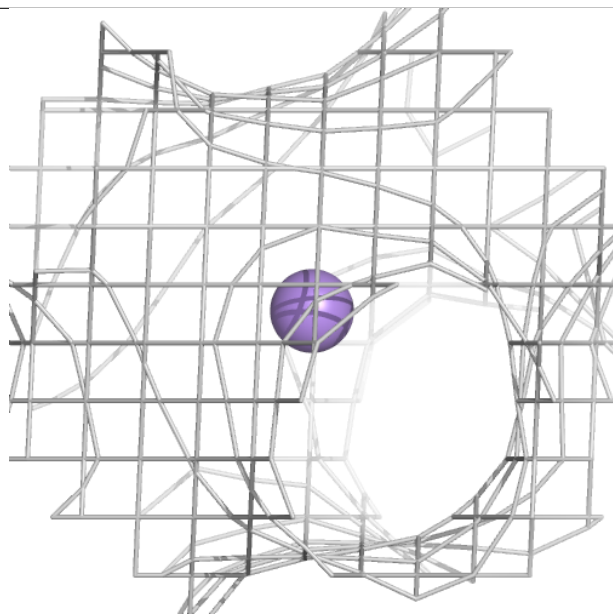
Electron density around MN E 402:

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



Electron density around MN F 403:

$2mF_o - DF_c$ (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.