



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 11, 2023 – 03:40 PM EDT

PDB ID : 8F4Y
Title : Crystal Structure of SARS-CoV-2 2'-O-Methyltransferase in Complex with Compound 5a covalently bound to nsp16 and nsp10
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Deposited on : 2022-11-11
Resolution : 2.13 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
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) : 2.35.1

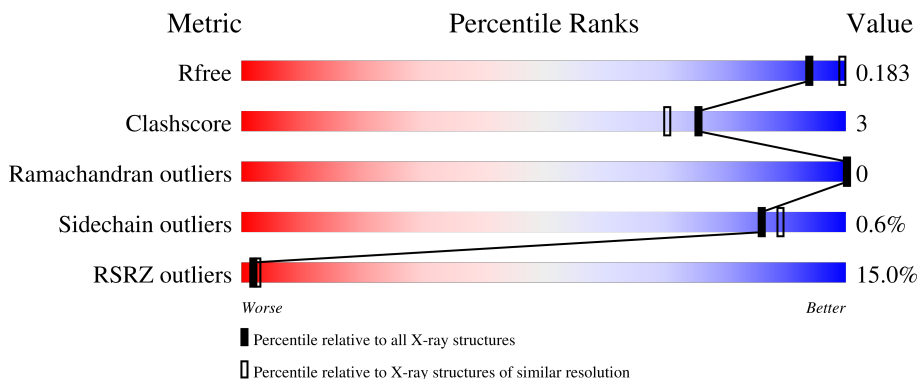
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.13 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	2523 (2.16-2.12)
Clashscore	141614	2653 (2.16-2.12)
Ramachandran outliers	138981	2618 (2.16-2.12)
Sidechain outliers	138945	2617 (2.16-2.12)
RSRZ outliers	127900	2485 (2.16-2.12)

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	301	
2	B	142	

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
5	XE0	B	4405	-	-	-	X
6	FMT	B	4406	-	-	-	X

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 3770 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 2'-O-methyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	298	2490	1582	419	470	19	0	18	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	6796	SER	-	expression tag	UNP P0DTD1
A	6797	ASN	-	expression tag	UNP P0DTD1
A	6798	ALA	-	expression tag	UNP P0DTD1

- Molecule 2 is a protein called Non-structural protein 10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	110	835	517	142	159	17	0	3	0

There are 3 discrepancies between the modelled and reference sequences:

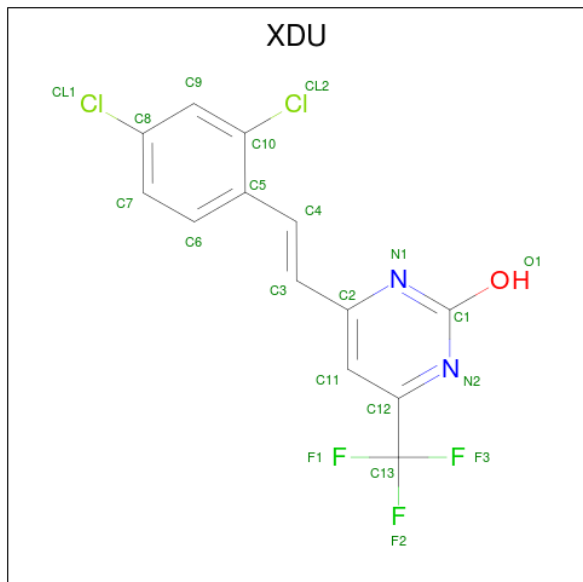
Chain	Residue	Modelled	Actual	Comment	Reference
B	4251	SER	-	expression tag	UNP P0DTD1
B	4252	ASN	-	expression tag	UNP P0DTD1
B	4253	ALA	-	expression tag	UNP P0DTD1

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Na	0	0
			1	1		
3	B	1	Total	Na	0	0
			1	1		

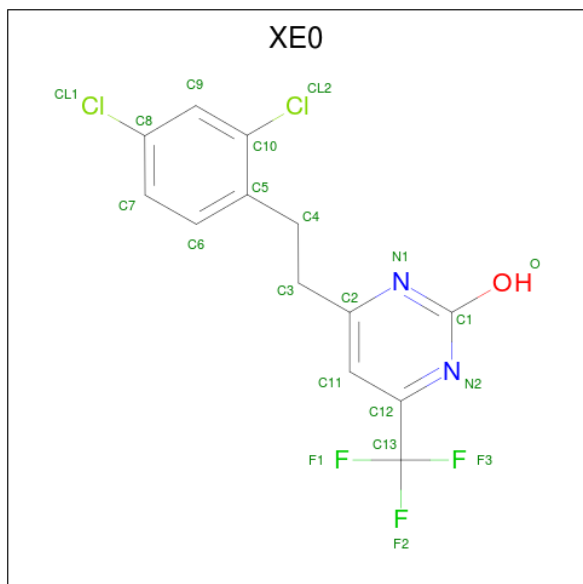
- Molecule 4 is 4-[(E)-2-(2,4-dichlorophenyl)ethenyl]-6-(trifluoromethyl)pyrimidin-2-o

1 (three-letter code: XDU) (formula: $C_{13}H_7Cl_2F_3N_2O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Cl	F	N			O
4	A	1	21	13	2	3	2	1	0	1

- Molecule 5 is 4-[2-(2,4-dichlorophenyl)ethyl]-6-(trifluoromethyl)pyrimidin-2-ol (three-letter code: XE0) (formula: $C_{13}H_9Cl_2F_3N_2O$) (labeled as "Ligand of Interest" by depositor).



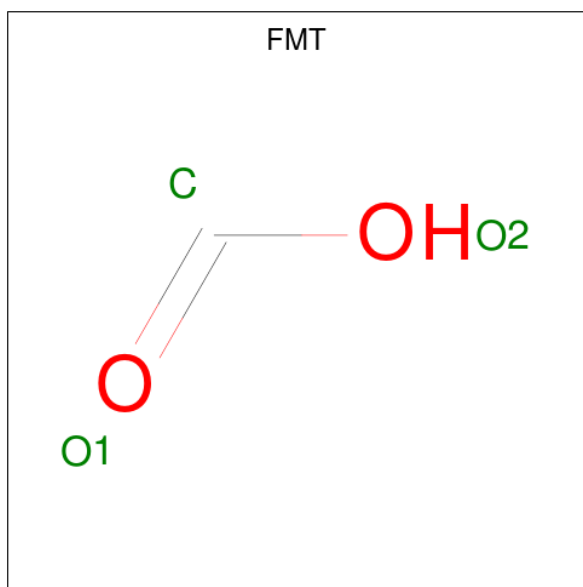
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Cl	F	N			O
5	A	1	21	13	2	3	2	1	0	1

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
5	B	1	Total	C	Cl	F	N	O	0	1
			21	13	2	3	2	1		
5	B	1	Total	C	Cl	F	N	O	0	0
			21	13	2	3	2	1		

- Molecule 6 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



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

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

- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	2	Total	Zn	0	0
			2	2		

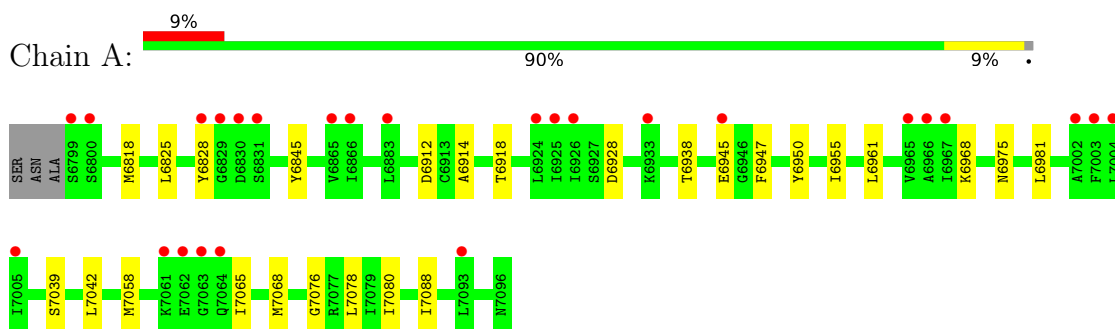
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	266	Total	O	0	22
			280	280		
8	B	46	Total	O	0	3
			47	47		

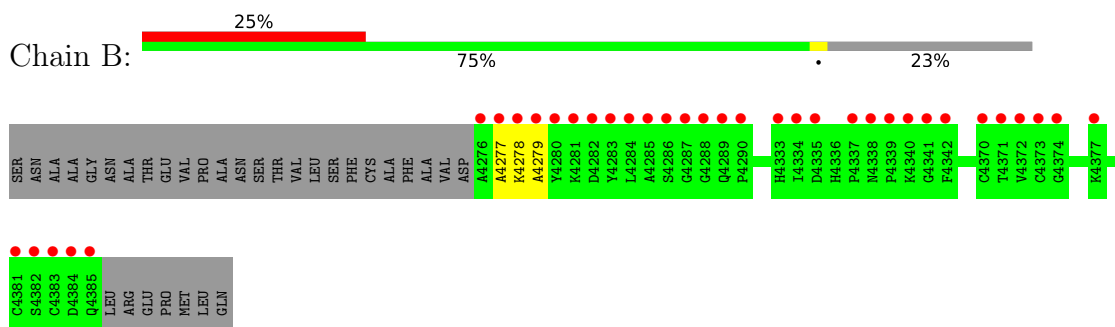
3 Residue-property plots [i](#)

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: 2'-O-methyltransferase



- Molecule 2: Non-structural protein 10



4 Data and refinement statistics i

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	171.04Å 171.04Å 52.03Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.62 – 2.13 29.62 – 2.13	Depositor EDS
% Data completeness (in resolution range)	99.9 (29.62-2.13) 99.9 (29.62-2.13)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.13 (at 2.14Å)	Xtrriage
Refinement program	REFMAC 5.8.0350	Depositor
R, R_{free}	0.157 , 0.180 0.165 , 0.183	Depositor DCC
R_{free} test set	2374 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å ²)	42.2	Xtrriage
Anisotropy	0.135	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 62.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.032 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	3770	wwPDB-VP
Average B, all atoms (Å ²)	58.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.56% 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: XDU, XE0, ZN, NA, 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	0.29	0/2544	0.60	0/3448
2	B	0.28	0/853	0.57	0/1154
All	All	0.28	0/3397	0.59	0/4602

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	2490	0	2444	17	0
2	B	835	0	795	3	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	21	0	0	2	0
5	A	21	0	0	2	0
5	B	42	0	0	0	0
6	A	27	0	9	0	0
6	B	3	0	1	0	0
7	B	2	0	0	0	0
8	A	280	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	B	47	0	0	0	0
All	All	3770	0	3249	21	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 3.

All (21) 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:A:6938:THR:O	8:A:7201[A]:HOH:O	2.13	0.67
1:A:7088:ILE:HG23	4:A:7102[A]:XDU:F1	1.91	0.61
4:A:7102[A]:XDU:CL2	4:A:7102[A]:XDU:C3	2.93	0.53
1:A:6961:LEU:HB2	1:A:7080:ILE:HB	1.93	0.50
1:A:6912[B]:ASP:OD2	1:A:6914[B]:ALA:HB3	2.14	0.48
1:A:6961:LEU:CD1	1:A:7065:ILE:HD13	2.46	0.46
1:A:6845:TYR:OH	1:A:6928:ASP:HB2	2.16	0.45
1:A:7058:MET:HG2	1:A:7078:LEU:HD11	1.99	0.45
2:B:4278:LYS:HG3	2:B:4279:ALA:H	1.82	0.45
1:A:7088:ILE:HG23	5:A:7103[B]:XE0:F3	2.05	0.44
1:A:6818:MET:HE3	8:A:7385:HOH:O	2.16	0.44
1:A:7039:SER:HB2	1:A:7042:LEU:HD12	1.99	0.44
2:B:4278:LYS:HG3	2:B:4279:ALA:N	2.33	0.44
1:A:6955:ILE:CG2	1:A:6981[A]:LEU:HD21	2.48	0.43
1:A:6947:PHE:HA	1:A:6950[A]:TYR:CD2	2.55	0.41
2:B:4277:ALA:O	2:B:4278:LYS:C	2.58	0.41
1:A:6945[A]:GLU:OE2	1:A:6975:ASN:ND2	2.54	0.41
1:A:6825:LEU:HB2	1:A:6828:TYR:HB2	2.03	0.41
1:A:6918:THR:HG22	5:A:7103[B]:XE0:N2	2.36	0.40
1:A:7076:GLY:HA2	8:A:7268:HOH:O	2.21	0.40
1:A:7058:MET:CG	1:A:7078:LEU:HD11	2.51	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	314/301 (104%)	301 (96%)	13 (4%)	0	100	100
2	B	111/142 (78%)	103 (93%)	8 (7%)	0	100	100
All	All	425/443 (96%)	404 (95%)	21 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	275/260 (106%)	273 (99%)	2 (1%)	84	87
2	B	93/115 (81%)	93 (100%)	0	100	100
All	All	368/375 (98%)	366 (100%)	2 (0%)	86	91

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6968	LYS
1	A	7068	MET

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

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 4 are monoatomic - leaving 14 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	FMT	A	7110	-	2,2,2	0.33	0	1,1,1	0.22	0
6	FMT	A	7108	-	2,2,2	0.31	0	1,1,1	0.24	0
6	FMT	A	7112	-	2,2,2	0.34	0	1,1,1	0.23	0
5	XE0	B	4404[A]	2	19,22,22	0.98	2 (10%)	27,32,32	1.76	6 (22%)
6	FMT	A	7105	-	2,2,2	0.36	0	1,1,1	0.28	0
5	XE0	B	4405	2	19,22,22	0.97	2 (10%)	27,32,32	1.71	7 (25%)
6	FMT	A	7109	-	2,2,2	0.35	0	1,1,1	0.22	0
4	XDU	A	7102[A]	-	19,22,22	0.94	2 (10%)	26,32,32	2.42	12 (46%)
6	FMT	A	7107	-	2,2,2	0.46	0	1,1,1	0.17	0
6	FMT	A	7104	-	2,2,2	0.28	0	1,1,1	0.26	0
6	FMT	A	7111	-	2,2,2	0.27	0	1,1,1	0.24	0
6	FMT	A	7106	-	2,2,2	0.39	0	1,1,1	0.21	0
5	XE0	A	7103[B]	1	19,22,22	1.07	2 (10%)	27,32,32	3.04	10 (37%)
6	FMT	B	4406	-	2,2,2	0.39	0	1,1,1	0.20	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
5	XE0	B	4405	2	-	0/11/11/11	0/2/2/2
4	XDU	A	7102[A]	-	-	2/11/11/11	0/2/2/2
5	XE0	A	7103[B]	1	-	0/11/11/11	0/2/2/2
5	XE0	B	4404[A]	2	-	0/11/11/11	0/2/2/2

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	7103[B]	XE0	C8-CL1	3.09	1.81	1.74
5	B	4405	XE0	C10-CL2	2.68	1.80	1.73
5	B	4404[A]	XE0	C8-CL1	2.55	1.80	1.74
5	B	4404[A]	XE0	C10-CL2	2.54	1.79	1.73
5	A	7103[B]	XE0	C10-CL2	2.53	1.79	1.73
4	A	7102[A]	XDU	C10-CL2	2.45	1.79	1.73
5	B	4405	XE0	C8-CL1	2.45	1.79	1.74
4	A	7102[A]	XDU	C8-CL1	2.36	1.79	1.74

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	7103[B]	XE0	C3-C4-C5	-7.42	100.80	112.81
5	A	7103[B]	XE0	C3-C2-N1	7.12	126.54	115.95
4	A	7102[A]	XDU	C13-C12-N2	6.85	122.33	114.56
5	A	7103[B]	XE0	C13-C12-N2	6.73	122.20	114.56
5	A	7103[B]	XE0	C3-C2-C11	-5.97	113.31	121.22
5	B	4405	XE0	C13-C12-N2	4.58	119.76	114.56
5	B	4404[A]	XE0	C13-C12-N2	4.05	119.15	114.56
5	B	4404[A]	XE0	C3-C4-C5	-3.76	106.73	112.81
4	A	7102[A]	XDU	C9-C10-C5	-3.72	119.68	122.46
4	A	7102[A]	XDU	C5-C4-C3	-3.51	115.86	126.46
5	B	4404[A]	XE0	C11-C2-N1	-3.24	119.46	122.90
4	A	7102[A]	XDU	C6-C5-C10	3.18	119.59	116.69
4	A	7102[A]	XDU	C10-C5-C4	3.18	124.29	121.86
5	B	4405	XE0	C4-C3-C2	-3.05	106.15	112.99
5	B	4404[A]	XE0	C3-C2-N1	3.04	120.48	115.95
5	B	4405	XE0	C11-C2-N1	-2.89	119.84	122.90
4	A	7102[A]	XDU	C3-C2-N1	2.82	125.04	117.75
4	A	7102[A]	XDU	C11-C2-C3	-2.72	114.68	121.48
5	A	7103[B]	XE0	C11-C2-N1	-2.63	120.11	122.90
4	A	7102[A]	XDU	C6-C5-C4	-2.61	115.97	121.12
5	B	4405	XE0	C9-C10-C5	-2.60	120.11	122.42
5	A	7103[B]	XE0	C4-C3-C2	2.41	118.38	112.99
4	A	7102[A]	XDU	C5-C10-CL2	2.40	122.26	120.17
4	A	7102[A]	XDU	C11-C12-N2	-2.40	119.42	123.33
5	B	4405	XE0	C3-C2-N1	2.38	119.49	115.95
5	B	4405	XE0	C11-C12-N2	-2.35	119.50	123.33
5	B	4404[A]	XE0	C9-C10-C5	-2.35	120.33	122.42
5	A	7103[B]	XE0	C9-C10-C5	-2.33	120.35	122.42
5	B	4404[A]	XE0	C11-C12-N2	-2.32	119.56	123.33
5	A	7103[B]	XE0	F2-C13-C12	-2.31	108.52	112.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	7103[B]	XE0	C11-C12-N2	-2.25	119.68	123.33
5	A	7103[B]	XE0	F3-C13-C12	-2.18	108.73	112.47
4	A	7102[A]	XDU	F2-C13-C12	-2.17	108.76	112.47
5	B	4405	XE0	F1-C13-C12	-2.10	108.88	112.47
4	A	7102[A]	XDU	F3-C13-C12	-2.04	108.99	112.47

There are no chirality outliers.

All (2) torsion outliers are listed below:

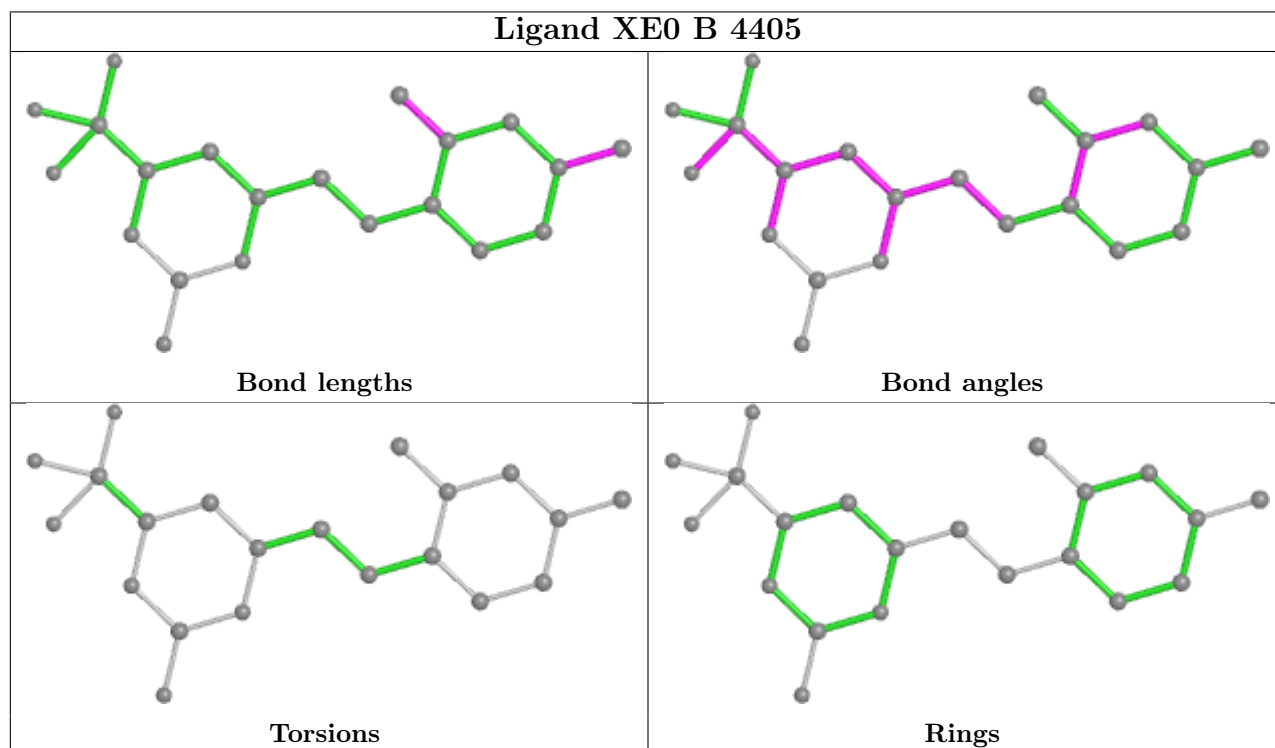
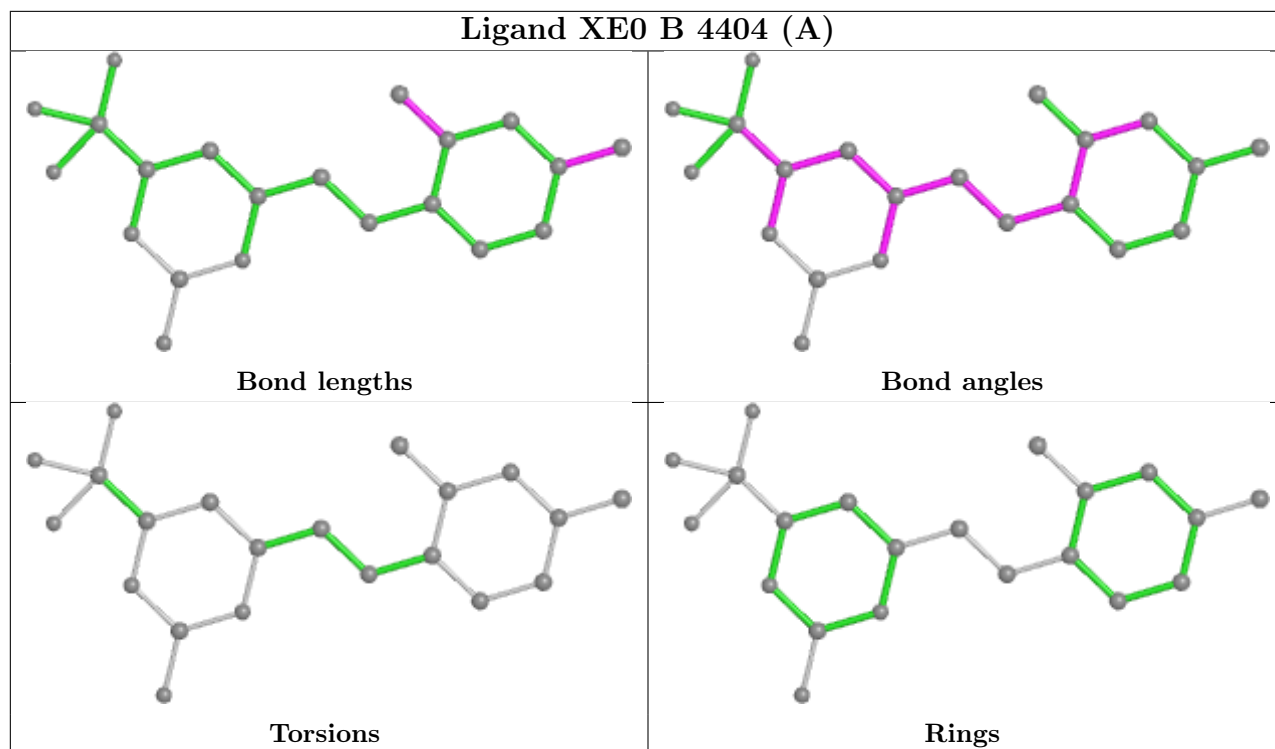
Mol	Chain	Res	Type	Atoms
4	A	7102[A]	XDU	C3-C4-C5-C10
4	A	7102[A]	XDU	C3-C4-C5-C6

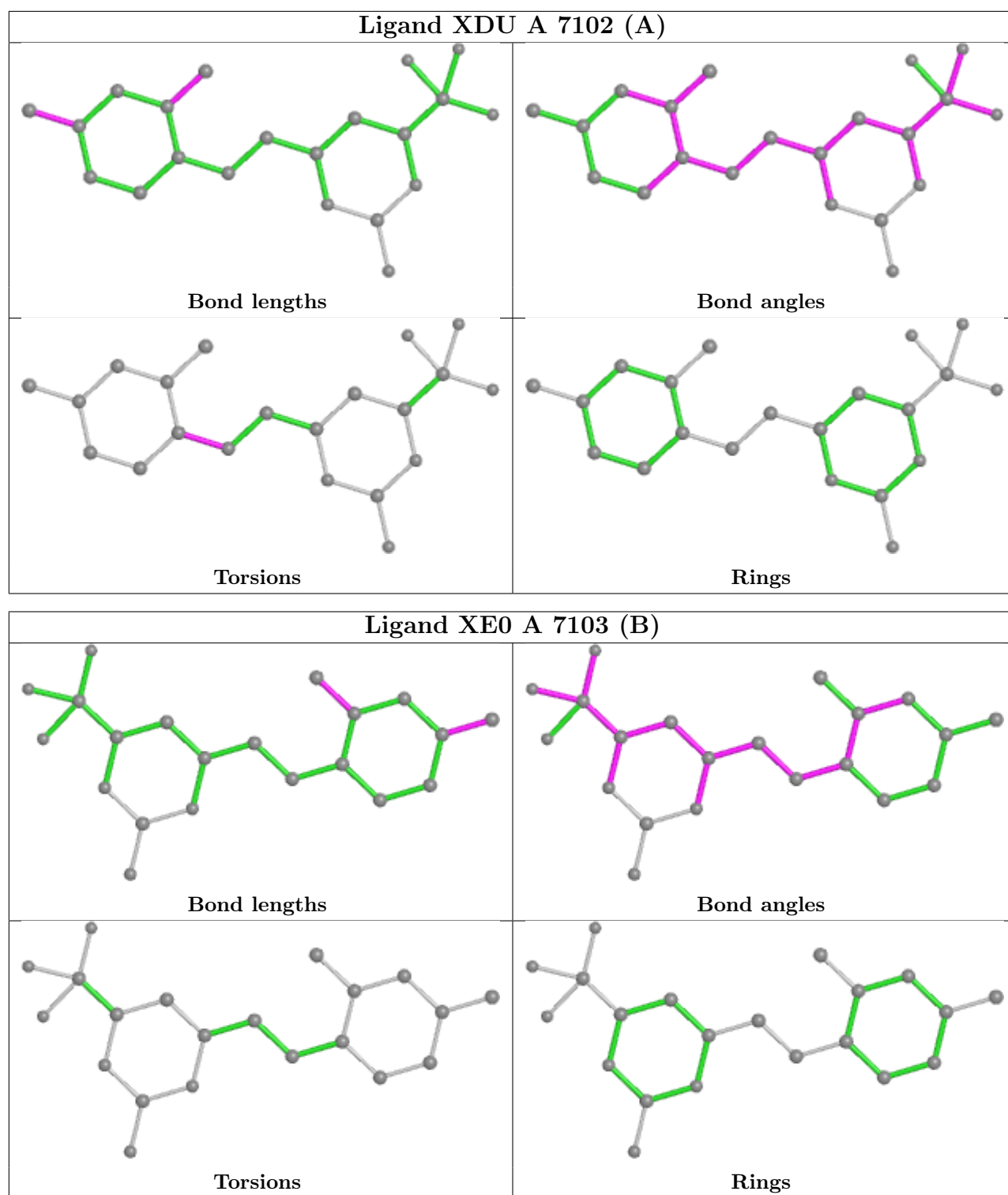
There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	7102[A]	XDU	2	0
5	A	7103[B]	XE0	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	298/301 (99%)	0.28	26 (8%) 10 13	31, 44, 85, 146	0
2	B	110/142 (77%)	1.35	35 (31%) 0 0	37, 73, 144, 151	0
All	All	408/443 (92%)	0.57	61 (14%) 2 2	31, 49, 124, 151	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	4285	ALA	9.4
2	B	4339	PRO	8.3
2	B	4284	LEU	7.4
2	B	4289	GLN	7.4
2	B	4383	CYS	7.4
2	B	4286	SER	6.2
1	A	7061	LYS	6.2
2	B	4342	PHE	6.1
2	B	4372	VAL	5.7
2	B	4385	GLN	5.6
2	B	4287	GLY	5.6
1	A	6799	SER	5.5
2	B	4340	LYS	5.4
2	B	4283	TYR	5.0
1	A	6828	TYR	4.8
1	A	7063	GLY	4.5
2	B	4288	GLY	4.4
2	B	4282	ASP	4.4
2	B	4341	GLY	4.3
2	B	4280	TYR	4.1
2	B	4384	ASP	4.1
2	B	4337	PRO	4.0
2	B	4373	CYS	4.0
2	B	4338	ASN	3.9

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Mol	Chain	Res	Type	RSRZ
1	A	7093	LEU	3.9
2	B	4281	LYS	3.8
1	A	6925	ILE	3.8
2	B	4277	ALA	3.8
2	B	4279	ALA	3.8
1	A	6926	ILE	3.7
1	A	7062	GLU	3.7
1	A	6967	ILE	3.6
2	B	4290	PRO	3.6
2	B	4382	SER	3.5
1	A	6924	LEU	3.3
1	A	6829	GLY	3.2
1	A	7004	LEU	3.2
1	A	6965	VAL	3.1
2	B	4276	ALA	3.1
1	A	7064	GLN	3.1
1	A	6966	ALA	2.9
1	A	6883	LEU	2.9
1	A	6933	LYS	2.7
2	B	4278	LYS	2.7
1	A	6866	ILE	2.7
1	A	7003	PHE	2.7
2	B	4371	THR	2.6
2	B	4335	ASP	2.6
2	B	4374	GLY	2.6
2	B	4370	CYS	2.6
2	B	4381	CYS	2.5
1	A	7005	ILE	2.5
1	A	7002	ALA	2.5
1	A	6865	VAL	2.4
1	A	6945[A]	GLU	2.4
1	A	6830	ASP	2.3
1	A	6800	SER	2.2
1	A	6831	SER	2.1
2	B	4334	ILE	2.1
2	B	4377	LYS	2.0
2	B	4333	HIS	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 [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

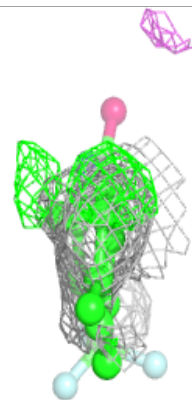
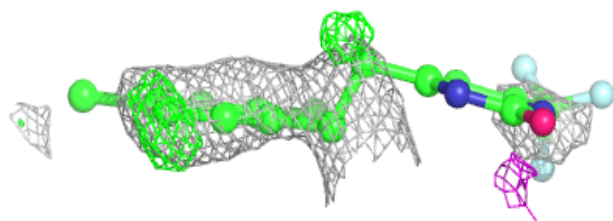
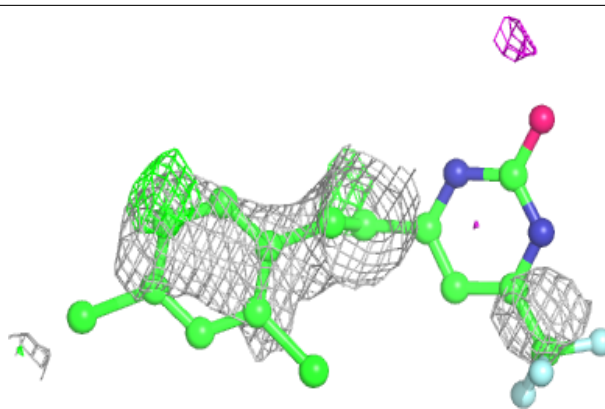
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	XE0	B	4405	21/21	0.61	0.56	95,117,123,137	21
6	FMT	A	7108	3/3	0.65	0.19	89,89,90,93	0
5	XE0	B	4404[A]	21/21	0.72	0.33	89,93,117,119	21
6	FMT	B	4406	3/3	0.73	0.50	68,68,74,91	0
6	FMT	A	7112	3/3	0.76	0.35	75,75,83,88	0
6	FMT	A	7110	3/3	0.78	0.22	83,83,87,93	0
3	NA	B	4403	1/1	0.79	0.12	86,86,86,86	0
6	FMT	A	7107	3/3	0.81	0.29	66,66,66,73	0
6	FMT	A	7106	3/3	0.84	0.23	69,69,81,87	0
6	FMT	A	7109	3/3	0.86	0.36	71,71,82,87	0
3	NA	A	7101	1/1	0.86	0.22	53,53,53,53	0
4	XDU	A	7102[A]	21/21	0.91	0.13	60,71,103,112	21
5	XE0	A	7103[B]	21/21	0.92	0.12	37,45,60,72	21
7	ZN	B	4402	1/1	0.93	0.12	91,91,91,91	0
7	ZN	B	4401	1/1	0.95	0.04	63,63,63,63	0
6	FMT	A	7104	3/3	0.97	0.10	49,49,52,54	0
6	FMT	A	7111	3/3	0.97	0.24	77,77,83,88	0
6	FMT	A	7105	3/3	0.98	0.09	42,42,44,51	0

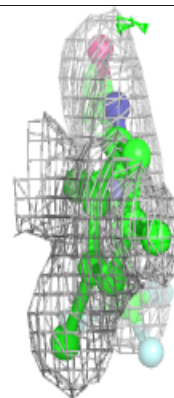
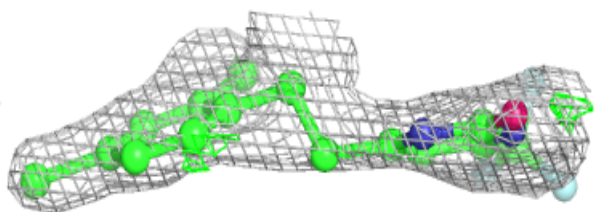
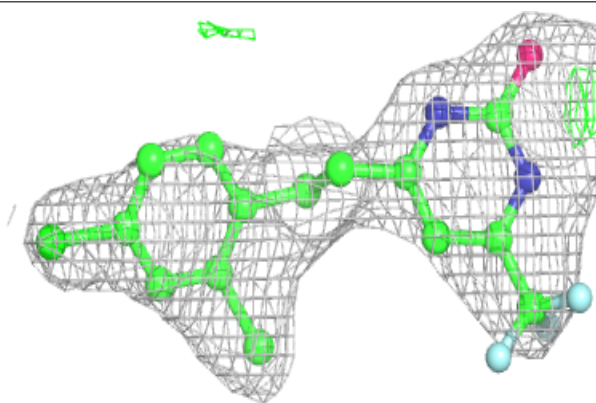
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around XE0 B 4405:

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

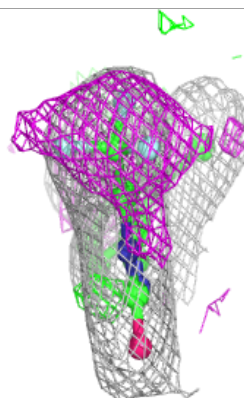
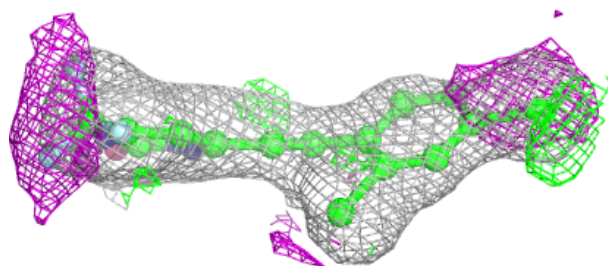
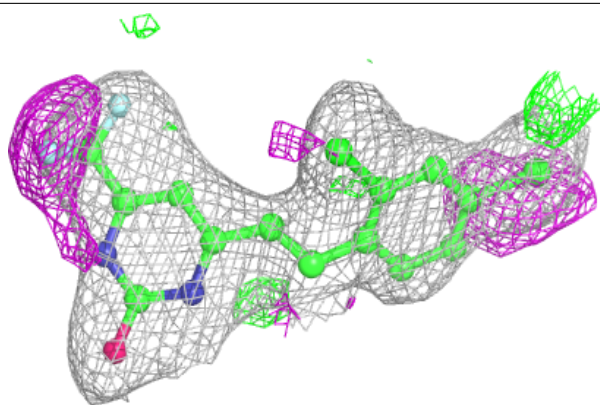
**Electron density around XE0 B 4404 (A):**

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

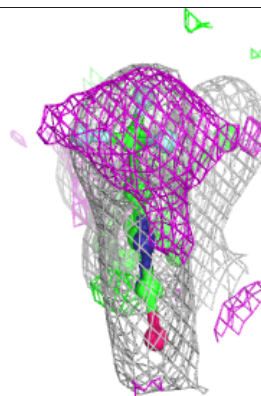
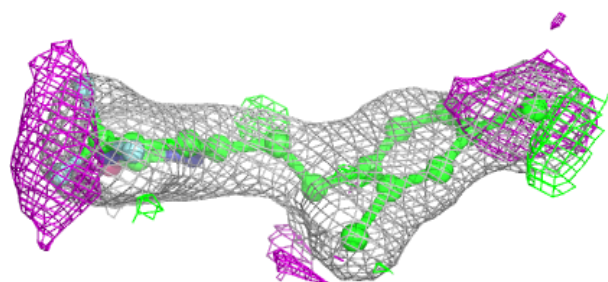
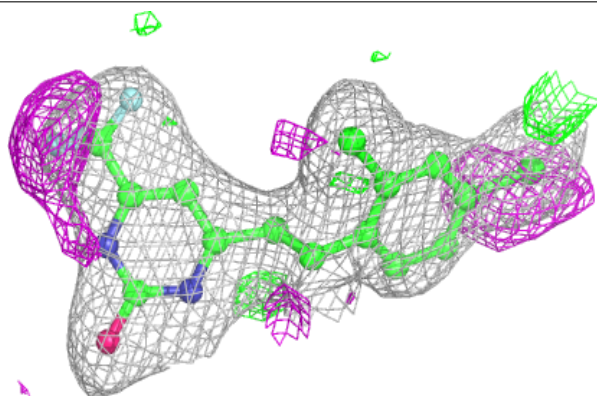


Electron density around XDU A 7102 (A):

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

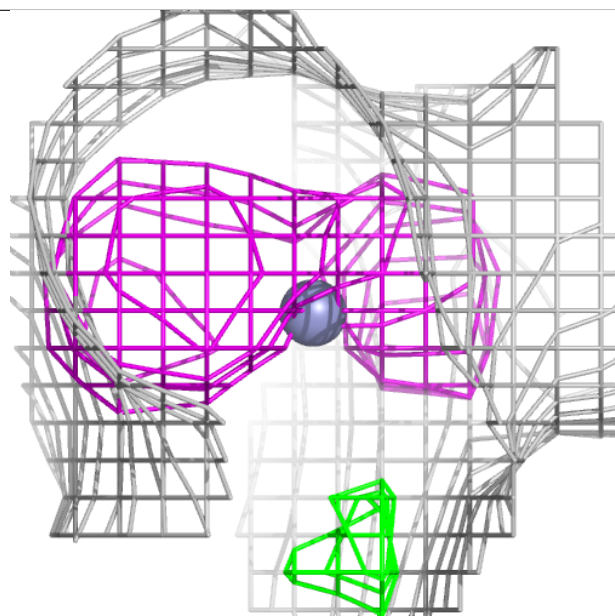
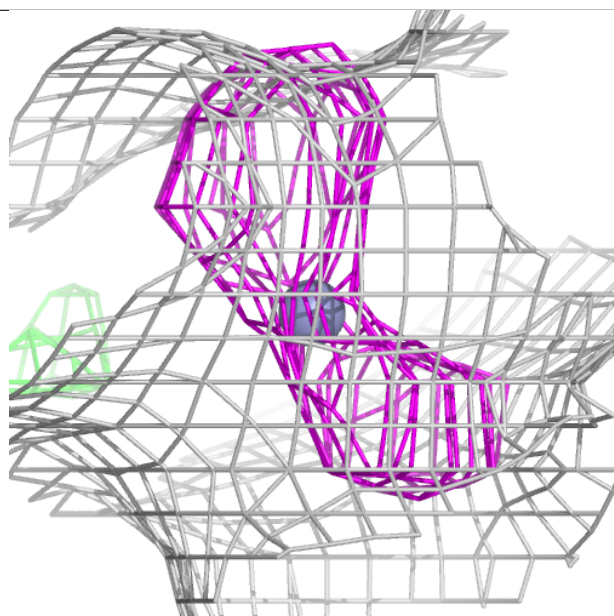
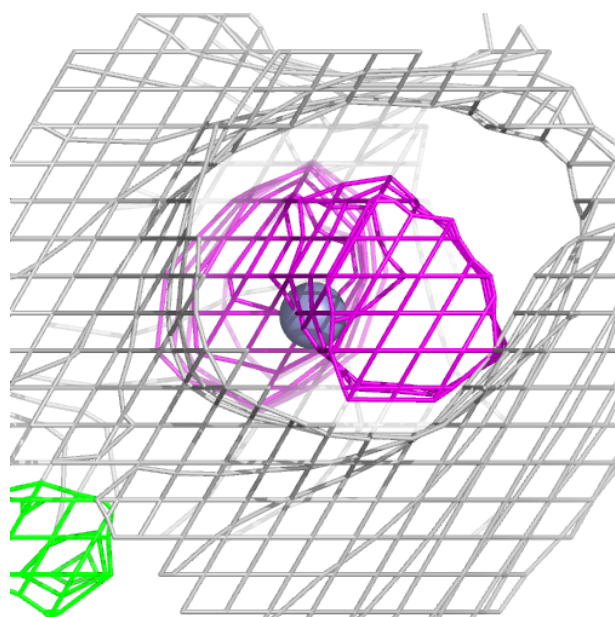
**Electron density around XE0 A 7103 (B):**

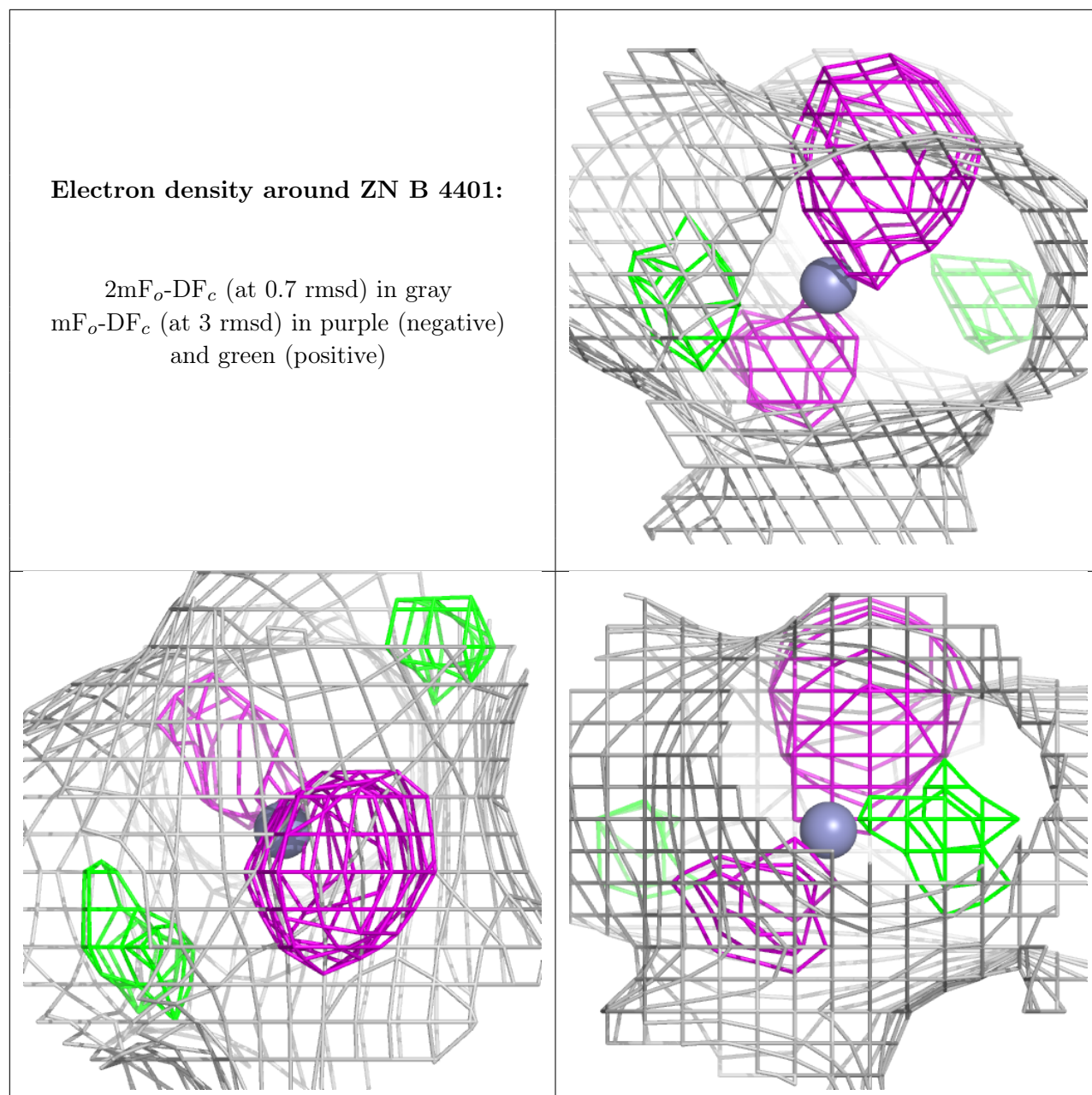
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around ZN B 4402:

$2mF_o-DF_c$ (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.