Full wwPDB X-ray Structure Validation Report (i)

Sep 1, 2025 – 10:35 AM JST

PDB ID	:	9JEO / pdb_00009jeo
Title	:	Chito oligosaccharide deacetylase from vibrio campbellii (VhCOD) in complex with N-acetyl-beta-D-glucosaminyl-1,4-D-glucosaminium(GlcNAcGlcN)
Authors	:	Sirikan, P.; Tamo, F.; Robinson, R.C.; Wipa, S.
Deposited on	:	2024-09-03
Resolution	:	1.87 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 (i) 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 (i)) were used in the production of this report:

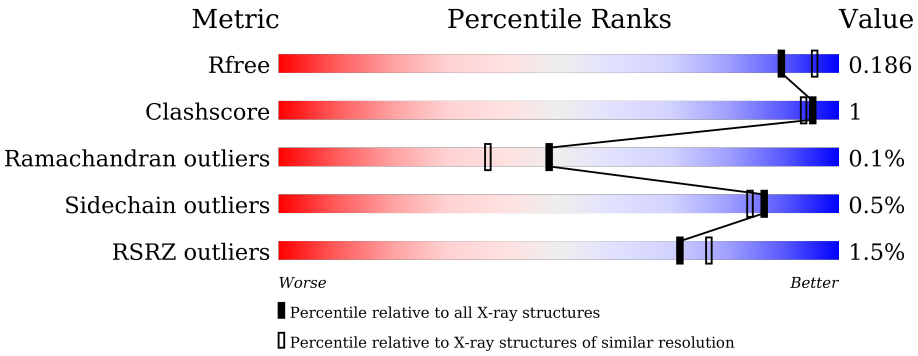
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 1.87 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1090 (1.88-1.88)
Clashscore	180529	1144 (1.88-1.88)
Ramachandran outliers	177936	1135 (1.88-1.88)
Sidechain outliers	177891	1135 (1.88-1.88)
RSRZ outliers	164620	1090 (1.88-1.88)

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	A	413	95%
1	B	413	93% 5%
1	C	413	95%
1	D	413	4% 96%
2	E	2	50% 50%
2	F	2	100%

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Mol	Chain	Length	Quality of chain
2	G	2	50% 50%
2	H	2	50% 50%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 14420 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 NodB homology domain-containing protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	407	Total	C	N	O	S	0	0	0
			3172	2010	533	620	9			
1	B	404	Total	C	N	O	S	0	0	0
			3137	1990	521	617	9			
1	C	402	Total	C	N	O	S	0	2	0
			3134	1992	519	614	9			
1	D	405	Total	C	N	O	S	0	0	0
			3147	1995	525	618	9			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	406	ARG	-	expression tag	UNP A7MSF4
A	407	SER	-	expression tag	UNP A7MSF4
A	408	HIS	-	expression tag	UNP A7MSF4
A	409	HIS	-	expression tag	UNP A7MSF4
A	410	HIS	-	expression tag	UNP A7MSF4
A	411	HIS	-	expression tag	UNP A7MSF4
A	412	HIS	-	expression tag	UNP A7MSF4
A	413	HIS	-	expression tag	UNP A7MSF4
B	406	ARG	-	expression tag	UNP A7MSF4
B	407	SER	-	expression tag	UNP A7MSF4
B	408	HIS	-	expression tag	UNP A7MSF4
B	409	HIS	-	expression tag	UNP A7MSF4
B	410	HIS	-	expression tag	UNP A7MSF4
B	411	HIS	-	expression tag	UNP A7MSF4
B	412	HIS	-	expression tag	UNP A7MSF4
B	413	HIS	-	expression tag	UNP A7MSF4
C	406	ARG	-	expression tag	UNP A7MSF4
C	407	SER	-	expression tag	UNP A7MSF4
C	408	HIS	-	expression tag	UNP A7MSF4
C	409	HIS	-	expression tag	UNP A7MSF4
C	410	HIS	-	expression tag	UNP A7MSF4

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Chain	Residue	Modelled	Actual	Comment	Reference
C	411	HIS	-	expression tag	UNP A7MSF4
C	412	HIS	-	expression tag	UNP A7MSF4
C	413	HIS	-	expression tag	UNP A7MSF4
D	406	ARG	-	expression tag	UNP A7MSF4
D	407	SER	-	expression tag	UNP A7MSF4
D	408	HIS	-	expression tag	UNP A7MSF4
D	409	HIS	-	expression tag	UNP A7MSF4
D	410	HIS	-	expression tag	UNP A7MSF4
D	411	HIS	-	expression tag	UNP A7MSF4
D	412	HIS	-	expression tag	UNP A7MSF4
D	413	HIS	-	expression tag	UNP A7MSF4

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-amino-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	E	2	Total C N O 26 14 2 10	0	0	0
2	F	2	Total C N O 26 14 2 10	0	0	0
2	G	2	Total C N O 26 14 2 10	0	0	0
2	H	2	Total C N O 26 14 2 10	0	0	0

- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Zn 1 1	0	0
3	B	1	Total Zn 1 1	0	0
3	C	1	Total Zn 1 1	0	0
3	D	1	Total Zn 1 1	0	0

- Molecule 4 is SODIUM ION (CCD ID: NA) (formula: Na) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	458	Total O 458 458	0	0
5	B	422	Total O 422 422	0	0
5	C	434	Total O 435 435	0	1
5	D	404	Total O 404 404	0	0

3 Residue-property plots (i)

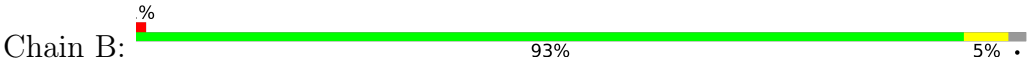
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

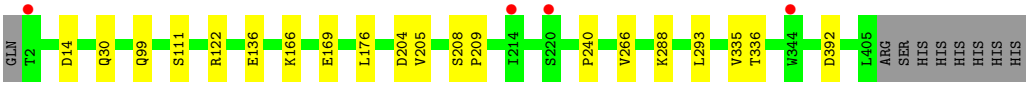
• Molecule 1: NodB homology domain-containing protein

Chain A:

• Molecule 1: NodB homology domain-containing protein

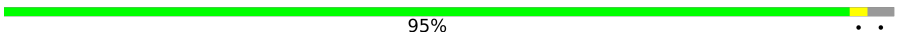
Chain B:

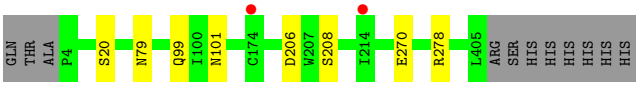




• Molecule 1: NodB homology domain-containing protein

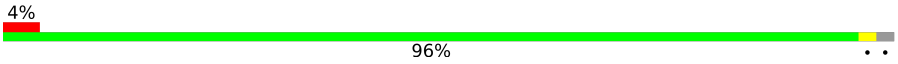
Chain C:

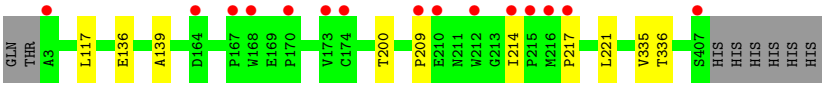




• Molecule 1: NodB homology domain-containing protein

Chain D:



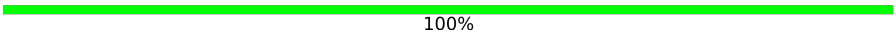


• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-amino-2-deoxy-beta-D-glucopyranose

Chain E:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-amino-2-deoxy-beta-D-glucopyranose

Chain F:



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-amino-2-deoxy-beta-D-glucopyranose

Chain G:

• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-amino-2-deoxy-beta-D-glucopyranose

Chain H:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	61.13Å 118.71Å 254.61Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.68 – 1.87 29.68 – 1.87	Depositor EDS
% Data completeness (in resolution range)	99.3 (29.68-1.87) 99.6 (29.68-1.87)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	0.13	Depositor
$< I/\sigma(I) >$ [1]	2.39 (at 1.87Å)	Xtriage
Refinement program	PHENIX (1.18.2_3874: 000)	Depositor
R, R_{free}	0.154 , 0.185 0.156 , 0.186	Depositor DCC
R_{free} test set	7582 reflections (4.90%)	wwPDB-VP
Wilson B-factor (Å^2)	17.7	Xtriage
Anisotropy	0.100	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 38.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	14420	wwPDB-VP
Average B, all atoms (Å^2)	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.59% 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: NA, NAG, ZN, GCS

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	0.38	0/3267	0.57	0/4480
1	B	0.37	0/3229	0.55	0/4431
1	C	0.37	0/3232	0.55	0/4434
1	D	0.38	0/3239	0.57	0/4443
All	All	0.38	0/12967	0.56	0/17788

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

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	3172	0	2954	6	0
1	B	3137	0	2926	12	0
1	C	3134	0	2935	6	0
1	D	3147	0	2937	4	0
2	E	26	0	25	0	0
2	F	26	0	25	0	0
2	G	26	0	25	3	0
2	H	26	0	25	0	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	D	1	0	0	0	0
5	A	458	0	0	0	0
5	B	422	0	0	1	0
5	C	435	0	0	0	0
5	D	404	0	0	0	0
All	All	14420	0	11852	26	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 1.

All (26) 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:278:ARG:HE	2:G:2:NAG:C8	2.14	0.60
1:B:136:GLU:H	1:B:136:GLU:CD	2.11	0.58
1:A:122:ARG:NH1	1:B:111:SER:OG	2.41	0.53
1:B:335:VAL:HG12	1:B:336:THR:HG23	1.92	0.51
1:B:30:GLN:HG3	1:B:293:LEU:HD12	1.92	0.51
1:C:278:ARG:HH21	2:G:2:NAG:H82	1.75	0.51
1:B:166:LYS:HB2	1:B:169:GLU:HG3	1.93	0.51
1:D:117:LEU:HD13	1:D:136:GLU:HG2	1.93	0.50
1:B:205:VAL:CG2	1:B:266:VAL:HG22	2.41	0.50
1:D:209:PRO:HG3	1:D:217:PRO:HB2	1.94	0.49
1:D:335:VAL:HG12	1:D:336:THR:HG23	1.99	0.45
1:C:20:SER:HA	1:C:270:GLU:HG2	1.98	0.45
1:A:208:SER:HB2	1:A:209:PRO:HD2	2.00	0.44
1:A:166:LYS:HB2	1:A:169:GLU:HG3	2.00	0.44
1:A:117:LEU:HD13	1:A:136:GLU:HG2	2.00	0.42
1:B:176:LEU:HD23	1:B:176:LEU:HA	1.75	0.42
1:C:79:ASN:HB3	1:C:101:ASN:O	2.19	0.42
1:C:278:ARG:HE	2:G:2:NAG:H81	1.83	0.42
1:B:288:LYS:NZ	5:B:618:HOH:O	2.52	0.42
1:B:204:ASP:OD1	1:B:240:PRO:HD3	2.20	0.42
1:B:208:SER:HB2	1:B:209:PRO:HD2	2.01	0.41
1:A:79:ASN:HB3	1:A:101:ASN:O	2.20	0.41
1:A:111:SER:OG	1:B:122:ARG:NH1	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:139:ALA:O	1:D:200:THR:HA	2.21	0.41
1:C:206:ASP:OD1	1:C:208:SER:HB3	2.21	0.40
1:B:392:ASP:OD1	1:B:392:ASP:N	2.55	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	405/413 (98%)	393 (97%)	12 (3%)	0	100	100
1	B	402/413 (97%)	392 (98%)	9 (2%)	1 (0%)	44	34
1	C	402/413 (97%)	392 (98%)	10 (2%)	0	100	100
1	D	403/413 (98%)	392 (97%)	11 (3%)	0	100	100
All	All	1612/1652 (98%)	1569 (97%)	42 (3%)	1 (0%)	48	37

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	14	ASP

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	337/342 (98%)	334 (99%)	3 (1%)	75 69
1	B	333/342 (97%)	332 (100%)	1 (0%)	91 88
1	C	334/342 (98%)	333 (100%)	1 (0%)	91 88
1	D	334/342 (98%)	332 (99%)	2 (1%)	84 80
All	All	1338/1368 (98%)	1331 (100%)	7 (0%)	86 84

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

Mol	Chain	Res	Type
1	A	99	GLN
1	A	221	LEU
1	A	259	LEU
1	B	99	GLN
1	C	99	GLN
1	D	214	ILE
1	D	221	LEU

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

Mol	Chain	Res	Type
1	D	342	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)

8 monosaccharides are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	GCS	E	1	2	12,12,12	0.56	0	16,17,17	0.56	0
2	NAG	E	2	2	14,14,15	0.64	1 (7%)	17,19,21	0.60	0
2	GCS	F	1	2	12,12,12	0.31	0	16,17,17	0.70	0
2	NAG	F	2	2	14,14,15	0.39	0	17,19,21	0.57	0
2	GCS	G	1	2	12,12,12	0.45	0	16,17,17	0.40	0
2	NAG	G	2	2	14,14,15	0.57	0	17,19,21	0.60	0
2	GCS	H	1	2	12,12,12	0.40	0	16,17,17	0.62	0
2	NAG	H	2	2	14,14,15	0.29	0	17,19,21	0.61	1 (5%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GCS	E	1	2	-	0/2/22/22	0/1/1/1
2	NAG	E	2	2	-	0/6/23/26	0/1/1/1
2	GCS	F	1	2	-	0/2/22/22	0/1/1/1
2	NAG	F	2	2	-	0/6/23/26	0/1/1/1
2	GCS	G	1	2	-	0/2/22/22	0/1/1/1
2	NAG	G	2	2	-	2/6/23/26	0/1/1/1
2	GCS	H	1	2	-	0/2/22/22	0/1/1/1
2	NAG	H	2	2	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	2	NAG	C1-C2	2.10	1.55	1.52

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	2	NAG	C1-O5-C5	2.14	115.10	112.19

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	G	2	NAG	C8-C7-N2-C2
2	G	2	NAG	O7-C7-N2-C2

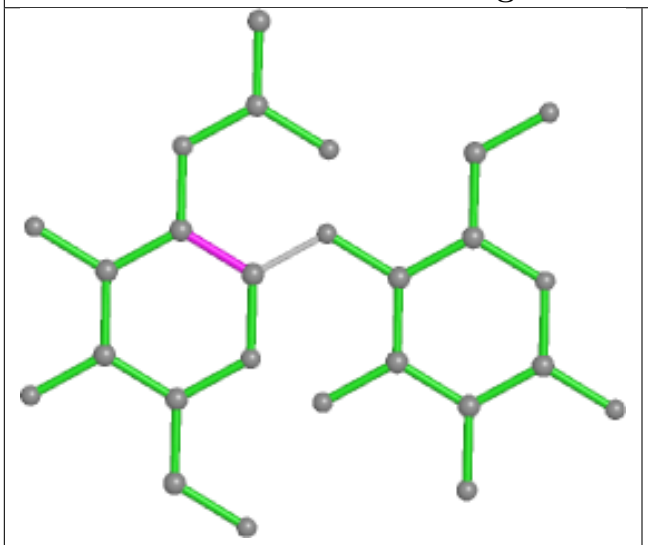
There are no ring outliers.

1 monomer is involved in 3 short contacts:

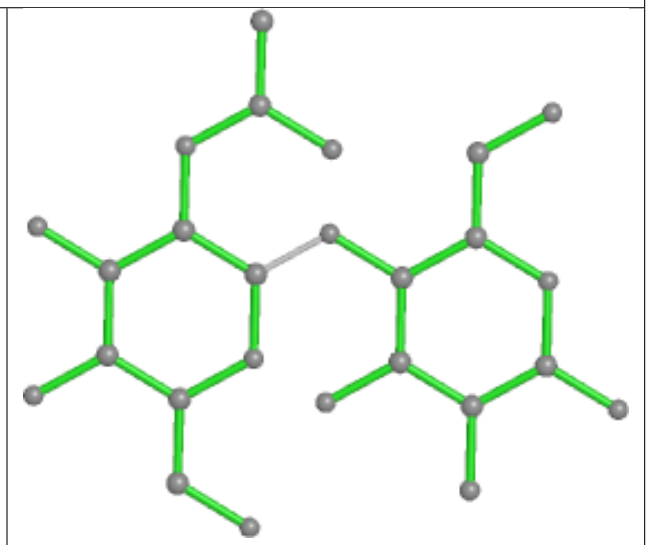
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	2	NAG	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

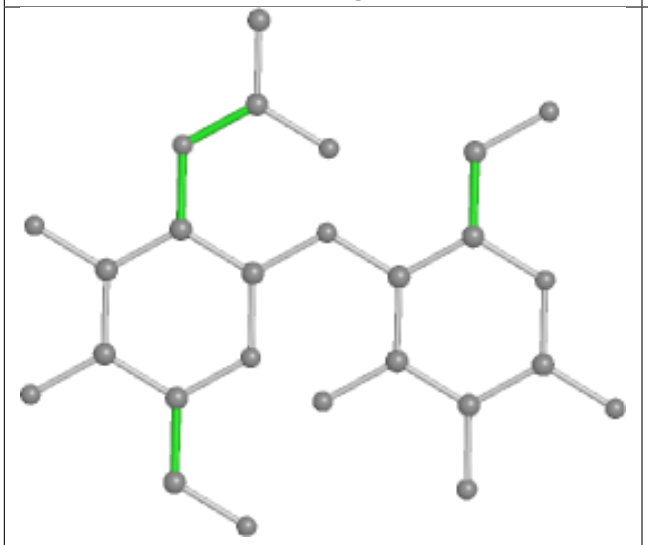
Oligosaccharide Chain E



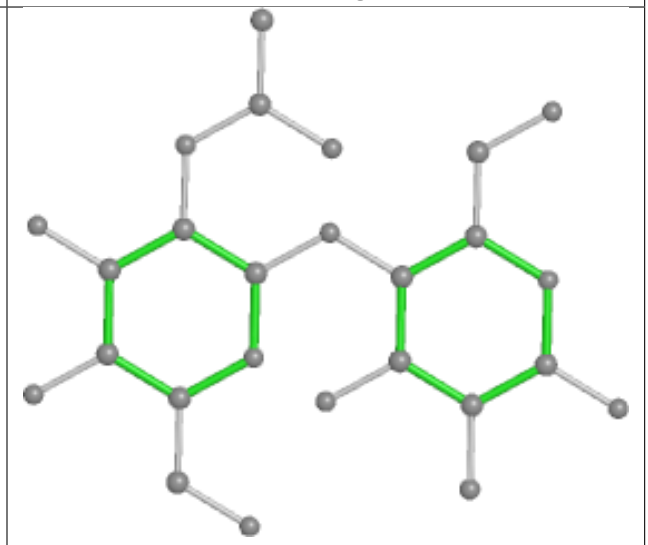
Bond lengths



Bond angles

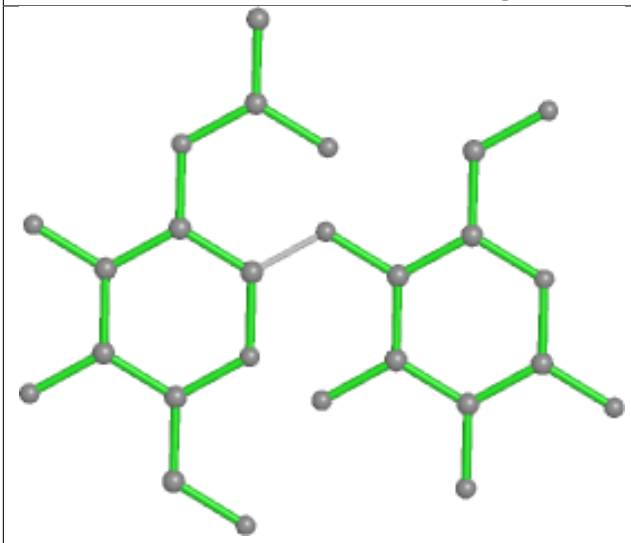


Torsions

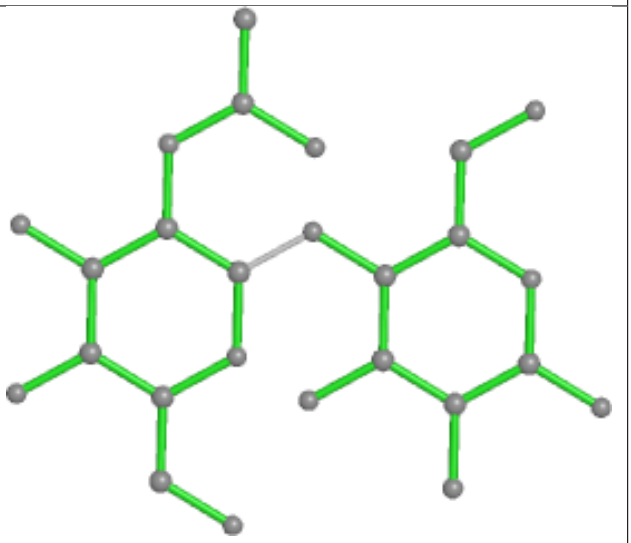


Rings

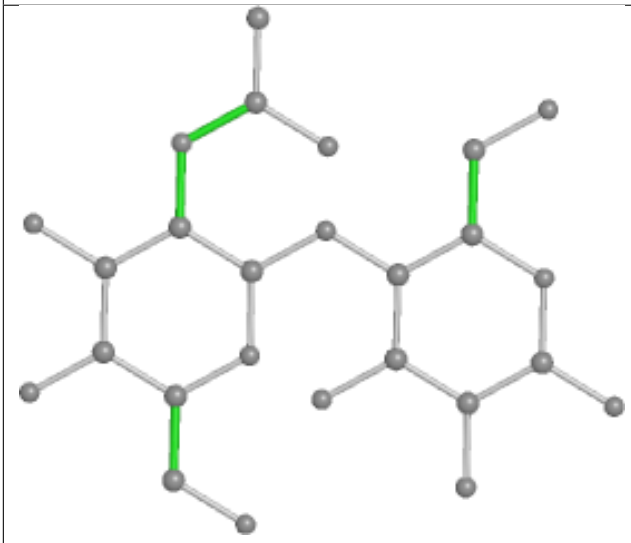
Oligosaccharide Chain F



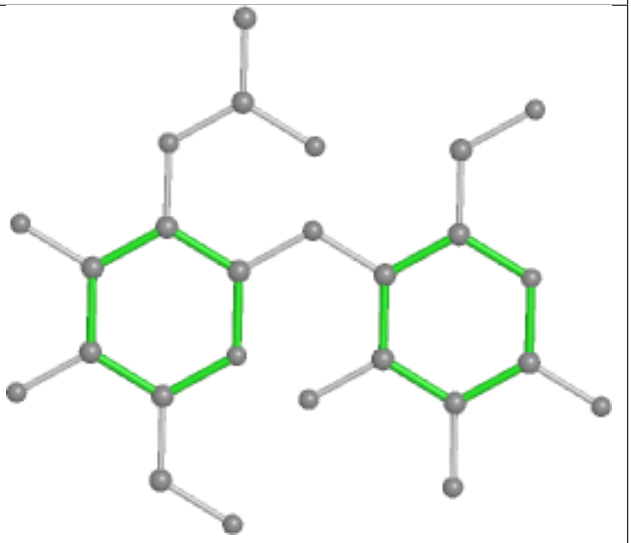
Bond lengths



Bond angles

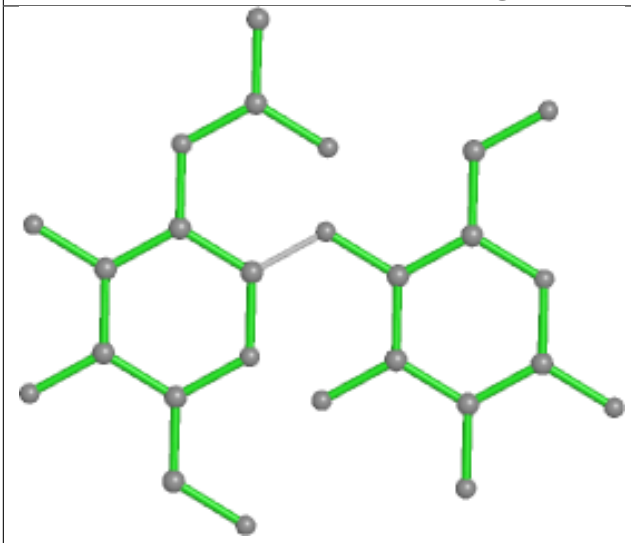


Torsions

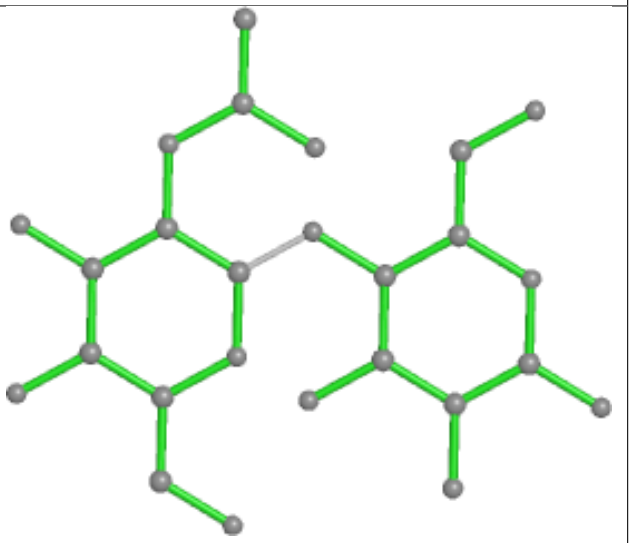


Rings

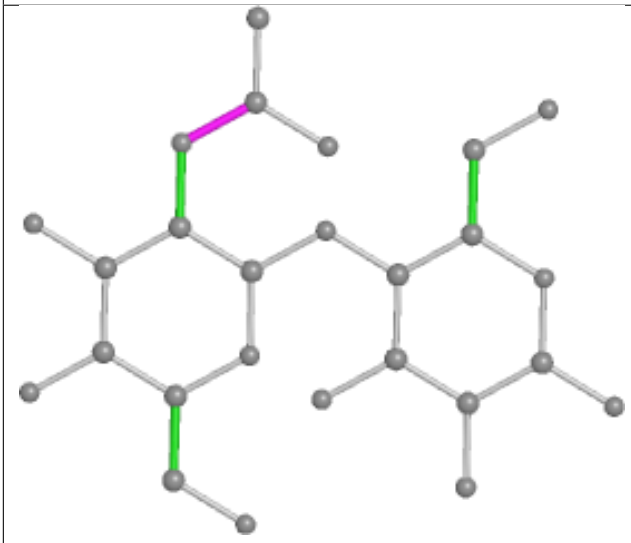
Oligosaccharide Chain G



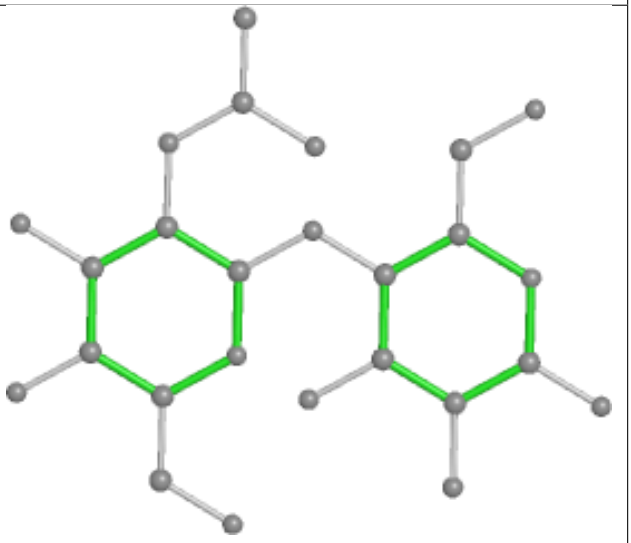
Bond lengths



Bond angles

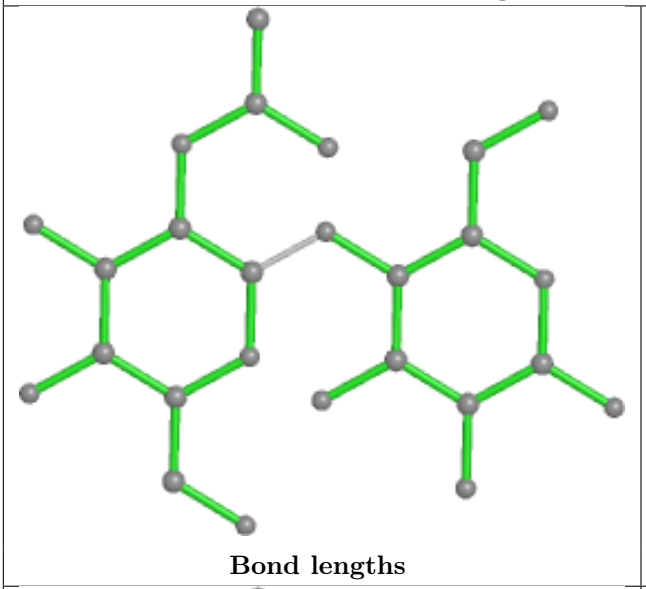


Torsions

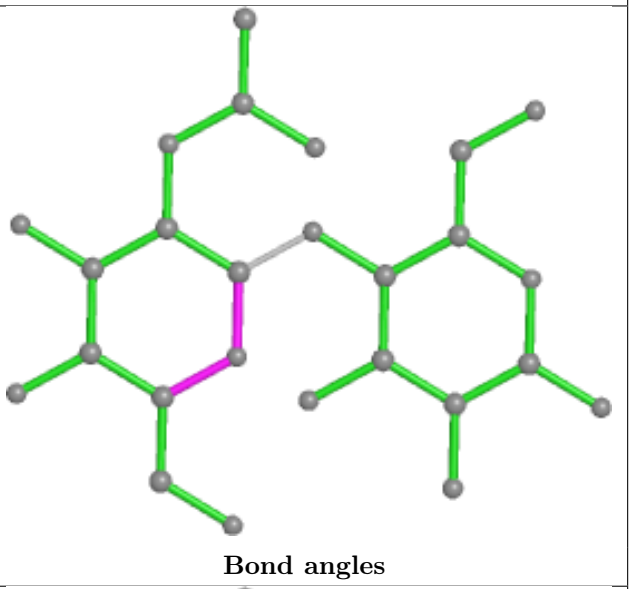


Rings

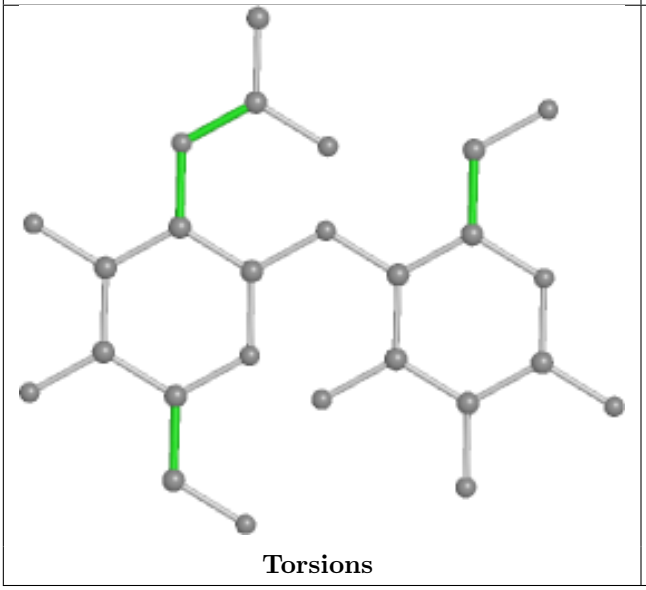
Oligosaccharide Chain H



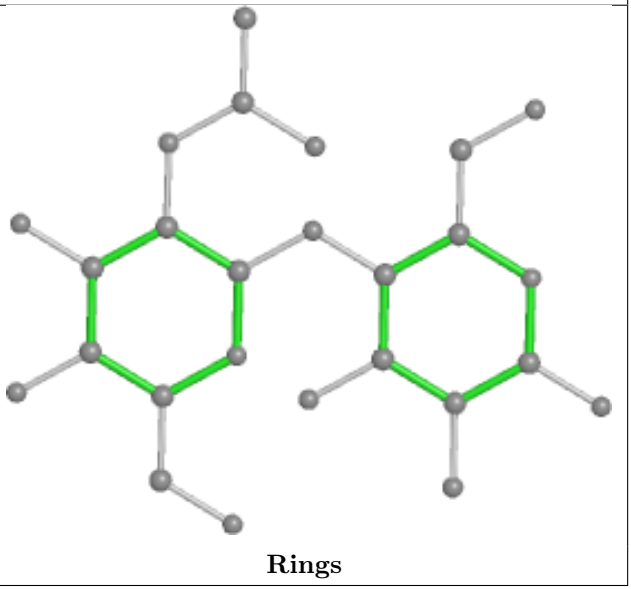
Bond lengths



Bond angles



Torsions



Rings

5.6 Ligand geometry (i)

Of 7 ligands modelled in this entry, 7 are monoatomic - leaving 0 for Mogul analysis.

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.

No monomer is involved in short contacts.

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	A	407/413 (98%)	-0.56	3 (0%)	84	87	9, 15, 30, 56	0
1	B	404/413 (97%)	-0.55	4 (0%)	79	83	10, 15, 30, 58	0
1	C	402/413 (97%)	-0.53	2 (0%)	87	90	8, 16, 31, 51	2 (0%)
1	D	405/413 (98%)	-0.33	15 (3%)	45	48	10, 17, 41, 64	0
All	All	1618/1652 (97%)	-0.49	24 (1%)	71	77	8, 16, 32, 64	2 (0%)

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	217	PRO	7.1
1	D	168	TRP	4.4
1	D	214	ILE	4.2
1	D	209	PRO	3.9
1	D	170	PRO	3.8
1	D	167	PRO	3.7
1	B	220	SER	3.3
1	D	3	ALA	3.2
1	B	344	TRP	3.2
1	D	210	GLU	2.8
1	D	215	PRO	2.7
1	D	212	TRP	2.6
1	D	407	SER	2.6
1	D	216	MET	2.6
1	B	2	THR	2.6
1	D	173	VAL	2.5
1	C	174	CYS	2.4
1	A	344	TRP	2.3
1	A	220	SER	2.3
1	B	214	ILE	2.2
1	C	214	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	210	GLU	2.1
1	D	174	CYS	2.1
1	D	164	ASP	2.1

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

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

6.3 Carbohydrates (i)

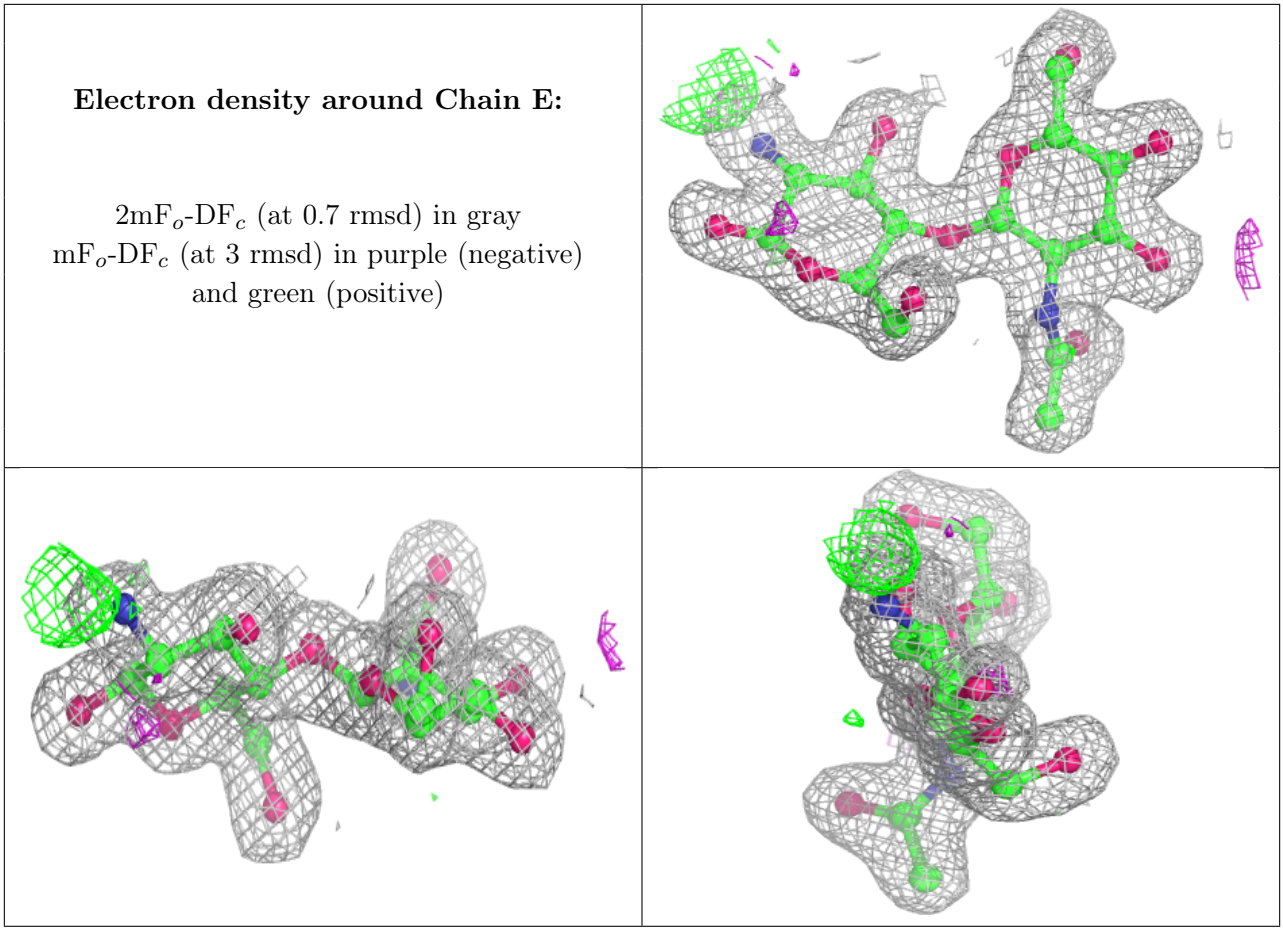
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
2	GCS	H	1	12/12	0.86	0.11	21,28,35,37	0
2	GCS	G	1	12/12	0.91	0.07	18,24,26,26	0
2	NAG	H	2	14/15	0.93	0.08	16,20,29,33	0
2	NAG	G	2	14/15	0.95	0.07	12,17,30,37	0
2	GCS	F	1	12/12	0.95	0.06	16,19,21,23	0
2	GCS	E	1	12/12	0.95	0.06	15,17,19,20	0
2	NAG	F	2	14/15	0.97	0.05	12,17,19,20	0
2	NAG	E	2	14/15	0.98	0.04	12,16,19,21	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

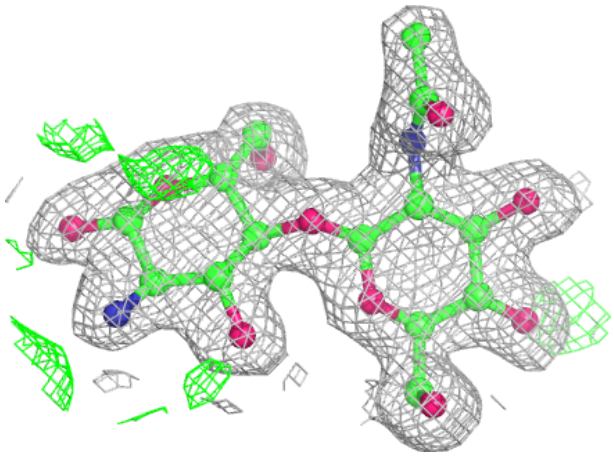
Electron density around Chain E:

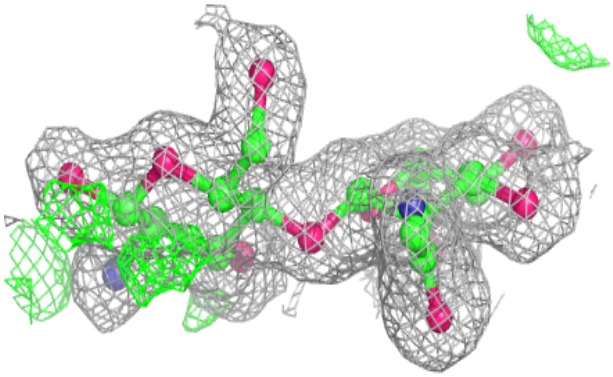
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

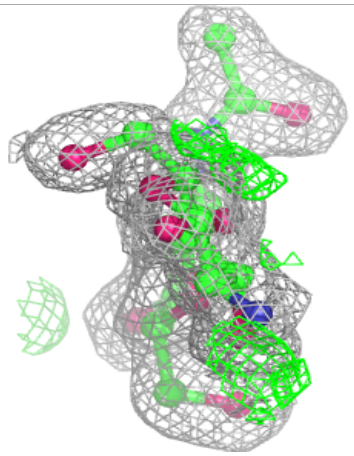


Electron density around Chain F:

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

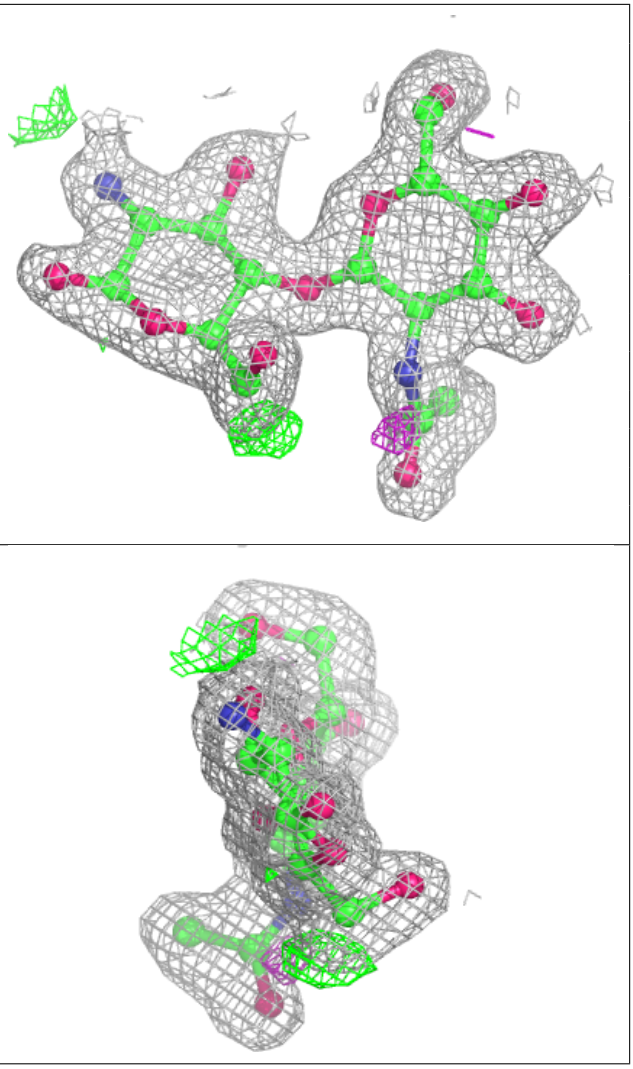






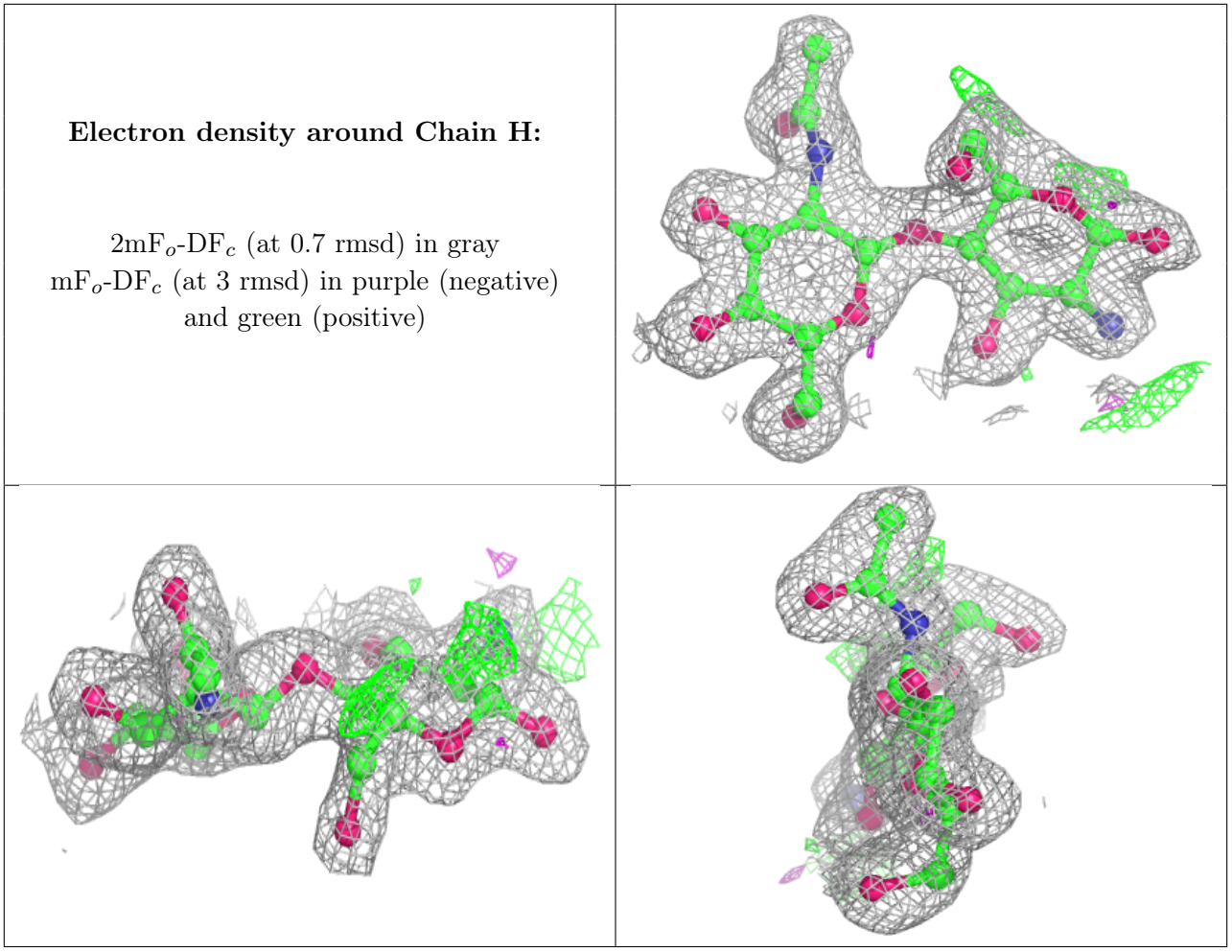
Electron density around Chain G:

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



Electron density around Chain H:

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



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.

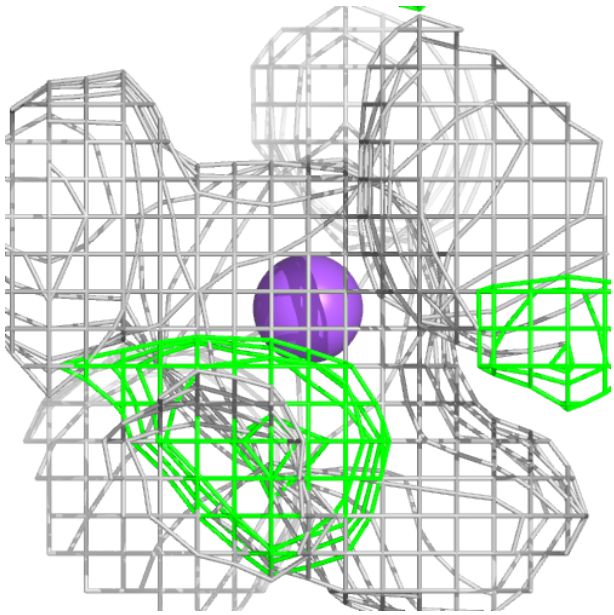
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	NA	B	502	1/1	0.97	0.03	11,11,11,11	0
4	NA	D	502	1/1	0.98	0.03	12,12,12,12	0
4	NA	A	502	1/1	0.99	0.02	9,9,9,9	0
3	ZN	D	501	1/1	1.00	0.01	14,14,14,14	0
3	ZN	A	501	1/1	1.00	0.01	13,13,13,13	0
3	ZN	B	501	1/1	1.00	0.01	13,13,13,13	0
3	ZN	C	501	1/1	1.00	0.01	14,14,14,14	0

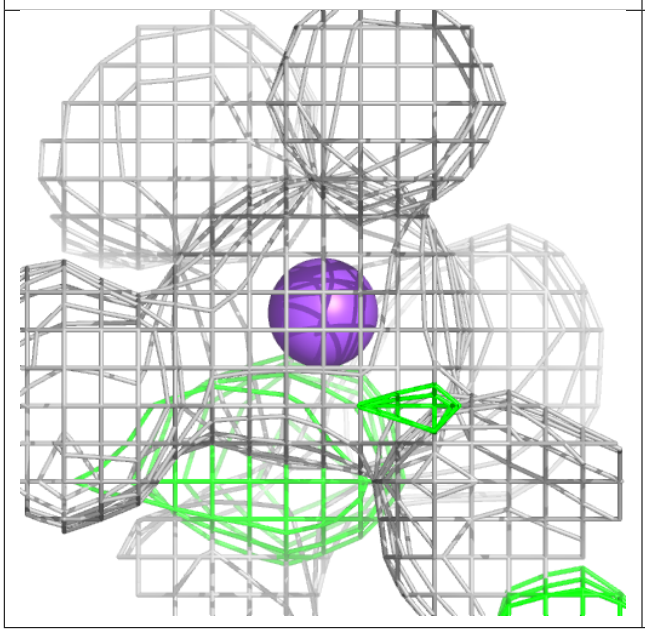
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different

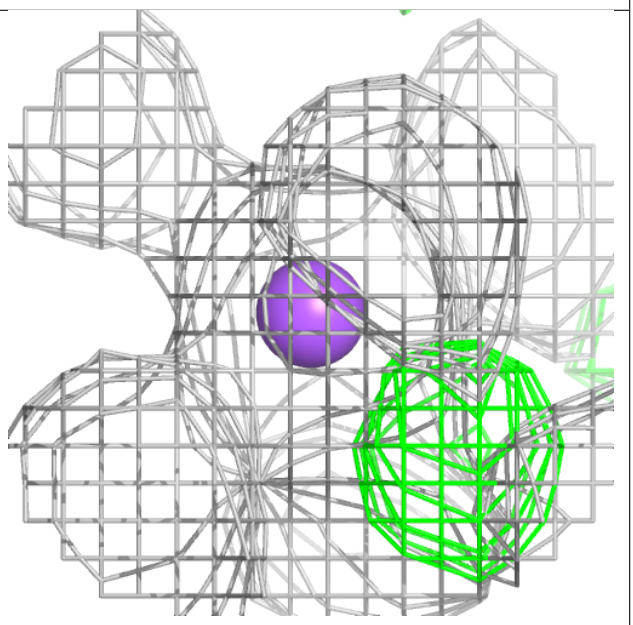
orientation to approximate a three-dimensional view.

Electron density around NA B 502:

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

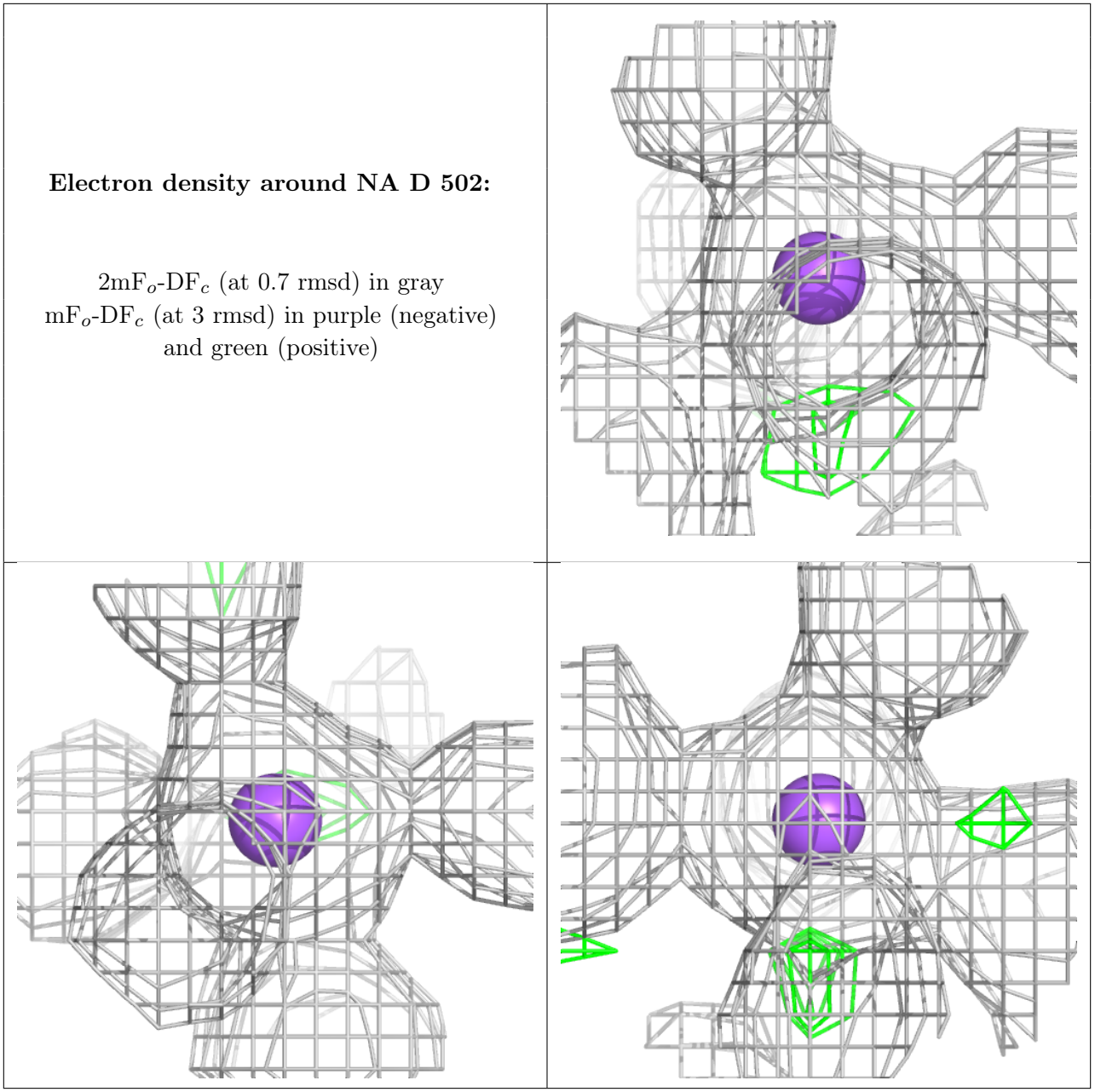






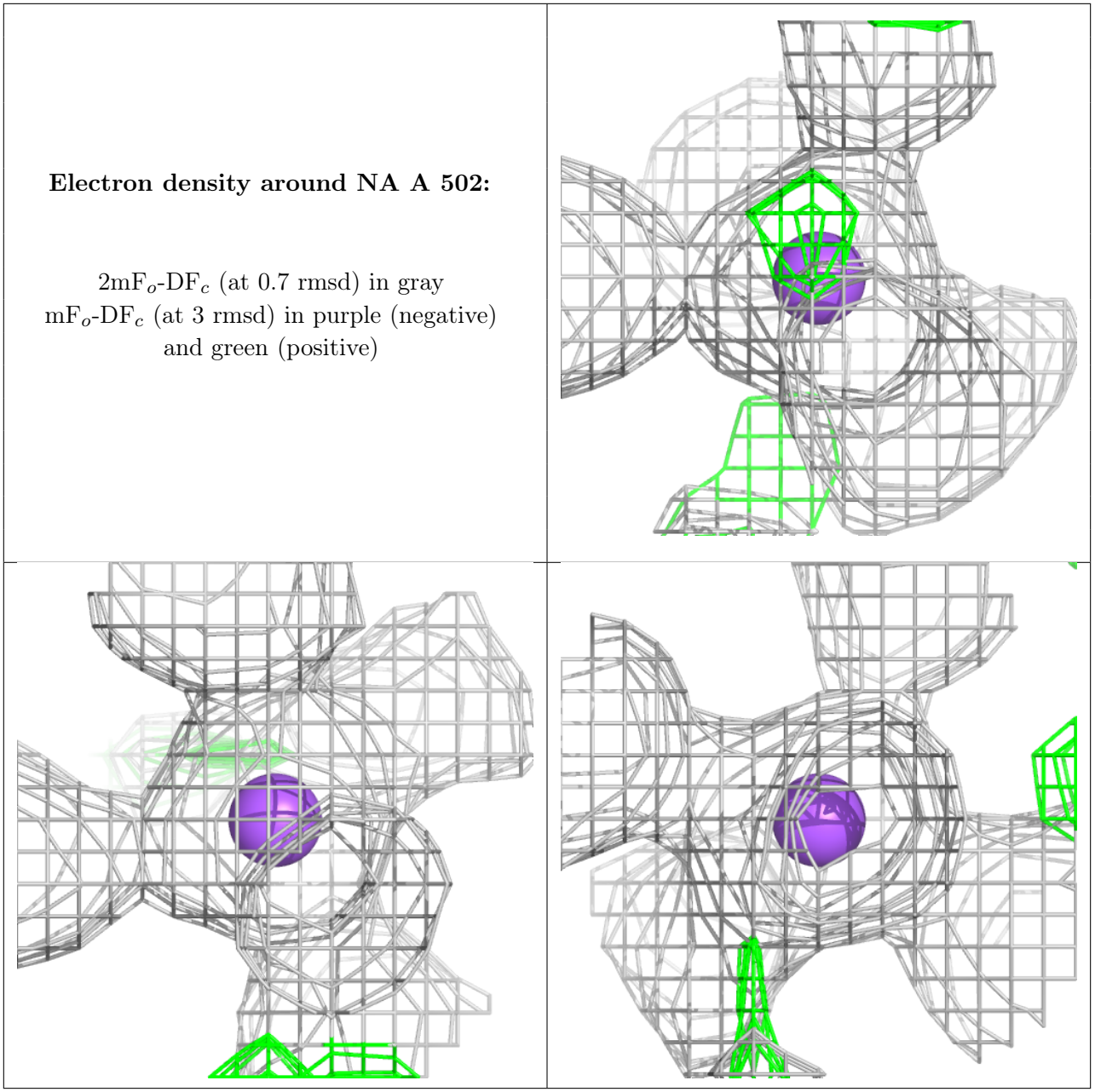
Electron density around NA D 502:

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



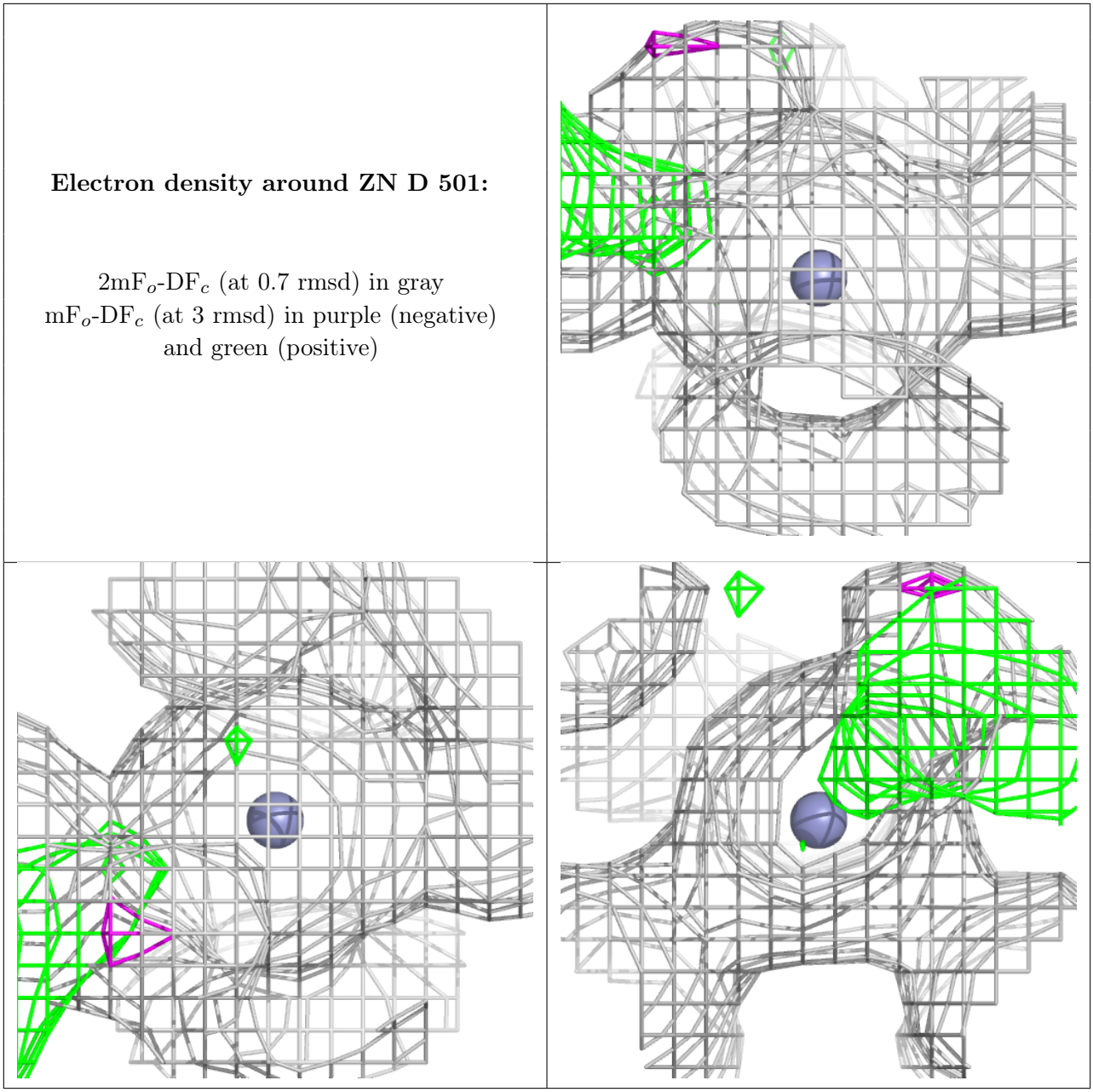
Electron density around NA A 502:

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



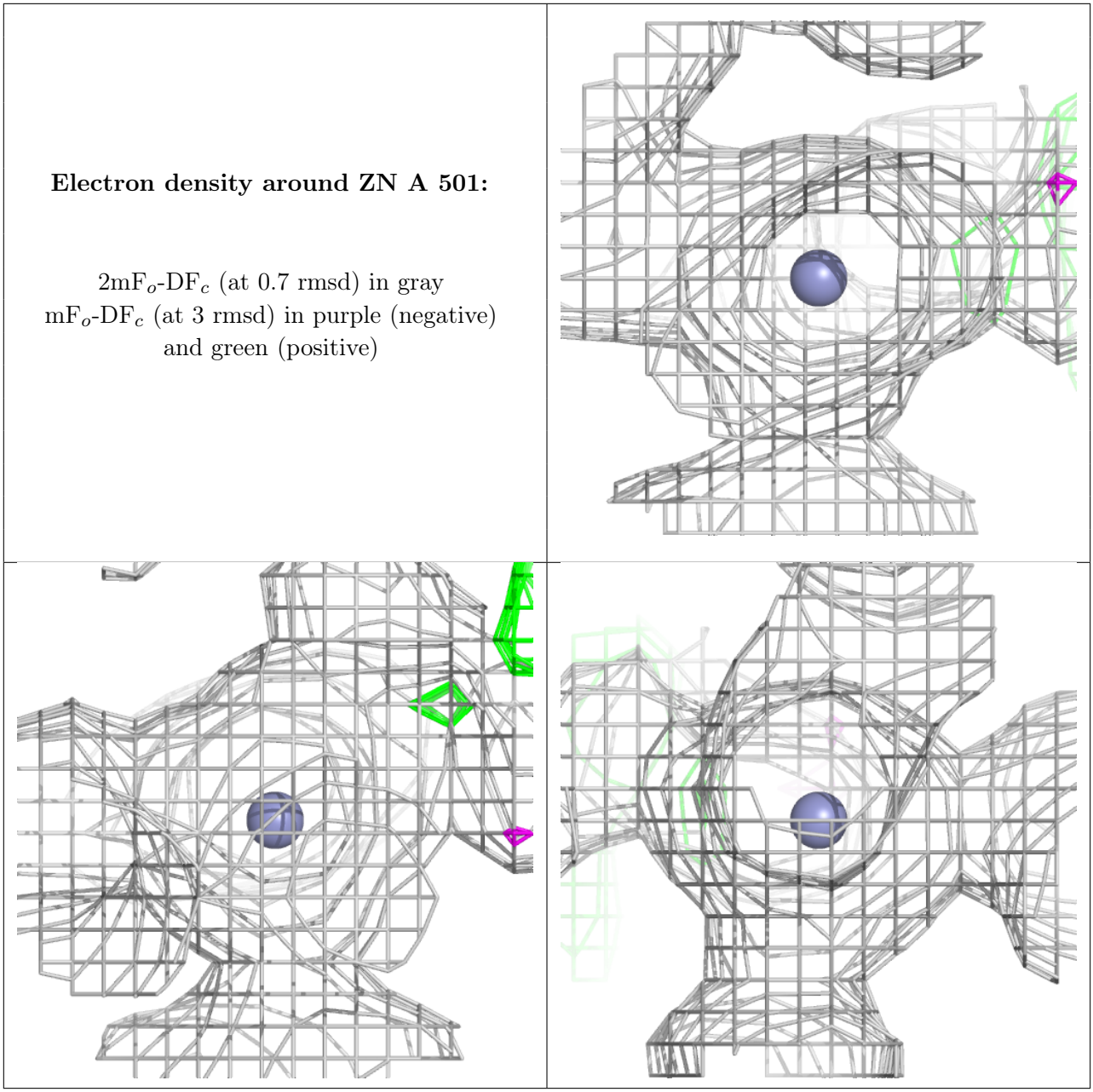
Electron density around ZN D 501:

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



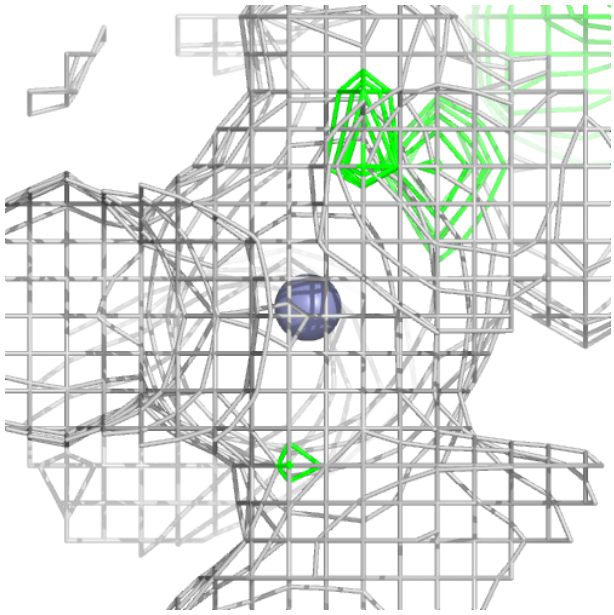
Electron density around ZN A 501:

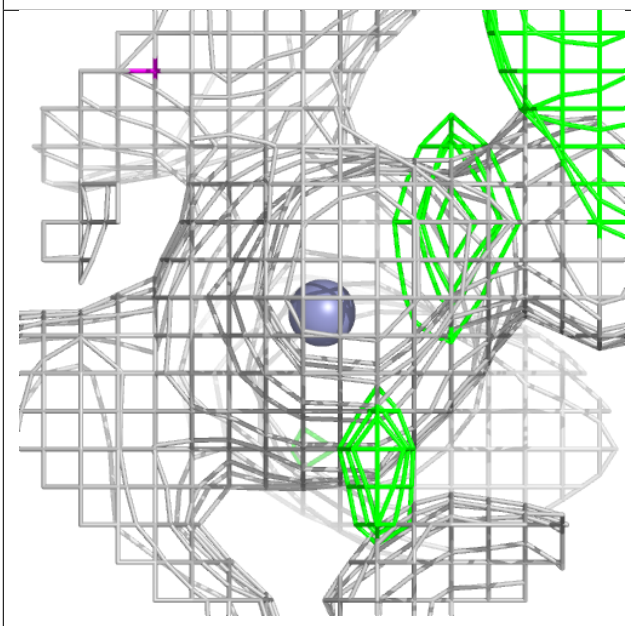
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

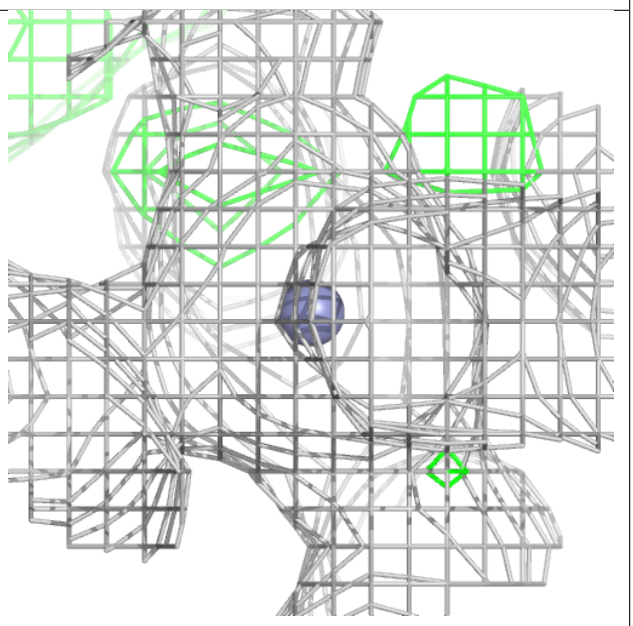


Electron density around ZN B 501:

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

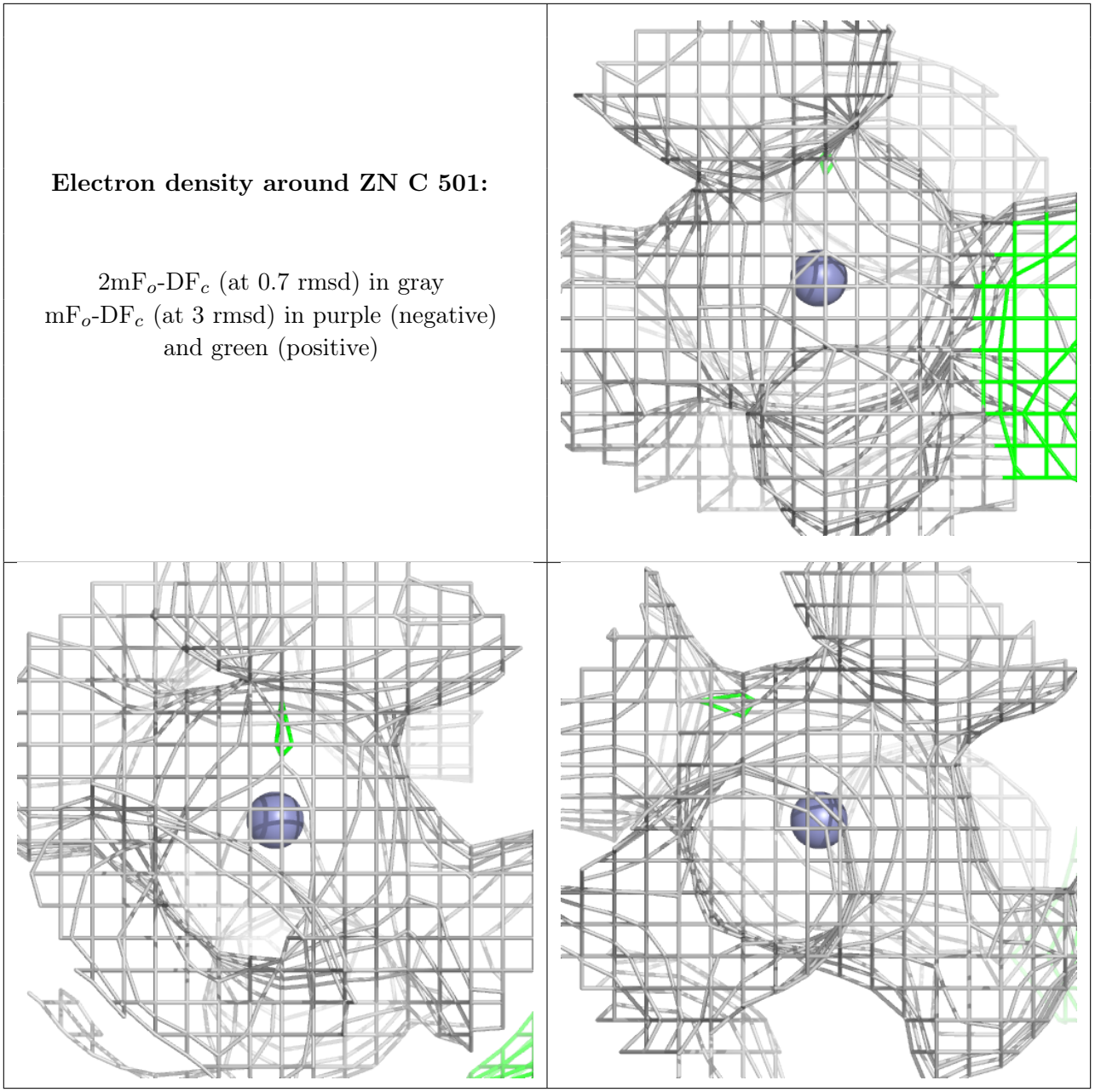






Electron density around ZN C 501:

$2mF_o$-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.