



# wwPDB X-ray Structure Validation Summary Report ⓘ

Dec 30, 2025 – 02:15 PM JST

PDB ID : 9X3M / pdb\_00009x3m  
Title : Crystal structure of Pseudopedobacter saltans GH43 beta-xylosidase in complex with xylose.  
Authors : Vishwakarma, P.; Sachdeva, E.; Ethayathulla, A.S.; Goyal, A.; Singh, T.P.; Kaur, P.  
Deposited on : 2025-10-09  
Resolution : 2.80 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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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	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.011 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

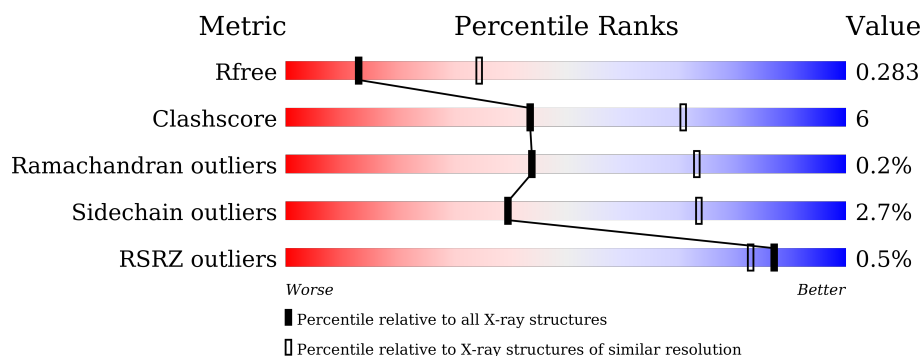
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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.



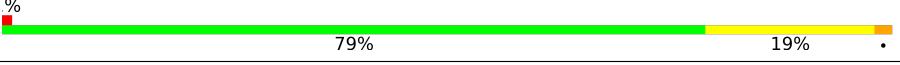

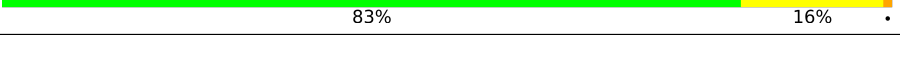
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	3657 (2.80-2.80)
Clashscore	180529	4123 (2.80-2.80)
Ramachandran outliers	177936	4071 (2.80-2.80)
Sidechain outliers	177891	4073 (2.80-2.80)
RSRZ outliers	164620	3659 (2.80-2.80)

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  $\geq 3$ , 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	432	<div> <div>85%</div> <div>13%</div> <div>..</div> </div>
1	B	432	<div> <div>%</div> <div>81%</div> <div>16%</div> <div>.</div> </div>
1	C	432	<div> <div>%</div> <div>81%</div> <div>16%</div> <div>.</div> </div>
1	D	432	<div> <div>82%</div> <div>16%</div> <div>.</div> </div>
1	E	432	<div> <div>81%</div> <div>17%</div> <div>.</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	432	 79% 19%
1	G	432	 82% 15%
1	H	432	 83% 16%

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
3	XLS	C	503	-	-	X	-
3	XLS	D	503	-	X	-	-
3	XLS	E	503	-	-	X	-
3	XLS	F	503	-	X	-	-

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 27742 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 Xylan 1,4-beta-xylosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			
1	B	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			
1	C	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			
1	D	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			
1	E	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			
1	F	432	Total	C	N	O	S	0	1	0
			3431	2209	564	643	15			
1	G	432	Total	C	N	O	S	0	0	0
			3421	2203	562	641	15			
1	H	432	Total	C	N	O	S	0	0	0
			3425	2205	563	642	15			

- Molecule 2 is CALCIUM ION (CCD ID: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Ca	0	0
			2	2		
2	B	2	Total	Ca	0	0
			2	2		
2	C	2	Total	Ca	0	0
			2	2		
2	D	2	Total	Ca	0	0
			2	2		
2	E	2	Total	Ca	0	0
			2	2		
2	F	2	Total	Ca	0	0
			2	2		

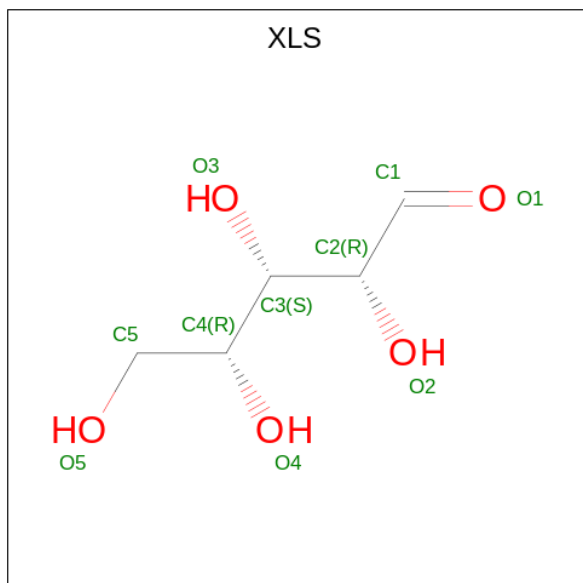
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	G	2	Total	Ca	0	0
			2	2		
2	H	2	Total	Ca	0	0
			2	2		

- Molecule 3 is D-xylose (CCD ID: XLS) (formula:  $C_5H_{10}O_5$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			10	5	5		
3	B	1	Total	C	O	0	0
			10	5	5		
3	C	1	Total	C	O	0	0
			10	5	5		
3	D	1	Total	C	O	0	0
			10	5	5		
3	E	1	Total	C	O	0	0
			10	5	5		
3	F	1	Total	C	O	0	0
			10	5	5		
3	G	1	Total	C	O	0	0
			10	5	5		
3	H	1	Total	C	O	0	0
			10	5	5		


- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	32	Total 32	O 32	0	0
4	B	29	Total 29	O 29	0	0
4	C	31	Total 31	O 31	0	0
4	D	28	Total 28	O 28	0	0
4	E	36	Total 36	O 36	0	0
4	F	34	Total 34	O 34	0	0
4	G	30	Total 30	O 30	0	0
4	H	24	Total 24	O 24	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.

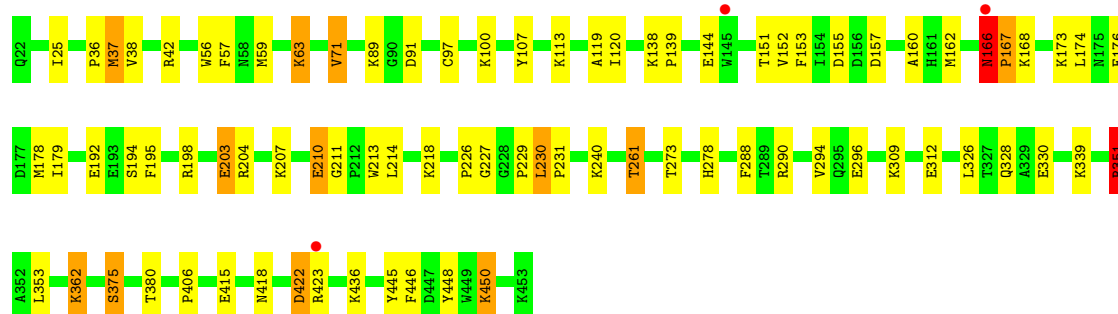
- Molecule 1: Xylan 1,4-beta-xylosidase

Chain A: 




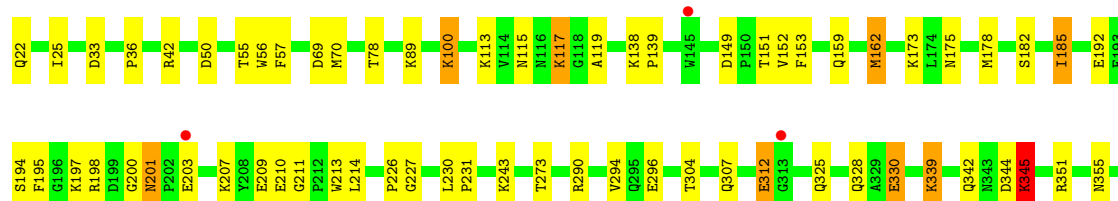
- Molecule 1: Xylan 1,4-beta-xylosidase

Chain B: 



- Molecule 1: Xylan 1,4-beta-xylosidase

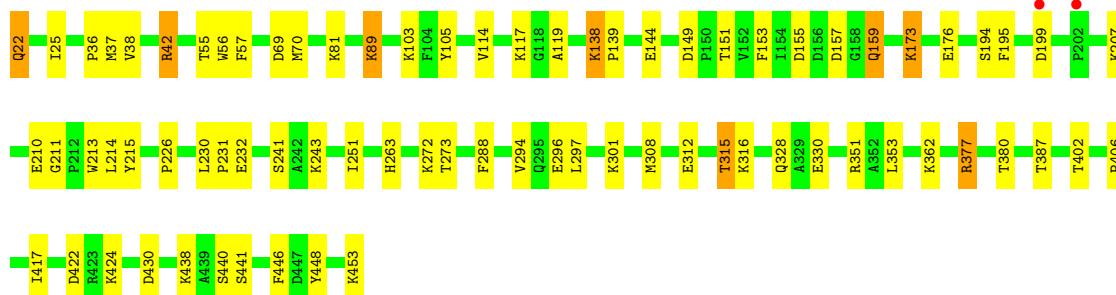
Chain C: 





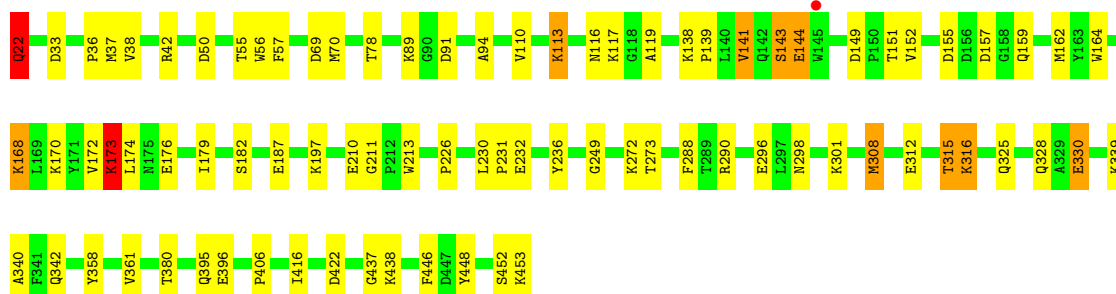
- Molecule 1: Xylan 1,4-beta-xylosidase

Chain D: 82% 16% .



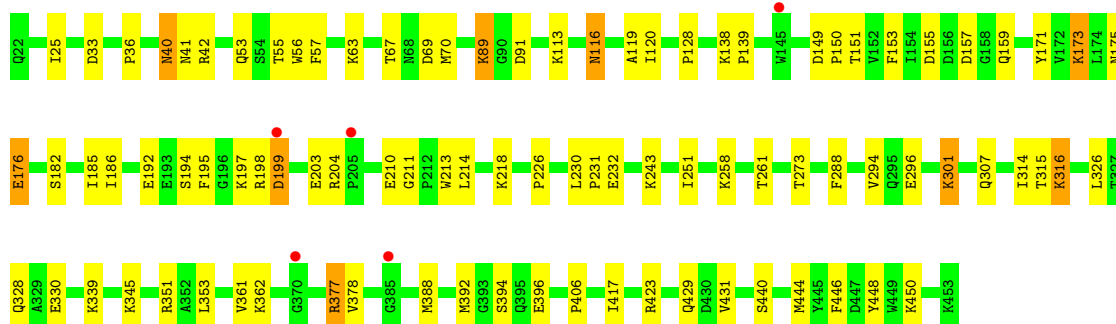
- Molecule 1: Xylan 1,4-beta-xylosidase

Chain E: 81% 17% .



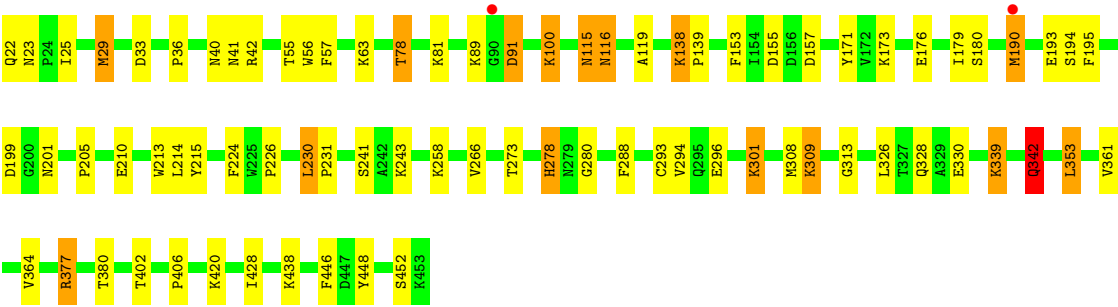
- Molecule 1: Xylan 1,4-beta-xylosidase

Chain F: 79% 19% .

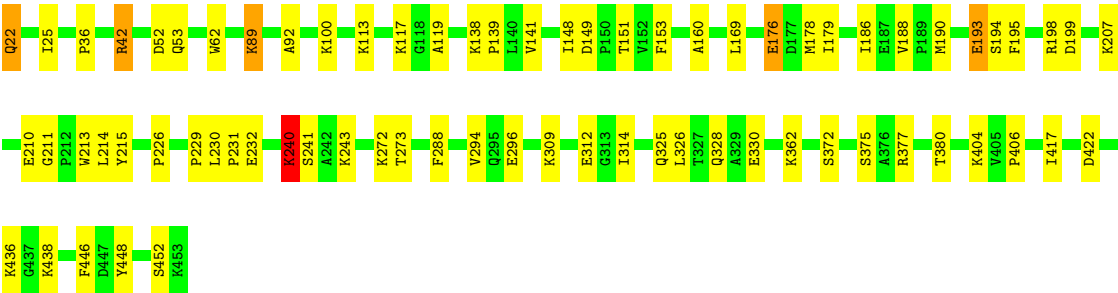
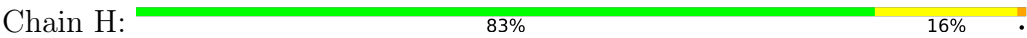


- Molecule 1: Xylan 1,4-beta-xylosidase

Chain G: 82% 15% .



● Molecule 1: Xylan 1,4-beta-xylosidase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	73.58Å 89.44Å 138.44Å 102.82° 94.02° 97.88°	Depositor
Resolution (Å)	47.84 – 2.80 47.84 – 2.80	Depositor EDS
% Data completeness (in resolution range)	93.0 (47.84-2.80) 93.8 (47.84-2.80)	Depositor EDS
$R_{merge}$	0.17	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.35 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, $R_{free}$	0.218 , 0.273 0.227 , 0.283	Depositor DCC
$R_{free}$ test set	3996 reflections (4.78%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	28.6	Xtriage
Anisotropy	0.354	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 23.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.90	EDS
Total number of atoms	27742	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.13% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CA, XLS

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	0.81	1/3528 (0.0%)	1.47	32/4791 (0.7%)
1	B	0.81	0/3528	1.43	28/4791 (0.6%)
1	C	0.80	0/3528	1.39	28/4791 (0.6%)
1	D	0.80	1/3528 (0.0%)	1.40	34/4791 (0.7%)
1	E	0.79	0/3528	1.43	36/4791 (0.8%)
1	F	0.80	1/3537 (0.0%)	1.41	36/4803 (0.7%)
1	G	0.80	1/3524 (0.0%)	1.47	45/4786 (0.9%)
1	H	0.81	0/3528	1.42	29/4791 (0.6%)
All	All	0.80	4/28229 (0.0%)	1.43	268/38335 (0.7%)

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	2
1	C	0	1
1	D	0	3
1	E	0	1
1	F	0	3
1	G	0	1
1	H	0	1
All	All	0	12

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	440	SER	CA-CB	-6.60	1.42	1.53
1	D	440	SER	CA-CB	-6.06	1.44	1.53
1	A	217	ARG	NE-CZ	5.32	1.38	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	180	SER	CA-CB	-5.05	1.45	1.53

The worst 5 of 268 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	446	PHE	CA-CB-CG	17.79	131.59	113.80
1	A	446	PHE	CB-CA-C	-14.32	81.32	109.68
1	D	315	THR	CA-CB-OG1	-13.96	88.65	109.60
1	E	22	GLN	CB-CA-C	12.51	133.87	110.10
1	A	157	ASP	CB-CA-C	-12.35	86.50	110.46

There are no chirality outliers.

5 of 12 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	217	ARG	Sidechain
1	A	446	PHE	Sidechain
1	C	351	ARG	Sidechain
1	D	351	ARG	Sidechain
1	D	42	ARG	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	3425	0	3288	34	0
1	B	3425	0	3288	45	0
1	C	3425	0	3288	49	0
1	D	3425	0	3288	36	0
1	E	3425	0	3288	37	0
1	F	3431	0	3296	51	0
1	G	3421	0	3282	42	0
1	H	3425	0	3288	36	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	2	0	0	0	0
2	F	2	0	0	0	0
2	G	2	0	0	0	0
2	H	2	0	0	0	0
3	A	10	0	10	5	0
3	B	10	0	10	5	0
3	C	10	0	10	9	0
3	D	10	0	10	3	0
3	E	10	0	10	7	0
3	F	10	0	10	1	0
3	G	10	0	10	1	0
3	H	10	0	10	3	0
4	A	32	0	0	0	0
4	B	29	0	0	1	0
4	C	31	0	0	1	0
4	D	28	0	0	0	0
4	E	36	0	0	3	0
4	F	34	0	0	3	0
4	G	30	0	0	2	0
4	H	24	0	0	0	0
All	All	27742	0	26386	325	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 6.

The worst 5 of 325 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:33:ASP:OD2	3:C:503:XLS:H51	1.41	1.18
1:C:290:ARG:HH12	3:C:503:XLS:H52	1.15	1.09
1:F:392:MET:CE	1:F:429:GLN:HB3	1.84	1.08
1:C:290:ARG:NH1	3:C:503:XLS:H52	1.75	1.01
1:D:173:LYS:NZ	1:D:243:LYS:HZ1	1.59	0.99

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	430/432 (100%)	405 (94%)	22 (5%)	3 (1%)	19	48
1	B	430/432 (100%)	408 (95%)	20 (5%)	2 (0%)	25	56
1	C	430/432 (100%)	411 (96%)	17 (4%)	2 (0%)	25	56
1	D	430/432 (100%)	408 (95%)	22 (5%)	0	100	100
1	E	430/432 (100%)	410 (95%)	20 (5%)	0	100	100
1	F	431/432 (100%)	410 (95%)	21 (5%)	0	100	100
1	G	430/432 (100%)	408 (95%)	21 (5%)	1 (0%)	44	73
1	H	430/432 (100%)	409 (95%)	21 (5%)	0	100	100
All	All	3441/3456 (100%)	3269 (95%)	164 (5%)	8 (0%)	44	73

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	231	PRO
1	A	232	GLU
1	B	166	ASN
1	C	396	GLU
1	G	91	ASP

### 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	363/363 (100%)	357 (98%)	6 (2%)	56	84

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	363/363 (100%)	344 (95%)	19 (5%)	19	50
1	C	363/363 (100%)	353 (97%)	10 (3%)	38	72
1	D	363/363 (100%)	357 (98%)	6 (2%)	56	84
1	E	363/363 (100%)	350 (96%)	13 (4%)	30	64
1	F	364/363 (100%)	359 (99%)	5 (1%)	62	87
1	G	362/363 (100%)	352 (97%)	10 (3%)	38	72
1	H	363/363 (100%)	353 (97%)	10 (3%)	38	72
All	All	2904/2904 (100%)	2825 (97%)	79 (3%)	40	74

5 of 79 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	345	LYS
1	H	186	ILE
1	G	115	ASN
1	G	342	GLN
1	H	372	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 29 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	418	ASN
1	H	307	GLN
1	E	58	ASN
1	G	58	ASN
1	D	159	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 24 ligands modelled in this entry, 16 are monoatomic - leaving 8 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	XLS	E	503	-	8,9,9	1.57	1 (12%)	10,11,11	3.40	5 (50%)
3	XLS	G	503	-	8,9,9	0.73	0	10,11,11	2.17	3 (30%)
3	XLS	F	503	-	8,9,9	1.24	1 (12%)	10,11,11	2.80	5 (50%)
3	XLS	A	502	-	8,9,9	0.61	0	10,11,11	1.50	1 (10%)
3	XLS	B	503	-	8,9,9	1.22	1 (12%)	10,11,11	2.20	5 (50%)
3	XLS	D	503	-	8,9,9	0.84	1 (12%)	10,11,11	2.52	5 (50%)
3	XLS	H	503	-	8,9,9	0.64	0	10,11,11	2.00	4 (40%)
3	XLS	C	503	-	8,9,9	0.59	0	10,11,11	1.45	2 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	XLS	E	503	-	-	4/10/12/12	-
3	XLS	G	503	-	-	6/10/12/12	-
3	XLS	F	503	-	-	9/10/12/12	-
3	XLS	A	502	-	-	8/10/12/12	-
3	XLS	B	503	-	-	5/10/12/12	-
3	XLS	D	503	-	-	8/10/12/12	-
3	XLS	H	503	-	-	4/10/12/12	-
3	XLS	C	503	-	-	5/10/12/12	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	503	XLS	C3-C2	-4.03	1.47	1.53
3	B	503	XLS	C3-C2	-2.45	1.49	1.53
3	F	503	XLS	C4-C3	2.11	1.57	1.53
3	D	503	XLS	O2-C2	-2.06	1.39	1.43

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	503	XLS	O2-C2-C3	-9.01	88.06	109.46
3	F	503	XLS	O4-C4-C3	5.76	123.12	109.10
3	D	503	XLS	C3-C2-C1	-5.14	94.93	111.10
3	G	503	XLS	C3-C2-C1	-4.80	96.01	111.10
3	F	503	XLS	C4-C3-C2	3.74	122.84	112.97

There are no chirality outliers.

5 of 49 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	502	XLS	C1-C2-C3-C4
3	A	502	XLS	C1-C2-C3-O3
3	A	502	XLS	O2-C2-C3-C4
3	A	502	XLS	O2-C2-C3-O3
3	A	502	XLS	O3-C3-C4-C5

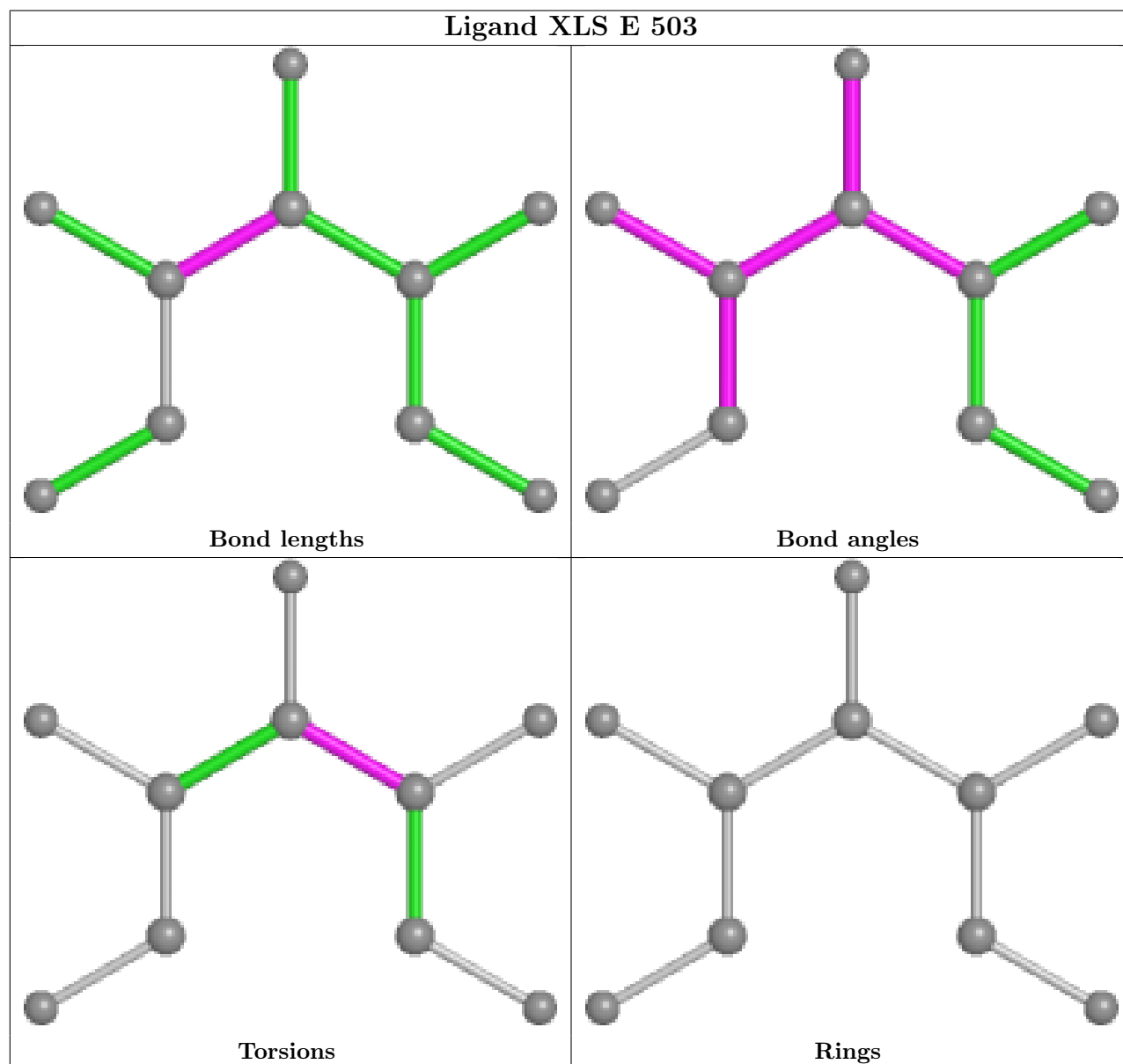
There are no ring outliers.

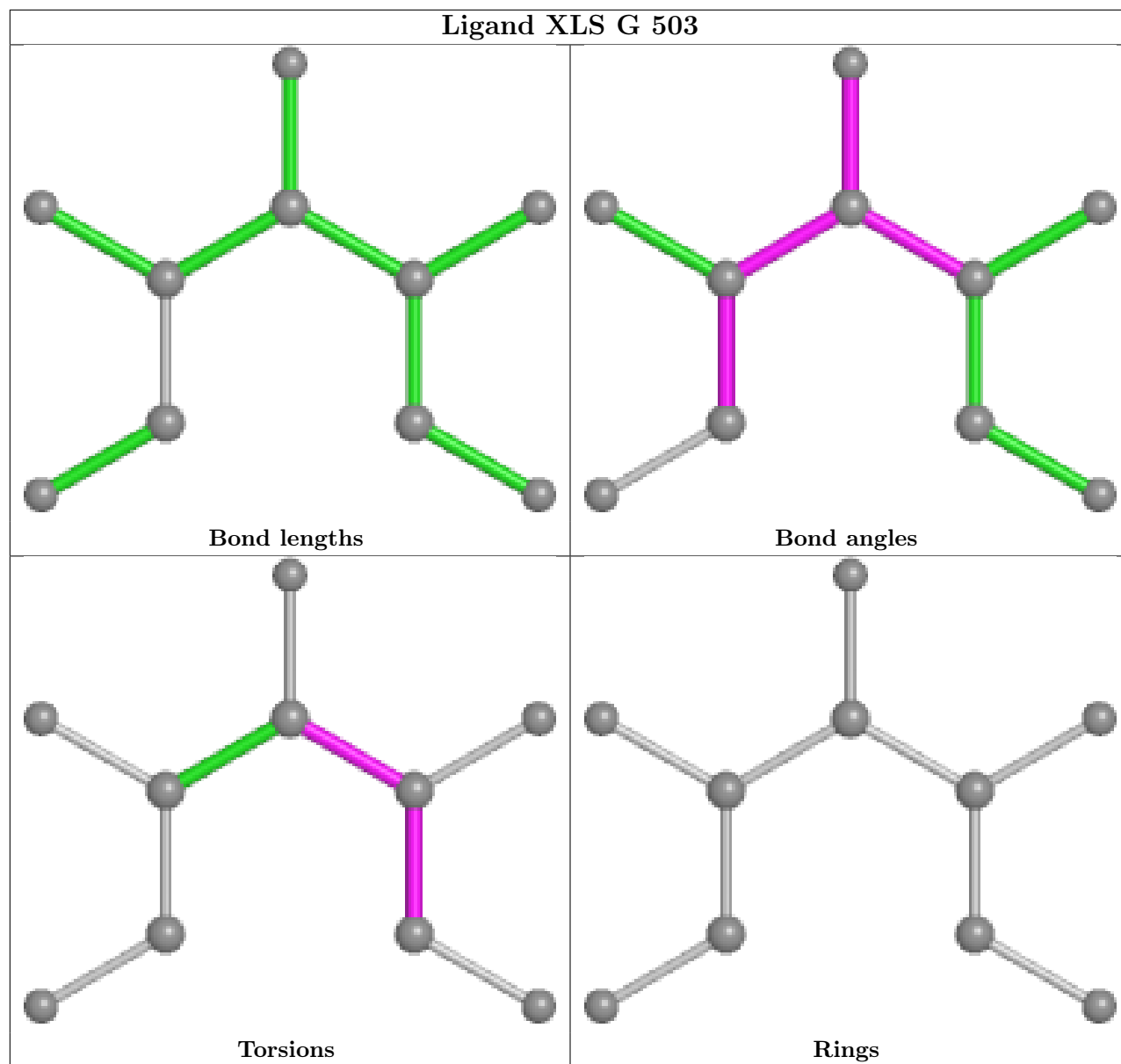
8 monomers are involved in 34 short contacts:

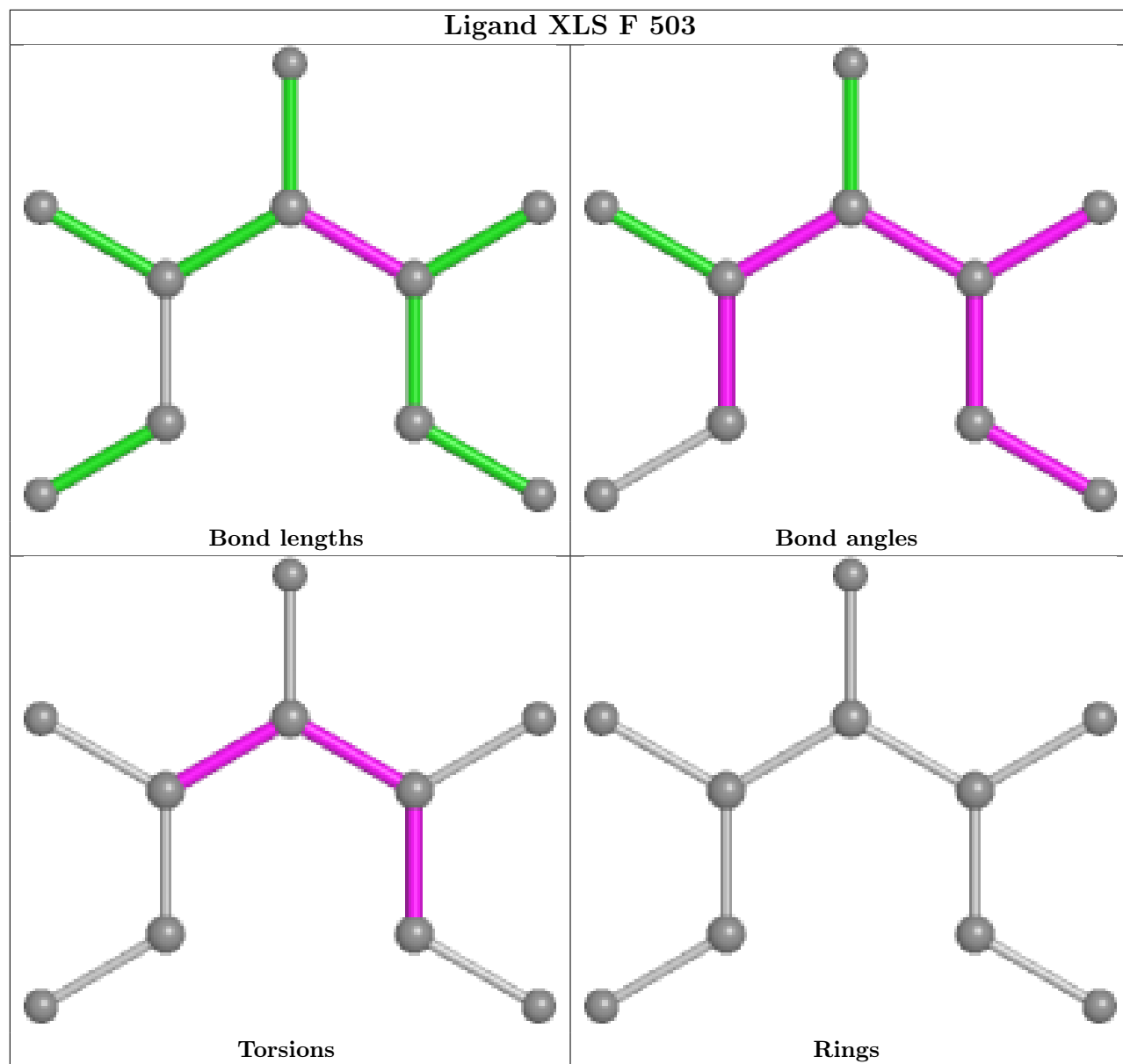
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	503	XLS	7	0
3	G	503	XLS	1	0
3	F	503	XLS	1	0
3	A	502	XLS	5	0
3	B	503	XLS	5	0
3	D	503	XLS	3	0
3	H	503	XLS	3	0
3	C	503	XLS	9	0

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

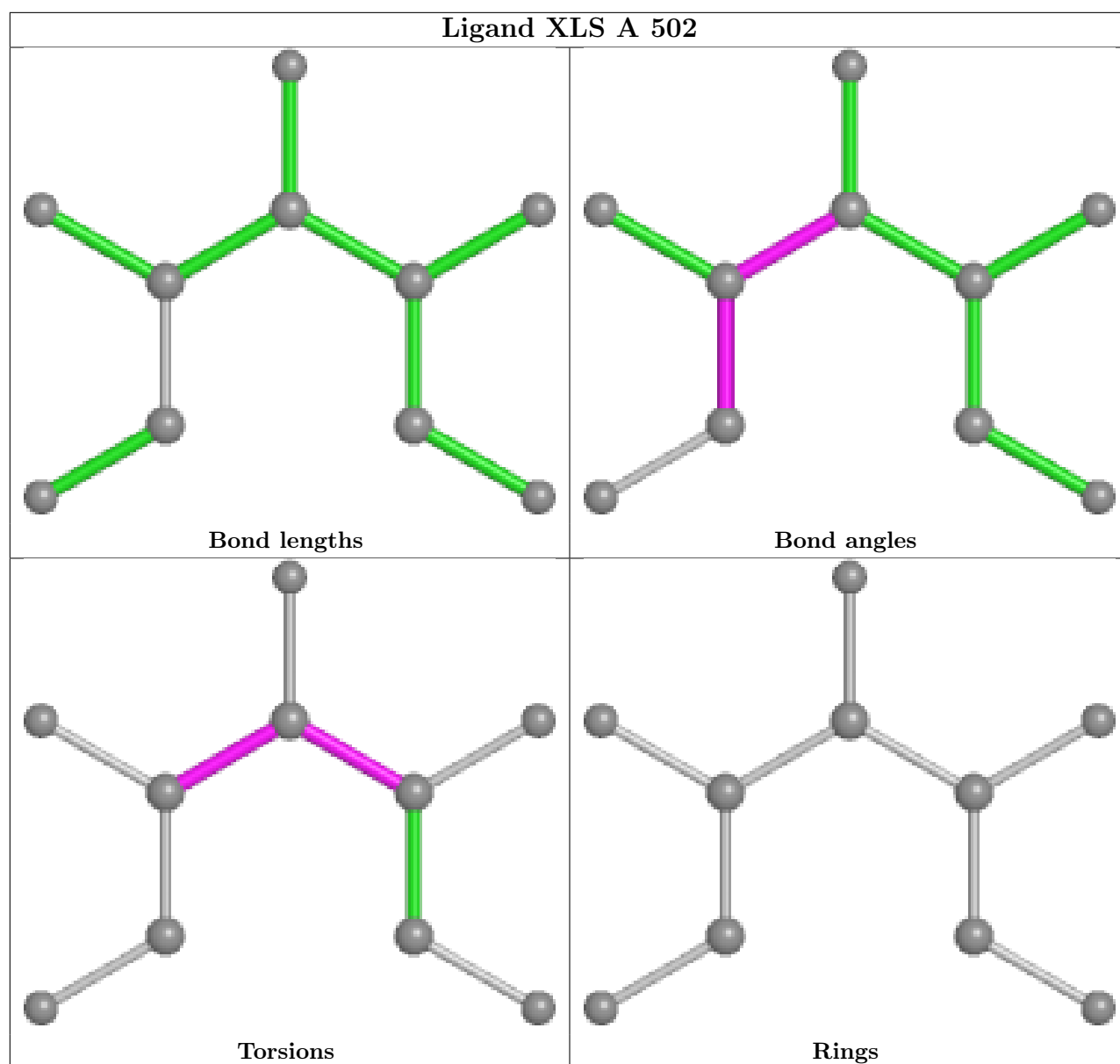
within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question 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.

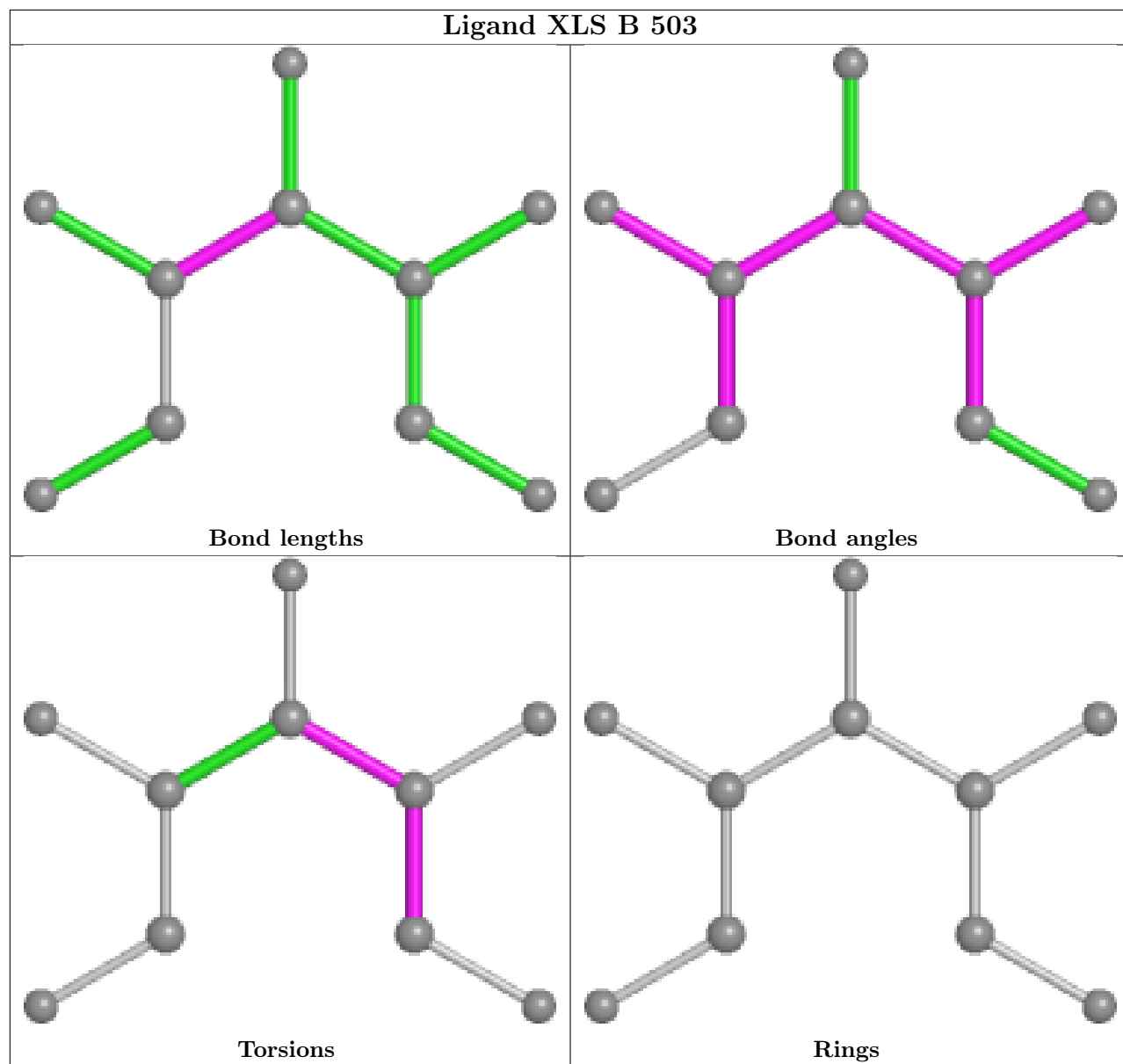


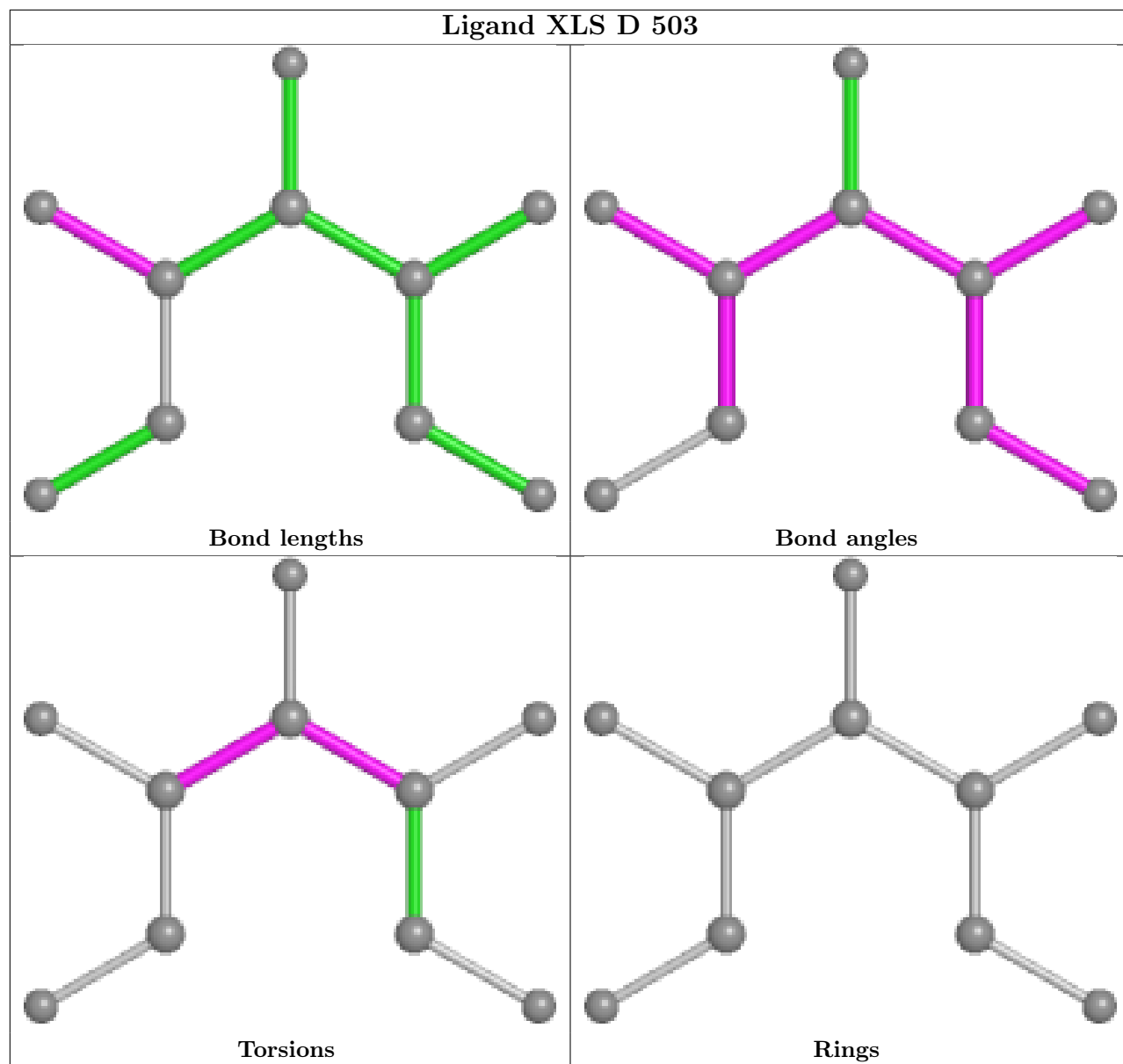


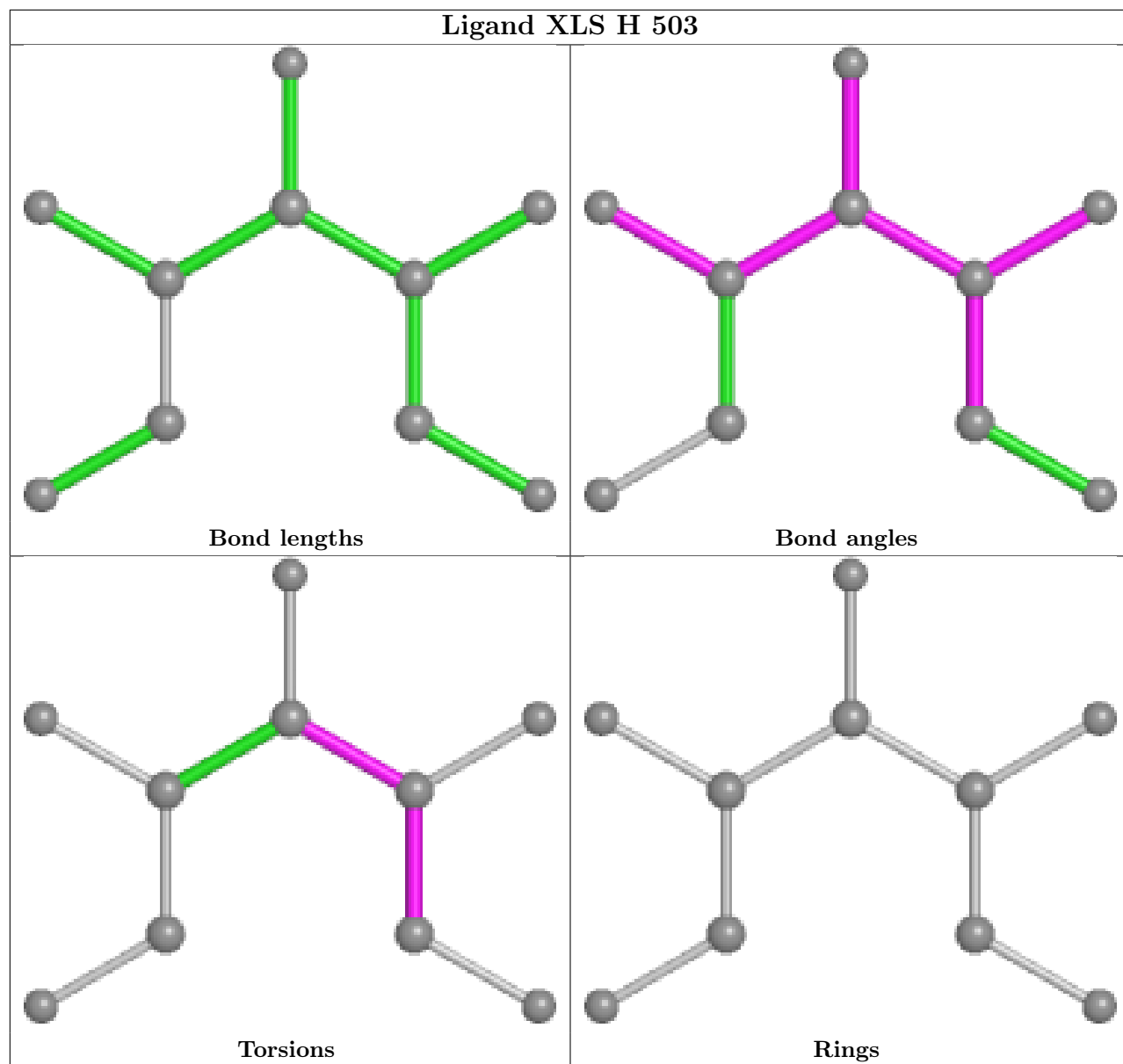


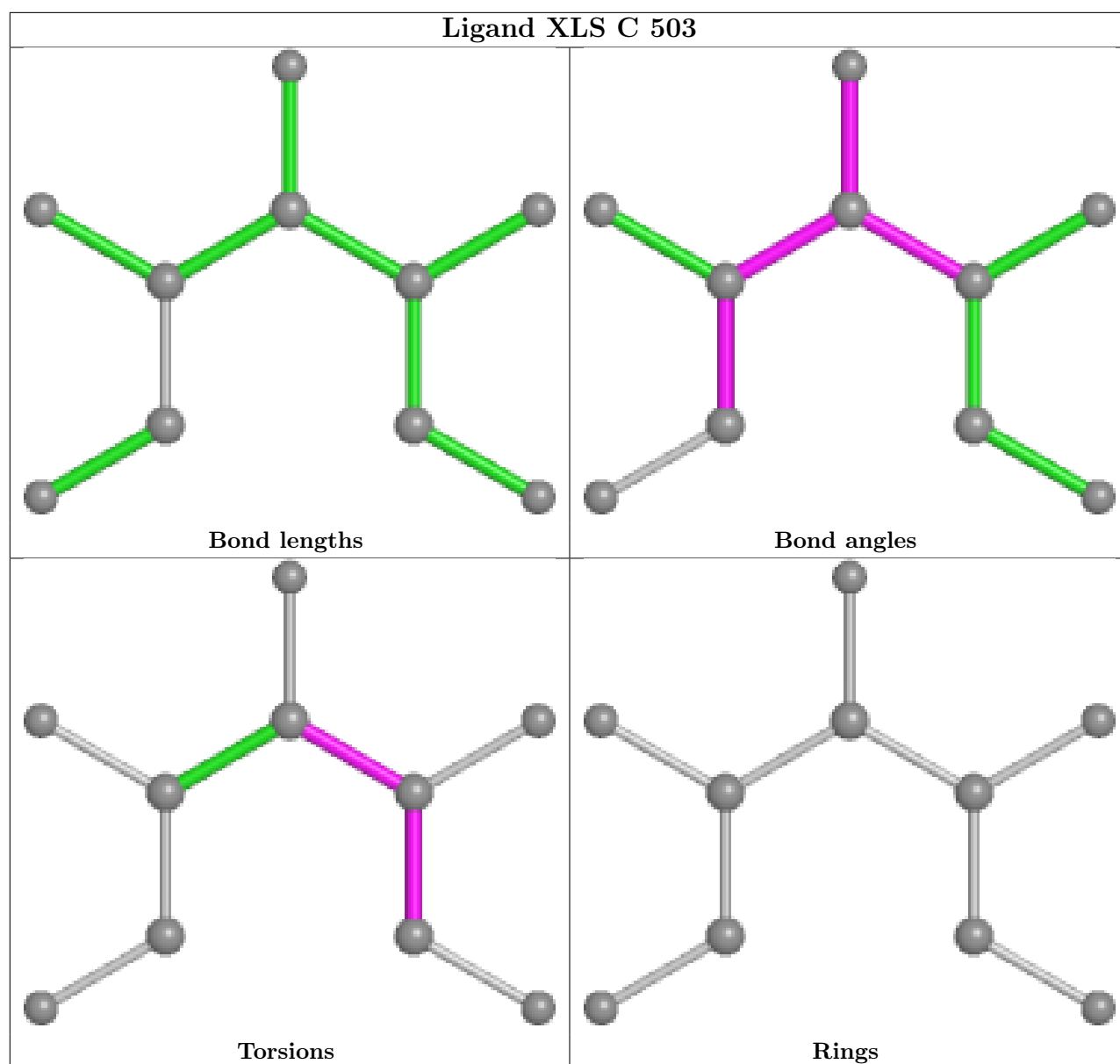












## 5.7 Other polymers [i](#)

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 [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	432/432 (100%)	-0.14	1 (0%) 92 89	13, 22, 41, 82	0
1	B	432/432 (100%)	-0.13	3 (0%) 84 79	13, 23, 42, 84	0
1	C	432/432 (100%)	-0.15	3 (0%) 84 79	13, 22, 42, 74	0
1	D	432/432 (100%)	-0.15	2 (0%) 87 83	13, 22, 39, 86	0
1	E	432/432 (100%)	-0.27	1 (0%) 92 89	12, 20, 35, 83	0
1	F	432/432 (100%)	-0.13	5 (1%) 76 69	12, 22, 39, 62	1 (0%)
1	G	432/432 (100%)	-0.19	2 (0%) 87 83	12, 22, 38, 66	0
1	H	432/432 (100%)	-0.18	0 100 100	12, 21, 35, 72	0
All	All	3456/3456 (100%)	-0.17	17 (0%) 87 83	12, 22, 38, 86	1 (0%)

The worst 5 of 17 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	166	ASN	4.3
1	E	145	TRP	3.5
1	F	370	GLY	3.4
1	F	145	TRP	3.1
1	B	423	ARG	3.1

### 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](#)

There are no oligosaccharides in this entry.

## 6.4 Ligands ⓘ

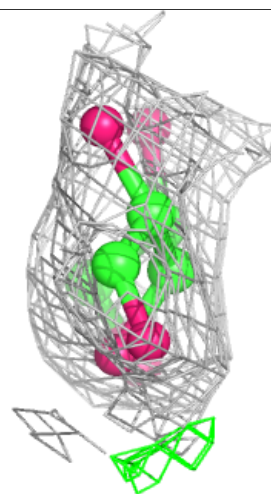
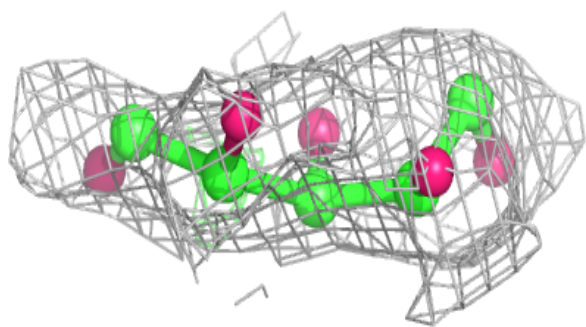
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	XLS	F	503	10/10	0.82	0.13	28,35,46,48	0
3	XLS	H	503	10/10	0.82	0.22	26,37,43,44	0
3	XLS	C	503	10/10	0.87	0.14	28,37,48,52	0
3	XLS	E	503	10/10	0.88	0.17	25,35,46,49	0
3	XLS	B	503	10/10	0.88	0.12	20,22,22,23	10
3	XLS	D	503	10/10	0.88	0.14	21,39,52,56	0
3	XLS	A	502	10/10	0.90	0.14	24,33,34,37	0
3	XLS	G	503	10/10	0.92	0.11	26,36,54,57	0
2	CA	B	502	1/1	0.93	0.06	16,16,16,16	0
2	CA	H	502	1/1	0.94	0.04	22,22,22,22	0
2	CA	G	501	1/1	0.95	0.06	36,36,36,36	0
2	CA	H	501	1/1	0.96	0.03	28,28,28,28	0
2	CA	A	501	1/1	0.96	0.04	22,22,22,22	0
2	CA	F	501	1/1	0.96	0.04	22,22,22,22	0
2	CA	A	503	1/1	0.96	0.04	46,46,46,46	0
2	CA	G	502	1/1	0.96	0.05	19,19,19,19	0
2	CA	E	501	1/1	0.97	0.04	33,33,33,33	0
2	CA	E	502	1/1	0.97	0.04	16,16,16,16	0
2	CA	B	501	1/1	0.97	0.03	32,32,32,32	0
2	CA	C	502	1/1	0.98	0.06	18,18,18,18	0
2	CA	D	501	1/1	0.98	0.04	36,36,36,36	0
2	CA	D	502	1/1	0.98	0.03	15,15,15,15	0
2	CA	C	501	1/1	0.99	0.02	30,30,30,30	0
2	CA	F	502	1/1	0.99	0.04	10,10,10,10	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 XLS F 503:**

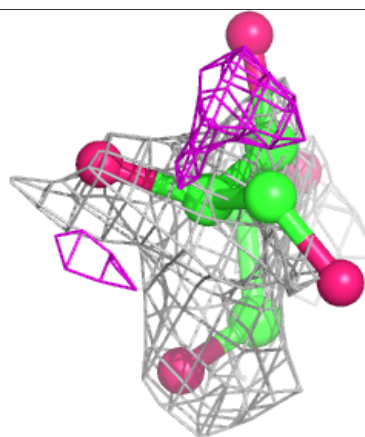
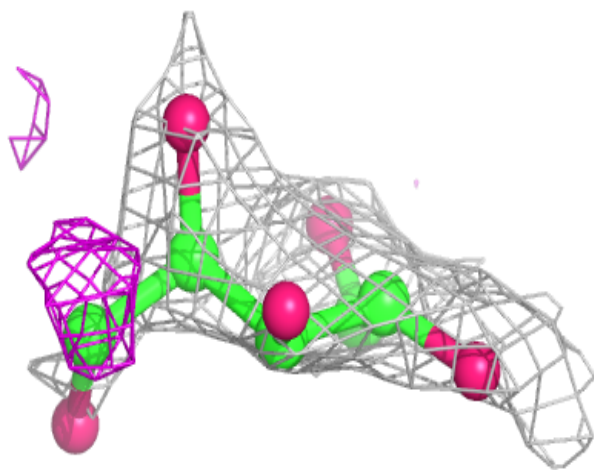
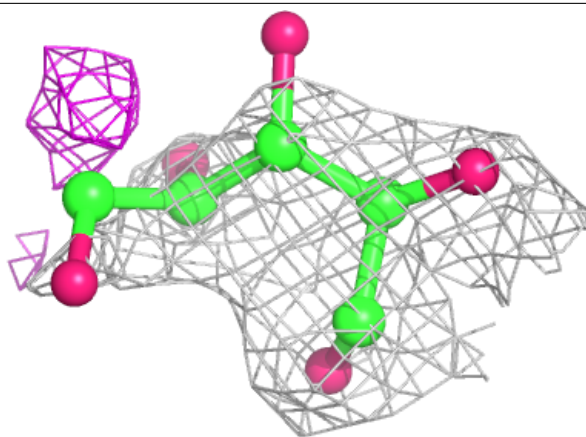
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





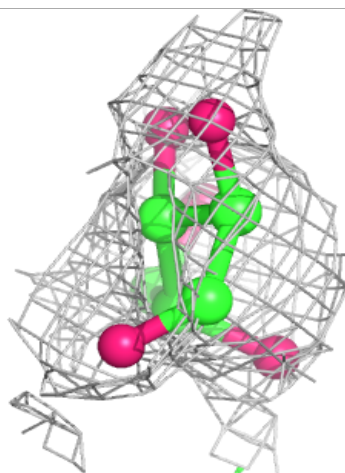
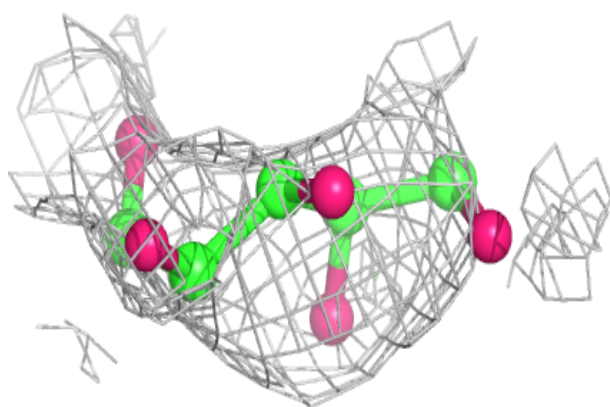
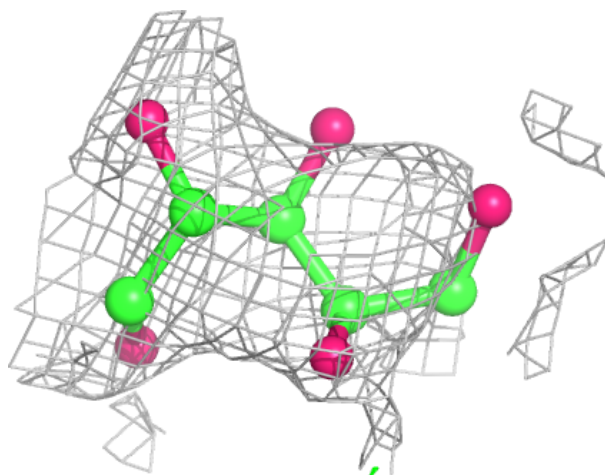
**Electron density around XLS H 503:**

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and green (positive)



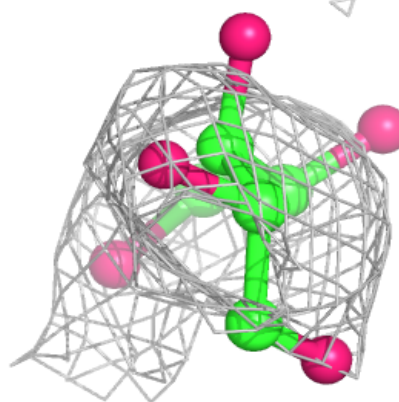
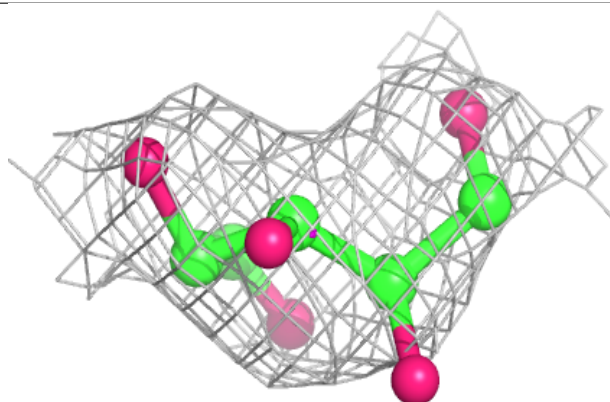
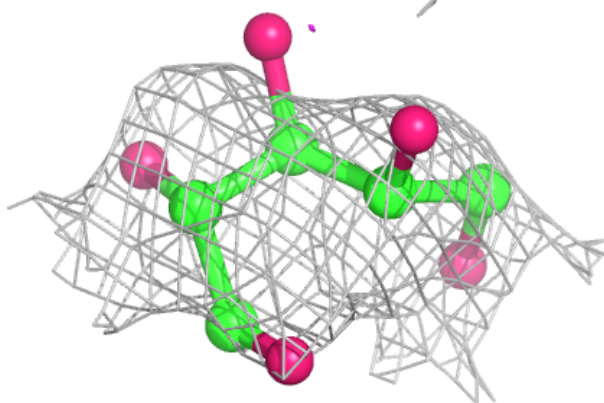
**Electron density around XLS C 503:**

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

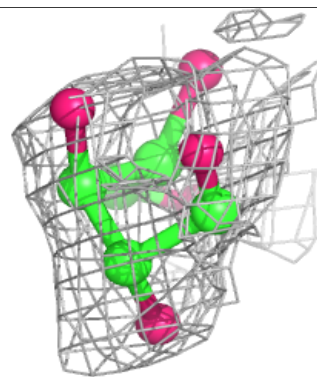
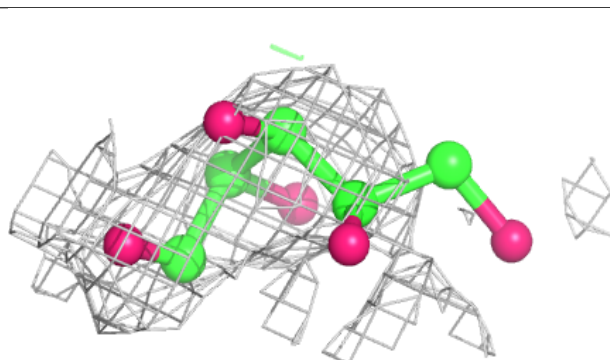
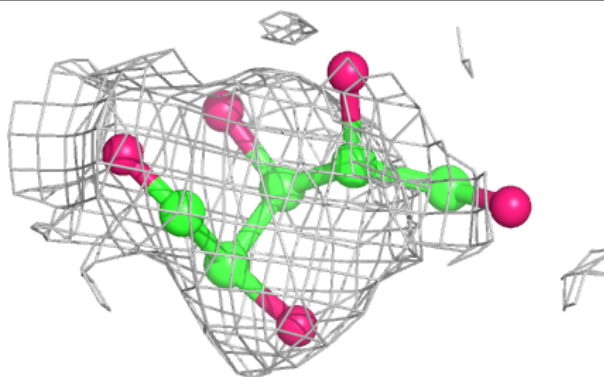


**Electron density around XLS E 503:**

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and green (positive)

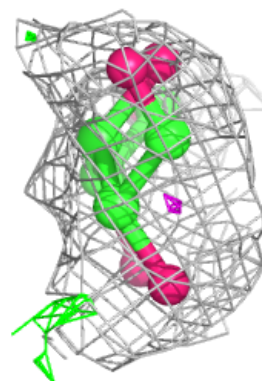
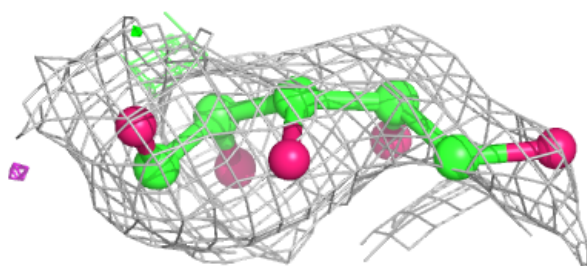
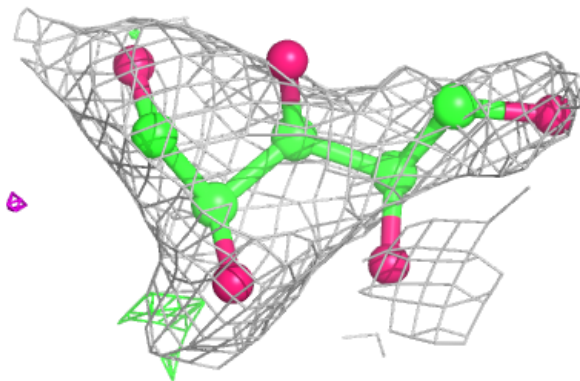
**Electron density around XLS B 503:**

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and green (positive)



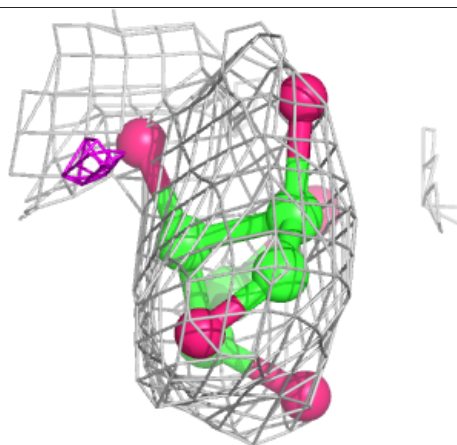
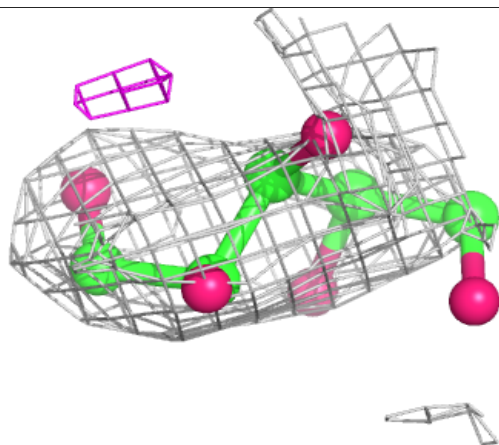
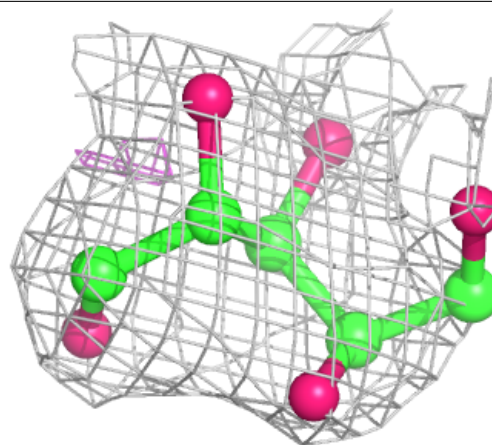
**Electron density around XLS D 503:**

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and green (positive)



**Electron density around XLS A 502:**

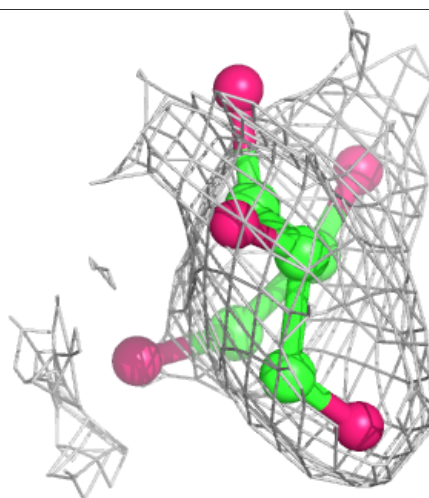
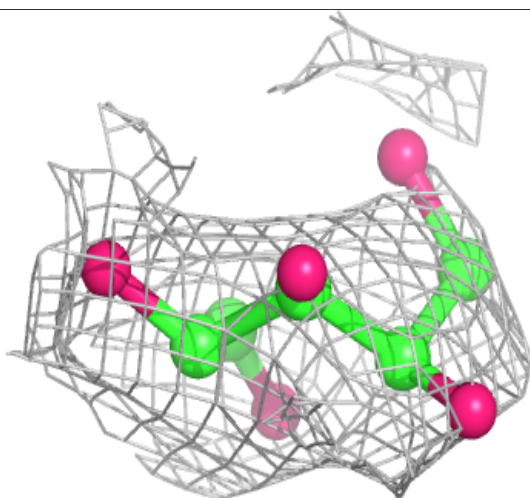
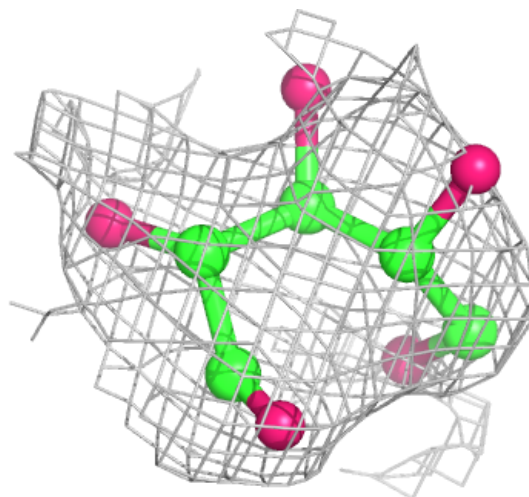
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





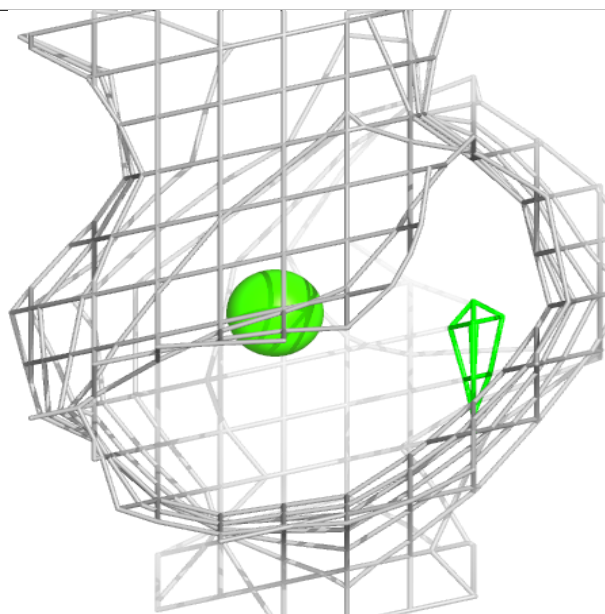
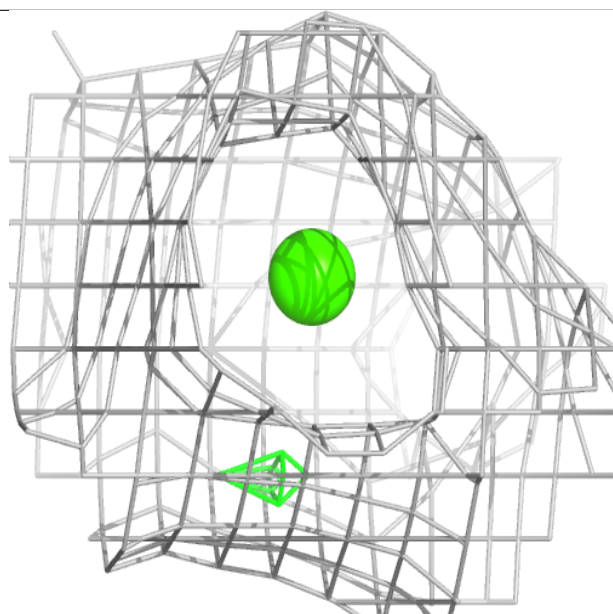
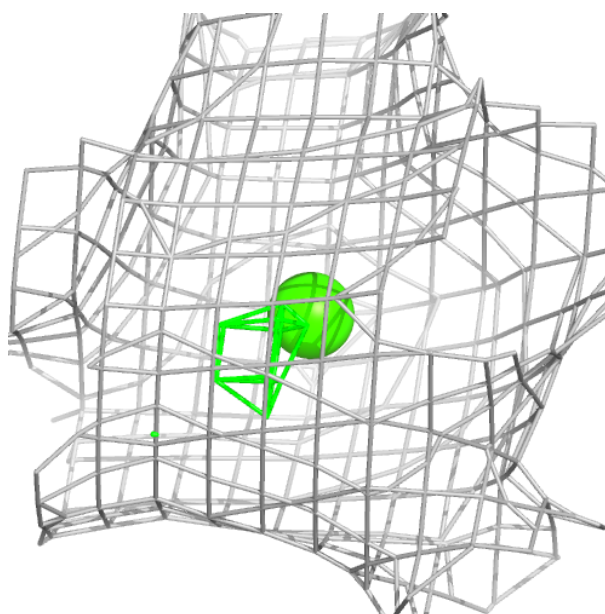
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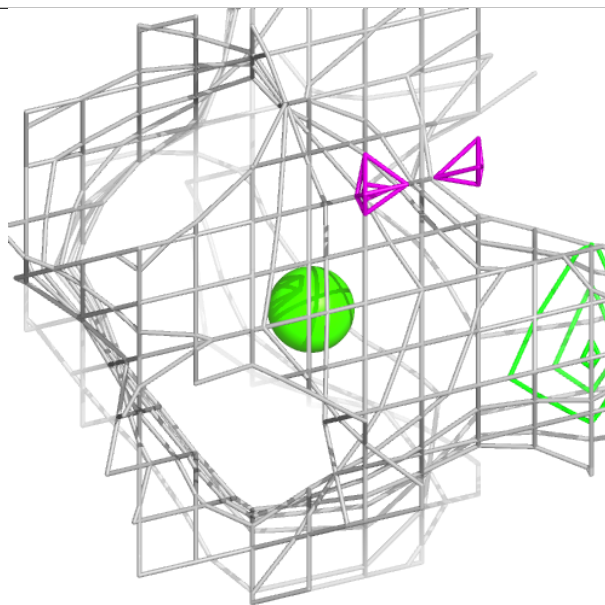
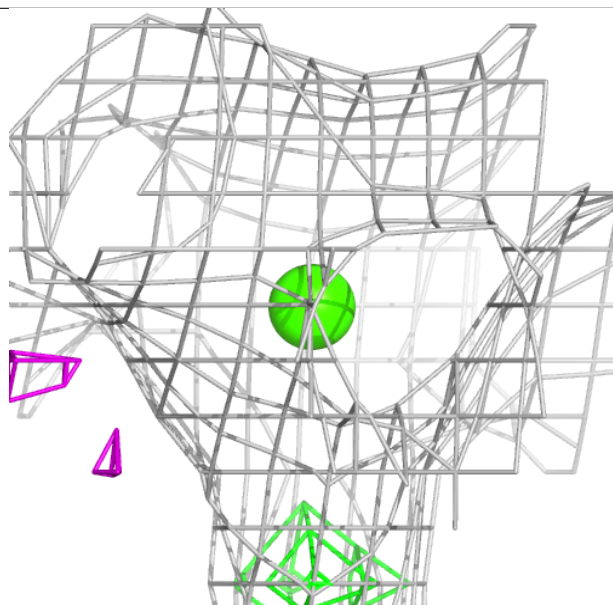
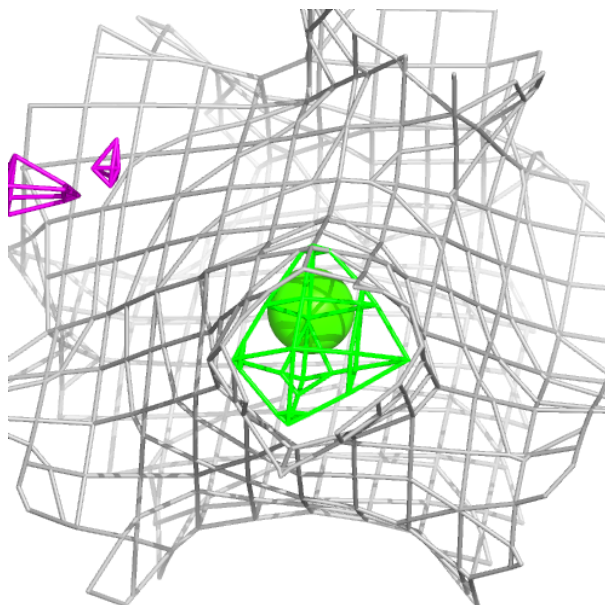
**Electron density around CA B 502:**

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and green (positive)



**Electron density around CA H 502:**

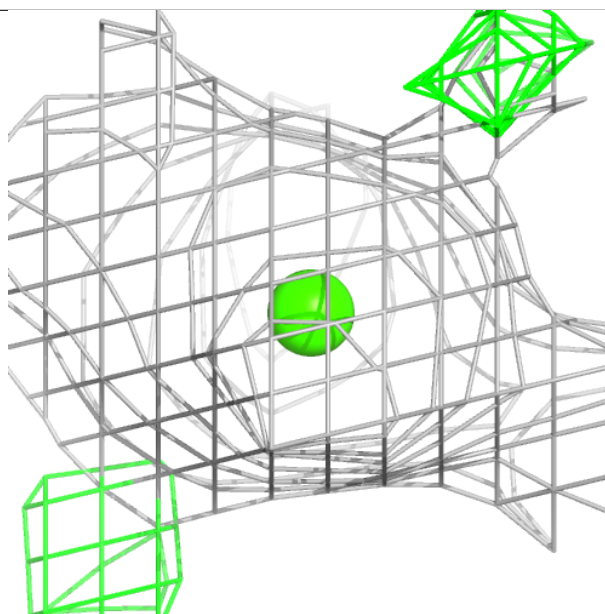
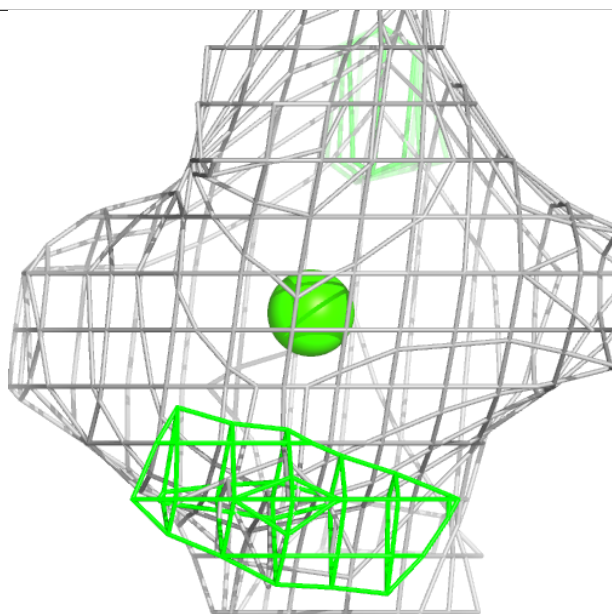
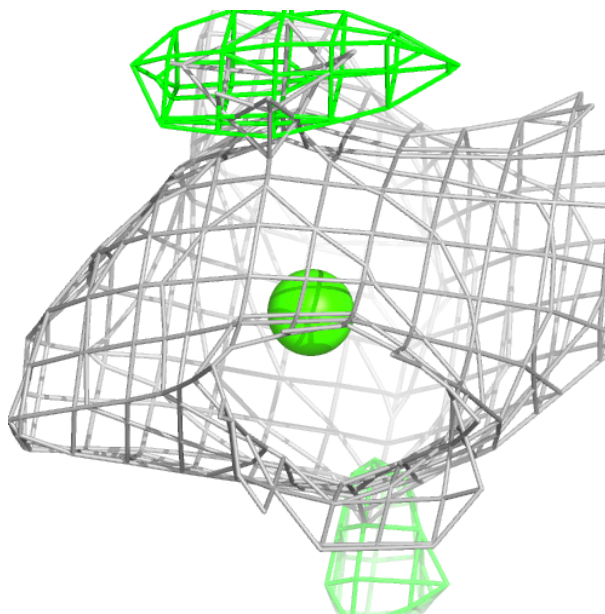
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and green (positive)





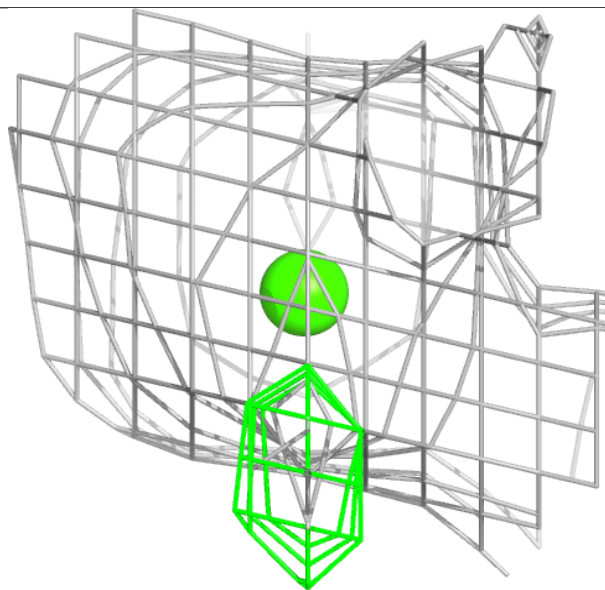
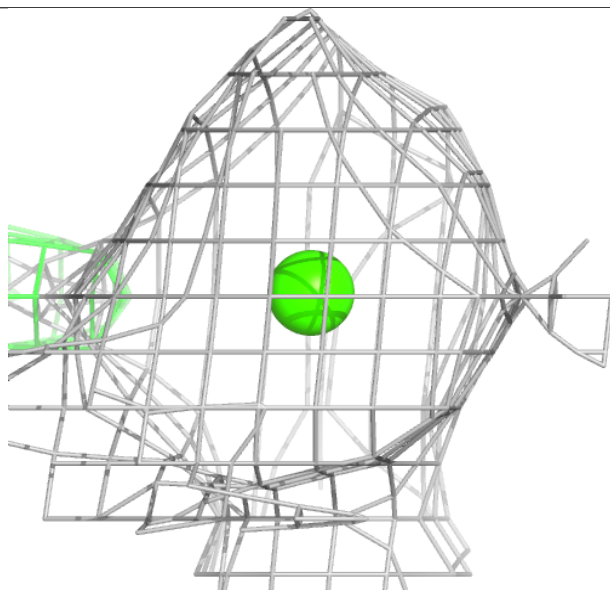
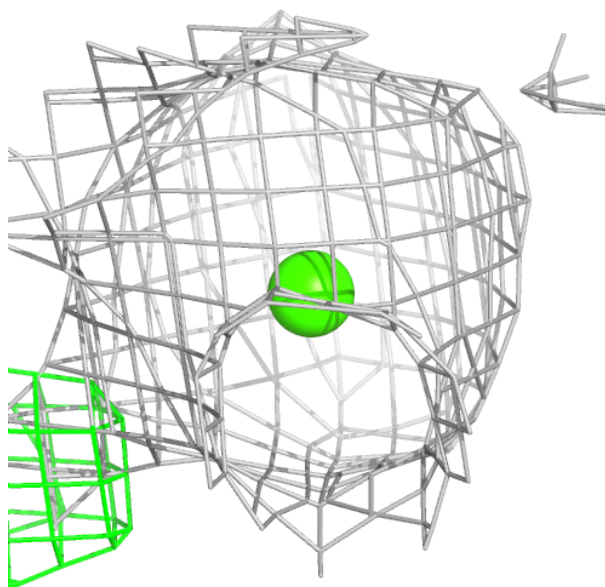
**Electron density around CA G 501:**

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and green (positive)



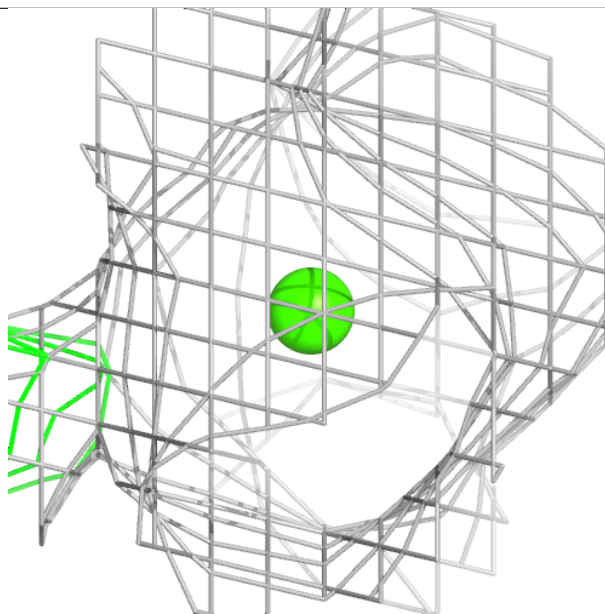
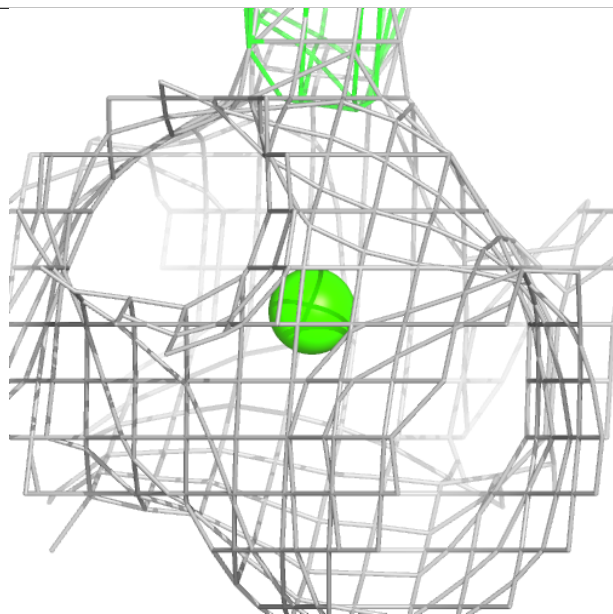
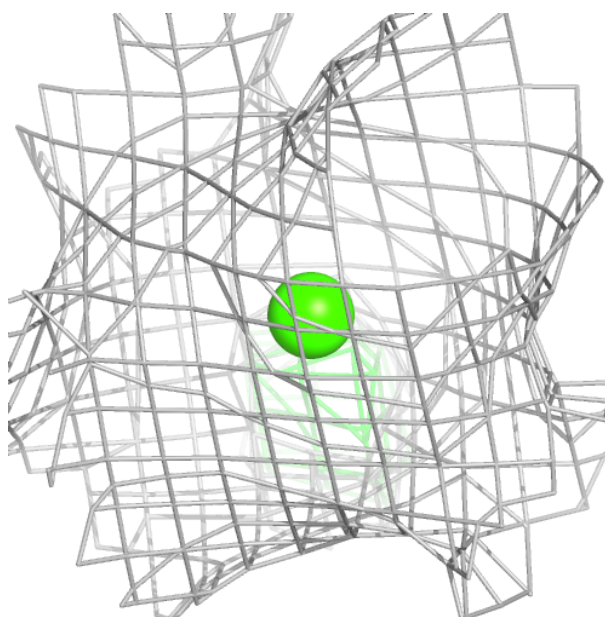
**Electron density around CA H 501:**

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and green (positive)



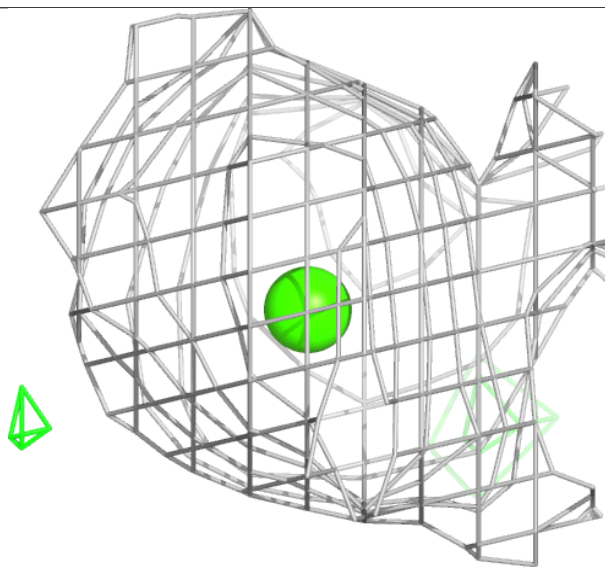
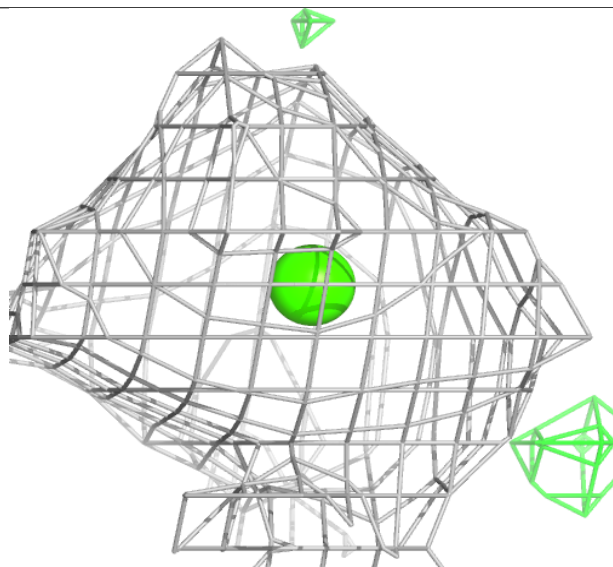
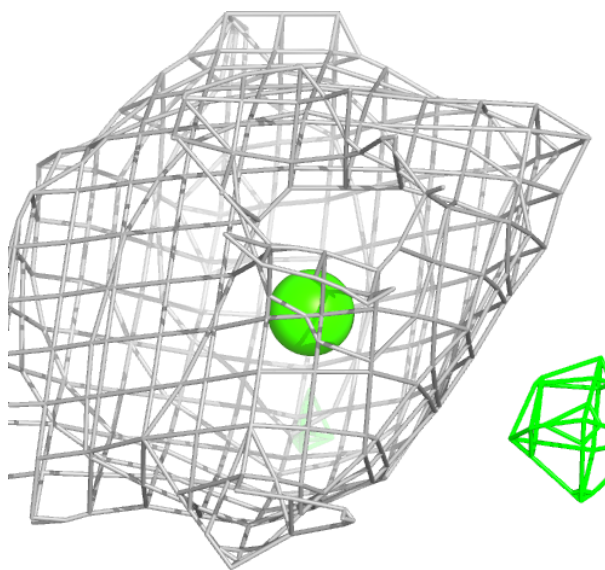
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and green (positive)



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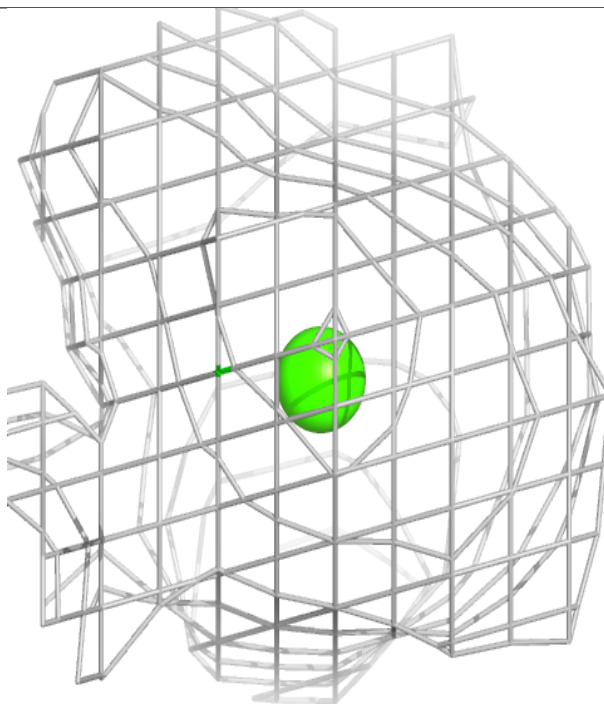
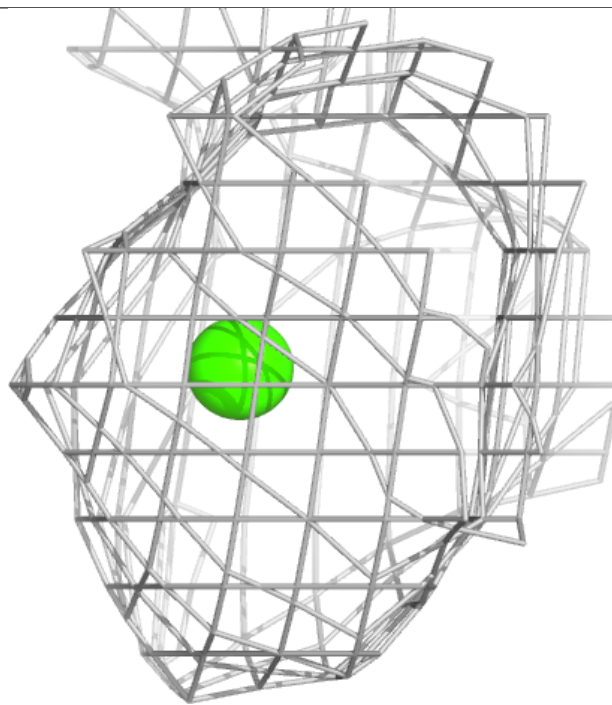
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





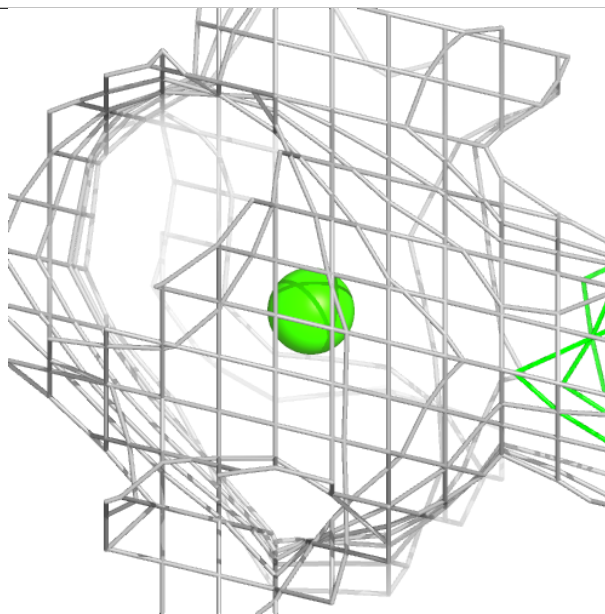
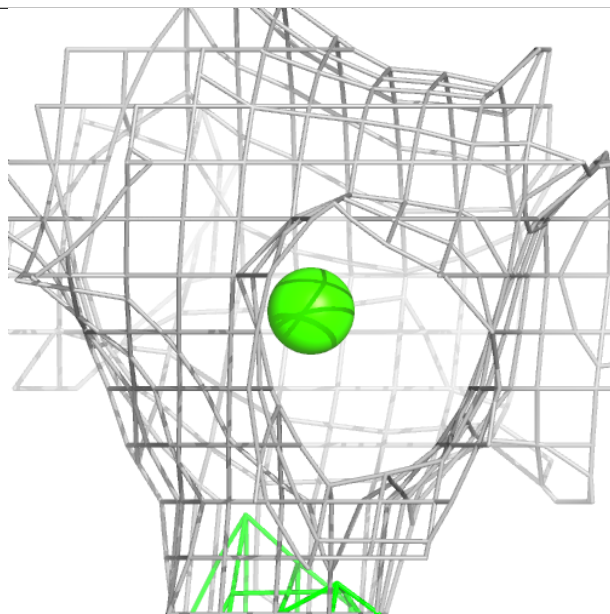
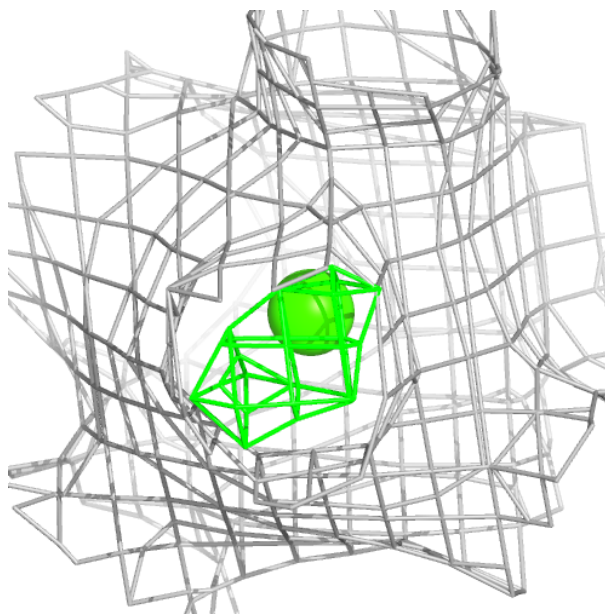
**Electron density around CA A 503:**

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



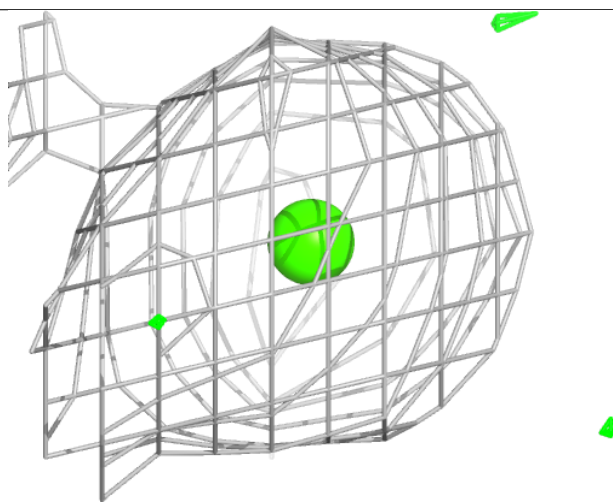
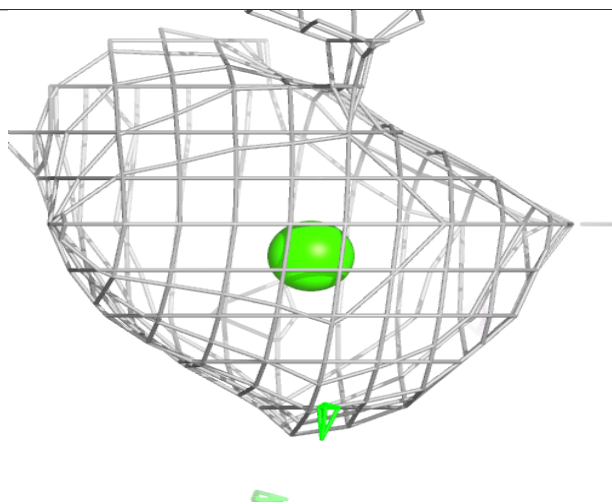
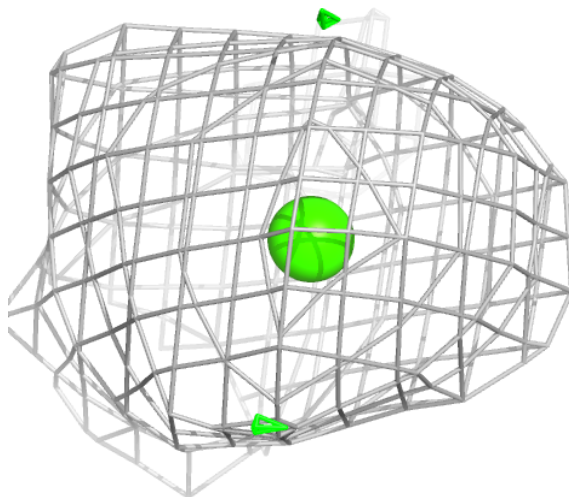
**Electron density around CA G 502:**

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



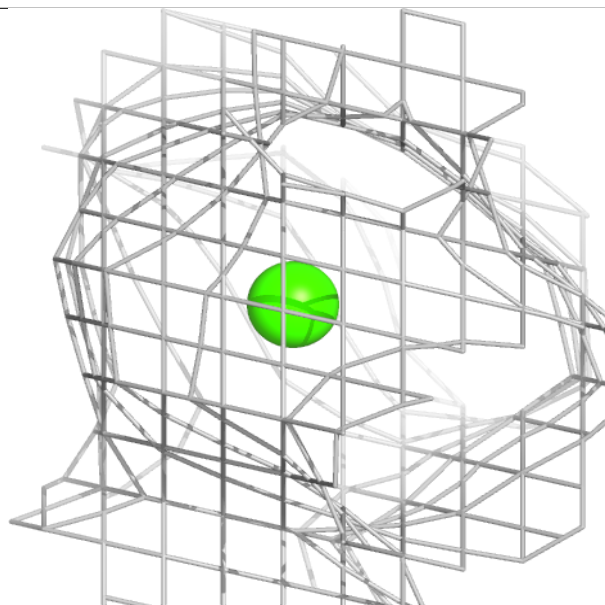
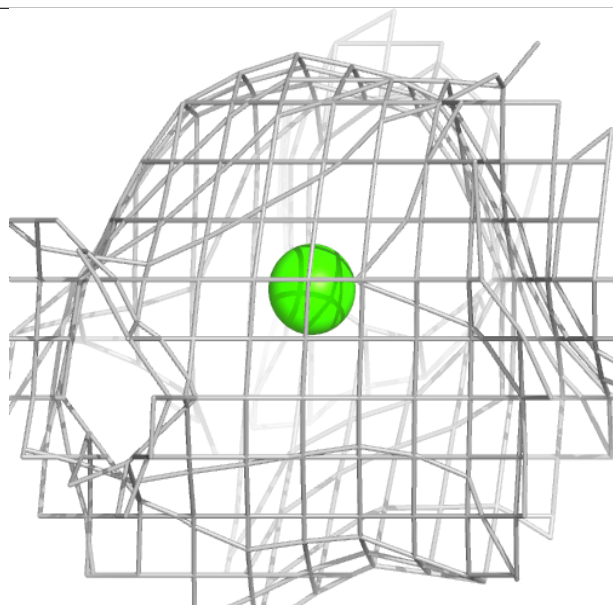
**Electron density around CA E 501:**

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



**Electron density around CA E 502:**

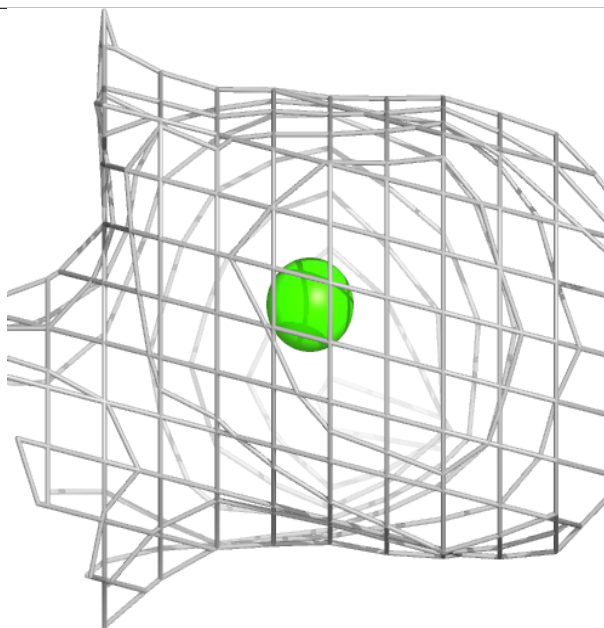
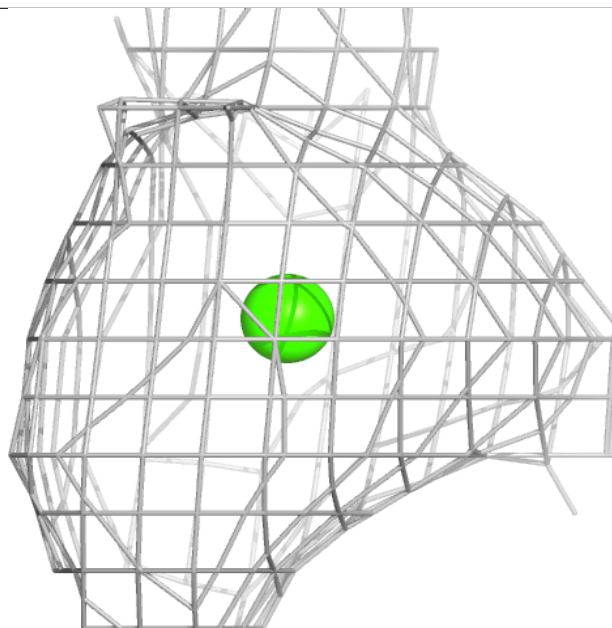
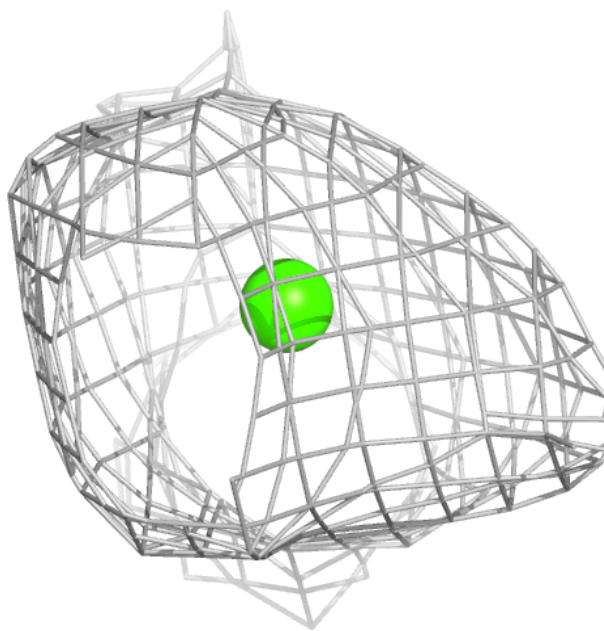
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





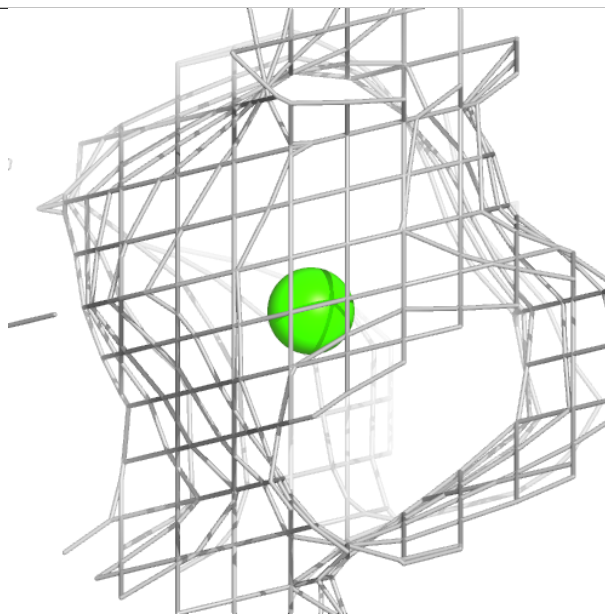
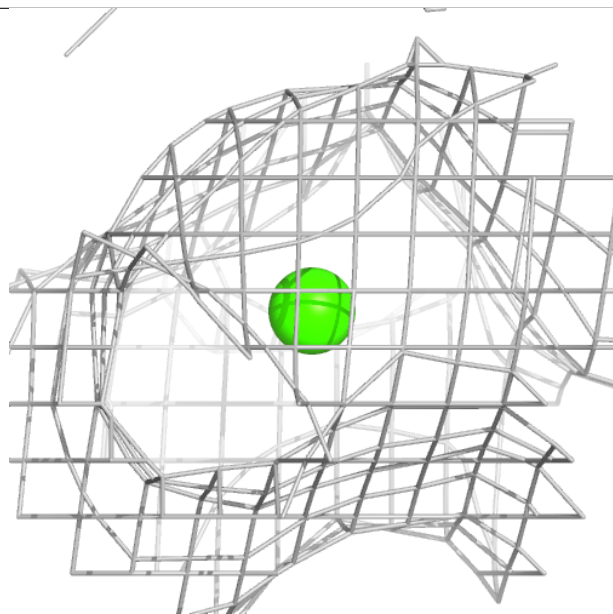
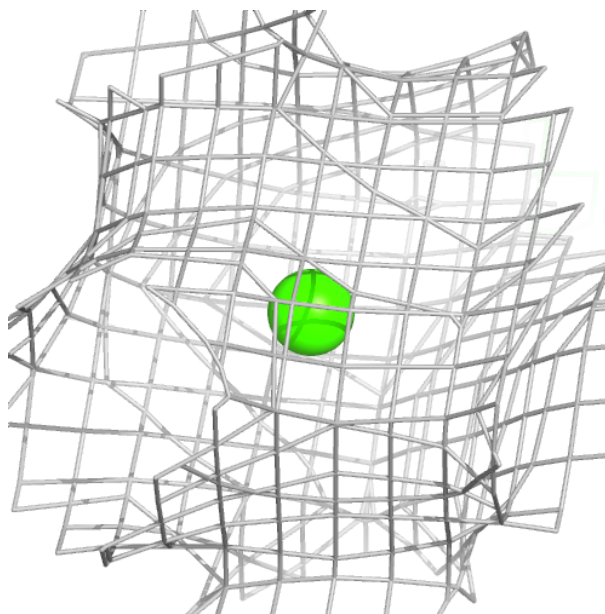
**Electron density around CA B 501:**

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



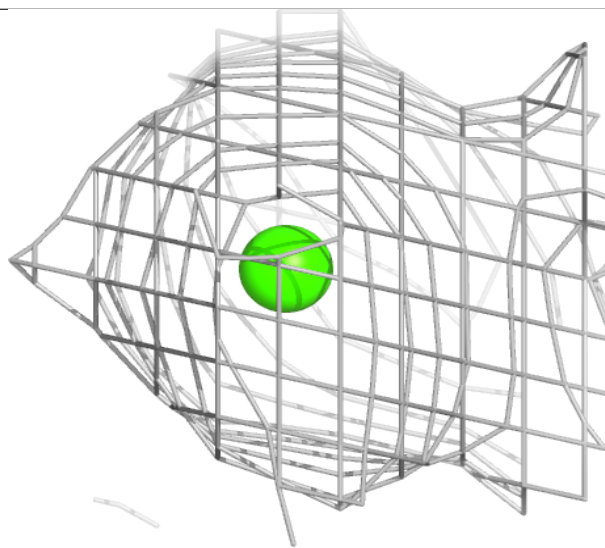
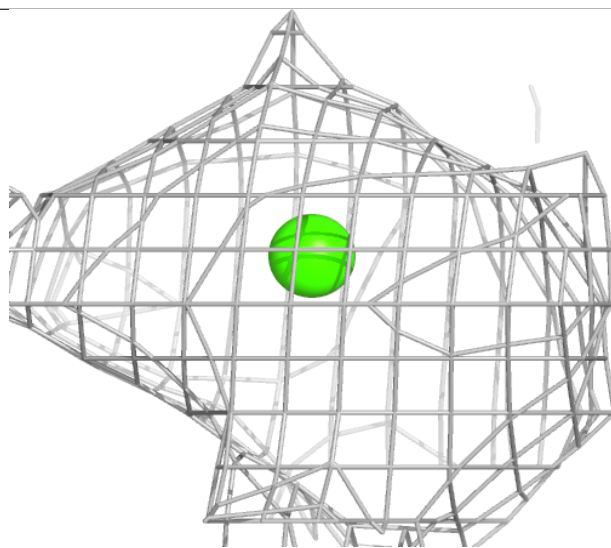
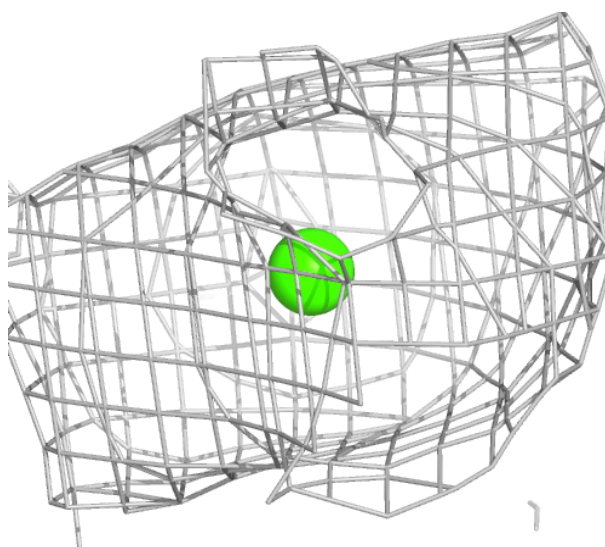
**Electron density around CA C 502:**

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



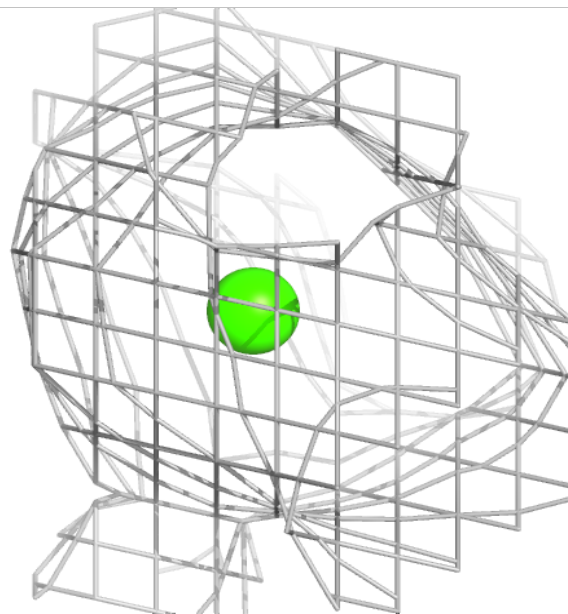
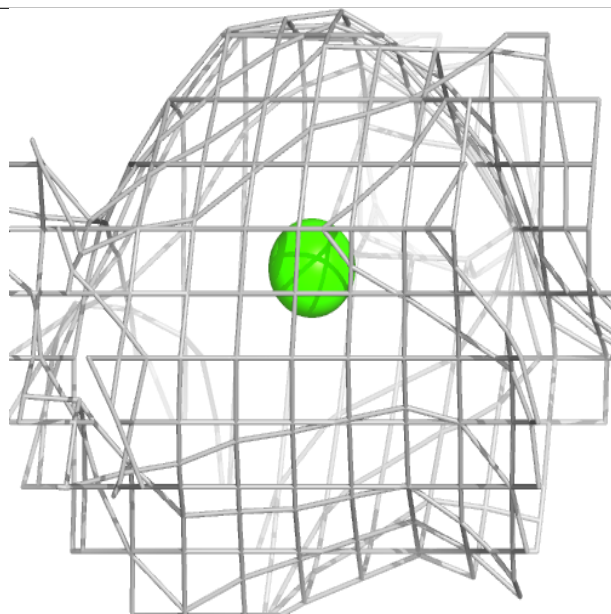
**Electron density around CA D 501:**

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



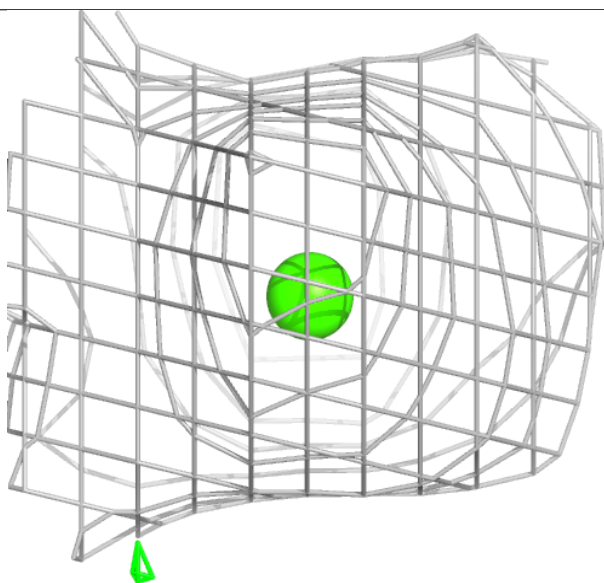
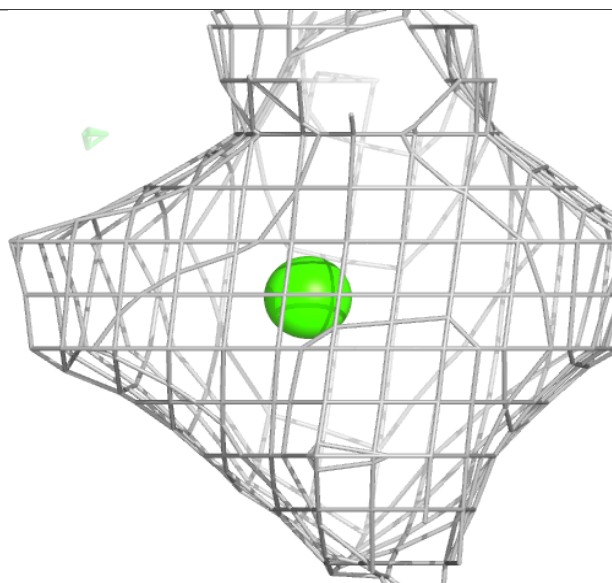
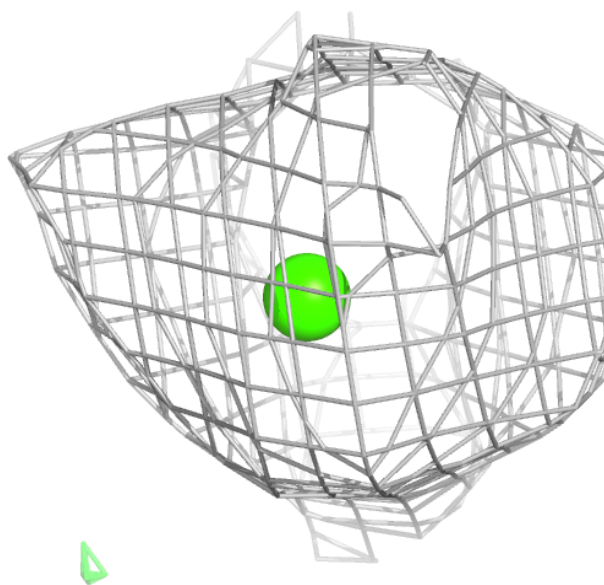
**Electron density around CA D 502:**

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



**Electron density around CA C 501:**

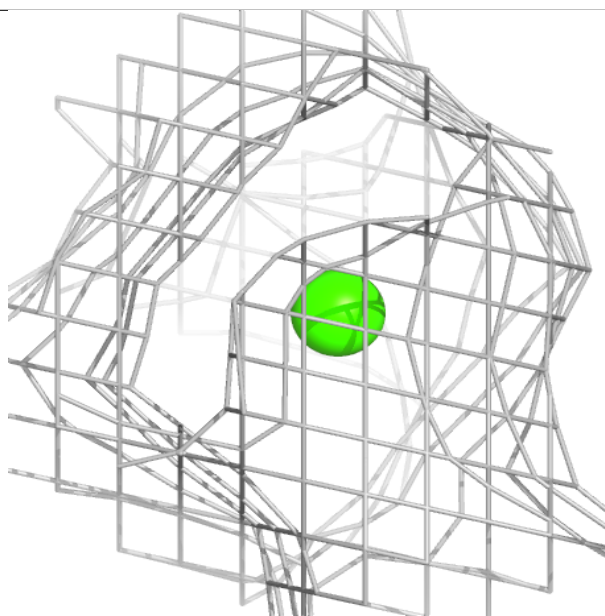
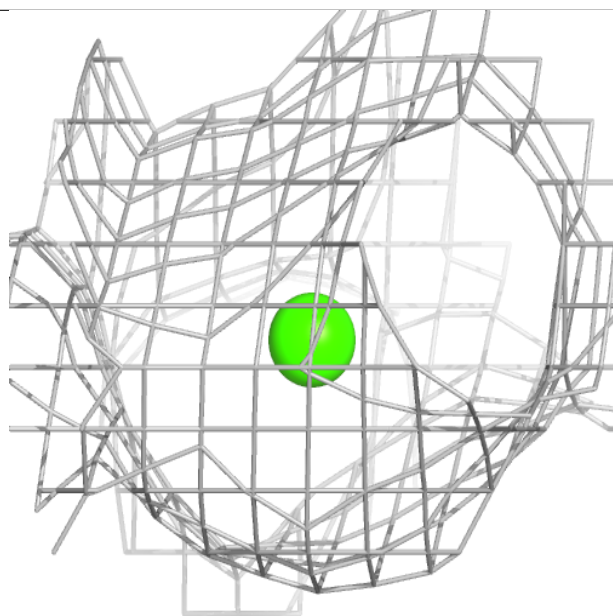
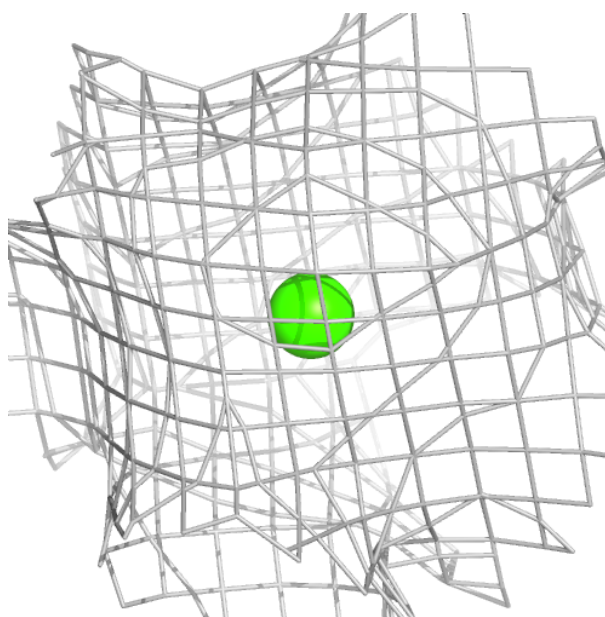
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





**Electron density around CA F 502:**

$2mF_o-DF_c$  (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.