



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 20, 2022 – 10:05 am BST

PDB ID : 6YJZ
Title : Crystal structure of mouse pyridoxal kinase in apo form
Authors : Kasaragod, V.B.; Schindelin, H.
Deposited on : 2020-04-05
Resolution : 2.45 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.27
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0267
CCP4 : 7.1.010 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.27

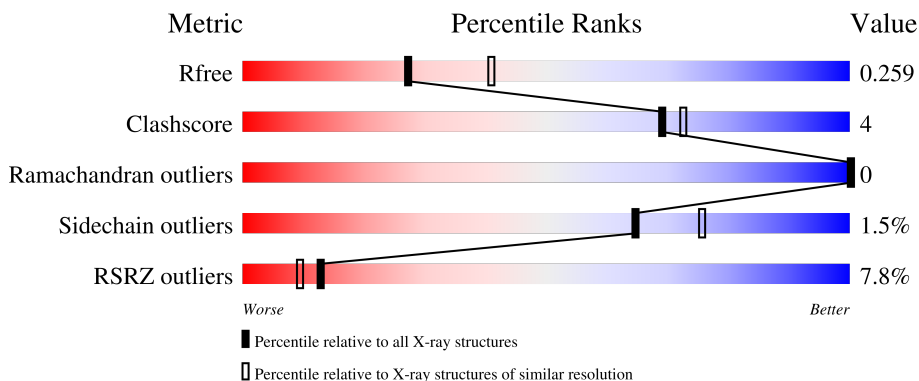
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.45 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	1544 (2.48-2.44)
Clashscore	141614	1613 (2.48-2.44)
Ramachandran outliers	138981	1598 (2.48-2.44)
Sidechain outliers	138945	1598 (2.48-2.44)
RSRZ outliers	127900	1523 (2.48-2.44)

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	314	 5% 88% 8% .
1	B	314	 4% 87% 11% ..
1	C	314	 7% 85% 11% .
1	D	314	 14% 88% 8% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	PG4	A	401	-	-	-	X
4	EDO	B	501	-	-	-	X
4	EDO	C	703	-	-	-	X
4	EDO	C	705	-	-	-	X

2 Entry composition [i](#)

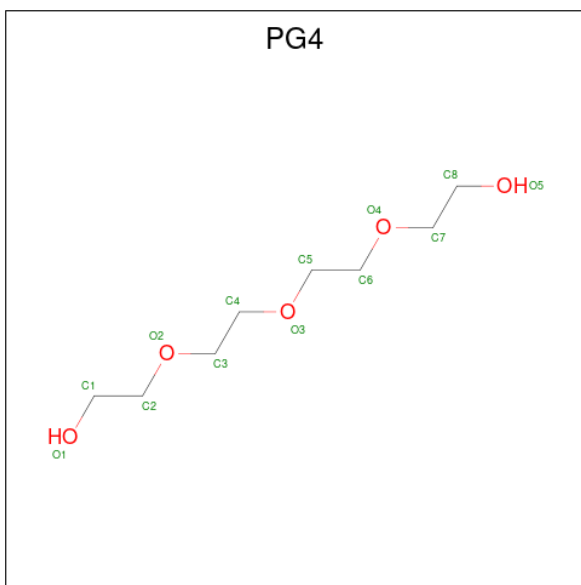
There are 5 unique types of molecules in this entry. The entry contains 19141 atoms, of which 9430 are hydrogens and 0 are deuteriums.

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 Pyridoxal Kinase.

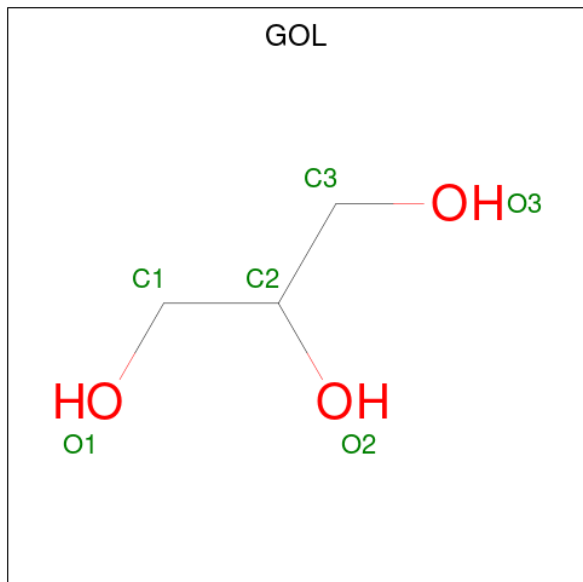
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
1	A	304	Total 4762	C 1501	H 2376	N 417	O 450	S 18	0	1	0
1	B	308	Total 4739	C 1499	H 2356	N 415	O 451	S 18	0	0	0
1	C	302	Total 4685	C 1479	H 2333	N 413	O 442	S 18	0	0	0
1	D	302	Total 4486	C 1439	H 2199	N 389	O 442	S 17	0	0	0

- Molecule 2 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: C₈H₁₈O₅) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	H			O
2	A	1	Total 31	C 8	H 18	O 5	0	0
2	A	1	Total 31	C 8	H 18	O 5	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
3	A	1	Total 14	C 3	H 8	O 3	0	0
3	A	1	Total 14	C 3	H 8	O 3	0	0
3	B	1	Total 14	C 3	H 8	O 3	0	0
3	C	1	Total 14	C 3	H 8	O 3	0	0
3	D	1	Total 14	C 3	H 8	O 3	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	A	1	10	2	6	2	0	0
4	A	1	10	2	6	2	0	0
4	A	1	10	2	6	2	0	0
4	A	1	10	2	6	2	0	0
4	B	1	10	2	6	2	0	0
4	B	1	10	2	6	2	0	0
4	B	1	10	2	6	2	0	0
4	B	1	10	2	6	2	0	0
4	C	1	10	2	6	2	0	0
4	C	1	10	2	6	2	0	0
4	C	1	10	2	6	2	0	0
4	C	1	10	2	6	2	0	0
4	C	1	10	2	6	2	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	D	1	10	2	6	2	0	0

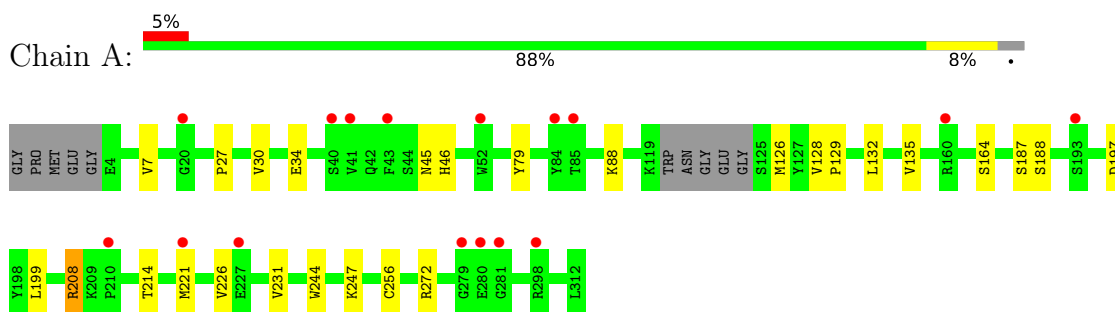
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	58	Total	O	0	0
			58	58		
5	B	60	Total	O	0	0
			60	60		
5	C	39	Total	O	0	0
			39	39		
5	D	30	Total	O	0	0
			30	30		

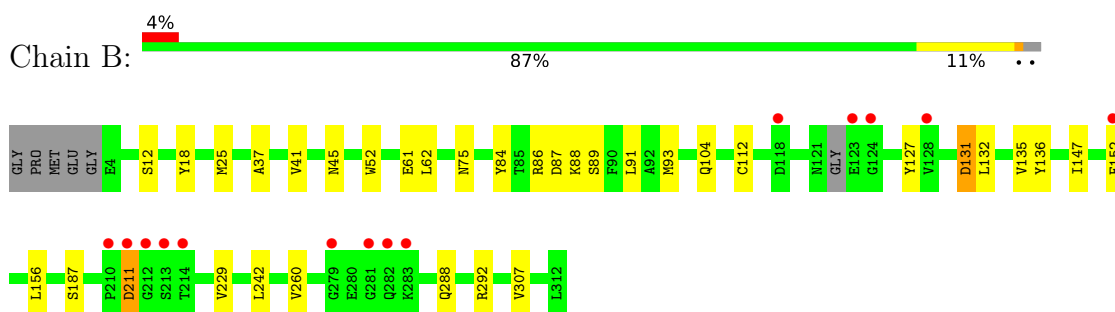
3 Residue-property plots [i](#)

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.

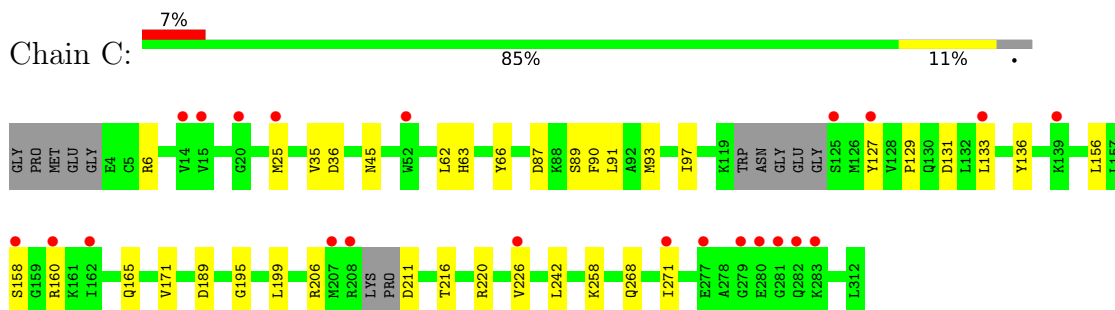
- Molecule 1: Pyridoxal Kinase



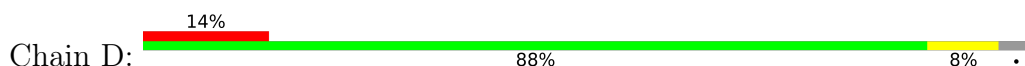
- Molecule 1: Pyridoxal Kinase

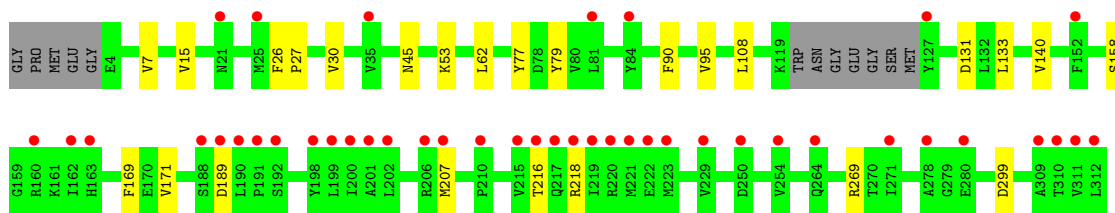


- Molecule 1: Pyridoxal Kinase



- Molecule 1: Pyridoxal Kinase





4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	279.13Å 53.43Å 109.37Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.32 – 2.45 47.32 – 2.45	Depositor EDS
% Data completeness (in resolution range)	95.2 (47.32-2.45) 95.2 (47.32-2.45)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.75 (at 2.45Å)	Xtrriage
Refinement program	PHENIX (1.17.1_3660: ???)	Depositor
R, R_{free}	0.216 , 0.260 0.217 , 0.259	Depositor DCC
R_{free} test set	2930 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	46.4	Xtrriage
Anisotropy	0.351	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	(Not available) , (Not available)	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.084 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	19141	wwPDB-VP
Average B, all atoms (Å ²)	63.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.53% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, GOL, PG4

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	0.60	0/2431	0.52	0/3288
1	B	0.55	1/2425 (0.0%)	0.50	0/3284
1	C	0.59	0/2392	0.54	2/3236 (0.1%)
1	D	0.48	0/2328	0.51	1/3167 (0.0%)
All	All	0.56	1/9576 (0.0%)	0.52	3/12975 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	61	GLU	CD-OE2	-5.47	1.19	1.25

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	189	ASP	CB-CG-OD1	7.56	125.10	118.30
1	C	189	ASP	CB-CG-OD1	6.18	123.86	118.30
1	C	199	LEU	CA-CB-CG	5.09	127.01	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2386	2376	2386	17	1
1	B	2383	2356	2358	21	0
1	C	2352	2333	2340	20	0
1	D	2287	2199	2198	14	1
2	A	26	36	36	1	0
3	A	12	16	16	0	0
3	B	6	8	8	0	0
3	C	6	8	8	0	0
3	D	6	8	8	0	0
4	A	16	24	24	0	0
4	B	16	24	24	0	0
4	C	24	36	36	0	0
4	D	4	6	6	0	0
5	A	58	0	0	1	0
5	B	60	0	0	0	0
5	C	39	0	0	3	0
5	D	30	0	0	0	0
All	All	9711	9430	9448	70	1

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 4.

All (70) 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:188:SER:H	1:A:199:LEU:HD21	1.49	0.75
1:C:158:SER:HB3	1:C:171:VAL:HG13	1.80	0.64
1:A:128:VAL:HG22	1:A:129:PRO:HD2	1.81	0.61
1:B:288:GLN:O	1:B:292:ARG:NH2	2.35	0.60
1:A:208:ARG:HG3	1:A:214:THR:HG22	1.83	0.60
2:A:405:PG4:H71	2:A:405:PG4:O3	2.02	0.59
1:C:91:LEU:HD11	1:C:136:TYR:CZ	2.41	0.56
1:D:62:LEU:HD22	1:D:90:PHE:CZ	2.40	0.56
1:C:25:MET:HG2	1:C:35:VAL:HG11	1.89	0.55
1:A:244:TRP:CE3	1:A:247:LYS:HD2	2.43	0.54
1:A:187:SER:HA	1:A:199:LEU:HD21	1.88	0.54
1:C:160:ARG:NH1	5:C:802:HOH:O	2.38	0.53
1:B:75:ASN:ND2	1:B:104:GLN:OE1	2.41	0.53
1:C:91:LEU:HD11	1:C:136:TYR:CE2	2.44	0.53
1:A:188:SER:N	1:A:199:LEU:HD21	2.23	0.51
1:C:206:ARG:HG2	1:C:216:THR:HG22	1.92	0.51
1:B:91:LEU:HD12	1:B:132:LEU:HD22	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:87:ASP:OD2	1:B:89:SER:OG	2.29	0.50
1:D:95:VAL:CG2	1:D:140:VAL:HG22	2.42	0.50
1:A:187:SER:HA	1:A:199:LEU:CD2	2.41	0.49
1:C:268:GLN:O	1:C:271:ILE:HG22	2.12	0.49
1:B:211:ASP:OD1	1:B:211:ASP:N	2.42	0.49
1:A:7:VAL:HG22	1:A:79:TYR:HB2	1.93	0.49
1:A:46:HIS:CE1	1:A:231:VAL:HG21	2.47	0.49
1:B:131:ASP:N	1:B:131:ASP:OD1	2.46	0.48
1:B:88:LYS:HG3	1:B:135:VAL:HG21	1.95	0.47
1:C:158:SER:CB	1:C:171:VAL:HG13	2.44	0.47
1:C:87:ASP:OD2	1:C:89:SER:OG	2.33	0.47
1:A:88:LYS:HG3	1:A:135:VAL:HG21	1.96	0.47
1:C:63:HIS:HB2	1:C:93:MET:SD	2.55	0.47
1:C:36:ASP:HA	1:D:15:VAL:O	2.15	0.47
1:D:269:ARG:NH2	1:D:299:ASP:OD2	2.48	0.46
1:D:27:PRO:O	1:D:30:VAL:HG22	2.15	0.46
1:A:128:VAL:HG22	1:A:132:LEU:HD22	1.98	0.46
1:D:169:PHE:CD1	1:D:218:ARG:HD3	2.52	0.45
1:C:258:LYS:NZ	5:C:806:HOH:O	2.49	0.45
1:B:84:TYR:OH	1:B:86:ARG:HD2	2.17	0.44
1:B:62:LEU:HD23	1:B:93:MET:HG2	2.00	0.44
1:A:272:ARG:NH1	5:A:505:HOH:O	2.45	0.44
1:D:77:TYR:O	1:D:108:LEU:HD12	2.18	0.44
1:B:152:PHE:CE2	1:B:156:LEU:HD11	2.54	0.43
1:D:158:SER:HB3	1:D:171:VAL:HG13	2.00	0.43
1:B:229:VAL:O	1:B:229:VAL:HG13	2.19	0.43
1:A:34:GLU:OE1	1:B:18:TYR:OH	2.27	0.43
1:D:27:PRO:HA	1:D:30:VAL:HG22	2.01	0.42
1:A:226:VAL:O	1:A:226:VAL:HG23	2.20	0.42
1:C:242:LEU:C	1:C:242:LEU:HD23	2.40	0.42
1:A:27:PRO:HA	1:A:30:VAL:HG22	2.01	0.42
1:A:27:PRO:O	1:A:30:VAL:HG22	2.19	0.42
1:C:62:LEU:HD22	1:C:90:PHE:CZ	2.55	0.42
1:B:242:LEU:HD23	1:B:242:LEU:C	2.41	0.42
1:C:133:LEU:HD22	1:C:156:LEU:HD22	2.02	0.42
1:B:25:MET:CE	1:B:37:ALA:HB2	2.50	0.41
1:B:112:CYS:O	1:B:147:ILE:HA	2.20	0.41
1:D:7:VAL:HG22	1:D:79:TYR:HB2	2.01	0.41
1:D:26:PHE:HB3	1:D:27:PRO:HD3	2.02	0.41
1:B:12:SER:HB2	1:B:41:VAL:HG22	2.02	0.41
1:C:66:TYR:CE1	1:C:97:ILE:HG23	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:133:LEU:HD12	1:D:133:LEU:O	2.20	0.41
1:A:221:MET:SD	1:A:256:CYS:HB3	2.61	0.41
1:C:129:PRO:HB2	1:C:131:ASP:OD1	2.20	0.41
1:B:260:VAL:HG12	1:B:307:VAL:HG21	2.01	0.41
1:C:165:GLN:OE1	1:C:220:ARG:NH1	2.54	0.41
1:B:260:VAL:CG1	1:B:307:VAL:HG21	2.51	0.41
1:B:91:LEU:HD11	1:B:136:TYR:CZ	2.56	0.40
1:B:91:LEU:HD11	1:B:136:TYR:CE2	2.56	0.40
1:D:131:ASP:N	1:D:131:ASP:OD1	2.54	0.40
1:B:52:TRP:CZ3	1:C:195:GLY:HA2	2.57	0.40
1:C:6:ARG:NH2	5:C:801:HOH:O	2.35	0.40
1:D:216:THR:HG21	1:D:218:ARG:CZ	2.52	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:ASP:OD2	1:D:53:LYS:CE[1_554]	2.08	0.12

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	301/314 (96%)	290 (96%)	11 (4%)	0	100	100
1	B	304/314 (97%)	294 (97%)	10 (3%)	0	100	100
1	C	296/314 (94%)	287 (97%)	9 (3%)	0	100	100
1	D	298/314 (95%)	288 (97%)	10 (3%)	0	100	100
All	All	1199/1256 (96%)	1159 (97%)	40 (3%)	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	265/273 (97%)	261 (98%)	4 (2%)	65	76
1	B	261/273 (96%)	256 (98%)	5 (2%)	57	69
1	C	259/273 (95%)	255 (98%)	4 (2%)	65	76
1	D	245/273 (90%)	243 (99%)	2 (1%)	81	88
All	All	1030/1092 (94%)	1015 (98%)	15 (2%)	65	76

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	ASN
1	A	126	MET
1	A	164	SER
1	A	208	ARG
1	B	45	ASN
1	B	127	TYR
1	B	131	ASP
1	B	187	SER
1	B	211	ASP
1	C	45	ASN
1	C	127	TYR
1	C	211	ASP
1	C	226	VAL
1	D	45	ASN
1	D	207	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	60	GLN
1	B	75	ASN
1	B	104	GLN
1	C	29	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

22 ligands 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	$\# Z > 2$
3	GOL	B	502	-	5,5,5	0.83	0	5,5,5	0.97	0
4	EDO	C	703	-	3,3,3	0.47	0	2,2,2	0.31	0
2	PG4	A	405	-	12,12,12	0.37	0	11,11,11	0.61	0
4	EDO	A	408	-	3,3,3	0.49	0	2,2,2	0.22	0
3	GOL	C	701	-	5,5,5	0.83	0	5,5,5	0.97	0
4	EDO	A	404	-	3,3,3	0.46	0	2,2,2	0.31	0
2	PG4	A	401	-	12,12,12	0.52	0	11,11,11	0.37	0
4	EDO	B	505	-	3,3,3	0.49	0	2,2,2	0.26	0
3	GOL	A	402	-	5,5,5	0.85	0	5,5,5	1.00	0
3	GOL	A	406	-	5,5,5	0.83	0	5,5,5	0.93	0
4	EDO	C	707	-	3,3,3	0.42	0	2,2,2	0.38	0
4	EDO	B	501	-	3,3,3	0.47	0	2,2,2	0.32	0
4	EDO	C	706	-	3,3,3	0.42	0	2,2,2	0.54	0
4	EDO	B	503	-	3,3,3	0.46	0	2,2,2	0.26	0
4	EDO	D	402	-	3,3,3	0.47	0	2,2,2	0.27	0
3	GOL	D	401	-	5,5,5	0.82	0	5,5,5	0.99	0
4	EDO	A	403	-	3,3,3	0.46	0	2,2,2	0.31	0
4	EDO	A	407	-	3,3,3	0.45	0	2,2,2	0.41	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	EDO	B	504	-	3,3,3	0.48	0	2,2,2	0.30	0
4	EDO	C	705	-	3,3,3	0.41	0	2,2,2	0.46	0
4	EDO	C	704	-	3,3,3	0.47	0	2,2,2	0.29	0
4	EDO	C	702	-	3,3,3	0.46	0	2,2,2	0.34	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
3	GOL	B	502	-	-	0/4/4/4	-
4	EDO	C	703	-	-	0/1/1/1	-
2	PG4	A	405	-	-	5/10/10/10	-
4	EDO	A	408	-	-	0/1/1/1	-
3	GOL	C	701	-	-	1/4/4/4	-
4	EDO	A	404	-	-	0/1/1/1	-
2	PG4	A	401	-	-	3/10/10/10	-
4	EDO	B	505	-	-	0/1/1/1	-
3	GOL	A	402	-	-	2/4/4/4	-
3	GOL	A	406	-	-	2/4/4/4	-
4	EDO	C	707	-	-	0/1/1/1	-
4	EDO	B	501	-	-	0/1/1/1	-
4	EDO	C	706	-	-	1/1/1/1	-
4	EDO	B	503	-	-	0/1/1/1	-
4	EDO	D	402	-	-	0/1/1/1	-
3	GOL	D	401	-	-	2/4/4/4	-
4	EDO	A	403	-	-	0/1/1/1	-
4	EDO	A	407	-	-	0/1/1/1	-
4	EDO	B	504	-	-	0/1/1/1	-
4	EDO	C	705	-	-	0/1/1/1	-
4	EDO	C	704	-	-	0/1/1/1	-
4	EDO	C	702	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (16) torsion outliers are listed below:

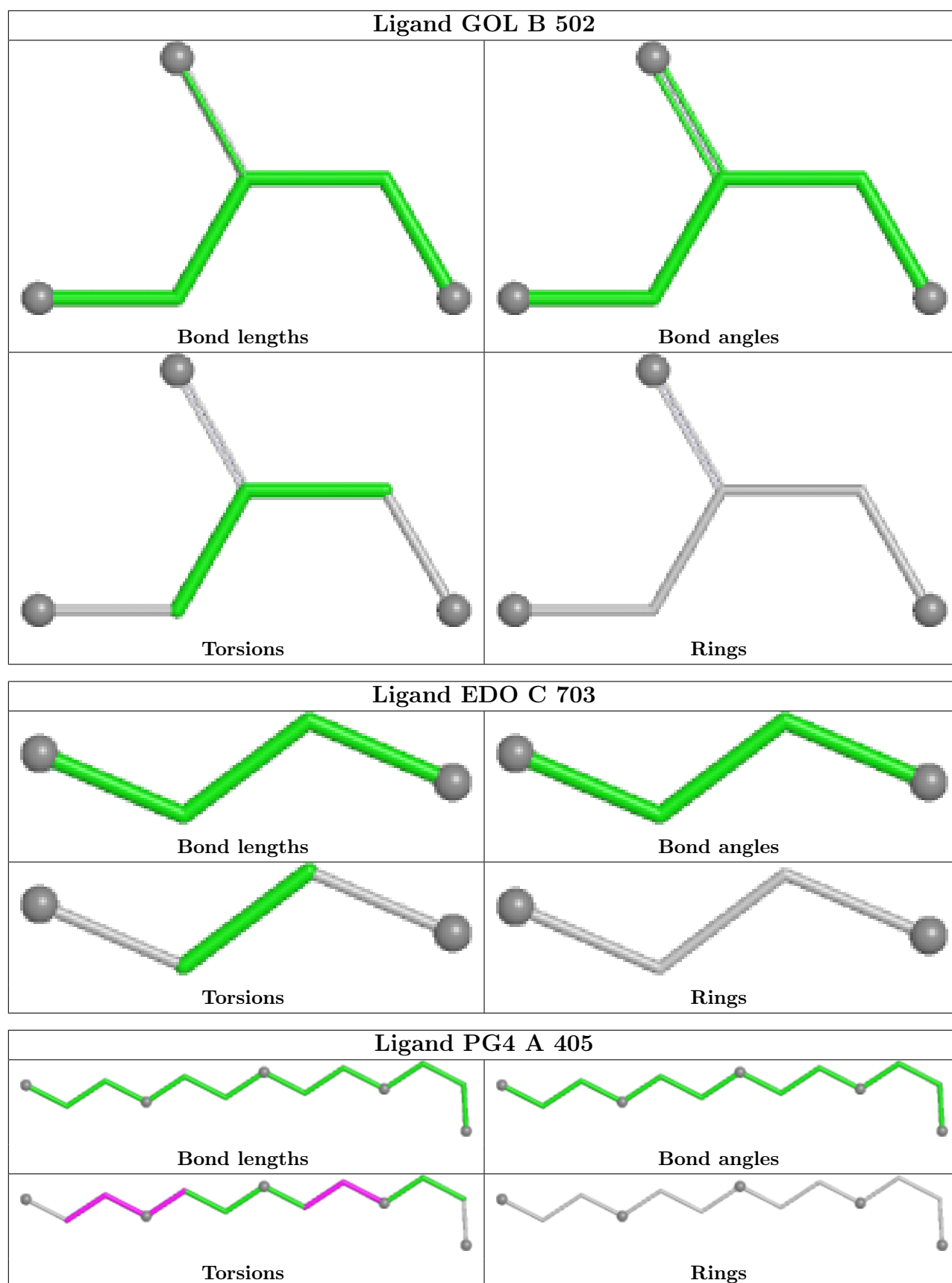
Mol	Chain	Res	Type	Atoms
3	A	406	GOL	O1-C1-C2-C3
2	A	401	PG4	O2-C3-C4-O3
2	A	405	PG4	O2-C3-C4-O3
3	A	402	GOL	O1-C1-C2-C3
2	A	405	PG4	O4-C7-C8-O5
2	A	401	PG4	O4-C7-C8-O5
3	A	406	GOL	O1-C1-C2-O2
2	A	405	PG4	C8-C7-O4-C6
2	A	405	PG4	C4-C3-O2-C2
3	D	401	GOL	O2-C2-C3-O3
2	A	401	PG4	C5-C6-O4-C7
2	A	405	PG4	C5-C6-O4-C7
4	C	706	EDO	O1-C1-C2-O2
3	D	401	GOL	C1-C2-C3-O3
3	A	402	GOL	O1-C1-C2-O2
3	C	701	GOL	O2-C2-C3-O3

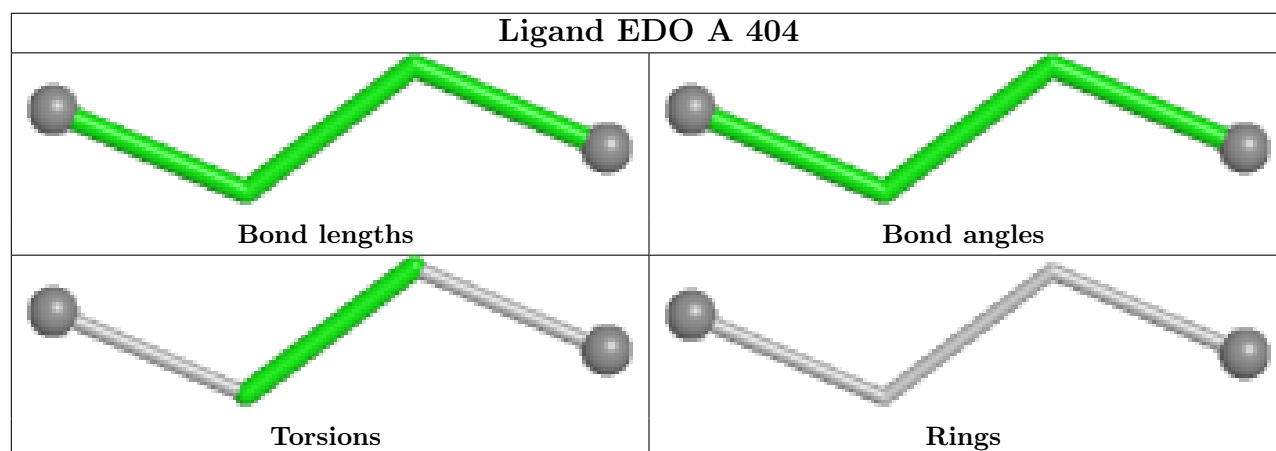
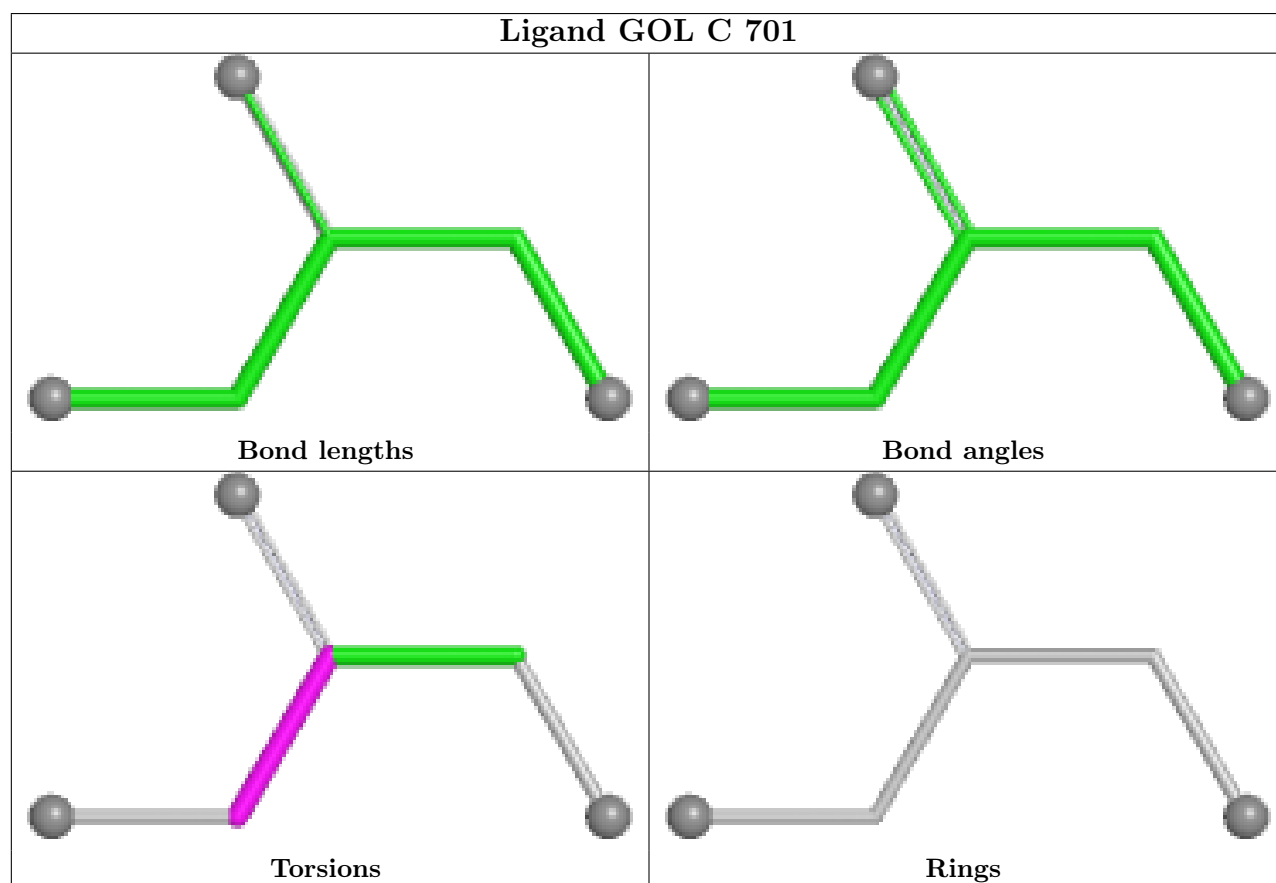
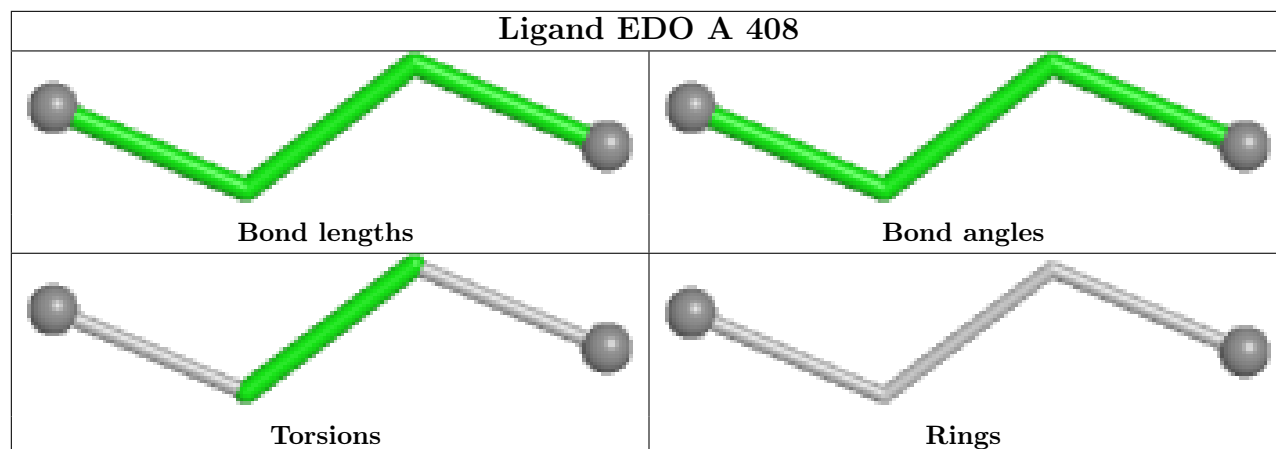
There are no ring outliers.

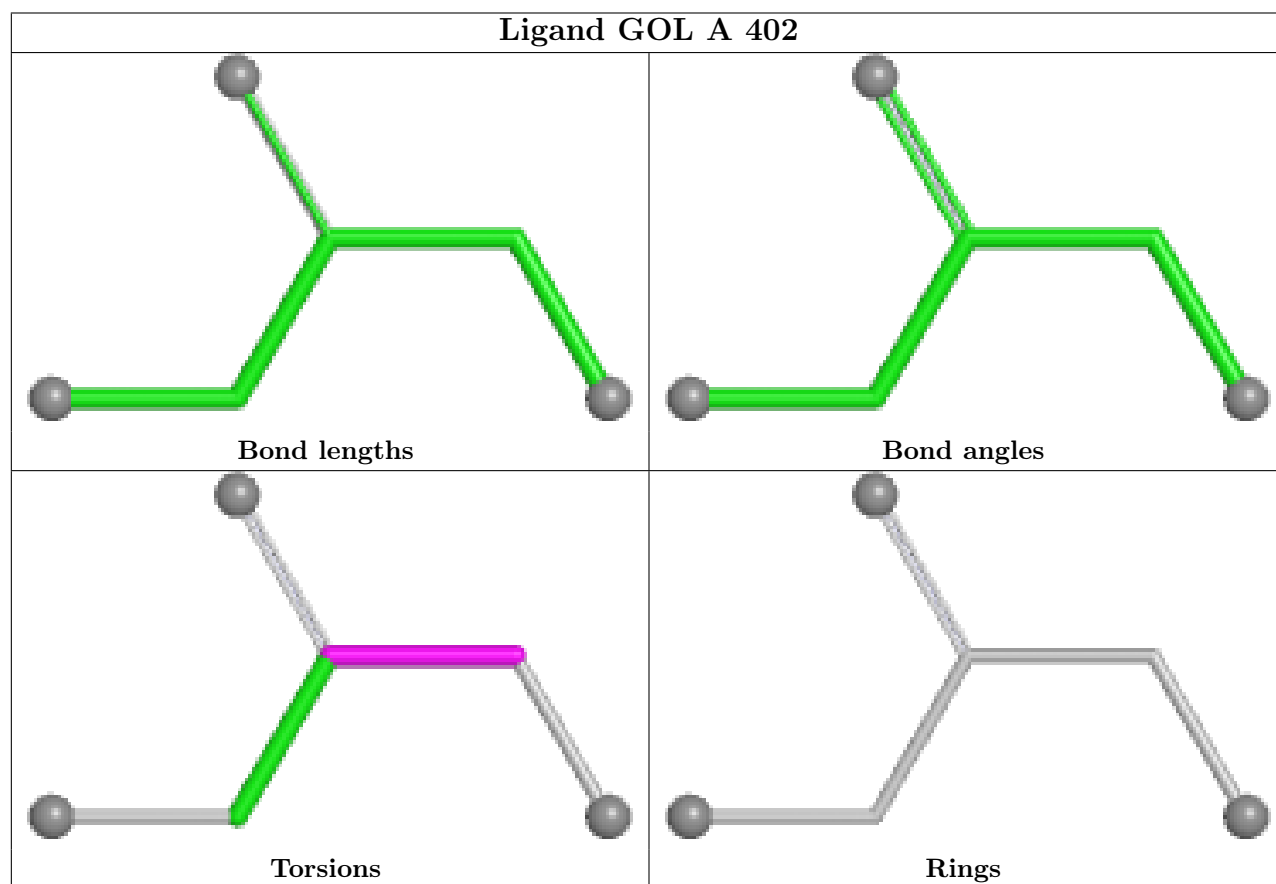
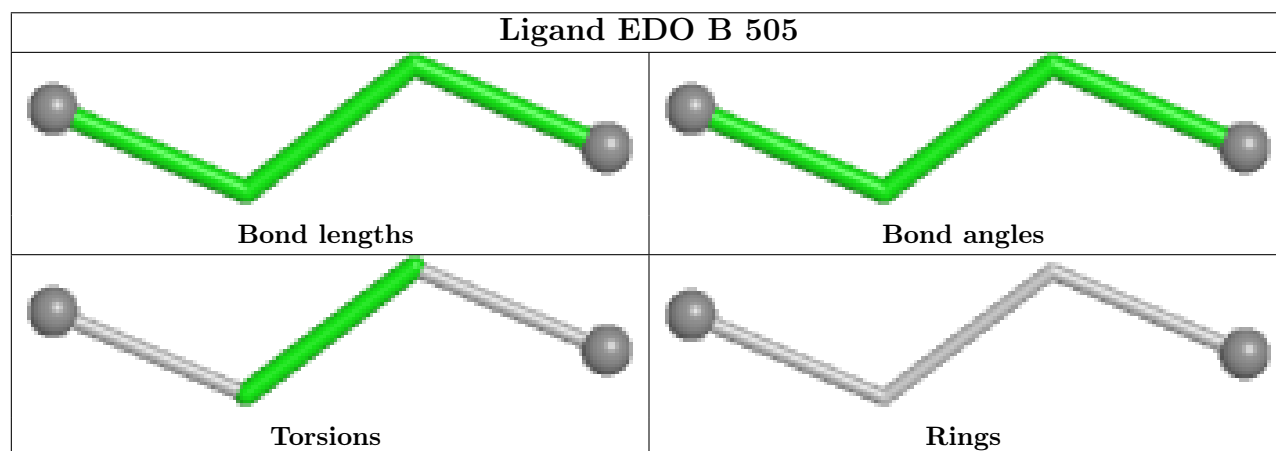
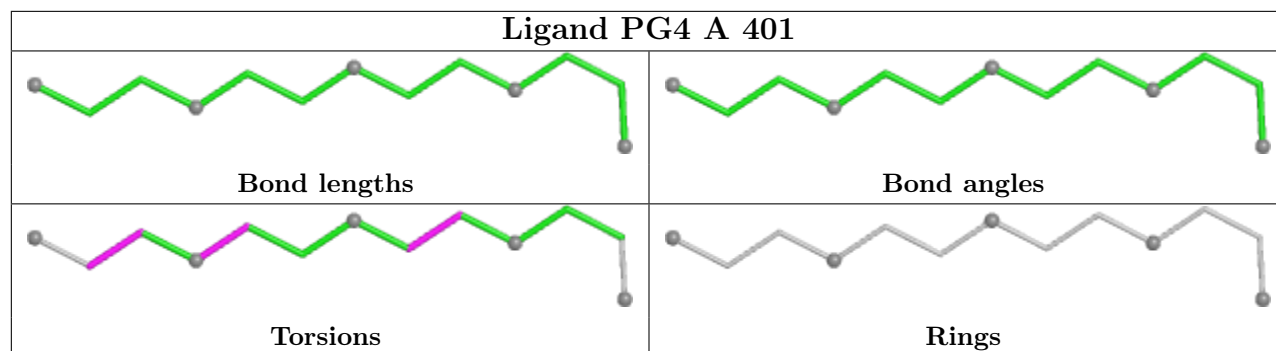
1 monomer is involved in 1 short contact:

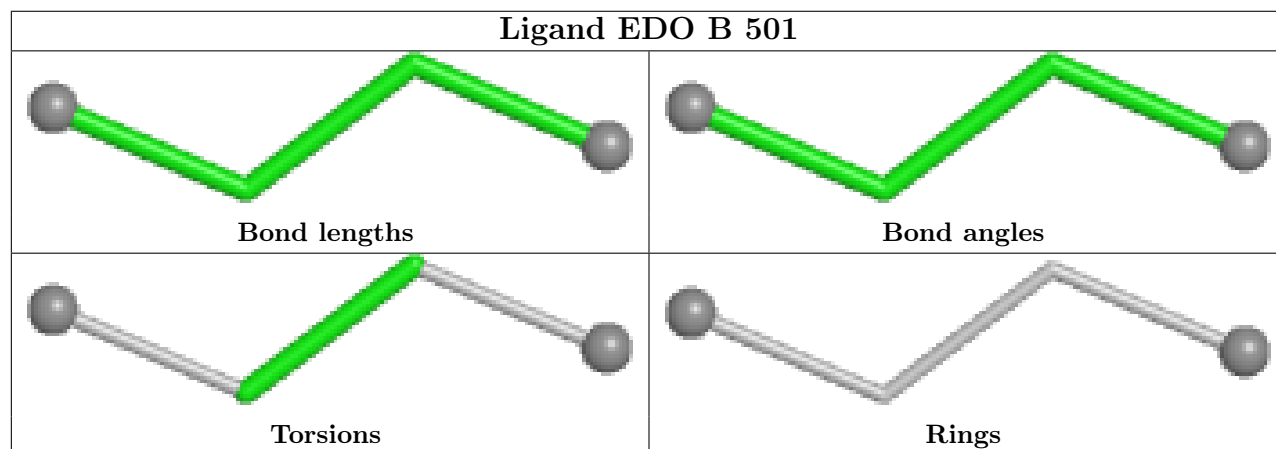
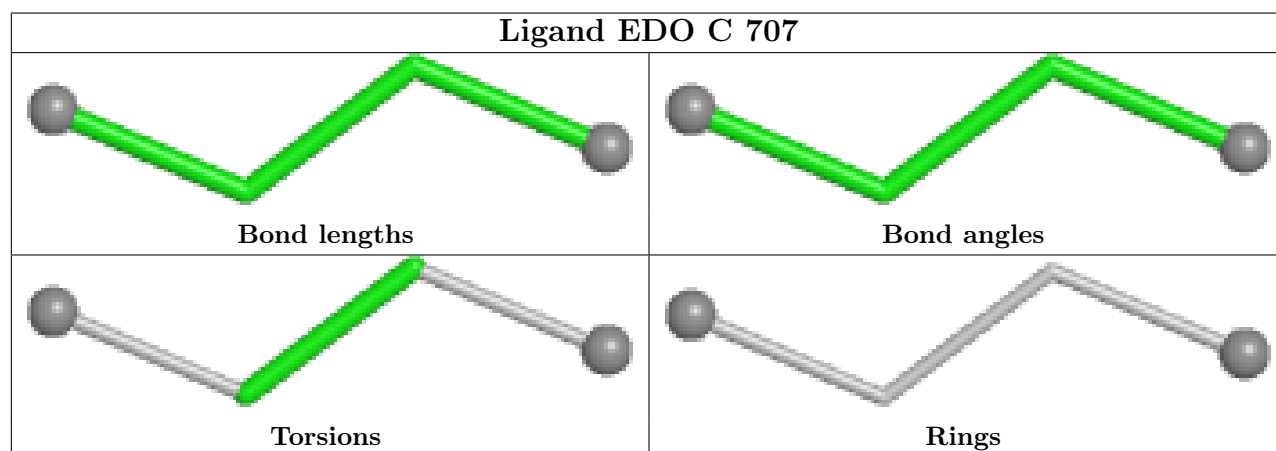
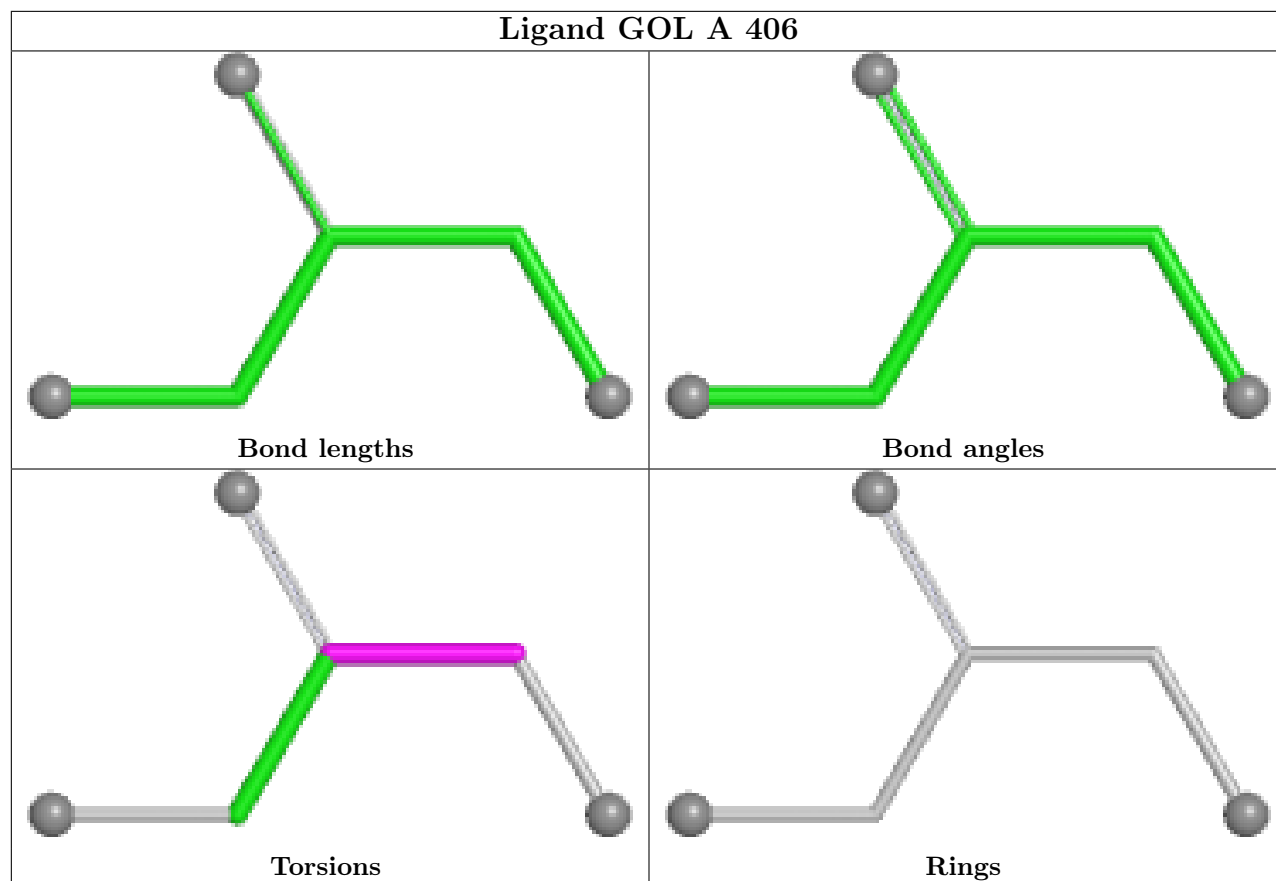
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	405	PG4	1	0

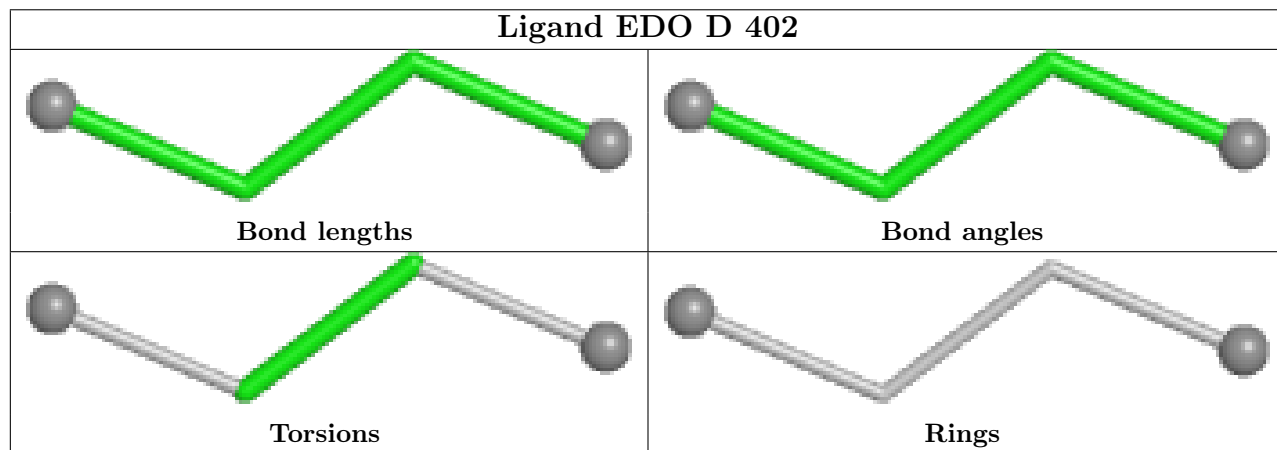
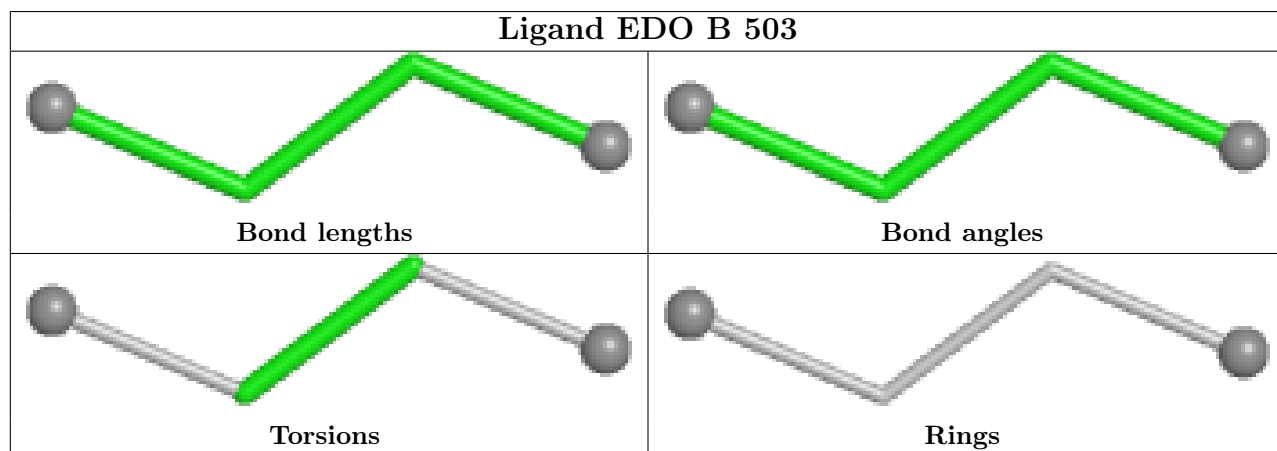
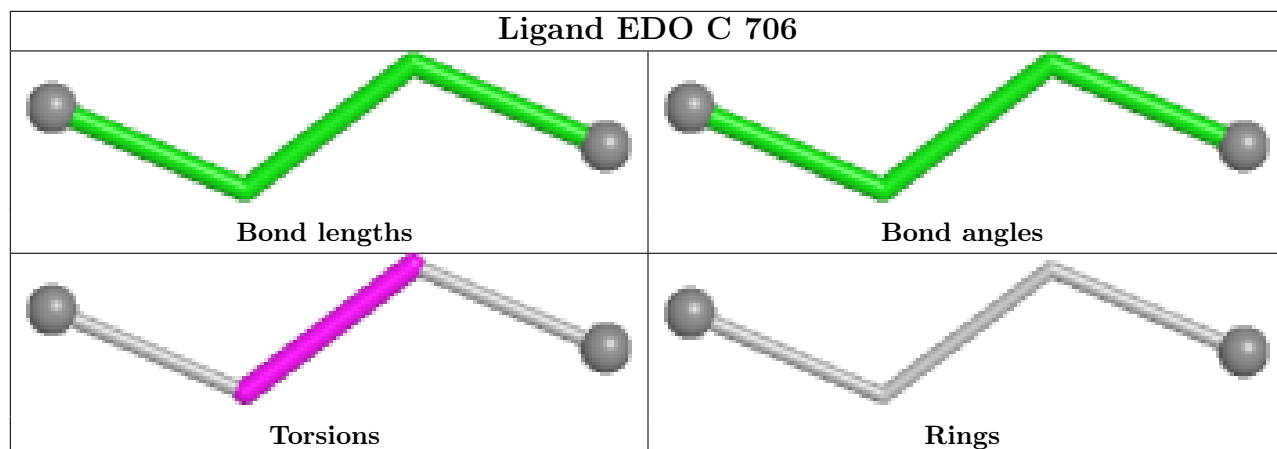
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

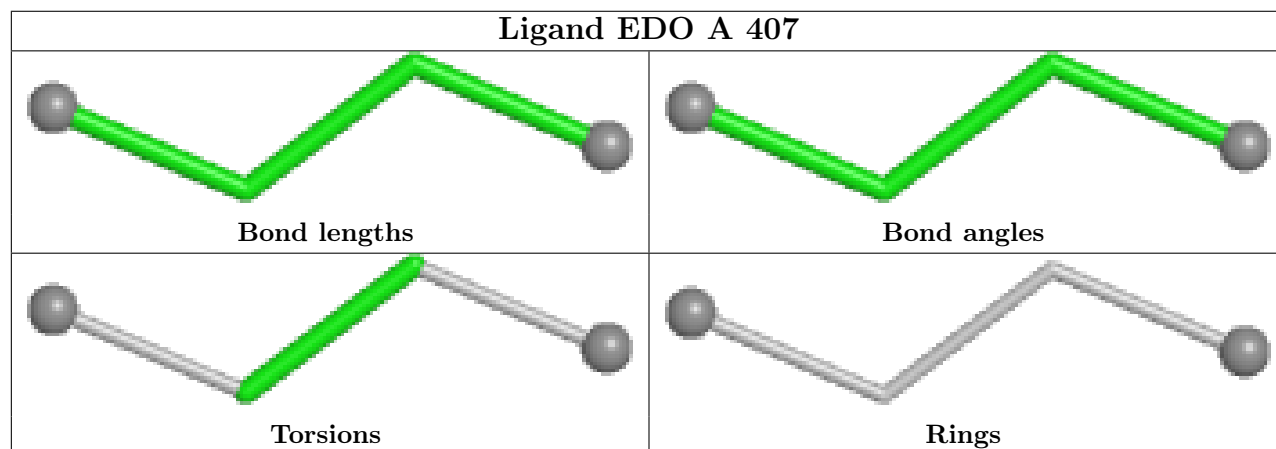
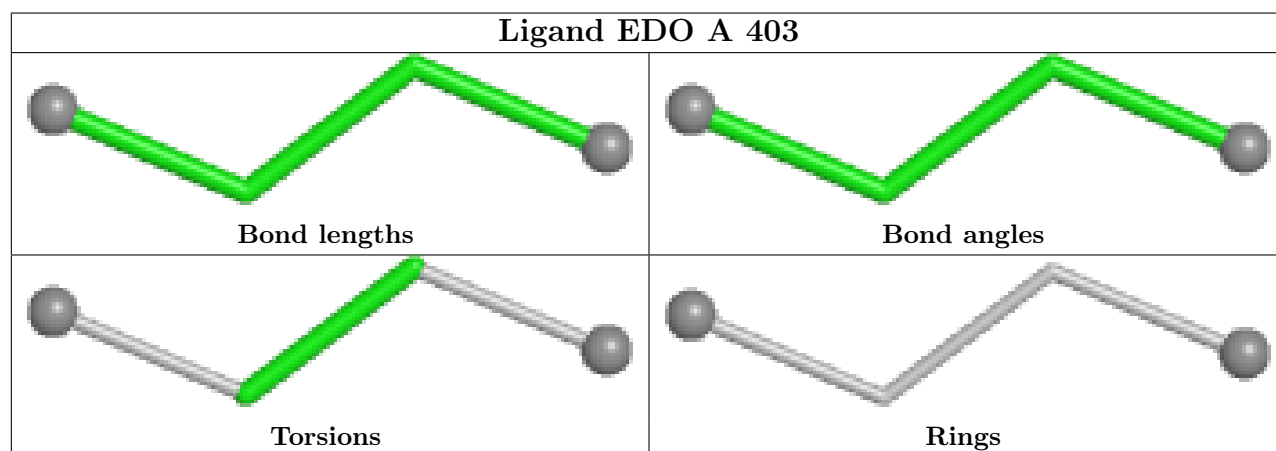
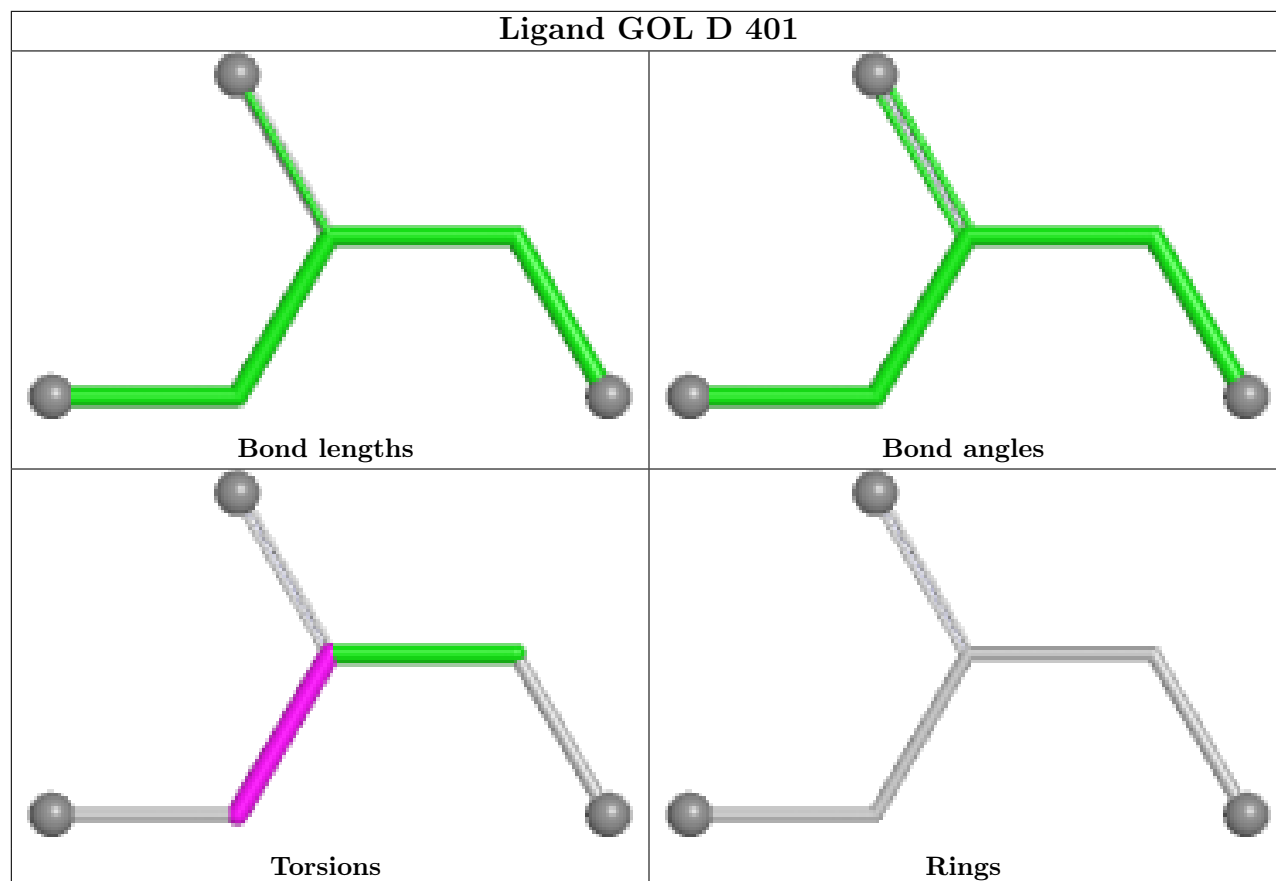


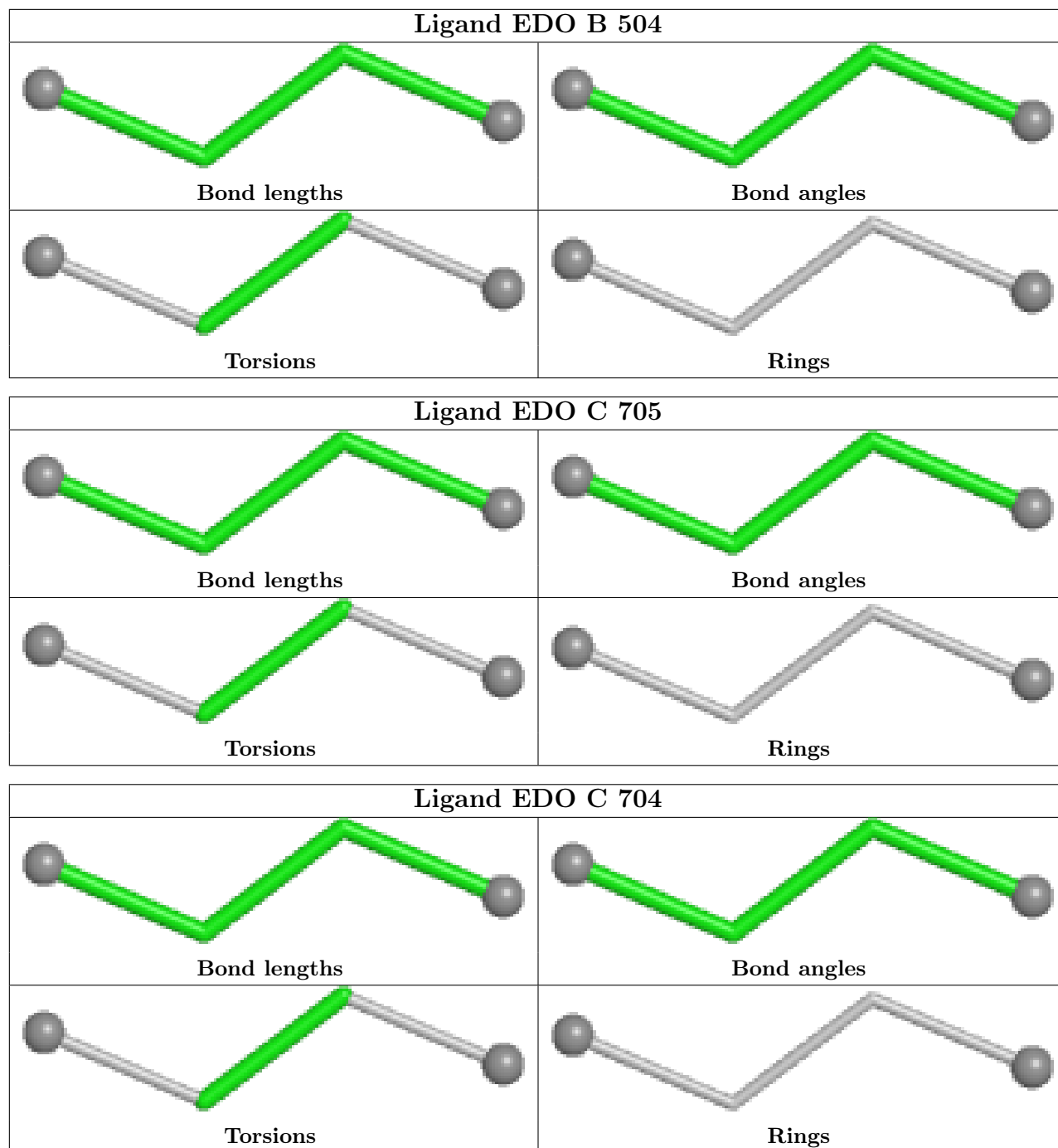


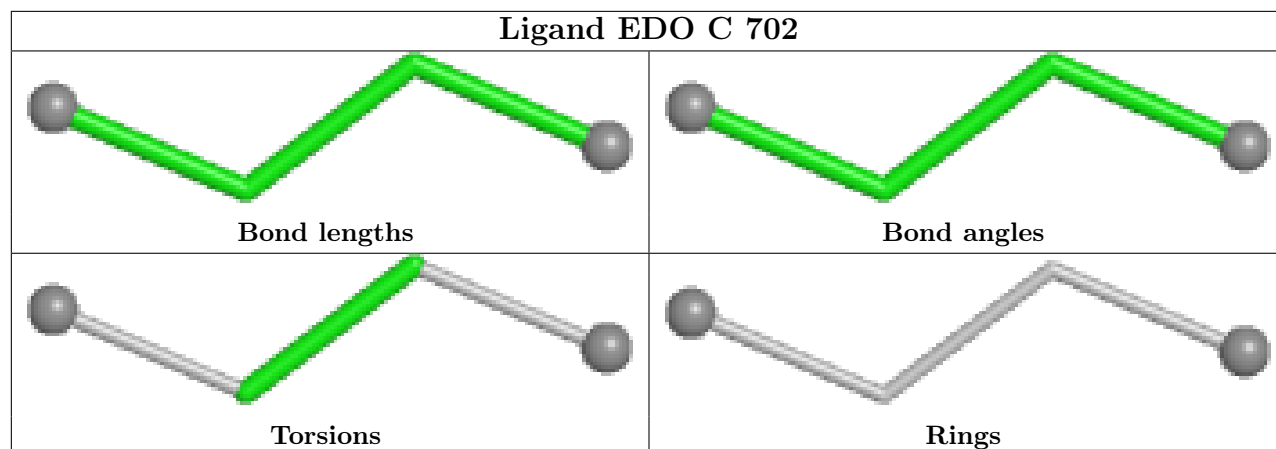












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	304/314 (96%)	0.64	16 (5%) 26 23	33, 50, 80, 115	0
1	B	308/314 (98%)	0.49	14 (4%) 33 30	31, 48, 86, 125	0
1	C	302/314 (96%)	0.63	22 (7%) 15 11	40, 56, 80, 97	0
1	D	302/314 (96%)	0.98	43 (14%) 2 1	41, 62, 100, 119	0
All	All	1216/1256 (96%)	0.68	95 (7%) 13 9	31, 54, 90, 125	0

All (95) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	312	LEU	7.1
1	B	210	PRO	5.8
1	D	200	ILE	5.3
1	D	221	MET	5.0
1	D	215	VAL	4.9
1	A	279	GLY	4.8
1	D	309	ALA	4.8
1	B	211	ASP	4.8
1	D	310	THR	4.6
1	D	219	ILE	4.5
1	B	212	GLY	4.4
1	D	311	VAL	4.4
1	D	220	ARG	4.3
1	D	163	HIS	4.3
1	D	190	LEU	4.1
1	D	207	MET	4.0
1	D	198	TYR	3.9
1	A	280	GLU	3.8
1	C	280	GLU	3.8
1	D	217	GLN	3.7
1	C	125	SER	3.7

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Mol	Chain	Res	Type	RSRZ
1	D	223	MET	3.7
1	C	207	MET	3.6
1	A	210	PRO	3.5
1	B	281	GLY	3.5
1	D	222	GLU	3.5
1	B	123	GLU	3.5
1	D	189	ASP	3.4
1	C	282	GLN	3.4
1	D	210	PRO	3.3
1	C	281	GLY	3.3
1	D	188	SER	3.3
1	D	152	PHE	3.3
1	A	160	ARG	3.3
1	B	282	GLN	3.2
1	B	279	GLY	3.2
1	A	84	TYR	3.1
1	A	221	MET	3.1
1	B	213	SER	3.0
1	C	127	TYR	3.0
1	D	201	ALA	3.0
1	C	158	SER	2.9
1	D	192	SER	2.9
1	B	124	GLY	2.9
1	D	162	ILE	2.9
1	D	199	LEU	2.9
1	A	41	VAL	2.8
1	D	127	TYR	2.8
1	B	214	THR	2.7
1	C	52	TRP	2.7
1	A	193	SER	2.7
1	C	139	LYS	2.7
1	C	226	VAL	2.6
1	A	43	PHE	2.6
1	D	250	ASP	2.6
1	C	283	LYS	2.6
1	C	160	ARG	2.6
1	D	21	ASN	2.6
1	D	218	ARG	2.5
1	C	20	GLY	2.5
1	C	133	LEU	2.4
1	B	128	VAL	2.4
1	D	160	ARG	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	162	ILE	2.4
1	D	271	ILE	2.4
1	D	216	THR	2.4
1	A	40	SER	2.4
1	D	254	VAL	2.4
1	A	20	GLY	2.3
1	D	25	MET	2.3
1	B	152	PHE	2.3
1	A	281	GLY	2.3
1	D	191	PRO	2.2
1	D	206	ARG	2.2
1	C	279	GLY	2.2
1	A	52	TRP	2.2
1	C	15	VAL	2.2
1	D	278	ALA	2.2
1	C	277	GLU	2.2
1	C	271	ILE	2.1
1	C	14	VAL	2.1
1	A	227	GLU	2.1
1	D	81	LEU	2.1
1	D	35	VAL	2.1
1	A	298	ARG	2.1
1	B	283	LYS	2.1
1	D	264	GLN	2.1
1	A	85	THR	2.0
1	D	202	LEU	2.0
1	D	280	GLU	2.0
1	B	118	ASP	2.0
1	C	25	MET	2.0
1	D	229	VAL	2.0
1	C	208	ARG	2.0
1	D	84	TYR	2.0

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](#)

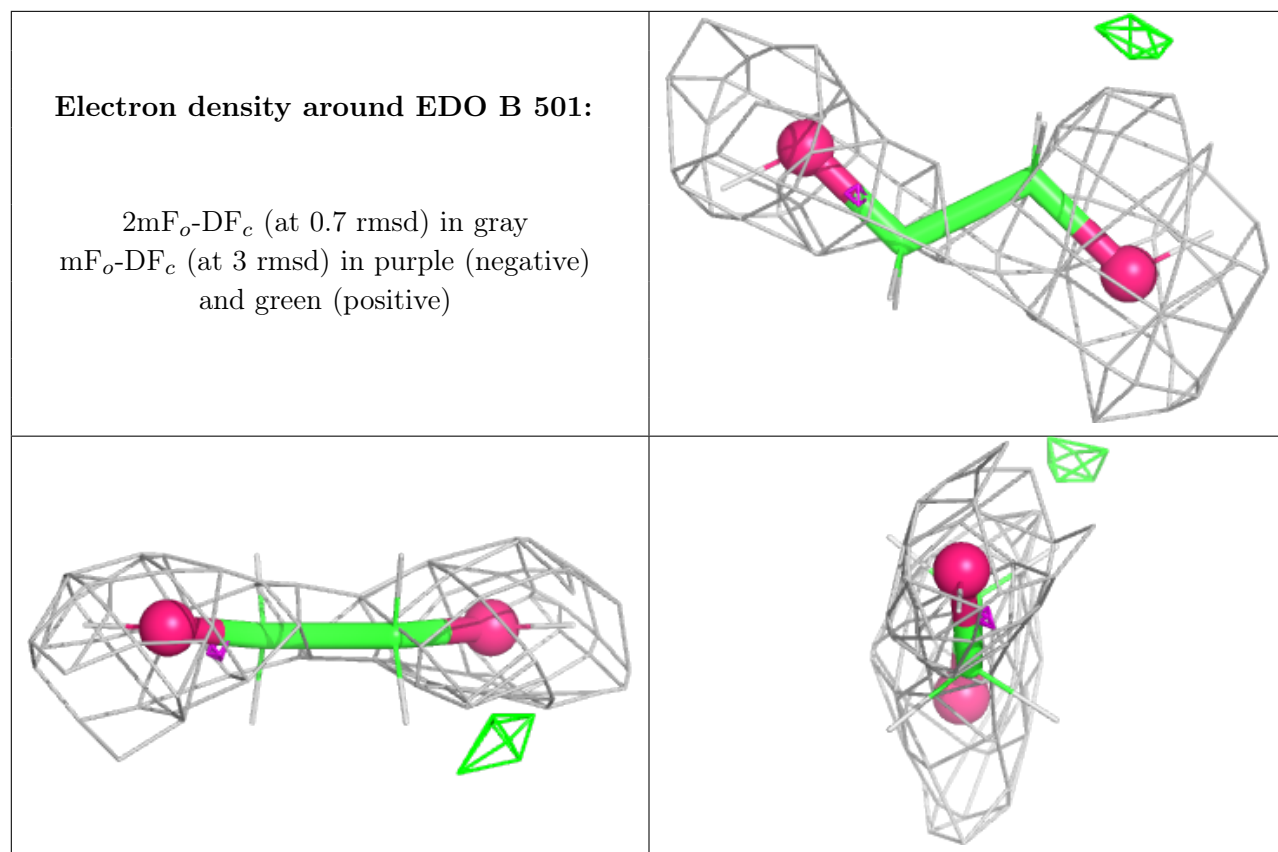
There are no monosaccharides in this entry.

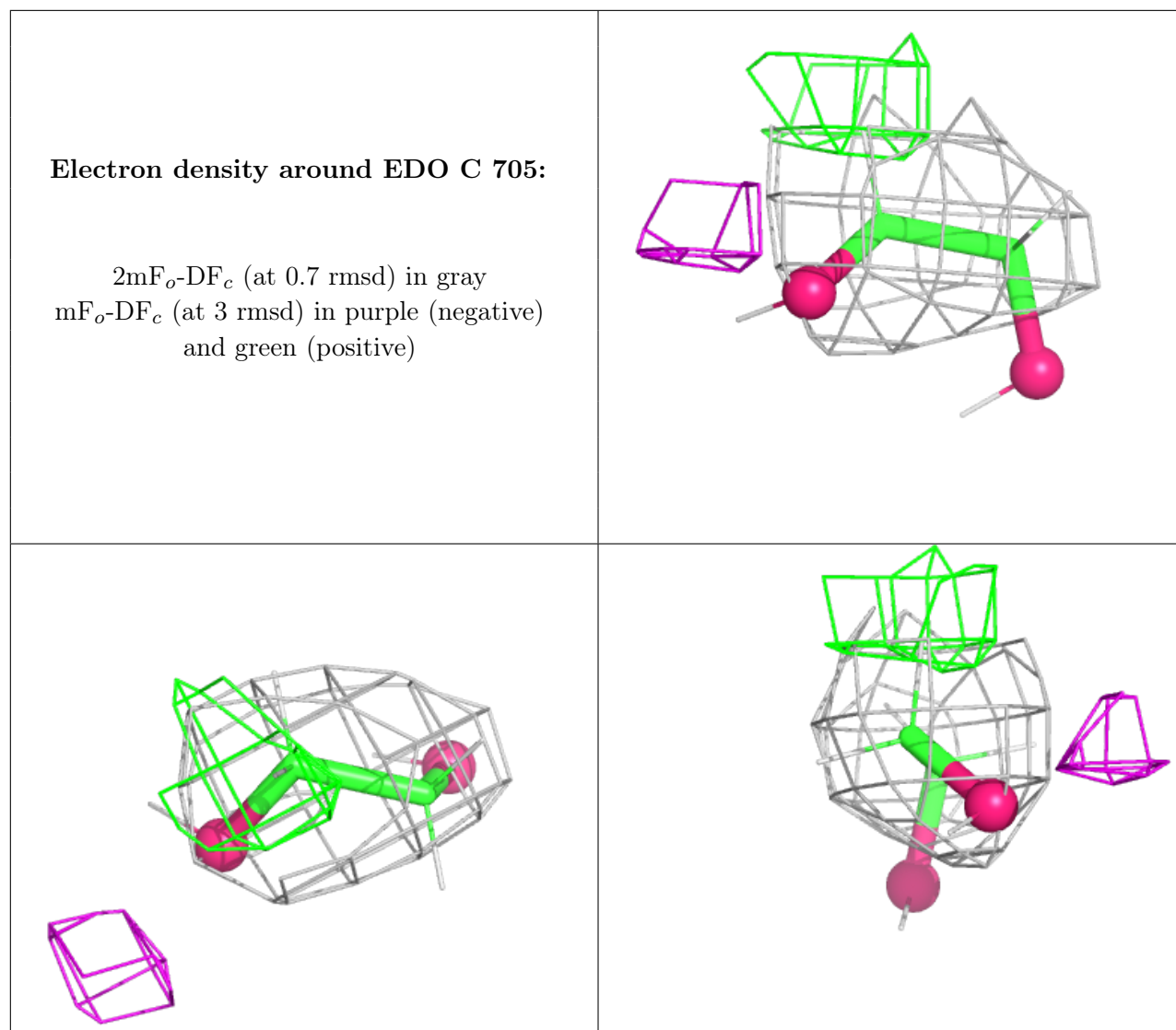
6.4 Ligands i

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
4	EDO	B	501	4/4	0.41	0.46	59,73,82,88	0
4	EDO	C	705	4/4	0.61	0.51	87,105,123,148	0
4	EDO	C	702	4/4	0.65	0.13	84,102,109,112	0
3	GOL	A	406	6/6	0.67	0.32	67,80,94,94	0
2	PG4	A	401	13/13	0.68	0.52	65,80,90,92	0
4	EDO	D	402	4/4	0.72	0.27	63,76,89,89	0
2	PG4	A	405	13/13	0.75	0.37	63,89,107,113	0
4	EDO	C	703	4/4	0.76	0.45	73,88,100,100	0
4	EDO	A	407	4/4	0.80	0.26	63,76,89,89	0
4	EDO	C	704	4/4	0.81	0.32	64,78,90,90	0
4	EDO	B	505	4/4	0.82	0.27	44,64,77,77	0
4	EDO	A	403	4/4	0.83	0.23	81,97,105,105	0
3	GOL	B	502	6/6	0.84	0.28	61,75,91,109	0
4	EDO	B	503	4/4	0.84	0.18	56,68,79,96	0
4	EDO	C	706	4/4	0.85	0.25	82,110,128,152	0
3	GOL	A	402	6/6	0.86	0.36	65,78,82,85	0
3	GOL	C	701	6/6	0.87	0.30	67,81,99,99	0
4	EDO	B	504	4/4	0.87	0.16	65,78,85,85	0
4	EDO	A	404	4/4	0.87	0.26	57,69,76,76	0
4	EDO	C	707	4/4	0.88	0.23	101,121,126,135	0
4	EDO	A	408	4/4	0.89	0.32	38,52,58,63	0
3	GOL	D	401	6/6	0.89	0.34	62,80,92,100	0

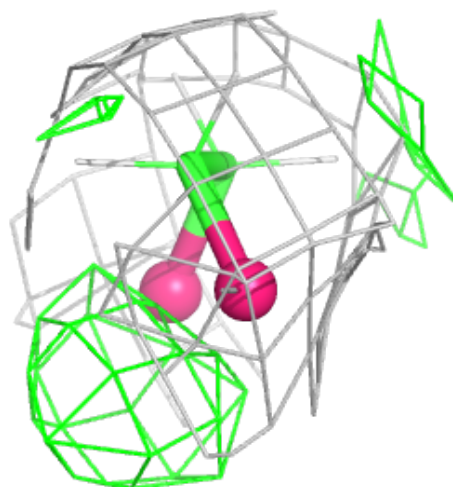
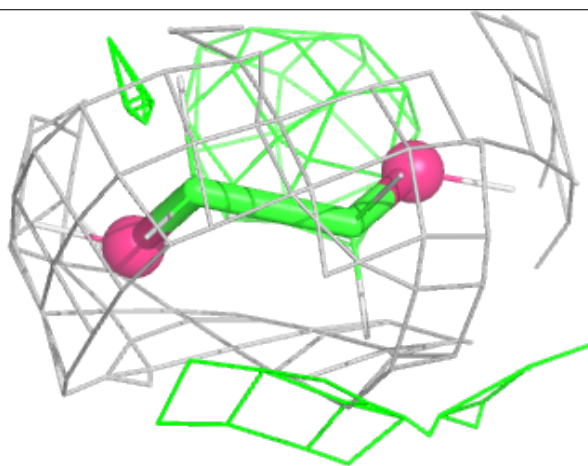
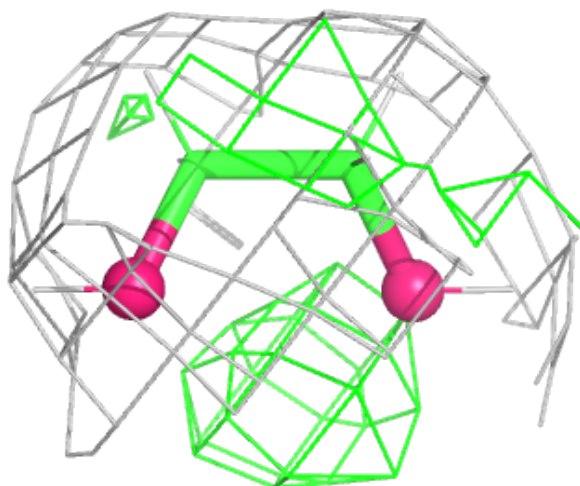
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

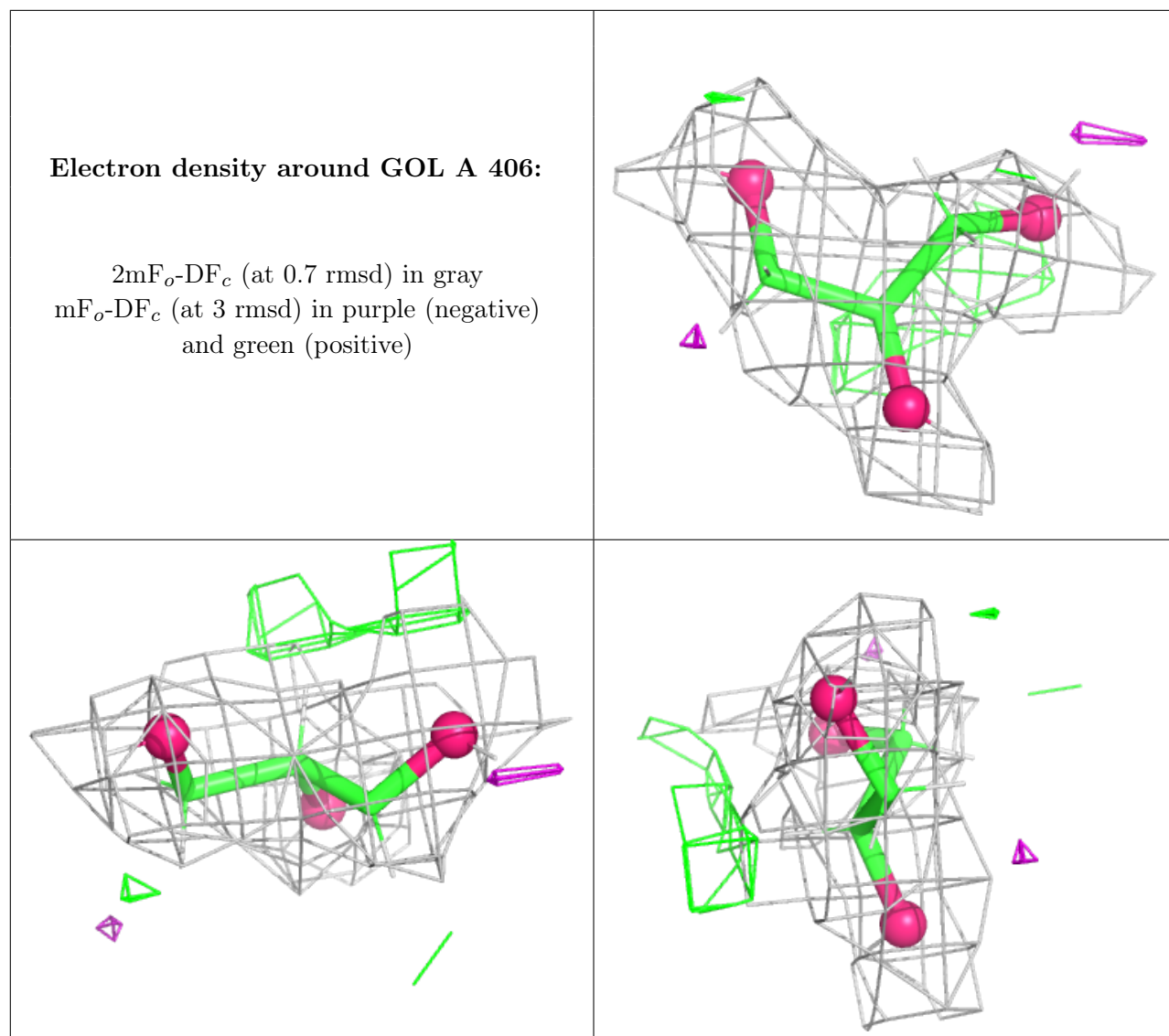




Electron density around EDO C 702:

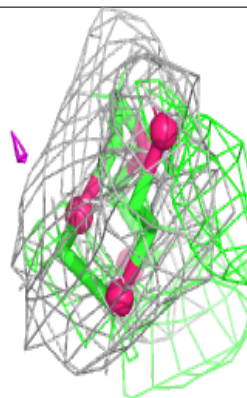
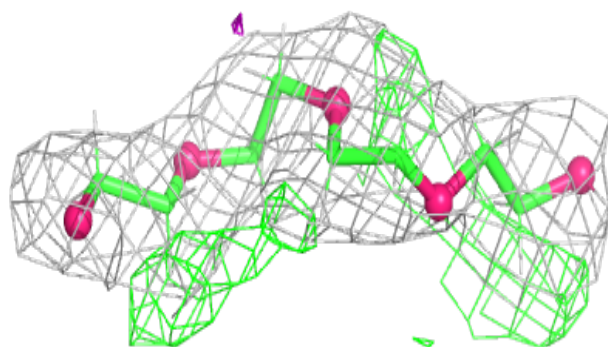
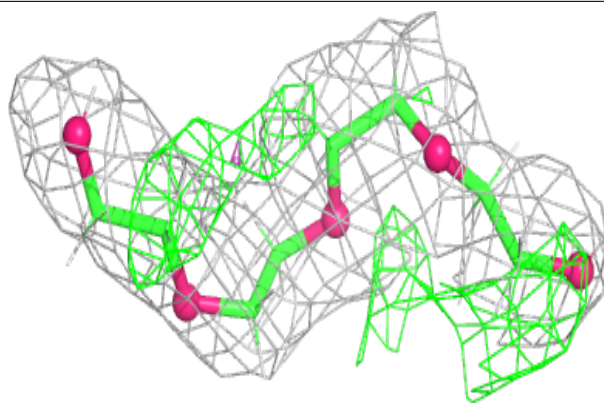
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





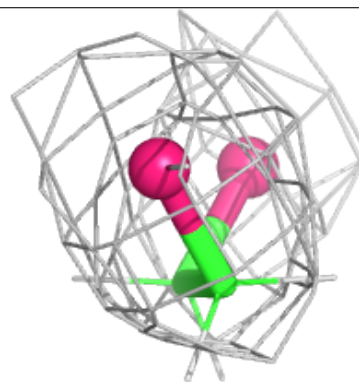
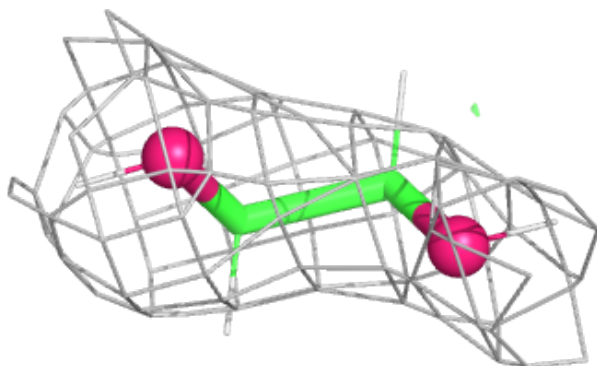
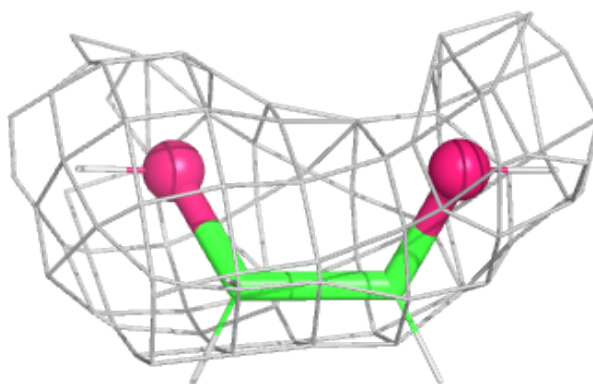
Electron density around PG4 A 401:

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



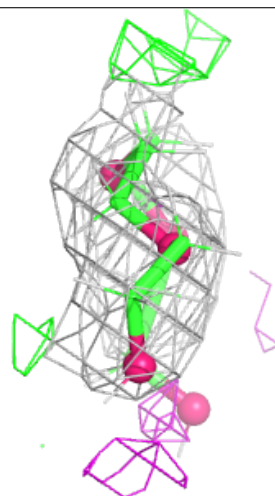
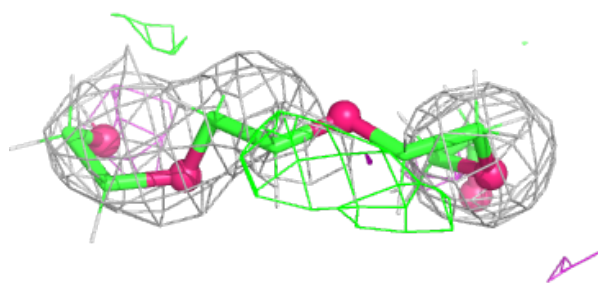
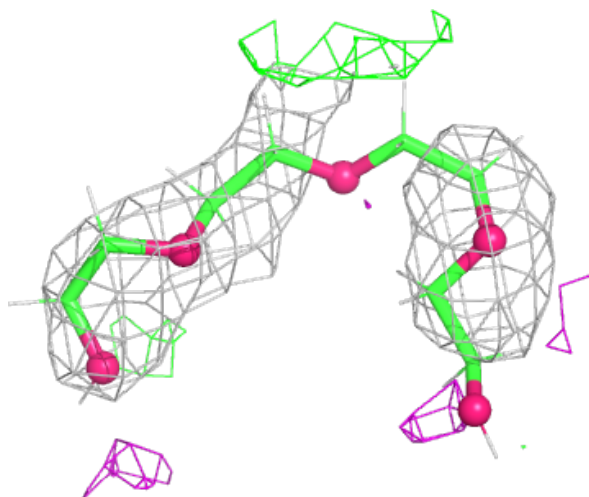
Electron density around EDO D 402:

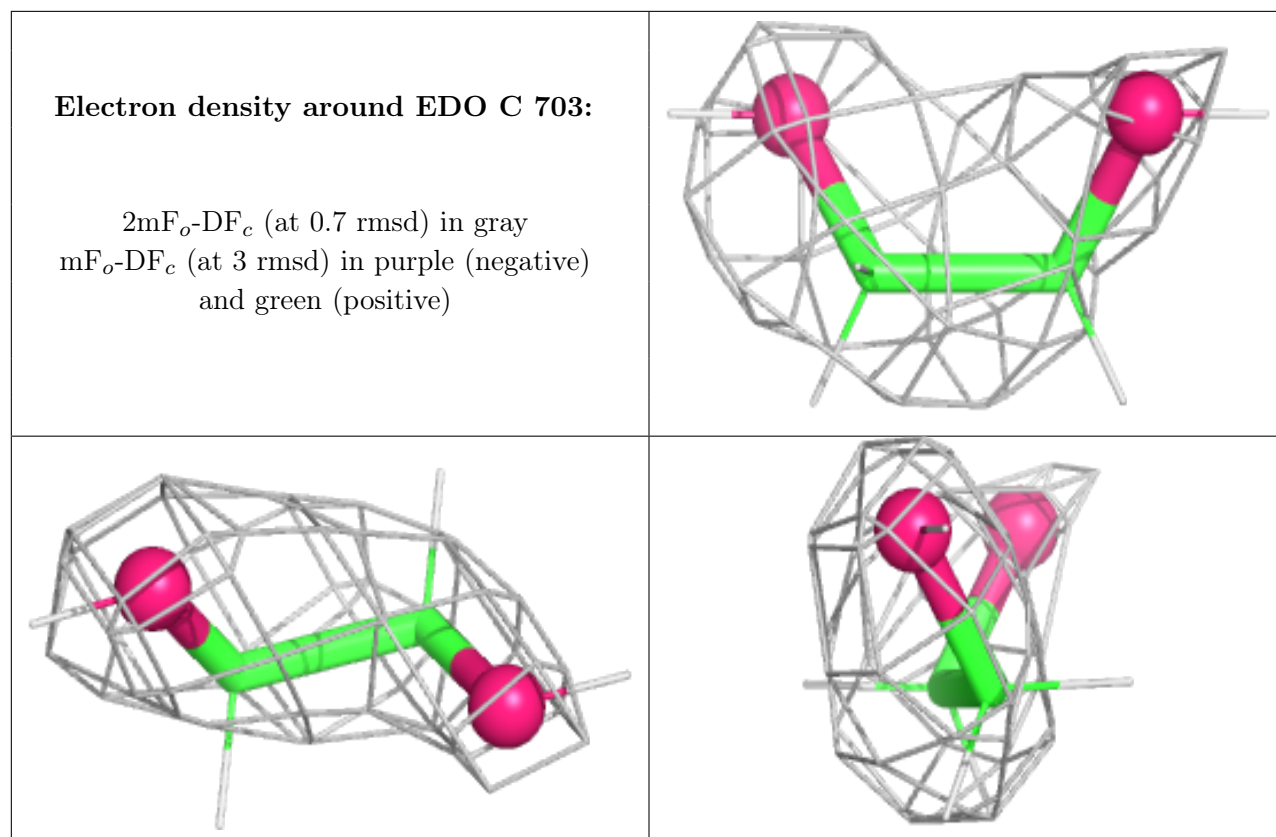
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around PG4 A 405:

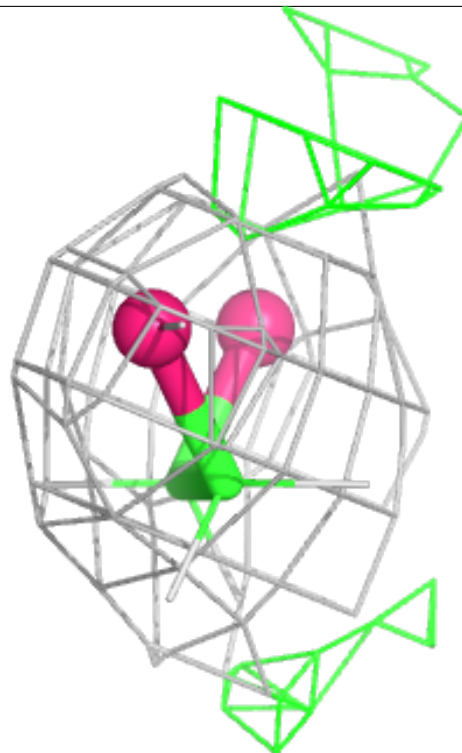
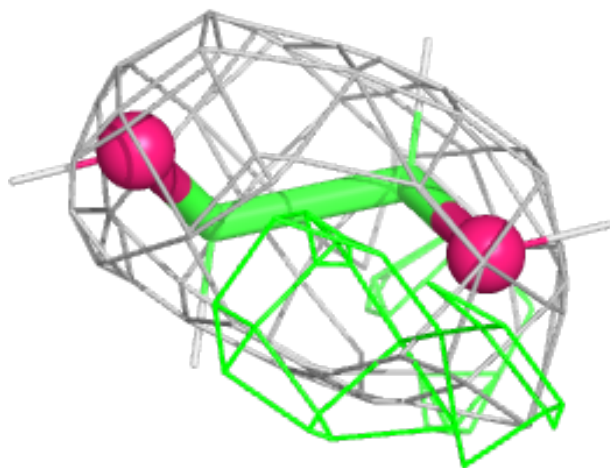
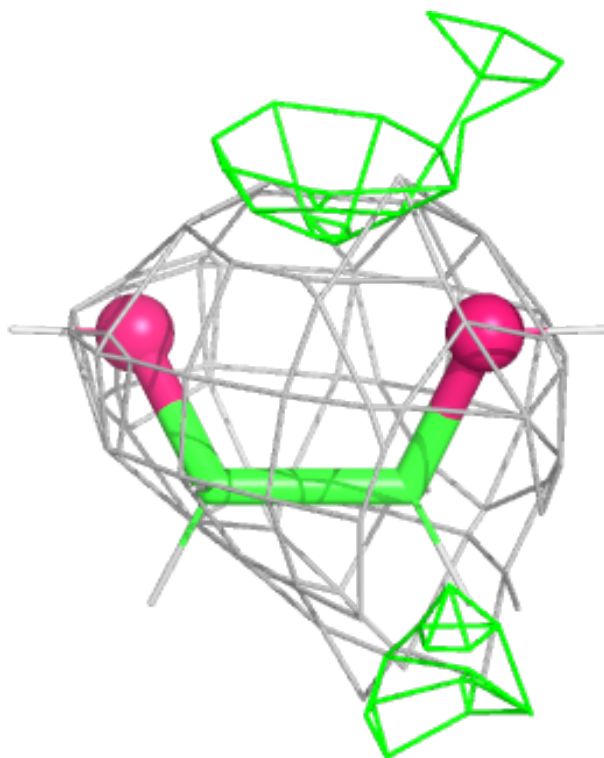
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





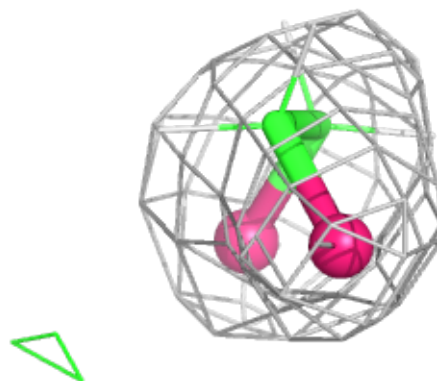
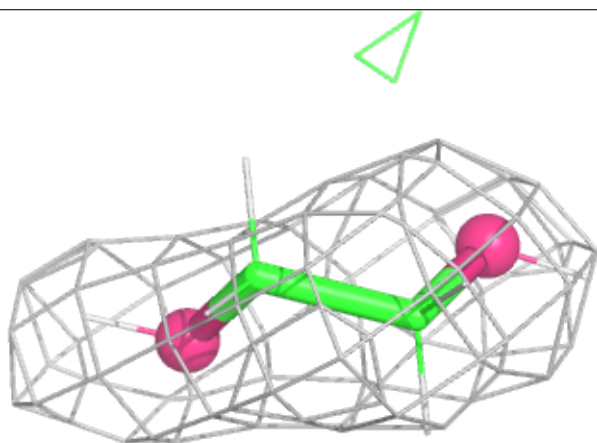
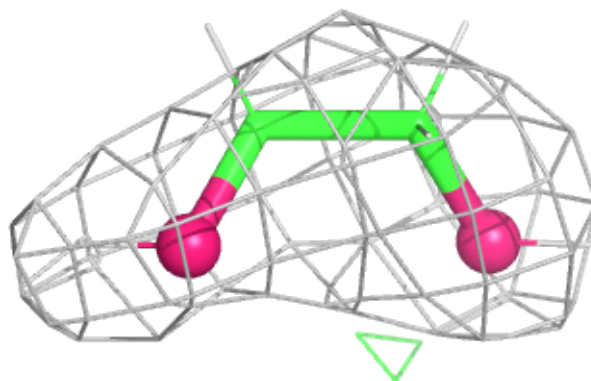
Electron density around EDO A 407:

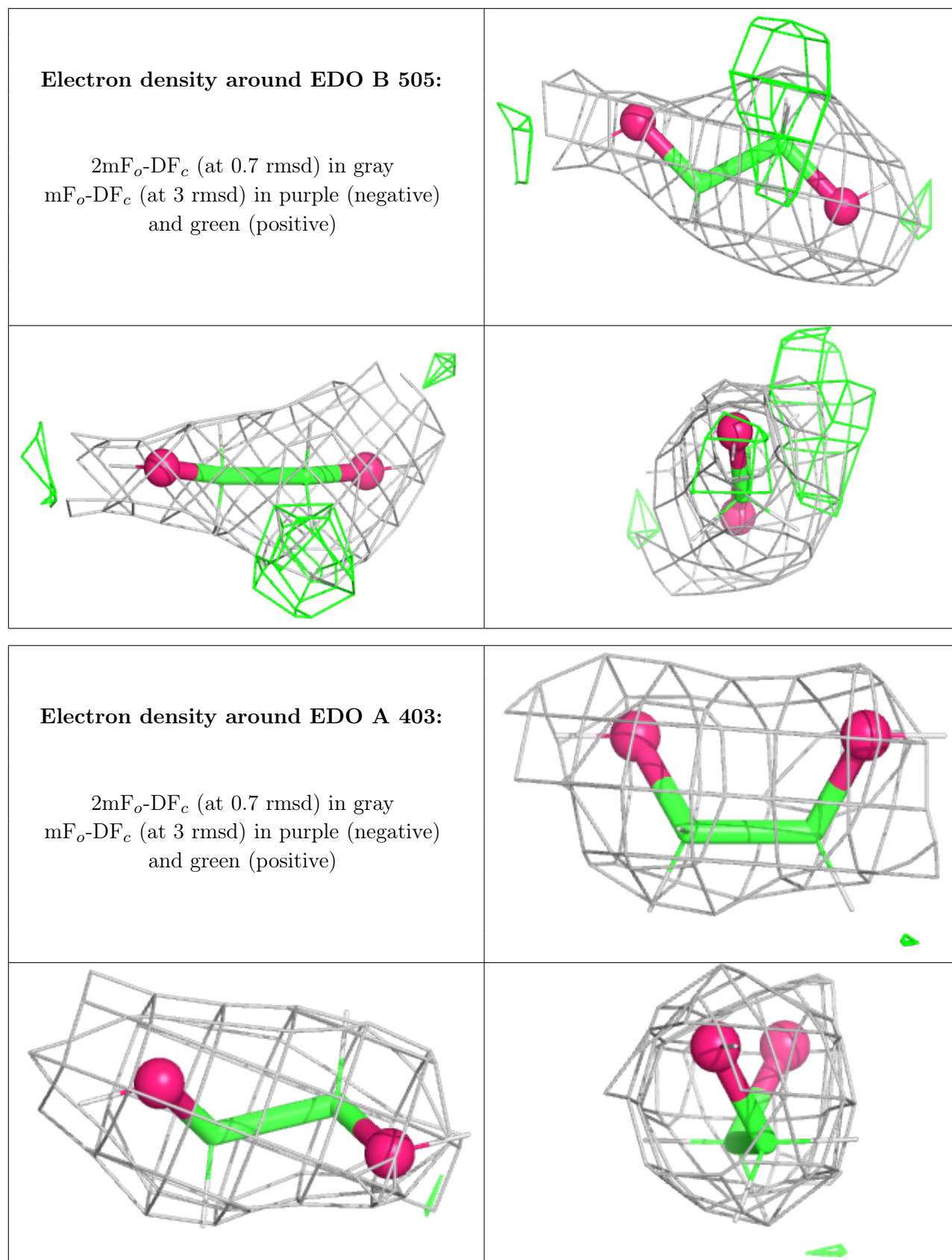
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around EDO C 704:

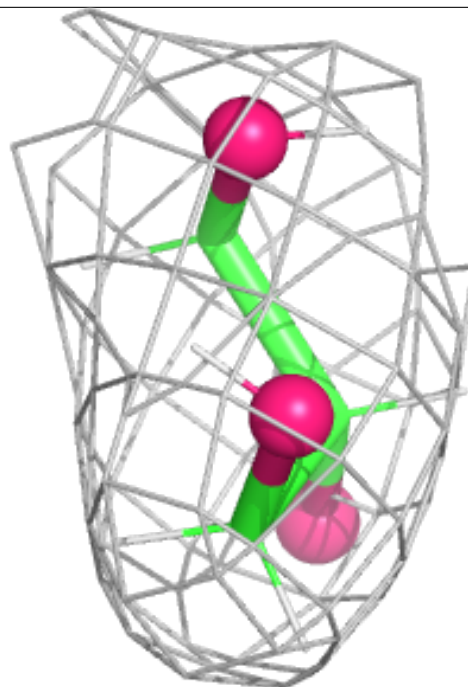
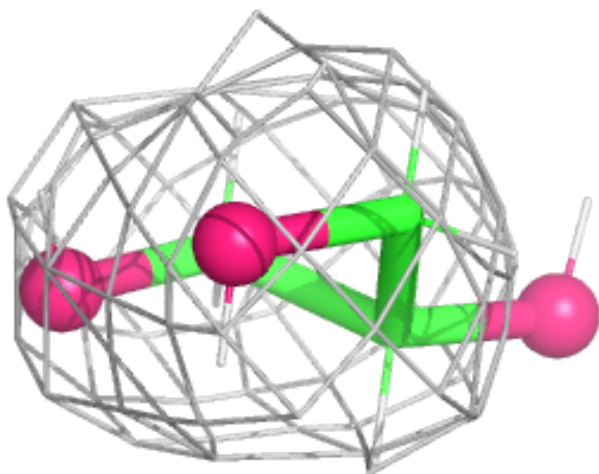
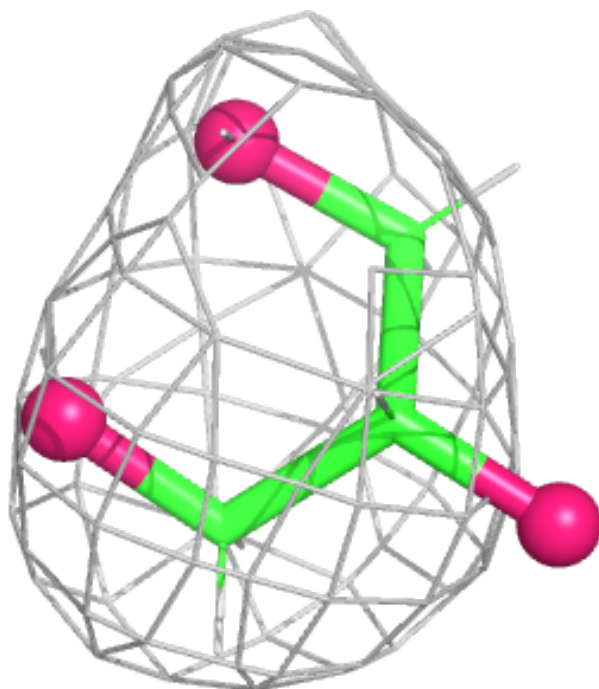
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

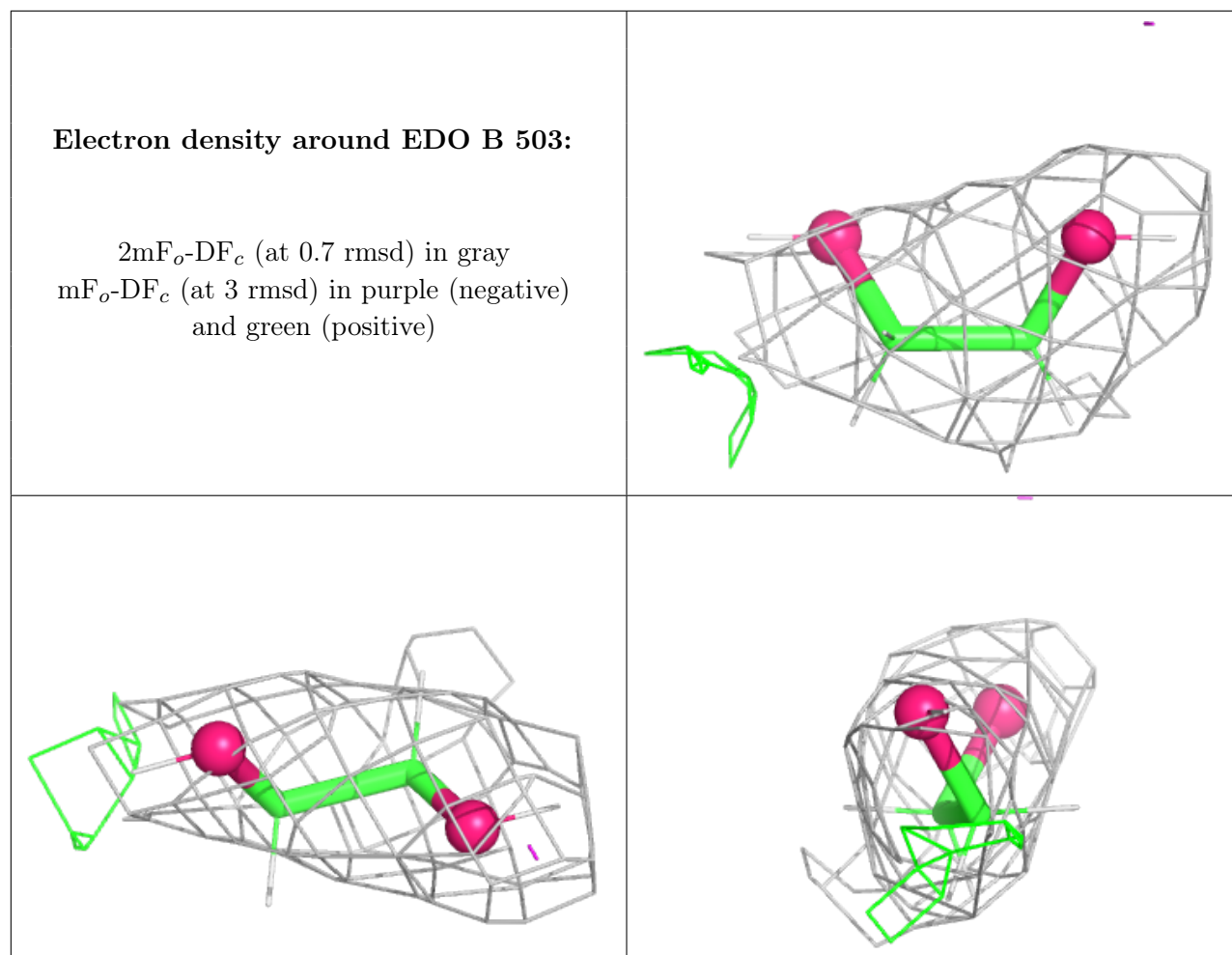


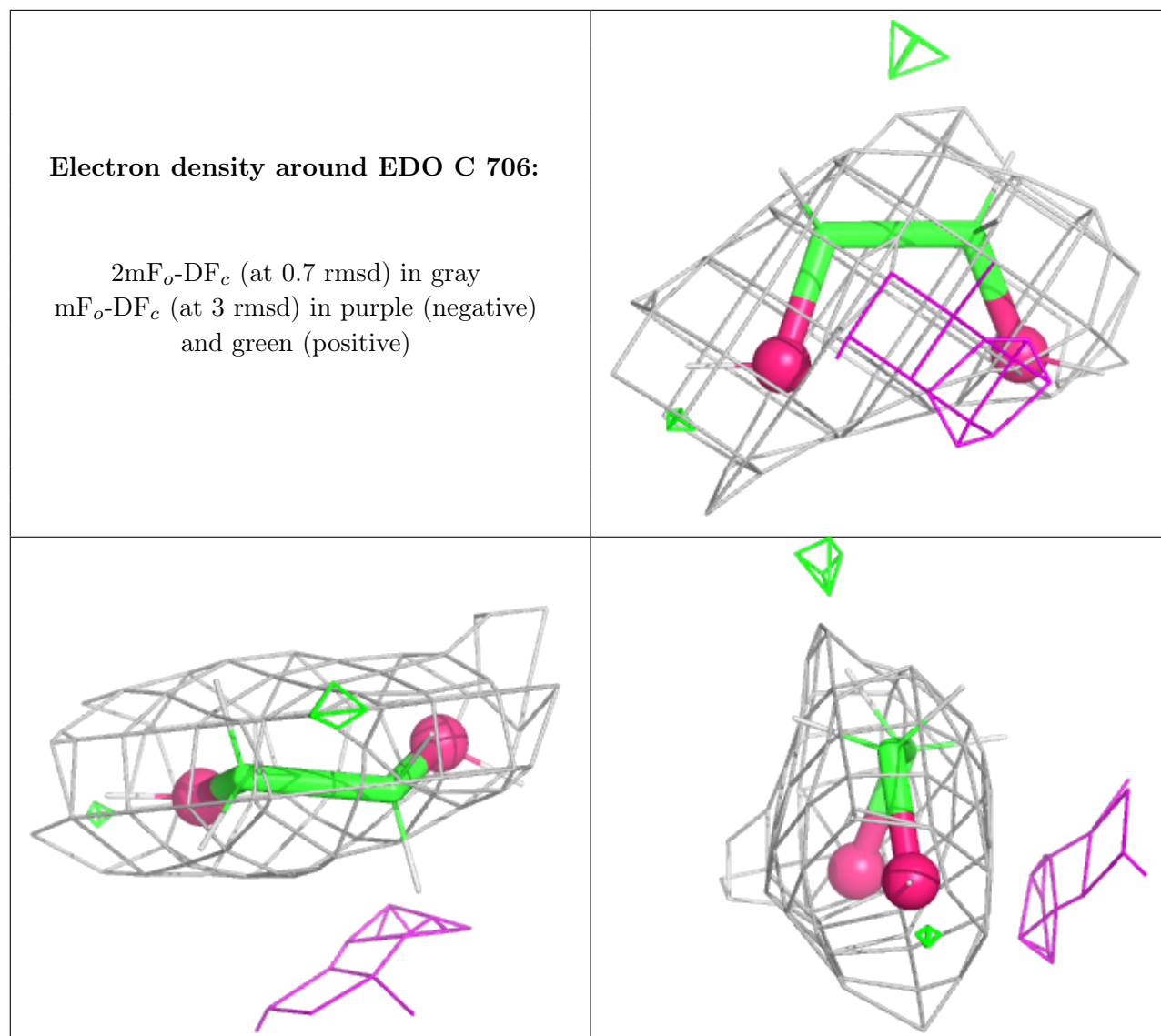


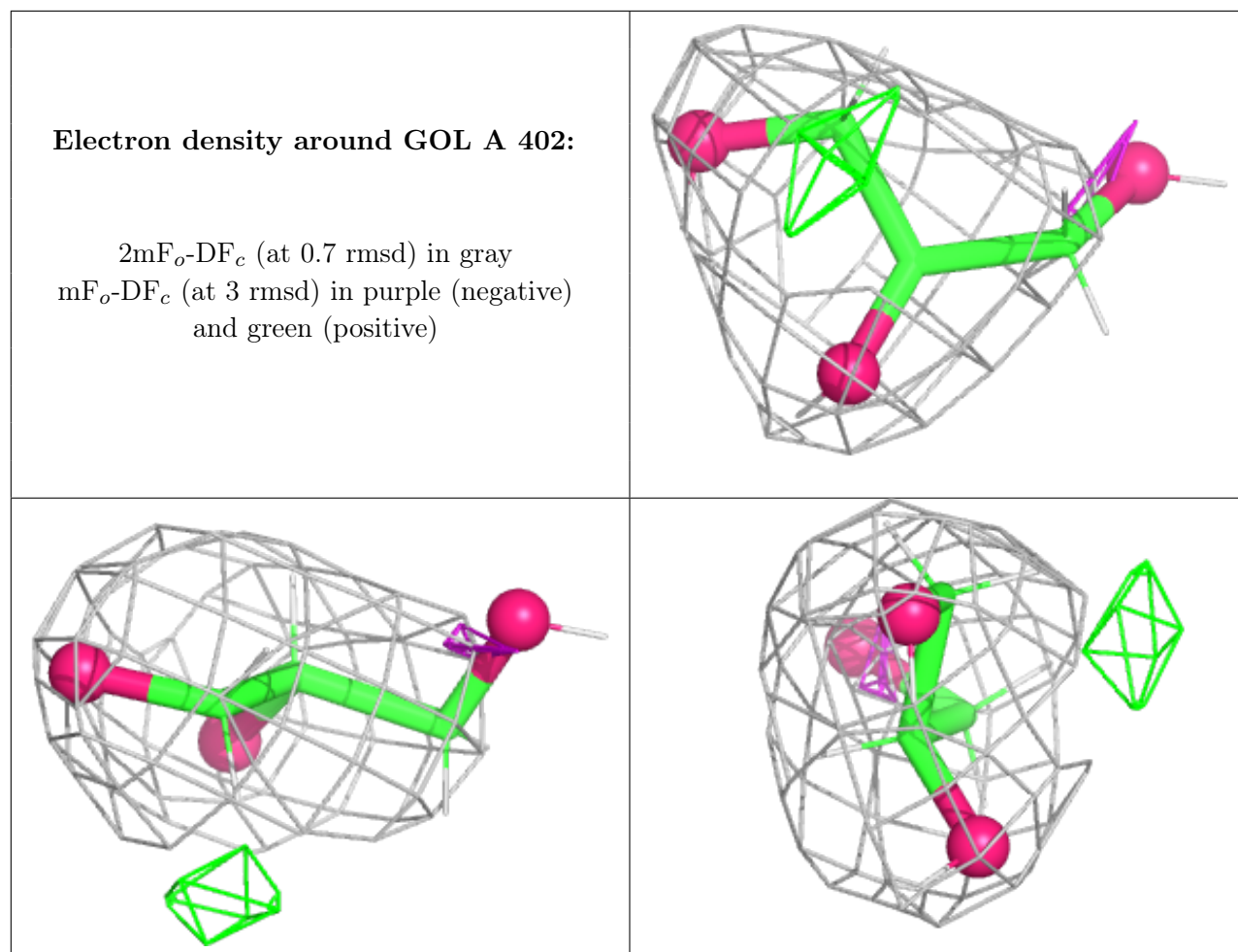
Electron density around GOL B 502:

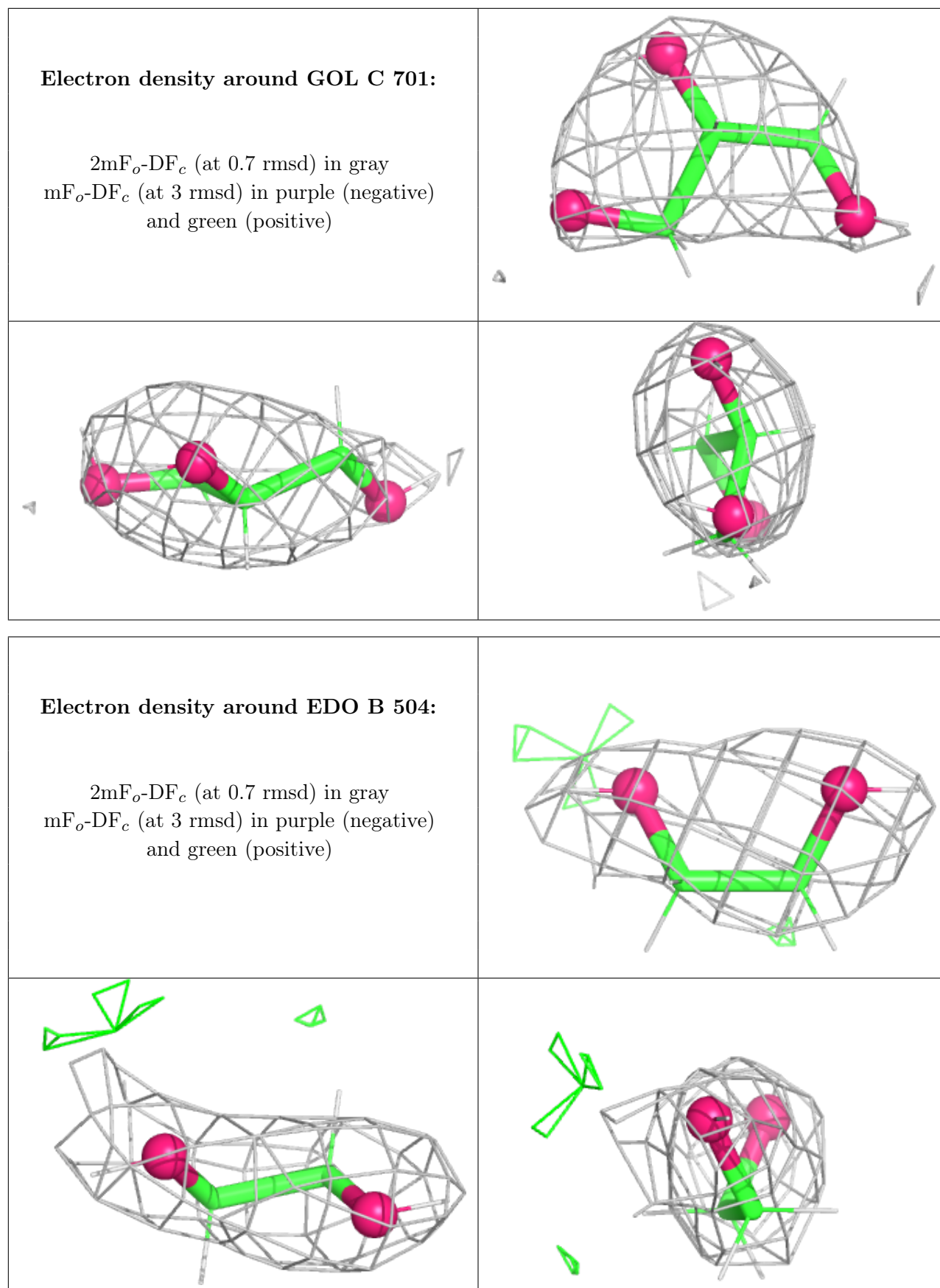
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

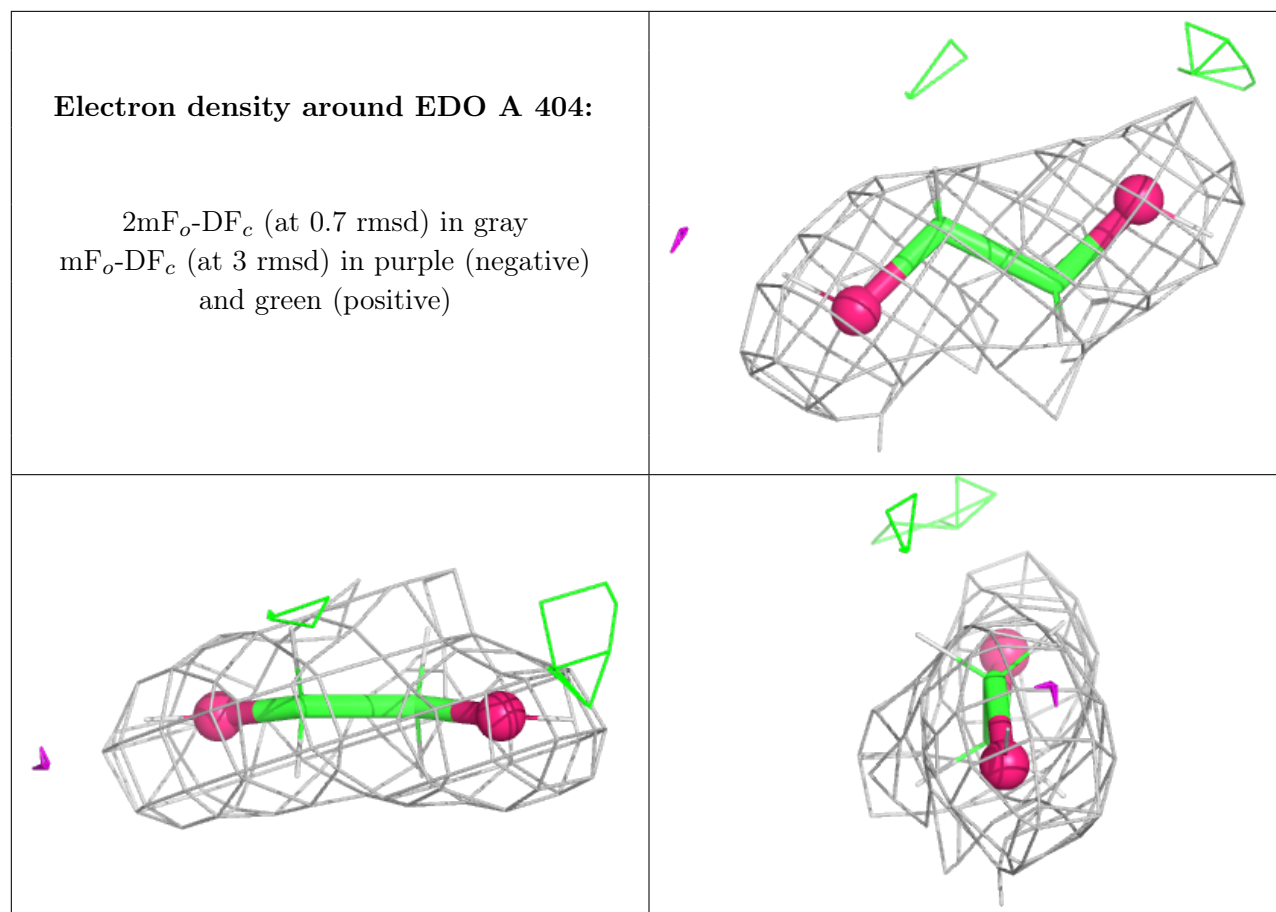


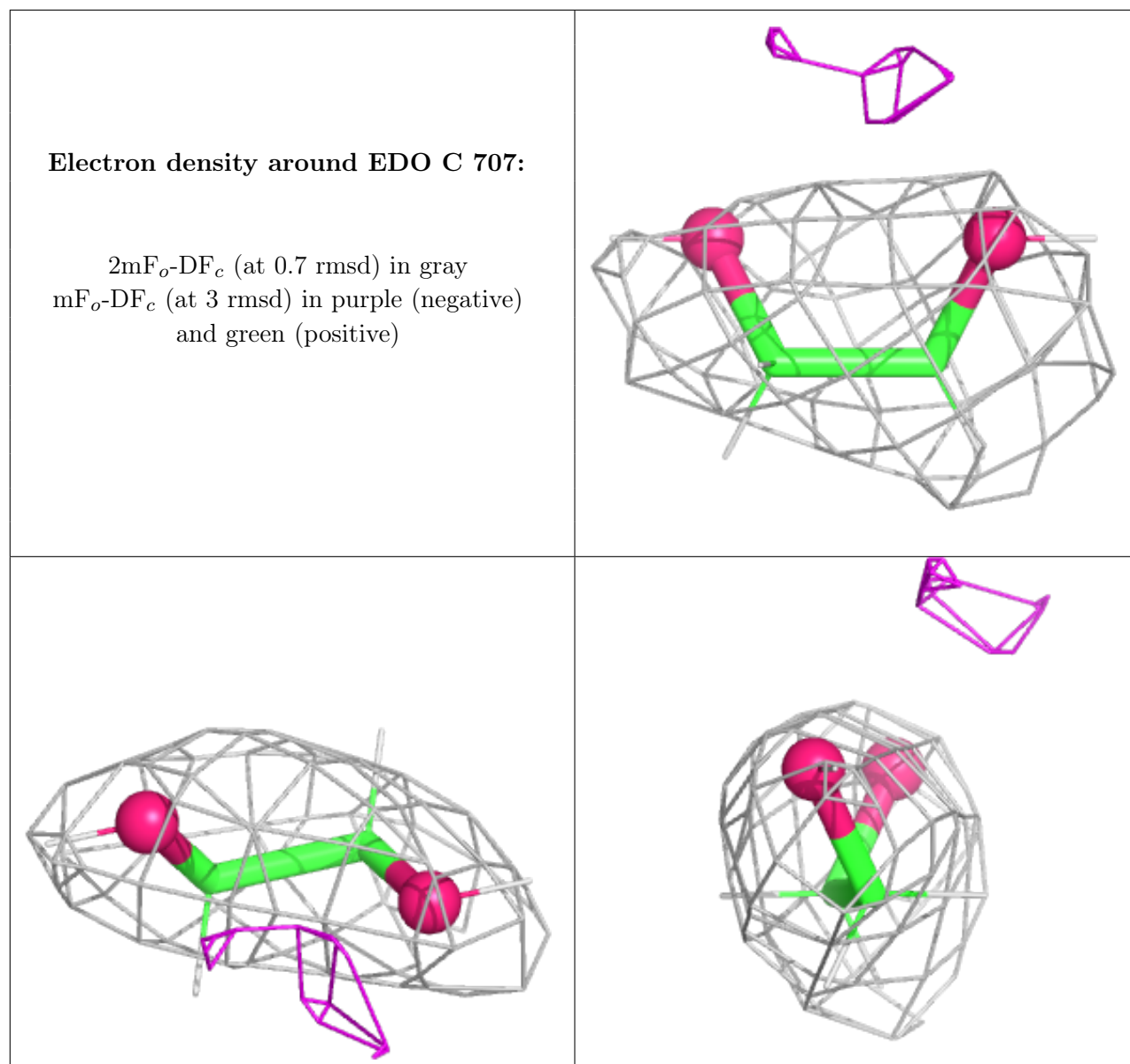






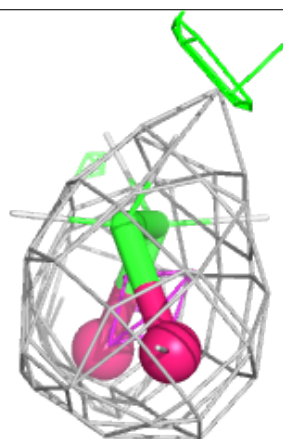
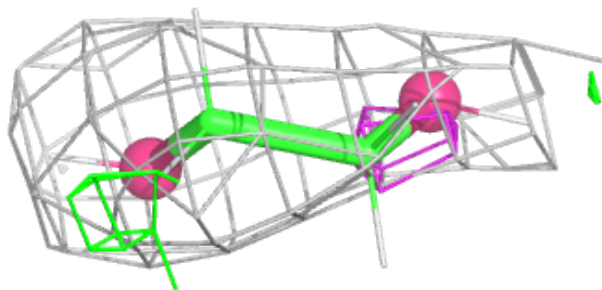
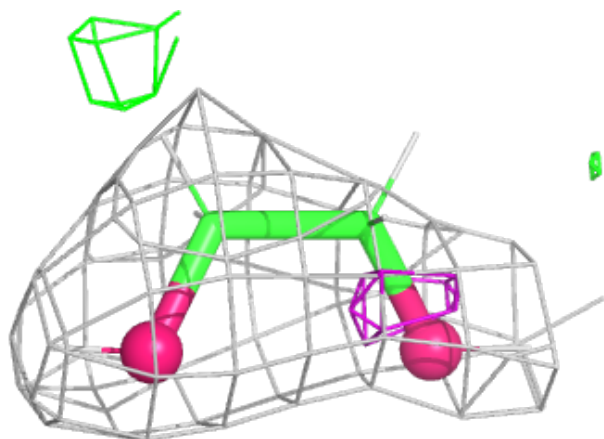


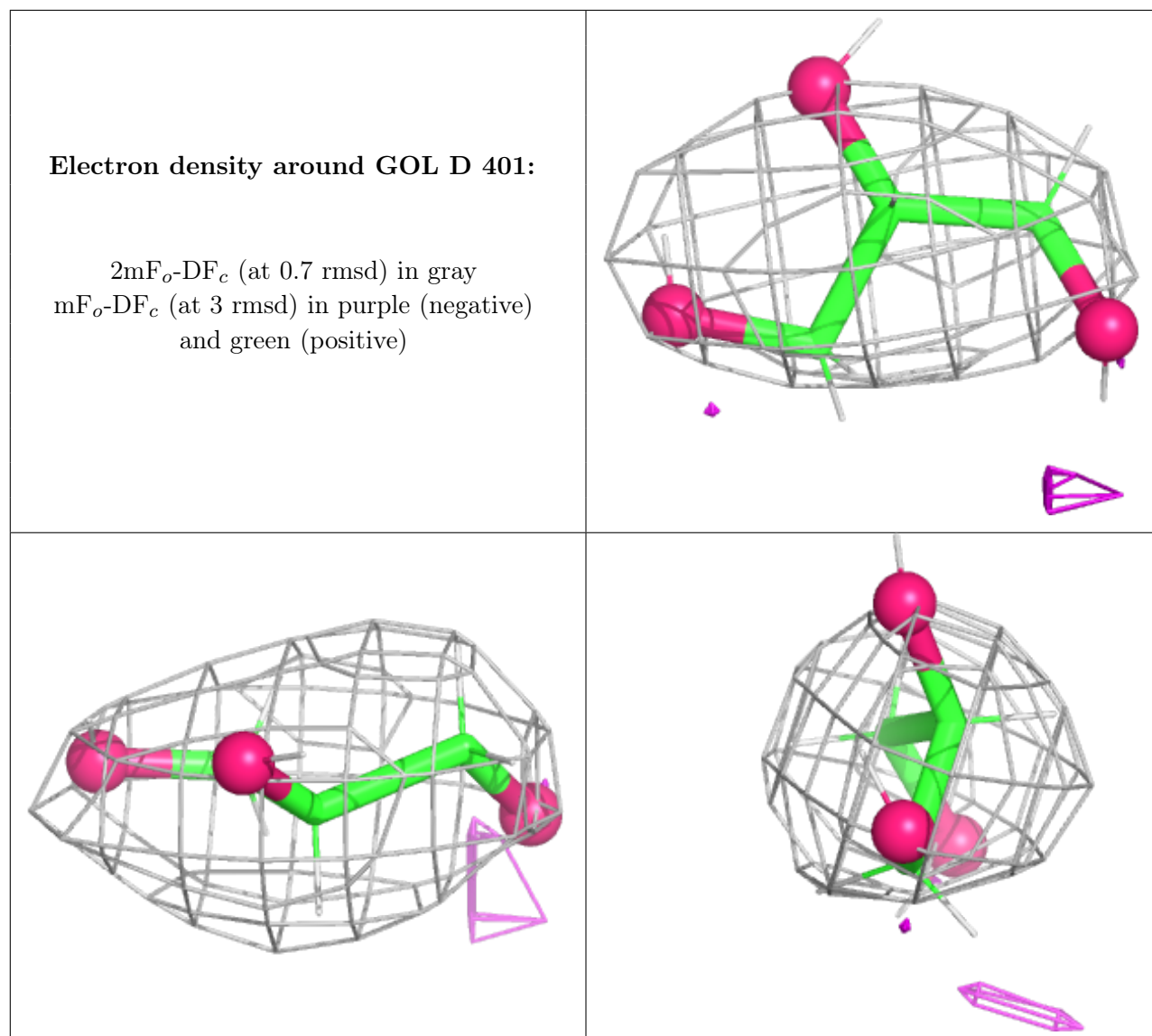




Electron density around EDO A 408:

$2mF_o-DF_c$ (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.