wwPDB X-ray Structure Validation Summary Report (i)

Jan 7, 2024 – 06:39 pm GMT

PDB ID	:	5MZP
Title	:	Crystal structure of stabilized A2A adenosine receptor A2AR-StaR2-bRIL in complex with caffeine at 2.1A resolution
Authors	:	Cheng, K.Y.R.; Segala, E.; Robertson, N.; Deflorian, F.; Dore, A.S.; Errey, J.C.; Fiez-Vandal, C.; Marshall, F.H.; Cooke, R.M.
Deposited on	:	2017-02-01
Resolution	:	2.10 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*
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:

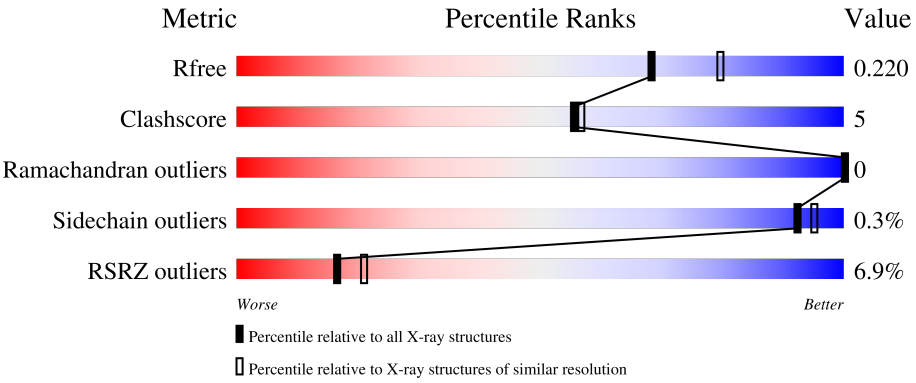
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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	433	6% 83% 7% 10%

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 3780 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 Adenosine receptor A2a,Soluble cytochrome b562,Adenosine receptor A2a.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	389	3054	1991	513	526	24	0	5	0

There are 33 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-8	ASP	-	expression tag	UNP P29274
A	-7	TYR	-	expression tag	UNP P29274
A	-6	LYS	-	expression tag	UNP P29274
A	-5	ASP	-	expression tag	UNP P29274
A	-4	ASP	-	expression tag	UNP P29274
A	-3	ASP	-	expression tag	UNP P29274
A	-2	ASP	-	expression tag	UNP P29274
A	-1	GLY	-	expression tag	UNP P29274
A	0	ALA	-	expression tag	UNP P29274
A	1	PRO	-	expression tag	UNP P29274
A	54	LEU	ALA	engineered mutation	UNP P29274
A	88	ALA	THR	engineered mutation	UNP P29274
A	107	ALA	ARG	engineered mutation	UNP P29274
A	122	ALA	LYS	engineered mutation	UNP P29274
A	154	ALA	ASN	engineered mutation	UNP P29274
A	202	ALA	LEU	engineered mutation	UNP P29274
A	1007	TRP	MET	engineered mutation	UNP P0ABE7
A	1102	ILE	HIS	conflict	UNP P0ABE7
A	1106	LEU	ARG	conflict	UNP P0ABE7
A	235	ALA	LEU	engineered mutation	UNP P29274
A	239	ALA	VAL	engineered mutation	UNP P29274
A	277	ALA	SER	engineered mutation	UNP P29274
A	318	ALA	-	expression tag	UNP P29274
A	319	HIS	-	expression tag	UNP P29274
A	320	HIS	-	expression tag	UNP P29274
A	321	HIS	-	expression tag	UNP P29274

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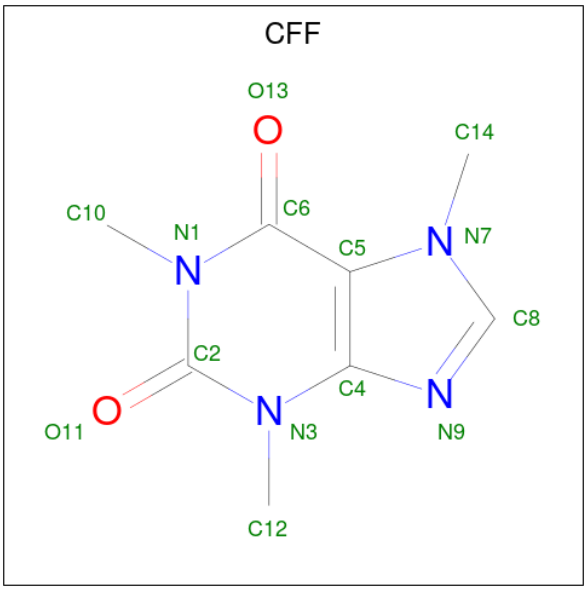
Chain	Residue	Modelled	Actual	Comment	Reference
A	322	HIS	-	expression tag	UNP P29274
A	323	HIS	-	expression tag	UNP P29274
A	324	HIS	-	expression tag	UNP P29274
A	325	HIS	-	expression tag	UNP P29274
A	326	HIS	-	expression tag	UNP P29274
A	327	HIS	-	expression tag	UNP P29274
A	328	HIS	-	expression tag	UNP P29274

- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

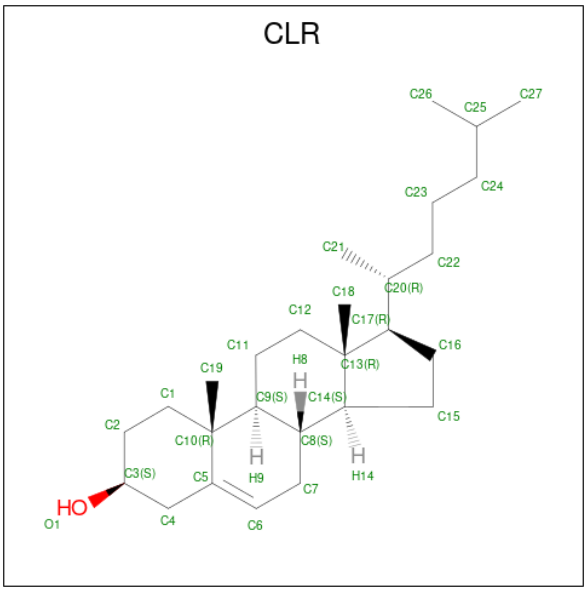
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Na 1 1	0	0

- Molecule 3 is CAFFEINE (three-letter code: CFF) (formula: $C_8H_{10}N_4O_2$).



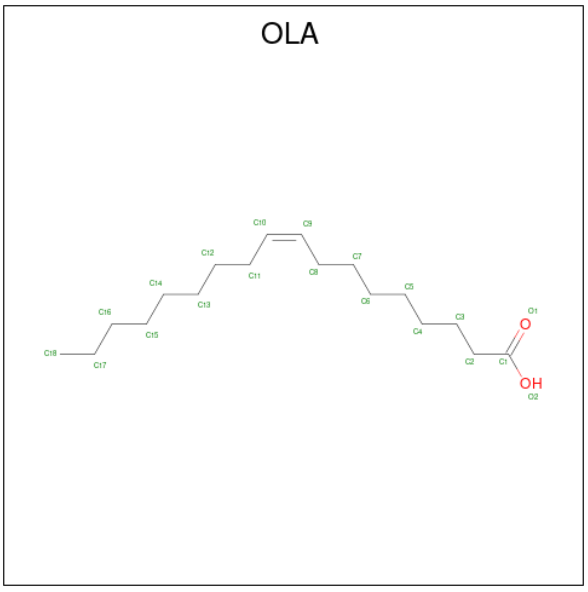
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O 28 16 8 4	0	1

- Molecule 4 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).



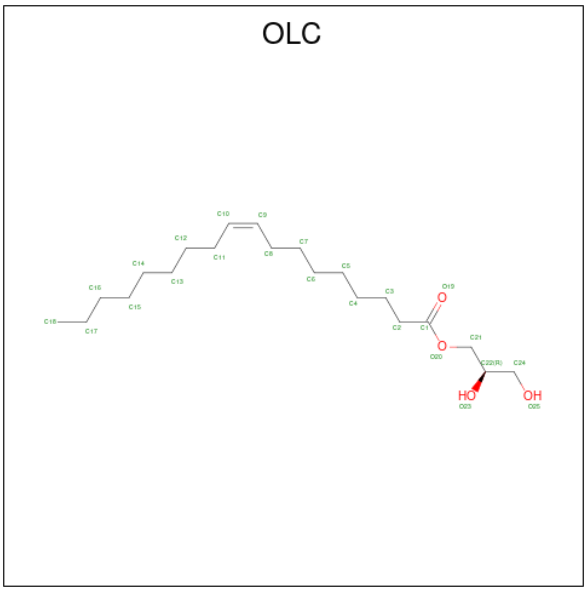
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 28 27 1	0	0
4	A	1	Total C O 28 27 1	0	0
4	A	1	Total C O 28 27 1	0	0
4	A	1	Total C O 28 27 1	0	0

- Molecule 5 is OLEIC ACID (three-letter code: OLA) (formula: $C_{18}H_{34}O_2$).



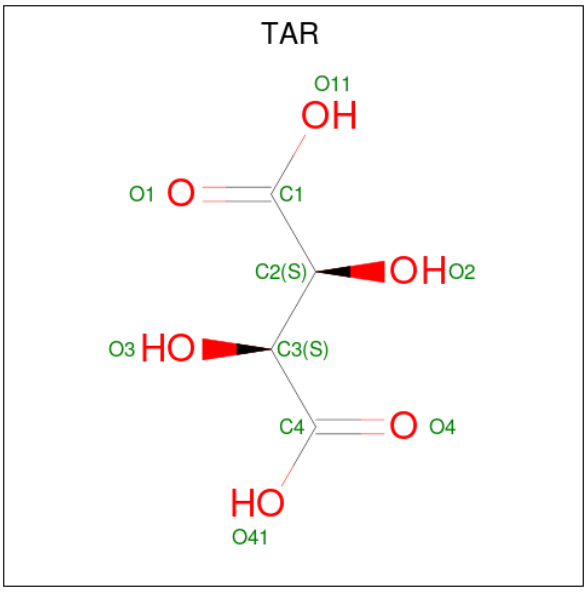
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 9 7 2	0	0
5	A	1	Total C O 18 16 2	0	0
5	A	1	Total C O 20 18 2	0	0
5	A	1	Total C O 20 18 2	0	0
5	A	1	Total C O 12 10 2	0	0
5	A	1	Total C O 8 6 2	0	0
5	A	1	Total C O 15 13 2	0	0
5	A	1	Total C O 11 9 2	0	0
5	A	1	Total C O 19 17 2	0	0
5	A	1	Total C O 14 12 2	0	0
5	A	1	Total C 10 10	0	0
5	A	1	Total C 13 13	0	0
5	A	1	Total C 12 12	0	0
5	A	1	Total C 13 13	0	0
5	A	1	Total C O 13 11 2	0	0
5	A	1	Total C O 15 13 2	0	0
5	A	1	Total C O 16 14 2	0	0
5	A	1	Total C 16 16	0	0

- Molecule 6 is (2R)-2,3-dihydroxypropyl (9Z)-octadec-9-enoate (three-letter code: OLC) (formula: $C_{21}H_{40}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 16 12 4	0	0
6	A	1	Total C O 16 12 4	0	0
6	A	1	Total C O 23 19 4	0	0
6	A	1	Total C O 23 19 4	0	0
6	A	1	Total C O 23 19 4	0	0
6	A	1	Total C O 18 14 4	0	0
6	A	1	Total C O 25 21 4	0	0

- Molecule 7 is D(-)-TARTARIC ACID (three-letter code: TAR) (formula: $C_4H_6O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 10 4 6	0	0

- Molecule 8 is water.

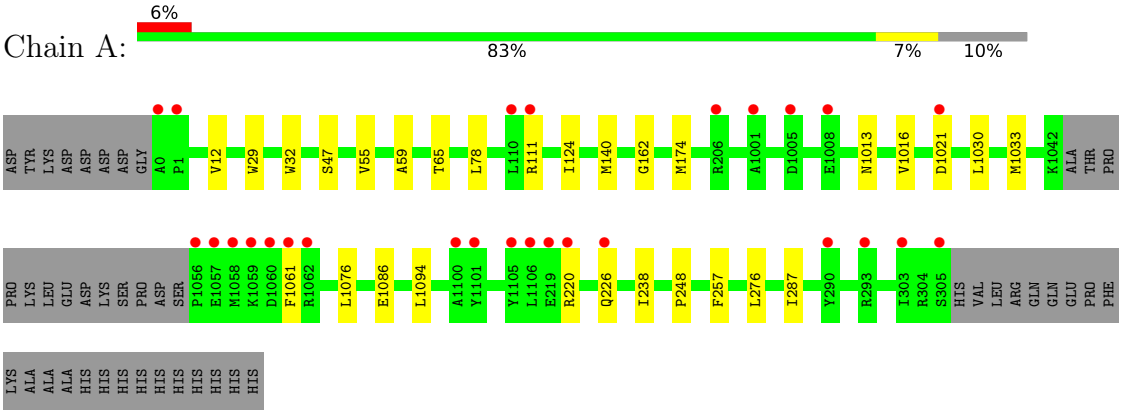
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	177	Total O 177 177	0	0

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: Adenosine receptor A2a,Soluble cytochrome b562,Adenosine receptor A2a

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	39.44Å 179.87Å 139.64Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.53 – 2.10 38.53 – 2.10	Depositor EDS
% Data completeness (in resolution range)	98.5 (38.53-2.10) 98.5 (38.53-2.10)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.62 (at 2.10Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, R_{free}	0.196 , 0.220 0.196 , 0.220	Depositor DCC
R_{free} test set	1479 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	31.6	Xtriage
Anisotropy	0.178	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 70.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	3780	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.10% 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, TAR, CFF, OLC, CLR, OLA

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	0.56	0/3119	0.45	0/4239

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	3054	0	3115	20	0
2	A	1	0	0	0	0
3	A	28	0	20	2	0
4	A	112	0	184	3	0
5	A	254	0	367	17	0
6	A	144	0	204	5	0
7	A	10	0	4	0	0
8	A	177	0	0	5	0
All	All	3780	0	3894	38	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 5.

The worst 5 of 38 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:162:GLY:O	8:A:2501:HOH:O	2.15	0.63
1:A:226:GLN:HA	1:A:226:GLN:OE1	1.99	0.62
3:A:2401[B]:CFF:H81	8:A:2559:HOH:O	2.01	0.61
1:A:65:THR:HG23	6:A:2430:OLC:H4	1.83	0.61
5:A:2416:OLA:H61	5:A:2417:OLA:H82	1.82	0.61

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	386/433 (89%)	383 (99%)	3 (1%)	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	319/353 (90%)	318 (100%)	1 (0%)	92 95

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

Mol	Chain	Res	Type
1	A	1086	GLU

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

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 33 ligands modelled in this entry, 1 is monoatomic - leaving 32 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
6	OLC	A	2429	-	17,17,24	0.75	0	18,18,25	0.78	0
6	OLC	A	2424	-	15,15,24	0.77	0	16,16,25	0.83	0
5	OLA	A	2417	-	12,12,19	0.46	0	11,11,19	0.26	0
5	OLA	A	2419	-	12,12,19	0.46	0	11,11,19	0.26	0
3	CFF	A	2401[B]	-	8,15,15	2.73	4 (50%)	8,23,23	0.82	0
6	OLC	A	2427	-	22,22,24	0.73	0	23,23,25	0.79	0
6	OLC	A	2428	-	22,22,24	0.69	0	23,23,25	0.73	0
5	OLA	A	2414	-	18,18,19	0.67	0	18,18,19	0.78	1 (5%)
5	OLA	A	2421	-	14,14,19	0.53	0	14,14,19	1.00	2 (14%)
6	OLC	A	2426	-	22,22,24	0.67	0	23,23,25	0.70	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	CLR	A	2404	-	31,31,31	0.71	0	48,48,48	0.86	0
5	OLA	A	2416	-	9,9,19	0.44	0	7,8,19	0.31	0
4	CLR	A	2402	-	31,31,31	0.70	0	48,48,48	1.00	1 (2%)
5	OLA	A	2407	-	17,17,19	0.53	0	17,17,19	0.90	2 (11%)
4	CLR	A	2405	-	31,31,31	0.71	0	48,48,48	0.92	1 (2%)
5	OLA	A	2413	-	10,10,19	0.53	0	10,10,19	1.16	2 (20%)
5	OLA	A	2409	-	19,19,19	0.66	0	19,19,19	0.77	1 (5%)
6	OLC	A	2430	-	24,24,24	0.65	0	25,25,25	0.68	0
5	OLA	A	2408	-	19,19,19	0.67	0	19,19,19	0.76	1 (5%)
5	OLA	A	2420	-	12,12,19	0.57	0	12,12,19	1.10	2 (16%)
5	OLA	A	2422	-	15,15,19	0.70	0	15,15,19	0.85	1 (6%)
3	CFF	A	2401[A]	-	8,15,15	2.73	4 (50%)	8,23,23	0.94	0
7	TAR	A	2431	-	9,9,9	0.97	0	12,12,12	1.60	2 (16%)
5	OLA	A	2410	-	11,11,19	0.62	0	11,11,19	1.13	2 (18%)
5	OLA	A	2415	-	13,13,19	0.58	0	12,13,19	1.06	2 (16%)
6	OLC	A	2425	-	15,15,24	0.80	0	16,16,25	0.80	0
4	CLR	A	2403	-	31,31,31	1.03	0	48,48,48	1.07	4 (8%)
5	OLA	A	2406	-	8,8,19	0.84	0	8,8,19	1.11	1 (12%)
5	OLA	A	2423	-	15,15,19	0.41	0	14,14,19	0.27	0
5	OLA	A	2418	-	11,11,19	0.40	0	9,10,19	0.31	0
5	OLA	A	2411	-	7,7,19	0.91	0	7,7,19	1.21	1 (14%)
5	OLA	A	2412	-	14,14,19	0.71	0	14,14,19	0.89	1 (7%)

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
6	OLC	A	2429	-	-	7/17/17/24	-
6	OLC	A	2424	-	-	8/15/15/24	-
5	OLA	A	2417	-	-	5/10/10/17	-
5	OLA	A	2419	-	-	6/10/10/17	-
3	CFF	A	2401[B]	-	-	-	0/2/2/2
6	OLC	A	2427	-	-	11/22/22/24	-
6	OLC	A	2428	-	-	8/22/22/24	-
5	OLA	A	2414	-	-	5/16/16/17	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	OLA	A	2421	-	-	8/12/12/17	-
6	OLC	A	2426	-	-	13/22/22/24	-
4	CLR	A	2404	-	-	1/10/68/68	0/4/4/4
5	OLA	A	2416	-	-	3/7/7/17	-
4	CLR	A	2402	-	-	9/10/68/68	0/4/4/4
5	OLA	A	2407	-	-	6/15/15/17	-
4	CLR	A	2405	-	-	3/10/68/68	0/4/4/4
5	OLA	A	2413	-	-	5/8/8/17	-
5	OLA	A	2409	-	-	9/17/17/17	-
6	OLC	A	2430	-	-	12/24/24/24	-
5	OLA	A	2408	-	-	9/17/17/17	-
5	OLA	A	2420	-	-	3/10/10/17	-
5	OLA	A	2422	-	-	6/13/13/17	-
3	CFF	A	2401[A]	-	-	-	0/2/2/2
7	TAR	A	2431	-	-	8/12/12/12	-
5	OLA	A	2410	-	-	7/9/9/17	-
5	OLA	A	2415	-	-	6/11/11/17	-
6	OLC	A	2425	-	-	8/15/15/24	-
4	CLR	A	2403	-	-	0/10/68/68	0/4/4/4
5	OLA	A	2406	-	-	2/6/6/17	-
5	OLA	A	2423	-	-	9/13/13/17	-
5	OLA	A	2418	-	-	7/9/9/17	-
5	OLA	A	2411	-	-	2/5/5/17	-
5	OLA	A	2412	-	-	3/12/12/17	-

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	2401[A]	CFF	C5-C6	6.40	1.51	1.41
3	A	2401[B]	CFF	C5-C6	6.38	1.51	1.41
3	A	2401[B]	CFF	C5-C4	-2.28	1.36	1.39
3	A	2401[A]	CFF	C5-C4	-2.21	1.36	1.39
3	A	2401[B]	CFF	C10-N1	-2.14	1.42	1.47

The worst 5 of 27 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	2403	CLR	C4-C5-C10	3.29	120.79	116.42
4	A	2403	CLR	C4-C5-C6	-2.98	116.31	120.61
7	A	2431	TAR	O11-C1-C2	2.53	120.10	113.27
7	A	2431	TAR	O41-C4-C3	2.52	120.09	113.27
5	A	2420	OLA	O2-C1-C2	2.51	122.09	114.03

There are no chirality outliers.

5 of 189 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	2409	OLA	C6-C7-C8-C9
5	A	2415	OLA	C9-C10-C11-C12
5	A	2417	OLA	C6-C7-C8-C9
5	A	2419	OLA	C6-C7-C8-C9
6	A	2424	OLC	O20-C21-C22-C24

There are no ring outliers.

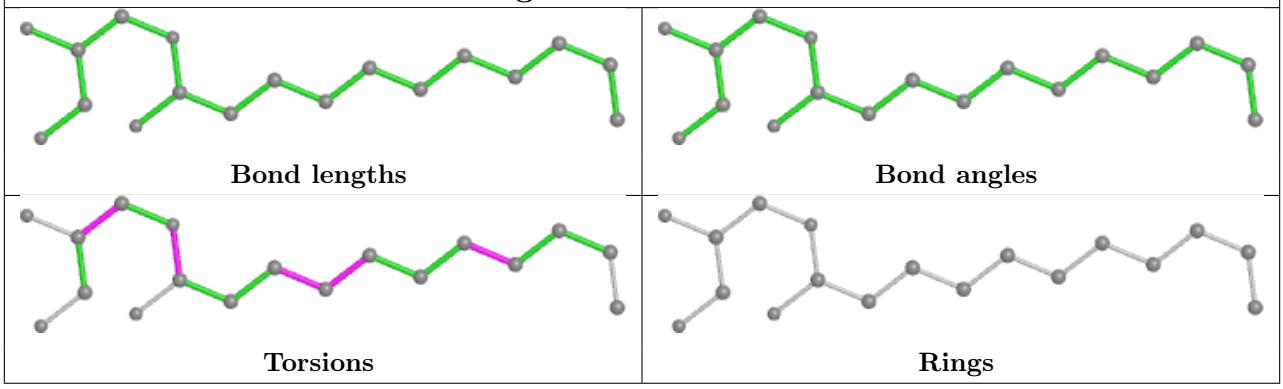
20 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2417	OLA	6	0
5	A	2419	OLA	1	0
3	A	2401[B]	CFF	1	0
6	A	2427	OLC	2	0
6	A	2428	OLC	2	0
5	A	2414	OLA	3	0
6	A	2426	OLC	1	0
5	A	2416	OLA	2	0
4	A	2402	CLR	1	0
5	A	2407	OLA	4	0
4	A	2405	CLR	1	0
5	A	2409	OLA	1	0
6	A	2430	OLC	1	0
5	A	2408	OLA	1	0
3	A	2401[A]	CFF	1	0
5	A	2415	OLA	1	0
4	A	2403	CLR	1	0
5	A	2406	OLA	1	0
5	A	2423	OLA	2	0
5	A	2418	OLA	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 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.

Ligand OLC A 2429



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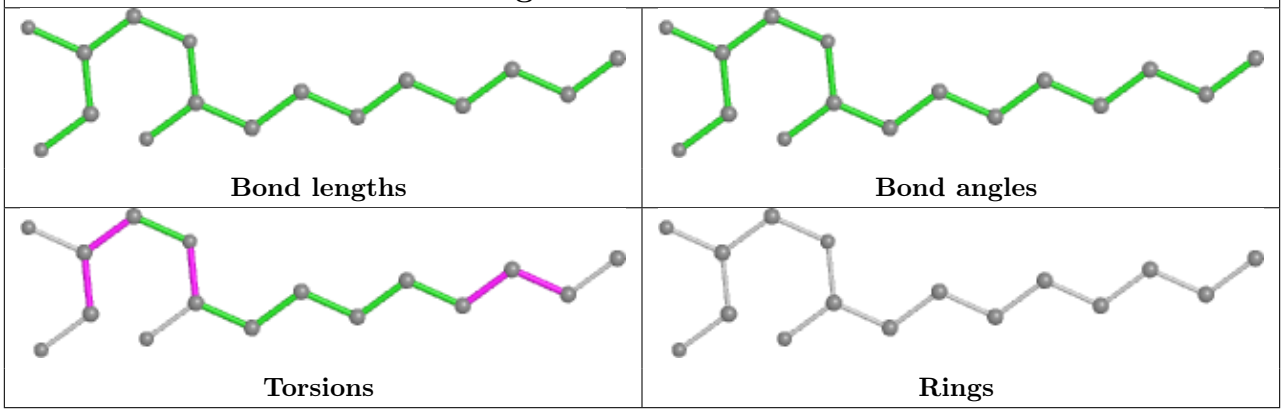

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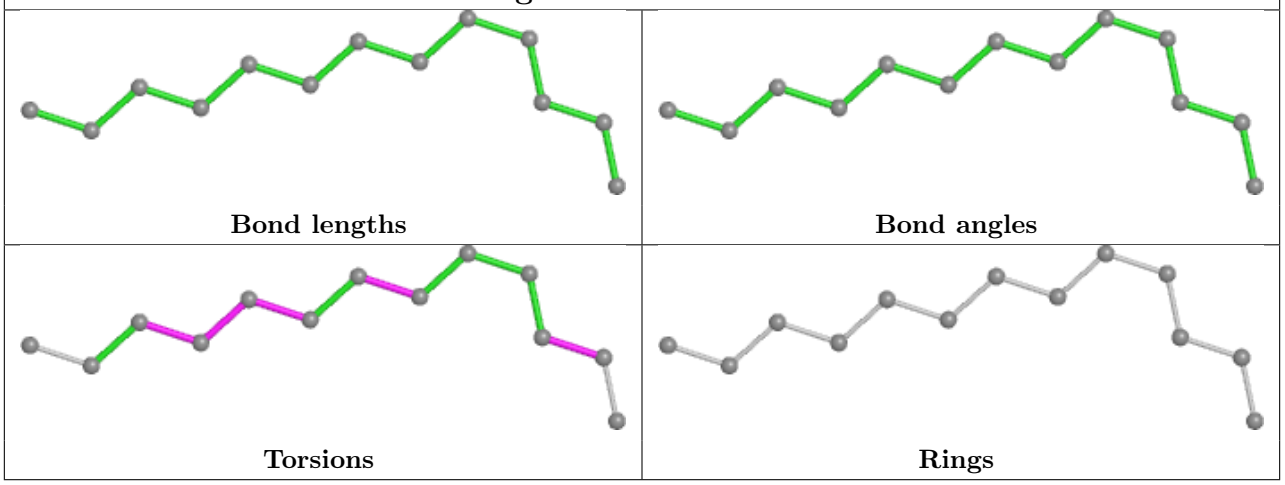

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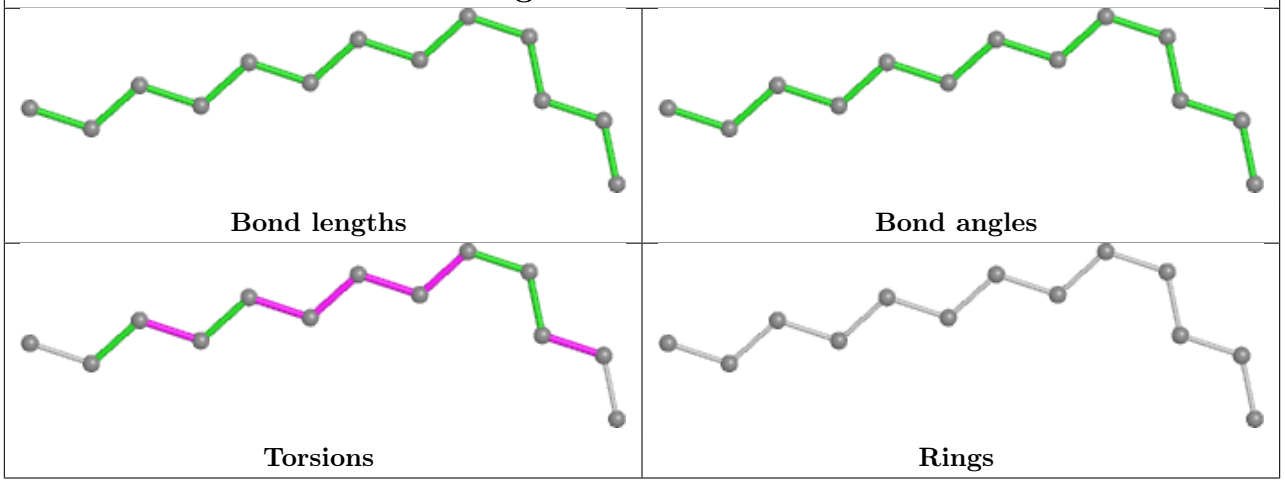

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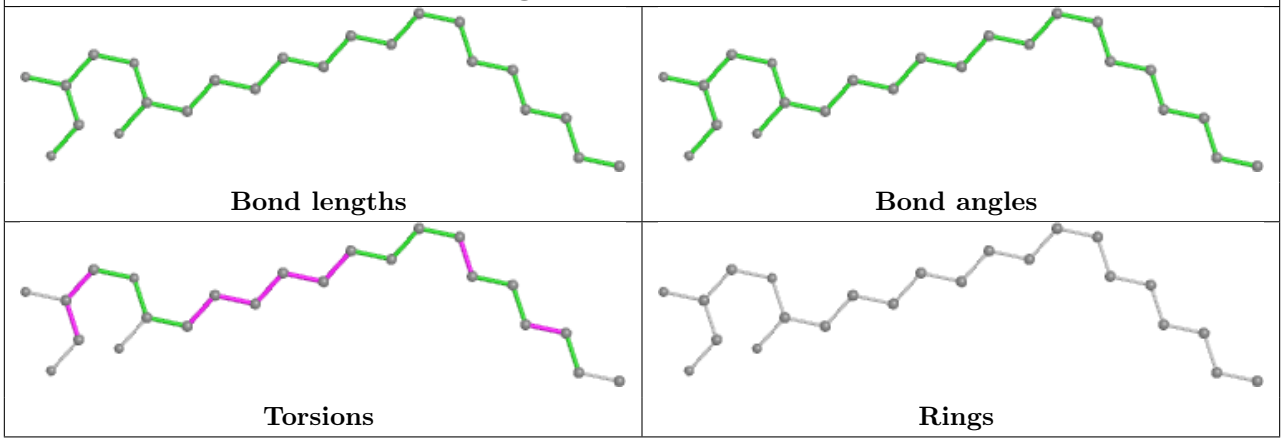

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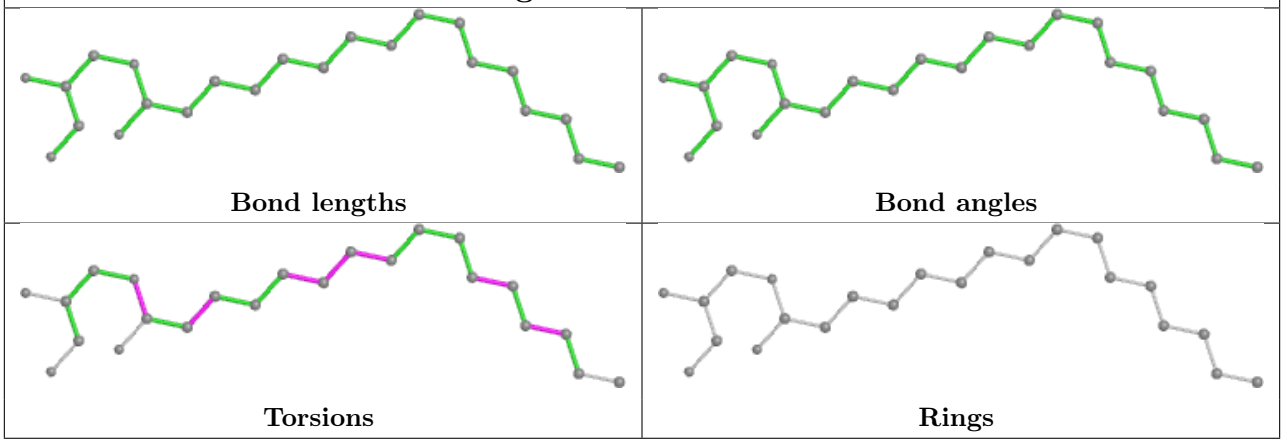

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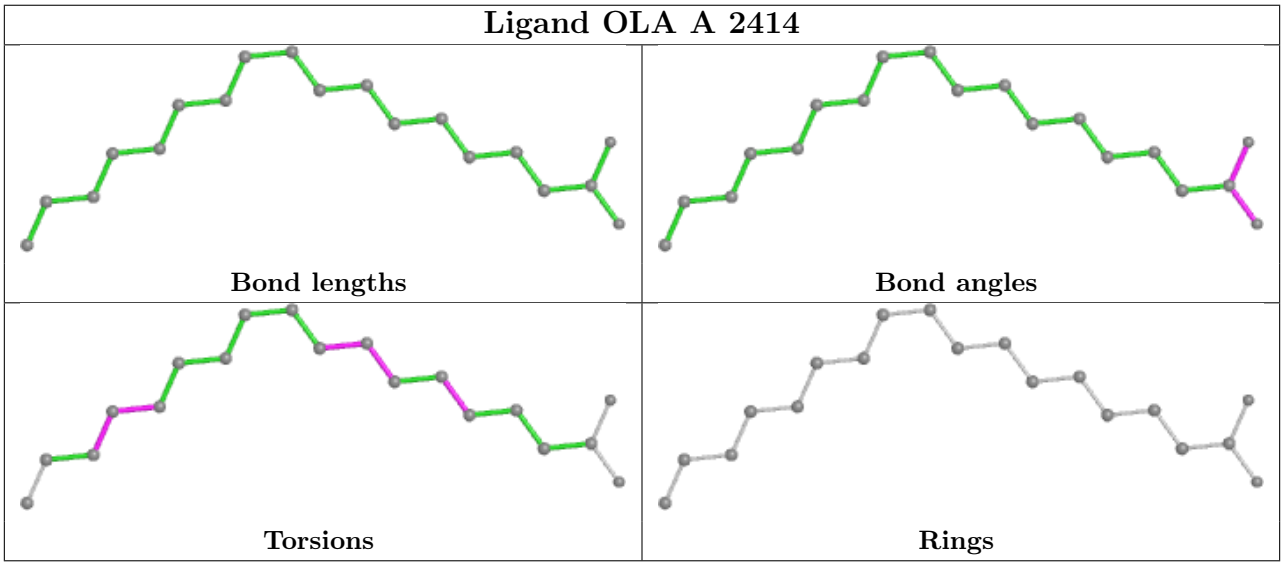

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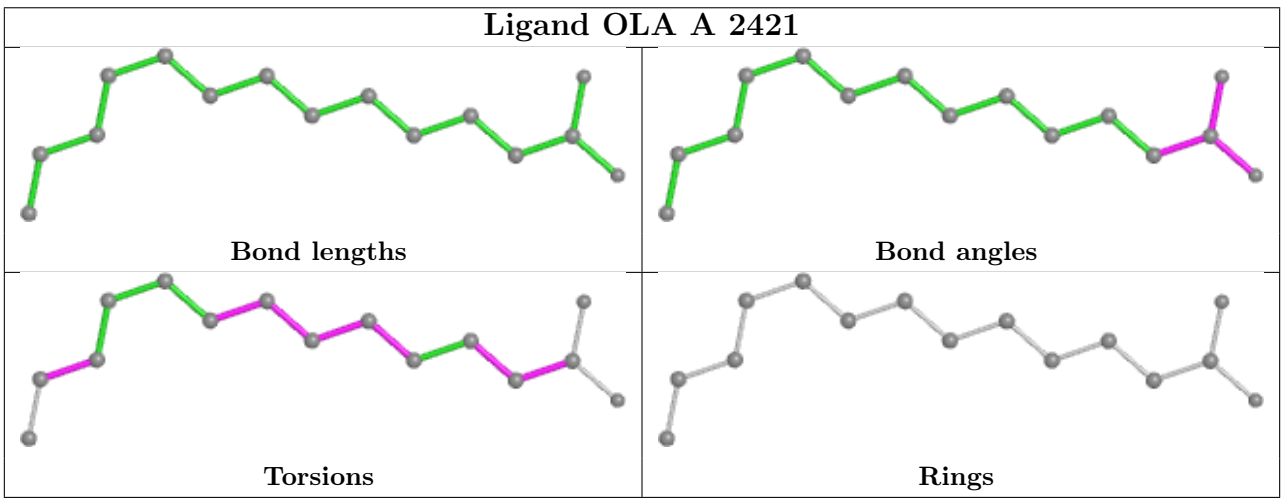

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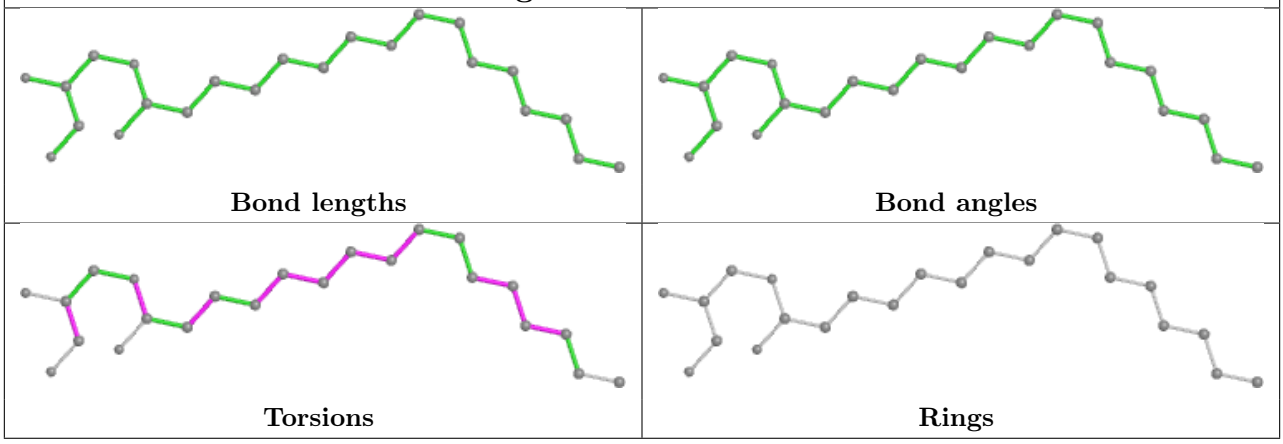
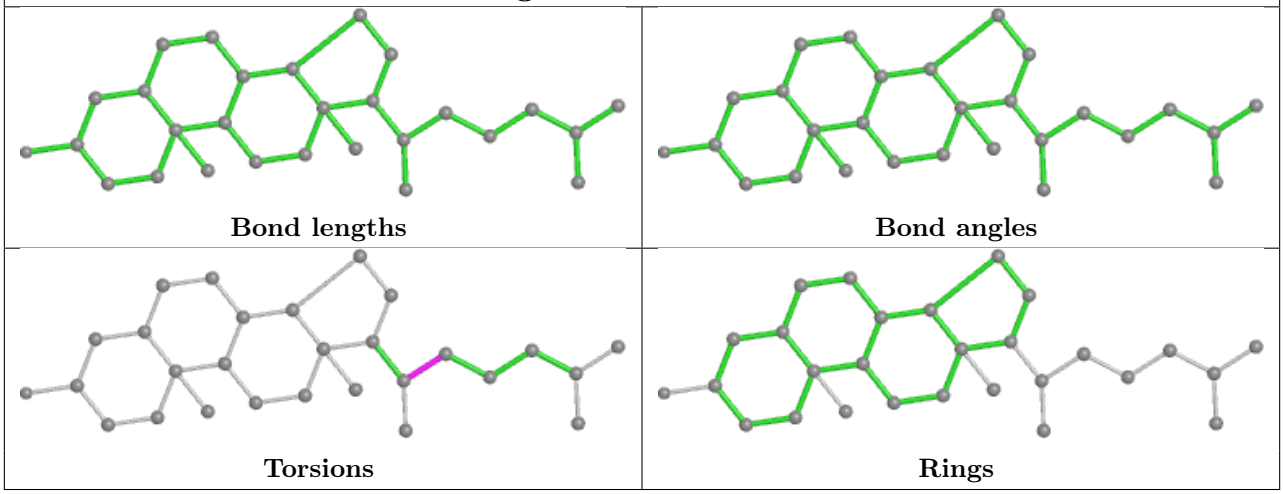


Ligand CLR A 2404



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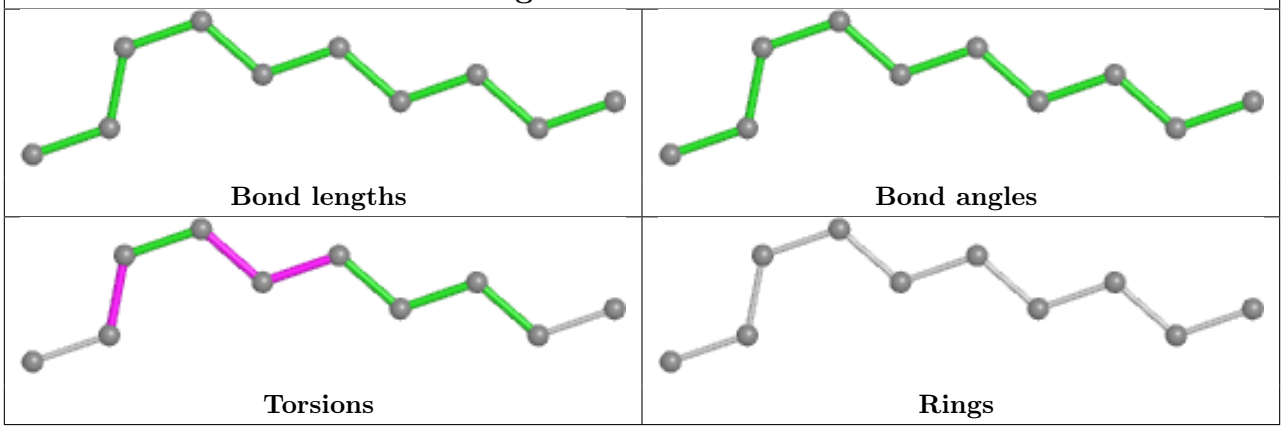
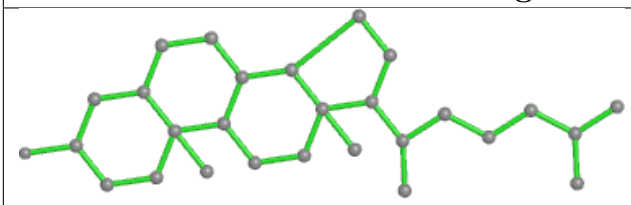
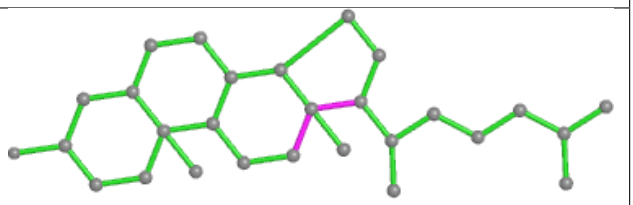


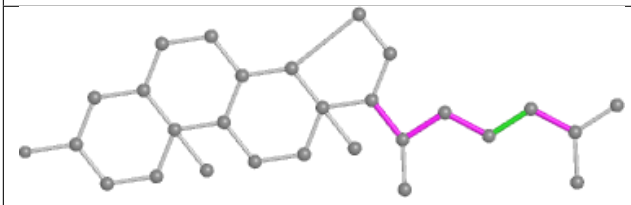
Ligand CLR A 2402



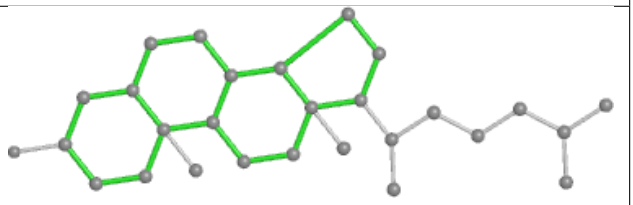
Bond lengths



Bond angles

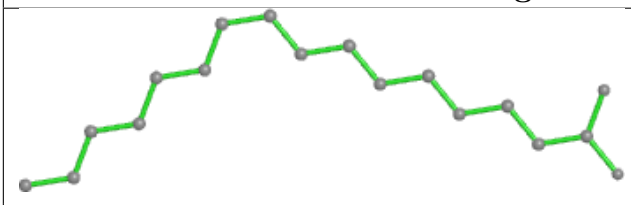


Torsions



Rings

Ligand OLA A 2407



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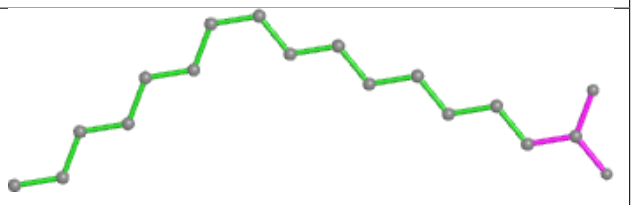

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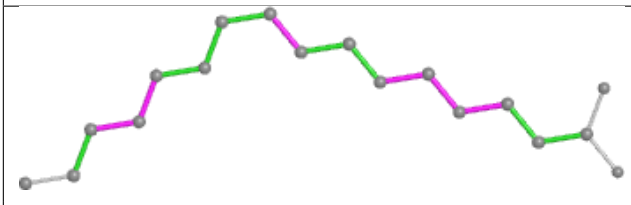

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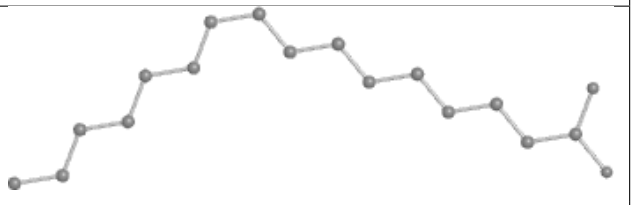
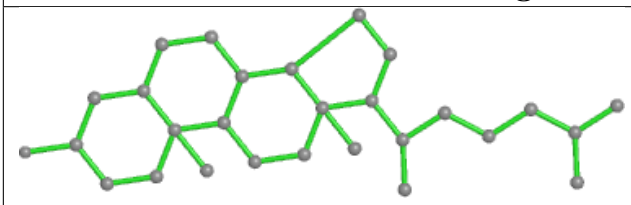
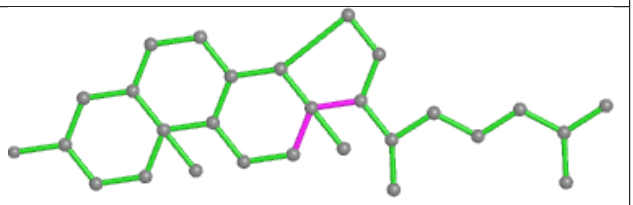


Rings

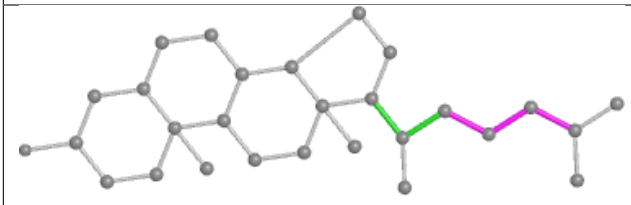
Ligand CLR A 2405



Bond lengths



Bond angles



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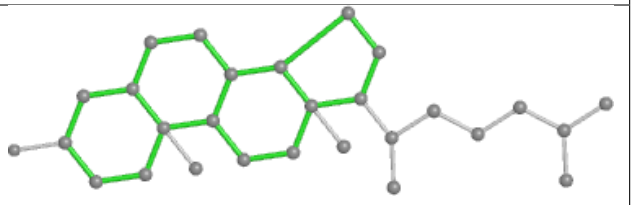
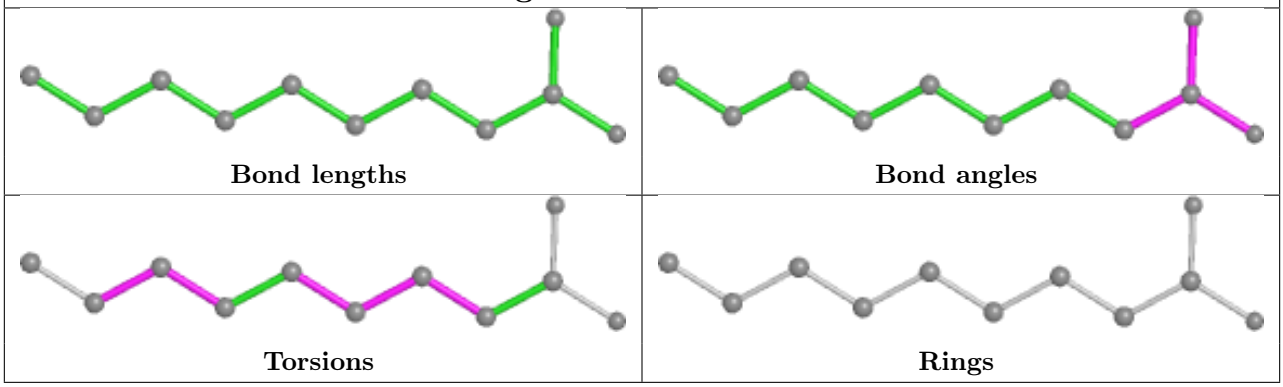
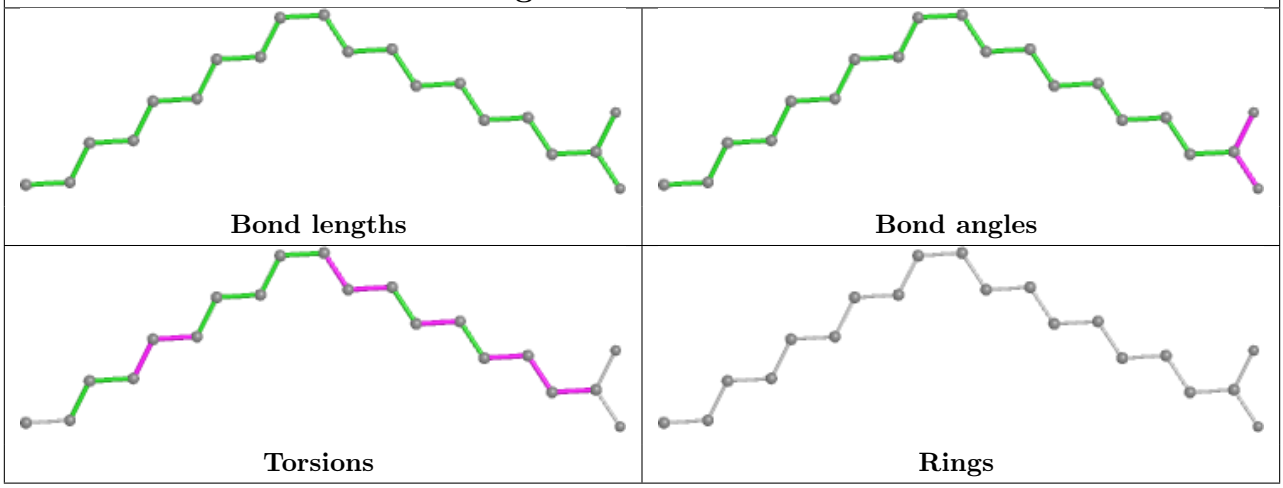


Rings

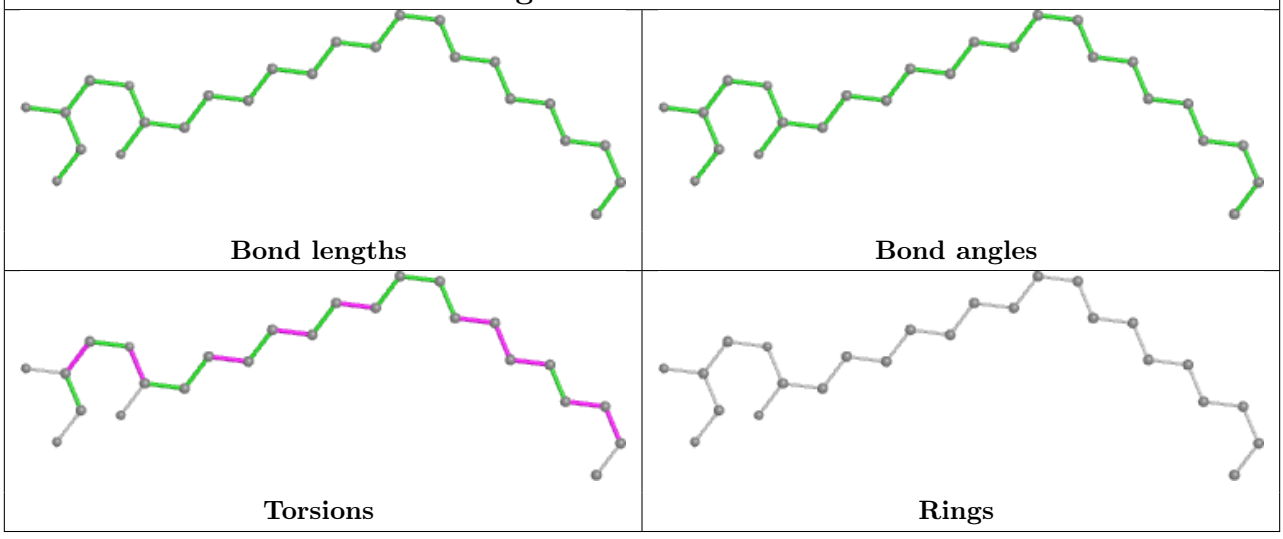
Ligand OLA A 2413



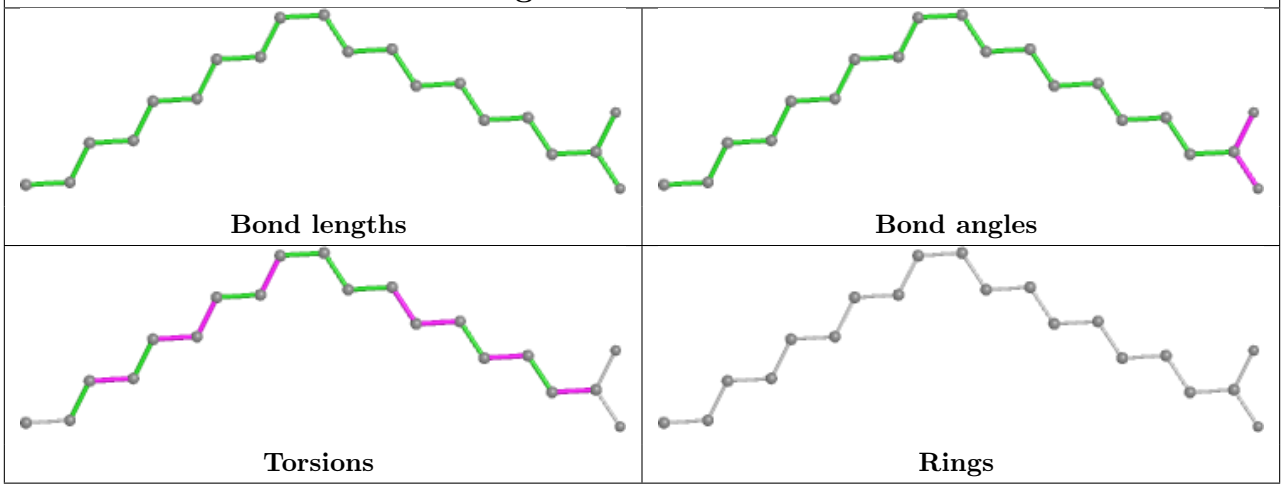
Ligand OLA A 2409



Ligand OLC A 2430



Ligand OLA A 2408



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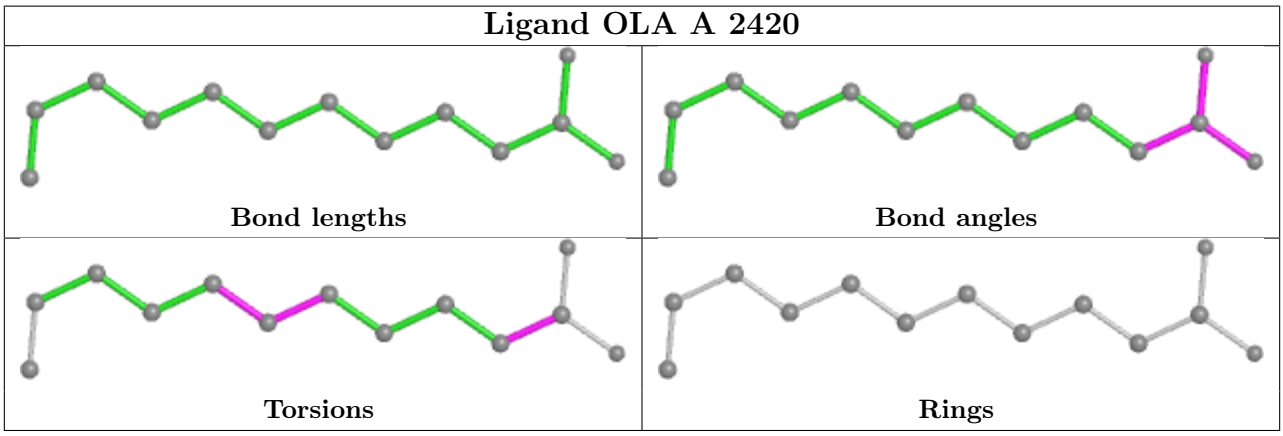
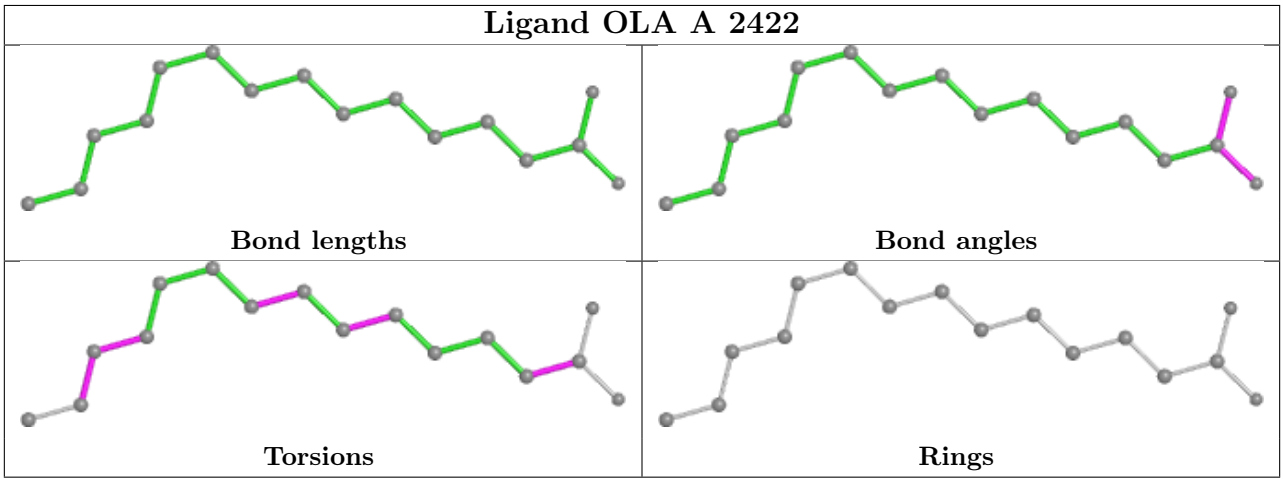
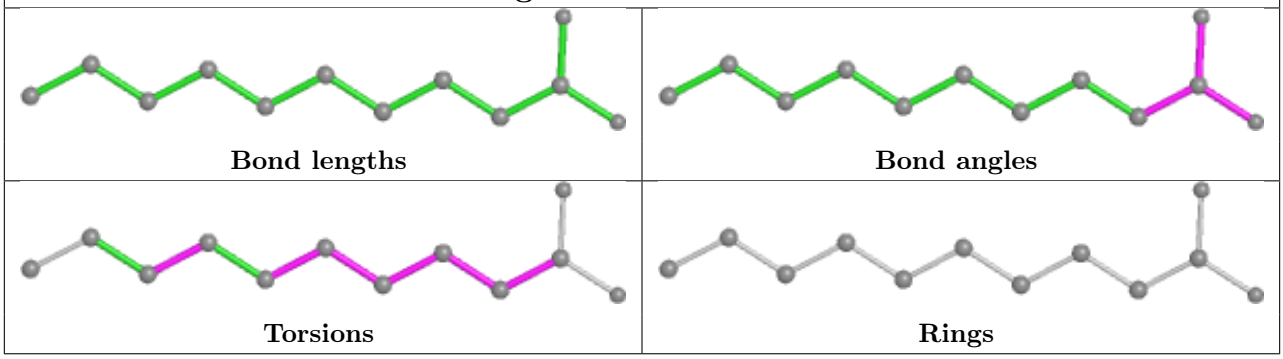


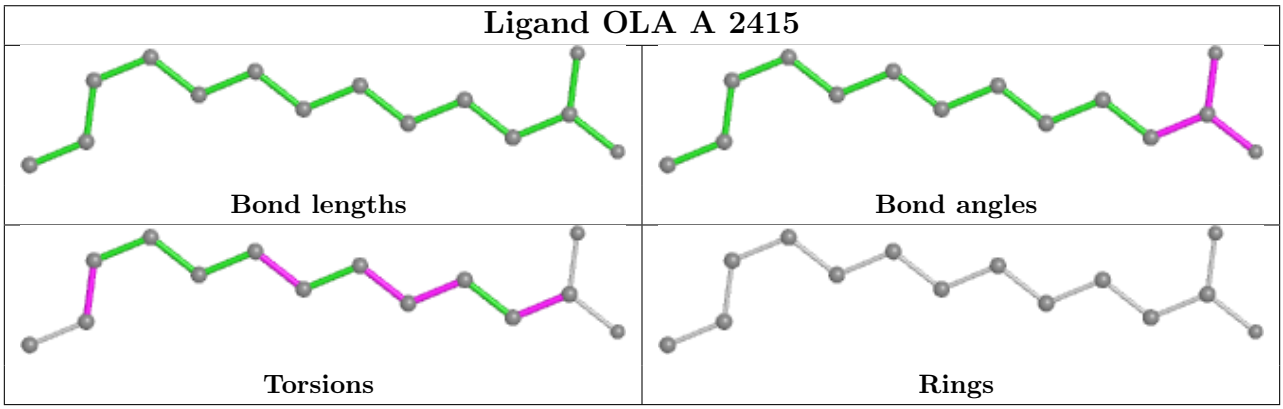
Ligand OLA A 2422



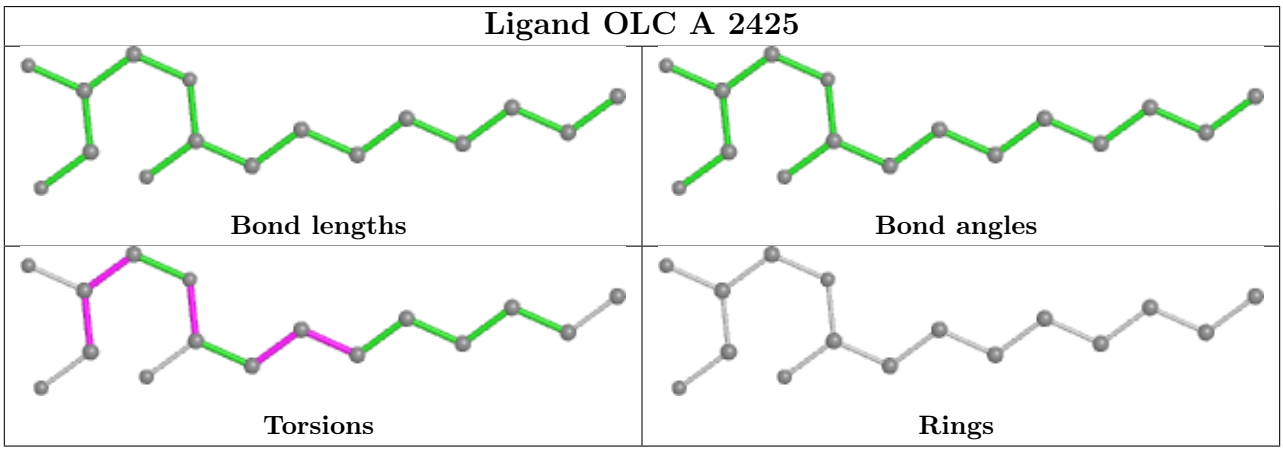
Ligand OLA A 2410



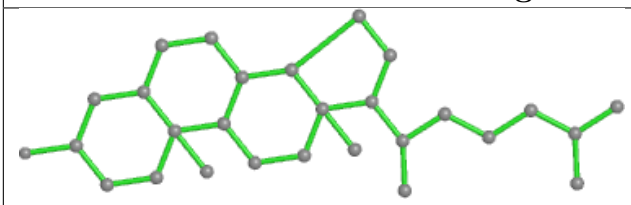
Ligand OLA A 2415



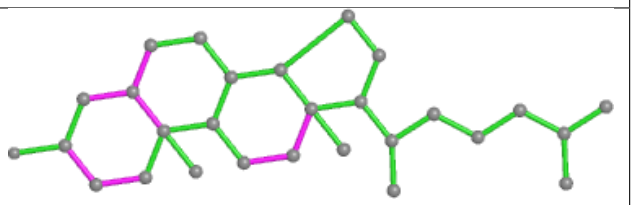
Ligand OLC A 2425



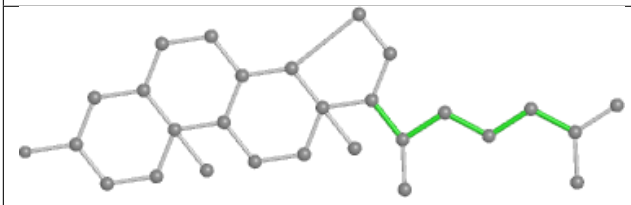
Ligand CLR A 2403



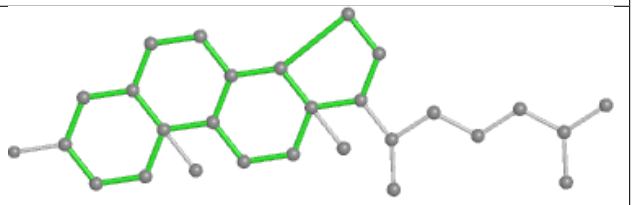
Bond lengths



Bond angles

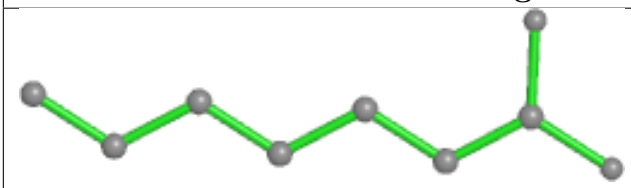


Torsions



Rings

Ligand OLA A 2406



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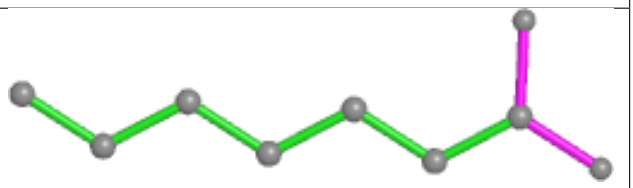
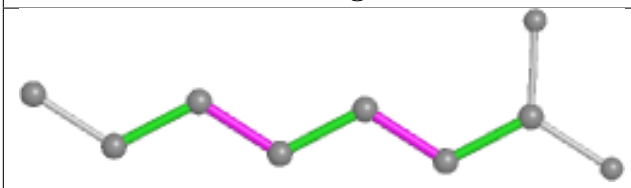
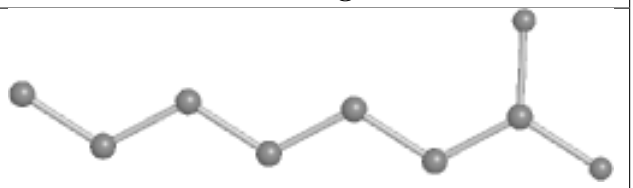


Bond angles

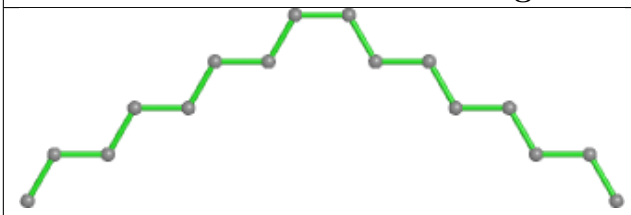


Torsions

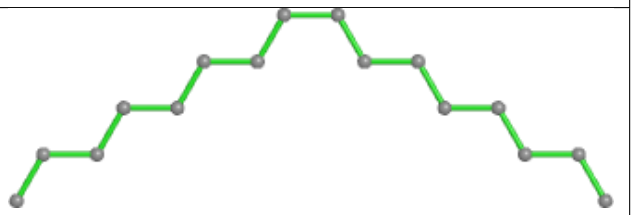


Rings

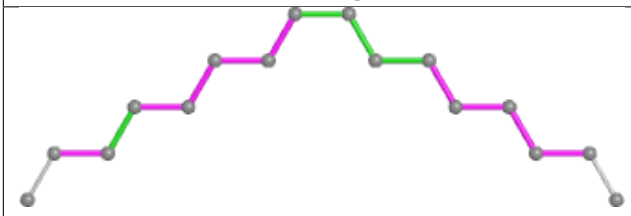
Ligand OLA A 2423



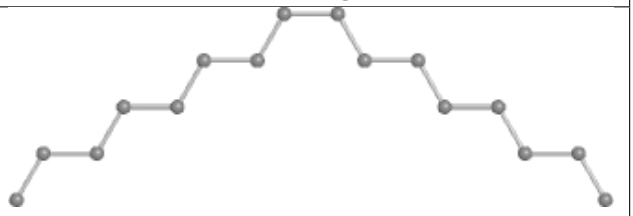
Bond lengths



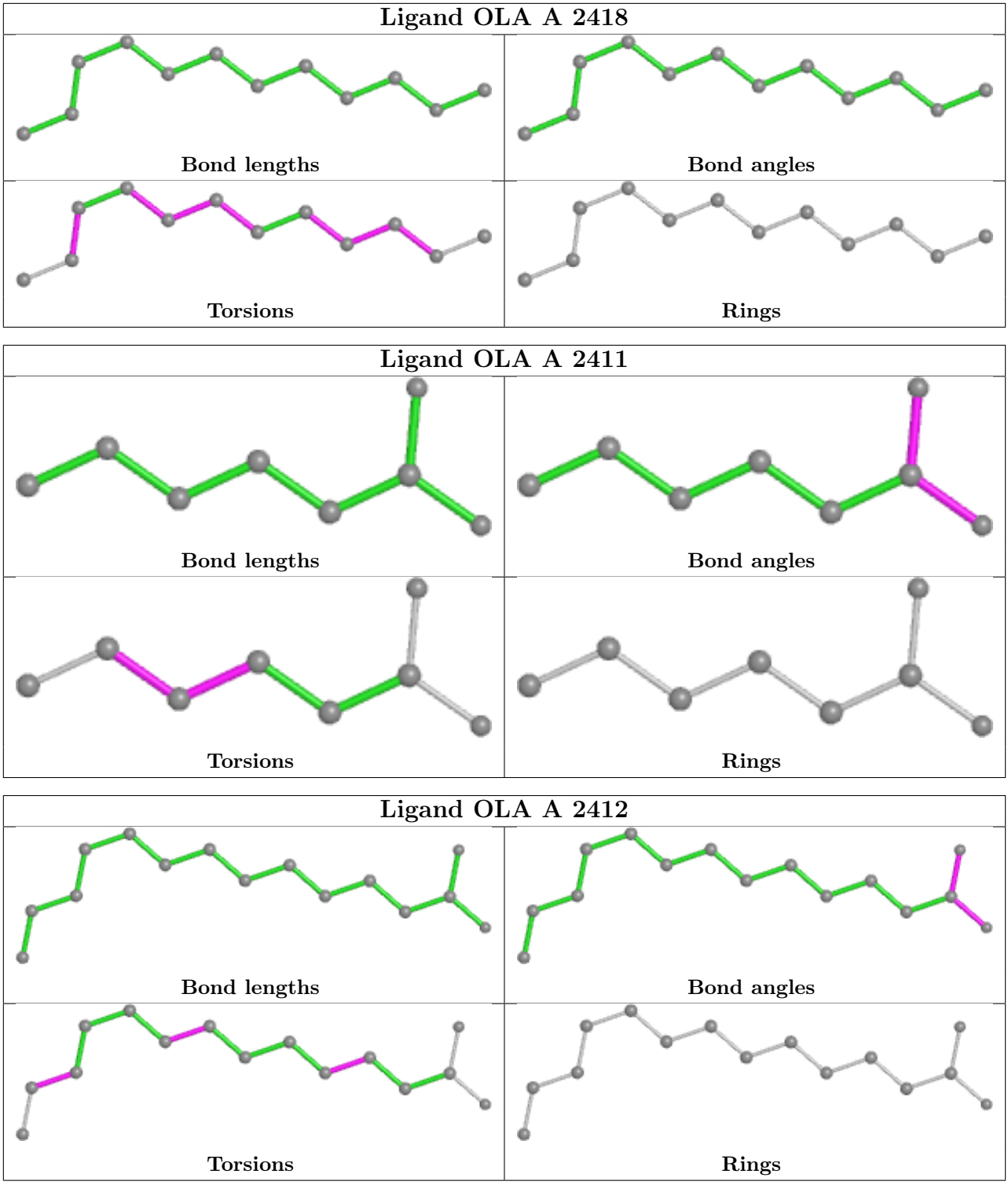
Bond angles



Torsions



Rings



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	1106:LEU	C	219:GLU	N	3.07
1	A	208:LEU	C	1001:ALA	N	2.85

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	389/433 (89%)	0.28	27 (6%)	16	21	18, 36, 78, 113	0

The worst 5 of 27 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1061	PHE	6.0
1	A	1057	GLU	5.8
1	A	1058	MET	4.8
1	A	1	PRO	4.8
1	A	290	TYR	4.2

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no monosaccharides 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^{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
5	OLA	A	2415	14/20	0.66	0.21	49,68,74,74	0
6	OLC	A	2425	16/25	0.66	0.24	59,80,92,95	0

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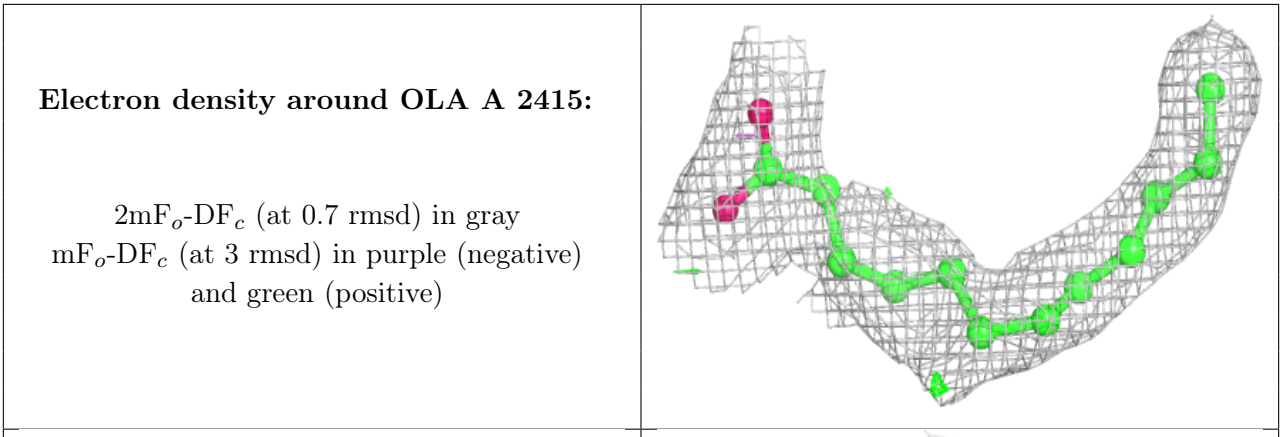
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	OLA	A	2416	10/20	0.67	0.23	60,68,70,70	0
5	OLA	A	2414	19/20	0.68	0.26	63,69,78,80	0
5	OLA	A	2412	15/20	0.69	0.23	61,65,82,83	0
6	OLC	A	2428	23/25	0.70	0.28	52,58,81,81	0
4	CLR	A	2402	28/28	0.71	0.32	93,96,98,99	0
5	OLA	A	2409	20/20	0.73	0.22	62,69,77,80	0
5	OLA	A	2422	16/20	0.74	0.31	42,52,68,72	0
6	OLC	A	2429	18/25	0.74	0.28	55,65,91,93	0
5	OLA	A	2421	15/20	0.75	0.30	65,68,80,82	0
5	OLA	A	2418	12/20	0.76	0.23	60,66,71,71	0
6	OLC	A	2430	25/25	0.77	0.24	40,57,92,93	0
5	OLA	A	2408	20/20	0.78	0.23	47,65,76,77	0
5	OLA	A	2420	13/20	0.79	0.23	54,65,82,83	0
6	OLC	A	2426	23/25	0.81	0.23	47,56,95,97	0
5	OLA	A	2410	12/20	0.82	0.27	54,68,81,82	0
5	OLA	A	2413	11/20	0.82	0.20	62,65,78,79	0
6	OLC	A	2427	23/25	0.83	0.20	43,52,65,69	0
5	OLA	A	2407	18/20	0.83	0.17	49,61,76,80	0
5	OLA	A	2411	8/20	0.85	0.19	58,62,63,65	0
5	OLA	A	2417	13/20	0.85	0.23	62,66,72,72	0
5	OLA	A	2419	13/20	0.87	0.21	51,54,61,61	0
5	OLA	A	2406	9/20	0.87	0.17	40,43,60,67	0
6	OLC	A	2424	16/25	0.87	0.23	37,49,60,62	0
7	TAR	A	2431	10/10	0.88	0.21	66,67,68,68	10
5	OLA	A	2423	16/20	0.90	0.21	49,53,65,67	0
2	NA	A	2400	1/1	0.92	0.36	48,48,48,48	0
4	CLR	A	2404	28/28	0.95	0.12	23,31,41,49	0
4	CLR	A	2403	28/28	0.96	0.10	19,28,54,57	0
4	CLR	A	2405	28/28	0.96	0.12	22,26,53,54	0
3	CFF	A	2401[A]	14/14	0.98	0.14	17,21,22,23	14
3	CFF	A	2401[B]	14/14	0.98	0.14	17,21,22,23	14

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.

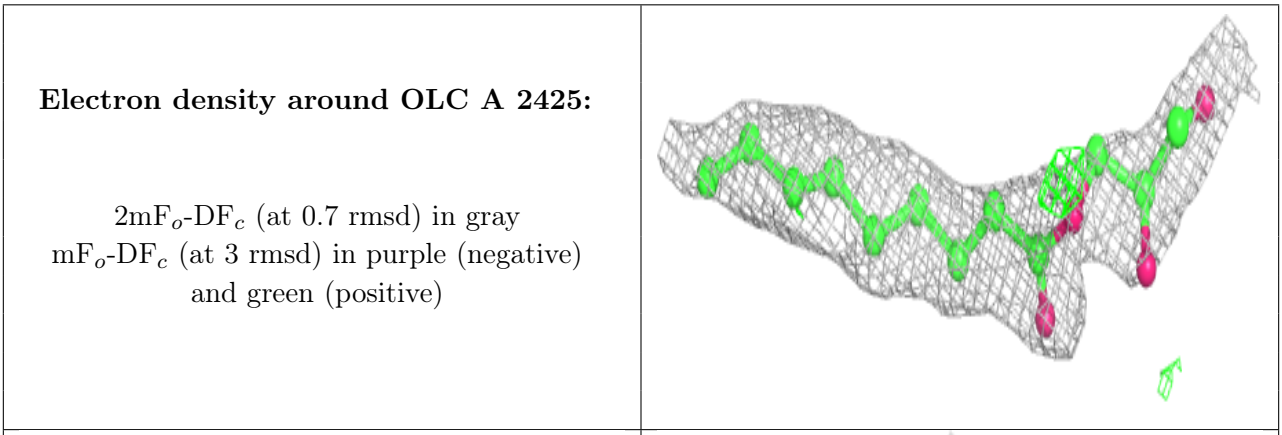
Electron density around OLA A 2415:

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



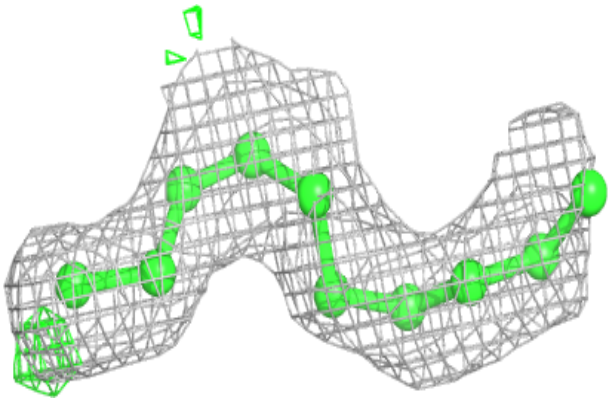
Electron density around OLC A 2425:

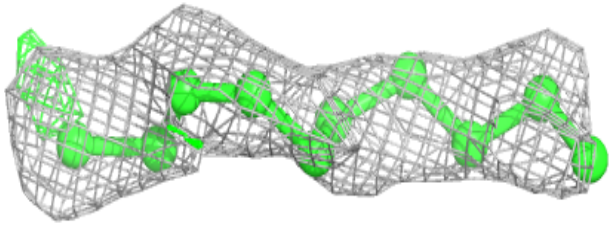
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

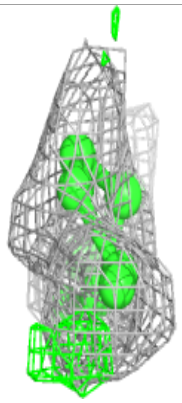


Electron density around OLA A 2416:

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

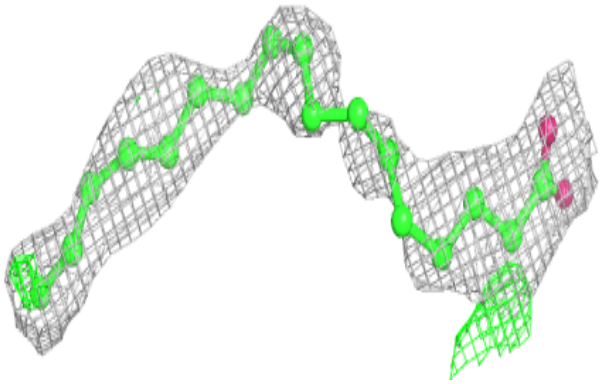


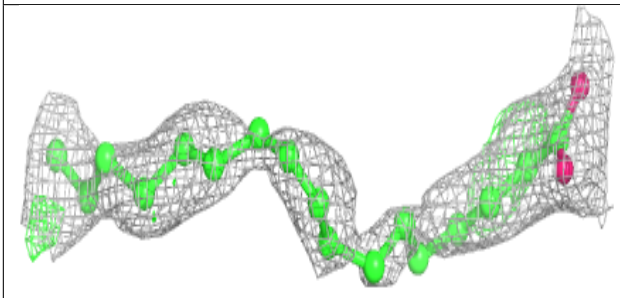


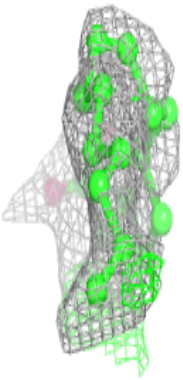


Electron density around OLA A 2414:

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

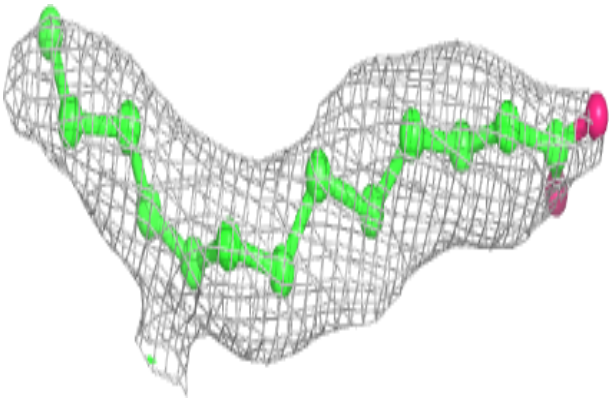


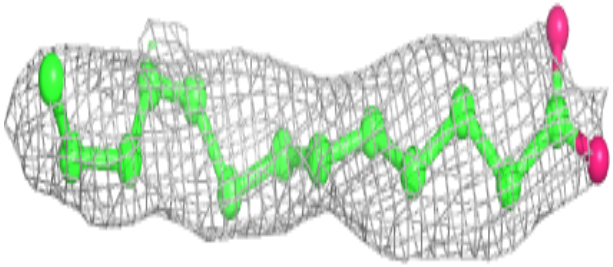


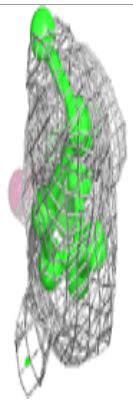


Electron density around OLA A 2412:

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

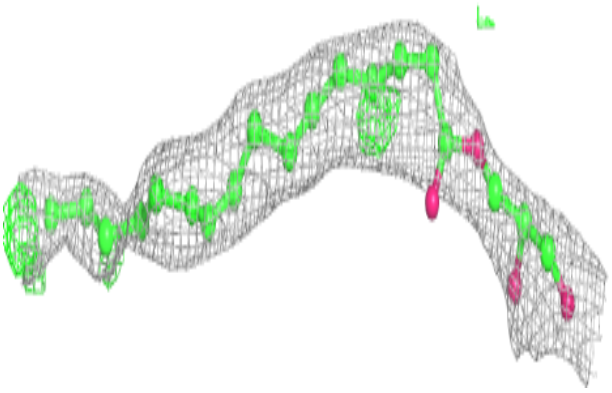


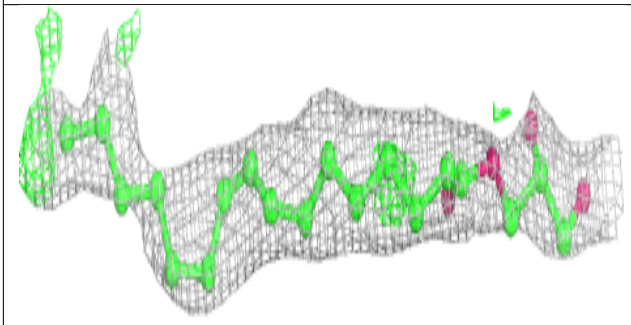


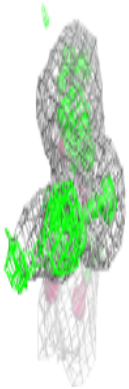


Electron density around OLC A 2428:

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

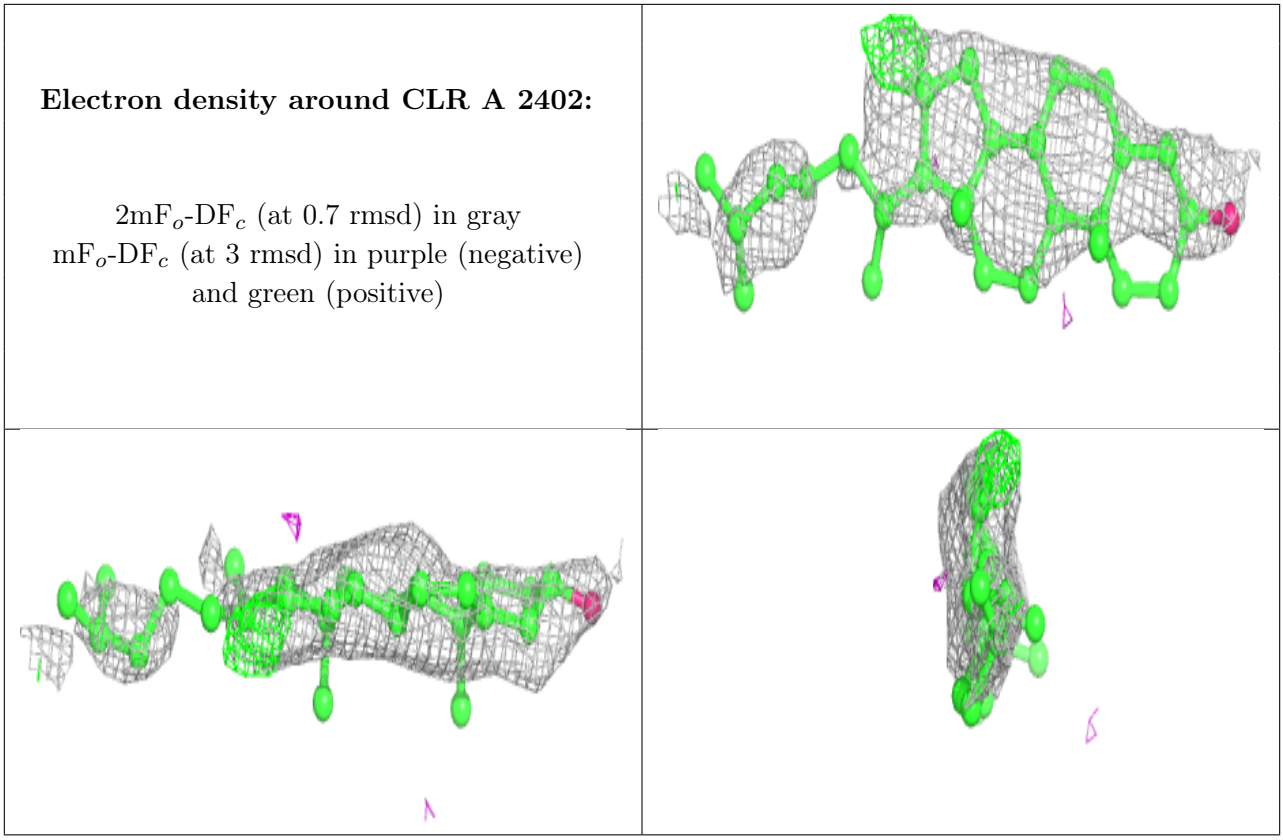






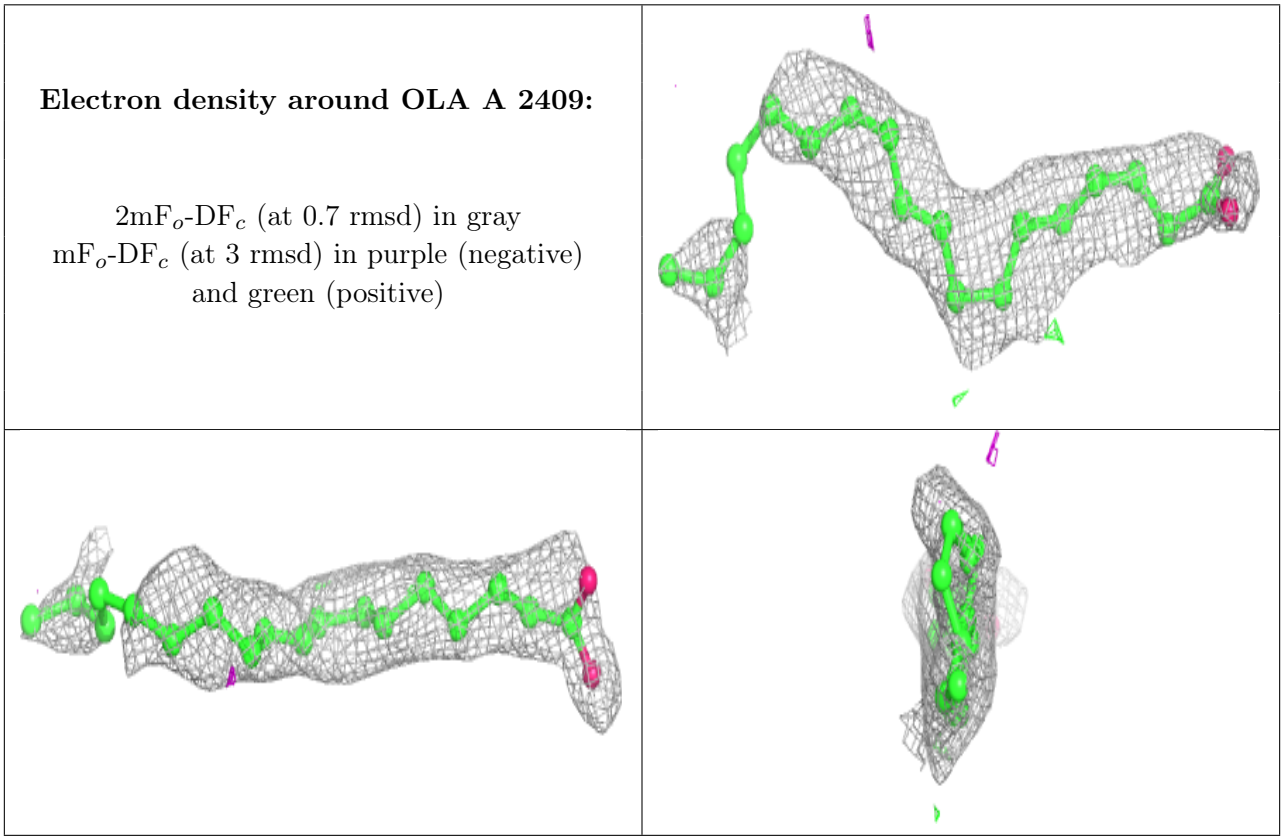
Electron density around CLR A 2402:

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



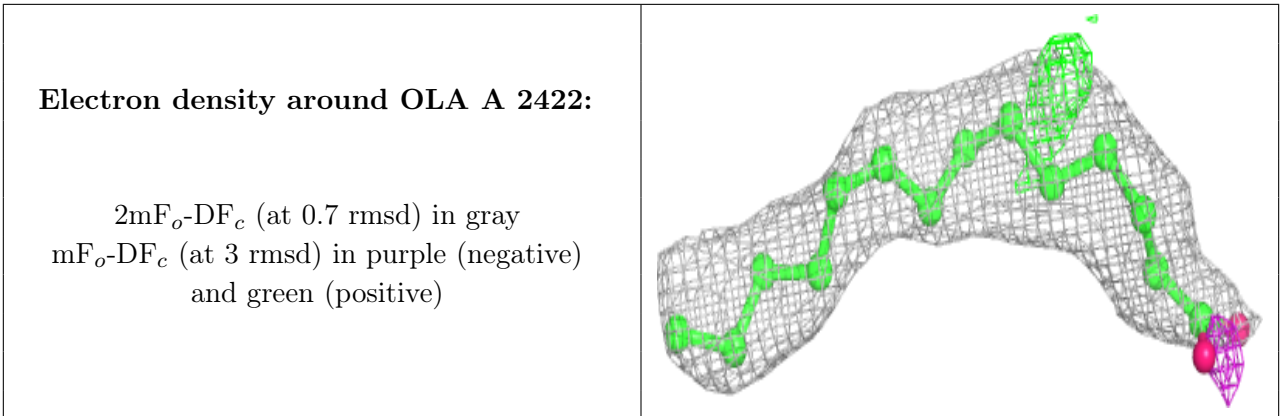
Electron density around OLA A 2409:

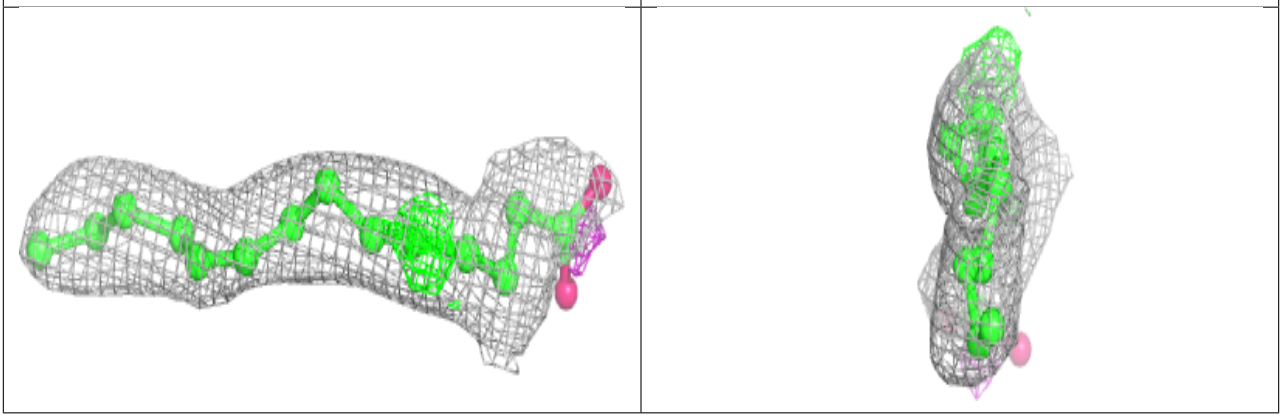
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around OLA A 2422:

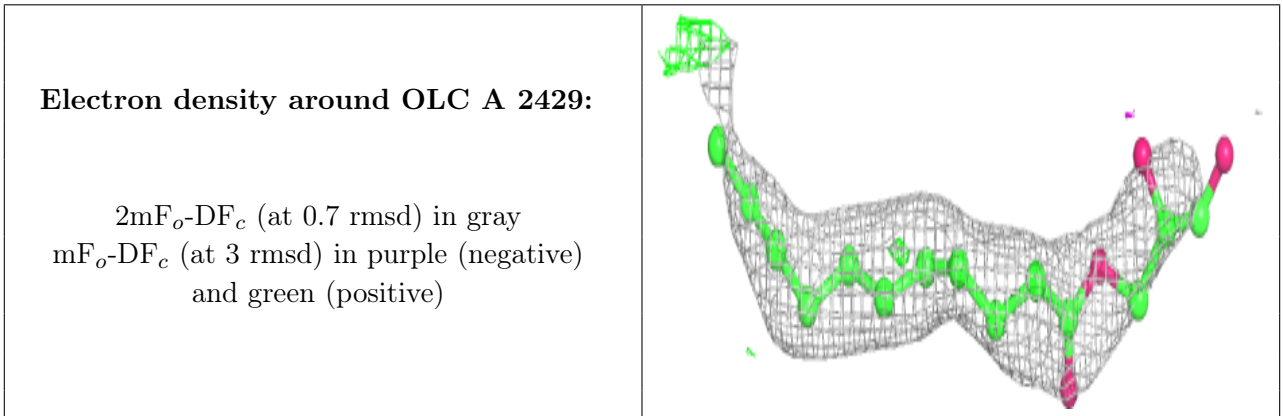
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

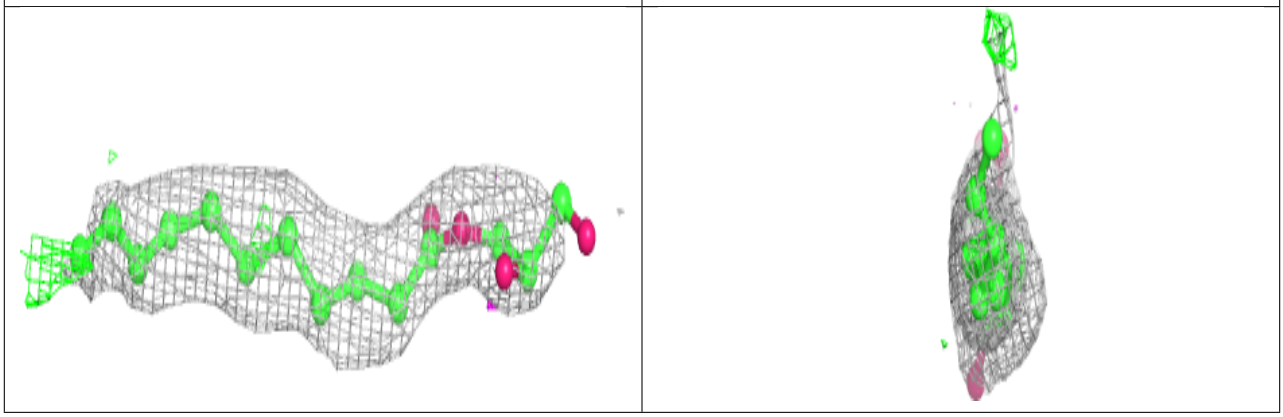




Electron density around OLC A 2429:

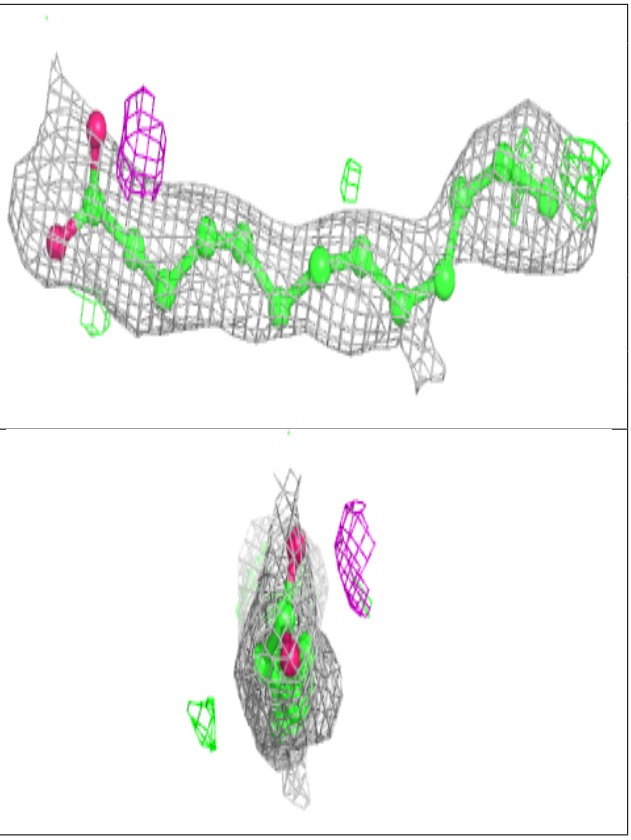
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





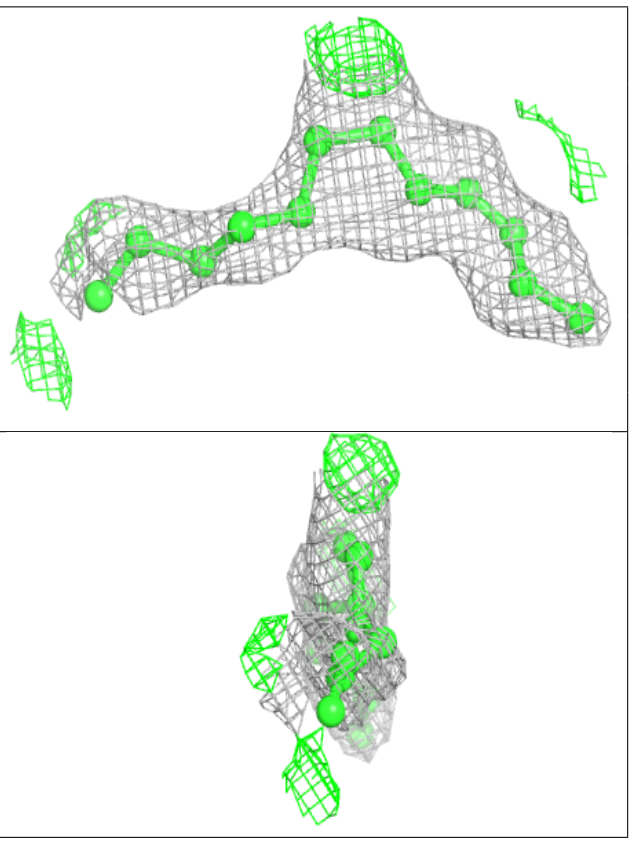
Electron density around OLA A 2421:

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



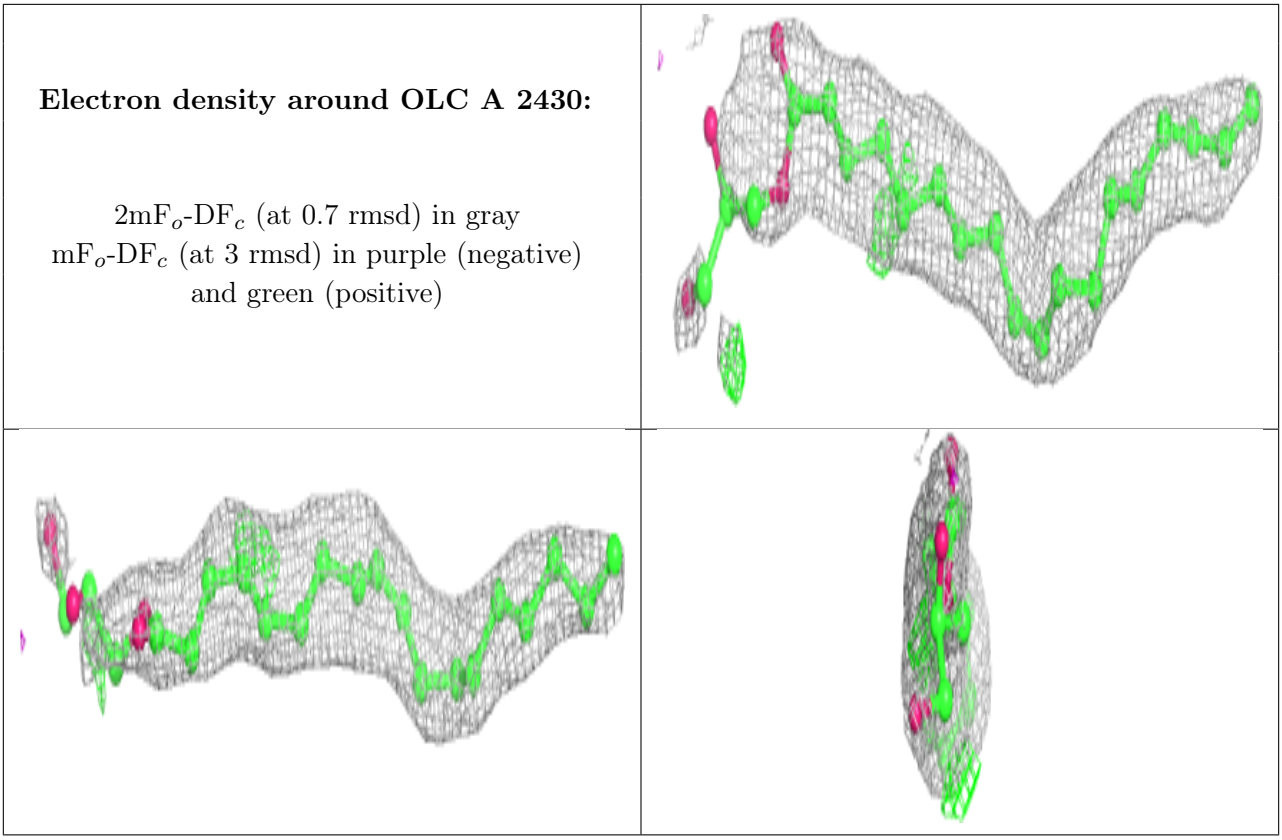
Electron density around OLA A 2418:

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



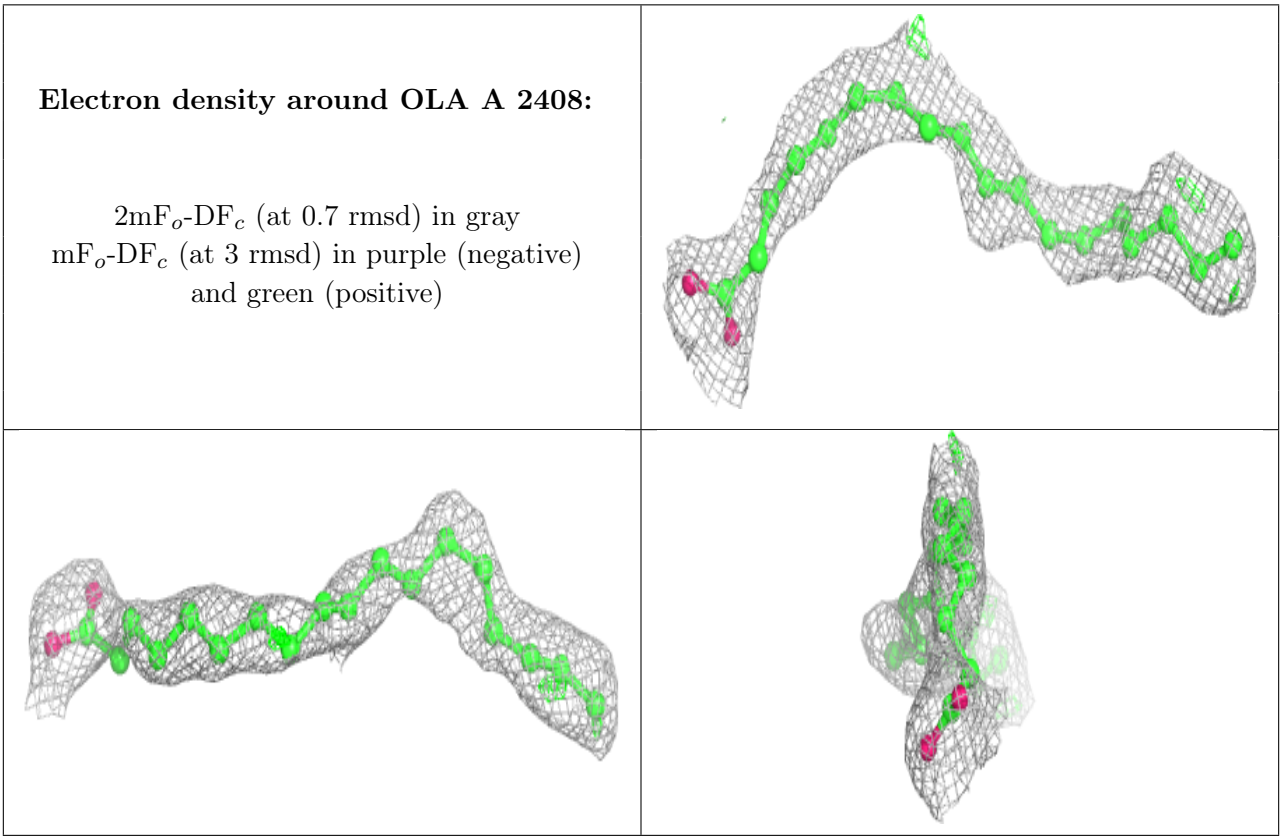
Electron density around OLC A 2430:

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



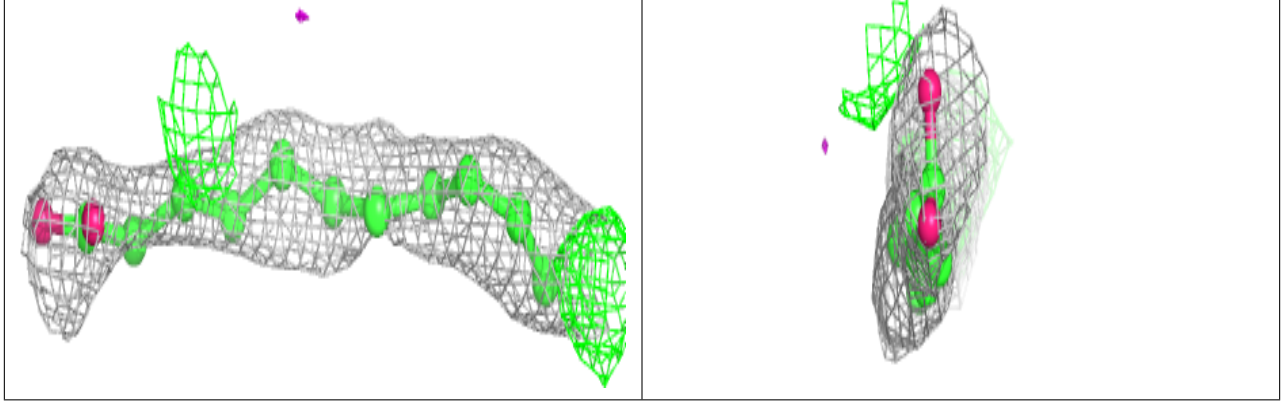
Electron density around OLA A 2408:

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



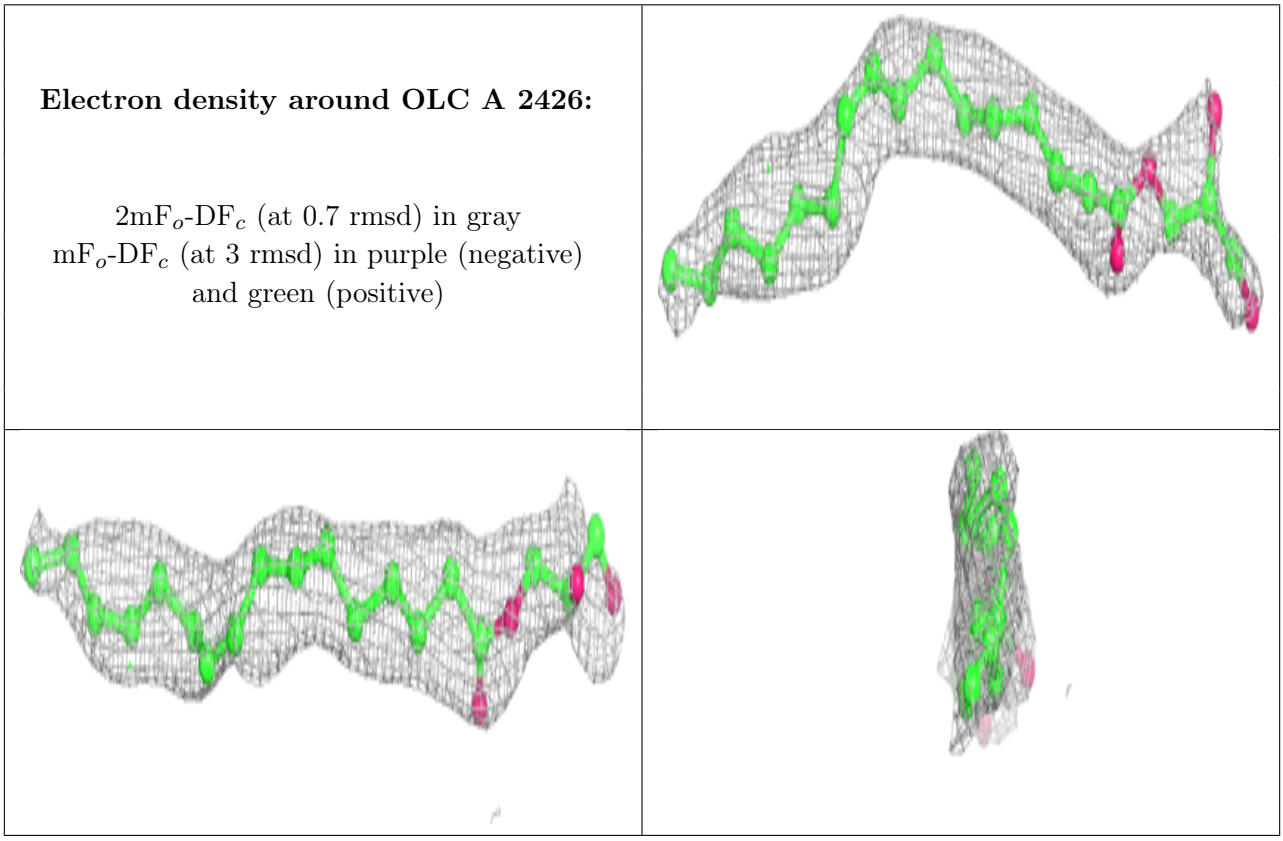
Electron density around OLA A 2420:

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



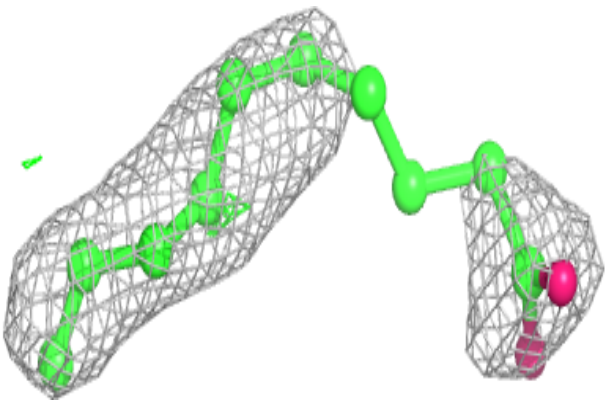
Electron density around OLC A 2426:

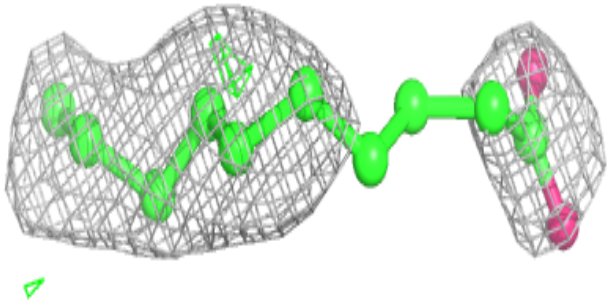
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

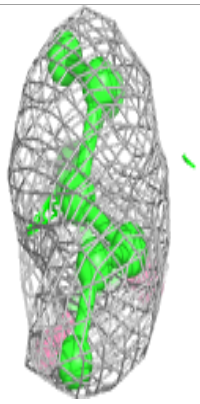


Electron density around OLA A 2410:

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

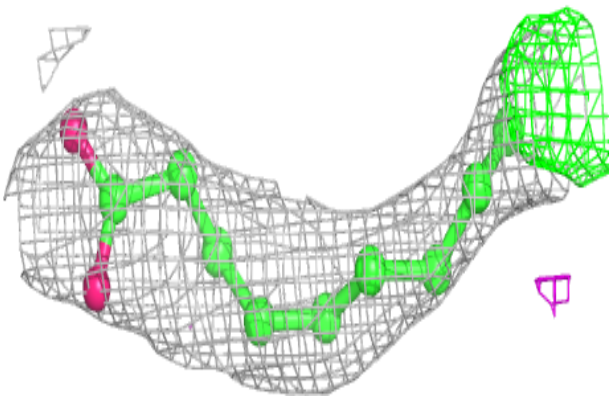


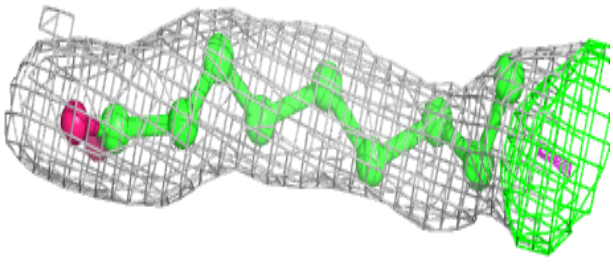


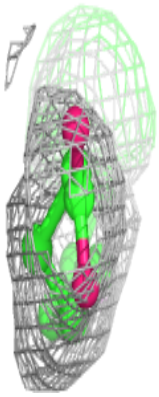


Electron density around OLA A 2413:

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







Electron density around OLC A 2427:

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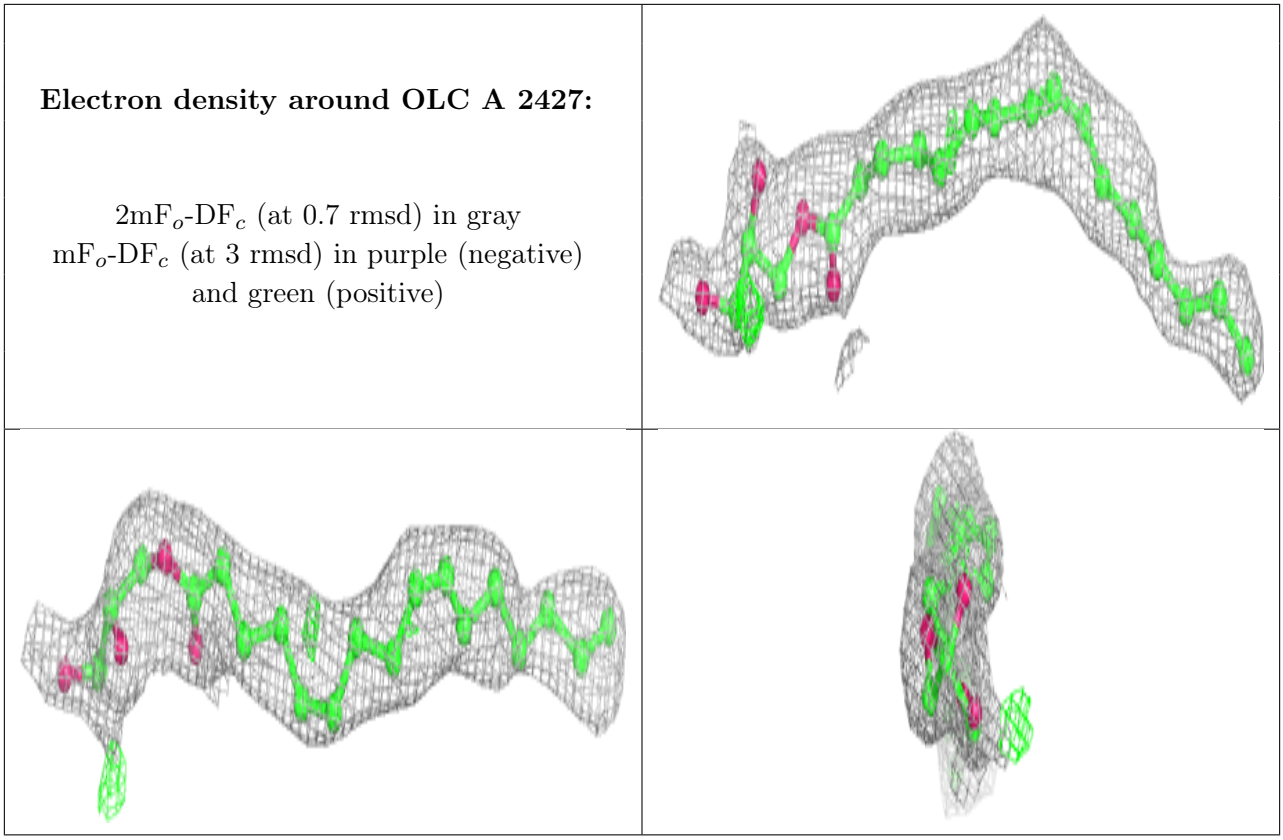
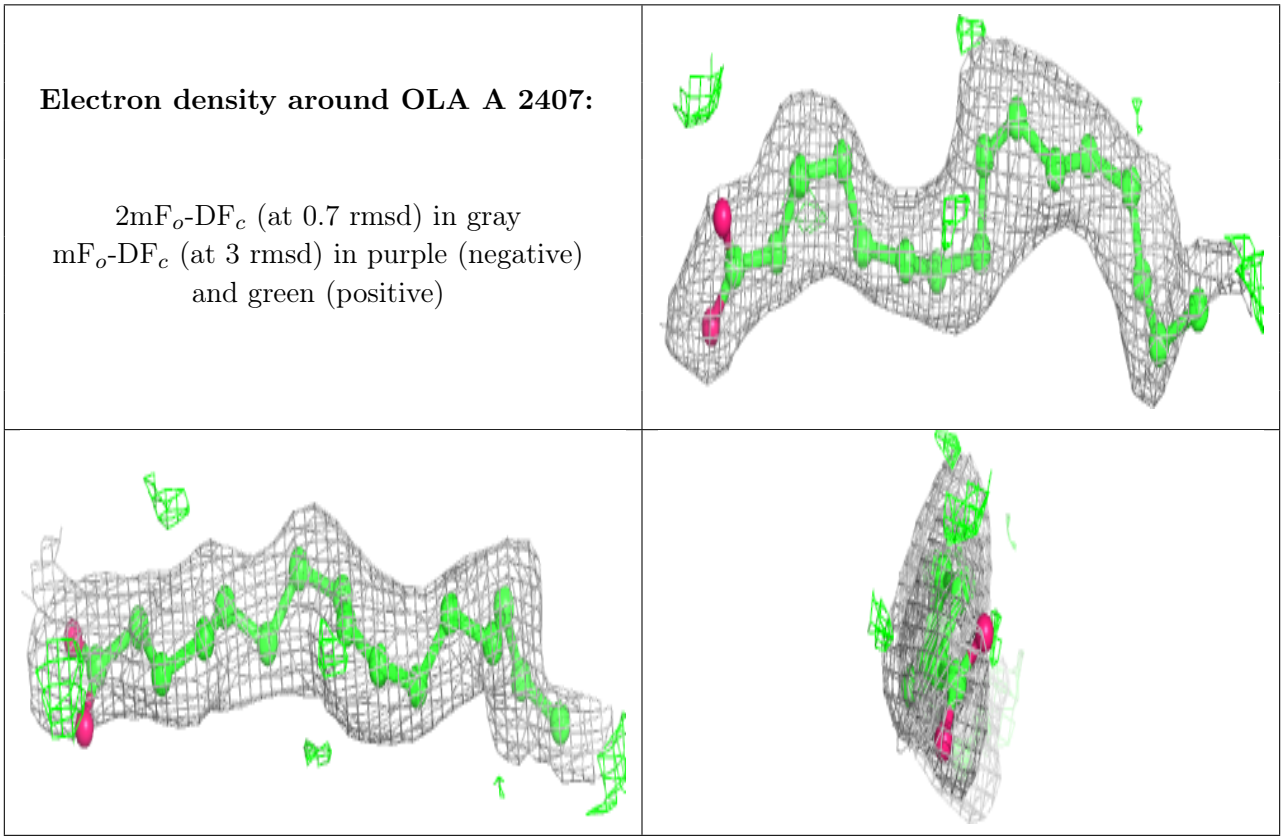
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around OLA A 2407:

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



Electron density around OLA A 2411:

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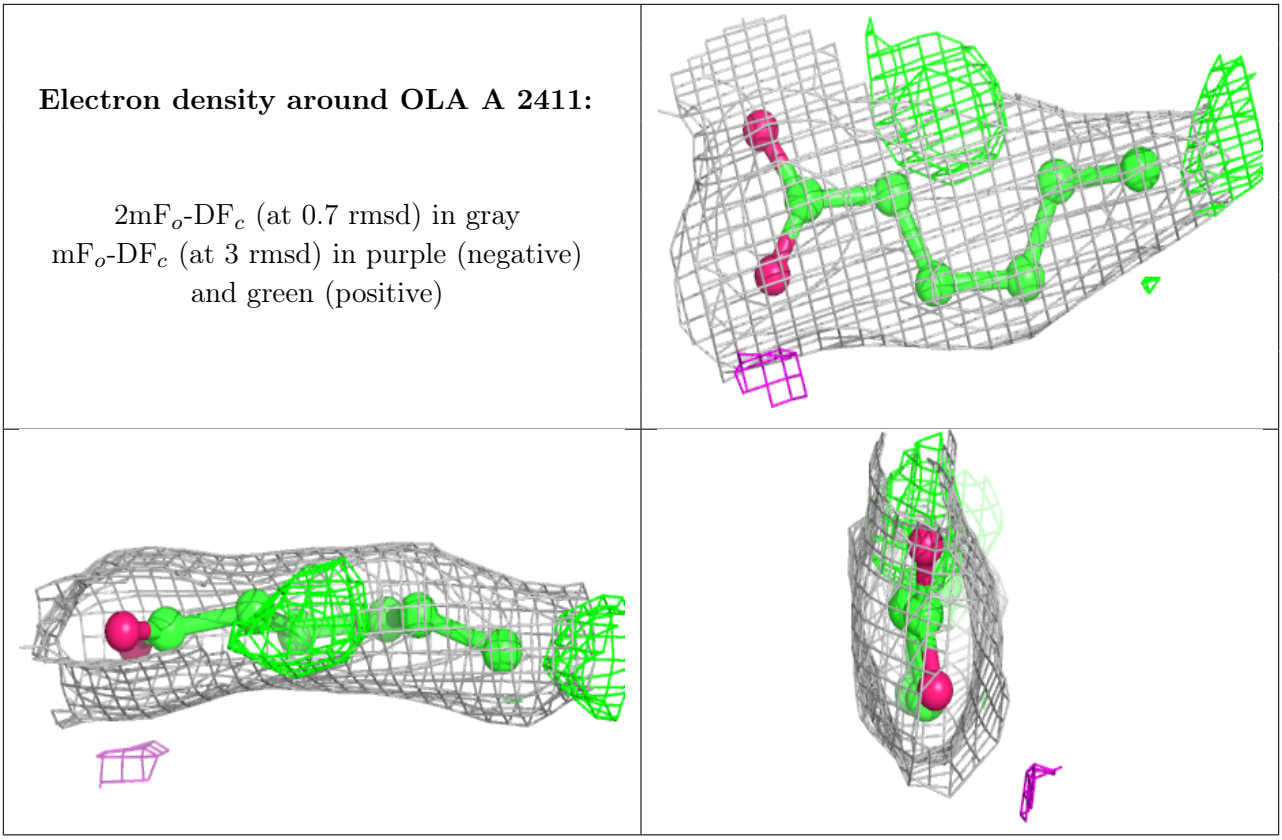
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around OLA A 2417:

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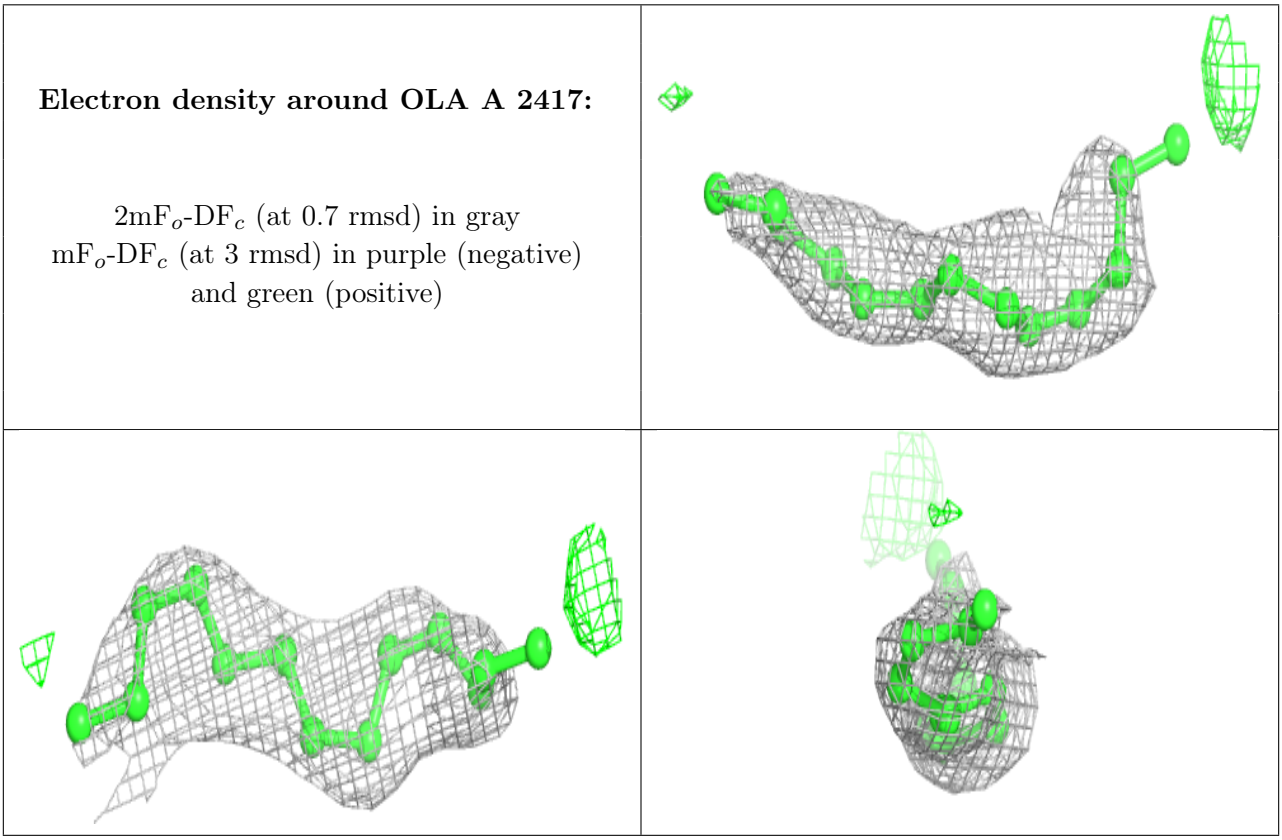
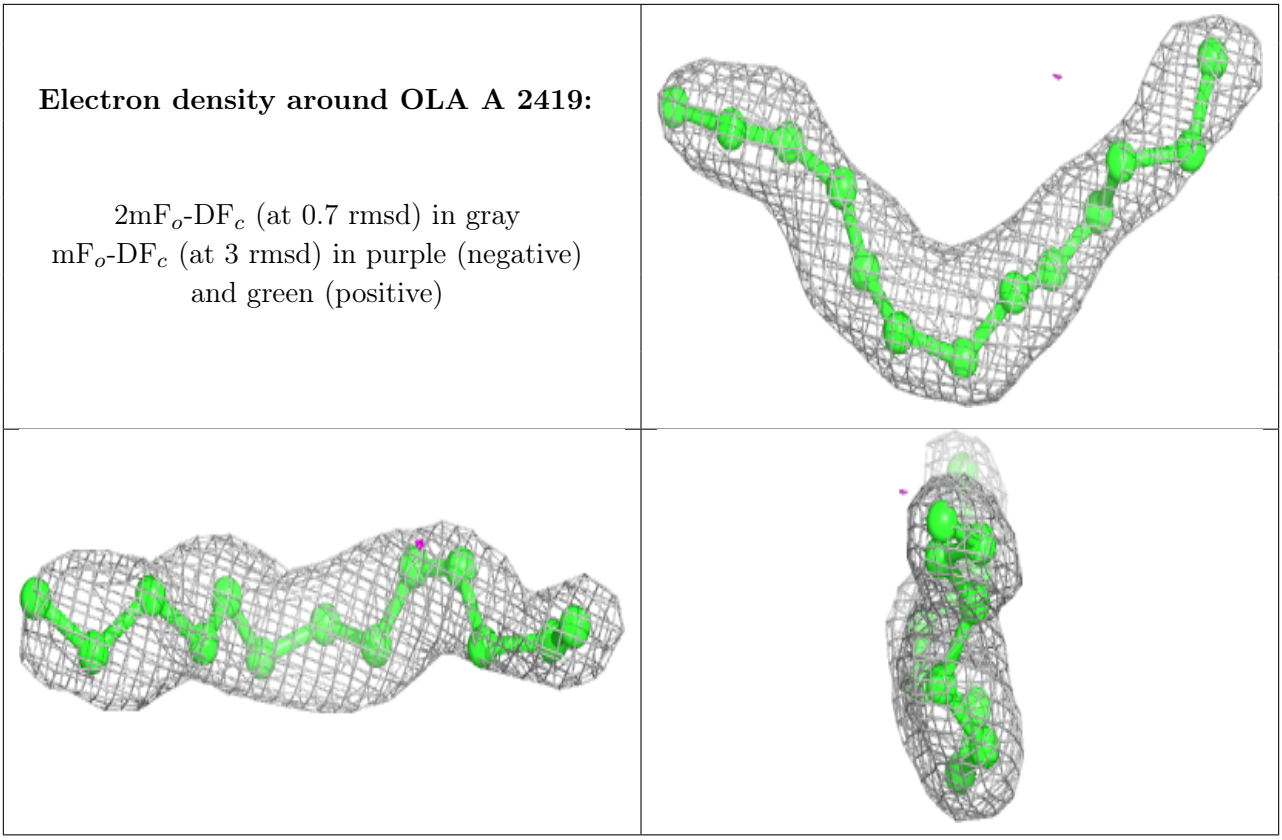
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



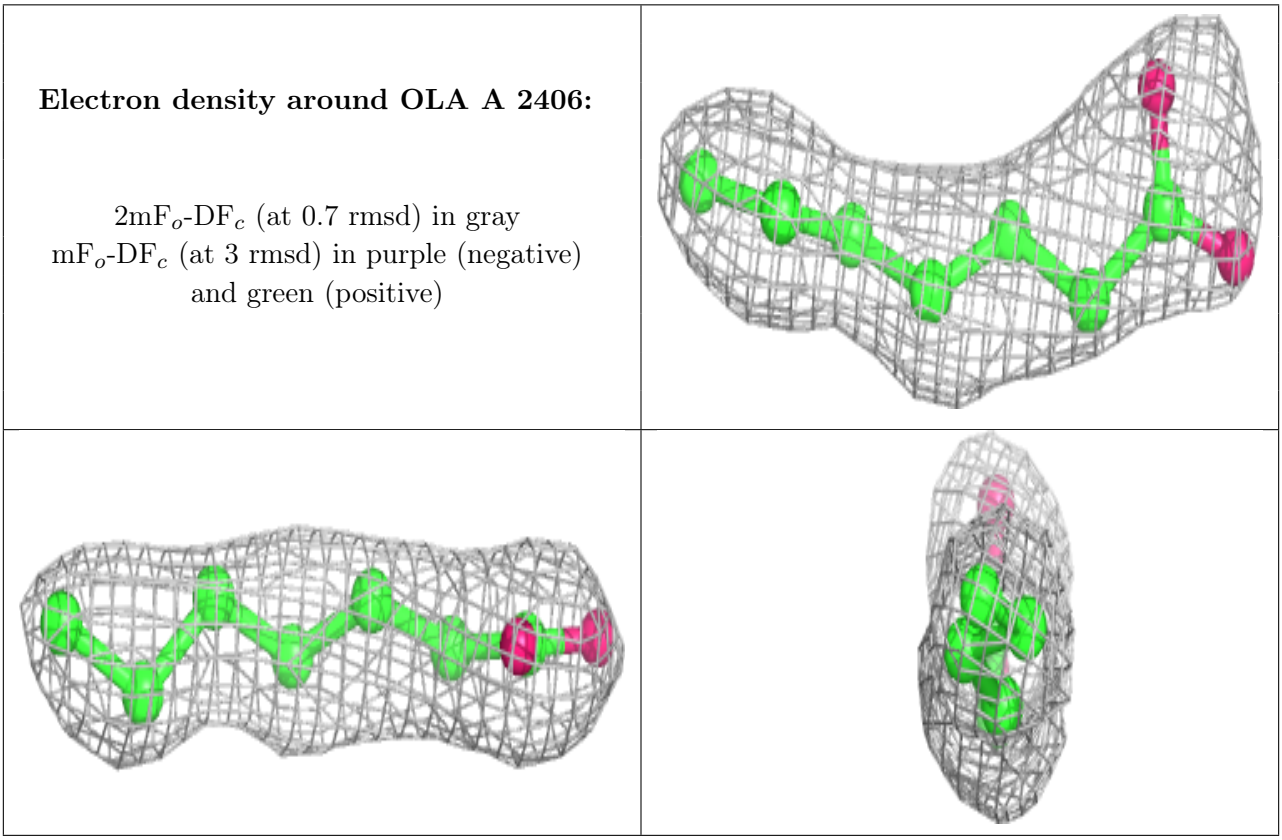
Electron density around OLA A 2419:

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



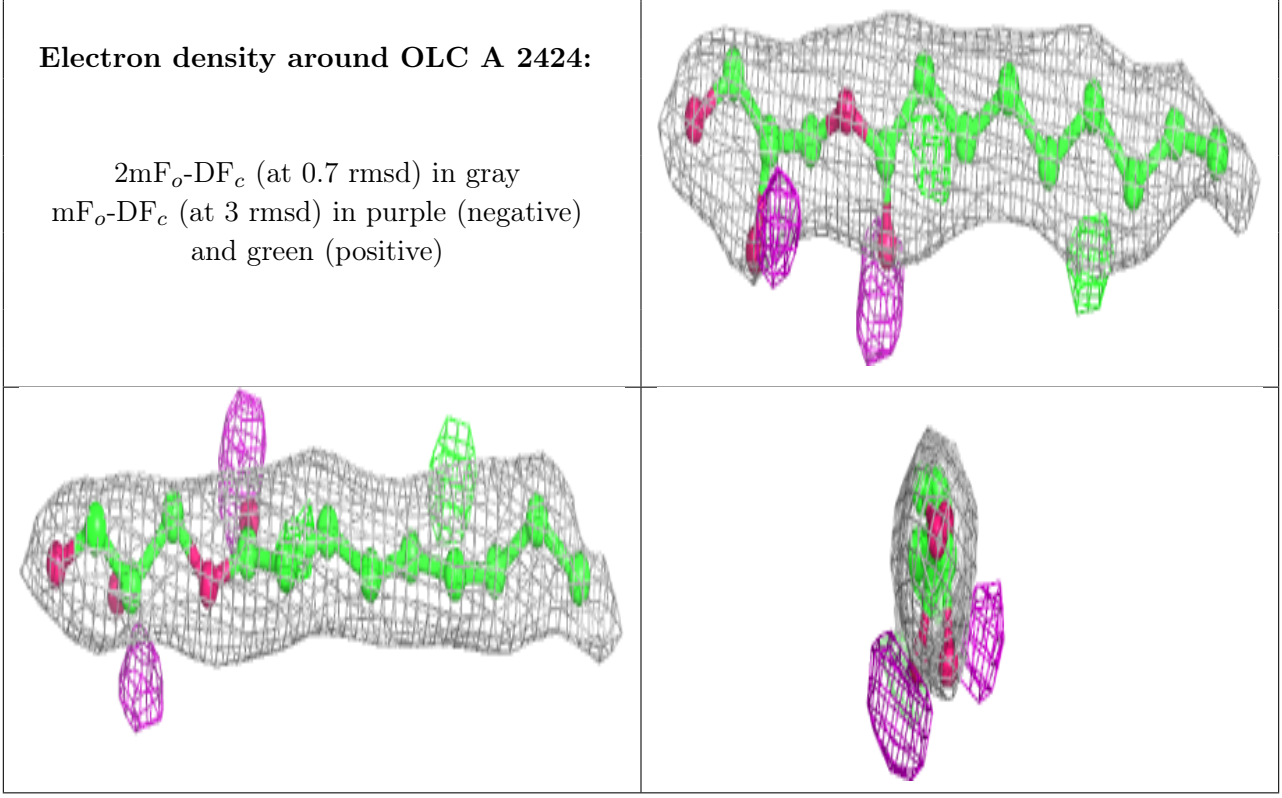
Electron density around OLA A 2406:

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



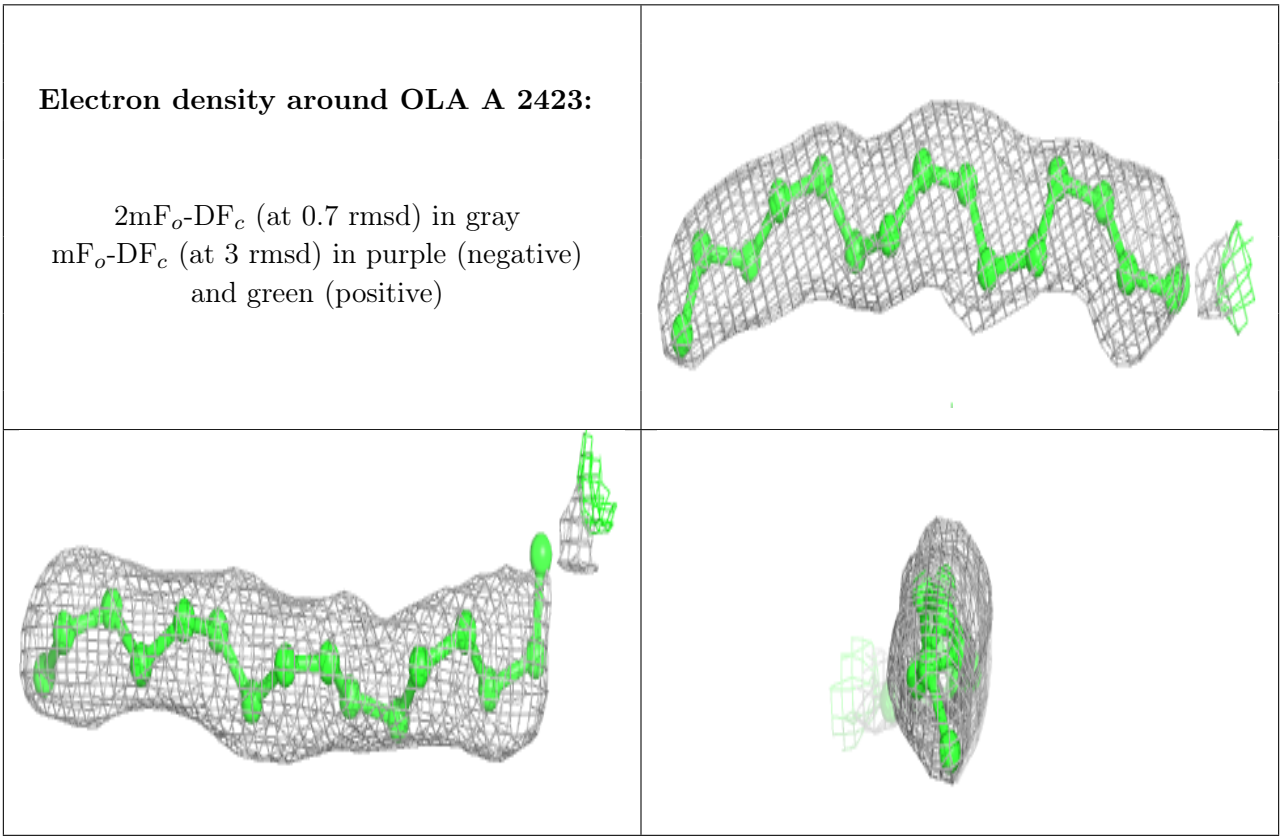
Electron density around OLC A 2424:

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



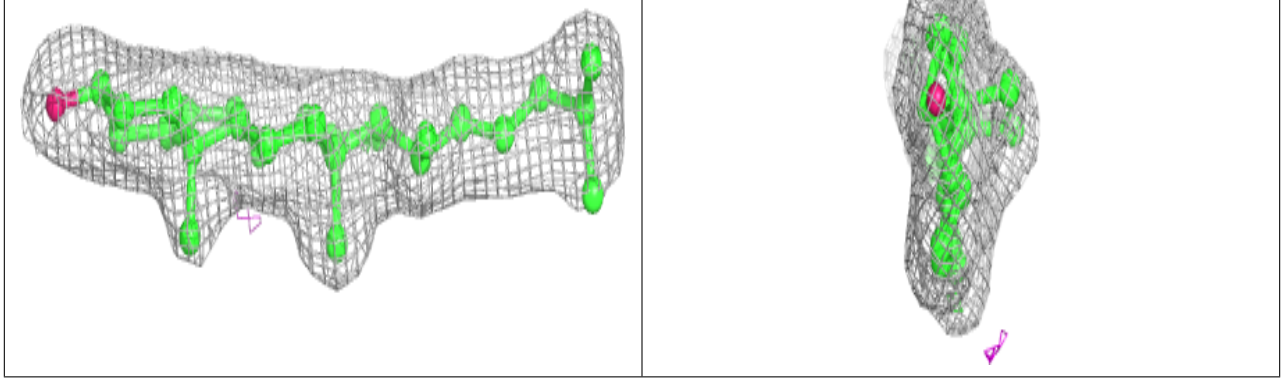
Electron density around OLA A 2423:

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



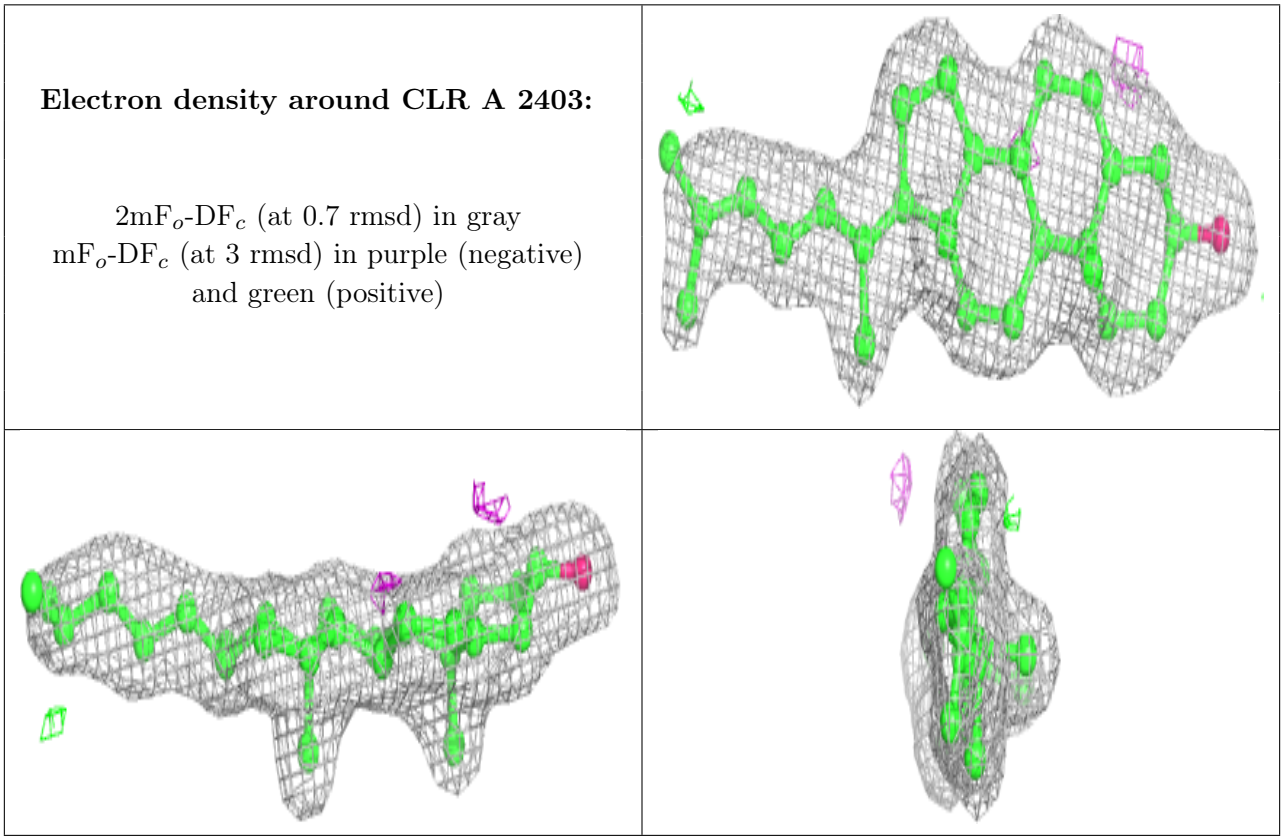
Electron density around CLR A 2404:

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



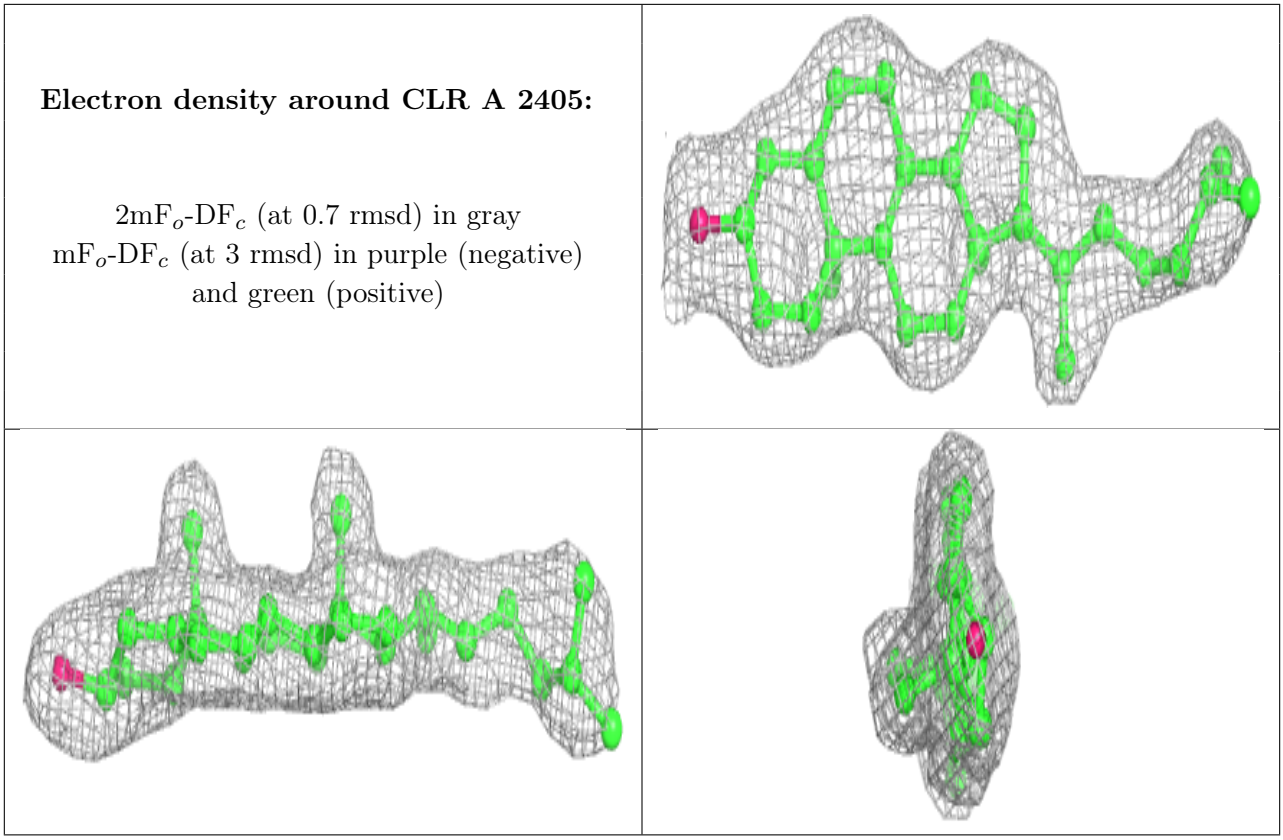
Electron density around CLR A 2403:

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



Electron density around CLR A 2405:

$2mF_o$-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.