Full wwPDB EM Validation Report ⓘ

Dec 3, 2025 – 04:29 PM JST

PDB ID	:	9UO2 / pdb_00009uo2
EMDB ID	:	EMD-64370
Title	:	Cryo-EM structure of human organic solute transporter Ost-alpha/beta in apo state
Authors	:	Yang, X.; Xu, E.
Deposited on	:	2025-04-24
Resolution	:	2.60 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

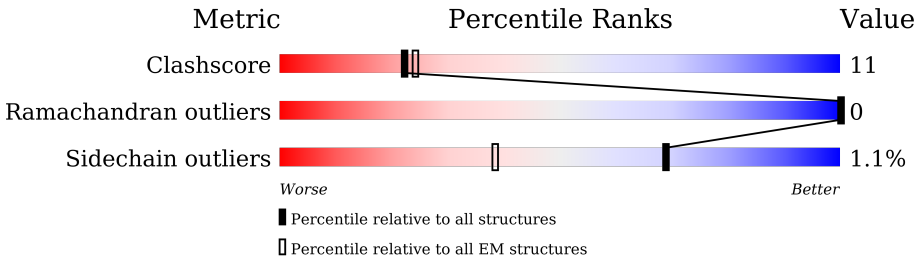
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

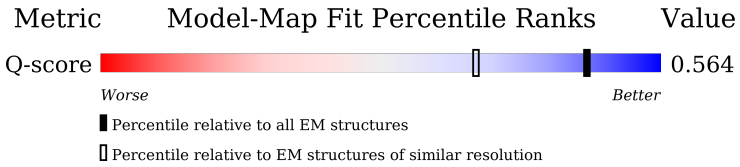
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.60 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)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	8728 (2.10 - 3.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	351	74% 19% • 7%
1	C	351	74% 18% • 7%
2	B	141	26% 6% 67%
2	D	141	25% 8% 67%

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 7322 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Organic solute transporter subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	327	Total 2525	C 1652	N 416	O 433	S 24	0	0
1	C	327	Total 2525	C 1652	N 416	O 433	S 24	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	15	ALA	THR	conflict	UNP Q86UW1
A	341	GLY	-	expression tag	UNP Q86UW1
A	342	GLY	-	expression tag	UNP Q86UW1
A	343	SER	-	expression tag	UNP Q86UW1
A	344	ASP	-	expression tag	UNP Q86UW1
A	345	TYR	-	expression tag	UNP Q86UW1
A	346	LYS	-	expression tag	UNP Q86UW1
A	347	ASP	-	expression tag	UNP Q86UW1
A	348	ASP	-	expression tag	UNP Q86UW1
A	349	ASP	-	expression tag	UNP Q86UW1
A	350	ASP	-	expression tag	UNP Q86UW1
A	351	LYS	-	expression tag	UNP Q86UW1
C	15	ALA	THR	conflict	UNP Q86UW1
C	341	GLY	-	expression tag	UNP Q86UW1
C	342	GLY	-	expression tag	UNP Q86UW1
C	343	SER	-	expression tag	UNP Q86UW1
C	344	ASP	-	expression tag	UNP Q86UW1
C	345	TYR	-	expression tag	UNP Q86UW1
C	346	LYS	-	expression tag	UNP Q86UW1
C	347	ASP	-	expression tag	UNP Q86UW1
C	348	ASP	-	expression tag	UNP Q86UW1
C	349	ASP	-	expression tag	UNP Q86UW1
C	350	ASP	-	expression tag	UNP Q86UW1
C	351	LYS	-	expression tag	UNP Q86UW1

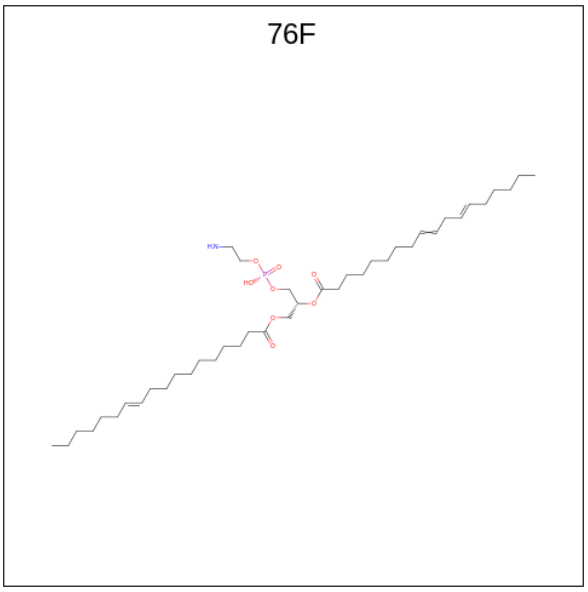
- Molecule 2 is a protein called Organic solute transporter subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	46	Total	C	N	O	S	0	0
			364	239	59	64	2		
2	D	46	Total	C	N	O	S	0	0
			364	239	59	64	2		

There are 26 discrepancies between the modelled and reference sequences:

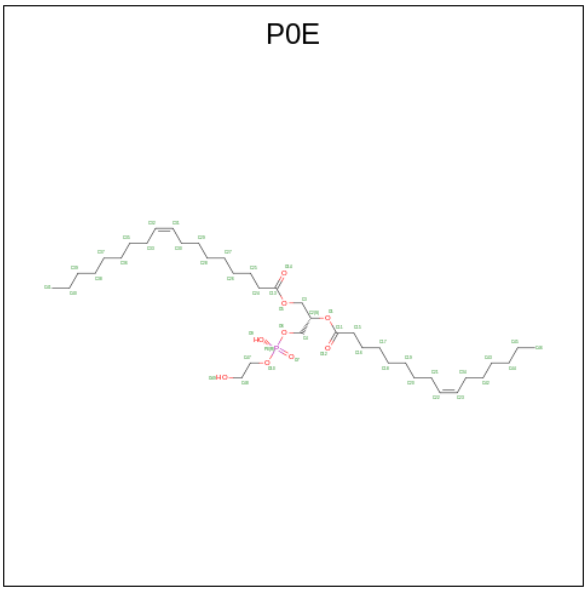
Chain	Residue	Modelled	Actual	Comment	Reference
B	129	GLY	-	expression tag	UNP Q86UW2
B	130	GLY	-	expression tag	UNP Q86UW2
B	131	SER	-	expression tag	UNP Q86UW2
B	132	HIS	-	expression tag	UNP Q86UW2
B	133	HIS	-	expression tag	UNP Q86UW2
B	134	HIS	-	expression tag	UNP Q86UW2
B	135	HIS	-	expression tag	UNP Q86UW2
B	136	HIS	-	expression tag	UNP Q86UW2
B	137	HIS	-	expression tag	UNP Q86UW2
B	138	HIS	-	expression tag	UNP Q86UW2
B	139	HIS	-	expression tag	UNP Q86UW2
B	140	HIS	-	expression tag	UNP Q86UW2
B	141	HIS	-	expression tag	UNP Q86UW2
D	129	GLY	-	expression tag	UNP Q86UW2
D	130	GLY	-	expression tag	UNP Q86UW2
D	131	SER	-	expression tag	UNP Q86UW2
D	132	HIS	-	expression tag	UNP Q86UW2
D	133	HIS	-	expression tag	UNP Q86UW2
D	134	HIS	-	expression tag	UNP Q86UW2
D	135	HIS	-	expression tag	UNP Q86UW2
D	136	HIS	-	expression tag	UNP Q86UW2
D	137	HIS	-	expression tag	UNP Q86UW2
D	138	HIS	-	expression tag	UNP Q86UW2
D	139	HIS	-	expression tag	UNP Q86UW2
D	140	HIS	-	expression tag	UNP Q86UW2
D	141	HIS	-	expression tag	UNP Q86UW2

- Molecule 3 is (7E,21R,24S)-27-amino-24-hydroxy-18,24-dioxo-19,23,25-trioxa-24lambda 5 -phosphaheptacos-7-en-21-yl (9Z,12E)-octadeca-9,12-dienoate (CCD ID: 76F) (formula: $C_{41}H_{76}NO_8P$) (labeled as "Ligand of Interest" by depositor).



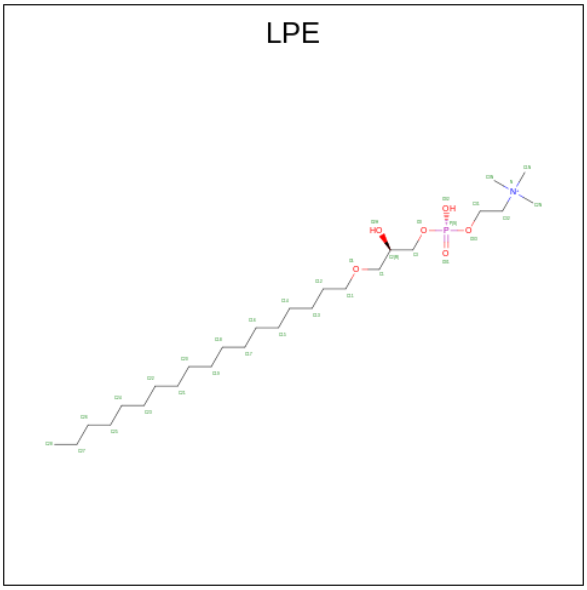
Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			51	41	1	8	1	
3	A	1	Total	C	N	O	P	0
			44	34	1	8	1	
3	C	1	Total	C	N	O	P	0
			51	41	1	8	1	
3	C	1	Total	C	N	O	P	0
			44	34	1	8	1	

- Molecule 4 is PHOSPHATIDYL ETHANOL (CCD ID: P0E) (formula: $C_{39}H_{73}O_9P$) (labeled as "Ligand of Interest" by depositor).



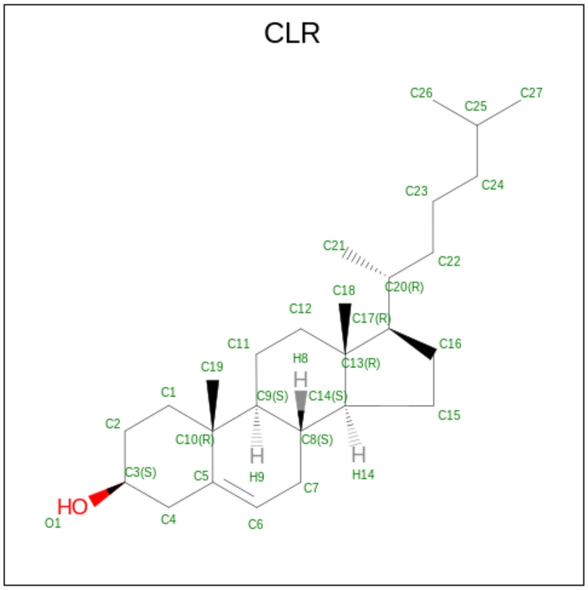
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	O	P	0
			49	39	9	1	
4	C	1	Total	C	O	P	0
			49	39	9	1	

- Molecule 5 is 1-O-OCTADECYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: LPE) (formula: $C_{26}H_{57}NO_6P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	N	O	P	0
			34	26	1	6	1	
5	C	1	Total	C	N	O	P	0
			34	26	1	6	1	

- Molecule 6 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$) (labeled as "Ligand of Interest" by depositor).



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

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Mol	Chain	Residues	Atoms	AltConf
6	A	1	Total C O 28 27 1	0
6	A	1	Total C O 28 27 1	0
6	A	1	Total C O 28 27 1	0
6	B	1	Total C O 28 27 1	0
6	B	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0
6	C	1	Total C O 28 27 1	0

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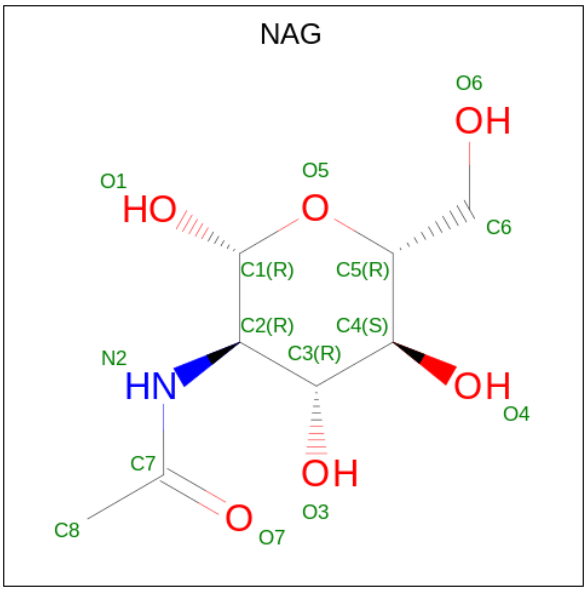
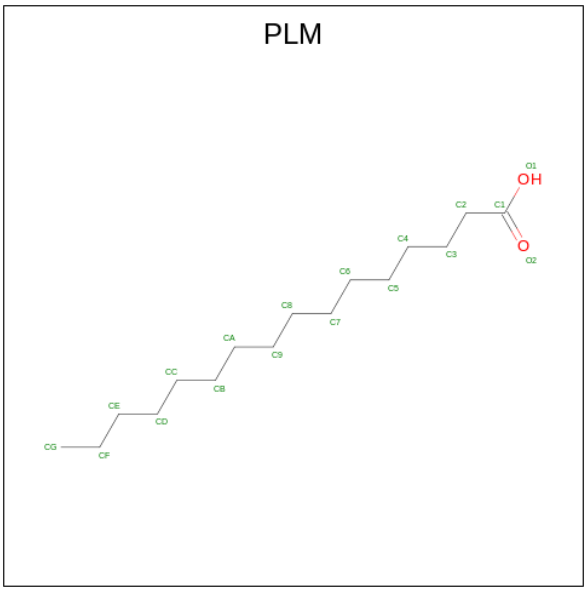
Mol	Chain	Residues	Atoms	AltConf
6	C	1	Total C O 28 27 1	0
6	D	1	Total C O 28 27 1	0
6	D	1	Total C O 28 27 1	0

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
7	A	1	Total C N O 14 8 1 5	0
7	C	1	Total C N O 14 8 1 5	0

- Molecule 8 is PALMITIC ACID (CCD ID: PLM) (formula: $C_{16}H_{32}O_2$) (labeled as "Ligand of Interest" by depositor).



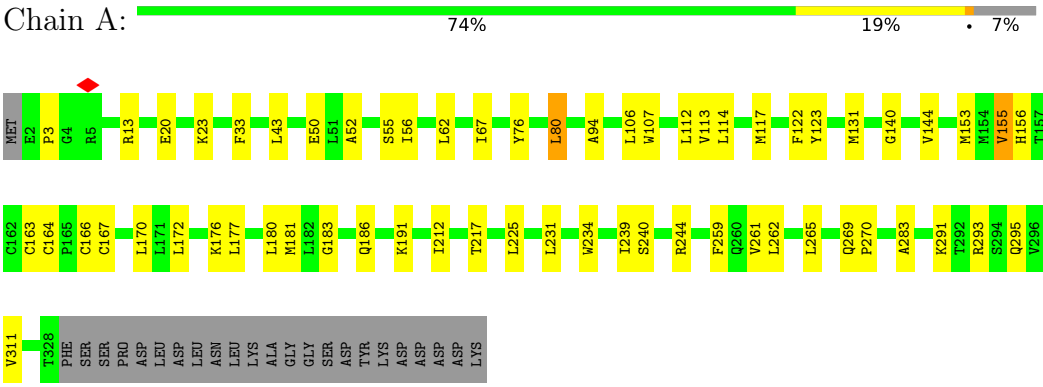
Mol	Chain	Residues	Atoms	AltConf
8	A	1	Total C O 6 5 1	0
8	A	1	Total C O 8 7 1	0
8	A	1	Total C O 5 4 1	0
8	A	1	Total C O 7 6 1	0
8	A	1	Total C O 9 8 1	0
8	A	1	Total C O 5 4 1	0
8	A	1	Total C O 8 7 1	0
8	C	1	Total C O 6 5 1	0
8	C	1	Total C O 8 7 1	0
8	C	1	Total C O 5 4 1	0
8	C	1	Total C O 7 6 1	0
8	C	1	Total C O 9 8 1	0
8	C	1	Total C O 5 4 1	0
8	C	1	Total C O 8 7 1	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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

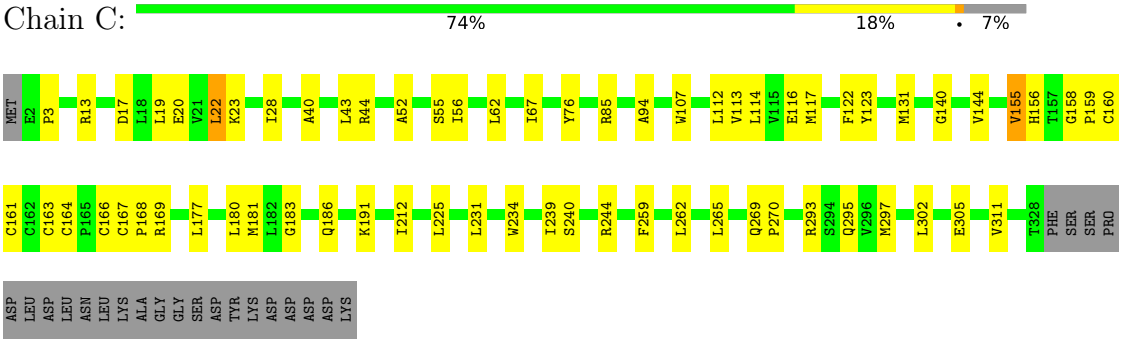
• Molecule 1: Organic solute transporter subunit alpha

Chain A:



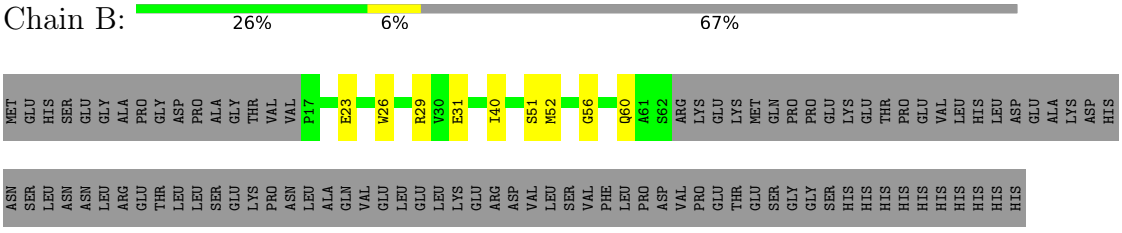
• Molecule 1: Organic solute transporter subunit alpha

Chain C:



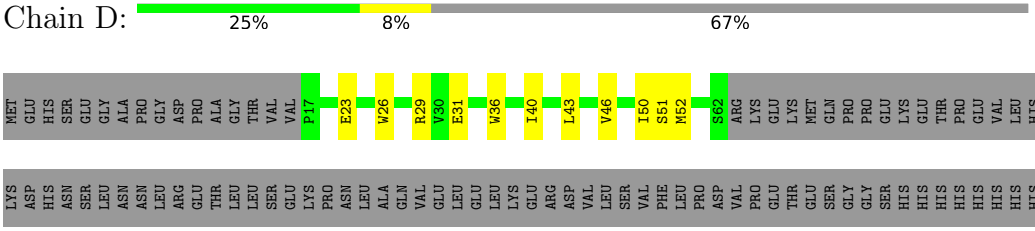
• Molecule 2: Organic solute transporter subunit beta

Chain B:



• Molecule 2: Organic solute transporter subunit beta

Chain D:


25%
8%
67%
MET GLU HIS SER GLU GLY ALA PRO GLY ASP PRO ALA GLY THR VAL VAL P17 E23 W26 R29 Y30 E31 W36 I40 L43 V46 I50 S51 M52 S62 ARG LYS GLU LYS MET GLN PRO PRO GLU LYS GLU THR PRO GLU VAL LEU HIS LEU ASP GLU ALA
LYS ASP HIS ASN SER LEU ASN ASN LEU ARG GLU THR LEU LEU SER GLU LYS PRO ASN LEU ALA GLN VAL GLU LEU GLU LEU LYS GLU ARG ASP VAL LEU SER VAL PHE LEU PRO ASP VAL PRO GLU THR GLU SER GLY GLY SER HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	73940	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.210	Depositor
Minimum map value	-1.059	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.058	Depositor
Recommended contour level	0.24	Depositor
Map size (Å)	247.2, 247.2, 247.2	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.824, 0.824, 0.824	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CLR, LPE, 76F, P0E, PLM, NAG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.29	0/2581	0.43	0/3515
1	C	0.30	1/2581 (0.0%)	0.43	3/3515 (0.1%)
2	B	0.13	0/372	0.25	0/506
2	D	0.13	0/372	0.24	0/506
All	All	0.28	1/5906 (0.0%)	0.41	3/8042 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	169	ARG	C-N	-8.07	1.22	1.33

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	155	VAL	O-C-N	-6.86	115.50	122.23
1	C	155	VAL	CA-C-N	5.67	130.60	122.21
1	C	155	VAL	C-N-CA	5.67	130.60	122.21

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	158	GLY	Peptide
1	C	158	GLY	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2525	0	2645	69	0
1	C	2525	0	2645	64	0
2	B	364	0	372	7	0
2	D	364	0	372	9	0
3	A	95	0	0	0	0
3	C	95	0	0	0	0
4	A	49	0	72	4	0
4	C	49	0	72	0	0
5	A	34	0	56	4	0
5	C	34	0	56	3	0
6	A	476	0	782	26	0
6	B	56	0	92	0	0
6	C	476	0	782	22	0
6	D	56	0	92	1	0
7	A	14	0	13	0	0
7	C	14	0	13	0	0
8	A	48	0	54	21	0
8	C	48	0	54	22	0
All	All	7322	0	8172	174	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 11.

All (174) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:161:CYS:HG	8:C:425:PLM:C1	1.50	1.24
1:A:161:CYS:SG	8:A:423:PLM:C1	2.29	1.20
1:C:161:CYS:SG	8:C:425:PLM:C1	2.29	1.20
1:C:164:CYS:SG	8:C:421:PLM:C1	2.39	1.11

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:CYS:SG	8:A:419:PLM:C1	2.39	1.09
1:C:167:CYS:SG	8:C:422:PLM:C1	2.43	1.07
1:A:163:CYS:SG	8:A:421:PLM:O2	2.13	1.06
1:C:163:CYS:SG	8:C:423:PLM:O2	2.13	1.06
1:A:167:CYS:SG	8:A:420:PLM:C1	2.43	1.04
1:A:166:CYS:SG	8:A:425:PLM:C1	2.52	0.97
1:C:166:CYS:SG	8:C:427:PLM:C1	2.53	0.96
1:C:163:CYS:SG	8:C:423:PLM:C1	2.57	0.92
1:A:163:CYS:SG	8:A:421:PLM:C1	2.57	0.92
1:A:161:CYS:SG	8:A:423:PLM:O2	2.29	0.90
1:C:161:CYS:SG	8:C:425:PLM:O2	2.29	0.89
1:A:234:TRP:CG	8:A:423:PLM:H22	2.19	0.78
1:C:234:TRP:CG	8:C:425:PLM:H22	2.19	0.78
1:A:234:TRP:CD2	8:A:423:PLM:H22	2.23	0.74
1:A:164:CYS:HG	8:A:419:PLM:C1	1.91	0.73
1:C:293:ARG:O	1:C:297:MET:HG3	1.90	0.72
1:A:293:ARG:O	1:A:297:MET:HG3	1.90	0.72
1:C:234:TRP:CD2	8:C:425:PLM:H22	2.25	0.70
1:A:161:CYS:HG	8:A:423:PLM:C1	2.06	0.68
1:A:159:PRO:HD3	1:A:234:TRP:HA	1.77	0.67
1:A:155:VAL:HG23	1:A:167:CYS:SG	2.36	0.66
1:C:183:GLY:O	1:C:186:GLN:HG3	1.96	0.66
1:A:55:SER:HB2	6:A:417:CLR:H151	1.79	0.65
1:C:164:CYS:SG	8:C:421:PLM:O2	2.49	0.65
1:C:160:CYS:SG	8:C:426:PLM:C1	2.85	0.65
1:C:13:ARG:NH2	2:D:23:GLU:OE2	2.30	0.64
1:A:160:CYS:SG	8:A:424:PLM:C1	2.85	0.64
1:A:231:LEU:HD12	8:A:423:PLM:H52	1.78	0.64
1:A:311:VAL:HG21	2:B:51:SER:HB2	1.79	0.64
1:C:160:CYS:SG	8:C:426:PLM:O2	2.56	0.64
6:C:416:CLR:H152	6:C:429:CLR:H213	1.81	0.63
1:A:13:ARG:NH2	2:B:23:GLU:OE2	2.32	0.63
6:A:414:CLR:H152	6:A:427:CLR:H213	1.80	0.63
1:A:183:GLY:O	1:A:186:GLN:HG3	1.99	0.63
1:C:167:CYS:SG	1:C:168:PRO:HD2	2.38	0.63
1:C:55:SER:HB2	6:C:419:CLR:H151	1.79	0.63
1:A:170:LEU:HD11	1:A:176:LYS:HD3	1.80	0.63
2:D:46:VAL:O	2:D:50:ILE:HG13	1.98	0.62
1:A:160:CYS:SG	8:A:424:PLM:O2	2.56	0.61
1:A:240:SER:O	1:A:244:ARG:HG3	2.01	0.61
1:C:159:PRO:HD3	1:C:234:TRP:HA	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:311:VAL:HG21	2:D:51:SER:HB2	1.83	0.60
1:C:240:SER:O	1:C:244:ARG:HG3	2.02	0.59
1:C:113:VAL:HG12	1:C:117:MET:HE2	1.85	0.58
1:C:17:ASP:OD2	1:C:17:ASP:N	2.36	0.58
1:A:167:CYS:HB2	8:A:420:PLM:O2	2.04	0.58
1:A:113:VAL:HG12	1:A:117:MET:HE2	1.85	0.57
1:C:167:CYS:HB2	8:C:422:PLM:O2	2.04	0.57
1:C:231:LEU:HD12	8:C:425:PLM:H52	1.87	0.56
4:A:403:P0E:H31	6:A:405:CLR:H21	1.87	0.56
1:A:160:CYS:O	8:A:419:PLM:H22	2.06	0.56
1:A:52:ALA:HA	6:A:417:CLR:H72	1.87	0.55
1:C:52:ALA:HA	6:C:419:CLR:H72	1.88	0.54
1:C:160:CYS:O	8:C:421:PLM:H22	2.07	0.54
1:A:144:VAL:HG12	1:A:172:LEU:HD21	1.89	0.54
1:A:180:LEU:HD13	1:A:239:ILE:HD11	1.89	0.53
1:A:191:LYS:HD2	1:A:225:LEU:HD13	1.89	0.53
1:A:231:LEU:HD23	6:A:412:CLR:H273	1.91	0.53
6:A:413:CLR:H181	6:A:416:CLR:H212	1.91	0.53
1:C:56:ILE:HD13	6:C:417:CLR:H241	1.92	0.52
6:C:415:CLR:H181	6:C:418:CLR:H212	1.92	0.52
1:A:56:ILE:HD13	6:A:415:CLR:H241	1.92	0.52
1:A:261:VAL:HG22	4:A:403:P0E:H372	1.90	0.52
1:C:177:LEU:O	1:C:181:MET:HG3	2.10	0.52
1:C:180:LEU:HD13	1:C:239:ILE:HD11	1.91	0.52
1:C:167:CYS:SG	8:C:422:PLM:O2	2.66	0.51
1:A:159:PRO:HA	6:A:405:CLR:H191	1.93	0.51
1:A:20:GLU:HA	1:A:20:GLU:OE1	2.11	0.50
1:C:22:LEU:HD13	1:C:28:ILE:HD12	1.93	0.50
6:C:410:CLR:H11	6:C:411:CLR:H21	1.94	0.50
6:A:408:CLR:H11	6:A:409:CLR:H21	1.94	0.50
1:A:167:CYS:SG	8:A:420:PLM:O2	2.66	0.50
1:C:20:GLU:HA	1:C:20:GLU:OE1	2.12	0.50
1:C:166:CYS:SG	8:C:427:PLM:O2	2.69	0.50
1:A:94:ALA:HA	1:A:122:PHE:HE2	1.77	0.49
5:A:404:LPE:H152	6:A:409:CLR:H6	1.94	0.49
5:C:406:LPE:H152	6:C:411:CLR:H6	1.93	0.49
1:A:113:VAL:O	1:A:117:MET:HG3	2.13	0.48
4:A:403:P0E:H413	4:A:403:P0E:H463	1.95	0.48
1:C:67:ILE:HG12	6:C:409:CLR:H71	1.96	0.48
1:A:156:HIS:HA	1:A:161:CYS:HB3	1.96	0.48
1:A:166:CYS:SG	8:A:425:PLM:O2	2.69	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:156:HIS:HA	1:C:161:CYS:HB3	1.94	0.48
6:A:429:CLR:H193	6:C:413:CLR:H8	1.96	0.47
1:A:62:LEU:HD22	6:A:408:CLR:H271	1.96	0.47
1:A:159:PRO:HG2	8:A:423:PLM:H32	1.96	0.47
1:C:94:ALA:HA	1:C:122:PHE:HE2	1.78	0.47
1:C:113:VAL:O	1:C:117:MET:HG3	2.15	0.47
1:A:67:ILE:HG12	6:A:407:CLR:H71	1.95	0.47
6:A:411:CLR:H8	6:C:402:CLR:H193	1.97	0.47
1:A:23:LYS:HE2	1:A:33:PHE:CD2	2.50	0.47
1:A:291:LYS:HA	1:A:291:LYS:HD2	1.70	0.47
2:B:26:TRP:O	2:B:29:ARG:HG2	2.16	0.46
5:A:404:LPE:H1N2	5:A:404:LPE:H311	1.68	0.46
1:C:114:LEU:HD23	1:C:117:MET:HE3	1.97	0.46
1:C:159:PRO:HG2	8:C:425:PLM:H32	1.96	0.46
1:A:3:PRO:HA	1:C:3:PRO:HA	1.97	0.46
1:A:114:LEU:HD23	1:A:117:MET:HE3	1.96	0.46
6:D:201:CLR:H162	6:D:201:CLR:H222	1.79	0.46
1:A:43:LEU:HD21	1:A:107:TRP:HZ3	1.81	0.46
1:A:234:TRP:CD2	8:A:423:PLM:C2	2.98	0.46
1:A:177:LEU:O	1:A:181:MET:HG3	2.15	0.46
5:C:406:LPE:H1N2	5:C:406:LPE:H311	1.68	0.46
1:C:191:LYS:HD2	1:C:225:LEU:HD13	1.98	0.45
1:C:62:LEU:HD22	6:C:410:CLR:H271	1.98	0.45
6:C:409:CLR:H213	2:D:52:MET:HE2	1.98	0.45
2:D:26:TRP:O	2:D:29:ARG:HG2	2.16	0.45
1:C:43:LEU:HD21	1:C:107:TRP:HZ3	1.82	0.45
1:A:131:MET:HE1	1:A:239:ILE:HG13	1.98	0.45
6:C:419:CLR:H162	6:C:419:CLR:H222	1.69	0.45
1:C:123:TYR:OH	1:C:259:PHE:O	2.32	0.45
6:A:428:CLR:H272	6:A:428:CLR:H232	1.82	0.45
1:C:19:LEU:O	1:C:23:LYS:HG3	2.17	0.45
6:A:415:CLR:H222	6:A:415:CLR:H162	1.83	0.44
6:C:414:CLR:H20	6:C:414:CLR:H242	1.78	0.44
6:C:407:CLR:H162	6:C:407:CLR:H222	1.76	0.44
6:A:428:CLR:H181	6:A:429:CLR:H71	2.00	0.44
1:A:123:TYR:OH	1:A:259:PHE:O	2.34	0.44
1:C:131:MET:HE3	1:C:181:MET:HA	2.00	0.44
1:A:167:CYS:CB	8:A:420:PLM:O2	2.66	0.43
1:C:265:LEU:HD13	1:C:305:GLU:HB3	2.01	0.43
2:B:56:GLY:O	2:B:60:GLN:HG2	2.18	0.43
1:C:231:LEU:HD23	6:C:414:CLR:H273	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:167:CYS:CB	8:C:422:PLM:O2	2.66	0.43
2:D:43:LEU:HD23	2:D:43:LEU:HA	1.84	0.43
1:A:183:GLY:HA2	6:A:412:CLR:H271	2.00	0.43
1:A:265:LEU:HD13	1:A:305:GLU:HB3	2.00	0.43
1:A:140:GLY:O	1:A:144:VAL:HG23	2.19	0.43
6:C:415:CLR:H272	6:C:416:CLR:H241	2.01	0.42
6:C:416:CLR:H191	6:C:429:CLR:H112	2.01	0.42
1:C:166:CYS:HG	8:C:427:PLM:C1	2.30	0.42
4:A:403:P0E:H292	4:A:403:P0E:H261	1.87	0.42
6:A:417:CLR:H242	6:A:417:CLR:H20	1.81	0.42
1:C:40:ALA:O	1:C:44:ARG:HG3	2.19	0.42
1:C:234:TRP:CD2	8:C:425:PLM:C2	2.99	0.42
6:C:418:CLR:H162	6:C:418:CLR:H222	1.85	0.42
6:A:414:CLR:H191	6:A:427:CLR:H112	2.02	0.42
2:D:29:ARG:NH1	2:D:31:GLU:OE2	2.52	0.42
1:A:212:ILE:HG22	1:A:212:ILE:O	2.20	0.41
6:A:407:CLR:H213	2:B:52:MET:HE2	2.02	0.41
1:C:212:ILE:HG22	1:C:212:ILE:O	2.20	0.41
1:A:80:LEU:HD22	5:A:404:LPE:H1N1	2.02	0.41
1:C:76:TYR:CD1	5:C:406:LPE:H161	2.55	0.41
6:C:401:CLR:H181	6:C:402:CLR:H71	2.01	0.41
1:C:67:ILE:HG13	6:C:409:CLR:H151	2.02	0.41
1:C:76:TYR:HA	1:C:85:ARG:HD2	2.02	0.41
1:A:67:ILE:HG13	6:A:407:CLR:H151	2.02	0.41
1:A:262:LEU:HD12	1:A:262:LEU:HA	1.93	0.41
6:A:413:CLR:H272	6:A:414:CLR:H241	2.01	0.41
6:C:428:CLR:H273	6:C:428:CLR:H231	1.87	0.41
1:A:112:LEU:HD13	1:A:295:GLN:HB2	2.02	0.41
1:C:302:LEU:HD23	1:C:302:LEU:HA	1.95	0.41
2:D:40:ILE:HD13	2:D:40:ILE:HA	1.90	0.41
1:A:106:LEU:HD23	1:A:106:LEU:HA	1.94	0.41
6:A:412:CLR:H20	6:A:412:CLR:H242	1.82	0.41
6:A:428:CLR:H162	6:A:428:CLR:H222	1.81	0.41
1:C:123:TYR:OH	1:C:262:LEU:HB3	2.21	0.41
1:C:269:GLN:HB3	1:C:270:PRO:HD3	2.03	0.41
1:A:50:GLU:OE1	1:A:50:GLU:N	2.30	0.41
1:A:50:GLU:H	1:A:50:GLU:CD	2.22	0.41
1:A:76:TYR:CD1	5:A:404:LPE:H161	2.55	0.41
1:C:112:LEU:HD13	1:C:295:GLN:HB2	2.02	0.41
1:A:283:ALA:HB2	2:B:29:ARG:CZ	2.50	0.41
2:B:40:ILE:HD13	2:B:40:ILE:HA	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:140:GLY:O	1:C:144:VAL:HG23	2.21	0.40
1:A:269:GLN:HB3	1:A:270:PRO:HD3	2.03	0.40
1:C:43:LEU:HD23	1:C:43:LEU:HA	1.93	0.40
1:A:217:THR:OG1	6:A:428:CLR:H72	2.22	0.40
1:A:123:TYR:OH	1:A:262:LEU:HB3	2.22	0.40
1:C:297:MET:HB3	2:D:36:TRP:CZ2	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	325/351 (93%)	319 (98%)	6 (2%)	0	100	100
1	C	325/351 (93%)	320 (98%)	5 (2%)	0	100	100
2	B	44/141 (31%)	44 (100%)	0	0	100	100
2	D	44/141 (31%)	44 (100%)	0	0	100	100
All	All	738/984 (75%)	727 (98%)	11 (2%)	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 PDB entries followed by that with respect to all EM entries.

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	280/305 (92%)	277 (99%)	3 (1%)	70 86
1	C	280/305 (92%)	277 (99%)	3 (1%)	70 86
2	B	40/126 (32%)	39 (98%)	1 (2%)	42 68
2	D	40/126 (32%)	40 (100%)	0	100 100
All	All	640/862 (74%)	633 (99%)	7 (1%)	69 86

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

Mol	Chain	Res	Type
1	A	80	LEU
1	A	153	MET
1	A	155	VAL
2	B	31	GLU
1	C	22	LEU
1	C	116	GLU
1	C	155	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	242	GLN
1	A	269	GLN
1	A	295	GLN
1	C	242	GLN
1	C	269	GLN
2	D	37	ASN

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

62 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	$\#\|Z\| > 2$
6	CLR	A	410	-	31,31,31	0.38	0	48,48,48	0.59	0
6	CLR	C	415	-	31,31,31	0.37	0	48,48,48	0.50	0
8	PLM	A	423	-	8,8,17	0.46	0	7,7,17	0.54	0
6	CLR	C	408	-	31,31,31	0.36	0	48,48,48	0.48	0
6	CLR	A	417	-	31,31,31	0.37	0	48,48,48	0.55	0
8	PLM	C	425	-	8,8,17	0.46	0	7,7,17	0.54	0
8	PLM	C	427	-	7,7,17	0.49	0	6,6,17	0.63	0
6	CLR	C	428	-	31,31,31	0.35	0	48,48,48	0.53	0
6	CLR	B	202	-	31,31,31	0.37	0	48,48,48	0.52	0
8	PLM	C	424	-	6,6,17	0.53	0	5,5,17	0.63	0
6	CLR	A	427	-	31,31,31	0.37	0	48,48,48	0.66	0
6	CLR	C	419	-	31,31,31	0.38	0	48,48,48	0.54	0
6	CLR	D	202	-	31,31,31	0.37	0	48,48,48	0.51	0
6	CLR	D	201	-	31,31,31	0.35	0	48,48,48	0.53	0
6	CLR	A	411	-	31,31,31	0.37	0	48,48,48	0.55	0
6	CLR	A	416	-	31,31,31	0.36	0	48,48,48	0.50	0
6	CLR	C	413	-	31,31,31	0.37	0	48,48,48	0.55	0
7	NAG	C	420	1	14,14,15	0.73	0	17,19,21	2.13	3 (17%)
6	CLR	A	413	-	31,31,31	0.37	0	48,48,48	0.50	0
6	CLR	C	410	-	31,31,31	0.36	0	48,48,48	0.47	0
4	P0E	C	405	-	48,48,48	0.50	0	51,53,53	0.51	1 (1%)
6	CLR	C	401	-	31,31,31	0.37	0	48,48,48	0.58	0
8	PLM	A	425	-	7,7,17	0.49	0	6,6,17	0.63	0
8	PLM	A	422	-	6,6,17	0.52	0	5,5,17	0.63	0
6	CLR	A	405	-	31,31,31	0.36	0	48,48,48	0.55	0
6	CLR	C	416	-	31,31,31	0.36	0	48,48,48	0.50	0
6	CLR	C	417	-	31,31,31	0.38	0	48,48,48	0.46	0
8	PLM	C	421	-	5,5,17	0.56	0	4,4,17	0.74	0
6	CLR	C	429	-	31,31,31	0.37	0	48,48,48	0.65	0
5	LPE	C	406	-	33,33,33	1.02	0	37,39,39	0.81	1 (2%)
6	CLR	A	429	-	31,31,31	0.39	0	48,48,48	0.64	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	CLR	A	412	-	31,31,31	0.40	0	48,48,48	1.02	3 (6%)
8	PLM	C	422	-	7,7,17	0.48	0	6,6,17	0.56	0
8	PLM	C	426	-	4,4,17	0.59	0	3,3,17	0.76	0
6	CLR	A	406	-	31,31,31	0.35	0	48,48,48	0.47	0
6	CLR	A	408	-	31,31,31	0.36	0	48,48,48	0.47	0
4	P0E	A	403	-	48,48,48	0.50	0	51,53,53	0.52	1 (1%)
6	CLR	A	414	-	31,31,31	0.36	0	48,48,48	0.50	0
6	CLR	C	418	-	31,31,31	0.36	0	48,48,48	0.50	0
8	PLM	C	423	-	4,4,17	0.58	0	3,3,17	0.78	0
3	76F	C	404	-	43,43,50	1.36	4 (9%)	46,48,55	1.42	7 (15%)
6	CLR	B	201	-	31,31,31	0.36	0	48,48,48	0.53	0
6	CLR	C	409	-	31,31,31	0.37	0	48,48,48	0.58	0
6	CLR	A	415	-	31,31,31	0.37	0	48,48,48	0.46	0
6	CLR	C	407	-	31,31,31	0.37	0	48,48,48	0.54	0
7	NAG	A	418	1	14,14,15	0.72	0	17,19,21	2.16	2 (11%)
8	PLM	A	419	-	5,5,17	0.57	0	4,4,17	0.74	0
6	CLR	C	411	-	31,31,31	0.37	0	48,48,48	0.52	0
6	CLR	C	412	-	31,31,31	0.38	0	48,48,48	0.59	0
8	PLM	A	420	-	7,7,17	0.48	0	6,6,17	0.56	0
6	CLR	A	428	-	31,31,31	0.37	0	48,48,48	0.56	0
6	CLR	A	426	-	31,31,31	0.35	0	48,48,48	0.53	0
3	76F	A	401	-	50,50,50	1.59	7 (14%)	53,55,55	1.55	4 (7%)
6	CLR	C	414	-	31,31,31	0.40	0	48,48,48	1.00	2 (4%)
8	PLM	A	421	-	4,4,17	0.58	0	3,3,17	0.78	0
3	76F	C	403	-	50,50,50	1.59	7 (14%)	53,55,55	1.56	4 (7%)
5	LPE	A	404	-	33,33,33	1.02	0	37,39,39	0.81	1 (2%)
6	CLR	A	409	-	31,31,31	0.36	0	48,48,48	0.52	0
6	CLR	A	407	-	31,31,31	0.38	0	48,48,48	0.59	0
6	CLR	C	402	-	31,31,31	0.39	0	48,48,48	0.64	0
3	76F	A	402	-	43,43,50	1.36	4 (9%)	46,48,55	1.42	7 (15%)
8	PLM	A	424	-	4,4,17	0.59	0	3,3,17	0.76	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
6	CLR	A	410	-	-	0/10/68/68	0/4/4/4
6	CLR	C	415	-	-	0/10/68/68	0/4/4/4
8	PLM	A	423	-	-	1/5/6/15	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	CLR	C	408	-	-	0/10/68/68	0/4/4/4
6	CLR	A	417	-	-	5/10/68/68	0/4/4/4
8	PLM	C	425	-	-	1/5/6/15	-
8	PLM	C	427	-	-	1/4/5/15	-
6	CLR	C	428	-	-	4/10/68/68	0/4/4/4
6	CLR	B	202	-	-	0/10/68/68	0/4/4/4
8	PLM	C	424	-	-	0/3/4/15	-
6	CLR	A	427	-	-	4/10/68/68	0/4/4/4
6	CLR	C	419	-	-	5/10/68/68	0/4/4/4
6	CLR	D	202	-	-	0/10/68/68	0/4/4/4
6	CLR	D	201	-	-	4/10/68/68	0/4/4/4
6	CLR	A	411	-	-	7/10/68/68	0/4/4/4
6	CLR	A	416	-	-	4/10/68/68	0/4/4/4
6	CLR	C	413	-	-	7/10/68/68	0/4/4/4
7	NAG	C	420	1	-	2/6/23/26	0/1/1/1
6	CLR	A	413	-	-	0/10/68/68	0/4/4/4
6	CLR	C	410	-	-	0/10/68/68	0/4/4/4
4	P0E	C	405	-	-	13/52/52/52	-
6	CLR	C	401	-	-	7/10/68/68	0/4/4/4
8	PLM	A	425	-	-	1/4/5/15	-
8	PLM	A	422	-	-	0/3/4/15	-
6	CLR	A	405	-	-	5/10/68/68	0/4/4/4
6	CLR	C	416	-	-	0/10/68/68	0/4/4/4
6	CLR	C	417	-	-	5/10/68/68	0/4/4/4
8	PLM	C	421	-	-	1/2/3/15	-
6	CLR	C	429	-	-	4/10/68/68	0/4/4/4
5	LPE	C	406	-	-	10/34/34/34	-
6	CLR	A	429	-	-	4/10/68/68	0/4/4/4
6	CLR	A	412	-	-	6/10/68/68	0/4/4/4
8	PLM	C	422	-	-	0/4/5/15	-
8	PLM	C	426	-	-	0/1/2/15	-
6	CLR	A	406	-	-	1/10/68/68	0/4/4/4
6	CLR	A	408	-	-	0/10/68/68	0/4/4/4
4	P0E	A	403	-	-	13/52/52/52	-
6	CLR	A	414	-	-	0/10/68/68	0/4/4/4
6	CLR	C	418	-	-	4/10/68/68	0/4/4/4
8	PLM	C	423	-	-	0/1/2/15	-
3	76F	C	404	-	-	18/47/47/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	CLR	B	201	-	-	4/10/68/68	0/4/4/4
6	CLR	C	409	-	-	4/10/68/68	0/4/4/4
6	CLR	A	415	-	-	5/10/68/68	0/4/4/4
6	CLR	C	407	-	-	5/10/68/68	0/4/4/4
7	NAG	A	418	1	-	2/6/23/26	0/1/1/1
8	PLM	A	419	-	-	1/2/3/15	-
6	CLR	C	411	-	-	0/10/68/68	0/4/4/4
6	CLR	C	412	-	-	0/10/68/68	0/4/4/4
8	PLM	A	420	-	-	0/4/5/15	-
6	CLR	A	428	-	-	7/10/68/68	0/4/4/4
6	CLR	A	426	-	-	4/10/68/68	0/4/4/4
3	76F	A	401	-	-	21/54/54/54	-
6	CLR	C	414	-	-	6/10/68/68	0/4/4/4
8	PLM	A	421	-	-	0/1/2/15	-
3	76F	C	403	-	-	20/54/54/54	-
5	LPE	A	404	-	-	9/34/34/34	-
6	CLR	A	409	-	-	0/10/68/68	0/4/4/4
6	CLR	A	407	-	-	4/10/68/68	0/4/4/4
6	CLR	C	402	-	-	3/10/68/68	0/4/4/4
3	76F	A	402	-	-	19/47/47/54	-
8	PLM	A	424	-	-	0/1/2/15	-

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	404	76F	P-O3P	4.34	1.76	1.59
3	A	402	76F	P-O3P	4.34	1.76	1.59
3	C	403	76F	C5-N	-4.04	1.13	1.46
3	C	403	76F	C22-C21	4.04	1.55	1.31
3	A	401	76F	C5-N	-4.03	1.14	1.46
3	A	401	76F	C22-C21	4.03	1.55	1.31
3	A	401	76F	C41-C40	3.99	1.54	1.31
3	C	403	76F	C41-C40	3.99	1.54	1.31
3	A	401	76F	C19-C18	3.92	1.54	1.31
3	C	403	76F	C19-C18	3.89	1.54	1.31
3	A	402	76F	P-O4P	3.47	1.73	1.59
3	C	404	76F	P-O4P	3.44	1.73	1.59
3	A	402	76F	C1-C2	3.23	1.60	1.50
3	C	404	76F	C1-C2	3.19	1.60	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	401	76F	O2-C10	2.79	1.42	1.34
3	C	403	76F	O2-C10	2.77	1.42	1.34
3	A	401	76F	O3-C30	2.72	1.41	1.33
3	C	403	76F	O2-C2	-2.71	1.39	1.46
3	A	401	76F	O2-C2	-2.70	1.39	1.46
3	C	403	76F	O3-C30	2.70	1.41	1.33
3	A	402	76F	C3-C2	2.34	1.57	1.50
3	C	404	76F	C3-C2	2.33	1.57	1.50

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	403	76F	C4-C5-N	7.36	179.98	114.45
3	A	401	76F	C4-C5-N	7.27	179.13	114.45
7	A	418	NAG	C1-O5-C5	-6.90	102.84	112.19
7	C	420	NAG	C1-O5-C5	-6.66	103.17	112.19
3	C	404	76F	O2-C10-C11	6.05	124.53	111.50
3	A	402	76F	O2-C10-C11	6.05	124.53	111.50
6	A	412	CLR	C13-C17-C20	4.22	126.10	119.49
6	C	414	CLR	C13-C17-C20	4.22	126.09	119.49
3	C	403	76F	O2-C10-C11	4.06	120.26	111.50
3	A	401	76F	O2-C10-C11	4.02	120.17	111.50
7	C	420	NAG	O5-C5-C6	3.50	112.69	107.20
7	A	418	NAG	O5-C5-C6	3.38	112.51	107.20
3	C	404	76F	O3-C30-C31	3.38	122.52	111.91
3	A	402	76F	O3-C30-C31	3.34	122.39	111.91
3	A	402	76F	O2-C10-O4	-2.92	116.66	123.70
3	C	404	76F	O2-C10-O4	-2.91	116.66	123.70
3	A	402	76F	O2P-P-O1P	2.76	125.88	112.24
3	C	404	76F	O2P-P-O1P	2.75	125.81	112.24
4	A	403	P0E	O9-P8-O7	2.43	124.25	112.24
3	C	403	76F	O3-C30-C31	2.43	119.53	111.91
3	A	401	76F	O3-C30-C31	2.42	119.50	111.91
4	C	405	P0E	O9-P8-O7	2.41	124.17	112.24
6	A	412	CLR	C17-C13-C14	-2.36	97.28	100.07
3	A	401	76F	O2P-P-O1P	-2.32	100.79	112.24
3	A	402	76F	C21-C20-C19	2.31	123.40	112.02
3	C	404	76F	C21-C20-C19	2.31	123.39	112.02
3	C	403	76F	O2P-P-O1P	-2.30	100.88	112.24
6	C	414	CLR	C17-C13-C14	-2.25	97.41	100.07
3	C	404	76F	O3-C30-O5	-2.23	117.95	123.59
3	A	402	76F	O3-C30-O5	-2.23	117.97	123.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	412	CLR	C13-C14-C8	2.21	117.65	114.38
5	A	404	LPE	O32-P-O31	-2.18	101.45	112.24
5	C	406	LPE	O32-P-O31	-2.18	101.45	112.24
7	C	420	NAG	C2-N2-C7	2.16	125.98	122.90
3	A	402	76F	C2-O2-C10	2.12	123.02	117.79
3	C	404	76F	C2-O2-C10	2.08	122.92	117.79

There are no chirality outliers.

All (251) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	401	76F	O4-C10-O2-C2
3	A	401	76F	C1-O3P-P-O1P
3	A	401	76F	C1-O3P-P-O2P
3	A	401	76F	C1-O3P-P-O4P
3	A	401	76F	C4-O4P-P-O1P
3	A	402	76F	C11-C10-O2-C2
3	A	402	76F	O4-C10-O2-C2
3	C	403	76F	O4-C10-O2-C2
3	C	403	76F	C1-O3P-P-O1P
3	C	403	76F	C1-O3P-P-O2P
3	C	404	76F	C11-C10-O2-C2
4	A	403	P0E	C4-O6-P8-O7
4	C	405	P0E	C4-O6-P8-O7
5	A	404	LPE	C31-O33-P-O3
5	A	404	LPE	C31-O33-P-O31
5	C	406	LPE	C31-O33-P-O3
5	C	406	LPE	C31-O33-P-O31
6	A	415	CLR	C13-C17-C20-C21
6	A	415	CLR	C13-C17-C20-C22
6	A	415	CLR	C16-C17-C20-C22
6	C	417	CLR	C13-C17-C20-C21
6	C	417	CLR	C13-C17-C20-C22
6	C	417	CLR	C16-C17-C20-C22
4	C	405	P0E	O14-C13-O5-C3
6	A	415	CLR	C16-C17-C20-C21
6	C	417	CLR	C16-C17-C20-C21
3	C	404	76F	O4-C10-O2-C2
3	A	401	76F	C11-C10-O2-C2
3	C	403	76F	C11-C10-O2-C2
6	A	429	CLR	C21-C20-C22-C23
6	C	402	CLR	C21-C20-C22-C23

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Mol	Chain	Res	Type	Atoms
4	C	405	P0E	C24-C13-O5-C3
3	A	402	76F	C20-C21-C22-C23
3	C	404	76F	C20-C21-C22-C23
6	A	412	CLR	C13-C17-C20-C22
6	C	414	CLR	C13-C17-C20-C22
8	A	425	PLM	C3-C4-C5-C6
8	C	427	PLM	C3-C4-C5-C6
7	A	418	NAG	O5-C5-C6-O6
6	A	405	CLR	C13-C17-C20-C22
6	A	411	CLR	C21-C20-C22-C23
7	C	420	NAG	O5-C5-C6-O6
6	A	411	CLR	C17-C20-C22-C23
6	A	427	CLR	C17-C20-C22-C23
6	C	402	CLR	C17-C20-C22-C23
6	C	413	CLR	C21-C20-C22-C23
3	A	402	76F	C31-C32-C33-C34
6	C	413	CLR	C17-C20-C22-C23
6	C	429	CLR	C17-C20-C22-C23
6	A	411	CLR	C22-C23-C24-C25
3	C	404	76F	C31-C32-C33-C34
7	C	420	NAG	C4-C5-C6-O6
7	A	418	NAG	C4-C5-C6-O6
6	C	401	CLR	C22-C23-C24-C25
6	C	413	CLR	C22-C23-C24-C25
6	A	415	CLR	C22-C23-C24-C25
6	A	428	CLR	C22-C23-C24-C25
6	C	417	CLR	C22-C23-C24-C25
6	A	426	CLR	C17-C20-C22-C23
6	A	429	CLR	C17-C20-C22-C23
6	C	428	CLR	C17-C20-C22-C23
6	A	426	CLR	C22-C23-C24-C25
3	A	402	76F	C2-C1-O3P-P
3	C	404	76F	C2-C1-O3P-P
6	C	428	CLR	C22-C23-C24-C25
6	A	412	CLR	C16-C17-C20-C21
6	C	414	CLR	C16-C17-C20-C21
6	C	407	CLR	C13-C17-C20-C22
6	A	427	CLR	C21-C20-C22-C23
6	C	429	CLR	C21-C20-C22-C23
6	A	427	CLR	C22-C23-C24-C25
6	C	429	CLR	C22-C23-C24-C25
6	A	412	CLR	C16-C17-C20-C22

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Mol	Chain	Res	Type	Atoms
6	C	414	CLR	C16-C17-C20-C22
3	A	401	76F	C4-O4P-P-O3P
3	C	403	76F	C1-O3P-P-O4P
4	C	405	P0E	C4-O6-P8-O10
4	A	403	P0E	C24-C13-O5-C3
5	A	404	LPE	O2H-C2-C3-O3
5	C	406	LPE	O2H-C2-C3-O3
3	A	402	76F	C31-C30-O3-C3
4	A	403	P0E	O14-C13-O5-C3
3	A	402	76F	C35-C36-C37-C38
3	C	404	76F	C35-C36-C37-C38
6	C	407	CLR	C20-C22-C23-C24
5	C	406	LPE	C14-C15-C16-C17
5	A	404	LPE	C14-C15-C16-C17
6	A	405	CLR	C13-C17-C20-C21
6	A	417	CLR	C13-C17-C20-C22
6	C	419	CLR	C13-C17-C20-C22
3	C	404	76F	C31-C30-O3-C3
3	A	402	76F	O5-C30-O3-C3
6	A	405	CLR	C20-C22-C23-C24
4	A	403	P0E	C15-C16-C17-C18
6	A	412	CLR	C22-C23-C24-C25
6	A	429	CLR	C20-C22-C23-C24
6	C	402	CLR	C20-C22-C23-C24
6	A	416	CLR	C13-C17-C20-C22
6	C	418	CLR	C13-C17-C20-C22
4	A	403	P0E	C15-C11-O1-C2
4	C	405	P0E	C15-C11-O1-C2
4	C	405	P0E	O12-C11-O1-C2
3	A	401	76F	O2-C2-C3-O3
3	C	403	76F	O2-C2-C3-O3
6	C	407	CLR	C13-C17-C20-C21
4	C	405	P0E	C15-C16-C17-C18
3	A	401	76F	C20-C21-C22-C23
5	C	406	LPE	C23-C24-C25-C26
6	A	428	CLR	C23-C24-C25-C26
6	C	401	CLR	C23-C24-C25-C26
4	A	403	P0E	O12-C11-O1-C2
3	C	404	76F	O5-C30-O3-C3
6	A	405	CLR	C16-C17-C20-C22
6	C	414	CLR	C22-C23-C24-C25
3	C	403	76F	C20-C21-C22-C23

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Mol	Chain	Res	Type	Atoms
6	A	405	CLR	C16-C17-C20-C21
6	C	407	CLR	C16-C17-C20-C22
3	A	402	76F	C1-C2-O2-C10
3	C	404	76F	C1-C2-O2-C10
6	A	416	CLR	C16-C17-C20-C21
6	A	417	CLR	C16-C17-C20-C21
6	C	407	CLR	C16-C17-C20-C21
6	C	418	CLR	C16-C17-C20-C21
6	C	419	CLR	C16-C17-C20-C21
6	A	416	CLR	C13-C17-C20-C21
6	A	417	CLR	C13-C17-C20-C21
6	C	418	CLR	C13-C17-C20-C21
6	C	419	CLR	C13-C17-C20-C21
5	C	406	LPE	C25-C26-C27-C28
6	A	428	CLR	C13-C17-C20-C21
5	C	406	LPE	C1-C2-C3-O3
6	A	417	CLR	C16-C17-C20-C22
6	C	419	CLR	C16-C17-C20-C22
6	A	428	CLR	C13-C17-C20-C22
3	A	401	76F	O3-C30-C31-C32
6	A	416	CLR	C16-C17-C20-C22
6	C	418	CLR	C16-C17-C20-C22
6	C	401	CLR	C13-C17-C20-C22
6	C	401	CLR	C13-C17-C20-C21
6	A	428	CLR	C23-C24-C25-C27
3	C	403	76F	O3-C30-C31-C32
6	A	407	CLR	C17-C20-C22-C23
6	C	409	CLR	C17-C20-C22-C23
3	A	402	76F	O2-C2-C3-O3
3	C	404	76F	O2-C2-C3-O3
6	A	428	CLR	C16-C17-C20-C22
6	A	411	CLR	C13-C17-C20-C22
6	C	413	CLR	C13-C17-C20-C22
3	A	401	76F	C2-C1-O3P-P
5	A	404	LPE	C2-C3-O3-P
5	C	406	LPE	C2-C3-O3-P
6	C	401	CLR	C16-C17-C20-C22
6	C	401	CLR	C23-C24-C25-C27
6	B	201	CLR	C13-C17-C20-C22
6	D	201	CLR	C13-C17-C20-C22
3	C	404	76F	C16-C17-C18-C19
3	A	401	76F	C24-C25-C26-C27

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Mol	Chain	Res	Type	Atoms
3	C	404	76F	C34-C35-C36-C37
3	A	402	76F	C16-C17-C18-C19
6	A	428	CLR	C16-C17-C20-C21
3	A	401	76F	C1-C2-C3-O3
3	A	402	76F	C1-C2-C3-O3
3	C	403	76F	C1-C2-C3-O3
3	C	403	76F	C2-C1-O3P-P
3	C	404	76F	C1-C2-C3-O3
3	C	404	76F	C11-C12-C13-C14
6	A	411	CLR	C13-C17-C20-C21
6	A	412	CLR	C13-C17-C20-C21
6	D	201	CLR	C13-C17-C20-C21
5	A	404	LPE	C1-C2-C3-O3
3	C	403	76F	C24-C25-C26-C27
6	B	201	CLR	C13-C17-C20-C21
6	C	413	CLR	C13-C17-C20-C21
6	C	414	CLR	C13-C17-C20-C21
3	A	402	76F	C34-C35-C36-C37
6	A	411	CLR	C16-C17-C20-C22
3	C	403	76F	C10-C11-C12-C13
3	A	401	76F	C10-C11-C12-C13
3	C	403	76F	C4-O4P-P-O3P
4	A	403	P0E	C4-O6-P8-O9
4	C	405	P0E	C4-O6-P8-O9
6	C	413	CLR	C16-C17-C20-C22
6	D	201	CLR	C16-C17-C20-C22
6	C	401	CLR	C16-C17-C20-C21
3	A	402	76F	C17-C18-C19-C20
3	A	402	76F	C5-C4-O4P-P
3	C	404	76F	C5-C4-O4P-P
5	A	404	LPE	C32-C31-O33-P
5	C	406	LPE	C32-C31-O33-P
6	B	201	CLR	C16-C17-C20-C22
8	A	419	PLM	C1-C2-C3-C4
8	A	423	PLM	C1-C2-C3-C4
8	C	421	PLM	C1-C2-C3-C4
8	C	425	PLM	C1-C2-C3-C4
3	C	404	76F	C17-C18-C19-C20
6	C	419	CLR	C20-C22-C23-C24
6	A	417	CLR	C20-C22-C23-C24
6	A	407	CLR	C23-C24-C25-C27
3	A	402	76F	C11-C12-C13-C14

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Mol	Chain	Res	Type	Atoms
6	A	407	CLR	C22-C23-C24-C25
6	C	409	CLR	C23-C24-C25-C27
6	C	409	CLR	C22-C23-C24-C25
4	A	403	P0E	C3-C2-O1-C11
4	C	405	P0E	C4-C2-O1-C11
4	A	403	P0E	C22-C23-C34-C42
3	A	402	76F	C4-O4P-P-O3P
3	C	404	76F	C4-O4P-P-O3P
4	A	403	P0E	C4-O6-P8-O10
6	A	427	CLR	C20-C22-C23-C24
4	C	405	P0E	C22-C23-C34-C42
3	C	404	76F	C32-C33-C34-C35
6	A	411	CLR	C16-C17-C20-C21
6	C	429	CLR	C20-C22-C23-C24
6	A	407	CLR	C21-C20-C22-C23
6	C	409	CLR	C21-C20-C22-C23
6	C	413	CLR	C16-C17-C20-C21
6	D	201	CLR	C16-C17-C20-C21
4	C	405	P0E	C20-C21-C22-C23
6	C	414	CLR	C20-C22-C23-C24
5	A	404	LPE	C20-C21-C22-C23
5	C	406	LPE	C20-C21-C22-C23
6	B	201	CLR	C16-C17-C20-C21
4	A	403	P0E	C4-C2-O1-C11
3	A	401	76F	C16-C17-C18-C19
3	C	403	76F	C16-C17-C18-C19
3	A	401	76F	O5-C30-C31-C32
3	C	403	76F	C31-C30-O3-C3
4	A	403	P0E	C20-C21-C22-C23
3	C	403	76F	O5-C30-O3-C3
3	A	401	76F	C31-C30-O3-C3
3	C	403	76F	C39-C40-C41-C42
4	C	405	P0E	C3-C2-O1-C11
3	A	401	76F	O5-C30-O3-C3
4	C	405	P0E	C2-C4-O6-P8
6	A	412	CLR	C20-C22-C23-C24
3	C	403	76F	O5-C30-C31-C32
3	A	401	76F	C40-C41-C42-C43
3	C	403	76F	C40-C41-C42-C43
6	A	426	CLR	C23-C24-C25-C27
6	C	428	CLR	C23-C24-C25-C27
6	A	426	CLR	C21-C20-C22-C23

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Mol	Chain	Res	Type	Atoms
6	C	428	CLR	C21-C20-C22-C23
4	A	403	P0E	O10-C47-C48-O49
3	A	401	76F	C30-C31-C32-C33
6	A	406	CLR	C13-C17-C20-C21
3	A	402	76F	C36-C37-C38-C39
3	C	403	76F	C4-O4P-P-O1P
6	A	429	CLR	C23-C24-C25-C26
3	A	401	76F	C5-C4-O4P-P
3	A	402	76F	C32-C33-C34-C35
5	A	404	LPE	C23-C24-C25-C26

There are no ring outliers.

45 monomers are involved in 98 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	C	415	CLR	2	0
8	A	423	PLM	8	0
6	A	417	CLR	3	0
8	C	425	PLM	8	0
8	C	427	PLM	3	0
6	C	428	CLR	1	0
6	A	427	CLR	2	0
6	C	419	CLR	3	0
6	D	201	CLR	1	0
6	A	411	CLR	1	0
6	A	416	CLR	1	0
6	C	413	CLR	1	0
6	A	413	CLR	2	0
6	C	410	CLR	2	0
6	C	401	CLR	1	0
8	A	425	PLM	2	0
6	A	405	CLR	2	0
6	C	416	CLR	3	0
6	C	417	CLR	1	0
8	C	421	PLM	3	0
6	C	429	CLR	2	0
5	C	406	LPE	3	0
6	A	429	CLR	2	0
6	A	412	CLR	3	0
8	C	422	PLM	4	0
8	C	426	PLM	2	0
6	A	408	CLR	2	0

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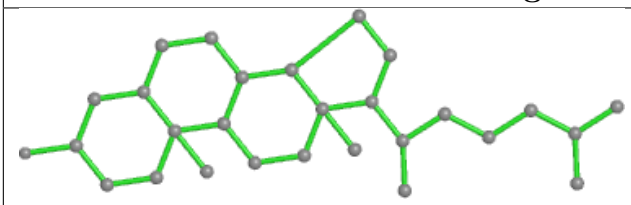
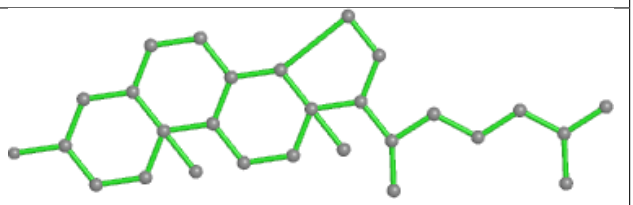
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	403	P0E	4	0
6	A	414	CLR	3	0
6	C	418	CLR	2	0
8	C	423	PLM	2	0
6	C	409	CLR	3	0
6	A	415	CLR	2	0
6	C	407	CLR	1	0
8	A	419	PLM	3	0
6	C	411	CLR	2	0
8	A	420	PLM	4	0
6	A	428	CLR	4	0
6	C	414	CLR	2	0
8	A	421	PLM	2	0
5	A	404	LPE	4	0
6	A	409	CLR	2	0
6	A	407	CLR	3	0
6	C	402	CLR	2	0
8	A	424	PLM	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.

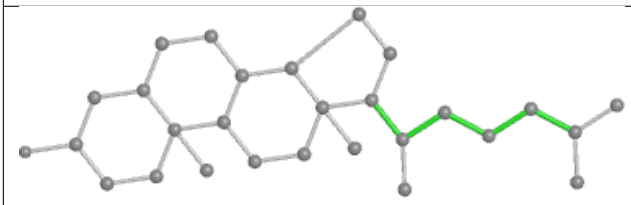
Ligand CLR A 410



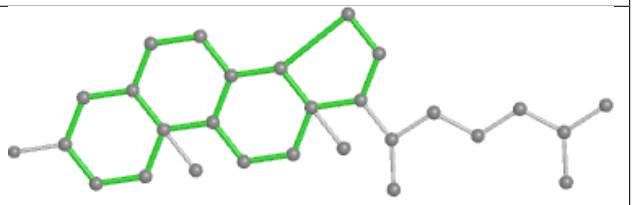
Bond lengths



Bond angles

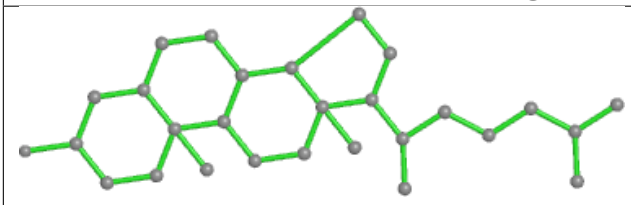


Torsions

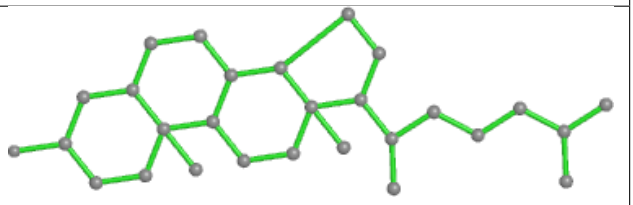


Rings

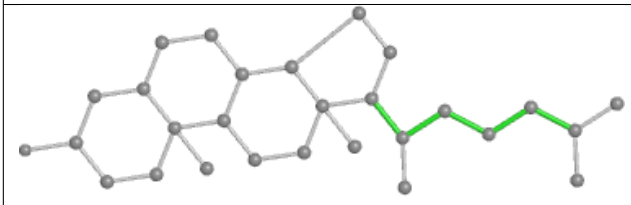
Ligand CLR C 415



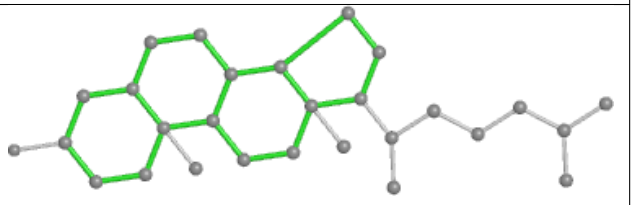
Bond lengths



Bond angles

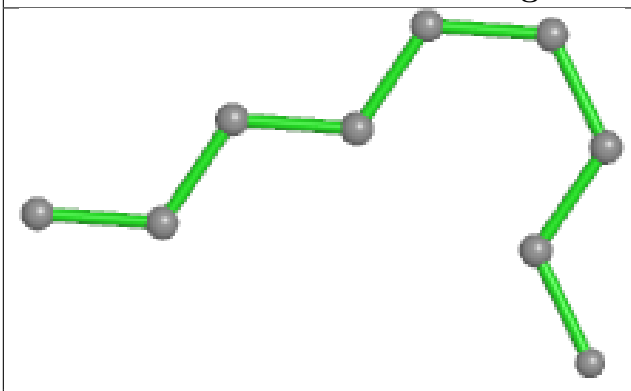


Torsions

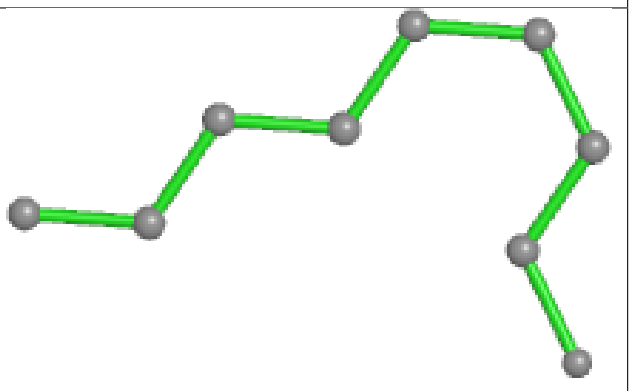


Rings

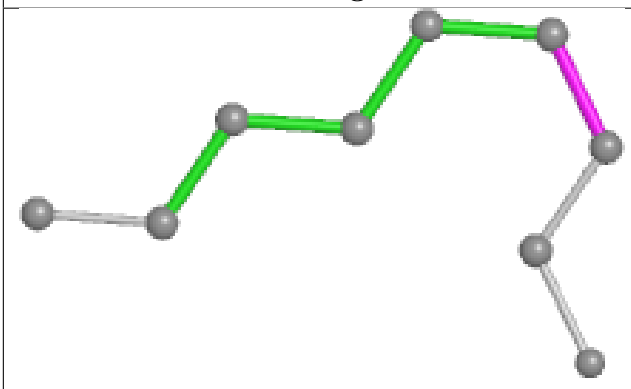
Ligand PLM A 423



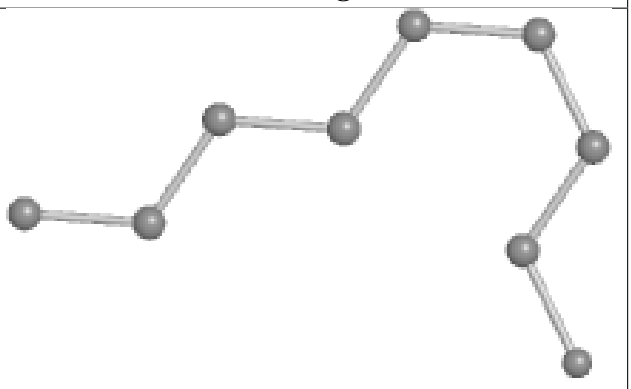
Bond lengths



Bond angles

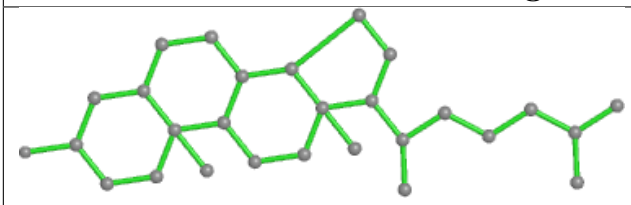


Torsions

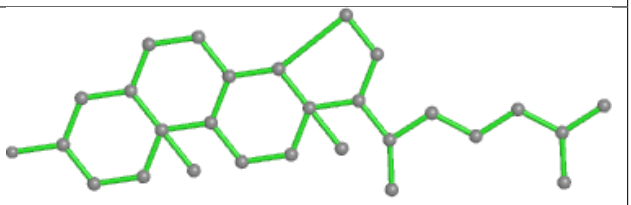


Rings

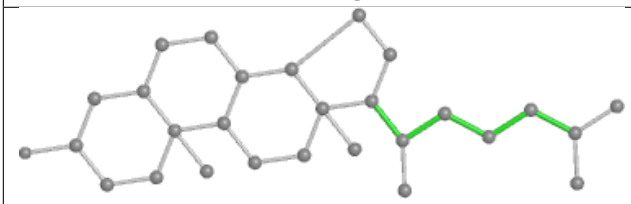
Ligand CLR C 408



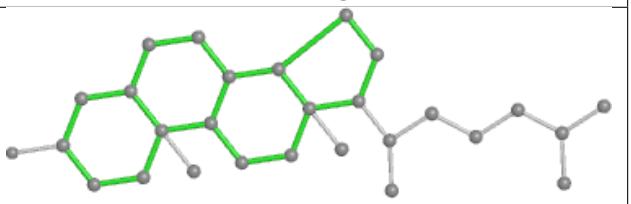
Bond lengths



Bond angles

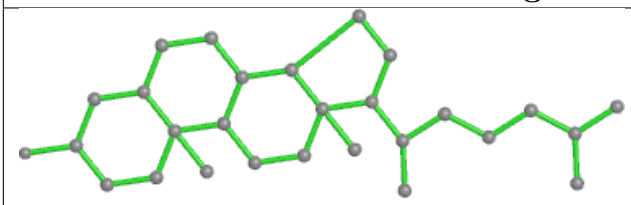


Torsions

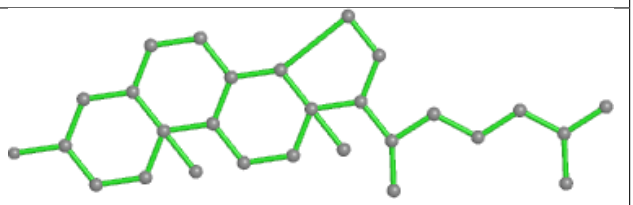


Rings

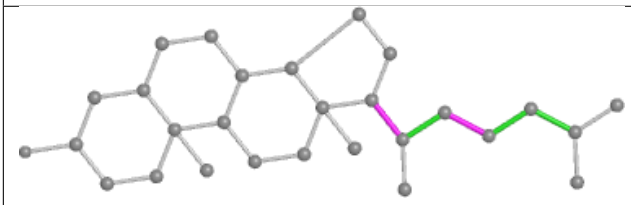
Ligand CLR A 417



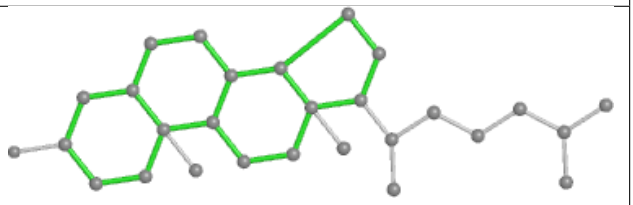
Bond lengths



Bond angles

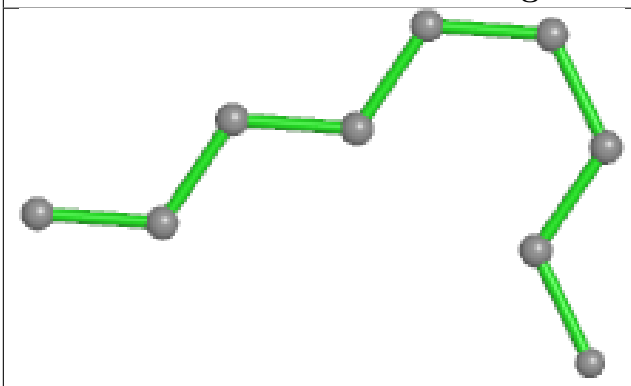


Torsions

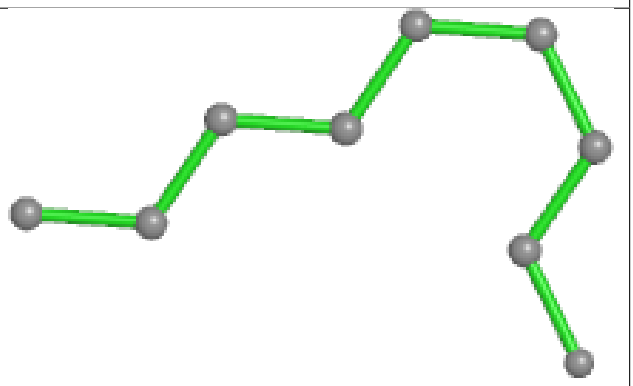


Rings

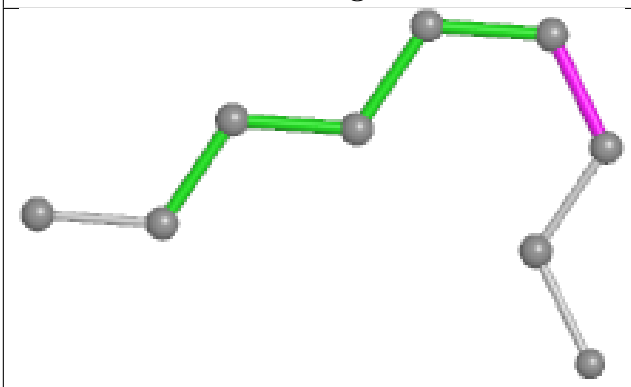
Ligand PLM C 425



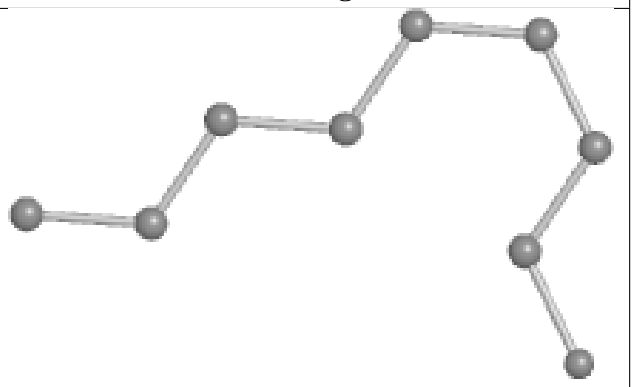
Bond lengths



Bond angles

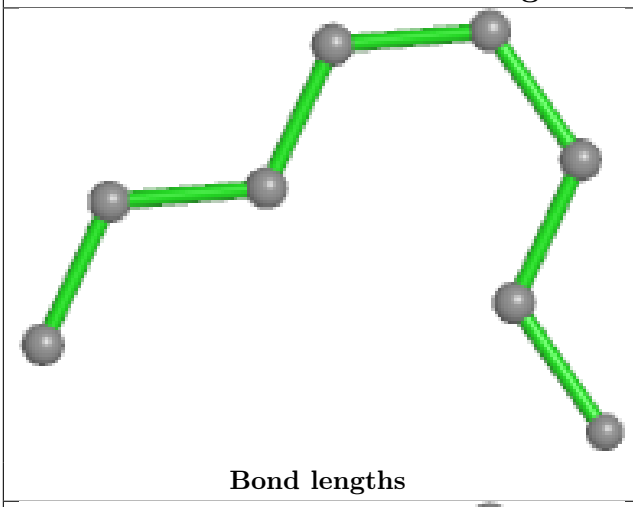


Torsions

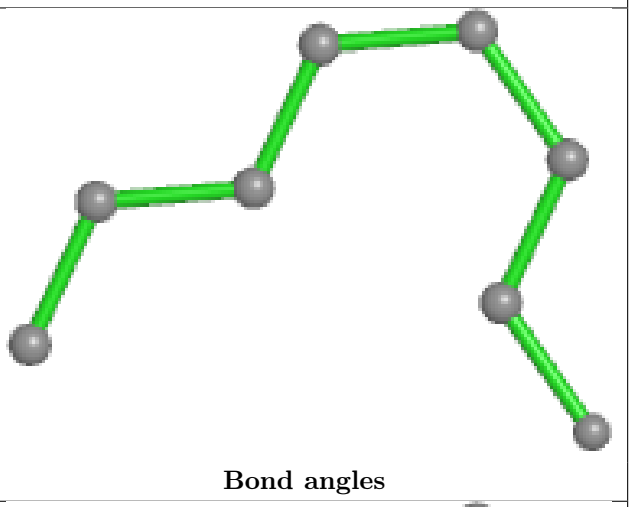


Rings

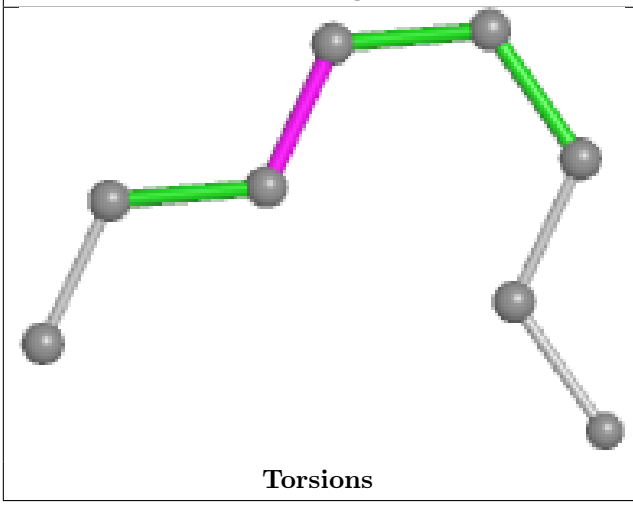
Ligand PLM C 427



Bond lengths



Bond angles



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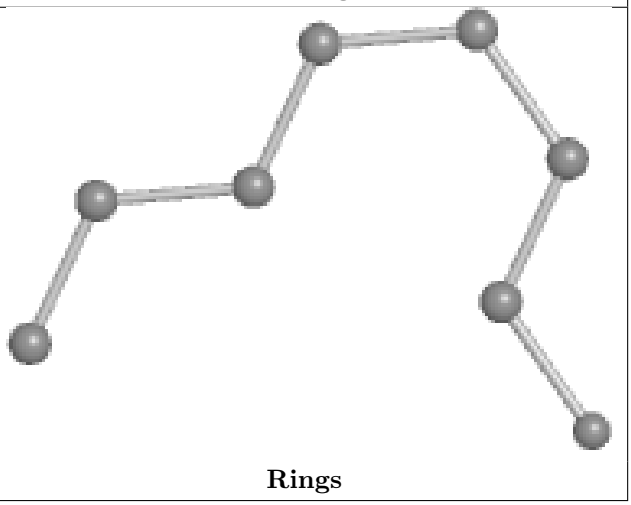
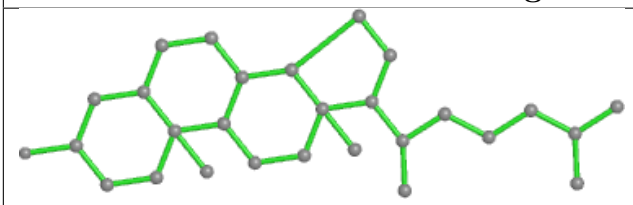
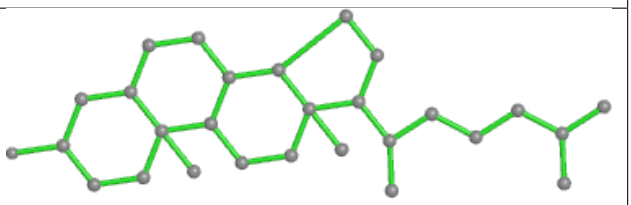


Rings

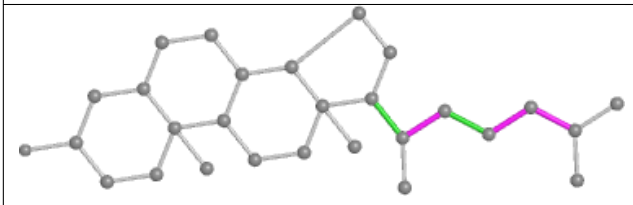
Ligand CLR C 428



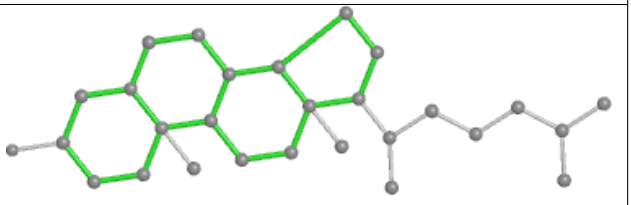
Bond lengths



Bond angles

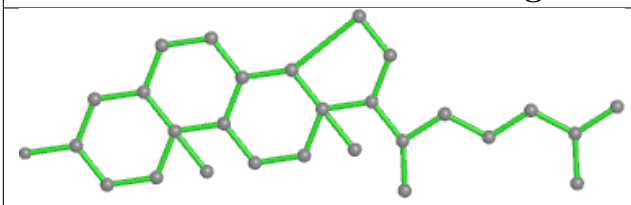


Torsions

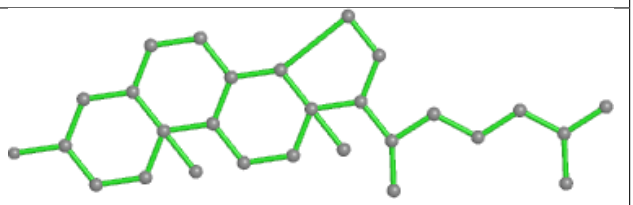


Rings

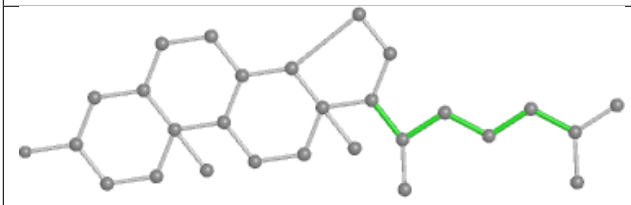
Ligand CLR B 202



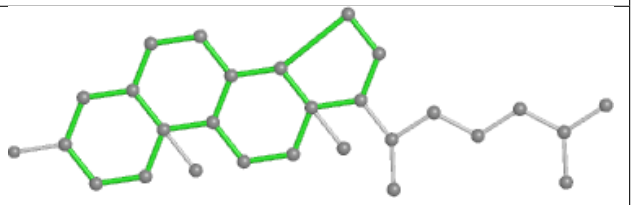
Bond lengths



Bond angles

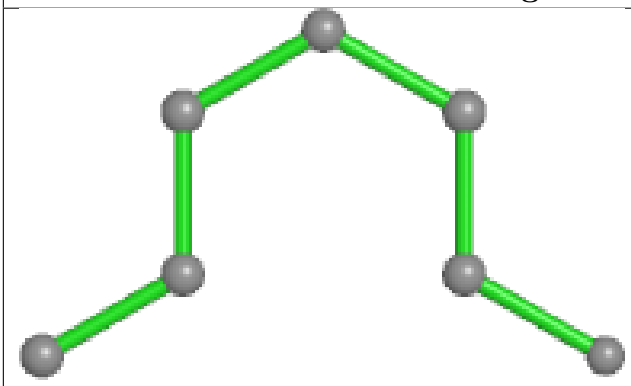


Torsions

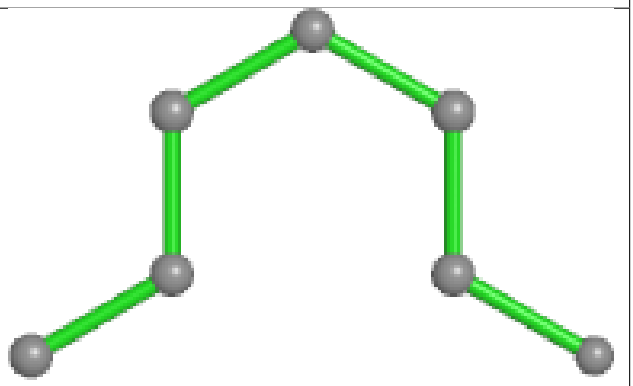


Rings

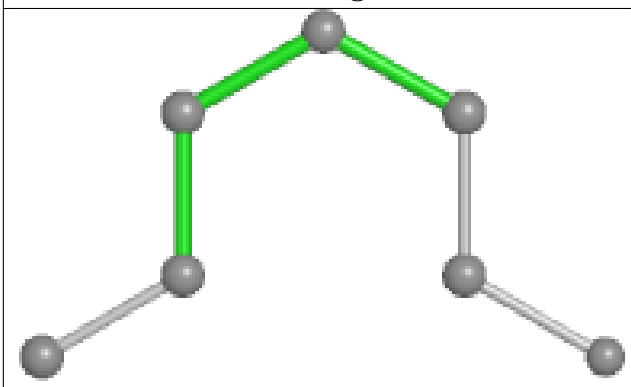
Ligand PLM C 424



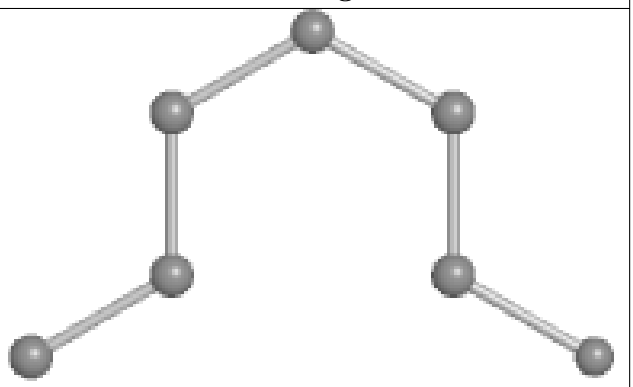
Bond lengths



Bond angles

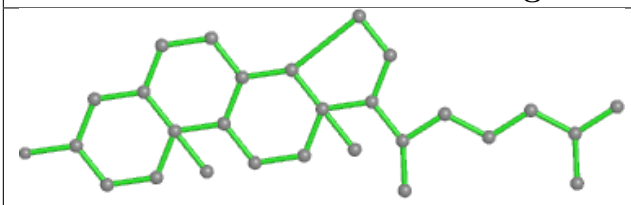


Torsions

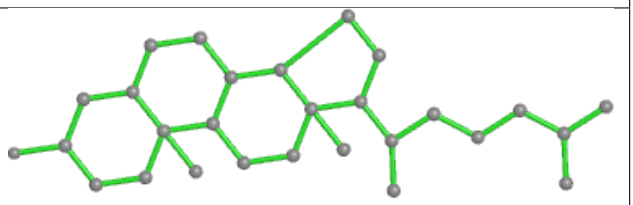


Rings

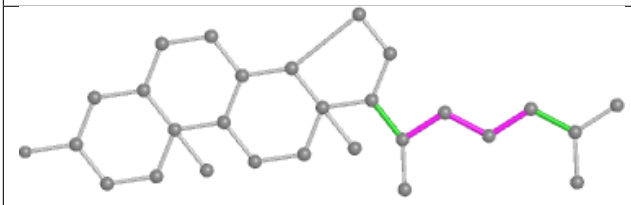
Ligand CLR A 427



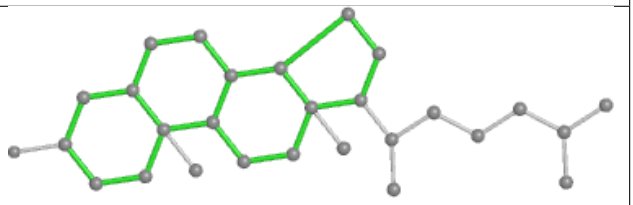
Bond lengths



Bond angles

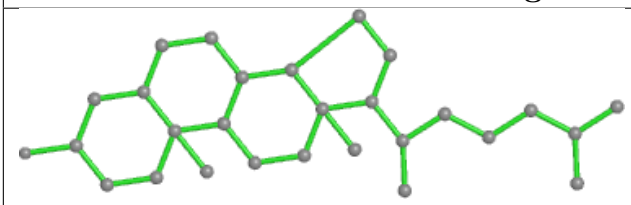


Torsions

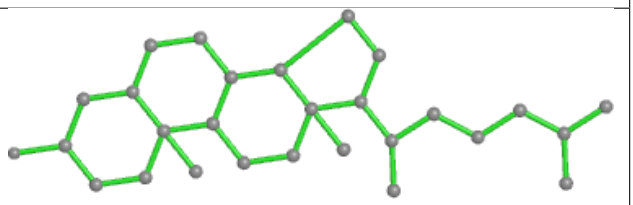


Rings

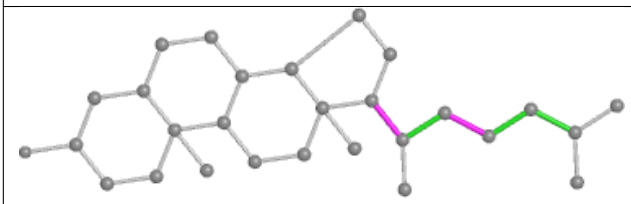
Ligand CLR C 419



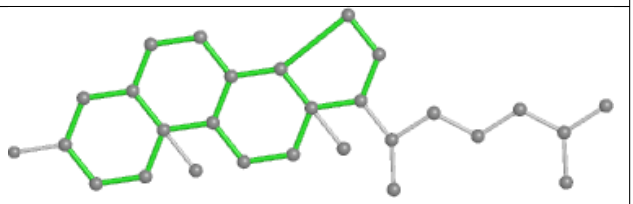
Bond lengths



Bond angles

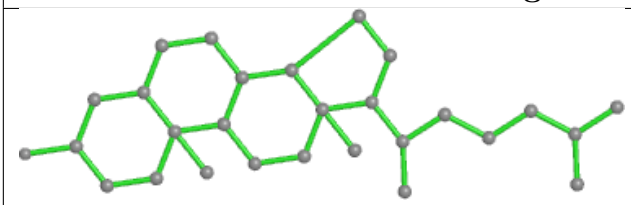


Torsions

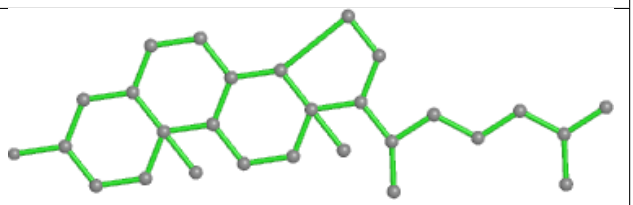


Rings

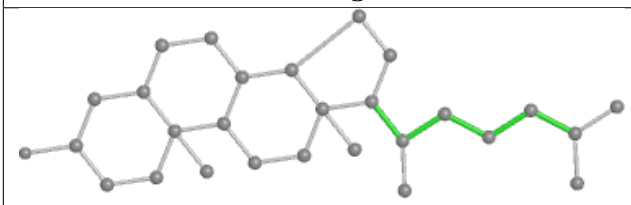
Ligand CLR D 202



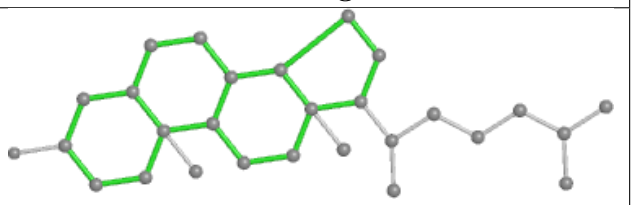
Bond lengths



Bond angles

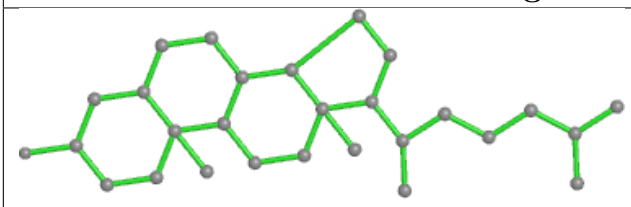


Torsions

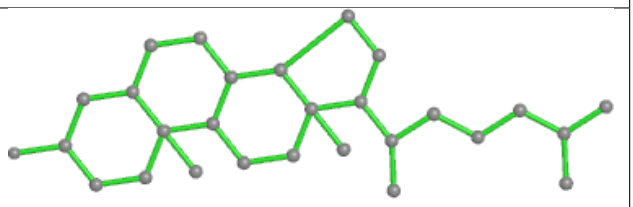


Rings

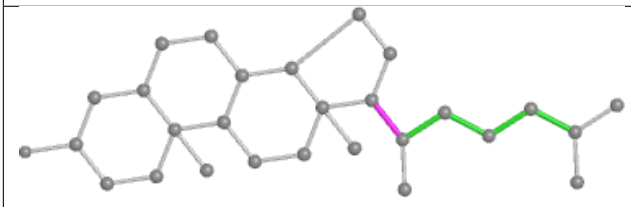
Ligand CLR D 201



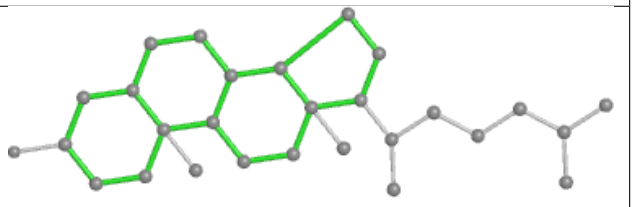
Bond lengths



Bond angles

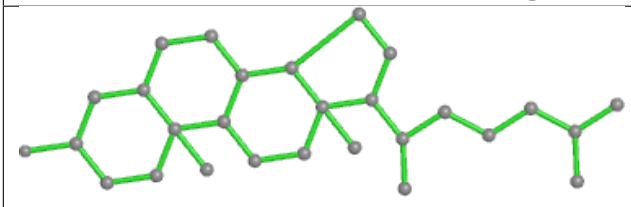


Torsions

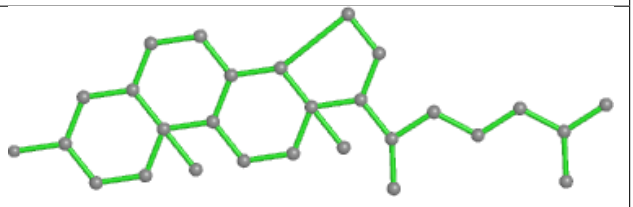


Rings

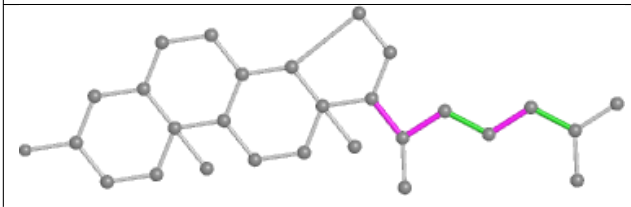
Ligand CLR A 411



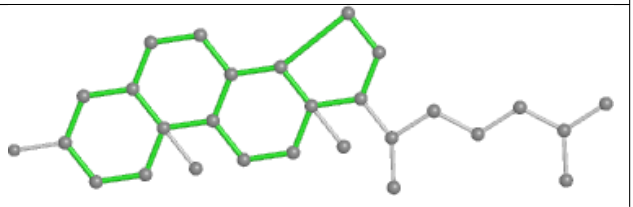
Bond lengths



Bond angles

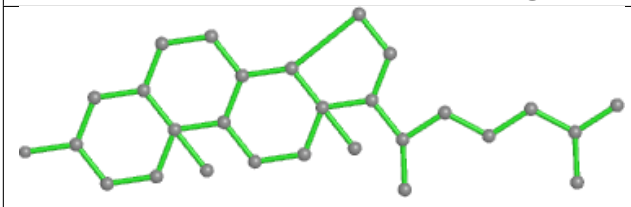


Torsions

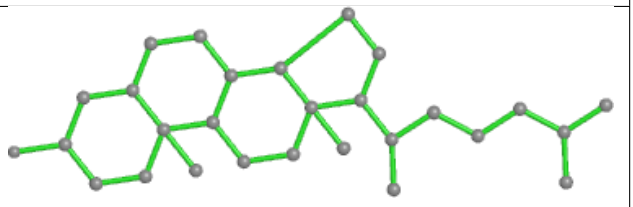


Rings

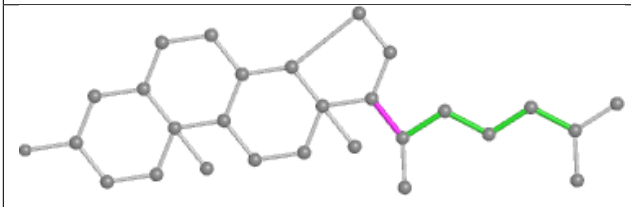
Ligand CLR A 416



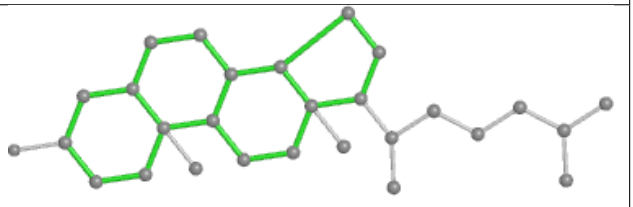
Bond lengths



Bond angles

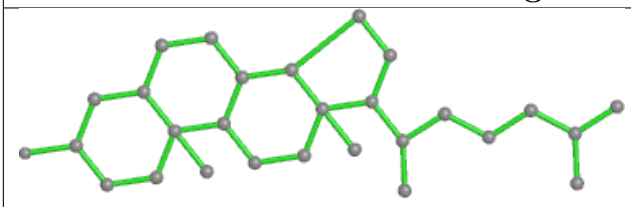


Torsions

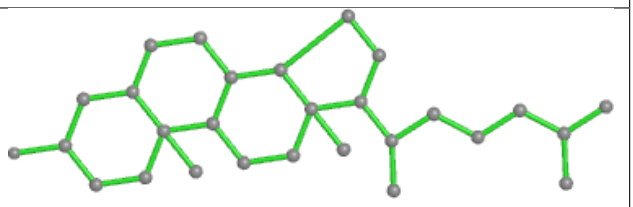


Rings

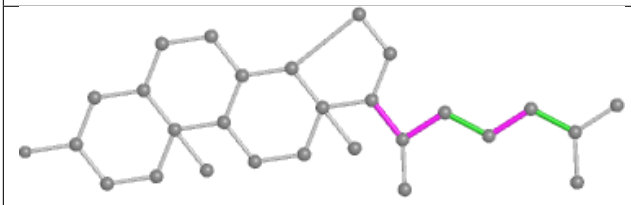
Ligand CLR C 413



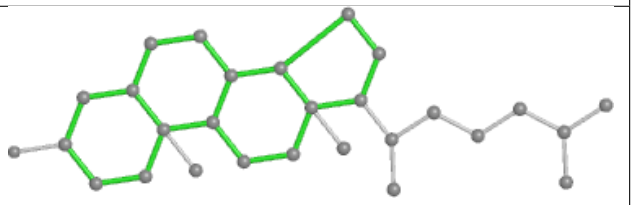
Bond lengths



Bond angles

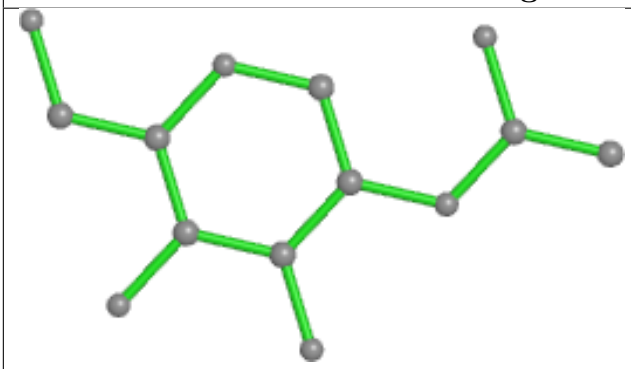


Torsions

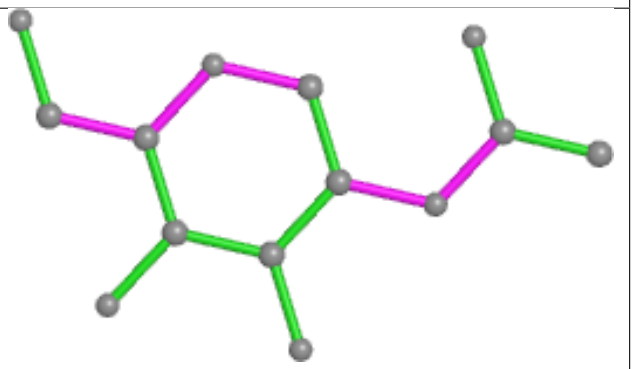


Rings

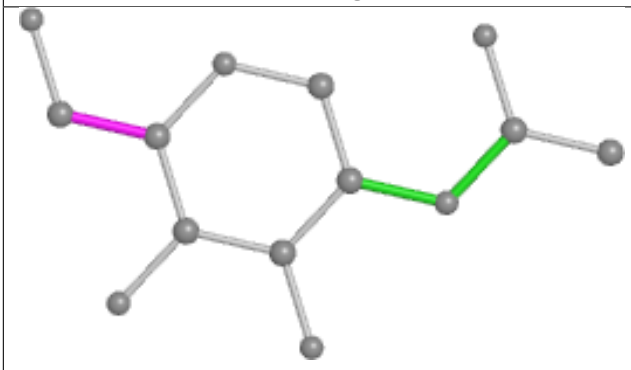
Ligand NAG C 420



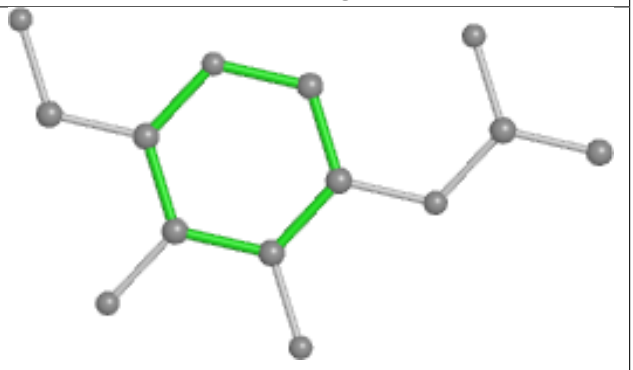
Bond lengths



Bond angles

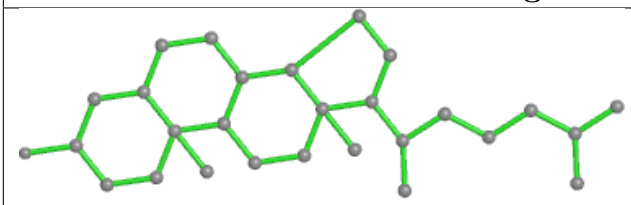


Torsions

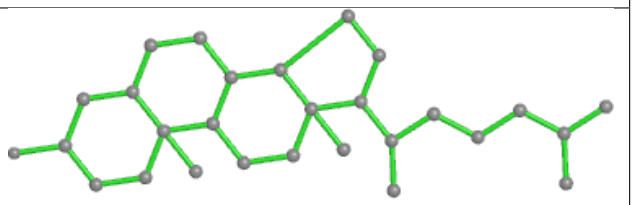


Rings

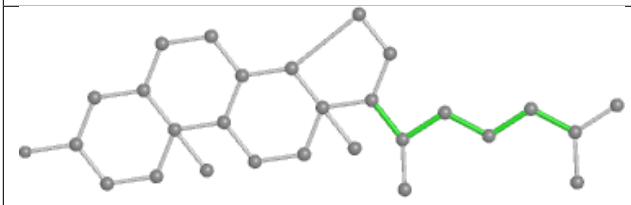
Ligand CLR A 413



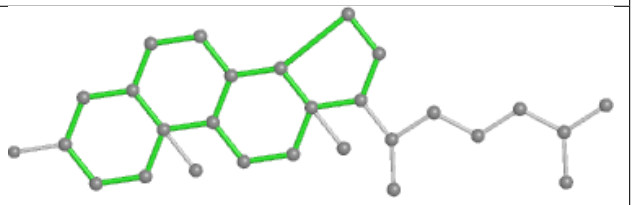
Bond lengths



Bond angles

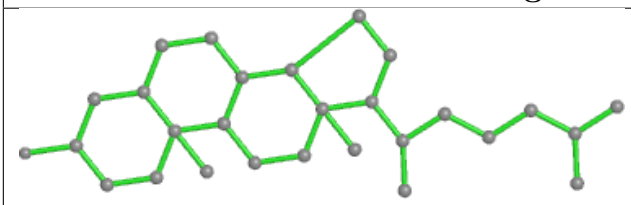


Torsions

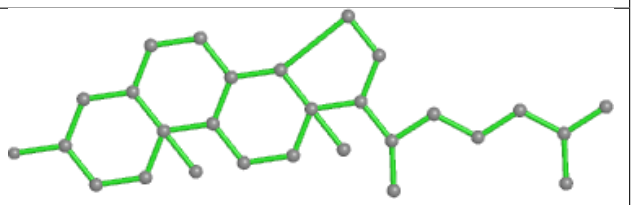


Rings

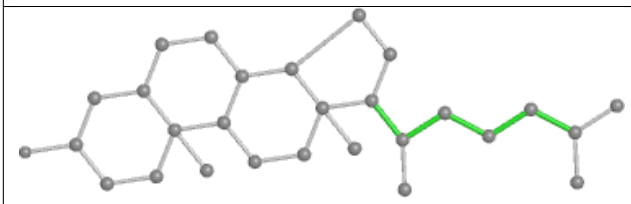
Ligand CLR C 410



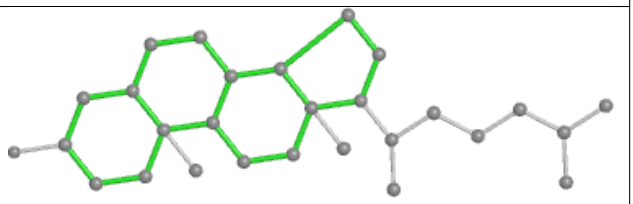
Bond lengths



Bond angles

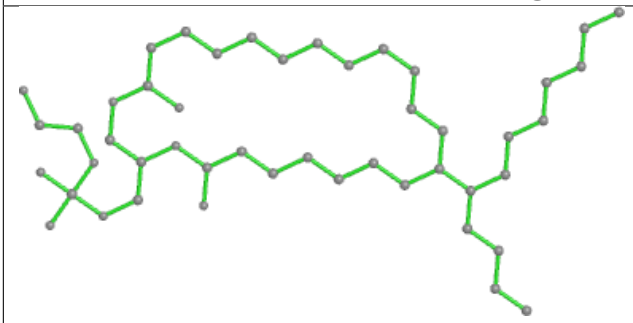


Torsions



Rings

Ligand P0E C 405



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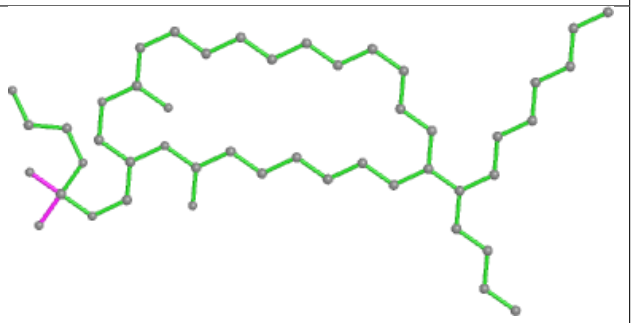
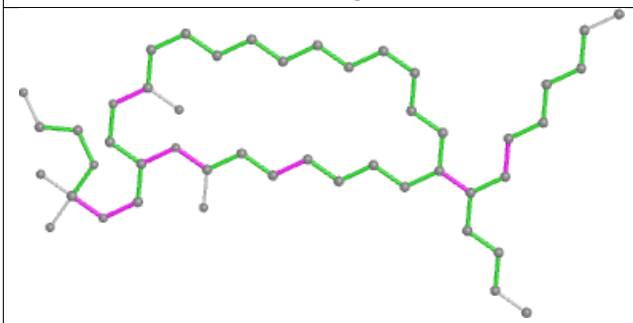
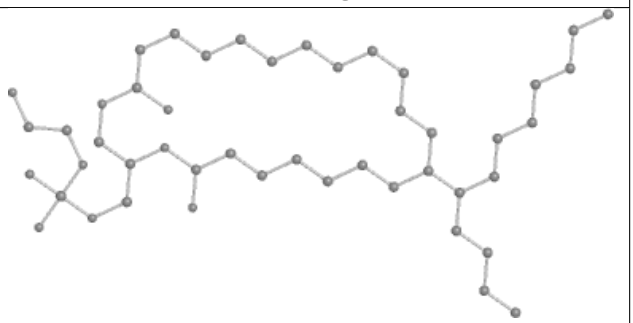


Bond angles

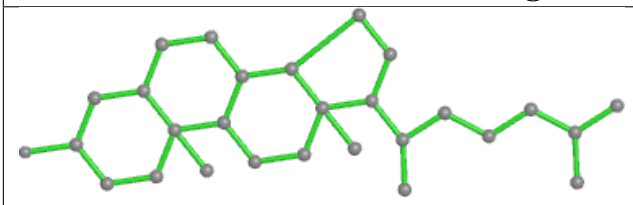


Torsions

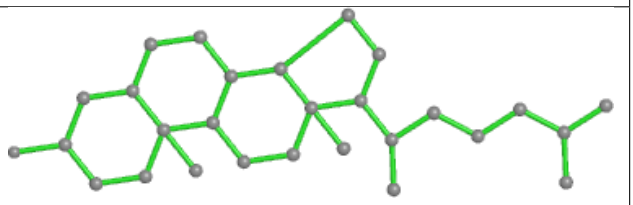


Rings

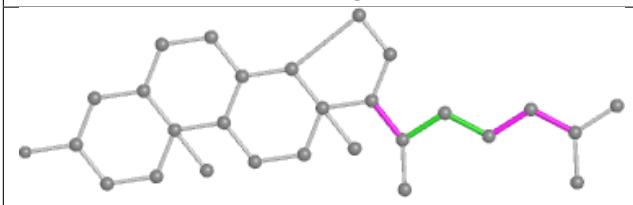
Ligand CLR C 401



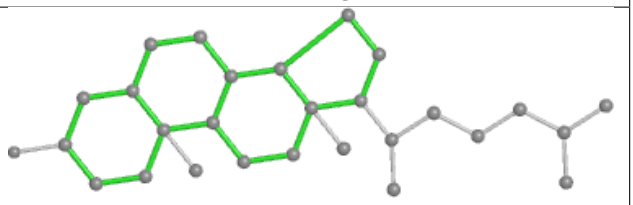
Bond lengths



Bond angles

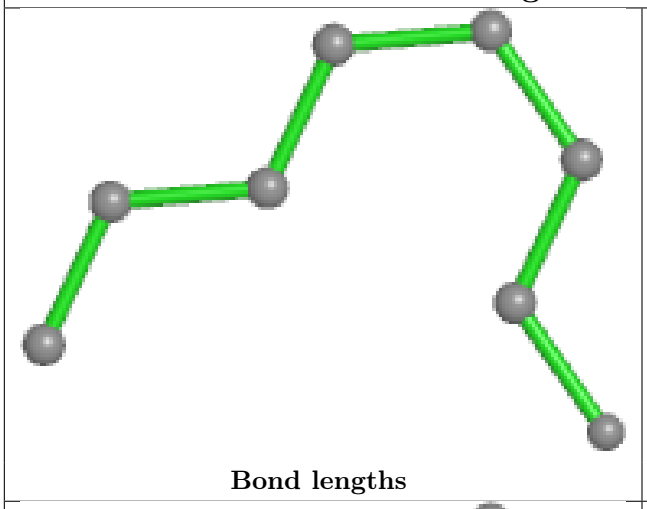


Torsions

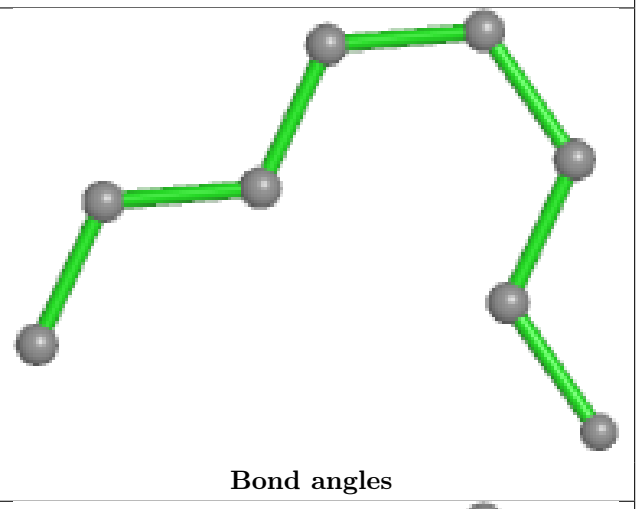


Rings

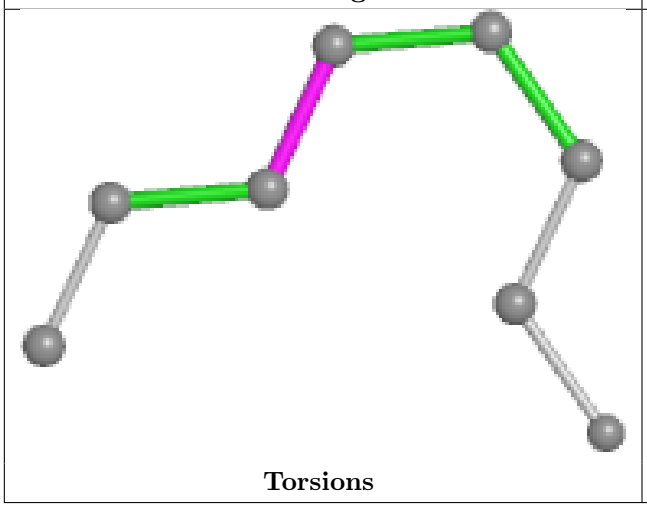
Ligand PLM A 425



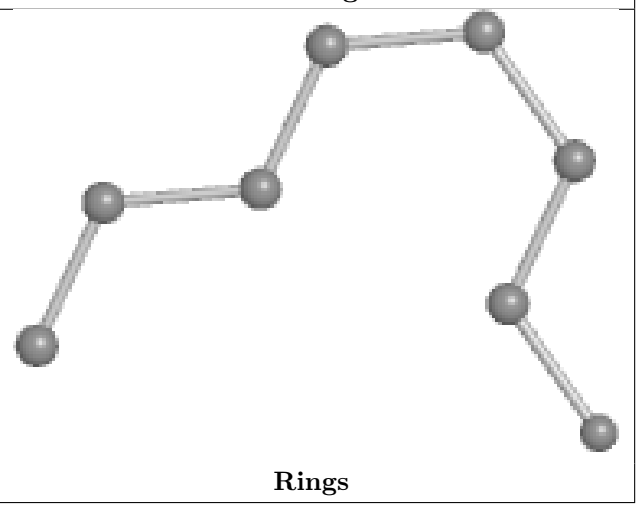
Bond lengths



Bond angles

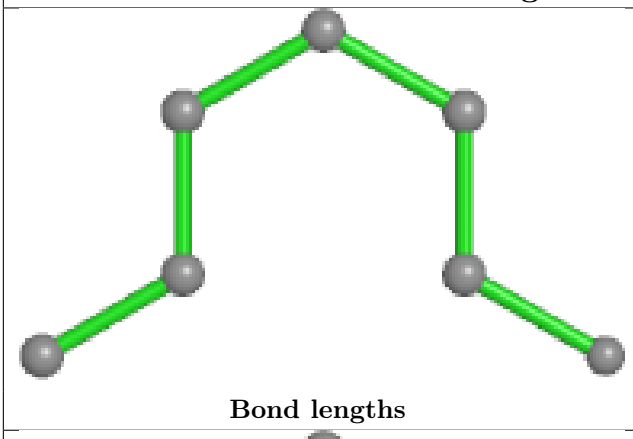


Torsions

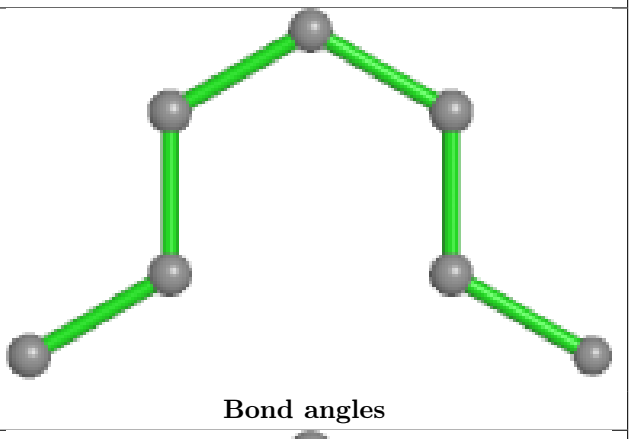


Rings

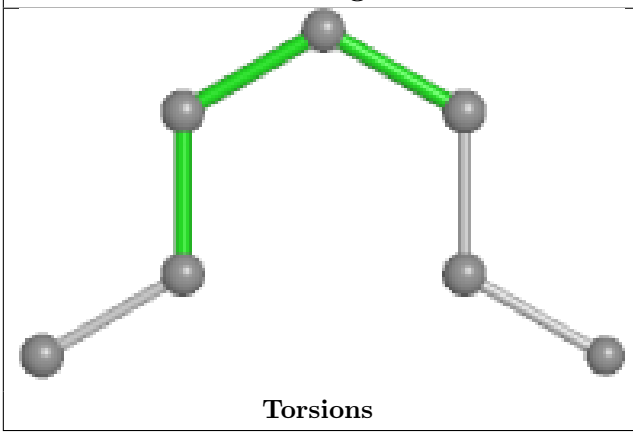
Ligand PLM A 422



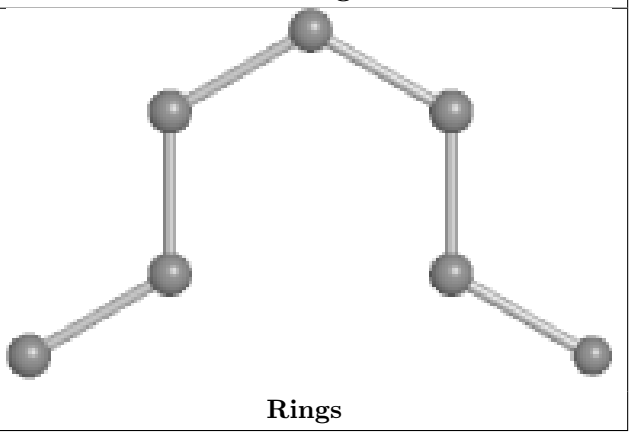
Bond lengths



Bond angles

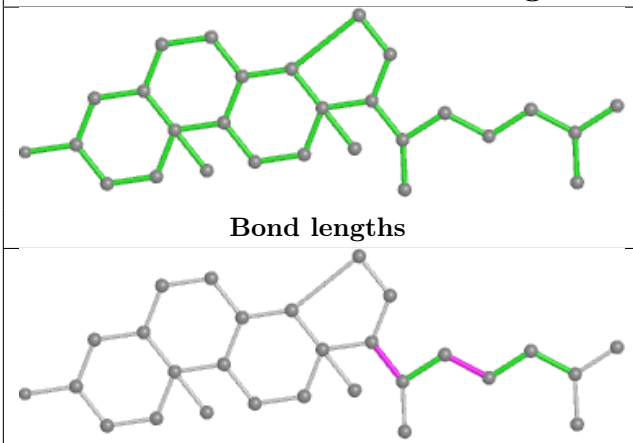


Torsions

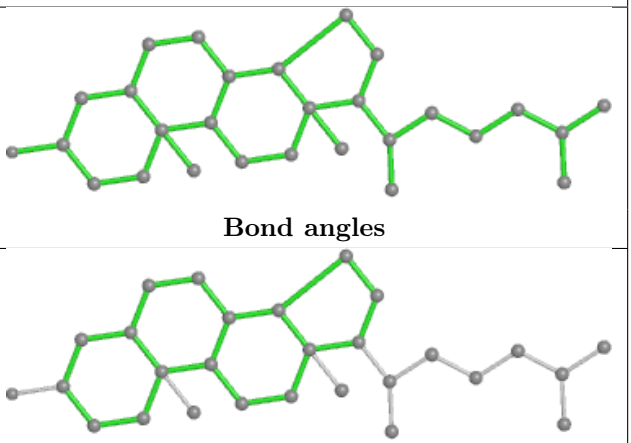


Rings

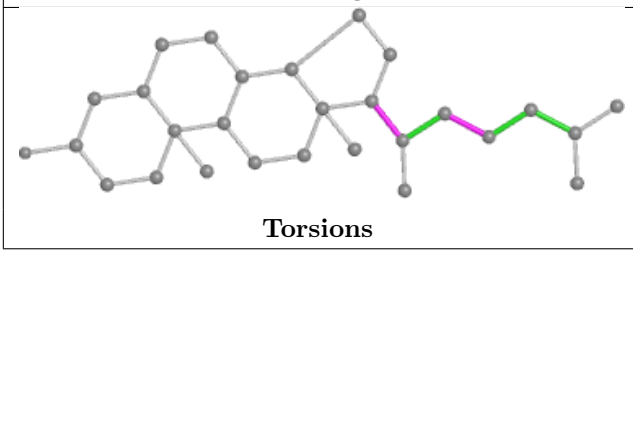
Ligand CLR A 405



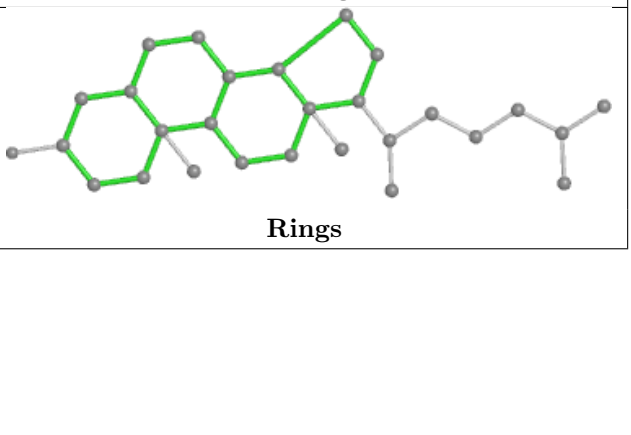
Bond lengths



Bond angles

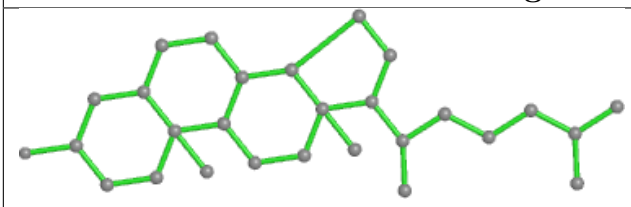


Torsions

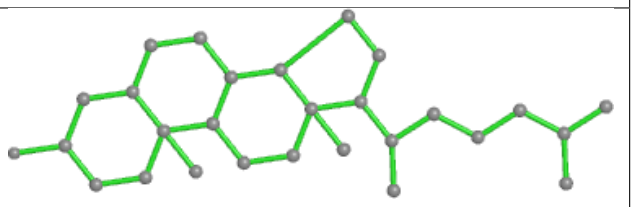


Rings

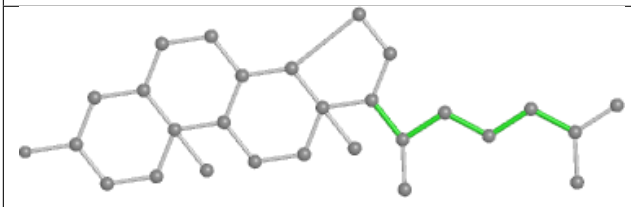
Ligand CLR C 416



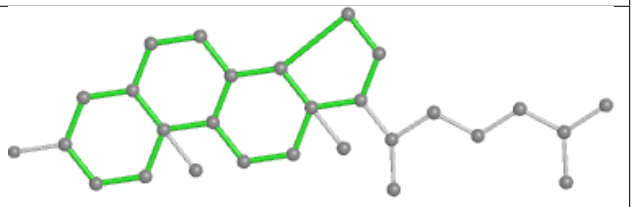
Bond lengths



Bond angles

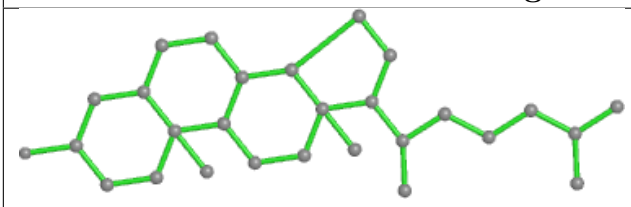


Torsions

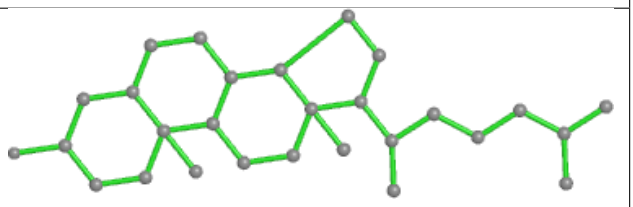


Rings

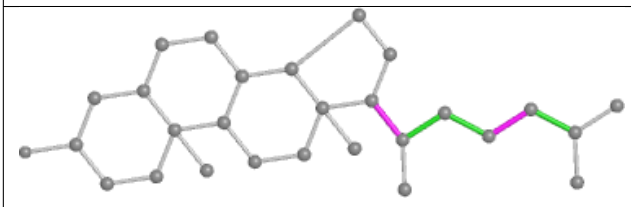
Ligand CLR C 417



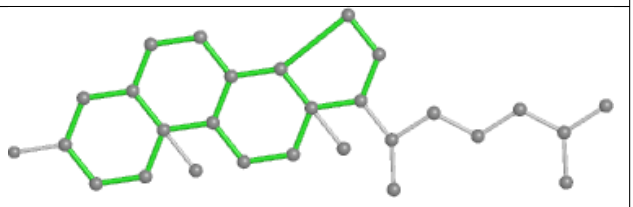
Bond lengths



Bond angles

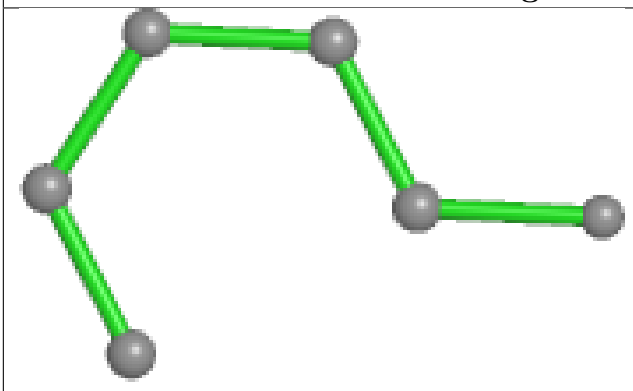


Torsions

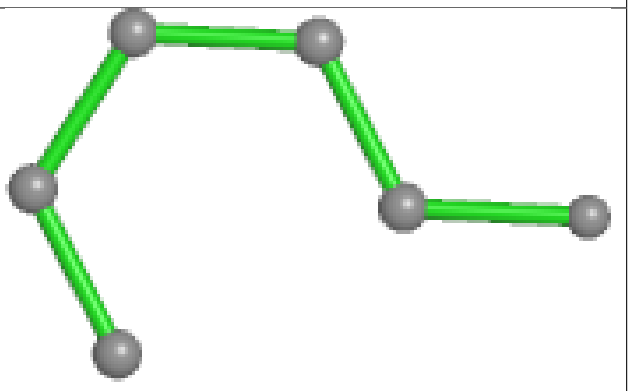


Rings

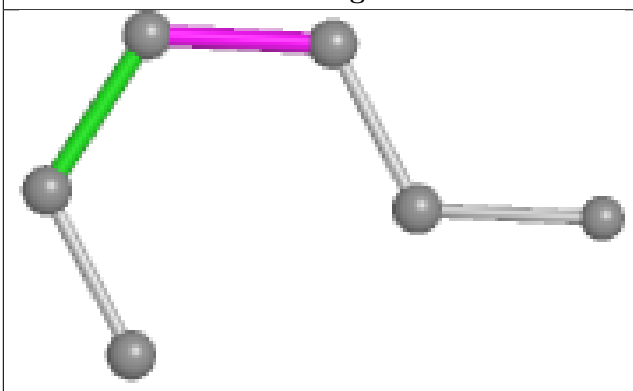
Ligand PLM C 421



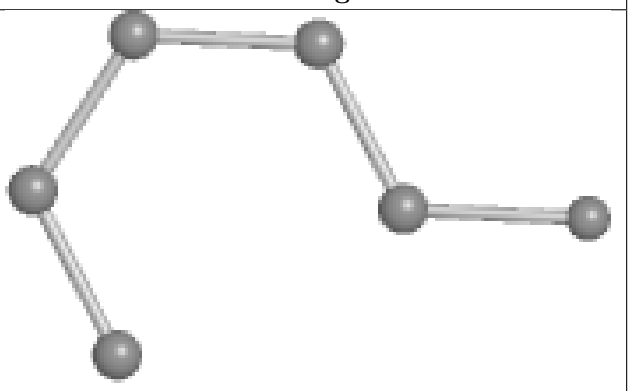
Bond lengths



Bond angles

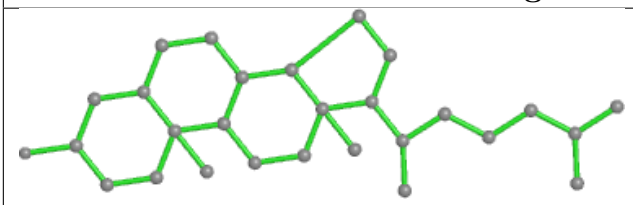


Torsions

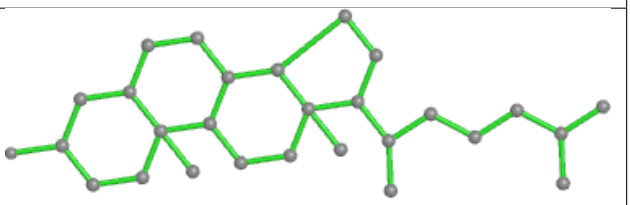


Rings

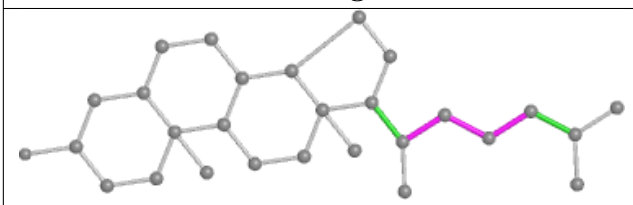
Ligand CLR C 429



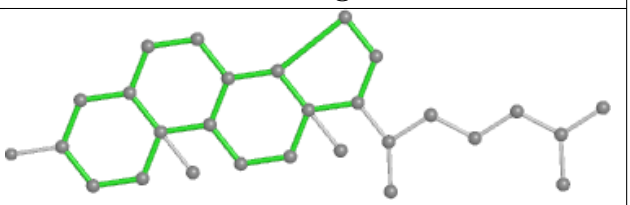
Bond lengths



Bond angles

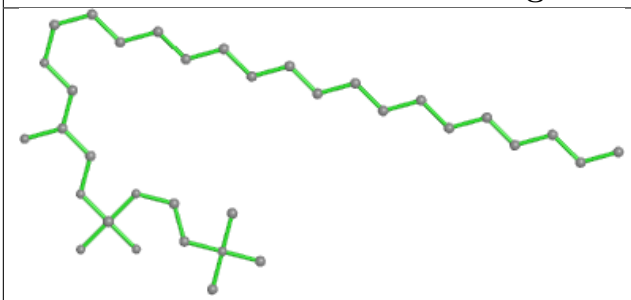


Torsions



Rings

Ligand LPE C 406



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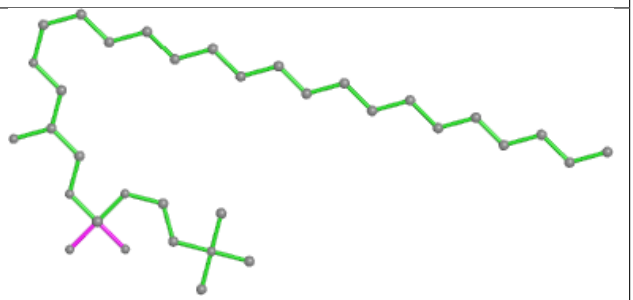
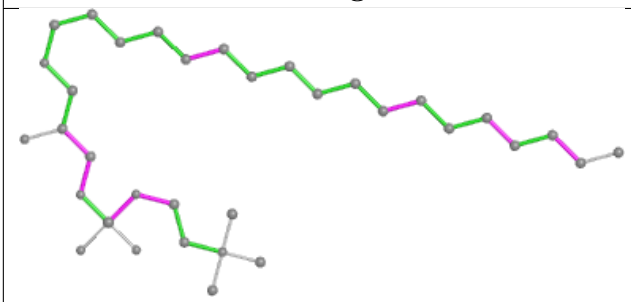
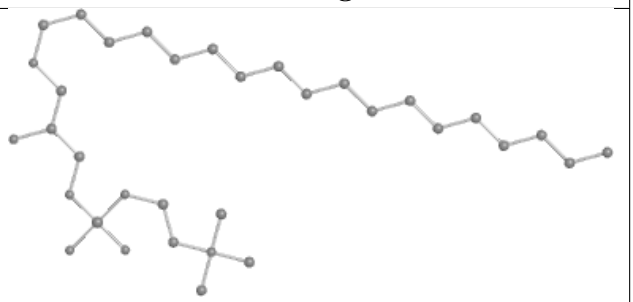


Bond angles

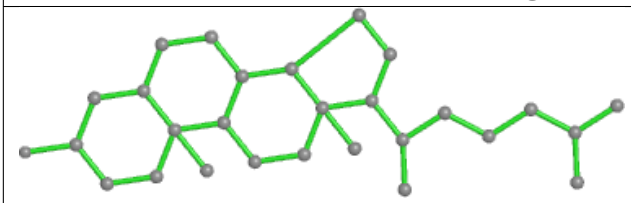


Torsions



Rings

Ligand CLR A 429



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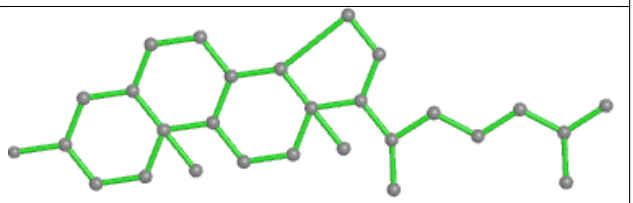
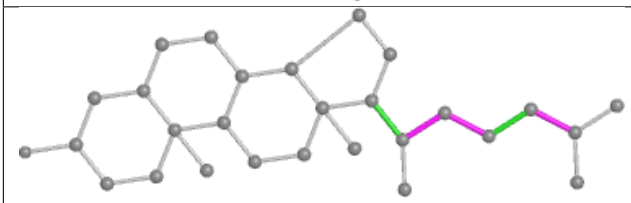
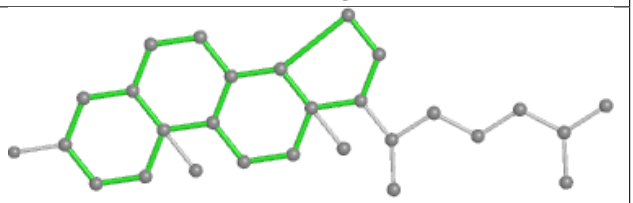


Bond angles

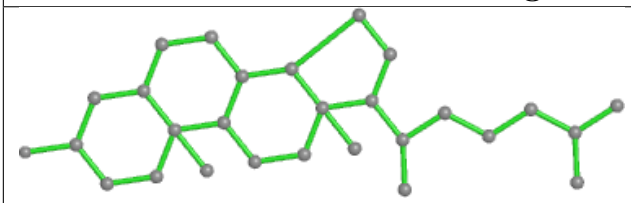


Torsions

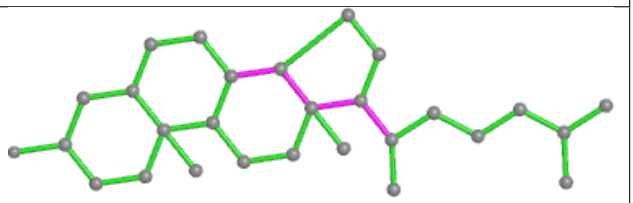


Rings

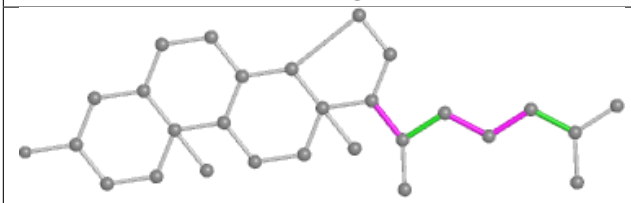
Ligand CLR A 412



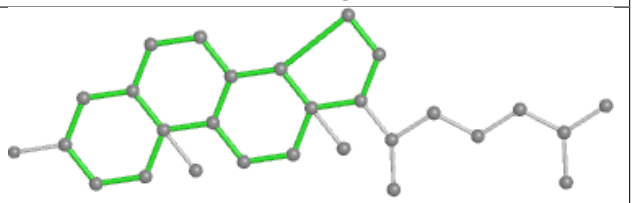
Bond lengths



Bond angles

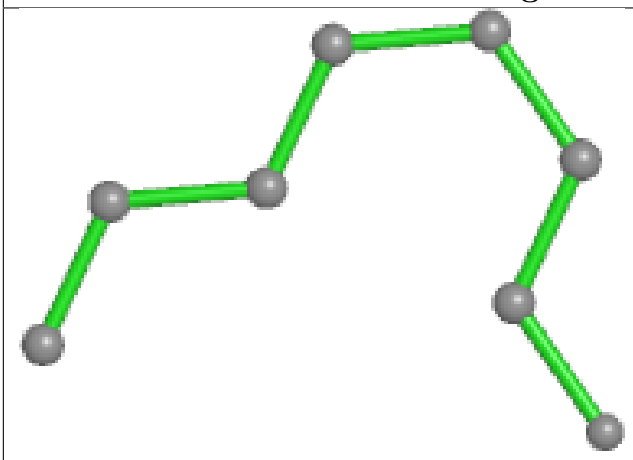


Torsions

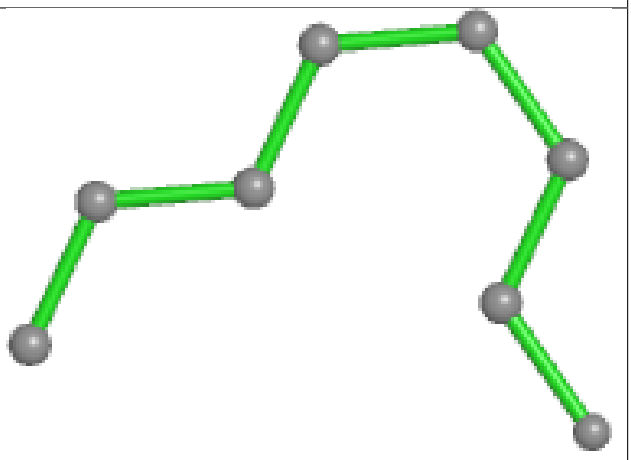


Rings

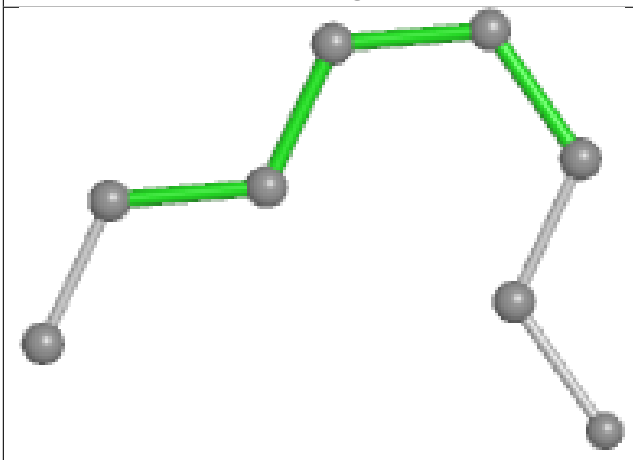
Ligand PLM C 422



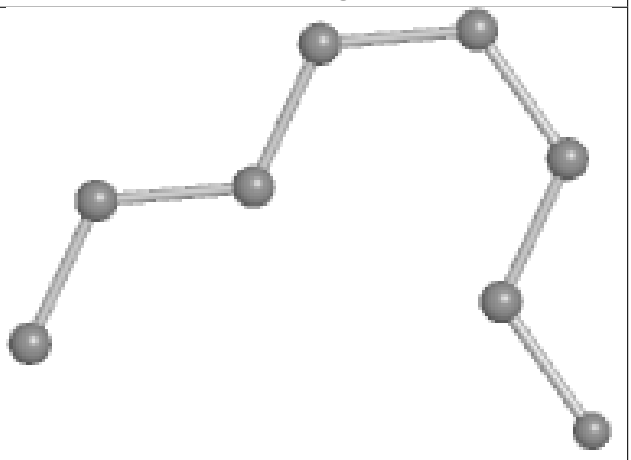
Bond lengths



Bond angles

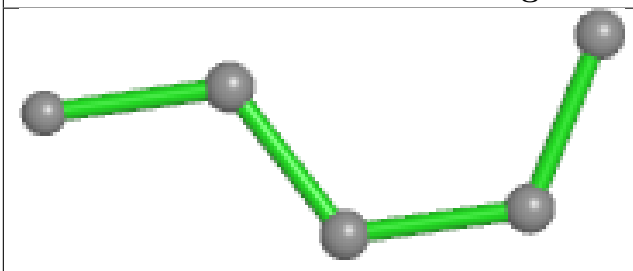


Torsions

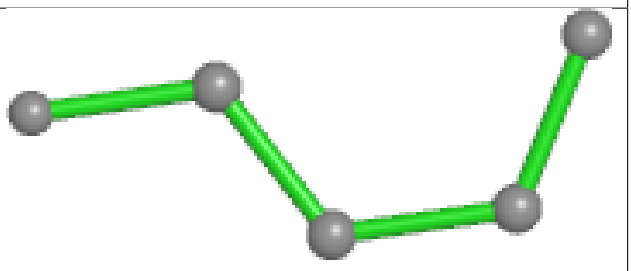


Rings

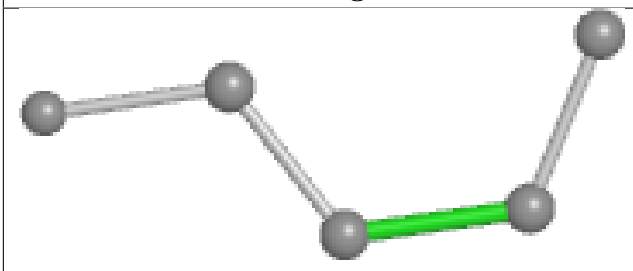
Ligand PLM C 426



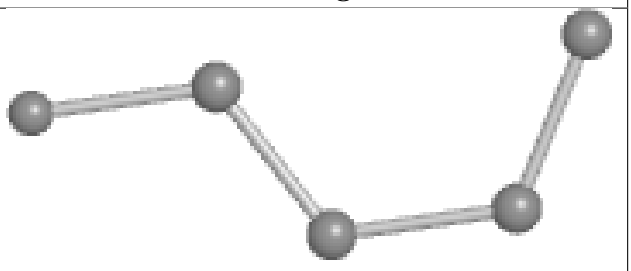
Bond lengths



Bond angles

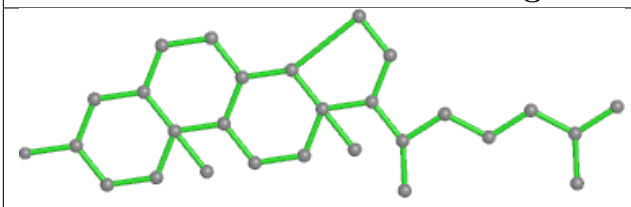


Torsions



Rings

Ligand CLR A 406



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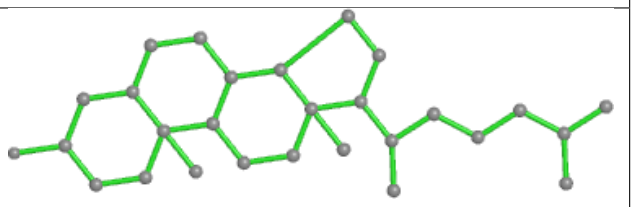
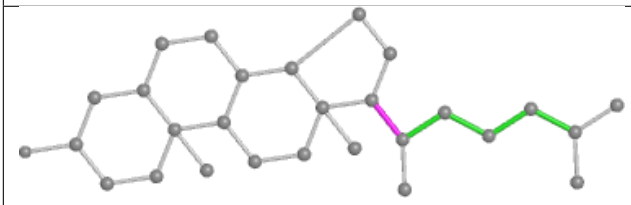
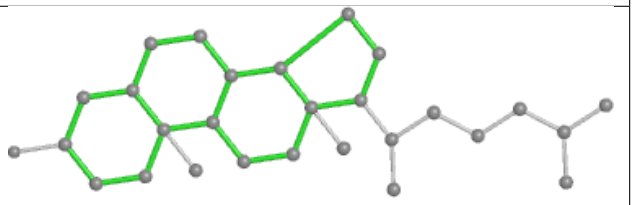


Bond angles

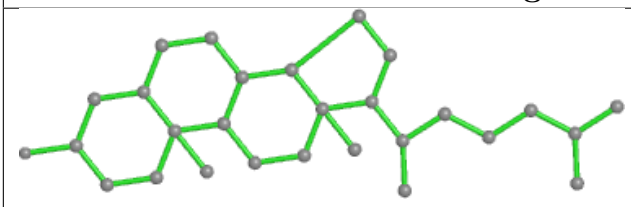


Torsions

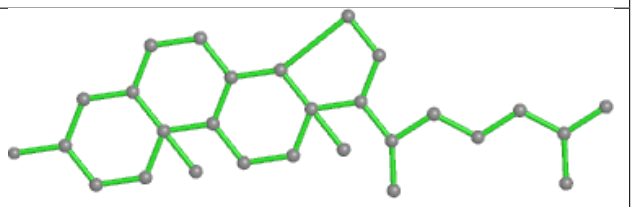


Rings

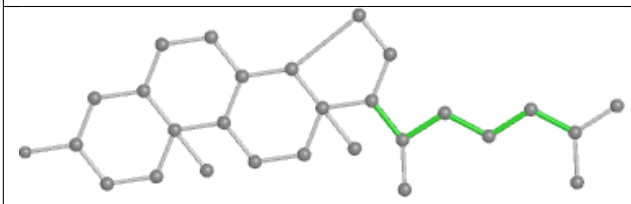
Ligand CLR A 408



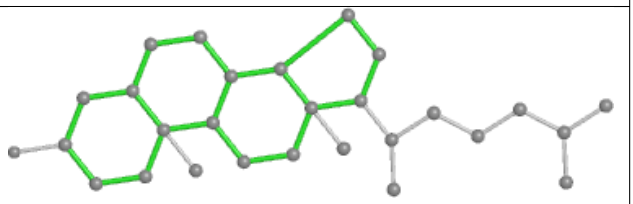
Bond lengths



Bond angles

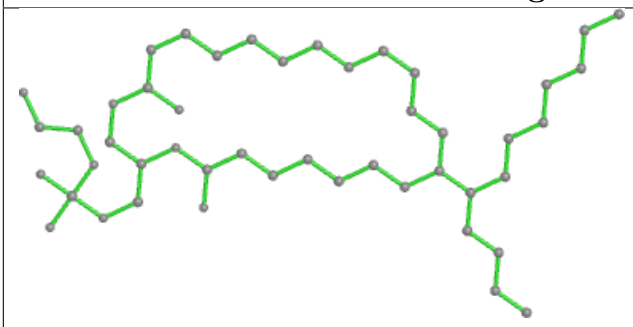


Torsions

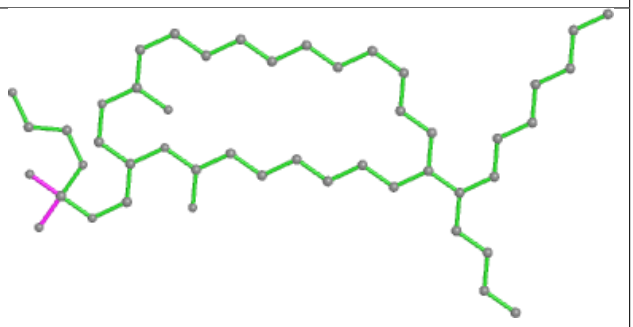


Rings

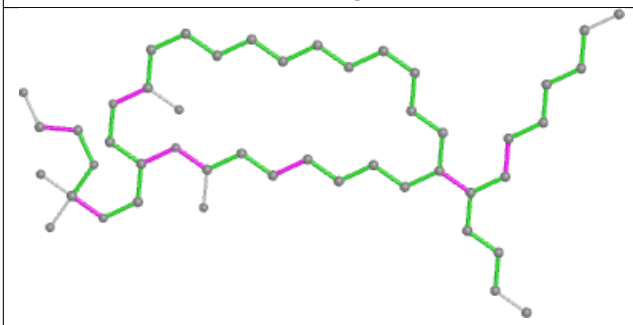
Ligand P0E A 403



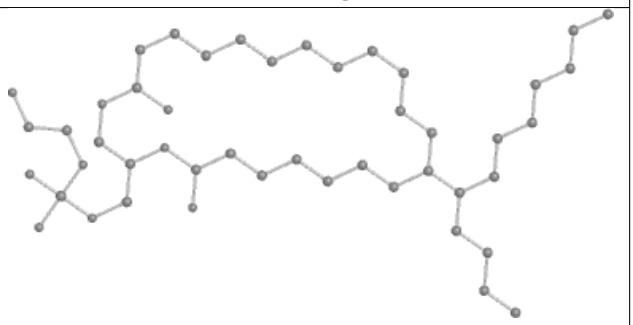
Bond lengths



Bond angles

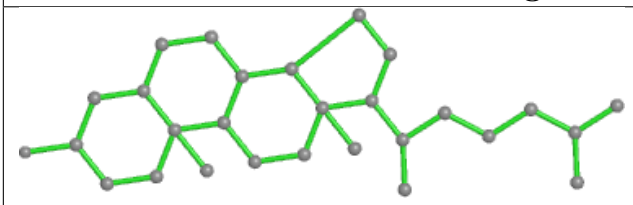


Torsions

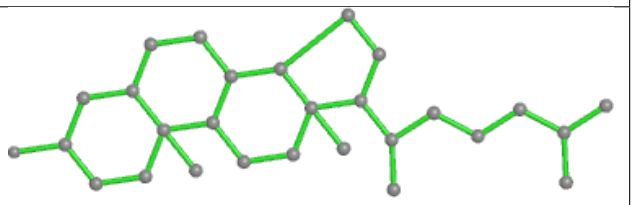


Rings

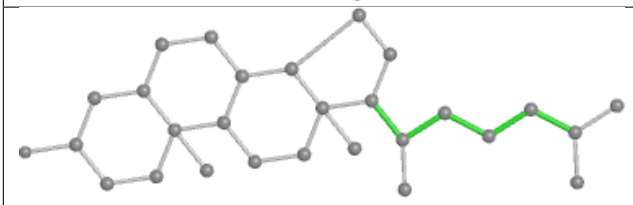
Ligand CLR A 414



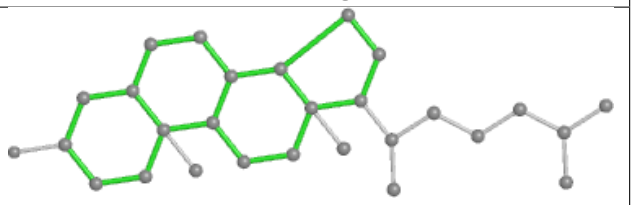
Bond lengths



Bond angles

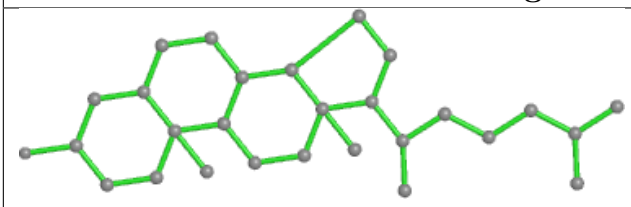


Torsions

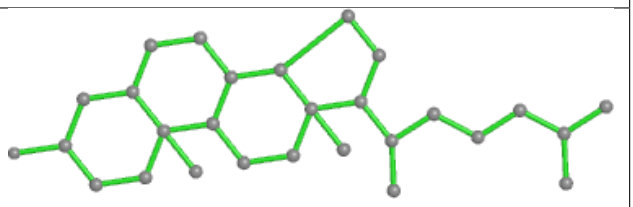


Rings

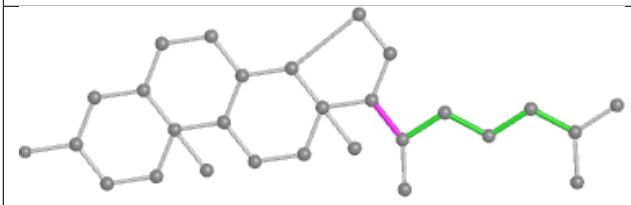
Ligand CLR C 418



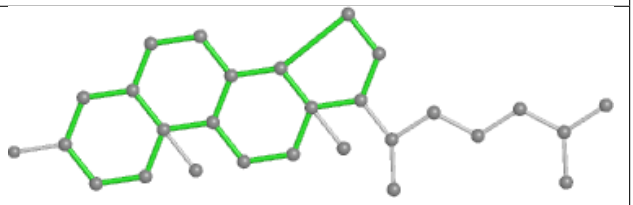
Bond lengths



Bond angles

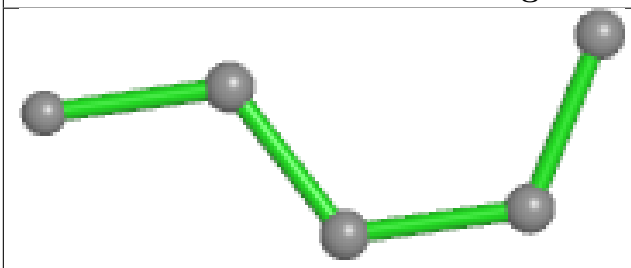


Torsions

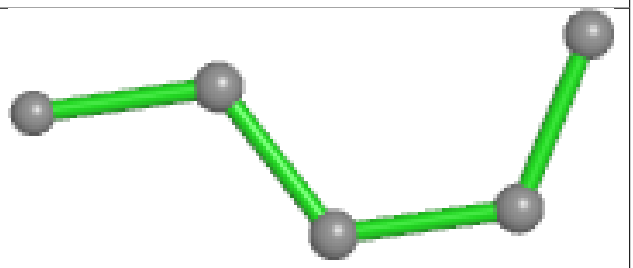


Rings

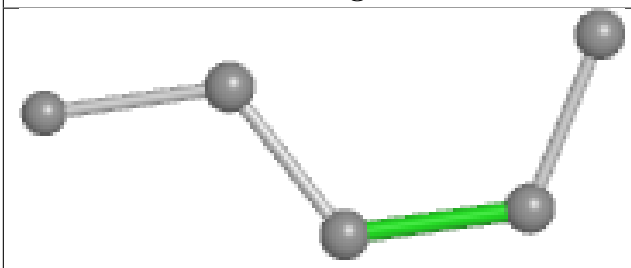
Ligand PLM C 423



Bond lengths



Bond angles



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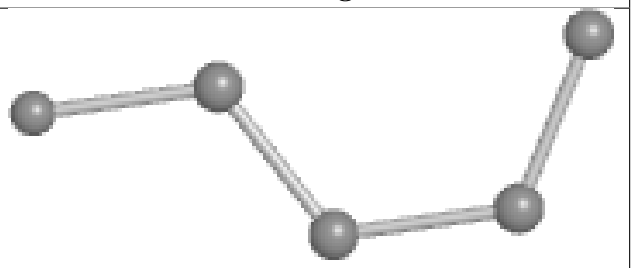
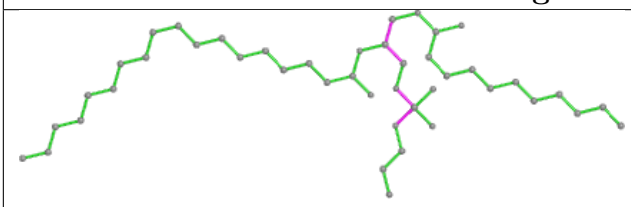


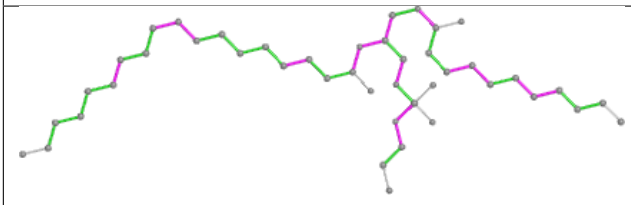
Rings

Ligand 76F C 404

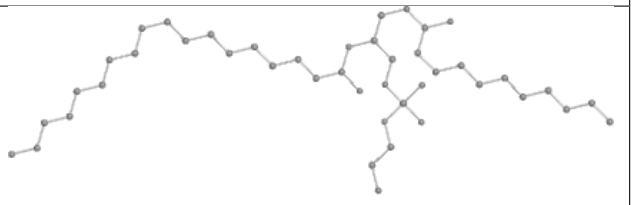


Bond lengths

Bond angles

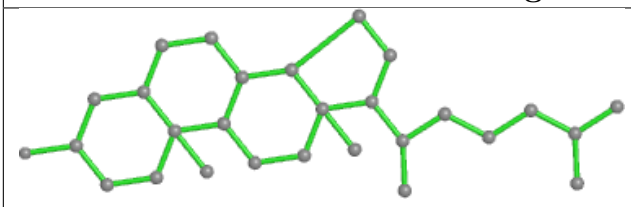


Torsions

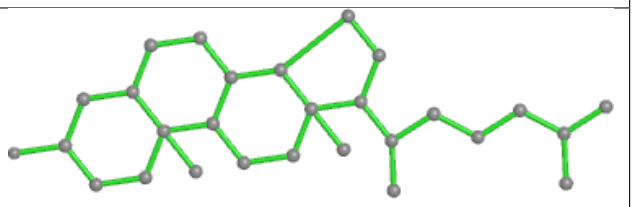


Rings

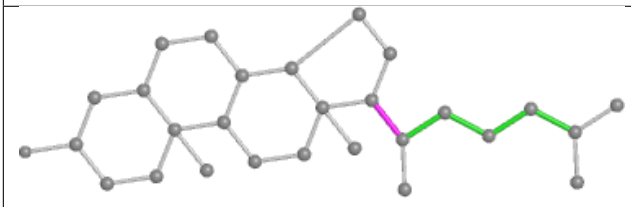
Ligand CLR B 201



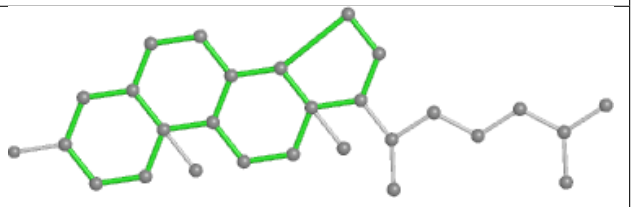
Bond lengths



Bond angles

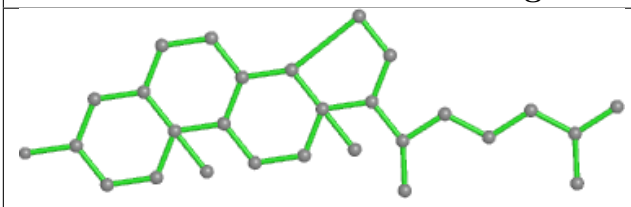


Torsions

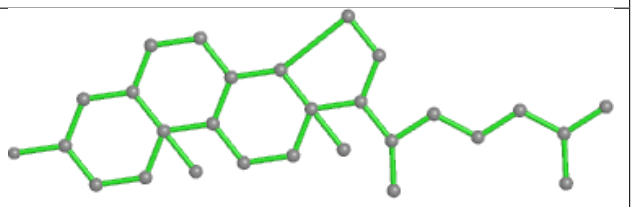


Rings

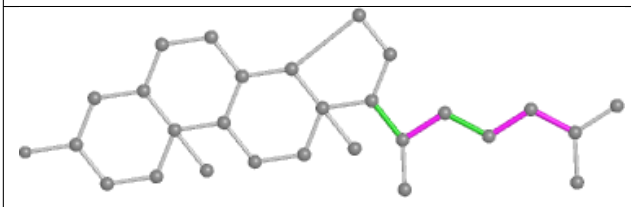
Ligand CLR C 409



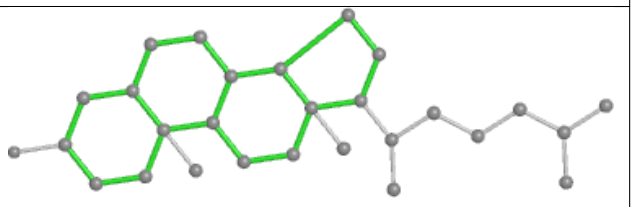
Bond lengths



Bond angles

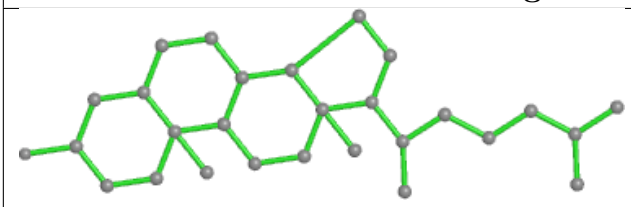


Torsions

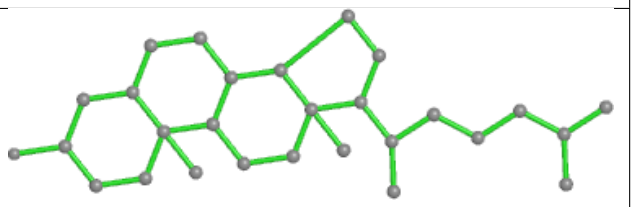


Rings

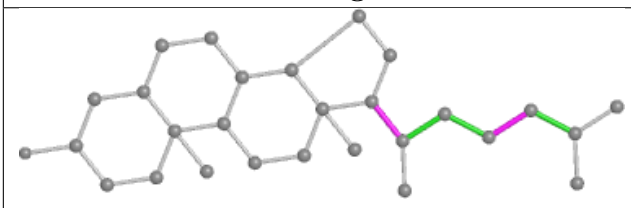
Ligand CLR A 415



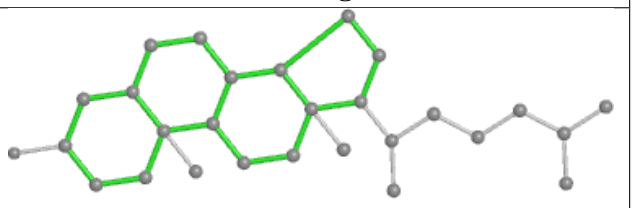
Bond lengths



Bond angles

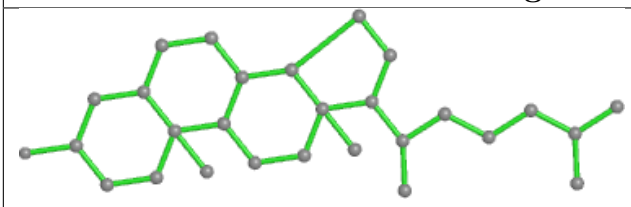


Torsions

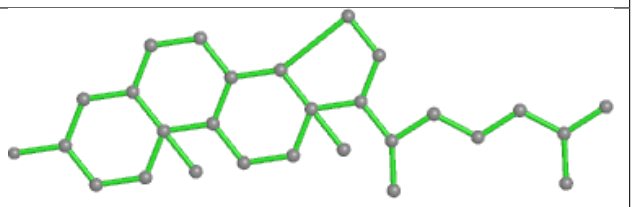


Rings

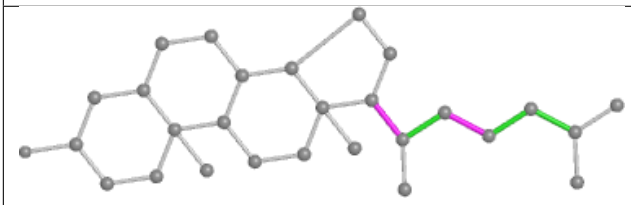
Ligand CLR C 407



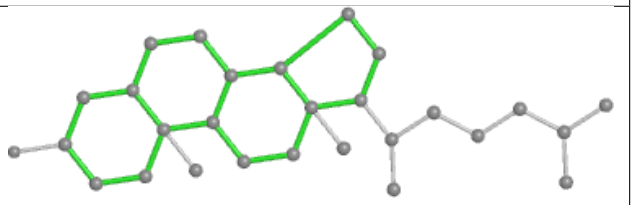
Bond lengths



Bond angles

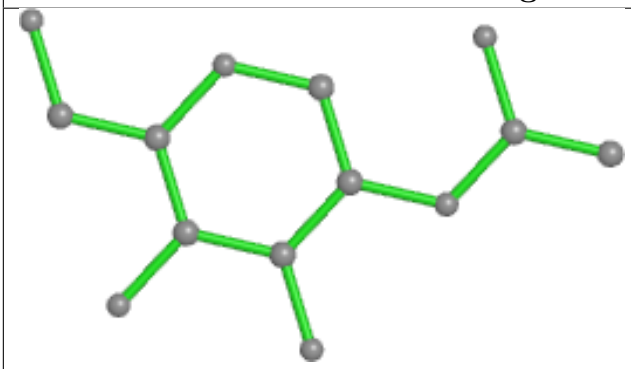


Torsions

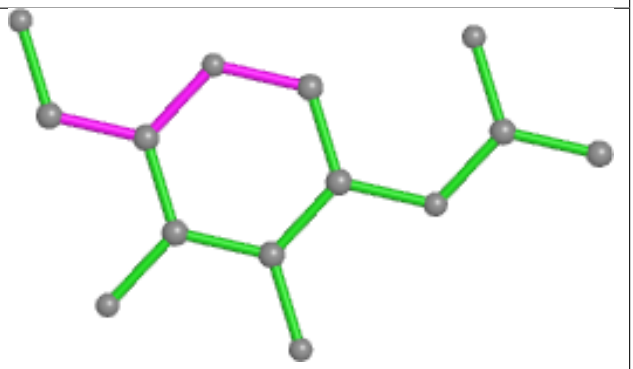


Rings

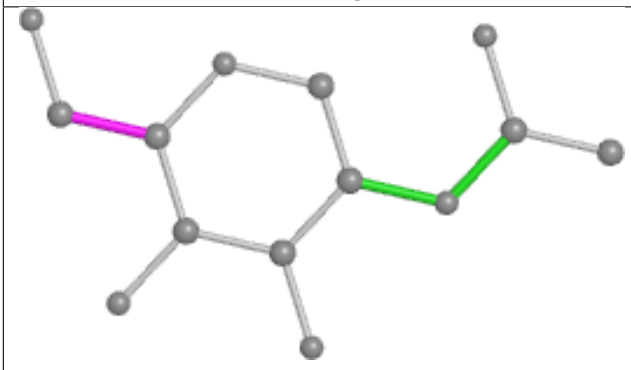
Ligand NAG A 418



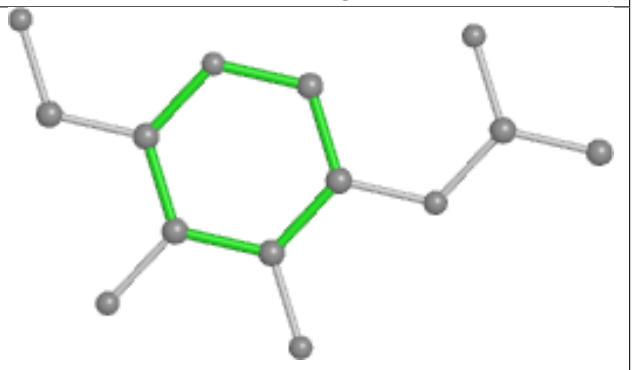
Bond lengths



Bond angles

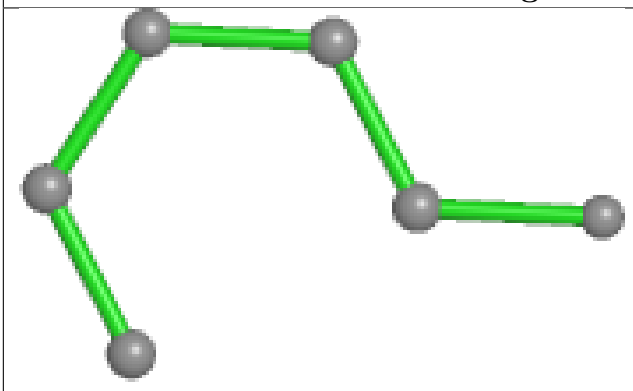


Torsions

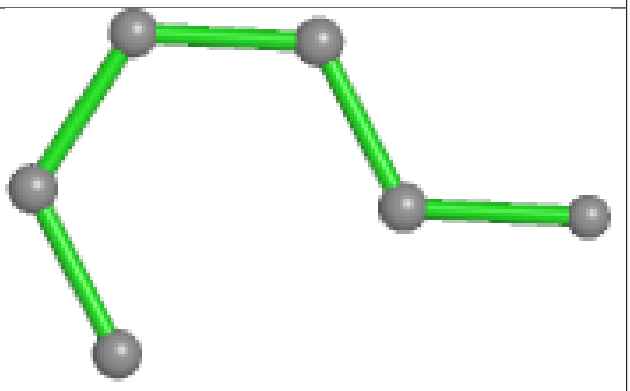


Rings

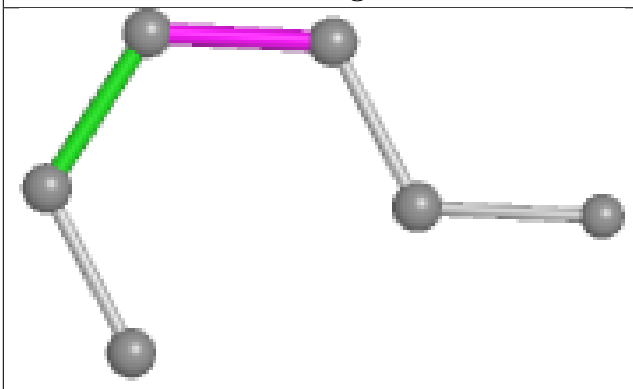
Ligand PLM A 419



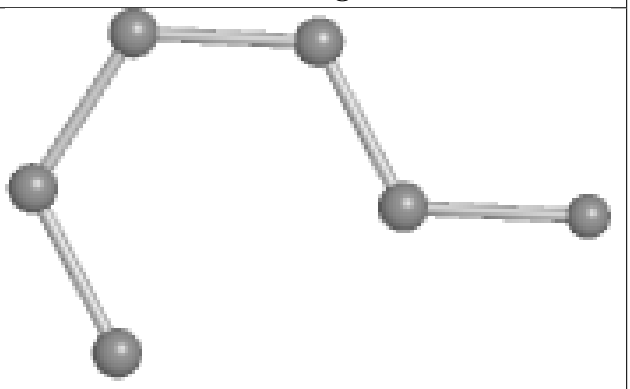
Bond lengths



Bond angles

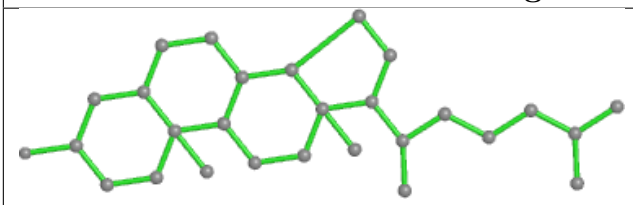


Torsions

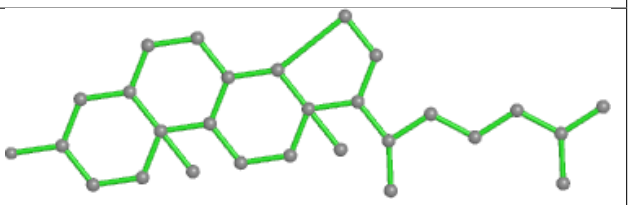


Rings

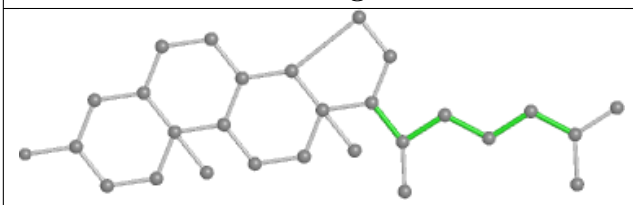
Ligand CLR C 411



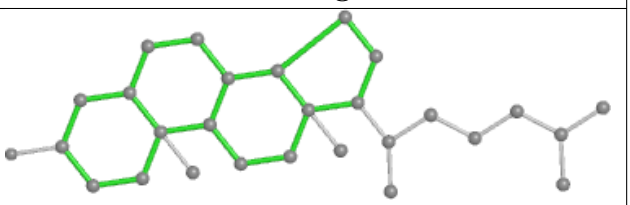
Bond lengths



Bond angles

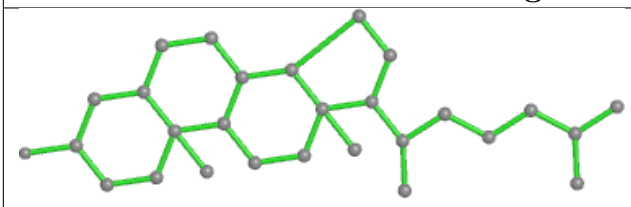


Torsions

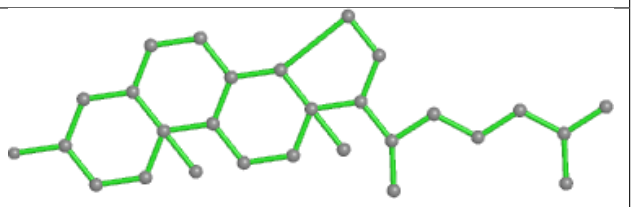


Rings

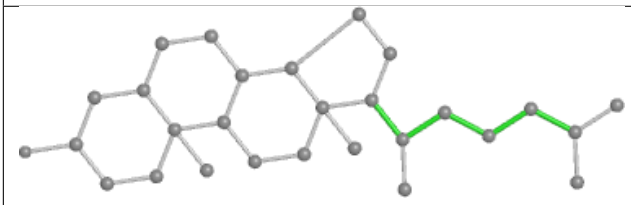
Ligand CLR C 412



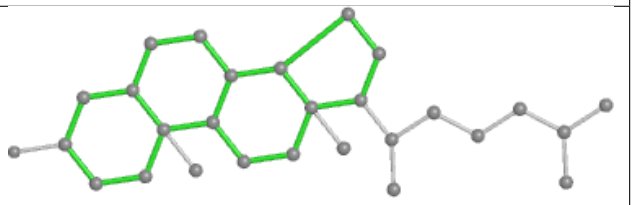
Bond lengths



Bond angles

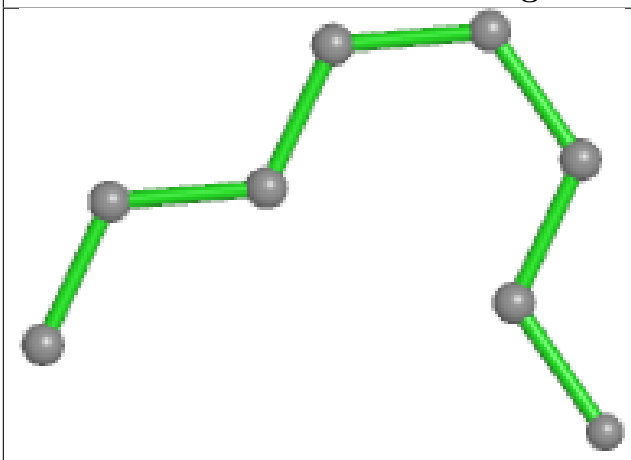


Torsions

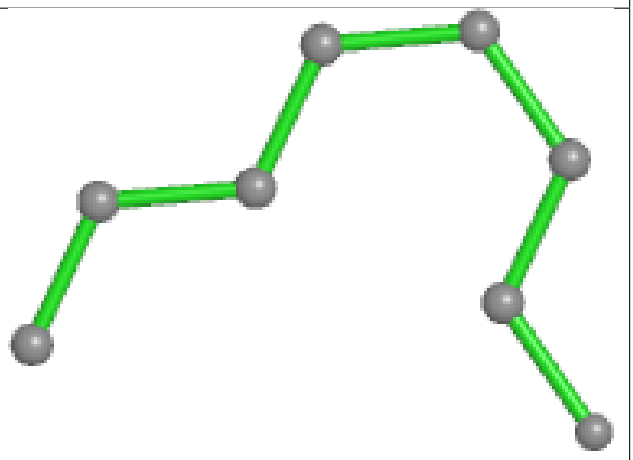


Rings

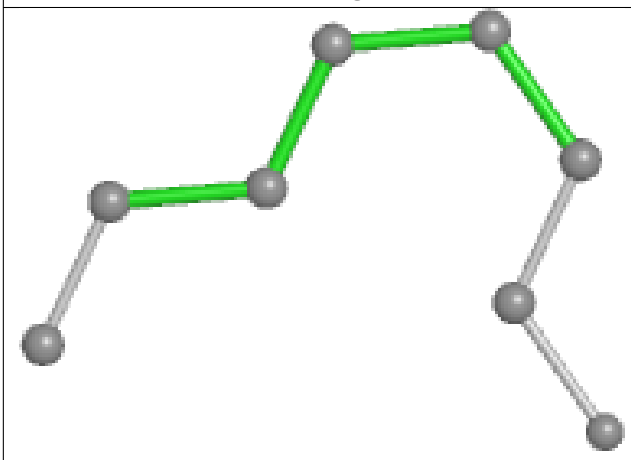
Ligand PLM A 420



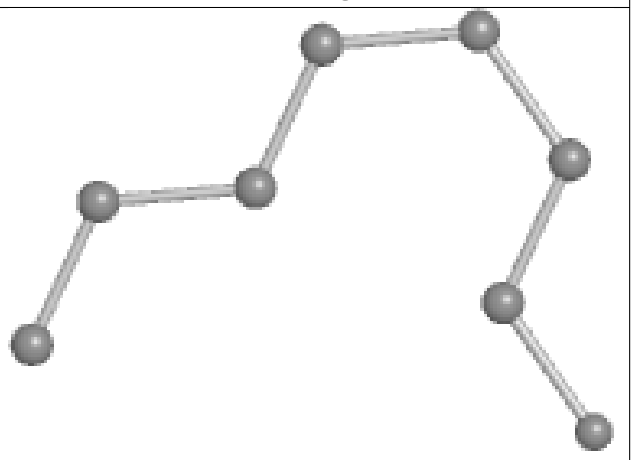
Bond lengths



Bond angles

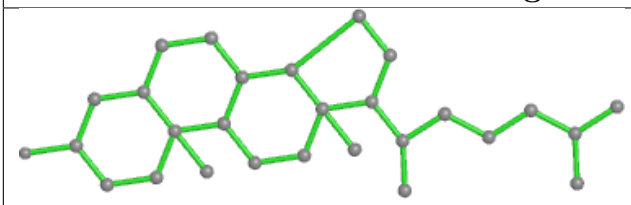


Torsions

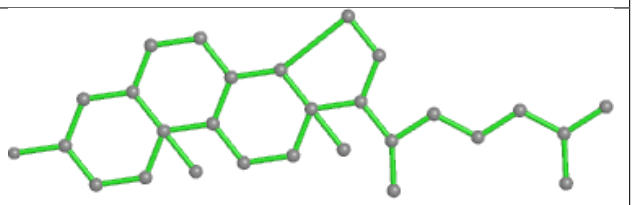


Rings

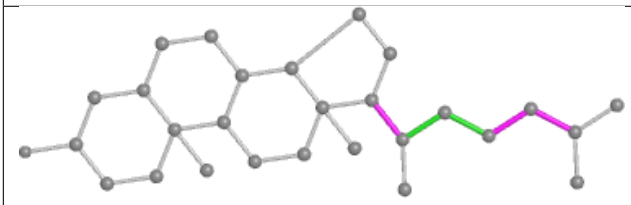
Ligand CLR A 428



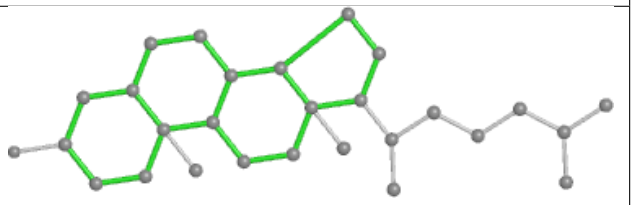
Bond lengths



Bond angles

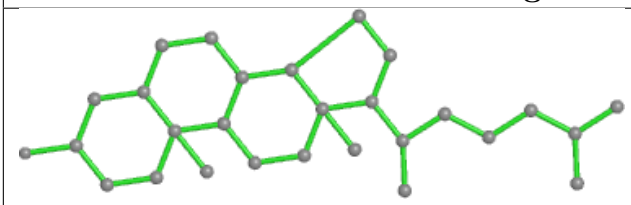


Torsions

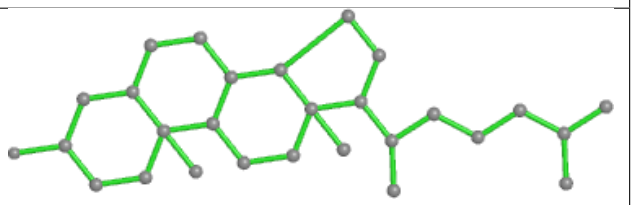


Rings

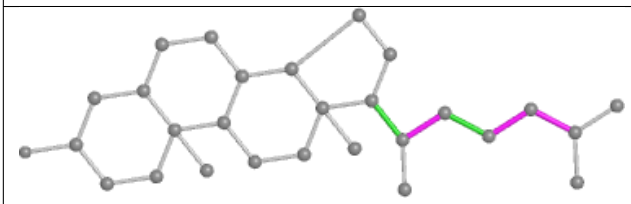
Ligand CLR A 426



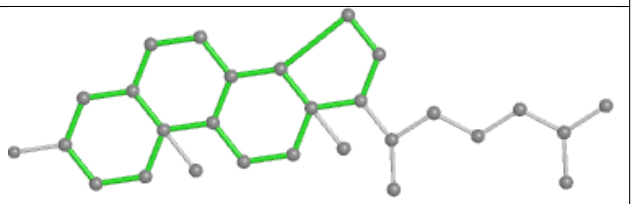
Bond lengths



Bond angles

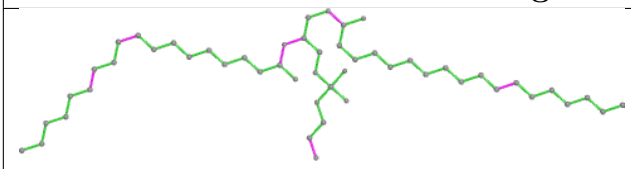


Torsions

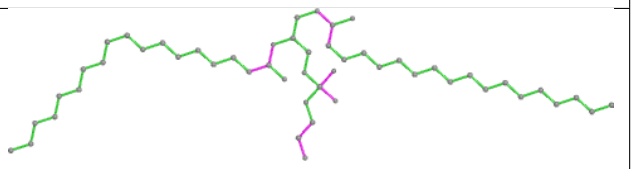


Rings

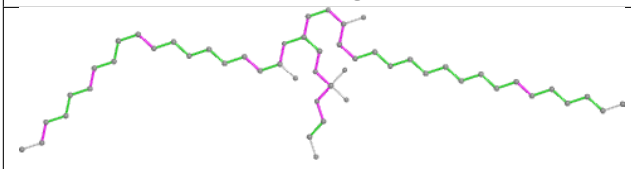
Ligand 76F A 401



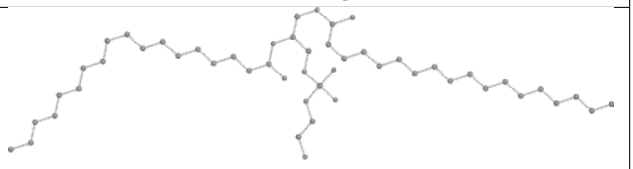
Bond lengths



Bond angles

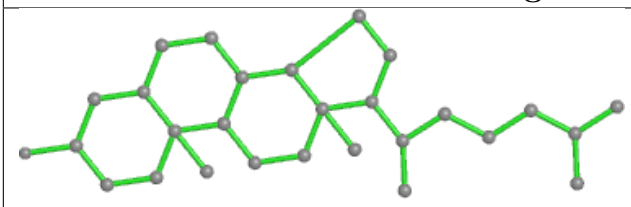


Torsions

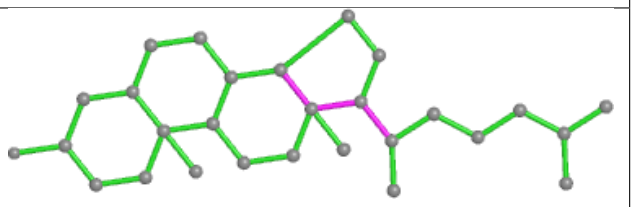


Rings

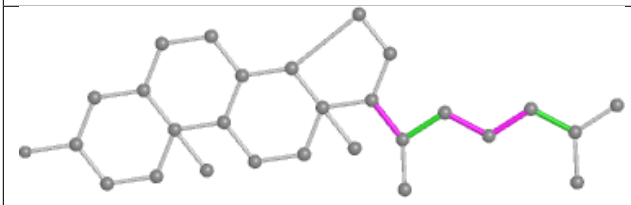
Ligand CLR C 414



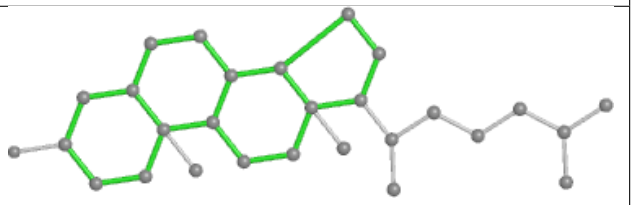
Bond lengths



Bond angles

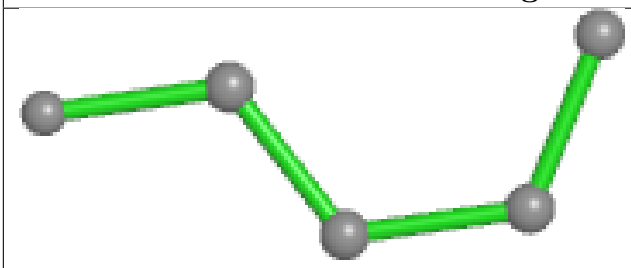


Torsions

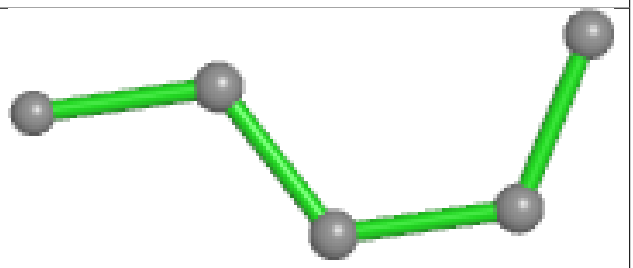


Rings

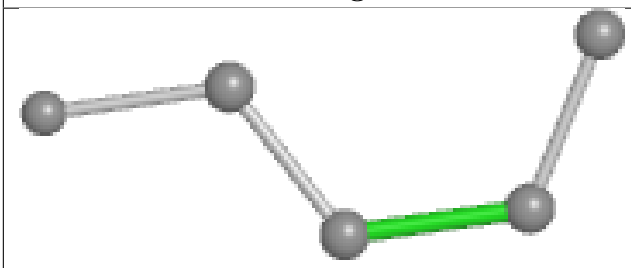
Ligand PLM A 421



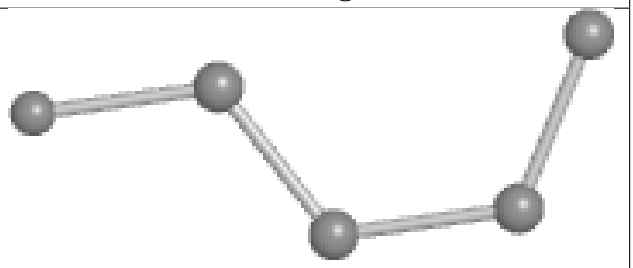
Bond lengths



Bond angles

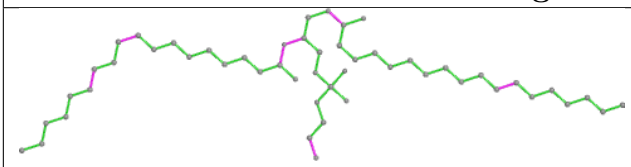


Torsions

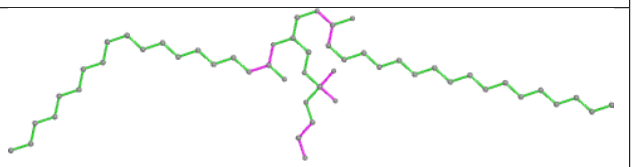


Rings

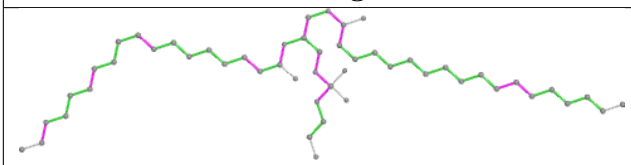
Ligand 76F C 403



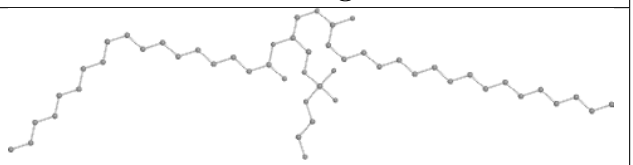
Bond lengths



Bond angles

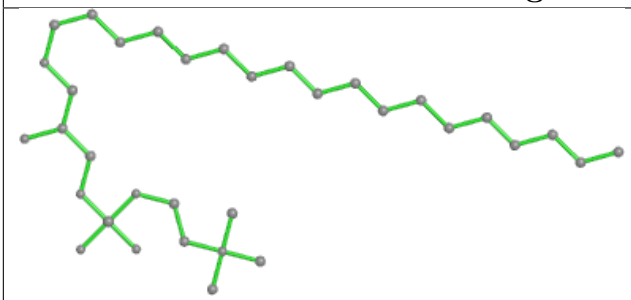


Torsions

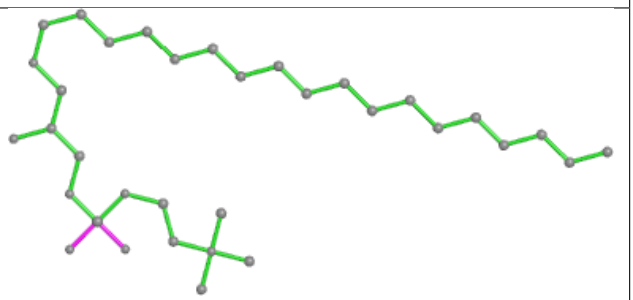


Rings

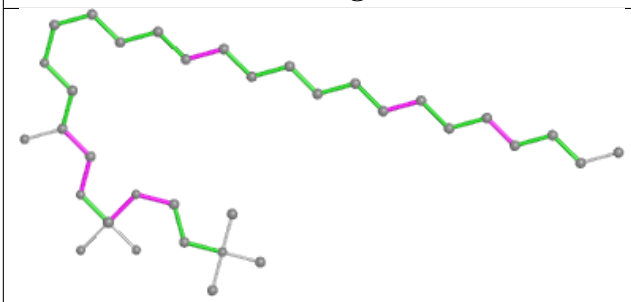
Ligand LPE A 404



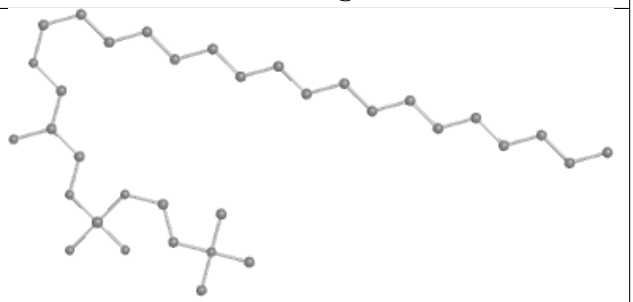
Bond lengths



Bond angles

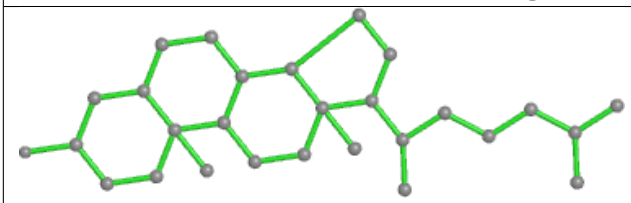


Torsions

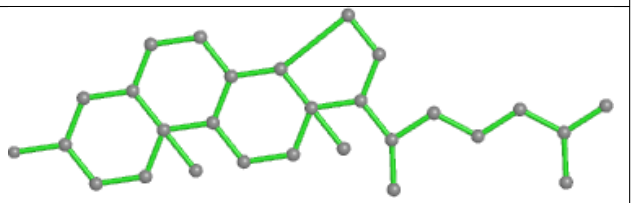


Rings

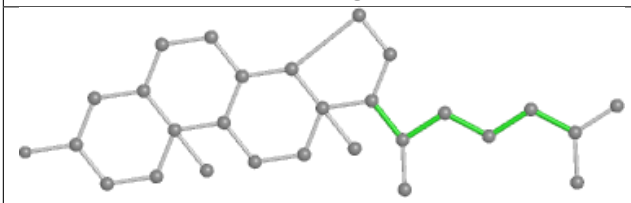
Ligand CLR A 409



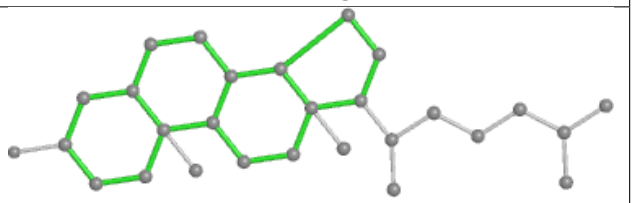
Bond lengths



Bond angles

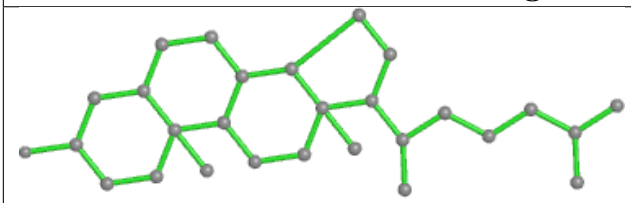


Torsions

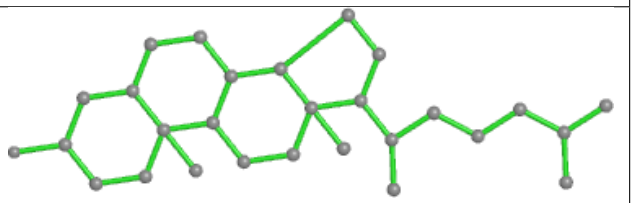


Rings

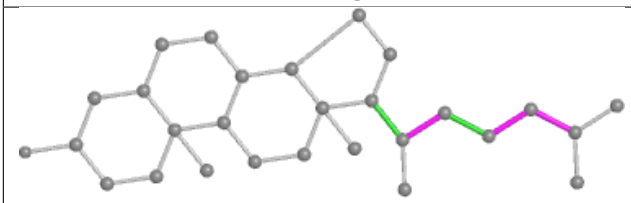
Ligand CLR A 407



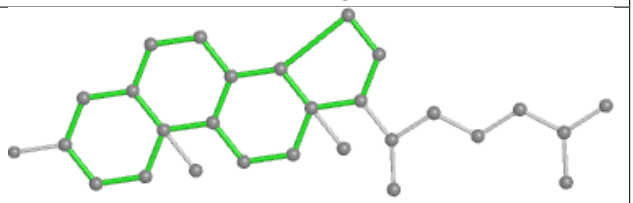
Bond lengths



Bond angles

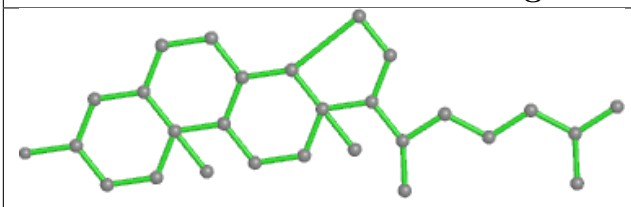


Torsions

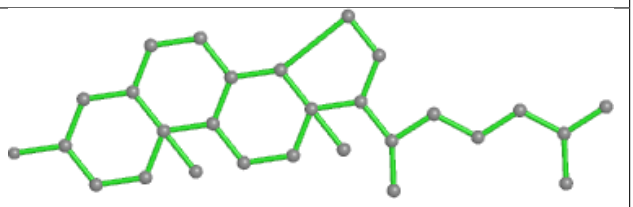


Rings

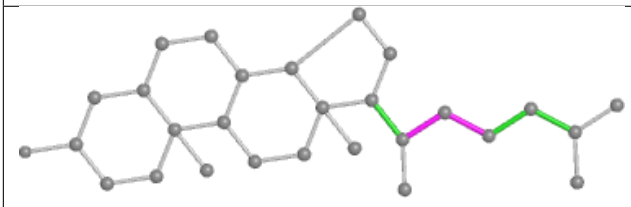
Ligand CLR C 402



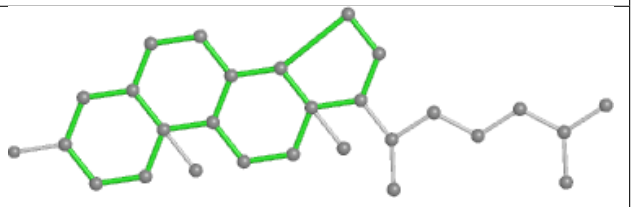
Bond lengths



Bond angles

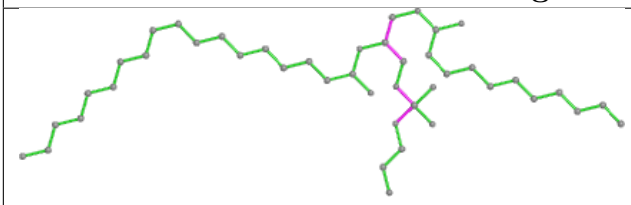


Torsions

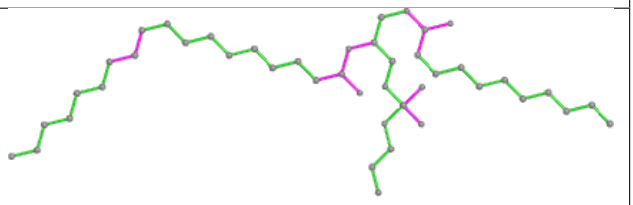


Rings

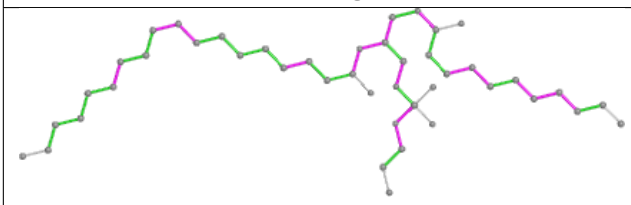
Ligand 76F A 402



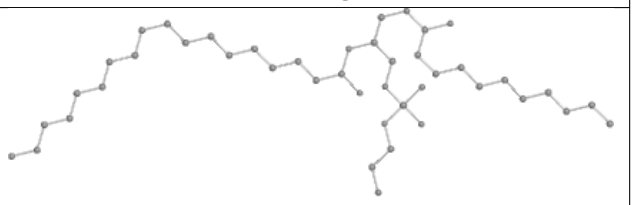
Bond lengths



Bond angles

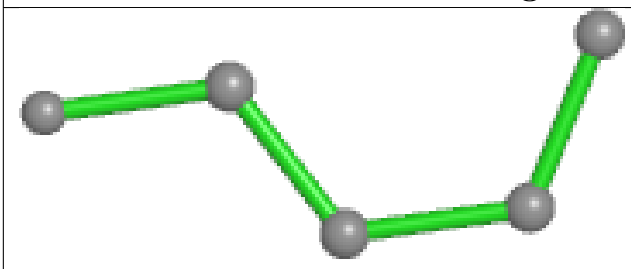


Torsions

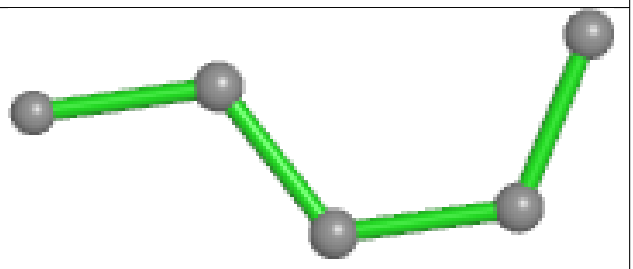


Rings

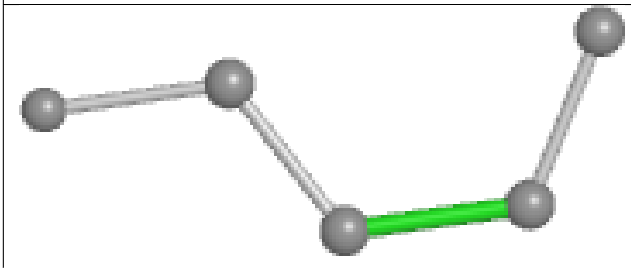
Ligand PLM A 424



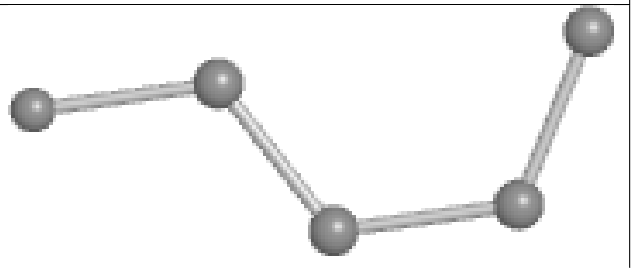
Bond lengths



Bond angles



Torsions



Rings

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.

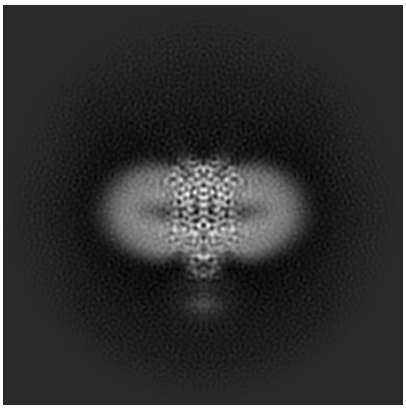
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-64370. These allow visual inspection of the internal detail of the map and identification of artifacts.

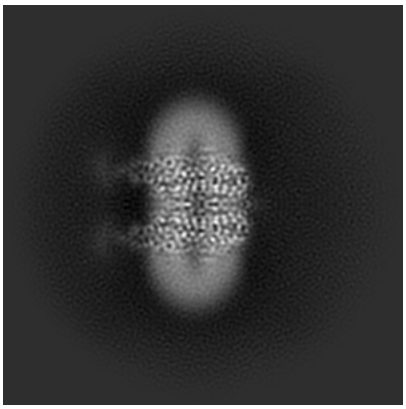
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

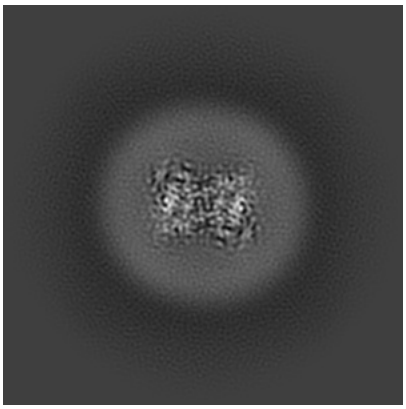
6.1.1 Primary map



X

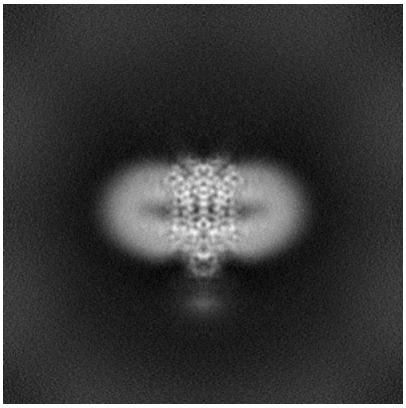


Y

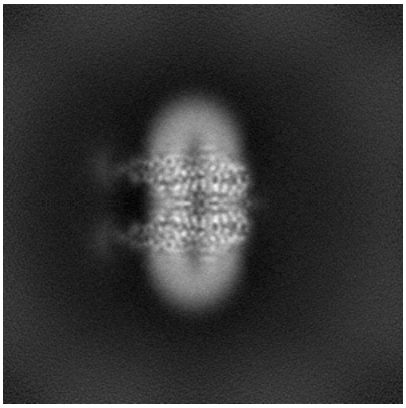


Z

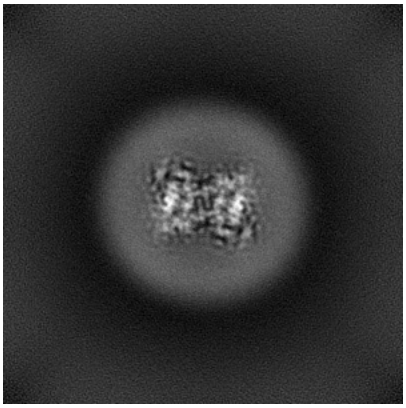
6.1.2 Raw map



X



Y

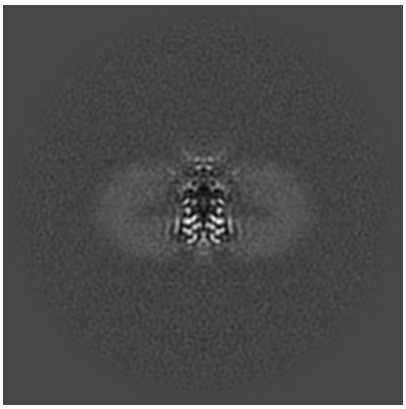


Z

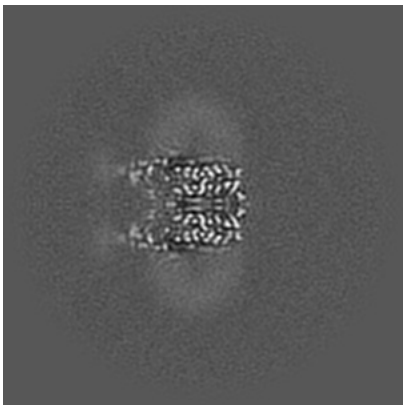
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

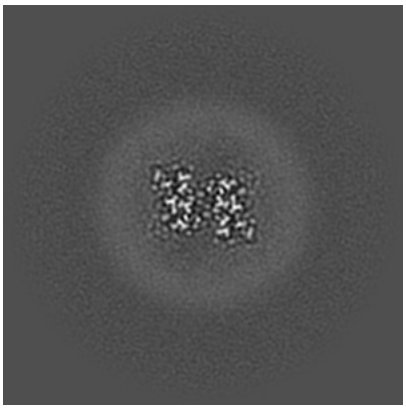
6.2.1 Primary map



X Index: 150

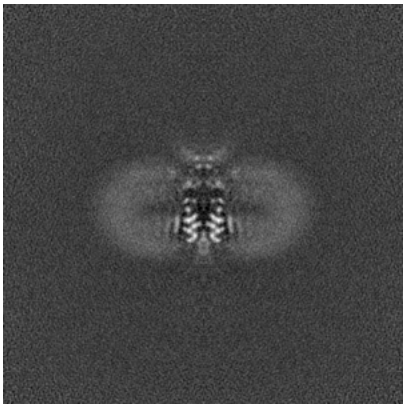


Y Index: 150

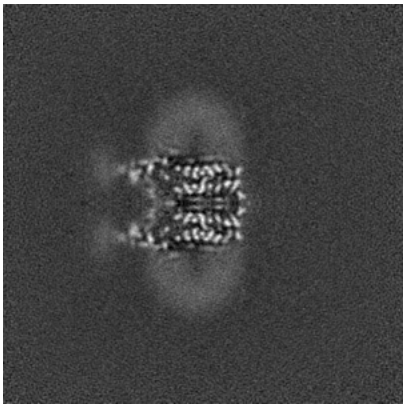


Z Index: 150

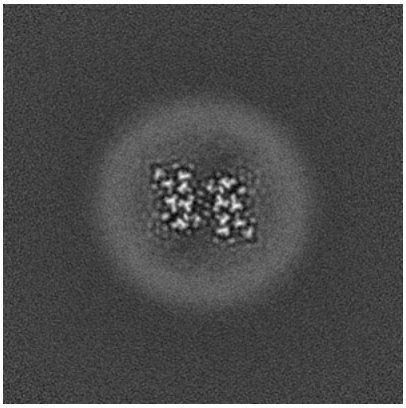
6.2.2 Raw map



X Index: 150



Y Index: 150

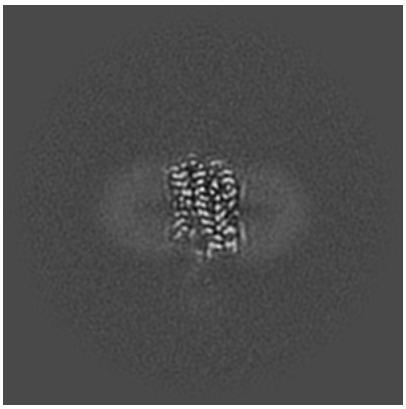


Z Index: 150

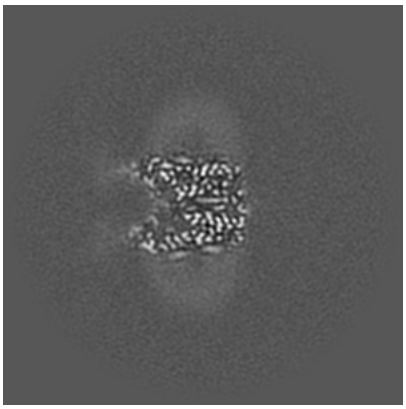
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

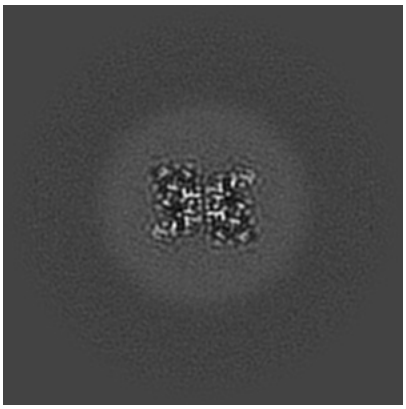
6.3.1 Primary map



X Index: 138

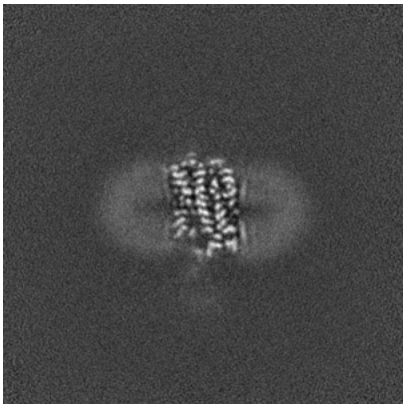


Y Index: 148

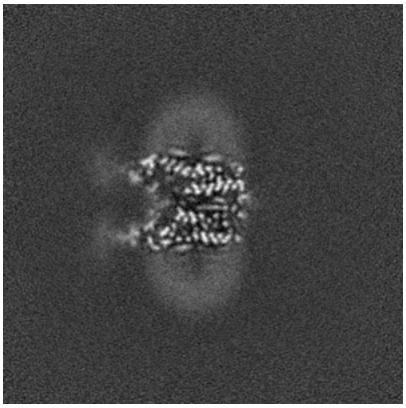


Z Index: 159

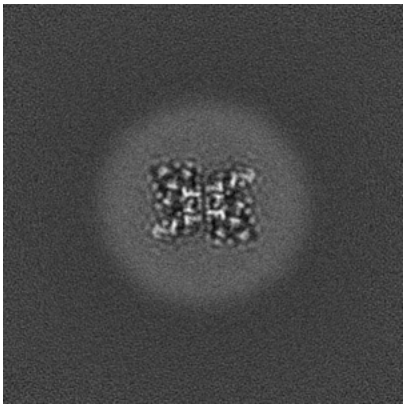
6.3.2 Raw map



X Index: 138



Y Index: 152

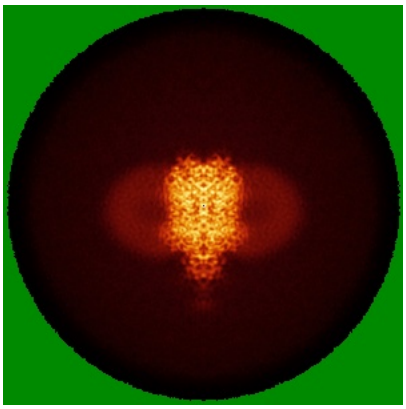


Z Index: 159

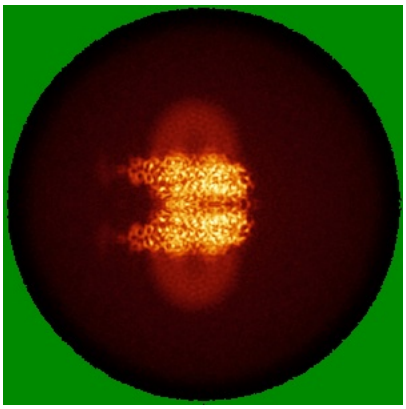
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

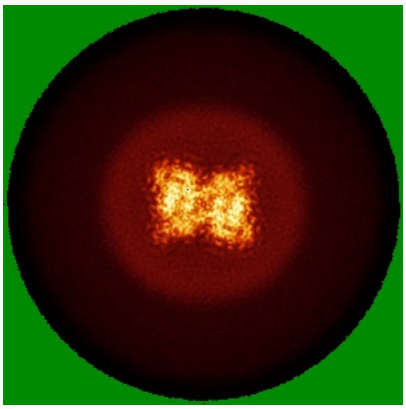
6.4.1 Primary map



X

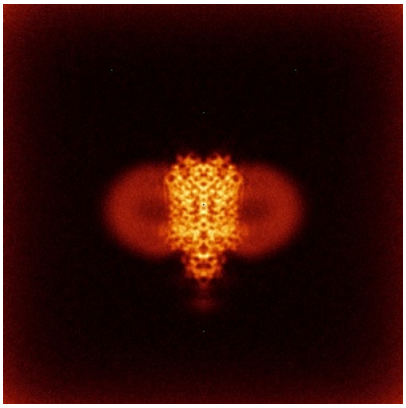


Y

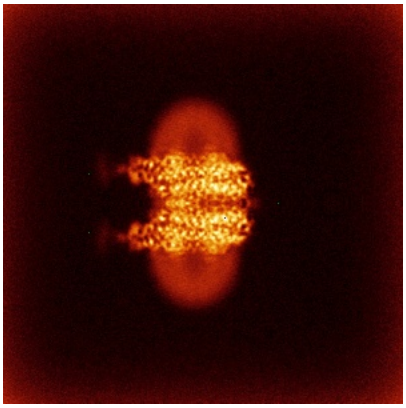


Z

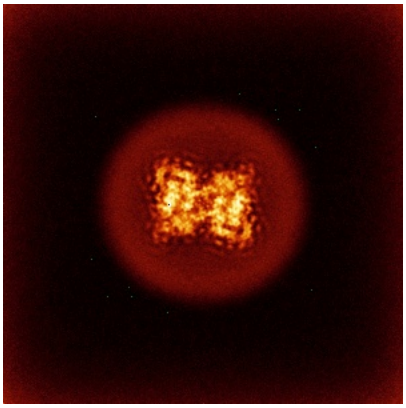
6.4.2 Raw map



X



Y

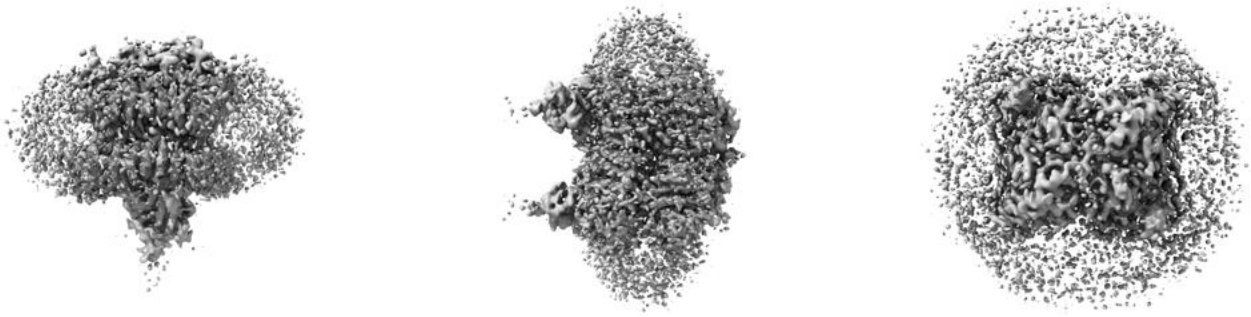


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

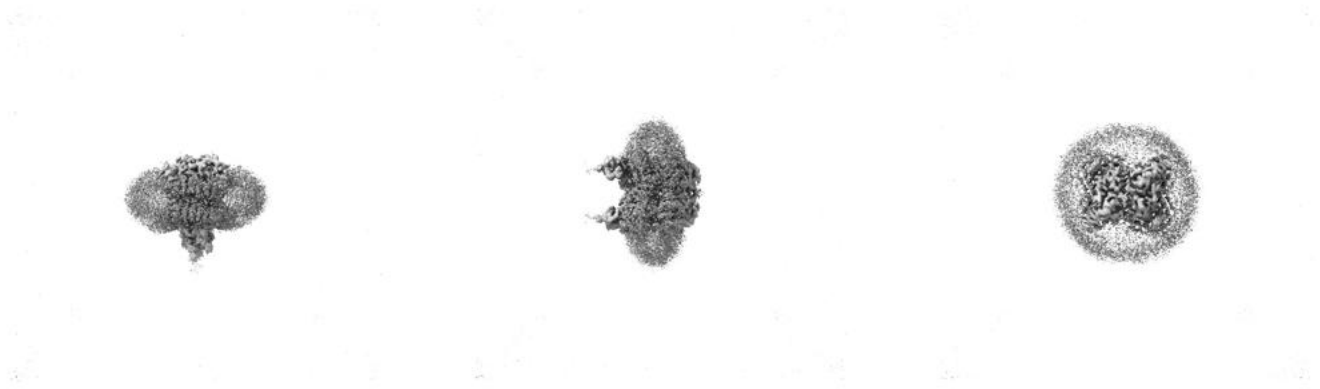
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.24. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

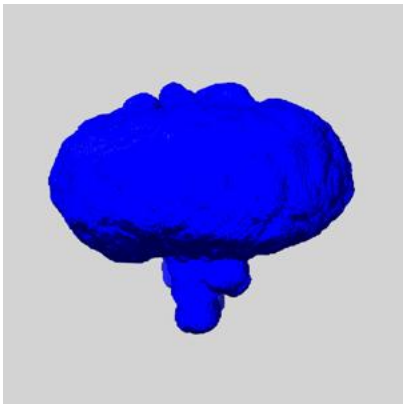
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

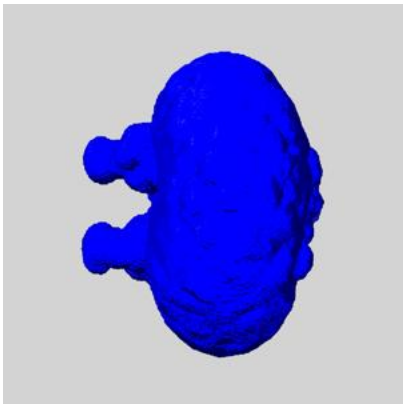
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

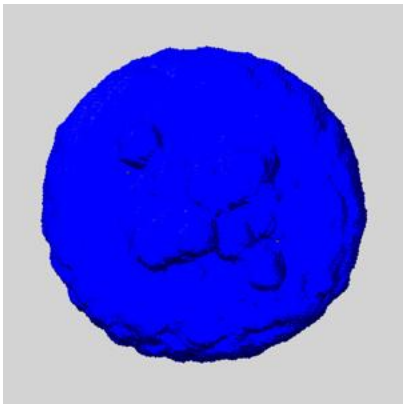
6.6.1 emd_64370_msk_1.map



X



Y

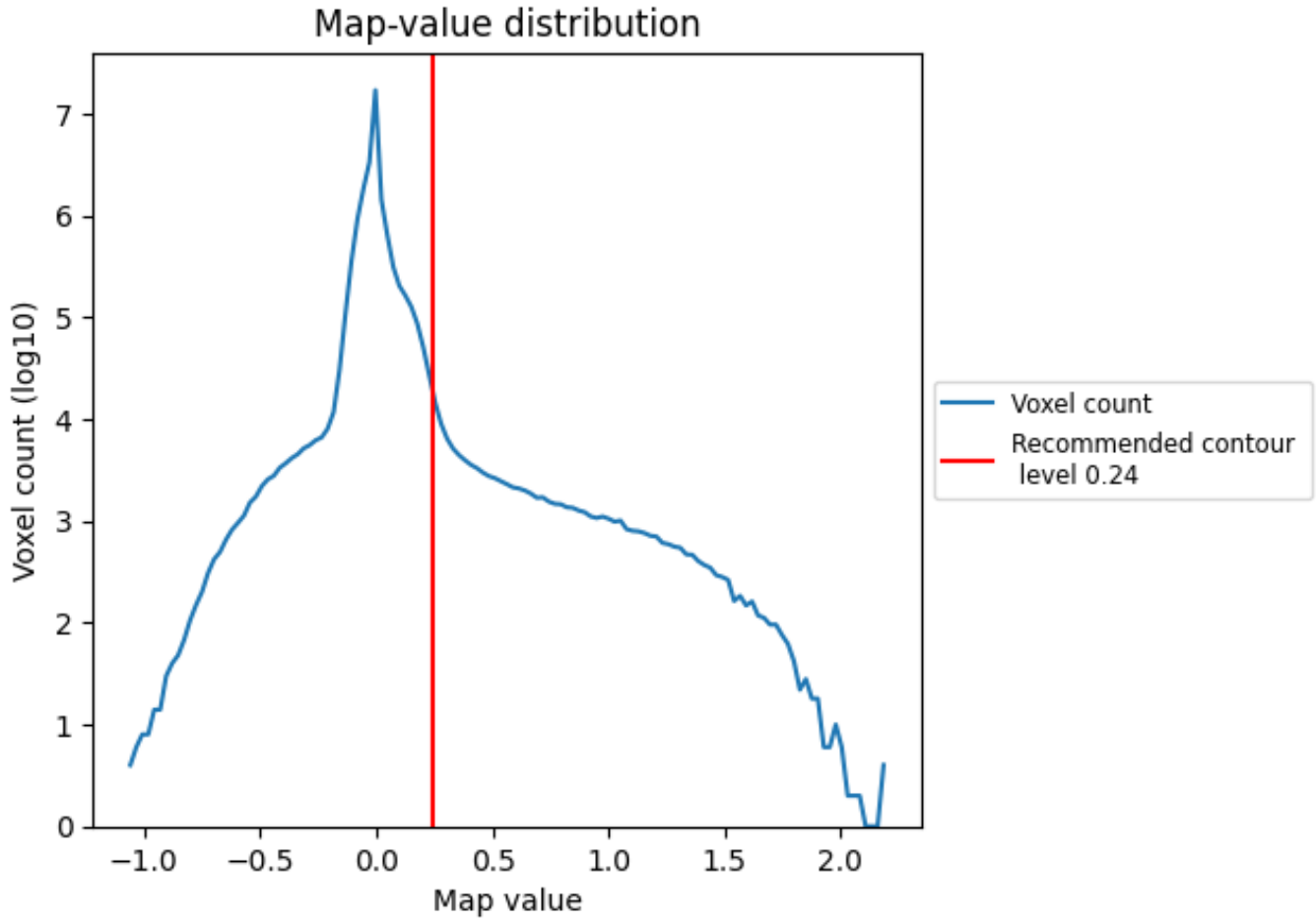


Z

7 Map analysis

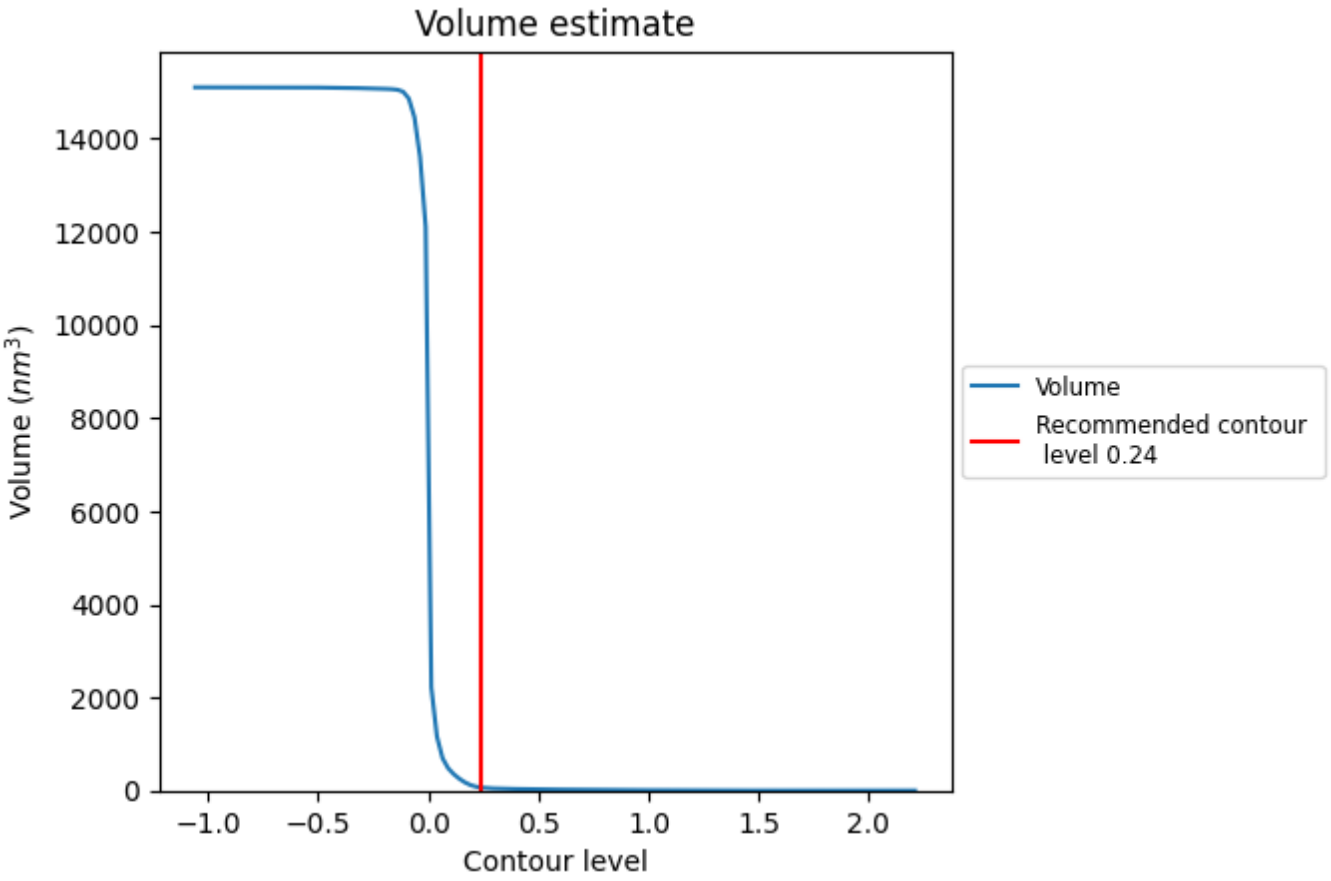
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

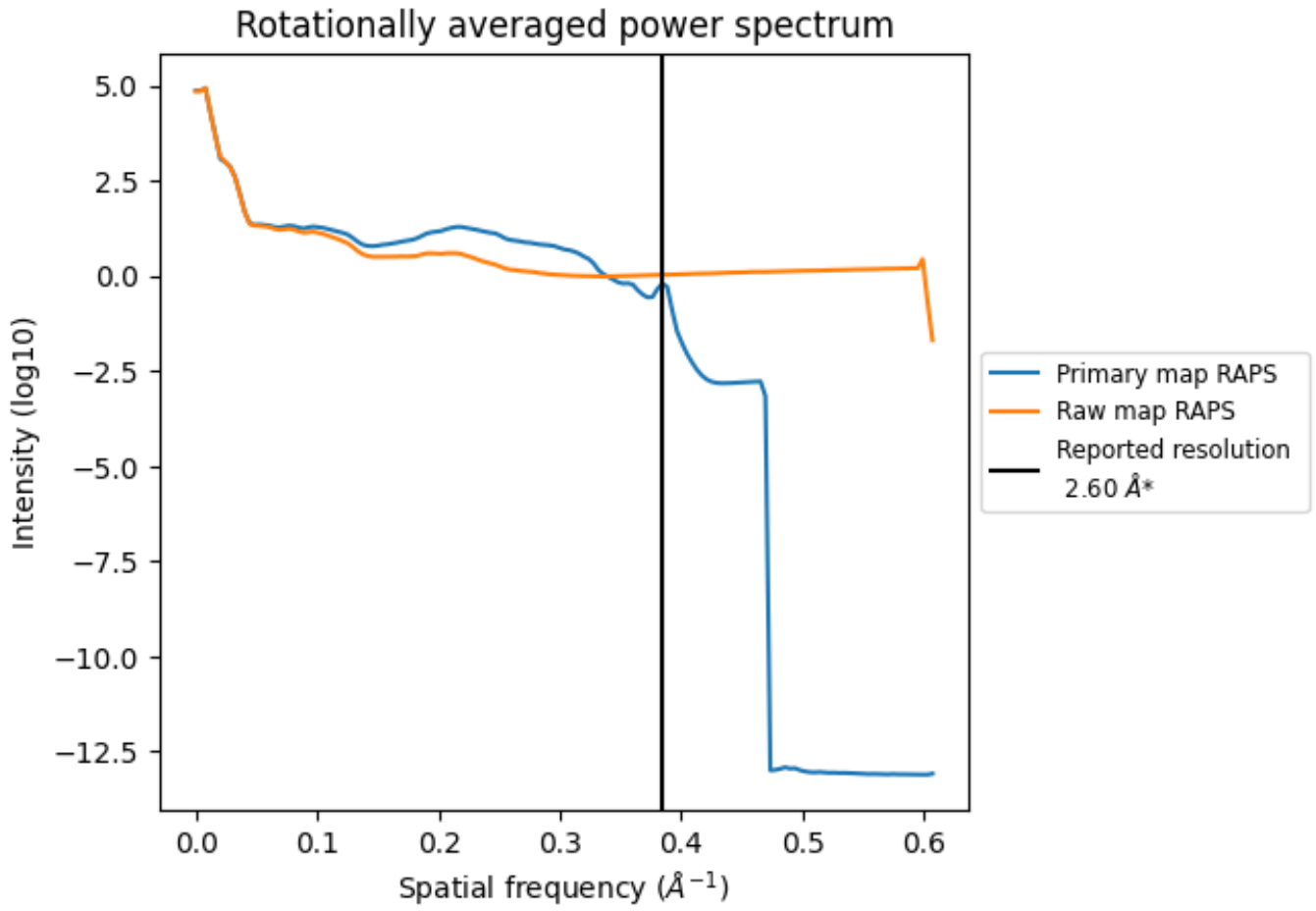
7.2 Volume estimate



The volume at the recommended contour level is 65 nm^3; this corresponds to an approximate mass of 58 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

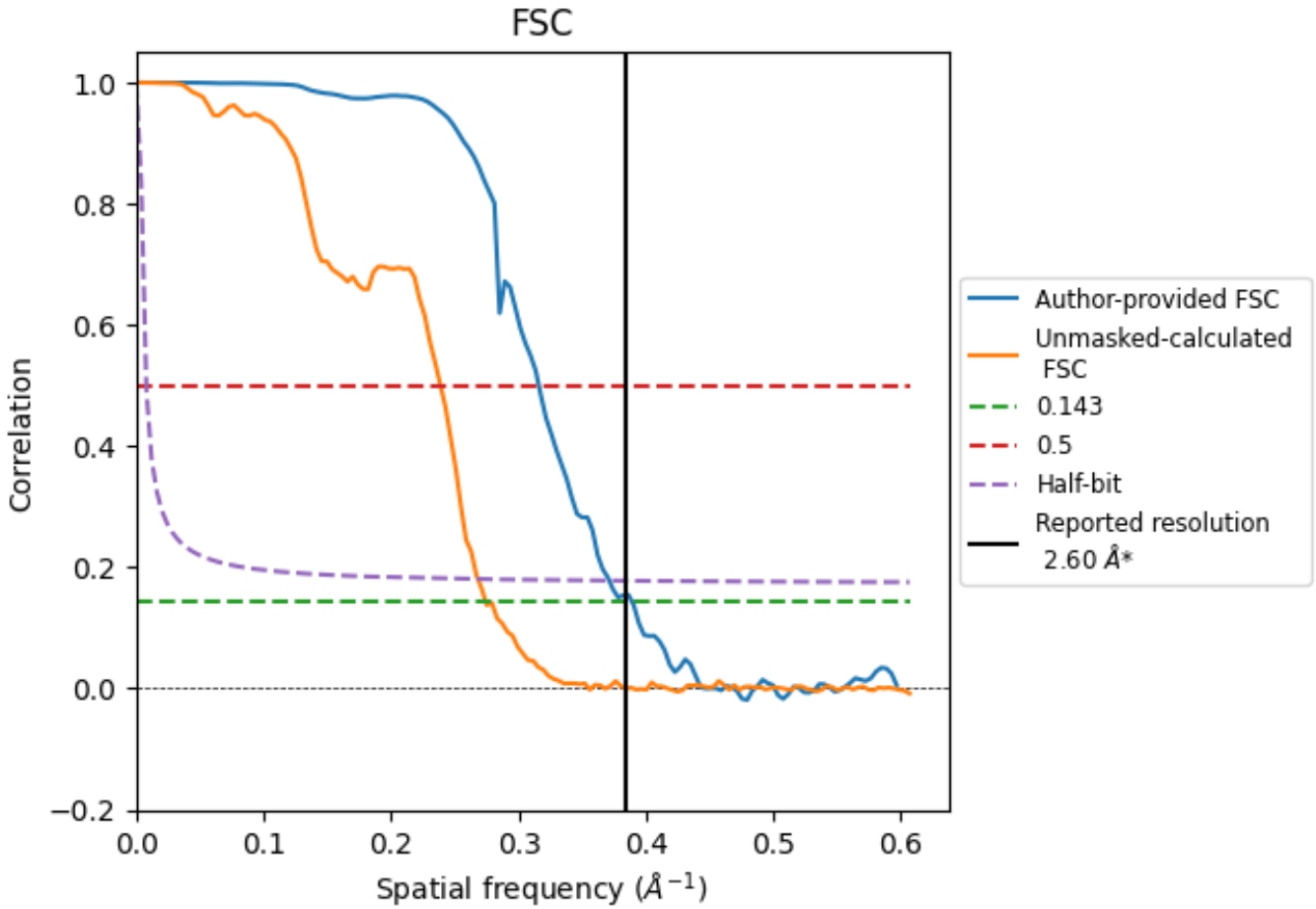


*Reported resolution corresponds to spatial frequency of 0.385 $Å^{-1}$

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

8.2 Resolution estimates (i)

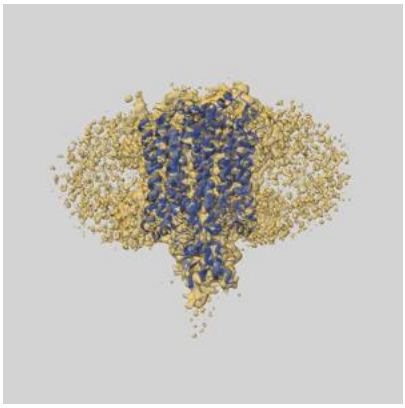
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	2.57	3.17	2.69
Unmasked-calculated*	3.65	4.19	3.73

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.65 differs from the reported value 2.6 by more than 10 %

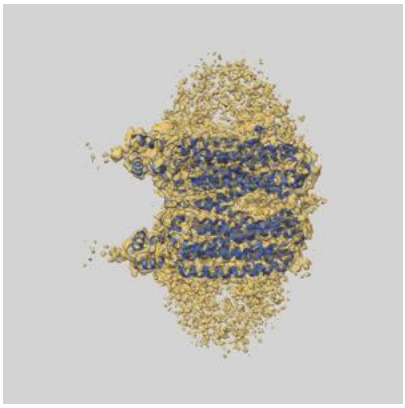
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-64370 and PDB model 9UO2. Per-residue inclusion information can be found in section 3 on page 11.

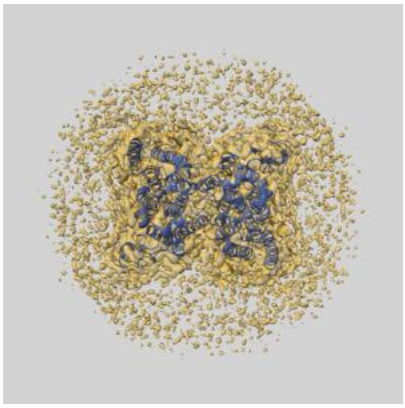
9.1 Map-model overlay



X



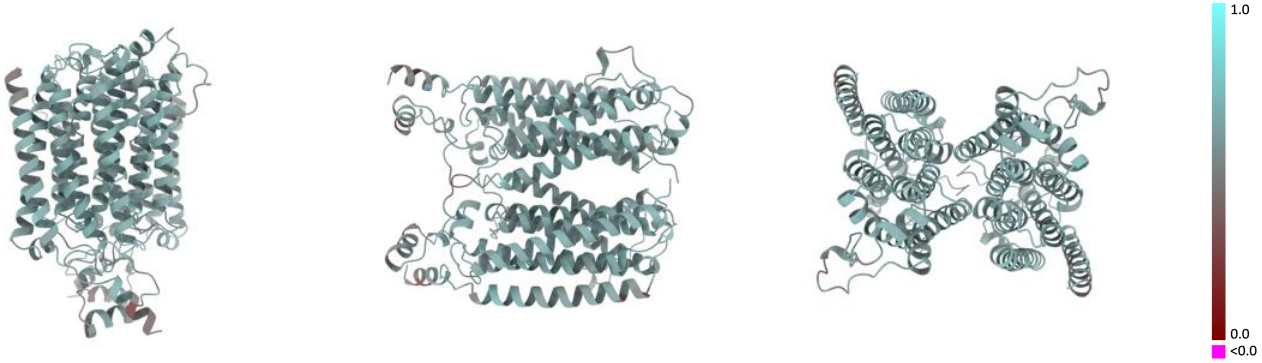
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.24 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

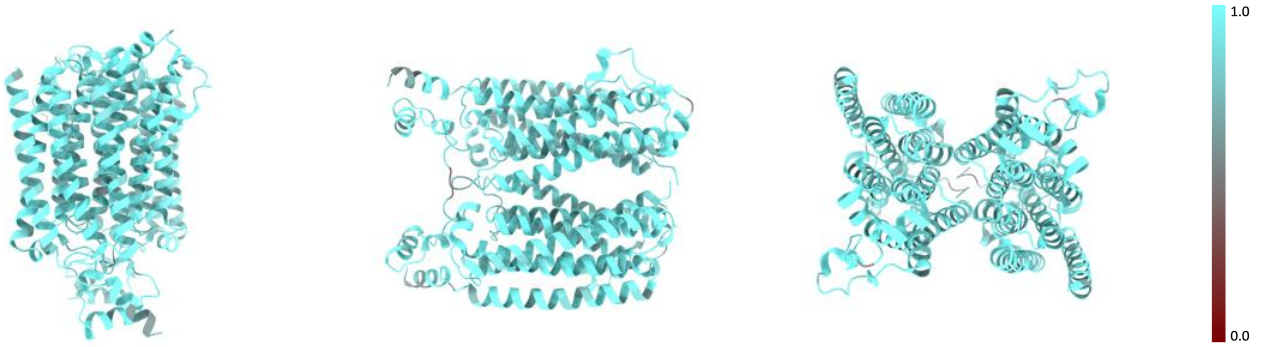
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

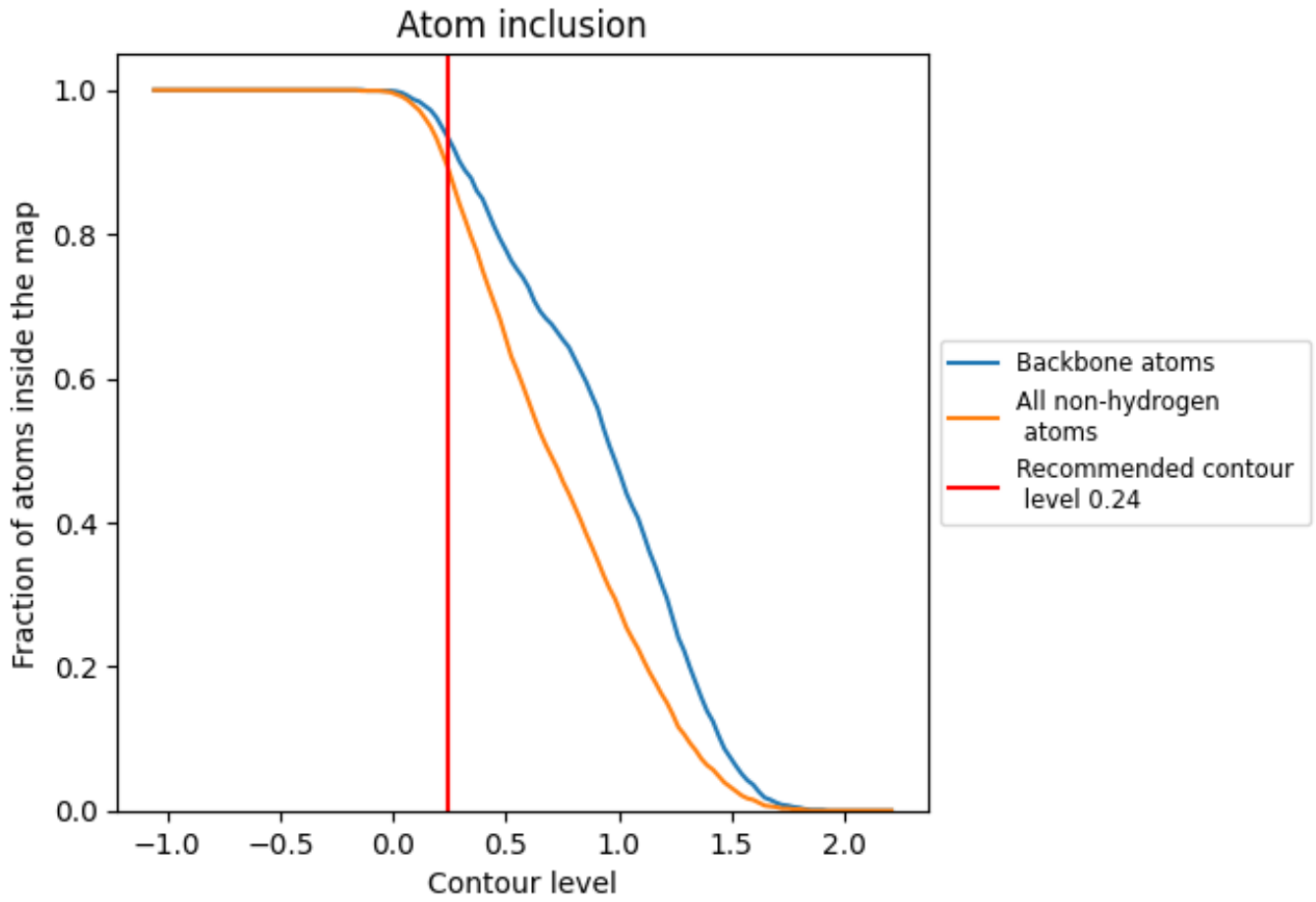
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.24).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 90% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.24) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8950	0.5640
A	0.9020	0.5700
B	0.8410	0.5280
C	0.9030	0.5680
D	0.8410	0.5310