Full wwPDB EM Validation Report ⓘ

Sep 19, 2022 – 02:33 pm BST

PDB ID	:	7QSM
EMDB ID	:	EMD-14134
Title	:	Bovine complex I in lipid nanodisc, Deactive-ligand (composite)
Authors	:	Chung, I.; Bridges, H.R.; Hirst, J.
Deposited on	:	2022-01-13
Resolution	:	2.30 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:

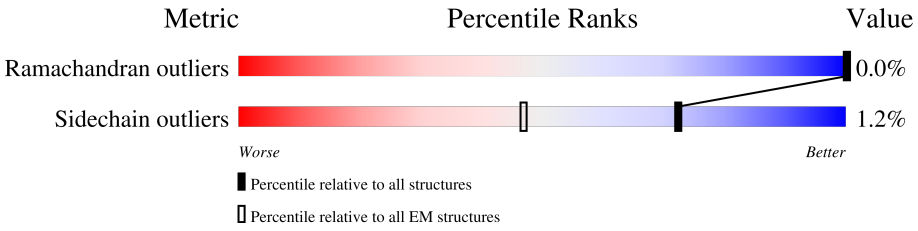
EMDB validation analysis	:	0.0.1.dev8
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.30

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.30 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)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	115	7%, 91%, 8%
2	B	216	69%, 28%
3	C	266	77%, 22%
4	D	463	91%, 7%
5	E	249	85%, 14%
6	F	464	92%, 7%
7	G	727	94%, 5%
8	H	318	98%
9	I	212	83%, 17%

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Mol	Chain	Length	Quality of chain
10	J	175	5% 98%
11	K	98	98%
12	L	606	99%
13	M	459	99%
14	N	347	100%
15	O	343	92% 7%
16	P	380	12% 86% 11%
17	Q	175	73% 26%
18	R	124	77% 23%
19	S	99	87% 13%
20	T	156	9% 53% 46%
20	U	156	55% 45%
21	V	116	98%
22	W	128	91% 9%
23	X	172	99%
24	Y	141	99%
25	Z	144	99%
26	a	70	100%
27	b	84	99%
28	c	76	64% 36%
29	d	120	98%
30	e	106	92% 8%
31	f	57	16% 96%
32	g	154	62% 34%
33	h	189	72% 27%

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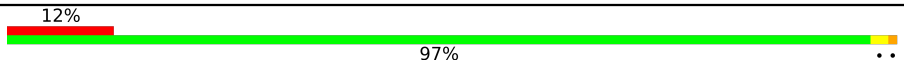
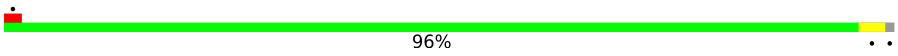
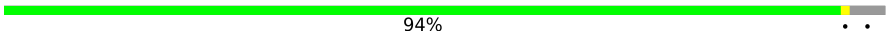
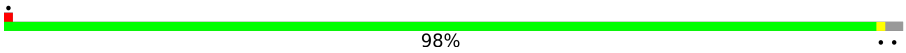
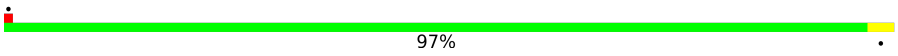
Mol	Chain	Length	Quality of chain
34	i	127	
35	j	108	
36	k	98	
37	l	186	
38	m	129	
39	n	179	
40	o	137	
41	p	176	
42	q	145	
43	r	113	
44	s	109	

2 Entry composition

There are 61 unique types of molecules in this entry. The entry contains 71639 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 NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	106	852	578	124	145	5	0	0

- Molecule 2 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	156	1247	795	225	213	14	0	0

- Molecule 3 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	207	1721	1111	296	311	3	0	0

- Molecule 4 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	430	3459	2209	596	629	25	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	129	ARG	GLN	variant	UNP P17694

- Molecule 5 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	214	Total	C	N	O	S	0	0
			1659	1059	278	312	10		

- Molecule 6 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	432	Total	C	N	O	S	1	0
			3336	2102	597	617	20		

- Molecule 7 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	691	Total	C	N	O	S	0	0
			5298	3318	925	1016	39		

- Molecule 8 is a protein called NADH-ubiquinone oxidoreductase chain 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	318	Total	C	N	O	S	1	0
			2519	1687	388	421	23		

- Molecule 9 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	176	Total	C	N	O	S	0	0
			1414	889	243	270	12		

- Molecule 10 is a protein called NADH-ubiquinone oxidoreductase chain 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	175	Total	C	N	O	S	0	0
			1345	906	191	236	12		

- Molecule 11 is a protein called NADH-ubiquinone oxidoreductase chain 4L.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	98	Total	C	N	O	S	0	0
			745	486	112	131	16		

- Molecule 12 is a protein called NADH-ubiquinone oxidoreductase chain 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	606	Total	C	N	O	S	0	0
			4802	3195	737	827	43		

- Molecule 13 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	459	Total	C	N	O	S	0	0
			3654	2436	570	609	39		

- Molecule 14 is a protein called NADH-ubiquinone oxidoreductase chain 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	347	Total	C	N	O	S	0	0
			2733	1817	416	457	43		

- Molecule 15 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	320	Total	C	N	O	S	0	0
			2589	1662	429	488	10		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	255	LYS	ASN	variant	UNP P34942

- Molecule 16 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	337	Total	C	N	O	S	0	0
			2706	1750	478	473	5		

- Molecule 17 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	129	Total	C	N	O	S	0	0
			1049	659	188	199	3		

- Molecule 18 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	96	Total	C	N	O	S	0	0
			740	454	140	143	3		

- Molecule 19 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	86	Total	C	N	O	S	0	0
			691	434	129	126	2		

- Molecule 20 is a protein called Acyl carrier protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	85	Total	C	N	O	S	0	0
			688	444	101	138	5		
20	U	86	Total	C	N	O	S	0	0
			693	447	102	139	5		

- Molecule 21 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	114	Total	C	N	O	S	0	0
			923	597	156	167	3		

- Molecule 22 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	116	Total	C	N	O	S	0	0
			982	628	182	168	4		

- Molecule 23 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	171	Total	C	N	O	S	0	0
			1402	887	253	252	10		

- Molecule 24 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	140	Total	C	N	O	S	0	0
			1030	657	176	191	6		

- Molecule 25 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Z	142	Total	C	N	O	S	0	0
			1157	743	202	203	9		

- Molecule 26 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	a	70	Total	C	N	O	S	0	0
			569	365	104	95	5		

- Molecule 27 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	b	83	Total	C	N	O	S	0	0
			651	425	109	115	2		

- Molecule 28 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	c	49	Total	C	N	O	0	0
			414	273	70	71		

- Molecule 29 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	d	120	Total	C	N	O	S	0	0
			999	650	172	172	5		

- Molecule 30 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	e	98	Total	C	N	O	S	0	0
			825	521	157	141	6		

- Molecule 31 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	57	Total	C	N	O	S	0	0
			492	322	86	82	2		

- Molecule 32 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	g	101	Total	C	N	O	S	0	0
			846	544	140	158	4		

- Molecule 33 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	h	138	Total	C	N	O	S	0	0
			1154	759	196	197	2		

- Molecule 34 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	i	127	Total	C	N	O	S	0	0
			1097	722	191	183	1		

- Molecule 35 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	j	67	Total	C	N	O	S	0	0
			580	381	95	103	1		

- Molecule 36 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	k	81	Total	C	N	O	S	0	0
			653	427	110	114	2		

- Molecule 37 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	l	156	Total	C	N	O	S	0	0
			1314	850	216	240	8		

- Molecule 38 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	m	128	Total	C	N	O	0	0
			1067	684	188	195		

- Molecule 39 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	n	171	Total	C	N	O	S	1	0
			1498	958	276	257	7		

- Molecule 40 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	o	122	Total	C	N	O	S	0	0
			1048	653	201	185	9		

- Molecule 41 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	p	173	Total	C	N	O	S	0	0
			1450	909	268	265	8		

- Molecule 42 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	q	145	Total	C	N	O	S	0	0
			1209	778	216	210	5		

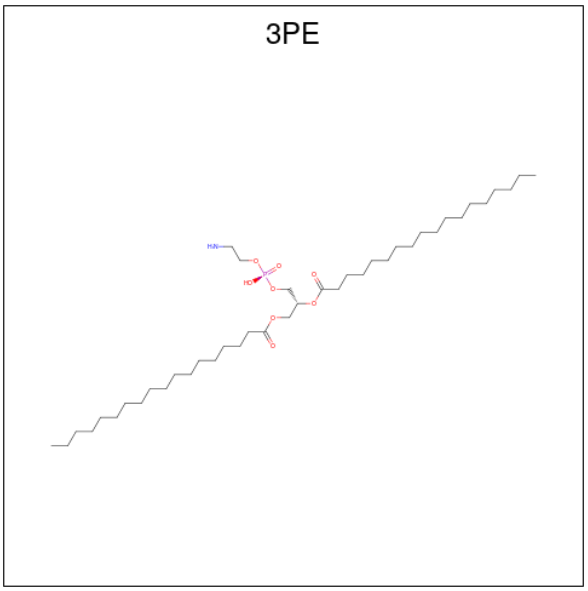
- Molecule 43 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	r	95	Total	C	N	O	S	0	0
			776	490	144	139	3		

- Molecule 44 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	s	44	Total	C	N	O	S	0	0
			371	233	66	71	1		

- Molecule 45 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
45	A	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	A	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	H	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	H	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	I	1	Total	C	N	O	P	0
			51	41	1	8	1	
45	J	1	Total	C	N	O	P	0
			47	37	1	8	1	
45	K	1	Total	C	N	O	P	0
			48	38	1	8	1	

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Mol	Chain	Residues	Atoms					AltConf
45	L	1	Total	C	N	O	P	0
			94	74	2	16	2	
45	L	1	Total	C	N	O	P	0
			94	74	2	16	2	
45	M	1	Total	C	N	O	P	0
			148	118	3	24	3	
45	M	1	Total	C	N	O	P	0
			148	118	3	24	3	
45	M	1	Total	C	N	O	P	0
			148	118	3	24	3	
45	N	1	Total	C	N	O	P	0
			100	80	2	16	2	
45	N	1	Total	C	N	O	P	0
			100	80	2	16	2	
45	O	1	Total	C	N	O	P	0
			22	12	1	8	1	
45	Y	1	Total	C	N	O	P	0
			231	181	5	40	5	
45	Y	1	Total	C	N	O	P	0
			231	181	5	40	5	
45	Y	1	Total	C	N	O	P	0
			231	181	5	40	5	
45	Y	1	Total	C	N	O	P	0
			231	181	5	40	5	
45	Y	1	Total	C	N	O	P	0
			231	181	5	40	5	
45	Z	1	Total	C	N	O	P	0
			43	33	1	8	1	
45	b	1	Total	C	N	O	P	0
			33	23	1	8	1	
45	d	1	Total	C	N	O	P	0
			92	72	2	16	2	
45	d	1	Total	C	N	O	P	0
			92	72	2	16	2	
45	h	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	h	1	Total	C	N	O	P	0
			89	69	2	16	2	
45	j	1	Total	C	N	O	P	0
			44	34	1	8	1	
45	m	1	Total	C	N	O	P	0
			86	66	2	16	2	

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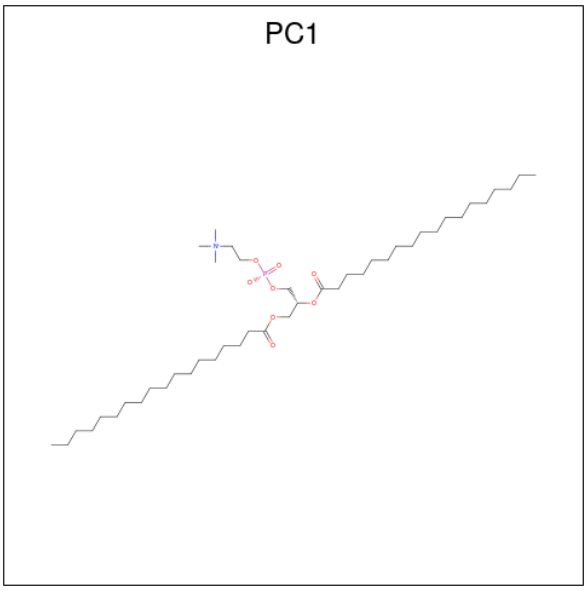
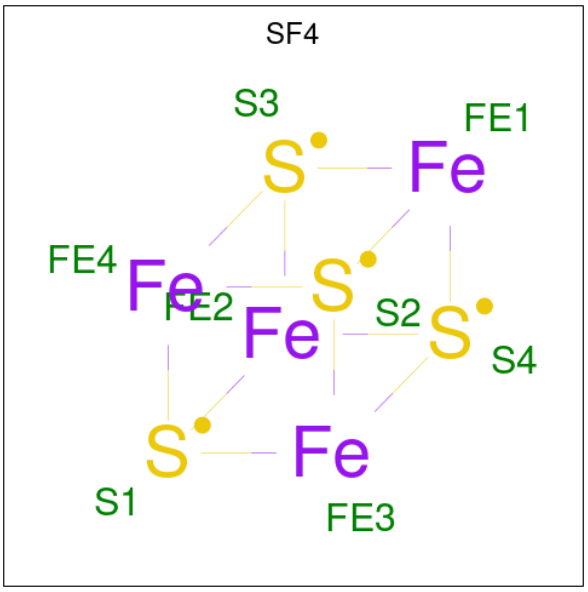
Mol	Chain	Residues	Atoms					AltConf
45	m	1	Total	C	N	O	P	0
			86	66	2	16	2	

- Molecule 46 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



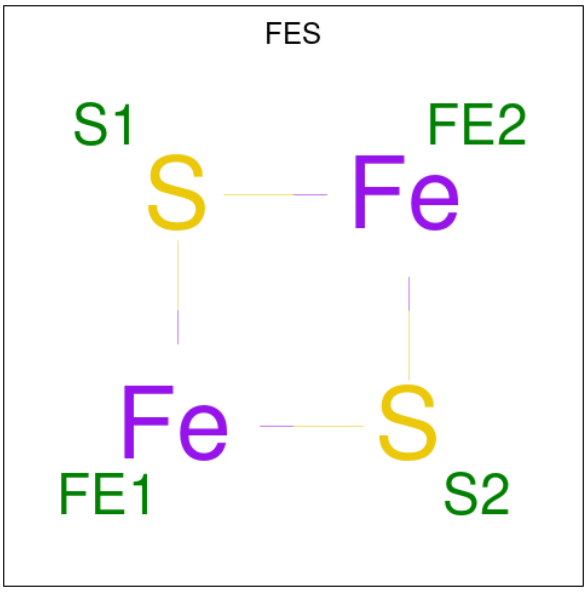
Mol	Chain	Residues	Atoms					AltConf
46	A	1	Total	C	N	O	P	0
			50	40	1	8	1	
46	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
46	J	1	Total	C	N	O	P	0
			48	38	1	8	1	
46	M	1	Total	C	N	O	P	0
			92	72	2	16	2	
46	M	1	Total	C	N	O	P	0
			92	72	2	16	2	
46	N	1	Total	C	N	O	P	0
			37	27	1	8	1	
46	d	1	Total	C	N	O	P	0
			46	36	1	8	1	

- Molecule 47 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



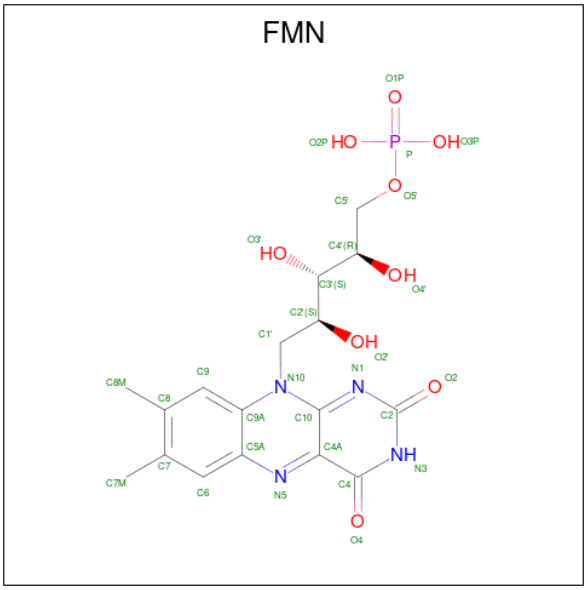
Mol	Chain	Residues	Atoms	AltConf
47	B	1	Total Fe S 8 4 4	0
47	F	1	Total Fe S 8 4 4	0
47	G	1	Total Fe S 16 8 8	0
47	G	1	Total Fe S 16 8 8	0
47	I	1	Total Fe S 16 8 8	0
47	I	1	Total Fe S 16 8 8	0

- Molecule 48 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).



Mol	Chain	Residues	Atoms			AltConf
48	E	1	Total	Fe	S	0
			4	2	2	
48	G	1	Total	Fe	S	0
			4	2	2	

- Molecule 49 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$).

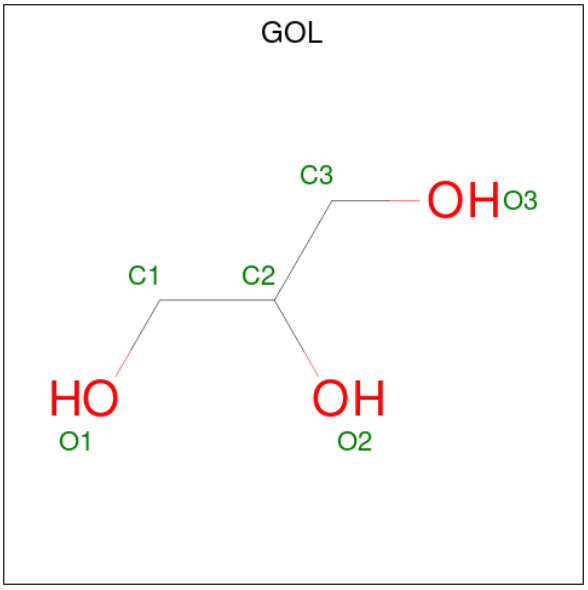


Mol	Chain	Residues	Atoms					AltConf
49	F	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 50 is POTASSIUM ION (three-letter code: K) (formula: K).

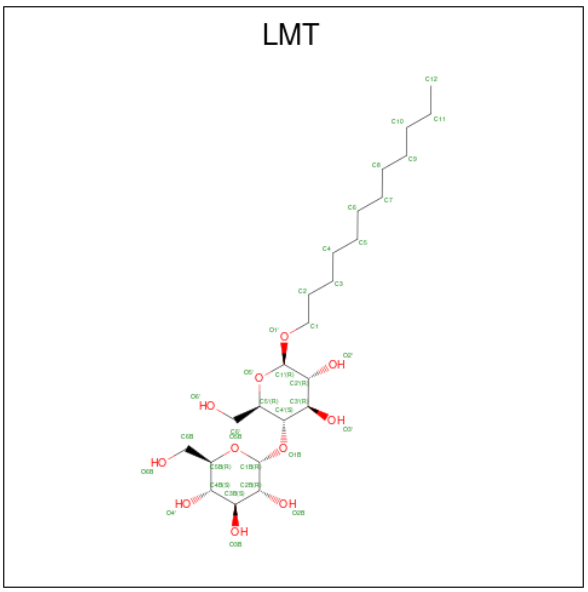
Mol	Chain	Residues	Atoms	AltConf
50	G	1	Total K 1 1	0

- Molecule 51 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



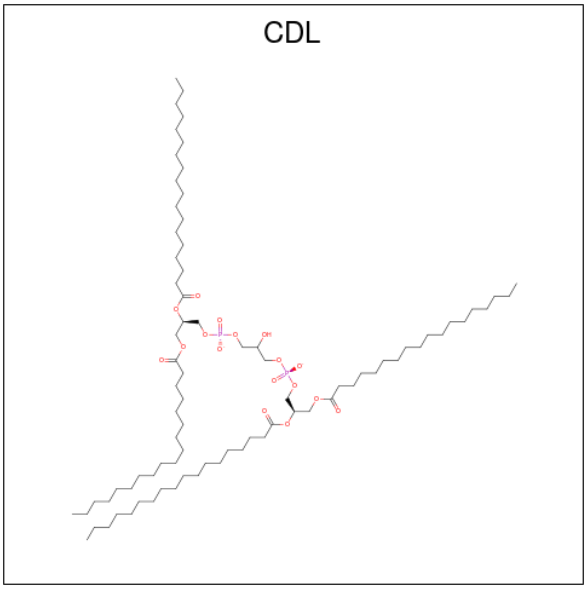
Mol	Chain	Residues	Atoms	AltConf
51	H	1	Total C O 6 3 3	0

- Molecule 52 is DODECYL-BETA-D-MALTOSIDE (three-letter code: LMT) (formula: $C_{24}H_{46}O_{11}$) (labeled as "Ligand of Interest" by depositor).



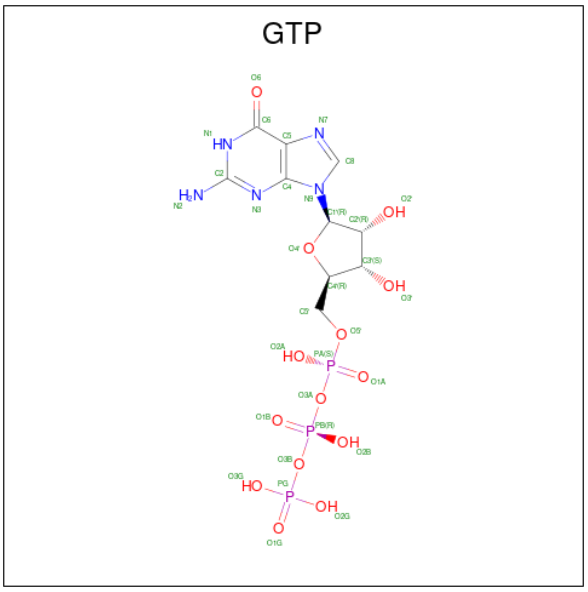
Mol	Chain	Residues	Atoms			AltConf
52	H	1	Total	C	O	0
			35	24	11	

- Molecule 53 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



Mol	Chain	Residues	Atoms				AltConf
53	L	1	Total	C	O	P	0
			79	60	17	2	
53	N	1	Total	C	O	P	0
			86	67	17	2	
53	X	1	Total	C	O	P	0
			93	74	17	2	
53	d	1	Total	C	O	P	0
			65	46	17	2	
53	h	1	Total	C	O	P	0
			72	53	17	2	
53	r	1	Total	C	O	P	0
			64	45	17	2	

- Molecule 54 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).

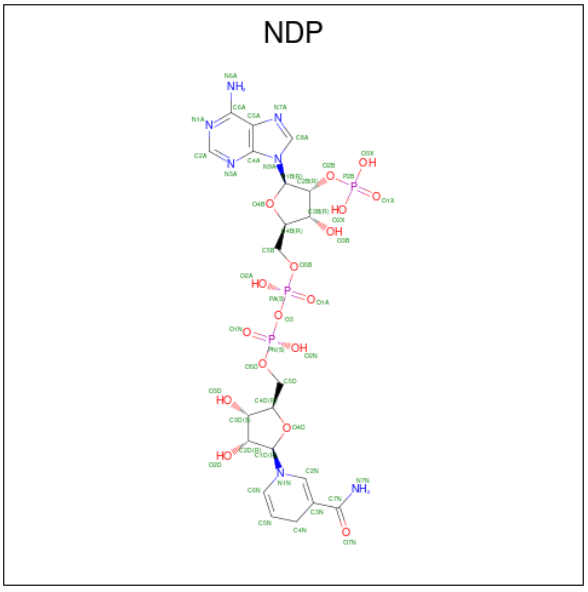


Mol	Chain	Residues	Atoms					AltConf
54	O	1	Total	C	N	O	P	0
			32	10	5	14	3	

- Molecule 55 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
55	O	1	Total	Mg	0
			1	1	

- Molecule 56 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).

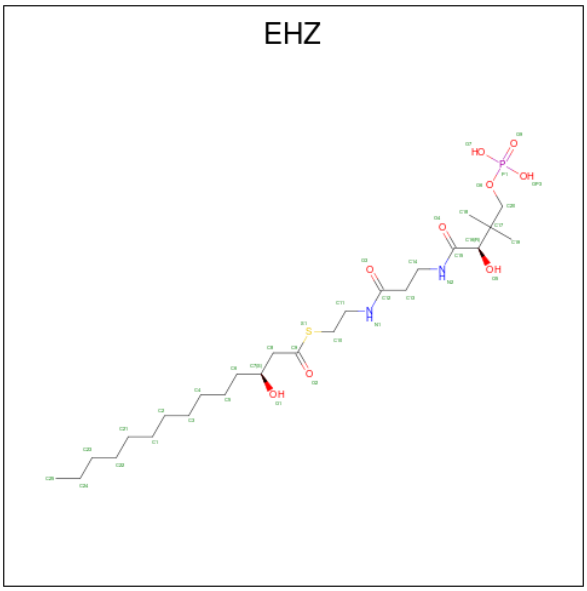


Mol	Chain	Residues	Atoms					AltConf
56	P	1	Total	C	N	O	P	0
			48	21	7	17	3	

- Molecule 57 is ZINC ION (three-letter code: ZN) (formula: Zn).

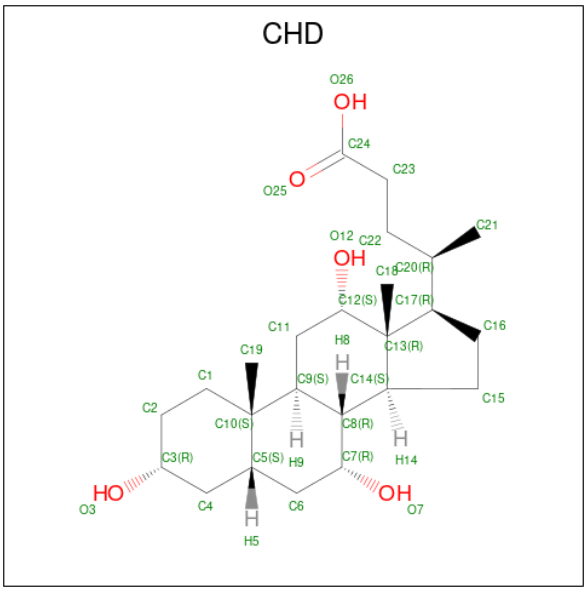
Mol	Chain	Residues	Atoms		AltConf
57	R	1	Total	Zn	0
			1	1	

- Molecule 58 is {S}-[2-[3-[[(2 {R})-3,3-dimethyl-2-oxidanyl-4-phosphonooxy-butanoyl]amino]propanoylamino]ethyl] (3 {S})-3-oxidanyltetradecanethioate (three-letter code: EHZ) (formula: $C_{25}H_{49}N_2O_9PS$).



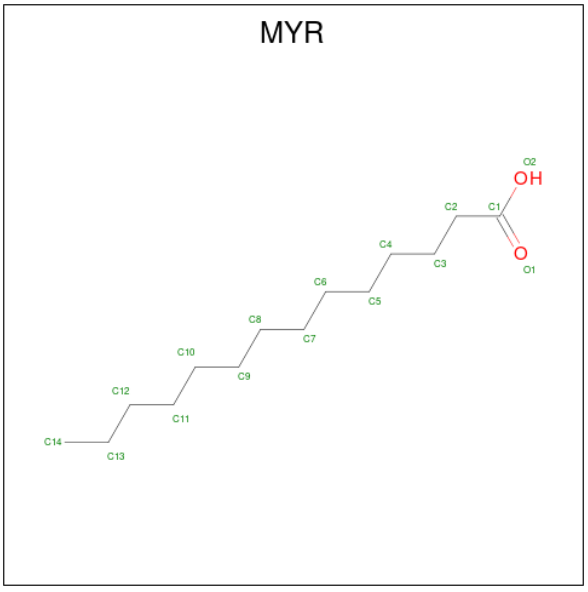
Mol	Chain	Residues	Atoms						AltConf
58	T	1	Total	C	N	O	P	S	0
			37	25	2	8	1	1	
58	U	1	Total	C	N	O	P	S	0
			37	25	2	8	1	1	

- Molecule 59 is CHOLIC ACID (three-letter code: CHD) (formula: $C_{24}H_{40}O_5$).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
59	i	1	29	24	5	0

- Molecule 60 is MYRISTIC ACID (three-letter code: MYR) (formula: $C_{14}H_{28}O_2$).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
60	o	1	15	14	1	0

- Molecule 61 is water.

Mol	Chain	Residues	Atoms	AltConf
61	A	19	Total O 19 19	0
61	B	72	Total O 72 72	0
61	C	145	Total O 145 145	0
61	D	205	Total O 205 205	0
61	E	58	Total O 58 58	0
61	F	101	Total O 101 101	0
61	G	293	Total O 293 293	0
61	H	93	Total O 93 93	0
61	I	113	Total O 113 113	0
61	J	25	Total O 25 25	0
61	K	21	Total O 21 21	0
61	L	168	Total O 168 168	0
61	M	166	Total O 166 166	0
61	N	105	Total O 105 105	0
61	O	59	Total O 59 59	0
61	P	75	Total O 75 75	0
61	Q	105	Total O 105 105	0
61	R	58	Total O 58 58	0
61	S	7	Total O 7 7	0
61	T	1	Total O 1 1	0
61	U	34	Total O 34 34	0
61	V	25	Total O 25 25	0

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Mol	Chain	Residues	Atoms	AltConf
61	W	27	Total O 27 27	0
61	X	43	Total O 43 43	0
61	Y	7	Total O 7 7	0
61	Z	59	Total O 59 59	0
61	a	24	Total O 24 24	0
61	b	17	Total O 17 17	0
61	c	4	Total O 4 4	0
61	d	34	Total O 34 34	0
61	e	41	Total O 41 41	0
61	f	6	Total O 6 6	0
61	g	30	Total O 30 30	0
61	h	62	Total O 62 62	0
61	i	30	Total O 30 30	0
61	j	9	Total O 9 9	0
61	k	13	Total O 13 13	0
61	l	73	Total O 73 73	0
61	m	38	Total O 38 38	0
61	n	88	Total O 88 88	0
61	o	47	Total O 47 47	0
61	p	61	Total O 61 61	0
61	q	55	Total O 55 55	0

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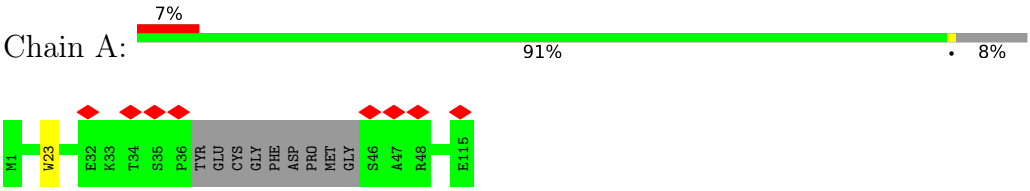
Mol	Chain	Residues	Atoms	AltConf
61	r	44	Total O 44 44	0
61	s	14	Total O 14 14	0

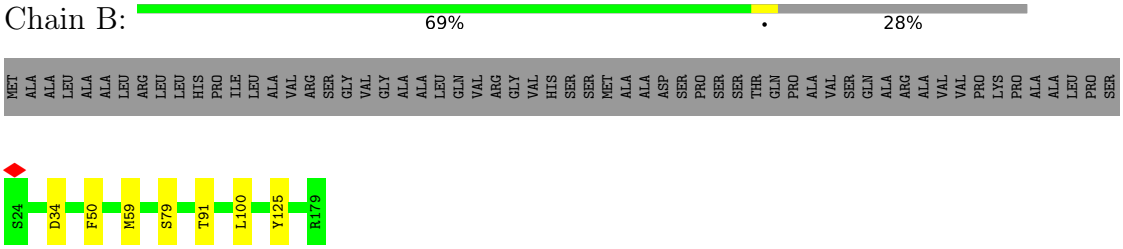
3 Residue-property plots (i)

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.

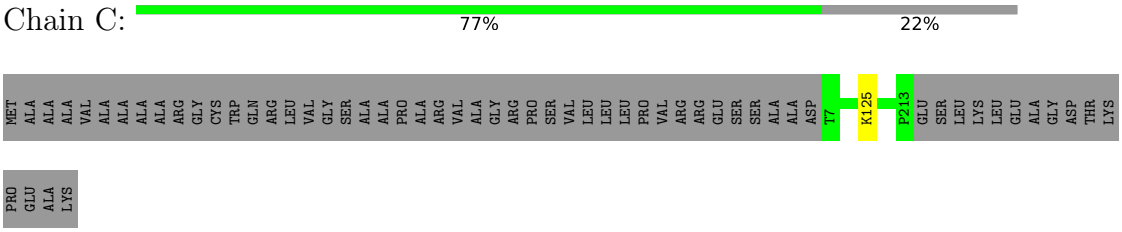
• Molecule 1: NADH-ubiquinone oxidoreductase chain 3



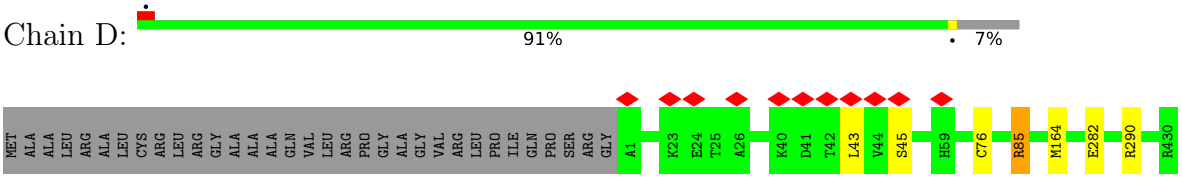
• Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial



• Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

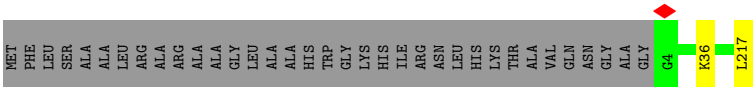


• Molecule 4: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial



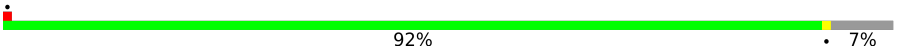
• Molecule 5: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

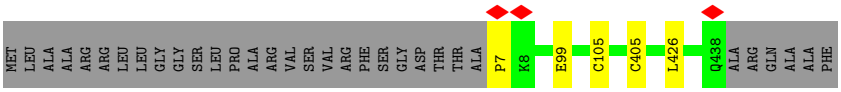
Chain E:



• Molecule 6: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial

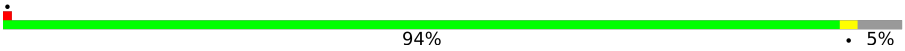
Chain F:

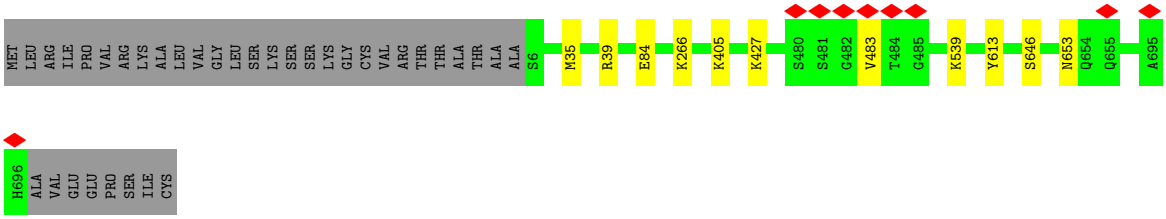




• Molecule 7: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

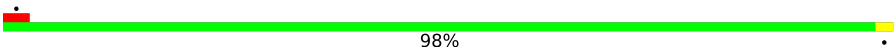
Chain G:

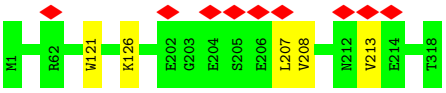




• Molecule 8: NADH-ubiquinone oxidoreductase chain 1

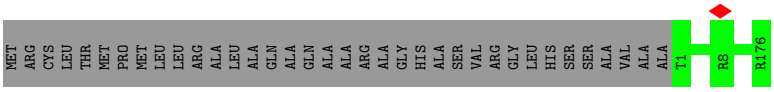
Chain H:





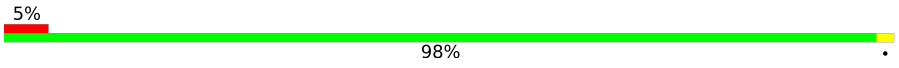
• Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

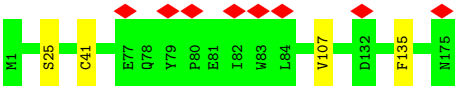
Chain I:



• Molecule 10: NADH-ubiquinone oxidoreductase chain 6

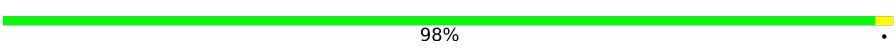
Chain J:





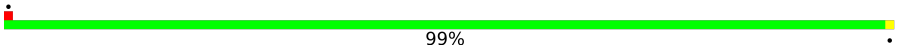
• Molecule 11: NADH-ubiquinone oxidoreductase chain 4L

Chain K:



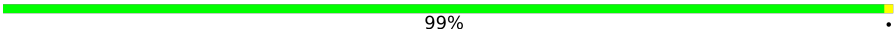
• Molecule 12: NADH-ubiquinone oxidoreductase chain 5

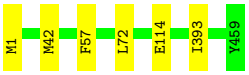
Chain L:



• Molecule 13: NADH-ubiquinone oxidoreductase chain 4

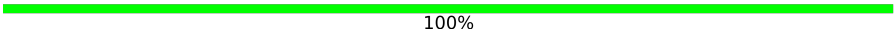
Chain M:





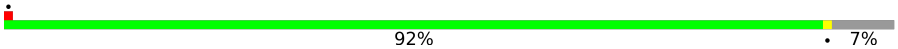
• Molecule 14: NADH-ubiquinone oxidoreductase chain 2

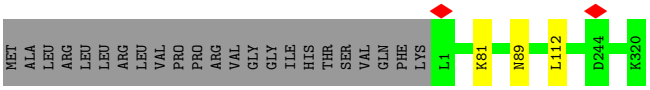
Chain N:



• Molecule 15: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

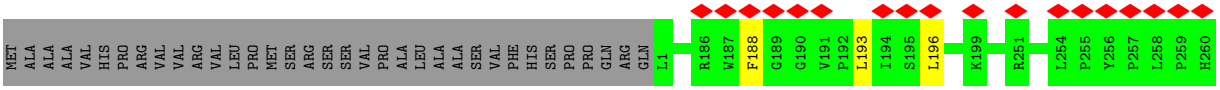
Chain O:

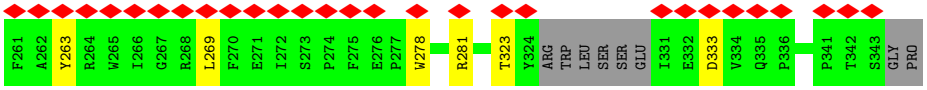




• Molecule 16: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

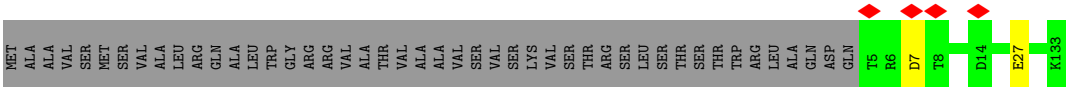
Chain P:



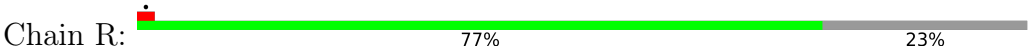


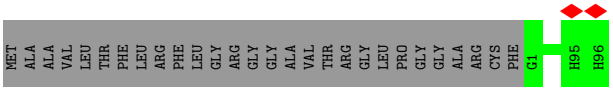
• Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain Q:

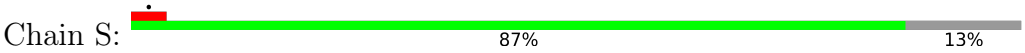


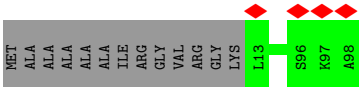
• Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial



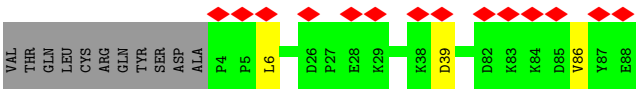


• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

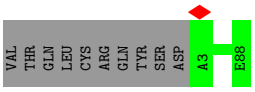




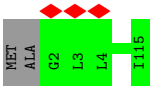
• Molecule 20: Acyl carrier protein, mitochondrial



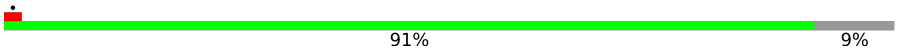
• Molecule 20: Acyl carrier protein, mitochondrial

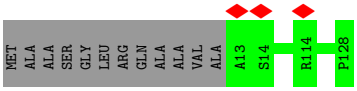


• Molecule 21: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5



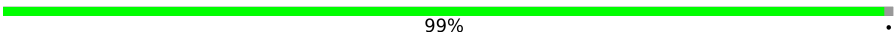
• Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6





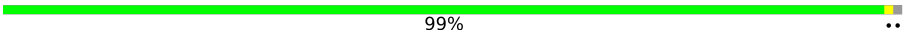
• Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8

Chain X:



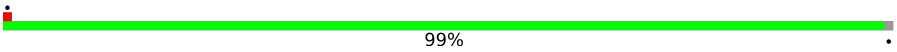
• Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11

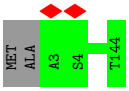
Chain Y:



• Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13

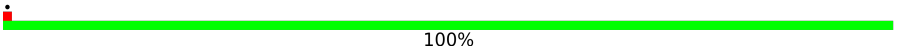
Chain Z:





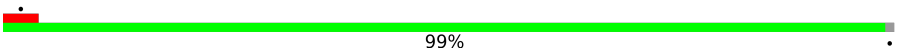
• Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

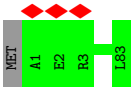
Chain a:



• Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

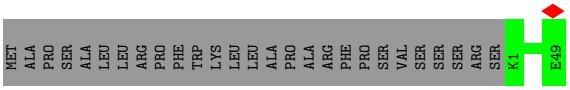
Chain b:





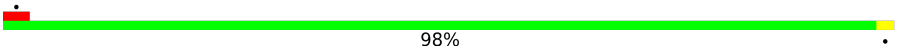
• Molecule 28: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

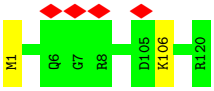
Chain c:



• Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C2

Chain d:



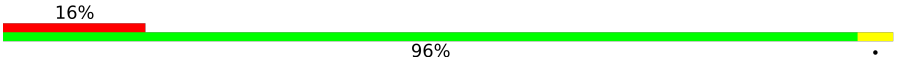


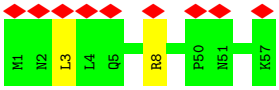
• Molecule 30: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

Chain e:

• Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

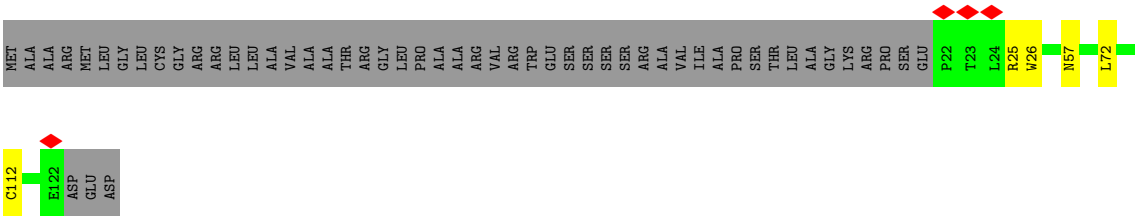
Chain f:





• Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

Chain g:

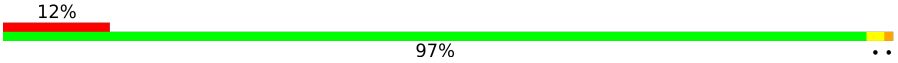


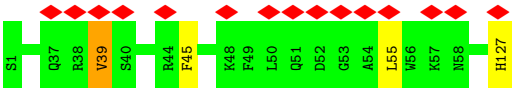
• Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

Chain h:

• Molecule 34: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6

Chain i:



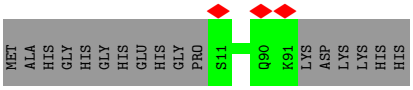


• Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

Chain j:

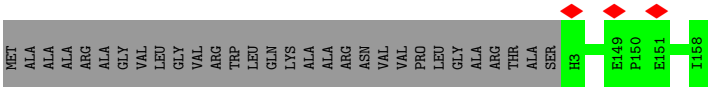
• Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

Chain k:



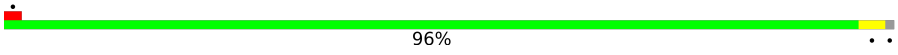
• Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial

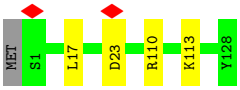
Chain l:



• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

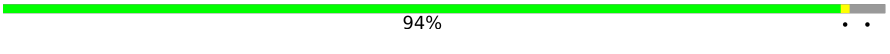
Chain m:





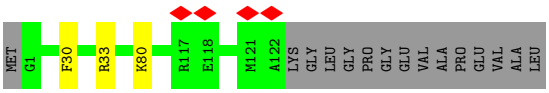
• Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9

Chain n:



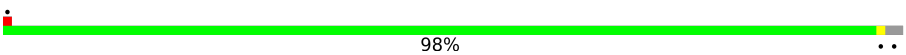
• Molecule 40: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7

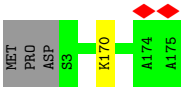
Chain o:



• Molecule 41: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

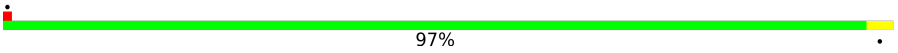
Chain p:

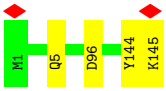




• Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12

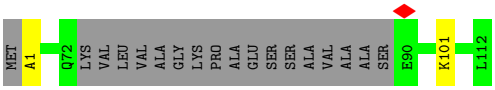
Chain q:





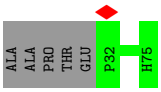
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

Chain r:



• Molecule 44: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

Chain s:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	235957	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40.5	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	47.075	Depositor
Minimum map value	-19.323	Depositor
Average map value	0.008	Depositor
Map value standard deviation	1.086	Depositor
Recommended contour level	5.5	Depositor
Map size (Å)	479.744, 479.744, 479.744	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.7496, 0.7496, 0.7496	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, SAC, K, MYR, ZN, LMT, CHD, SF4, MG, PC1, 3PE, AME, GTP, EHZ, CDL, FES, FMN, AYA, NDP, 2MR, FME

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	0.28	0/863	0.43	0/1181
2	B	0.39	0/1278	0.46	0/1728
3	C	0.35	0/1772	0.46	0/2413
4	D	0.33	0/3537	0.46	2/4794 (0.0%)
5	E	0.33	0/1699	0.47	2/2312 (0.1%)
6	F	0.33	0/3412	0.47	3/4610 (0.1%)
7	G	0.31	0/5387	0.47	0/7301
8	H	0.32	0/2582	0.50	4/3528 (0.1%)
9	I	0.37	0/1445	0.48	0/1956
10	J	0.34	0/1370	0.42	0/1859
11	K	0.31	0/745	0.44	0/1008
12	L	0.33	0/4920	0.45	4/6694 (0.1%)
13	M	0.32	0/3738	0.42	0/5097
14	N	0.31	0/2792	0.44	0/3800
15	O	0.36	0/2651	0.44	2/3587 (0.1%)
16	P	0.31	0/2780	0.51	6/3770 (0.2%)
17	Q	0.31	0/1072	0.46	0/1449
18	R	0.34	0/753	0.46	0/1014
19	S	0.30	0/702	0.46	0/945
20	T	0.29	0/700	0.57	4/944 (0.4%)
20	U	0.38	0/705	0.41	0/952
21	V	0.28	0/943	0.37	0/1277
22	W	0.30	0/1006	0.43	0/1352
23	X	0.33	0/1439	0.43	0/1942
24	Y	0.31	0/1042	0.42	0/1414
25	Z	0.33	0/1186	0.44	0/1599
26	a	0.34	0/584	0.42	0/786
27	b	0.32	0/672	0.42	0/923
28	c	0.34	0/427	0.35	0/579
29	d	0.38	0/1018	0.44	0/1375
30	e	0.30	0/846	0.43	0/1131

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
31	f	0.33	0/505	0.54	2/681 (0.3%)
32	g	0.34	0/873	0.47	2/1186 (0.2%)
33	h	0.33	0/1188	0.47	2/1607 (0.1%)
34	i	0.35	0/1127	0.53	3/1534 (0.2%)
35	j	0.36	0/607	0.49	1/833 (0.1%)
36	k	0.35	0/672	0.41	0/906
37	l	0.39	0/1369	0.42	0/1873
38	m	0.36	0/1094	0.48	1/1480 (0.1%)
39	n	0.38	0/1551	0.45	1/2099 (0.0%)
40	o	0.38	0/1073	0.41	0/1437
41	p	0.36	0/1483	0.42	0/2000
42	q	0.34	0/1250	0.45	0/1698
43	r	0.32	0/789	0.44	0/1068
44	s	0.30	0/383	0.43	0/518
All	All	0.33	0/68030	0.45	39/92240 (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
4	D	0	1

There are no bond length outliers.

All (39) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	H	208	VAL	CG1-CB-CG2	7.27	122.53	110.90
8	H	213	VAL	CG1-CB-CG2	7.08	122.22	110.90
34	i	39	VAL	CG1-CB-CG2	7.05	122.19	110.90
20	T	86	VAL	CG1-CB-CG2	6.63	121.51	110.90
38	m	17	LEU	CB-CG-CD2	6.58	122.19	111.00
39	n	9	LEU	CB-CG-CD2	6.53	122.11	111.00
33	h	113	LEU	CB-CG-CD1	6.11	121.38	111.00
35	j	37	LEU	CB-CG-CD2	6.08	121.34	111.00
34	i	55	LEU	CB-CG-CD1	6.06	121.31	111.00
12	L	525	LEU	CB-CG-CD2	6.05	121.29	111.00
16	P	193	LEU	CB-CG-CD2	6.03	121.25	111.00
32	g	72	LEU	CB-CG-CD2	5.95	121.12	111.00
8	H	207	LEU	CB-CG-CD2	5.88	120.99	111.00
4	D	43	LEU	CB-CG-CD2	5.86	120.96	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	E	217	LEU	CB-CG-CD2	5.85	120.94	111.00
12	L	247	LEU	CB-CG-CD1	5.84	120.93	111.00
16	P	196	LEU	CB-CG-CD2	5.83	120.92	111.00
31	f	3	LEU	CB-CG-CD1	5.79	120.84	111.00
20	T	86	VAL	CA-CB-CG2	5.74	119.51	110.90
16	P	269	LEU	CB-CG-CD2	5.73	120.74	111.00
20	T	6	LEU	CB-CG-CD1	5.70	120.69	111.00
6	F	426	LEU	CB-CG-CD1	5.70	120.68	111.00
15	O	112	LEU	CB-CG-CD2	5.69	120.68	111.00
31	f	3	LEU	CB-CG-CD2	5.64	120.58	111.00
6	F	426	LEU	CB-CG-CD2	5.61	120.53	111.00
12	L	525	LEU	CB-CG-CD1	5.58	120.50	111.00
8	H	207	LEU	CB-CG-CD1	5.51	120.36	111.00
20	T	6	LEU	CB-CG-CD2	5.51	120.36	111.00
33	h	113	LEU	CB-CG-CD2	5.50	120.35	111.00
4	D	43	LEU	CB-CG-CD1	5.46	120.28	111.00
5	E	217	LEU	CB-CG-CD1	5.45	120.26	111.00
16	P	269	LEU	CB-CG-CD1	5.44	120.25	111.00
16	P	196	LEU	CB-CG-CD1	5.42	120.21	111.00
34	i	55	LEU	CB-CG-CD2	5.40	120.18	111.00
12	L	247	LEU	CB-CG-CD2	5.33	120.06	111.00
32	g	72	LEU	CB-CG-CD1	5.29	120.00	111.00
16	P	193	LEU	CB-CG-CD1	5.25	119.92	111.00
15	O	112	LEU	CB-CG-CD1	5.21	119.86	111.00
6	F	7	PRO	CA-N-CD	-5.09	104.38	111.50

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	D	85	2MR	Mainchain

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	102/115 (89%)	98 (96%)	4 (4%)	0	100	100
2	B	154/216 (71%)	146 (95%)	8 (5%)	0	100	100
3	C	205/266 (77%)	200 (98%)	5 (2%)	0	100	100
4	D	427/463 (92%)	412 (96%)	15 (4%)	0	100	100
5	E	212/249 (85%)	208 (98%)	4 (2%)	0	100	100
6	F	431/464 (93%)	424 (98%)	7 (2%)	0	100	100
7	G	689/727 (95%)	668 (97%)	21 (3%)	0	100	100
8	H	317/318 (100%)	313 (99%)	4 (1%)	0	100	100
9	I	174/212 (82%)	170 (98%)	4 (2%)	0	100	100
10	J	173/175 (99%)	160 (92%)	13 (8%)	0	100	100
11	K	96/98 (98%)	94 (98%)	2 (2%)	0	100	100
12	L	604/606 (100%)	582 (96%)	21 (4%)	1 (0%)	47	58
13	M	457/459 (100%)	454 (99%)	3 (1%)	0	100	100
14	N	345/347 (99%)	340 (99%)	5 (1%)	0	100	100
15	O	318/343 (93%)	315 (99%)	3 (1%)	0	100	100
16	P	333/380 (88%)	321 (96%)	12 (4%)	0	100	100
17	Q	127/175 (73%)	127 (100%)	0	0	100	100
18	R	94/124 (76%)	90 (96%)	4 (4%)	0	100	100
19	S	84/99 (85%)	83 (99%)	1 (1%)	0	100	100
20	T	83/156 (53%)	81 (98%)	2 (2%)	0	100	100
20	U	84/156 (54%)	84 (100%)	0	0	100	100
21	V	112/116 (97%)	111 (99%)	1 (1%)	0	100	100
22	W	114/128 (89%)	112 (98%)	2 (2%)	0	100	100
23	X	169/172 (98%)	168 (99%)	1 (1%)	0	100	100
24	Y	138/141 (98%)	137 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	Z	140/144 (97%)	138 (99%)	2 (1%)	0	100	100
26	a	68/70 (97%)	68 (100%)	0	0	100	100
27	b	81/84 (96%)	78 (96%)	3 (4%)	0	100	100
28	c	47/76 (62%)	46 (98%)	1 (2%)	0	100	100
29	d	118/120 (98%)	118 (100%)	0	0	100	100
30	e	96/106 (91%)	94 (98%)	2 (2%)	0	100	100
31	f	55/57 (96%)	50 (91%)	5 (9%)	0	100	100
32	g	99/154 (64%)	91 (92%)	8 (8%)	0	100	100
33	h	136/189 (72%)	134 (98%)	2 (2%)	0	100	100
34	i	125/127 (98%)	121 (97%)	4 (3%)	0	100	100
35	j	65/108 (60%)	65 (100%)	0	0	100	100
36	k	79/98 (81%)	79 (100%)	0	0	100	100
37	l	154/186 (83%)	150 (97%)	4 (3%)	0	100	100
38	m	126/129 (98%)	125 (99%)	1 (1%)	0	100	100
39	n	170/179 (95%)	167 (98%)	3 (2%)	0	100	100
40	o	120/137 (88%)	116 (97%)	4 (3%)	0	100	100
41	p	171/176 (97%)	169 (99%)	2 (1%)	0	100	100
42	q	143/145 (99%)	143 (100%)	0	0	100	100
43	r	91/113 (80%)	87 (96%)	4 (4%)	0	100	100
44	s	42/109 (38%)	39 (93%)	3 (7%)	0	100	100
All	All	8168/9212 (89%)	7976 (98%)	191 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	L	562	LEU

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	93/100 (93%)	92 (99%)	1 (1%)	73	86
2	B	132/175 (75%)	125 (95%)	7 (5%)	22	31
3	C	188/228 (82%)	187 (100%)	1 (0%)	88	95
4	D	370/392 (94%)	365 (99%)	5 (1%)	67	81
5	E	183/205 (89%)	182 (100%)	1 (0%)	88	95
6	F	347/368 (94%)	344 (99%)	3 (1%)	78	89
7	G	579/608 (95%)	568 (98%)	11 (2%)	57	73
8	H	275/274 (100%)	273 (99%)	2 (1%)	84	92
9	I	151/175 (86%)	151 (100%)	0	100	100
10	J	141/141 (100%)	137 (97%)	4 (3%)	43	60
11	K	85/85 (100%)	84 (99%)	1 (1%)	71	84
12	L	533/533 (100%)	528 (99%)	5 (1%)	78	89
13	M	412/412 (100%)	407 (99%)	5 (1%)	71	84
14	N	315/315 (100%)	314 (100%)	1 (0%)	92	97
15	O	283/303 (93%)	281 (99%)	2 (1%)	84	92
16	P	291/327 (89%)	285 (98%)	6 (2%)	53	70
17	Q	116/153 (76%)	114 (98%)	2 (2%)	60	76
18	R	79/97 (81%)	79 (100%)	0	100	100
19	S	76/82 (93%)	76 (100%)	0	100	100
20	T	79/135 (58%)	78 (99%)	1 (1%)	69	82
20	U	79/135 (58%)	79 (100%)	0	100	100
21	V	101/102 (99%)	101 (100%)	0	100	100
22	W	108/114 (95%)	108 (100%)	0	100	100
23	X	154/155 (99%)	154 (100%)	0	100	100
24	Y	101/102 (99%)	101 (100%)	0	100	100
25	Z	120/121 (99%)	120 (100%)	0	100	100
26	a	59/59 (100%)	59 (100%)	0	100	100
27	b	71/72 (99%)	71 (100%)	0	100	100
28	c	45/68 (66%)	45 (100%)	0	100	100
29	d	105/105 (100%)	104 (99%)	1 (1%)	76	87
30	e	89/96 (93%)	88 (99%)	1 (1%)	73	86
31	f	54/54 (100%)	53 (98%)	1 (2%)	57	73

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
32	g	92/131 (70%)	88 (96%)	4 (4%)	29 40
33	h	121/158 (77%)	121 (100%)	0	100 100
34	i	120/120 (100%)	117 (98%)	3 (2%)	47 65
35	j	61/84 (73%)	59 (97%)	2 (3%)	38 53
36	k	63/76 (83%)	63 (100%)	0	100 100
37	l	140/159 (88%)	140 (100%)	0	100 100
38	m	114/115 (99%)	111 (97%)	3 (3%)	46 63
39	n	157/161 (98%)	156 (99%)	1 (1%)	86 94
40	o	110/120 (92%)	107 (97%)	3 (3%)	44 61
41	p	154/157 (98%)	153 (99%)	1 (1%)	86 94
42	q	131/131 (100%)	127 (97%)	4 (3%)	40 55
43	r	85/97 (88%)	84 (99%)	1 (1%)	71 84
44	s	43/92 (47%)	43 (100%)	0	100 100
All	All	7205/7892 (91%)	7122 (99%)	83 (1%)	72 84

All (83) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23	TRP
2	B	34	ASP
2	B	50	PHE
2	B	59	MET
2	B	79	SER
2	B	91	THR
2	B	100	LEU
2	B	125	TYR
3	C	125	LYS
4	D	45	SER
4	D	76	CYS
4	D	164	MET
4	D	282	GLU
4	D	290	ARG
5	E	36	LYS
6	F	99	GLU
6	F	105	CYS
6	F	405	CYS
7	G	35	MET

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Mol	Chain	Res	Type
7	G	39	ARG
7	G	84	GLU
7	G	266	LYS
7	G	405	LYS
7	G	427	LYS
7	G	483	VAL
7	G	539	LYS
7	G	613	TYR
7	G	646	SER
7	G	653	ASN
8	H	121	TRP
8	H	126	LYS
10	J	25	SER
10	J	41	CYS
10	J	107	VAL
10	J	135	PHE
11	K	53	PHE
12	L	6	SER
12	L	197	ASP
12	L	393	ASP
12	L	525	LEU
12	L	554	ASP
13	M	42	MET
13	M	57	PHE
13	M	72	LEU
13	M	114	GLU
13	M	393	ILE
14	N	187	MET
15	O	81	LYS
15	O	89	ASN
16	P	188	PHE
16	P	263	TYR
16	P	278	TRP
16	P	281	ARG
16	P	323	THR
16	P	333	ASP
17	Q	7	ASP
17	Q	27	GLU
20	T	39	ASP
29	d	106	LYS
30	e	97	HIS
31	f	8	ARG

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Mol	Chain	Res	Type
32	g	25	ARG
32	g	26	TRP
32	g	57	ASN
32	g	112	CYS
34	i	39	VAL
34	i	45	PHE
34	i	127	HIS
35	j	6	HIS
35	j	69	ASP
38	m	23	ASP
38	m	110	ARG
38	m	113	LYS
39	n	120	LYS
40	o	30	PHE
40	o	33	ARG
40	o	80	LYS
41	p	170	LYS
42	q	5	GLN
42	q	96	ASP
42	q	144	TYR
42	q	145	LYS
43	r	101	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	106	GLN
4	D	150	HIS
14	N	48	HIS
15	O	190	HIS
25	Z	76	GLN
32	g	86	GLN
38	m	47	GLN
42	q	91	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

12 non-standard protein/DNA/RNA residues 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	$\#\|Z\|>2$
43	AYA	r	1	43	6,7,8	1.28	1 (16%)	5,8,10	0.88	0
11	FME	K	1	11	8,9,10	0.91	0	7,9,11	1.19	1 (14%)
1	FME	A	1	1	8,9,10	0.94	0	7,9,11	0.83	0
8	FME	H	1	8	8,9,10	0.96	0	7,9,11	0.77	0
10	FME	J	1	10	8,9,10	0.99	0	7,9,11	0.84	0
34	SAC	i	1	34	7,8,9	1.03	0	8,9,11	1.07	0
12	FME	L	1	12	8,9,10	0.91	0	7,9,11	0.95	0
14	FME	N	1	14	8,9,10	0.93	0	7,9,11	0.95	0
29	AME	d	1	29	9,10,11	1.59	3 (33%)	9,11,13	1.38	1 (11%)
24	AYA	Y	1	24	6,7,8	1.20	1 (16%)	5,8,10	1.21	1 (20%)
13	FME	M	1	13	8,9,10	0.98	0	7,9,11	1.05	1 (14%)
4	2MR	D	85	4	10,12,13	2.59	4 (40%)	5,13,15	1.29	1 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
43	AYA	r	1	43	-	0/4/6/8	-
11	FME	K	1	11	-	0/7/9/11	-
1	FME	A	1	1	-	0/7/9/11	-
8	FME	H	1	8	-	4/7/9/11	-
10	FME	J	1	10	-	2/7/9/11	-
34	SAC	i	1	34	-	2/7/8/10	-
12	FME	L	1	12	-	2/7/9/11	-
14	FME	N	1	14	-	4/7/9/11	-
29	AME	d	1	29	-	4/9/10/12	-
24	AYA	Y	1	24	-	0/4/6/8	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
13	FME	M	1	13	-	1/7/9/11	-
4	2MR	D	85	4	-	0/10/13/15	-

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	85	2MR	CZ-NH2	4.73	1.43	1.33
4	D	85	2MR	CZ-NE	4.50	1.43	1.34
4	D	85	2MR	O-C	3.92	1.35	1.19
29	d	1	AME	CT1-N	3.13	1.45	1.34
43	r	1	AYA	CA-N	-2.61	1.43	1.46
24	Y	1	AYA	CA-N	-2.38	1.44	1.46
29	d	1	AME	CA-N	-2.32	1.43	1.46
29	d	1	AME	OT-CT1	-2.15	1.18	1.23
4	D	85	2MR	CQ1-NH1	-2.08	1.42	1.46

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	85	2MR	NE-CZ-NH2	-2.66	117.04	119.48
24	Y	1	AYA	CB-CA-N	2.39	112.26	109.61
11	K	1	FME	C-CA-N	2.26	113.82	109.73
29	d	1	AME	CE-SD-CG	2.26	108.15	100.40
13	M	1	FME	C-CA-N	2.19	113.69	109.73

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	H	1	FME	O1-CN-N-CA
8	H	1	FME	N-CA-CB-CG
10	J	1	FME	O1-CN-N-CA
14	N	1	FME	N-CA-CB-CG
14	N	1	FME	C-CA-CB-CG
14	N	1	FME	O-C-CA-CB
12	L	1	FME	CA-CB-CG-SD
34	i	1	SAC	C2A-C1A-N-CA
34	i	1	SAC	OAC-C1A-N-CA
29	d	1	AME	N-CA-CB-CG
8	H	1	FME	CB-CG-SD-CE
10	J	1	FME	C-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
29	d	1	AME	C-CA-CB-CG
29	d	1	AME	C-CA-N-CT1
14	N	1	FME	CB-CG-SD-CE
29	d	1	AME	CB-CA-N-CT1
8	H	1	FME	C-CA-CB-CG
13	M	1	FME	CB-CA-N-CN
12	L	1	FME	CB-CG-SD-CE

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 62 ligands modelled in this entry, 3 are monoatomic - leaving 59 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
45	3PE	O	403	-	21,21,50	1.28	4 (19%)	24,26,55	1.41	3 (12%)
47	SF4	I	201	9	0,12,12	-	-	-		
60	MYR	o	201	40	14,14,15	0.90	0	13,13,15	0.69	0
46	PC1	B	202	-	50,50,53	0.97	4 (8%)	56,58,61	1.00	2 (3%)
45	3PE	L	701	-	48,48,50	0.88	3 (6%)	51,53,55	1.00	2 (3%)
59	CHD	i	201	-	32,32,32	3.30	11 (34%)	51,51,51	3.19	23 (45%)
53	CDL	N	903	-	85,85,99	0.94	8 (9%)	91,97,111	1.10	4 (4%)
56	NDP	P	501	-	45,52,52	2.22	5 (11%)	53,80,80	1.67	11 (20%)
46	PC1	M	605	-	45,45,53	0.36	0	51,53,61	0.43	0
45	3PE	d	204	-	50,50,50	0.88	4 (8%)	53,55,55	1.04	2 (3%)
45	3PE	h	202	-	37,37,50	1.00	4 (10%)	40,42,55	1.00	2 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
58	EHZ	U	101	20	29,36,37	1.67	5 (17%)	35,44,47	1.36	3 (8%)
45	3PE	Y	201	-	50,50,50	0.88	4 (8%)	53,55,55	1.03	2 (3%)
47	SF4	B	201	2	0,12,12	-	-	-		
52	LMT	H	504	-	36,36,36	1.15	3 (8%)	47,47,47	0.95	2 (4%)
45	3PE	A	201	-	41,41,50	0.94	3 (7%)	44,46,55	1.13	2 (4%)
53	CDL	r	201	-	63,63,99	1.09	8 (12%)	69,75,111	1.17	4 (5%)
48	FES	E	301	5	0,4,4	-	-	-		
45	3PE	N	901	-	50,50,50	0.85	4 (8%)	53,55,55	1.07	2 (3%)
45	3PE	I	203	-	50,50,50	0.86	4 (8%)	53,55,55	1.05	2 (3%)
45	3PE	Z	201	-	42,42,50	0.94	3 (7%)	45,47,55	1.02	2 (4%)
45	3PE	m	202	-	40,40,50	0.94	4 (10%)	43,45,55	1.05	2 (4%)
45	3PE	M	602	-	50,50,50	0.86	3 (6%)	53,55,55	1.12	2 (3%)
53	CDL	L	702	-	78,78,99	1.00	7 (8%)	84,90,111	1.06	4 (4%)
46	PC1	J	201	-	47,47,53	0.44	0	53,55,61	0.47	0
45	3PE	b	101	-	32,32,50	1.04	4 (12%)	35,37,55	1.01	2 (5%)
49	FMN	F	502	-	33,33,33	1.11	2 (6%)	48,50,50	1.25	6 (12%)
45	3PE	Y	202	-	50,50,50	0.86	4 (8%)	53,55,55	1.04	2 (3%)
53	CDL	h	201	-	71,71,99	1.03	7 (9%)	77,83,111	1.21	5 (6%)
45	3PE	J	202	-	46,46,50	0.90	4 (8%)	49,51,55	1.04	2 (4%)
45	3PE	L	703	-	44,44,50	0.91	3 (6%)	47,49,55	1.10	2 (4%)
45	3PE	H	502	-	37,37,50	0.98	4 (10%)	40,42,55	1.12	2 (5%)
58	EHZ	T	101	20	29,36,37	1.66	5 (17%)	35,44,47	1.36	4 (11%)
47	SF4	G	801	7	0,12,12	-	-	-		
45	3PE	m	201	-	44,44,50	0.91	4 (9%)	47,49,55	1.07	2 (4%)
45	3PE	d	201	-	40,40,50	0.98	4 (10%)	43,45,55	1.14	2 (4%)
51	GOL	H	501	-	5,5,5	1.05	0	5,5,5	0.97	0
45	3PE	H	503	-	50,50,50	0.85	3 (6%)	53,55,55	0.96	2 (3%)
46	PC1	d	202	-	45,45,53	1.04	3 (6%)	51,53,61	1.02	2 (3%)
45	3PE	j	101	-	43,43,50	0.92	3 (6%)	46,48,55	1.00	2 (4%)
48	FES	G	803	7	0,4,4	-	-	-		
45	3PE	A	202	-	46,46,50	0.90	3 (6%)	49,51,55	1.09	2 (4%)
53	CDL	X	201	-	92,92,99	0.91	7 (7%)	98,104,111	1.08	4 (4%)
45	3PE	N	902	-	48,48,50	0.88	3 (6%)	51,53,55	1.06	2 (3%)
53	CDL	d	203	-	64,64,99	1.06	8 (12%)	70,76,111	1.13	4 (5%)
45	3PE	M	604	-	50,50,50	0.84	3 (6%)	53,55,55	1.04	2 (3%)
45	3PE	Y	203	-	38,38,50	0.96	4 (10%)	41,43,55	1.06	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
47	SF4	G	802	7	0,12,12	-	-	-		
47	SF4	F	501	6	0,12,12	-	-	-		
45	3PE	K	101	-	47,47,50	0.88	3 (6%)	50,52,55	0.98	2 (4%)
46	PC1	N	904	-	36,36,53	1.15	4 (11%)	42,44,61	1.05	2 (4%)
46	PC1	M	603	-	45,45,53	1.03	4 (8%)	51,53,61	0.97	2 (3%)
47	SF4	I	202	9	0,12,12	-	-	-		
54	GTP	O	401	55	26,34,34	2.90	11 (42%)	32,54,54	1.74	10 (31%)
45	3PE	Y	204	-	38,38,50	0.97	4 (10%)	41,43,55	1.06	2 (4%)
46	PC1	A	203	-	49,49,53	0.99	4 (8%)	55,57,61	1.01	2 (3%)
45	3PE	M	601	-	45,45,50	0.90	3 (6%)	48,50,55	1.16	2 (4%)
45	3PE	Y	205	-	50,50,50	0.86	4 (8%)	53,55,55	0.99	2 (3%)
45	3PE	h	203	-	50,50,50	0.86	4 (8%)	53,55,55	1.03	2 (3%)

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
45	3PE	O	403	-	-	11/24/24/54	-
47	SF4	I	201	9	-	-	0/6/5/5
60	MYR	o	201	40	-	7/11/12/13	-
46	PC1	B	202	-	-	15/54/54/57	-
45	3PE	L	701	-	-	28/52/52/54	-
59	CHD	i	201	-	-	4/9/74/74	0/4/4/4
53	CDL	N	903	-	-	47/96/96/110	-
56	NDP	P	501	-	-	8/30/77/77	0/5/5/5
46	PC1	M	605	-	-	16/49/49/57	-
45	3PE	d	204	-	-	17/54/54/54	-
45	3PE	h	202	-	-	18/41/41/54	-
58	EHZ	U	101	20	-	5/42/44/45	-
45	3PE	Y	201	-	-	24/54/54/54	-
47	SF4	B	201	2	-	-	0/6/5/5
52	LMT	H	504	-	-	3/21/61/61	0/2/2/2
45	3PE	A	201	-	-	19/45/45/54	-
53	CDL	r	201	-	-	31/74/74/110	-
48	FES	E	301	5	-	-	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
45	3PE	N	901	-	-	24/54/54/54	-
45	3PE	I	203	-	-	23/54/54/54	-
45	3PE	Z	201	-	-	20/46/46/54	-
45	3PE	m	202	-	-	23/44/44/54	-
45	3PE	M	602	-	-	26/54/54/54	-
53	CDL	L	702	-	-	37/89/89/110	-
46	PC1	J	201	-	-	12/51/51/57	-
45	3PE	b	101	-	-	11/36/36/54	-
49	FMN	F	502	-	-	2/18/18/18	0/3/3/3
45	3PE	Y	202	-	-	16/54/54/54	-
53	CDL	h	201	-	-	33/82/82/110	-
45	3PE	J	202	-	-	21/50/50/54	-
45	3PE	L	703	-	-	18/48/48/54	-
45	3PE	H	502	-	-	22/41/41/54	-
58	EHZ	T	101	20	-	12/42/44/45	-
47	SF4	G	801	7	-	-	0/6/5/5
45	3PE	m	201	-	-	22/48/48/54	-
45	3PE	d	201	-	-	20/44/44/54	-
51	GOL	H	501	-	-	0/4/4/4	-
45	3PE	H	503	-	-	17/54/54/54	-
46	PC1	d	202	-	-	19/49/49/57	-
45	3PE	j	101	-	-	19/47/47/54	-
48	FES	G	803	7	-	-	0/1/1/1
45	3PE	A	202	-	-	18/50/50/54	-
53	CDL	X	201	-	-	48/103/103/110	-
45	3PE	N	902	-	-	26/52/52/54	-
53	CDL	d	203	-	-	41/75/75/110	-
45	3PE	M	604	-	-	28/54/54/54	-
45	3PE	Y	203	-	-	20/42/42/54	-
47	SF4	G	802	7	-	-	0/6/5/5
47	SF4	F	501	6	-	-	0/6/5/5
45	3PE	K	101	-	-	26/51/51/54	-
46	PC1	N	904	-	-	15/40/40/57	-
46	PC1	M	603	-	-	17/49/49/57	-
54	GTP	O	401	55	-	4/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
47	SF4	I	202	9	-	-	0/6/5/5
45	3PE	Y	204	-	-	20/42/42/54	-
46	PC1	A	203	-	-	18/53/53/57	-
45	3PE	M	601	-	-	21/49/49/54	-
45	3PE	Y	205	-	-	20/54/54/54	-
45	3PE	h	203	-	-	23/54/54/54	-

All (210) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
56	P	501	NDP	P2B-O2B	12.43	1.82	1.59
59	i	201	CHD	C11-C12	8.79	1.68	1.53
54	O	401	GTP	O6-C6	8.16	1.39	1.23
59	i	201	CHD	C16-C15	6.90	1.72	1.54
59	i	201	CHD	C8-C9	5.85	1.65	1.53
59	i	201	CHD	C20-C17	-5.84	1.44	1.54
59	i	201	CHD	C6-C5	5.53	1.62	1.53
59	i	201	CHD	O12-C12	-5.46	1.34	1.43
59	i	201	CHD	C13-C17	5.44	1.64	1.55
54	O	401	GTP	O4'-C1'	5.22	1.48	1.41
58	T	101	EHZ	C15-N2	5.20	1.45	1.33
58	U	101	EHZ	C15-N2	5.18	1.44	1.33
58	T	101	EHZ	C12-N1	5.15	1.45	1.33
58	U	101	EHZ	C12-N1	5.06	1.44	1.33
54	O	401	GTP	C2-N1	4.64	1.49	1.37
54	O	401	GTP	C2-N2	4.52	1.44	1.34
54	O	401	GTP	C2-N3	4.45	1.44	1.33
59	i	201	CHD	C15-C14	4.19	1.63	1.54
59	i	201	CHD	C6-C7	3.87	1.59	1.52
56	P	501	NDP	PN-O5D	3.71	1.74	1.59
49	F	502	FMN	C4A-N5	3.69	1.37	1.30
52	H	504	LMT	O5B-C1B	3.48	1.50	1.41
54	O	401	GTP	C2'-C1'	-3.38	1.48	1.53
54	O	401	GTP	C5-C6	-3.19	1.40	1.47
56	P	501	NDP	O2B-C2B	-3.16	1.32	1.44
45	L	701	3PE	O21-C2	-2.84	1.39	1.46
52	H	504	LMT	O5'-C1'	2.84	1.49	1.41
53	L	702	CDL	OA6-CA4	-2.80	1.39	1.46
53	r	201	CDL	OA6-CA4	-2.76	1.39	1.46
53	d	203	CDL	OA6-CA4	-2.74	1.39	1.46
46	d	202	PC1	O21-C2	-2.73	1.39	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	N	903	CDL	OA6-CA4	-2.73	1.39	1.46
45	j	101	3PE	O21-C2	-2.72	1.39	1.46
45	d	201	3PE	O21-C2	-2.71	1.39	1.46
45	M	601	3PE	O21-C2	-2.70	1.39	1.46
45	Z	201	3PE	O21-C2	-2.69	1.39	1.46
45	K	101	3PE	O21-C2	-2.69	1.39	1.46
45	L	703	3PE	O21-C2	-2.68	1.39	1.46
53	L	702	CDL	OB6-CB4	-2.67	1.39	1.46
45	H	503	3PE	O21-C2	-2.67	1.39	1.46
45	Y	202	3PE	O21-C2	-2.67	1.39	1.46
53	h	201	CDL	OA6-CA4	-2.67	1.39	1.46
46	A	203	PC1	O21-C2	-2.66	1.39	1.46
45	I	203	3PE	O21-C2	-2.64	1.40	1.46
45	h	203	3PE	O21-C2	-2.64	1.40	1.46
53	X	201	CDL	OB6-CB4	-2.63	1.40	1.46
45	d	204	3PE	O21-C2	-2.62	1.40	1.46
45	N	901	3PE	O21-C2	-2.62	1.40	1.46
46	M	603	PC1	O21-C2	-2.62	1.40	1.46
53	r	201	CDL	OB6-CB4	-2.62	1.40	1.46
45	h	202	3PE	O21-C2	-2.61	1.40	1.46
45	L	701	3PE	O31-C3	-2.61	1.39	1.45
53	X	201	CDL	OA6-CA4	-2.60	1.40	1.46
53	d	203	CDL	OB6-CB4	-2.60	1.40	1.46
45	M	602	3PE	O21-C2	-2.57	1.40	1.46
53	X	201	CDL	OA8-CA7	2.57	1.40	1.33
53	N	903	CDL	OB6-CB4	-2.57	1.40	1.46
45	Y	205	3PE	O21-C2	-2.56	1.40	1.46
58	U	101	EHZ	O4-C15	-2.56	1.18	1.23
45	A	202	3PE	O31-C31	2.56	1.40	1.33
45	N	902	3PE	O21-C2	-2.56	1.40	1.46
45	A	202	3PE	O21-C2	-2.55	1.40	1.46
53	L	702	CDL	OB8-CB7	2.54	1.40	1.33
59	i	201	CHD	C13-C12	-2.54	1.50	1.54
53	L	702	CDL	OA8-CA7	2.53	1.40	1.33
46	B	202	PC1	O21-C2	-2.50	1.40	1.46
46	d	202	PC1	O31-C31	2.50	1.40	1.33
46	N	904	PC1	O21-C2	-2.49	1.40	1.46
45	Y	201	3PE	O21-C2	-2.49	1.40	1.46
45	J	202	3PE	O21-C2	-2.49	1.40	1.46
53	h	201	CDL	OB6-CB4	-2.48	1.40	1.46
45	N	902	3PE	O31-C31	2.48	1.40	1.33
53	r	201	CDL	OB8-CB7	2.48	1.40	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	d	204	3PE	O31-C31	2.48	1.40	1.33
45	M	602	3PE	O31-C3	-2.48	1.39	1.45
45	b	101	3PE	O21-C2	-2.47	1.40	1.46
53	X	201	CDL	OB8-CB7	2.47	1.40	1.33
45	d	201	3PE	O31-C31	2.46	1.40	1.33
53	N	903	CDL	OB8-CB7	2.46	1.40	1.33
45	Z	201	3PE	O31-C31	2.46	1.40	1.33
45	A	201	3PE	O21-C2	-2.45	1.40	1.46
53	h	201	CDL	OB8-CB6	-2.44	1.39	1.45
45	Y	201	3PE	O31-C31	2.44	1.40	1.33
58	T	101	EHZ	O4-C15	-2.44	1.18	1.23
45	O	403	3PE	O21-C2	-2.44	1.40	1.46
46	A	203	PC1	O31-C3	-2.44	1.39	1.45
45	h	202	3PE	O31-C31	2.43	1.40	1.33
45	M	604	3PE	O21-C2	-2.43	1.40	1.46
45	H	502	3PE	O21-C2	-2.43	1.40	1.46
45	m	202	3PE	O21-C2	-2.43	1.40	1.46
45	h	203	3PE	O31-C31	2.42	1.40	1.33
45	Y	203	3PE	O31-C31	2.42	1.40	1.33
45	A	201	3PE	O31-C31	2.41	1.40	1.33
58	U	101	EHZ	O3-C12	-2.41	1.18	1.23
54	O	401	GTP	C2'-C3'	-2.41	1.46	1.53
45	m	201	3PE	O31-C31	2.41	1.40	1.33
45	Y	203	3PE	O21-C2	-2.40	1.40	1.46
54	O	401	GTP	PG-O3G	-2.39	1.45	1.54
53	h	201	CDL	OA8-CA7	2.39	1.40	1.33
45	O	403	3PE	O31-C31	2.39	1.40	1.33
53	r	201	CDL	OA8-CA6	-2.38	1.39	1.45
45	j	101	3PE	O31-C31	2.36	1.40	1.33
46	M	603	PC1	O31-C3	-2.34	1.39	1.45
45	J	202	3PE	O31-C31	2.33	1.40	1.33
45	Y	204	3PE	O21-C2	-2.33	1.40	1.46
58	T	101	EHZ	O3-C12	-2.32	1.18	1.23
45	K	101	3PE	O31-C3	-2.32	1.39	1.45
45	H	503	3PE	O31-C3	-2.32	1.39	1.45
45	H	502	3PE	O31-C3	-2.32	1.39	1.45
46	B	202	PC1	O31-C3	-2.32	1.39	1.45
45	Y	205	3PE	O31-C31	2.32	1.40	1.33
53	N	903	CDL	OA8-CA7	2.32	1.40	1.33
46	N	904	PC1	O31-C31	2.32	1.40	1.33
45	m	202	3PE	O31-C31	2.31	1.40	1.33
45	m	201	3PE	O21-C2	-2.30	1.40	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
54	O	401	GTP	PG-O2G	-2.30	1.46	1.54
46	N	904	PC1	O31-C3	-2.29	1.39	1.45
45	Y	202	3PE	O31-C31	2.29	1.40	1.33
45	O	403	3PE	O21-C21	2.28	1.40	1.35
45	b	101	3PE	O21-C21	2.28	1.40	1.34
45	L	703	3PE	O31-C3	-2.28	1.40	1.45
46	M	603	PC1	O31-C31	2.28	1.40	1.33
53	r	201	CDL	OA8-CA7	2.26	1.39	1.33
45	M	604	3PE	O31-C31	2.25	1.39	1.33
45	H	502	3PE	O31-C31	2.25	1.39	1.33
45	I	203	3PE	O31-C31	2.25	1.39	1.33
53	d	203	CDL	OB8-CB7	2.24	1.39	1.33
45	M	601	3PE	O31-C3	-2.24	1.40	1.45
45	N	901	3PE	O31-C3	-2.24	1.40	1.45
45	d	201	3PE	O31-C3	-2.23	1.40	1.45
45	N	901	3PE	O31-C31	2.23	1.39	1.33
46	A	203	PC1	O31-C31	2.23	1.39	1.33
45	O	403	3PE	O31-C3	-2.23	1.40	1.45
45	Y	204	3PE	O31-C31	2.23	1.39	1.33
53	d	203	CDL	OA8-CA6	-2.22	1.40	1.45
45	Y	201	3PE	O21-C21	2.22	1.40	1.34
45	b	101	3PE	O31-C3	-2.22	1.40	1.45
45	J	202	3PE	O31-C3	-2.21	1.40	1.45
53	L	702	CDL	OB6-CB5	2.21	1.40	1.34
53	d	203	CDL	OA8-CA7	2.21	1.39	1.33
45	M	602	3PE	O31-C31	2.20	1.39	1.33
45	A	201	3PE	O21-C21	2.20	1.40	1.34
53	d	203	CDL	OB8-CB6	-2.19	1.40	1.45
46	B	202	PC1	O21-C21	2.19	1.40	1.34
45	Y	204	3PE	O31-C3	-2.19	1.40	1.45
45	M	604	3PE	O31-C3	-2.19	1.40	1.45
45	Y	204	3PE	O21-C21	2.18	1.40	1.34
53	h	201	CDL	OB6-CB5	2.17	1.40	1.34
45	L	703	3PE	O31-C31	2.17	1.39	1.33
45	H	503	3PE	O31-C31	2.17	1.39	1.33
45	m	202	3PE	O31-C3	-2.16	1.40	1.45
45	Y	202	3PE	O31-C3	-2.16	1.40	1.45
45	m	202	3PE	O21-C21	2.16	1.40	1.34
45	H	502	3PE	O21-C21	2.15	1.40	1.34
45	Y	203	3PE	O31-C3	-2.14	1.40	1.45
56	P	501	NDP	O5D-C5D	-2.14	1.36	1.44
53	h	201	CDL	OB8-CB7	2.14	1.39	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	h	202	3PE	O21-C21	2.14	1.40	1.34
46	B	202	PC1	O31-C31	2.13	1.39	1.33
58	T	101	EHZ	C9-S1	2.13	1.81	1.76
45	M	601	3PE	O31-C31	2.13	1.39	1.33
45	Z	201	3PE	O31-C3	-2.13	1.40	1.45
45	j	101	3PE	O31-C3	-2.13	1.40	1.45
53	L	702	CDL	OA8-CA6	-2.13	1.40	1.45
45	I	203	3PE	O31-C3	-2.13	1.40	1.45
58	U	101	EHZ	O6-C20	-2.12	1.39	1.44
53	X	201	CDL	OB8-CB6	-2.12	1.40	1.45
53	N	903	CDL	OA8-CA6	-2.11	1.40	1.45
46	N	904	PC1	O21-C21	2.11	1.40	1.34
59	i	201	CHD	O7-C7	-2.11	1.38	1.43
46	d	202	PC1	O31-C3	-2.11	1.40	1.45
53	N	903	CDL	OB8-CB6	-2.10	1.40	1.45
45	m	201	3PE	O21-C21	2.10	1.40	1.34
53	d	203	CDL	OB6-CB5	2.10	1.40	1.34
45	d	201	3PE	O21-C21	2.09	1.40	1.34
45	J	202	3PE	O21-C21	2.09	1.40	1.34
46	M	603	PC1	O21-C21	2.09	1.40	1.34
49	F	502	FMN	C10-N1	2.09	1.37	1.33
45	b	101	3PE	O31-C31	2.09	1.39	1.33
46	A	203	PC1	O21-C21	2.09	1.40	1.34
45	m	201	3PE	O31-C3	-2.09	1.40	1.45
45	K	101	3PE	O31-C31	2.09	1.39	1.33
45	h	202	3PE	O31-C3	-2.07	1.40	1.45
45	h	203	3PE	O31-C3	-2.07	1.40	1.45
53	d	203	CDL	OA6-CA5	2.07	1.40	1.34
53	r	201	CDL	OA6-CA5	2.07	1.40	1.34
45	I	203	3PE	O21-C21	2.07	1.40	1.34
53	N	903	CDL	OB6-CB5	2.06	1.40	1.34
53	L	702	CDL	OA6-CA5	2.06	1.40	1.34
45	h	203	3PE	O21-C21	2.05	1.40	1.34
45	d	204	3PE	O21-C21	2.05	1.40	1.34
53	h	201	CDL	OA6-CA5	2.05	1.40	1.34
45	Y	205	3PE	O31-C3	-2.04	1.40	1.45
45	A	202	3PE	O21-C21	2.04	1.40	1.34
53	N	903	CDL	OA6-CA5	2.04	1.40	1.34
56	P	501	NDP	C7N-N7N	2.04	1.38	1.33
53	X	201	CDL	OB6-CB5	2.03	1.40	1.34
45	Y	202	3PE	O21-C21	2.03	1.40	1.34
45	Y	201	3PE	O31-C3	-2.03	1.40	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
45	Y	203	3PE	O21-C21	2.03	1.40	1.34
45	L	701	3PE	O31-C31	2.02	1.39	1.33
52	H	504	LMT	O5B-C5B	2.02	1.49	1.44
45	N	902	3PE	O21-C21	2.01	1.40	1.34
45	d	204	3PE	O31-C3	-2.01	1.40	1.45
45	Y	205	3PE	O21-C21	2.01	1.40	1.34
53	r	201	CDL	OB6-CB5	2.01	1.40	1.34
45	N	901	3PE	O21-C21	2.01	1.40	1.34
54	O	401	GTP	PB-O2B	-2.01	1.45	1.55
53	X	201	CDL	OA6-CA5	2.00	1.40	1.34
53	r	201	CDL	OB8-CB6	-2.00	1.40	1.45

All (153) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
59	i	201	CHD	C4-C5-C10	9.48	122.73	112.66
59	i	201	CHD	C11-C12-C13	6.93	118.36	111.24
56	P	501	NDP	PN-O3-PA	-6.66	109.98	132.83
59	i	201	CHD	C11-C9-C10	6.51	120.44	113.73
59	i	201	CHD	C14-C13-C12	6.47	113.42	107.40
59	i	201	CHD	C10-C9-C8	6.28	118.56	111.82
59	i	201	CHD	C18-C13-C12	-5.85	103.11	109.07
58	T	101	EHZ	C8-C9-S1	5.65	120.62	113.63
58	U	101	EHZ	C8-C9-S1	5.49	120.42	113.63
59	i	201	CHD	C11-C9-C8	5.28	118.60	110.88
45	O	403	3PE	O21-C21-C22	4.92	120.14	111.09
53	h	201	CDL	OB6-CB5-C51	4.74	121.71	111.50
59	i	201	CHD	C6-C5-C10	4.67	117.61	112.66
53	X	201	CDL	OB6-CB5-C51	4.42	121.03	111.50
59	i	201	CHD	C4-C3-C2	4.26	115.64	110.55
46	B	202	PC1	O21-C21-C22	4.19	120.54	111.50
45	A	201	3PE	O21-C21-C22	4.16	120.48	111.50
45	M	602	3PE	O21-C21-C22	4.12	120.39	111.50
45	Y	201	3PE	O21-C21-C22	4.09	120.33	111.50
53	h	201	CDL	OA6-CA5-C11	4.09	120.32	111.50
46	N	904	PC1	O21-C21-C22	4.04	120.21	111.50
45	m	201	3PE	O21-C21-C22	4.02	120.16	111.50
53	r	201	CDL	OB6-CB5-C51	4.01	120.15	111.50
45	N	902	3PE	O21-C21-C22	4.01	120.14	111.50
53	d	203	CDL	OA6-CA5-C11	4.00	120.12	111.50
45	Y	203	3PE	O21-C21-C22	3.98	120.07	111.50
59	i	201	CHD	C17-C13-C14	3.96	104.08	100.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	d	201	3PE	O21-C21-C22	3.95	120.00	111.50
45	m	202	3PE	O21-C21-C22	3.92	119.95	111.50
45	A	202	3PE	O21-C21-C22	3.91	119.92	111.50
53	N	903	CDL	OB6-CB5-C51	3.90	119.91	111.50
45	d	204	3PE	O21-C21-C22	3.89	119.88	111.50
45	M	601	3PE	O21-C21-C22	3.88	119.87	111.50
45	N	901	3PE	O21-C21-C22	3.88	119.87	111.50
45	L	703	3PE	O21-C21-C22	3.88	119.86	111.50
46	d	202	PC1	O21-C21-C22	3.87	119.85	111.50
45	Y	204	3PE	O21-C21-C22	3.87	119.83	111.50
45	M	604	3PE	O21-C21-C22	3.85	119.81	111.50
45	I	203	3PE	O21-C21-C22	3.85	119.80	111.50
46	A	203	PC1	O21-C21-C22	3.85	119.80	111.50
45	Z	201	3PE	O21-C21-C22	3.83	119.75	111.50
45	J	202	3PE	O21-C21-C22	3.81	119.71	111.50
53	N	903	CDL	OA6-CA5-C11	3.79	119.66	111.50
45	H	502	3PE	O21-C21-C22	3.78	119.64	111.50
53	r	201	CDL	OA6-CA5-C11	3.77	119.63	111.50
53	L	702	CDL	OB6-CB5-C51	3.74	119.55	111.50
53	L	702	CDL	OA6-CA5-C11	3.72	119.52	111.50
53	X	201	CDL	OA6-CA5-C11	3.72	119.52	111.50
45	h	203	3PE	O21-C21-C22	3.71	119.49	111.50
45	Y	202	3PE	O21-C21-C22	3.62	119.30	111.50
45	L	701	3PE	O21-C21-C22	3.61	119.27	111.50
56	P	501	NDP	O2B-P2B-O1X	-3.58	95.58	109.39
59	i	201	CHD	C17-C13-C12	3.57	120.92	117.67
45	Y	205	3PE	O21-C21-C22	3.49	119.02	111.50
46	M	603	PC1	O21-C21-C22	3.42	118.88	111.50
53	h	201	CDL	OA8-CA7-C31	3.40	122.59	111.91
59	i	201	CHD	C6-C5-C4	3.37	115.07	111.19
54	O	401	GTP	C3'-C2'-C1'	3.36	106.04	100.98
59	i	201	CHD	C23-C22-C20	-3.35	108.39	114.52
53	d	203	CDL	OB6-CB5-C51	3.35	120.14	110.80
45	b	101	3PE	O21-C21-C22	3.31	118.63	111.50
59	i	201	CHD	C5-C6-C7	-3.18	110.95	114.46
49	F	502	FMN	C4-N3-C2	-3.16	119.80	125.64
59	i	201	CHD	C16-C17-C20	-3.14	107.28	112.15
45	M	601	3PE	O31-C31-C32	3.12	121.70	111.91
54	O	401	GTP	C2-N1-C6	-3.10	119.38	125.10
54	O	401	GTP	C5-C6-N1	3.10	119.43	113.95
45	K	101	3PE	O21-C21-C22	3.09	118.15	111.50
45	H	503	3PE	O21-C21-C22	3.07	118.12	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	d	201	3PE	O31-C31-C32	3.07	121.55	111.91
45	j	101	3PE	O21-C21-C22	3.04	118.06	111.50
59	i	201	CHD	C15-C14-C8	3.02	122.55	118.33
49	F	502	FMN	C4A-C10-N10	2.99	120.86	116.48
54	O	401	GTP	PA-O3A-PB	-2.98	122.58	132.83
45	h	202	3PE	O21-C21-C22	2.94	117.83	111.50
45	N	902	3PE	O31-C31-C32	2.91	121.04	111.91
53	N	903	CDL	OB8-CB7-C71	2.90	121.02	111.91
53	L	702	CDL	OA8-CA7-C31	2.90	121.00	111.91
53	r	201	CDL	OA8-CA7-C31	2.89	120.97	111.91
54	O	401	GTP	O2G-PG-O3B	2.87	114.26	104.64
45	M	602	3PE	O31-C31-C32	2.85	120.86	111.91
59	i	201	CHD	C18-C13-C14	-2.84	106.77	111.21
46	d	202	PC1	O31-C31-C32	2.83	120.78	111.91
46	M	603	PC1	O31-C31-C32	2.81	120.74	111.91
45	I	203	3PE	O31-C31-C32	2.81	120.73	111.91
45	A	201	3PE	O31-C31-C32	2.79	120.66	111.91
53	N	903	CDL	OA8-CA7-C31	2.78	120.64	111.91
56	P	501	NDP	PA-O5B-C5B	-2.76	105.47	121.68
45	Y	205	3PE	O31-C31-C32	2.73	120.47	111.91
49	F	502	FMN	C4A-C4-N3	2.73	120.12	113.19
54	O	401	GTP	PB-O3B-PG	-2.72	123.49	132.83
45	L	703	3PE	O31-C31-C32	2.71	120.42	111.91
45	h	202	3PE	O31-C31-C32	2.69	120.35	111.91
45	H	502	3PE	O31-C31-C32	2.69	120.34	111.91
56	P	501	NDP	PN-O5D-C5D	-2.68	105.98	121.68
45	d	204	3PE	O31-C31-C32	2.67	120.30	111.91
45	A	202	3PE	O31-C31-C32	2.67	120.30	111.91
53	X	201	CDL	OB8-CB7-C71	2.66	120.25	111.91
45	j	101	3PE	O31-C31-C32	2.64	120.19	111.91
46	B	202	PC1	O31-C31-C32	2.63	120.17	111.91
45	b	101	3PE	O31-C31-C32	2.63	120.16	111.91
53	X	201	CDL	OA8-CA7-C31	2.56	119.94	111.91
45	h	203	3PE	O31-C31-C32	2.56	119.94	111.91
59	i	201	CHD	C1-C10-C5	2.55	111.54	107.77
54	O	401	GTP	O3G-PG-O3B	2.54	113.15	104.64
45	J	202	3PE	O31-C31-C32	2.54	119.87	111.91
45	H	503	3PE	O31-C31-C32	2.53	119.85	111.91
45	m	201	3PE	O31-C31-C32	2.53	119.83	111.91
59	i	201	CHD	C5-C4-C3	2.52	116.45	112.76
56	P	501	NDP	O4B-C4B-C3B	2.50	110.07	105.11
56	P	501	NDP	O3X-P2B-O2X	2.49	117.16	107.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	O	403	3PE	O31-C31-C32	2.49	119.72	111.91
53	h	201	CDL	OB8-CB7-C71	2.49	119.71	111.91
58	T	101	EHZ	O2-C9-S1	-2.48	119.39	122.61
53	d	203	CDL	OB8-CB7-C71	2.45	119.61	111.91
45	Y	201	3PE	O31-C31-C32	2.44	119.58	111.91
46	A	203	PC1	O31-C31-C32	2.44	119.58	111.91
54	O	401	GTP	O2A-PA-O1A	-2.44	100.19	112.24
53	d	203	CDL	OA8-CA7-C31	2.43	119.54	111.91
53	L	702	CDL	OB8-CB7-C71	2.42	119.49	111.91
53	r	201	CDL	OB8-CB7-C71	2.41	119.48	111.91
45	Y	204	3PE	O31-C31-C32	2.40	119.45	111.91
46	N	904	PC1	O31-C31-C32	2.40	119.45	111.91
45	N	901	3PE	O31-C31-C32	2.40	119.44	111.91
45	K	101	3PE	O31-C31-C32	2.40	119.43	111.91
49	F	502	FMN	O4-C4-C4A	-2.37	120.30	126.60
45	Y	203	3PE	O31-C31-C32	2.36	119.32	111.91
45	M	604	3PE	O31-C31-C32	2.35	119.28	111.91
56	P	501	NDP	C2A-N1A-C6A	-2.34	114.75	118.75
45	m	202	3PE	O31-C31-C32	2.34	119.25	111.91
45	Y	202	3PE	O31-C31-C32	2.34	119.25	111.91
56	P	501	NDP	O5D-PN-O1N	-2.34	99.94	109.07
49	F	502	FMN	C10-C4A-N5	-2.34	119.90	124.86
45	L	701	3PE	O31-C31-C32	2.33	119.21	111.91
59	i	201	CHD	O12-C12-C11	-2.31	104.42	109.12
54	O	401	GTP	C2'-C3'-C4'	2.30	107.11	102.64
45	Z	201	3PE	O31-C31-C32	2.25	118.98	111.91
54	O	401	GTP	O2B-PB-O1B	-2.25	101.12	112.24
56	P	501	NDP	C5B-C4B-C3B	-2.24	106.78	115.18
59	i	201	CHD	C18-C13-C17	-2.22	107.73	111.21
45	O	403	3PE	C2-O21-C21	-2.18	113.83	117.90
49	F	502	FMN	C4A-C10-N1	-2.18	119.67	124.73
59	i	201	CHD	C21-C20-C22	-2.18	106.95	110.36
56	P	501	NDP	O7N-C7N-N7N	-2.16	117.83	122.88
56	P	501	NDP	O2N-PN-O1N	2.15	122.88	112.24
58	T	101	EHZ	C13-C12-N1	2.10	119.95	116.42
58	T	101	EHZ	C10-S1-C9	2.09	108.39	101.87
52	H	504	LMT	C1B-O1B-C4'	-2.09	112.79	117.96
59	i	201	CHD	C15-C14-C13	2.09	105.60	103.55
58	U	101	EHZ	C13-C12-N1	2.06	119.88	116.42
52	H	504	LMT	O5B-C5B-C4B	2.02	113.36	109.69
53	h	201	CDL	CB6-CB4-CB3	-2.01	107.03	111.79
58	U	101	EHZ	O2-C9-S1	-2.01	120.00	122.61

There are no chirality outliers.

All (995) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	A	201	3PE	C11-O13-P-O12
45	A	201	3PE	C11-O13-P-O14
45	A	201	3PE	O13-C11-C12-N
45	A	201	3PE	C22-C21-O21-C2
45	A	202	3PE	O21-C2-C3-O31
45	H	502	3PE	C1-O11-P-O12
45	H	502	3PE	C1-O11-P-O13
45	H	502	3PE	C11-O13-P-O14
45	H	502	3PE	O13-C11-C12-N
45	H	503	3PE	C11-O13-P-O14
45	I	203	3PE	C11-O13-P-O14
45	I	203	3PE	O13-C11-C12-N
45	J	202	3PE	O13-C11-C12-N
45	K	101	3PE	C1-O11-P-O12
45	K	101	3PE	O13-C11-C12-N
45	L	701	3PE	C1-O11-P-O14
45	L	701	3PE	C11-O13-P-O12
45	L	701	3PE	O13-C11-C12-N
45	L	703	3PE	C1-O11-P-O12
45	L	703	3PE	C1-O11-P-O14
45	L	703	3PE	C11-O13-P-O12
45	M	601	3PE	O13-C11-C12-N
45	M	602	3PE	C1-O11-P-O14
45	M	602	3PE	O13-C11-C12-N
45	M	604	3PE	C1-O11-P-O14
45	M	604	3PE	C11-O13-P-O11
45	M	604	3PE	O13-C11-C12-N
45	M	604	3PE	C22-C21-O21-C2
45	N	901	3PE	C11-O13-P-O11
45	N	901	3PE	O13-C11-C12-N
45	N	901	3PE	O11-C1-C2-O21
45	N	902	3PE	O13-C11-C12-N
45	O	403	3PE	C1-O11-P-O13
45	O	403	3PE	C1-O11-P-O14
45	O	403	3PE	C22-C21-O21-C2
45	Y	201	3PE	C1-O11-P-O12
45	Y	201	3PE	C1-O11-P-O14
45	Y	201	3PE	C11-O13-P-O11
45	Y	201	3PE	O13-C11-C12-N
45	Y	201	3PE	C22-C21-O21-C2

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Mol	Chain	Res	Type	Atoms
45	Y	203	3PE	O13-C11-C12-N
45	Y	204	3PE	O13-C11-C12-N
45	Y	204	3PE	O22-C21-O21-C2
45	Z	201	3PE	C1-O11-P-O12
45	Z	201	3PE	C1-O11-P-O13
45	Z	201	3PE	C1-O11-P-O14
45	b	101	3PE	C1-O11-P-O12
45	b	101	3PE	C1-O11-P-O14
45	d	201	3PE	C1-O11-P-O12
45	d	201	3PE	C1-O11-P-O13
45	d	201	3PE	C1-O11-P-O14
45	d	201	3PE	O13-C11-C12-N
45	d	201	3PE	C22-C21-O21-C2
45	d	204	3PE	O13-C11-C12-N
45	d	204	3PE	C22-C21-O21-C2
45	h	202	3PE	O11-C1-C2-O21
45	h	202	3PE	O21-C2-C3-O31
45	h	203	3PE	O13-C11-C12-N
45	j	101	3PE	C1-O11-P-O12
45	j	101	3PE	C1-O11-P-O13
45	j	101	3PE	C1-O11-P-O14
45	j	101	3PE	C11-O13-P-O14
45	j	101	3PE	O13-C11-C12-N
45	m	201	3PE	C1-O11-P-O12
45	m	201	3PE	C1-O11-P-O14
45	m	201	3PE	C22-C21-O21-C2
45	m	202	3PE	C1-O11-P-O14
45	m	202	3PE	C11-O13-P-O11
45	m	202	3PE	C11-O13-P-O12
45	m	202	3PE	C11-O13-P-O14
45	m	202	3PE	O13-C11-C12-N
46	A	203	PC1	O21-C2-C3-O31
46	B	202	PC1	C22-C21-O21-C2
46	M	605	PC1	C22-C21-O21-C2
46	N	904	PC1	C11-O13-P-O14
46	N	904	PC1	C1-O11-P-O12
46	N	904	PC1	C22-C21-O21-C2
46	d	202	PC1	C11-O13-P-O12
46	d	202	PC1	C11-O13-P-O14
46	d	202	PC1	C11-O13-P-O11
53	L	702	CDL	CA2-OA2-PA1-OA3
53	L	702	CDL	CA2-OA2-PA1-OA4

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Mol	Chain	Res	Type	Atoms
53	L	702	CDL	OA5-CA3-CA4-OA6
53	N	903	CDL	CA2-C1-CB2-OB2
53	N	903	CDL	CA3-OA5-PA1-OA2
53	N	903	CDL	CB2-OB2-PB2-OB3
53	N	903	CDL	CB2-OB2-PB2-OB4
53	N	903	CDL	CB2-OB2-PB2-OB5
53	N	903	CDL	CB3-OB5-PB2-OB4
53	X	201	CDL	CB2-OB2-PB2-OB3
53	X	201	CDL	OB7-CB5-OB6-CB4
53	d	203	CDL	O1-C1-CB2-OB2
53	d	203	CDL	C11-CA5-OA6-CA4
53	h	201	CDL	CA3-OA5-PA1-OA2
53	h	201	CDL	CA3-OA5-PA1-OA3
53	h	201	CDL	CB3-OB5-PB2-OB3
53	h	201	CDL	C51-CB5-OB6-CB4
53	r	201	CDL	CA3-OA5-PA1-OA3
53	r	201	CDL	C11-CA5-OA6-CA4
53	r	201	CDL	CB2-OB2-PB2-OB5
54	O	401	GTP	C5'-O5'-PA-O3A
56	P	501	NDP	C2B-O2B-P2B-O1X
58	T	101	EHZ	C5-C6-C7-C8
58	T	101	EHZ	C11-C10-S1-C9
58	T	101	EHZ	N2-C15-C16-O5
45	d	201	3PE	O32-C31-O31-C3
46	M	605	PC1	O32-C31-O31-C3
53	N	903	CDL	OB9-CB7-OB8-CB6
45	d	201	3PE	C32-C31-O31-C3
53	N	903	CDL	C71-CB7-OB8-CB6
45	N	902	3PE	O32-C31-O31-C3
45	O	403	3PE	O32-C31-O31-C3
46	d	202	PC1	O32-C31-O31-C3
53	L	702	CDL	OA9-CA7-OA8-CA6
45	A	201	3PE	O22-C21-O21-C2
45	M	604	3PE	O22-C21-O21-C2
45	Y	201	3PE	O22-C21-O21-C2
45	d	201	3PE	O22-C21-O21-C2
45	d	204	3PE	O22-C21-O21-C2
45	m	201	3PE	O22-C21-O21-C2
46	B	202	PC1	O22-C21-O21-C2
46	M	605	PC1	O22-C21-O21-C2
53	d	203	CDL	OA7-CA5-OA6-CA4
53	h	201	CDL	OB7-CB5-OB6-CB4

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Mol	Chain	Res	Type	Atoms
53	r	201	CDL	OA7-CA5-OA6-CA4
45	j	101	3PE	O32-C31-O31-C3
45	N	902	3PE	C32-C31-O31-C3
45	O	403	3PE	C32-C31-O31-C3
46	M	605	PC1	C32-C31-O31-C3
46	d	202	PC1	C32-C31-O31-C3
53	L	702	CDL	C31-CA7-OA8-CA6
45	Y	204	3PE	C22-C21-O21-C2
53	X	201	CDL	C51-CB5-OB6-CB4
45	O	403	3PE	O22-C21-O21-C2
45	H	502	3PE	C32-C31-O31-C3
45	M	602	3PE	C32-C31-O31-C3
45	j	101	3PE	C32-C31-O31-C3
46	A	203	PC1	C32-C31-O31-C3
46	N	904	PC1	C32-C31-O31-C3
53	N	903	CDL	C31-CA7-OA8-CA6
53	h	201	CDL	C71-CB7-OB8-CB6
46	N	904	PC1	O22-C21-O21-C2
53	N	903	CDL	OB7-CB5-OB6-CB4
45	H	502	3PE	O32-C31-O31-C3
45	h	203	3PE	O32-C31-O31-C3
53	N	903	CDL	OA9-CA7-OA8-CA6
53	X	201	CDL	OB9-CB7-OB8-CB6
53	N	903	CDL	O1-C1-CB2-OB2
45	Y	204	3PE	C32-C31-O31-C3
45	h	203	3PE	C32-C31-O31-C3
53	X	201	CDL	C71-CB7-OB8-CB6
45	J	202	3PE	C22-C21-O21-C2
45	L	701	3PE	C22-C21-O21-C2
45	m	202	3PE	C22-C21-O21-C2
53	N	903	CDL	C51-CB5-OB6-CB4
53	h	201	CDL	OB9-CB7-OB8-CB6
45	J	202	3PE	O22-C21-O21-C2
45	m	202	3PE	O22-C21-O21-C2
45	Y	204	3PE	O32-C31-O31-C3
46	A	203	PC1	O32-C31-O31-C3
46	N	904	PC1	O32-C31-O31-C3
60	o	201	MYR	C2-C3-C4-C5
59	i	201	CHD	C21-C20-C22-C23
45	M	602	3PE	O32-C31-O31-C3
59	i	201	CHD	C17-C20-C22-C23
53	d	203	CDL	CA2-C1-CB2-OB2

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Mol	Chain	Res	Type	Atoms
45	L	701	3PE	O22-C21-O21-C2
45	L	701	3PE	C32-C31-O31-C3
45	L	703	3PE	C32-C31-O31-C3
45	b	101	3PE	C32-C31-O31-C3
45	d	204	3PE	C32-C31-O31-C3
46	M	603	PC1	C32-C31-O31-C3
53	r	201	CDL	C31-CA7-OA8-CA6
53	r	201	CDL	OB5-CB3-CB4-OB6
45	K	101	3PE	O21-C2-C3-O31
45	Z	201	3PE	O21-C2-C3-O31
53	r	201	CDL	OA9-CA7-OA8-CA6
53	h	201	CDL	C11-CA5-OA6-CA4
45	A	202	3PE	C31-C32-C33-C34
45	Y	201	3PE	C31-C32-C33-C34
53	X	201	CDL	CA5-C11-C12-C13
45	L	701	3PE	O32-C31-O31-C3
45	L	703	3PE	O32-C31-O31-C3
45	b	101	3PE	O32-C31-O31-C3
45	d	204	3PE	O32-C31-O31-C3
45	H	503	3PE	C31-C32-C33-C34
45	I	203	3PE	C31-C32-C33-C34
45	K	101	3PE	C31-C32-C33-C34
45	K	101	3PE	C21-C22-C23-C24
45	L	701	3PE	C31-C32-C33-C34
45	N	901	3PE	C31-C32-C33-C34
45	Z	201	3PE	C21-C22-C23-C24
53	h	201	CDL	CB5-C51-C52-C53
56	P	501	NDP	O4D-C4D-C5D-O5D
45	A	201	3PE	C32-C31-O31-C3
46	M	603	PC1	C2-C1-O11-P
45	m	202	3PE	C21-C22-C23-C24
46	M	603	PC1	C31-C32-C33-C34
53	X	201	CDL	CB7-C71-C72-C73
45	H	502	3PE	C31-C32-C33-C34
46	M	603	PC1	O32-C31-O31-C3
45	L	701	3PE	C2C-C2D-C2E-C2F
53	h	201	CDL	OA7-CA5-OA6-CA4
45	M	601	3PE	C22-C21-O21-C2
45	Y	203	3PE	C22-C21-O21-C2
45	A	201	3PE	C1-O11-P-O13
45	A	201	3PE	C11-O13-P-O11
45	A	202	3PE	C1-O11-P-O13

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Mol	Chain	Res	Type	Atoms
45	I	203	3PE	C11-O13-P-O11
45	J	202	3PE	C11-O13-P-O11
45	K	101	3PE	C1-O11-P-O13
45	L	703	3PE	C1-O11-P-O13
45	L	703	3PE	C11-O13-P-O11
45	M	601	3PE	C1-O11-P-O13
45	M	602	3PE	C1-O11-P-O13
45	N	902	3PE	C1-O11-P-O13
45	Y	201	3PE	C1-O11-P-O13
45	Y	204	3PE	C11-O13-P-O11
45	b	101	3PE	C1-O11-P-O13
45	m	201	3PE	C1-O11-P-O13
46	M	605	PC1	C1-O11-P-O13
46	N	904	PC1	C11-O13-P-O11
46	N	904	PC1	C1-O11-P-O13
53	L	702	CDL	CA2-OA2-PA1-OA5
53	N	903	CDL	CB3-OB5-PB2-OB2
53	d	203	CDL	CA2-OA2-PA1-OA5
53	d	203	CDL	CA3-OA5-PA1-OA2
53	d	203	CDL	CB2-OB2-PB2-OB5
53	r	201	CDL	CB3-OB5-PB2-OB2
45	M	604	3PE	C32-C31-O31-C3
45	N	902	3PE	C21-C22-C23-C24
45	Y	203	3PE	C31-C32-C33-C34
46	d	202	PC1	C21-C22-C23-C24
45	Y	203	3PE	O22-C21-O21-C2
45	H	503	3PE	C32-C31-O31-C3
45	J	202	3PE	C32-C31-O31-C3
53	h	201	CDL	C31-CA7-OA8-CA6
45	N	902	3PE	C3B-C3C-C3D-C3E
53	X	201	CDL	C22-C23-C24-C25
45	L	703	3PE	C38-C39-C3A-C3B
45	M	602	3PE	C22-C23-C24-C25
45	N	902	3PE	C27-C28-C29-C2A
45	Y	202	3PE	C2A-C2B-C2C-C2D
45	Y	205	3PE	C3D-C3E-C3F-C3G
45	Z	201	3PE	C3C-C3D-C3E-C3F
46	J	201	PC1	C34-C35-C36-C37
46	M	603	PC1	C26-C27-C28-C29
53	L	702	CDL	C39-C40-C41-C42
45	H	503	3PE	C3A-C3B-C3C-C3D
53	L	702	CDL	C57-C58-C59-C60

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Mol	Chain	Res	Type	Atoms
53	N	903	CDL	C60-C61-C62-C63
53	N	903	CDL	C73-C74-C75-C76
45	m	201	3PE	C1-C2-O21-C21
45	M	601	3PE	O22-C21-O21-C2
45	H	502	3PE	C24-C25-C26-C27
45	M	602	3PE	C35-C36-C37-C38
45	Y	204	3PE	C28-C29-C2A-C2B
45	h	202	3PE	C33-C34-C35-C36
53	X	201	CDL	C56-C57-C58-C59
53	X	201	CDL	C59-C60-C61-C62
45	L	703	3PE	C3A-C3B-C3C-C3D
45	L	703	3PE	C25-C26-C27-C28
45	h	203	3PE	C23-C24-C25-C26
46	A	203	PC1	C3E-C3F-C3G-C3H
53	N	903	CDL	C16-C17-C18-C19
53	d	203	CDL	C33-C34-C35-C36
53	h	201	CDL	C56-C57-C58-C59
45	d	204	3PE	C39-C3A-C3B-C3C
45	m	201	3PE	C23-C24-C25-C26
46	B	202	PC1	C32-C33-C34-C35
53	X	201	CDL	C15-C16-C17-C18
45	I	203	3PE	C35-C36-C37-C38
45	L	703	3PE	C22-C23-C24-C25
45	N	901	3PE	C33-C34-C35-C36
46	A	203	PC1	C22-C23-C24-C25
53	h	201	CDL	OA9-CA7-OA8-CA6
45	M	602	3PE	C33-C34-C35-C36
45	M	602	3PE	C2A-C2B-C2C-C2D
45	Y	205	3PE	C2B-C2C-C2D-C2E
45	h	202	3PE	C2A-C2B-C2C-C2D
46	M	603	PC1	C23-C24-C25-C26
53	N	903	CDL	C38-C39-C40-C41
53	r	201	CDL	C31-C32-C33-C34
45	d	201	3PE	C21-C22-C23-C24
53	h	201	CDL	CA5-C11-C12-C13
45	H	503	3PE	C3E-C3F-C3G-C3H
45	K	101	3PE	C39-C3A-C3B-C3C
45	M	602	3PE	C2C-C2D-C2E-C2F
45	Y	201	3PE	C36-C37-C38-C39
45	h	203	3PE	C2D-C2E-C2F-C2G
45	m	202	3PE	C2C-C2D-C2E-C2F
46	B	202	PC1	C37-C38-C39-C3A

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Mol	Chain	Res	Type	Atoms
53	X	201	CDL	C54-C55-C56-C57
45	A	201	3PE	O32-C31-O31-C3
45	I	203	3PE	C38-C39-C3A-C3B
45	Y	202	3PE	C32-C33-C34-C35
45	h	203	3PE	C37-C38-C39-C3A
46	M	603	PC1	C2C-C2D-C2E-C2F
45	N	902	3PE	C22-C21-O21-C2
45	H	503	3PE	C32-C33-C34-C35
45	Y	201	3PE	C3B-C3C-C3D-C3E
45	Y	204	3PE	C23-C24-C25-C26
52	H	504	LMT	C4'-C5'-C6'-O6'
53	d	203	CDL	CA5-C11-C12-C13
45	N	901	3PE	C3E-C3F-C3G-C3H
45	Y	205	3PE	C34-C35-C36-C37
46	A	203	PC1	C28-C29-C2A-C2B
53	L	702	CDL	C15-C16-C17-C18
53	L	702	CDL	C38-C39-C40-C41
53	N	903	CDL	C14-C15-C16-C17
53	N	903	CDL	C33-C34-C35-C36
58	U	101	EHZ	C1-C2-C3-C4
45	M	602	3PE	C3A-C3B-C3C-C3D
45	m	201	3PE	C2E-C2F-C2G-C2H
45	A	202	3PE	O13-C11-C12-N
45	I	203	3PE	C3E-C3F-C3G-C3H
45	M	604	3PE	C33-C34-C35-C36
45	h	203	3PE	C27-C28-C29-C2A
45	h	203	3PE	C2A-C2B-C2C-C2D
45	H	503	3PE	O32-C31-O31-C3
45	J	202	3PE	O32-C31-O31-C3
45	M	604	3PE	O32-C31-O31-C3
45	Y	204	3PE	C24-C25-C26-C27
45	M	604	3PE	C37-C38-C39-C3A
45	Y	203	3PE	C39-C3A-C3B-C3C
45	Y	205	3PE	C3B-C3C-C3D-C3E
45	h	202	3PE	C32-C33-C34-C35
45	K	101	3PE	C3D-C3E-C3F-C3G
45	N	902	3PE	C32-C33-C34-C35
45	Y	204	3PE	C2B-C2C-C2D-C2E
45	m	201	3PE	C26-C27-C28-C29
53	X	201	CDL	C33-C34-C35-C36
45	Y	205	3PE	C26-C27-C28-C29
45	j	101	3PE	C24-C25-C26-C27

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Mol	Chain	Res	Type	Atoms
45	m	201	3PE	C32-C33-C34-C35
53	L	702	CDL	C59-C60-C61-C62
53	r	201	CDL	CB3-CB4-CB6-OB8
45	N	902	3PE	O22-C21-O21-C2
45	N	902	3PE	C22-C23-C24-C25
46	d	202	PC1	C32-C33-C34-C35
53	N	903	CDL	C71-C72-C73-C74
45	M	601	3PE	C31-C32-C33-C34
45	Y	202	3PE	C32-C31-O31-C3
45	Z	201	3PE	C22-C21-O21-C2
45	J	202	3PE	C36-C37-C38-C39
45	M	602	3PE	C39-C3A-C3B-C3C
45	I	203	3PE	C3B-C3C-C3D-C3E
45	d	204	3PE	C37-C38-C39-C3A
46	J	201	PC1	C38-C39-C3A-C3B
53	h	201	CDL	C57-C58-C59-C60
45	Y	202	3PE	C26-C27-C28-C29
45	N	902	3PE	C35-C36-C37-C38
45	Y	203	3PE	C38-C39-C3A-C3B
46	B	202	PC1	C38-C39-C3A-C3B
58	T	101	EHZ	C21-C22-C23-C24
45	Z	201	3PE	O22-C21-O21-C2
45	M	601	3PE	C32-C33-C34-C35
45	Y	202	3PE	C3C-C3D-C3E-C3F
58	U	101	EHZ	C2-C3-C4-C5
60	o	201	MYR	C6-C7-C8-C9
45	L	701	3PE	C36-C37-C38-C39
45	L	701	3PE	C2E-C2F-C2G-C2H
45	d	204	3PE	C23-C24-C25-C26
53	r	201	CDL	CB5-C51-C52-C53
45	I	203	3PE	C28-C29-C2A-C2B
45	Y	203	3PE	C22-C23-C24-C25
53	N	903	CDL	C77-C78-C79-C80
45	L	703	3PE	C22-C21-O21-C2
53	X	201	CDL	C11-CA5-OA6-CA4
45	h	203	3PE	C2C-C2D-C2E-C2F
45	A	202	3PE	C39-C3A-C3B-C3C
45	J	202	3PE	C27-C28-C29-C2A
45	H	503	3PE	C33-C34-C35-C36
53	h	201	CDL	C54-C55-C56-C57
45	h	202	3PE	O22-C21-O21-C2
53	N	903	CDL	OA7-CA5-OA6-CA4

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Mol	Chain	Res	Type	Atoms
45	h	202	3PE	C32-C31-O31-C3
46	J	201	PC1	C32-C33-C34-C35
45	Y	202	3PE	O32-C31-O31-C3
45	K	101	3PE	C38-C39-C3A-C3B
45	m	202	3PE	C2E-C2F-C2G-C2H
45	Y	205	3PE	C31-C32-C33-C34
45	M	602	3PE	C2E-C2F-C2G-C2H
53	d	203	CDL	C42-C43-C44-C45
58	T	101	EHZ	C12-C13-C14-N2
46	M	605	PC1	C22-C23-C24-C25
53	X	201	CDL	C12-C13-C14-C15
45	I	203	3PE	C22-C21-O21-C2
45	K	101	3PE	C22-C21-O21-C2
45	h	202	3PE	C22-C21-O21-C2
53	L	702	CDL	C11-CA5-OA6-CA4
53	N	903	CDL	C11-CA5-OA6-CA4
45	M	602	3PE	O11-C1-C2-O21
45	N	902	3PE	C37-C38-C39-C3A
46	M	603	PC1	C2E-C2F-C2G-C2H
60	o	201	MYR	C7-C8-C9-C10
45	K	101	3PE	O22-C21-O21-C2
53	X	201	CDL	OA7-CA5-OA6-CA4
45	J	202	3PE	C21-C22-C23-C24
45	M	604	3PE	C31-C32-C33-C34
45	m	201	3PE	C27-C28-C29-C2A
53	X	201	CDL	C41-C42-C43-C44
53	r	201	CDL	C15-C16-C17-C18
46	M	603	PC1	O21-C2-C3-O31
53	r	201	CDL	OB6-CB4-CB6-OB8
45	d	204	3PE	C3C-C3D-C3E-C3F
46	N	904	PC1	C32-C33-C34-C35
53	N	903	CDL	C31-C32-C33-C34
53	X	201	CDL	C35-C36-C37-C38
45	A	202	3PE	C2E-C2F-C2G-C2H
45	L	703	3PE	O22-C21-O21-C2
45	I	203	3PE	C29-C2A-C2B-C2C
45	M	601	3PE	C37-C38-C39-C3A
45	L	701	3PE	C11-O13-P-O11
45	j	101	3PE	C11-O13-P-O11
45	m	202	3PE	C1-O11-P-O13
45	Y	202	3PE	C3B-C3C-C3D-C3E
45	H	502	3PE	C22-C23-C24-C25

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Mol	Chain	Res	Type	Atoms
45	N	901	3PE	C23-C24-C25-C26
45	L	703	3PE	O11-C1-C2-C3
45	M	602	3PE	O11-C1-C2-C3
45	b	101	3PE	O11-C1-C2-C3
53	L	702	CDL	OA5-CA3-CA4-CA6
45	Y	203	3PE	C34-C35-C36-C37
45	h	203	3PE	C32-C33-C34-C35
45	m	201	3PE	C37-C38-C39-C3A
45	I	203	3PE	O22-C21-O21-C2
53	L	702	CDL	OA7-CA5-OA6-CA4
45	K	101	3PE	C27-C28-C29-C2A
46	d	202	PC1	C24-C25-C26-C27
45	h	202	3PE	O32-C31-O31-C3
53	X	201	CDL	C75-C76-C77-C78
45	A	201	3PE	C1-C2-C3-O31
45	A	202	3PE	C1-C2-C3-O31
45	I	203	3PE	C1-C2-C3-O31
45	J	202	3PE	C1-C2-C3-O31
45	K	101	3PE	C1-C2-C3-O31
45	M	604	3PE	C1-C2-C3-O31
45	M	604	3PE	C35-C36-C37-C38
45	Y	201	3PE	C22-C23-C24-C25
45	Z	201	3PE	C1-C2-C3-O31
45	d	204	3PE	C1-C2-C3-O31
45	h	202	3PE	C1-C2-C3-O31
45	h	203	3PE	C1-C2-C3-O31
46	A	203	PC1	C1-C2-C3-O31
53	N	903	CDL	CA3-CA4-CA6-OA8
53	r	201	CDL	C56-C57-C58-C59
45	M	604	3PE	C3E-C3F-C3G-C3H
45	N	902	3PE	C3D-C3E-C3F-C3G
45	Z	201	3PE	C33-C34-C35-C36
46	N	904	PC1	C36-C37-C38-C39
53	N	903	CDL	C39-C40-C41-C42
45	L	703	3PE	O21-C21-C22-C23
53	d	203	CDL	C31-C32-C33-C34
58	T	101	EHZ	O4-C15-C16-O5
45	Y	205	3PE	C37-C38-C39-C3A
53	L	702	CDL	C71-CB7-OB8-CB6
45	I	203	3PE	C2F-C2G-C2H-C2I
45	M	601	3PE	C2A-C2B-C2C-C2D
45	O	403	3PE	C32-C33-C34-C35

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Mol	Chain	Res	Type	Atoms
53	X	201	CDL	C19-C20-C21-C22
53	d	203	CDL	C39-C40-C41-C42
58	T	101	EHZ	C5-C6-C7-O1
45	L	701	3PE	C29-C2A-C2B-C2C
45	Z	201	3PE	C3A-C3B-C3C-C3D
46	M	605	PC1	C21-C22-C23-C24
45	Y	201	3PE	C32-C31-O31-C3
46	d	202	PC1	C27-C28-C29-C2A
46	M	605	PC1	C25-C26-C27-C28
45	M	604	3PE	C1-C2-O21-C21
45	Y	203	3PE	C3-C2-O21-C21
53	h	201	CDL	CB6-CB4-OB6-CB5
45	L	701	3PE	C3D-C3E-C3F-C3G
46	A	203	PC1	C34-C35-C36-C37
45	N	902	3PE	C2E-C2F-C2G-C2H
45	L	703	3PE	O11-C1-C2-O21
45	N	902	3PE	O11-C1-C2-O21
45	M	601	3PE	O21-C21-C22-C23
45	A	202	3PE	C21-C22-C23-C24
46	J	201	PC1	C2B-C2C-C2D-C2E
46	J	201	PC1	C39-C3A-C3B-C3C
46	M	605	PC1	C3A-C3B-C3C-C3D
45	M	604	3PE	O21-C2-C3-O31
45	O	403	3PE	O21-C2-C3-O31
45	m	201	3PE	O21-C2-C3-O31
53	N	903	CDL	OA6-CA4-CA6-OA8
46	B	202	PC1	C2A-C2B-C2C-C2D
53	L	702	CDL	C32-C33-C34-C35
53	L	702	CDL	C52-C53-C54-C55
45	Y	201	3PE	C2A-C2B-C2C-C2D
53	L	702	CDL	OB9-CB7-OB8-CB6
45	I	203	3PE	C32-C33-C34-C35
45	M	601	3PE	C34-C35-C36-C37
45	d	201	3PE	C27-C28-C29-C2A
45	Y	201	3PE	O32-C31-O31-C3
45	Y	205	3PE	C3F-C3G-C3H-C3I
53	d	203	CDL	C51-CB5-OB6-CB4
53	L	702	CDL	C44-C45-C46-C47
46	J	201	PC1	C32-C31-O31-C3
45	b	101	3PE	C28-C29-C2A-C2B
53	h	201	CDL	C73-C74-C75-C76
45	d	204	3PE	C3F-C3G-C3H-C3I

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Mol	Chain	Res	Type	Atoms
45	d	204	3PE	C25-C26-C27-C28
46	A	203	PC1	C24-C25-C26-C27
45	Y	204	3PE	O11-C1-C2-C3
45	h	202	3PE	O11-C1-C2-C3
53	r	201	CDL	OB5-CB3-CB4-CB6
53	N	903	CDL	C34-C35-C36-C37
53	X	201	CDL	C23-C24-C25-C26
53	d	203	CDL	C71-CB7-OB8-CB6
45	M	604	3PE	C21-C22-C23-C24
53	d	203	CDL	C72-C73-C74-C75
45	A	202	3PE	C2A-C2B-C2C-C2D
45	A	202	3PE	C37-C38-C39-C3A
46	M	603	PC1	C2A-C2B-C2C-C2D
45	Y	201	3PE	C2-C1-O11-P
53	d	203	CDL	C1-CB2-OB2-PB2
53	d	203	CDL	CB4-CB3-OB5-PB2
45	N	901	3PE	C2A-C2B-C2C-C2D
45	M	602	3PE	C1-C2-C3-O31
45	Y	201	3PE	C1-C2-C3-O31
45	Y	204	3PE	C1-C2-C3-O31
45	d	201	3PE	C1-C2-C3-O31
45	m	201	3PE	C1-C2-C3-O31
46	d	202	PC1	C1-C2-C3-O31
53	d	203	CDL	CA3-CA4-CA6-OA8
53	d	203	CDL	CB3-CB4-CB6-OB8
53	X	201	CDL	C44-C45-C46-C47
46	d	202	PC1	C3E-C3F-C3G-C3H
45	m	202	3PE	C23-C24-C25-C26
45	N	902	3PE	C3C-C3D-C3E-C3F
45	d	204	3PE	C2A-C2B-C2C-C2D
45	M	604	3PE	C1-O11-P-O13
45	Y	203	3PE	C1-O11-P-O13
45	m	201	3PE	C11-O13-P-O11
53	X	201	CDL	CB2-OB2-PB2-OB5
53	h	201	CDL	CB3-OB5-PB2-OB2
45	Y	202	3PE	C24-C25-C26-C27
53	d	203	CDL	C75-C76-C77-C78
58	U	101	EHZ	C1-C21-C22-C23
53	L	702	CDL	OB5-CB3-CB4-OB6
53	h	201	CDL	OB5-CB3-CB4-OB6
45	A	202	3PE	C28-C29-C2A-C2B
45	m	201	3PE	C25-C26-C27-C28

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Mol	Chain	Res	Type	Atoms
53	X	201	CDL	C71-C72-C73-C74
45	A	201	3PE	O21-C2-C3-O31
45	L	701	3PE	O21-C2-C3-O31
45	M	602	3PE	O21-C2-C3-O31
45	Y	205	3PE	O21-C2-C3-O31
45	d	201	3PE	O21-C2-C3-O31
45	A	201	3PE	C26-C27-C28-C29
53	X	201	CDL	C32-C33-C34-C35
45	Y	201	3PE	C2B-C2C-C2D-C2E
46	A	203	PC1	C2A-C2B-C2C-C2D
45	j	101	3PE	C2-C1-O11-P
53	L	702	CDL	CA4-CA3-OA5-PA1
53	N	903	CDL	CB4-CB3-OB5-PB2
45	N	901	3PE	C29-C2A-C2B-C2C
45	Y	202	3PE	C3F-C3G-C3H-C3I
45	L	701	3PE	C35-C36-C37-C38
45	M	602	3PE	C22-C21-O21-C2
53	d	203	CDL	C77-C78-C79-C80
45	L	701	3PE	C34-C35-C36-C37
53	X	201	CDL	C76-C77-C78-C79
45	N	902	3PE	C26-C27-C28-C29
46	M	603	PC1	C2B-C2C-C2D-C2E
60	o	201	MYR	C9-C10-C11-C12
45	N	901	3PE	O11-C1-C2-C3
45	N	902	3PE	O11-C1-C2-C3
45	Y	205	3PE	O11-C1-C2-C3
53	L	702	CDL	OB5-CB3-CB4-CB6
45	b	101	3PE	C23-C24-C25-C26
45	j	101	3PE	C2C-C2D-C2E-C2F
45	H	503	3PE	C27-C28-C29-C2A
45	K	101	3PE	C33-C34-C35-C36
46	M	605	PC1	C2-C3-O31-C31
45	I	203	3PE	C33-C34-C35-C36
53	h	201	CDL	C36-C37-C38-C39
45	K	101	3PE	C35-C36-C37-C38
53	N	903	CDL	C76-C77-C78-C79
45	K	101	3PE	C1-C2-O21-C21
53	N	903	CDL	CB6-CB4-OB6-CB5
53	L	702	CDL	C60-C61-C62-C63
53	N	903	CDL	C57-C58-C59-C60
60	o	201	MYR	C3-C4-C5-C6
45	d	201	3PE	C22-C23-C24-C25

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Mol	Chain	Res	Type	Atoms
45	M	601	3PE	C2D-C2E-C2F-C2G
46	M	603	PC1	C28-C29-C2A-C2B
45	L	701	3PE	C1-C2-C3-O31
45	N	901	3PE	C2-C1-O11-P
45	Y	205	3PE	C1-C2-C3-O31
46	J	201	PC1	C1-C2-C3-O31
46	N	904	PC1	C2-C1-O11-P
46	N	904	PC1	C1-C2-C3-O31
53	L	702	CDL	CB4-CB3-OB5-PB2
45	M	601	3PE	C35-C36-C37-C38
45	Y	204	3PE	O11-C1-C2-O21
45	Y	205	3PE	O11-C1-C2-O21
45	m	202	3PE	O11-C1-C2-O21
45	Y	202	3PE	O31-C31-C32-C33
45	J	202	3PE	C2C-C2D-C2E-C2F
45	M	602	3PE	O22-C21-O21-C2
53	d	203	CDL	OB7-CB5-OB6-CB4
58	T	101	EHZ	O1-C7-C8-C9
46	J	201	PC1	O32-C31-O31-C3
53	d	203	CDL	OB9-CB7-OB8-CB6
45	I	203	3PE	O21-C2-C3-O31
45	Y	204	3PE	O21-C2-C3-O31
45	h	203	3PE	O21-C2-C3-O31
45	j	101	3PE	O21-C2-C3-O31
46	d	202	PC1	O21-C2-C3-O31
53	d	203	CDL	OA6-CA4-CA6-OA8
46	M	603	PC1	C29-C2A-C2B-C2C
45	m	202	3PE	C27-C28-C29-C2A
45	N	901	3PE	C37-C38-C39-C3A
45	M	601	3PE	C2E-C2F-C2G-C2H
58	T	101	EHZ	C1-C21-C22-C23
45	N	901	3PE	C2D-C2E-C2F-C2G
54	O	401	GTP	PB-O3A-PA-O1A
45	m	202	3PE	C2A-C2B-C2C-C2D
46	M	605	PC1	C32-C33-C34-C35
53	L	702	CDL	C63-C64-C65-C66
45	A	201	3PE	O31-C31-C32-C33
52	H	504	LMT	O5'-C5'-C6'-O6'
45	h	203	3PE	C3C-C3D-C3E-C3F
46	A	203	PC1	C33-C34-C35-C36
53	L	702	CDL	C58-C59-C60-C61
45	I	203	3PE	C2D-C2E-C2F-C2G

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Mol	Chain	Res	Type	Atoms
45	N	902	3PE	C39-C3A-C3B-C3C
45	H	502	3PE	C11-O13-P-O11
45	Y	203	3PE	C11-O13-P-O11
46	d	202	PC1	C1-O11-P-O13
53	r	201	CDL	CA3-OA5-PA1-OA2
56	P	501	NDP	O4D-C1D-N1N-C6N
45	d	201	3PE	C25-C26-C27-C28
45	H	503	3PE	C34-C35-C36-C37
45	Z	201	3PE	C26-C27-C28-C29
53	N	903	CDL	C56-C57-C58-C59
45	A	201	3PE	C1-O11-P-O12
45	A	202	3PE	C1-O11-P-O14
45	H	502	3PE	C1-O11-P-O14
45	H	502	3PE	C11-O13-P-O12
45	I	203	3PE	C11-O13-P-O12
45	J	202	3PE	C11-O13-P-O14
45	K	101	3PE	C1-O11-P-O14
45	L	701	3PE	C11-O13-P-O14
45	L	703	3PE	C11-O13-P-O14
45	M	601	3PE	C1-O11-P-O12
45	M	604	3PE	C11-O13-P-O12
45	N	901	3PE	C1-O11-P-O12
45	N	902	3PE	C1-O11-P-O14
45	Y	203	3PE	C11-O13-P-O12
45	Y	203	3PE	C11-O13-P-O14
45	Y	204	3PE	C11-O13-P-O12
45	Y	204	3PE	C11-O13-P-O14
45	h	202	3PE	C11-O13-P-O14
45	h	203	3PE	C11-O13-P-O12
45	m	202	3PE	C1-O11-P-O12
46	M	605	PC1	C1-O11-P-O14
46	N	904	PC1	C1-O11-P-O14
46	d	202	PC1	C1-O11-P-O12
53	L	702	CDL	CB3-OB5-PB2-OB3
53	N	903	CDL	CA3-OA5-PA1-OA3
53	N	903	CDL	CA3-OA5-PA1-OA4
53	N	903	CDL	CB3-OB5-PB2-OB3
53	X	201	CDL	CA3-OA5-PA1-OA4
53	d	203	CDL	CA2-OA2-PA1-OA3
53	d	203	CDL	CA2-OA2-PA1-OA4
53	d	203	CDL	CA3-OA5-PA1-OA3
53	d	203	CDL	CB2-OB2-PB2-OB3

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Mol	Chain	Res	Type	Atoms
53	d	203	CDL	CB2-OB2-PB2-OB4
53	h	201	CDL	CB2-OB2-PB2-OB3
53	r	201	CDL	CB2-OB2-PB2-OB4
53	r	201	CDL	CB3-OB5-PB2-OB3
53	r	201	CDL	CB3-OB5-PB2-OB4
54	O	401	GTP	C5'-O5'-PA-O1A
54	O	401	GTP	C5'-O5'-PA-O2A
58	T	101	EHZ	C6-C7-C8-C9
45	A	201	3PE	C23-C24-C25-C26
45	H	502	3PE	O11-C1-C2-C3
45	m	202	3PE	O11-C1-C2-C3
53	d	203	CDL	OB5-CB3-CB4-CB6
45	J	202	3PE	C33-C34-C35-C36
45	N	901	3PE	C3A-C3B-C3C-C3D
46	A	203	PC1	C36-C37-C38-C39
45	K	101	3PE	C28-C29-C2A-C2B
45	I	203	3PE	C25-C26-C27-C28
53	r	201	CDL	C19-C20-C21-C22
45	M	602	3PE	C3D-C3E-C3F-C3G
45	d	201	3PE	C2B-C2C-C2D-C2E
45	h	203	3PE	C25-C26-C27-C28
53	N	903	CDL	C36-C37-C38-C39
45	M	601	3PE	C12-C11-O13-P
45	M	604	3PE	C12-C11-O13-P
45	N	901	3PE	C12-C11-O13-P
45	h	202	3PE	C12-C11-O13-P
53	L	702	CDL	C14-C15-C16-C17
53	d	203	CDL	CB7-C71-C72-C73
45	N	901	3PE	C32-C31-O31-C3
53	d	203	CDL	C73-C74-C75-C76
45	H	502	3PE	O11-C1-C2-O21
53	d	203	CDL	OB5-CB3-CB4-OB6
53	L	702	CDL	C51-CB5-OB6-CB4
45	L	701	3PE	C22-C23-C24-C25
45	j	101	3PE	C32-C33-C34-C35
46	d	202	PC1	C35-C36-C37-C38
45	h	203	3PE	C31-C32-C33-C34
45	O	403	3PE	C1-C2-C3-O31
45	j	101	3PE	C1-C2-C3-O31
46	A	203	PC1	O13-C11-C12-N
46	M	603	PC1	C1-C2-C3-O31
53	L	702	CDL	OB7-CB5-OB6-CB4

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Mol	Chain	Res	Type	Atoms
45	d	204	3PE	O21-C2-C3-O31
46	J	201	PC1	O21-C2-C3-O31
53	h	201	CDL	OA6-CA4-CA6-OA8
53	h	201	CDL	C55-C56-C57-C58
45	J	202	3PE	C24-C25-C26-C27
45	K	101	3PE	C36-C37-C38-C39
45	Y	203	3PE	C33-C34-C35-C36
45	Y	205	3PE	C39-C3A-C3B-C3C
45	Y	203	3PE	C35-C36-C37-C38
53	X	201	CDL	C72-C73-C74-C75
53	L	702	CDL	C31-C32-C33-C34
45	Y	205	3PE	C25-C26-C27-C28
45	L	701	3PE	C39-C3A-C3B-C3C
53	d	203	CDL	C41-C42-C43-C44
45	N	901	3PE	C2C-C2D-C2E-C2F
46	J	201	PC1	C37-C38-C39-C3A
45	A	201	3PE	C36-C37-C38-C39
45	N	901	3PE	O32-C31-O31-C3
45	I	203	3PE	C39-C3A-C3B-C3C
53	d	203	CDL	C71-C72-C73-C74
45	K	101	3PE	C22-C23-C24-C25
53	X	201	CDL	CB3-CB4-OB6-CB5
53	h	201	CDL	CA6-CA4-OA6-CA5
45	Z	201	3PE	C3F-C3G-C3H-C3I
45	H	503	3PE	C21-C22-C23-C24
45	M	601	3PE	C28-C29-C2A-C2B
45	b	101	3PE	O11-C1-C2-O21
45	L	701	3PE	C23-C24-C25-C26
45	J	202	3PE	O21-C2-C3-O31
45	Y	201	3PE	O21-C2-C3-O31
53	r	201	CDL	C14-C15-C16-C17
45	A	202	3PE	C11-O13-P-O11
45	L	701	3PE	C1-O11-P-O13
45	Y	204	3PE	C1-O11-P-O13
45	d	204	3PE	C1-O11-P-O13
46	B	202	PC1	C11-O13-P-O11
53	d	203	CDL	CB3-OB5-PB2-OB2
53	h	201	CDL	CB2-OB2-PB2-OB5
45	m	201	3PE	C36-C37-C38-C39
45	Z	201	3PE	C3E-C3F-C3G-C3H
45	A	202	3PE	C35-C36-C37-C38
60	o	201	MYR	C5-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
53	L	702	CDL	C37-C38-C39-C40
45	M	604	3PE	C3F-C3G-C3H-C3I
45	Y	205	3PE	C32-C31-O31-C3
58	U	101	EHZ	C3-C4-C5-C6
45	L	703	3PE	O22-C21-C22-C23
45	Y	202	3PE	C2B-C2C-C2D-C2E
45	h	203	3PE	C26-C27-C28-C29
45	K	101	3PE	C32-C31-O31-C3
45	Y	202	3PE	C2-C1-O11-P
53	X	201	CDL	CA4-CA3-OA5-PA1
53	r	201	CDL	C1-CB2-OB2-PB2
45	j	101	3PE	C27-C28-C29-C2A
46	M	603	PC1	C32-C33-C34-C35
53	r	201	CDL	CA7-C31-C32-C33
45	K	101	3PE	O32-C31-O31-C3
45	m	202	3PE	C32-C31-O31-C3
56	P	501	NDP	C3D-C4D-C5D-O5D
53	X	201	CDL	C20-C21-C22-C23
45	Y	205	3PE	O32-C31-O31-C3
53	L	702	CDL	C42-C43-C44-C45
45	d	204	3PE	C21-C22-C23-C24
46	d	202	PC1	C31-C32-C33-C34
45	Y	202	3PE	O13-C11-C12-N
52	H	504	LMT	C11-C10-C9-C8
45	Z	201	3PE	O11-C1-C2-O21
53	X	201	CDL	C24-C25-C26-C27
53	h	201	CDL	C35-C36-C37-C38
53	L	702	CDL	C72-C71-CB7-OB8
53	d	203	CDL	OB6-CB4-CB6-OB8
45	H	503	3PE	C29-C2A-C2B-C2C
53	N	903	CDL	C1-CA2-OA2-PA1
45	M	601	3PE	O22-C21-C22-C23
53	N	903	CDL	C53-C54-C55-C56
45	H	502	3PE	C2D-C2E-C2F-C2G
46	N	904	PC1	C31-C32-C33-C34
45	H	503	3PE	C2C-C2D-C2E-C2F
45	M	602	3PE	C36-C37-C38-C39
45	Y	203	3PE	C26-C27-C28-C29
45	j	101	3PE	C37-C38-C39-C3A
53	r	201	CDL	C71-C72-C73-C74
46	M	605	PC1	C28-C29-C2A-C2B
53	L	702	CDL	C35-C36-C37-C38

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Mol	Chain	Res	Type	Atoms
45	Y	204	3PE	C26-C27-C28-C29
45	N	901	3PE	C3D-C3E-C3F-C3G
45	A	201	3PE	C28-C29-C2A-C2B
45	m	202	3PE	O32-C31-O31-C3
45	Y	201	3PE	C3D-C3E-C3F-C3G
53	X	201	CDL	C36-C37-C38-C39
60	o	201	MYR	C11-C10-C9-C8
45	N	902	3PE	C1-C2-O21-C21
45	N	902	3PE	C3-C2-O21-C21
46	M	605	PC1	C3-C2-O21-C21
45	A	201	3PE	C2C-C2D-C2E-C2F
45	Y	201	3PE	C32-C33-C34-C35
45	Z	201	3PE	C37-C38-C39-C3A
45	H	503	3PE	C22-C23-C24-C25
53	X	201	CDL	C57-C58-C59-C60
53	L	702	CDL	CB3-OB5-PB2-OB2
46	M	605	PC1	C38-C39-C3A-C3B
53	h	201	CDL	CB4-CB3-OB5-PB2
45	I	203	3PE	O11-C1-C2-O21
45	N	902	3PE	C24-C25-C26-C27
58	U	101	EHZ	C22-C23-C24-C25
46	B	202	PC1	C32-C31-O31-C3
53	r	201	CDL	C13-C14-C15-C16
53	N	903	CDL	OB5-CB3-CB4-CB6
45	h	203	3PE	C36-C37-C38-C39
53	X	201	CDL	C51-C52-C53-C54
45	H	503	3PE	C37-C38-C39-C3A
45	m	202	3PE	C34-C35-C36-C37
45	Y	203	3PE	C36-C37-C38-C39
53	d	203	CDL	CB2-C1-CA2-OA2
53	X	201	CDL	C53-C54-C55-C56
46	J	201	PC1	C2C-C2D-C2E-C2F
45	A	202	3PE	O21-C21-C22-C23
53	N	903	CDL	C61-C62-C63-C64
56	P	501	NDP	PN-O3-PA-O1A
45	Y	202	3PE	C39-C3A-C3B-C3C
45	Y	203	3PE	C25-C26-C27-C28
46	A	203	PC1	C29-C2A-C2B-C2C
45	Z	201	3PE	C31-C32-C33-C34
45	Y	201	3PE	C3E-C3F-C3G-C3H
46	M	605	PC1	C26-C27-C28-C29
53	X	201	CDL	OA5-CA3-CA4-OA6

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Mol	Chain	Res	Type	Atoms
45	A	202	3PE	O31-C31-C32-C33
53	X	201	CDL	C42-C43-C44-C45
53	N	903	CDL	OA5-CA3-CA4-CA6
53	h	201	CDL	OB5-CB3-CB4-CB6
45	J	202	3PE	C28-C29-C2A-C2B
46	B	202	PC1	O32-C31-O31-C3
53	X	201	CDL	C74-C75-C76-C77
45	M	601	3PE	C29-C2A-C2B-C2C
45	N	901	3PE	C26-C27-C28-C29
45	H	502	3PE	O21-C21-C22-C23
53	X	201	CDL	C32-C31-CA7-OA8
53	d	203	CDL	C72-C71-CB7-OB8
46	A	203	PC1	C1-O11-P-O13
45	J	202	3PE	C37-C38-C39-C3A
45	Y	202	3PE	C3D-C3E-C3F-C3G
45	M	602	3PE	C37-C38-C39-C3A
45	Y	202	3PE	C33-C34-C35-C36
45	j	101	3PE	C2E-C2F-C2G-C2H
45	J	202	3PE	C38-C39-C3A-C3B
45	N	901	3PE	O22-C21-O21-C2
45	H	502	3PE	O31-C31-C32-C33
45	M	604	3PE	O31-C31-C32-C33
46	d	202	PC1	O21-C21-C22-C23
45	m	202	3PE	C28-C29-C2A-C2B
45	M	604	3PE	C2E-C2F-C2G-C2H
45	J	202	3PE	C3B-C3C-C3D-C3E
45	b	101	3PE	C34-C35-C36-C37
45	A	201	3PE	O21-C21-C22-C23
45	m	201	3PE	O21-C21-C22-C23
45	Y	201	3PE	C33-C34-C35-C36
45	h	202	3PE	C22-C23-C24-C25
46	B	202	PC1	C24-C25-C26-C27
45	J	202	3PE	C32-C33-C34-C35
53	X	201	CDL	C60-C61-C62-C63
53	N	903	CDL	OA5-CA3-CA4-OA6
45	L	701	3PE	O21-C21-C22-C23
53	X	201	CDL	C72-C71-CB7-OB8
45	L	701	3PE	C3C-C3D-C3E-C3F
45	Y	203	3PE	C32-C33-C34-C35
53	h	201	CDL	C60-C61-C62-C63
45	J	202	3PE	C22-C23-C24-C25
46	M	603	PC1	C37-C38-C39-C3A

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Mol	Chain	Res	Type	Atoms
46	B	202	PC1	O31-C31-C32-C33
53	X	201	CDL	C12-C11-CA5-OA6
45	H	502	3PE	C2E-C2F-C2G-C2H
45	M	601	3PE	C3A-C3B-C3C-C3D
45	m	202	3PE	C24-C25-C26-C27
45	Y	205	3PE	C35-C36-C37-C38
46	A	203	PC1	C2B-C2C-C2D-C2E
45	N	902	3PE	C2F-C2G-C2H-C2I
45	Y	203	3PE	C27-C28-C29-C2A
53	X	201	CDL	OA5-CA3-CA4-CA6
45	I	203	3PE	C3A-C3B-C3C-C3D
45	Y	204	3PE	O31-C31-C32-C33
45	M	602	3PE	C21-C22-C23-C24
53	N	903	CDL	C17-C18-C19-C20
45	m	201	3PE	O31-C31-C32-C33
53	r	201	CDL	C52-C51-CB5-OB6
53	r	201	CDL	C72-C71-CB7-OB8
56	P	501	NDP	C2B-O2B-P2B-O3X
53	N	903	CDL	C32-C31-CA7-OA8
45	j	101	3PE	C35-C36-C37-C38
45	Y	201	3PE	C34-C35-C36-C37
45	O	403	3PE	C2-C1-O11-P
49	F	502	FMN	C4'-C5'-O5'-P
56	P	501	NDP	O4B-C4B-C5B-O5B
53	r	201	CDL	CA5-C11-C12-C13
46	A	203	PC1	O21-C21-C22-C23
56	P	501	NDP	PN-O3-PA-O2A
45	H	502	3PE	C2A-C2B-C2C-C2D
45	h	203	3PE	C28-C29-C2A-C2B
53	X	201	CDL	C72-C71-CB7-OB9
45	d	201	3PE	O21-C21-C22-C23
45	M	604	3PE	C26-C27-C28-C29
46	B	202	PC1	C35-C36-C37-C38
45	L	701	3PE	O22-C21-C22-C23
53	d	203	CDL	C72-C71-CB7-OB9
45	j	101	3PE	C26-C27-C28-C29
45	m	202	3PE	C26-C27-C28-C29
45	Y	201	3PE	C29-C2A-C2B-C2C
53	h	201	CDL	C74-C75-C76-C77
53	X	201	CDL	C63-C64-C65-C66
53	d	203	CDL	C40-C41-C42-C43
45	h	203	3PE	O21-C21-C22-C23

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Mol	Chain	Res	Type	Atoms
45	A	202	3PE	C27-C28-C29-C2A
45	H	502	3PE	C2C-C2D-C2E-C2F
45	Y	205	3PE	C38-C39-C3A-C3B
45	H	502	3PE	O22-C21-C22-C23
45	M	604	3PE	O32-C31-C32-C33
45	d	201	3PE	O22-C21-C22-C23
53	X	201	CDL	C12-C11-CA5-OA7
53	h	201	CDL	CA3-CA4-CA6-OA8
45	H	502	3PE	O32-C31-C32-C33
53	X	201	CDL	C32-C31-CA7-OA9
53	r	201	CDL	C52-C51-CB5-OB7
45	N	901	3PE	C28-C29-C2A-C2B
45	h	202	3PE	C25-C26-C27-C28
45	M	602	3PE	O21-C21-C22-C23
45	h	203	3PE	C2-C1-O11-P
45	A	202	3PE	C11-O13-P-O14
45	M	602	3PE	C1-O11-P-O12
45	N	902	3PE	C11-O13-P-O12
45	Y	205	3PE	C1-O11-P-O14
45	Z	201	3PE	C11-O13-P-O14
45	d	201	3PE	C11-O13-P-O14
45	h	202	3PE	C1-O11-P-O14
46	B	202	PC1	C11-O13-P-O14
46	N	904	PC1	O21-C2-C3-O31
45	M	601	3PE	C23-C24-C25-C26
46	J	201	PC1	C2F-C2G-C2H-C2I
46	A	203	PC1	O22-C21-C22-C23
45	Z	201	3PE	O11-C1-C2-C3
59	i	201	CHD	C22-C23-C24-O26
45	O	403	3PE	O13-C11-C12-N
45	m	201	3PE	O13-C11-C12-N
45	Y	204	3PE	O32-C31-C32-C33
46	B	202	PC1	O32-C31-C32-C33
58	T	101	EHZ	C18-C17-C20-O6
45	K	101	3PE	O31-C31-C32-C33
53	L	702	CDL	C52-C51-CB5-OB6
45	Y	205	3PE	C3E-C3F-C3G-C3H
45	h	203	3PE	C39-C3A-C3B-C3C
45	d	201	3PE	C31-C32-C33-C34
45	K	101	3PE	C2C-C2D-C2E-C2F
46	M	603	PC1	O31-C31-C32-C33
45	K	101	3PE	C24-C25-C26-C27

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Mol	Chain	Res	Type	Atoms
45	L	701	3PE	C32-C33-C34-C35
53	r	201	CDL	C11-C12-C13-C14
46	d	202	PC1	O22-C21-C22-C23
45	d	204	3PE	C24-C25-C26-C27
45	Z	201	3PE	C12-C11-O13-P
45	b	101	3PE	C12-C11-O13-P
45	d	201	3PE	C12-C11-O13-P
58	T	101	EHZ	O4-C15-C16-C17
45	m	201	3PE	O22-C21-C22-C23
45	M	604	3PE	O21-C21-C22-C23
53	h	201	CDL	C12-C11-CA5-OA6
45	L	701	3PE	C2A-C2B-C2C-C2D
53	N	903	CDL	C32-C31-CA7-OA9
46	d	202	PC1	O22-C21-O21-C2
45	M	604	3PE	C2A-C2B-C2C-C2D
49	F	502	FMN	N10-C1'-C2'-O2'
45	M	602	3PE	O22-C21-C22-C23
45	h	203	3PE	O22-C21-C22-C23
45	h	202	3PE	O31-C31-C32-C33
45	H	503	3PE	C23-C24-C25-C26
45	M	604	3PE	O22-C21-C22-C23
45	m	201	3PE	O32-C31-C32-C33
53	r	201	CDL	C72-C71-CB7-OB9
59	i	201	CHD	C22-C23-C24-O25
45	N	901	3PE	C22-C21-O21-C2
45	H	503	3PE	C25-C26-C27-C28
46	B	202	PC1	O21-C21-C22-C23
45	K	101	3PE	O32-C31-C32-C33
45	M	604	3PE	C23-C24-C25-C26
45	h	202	3PE	O32-C31-C32-C33
45	M	601	3PE	C26-C27-C28-C29

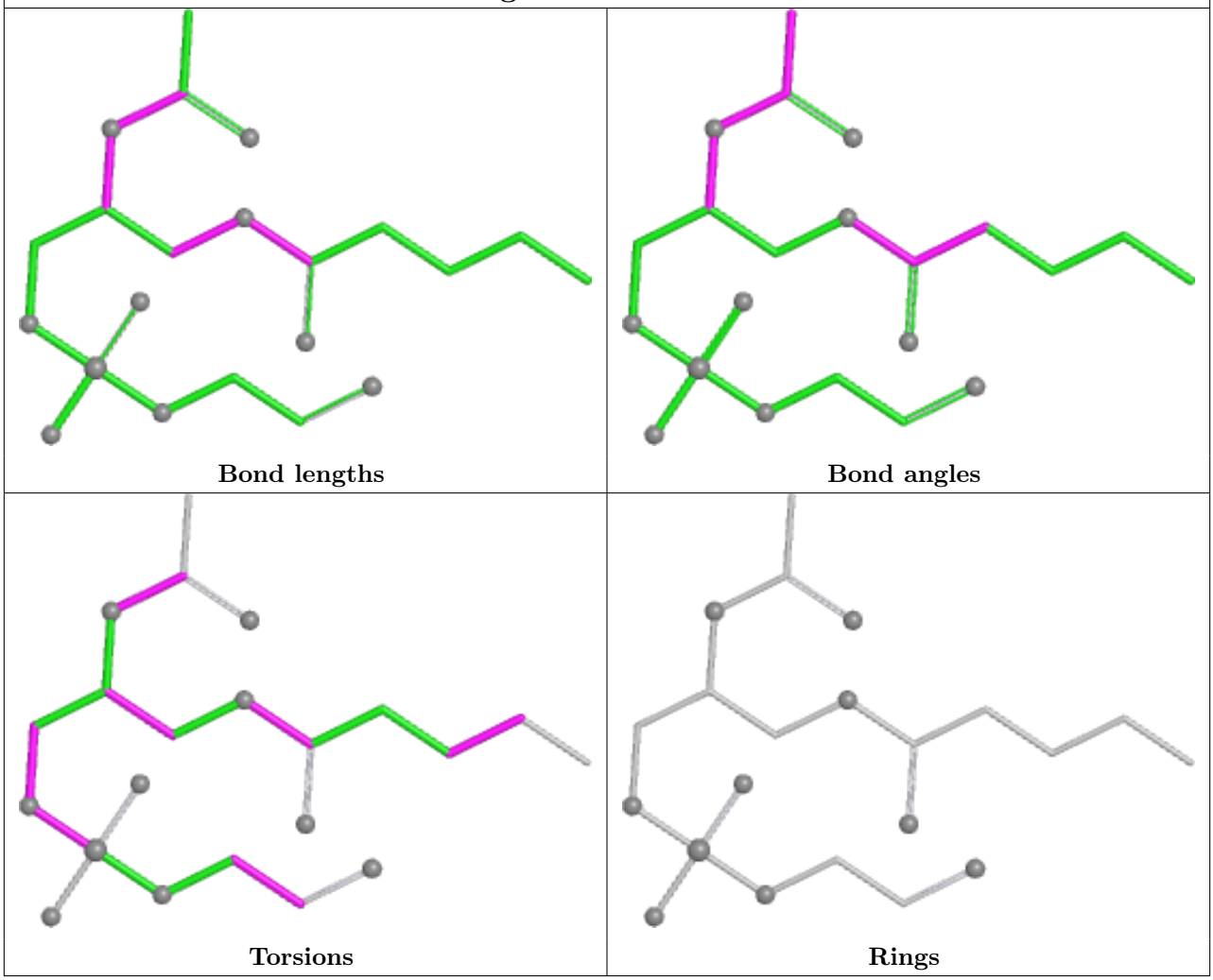
There are no ring outliers.

No monomer is involved in short contacts.

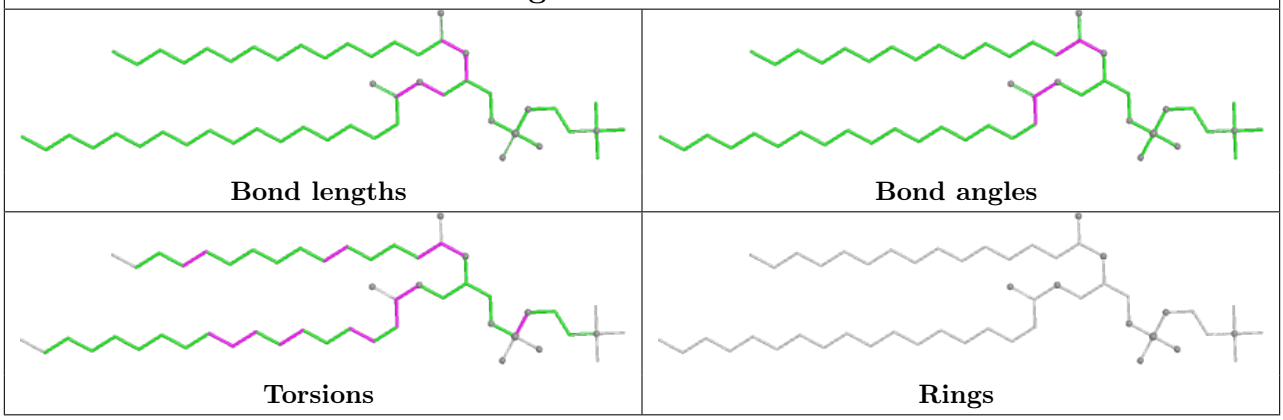
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

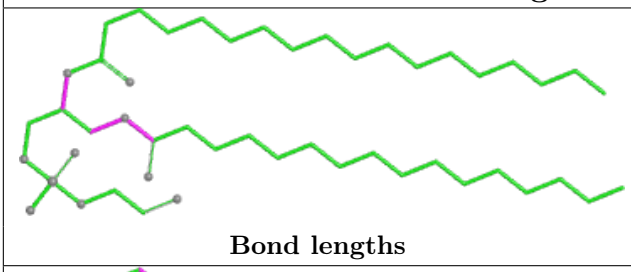
Ligand 3PE O 403



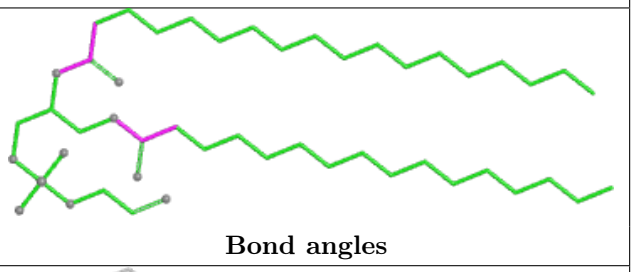
Ligand PC1 B 202



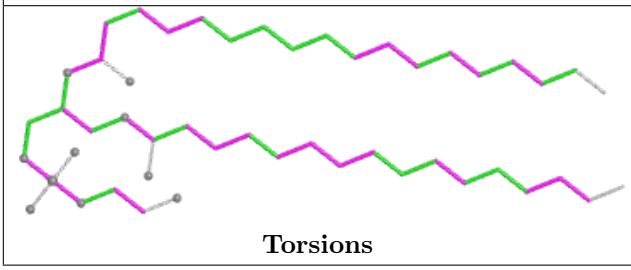
Ligand 3PE L 701



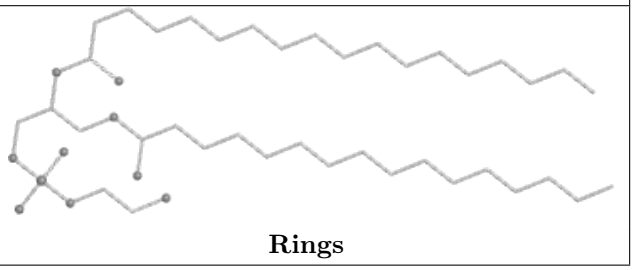
Bond lengths



Bond angles

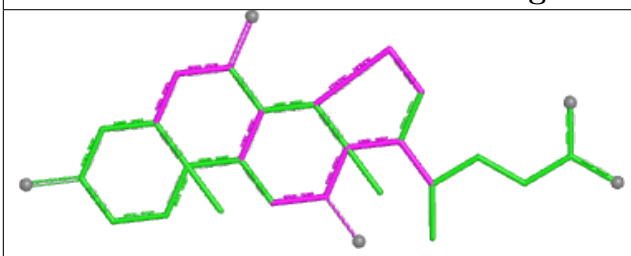


Torsions

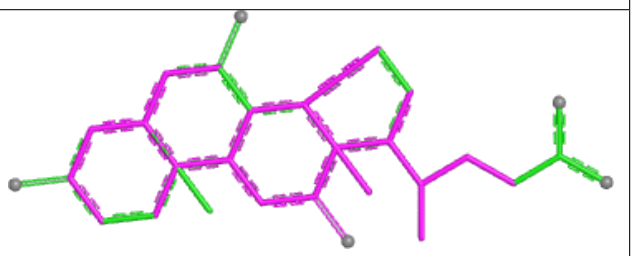


Rings

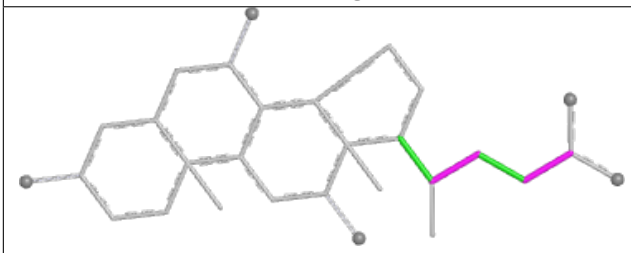
Ligand CHD i 201



Bond lengths



Bond angles



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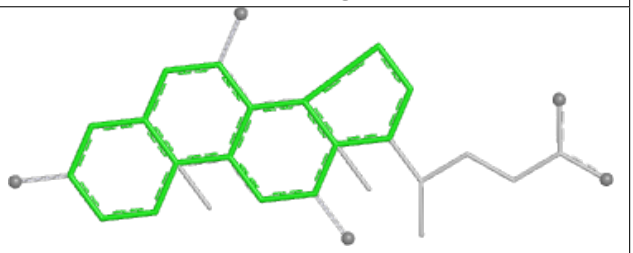
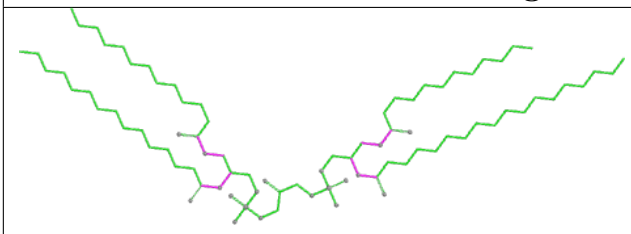


Rings

Ligand CDL N 903



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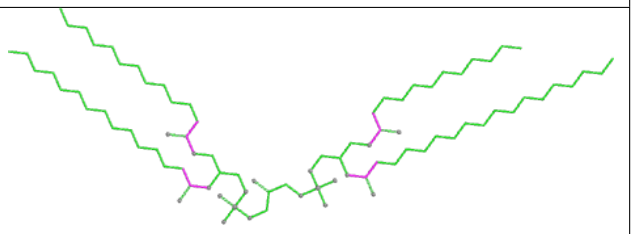
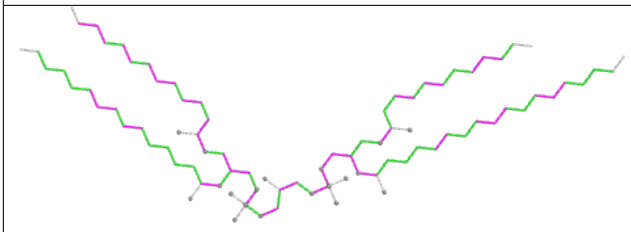
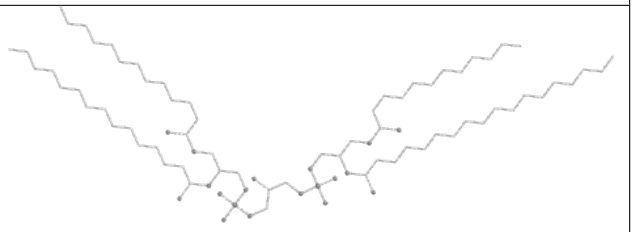


Bond angles

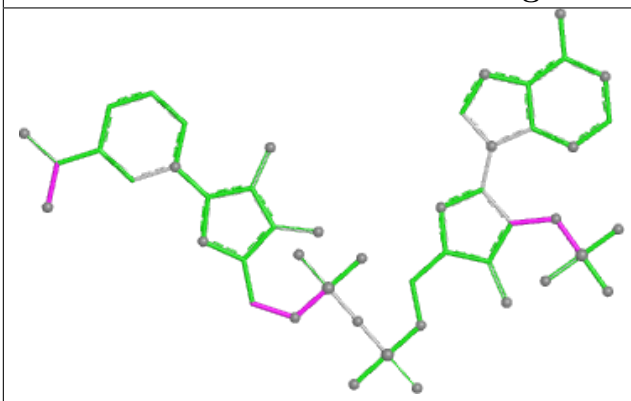


Torsions

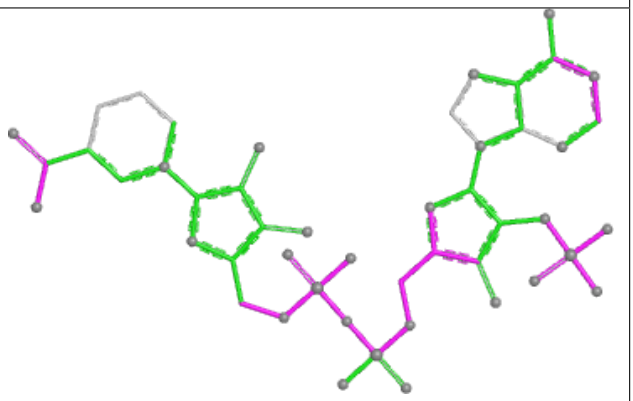


Rings

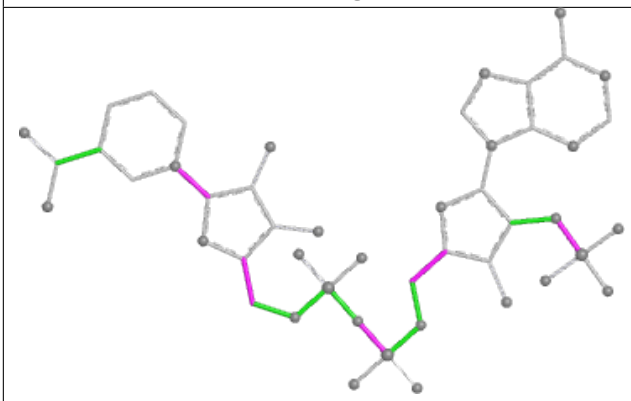
Ligand NDP P 501



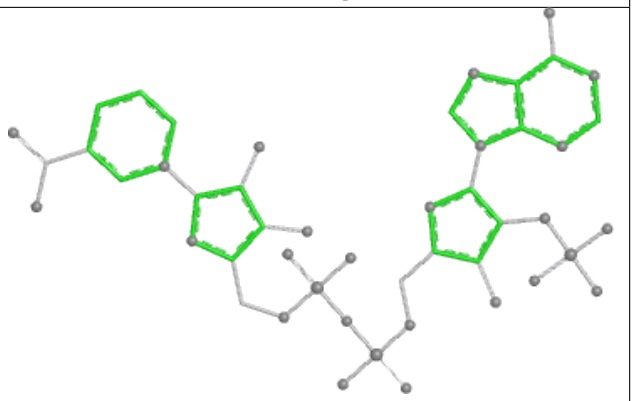
Bond lengths



Bond angles

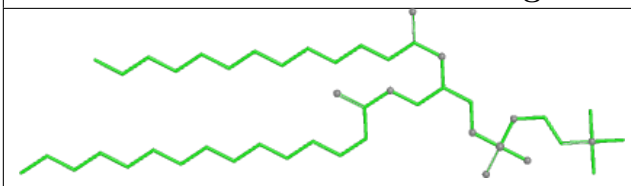


Torsions

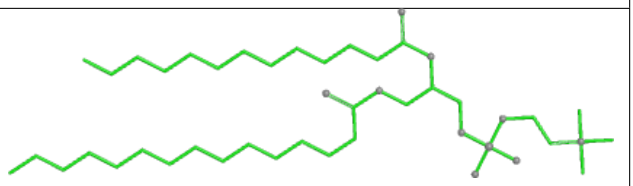


Rings

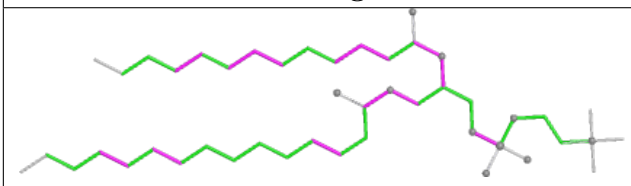
Ligand PC1 M 605



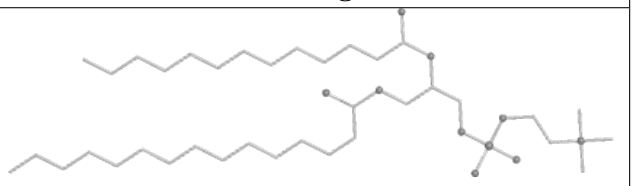
Bond lengths



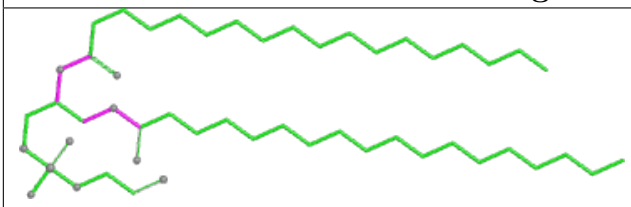
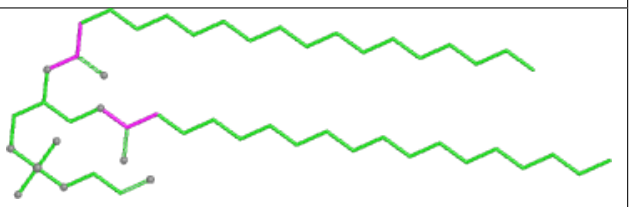
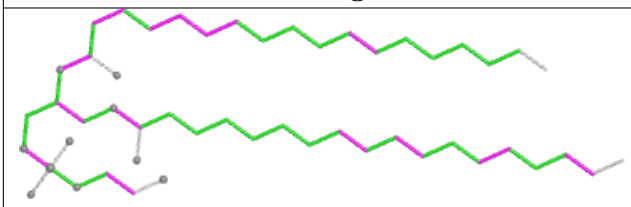
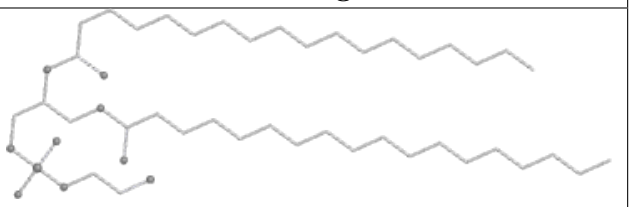
Bond angles

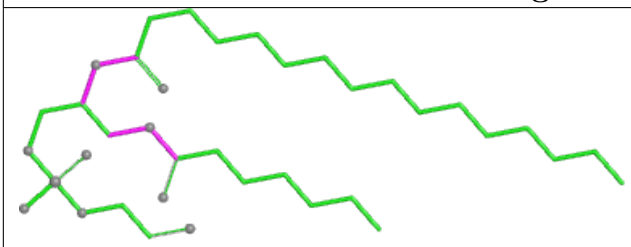
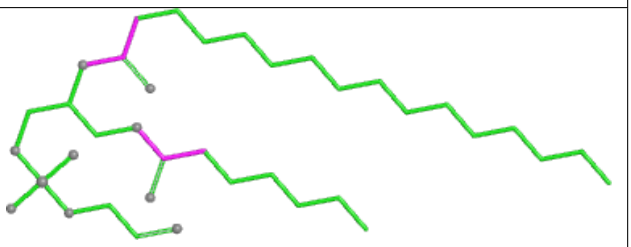
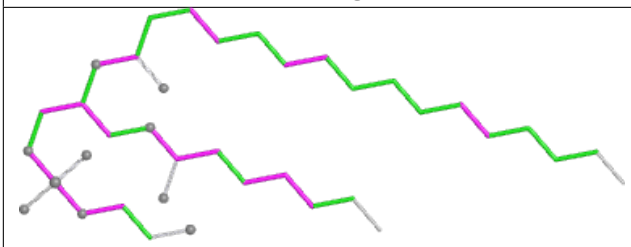
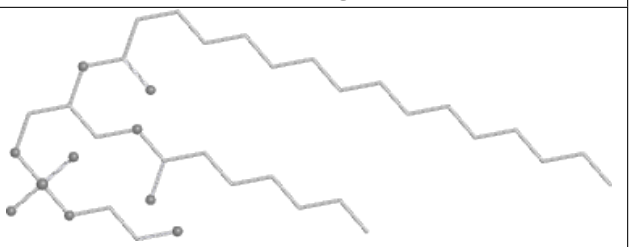


Torsions

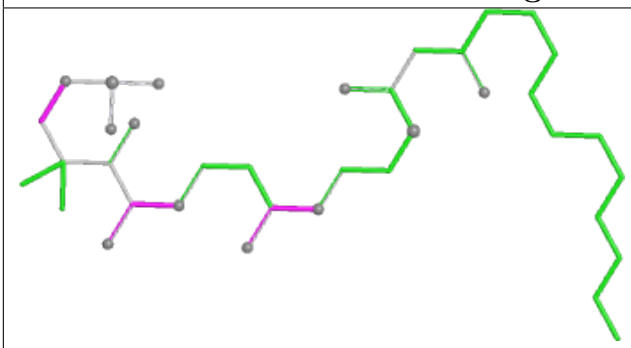


Rings

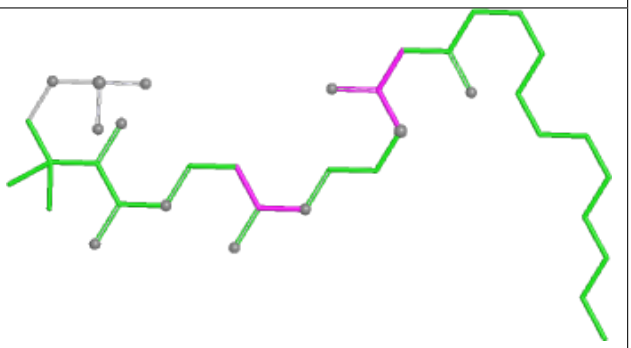
Ligand 3PE d 204	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE h 202	
 Bond lengths	 Bond angles
 Torsions	 Rings

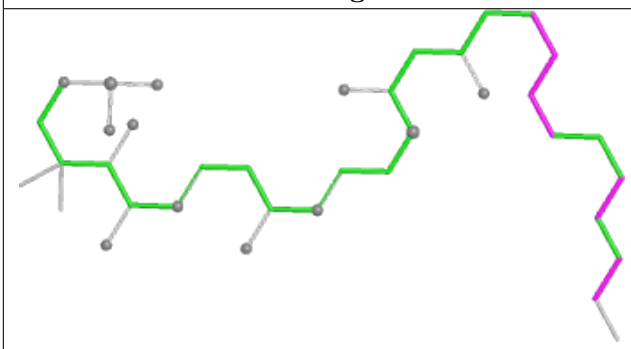
Ligand EHZ U 101



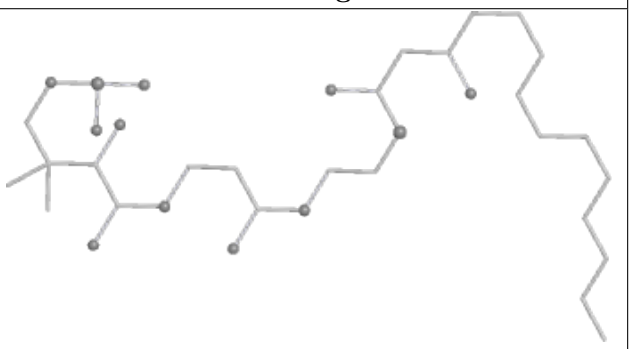
Bond lengths



Bond angles

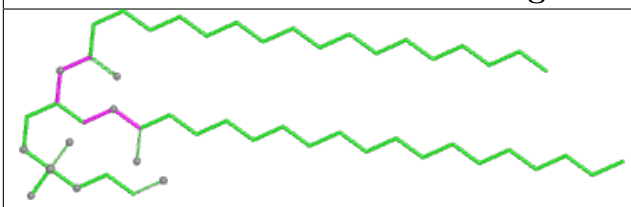


Torsions

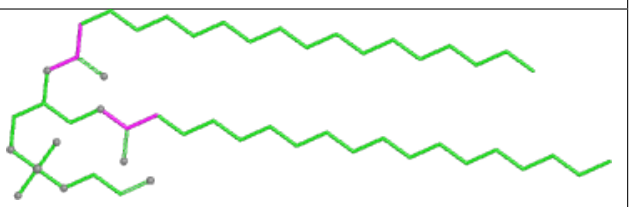


Rings

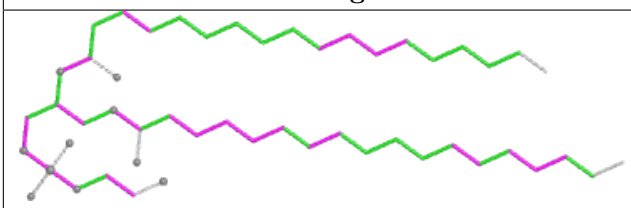
Ligand 3PE Y 201



Bond lengths



Bond angles



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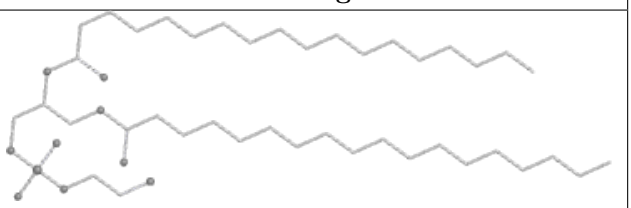
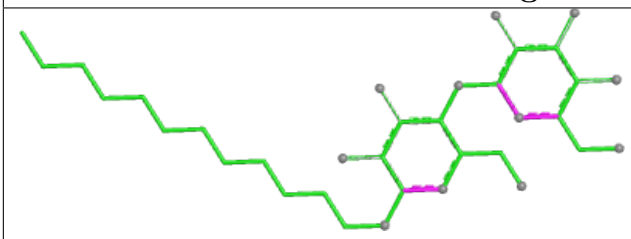
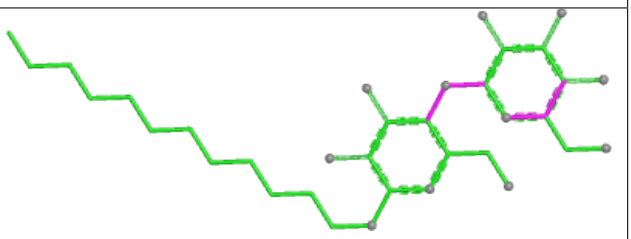
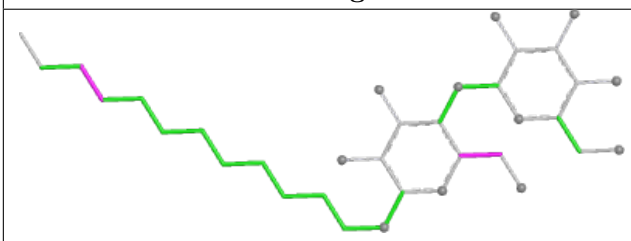


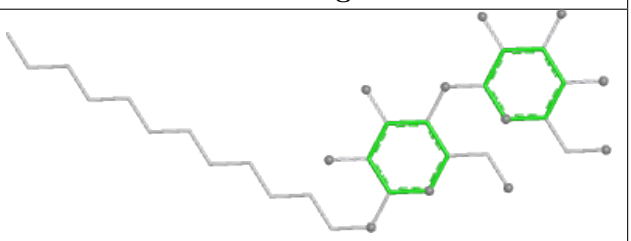
Rings

Ligand LMT H 504

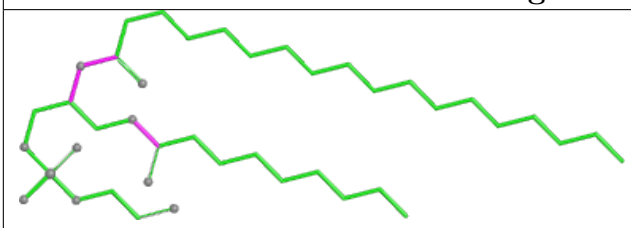

Bond lengths

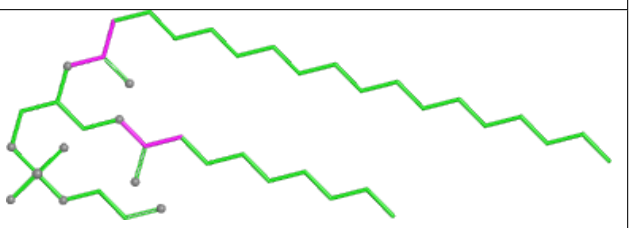

Bond angles

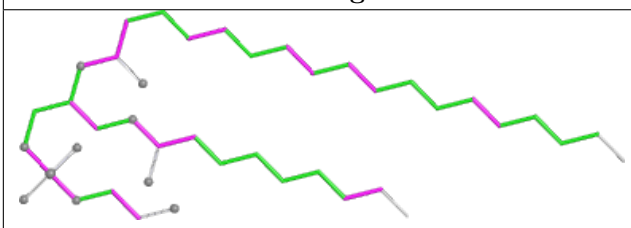

Torsions

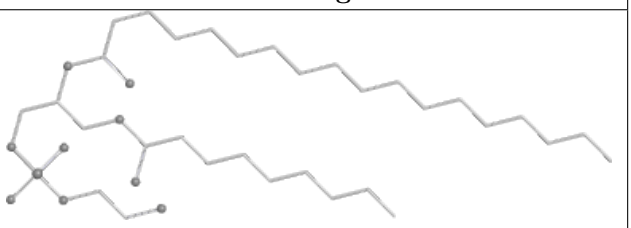

Rings

Ligand 3PE A 201

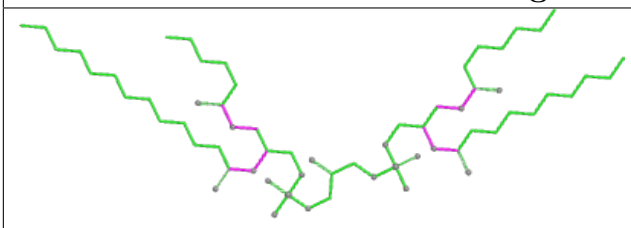

Bond lengths


Bond angles


Torsions


Rings

Ligand CDL r 201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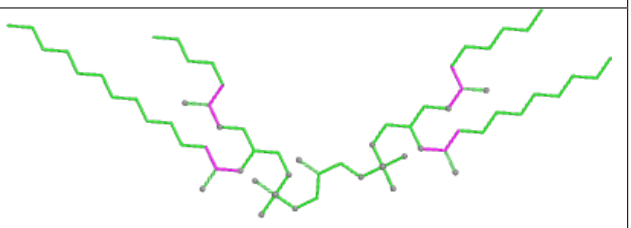
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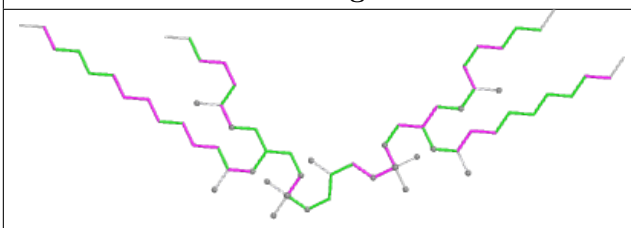
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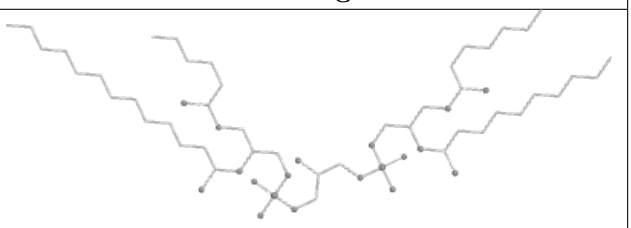
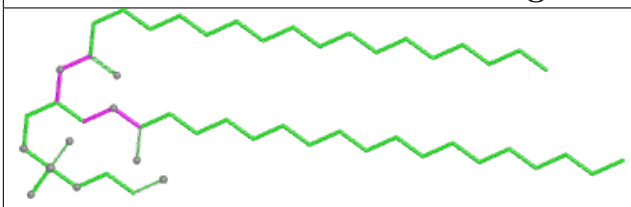
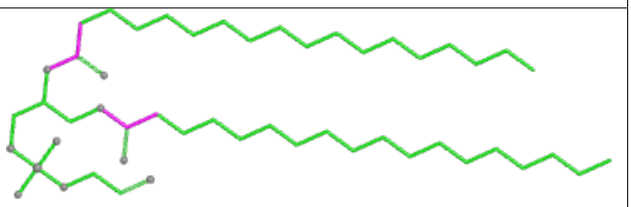
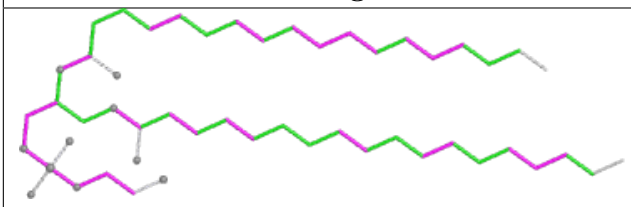
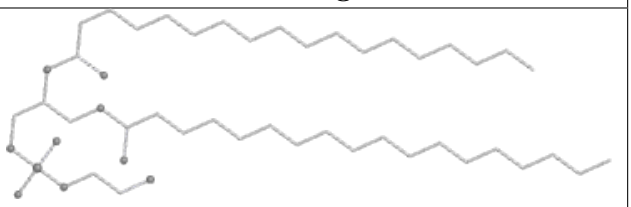
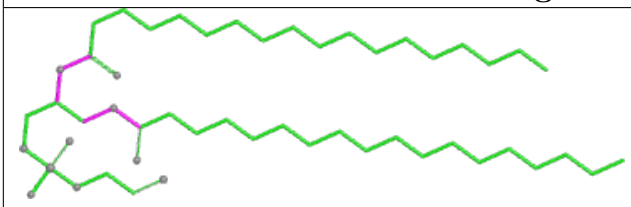
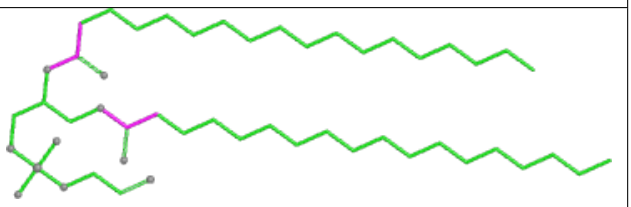
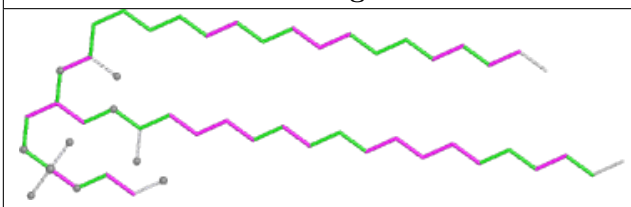
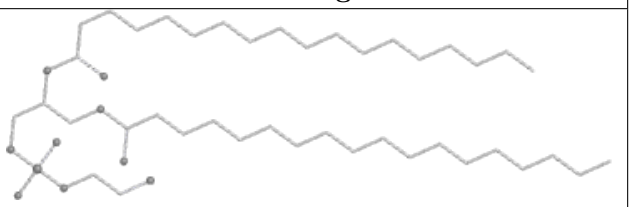

Rings

Ligand 3PE N 901	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE I 203	
 Bond lengths	 Bond angles
 Torsions	 Rings

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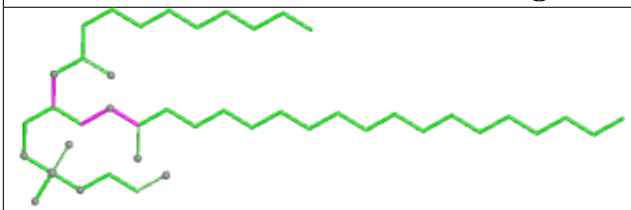
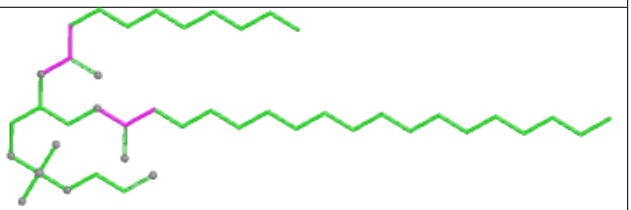
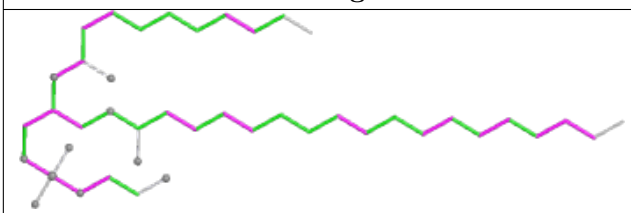
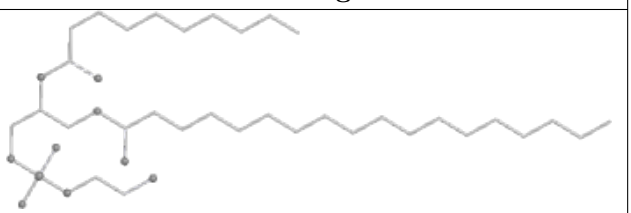
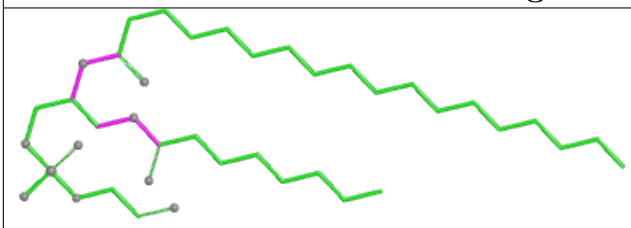
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE m 202



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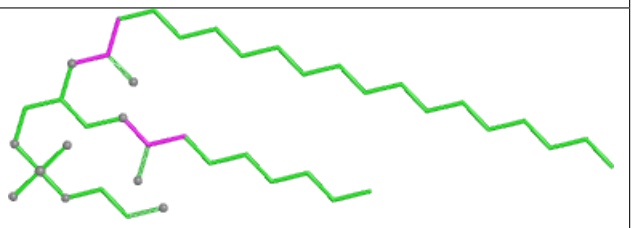

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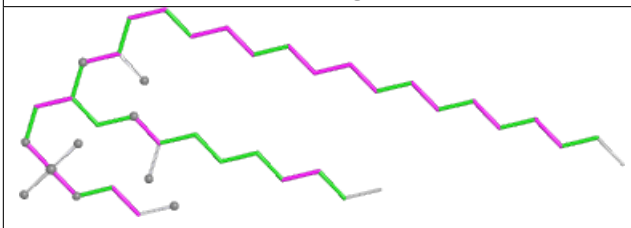

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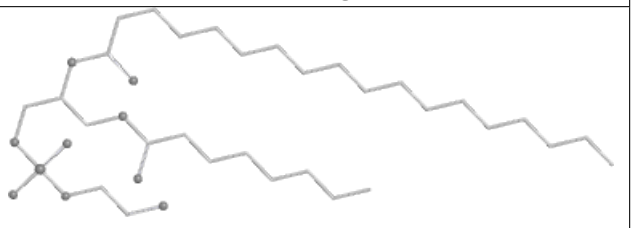
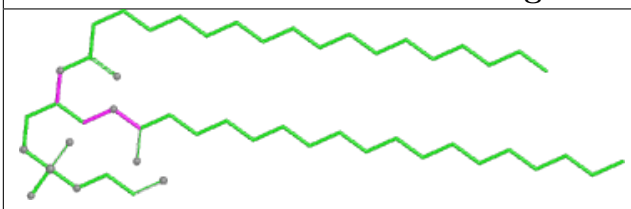
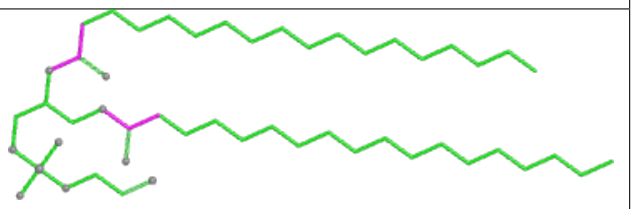


Rings

Ligand 3PE M 602



Bond lengths



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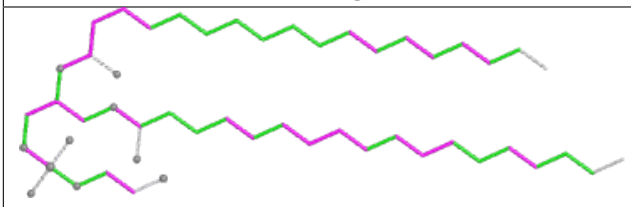

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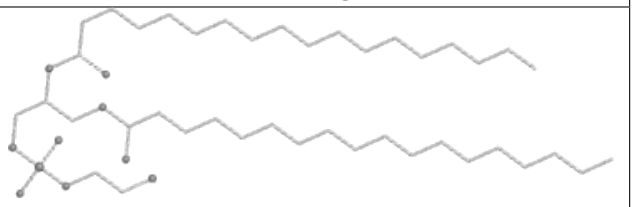
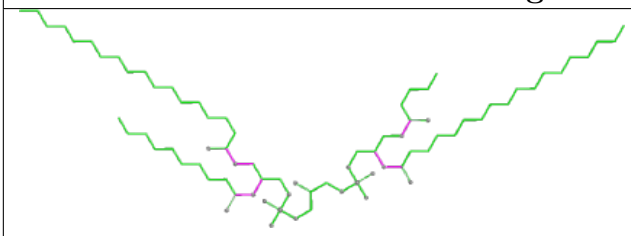


Rings

Ligand CDL L 702



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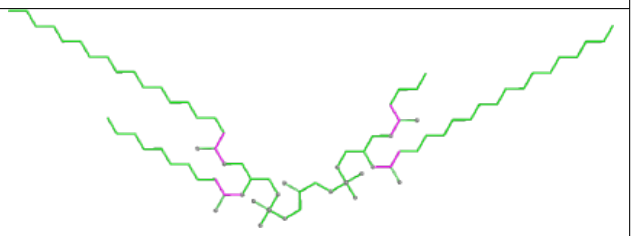
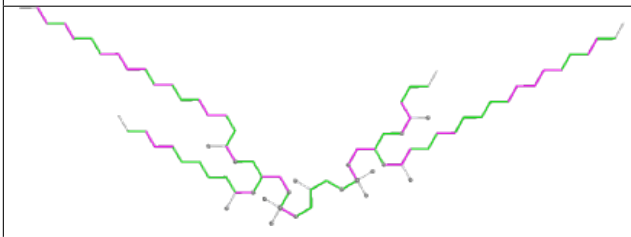


Bond angles



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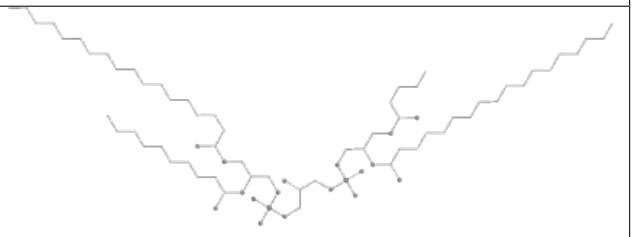
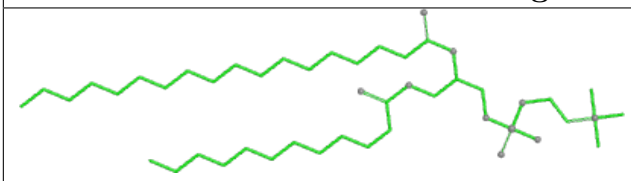
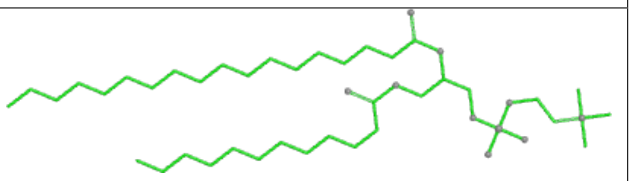
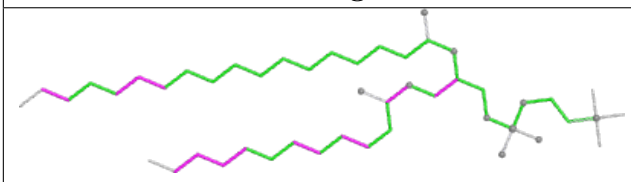
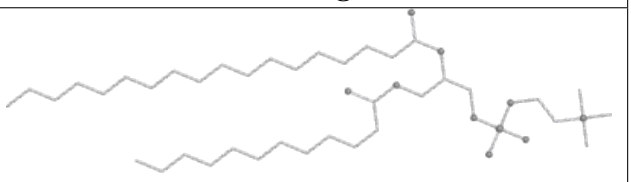
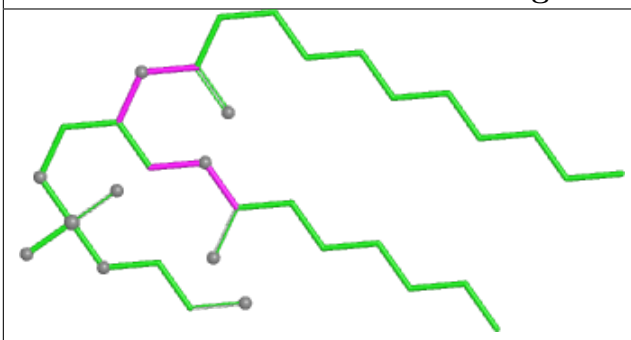
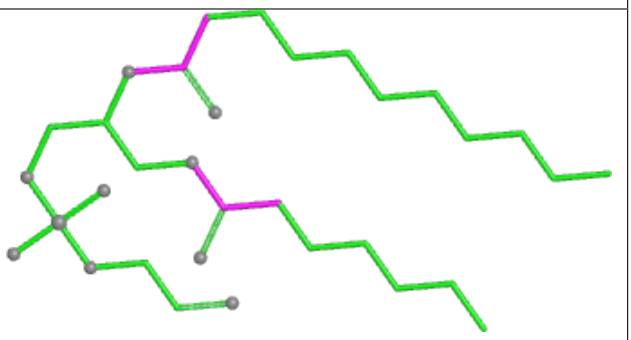
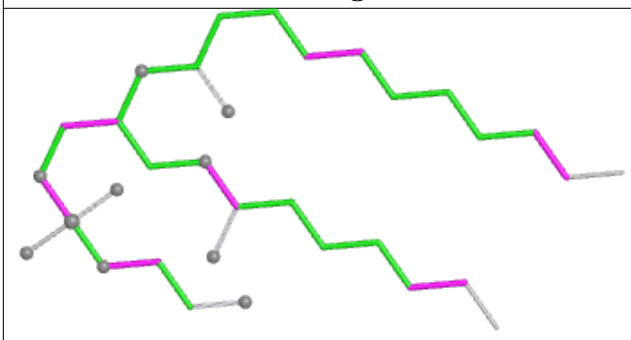
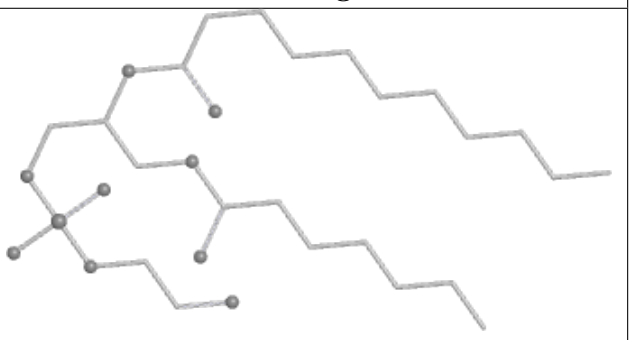
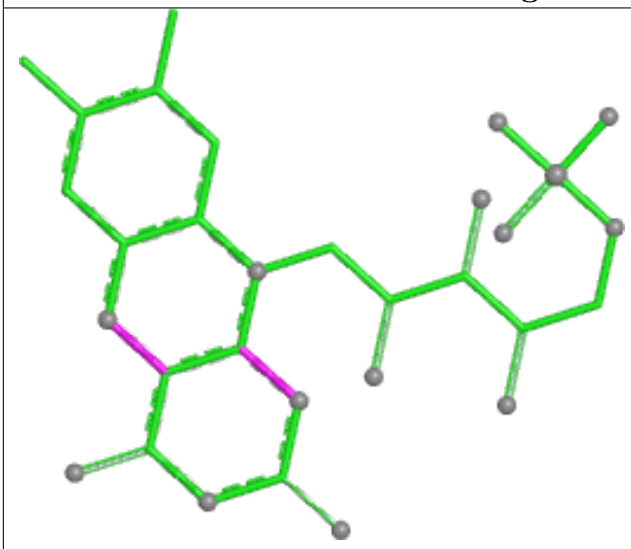


Rings

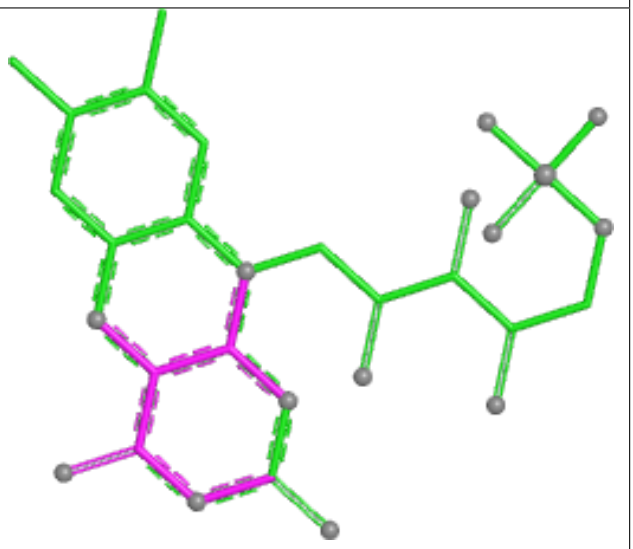
Ligand PC1 J 201	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE b 101	
 Bond lengths	 Bond angles
 Torsions	 Rings

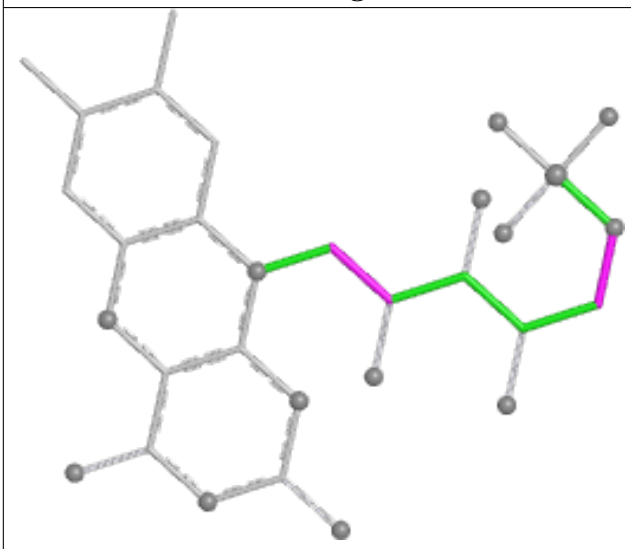
Ligand FMN F 502



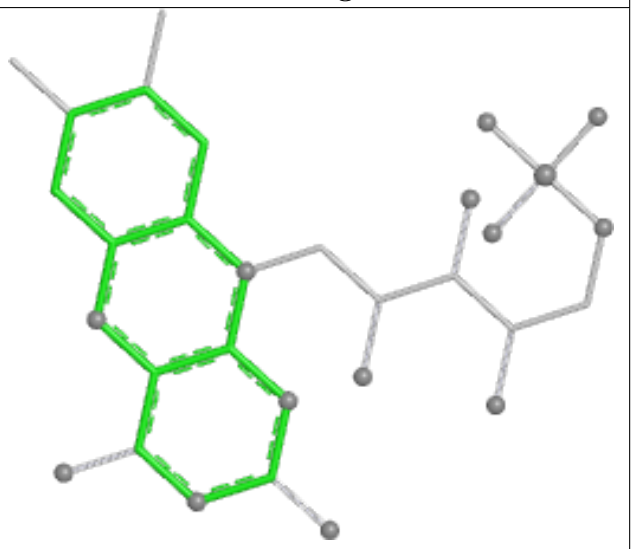
Bond lengths



Bond angles

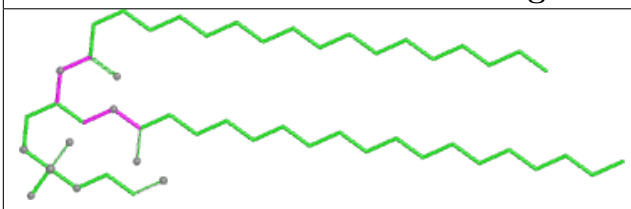


Torsions



Rings

Ligand 3PE Y 202



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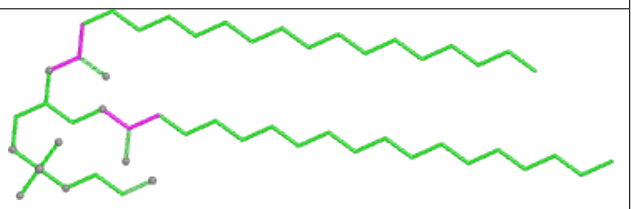
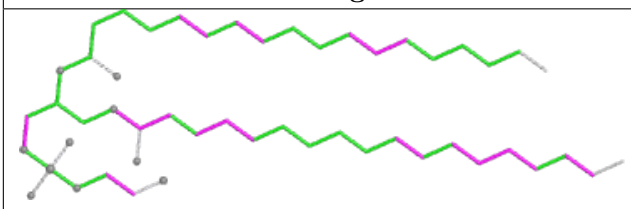


Bond angles



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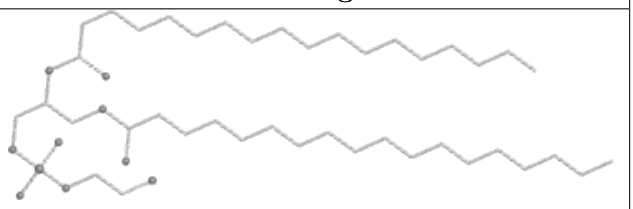
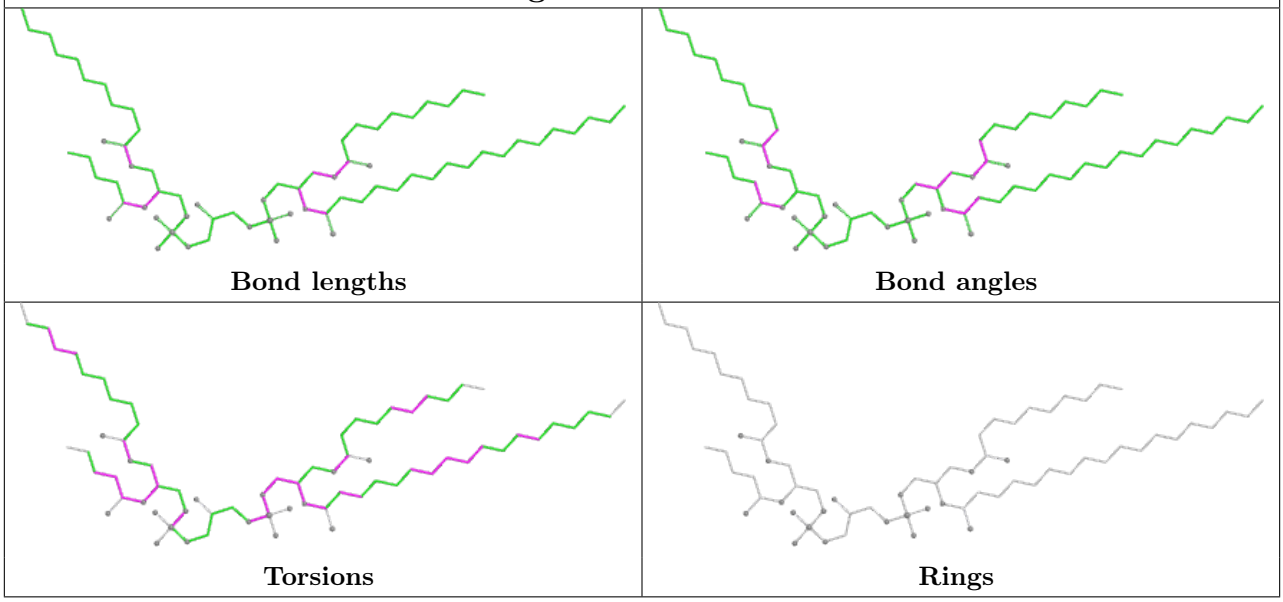


Rings

Ligand CDL h 201



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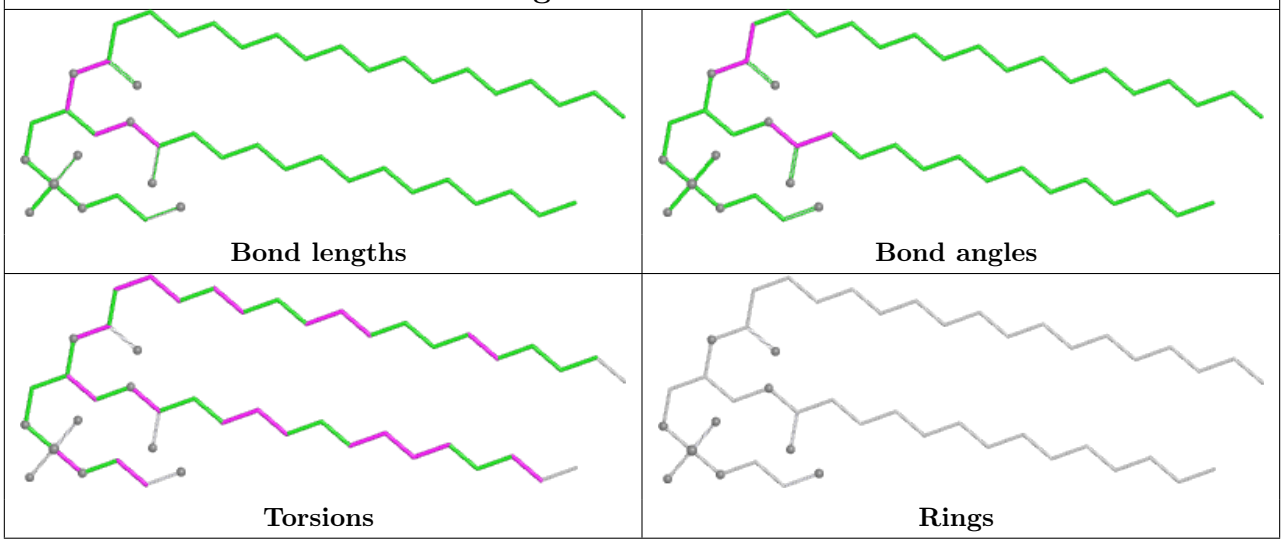
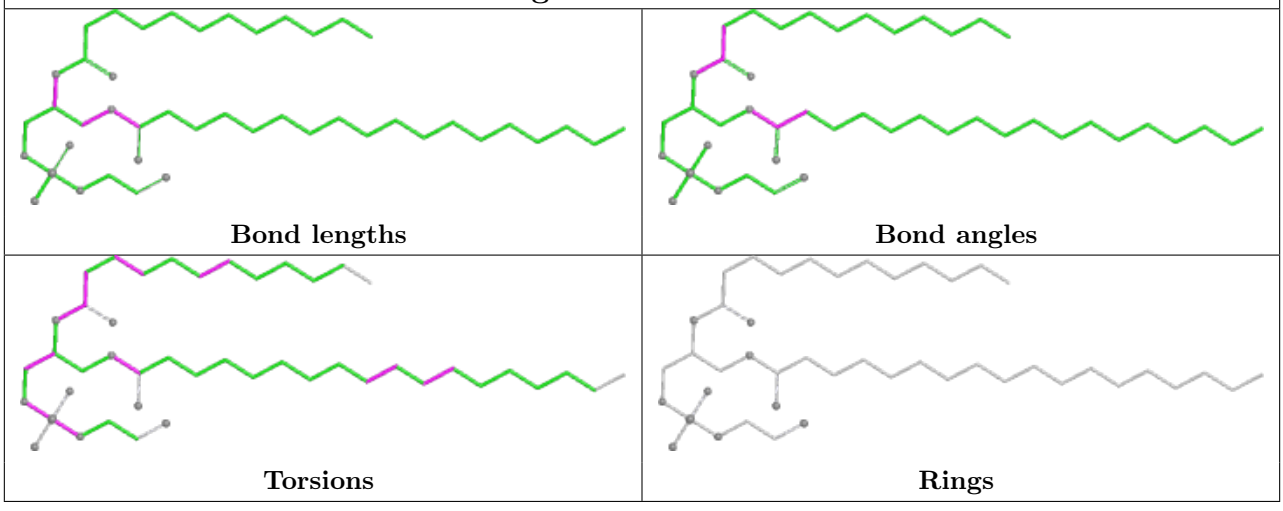


Ligand 3PE L 703



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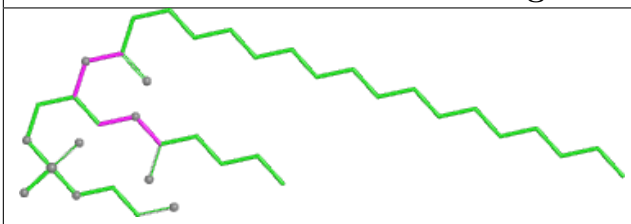
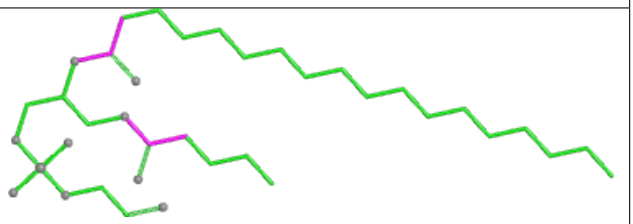
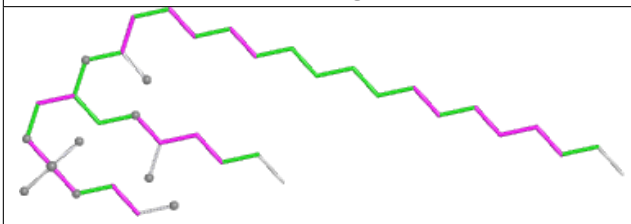


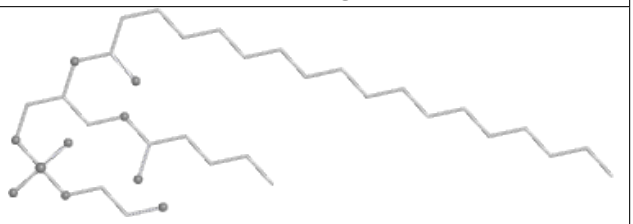
Bond lengths



Bond angles

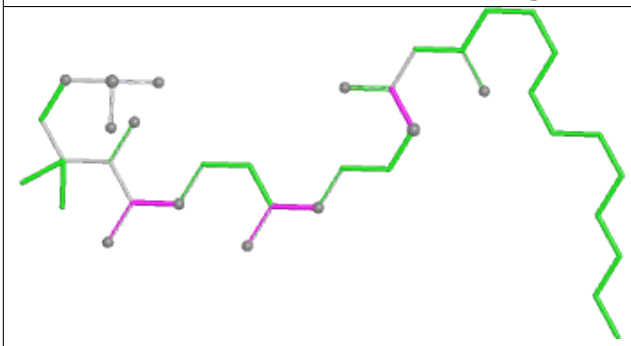


Torsions

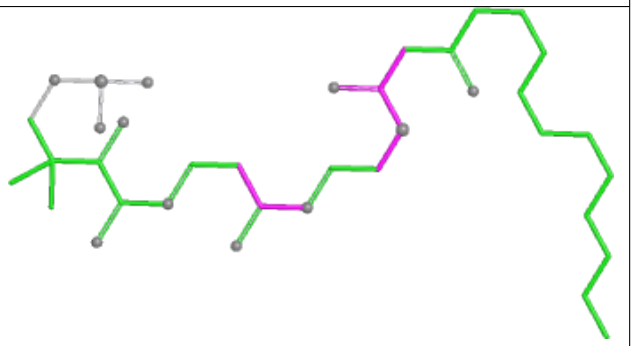


Rings

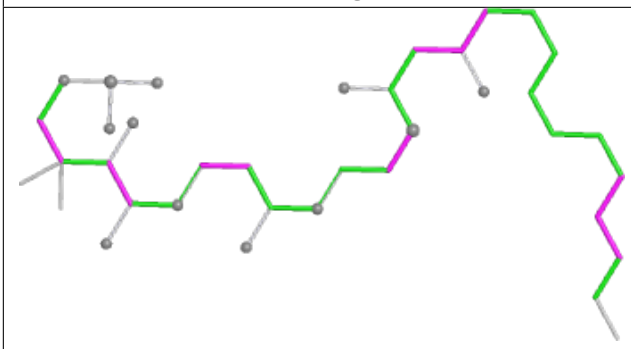
Ligand EHZ T 101



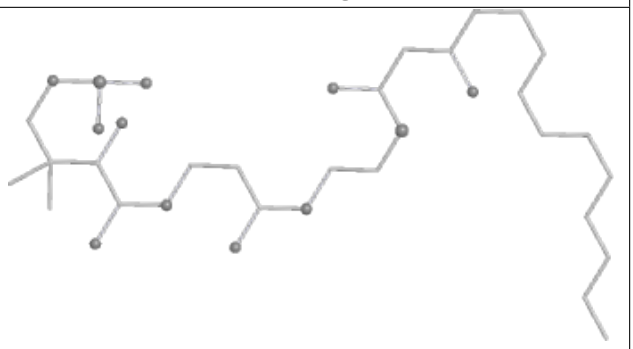
Bond lengths



Bond angles

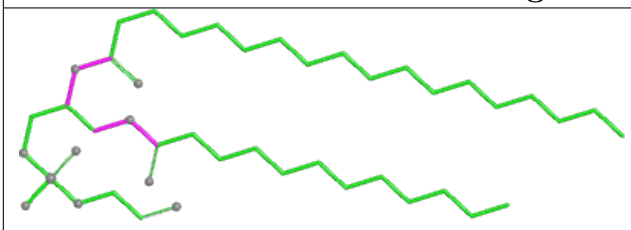


Torsions

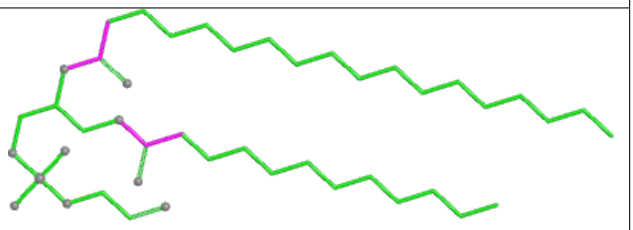


Rings

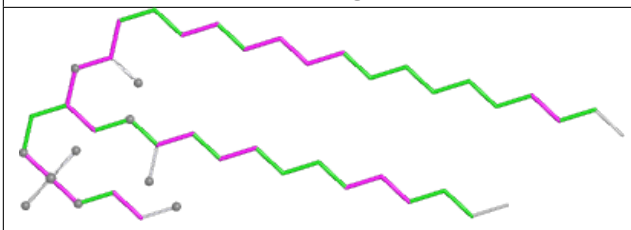
Ligand 3PE m 201



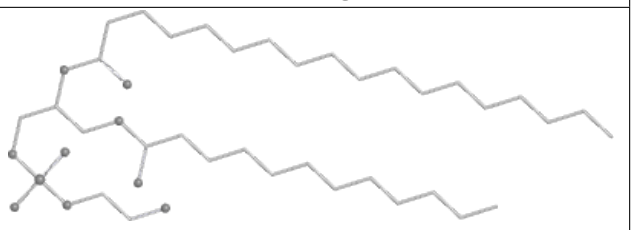
Bond lengths



Bond angles

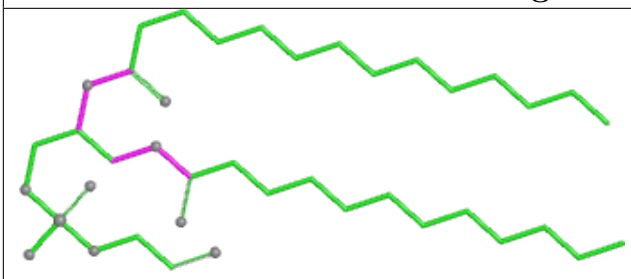


Torsions

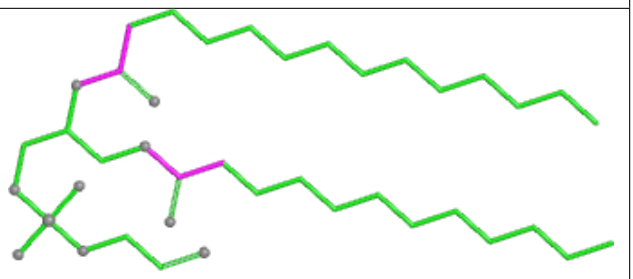


Rings

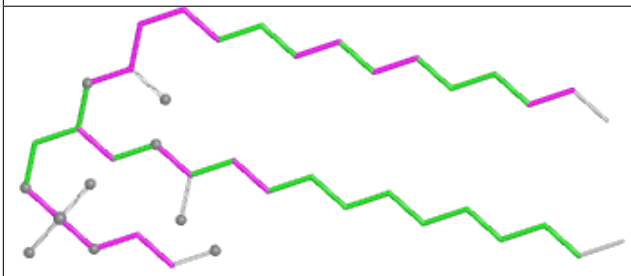
Ligand 3PE d 201



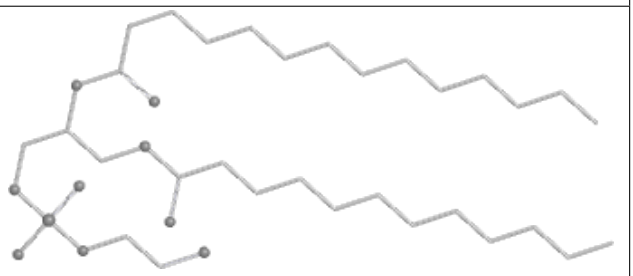
Bond lengths



Bond angles

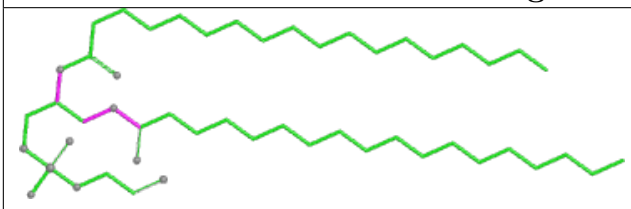


Torsions



Rings

Ligand 3PE H 503



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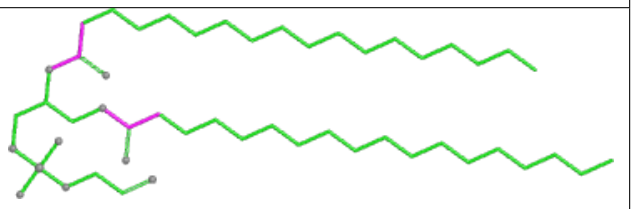
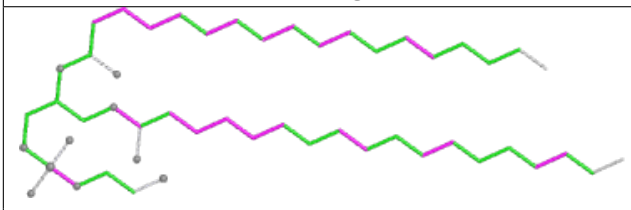


Bond angles



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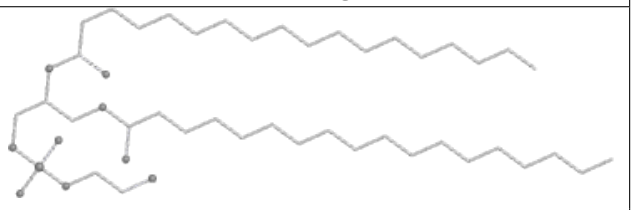
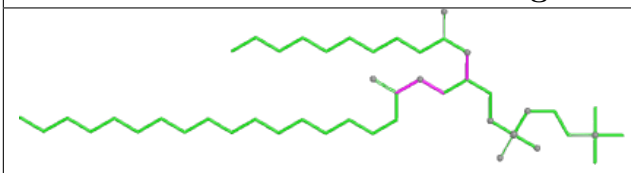
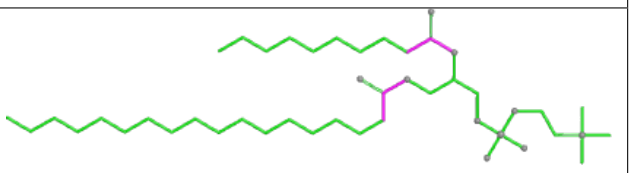
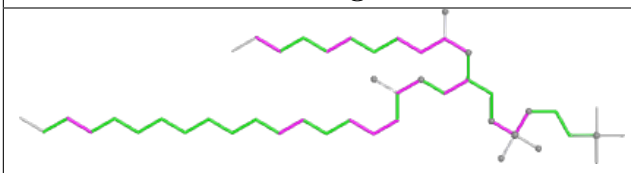
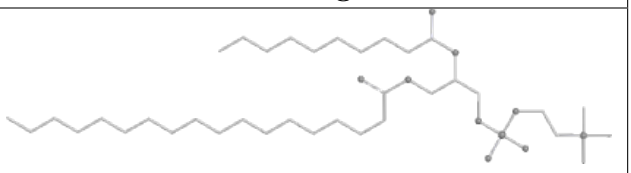
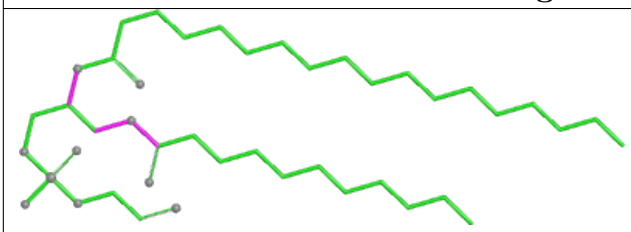
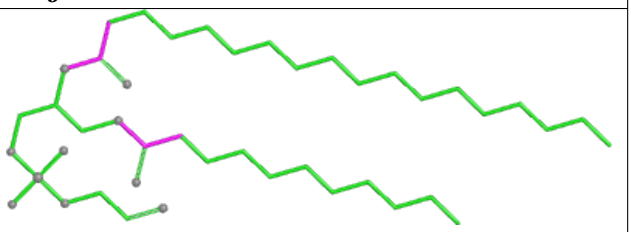
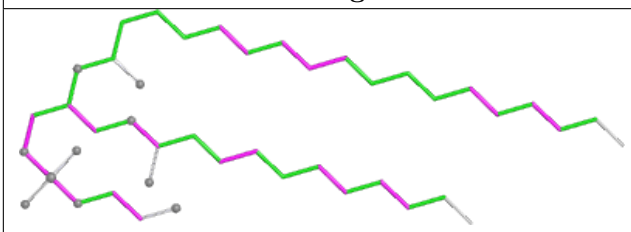
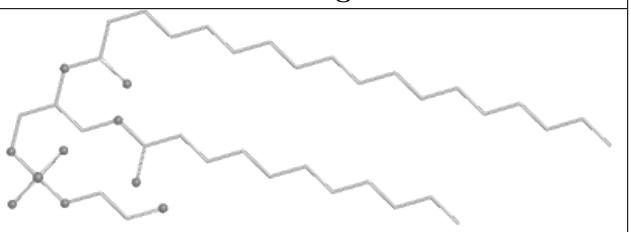
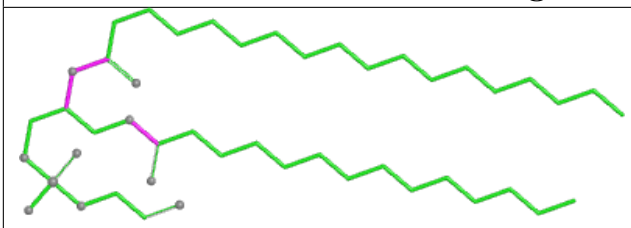
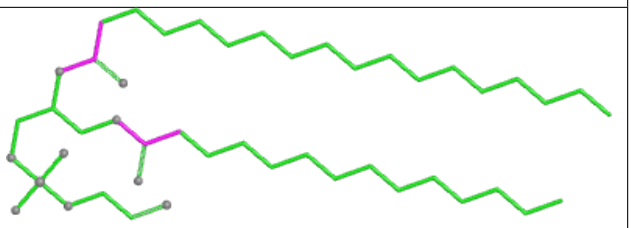
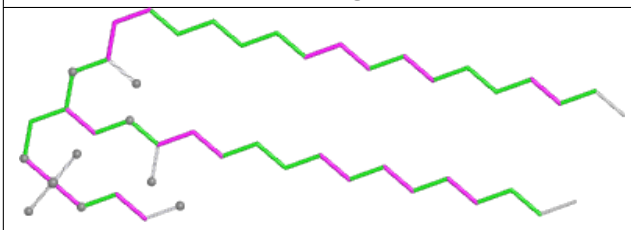
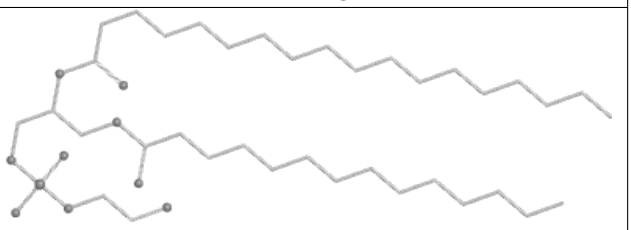


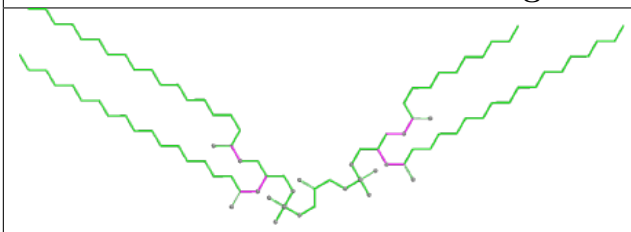
Rings

Ligand PC1 d 202	
 Bond lengths	 Bond angles
 Torsions	 Rings

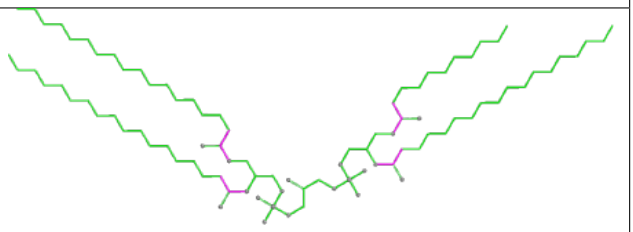
Ligand 3PE j 101	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE A 202	
 Bond lengths	 Bond angles
 Torsions	 Rings

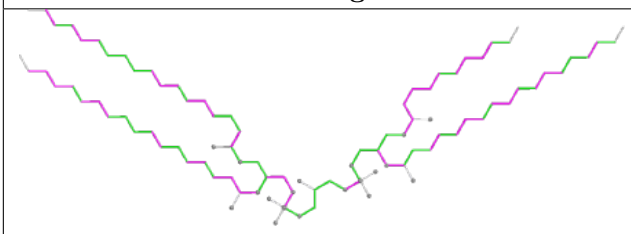
Ligand CDL X 201



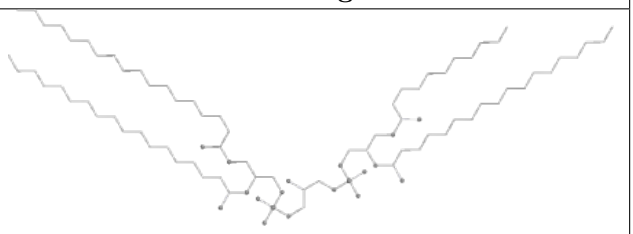
Bond lengths



Bond angles

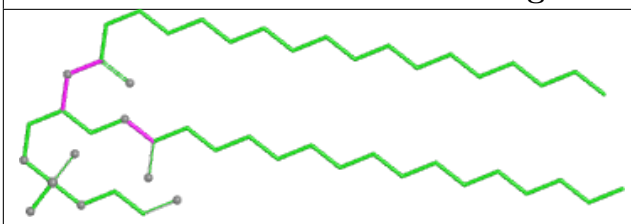


Torsions



Rings

Ligand 3PE N 902



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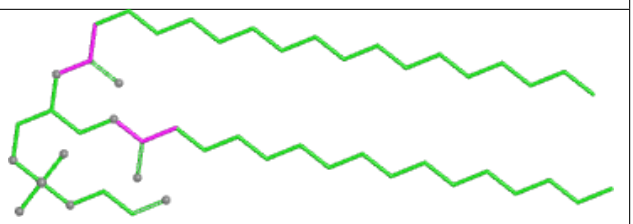
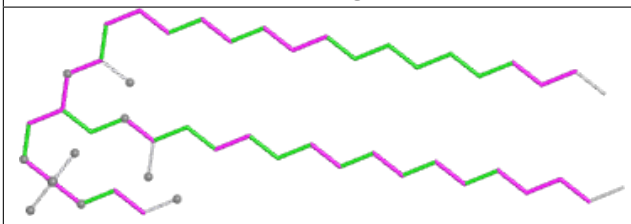


Bond angles



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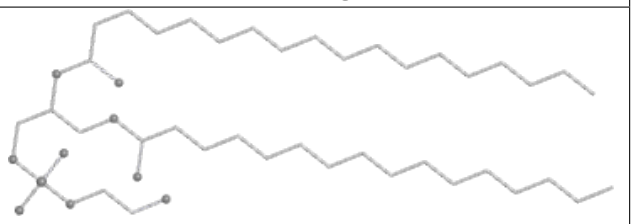
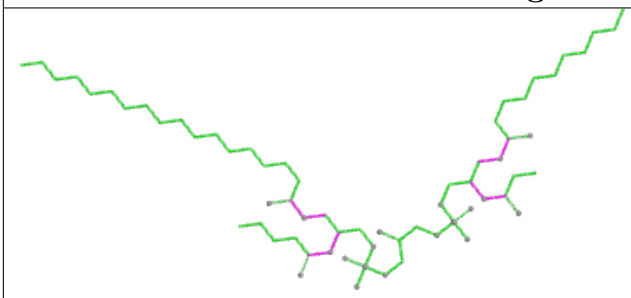
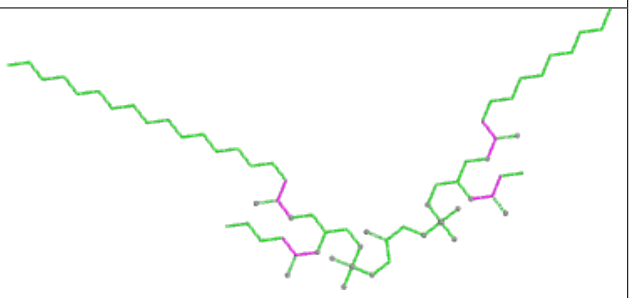
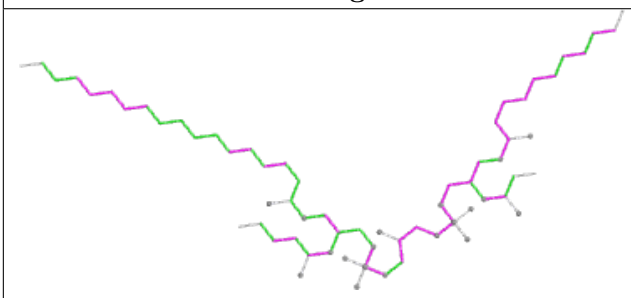
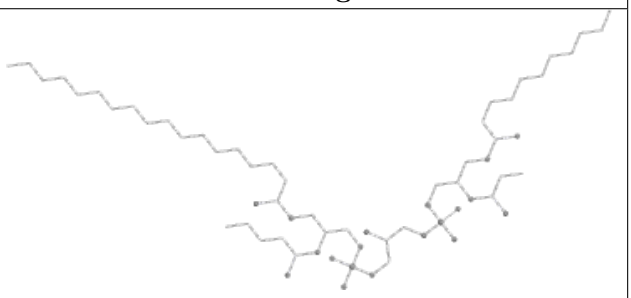
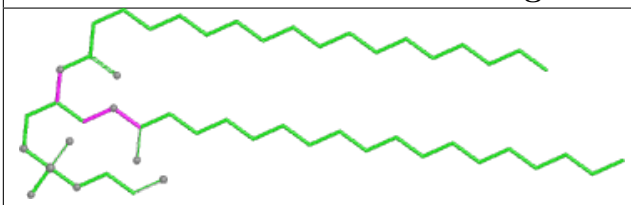
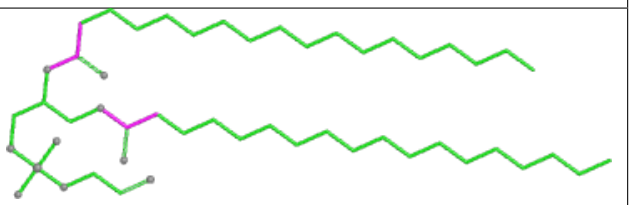
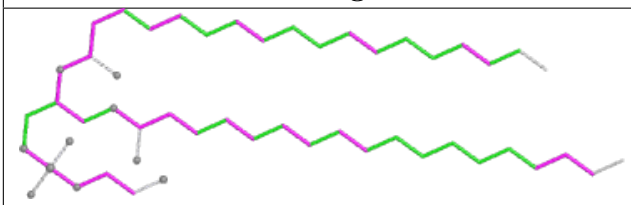
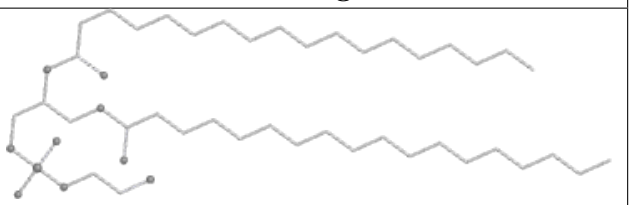
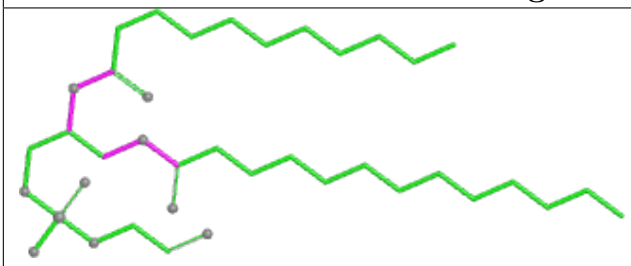
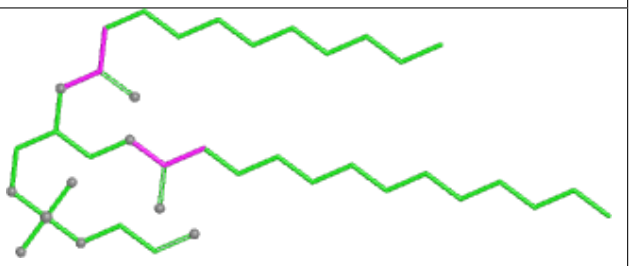
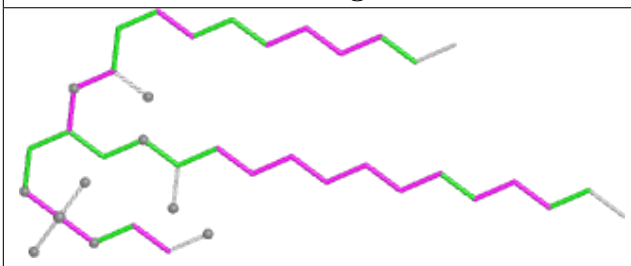
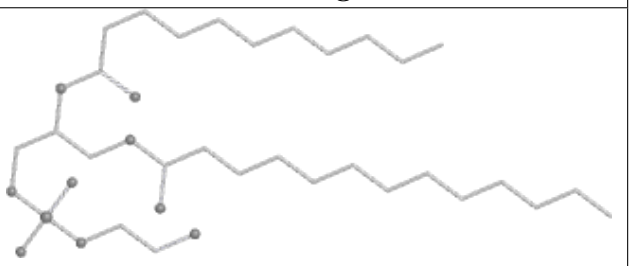
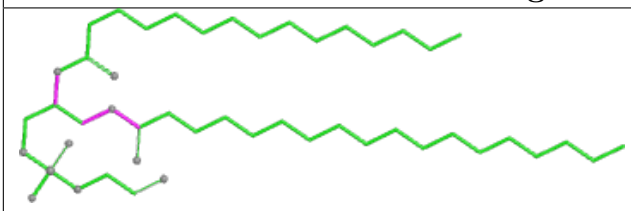
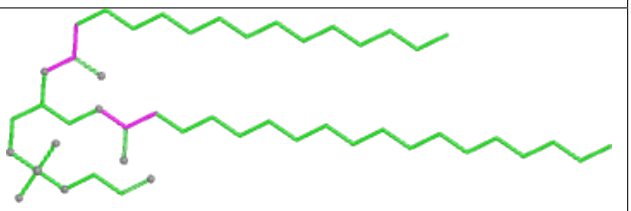
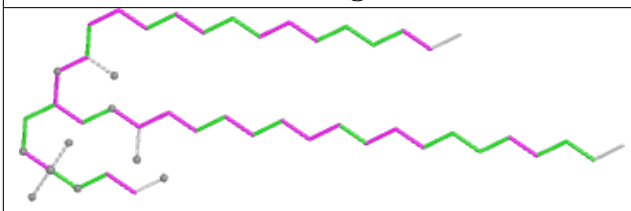
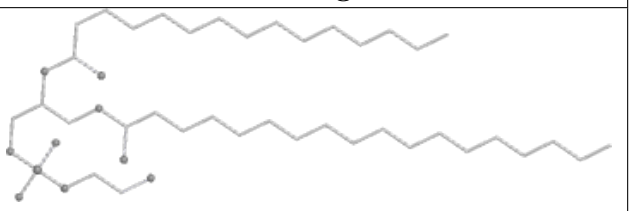


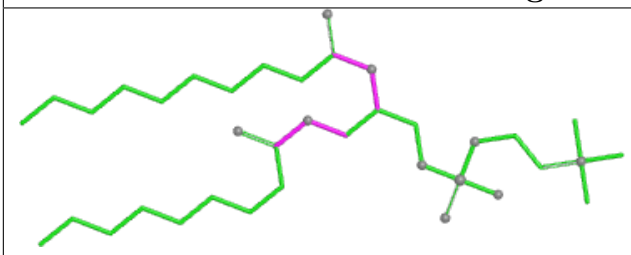
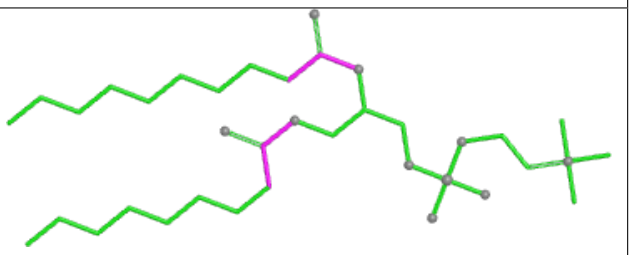
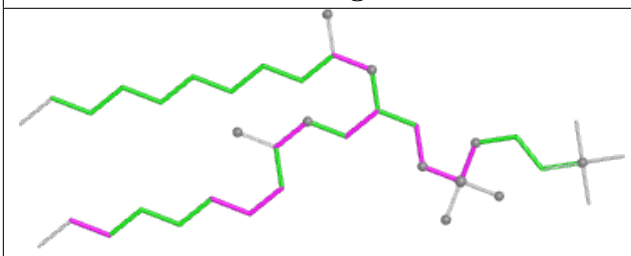
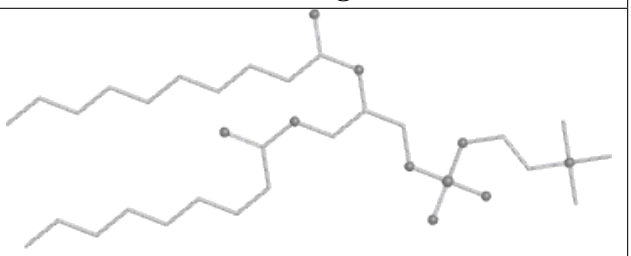
Rings

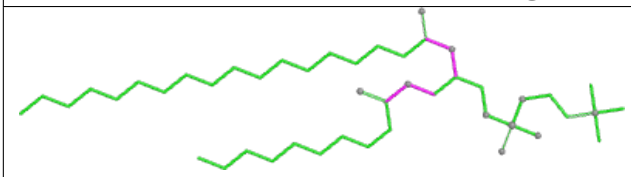
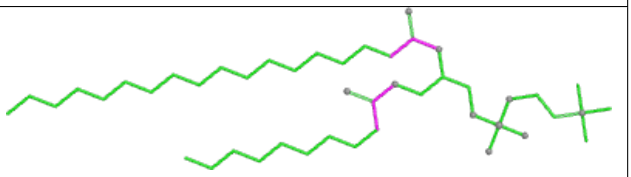
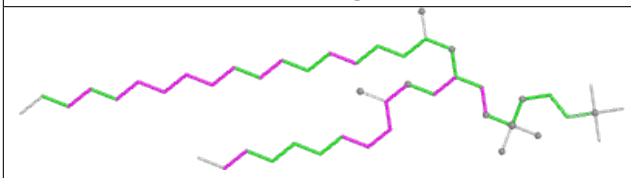
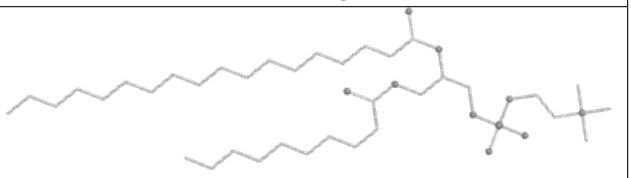
Ligand CDL d 203	
 Bond lengths	 Bond angles
 Torsions	 Rings

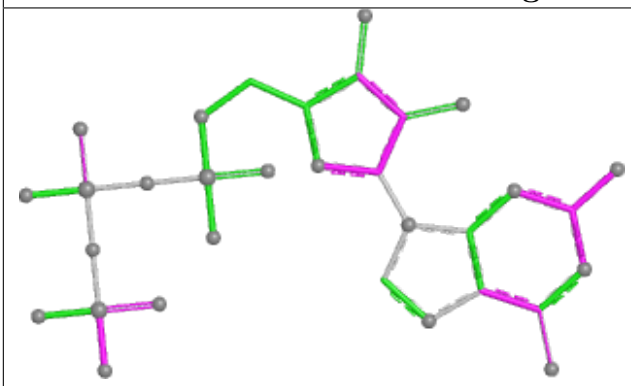
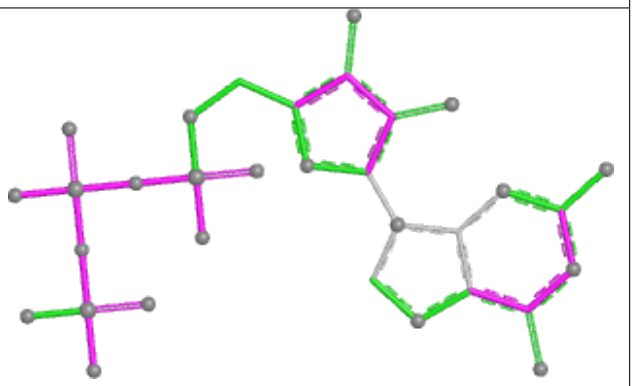
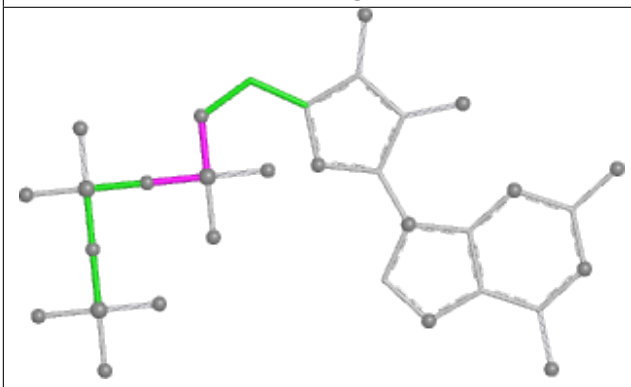
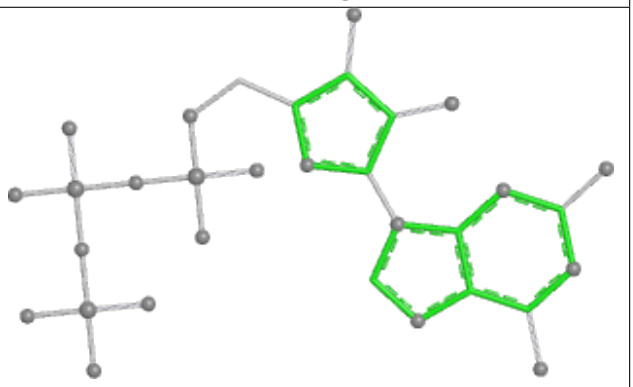
Ligand 3PE M 604	
 Bond lengths	 Bond angles
 Torsions	 Rings

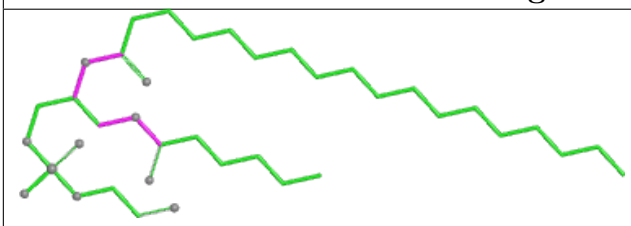
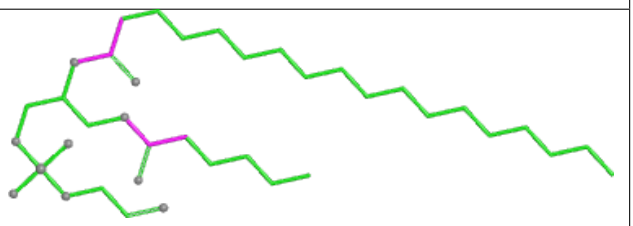
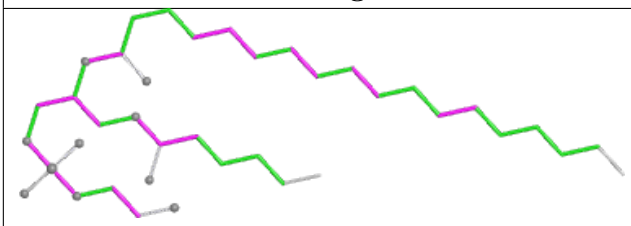
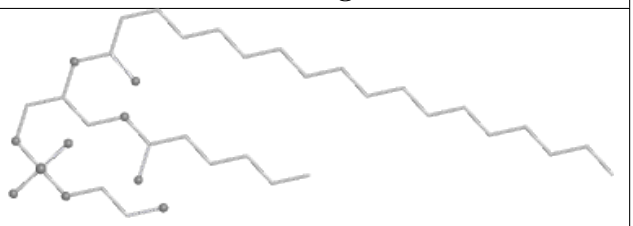
Ligand 3PE Y 203	
 Bond lengths	 Bond angles
 Torsions	 Rings

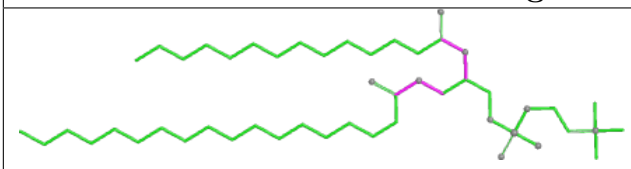
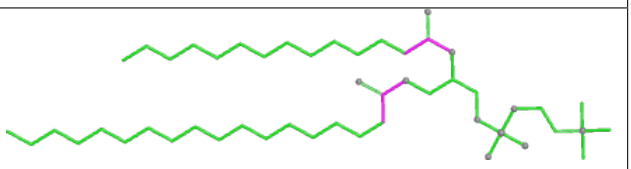
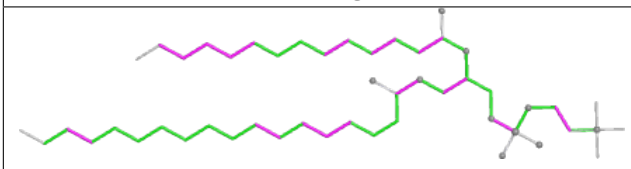
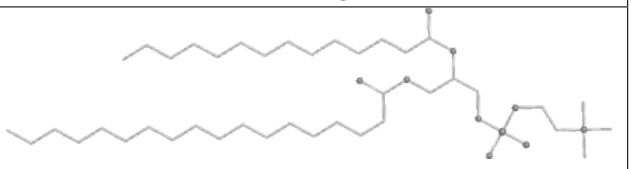
Ligand 3PE K 101	
 Bond lengths	 Bond angles
 Torsions	 Rings

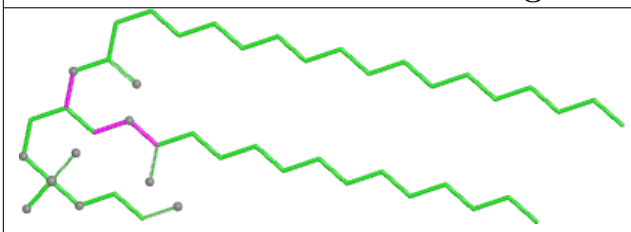
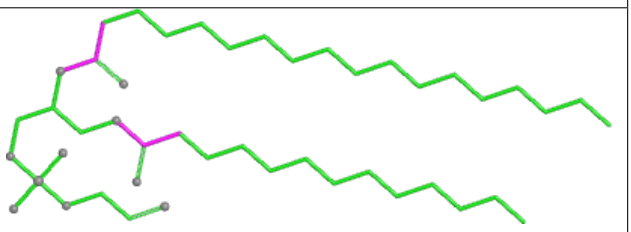
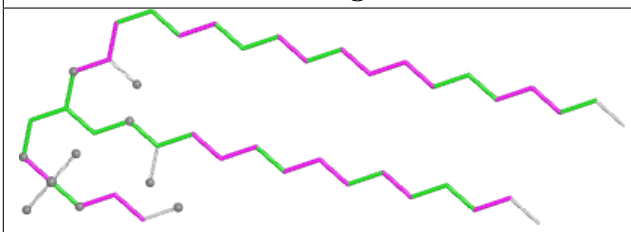
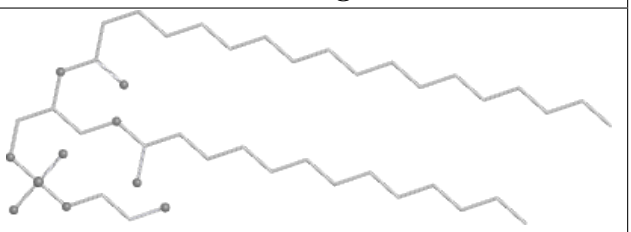
Ligand PC1 N 904	
 Bond lengths	 Bond angles
 Torsions	 Rings

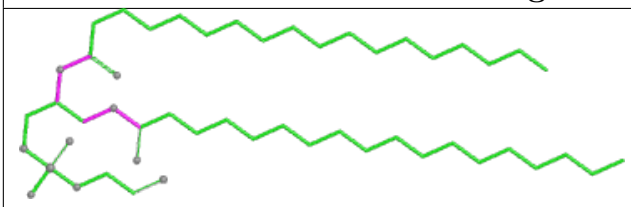
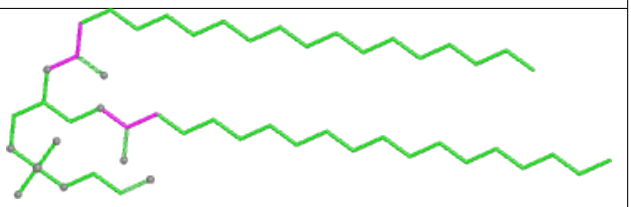
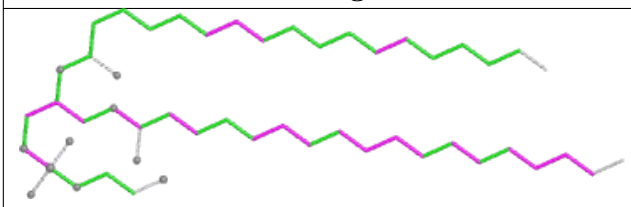
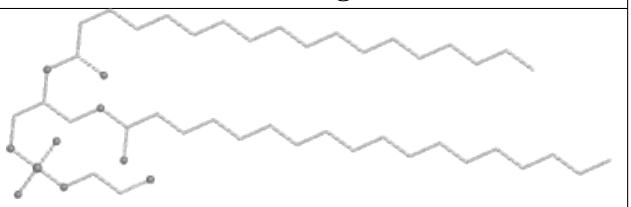
Ligand PC1 M 603	
 Bond lengths	 Bond angles
 Torsions	 Rings

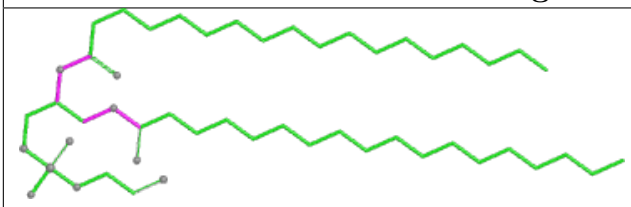
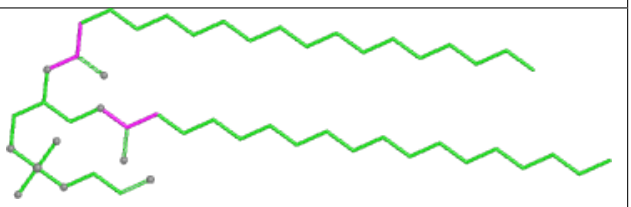
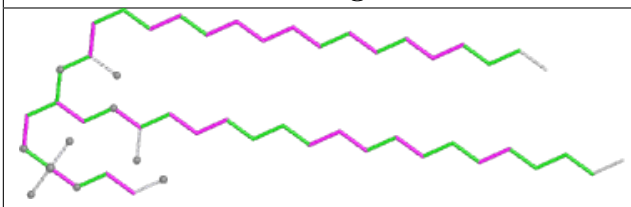
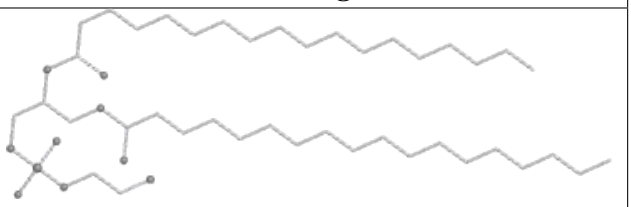
Ligand GTP O 401	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE Y 204	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand PC1 A 203	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE M 601	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE Y 205	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand 3PE h 203	
 Bond lengths	 Bond angles
 Torsions	 Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

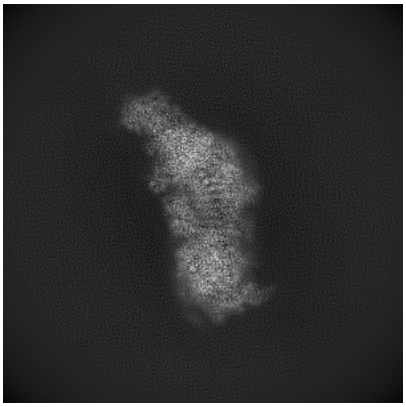
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14134. These allow visual inspection of the internal detail of the map and identification of artifacts.

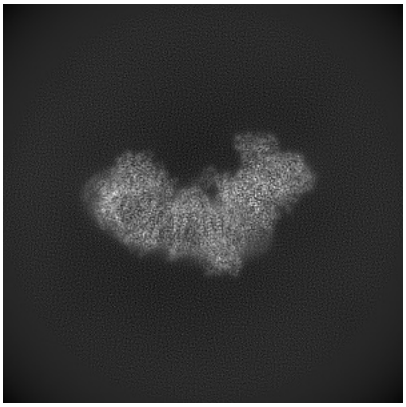
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

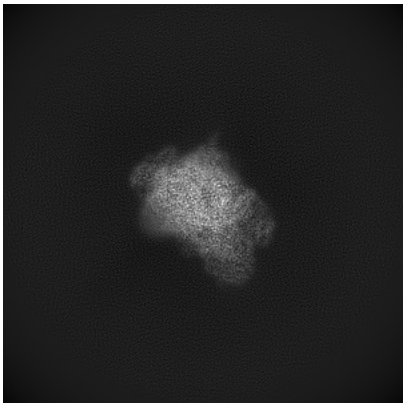
6.1.1 Primary map



X



Y

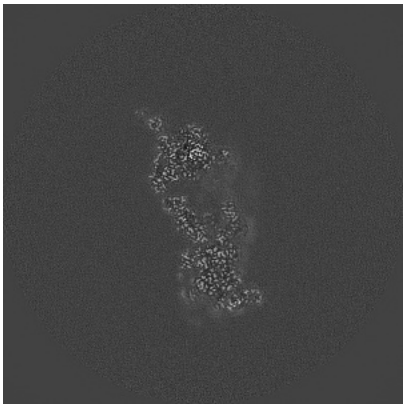


Z

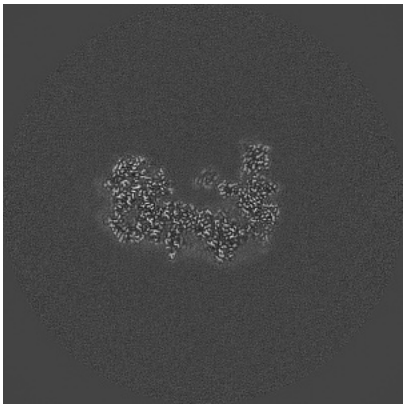
The images above show the map projected in three orthogonal directions.

6.2 Central slices

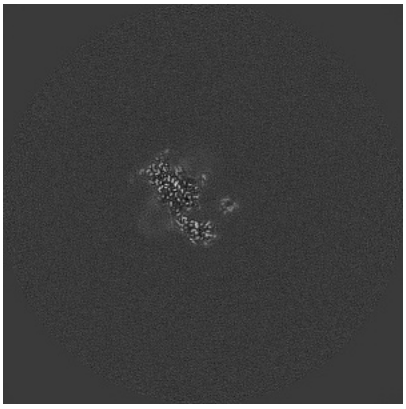
6.2.1 Primary map



X Index: 320



Y Index: 320

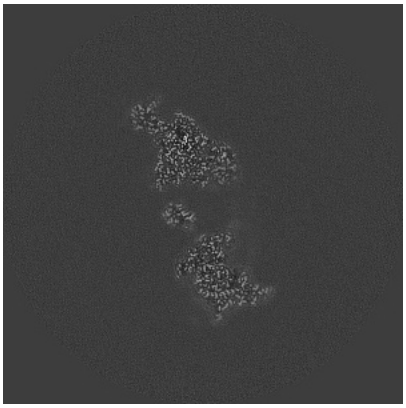


Z Index: 320

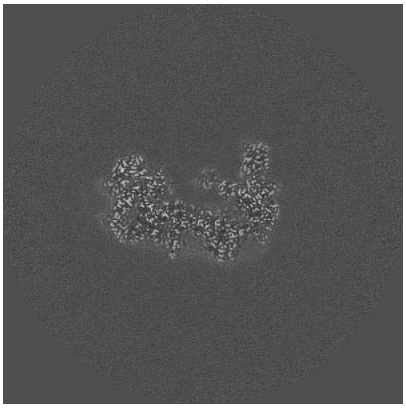
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

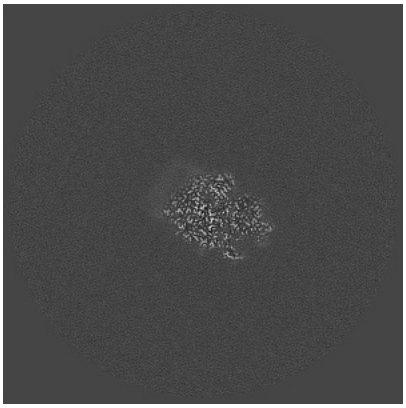
6.3.1 Primary map



X Index: 337



Y Index: 319



Z Index: 404

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 5.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

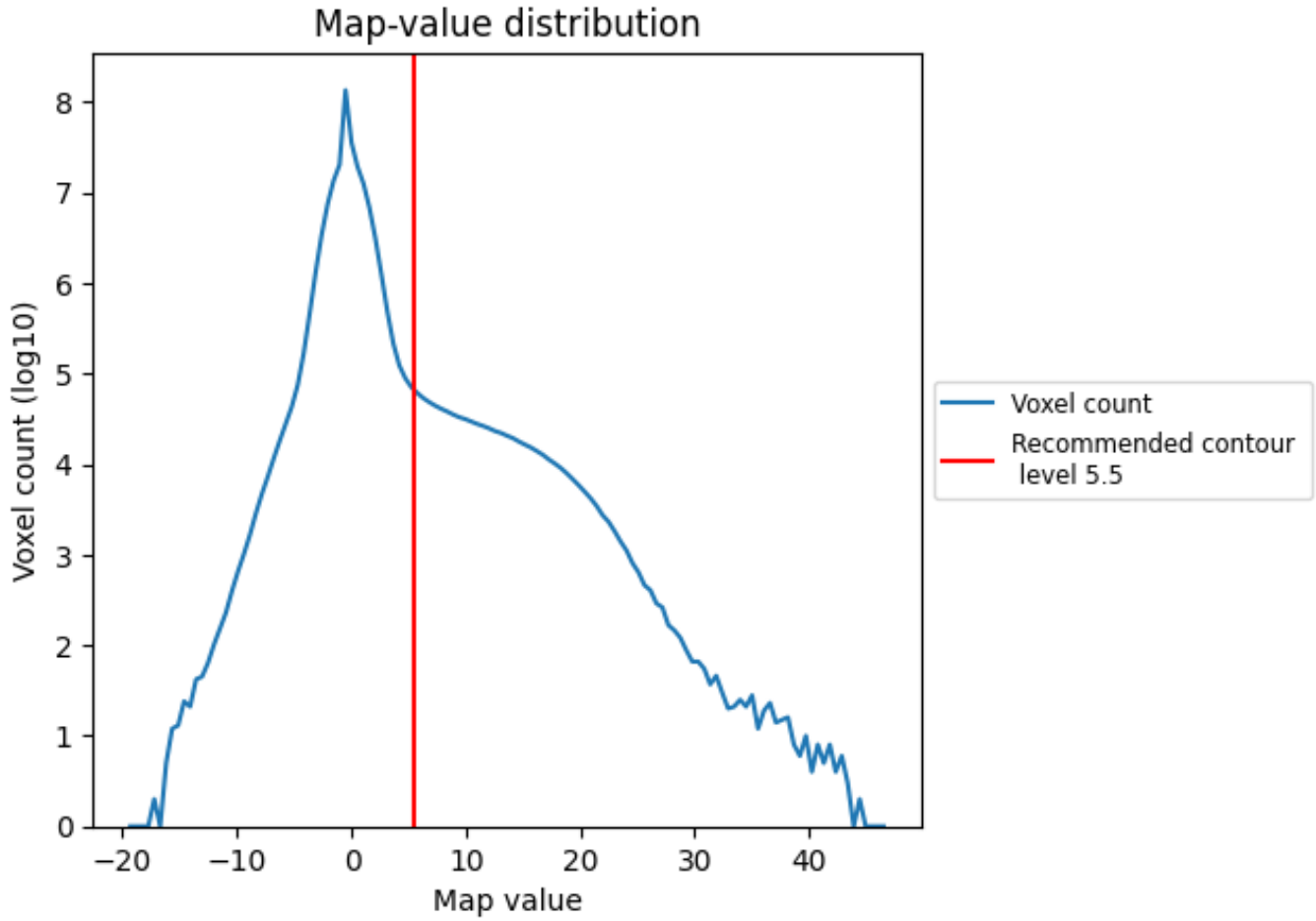
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

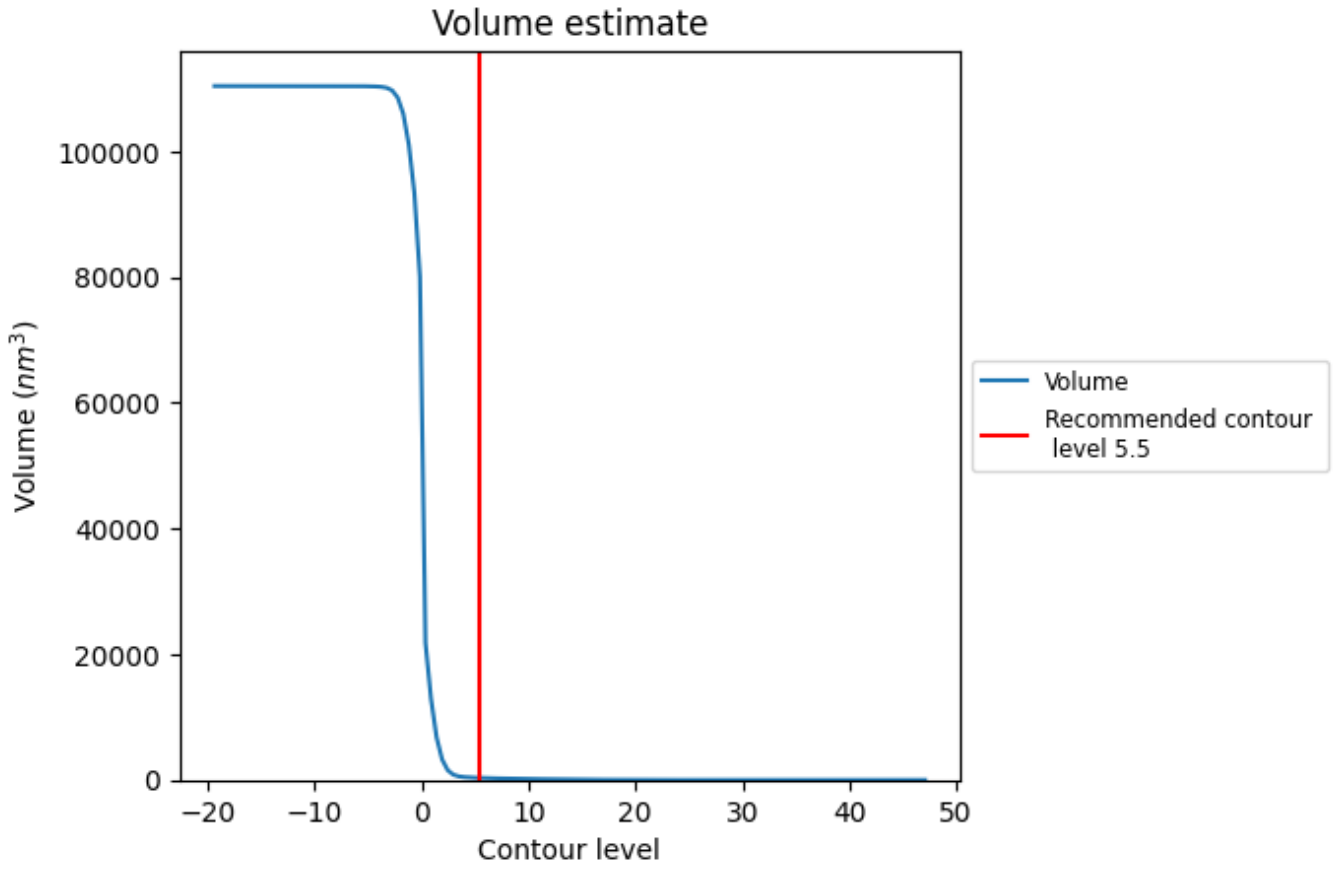
This section contains the results of statistical analysis of the map.

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.

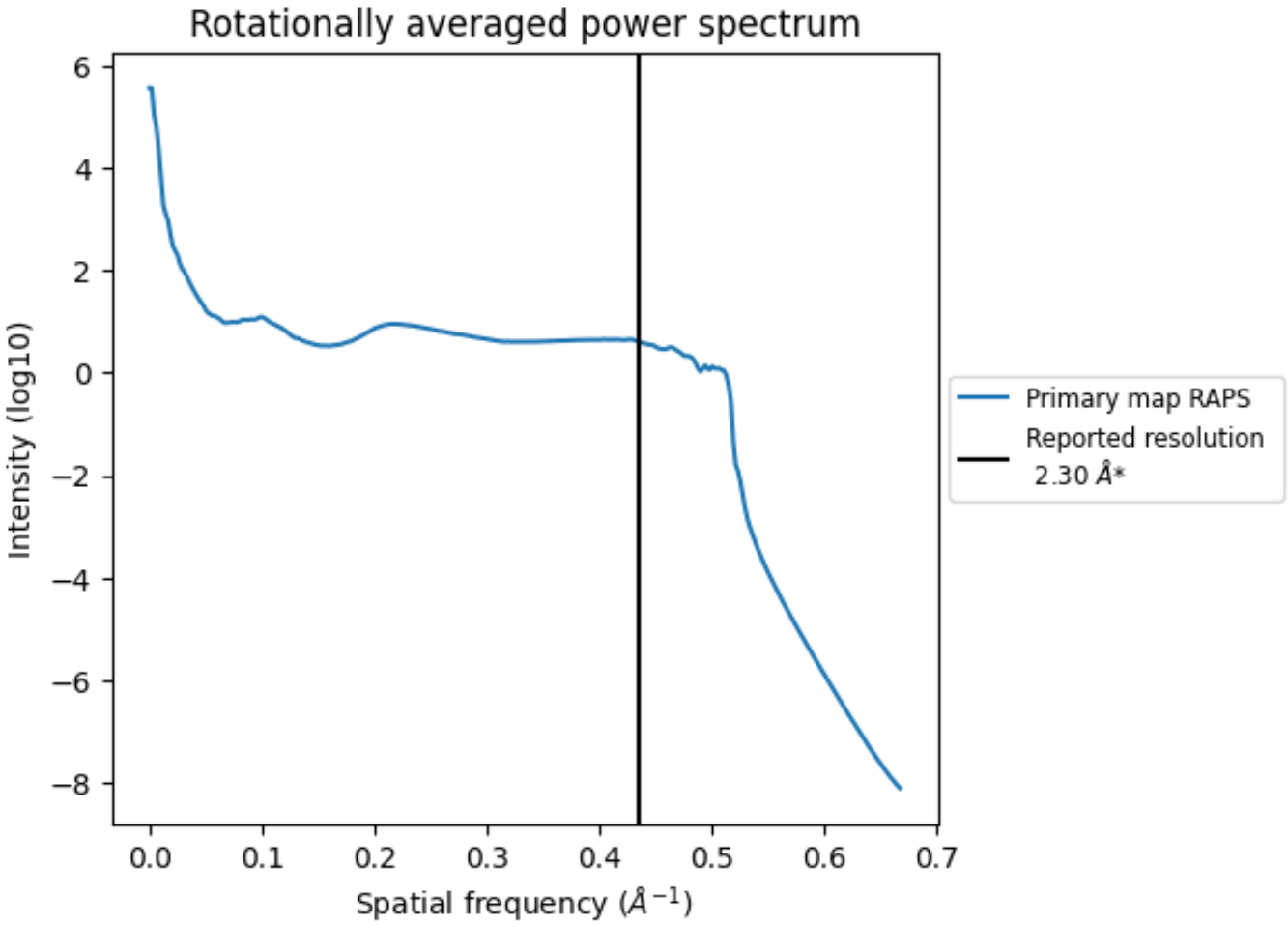
7.2 Volume estimate



The volume at the recommended contour level is 324 nm^3; this corresponds to an approximate mass of 293 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 0.435 $Å^{-1}$

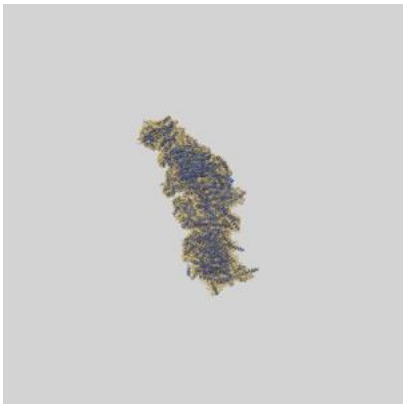
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

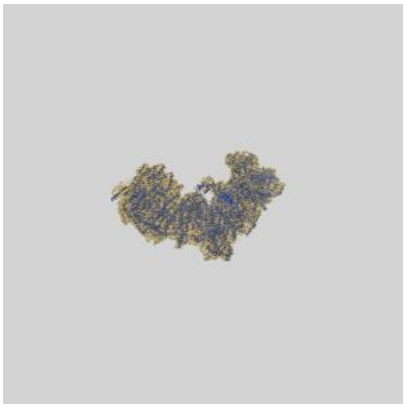
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14134 and PDB model 7QSM. Per-residue inclusion information can be found in section 3 on page 25.

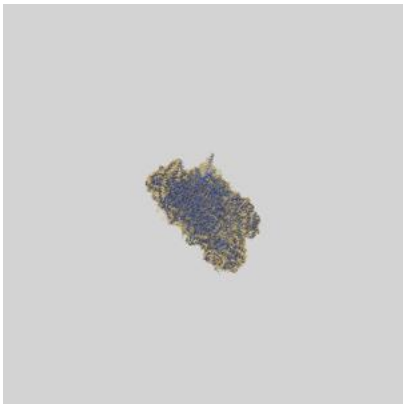
9.1 Map-model overlay



X



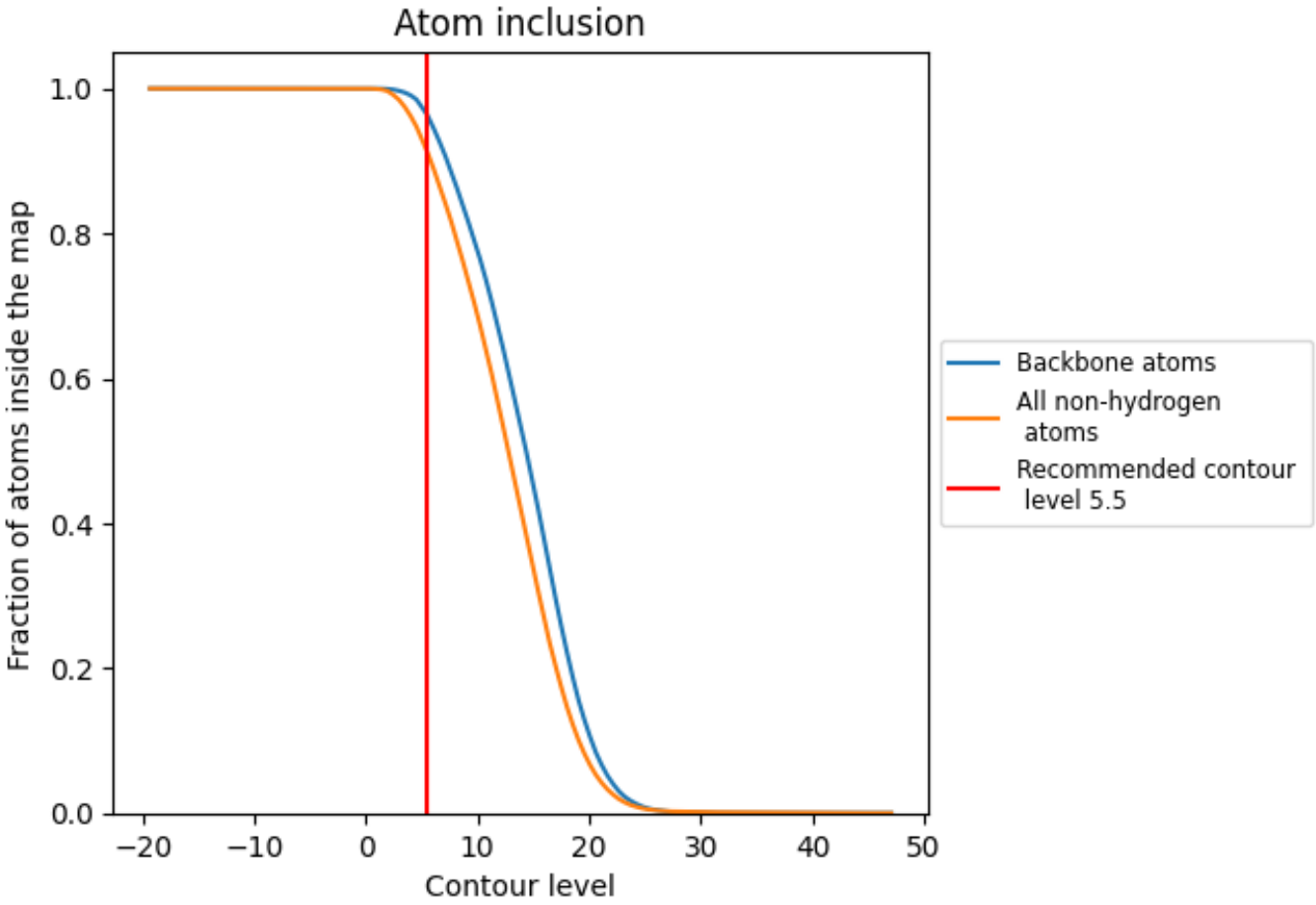
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 5.5 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 Atom inclusion (i)



At the recommended contour level, 96% of all backbone atoms, 91% of all non-hydrogen atoms, are inside the map.