Full wwPDB EM Validation Report ⓘ

Feb 4, 2023 – 09:04 am GMT

PDB ID	:	7R4D
EMDB ID	:	EMD-14297
Title	:	Bovine complex I in the presence of IM1761092, deactive class vi (Composite map)
Authors	:	Bridges, H.R.; Blaza, J.N.; Yin, Z.; Chung, I.; Hirst, J.
Deposited on	:	2022-02-08
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:

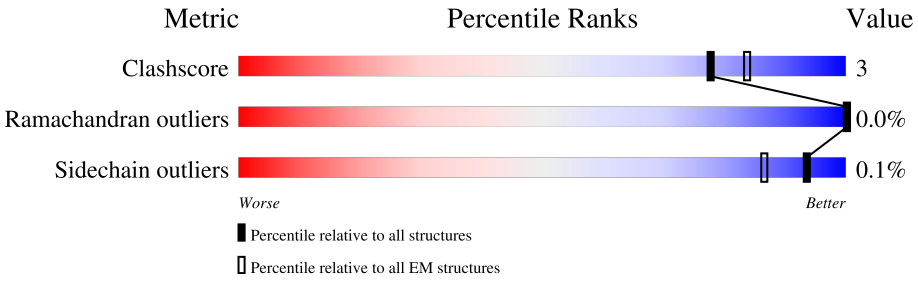
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

1 Overall quality at a glance

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

The reported resolution of this entry is 2.30 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)
Clashscore	158937	4297
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	72% 14% 14%
2	B	216	64% 7% 29%
3	C	266	76% 23%
4	D	463	84% 5% 10%
5	E	249	83% 14%
6	F	464	86% 7% 8%
7	G	727	89% 5% 5%
8	H	318	85% 12%

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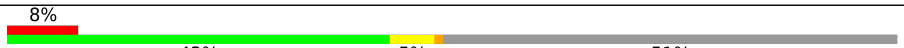
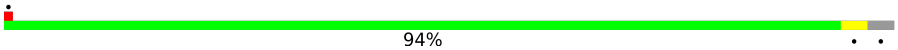
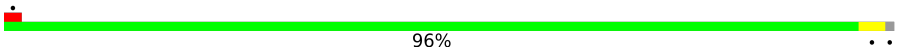
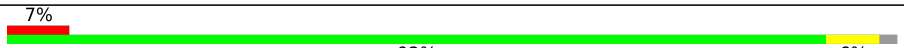
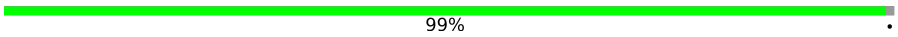
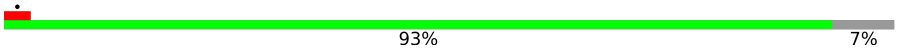
Mol	Chain	Length	Quality of chain
9	I	212	
10	J	175	
11	K	98	
12	L	606	
13	M	459	
14	N	347	
15	O	343	
16	P	380	
17	Q	175	
18	R	124	
19	S	99	
20	T	156	
20	U	156	
21	V	116	
22	W	128	
23	X	172	
24	Y	141	
25	Z	144	
26	a	70	
27	b	84	
28	c	76	
29	d	120	
30	e	106	
31	f	57	
32	g	154	

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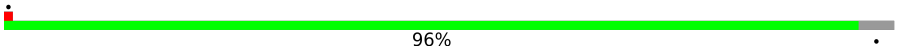
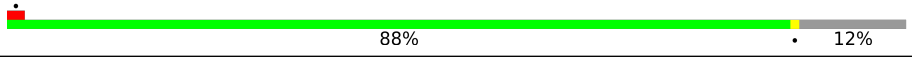
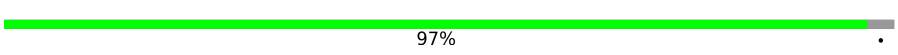
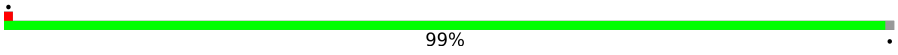
Mol	Chain	Length	Quality of chain
33	h	189	
34	i	127	
35	j	108	
36	k	98	
37	l	186	
38	m	129	
39	n	179	
40	o	137	
41	p	176	
42	q	145	
43	r	113	
44	s	109	

2 Entry composition

There are 60 unique types of molecules in this entry. The entry contains 68004 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	99	799	547	116	131	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	154	1230	786	220	210	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	206	1714	1107	295	309	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	416	3362	2149	578	610	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	213	Total	C	N	O	S	0	0
			1655	1057	277	311	10		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	429	Total	C	N	O	S	0	0
			3301	2080	589	612	20		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	688	Total	C	N	O	S	0	0
			5279	3307	920	1013	39		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	309	Total	C	N	O	S	0	0
			2440	1636	375	406	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	174	Total	C	N	O	S	0	0
			1337	902	189	234	12		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	96	Total	C	N	O	S	0	0
			730	478	109	128	15		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	592	Total	C	N	O	S	0	0
			4695	3124	722	806	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	290	Total	C	N	O	S	0	0
			2305	1474	416	410	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	125	Total	C	N	O	S	0	0
			1016	641	181	191	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
18	R	94	Total	C	N	O	S	0	0
			720	442	134	141	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	83	Total	C	N	O	S	0	0
			669	419	125	123	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	76	Total	C	N	O	S	0	0
			612	393	90	124	5		
20	U	84	Total	C	N	O	S	0	0
			681	439	100	137	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
21	V	112	Total	C	N	O	S	0	0
			911	589	154	165	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	114	Total	C	N	O	S	0	0
			971	622	180	165	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	141	Total	C	N	O	S	0	0
			1152	740	201	202	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
26	a	69	Total	C	N	O	S	0	0
			561	361	103	92	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	48	Total	C	N	O	0	0
			405	268	69	68		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
29	d	112	Total	C	N	O	S	0	0
			934	613	157	161	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
30	e	95	Total	C	N	O	S	0	0
			799	506	150	137	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
31	f	51	Total	C	N	O	S	0	0
			444	291	78	74	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
32	g	97	Total	C	N	O	S	0	0
			813	523	133	153	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	103	Total	C	N	O	S	0	0
			884	584	149	150	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	79	Total	C	N	O	S	0	0
			638	418	107	111	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
37	l	155	Total	C	N	O	S	0	0
			1304	844	213	239	8		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
38	m	108	Total	C	N	O	0	0
			908	580	161	167		

- 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	0	0
			1487	952	272	256	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
40	o	121	Total	C	N	O	S	0	0
			1043	650	200	184	9		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
41	p	170	Total	C	N	O	S	0	0
			1435	900	265	262	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
42	q	144	Total	C	N	O	S	0	0
			1201	773	215	209	4		

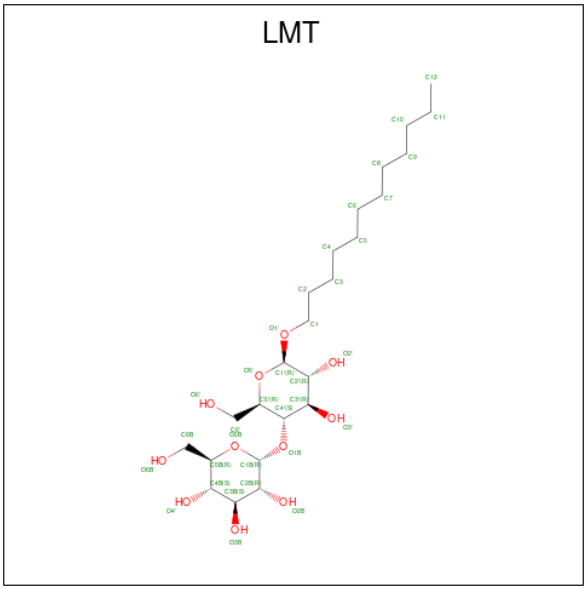
- Molecule 43 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	r	94	Total	C	N	O	S	0	0
			767	485	143	136	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
44	s	43	Total	C	N	O	S	0	0
			364	228	65	70	1		

- Molecule 45 is DODECYL-BETA-D-MALTOSIDE (three-letter code: LMT) (formula: $C_{24}H_{46}O_{11}$).



Mol	Chain	Residues	Atoms			AltConf
45	A	1	Total	C	O	0
			35	24	11	
45	H	1	Total	C	O	0
			35	24	11	
45	J	1	Total	C	O	0
			35	24	11	
45	L	1	Total	C	O	0
			35	24	11	
45	L	1	Total	C	O	0
			35	24	11	
45	M	1	Total	C	O	0
			35	24	11	
45	N	1	Total	C	O	0
			35	24	11	

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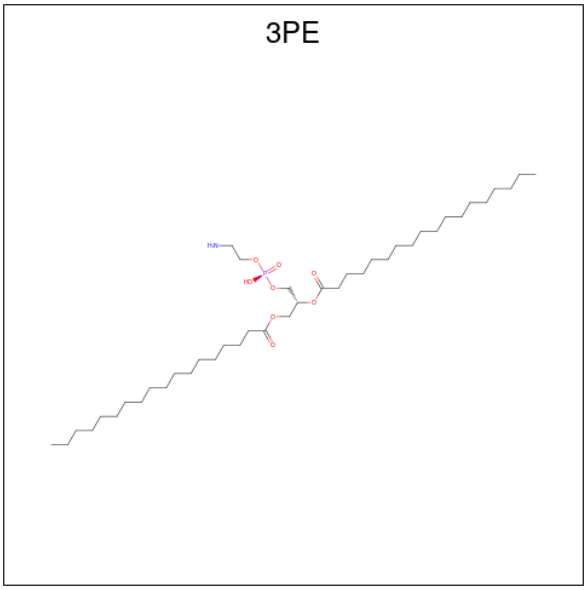
Mol	Chain	Residues	Atoms	AltConf
45	Y	1	Total C O 35 24 11	0
45	f	1	Total C O 35 24 11	0
45	h	1	Total C O 35 24 11	0
45	h	1	Total C O 35 24 11	0
45	j	1	Total C O 35 24 11	0
45	l	1	Total C O 35 24 11	0

- Molecule 46 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms	AltConf
46	A	1	Total C N O P 42 32 1 8 1	0
46	H	1	Total C N O P 51 41 1 8 1	0
46	H	1	Total C N O P 34 24 1 8 1	0
46	L	1	Total C N O P 49 39 1 8 1	0
46	L	1	Total C N O P 45 35 1 8 1	0

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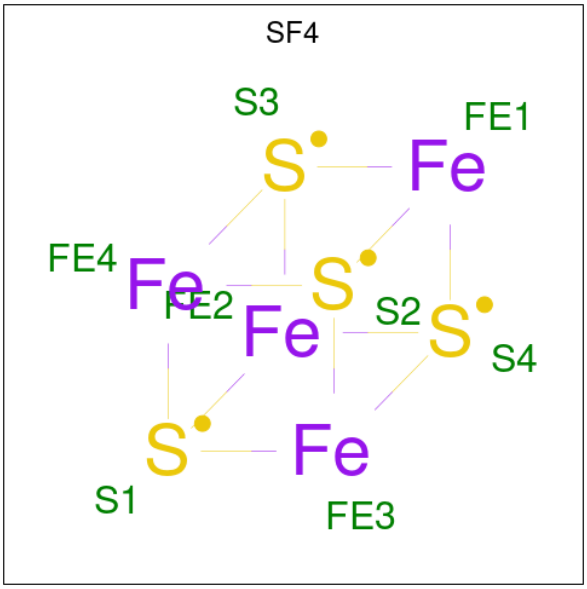
Mol	Chain	Residues	Atoms					AltConf
46	M	1	Total	C	N	O	P	0
			51	41	1	8	1	
46	N	1	Total	C	N	O	P	0
			41	31	1	8	1	
46	O	1	Total	C	N	O	P	0
			47	37	1	8	1	
46	Y	1	Total	C	N	O	P	0
			40	30	1	8	1	
46	Y	1	Total	C	N	O	P	0
			35	25	1	8	1	
46	Y	1	Total	C	N	O	P	0
			29	19	1	8	1	

- 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	0
			8	4	4	
47	F	1	Total	Fe	S	0
			8	4	4	
47	G	1	Total	Fe	S	0
			8	4	4	
47	G	1	Total	Fe	S	0
			8	4	4	
47	I	1	Total	Fe	S	0
			8	4	4	

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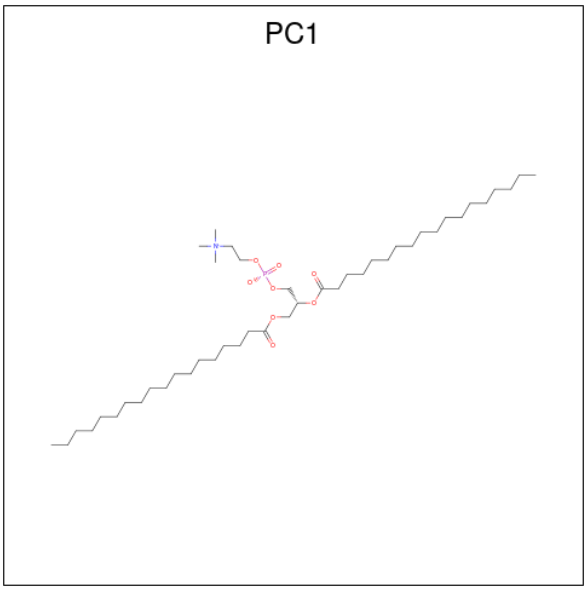
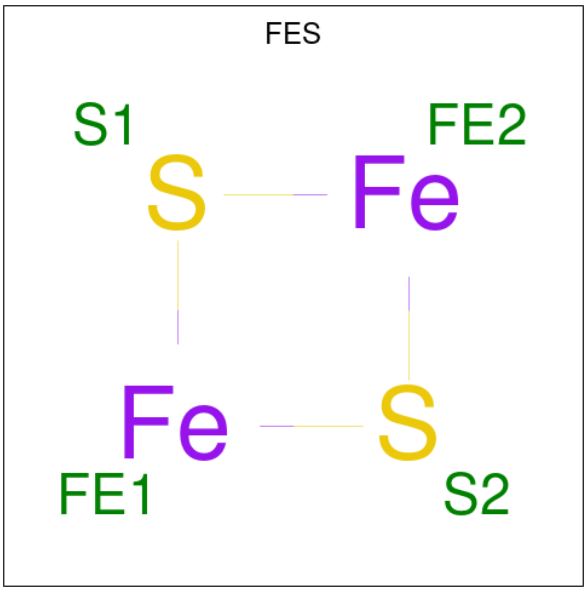
Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
47	I	1	8	4	4	0

- Molecule 48 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



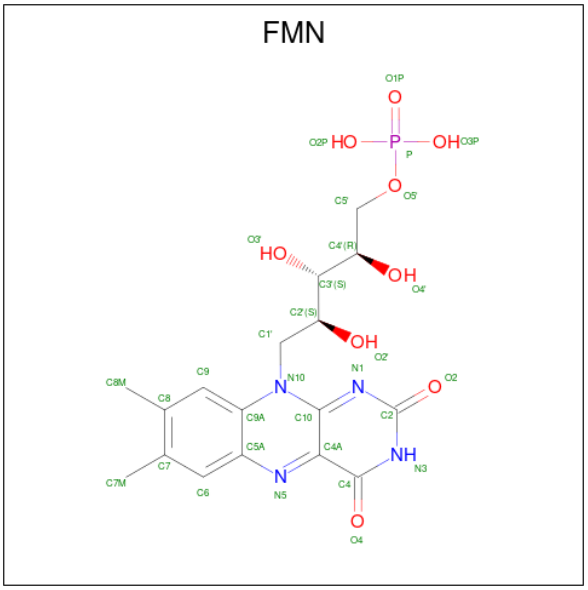
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
48	B	1	35	25	1	8	1	0
			Total	C	N	O	P	
48	M	1	49	39	1	8	1	0

- Molecule 49 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2).



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

- Molecule 50 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$).

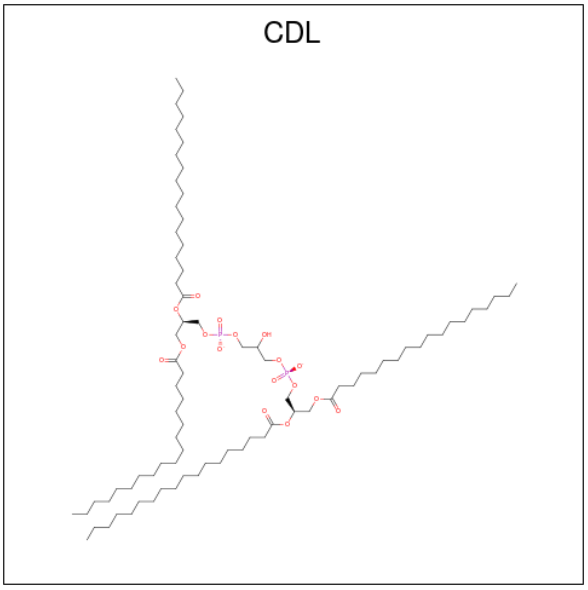


Mol	Chain	Residues	Atoms					AltConf
50	F	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 51 is POTASSIUM ION (three-letter code: K) (formula: K).

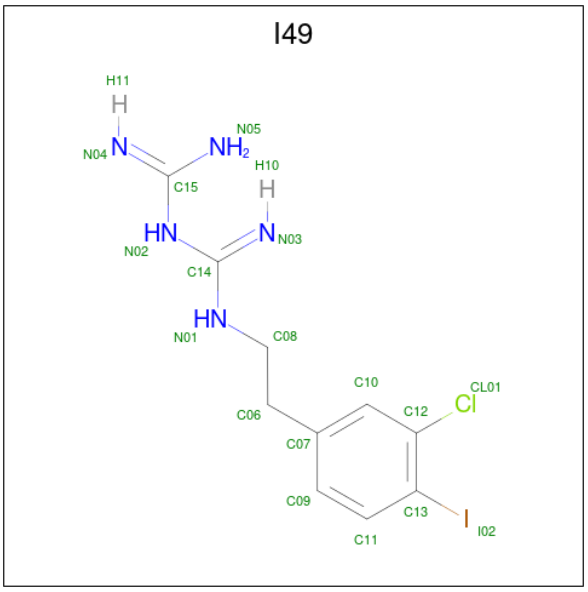
Mol	Chain	Residues	Atoms	AltConf
51	G	1	Total K 1 1	0

- Molecule 52 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



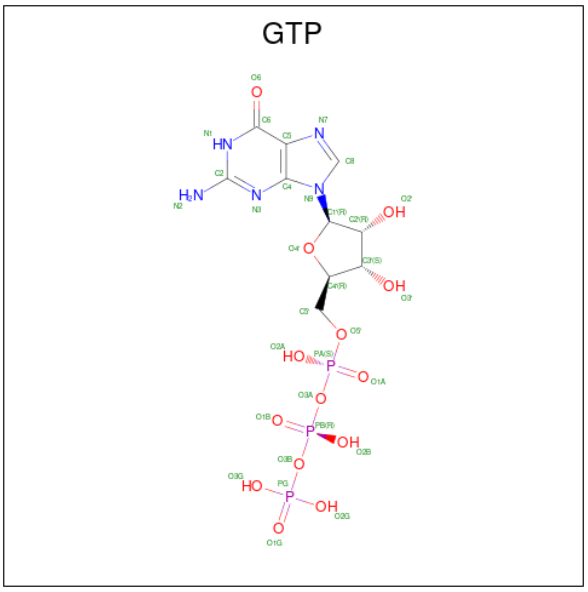
Mol	Chain	Residues	Atoms	AltConf
52	L	1	Total C O P 69 50 17 2	0
52	X	1	Total C O P 68 49 17 2	0
52	d	1	Total C O P 65 46 17 2	0
52	h	1	Total C O P 67 48 17 2	0
52	r	1	Total C O P 76 57 17 2	0

- Molecule 53 is 1-carbamimidoyl-3-[2-(3-chloranyl-4-iodanyl-phenyl)ethyl]guanidine (three-letter code: I49) (formula: $C_{10}H_{13}ClIN_5$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
53	N	1	Total	C	Cl	I	N	0
			17	10	1	1	5	

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

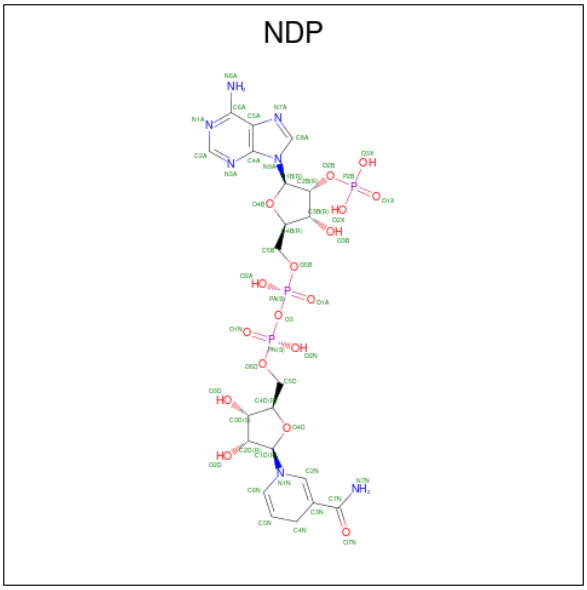


Mol	Chain	Residues	Atoms					AltConf
54	O	1	Total	C	N	O	P	0
			32	10	5	14	3	

- 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: $C_{21}H_{30}N_7O_{17}P_3$).

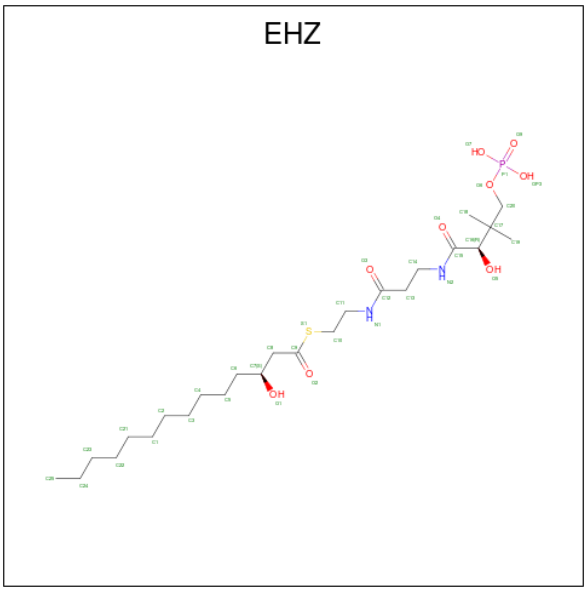


Mol	Chain	Residues	Atoms					AltConf
56	P	1	Total	C	N	O	P	0
			48	21	7	17	3	

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

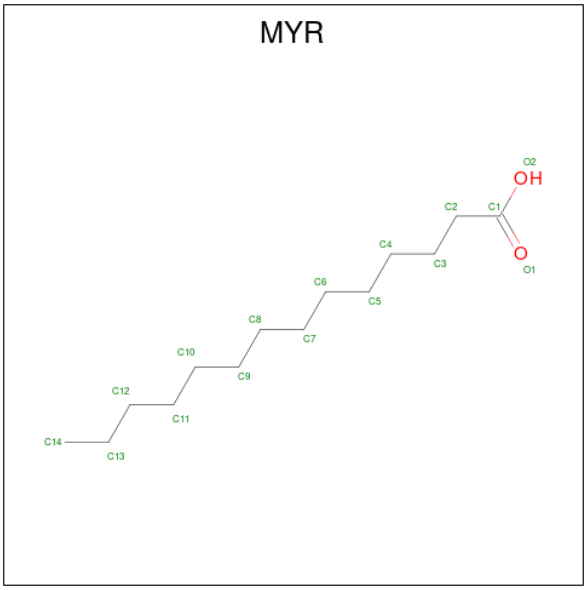
Mol	Chain	Residues	Atoms		AltConf
57	R	1	Total	Zn	0
			1	1	

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



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

- Molecule 60 is water.

Mol	Chain	Residues	Atoms	AltConf
60	A	8	Total O 8 8	0
60	B	58	Total O 58 58	0
60	C	102	Total O 102 102	0
60	D	157	Total O 157 157	0
60	E	29	Total O 29 29	0
60	F	70	Total O 70 70	0
60	G	227	Total O 227 227	0
60	H	46	Total O 46 46	0
60	I	104	Total O 104 104	0
60	J	10	Total O 10 10	0
60	K	4	Total O 4 4	0
60	L	65	Total O 65 65	0
60	M	71	Total O 71 71	0
60	N	46	Total O 46 46	0
60	O	11	Total O 11 11	0
60	P	47	Total O 47 47	0
60	Q	74	Total O 74 74	0
60	R	47	Total O 47 47	0
60	S	2	Total O 2 2	0
60	T	1	Total O 1 1	0
60	U	23	Total O 23 23	0
60	V	13	Total O 13 13	0

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Mol	Chain	Residues	Atoms	AltConf
60	W	18	Total O 18 18	0
60	X	28	Total O 28 28	0
60	Y	1	Total O 1 1	0
60	Z	21	Total O 21 21	0
60	a	19	Total O 19 19	0
60	b	7	Total O 7 7	0
60	c	1	Total O 1 1	0
60	d	8	Total O 8 8	0
60	e	15	Total O 15 15	0
60	f	7	Total O 7 7	0
60	g	9	Total O 9 9	0
60	h	29	Total O 29 29	0
60	i	7	Total O 7 7	0
60	j	4	Total O 4 4	0
60	k	7	Total O 7 7	0
60	l	30	Total O 30 30	0
60	m	18	Total O 18 18	0
60	n	31	Total O 31 31	0
60	o	22	Total O 22 22	0
60	p	37	Total O 37 37	0
60	q	40	Total O 40 40	0

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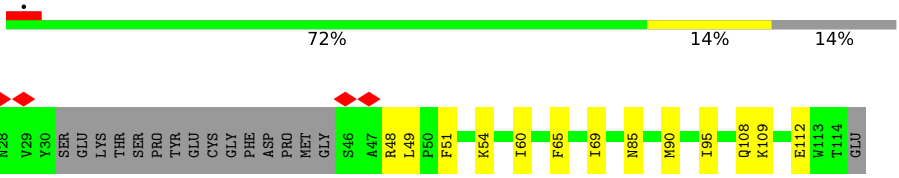
Mol	Chain	Residues	Atoms	AltConf
60	r	27	Total O 27 27	0
60	s	6	Total O 6 6	0

3 Residue-property plots

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.

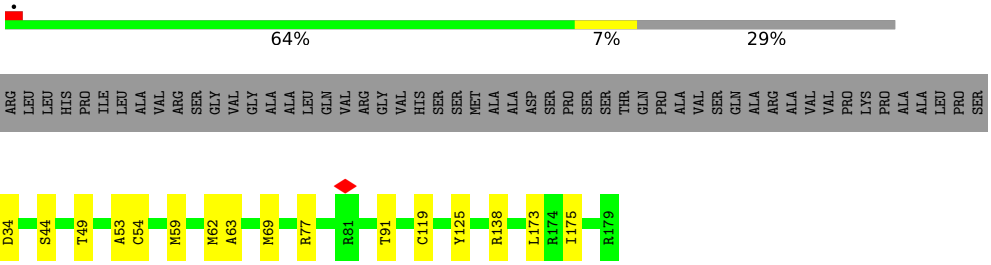
• Molecule 1: NADH-ubiquinone oxidoreductase chain 3

Chain A:



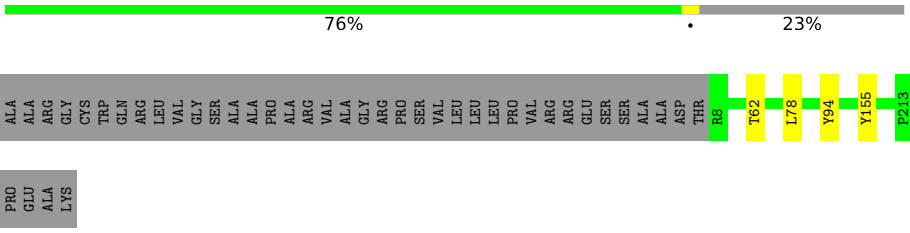
• Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

Chain B:



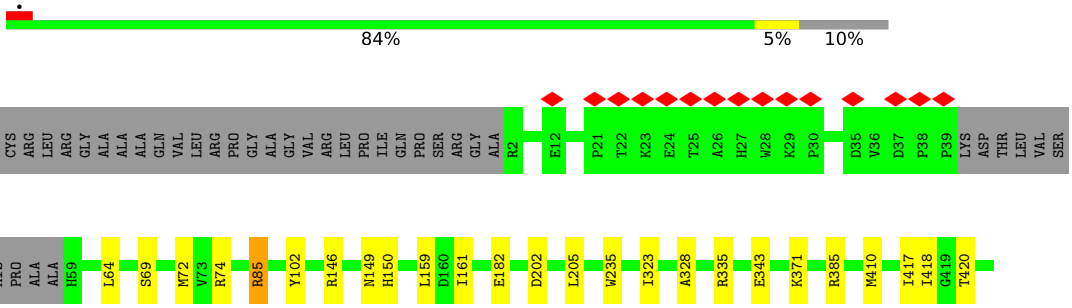
• Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

Chain C:



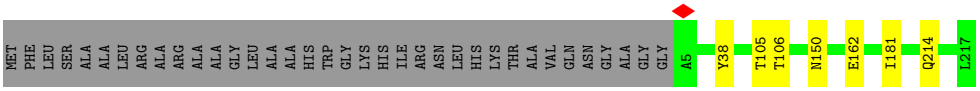
• Molecule 4: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial

Chain D:



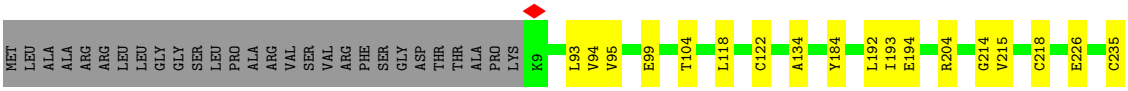
• Molecule 5: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

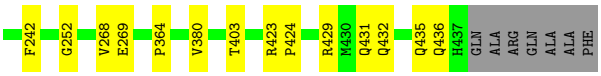
Chain E:



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

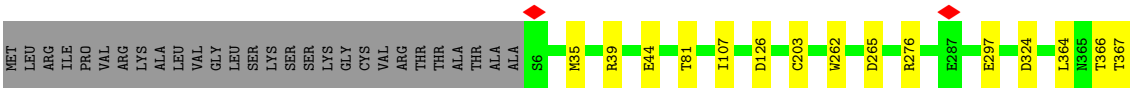
Chain F:

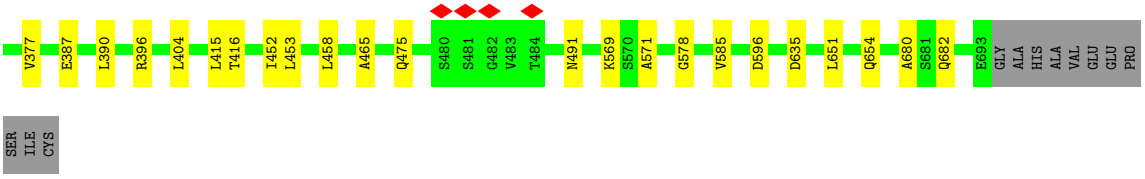




• Molecule 7: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

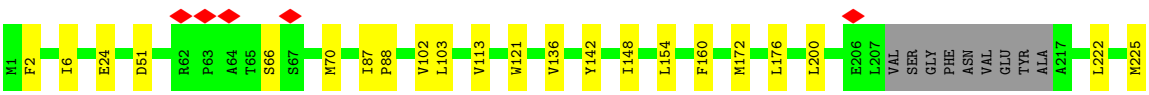
Chain G:

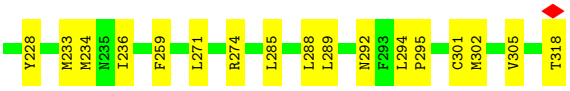




• Molecule 8: NADH-ubiquinone oxidoreductase chain 1

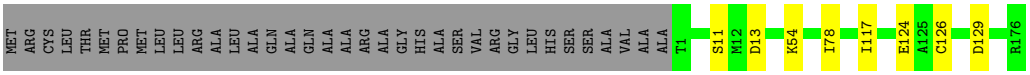
Chain H:





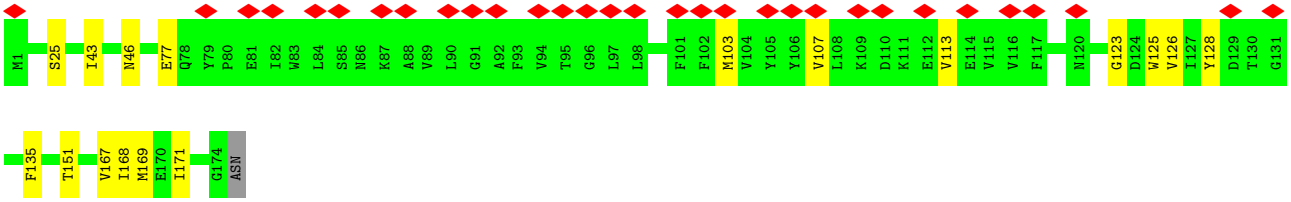
• Molecule 9: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

Chain I:



• Molecule 10: NADH-ubiquinone oxidoreductase chain 6

Chain J:

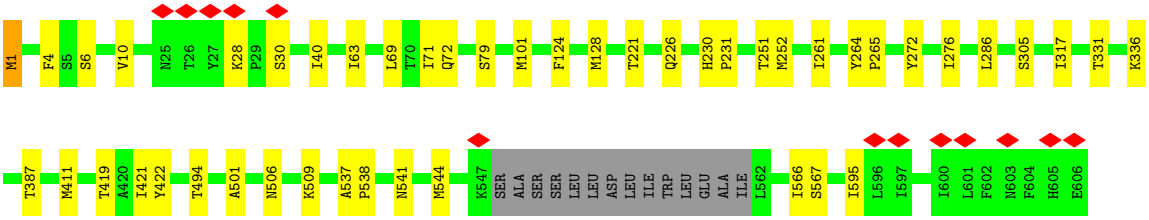


• Molecule 11: NADH-ubiquinone oxidoreductase chain 4L

Chain K:

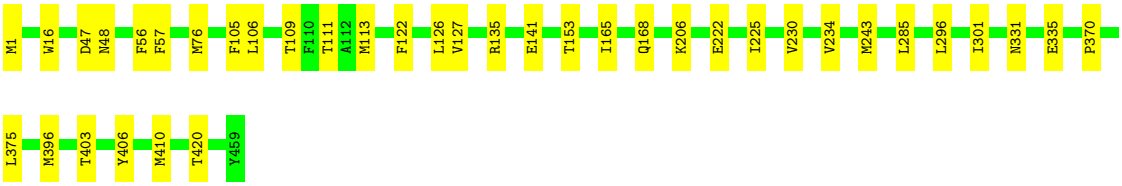
• Molecule 12: NADH-ubiquinone oxidoreductase chain 5

Chain L:



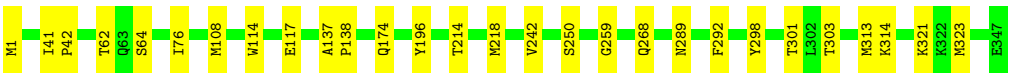
• Molecule 13: NADH-ubiquinone oxidoreductase chain 4

Chain M:



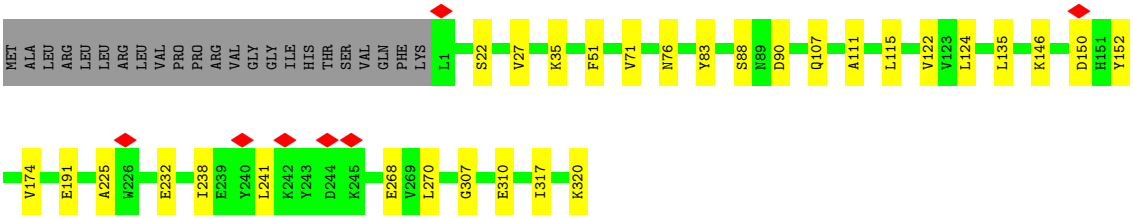
• Molecule 14: NADH-ubiquinone oxidoreductase chain 2

Chain N:



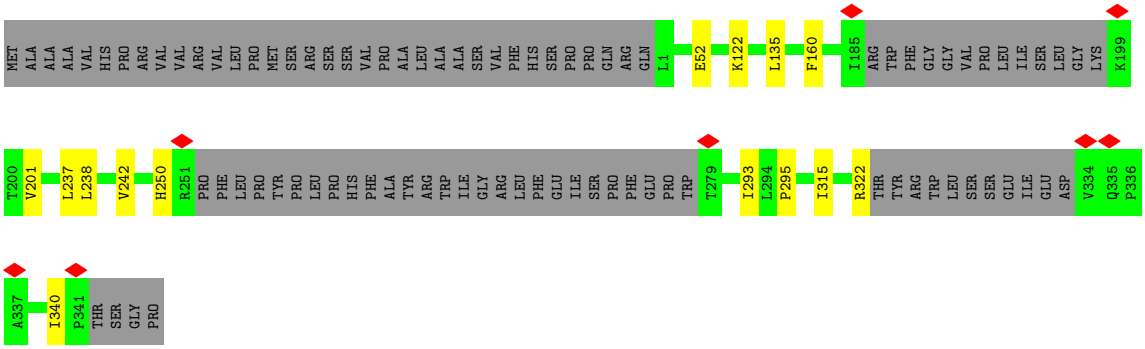
• Molecule 15: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

Chain O:



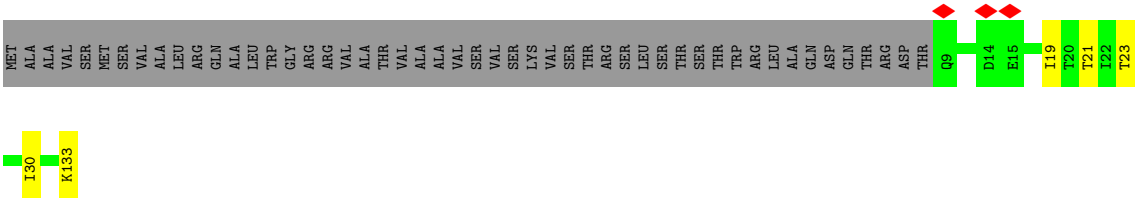
• Molecule 16: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

Chain P:



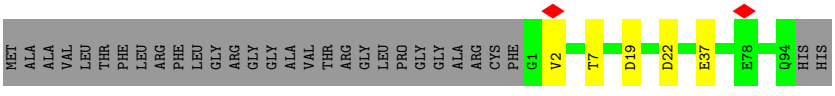
• Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

Chain Q:



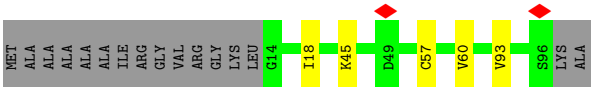
• Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

Chain R:



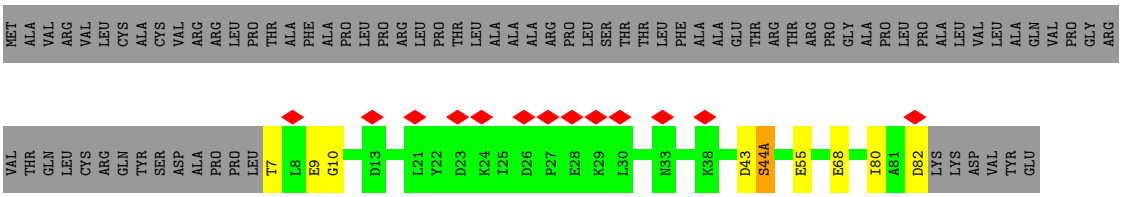
• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

Chain S:



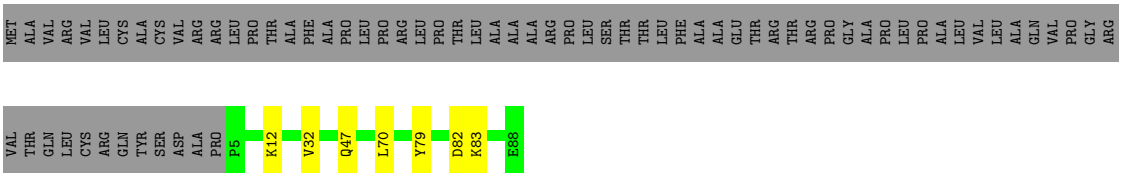
• Molecule 20: Acyl carrier protein, mitochondrial

Chain T:



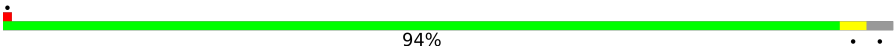
• Molecule 20: Acyl carrier protein, mitochondrial

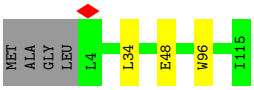
Chain U:



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

Chain V:



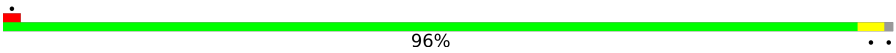


• Molecule 22: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

Chain W:

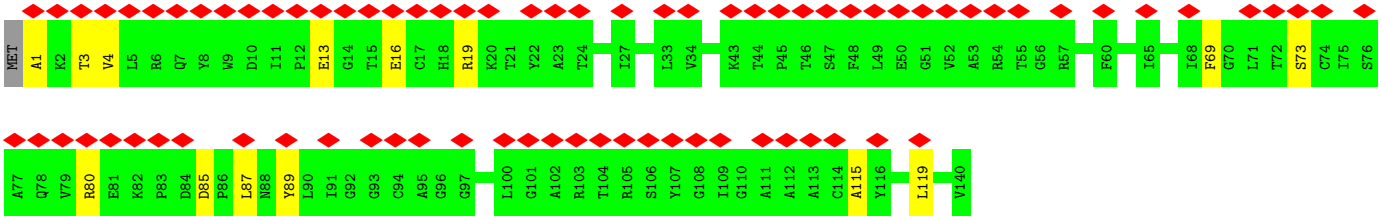
• Molecule 23: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8

Chain X:

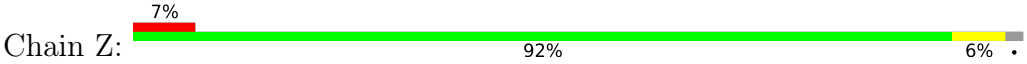


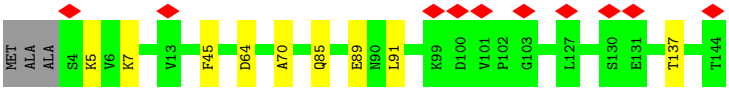
• Molecule 24: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11

Chain Y:



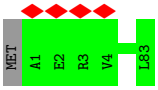
• Molecule 25: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13



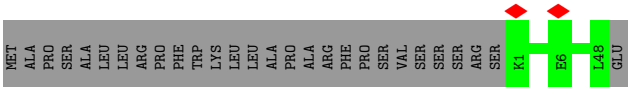


• Molecule 26: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

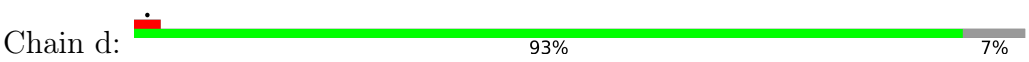
• Molecule 27: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

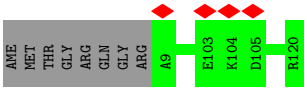


• Molecule 28: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

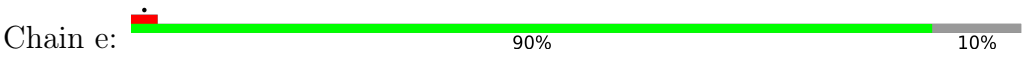


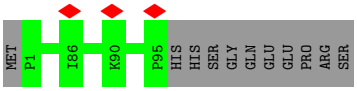
• Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C2



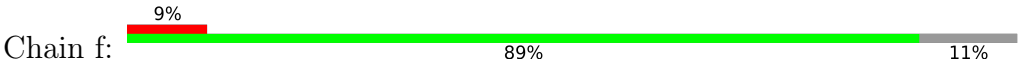


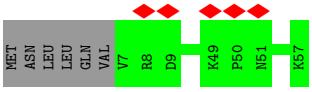
• Molecule 30: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5



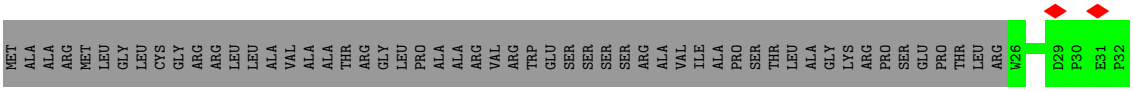


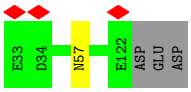
• Molecule 31: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1





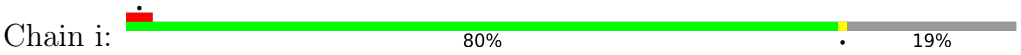
• Molecule 32: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

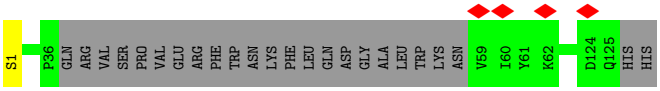




• Molecule 33: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5, mitochondrial

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

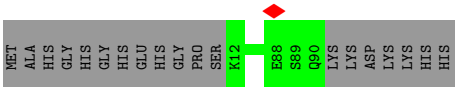




• Molecule 35: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2, mitochondrial

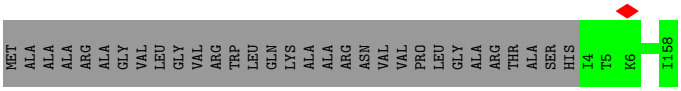
• Molecule 36: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3

Chain k:



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

Chain l:

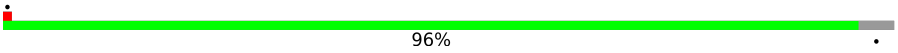


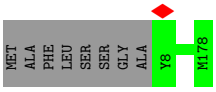
• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

Chain m:

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

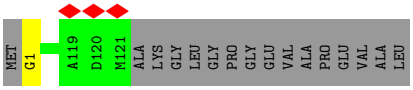
Chain n:





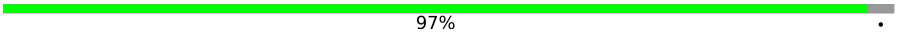
• Molecule 40: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7

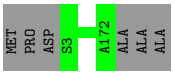
Chain o:



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

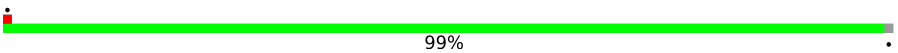
Chain p:

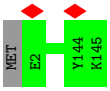




• Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12

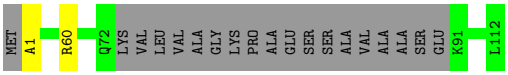
Chain q:





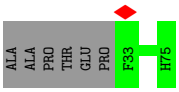
• Molecule 43: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7

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, Not provided	
Number of particles used	122019	Depositor
Resolution determination method	OTHER	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	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	47.399	Depositor
Minimum map value	-18.669	Depositor
Average map value	0.010	Depositor
Map value standard deviation	1.090	Depositor
Recommended contour level	6.0	Depositor
Map size (Å)	482.46, 482.46, 482.46	wwPDB
Map dimensions	660, 660, 660	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.731, 0.731, 0.731	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PC1, 3PE, EHZ, SF4, I49, FES, FME, CDL, NDP, GTP, AYA, ZN, 2MR, K, MG, FMN, SAC, LMT, MYR

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.29	0/809	0.45	0/1108
2	B	0.38	1/1261 (0.1%)	0.50	0/1706
3	C	0.33	0/1765	0.47	0/2403
4	D	0.32	0/3435	0.46	0/4650
5	E	0.32	0/1695	0.46	0/2307
6	F	0.31	0/3375	0.48	0/4561
7	G	0.30	0/5367	0.48	0/7274
8	H	0.33	0/2499	0.45	0/3413
9	I	0.35	0/1445	0.49	0/1956
10	J	0.33	0/1362	0.43	0/1848
11	K	0.34	0/730	0.49	0/988
12	L	0.34	0/4810	0.44	0/6541
13	M	0.32	0/3738	0.45	0/5097
14	N	0.31	0/2792	0.45	0/3800
15	O	0.37	0/2651	0.43	0/3587
16	P	0.31	0/2355	0.47	0/3182
17	Q	0.31	0/1039	0.46	0/1404
18	R	0.32	0/731	0.48	0/984
19	S	0.33	0/680	0.48	0/916
20	T	0.33	0/621	0.39	0/837
20	U	0.39	0/692	0.44	0/932
21	V	0.29	0/931	0.39	0/1261
22	W	0.31	0/995	0.43	0/1337
23	X	0.33	0/1439	0.44	0/1942
24	Y	0.27	0/1042	0.42	0/1414
25	Z	0.34	0/1181	0.45	0/1592
26	a	0.36	0/576	0.44	0/775
27	b	0.33	0/672	0.43	0/923
28	c	0.38	0/418	0.38	0/567
29	d	0.38	0/964	0.42	0/1305
30	e	0.33	0/818	0.47	0/1093

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
31	f	0.35	0/457	0.42	0/616
32	g	0.37	0/839	0.44	0/1140
33	h	0.35	0/1188	0.43	0/1607
34	i	0.41	0/904	0.47	0/1230
35	j	0.39	0/607	0.41	0/833
36	k	0.35	0/657	0.41	0/887
37	l	0.42	0/1358	0.44	0/1858
38	m	0.38	0/929	0.44	0/1252
39	n	0.37	0/1540	0.44	0/2085
40	o	0.43	1/1068 (0.1%)	0.44	0/1430
41	p	0.38	0/1468	0.44	0/1979
42	q	0.31	0/1242	0.45	0/1688
43	r	0.31	0/780	0.45	0/1056
44	s	0.32	0/375	0.44	0/507
All	All	0.34	2/66300 (0.0%)	0.45	0/89871

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

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
40	o	1	GLY	CA-C	5.84	1.61	1.51
2	B	54	CYS	CB-SG	-5.10	1.73	1.81

There are no bond angle outliers.

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)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	799	0	847	13	0
2	B	1230	0	1238	13	0
3	C	1714	0	1668	4	0
4	D	3362	0	3303	18	0
5	E	1655	0	1661	5	0
6	F	3301	0	3253	19	0
7	G	5279	0	5301	29	0
8	H	2440	0	2559	29	0
9	I	1414	0	1370	9	0
10	J	1337	0	1346	19	0
11	K	730	0	772	14	0
12	L	4695	0	4848	26	0
13	M	3654	0	3852	31	0
14	N	2733	0	2912	30	0
15	O	2589	0	2566	21	0
16	P	2305	0	2339	9	0
17	Q	1016	0	1014	4	0
18	R	720	0	700	3	0
19	S	669	0	677	4	0
20	T	612	0	604	6	0
20	U	681	0	677	4	0
21	V	911	0	950	2	0
22	W	971	0	989	7	0
23	X	1402	0	1383	5	0
24	Y	1030	0	1041	7	0
25	Z	1152	0	1151	9	0
26	a	561	0	564	0	0
27	b	651	0	662	0	0
28	c	405	0	409	0	0
29	d	934	0	919	0	0
30	e	799	0	807	0	0
31	f	444	0	444	0	0
32	g	813	0	759	0	0
33	h	1154	0	1168	0	0
34	i	884	0	905	0	0
35	j	580	0	519	0	0
36	k	638	0	621	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
37	l	1304	0	1203	0	0
38	m	908	0	903	0	0
39	n	1487	0	1433	0	0
40	o	1043	0	1011	0	0
41	p	1435	0	1411	0	0
42	q	1201	0	1170	0	0
43	r	767	0	776	0	0
44	s	364	0	336	0	0
45	A	35	0	46	2	0
45	H	35	0	46	0	0
45	J	35	0	46	0	0
45	L	70	0	92	1	0
45	M	35	0	46	2	0
45	N	35	0	46	3	0
45	Y	35	0	46	2	0
45	f	35	0	46	0	0
45	h	70	0	92	0	0
45	j	35	0	46	0	0
45	l	35	0	46	0	0
46	A	42	0	58	1	0
46	H	85	0	129	0	0
46	L	94	0	142	0	0
46	M	51	0	82	5	0
46	N	41	0	56	0	0
46	O	47	0	71	1	0
46	Y	104	0	133	0	0
47	B	8	0	0	0	0
47	F	8	0	0	1	0
47	G	16	0	0	1	0
47	I	16	0	0	1	0
48	B	35	0	44	0	0
48	M	49	0	75	0	0
49	E	4	0	0	0	0
49	G	4	0	0	0	0
50	F	31	0	19	1	0
51	G	1	0	0	0	0
52	L	69	0	82	0	0
52	X	68	0	80	0	0
52	d	65	0	77	0	0
52	h	67	0	81	0	0
52	r	76	0	96	0	0
53	N	17	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
54	O	32	0	12	2	0
55	O	1	0	0	0	0
56	P	48	0	26	0	0
57	R	1	0	0	0	0
58	T	37	0	0	0	0
58	U	37	0	0	0	0
59	o	15	0	27	0	0
60	A	8	0	0	0	0
60	B	58	0	0	1	0
60	C	102	0	0	1	0
60	D	157	0	0	2	0
60	E	29	0	0	1	0
60	F	70	0	0	1	0
60	G	227	0	0	6	0
60	H	46	0	0	0	0
60	I	104	0	0	2	0
60	J	10	0	0	0	0
60	K	4	0	0	0	0
60	L	65	0	0	1	0
60	M	71	0	0	2	0
60	N	46	0	0	2	0
60	O	11	0	0	1	0
60	P	47	0	0	1	0
60	Q	74	0	0	2	0
60	R	47	0	0	0	0
60	S	2	0	0	0	0
60	T	1	0	0	0	0
60	U	23	0	0	1	0
60	V	13	0	0	0	0
60	W	18	0	0	0	0
60	X	28	0	0	0	0
60	Y	1	0	0	0	0
60	Z	21	0	0	2	0
60	a	19	0	0	0	0
60	b	7	0	0	0	0
60	c	1	0	0	0	0
60	d	8	0	0	0	0
60	e	15	0	0	0	0
60	f	7	0	0	0	0
60	g	9	0	0	0	0
60	h	29	0	0	0	0
60	i	7	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
60	j	4	0	0	0	0
60	k	7	0	0	0	0
60	l	30	0	0	0	0
60	m	18	0	0	0	0
60	n	31	0	0	0	0
60	o	22	0	0	0	0
60	p	37	0	0	0	0
60	q	40	0	0	0	0
60	r	27	0	0	0	0
60	s	6	0	0	0	0
All	All	68004	0	66929	302	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (302) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:237:LEU:HD22	16:P:340:ILE:HD11	1.43	0.98
7:G:276:ARG:NH2	7:G:680:ALA:O	1.97	0.97
10:J:25:SER:OG	10:J:77:GLU:OE1	1.86	0.92
15:O:83:TYR:OH	54:O:1202:GTP:O2'	1.89	0.89
13:M:335:GLU:OE1	60:M:1401:HOH:O	1.92	0.88
1:A:85:ASN:OD1	45:A:301:LMT:O3'	1.92	0.87
14:N:196:TYR:O	53:N:503:I49:N05	2.11	0.83
6:F:432:GLN:O	6:F:436:GLN:NE2	2.12	0.82
1:A:54:LYS:NZ	1:A:112:GLU:O	2.12	0.80
8:H:236:ILE:HG23	8:H:259:PHE:HZ	1.46	0.80
9:I:11:SER:OG	9:I:13:ASP:OD2	2.00	0.79
5:E:38:TYR:O	60:E:401:HOH:O	2.00	0.78
14:N:174:GLN:OE1	60:N:601:HOH:O	2.02	0.77
6:F:226:GLU:OE1	60:F:601:HOH:O	2.02	0.76
15:O:146:LYS:NZ	15:O:150:ASP:OD2	2.19	0.74
2:B:44:SER:OG	8:H:51:ASP:OD1	2.02	0.74
45:Y:602:LMT:O5B	45:Y:602:LMT:O6'	2.04	0.74
13:M:126:LEU:HD11	13:M:153:THR:HG21	1.69	0.74
12:L:286:LEU:HD13	12:L:411:MET:SD	2.28	0.74
22:W:42:GLU:OE2	22:W:46:THR:OG1	2.05	0.74
7:G:265:ASP:OD2	60:G:901:HOH:O	2.06	0.73
20:T:68:GLU:OE2	22:W:33:ARG:NE	2.22	0.73
12:L:72:GLN:OE1	60:L:801:HOH:O	2.07	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:221:THR:HG23	12:L:226:GLN:HB2	1.71	0.72
13:M:153:THR:HG23	13:M:206:LYS:NZ	2.03	0.72
6:F:431:GLN:O	6:F:435:GLN:NE2	2.22	0.72
9:I:54:LYS:O	60:I:301:HOH:O	2.08	0.72
17:Q:30:ILE:O	60:Q:201:HOH:O	2.08	0.71
7:G:387:GLU:OE1	60:G:902:HOH:O	2.08	0.71
13:M:285:LEU:HD22	13:M:410:MET:CE	2.21	0.70
20:T:55:GLU:OE1	22:W:37:ARG:NH2	2.25	0.70
11:K:44:ALA:HB1	11:K:59:MET:HE3	1.72	0.69
15:O:107:GLN:OE1	60:O:1301:HOH:O	2.10	0.69
7:G:635:ASP:O	60:G:903:HOH:O	2.11	0.67
4:D:69:SER:OG	4:D:74:ARG:NH1	2.28	0.67
25:Z:64:ASP:OD2	60:Z:201:HOH:O	2.11	0.67
20:T:7:THR:O	20:T:10:GLY:N	2.29	0.66
17:Q:21:THR:HG21	22:W:73:ILE:HD11	1.77	0.66
12:L:494:THR:HG21	45:L:705:LMT:H121	1.77	0.66
7:G:578:GLY:O	60:G:905:HOH:O	2.14	0.66
25:Z:85:GLN:NE2	25:Z:89:GLU:OE1	2.26	0.66
4:D:161:ILE:HD11	4:D:235:TRP:CZ3	2.31	0.65
11:K:53:PHE:CE2	11:K:56:ALA:HB2	2.31	0.65
8:H:24:GLU:OE2	8:H:228:TYR:OH	2.09	0.65
4:D:182:GLU:OE1	60:D:501:HOH:O	2.15	0.65
7:G:569:LYS:NZ	7:G:596:ASP:OD2	2.29	0.65
8:H:176:LEU:HD21	25:Z:45:PHE:HD2	1.61	0.65
12:L:28:LYS:NZ	12:L:30:SER:OG	2.21	0.65
7:G:364:LEU:HD12	7:G:491:ASN:HB3	1.78	0.65
46:M:1301:3PE:H3D2	46:M:1301:3PE:H2I3	1.78	0.65
7:G:44:GLU:OE2	60:G:904:HOH:O	2.14	0.64
8:H:2:PHE:CE2	8:H:6:ILE:HD11	2.33	0.64
8:H:236:ILE:HG23	8:H:259:PHE:CZ	2.32	0.63
20:U:12:LYS:HD2	20:U:32:VAL:HG11	1.81	0.63
15:O:71:VAL:HG22	15:O:76:ASN:HA	1.81	0.63
23:X:25:LYS:NZ	23:X:94:GLN:O	2.31	0.62
15:O:135:LEU:HD22	15:O:152:TYR:CG	2.33	0.62
8:H:24:GLU:OE1	8:H:274:ARG:NH1	2.33	0.61
4:D:205:LEU:HD13	25:Z:7:LYS:HZ2	1.66	0.61
15:O:135:LEU:HD22	15:O:152:TYR:CD1	2.35	0.61
11:K:70:GLU:OE2	14:N:64:SER:OG	2.13	0.60
15:O:191:GLU:OE2	54:O:1202:GTP:O3'	2.14	0.60
14:N:62:THR:HG21	14:N:114:TRP:CD1	2.37	0.60
13:M:225:ILE:HD13	13:M:331:ASN:HB2	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:174:VAL:HG22	15:O:225:ALA:HB2	1.84	0.59
7:G:324:ASP:CB	7:G:571:ALA:HB1	2.33	0.59
20:U:79:TYR:OH	20:U:83:LYS:NZ	2.36	0.59
10:J:103:MET:O	10:J:107:VAL:HG23	2.03	0.58
15:O:51:PHE:HB2	15:O:124:LEU:HD23	1.84	0.58
7:G:366:THR:O	7:G:367:THR:OG1	2.14	0.58
7:G:107:ILE:CG2	9:I:78:ILE:HD12	2.33	0.58
7:G:107:ILE:HG23	9:I:78:ILE:HD12	1.85	0.58
13:M:153:THR:HG23	13:M:206:LYS:HZ2	1.67	0.58
8:H:222:LEU:HD23	8:H:225:MET:HE2	1.85	0.57
4:D:205:LEU:HD13	25:Z:7:LYS:NZ	2.19	0.57
23:X:44:LEU:HD22	23:X:130:VAL:CG2	2.35	0.57
45:N:501:LMT:O6'	45:N:501:LMT:O1B	2.23	0.57
8:H:102:VAL:HG11	8:H:154:LEU:HD11	1.87	0.56
24:Y:80:ARG:HH12	24:Y:87:LEU:HD23	1.70	0.56
13:M:285:LEU:HD22	13:M:410:MET:HE3	1.88	0.55
12:L:506:ASN:OD1	12:L:509:LYS:NZ	2.30	0.55
6:F:94:VAL:HG11	6:F:192:LEU:HD22	1.89	0.55
10:J:107:VAL:HG22	10:J:113:VAL:CG1	2.36	0.55
8:H:172:MET:SD	8:H:176:LEU:HD23	2.47	0.55
12:L:124:PHE:CE1	12:L:251:THR:HG21	2.42	0.55
15:O:238:ILE:HA	15:O:241:LEU:HD23	1.88	0.54
6:F:194:GLU:OE2	6:F:204:ARG:NE	2.25	0.54
13:M:57:PHE:CD1	13:M:113:MET:HG2	2.43	0.54
7:G:396:ARG:NH1	7:G:416:THR:O	2.40	0.54
7:G:465:ALA:HB2	7:G:654:GLN:OE1	2.07	0.53
14:N:321:LYS:NZ	15:O:268:GLU:OE2	2.41	0.53
4:D:149:ASN:OD1	4:D:371:LYS:NZ	2.42	0.53
20:U:82:ASP:OD1	60:U:201:HOH:O	2.18	0.53
24:Y:16:GLU:OE1	24:Y:19:ARG:NE	2.40	0.53
12:L:69:LEU:HD21	12:L:71:ILE:HD11	1.89	0.53
13:M:165:ILE:HG21	14:N:268:GLN:HA	1.90	0.53
12:L:40:ILE:HG13	12:L:101:MET:SD	2.49	0.53
8:H:222:LEU:HD23	8:H:225:MET:CE	2.39	0.52
12:L:128:MET:HB2	12:L:251:THR:HG23	1.91	0.52
4:D:72:MET:HE2	4:D:410:MET:HG2	1.90	0.52
6:F:99:GLU:OE2	6:F:104:THR:HG22	2.10	0.52
10:J:43:ILE:HG22	11:K:46:LEU:HD11	1.90	0.52
8:H:70:MET:HE3	8:H:121:TRP:HE3	1.74	0.52
1:A:108:GLN:HB2	10:J:169:MET:HE1	1.92	0.52
13:M:153:THR:HG23	13:M:206:LYS:HZ1	1.72	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:214:GLN:NE2	6:F:235:CYS:O	2.42	0.52
12:L:331:THR:HB	12:L:387:THR:HG22	1.92	0.52
46:M:1301:3PE:C33	14:N:242:VAL:HG11	2.40	0.52
45:M:1303:LMT:C1'	45:M:1303:LMT:H6'	2.21	0.52
13:M:370:PRO:HB3	13:M:375:LEU:HD22	1.92	0.51
2:B:125:TYR:HB2	9:I:117:ILE:CG2	2.40	0.51
16:P:135:LEU:O	60:P:601:HOH:O	2.18	0.51
12:L:421:ILE:HA	12:L:501:ALA:HB2	1.92	0.51
14:N:214:THR:HG22	14:N:218:MET:CE	2.41	0.51
45:A:301:LMT:O3'	45:A:301:LMT:O5B	2.28	0.51
24:Y:13:GLU:OE2	24:Y:89:TYR:OH	2.25	0.51
2:B:91:THR:HA	2:B:119:CYS:HB3	1.93	0.50
8:H:200:LEU:HD22	8:H:285:LEU:HD21	1.92	0.50
2:B:125:TYR:HB2	9:I:117:ILE:HG21	1.93	0.50
10:J:125:TRP:HB2	25:Z:137:THR:HG21	1.94	0.50
7:G:651:LEU:HD11	19:S:45:LYS:HE2	1.94	0.50
23:X:44:LEU:HD22	23:X:130:VAL:HG22	1.94	0.50
2:B:63:ALA:HA	2:B:69:MET:HG2	1.94	0.49
12:L:261:ILE:HG13	12:L:317:ILE:HD11	1.94	0.49
1:A:95:ILE:HG21	8:H:302:MET:HG3	1.94	0.49
6:F:95:VAL:HG11	6:F:118:LEU:HD11	1.94	0.49
21:V:34:LEU:HD13	21:V:48:GLU:HG3	1.95	0.49
6:F:184:TYR:CE2	50:F:501:FMN:HM73	2.47	0.49
3:C:78:LEU:HD13	3:C:94:TYR:CD2	2.48	0.49
5:E:181:ILE:HG23	5:E:181:ILE:O	2.10	0.49
15:O:232:GLU:OE1	15:O:232:GLU:N	2.46	0.49
7:G:324:ASP:HB2	7:G:571:ALA:HB1	1.95	0.49
12:L:251:THR:HG22	12:L:252:MET:N	2.28	0.48
15:O:27:VAL:HG12	15:O:35:LYS:HB2	1.95	0.48
12:L:305:SER:OG	12:L:336:LYS:NZ	2.46	0.48
1:A:49:LEU:O	1:A:51:PHE:N	2.47	0.48
45:M:1303:LMT:O1'	45:M:1303:LMT:O6'	2.27	0.48
14:N:314:LYS:NZ	15:O:270:LEU:O	2.47	0.48
7:G:324:ASP:HB3	7:G:571:ALA:HB1	1.96	0.48
13:M:403:THR:HA	13:M:406:TYR:CE1	2.48	0.48
13:M:126:LEU:HD11	13:M:153:THR:CG2	2.41	0.48
13:M:243:MET:HB3	13:M:301:ILE:HG21	1.94	0.48
11:K:37:MET:HG3	11:K:67:ALA:CB	2.44	0.48
19:S:57:CYS:O	19:S:60:VAL:HG22	2.14	0.48
14:N:313:MET:HG2	15:O:270:LEU:HD13	1.96	0.48
6:F:95:VAL:HG21	6:F:122:CYS:SG	2.54	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:262:TRP:HB2	7:G:390:LEU:HD11	1.95	0.47
13:M:127:VAL:HG11	46:M:1301:3PE:H2I2	1.95	0.47
1:A:69:ILE:HD12	8:H:148:ILE:HG12	1.95	0.47
9:I:124:GLU:OE2	60:I:302:HOH:O	2.20	0.47
7:G:297:GLU:HG3	22:W:123:TYR:CZ	2.49	0.47
12:L:541:ASN:O	12:L:544:MET:HG3	2.15	0.47
14:N:298:TYR:O	14:N:303:THR:OG1	2.25	0.47
8:H:87:ILE:N	8:H:88:PRO:CD	2.77	0.47
16:P:122:LYS:HE3	16:P:160:PHE:CD1	2.49	0.47
16:P:250:HIS:CE1	16:P:322:ARG:NH1	2.82	0.47
8:H:318:THR:HG1	10:J:135:PHE:HE2	1.60	0.47
4:D:146:ARG:HG2	4:D:150:HIS:CD2	2.50	0.47
7:G:415:LEU:O	7:G:416:THR:OG1	2.21	0.47
12:L:1:FME:HCN	12:L:4:PHE:H	1.79	0.47
13:M:56:PHE:HA	13:M:111:THR:O	2.15	0.47
4:D:64:LEU:HD11	4:D:418:ILE:HD11	1.96	0.46
14:N:321:LYS:CE	15:O:268:GLU:OE2	2.63	0.46
15:O:310:GLU:HG3	15:O:317:ILE:HD12	1.96	0.46
5:E:105:THR:HG22	5:E:106:THR:H	1.80	0.46
5:E:150:ASN:HB3	5:E:162:GLU:HB3	1.97	0.46
7:G:377:VAL:HG13	7:G:452:ILE:CD1	2.45	0.46
10:J:167:VAL:HG22	14:N:42:PRO:HG3	1.98	0.46
15:O:22:SER:HB3	15:O:115:LEU:HD11	1.98	0.46
17:Q:19:ILE:O	17:Q:23:THR:HG23	2.16	0.46
17:Q:133:LYS:NZ	60:Q:204:HOH:O	2.39	0.46
4:D:385:ARG:NH1	60:D:507:HOH:O	2.38	0.46
20:T:80:ILE:O	20:T:82:ASP:N	2.47	0.46
1:A:108:GLN:HB2	10:J:169:MET:CE	2.46	0.46
14:N:323:MET:O	60:N:602:HOH:O	2.20	0.46
18:R:2:VAL:HG21	18:R:37:GLU:OE1	2.16	0.46
19:S:18:ILE:CD1	19:S:93:VAL:HG11	2.46	0.46
20:T:43:ASP:OD1	20:T:44(A):SER:N	2.41	0.46
24:Y:115:ALA:O	24:Y:119:LEU:HD23	2.15	0.46
8:H:113:VAL:HG21	8:H:136:VAL:HG13	1.97	0.45
4:D:417:ILE:O	4:D:420:THR:HG22	2.16	0.45
6:F:193:ILE:HG23	6:F:215:VAL:HA	1.98	0.45
11:K:44:ALA:HB1	11:K:59:MET:CE	2.43	0.45
22:W:96:VAL:HG12	22:W:96:VAL:O	2.17	0.45
4:D:161:ILE:HD11	4:D:235:TRP:CE3	2.50	0.45
6:F:93:LEU:O	6:F:134:ALA:HA	2.17	0.45
8:H:103:LEU:HD21	8:H:160:PHE:CE1	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:142:TYR:HA	8:H:289:LEU:CD1	2.46	0.45
12:L:230:HIS:N	12:L:231:PRO:CD	2.79	0.45
24:Y:69:PHE:O	24:Y:73:SER:OG	2.28	0.45
10:J:135:PHE:CD2	10:J:135:PHE:O	2.70	0.45
13:M:135:ARG:NH1	14:N:301:THR:O	2.50	0.45
2:B:175:ILE:HD12	16:P:52:GLU:HG2	1.99	0.45
13:M:168:GLN:NE2	23:X:167:PHE:CE1	2.84	0.45
13:M:285:LEU:HD23	13:M:285:LEU:O	2.16	0.45
8:H:70:MET:CE	8:H:121:TRP:HE3	2.30	0.44
25:Z:70:ALA:O	60:Z:202:HOH:O	2.21	0.44
12:L:419:THR:HA	12:L:422:TYR:CE1	2.52	0.44
7:G:276:ARG:NH2	7:G:682:GLN:HG3	2.32	0.44
6:F:364:PRO:HB2	6:F:403:THR:HG22	1.99	0.44
46:M:1301:3PE:H332	14:N:242:VAL:HG11	2.00	0.44
3:C:155:TYR:O	60:C:301:HOH:O	2.21	0.44
18:R:7:THR:O	18:R:7:THR:HG22	2.18	0.44
10:J:123:GLY:O	10:J:126:VAL:HG22	2.18	0.44
13:M:106:LEU:HD13	13:M:234:VAL:HG11	2.00	0.44
1:A:60:ILE:HG21	10:J:168:ILE:HG21	1.99	0.44
8:H:66:SER:OG	8:H:121:TRP:O	2.35	0.44
11:K:53:PHE:CD2	11:K:56:ALA:HB2	2.52	0.44
13:M:296:LEU:HD21	13:M:396:MET:SD	2.58	0.44
13:M:105:PHE:O	13:M:109:THR:OG1	2.29	0.44
46:M:1301:3PE:H331	14:N:242:VAL:HG11	1.98	0.44
14:N:214:THR:HG22	14:N:218:MET:HE1	2.00	0.44
15:O:88:SER:OG	15:O:90:ASP:OD1	2.25	0.44
2:B:62:MET:HE2	2:B:69:MET:HE1	2.00	0.43
10:J:135:PHE:O	10:J:135:PHE:CG	2.71	0.43
14:N:108:MET:HE2	14:N:108:MET:HB3	1.89	0.43
2:B:63:ALA:HB2	2:B:69:MET:HE3	2.00	0.43
7:G:35:MET:SD	7:G:81:THR:CB	3.07	0.43
7:G:377:VAL:HG23	7:G:404:LEU:HD11	1.99	0.43
11:K:59:MET:HB3	11:K:60:PRO:HD3	2.00	0.43
15:O:307:GLY:O	15:O:320:LYS:NZ	2.40	0.43
3:C:62:THR:HG21	21:V:96:TRP:HH2	1.83	0.43
4:D:328:ALA:HB3	7:G:126:ASP:HB2	2.01	0.43
12:L:272:TYR:CZ	12:L:276:ILE:HD11	2.54	0.43
12:L:595:ILE:HG21	45:N:501:LMT:C12	2.49	0.43
11:K:73:LEU:HD21	14:N:41:ILE:HG13	2.00	0.43
2:B:138:ARG:NH1	60:B:306:HOH:O	2.46	0.43
23:X:6:LEU:HD12	25:Z:91:LEU:HD22	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:Y:85:ASP:OD1	24:Y:87:LEU:HB3	2.19	0.43
6:F:380:VAL:O	6:F:429:ARG:NH2	2.46	0.43
8:H:288:LEU:O	8:H:292:ASN:HB2	2.18	0.43
11:K:53:PHE:CD2	11:K:56:ALA:CB	3.01	0.43
22:W:54:ILE:HD13	22:W:107:PHE:CZ	2.54	0.42
3:C:78:LEU:HD13	3:C:94:TYR:CE2	2.55	0.42
4:D:335:ARG:NH2	9:I:129:ASP:OD2	2.46	0.42
11:K:70:GLU:OE2	14:N:64:SER:CB	2.67	0.42
10:J:46:ASN:O	10:J:128:TYR:OH	2.23	0.42
12:L:537:ALA:HB3	12:L:538:PRO:HD3	2.00	0.42
15:O:111:ALA:HB1	15:O:122:VAL:HG21	2.02	0.42
45:Y:602:LMT:H6'	45:Y:602:LMT:C1B	2.29	0.42
1:A:65:PHE:O	1:A:69:ILE:HG12	2.20	0.42
2:B:34:ASP:OD1	2:B:173:LEU:HB2	2.20	0.42
13:M:225:ILE:HD13	13:M:331:ASN:CB	2.49	0.42
2:B:125:TYR:CE2	4:D:102:TYR:CD1	3.08	0.42
16:P:293:ILE:HG22	16:P:295:PRO:HD3	2.01	0.42
1:A:90:MET:SD	10:J:151:THR:HG23	2.60	0.42
1:A:109:LYS:HE2	1:A:109:LYS:HA	2.02	0.42
14:N:137:ALA:HB3	14:N:138:PRO:HD3	2.01	0.42
19:S:18:ILE:HD11	19:S:93:VAL:HG11	2.01	0.42
6:F:268:VAL:HG22	6:F:269:GLU:N	2.35	0.42
6:F:423:ARG:N	6:F:424:PRO:HD2	2.35	0.42
8:H:24:GLU:HA	8:H:271:LEU:HD13	2.02	0.42
12:L:6:SER:O	12:L:10:VAL:HG23	2.19	0.42
10:J:167:VAL:O	10:J:171:ILE:HG12	2.19	0.42
20:T:7:THR:O	20:T:9:GLU:N	2.53	0.42
4:D:202:ASP:CA	4:D:323:ILE:HD13	2.49	0.41
6:F:242:PHE:CZ	6:F:252:GLY:HA3	2.55	0.41
13:M:122:PHE:CZ	13:M:206:LYS:HE2	2.55	0.41
1:A:25:PRO:O	1:A:26:GLN:CB	2.69	0.41
10:J:171:ILE:HD11	14:N:41:ILE:HG22	2.03	0.41
11:K:33:LEU:HD21	14:N:64:SER:HB3	2.02	0.41
13:M:370:PRO:HB3	13:M:375:LEU:CD2	2.49	0.41
24:Y:3:THR:HG23	24:Y:4:VAL:N	2.35	0.41
1:A:48:ARG:NH1	1:A:51:PHE:O	2.47	0.41
2:B:49:THR:HG21	2:B:59:MET:HG2	2.02	0.41
7:G:39:ARG:NH2	60:G:930:HOH:O	2.44	0.41
7:G:453:LEU:HD21	7:G:458:LEU:HD21	2.03	0.41
16:P:238:LEU:O	16:P:242:VAL:HG23	2.20	0.41
14:N:76:ILE:HD11	45:N:501:LMT:H62	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:N:214:THR:HG22	14:N:218:MET:HE2	2.03	0.41
6:F:403:THR:HB	47:F:502:SF4:S4	2.61	0.41
12:L:264:TYR:N	12:L:265:PRO:CD	2.84	0.41
8:H:113:VAL:CG2	8:H:136:VAL:HG22	2.51	0.41
10:J:167:VAL:HG13	14:N:42:PRO:HD3	2.02	0.41
13:M:16:TRP:CE2	46:O:1201:3PE:H271	2.56	0.41
16:P:201:VAL:HG13	16:P:340:ILE:HD12	2.01	0.41
7:G:203:CYS:HA	47:G:802:SF4:S2	2.61	0.41
12:L:566:ILE:HG23	12:L:567:SER:N	2.35	0.41
13:M:141:GLU:HG2	13:M:222:GLU:CD	2.41	0.41
13:M:420:THR:O	60:M:1402:HOH:O	2.22	0.41
14:N:250:SER:O	14:N:259:GLY:HA3	2.20	0.41
14:N:289:ASN:HA	14:N:292:PHE:CE2	2.56	0.41
6:F:214:GLY:N	6:F:218:CYS:O	2.48	0.41
13:M:285:LEU:HD23	13:M:285:LEU:C	2.41	0.41
16:P:315:ILE:CD1	16:P:322:ARG:HH21	2.33	0.41
46:A:302:3PE:C2B	46:A:302:3PE:C2F	2.98	0.40
9:I:126:CYS:HA	47:I:202:SF4:S2	2.61	0.40
11:K:96:LEU:HD13	14:N:117:GLU:O	2.21	0.40
12:L:63:ILE:O	12:L:79:SER:HA	2.21	0.40
2:B:77:ARG:NH2	4:D:159:LEU:HD21	2.36	0.40
13:M:47:ASP:OD1	13:M:48:ASN:N	2.53	0.40
13:M:76:MET:SD	13:M:230:VAL:HB	2.62	0.40
4:D:343:GLU:OE2	4:D:343:GLU:N	2.49	0.40
8:H:301:CYS:O	8:H:305:VAL:HG23	2.20	0.40
10:J:125:TRP:CB	25:Z:137:THR:HG21	2.51	0.40
11:K:4:VAL:HG11	11:K:46:LEU:CD2	2.51	0.40
18:R:19:ASP:OD2	18:R:22:ASP:HB2	2.21	0.40
7:G:569:LYS:HA	7:G:585:VAL:HG22	2.04	0.40
20:U:47:GLN:NE2	20:U:70:LEU:O	2.50	0.40
8:H:142:TYR:CD1	8:H:289:LEU:HD12	2.57	0.40
8:H:233:MET:SD	8:H:234:MET:HE2	2.62	0.40
8:H:294:LEU:HB3	8:H:295:PRO:HD3	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	95/115 (83%)	92 (97%)	3 (3%)	0	100	100
2	B	152/216 (70%)	144 (95%)	7 (5%)	1 (1%)	22	26
3	C	204/266 (77%)	199 (98%)	5 (2%)	0	100	100
4	D	409/463 (88%)	402 (98%)	7 (2%)	0	100	100
5	E	211/249 (85%)	208 (99%)	3 (1%)	0	100	100
6	F	427/464 (92%)	418 (98%)	9 (2%)	0	100	100
7	G	686/727 (94%)	670 (98%)	16 (2%)	0	100	100
8	H	305/318 (96%)	296 (97%)	9 (3%)	0	100	100
9	I	174/212 (82%)	171 (98%)	3 (2%)	0	100	100
10	J	172/175 (98%)	162 (94%)	10 (6%)	0	100	100
11	K	94/98 (96%)	91 (97%)	3 (3%)	0	100	100
12	L	588/606 (97%)	569 (97%)	19 (3%)	0	100	100
13	M	457/459 (100%)	451 (99%)	6 (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	282/380 (74%)	278 (99%)	4 (1%)	0	100	100
17	Q	123/175 (70%)	123 (100%)	0	0	100	100
18	R	92/124 (74%)	89 (97%)	3 (3%)	0	100	100
19	S	81/99 (82%)	80 (99%)	1 (1%)	0	100	100
20	T	74/156 (47%)	70 (95%)	4 (5%)	0	100	100
20	U	82/156 (53%)	82 (100%)	0	0	100	100
21	V	110/116 (95%)	109 (99%)	1 (1%)	0	100	100
22	W	112/128 (88%)	109 (97%)	3 (3%)	0	100	100
23	X	169/172 (98%)	167 (99%)	2 (1%)	0	100	100
24	Y	138/141 (98%)	136 (99%)	2 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
25	Z	139/144 (96%)	138 (99%)	1 (1%)	0	100	100
26	a	67/70 (96%)	67 (100%)	0	0	100	100
27	b	81/84 (96%)	79 (98%)	2 (2%)	0	100	100
28	c	46/76 (60%)	46 (100%)	0	0	100	100
29	d	110/120 (92%)	107 (97%)	3 (3%)	0	100	100
30	e	93/106 (88%)	92 (99%)	1 (1%)	0	100	100
31	f	49/57 (86%)	49 (100%)	0	0	100	100
32	g	95/154 (62%)	91 (96%)	4 (4%)	0	100	100
33	h	136/189 (72%)	135 (99%)	1 (1%)	0	100	100
34	i	99/127 (78%)	96 (97%)	3 (3%)	0	100	100
35	j	65/108 (60%)	65 (100%)	0	0	100	100
36	k	77/98 (79%)	77 (100%)	0	0	100	100
37	l	153/186 (82%)	147 (96%)	6 (4%)	0	100	100
38	m	104/129 (81%)	101 (97%)	3 (3%)	0	100	100
39	n	169/179 (94%)	166 (98%)	3 (2%)	0	100	100
40	o	119/137 (87%)	116 (98%)	3 (2%)	0	100	100
41	p	168/176 (96%)	166 (99%)	2 (1%)	0	100	100
42	q	142/145 (98%)	141 (99%)	1 (1%)	0	100	100
43	r	90/113 (80%)	86 (96%)	4 (4%)	0	100	100
44	s	41/109 (38%)	40 (98%)	1 (2%)	0	100	100
All	All	7943/9212 (86%)	7776 (98%)	166 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	53	ALA

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	86/100 (86%)	86 (100%)	0	100	100
2	B	130/175 (74%)	130 (100%)	0	100	100
3	C	187/228 (82%)	187 (100%)	0	100	100
4	D	360/392 (92%)	360 (100%)	0	100	100
5	E	183/205 (89%)	183 (100%)	0	100	100
6	F	343/368 (93%)	343 (100%)	0	100	100
7	G	578/608 (95%)	577 (100%)	1 (0%)	93	97
8	H	267/274 (97%)	267 (100%)	0	100	100
9	I	151/175 (86%)	151 (100%)	0	100	100
10	J	140/141 (99%)	140 (100%)	0	100	100
11	K	83/85 (98%)	83 (100%)	0	100	100
12	L	521/533 (98%)	521 (100%)	0	100	100
13	M	412/412 (100%)	412 (100%)	0	100	100
14	N	315/315 (100%)	315 (100%)	0	100	100
15	O	283/303 (93%)	283 (100%)	0	100	100
16	P	249/327 (76%)	249 (100%)	0	100	100
17	Q	112/153 (73%)	112 (100%)	0	100	100
18	R	77/97 (79%)	77 (100%)	0	100	100
19	S	74/82 (90%)	74 (100%)	0	100	100
20	T	70/135 (52%)	69 (99%)	1 (1%)	67	81
20	U	78/135 (58%)	78 (100%)	0	100	100
21	V	100/102 (98%)	100 (100%)	0	100	100
22	W	107/114 (94%)	107 (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%)	119 (99%)	1 (1%)	81	91
26	a	58/59 (98%)	58 (100%)	0	100	100
27	b	71/72 (99%)	71 (100%)	0	100	100
28	c	44/68 (65%)	44 (100%)	0	100	100
29	d	100/105 (95%)	100 (100%)	0	100	100
30	e	86/96 (90%)	86 (100%)	0	100	100
31	f	48/54 (89%)	48 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
32	g	88/131 (67%)	87 (99%)	1 (1%)	73 86
33	h	121/158 (77%)	121 (100%)	0	100 100
34	i	98/120 (82%)	98 (100%)	0	100 100
35	j	61/84 (73%)	61 (100%)	0	100 100
36	k	61/76 (80%)	61 (100%)	0	100 100
37	l	139/159 (87%)	139 (100%)	0	100 100
38	m	96/115 (84%)	96 (100%)	0	100 100
39	n	156/161 (97%)	156 (100%)	0	100 100
40	o	110/120 (92%)	110 (100%)	0	100 100
41	p	154/157 (98%)	154 (100%)	0	100 100
42	q	130/131 (99%)	130 (100%)	0	100 100
43	r	84/97 (87%)	83 (99%)	1 (1%)	71 84
44	s	42/92 (46%)	42 (100%)	0	100 100
All	All	7028/7892 (89%)	7023 (100%)	5 (0%)	93 97

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	G	475	GLN
20	T	44(A)	SER
25	Z	5	LYS
32	g	57	ASN
43	r	60	ARG

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

Mol	Chain	Res	Type
6	F	435	GLN
6	F	436	GLN
8	H	287	HIS
11	K	52	HIS
13	M	293	HIS
16	P	250	HIS
16	P	288	HIS
39	n	72	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

11 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	$\#\|Z\| > 2$
10	FME	J	1	10	8,9,10	0.97	0	7,9,11	0.73	0
34	SAC	i	1	34	7,8,9	1.86	1 (14%)	8,9,11	1.95	1 (12%)
43	AYA	r	1	43	6,7,8	1.79	1 (16%)	5,8,10	1.19	1 (20%)
13	FME	M	1	13	8,9,10	0.93	0	7,9,11	0.97	1 (14%)
24	AYA	Y	1	24	6,7,8	1.82	2 (33%)	5,8,10	1.28	1 (20%)
11	FME	K	1	11	8,9,10	0.92	0	7,9,11	0.82	0
4	2MR	D	85	4	10,12,13	2.66	4 (40%)	5,13,15	1.16	1 (20%)
14	FME	N	1	14	8,9,10	0.95	0	7,9,11	1.20	1 (14%)
1	FME	A	1	1	8,9,10	0.99	1 (12%)	7,9,11	0.73	0
8	FME	H	1	8	8,9,10	0.97	0	7,9,11	0.92	0
12	FME	L	1	12	8,9,10	0.97	1 (12%)	7,9,11	0.83	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
10	FME	J	1	10	-	3/7/9/11	-
34	SAC	i	1	34	-	4/7/8/10	-
43	AYA	r	1	43	-	0/4/6/8	-
13	FME	M	1	13	-	0/7/9/11	-
24	AYA	Y	1	24	-	0/4/6/8	-
11	FME	K	1	11	-	1/7/9/11	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	2MR	D	85	4	-	0/10/13/15	-
14	FME	N	1	14	-	3/7/9/11	-
1	FME	A	1	1	-	3/7/9/11	-
8	FME	H	1	8	-	2/7/9/11	-
12	FME	L	1	12	-	3/7/9/11	-

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	85	2MR	CZ-NH2	5.14	1.44	1.33
4	D	85	2MR	CZ-NE	4.69	1.44	1.34
34	i	1	SAC	O-C	4.25	1.36	1.19
4	D	85	2MR	O-C	3.89	1.35	1.19
43	r	1	AYA	CT-N	3.27	1.45	1.34
24	Y	1	AYA	CT-N	3.25	1.45	1.34
1	A	1	FME	CA-N	-2.07	1.43	1.46
4	D	85	2MR	CQ1-NH1	-2.07	1.42	1.46
12	L	1	FME	CA-N	-2.04	1.43	1.46
24	Y	1	AYA	OT-CT	-2.03	1.18	1.23

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
34	i	1	SAC	O-C-CA	-4.63	112.65	124.78
4	D	85	2MR	NE-CZ-NH2	-2.30	117.37	119.48
24	Y	1	AYA	CM-CT-N	2.20	119.83	116.10
14	N	1	FME	C-CA-N	2.16	113.63	109.73
43	r	1	AYA	CM-CT-N	2.12	119.69	116.10
13	M	1	FME	C-CA-N	2.06	113.46	109.73

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1	FME	O1-CN-N-CA
1	A	1	FME	N-CA-CB-CG
1	A	1	FME	C-CA-CB-CG
8	H	1	FME	N-CA-CB-CG
10	J	1	FME	N-CA-CB-CG
12	L	1	FME	O1-CN-N-CA

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

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	L	1	FME	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 49 ligands modelled in this entry, 3 are monoatomic - leaving 46 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	$\#\|Z\| > 2$
46	3PE	H	402	-	50,50,50	0.86	4 (8%)	53,55,55	0.93	2 (3%)
45	LMT	L	705	-	36,36,36	1.20	3 (8%)	47,47,47	1.36	7 (14%)
45	LMT	h	1002	-	36,36,36	1.19	3 (8%)	47,47,47	1.20	3 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
47	SF4	B	201	2	0,12,12	-	-	-		
46	3PE	N	502	-	40,40,50	0.95	4 (10%)	43,45,55	1.15	2 (4%)
56	NDP	P	501	-	45,52,52	2.25	5 (11%)	53,80,80	1.63	10 (18%)
46	3PE	L	704	-	44,44,50	0.91	3 (6%)	47,49,55	1.06	3 (6%)
47	SF4	G	801	7	0,12,12	-	-	-		
52	CDL	L	703	-	68,68,99	1.03	6 (8%)	74,80,111	1.12	4 (5%)
58	EHZ	U	101	20	29,36,37	1.66	5 (17%)	35,44,47	1.54	3 (8%)
52	CDL	d	201	-	64,64,99	1.07	8 (12%)	70,76,111	1.18	4 (5%)
59	MYR	o	201	40	14,14,15	0.96	0	13,13,15	0.72	0
45	LMT	J	201	-	36,36,36	1.24	4 (11%)	47,47,47	1.24	7 (14%)
47	SF4	I	201	9	0,12,12	-	-	-		
47	SF4	G	802	7	0,12,12	-	-	-		
52	CDL	h	1001	-	66,66,99	1.06	6 (9%)	72,78,111	1.24	4 (5%)
46	3PE	M	1301	-	50,50,50	0.86	3 (6%)	53,55,55	1.11	2 (3%)
45	LMT	L	702	-	36,36,36	1.16	3 (8%)	47,47,47	0.87	1 (2%)
46	3PE	Y	604	-	28,28,50	1.12	4 (14%)	31,33,55	1.21	2 (6%)
45	LMT	h	1003	-	36,36,36	1.17	3 (8%)	47,47,47	1.09	2 (4%)
49	FES	E	301	5	0,4,4	-	-	-		
54	GTP	O	1202	55	26,34,34	2.92	10 (38%)	32,54,54	1.83	11 (34%)
45	LMT	Y	602	-	36,36,36	1.18	3 (8%)	47,47,47	0.98	3 (6%)
46	3PE	H	403	-	33,33,50	1.36	3 (9%)	34,37,55	1.23	2 (5%)
45	LMT	H	401	-	36,36,36	1.22	2 (5%)	47,47,47	0.94	0
45	LMT	l	201	-	36,36,36	1.19	3 (8%)	47,47,47	0.87	1 (2%)
47	SF4	F	502	6	0,12,12	-	-	-		
49	FES	G	803	7	0,4,4	-	-	-		
45	LMT	A	301	-	36,36,36	1.20	2 (5%)	47,47,47	1.00	3 (6%)
50	FMN	F	501	-	33,33,33	1.10	1 (3%)	48,50,50	1.31	8 (16%)
45	LMT	M	1303	-	36,36,36	1.24	4 (11%)	47,47,47	0.98	4 (8%)
53	I49	N	503	-	15,17,17	1.56	2 (13%)	21,22,22	1.72	4 (19%)
52	CDL	X	1701	-	67,67,99	1.05	7 (10%)	73,79,111	1.20	4 (5%)
58	EHZ	T	101	20	29,36,37	1.67	5 (17%)	35,44,47	1.48	6 (17%)
45	LMT	N	501	-	36,36,36	1.19	3 (8%)	47,47,47	0.96	1 (2%)
46	3PE	L	701	-	48,48,50	0.86	2 (4%)	51,53,55	1.05	2 (3%)
46	3PE	O	1201	-	46,46,50	0.90	4 (8%)	49,51,55	1.09	2 (4%)
45	LMT	f	1901	-	36,36,36	1.19	4 (11%)	47,47,47	1.02	2 (4%)
46	3PE	Y	601	-	39,39,50	0.94	4 (10%)	42,44,55	1.05	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
48	PC1	M	1302	-	48,48,53	1.00	4 (8%)	54,56,61	0.98	2 (3%)
48	PC1	B	202	-	34,34,53	1.16	4 (11%)	40,42,61	1.13	2 (5%)
52	CDL	r	201	-	75,75,99	1.00	8 (10%)	81,87,111	1.11	4 (4%)
46	3PE	Y	603	-	34,34,50	1.04	4 (11%)	37,39,55	1.16	2 (5%)
46	3PE	A	302	-	41,41,50	0.92	4 (9%)	44,46,55	1.09	2 (4%)
45	LMT	j	101	-	36,36,36	1.20	3 (8%)	47,47,47	0.79	0
47	SF4	I	202	9	0,12,12	-	-	-		

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
46	3PE	H	402	-	-	16/54/54/54	-
45	LMT	L	705	-	-	7/21/61/61	0/2/2/2
45	LMT	h	1002	-	-	10/21/61/61	0/2/2/2
47	SF4	B	201	2	-	-	0/6/5/5
46	3PE	N	502	-	-	22/44/44/54	-
56	NDP	P	501	-	-	7/30/77/77	0/5/5/5
46	3PE	L	704	-	-	21/48/48/54	-
47	SF4	G	801	7	-	-	0/6/5/5
52	CDL	L	703	-	-	33/79/79/110	-
58	EHZ	U	101	20	-	4/42/44/45	-
52	CDL	d	201	-	-	31/75/75/110	-
59	MYR	o	201	40	-	4/11/12/13	-
45	LMT	J	201	-	-	7/21/61/61	0/2/2/2
47	SF4	I	201	9	-	-	0/6/5/5
52	CDL	h	1001	-	-	32/77/77/110	-
47	SF4	G	802	7	-	-	0/6/5/5
46	3PE	M	1301	-	-	20/54/54/54	-
45	LMT	L	702	-	-	3/21/61/61	0/2/2/2
46	3PE	Y	604	-	-	12/32/32/54	-
45	LMT	h	1003	-	-	4/21/61/61	0/2/2/2
54	GTP	O	1202	55	-	7/18/38/38	0/3/3/3
49	FES	E	301	5	-	-	0/1/1/1
45	LMT	Y	602	-	-	10/21/61/61	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
46	3PE	H	403	-	-	17/36/36/54	-
45	LMT	H	401	-	-	9/21/61/61	0/2/2/2
45	LMT	l	201	-	-	4/21/61/61	0/2/2/2
47	SF4	F	502	6	-	-	0/6/5/5
49	FES	G	803	7	-	-	0/1/1/1
45	LMT	A	301	-	-	10/21/61/61	0/2/2/2
50	FMN	F	501	-	-	2/18/18/18	0/3/3/3
45	LMT	M	1303	-	-	8/21/61/61	0/2/2/2
53	I49	N	503	-	-	3/10/10/10	0/1/1/1
52	CDL	X	1701	-	-	32/78/78/110	-
58	EHZ	T	101	20	-	13/42/44/45	-
45	LMT	N	501	-	-	7/21/61/61	0/2/2/2
46	3PE	L	701	-	-	20/52/52/54	-
46	3PE	O	1201	-	-	26/50/50/54	-
45	LMT	f	1901	-	-	9/21/61/61	0/2/2/2
46	3PE	Y	601	-	-	15/43/43/54	-
48	PC1	M	1302	-	-	16/52/52/57	-
48	PC1	B	202	-	-	13/38/38/57	-
52	CDL	r	201	-	-	37/86/86/110	-
46	3PE	Y	603	-	-	20/38/38/54	-
46	3PE	A	302	-	-	26/45/45/54	-
45	LMT	j	101	-	-	9/21/61/61	0/2/2/2
47	SF4	I	202	9	-	-	0/6/5/5

All (150) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
56	P	501	NDP	P2B-O2B	12.42	1.82	1.59
54	O	1202	GTP	O6-C6	8.17	1.39	1.23
46	H	403	3PE	O21-C2	-5.30	1.40	1.46
54	O	1202	GTP	O4'-C1'	5.29	1.48	1.41
58	U	101	EHZ	C15-N2	5.23	1.45	1.33
58	T	101	EHZ	C12-N1	5.17	1.45	1.33
58	T	101	EHZ	C15-N2	5.16	1.44	1.33
58	U	101	EHZ	C12-N1	4.92	1.44	1.33
53	N	503	I49	C15-N02	-4.85	1.30	1.37
54	O	1202	GTP	C2-N2	4.79	1.45	1.34
54	O	1202	GTP	C2-N1	4.72	1.49	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
54	O	1202	GTP	C2-N3	4.43	1.43	1.33
45	L	705	LMT	O5B-C1B	3.92	1.51	1.41
56	P	501	NDP	PN-O5D	3.63	1.74	1.59
45	H	401	LMT	O5B-C1B	3.62	1.51	1.41
50	F	501	FMN	C4A-N5	3.54	1.37	1.30
45	l	201	LMT	O5B-C1B	3.46	1.50	1.41
45	h	1002	LMT	O5B-C1B	3.46	1.50	1.41
45	N	501	LMT	O5B-C1B	3.46	1.50	1.41
45	f	1901	LMT	O5B-C1B	3.46	1.50	1.41
45	Y	602	LMT	O5B-C1B	3.43	1.50	1.41
45	M	1303	LMT	O5B-C1B	3.43	1.50	1.41
45	j	101	LMT	O5B-C1B	3.42	1.50	1.41
45	J	201	LMT	O5B-C1B	3.41	1.50	1.41
45	M	1303	LMT	O5'-C1'	3.38	1.50	1.41
45	A	301	LMT	O5B-C1B	3.35	1.50	1.41
45	L	702	LMT	O5B-C1B	3.34	1.50	1.41
54	O	1202	GTP	C2'-C1'	-3.33	1.48	1.53
45	J	201	LMT	O5'-C1'	3.28	1.50	1.41
54	O	1202	GTP	C5-C6	-3.18	1.40	1.47
45	j	101	LMT	O5'-C1'	3.18	1.49	1.41
45	h	1003	LMT	O5B-C1B	3.11	1.49	1.41
45	A	301	LMT	O5'-C1'	3.11	1.49	1.41
53	N	503	I49	C14-N03	3.09	1.38	1.29
45	N	501	LMT	O5'-C1'	3.09	1.49	1.41
45	h	1002	LMT	O5'-C1'	3.08	1.49	1.41
56	P	501	NDP	O2B-C2B	-3.05	1.33	1.44
45	l	201	LMT	O5'-C1'	3.02	1.49	1.41
45	H	401	LMT	O5'-C1'	3.01	1.49	1.41
45	h	1003	LMT	O5'-C1'	3.00	1.49	1.41
45	f	1901	LMT	O5'-C1'	2.97	1.49	1.41
46	H	403	3PE	O21-C21	2.96	1.40	1.33
52	r	201	CDL	OB6-CB4	-2.81	1.39	1.46
45	L	702	LMT	O5'-C1'	2.81	1.49	1.41
45	Y	602	LMT	O5'-C1'	2.80	1.49	1.41
46	L	701	3PE	O21-C2	-2.80	1.39	1.46
52	L	703	CDL	OB6-CB4	-2.80	1.39	1.46
45	L	705	LMT	O5'-C1'	2.77	1.48	1.41
46	L	704	3PE	O21-C2	-2.77	1.39	1.46
48	M	1302	PC1	O21-C2	-2.74	1.39	1.46
52	L	703	CDL	OA6-CA4	-2.73	1.39	1.46
52	r	201	CDL	OA6-CA4	-2.73	1.39	1.46
46	M	1301	3PE	O21-C2	-2.72	1.39	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	h	1001	CDL	OB6-CB4	-2.72	1.39	1.46
46	L	701	3PE	O31-C3	-2.70	1.39	1.45
52	h	1001	CDL	OB8-CB6	-2.67	1.39	1.45
52	d	201	CDL	OB6-CB4	-2.66	1.39	1.46
46	H	402	3PE	O31-C3	-2.63	1.39	1.45
52	h	1001	CDL	OA6-CA4	-2.61	1.40	1.46
52	X	1701	CDL	OA6-CA4	-2.60	1.40	1.46
52	d	201	CDL	OA6-CA4	-2.60	1.40	1.46
46	O	1201	3PE	O21-C2	-2.57	1.40	1.46
58	U	101	EHZ	O3-C12	-2.56	1.18	1.23
46	Y	604	3PE	O21-C2	-2.54	1.40	1.46
46	Y	603	3PE	O21-C2	-2.53	1.40	1.46
58	T	101	EHZ	O4-C15	-2.53	1.18	1.23
52	X	1701	CDL	OB6-CB4	-2.52	1.40	1.46
46	N	502	3PE	O21-C2	-2.49	1.40	1.46
46	Y	601	3PE	O21-C2	-2.49	1.40	1.46
48	B	202	PC1	O21-C2	-2.48	1.40	1.46
45	L	705	LMT	O5B-C5B	2.48	1.50	1.44
46	A	302	3PE	O31-C31	2.47	1.40	1.33
52	L	703	CDL	OB8-CB7	2.44	1.40	1.33
46	M	1301	3PE	O31-C3	-2.43	1.39	1.45
52	r	201	CDL	OA8-CA6	-2.43	1.39	1.45
46	H	402	3PE	O21-C2	-2.42	1.40	1.46
46	O	1201	3PE	O31-C31	2.42	1.40	1.33
52	X	1701	CDL	OA8-CA7	2.42	1.40	1.33
48	M	1302	PC1	O31-C3	-2.41	1.39	1.45
58	U	101	EHZ	O4-C15	-2.39	1.18	1.23
54	O	1202	GTP	PG-O2G	-2.39	1.45	1.54
52	d	201	CDL	OA8-CA6	-2.38	1.39	1.45
52	X	1701	CDL	OB8-CB7	2.37	1.40	1.33
54	O	1202	GTP	C2'-C3'	-2.37	1.46	1.53
52	d	201	CDL	OB8-CB7	2.35	1.40	1.33
58	T	101	EHZ	O3-C12	-2.34	1.18	1.23
54	O	1202	GTP	PG-O3G	-2.34	1.45	1.54
52	r	201	CDL	OB8-CB7	2.33	1.40	1.33
46	L	704	3PE	O31-C3	-2.33	1.39	1.45
46	Y	603	3PE	O31-C31	2.33	1.40	1.33
46	H	403	3PE	O31-C31	2.32	1.40	1.33
45	J	201	LMT	O5'-C5'	2.32	1.50	1.44
48	B	202	PC1	O21-C21	2.29	1.40	1.34
52	L	703	CDL	OA8-CA7	2.28	1.40	1.33
52	h	1001	CDL	OA8-CA7	2.27	1.40	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
46	O	1201	3PE	O31-C3	-2.26	1.40	1.45
46	N	502	3PE	O31-C31	2.25	1.39	1.33
46	N	502	3PE	O31-C3	-2.25	1.40	1.45
46	Y	604	3PE	O31-C31	2.24	1.39	1.33
48	B	202	PC1	O31-C31	2.24	1.39	1.33
52	r	201	CDL	OB8-CB6	-2.24	1.40	1.45
52	X	1701	CDL	OA8-CA6	-2.24	1.40	1.45
45	L	702	LMT	O5B-C5B	2.23	1.49	1.44
46	Y	601	3PE	O31-C31	2.23	1.39	1.33
45	h	1002	LMT	O5B-C5B	2.23	1.49	1.44
52	d	201	CDL	OB8-CB6	-2.22	1.40	1.45
46	O	1201	3PE	O21-C21	2.22	1.40	1.34
46	L	704	3PE	O31-C31	2.21	1.39	1.33
48	M	1302	PC1	O31-C31	2.21	1.39	1.33
46	Y	604	3PE	O31-C3	-2.21	1.40	1.45
46	Y	603	3PE	O31-C3	-2.20	1.40	1.45
46	M	1301	3PE	O31-C31	2.19	1.39	1.33
45	h	1003	LMT	O5'-C5'	2.18	1.49	1.44
45	Y	602	LMT	O5B-C5B	2.18	1.49	1.44
52	X	1701	CDL	OA6-CA5	2.18	1.40	1.34
52	d	201	CDL	OA8-CA7	2.17	1.39	1.33
52	L	703	CDL	OA8-CA6	-2.17	1.40	1.45
45	f	1901	LMT	O5'-C5'	2.16	1.49	1.44
45	J	201	LMT	O5B-C5B	2.16	1.49	1.44
45	N	501	LMT	O5B-C5B	2.15	1.49	1.44
46	H	402	3PE	O21-C21	2.14	1.40	1.34
46	N	502	3PE	O21-C21	2.14	1.40	1.34
46	A	302	3PE	O21-C2	-2.14	1.41	1.46
48	B	202	PC1	O31-C3	-2.14	1.40	1.45
46	Y	601	3PE	O31-C3	-2.13	1.40	1.45
58	U	101	EHZ	C9-S1	2.12	1.81	1.76
52	X	1701	CDL	OB8-CB6	-2.12	1.40	1.45
52	h	1001	CDL	OB8-CB7	2.12	1.39	1.33
45	M	1303	LMT	O5'-C5'	2.11	1.49	1.44
45	l	201	LMT	O5B-C5B	2.11	1.49	1.44
52	r	201	CDL	OA8-CA7	2.11	1.39	1.33
46	A	302	3PE	O21-C21	2.09	1.40	1.34
45	f	1901	LMT	O5B-C5B	2.08	1.49	1.44
46	H	402	3PE	O31-C31	2.07	1.39	1.33
52	d	201	CDL	OA6-CA5	2.07	1.40	1.34
48	M	1302	PC1	O21-C21	2.06	1.40	1.34
46	A	302	3PE	O31-C3	-2.05	1.40	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
52	r	201	CDL	OA6-CA5	2.05	1.40	1.34
56	P	501	NDP	C2A-N1A	2.04	1.37	1.33
46	Y	601	3PE	O21-C21	2.04	1.40	1.34
45	M	1303	LMT	O5B-C5B	2.04	1.49	1.44
46	Y	604	3PE	O21-C21	2.04	1.40	1.34
52	h	1001	CDL	OB6-CB5	2.04	1.40	1.34
46	Y	603	3PE	O21-C21	2.03	1.40	1.34
52	L	703	CDL	OB8-CB6	-2.03	1.40	1.45
52	d	201	CDL	OB6-CB5	2.03	1.40	1.34
56	P	501	NDP	O3D-C3D	-2.02	1.38	1.43
58	T	101	EHZ	O6-C20	-2.02	1.39	1.44
52	r	201	CDL	OB6-CB5	2.01	1.40	1.34
45	j	101	LMT	O5B-C5B	2.01	1.49	1.44

All (123) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
56	P	501	NDP	PN-O3-PA	-6.62	110.12	132.83
58	U	101	EHZ	C8-C9-S1	6.36	121.50	113.63
58	T	101	EHZ	C8-C9-S1	5.63	120.59	113.63
46	H	403	3PE	O21-C21-O22	-4.92	119.31	125.57
52	X	1701	CDL	OB6-CB5-C51	4.62	121.45	111.50
52	h	1001	CDL	OB6-CB5-C51	4.58	121.38	111.50
53	N	503	I49	N01-C14-N03	4.49	128.67	120.26
52	d	201	CDL	OA6-CA5-C11	4.35	120.87	111.50
48	B	202	PC1	O21-C21-C22	4.27	120.70	111.50
46	Y	604	3PE	O21-C21-C22	4.25	120.66	111.50
45	J	201	LMT	O5'-C5'-C4'	4.23	118.67	109.75
52	X	1701	CDL	OA6-CA5-C11	4.20	120.56	111.50
46	Y	603	3PE	O21-C21-C22	4.11	120.35	111.50
46	N	502	3PE	O21-C21-C22	4.10	120.35	111.50
46	O	1201	3PE	O21-C21-C22	4.01	120.15	111.50
54	O	1202	GTP	C3'-C2'-C1'	3.97	106.95	100.98
45	h	1003	LMT	O5'-C5'-C4'	3.96	118.10	109.75
46	A	302	3PE	O21-C21-C22	3.85	119.79	111.50
46	M	1301	3PE	O21-C21-C22	3.85	119.79	111.50
52	h	1001	CDL	OA6-CA5-C11	3.79	119.68	111.50
52	r	201	CDL	OB6-CB5-C51	3.77	119.62	111.50
45	L	705	LMT	O5B-C5B-C4B	3.66	116.33	109.69
48	M	1302	PC1	O21-C21-C22	3.64	119.34	111.50
52	L	703	CDL	OB6-CB5-C51	3.63	119.33	111.50
52	L	703	CDL	OA6-CA5-C11	3.63	119.32	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
46	Y	601	3PE	O21-C21-C22	3.60	119.26	111.50
56	P	501	NDP	O2B-P2B-O1X	-3.51	95.84	109.39
52	r	201	CDL	OA6-CA5-C11	3.49	119.03	111.50
45	f	1901	LMT	O5'-C5'-C4'	3.43	116.99	109.75
50	F	501	FMN	C4-N3-C2	-3.32	119.50	125.64
52	d	201	CDL	OB6-CB5-C51	3.32	120.05	110.80
46	L	701	3PE	O21-C21-C22	3.31	118.64	111.50
45	L	705	LMT	C1B-O5B-C5B	3.30	120.16	113.69
54	O	1202	GTP	C5-C6-N1	3.29	119.76	113.95
54	O	1202	GTP	C2-N1-C6	-3.19	119.22	125.10
46	L	704	3PE	O21-C21-C22	3.13	118.24	111.50
45	h	1002	LMT	C1'-C2'-C3'	3.09	116.44	110.00
52	h	1001	CDL	OA8-CA7-C31	3.09	121.59	111.91
46	H	402	3PE	O21-C21-C22	3.07	118.11	111.50
46	H	403	3PE	O31-C31-C32	3.03	121.42	111.91
52	d	201	CDL	OA8-CA7-C31	3.00	121.32	111.91
54	O	1202	GTP	O2G-PG-O3B	2.98	114.62	104.64
52	X	1701	CDL	OB8-CB7-C71	2.97	121.22	111.91
46	O	1201	3PE	O31-C31-C32	2.94	121.13	111.91
54	O	1202	GTP	O3G-PG-O3B	2.93	114.45	104.64
50	F	501	FMN	C4A-C10-N10	2.88	120.69	116.48
52	L	703	CDL	OA8-CA7-C31	2.84	120.82	111.91
53	N	503	I49	N05-C15-N04	-2.81	111.60	120.26
52	h	1001	CDL	OB8-CB7-C71	2.80	120.70	111.91
45	A	301	LMT	C1B-O5B-C5B	-2.80	108.19	113.69
56	P	501	NDP	PA-O5B-C5B	-2.79	105.31	121.68
45	L	705	LMT	C1'-O5'-C5'	-2.79	108.22	113.69
52	X	1701	CDL	OA8-CA7-C31	2.79	120.65	111.91
46	Y	603	3PE	O31-C31-C32	2.78	120.64	111.91
45	L	705	LMT	C2'-C3'-C4'	2.78	116.03	109.68
46	N	502	3PE	O31-C31-C32	2.78	120.63	111.91
54	O	1202	GTP	PB-O3B-PG	-2.77	123.31	132.83
50	F	501	FMN	C4A-C4-N3	2.77	120.21	113.19
45	A	301	LMT	O1B-C4'-C3'	2.76	114.63	107.28
46	L	704	3PE	O31-C31-C32	2.76	120.56	111.91
52	r	201	CDL	OA8-CA7-C31	2.74	120.50	111.91
58	T	101	EHZ	O2-C9-S1	-2.71	119.09	122.61
48	B	202	PC1	O31-C31-C32	2.67	120.30	111.91
45	J	201	LMT	C1'-O5'-C5'	2.67	118.93	113.69
46	M	1301	3PE	O31-C31-C32	2.63	120.17	111.91
46	Y	604	3PE	O31-C31-C32	2.62	120.13	111.91
54	O	1202	GTP	PA-O3A-PB	-2.61	123.89	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
58	T	101	EHZ	C13-C12-N1	2.60	120.81	116.42
46	Y	601	3PE	O31-C31-C32	2.59	120.03	111.91
52	d	201	CDL	OB8-CB7-C71	2.58	120.02	111.91
50	F	501	FMN	O4-C4-C4A	-2.57	119.78	126.60
48	M	1302	PC1	O31-C31-C32	2.57	119.96	111.91
52	L	703	CDL	OB8-CB7-C71	2.56	119.93	111.91
54	O	1202	GTP	C2'-C3'-C4'	2.55	107.60	102.64
45	L	705	LMT	C1'-C2'-C3'	2.54	115.29	110.00
56	P	501	NDP	O3X-P2B-O2X	2.51	117.24	107.64
54	O	1202	GTP	O2A-PA-O1A	-2.51	99.84	112.24
45	h	1002	LMT	C2'-C3'-C4'	2.48	115.35	109.68
52	r	201	CDL	OB8-CB7-C71	2.47	119.64	111.91
45	h	1002	LMT	C1-O1'-C1'	2.47	117.93	113.84
58	U	101	EHZ	O2-C9-S1	-2.45	119.43	122.61
45	L	705	LMT	O5B-C1B-C2B	2.45	115.53	110.35
45	f	1901	LMT	C3'-C4'-C5'	2.44	116.52	110.93
56	P	501	NDP	PN-O5D-C5D	-2.42	107.50	121.68
45	J	201	LMT	O5B-C5B-C4B	2.38	114.01	109.69
45	L	705	LMT	C6B-C5B-C4B	-2.38	107.43	113.00
56	P	501	NDP	C2A-N1A-C6A	-2.37	114.69	118.75
46	L	701	3PE	O31-C31-C32	2.36	119.30	111.91
58	U	101	EHZ	C13-C12-N1	2.35	120.37	116.42
46	A	302	3PE	O31-C31-C32	2.35	119.27	111.91
45	J	201	LMT	C3B-C4B-C5B	2.33	114.40	110.24
45	h	1003	LMT	C1B-O1B-C4'	-2.33	112.21	117.96
45	Y	602	LMT	C1'-C2'-C3'	2.31	114.80	110.00
50	F	501	FMN	C10-C4A-N5	-2.29	120.00	124.86
45	L	702	LMT	C1B-O1B-C4'	-2.28	112.32	117.96
45	A	301	LMT	C1'-O5'-C5'	-2.28	109.21	113.69
56	P	501	NDP	O5D-PN-O1N	-2.27	100.18	109.07
53	N	503	I49	C14-N02-C15	-2.26	121.44	125.21
56	P	501	NDP	O2N-PN-O1N	2.24	123.33	112.24
54	O	1202	GTP	O2B-PB-O1B	-2.24	101.17	112.24
54	O	1202	GTP	O6-C6-C5	-2.24	120.00	124.37
45	J	201	LMT	C1-O1'-C1'	2.21	117.51	113.84
46	H	402	3PE	O31-C31-C32	2.19	118.79	111.91
50	F	501	FMN	C4A-C10-N1	-2.17	119.68	124.73
58	T	101	EHZ	C13-C14-N2	-2.17	107.52	111.90
45	Y	602	LMT	C2'-C3'-C4'	2.13	114.55	109.68
56	P	501	NDP	O4B-C4B-C3B	2.13	109.32	105.11
45	M	1303	LMT	O5'-C5'-C4'	2.11	114.21	109.75
58	T	101	EHZ	C19-C17-C16	2.11	112.48	108.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	l	201	LMT	C1B-O1B-C4'	-2.10	112.76	117.96
45	J	201	LMT	C3'-C4'-C5'	2.10	115.74	110.93
58	T	101	EHZ	C16-C15-N2	2.09	120.74	116.58
56	P	501	NDP	O7N-C7N-N7N	-2.09	117.99	122.88
50	F	501	FMN	C5'-C4'-C3'	-2.07	108.21	112.20
45	M	1303	LMT	O5B-C5B-C4B	2.06	113.43	109.69
45	M	1303	LMT	C1'-O5'-C5'	2.05	117.72	113.69
45	N	501	LMT	O1B-C4'-C3'	2.05	112.72	107.28
53	N	503	I49	C09-C07-C10	2.04	121.39	118.54
45	M	1303	LMT	C3B-C4B-C5B	2.03	113.86	110.24
50	F	501	FMN	C9A-C5A-N5	-2.01	120.25	122.43
45	J	201	LMT	C1B-O1B-C4'	-2.01	112.99	117.96
46	L	704	3PE	C23-C22-C21	-2.01	106.32	113.62
45	Y	602	LMT	C1-O1'-C1'	2.01	117.17	113.84

There are no chirality outliers.

All (546) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
45	A	301	LMT	C2'-C1'-O1'-C1
45	A	301	LMT	O5'-C1'-O1'-C1
45	J	201	LMT	C2-C1-O1'-C1'
45	h	1003	LMT	C2-C1-O1'-C1'
46	A	302	3PE	C1-O11-P-O12
46	A	302	3PE	C1-O11-P-O14
46	A	302	3PE	C11-O13-P-O14
46	A	302	3PE	O13-C11-C12-N
46	A	302	3PE	O21-C2-C3-O31
46	A	302	3PE	C1-C2-O21-C21
46	A	302	3PE	O22-C21-O21-C2
46	A	302	3PE	C22-C21-O21-C2
46	H	402	3PE	C11-O13-P-O14
46	H	403	3PE	C2-C1-O11-P
46	H	403	3PE	O13-C11-C12-N
46	H	403	3PE	C1-C2-O21-C21
46	H	403	3PE	O22-C21-O21-C2
46	L	704	3PE	C11-O13-P-O12
46	M	1301	3PE	O13-C11-C12-N
46	N	502	3PE	O13-C11-C12-N
46	O	1201	3PE	C22-C21-O21-C2
46	Y	601	3PE	O13-C11-C12-N
46	Y	603	3PE	C11-O13-P-O11

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Mol	Chain	Res	Type	Atoms
46	Y	603	3PE	C11-O13-P-O12
46	Y	603	3PE	C11-O13-P-O14
46	Y	603	3PE	C22-C21-O21-C2
46	Y	604	3PE	C1-O11-P-O13
46	Y	604	3PE	O22-C21-O21-C2
52	L	703	CDL	CA2-OA2-PA1-OA3
52	X	1701	CDL	OA7-CA5-OA6-CA4
52	X	1701	CDL	CB2-OB2-PB2-OB3
52	X	1701	CDL	OB6-CB4-CB6-OB8
52	d	201	CDL	CA3-OA5-PA1-OA2
52	d	201	CDL	CA3-OA5-PA1-OA3
52	d	201	CDL	CA3-OA5-PA1-OA4
52	d	201	CDL	C11-CA5-OA6-CA4
52	d	201	CDL	C51-CB5-OB6-CB4
52	h	1001	CDL	CA2-C1-CB2-OB2
52	h	1001	CDL	CA2-OA2-PA1-OA5
52	h	1001	CDL	CA3-OA5-PA1-OA4
52	h	1001	CDL	OB7-CB5-OB6-CB4
52	r	201	CDL	C11-CA5-OA6-CA4
52	r	201	CDL	CB2-OB2-PB2-OB5
52	r	201	CDL	CB3-OB5-PB2-OB3
53	N	503	I49	C07-C06-C08-N01
53	N	503	I49	N01-C14-N02-C15
53	N	503	I49	N03-C14-N02-C15
54	O	1202	GTP	PB-O3B-PG-O2G
54	O	1202	GTP	C5'-O5'-PA-O3A
54	O	1202	GTP	C5'-O5'-PA-O2A
56	P	501	NDP	C2B-O2B-P2B-O1X
58	T	101	EHZ	C6-C7-C8-C9
58	T	101	EHZ	C11-C10-S1-C9
58	T	101	EHZ	N2-C15-C16-C17
58	T	101	EHZ	N2-C15-C16-O5
58	T	101	EHZ	O4-C15-C16-C17
58	U	101	EHZ	C5-C6-C7-C8
45	M	1303	LMT	O5B-C1B-O1B-C4'
45	A	301	LMT	C3'-C4'-O1B-C1B
46	O	1201	3PE	O32-C31-O31-C3
52	X	1701	CDL	OB9-CB7-OB8-CB6
45	L	705	LMT	O5B-C1B-O1B-C4'
45	f	1901	LMT	O5B-C1B-O1B-C4'
46	O	1201	3PE	C32-C31-O31-C3
52	X	1701	CDL	C71-CB7-OB8-CB6

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Mol	Chain	Res	Type	Atoms
46	M	1301	3PE	O32-C31-O31-C3
46	Y	604	3PE	O32-C31-O31-C3
52	X	1701	CDL	OA9-CA7-OA8-CA6
52	d	201	CDL	OB9-CB7-OB8-CB6
45	M	1303	LMT	C2B-C1B-O1B-C4'
46	Y	603	3PE	O22-C21-O21-C2
52	d	201	CDL	OB7-CB5-OB6-CB4
46	Y	604	3PE	C32-C31-O31-C3
52	X	1701	CDL	C31-CA7-OA8-CA6
46	Y	604	3PE	C22-C21-O21-C2
52	X	1701	CDL	C11-CA5-OA6-CA4
52	h	1001	CDL	C51-CB5-OB6-CB4
45	Y	602	LMT	O5B-C5B-C6B-O6B
45	J	201	LMT	C4B-C5B-C6B-O6B
45	N	501	LMT	C3'-C4'-O1B-C1B
46	M	1301	3PE	C32-C31-O31-C3
46	N	502	3PE	C32-C31-O31-C3
52	d	201	CDL	C71-CB7-OB8-CB6
46	O	1201	3PE	O22-C21-O21-C2
52	d	201	CDL	OA7-CA5-OA6-CA4
52	r	201	CDL	OA7-CA5-OA6-CA4
46	Y	603	3PE	O32-C31-O31-C3
52	h	1001	CDL	OB9-CB7-OB8-CB6
52	h	1001	CDL	O1-C1-CB2-OB2
46	Y	603	3PE	C32-C31-O31-C3
52	h	1001	CDL	C71-CB7-OB8-CB6
45	N	501	LMT	O5'-C5'-C6'-O6'
45	h	1002	LMT	O5'-C5'-C6'-O6'
46	L	701	3PE	C22-C21-O21-C2
45	A	301	LMT	O5B-C5B-C6B-O6B
45	A	301	LMT	O5'-C5'-C6'-O6'
45	f	1901	LMT	O5'-C5'-C6'-O6'
45	Y	602	LMT	O5'-C5'-C6'-O6'
56	P	501	NDP	O4B-C4B-C5B-O5B
56	P	501	NDP	O4D-C4D-C5D-O5D
56	P	501	NDP	C3D-C4D-C5D-O5D
45	Y	602	LMT	C4B-C5B-C6B-O6B
48	M	1302	PC1	C2-C1-O11-P
45	h	1003	LMT	C2-C3-C4-C5
45	N	501	LMT	C4'-C5'-C6'-O6'
45	J	201	LMT	O5B-C5B-C6B-O6B
46	N	502	3PE	O32-C31-O31-C3

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Mol	Chain	Res	Type	Atoms
45	H	401	LMT	O5'-C1'-O1'-C1
45	J	201	LMT	O5'-C1'-O1'-C1
46	L	704	3PE	C32-C31-O31-C3
52	L	703	CDL	CB2-C1-CA2-OA2
46	L	701	3PE	O22-C21-O21-C2
46	L	704	3PE	O32-C31-O31-C3
45	H	401	LMT	C3'-C4'-O1B-C1B
48	B	202	PC1	C32-C31-O31-C3
48	M	1302	PC1	C32-C31-O31-C3
45	M	1303	LMT	C3'-C4'-O1B-C1B
52	L	703	CDL	O1-C1-CA2-OA2
45	f	1901	LMT	C2'-C1'-O1'-C1
48	B	202	PC1	O32-C31-O31-C3
48	M	1302	PC1	O32-C31-O31-C3
45	f	1901	LMT	C2B-C1B-O1B-C4'
46	L	701	3PE	C32-C31-O31-C3
52	X	1701	CDL	CA7-C31-C32-C33
48	B	202	PC1	C21-C22-C23-C24
45	N	501	LMT	O1'-C1-C2-C3
45	L	705	LMT	O5'-C5'-C6'-O6'
46	H	402	3PE	C21-C22-C23-C24
46	L	701	3PE	C31-C32-C33-C34
52	h	1001	CDL	CB5-C51-C52-C53
45	J	201	LMT	O5B-C1B-O1B-C4'
45	Y	602	LMT	C4'-C5'-C6'-O6'
46	H	402	3PE	C26-C27-C28-C29
45	J	201	LMT	C2B-C1B-O1B-C4'
45	A	301	LMT	C2-C3-C4-C5
52	X	1701	CDL	O1-C1-CB2-OB2
45	A	301	LMT	C4'-C5'-C6'-O6'
45	A	301	LMT	C4B-C5B-C6B-O6B
45	M	1303	LMT	C4'-C5'-C6'-O6'
46	L	701	3PE	O32-C31-O31-C3
46	A	302	3PE	C1-O11-P-O13
46	A	302	3PE	C11-O13-P-O11
46	H	402	3PE	C11-O13-P-O11
46	L	704	3PE	C1-O11-P-O13
46	L	704	3PE	C11-O13-P-O11
52	L	703	CDL	CA2-OA2-PA1-OA5
52	d	201	CDL	CA2-OA2-PA1-OA5
46	L	701	3PE	C21-C22-C23-C24
45	h	1002	LMT	C4'-C5'-C6'-O6'

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Mol	Chain	Res	Type	Atoms
45	M	1303	LMT	C5'-C4'-O1B-C1B
52	X	1701	CDL	CA2-C1-CB2-OB2
45	j	101	LMT	O5'-C5'-C6'-O6'
52	r	201	CDL	C13-C14-C15-C16
52	L	703	CDL	C51-CB5-OB6-CB4
45	h	1002	LMT	C4-C5-C6-C7
45	j	101	LMT	C5-C6-C7-C8
46	L	704	3PE	C38-C39-C3A-C3B
46	O	1201	3PE	C34-C35-C36-C37
52	h	1001	CDL	C22-C23-C24-C25
52	r	201	CDL	C38-C39-C40-C41
45	L	702	LMT	C11-C10-C9-C8
48	B	202	PC1	C24-C25-C26-C27
52	L	703	CDL	OB7-CB5-OB6-CB4
46	O	1201	3PE	C21-C22-C23-C24
52	X	1701	CDL	CB5-C51-C52-C53
46	M	1301	3PE	C2D-C2E-C2F-C2G
48	M	1302	PC1	C2C-C2D-C2E-C2F
46	H	403	3PE	C3D-C3E-C3F-C3G
52	X	1701	CDL	C15-C16-C17-C18
52	r	201	CDL	C71-C72-C73-C74
46	M	1301	3PE	C35-C36-C37-C38
45	L	705	LMT	C2'-C1'-O1'-C1
46	A	302	3PE	C2A-C2B-C2C-C2D
52	L	703	CDL	C54-C55-C56-C57
52	X	1701	CDL	C57-C58-C59-C60
45	h	1003	LMT	C4-C5-C6-C7
46	H	403	3PE	C33-C34-C35-C36
52	X	1701	CDL	C51-C52-C53-C54
52	h	1001	CDL	C71-C72-C73-C74
58	T	101	EHZ	C3-C4-C5-C6
48	M	1302	PC1	C23-C24-C25-C26
52	X	1701	CDL	C55-C56-C57-C58
52	h	1001	CDL	C31-C32-C33-C34
52	r	201	CDL	C51-C52-C53-C54
52	r	201	CDL	C57-C58-C59-C60
46	A	302	3PE	C28-C29-C2A-C2B
46	H	402	3PE	C3A-C3B-C3C-C3D
48	M	1302	PC1	C26-C27-C28-C29
52	L	703	CDL	C35-C36-C37-C38
52	h	1001	CDL	C12-C13-C14-C15
46	A	302	3PE	C21-C22-C23-C24

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Mol	Chain	Res	Type	Atoms
52	X	1701	CDL	CA5-C11-C12-C13
45	N	501	LMT	C5-C6-C7-C8
46	H	403	3PE	C32-C33-C34-C35
46	H	403	3PE	C35-C36-C37-C38
46	O	1201	3PE	C33-C34-C35-C36
52	X	1701	CDL	C71-C72-C73-C74
52	X	1701	CDL	C73-C74-C75-C76
45	L	705	LMT	O5'-C1'-O1'-C1
45	h	1002	LMT	O5'-C1'-O1'-C1
46	L	701	3PE	C2B-C2C-C2D-C2E
46	L	704	3PE	C3A-C3B-C3C-C3D
46	M	1301	3PE	C3D-C3E-C3F-C3G
46	Y	601	3PE	C23-C24-C25-C26
52	L	703	CDL	C12-C13-C14-C15
59	o	201	MYR	C11-C10-C9-C8
46	Y	604	3PE	O13-C11-C12-N
48	M	1302	PC1	C39-C3A-C3B-C3C
52	h	1001	CDL	C31-CA7-OA8-CA6
45	H	401	LMT	C7-C8-C9-C10
46	H	402	3PE	C33-C34-C35-C36
59	o	201	MYR	C2-C3-C4-C5
45	M	1303	LMT	C2-C1-O1'-C1'
46	M	1301	3PE	C27-C28-C29-C2A
52	X	1701	CDL	C11-C12-C13-C14
46	M	1301	3PE	C1-C2-C3-O31
52	r	201	CDL	CB3-CB4-CB6-OB8
48	M	1302	PC1	C2A-C2B-C2C-C2D
46	H	403	3PE	C32-C31-O31-C3
45	H	401	LMT	C3-C4-C5-C6
48	M	1302	PC1	C32-C33-C34-C35
46	A	302	3PE	C32-C33-C34-C35
46	L	701	3PE	C22-C23-C24-C25
48	M	1302	PC1	C2E-C2F-C2G-C2H
59	o	201	MYR	C4-C5-C6-C7
46	N	502	3PE	C23-C24-C25-C26
46	A	302	3PE	C26-C27-C28-C29
52	h	1001	CDL	C72-C73-C74-C75
58	T	101	EHZ	C21-C1-C2-C3
45	H	401	LMT	C4'-C5'-C6'-O6'
52	r	201	CDL	C37-C38-C39-C40
52	d	201	CDL	CA5-C11-C12-C13
45	j	101	LMT	C1-C2-C3-C4

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Mol	Chain	Res	Type	Atoms
46	Y	604	3PE	C32-C33-C34-C35
52	X	1701	CDL	C20-C21-C22-C23
46	Y	604	3PE	C21-C22-C23-C24
46	H	403	3PE	O32-C31-O31-C3
52	h	1001	CDL	OA9-CA7-OA8-CA6
46	N	502	3PE	C35-C36-C37-C38
46	N	502	3PE	O22-C21-O21-C2
46	L	701	3PE	C2A-C2B-C2C-C2D
46	N	502	3PE	C32-C33-C34-C35
45	M	1303	LMT	O5'-C5'-C6'-O6'
45	l	201	LMT	C4-C5-C6-C7
52	r	201	CDL	C59-C60-C61-C62
46	L	704	3PE	C22-C21-O21-C2
46	N	502	3PE	C22-C21-O21-C2
48	B	202	PC1	C22-C21-O21-C2
46	N	502	3PE	C29-C2A-C2B-C2C
48	M	1302	PC1	C36-C37-C38-C39
48	M	1302	PC1	O21-C2-C3-O31
46	A	302	3PE	C2C-C2D-C2E-C2F
52	h	1001	CDL	C15-C16-C17-C18
48	M	1302	PC1	C29-C2A-C2B-C2C
58	T	101	EHZ	C1-C2-C3-C4
46	L	704	3PE	O22-C21-O21-C2
46	M	1301	3PE	C33-C34-C35-C36
45	f	1901	LMT	C1-C2-C3-C4
46	N	502	3PE	C11-O13-P-O11
46	O	1201	3PE	C1-O11-P-O13
52	h	1001	CDL	CA3-OA5-PA1-OA2
52	L	703	CDL	C52-C53-C54-C55
45	J	201	LMT	O5'-C5'-C6'-O6'
52	L	703	CDL	OB5-CB3-CB4-CB6
45	h	1002	LMT	C5'-C4'-O1B-C1B
46	Y	601	3PE	C2A-C2B-C2C-C2D
46	M	1301	3PE	C3C-C3D-C3E-C3F
46	L	701	3PE	C24-C25-C26-C27
52	d	201	CDL	C33-C34-C35-C36
46	M	1301	3PE	C23-C24-C25-C26
52	d	201	CDL	C38-C39-C40-C41
46	H	402	3PE	C35-C36-C37-C38
46	L	701	3PE	C1-C2-C3-O31
52	r	201	CDL	CA3-CA4-CA6-OA8
45	h	1002	LMT	O5B-C5B-C6B-O6B

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Mol	Chain	Res	Type	Atoms
58	U	101	EHZ	C1-C2-C3-C4
45	L	702	LMT	C4-C5-C6-C7
46	Y	603	3PE	C32-C33-C34-C35
45	f	1901	LMT	O5'-C1'-O1'-C1
58	T	101	EHZ	O4-C15-C16-O5
45	L	705	LMT	C2B-C1B-O1B-C4'
58	U	101	EHZ	C1-C21-C22-C23
46	L	704	3PE	C31-C32-C33-C34
46	L	701	3PE	C25-C26-C27-C28
46	A	302	3PE	C39-C3A-C3B-C3C
45	N	501	LMT	O5B-C5B-C6B-O6B
58	U	101	EHZ	C5-C6-C7-O1
46	O	1201	3PE	C3A-C3B-C3C-C3D
52	r	201	CDL	C35-C36-C37-C38
46	H	402	3PE	C32-C31-O31-C3
46	Y	601	3PE	C33-C34-C35-C36
45	h	1002	LMT	C3'-C4'-O1B-C1B
45	h	1002	LMT	O5B-C1B-O1B-C4'
46	H	402	3PE	C3B-C3C-C3D-C3E
52	L	703	CDL	C34-C35-C36-C37
52	d	201	CDL	C76-C77-C78-C79
52	r	201	CDL	C71-CB7-OB8-CB6
46	L	704	3PE	O11-C1-C2-O21
48	M	1302	PC1	C34-C35-C36-C37
52	L	703	CDL	C71-C72-C73-C74
46	Y	603	3PE	C34-C35-C36-C37
52	X	1701	CDL	C19-C20-C21-C22
46	O	1201	3PE	O21-C2-C3-O31
52	r	201	CDL	OB6-CB4-CB6-OB8
46	L	701	3PE	C33-C34-C35-C36
46	O	1201	3PE	C3C-C3D-C3E-C3F
46	Y	601	3PE	C26-C27-C28-C29
52	d	201	CDL	C74-C75-C76-C77
46	Y	601	3PE	C32-C33-C34-C35
52	r	201	CDL	C18-C19-C20-C21
46	H	402	3PE	C2A-C2B-C2C-C2D
46	H	403	3PE	C3C-C3D-C3E-C3F
46	L	704	3PE	C25-C26-C27-C28
48	B	202	PC1	C32-C33-C34-C35
56	P	501	NDP	PN-O3-PA-O1A
48	B	202	PC1	O22-C21-O21-C2
52	r	201	CDL	C15-C16-C17-C18

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Mol	Chain	Res	Type	Atoms
52	L	703	CDL	CB5-C51-C52-C53
46	L	704	3PE	O11-C1-C2-C3
46	N	502	3PE	O11-C1-C2-C3
52	h	1001	CDL	OA5-CA3-CA4-CA6
45	f	1901	LMT	O5B-C5B-C6B-O6B
52	r	201	CDL	CA5-C11-C12-C13
46	H	402	3PE	O32-C31-O31-C3
45	H	401	LMT	C5'-C4'-O1B-C1B
46	H	402	3PE	C23-C24-C25-C26
46	H	402	3PE	C32-C33-C34-C35
45	Y	602	LMT	C2-C1-O1'-C1'
52	X	1701	CDL	C17-C18-C19-C20
52	L	703	CDL	C31-CA7-OA8-CA6
48	B	202	PC1	C1-C2-C3-O31
48	M	1302	PC1	C1-C2-C3-O31
52	L	703	CDL	CB3-CB4-CB6-OB8
46	O	1201	3PE	C35-C36-C37-C38
46	M	1301	3PE	C3A-C3B-C3C-C3D
52	L	703	CDL	C32-C33-C34-C35
46	L	701	3PE	C39-C3A-C3B-C3C
52	X	1701	CDL	CB2-OB2-PB2-OB5
46	N	502	3PE	O11-C1-C2-O21
52	L	703	CDL	OB5-CB3-CB4-OB6
52	h	1001	CDL	OA5-CA3-CA4-OA6
52	r	201	CDL	OB9-CB7-OB8-CB6
52	L	703	CDL	C60-C61-C62-C63
52	d	201	CDL	C39-C40-C41-C42
46	L	701	3PE	O21-C2-C3-O31
48	B	202	PC1	O21-C2-C3-O31
46	M	1301	3PE	C29-C2A-C2B-C2C
46	O	1201	3PE	C28-C29-C2A-C2B
59	o	201	MYR	C9-C10-C11-C12
48	B	202	PC1	C2-C1-O11-P
46	M	1301	3PE	C25-C26-C27-C28
46	N	502	3PE	C34-C35-C36-C37
46	L	701	3PE	C27-C28-C29-C2A
52	L	703	CDL	C55-C56-C57-C58
46	Y	603	3PE	O11-C1-C2-C3
56	P	501	NDP	O4D-C1D-N1N-C6N
52	r	201	CDL	C31-CA7-OA8-CA6
46	Y	604	3PE	C31-C32-C33-C34
45	l	201	LMT	O1'-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
45	h	1003	LMT	C4'-C5'-C6'-O6'
46	N	502	3PE	C33-C34-C35-C36
58	T	101	EHZ	C12-C13-C14-N2
46	A	302	3PE	C1-C2-C3-O31
52	X	1701	CDL	CB3-CB4-CB6-OB8
52	r	201	CDL	C33-C34-C35-C36
52	X	1701	CDL	CB2-C1-CA2-OA2
52	X	1701	CDL	O1-C1-CA2-OA2
58	T	101	EHZ	O1-C7-C8-C9
52	L	703	CDL	OA9-CA7-OA8-CA6
46	L	704	3PE	C22-C23-C24-C25
46	H	403	3PE	C31-C32-C33-C34
45	M	1303	LMT	C9-C10-C11-C12
45	H	401	LMT	O5B-C5B-C6B-O6B
46	O	1201	3PE	C26-C27-C28-C29
45	A	301	LMT	O1'-C1-C2-C3
45	j	101	LMT	O1'-C1-C2-C3
46	H	402	3PE	C2C-C2D-C2E-C2F
46	Y	601	3PE	C1-O11-P-O13
52	d	201	CDL	C31-C32-C33-C34
46	N	502	3PE	C31-C32-C33-C34
52	r	201	CDL	OA9-CA7-OA8-CA6
46	H	403	3PE	C11-O13-P-O14
46	L	704	3PE	C1-O11-P-O12
46	L	704	3PE	C1-O11-P-O14
46	N	502	3PE	C11-O13-P-O12
46	O	1201	3PE	C1-O11-P-O14
46	Y	601	3PE	C1-O11-P-O12
46	Y	601	3PE	C1-O11-P-O14
52	d	201	CDL	CA2-OA2-PA1-OA3
52	d	201	CDL	CA2-OA2-PA1-OA4
52	h	1001	CDL	CA3-OA5-PA1-OA3
52	h	1001	CDL	CB2-OB2-PB2-OB4
54	O	1202	GTP	C5'-O5'-PA-O1A
52	d	201	CDL	CB7-C71-C72-C73
52	d	201	CDL	OA5-CA3-CA4-CA6
58	T	101	EHZ	C4-C5-C6-C7
45	l	201	LMT	C1-C2-C3-C4
46	M	1301	3PE	C12-C11-O13-P
46	Y	603	3PE	C12-C11-O13-P
52	L	703	CDL	CA7-C31-C32-C33
46	Y	603	3PE	O11-C1-C2-O21

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Mol	Chain	Res	Type	Atoms
52	d	201	CDL	OA5-CA3-CA4-OA6
45	L	705	LMT	C4B-C5B-C6B-O6B
52	X	1701	CDL	C52-C51-CB5-OB6
45	N	501	LMT	C5'-C4'-O1B-C1B
52	r	201	CDL	C56-C57-C58-C59
45	f	1901	LMT	C4'-C5'-C6'-O6'
46	O	1201	3PE	C1-C2-C3-O31
46	Y	603	3PE	C1-C2-C3-O31
52	X	1701	CDL	CA3-CA4-CA6-OA8
46	M	1301	3PE	O21-C2-C3-O31
46	Y	603	3PE	O21-C2-C3-O31
52	L	703	CDL	OB6-CB4-CB6-OB8
52	h	1001	CDL	OA6-CA4-CA6-OA8
52	r	201	CDL	OA6-CA4-CA6-OA8
46	L	704	3PE	C34-C35-C36-C37
46	L	701	3PE	C2E-C2F-C2G-C2H
46	A	302	3PE	C27-C28-C29-C2A
45	Y	602	LMT	C1-C2-C3-C4
45	f	1901	LMT	C5-C6-C7-C8
52	h	1001	CDL	C33-C34-C35-C36
46	O	1201	3PE	C25-C26-C27-C28
46	H	403	3PE	O31-C31-C32-C33
45	H	401	LMT	O5'-C5'-C6'-O6'
45	h	1002	LMT	C6-C7-C8-C9
46	O	1201	3PE	C39-C3A-C3B-C3C
46	N	502	3PE	C28-C29-C2A-C2B
45	l	201	LMT	C5-C6-C7-C8
52	h	1001	CDL	C16-C17-C18-C19
46	Y	601	3PE	C28-C29-C2A-C2B
52	X	1701	CDL	OA6-CA4-CA6-OA8
46	Y	603	3PE	C37-C38-C39-C3A
46	Y	603	3PE	C1-O11-P-O13
52	h	1001	CDL	CB3-OB5-PB2-OB2
52	r	201	CDL	CA3-OA5-PA1-OA2
48	M	1302	PC1	C28-C29-C2A-C2B
52	X	1701	CDL	C74-C75-C76-C77
46	Y	604	3PE	C33-C34-C35-C36
46	H	403	3PE	C1-C2-C3-O31
46	A	302	3PE	C2B-C2C-C2D-C2E
46	H	402	3PE	C31-C32-C33-C34
46	Y	601	3PE	C2C-C2D-C2E-C2F
50	F	501	FMN	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
46	L	704	3PE	O21-C21-C22-C23
46	O	1201	3PE	O13-C11-C12-N
45	h	1002	LMT	C2B-C1B-O1B-C4'
45	Y	602	LMT	C2'-C1'-O1'-C1
46	A	302	3PE	C23-C24-C25-C26
52	L	703	CDL	CB4-CB3-OB5-PB2
54	O	1202	GTP	C4'-C5'-O5'-PA
52	L	703	CDL	OA7-CA5-OA6-CA4
46	Y	603	3PE	C3B-C3C-C3D-C3E
46	N	502	3PE	C26-C27-C28-C29
52	h	1001	CDL	CA3-CA4-CA6-OA8
45	Y	602	LMT	O5'-C1'-O1'-C1
52	h	1001	CDL	CA6-CA4-OA6-CA5
46	H	403	3PE	C11-O13-P-O11
46	Y	601	3PE	O21-C21-C22-C23
52	X	1701	CDL	CB4-CB3-OB5-PB2
45	j	101	LMT	O5B-C1B-O1B-C4'
46	L	701	3PE	C35-C36-C37-C38
45	Y	602	LMT	C3'-C4'-O1B-C1B
48	B	202	PC1	C33-C34-C35-C36
46	O	1201	3PE	C32-C33-C34-C35
45	j	101	LMT	O5'-C1'-O1'-C1
45	Y	602	LMT	C5'-C4'-O1B-C1B
54	O	1202	GTP	PG-O3B-PB-O1B
52	L	703	CDL	C38-C39-C40-C41
46	M	1301	3PE	C2F-C2G-C2H-C2I
45	j	101	LMT	C2B-C1B-O1B-C4'
52	r	201	CDL	C14-C15-C16-C17
45	L	705	LMT	C4'-C5'-C6'-O6'
46	M	1301	3PE	C22-C23-C24-C25
52	d	201	CDL	OB5-CB3-CB4-OB6
52	r	201	CDL	OB5-CB3-CB4-OB6
45	A	301	LMT	C1-C2-C3-C4
52	r	201	CDL	C52-C53-C54-C55
52	r	201	CDL	C58-C59-C60-C61
46	L	701	3PE	O13-C11-C12-N
46	Y	603	3PE	O13-C11-C12-N
46	O	1201	3PE	C2B-C2C-C2D-C2E
46	L	704	3PE	C29-C2A-C2B-C2C
46	L	704	3PE	C28-C29-C2A-C2B
46	Y	601	3PE	C2F-C2G-C2H-C2I
54	O	1202	GTP	PB-O3B-PG-O1G

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Mol	Chain	Res	Type	Atoms
46	O	1201	3PE	O21-C21-C22-C23
46	N	502	3PE	O21-C21-C22-C23
52	h	1001	CDL	CA3-CA4-OA6-CA5
46	H	402	3PE	C25-C26-C27-C28
52	d	201	CDL	C41-C42-C43-C44
52	r	201	CDL	C11-C12-C13-C14
46	N	502	3PE	O31-C31-C32-C33
48	B	202	PC1	O21-C21-C22-C23
46	A	302	3PE	O31-C31-C32-C33
52	d	201	CDL	C72-C71-CB7-OB8
45	j	101	LMT	C4-C5-C6-C7
52	d	201	CDL	OB5-CB3-CB4-CB6
52	r	201	CDL	C72-C71-CB7-OB8
46	A	302	3PE	O21-C21-C22-C23
52	d	201	CDL	C71-C72-C73-C74
52	r	201	CDL	C52-C51-CB5-OB6
46	A	302	3PE	C33-C34-C35-C36
46	Y	604	3PE	C22-C23-C24-C25
56	P	501	NDP	PN-O3-PA-O2A
52	L	703	CDL	C11-CA5-OA6-CA4
48	B	202	PC1	O22-C21-C22-C23
52	h	1001	CDL	C19-C20-C21-C22
46	H	403	3PE	C3A-C3B-C3C-C3D
52	d	201	CDL	C35-C36-C37-C38
46	L	704	3PE	C39-C3A-C3B-C3C
46	A	302	3PE	O32-C31-C32-C33
46	O	1201	3PE	O22-C21-C22-C23
52	d	201	CDL	CA3-CA4-CA6-OA8
52	L	703	CDL	CA4-CA3-OA5-PA1
46	A	302	3PE	O22-C21-C22-C23
46	Y	601	3PE	O32-C31-O31-C3
46	L	701	3PE	C1-O11-P-O14
46	M	1301	3PE	C1-O11-P-O14
46	N	502	3PE	C11-O13-P-O14
46	O	1201	3PE	C1-O11-P-O12
52	L	703	CDL	CA3-OA5-PA1-OA3
52	L	703	CDL	CB2-OB2-PB2-OB3
52	h	1001	CDL	CB3-OB5-PB2-OB3
52	r	201	CDL	CA2-OA2-PA1-OA3
52	r	201	CDL	CA3-OA5-PA1-OA3
52	d	201	CDL	C72-C71-CB7-OB9
46	Y	604	3PE	O31-C31-C32-C33

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Mol	Chain	Res	Type	Atoms
46	N	502	3PE	O22-C21-C22-C23
46	O	1201	3PE	C38-C39-C3A-C3B
52	L	703	CDL	C32-C31-CA7-OA8
46	Y	603	3PE	C39-C3A-C3B-C3C
46	Y	603	3PE	C3A-C3B-C3C-C3D
46	Y	601	3PE	C12-C11-O13-P
52	d	201	CDL	C40-C41-C42-C43
52	r	201	CDL	C72-C71-CB7-OB9
50	F	501	FMN	N10-C1'-C2'-O2'
58	T	101	EHZ	C5-C6-C7-O1
45	L	702	LMT	C2-C1-O1'-C1'
45	j	101	LMT	C2-C1-O1'-C1'
52	h	1001	CDL	C32-C31-CA7-OA8
46	O	1201	3PE	C2A-C2B-C2C-C2D
52	r	201	CDL	C52-C51-CB5-OB7
52	L	703	CDL	C32-C31-CA7-OA9
45	H	401	LMT	C5-C6-C7-C8
46	M	1301	3PE	C26-C27-C28-C29
52	L	703	CDL	C72-C71-CB7-OB8

There are no ring outliers.

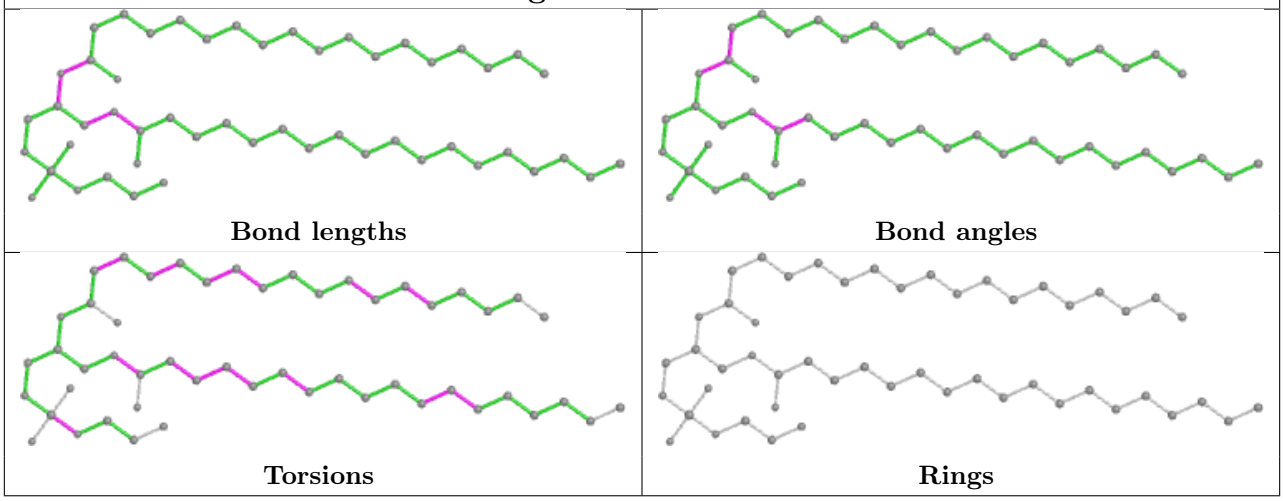
14 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
45	L	705	LMT	1	0
47	G	802	SF4	1	0
46	M	1301	3PE	5	0
54	O	1202	GTP	2	0
45	Y	602	LMT	2	0
47	F	502	SF4	1	0
45	A	301	LMT	2	0
50	F	501	FMN	1	0
45	M	1303	LMT	2	0
53	N	503	I49	1	0
45	N	501	LMT	3	0
46	O	1201	3PE	1	0
46	A	302	3PE	1	0
47	I	202	SF4	1	0

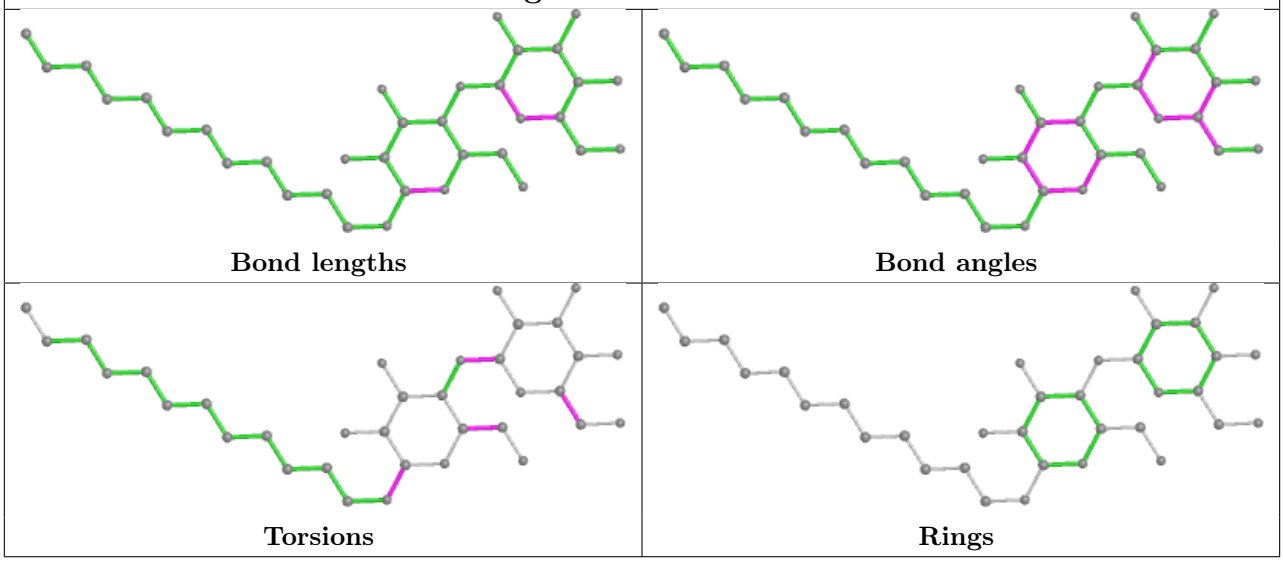
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less 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.

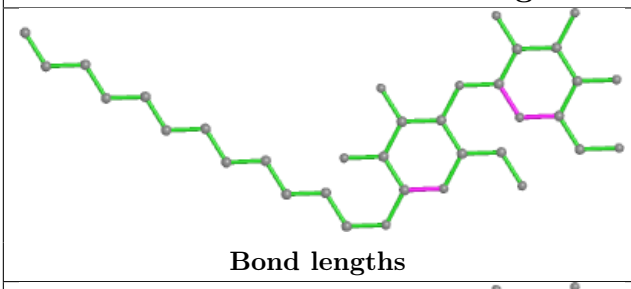
Ligand 3PE H 402



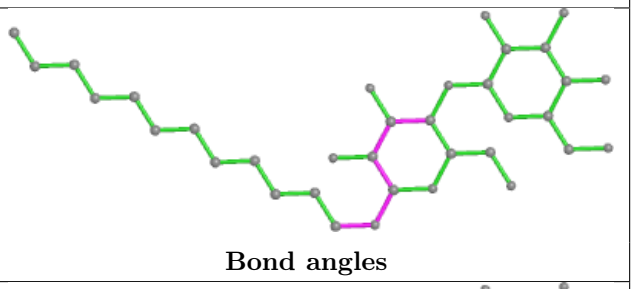
Ligand LMT L 705



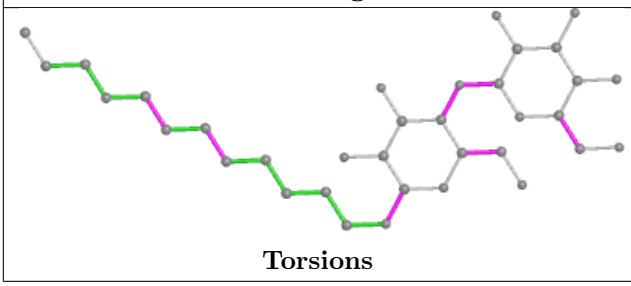
Ligand LMT h 1002



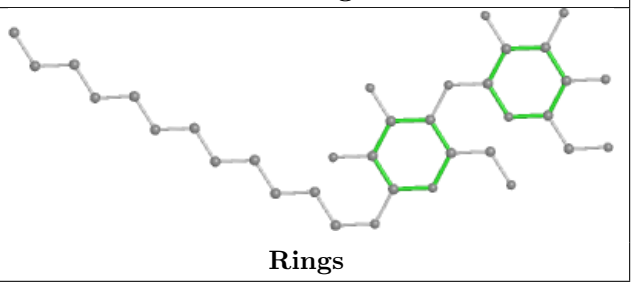
Bond lengths



Bond angles

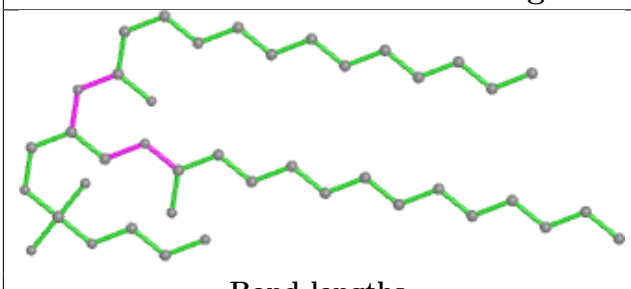


Torsions



Rings

Ligand 3PE N 502



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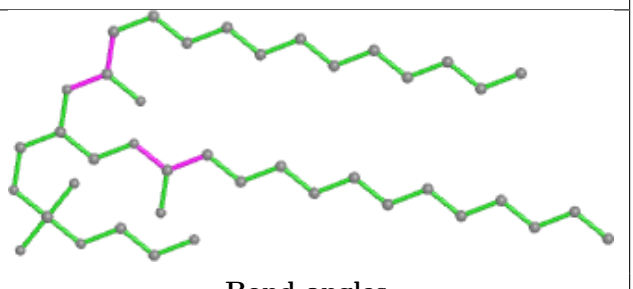
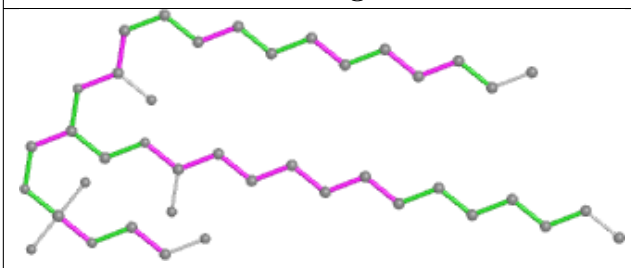
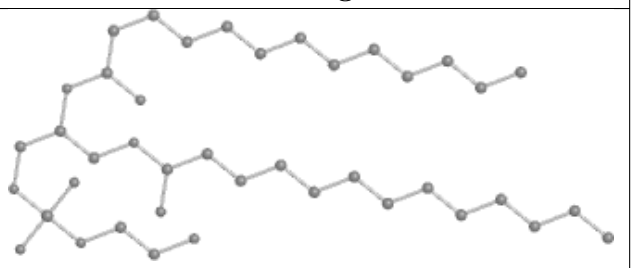


Bond angles

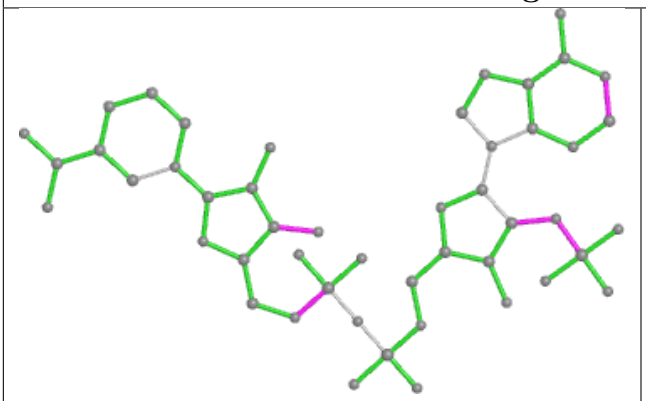


Torsions



Rings

Ligand NDP P 501



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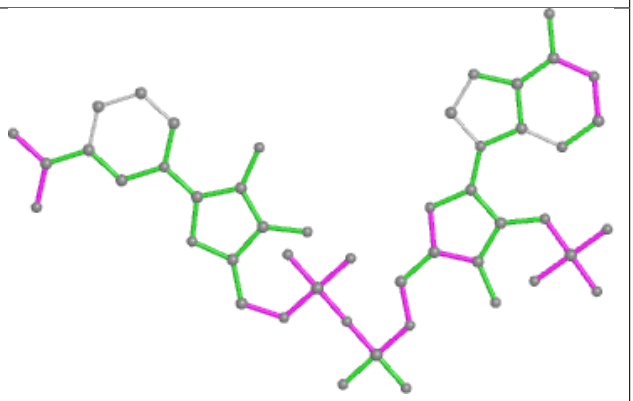
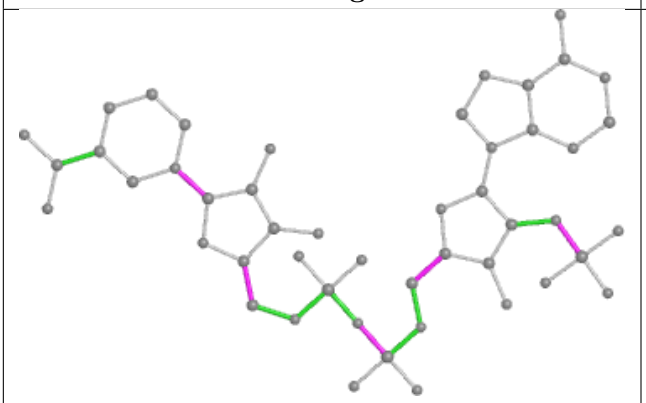


Bond angles



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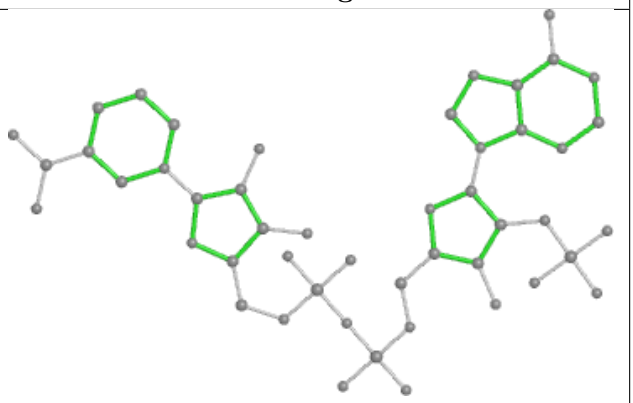
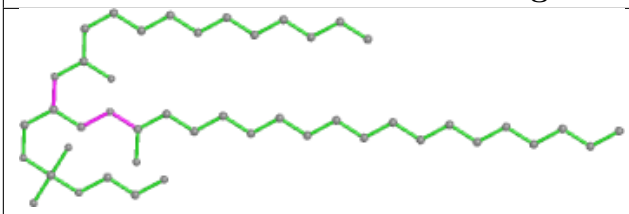


Rings

Ligand 3PE L 704



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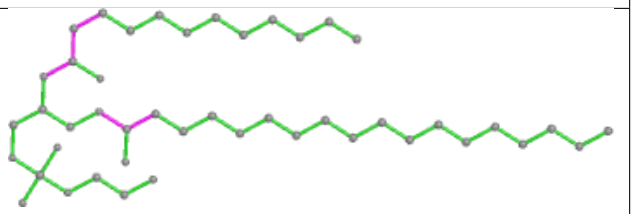
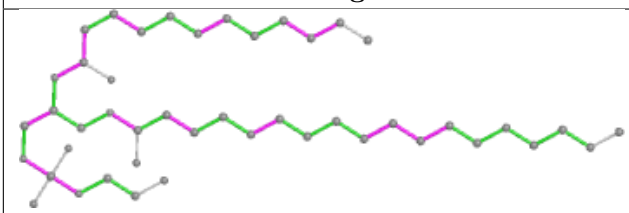


Bond angles



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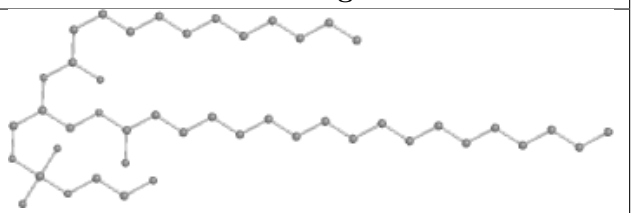
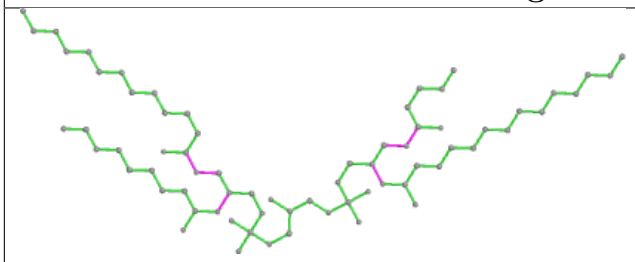


Rings

Ligand CDL L 703



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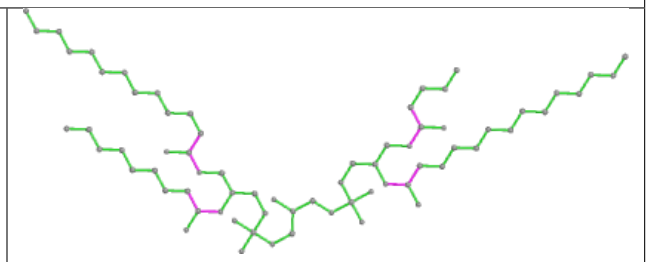
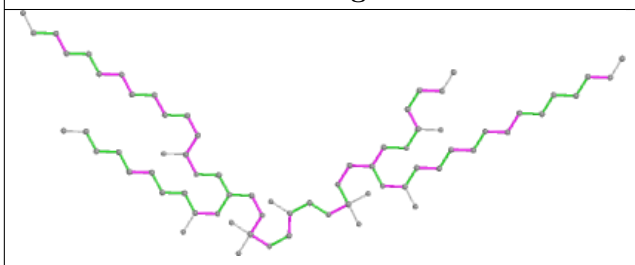


Bond angles



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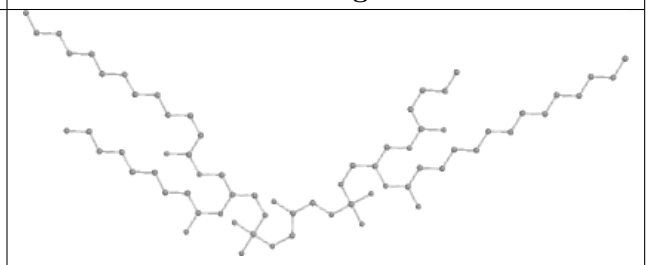
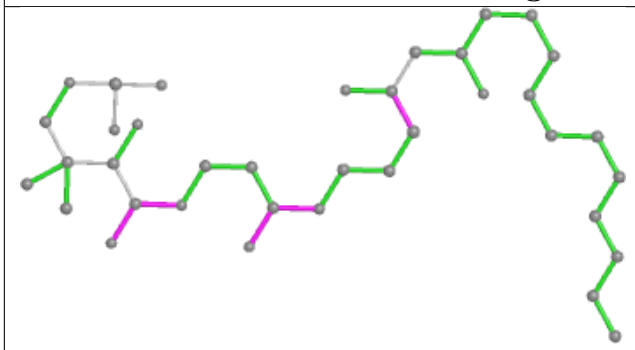


Rings

Ligand EHZ U 101



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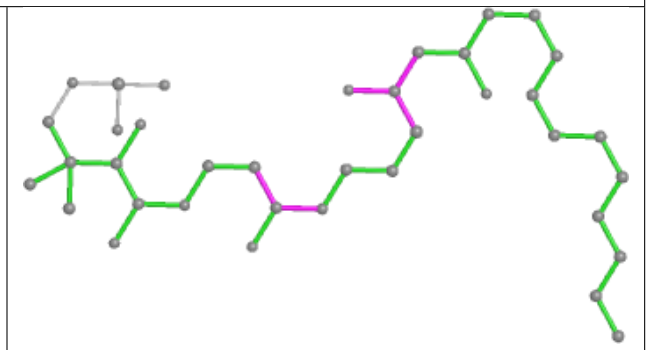
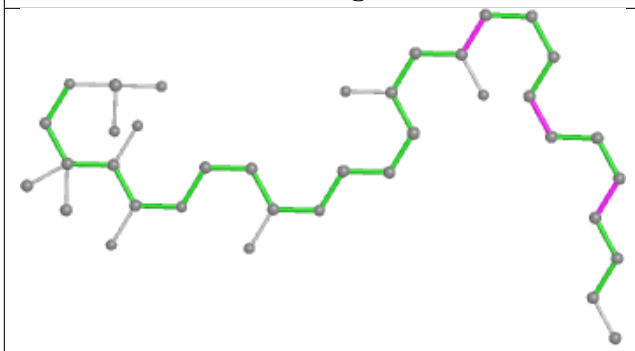
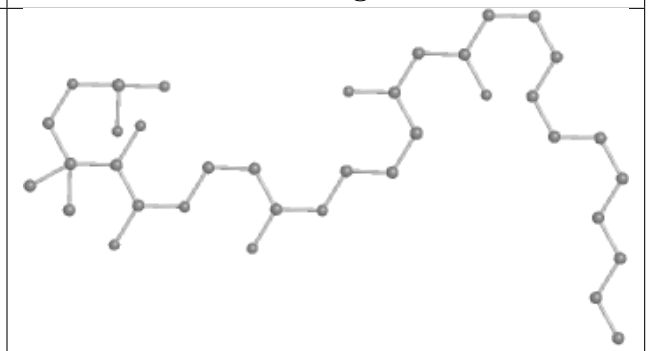


Bond angles

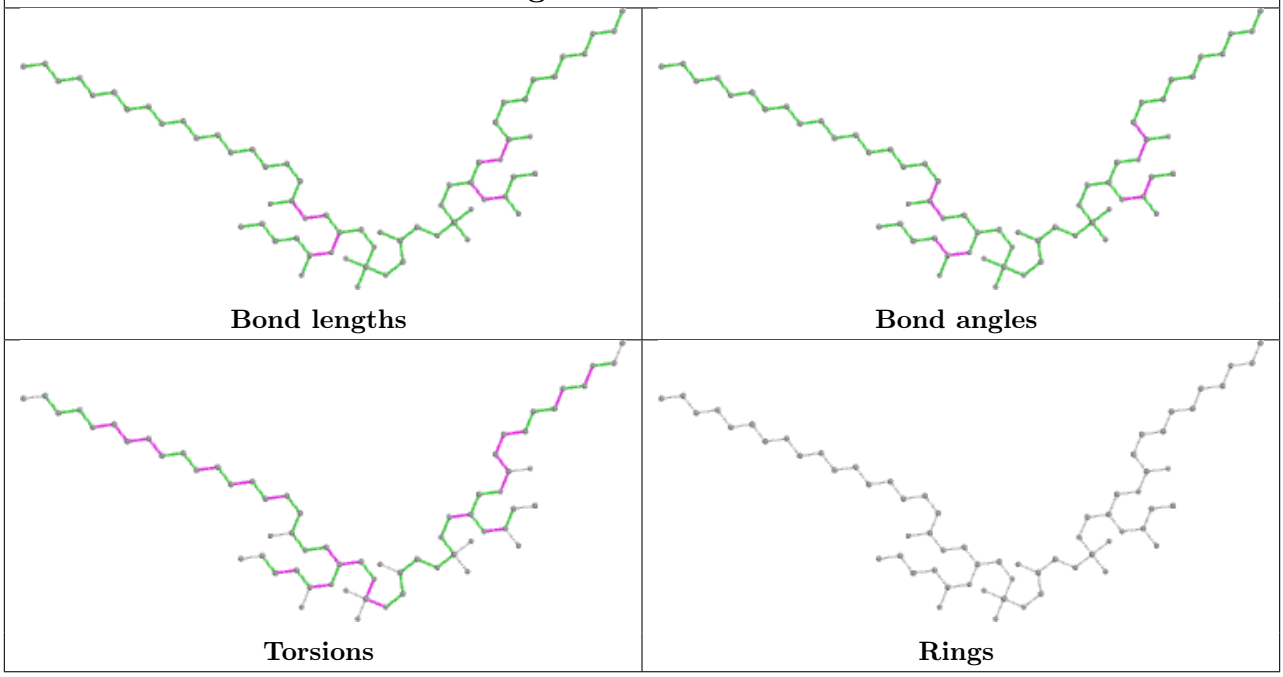


Torsions

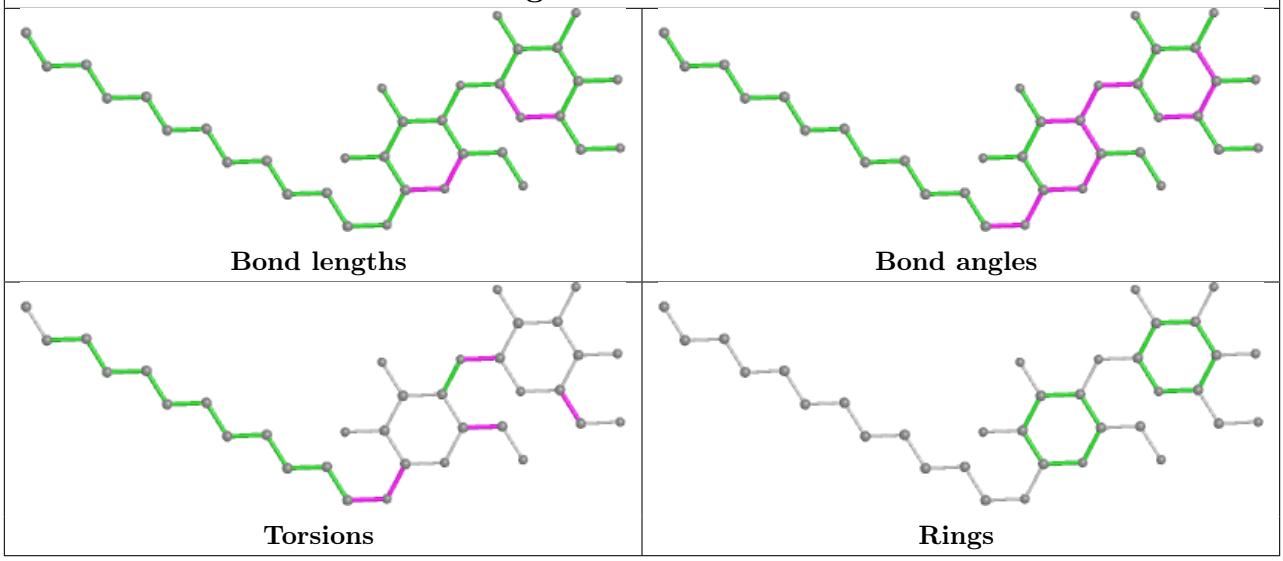


Rings

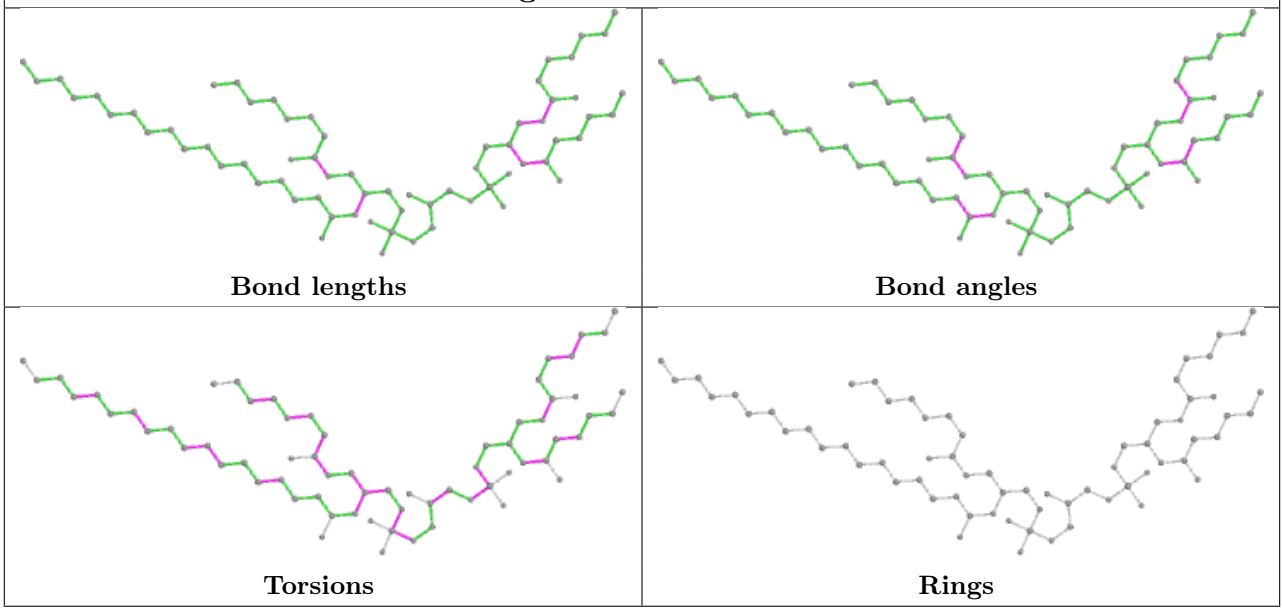
Ligand CDL d 201



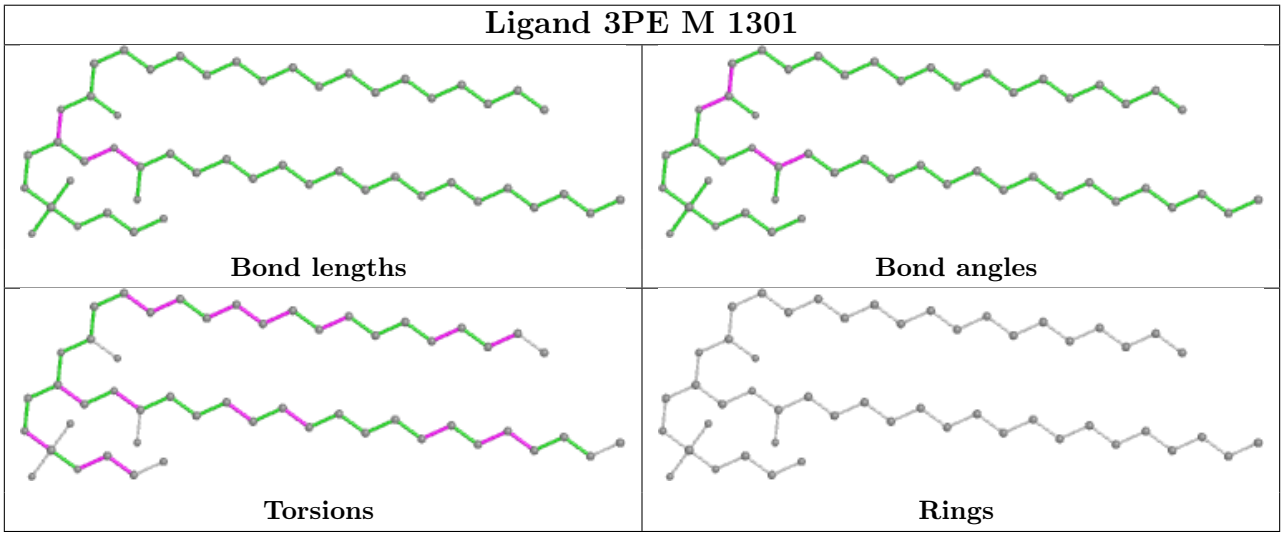
Ligand LMT J 201



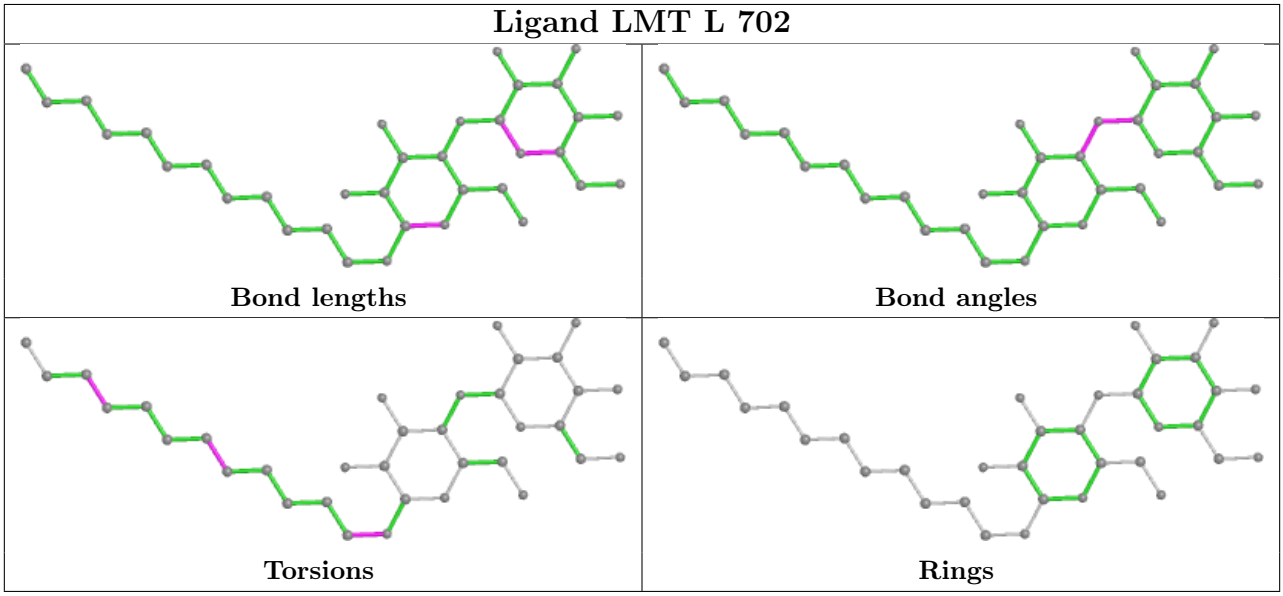
Ligand CDL h 1001



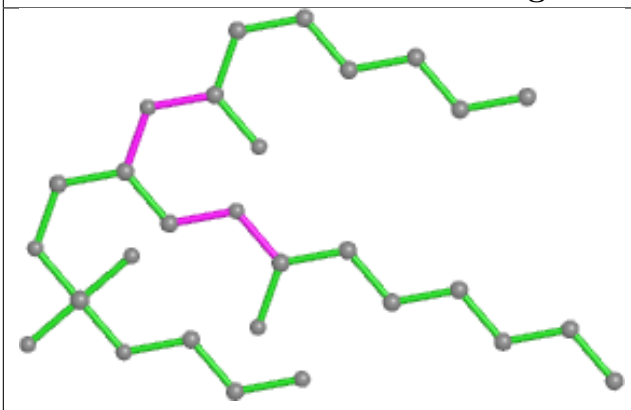
Ligand 3PE M 1301



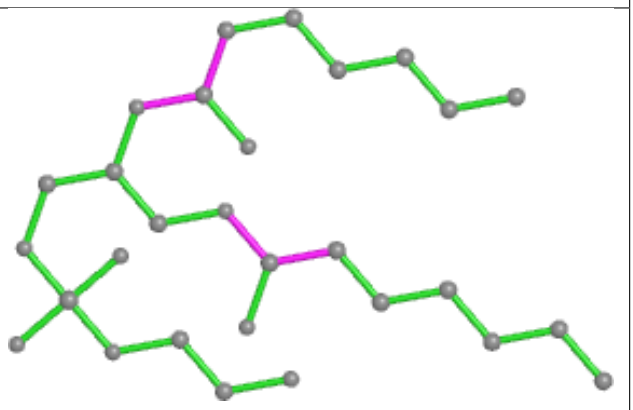
Ligand LMT L 702



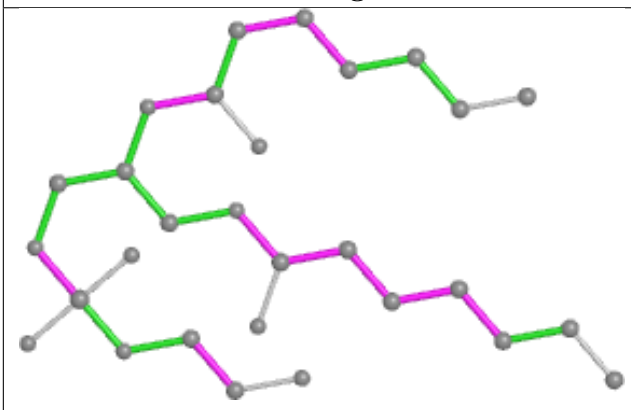
Ligand 3PE Y 604



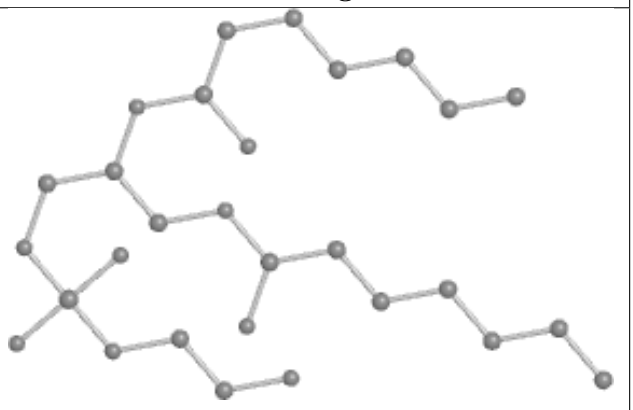
Bond lengths



Bond angles

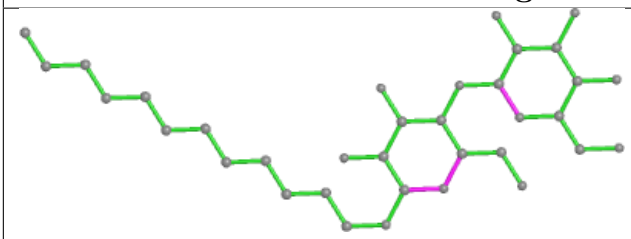


Torsions

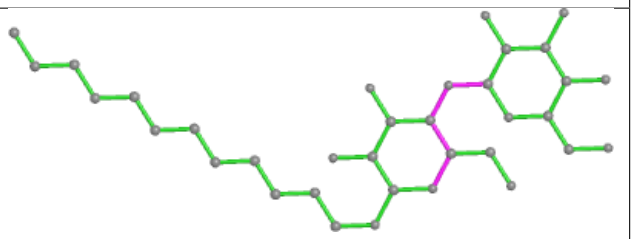


Rings

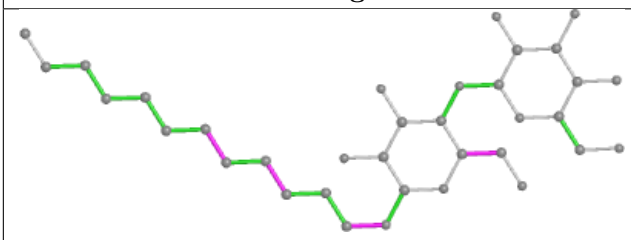
Ligand LMT h 1003



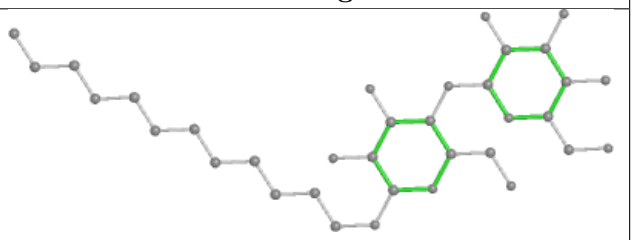
Bond lengths



Bond angles

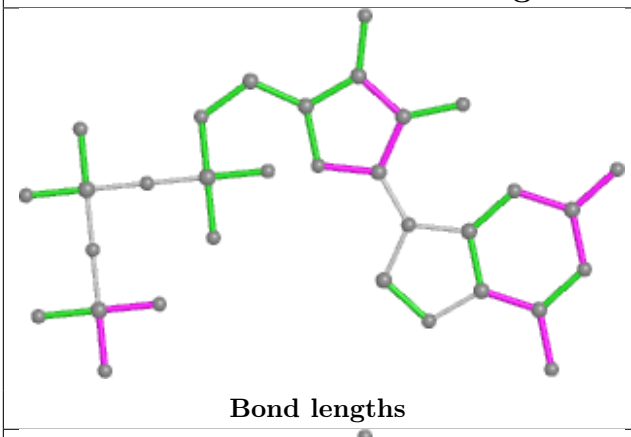


Torsions



Rings

Ligand GTP O 1202



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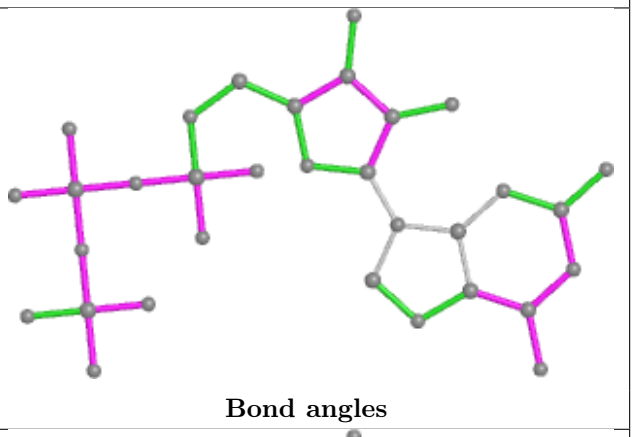
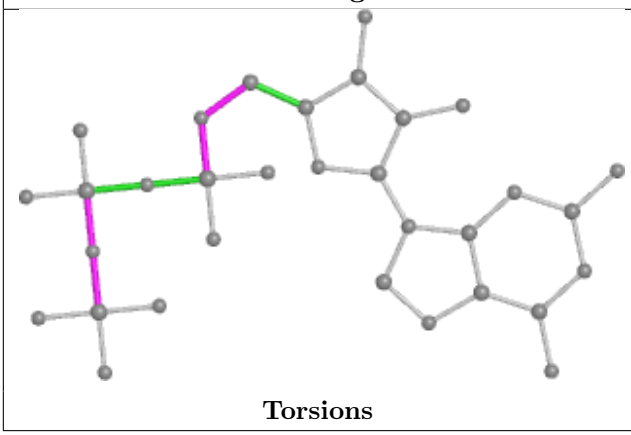
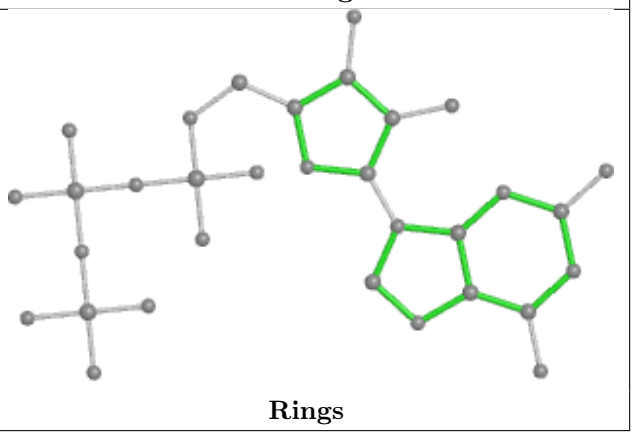


Bond angles

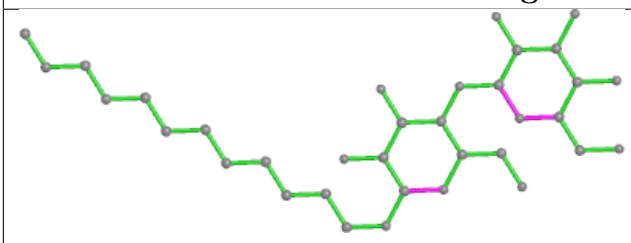


Torsions

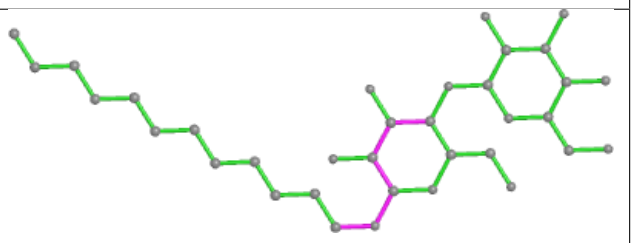


Rings

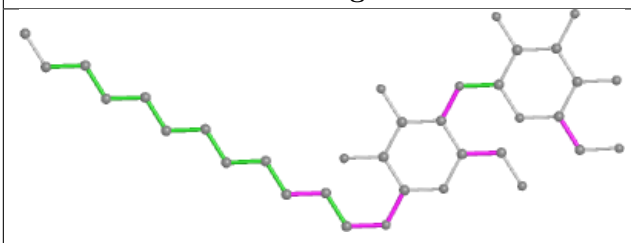
Ligand LMT Y 602



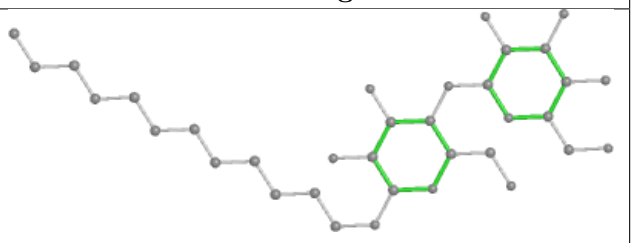
Bond lengths



Bond angles

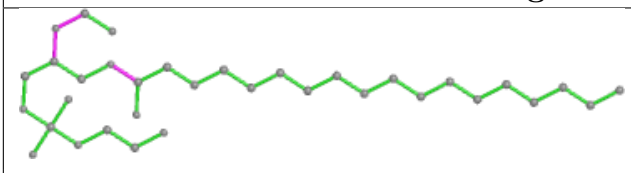


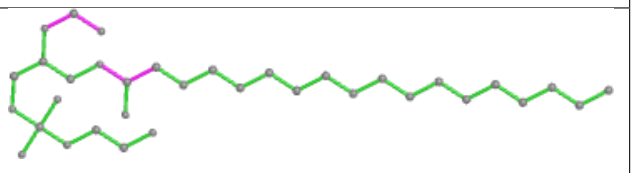
Torsions

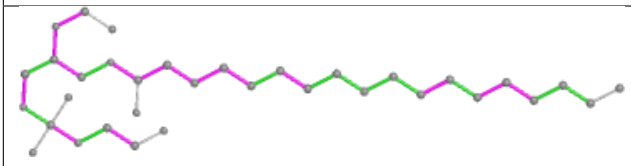


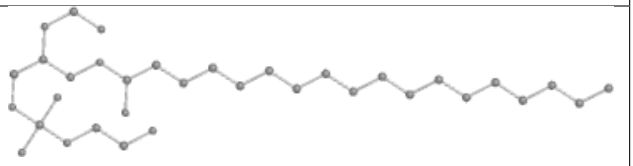
Rings

Ligand 3PE H 403

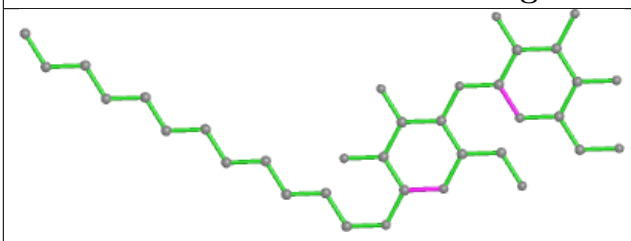

Bond lengths

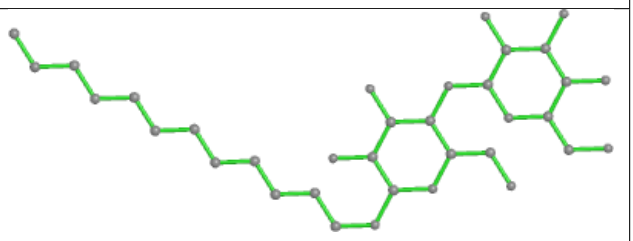

Bond angles

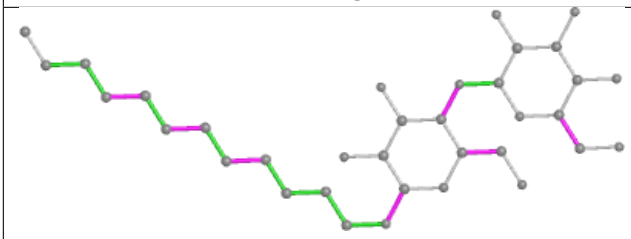

Torsions

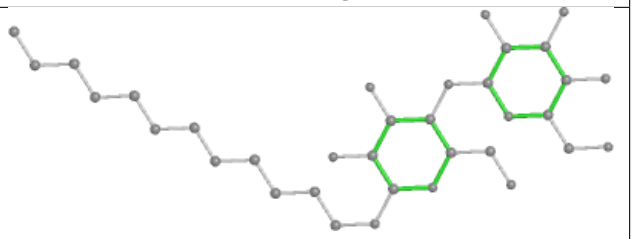

Rings

Ligand LMT H 401

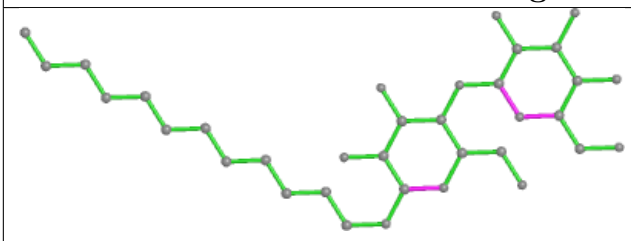

Bond lengths

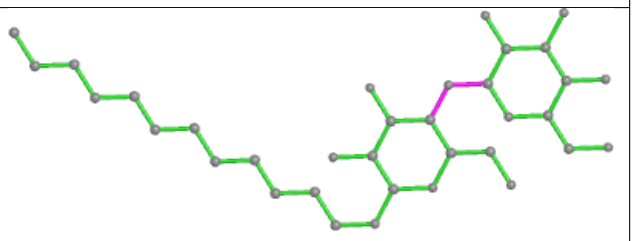

Bond angles

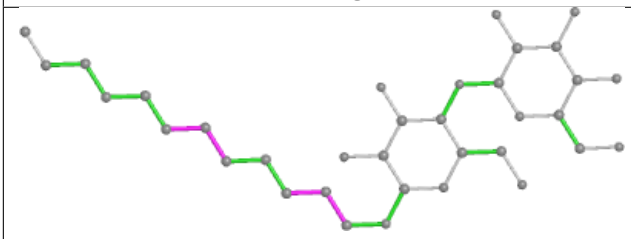

Torsions

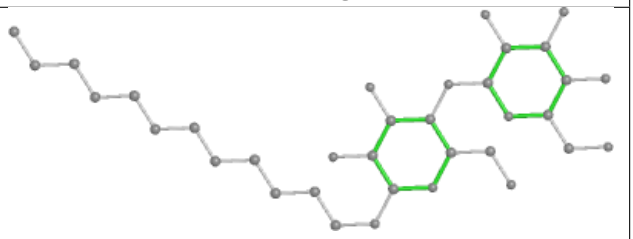

Rings

Ligand LMT l 201

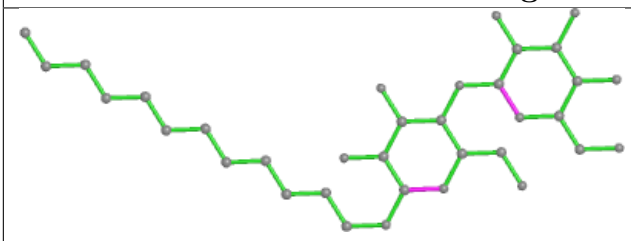

Bond lengths


Bond angles


Torsions


Rings

Ligand LMT A 301



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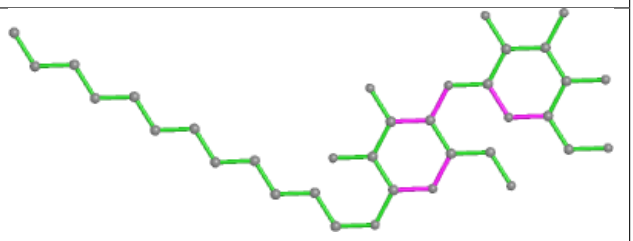

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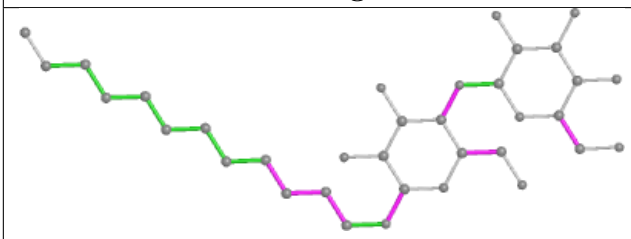

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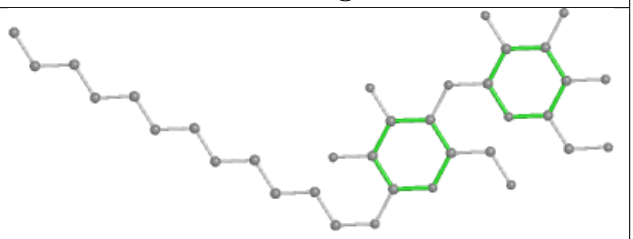
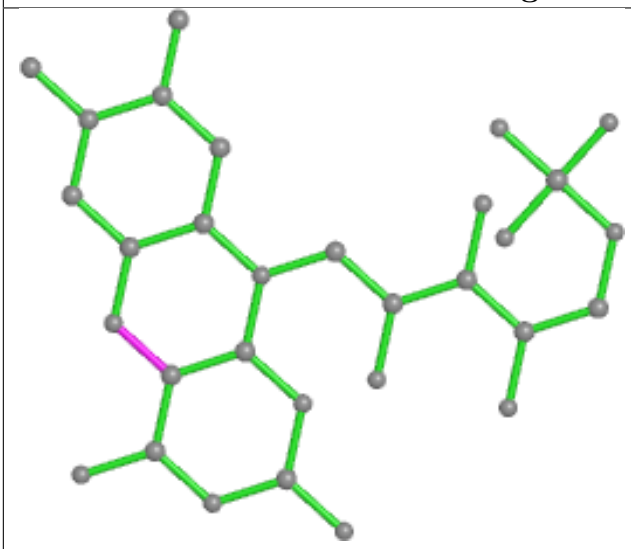


Rings

Ligand FMN F 501



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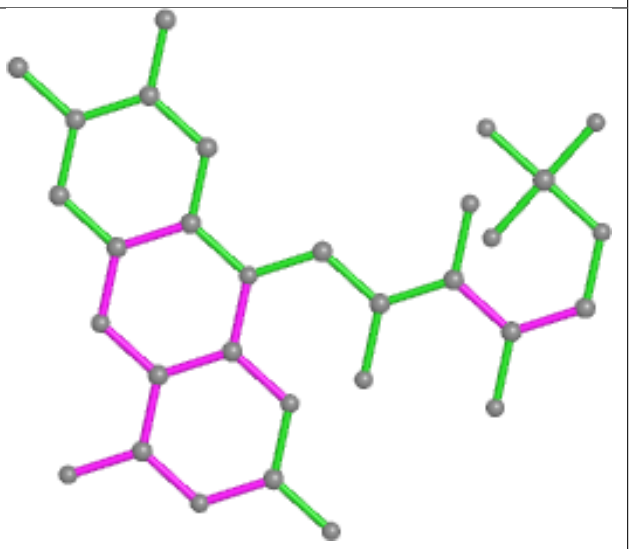

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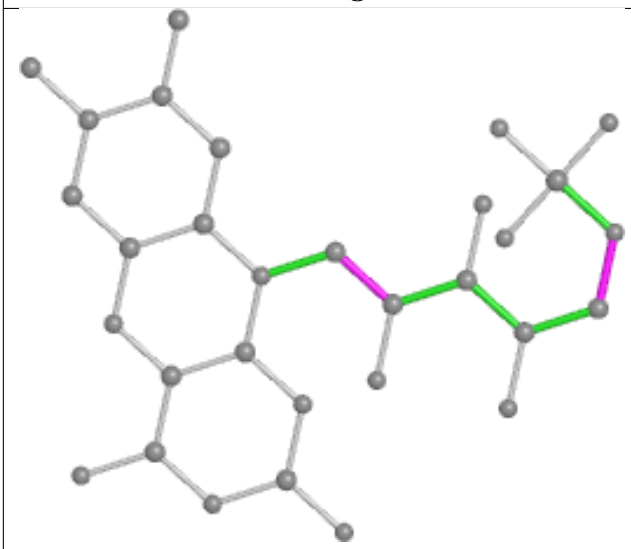

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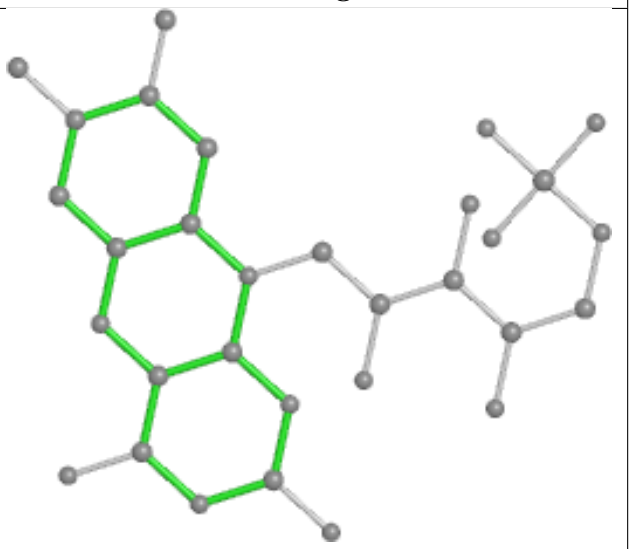
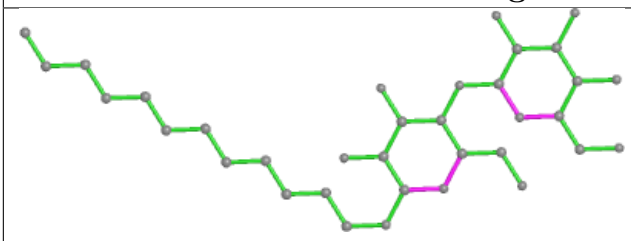


Rings

Ligand LMT M 1303



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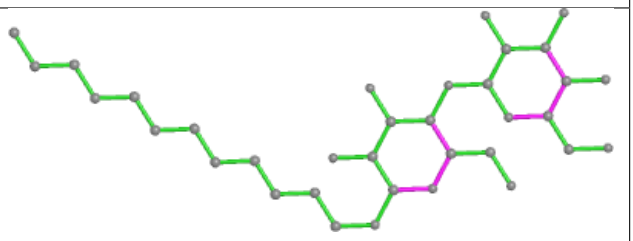

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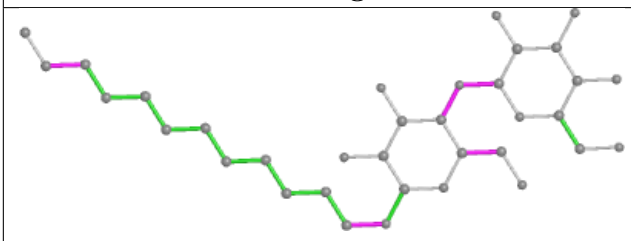

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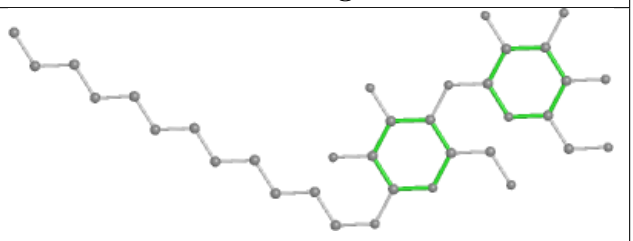
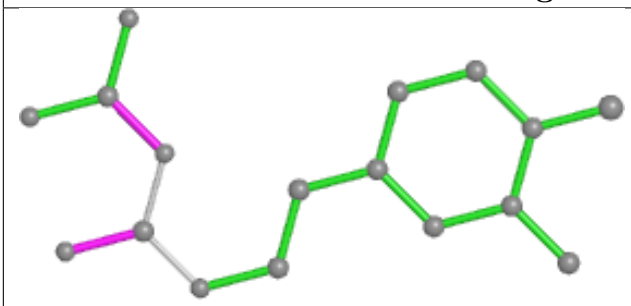


Rings

Ligand I49 N 503



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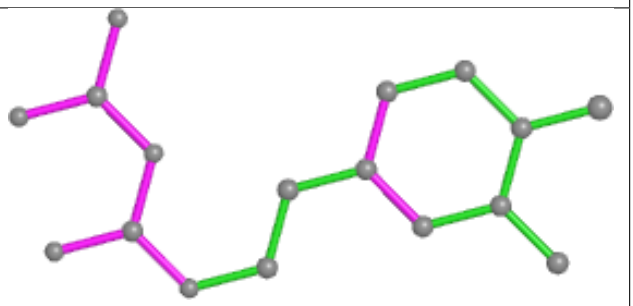

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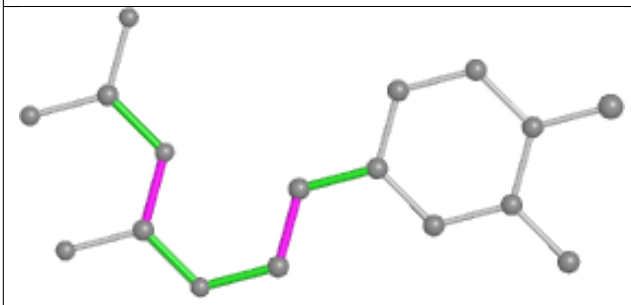

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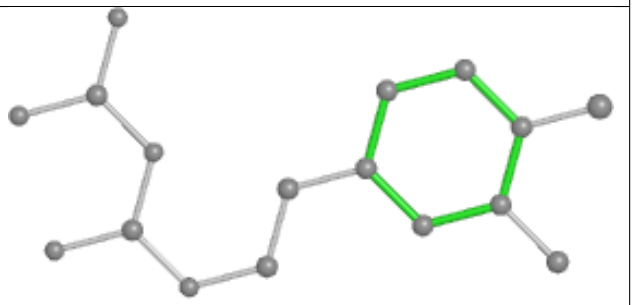
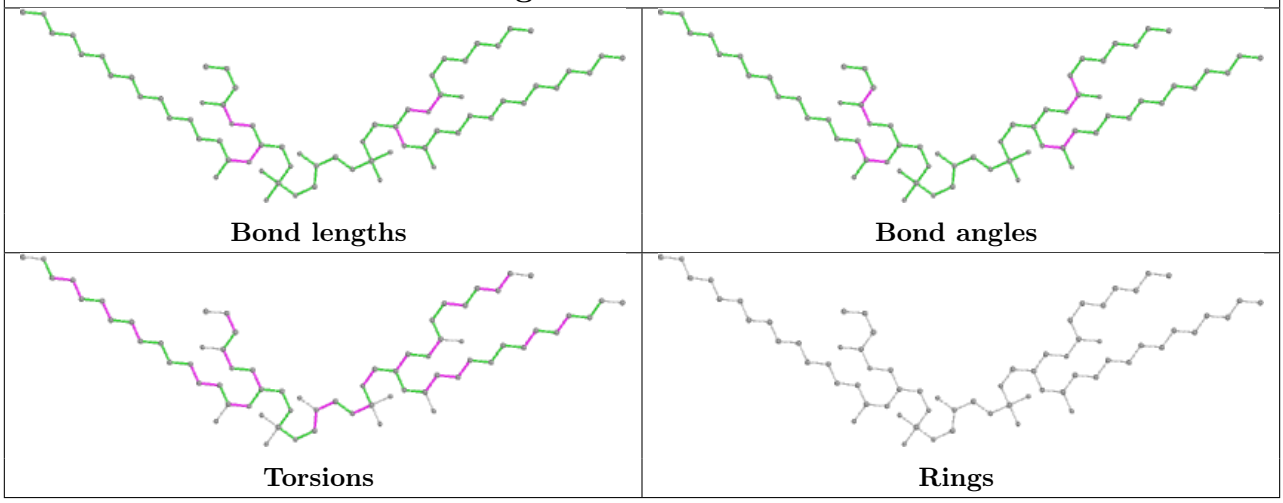
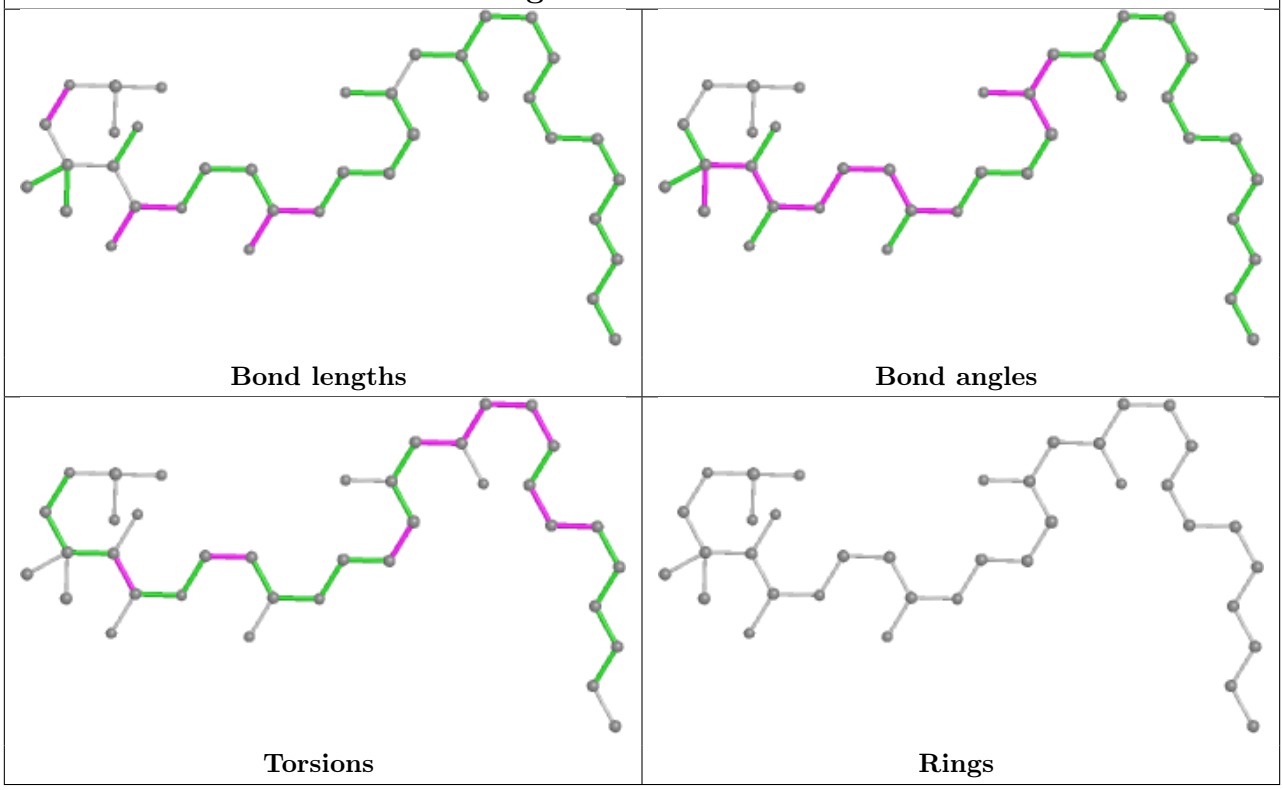


Rings

Ligand CDL X 1701



Ligand EHZ T 101



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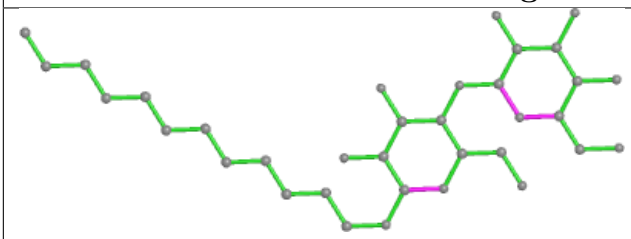

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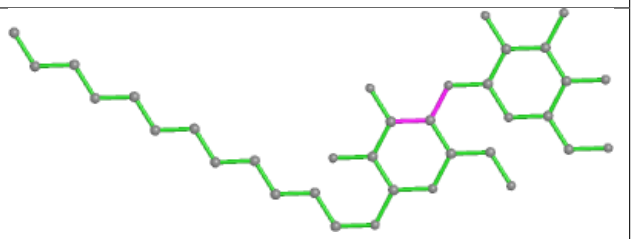
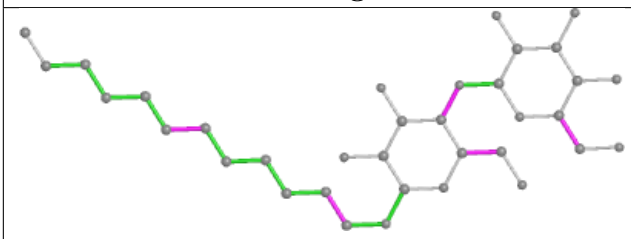


Bond angles



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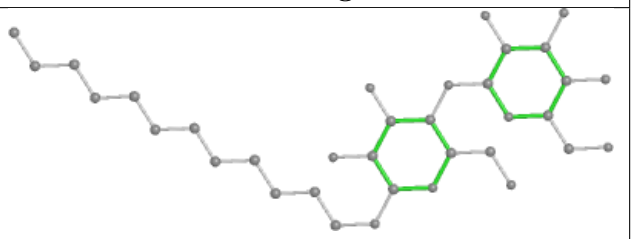
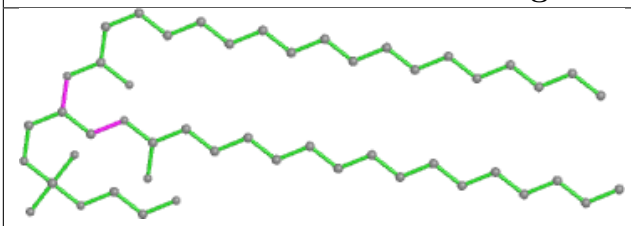


Rings

Ligand 3PE L 701



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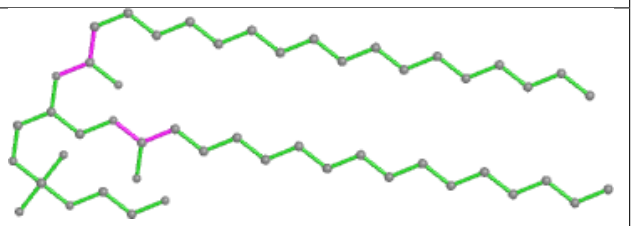
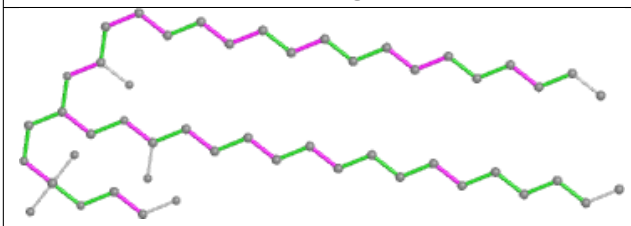


Bond angles



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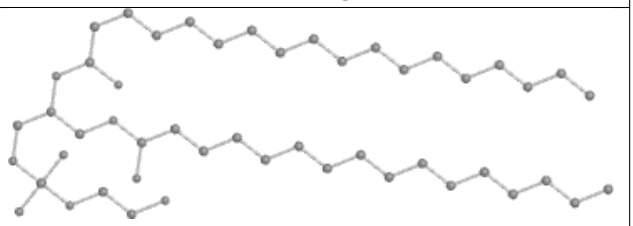
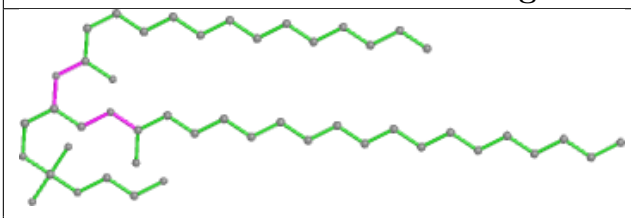


Rings

Ligand 3PE O 1201



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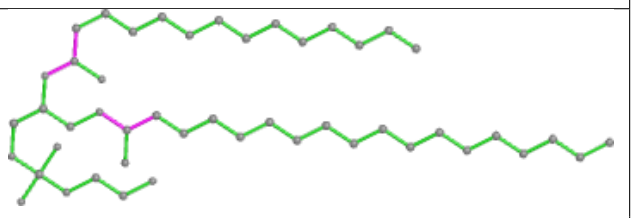
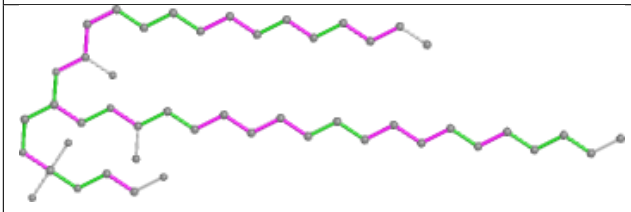


Bond angles



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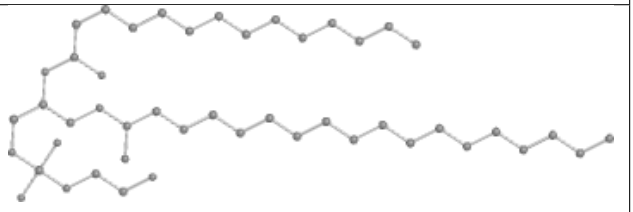
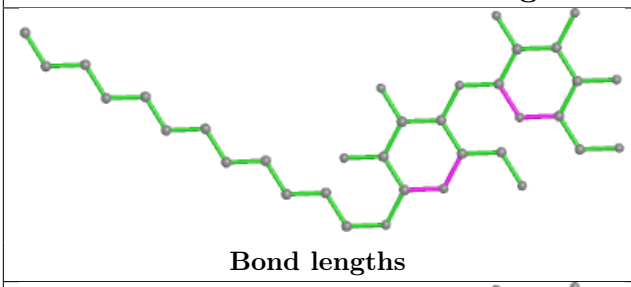


Rings

Ligand LMT f 1901



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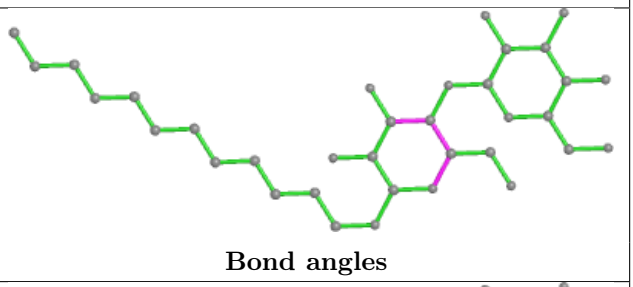
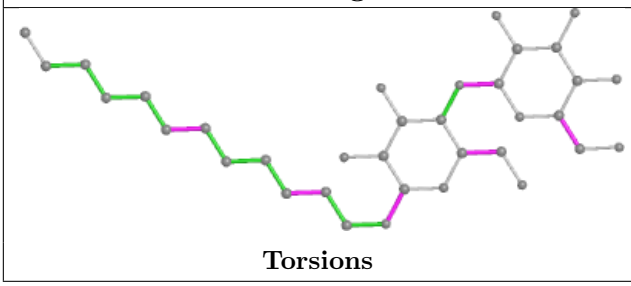


Bond angles



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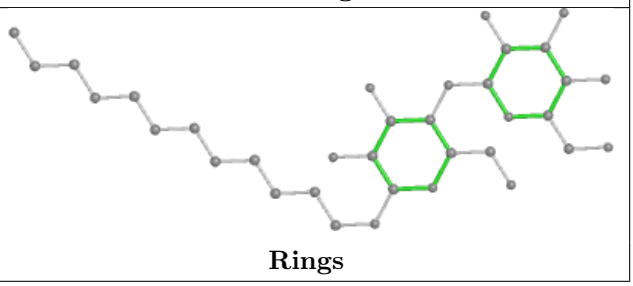
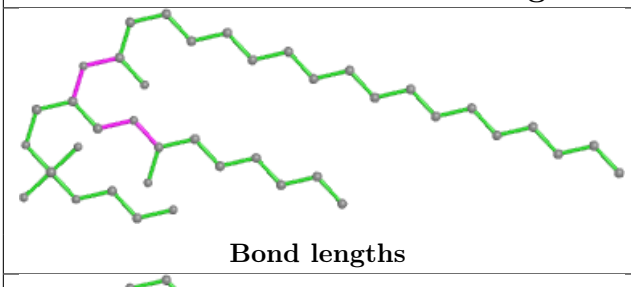


Rings

Ligand 3PE Y 601



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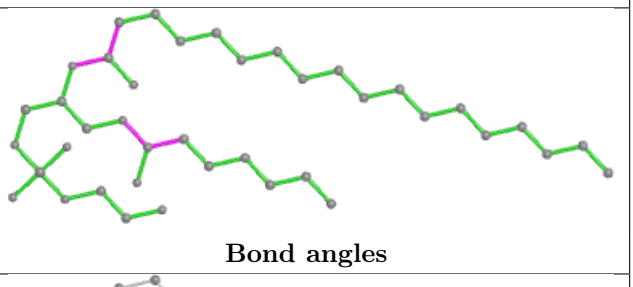
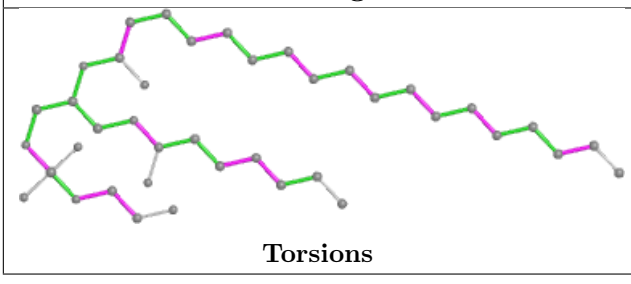


Bond angles



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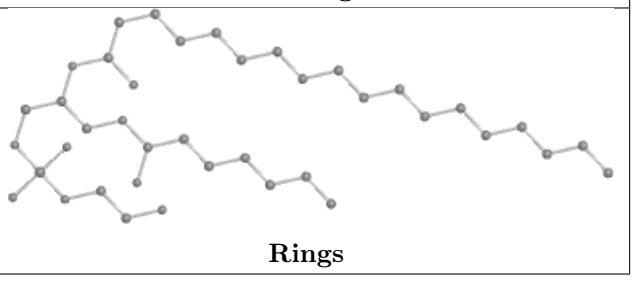
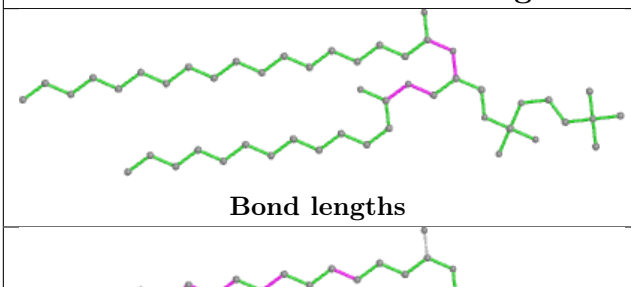


Rings

Ligand PC1 M 1302



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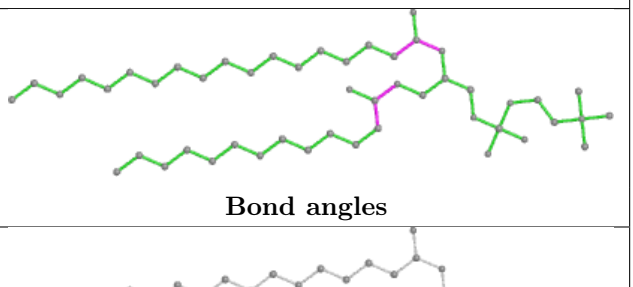
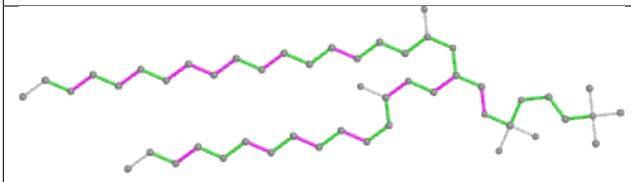


Bond angles



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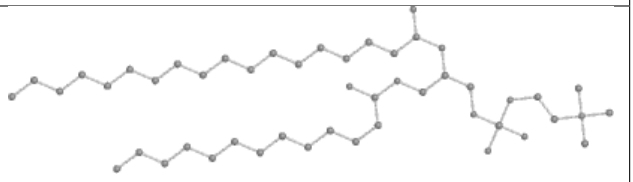
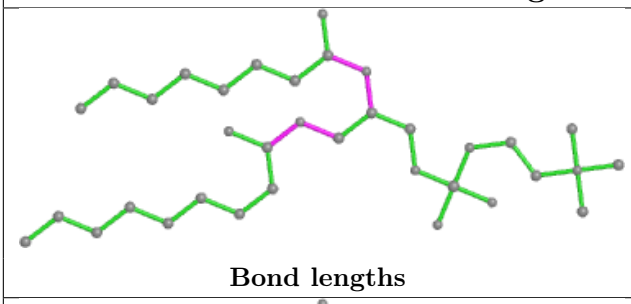


Rings

Ligand PC1 B 202



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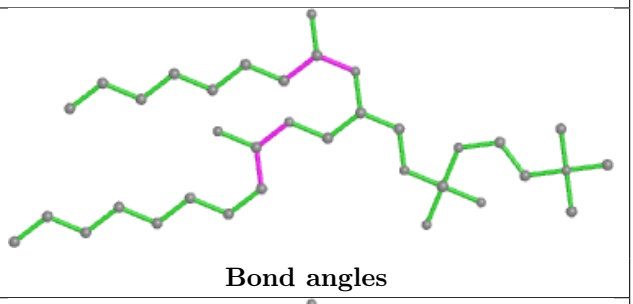
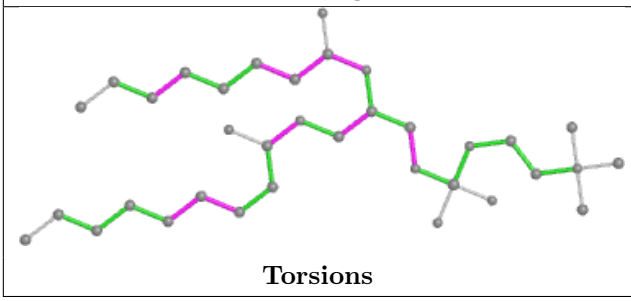
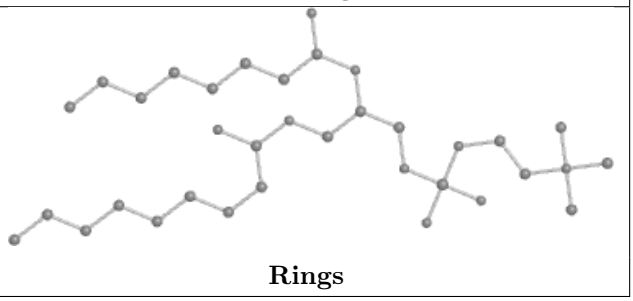


Bond angles

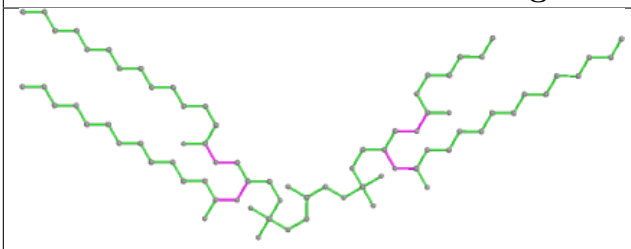


Torsions



Rings

Ligand CDL r 201



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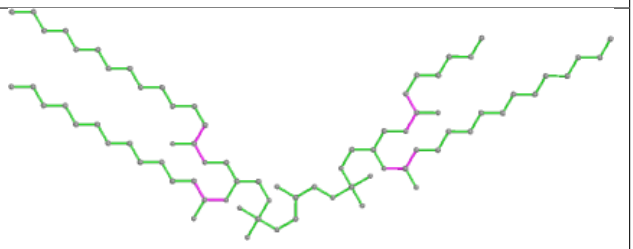
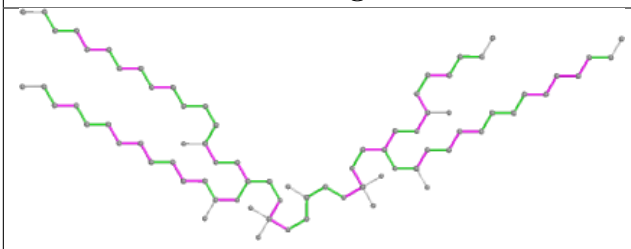


Bond angles



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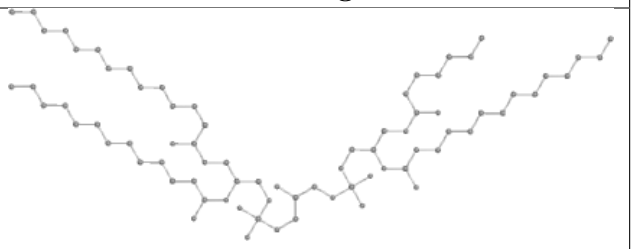
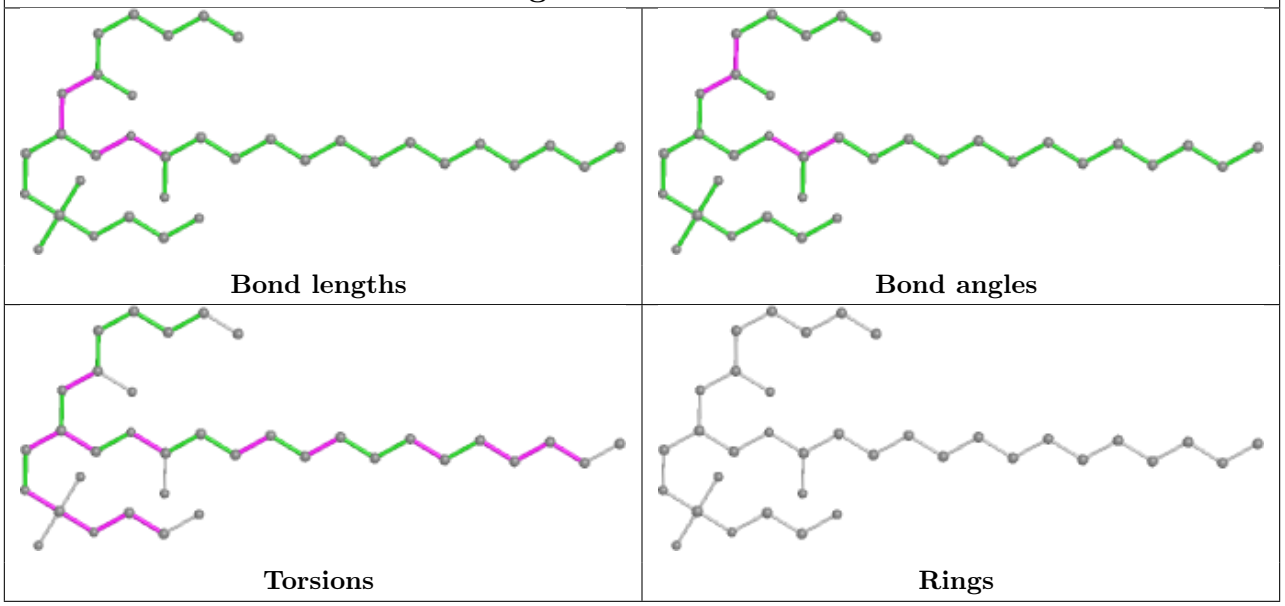
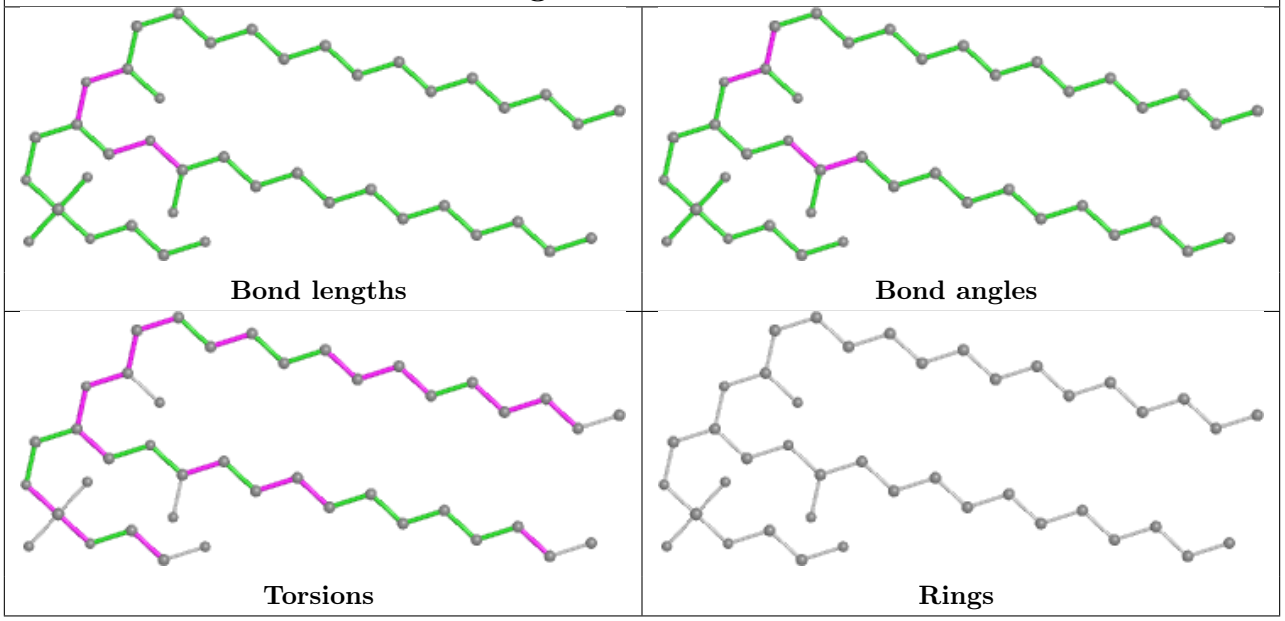


Rings

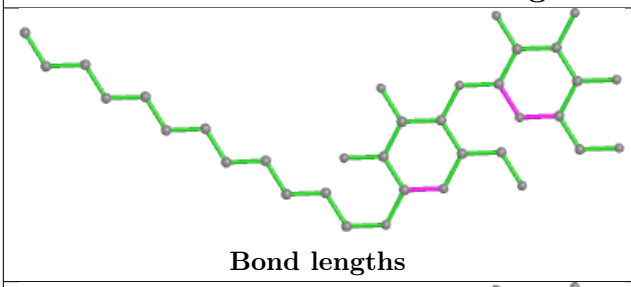
Ligand 3PE Y 603



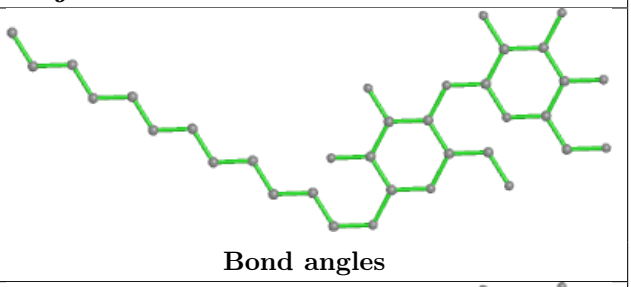
Ligand 3PE A 302



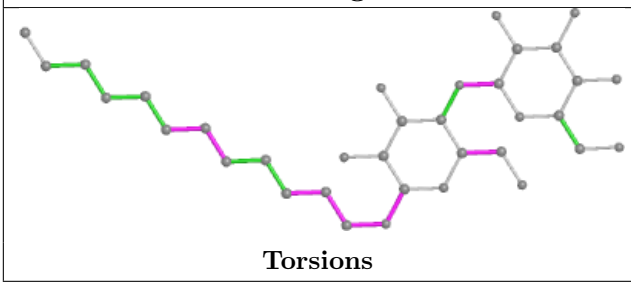
Ligand LMT j 101



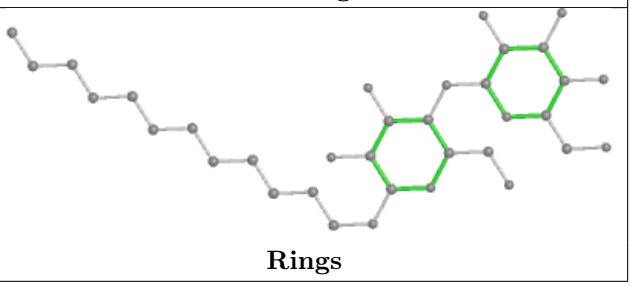
Bond lengths



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.

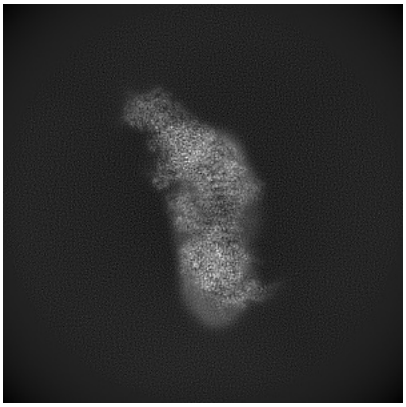
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-14297. These allow visual inspection of the internal detail of the map and identification of artifacts.

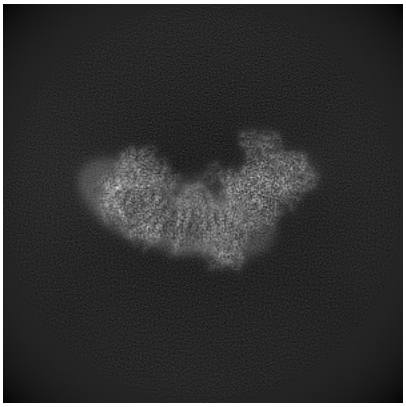
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

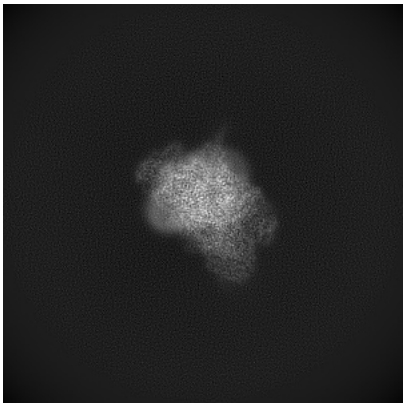
6.1.1 Primary map



X



Y

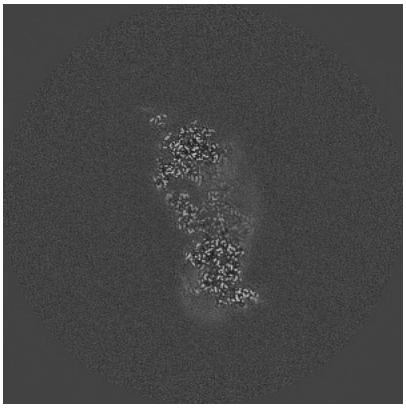


Z

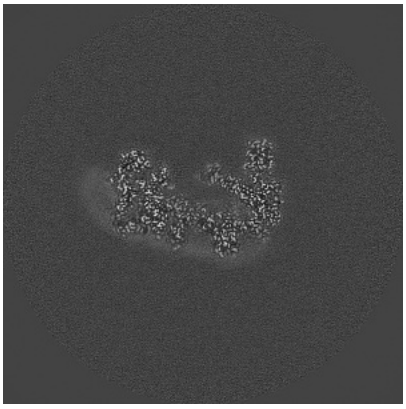
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 330



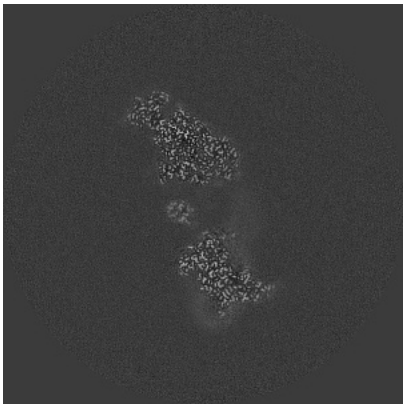
Y Index: 330

Z Index: 330

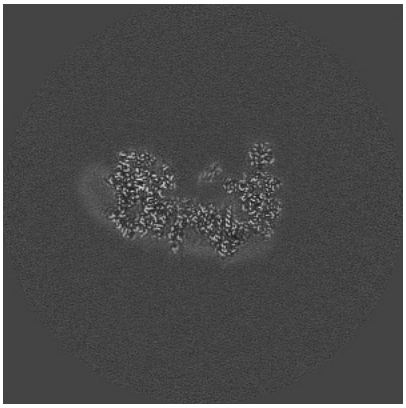
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

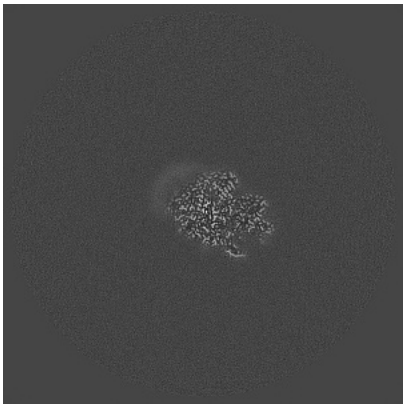
6.3.1 Primary map



X Index: 358



Y Index: 337



Z Index: 422

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 6.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

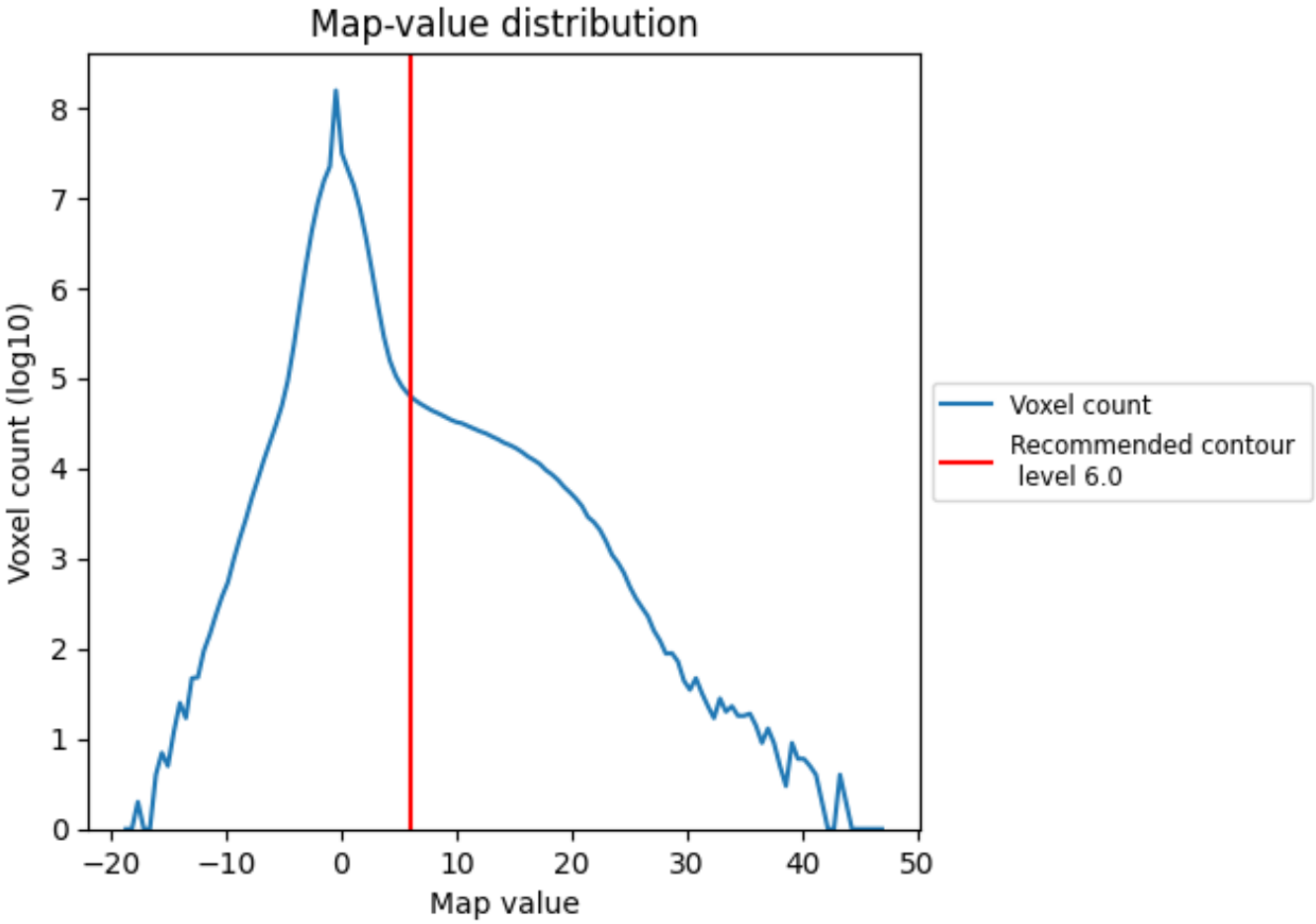
6.5 Mask visualisation (i)

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

7 Map analysis

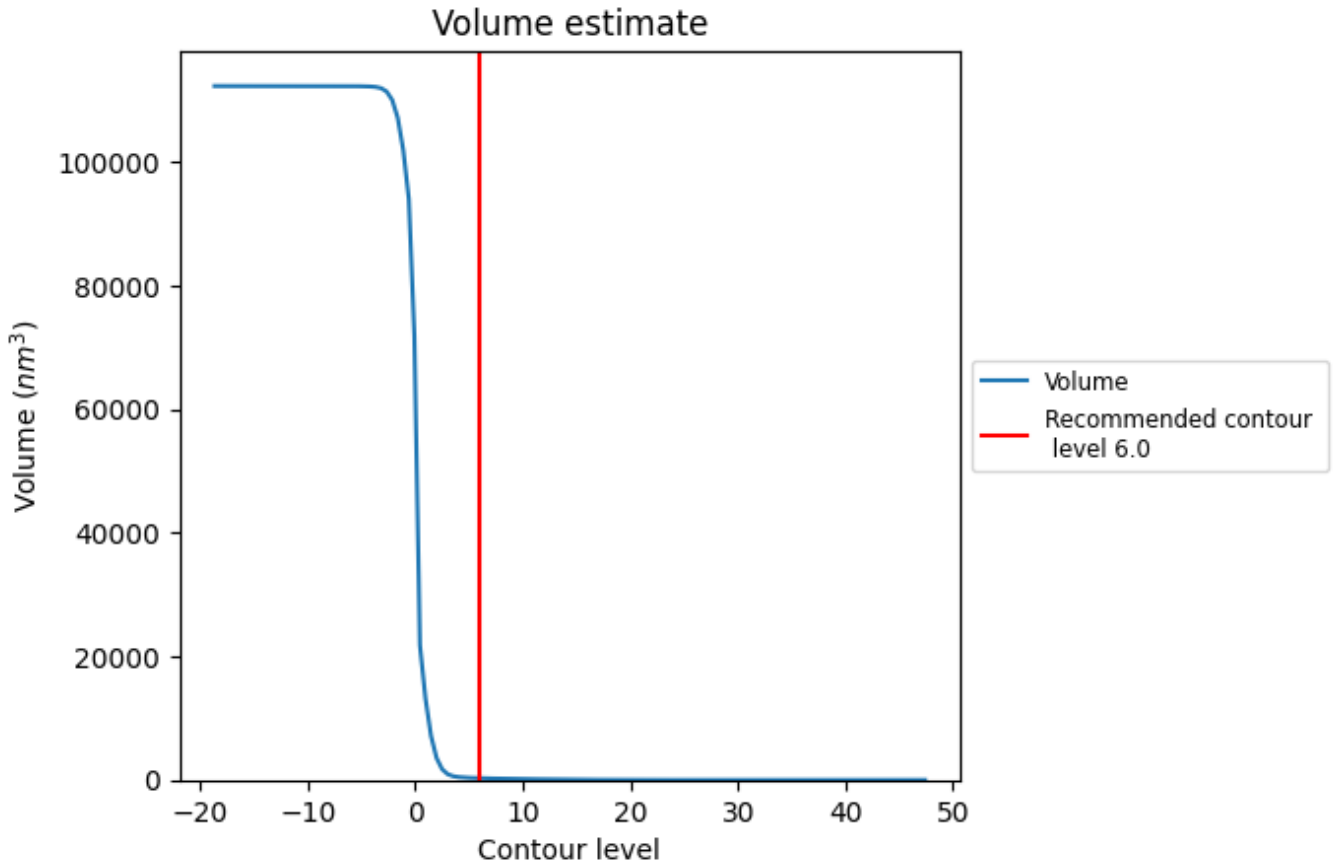
This section contains the results of statistical analysis of the map.

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.

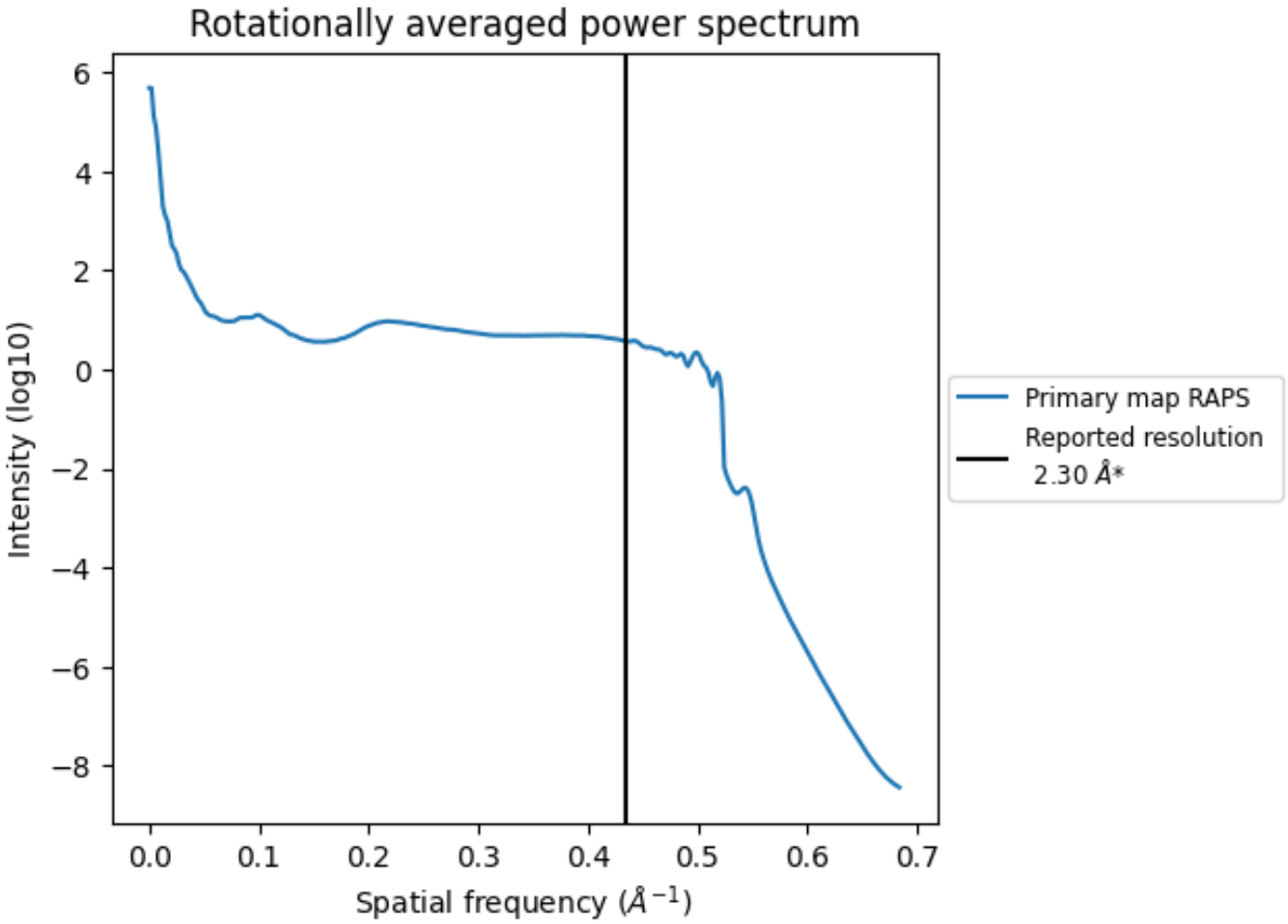
7.2 Volume estimate



The volume at the recommended contour level is 287 nm^3; this corresponds to an approximate mass of 259 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}

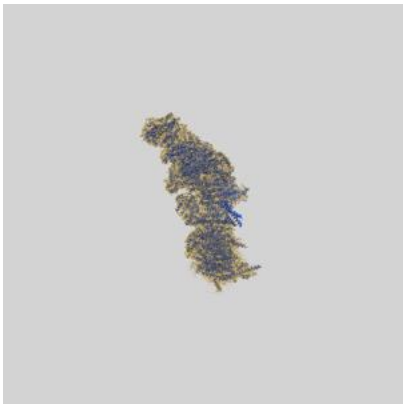
8 Fourier-Shell correlation

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

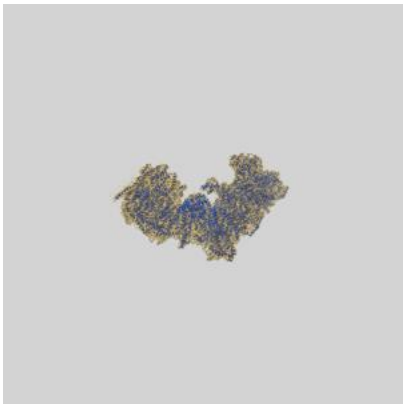
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-14297 and PDB model 7R4D. Per-residue inclusion information can be found in section 3 on page 24.

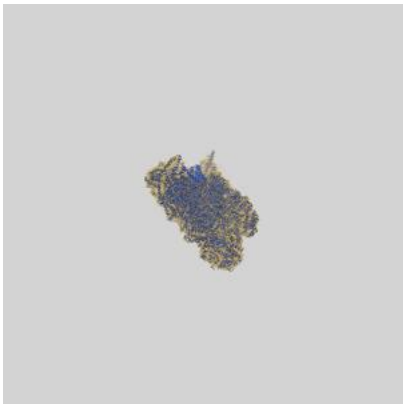
9.1 Map-model overlay



X



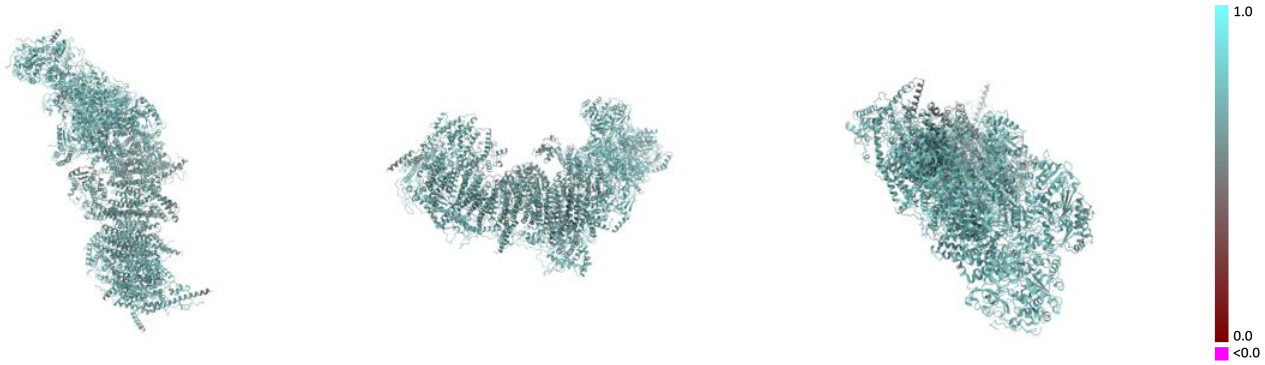
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 6.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

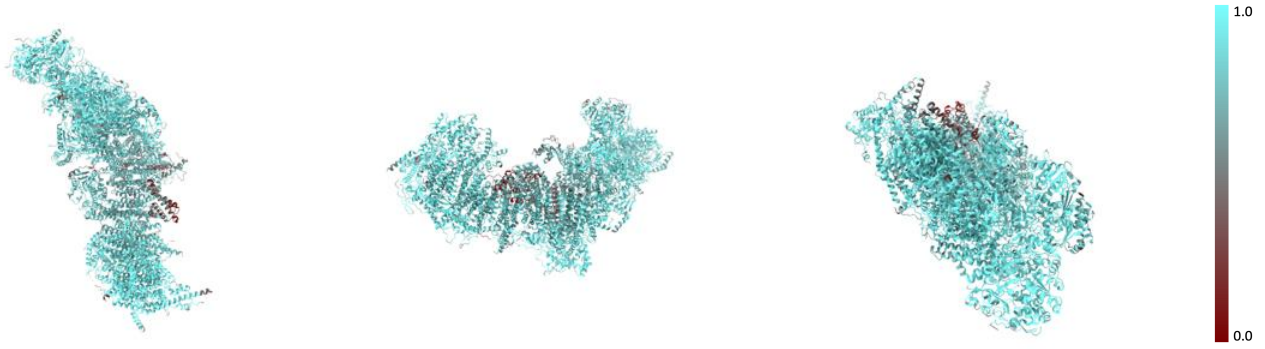
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

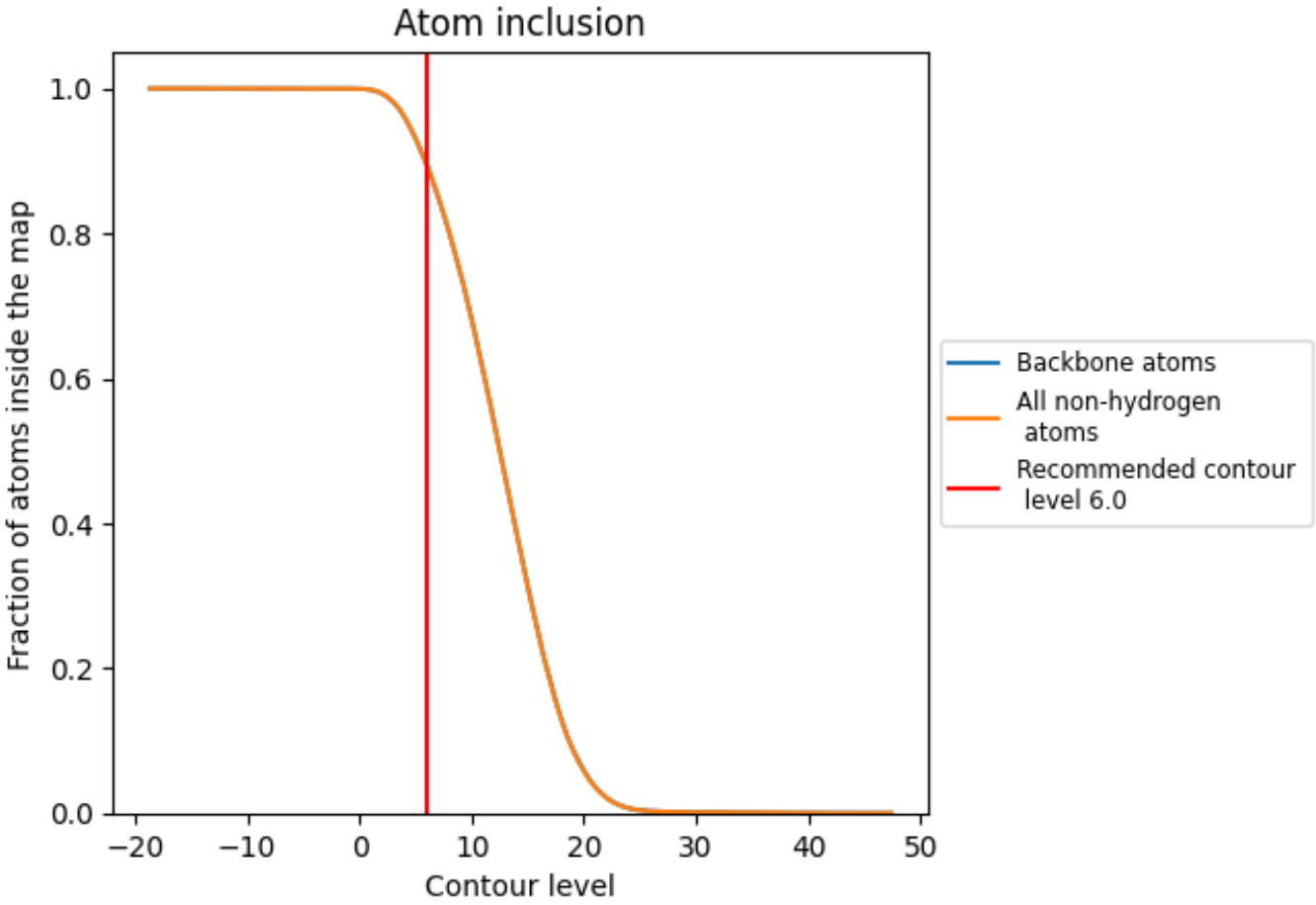
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (6.0).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 90% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (6.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8953	0.7000
A	0.8180	0.6700
B	0.9276	0.7330
C	0.9682	0.7480
D	0.9179	0.7390
E	0.9119	0.7030
F	0.9440	0.7150
G	0.9291	0.7240
H	0.9302	0.7130
I	0.9727	0.7520
J	0.7537	0.6630
K	0.9351	0.7100
L	0.9276	0.6950
M	0.9556	0.7120
N	0.9500	0.7120
O	0.8368	0.6620
P	0.8818	0.7040
Q	0.9245	0.7350
R	0.9232	0.7220
S	0.8631	0.6860
T	0.6537	0.6010
U	0.9480	0.6930
V	0.8884	0.7100
W	0.8885	0.7110
X	0.8821	0.6820
Y	0.3843	0.6060
Z	0.8716	0.6890
a	0.9667	0.7080
b	0.8744	0.6750
c	0.7854	0.6440
d	0.8654	0.6850
e	0.8505	0.6650
f	0.8090	0.6580
g	0.8663	0.6800
h	0.9048	0.6920

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
i	0.8894	0.6650
j	0.8767	0.6520
k	0.8923	0.6420
l	0.9248	0.6850
m	0.8840	0.6740
n	0.9337	0.6900
o	0.9017	0.6550
p	0.9230	0.6890
q	0.9006	0.7210
r	0.8851	0.7170
s	0.8986	0.6980