Full wwPDB EM Validation Report ⓘ

Jun 22, 2023 – 11:44 AM JST

PDB ID	:	7W4N
EMDB ID	:	EMD-32309
Title	:	Deactive state CI from Q1-NADH dataset, Subclass 5
Authors	:	Gu, J.; Yang, M.
Deposited on	:	2021-11-28
Resolution	:	3.00 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:

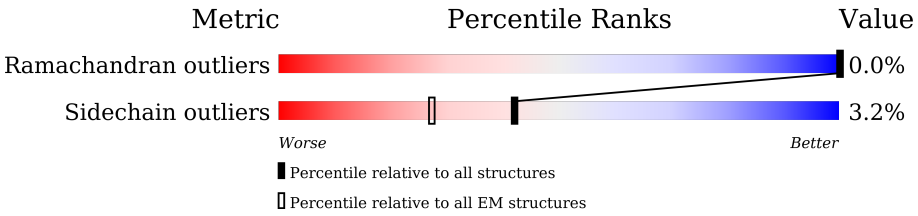
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.33

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	433	13% 97%
2	B	176	97%
3	C	156	96%
4	E	115	11% 97%
5	F	86	34% 93% 7%
6	G	88	53% 97%
6	X	88	90% 10%
7	H	112	5% 97%
8	I	112	86% 13%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	J	342	15% 85% 13%
10	K	43	26% 91% 7%
11	L	125	9% 98%
12	M	690	7% 97%
13	N	144	97%
14	O	217	21% 96%
15	P	208	99%
16	Q	430	96%
17	S	70	97%
18	T	96	9% 97%
19	U	83	6% 96%
20	V	140	14% 97%
21	W	142	97%
22	Y	70	13% 100%
23	Z	84	24% 98%
24	a	140	99%
25	b	126	12% 80% 18%
26	c	156	6% 98%
27	d	175	6% 97%
28	e	107	9% 99%
29	f	49	14% 84% 14%
30	g	122	97%
31	h	105	6% 95% 5%
32	i	347	98%
33	j	115	14% 85% 14%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
34	k	98	97%
35	l	603	96%
36	m	175	9% 71% 26%
37	n	56	16% 93% 7%
38	o	128	98%
39	p	178	96%
40	r	459	98%
41	s	318	95% 5%
42	u	171	96%
43	v	124	14% 94% 6%
44	w	320	5% 98%

2 Entry composition

There are 57 unique types of molecules in this entry. The entry contains 66477 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 dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	431	3313	2092	590	611	20	0	0

- Molecule 2 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	176	1412	887	243	269	13	0	0

- Molecule 3 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	156	1248	794	227	213	14	0	0

- Molecule 4 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	115	971	619	179	168	5	0	0

- Molecule 5 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

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

- Molecule 6 is a protein called Acyl carrier protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	88	Total 690	C 446	N 102	O 137	S 5	0	0
6	X	88	Total 696	C 449	N 103	O 139	S 5	0	0

- Molecule 7 is a protein called Complex I subunit B13.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	112	Total 910	C 588	N 154	O 165	S 3	0	0

- Molecule 8 is a protein called Complex I-B14.5a.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	97	Total 780	C 491	N 147	O 139	S 3	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	297	Total 2359	C 1514	N 421	O 416	S 8	0	0

- Molecule 10 is a protein called Complex I-9kD.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	42	Total 355	C 219	N 67	O 68	S 1	0	0

- Molecule 11 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	125	Total 1013	C 641	N 181	O 188	S 3	0	0

- Molecule 12 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	690	Total 5292	C 3318	N 923	O 1012	S 39	0	0

- Molecule 13 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	144	Total	C	N	O	S	0	0
			1201	767	218	212	4		

- Molecule 14 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	217	Total	C	N	O	S	0	0
			1671	1065	281	315	10		

- Molecule 15 is a protein called Complex I-30kD.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	208	Total	C	N	O	S	0	0
			1738	1124	298	314	2		

- Molecule 16 is a protein called Complex I-49kD.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	419	Total	C	N	O	S	0	0
			3377	2162	578	613	24		

- Molecule 17 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	S	70	Total	C	N	O	S	0	0
			567	364	104	94	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	96	Total	C	N	O	S	0	0
			741	452	140	146	3		

- Molecule 19 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	83	Total	C	N	O	S	0	0
			643	417	110	115	1		

- Molecule 20 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	V	140	Total	C	N	O	S	0	0
			1009	646	171	186	6		

- Molecule 21 is a protein called Complex I-B16.6.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	W	142	Total	C	N	O	S	0	0
			1173	755	203	206	9		

- Molecule 22 is a protein called Complex I-AGGG.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Y	70	Total	C	N	O	S	0	0
			597	392	98	106	1		

- Molecule 23 is a protein called Complex I-B12.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Z	84	Total	C	N	O	S	0	0
			674	437	116	120	1		

- Molecule 24 is a protein called Complex I-SGDH.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	a	140	Total	C	N	O	S	0	0
			1165	762	199	201	3		

- Molecule 25 is a protein called Complex I-B17.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	b	103	Total	C	N	O	S	0	0
			879	573	158	147	1		

- Molecule 26 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	c	156	Total	C	N	O	S	0	0
			1315	853	213	241	8		

- Molecule 27 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	d	175	Total	C	N	O	S	0	0
			1461	916	265	272	8		

- Molecule 28 is a protein called NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	e	107	Total	C	N	O	S	0	0
			890	568	145	173	4		

- Molecule 29 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	f	42	Total	C	N	O	0	0
			342	225	58	59		

- Molecule 30 is a protein called NADH dehydrogenase [ubiquinone] 1 subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	g	121	Total	C	N	O	S	0	0
			1000	650	173	171	6		

- Molecule 31 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	h	105	Total	C	N	O	S	0	0
			867	550	161	150	6		

- Molecule 32 is a protein called NADH-ubiquinone oxidoreductase chain 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	i	347	Total	C	N	O	S	0	0
			2710	1782	420	462	46		

- Molecule 33 is a protein called NADH-ubiquinone oxidoreductase chain 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	j	99	Total	C	N	O	S	0	0
			800	545	118	132	5		

- Molecule 34 is a protein called NADH-ubiquinone oxidoreductase chain 4L.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	k	98	Total	C	N	O	S	0	0
			748	493	113	128	14		

- Molecule 35 is a protein called NADH-ubiquinone oxidoreductase chain 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	l	603	Total	C	N	O	S	0	0
			4782	3172	740	819	51		

- Molecule 36 is a protein called NADH-ubiquinone oxidoreductase chain 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	m	129	Total	C	N	O	S	0	0
			946	635	138	165	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
37	n	56	Total	C	N	O	S	0	0
			479	311	88	79	1		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
38	o	128	Total	C	N	O	0	0
			1062	691	182	189		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
39	p	178	Total	C	N	O	S	0	0
			1534	982	279	265	8		

- Molecule 40 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	r	459	Total	C	N	O	S	0	0
			3631	2412	572	609	38		

- Molecule 41 is a protein called NADH-ubiquinone oxidoreductase chain 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	s	303	Total	C	N	O	S	0	0
			2394	1607	369	397	21		

- Molecule 42 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	u	171	Total	C	N	O	S	0	0
			1398	887	250	251	10		

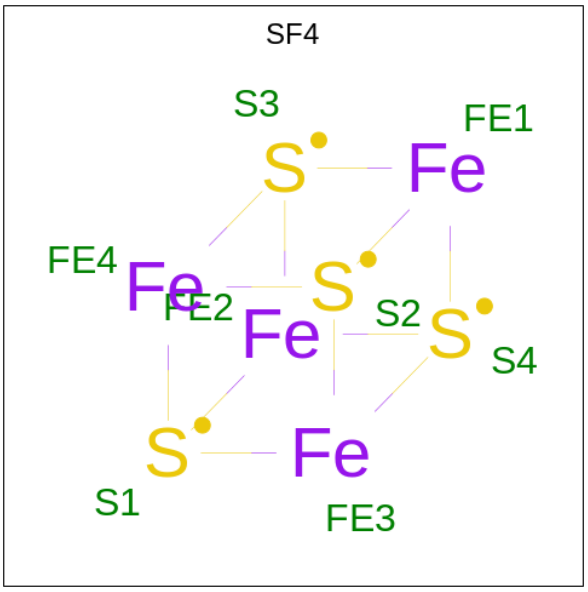
- Molecule 43 is a protein called Complex I-B18.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	v	124	Total	C	N	O	S	0	0
			1028	642	195	182	9		

- Molecule 44 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial.

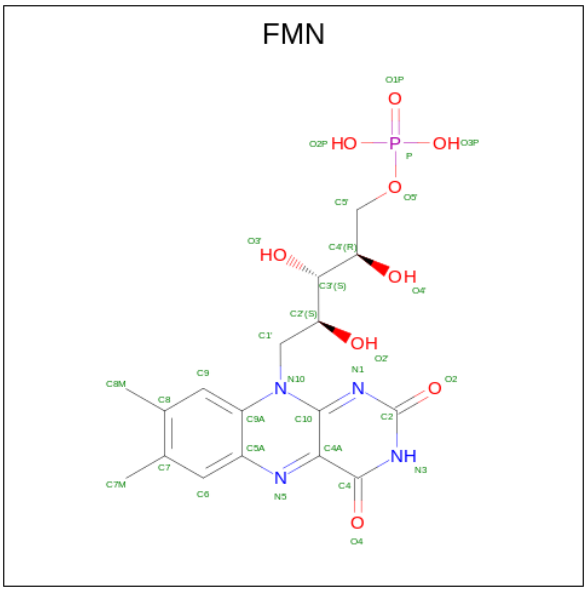
Mol	Chain	Residues	Atoms					AltConf	Trace
44	w	320	Total	C	N	O	S	0	0
			2570	1636	436	488	10		

- Molecule 45 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4) (labeled as "Ligand of Interest" by depositor).



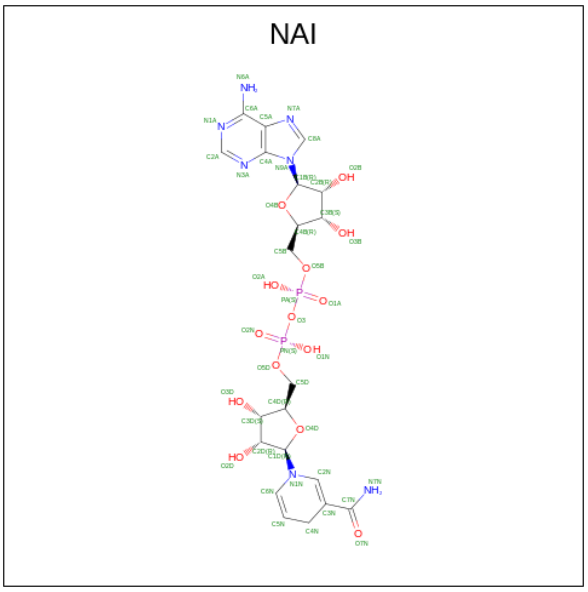
Mol	Chain	Residues	Atoms	AltConf
45	A	1	Total Fe S 8 4 4	0
45	B	1	Total Fe S 8 4 4	0
45	B	1	Total Fe S 8 4 4	0
45	C	1	Total Fe S 8 4 4	0
45	M	1	Total Fe S 8 4 4	0
45	M	1	Total Fe S 8 4 4	0

- Molecule 46 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: $C_{17}H_{21}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



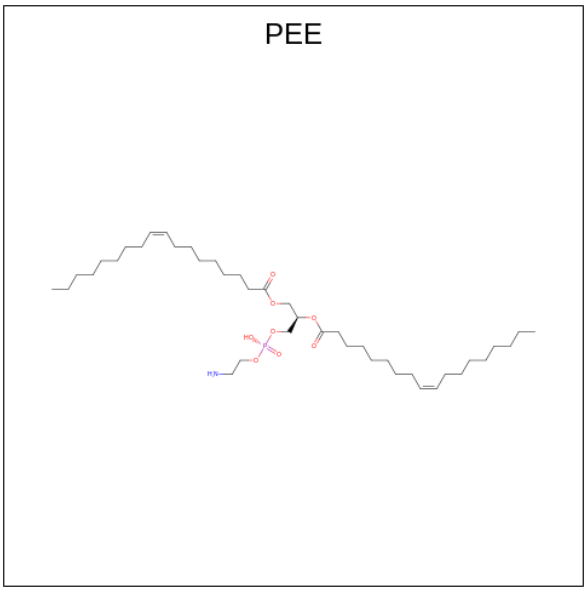
Mol	Chain	Residues	Atoms					AltConf
46	A	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 47 is 1,4-DIHYDRONICOTINAMIDE ADENINE DINUCLEOTIDE (three-letter code: NAI) (formula: $C_{21}H_{29}N_7O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



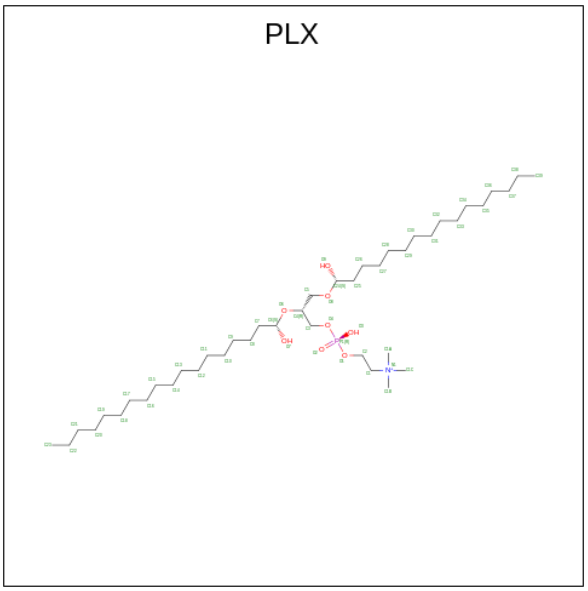
Mol	Chain	Residues	Atoms					AltConf
47	A	1	Total	C	N	O	P	0
			44	21	7	14	2	

- Molecule 48 is 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (three-letter code: PEE) (formula: $C_{41}H_{78}NO_8P$) (labeled as "Ligand of Interest" by depositor).



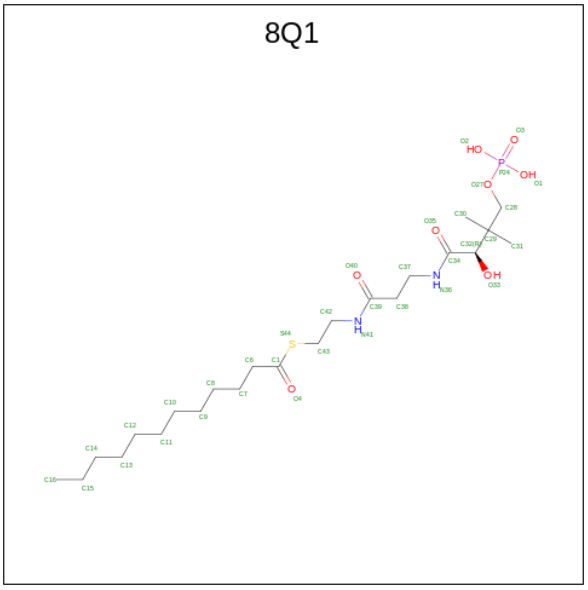
Mol	Chain	Residues	Atoms					AltConf
48	B	1	Total	C	N	O	P	0
			51	41	1	8	1	
48	C	1	Total	C	N	O	P	0
			47	37	1	8	1	
48	U	1	Total	C	N	O	P	0
			51	41	1	8	1	
48	i	1	Total	C	N	O	P	0
			47	37	1	8	1	
48	l	1	Total	C	N	O	P	0
			46	36	1	8	1	
48	m	1	Total	C	N	O	P	0
			41	31	1	8	1	
48	r	1	Total	C	N	O	P	0
			51	41	1	8	1	

- Molecule 49 is (9R,11S)-9-({[(1S)-1-HYDROXYHEXADECYL]OXY}METHYL)-2,2-DIMETHYL-5,7,10-TRIOXA-2LAMBDA 5 -AZA-6LAMBDA 5 -PHOSPHAOCTACOSANE-6,6,11-TRIOL (three-letter code: PLX) (formula: $C_{42}H_{89}NO_8P$) (labeled as "Ligand of Interest" by depositor).



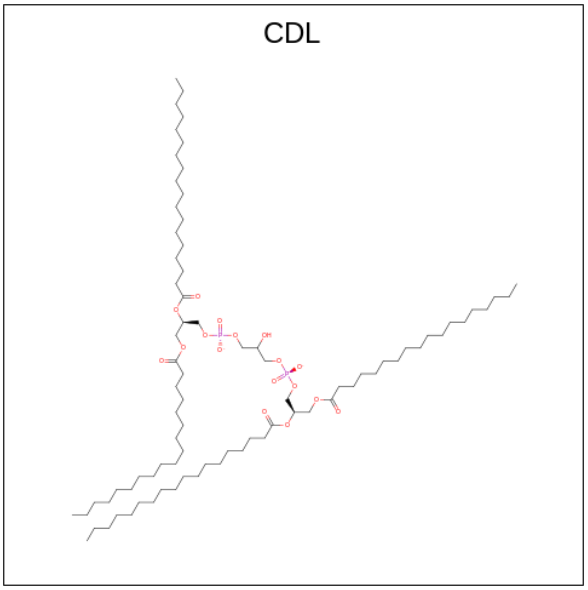
Mol	Chain	Residues	Atoms					AltConf
49	C	1	Total	C	N	O	P	0
			52	42	1	8	1	
49	g	1	Total	C	N	O	P	0
			52	42	1	8	1	
49	j	1	Total	C	N	O	P	0
			52	42	1	8	1	
49	r	1	Total	C	N	O	P	0
			52	42	1	8	1	

- Molecule 50 is S-[2-({N-[(2R)-2-hydroxy-3,3-dimethyl-4-(phosphonooxy)butanoyl]-beta -alanyl}amino)ethyl] dodecanethioate (three-letter code: 8Q1) (formula: $C_{23}H_{45}N_2O_8PS$) (labeled as "Ligand of Interest" by depositor).



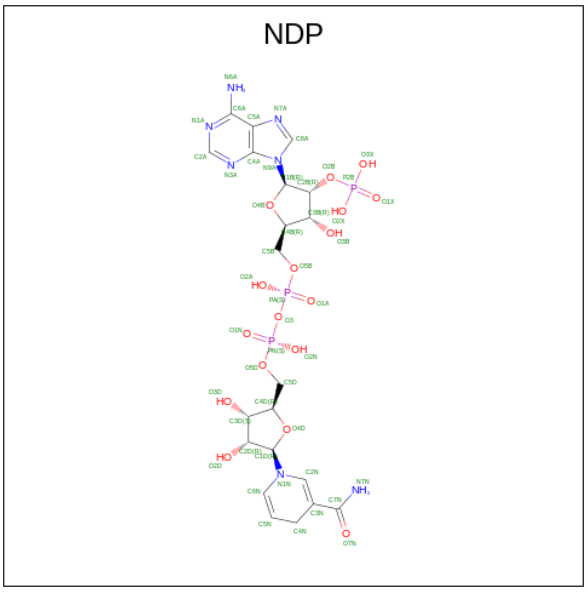
Mol	Chain	Residues	Atoms						AltConf
50	G	1	Total	C	N	O	P	S	0
			35	23	2	8	1	1	
50	X	1	Total	C	N	O	P	S	0
			35	23	2	8	1	1	

- Molecule 51 is CARDIOLIPIN (three-letter code: CDL) (formula: $C_{81}H_{156}O_{17}P_2$) (labeled as "Ligand of Interest" by depositor).



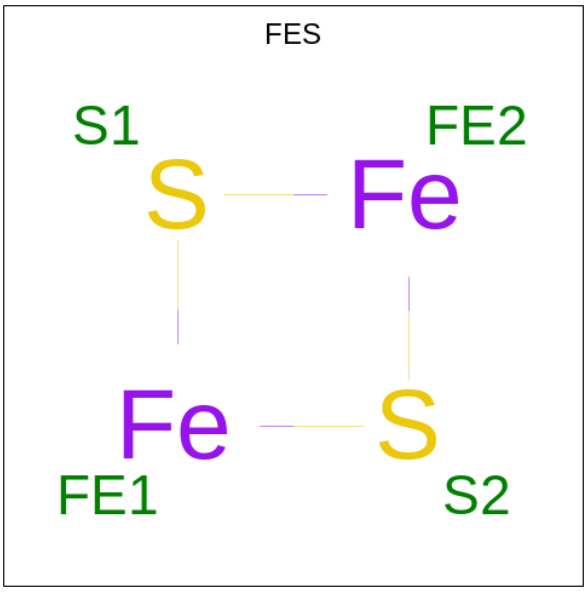
Mol	Chain	Residues	Atoms				AltConf
51	I	1	Total	C	O	P	0
			51	32	17	2	
51	a	1	Total	C	O	P	0
			91	72	17	2	
51	i	1	Total	C	O	P	0
			66	47	17	2	
51	l	1	Total	C	O	P	0
			99	80	17	2	
51	l	1	Total	C	O	P	0
			100	81	17	2	
51	r	1	Total	C	O	P	0
			100	81	17	2	

- Molecule 52 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 53 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe_2S_2) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
53	M	1	Total	Fe	S	0
			4	2	2	
53	O	1	Total	Fe	S	0
			4	2	2	

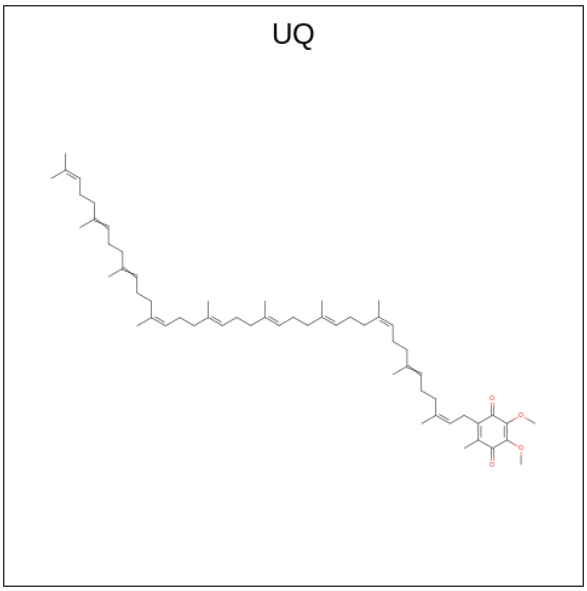
- Molecule 54 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
54	M	1	Total	Mg	0
			1	1	

- Molecule 55 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

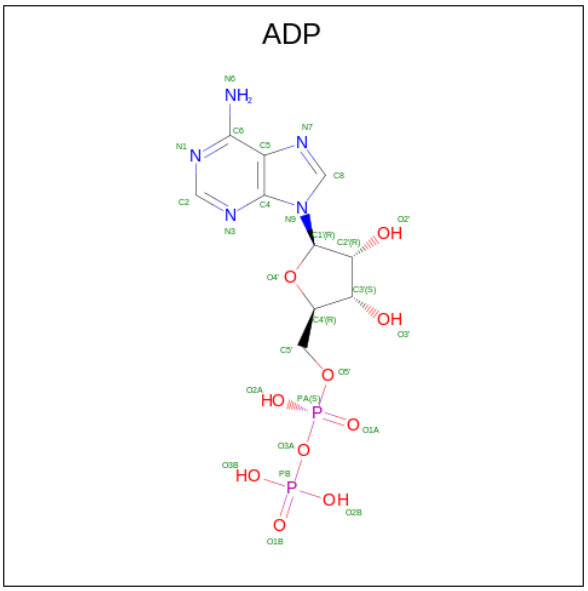
Mol	Chain	Residues	Atoms		AltConf
55	T	1	Total	Zn	0
			1	1	

- Molecule 56 is Coenzyme Q10, (2Z,6E,10Z,14E,18E,22E,26Z)-isomer (three-letter code: UQ) (formula: $C_{59}H_{90}O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
56	s	1	Total	C	O	0
			28	24	4	

- Molecule 57 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



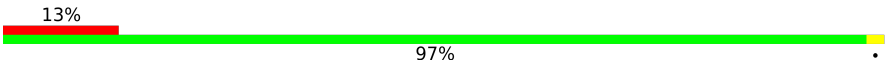
Mol	Chain	Residues	Atoms					AltConf
57	w	1	Total	C	N	O	P	0
			27	10	5	10	2	

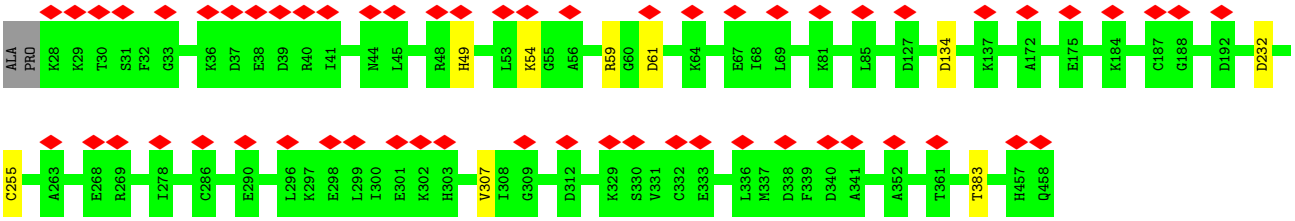
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

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

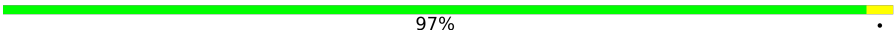
Chain A:





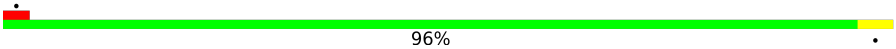
• Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial

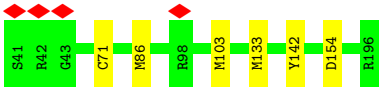
Chain B:



• Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial

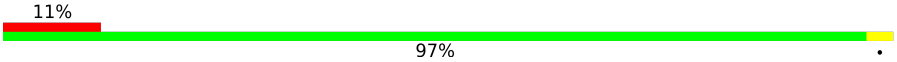
Chain C:

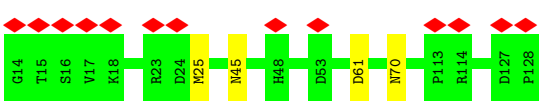




• Molecule 4: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6

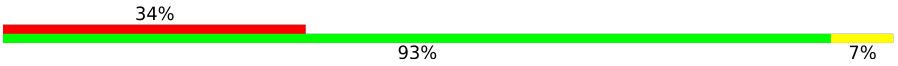
Chain E:

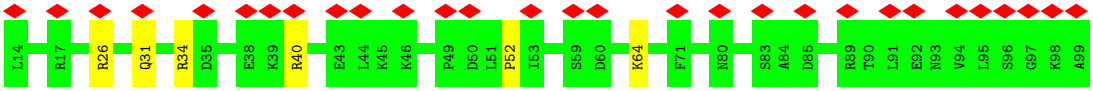




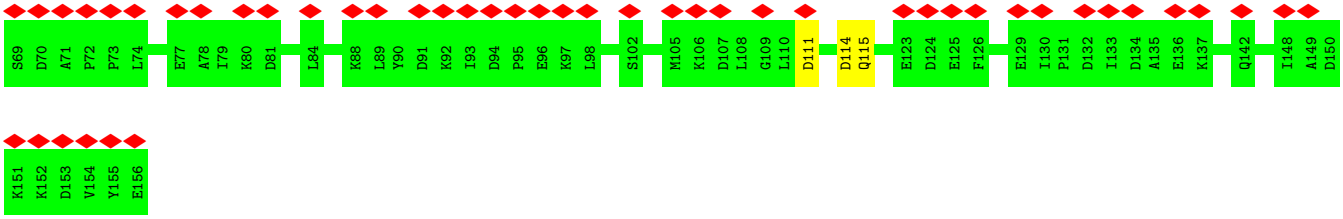
• Molecule 5: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2

Chain F:

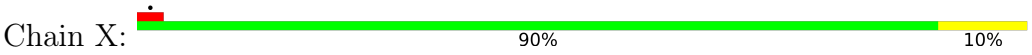




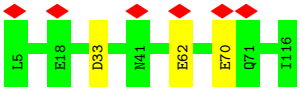
• Molecule 6: Acyl carrier protein



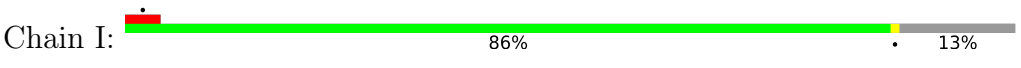
• Molecule 6: Acyl carrier protein

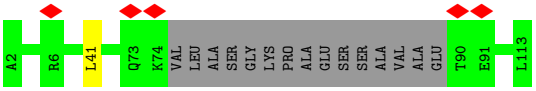


• Molecule 7: Complex I subunit B13

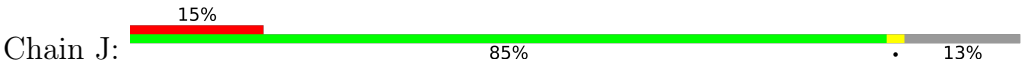


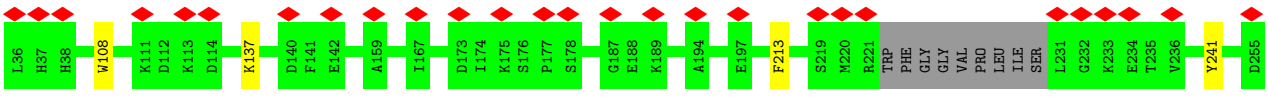
• Molecule 8: Complex I-B14.5a

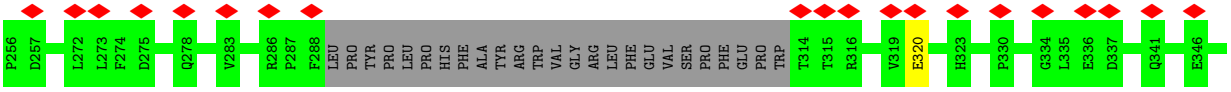


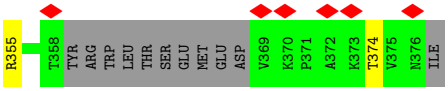


• Molecule 9: NADH dehydrogenase ubiquinone 1 alpha subcomplex subunit 9, mitochondrial



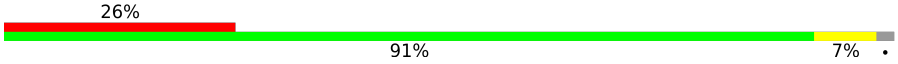


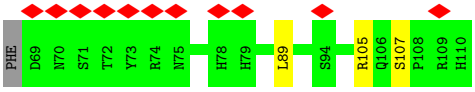




• Molecule 10: Complex I-9kD

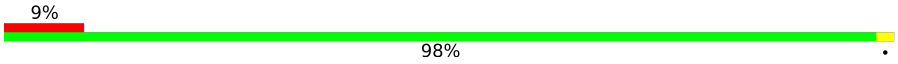
Chain K:

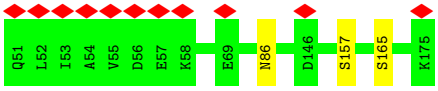




• Molecule 11: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial

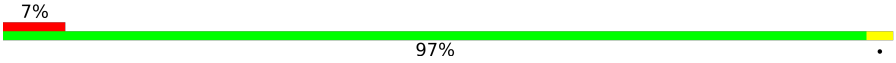
Chain L:

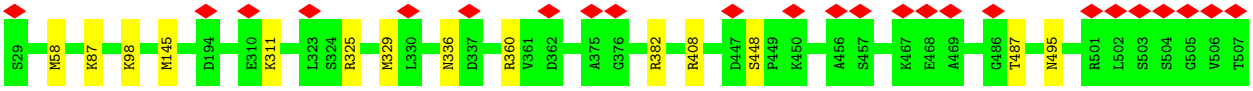




• Molecule 12: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial

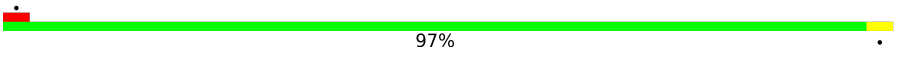
Chain M:

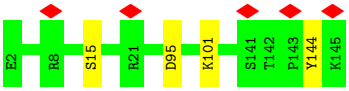




• Molecule 13: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12

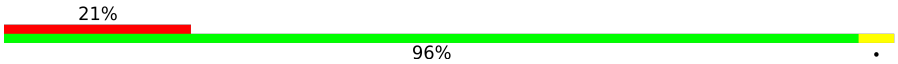
Chain N:

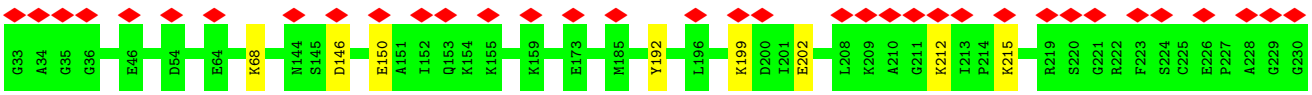


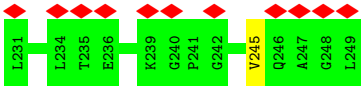


• Molecule 14: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

Chain O:





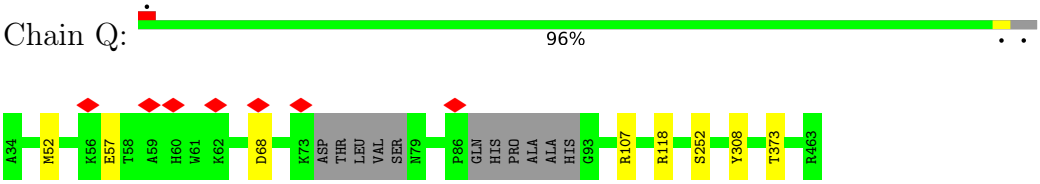


• Molecule 15: Complex I-30kD

Chain P:

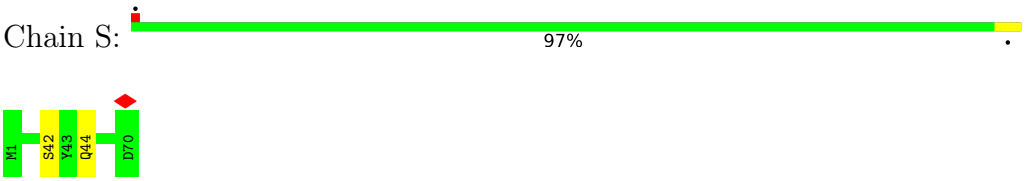
• Molecule 16: Complex I-49kD

Chain Q:



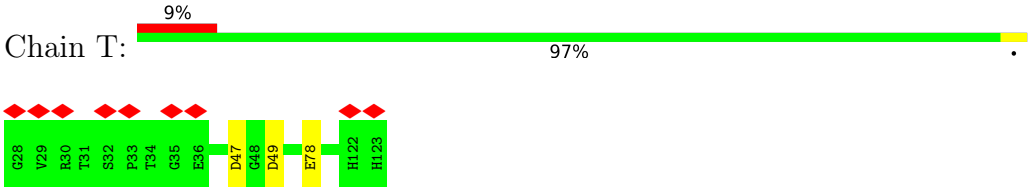
• Molecule 17: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 1

Chain S:



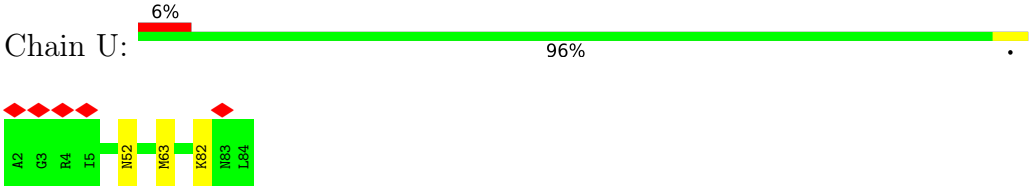
• Molecule 18: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial

Chain T:



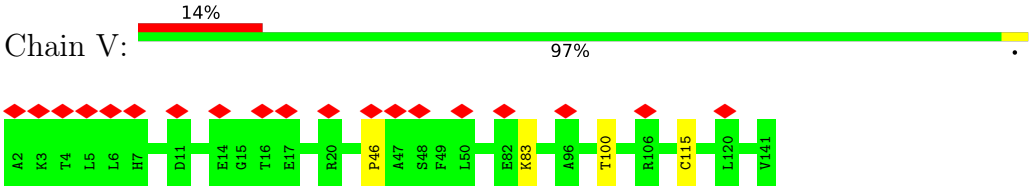
• Molecule 19: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3

Chain U:



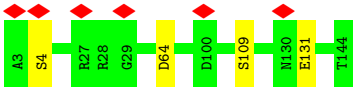
• Molecule 20: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11

Chain V:



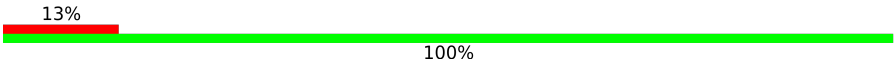
• Molecule 21: Complex I-B16.6

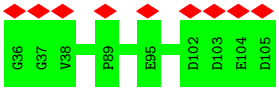
Chain W:



• Molecule 22: Complex I-AGGG

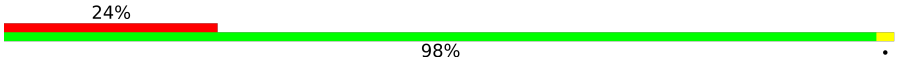
Chain Y:

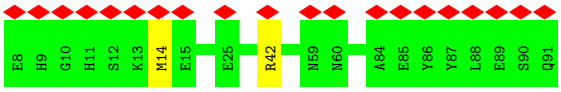




• Molecule 23: Complex I-B12

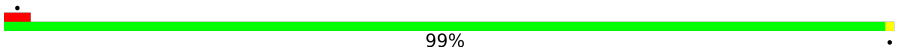
Chain Z:

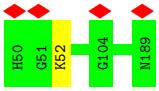




• Molecule 24: Complex I-SGDH

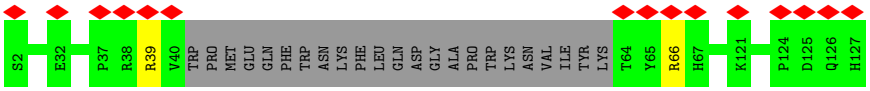
Chain a:





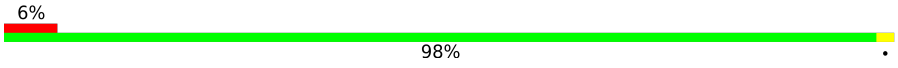
• Molecule 25: Complex I-B17

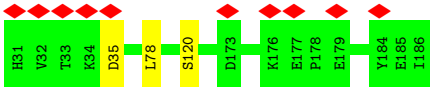
Chain b:



• Molecule 26: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial

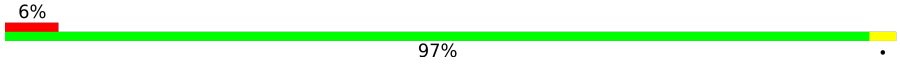
Chain c:

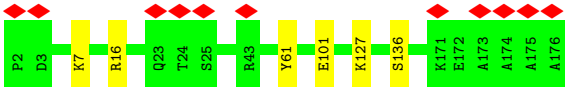




• Molecule 27: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10

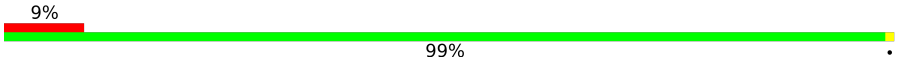
Chain d:

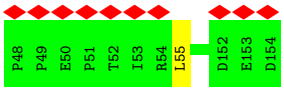




• Molecule 28: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 11, mitochondrial

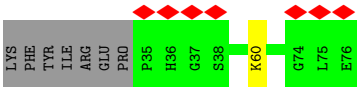
Chain e:





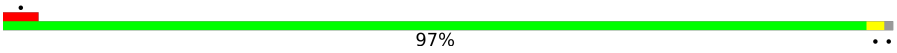
• Molecule 29: NADH dehydrogenase [ubiquinone] 1 subunit C1, mitochondrial

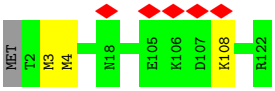
Chain f:



• Molecule 30: NADH dehydrogenase [ubiquinone] 1 subunit C2

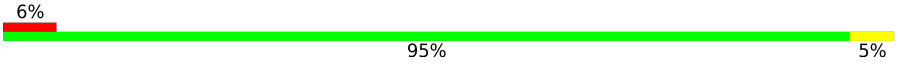
Chain g:

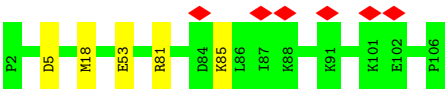




• Molecule 31: NADH dehydrogenase [ubiquinone] iron-sulfur protein 5

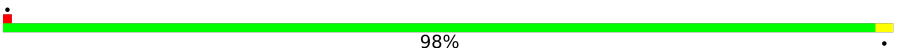
Chain h:





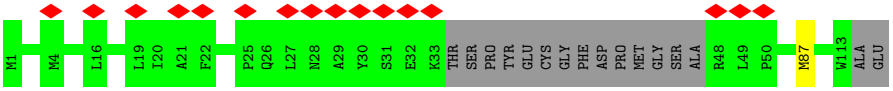
• Molecule 32: NADH-ubiquinone oxidoreductase chain 2

Chain i:



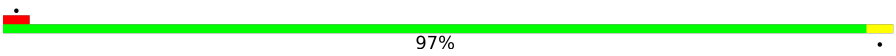
• Molecule 33: NADH-ubiquinone oxidoreductase chain 3

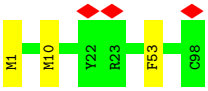
Chain j:



• Molecule 34: NADH-ubiquinone oxidoreductase chain 4L

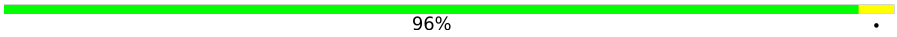
Chain k:

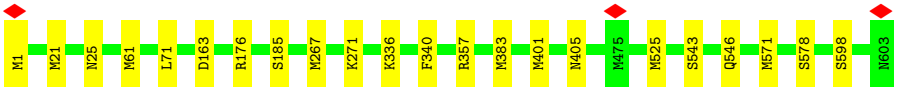




• Molecule 35: NADH-ubiquinone oxidoreductase chain 5

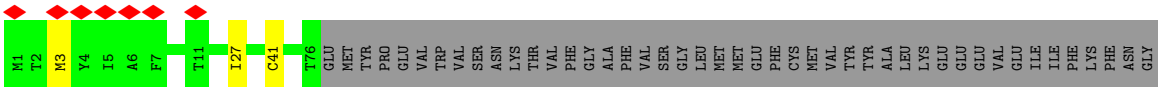
Chain l:

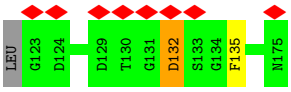




• Molecule 36: NADH-ubiquinone oxidoreductase chain 6

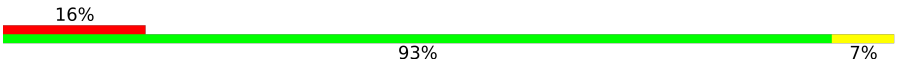
Chain m:

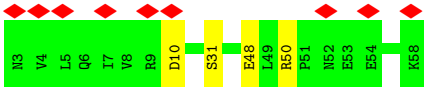




• Molecule 37: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 1

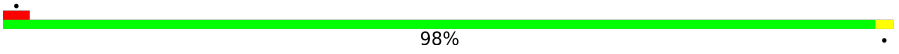
Chain n:

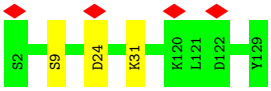




• Molecule 38: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4

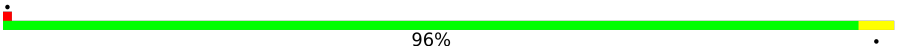
Chain o:





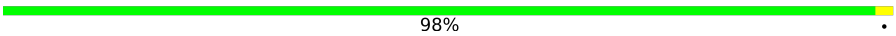
• Molecule 39: NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9

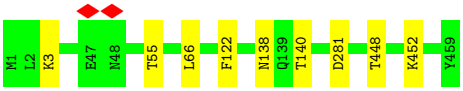
Chain p:



• Molecule 40: NADH-ubiquinone oxidoreductase chain 4

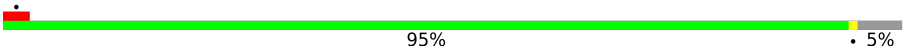
Chain r:

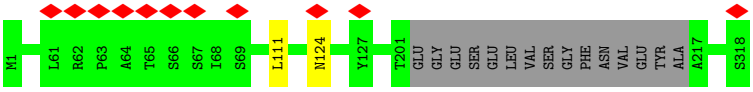




• Molecule 41: NADH-ubiquinone oxidoreductase chain 1

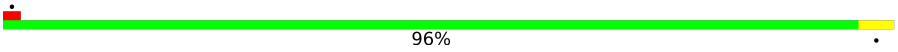
Chain s:

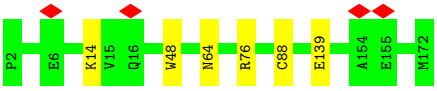




• Molecule 42: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8

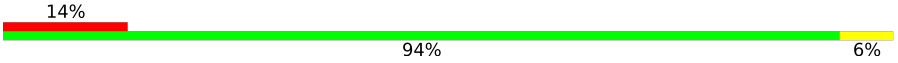
Chain u:

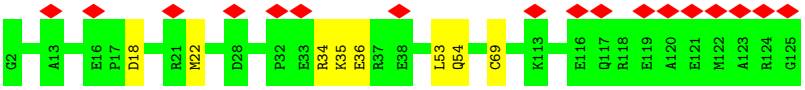




• Molecule 43: Complex I-B18

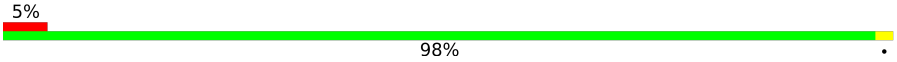
Chain v:

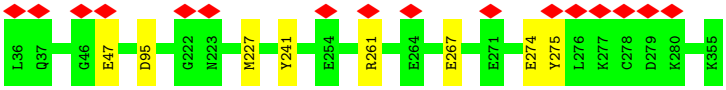




• Molecule 44: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial

Chain w:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	53905	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.205	Depositor
Minimum map value	-0.120	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	333.7616, 333.7616, 333.7616	wwPDB
Map dimensions	304, 304, 304	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0979, 1.0979, 1.0979	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: FES, ZN, UQ, ADP, PEE, 8Q1, PLX, SF4, NAI, MG, FMN, 2MR, NDP, CDL

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	0.35	0/3388	0.53	0/4579
2	B	0.49	0/1443	0.53	0/1952
3	C	0.47	0/1279	0.55	0/1730
4	E	0.33	0/995	0.53	0/1340
5	F	0.35	0/702	0.64	1/945 (0.1%)
6	G	0.32	0/702	0.49	0/952
6	X	0.41	0/708	0.45	0/959
7	H	0.33	0/929	0.49	1/1258 (0.1%)
8	I	0.37	0/798	0.55	0/1079
9	J	0.35	0/2411	0.50	0/3254
10	K	0.31	0/365	0.51	0/493
11	L	0.40	0/1036	0.51	0/1399
12	M	0.37	0/5380	0.53	0/7290
13	N	0.41	0/1242	0.53	0/1690
14	O	0.35	0/1711	0.50	0/2328
15	P	0.46	0/1789	0.54	0/2436
16	Q	0.46	0/3451	0.54	0/4672
17	S	0.39	0/582	0.50	0/783
18	T	0.38	0/755	0.51	0/1018
19	U	0.38	0/664	0.46	0/912
20	V	0.32	0/1030	0.48	0/1397
21	W	0.40	0/1204	0.51	0/1624
22	Y	0.37	0/623	0.48	0/853
23	Z	0.36	0/695	0.45	0/939
24	a	0.43	0/1199	0.51	0/1623
25	b	0.41	0/906	0.55	0/1232
26	c	0.47	0/1371	0.50	0/1875
27	d	0.41	0/1494	0.51	0/2015
28	e	0.42	0/916	0.49	0/1246
29	f	0.36	0/350	0.45	0/473
30	g	0.43	0/1031	0.50	0/1394
31	h	0.37	0/889	0.50	0/1190

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	i	0.42	0/2773	0.48	0/3768
33	j	0.36	0/819	0.50	0/1117
34	k	0.39	0/759	0.48	0/1029
35	l	0.42	0/4911	0.48	0/6679
36	m	0.46	0/968	0.55	1/1313 (0.1%)
37	n	0.36	0/491	0.55	0/663
38	o	0.42	0/1092	0.52	0/1481
39	p	0.43	0/1590	0.53	0/2155
40	r	0.45	0/3723	0.49	0/5078
41	s	0.43	0/2464	0.51	0/3369
42	u	0.39	0/1436	0.50	0/1938
43	v	0.39	0/1052	0.57	0/1411
44	w	0.41	0/2630	0.50	0/3566
All	All	0.41	0/66746	0.51	3/90497 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	H	33	ASP	CB-CG-OD2	5.75	123.47	118.30
36	m	132	ASP	CB-CG-OD2	5.68	123.41	118.30
5	F	52	PRO	CA-N-CD	-5.12	104.33	111.50

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	429/433 (99%)	414 (96%)	15 (4%)	0	100	100
2	B	174/176 (99%)	173 (99%)	1 (1%)	0	100	100
3	C	154/156 (99%)	147 (96%)	7 (4%)	0	100	100
4	E	113/115 (98%)	110 (97%)	3 (3%)	0	100	100
5	F	84/86 (98%)	80 (95%)	4 (5%)	0	100	100
6	G	86/88 (98%)	85 (99%)	1 (1%)	0	100	100
6	X	86/88 (98%)	85 (99%)	1 (1%)	0	100	100
7	H	110/112 (98%)	103 (94%)	7 (6%)	0	100	100
8	I	93/112 (83%)	80 (86%)	13 (14%)	0	100	100
9	J	289/342 (84%)	273 (94%)	16 (6%)	0	100	100
10	K	40/43 (93%)	39 (98%)	1 (2%)	0	100	100
11	L	123/125 (98%)	120 (98%)	3 (2%)	0	100	100
12	M	688/690 (100%)	668 (97%)	20 (3%)	0	100	100
13	N	142/144 (99%)	139 (98%)	3 (2%)	0	100	100
14	O	215/217 (99%)	201 (94%)	14 (6%)	0	100	100
15	P	206/208 (99%)	196 (95%)	10 (5%)	0	100	100
16	Q	412/430 (96%)	400 (97%)	12 (3%)	0	100	100
17	S	68/70 (97%)	66 (97%)	2 (3%)	0	100	100
18	T	94/96 (98%)	91 (97%)	3 (3%)	0	100	100
19	U	81/83 (98%)	78 (96%)	3 (4%)	0	100	100
20	V	138/140 (99%)	133 (96%)	4 (3%)	1 (1%)	22	60
21	W	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
22	Y	68/70 (97%)	65 (96%)	3 (4%)	0	100	100
23	Z	82/84 (98%)	80 (98%)	2 (2%)	0	100	100
24	a	138/140 (99%)	135 (98%)	3 (2%)	0	100	100
25	b	99/126 (79%)	93 (94%)	6 (6%)	0	100	100
26	c	154/156 (99%)	145 (94%)	9 (6%)	0	100	100
27	d	173/175 (99%)	171 (99%)	2 (1%)	0	100	100
28	e	105/107 (98%)	101 (96%)	4 (4%)	0	100	100
29	f	40/49 (82%)	39 (98%)	1 (2%)	0	100	100
30	g	119/122 (98%)	115 (97%)	4 (3%)	0	100	100
31	h	103/105 (98%)	99 (96%)	4 (4%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
32	i	345/347 (99%)	332 (96%)	13 (4%)	0	100	100
33	j	95/115 (83%)	90 (95%)	5 (5%)	0	100	100
34	k	96/98 (98%)	89 (93%)	7 (7%)	0	100	100
35	l	601/603 (100%)	576 (96%)	25 (4%)	0	100	100
36	m	125/175 (71%)	112 (90%)	13 (10%)	0	100	100
37	n	54/56 (96%)	54 (100%)	0	0	100	100
38	o	126/128 (98%)	120 (95%)	6 (5%)	0	100	100
39	p	176/178 (99%)	169 (96%)	6 (3%)	1 (1%)	25	64
40	r	457/459 (100%)	446 (98%)	11 (2%)	0	100	100
41	s	299/318 (94%)	286 (96%)	13 (4%)	0	100	100
42	u	169/171 (99%)	163 (96%)	6 (4%)	0	100	100
43	v	122/124 (98%)	115 (94%)	7 (6%)	0	100	100
44	w	318/320 (99%)	304 (96%)	14 (4%)	0	100	100
All	All	8029/8322 (96%)	7717 (96%)	310 (4%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	V	46	PRO
39	p	174	PRO

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	343/346 (99%)	334 (97%)	9 (3%)	46	78
2	B	151/151 (100%)	146 (97%)	5 (3%)	38	73
3	C	132/132 (100%)	126 (96%)	6 (4%)	27	64
4	E	107/107 (100%)	103 (96%)	4 (4%)	34	70
5	F	76/76 (100%)	71 (93%)	5 (7%)	16	49

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
6	G	75/81 (93%)	72 (96%)	3 (4%)	31 68
6	X	77/81 (95%)	68 (88%)	9 (12%)	5 22
7	H	99/99 (100%)	97 (98%)	2 (2%)	55 83
8	I	87/97 (90%)	86 (99%)	1 (1%)	73 90
9	J	255/296 (86%)	248 (97%)	7 (3%)	44 77
10	K	41/42 (98%)	38 (93%)	3 (7%)	14 44
11	L	112/113 (99%)	109 (97%)	3 (3%)	44 77
12	M	579/580 (100%)	559 (96%)	20 (4%)	36 71
13	N	129/130 (99%)	125 (97%)	4 (3%)	40 75
14	O	183/183 (100%)	174 (95%)	9 (5%)	25 61
15	P	190/190 (100%)	187 (98%)	3 (2%)	62 86
16	Q	361/370 (98%)	354 (98%)	7 (2%)	57 84
17	S	58/58 (100%)	56 (97%)	2 (3%)	37 72
18	T	79/79 (100%)	76 (96%)	3 (4%)	33 69
19	U	69/69 (100%)	66 (96%)	3 (4%)	29 66
20	V	97/101 (96%)	94 (97%)	3 (3%)	40 75
21	W	123/123 (100%)	119 (97%)	4 (3%)	38 73
22	Y	62/63 (98%)	62 (100%)	0	100 100
23	Z	65/65 (100%)	63 (97%)	2 (3%)	40 75
24	a	122/122 (100%)	121 (99%)	1 (1%)	81 93
25	b	98/119 (82%)	96 (98%)	2 (2%)	55 83
26	c	141/141 (100%)	138 (98%)	3 (2%)	53 82
27	d	155/155 (100%)	149 (96%)	6 (4%)	32 69
28	e	99/99 (100%)	98 (99%)	1 (1%)	76 91
29	f	35/45 (78%)	34 (97%)	1 (3%)	42 76
30	g	108/109 (99%)	105 (97%)	3 (3%)	43 77
31	h	93/93 (100%)	88 (95%)	5 (5%)	22 57
32	i	311/311 (100%)	304 (98%)	7 (2%)	50 80
33	j	88/100 (88%)	87 (99%)	1 (1%)	73 90
34	k	85/85 (100%)	82 (96%)	3 (4%)	36 71
35	l	536/537 (100%)	514 (96%)	22 (4%)	30 67

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
36	m	97/141 (69%)	92 (95%)	5 (5%)	23 59
37	n	53/53 (100%)	49 (92%)	4 (8%)	13 43
38	o	113/113 (100%)	110 (97%)	3 (3%)	44 77
39	p	159/159 (100%)	153 (96%)	6 (4%)	33 69
40	r	410/410 (100%)	401 (98%)	9 (2%)	52 81
41	s	263/275 (96%)	261 (99%)	2 (1%)	81 93
42	u	153/153 (100%)	147 (96%)	6 (4%)	32 69
43	v	104/111 (94%)	96 (92%)	8 (8%)	13 42
44	w	278/283 (98%)	270 (97%)	8 (3%)	42 76
All	All	7051/7246 (97%)	6828 (97%)	223 (3%)	42 74

All (223) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	HIS
1	A	54	LYS
1	A	59	ARG
1	A	61	ASP
1	A	134	ASP
1	A	232	ASP
1	A	255	CYS
1	A	307	VAL
1	A	383	THR
2	B	44	ARG
2	B	55	ASP
2	B	73	THR
2	B	76	TYR
2	B	180	HIS
3	C	71	CYS
3	C	86	MET
3	C	103	MET
3	C	133	MET
3	C	142	TYR
3	C	154	ASP
4	E	25	MET
4	E	45	ASN
4	E	61	ASP
4	E	70	ASN
5	F	26	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
5	F	31	GLN
5	F	34	ARG
5	F	40	ARG
5	F	64	LYS
6	G	111	ASP
6	G	114	ASP
6	G	115	GLN
7	H	62	GLU
7	H	70	GLU
8	I	41	LEU
9	J	108	TRP
9	J	137	LYS
9	J	213	PHE
9	J	241	TYR
9	J	320	GLU
9	J	355	ARG
9	J	374	THR
10	K	89	LEU
10	K	105	ARG
10	K	107	SER
11	L	86	ASN
11	L	157	SER
11	L	165	SER
12	M	58	MET
12	M	87	LYS
12	M	98	LYS
12	M	145	MET
12	M	311	LYS
12	M	325	ARG
12	M	329	MET
12	M	336	ASN
12	M	360	ARG
12	M	382	ARG
12	M	408	ARG
12	M	448	SER
12	M	487	THR
12	M	495	ASN
12	M	535	GLU
12	M	538	ARG
12	M	579	MET
12	M	636	TYR
12	M	640	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
12	M	655	ARG
13	N	15	SER
13	N	95	ASP
13	N	101	LYS
13	N	144	TYR
14	O	68	LYS
14	O	146	ASP
14	O	150	GLU
14	O	192	TYR
14	O	199	LYS
14	O	202	GLU
14	O	212	LYS
14	O	215	LYS
14	O	245	VAL
15	P	50	ARG
15	P	52	ASP
15	P	231	ARG
16	Q	52	MET
16	Q	57	GLU
16	Q	68	ASP
16	Q	107	ARG
16	Q	252	SER
16	Q	308	TYR
16	Q	373	THR
17	S	42	SER
17	S	44	GLN
18	T	47	ASP
18	T	49	ASP
18	T	78	GLU
19	U	52	ASN
19	U	63	MET
19	U	82	LYS
20	V	83	LYS
20	V	100	THR
20	V	115	CYS
21	W	4	SER
21	W	64	ASP
21	W	109	SER
21	W	131	GLU
6	X	76	LEU
6	X	77	GLU
6	X	98	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
6	X	105	MET
6	X	129	GLU
6	X	136	GLU
6	X	137	LYS
6	X	151	LYS
6	X	152	LYS
23	Z	14	MET
23	Z	42	ARG
24	a	52	LYS
25	b	39	ARG
25	b	66	ARG
26	c	35	ASP
26	c	78	LEU
26	c	120	SER
27	d	7	LYS
27	d	16	ARG
27	d	61	TYR
27	d	101	GLU
27	d	127	LYS
27	d	136	SER
28	e	55	LEU
29	f	60	LYS
30	g	3	MET
30	g	4	MET
30	g	108	LYS
31	h	5	ASP
31	h	18	MET
31	h	53	GLU
31	h	81	ARG
31	h	85	LYS
32	i	187	MET
32	i	237	MET
32	i	251	MET
32	i	261	MET
32	i	282	MET
32	i	300	SER
32	i	324	LYS
33	j	87	MET
34	k	1	MET
34	k	10	MET
34	k	53	PHE
35	l	1	MET

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
35	l	21	MET
35	l	25	ASN
35	l	61	MET
35	l	71	LEU
35	l	163	ASP
35	l	176	ARG
35	l	185	SER
35	l	267	MET
35	l	271	LYS
35	l	336	LYS
35	l	340	PHE
35	l	357	ARG
35	l	383	MET
35	l	401	MET
35	l	405	ASN
35	l	525	MET
35	l	543	SER
35	l	546	GLN
35	l	571	MET
35	l	578	SER
35	l	598	SER
36	m	3	MET
36	m	27	ILE
36	m	41	CYS
36	m	132	ASP
36	m	135	PHE
37	n	10	ASP
37	n	31	SER
37	n	48	GLU
37	n	50	ARG
38	o	9	SER
38	o	24	ASP
38	o	31	LYS
39	p	38	ARG
39	p	48	PHE
39	p	54	GLU
39	p	110	SER
39	p	135	ARG
39	p	141	GLN
40	r	3	LYS
40	r	55	THR
40	r	66	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
40	r	122	PHE
40	r	138	ASN
40	r	140	THR
40	r	281	ASP
40	r	448	THR
40	r	452	LYS
41	s	111	LEU
41	s	124	ASN
42	u	14	LYS
42	u	48	TRP
42	u	64	ASN
42	u	76	ARG
42	u	88	CYS
42	u	139	GLU
43	v	18	ASP
43	v	22	MET
43	v	34	ARG
43	v	35	LYS
43	v	36	GLU
43	v	53	LEU
43	v	54	GLN
43	v	69	CYS
44	w	47	GLU
44	w	95	ASP
44	w	227	MET
44	w	241	TYR
44	w	261	ARG
44	w	267	GLU
44	w	274	GLU
44	w	275	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	103	ASN
4	E	51	GLN
12	M	278	HIS
12	M	604	GLN
15	P	75	GLN
15	P	107	GLN
27	d	124	ASN
35	l	2	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
42	u	77	HIS
43	v	85	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)

1 non-standard protein/DNA/RNA residue is 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	$\#\|Z\| > 2$
16	2MR	Q	118	16	10,12,13	1.96	2 (20%)	5,13,15	6.39	3 (60%)

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
16	2MR	Q	118	16	-	2/10/13/15	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	Q	118	2MR	CZ-NE	5.14	1.45	1.34
16	Q	118	2MR	CQ2-NH2	-2.29	1.41	1.45

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	Q	118	2MR	NE-CZ-NH2	13.38	131.74	119.48

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	Q	118	2MR	CD-NE-CZ	3.87	130.65	123.41
16	Q	118	2MR	CQ2-NH2-CZ	3.04	130.58	123.86

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	Q	118	2MR	NE-CD-CG-CB
16	Q	118	2MR	CA-CB-CG-CD

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 34 ligands modelled in this entry, 2 are monoatomic - leaving 32 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
48	PEE	B	303	-	50,50,50	1.15	6 (12%)	53,55,55	1.07	3 (5%)
50	8Q1	X	201	-	31,34,34	1.68	6 (19%)	40,43,43	1.62	7 (17%)
53	FES	O	301	14	0,4,4	-	-	-		
49	PLX	C	303	-	51,51,51	1.14	3 (5%)	55,59,59	0.62	1 (1%)
49	PLX	j	201	-	51,51,51	1.12	4 (7%)	55,59,59	0.61	1 (1%)
51	CDL	i	401	-	65,65,99	1.28	8 (12%)	71,77,111	1.03	4 (5%)
51	CDL	l	702	-	99,99,99	1.07	8 (8%)	105,111,111	0.89	4 (3%)
51	CDL	r	503	-	99,99,99	1.07	8 (8%)	105,111,111	0.87	4 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
46	FMN	A	502	-	33,33,33	1.14	2 (6%)	48,50,50	1.25	8 (16%)
45	SF4	B	301	2	0,12,12	-	-	-		
49	PLX	r	502	-	51,51,51	1.13	3 (5%)	55,59,59	0.61	1 (1%)
45	SF4	M	802	12	0,12,12	-	-	-		
48	PEE	r	501	-	50,50,50	1.13	5 (10%)	53,55,55	1.07	2 (3%)
51	CDL	l	701	-	98,98,99	0.93	4 (4%)	104,110,111	1.10	6 (5%)
48	PEE	m	201	-	40,40,50	1.13	5 (12%)	43,45,55	1.06	2 (4%)
45	SF4	M	801	12	0,12,12	-	-	-		
45	SF4	B	302	2	0,12,12	-	-	-		
51	CDL	a	201	-	90,90,99	1.12	7 (7%)	96,102,111	1.02	4 (4%)
51	CDL	I	201	-	50,50,99	1.40	8 (16%)	56,62,111	1.19	4 (7%)
52	NDP	J	401	-	45,52,52	4.55	19 (42%)	53,80,80	1.95	8 (15%)
47	NAI	A	503	-	42,48,48	4.94	19 (45%)	47,73,73	1.31	6 (12%)
50	8Q1	G	201	-	31,34,34	1.69	6 (19%)	40,43,43	1.66	8 (20%)
48	PEE	l	703	-	45,45,50	1.22	6 (13%)	48,50,55	1.03	2 (4%)
48	PEE	C	302	-	46,46,50	1.22	6 (13%)	49,51,55	0.96	2 (4%)
53	FES	M	803	12	0,4,4	-	-	-		
57	ADP	w	401	-	24,29,29	3.16	6 (25%)	29,45,45	1.42	5 (17%)
45	SF4	A	501	1	0,12,12	-	-	-		
48	PEE	i	402	-	46,46,50	1.18	6 (13%)	49,51,55	1.05	2 (4%)
49	PLX	g	201	-	51,51,51	1.12	3 (5%)	55,59,59	0.63	1 (1%)
48	PEE	U	101	-	50,50,50	1.15	6 (12%)	53,55,55	0.93	2 (3%)
56	UQ	s	401	-	28,28,63	3.26	8 (28%)	34,37,79	2.89	12 (35%)
45	SF4	C	301	16,3	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
48	PEE	B	303	-	-	22/54/54/54	-
50	8Q1	X	201	-	-	24/41/41/41	-
53	FES	O	301	14	-	-	0/1/1/1
49	PLX	C	303	-	-	26/55/55/55	-
49	PLX	j	201	-	-	30/55/55/55	-
51	CDL	i	401	-	-	38/76/76/110	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
51	CDL	l	702	-	-	61/110/110/110	-
51	CDL	r	503	-	-	66/110/110/110	-
46	FMN	A	502	-	-	5/18/18/18	0/3/3/3
49	PLX	r	502	-	-	37/55/55/55	-
45	SF4	B	301	2	-	-	0/6/5/5
45	SF4	M	802	12	-	-	0/6/5/5
48	PEE	r	501	-	-	27/54/54/54	-
51	CDL	l	701	-	-	42/109/109/110	-
48	PEE	m	201	-	-	20/44/44/54	-
45	SF4	M	801	12	-	-	0/6/5/5
51	CDL	a	201	-	-	36/101/101/110	-
45	SF4	B	302	2	-	-	0/6/5/5
51	CDL	I	201	-	-	32/61/61/110	-
52	NDP	J	401	-	-	9/30/77/77	0/4/5/5
47	NAI	A	503	-	-	7/25/72/72	0/5/5/5
50	8Q1	G	201	-	-	17/41/41/41	-
48	PEE	l	703	-	-	25/49/49/54	-
48	PEE	C	302	-	-	24/50/50/54	-
53	FES	M	803	12	-	-	0/1/1/1
57	ADP	w	401	-	-	4/12/32/32	0/3/3/3
45	SF4	A	501	1	-	-	0/6/5/5
48	PEE	i	402	-	-	30/50/50/54	-
49	PLX	g	201	-	-	27/55/55/55	-
48	PEE	U	101	-	-	25/54/54/54	-
56	UQ	s	401	-	-	10/21/45/87	0/1/1/1
45	SF4	C	301	16,3	-	-	0/6/5/5

All (162) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
47	A	503	NAI	O4B-C1B	15.96	1.63	1.41
47	A	503	NAI	C2B-C1B	-15.78	1.29	1.53
52	J	401	NDP	C3B-C2B	-12.92	1.24	1.52
52	J	401	NDP	C6N-C5N	12.34	1.55	1.33
52	J	401	NDP	O4D-C4D	10.61	1.68	1.45
47	A	503	NAI	C3D-C4D	-10.35	1.26	1.53
52	J	401	NDP	C3D-C4D	-9.98	1.27	1.53
56	s	401	UQ	C13-C14	9.29	1.55	1.33

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
57	w	401	ADP	C3'-C4'	-8.91	1.30	1.53
56	s	401	UQ	C8-C9	8.85	1.54	1.33
52	J	401	NDP	O4B-C4B	-8.30	1.26	1.45
56	s	401	UQ	C18-C19	8.28	1.56	1.32
47	A	503	NAI	O4B-C4B	-8.28	1.26	1.45
52	J	401	NDP	O4B-C1B	7.79	1.51	1.41
57	w	401	ADP	O4'-C4'	7.56	1.61	1.45
47	A	503	NAI	C2D-C1D	-7.55	1.29	1.53
52	J	401	NDP	C2N-C3N	7.43	1.55	1.34
57	w	401	ADP	O4'-C1'	-6.99	1.31	1.41
47	A	503	NAI	O4D-C4D	6.72	1.60	1.45
47	A	503	NAI	C2D-C3D	5.82	1.69	1.53
47	A	503	NAI	C7N-N7N	5.76	1.48	1.33
47	A	503	NAI	O4D-C1D	5.41	1.54	1.42
50	G	201	8Q1	C34-N36	5.40	1.45	1.33
52	J	401	NDP	P2B-O2B	5.39	1.69	1.59
50	X	201	8Q1	C34-N36	5.37	1.45	1.33
47	A	503	NAI	C4N-C3N	-5.24	1.39	1.49
50	G	201	8Q1	C39-N41	5.15	1.45	1.33
52	J	401	NDP	C3B-C4B	5.09	1.66	1.53
52	J	401	NDP	O4D-C1D	-5.05	1.30	1.42
50	X	201	8Q1	C39-N41	4.97	1.44	1.33
52	J	401	NDP	C6N-N1N	4.79	1.49	1.37
47	A	503	NAI	O2B-C2B	4.43	1.53	1.43
52	J	401	NDP	O2D-C2D	-4.38	1.32	1.43
51	l	701	CDL	OA8-CA7	4.27	1.45	1.33
52	J	401	NDP	C7N-N7N	4.18	1.44	1.33
51	l	701	CDL	OB8-CB7	4.15	1.45	1.33
51	l	701	CDL	OB6-CB5	4.13	1.46	1.34
51	l	701	CDL	OA6-CA5	4.09	1.45	1.34
52	J	401	NDP	C6A-N6A	3.88	1.48	1.34
57	w	401	ADP	C6-N6	3.80	1.47	1.34
48	C	302	PEE	C18-C19	3.76	1.53	1.31
47	A	503	NAI	C6N-C5N	3.76	1.40	1.33
48	B	303	PEE	C18-C19	3.71	1.53	1.31
48	l	703	PEE	C18-C19	3.70	1.53	1.31
48	C	302	PEE	C39-C38	3.68	1.53	1.31
57	w	401	ADP	O2'-C2'	-3.67	1.34	1.43
48	m	201	PEE	C18-C19	3.65	1.52	1.31
48	U	101	PEE	C18-C19	3.65	1.52	1.31
48	U	101	PEE	C39-C38	3.62	1.52	1.31
48	r	501	PEE	C39-C38	3.62	1.52	1.31

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
48	r	501	PEE	C18-C19	3.61	1.52	1.31
46	A	502	FMN	C4A-N5	3.61	1.37	1.30
48	i	402	PEE	C18-C19	3.61	1.52	1.31
48	B	303	PEE	C39-C38	3.59	1.52	1.31
48	l	703	PEE	C39-C38	3.57	1.52	1.31
48	i	402	PEE	C39-C38	3.56	1.52	1.31
51	i	401	CDL	OA8-CA7	3.55	1.43	1.33
47	A	503	NAI	C6A-N6A	3.52	1.46	1.34
47	A	503	NAI	C4N-C5N	-3.43	1.39	1.48
51	l	702	CDL	OA8-CA7	3.41	1.43	1.33
47	A	503	NAI	C7N-C3N	3.39	1.56	1.48
51	a	201	CDL	OA8-CA7	3.35	1.43	1.33
51	r	503	CDL	OA8-CA7	3.31	1.43	1.33
51	I	201	CDL	OA8-CA7	3.31	1.43	1.33
49	g	201	PLX	O6-C4	-3.13	1.40	1.44
52	J	401	NDP	O3D-C3D	3.09	1.50	1.43
57	w	401	ADP	O3'-C3'	3.08	1.50	1.43
51	I	201	CDL	OB8-CB7	3.05	1.42	1.33
51	i	401	CDL	OB6-CB5	3.01	1.42	1.34
51	a	201	CDL	OB8-CB7	3.00	1.42	1.33
51	I	201	CDL	OA6-CA5	3.00	1.42	1.34
49	C	303	PLX	O6-C4	-2.99	1.40	1.44
51	r	503	CDL	OB8-CB7	2.97	1.42	1.33
52	J	401	NDP	C7N-C3N	2.95	1.55	1.48
51	l	702	CDL	OA6-CA5	2.95	1.42	1.34
51	i	401	CDL	OB8-CB7	2.95	1.41	1.33
51	a	201	CDL	OB6-CB5	2.94	1.42	1.34
51	l	702	CDL	OB8-CB7	2.93	1.41	1.33
51	i	401	CDL	OA6-CA5	2.93	1.42	1.34
51	l	702	CDL	OB6-CB5	2.92	1.42	1.34
51	I	201	CDL	OB6-CB5	2.91	1.42	1.34
51	r	503	CDL	OB6-CB5	2.90	1.42	1.34
51	a	201	CDL	OA6-CA5	2.90	1.42	1.34
51	r	503	CDL	OA6-CA5	2.89	1.42	1.34
49	r	502	PLX	O6-C4	-2.89	1.40	1.44
48	U	101	PEE	O2-C2	-2.67	1.39	1.46
51	r	503	CDL	OA6-CA4	-2.65	1.40	1.46
47	A	503	NAI	O3B-C3B	-2.61	1.36	1.43
48	B	303	PEE	O2-C2	-2.60	1.40	1.46
48	C	302	PEE	O2-C2	-2.58	1.40	1.46
48	l	703	PEE	O2-C2	-2.56	1.40	1.46
49	j	201	PLX	O6-C4	-2.52	1.41	1.44

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
50	X	201	8Q1	O40-C39	-2.51	1.18	1.23
50	G	201	8Q1	O40-C39	-2.51	1.18	1.23
51	i	401	CDL	OA6-CA4	-2.50	1.40	1.46
51	a	201	CDL	OA6-CA4	-2.49	1.40	1.46
48	m	201	PEE	O2-C2	-2.45	1.40	1.46
48	r	501	PEE	O2-C2	-2.44	1.40	1.46
48	C	302	PEE	O3-C30	2.42	1.40	1.33
56	s	401	UQ	C6-C1	2.42	1.53	1.46
48	U	101	PEE	O3-C30	2.40	1.40	1.33
48	B	303	PEE	O3-C30	2.40	1.40	1.33
50	X	201	8Q1	O35-C34	-2.40	1.18	1.23
51	l	702	CDL	OA6-CA4	-2.38	1.40	1.46
51	I	201	CDL	OB6-CB4	-2.37	1.40	1.46
50	G	201	8Q1	O35-C34	-2.37	1.18	1.23
52	J	401	NDP	O2B-C2B	2.36	1.52	1.44
48	l	703	PEE	O3-C3	-2.36	1.39	1.45
48	i	402	PEE	O2-C2	-2.35	1.40	1.46
48	i	402	PEE	O3-C30	2.35	1.40	1.33
47	A	503	NAI	PN-O5D	2.34	1.68	1.59
51	I	201	CDL	OA6-CA4	-2.32	1.40	1.46
56	s	401	UQ	O1-C1	-2.32	1.18	1.23
52	J	401	NDP	O7N-C7N	-2.32	1.19	1.24
48	m	201	PEE	O2-C10	2.31	1.40	1.34
56	s	401	UQ	O4-C4	-2.31	1.18	1.23
51	a	201	CDL	OB6-CB4	-2.29	1.40	1.46
49	r	502	PLX	C7-C6	2.28	1.55	1.50
51	l	702	CDL	OB6-CB4	-2.28	1.40	1.46
51	r	503	CDL	PB2-OB5	2.28	1.68	1.59
50	X	201	8Q1	C6-C1	2.27	1.53	1.50
48	r	501	PEE	O3-C30	2.27	1.40	1.33
51	r	503	CDL	OB6-CB4	-2.26	1.40	1.46
48	l	703	PEE	O3-C30	2.25	1.39	1.33
48	m	201	PEE	O3-C30	2.25	1.39	1.33
48	i	402	PEE	O2-C10	2.24	1.40	1.34
47	A	503	NAI	C5B-C4B	2.24	1.58	1.51
48	m	201	PEE	O3-C3	-2.23	1.40	1.45
48	r	501	PEE	O3-C3	-2.21	1.40	1.45
49	j	201	PLX	C7-C6	2.21	1.55	1.50
51	i	401	CDL	PB2-OB5	2.20	1.68	1.59
49	g	201	PLX	C7-C6	2.20	1.55	1.50
48	U	101	PEE	O2-C10	2.19	1.40	1.34
48	U	101	PEE	O3-C3	-2.17	1.40	1.45

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
51	I	201	CDL	PB2-OB5	2.17	1.68	1.59
48	C	302	PEE	O2-C10	2.16	1.40	1.34
52	J	401	NDP	C2D-C3D	2.16	1.59	1.53
51	i	401	CDL	PB2-OB2	2.16	1.68	1.59
48	l	703	PEE	O2-C10	2.15	1.40	1.34
51	i	401	CDL	OB6-CB4	-2.15	1.41	1.46
50	G	201	8Q1	C1-S44	2.13	1.81	1.76
50	G	201	8Q1	C6-C1	2.13	1.53	1.50
48	B	303	PEE	O2-C10	2.12	1.40	1.34
49	C	303	PLX	C7-C6	2.12	1.55	1.50
48	C	302	PEE	O3-C3	-2.12	1.40	1.45
51	r	503	CDL	PB2-OB2	2.11	1.67	1.59
49	r	502	PLX	P1-O4	2.11	1.67	1.59
56	s	401	UQ	O3-CM3	-2.10	1.40	1.45
48	B	303	PEE	O3-C3	-2.10	1.40	1.45
49	g	201	PLX	P1-O4	2.09	1.67	1.59
51	l	702	CDL	C11-CA5	2.07	1.56	1.50
49	j	201	PLX	P1-O1	2.06	1.67	1.59
51	l	702	CDL	PB2-OB5	2.05	1.67	1.59
46	A	502	FMN	C10-N1	2.05	1.37	1.33
56	s	401	UQ	C6-C5	-2.05	1.31	1.35
51	a	201	CDL	PB2-OB2	2.05	1.67	1.59
48	i	402	PEE	O3-C3	-2.04	1.40	1.45
50	X	201	8Q1	C1-S44	2.02	1.81	1.76
49	j	201	PLX	P1-O4	2.02	1.67	1.59
49	C	303	PLX	P1-O4	2.02	1.67	1.59
51	I	201	CDL	C11-CA5	2.02	1.56	1.50
47	A	503	NAI	C2N-C3N	2.00	1.40	1.34

All (99) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
56	s	401	UQ	C7-C8-C9	-10.23	109.76	126.79
52	J	401	NDP	C3N-C2N-N1N	-7.16	112.88	123.10
52	J	401	NDP	C1D-N1N-C2N	-6.93	109.57	121.11
50	X	201	8Q1	C6-C1-S44	6.64	121.19	113.46
50	G	201	8Q1	C6-C1-S44	6.25	120.73	113.46
52	J	401	NDP	C1D-N1N-C6N	-5.84	108.26	120.83
56	s	401	UQ	C12-C13-C14	-5.81	113.68	127.66
48	B	303	PEE	O2-C10-C11	4.83	121.92	111.50
51	a	201	CDL	OA6-CA5-C11	4.76	121.75	111.50
56	s	401	UQ	C11-C9-C8	-4.71	111.58	121.12

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
51	a	201	CDL	OB6-CB5-C51	4.62	121.45	111.50
56	s	401	UQ	C10-C9-C8	-4.54	112.02	123.68
56	s	401	UQ	C16-C14-C13	-4.49	112.04	121.12
48	r	501	PEE	O2-C10-C11	4.48	121.16	111.50
51	l	701	CDL	OA6-CA5-C11	4.40	120.99	111.50
48	i	402	PEE	O2-C10-C11	4.38	120.94	111.50
51	l	701	CDL	OB6-CB5-C51	4.37	120.93	111.50
57	w	401	ADP	N3-C2-N1	-4.37	121.86	128.68
47	A	503	NAI	N3A-C2A-N1A	-4.29	121.97	128.68
51	l	702	CDL	OB6-CB5-C51	4.23	120.61	111.50
51	I	201	CDL	OB6-CB5-C51	4.21	120.58	111.50
48	m	201	PEE	O2-C10-C11	4.15	120.45	111.50
48	l	703	PEE	O2-C10-C11	4.15	120.45	111.50
51	i	401	CDL	OA6-CA5-C11	4.12	120.39	111.50
51	I	201	CDL	OA6-CA5-C11	4.09	120.31	111.50
51	l	702	CDL	OA6-CA5-C11	4.06	120.24	111.50
56	s	401	UQ	C15-C14-C13	-4.03	113.34	123.68
51	r	503	CDL	OB6-CB5-C51	3.94	120.00	111.50
48	C	302	PEE	O2-C10-C11	3.90	119.90	111.50
51	i	401	CDL	OB6-CB5-C51	3.89	119.89	111.50
51	r	503	CDL	OA6-CA5-C11	3.81	119.71	111.50
56	s	401	UQ	C17-C18-C19	-3.77	114.86	127.75
52	J	401	NDP	N3A-C2A-N1A	-3.71	122.87	128.68
50	G	201	8Q1	O4-C1-C6	-3.69	119.63	123.99
48	U	101	PEE	O2-C10-C11	3.64	119.35	111.50
56	s	401	UQ	C21-C19-C18	-3.52	112.47	122.65
46	A	502	FMN	C4-N3-C2	-3.49	119.19	125.64
47	A	503	NAI	C3D-C2D-C1D	3.26	107.62	101.43
50	G	201	8Q1	C37-C38-C39	3.19	117.67	112.36
50	X	201	8Q1	O4-C1-S44	-3.18	118.48	122.61
56	s	401	UQ	CM5-C5-C6	-3.13	119.30	124.40
50	X	201	8Q1	O4-C1-C6	-3.09	120.33	123.99
47	A	503	NAI	C4D-O4D-C1D	-3.06	102.72	109.47
51	a	201	CDL	OB8-CB7-C71	2.97	121.24	111.91
48	l	703	PEE	O3-C30-C31	2.96	121.20	111.91
48	B	303	PEE	O3-C30-C31	2.91	121.05	111.91
56	s	401	UQ	C20-C19-C18	-2.91	114.24	122.65
50	G	201	8Q1	C38-C39-N41	2.89	121.29	116.42
51	r	503	CDL	OB8-CB7-C71	2.88	120.95	111.91
48	i	402	PEE	O3-C30-C31	2.87	120.93	111.91
52	J	401	NDP	O4B-C1B-C2B	-2.87	101.62	106.59
48	r	501	PEE	O3-C30-C31	2.86	120.88	111.91

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
51	I	201	CDL	OB8-CB7-C71	2.86	120.87	111.91
57	w	401	ADP	PA-O3A-PB	-2.83	123.12	132.83
46	A	502	FMN	C4A-C4-N3	2.82	120.34	113.19
51	l	701	CDL	OA8-CA7-C31	2.78	120.64	111.91
51	i	401	CDL	OA8-CA7-C31	2.76	120.58	111.91
51	I	201	CDL	OA8-CA7-C31	2.74	120.50	111.91
48	m	201	PEE	O3-C30-C31	2.70	120.39	111.91
51	l	701	CDL	CB4-OB6-CB5	-2.68	111.19	117.79
49	g	201	PLX	C1A-N1-C1	2.67	120.84	109.92
57	w	401	ADP	C4-C5-N7	-2.66	106.63	109.40
51	l	702	CDL	OB8-CB7-C71	2.64	120.20	111.91
49	r	502	PLX	C1A-N1-C1	2.63	120.69	109.92
47	A	503	NAI	C4A-C5A-N7A	-2.62	106.66	109.40
48	U	101	PEE	O3-C30-C31	2.62	120.12	111.91
51	a	201	CDL	OA8-CA7-C31	2.61	120.11	111.91
51	l	701	CDL	OB8-CB7-C71	2.61	120.08	111.91
51	r	503	CDL	OA8-CA7-C31	2.57	119.98	111.91
51	l	701	CDL	CA4-OA6-CA5	-2.53	111.55	117.79
51	l	702	CDL	OA8-CA7-C31	2.53	119.86	111.91
48	C	302	PEE	O3-C30-C31	2.53	119.84	111.91
46	A	502	FMN	O4-C4-C4A	-2.52	119.91	126.60
52	J	401	NDP	PN-O3-PA	-2.51	124.20	132.83
52	J	401	NDP	C2B-C3B-C4B	2.49	107.41	101.99
51	i	401	CDL	OB8-CB7-C71	2.48	119.69	111.91
49	j	201	PLX	C1A-N1-C1	2.48	120.07	109.92
46	A	502	FMN	C4A-C10-N10	2.48	120.10	116.48
52	J	401	NDP	C4A-C5A-N7A	-2.46	106.83	109.40
50	X	201	8Q1	C38-C39-N41	2.40	120.47	116.42
47	A	503	NAI	PN-O3-PA	-2.36	124.74	132.83
47	A	503	NAI	C2D-C3D-C4D	2.31	107.14	102.64
46	A	502	FMN	C4A-C10-N1	-2.31	119.37	124.73
57	w	401	ADP	O4'-C1'-C2'	-2.30	103.56	106.93
50	G	201	8Q1	O4-C1-S44	-2.30	119.63	122.61
50	X	201	8Q1	C38-C37-N36	-2.29	107.27	111.90
46	A	502	FMN	C9A-C5A-N5	-2.29	119.94	122.43
49	C	303	PLX	C1A-N1-C1	2.28	119.24	109.92
46	A	502	FMN	C10-C4A-N5	-2.21	120.17	124.86
50	G	201	8Q1	C43-S44-C1	2.17	108.63	101.87
50	G	201	8Q1	O40-C39-N41	-2.17	118.93	123.01
50	X	201	8Q1	C37-C38-C39	2.11	115.88	112.36
50	G	201	8Q1	C42-N41-C39	-2.08	118.98	122.84
50	X	201	8Q1	C43-S44-C1	2.07	108.30	101.87

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
57	w	401	ADP	C2'-C3'-C4'	2.05	106.63	102.64
56	s	401	UQ	C7-C6-C1	2.04	120.93	118.48
46	A	502	FMN	C5A-C9A-N10	2.03	120.05	117.95
56	s	401	UQ	C15-C14-C16	-2.03	111.86	115.27
48	B	303	PEE	O2-C10-O4	-2.03	118.80	123.70

There are no chirality outliers.

All (644) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
46	A	502	FMN	N10-C1'-C2'-O2'
46	A	502	FMN	N10-C1'-C2'-C3'
46	A	502	FMN	C1'-C2'-C3'-O3'
48	C	302	PEE	C1-O3P-P-O1P
48	U	101	PEE	C1-O3P-P-O1P
48	i	402	PEE	C11-C10-O2-C2
48	i	402	PEE	C1-O3P-P-O2P
48	i	402	PEE	C1-O3P-P-O1P
48	l	703	PEE	C11-C10-O2-C2
48	l	703	PEE	C4-O4P-P-O3P
48	l	703	PEE	C4-O4P-P-O2P
48	l	703	PEE	C4-O4P-P-O1P
48	m	201	PEE	C11-C10-O2-C2
48	m	201	PEE	O4-C10-O2-C2
49	C	303	PLX	O7-C6-C7-C8
49	C	303	PLX	O4-C3-C4-O6
49	C	303	PLX	C3-O4-P1-O2
49	C	303	PLX	C3-O4-P1-O3
49	C	303	PLX	N1-C1-C2-O1
49	g	201	PLX	O7-C6-O6-C4
49	g	201	PLX	C25-C24-O8-C5
49	j	201	PLX	O7-C6-C7-C8
49	r	502	PLX	O7-C6-O6-C4
49	r	502	PLX	C5-C4-O6-C6
49	r	502	PLX	C3-O4-P1-O1
49	r	502	PLX	C3-O4-P1-O2
49	r	502	PLX	C2-O1-P1-O4
49	r	502	PLX	C2-O1-P1-O2
49	r	502	PLX	C2-O1-P1-O3
49	r	502	PLX	O9-C24-O8-C5
49	r	502	PLX	O9-C24-C25-C26
50	G	201	8Q1	C1-C6-C7-C8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
50	G	201	8Q1	N41-C42-C43-S44
50	G	201	8Q1	C28-O27-P24-O2
50	G	201	8Q1	C28-O27-P24-O1
50	X	201	8Q1	C1-C6-C7-C8
50	X	201	8Q1	O4-C1-S44-C43
50	X	201	8Q1	C6-C1-S44-C43
50	X	201	8Q1	O27-C28-C29-C32
50	X	201	8Q1	C28-C29-C32-C34
50	X	201	8Q1	C28-C29-C32-O33
50	X	201	8Q1	C30-C29-C32-C34
50	X	201	8Q1	C30-C29-C32-O33
50	X	201	8Q1	C31-C29-C32-C34
50	X	201	8Q1	C31-C29-C32-O33
50	X	201	8Q1	N36-C37-C38-C39
50	X	201	8Q1	C42-C43-S44-C1
50	X	201	8Q1	C28-O27-P24-O3
50	X	201	8Q1	C28-O27-P24-O2
50	X	201	8Q1	C28-O27-P24-O1
51	I	201	CDL	CA2-OA2-PA1-OA3
51	I	201	CDL	CA3-OA5-PA1-OA2
51	I	201	CDL	CA3-OA5-PA1-OA3
51	I	201	CDL	CA3-OA5-PA1-OA4
51	I	201	CDL	CB2-OB2-PB2-OB3
51	I	201	CDL	CB2-OB2-PB2-OB4
51	I	201	CDL	CB2-OB2-PB2-OB5
51	I	201	CDL	CB3-OB5-PB2-OB3
51	a	201	CDL	CA2-OA2-PA1-OA3
51	a	201	CDL	CA2-OA2-PA1-OA4
51	a	201	CDL	CA3-OA5-PA1-OA3
51	a	201	CDL	CA3-OA5-PA1-OA4
51	a	201	CDL	OA5-CA3-CA4-OA6
51	a	201	CDL	CB3-OB5-PB2-OB2
51	a	201	CDL	CB3-OB5-PB2-OB3
51	i	401	CDL	CB2-OB2-PB2-OB3
51	i	401	CDL	CB2-OB2-PB2-OB4
51	i	401	CDL	CB3-OB5-PB2-OB3
51	l	701	CDL	O1-C1-CA2-OA2
51	l	701	CDL	CB2-OB2-PB2-OB5
51	l	701	CDL	CB3-OB5-PB2-OB2
51	l	701	CDL	CB3-OB5-PB2-OB3
51	l	701	CDL	CB3-OB5-PB2-OB4
51	l	702	CDL	CA2-OA2-PA1-OA4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	l	702	CDL	CA3-OA5-PA1-OA2
51	l	702	CDL	CA3-OA5-PA1-OA3
51	l	702	CDL	CA3-OA5-PA1-OA4
51	l	702	CDL	OA6-CA4-CA6-OA8
51	l	702	CDL	CB2-OB2-PB2-OB4
51	l	702	CDL	CB2-OB2-PB2-OB5
51	l	702	CDL	OB6-CB4-CB6-OB8
51	r	503	CDL	CA2-OA2-PA1-OA3
51	r	503	CDL	CA2-OA2-PA1-OA4
51	r	503	CDL	CA3-OA5-PA1-OA3
51	r	503	CDL	CA3-OA5-PA1-OA4
51	r	503	CDL	OA6-CA4-CA6-OA8
52	J	401	NDP	C5B-O5B-PA-O3
52	J	401	NDP	O4B-C4B-C5B-O5B
52	J	401	NDP	C2N-C3N-C7N-N7N
56	s	401	UQ	C7-C8-C9-C10
56	s	401	UQ	C7-C8-C9-C11
56	s	401	UQ	C12-C11-C9-C10
56	s	401	UQ	C14-C16-C17-C18
57	w	401	ADP	C5'-O5'-PA-O2A
57	w	401	ADP	C5'-O5'-PA-O3A
56	s	401	UQ	C17-C18-C19-C21
48	i	402	PEE	O4-C10-O2-C2
48	l	703	PEE	O4-C10-O2-C2
51	r	503	CDL	C71-CB7-OB8-CB6
51	i	401	CDL	OA9-CA7-OA8-CA6
48	m	201	PEE	O5-C30-O3-C3
51	r	503	CDL	C83-C84-C85-C86
48	m	201	PEE	C31-C30-O3-C3
48	B	303	PEE	C37-C38-C39-C40
48	U	101	PEE	C17-C18-C19-C20
48	r	501	PEE	C17-C18-C19-C20
56	s	401	UQ	C12-C13-C14-C16
51	r	503	CDL	OB9-CB7-OB8-CB6
51	l	702	CDL	O1-C1-CB2-OB2
48	l	703	PEE	C31-C30-O3-C3
51	i	401	CDL	C31-CA7-OA8-CA6
51	l	701	CDL	C31-CA7-OA8-CA6
51	l	702	CDL	C71-CB7-OB8-CB6
51	l	701	CDL	OA9-CA7-OA8-CA6
48	C	302	PEE	C11-C10-O2-C2
51	I	201	CDL	C11-CA5-OA6-CA4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	r	503	CDL	C51-CB5-OB6-CB4
52	J	401	NDP	C2D-C1D-N1N-C6N
49	C	303	PLX	C28-C29-C30-C31
49	g	201	PLX	C7-C8-C9-C10
51	l	702	CDL	C11-C12-C13-C14
51	l	702	CDL	OB9-CB7-OB8-CB6
49	r	502	PLX	C12-C13-C14-C15
51	l	702	CDL	C59-C60-C61-C62
49	j	201	PLX	C34-C35-C36-C37
48	l	703	PEE	O5-C30-O3-C3
51	i	401	CDL	C14-C15-C16-C17
51	r	503	CDL	C36-C37-C38-C39
49	j	201	PLX	C28-C29-C30-C31
51	i	401	CDL	C31-C32-C33-C34
48	B	303	PEE	C12-C13-C14-C15
51	l	701	CDL	CB2-C1-CA2-OA2
51	r	503	CDL	CB2-C1-CA2-OA2
48	C	302	PEE	O4-C10-O2-C2
51	I	201	CDL	OA7-CA5-OA6-CA4
51	l	702	CDL	C35-C36-C37-C38
48	U	101	PEE	C31-C30-O3-C3
51	a	201	CDL	C71-CB7-OB8-CB6
51	l	702	CDL	O1-C1-CA2-OA2
49	j	201	PLX	C15-C16-C17-C18
56	s	401	UQ	C13-C14-C16-C17
51	l	702	CDL	C39-C40-C41-C42
51	l	702	CDL	C54-C55-C56-C57
51	r	503	CDL	OB7-CB5-OB6-CB4
51	I	201	CDL	C51-CB5-OB6-CB4
51	a	201	CDL	OB9-CB7-OB8-CB6
48	U	101	PEE	C34-C35-C36-C37
48	B	303	PEE	C30-C31-C32-C33
48	r	501	PEE	C10-C11-C12-C13
48	U	101	PEE	O5-C30-O3-C3
51	i	401	CDL	CA7-C31-C32-C33
51	r	503	CDL	CB7-C71-C72-C73
47	A	503	NAI	C3D-C4D-C5D-O5D
52	J	401	NDP	C3B-C4B-C5B-O5B
51	a	201	CDL	CA7-C31-C32-C33
51	l	701	CDL	C16-C17-C18-C19
56	s	401	UQ	C9-C11-C12-C13
51	i	401	CDL	O1-C1-CA2-OA2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	r	503	CDL	O1-C1-CA2-OA2
51	I	201	CDL	OB7-CB5-OB6-CB4
48	i	402	PEE	C31-C30-O3-C3
48	i	402	PEE	C17-C18-C19-C20
48	i	402	PEE	C22-C23-C24-C25
48	C	302	PEE	C1-O3P-P-O4P
48	m	201	PEE	C4-O4P-P-O3P
48	r	501	PEE	C1-O3P-P-O4P
49	C	303	PLX	C3-O4-P1-O1
49	j	201	PLX	C3-O4-P1-O1
51	I	201	CDL	CA2-OA2-PA1-OA5
51	I	201	CDL	CB3-OB5-PB2-OB2
51	a	201	CDL	CA2-OA2-PA1-OA5
51	a	201	CDL	CA3-OA5-PA1-OA2
51	i	401	CDL	CA2-OA2-PA1-OA5
51	i	401	CDL	CA3-OA5-PA1-OA2
51	i	401	CDL	CB2-OB2-PB2-OB5
51	l	701	CDL	CA2-OA2-PA1-OA5
51	l	702	CDL	CA2-OA2-PA1-OA5
51	l	702	CDL	CB3-OB5-PB2-OB2
51	r	503	CDL	CA2-OA2-PA1-OA5
51	r	503	CDL	CA3-OA5-PA1-OA2
51	r	503	CDL	CB2-OB2-PB2-OB5
51	r	503	CDL	CB3-OB5-PB2-OB2
51	l	701	CDL	CB5-C51-C52-C53
48	i	402	PEE	C10-C11-C12-C13
51	r	503	CDL	CA7-C31-C32-C33
51	i	401	CDL	CB2-C1-CA2-OA2
51	l	701	CDL	C59-C60-C61-C62
48	l	703	PEE	C30-C31-C32-C33
48	U	101	PEE	C21-C22-C23-C24
51	a	201	CDL	C17-C18-C19-C20
48	l	703	PEE	C23-C24-C25-C26
49	C	303	PLX	C7-C8-C9-C10
49	g	201	PLX	C11-C10-C9-C8
49	g	201	PLX	C30-C31-C32-C33
49	r	502	PLX	C13-C14-C15-C16
49	r	502	PLX	C28-C29-C30-C31
51	l	702	CDL	C75-C76-C77-C78
49	j	201	PLX	C27-C28-C29-C30
51	l	702	CDL	C37-C38-C39-C40
51	r	503	CDL	C56-C57-C58-C59

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	I	201	CDL	CB7-C71-C72-C73
49	g	201	PLX	C27-C28-C29-C30
50	G	201	8Q1	C11-C12-C13-C14
48	C	302	PEE	C42-C43-C44-C45
49	C	303	PLX	C17-C18-C19-C20
49	r	502	PLX	C14-C15-C16-C17
49	r	502	PLX	C25-C26-C27-C28
51	l	701	CDL	C14-C15-C16-C17
48	U	101	PEE	C41-C42-C43-C44
51	I	201	CDL	C11-C12-C13-C14
51	i	401	CDL	C52-C53-C54-C55
51	r	503	CDL	C59-C60-C61-C62
51	r	503	CDL	CB5-C51-C52-C53
49	g	201	PLX	C33-C34-C35-C36
48	i	402	PEE	O5-C30-O3-C3
49	C	303	PLX	C11-C12-C13-C14
51	a	201	CDL	C37-C38-C39-C40
51	a	201	CDL	C71-C72-C73-C74
48	B	303	PEE	C21-C22-C23-C24
48	B	303	PEE	C33-C34-C35-C36
49	g	201	PLX	C10-C11-C12-C13
49	g	201	PLX	C32-C33-C34-C35
51	a	201	CDL	C76-C77-C78-C79
51	r	503	CDL	C75-C76-C77-C78
49	j	201	PLX	C14-C15-C16-C17
50	G	201	8Q1	C10-C11-C12-C13
51	i	401	CDL	C11-C12-C13-C14
49	C	303	PLX	C25-C26-C27-C28
49	r	502	PLX	C10-C11-C12-C13
51	a	201	CDL	C11-C12-C13-C14
51	r	503	CDL	C41-C42-C43-C44
51	r	503	CDL	C73-C74-C75-C76
51	r	503	CDL	C82-C83-C84-C85
48	B	303	PEE	C14-C15-C16-C17
48	i	402	PEE	C14-C15-C16-C17
49	g	201	PLX	C14-C15-C16-C17
49	g	201	PLX	C9-C10-C11-C12
49	j	201	PLX	C12-C13-C14-C15
49	j	201	PLX	C10-C11-C12-C13
49	r	502	PLX	C29-C30-C31-C32
48	B	303	PEE	O3P-C1-C2-C3
48	U	101	PEE	C40-C41-C42-C43

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
49	C	303	PLX	C35-C36-C37-C38
51	l	701	CDL	C51-C52-C53-C54
51	r	503	CDL	C17-C18-C19-C20
49	C	303	PLX	C9-C10-C11-C12
50	X	201	8Q1	C7-C8-C9-C10
51	l	702	CDL	C52-C53-C54-C55
51	r	503	CDL	CA5-C11-C12-C13
48	l	703	PEE	C31-C32-C33-C34
48	m	201	PEE	C11-C12-C13-C14
49	j	201	PLX	C33-C34-C35-C36
51	a	201	CDL	C75-C76-C77-C78
51	i	401	CDL	C36-C37-C38-C39
48	B	303	PEE	C20-C21-C22-C23
48	C	302	PEE	C13-C14-C15-C16
51	r	503	CDL	C35-C36-C37-C38
51	i	401	CDL	CB5-C51-C52-C53
48	i	402	PEE	C32-C33-C34-C35
49	g	201	PLX	C28-C29-C30-C31
51	a	201	CDL	C73-C74-C75-C76
48	U	101	PEE	C11-C10-O2-C2
49	j	201	PLX	C13-C14-C15-C16
49	r	502	PLX	C11-C12-C13-C14
51	i	401	CDL	C35-C36-C37-C38
51	r	503	CDL	C60-C61-C62-C63
49	j	201	PLX	C25-C26-C27-C28
49	j	201	PLX	C35-C36-C37-C38
51	i	401	CDL	C32-C33-C34-C35
51	l	702	CDL	C14-C15-C16-C17
48	U	101	PEE	C19-C20-C21-C22
48	i	402	PEE	C19-C20-C21-C22
51	l	701	CDL	C58-C59-C60-C61
50	G	201	8Q1	C12-C13-C14-C15
50	G	201	8Q1	C9-C10-C11-C12
51	I	201	CDL	CA7-C31-C32-C33
48	U	101	PEE	O4-C10-O2-C2
49	g	201	PLX	C25-C26-C27-C28
51	i	401	CDL	C37-C38-C39-C40
51	r	503	CDL	C37-C38-C39-C40
51	r	503	CDL	C43-C44-C45-C46
49	r	502	PLX	C31-C32-C33-C34
49	r	502	PLX	C33-C34-C35-C36
50	G	201	8Q1	C7-C8-C9-C10

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	i	401	CDL	C73-C74-C75-C76
49	r	502	PLX	C2-C1-N1-C1A
51	l	701	CDL	CA5-C11-C12-C13
51	i	401	CDL	C12-C13-C14-C15
51	I	201	CDL	C31-CA7-OA8-CA6
48	r	501	PEE	C11-C10-O2-C2
48	C	302	PEE	C32-C33-C34-C35
51	a	201	CDL	C74-C75-C76-C77
48	U	101	PEE	C36-C37-C38-C39
48	C	302	PEE	C39-C40-C41-C42
48	r	501	PEE	O4-C10-O2-C2
48	B	303	PEE	C31-C30-O3-C3
49	j	201	PLX	C7-C8-C9-C10
51	i	401	CDL	C13-C14-C15-C16
51	l	701	CDL	C35-C36-C37-C38
50	G	201	8Q1	N36-C37-C38-C39
49	g	201	PLX	C13-C14-C15-C16
48	B	303	PEE	C11-C10-O2-C2
48	l	703	PEE	O3P-C1-C2-O2
48	C	302	PEE	C11-C12-C13-C14
51	r	503	CDL	C81-C82-C83-C84
49	r	502	PLX	C2-C1-N1-C1C
50	X	201	8Q1	C6-C7-C8-C9
48	B	303	PEE	C15-C16-C17-C18
48	i	402	PEE	C35-C36-C37-C38
48	l	703	PEE	C19-C20-C21-C22
51	a	201	CDL	CB5-C51-C52-C53
51	l	702	CDL	C74-C75-C76-C77
49	C	303	PLX	C16-C17-C18-C19
51	r	503	CDL	C62-C63-C64-C65
51	I	201	CDL	OA9-CA7-OA8-CA6
48	B	303	PEE	O4-C10-O2-C2
49	C	303	PLX	C14-C15-C16-C17
48	r	501	PEE	C36-C37-C38-C39
48	U	101	PEE	C1-O3P-P-O4P
48	i	402	PEE	C1-O3P-P-O4P
48	l	703	PEE	C33-C34-C35-C36
51	l	702	CDL	CB7-C71-C72-C73
48	B	303	PEE	O5-C30-O3-C3
51	i	401	CDL	C71-CB7-OB8-CB6
48	m	201	PEE	C13-C14-C15-C16
48	l	703	PEE	C15-C16-C17-C18

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
49	r	502	PLX	C27-C28-C29-C30
51	l	702	CDL	CA2-C1-CB2-OB2
48	B	303	PEE	C34-C35-C36-C37
51	a	201	CDL	C22-C23-C24-C25
48	C	302	PEE	C1-C2-C3-O3
49	j	201	PLX	C3-C4-C5-O8
51	I	201	CDL	CA3-CA4-CA6-OA8
51	r	503	CDL	CA3-CA4-CA6-OA8
51	r	503	CDL	C71-C72-C73-C74
51	l	702	CDL	C40-C41-C42-C43
49	C	303	PLX	O6-C6-C7-C8
49	g	201	PLX	O8-C24-C25-C26
49	r	502	PLX	C36-C37-C38-C39
48	C	302	PEE	C15-C16-C17-C18
48	r	501	PEE	C12-C13-C14-C15
49	j	201	PLX	C30-C31-C32-C33
50	X	201	8Q1	O27-C28-C29-C30
50	X	201	8Q1	O27-C28-C29-C31
49	g	201	PLX	C20-C21-C22-C23
50	X	201	8Q1	C13-C14-C15-C16
51	l	702	CDL	C64-C65-C66-C67
51	I	201	CDL	CA6-CA4-OA6-CA5
51	i	401	CDL	OB9-CB7-OB8-CB6
50	G	201	8Q1	C6-C7-C8-C9
51	r	503	CDL	C84-C85-C86-C87
50	G	201	8Q1	C28-O27-P24-O3
48	l	703	PEE	C37-C38-C39-C40
49	r	502	PLX	C2-C1-N1-C1B
49	j	201	PLX	C9-C10-C11-C12
49	j	201	PLX	C18-C19-C20-C21
51	r	503	CDL	C55-C56-C57-C58
51	r	503	CDL	OB6-CB4-CB6-OB8
51	r	503	CDL	C52-C53-C54-C55
51	a	201	CDL	C31-C32-C33-C34
48	B	303	PEE	C17-C18-C19-C20
49	r	502	PLX	C16-C17-C18-C19
48	l	703	PEE	O3P-C1-C2-C3
49	C	303	PLX	O4-C3-C4-C5
51	I	201	CDL	OB5-CB3-CB4-CB6
51	a	201	CDL	OA5-CA3-CA4-CA6
48	i	402	PEE	C23-C24-C25-C26
51	l	702	CDL	CB5-C51-C52-C53

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
49	j	201	PLX	C31-C32-C33-C34
51	r	503	CDL	C74-C75-C76-C77
48	r	501	PEE	C31-C32-C33-C34
48	r	501	PEE	C40-C41-C42-C43
51	r	503	CDL	C78-C79-C80-C81
51	l	702	CDL	C33-C34-C35-C36
51	r	503	CDL	C14-C15-C16-C17
56	s	401	UQ	C17-C18-C19-C20
48	C	302	PEE	C31-C30-O3-C3
49	r	502	PLX	C3-C4-C5-O8
51	l	702	CDL	CA3-CA4-CA6-OA8
51	l	702	CDL	CB3-CB4-CB6-OB8
51	r	503	CDL	CB3-CB4-CB6-OB8
48	B	303	PEE	C42-C43-C44-C45
49	r	502	PLX	C7-C8-C9-C10
51	l	701	CDL	C82-C83-C84-C85
51	r	503	CDL	C64-C65-C66-C67
49	r	502	PLX	C15-C16-C17-C18
48	B	303	PEE	C13-C14-C15-C16
51	l	702	CDL	C32-C33-C34-C35
51	i	401	CDL	CB3-OB5-PB2-OB2
49	g	201	PLX	O9-C24-C25-C26
48	B	303	PEE	O3P-C1-C2-O2
47	A	503	NAI	O4D-C4D-C5D-O5D
49	C	303	PLX	C33-C34-C35-C36
48	r	501	PEE	O2-C2-C3-O3
49	j	201	PLX	O6-C4-C5-O8
49	r	502	PLX	O6-C4-C5-O8
51	i	401	CDL	OB6-CB4-CB6-OB8
49	C	303	PLX	C26-C27-C28-C29
51	l	701	CDL	C51-CB5-OB6-CB4
48	l	703	PEE	C11-C12-C13-C14
51	a	201	CDL	C16-C17-C18-C19
51	l	701	CDL	C24-C25-C26-C27
51	l	702	CDL	C43-C44-C45-C46
48	i	402	PEE	C2-C1-O3P-P
51	l	702	CDL	C55-C56-C57-C58
51	l	702	CDL	C62-C63-C64-C65
50	G	201	8Q1	O4-C1-S44-C43
51	i	401	CDL	C71-C72-C73-C74
49	r	502	PLX	C35-C36-C37-C38
51	a	201	CDL	C52-C53-C54-C55

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	i	401	CDL	C15-C16-C17-C18
49	r	502	PLX	O8-C24-C25-C26
49	g	201	PLX	O4-C3-C4-C5
49	j	201	PLX	O4-C3-C4-C5
48	r	501	PEE	C41-C42-C43-C44
48	i	402	PEE	C37-C38-C39-C40
51	r	503	CDL	C33-C34-C35-C36
51	l	702	CDL	C73-C74-C75-C76
48	m	201	PEE	O3-C30-C31-C32
51	r	503	CDL	C20-C21-C22-C23
51	a	201	CDL	C57-C58-C59-C60
51	l	702	CDL	C15-C16-C17-C18
50	G	201	8Q1	C6-C1-S44-C43
48	i	402	PEE	C24-C25-C26-C27
48	i	402	PEE	C1-C2-C3-O3
48	r	501	PEE	C1-C2-C3-O3
48	U	101	PEE	C22-C23-C24-C25
49	r	502	PLX	C18-C19-C20-C21
49	j	201	PLX	O4-C3-C4-O6
48	m	201	PEE	C33-C34-C35-C36
51	l	701	CDL	OB7-CB5-OB6-CB4
48	U	101	PEE	C12-C13-C14-C15
51	l	702	CDL	C57-C58-C59-C60
51	r	503	CDL	C42-C43-C44-C45
48	i	402	PEE	O2-C2-C3-O3
51	i	401	CDL	OA6-CA4-CA6-OA8
48	C	302	PEE	O5-C30-O3-C3
48	r	501	PEE	C44-C45-C46-C47
51	l	702	CDL	C77-C78-C79-C80
48	i	402	PEE	C31-C32-C33-C34
51	a	201	CDL	C21-C22-C23-C24
51	a	201	CDL	C43-C44-C45-C46
51	a	201	CDL	C35-C36-C37-C38
51	r	503	CDL	C31-C32-C33-C34
51	l	702	CDL	C51-C52-C53-C54
51	r	503	CDL	C31-CA7-OA8-CA6
51	l	702	CDL	C12-C13-C14-C15
48	i	402	PEE	C15-C16-C17-C18
49	C	303	PLX	C13-C14-C15-C16
51	l	701	CDL	CA4-CA3-OA5-PA1
51	r	503	CDL	CB4-CB3-OB5-PB2
48	i	402	PEE	C21-C22-C23-C24

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	l	702	CDL	C34-C35-C36-C37
48	C	302	PEE	C1-O3P-P-O2P
48	U	101	PEE	C1-O3P-P-O2P
48	m	201	PEE	C4-O4P-P-O2P
48	m	201	PEE	C4-O4P-P-O1P
48	r	501	PEE	C1-O3P-P-O2P
48	r	501	PEE	C1-O3P-P-O1P
48	r	501	PEE	C4-O4P-P-O1P
49	j	201	PLX	C3-O4-P1-O3
51	I	201	CDL	CA2-OA2-PA1-OA4
51	I	201	CDL	CB3-OB5-PB2-OB4
51	i	401	CDL	CA2-OA2-PA1-OA4
51	i	401	CDL	CA3-OA5-PA1-OA4
51	l	701	CDL	CA2-OA2-PA1-OA3
51	l	701	CDL	CB2-OB2-PB2-OB3
51	l	702	CDL	CA2-OA2-PA1-OA3
51	l	702	CDL	CB2-OB2-PB2-OB3
51	l	702	CDL	CB3-OB5-PB2-OB3
51	l	702	CDL	CB3-OB5-PB2-OB4
51	r	503	CDL	CB2-OB2-PB2-OB3
51	r	503	CDL	CB2-OB2-PB2-OB4
51	r	503	CDL	CB3-OB5-PB2-OB3
52	J	401	NDP	C5B-O5B-PA-O1A
52	J	401	NDP	C5B-O5B-PA-O2A
57	w	401	ADP	C5'-O5'-PA-O1A
51	r	503	CDL	C44-C45-C46-C47
51	l	702	CDL	OA5-CA3-CA4-CA6
51	a	201	CDL	C33-C34-C35-C36
48	U	101	PEE	C38-C39-C40-C41
49	r	502	PLX	C9-C10-C11-C12
51	r	503	CDL	C13-C14-C15-C16
48	C	302	PEE	C33-C34-C35-C36
48	l	703	PEE	C13-C14-C15-C16
48	m	201	PEE	C24-C25-C26-C27
49	j	201	PLX	C25-C24-O8-C5
48	U	101	PEE	C30-C31-C32-C33
51	r	503	CDL	C57-C58-C59-C60
49	g	201	PLX	O4-C3-C4-O6
51	I	201	CDL	OB5-CB3-CB4-OB6
51	l	702	CDL	OA5-CA3-CA4-OA6
48	i	402	PEE	C18-C19-C20-C21
51	r	503	CDL	OA9-CA7-OA8-CA6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
50	X	201	8Q1	C9-C10-C11-C12
51	l	702	CDL	C56-C57-C58-C59
51	l	702	CDL	C60-C61-C62-C63
51	r	503	CDL	C40-C41-C42-C43
52	J	401	NDP	C2N-C3N-C7N-O7N
48	C	302	PEE	O2-C2-C3-O3
48	r	501	PEE	C24-C25-C26-C27
49	C	303	PLX	C27-C28-C29-C30
46	A	502	FMN	O2'-C2'-C3'-C4'
48	r	501	PEE	C38-C39-C40-C41
48	C	302	PEE	C43-C44-C45-C46
49	C	303	PLX	C15-C16-C17-C18
49	j	201	PLX	O6-C6-C7-C8
49	C	303	PLX	C31-C32-C33-C34
51	l	701	CDL	C37-C38-C39-C40
50	G	201	8Q1	O27-C28-C29-C30
50	G	201	8Q1	O27-C28-C29-C31
47	A	503	NAI	C2D-C1D-N1N-C2N
48	C	302	PEE	C38-C39-C40-C41
48	r	501	PEE	C11-C12-C13-C14
49	C	303	PLX	C30-C31-C32-C33
50	X	201	8Q1	C10-C11-C12-C13
48	m	201	PEE	C3-C2-O2-C10
48	r	501	PEE	C30-C31-C32-C33
49	g	201	PLX	C18-C19-C20-C21
47	A	503	NAI	O4D-C1D-N1N-C2N
51	i	401	CDL	C33-C34-C35-C36
51	l	702	CDL	C58-C59-C60-C61
48	i	402	PEE	C38-C39-C40-C41
48	m	201	PEE	C16-C17-C18-C19
51	I	201	CDL	OA6-CA4-CA6-OA8
49	g	201	PLX	C3-O4-P1-O1
51	l	701	CDL	C33-C34-C35-C36
51	i	401	CDL	CB7-C71-C72-C73
51	l	701	CDL	CB7-C71-C72-C73
52	J	401	NDP	PN-O3-PA-O1A
48	m	201	PEE	C19-C20-C21-C22
51	l	701	CDL	C61-C62-C63-C64
48	l	703	PEE	C32-C33-C34-C35
48	i	402	PEE	O3P-C1-C2-C3
51	r	503	CDL	C80-C81-C82-C83
48	m	201	PEE	C22-C23-C24-C25

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
48	B	303	PEE	C19-C20-C21-C22
48	r	501	PEE	C15-C16-C17-C18
49	r	502	PLX	C19-C20-C21-C22
48	C	302	PEE	C18-C19-C20-C21
51	l	701	CDL	C11-C12-C13-C14
51	l	701	CDL	C71-CB7-OB8-CB6
49	j	201	PLX	C26-C27-C28-C29
48	U	101	PEE	C43-C44-C45-C46
48	l	703	PEE	C1-C2-O2-C10
48	l	703	PEE	C3-C2-O2-C10
51	a	201	CDL	C38-C39-C40-C41
48	l	703	PEE	C24-C25-C26-C27
48	B	303	PEE	C22-C23-C24-C25
49	r	502	PLX	C24-C25-C26-C27
51	a	201	CDL	C32-C31-CA7-OA8
51	I	201	CDL	C51-C52-C53-C54
51	l	701	CDL	C52-C53-C54-C55
51	l	702	CDL	C71-C72-C73-C74
50	G	201	8Q1	C42-C43-S44-C1
48	l	703	PEE	C20-C21-C22-C23
51	l	701	CDL	C76-C77-C78-C79
48	U	101	PEE	C37-C38-C39-C40
49	C	303	PLX	C18-C19-C20-C21
49	g	201	PLX	C16-C17-C18-C19
51	l	701	CDL	C72-C73-C74-C75
51	i	401	CDL	CA4-CA3-OA5-PA1
49	g	201	PLX	C36-C37-C38-C39
51	l	701	CDL	C60-C61-C62-C63
48	r	501	PEE	O3P-C1-C2-O2
51	i	401	CDL	C75-C76-C77-C78
51	l	701	CDL	OB9-CB7-OB8-CB6
46	A	502	FMN	O2'-C2'-C3'-O3'
48	r	501	PEE	O5-C30-O3-C3
48	r	501	PEE	C42-C43-C44-C45
48	C	302	PEE	C20-C21-C22-C23
49	g	201	PLX	C35-C36-C37-C38
51	r	503	CDL	C23-C24-C25-C26
48	r	501	PEE	C31-C30-O3-C3
50	X	201	8Q1	O33-C32-C34-N36
51	l	702	CDL	C83-C84-C85-C86
47	A	503	NAI	C2D-C1D-N1N-C6N
51	I	201	CDL	C52-C51-CB5-OB6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
51	r	503	CDL	C51-C52-C53-C54
48	B	303	PEE	C18-C19-C20-C21
48	C	302	PEE	C36-C37-C38-C39
48	l	703	PEE	C36-C37-C38-C39
48	r	501	PEE	C18-C19-C20-C21
51	I	201	CDL	C31-C32-C33-C34
51	a	201	CDL	C59-C60-C61-C62
51	I	201	CDL	C72-C71-CB7-OB8
49	r	502	PLX	C32-C33-C34-C35
48	i	402	PEE	C36-C37-C38-C39
48	l	703	PEE	C18-C19-C20-C21
48	i	402	PEE	C39-C40-C41-C42
49	j	201	PLX	C7-C6-O6-C4
51	i	401	CDL	CA3-CA4-CA6-OA8
51	i	401	CDL	CB3-CB4-CB6-OB8
48	U	101	PEE	C13-C14-C15-C16
51	l	701	CDL	C84-C85-C86-C87
51	r	503	CDL	C76-C77-C78-C79
49	j	201	PLX	C19-C20-C21-C22
48	C	302	PEE	O3-C30-C31-C32
48	U	101	PEE	O2-C10-C11-C12
51	l	702	CDL	C12-C11-CA5-OA6
48	U	101	PEE	O3-C30-C31-C32
51	l	702	CDL	C44-C45-C46-C47
49	g	201	PLX	C31-C32-C33-C34
48	m	201	PEE	C18-C19-C20-C21
49	j	201	PLX	C24-C25-C26-C27
49	r	502	PLX	C26-C27-C28-C29
51	I	201	CDL	C52-C51-CB5-OB7
48	r	501	PEE	C20-C21-C22-C23
51	l	701	CDL	C12-C11-CA5-OA6
51	a	201	CDL	C77-C78-C79-C80
51	r	503	CDL	C72-C71-CB7-OB8
57	w	401	ADP	C4'-C5'-O5'-PA
47	A	503	NAI	C5B-O5B-PA-O1A
48	B	303	PEE	C1-O3P-P-O1P
48	i	402	PEE	C4-O4P-P-O1P
48	m	201	PEE	C1-O3P-P-O1P
49	C	303	PLX	C2-O1-P1-O3
49	g	201	PLX	C3-O4-P1-O2
49	j	201	PLX	C3-O4-P1-O2
51	a	201	CDL	CB2-OB2-PB2-OB4

Continued on next page...

Continued from previous page...

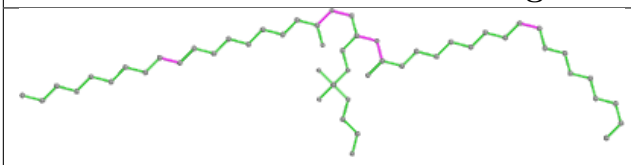
Mol	Chain	Res	Type	Atoms
48	i	402	PEE	C30-C31-C32-C33
48	U	101	PEE	O4-C10-C11-C12
50	X	201	8Q1	C12-C13-C14-C15
51	l	701	CDL	C73-C74-C75-C76
51	I	201	CDL	C72-C71-CB7-OB9
49	g	201	PLX	C1-C2-O1-P1
51	l	702	CDL	C12-C11-CA5-OA7
51	l	702	CDL	C32-C31-CA7-OA8
51	l	702	CDL	C76-C77-C78-C79
51	r	503	CDL	C52-C51-CB5-OB6
51	l	702	CDL	CB2-C1-CA2-OA2
51	l	701	CDL	OA7-CA5-OA6-CA4
48	m	201	PEE	C20-C21-C22-C23
56	s	401	UQ	C12-C11-C9-C8
48	m	201	PEE	O5-C30-C31-C32
51	l	701	CDL	C12-C11-CA5-OA7
51	r	503	CDL	C72-C71-CB7-OB9
48	C	302	PEE	C37-C38-C39-C40
51	l	702	CDL	C32-C31-CA7-OA9
51	l	701	CDL	C56-C57-C58-C59
47	A	503	NAI	O4D-C1D-N1N-C6N
48	C	302	PEE	O5-C30-C31-C32
48	U	101	PEE	O5-C30-C31-C32
51	l	701	CDL	C72-C71-CB7-OB8

There are no ring outliers.

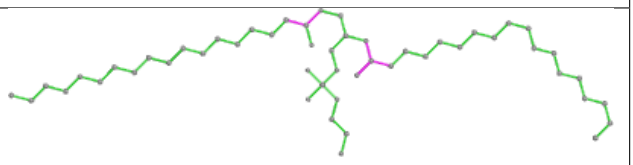
No monomer is involved in short contacts.

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

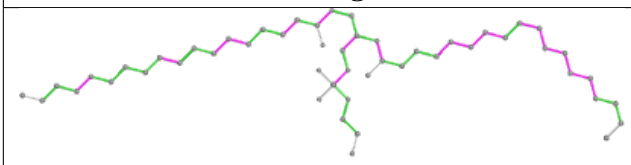
Ligand PEE B 303



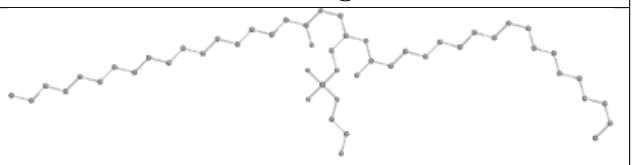
Bond lengths



Bond angles

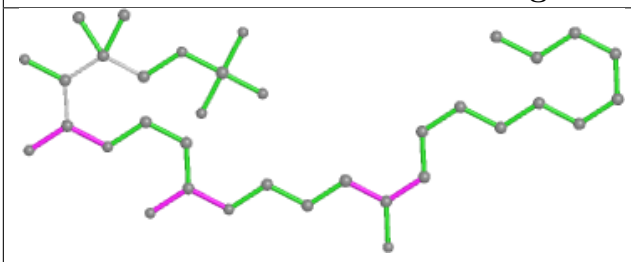


Torsions

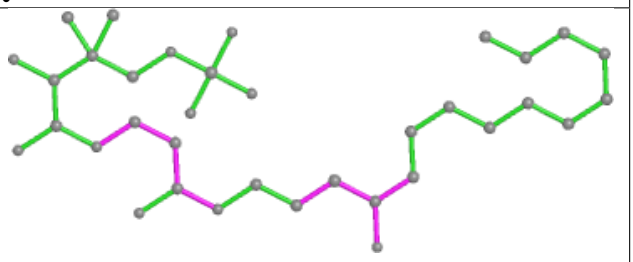


Rings

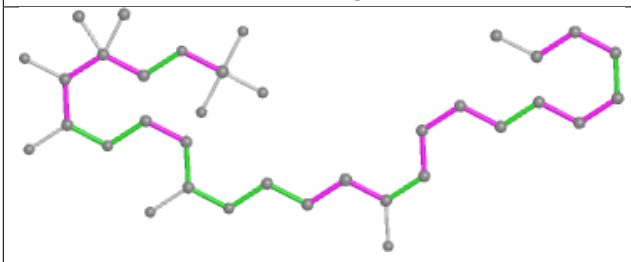
Ligand 8Q1 X 201



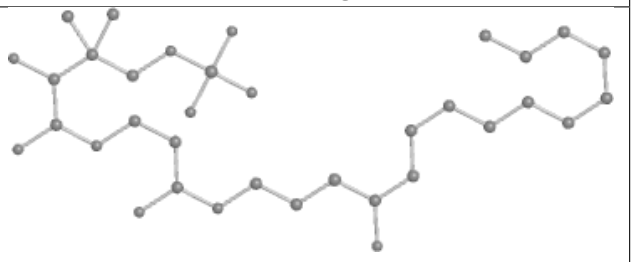
Bond lengths



Bond angles

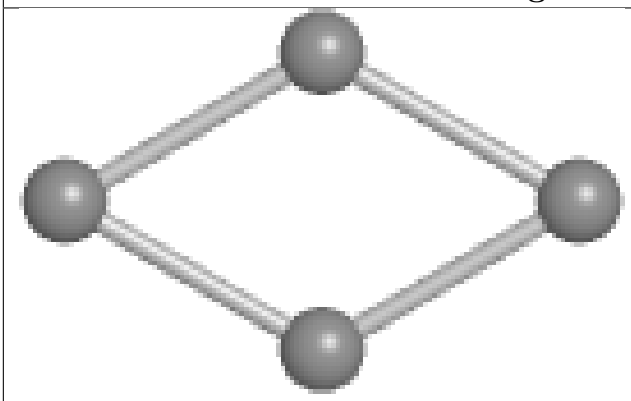


Torsions

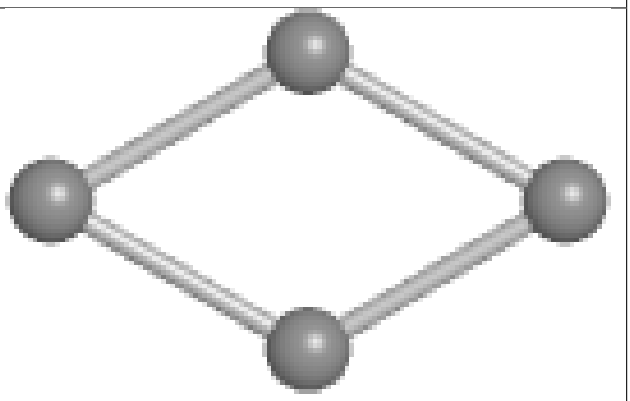


Rings

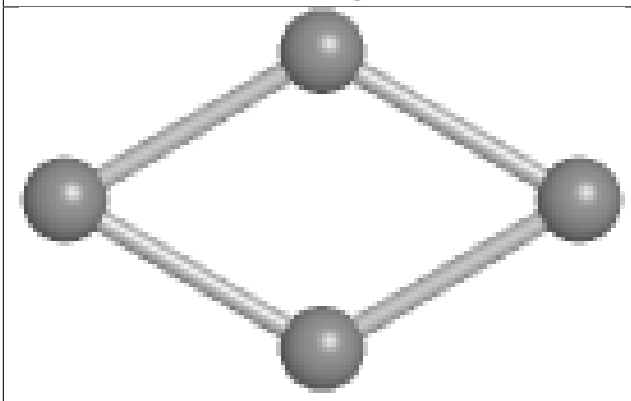
Ligand FES O 301



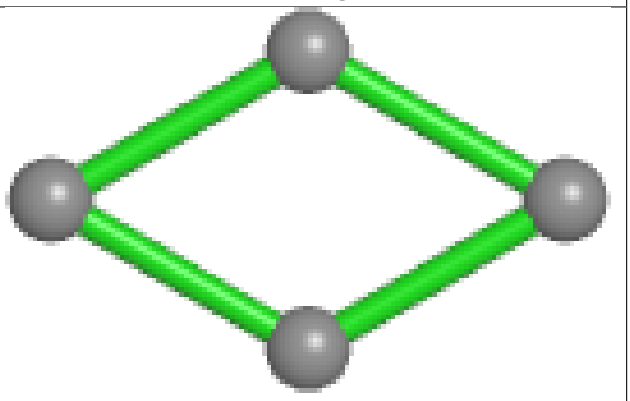
Bond lengths



Bond angles

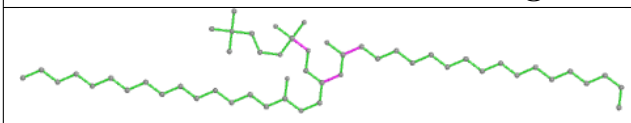


Torsions

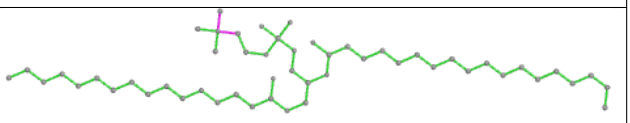


Rings

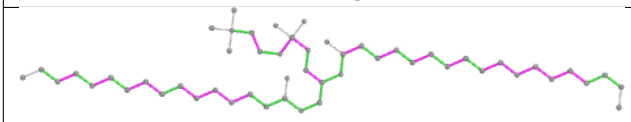
Ligand PLX C 303



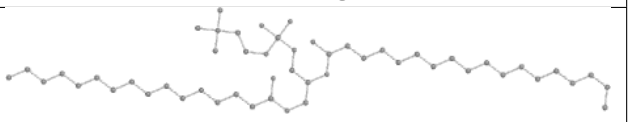
Bond lengths



Bond angles

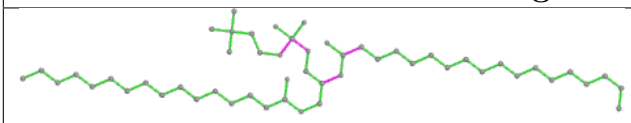


Torsions

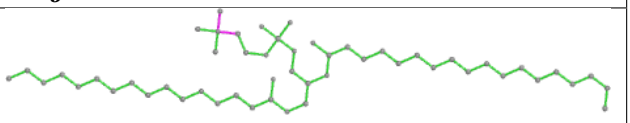


Rings

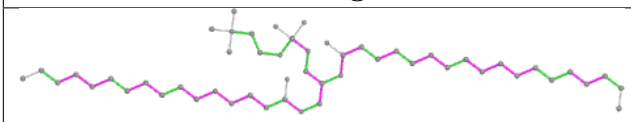
Ligand PLX j 201



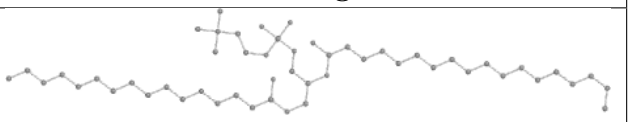
Bond lengths



Bond angles

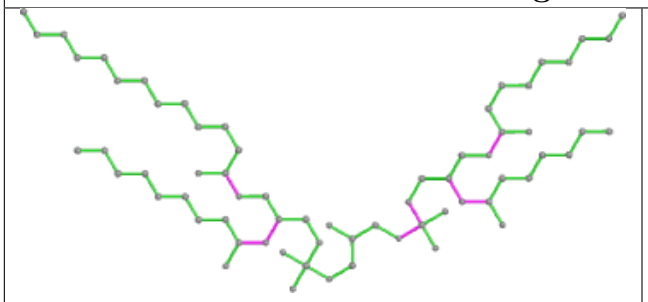


Torsions

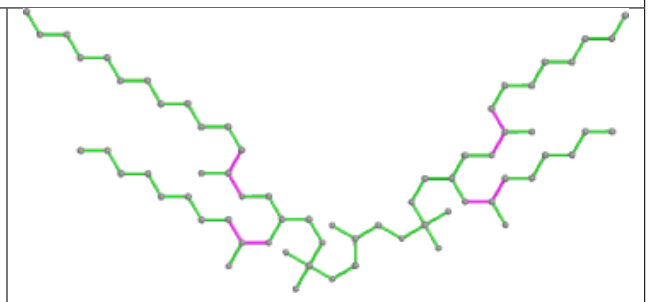


Rings

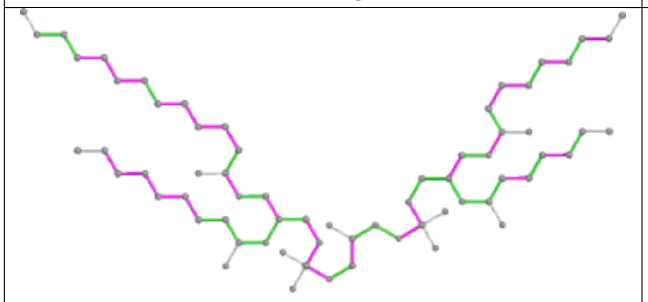
Ligand CDL i 401



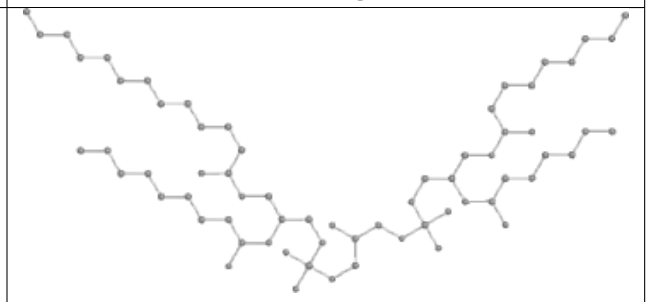
Bond lengths



Bond angles

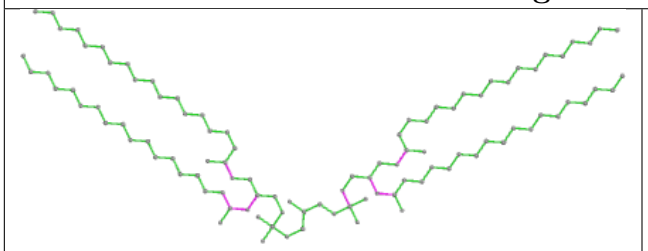


Torsions

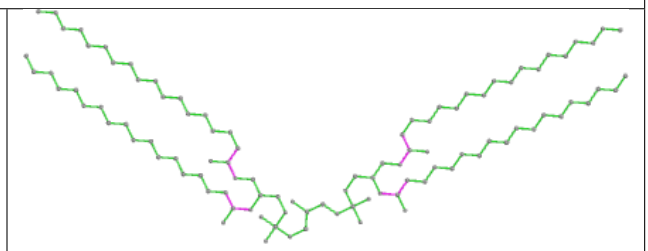


Rings

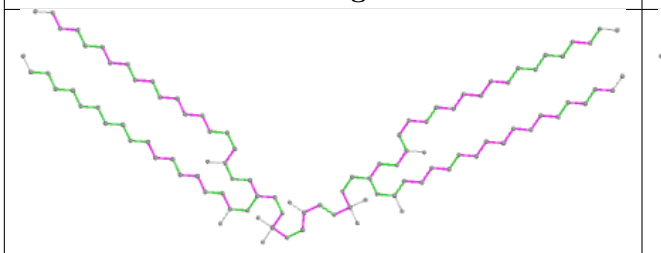
Ligand CDL l 702



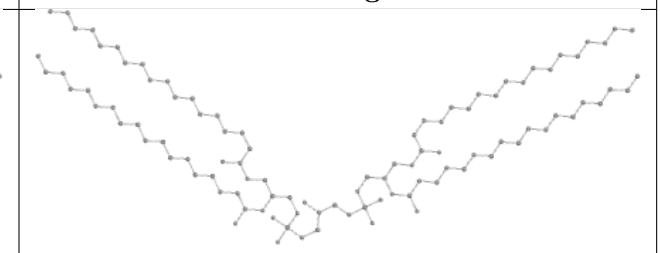
Bond lengths



Bond angles

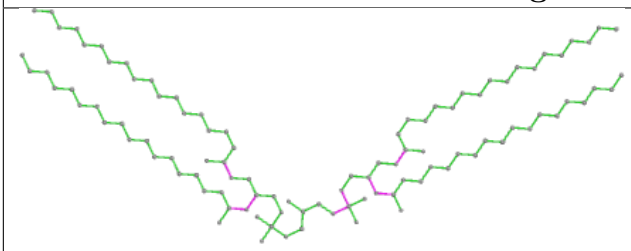


Torsions

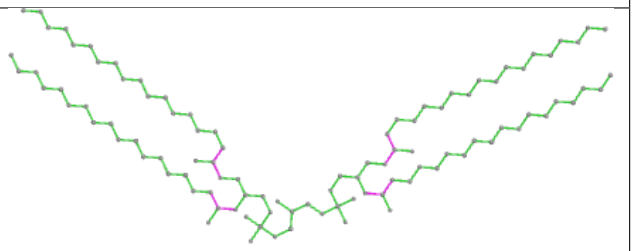


Rings

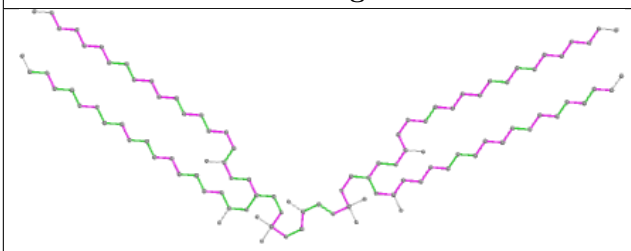
Ligand CDL r 503



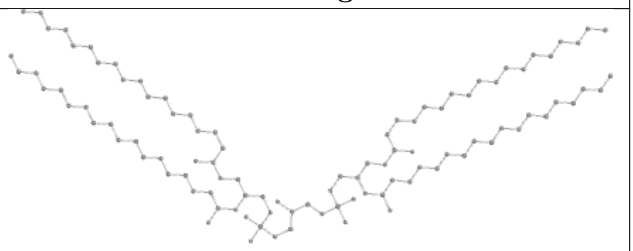
Bond lengths



Bond angles

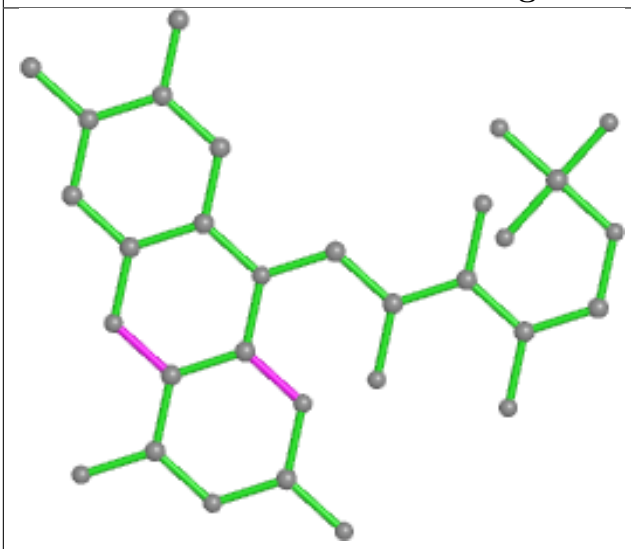


Torsions

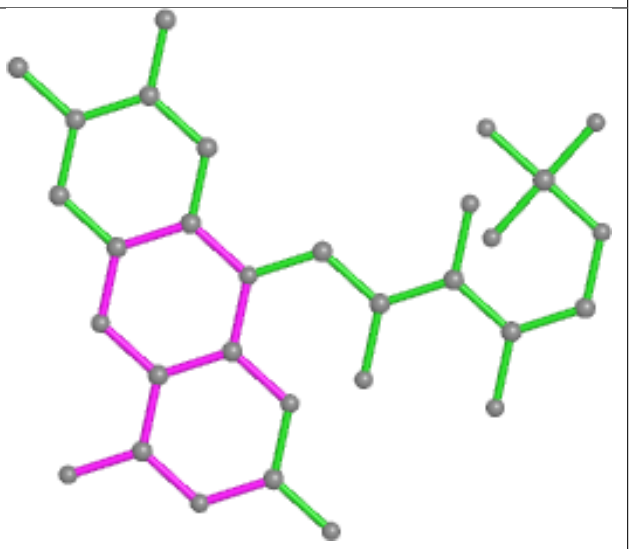


Rings

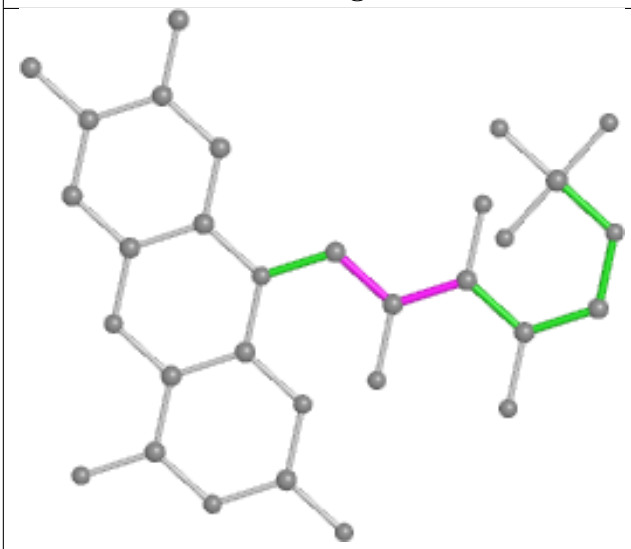
Ligand FMN A 502



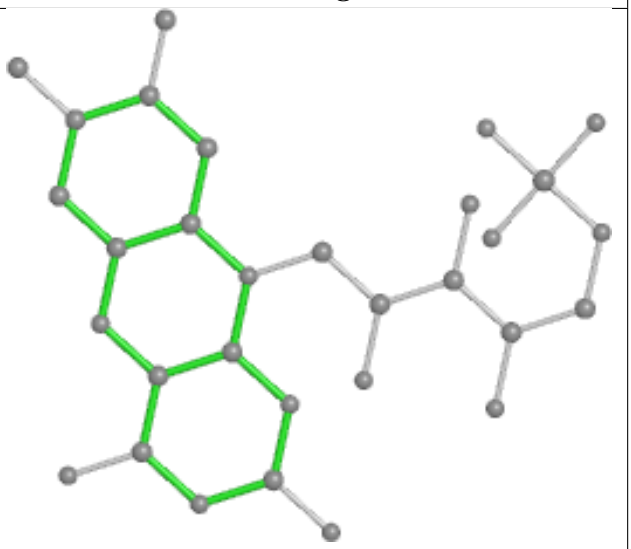
Bond lengths



Bond angles

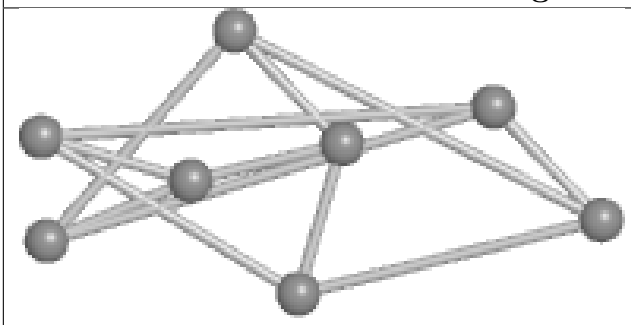


Torsions

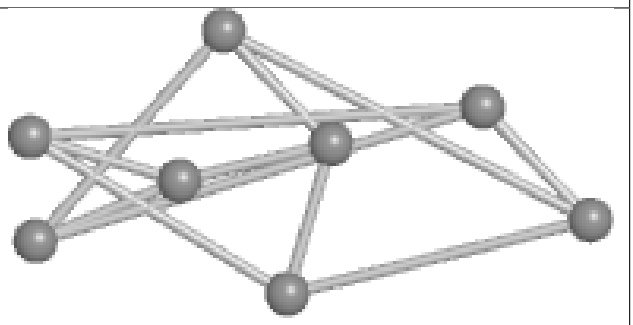


Rings

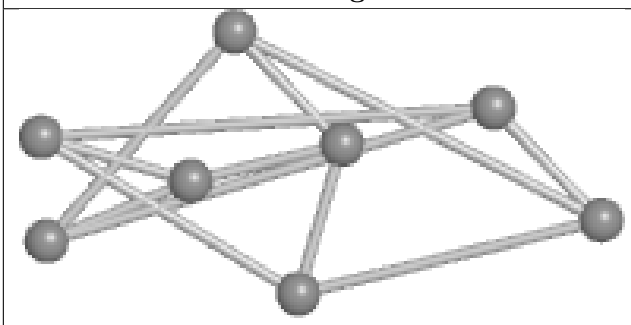
Ligand SF4 B 301



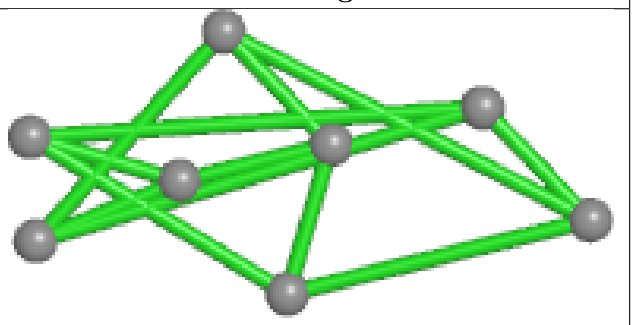
Bond lengths



Bond angles

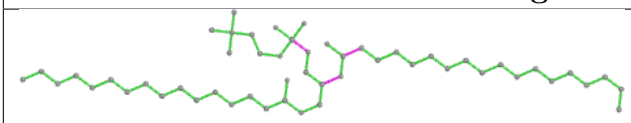


Torsions

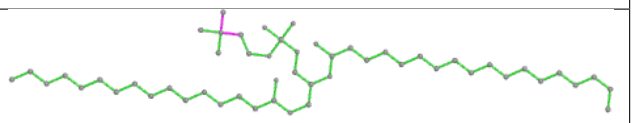


Rings

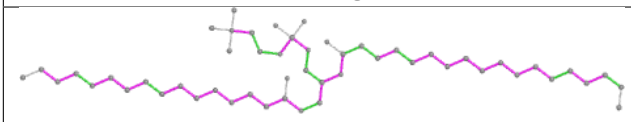
Ligand PLX r 502



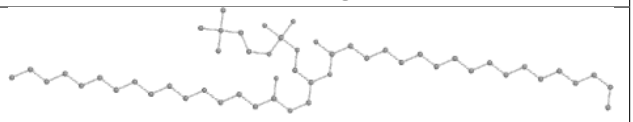
Bond lengths



Bond angles

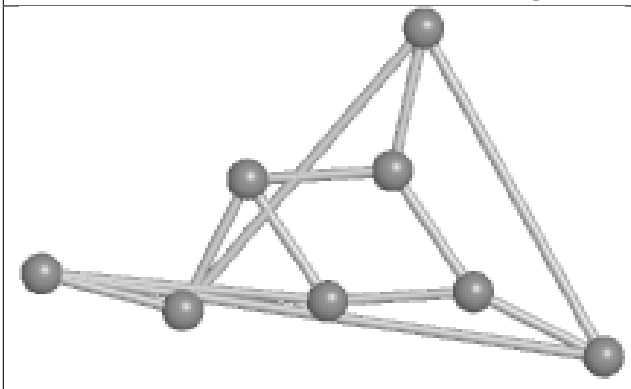


Torsions

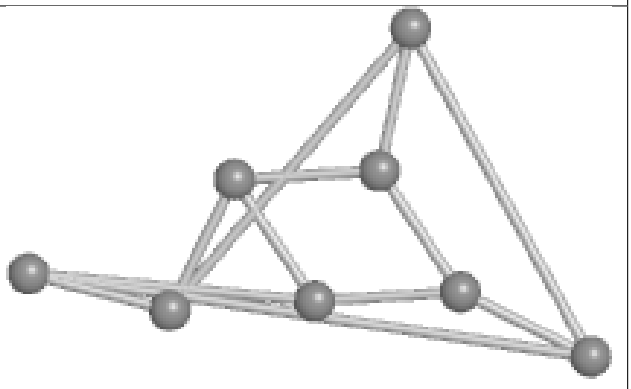


Rings

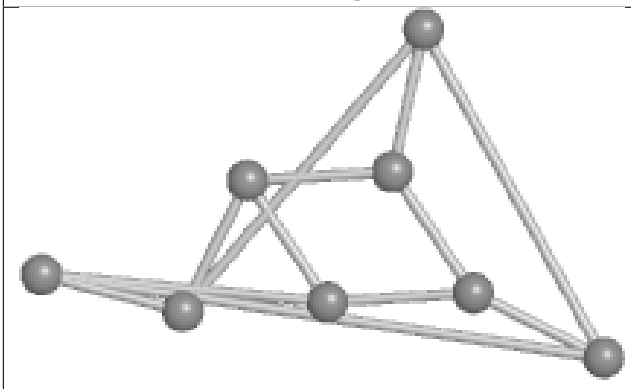
Ligand SF4 M 802



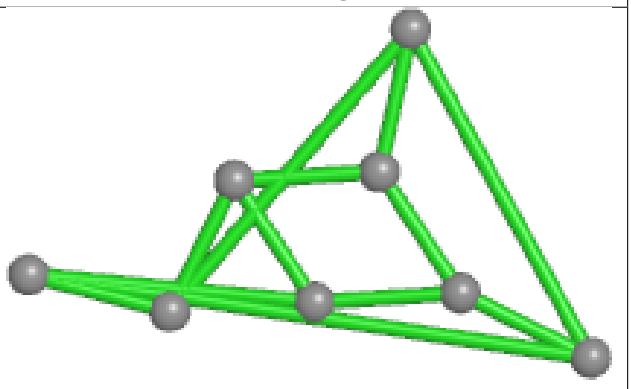
Bond lengths



Bond angles

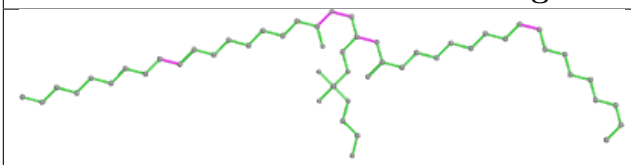


Torsions

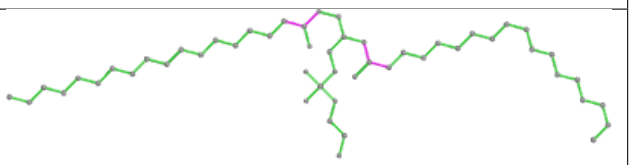


Rings

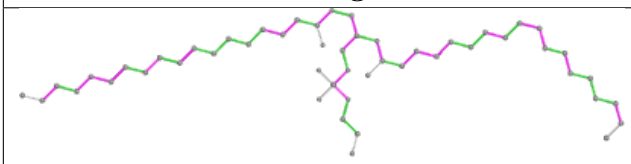
Ligand PEE r 501



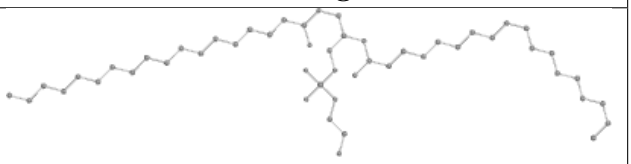
Bond lengths



Bond angles

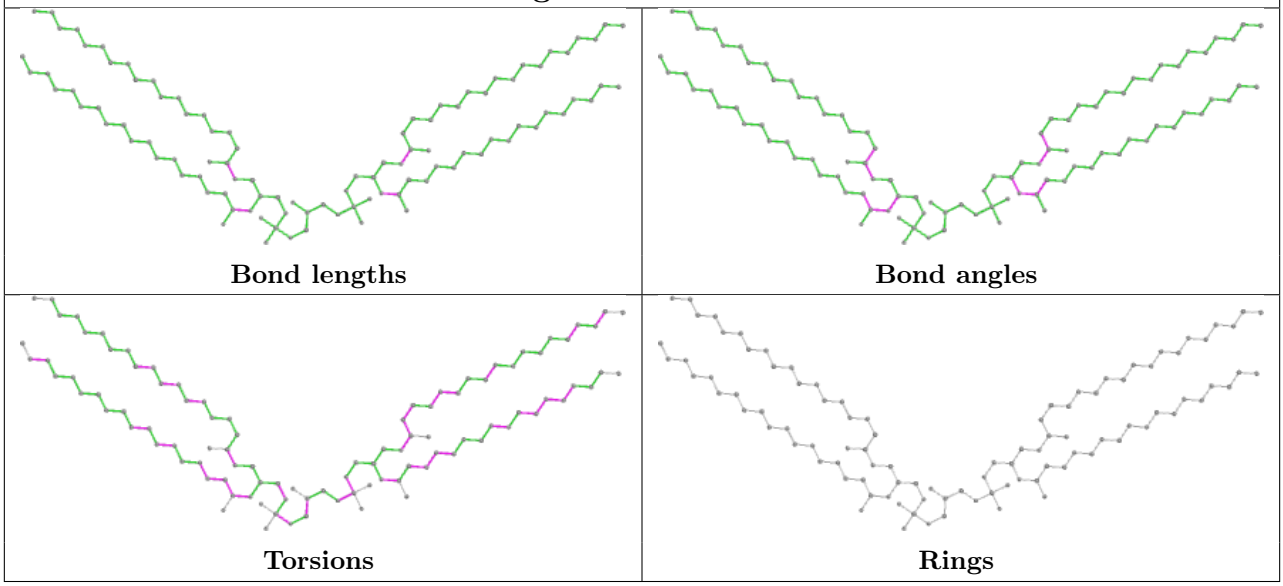


Torsions

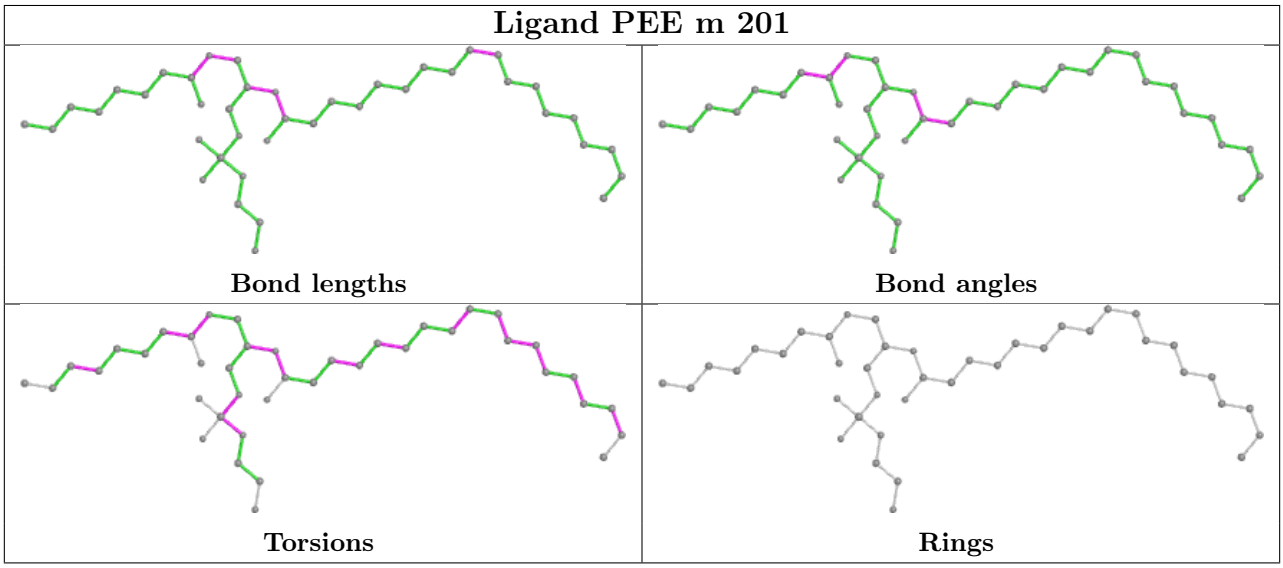


Rings

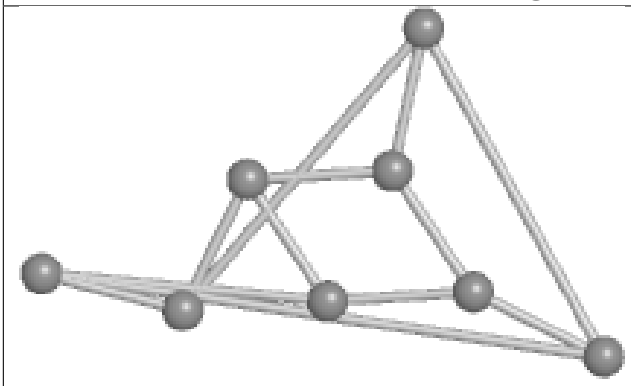
Ligand CDL l 701



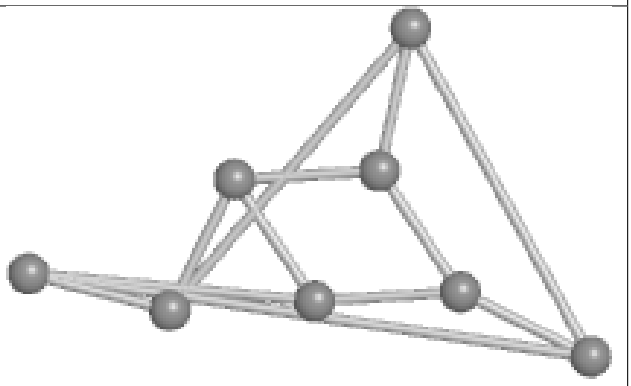
Ligand PEE m 201



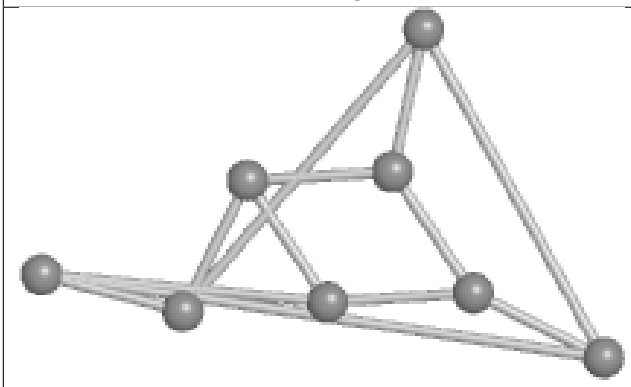
Ligand SF4 M 801



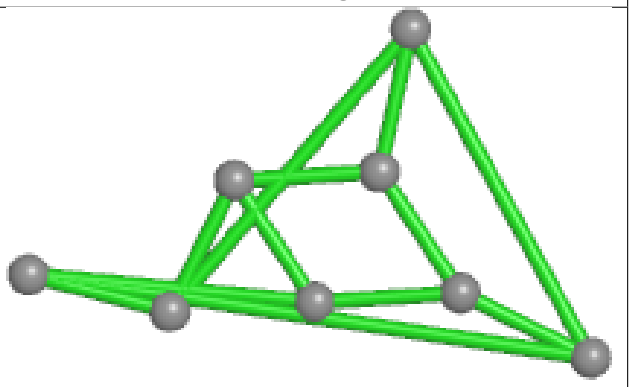
Bond lengths



Bond angles

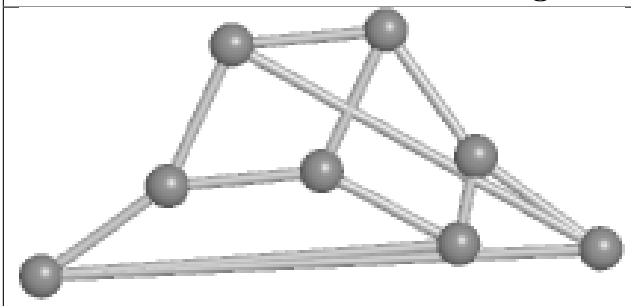


Torsions

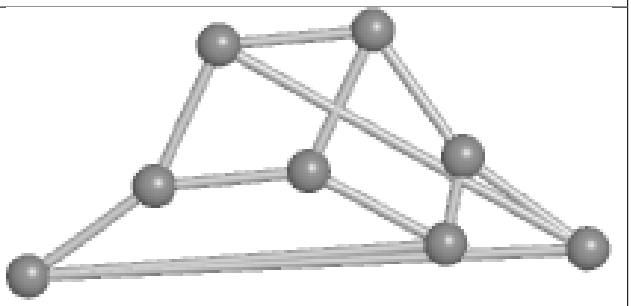


Rings

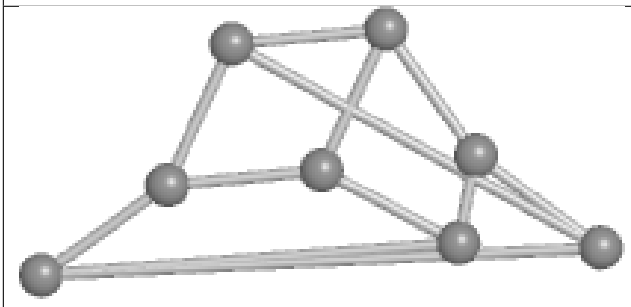
Ligand SF4 B 302



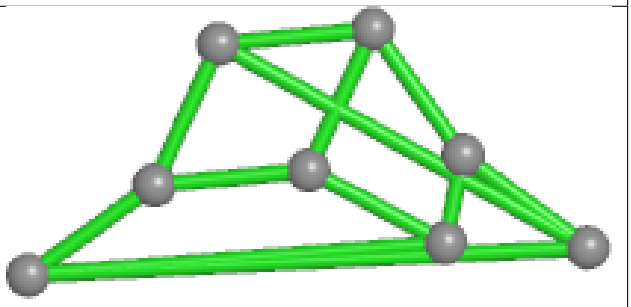
Bond lengths



Bond angles

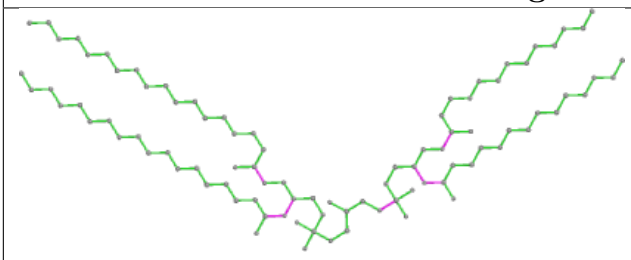


Torsions

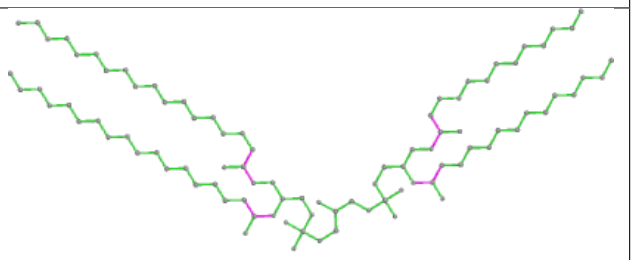


Rings

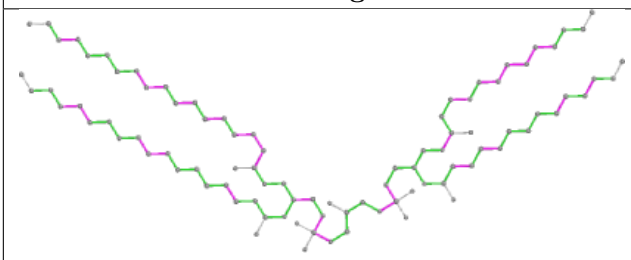
Ligand CDL a 201



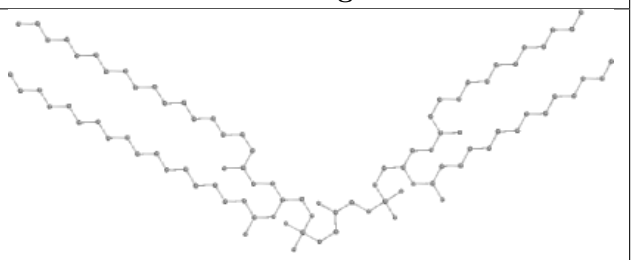
Bond lengths



Bond angles

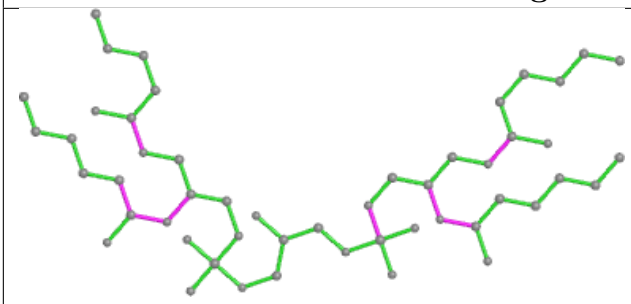


Torsions

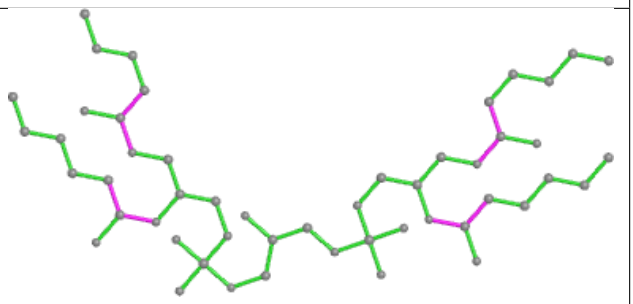


Rings

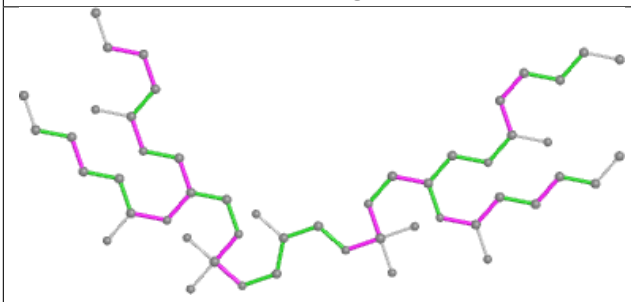
Ligand CDL I 201



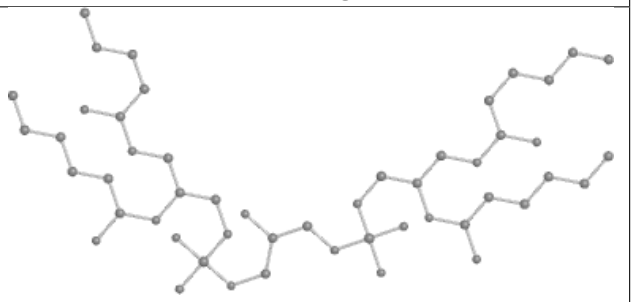
Bond lengths



Bond angles

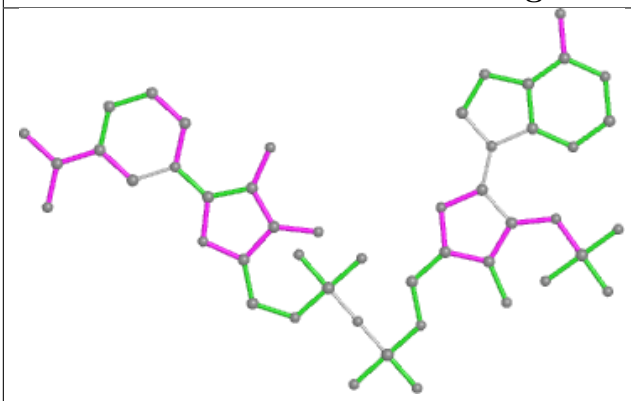


Torsions

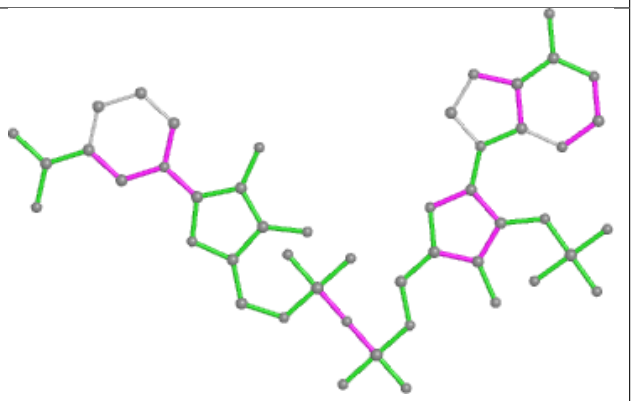


Rings

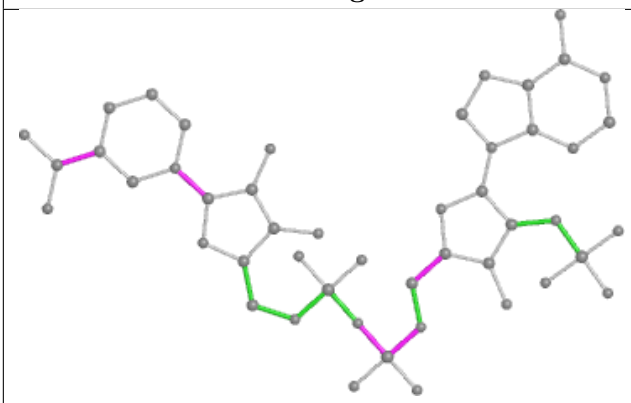
Ligand NDP J 401



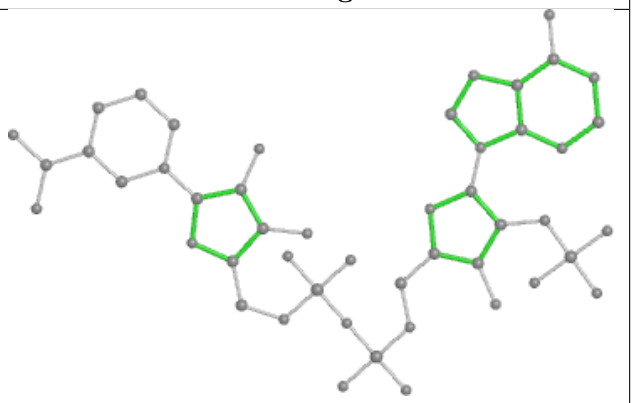
Bond lengths



Bond angles

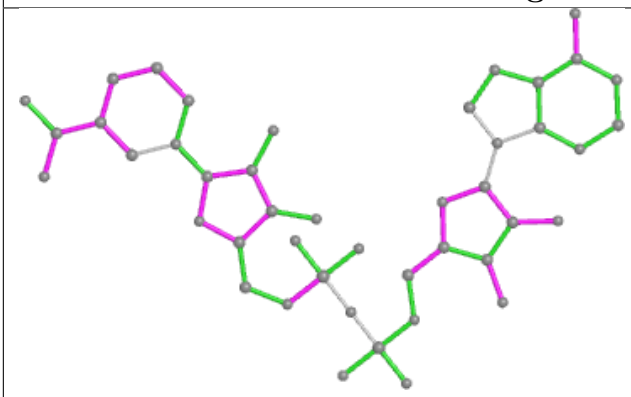


Torsions

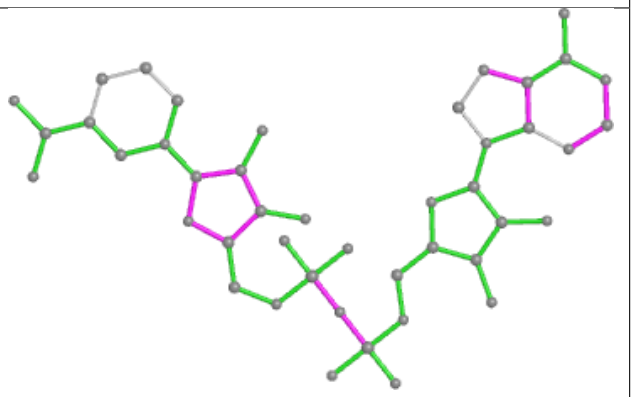


Rings

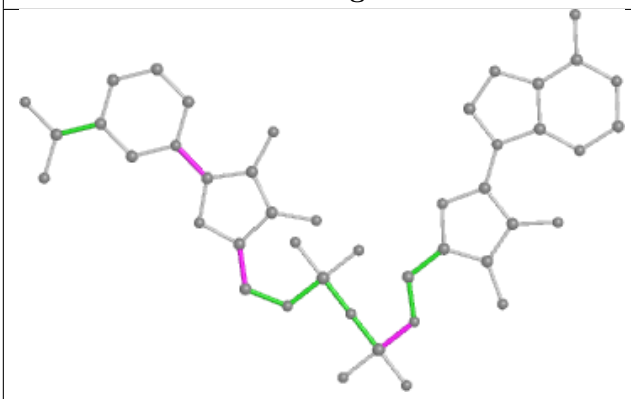
Ligand NAI A 503



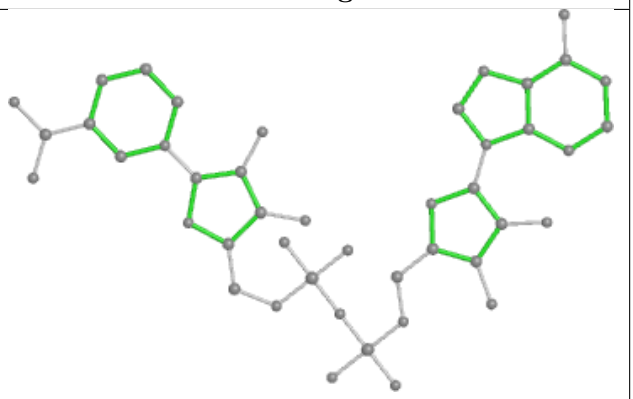
Bond lengths



Bond angles

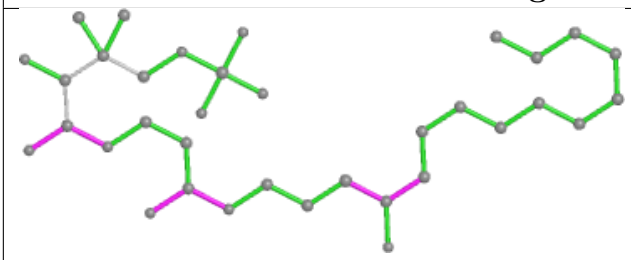


Torsions

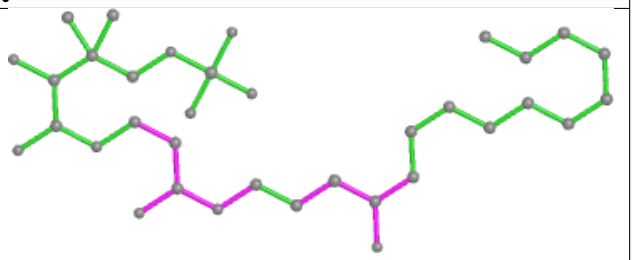


Rings

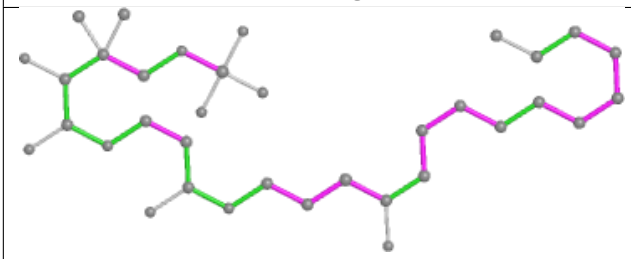
Ligand 8Q1 G 201



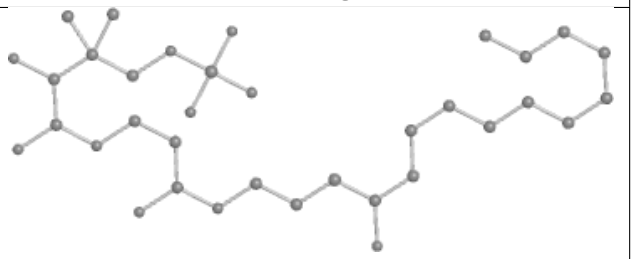
Bond lengths



Bond angles

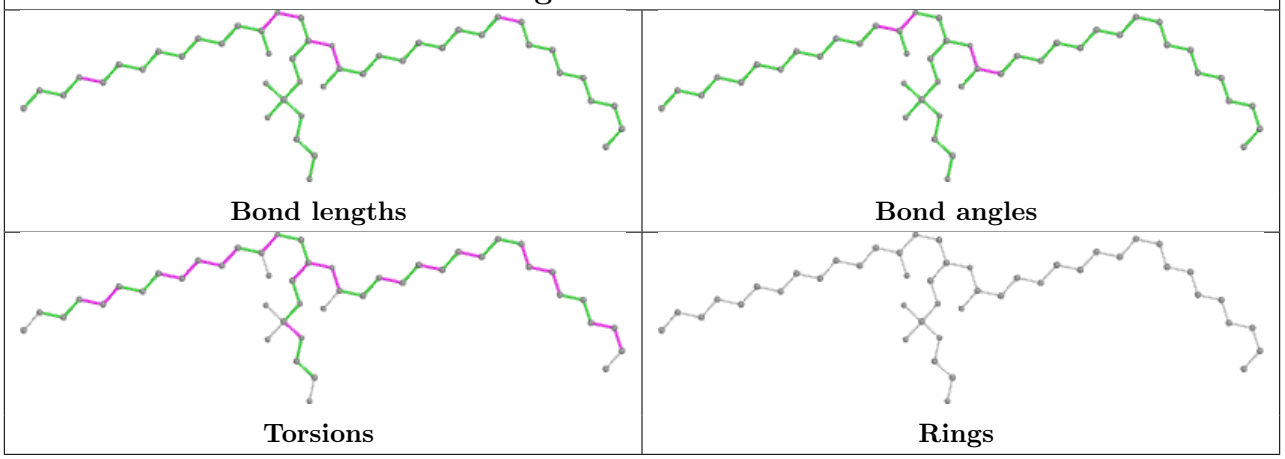


Torsions

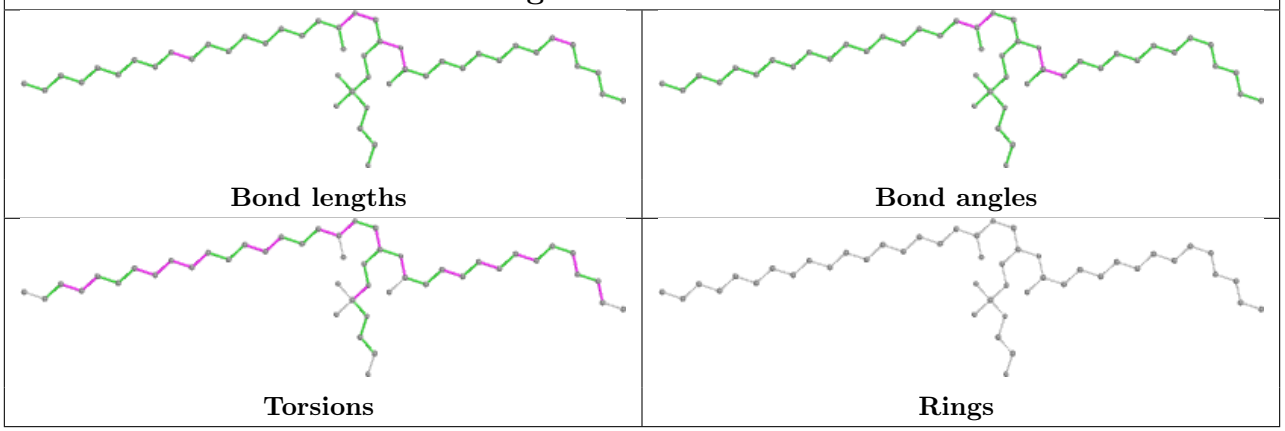


Rings

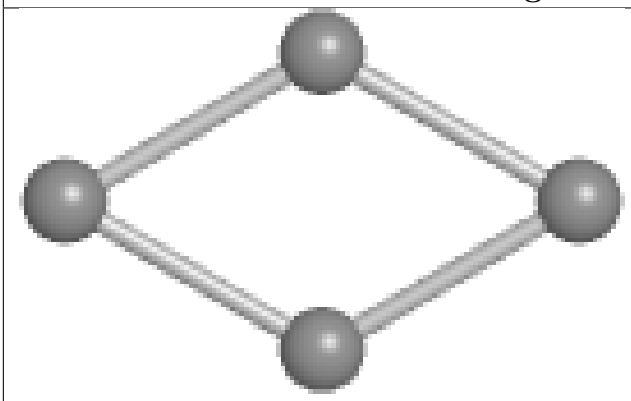
Ligand PEE l 703



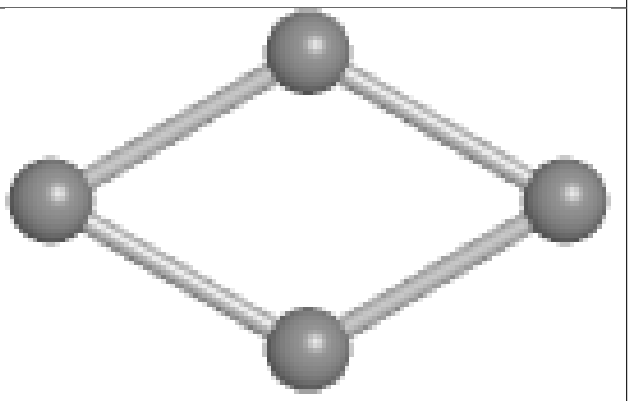
Ligand PEE C 302



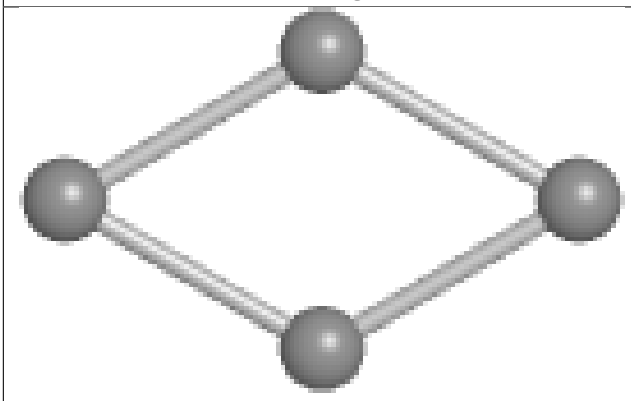
Ligand FES M 803



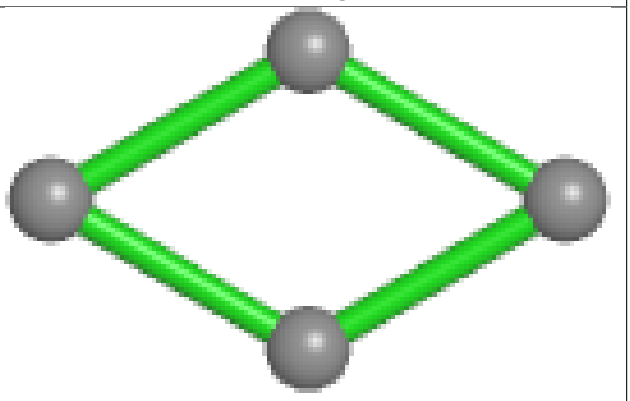
Bond lengths



Bond angles

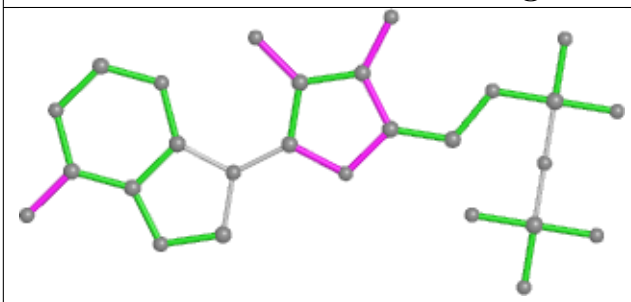


Torsions

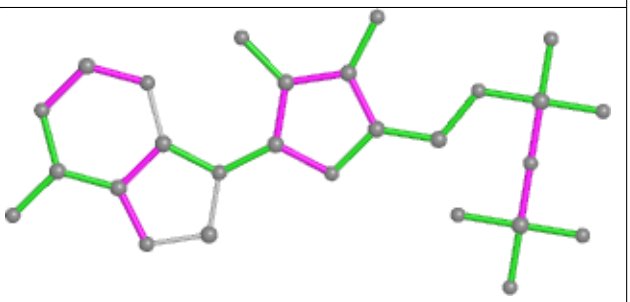


Rings

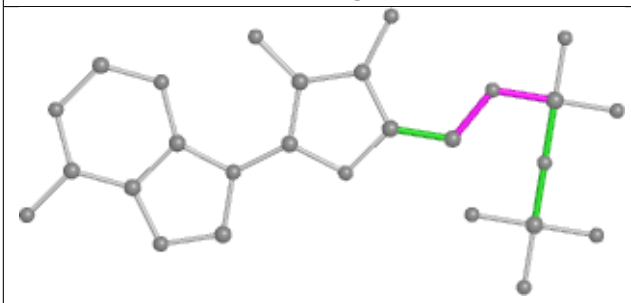
Ligand ADP w 401



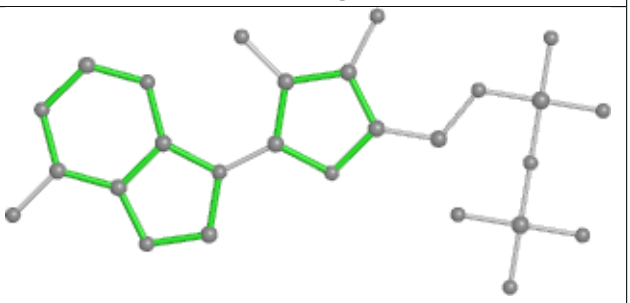
Bond lengths



Bond angles

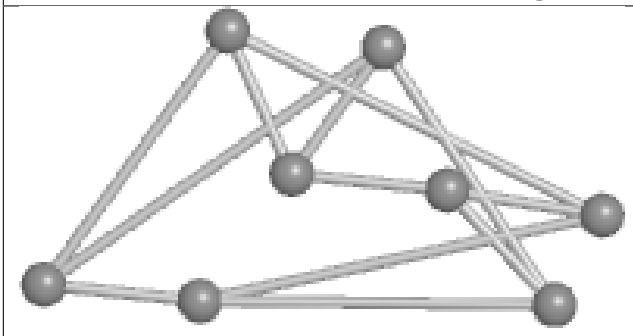


Torsions

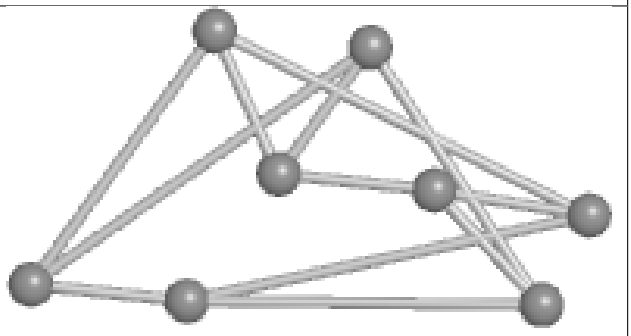


Rings

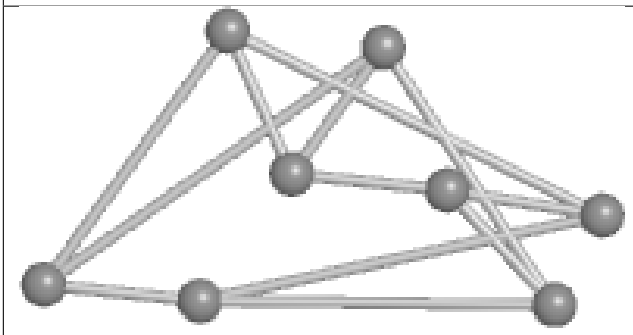
Ligand SF4 A 501



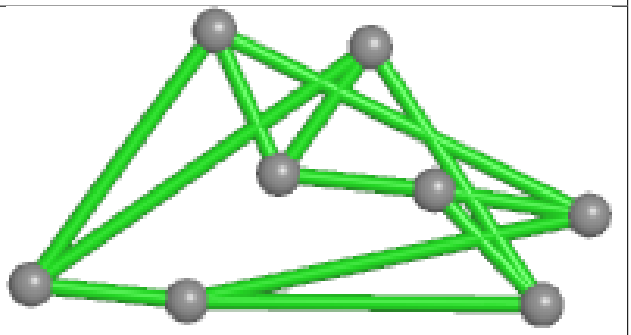
Bond lengths



Bond angles

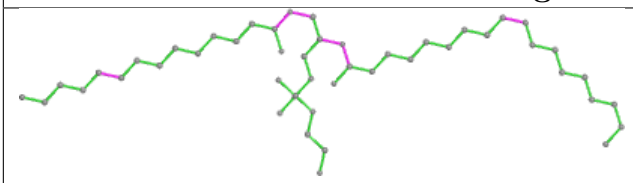


Torsions

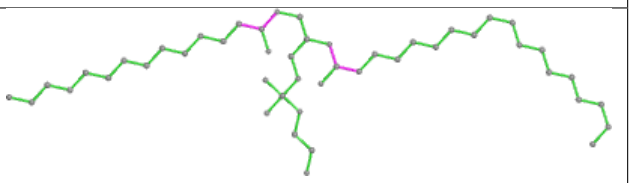


Rings

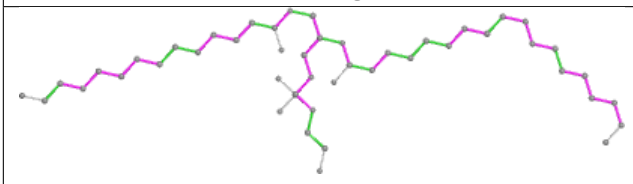
Ligand PEE i 402



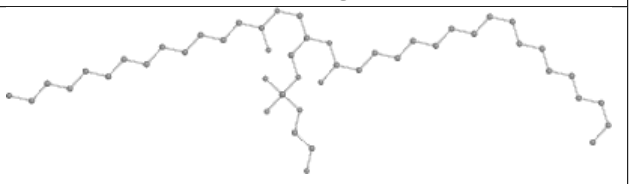
Bond lengths



Bond angles

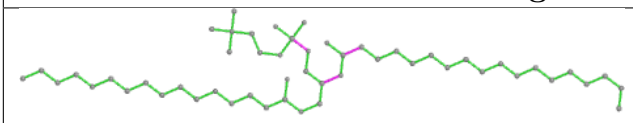


Torsions

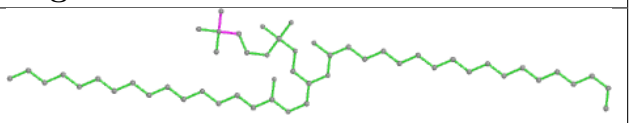


Rings

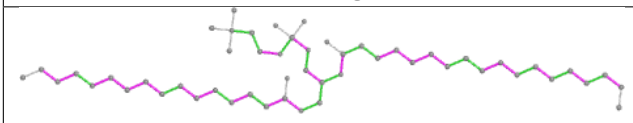
Ligand PLX g 201



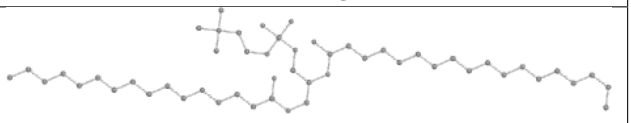
Bond lengths



Bond angles

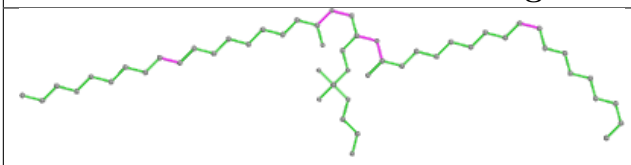


Torsions

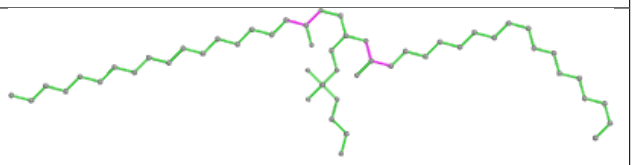


Rings

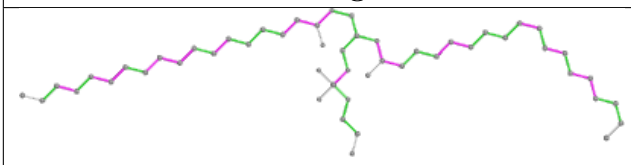
Ligand PEE U 101



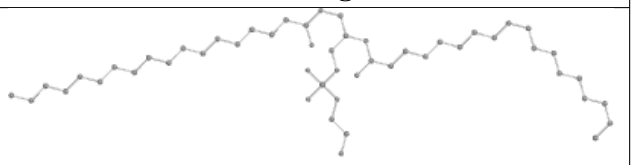
Bond lengths



Bond angles

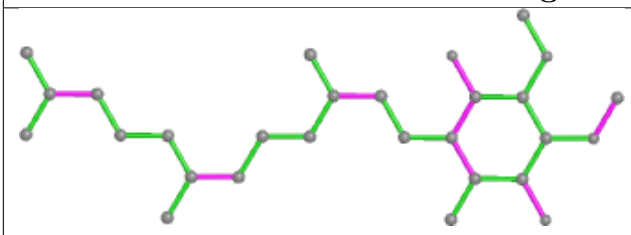


Torsions

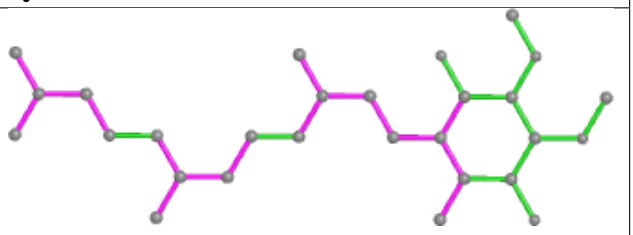


Rings

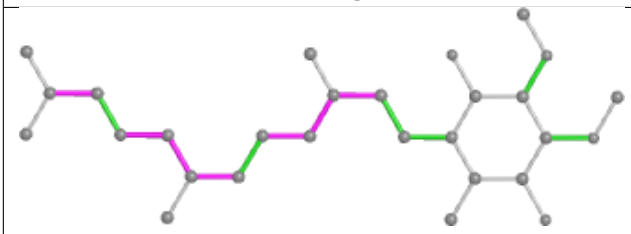
Ligand UQ s 401



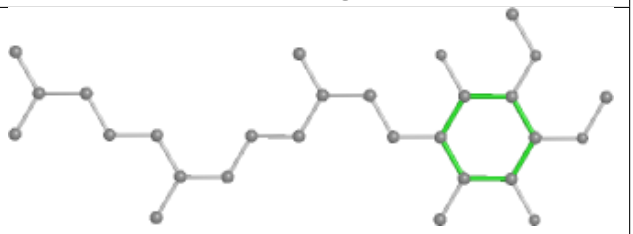
Bond lengths



Bond angles

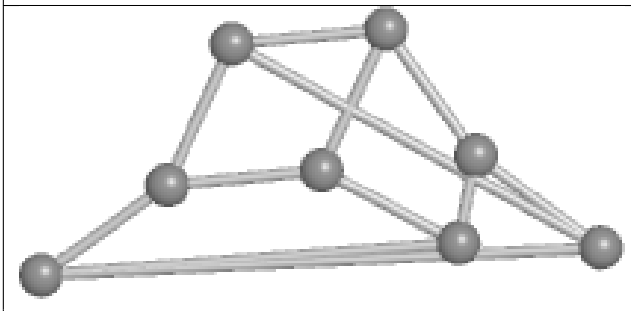


Torsions

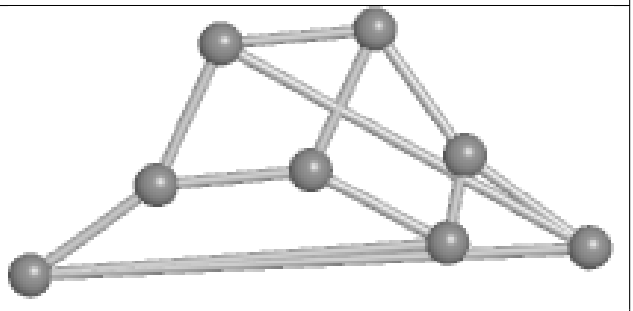


Rings

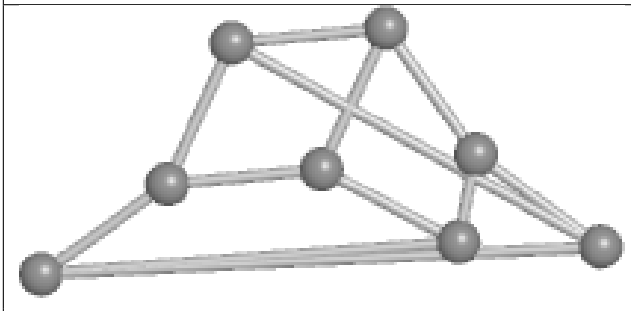
Ligand SF4 C 301



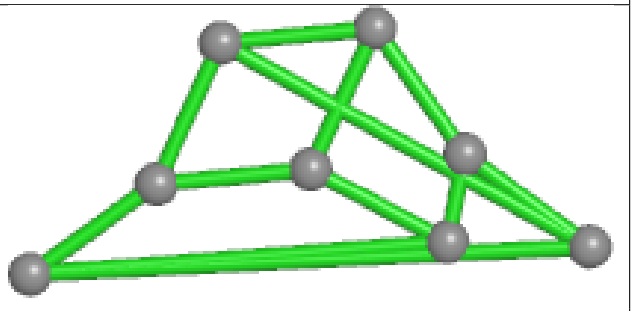
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

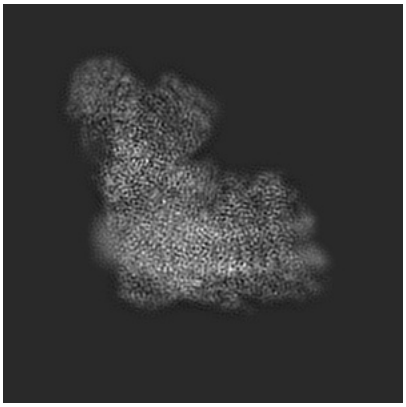
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-32309. These allow visual inspection of the internal detail of the map and identification of artifacts.

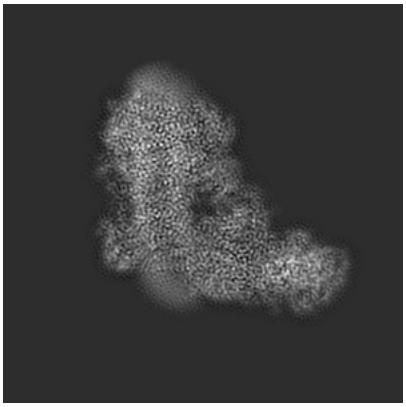
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

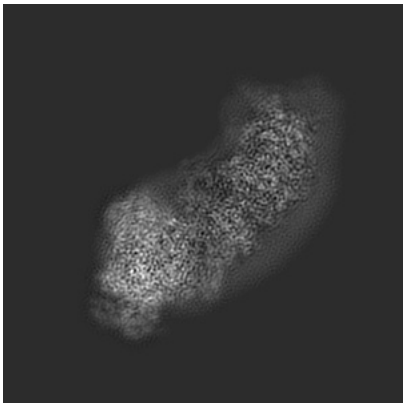
6.1.1 Primary map



X



Y

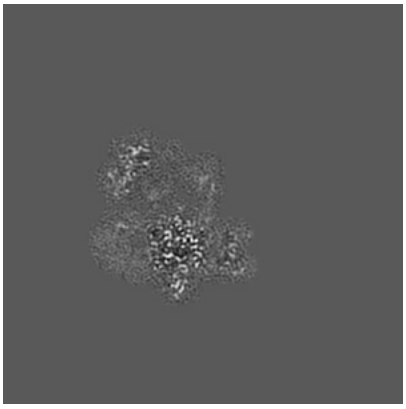


Z

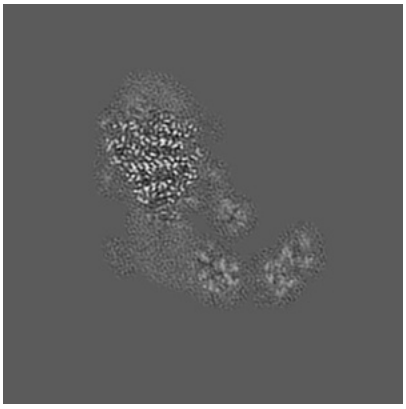
The images above show the map projected in three orthogonal directions.

6.2 Central slices

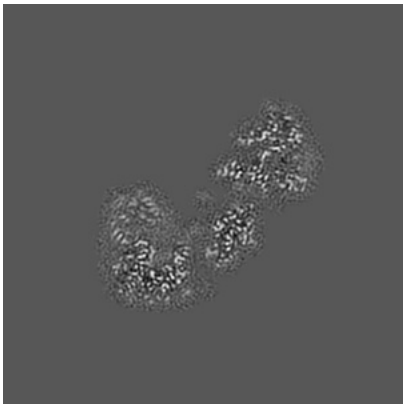
6.2.1 Primary map



X Index: 152



Y Index: 152



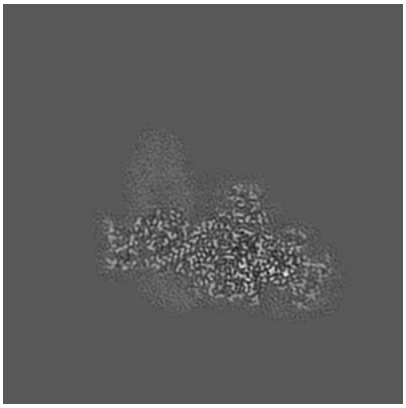
Z Index: 152

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

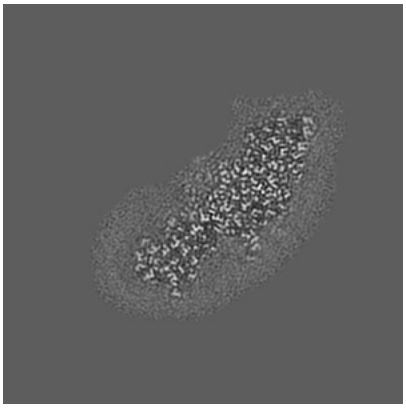
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 105



Y Index: 98

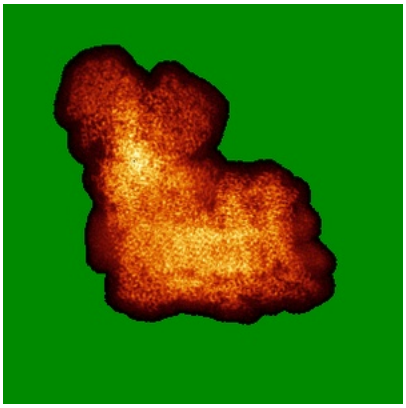


Z Index: 127

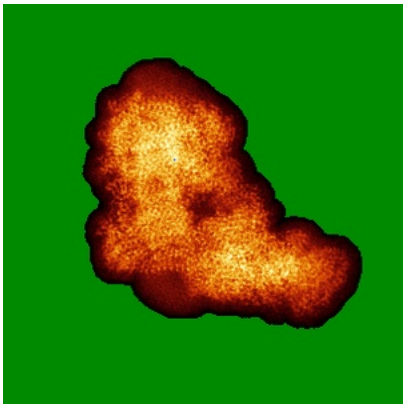
The images above show the largest variance slices of the map in three orthogonal directions.

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

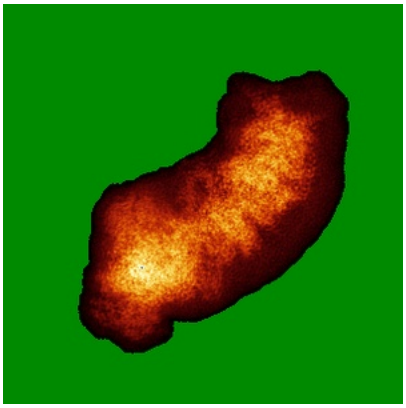
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

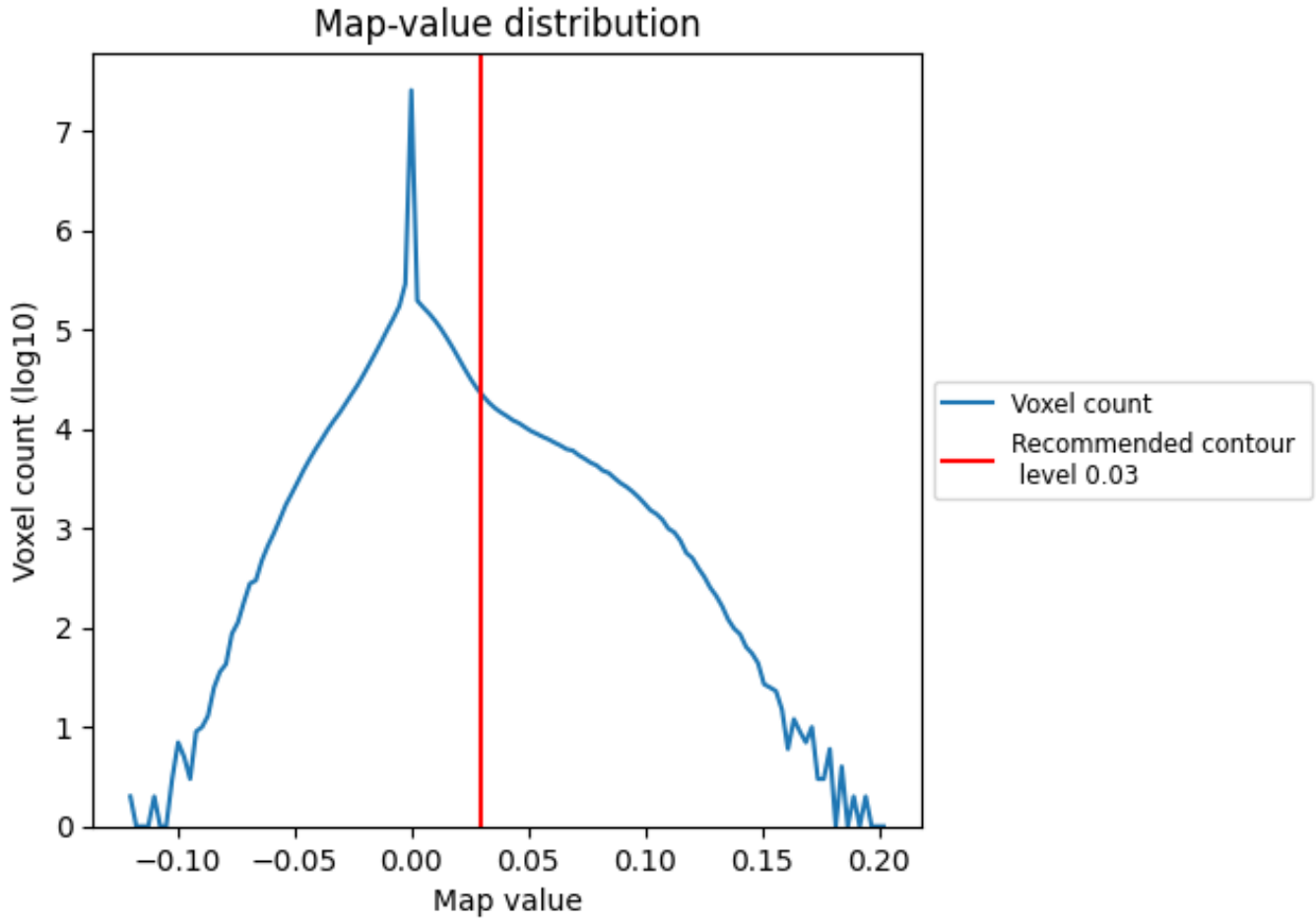
6.6 Mask visualisation (i)

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

7 Map analysis

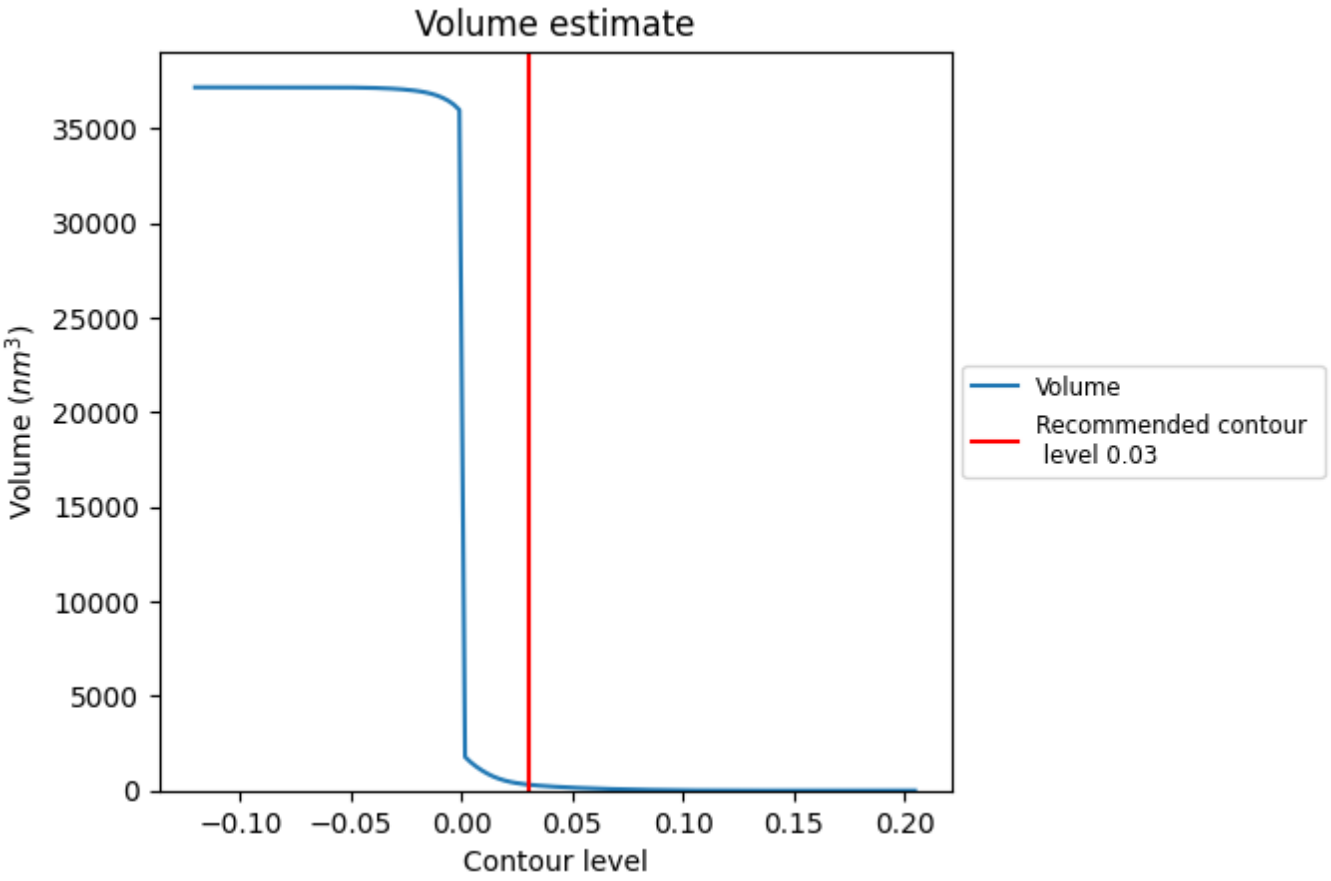
This section contains the results of statistical analysis of the map.

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.

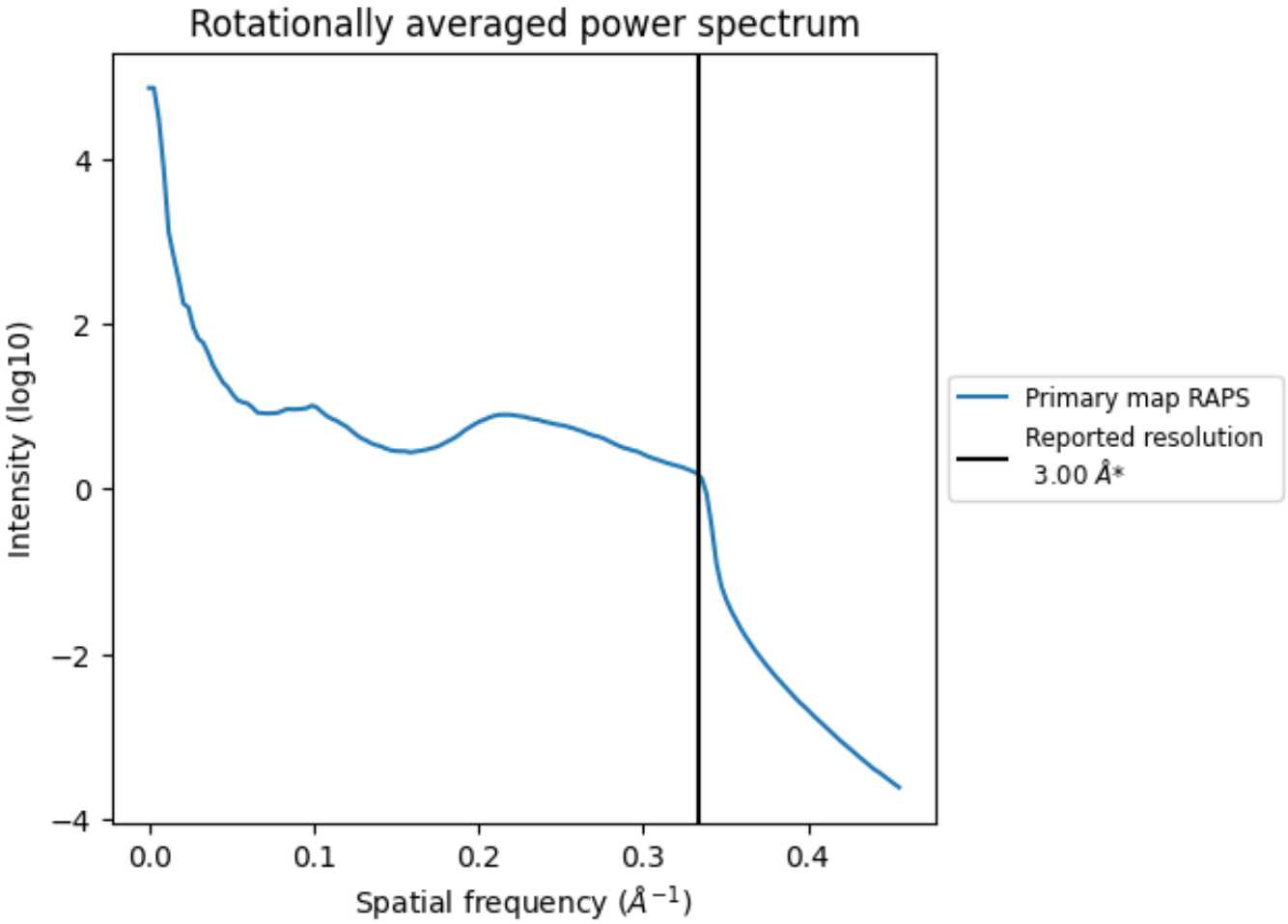
7.2 Volume estimate



The volume at the recommended contour level is 314 nm^3; this corresponds to an approximate mass of 284 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 0.333 $Å^{-1}$

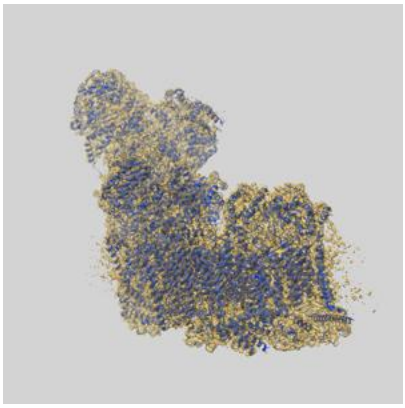
8 Fourier-Shell correlation (i)

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

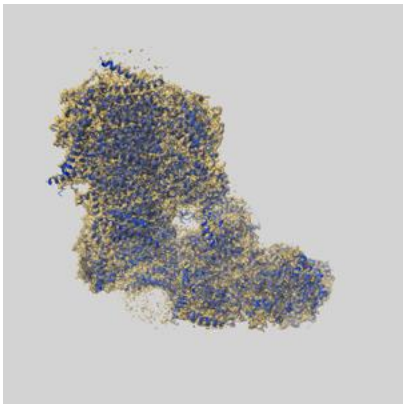
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-32309 and PDB model 7W4N. Per-residue inclusion information can be found in section 3 on page 20.

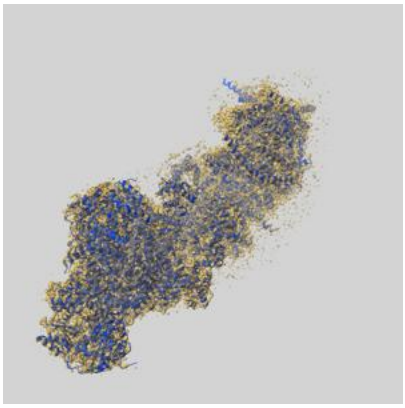
9.1 Map-model overlay



X



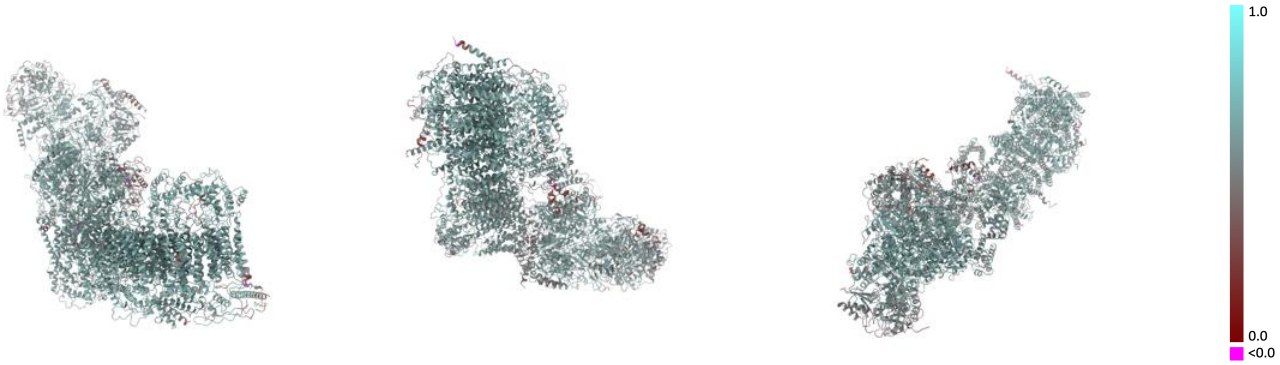
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 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.

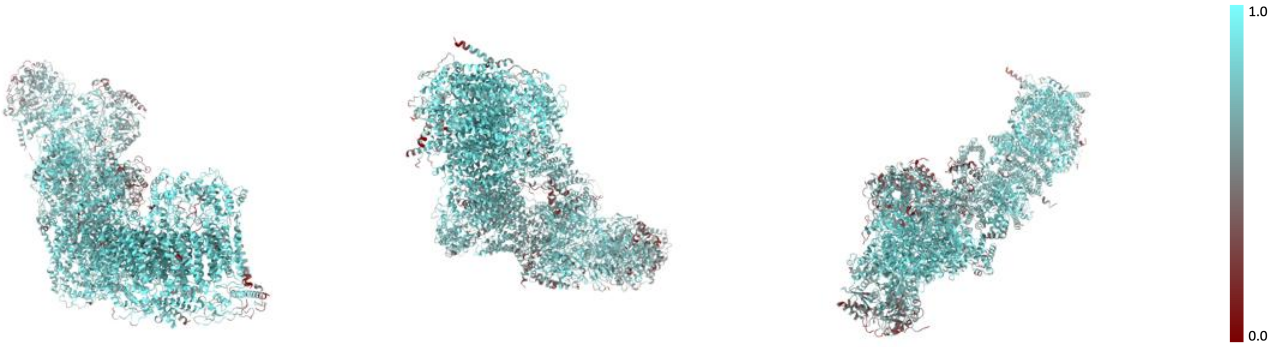
9.2 Q-score mapped to coordinate model



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.

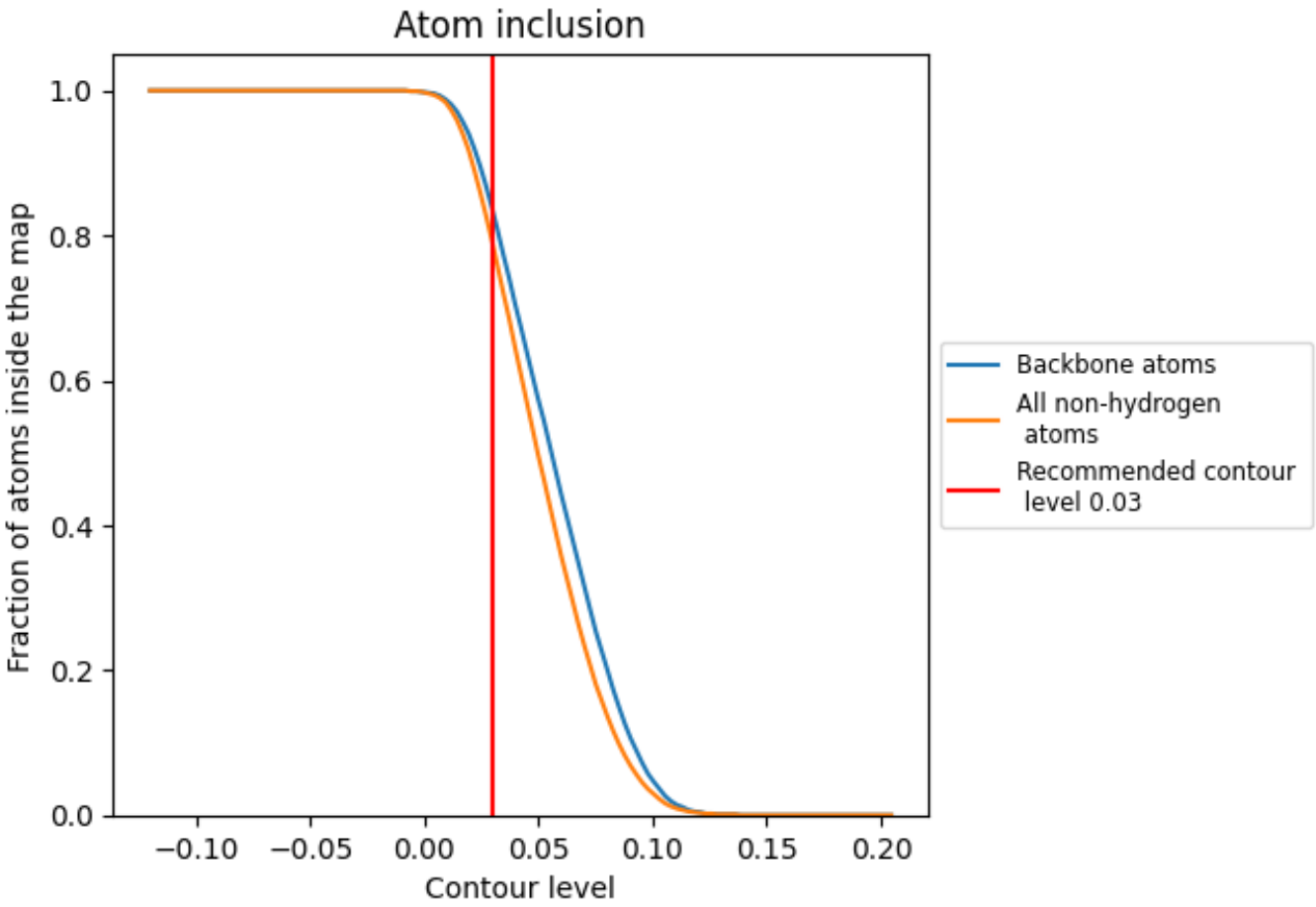
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7870	0.5850
A	0.6550	0.5410
B	0.9210	0.6350
C	0.8450	0.6100
E	0.7180	0.5720
F	0.5090	0.4620
G	0.4170	0.4090
H	0.7290	0.5680
I	0.7520	0.5810
J	0.6540	0.5340
K	0.5230	0.5220
L	0.8110	0.6010
M	0.7580	0.5760
N	0.8050	0.6020
O	0.6100	0.5250
P	0.8960	0.6240
Q	0.8870	0.6270
S	0.8370	0.6050
T	0.7730	0.5900
U	0.7760	0.5760
V	0.6650	0.5530
W	0.8030	0.5920
X	0.7990	0.5890
Y	0.7060	0.5550
Z	0.6350	0.5190
a	0.8450	0.6130
b	0.7330	0.5570
c	0.8230	0.5970
d	0.7960	0.5860
e	0.7700	0.5720
f	0.6950	0.5470
g	0.8360	0.6100
h	0.8040	0.5880
i	0.8920	0.6230
j	0.6810	0.5530

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
k	0.8190	0.5960
l	0.8660	0.6150
m	0.7500	0.5720
n	0.7050	0.5700
o	0.8200	0.6010
p	0.8380	0.6000
r	0.9000	0.6230
s	0.8420	0.6000
u	0.7960	0.5860
v	0.7180	0.5460
w	0.7910	0.5830