Full wwPDB EM Validation Report ⓘ

Jun 24, 2026 – 11:37 am BST

PDB ID	:	9SFI / pdb_00009sfi
EMDB ID	:	EMD-54825
Title	:	Heterodisulfide reductase-Formylmethanofuran dehydrogenase super-assembly
Authors	:	Paul, S.; Schuller, J.M.
Deposited on	:	2025-08-19
Resolution	:	4.00 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:

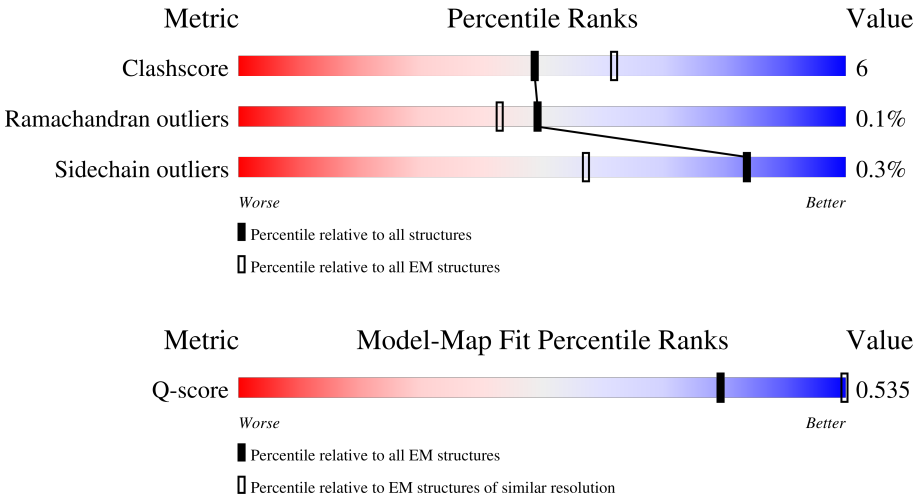
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.00 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	7587 (3.50 - 4.50)

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	658	86% 13%
1	B	658	88% 12%
1	a	658	88% 12%
1	b	658	89% 11%

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Mol	Chain	Length	Quality of chain
2	C	293	90% 10%
2	D	293	94% 6%
2	c	293	89% 11%
2	d	293	90% 10%
3	E	184	89% 11%
3	F	184	94% 6%
3	e	184	91% 9%
3	f	184	89% 11%
4	I	288	86% 14%
4	J	288	88% 12%
4	i	288	88% 11%
4	j	288	88% 11%
5	K	134	88% 12%
5	L	134	88% 12%
5	k	134	88% 11%
5	l	134	87% 13%
6	M	27	63% 37%
6	N	27	78% 22%
6	m	27	63% 37%
6	n	27	56% 44%
7	O	394	89% 11%
7	o	394	87% 13%
8	P	567	90% 10%
8	p	567	91% 9%
9	Q	436	88% 12%

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Mol	Chain	Length	Quality of chain
9	q	436	87% 12%
10	R	272	83% 17%
10	r	272	83% 16%
11	S	128	81% 19%
11	s	128	93% 7%
12	T	352	92% 8%
12	t	352	95% 5%
13	U	80	91% 9%
13	u	80	82% 18%
14	G	418	82% 17%
14	H	418	83% 17%
14	g	418	81% 19%
14	h	418	82% 17%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
15	SF4	B	705	-	-	X	-
22	NFU	G	501	-	-	X	-
22	NFU	H	501	-	-	X	-
22	NFU	g	501	-	-	X	-
22	NFU	h	501	-	-	X	-

2 Entry composition (i)

There are 22 unique types of molecules in this entry. The entry contains 96248 atoms, of which 128 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 CoB–CoM heterodisulfide reductase iron-sulfur subunit A.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	658	Total	C	N	O	S	Se	0	0
			4970	3126	834	957	52	1		
1	B	658	Total	C	N	O	S	Se	0	0
			4970	3126	834	957	52	1		
1	a	658	Total	C	N	O	S	Se	0	0
			4970	3126	834	957	52	1		
1	b	658	Total	C	N	O	S	Se	0	0
			4970	3126	834	957	52	1		

- Molecule 2 is a protein called H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit B2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	293	Total	C	N	O	S	0	0
			2236	1420	373	419	24		
2	D	293	Total	C	N	O	S	0	0
			2236	1420	373	419	24		
2	c	293	Total	C	N	O	S	0	0
			2236	1420	373	419	24		
2	d	293	Total	C	N	O	S	0	0
			2236	1420	373	419	24		

- Molecule 3 is a protein called H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit C2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	184	Total	C	N	O	S	0	0
			1426	892	252	268	14		
3	F	184	Total	C	N	O	S	0	0
			1426	892	252	268	14		
3	e	184	Total	C	N	O	S	0	0
			1426	892	252	268	14		
3	f	184	Total	C	N	O	S	0	0
			1426	892	252	268	14		

- Molecule 4 is a protein called F420-non-reducing hydrogenase small subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	I	288	Total	C	N	O	S	0	0
			2149	1360	354	416	19		
4	J	288	Total	C	N	O	S	0	0
			2149	1360	354	416	19		
4	i	288	Total	C	N	O	S	0	0
			2149	1360	354	416	19		
4	j	288	Total	C	N	O	S	0	0
			2149	1360	354	416	19		

- Molecule 5 is a protein called F420-non-reducing hydrogenase subunit delta.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	K	134	Total	C	N	O	S	Se	0	0
			1018	647	173	187	9	2		
5	L	134	Total	C	N	O	S	Se	0	0
			1018	647	173	187	9	2		
5	k	134	Total	C	N	O	S	Se	0	0
			1018	647	173	187	9	2		
5	l	134	Total	C	N	O	S	Se	0	0
			1018	647	173	187	9	2		

- Molecule 6 is a protein called F420 non-reducing hydrogenase subunit.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	M	27	Total	C	N	O	S	Se	0	0
			211	134	34	39	3	1		
6	N	27	Total	C	N	O	S	Se	0	0
			211	134	34	39	3	1		
6	m	27	Total	C	N	O	S	Se	0	0
			211	134	34	39	3	1		
6	n	27	Total	C	N	O	S	Se	0	0
			211	134	34	39	3	1		

- Molecule 7 is a protein called Ferredoxin.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	O	394	Total	C	N	O	S	0	0
			2901	1818	473	556	54		
7	o	394	Total	C	N	O	S	0	0
			2897	1815	472	556	54		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	220	LYS	ALA	conflict	UNP A0A2L1CB03
o	220	LYS	ALA	conflict	UNP A0A2L1CB03

- Molecule 8 is a protein called Formylmethanofuran dehydrogenase subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	P	567	Total	C	N	O	S	0	0
			4456	2834	746	852	24		
8	p	567	Total	C	N	O	S	0	0
			4456	2834	746	852	24		

- Molecule 9 is a protein called Molybdopterin oxidoreductase.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	Q	436	Total	C	N	O	S	Se	0	0
			3401	2150	596	630	24	1		
9	q	436	Total	C	N	O	S	Se	0	0
			3401	2150	596	630	24	1		

- Molecule 10 is a protein called Tungsten-containing formylmethanofuran dehydrogenase 2 subunit C.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	R	272	Total	C	N	O	S	0	0
			2041	1288	341	399	13		
10	r	272	Total	C	N	O	S	0	0
			2041	1288	341	399	13		

- Molecule 11 is a protein called Formylmethanofuran dehydrogenase subunit D.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	S	128	Total	C	N	O	S	0	0
			986	625	157	193	11		
11	s	128	Total	C	N	O	S	0	0
			986	625	157	193	11		

- Molecule 12 is a protein called 4Fe-4S ferredoxin.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	T	352	Total	C	N	O	S	0	0
			2640	1653	435	507	45		
12	t	352	Total	C	N	O	S	0	0
			2640	1653	435	507	45		

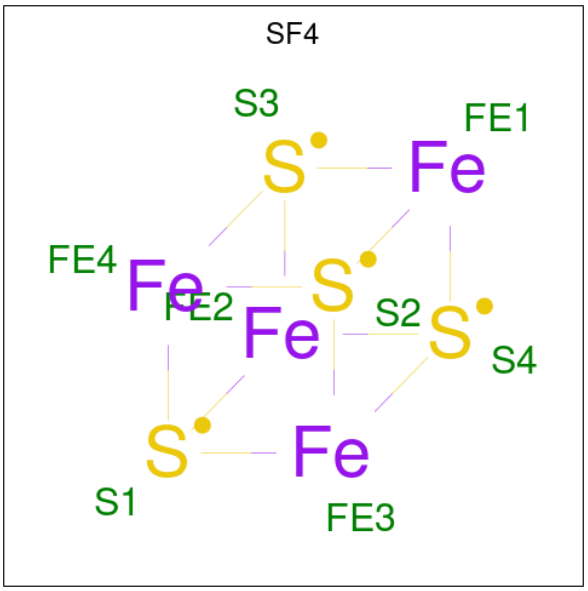
- Molecule 13 is a protein called 4Fe-4S binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	U	80	Total	C	N	O	S	0	0
			576	358	96	112	10		
13	u	80	Total	C	N	O	S	0	0
			576	358	96	112	10		

- Molecule 14 is a protein called Coenzyme F420-reducing hydrogenase, alpha subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	g	418	Total	C	N	O	S	0	0
			3207	2033	553	604	17		
14	G	418	Total	C	N	O	S	0	0
			3207	2033	553	604	17		
14	H	418	Total	C	N	O	S	0	0
			3207	2033	553	604	17		
14	h	418	Total	C	N	O	S	0	0
			3207	2033	553	604	17		

- Molecule 15 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
15	A	1	Total	Fe	S	0
			8	4	4	
15	A	1	Total	Fe	S	0
			8	4	4	

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Mol	Chain	Residues	Atoms	AltConf
15	A	1	Total Fe S 8 4 4	0
15	A	1	Total Fe S 8 4 4	0
15	A	1	Total Fe S 8 4 4	0
15	A	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	B	1	Total Fe S 8 4 4	0
15	E	1	Total Fe S 8 4 4	0
15	E	1	Total Fe S 8 4 4	0
15	F	1	Total Fe S 8 4 4	0
15	F	1	Total Fe S 8 4 4	0
15	I	1	Total Fe S 8 4 4	0
15	I	1	Total Fe S 8 4 4	0
15	I	1	Total Fe S 8 4 4	0
15	J	1	Total Fe S 8 4 4	0
15	J	1	Total Fe S 8 4 4	0
15	J	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0

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Mol	Chain	Residues	Atoms	AltConf
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	O	1	Total Fe S 8 4 4	0
15	Q	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0
15	T	1	Total Fe S 8 4 4	0

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Mol	Chain	Residues	Atoms	AltConf
15	U	1	Total Fe S 8 4 4	0
15	U	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	a	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	b	1	Total Fe S 8 4 4	0
15	e	1	Total Fe S 8 4 4	0
15	e	1	Total Fe S 8 4 4	0
15	f	1	Total Fe S 8 4 4	0
15	f	1	Total Fe S 8 4 4	0
15	i	1	Total Fe S 8 4 4	0
15	i	1	Total Fe S 8 4 4	0
15	i	1	Total Fe S 8 4 4	0

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Mol	Chain	Residues	Atoms	AltConf
15	j	1	Total Fe S 8 4 4	0
15	j	1	Total Fe S 8 4 4	0
15	j	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	o	1	Total Fe S 8 4 4	0
15	q	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0

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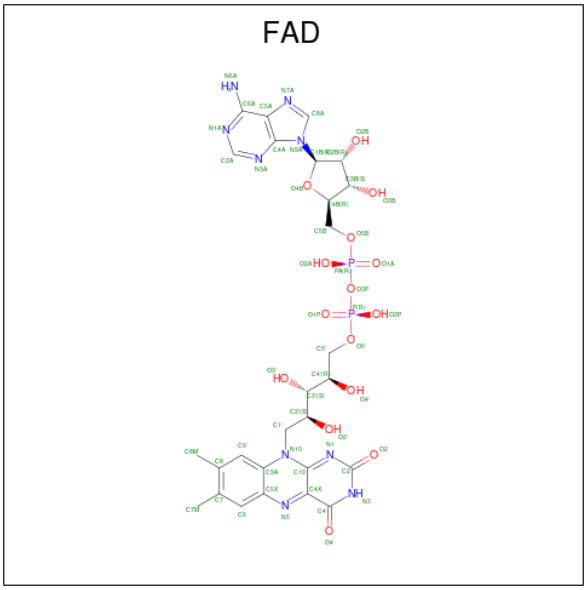
Mol	Chain	Residues	Atoms	AltConf
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	t	1	Total Fe S 8 4 4	0
15	u	1	Total Fe S 8 4 4	0
15	u	1	Total Fe S 8 4 4	0

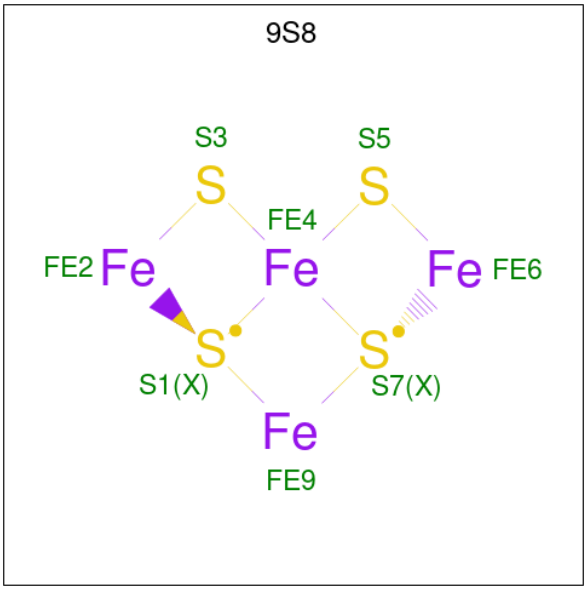
- Molecule 16 is FLAVIN-ADENINE DINUCLEOTIDE (CCD ID: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
16	A	1	Total C H N O P 84 27 31 9 15 2	0
16	B	1	Total C H N O P 84 27 31 9 15 2	0
16	a	1	Total C H N O P 84 27 31 9 15 2	0
16	b	1	Total C H N O P 84 27 31 9 15 2	0

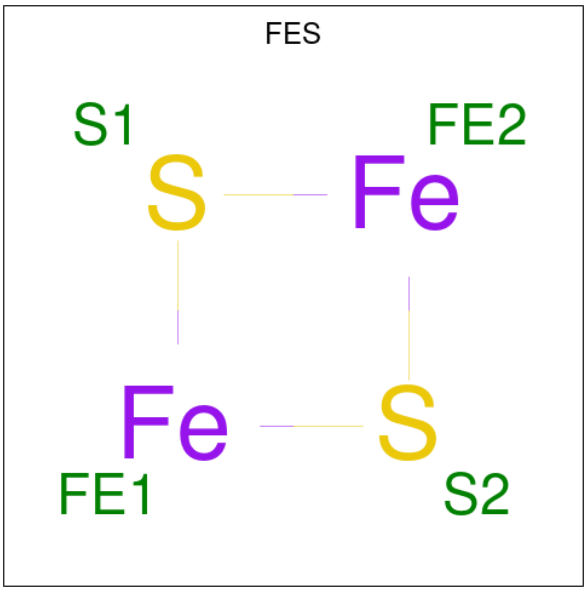
- Molecule 17 is Non-cubane [4Fe-4S]-cluster (CCD ID: 9S8) (formula: Fe_4S_4) (labeled as

"Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
17	C	1	Total Fe S 8 4 4	0
17	C	1	Total Fe S 8 4 4	0
17	D	1	Total Fe S 8 4 4	0
17	D	1	Total Fe S 8 4 4	0
17	c	1	Total Fe S 8 4 4	0
17	c	1	Total Fe S 8 4 4	0
17	d	1	Total Fe S 8 4 4	0
17	d	1	Total Fe S 8 4 4	0

- Molecule 18 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2) (labeled as "Ligand of Interest" by depositor).

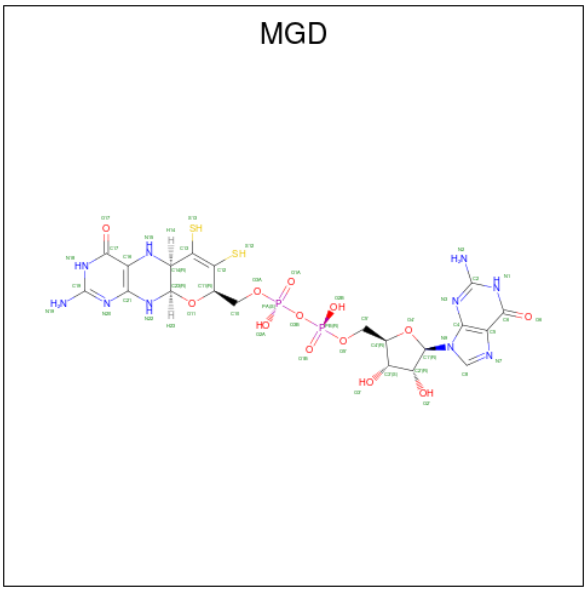


Mol	Chain	Residues	Atoms	AltConf
18	K	1	Total Fe S 4 2 2	0
18	L	1	Total Fe S 4 2 2	0
18	k	1	Total Fe S 4 2 2	0
18	l	1	Total Fe S 4 2 2	0

- Molecule 19 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
19	P	2	Total Zn 2 2	0
19	p	2	Total Zn 2 2	0

- Molecule 20 is 2-AMINO-5,6-DIMERCAPTO-7-METHYL-3,7,8A,9-TETRAHYDRO-8-OXA-1,3,9,10-TETRAAZA-ANTHRACEN-4-ONE GUANOSINE DINUCLEOTIDE (CCD ID: MGD) (formula: $C_{20}H_{26}N_{10}O_{13}P_2S_2$) (labeled as "Ligand of Interest" by depositor).

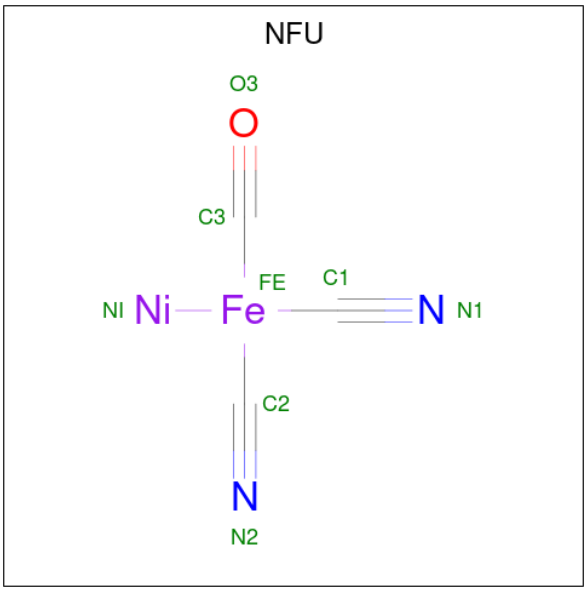


Mol	Chain	Residues	Atoms						AltConf
20	Q	1	Total	C	N	O	P	S	0
			47	20	10	13	2	2	
20	Q	1	Total	C	N	O	P	S	0
			47	20	10	13	2	2	
20	q	1	Total	C	N	O	P	S	0
			47	20	10	13	2	2	
20	q	1	Total	C	N	O	P	S	0
			47	20	10	13	2	2	

- Molecule 21 is TUNGSTEN ION (CCD ID: W) (formula: W) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
21	Q	1	Total	W	0
			1	1	
21	q	1	Total	W	0
			1	1	

- Molecule 22 is formyl[bis(hydrocyanato-1kappaC)]ironnickel(Fe-Ni) (CCD ID: NFU) (formula: C_3FeN_2NiO) (labeled as "Ligand of Interest" by depositor).



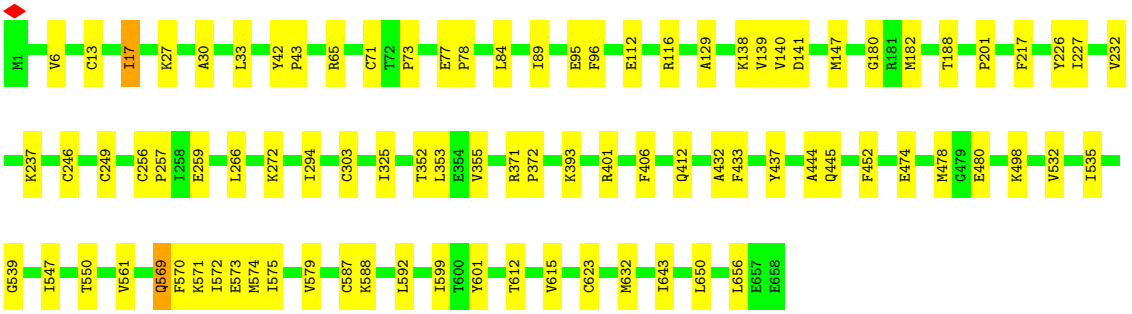
Mol	Chain	Residues	Atoms							AltConf
22	g	1	Total	C	Fe	H	N	Ni	O	0
			9	3	1	1	2	1	1	
22	G	1	Total	C	Fe	H	N	Ni	O	0
			9	3	1	1	2	1	1	
22	H	1	Total	C	Fe	H	N	Ni	O	0
			9	3	1	1	2	1	1	
22	h	1	Total	C	Fe	H	N	Ni	O	0
			9	3	1	1	2	1	1	

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.

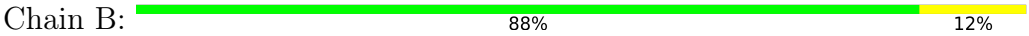
• Molecule 1: CoB–CoM heterodisulfide reductase iron-sulfur subunit A

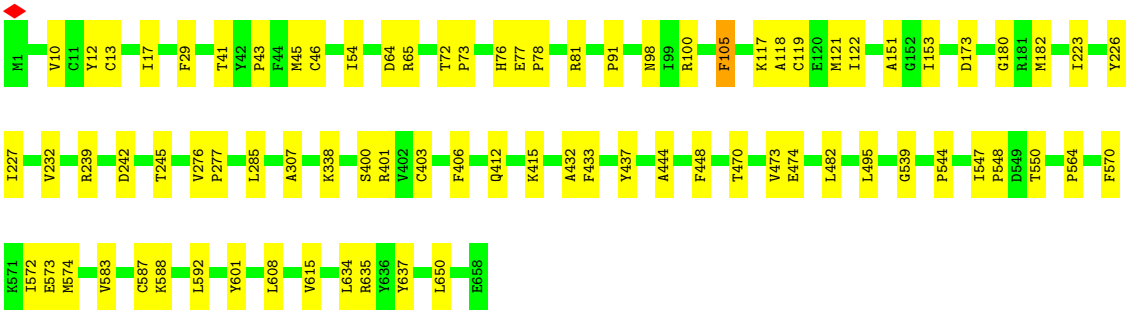
Chain A:



• Molecule 1: CoB–CoM heterodisulfide reductase iron-sulfur subunit A

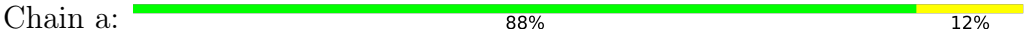
Chain B:

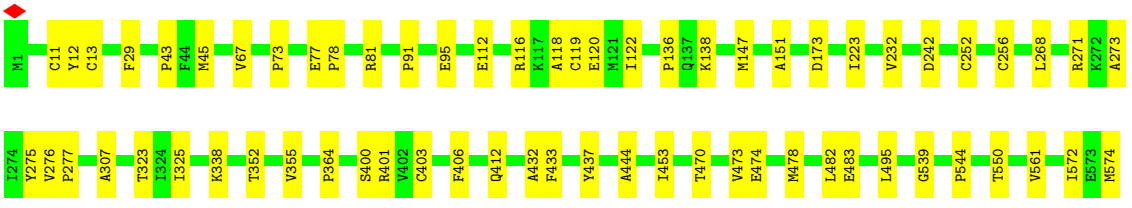




• Molecule 1: CoB–CoM heterodisulfide reductase iron-sulfur subunit A

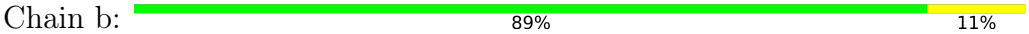
Chain a:

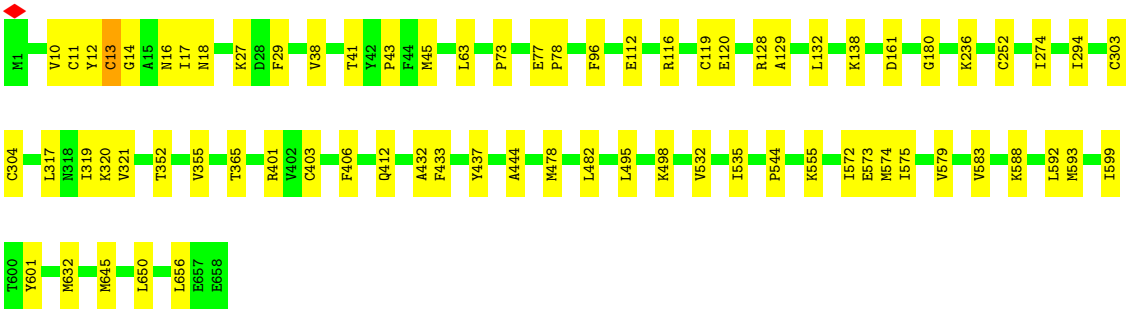




• Molecule 1: CoB–CoM heterodisulfide reductase iron-sulfur subunit A

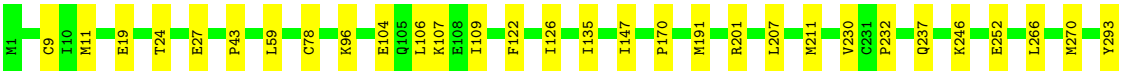
Chain b:





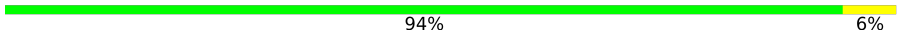
• Molecule 2: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit B2

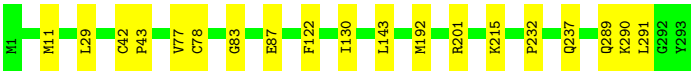
Chain C:



• Molecule 2: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit B2

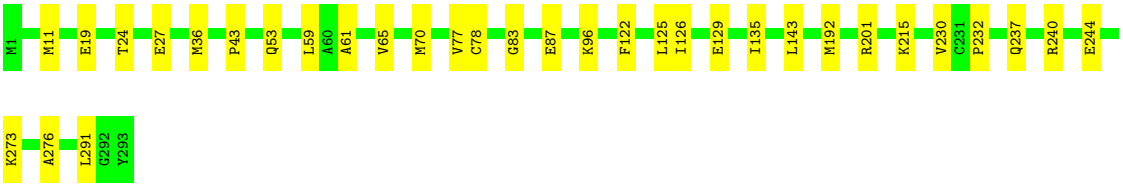
Chain D:





• Molecule 2: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit B2

Chain c:

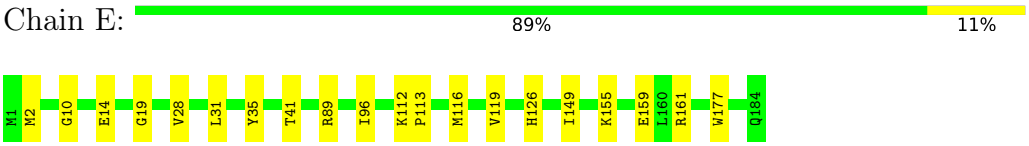


• Molecule 2: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit B2

Chain d:

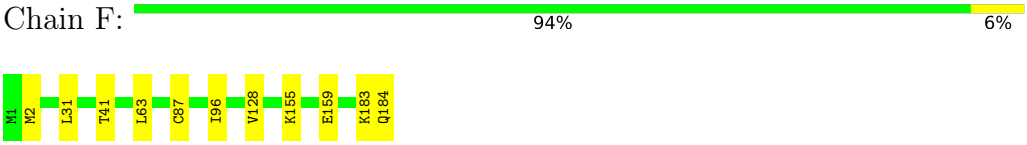
• Molecule 3: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit C2

Chain E:



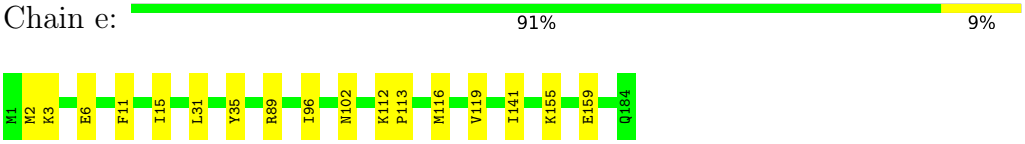
• Molecule 3: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit C2

Chain F:



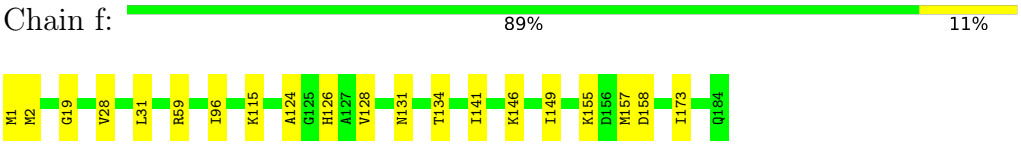
• Molecule 3: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit C2

Chain e:



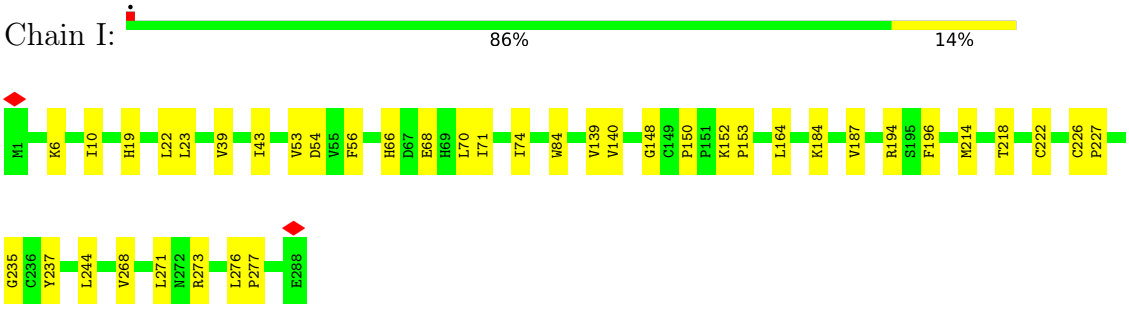
• Molecule 3: H(2)/formate:CoB-CoM heterodisulfide,ferredoxin reductase subunit C2

Chain f:



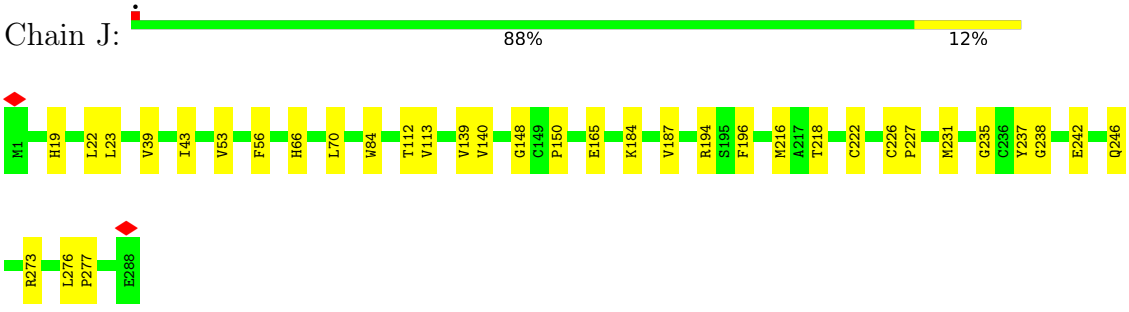
• Molecule 4: F420-non-reducing hydrogenase small subunit

Chain I:



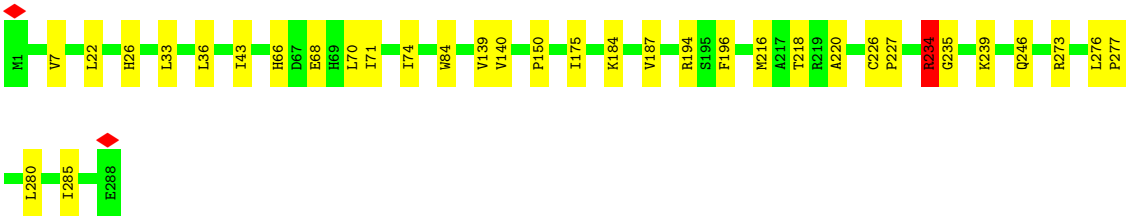
• Molecule 4: F420-non-reducing hydrogenase small subunit

Chain J:



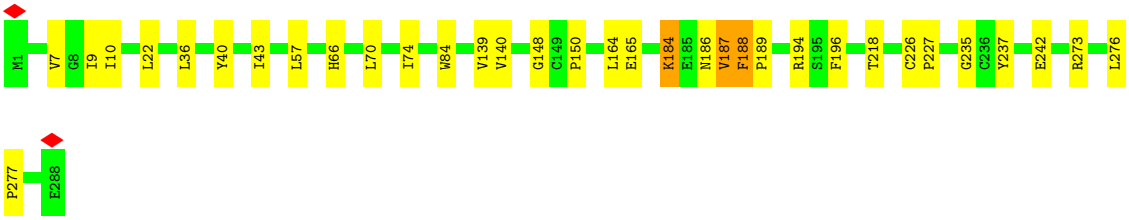
• Molecule 4: F420-non-reducing hydrogenase small subunit

Chain i:



• Molecule 4: F420-non-reducing hydrogenase small subunit

Chain j:

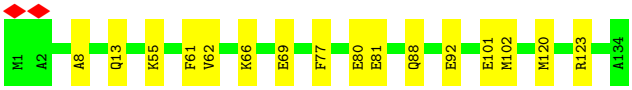


• Molecule 5: F420-non-reducing hydrogenase subunit delta

Chain K:

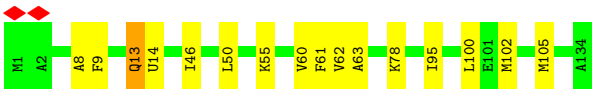
• Molecule 5: F420-non-reducing hydrogenase subunit delta

Chain L:



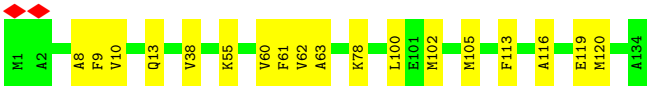
• Molecule 5: F420-non-reducing hydrogenase subunit delta

Chain k:



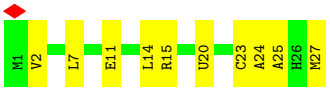
• Molecule 5: F420-non-reducing hydrogenase subunit delta

Chain l:



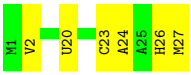
• Molecule 6: F420 non-reducing hydrogenase subunit

Chain M:



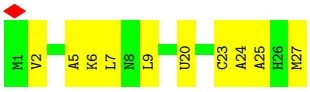
• Molecule 6: F420 non-reducing hydrogenase subunit

Chain N:



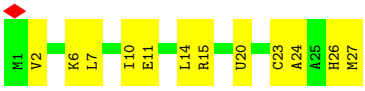
• Molecule 6: F420 non-reducing hydrogenase subunit

Chain m:



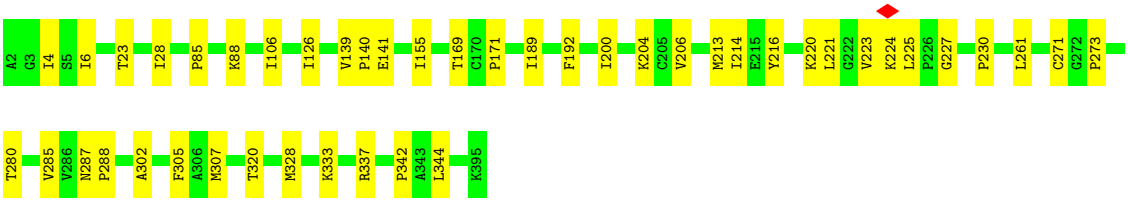
• Molecule 6: F420 non-reducing hydrogenase subunit

Chain n:



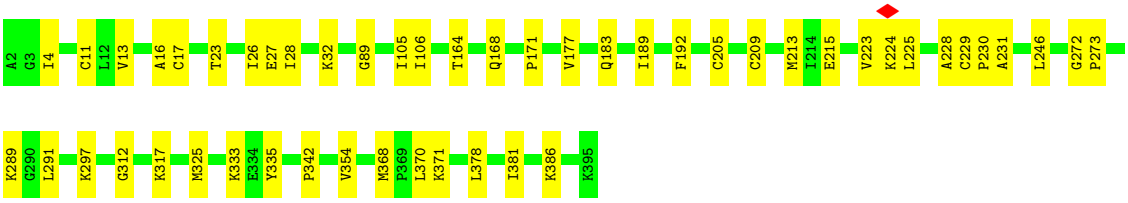
• Molecule 7: Ferredoxin

Chain O:



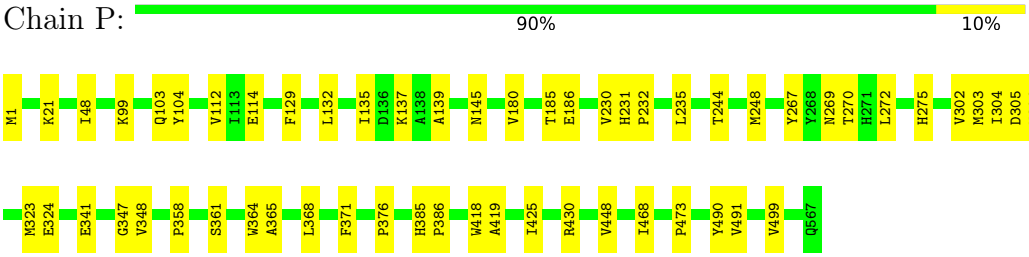
• Molecule 7: Ferredoxin

Chain o:



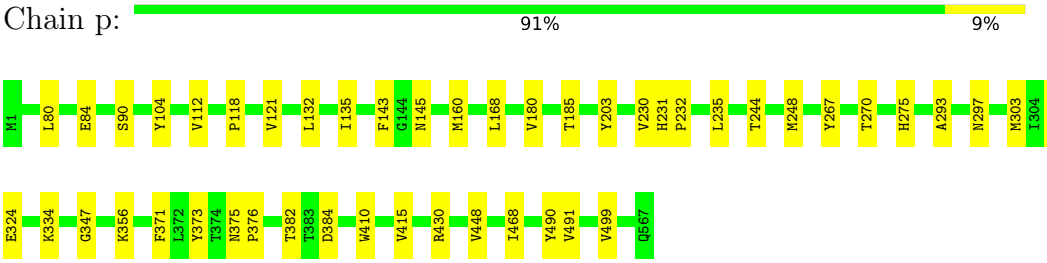
• Molecule 8: Formylmethanofuran dehydrogenase subunit A

Chain P:



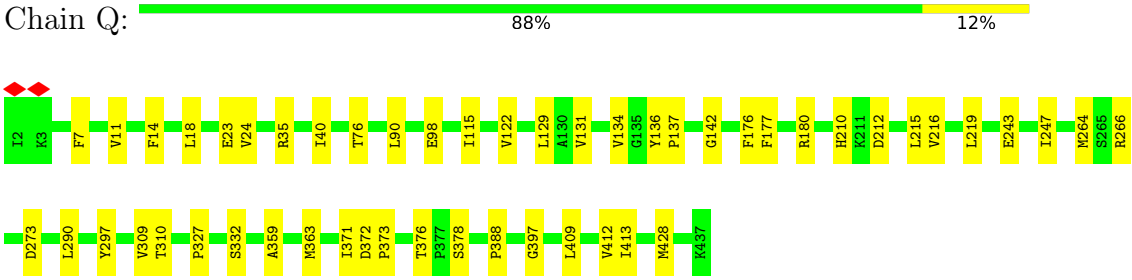
• Molecule 8: Formylmethanofuran dehydrogenase subunit A

Chain p:



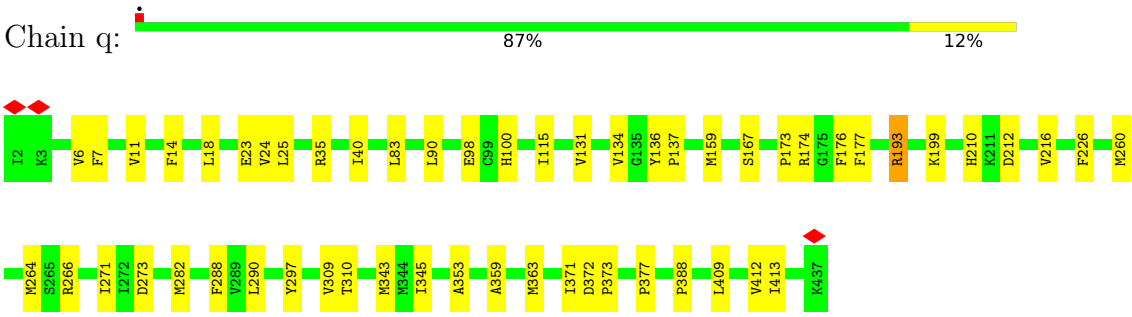
• Molecule 9: Molybdopterin oxidoreductase

Chain Q:



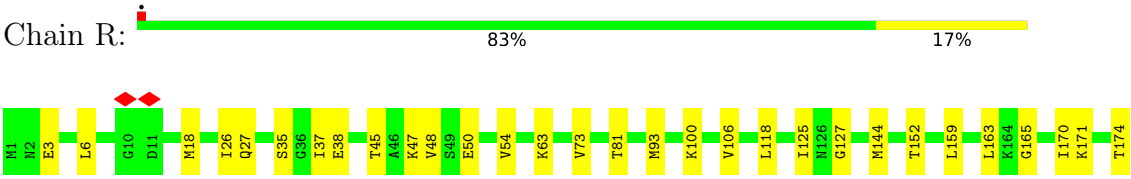
• Molecule 9: Molybdopterin oxidoreductase

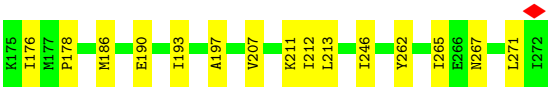
Chain q:



• Molecule 10: Tungsten-containing formylmethanofuran dehydrogenase 2 subunit C

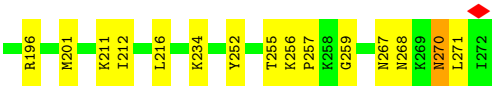
Chain R:





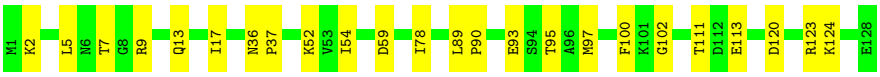
• Molecule 10: Tungsten-containing formylmethanofuran dehydrogenase 2 subunit C

Chain r:



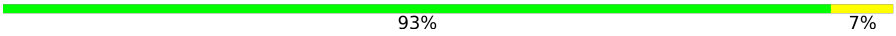
• Molecule 11: Formylmethanofuran dehydrogenase subunit D

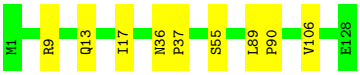
Chain S:



• Molecule 11: Formylmethanofuran dehydrogenase subunit D

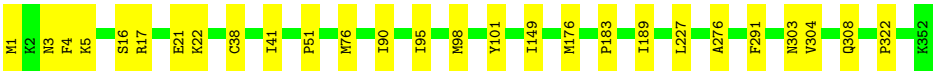
Chain s:





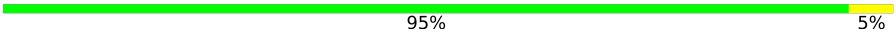
• Molecule 12: 4Fe-4S ferredoxin

Chain T:



• Molecule 12: 4Fe-4S ferredoxin

Chain t:

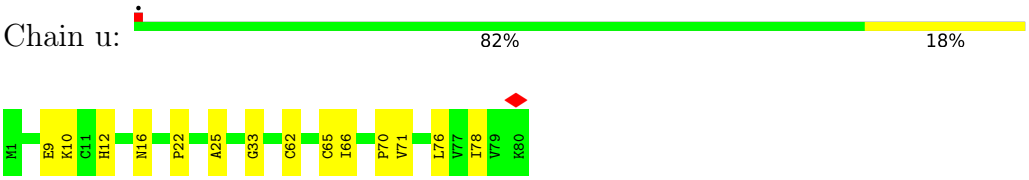


• Molecule 13: 4Fe-4S binding protein

Chain U:

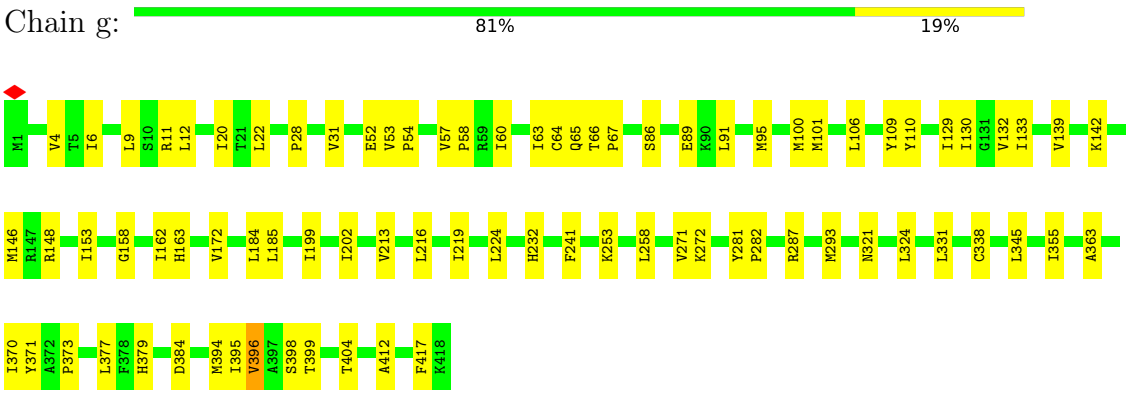
• Molecule 13: 4Fe-4S binding protein

Chain u:



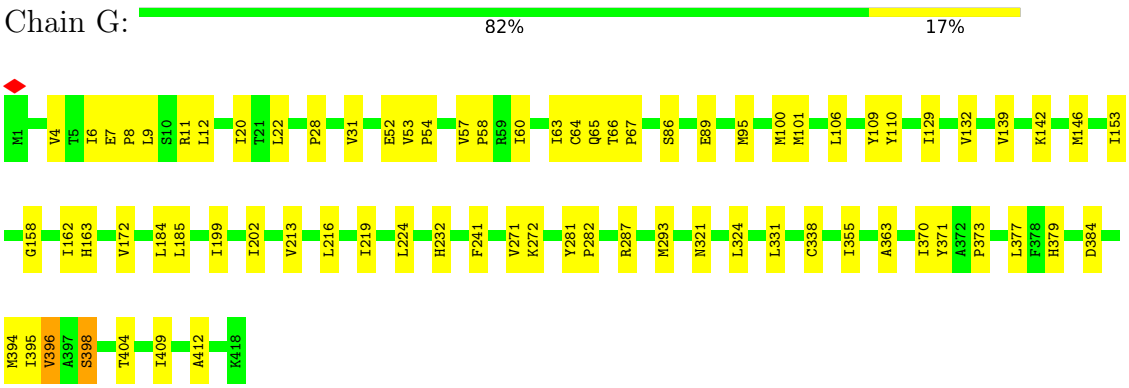
• Molecule 14: Coenzyme F420-reducing hydrogenase, alpha subunit

Chain g:



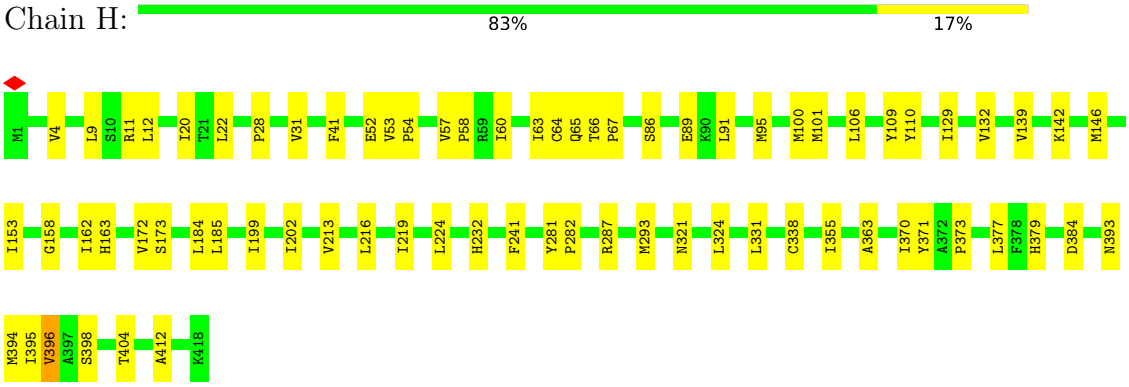
• Molecule 14: Coenzyme F420-reducing hydrogenase, alpha subunit

Chain G:



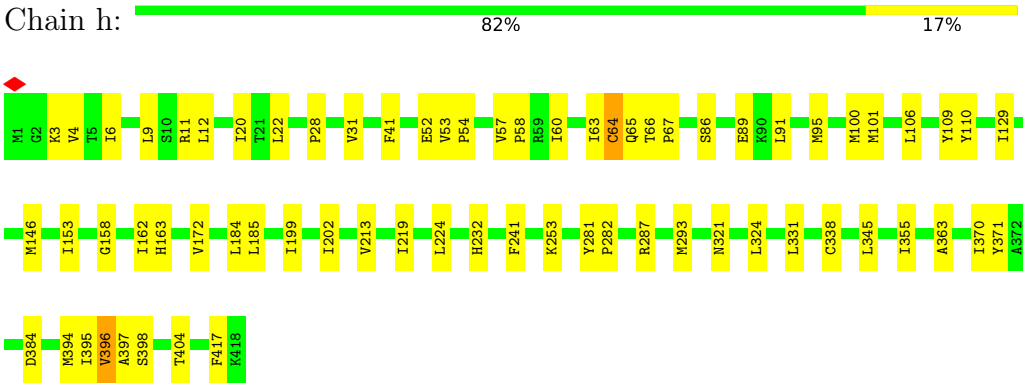
• Molecule 14: Coenzyme F420-reducing hydrogenase, alpha subunit

Chain H:



• Molecule 14: Coenzyme F420-reducing hydrogenase, alpha subunit

Chain h:


82%
17%
M1 G2 K3 V4 T5 I6 L9 S10 R11 L12 I20 T21 L22 P28 V31 F41 E52 V53 P54 V57 P58 R59 I60 I63 C64 Q65 T66 P67 S86 E89 K90 L91 M95 M100 M101 L106 Y109 Y110 I129 V132 V139 K142
M146 I153 G158 I162 H163 V172 L184 L185 I199 I202 V213 I219 L224 H232 F241 K253 Y281 P282 R287 M293 N321 L324 L331 C338 L345 I355 A363 I370 Y371 A372 P373 L377 F378 H379
D384 M394 I395 V396 A397 S398 T404 F417 K418

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	110231	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.000	Depositor
Minimum map value	0.000	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.034	Depositor
Recommended contour level	0.084	Depositor
Map size (Å)	760.0, 760.0, 760.0	wwPDB
Map dimensions	800, 800, 800	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: FAD, FES, 9S8, W, SF4, SEC, MGD, ZN, NFU

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	0.14	0/5052	0.29	0/6830
1	B	0.13	0/5052	0.29	0/6830
1	a	0.13	0/5052	0.25	0/6830
1	b	0.13	0/5052	0.29	0/6830
2	C	0.12	0/2277	0.24	0/3073
2	D	0.13	0/2277	0.24	0/3073
2	c	0.13	0/2277	0.26	0/3073
2	d	0.12	0/2277	0.25	0/3073
3	E	0.11	0/1447	0.21	0/1944
3	F	0.12	0/1447	0.22	0/1944
3	e	0.12	0/1447	0.21	0/1944
3	f	0.12	0/1447	0.22	0/1944
4	I	0.11	0/2192	0.24	0/2982
4	J	0.11	0/2192	0.25	0/2982
4	i	0.11	0/2192	0.25	0/2982
4	j	0.11	0/2192	0.25	0/2982
5	K	0.10	0/1023	0.21	0/1367
5	L	0.10	0/1023	0.22	0/1367
5	k	0.10	0/1023	0.23	0/1367
5	l	0.10	0/1023	0.21	0/1367
6	M	0.18	0/207	0.37	0/278
6	N	0.17	0/207	0.39	0/278
6	m	0.18	0/207	0.40	0/278
6	n	0.17	0/207	0.35	0/278
7	O	0.14	0/2948	0.28	0/3981
7	o	0.13	0/2944	0.30	0/3977
8	P	0.10	0/4563	0.24	0/6190
8	p	0.10	0/4563	0.26	0/6190
9	Q	0.10	0/3468	0.25	0/4695
9	q	0.10	0/3468	0.24	0/4695
10	R	0.08	0/2065	0.21	0/2767
10	r	0.08	0/2065	0.21	0/2767

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
11	S	0.10	0/1004	0.26	0/1358
11	s	0.09	0/1004	0.23	0/1358
12	T	0.11	0/2682	0.26	0/3630
12	t	0.10	0/2682	0.25	0/3630
13	U	0.13	0/584	0.31	0/789
13	u	0.11	0/584	0.29	0/789
14	G	0.12	0/3275	0.28	0/4435
14	H	0.12	0/3275	0.28	0/4435
14	g	0.12	0/3275	0.28	0/4435
14	h	0.12	0/3275	0.28	1/4435 (0.0%)
All	All	0.12	0/96516	0.26	1/130452 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	i	0	1
9	q	0	1
All	All	0	2

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
14	h	64	CYS	CA-CB-SG	5.00	125.91	114.40

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	i	234	ARG	Sidechain
9	q	193	ARG	Sidechain

5.2 Too-close contacts (i)

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

the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4970	0	4902	69	0
1	B	4970	0	4902	61	0
1	a	4970	0	4902	59	0
1	b	4970	0	4902	64	0
2	C	2236	0	2236	19	0
2	D	2236	0	2236	12	0
2	c	2236	0	2236	20	0
2	d	2236	0	2236	19	0
3	E	1426	0	1460	17	0
3	F	1426	0	1460	10	0
3	e	1426	0	1460	12	0
3	f	1426	0	1460	17	0
4	I	2149	0	2155	39	0
4	J	2149	0	2155	32	0
4	i	2149	0	2155	27	0
4	j	2149	0	2155	29	0
5	K	1018	0	1010	11	0
5	L	1018	0	1010	14	0
5	k	1018	0	1010	14	0
5	l	1018	0	1010	13	0
6	M	211	0	207	19	0
6	N	211	0	207	13	0
6	m	211	0	207	19	0
6	n	211	0	207	18	0
7	O	2901	0	2913	34	0
7	o	2897	0	2902	34	0
8	P	4456	0	4369	42	0
8	p	4456	0	4369	31	0
9	Q	3401	0	3379	34	0
9	q	3401	0	3379	35	0
10	R	2041	0	2105	31	0
10	r	2041	0	2105	32	0
11	S	986	0	984	21	0
11	s	986	0	984	6	0
12	T	2640	0	2648	24	0
12	t	2640	0	2648	12	0
13	U	576	0	570	8	0
13	u	576	0	570	14	0
14	G	3207	0	3217	71	0
14	H	3207	0	3217	67	0
14	g	3207	0	3217	75	0
14	h	3207	0	3217	71	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
15	A	48	0	0	2	0
15	B	48	0	0	2	0
15	E	16	0	0	0	0
15	F	16	0	0	0	0
15	I	24	0	0	0	0
15	J	24	0	0	0	0
15	O	96	0	0	1	0
15	Q	8	0	0	0	0
15	T	72	0	0	0	0
15	U	16	0	0	1	0
15	a	48	0	0	2	0
15	b	48	0	0	2	0
15	e	16	0	0	0	0
15	f	16	0	0	0	0
15	i	24	0	0	0	0
15	j	24	0	0	0	0
15	o	96	0	0	4	0
15	q	8	0	0	0	0
15	t	72	0	0	1	0
15	u	16	0	0	2	0
16	A	53	31	31	3	0
16	B	53	31	31	2	0
16	a	53	31	31	0	0
16	b	53	31	31	2	0
17	C	16	0	0	0	0
17	D	16	0	0	0	0
17	c	16	0	0	0	0
17	d	16	0	0	0	0
18	K	4	0	0	0	0
18	L	4	0	0	0	0
18	k	4	0	0	0	0
18	l	4	0	0	0	0
19	P	2	0	0	0	0
19	p	2	0	0	0	0
20	Q	94	0	44	3	0
20	q	94	0	44	2	0
21	Q	1	0	0	0	0
21	q	1	0	0	0	0
22	G	8	1	0	3	0
22	H	8	1	0	3	0
22	g	8	1	0	3	0
22	h	8	1	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	96120	128	94885	1106	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (1106) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:k:62:VAL:HG23	5:k:102:MET:HG3	1.40	1.02
1:A:139:VAL:HG12	1:A:571:LYS:HG2	1.45	0.98
4:J:112:THR:HG21	14:H:393:ASN:HD22	1.36	0.90
9:Q:131:VAL:HG13	9:Q:136:TYR:HB2	1.56	0.88
1:a:13:CYS:HB2	15:a:701:SF4:S4	2.14	0.88
7:O:204:LYS:HE3	12:T:1:MET:HB2	1.57	0.86
1:b:12:TYR:HE1	1:b:41:THR:HB	1.40	0.86
5:K:62:VAL:HG23	5:K:102:MET:HG3	1.57	0.85
7:o:11:CYS:HB3	7:o:105:ILE:HD11	1.58	0.85
1:B:13:CYS:HB2	15:B:705:SF4:S4	2.18	0.83
6:n:27:MET:HE1	14:h:396:VAL:H	1.41	0.82
1:A:592:LEU:HD11	4:I:187:VAL:HB	1.62	0.81
7:o:317:LYS:HG2	7:o:354:VAL:HG21	1.64	0.80
14:h:65:GLN:HG3	14:h:163:HIS:H	1.47	0.80
10:R:81:THR:HG22	10:R:100:LYS:HB2	1.65	0.79
14:G:65:GLN:HG3	14:G:163:HIS:H	1.47	0.79
1:a:147:MET:HE1	1:a:232:VAL:HG21	1.64	0.79
1:a:323:THR:HG21	1:a:561:VAL:HB	1.65	0.78
14:H:65:GLN:HG3	14:H:163:HIS:H	1.47	0.78
1:a:138:LYS:HD2	1:a:572:ILE:HD11	1.64	0.77
14:g:65:GLN:HG3	14:g:163:HIS:H	1.47	0.77
1:b:12:TYR:HB2	1:b:43:PRO:HA	1.65	0.76
1:B:17:ILE:HG21	1:B:100:ARG:HG3	1.68	0.76
1:A:412:GLN:HE21	1:A:444:ALA:HB2	1.51	0.75
7:O:328:MET:HB2	7:O:337:ARG:HD2	1.68	0.75
5:L:66:LYS:HG3	5:L:69:GLU:HG3	1.69	0.75
6:n:7:LEU:HD12	14:h:6:ILE:HD11	1.68	0.75
9:q:260:MET:HB3	9:q:264:MET:HE3	1.69	0.75
14:g:6:ILE:HD11	6:m:7:LEU:HD12	1.68	0.75
10:R:159:LEU:HD21	10:R:178:PRO:HB3	1.69	0.74
6:n:20:SEC:SE	22:h:501:NFU:C1	2.85	0.74
5:K:66:LYS:HG3	5:K:69:GLU:HG3	1.67	0.74
10:R:35:SER:HA	10:R:48:VAL:HB	1.70	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:k:63:ALA:HB1	5:k:105:MET:HE2	1.70	0.74
10:r:212:ILE:HD11	10:r:271:LEU:HD21	1.70	0.73
9:q:131:VAL:HG13	9:q:136:TYR:HB2	1.69	0.73
4:J:112:THR:HG21	14:H:393:ASN:ND2	2.04	0.72
5:L:80:GLU:HG3	5:L:102:MET:HE1	1.70	0.72
1:a:593:MET:HE1	5:k:78:LYS:HD2	1.72	0.72
14:h:53:VAL:HG23	14:h:54:PRO:HD3	1.71	0.72
22:g:501:NFU:C1	6:m:20:SEC:SE	2.87	0.72
9:q:412:VAL:HG23	9:q:413:ILE:HG23	1.73	0.71
1:b:592:LEU:HD11	4:j:187:VAL:HG11	1.72	0.71
14:g:53:VAL:HG23	14:g:54:PRO:HD3	1.71	0.71
1:b:412:GLN:HE21	1:b:444:ALA:HB2	1.56	0.70
14:G:53:VAL:HG23	14:G:54:PRO:HD3	1.71	0.70
7:O:261:LEU:HD23	7:O:307:MET:HE1	1.74	0.70
8:P:303:MET:HE1	8:P:448:VAL:HB	1.72	0.70
8:p:306:VAL:HG21	8:p:371:PHE:CZ	2.26	0.70
14:G:202:ILE:HG21	14:G:331:LEU:HD12	1.74	0.70
14:H:53:VAL:HG23	14:H:54:PRO:HD3	1.71	0.70
4:I:71:ILE:HD12	4:I:74:ILE:HD11	1.74	0.68
1:b:116:ARG:HH12	1:b:656:LEU:HB3	1.58	0.68
14:g:202:ILE:HG21	14:g:331:LEU:HD12	1.75	0.68
6:N:27:MET:HE1	14:H:396:VAL:H	1.57	0.68
7:o:23:THR:HG22	7:o:89:GLY:H	1.59	0.68
9:Q:129:LEU:HD21	9:Q:327:PRO:HG2	1.75	0.68
14:g:52:GLU:HG2	4:i:273:ARG:HH22	1.59	0.68
1:A:116:ARG:HH12	1:A:656:LEU:HB3	1.57	0.68
14:H:202:ILE:HG21	14:H:331:LEU:HD12	1.76	0.67
14:h:202:ILE:HG21	14:h:331:LEU:HD12	1.75	0.67
1:b:592:LEU:HD11	4:j:187:VAL:HG21	1.77	0.67
1:B:12:TYR:HB2	1:B:43:PRO:HA	1.76	0.67
4:i:71:ILE:HD12	4:i:74:ILE:HD11	1.76	0.67
4:I:273:ARG:HH22	14:G:52:GLU:HG2	1.58	0.67
5:L:101:GLU:HG3	5:L:123:ARG:HH12	1.59	0.66
2:c:36:MET:HA	2:c:70:MET:HE1	1.77	0.66
1:b:129:ALA:HA	1:b:132:LEU:HD23	1.77	0.66
4:j:273:ARG:HH22	14:h:52:GLU:HG2	1.61	0.66
1:A:147:MET:HE1	1:A:232:VAL:HG21	1.76	0.66
14:h:9:LEU:HB3	14:h:12:LEU:HD21	1.76	0.66
10:R:118:LEU:HB3	10:R:144:MET:HE2	1.78	0.66
1:a:593:MET:HE3	1:a:593:MET:HA	1.75	0.66
7:o:229:CYS:HB2	7:o:231:ALA:H	1.61	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:d:143:LEU:HD22	2:d:291:LEU:HD21	1.77	0.65
9:Q:376:THR:HG22	9:Q:378:SER:H	1.61	0.65
14:h:396:VAL:HG22	22:h:501:NFU:N2	2.12	0.65
4:J:273:ARG:HH22	14:H:52:GLU:HG2	1.60	0.65
7:o:223:VAL:HG23	7:o:225:LEU:HD23	1.79	0.65
5:L:62:VAL:CG2	5:L:102:MET:HG2	2.27	0.64
5:L:80:GLU:HA	5:L:102:MET:SD	2.37	0.64
14:g:396:VAL:HG22	22:g:501:NFU:N2	2.13	0.64
14:G:9:LEU:HB3	14:G:12:LEU:HD21	1.78	0.64
4:I:218:THR:HG21	4:I:235:GLY:HA2	1.79	0.64
4:J:218:THR:HG21	4:J:235:GLY:HA2	1.80	0.64
1:b:403:CYS:HA	1:b:406:PHE:CZ	2.32	0.64
14:g:9:LEU:HB3	14:g:12:LEU:HD21	1.78	0.64
8:p:244:THR:O	8:p:248:MET:HG2	1.97	0.64
9:q:134:VAL:HG21	9:q:273:ASP:OD1	1.96	0.64
14:H:9:LEU:HB3	14:H:12:LEU:HD21	1.79	0.64
14:H:396:VAL:HG22	22:H:501:NFU:N2	2.13	0.64
6:N:20:SEC:SE	22:H:501:NFU:C1	2.95	0.64
8:P:270:THR:HA	8:P:305:ASP:OD1	1.98	0.64
1:B:72:THR:HG22	1:B:98:ASN:HD21	1.63	0.64
4:j:70:LEU:O	4:j:74:ILE:HG12	1.98	0.64
7:O:213:MET:HE2	7:O:225:LEU:HD11	1.80	0.64
6:n:26:HIS:O	6:n:27:MET:HE2	1.97	0.64
1:A:592:LEU:HD11	4:I:187:VAL:CB	2.28	0.64
1:b:650:LEU:HD13	5:l:55:LYS:HB2	1.79	0.64
14:h:66:THR:HB	14:h:67:PRO:HD3	1.80	0.64
1:A:141:ASP:HA	1:A:569:GLN:HG3	1.80	0.63
1:A:592:LEU:HD21	4:I:187:VAL:HG11	1.79	0.63
7:o:312:GLY:HA2	7:o:325:MET:HE3	1.81	0.63
14:G:396:VAL:HG22	22:G:501:NFU:N2	2.14	0.63
14:h:101:MET:HE2	14:h:338:CYS:SG	2.39	0.63
14:H:66:THR:HB	14:H:67:PRO:HD3	1.80	0.63
2:D:11:MET:HE1	2:D:77:VAL:HG21	1.78	0.63
8:P:491:VAL:HB	8:P:499:VAL:HB	1.80	0.63
5:l:62:VAL:HG23	5:l:102:MET:HG3	1.81	0.63
1:A:432:ALA:HB1	1:A:437:TYR:HB3	1.80	0.63
1:B:17:ILE:CG2	1:B:100:ARG:HG3	2.29	0.63
9:Q:412:VAL:HG13	9:Q:413:ILE:HG23	1.80	0.63
14:G:66:THR:HB	14:G:67:PRO:HD3	1.80	0.63
1:b:592:LEU:HD21	4:j:187:VAL:HG11	1.79	0.63
1:b:14:GLY:O	1:b:18:ASN:HB2	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:498:LYS:HE3	16:b:704:FAD:H8A	1.81	0.63
14:g:66:THR:HB	14:g:67:PRO:HD3	1.80	0.63
5:l:63:ALA:HB1	5:l:105:MET:HE2	1.79	0.63
1:A:573:GLU:C	1:A:574:MET:HE2	2.24	0.62
1:b:10:VAL:HB	1:b:41:THR:HG22	1.82	0.62
1:A:257:PRO:HB3	7:O:337:ARG:NH2	2.15	0.62
14:H:101:MET:HE2	14:H:338:CYS:SG	2.39	0.62
6:M:2:VAL:HG21	14:G:4:VAL:HG11	1.82	0.62
8:p:270:THR:HA	8:p:305:ASP:OD1	2.00	0.62
7:O:200:ILE:HG23	12:T:76:MET:HE3	1.82	0.62
13:U:3:LYS:HB2	13:U:77:VAL:O	2.00	0.62
8:P:272:LEU:HD13	8:P:304:ILE:HD13	1.82	0.61
11:S:89:LEU:HD12	11:S:90:PRO:HD2	1.81	0.61
14:g:101:MET:HE2	14:g:338:CYS:SG	2.39	0.61
1:B:226:TYR:HE2	1:B:615:VAL:HG13	1.66	0.61
6:M:24:ALA:HB2	14:G:398:SER:HB3	1.82	0.61
6:N:26:HIS:O	6:N:27:MET:HE2	2.00	0.61
10:R:3:GLU:OE1	10:R:63:LYS:HB3	2.01	0.61
14:g:398:SER:HB3	6:m:24:ALA:HB2	1.82	0.61
11:s:13:GLN:NE2	11:s:17:ILE:HD11	2.15	0.61
14:G:101:MET:HE2	14:G:338:CYS:SG	2.39	0.61
14:G:224:LEU:HD13	14:G:241:PHE:CE1	2.36	0.61
10:R:144:MET:HB3	10:R:163:LEU:HD12	1.82	0.61
8:P:235:LEU:HD22	8:P:323:MET:SD	2.41	0.61
1:a:432:ALA:HB1	1:a:437:TYR:HB3	1.81	0.61
14:g:224:LEU:HD13	14:g:241:PHE:CE1	2.36	0.61
10:r:38:GLU:HB3	10:r:45:THR:HB	1.83	0.61
14:h:224:LEU:HD13	14:h:241:PHE:CE1	2.36	0.60
1:A:257:PRO:HB3	7:O:337:ARG:HH22	1.66	0.60
1:B:227:ILE:HD13	1:B:570:PHE:CE2	2.36	0.60
5:K:77:PHE:O	5:K:81:GLU:HG3	2.02	0.60
12:T:1:MET:HE3	12:T:4:PHE:HB2	1.84	0.60
1:a:81:ARG:HD2	1:a:91:PRO:HB2	1.83	0.60
2:d:11:MET:HB3	2:d:12:PRO:HD3	1.82	0.60
10:r:144:MET:HB3	10:r:163:LEU:HD12	1.83	0.60
14:g:4:VAL:CG2	14:g:20:ILE:HB	2.32	0.60
13:u:66:ILE:HD11	13:u:76:LEU:HD13	1.82	0.60
1:B:182:MET:HE3	1:B:547:ILE:HD13	1.84	0.60
10:R:207:VAL:HG12	10:R:262:TYR:HB2	1.83	0.60
14:g:395:ILE:HG23	6:m:27:MET:HE1	1.84	0.60
1:a:634:LEU:HD22	1:a:637:TYR:HB2	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:592:LEU:HD11	4:j:187:VAL:CG1	2.32	0.60
1:A:498:LYS:HE3	16:A:704:FAD:H8A	1.83	0.60
2:c:77:VAL:HG12	2:c:122:PHE:HB2	1.84	0.60
1:b:129:ALA:HA	1:b:132:LEU:CD2	2.31	0.59
14:g:52:GLU:HG3	4:i:273:ARG:HH12	1.67	0.59
14:H:4:VAL:CG2	14:H:20:ILE:HB	2.32	0.59
1:a:12:TYR:HB2	1:a:43:PRO:HA	1.82	0.59
10:r:234:LYS:HE2	10:r:234:LYS:HA	1.84	0.59
6:M:27:MET:SD	14:G:395:ILE:HG12	2.42	0.59
4:I:273:ARG:HH12	14:G:52:GLU:HG3	1.67	0.59
8:p:180:VAL:HA	8:p:231:HIS:HB3	1.84	0.59
14:G:4:VAL:CG2	14:G:20:ILE:HB	2.32	0.59
10:R:211:LYS:HB2	10:R:267:ASN:HB3	1.84	0.59
5:k:9:PHE:HB2	5:k:62:VAL:HG12	1.84	0.59
9:Q:243:GLU:O	9:Q:247:ILE:HG22	2.03	0.59
14:H:224:LEU:HD13	14:H:241:PHE:CE1	2.37	0.59
4:j:43:ILE:O	14:h:11:ARG:HA	2.03	0.59
4:j:218:THR:HG21	4:j:235:GLY:HA2	1.85	0.59
1:A:42:TYR:CD1	1:A:43:PRO:HD2	2.38	0.59
5:k:46:ILE:HG22	5:k:50:LEU:HD13	1.85	0.59
14:h:4:VAL:CG2	14:h:20:ILE:HB	2.32	0.59
3:E:35:TYR:HE1	3:E:89:ARG:HG3	1.68	0.58
6:M:23:CYS:HB2	14:G:396:VAL:HG21	1.83	0.58
7:o:213:MET:HB3	7:o:225:LEU:HD11	1.85	0.58
7:o:273:PRO:HD2	15:o:402:SF4:S4	2.43	0.58
1:a:592:LEU:HD21	4:i:187:VAL:HG12	1.85	0.58
1:B:45:MET:HE1	1:B:54:ILE:HD11	1.86	0.58
1:a:112:GLU:O	1:a:116:ARG:HG3	2.02	0.58
2:C:266:LEU:HD23	2:C:293:TYR:CE2	2.39	0.58
11:S:13:GLN:NE2	11:S:17:ILE:HD11	2.18	0.58
5:L:77:PHE:O	5:L:81:GLU:HG3	2.03	0.58
12:t:322:PRO:HG2	13:u:22:PRO:HG2	1.84	0.58
4:i:285:ILE:HD11	5:k:95:ILE:HA	1.85	0.58
9:q:14:PHE:CE2	9:q:40:ILE:HG21	2.39	0.58
20:Q:501:MGD:H191	11:S:7:THR:HG21	1.69	0.58
12:T:95:ILE:HB	12:T:101:TYR:CD2	2.39	0.58
13:U:12:HIS:HB2	15:U:102:SF4:S4	2.42	0.58
2:C:266:LEU:HD12	2:C:266:LEU:H	1.67	0.58
6:n:23:CYS:HB2	14:h:396:VAL:HG21	1.85	0.58
1:a:433:PHE:HB2	1:b:401:ARG:HG3	1.85	0.58
4:j:7:VAL:HG21	4:j:36:LEU:HD13	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:p:491:VAL:HB	8:p:499:VAL:HB	1.85	0.58
12:t:62:ALA:HB1	13:u:78:ILE:HG21	1.86	0.57
1:a:650:LEU:HD13	5:k:55:LYS:HB2	1.86	0.57
7:o:189:ILE:HD11	7:o:192:PHE:HB2	1.85	0.57
10:r:196:ARG:HA	10:r:216:LEU:HD21	1.87	0.57
4:I:43:ILE:O	14:G:11:ARG:HA	2.04	0.57
8:p:132:LEU:HD21	8:p:135:ILE:HD11	1.86	0.57
1:A:256:CYS:HB3	1:A:272:LYS:HD2	1.86	0.57
1:B:650:LEU:HD12	5:L:55:LYS:HB2	1.84	0.57
2:D:11:MET:HE1	2:D:77:VAL:CG2	2.34	0.57
5:l:105:MET:HE1	5:l:113:PHE:HD1	1.70	0.57
6:n:27:MET:SD	14:h:395:ILE:HG23	2.45	0.57
7:o:378:LEU:HD22	7:o:381:ILE:HD12	1.85	0.57
9:q:282:MET:HG3	9:q:288:PHE:CE2	2.39	0.57
6:N:23:CYS:HB2	14:H:396:VAL:HG21	1.86	0.57
1:b:73:PRO:O	1:b:77:GLU:HB2	2.05	0.57
2:c:143:LEU:HD22	2:c:291:LEU:HD22	1.85	0.57
4:j:273:ARG:HH12	14:h:52:GLU:HG3	1.69	0.57
14:G:4:VAL:HG23	14:G:20:ILE:HB	1.86	0.57
6:N:24:ALA:HA	14:H:396:VAL:HG11	1.87	0.57
8:P:180:VAL:HA	8:P:231:HIS:HB3	1.85	0.57
10:R:159:LEU:H	10:R:159:LEU:HD23	1.70	0.57
1:A:73:PRO:O	1:A:77:GLU:HB2	2.05	0.57
2:C:170:PRO:HD2	2:C:191:MET:HE3	1.87	0.57
4:I:71:ILE:CD1	4:I:74:ILE:HD11	2.35	0.57
5:k:62:VAL:CG2	5:k:102:MET:HG3	2.24	0.57
1:A:138:LYS:HB3	1:A:574:MET:HE3	1.86	0.57
6:M:27:MET:HG2	14:G:272:LYS:HD2	1.87	0.56
1:a:403:CYS:HA	1:a:406:PHE:CZ	2.40	0.56
14:g:57:VAL:HG23	14:g:58:PRO:HD3	1.87	0.56
1:B:403:CYS:HA	1:B:406:PHE:CZ	2.40	0.56
14:g:4:VAL:HG23	14:g:20:ILE:HB	1.86	0.56
1:B:73:PRO:O	1:B:77:GLU:HB2	2.05	0.56
1:B:432:ALA:HB1	1:B:437:TYR:HB3	1.86	0.56
3:E:126:HIS:NE2	3:E:149:ILE:HD12	2.20	0.56
6:N:24:ALA:HB2	14:H:398:SER:HB3	1.88	0.56
14:H:57:VAL:HG23	14:H:58:PRO:HD3	1.88	0.56
14:G:57:VAL:HG23	14:G:58:PRO:HD3	1.88	0.56
14:H:53:VAL:CG2	14:H:54:PRO:HD3	2.36	0.56
9:Q:215:LEU:O	9:Q:219:LEU:HD23	2.05	0.56
2:c:53:GLN:HG2	3:e:102:ASN:HD21	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:h:57:VAL:HG23	14:h:58:PRO:HD3	1.87	0.56
1:B:482:LEU:HD12	3:F:2:MET:HG3	1.88	0.56
1:b:592:LEU:HD11	4:j:187:VAL:CG2	2.36	0.56
6:M:14:LEU:HD21	14:G:409:ILE:HG21	1.86	0.56
1:a:73:PRO:O	1:a:77:GLU:HB2	2.06	0.56
1:b:180:GLY:HA2	16:b:704:FAD:H3B	1.87	0.56
2:c:276:ALA:HB2	3:e:141:ILE:HD11	1.87	0.56
8:p:104:TYR:CE2	8:p:112:VAL:HG21	2.41	0.56
14:h:4:VAL:HG23	14:h:20:ILE:HB	1.86	0.55
1:b:593:MET:CE	5:l:78:LYS:HD2	2.36	0.55
7:o:171:PRO:HB2	7:o:230:PRO:HG2	1.88	0.55
12:t:149:ILE:HD11	12:t:189:ILE:HD11	1.89	0.55
9:Q:371:ILE:HG22	9:Q:388:PRO:HG3	1.89	0.55
14:H:4:VAL:HG23	14:H:20:ILE:HB	1.87	0.55
2:c:83:GLY:O	2:c:87:GLU:HG2	2.07	0.55
8:p:324:GLU:HG3	8:p:347:GLY:HA3	1.88	0.55
5:L:80:GLU:HA	5:L:102:MET:HE1	1.87	0.55
2:C:104:GLU:O	2:C:107:LYS:HG3	2.07	0.55
8:P:324:GLU:HG3	8:P:347:GLY:HA3	1.89	0.55
14:G:53:VAL:CG2	14:G:54:PRO:HD3	2.36	0.55
4:i:22:LEU:HB2	4:i:84:TRP:HH2	1.71	0.55
6:M:27:MET:HE1	14:G:395:ILE:HG12	1.88	0.55
1:b:432:ALA:HB1	1:b:437:TYR:HB3	1.88	0.55
2:c:78:CYS:SG	2:c:232:PRO:HD2	2.47	0.55
2:d:61:ALA:O	2:d:65:VAL:HG23	2.07	0.55
2:d:276:ALA:HB2	3:f:141:ILE:HD11	1.89	0.55
14:g:53:VAL:CG2	14:g:54:PRO:HD3	2.36	0.55
2:D:83:GLY:O	2:D:87:GLU:HG2	2.06	0.55
6:N:2:VAL:HG21	14:H:4:VAL:HG11	1.88	0.55
2:C:126:ILE:CG2	2:C:135:ILE:HD11	2.37	0.54
8:p:303:MET:SD	8:p:448:VAL:HG11	2.48	0.54
1:B:634:LEU:HD22	1:B:637:TYR:HB2	1.90	0.54
2:C:122:PHE:CE1	2:C:126:ILE:HD11	2.43	0.54
14:h:53:VAL:CG2	14:h:54:PRO:HD3	2.36	0.54
1:B:118:ALA:O	1:B:122:ILE:HG12	2.07	0.54
2:C:43:PRO:HG3	2:C:59:LEU:HB2	1.89	0.54
5:K:9:PHE:HB2	5:K:62:VAL:HG12	1.88	0.54
13:U:1:MET:HA	13:U:1:MET:HE2	1.89	0.54
1:a:151:ALA:HB3	1:a:173:ASP:OD2	2.07	0.54
4:J:273:ARG:HH12	14:H:52:GLU:HG3	1.72	0.54
1:a:588:LYS:HA	1:a:601:TYR:CZ	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:j:139:VAL:HG12	4:j:140:VAL:HG13	1.90	0.54
8:p:356:LYS:HE3	8:p:356:LYS:HA	1.89	0.54
6:M:24:ALA:HA	14:G:396:VAL:HG11	1.89	0.54
3:f:126:HIS:CD2	3:f:149:ILE:HD12	2.43	0.54
7:o:192:PHE:HD1	7:o:246:LEU:HD13	1.73	0.54
1:a:116:ARG:HH12	1:a:656:LEU:HG	1.73	0.54
13:u:9:GLU:HG2	13:u:10:LYS:HG3	1.89	0.54
7:O:287:ASN:HB2	7:O:288:PRO:HD2	1.90	0.54
8:P:104:TYR:CE2	8:P:112:VAL:HG21	2.42	0.54
8:p:376:PRO:HG3	8:p:430:ARG:HH22	1.72	0.54
14:h:213:VAL:HA	14:h:324:LEU:HD12	1.90	0.54
1:B:583:VAL:HG21	4:J:242:GLU:HG3	1.89	0.54
3:e:35:TYR:HE1	3:e:89:ARG:HG3	1.72	0.54
14:g:213:VAL:HA	14:g:324:LEU:HD12	1.90	0.54
10:r:174:THR:OG1	10:r:193:ILE:HG22	2.08	0.54
9:Q:134:VAL:HG21	9:Q:273:ASP:OD1	2.07	0.54
1:b:573:GLU:C	1:b:574:MET:HE2	2.33	0.54
1:b:579:VAL:HG22	1:b:632:MET:SD	2.48	0.54
4:I:139:VAL:HG12	4:I:140:VAL:HG13	1.90	0.53
2:c:61:ALA:O	2:c:65:VAL:HG23	2.07	0.53
4:j:194:ARG:HE	4:j:196:PHE:HE1	1.56	0.53
1:A:138:LYS:HD3	1:A:572:ILE:HD11	1.90	0.53
8:P:132:LEU:HD21	8:P:135:ILE:HD11	1.90	0.53
1:a:77:GLU:HB3	1:a:78:PRO:HD3	1.90	0.53
14:H:213:VAL:HA	14:H:324:LEU:HD12	1.91	0.53
14:H:287:ARG:CG	14:H:404:THR:HG21	2.38	0.53
1:B:495:LEU:HD12	1:B:544:PRO:HB3	1.91	0.53
4:J:112:THR:HG22	4:J:113:VAL:N	2.23	0.53
20:Q:501:MGD:H15	11:S:9:ARG:HH22	1.56	0.53
6:n:24:ALA:HB2	14:h:398:SER:HB3	1.89	0.53
4:I:22:LEU:HB2	4:I:84:TRP:HH2	1.73	0.53
4:I:150:PRO:HG3	14:G:162:ILE:HD12	1.90	0.53
2:d:83:GLY:O	2:d:87:GLU:HG2	2.09	0.53
4:i:7:VAL:HG21	4:i:36:LEU:HD13	1.89	0.53
1:A:84:LEU:HD22	1:A:89:ILE:HD11	1.91	0.53
1:A:623:CYS:HB3	15:A:703:SF4:S4	2.48	0.53
8:P:244:THR:O	8:P:248:MET:HG3	2.08	0.53
14:g:396:VAL:HG21	6:m:23:CYS:HB2	1.91	0.53
10:r:201:MET:HE2	10:r:259:GLY:HA3	1.90	0.53
1:A:587:CYS:O	4:I:184:LYS:HE2	2.09	0.53
14:H:153:ILE:HD13	14:H:184:LEU:HD13	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:401:ARG:HG3	1:B:433:PHE:HB2	1.90	0.53
4:J:112:THR:HG22	4:J:113:VAL:H	1.74	0.53
1:b:138:LYS:HB3	1:b:572:ILE:HG13	1.90	0.53
14:G:213:VAL:HA	14:G:324:LEU:HD12	1.91	0.53
2:D:77:VAL:HG12	2:D:122:PHE:CD1	2.44	0.53
7:O:85:PRO:HD3	1:b:294:ILE:HG21	1.91	0.53
1:a:403:CYS:HA	1:a:406:PHE:CE2	2.43	0.53
14:g:6:ILE:CD1	6:m:7:LEU:HD12	2.37	0.53
14:g:153:ILE:HD13	14:g:184:LEU:HD13	1.91	0.53
14:G:153:ILE:HD13	14:G:184:LEU:HD13	1.91	0.53
1:A:226:TYR:HE2	1:A:615:VAL:HG13	1.74	0.52
1:A:294:ILE:HD12	7:O:280:THR:HG22	1.90	0.52
1:b:575:ILE:HG13	1:b:575:ILE:O	2.10	0.52
10:r:170:ILE:CG2	10:r:189:ILE:HA	2.39	0.52
3:E:35:TYR:CE1	3:E:89:ARG:HG3	2.44	0.52
1:b:482:LEU:HD23	3:e:2:MET:HG3	1.92	0.52
3:f:19:GLY:HA3	3:f:28:VAL:HG21	1.90	0.52
6:n:7:LEU:HD12	14:h:6:ILE:CD1	2.38	0.52
14:H:287:ARG:HG2	14:H:404:THR:HG21	1.92	0.52
3:E:155:LYS:O	3:E:159:GLU:HG3	2.09	0.52
7:O:206:VAL:HG21	7:O:216:TYR:HB2	1.91	0.52
9:q:23:GLU:HB3	9:q:35:ARG:HB2	1.90	0.52
10:r:35:SER:HA	10:r:48:VAL:HB	1.90	0.52
1:b:112:GLU:O	1:b:116:ARG:HG3	2.08	0.52
4:i:239:LYS:HB3	4:i:246:GLN:HG3	1.92	0.52
20:q:501:MGD:H15	11:s:9:ARG:HH22	1.56	0.52
2:C:24:THR:HB	2:C:270:MET:HE1	1.90	0.52
4:i:139:VAL:HG12	4:i:140:VAL:HG13	1.91	0.52
1:A:112:GLU:O	1:A:116:ARG:HG3	2.10	0.52
7:O:224:LYS:C	7:O:225:LEU:HD22	2.35	0.52
7:o:4:ILE:HD11	7:o:106:ILE:HG23	1.92	0.52
1:B:572:ILE:HG23	1:B:574:MET:HE3	1.92	0.52
1:B:588:LYS:HA	1:B:601:TYR:CZ	2.45	0.52
1:b:532:VAL:HG21	1:b:535:ILE:HD12	1.91	0.52
1:b:573:GLU:O	1:b:574:MET:HE2	2.10	0.52
1:A:147:MET:CE	1:A:232:VAL:HG21	2.40	0.52
6:N:27:MET:SD	14:H:395:ILE:HG23	2.50	0.52
8:p:410:TRP:O	8:p:415:VAL:HG22	2.10	0.52
1:B:587:CYS:O	4:J:184:LYS:HE2	2.09	0.52
1:B:592:LEU:HD21	4:J:187:VAL:HG12	1.91	0.52
4:I:68:GLU:O	4:I:71:ILE:HG22	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:M:20:SEC:SE	22:G:501:NFU:C1	3.08	0.52
1:a:136:PRO:O	1:a:574:MET:HB2	2.09	0.52
1:b:236:LYS:HE3	1:b:317:LEU:CD1	2.40	0.52
2:D:29:LEU:HD12	2:D:130:ILE:HG21	1.91	0.51
2:D:143:LEU:HD22	2:D:291:LEU:HD21	1.92	0.51
5:K:98:GLU:HG3	5:K:123:ARG:HD3	1.92	0.51
12:T:95:ILE:HB	12:T:101:TYR:CE2	2.45	0.51
8:P:468:ILE:HB	8:P:490:TYR:HB2	1.92	0.51
4:i:194:ARG:HE	4:i:196:PHE:HE1	1.57	0.51
14:H:22:LEU:HD23	14:H:28:PRO:HA	1.92	0.51
1:A:13:CYS:HB2	1:A:17:ILE:HG13	1.91	0.51
1:b:11:CYS:SG	1:b:45:MET:HB2	2.49	0.51
12:t:124:VAL:HB	12:t:247:TRP:CE3	2.45	0.51
14:G:287:ARG:CG	14:G:404:THR:HG21	2.40	0.51
3:E:126:HIS:CD2	3:E:149:ILE:HD12	2.46	0.51
2:c:230:VAL:HG12	2:c:230:VAL:O	2.11	0.51
7:o:231:ALA:HA	7:o:246:LEU:HD21	1.93	0.51
14:G:22:LEU:HD23	14:G:28:PRO:HA	1.93	0.51
14:h:287:ARG:CG	14:h:404:THR:HG21	2.40	0.51
5:L:101:GLU:HG3	5:L:123:ARG:NH1	2.23	0.51
1:b:77:GLU:HB3	1:b:78:PRO:HD3	1.92	0.51
14:g:11:ARG:HA	4:i:43:ILE:O	2.09	0.51
14:h:153:ILE:HD13	14:h:184:LEU:HD13	1.92	0.51
1:B:81:ARG:HG2	1:B:91:PRO:HB2	1.91	0.51
7:O:288:PRO:HA	7:O:302:ALA:HB1	1.93	0.51
7:O:320:THR:HG21	7:O:344:LEU:O	2.10	0.51
1:a:593:MET:CE	5:k:78:LYS:HD2	2.41	0.51
1:b:412:GLN:NE2	1:b:444:ALA:HB2	2.25	0.51
9:q:167:SER:HB2	13:u:16:ASN:OD1	2.11	0.51
10:r:151:ILE:HB	10:r:170:ILE:HD12	1.93	0.51
13:u:66:ILE:HD11	13:u:76:LEU:CD1	2.41	0.51
7:O:328:MET:HB2	7:O:337:ARG:CD	2.38	0.51
8:P:376:PRO:HG3	8:P:430:ARG:HH22	1.76	0.51
1:b:574:MET:HE2	1:b:574:MET:HA	1.92	0.51
1:b:593:MET:HE1	5:l:78:LYS:HD2	1.93	0.51
9:q:210:HIS:HB3	9:q:266:ARG:HB3	1.93	0.51
8:P:269:ASN:HB3	8:P:304:ILE:HG22	1.92	0.51
8:P:376:PRO:HG3	8:P:430:ARG:NH2	2.25	0.51
9:Q:23:GLU:HB3	9:Q:35:ARG:HB2	1.93	0.51
14:g:287:ARG:HG2	14:g:404:THR:HG21	1.93	0.51
1:A:532:VAL:HG21	1:A:535:ILE:HD12	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:22:LEU:HB2	4:J:84:TRP:HH2	1.76	0.50
9:Q:98:GLU:HG3	9:Q:397:GLY:HA3	1.93	0.50
10:R:38:GLU:HB3	10:R:45:THR:HB	1.93	0.50
11:S:93:GLU:O	11:S:93:GLU:HG2	2.11	0.50
6:n:23:CYS:O	14:h:396:VAL:HG11	2.11	0.50
8:p:297:ASN:OD1	8:p:375:ASN:HB2	2.11	0.50
9:q:371:ILE:HG22	9:q:388:PRO:HG3	1.93	0.50
1:B:412:GLN:HE21	1:B:444:ALA:HB2	1.77	0.50
1:a:473:VAL:HG22	1:a:474:GLU:H	1.75	0.50
14:g:202:ILE:CG2	14:g:331:LEU:HD12	2.41	0.50
14:g:287:ARG:CG	14:g:404:THR:HG21	2.41	0.50
8:P:48:ILE:HD11	8:P:473:PRO:HG3	1.92	0.50
9:Q:180:ARG:NH1	12:T:303:ASN:HA	2.27	0.50
7:o:168:GLN:HG2	7:o:183:GLN:O	2.11	0.50
14:h:377:LEU:HD21	14:h:379:HIS:CD2	2.46	0.50
4:I:194:ARG:HE	4:I:196:PHE:HE1	1.60	0.50
4:J:43:ILE:O	14:H:11:ARG:HA	2.12	0.50
6:M:11:GLU:CG	6:M:15:ARG:HH21	2.25	0.50
6:M:14:LEU:CD2	14:G:409:ILE:HG21	2.41	0.50
1:A:182:MET:HE3	1:A:547:ILE:HD13	1.94	0.50
2:C:230:VAL:HG12	2:C:230:VAL:O	2.11	0.50
3:F:183:LYS:O	3:F:184:GLN:HG3	2.12	0.50
4:I:226:CYS:HB2	4:I:227:PRO:HD3	1.93	0.50
1:A:180:GLY:HA2	16:A:704:FAD:H3B	1.94	0.50
1:B:77:GLU:HB3	1:B:78:PRO:HD3	1.93	0.50
1:B:592:LEU:HD11	4:J:187:VAL:HG11	1.94	0.50
14:g:22:LEU:HD23	14:g:28:PRO:HA	1.93	0.50
6:n:10:ILE:O	6:n:14:LEU:HD23	2.12	0.50
14:G:377:LEU:HD21	14:G:379:HIS:CD2	2.47	0.50
1:B:46:CYS:HB3	15:B:705:SF4:S3	2.51	0.50
4:J:19:HIS:O	4:J:23:LEU:HD23	2.12	0.50
1:b:303:CYS:HA	15:b:707:SF4:S4	2.52	0.50
14:G:202:ILE:CG2	14:G:331:LEU:HD12	2.40	0.50
14:h:202:ILE:CG2	14:h:331:LEU:HD12	2.41	0.50
1:B:151:ALA:HB3	1:B:173:ASP:OD2	2.12	0.50
6:M:11:GLU:HG3	14:G:9:LEU:HD12	1.94	0.50
9:Q:264:MET:HE2	11:S:100:PHE:CD2	2.47	0.50
12:T:5:LYS:HB2	12:T:16:SER:OG	2.12	0.50
12:T:17:ARG:O	12:T:22:LYS:HA	2.12	0.50
7:o:4:ILE:HD11	7:o:106:ILE:CG2	2.41	0.50
9:q:176:PHE:O	9:q:177:PHE:HB2	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:217:PHE:CE2	1:A:237:LYS:HB2	2.47	0.49
1:b:138:LYS:HD3	1:b:572:ILE:HD11	1.93	0.49
14:g:271:VAL:HG12	6:m:25:ALA:HA	1.93	0.49
4:i:226:CYS:HB2	4:i:227:PRO:HD3	1.94	0.49
14:h:22:LEU:HD23	14:h:28:PRO:HA	1.94	0.49
2:C:201:ARG:HD2	2:C:237:GLN:OE1	2.12	0.49
1:a:12:TYR:HD2	1:a:43:PRO:HA	1.78	0.49
4:j:226:CYS:HB2	4:j:227:PRO:HD3	1.94	0.49
14:G:287:ARG:HG2	14:G:404:THR:HG21	1.94	0.49
4:J:139:VAL:HG12	4:J:140:VAL:HG13	1.92	0.49
4:J:150:PRO:HG3	14:H:162:ILE:HD12	1.94	0.49
1:a:67:VAL:HG22	1:a:95:GLU:HB3	1.94	0.49
7:o:16:ALA:HB2	7:o:228:ALA:HA	1.95	0.49
14:H:377:LEU:HD21	14:H:379:HIS:CD2	2.48	0.49
14:h:287:ARG:HG2	14:h:404:THR:HG21	1.94	0.49
8:P:114:GLU:HB3	8:P:139:ALA:HA	1.93	0.49
9:q:353:ALA:HB2	9:q:377:PRO:HG2	1.93	0.49
11:S:5:LEU:HD11	11:S:78:ILE:HD12	1.95	0.49
1:b:13:CYS:HB3	1:b:16:ASN:HB2	1.94	0.49
1:A:575:ILE:HG13	1:A:575:ILE:O	2.11	0.49
3:E:155:LYS:HE2	3:E:159:GLU:OE2	2.13	0.49
7:O:6:ILE:HG12	7:O:106:ILE:HG12	1.94	0.49
1:a:539:GLY:HA2	1:a:550:THR:OG1	2.13	0.49
14:g:129:ILE:HD12	14:g:132:VAL:CG1	2.43	0.49
4:I:19:HIS:O	4:I:23:LEU:HD23	2.12	0.49
4:I:214:MET:HE1	4:I:271:LEU:HD23	1.94	0.49
1:b:583:VAL:HG21	4:j:242:GLU:HG3	1.95	0.49
14:g:396:VAL:HG11	6:m:24:ALA:HA	1.95	0.49
10:r:170:ILE:O	10:r:190:GLU:HG2	2.13	0.49
1:a:587:CYS:O	4:i:184:LYS:HE2	2.12	0.49
14:H:129:ILE:HD12	14:H:132:VAL:CG1	2.43	0.49
4:j:22:LEU:HB2	4:j:84:TRP:HH2	1.78	0.49
14:h:57:VAL:CG2	14:h:58:PRO:HD3	2.43	0.49
1:A:116:ARG:HH22	1:A:656:LEU:HB3	1.77	0.48
2:c:126:ILE:CG2	2:c:135:ILE:HD11	2.42	0.48
3:f:126:HIS:NE2	3:f:149:ILE:HD12	2.27	0.48
6:n:24:ALA:HA	14:h:396:VAL:HG11	1.94	0.48
9:Q:122:VAL:HA	11:S:97:MET:SD	2.52	0.48
10:R:125:ILE:HG22	10:R:127:GLY:H	1.78	0.48
12:T:176:MET:HE1	12:T:183:PRO:HA	1.94	0.48
14:h:20:ILE:HG23	14:h:31:VAL:HG22	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:164:LEU:O	4:I:164:LEU:HD23	2.14	0.48
4:J:194:ARG:HE	4:J:196:PHE:HE1	1.60	0.48
4:J:226:CYS:HB2	4:J:227:PRO:HD3	1.95	0.48
8:P:341:GLU:OE1	9:Q:142:GLY:HA3	2.14	0.48
9:Q:176:PHE:O	9:Q:177:PHE:HB2	2.13	0.48
12:T:3:ASN:HB3	12:T:5:LYS:NZ	2.28	0.48
14:h:377:LEU:HD21	14:h:379:HIS:HD2	1.78	0.48
1:A:77:GLU:HB3	1:A:78:PRO:HD3	1.94	0.48
3:f:115:LYS:HG2	3:f:173:ILE:HD11	1.95	0.48
14:G:57:VAL:CG2	14:G:58:PRO:HD3	2.44	0.48
14:g:57:VAL:CG2	14:g:58:PRO:HD3	2.43	0.48
14:g:417:PHE:CE1	6:m:6:LYS:HD3	2.49	0.48
5:l:60:VAL:O	5:l:100:LEU:HD12	2.13	0.48
7:o:224:LYS:C	7:o:225:LEU:HD22	2.39	0.48
1:b:116:ARG:O	1:b:120:GLU:HG2	2.14	0.48
4:i:22:LEU:HB2	4:i:84:TRP:CH2	2.48	0.48
2:C:24:THR:HG21	2:C:270:MET:HE2	1.95	0.48
10:R:3:GLU:OE2	10:R:63:LYS:HD2	2.13	0.48
1:a:592:LEU:HD11	4:i:187:VAL:HG11	1.95	0.48
2:d:242:GLN:HE22	2:d:255:PHE:HB3	1.79	0.48
14:g:162:ILE:HD12	4:i:150:PRO:HG3	1.96	0.48
4:i:68:GLU:O	4:i:71:ILE:HG22	2.13	0.48
4:j:66:HIS:O	4:j:70:LEU:HD23	2.14	0.48
8:p:84:GLU:OE1	8:p:84:GLU:HA	2.13	0.48
6:M:24:ALA:HB2	14:G:398:SER:CB	2.43	0.48
1:b:11:CYS:HB2	1:b:45:MET:HG3	1.95	0.48
1:b:599:ILE:HD11	15:b:703:SF4:S1	2.53	0.48
14:H:202:ILE:CG2	14:H:331:LEU:HD12	2.42	0.48
1:A:139:VAL:O	1:A:139:VAL:HG23	2.14	0.48
1:B:403:CYS:HA	1:B:406:PHE:CE2	2.49	0.48
11:S:123:ARG:NH1	11:S:123:ARG:HB3	2.28	0.48
12:T:38:CYS:HA	12:T:41:ILE:HG22	1.96	0.48
2:d:24:THR:HB	2:d:270:MET:CE	2.44	0.48
14:g:396:VAL:HG11	6:m:23:CYS:O	2.14	0.48
1:a:401:ARG:HG3	1:b:433:PHE:HB2	1.96	0.47
1:b:352:THR:O	1:b:355:VAL:HG12	2.13	0.47
7:o:27:GLU:HB2	7:o:32:LYS:HB3	1.95	0.47
7:O:273:PRO:HD2	15:O:412:SF4:S1	2.54	0.47
1:a:352:THR:O	1:a:355:VAL:HG12	2.14	0.47
14:G:377:LEU:HD21	14:G:379:HIS:HD2	1.80	0.47
14:H:57:VAL:CG2	14:H:58:PRO:HD3	2.44	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:h:129:ILE:HD12	14:h:132:VAL:CG1	2.44	0.47
2:C:96:LYS:HE3	2:C:96:LYS:HA	1.96	0.47
10:R:193:ILE:O	10:R:213:LEU:HD23	2.14	0.47
11:S:52:LYS:NZ	11:S:54:ILE:HD11	2.29	0.47
7:O:213:MET:HE2	7:O:225:LEU:CD1	2.44	0.47
1:a:118:ALA:O	1:a:122:ILE:HG12	2.15	0.47
2:d:77:VAL:HG12	2:d:122:PHE:CD1	2.49	0.47
14:g:377:LEU:HD21	14:g:379:HIS:CD2	2.49	0.47
4:j:188:PHE:HD1	4:j:189:PRO:HD2	1.78	0.47
7:o:289:LYS:HA	7:o:289:LYS:HD3	1.67	0.47
1:B:239:ARG:NH1	1:B:285:LEU:HD12	2.29	0.47
4:J:218:THR:HG22	4:J:246:GLN:NE2	2.29	0.47
5:K:8:ALA:HB2	5:K:61:PHE:CE1	2.50	0.47
12:T:291:PHE:HE1	12:T:304:VAL:HG22	1.79	0.47
9:q:7:PHE:HB2	9:q:24:VAL:CG1	2.44	0.47
2:D:78:CYS:SG	2:D:232:PRO:HD2	2.55	0.47
5:L:88:GLN:O	5:L:92:GLU:HG3	2.15	0.47
6:N:23:CYS:O	14:H:396:VAL:HG11	2.15	0.47
1:a:268:LEU:HB2	1:a:364:PRO:HG3	1.96	0.47
2:c:24:THR:O	2:c:27:GLU:HG3	2.15	0.47
1:B:64:ASP:HB3	1:B:65:ARG:HH11	1.80	0.47
4:J:238:GLY:C	4:J:246:GLN:HE21	2.23	0.47
5:L:80:GLU:HA	5:L:102:MET:CE	2.44	0.47
5:L:120:MET:HE3	5:L:120:MET:HB3	1.82	0.47
6:M:25:ALA:HA	14:G:271:VAL:HG12	1.97	0.47
2:d:29:LEU:HD12	2:d:130:ILE:HG21	1.97	0.47
4:i:71:ILE:CD1	4:i:74:ILE:HD11	2.43	0.47
7:o:291:LEU:HD12	7:o:297:LYS:O	2.14	0.47
8:p:230:VAL:HG21	8:p:267:TYR:CE1	2.50	0.47
13:u:12:HIS:HB2	15:u:102:SF4:S4	2.54	0.47
2:C:24:THR:O	2:C:27:GLU:HG3	2.15	0.47
3:F:128:VAL:HG23	3:F:128:VAL:O	2.15	0.47
10:R:246:ILE:HD11	10:R:265:ILE:HG13	1.96	0.47
8:p:118:PRO:HB2	8:p:121:VAL:HG22	1.97	0.47
12:t:280:CYS:HB3	15:t:402:SF4:S2	2.55	0.47
9:Q:264:MET:HE2	11:S:100:PHE:HD2	1.79	0.47
1:a:276:VAL:CG2	1:a:277:PRO:HD2	2.45	0.47
4:j:150:PRO:HG3	14:h:162:ILE:HD12	1.96	0.47
10:r:130:GLU:O	10:r:156:GLY:HA3	2.14	0.47
14:H:185:LEU:HD23	14:H:185:LEU:O	2.15	0.47
14:h:185:LEU:HD23	14:h:185:LEU:O	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:42:CYS:N	2:D:43:PRO:HA	2.30	0.47
7:O:4:ILE:HG23	7:O:106:ILE:HG23	1.97	0.47
9:Q:7:PHE:HB2	9:Q:24:VAL:HG13	1.97	0.47
11:S:36:ASN:OD1	11:S:37:PRO:HD2	2.15	0.47
9:q:260:MET:CB	9:q:264:MET:HE3	2.40	0.47
14:G:106:LEU:O	14:G:110:TYR:HB2	2.15	0.47
14:H:20:ILE:HG23	14:H:31:VAL:HG22	1.97	0.47
4:I:214:MET:HG3	4:I:214:MET:O	2.15	0.46
7:O:214:ILE:HD12	7:O:223:VAL:HG22	1.97	0.46
1:b:236:LYS:HE3	1:b:317:LEU:HD11	1.97	0.46
6:m:5:ALA:O	6:m:9:LEU:HD23	2.15	0.46
12:t:95:ILE:HB	12:t:101:TYR:CD2	2.50	0.46
1:A:480:GLU:HG3	3:E:2:MET:HE3	1.97	0.46
3:F:155:LYS:HE2	3:F:159:GLU:OE2	2.15	0.46
2:d:78:CYS:SG	2:d:232:PRO:HD2	2.55	0.46
9:q:90:LEU:HD12	9:q:115:ILE:O	2.15	0.46
14:G:20:ILE:HG23	14:G:31:VAL:HG22	1.97	0.46
14:G:185:LEU:HD23	14:G:185:LEU:O	2.15	0.46
1:A:588:LYS:HA	1:A:601:TYR:CZ	2.51	0.46
1:B:415:LYS:HD2	1:B:448:PHE:HB3	1.96	0.46
4:I:10:ILE:HB	4:I:56:PHE:HZ	1.81	0.46
8:P:230:VAL:O	8:P:270:THR:HG22	2.15	0.46
4:i:276:LEU:HB3	4:i:277:PRO:HD3	1.98	0.46
4:j:165:GLU:OE1	4:j:165:GLU:HA	2.16	0.46
7:o:192:PHE:CD1	7:o:246:LEU:HD13	2.50	0.46
1:A:6:VAL:HG22	1:A:65:ARG:HB2	1.96	0.46
1:A:294:ILE:O	1:A:294:ILE:HG13	2.15	0.46
1:A:433:PHE:HB2	1:B:401:ARG:HG3	1.98	0.46
1:B:227:ILE:HD13	1:B:570:PHE:CD2	2.50	0.46
9:Q:18:LEU:HD13	9:Q:297:TYR:HB2	1.97	0.46
9:Q:359:ALA:O	9:Q:363:MET:HG3	2.16	0.46
10:R:171:LYS:HD2	10:R:190:GLU:HG3	1.98	0.46
12:T:3:ASN:O	12:T:17:ARG:HA	2.16	0.46
1:a:11:CYS:HB2	1:a:45:MET:HG3	1.97	0.46
1:b:252:CYS:HB3	1:b:274:ILE:HD13	1.97	0.46
5:k:8:ALA:HB2	5:k:61:PHE:CE1	2.50	0.46
13:u:71:VAL:HG12	13:u:71:VAL:O	2.15	0.46
1:A:650:LEU:CD1	5:K:55:LYS:HB2	2.46	0.46
1:a:495:LEU:HD12	1:a:544:PRO:HB3	1.98	0.46
7:o:342:PRO:HG3	7:o:368:MET:HE1	1.98	0.46
9:q:271:ILE:HD12	9:q:271:ILE:H	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:r:125:ILE:HG22	10:r:127:GLY:H	1.81	0.46
12:t:27:TRP:NE1	12:t:65:LEU:HD21	2.30	0.46
14:G:129:ILE:HD12	14:G:132:VAL:CG1	2.46	0.46
14:h:370:ILE:HG12	14:h:371:TYR:H	1.80	0.46
1:b:588:LYS:HA	1:b:601:TYR:CZ	2.51	0.46
3:f:128:VAL:HG23	3:f:128:VAL:O	2.16	0.46
9:q:226:PHE:HE2	10:r:252:TYR:HB3	1.80	0.46
9:q:359:ALA:O	9:q:363:MET:HG3	2.16	0.46
12:t:124:VAL:HB	12:t:247:TRP:HE3	1.80	0.46
3:E:116:MET:HE3	3:E:116:MET:HA	1.96	0.46
6:M:24:ALA:HA	14:G:396:VAL:CG1	2.46	0.46
1:a:223:ILE:HG12	1:a:232:VAL:HG12	1.96	0.46
14:g:398:SER:CB	6:m:24:ALA:HB2	2.44	0.46
14:h:100:MET:HE2	14:h:373:PRO:HG3	1.97	0.46
1:A:325:ILE:HD11	1:A:561:VAL:HG21	1.97	0.46
1:A:474:GLU:OE1	3:F:41:THR:HB	2.16	0.46
10:R:47:LYS:HB2	10:R:50:GLU:HG2	1.98	0.46
3:e:31:LEU:HB3	3:e:96:ILE:HD13	1.98	0.46
14:g:106:LEU:O	14:g:110:TYR:HB2	2.15	0.46
8:p:293:ALA:HB1	8:p:373:TYR:O	2.16	0.46
1:B:473:VAL:HG22	1:B:474:GLU:H	1.81	0.46
3:F:31:LEU:HB3	3:F:96:ILE:HD13	1.98	0.46
4:J:165:GLU:OE1	4:J:165:GLU:HA	2.16	0.46
8:P:365:ALA:CB	8:P:425:ILE:HD11	2.46	0.46
9:Q:14:PHE:CE2	9:Q:40:ILE:HG21	2.51	0.46
13:U:1:MET:HE2	13:U:1:MET:CA	2.46	0.46
6:n:2:VAL:HG21	14:h:4:VAL:HG11	1.98	0.46
8:p:382:THR:HG22	8:p:384:ASP:H	1.81	0.46
14:h:363:ALA:HB2	14:h:384:ASP:C	2.41	0.46
4:I:10:ILE:HB	4:I:56:PHE:CZ	2.51	0.46
7:O:23:THR:O	7:O:88:LYS:HB3	2.15	0.46
9:Q:11:VAL:HG21	9:Q:409:LEU:HG	1.98	0.46
3:f:31:LEU:HB3	3:f:96:ILE:CD1	2.46	0.46
3:f:115:LYS:HA	3:f:173:ILE:HD11	1.98	0.46
10:r:268:ASN:HB3	10:r:271:LEU:HD13	1.97	0.46
3:E:19:GLY:HA3	3:E:28:VAL:HG21	1.98	0.45
12:T:21:GLU:OE1	12:T:90:ILE:HD11	2.15	0.45
1:b:73:PRO:HB3	1:b:96:PHE:CD2	2.50	0.45
2:d:29:LEU:HD21	2:d:268:MET:HE1	1.97	0.45
9:q:226:PHE:CE2	10:r:252:TYR:HB3	2.51	0.45
14:h:106:LEU:O	14:h:110:TYR:HB2	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:207:LEU:HG	2:C:211:MET:HE3	1.98	0.45
4:I:22:LEU:HB2	4:I:84:TRP:CH2	2.51	0.45
4:I:276:LEU:HB3	4:I:277:PRO:HD3	1.98	0.45
10:R:159:LEU:CD2	10:R:178:PRO:HB3	2.44	0.45
14:g:20:ILE:HG23	14:g:31:VAL:HG22	1.97	0.45
14:g:370:ILE:HG12	14:g:371:TYR:H	1.80	0.45
14:G:370:ILE:HG12	14:G:371:TYR:H	1.80	0.45
14:H:370:ILE:HG12	14:H:371:TYR:H	1.81	0.45
1:A:227:ILE:HG21	1:A:570:PHE:CD2	2.52	0.45
9:Q:7:PHE:HB2	9:Q:24:VAL:CG1	2.46	0.45
12:T:98:MET:HE2	12:T:98:MET:HB3	1.91	0.45
2:d:143:LEU:HB3	2:d:291:LEU:HD11	1.98	0.45
3:e:35:TYR:CE1	3:e:89:ARG:HG3	2.50	0.45
14:g:100:MET:HE2	14:g:373:PRO:HG3	1.98	0.45
14:g:363:ALA:HB2	14:g:384:ASP:C	2.41	0.45
9:q:11:VAL:HG21	9:q:409:LEU:HD23	1.98	0.45
9:q:174:ARG:HH22	13:u:25:ALA:HB2	1.82	0.45
10:r:177:MET:HA	10:r:196:ARG:O	2.15	0.45
8:P:232:PRO:HD2	8:P:275:HIS:NE2	2.31	0.45
1:b:650:LEU:CD1	5:l:55:LYS:HB2	2.43	0.45
2:c:273:LYS:HE2	2:c:273:LYS:HB2	1.84	0.45
6:n:11:GLU:O	6:n:15:ARG:HD2	2.16	0.45
3:E:116:MET:O	3:E:119:VAL:HG12	2.16	0.45
3:f:131:ASN:OD1	3:f:134:THR:HG23	2.17	0.45
10:r:270:ASN:ND2	10:r:271:LEU:HD12	2.32	0.45
2:C:246:LYS:HE2	2:C:252:GLU:OE2	2.17	0.45
4:I:214:MET:HE2	4:I:214:MET:HB2	1.86	0.45
4:J:53:VAL:HG21	4:J:56:PHE:HD1	1.80	0.45
1:a:583:VAL:HB	1:a:631:ALA:HB2	1.98	0.45
1:b:27:LYS:HE2	1:b:27:LYS:HB3	1.77	0.45
14:G:232:HIS:CD2	14:G:293:MET:HE2	2.52	0.45
14:H:106:LEU:O	14:H:110:TYR:HB2	2.16	0.45
14:H:377:LEU:HD21	14:H:379:HIS:HD2	1.81	0.45
14:h:64:CYS:HB3	22:h:501:NFU:O3	2.17	0.45
1:A:73:PRO:HB3	1:A:96:PHE:CD2	2.51	0.45
10:R:170:ILE:HD11	10:R:174:THR:HG22	1.98	0.45
11:S:52:LYS:HZ2	11:S:54:ILE:HD11	1.82	0.45
3:e:3:LYS:HB2	3:e:6:GLU:OE1	2.16	0.45
10:r:3:GLU:OE1	10:r:63:LYS:HB3	2.16	0.45
1:B:180:GLY:HA2	16:B:701:FAD:H3B	1.99	0.45
1:B:245:THR:HB	1:B:307:ALA:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:66:HIS:O	4:J:70:LEU:HD23	2.15	0.45
8:P:104:TYR:HD2	8:P:135:ILE:HD13	1.81	0.45
9:Q:76:THR:HG21	9:Q:428:MET:SD	2.56	0.45
10:R:26:ILE:HG23	10:R:26:ILE:O	2.17	0.45
1:a:453:ILE:HD13	3:f:59:ARG:HH22	1.82	0.45
1:b:403:CYS:HA	1:b:406:PHE:CE2	2.52	0.45
2:c:125:LEU:HD12	2:c:129:GLU:HG3	1.98	0.45
2:C:78:CYS:SG	2:C:232:PRO:HD2	2.57	0.45
4:J:22:LEU:HB2	4:J:84:TRP:CH2	2.51	0.45
4:J:276:LEU:HB3	4:J:277:PRO:HD3	1.98	0.45
8:P:361:SER:HB3	8:P:419:ALA:HB2	1.98	0.45
1:a:601:TYR:HB3	1:a:608:LEU:HD21	1.98	0.45
14:g:86:SER:O	14:g:89:GLU:HG2	2.17	0.45
6:n:23:CYS:C	14:h:396:VAL:HG11	2.41	0.45
14:G:363:ALA:HB2	14:G:384:ASP:C	2.41	0.45
14:H:363:ALA:HB2	14:H:384:ASP:C	2.41	0.45
5:L:8:ALA:HB2	5:L:61:PHE:CE1	2.52	0.45
6:M:27:MET:CE	14:G:395:ILE:HG12	2.47	0.45
6:N:26:HIS:CD2	14:H:41:PHE:HD2	2.34	0.45
10:R:144:MET:HG2	10:R:165:GLY:O	2.16	0.45
2:d:265:GLY:O	2:d:270:MET:HG3	2.17	0.45
4:j:22:LEU:HB2	4:j:84:TRP:CH2	2.52	0.45
1:a:650:LEU:CD1	5:k:55:LYS:HB2	2.47	0.44
14:g:185:LEU:HD23	14:g:185:LEU:O	2.16	0.44
4:i:175:ILE:C	4:i:220:ALA:HB2	2.42	0.44
13:u:65:CYS:HB3	15:u:101:SF4:S1	2.57	0.44
1:B:539:GLY:HA2	1:B:550:THR:OG1	2.17	0.44
4:I:152:LYS:HD3	4:I:153:PRO:HD2	2.00	0.44
14:g:232:HIS:CD2	14:g:293:MET:HE2	2.53	0.44
14:g:396:VAL:HG11	6:m:23:CYS:C	2.41	0.44
10:r:3:GLU:OE2	10:r:63:LYS:HD2	2.17	0.44
14:G:281:TYR:CE2	14:G:282:PRO:HB3	2.52	0.44
14:h:377:LEU:HD12	22:h:501:NFU:N2	2.33	0.44
1:A:259:GLU:O	7:O:342:PRO:HD2	2.18	0.44
4:I:39:VAL:HG21	4:I:53:VAL:HG12	1.99	0.44
8:P:365:ALA:HA	8:P:425:ILE:HD11	1.98	0.44
13:U:1:MET:HE2	13:U:1:MET:H1	1.82	0.44
1:a:473:VAL:HG22	1:a:474:GLU:N	2.32	0.44
9:q:309:VAL:HG12	9:q:310:THR:HG23	1.99	0.44
10:r:103:LYS:HG3	10:r:122:GLU:HG3	1.99	0.44
1:B:29:PHE:CD2	1:B:119:CYS:HB3	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:289:GLN:OE1	2:D:289:GLN:HA	2.16	0.44
1:a:116:ARG:O	1:a:120:GLU:HG2	2.18	0.44
1:a:478:MET:HE3	1:a:478:MET:HB3	1.81	0.44
1:a:483:GLU:HG3	3:f:1:MET:HE1	1.99	0.44
2:c:240:ARG:O	2:c:244:GLU:HG2	2.16	0.44
4:i:218:THR:HG21	4:i:235:GLY:HA2	1.99	0.44
4:j:276:LEU:HB3	4:j:277:PRO:HD3	1.98	0.44
5:l:8:ALA:HB2	5:l:61:PHE:CE1	2.52	0.44
7:o:23:THR:HG22	7:o:23:THR:O	2.18	0.44
14:H:232:HIS:CD2	14:H:293:MET:HE2	2.52	0.44
14:h:224:LEU:HD13	14:h:241:PHE:HE1	1.81	0.44
14:g:399:THR:HG21	6:m:27:MET:CE	2.48	0.44
8:p:468:ILE:HB	8:p:490:TYR:HB2	2.00	0.44
1:B:223:ILE:HG12	1:B:232:VAL:HG12	1.99	0.44
4:J:216:MET:HE2	4:J:216:MET:HB3	1.88	0.44
4:J:273:ARG:HH22	14:H:52:GLU:CG	2.30	0.44
7:O:285:VAL:HG22	7:O:305:PHE:CD1	2.52	0.44
8:P:129:PHE:CD1	8:P:137:LYS:HD3	2.53	0.44
8:P:145:ASN:HD22	8:P:186:GLU:H	1.66	0.44
14:g:272:LYS:HD2	6:m:27:MET:HG2	1.99	0.44
4:j:218:THR:HG21	4:j:235:GLY:CA	2.47	0.44
8:p:160:MET:HE3	8:p:160:MET:HB3	1.82	0.44
8:p:306:VAL:HG23	8:p:307:GLY:N	2.33	0.44
1:a:271:ARG:HD2	1:a:275:TYR:CG	2.53	0.44
2:c:43:PRO:HG3	2:c:59:LEU:HB2	2.00	0.44
10:r:3:GLU:HB2	10:r:59:SER:HB2	2.00	0.44
14:h:109:TYR:CE1	14:h:139:VAL:HG13	2.53	0.44
14:h:345:LEU:HD23	14:h:345:LEU:HA	1.90	0.44
1:A:599:ILE:CD1	1:A:612:THR:HG22	2.47	0.44
1:A:643:ILE:HD13	4:I:244:LEU:HD11	2.00	0.44
1:B:276:VAL:CG2	1:B:277:PRO:HD2	2.48	0.44
8:P:272:LEU:HD13	8:P:304:ILE:CD1	2.45	0.44
8:P:358:PRO:HB2	8:P:418:TRP:CE3	2.53	0.44
10:R:6:LEU:CD2	10:R:54:VAL:HG12	2.48	0.44
10:R:93:MET:HE3	10:R:93:MET:HB2	1.90	0.44
14:H:100:MET:HE2	14:H:373:PRO:HG3	1.99	0.44
14:H:281:TYR:CE2	14:H:282:PRO:HB3	2.53	0.44
14:h:86:SER:O	14:h:89:GLU:HG2	2.18	0.44
1:A:201:PRO:HG3	1:B:76:HIS:NE2	2.33	0.44
9:Q:90:LEU:HD21	9:Q:332:SER:HB2	1.99	0.44
9:Q:309:VAL:HG12	9:Q:310:THR:HG23	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:T:51:PRO:HB3	13:U:2:TYR:HE1	1.82	0.44
1:a:252:CYS:HB3	15:a:706:SF4:S1	2.58	0.44
14:g:219:ILE:O	14:g:321:ASN:HB2	2.18	0.44
9:q:159:MET:HE2	13:u:70:PRO:CG	2.47	0.44
10:r:170:ILE:HG22	10:r:188:ILE:O	2.18	0.44
1:A:478:MET:HE3	1:A:478:MET:HB3	1.80	0.43
1:B:338:LYS:HB3	1:B:338:LYS:HE3	1.75	0.43
7:O:271:CYS:C	7:O:273:PRO:HD3	2.43	0.43
14:g:109:TYR:CE1	14:g:139:VAL:HG13	2.53	0.43
4:j:184:LYS:HE3	4:j:184:LYS:HB3	1.68	0.43
8:p:376:PRO:HG3	8:p:430:ARG:NH2	2.33	0.43
14:H:64:CYS:HB3	22:H:501:NFU:O3	2.18	0.43
14:H:86:SER:O	14:H:89:GLU:HG2	2.18	0.43
14:H:109:TYR:CE1	14:H:139:VAL:HG13	2.54	0.43
14:h:253:LYS:HB2	14:h:253:LYS:HE2	1.85	0.43
1:A:116:ARG:NH1	1:A:656:LEU:HB3	2.30	0.43
1:A:650:LEU:HD13	5:K:55:LYS:HB2	1.99	0.43
1:B:564:PRO:HB3	1:B:570:PHE:CD1	2.53	0.43
7:O:139:VAL:HB	7:O:140:PRO:HD3	1.99	0.43
1:a:482:LEU:HD12	3:f:2:MET:HG3	2.00	0.43
7:o:386:LYS:HB2	7:o:386:LYS:HE3	1.78	0.43
14:H:60:ILE:CD1	14:H:394:MET:HE1	2.48	0.43
14:h:232:HIS:CD2	14:h:293:MET:HE2	2.53	0.43
14:h:281:TYR:CE2	14:h:282:PRO:HB3	2.53	0.43
1:A:352:THR:O	1:A:355:VAL:HG12	2.18	0.43
1:A:579:VAL:HG22	1:A:632:MET:CE	2.47	0.43
6:M:7:LEU:HD22	14:G:6:ILE:HD11	1.99	0.43
8:P:306:VAL:HG21	8:P:371:PHE:CD1	2.53	0.43
13:U:71:VAL:HG12	13:U:71:VAL:O	2.18	0.43
2:d:258:VAL:HG12	2:d:259:HIS:O	2.18	0.43
7:o:272:GLY:N	7:o:273:PRO:HD3	2.34	0.43
1:A:412:GLN:NE2	1:A:444:ALA:HB2	2.27	0.43
10:R:18:MET:CE	10:R:73:VAL:HG13	2.48	0.43
3:f:31:LEU:HB3	3:f:96:ILE:HD13	2.00	0.43
8:p:132:LEU:CD2	8:p:135:ILE:HD11	2.46	0.43
8:p:232:PRO:HD2	8:p:275:HIS:NE2	2.34	0.43
11:s:89:LEU:HD12	11:s:90:PRO:HD2	1.99	0.43
3:E:116:MET:HA	3:E:119:VAL:HG12	2.01	0.43
3:e:11:PHE:CE2	3:e:15:ILE:HD11	2.54	0.43
4:i:66:HIS:O	4:i:70:LEU:HD23	2.18	0.43
7:o:370:LEU:HD12	7:o:371:LYS:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:q:372:ASP:OD1	9:q:373:PRO:HD2	2.19	0.43
14:G:219:ILE:O	14:G:321:ASN:HB2	2.18	0.43
14:H:64:CYS:O	14:H:67:PRO:HD2	2.19	0.43
1:B:10:VAL:HB	1:B:41:THR:HG22	2.00	0.43
2:D:201:ARG:HD2	2:D:237:GLN:OE1	2.19	0.43
6:N:24:ALA:HA	14:H:396:VAL:CG1	2.48	0.43
8:P:308:GLN:HB2	8:P:371:PHE:CZ	2.54	0.43
12:T:322:PRO:HG2	13:U:22:PRO:HG2	2.00	0.43
14:g:281:TYR:CE2	14:g:282:PRO:HB3	2.53	0.43
9:q:6:VAL:HG12	9:q:25:LEU:HG	2.01	0.43
14:G:109:TYR:CE1	14:G:139:VAL:HG13	2.53	0.43
14:H:172:VAL:HG13	14:H:355:ILE:HD12	2.00	0.43
14:h:219:ILE:O	14:h:321:ASN:HB2	2.19	0.43
3:E:112:LYS:HB3	3:E:113:PRO:HD3	2.00	0.43
6:M:23:CYS:C	14:G:396:VAL:HG11	2.43	0.43
10:R:186:MET:HE2	10:R:186:MET:HB2	1.87	0.43
2:d:42:CYS:N	2:d:43:PRO:HA	2.33	0.43
2:d:228:VAL:HA	2:d:258:VAL:O	2.19	0.43
14:g:4:VAL:HG11	6:m:2:VAL:HG21	2.01	0.43
14:g:129:ILE:O	14:g:132:VAL:HG12	2.19	0.43
10:r:167:THR:HG22	10:r:186:MET:HB3	2.00	0.43
1:B:117:LYS:O	1:B:121:MET:HG2	2.18	0.43
1:B:473:VAL:HG22	1:B:474:GLU:N	2.34	0.43
8:P:99:LYS:HE2	8:P:103:GLN:OE1	2.18	0.43
1:b:12:TYR:CE1	1:b:41:THR:HB	2.33	0.43
1:b:161:ASP:OD2	1:b:555:LYS:HG2	2.18	0.43
14:g:345:LEU:HD23	14:g:345:LEU:HA	1.90	0.43
14:G:86:SER:O	14:G:89:GLU:HG2	2.18	0.43
14:G:100:MET:HE2	14:G:373:PRO:HG3	1.99	0.43
14:H:199:ILE:HA	14:H:202:ILE:HG22	2.01	0.43
4:I:66:HIS:O	4:I:70:LEU:HD23	2.19	0.43
5:K:65:SEC:HA	5:K:105:MET:O	2.18	0.43
11:S:2:LYS:HA	11:S:2:LYS:HD3	1.83	0.43
12:T:149:ILE:HD11	12:T:189:ILE:HD11	2.01	0.43
9:q:83:LEU:CD2	9:q:343:MET:HE1	2.49	0.43
10:r:170:ILE:HG21	10:r:189:ILE:HG12	2.01	0.43
12:t:1:MET:C	12:t:1:MET:HE3	2.44	0.43
14:H:219:ILE:O	14:H:321:ASN:HB2	2.19	0.43
9:Q:266:ARG:HH12	10:R:176:ILE:HG21	1.84	0.43
5:l:116:ALA:O	5:l:119:GLU:HG3	2.19	0.43
14:h:53:VAL:O	14:h:57:VAL:HG22	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:h:199:ILE:HA	14:h:202:ILE:HG22	2.01	0.43
1:B:470:THR:HG22	1:B:470:THR:O	2.19	0.42
9:Q:137:PRO:O	9:Q:290:LEU:HD23	2.19	0.42
2:c:11:MET:SD	2:c:19:GLU:HB2	2.60	0.42
8:p:143:PHE:CZ	8:p:168:LEU:HD23	2.54	0.42
14:G:60:ILE:CD1	14:G:394:MET:HE1	2.49	0.42
14:G:64:CYS:HB3	22:G:501:NFU:O3	2.18	0.42
14:H:129:ILE:O	14:H:132:VAL:HG12	2.19	0.42
3:E:10:GLY:O	3:E:14:GLU:HG3	2.19	0.42
4:I:148:GLY:HA2	4:I:237:TYR:CE1	2.53	0.42
4:J:218:THR:HG21	4:J:235:GLY:CA	2.48	0.42
8:P:306:VAL:HG21	8:P:371:PHE:CE1	2.55	0.42
11:S:54:ILE:HD13	11:S:59:ASP:HB3	2.00	0.42
3:e:155:LYS:HE2	3:e:159:GLU:OE2	2.19	0.42
3:f:155:LYS:HA	3:f:158:ASP:OD2	2.19	0.42
14:g:6:ILE:HD11	6:m:7:LEU:CD1	2.43	0.42
14:g:64:CYS:HB3	22:g:501:NFU:O3	2.18	0.42
5:l:9:PHE:HB2	5:l:62:VAL:HG12	2.01	0.42
7:o:215:GLU:OE2	7:o:224:LYS:HE3	2.19	0.42
8:p:230:VAL:O	8:p:270:THR:HG22	2.19	0.42
14:H:91:LEU:HD12	14:H:172:VAL:HG11	2.02	0.42
14:h:100:MET:CE	14:h:373:PRO:HG3	2.49	0.42
14:h:129:ILE:O	14:h:132:VAL:HG12	2.19	0.42
14:h:172:VAL:HG13	14:h:355:ILE:HD12	2.00	0.42
9:Q:90:LEU:HD12	9:Q:115:ILE:O	2.19	0.42
9:Q:210:HIS:HB3	9:Q:266:ARG:HB3	2.02	0.42
12:T:3:ASN:HB3	12:T:5:LYS:HZ3	1.83	0.42
12:T:291:PHE:CE1	12:T:304:VAL:HG22	2.55	0.42
1:a:325:ILE:HD11	1:a:561:VAL:HG21	2.01	0.42
14:g:95:MET:HE2	14:g:158:GLY:HA2	2.01	0.42
14:g:199:ILE:HA	14:g:202:ILE:HG22	2.01	0.42
5:k:13:GLN:HB2	5:k:14:SEC:H	1.62	0.42
14:G:153:ILE:CD1	14:G:184:LEU:HD13	2.48	0.42
14:G:172:VAL:HG13	14:G:355:ILE:HD12	2.01	0.42
14:h:95:MET:HE2	14:h:158:GLY:HA2	2.01	0.42
3:E:31:LEU:HB3	3:E:96:ILE:CD1	2.49	0.42
4:I:70:LEU:O	4:I:74:ILE:HG12	2.19	0.42
10:R:106:VAL:HB	10:R:125:ILE:HD13	2.02	0.42
11:S:123:ARG:HB3	11:S:123:ARG:CZ	2.49	0.42
3:f:124:ALA:C	3:f:157:MET:HE1	2.44	0.42
20:q:501:MGD:H15	11:s:9:ARG:NH2	2.17	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:Q:372:ASP:OD1	9:Q:373:PRO:HD2	2.19	0.42
10:R:27:GLN:OE1	10:R:27:GLN:HA	2.19	0.42
1:a:81:ARG:CD	1:a:91:PRO:HB2	2.49	0.42
1:a:256:CYS:SG	1:a:273:ALA:HB3	2.60	0.42
1:b:128:ARG:HB2	1:b:645:MET:HB2	2.01	0.42
14:g:148:ARG:HA	4:i:26:HIS:CE1	2.54	0.42
14:g:395:ILE:HG12	6:m:27:MET:SD	2.59	0.42
8:p:203:TYR:HB2	12:t:298:GLY:O	2.20	0.42
11:s:55:SER:HB2	11:s:106:VAL:HG12	2.01	0.42
14:G:370:ILE:HG12	14:G:371:TYR:N	2.35	0.42
14:h:64:CYS:O	14:h:67:PRO:HD2	2.20	0.42
14:h:153:ILE:HD13	14:h:184:LEU:HD22	2.01	0.42
4:J:222:CYS:HB3	4:J:237:TYR:CE2	2.55	0.42
4:J:231:MET:HE2	14:H:173:SER:CB	2.49	0.42
7:O:171:PRO:HB2	7:O:230:PRO:HB2	2.01	0.42
8:P:232:PRO:HD2	8:P:275:HIS:CD2	2.54	0.42
14:g:64:CYS:O	14:g:67:PRO:HD2	2.20	0.42
14:g:130:ILE:CD1	4:i:33:LEU:HD13	2.49	0.42
4:j:9:ILE:HG22	4:j:57:LEU:HB2	2.01	0.42
6:n:27:MET:HA	14:h:394:MET:O	2.19	0.42
8:p:145:ASN:HD22	8:p:185:THR:HB	1.85	0.42
9:q:212:ASP:O	9:q:216:VAL:HG23	2.19	0.42
10:r:252:TYR:HA	10:r:257:PRO:HG3	2.01	0.42
14:G:64:CYS:O	14:G:67:PRO:HD2	2.19	0.42
14:H:53:VAL:O	14:H:57:VAL:HG22	2.20	0.42
3:F:31:LEU:HB3	3:F:96:ILE:CD1	2.50	0.42
4:I:6:LYS:HB2	4:I:54:ASP:OD2	2.19	0.42
8:P:368:LEU:HD23	8:P:368:LEU:HA	1.92	0.42
1:b:365:THR:O	1:b:365:THR:HG22	2.20	0.42
14:g:377:LEU:HD21	14:g:379:HIS:HD2	1.83	0.42
8:p:80:LEU:HD23	8:p:90:SER:HB3	2.02	0.42
9:q:137:PRO:O	9:q:290:LEU:HD23	2.20	0.42
14:h:370:ILE:HG12	14:h:371:TYR:N	2.35	0.42
1:B:153:ILE:HG22	16:B:701:FAD:O1P	2.20	0.42
6:N:24:ALA:HB2	14:H:398:SER:CB	2.49	0.42
7:O:126:ILE:CD1	7:O:155:ILE:HD13	2.49	0.42
7:O:141:GLU:HG3	7:O:169:THR:HG21	2.02	0.42
8:P:145:ASN:ND2	8:P:185:THR:HB	2.34	0.42
11:S:111:THR:HG22	11:S:113:GLU:H	1.84	0.42
1:b:592:LEU:CD1	4:j:187:VAL:HG11	2.46	0.42
14:g:153:ILE:CD1	14:g:184:LEU:HD13	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:q:159:MET:HE2	13:u:70:PRO:HG2	2.00	0.42
14:h:153:ILE:CD1	14:h:184:LEU:HD13	2.50	0.42
14:h:396:VAL:HG13	14:h:397:ALA:N	2.34	0.42
1:B:474:GLU:HG3	3:E:41:THR:HB	2.02	0.42
4:I:273:ARG:HH22	14:G:52:GLU:CG	2.30	0.42
1:a:338:LYS:HB3	1:a:338:LYS:HE3	1.75	0.42
2:c:70:MET:HE3	2:c:70:MET:HB2	1.85	0.42
2:d:9:CYS:SG	3:f:128:VAL:HG22	2.59	0.42
14:g:172:VAL:HG13	14:g:355:ILE:HD12	2.02	0.42
9:q:260:MET:CG	9:q:264:MET:HE3	2.50	0.42
10:r:18:MET:HE2	10:r:18:MET:HB3	1.83	0.42
14:G:199:ILE:HA	14:G:202:ILE:HG22	2.02	0.42
4:I:222:CYS:HB3	4:I:237:TYR:CE2	2.55	0.42
14:H:153:ILE:HD13	14:H:184:LEU:HD22	2.02	0.42
1:A:393:LYS:HE2	3:F:87:CYS:O	2.21	0.41
1:A:445:GLN:HG3	1:A:452:PHE:CE1	2.55	0.41
7:O:328:MET:CB	7:O:337:ARG:HD2	2.46	0.41
8:P:132:LEU:CD2	8:P:135:ILE:HD11	2.49	0.41
9:Q:212:ASP:O	9:Q:216:VAL:HG23	2.20	0.41
1:b:319:ILE:HG22	1:b:321:VAL:HG13	2.02	0.41
3:e:112:LYS:HB3	3:e:113:PRO:HD3	2.02	0.41
4:i:234:ARG:HA	4:i:234:ARG:HD3	1.62	0.41
7:o:17:CYS:SG	7:o:28:ILE:HD11	2.60	0.41
9:q:18:LEU:HD13	9:q:297:TYR:HB2	2.02	0.41
14:G:129:ILE:O	14:G:132:VAL:HG12	2.20	0.41
4:J:148:GLY:HA2	4:J:237:TYR:CE1	2.54	0.41
7:O:333:LYS:HB3	7:O:333:LYS:HE2	1.82	0.41
1:a:29:PHE:CD2	1:a:119:CYS:HB3	2.55	0.41
3:e:31:LEU:HB3	3:e:96:ILE:CD1	2.50	0.41
14:g:53:VAL:O	14:g:57:VAL:HG22	2.20	0.41
14:g:370:ILE:HG12	14:g:371:TYR:N	2.35	0.41
4:j:148:GLY:HA2	4:j:237:TYR:CE1	2.55	0.41
7:o:26:ILE:HD11	15:o:410:SF4:S1	2.60	0.41
7:o:209:CYS:HA	15:o:407:SF4:S1	2.60	0.41
8:p:334:LYS:H	8:p:334:LYS:HG2	1.71	0.41
10:r:255:THR:HG22	10:r:256:LYS:HG2	2.02	0.41
14:H:95:MET:HE2	14:H:158:GLY:HA2	2.01	0.41
14:H:100:MET:CE	14:H:373:PRO:HG3	2.50	0.41
1:A:539:GLY:HA2	1:A:550:THR:OG1	2.21	0.41
2:C:106:LEU:O	2:C:109:ILE:HG22	2.21	0.41
2:D:290:LYS:HE3	2:D:290:LYS:HB3	1.80	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:71:ILE:HA	4:I:74:ILE:HG12	2.02	0.41
4:J:39:VAL:HG21	4:J:53:VAL:HG12	2.02	0.41
5:K:62:VAL:CG2	5:K:102:MET:HG3	2.38	0.41
7:O:189:ILE:HD12	7:O:227:GLY:HA2	2.03	0.41
10:R:37:ILE:O	10:R:48:VAL:HG23	2.20	0.41
1:b:495:LEU:HD12	1:b:544:PRO:HB3	2.02	0.41
2:c:96:LYS:HE2	2:c:96:LYS:HA	2.02	0.41
2:c:201:ARG:HD2	2:c:237:GLN:OE1	2.20	0.41
14:g:153:ILE:HD13	14:g:184:LEU:HD22	2.02	0.41
4:j:164:LEU:HD23	4:j:164:LEU:O	2.20	0.41
6:n:26:HIS:CD2	14:h:41:PHE:HD2	2.37	0.41
7:o:205:CYS:HB3	15:o:408:SF4:S2	2.60	0.41
14:H:153:ILE:CD1	14:H:184:LEU:HD13	2.49	0.41
14:H:370:ILE:HG12	14:H:371:TYR:N	2.35	0.41
1:A:266:LEU:HD11	1:A:353:LEU:HB3	2.02	0.41
1:A:371:ARG:HA	1:A:372:PRO:HD3	1.86	0.41
1:B:239:ARG:HH11	1:B:285:LEU:HD12	1.85	0.41
1:B:634:LEU:HD23	1:B:635:ARG:O	2.20	0.41
11:S:120:ASP:O	11:S:124:LYS:HG2	2.21	0.41
1:a:242:ASP:HB3	1:a:307:ALA:HB1	2.01	0.41
1:a:412:GLN:HE21	1:a:444:ALA:HB2	1.85	0.41
1:b:38:VAL:CG1	1:b:63:LEU:HD21	2.51	0.41
5:k:60:VAL:O	5:k:100:LEU:HD12	2.19	0.41
7:o:333:LYS:HD2	7:o:335:TYR:OH	2.20	0.41
2:C:147:ILE:HD13	2:C:147:ILE:HA	1.93	0.41
20:Q:501:MGD:H15	11:S:9:ARG:NH2	2.19	0.41
10:R:212:ILE:HD11	10:R:271:LEU:HD21	2.03	0.41
5:l:10:VAL:O	5:l:38:VAL:HG12	2.21	0.41
9:q:98:GLU:OE2	9:q:100:HIS:HB3	2.21	0.41
9:q:173:PRO:HB3	13:u:33:GLY:HA3	2.02	0.41
14:h:91:LEU:HD12	14:h:172:VAL:HG11	2.02	0.41
1:A:30:ALA:HA	1:A:33:LEU:HD12	2.02	0.41
1:B:547:ILE:HB	1:B:548:PRO:HD3	2.02	0.41
12:T:22:LYS:HE3	12:T:22:LYS:HB3	1.76	0.41
1:a:116:ARG:HH11	1:a:116:ARG:HG2	1.85	0.41
10:r:211:LYS:HB2	10:r:267:ASN:HB3	2.03	0.41
14:G:100:MET:CE	14:G:373:PRO:HG3	2.50	0.41
14:G:153:ILE:HD13	14:G:184:LEU:HD22	2.02	0.41
14:G:224:LEU:HD13	14:G:241:PHE:HE1	1.82	0.41
3:F:63:LEU:HD23	3:F:63:LEU:HA	1.94	0.41
10:R:178:PRO:HD2	10:R:197:ALA:HA	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:o:164:THR:HG22	7:o:177:VAL:HG11	2.01	0.41
1:A:27:LYS:HB3	1:A:27:LYS:HE2	1.70	0.41
1:A:95:GLU:HB2	1:A:129:ALA:HB2	2.02	0.41
4:I:218:THR:HG21	4:I:235:GLY:CA	2.48	0.41
4:I:268:VAL:HG23	5:K:92:GLU:OE1	2.21	0.41
8:P:317:MET:CB	8:P:348:VAL:HG22	2.50	0.41
1:b:29:PHE:CD2	1:b:119:CYS:HB3	2.56	0.41
14:g:258:LEU:HD23	14:g:258:LEU:HA	1.95	0.41
1:B:650:LEU:CD1	5:L:55:LYS:HB2	2.47	0.41
2:D:192:MET:HE3	2:D:215:LYS:HD3	2.02	0.41
3:F:183:LYS:C	3:F:184:GLN:HG3	2.45	0.41
6:M:23:CYS:O	14:G:396:VAL:HG11	2.21	0.41
6:N:23:CYS:C	14:H:396:VAL:HG11	2.46	0.41
9:Q:180:ARG:HG2	12:T:276:ALA:HB2	2.02	0.41
10:R:152:THR:O	10:R:171:LYS:HB2	2.21	0.41
11:S:95:THR:O	11:S:95:THR:HG22	2.20	0.41
1:a:470:THR:O	1:a:470:THR:HG22	2.21	0.41
1:b:352:THR:HG21	1:b:406:PHE:CD1	2.56	0.41
3:f:146:LYS:HA	3:f:146:LYS:HD3	1.85	0.41
14:g:60:ILE:CD1	14:g:394:MET:HE1	2.51	0.41
14:g:100:MET:CE	14:g:373:PRO:HG3	2.50	0.41
14:g:142:LYS:O	14:g:146:MET:HG3	2.21	0.41
14:g:417:PHE:CD1	6:m:6:LYS:HD3	2.56	0.41
4:i:71:ILE:HA	4:i:74:ILE:HG12	2.02	0.41
5:l:120:MET:HE2	5:l:120:MET:HB2	1.87	0.41
6:n:7:LEU:CD1	14:h:6:ILE:HD11	2.43	0.41
8:p:231:HIS:NE2	8:p:235:LEU:HD22	2.36	0.41
9:q:343:MET:CE	9:q:345:ILE:HG13	2.51	0.41
10:r:170:ILE:HG23	10:r:189:ILE:HA	2.03	0.41
11:s:36:ASN:OD1	11:s:37:PRO:HD2	2.21	0.41
14:G:142:LYS:O	14:G:146:MET:HG3	2.21	0.41
14:h:142:LYS:O	14:h:146:MET:HG3	2.21	0.41
1:A:116:ARG:HH22	1:A:656:LEU:CB	2.34	0.41
1:A:116:ARG:HH11	1:A:116:ARG:HG2	1.84	0.41
1:B:400:SER:HB2	1:B:403:CYS:SG	2.61	0.41
7:O:220:LYS:HD2	7:O:220:LYS:N	2.36	0.41
12:T:227:LEU:HD12	12:T:227:LEU:HA	1.96	0.41
2:c:192:MET:HE3	2:c:215:LYS:HG2	2.03	0.41
4:j:10:ILE:HD12	4:j:40:TYR:HE2	1.86	0.41
6:n:6:LYS:HD3	14:h:417:PHE:CE1	2.56	0.41
1:A:547:ILE:O	1:A:550:THR:HG22	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:242:ASP:HB3	1:B:307:ALA:HB1	2.02	0.40
4:I:71:ILE:HD12	4:I:71:ILE:HA	1.92	0.40
7:O:28:ILE:HD13	7:O:28:ILE:HA	1.91	0.40
8:P:364:TRP:CZ2	8:P:368:LEU:HD11	2.56	0.40
1:b:320:LYS:HE3	1:b:320:LYS:HB3	1.84	0.40
2:d:101:MET:O	2:d:104:GLU:HG2	2.21	0.40
3:e:116:MET:O	3:e:119:VAL:HG12	2.21	0.40
14:g:253:LYS:HE2	14:g:253:LYS:HB2	1.85	0.40
2:C:11:MET:SD	2:C:19:GLU:HB2	2.61	0.40
3:E:31:LEU:HB3	3:E:96:ILE:HD13	2.02	0.40
8:P:21:LYS:HB2	8:P:21:LYS:HE2	1.86	0.40
8:P:365:ALA:HB1	8:P:425:ILE:HD11	2.03	0.40
8:P:385:HIS:HA	8:P:386:PRO:HA	1.88	0.40
9:Q:180:ARG:HH11	12:T:303:ASN:HA	1.86	0.40
14:g:130:ILE:O	14:g:133:ILE:HG22	2.22	0.40
12:t:98:MET:HB3	12:t:100:GLN:OE1	2.21	0.40
12:t:279:ALA:CB	13:u:62:CYS:HB2	2.51	0.40
14:G:53:VAL:O	14:G:57:VAL:HG22	2.20	0.40
14:h:3:LYS:HE2	14:h:3:LYS:HB3	1.93	0.40
1:A:572:ILE:HG13	1:A:574:MET:CE	2.51	0.40
1:B:227:ILE:HG21	1:B:570:PHE:CE2	2.56	0.40
4:I:148:GLY:HA2	4:I:237:TYR:HE1	1.87	0.40
7:O:216:TYR:HD1	7:O:221:LEU:HB3	1.86	0.40
14:g:91:LEU:HD12	14:g:172:VAL:HG11	2.02	0.40
10:r:111:GLU:HG3	10:r:112:SER:H	1.86	0.40
14:G:95:MET:HE2	14:G:158:GLY:HA2	2.03	0.40
14:H:142:LYS:O	14:H:146:MET:HG3	2.21	0.40
14:h:60:ILE:CD1	14:h:394:MET:HE1	2.50	0.40
1:A:188:THR:HA	16:A:704:FAD:O4	2.21	0.40
1:B:573:GLU:O	1:B:574:MET:HE2	2.22	0.40
9:Q:210:HIS:CE1	11:S:102:GLY:HA2	2.56	0.40
2:d:41:CYS:SG	2:d:43:PRO:HA	2.61	0.40
14:g:216:LEU:HD12	14:g:412:ALA:HB1	2.03	0.40
4:i:280:LEU:HD12	5:k:50:LEU:HB3	2.04	0.40
9:q:199:LYS:HE3	9:q:199:LYS:HB2	1.96	0.40
14:G:7:GLU:HA	14:G:8:PRO:HA	1.97	0.40
14:G:216:LEU:HD12	14:G:412:ALA:HB1	2.03	0.40
1:A:246:CYS:HA	15:A:707:SF4:S1	2.61	0.40
1:B:100:ARG:HG2	1:B:105:PHE:CD2	2.57	0.40
1:B:601:TYR:HB3	1:B:608:LEU:HD21	2.03	0.40
3:E:161:ARG:HG3	3:E:177:TRP:CH2	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:P:1:MET:HE2	8:P:1:MET:HB3	2.00	0.40
8:P:267:TYR:HB3	8:P:302:VAL:HG12	2.03	0.40
1:a:400:SER:HB2	1:a:403:CYS:SG	2.62	0.40
1:a:634:LEU:HD23	1:a:635:ARG:O	2.21	0.40
1:b:478:MET:HE3	1:b:478:MET:HB3	2.01	0.40
10:r:9:LYS:HE3	10:r:53:ASP:CG	2.46	0.40
14:H:216:LEU:HD12	14:H:412:ALA:HB1	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	655/658 (100%)	624 (95%)	30 (5%)	1 (0%)	43	75
1	B	655/658 (100%)	609 (93%)	45 (7%)	1 (0%)	43	75
1	a	655/658 (100%)	621 (95%)	34 (5%)	0	100	100
1	b	655/658 (100%)	620 (95%)	34 (5%)	1 (0%)	43	75
2	C	291/293 (99%)	281 (97%)	10 (3%)	0	100	100
2	D	291/293 (99%)	280 (96%)	11 (4%)	0	100	100
2	c	291/293 (99%)	280 (96%)	11 (4%)	0	100	100
2	d	291/293 (99%)	282 (97%)	9 (3%)	0	100	100
3	E	182/184 (99%)	179 (98%)	3 (2%)	0	100	100
3	F	182/184 (99%)	178 (98%)	4 (2%)	0	100	100
3	e	182/184 (99%)	178 (98%)	4 (2%)	0	100	100
3	f	182/184 (99%)	176 (97%)	6 (3%)	0	100	100
4	I	286/288 (99%)	277 (97%)	9 (3%)	0	100	100
4	J	286/288 (99%)	275 (96%)	11 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	i	286/288 (99%)	276 (96%)	10 (4%)	0	100	100
4	j	286/288 (99%)	273 (96%)	11 (4%)	2 (1%)	18	54
5	K	130/134 (97%)	128 (98%)	1 (1%)	1 (1%)	16	52
5	L	130/134 (97%)	128 (98%)	1 (1%)	1 (1%)	16	52
5	k	130/134 (97%)	128 (98%)	1 (1%)	1 (1%)	16	52
5	l	130/134 (97%)	127 (98%)	2 (2%)	1 (1%)	16	52
6	M	24/27 (89%)	23 (96%)	1 (4%)	0	100	100
6	N	24/27 (89%)	22 (92%)	2 (8%)	0	100	100
6	m	24/27 (89%)	23 (96%)	1 (4%)	0	100	100
6	n	24/27 (89%)	23 (96%)	1 (4%)	0	100	100
7	O	392/394 (100%)	375 (96%)	17 (4%)	0	100	100
7	o	392/394 (100%)	368 (94%)	23 (6%)	1 (0%)	36	70
8	P	565/567 (100%)	548 (97%)	17 (3%)	0	100	100
8	p	565/567 (100%)	550 (97%)	15 (3%)	0	100	100
9	Q	433/436 (99%)	420 (97%)	13 (3%)	0	100	100
9	q	433/436 (99%)	417 (96%)	16 (4%)	0	100	100
10	R	270/272 (99%)	259 (96%)	11 (4%)	0	100	100
10	r	270/272 (99%)	261 (97%)	9 (3%)	0	100	100
11	S	126/128 (98%)	125 (99%)	1 (1%)	0	100	100
11	s	126/128 (98%)	124 (98%)	2 (2%)	0	100	100
12	T	350/352 (99%)	344 (98%)	6 (2%)	0	100	100
12	t	350/352 (99%)	345 (99%)	5 (1%)	0	100	100
13	U	78/80 (98%)	77 (99%)	1 (1%)	0	100	100
13	u	78/80 (98%)	77 (99%)	1 (1%)	0	100	100
14	G	416/418 (100%)	408 (98%)	8 (2%)	0	100	100
14	H	416/418 (100%)	407 (98%)	9 (2%)	0	100	100
14	g	416/418 (100%)	408 (98%)	8 (2%)	0	100	100
14	h	416/418 (100%)	408 (98%)	8 (2%)	0	100	100
All	All	12364/12466 (99%)	11932 (96%)	422 (3%)	10 (0%)	49	81

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	105	PHE
5	K	13	GLN
5	L	13	GLN
1	b	304	CYS
4	j	186	ASN
5	k	13	GLN
5	l	13	GLN
1	A	303	CYS
4	j	187	VAL
7	o	13	VAL

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	525/525 (100%)	519 (99%)	6 (1%)	65 74
1	B	525/525 (100%)	525 (100%)	0	100 100
1	a	525/525 (100%)	525 (100%)	0	100 100
1	b	525/525 (100%)	523 (100%)	2 (0%)	84 84
2	C	239/239 (100%)	238 (100%)	1 (0%)	84 84
2	D	239/239 (100%)	239 (100%)	0	100 100
2	c	239/239 (100%)	239 (100%)	0	100 100
2	d	239/239 (100%)	239 (100%)	0	100 100
3	E	155/155 (100%)	155 (100%)	0	100 100
3	F	155/155 (100%)	155 (100%)	0	100 100
3	e	155/155 (100%)	155 (100%)	0	100 100
3	f	155/155 (100%)	155 (100%)	0	100 100
4	I	236/236 (100%)	236 (100%)	0	100 100
4	J	236/236 (100%)	236 (100%)	0	100 100
4	i	236/236 (100%)	234 (99%)	2 (1%)	73 77
4	j	236/236 (100%)	234 (99%)	2 (1%)	73 77
5	K	100/100 (100%)	100 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
5	L	100/100 (100%)	100 (100%)	0	100 100
5	k	100/100 (100%)	100 (100%)	0	100 100
5	l	100/100 (100%)	100 (100%)	0	100 100
6	M	22/22 (100%)	22 (100%)	0	100 100
6	N	22/22 (100%)	22 (100%)	0	100 100
6	m	22/22 (100%)	22 (100%)	0	100 100
6	n	22/22 (100%)	22 (100%)	0	100 100
7	O	330/330 (100%)	329 (100%)	1 (0%)	86 85
7	o	329/330 (100%)	329 (100%)	0	100 100
8	P	484/484 (100%)	484 (100%)	0	100 100
8	p	484/484 (100%)	484 (100%)	0	100 100
9	Q	369/369 (100%)	369 (100%)	0	100 100
9	q	369/369 (100%)	368 (100%)	1 (0%)	86 85
10	R	221/221 (100%)	221 (100%)	0	100 100
10	r	221/221 (100%)	220 (100%)	1 (0%)	81 82
11	S	106/106 (100%)	106 (100%)	0	100 100
11	s	106/106 (100%)	106 (100%)	0	100 100
12	T	304/304 (100%)	303 (100%)	1 (0%)	86 85
12	t	304/304 (100%)	304 (100%)	0	100 100
13	U	65/65 (100%)	65 (100%)	0	100 100
13	u	65/65 (100%)	65 (100%)	0	100 100
14	G	341/341 (100%)	338 (99%)	3 (1%)	70 76
14	H	341/341 (100%)	339 (99%)	2 (1%)	78 81
14	g	341/341 (100%)	339 (99%)	2 (1%)	78 81
14	h	341/341 (100%)	339 (99%)	2 (1%)	78 81
All	All	10229/10230 (100%)	10203 (100%)	26 (0%)	84 85

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	ILE
1	A	71	CYS
1	A	140	VAL

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Mol	Chain	Res	Type
1	A	249	CYS
1	A	406	PHE
1	A	569	GLN
2	C	9	CYS
7	O	192	PHE
12	T	308	GLN
1	b	13	CYS
1	b	17	ILE
14	g	63	ILE
14	g	396	VAL
4	i	216	MET
4	i	234	ARG
4	j	184	LYS
4	j	188	PHE
9	q	193	ARG
10	r	270	ASN
14	G	63	ILE
14	G	396	VAL
14	G	398	SER
14	H	63	ILE
14	H	396	VAL
14	h	63	ILE
14	h	396	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (82) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	61	HIS
1	A	157	GLN
1	A	229	ASN
1	B	61	HIS
1	B	98	ASN
1	B	580	ASN
2	C	138	ASN
2	C	169	HIS
2	C	262	GLN
2	D	138	ASN
2	D	169	HIS
2	D	242	GLN
2	D	254	ASN
3	E	36	GLN
3	E	114	HIS

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Mol	Chain	Res	Type
4	I	256	ASN
4	J	246	GLN
4	J	256	ASN
4	J	272	ASN
7	O	15	ASN
8	P	195	HIS
8	P	233	ASN
8	P	301	HIS
8	P	439	GLN
9	Q	160	HIS
9	Q	250	ASN
12	T	234	GLN
12	T	236	ASN
12	T	308	GLN
1	a	553	GLN
1	a	580	ASN
1	b	229	ASN
2	c	53	GLN
2	c	138	ASN
2	c	150	HIS
2	c	169	HIS
2	c	235	GLN
2	d	95	ASN
2	d	138	ASN
2	d	242	GLN
2	d	254	ASN
3	e	102	ASN
3	f	60	GLN
14	g	196	GLN
14	g	328	HIS
14	g	400	HIS
4	i	272	ASN
4	j	272	ASN
7	o	15	ASN
7	o	168	GLN
7	o	186	GLN
7	o	303	ASN
8	p	103	GLN
8	p	233	ASN
8	p	308	GLN
9	q	250	ASN
9	q	333	ASN

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Mol	Chain	Res	Type
10	r	27	GLN
10	r	67	ASN
10	r	88	ASN
10	r	107	ASN
10	r	126	ASN
10	r	240	GLN
11	s	13	GLN
12	t	206	HIS
12	t	234	GLN
12	t	236	ASN
12	t	275	ASN
13	u	48	ASN
14	G	43	GLN
14	G	196	GLN
14	G	260	ASN
14	G	328	HIS
14	G	400	HIS
14	H	196	GLN
14	H	328	HIS
14	H	393	ASN
14	H	400	HIS
14	h	196	GLN
14	h	260	ASN
14	h	328	HIS
14	h	400	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 122 ligands modelled in this entry, 6 are monoatomic - leaving 116 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	$\#\|Z\| > 2$
15	SF4	j	302	4	0,12,12	-	-	-		
15	SF4	B	707	1	0,12,12	-	-	-		
15	SF4	t	402	12	0,12,12	-	-	-		
15	SF4	f	202	3	0,12,12	-	-	-		
15	SF4	T	401	12	0,12,12	-	-	-		
20	MGD	q	501	21	45,52,52	0.72	0	54,81,81	1.09	6 (11%)
15	SF4	o	403	7	0,12,12	-	-	-		
18	FES	L	201	5	0,4,4	-	-	-		
15	SF4	O	409	7	0,12,12	-	-	-		
15	SF4	u	102	13	0,12,12	-	-	-		
15	SF4	A	707	1	0,12,12	-	-	-		
15	SF4	E	201	3	0,12,12	-	-	-		
15	SF4	o	410	7	0,12,12	-	-	-		
15	SF4	t	404	12	0,12,12	-	-	-		
15	SF4	J	302	4	0,12,12	-	-	-		
15	SF4	A	701	1	0,12,12	-	-	-		
15	SF4	b	707	1	0,12,12	-	-	-		
15	SF4	T	406	12	0,12,12	-	-	-		
15	SF4	B	705	1	0,12,12	-	-	-		
15	SF4	a	703	1	0,12,12	-	-	-		
22	NFU	H	501	6,14	3,7,7	1.06	0	-		
15	SF4	j	303	4	0,12,12	-	-	-		
15	SF4	O	405	7	0,12,12	-	-	-		
15	SF4	O	403	7	0,12,12	-	-	-		
15	SF4	o	401	7	0,12,12	-	-	-		
15	SF4	o	404	7	0,12,12	-	-	-		
15	SF4	t	405	12	0,12,12	-	-	-		
15	SF4	O	402	7	0,12,12	-	-	-		
15	SF4	Q	504	9	0,12,12	-	-	-		
15	SF4	a	706	1	0,12,12	-	-	-		
15	SF4	F	202	3	0,12,12	-	-	-		
17	9S8	c	302	2	2,10,10	1.24	0	-		

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
18	FES	l	201	5	0,4,4	-	-	-		
15	SF4	U	102	13	0,12,12	-	-	-		
15	SF4	b	701	1	0,12,12	-	-	-		
15	SF4	a	701	1	0,12,12	-	-	-		
16	FAD	A	704	-	56,58,58	0.37	0	81,89,89	0.38	0
15	SF4	U	101	13	0,12,12	-	-	-		
15	SF4	I	302	4	0,12,12	-	-	-		
17	9S8	c	301	2	2,10,10	1.25	0	-		
15	SF4	t	407	12	0,12,12	-	-	-		
18	FES	K	201	5	0,4,4	-	-	-		
15	SF4	o	405	7	0,12,12	-	-	-		
15	SF4	T	402	12	0,12,12	-	-	-		
15	SF4	B	704	1	0,12,12	-	-	-		
15	SF4	t	409	12	0,12,12	-	-	-		
15	SF4	O	404	7	0,12,12	-	-	-		
15	SF4	T	408	12	0,12,12	-	-	-		
15	SF4	j	301	4	0,12,12	-	-	-		
15	SF4	O	408	7	0,12,12	-	-	-		
16	FAD	a	704	-	56,58,58	0.37	0	81,89,89	0.39	0
15	SF4	B	706	1	0,12,12	-	-	-		
15	SF4	o	406	7	0,12,12	-	-	-		
15	SF4	o	407	7	0,12,12	-	-	-		
15	SF4	A	702	1	0,12,12	-	-	-		
20	MGD	Q	501	21	45,52,52	0.73	0	54,81,81	1.09	6 (11%)
15	SF4	o	412	7	0,12,12	-	-	-		
17	9S8	D	301	2	2,10,10	1.24	0	-		
15	SF4	T	404	12	0,12,12	-	-	-		
15	SF4	a	705	1	0,12,12	-	-	-		
20	MGD	Q	502	21	45,52,52	0.71	0	54,81,81	1.04	6 (11%)
15	SF4	b	702	1	0,12,12	-	-	-		
15	SF4	t	406	12	0,12,12	-	-	-		
17	9S8	C	302	2	2,10,10	1.28	0	-		
16	FAD	B	701	-	56,58,58	0.37	0	81,89,89	0.39	0
15	SF4	i	302	4	0,12,12	-	-	-		
22	NFU	h	501	6,14	3,7,7	1.03	0	-		
15	SF4	i	301	4	0,12,12	-	-	-		
15	SF4	u	101	13	0,12,12	-	-	-		
15	SF4	A	705	1	0,12,12	-	-	-		
15	SF4	T	403	12	0,12,12	-	-	-		
22	NFU	g	501	6,14	3,7,7	1.06	0	-		
15	SF4	B	703	1	0,12,12	-	-	-		
15	SF4	t	403	12	0,12,12	-	-	-		

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
17	9S8	C	301	2	2,10,10	1.24	0	-		
15	SF4	o	409	7	0,12,12	-	-	-		
18	FES	k	201	5	0,4,4	-	-	-		
15	SF4	B	702	1	0,12,12	-	-	-		
15	SF4	t	401	12	0,12,12	-	-	-		
15	SF4	J	301	4	0,12,12	-	-	-		
15	SF4	A	706	1	0,12,12	-	-	-		
17	9S8	d	302	2	2,10,10	1.28	0	-		
15	SF4	F	201	3	0,12,12	-	-	-		
15	SF4	b	706	1	0,12,12	-	-	-		
15	SF4	E	202	3	0,12,12	-	-	-		
17	9S8	D	302	2	2,10,10	1.26	0	-		
22	NFU	G	501	6,14	3,7,7	1.04	0	-		
16	FAD	b	704	-	56,58,58	0.37	0	81,89,89	0.40	0
20	MGD	q	502	21	45,52,52	0.72	0	54,81,81	1.03	6 (11%)
15	SF4	o	411	7	0,12,12	-	-	-		
15	SF4	T	407	12	0,12,12	-	-	-		
15	SF4	I	303	4	0,12,12	-	-	-		
15	SF4	f	201	3	0,12,12	-	-	-		
15	SF4	o	402	7	0,12,12	-	-	-		
15	SF4	b	705	1	0,12,12	-	-	-		
15	SF4	T	409	12	0,12,12	-	-	-		
15	SF4	o	408	7	0,12,12	-	-	-		
15	SF4	A	703	1	0,12,12	-	-	-		
15	SF4	i	303	4	0,12,12	-	-	-		
15	SF4	O	412	7	0,12,12	-	-	-		
15	SF4	O	401	7	0,12,12	-	-	-		
15	SF4	O	406	7	0,12,12	-	-	-		
15	SF4	a	702	1	0,12,12	-	-	-		
15	SF4	a	707	1	0,12,12	-	-	-		
15	SF4	e	201	3	0,12,12	-	-	-		
15	SF4	b	703	1	0,12,12	-	-	-		
15	SF4	t	408	12	0,12,12	-	-	-		
17	9S8	d	301	2	2,10,10	1.16	0	-		
15	SF4	e	202	3	0,12,12	-	-	-		
15	SF4	O	410	7	0,12,12	-	-	-		
15	SF4	O	411	7	0,12,12	-	-	-		
15	SF4	O	407	7	0,12,12	-	-	-		
15	SF4	I	301	4	0,12,12	-	-	-		
15	SF4	T	405	12	0,12,12	-	-	-		
15	SF4	q	504	9	0,12,12	-	-	-		
15	SF4	J	303	4	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
15	SF4	j	302	4	-	-	0/6/5/5
15	SF4	B	707	1	-	-	0/6/5/5
15	SF4	t	402	12	-	-	0/6/5/5
15	SF4	f	202	3	-	-	0/6/5/5
15	SF4	T	401	12	-	-	0/6/5/5
20	MGD	q	501	21	-	7/22/66/66	0/6/6/6
15	SF4	o	403	7	-	-	0/6/5/5
18	FES	L	201	5	-	-	0/1/1/1
15	SF4	O	409	7	-	-	0/6/5/5
15	SF4	u	102	13	-	-	0/6/5/5
15	SF4	A	707	1	-	-	0/6/5/5
15	SF4	E	201	3	-	-	0/6/5/5
15	SF4	o	410	7	-	-	0/6/5/5
15	SF4	t	404	12	-	-	0/6/5/5
15	SF4	J	302	4	-	-	0/6/5/5
15	SF4	A	701	1	-	-	0/6/5/5
15	SF4	b	707	1	-	-	0/6/5/5
15	SF4	T	406	12	-	-	0/6/5/5
15	SF4	B	705	1	-	-	0/6/5/5
15	SF4	a	703	1	-	-	0/6/5/5
15	SF4	j	303	4	-	-	0/6/5/5
15	SF4	O	405	7	-	-	0/6/5/5
15	SF4	O	403	7	-	-	0/6/5/5
15	SF4	o	401	7	-	-	0/6/5/5
15	SF4	o	404	7	-	-	0/6/5/5
15	SF4	t	405	12	-	-	0/6/5/5
15	SF4	O	402	7	-	-	0/6/5/5
15	SF4	Q	504	9	-	-	0/6/5/5
15	SF4	a	706	1	-	-	0/6/5/5
15	SF4	F	202	3	-	-	0/6/5/5
17	9S8	c	302	2	-	-	0/3/3/3
18	FES	l	201	5	-	-	0/1/1/1
15	SF4	U	102	13	-	-	0/6/5/5
15	SF4	b	701	1	-	-	0/6/5/5
15	SF4	a	701	1	-	-	0/6/5/5
16	FAD	A	704	-	-	16/34/50/50	0/6/6/6
15	SF4	U	101	13	-	-	0/6/5/5
15	SF4	I	302	4	-	-	0/6/5/5

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
17	9S8	c	301	2	-	-	0/3/3/3
15	SF4	t	407	12	-	-	0/6/5/5
18	FES	K	201	5	-	-	0/1/1/1
15	SF4	o	405	7	-	-	0/6/5/5
15	SF4	T	402	12	-	-	0/6/5/5
15	SF4	B	704	1	-	-	0/6/5/5
15	SF4	t	409	12	-	-	0/6/5/5
15	SF4	O	404	7	-	-	0/6/5/5
15	SF4	T	408	12	-	-	0/6/5/5
15	SF4	j	301	4	-	-	0/6/5/5
15	SF4	O	408	7	-	-	0/6/5/5
16	FAD	a	704	-	-	16/34/50/50	0/6/6/6
15	SF4	B	706	1	-	-	0/6/5/5
15	SF4	o	406	7	-	-	0/6/5/5
15	SF4	o	407	7	-	-	0/6/5/5
15	SF4	A	702	1	-	-	0/6/5/5
20	MGD	Q	501	21	-	8/22/66/66	0/6/6/6
15	SF4	o	412	7	-	-	0/6/5/5
17	9S8	D	301	2	-	-	0/3/3/3
15	SF4	T	404	12	-	-	0/6/5/5
15	SF4	a	705	1	-	-	0/6/5/5
20	MGD	Q	502	21	-	5/22/66/66	0/6/6/6
15	SF4	b	702	1	-	-	0/6/5/5
15	SF4	t	406	12	-	-	0/6/5/5
17	9S8	C	302	2	-	-	0/3/3/3
16	FAD	B	701	-	-	16/34/50/50	0/6/6/6
15	SF4	i	302	4	-	-	0/6/5/5
15	SF4	i	301	4	-	-	0/6/5/5
15	SF4	u	101	13	-	-	0/6/5/5
15	SF4	A	705	1	-	-	0/6/5/5
15	SF4	T	403	12	-	-	0/6/5/5
15	SF4	B	703	1	-	-	0/6/5/5
15	SF4	t	403	12	-	-	0/6/5/5
17	9S8	C	301	2	-	-	0/3/3/3
15	SF4	o	409	7	-	-	0/6/5/5
18	FES	k	201	5	-	-	0/1/1/1
15	SF4	B	702	1	-	-	0/6/5/5
15	SF4	t	401	12	-	-	0/6/5/5
15	SF4	J	301	4	-	-	0/6/5/5
15	SF4	A	706	1	-	-	0/6/5/5
17	9S8	d	302	2	-	-	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
15	SF4	F	201	3	-	-	0/6/5/5
15	SF4	b	706	1	-	-	0/6/5/5
15	SF4	E	202	3	-	-	0/6/5/5
17	9S8	D	302	2	-	-	0/3/3/3
16	FAD	b	704	-	-	16/34/50/50	0/6/6/6
20	MGD	q	502	21	-	4/22/66/66	0/6/6/6
15	SF4	o	411	7	-	-	0/6/5/5
15	SF4	T	407	12	-	-	0/6/5/5
15	SF4	I	303	4	-	-	0/6/5/5
15	SF4	f	201	3	-	-	0/6/5/5
15	SF4	o	402	7	-	-	0/6/5/5
15	SF4	b	705	1	-	-	0/6/5/5
15	SF4	T	409	12	-	-	0/6/5/5
15	SF4	o	408	7	-	-	0/6/5/5
15	SF4	A	703	1	-	-	0/6/5/5
15	SF4	i	303	4	-	-	0/6/5/5
15	SF4	O	412	7	-	-	0/6/5/5
15	SF4	O	401	7	-	-	0/6/5/5
15	SF4	O	406	7	-	-	0/6/5/5
15	SF4	a	702	1	-	-	0/6/5/5
15	SF4	a	707	1	-	-	0/6/5/5
15	SF4	e	201	3	-	-	0/6/5/5
15	SF4	b	703	1	-	-	0/6/5/5
15	SF4	t	408	12	-	-	0/6/5/5
17	9S8	d	301	2	-	-	0/3/3/3
15	SF4	e	202	3	-	-	0/6/5/5
15	SF4	O	410	7	-	-	0/6/5/5
15	SF4	O	411	7	-	-	0/6/5/5
15	SF4	O	407	7	-	-	0/6/5/5
15	SF4	I	301	4	-	-	0/6/5/5
15	SF4	T	405	12	-	-	0/6/5/5
15	SF4	q	504	9	-	-	0/6/5/5
15	SF4	J	303	4	-	-	0/6/5/5

There are no bond length outliers.

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	Q	501	MGD	C19-N20-C21	3.21	119.22	113.43
20	Q	502	MGD	C19-N20-C21	3.19	119.18	113.43
20	q	501	MGD	C19-N20-C21	3.18	119.16	113.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	q	502	MGD	C19-N20-C21	3.14	119.10	113.43
20	Q	501	MGD	C17-C16-N15	2.31	122.97	116.76
20	q	501	MGD	C17-C16-N15	2.28	122.89	116.76
20	q	501	MGD	O3'-C3'-C2'	-2.25	104.54	111.82
20	q	502	MGD	PA-O3B-PB	-2.25	125.12	132.83
20	q	501	MGD	O4'-C1'-C2'	-2.21	101.82	106.64
20	q	502	MGD	O3'-C3'-C2'	-2.20	104.71	111.82
20	Q	501	MGD	O4'-C1'-C2'	-2.15	101.95	106.64
20	Q	501	MGD	O3'-C3'-C2'	-2.15	104.87	111.82
20	Q	502	MGD	PA-O3B-PB	-2.15	125.45	132.83
20	Q	502	MGD	C17-C16-N15	2.13	122.49	116.76
20	Q	501	MGD	C19-N18-C17	-2.13	121.21	125.10
20	Q	502	MGD	O3'-C3'-C2'	-2.12	104.96	111.82
20	Q	502	MGD	O2B-PB-O1B	2.12	122.72	112.24
20	q	502	MGD	O2B-PB-O1B	2.11	122.69	112.24
20	q	501	MGD	C19-N18-C17	-2.11	121.25	125.10
20	Q	501	MGD	O2B-PB-O1B	2.08	122.50	112.24
20	q	502	MGD	C17-C16-N15	2.07	122.31	116.76
20	q	502	MGD	C19-N18-C17	-2.05	121.36	125.10
20	Q	502	MGD	C19-N18-C17	-2.04	121.37	125.10
20	q	501	MGD	O2B-PB-O1B	2.02	122.21	112.24

There are no chirality outliers.

All (88) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	A	704	FAD	C5B-O5B-PA-O1A
16	A	704	FAD	C3B-C4B-C5B-O5B
16	A	704	FAD	C2'-C1'-N10-C10
16	A	704	FAD	N10-C1'-C2'-O2'
16	A	704	FAD	N10-C1'-C2'-C3'
16	A	704	FAD	C1'-C2'-C3'-O3'
16	A	704	FAD	C1'-C2'-C3'-C4'
16	A	704	FAD	O2'-C2'-C3'-O3'
16	A	704	FAD	O2'-C2'-C3'-C4'
16	B	701	FAD	C5B-O5B-PA-O1A
16	B	701	FAD	C3B-C4B-C5B-O5B
16	B	701	FAD	C2'-C1'-N10-C10
16	B	701	FAD	N10-C1'-C2'-O2'
16	B	701	FAD	N10-C1'-C2'-C3'
16	B	701	FAD	C1'-C2'-C3'-O3'
16	B	701	FAD	C1'-C2'-C3'-C4'

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Mol	Chain	Res	Type	Atoms
16	B	701	FAD	O2'-C2'-C3'-O3'
16	B	701	FAD	O2'-C2'-C3'-C4'
16	a	704	FAD	C5B-O5B-PA-O1A
16	a	704	FAD	C3B-C4B-C5B-O5B
16	a	704	FAD	C2'-C1'-N10-C10
16	a	704	FAD	N10-C1'-C2'-O2'
16	a	704	FAD	N10-C1'-C2'-C3'
16	a	704	FAD	C1'-C2'-C3'-O3'
16	a	704	FAD	C1'-C2'-C3'-C4'
16	a	704	FAD	O2'-C2'-C3'-O3'
16	a	704	FAD	O2'-C2'-C3'-C4'
16	b	704	FAD	C5B-O5B-PA-O1A
16	b	704	FAD	C3B-C4B-C5B-O5B
16	b	704	FAD	C2'-C1'-N10-C10
16	b	704	FAD	N10-C1'-C2'-O2'
16	b	704	FAD	N10-C1'-C2'-C3'
16	b	704	FAD	C1'-C2'-C3'-O3'
16	b	704	FAD	C1'-C2'-C3'-C4'
16	b	704	FAD	O2'-C2'-C3'-O3'
16	b	704	FAD	O2'-C2'-C3'-C4'
20	Q	501	MGD	C5'-O5'-PB-O1B
20	Q	501	MGD	C5'-O5'-PB-O2B
20	Q	501	MGD	C3'-C4'-C5'-O5'
20	Q	501	MGD	O3A-C10-C11-C12
20	Q	502	MGD	C5'-O5'-PB-O1B
20	Q	502	MGD	C5'-O5'-PB-O2B
20	q	501	MGD	C5'-O5'-PB-O1B
20	q	501	MGD	C5'-O5'-PB-O2B
20	q	501	MGD	C5'-O5'-PB-O3B
20	q	501	MGD	O4'-C4'-C5'-O5'
20	q	501	MGD	C3'-C4'-C5'-O5'
20	q	501	MGD	O3A-C10-C11-C12
20	q	502	MGD	C5'-O5'-PB-O2B
20	q	502	MGD	C5'-O5'-PB-O3B
20	Q	501	MGD	O4'-C4'-C5'-O5'
16	A	704	FAD	O4B-C4B-C5B-O5B
16	B	701	FAD	O4B-C4B-C5B-O5B
16	a	704	FAD	O4B-C4B-C5B-O5B
16	b	704	FAD	O4B-C4B-C5B-O5B
16	A	704	FAD	O3'-C3'-C4'-C5'
16	B	701	FAD	O3'-C3'-C4'-C5'
16	b	704	FAD	O3'-C3'-C4'-C5'

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Mol	Chain	Res	Type	Atoms
16	b	704	FAD	C2'-C3'-C4'-C5'
16	a	704	FAD	O3'-C3'-C4'-C5'
16	A	704	FAD	C2'-C3'-C4'-C5'
16	B	701	FAD	C2'-C3'-C4'-C5'
16	a	704	FAD	C2'-C3'-C4'-C5'
16	A	704	FAD	O3'-C3'-C4'-O4'
16	B	701	FAD	O3'-C3'-C4'-O4'
16	b	704	FAD	O3'-C3'-C4'-O4'
20	Q	501	MGD	O3A-C10-C11-O11
20	q	501	MGD	O3A-C10-C11-O11
20	Q	501	MGD	PA-O3B-PB-O5'
20	Q	502	MGD	PA-O3B-PB-O5'
20	q	502	MGD	PA-O3B-PB-O5'
16	b	704	FAD	C2'-C3'-C4'-O4'
20	Q	501	MGD	C5'-O5'-PB-O3B
16	a	704	FAD	O3'-C3'-C4'-O4'
16	A	704	FAD	PA-O3P-P-O1P
16	A	704	FAD	C2'-C3'-C4'-O4'
16	B	701	FAD	C2'-C3'-C4'-O4'
16	a	704	FAD	C2'-C3'-C4'-O4'
16	a	704	FAD	PA-O3P-P-O1P
16	b	704	FAD	PA-O3P-P-O1P
16	B	701	FAD	PA-O3P-P-O1P
20	q	502	MGD	O4'-C4'-C5'-O5'
16	A	704	FAD	C5B-O5B-PA-O3P
16	B	701	FAD	C5B-O5B-PA-O3P
16	a	704	FAD	C5B-O5B-PA-O3P
16	b	704	FAD	C5B-O5B-PA-O3P
20	Q	502	MGD	C5'-O5'-PB-O3B
20	Q	502	MGD	O4'-C4'-C5'-O5'

There are no ring outliers.

25 monomers are involved in 42 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
15	t	402	SF4	1	0
20	q	501	MGD	2	0
15	u	102	SF4	1	0
15	A	707	SF4	1	0
15	o	410	SF4	1	0
15	b	707	SF4	1	0
15	B	705	SF4	2	0

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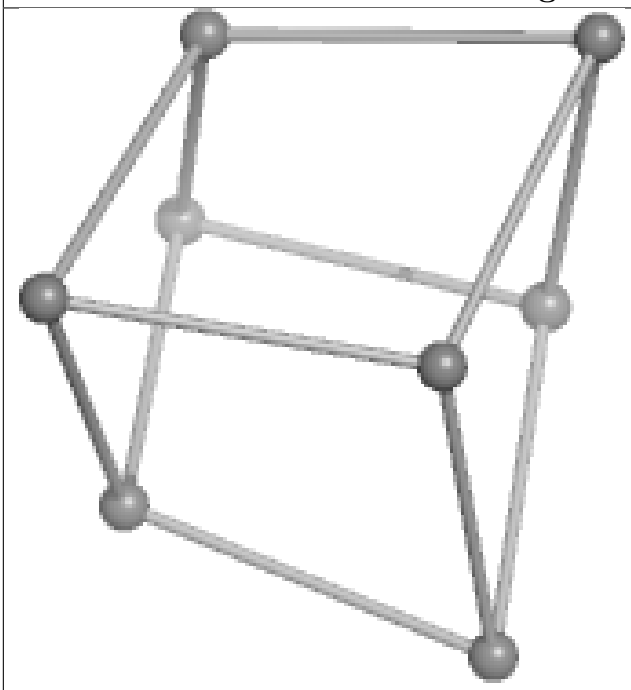
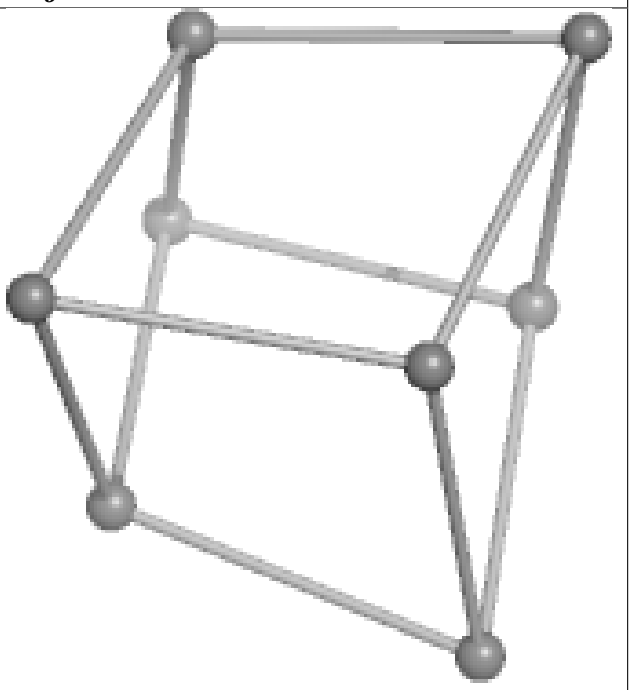
Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	H	501	NFU	3	0
15	a	706	SF4	1	0
15	U	102	SF4	1	0
15	a	701	SF4	1	0
16	A	704	FAD	3	0
15	o	407	SF4	1	0
20	Q	501	MGD	3	0
16	B	701	FAD	2	0
22	h	501	NFU	4	0
15	u	101	SF4	1	0
22	g	501	NFU	3	0
22	G	501	NFU	3	0
16	b	704	FAD	2	0
15	o	402	SF4	1	0
15	o	408	SF4	1	0
15	A	703	SF4	1	0
15	O	412	SF4	1	0
15	b	703	SF4	1	0

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

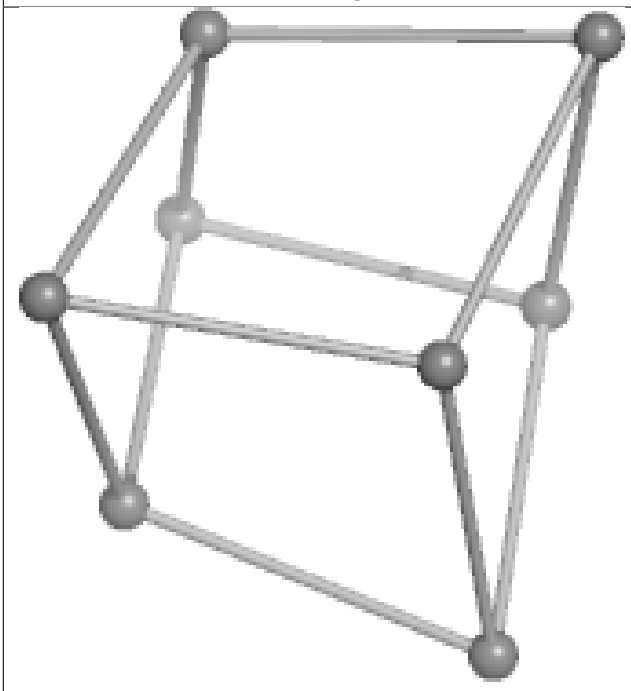
Ligand SF4 j 302



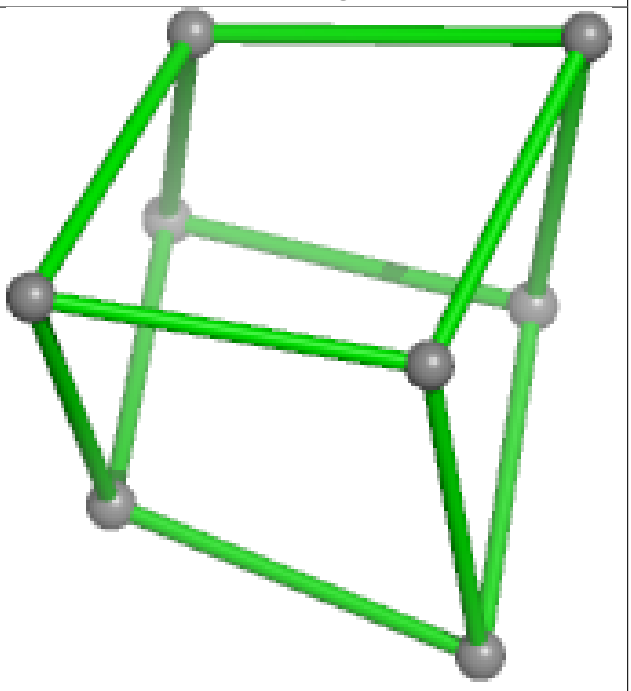
Bond lengths



Bond angles

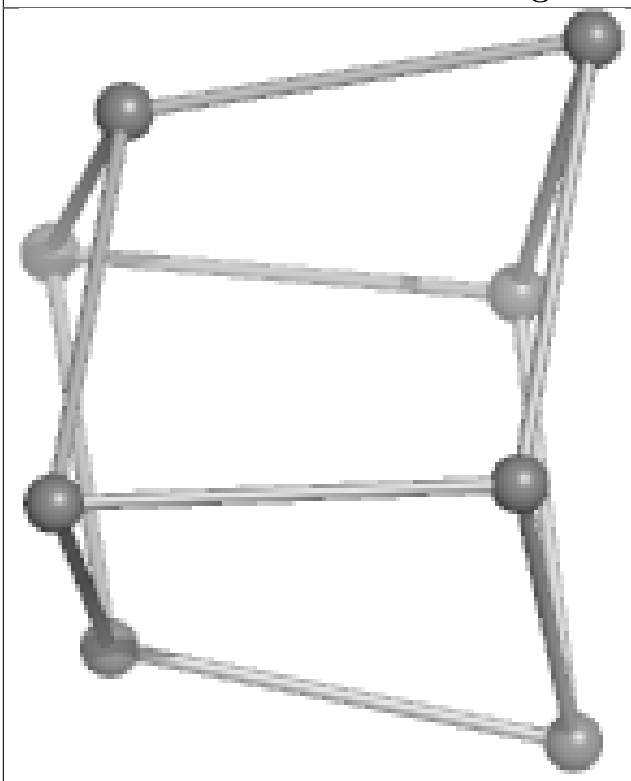


Torsions



Rings

Ligand SF4 B 707



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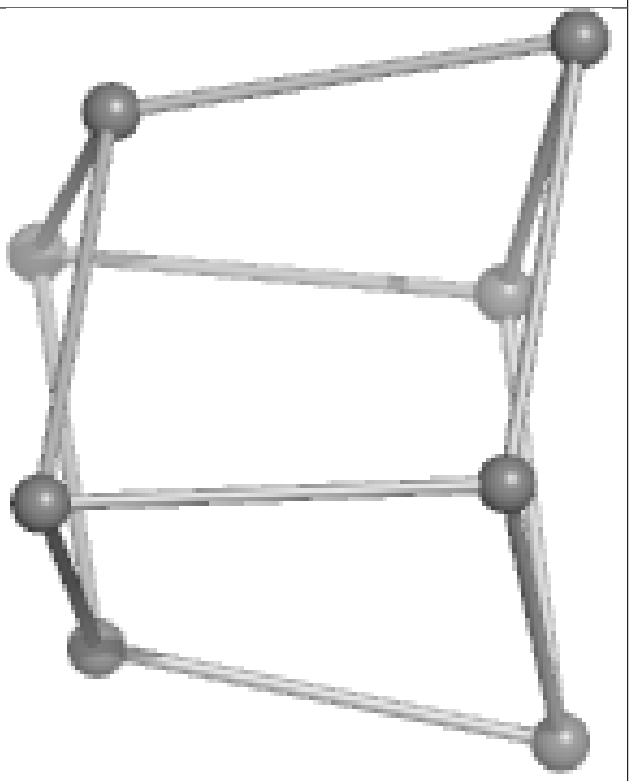

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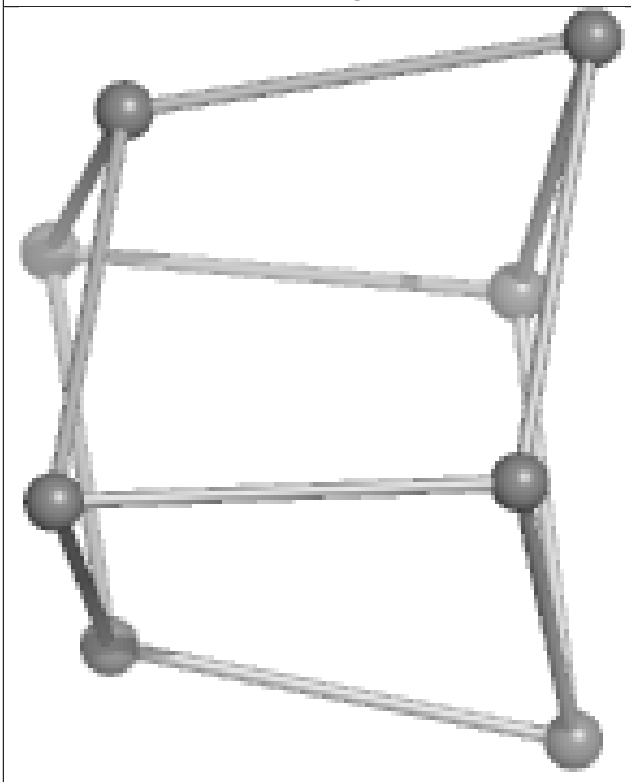

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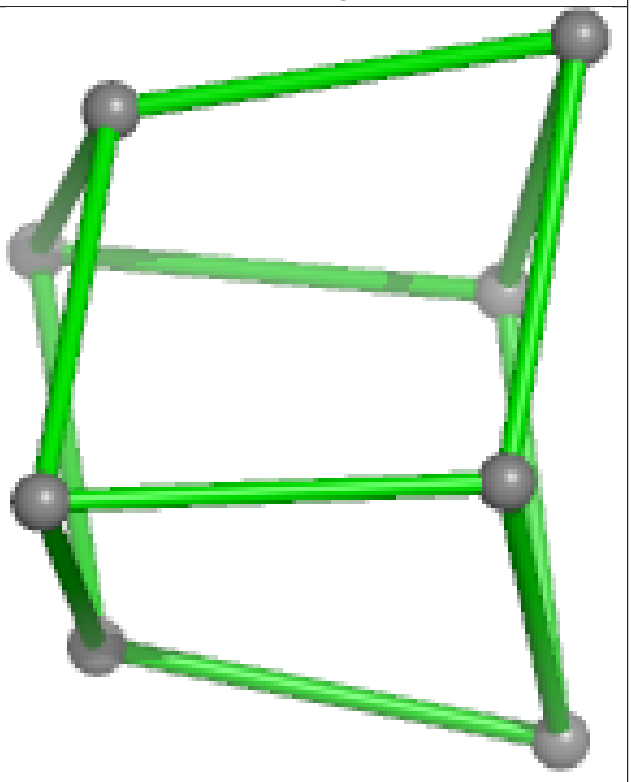
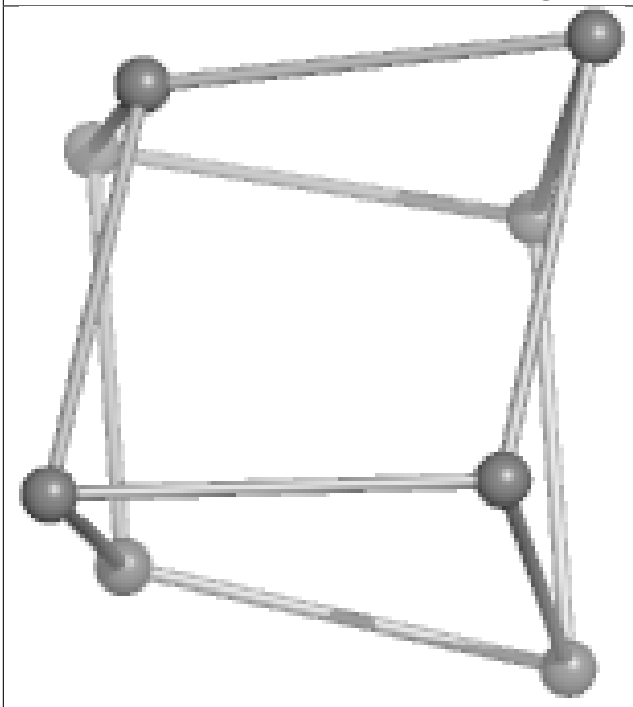
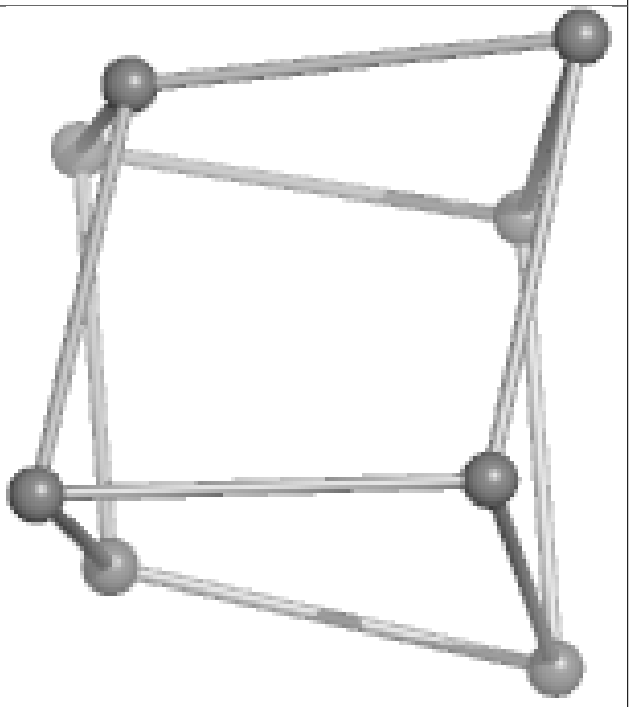


Rings

Ligand SF4 t 402



Bond lengths



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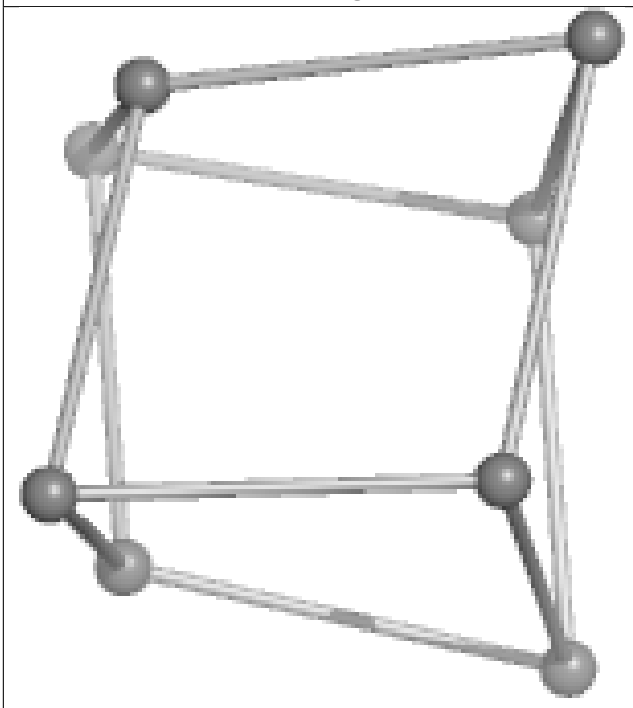

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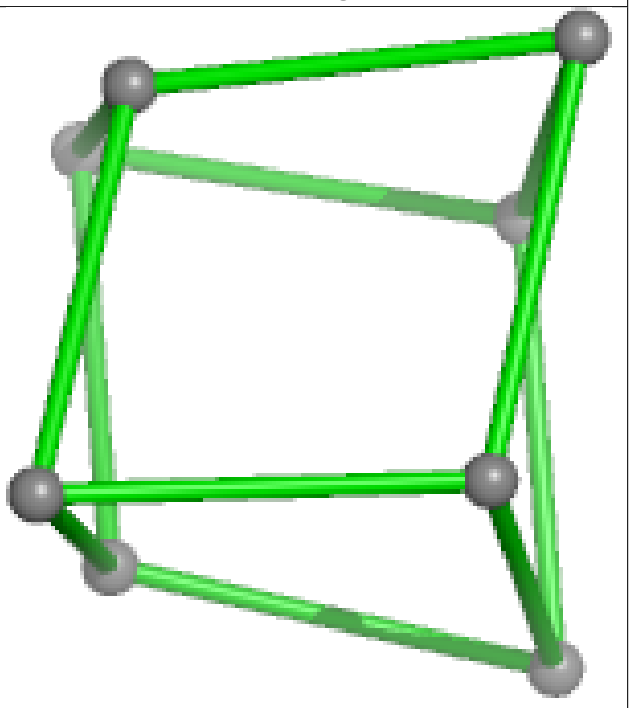
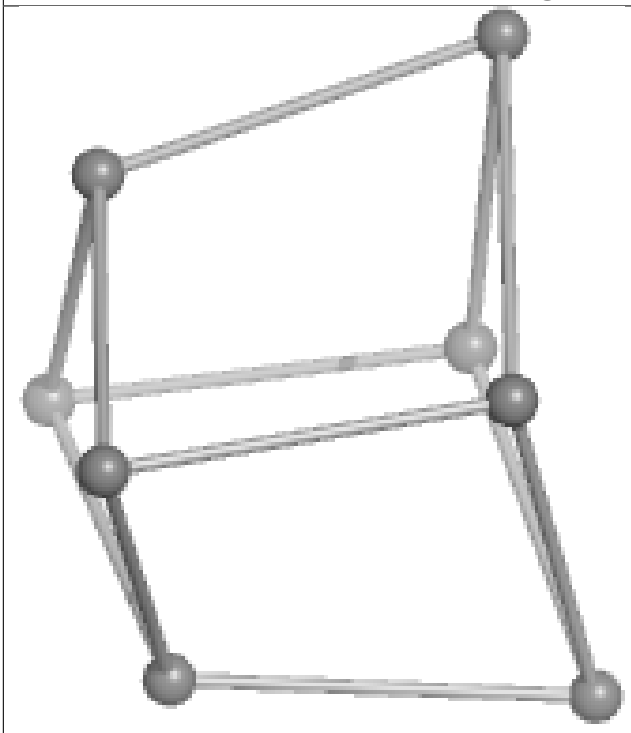


Rings

Ligand SF4 f 202



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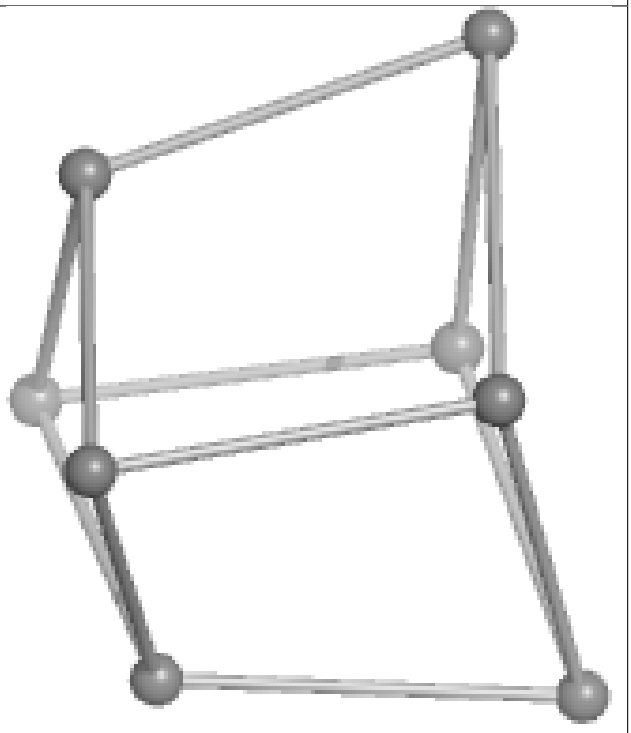

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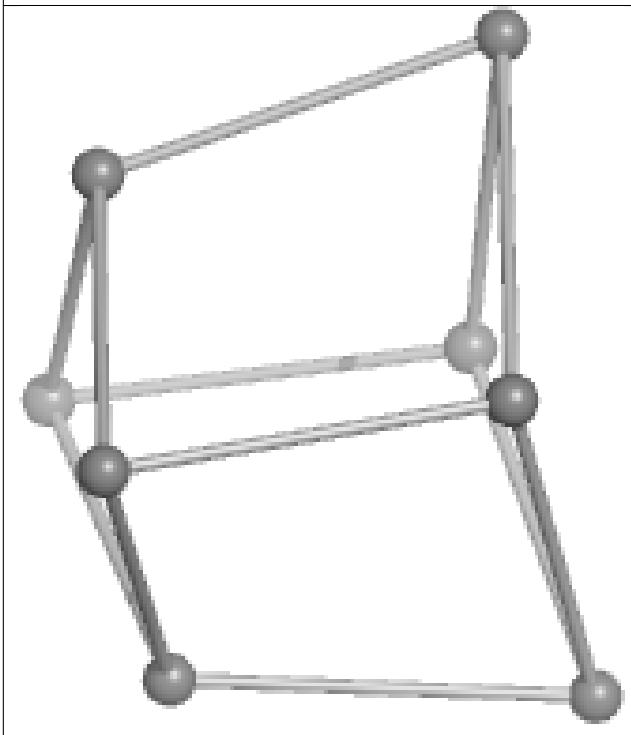

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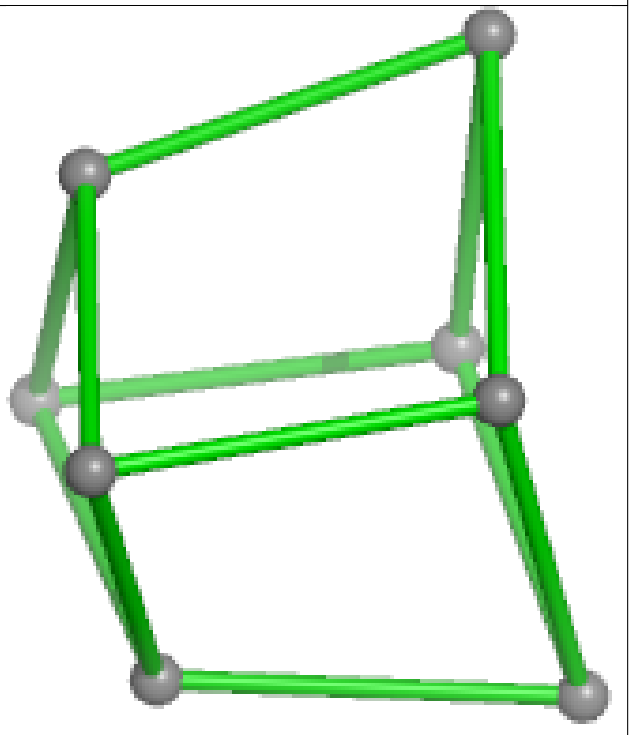
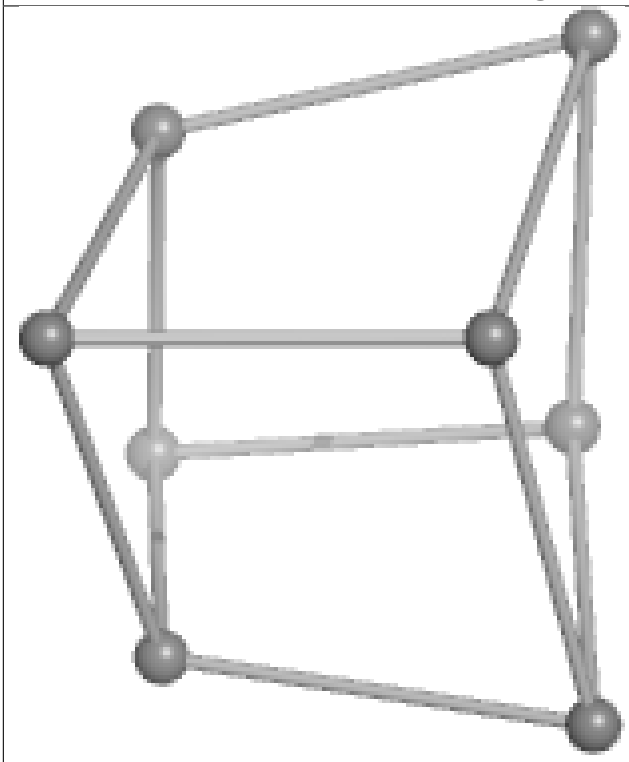
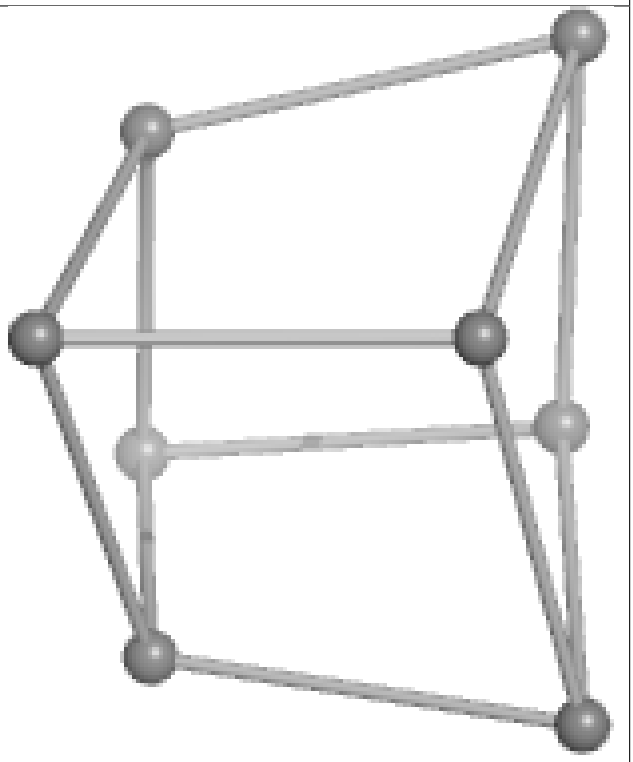


Rings

Ligand SF4 T 401



Bond lengths



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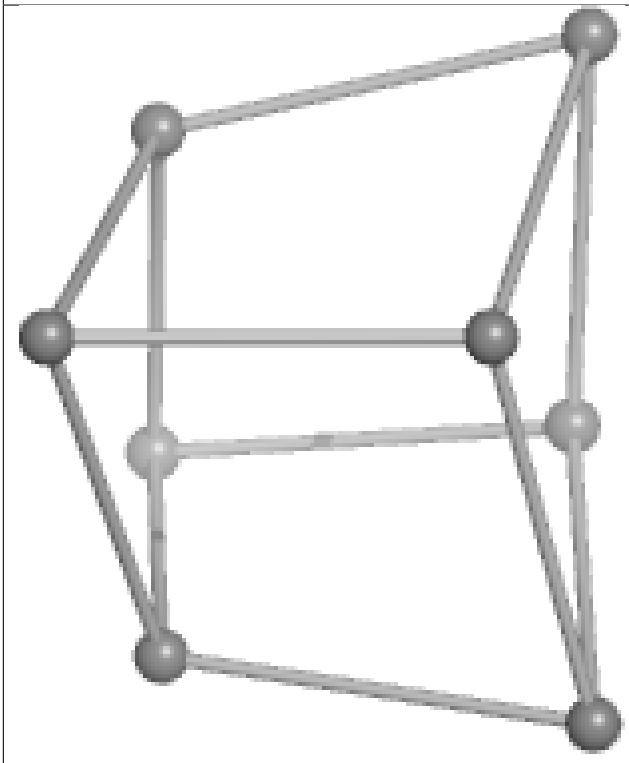

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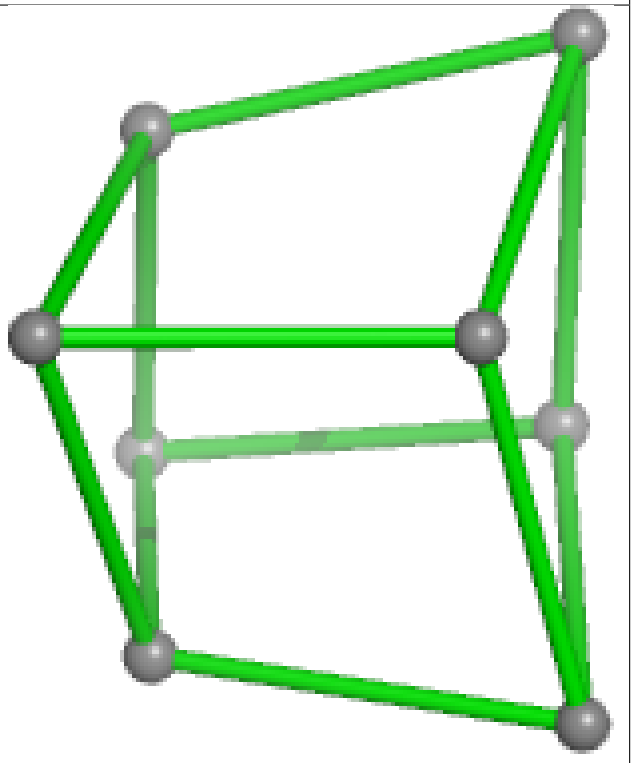
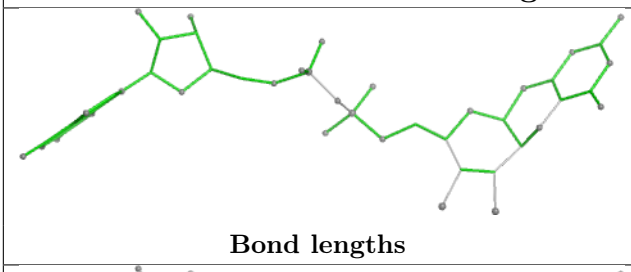


Rings

Ligand MGD q 501



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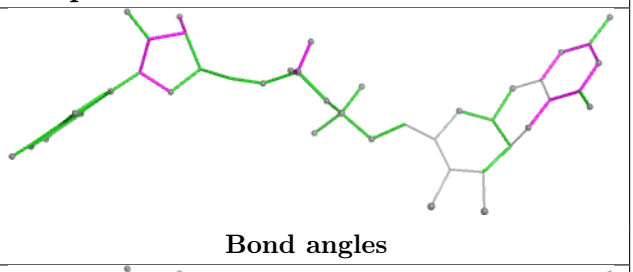

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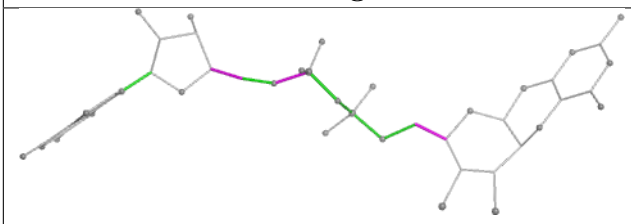

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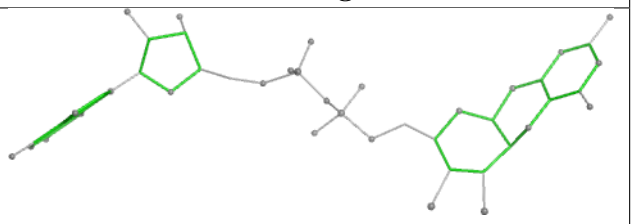
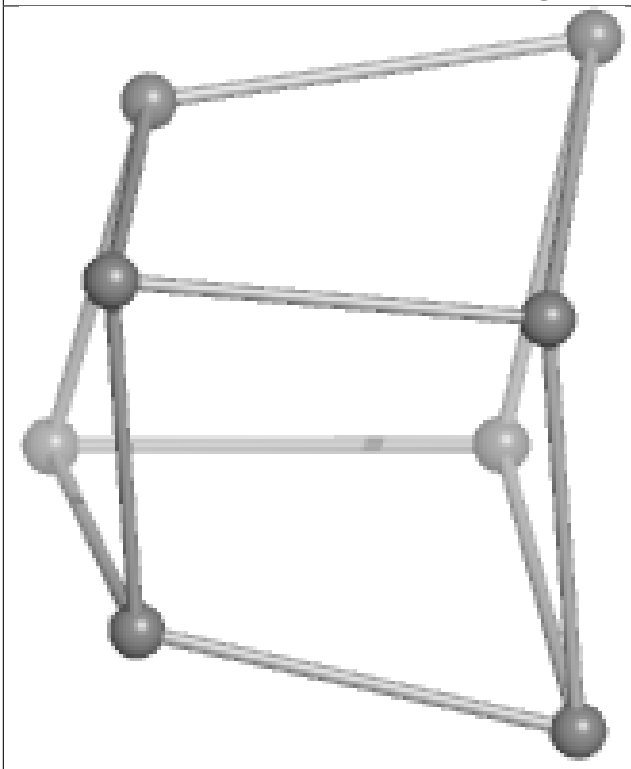


Rings

Ligand SF4 o 403



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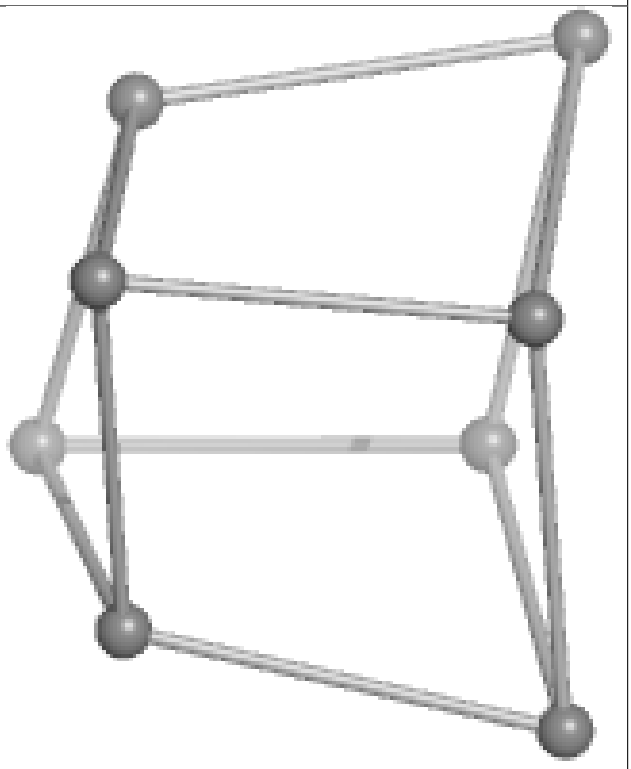

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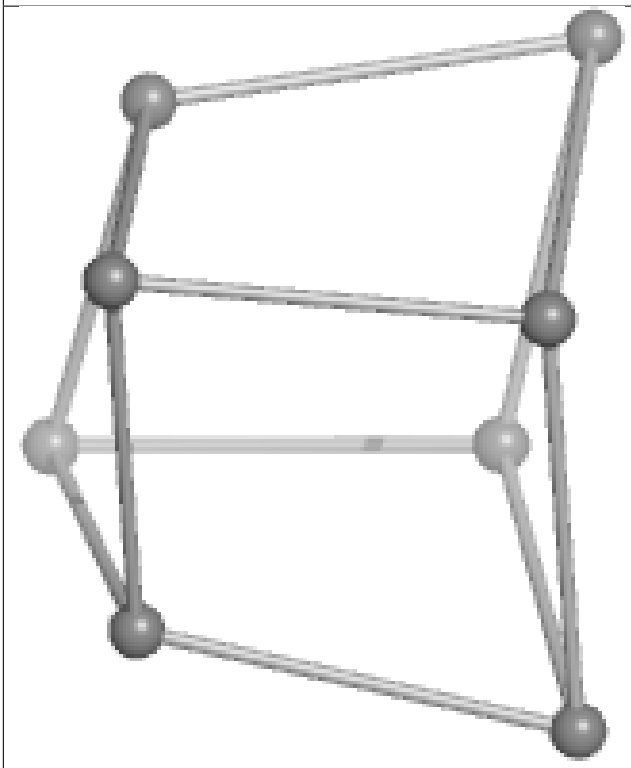

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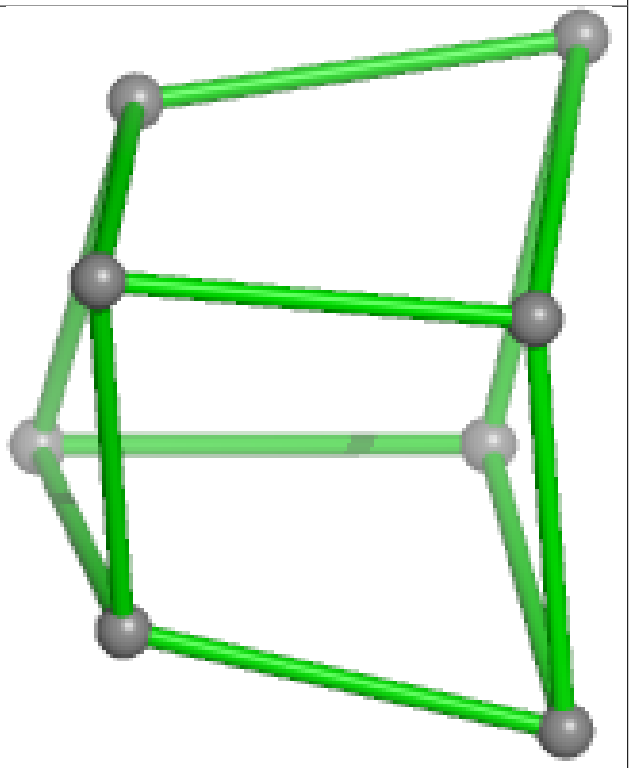
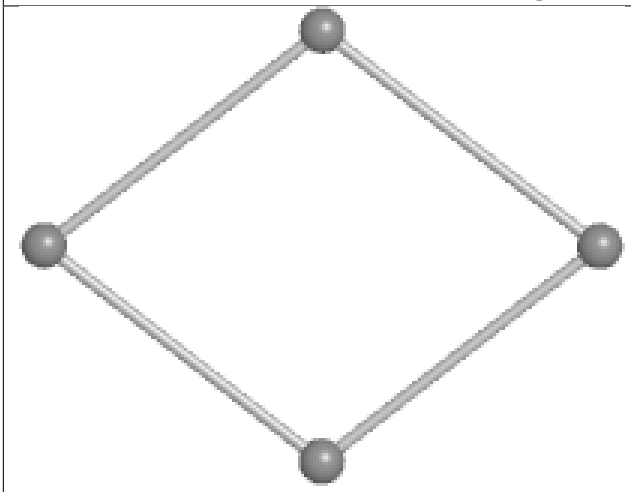


Rings

Ligand FES L 201



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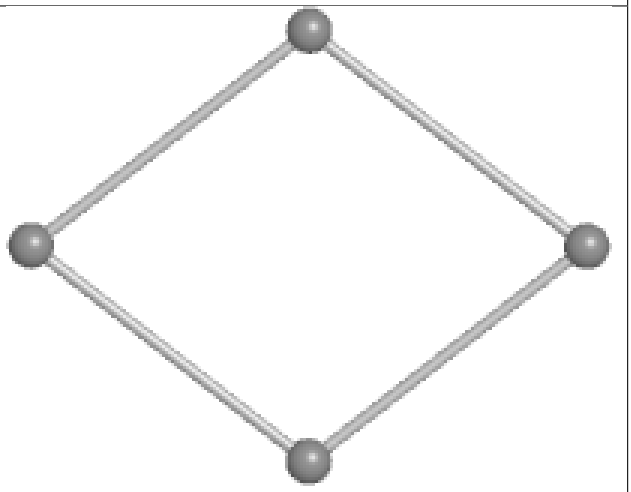

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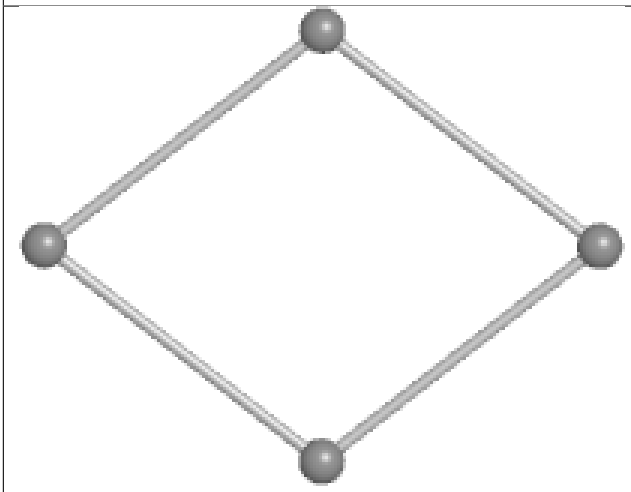

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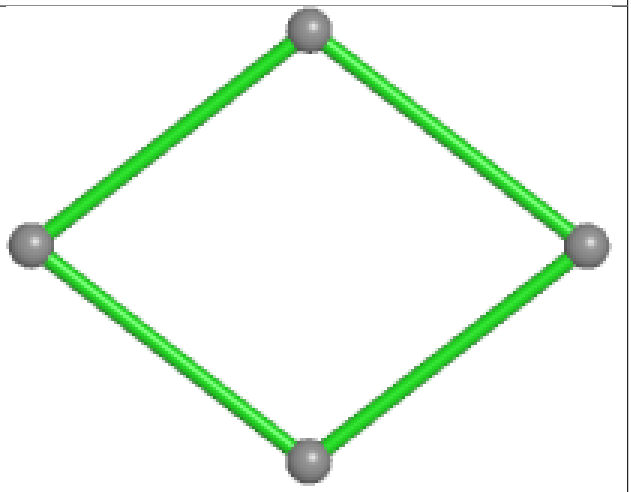
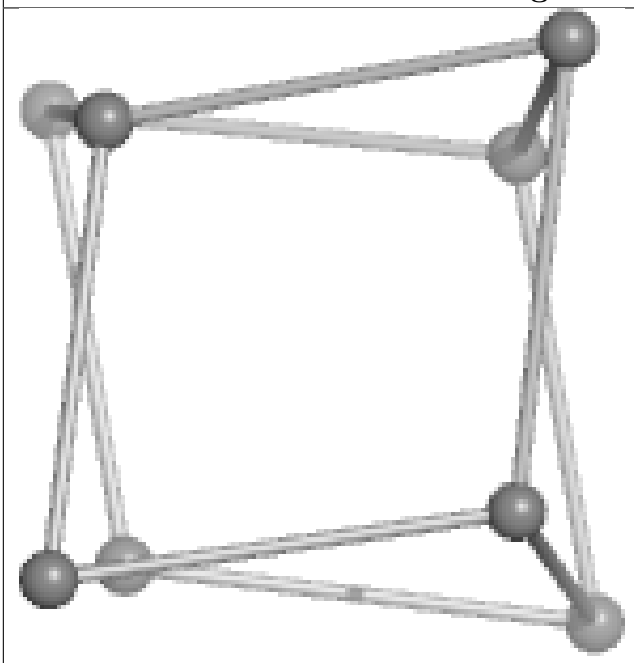


Rings

Ligand SF4 O 409



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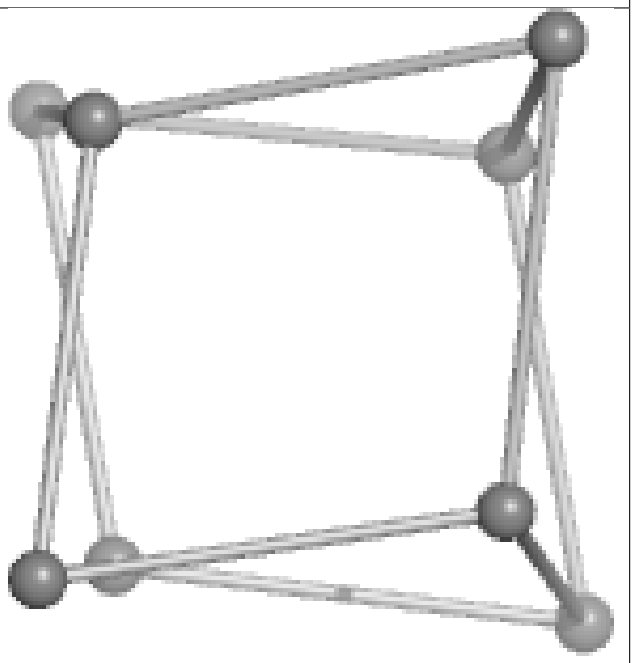
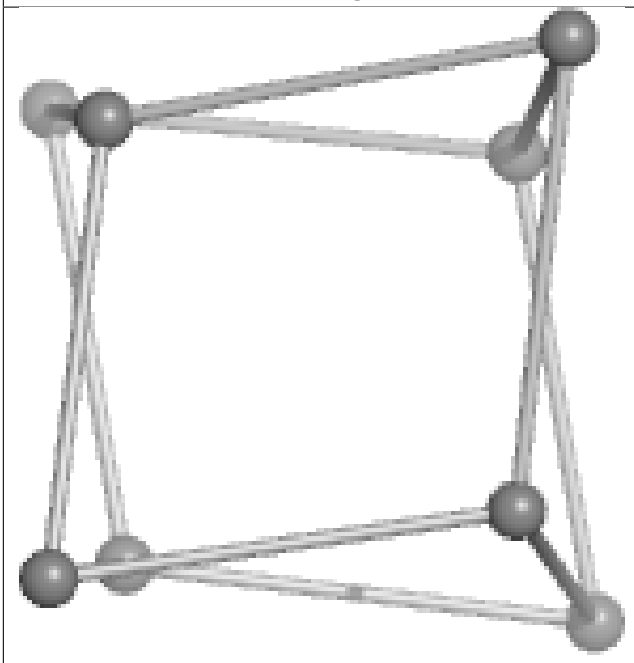
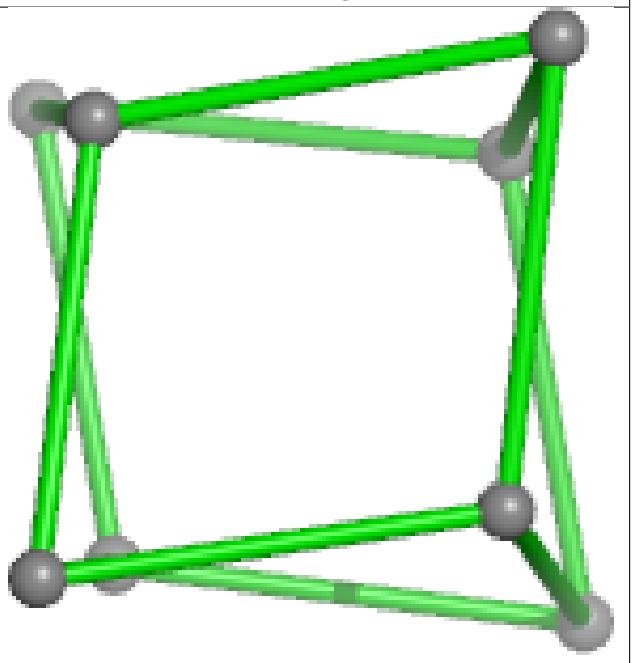


Bond angles

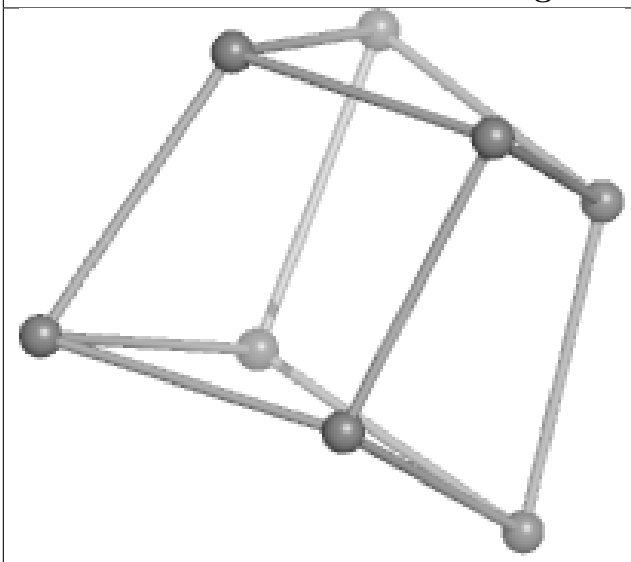


Torsions



Rings

Ligand SF4 u 102



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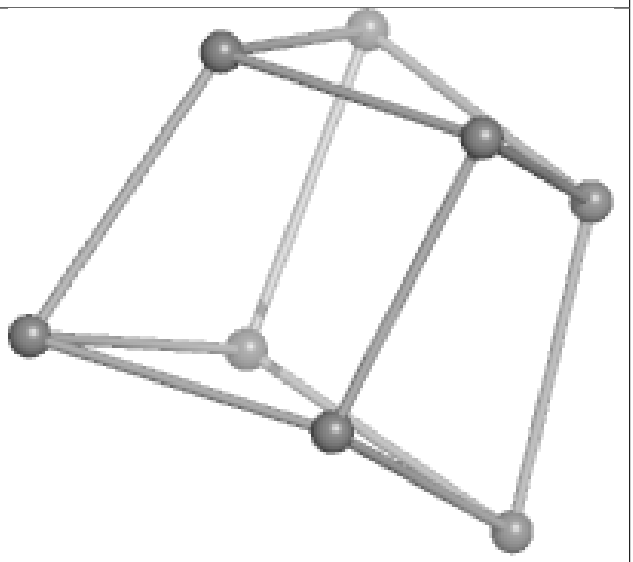

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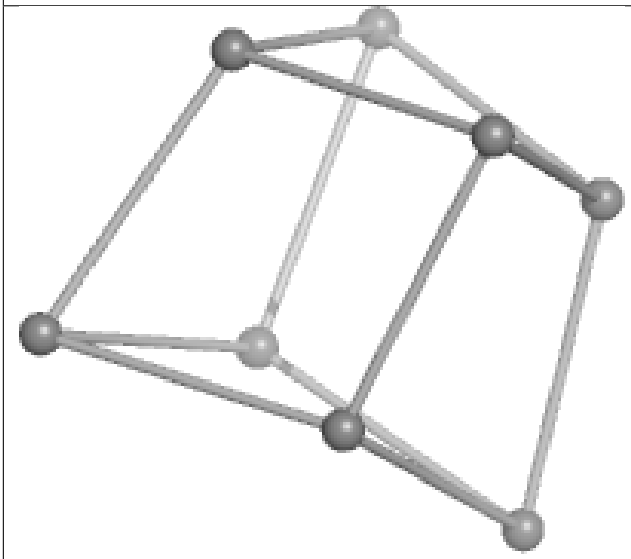

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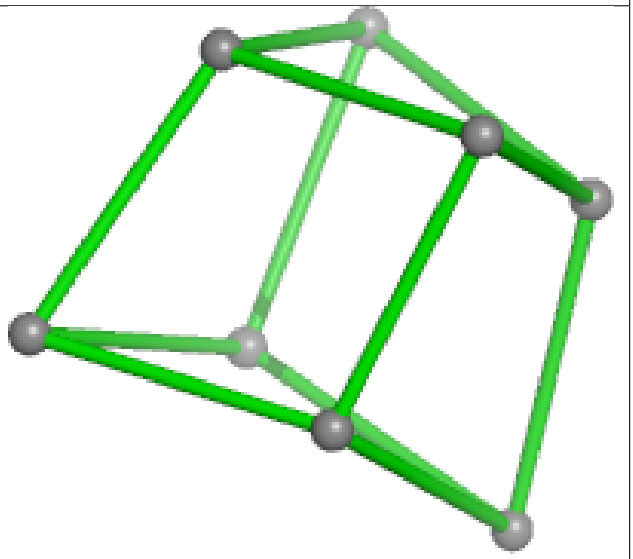
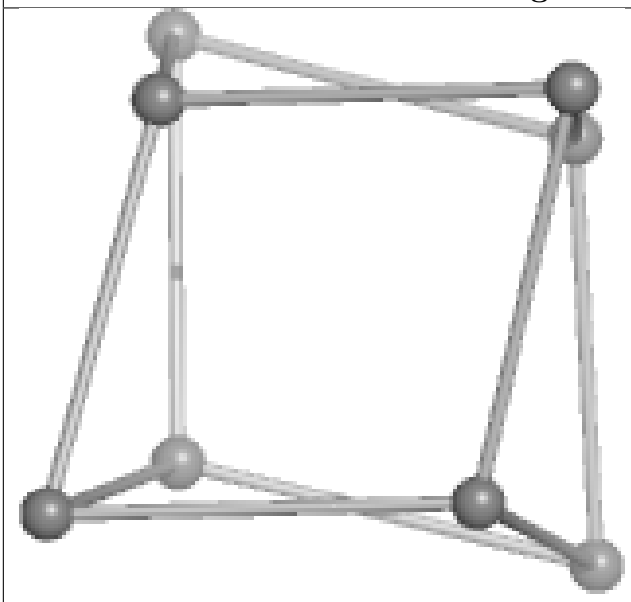


Rings

Ligand SF4 A 707



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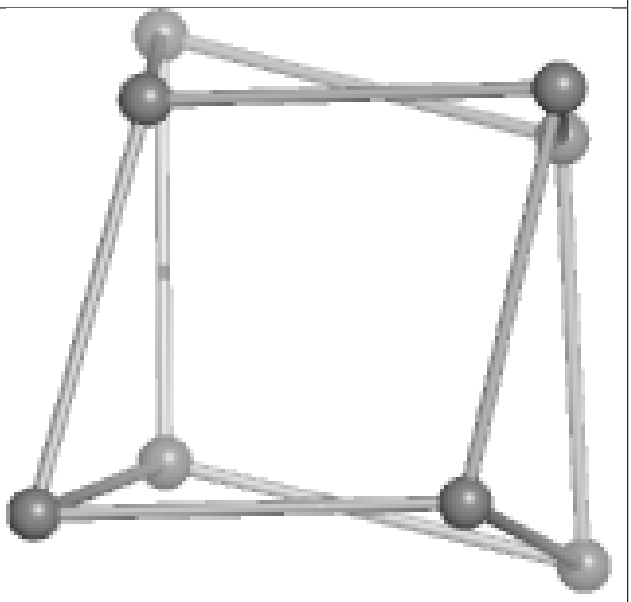

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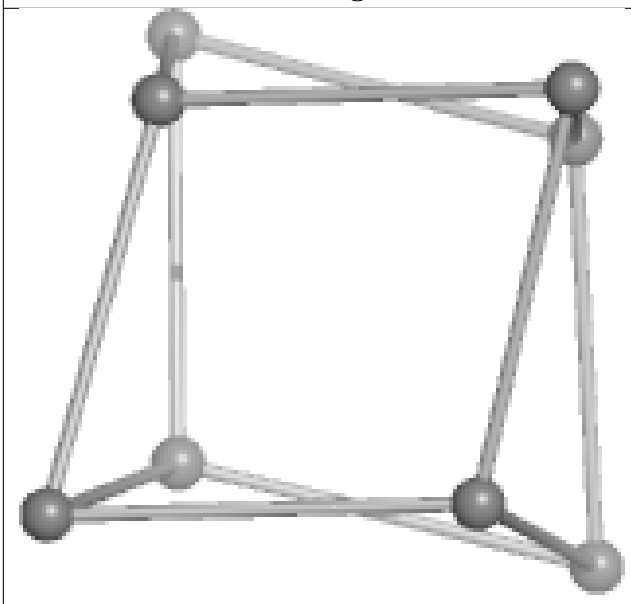

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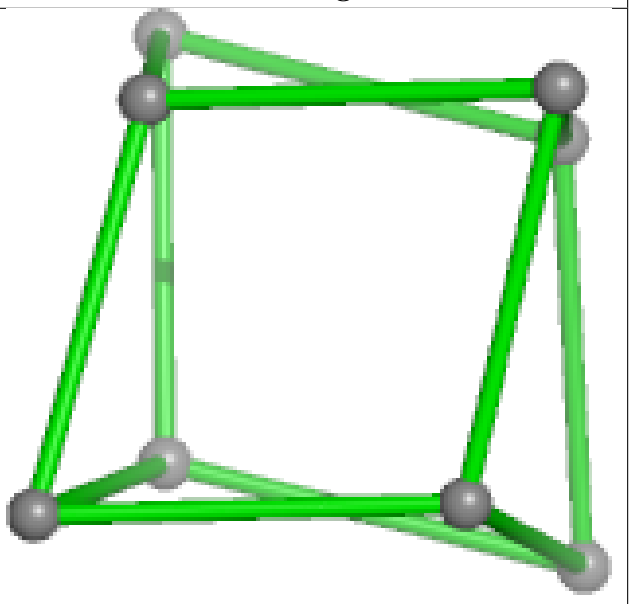
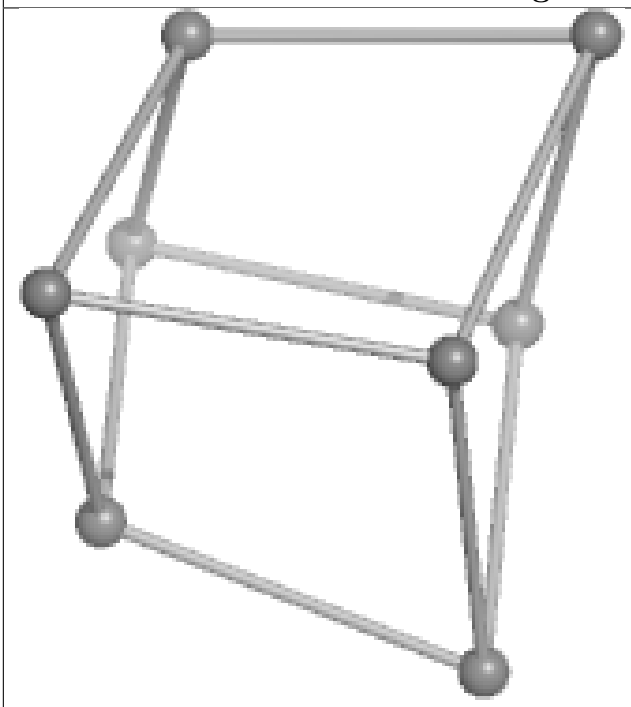


Rings

Ligand SF4 E 201



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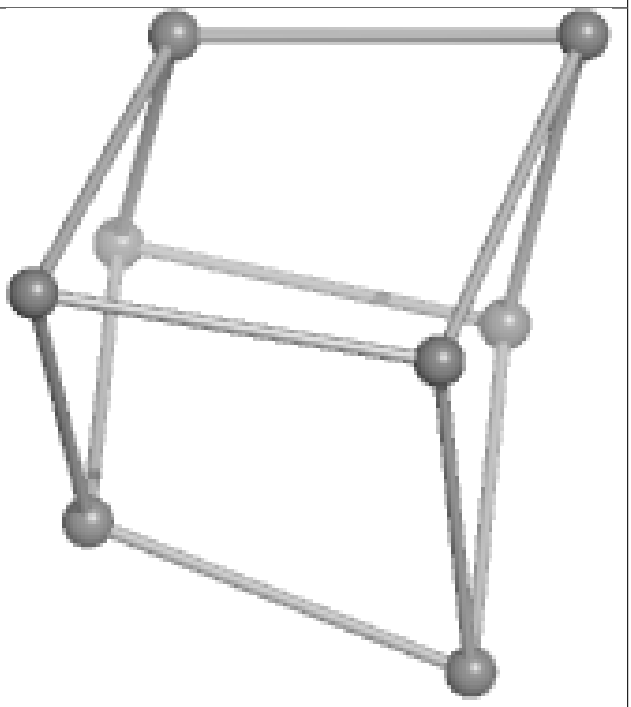

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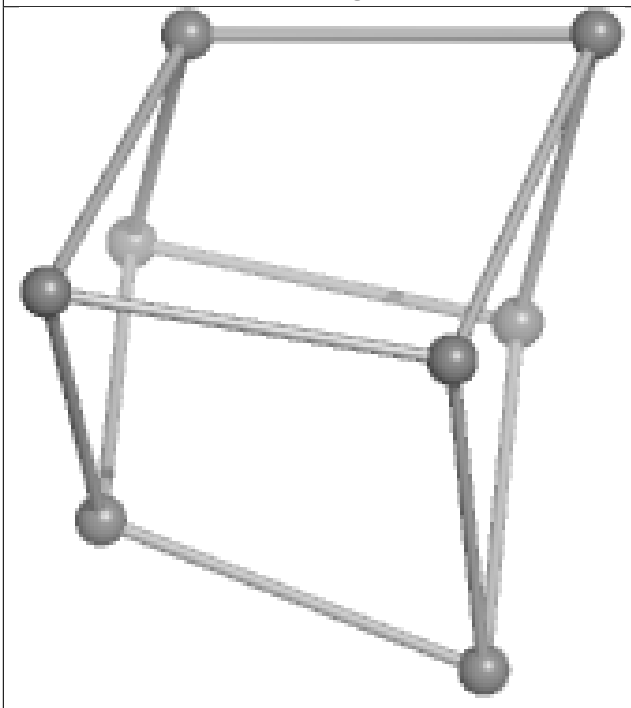

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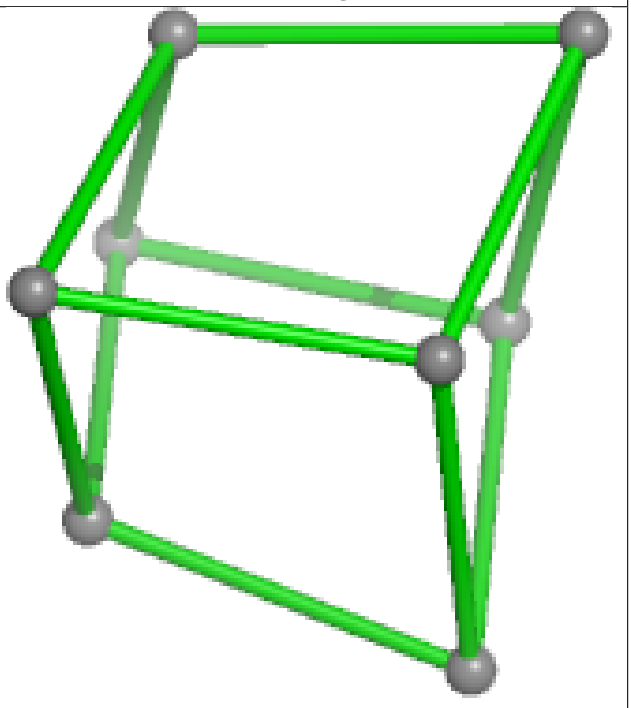
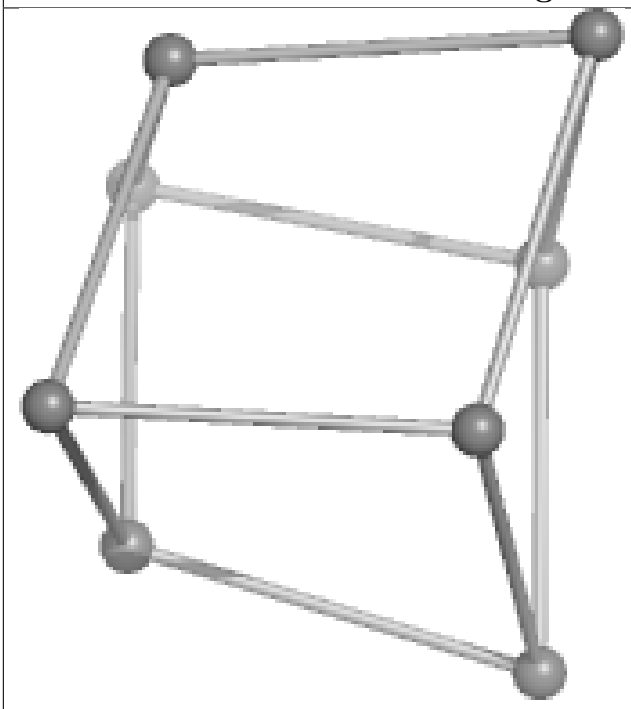


Rings

Ligand SF4 o 410



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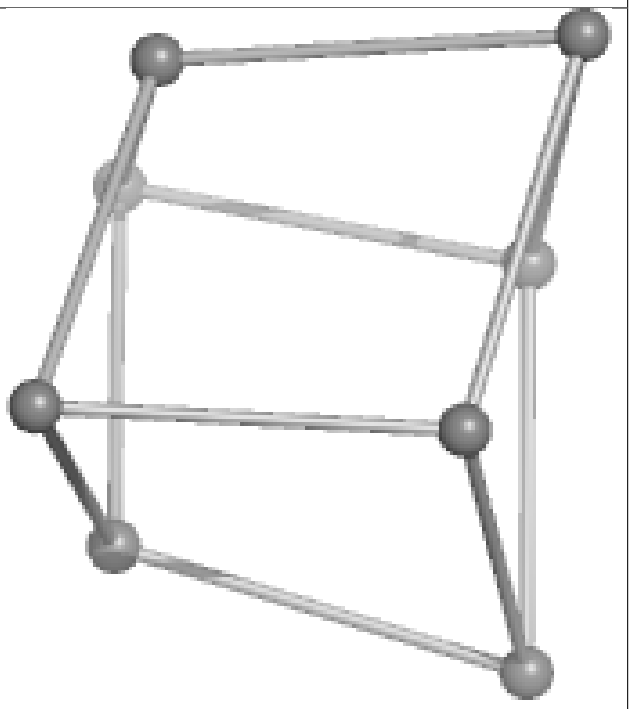

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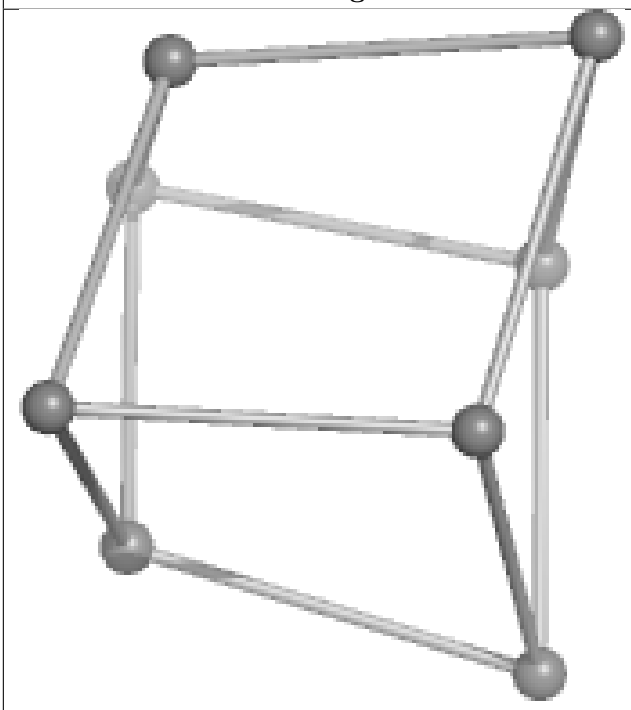

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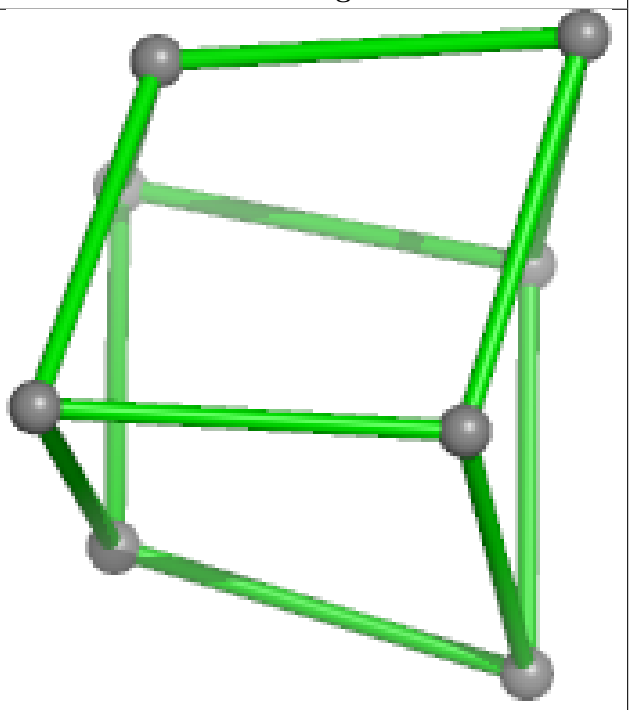
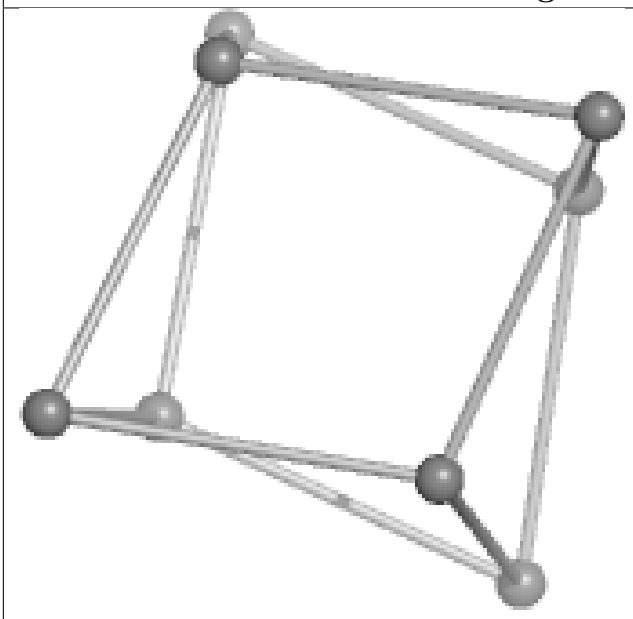


Rings

Ligand SF4 t 404



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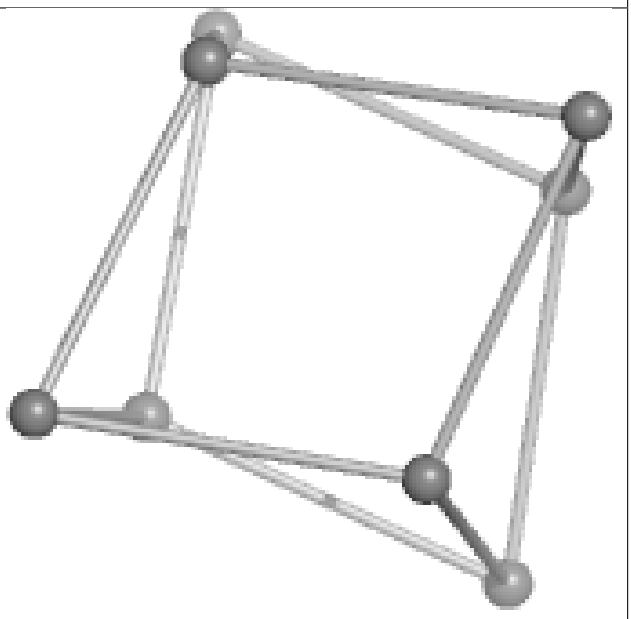

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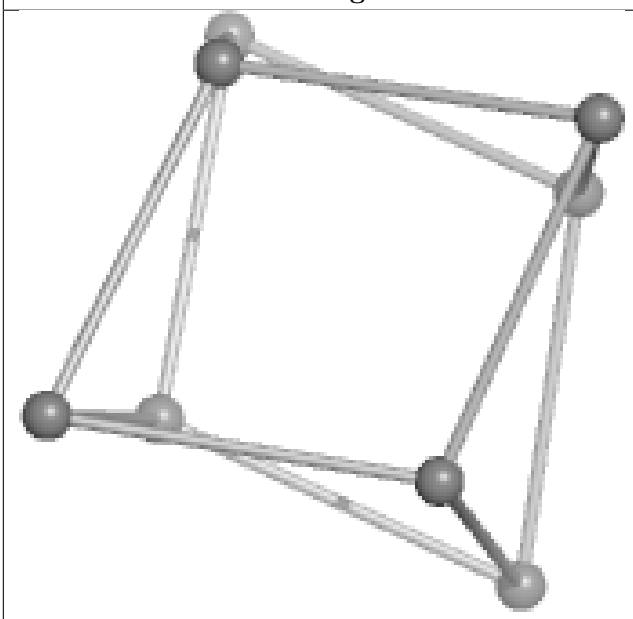

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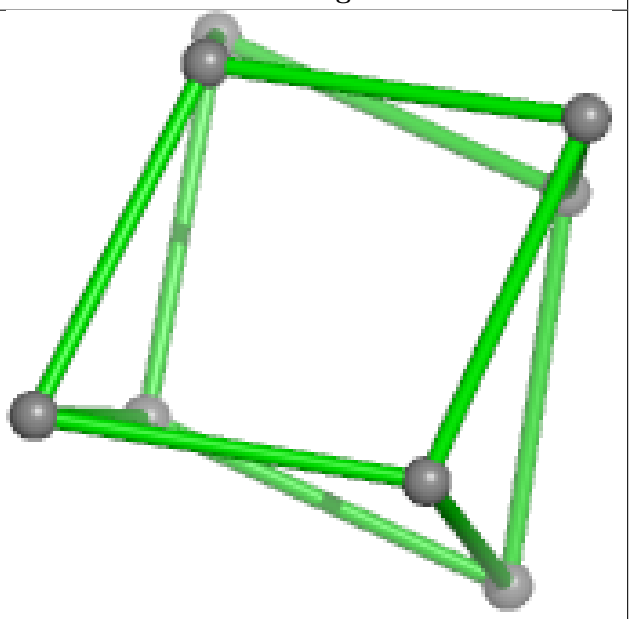
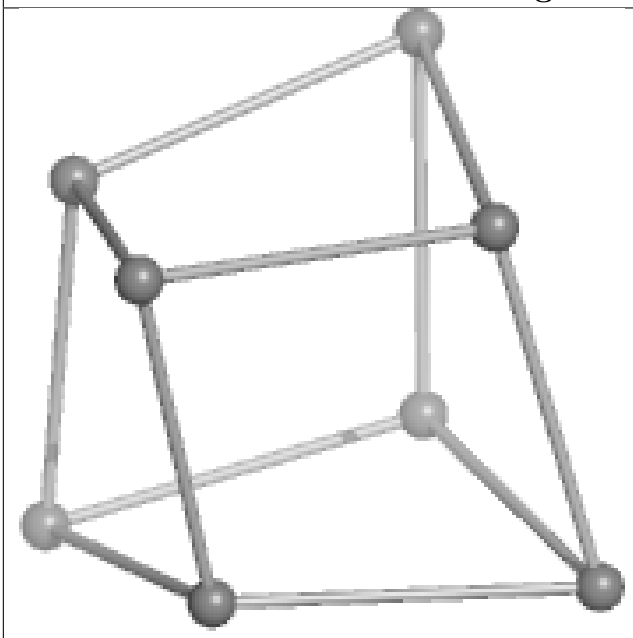


Rings

Ligand SF4 J 302



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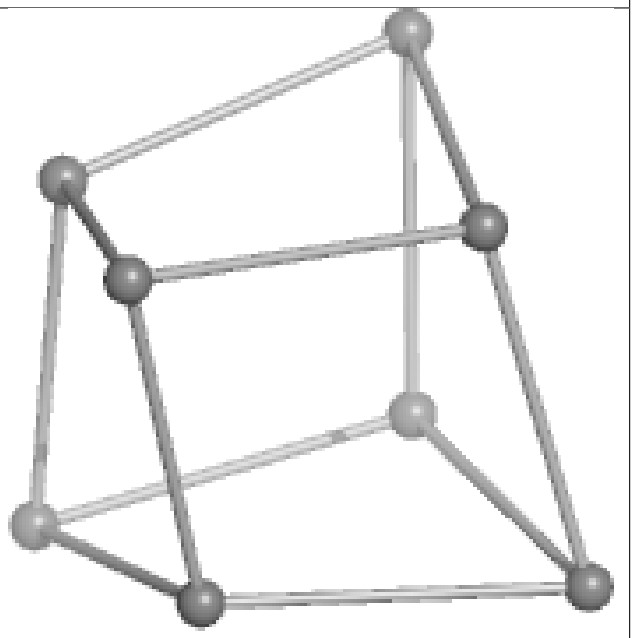

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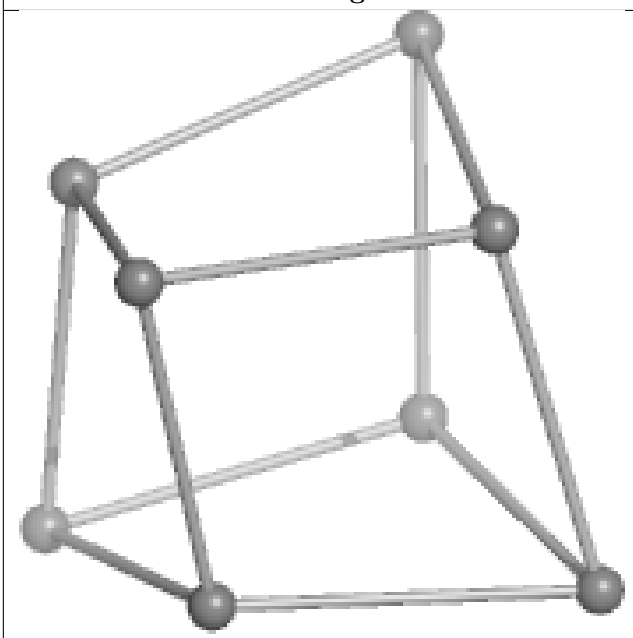

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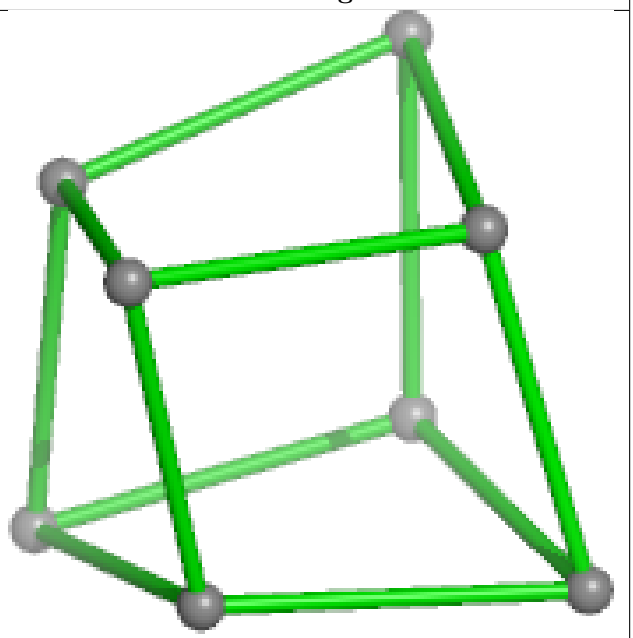
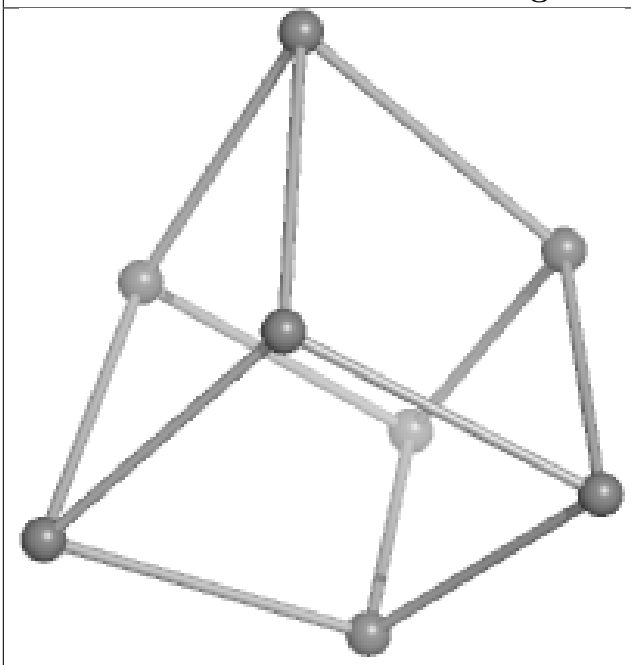


Rings

Ligand SF4 A 701



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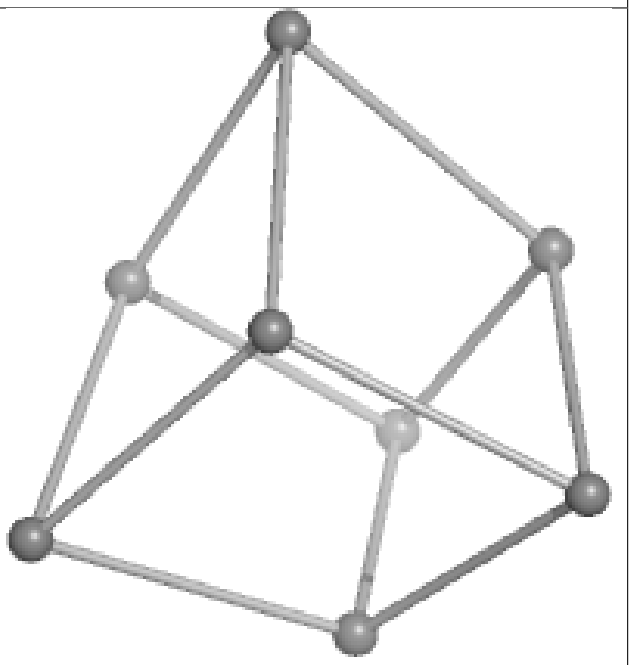
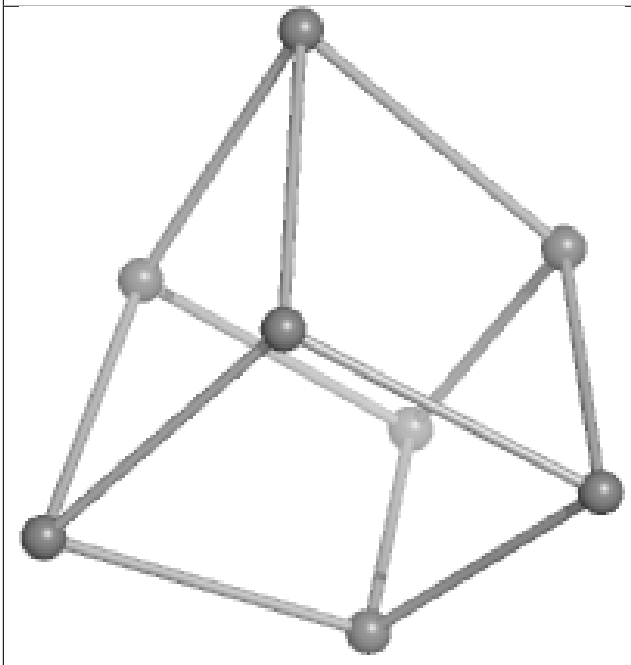


Bond angles



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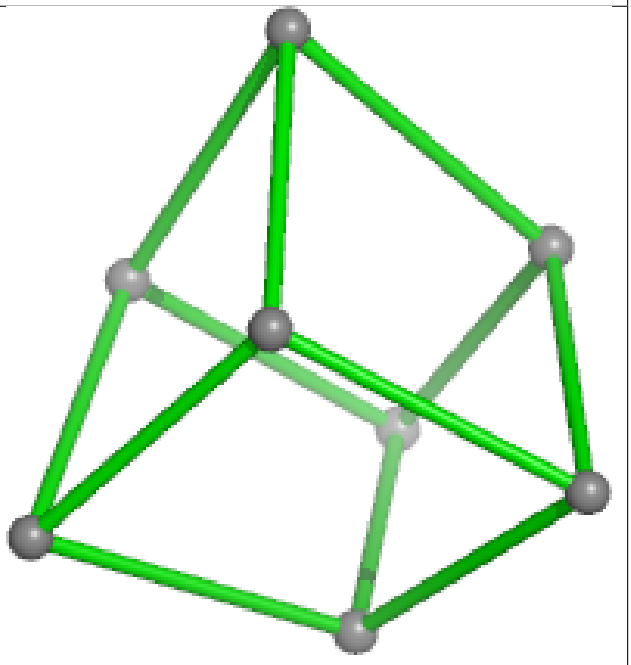
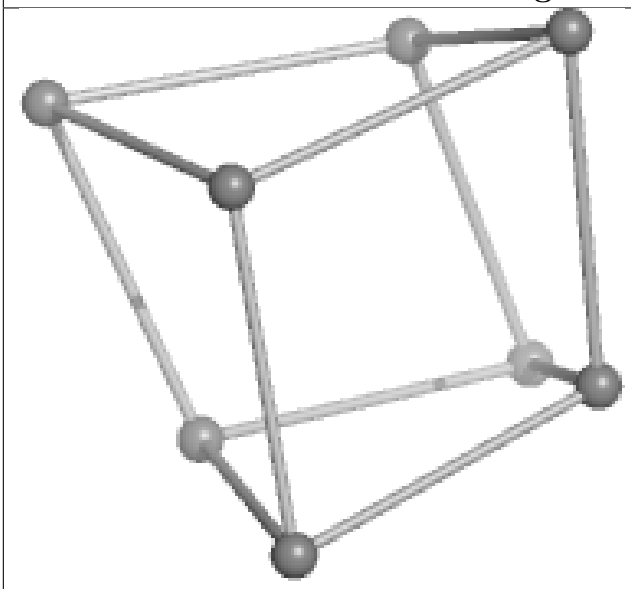


Rings

Ligand SF4 b 707



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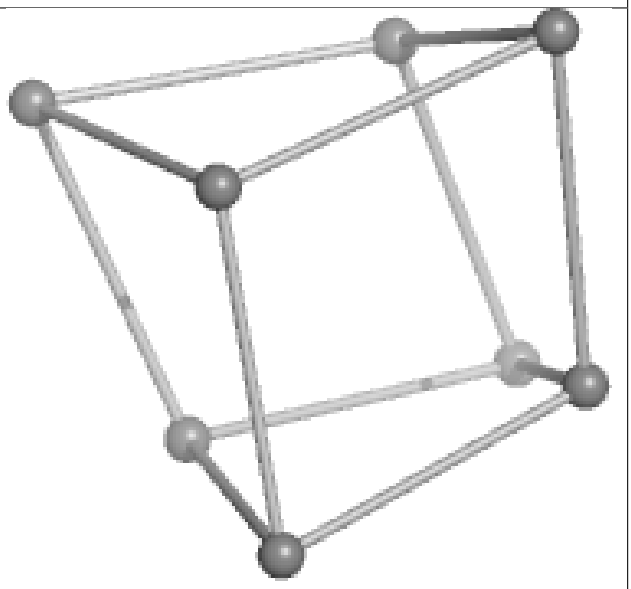
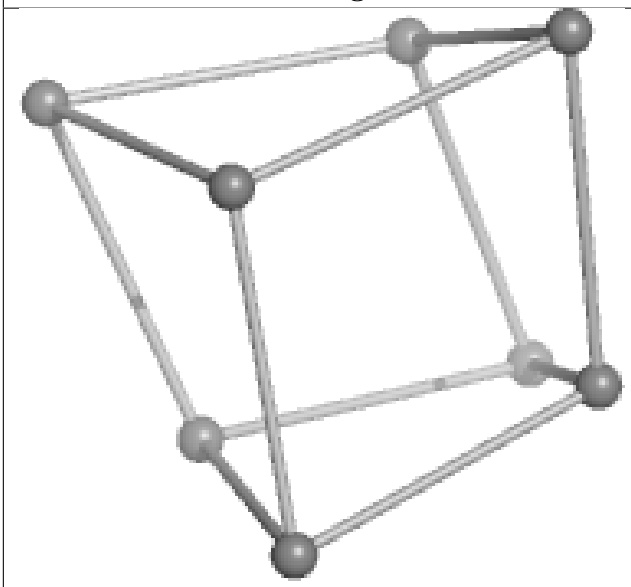


Bond angles



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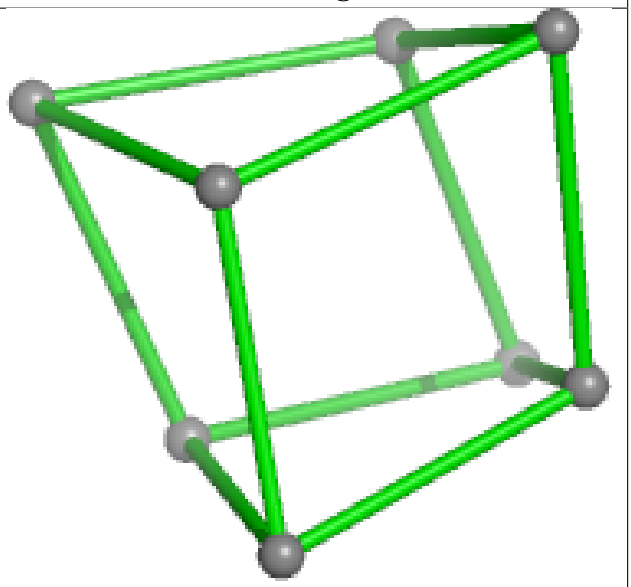
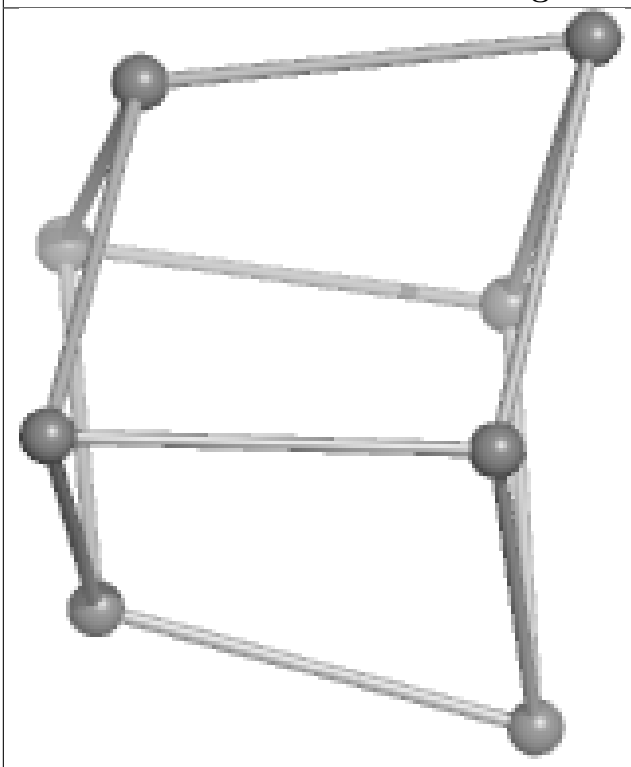


Rings

Ligand SF4 T 406



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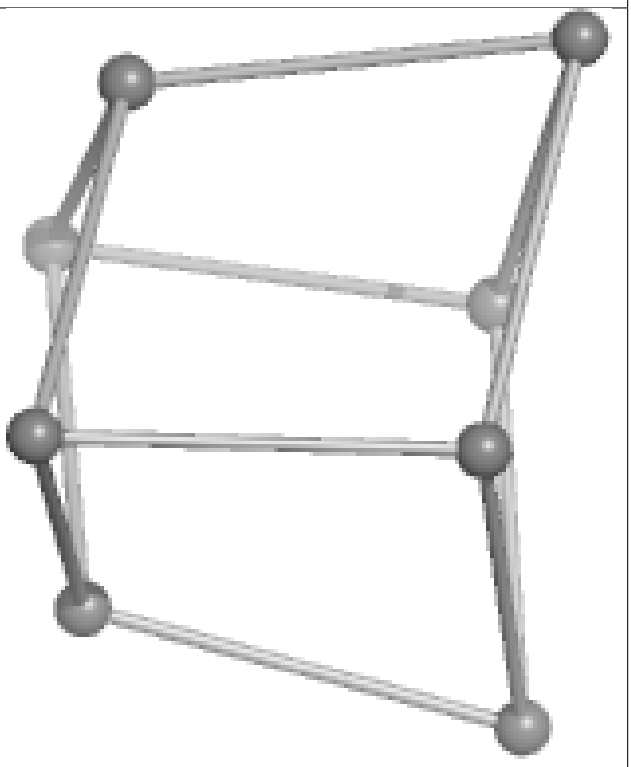

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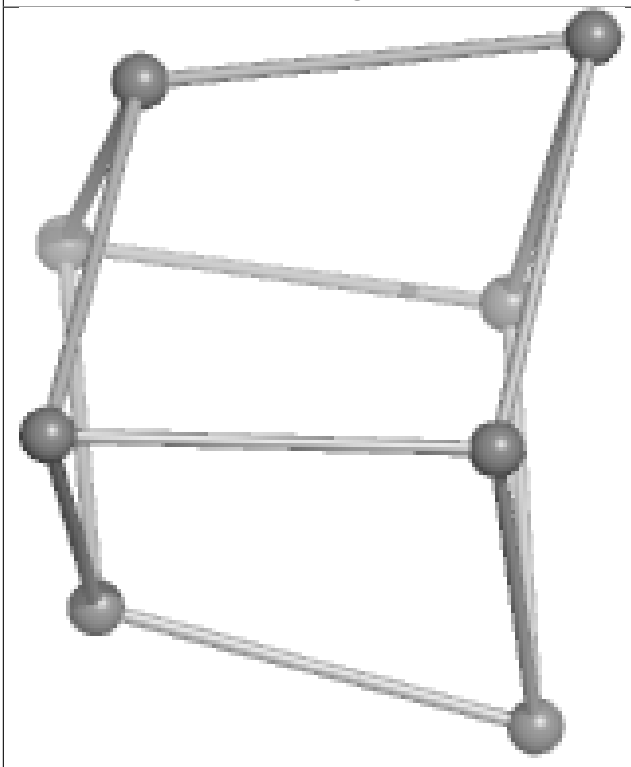

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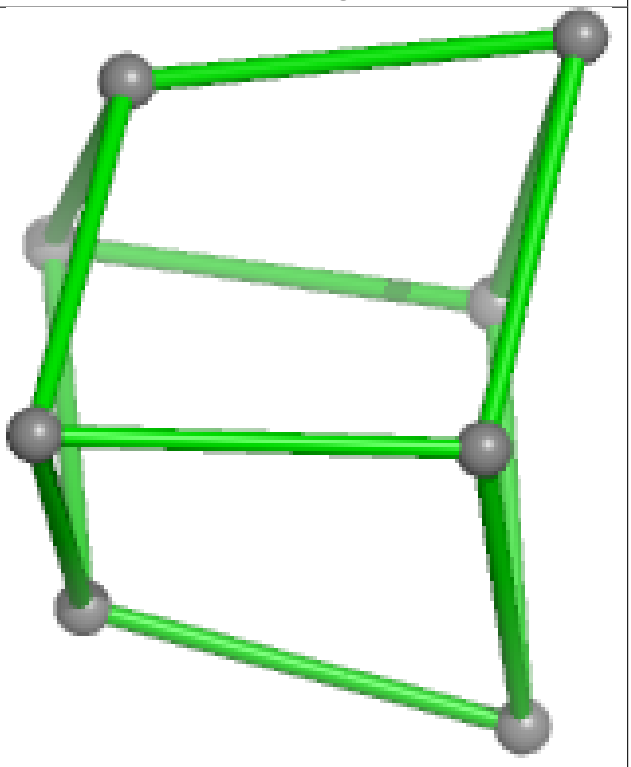
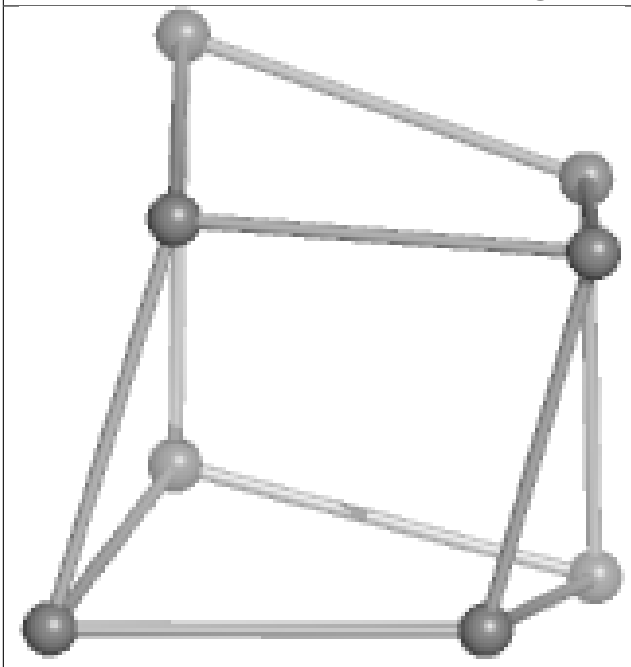


Rings

Ligand SF4 B 705



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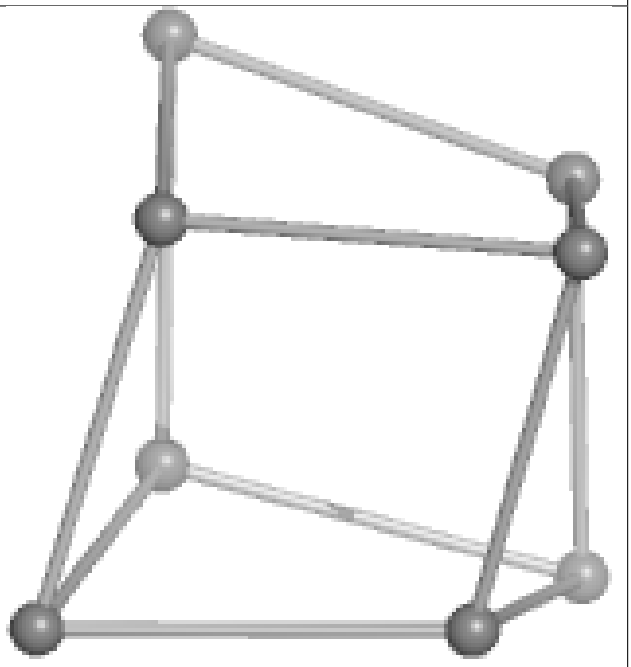

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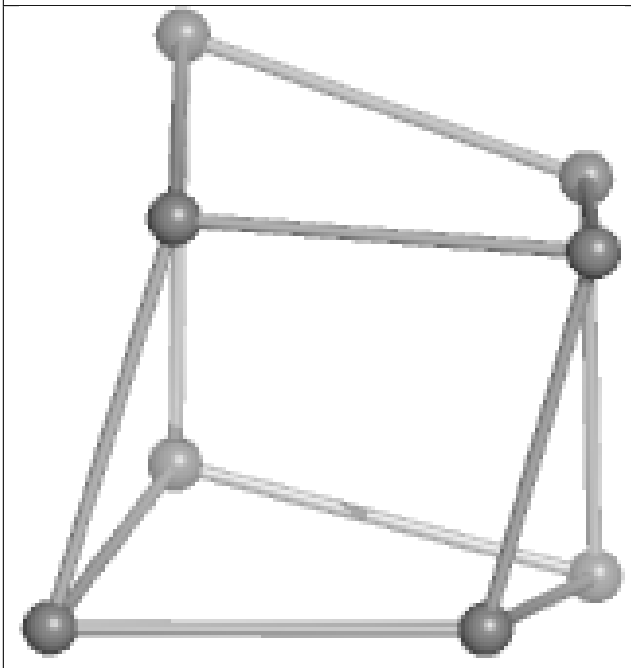

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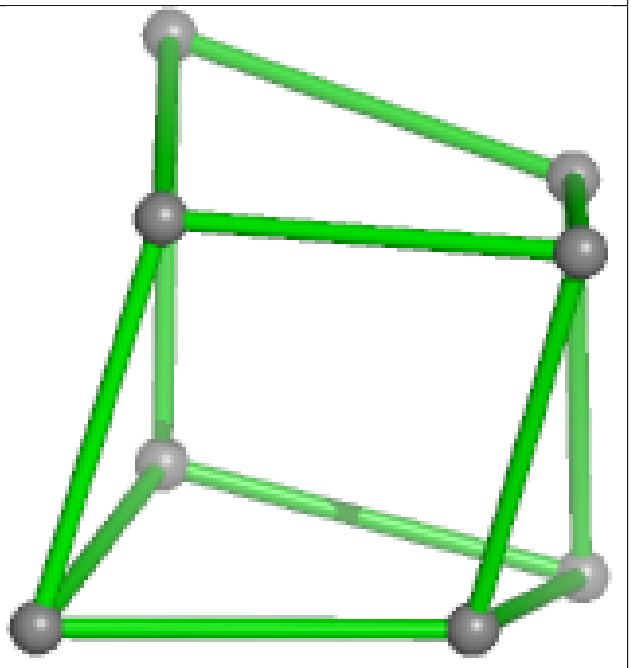
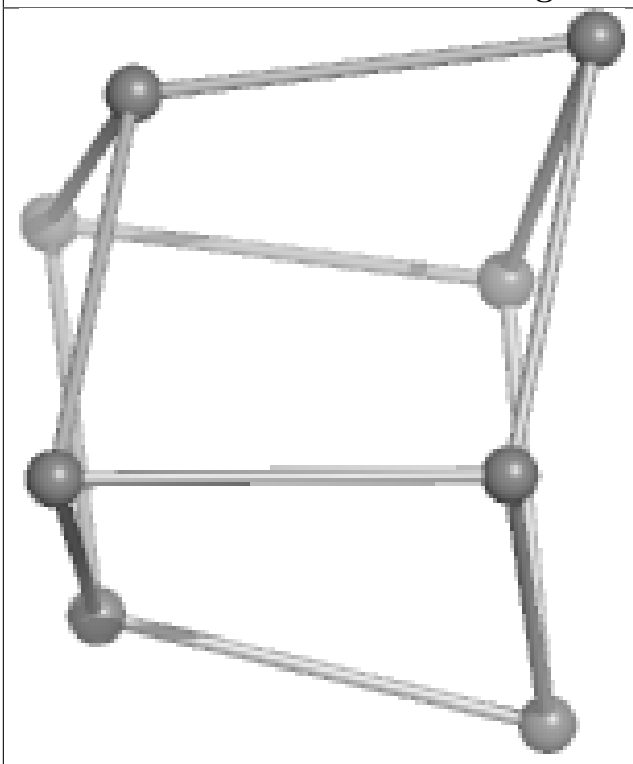


Rings

Ligand SF4 a 703



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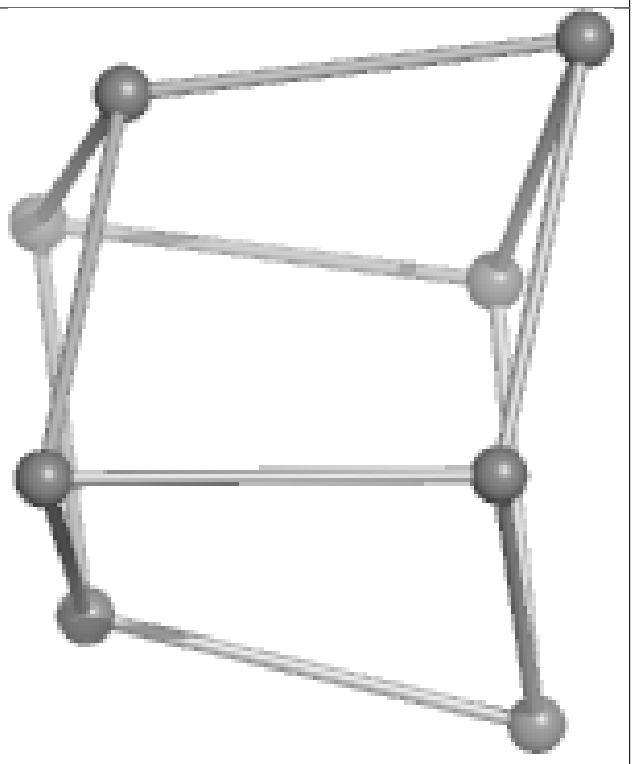
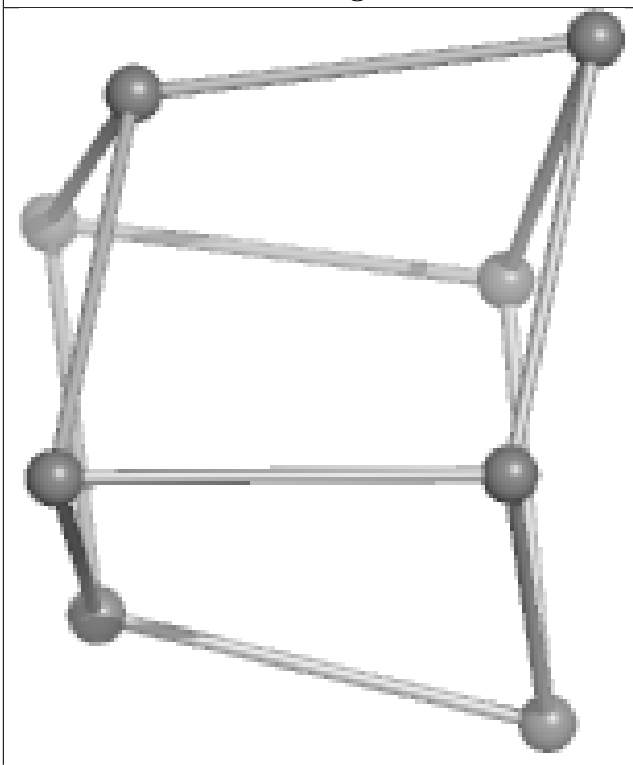


Bond angles



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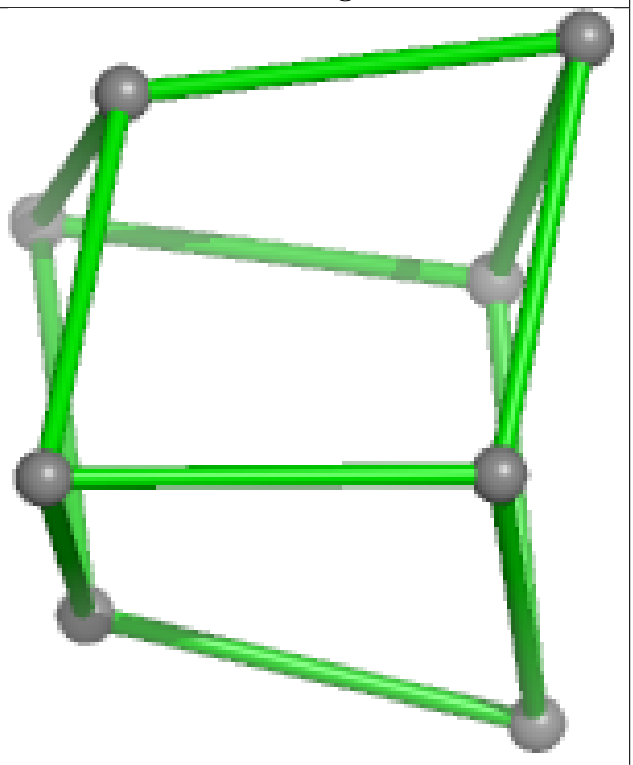
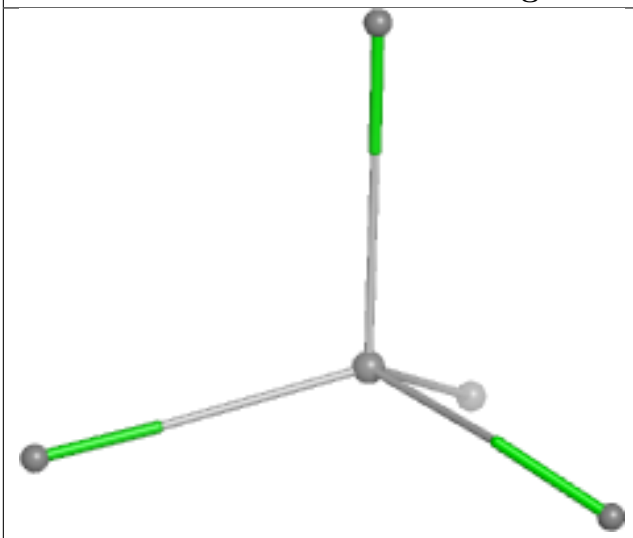


Rings

Ligand NFU H 501



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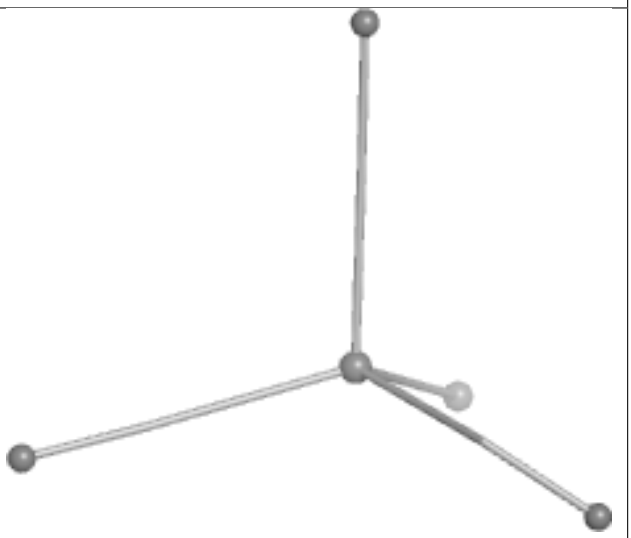
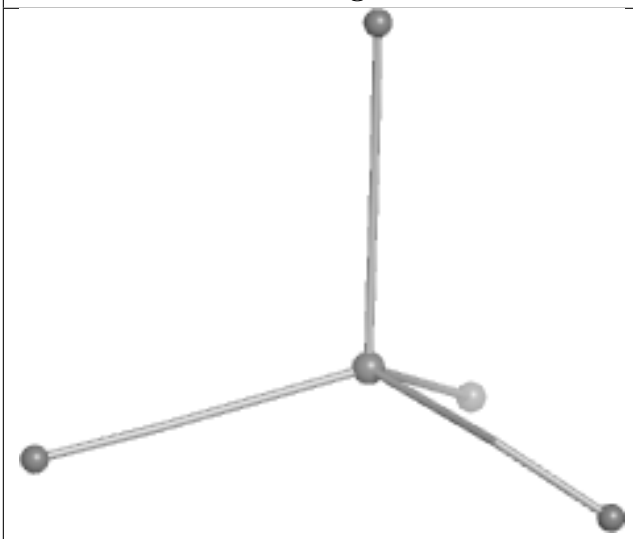


Bond angles



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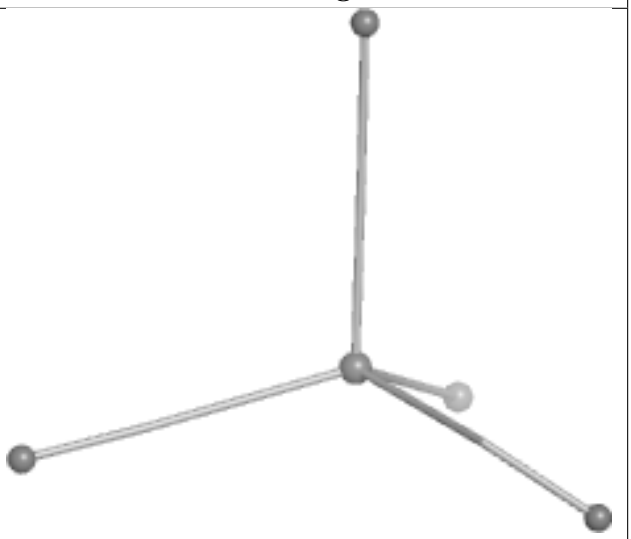
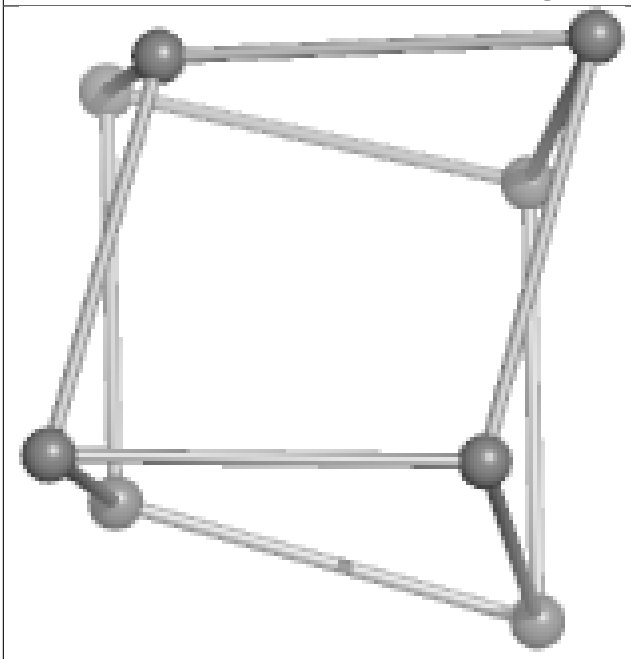


Rings

Ligand SF4 j 303



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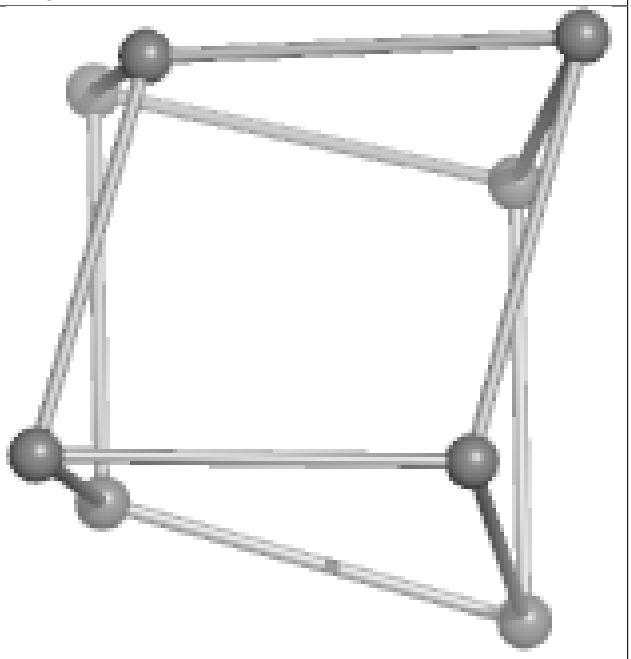
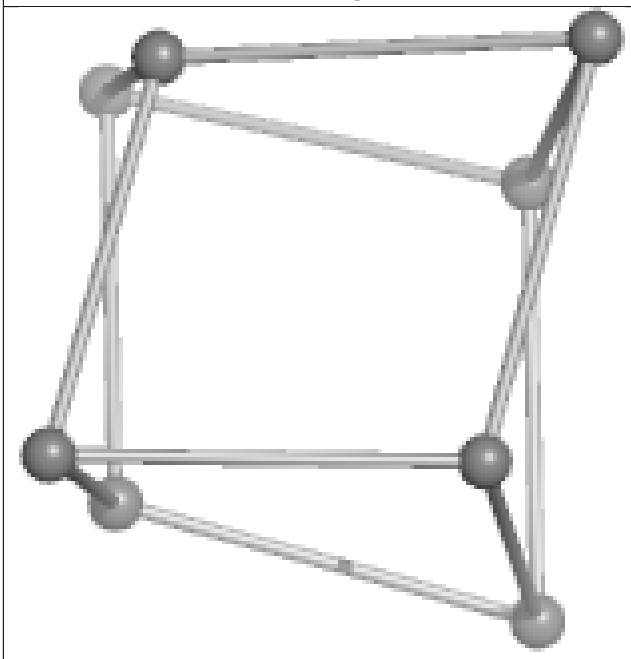


Bond angles



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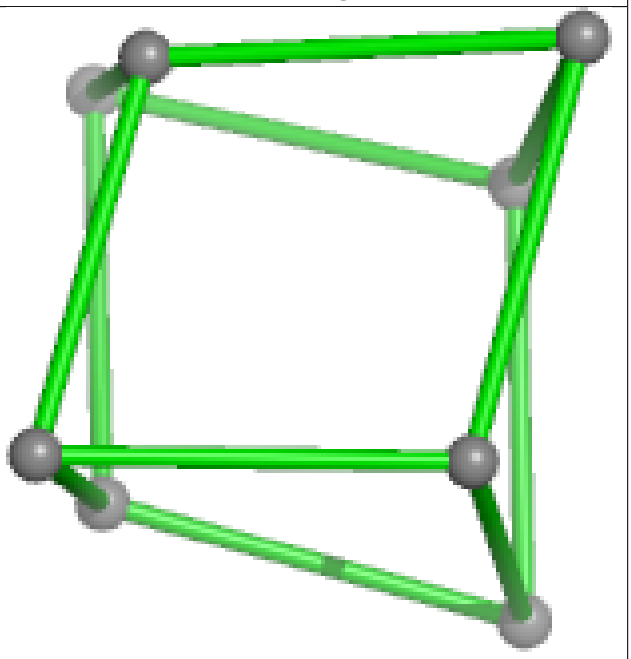
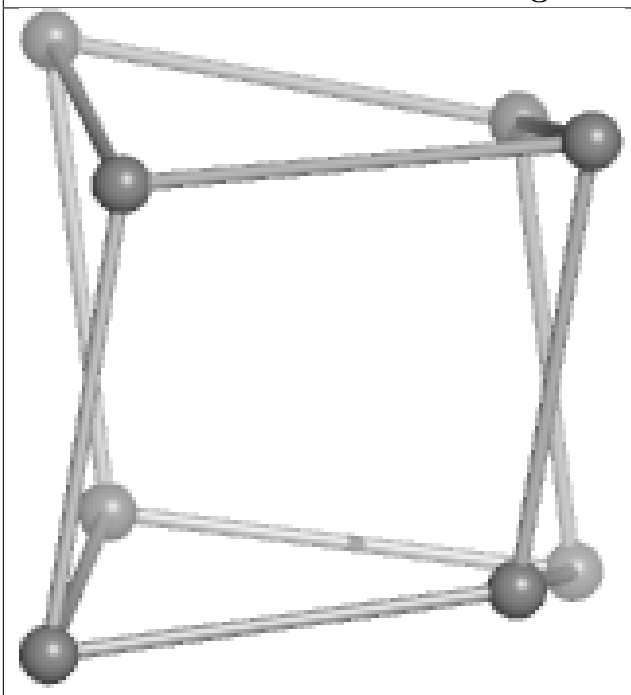
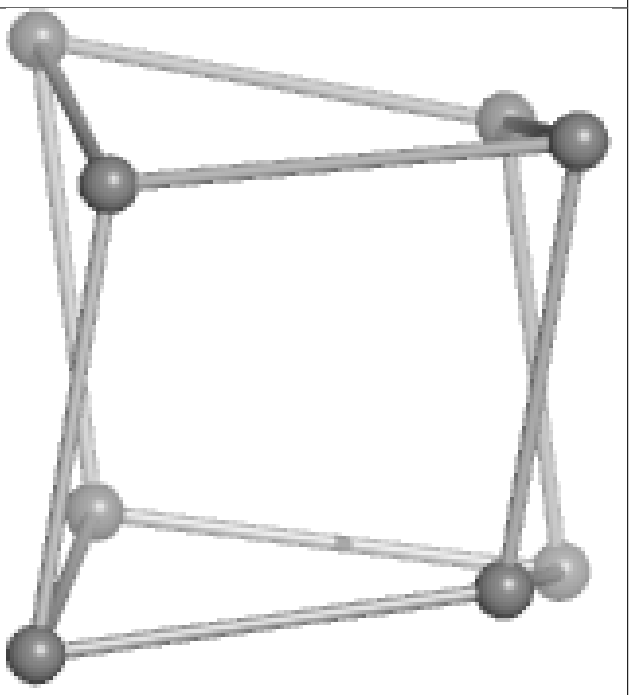


Rings

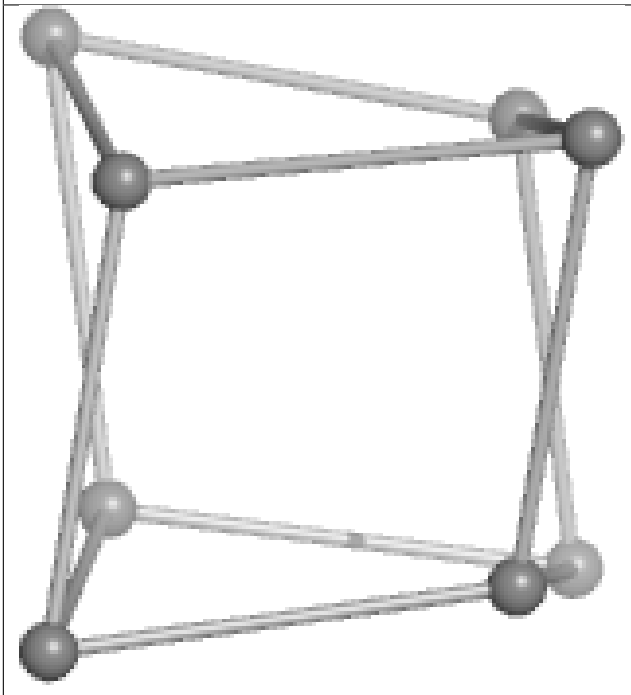
Ligand SF4 O 405



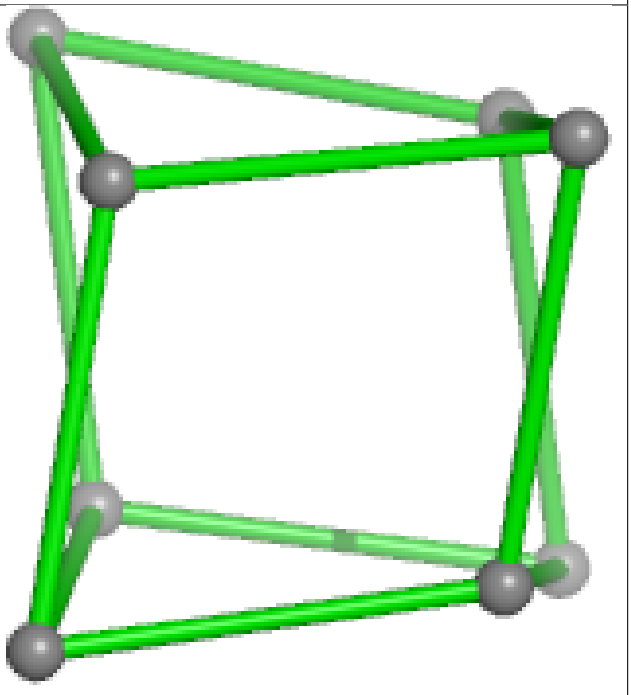
Bond lengths



Bond angles

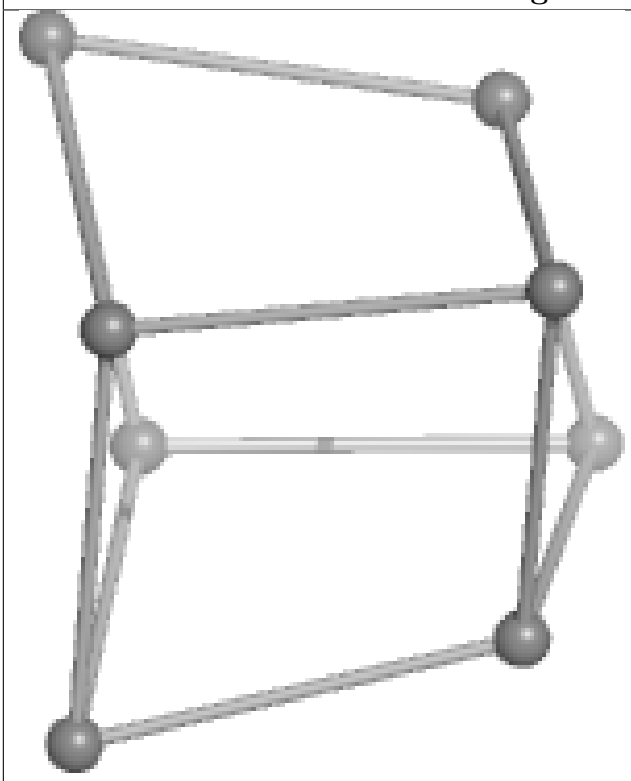


Torsions

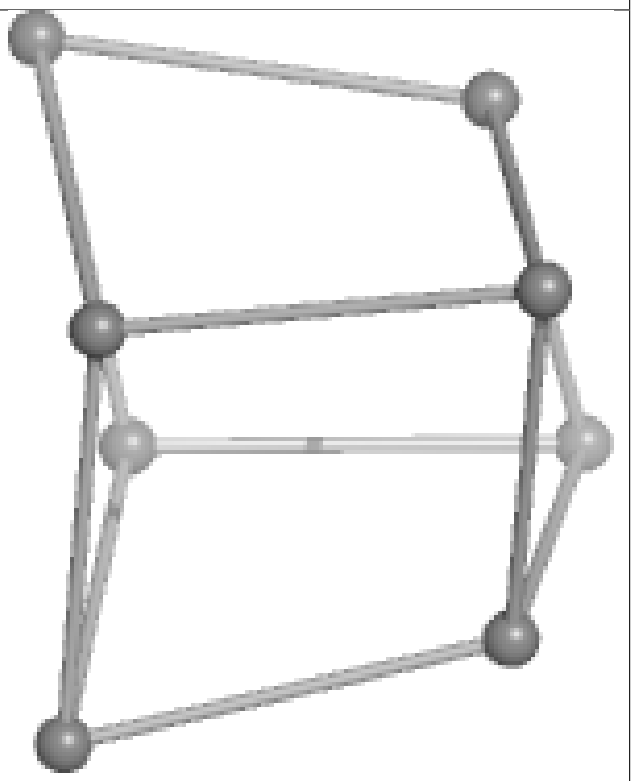


Rings

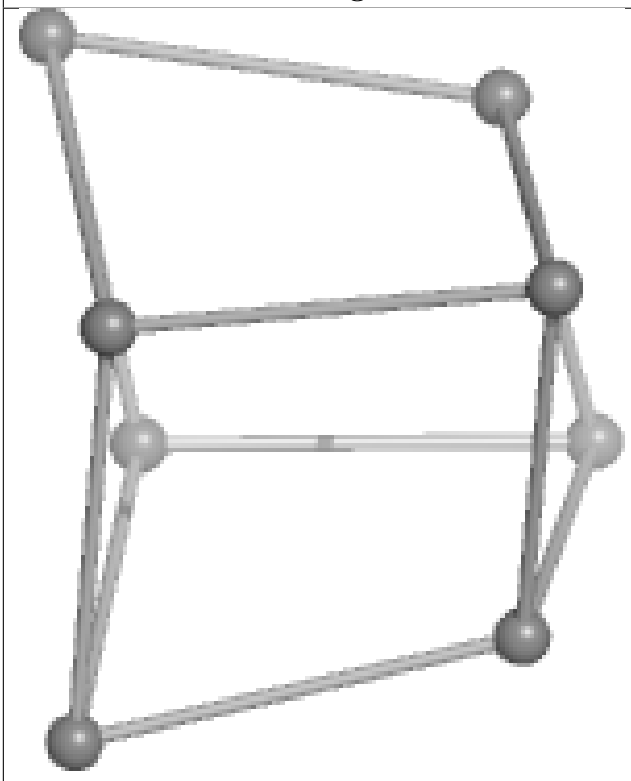
Ligand SF4 O 403



Bond lengths



Bond angles



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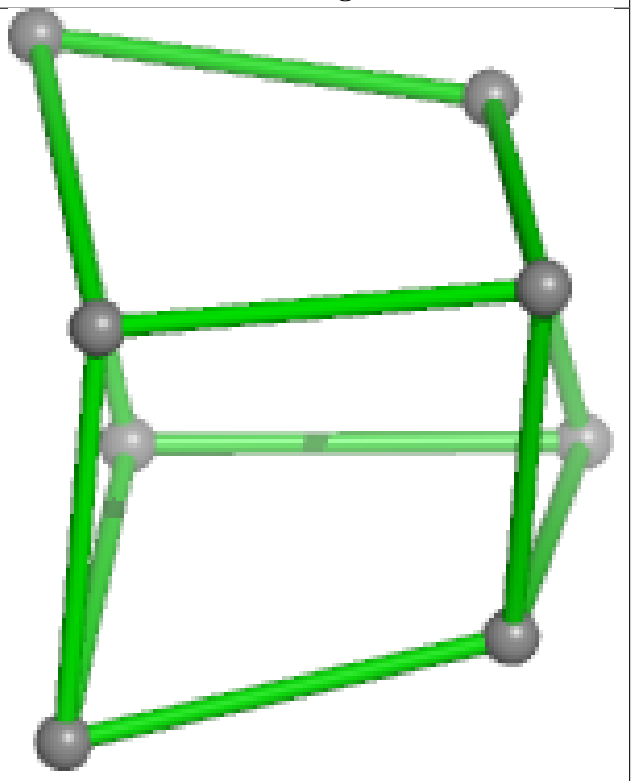
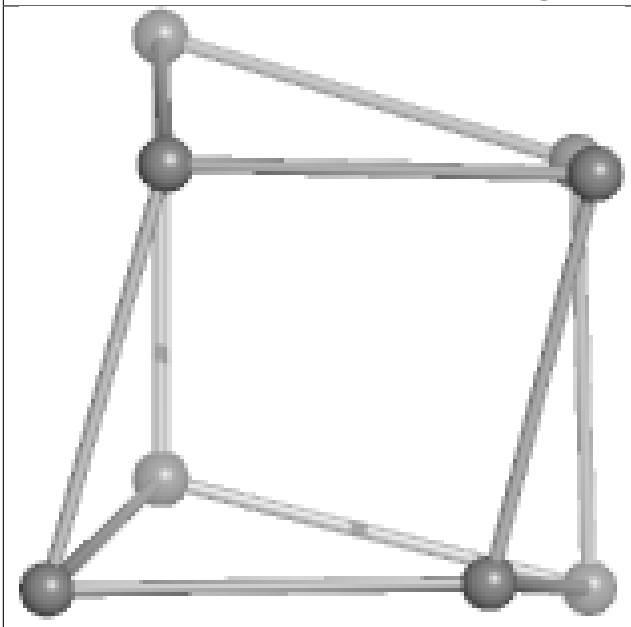


Rings

Ligand SF4 o 401



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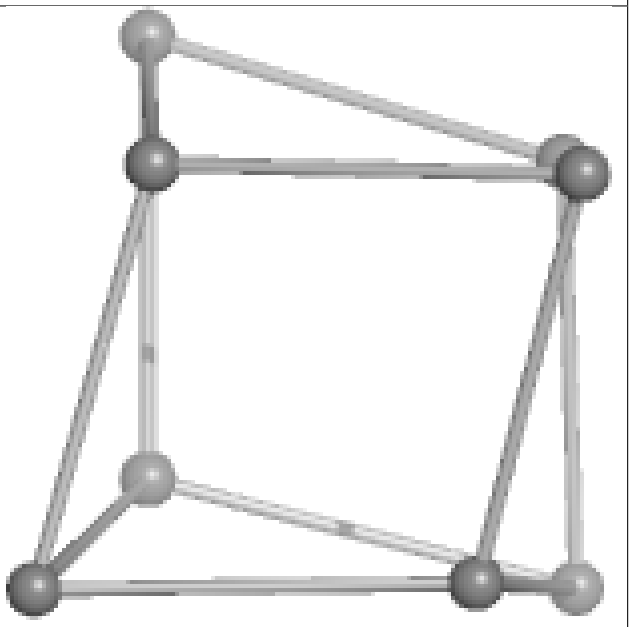
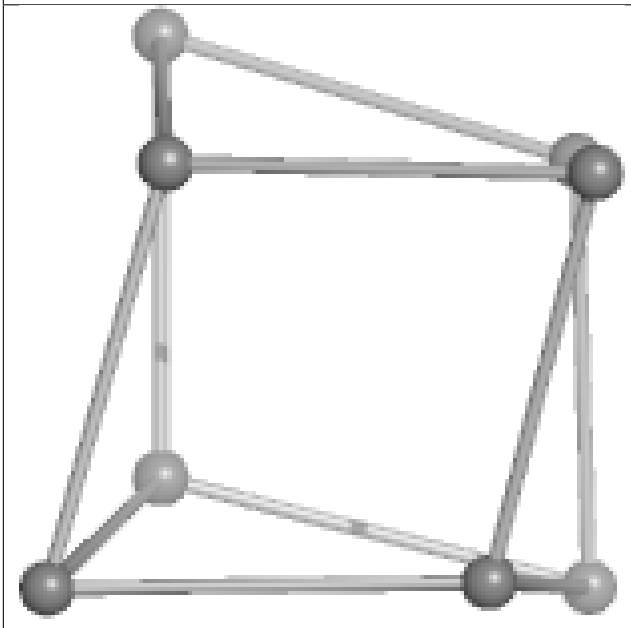


Bond angles



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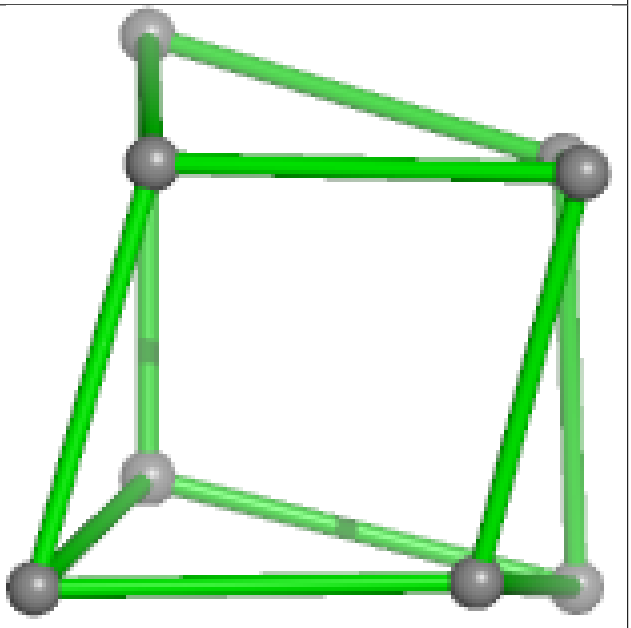
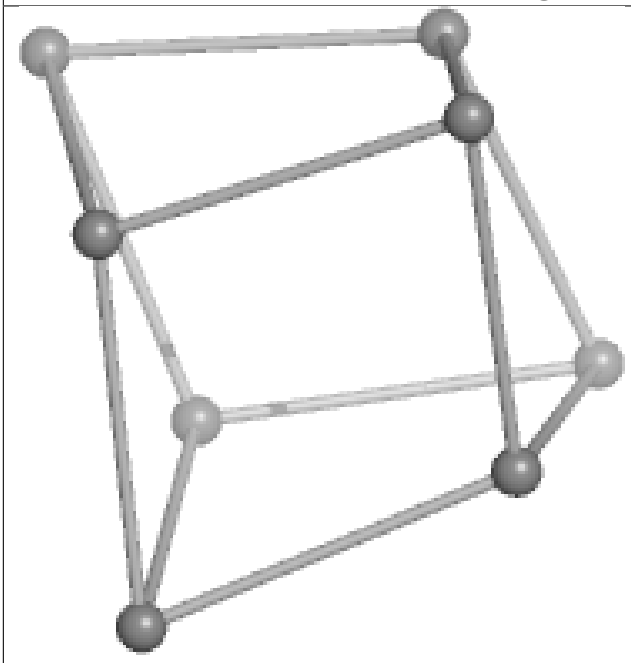


Rings

Ligand SF4 o 404



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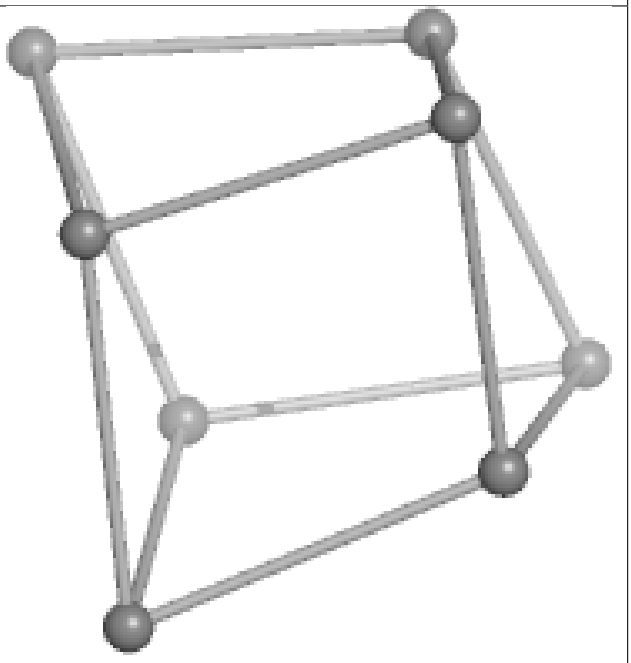

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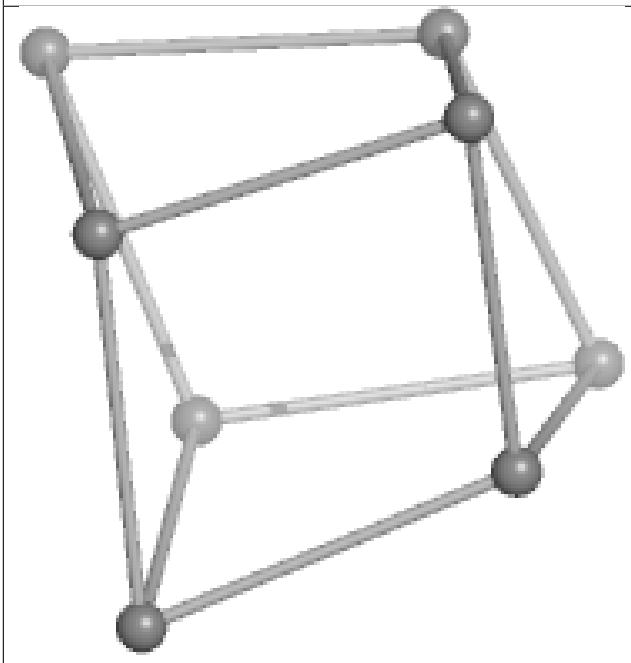

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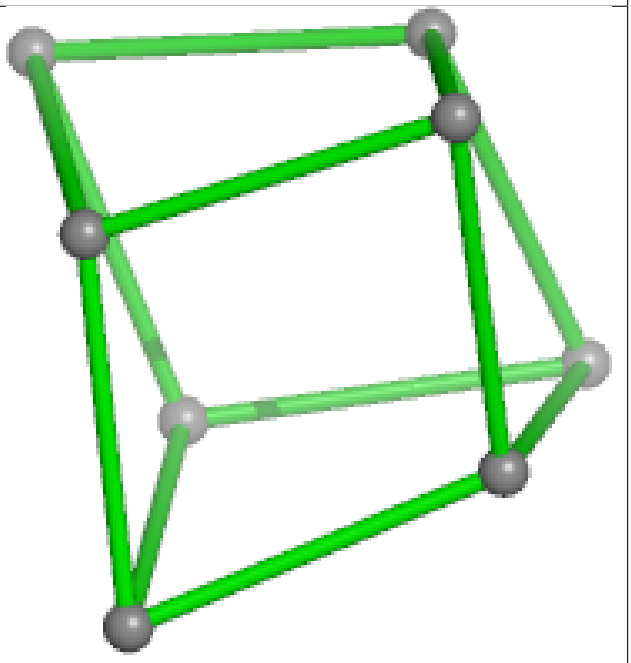
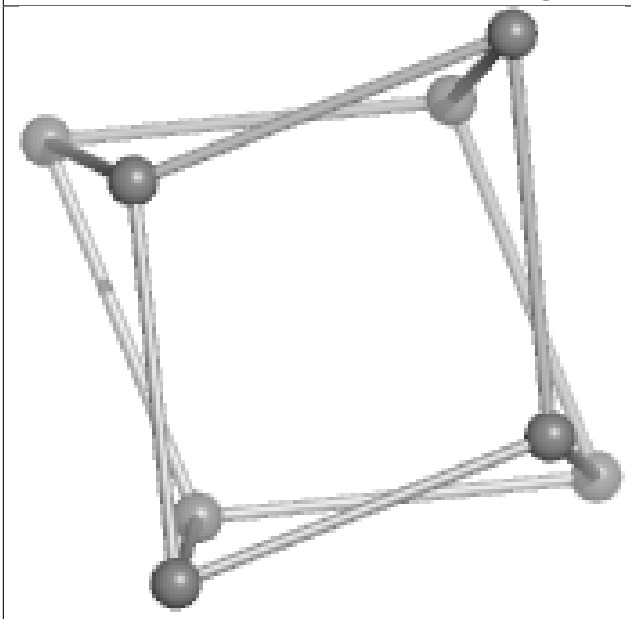


Rings

Ligand SF4 t 405



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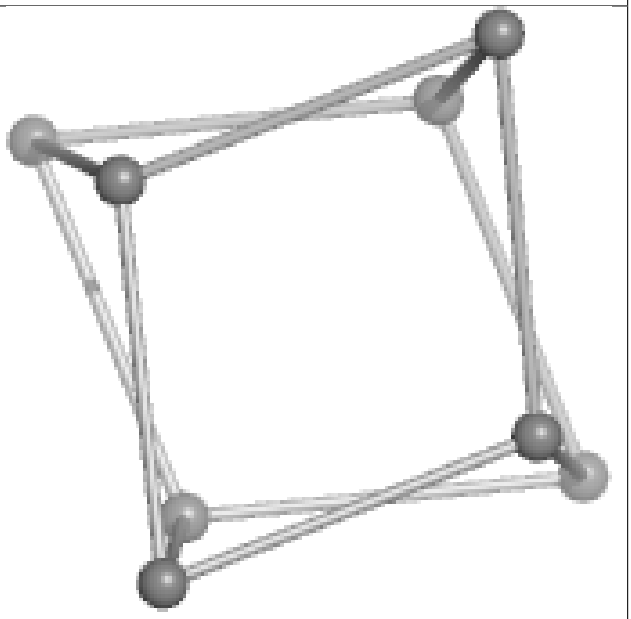
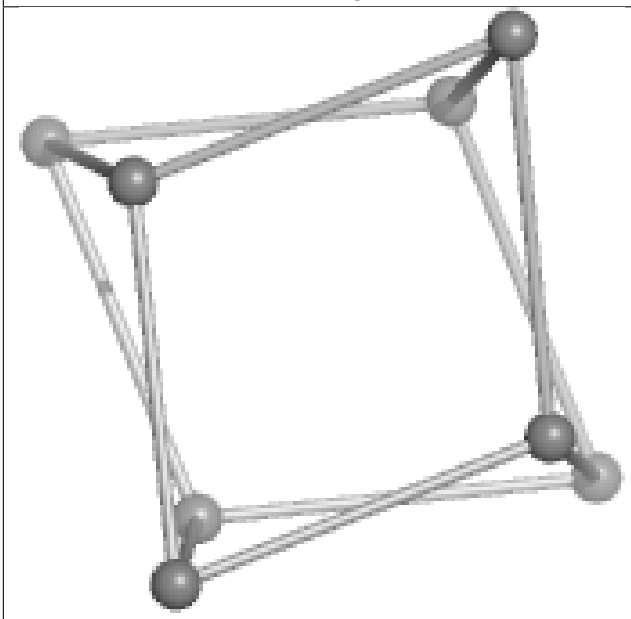


Bond angles



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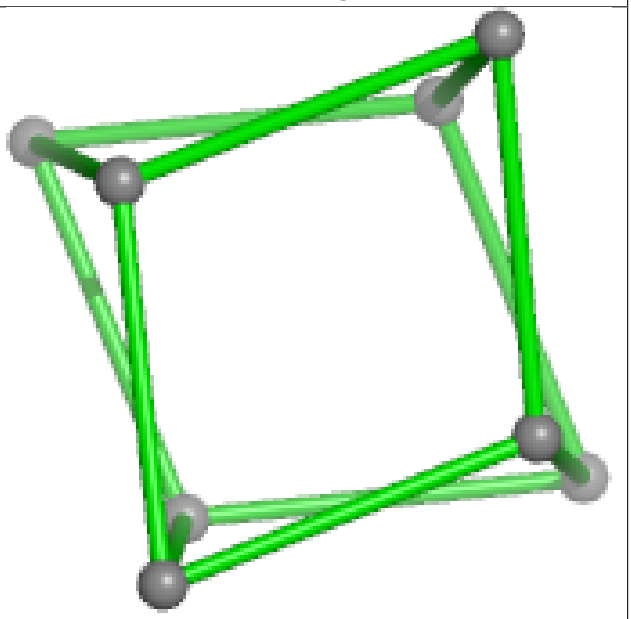
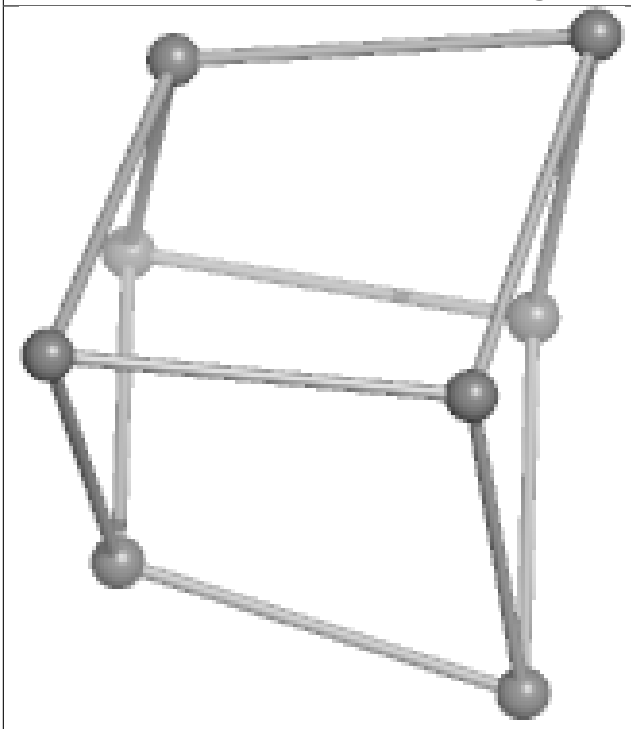


Rings

Ligand SF4 O 402



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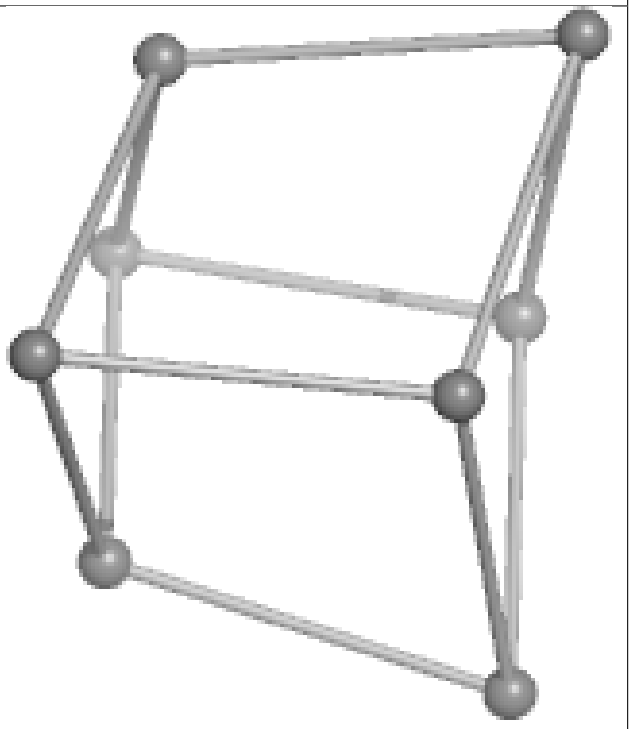
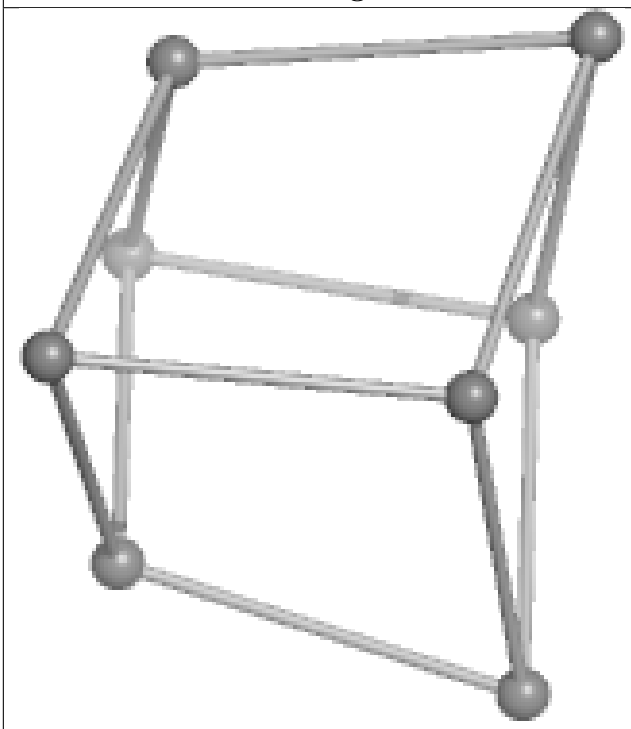


Bond angles



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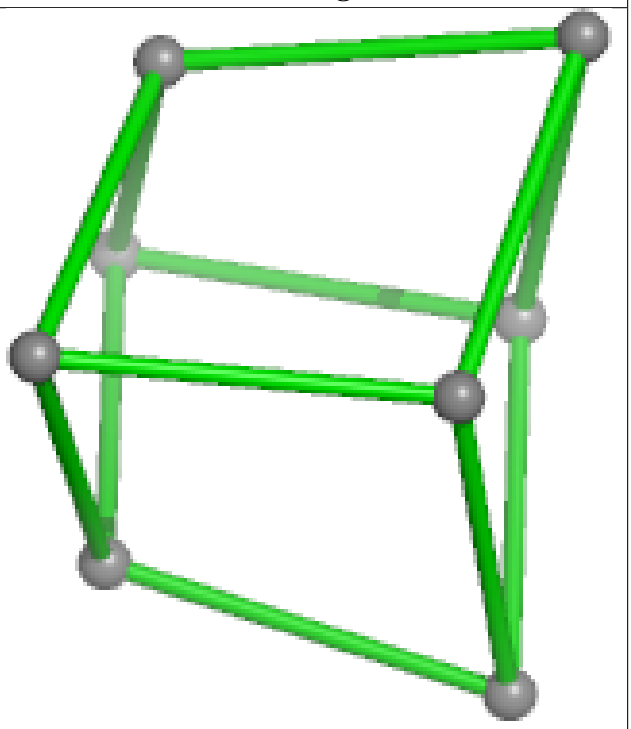
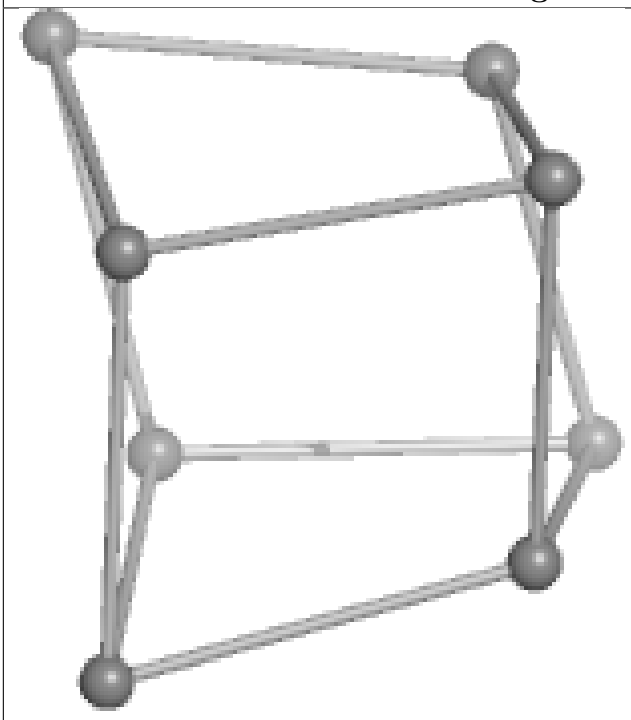


Rings

Ligand SF4 Q 504



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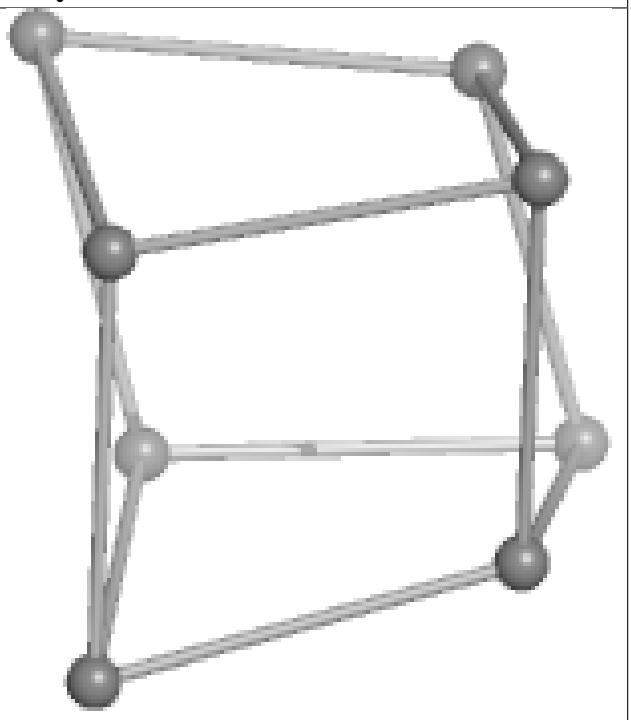
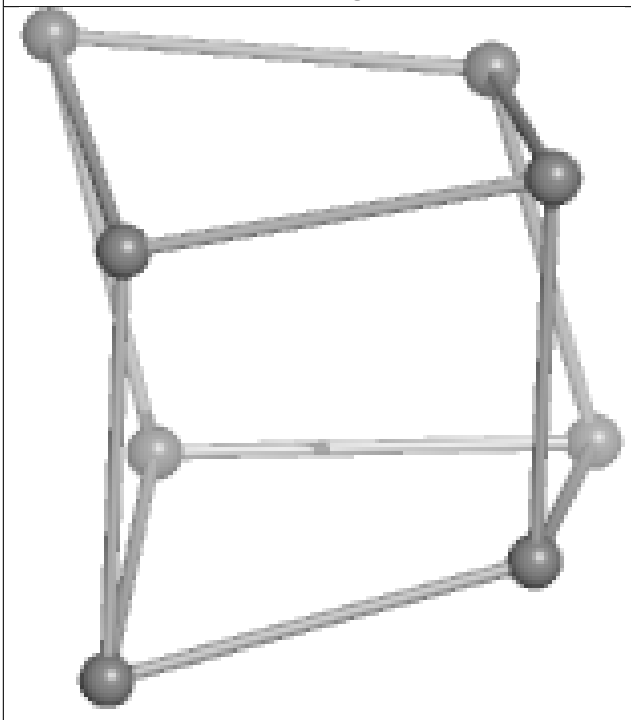


Bond angles



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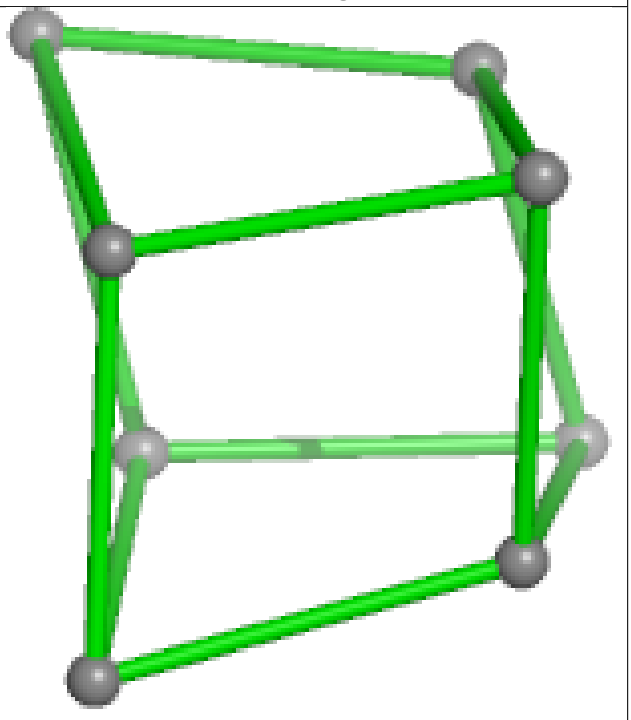
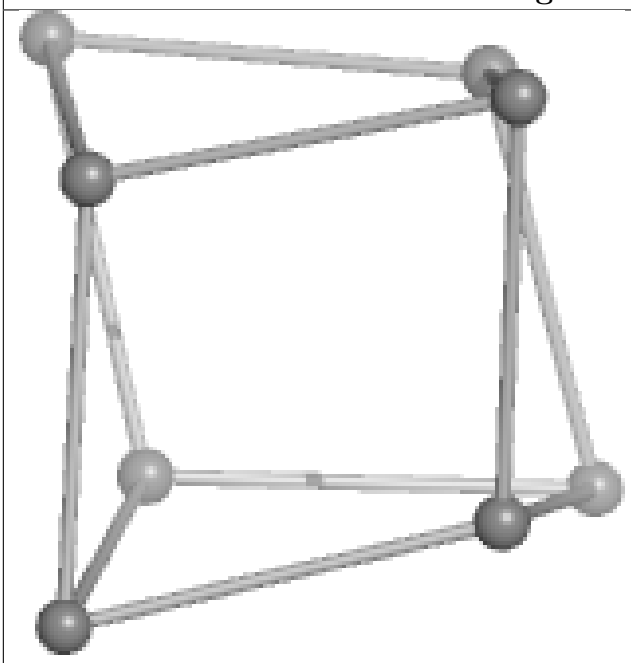


Rings

Ligand SF4 a 706



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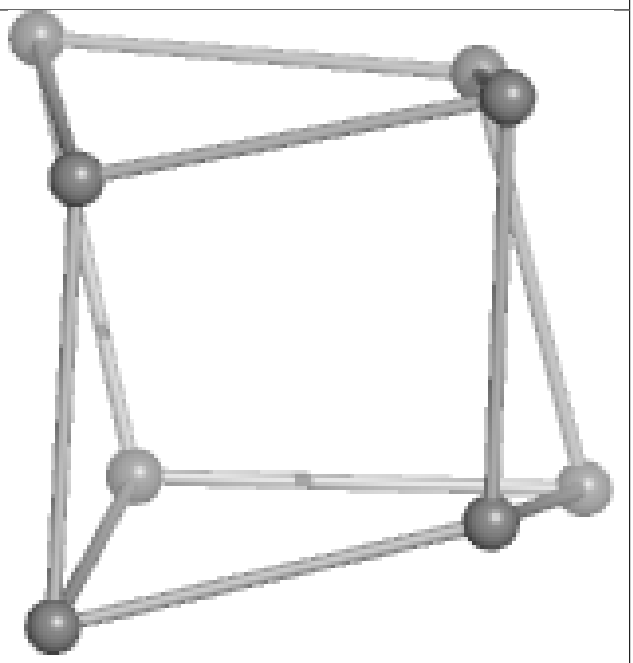
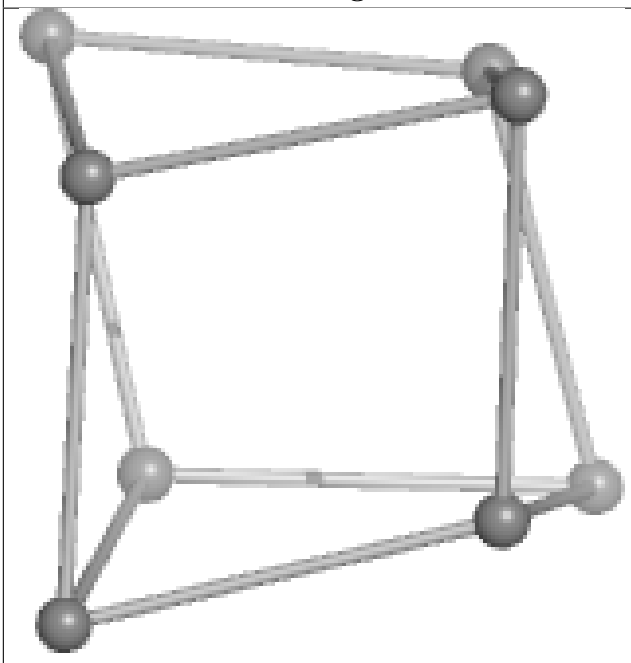


Bond angles



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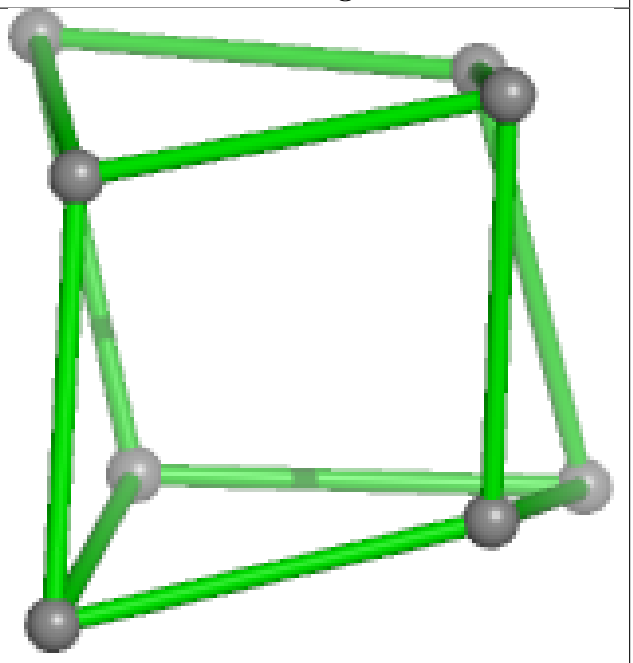
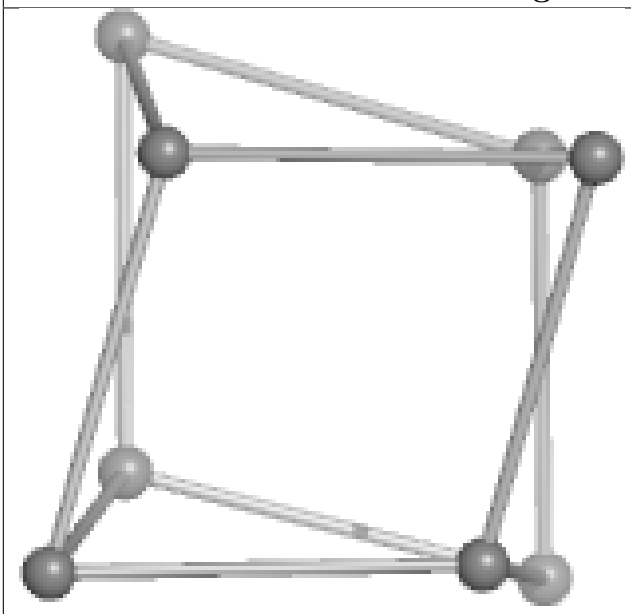


Rings

Ligand SF4 F 202



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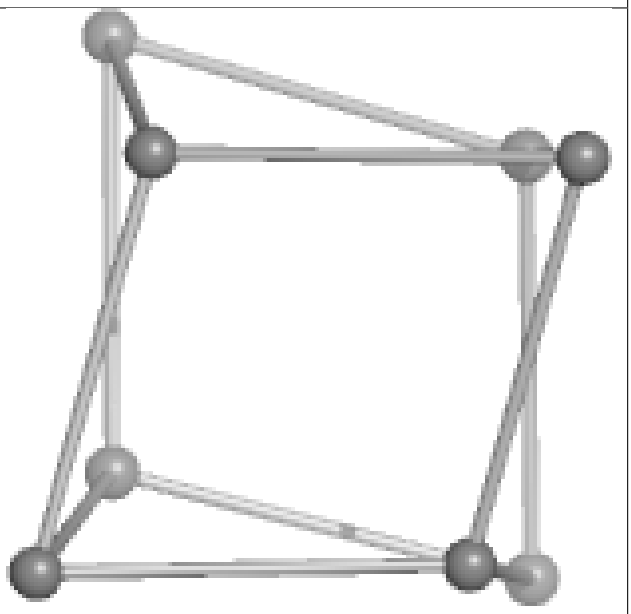
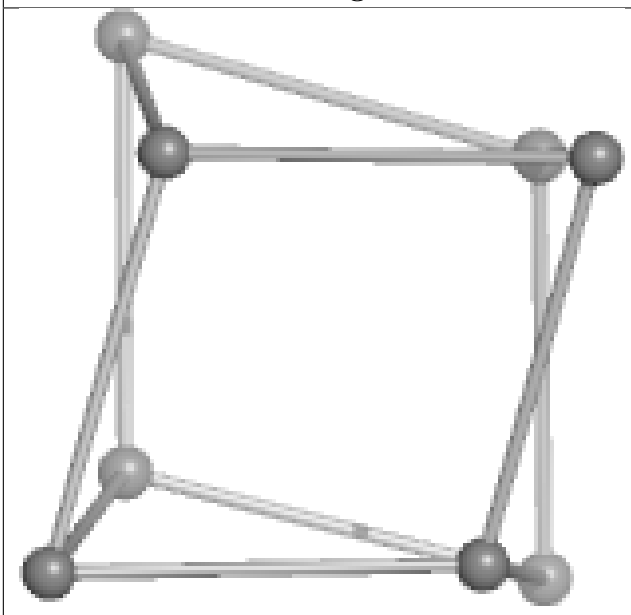


Bond angles



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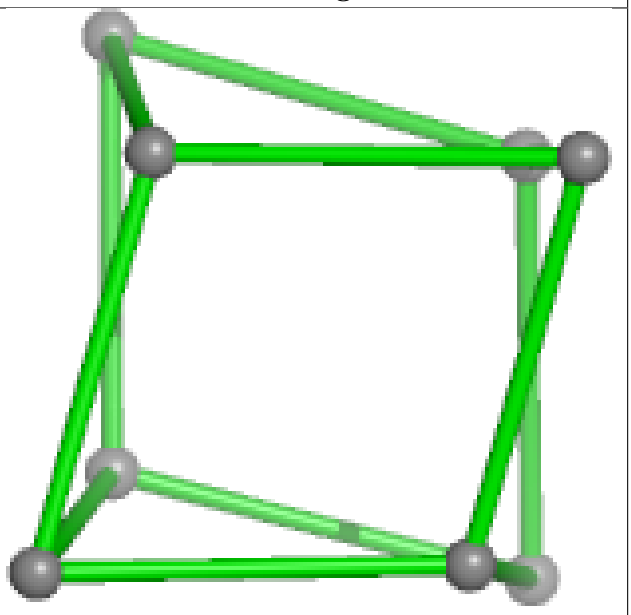
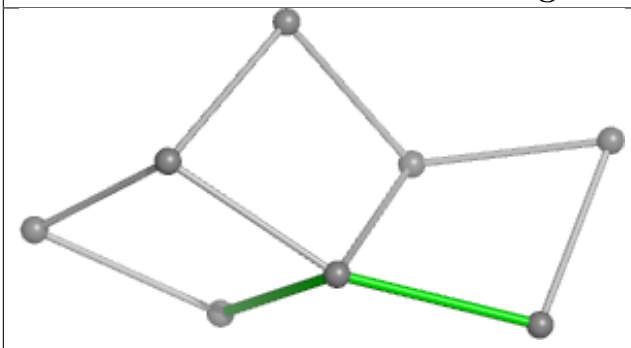


Rings

Ligand 9S8 c 302



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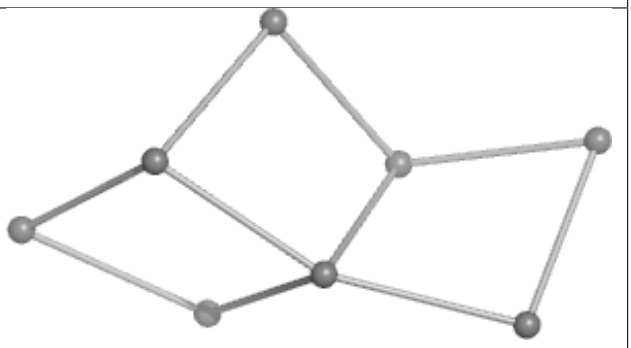
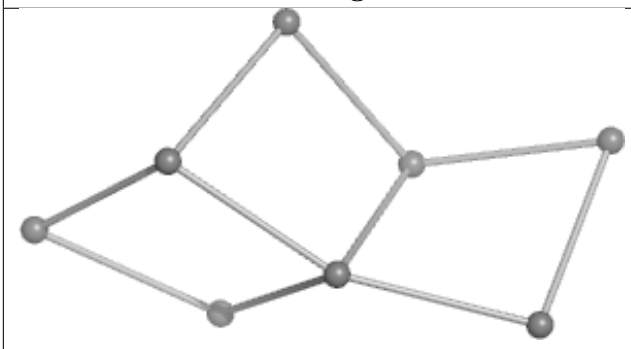


Bond angles



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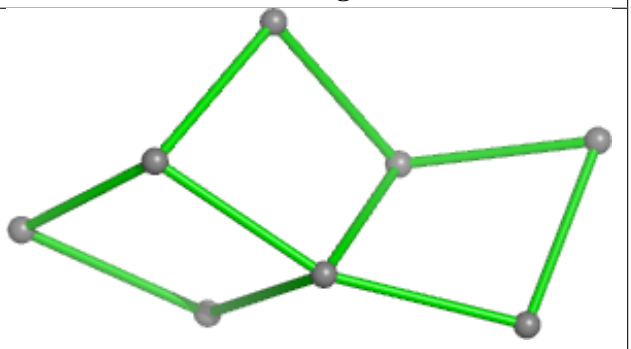
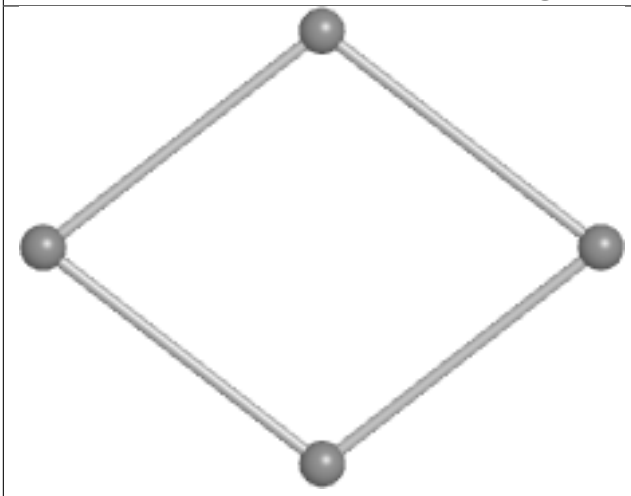


Rings

Ligand FES l 201



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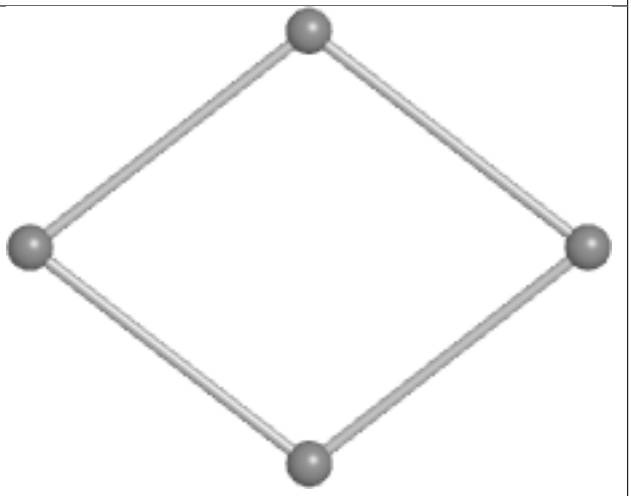

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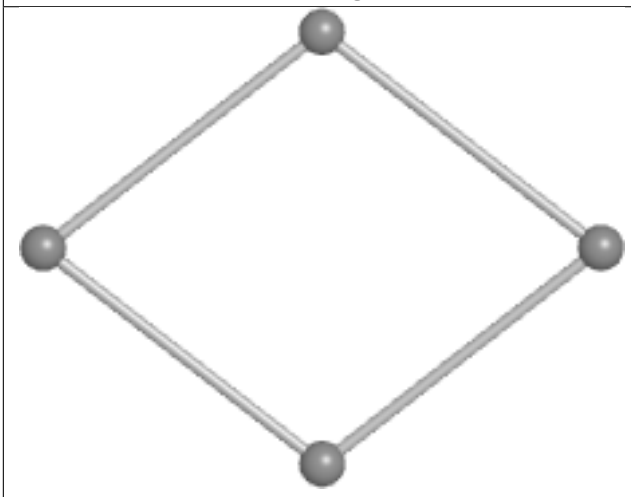

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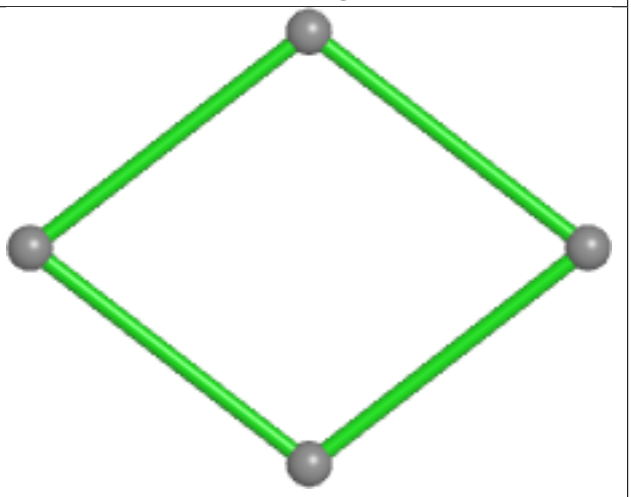
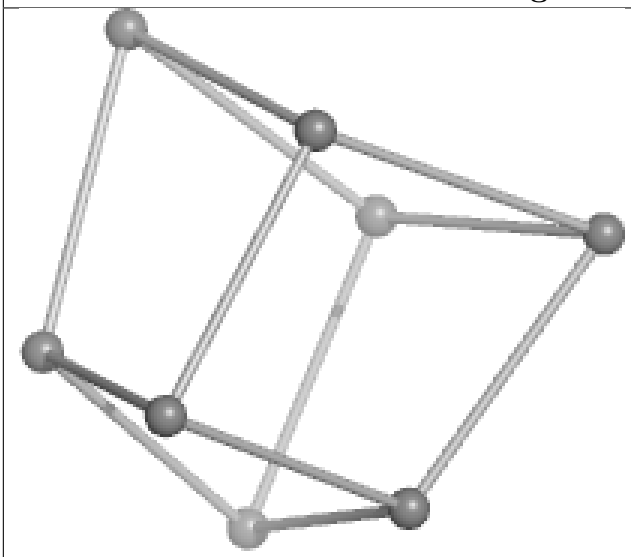


Rings

Ligand SF4 U 102



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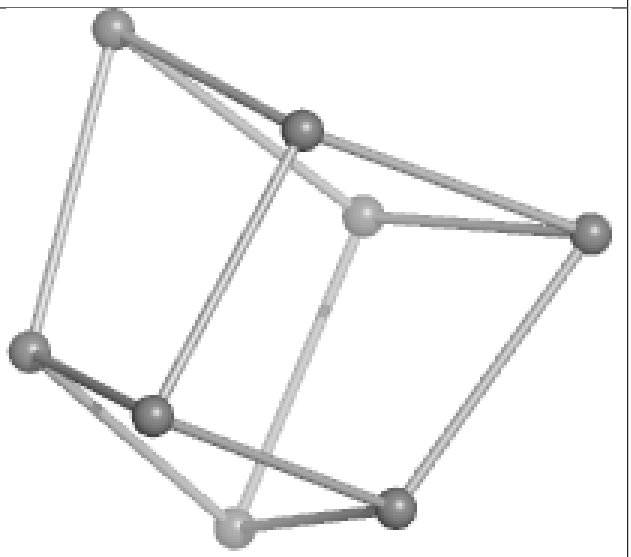
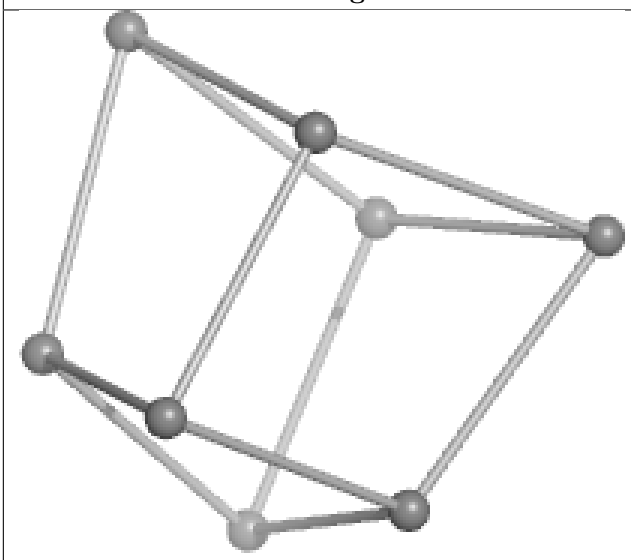


Bond angles



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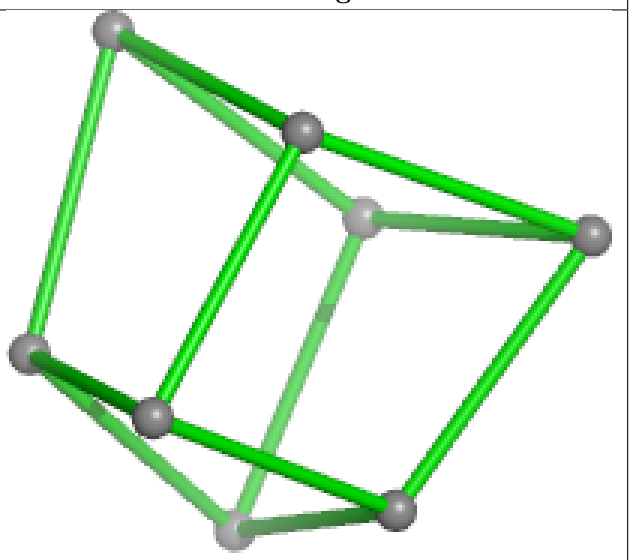
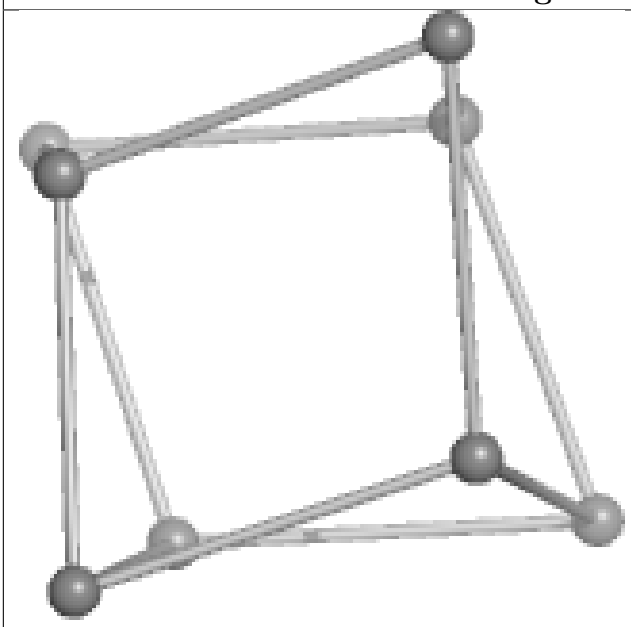


Rings

Ligand SF4 b 701



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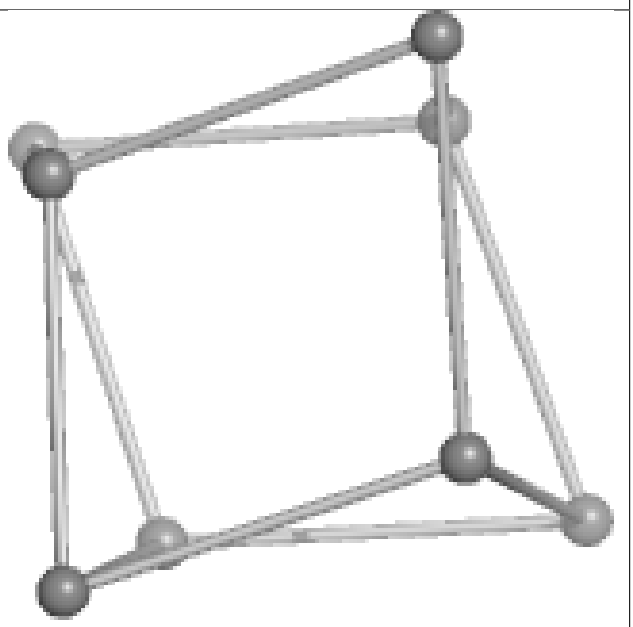
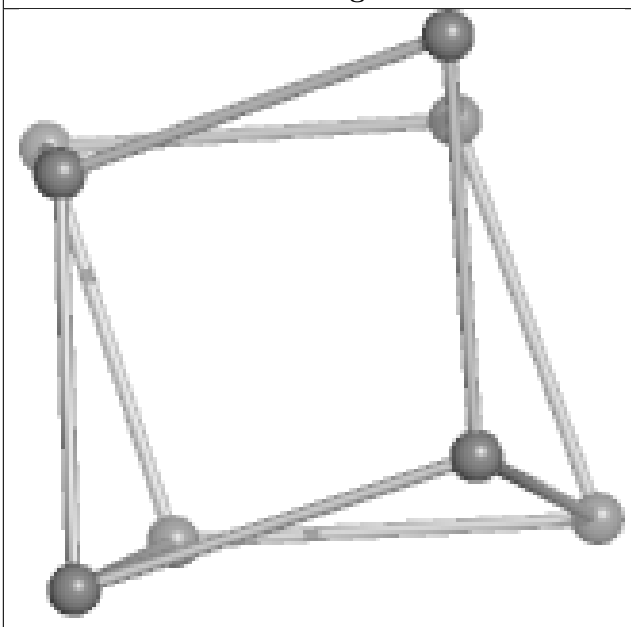
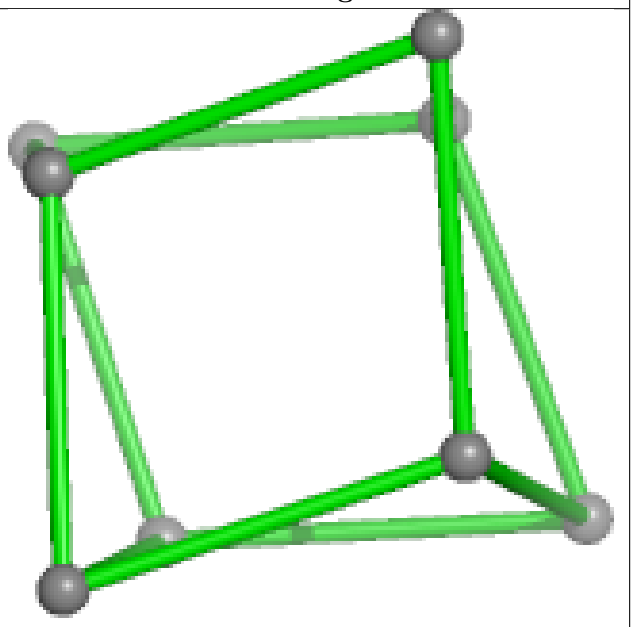


Bond angles

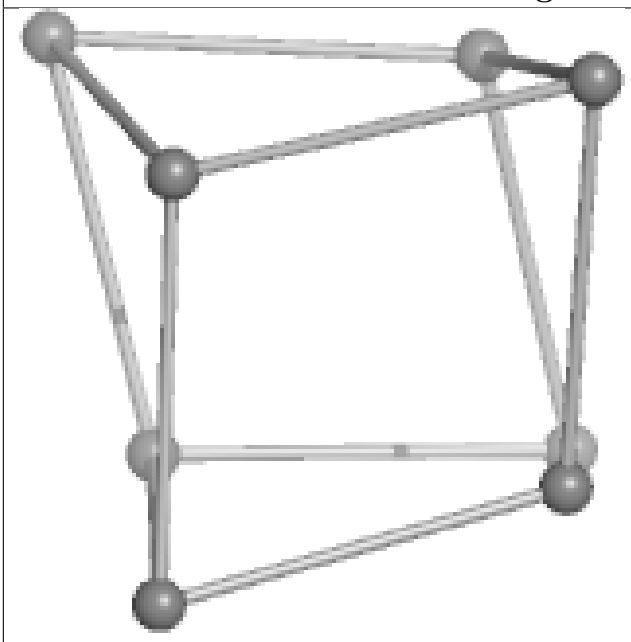


Torsions



Rings

Ligand SF4 a 701



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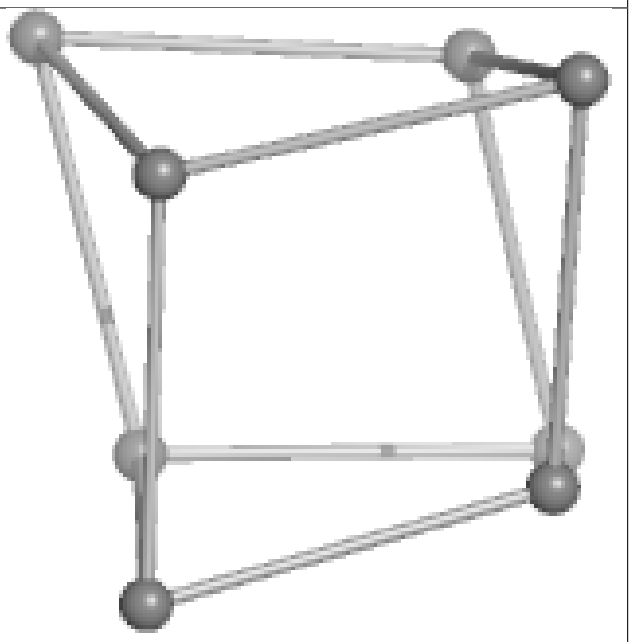
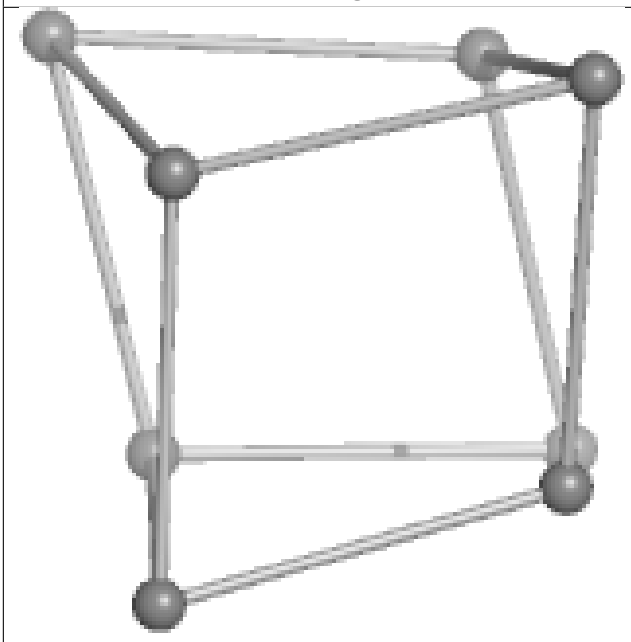


Bond angles



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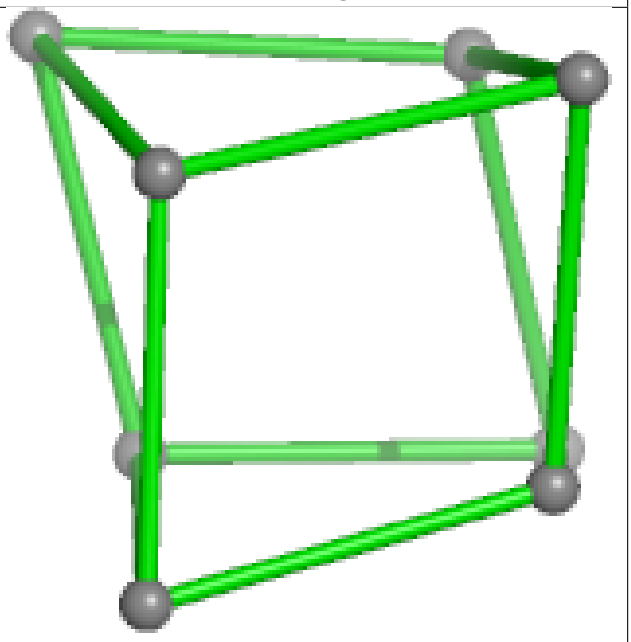
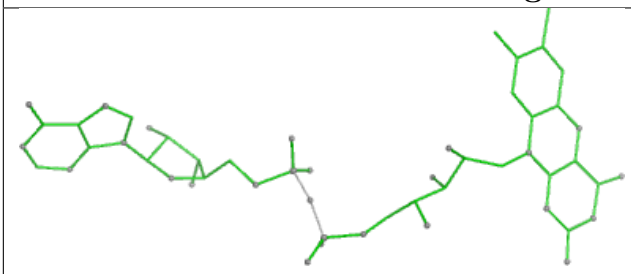


Rings

Ligand FAD A 704



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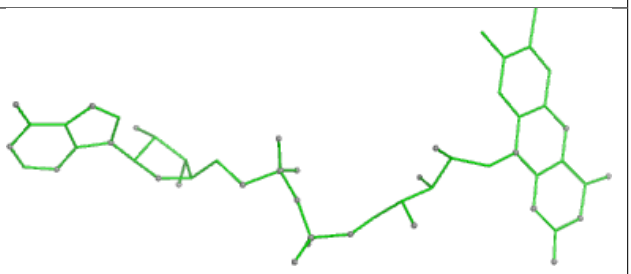
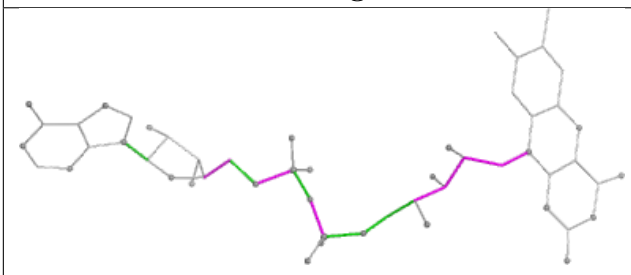
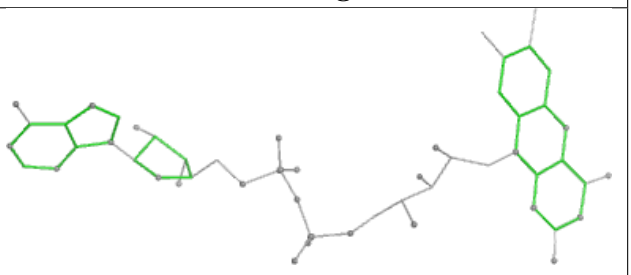


Bond angles

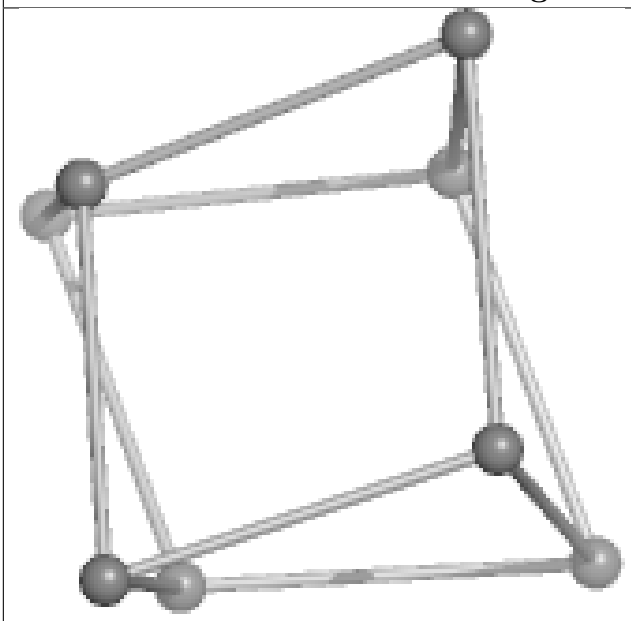


Torsions

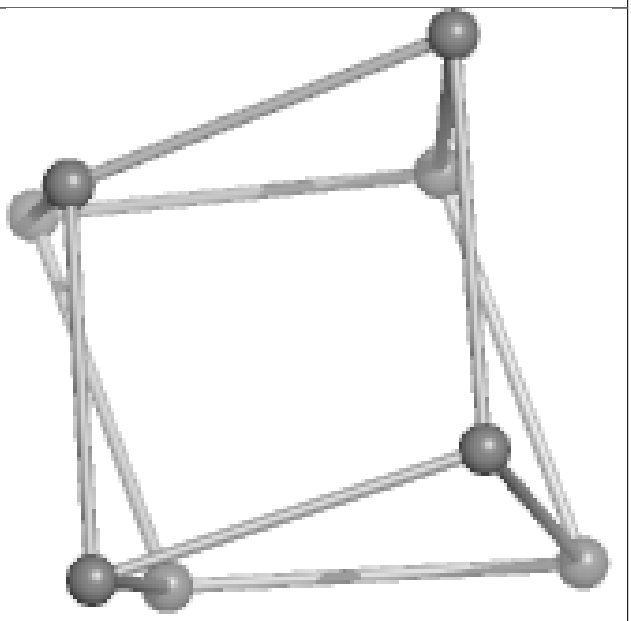


Rings

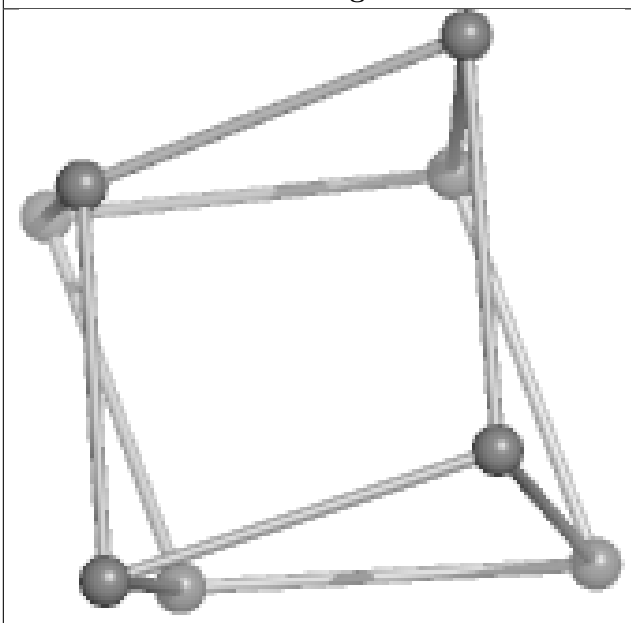
Ligand SF4 U 101



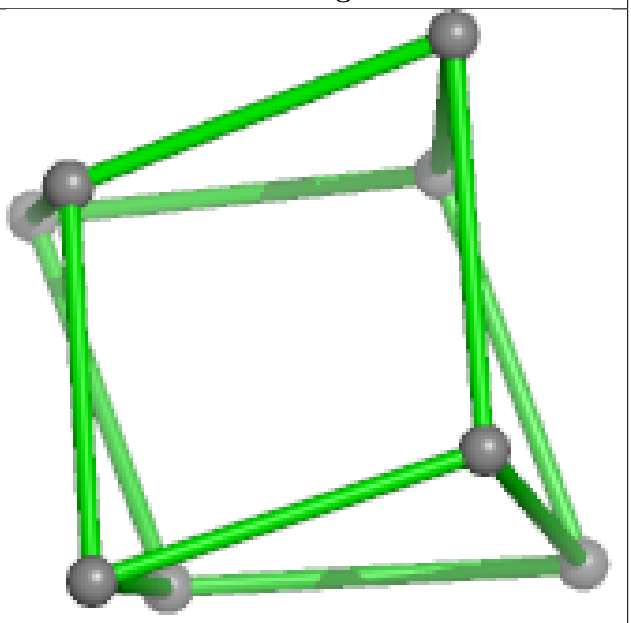
Bond lengths



Bond angles

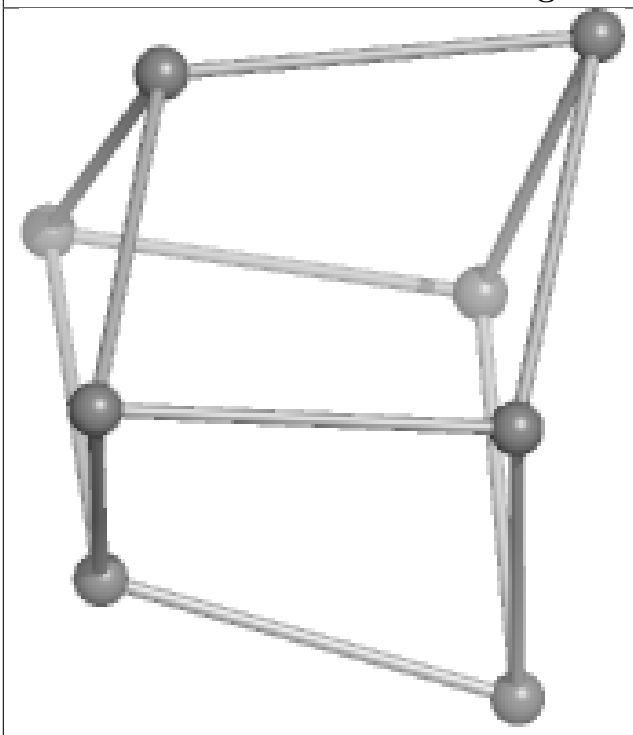


Torsions



Rings

Ligand SF4 I 302



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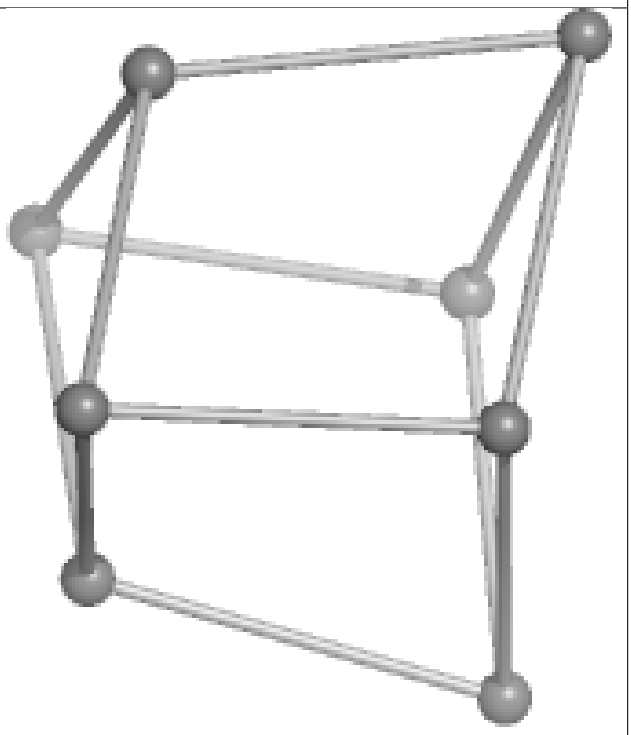

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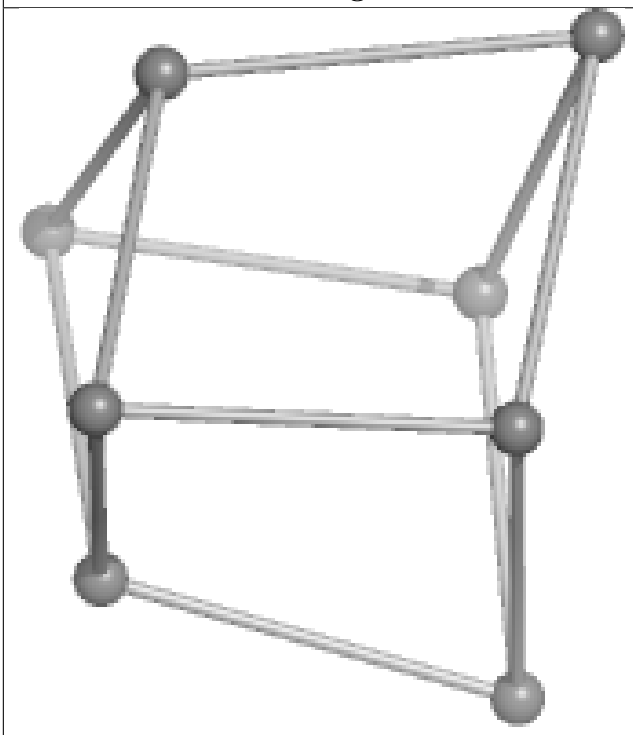

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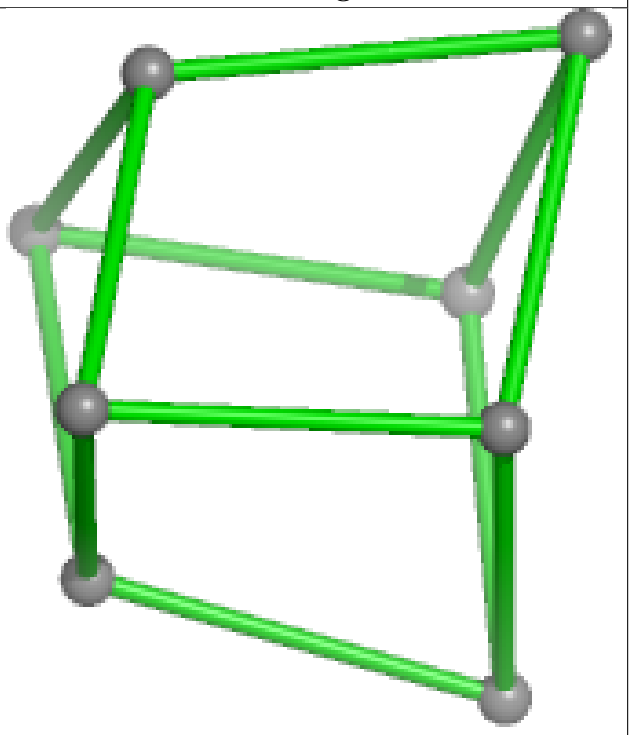
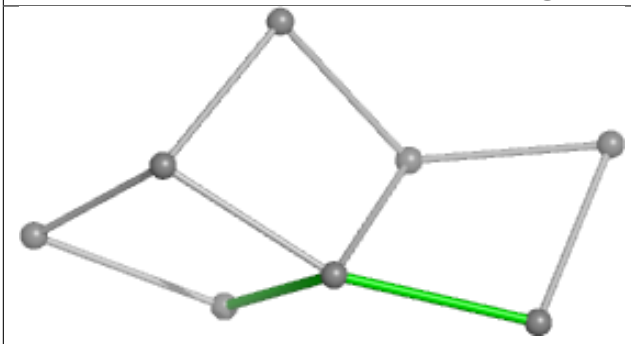


Rings

Ligand 9S8 c 301



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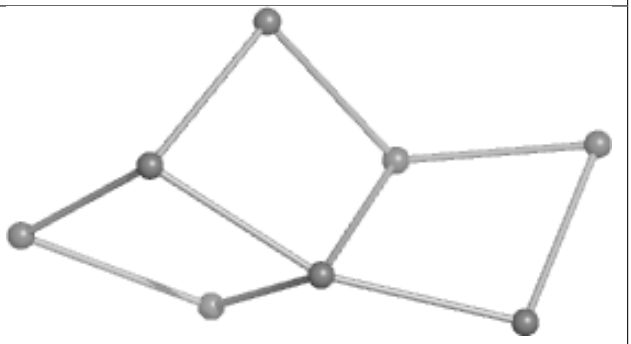

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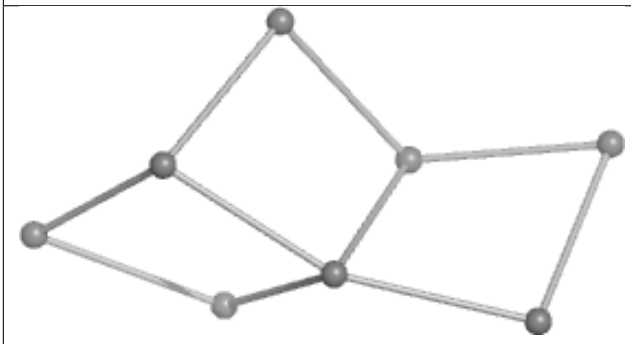

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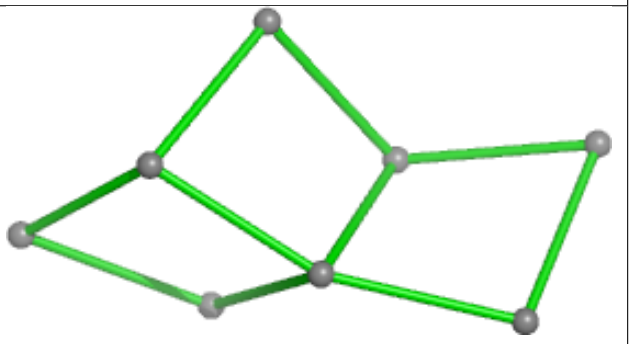
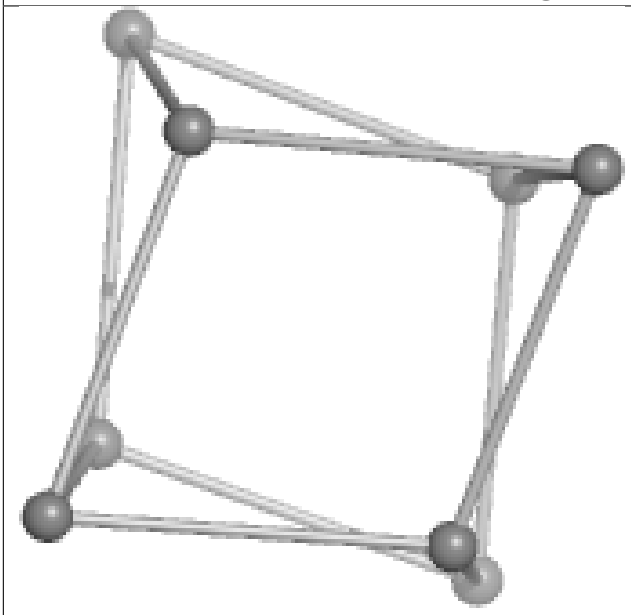


Rings

Ligand SF4 t 407



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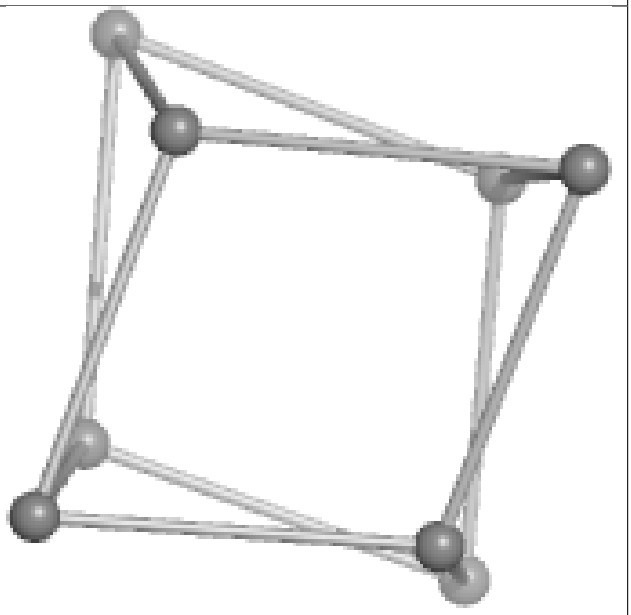
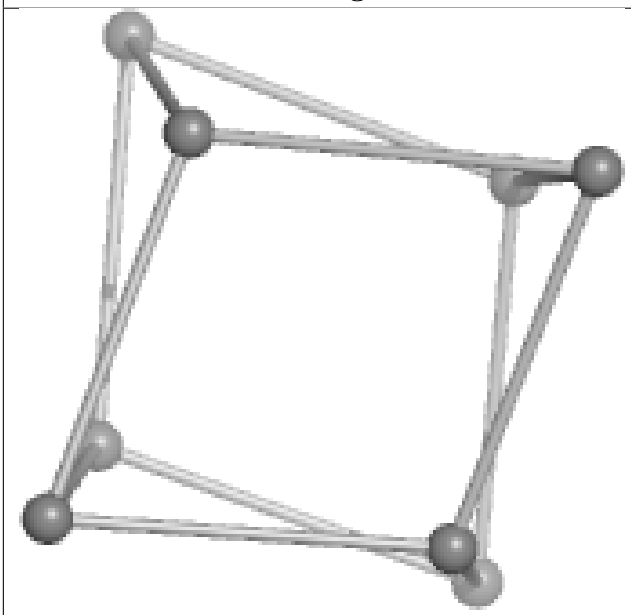


Bond angles



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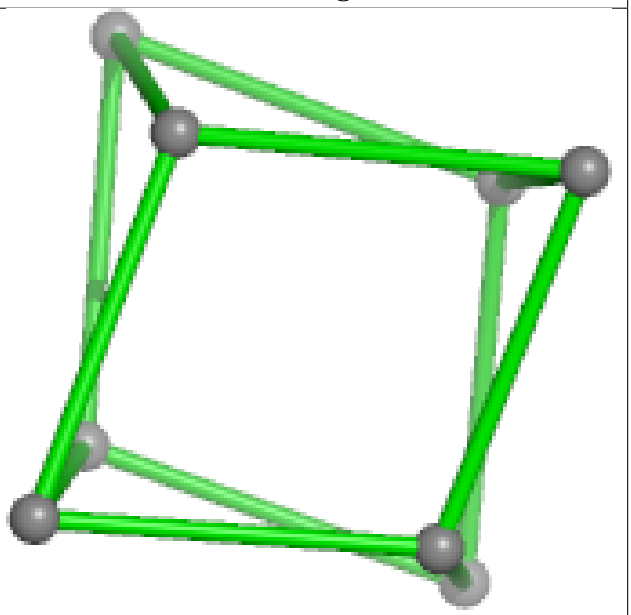
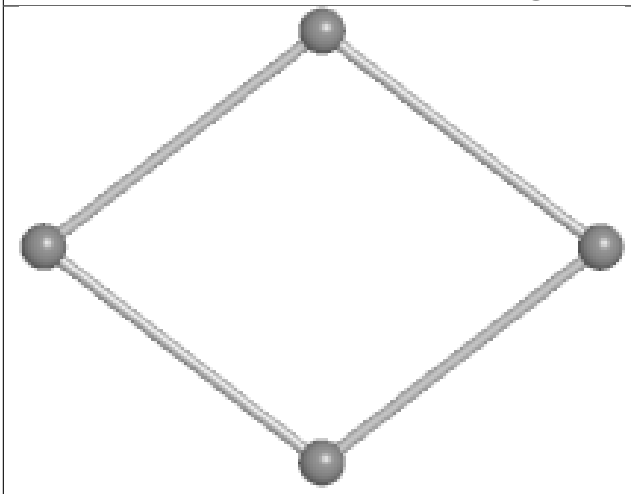


Rings

Ligand FES K 201



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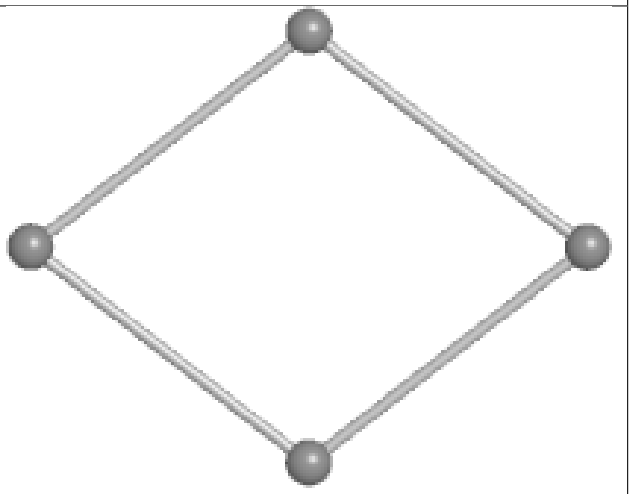

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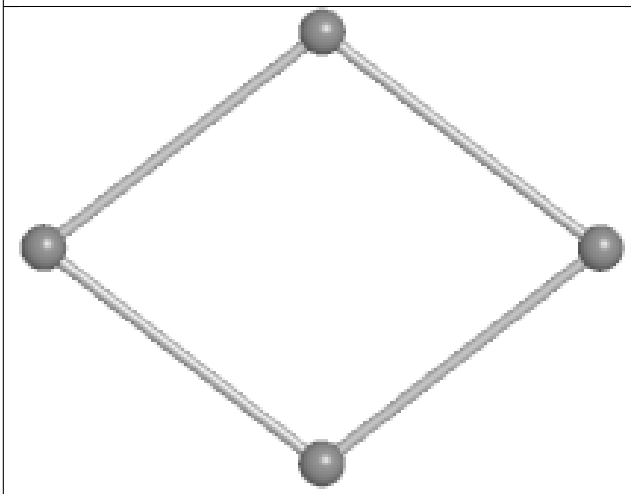

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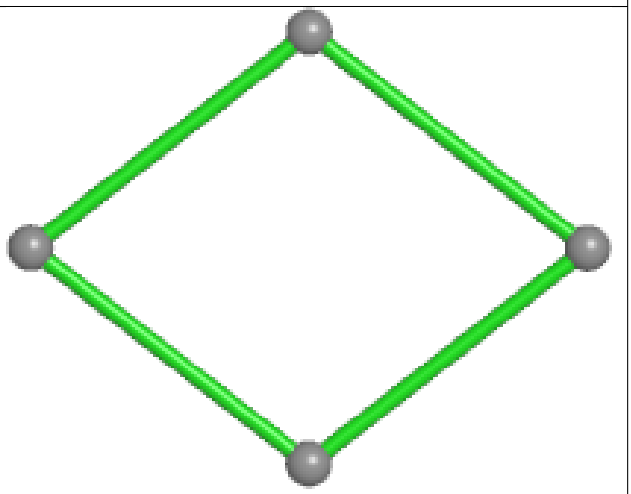
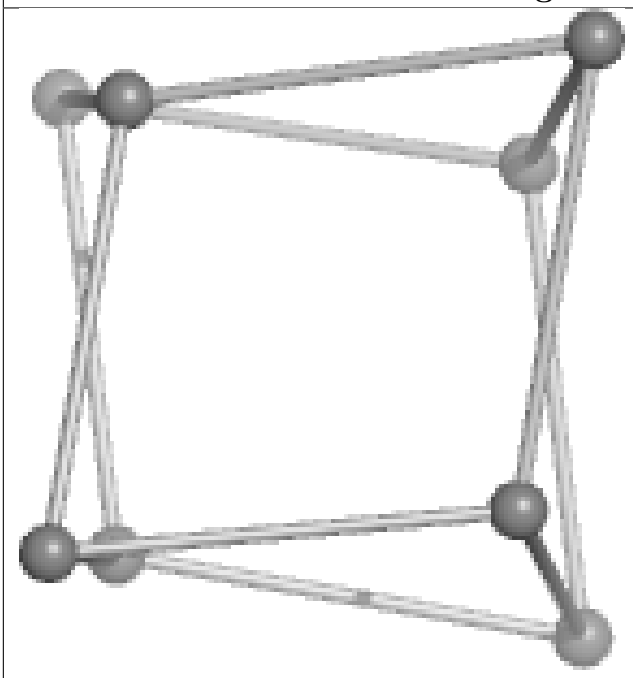


Rings

Ligand SF4 o 405



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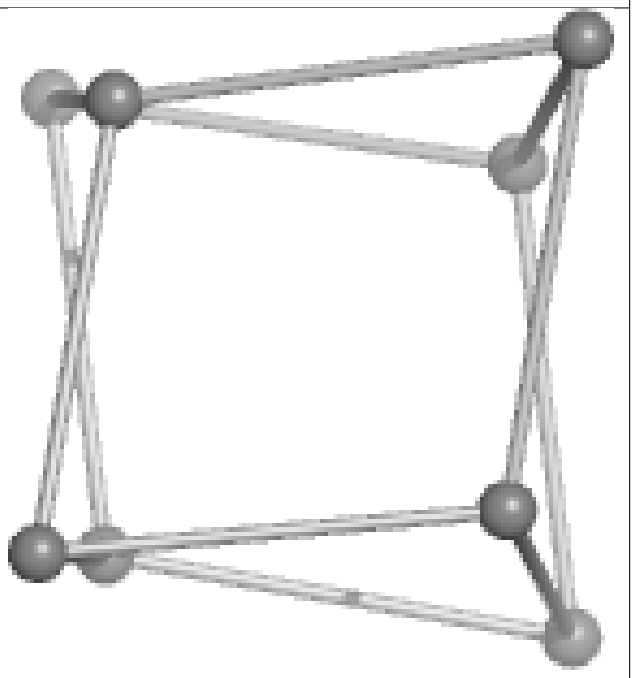

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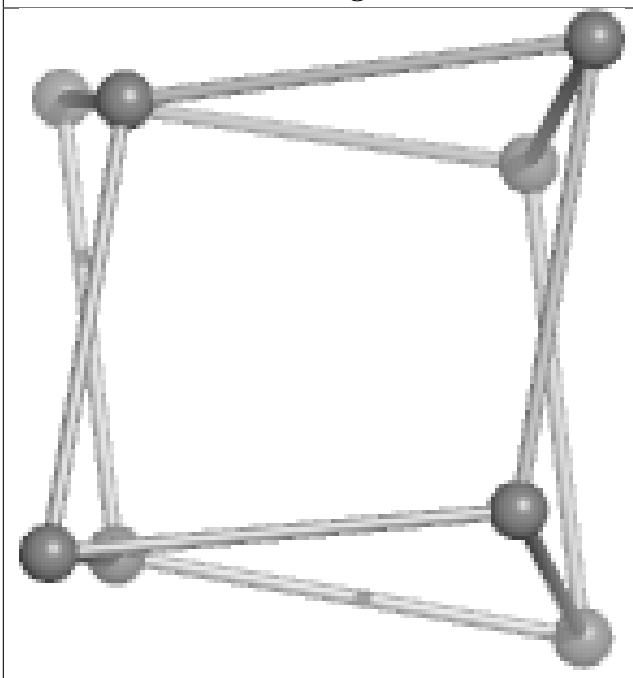

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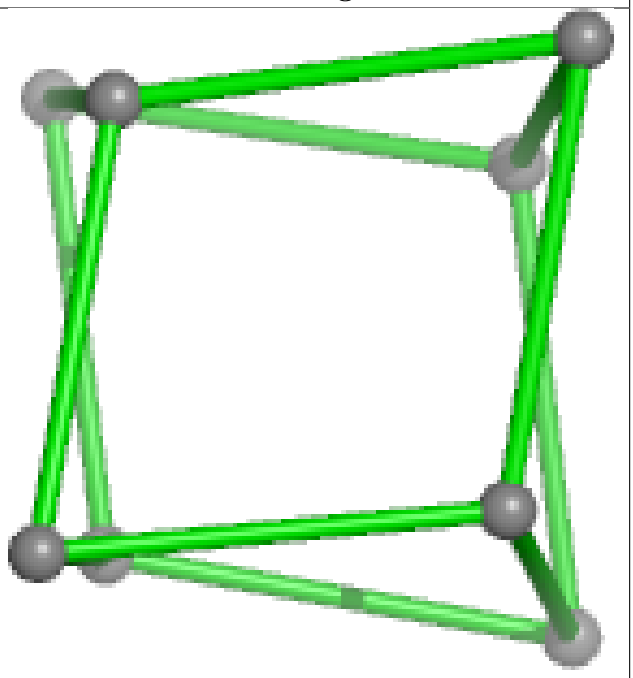
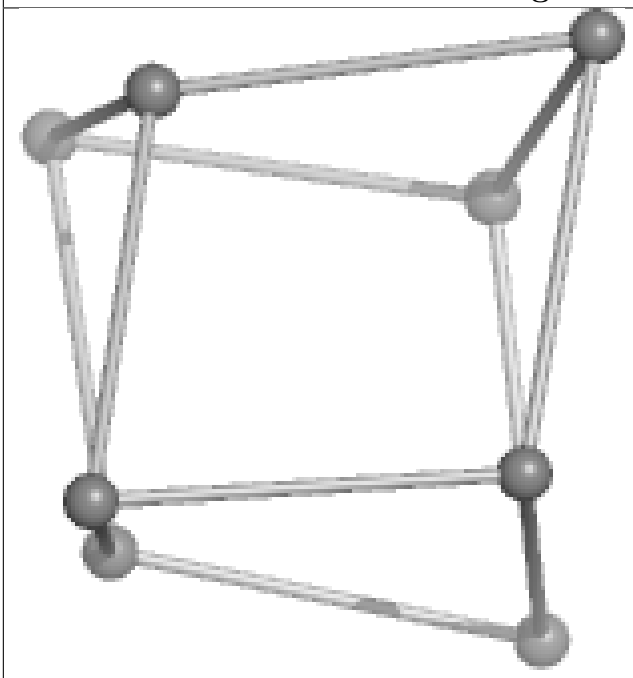


Rings

Ligand SF4 T 402



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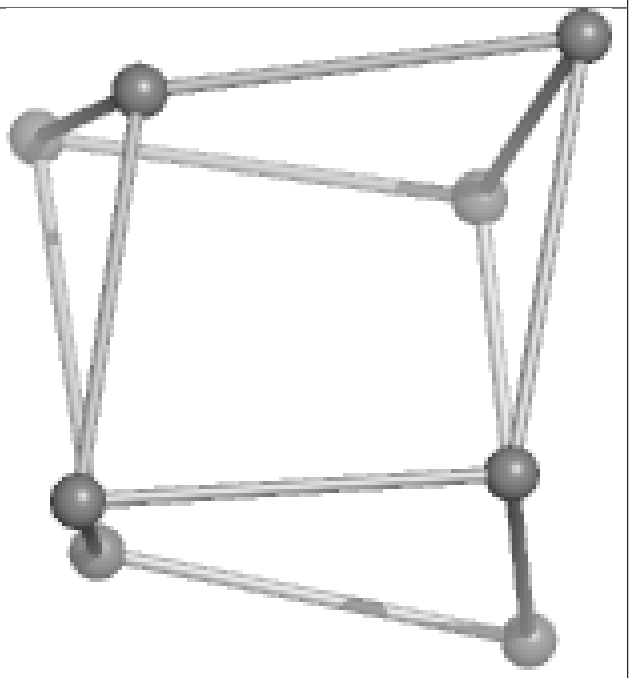
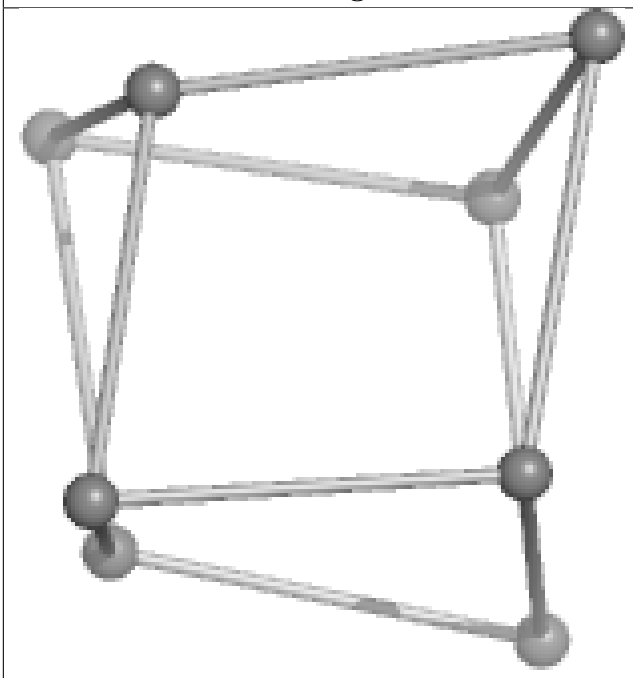


Bond angles



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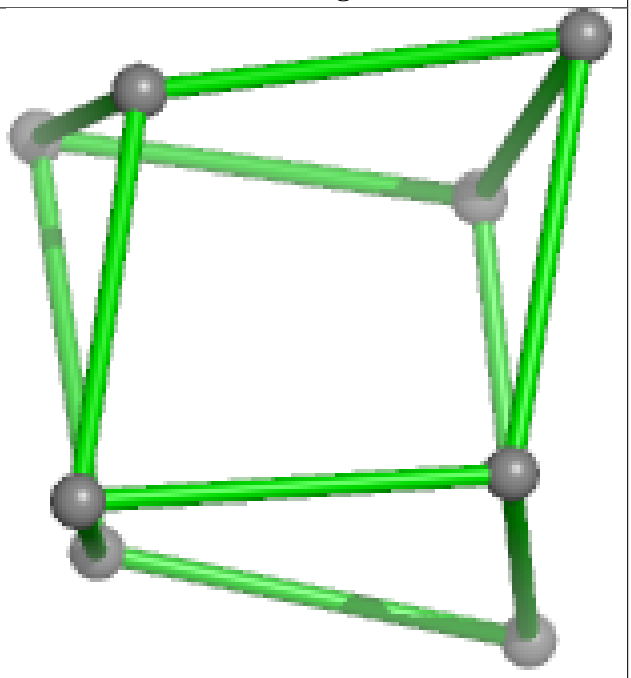
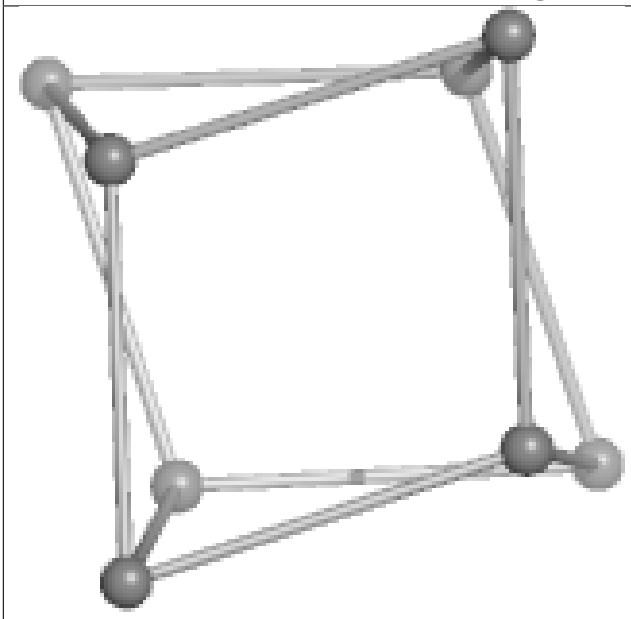


Rings

Ligand SF4 B 704



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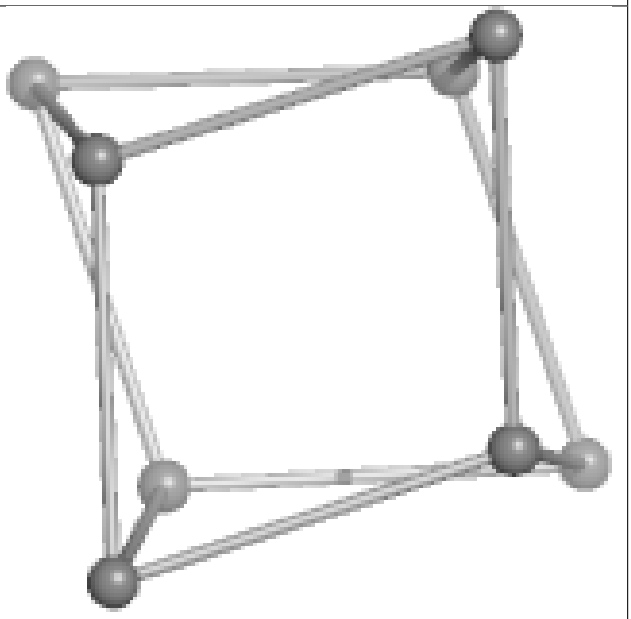

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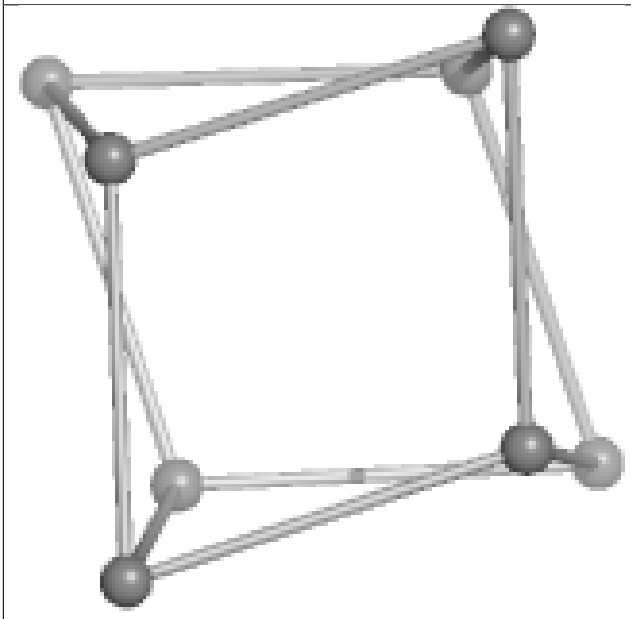

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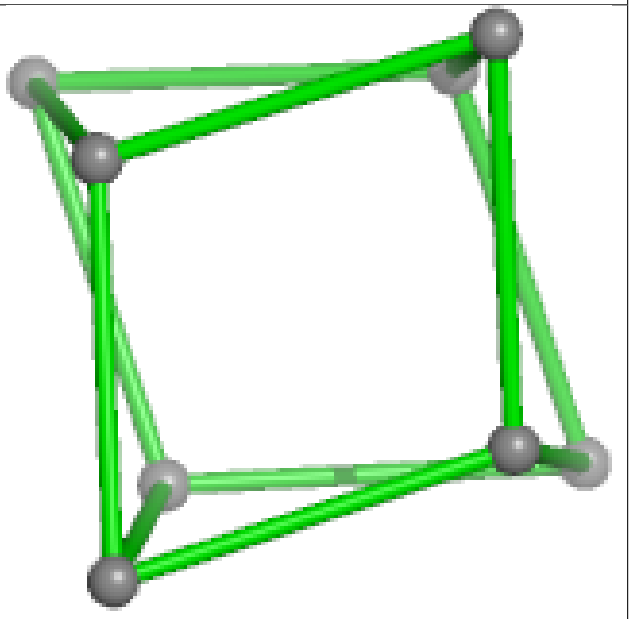
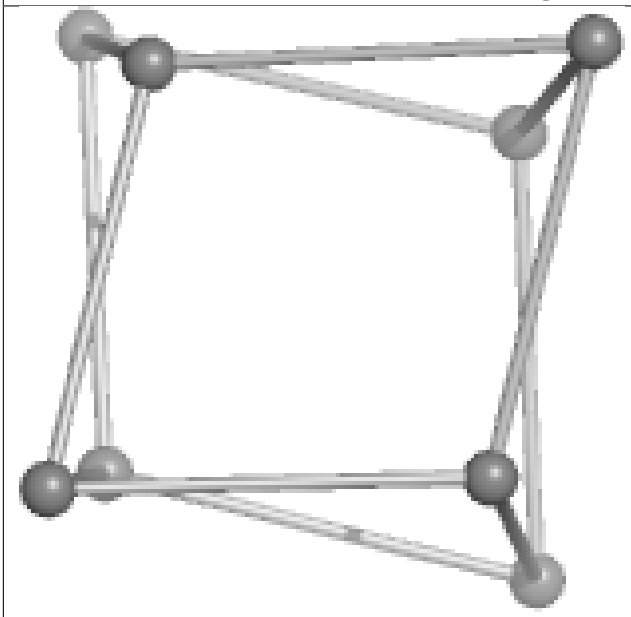


Rings

Ligand SF4 t 409



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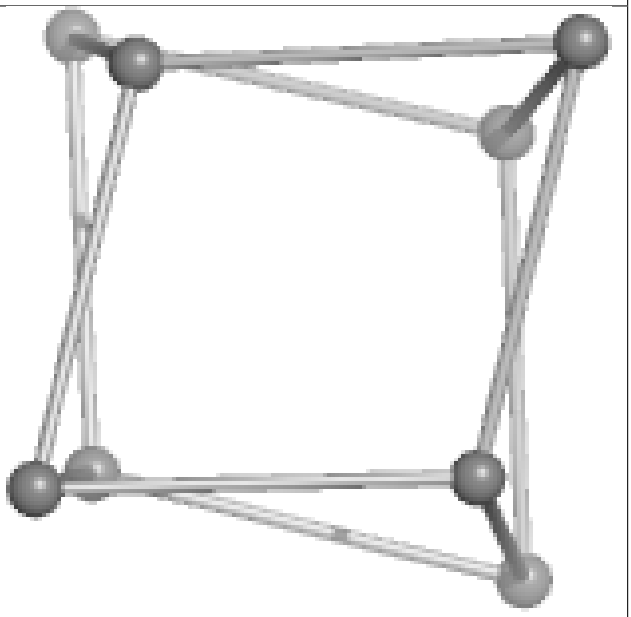
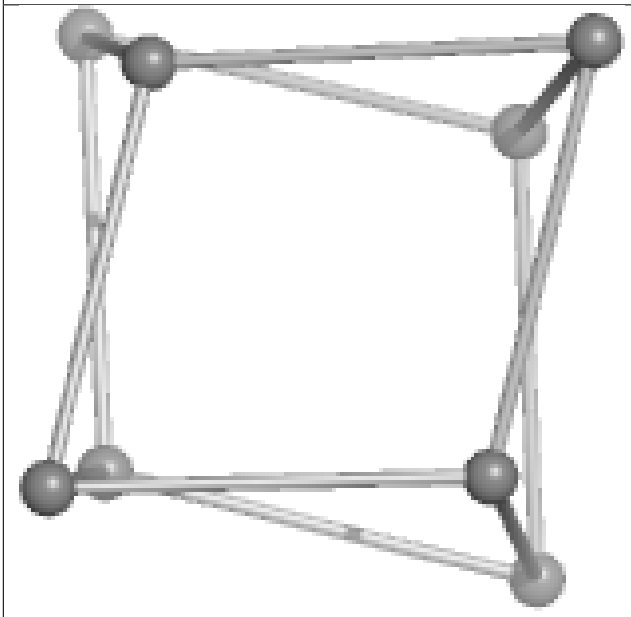


Bond angles



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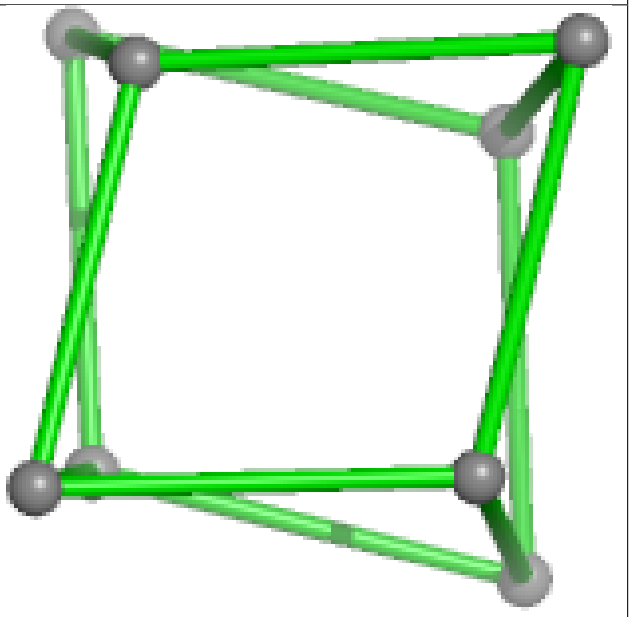
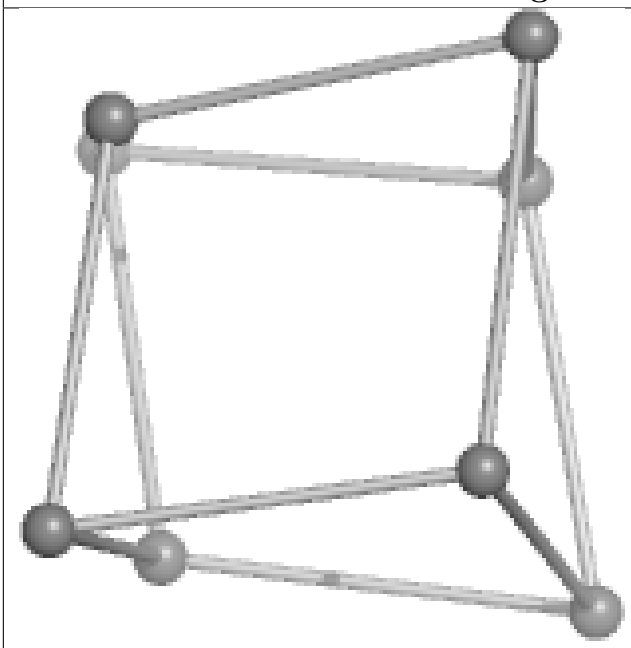


Rings

Ligand SF4 O 404



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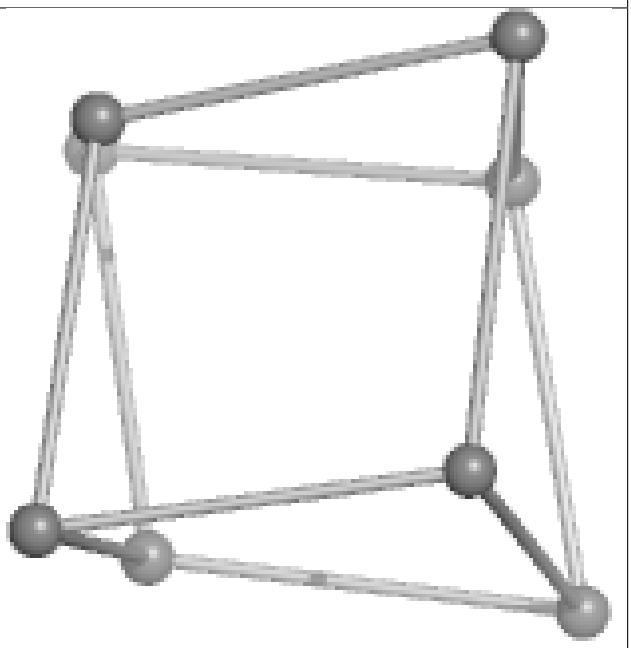
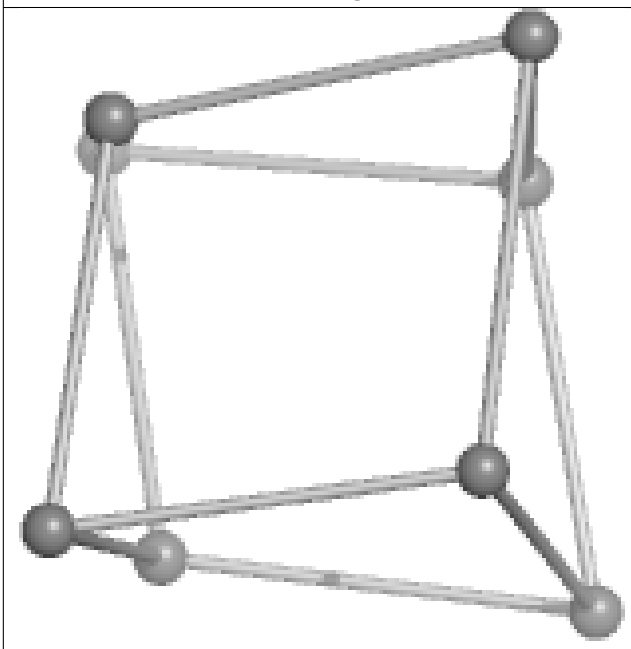


Bond angles



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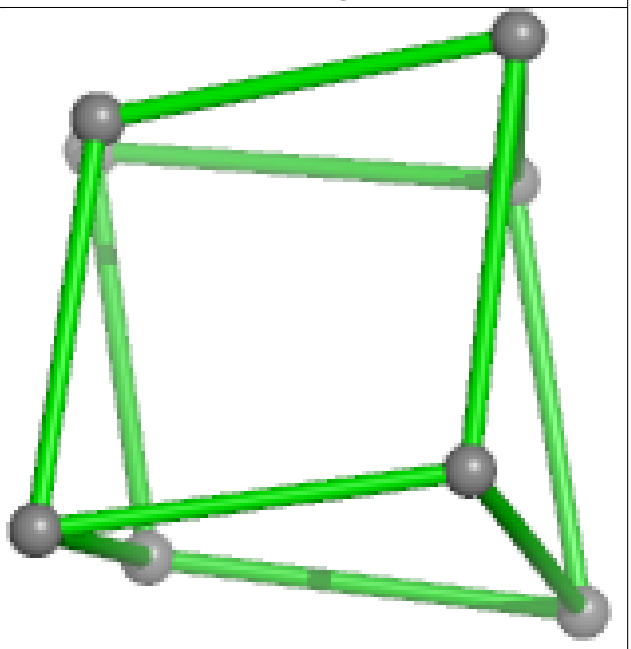
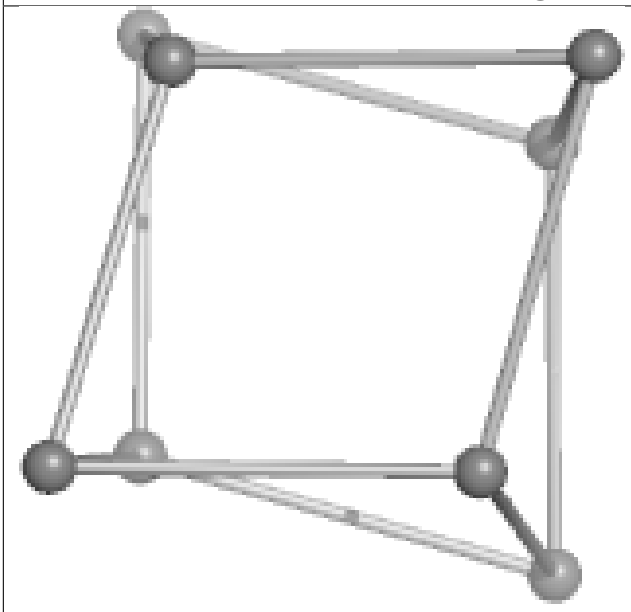


Rings

Ligand SF4 T 408



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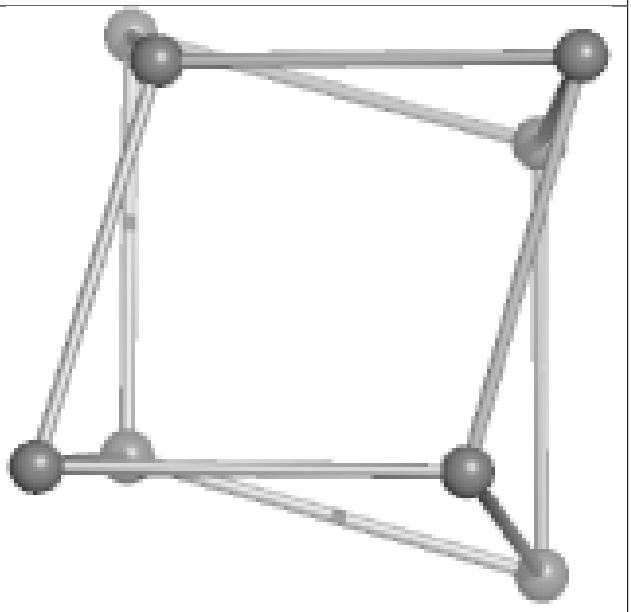
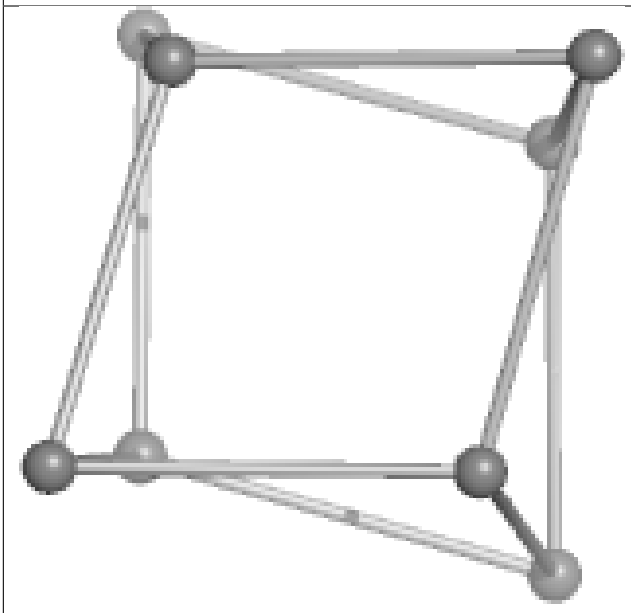


Bond angles



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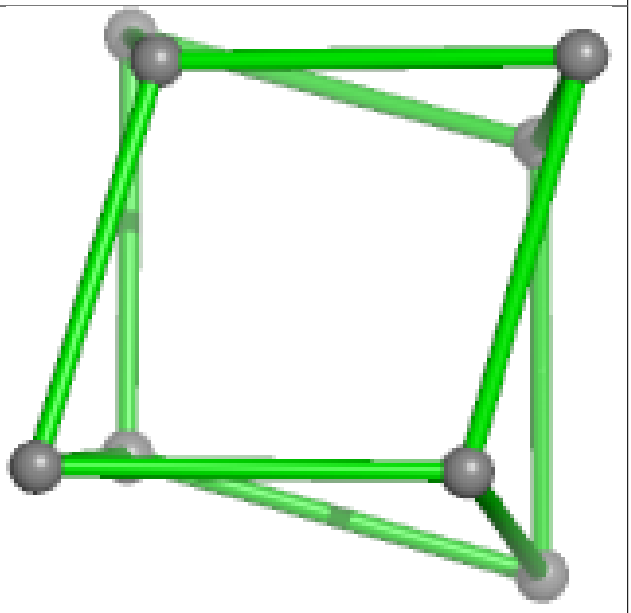
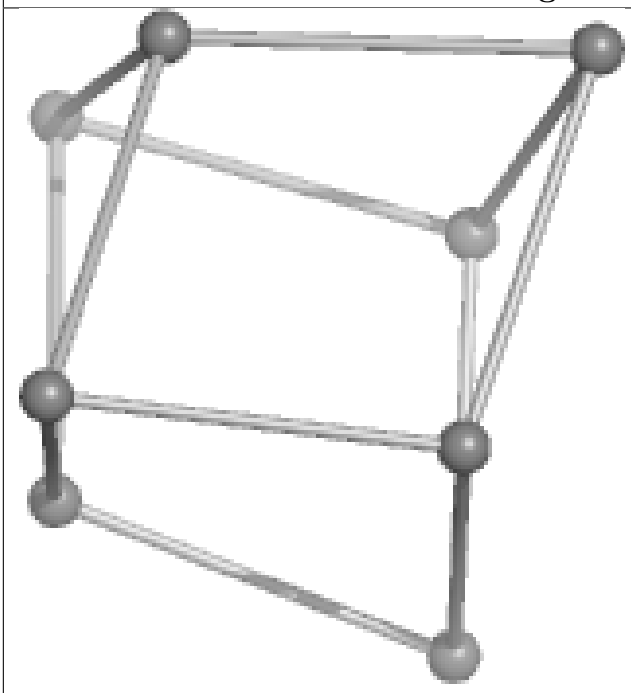


Rings

Ligand SF4 j 301



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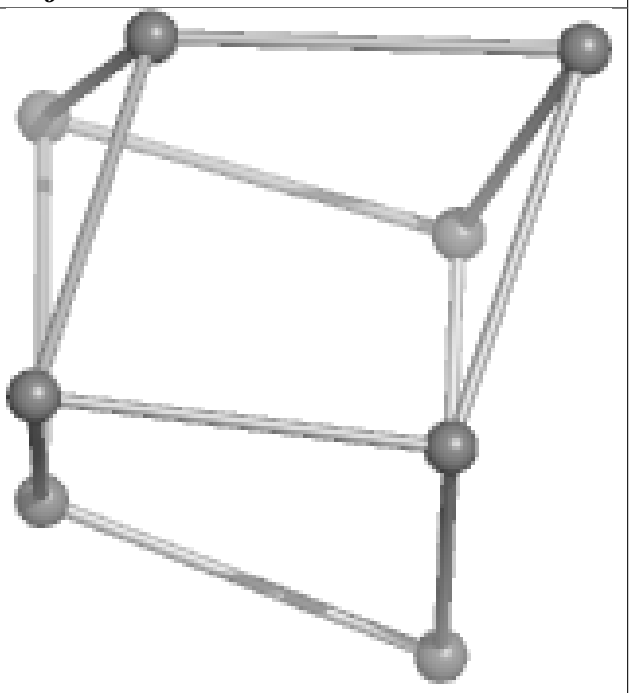

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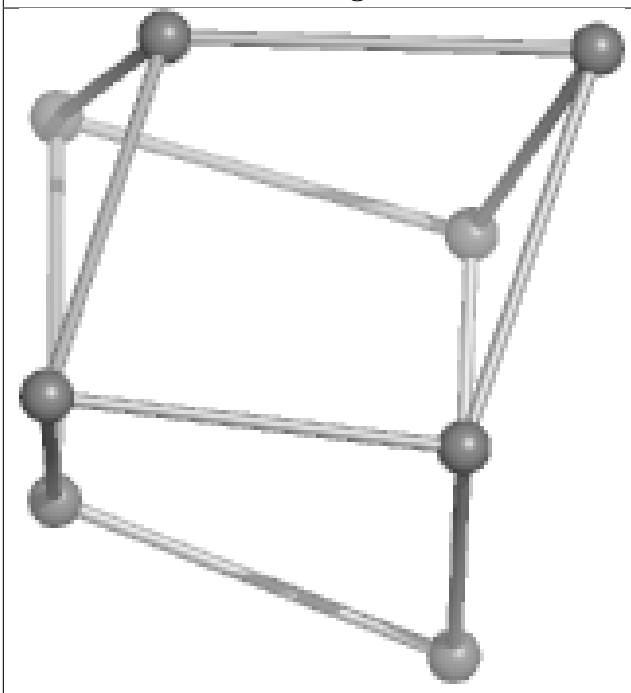

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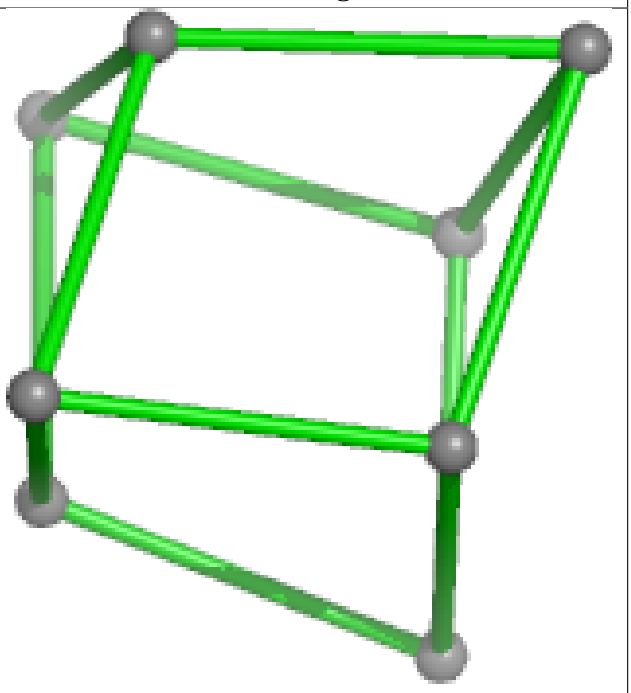
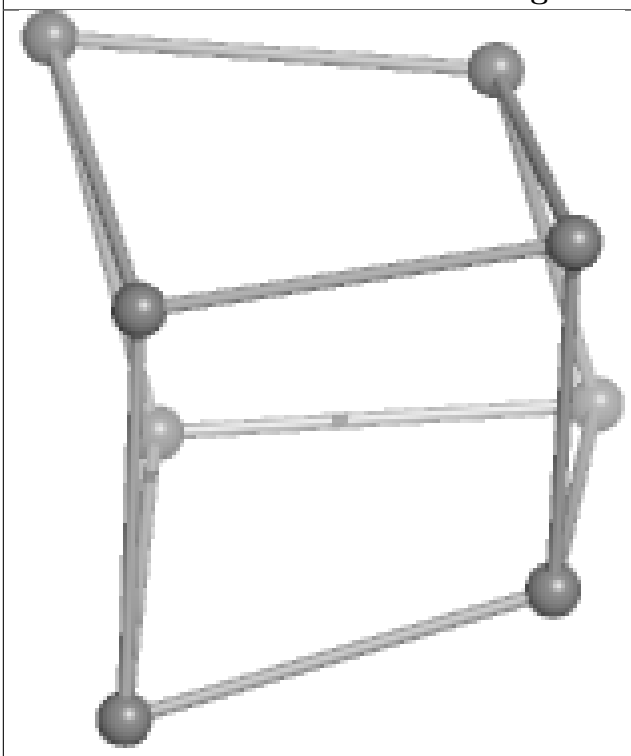


Rings

Ligand SF4 O 408



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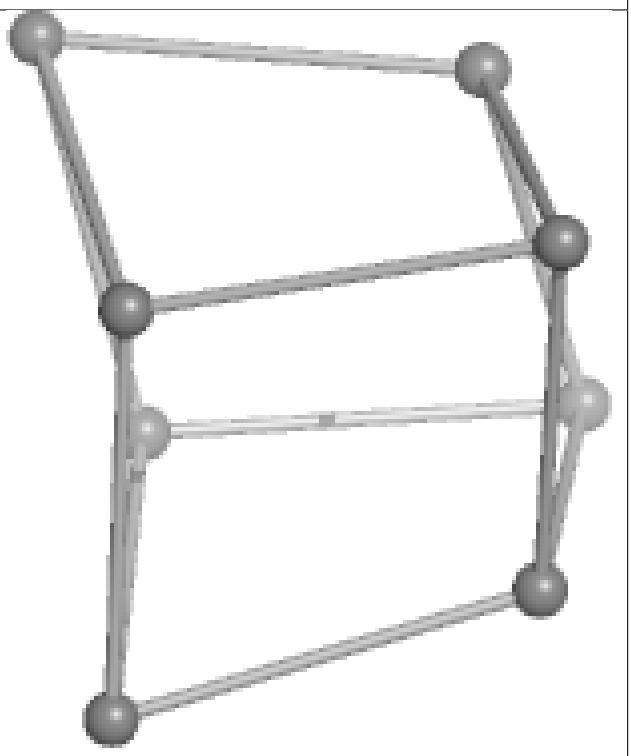

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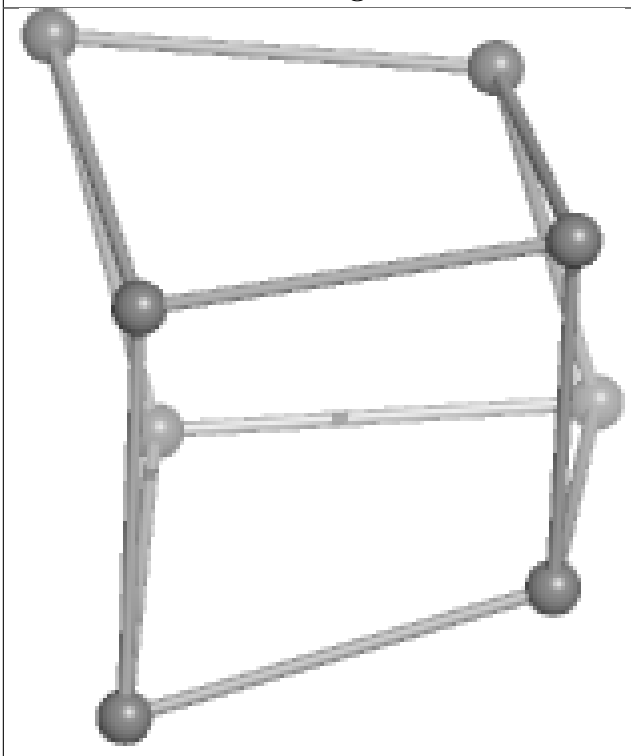

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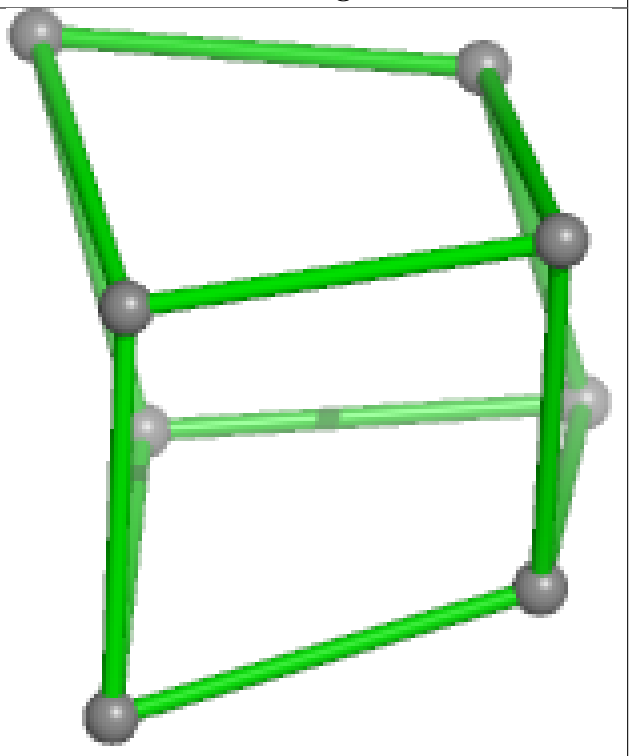
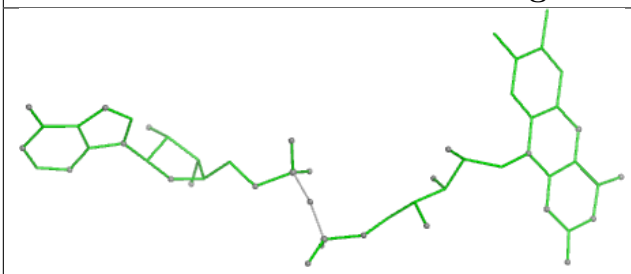


Rings

Ligand FAD a 704



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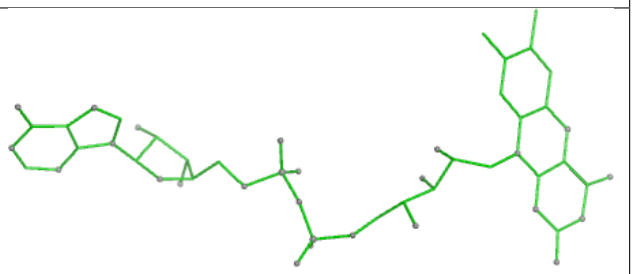
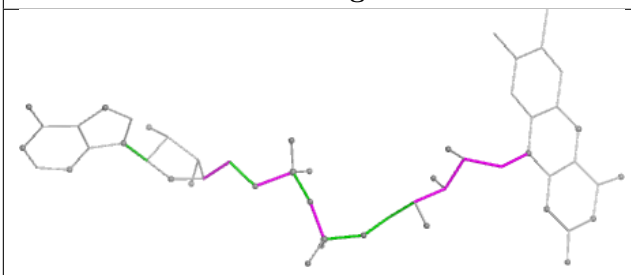


Bond angles



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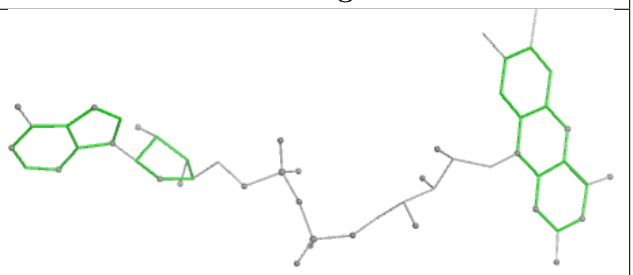
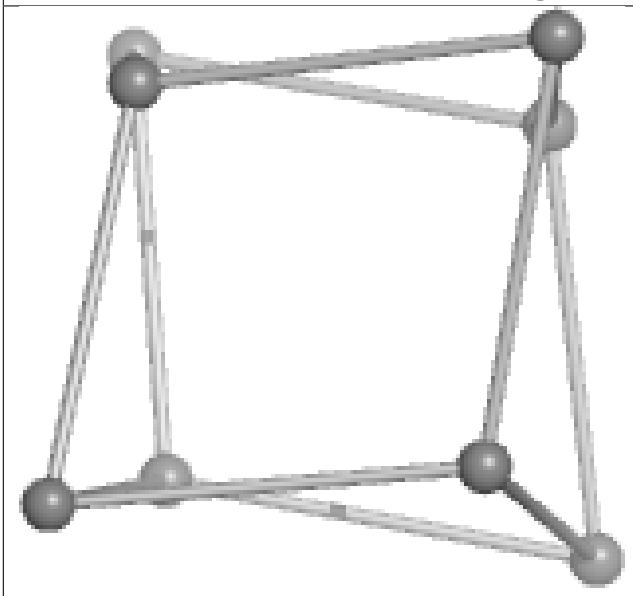


Rings

Ligand SF4 B 706



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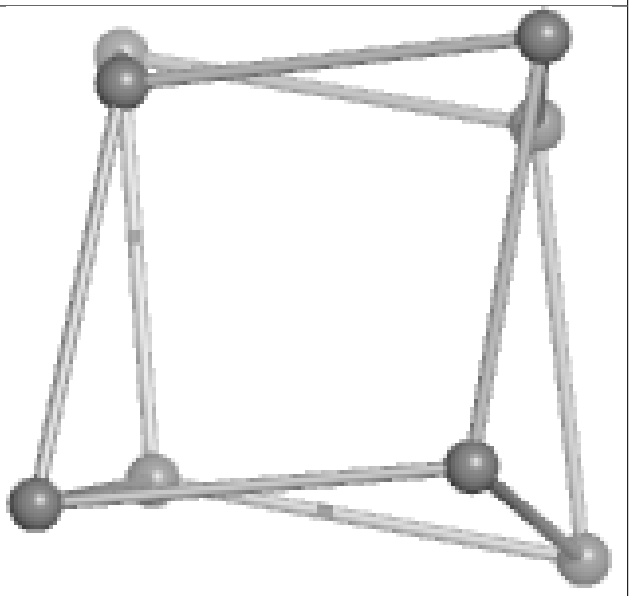
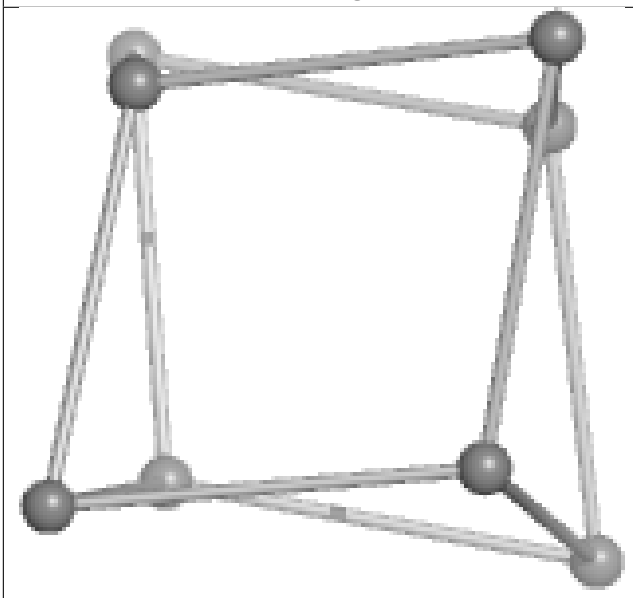
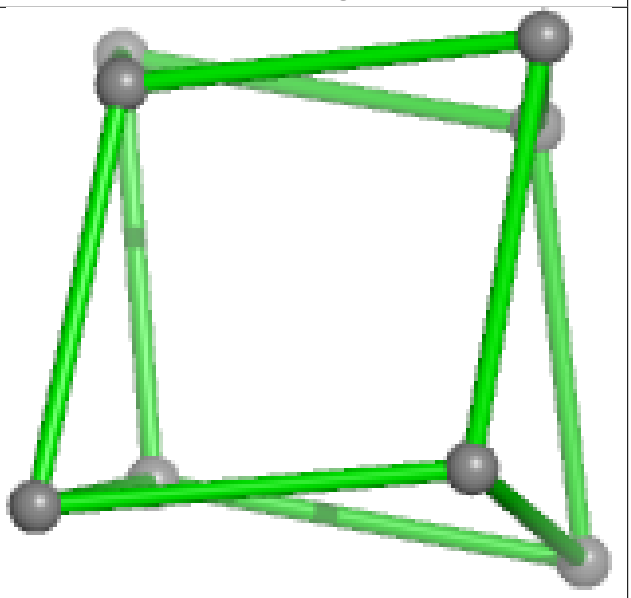


Bond angles

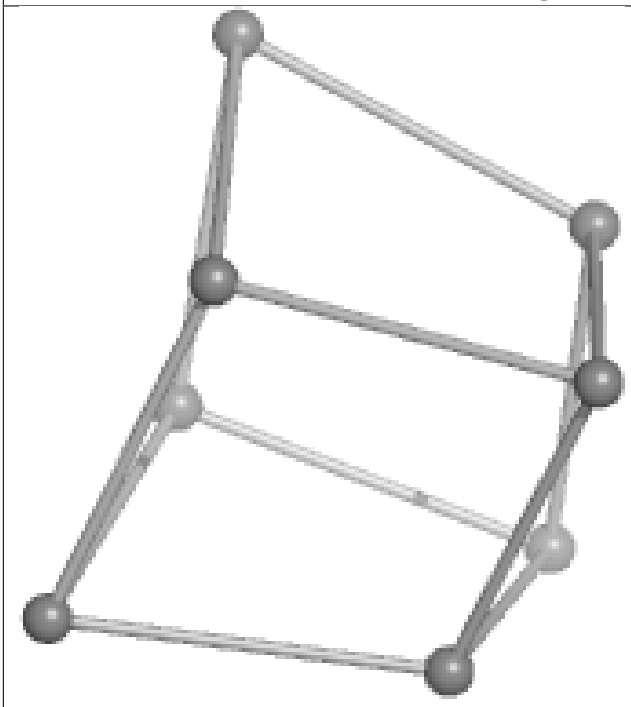


Torsions

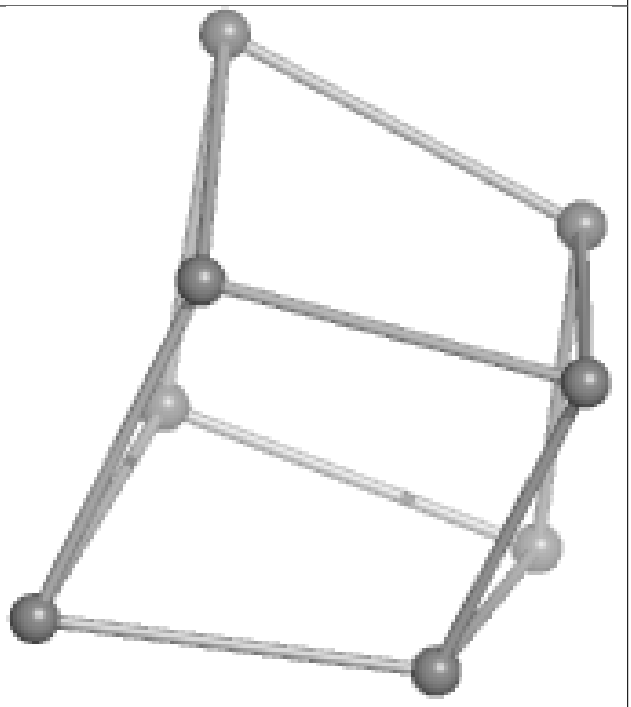


Rings

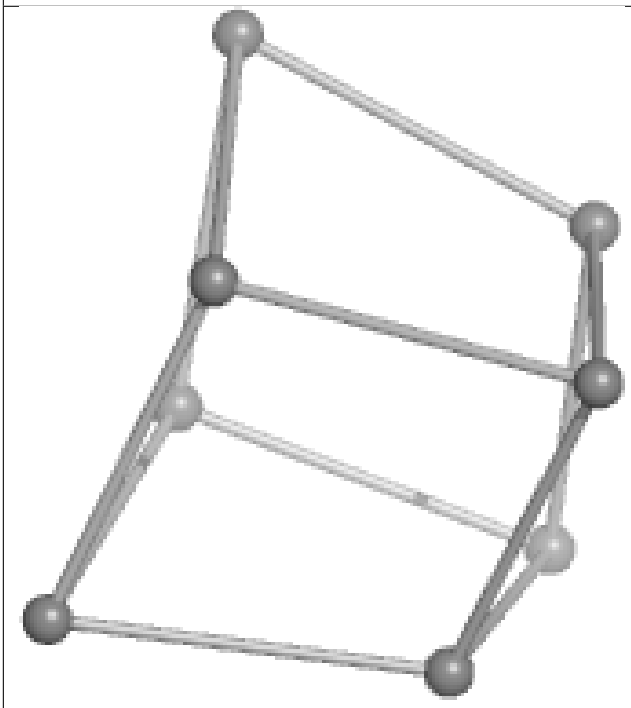
Ligand SF4 o 406



Bond lengths



Bond angles



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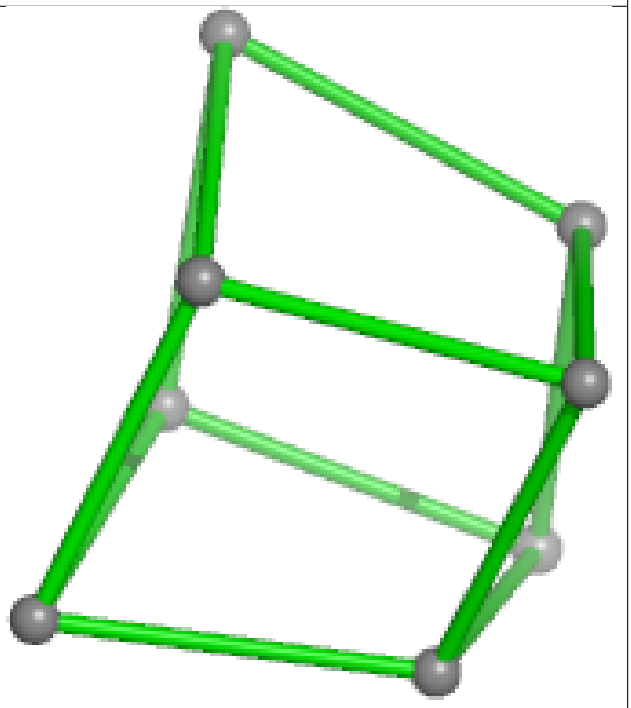
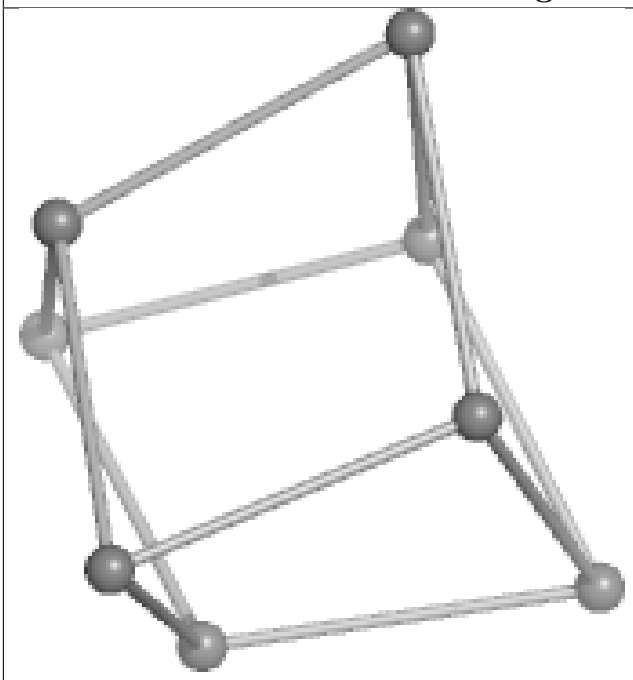


Rings

Ligand SF4 o 407



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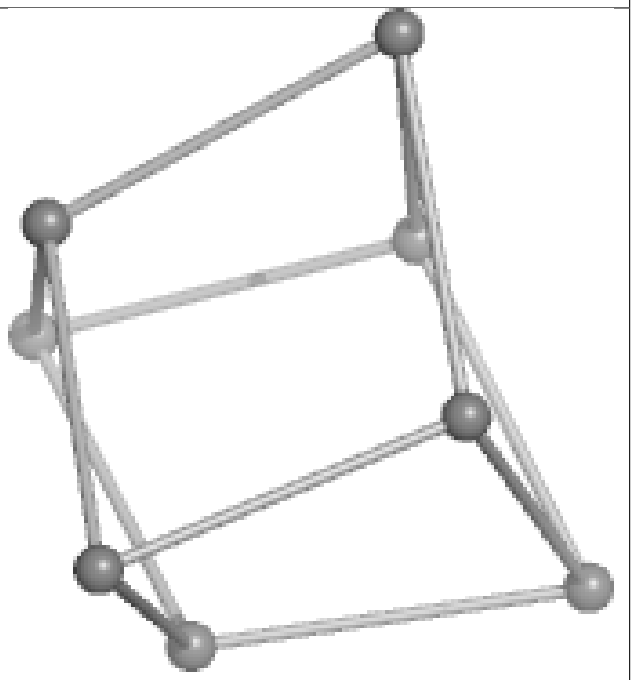

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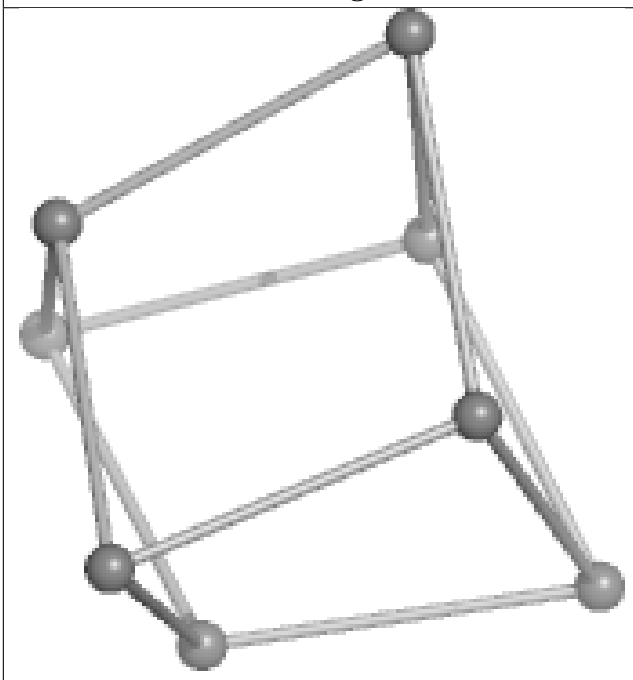

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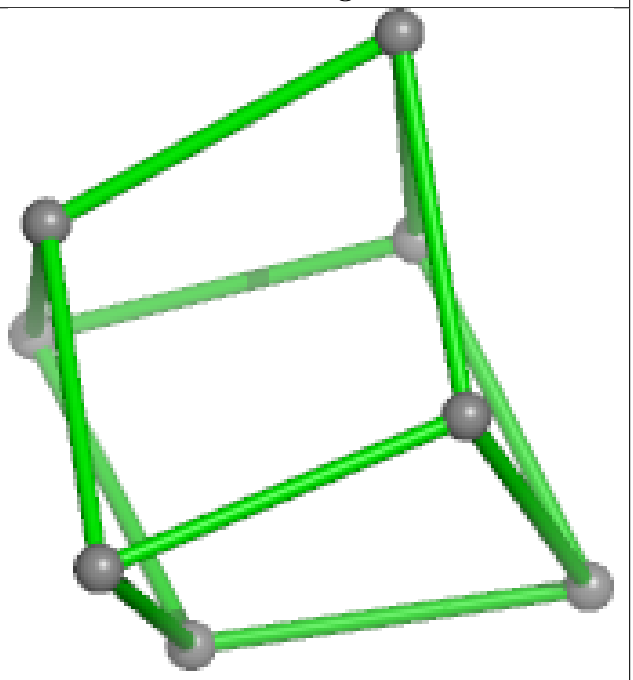
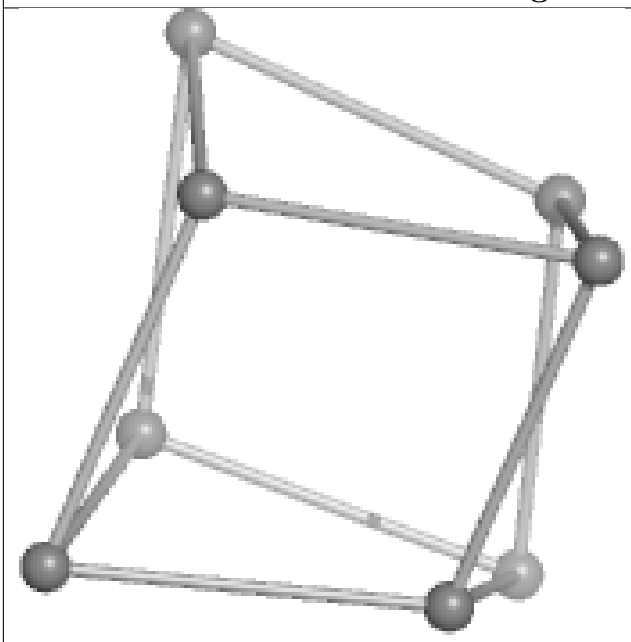


Rings

Ligand SF4 A 702



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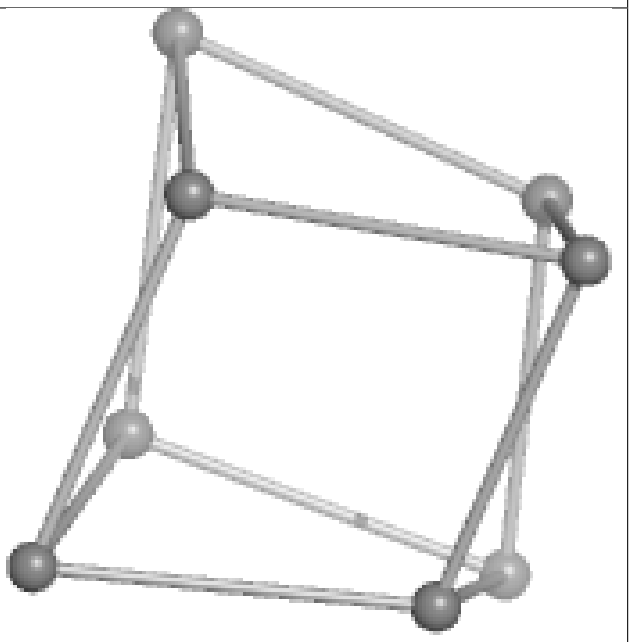
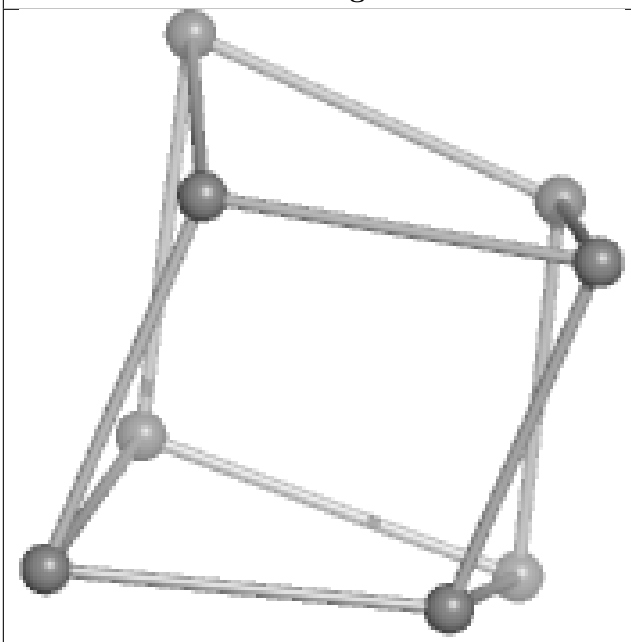


Bond angles



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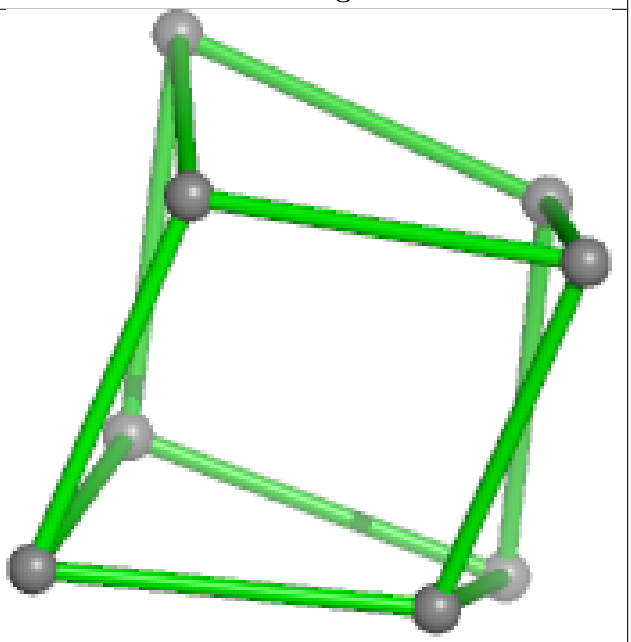
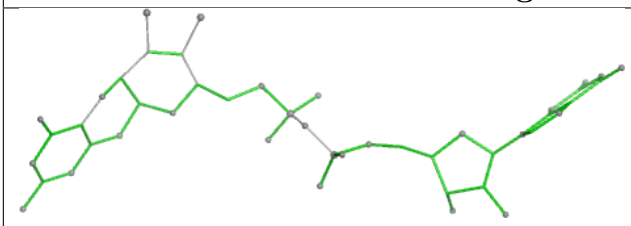


Rings

Ligand MGD Q 501



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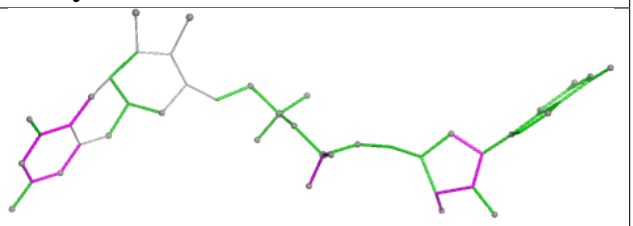
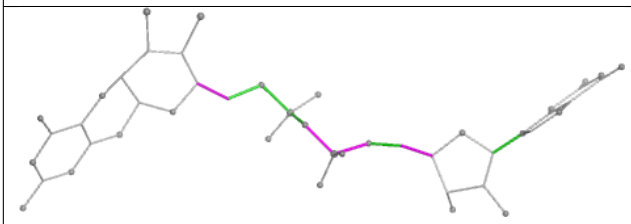


Bond angles



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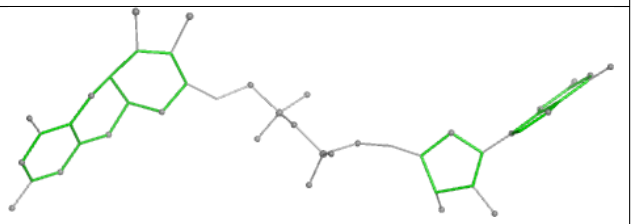
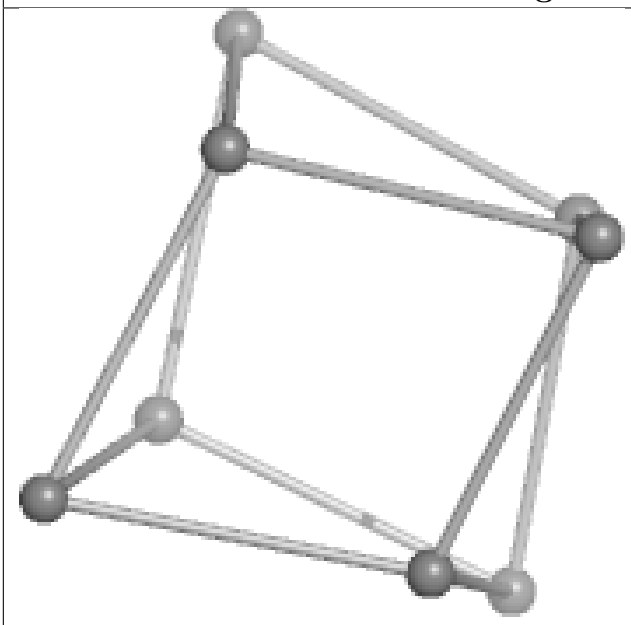


Rings

Ligand SF4 o 412



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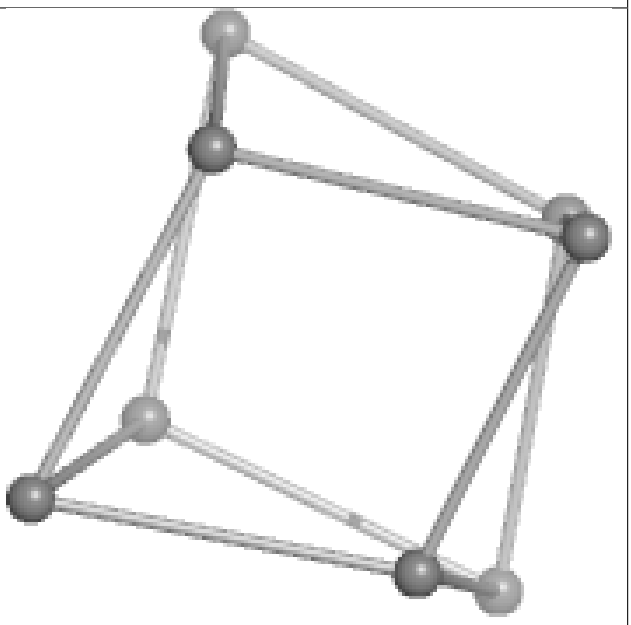
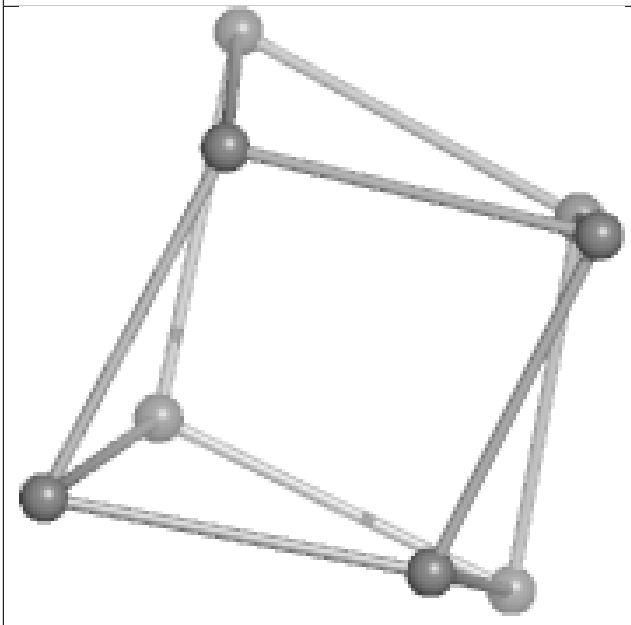


Bond angles



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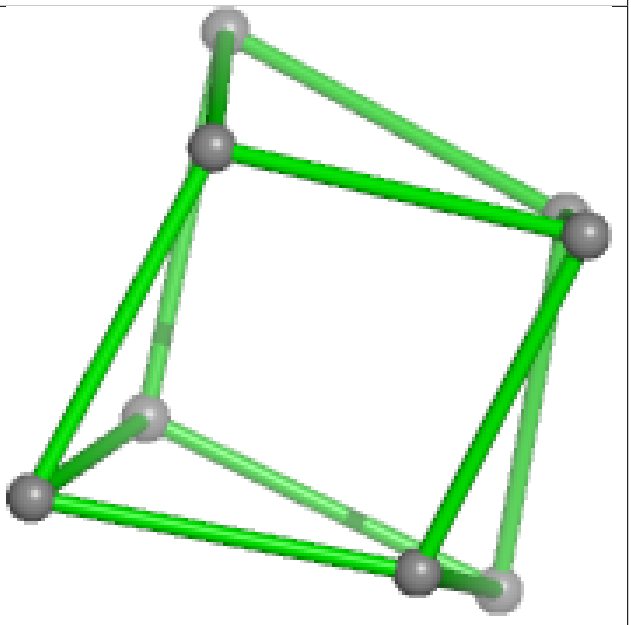
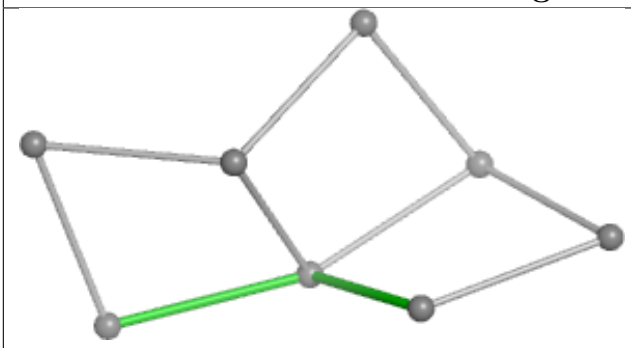


Rings

Ligand 9S8 D 301



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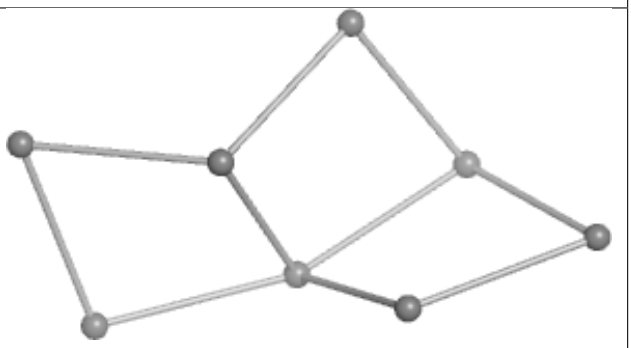
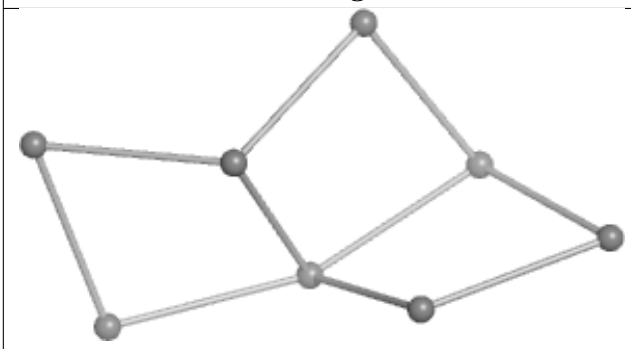


Bond angles



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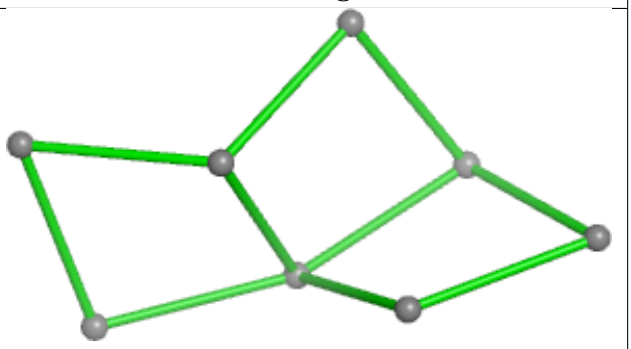
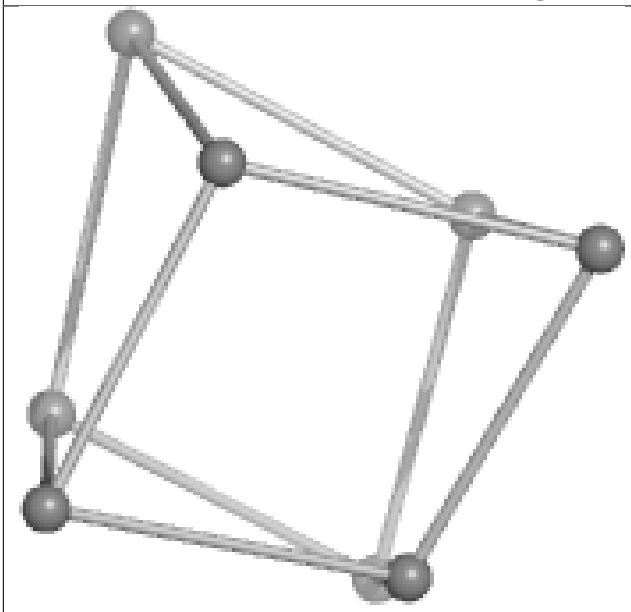


Rings

Ligand SF4 T 404



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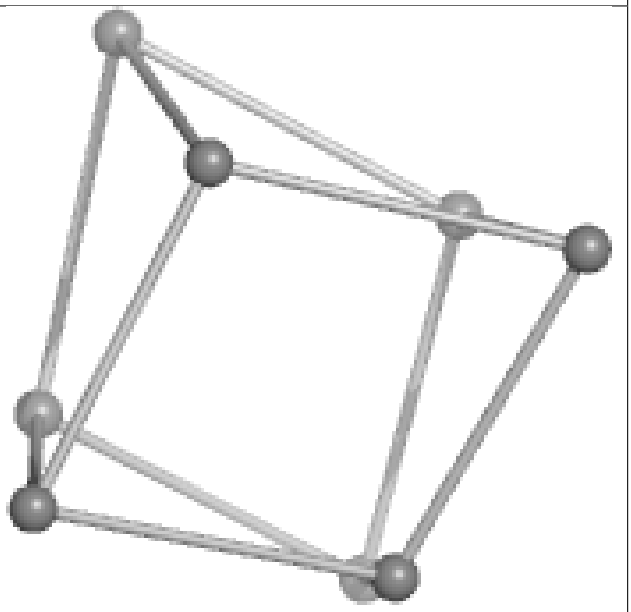
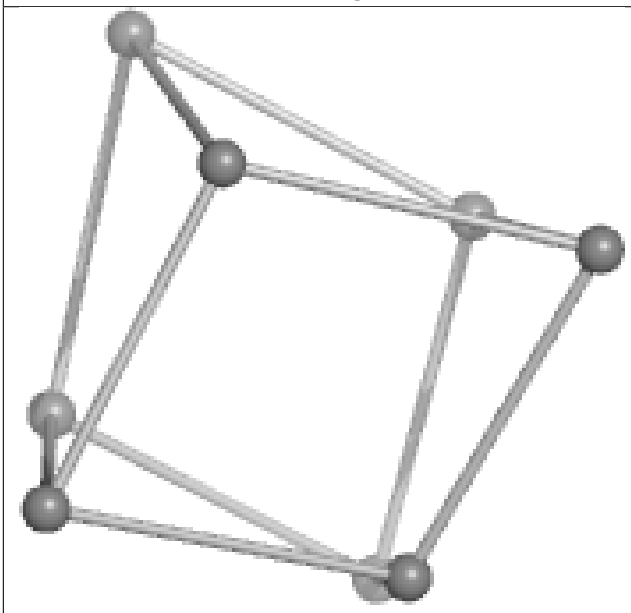


Bond angles



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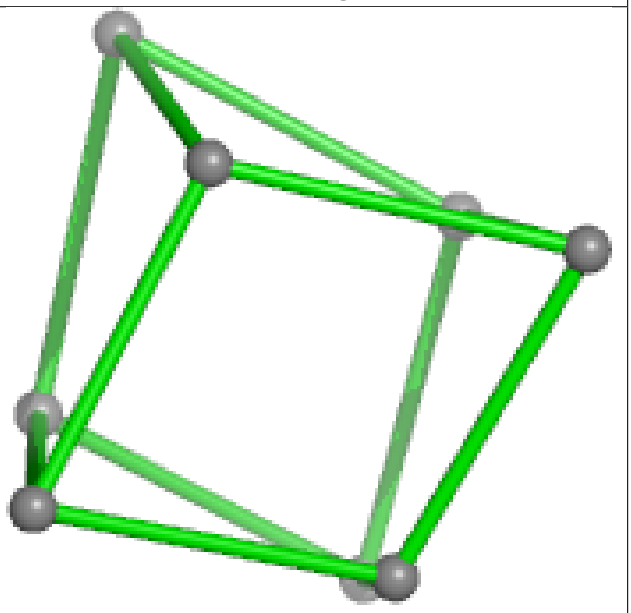
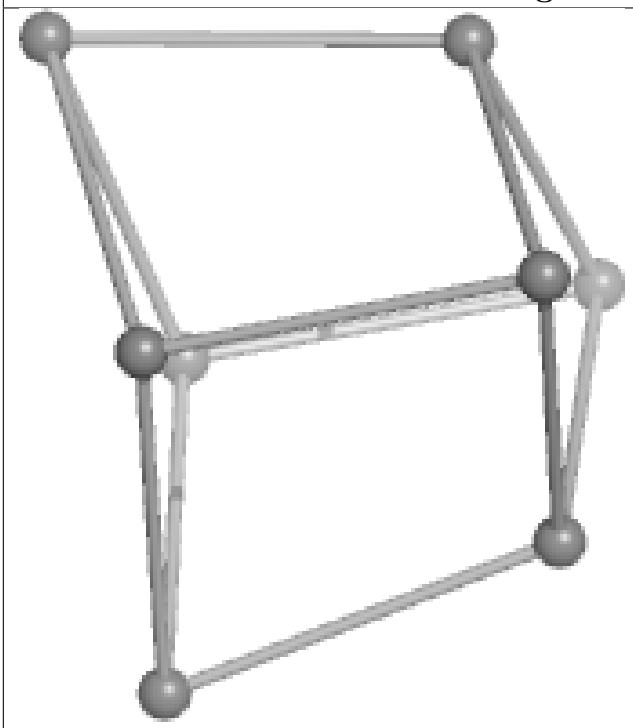


Rings

Ligand SF4 a 705



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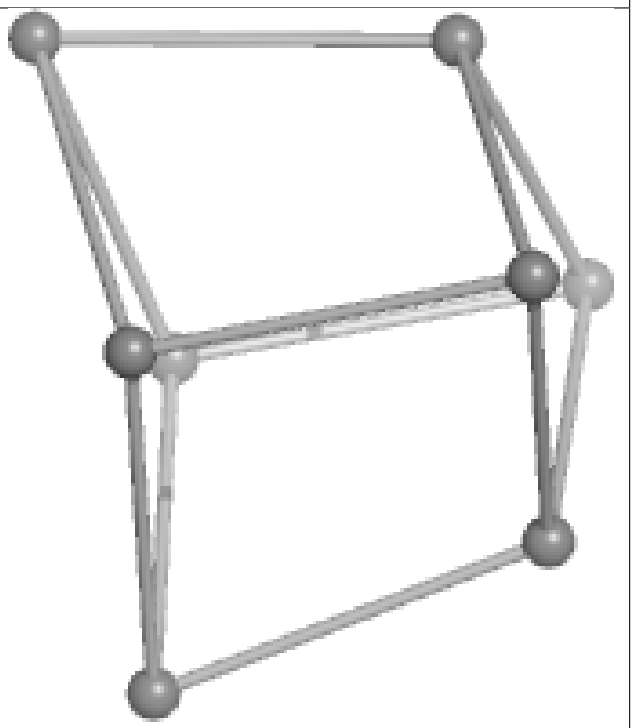
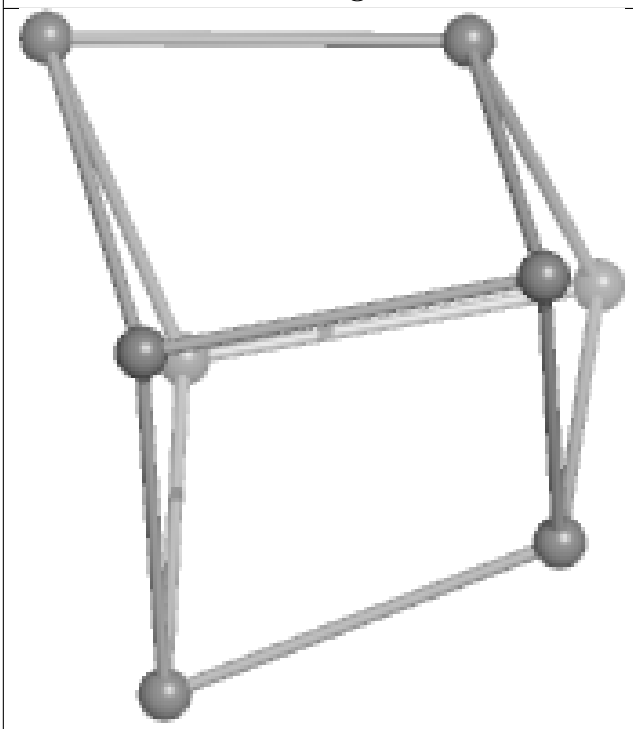
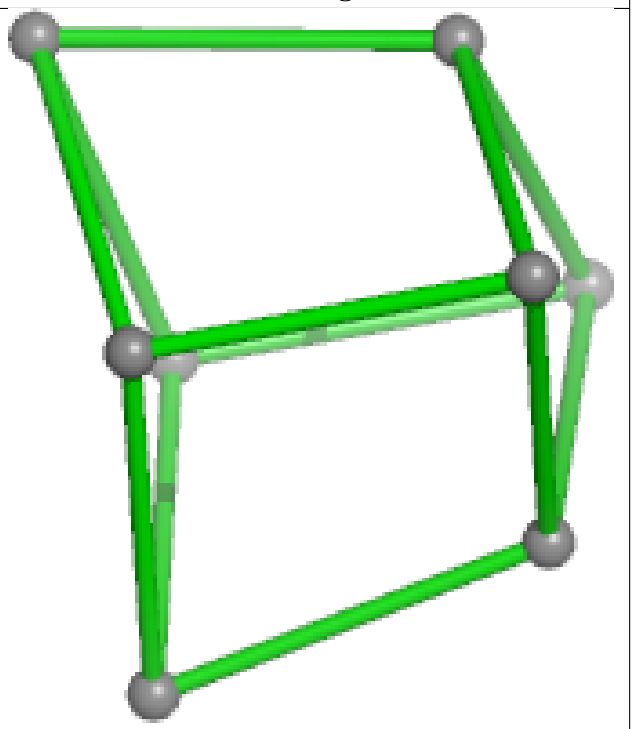


Bond angles

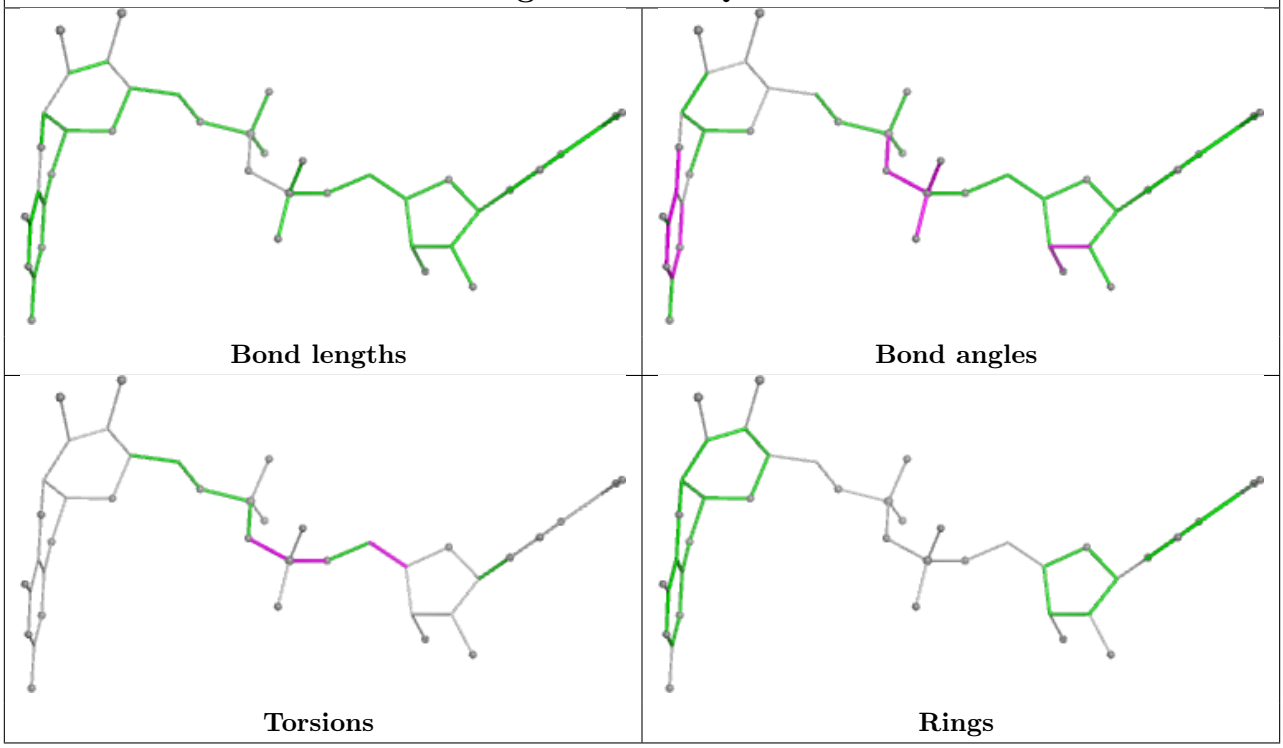


Torsions

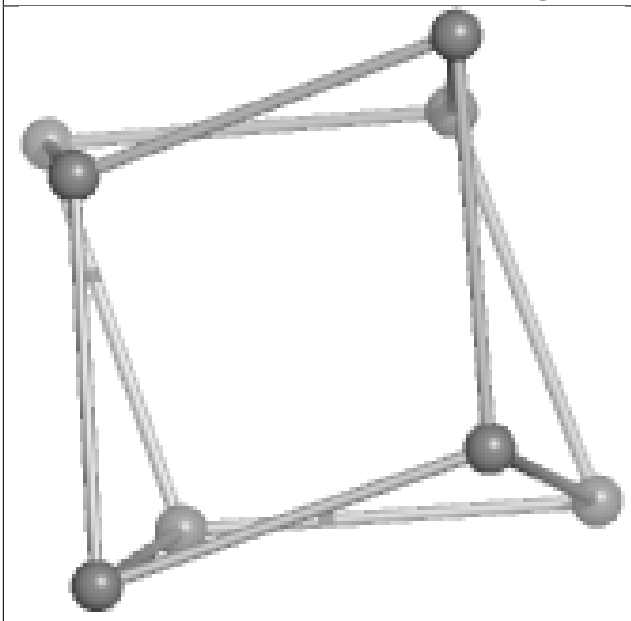


Rings

Ligand MGD Q 502



Ligand SF4 b 702



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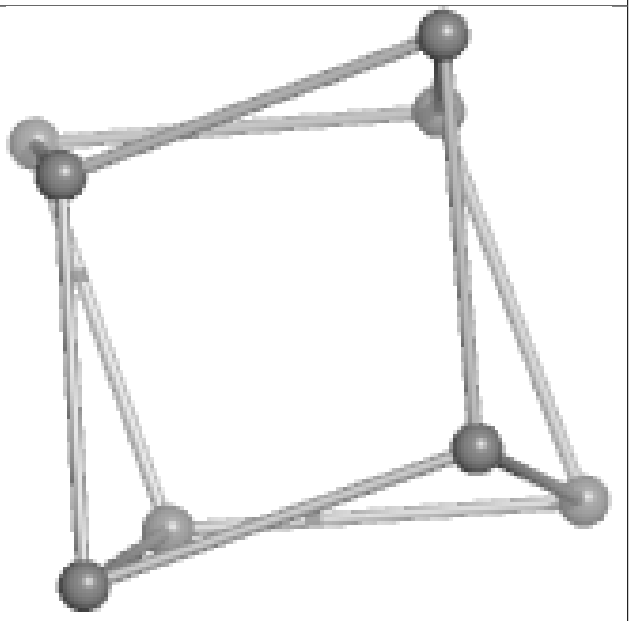
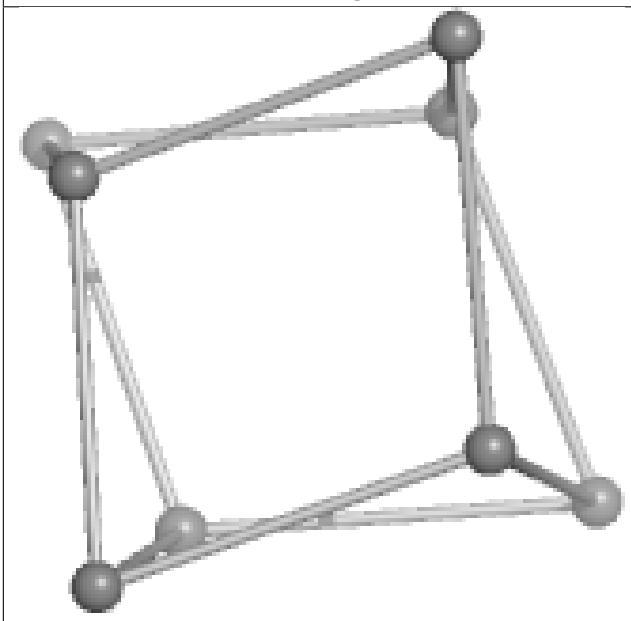


Bond angles



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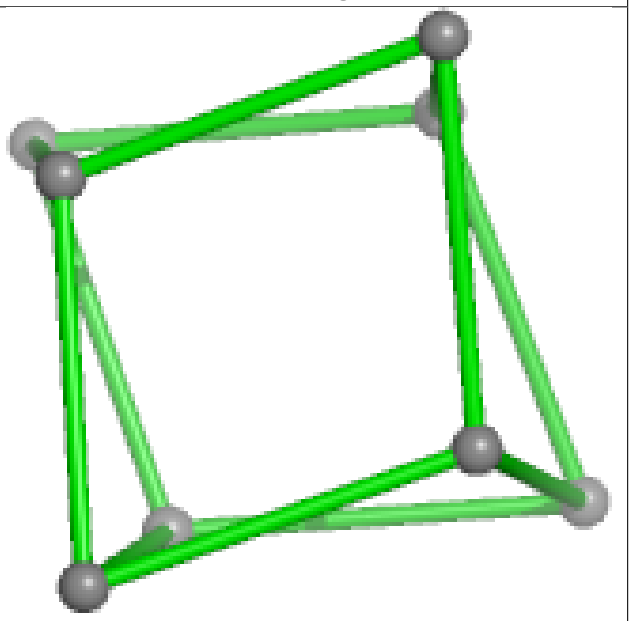
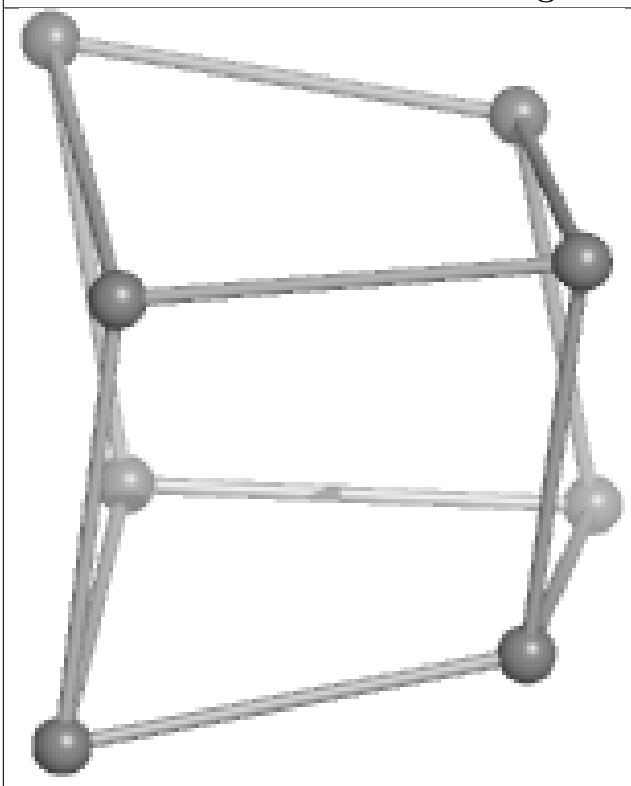
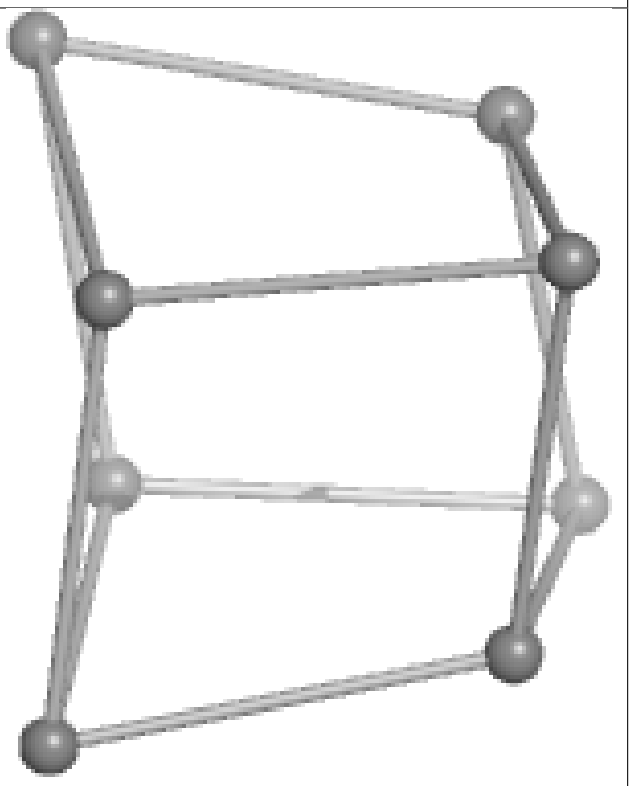


Rings

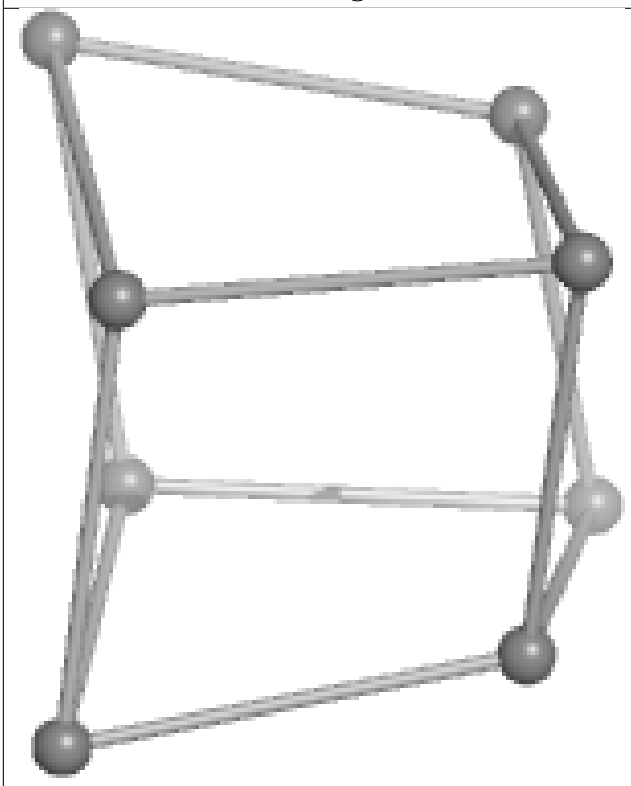
Ligand SF4 t 406



Bond lengths



Bond angles



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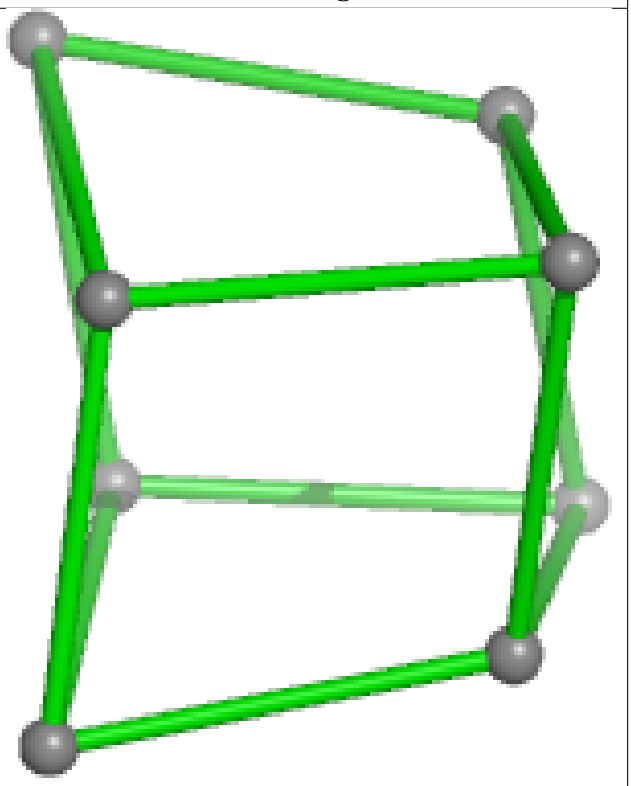
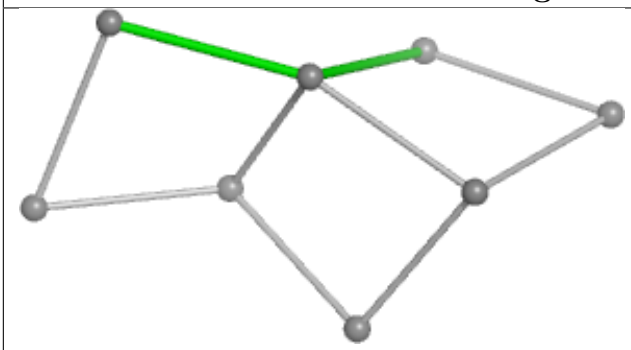


Rings

Ligand 9S8 C 302



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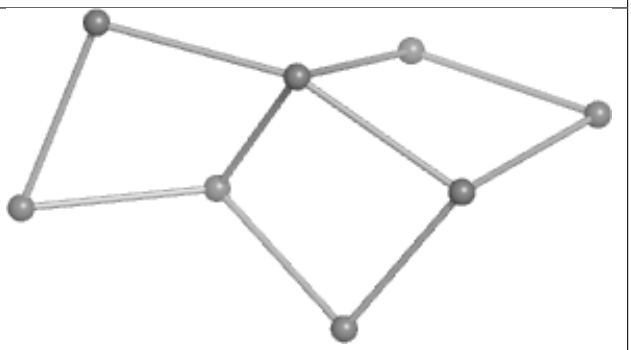
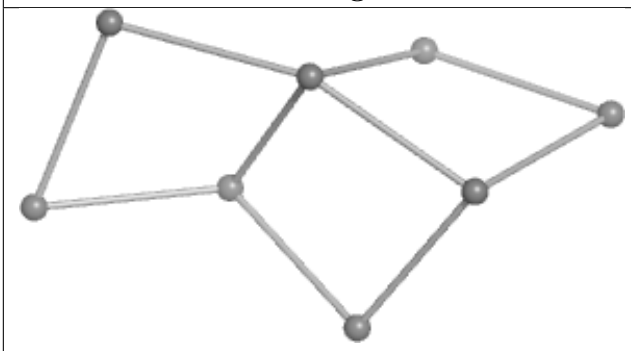


Bond angles



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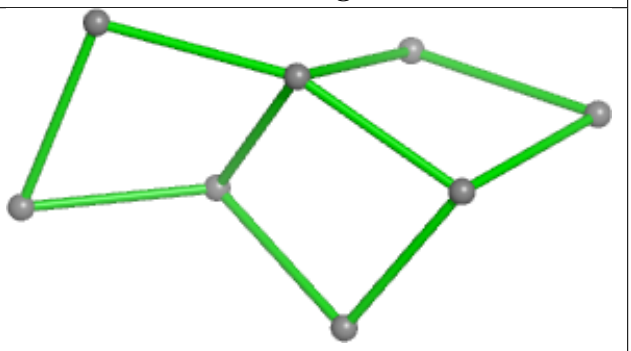
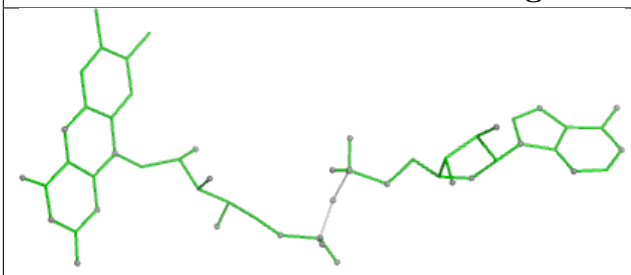


Rings

Ligand FAD B 701



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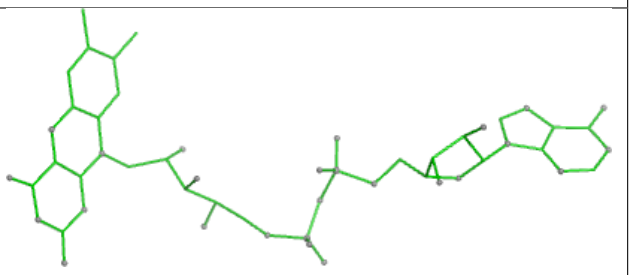
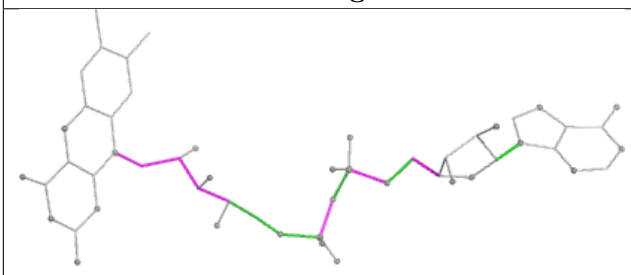
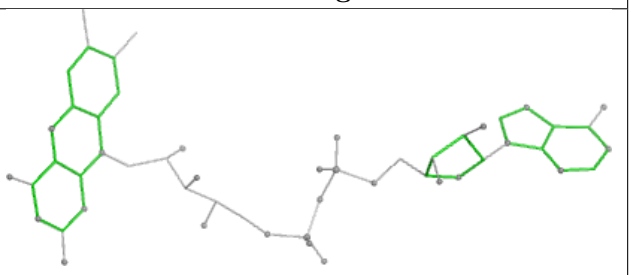


Bond angles

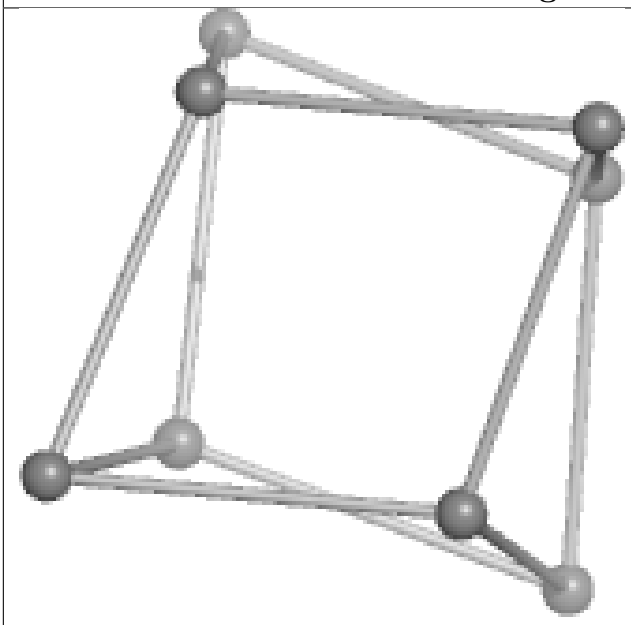


Torsions

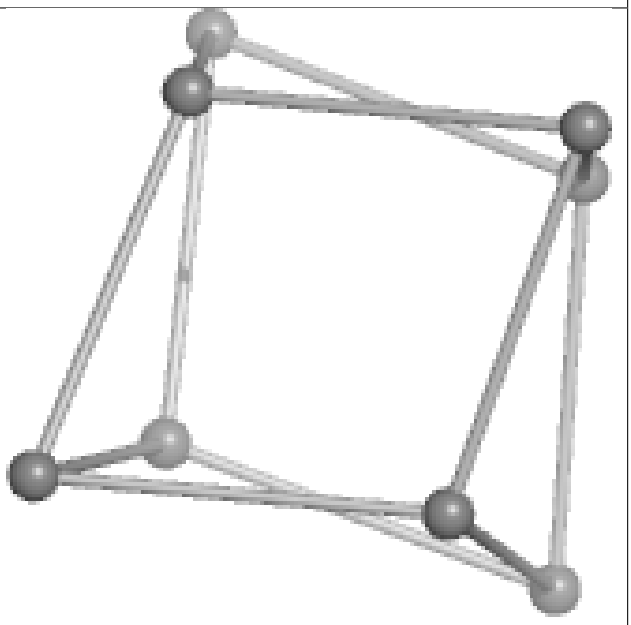


Rings

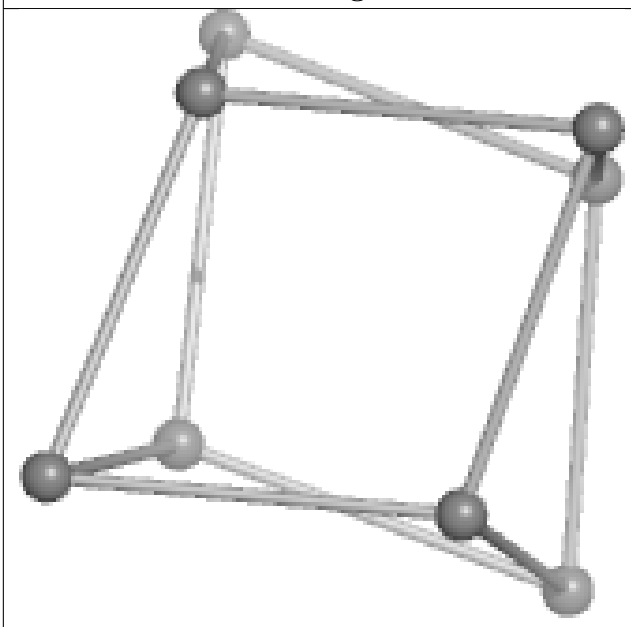
Ligand SF4 i 302



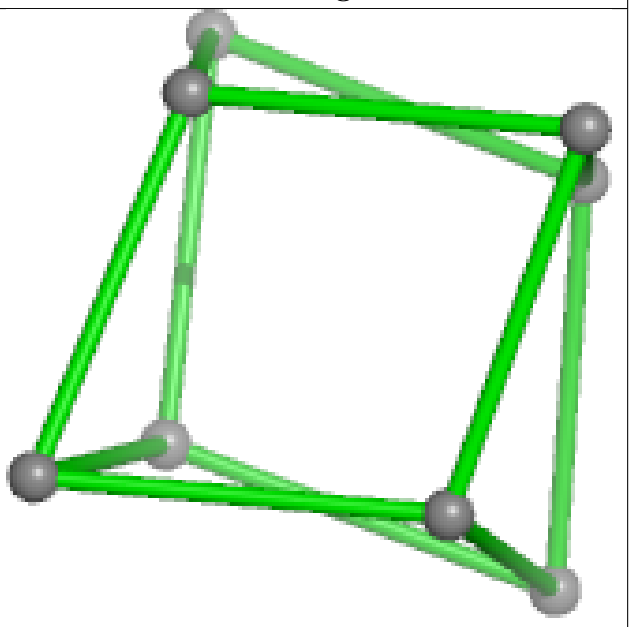
Bond lengths



Bond angles

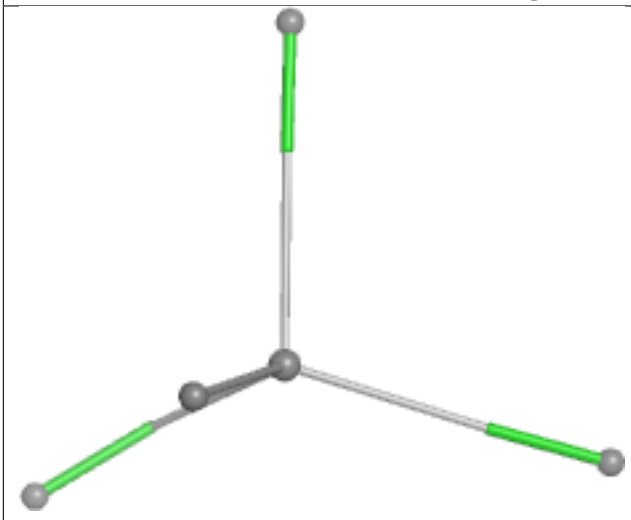


Torsions

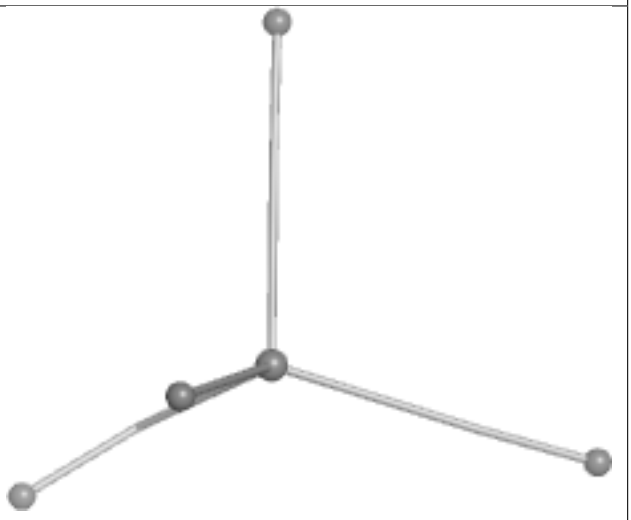


Rings

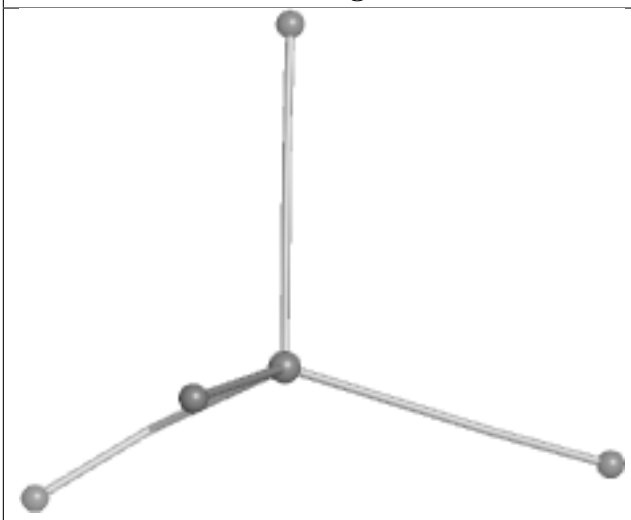
Ligand NFU h 501



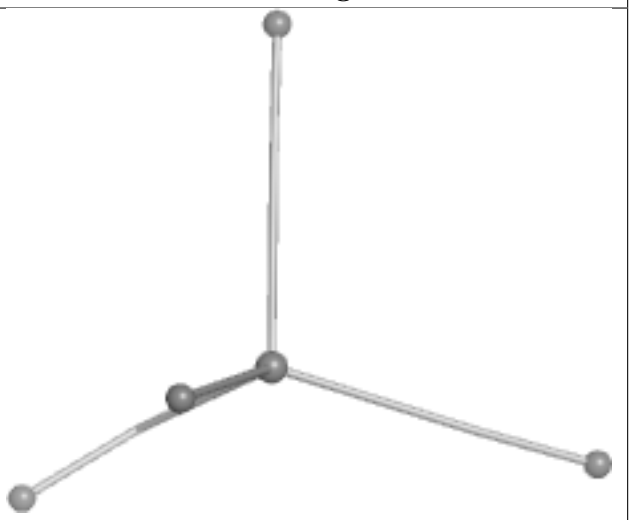
Bond lengths



Bond angles

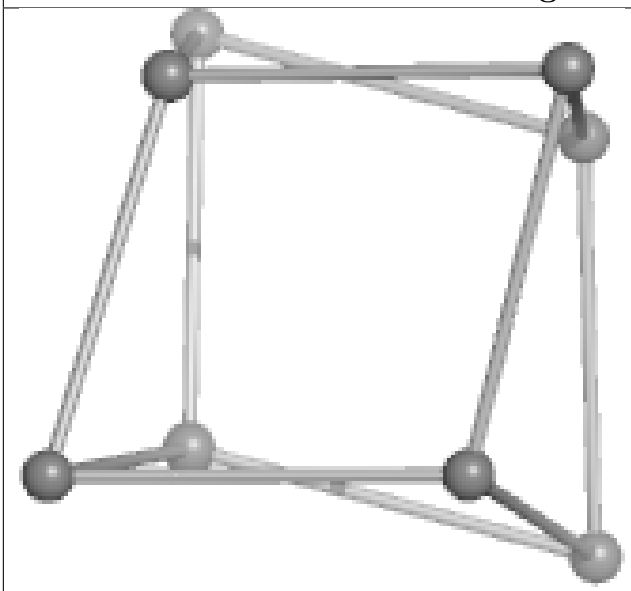


Torsions



Rings

Ligand SF4 i 301



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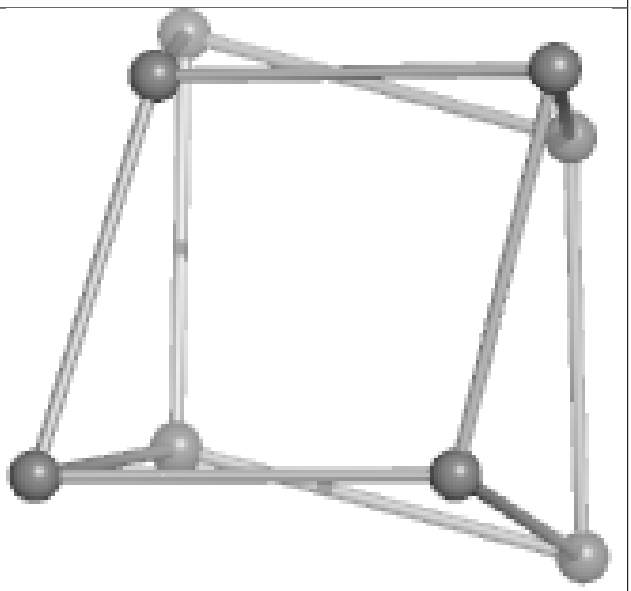

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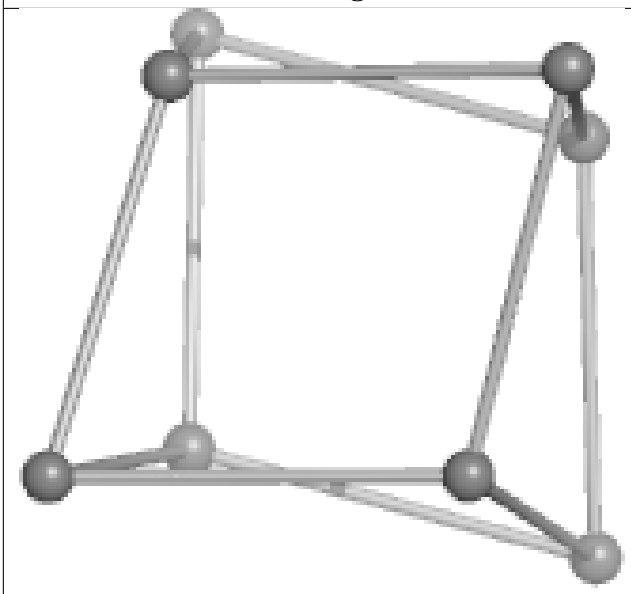

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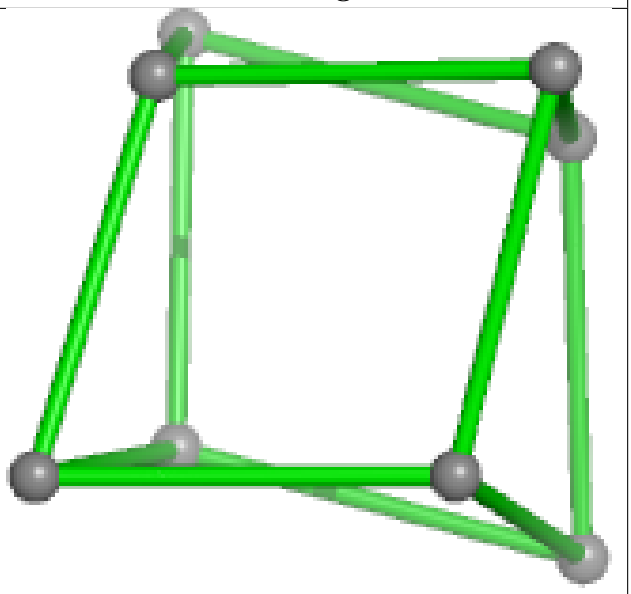
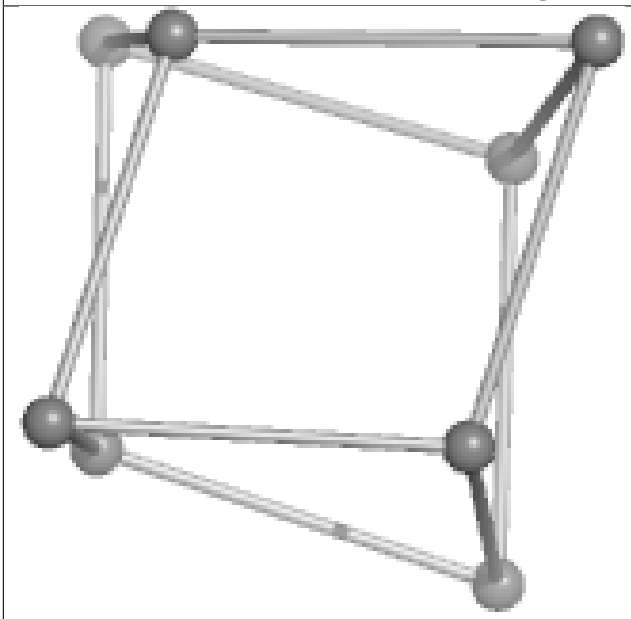


Rings

Ligand SF4 u 101



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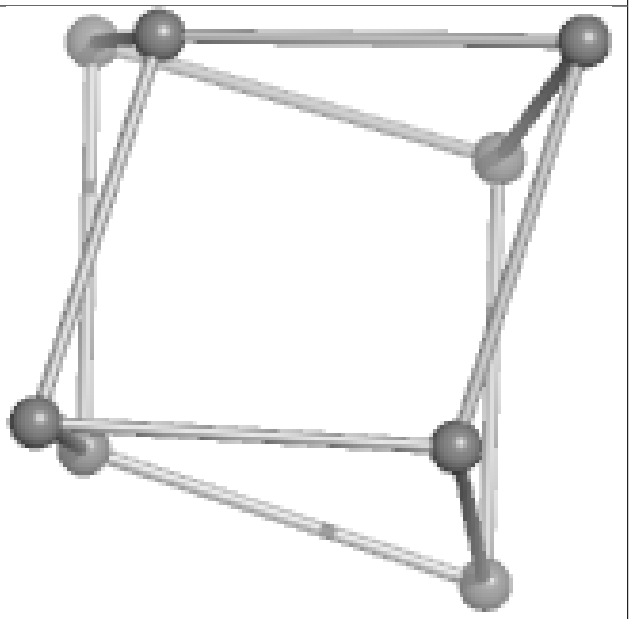

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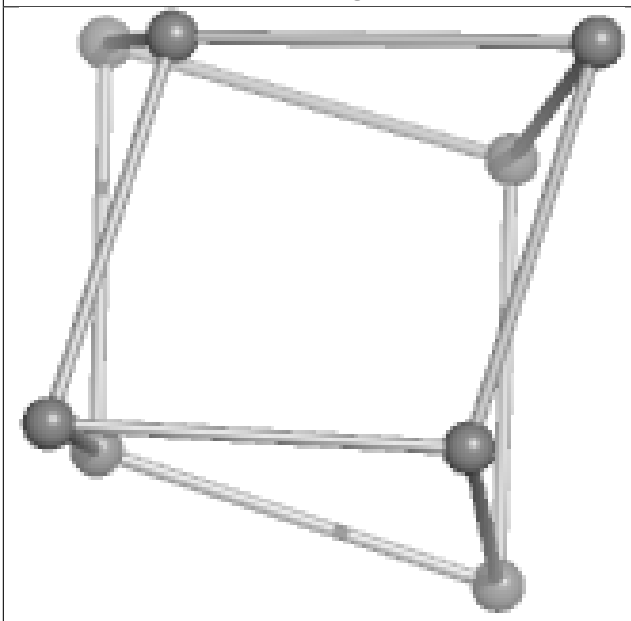

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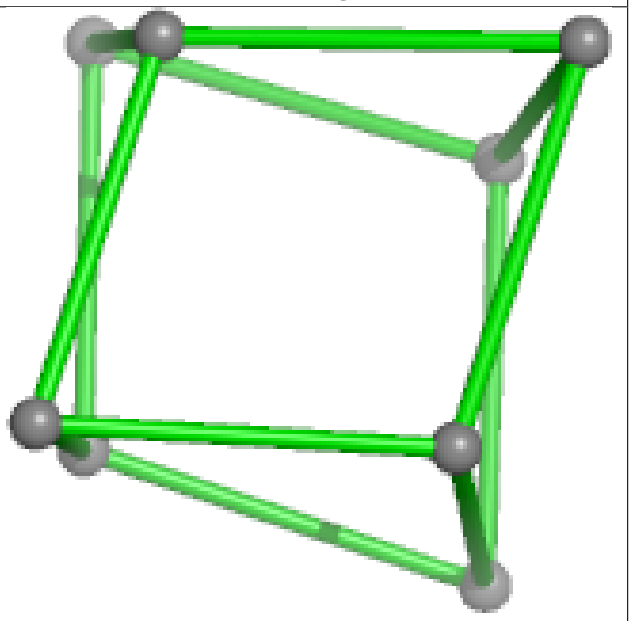
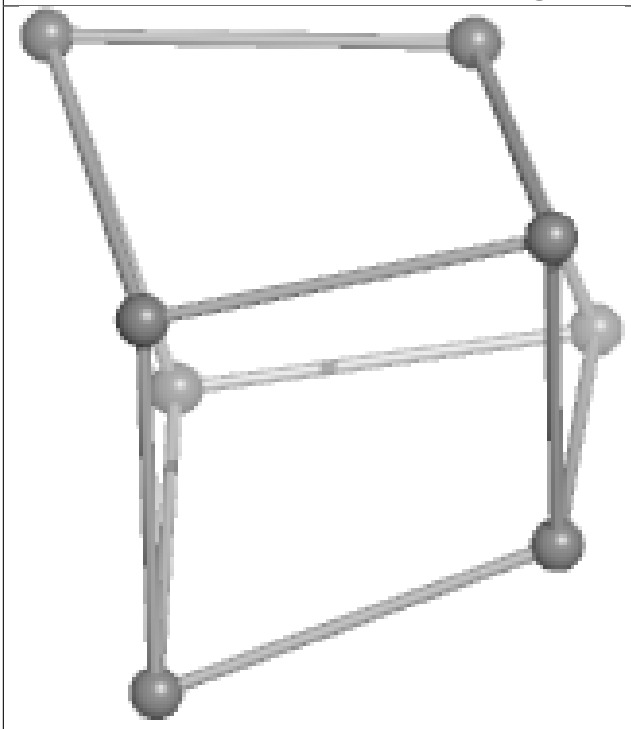


Rings

Ligand SF4 A 705



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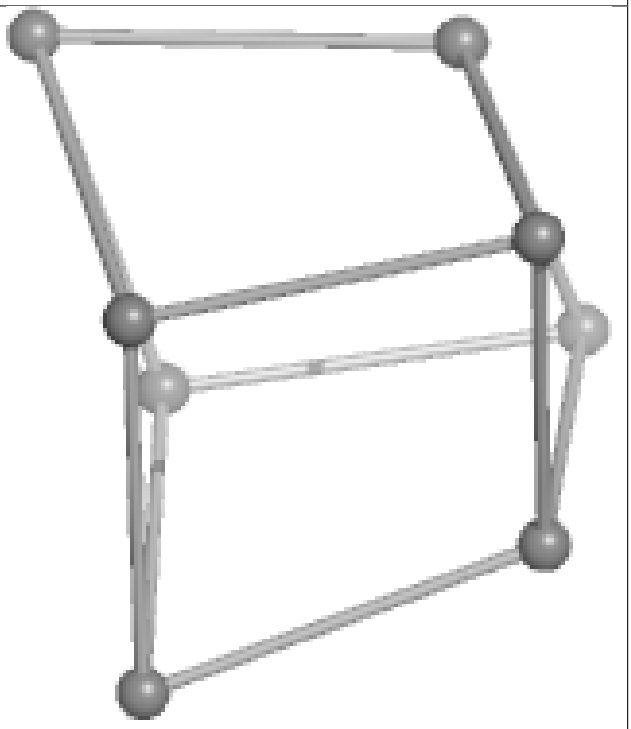

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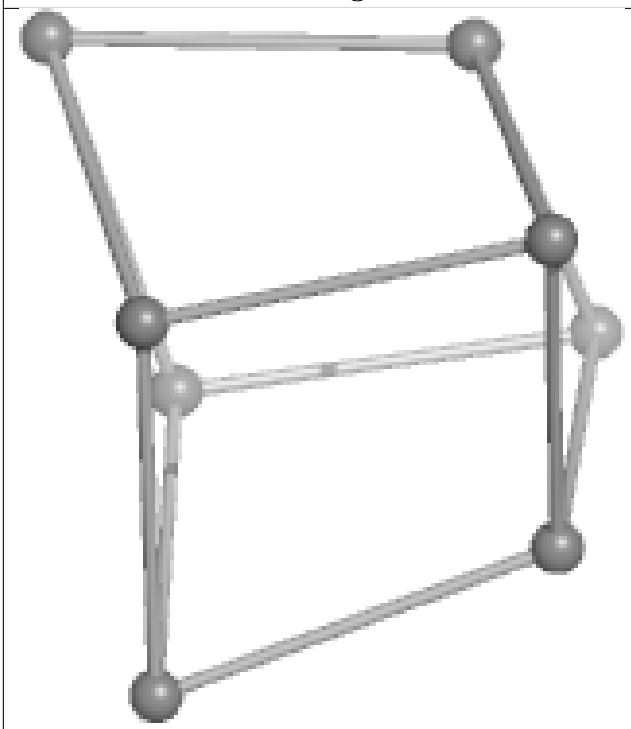

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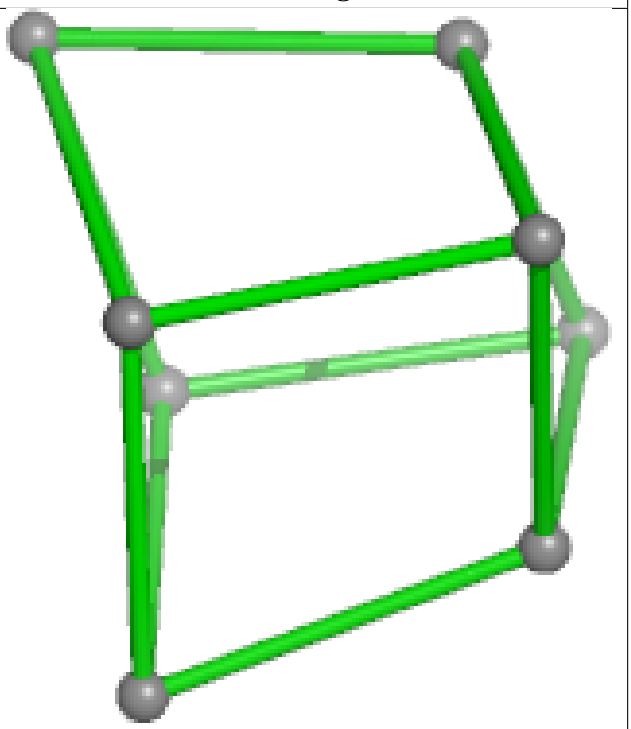
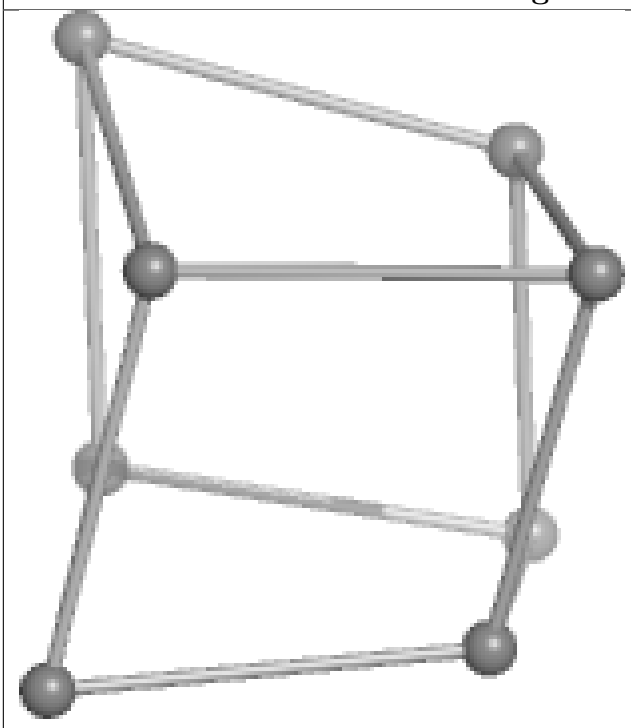


Rings

Ligand SF4 T 403



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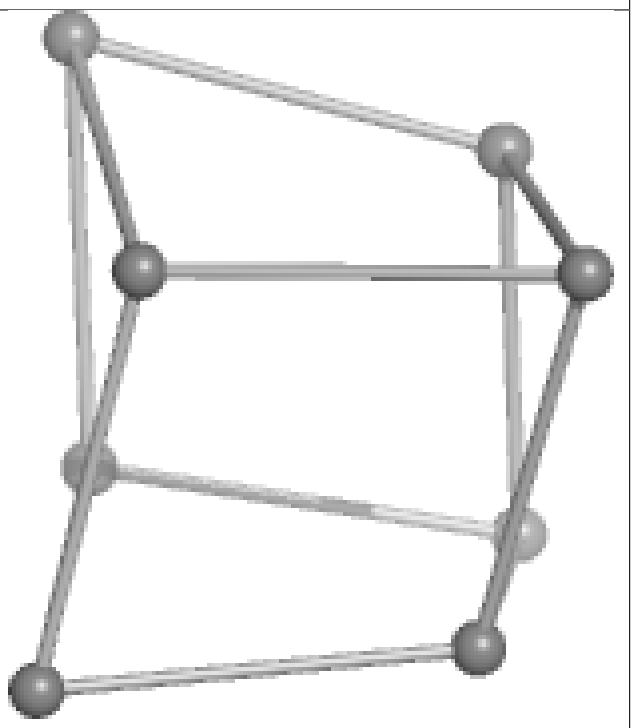

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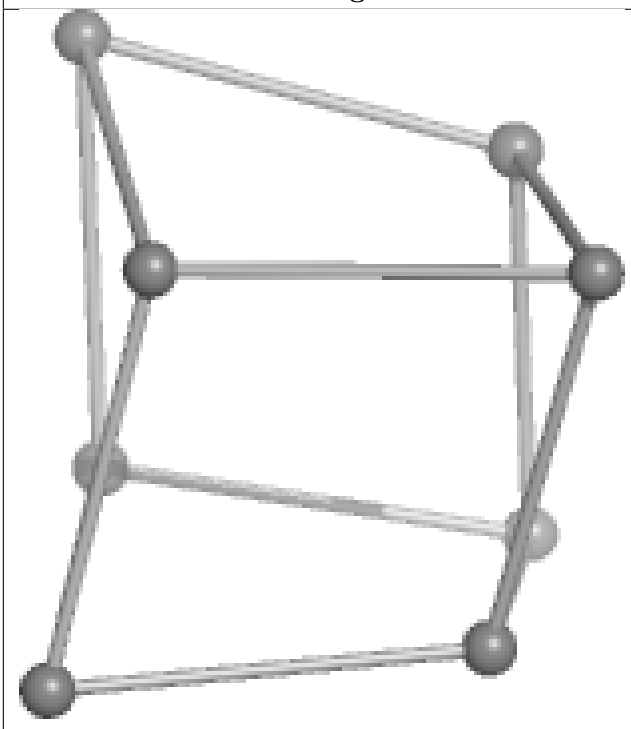

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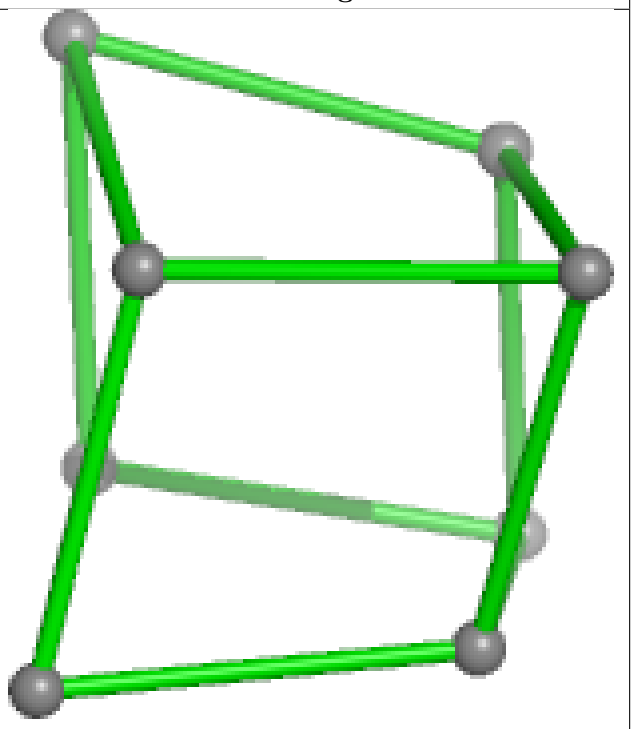
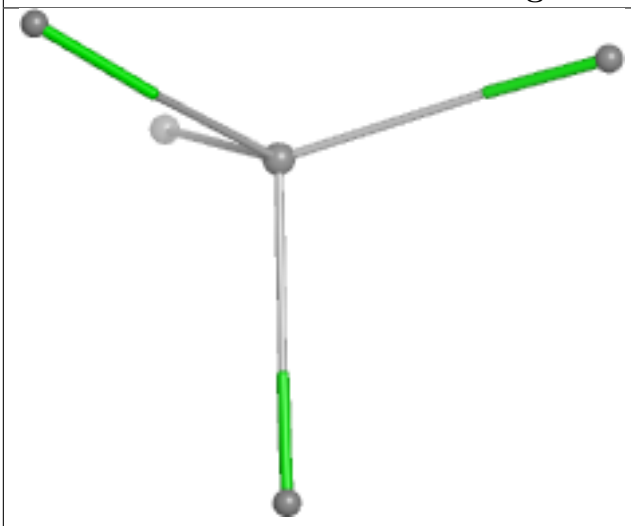


Rings

Ligand NFU g 501



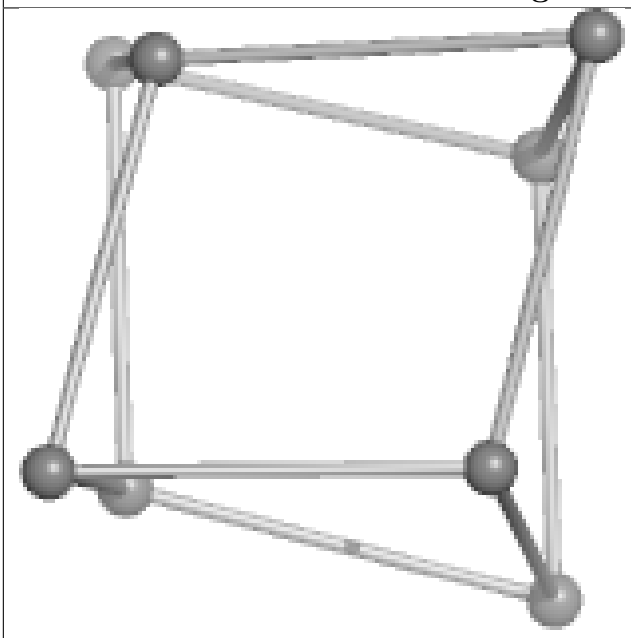
Bond lengths

Bond angles

Torsions

Rings

Ligand SF4 B 703



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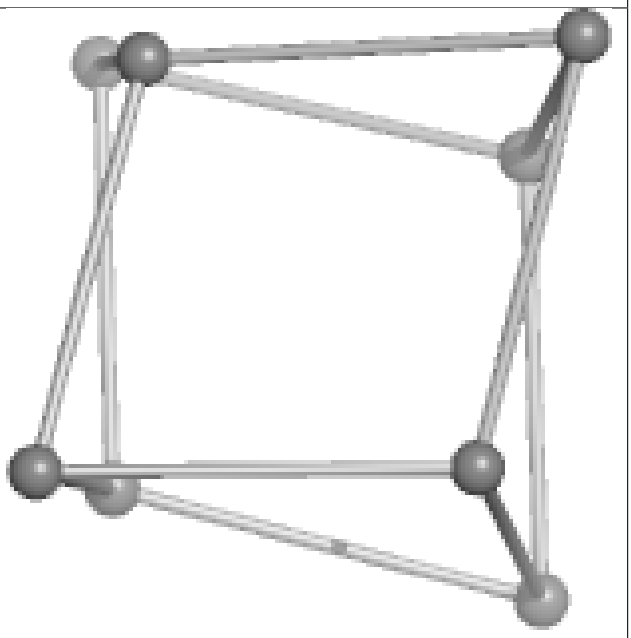

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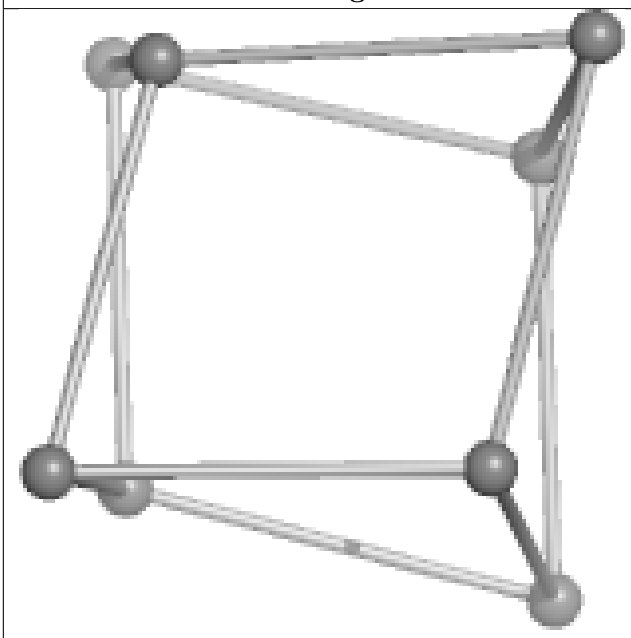

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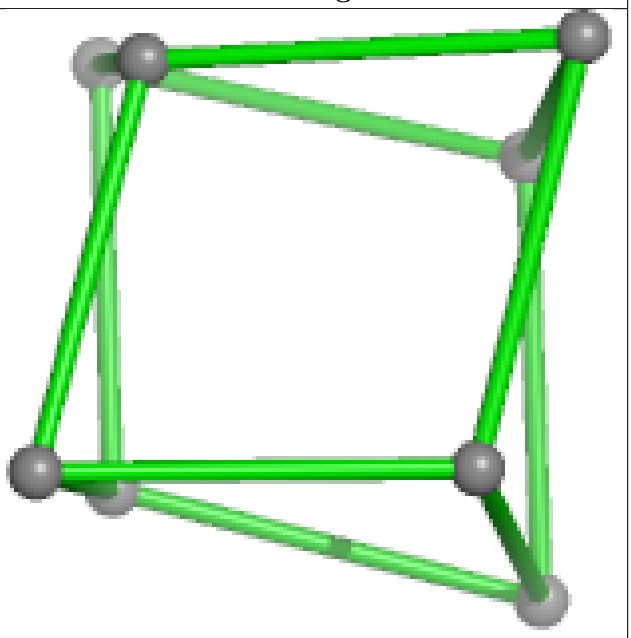
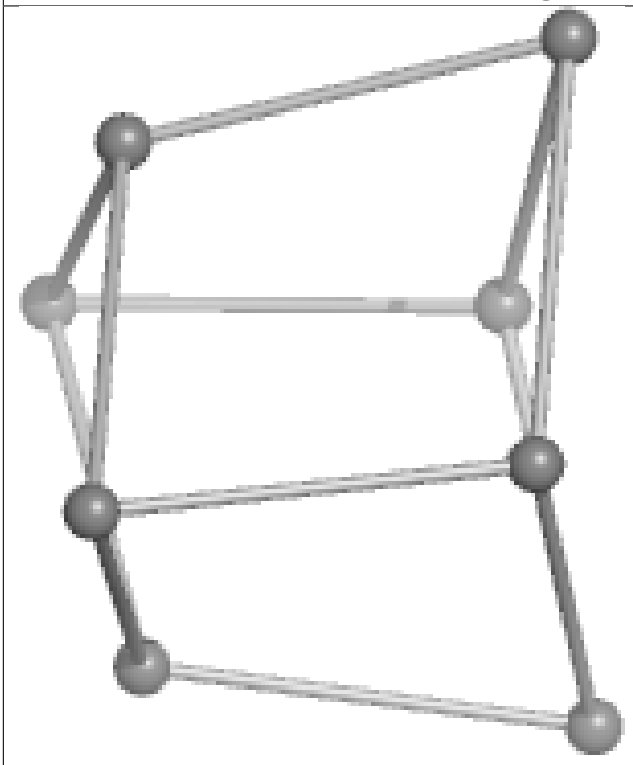


Rings

Ligand SF4 t 403



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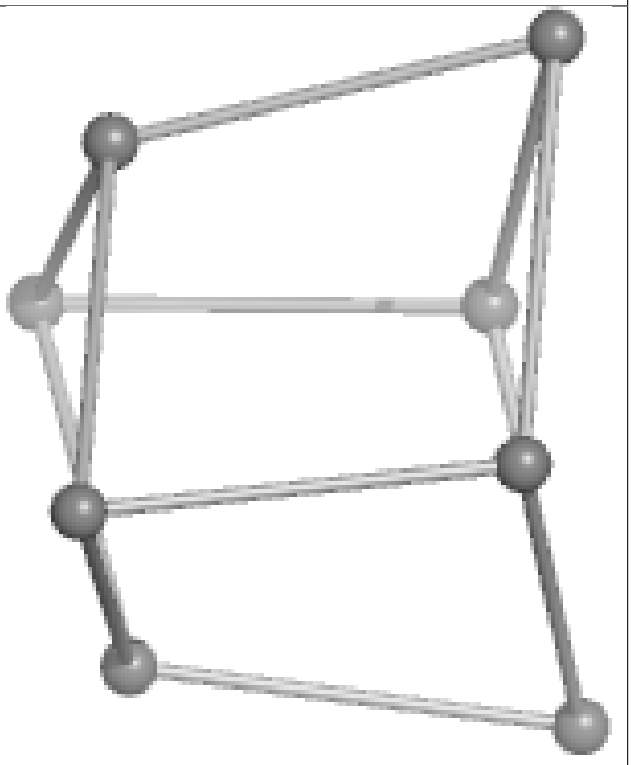

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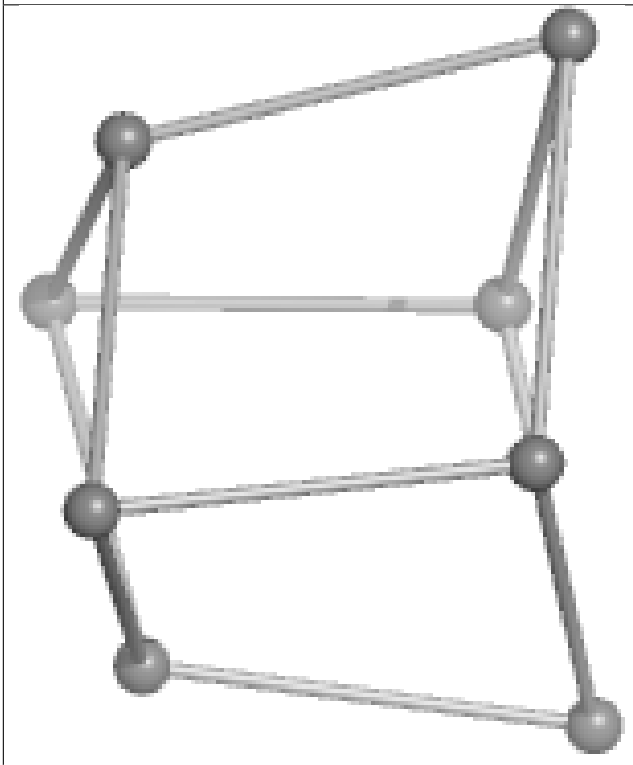

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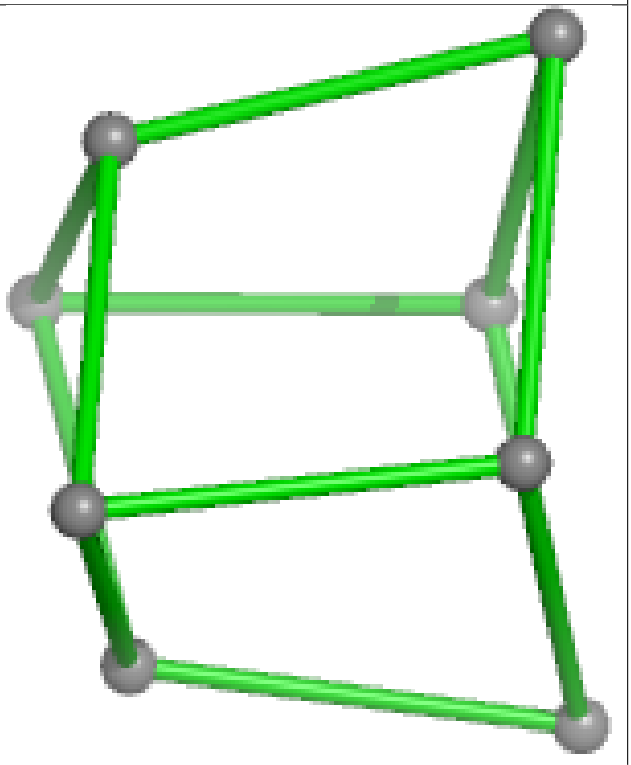
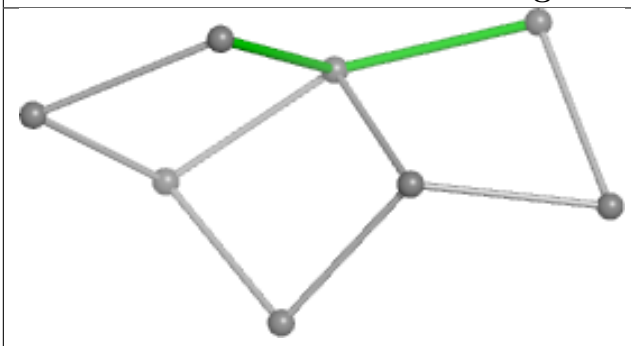


Rings

Ligand 9S8 C 301



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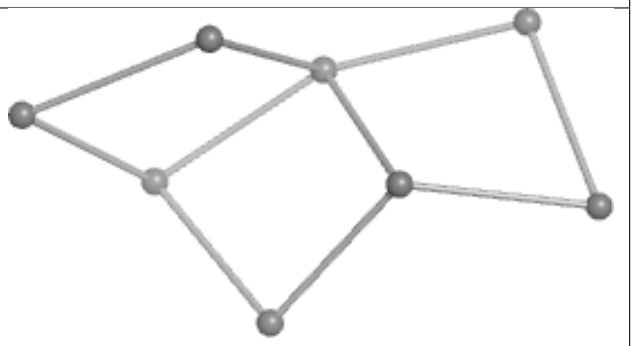

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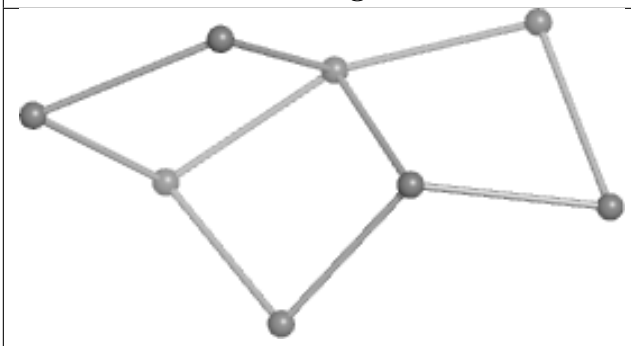

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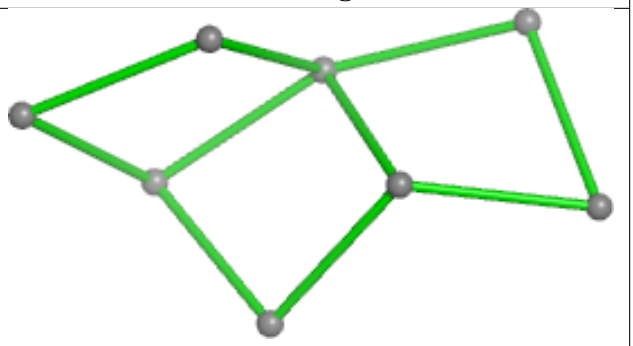
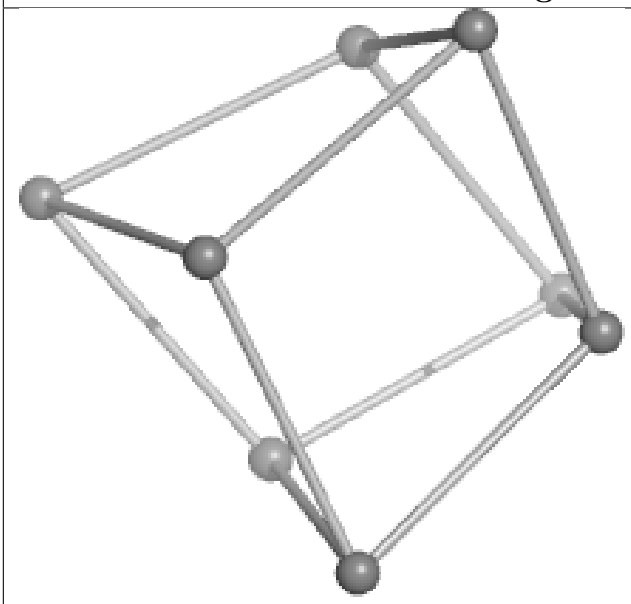


Rings

Ligand SF4 o 409



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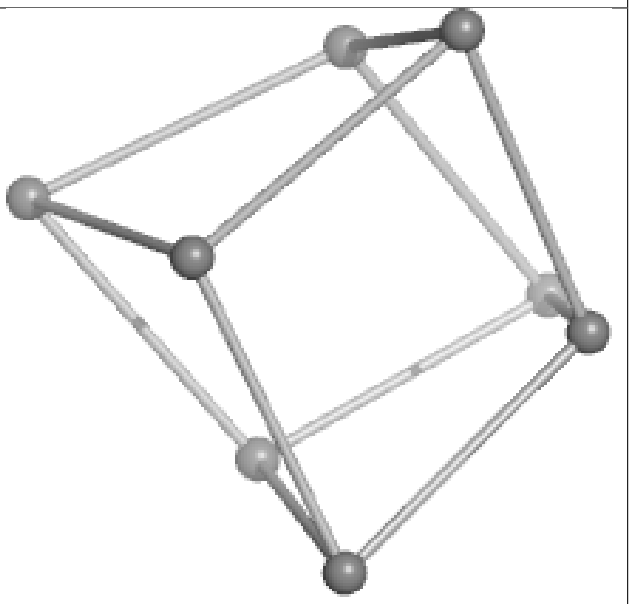

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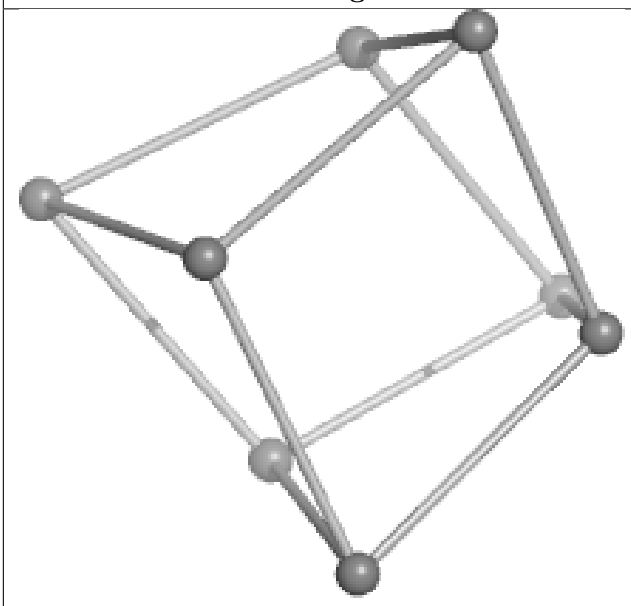

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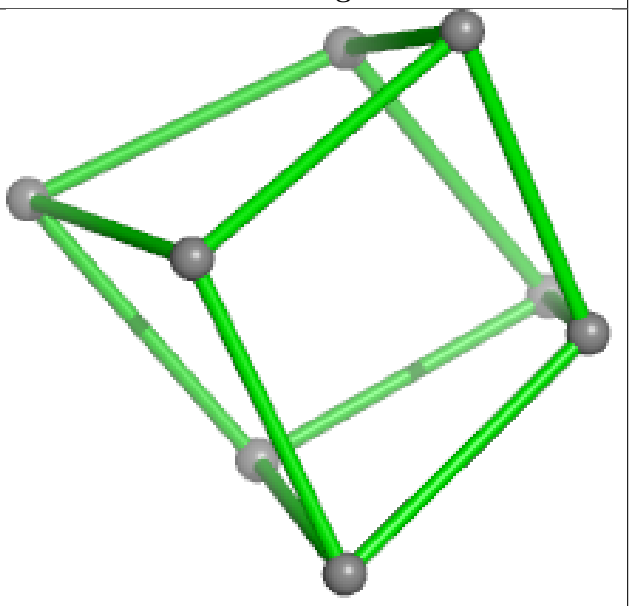
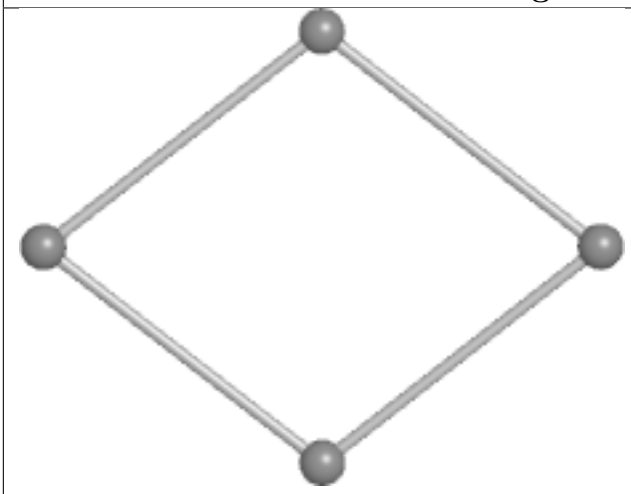


Rings

Ligand FES k 201



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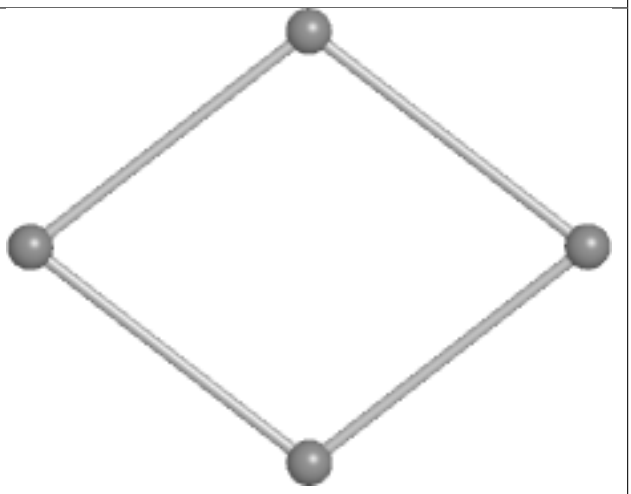

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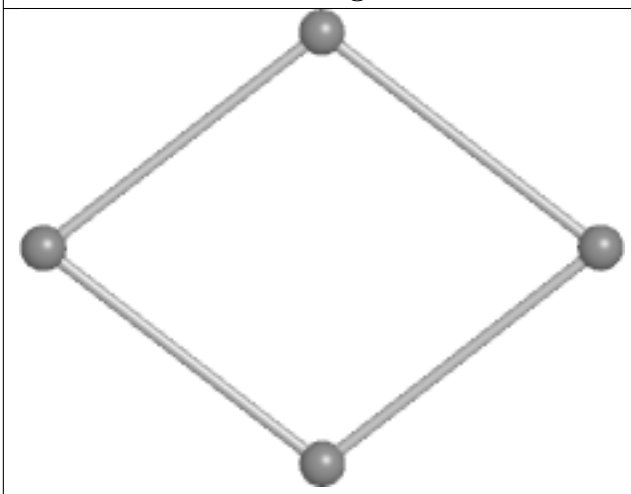

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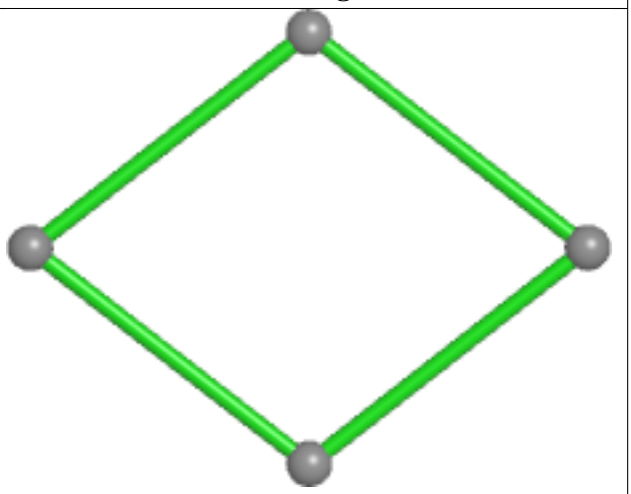
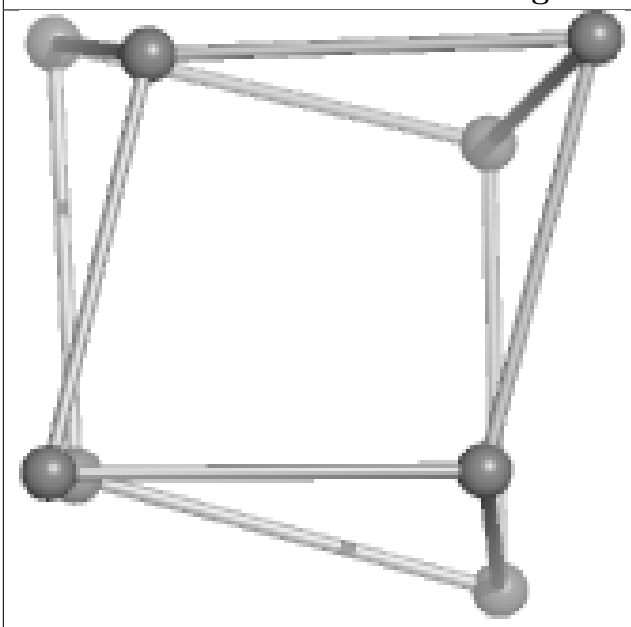


Rings

Ligand SF4 B 702



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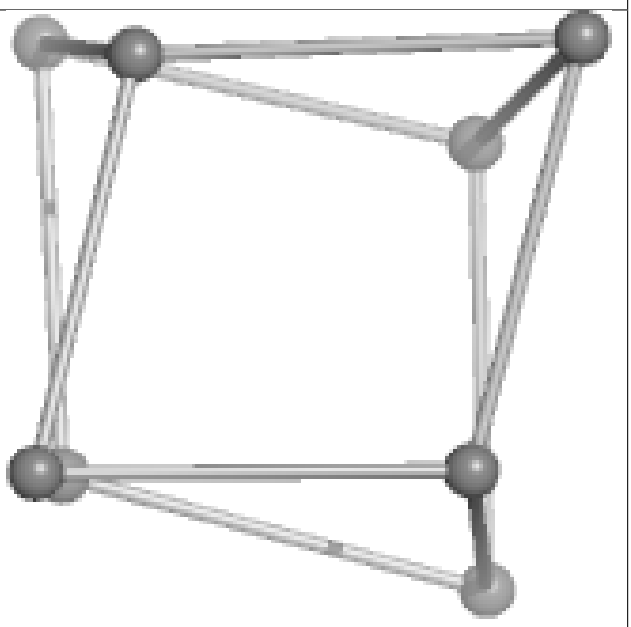

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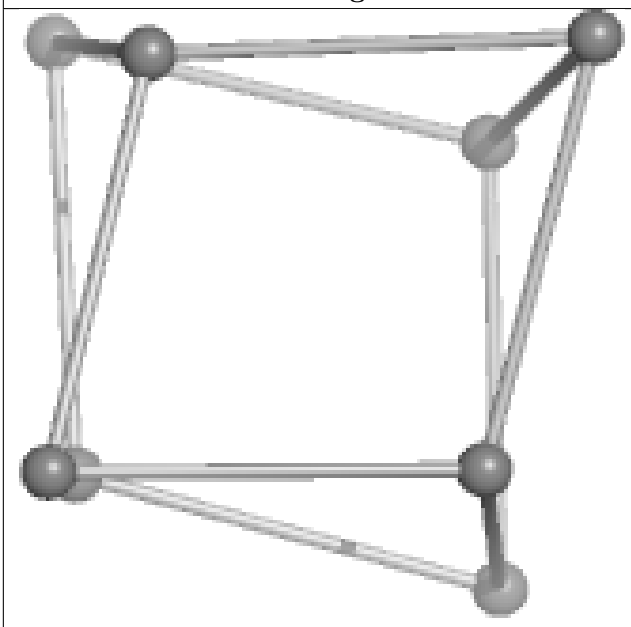

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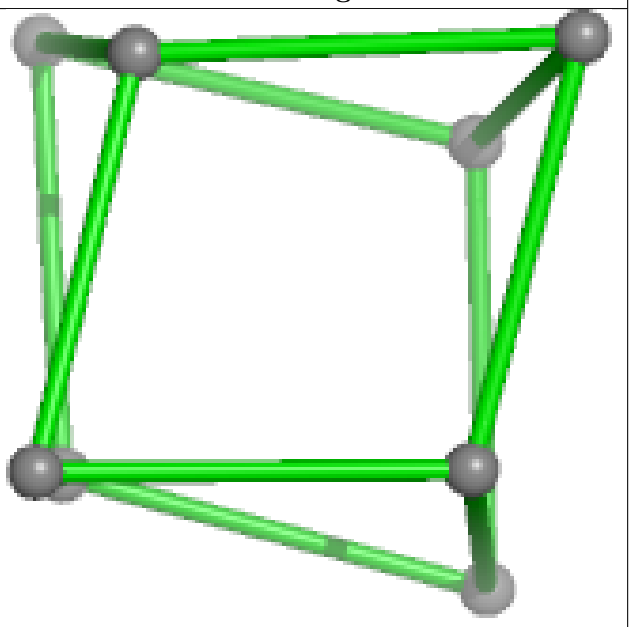
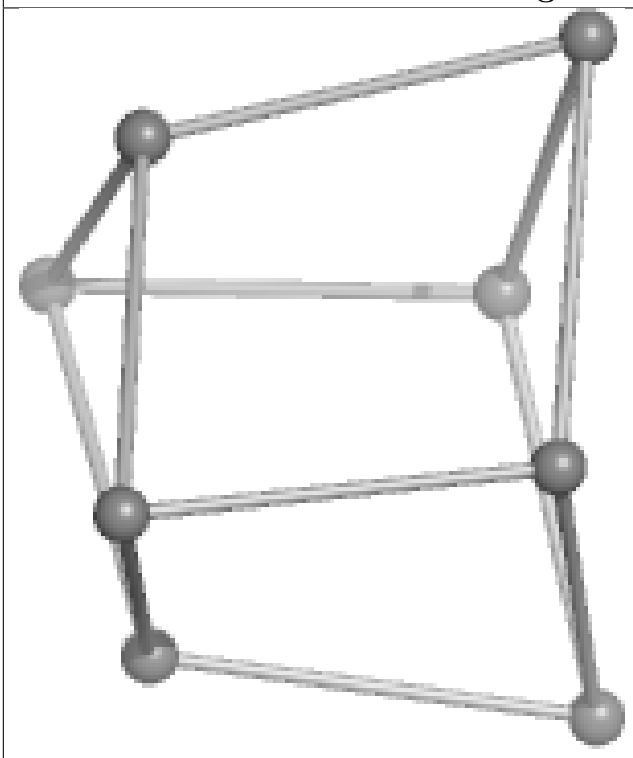


Rings

Ligand SF4 t 401



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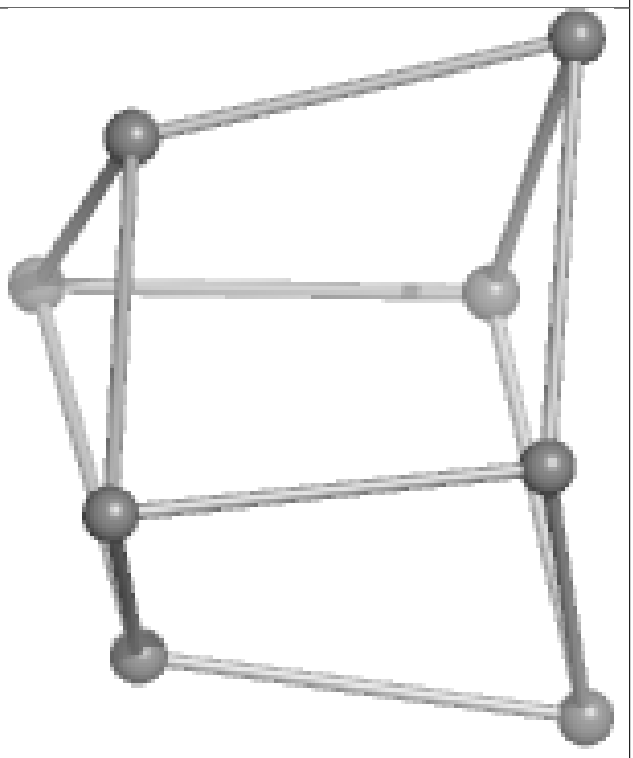

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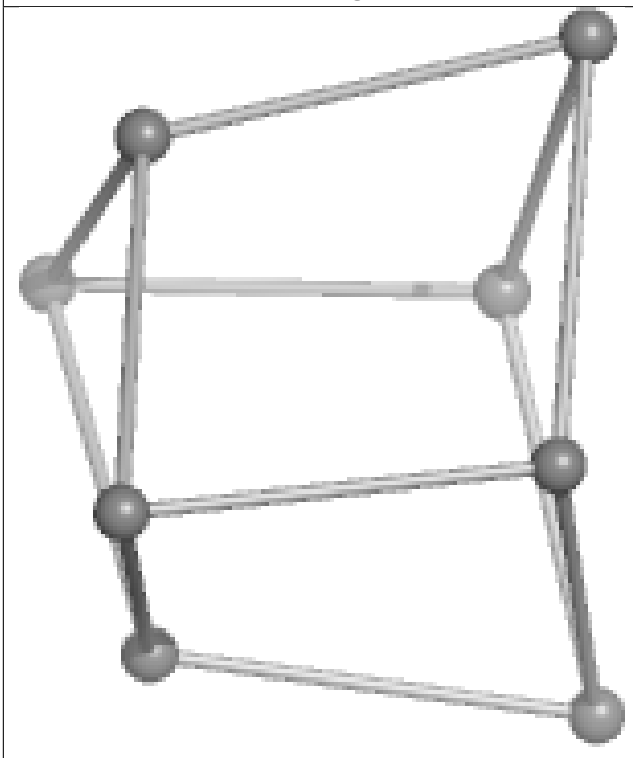

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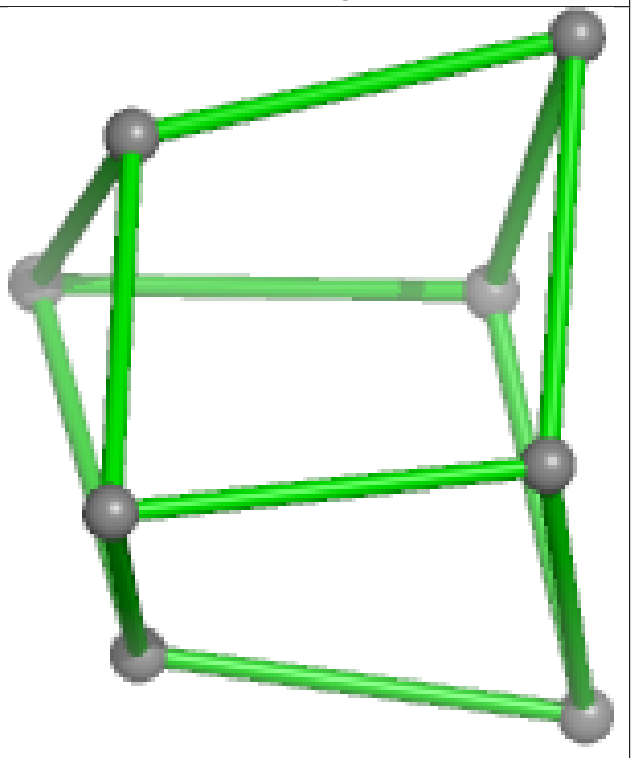
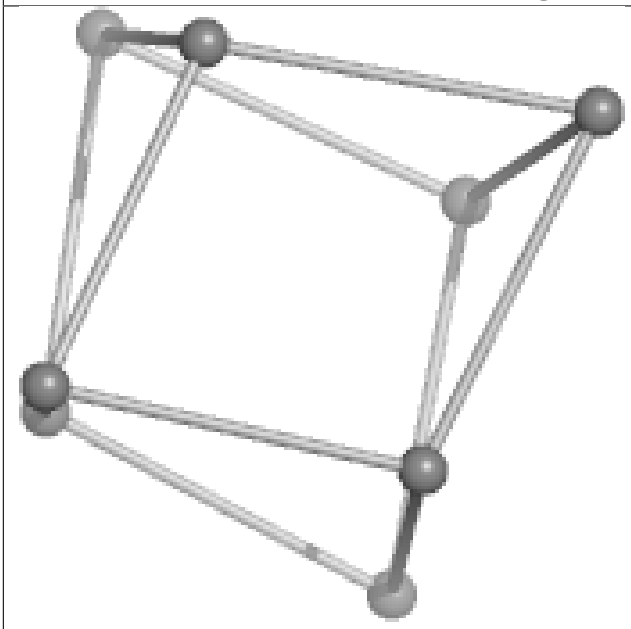


Rings

Ligand SF4 J 301



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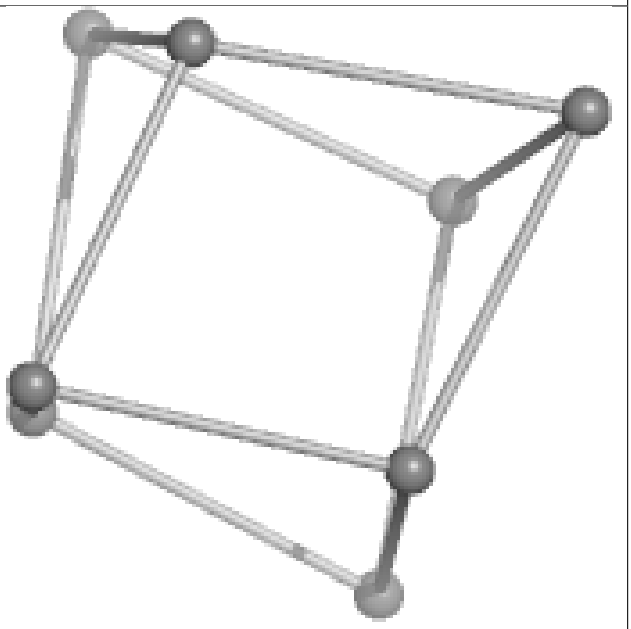

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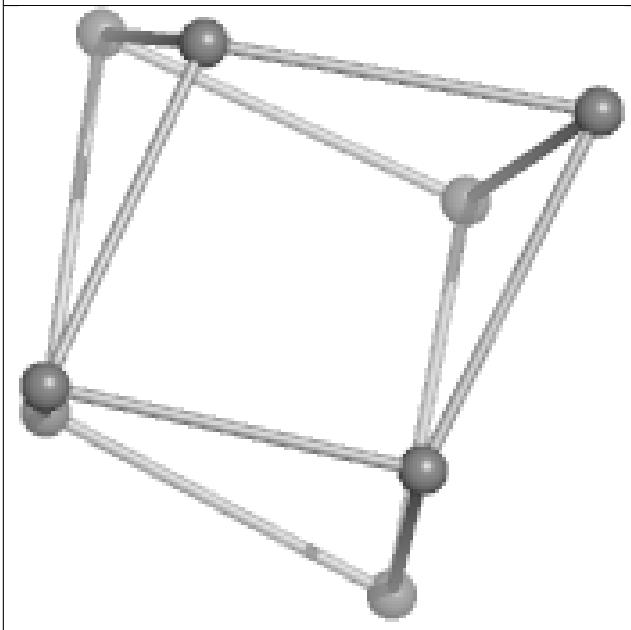

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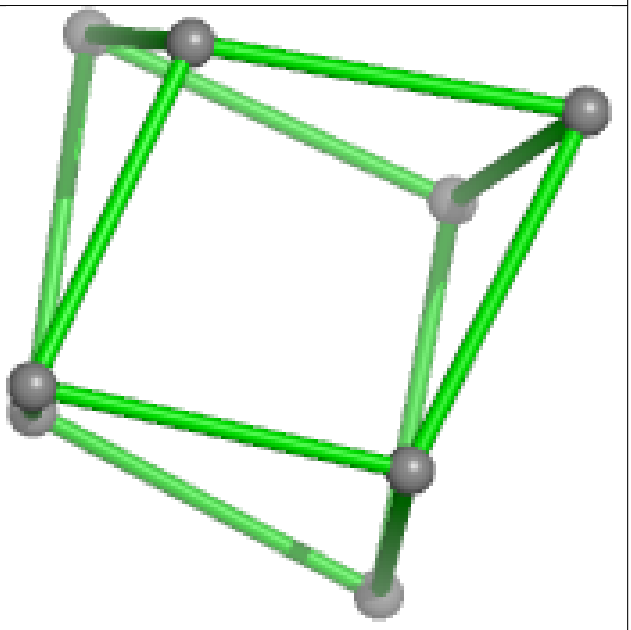
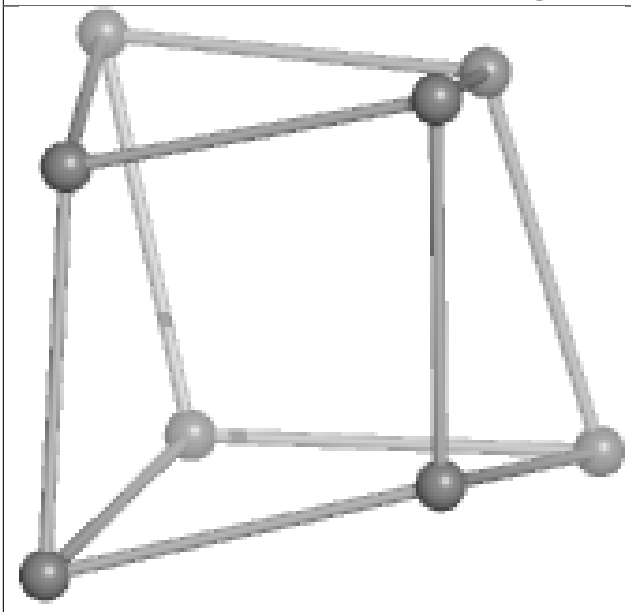


Rings

Ligand SF4 A 706



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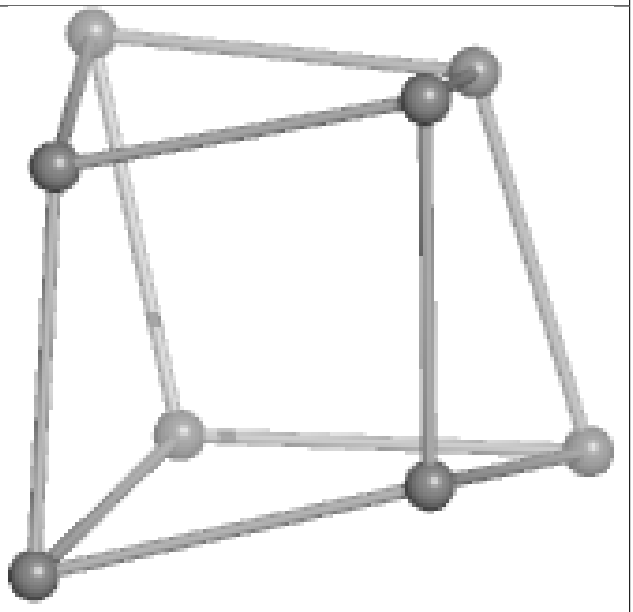

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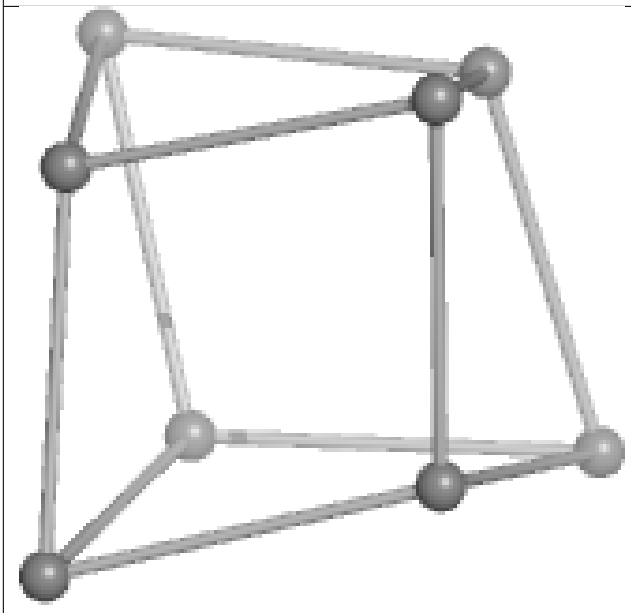

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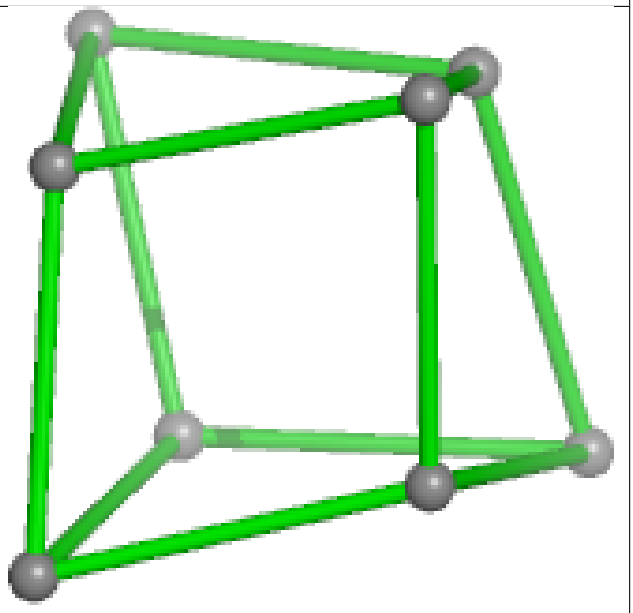
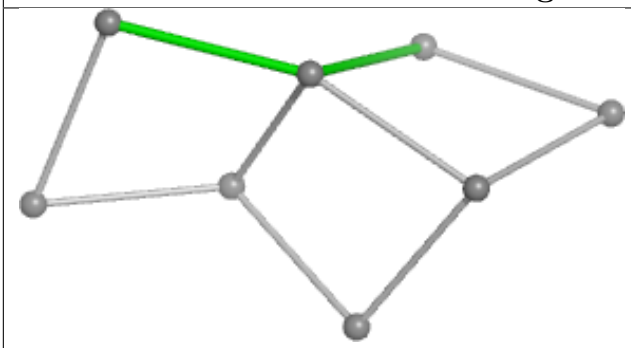


Rings

Ligand 9S8 d 302



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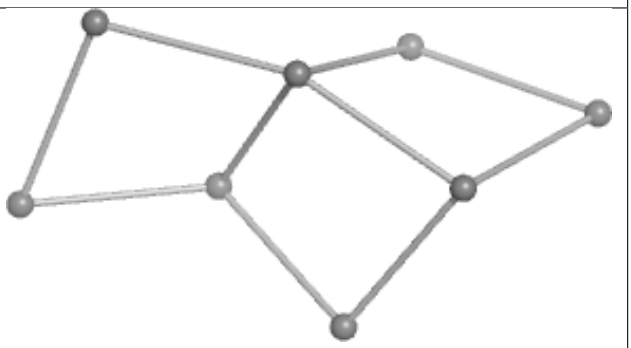

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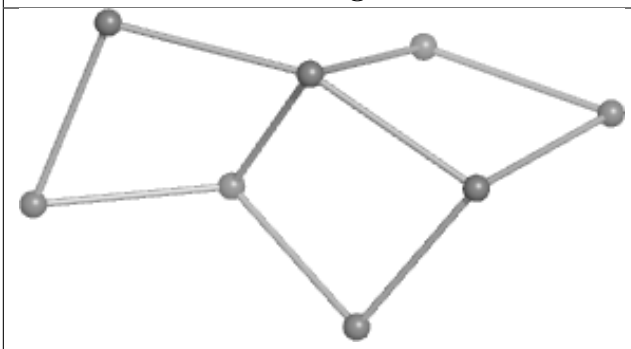
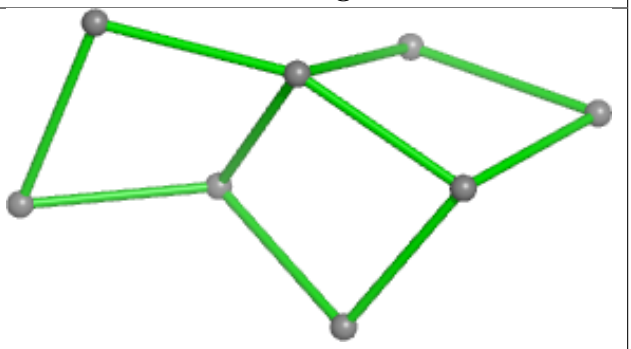
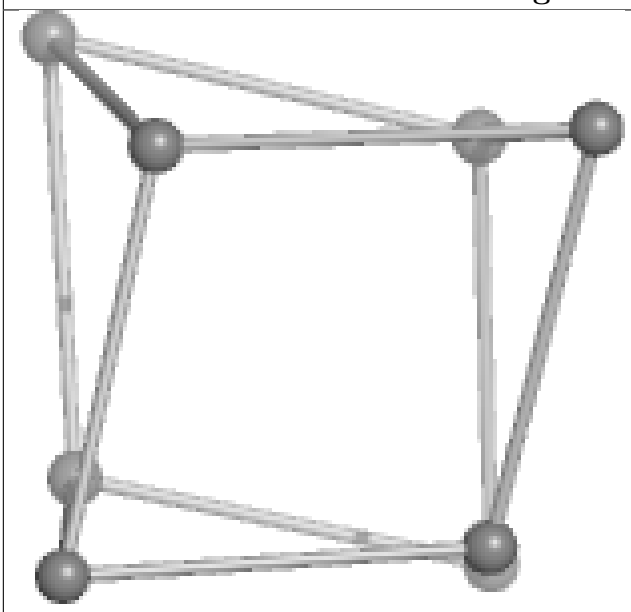


Torsions

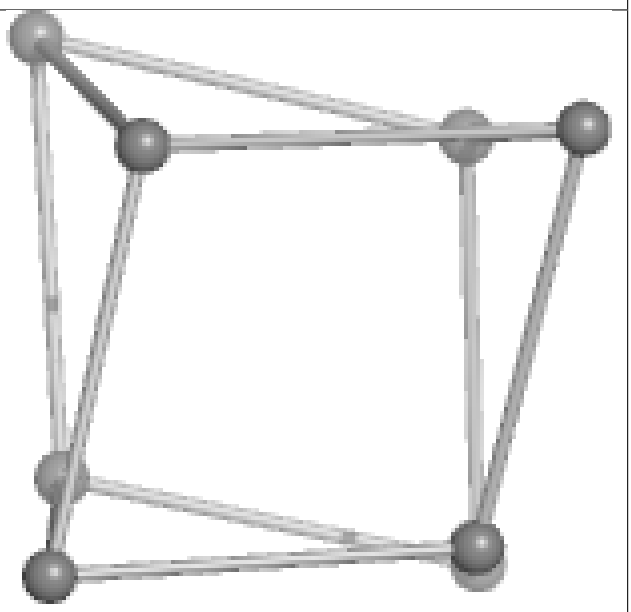


Rings

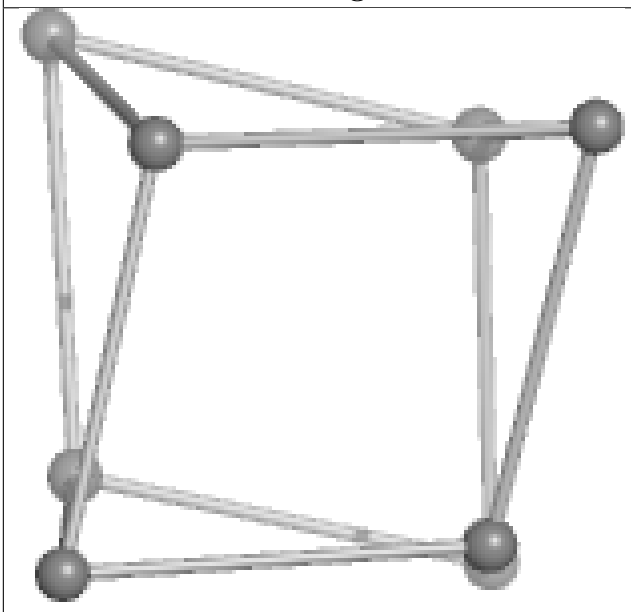
Ligand SF4 F 201



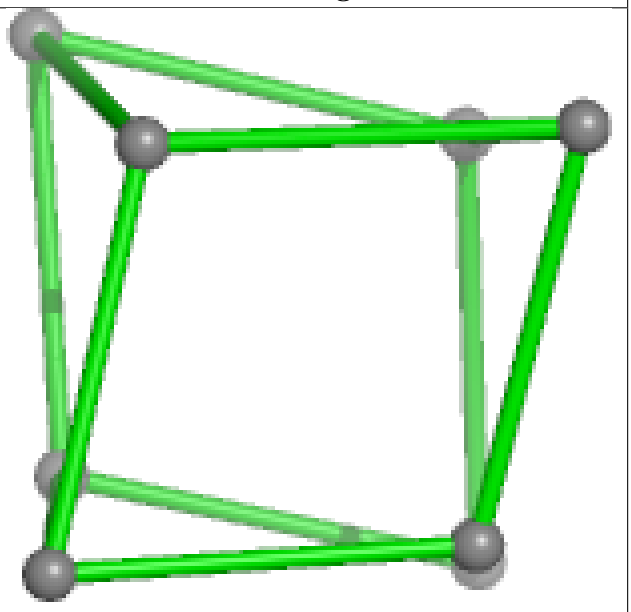
Bond lengths



Bond angles

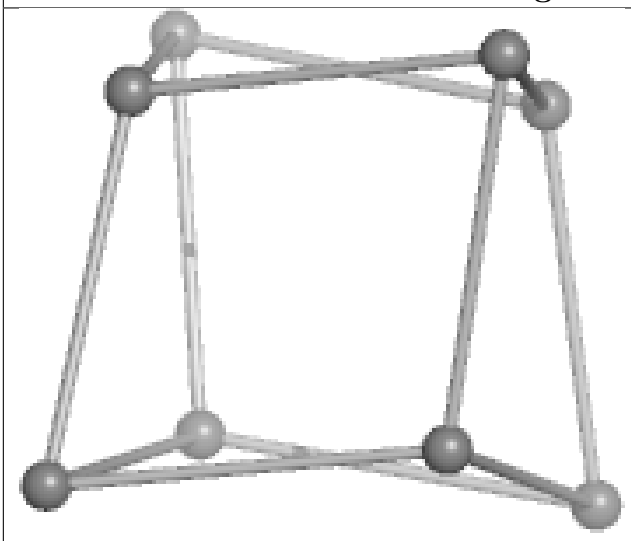


Torsions



Rings

Ligand SF4 b 706



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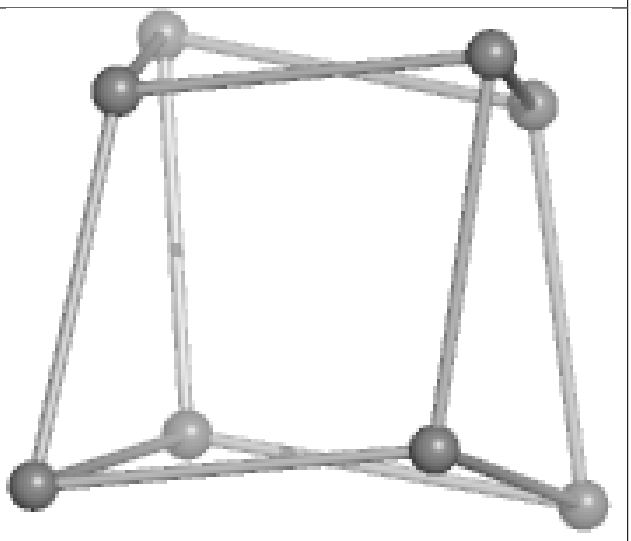
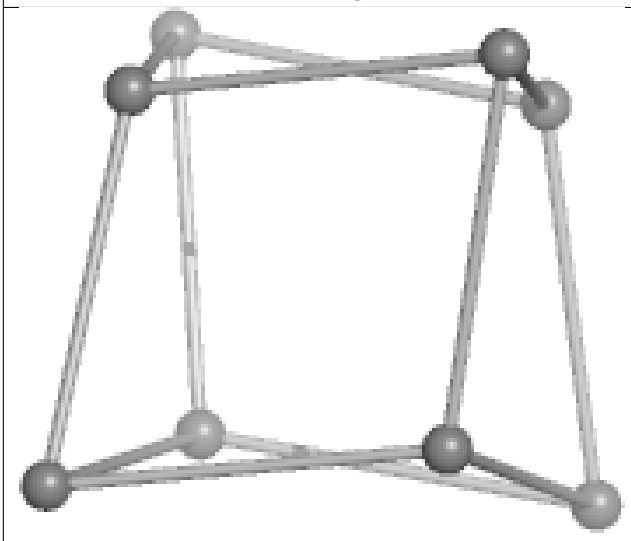


Bond angles



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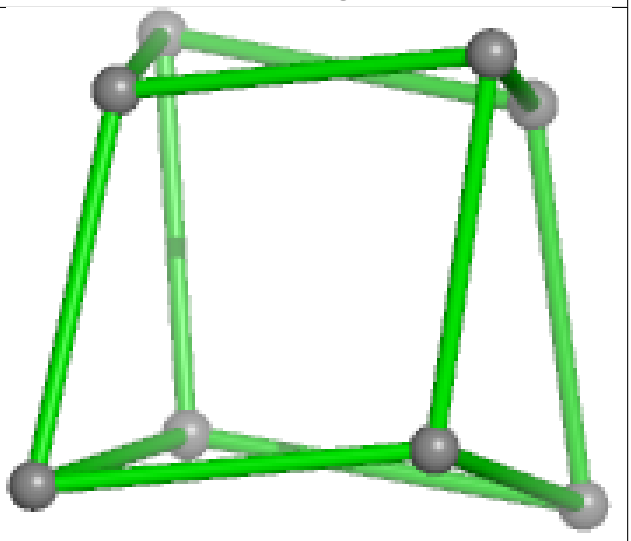
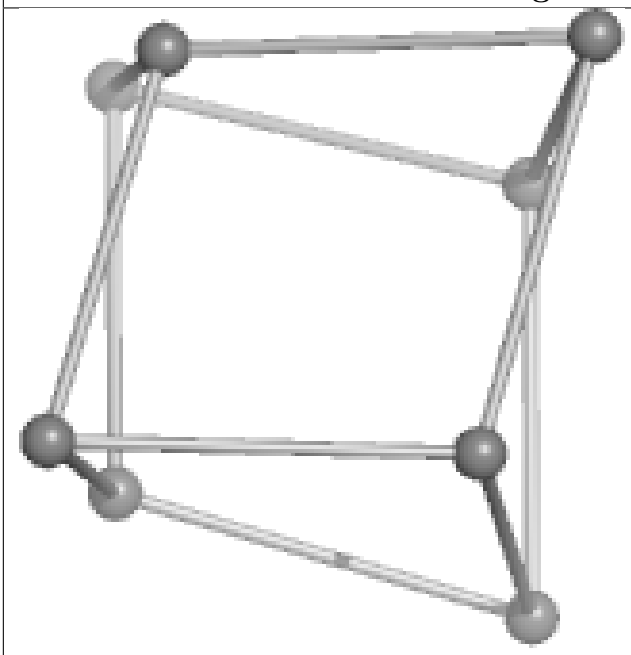


Rings

Ligand SF4 E 202



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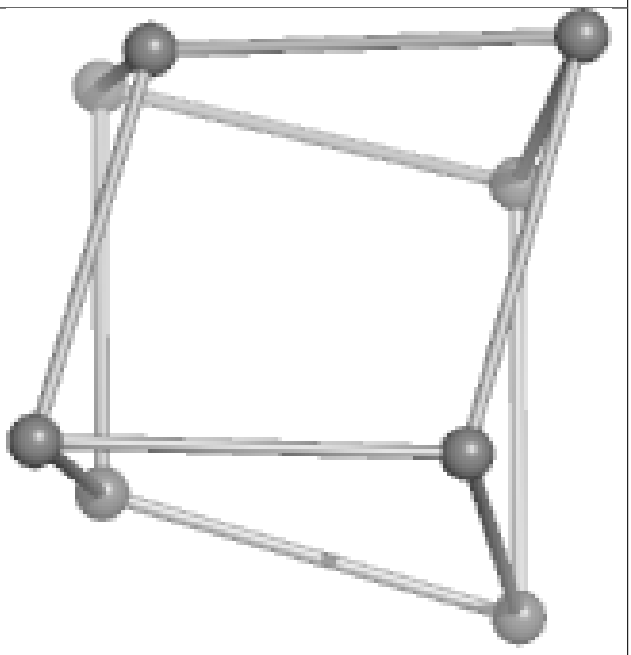
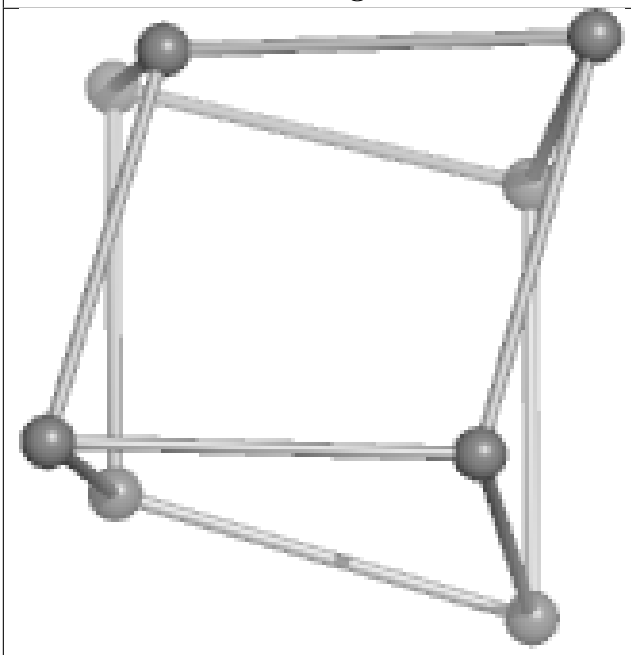
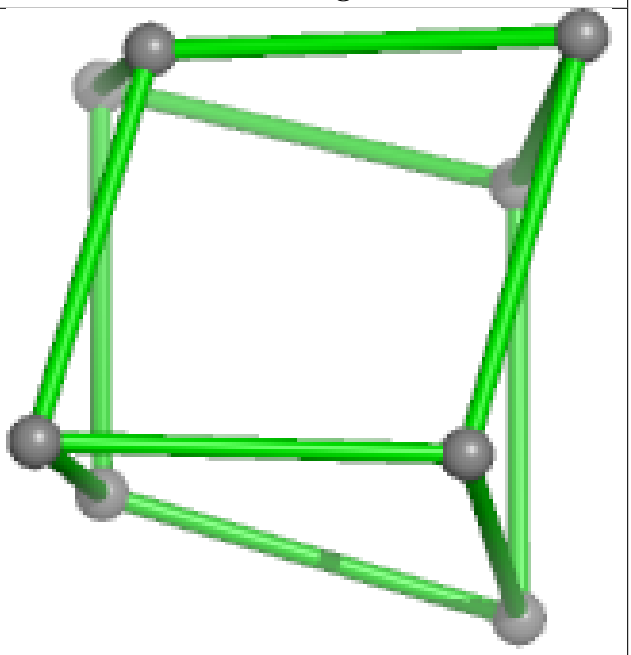


Bond angles

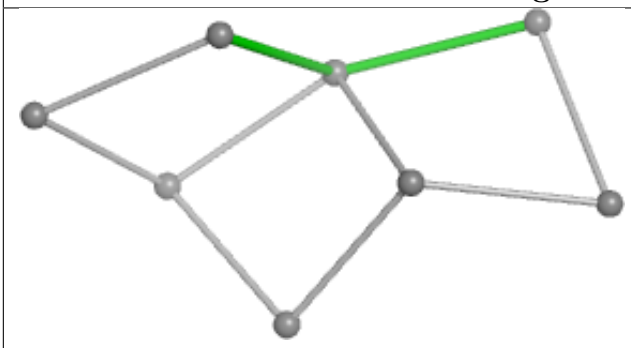


Torsions



Rings

Ligand 9S8 D 302



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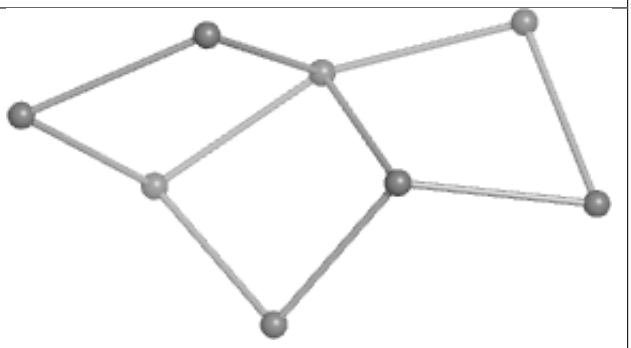
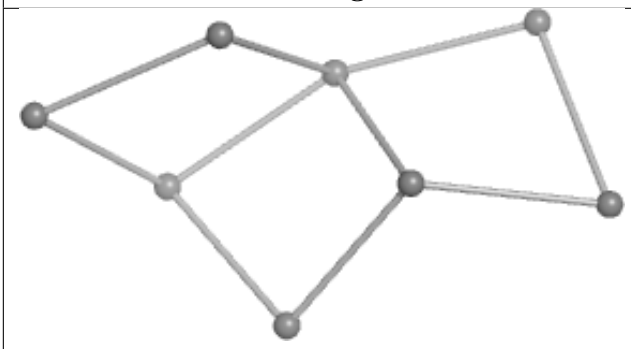


Bond angles



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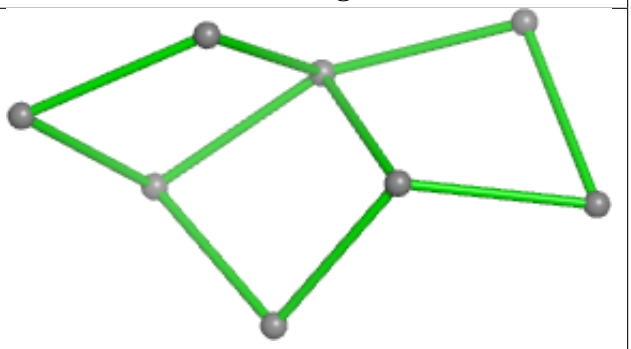
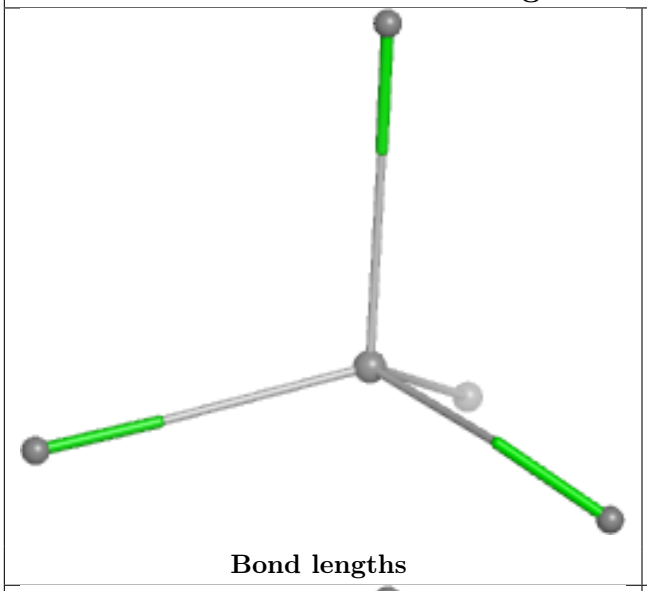


Rings

Ligand NFU G 501



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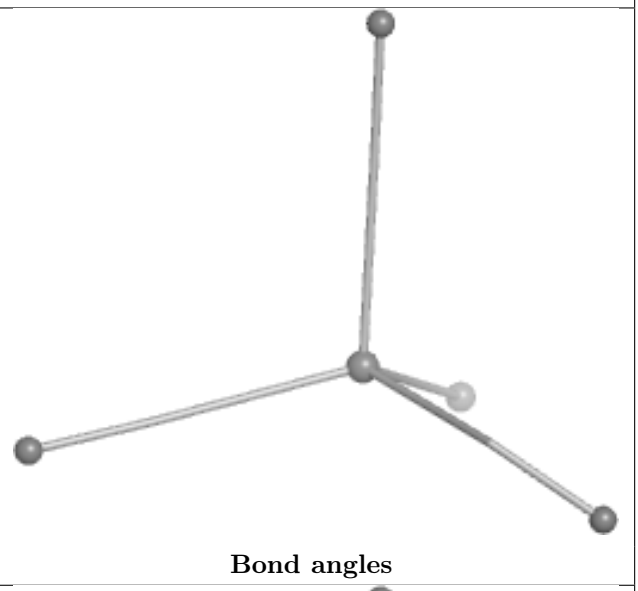
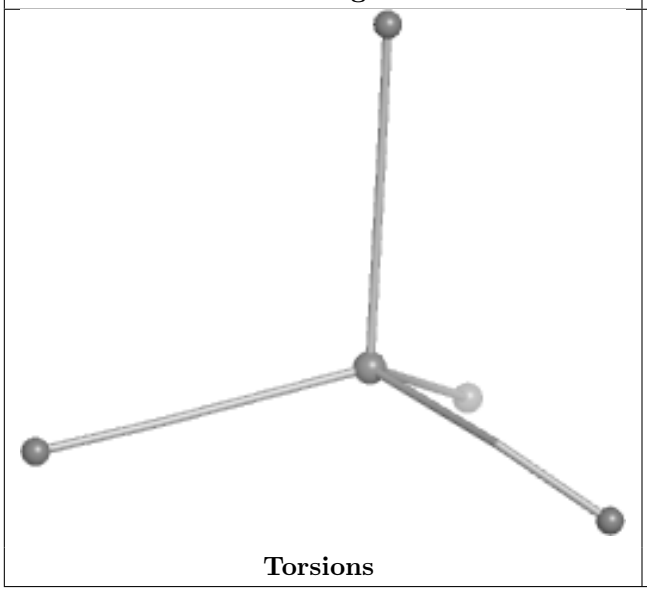


Bond angles



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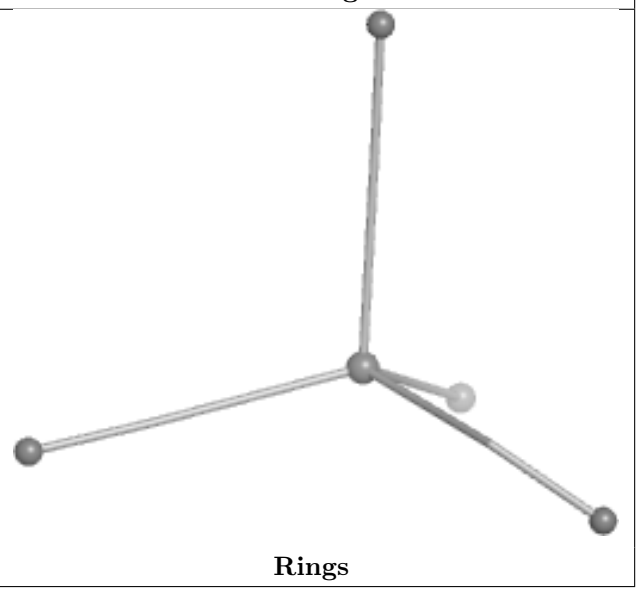
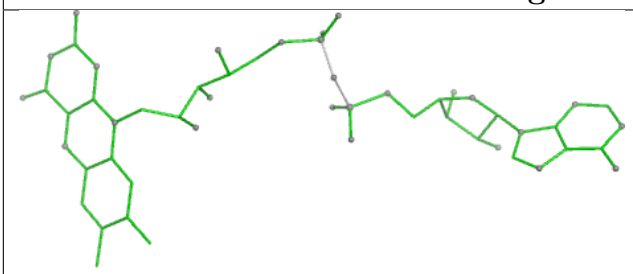


Rings

Ligand FAD b 704



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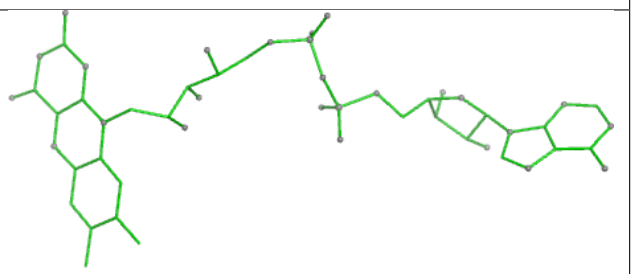
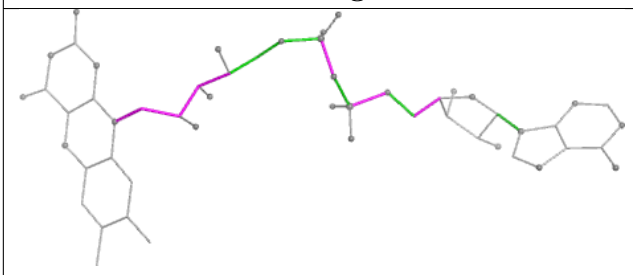


Bond angles



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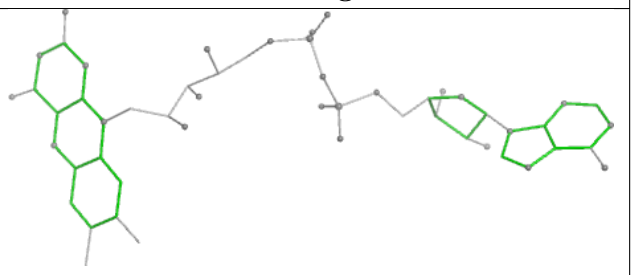
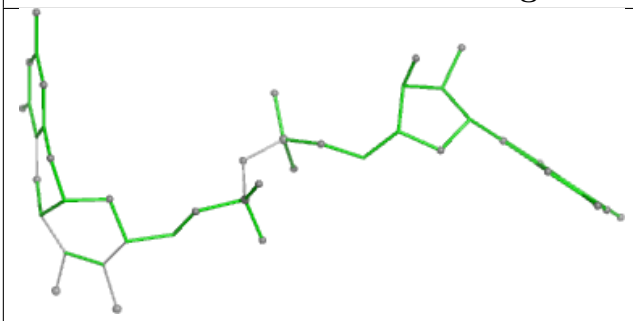


Rings

Ligand MGD q 502



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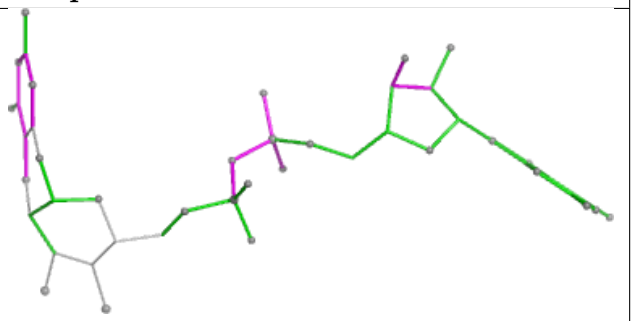
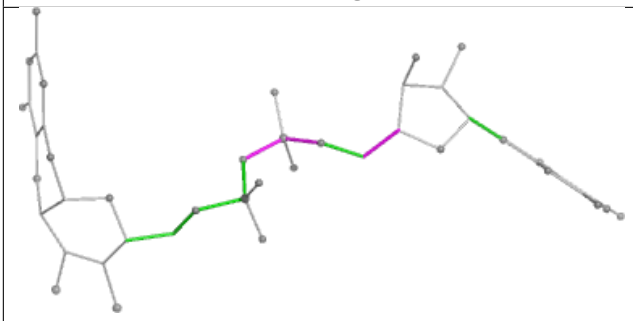


Bond angles



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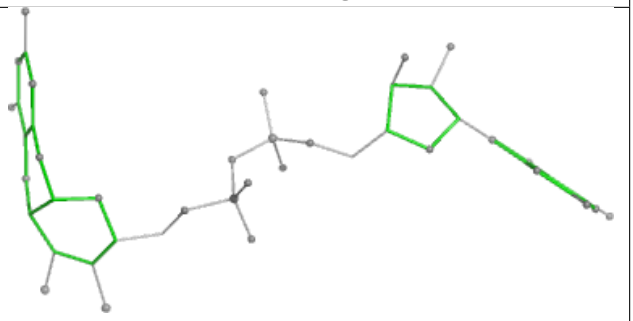
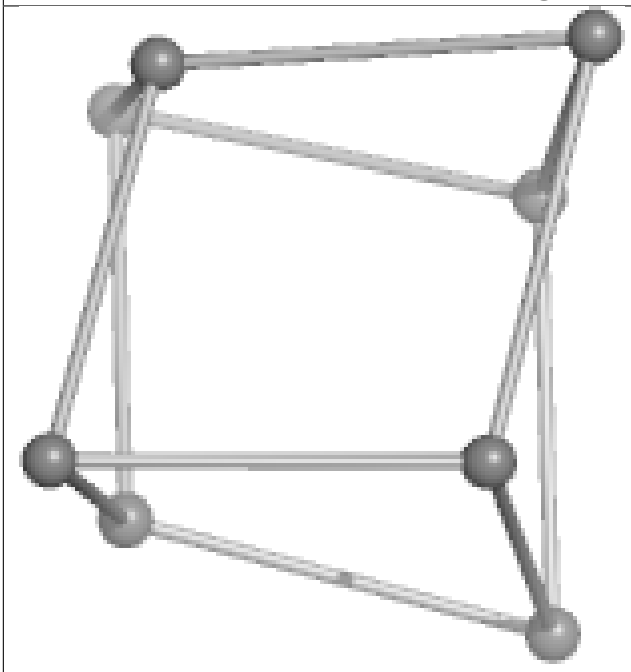


Rings

Ligand SF4 o 411



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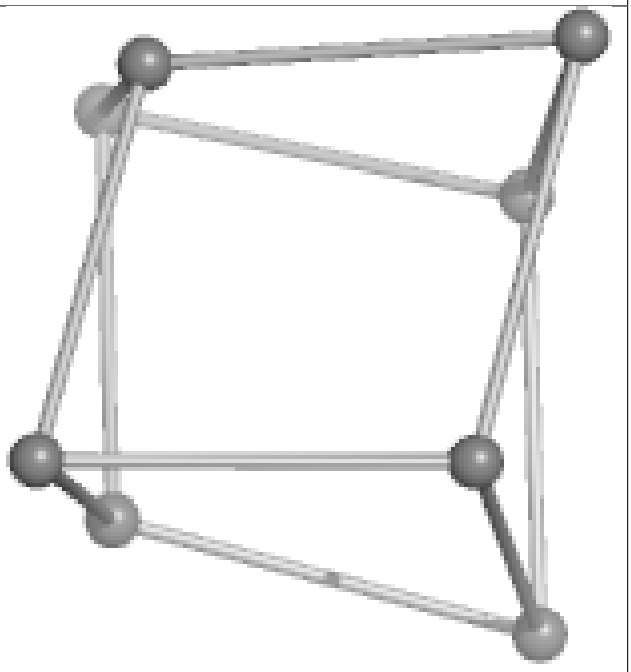
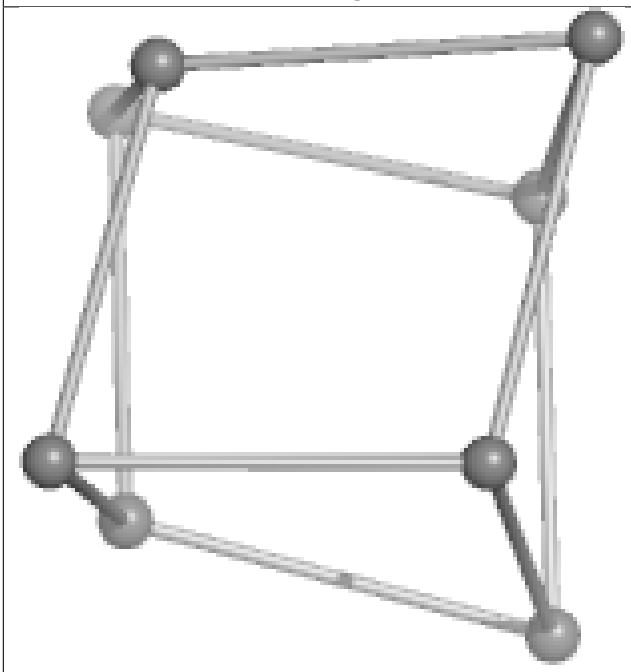


Bond angles



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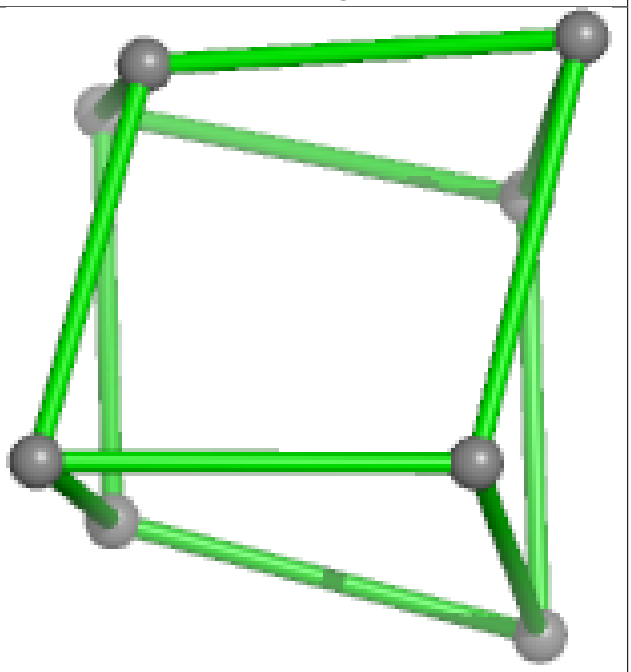
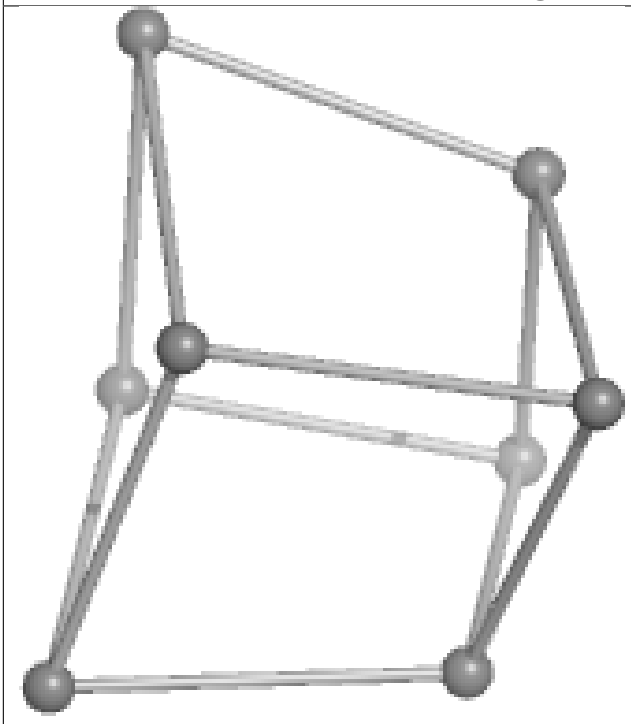


Rings

Ligand SF4 T 407



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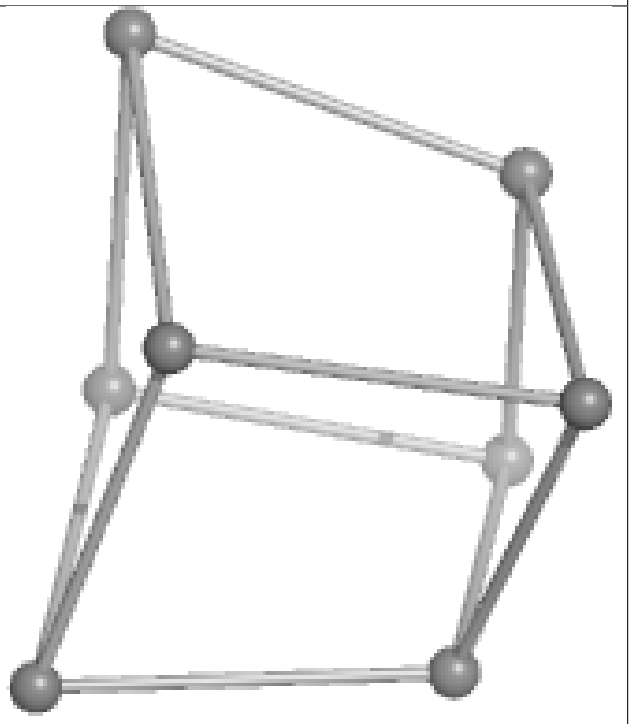
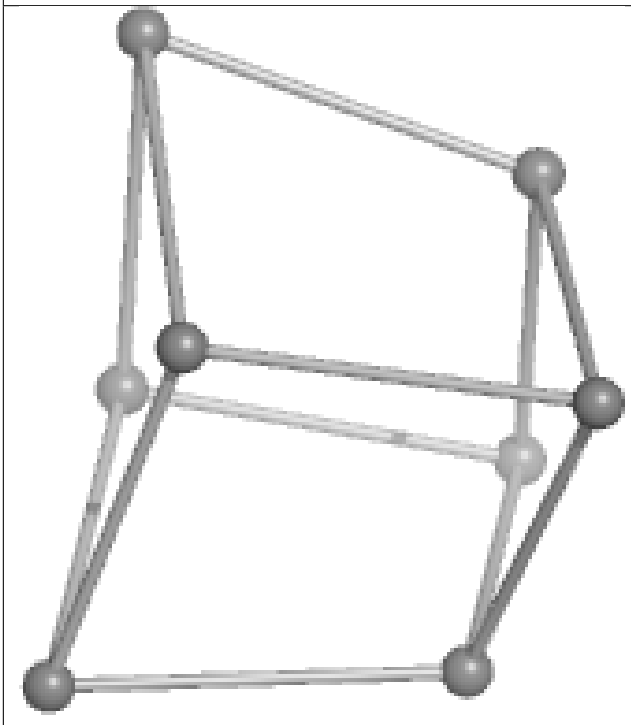


Bond angles



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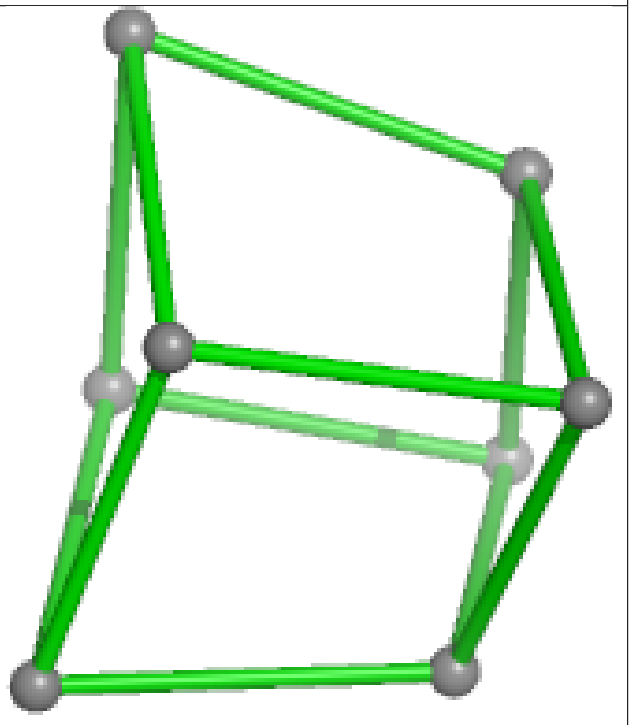
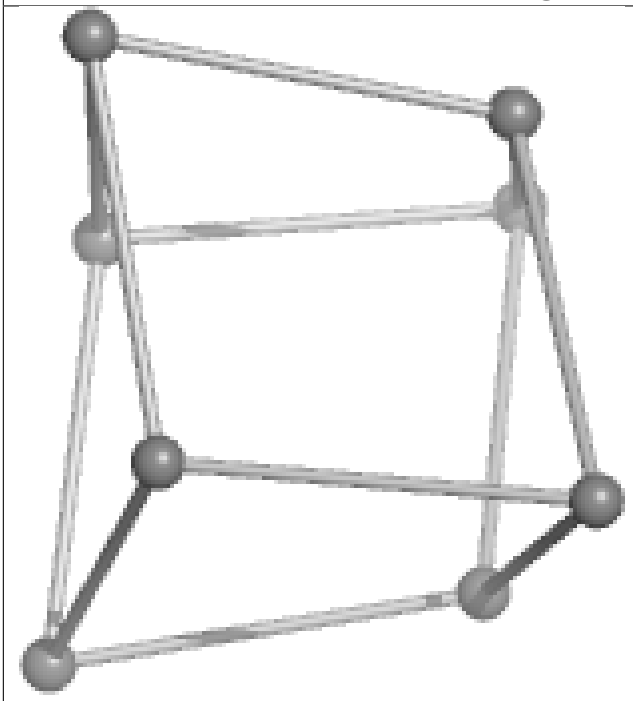


Rings

Ligand SF4 I 303



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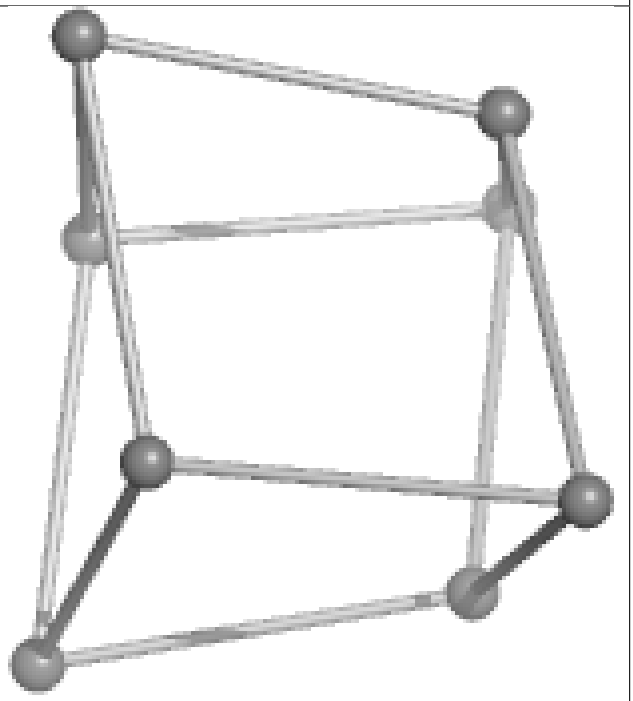
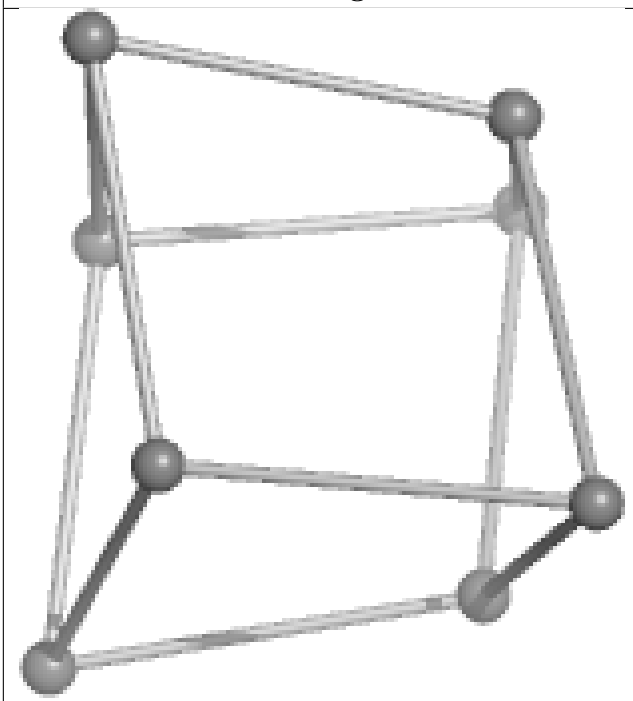


Bond angles



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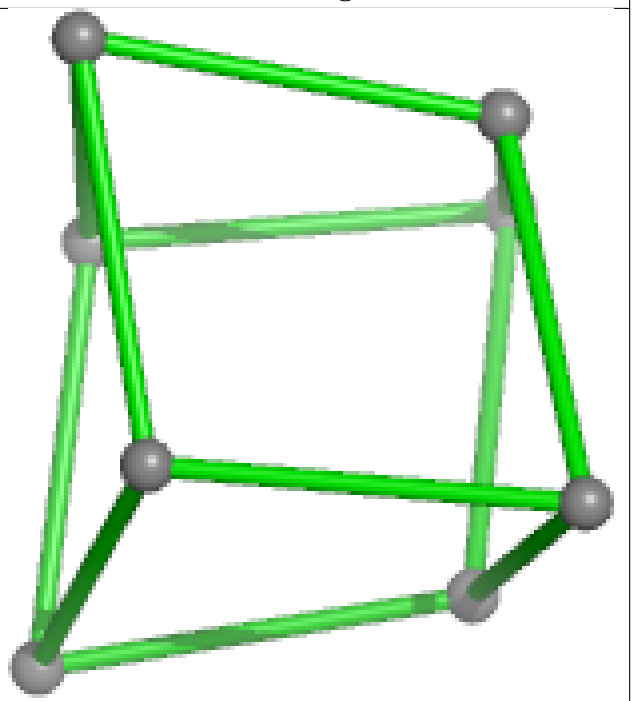
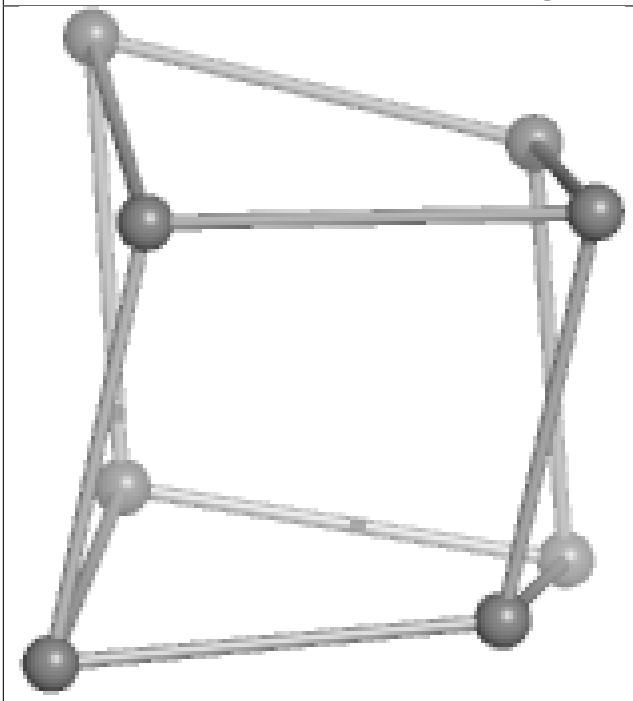


Rings

Ligand SF4 f 201



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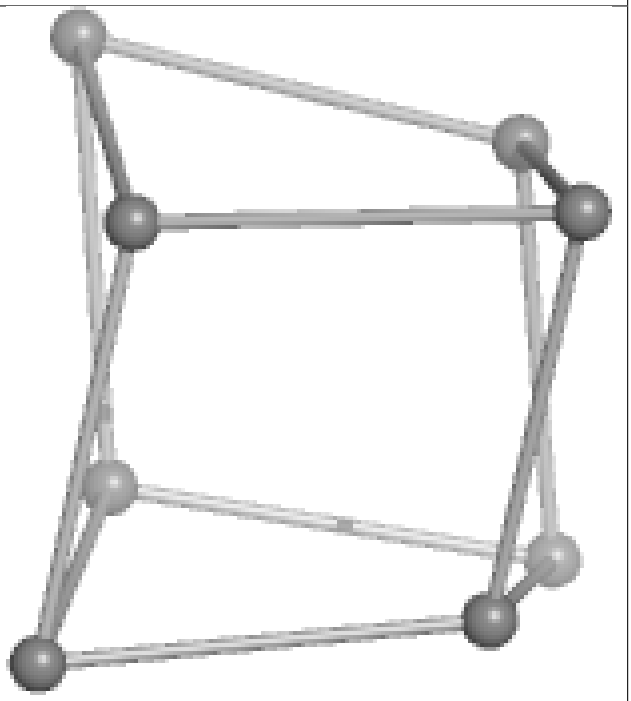
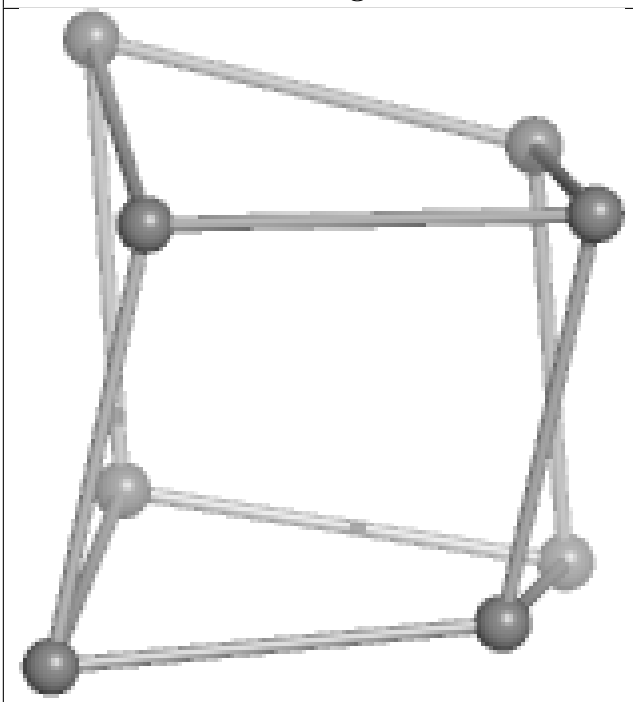


Bond angles



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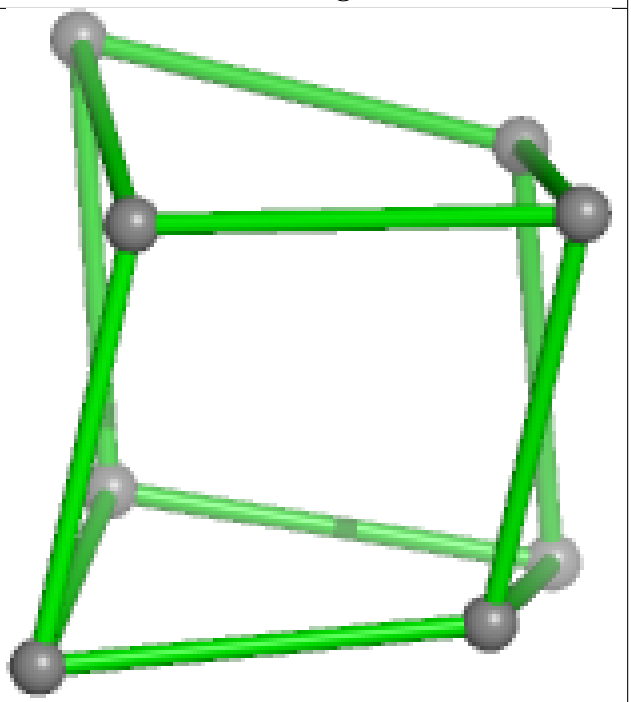
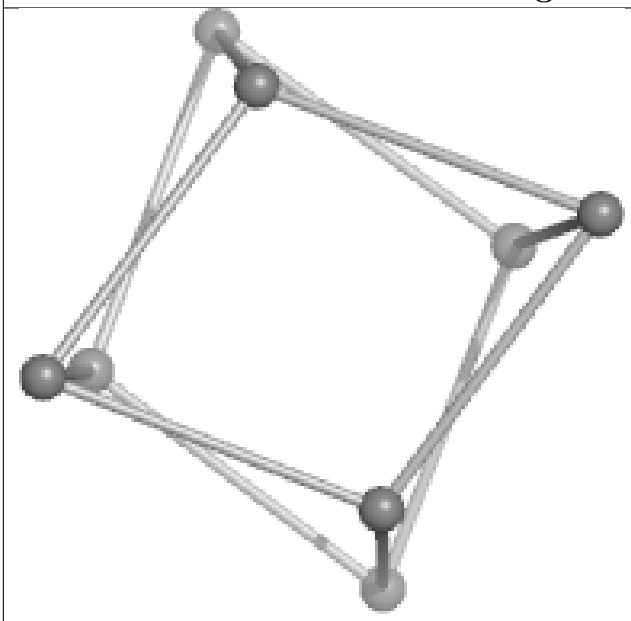


Rings

Ligand SF4 o 402



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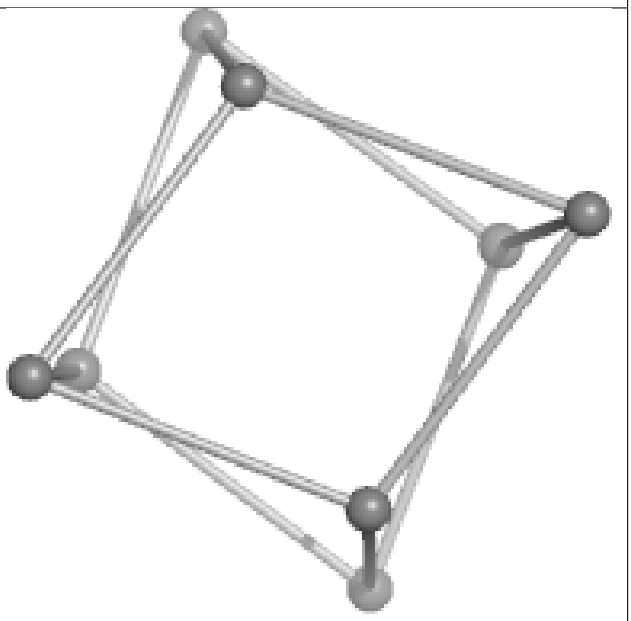
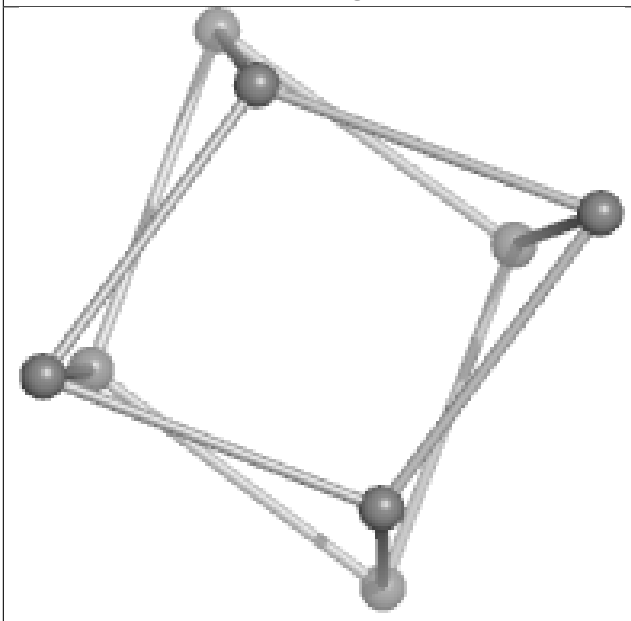


Bond angles



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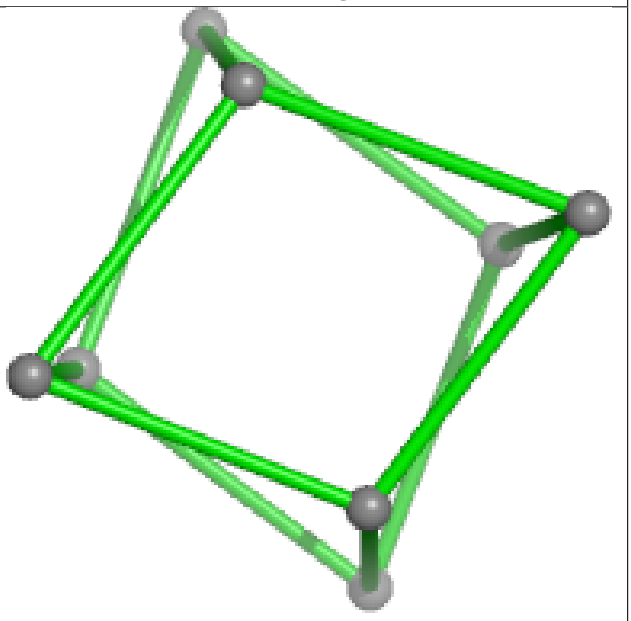
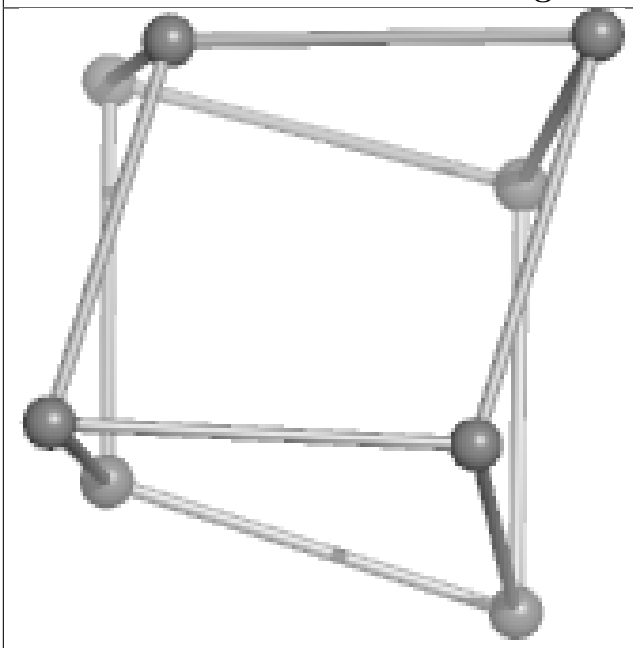
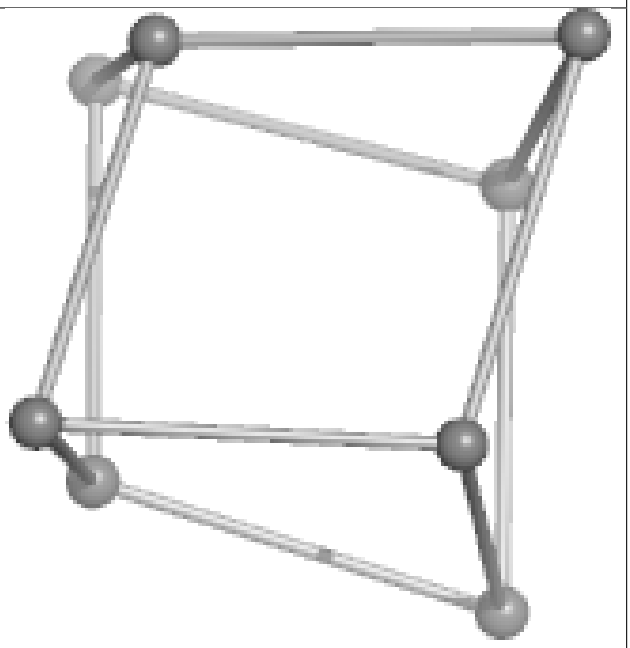


Rings

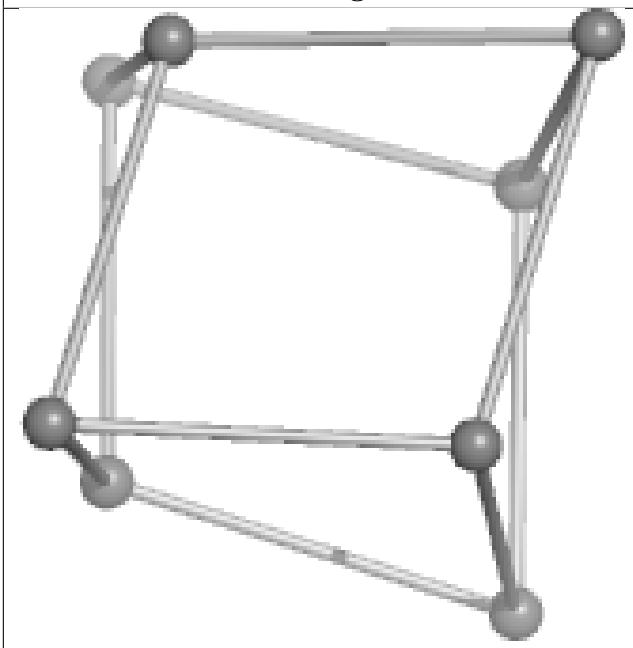
Ligand SF4 b 705



Bond lengths



Bond angles



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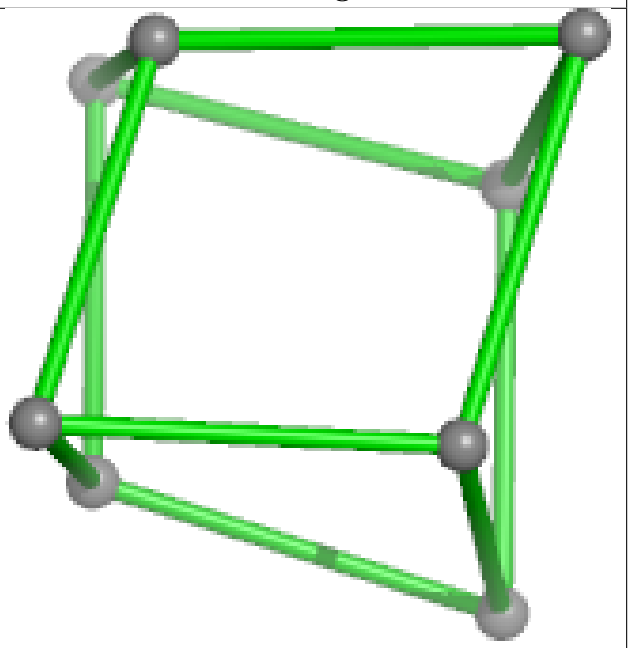
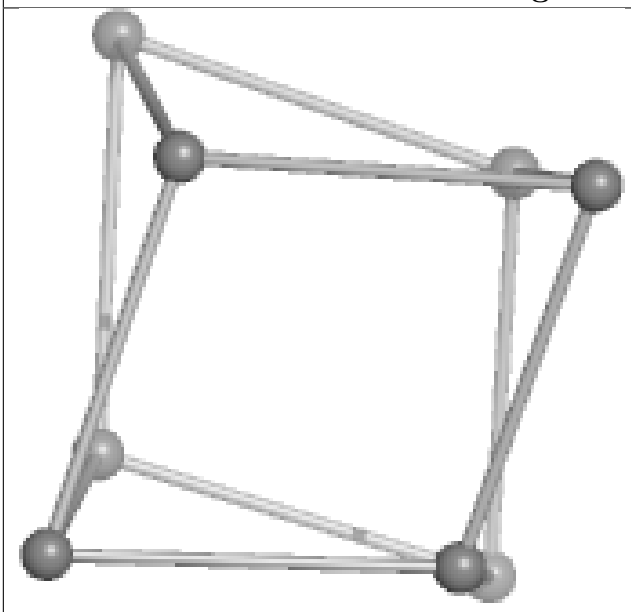
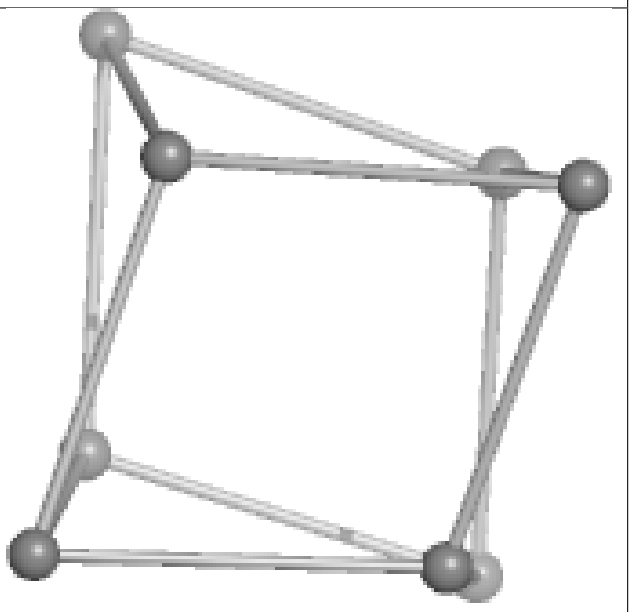


Rings

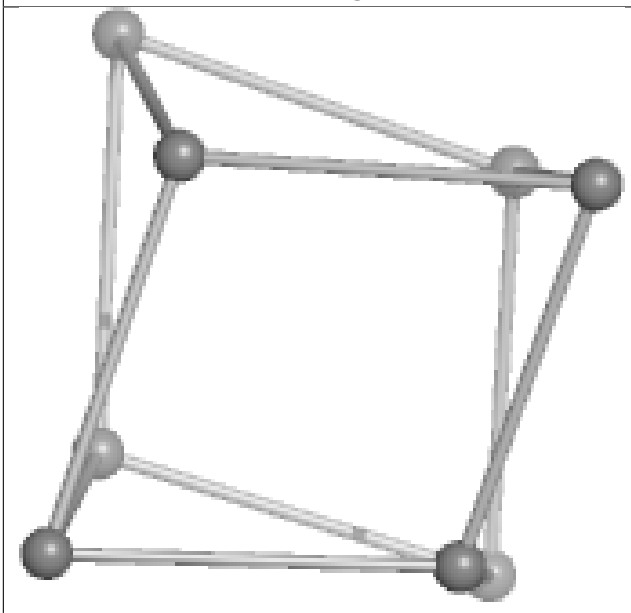
Ligand SF4 T 409



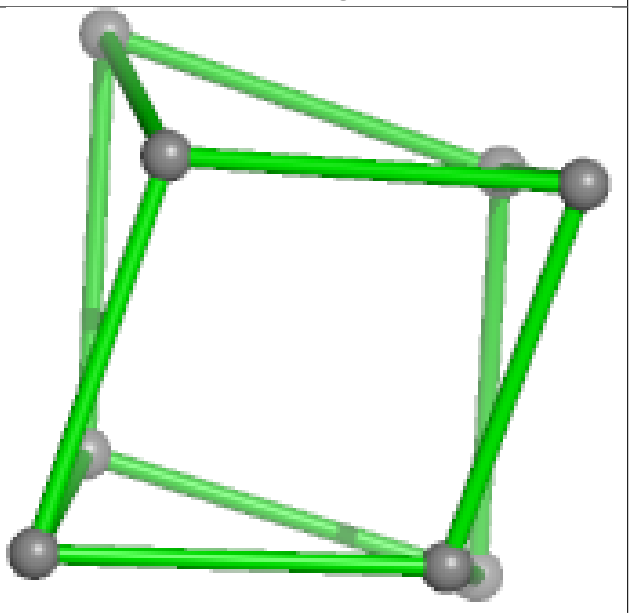
Bond lengths



Bond angles

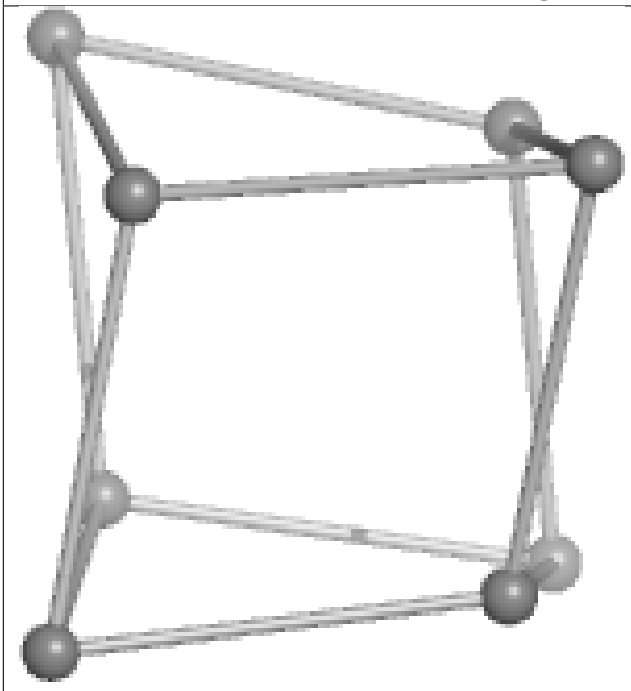


Torsions

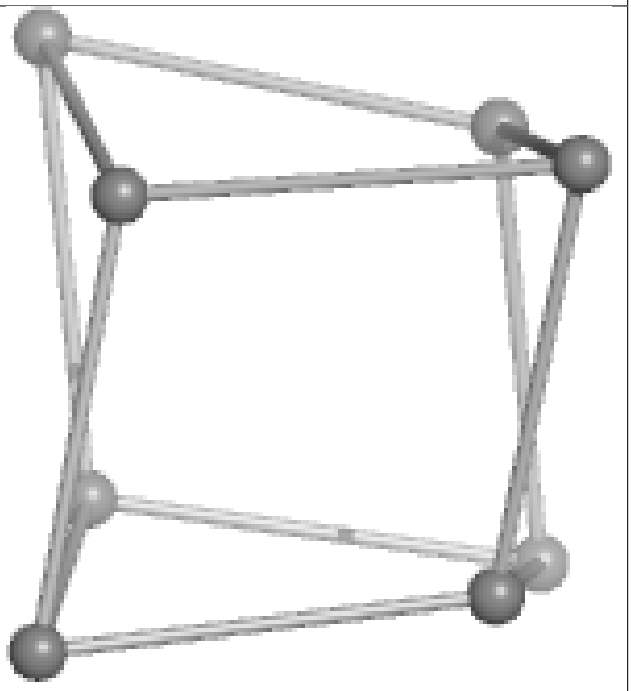


Rings

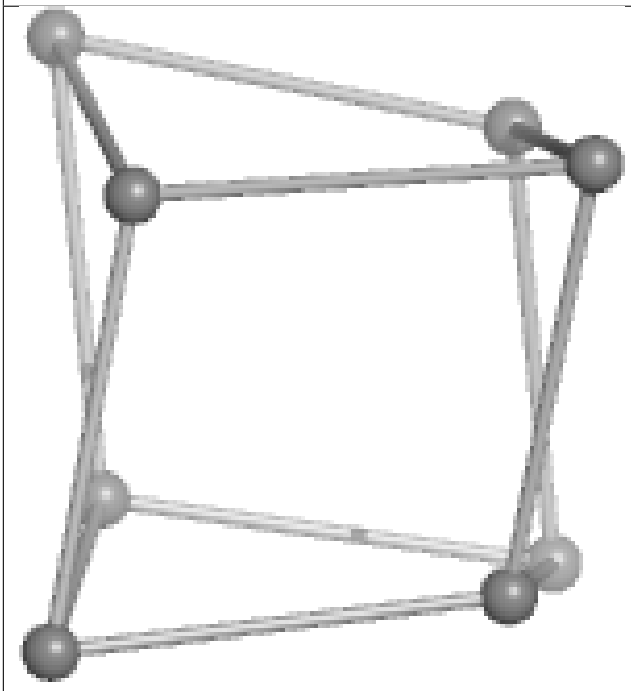
Ligand SF4 o 408



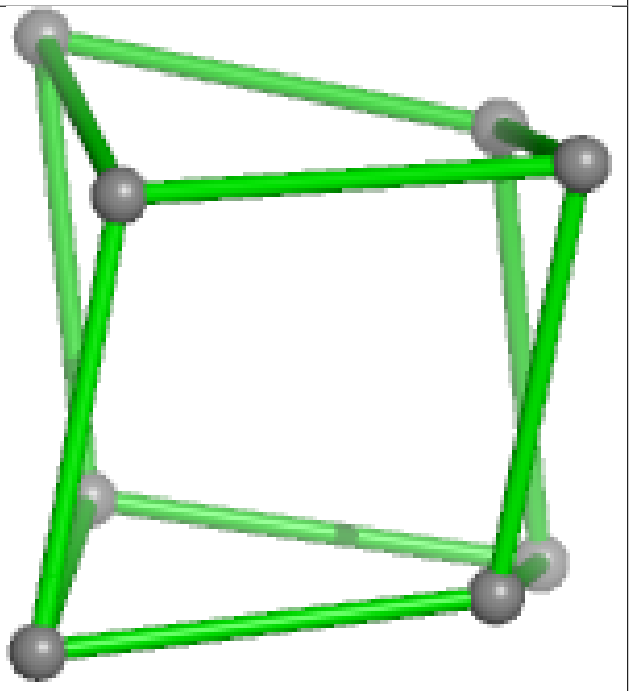
Bond lengths



Bond angles

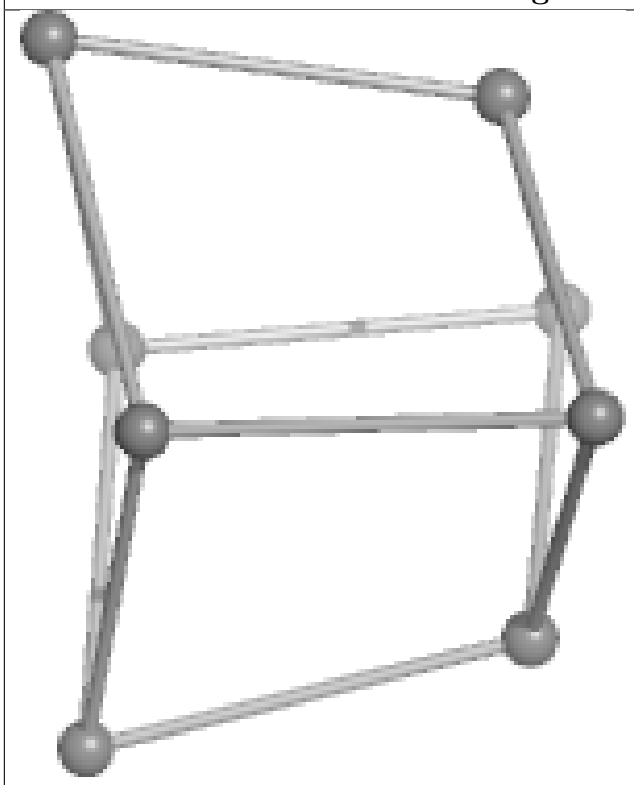


Torsions



Rings

Ligand SF4 A 703



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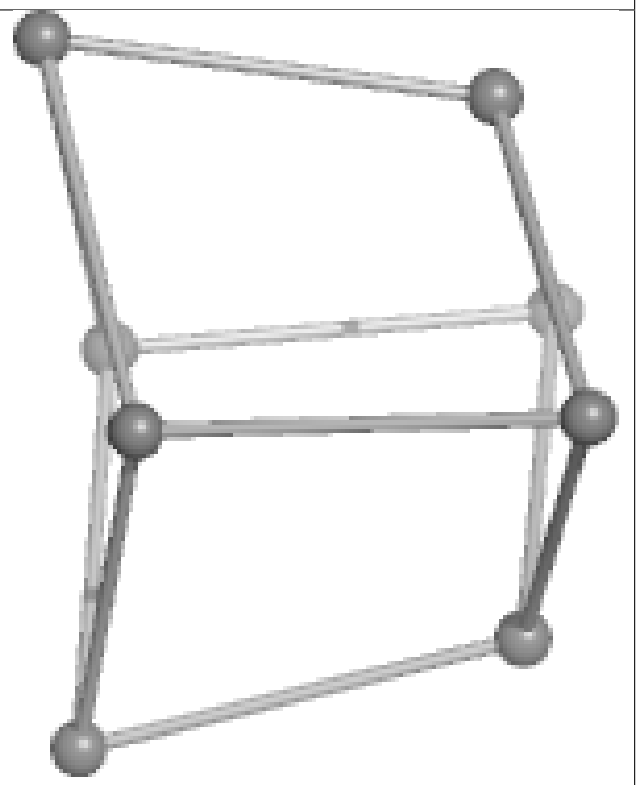

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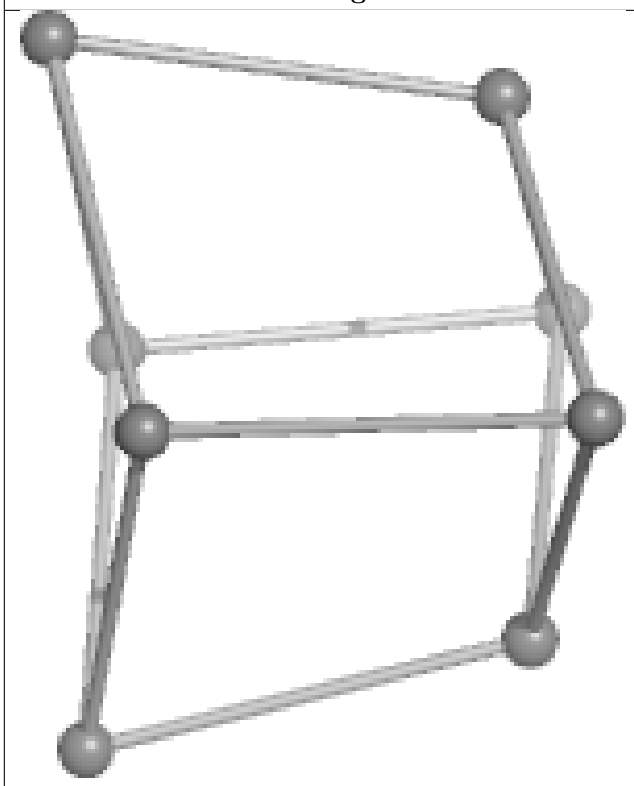

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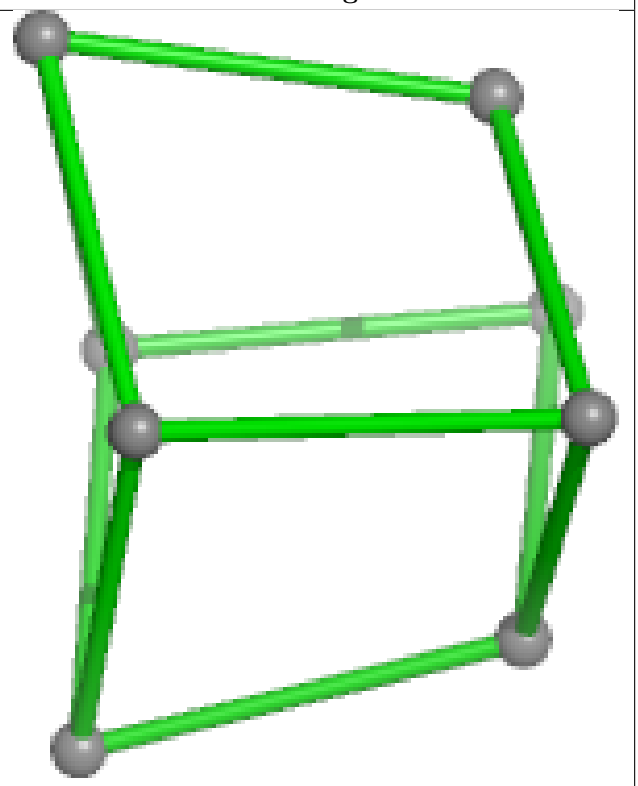
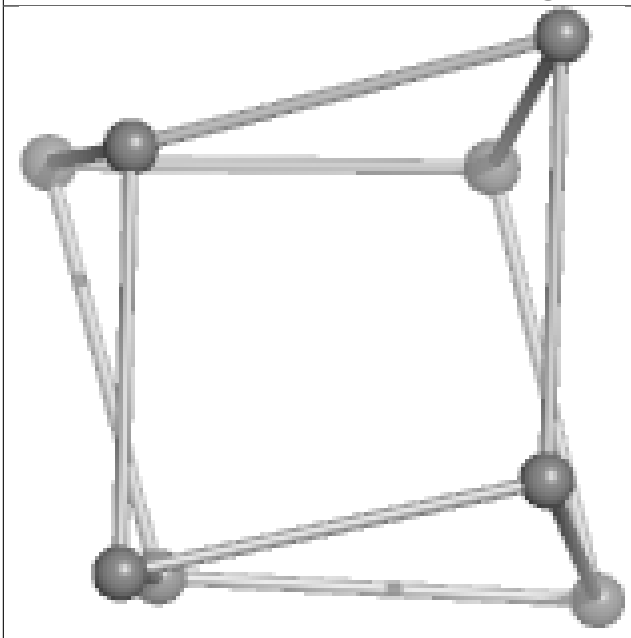


Rings

Ligand SF4 i 303



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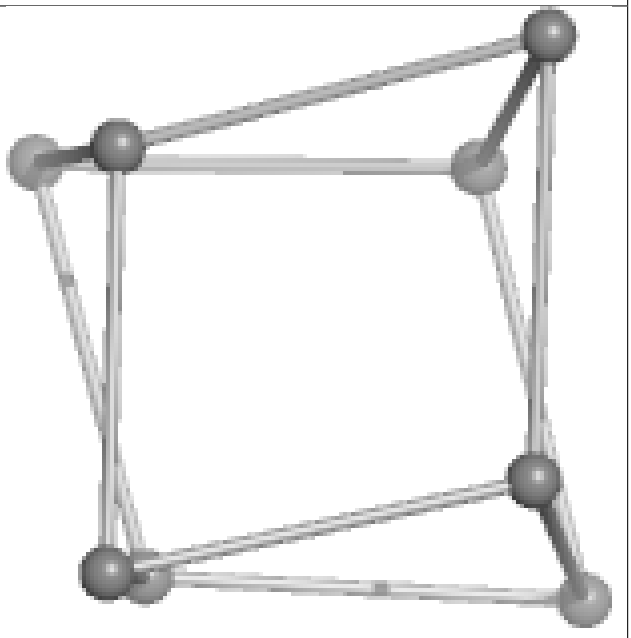

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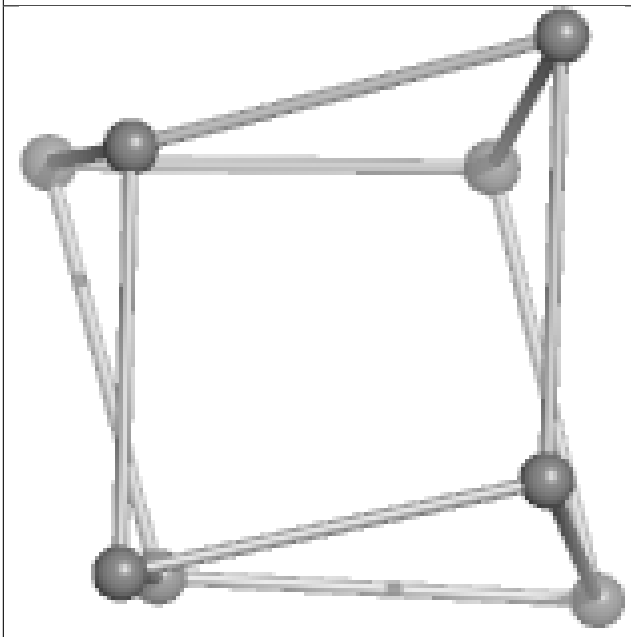

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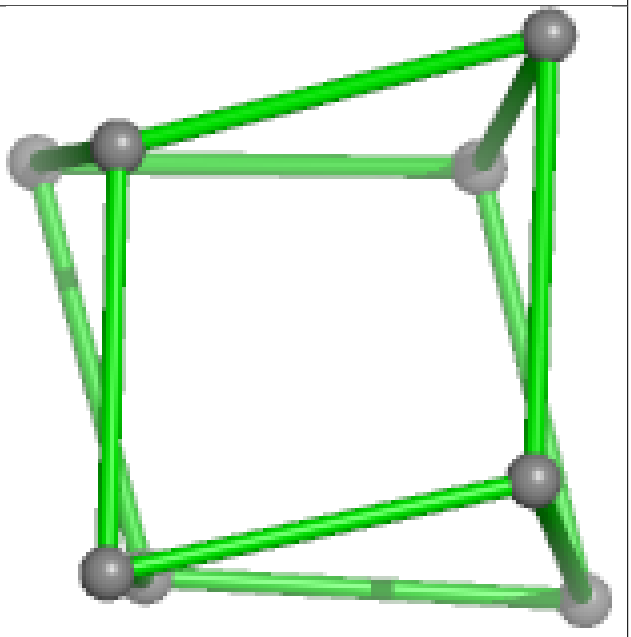
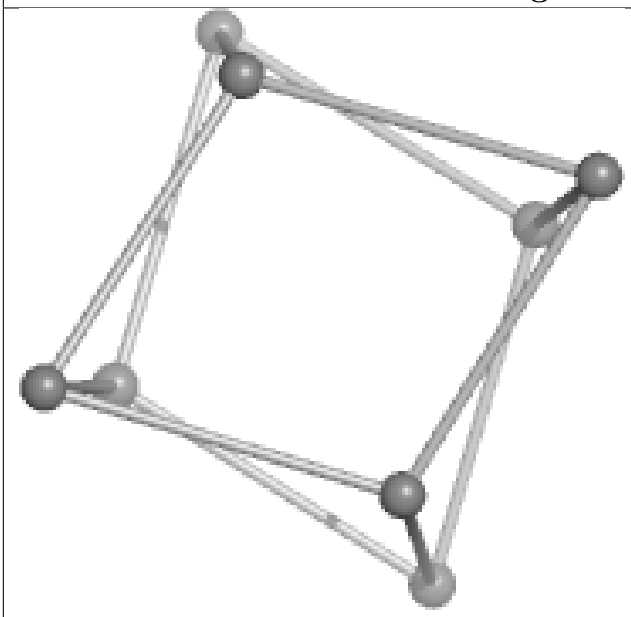


Rings

Ligand SF4 O 412



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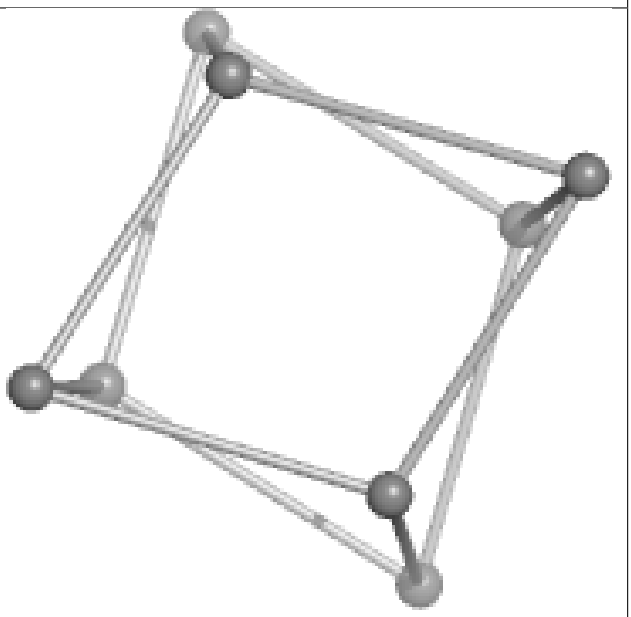

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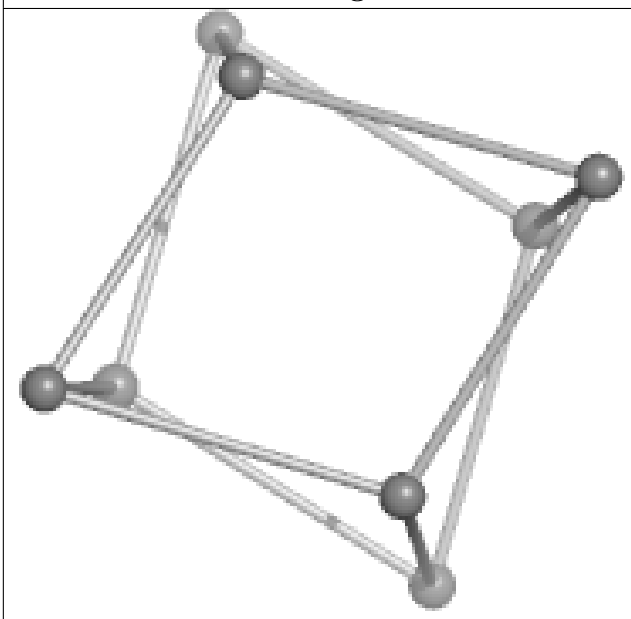

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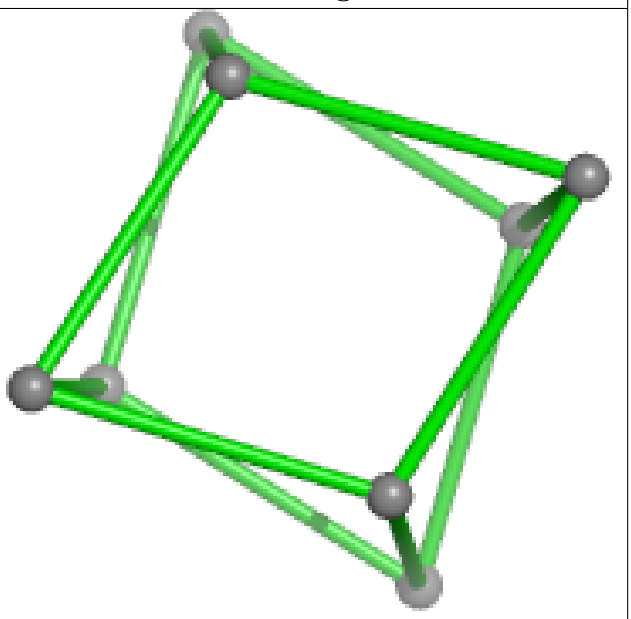
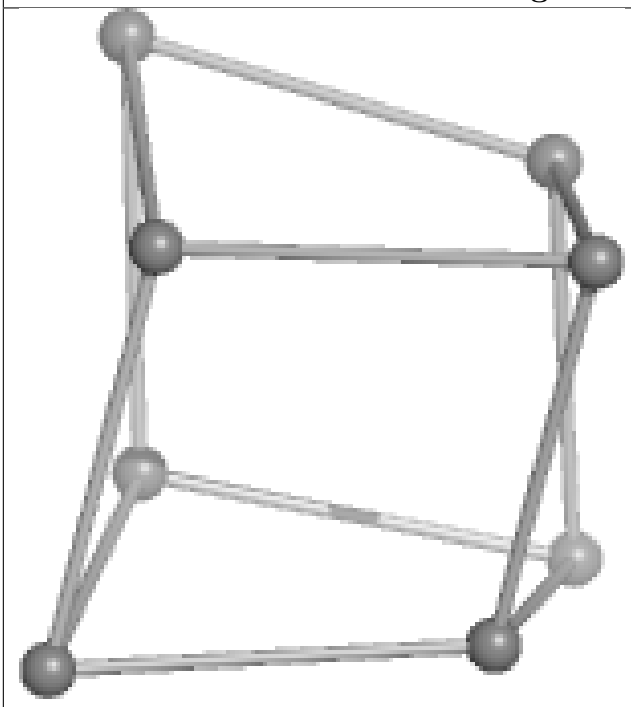


Rings

Ligand SF4 O 401



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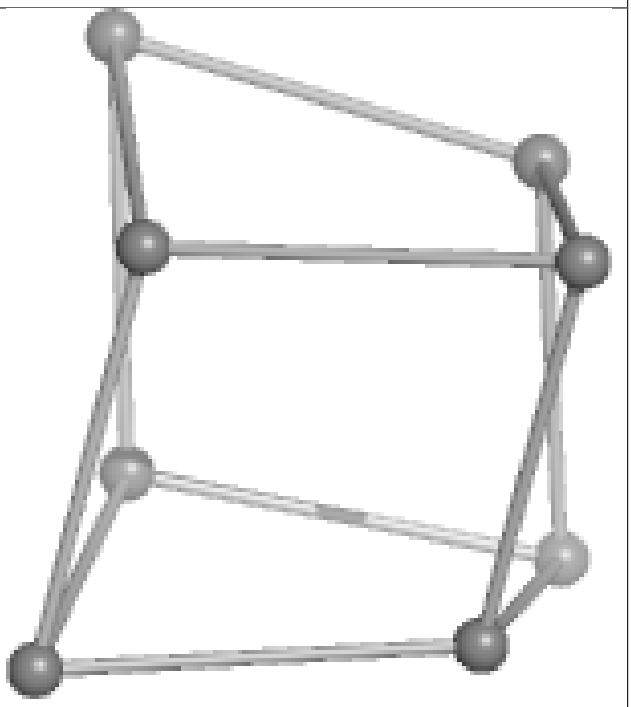

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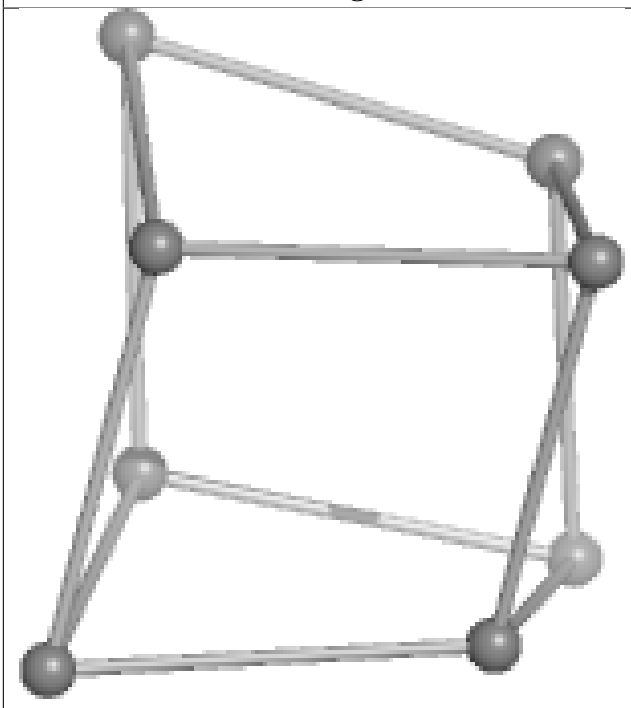

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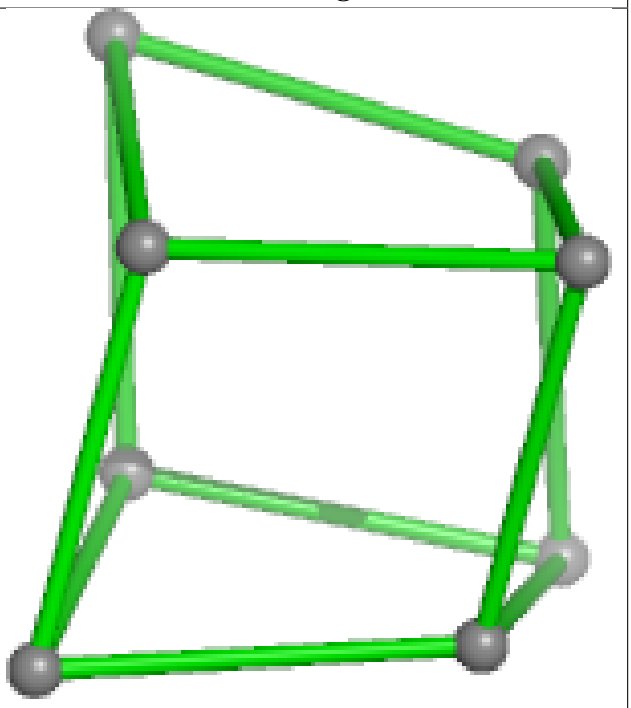

Rings

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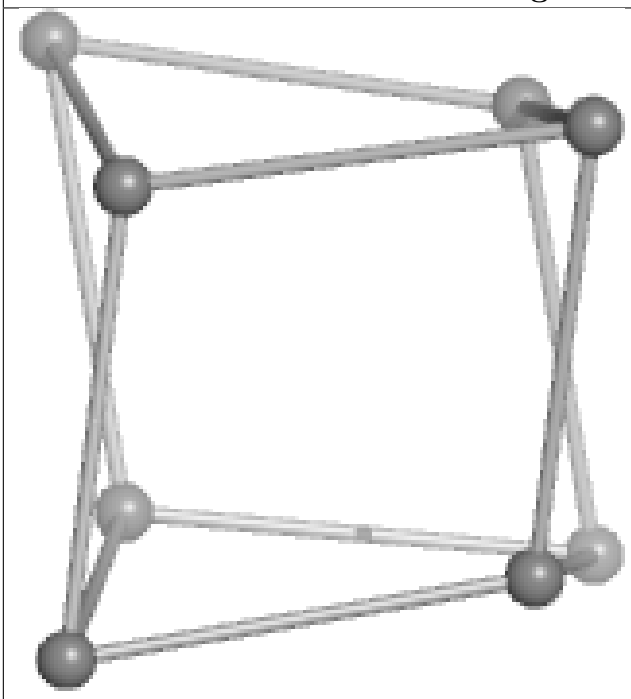

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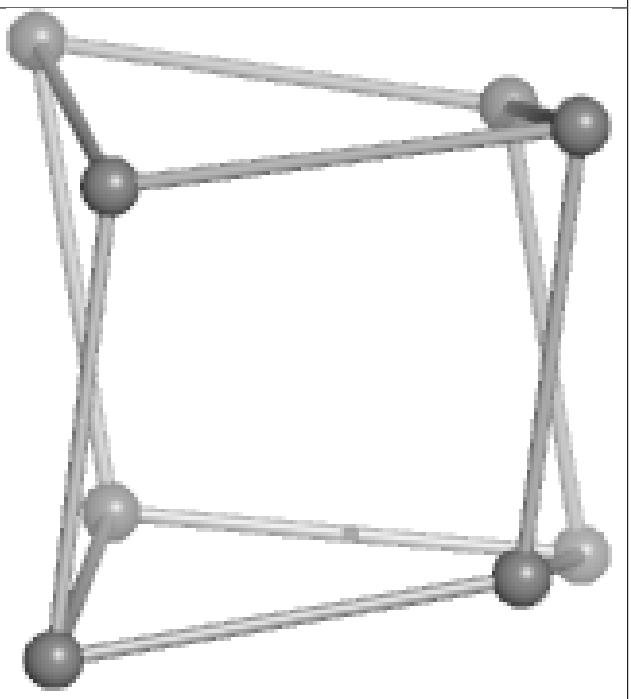

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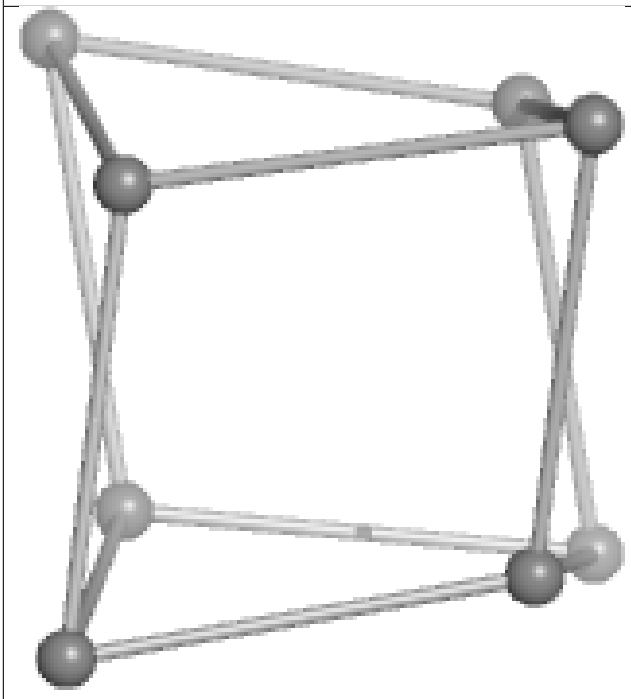

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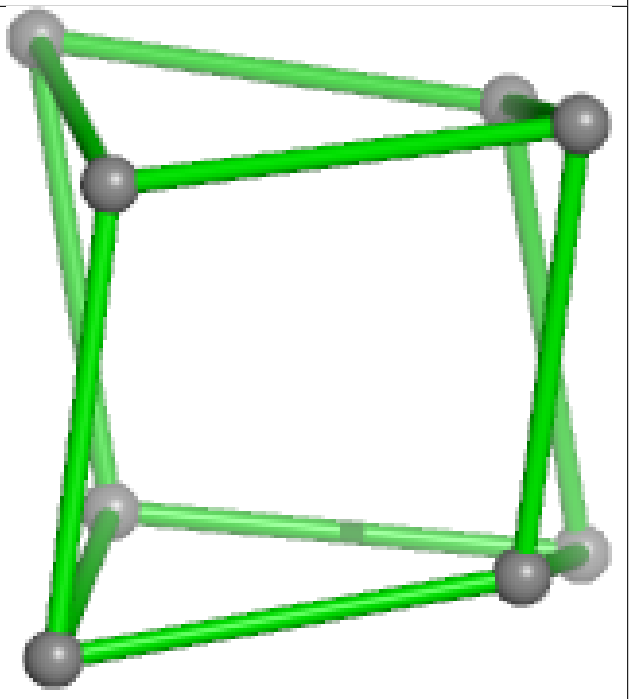
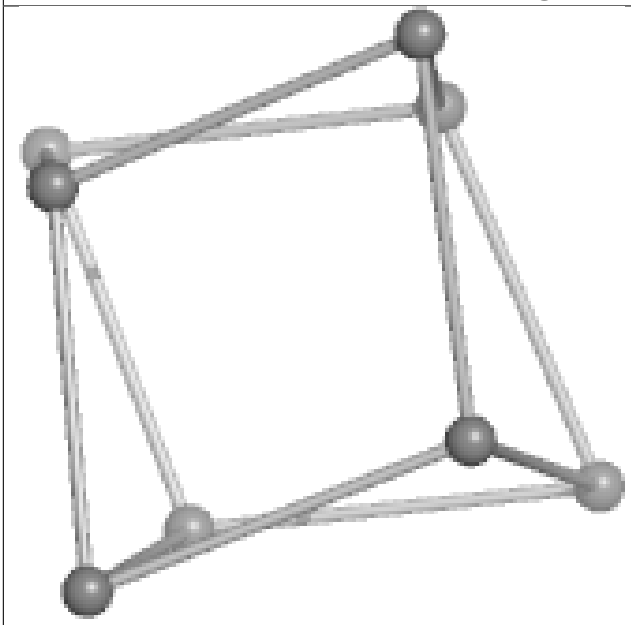


Rings

Ligand SF4 a 702



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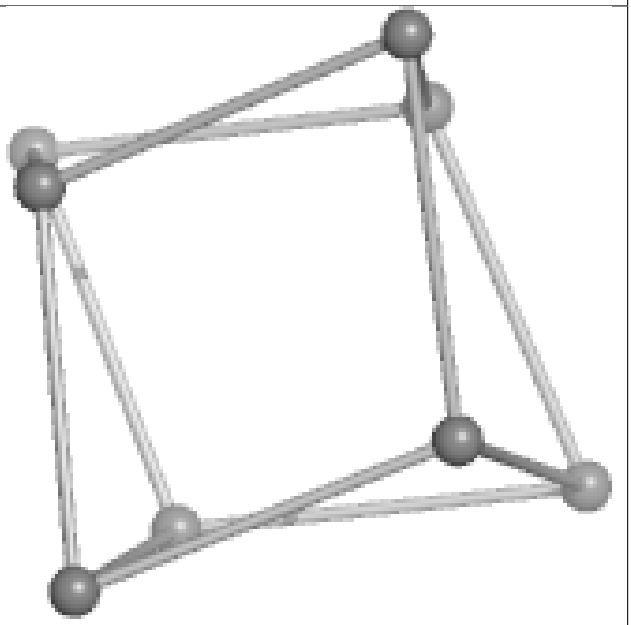
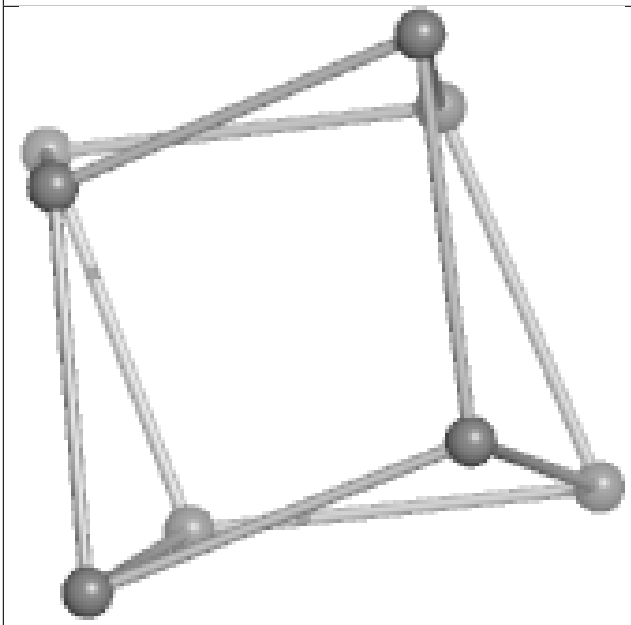


Bond angles



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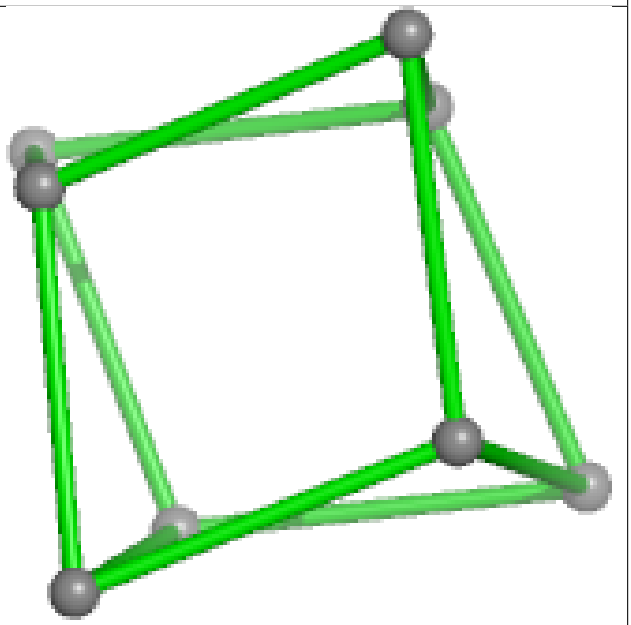

Rings

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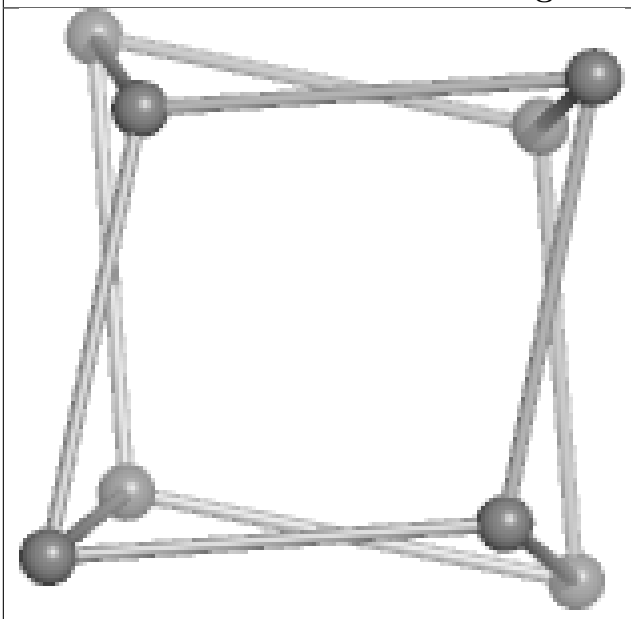

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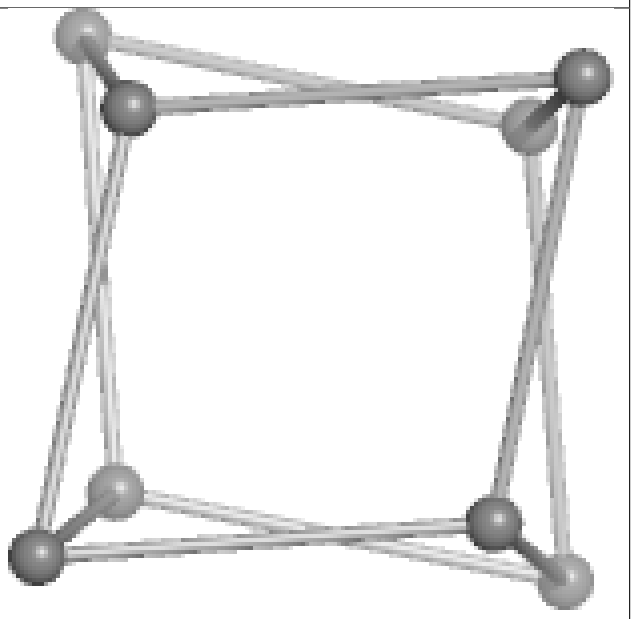
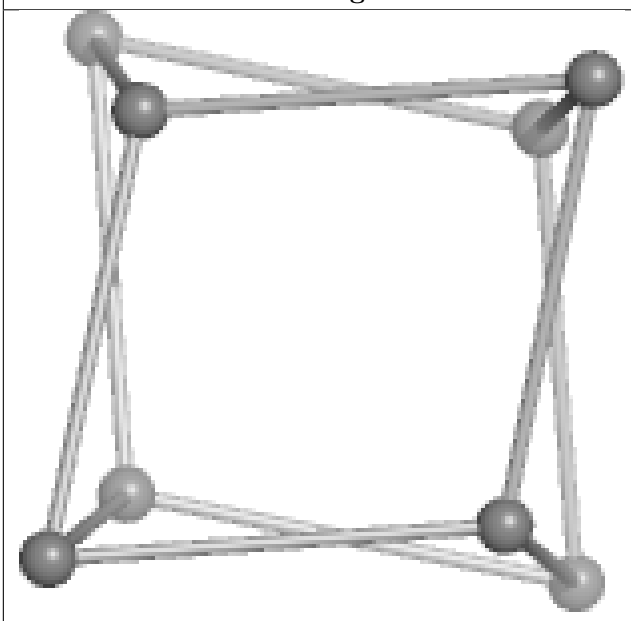


Bond angles



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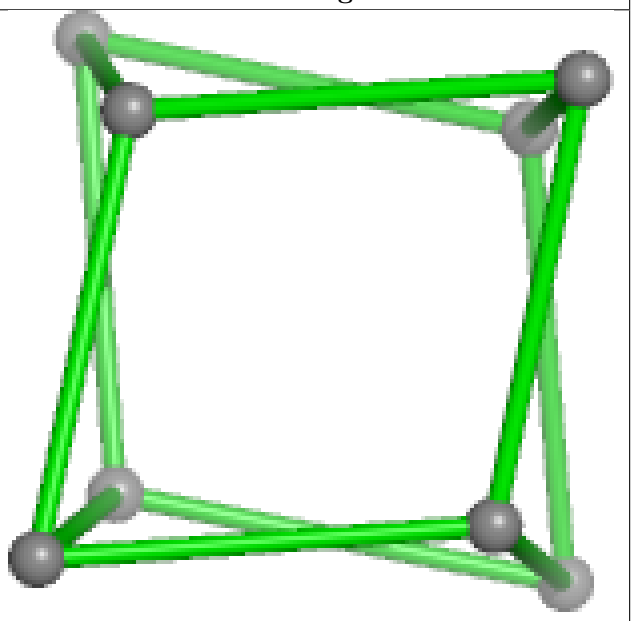
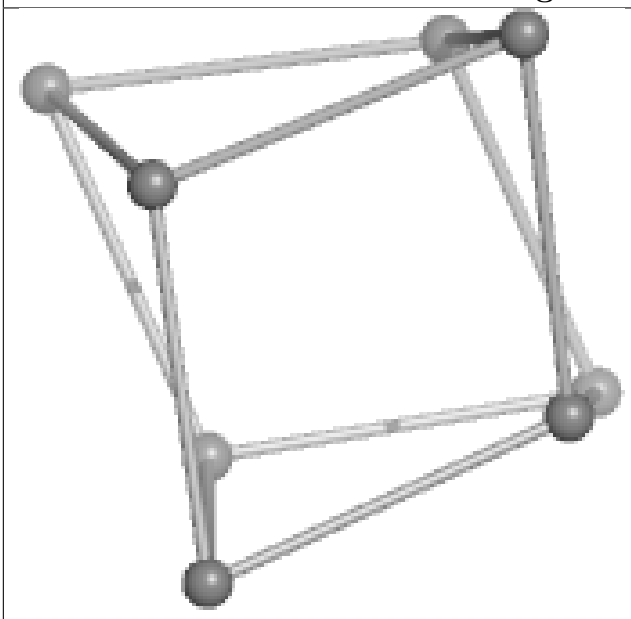


Rings

Ligand SF4 e 201



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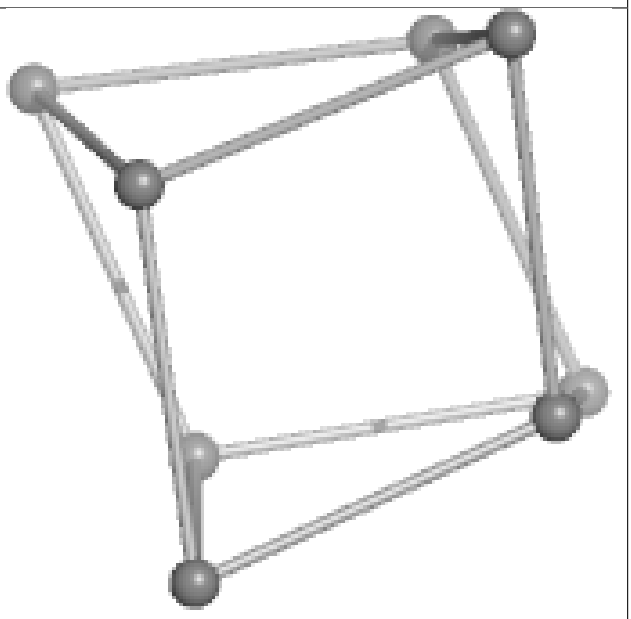
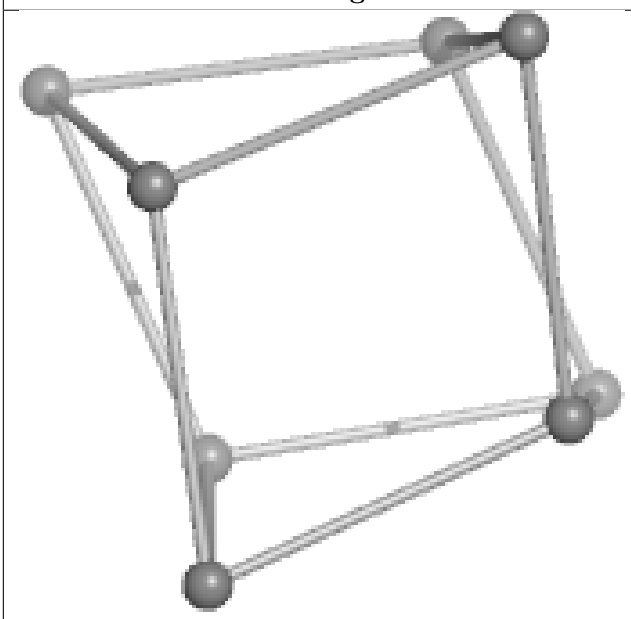


Bond angles



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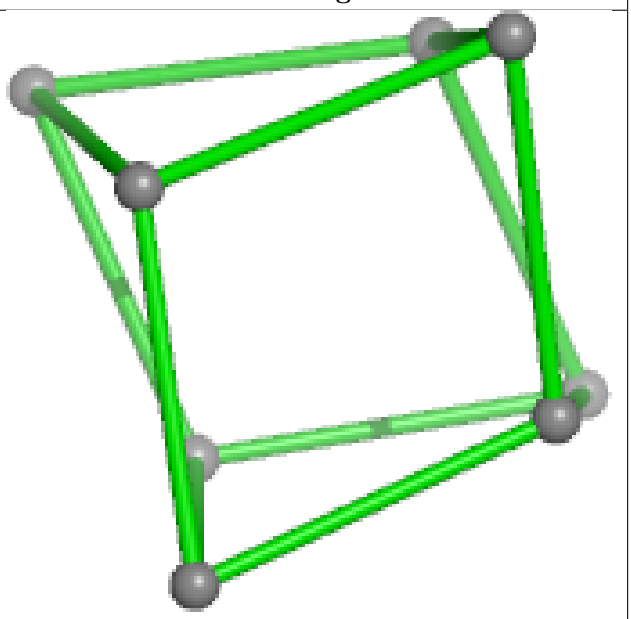
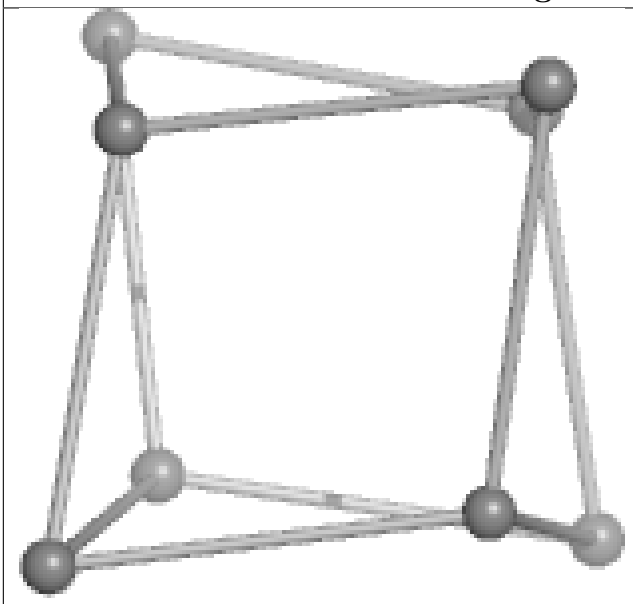


Rings

Ligand SF4 b 703



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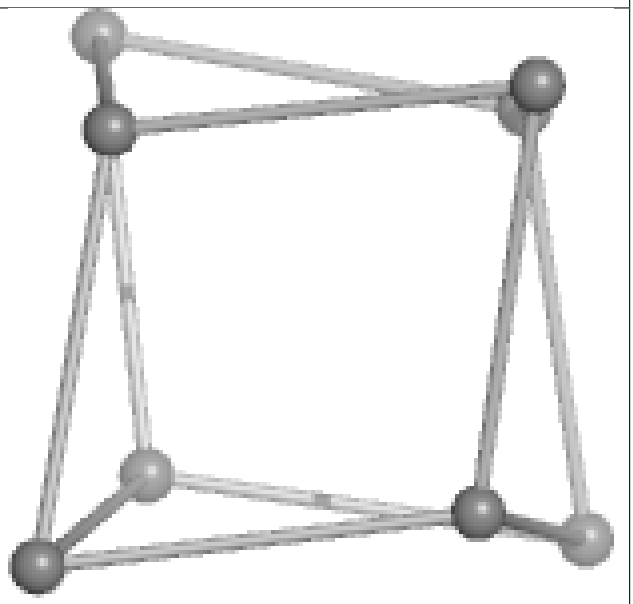

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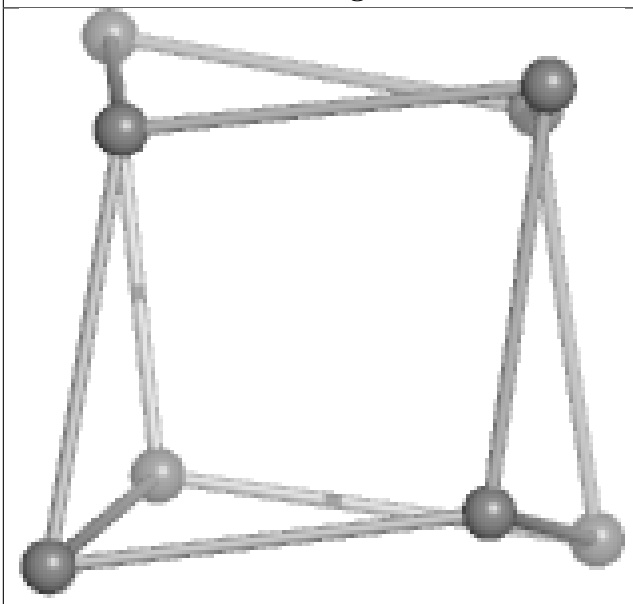

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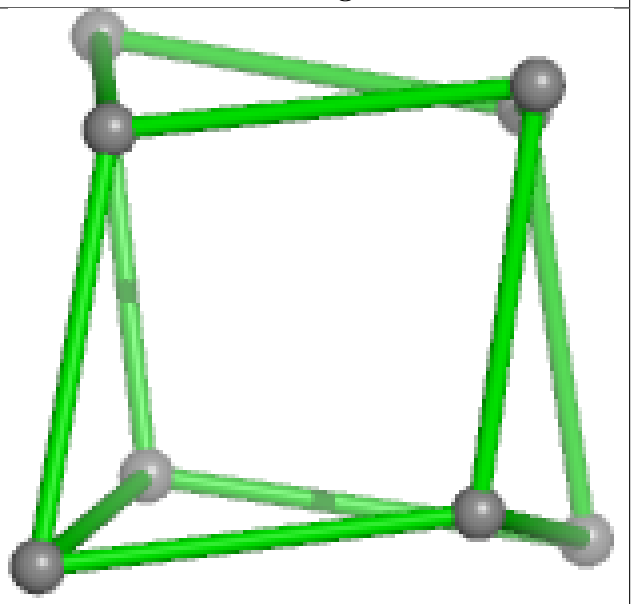
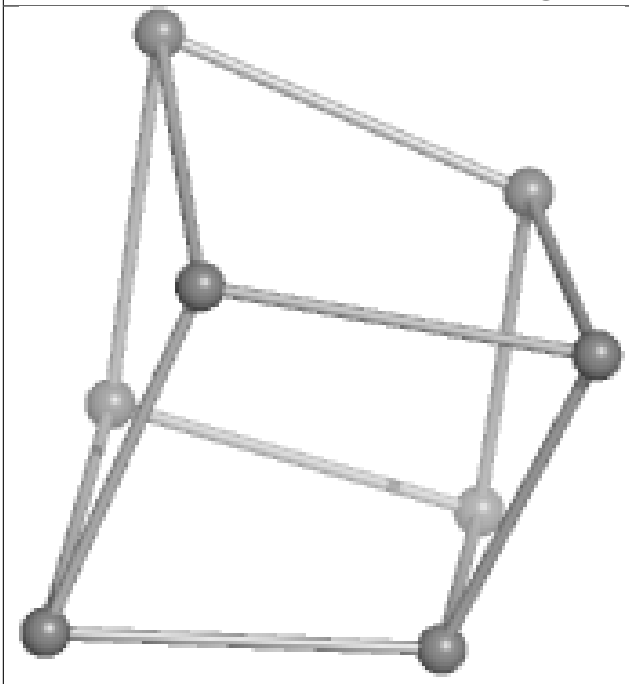


Rings

Ligand SF4 t 408



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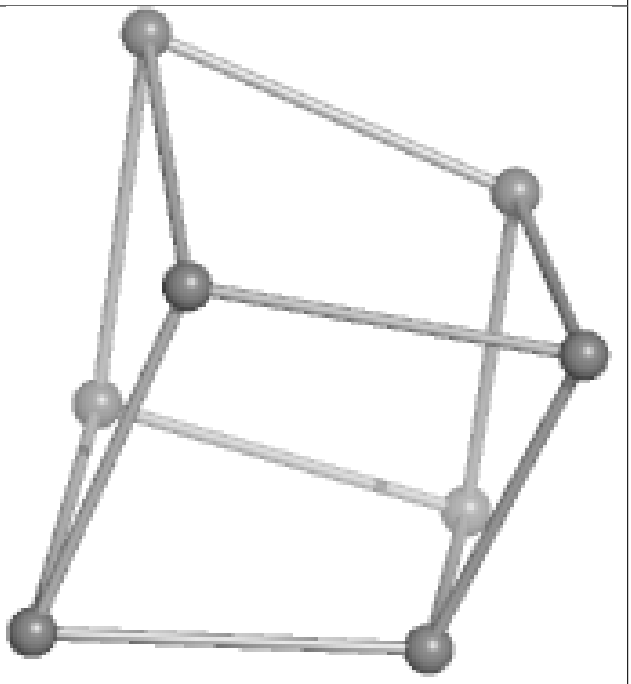
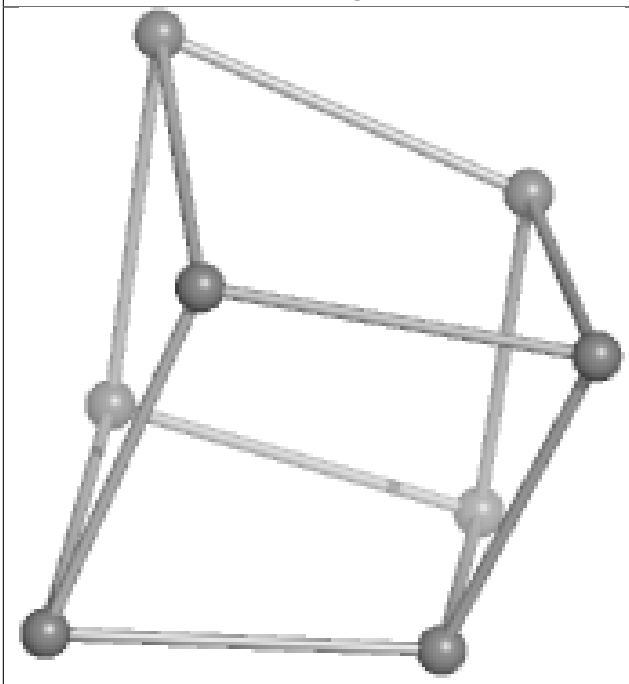


Bond angles



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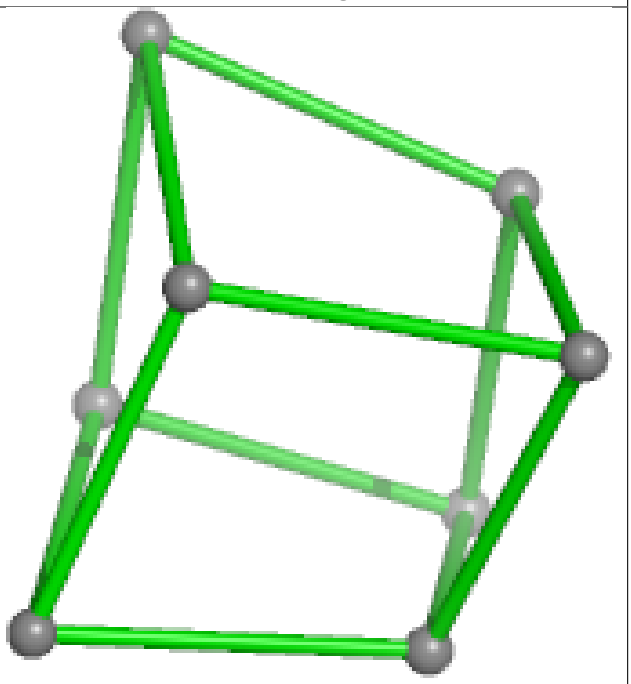
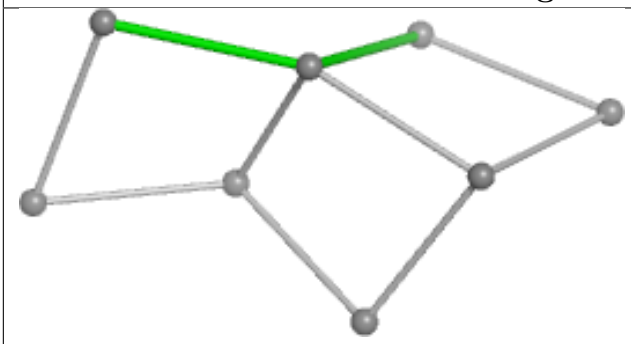


Rings

Ligand 9S8 d 301



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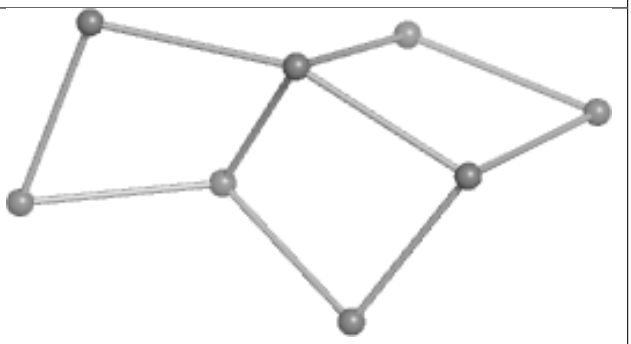
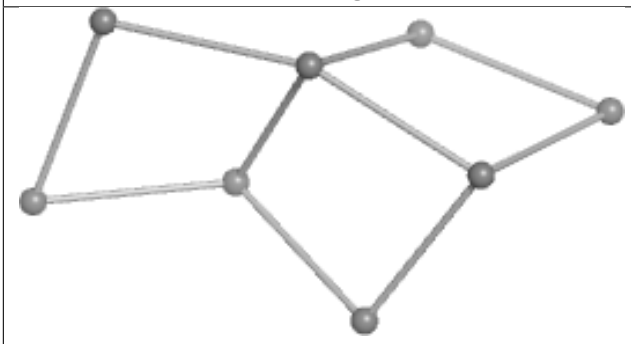


Bond angles



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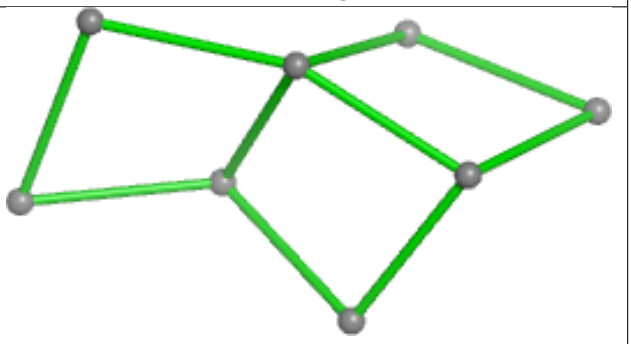
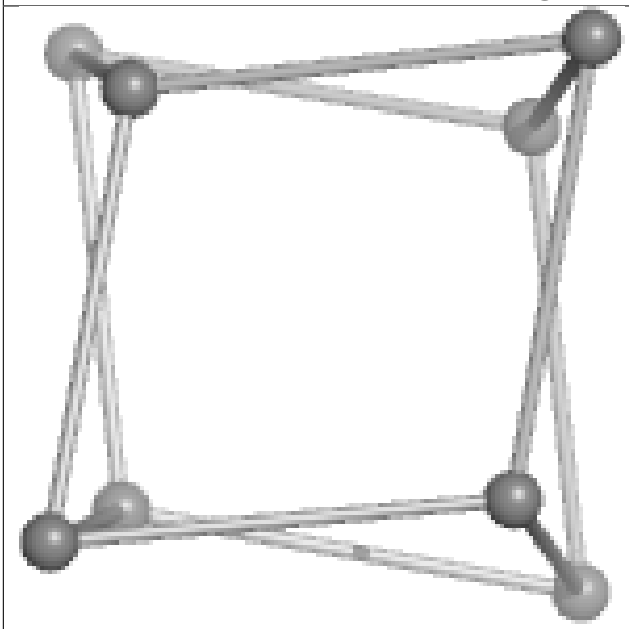


Rings

Ligand SF4 e 202



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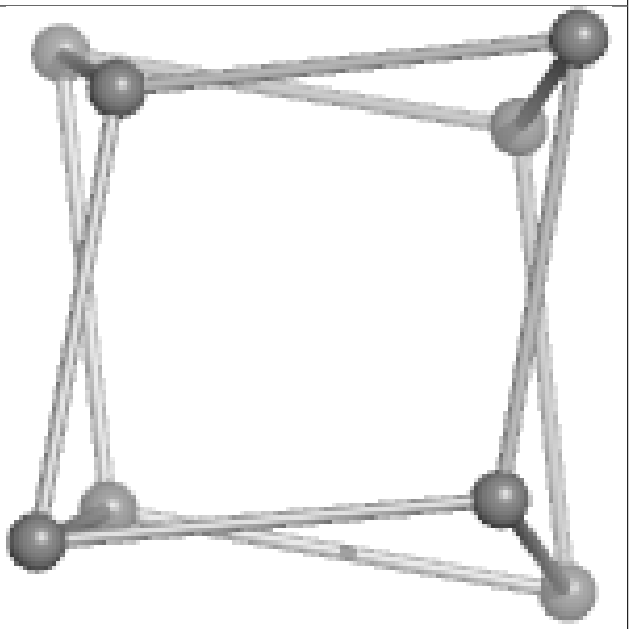
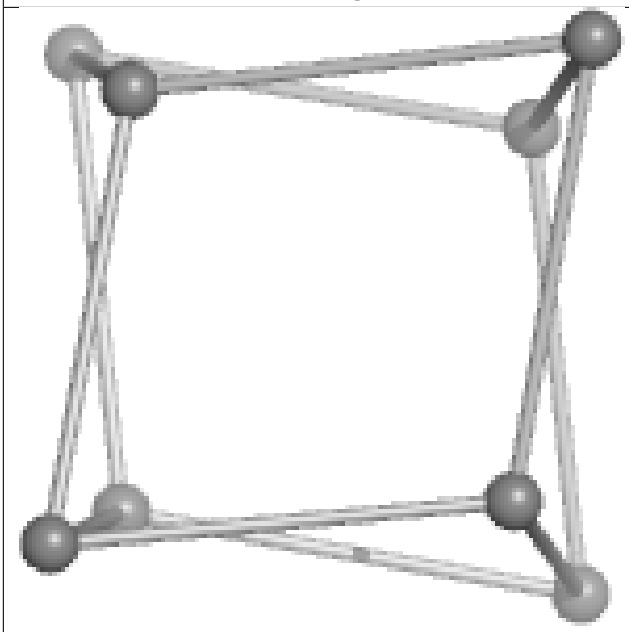


Bond angles



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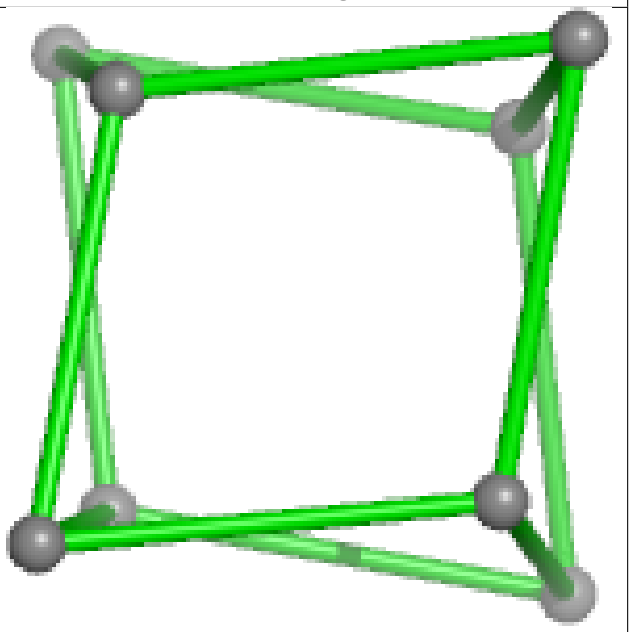
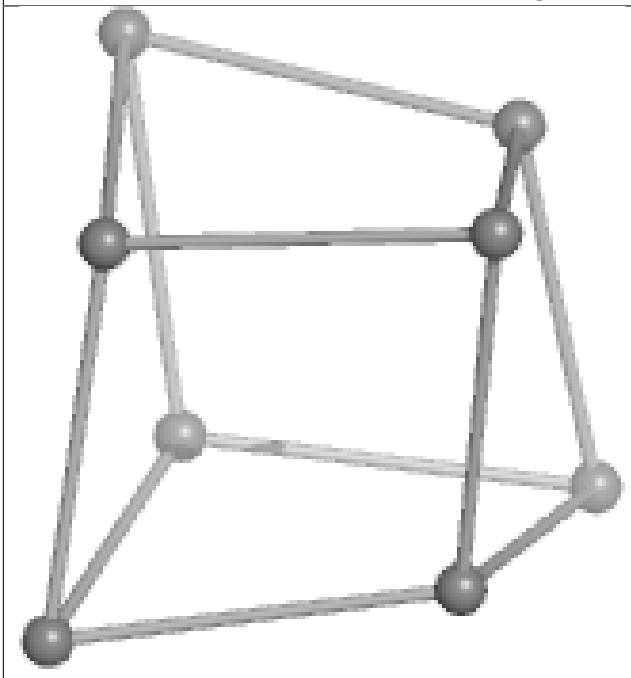


Rings

Ligand SF4 O 410



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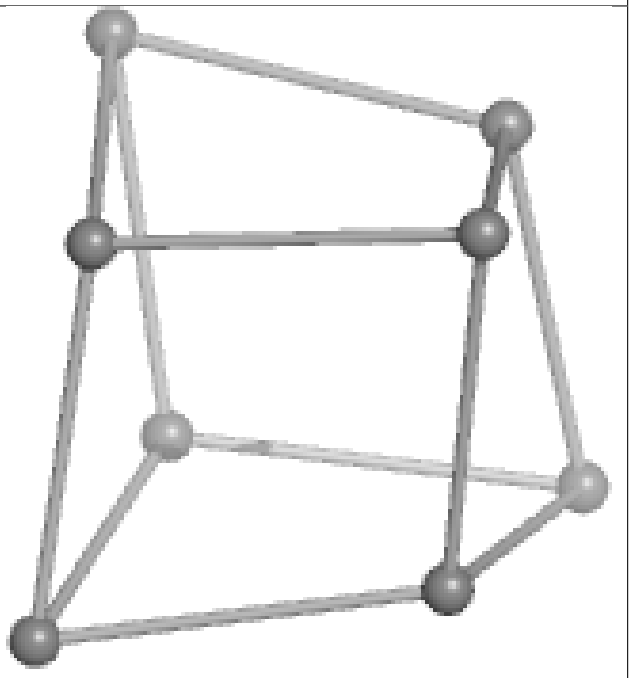
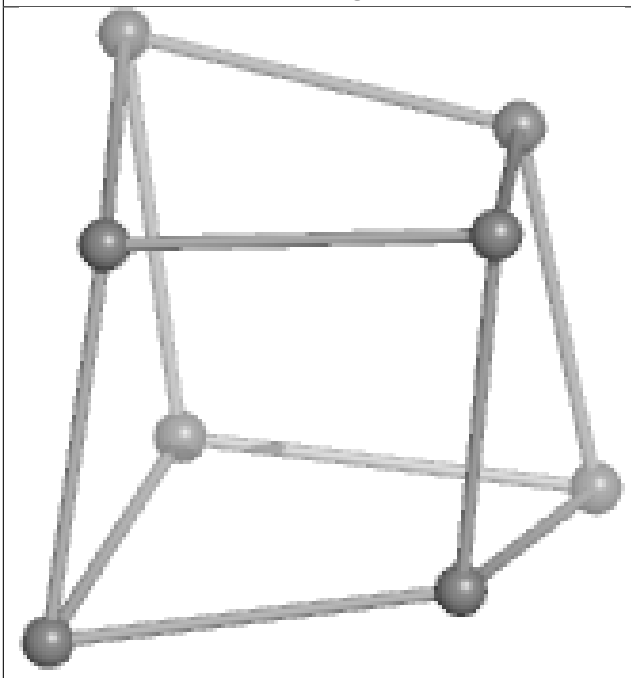


Bond angles



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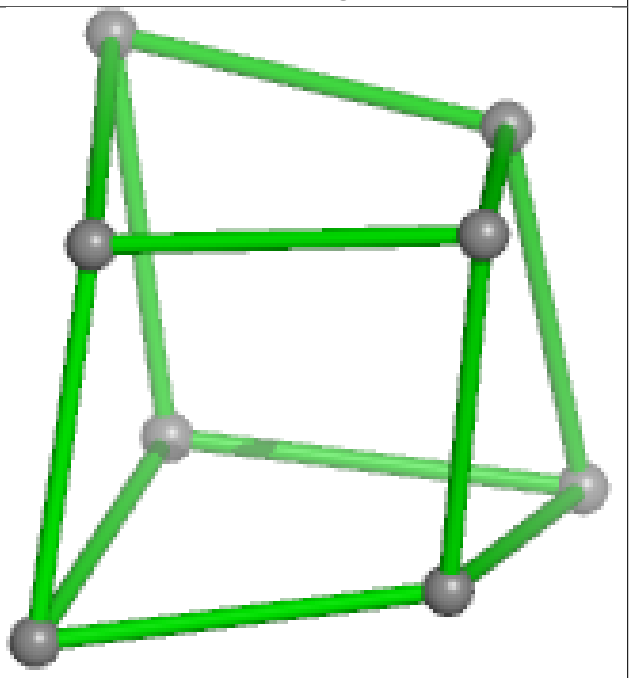

Rings

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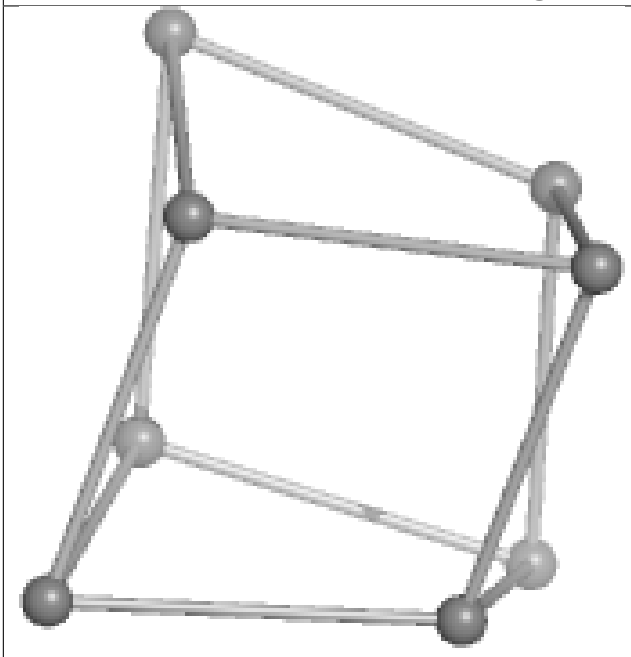

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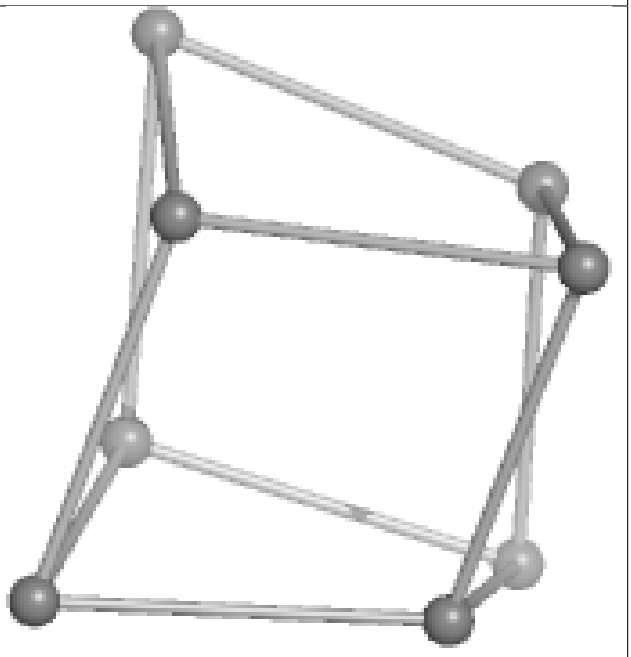
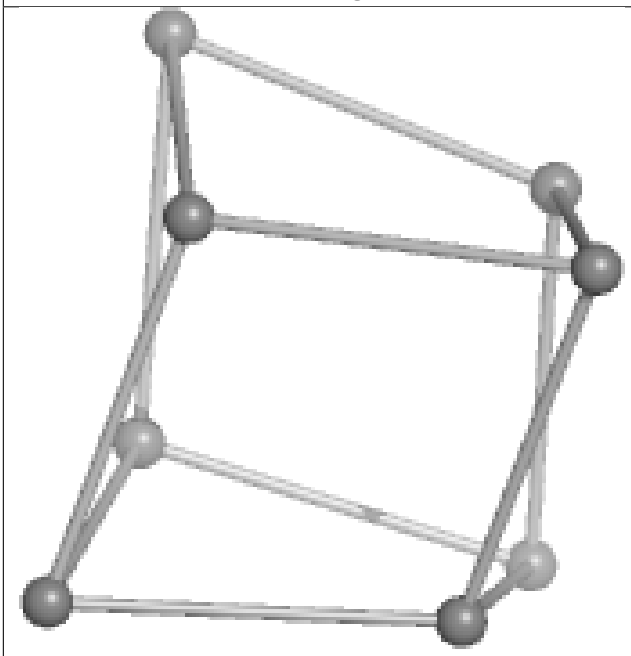
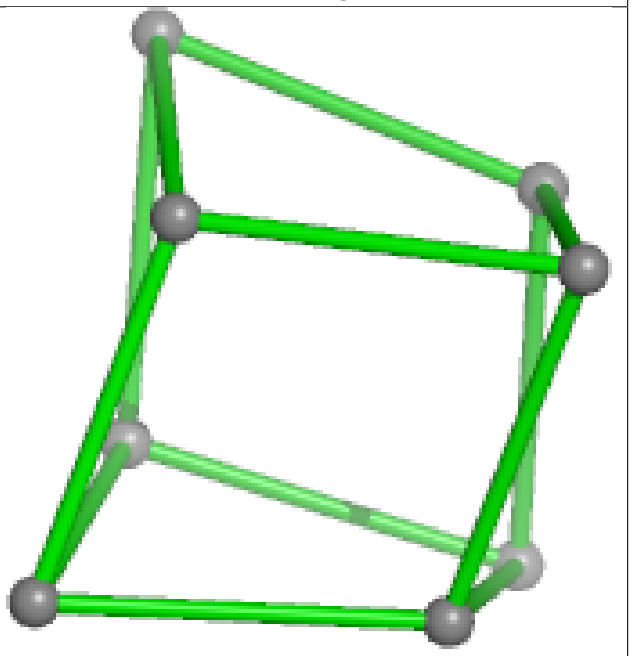


Bond angles

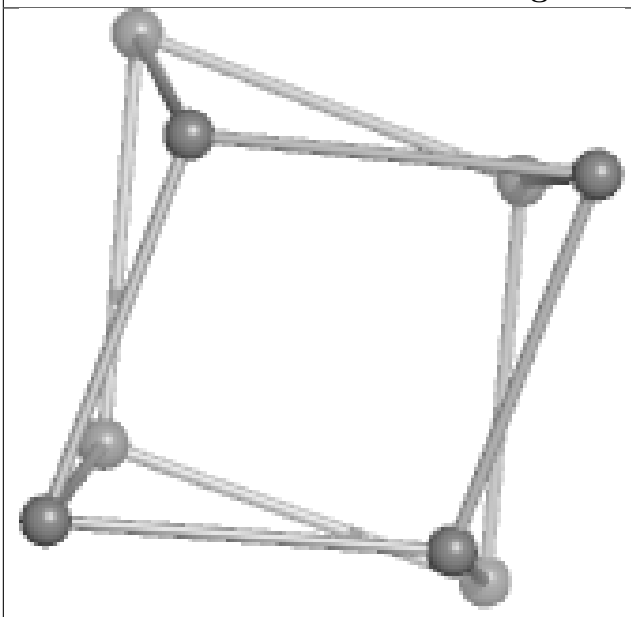


Torsions

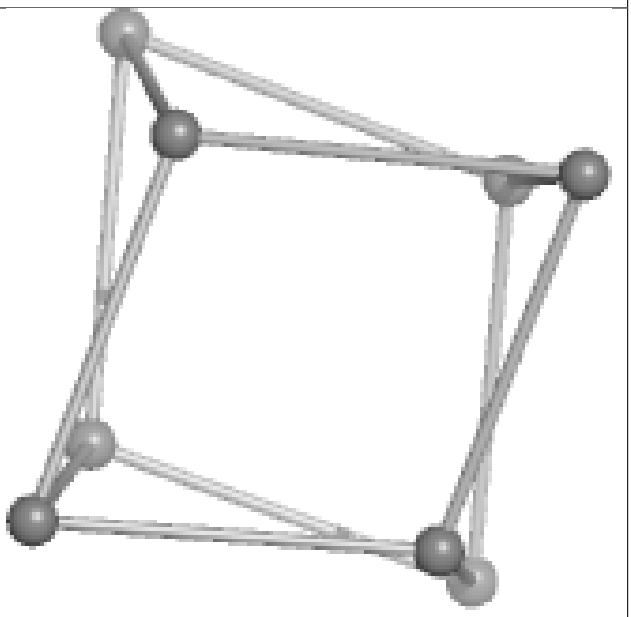


Rings

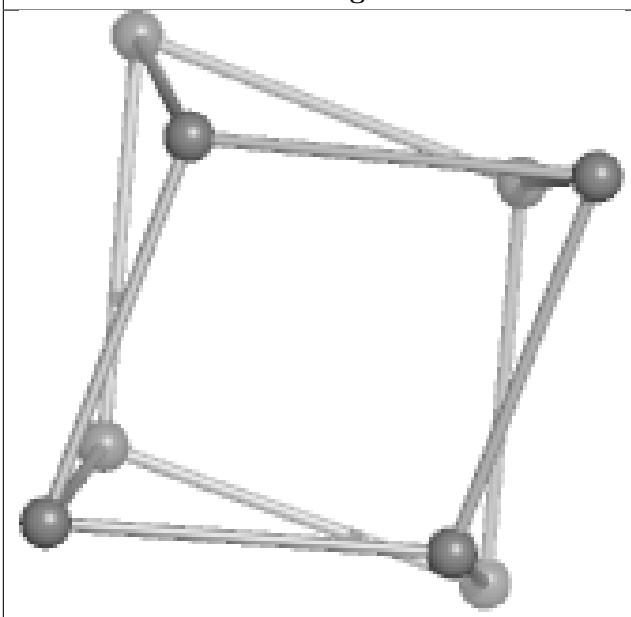
Ligand SF4 O 407



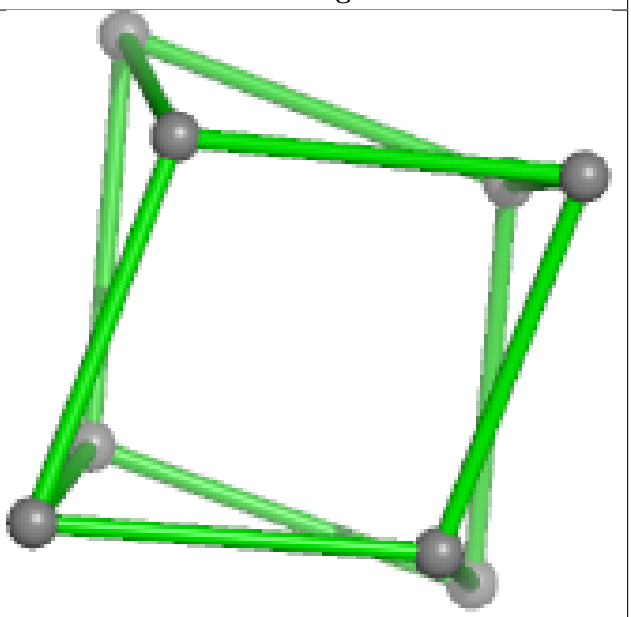
Bond lengths



Bond angles

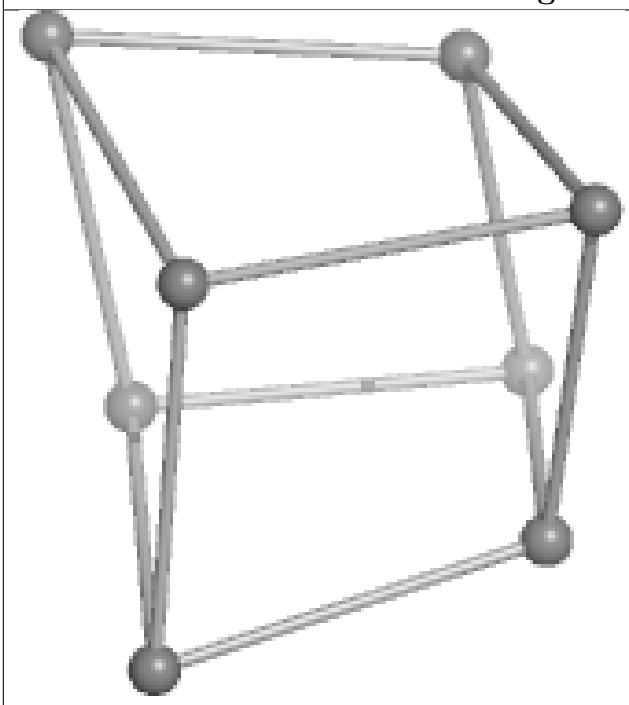


Torsions

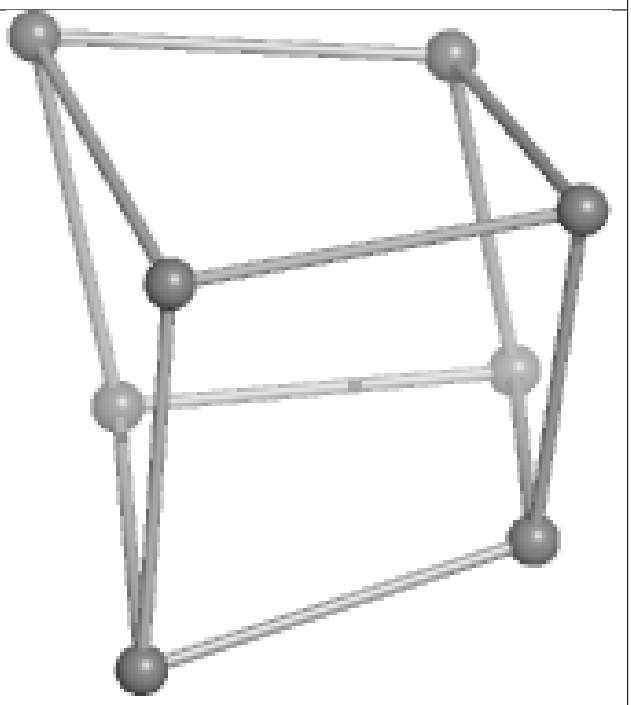


Rings

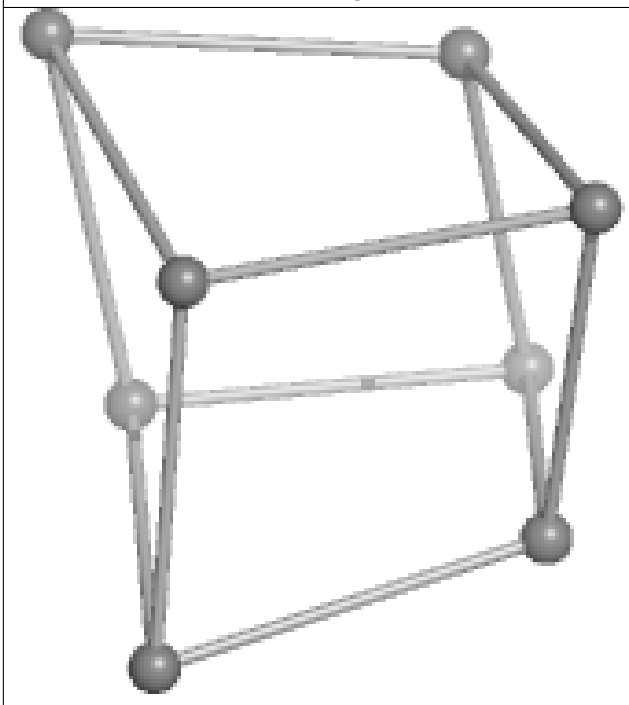
Ligand SF4 I 301



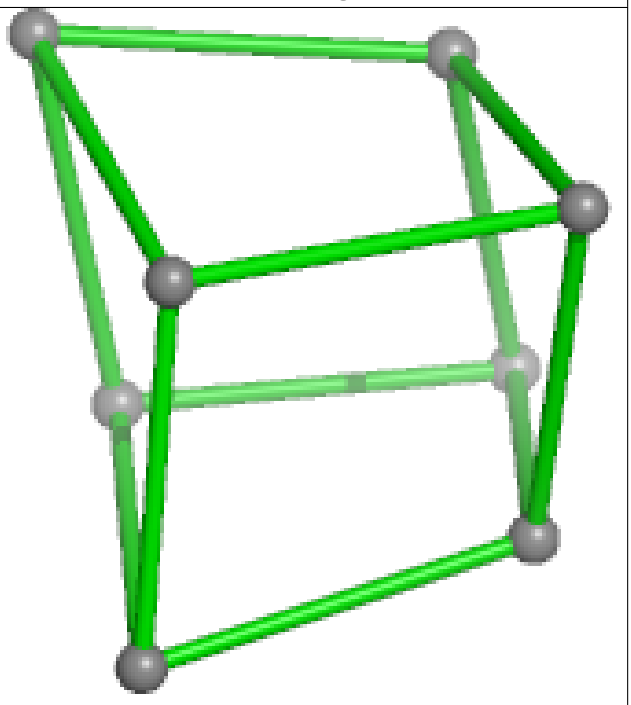
Bond lengths



Bond angles

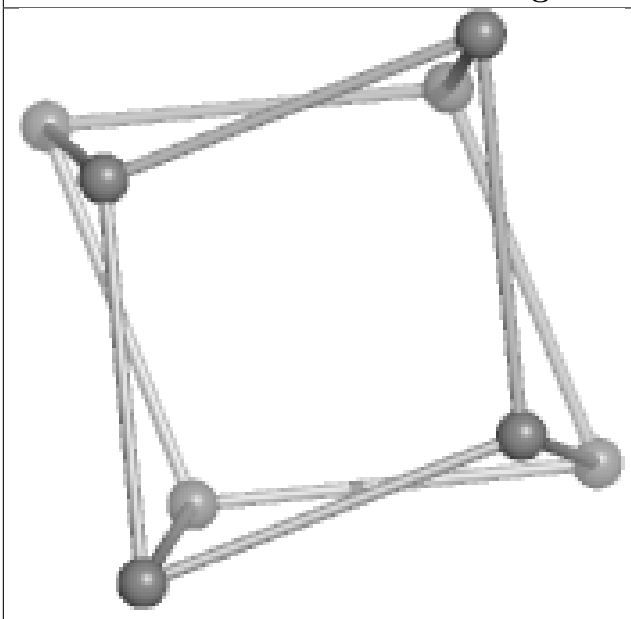


Torsions

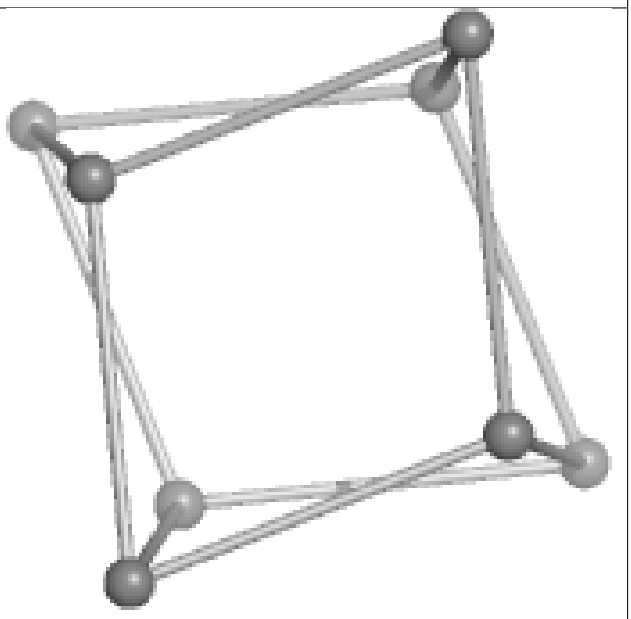


Rings

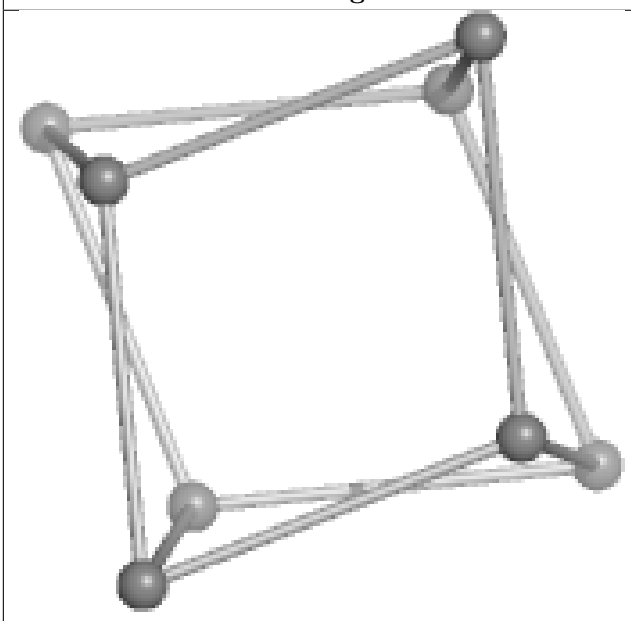
Ligand SF4 T 405



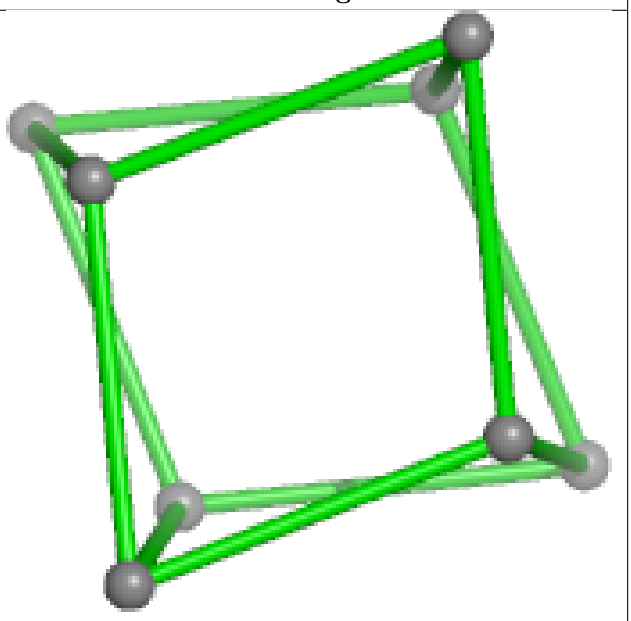
Bond lengths



Bond angles

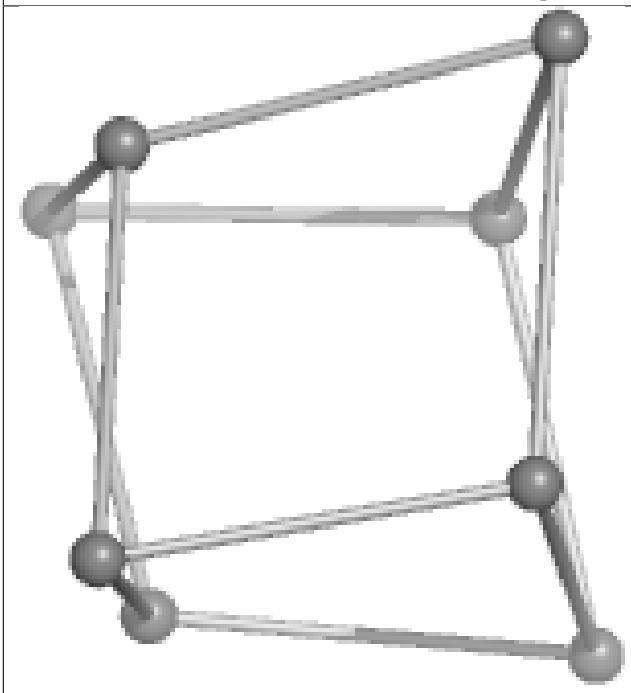


Torsions

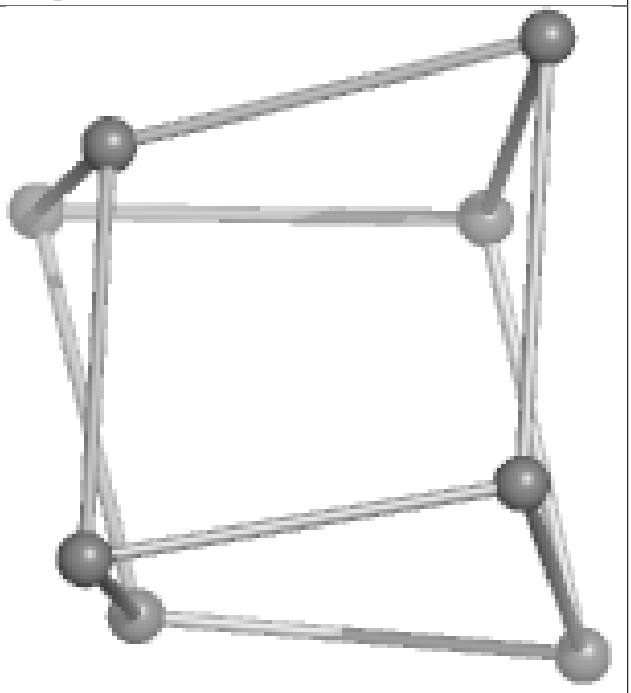


Rings

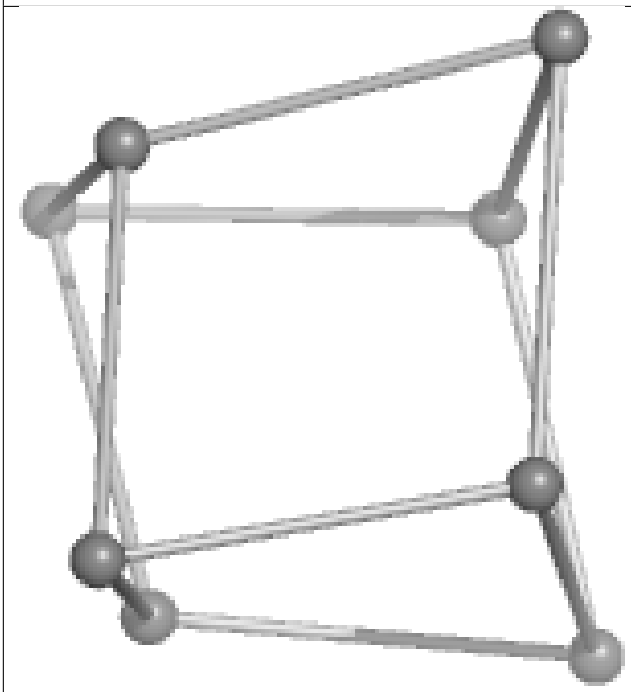
Ligand SF4 q 504



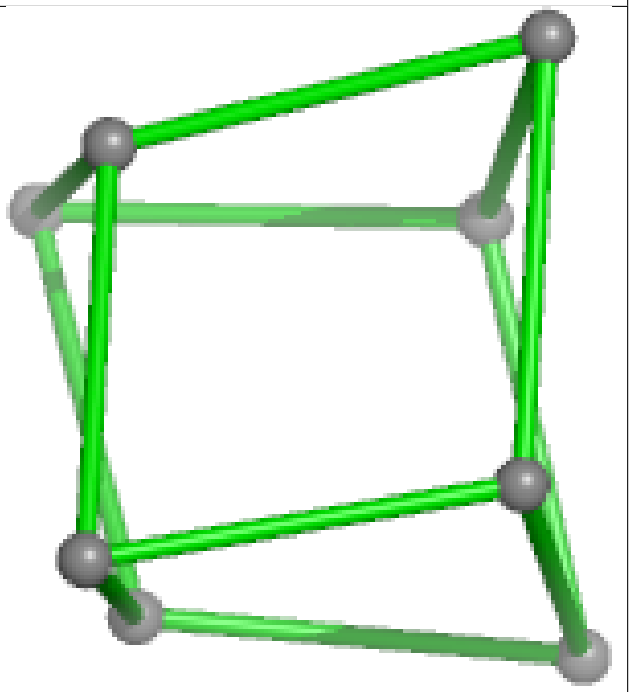
Bond lengths



Bond angles

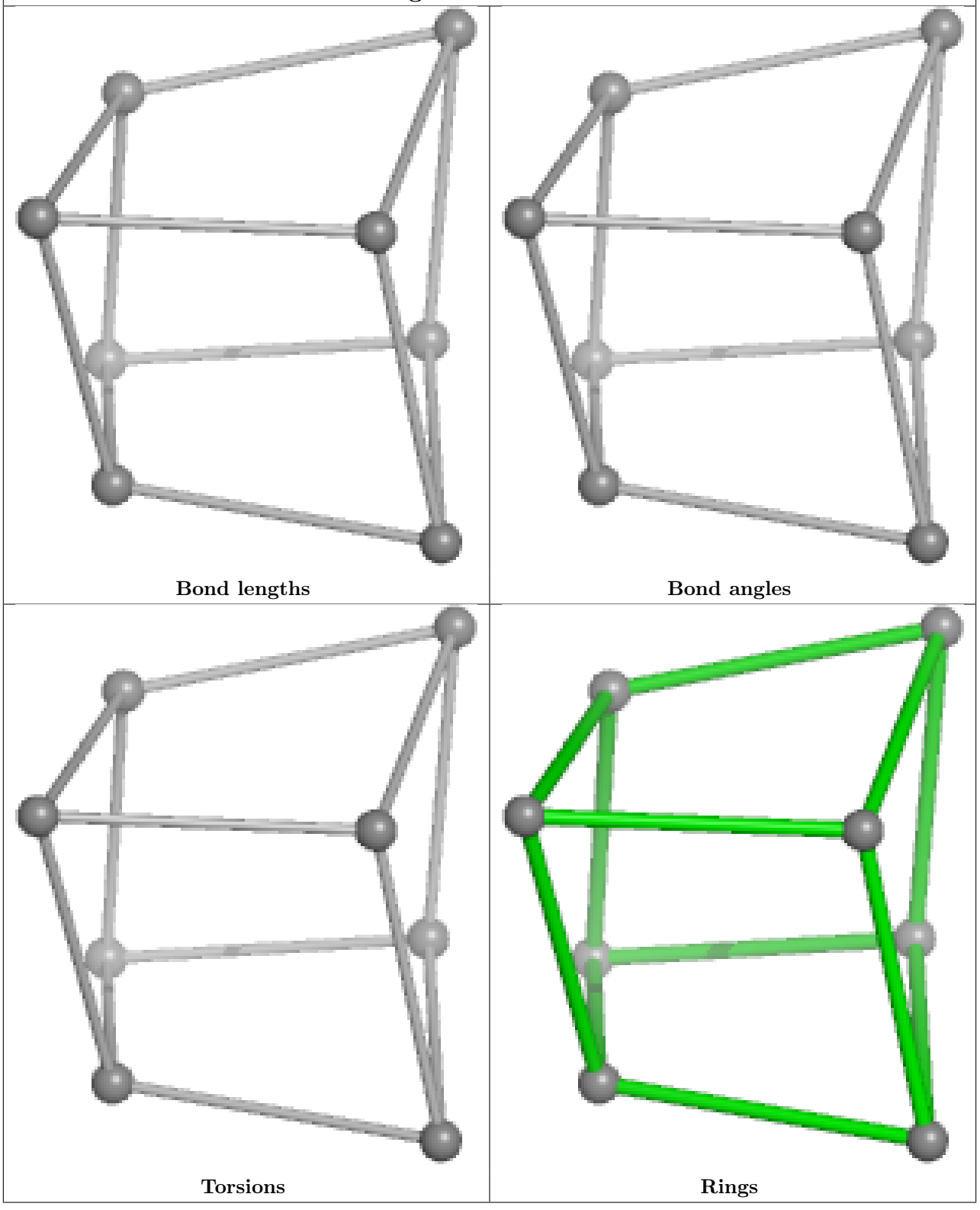


Torsions



Rings

Ligand SF4 J 303



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.

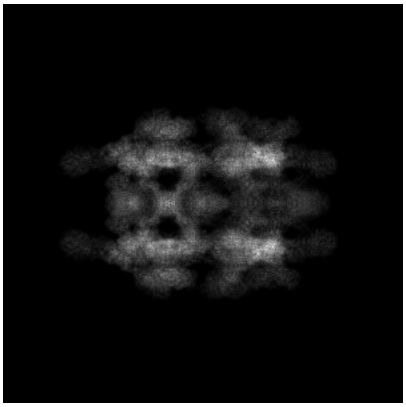
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-54825. These allow visual inspection of the internal detail of the map and identification of artifacts.

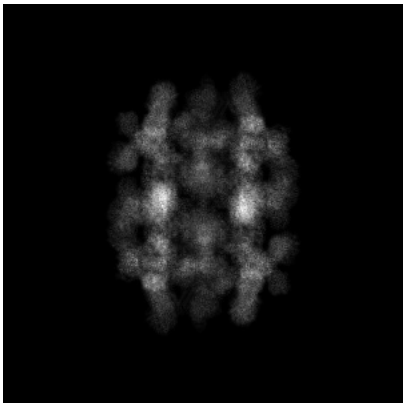
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

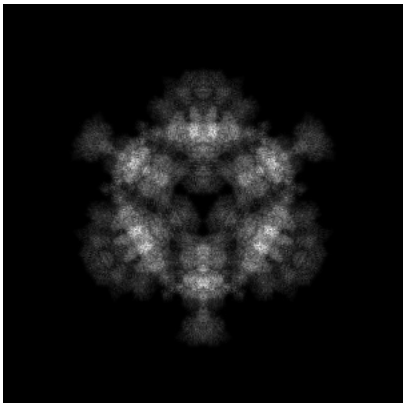
6.1.1 Primary map



X



Y

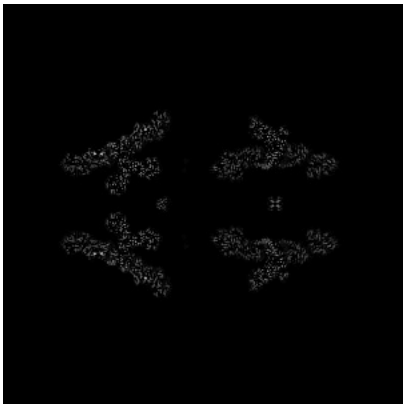


Z

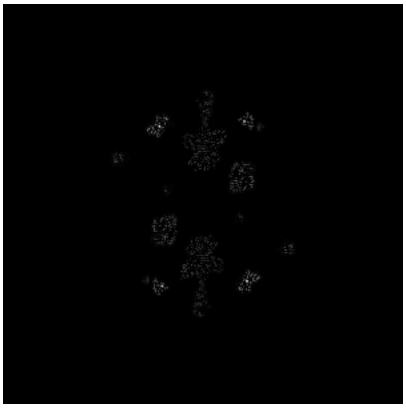
The images above show the map projected in three orthogonal directions.

6.2 Central slices

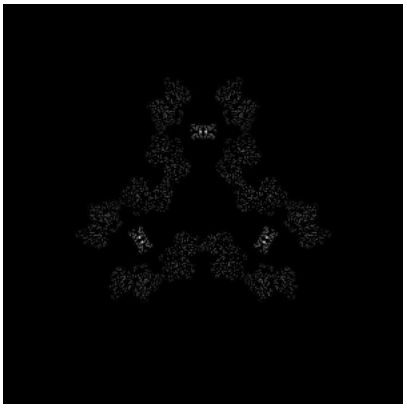
6.2.1 Primary map



X Index: 400



Y Index: 400

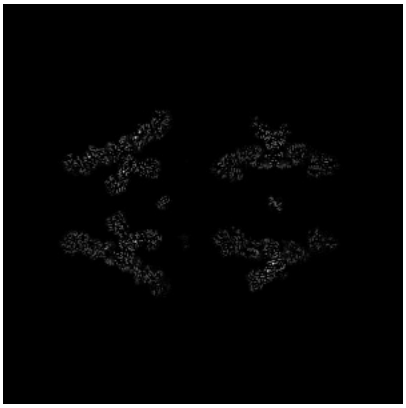


Z Index: 400

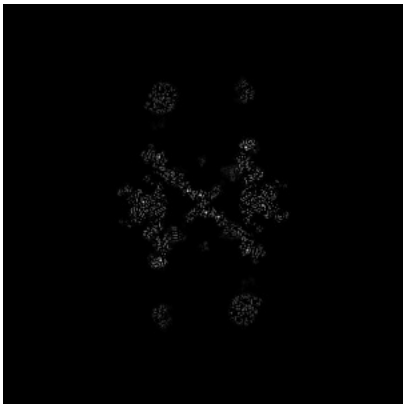
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

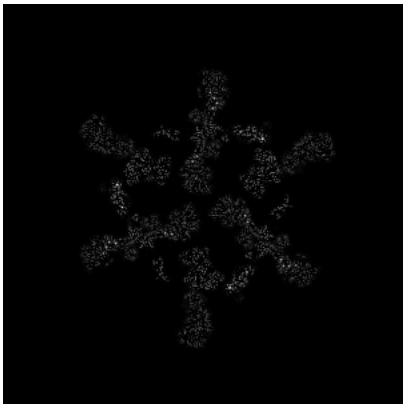
6.3.1 Primary map



X Index: 403



Y Index: 539

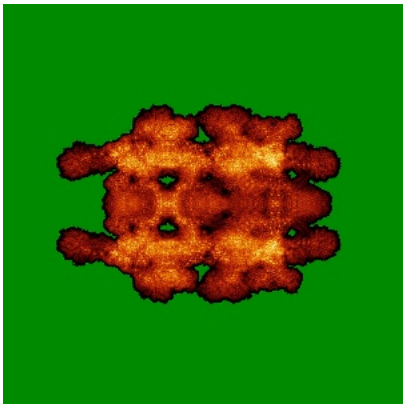


Z Index: 478

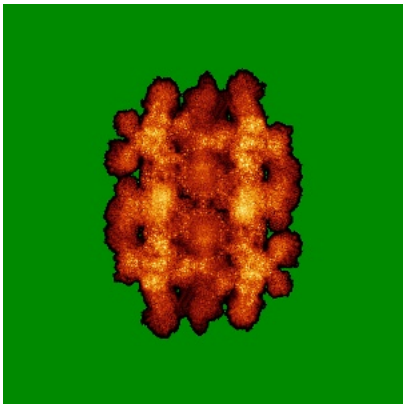
The images above show the largest variance slices of the map in three orthogonal directions.

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

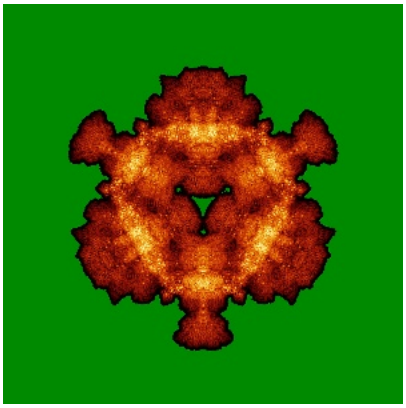
6.4.1 Primary map



X



Y

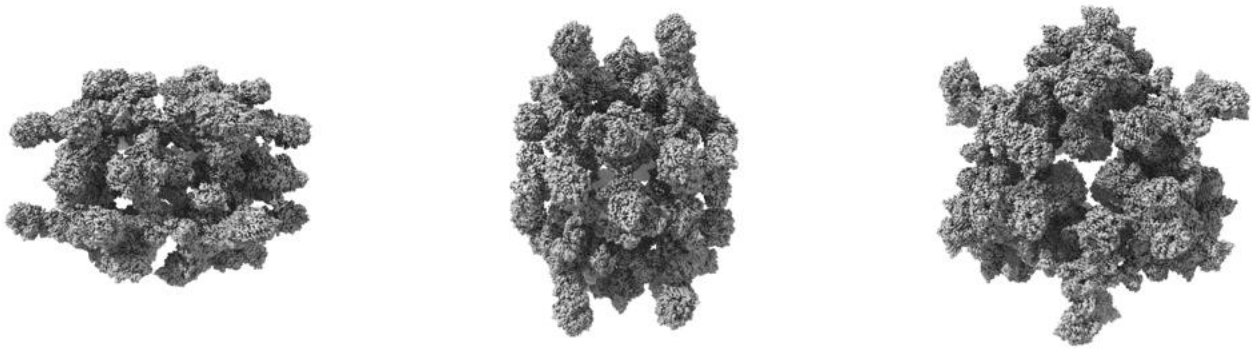


Z

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

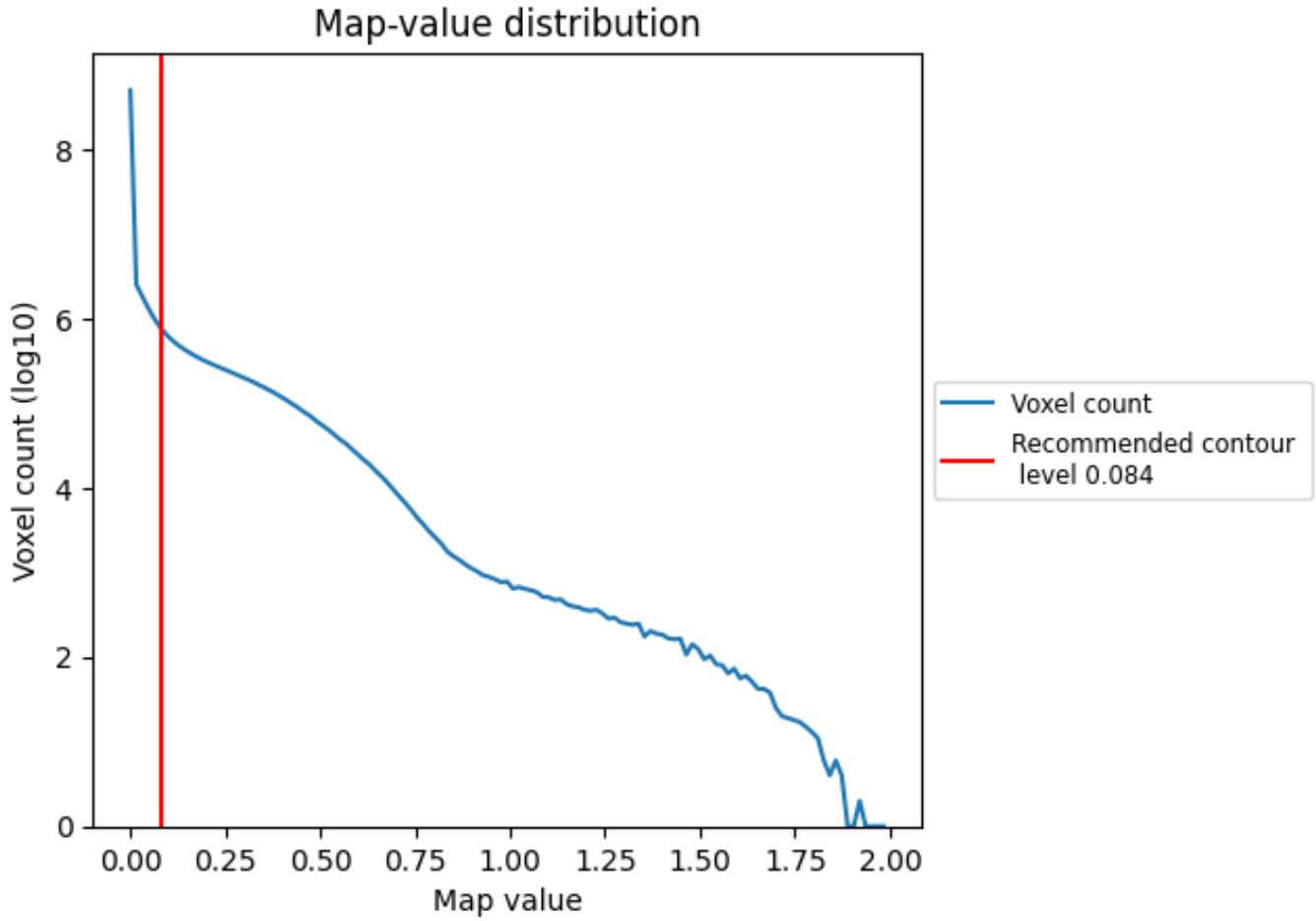
6.6 Mask visualisation (i)

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

7 Map analysis

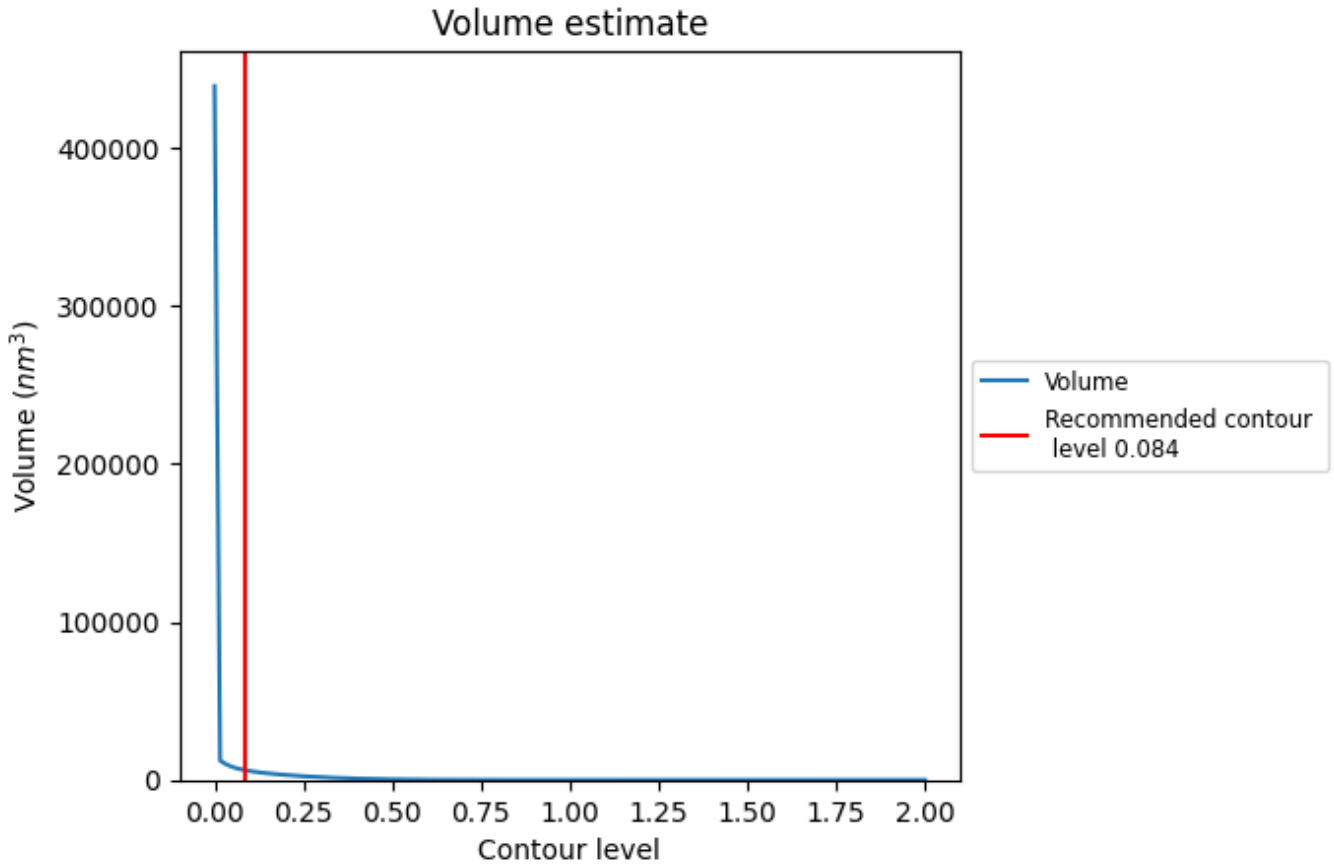
This section contains the results of statistical analysis of the map.

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.

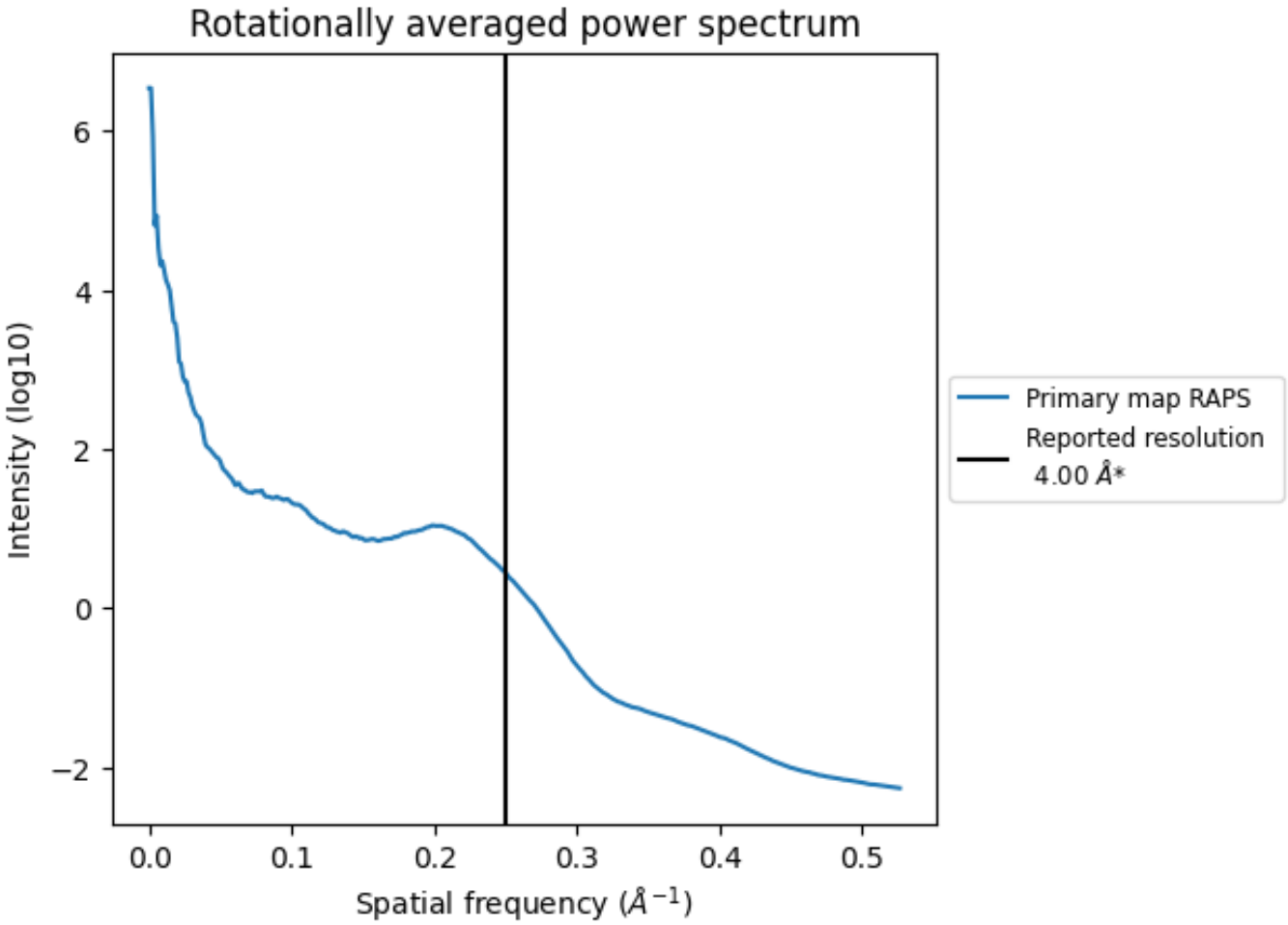
7.2 Volume estimate



The volume at the recommended contour level is 6257 nm^3; this corresponds to an approximate mass of 5652 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 0.250 $Å^{-1}$

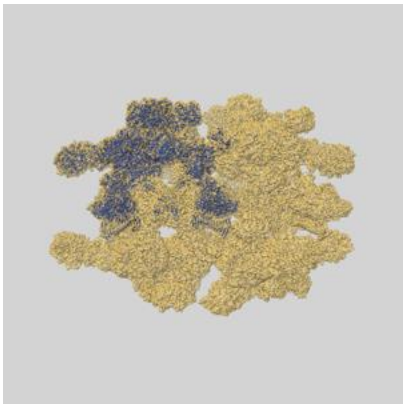
8 Fourier-Shell correlation (i)

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

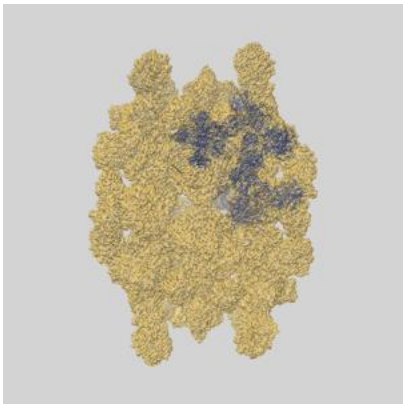
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-54825 and PDB model 9SFI. Per-residue inclusion information can be found in section 3 on page 18.

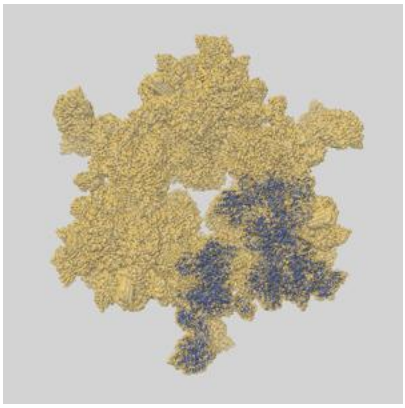
9.1 Map-model overlay



X



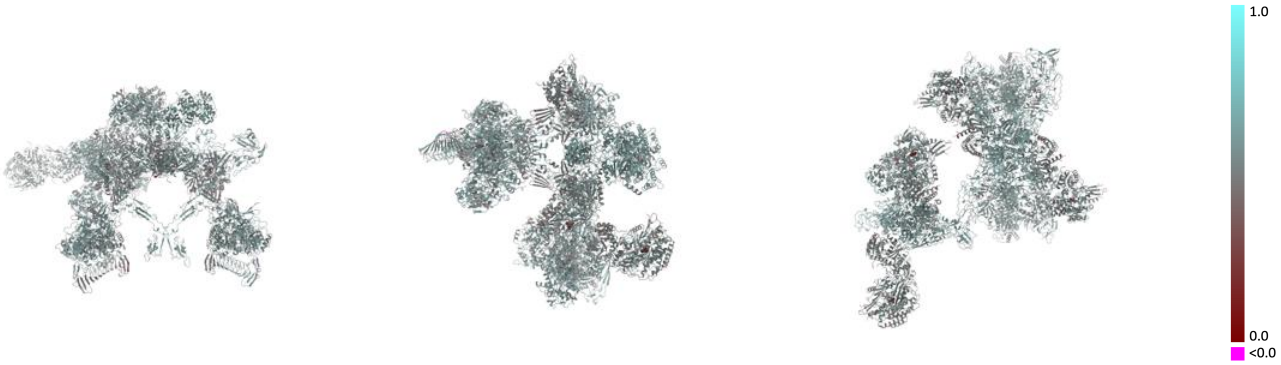
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.084 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

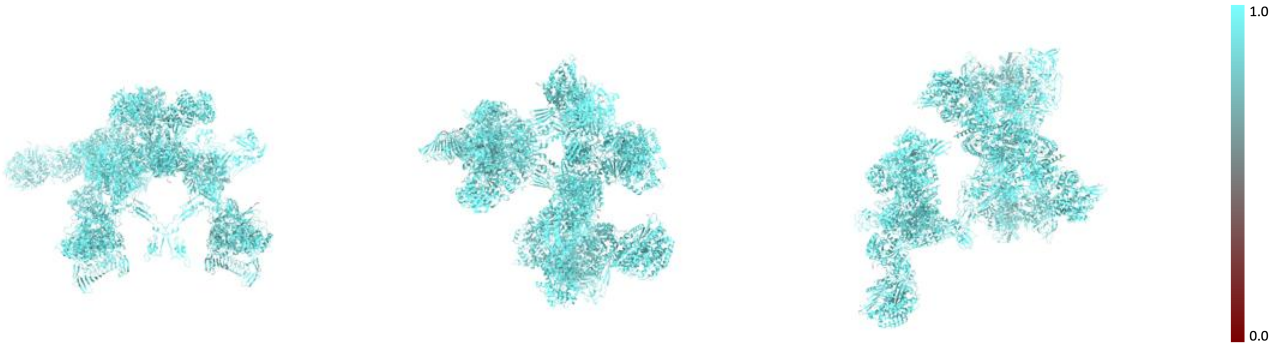
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

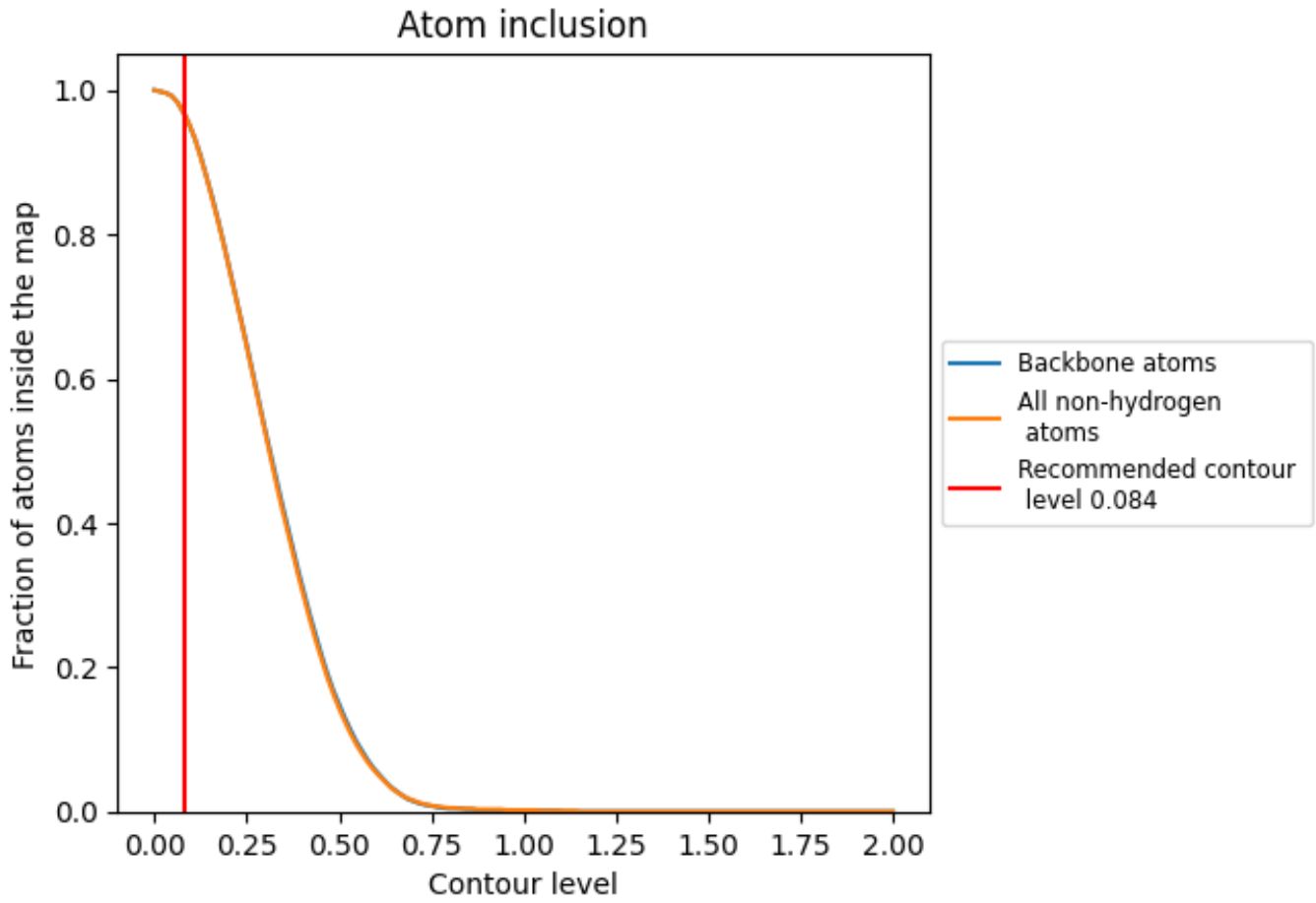
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.084).

9.4 Atom inclusion (i)



At the recommended contour level, 96% of all backbone atoms, 96% 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 (0.084) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9640	0.5350
A	0.9830	0.5480
B	0.9870	0.5490
C	0.9870	0.5630
D	0.9870	0.5670
E	0.9820	0.5610
F	0.9860	0.5660
G	0.9710	0.5170
H	0.9710	0.5140
I	0.9630	0.5080
J	0.9660	0.5070
K	0.9660	0.5010
L	0.9580	0.4960
M	0.9470	0.4920
N	0.9320	0.4790
O	0.9910	0.5480
P	0.9520	0.5460
Q	0.9510	0.5370
R	0.8800	0.4790
S	0.9190	0.5160
T	0.9710	0.5170
U	0.9640	0.5300
a	0.9880	0.5510
b	0.9840	0.5510
c	0.9860	0.5670
d	0.9860	0.5640
e	0.9820	0.5690
f	0.9800	0.5630
g	0.9710	0.5150
h	0.9710	0.5150
i	0.9660	0.5070
j	0.9610	0.5090
k	0.9610	0.4970
l	0.9610	0.5010
m	0.9470	0.4870

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
n	0.9180	0.4660
o	0.9780	0.5240
p	0.9210	0.5520
q	0.9100	0.5460
r	0.8580	0.5270
s	0.8970	0.5390
t	0.9730	0.5220
u	0.9160	0.5390