Full wwPDB X-ray Structure Validation Report ⓘ

Jan 15, 2024 – 04:17 pm GMT

PDB ID	:	8OQL
Title	:	Structure of Mycobacterium tuberculosis beta-oxidation trifunctional enzyme in complex with Fragment-M-1
Authors	:	Dalwani, S.; Wierenga, R.K.; Venkatesan, R.
Deposited on	:	2023-04-12
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp
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:

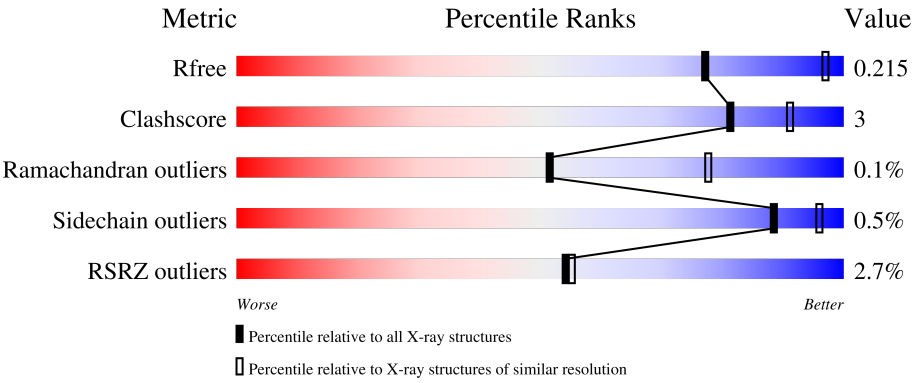
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	736	4% 94% 5%
1	B	736	3% 91% 8%
2	C	403	% 90% 8%
2	D	403	90% 7%

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
3	SO4	D	506	-	-	-	X

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 17164 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 3-hydroxyacyl-CoA dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	728	Total	C	N	O	S	0	2	0
			5415	3424	930	1040	21			
1	B	728	Total	C	N	O	S	0	4	0
			5407	3422	929	1035	21			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-15	MET	-	initiating methionine	UNP O53872
A	-14	GLY	-	expression tag	UNP O53872
A	-13	SER	-	expression tag	UNP O53872
A	-12	SER	-	expression tag	UNP O53872
A	-11	HIS	-	expression tag	UNP O53872
A	-10	HIS	-	expression tag	UNP O53872
A	-9	HIS	-	expression tag	UNP O53872
A	-8	HIS	-	expression tag	UNP O53872
A	-7	HIS	-	expression tag	UNP O53872
A	-6	HIS	-	expression tag	UNP O53872
A	-5	SER	-	expression tag	UNP O53872
A	-4	GLN	-	expression tag	UNP O53872
A	-3	ASP	-	expression tag	UNP O53872
A	-2	PRO	-	expression tag	UNP O53872
A	-1	ASN	-	expression tag	UNP O53872
A	0	SER	-	expression tag	UNP O53872
B	-15	MET	-	initiating methionine	UNP O53872
B	-14	GLY	-	expression tag	UNP O53872
B	-13	SER	-	expression tag	UNP O53872
B	-12	SER	-	expression tag	UNP O53872
B	-11	HIS	-	expression tag	UNP O53872
B	-10	HIS	-	expression tag	UNP O53872
B	-9	HIS	-	expression tag	UNP O53872
B	-8	HIS	-	expression tag	UNP O53872
B	-7	HIS	-	expression tag	UNP O53872

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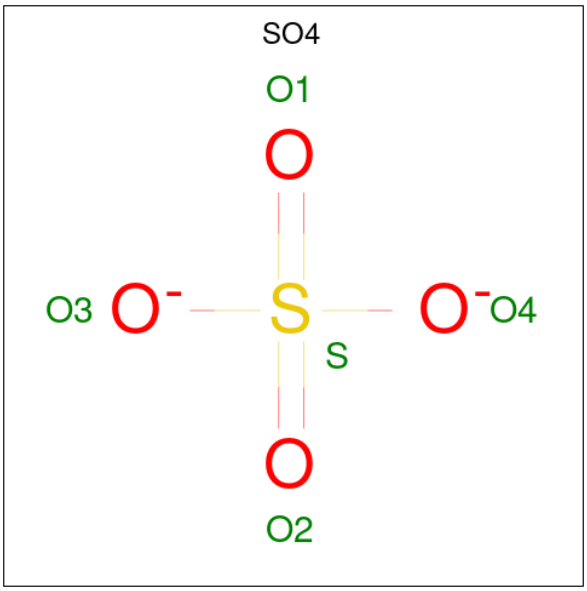
Chain	Residue	Modelled	Actual	Comment	Reference
B	-6	HIS	-	expression tag	UNP O53872
B	-5	SER	-	expression tag	UNP O53872
B	-4	GLN	-	expression tag	UNP O53872
B	-3	ASP	-	expression tag	UNP O53872
B	-2	PRO	-	expression tag	UNP O53872
B	-1	ASN	-	expression tag	UNP O53872
B	0	SER	-	expression tag	UNP O53872

- Molecule 2 is a protein called Putative acyltransferase Rv0859.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	397	Total	C	N	O	S	0	2	0
			2942	1838	519	570	15			
2	D	398	Total	C	N	O	S	0	1	0
			2936	1832	521	568	15			

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0

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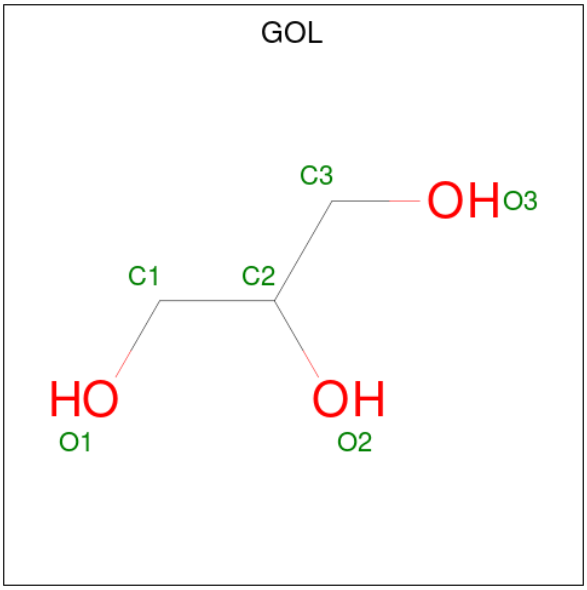
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0

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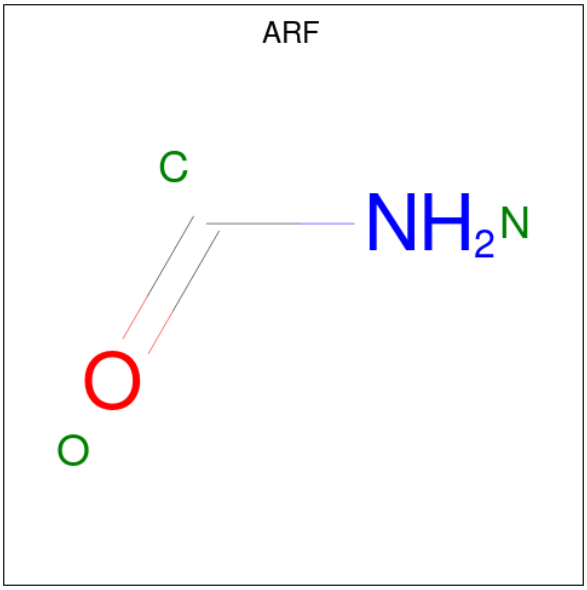
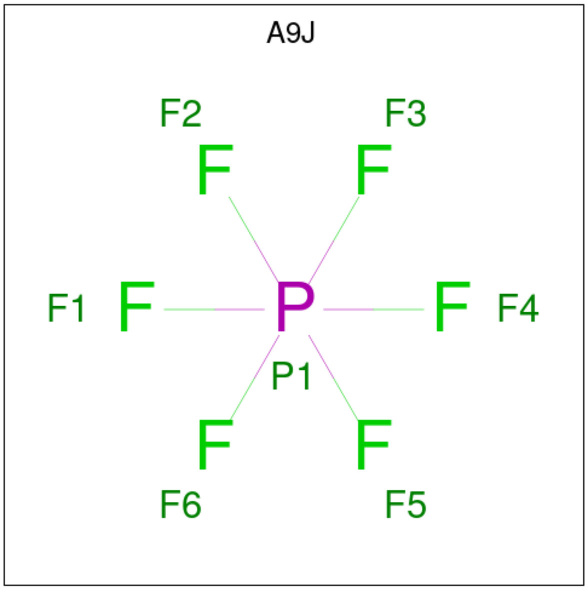
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

- Molecule 5 is FORMAMIDE (three-letter code: ARF) (formula: CH_3NO).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O 3 1 1 1	0	0
5	A	1	Total C N O 3 1 1 1	0	0
5	A	1	Total C N O 3 1 1 1	0	0
5	B	1	Total C N O 3 1 1 1	0	0
5	B	1	Total C N O 3 1 1 1	0	0
5	B	1	Total C N O 3 1 1 1	0	0

- Molecule 6 is Hexafluorophosphate anion (three-letter code: A9J) (formula: F_6P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	A	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	B	1	Total F P 7 6 1	0	0
6	C	1	Total F P 7 6 1	0	0
6	C	1	Total F P 7 6 1	0	0
6	D	1	Total F P 7 6 1	0	0
6	D	1	Total F P 7 6 1	0	0
6	D	1	Total F P 7 6 1	0	0

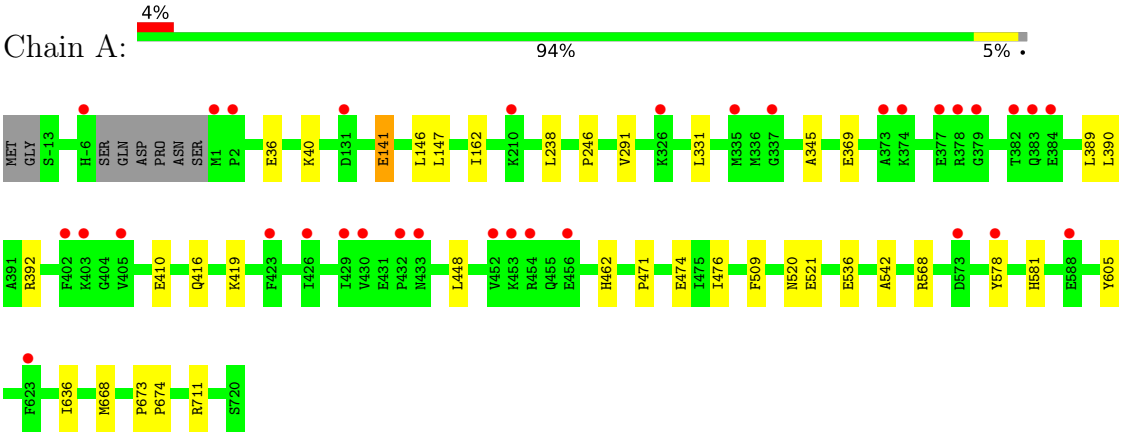
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	19	Total O 19 19	0	0
7	B	27	Total O 27 27	0	0
7	C	19	Total O 19 19	0	0
7	D	12	Total O 12 12	0	0

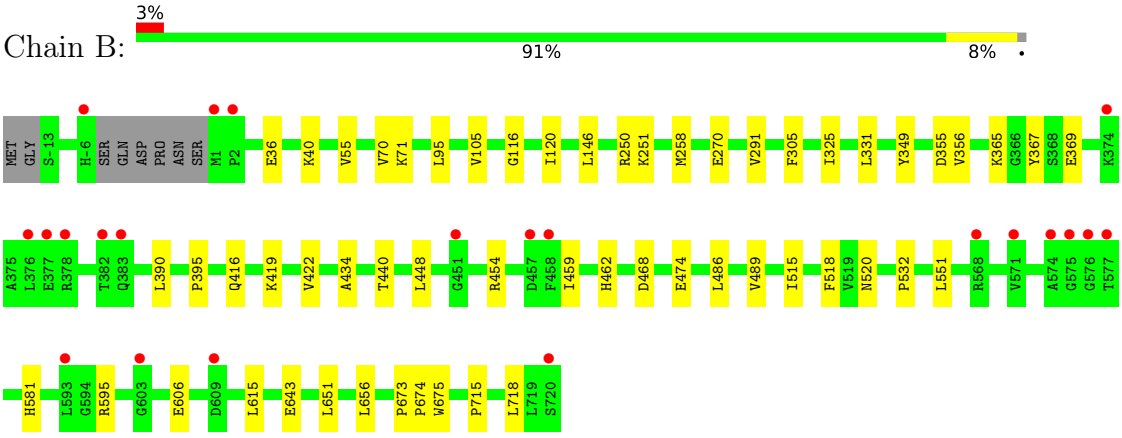
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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.

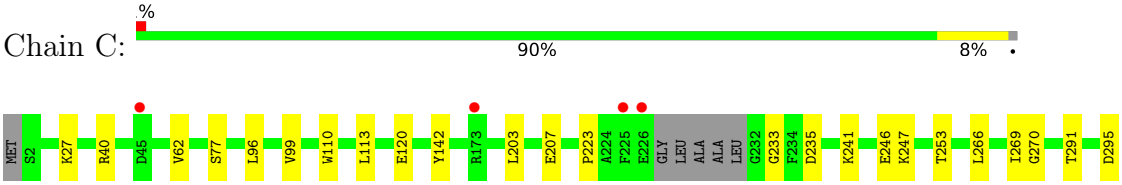
• Molecule 1: 3-hydroxyacyl-CoA dehydrogenase

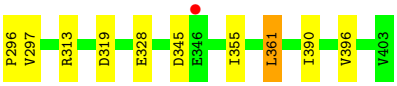


• Molecule 1: 3-hydroxyacyl-CoA dehydrogenase



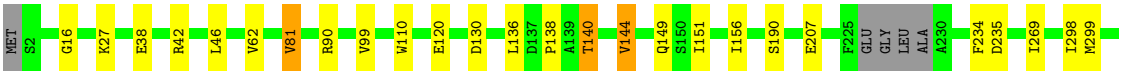
• Molecule 2: Putative acyltransferase Rv0859





• Molecule 2: Putative acyltransferase Rv0859

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	249.62Å 134.68Å 119.12Å 90.00° 110.61° 90.00°	Depositor
Resolution (Å)	48.32 – 2.70 48.32 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.7 (48.32-2.70) 99.7 (48.32-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.57 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.182 , 0.218 0.180 , 0.215	Depositor DCC
R_{free} test set	4964 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å^2)	71.6	Xtriage
Anisotropy	0.224	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 40.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	17164	wwPDB-VP
Average B, all atoms (Å^2)	74.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.61% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CSO, ARF, GOL, SO4, A9J

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	0.25	0/5523	0.46	0/7478
1	B	0.25	0/5521	0.46	0/7476
2	C	0.24	0/2984	0.50	0/4038
2	D	0.25	0/2974	0.49	0/4025
All	All	0.25	0/17002	0.47	0/23017

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	5415	0	5433	20	0
1	B	5407	0	5429	31	0
2	C	2942	0	2957	22	0
2	D	2936	0	2953	24	0
3	A	35	0	0	0	0
3	B	55	0	0	0	0
3	C	45	0	0	0	0
3	D	35	0	0	0	0
4	A	12	0	16	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	C	6	0	8	0	0
4	D	6	0	8	1	0
5	A	9	0	9	0	0
5	B	9	0	9	1	0
6	A	70	0	0	0	0
6	B	70	0	0	0	0
6	C	14	0	0	0	0
6	D	21	0	0	0	0
7	A	19	0	0	0	0
7	B	27	0	0	0	0
7	C	19	0	0	0	0
7	D	12	0	0	0	0
All	All	17164	0	16822	88	0

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

All (88) 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)
2:C:291:THR:HG22	2:C:396[B]:VAL:HG22	1.81	0.62
1:B:434:ALA:O	1:B:454:ARG:NH2	2.34	0.61
2:C:296:PRO:HD3	2:D:81:VAL:HG21	1.84	0.59
2:D:90:ARG:HH11	2:D:394:MET:HE1	1.68	0.59
1:B:258:MET:HG3	1:B:675:TRP:HB3	1.86	0.58
2:D:99:VAL:HG13	2:D:269:ILE:HD11	1.86	0.57
1:A:246:PRO:HG3	2:D:138:PRO:HB3	1.87	0.57
1:B:462:HIS:HB3	1:B:474:GLU:HB3	1.86	0.57
2:C:99:VAL:HG13	2:C:269:ILE:HD11	1.87	0.56
1:A:146:LEU:HD22	1:A:291:VAL:HG22	1.88	0.55
1:B:146:LEU:HD22	1:B:291:VAL:HG22	1.89	0.55
2:C:113:LEU:HD12	2:C:270:GLY:HA3	1.88	0.55
1:B:250:ARG:NH1	2:C:142:TYR:O	2.38	0.55
1:B:270:GLU:HG2	2:D:27:LYS:HE2	1.89	0.55
1:A:520:ASN:HB3	1:A:581:HIS:CE1	2.42	0.54
2:D:302:GLY:N	2:D:303:PRO:HD2	2.23	0.53
1:A:462:HIS:HB3	1:A:474:GLU:HB3	1.89	0.53
1:B:419:LYS:HE2	1:B:440:THR:HB	1.91	0.53
2:C:27:LYS:NZ	2:D:136:LEU:O	2.42	0.52
1:A:345:ALA:O	1:A:392:ARG:NH1	2.43	0.52
2:C:96:LEU:HD23	2:C:396[A]:VAL:HG13	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:120:GLU:HG2	2:C:361:LEU:HB2	1.92	0.52
1:B:331:LEU:HD13	1:B:422:VAL:HG12	1.91	0.52
1:B:251:LYS:HD3	2:C:233:GLY:HA2	1.92	0.51
1:A:521:GLU:OE2	1:A:711:ARG:NE	2.33	0.51
1:B:70:VAL:H	5:B:808:ARF:H	1.76	0.51
1:A:331:LEU:HB2	1:A:410:GLU:HA	1.93	0.51
2:C:241:LYS:HE2	2:C:295:ASP:OD1	2.12	0.50
1:A:536:GLU:OE2	1:A:605:TYR:OH	2.26	0.49
1:A:410:GLU:OE2	1:A:419:LYS:NZ	2.45	0.49
2:D:120:GLU:HG2	2:D:361:LEU:HB2	1.95	0.48
2:C:313:ARG:HD3	2:D:110:TRP:CD1	2.49	0.48
2:C:291:THR:HG22	2:C:396[A]:VAL:HG23	1.95	0.48
2:D:46:LEU:HD22	4:D:507:GOL:H11	1.94	0.48
2:D:90:ARG:HD3	2:D:394:MET:HE2	1.96	0.48
1:B:520:ASN:HB3	1:B:581:HIS:CE1	2.48	0.47
1:A:36:GLU:HG3	1:A:40:LYS:HE3	1.96	0.47
2:D:62[A]:VAL:HG21	2:D:130:ASP:HA	1.97	0.47
1:B:651:LEU:HD23	1:B:656[B]:LEU:HB2	1.98	0.46
1:B:36:GLU:HG3	1:B:40:LYS:HE3	1.97	0.46
1:B:459:ILE:HD11	1:B:486:LEU:HD12	1.96	0.46
1:B:595:ARG:HH22	1:B:606:GLU:HG2	1.81	0.46
1:A:416:GLN:HG3	1:A:448:LEU:HD23	1.98	0.46
2:C:62:VAL:HG12	2:D:62[A]:VAL:HG22	1.96	0.46
2:C:223:PRO:HA	2:C:253:THR:HG22	1.98	0.46
2:C:110:TRP:CD1	2:D:313:ARG:HD3	2.50	0.46
1:B:367:TYR:OH	1:B:468:ASP:OD1	2.32	0.45
1:B:532:PRO:HB2	1:B:615:LEU:HD13	1.97	0.45
2:C:40:ARG:NH1	2:C:77:SER:O	2.43	0.45
2:C:390:ILE:HD11	2:C:396[B]:VAL:HG23	1.97	0.45
2:D:16:GLY:HA2	2:D:207:GLU:HG2	1.97	0.45
2:D:156:ILE:HG12	2:D:298:ILE:HD11	1.97	0.45
1:A:542:ALA:HB2	1:A:636:ILE:HG23	1.99	0.45
2:D:151:ILE:HD12	2:D:234:PHE:HB2	1.98	0.45
2:D:390:ILE:HB	2:D:394:MET:HB2	1.98	0.45
2:D:140:THR:O	2:D:144:VAL:HG13	2.17	0.45
2:C:328:GLU:HB3	2:C:355:ILE:HG13	1.99	0.45
1:B:369:GLU:HG2	1:B:390:LEU:HD13	1.98	0.44
1:B:95:LEU:HD21	1:B:120:ILE:HD12	2.00	0.44
2:D:190:SER:OG	2:D:374:ASP:OD2	2.18	0.44
1:A:389:LEU:HA	1:A:392:ARG:NH1	2.33	0.43
1:A:476:ILE:HG21	1:A:509:PHE:CE1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:471:PRO:HG2	1:A:668:MET:HB3	2.01	0.43
1:B:459:ILE:HG21	1:B:489:VAL:HG21	2.01	0.43
2:D:298:ILE:HG23	2:D:298:ILE:O	2.17	0.43
1:A:673:PRO:HA	1:A:674:PRO:HD3	1.93	0.43
1:B:416:GLN:HG3	1:B:448:LEU:HD23	2.00	0.42
2:C:246:GLU:HG2	2:C:247:LYS:HG3	2.01	0.42
2:D:149:GLN:HG2	2:D:299:MET:HE3	2.01	0.42
2:C:241:LYS:HD2	2:C:297:VAL:HG21	2.02	0.42
1:B:365:LYS:HD2	1:B:395:PRO:HD3	2.02	0.42
1:A:369:GLU:HG2	1:A:390:LEU:HD13	2.02	0.41
2:D:38:GLU:HG3	2:D:42:ARG:HD2	2.02	0.41
1:B:55:VAL:HB	1:B:105:VAL:HG22	2.02	0.41
1:B:715:PRO:HD2	1:B:718:LEU:HD12	2.02	0.41
1:B:71:LYS:HD2	1:B:305:PHE:CE1	2.56	0.41
1:B:515:ILE:HD11	1:B:551:LEU:HD21	2.03	0.41
2:D:99:VAL:HG11	2:D:369:LEU:HD22	2.02	0.41
1:A:141:GLU:HG3	1:A:147:LEU:C	2.41	0.41
1:B:116:GLY:O	1:B:120:ILE:HG12	2.21	0.41
1:B:673:PRO:HA	1:B:674:PRO:HD3	1.90	0.40
2:C:203:LEU:HD11	2:C:207:GLU:HG3	2.03	0.40
2:C:266:LEU:HD23	2:C:266:LEU:HA	1.95	0.40
1:B:355:ASP:OD1	1:B:356:VAL:N	2.45	0.40
1:A:568:ARG:HG3	1:A:578:TYR:CD2	2.56	0.40
1:B:325:ILE:HB	1:B:349:TYR:CE1	2.57	0.40
1:B:518:PHE:HB2	1:B:643:GLU:CD	2.42	0.40
1:A:162:ILE:HD12	1:A:238:LEU:HD21	2.03	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 X-ray entries followed by that with respect to entries of similar resolution.

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	726/736 (99%)	698 (96%)	28 (4%)	0	100	100
1	B	728/736 (99%)	709 (97%)	19 (3%)	0	100	100
2	C	394/403 (98%)	382 (97%)	11 (3%)	1 (0%)	41	66
2	D	394/403 (98%)	379 (96%)	14 (4%)	1 (0%)	41	66
All	All	2242/2278 (98%)	2168 (97%)	72 (3%)	2 (0%)	51	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	361	LEU
2	D	361	LEU

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	557/566 (98%)	556 (100%)	1 (0%)	93	98
1	B	555/566 (98%)	555 (100%)	0	100	100
2	C	307/309 (99%)	304 (99%)	3 (1%)	76	91
2	D	305/309 (99%)	301 (99%)	4 (1%)	69	87
All	All	1724/1750 (98%)	1716 (100%)	8 (0%)	88	96

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	141	GLU
2	C	235	ASP
2	C	319	ASP
2	C	345	ASP
2	D	81	VAL
2	D	140	THR
2	D	144	VAL
2	D	235	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	C	141	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	CSO	D	92	2	3,6,7	0.58	0	0,6,8	-	-
2	CSO	C	92	2	3,6,7	0.58	0	0,6,8	-	-

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
2	CSO	D	92	2	-	0/1/5/7	-
2	CSO	C	92	2	-	0/1/5/7	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

69 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	SO4	C	502	-	4,4,4	0.14	0	6,6,6	0.06	0
6	A9J	A	817	-	6,6,6	0.72	0	15,15,15	1.02	3 (20%)
4	GOL	C	509	-	5,5,5	0.91	0	5,5,5	1.01	0
3	SO4	A	822	-	4,4,4	0.14	0	6,6,6	0.05	0
6	A9J	A	816	-	6,6,6	0.72	0	15,15,15	1.01	3 (20%)
3	SO4	D	504	-	4,4,4	0.15	0	6,6,6	0.04	0
6	A9J	B	817	-	6,6,6	0.69	0	15,15,15	1.01	3 (20%)
6	A9J	B	814	-	6,6,6	0.69	0	15,15,15	1.01	3 (20%)
6	A9J	D	509	-	6,6,6	0.70	0	15,15,15	1.01	3 (20%)
3	SO4	A	804	-	4,4,4	0.15	0	6,6,6	0.05	0
6	A9J	B	809	-	6,6,6	0.70	0	15,15,15	1.01	3 (20%)
6	A9J	B	812	-	6,6,6	0.72	0	15,15,15	1.01	3 (20%)
3	SO4	B	802	-	4,4,4	0.15	0	6,6,6	0.07	0
3	SO4	B	803	-	4,4,4	0.15	0	6,6,6	0.05	0
3	SO4	A	801	-	4,4,4	0.14	0	6,6,6	0.06	0
6	A9J	B	816	-	6,6,6	0.72	0	15,15,15	1.01	3 (20%)
5	ARF	B	820	-	2,2,2	0.40	0	1,1,1	0.71	0
4	GOL	A	809	-	5,5,5	0.93	0	5,5,5	0.99	0
3	SO4	C	501	-	4,4,4	0.13	0	6,6,6	0.07	0
6	A9J	D	510	-	6,6,6	0.72	0	15,15,15	1.01	3 (20%)
6	A9J	B	818	-	6,6,6	0.71	0	15,15,15	1.02	3 (20%)
3	SO4	C	506	-	4,4,4	0.14	0	6,6,6	0.05	0
3	SO4	A	803	-	4,4,4	0.14	0	6,6,6	0.05	0
4	GOL	A	806	-	5,5,5	0.94	0	5,5,5	0.94	0
6	A9J	A	819	-	6,6,6	0.72	0	15,15,15	1.01	3 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	SO4	D	505	-	4,4,4	0.14	0	6,6,6	0.05	0
3	SO4	D	503	-	4,4,4	0.15	0	6,6,6	0.05	0
3	SO4	A	805	-	4,4,4	0.15	0	6,6,6	0.05	0
6	A9J	B	810	-	6,6,6	0.69	0	15,15,15	1.01	3 (20%)
3	SO4	B	823	-	4,4,4	0.13	0	6,6,6	0.07	0
3	SO4	B	806	-	4,4,4	0.14	0	6,6,6	0.07	0
3	SO4	C	504	-	4,4,4	0.13	0	6,6,6	0.07	0
3	SO4	B	805	-	4,4,4	0.14	0	6,6,6	0.05	0
6	A9J	C	511	-	6,6,6	0.69	0	15,15,15	1.01	3 (20%)
6	A9J	B	811	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
5	ARF	B	819	-	2,2,2	0.40	0	1,1,1	0.77	0
3	SO4	B	822	-	4,4,4	0.14	0	6,6,6	0.06	0
6	A9J	A	810	-	6,6,6	0.70	0	15,15,15	1.01	3 (20%)
4	GOL	D	507	-	5,5,5	0.90	0	5,5,5	0.97	0
5	ARF	A	808	-	2,2,2	0.40	0	1,1,1	0.74	0
6	A9J	A	815	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
6	A9J	B	813	-	6,6,6	0.71	0	15,15,15	1.02	3 (20%)
6	A9J	A	811	-	6,6,6	0.70	0	15,15,15	1.01	3 (20%)
6	A9J	C	510	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
3	SO4	D	511	-	4,4,4	0.13	0	6,6,6	0.09	0
3	SO4	C	505	-	4,4,4	0.14	0	6,6,6	0.04	0
3	SO4	C	512	-	4,4,4	0.14	0	6,6,6	0.08	0
3	SO4	B	801	-	4,4,4	0.14	0	6,6,6	0.07	0
3	SO4	B	804	-	4,4,4	0.14	0	6,6,6	0.06	0
6	A9J	A	814	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
3	SO4	B	821	-	4,4,4	0.14	0	6,6,6	0.05	0
3	SO4	A	821	-	4,4,4	0.14	0	6,6,6	0.07	0
3	SO4	B	807	-	4,4,4	0.14	0	6,6,6	0.05	0
5	ARF	A	820	-	2,2,2	0.40	0	1,1,1	0.75	0
3	SO4	A	802	-	4,4,4	0.14	0	6,6,6	0.07	0
3	SO4	D	501	-	4,4,4	0.15	0	6,6,6	0.07	0
3	SO4	B	824	-	4,4,4	0.13	0	6,6,6	0.06	0
3	SO4	C	503	-	4,4,4	0.15	0	6,6,6	0.05	0
3	SO4	C	508	-	4,4,4	0.14	0	6,6,6	0.08	0
6	A9J	A	812	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
6	A9J	A	818	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
6	A9J	D	508	-	6,6,6	0.71	0	15,15,15	1.01	3 (20%)
6	A9J	B	815	-	6,6,6	0.71	0	15,15,15	1.02	3 (20%)
5	ARF	B	808	-	2,2,2	0.39	0	1,1,1	0.75	0
3	SO4	C	507	-	4,4,4	0.13	0	6,6,6	0.09	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	A9J	A	813	-	6,6,6	0.71	0	15,15,15	1.02	3 (20%)
3	SO4	D	506	-	4,4,4	0.14	0	6,6,6	0.10	0
3	SO4	D	502	-	4,4,4	0.14	0	6,6,6	0.07	0
5	ARF	A	807	-	2,2,2	0.40	0	1,1,1	0.76	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	GOL	A	809	-	-	0/4/4/4	-
4	GOL	A	806	-	-	2/4/4/4	-
4	GOL	C	509	-	-	0/4/4/4	-
4	GOL	D	507	-	-	2/4/4/4	-

There are no bond length outliers.

All (75) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	816	A9J	F2-P1-F1	2.03	180.00	108.00
6	B	818	A9J	F6-P1-F5	2.03	179.98	108.00
6	B	815	A9J	F2-P1-F1	2.03	179.98	108.00
6	B	813	A9J	F4-P1-F3	2.03	179.97	108.00
6	A	810	A9J	F2-P1-F1	2.03	179.97	108.00
6	A	815	A9J	F4-P1-F3	2.03	179.96	108.00
6	D	509	A9J	F2-P1-F1	2.03	179.96	108.00
6	A	817	A9J	F6-P1-F5	2.03	179.95	108.00
6	C	511	A9J	F6-P1-F5	2.03	179.95	108.00
6	B	811	A9J	F6-P1-F5	2.03	179.95	108.00
6	A	811	A9J	F2-P1-F1	2.03	179.95	108.00
6	A	812	A9J	F6-P1-F5	2.03	179.94	108.00
6	B	818	A9J	F4-P1-F3	2.03	179.94	108.00
6	A	813	A9J	F4-P1-F3	2.03	179.94	108.00
6	A	818	A9J	F2-P1-F1	2.03	179.94	108.00
6	A	813	A9J	F2-P1-F1	2.03	179.93	108.00
6	B	816	A9J	F2-P1-F1	2.03	179.93	108.00
6	B	813	A9J	F6-P1-F5	2.03	179.93	108.00
6	A	817	A9J	F4-P1-F3	2.03	179.92	108.00
6	B	815	A9J	F4-P1-F3	2.03	179.92	108.00
6	A	818	A9J	F6-P1-F5	2.03	179.91	108.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	819	A9J	F6-P1-F5	2.03	179.91	108.00
6	D	510	A9J	F4-P1-F3	2.03	179.90	108.00
6	B	813	A9J	F2-P1-F1	2.03	179.90	108.00
6	C	510	A9J	F4-P1-F3	2.03	179.90	108.00
6	A	812	A9J	F4-P1-F3	2.03	179.90	108.00
6	A	817	A9J	F2-P1-F1	2.03	179.90	108.00
6	A	819	A9J	F2-P1-F1	2.03	179.89	108.00
6	A	812	A9J	F2-P1-F1	2.03	179.88	108.00
6	B	815	A9J	F6-P1-F5	2.03	179.88	108.00
6	B	816	A9J	F4-P1-F3	2.03	179.88	108.00
6	A	813	A9J	F6-P1-F5	2.03	179.88	108.00
6	A	818	A9J	F4-P1-F3	2.03	179.88	108.00
6	B	812	A9J	F6-P1-F5	2.03	179.87	108.00
6	A	810	A9J	F4-P1-F3	2.03	179.87	108.00
6	A	811	A9J	F4-P1-F3	2.03	179.87	108.00
6	B	812	A9J	F2-P1-F1	2.03	179.87	108.00
6	A	811	A9J	F6-P1-F5	2.03	179.86	108.00
6	B	814	A9J	F4-P1-F3	2.03	179.85	108.00
6	B	818	A9J	F2-P1-F1	2.03	179.85	108.00
6	B	816	A9J	F6-P1-F5	2.03	179.85	108.00
6	D	508	A9J	F6-P1-F5	2.03	179.85	108.00
6	A	815	A9J	F6-P1-F5	2.03	179.84	108.00
6	B	811	A9J	F4-P1-F3	2.03	179.84	108.00
6	B	814	A9J	F6-P1-F5	2.03	179.84	108.00
6	A	816	A9J	F6-P1-F5	2.03	179.83	108.00
6	A	815	A9J	F2-P1-F1	2.03	179.81	108.00
6	B	809	A9J	F4-P1-F3	2.03	179.81	108.00
6	B	812	A9J	F4-P1-F3	2.03	179.81	108.00
6	A	810	A9J	F6-P1-F5	2.03	179.81	108.00
6	B	811	A9J	F2-P1-F1	2.03	179.81	108.00
6	C	510	A9J	F6-P1-F5	2.03	179.79	108.00
6	D	508	A9J	F4-P1-F3	2.03	179.78	108.00
6	A	816	A9J	F4-P1-F3	2.03	179.77	108.00
6	A	819	A9J	F4-P1-F3	2.03	179.77	108.00
6	B	809	A9J	F6-P1-F5	2.03	179.77	108.00
6	B	814	A9J	F2-P1-F1	2.03	179.77	108.00
6	D	509	A9J	F4-P1-F3	2.02	179.74	108.00
6	C	511	A9J	F2-P1-F1	2.02	179.74	108.00
6	A	814	A9J	F2-P1-F1	2.02	179.73	108.00
6	D	510	A9J	F2-P1-F1	2.02	179.71	108.00
6	C	511	A9J	F4-P1-F3	2.02	179.71	108.00
6	B	810	A9J	F2-P1-F1	2.02	179.69	108.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	814	A9J	F4-P1-F3	2.02	179.69	108.00
6	C	510	A9J	F2-P1-F1	2.02	179.69	108.00
6	D	510	A9J	F6-P1-F5	2.02	179.68	108.00
6	B	817	A9J	F6-P1-F5	2.02	179.67	108.00
6	B	817	A9J	F2-P1-F1	2.02	179.63	108.00
6	B	817	A9J	F4-P1-F3	2.02	179.60	108.00
6	D	508	A9J	F2-P1-F1	2.02	179.58	108.00
6	D	509	A9J	F6-P1-F5	2.02	179.57	108.00
6	B	810	A9J	F6-P1-F5	2.02	179.54	108.00
6	B	810	A9J	F4-P1-F3	2.02	179.54	108.00
6	B	809	A9J	F2-P1-F1	2.02	179.51	108.00
6	A	814	A9J	F6-P1-F5	2.01	179.38	108.00

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	806	GOL	O1-C1-C2-O2
4	A	806	GOL	O1-C1-C2-C3
4	D	507	GOL	O2-C2-C3-O3
4	D	507	GOL	C1-C2-C3-O3

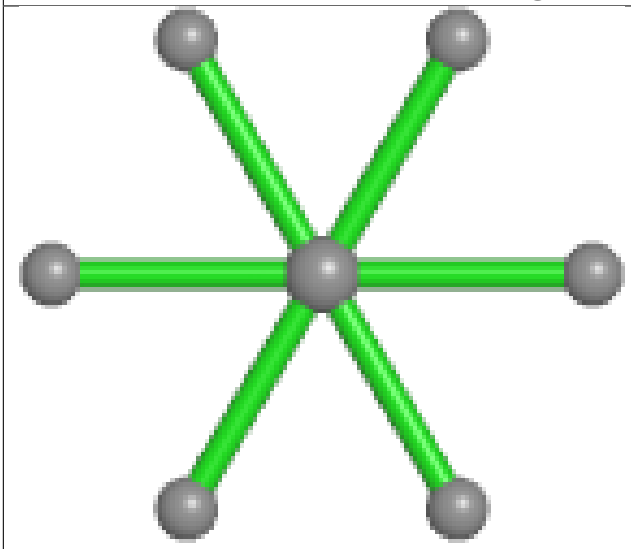
There are no ring outliers.

2 monomers are involved in 2 short contacts:

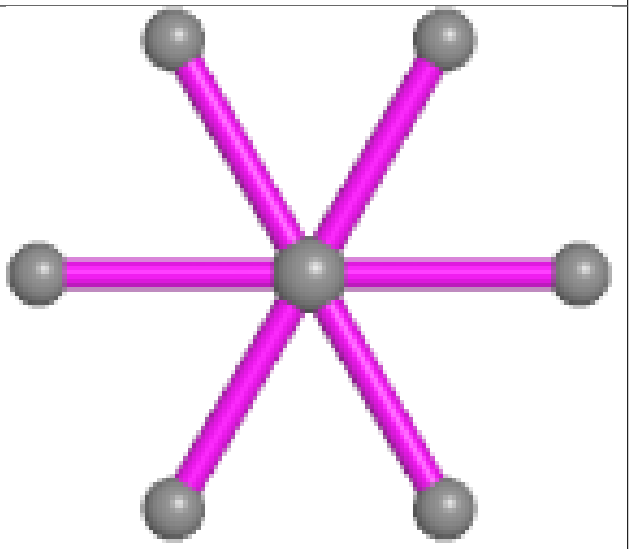
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	507	GOL	1	0
5	B	808	ARF	1	0

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.

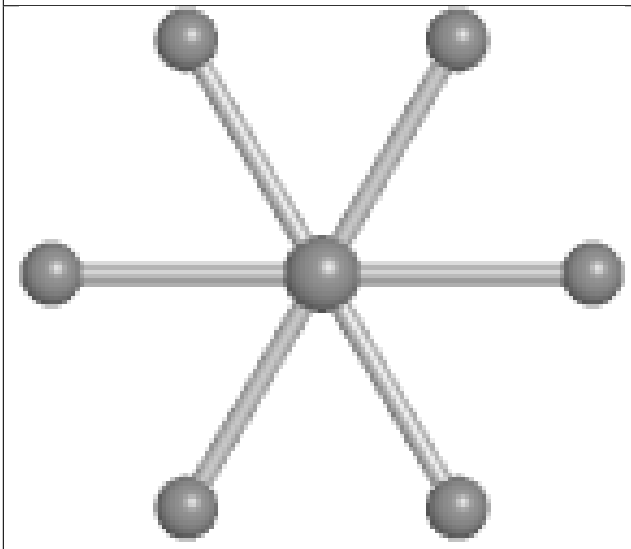
Ligand A9J A 817



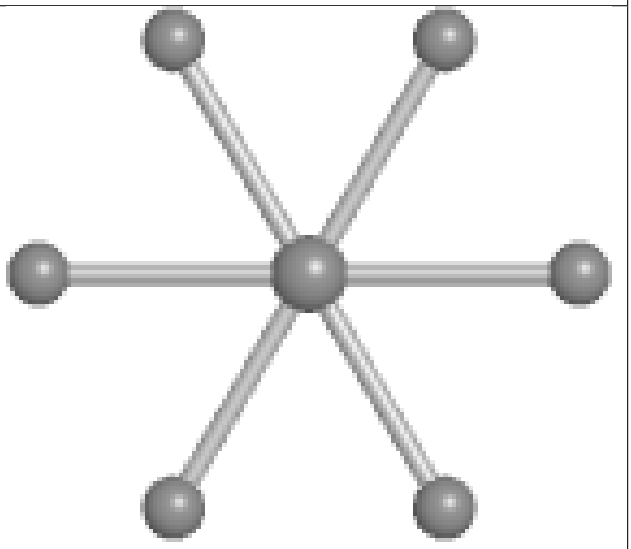
Bond lengths



Bond angles

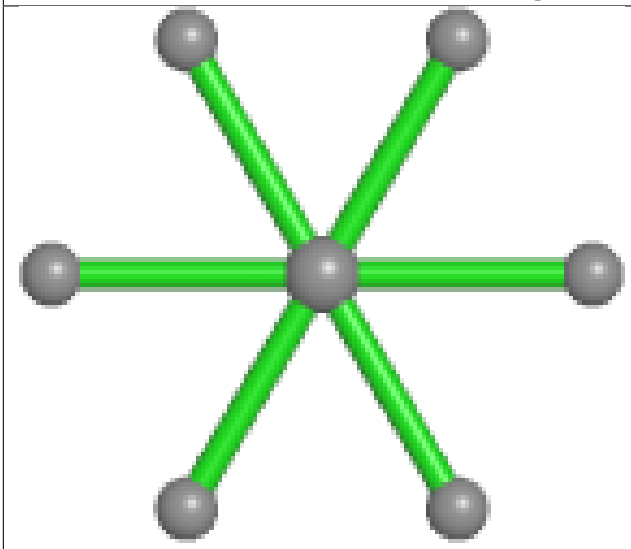


Torsions



Rings

Ligand A9J A 816



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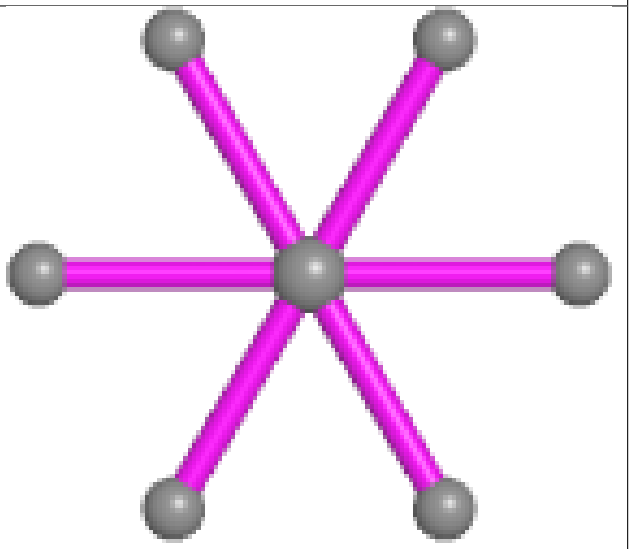
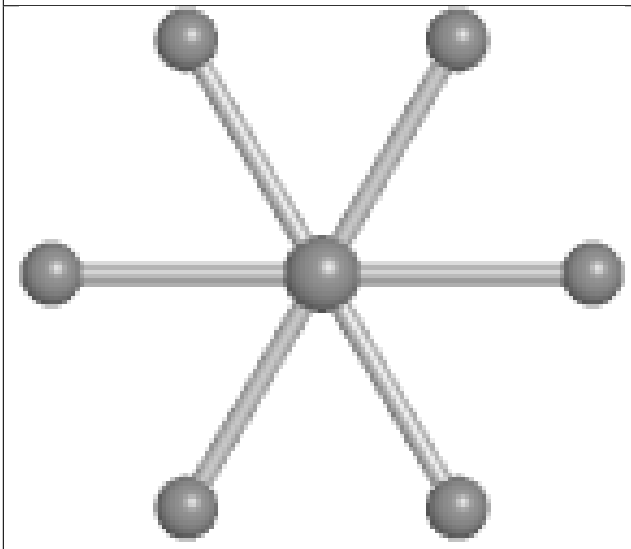


Bond angles



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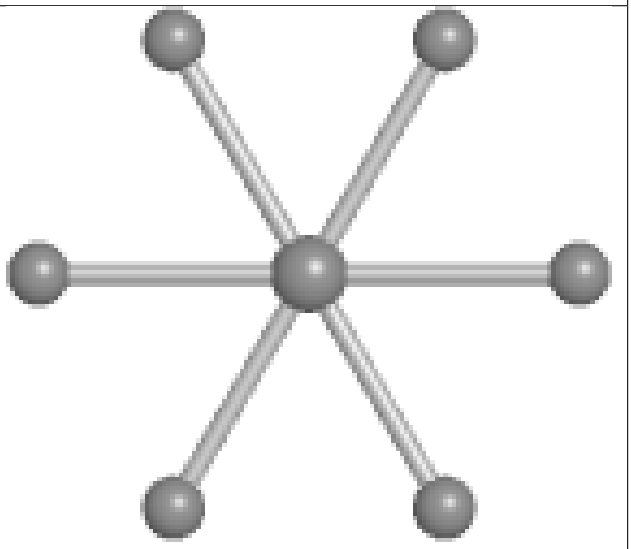
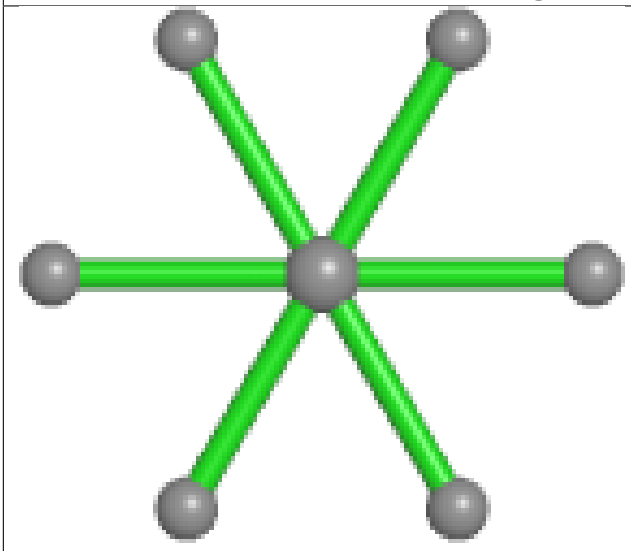


Rings

Ligand A9J B 817



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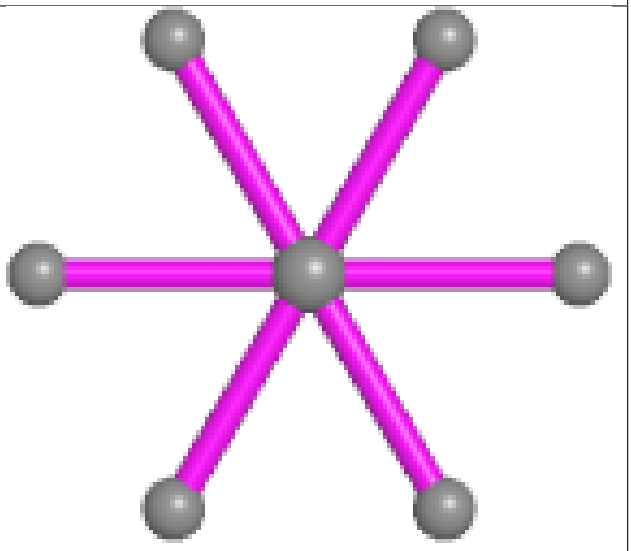
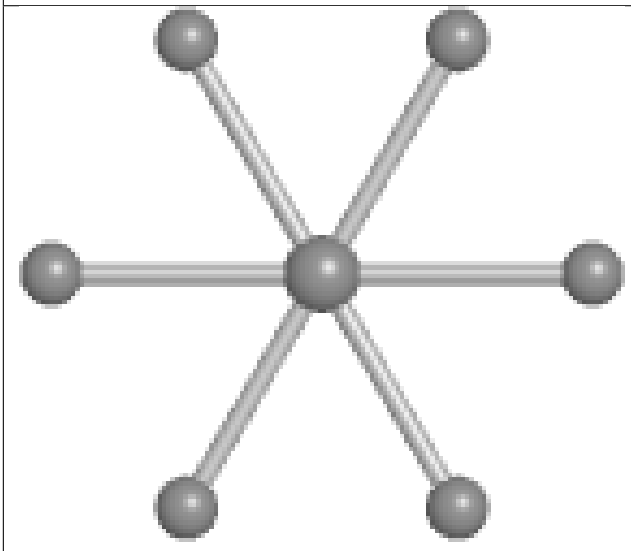


Bond angles



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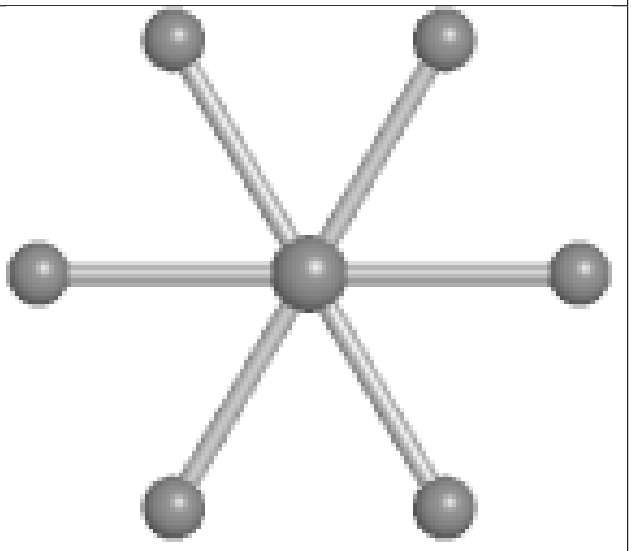
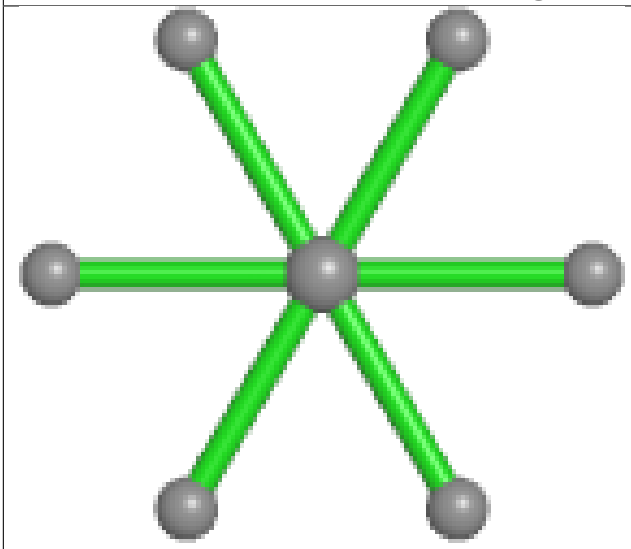


Rings

Ligand A9J B 814



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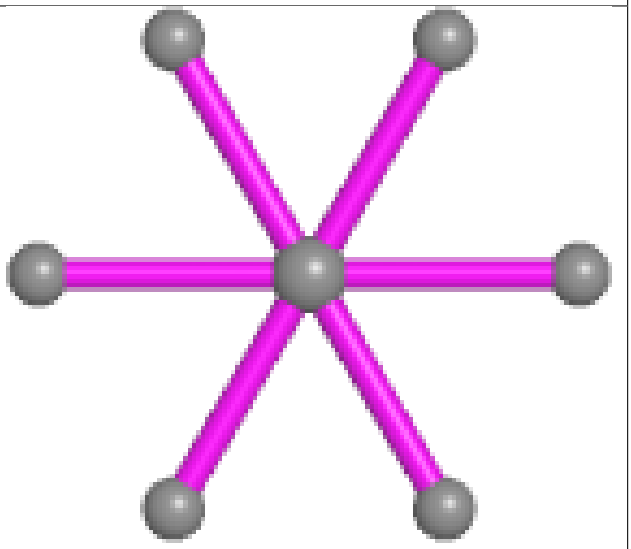
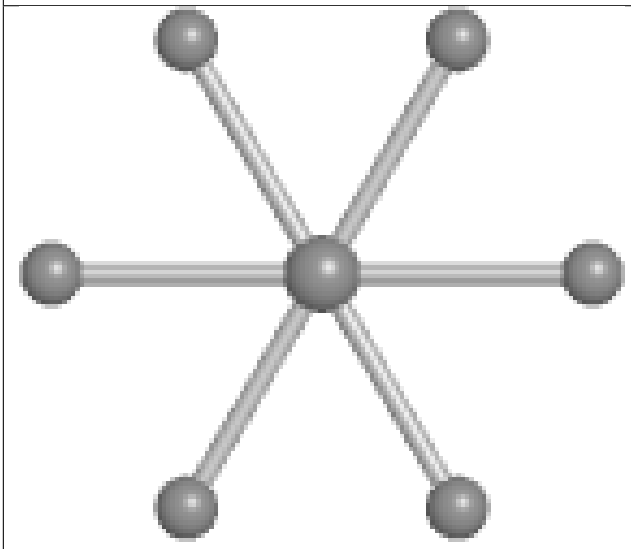


Bond angles



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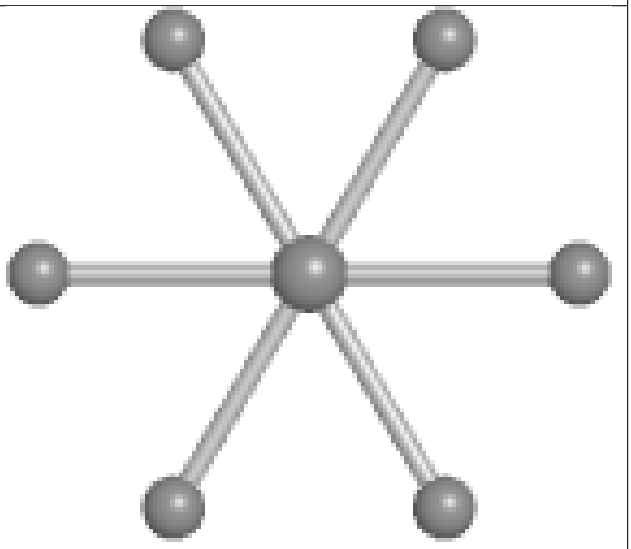
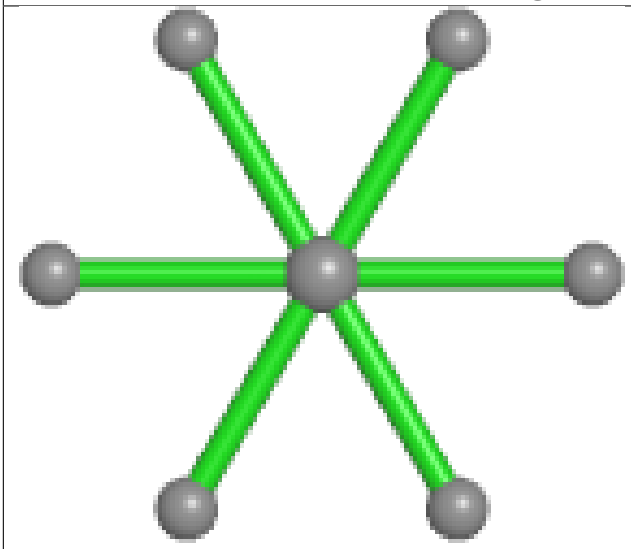


Rings

Ligand A9J D 509



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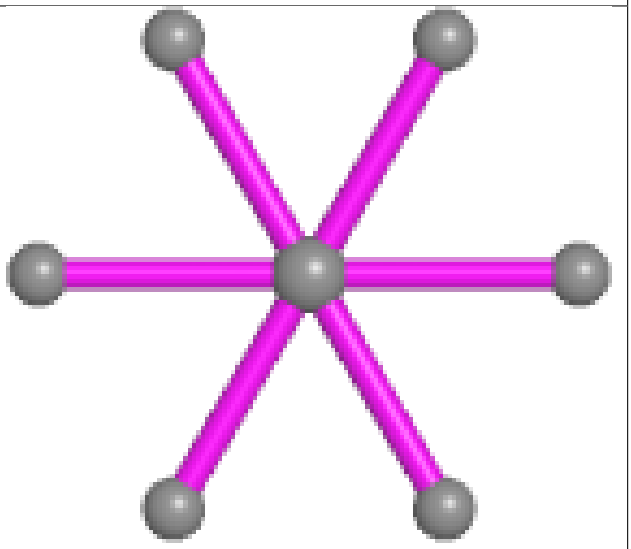

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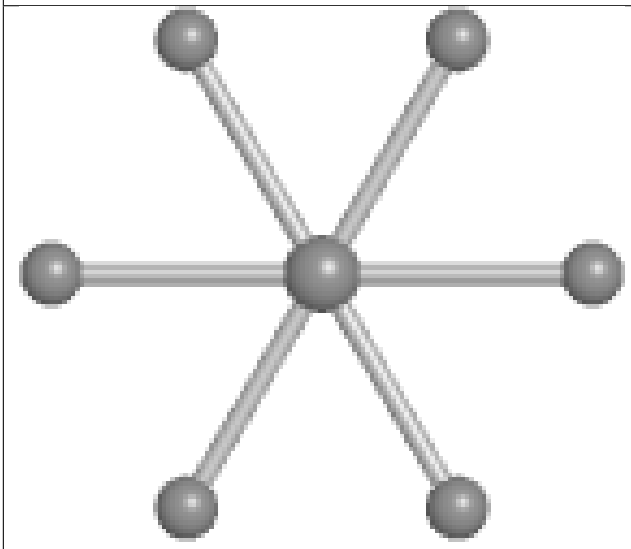

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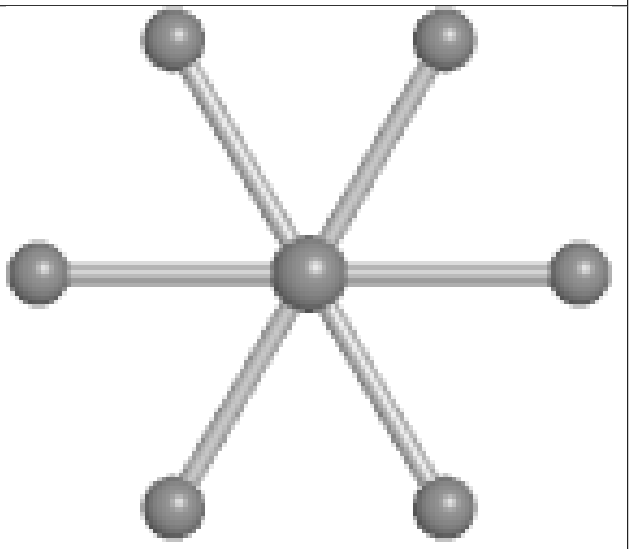
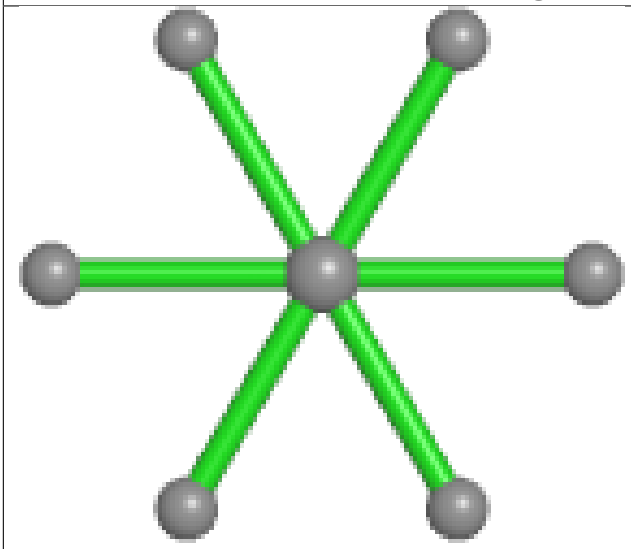


Rings

Ligand A9J B 809



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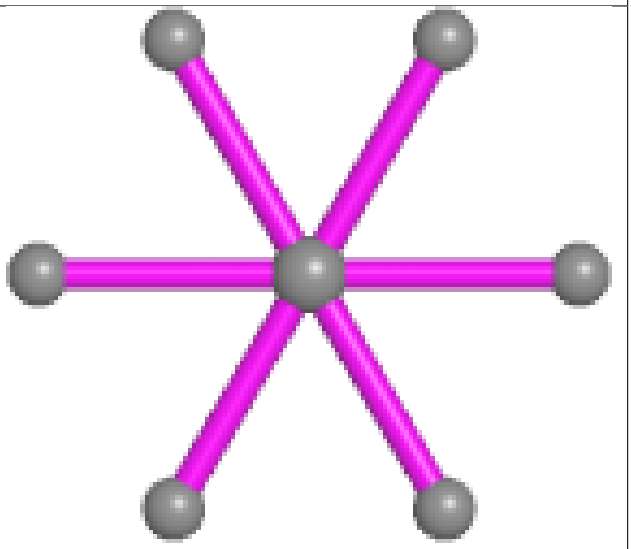

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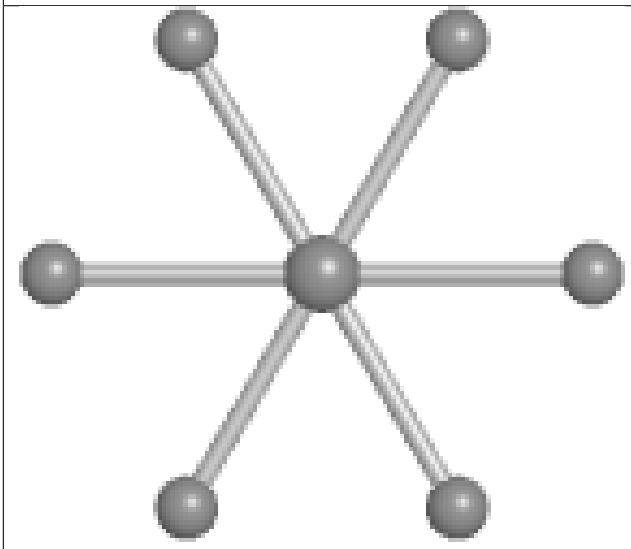

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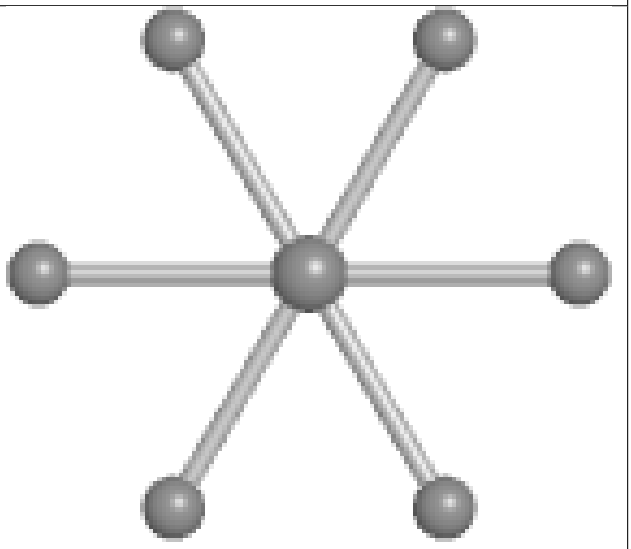
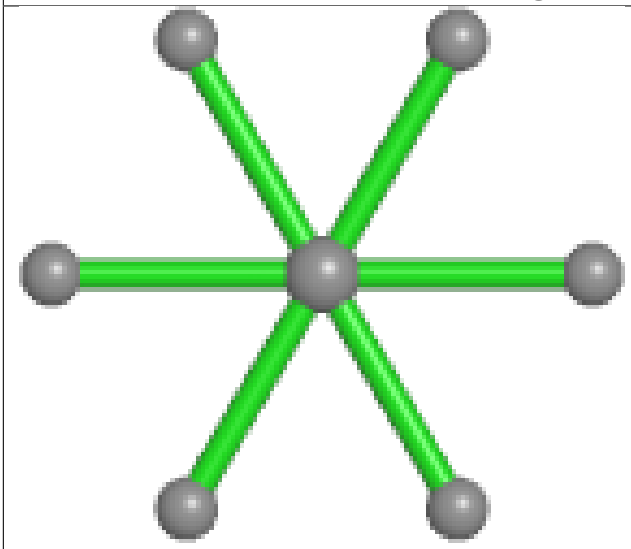


Rings

Ligand A9J B 812



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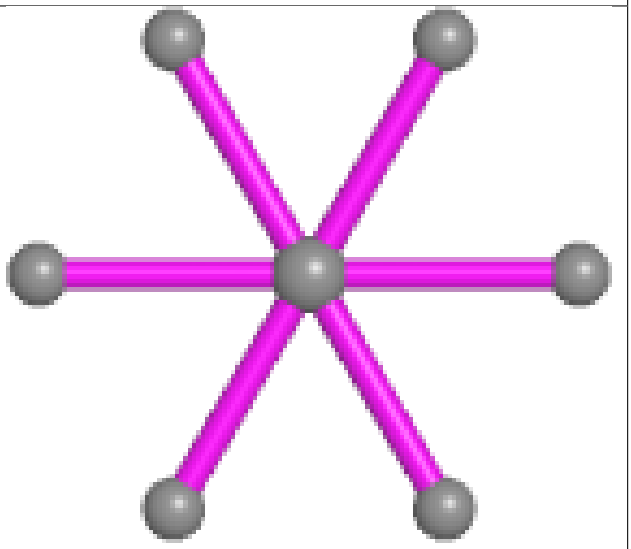

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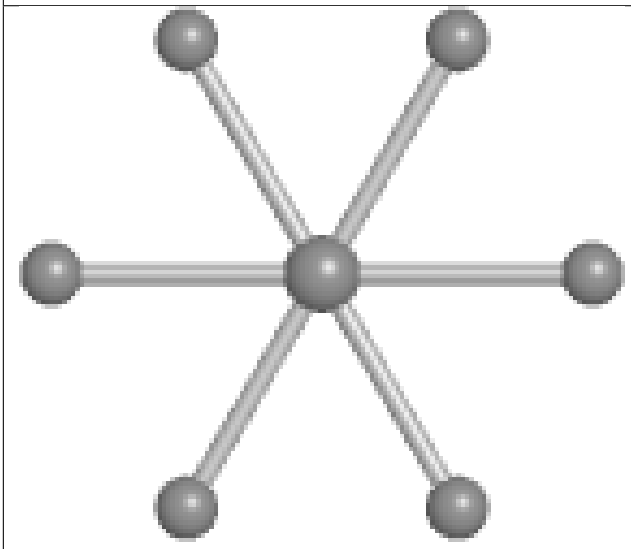

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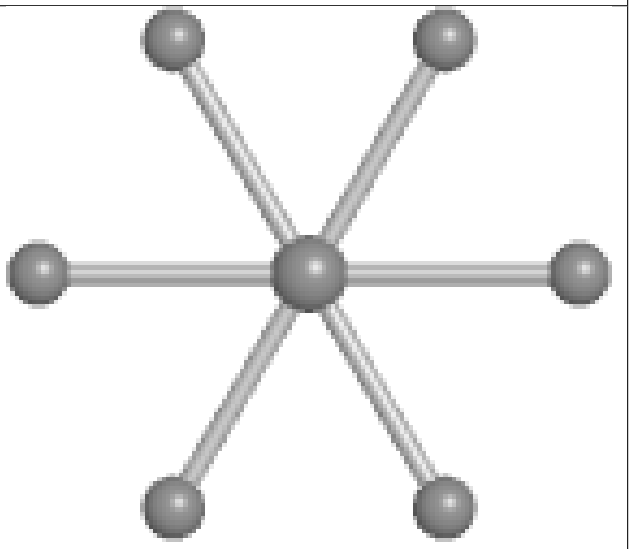
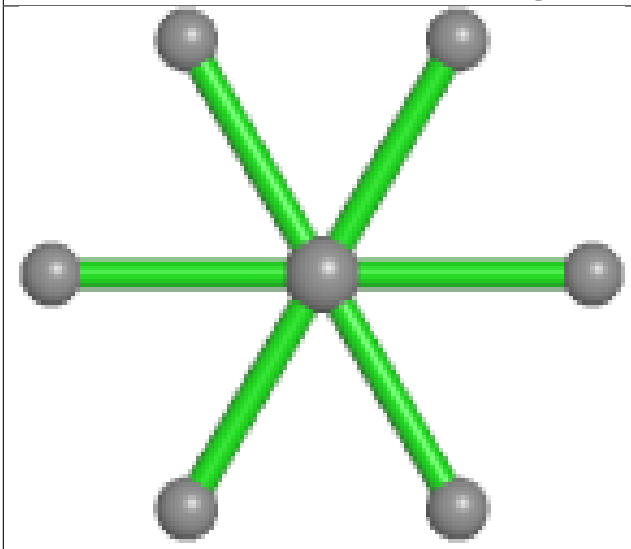


Rings

Ligand A9J B 816



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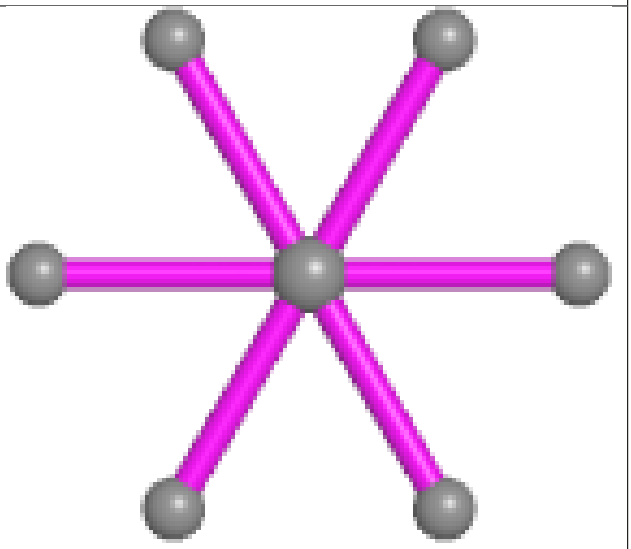

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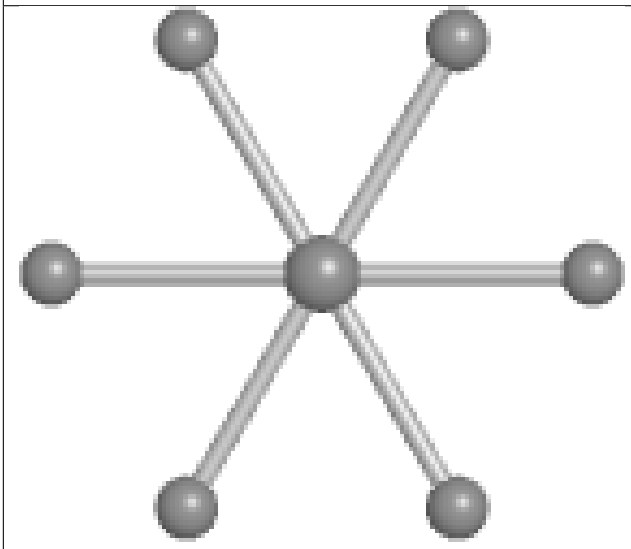

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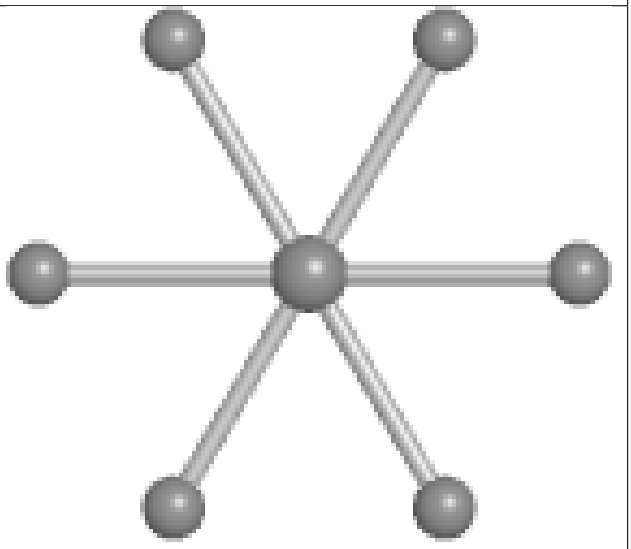
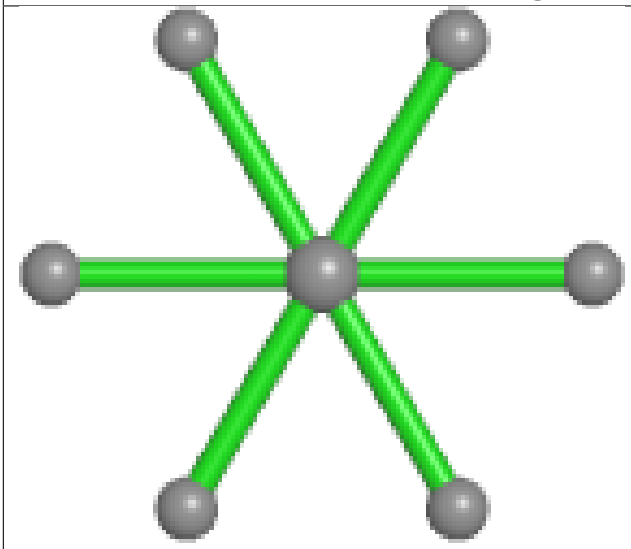


Rings

Ligand A9J D 510



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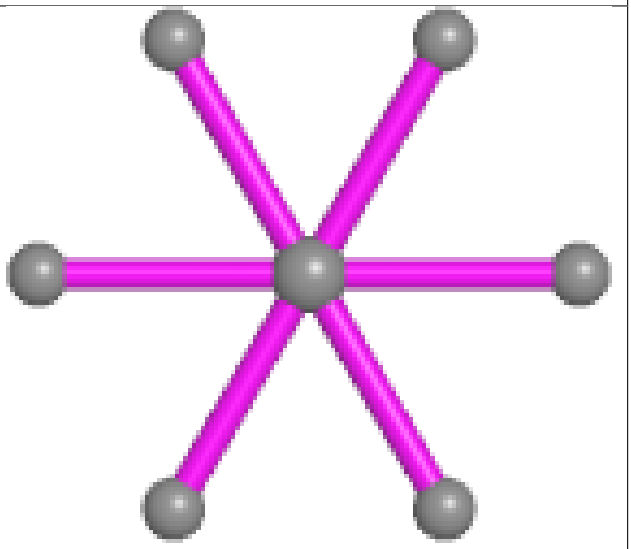

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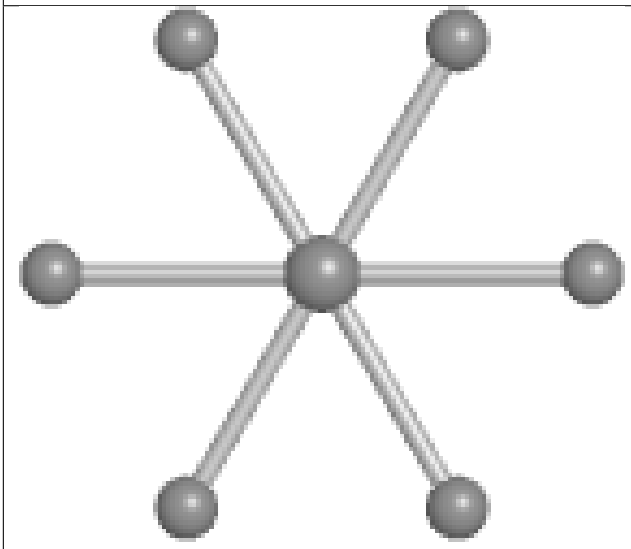

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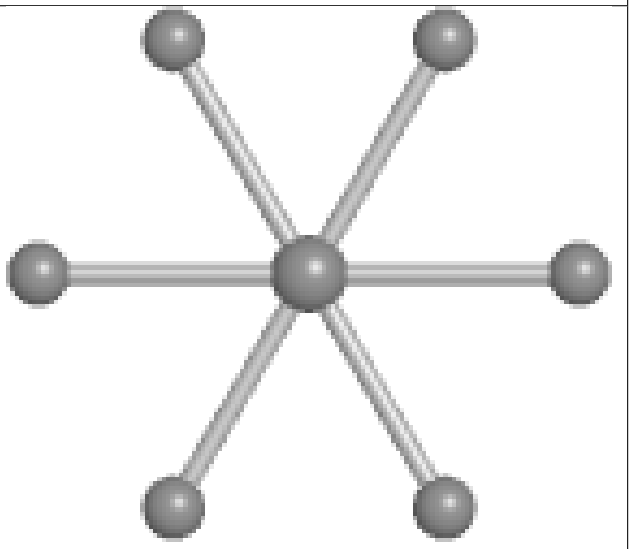
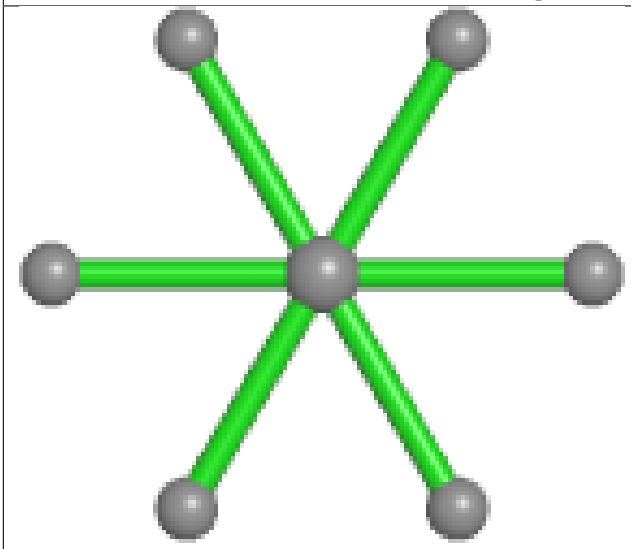


Rings

Ligand A9J B 818



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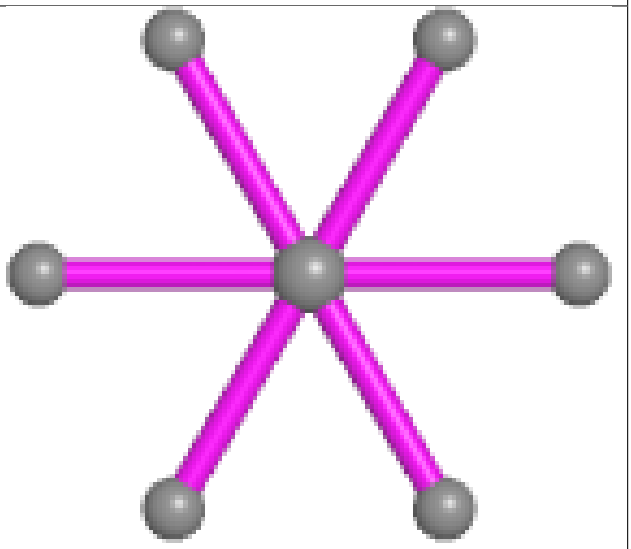

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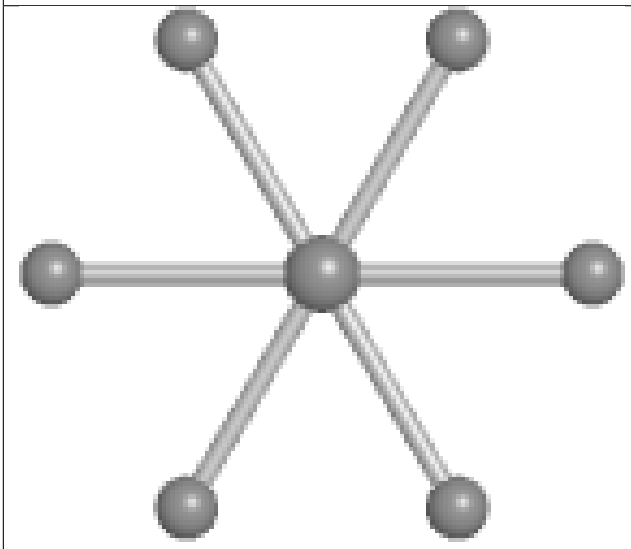

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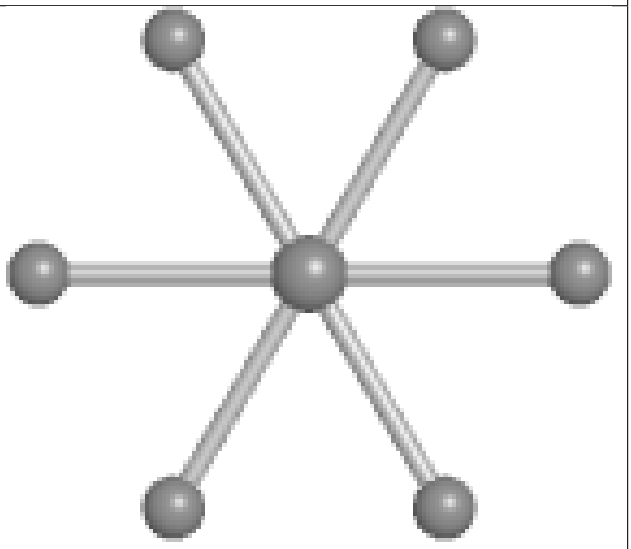
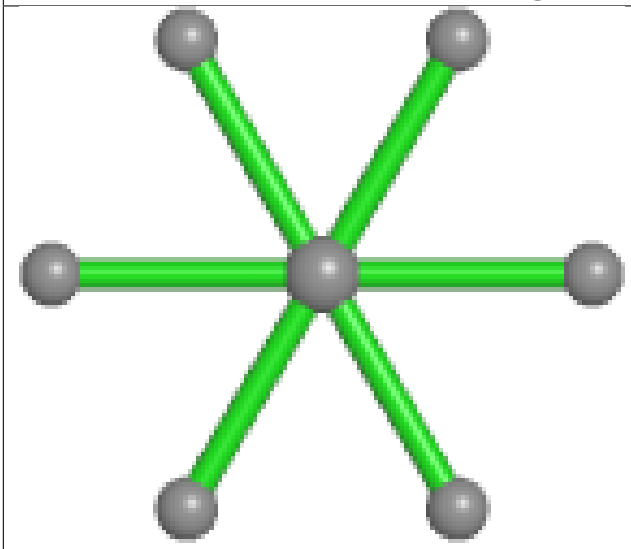


Rings

Ligand A9J A 819



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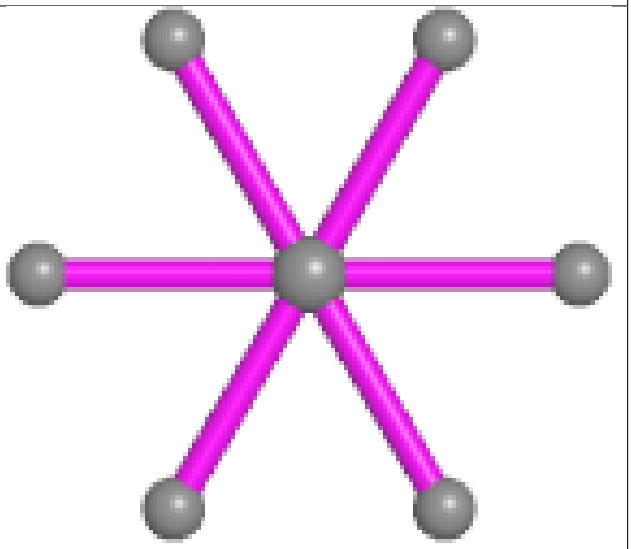

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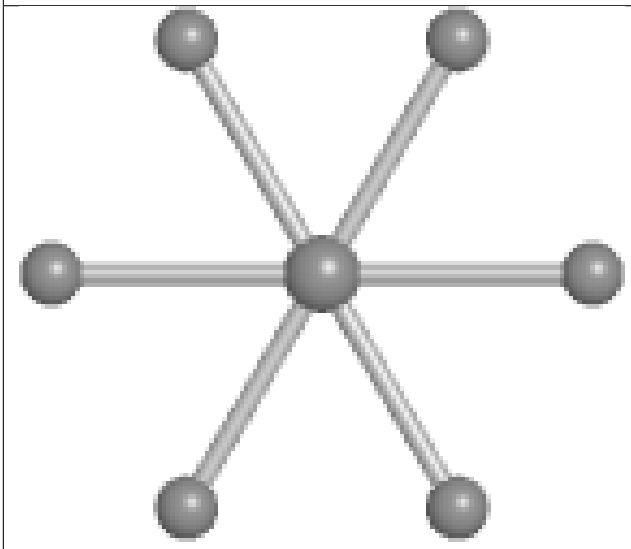

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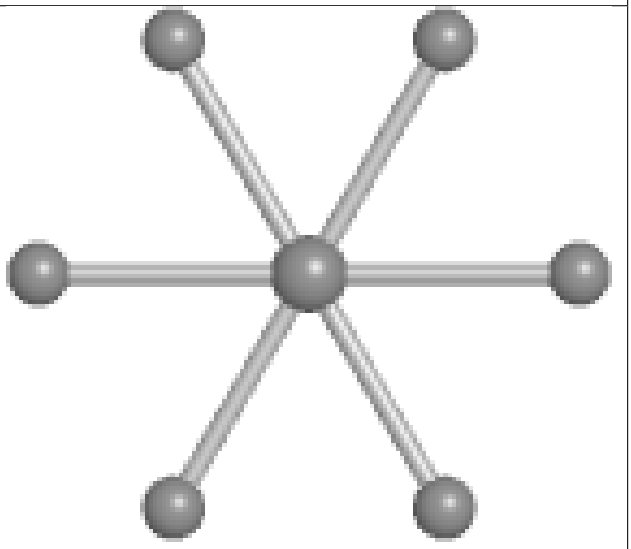
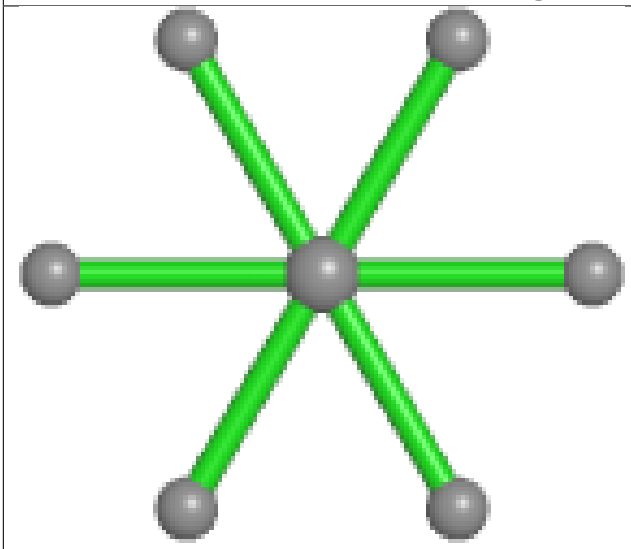


Rings

Ligand A9J B 810



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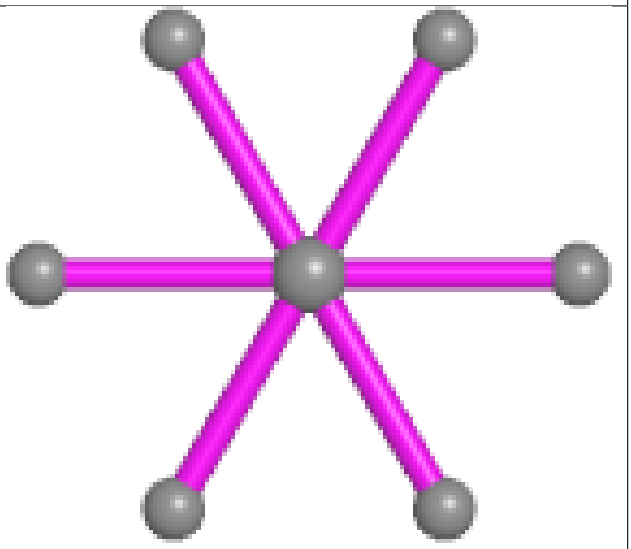

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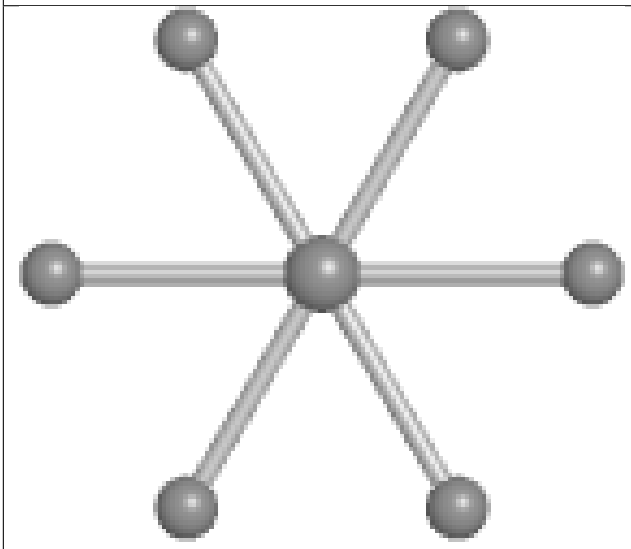

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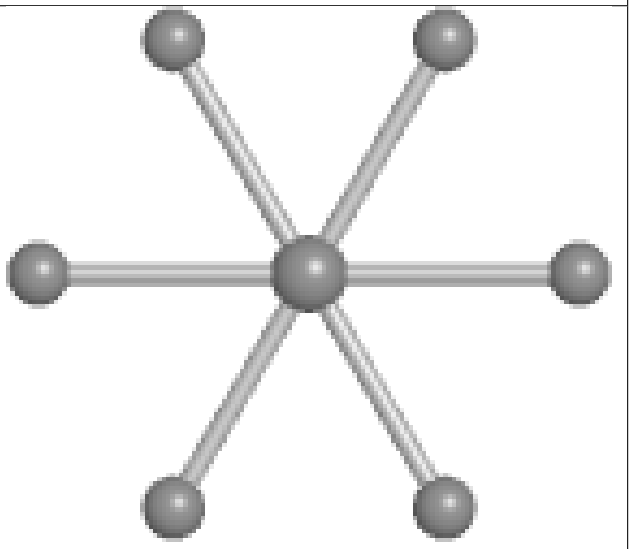
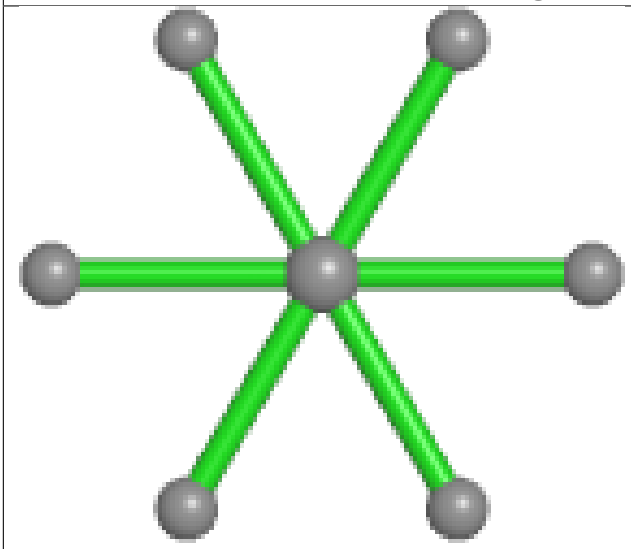


Rings

Ligand A9J C 511



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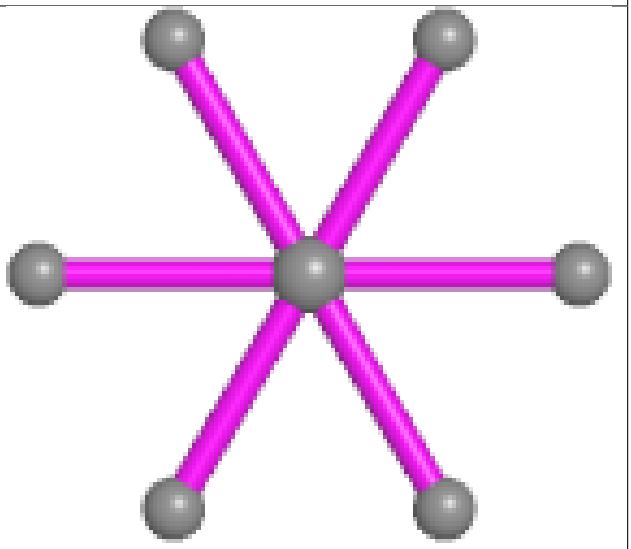
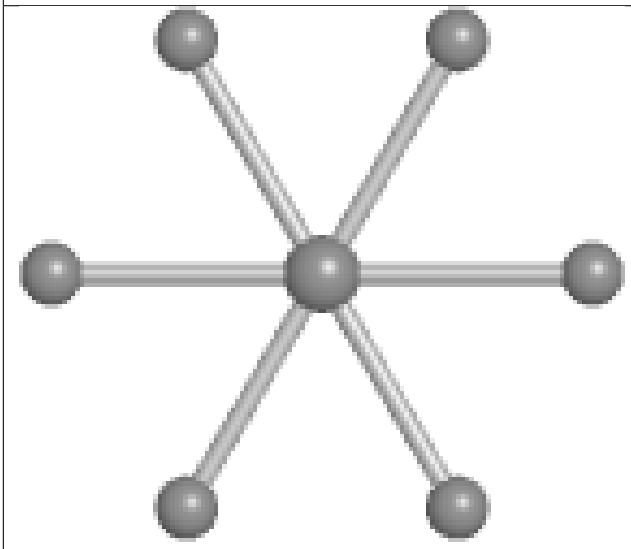


Bond angles



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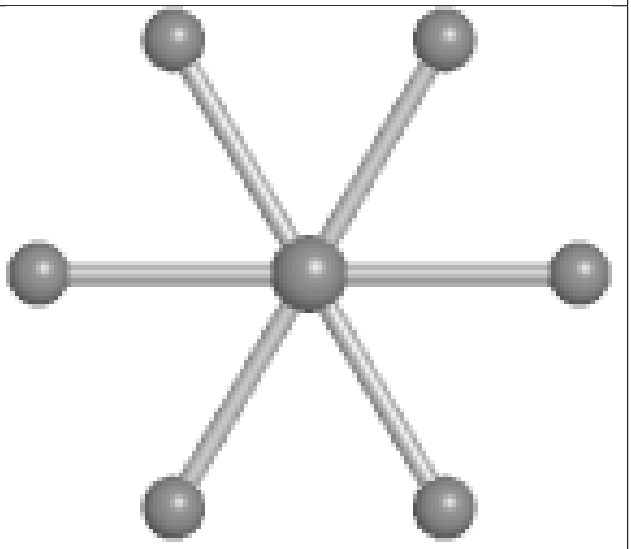
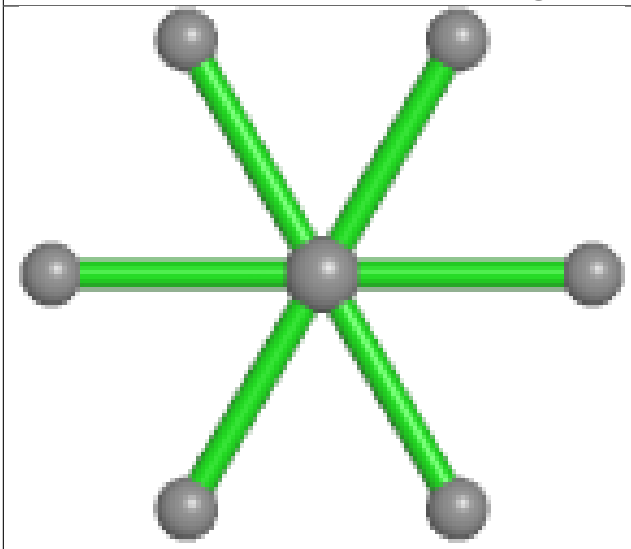


Rings

Ligand A9J B 811



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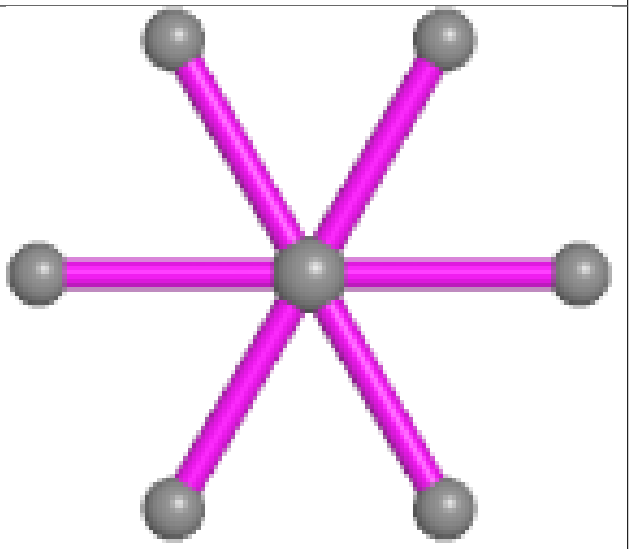
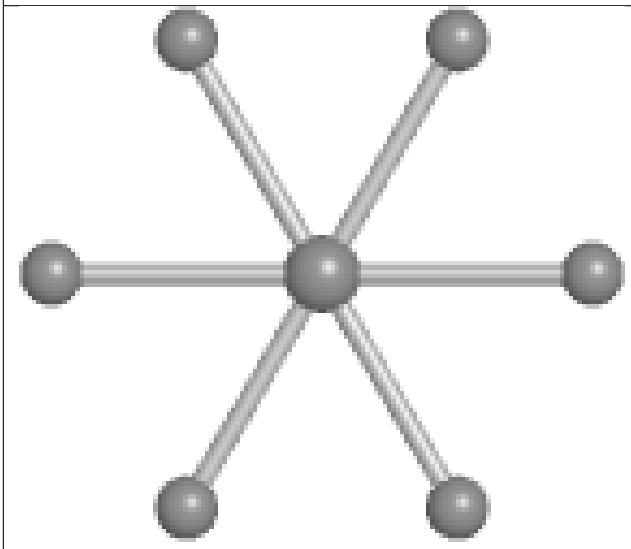
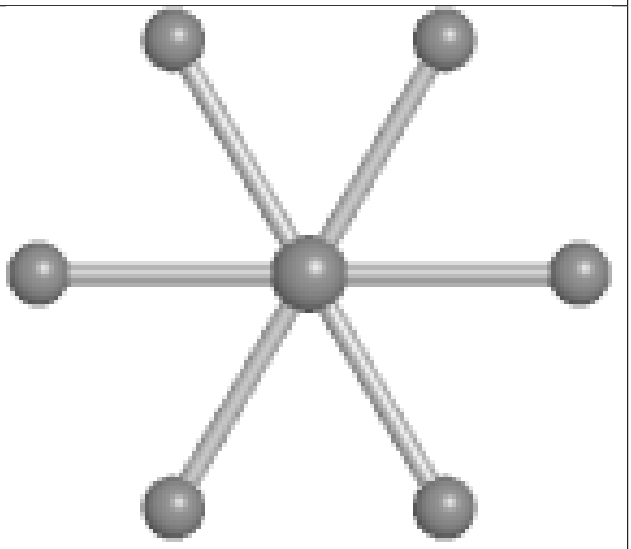


Bond angles

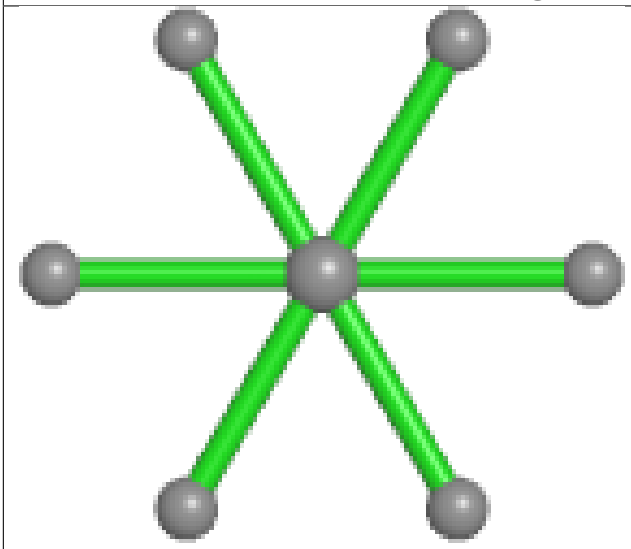


Torsions



Rings

Ligand A9J A 810



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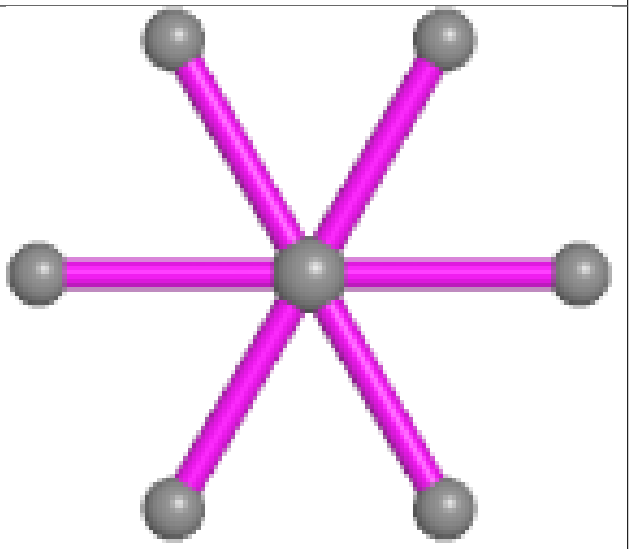

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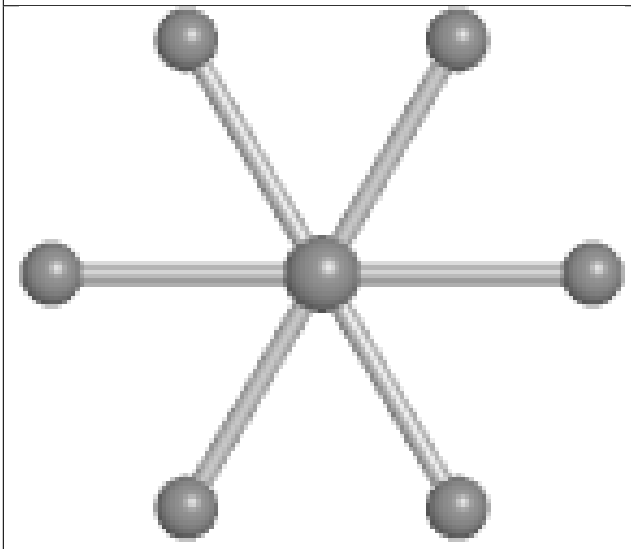

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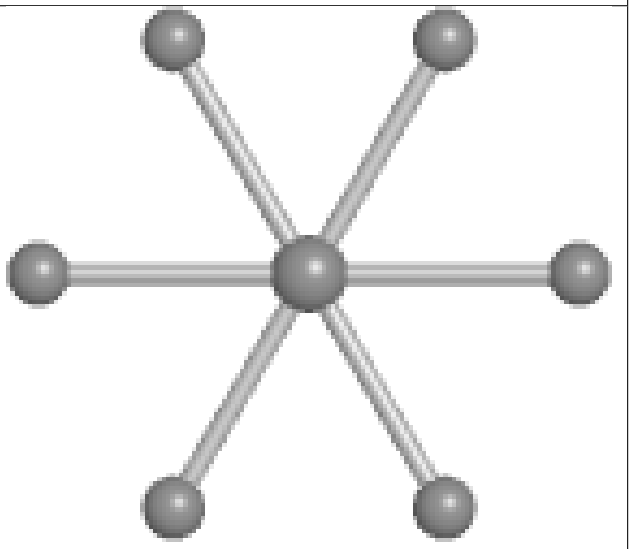
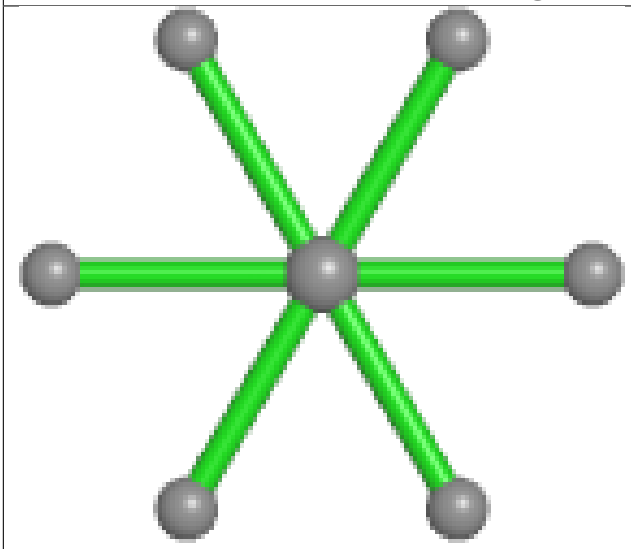


Rings

Ligand A9J A 815



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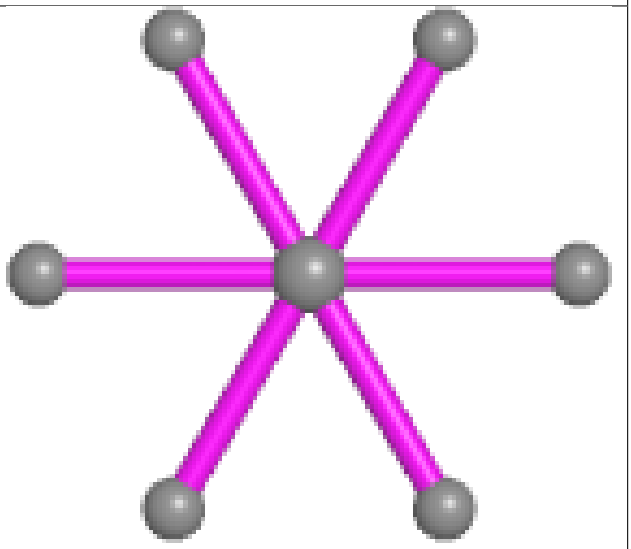
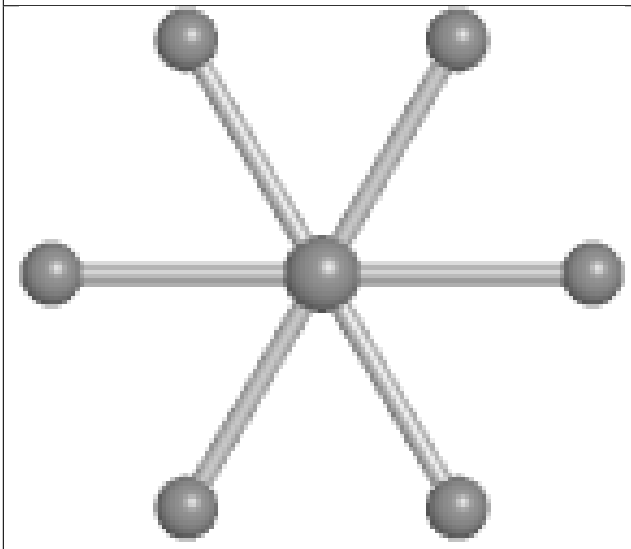


Bond angles



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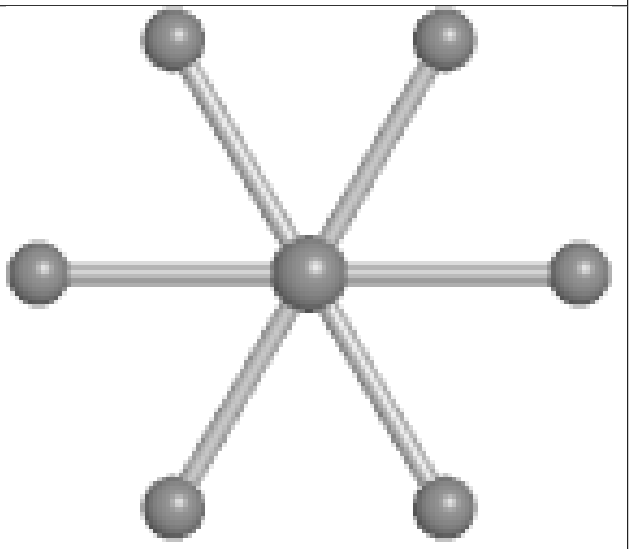
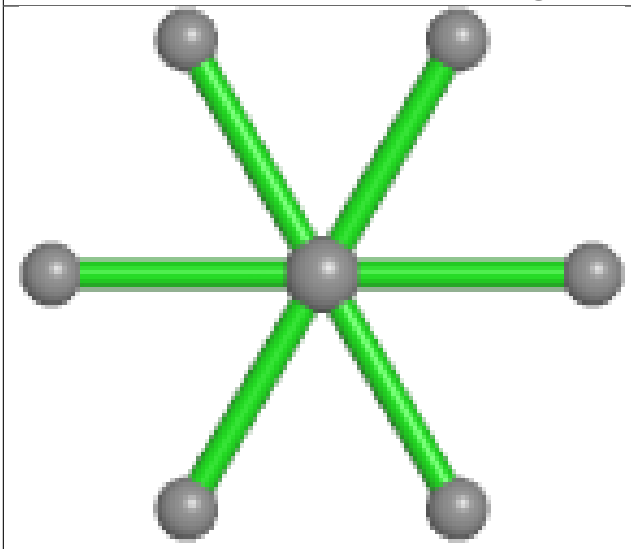
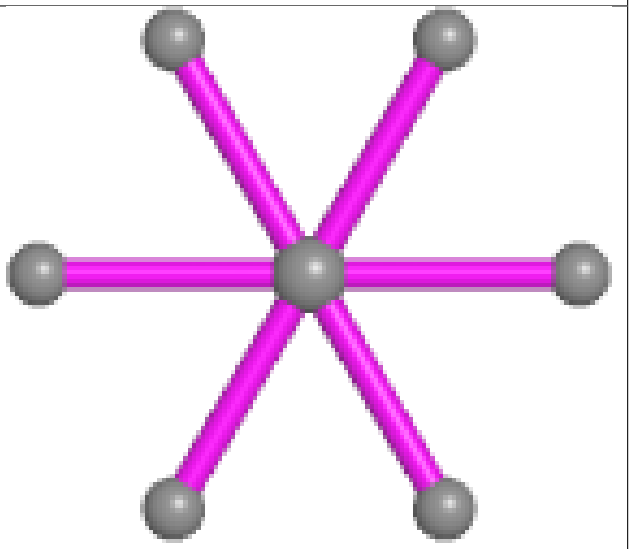


Rings

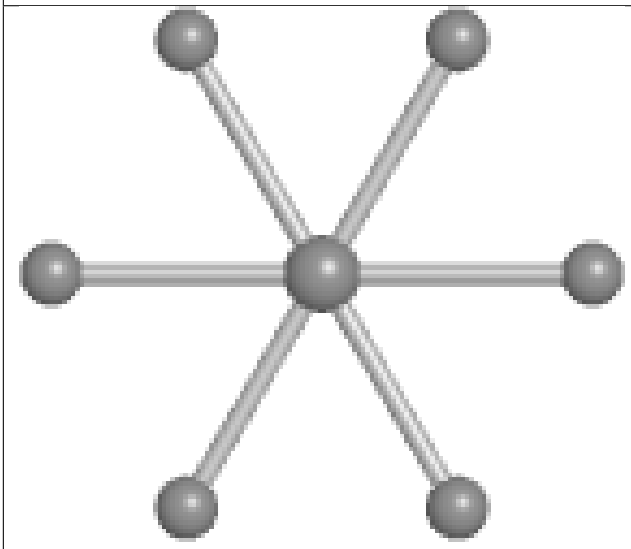
Ligand A9J B 813



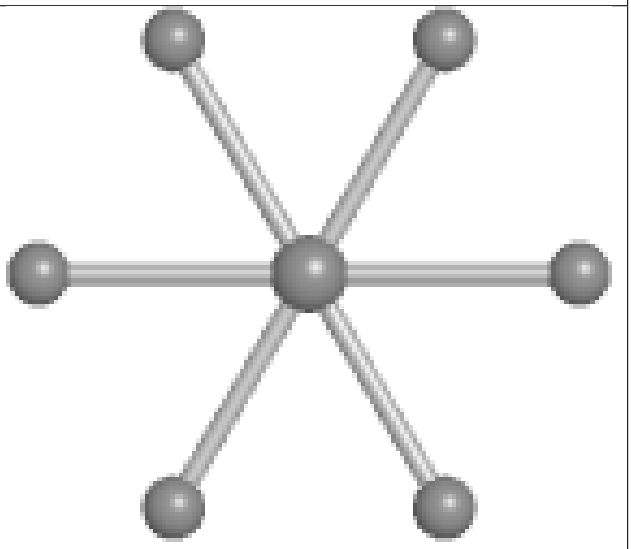
Bond lengths



Bond angles

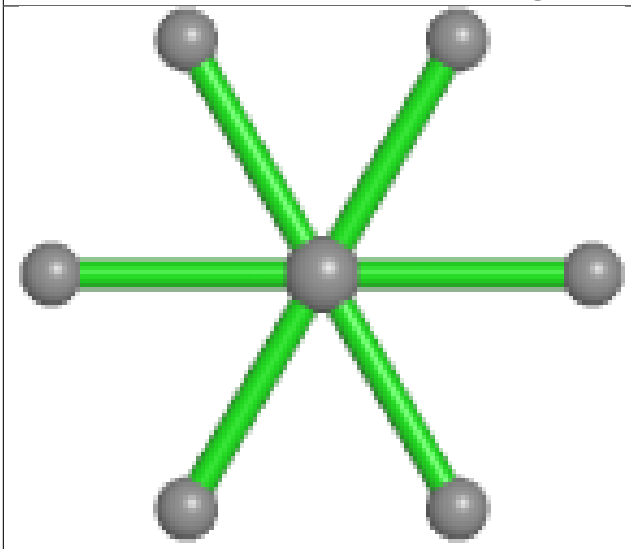


Torsions

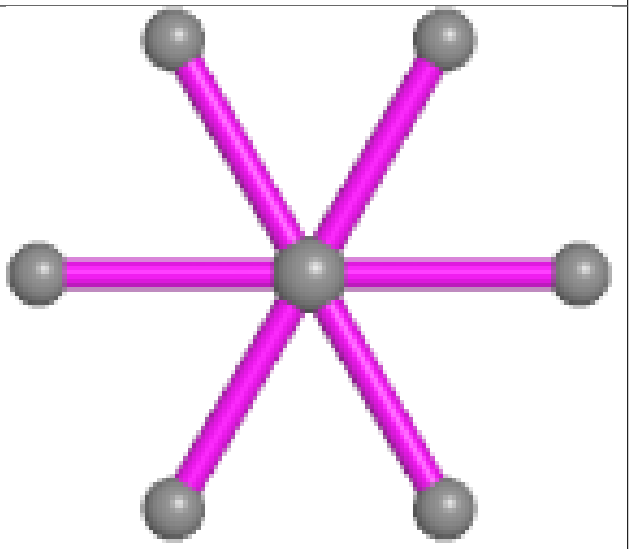


Rings

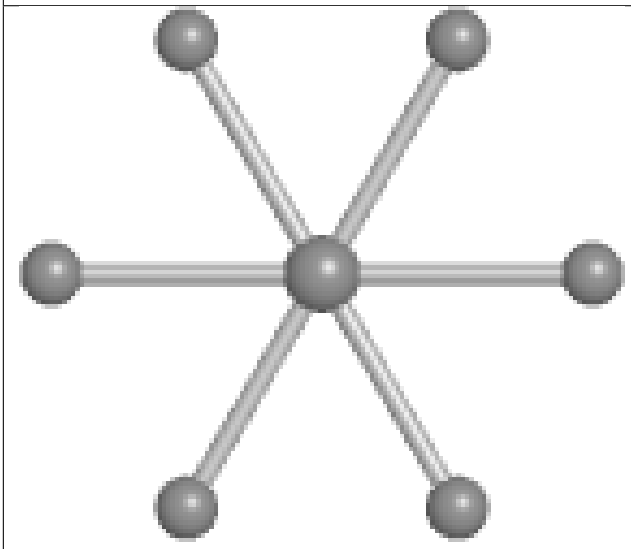
Ligand A9J A 811



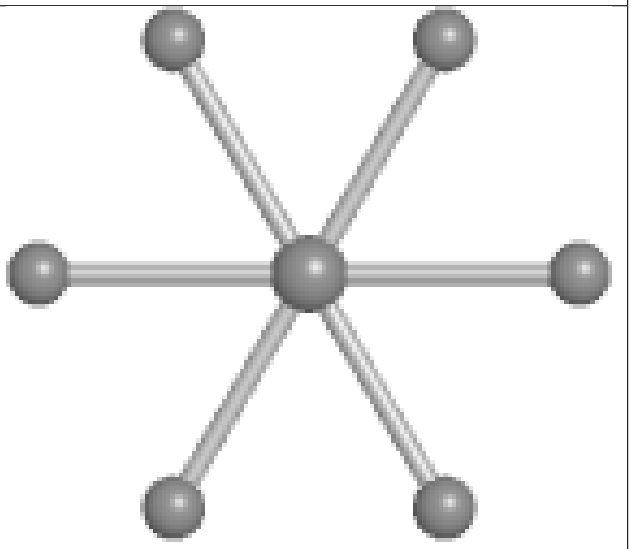
Bond lengths



Bond angles

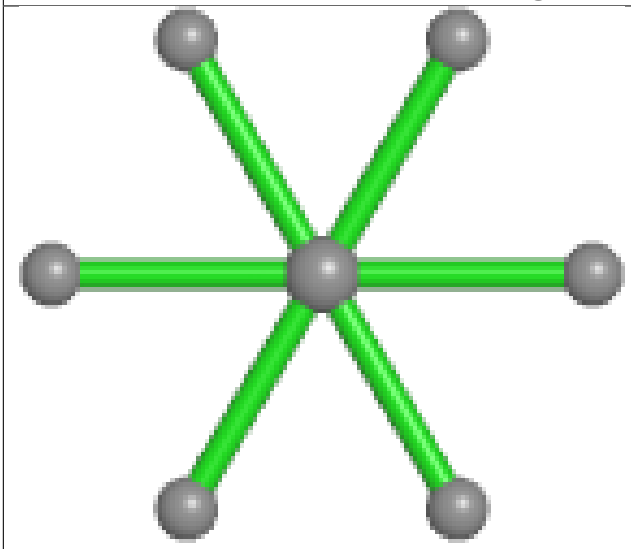


Torsions



Rings

Ligand A9J C 510



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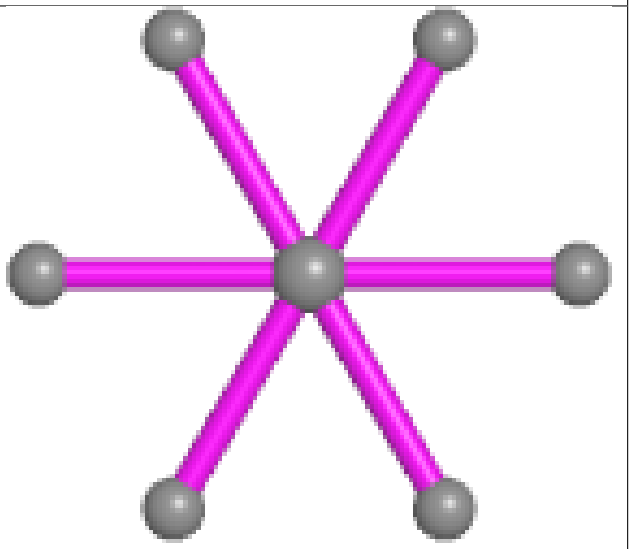
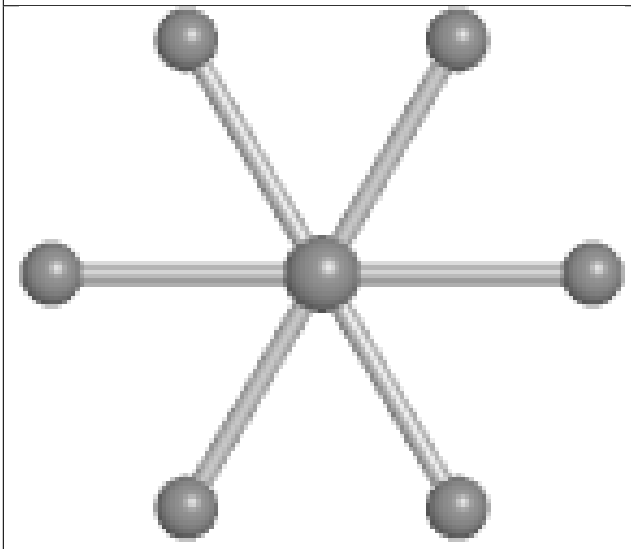


Bond angles



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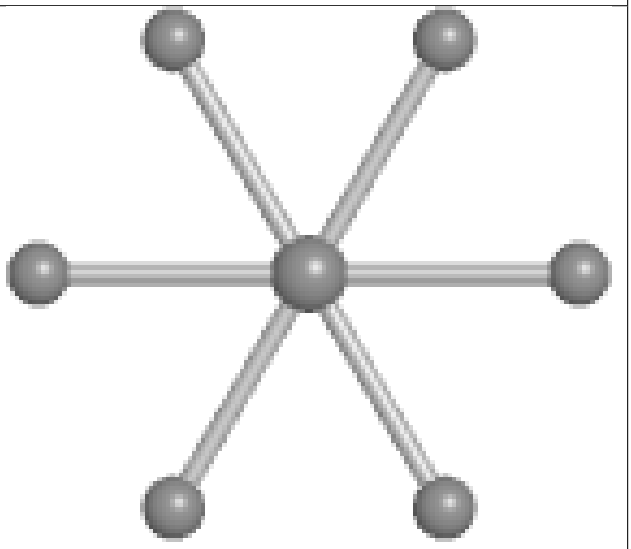
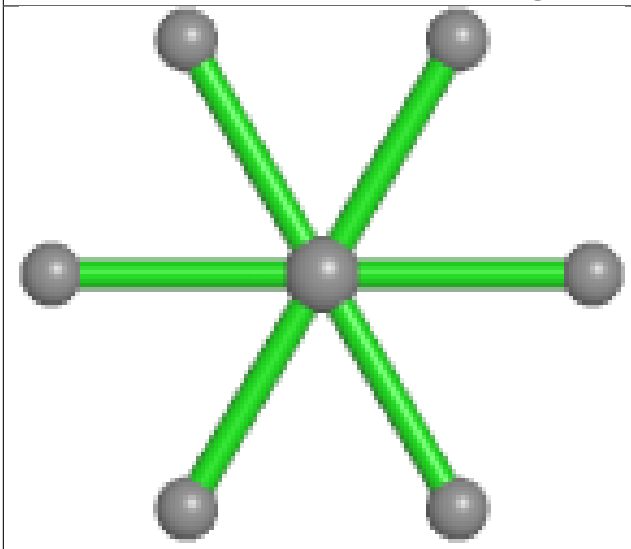
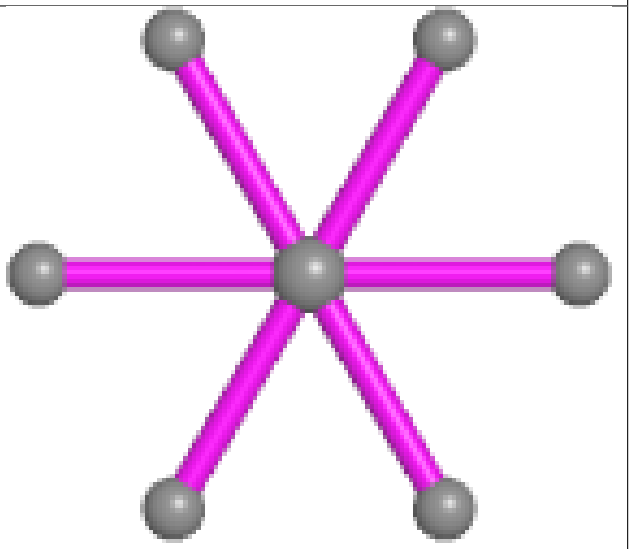


Rings

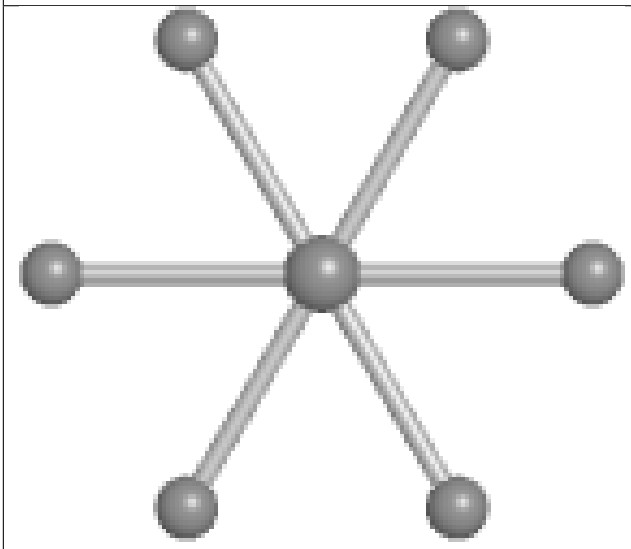
Ligand A9J A 814



Bond lengths



Bond angles



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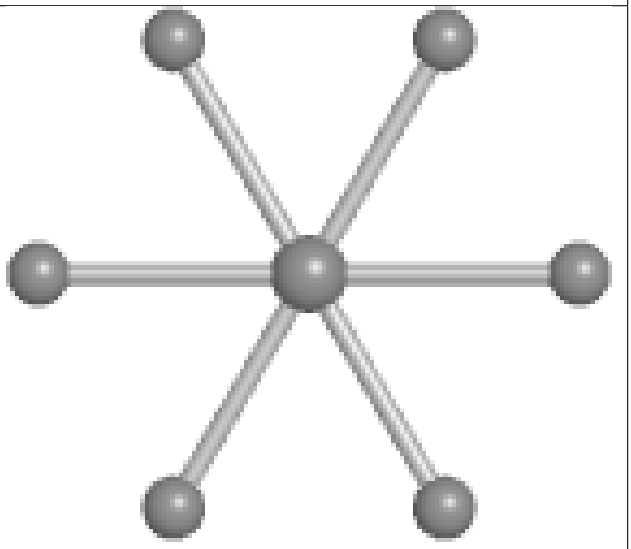
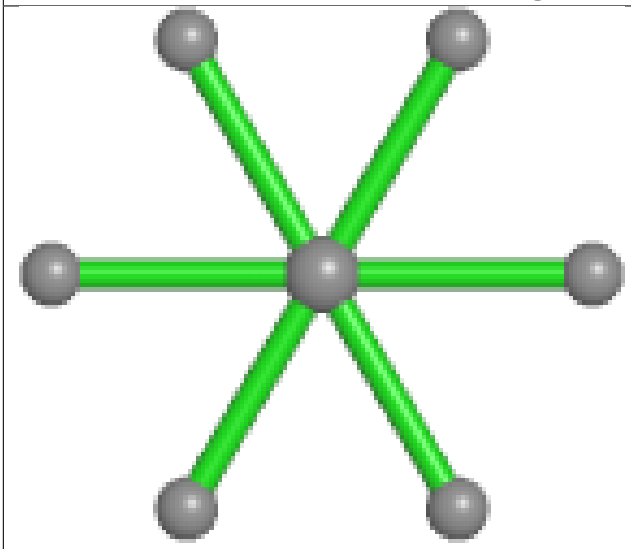


Rings

Ligand A9J A 812



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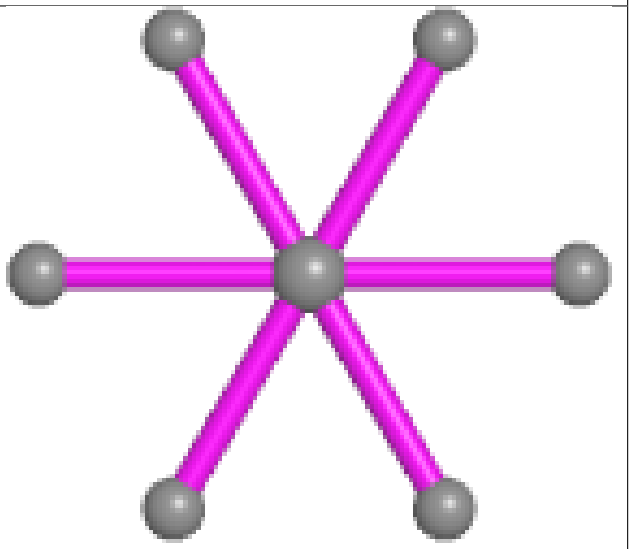
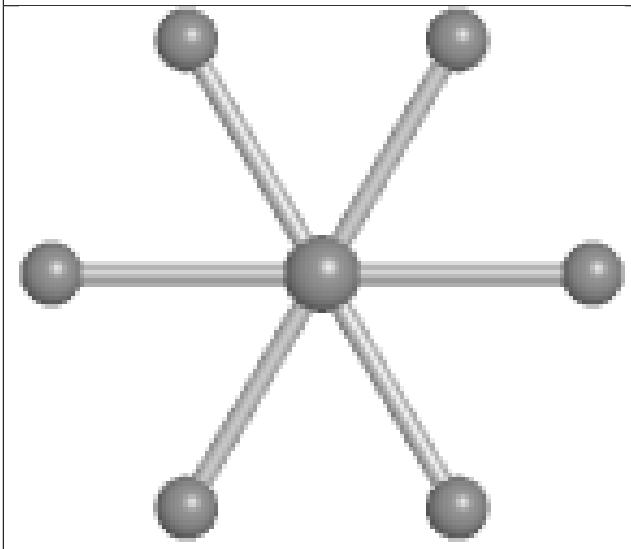


Bond angles



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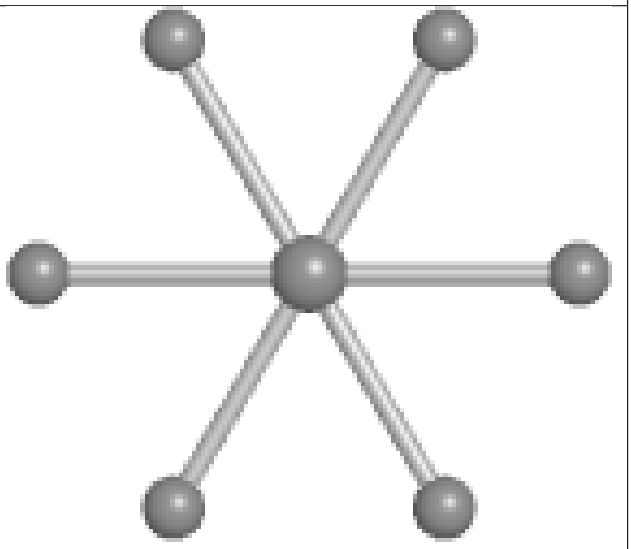
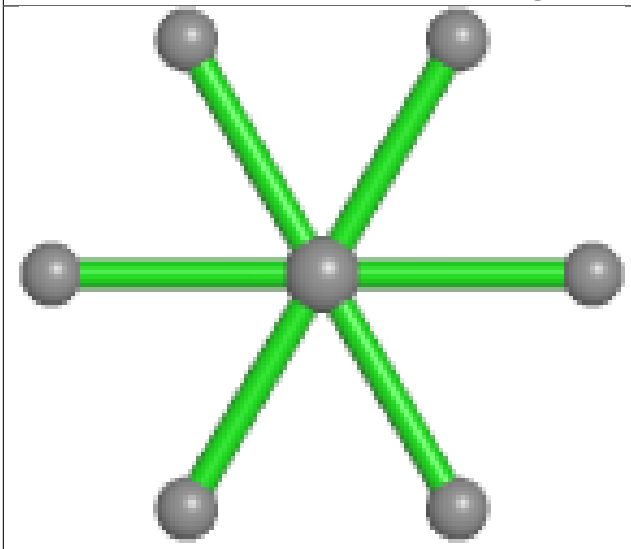
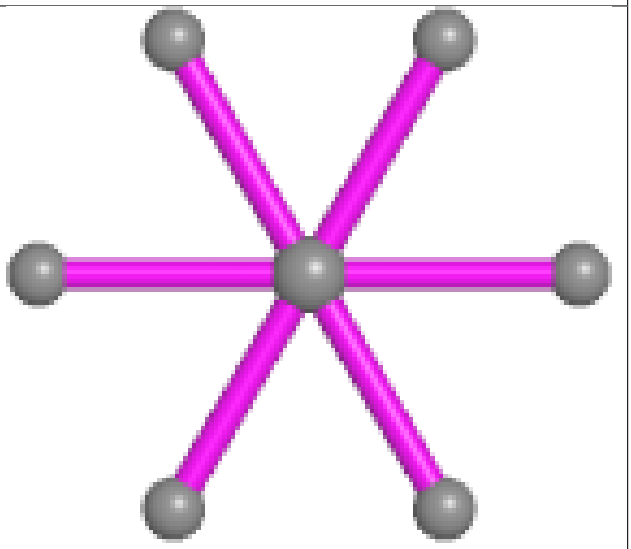


Rings

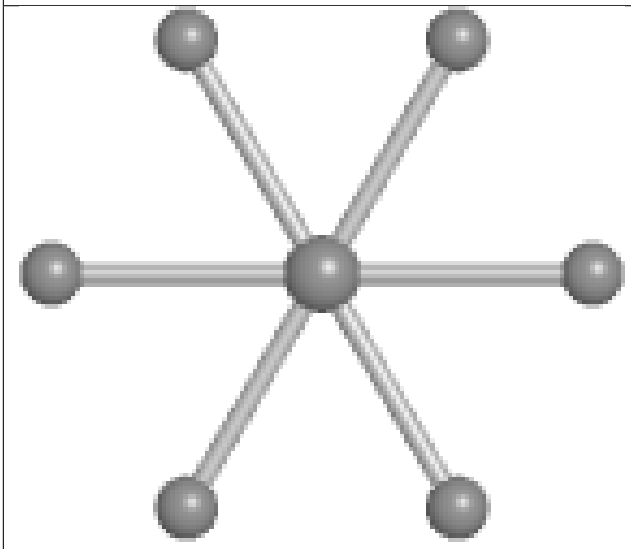
Ligand A9J A 818



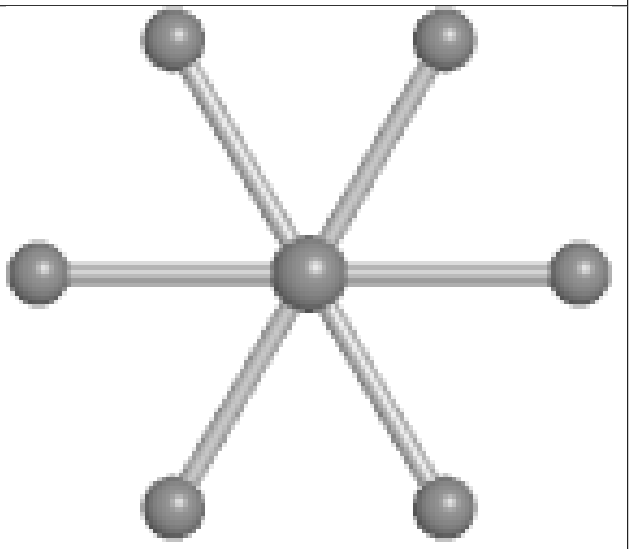
Bond lengths



Bond angles

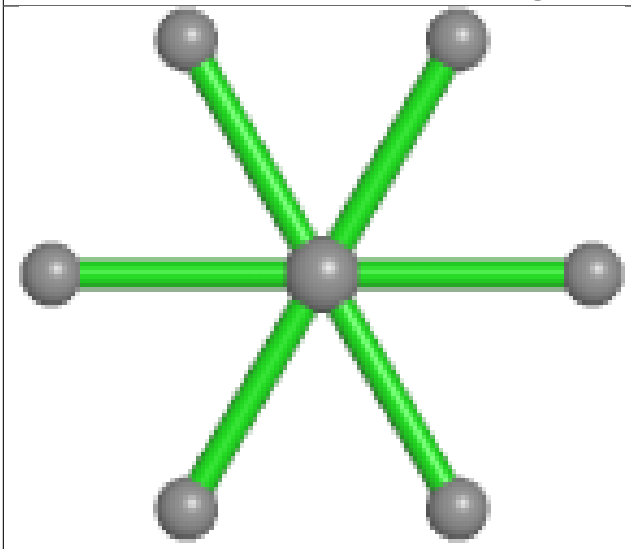


Torsions

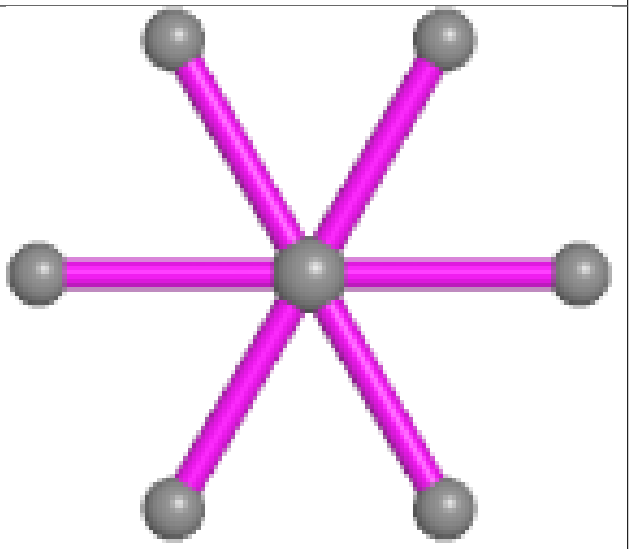


Rings

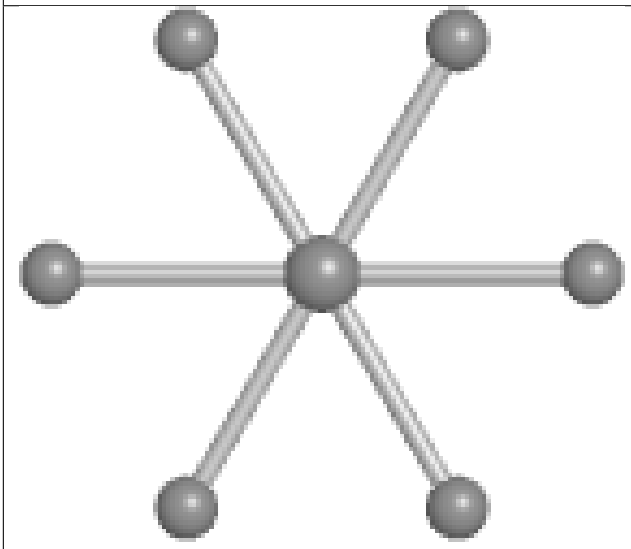
Ligand A9J D 508



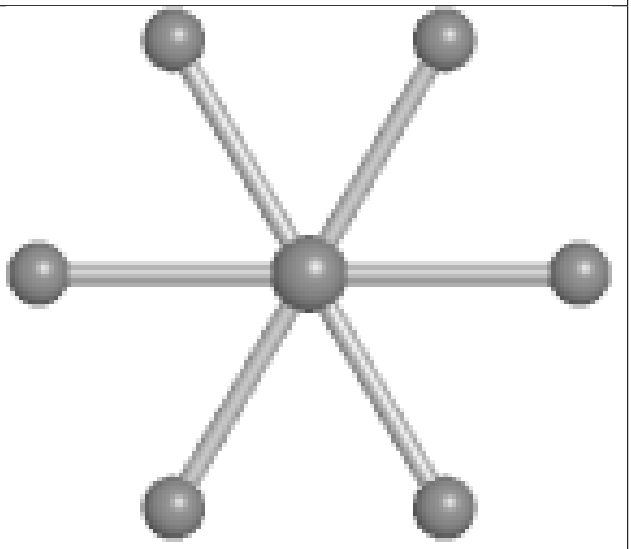
Bond lengths



Bond angles

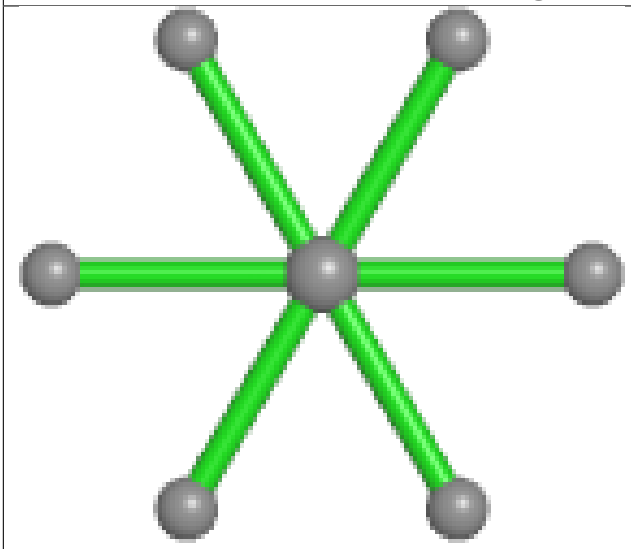


Torsions

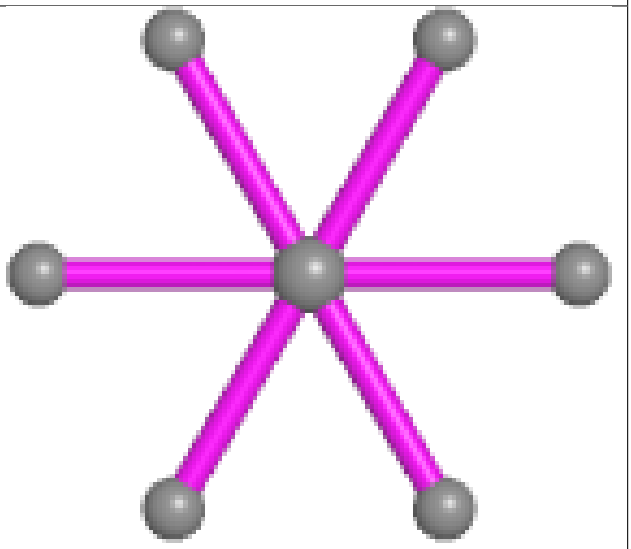


Rings

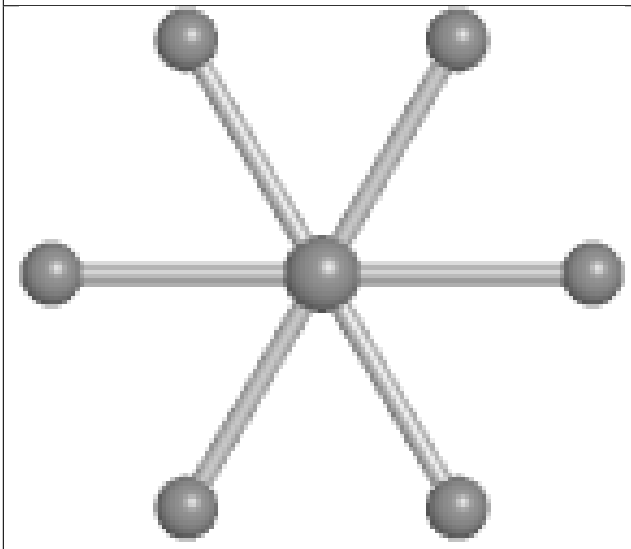
Ligand A9J B 815



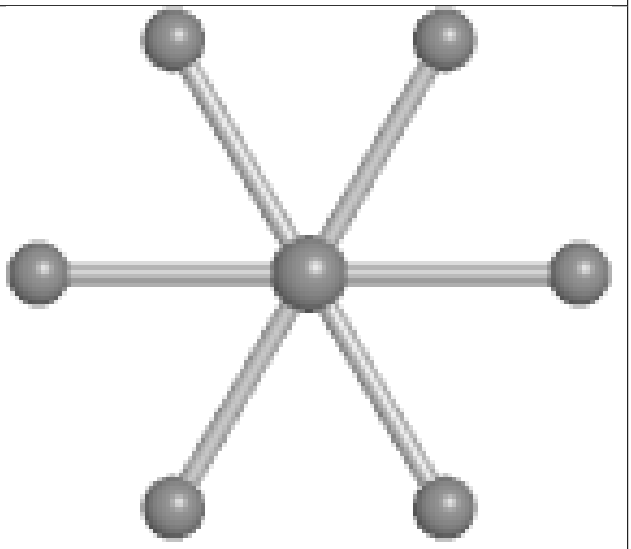
Bond lengths



Bond angles

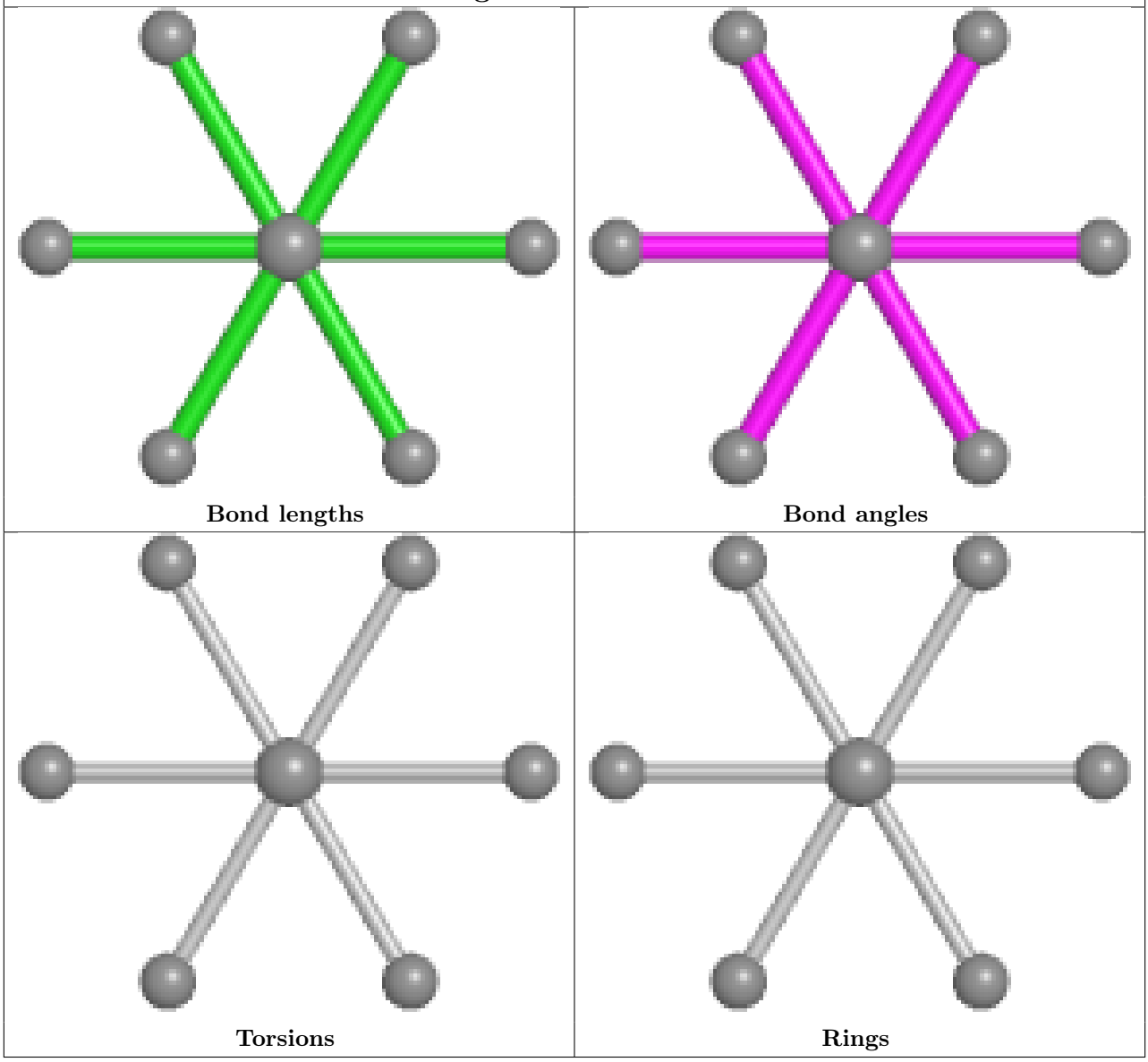


Torsions



Rings

Ligand A9J A 813



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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	728/736 (98%)	0.17	33 (4%)	33	31	48, 76, 122, 153	0
1	B	728/736 (98%)	0.08	22 (3%)	50	51	47, 70, 110, 166	0
2	C	396/403 (98%)	0.03	5 (1%)	77	78	44, 59, 90, 119	0
2	D	397/403 (98%)	0.03	1 (0%)	94	95	44, 60, 92, 148	0
All	All	2249/2278 (98%)	0.09	61 (2%)	54	55	44, 67, 113, 166	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	402	PHE	5.6
1	B	574	ALA	4.8
1	B	571	VAL	4.7
1	A	454	ARG	3.9
1	A	383	GLN	3.8
2	C	225	PHE	3.7
1	B	568	ARG	3.6
1	B	1	MET	3.5
1	A	382	THR	3.5
1	B	377	GLU	3.4
1	B	609	ASP	3.2
1	A	452	VAL	3.2
1	A	377	GLU	3.1
1	A	403	LYS	3.1
1	B	575	GLY	3.0
1	B	378	ARG	3.0
1	A	433	ASN	2.9
1	A	453	LYS	2.9
1	B	577	THR	2.9
1	A	379	GLY	2.9
1	A	210	LYS	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	-6	HIS	2.8
1	A	2	PRO	2.7
1	A	426	ILE	2.7
1	A	623	PHE	2.7
1	B	593	LEU	2.6
1	A	432	PRO	2.6
1	B	720	SER	2.6
1	B	2	PRO	2.6
1	A	378	ARG	2.6
1	A	373	ALA	2.6
1	A	578	TYR	2.5
1	A	374	LYS	2.5
1	A	423	PHE	2.5
2	C	226	GLU	2.5
2	C	45	ASP	2.5
1	A	430	VAL	2.4
1	B	383	GLN	2.4
1	A	456	GLU	2.4
1	A	429	ILE	2.3
1	A	405	VAL	2.3
1	B	376	LEU	2.3
1	A	1	MET	2.2
1	B	374	LYS	2.2
1	B	457	ASP	2.2
1	A	384	GLU	2.2
1	A	573	ASP	2.2
1	A	326	LYS	2.1
1	B	458	PHE	2.1
1	A	-6	HIS	2.1
1	B	451	GLY	2.1
2	C	173	ARG	2.1
1	A	335	MET	2.1
2	D	389	CYS	2.1
1	A	588	GLU	2.1
1	B	603	GLY	2.1
1	A	337	GLY	2.0
1	B	382	THR	2.0
1	B	576	GLY	2.0
1	A	131	ASP	2.0
2	C	346	GLU	2.0

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	CSO	C	92	7/8	0.98	0.23	46,51,63,81	0
2	CSO	D	92	7/8	0.98	0.27	48,57,61,88	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	SO4	B	824	5/5	0.77	0.26	105,117,155,176	0
3	SO4	C	508	5/5	0.78	0.20	87,99,110,110	5
5	ARF	A	807	3/3	0.78	0.25	85,85,87,93	0
3	SO4	D	506	5/5	0.79	0.47	146,152,172,175	1
4	GOL	A	806	6/6	0.82	0.17	72,92,109,122	0
4	GOL	A	809	6/6	0.83	0.38	86,95,113,115	0
3	SO4	A	821	5/5	0.84	0.32	119,128,145,175	0
3	SO4	B	807	5/5	0.84	0.23	79,80,84,89	5
3	SO4	B	822	5/5	0.84	0.23	123,130,154,178	0
3	SO4	A	822	5/5	0.85	0.26	110,111,137,174	0
5	ARF	B	819	3/3	0.85	0.30	71,71,81,84	0
3	SO4	D	511	5/5	0.86	0.25	107,118,133,171	0
5	ARF	A	808	3/3	0.87	0.26	69,69,75,75	0
3	SO4	C	512	5/5	0.87	0.28	108,110,142,176	0
3	SO4	B	806	5/5	0.88	0.21	115,120,138,164	0
3	SO4	C	505	5/5	0.88	0.30	94,101,127,145	5
4	GOL	C	509	6/6	0.88	0.47	60,77,94,98	0
3	SO4	B	823	5/5	0.89	0.25	111,111,147,167	0
3	SO4	C	506	5/5	0.89	0.32	105,113,134,156	0
3	SO4	B	802	5/5	0.89	0.22	82,106,114,144	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	A9J	B	818	7/7	0.89	0.26	140,157,190,202	0
6	A9J	A	819	7/7	0.90	0.18	91,132,166,186	0
3	SO4	B	821	5/5	0.90	0.23	122,131,142,168	0
6	A9J	D	510	7/7	0.90	0.16	121,124,145,176	0
5	ARF	B	820	3/3	0.91	0.19	73,73,86,89	0
3	SO4	B	804	5/5	0.91	0.15	99,110,114,133	5
6	A9J	B	816	7/7	0.91	0.22	102,119,178,179	0
5	ARF	A	820	3/3	0.91	0.16	71,71,78,79	0
3	SO4	C	501	5/5	0.91	0.18	89,110,114,142	0
3	SO4	A	805	5/5	0.92	0.15	73,81,86,87	5
5	ARF	B	808	3/3	0.92	0.28	80,80,81,84	0
3	SO4	D	505	5/5	0.93	0.33	65,76,81,87	5
4	GOL	D	507	6/6	0.93	0.55	61,67,81,88	0
3	SO4	B	805	5/5	0.93	0.11	82,91,105,109	5
6	A9J	B	813	7/7	0.93	0.22	129,142,172,194	0
3	SO4	A	803	5/5	0.93	0.12	110,120,136,154	0
3	SO4	B	801	5/5	0.93	0.17	63,92,99,127	0
3	SO4	D	503	5/5	0.93	0.33	84,98,115,148	0
6	A9J	B	812	7/7	0.94	0.25	108,128,162,163	0
3	SO4	D	502	5/5	0.94	0.28	82,89,117,122	0
6	A9J	A	812	7/7	0.94	0.22	120,131,152,170	0
6	A9J	A	815	7/7	0.94	0.14	104,117,143,160	0
3	SO4	C	504	5/5	0.94	0.19	95,100,114,147	0
6	A9J	A	817	7/7	0.95	0.17	104,123,150,160	0
3	SO4	C	503	5/5	0.95	0.13	91,95,104,120	0
6	A9J	B	815	7/7	0.95	0.18	107,117,146,160	0
3	SO4	C	507	5/5	0.96	0.16	94,104,108,137	0
3	SO4	A	801	5/5	0.96	0.12	64,83,100,111	0
6	A9J	A	816	7/7	0.96	0.16	80,124,143,157	0
3	SO4	A	804	5/5	0.96	0.11	87,91,97,108	0
6	A9J	B	817	7/7	0.96	0.15	72,110,131,135	0
6	A9J	A	818	7/7	0.96	0.27	120,126,151,155	0
6	A9J	A	811	7/7	0.96	0.23	117,120,154,162	0
6	A9J	A	814	7/7	0.97	0.14	72,79,92,98	0
3	SO4	B	803	5/5	0.97	0.10	82,92,96,103	0
3	SO4	D	501	5/5	0.97	0.08	90,93,112,113	0
3	SO4	A	802	5/5	0.97	0.12	85,92,102,105	0
3	SO4	C	502	5/5	0.97	0.13	79,89,97,101	0
3	SO4	D	504	5/5	0.97	0.13	68,89,98,102	0
6	A9J	B	809	7/7	0.97	0.16	73,76,90,91	0
6	A9J	B	814	7/7	0.98	0.15	75,78,93,93	0
6	A9J	C	511	7/7	0.98	0.15	82,87,110,117	0

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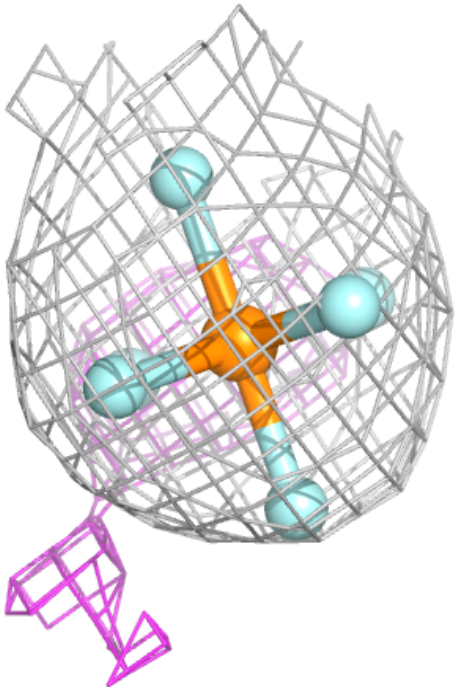
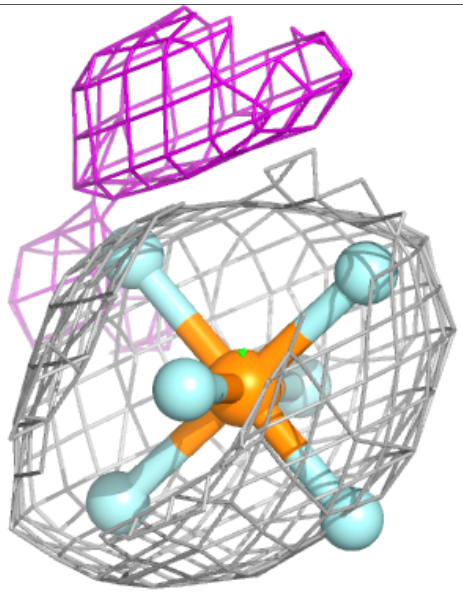
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	A9J	D	508	7/7	0.98	0.18	69,83,94,101	0
6	A9J	A	813	7/7	0.98	0.19	72,88,103,113	0
6	A9J	C	510	7/7	0.99	0.20	69,80,83,86	0
6	A9J	B	810	7/7	0.99	0.18	63,75,88,95	0
6	A9J	B	811	7/7	0.99	0.13	79,105,110,111	0
6	A9J	D	509	7/7	0.99	0.22	68,76,82,88	0
6	A9J	A	810	7/7	0.99	0.15	77,84,90,101	0

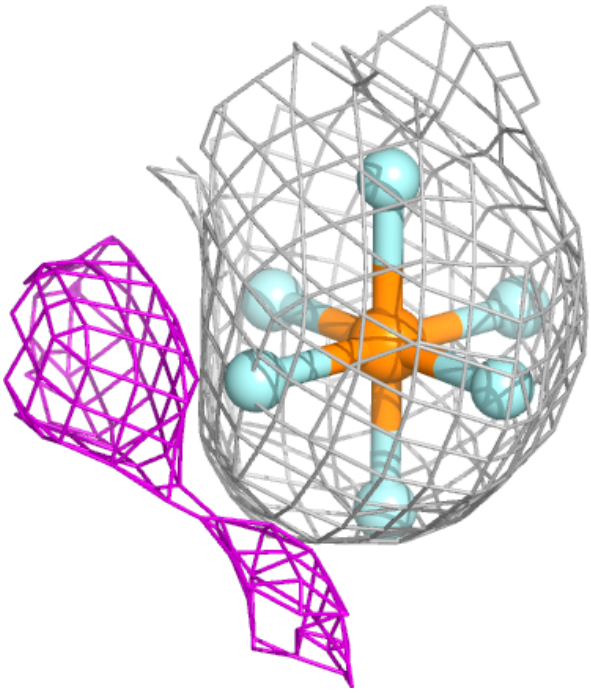
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around A9J B 818:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

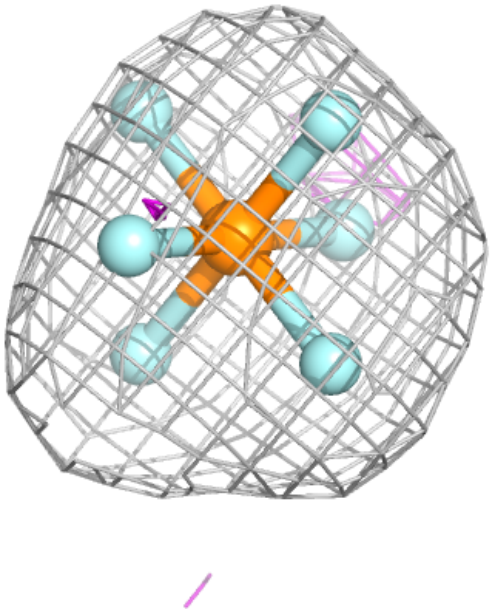


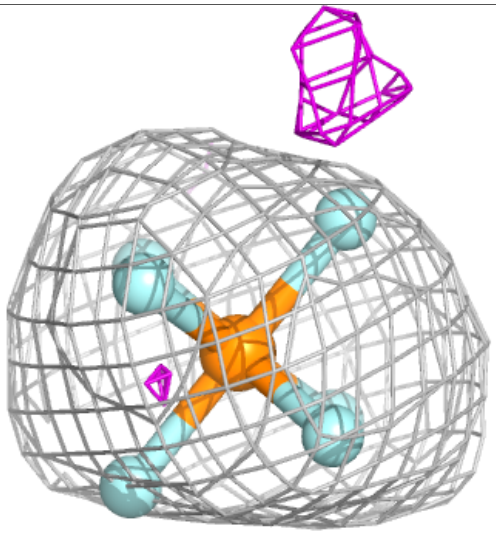


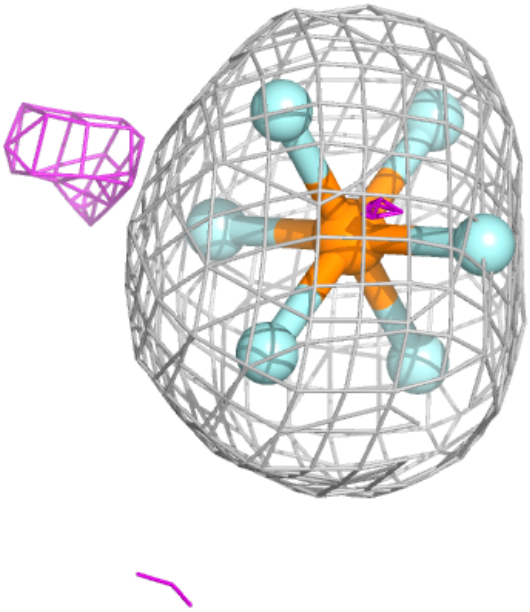


Electron density around A9J A 819:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

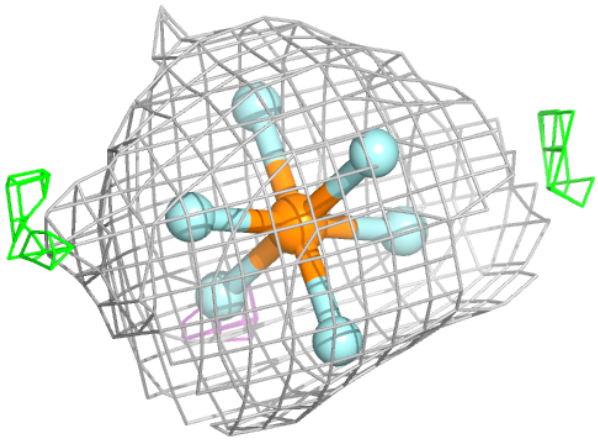


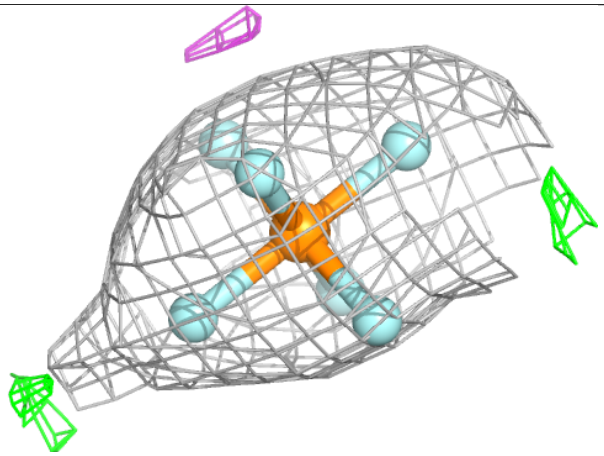


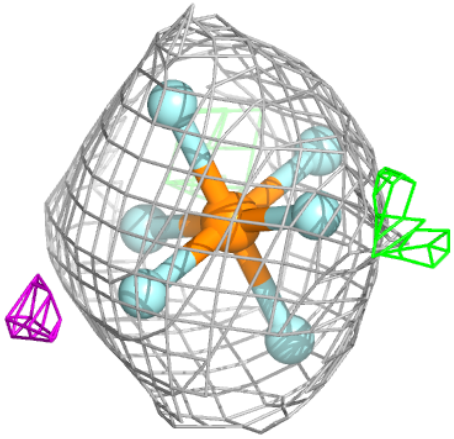


Electron density around A9J D 510:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

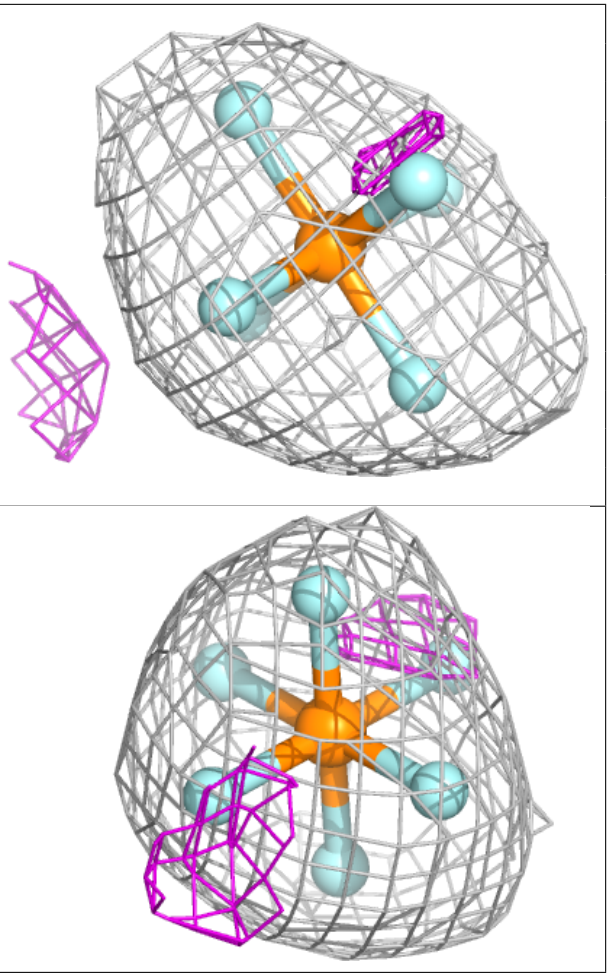






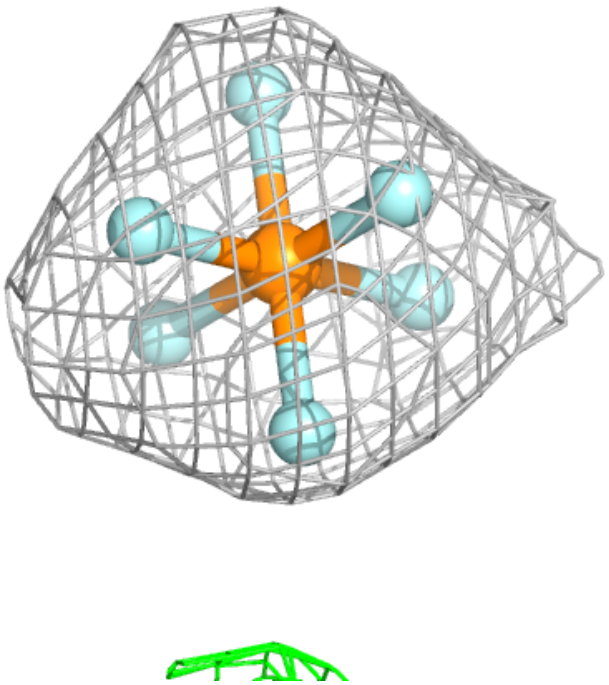
Electron density around A9J B 816:

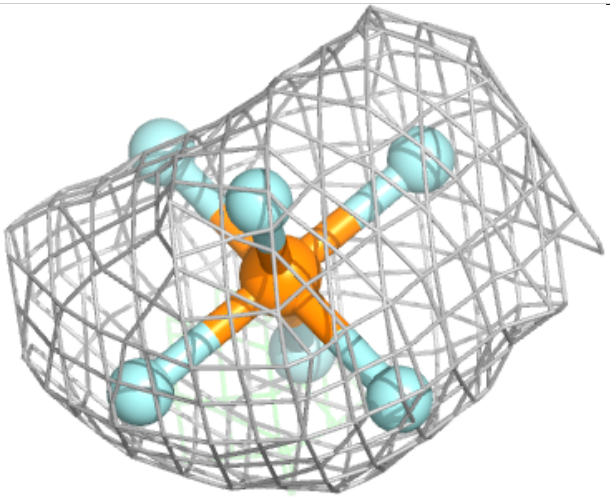
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

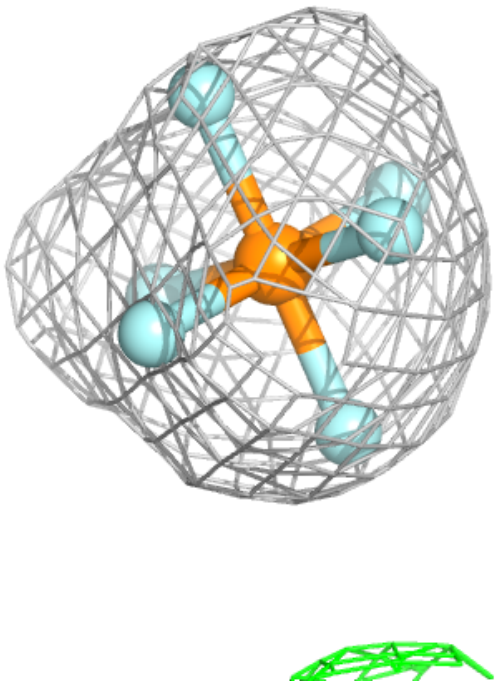


Electron density around A9J B 813:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

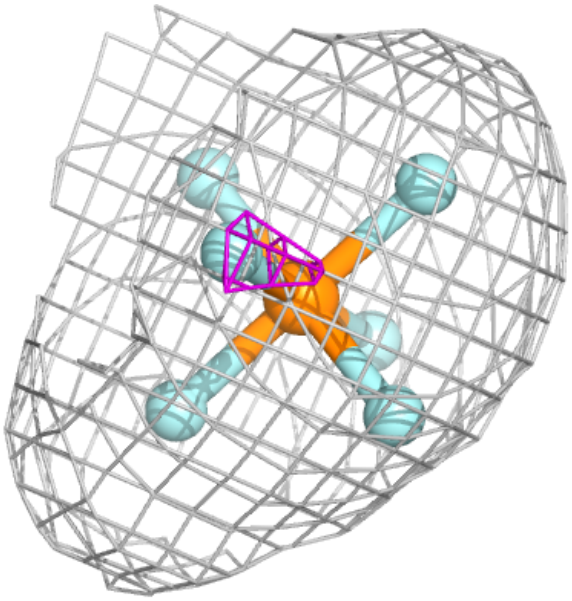


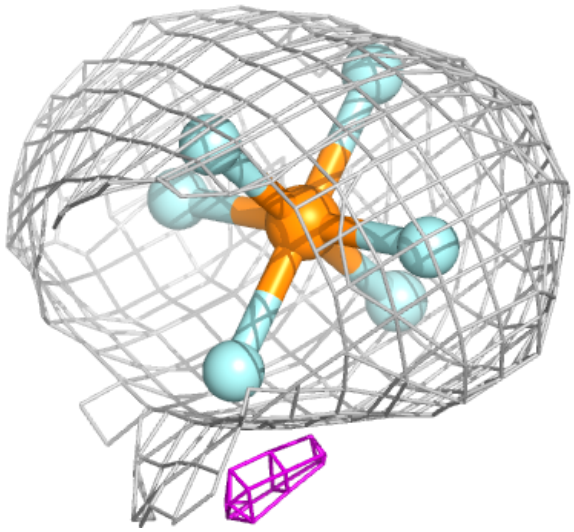


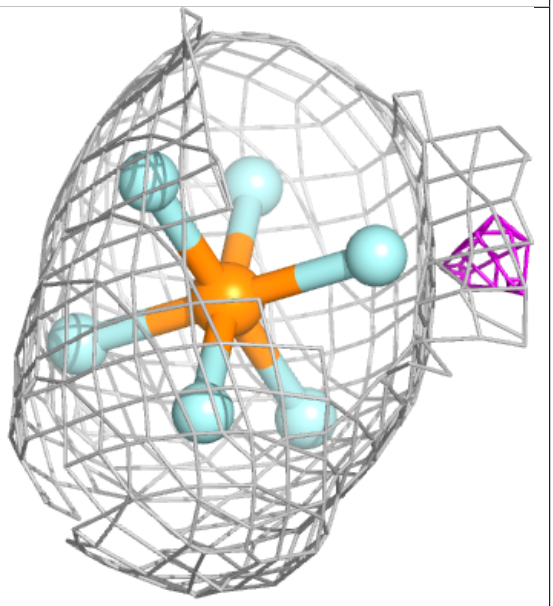


Electron density around A9J B 812:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

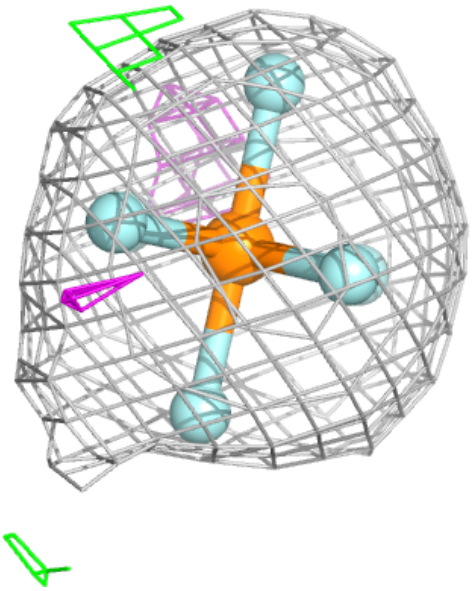


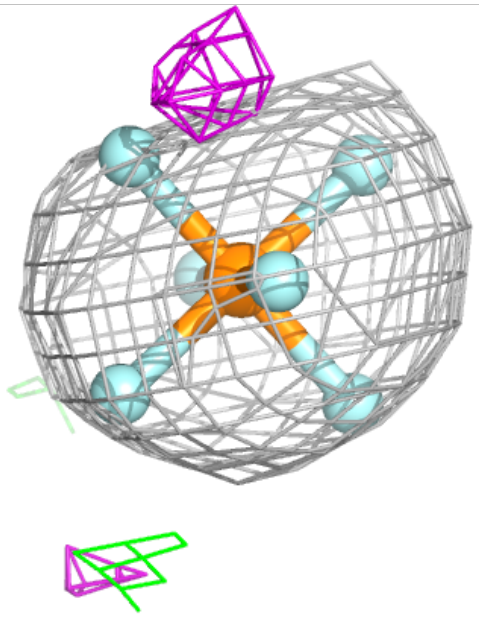


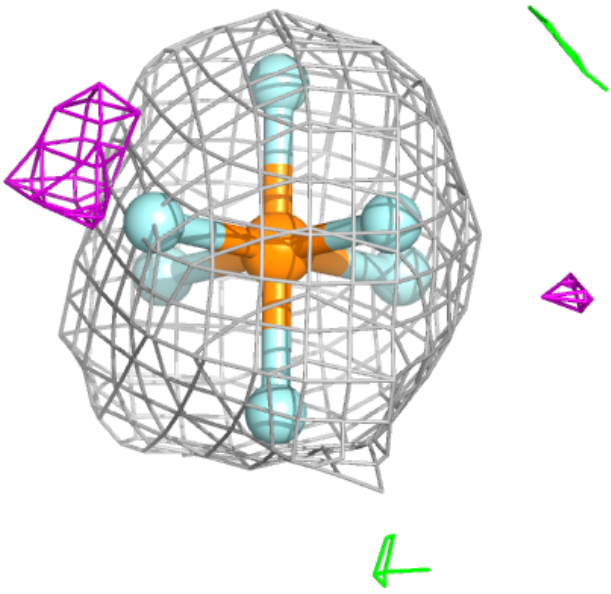


Electron density around A9J A 812:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

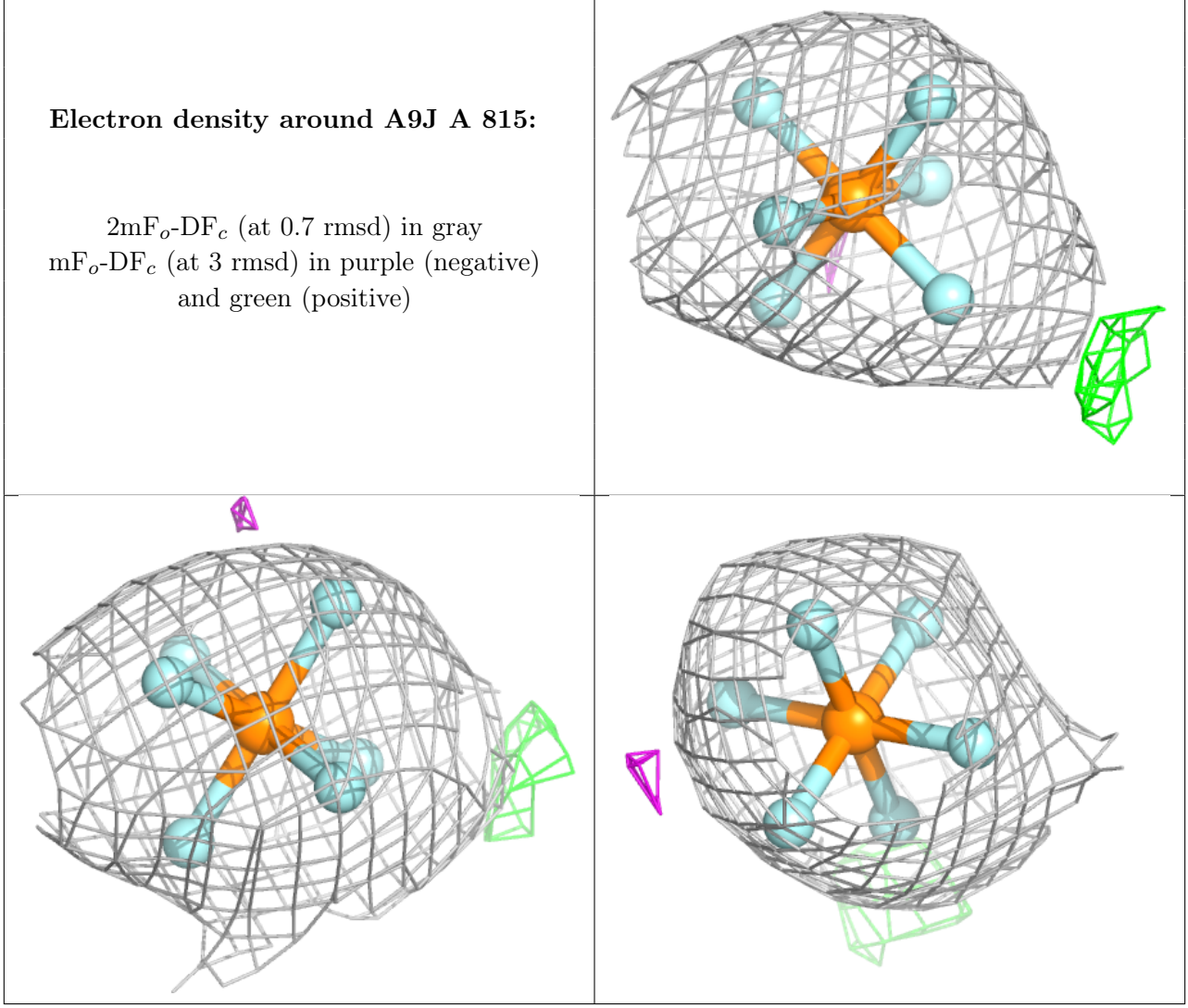






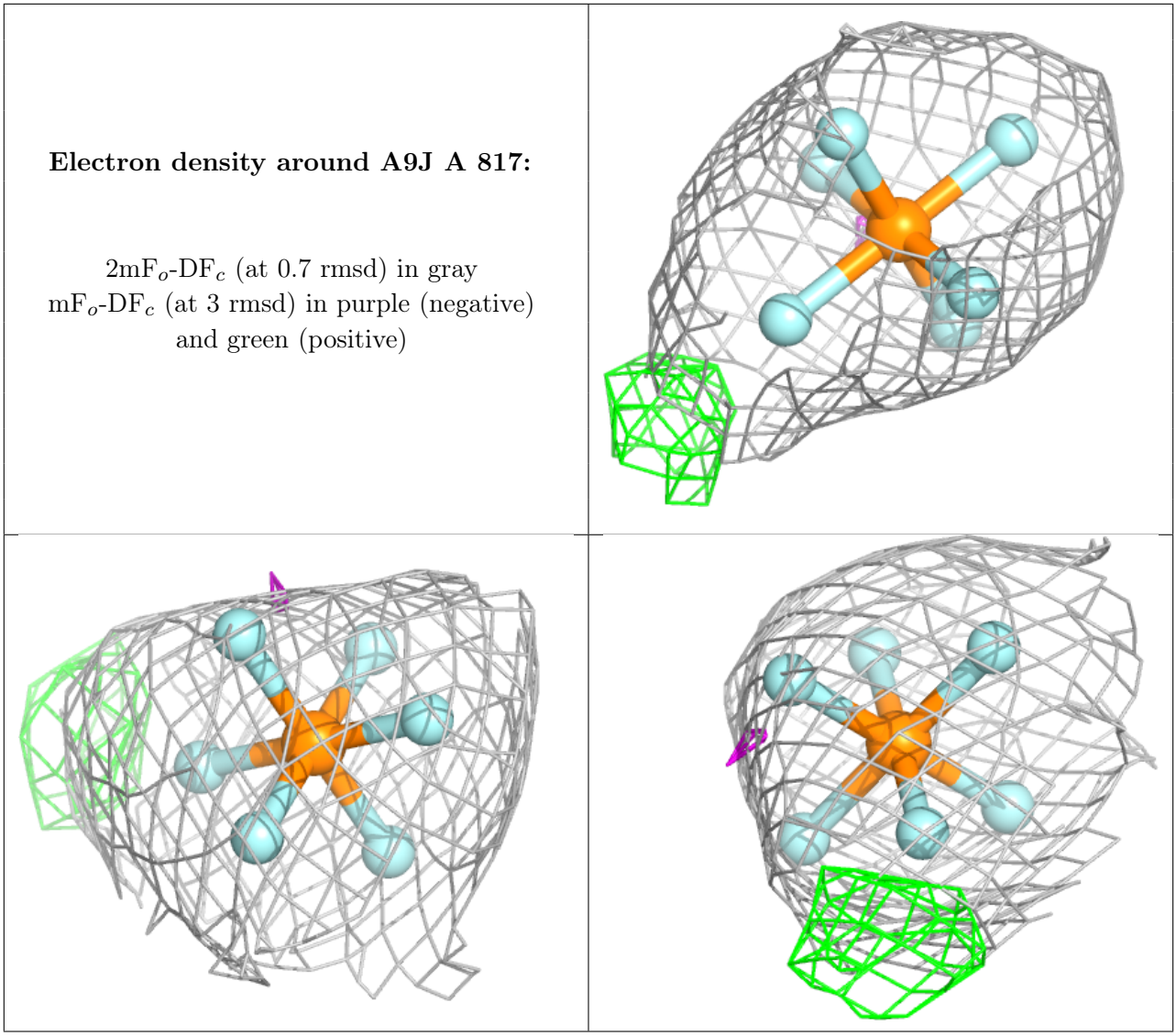
Electron density around A9J A 815:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



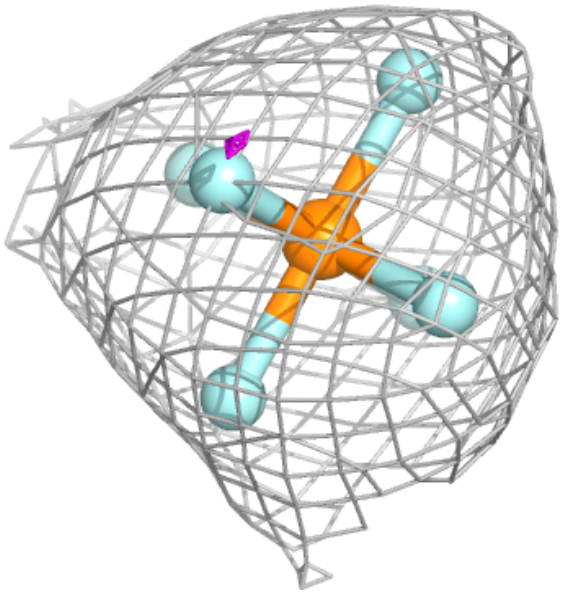
Electron density around A9J A 817:

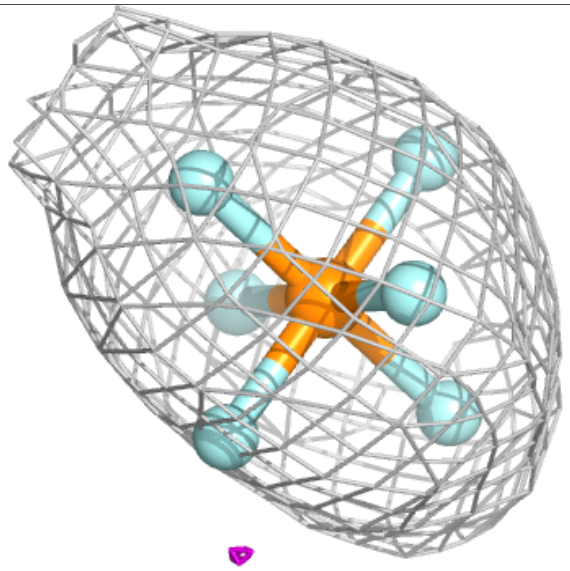
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

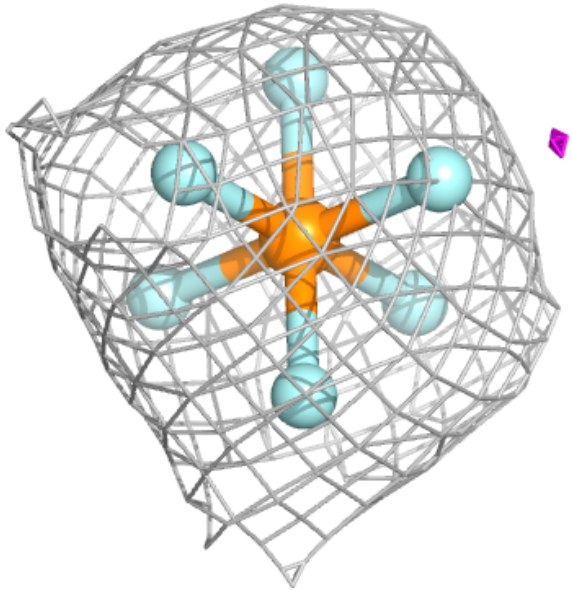


Electron density around A9J B 815:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

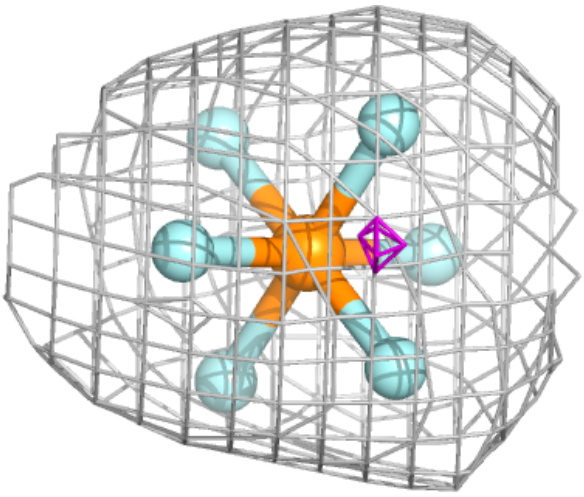


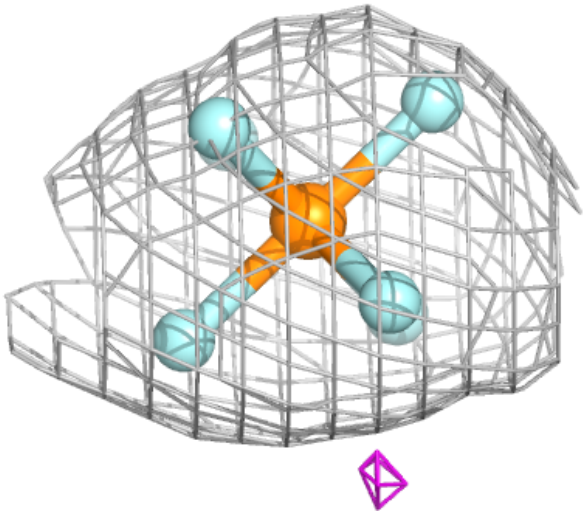


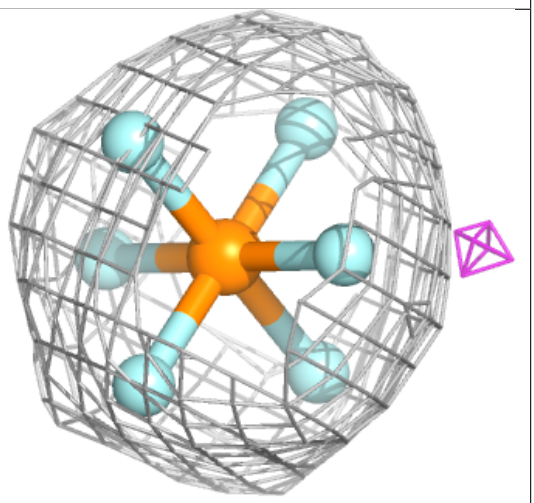


Electron density around A9J A 816:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

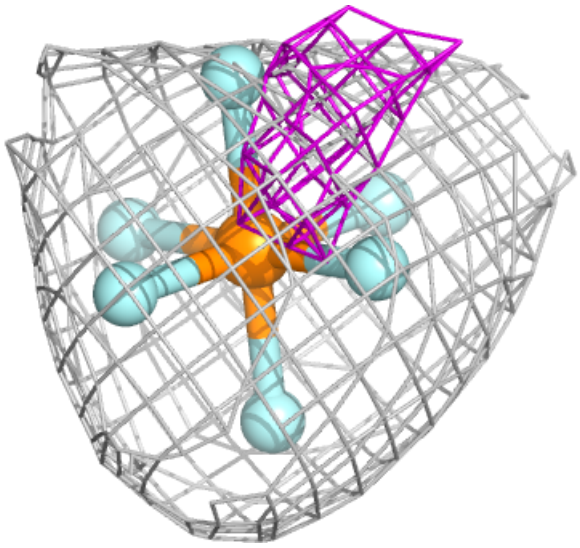


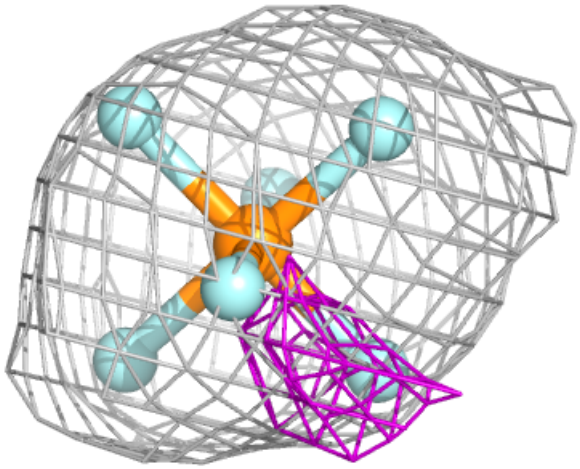


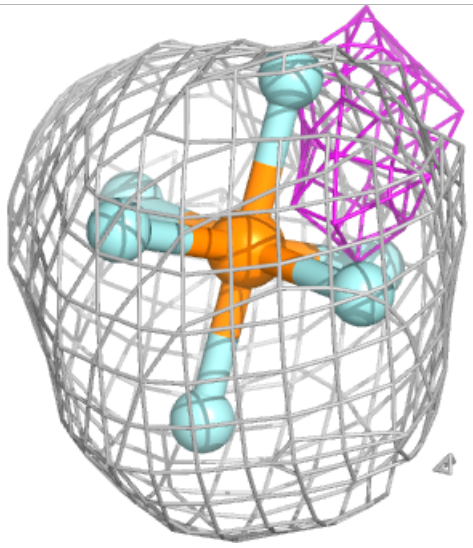


Electron density around A9J B 817:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

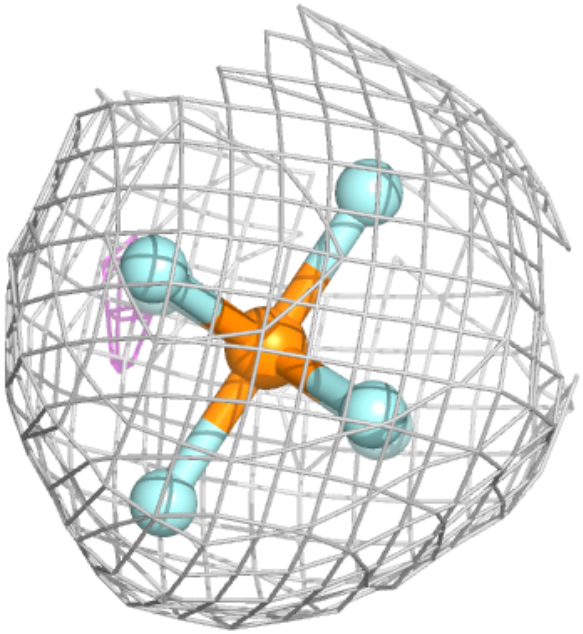


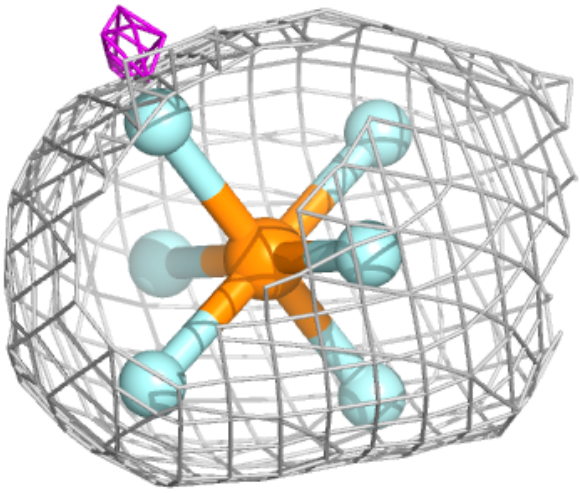


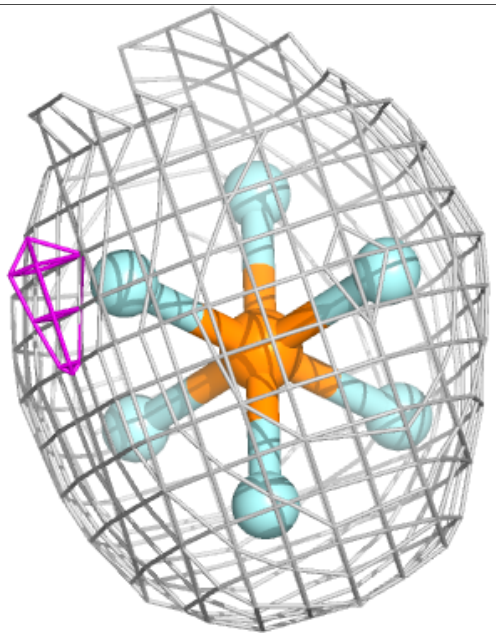


Electron density around A9J A 818:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

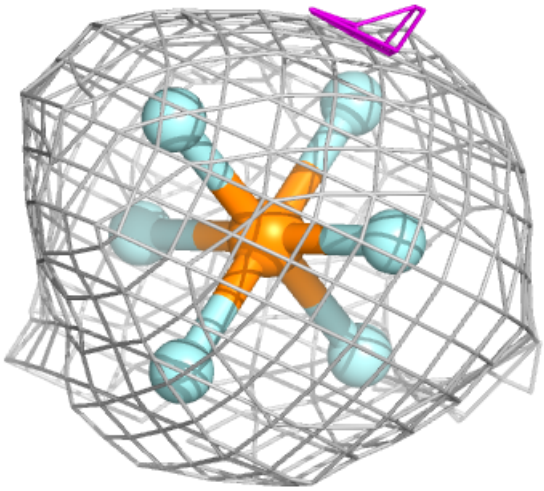


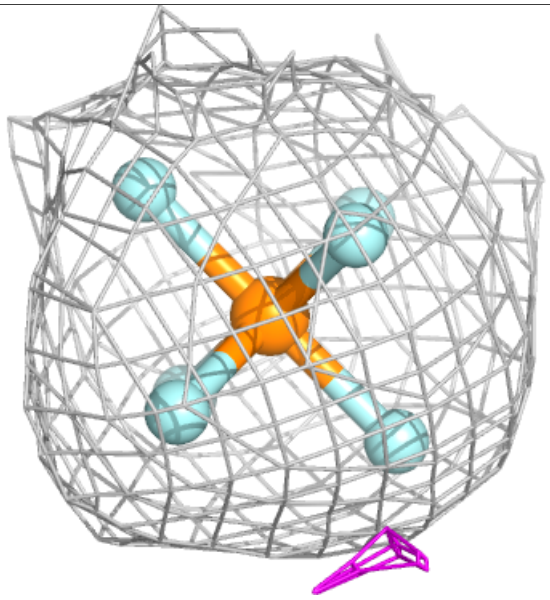


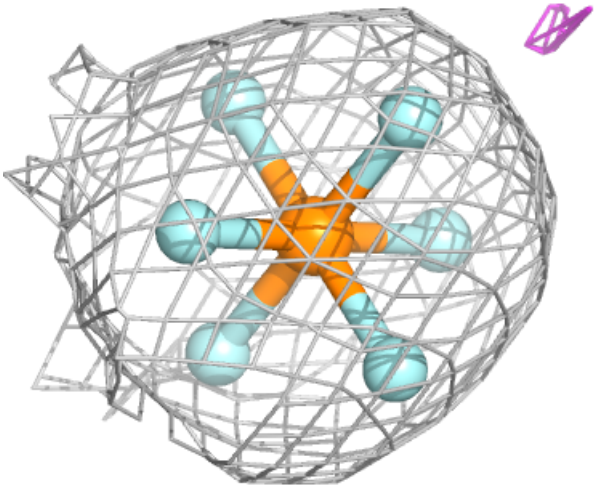


Electron density around A9J A 811:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

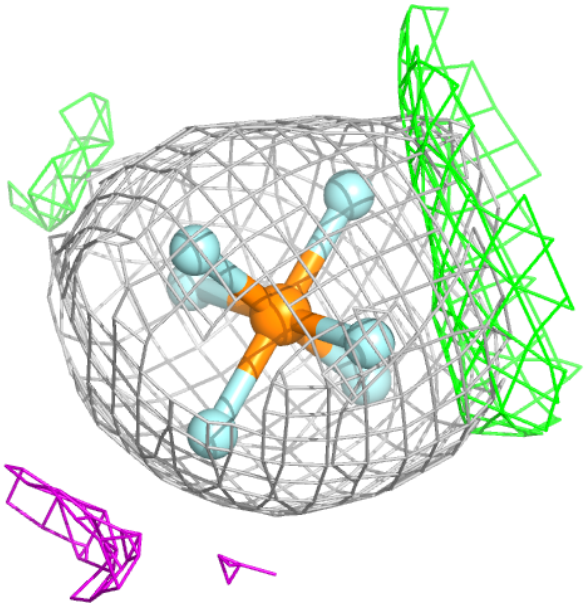


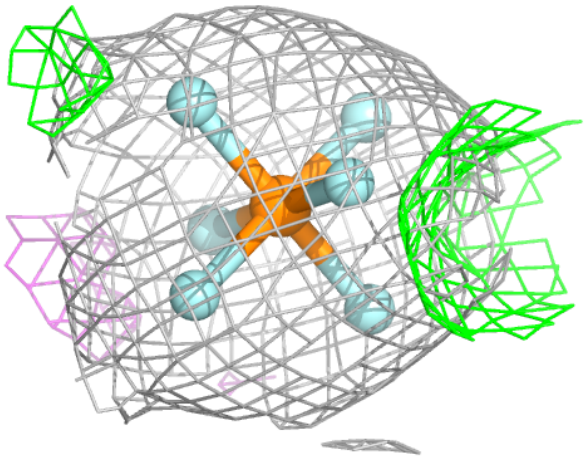


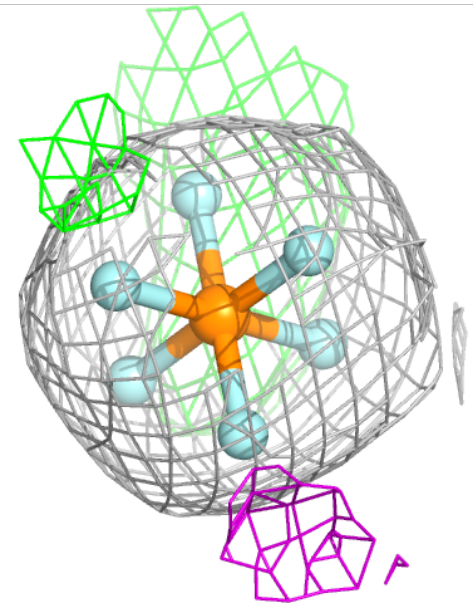


Electron density around A9J A 814:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)







Electron density around A9J B 809:

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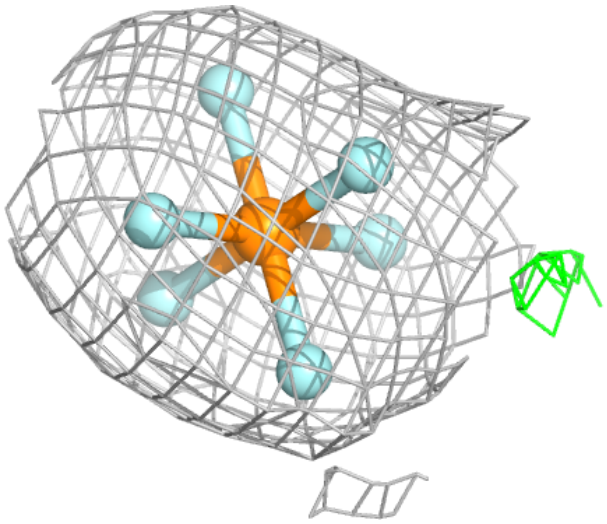
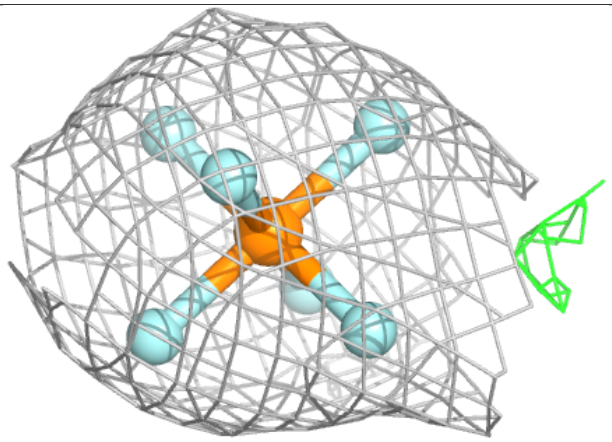
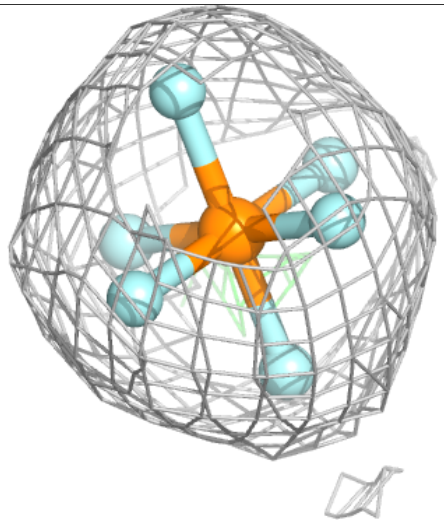
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

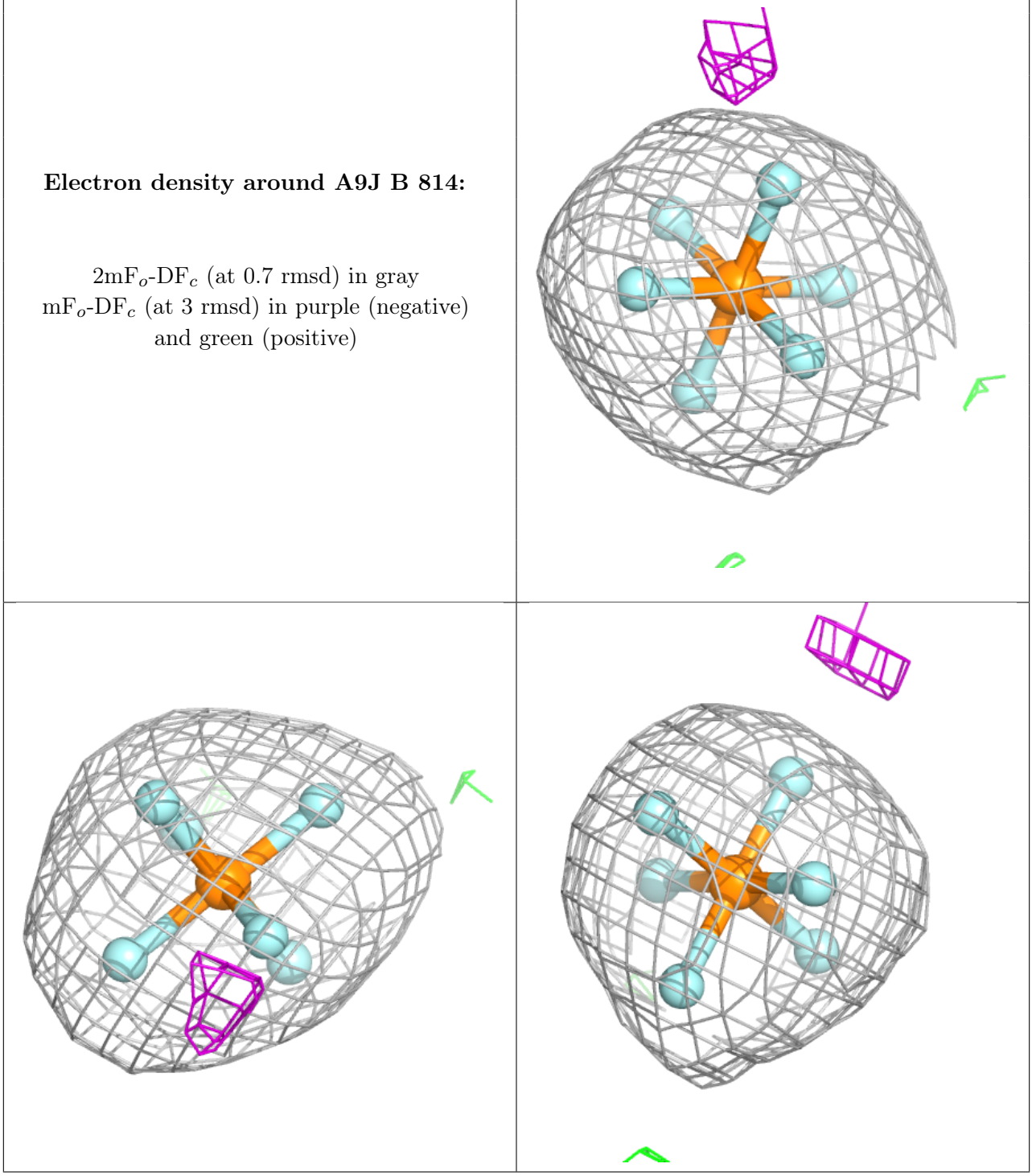






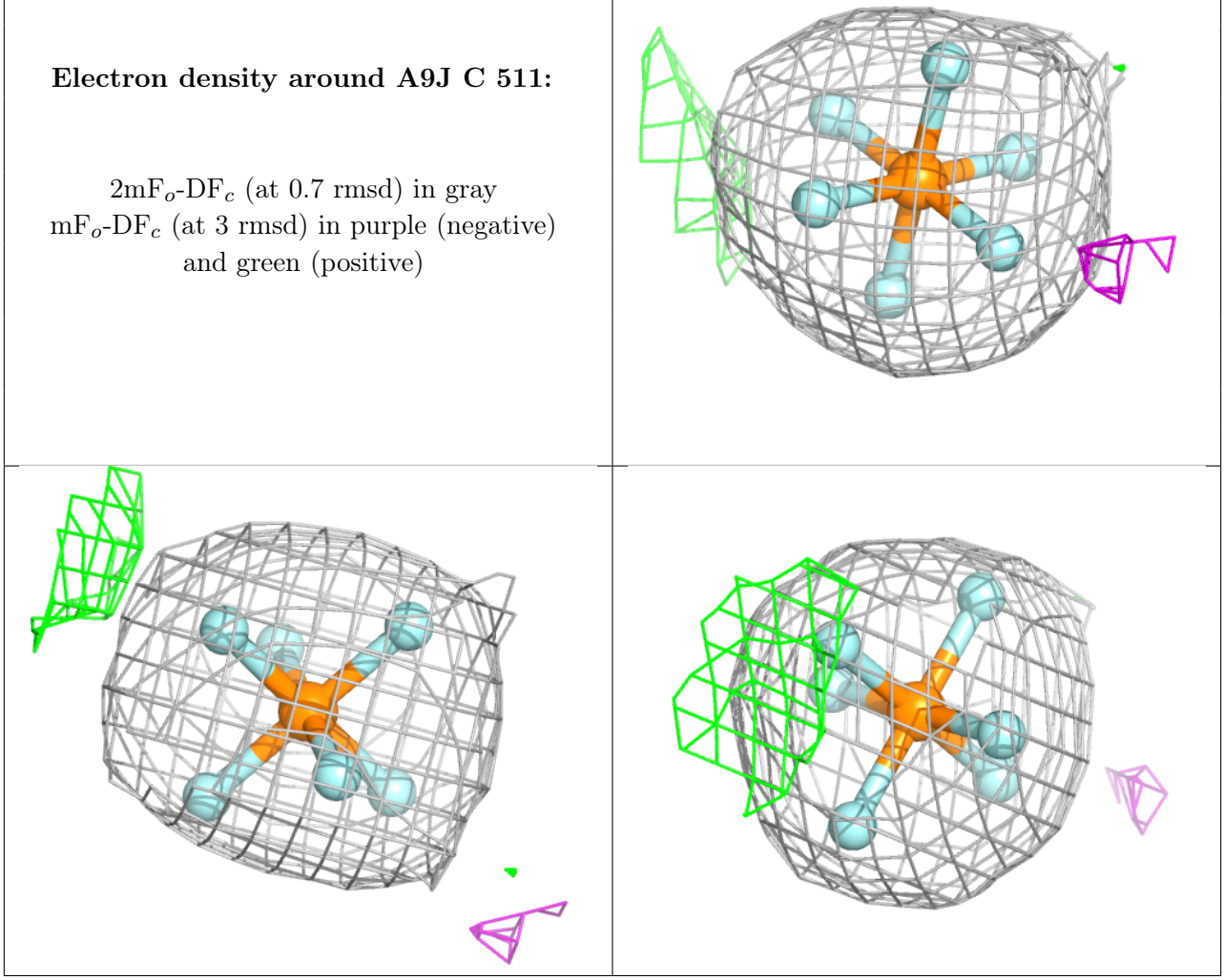
Electron density around A9J B 814:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



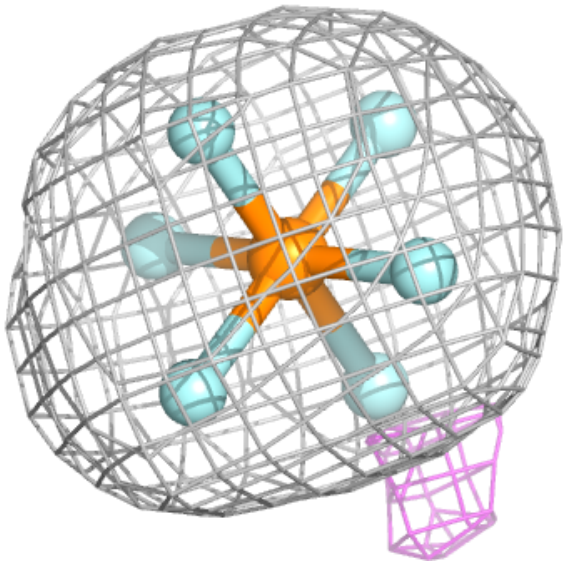
Electron density around A9J C 511:

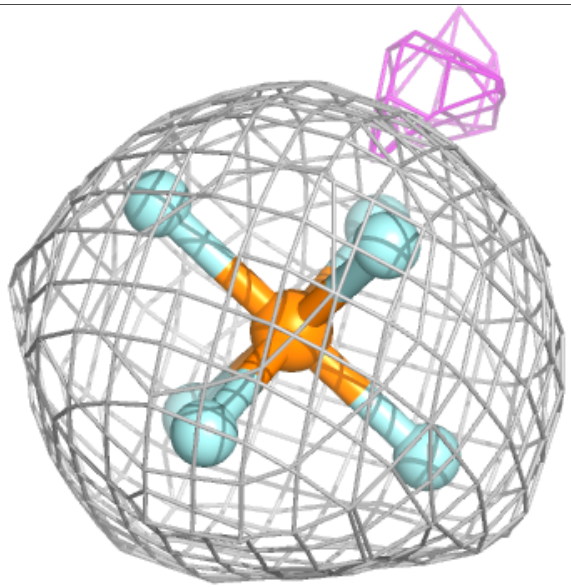
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

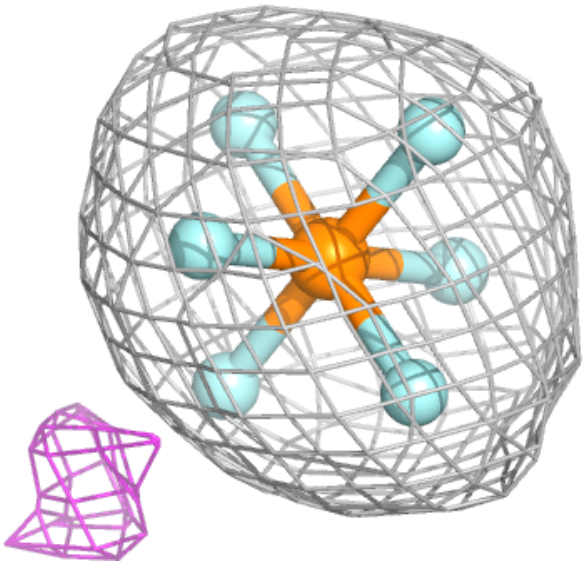


Electron density around A9J D 508:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

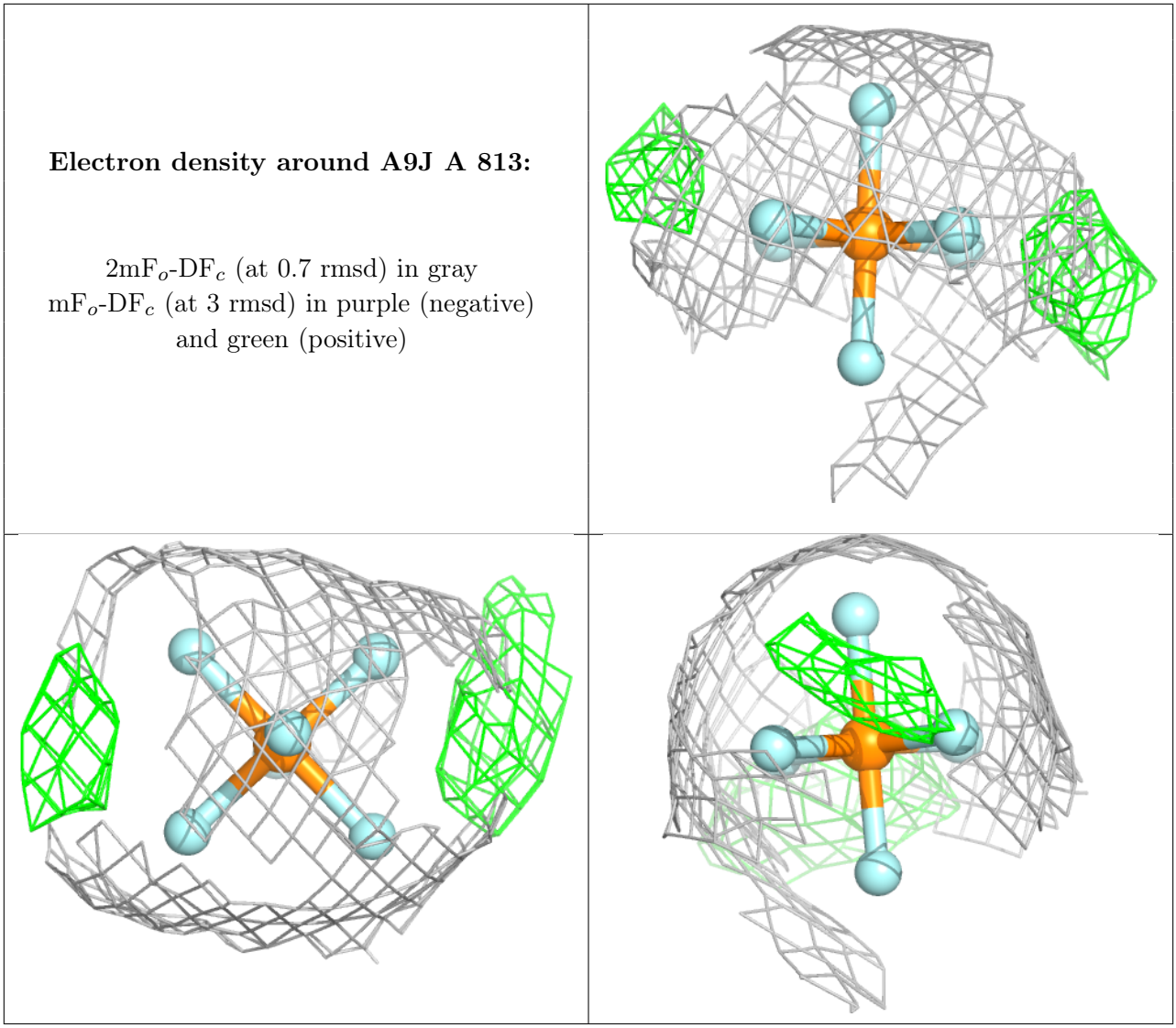






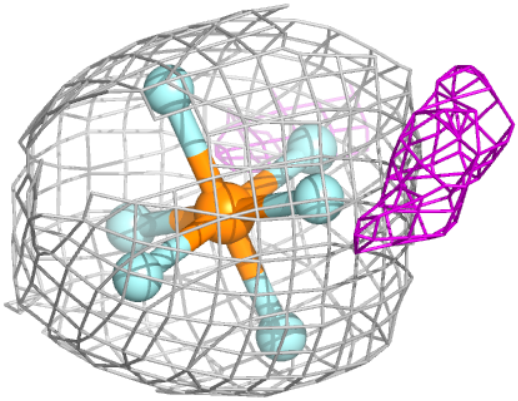
Electron density around A9J A 813:

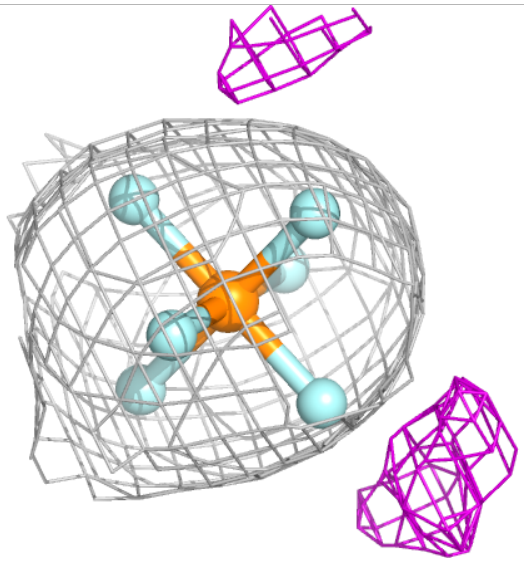
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

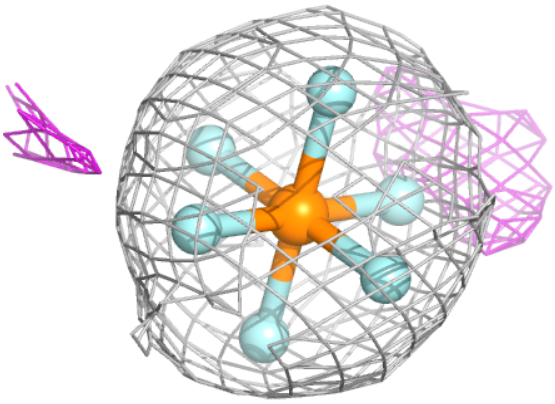


Electron density around A9J C 510:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

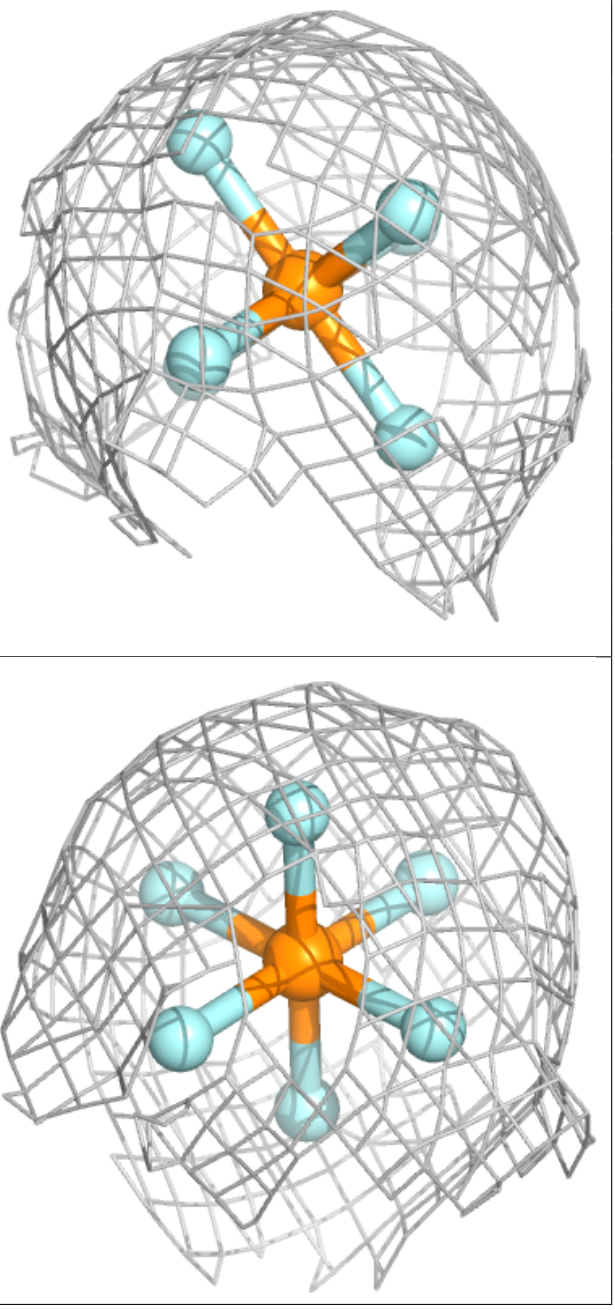


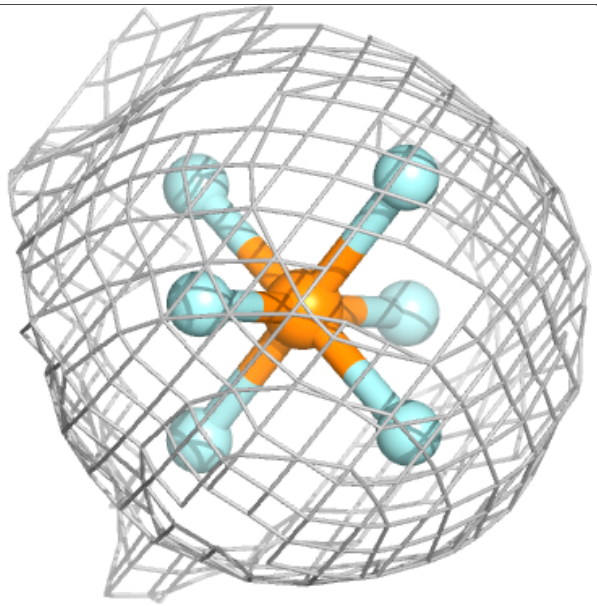




Electron density around A9J B 810:

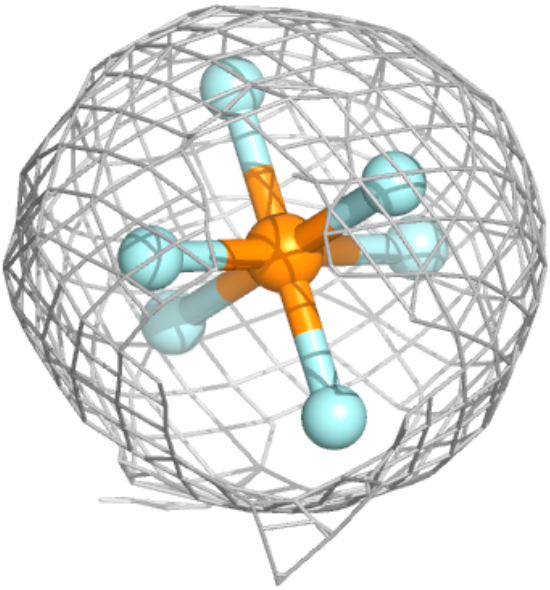
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

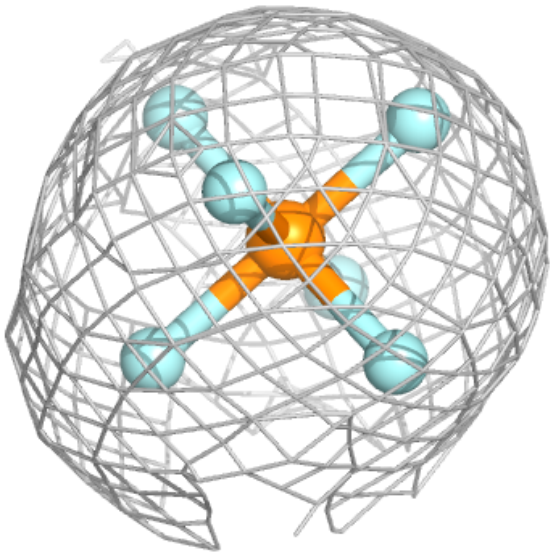


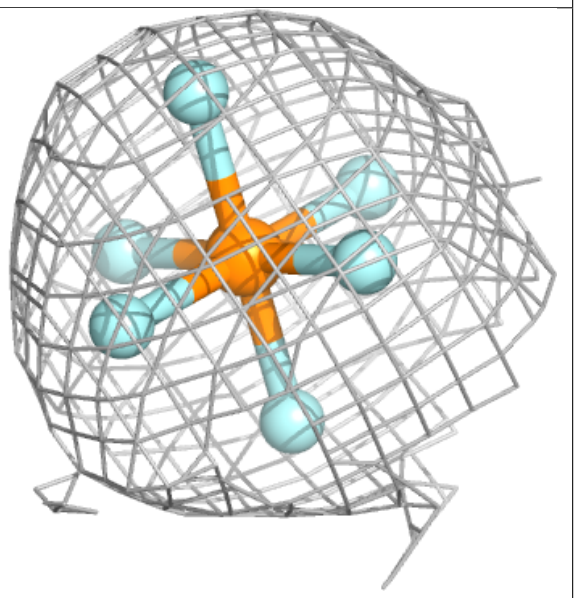


Electron density around A9J B 811:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

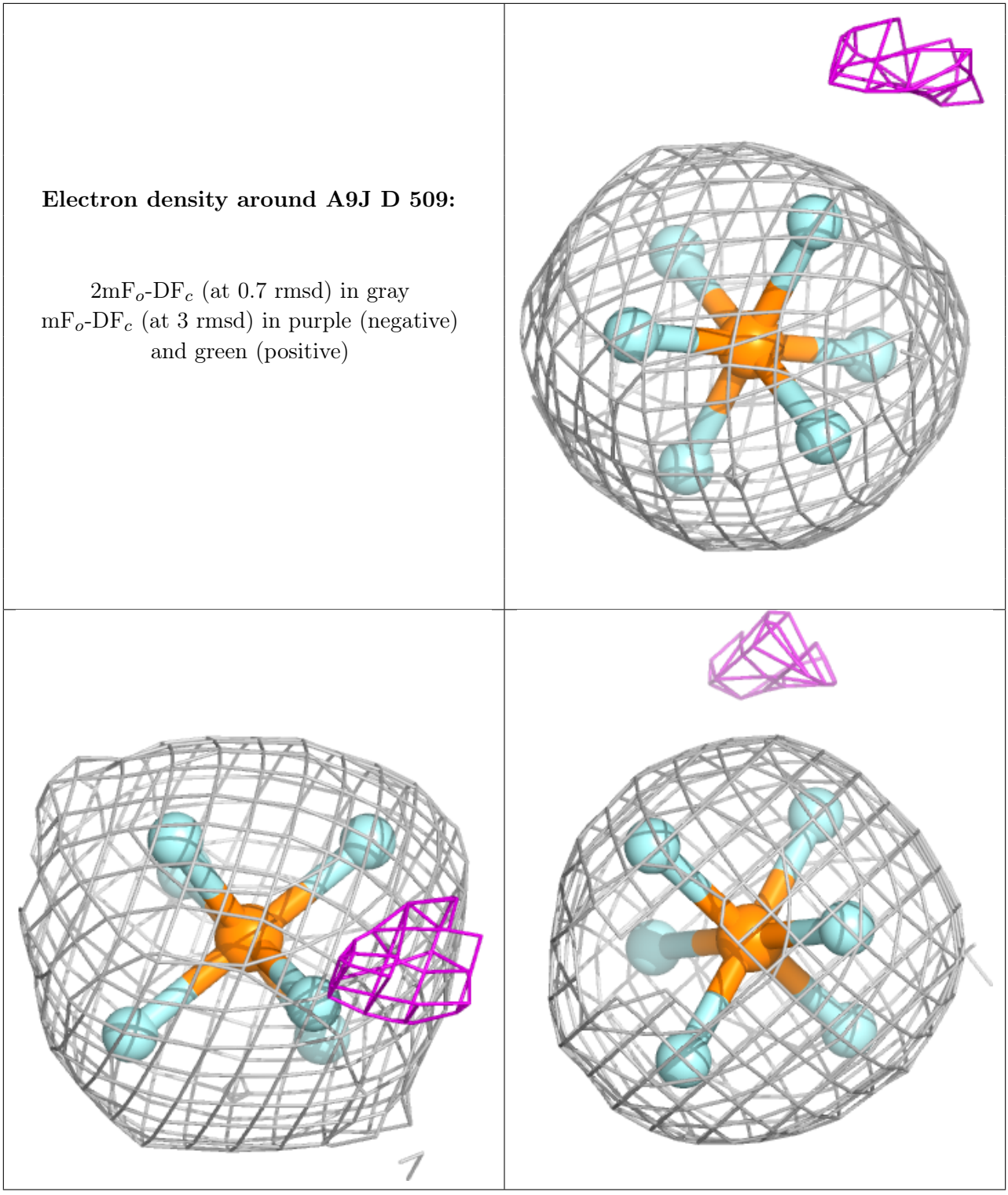






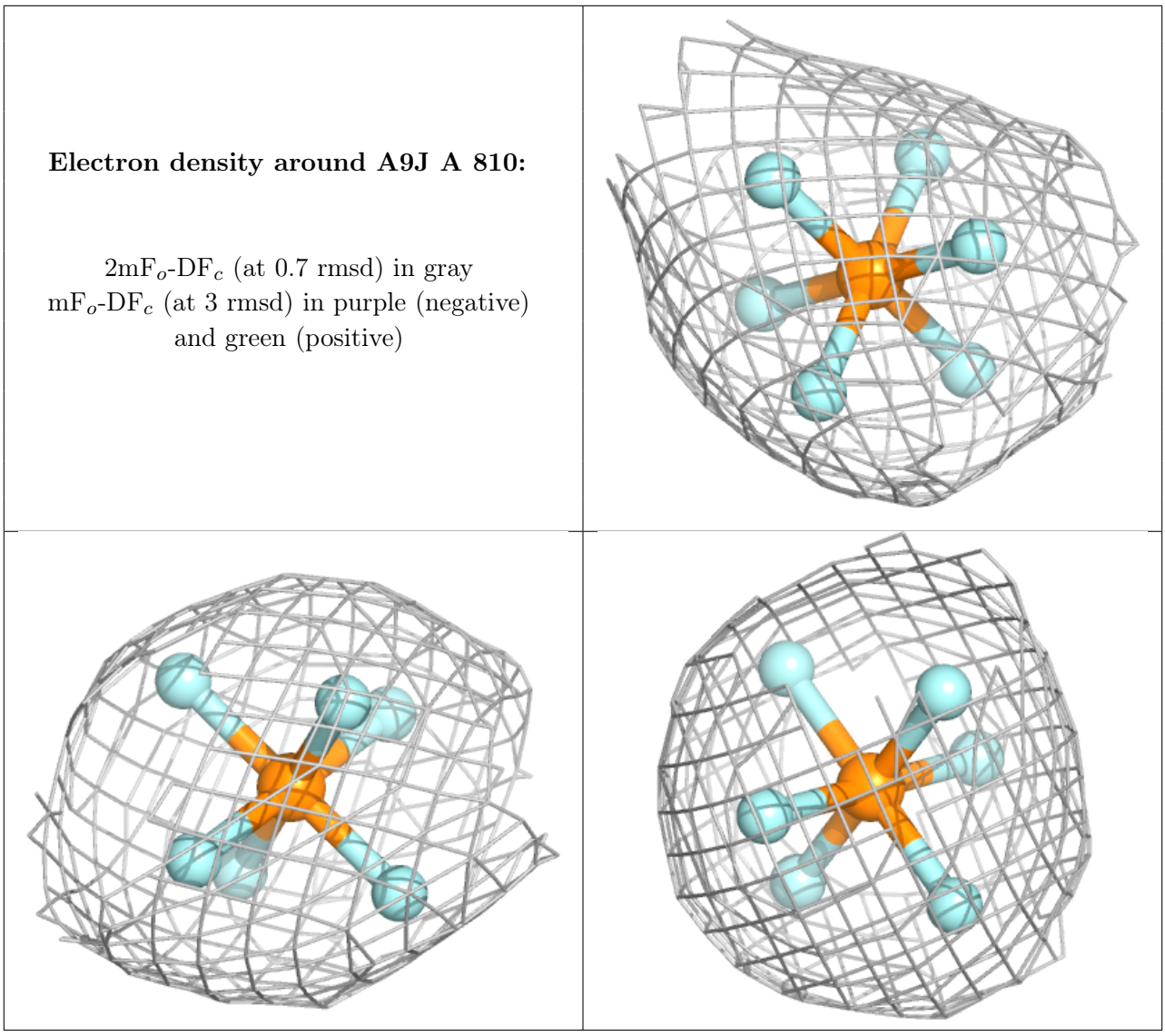
Electron density around A9J D 509:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around A9J A 810:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.5 Other polymers (i)

There are no such residues in this entry.