Full wwPDB X-ray Structure Validation Report ⓘ

Mar 3, 2024 – 10:16 PM EST

PDB ID	:	6E42
Title	:	CRYSTAL STRUCTURE OF HUMAN INDOLEAMINE 2,3-DIOXYGENASE 1 (IDO1) in complex with ferric heme and 4-Chlorophenyl imidazole
Authors	:	Luo, S.; Tong, L.
Deposited on	:	2018-07-16
Resolution	:	2.10 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:

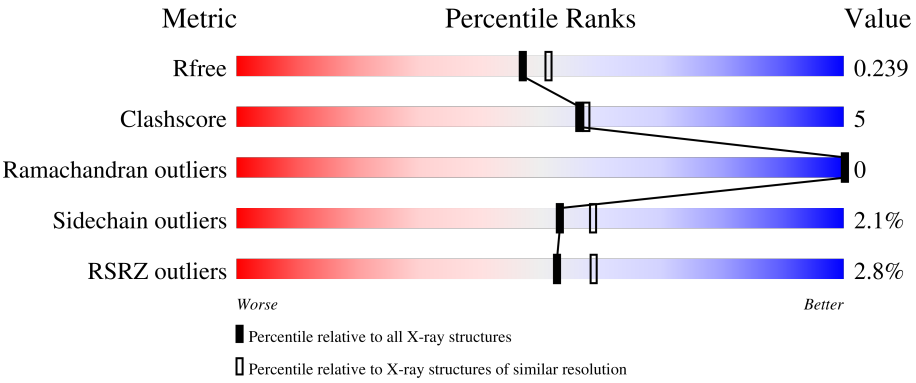
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (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 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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	405	2% 77% 12% • 11%
1	B	405	% 78% 11% 11%
1	C	405	4% 75% 14% 11%
1	D	405	3% 84% 7% 8%

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	HQJ	C	506	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 12170 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 Indoleamine 2,3-dioxygenase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	362	Total	C	N	O	S	0	1	0
			2865	1844	488	516	17			
1	B	362	Total	C	N	O	S	0	0	0
			2854	1837	488	512	17			
1	C	362	Total	C	N	O	S	0	1	0
			2860	1841	488	514	17			
1	D	372	Total	C	N	O	S	0	0	0
			2927	1882	501	527	17			

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	initiating methionine	UNP P14902
A	0	GLY	-	expression tag	UNP P14902
A	1	SER	-	expression tag	UNP P14902
A	2	SER	-	expression tag	UNP P14902
A	3	HIS	-	expression tag	UNP P14902
A	4	HIS	-	expression tag	UNP P14902
A	5	HIS	-	expression tag	UNP P14902
A	6	HIS	-	expression tag	UNP P14902
A	7	HIS	-	expression tag	UNP P14902
A	8	HIS	-	expression tag	UNP P14902
A	9	SER	-	expression tag	UNP P14902
A	10	SER	-	expression tag	UNP P14902
A	11	GLY	-	expression tag	UNP P14902
A	12	SER	-	expression tag	UNP P14902
A	13	ALA	-	expression tag	UNP P14902
A	14	ALA	-	expression tag	UNP P14902
A	116	ALA	LYS	engineered mutation	UNP P14902
A	117	ALA	LYS	engineered mutation	UNP P14902
B	-1	MET	-	initiating methionine	UNP P14902
B	0	GLY	-	expression tag	UNP P14902
B	1	SER	-	expression tag	UNP P14902

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Chain	Residue	Modelled	Actual	Comment	Reference
B	2	SER	-	expression tag	UNP P14902
B	3	HIS	-	expression tag	UNP P14902
B	4	HIS	-	expression tag	UNP P14902
B	5	HIS	-	expression tag	UNP P14902
B	6	HIS	-	expression tag	UNP P14902
B	7	HIS	-	expression tag	UNP P14902
B	8	HIS	-	expression tag	UNP P14902
B	9	SER	-	expression tag	UNP P14902
B	10	SER	-	expression tag	UNP P14902
B	11	GLY	-	expression tag	UNP P14902
B	12	SER	-	expression tag	UNP P14902
B	13	ALA	-	expression tag	UNP P14902
B	14	ALA	-	expression tag	UNP P14902
B	116	ALA	LYS	engineered mutation	UNP P14902
B	117	ALA	LYS	engineered mutation	UNP P14902
C	-1	MET	-	initiating methionine	UNP P14902
C	0	GLY	-	expression tag	UNP P14902
C	1	SER	-	expression tag	UNP P14902
C	2	SER	-	expression tag	UNP P14902
C	3	HIS	-	expression tag	UNP P14902
C	4	HIS	-	expression tag	UNP P14902
C	5	HIS	-	expression tag	UNP P14902
C	6	HIS	-	expression tag	UNP P14902
C	7	HIS	-	expression tag	UNP P14902
C	8	HIS	-	expression tag	UNP P14902
C	9	SER	-	expression tag	UNP P14902
C	10	SER	-	expression tag	UNP P14902
C	11	GLY	-	expression tag	UNP P14902
C	12	SER	-	expression tag	UNP P14902
C	13	ALA	-	expression tag	UNP P14902
C	14	ALA	-	expression tag	UNP P14902
C	116	ALA	LYS	engineered mutation	UNP P14902
C	117	ALA	LYS	engineered mutation	UNP P14902
D	-1	MET	-	initiating methionine	UNP P14902
D	0	GLY	-	expression tag	UNP P14902
D	1	SER	-	expression tag	UNP P14902
D	2	SER	-	expression tag	UNP P14902
D	3	HIS	-	expression tag	UNP P14902
D	4	HIS	-	expression tag	UNP P14902
D	5	HIS	-	expression tag	UNP P14902
D	6	HIS	-	expression tag	UNP P14902
D	7	HIS	-	expression tag	UNP P14902

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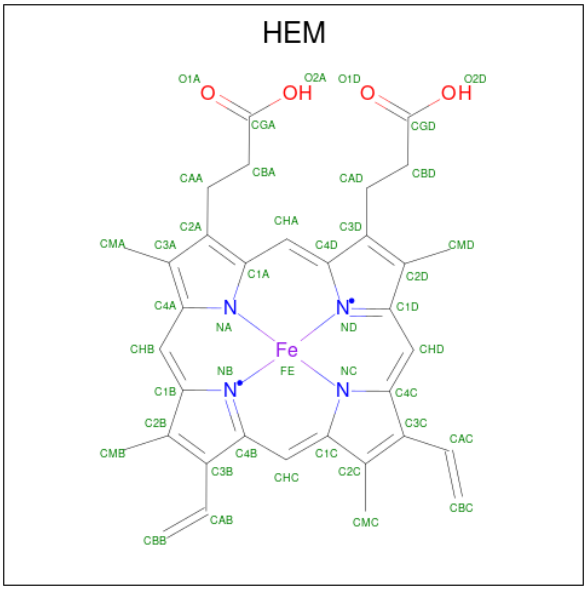
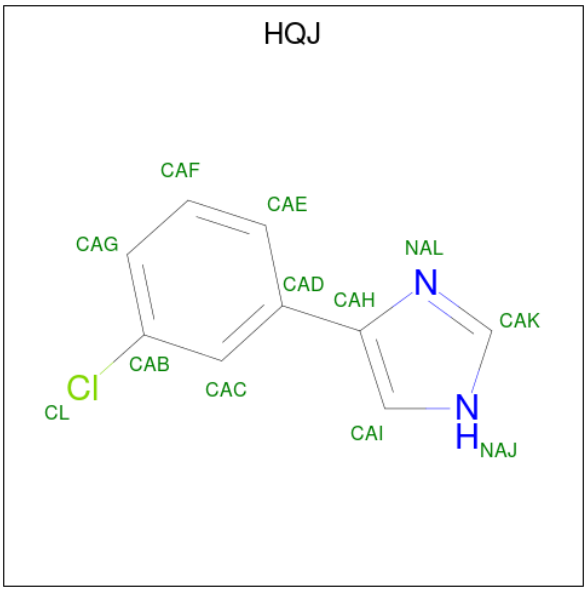
Chain	Residue	Modelled	Actual	Comment	Reference
D	8	HIS	-	expression tag	UNP P14902
D	9	SER	-	expression tag	UNP P14902
D	10	SER	-	expression tag	UNP P14902
D	11	GLY	-	expression tag	UNP P14902
D	12	SER	-	expression tag	UNP P14902
D	13	ALA	-	expression tag	UNP P14902
D	14	ALA	-	expression tag	UNP P14902
D	116	ALA	LYS	engineered mutation	UNP P14902
D	117	ALA	LYS	engineered mutation	UNP P14902

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	D	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is 4-(3-chlorophenyl)-1H-imidazole (three-letter code: HQJ) (formula: $C_9H_7ClN_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	A	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	A	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	A	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	B	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	B	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	B	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	B	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	C	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	C	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	C	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	C	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	C	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	D	1	Total	C	Cl	N	0	0
			12	9	1	2		

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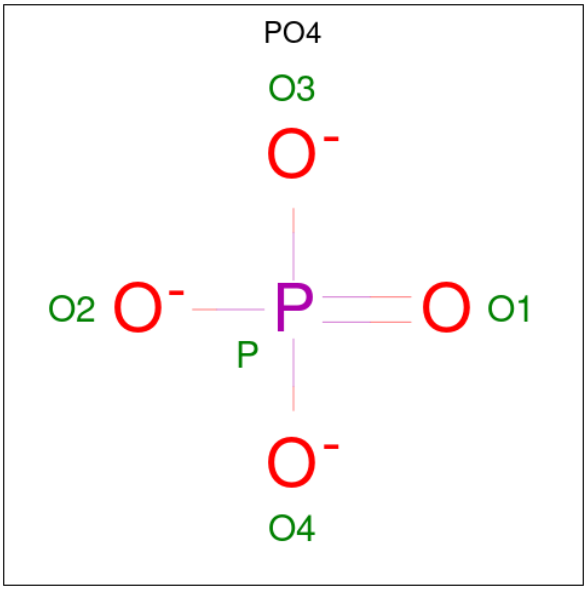
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	D	1	Total	C	Cl	N	0	0
			12	9	1	2		
3	D	1	Total	C	Cl	N	0	0
			12	9	1	2		

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	D	1	Total	O	P	0	0
			5	4	1		

- Molecule 5 is water.

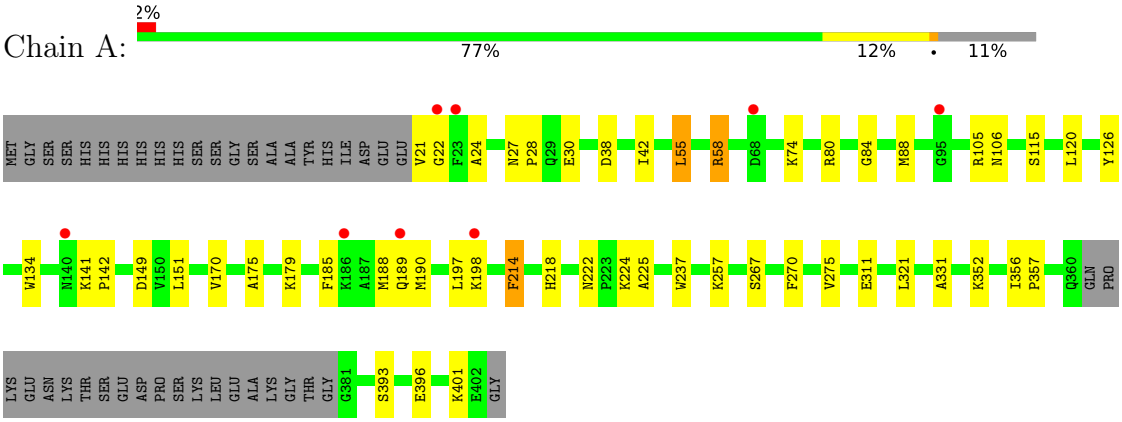
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	55	Total	O	0	0
			55	55		
5	B	53	Total	O	0	0
			53	53		
5	C	84	Total	O	0	0
			84	84		
5	D	103	Total	O	0	0
			103	103		

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.

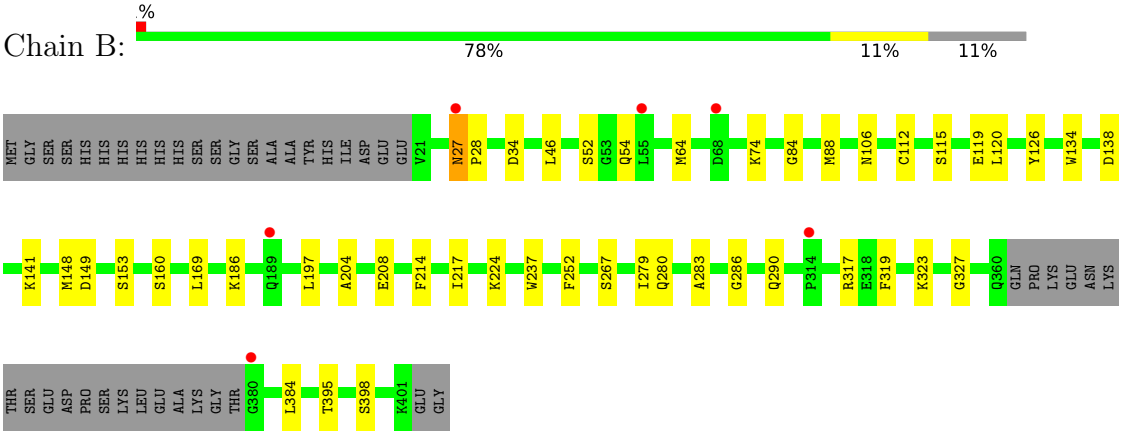
• Molecule 1: Indoleamine 2,3-dioxygenase 1

Chain A:



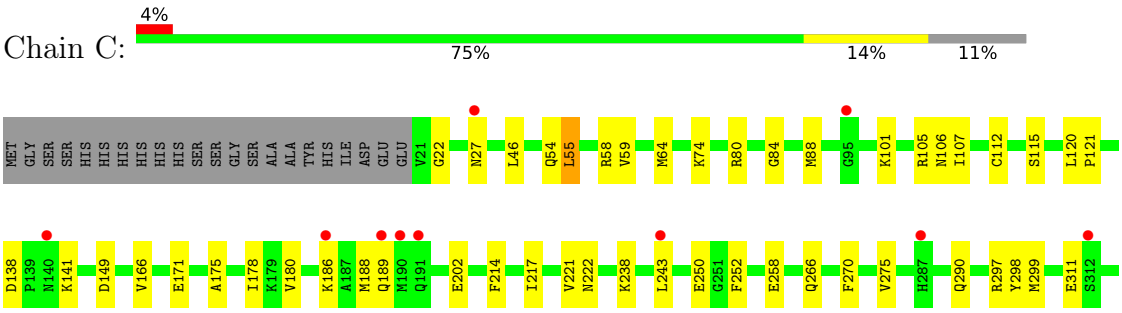
• Molecule 1: Indoleamine 2,3-dioxygenase 1

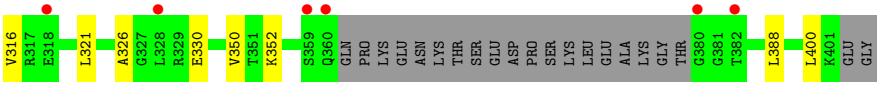
Chain B:



• Molecule 1: Indoleamine 2,3-dioxygenase 1

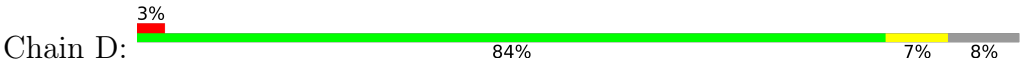
Chain C:

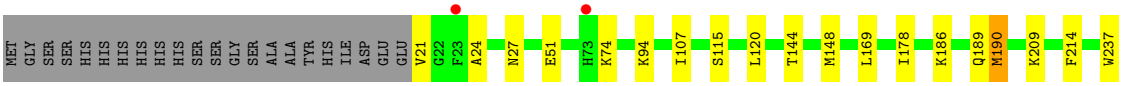


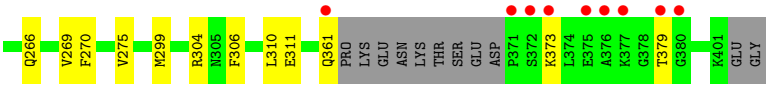


• Molecule 1: Indoleamine 2,3-dioxygenase 1

Chain D:







4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	79.74Å 197.88Å 113.02Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.07 – 2.10 49.07 – 2.10	Depositor EDS
% Data completeness (in resolution range)	98.3 (49.07-2.10) 98.3 (49.07-2.10)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.71 (at 2.10Å)	Xtriage
Refinement program	PHENIX 1.12_2829	Depositor
R, R_{free}	0.203 , 0.240 0.203 , 0.239	Depositor DCC
R_{free} test set	5081 reflections (4.94%)	wwPDB-VP
Wilson B-factor (Å^2)	40.3	Xtriage
Anisotropy	0.220	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 37.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	12170	wwPDB-VP
Average B, all atoms (Å^2)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 44.38 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.5393e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: HQJ, HEM, PO4

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	0.42	0/2934	0.56	1/3971 (0.0%)
1	B	0.42	0/2920	0.57	0/3952
1	C	0.40	0/2929	0.54	2/3964 (0.1%)
1	D	0.42	0/2994	0.55	0/4050
All	All	0.41	0/11777	0.56	3/15937 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	55	LEU	CA-CB-CG	-6.47	100.43	115.30
1	C	221	VAL	C-N-CA	-5.58	107.75	121.70
1	C	55	LEU	CA-CB-CG	-5.24	103.24	115.30

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	2865	0	2885	31	0
1	B	2854	0	2876	26	0
1	C	2860	0	2882	32	0
1	D	2927	0	2955	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	43	0	30	5	0
2	B	43	0	30	7	0
2	C	43	0	30	3	0
2	D	43	0	30	3	0
3	A	48	0	0	0	0
3	B	48	0	0	0	0
3	C	60	0	0	5	0
3	D	36	0	0	0	0
4	D	5	0	0	0	0
5	A	55	0	0	1	0
5	B	53	0	0	0	0
5	C	84	0	0	1	0
5	D	103	0	0	1	0
All	All	12170	0	11718	118	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 5.

All (118) 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)
1:B:27:ASN:O	1:B:74:LYS:NZ	1.88	1.05
1:D:148:MET:HE1	1:D:169:LEU:HD21	1.61	0.82
1:D:189:GLN:HG2	1:D:190:MET:HE3	1.68	0.74
1:C:352:LYS:NZ	3:C:506:HQJ:NAJ	2.37	0.73
1:D:373:LYS:NZ	1:D:379:THR:OG1	2.22	0.73
1:A:141:LYS:HG3	1:A:142:PRO:HD2	1.71	0.73
1:A:30[B]:GLU:HG3	1:A:151:LEU:HD22	1.70	0.72
1:C:175:ALA:HA	1:C:178:ILE:HD12	1.72	0.71
1:C:326:ALA:O	1:C:330:GLU:HG3	1.93	0.68
1:A:22:GLY:HA3	1:A:175:ALA:HB1	1.75	0.68
1:C:352:LYS:HZ3	3:C:506:HQJ:CAK	2.08	0.67
1:C:54:GLN:OE1	1:C:58:ARG:NH1	2.28	0.66
1:B:148:MET:HE1	1:B:169:LEU:HD21	1.79	0.65
1:B:286:GLY:O	1:B:290:GLN:HG2	1.96	0.65
1:D:148:MET:CE	1:D:169:LEU:HD21	2.26	0.64
1:B:384:LEU:HD21	2:B:501:HEM:HMA3	1.80	0.63
1:C:115:SER:HB3	1:C:120:LEU:O	2.00	0.62
1:B:317:ARG:NH1	1:B:398:SER:O	2.27	0.62
1:A:115:SER:HB3	1:A:120:LEU:O	2.01	0.61
1:B:115:SER:HB3	1:B:120:LEU:O	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:217:ILE:HD11	2:B:501:HEM:HAB	1.84	0.60
1:D:115:SER:HB3	1:D:120:LEU:O	2.02	0.60
2:A:501:HEM:HBB2	2:A:501:HEM:HMB2	1.85	0.59
1:C:166:VAL:HG11	1:C:217:ILE:HG12	1.86	0.56
2:C:501:HEM:HMB2	2:C:501:HEM:HBB2	1.87	0.56
1:D:306:PHE:O	1:D:310:LEU:HD13	2.05	0.56
1:A:27:ASN:O	1:A:74:LYS:HE3	2.06	0.55
1:A:141:LYS:HG3	1:A:142:PRO:CD	2.37	0.55
2:B:501:HEM:HMB2	2:B:501:HEM:HBB2	1.89	0.54
2:D:501:HEM:HBB2	2:D:501:HEM:HMB2	1.90	0.54
1:C:22:GLY:HA3	1:C:175:ALA:HB1	1.89	0.53
1:D:27:ASN:O	1:D:74:LYS:HE3	2.09	0.53
1:C:27:ASN:O	1:C:74:LYS:HE3	2.08	0.53
1:A:222:ASN:ND2	1:A:225:ALA:H	2.06	0.52
1:D:373:LYS:NZ	1:D:379:THR:CB	2.72	0.52
1:C:180:VAL:HG21	1:C:202:GLU:HG2	1.92	0.52
1:B:148:MET:CE	1:B:169:LEU:HD21	2.39	0.52
1:A:84:GLY:O	1:A:88:MET:HG2	2.10	0.51
1:B:217:ILE:CD1	2:B:501:HEM:HAB	2.39	0.51
1:C:59:VAL:HG13	1:C:107:ILE:CD1	2.40	0.51
1:A:257:LYS:HE2	1:B:119:GLU:OE1	2.11	0.51
1:D:275:VAL:HG13	1:D:311:GLU:HG3	1.92	0.51
1:A:214:PHE:CE2	2:A:501:HEM:HBC2	2.45	0.51
1:D:51:GLU:O	1:D:94:LYS:NZ	2.34	0.51
1:C:270:PHE:CZ	2:C:501:HEM:HBC1	2.46	0.51
1:D:270:PHE:CZ	2:D:501:HEM:HBC1	2.47	0.50
2:C:501:HEM:O1D	2:C:501:HEM:HMD1	2.10	0.50
1:A:21:VAL:HB	1:A:24:ALA:HB3	1.94	0.50
1:B:204:ALA:O	1:B:208:GLU:HG3	2.12	0.50
1:B:319:PHE:O	1:B:323:LYS:HG2	2.12	0.50
1:B:52:SER:OG	1:B:54:GLN:HG3	2.12	0.49
1:A:55:LEU:O	1:A:55:LEU:HG	2.08	0.49
1:C:106:ASN:HB2	5:C:644:HOH:O	2.12	0.49
1:D:209:LYS:NZ	5:D:602:HOH:O	2.39	0.49
1:C:101:LYS:HG2	1:C:243:LEU:CD2	2.44	0.48
1:D:144:THR:O	1:D:148:MET:HE2	2.14	0.47
1:D:373:LYS:HZ1	1:D:379:THR:CB	2.26	0.47
1:C:266:GLN:O	1:C:299:MET:HG2	2.15	0.47
1:C:297:ARG:HH12	3:C:505:HQJ:CAK	2.27	0.47
1:B:84:GLY:O	1:B:88:MET:HG2	2.15	0.47
1:A:270:PHE:CE2	2:A:501:HEM:HAC	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:VAL:HG11	2:A:501:HEM:HBC1	1.98	0.46
1:B:384:LEU:HD11	2:B:501:HEM:HAA1	1.97	0.46
1:D:21:VAL:HB	1:D:24:ALA:HB3	1.98	0.46
1:C:64:MET:CE	1:C:105:ARG:HG2	2.45	0.46
1:B:64:MET:HB2	1:B:106:ASN:OD1	2.15	0.45
1:C:84:GLY:O	1:C:88:MET:HG2	2.16	0.45
1:B:279:ILE:HD13	1:B:395:THR:HG23	1.98	0.45
1:C:138:ASP:OD2	1:C:141:LYS:N	2.50	0.45
1:C:112:CYS:HB3	1:C:252:PHE:CE2	2.52	0.45
1:C:121:PRO:HG2	1:C:298:TYR:CD2	2.52	0.45
2:B:501:HEM:HBC2	2:B:501:HEM:HHD	1.99	0.44
1:D:373:LYS:NZ	1:D:379:THR:HB	2.33	0.44
1:A:356:ILE:HB	1:A:357:PRO:HD3	1.99	0.44
1:A:170:VAL:HG11	2:A:501:HEM:CBC	2.47	0.44
1:C:352:LYS:NZ	3:C:506:HQJ:CAK	2.79	0.43
1:A:58:ARG:HH11	1:A:58:ARG:HG2	1.83	0.43
1:B:126:TYR:CE2	1:B:267:SER:HB2	2.53	0.43
1:D:186:LYS:HE3	1:D:190:MET:HG2	1.99	0.43
1:B:112:CYS:HB3	1:B:252:PHE:CE2	2.53	0.43
1:D:178:ILE:HD11	1:D:269:VAL:HG22	2.00	0.43
1:A:185:PHE:HA	1:A:188:MET:HE2	2.01	0.43
1:C:321:LEU:HD21	1:C:400:LEU:HD22	2.00	0.43
1:A:218:HIS:CE1	1:A:352:LYS:HZ2	2.36	0.43
1:B:28:PRO:HD3	1:B:134:TRP:CZ2	2.54	0.43
2:D:501:HEM:CMC	2:D:501:HEM:HBC2	2.49	0.43
1:A:179:LYS:HB3	1:A:179:LYS:HE3	1.61	0.43
1:C:275:VAL:HG13	1:C:311:GLU:HG3	2.01	0.43
1:C:350:VAL:HG21	1:C:388:LEU:HD11	2.01	0.43
1:D:107:ILE:HD13	1:D:107:ILE:HA	1.81	0.43
1:C:59:VAL:HG13	1:C:107:ILE:HD12	2.01	0.43
1:C:188:MET:SD	1:C:316:VAL:HG22	2.59	0.43
1:A:393:SER:HA	1:A:396:GLU:HG2	2.00	0.42
1:B:138:ASP:HB3	1:B:141:LYS:HD2	2.01	0.42
1:A:222:ASN:HD21	1:A:224:LYS:HB3	1.84	0.42
1:C:321:LEU:HD23	1:C:321:LEU:HA	1.71	0.42
1:A:189:GLN:HE21	1:A:190:MET:CE	2.32	0.42
1:B:46:LEU:HD23	1:B:46:LEU:HA	1.86	0.42
1:C:186:LYS:NZ	1:C:189:GLN:HG2	2.34	0.42
1:A:28:PRO:HD3	1:A:134:TRP:CZ2	2.54	0.42
1:C:105:ARG:HA	1:C:250:GLU:O	2.20	0.42
1:A:126:TYR:CE2	1:A:267:SER:HB2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:197:LEU:HD21	1:B:327:GLY:O	2.19	0.42
1:D:361:GLN:HE21	1:D:361:GLN:HB3	1.64	0.42
1:A:197:LEU:HD12	1:A:331:ALA:HB2	2.01	0.41
1:D:144:THR:C	1:D:148:MET:HE2	2.40	0.41
1:A:321:LEU:HD23	1:A:321:LEU:HA	1.82	0.41
1:C:222:ASN:HB3	3:C:506:HQJ:CAG	2.50	0.41
1:D:266:GLN:O	1:D:299:MET:HG2	2.21	0.41
1:A:106:ASN:HB2	5:A:642:HOH:O	2.20	0.41
1:B:153:SER:HB2	1:B:160:SER:OG	2.21	0.41
1:B:280:GLN:HB3	1:B:283:ALA:HB2	2.03	0.41
1:A:189:GLN:HE21	1:A:190:MET:HE2	1.85	0.41
1:B:384:LEU:CD2	2:B:501:HEM:HMA3	2.49	0.41
1:A:38:ASP:O	1:A:42:ILE:HG13	2.21	0.41
1:A:275:VAL:CG1	1:A:311:GLU:HG2	2.51	0.40
1:C:238:LYS:HA	1:C:258:GLU:HB3	2.04	0.40
1:D:190:MET:N	1:D:190:MET:SD	2.94	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	359/405 (89%)	349 (97%)	10 (3%)	0	100	100
1	B	358/405 (88%)	347 (97%)	11 (3%)	0	100	100
1	C	359/405 (89%)	350 (98%)	9 (2%)	0	100	100
1	D	368/405 (91%)	356 (97%)	12 (3%)	0	100	100
All	All	1444/1620 (89%)	1402 (97%)	42 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	312/346 (90%)	304 (97%)	8 (3%)	46	50
1	B	310/346 (90%)	303 (98%)	7 (2%)	50	55
1	C	311/346 (90%)	304 (98%)	7 (2%)	50	55
1	D	318/346 (92%)	314 (99%)	4 (1%)	69	75
All	All	1251/1384 (90%)	1225 (98%)	26 (2%)	53	59

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

Mol	Chain	Res	Type
1	A	58	ARG
1	A	80	ARG
1	A	105	ARG
1	A	149	ASP
1	A	198	LYS
1	A	214	PHE
1	A	237	TRP
1	A	401	LYS
1	B	27	ASN
1	B	34	ASP
1	B	149	ASP
1	B	186	LYS
1	B	214	PHE
1	B	224	LYS
1	B	237	TRP
1	C	46	LEU
1	C	55	LEU
1	C	80	ARG
1	C	149	ASP
1	C	171	GLU
1	C	214	PHE
1	C	290	GLN
1	D	190	MET
1	D	214	PHE

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Mol	Chain	Res	Type
1	D	237	TRP
1	D	304	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	222	ASN
1	B	280	GLN
1	C	69	HIS
1	C	293	GLN
1	C	348	GLN
1	D	54	GLN
1	D	242	GLN

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 monosaccharides in this entry.

5.6 Ligand geometry

21 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	HQJ	B	505	-	11,13,13	3.18	2 (18%)	13,17,17	1.38	1 (7%)
3	HQJ	C	504	-	11,13,13	2.89	2 (18%)	13,17,17	0.95	0
2	HEM	C	501	1,3	41,50,50	1.54	4 (9%)	45,82,82	1.39	6 (13%)
3	HQJ	A	505	-	11,13,13	3.04	2 (18%)	13,17,17	2.61	5 (38%)
3	HQJ	D	502	2	11,13,13	3.10	2 (18%)	13,17,17	1.02	0
3	HQJ	C	503	-	11,13,13	3.16	2 (18%)	13,17,17	1.14	0
3	HQJ	B	504	-	11,13,13	3.00	2 (18%)	13,17,17	1.11	0
3	HQJ	C	506	-	11,13,13	3.30	3 (27%)	13,17,17	1.14	2 (15%)
3	HQJ	D	503	-	11,13,13	3.06	1 (9%)	13,17,17	0.83	0
2	HEM	B	501	1,3	41,50,50	1.59	5 (12%)	45,82,82	1.68	10 (22%)
3	HQJ	B	503	-	11,13,13	2.84	2 (18%)	13,17,17	0.78	0
3	HQJ	C	505	-	11,13,13	3.28	3 (27%)	13,17,17	2.19	5 (38%)
3	HQJ	D	504	-	11,13,13	2.96	3 (27%)	13,17,17	1.13	0
3	HQJ	A	502	2	11,13,13	3.05	2 (18%)	13,17,17	1.13	1 (7%)
3	HQJ	A	503	-	11,13,13	2.94	2 (18%)	13,17,17	1.05	0
4	PO4	D	505	-	4,4,4	0.68	0	6,6,6	0.81	0
3	HQJ	A	504	-	11,13,13	2.93	2 (18%)	13,17,17	1.13	0
3	HQJ	B	502	2	11,13,13	2.98	2 (18%)	13,17,17	0.95	0
2	HEM	D	501	1,3	41,50,50	1.49	4 (9%)	45,82,82	1.71	14 (31%)
2	HEM	A	501	1,3	41,50,50	1.56	3 (7%)	45,82,82	1.52	9 (20%)
3	HQJ	C	502	2	11,13,13	3.02	2 (18%)	13,17,17	0.87	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
3	HQJ	B	505	-	-	0/4/4/4	0/2/2/2
3	HQJ	C	504	-	-	0/4/4/4	0/2/2/2
2	HEM	C	501	1,3	-	4/12/54/54	-
3	HQJ	A	505	-	-	0/4/4/4	0/2/2/2
3	HQJ	D	502	2	-	0/4/4/4	0/2/2/2
3	HQJ	C	503	-	-	0/4/4/4	0/2/2/2
3	HQJ	B	504	-	-	0/4/4/4	0/2/2/2
3	HQJ	C	506	-	-	0/4/4/4	0/2/2/2
3	HQJ	D	503	-	-	0/4/4/4	0/2/2/2
2	HEM	B	501	1,3	-	2/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	HQJ	B	503	-	-	0/4/4/4	0/2/2/2
3	HQJ	C	505	-	-	0/4/4/4	0/2/2/2
3	HQJ	D	504	-	-	0/4/4/4	0/2/2/2
3	HQJ	A	502	2	-	0/4/4/4	0/2/2/2
3	HQJ	A	503	-	-	0/4/4/4	0/2/2/2
3	HQJ	A	504	-	-	0/4/4/4	0/2/2/2
3	HQJ	B	502	2	-	0/4/4/4	0/2/2/2
2	HEM	D	501	1,3	-	2/12/54/54	-
2	HEM	A	501	1,3	-	2/12/54/54	-
3	HQJ	C	502	2	-	0/4/4/4	0/2/2/2

All (50) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	505	HQJ	CAD-CAH	-10.13	1.33	1.48
3	C	506	HQJ	CAD-CAH	-10.13	1.33	1.48
3	C	503	HQJ	CAD-CAH	-9.77	1.33	1.48
3	D	502	HQJ	CAD-CAH	-9.74	1.33	1.48
3	D	503	HQJ	CAD-CAH	-9.56	1.33	1.48
3	A	502	HQJ	CAD-CAH	-9.53	1.33	1.48
3	C	502	HQJ	CAD-CAH	-9.35	1.34	1.48
3	C	505	HQJ	CAD-CAH	-9.33	1.34	1.48
3	B	504	HQJ	CAD-CAH	-9.27	1.34	1.48
3	A	503	HQJ	CAD-CAH	-9.22	1.34	1.48
3	B	502	HQJ	CAD-CAH	-9.21	1.34	1.48
3	A	504	HQJ	CAD-CAH	-9.21	1.34	1.48
3	A	505	HQJ	CAD-CAH	-9.09	1.34	1.48
3	D	504	HQJ	CAD-CAH	-8.84	1.35	1.48
3	B	503	HQJ	CAD-CAH	-8.80	1.35	1.48
3	C	504	HQJ	CAD-CAH	-8.80	1.35	1.48
2	B	501	HEM	C3C-C2C	-5.34	1.33	1.40
2	A	501	HEM	C3C-C2C	-5.30	1.33	1.40
3	C	505	HQJ	CAB-CL	-4.35	1.65	1.74
2	D	501	HEM	C3C-C2C	-4.32	1.34	1.40
2	C	501	HEM	C3C-C2C	-3.77	1.35	1.40
2	C	501	HEM	C3C-CAC	3.49	1.55	1.47
2	B	501	HEM	C3C-CAC	3.32	1.54	1.47
2	D	501	HEM	C3C-CAC	3.21	1.54	1.47
2	C	501	HEM	CAB-C3B	3.04	1.55	1.47
3	C	506	HQJ	CAB-CL	-2.96	1.68	1.74
3	A	505	HQJ	CAI-CAH	-2.94	1.32	1.37
2	A	501	HEM	C3C-CAC	2.94	1.53	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	HEM	CAB-C3B	2.92	1.55	1.47
3	D	504	HQJ	CAI-CAH	-2.88	1.33	1.37
2	C	501	HEM	FE-NB	2.83	2.10	1.96
2	D	501	HEM	CAA-C2A	2.79	1.56	1.52
2	D	501	HEM	CAB-C3B	2.72	1.54	1.47
3	B	504	HQJ	CAI-CAH	-2.69	1.33	1.37
3	C	505	HQJ	CAI-CAH	-2.66	1.33	1.37
3	C	504	HQJ	CAI-CAH	-2.58	1.33	1.37
3	C	503	HQJ	CAI-CAH	-2.56	1.33	1.37
3	C	502	HQJ	CAI-CAH	-2.52	1.33	1.37
2	B	501	HEM	CAB-C3B	2.52	1.54	1.47
3	A	503	HQJ	CAI-CAH	-2.51	1.33	1.37
3	A	504	HQJ	CAI-CAH	-2.49	1.33	1.37
3	A	502	HQJ	CAI-CAH	-2.49	1.33	1.37
3	B	502	HQJ	CAI-CAH	-2.47	1.33	1.37
3	D	504	HQJ	CAB-CL	2.24	1.79	1.74
3	D	502	HQJ	CAI-CAH	-2.19	1.34	1.37
3	B	503	HQJ	CAI-CAH	-2.19	1.34	1.37
2	B	501	HEM	C4D-ND	-2.16	1.36	1.40
3	B	505	HQJ	CAI-CAH	-2.15	1.34	1.37
3	C	506	HQJ	CAI-CAH	-2.13	1.34	1.37
2	B	501	HEM	CAA-C2A	2.04	1.55	1.52

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	505	HQJ	CAC-CAD-CAH	-5.10	113.20	120.59
3	A	505	HQJ	CAC-CAB-CL	-4.63	113.36	119.15
2	B	501	HEM	CMA-C3A-C4A	-4.34	121.79	128.46
3	C	505	HQJ	CAC-CAD-CAH	-4.30	114.37	120.59
3	A	505	HQJ	CAG-CAB-CL	4.09	125.75	119.35
2	A	501	HEM	C2C-C3C-C4C	3.84	109.58	106.90
3	C	505	HQJ	CAC-CAB-CL	-3.60	114.65	119.15
2	D	501	HEM	CMA-C3A-C4A	-3.58	122.96	128.46
3	A	505	HQJ	CAE-CAD-CAH	3.57	126.92	121.28
2	D	501	HEM	C4C-CHD-C1D	3.41	127.06	122.56
2	A	501	HEM	CMA-C3A-C4A	-3.28	123.42	128.46
2	D	501	HEM	C2C-C3C-C4C	3.26	109.17	106.90
3	C	505	HQJ	CAG-CAB-CL	3.14	124.27	119.35
2	B	501	HEM	C4D-ND-C1D	3.11	108.28	105.07
2	B	501	HEM	C4C-CHD-C1D	3.10	126.64	122.56
2	B	501	HEM	C2C-C3C-C4C	3.08	109.05	106.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	505	HQJ	CAE-CAD-CAH	-3.07	116.44	121.28
2	D	501	HEM	C4D-ND-C1D	3.03	108.20	105.07
2	C	501	HEM	C2C-C3C-C4C	3.00	109.00	106.90
2	C	501	HEM	C4D-ND-C1D	2.88	108.05	105.07
2	C	501	HEM	C4C-CHD-C1D	2.87	126.35	122.56
2	B	501	HEM	CAA-CBA-CGA	-2.84	105.79	113.76
3	C	505	HQJ	CAE-CAD-CAH	2.84	125.77	121.28
2	A	501	HEM	CAA-CBA-CGA	-2.82	105.86	113.76
2	D	501	HEM	CAA-CBA-CGA	-2.75	106.05	113.76
2	A	501	HEM	C4C-CHD-C1D	2.73	126.17	122.56
2	B	501	HEM	C4A-C3A-C2A	2.70	108.87	107.00
2	C	501	HEM	CMC-C2C-C3C	2.60	129.54	124.68
2	B	501	HEM	CBD-CAD-C3D	-2.49	105.70	112.63
2	A	501	HEM	C4D-ND-C1D	2.44	107.59	105.07
2	C	501	HEM	C1B-NB-C4B	2.44	107.59	105.07
2	D	501	HEM	CMC-C2C-C3C	2.43	129.22	124.68
2	B	501	HEM	C1B-NB-C4B	2.36	107.51	105.07
2	D	501	HEM	C4A-C3A-C2A	2.35	108.63	107.00
2	B	501	HEM	CBA-CAA-C2A	-2.34	108.63	112.62
2	B	501	HEM	CMA-C3A-C2A	2.33	129.33	124.94
2	A	501	HEM	CHB-C1B-NB	2.31	127.23	124.38
2	D	501	HEM	O1A-CGA-CBA	-2.28	115.76	123.08
2	A	501	HEM	CMB-C2B-C1B	-2.28	121.57	125.04
2	D	501	HEM	CBD-CAD-C3D	-2.22	106.47	112.63
3	A	505	HQJ	CAI-NAJ-CAK	2.20	109.21	105.78
3	C	506	HQJ	CAE-CAD-CAC	2.19	121.26	118.16
2	D	501	HEM	C1B-NB-C4B	2.19	107.33	105.07
2	D	501	HEM	CBA-CAA-C2A	-2.18	108.91	112.62
2	A	501	HEM	C3B-C2B-C1B	2.16	108.09	106.49
2	C	501	HEM	CHD-C1D-C2D	2.16	128.35	124.98
2	D	501	HEM	C3D-C4D-ND	-2.11	107.82	110.17
3	C	506	HQJ	CAE-CAD-CAH	-2.08	118.00	121.28
2	A	501	HEM	C4A-C3A-C2A	2.06	108.43	107.00
3	A	502	HQJ	CAI-NAJ-CAK	2.06	108.99	105.78
3	C	505	HQJ	CAI-NAJ-CAK	2.05	108.97	105.78
2	D	501	HEM	O2A-CGA-CBA	2.05	120.60	114.03
2	D	501	HEM	C3B-C2B-C1B	2.04	108.00	106.49

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	501	HEM	C1A-C2A-CAA-CBA
2	C	501	HEM	C3A-C2A-CAA-CBA
2	A	501	HEM	CAA-CBA-CGA-O2A
2	C	501	HEM	CAA-CBA-CGA-O2A
2	D	501	HEM	CAA-CBA-CGA-O2A
2	A	501	HEM	CAA-CBA-CGA-O1A
2	B	501	HEM	CAA-CBA-CGA-O2A
2	C	501	HEM	CAA-CBA-CGA-O1A
2	D	501	HEM	CAA-CBA-CGA-O1A
2	B	501	HEM	CAA-CBA-CGA-O1A

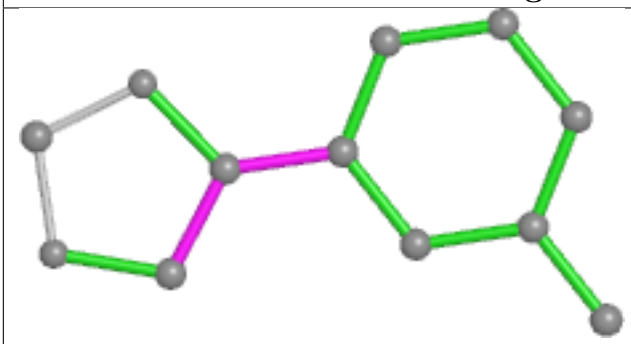
There are no ring outliers.

6 monomers are involved in 23 short contacts:

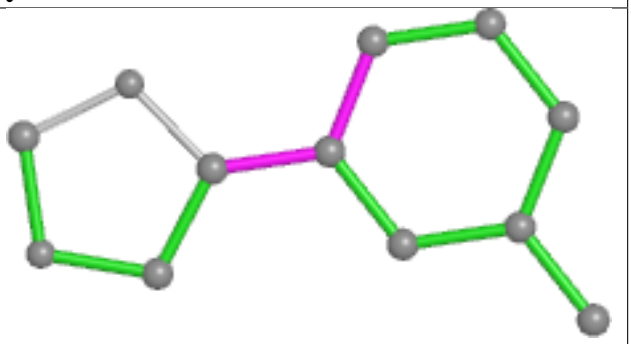
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	501	HEM	3	0
3	C	506	HQJ	4	0
2	B	501	HEM	7	0
3	C	505	HQJ	1	0
2	D	501	HEM	3	0
2	A	501	HEM	5	0

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.

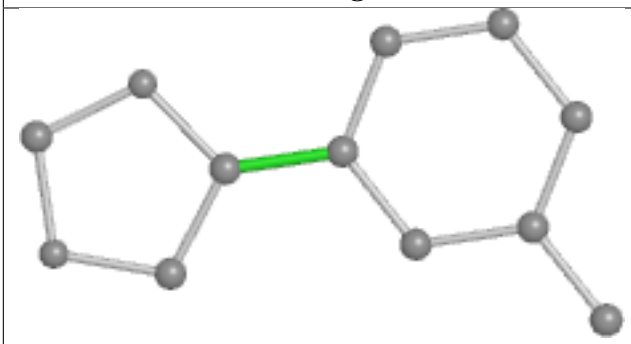
Ligand HQJ B 505



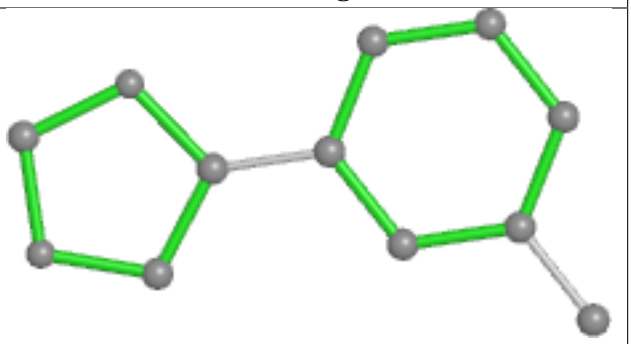
Bond lengths



Bond angles

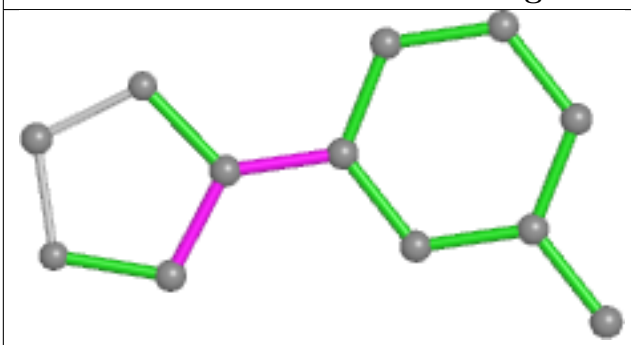


Torsions



Rings

Ligand HQJ C 504



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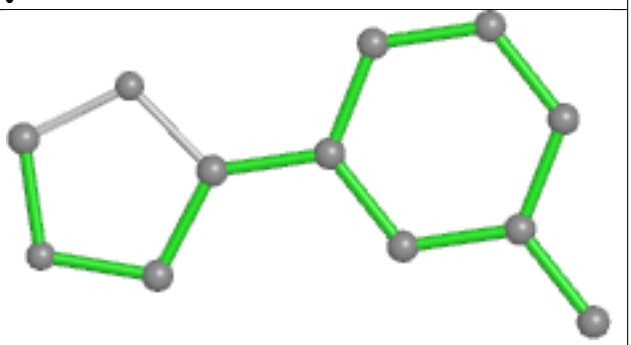

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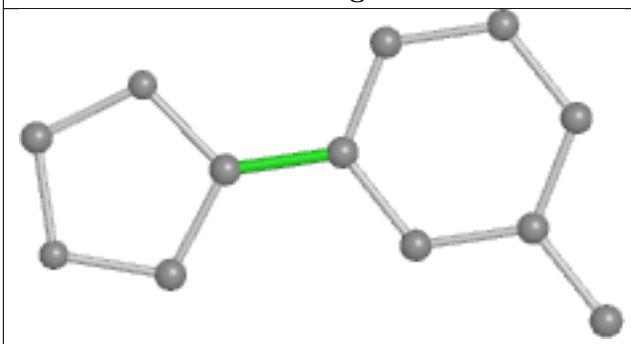

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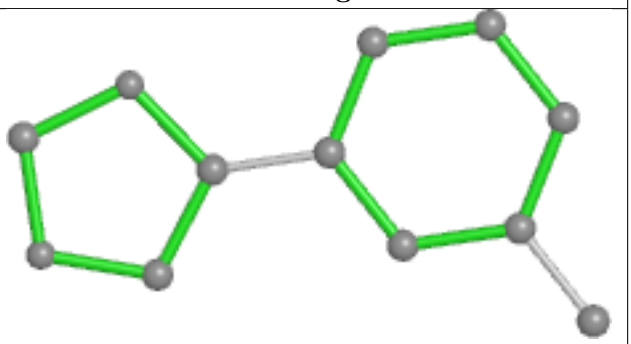
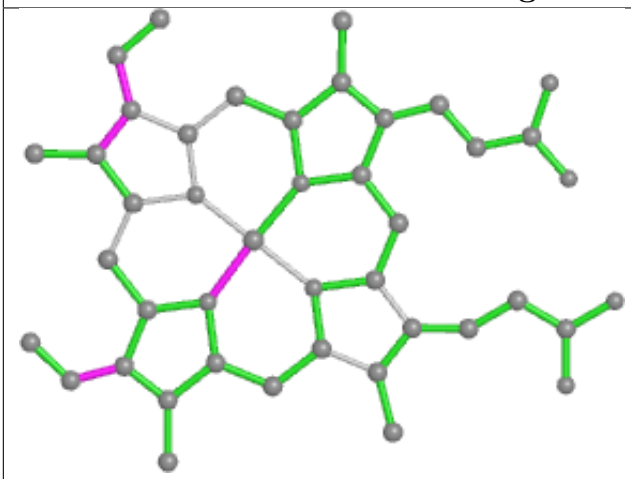


Rings

Ligand HEM C 501



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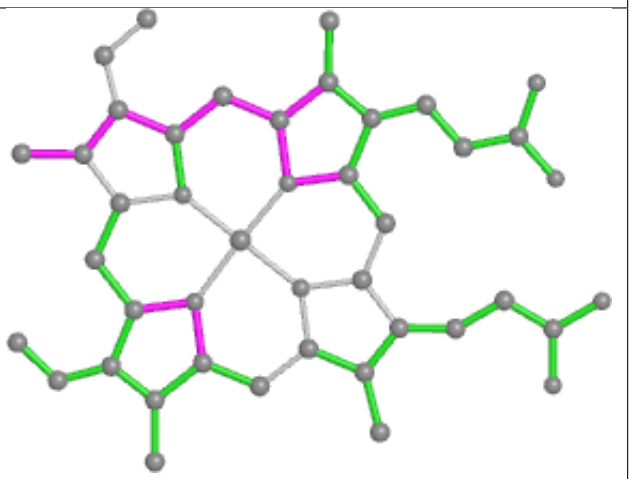
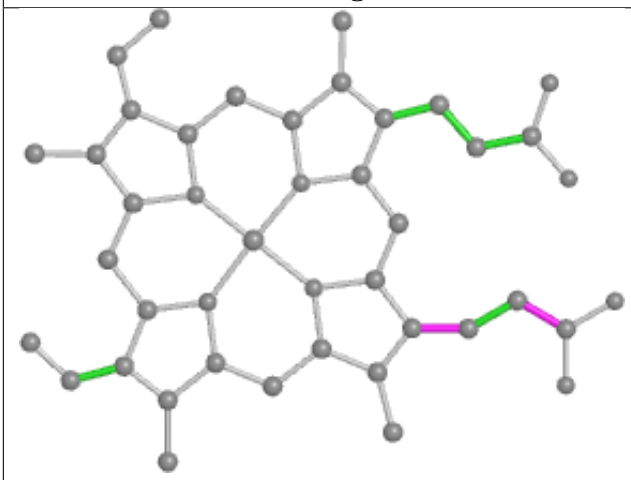


Bond angles



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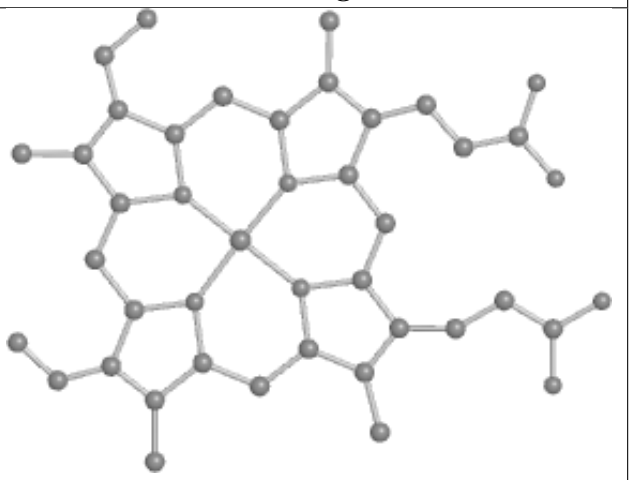
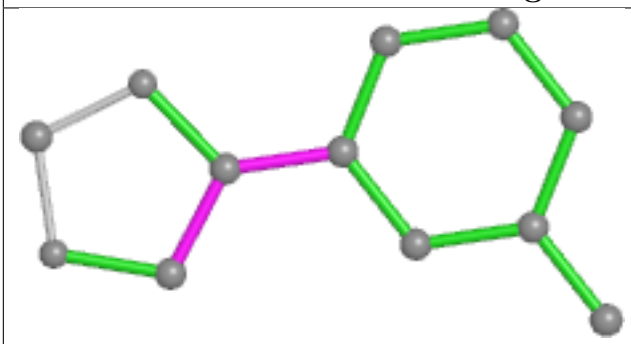


Rings

Ligand HQJ A 505



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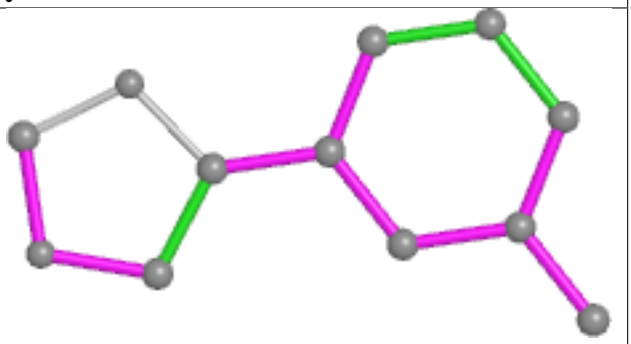

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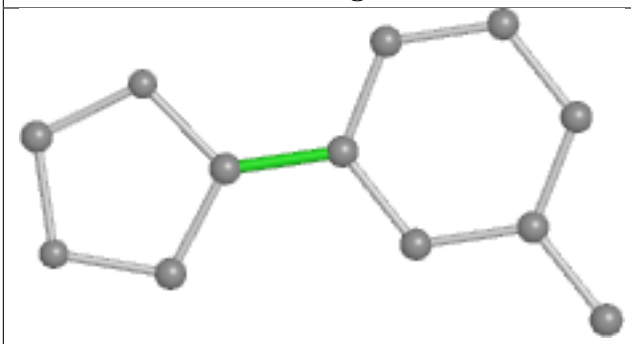

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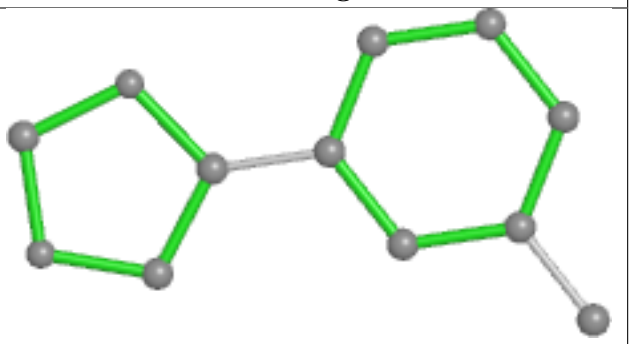
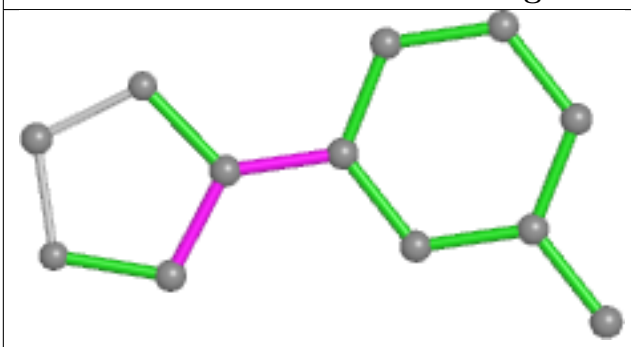


Rings

Ligand HQJ D 502



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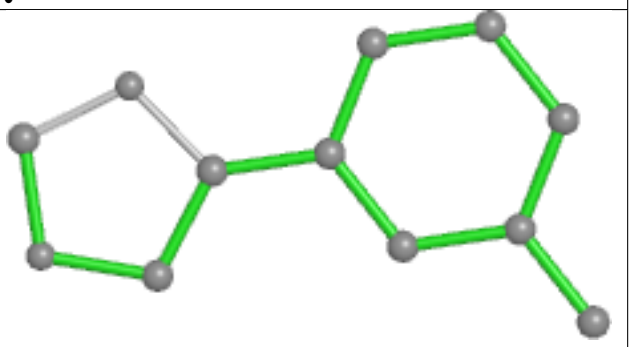

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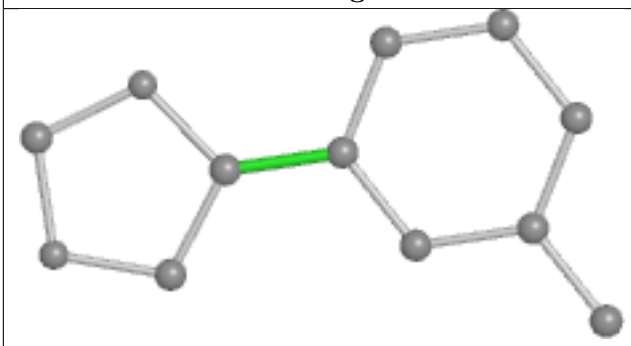

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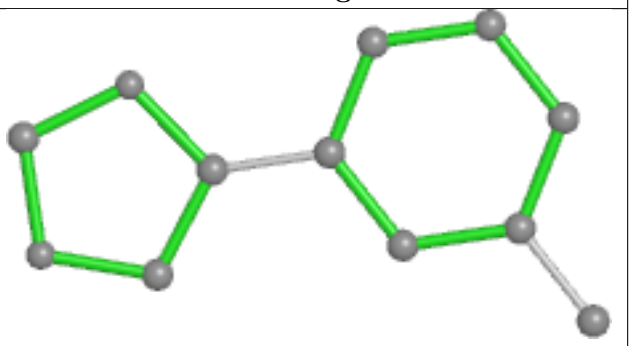
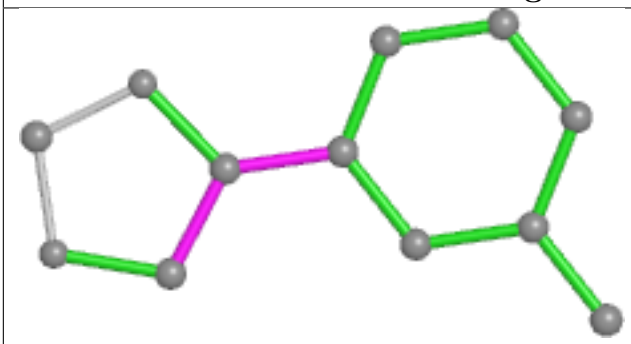


Rings

Ligand HQJ C 503



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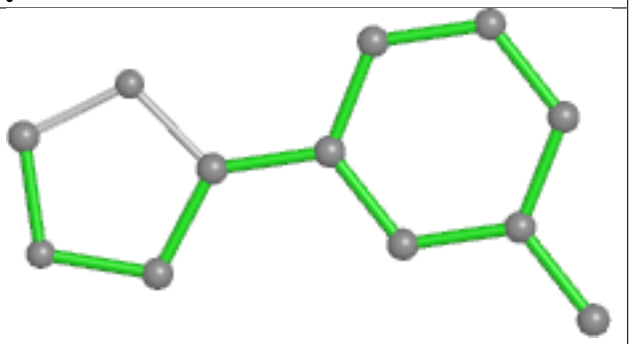

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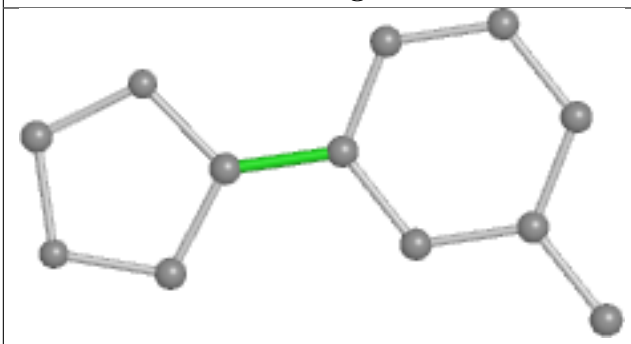

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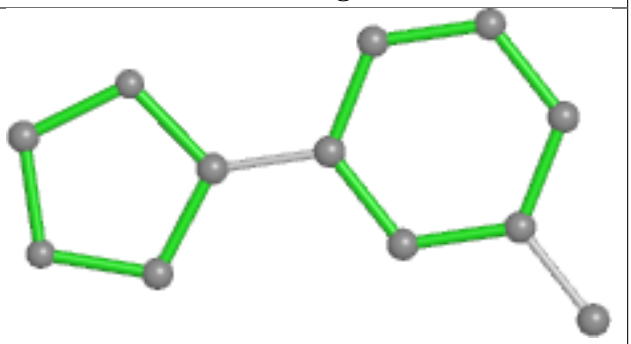
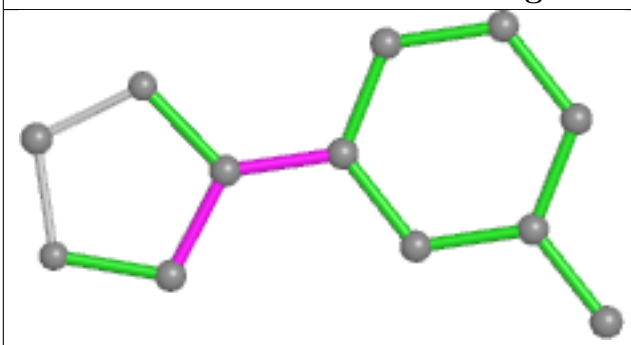


Rings

Ligand HQJ B 504



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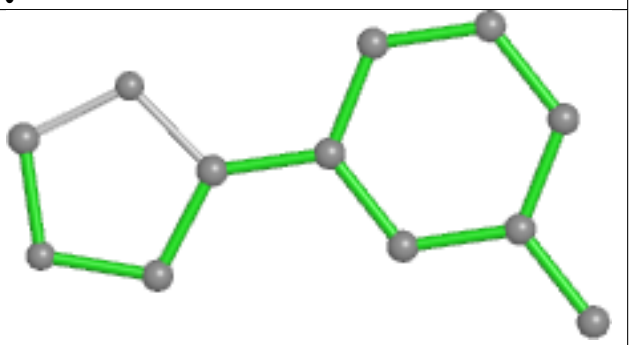

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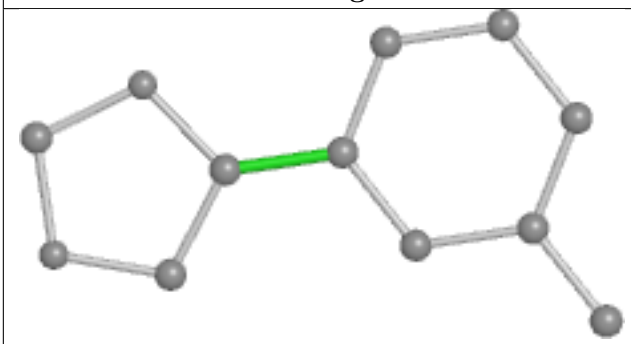

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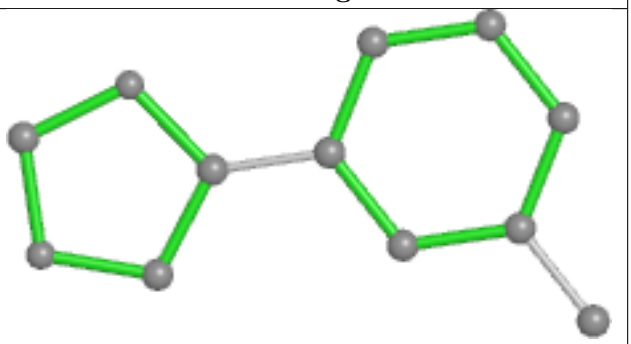
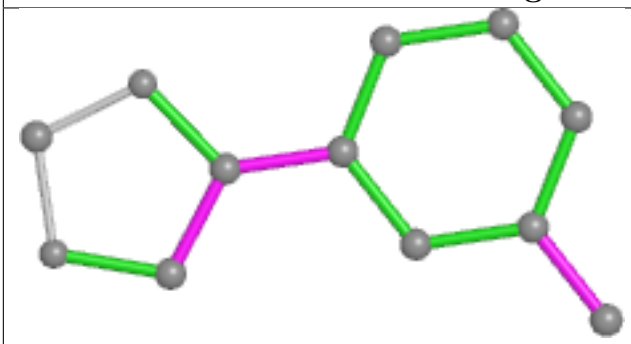


Rings

Ligand HQJ C 506



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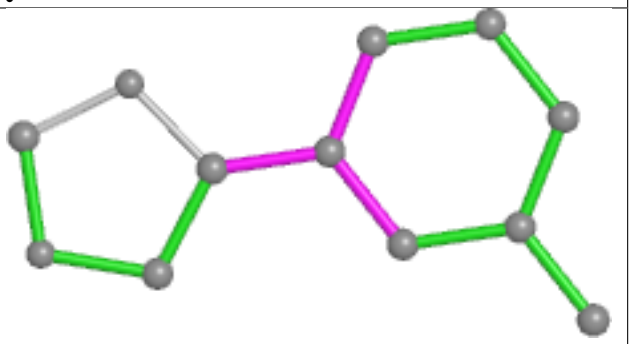

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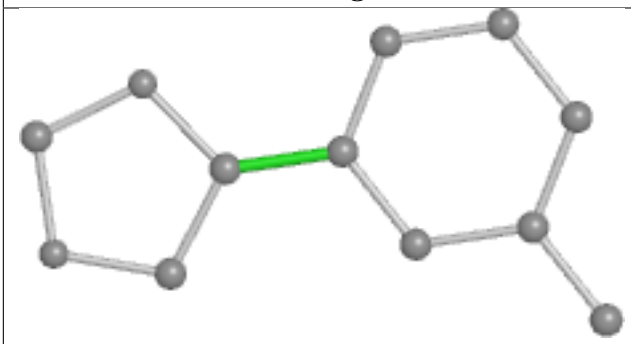

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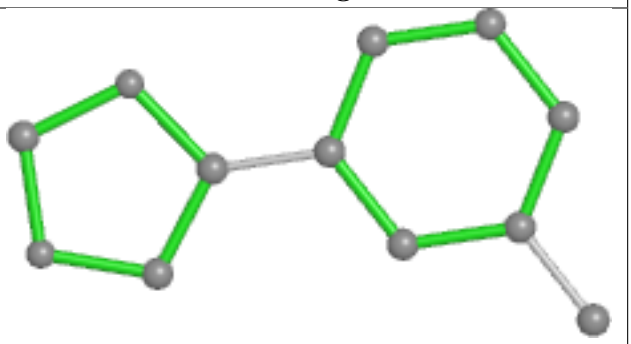
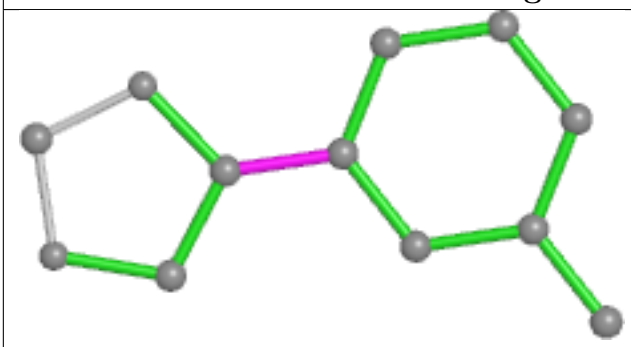


Rings

Ligand HQJ D 503



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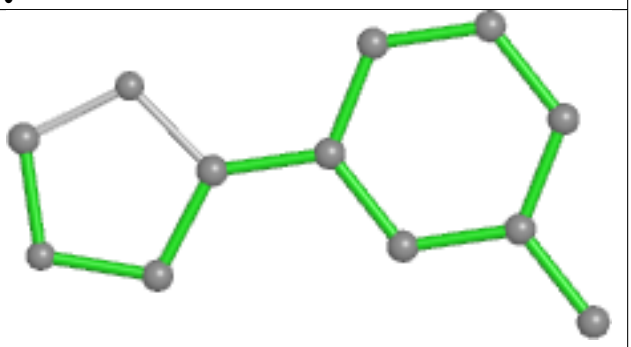

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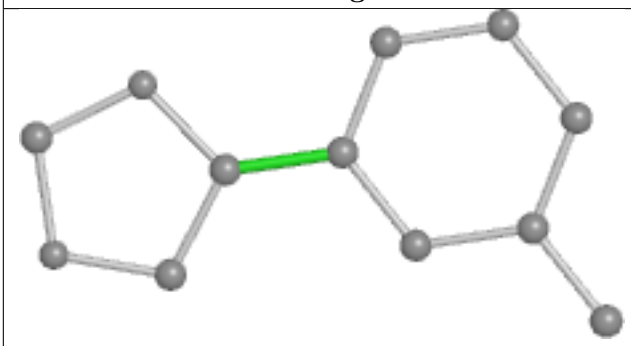

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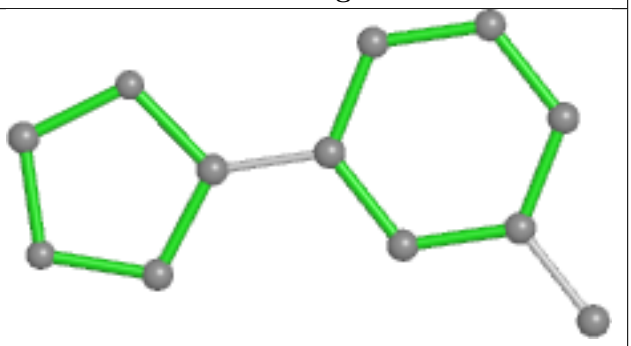
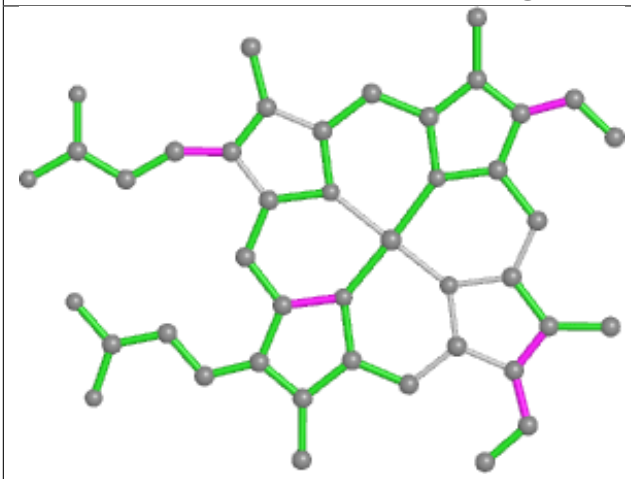


Rings

Ligand HEM B 501



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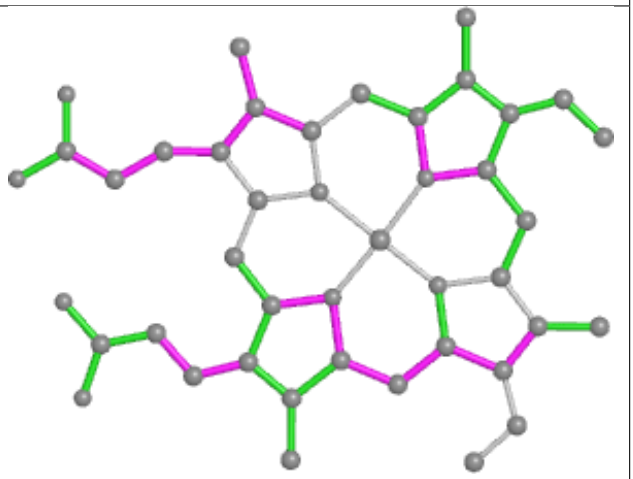

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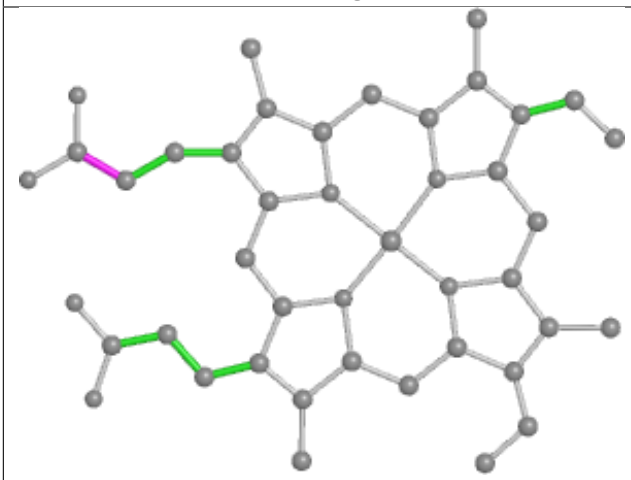

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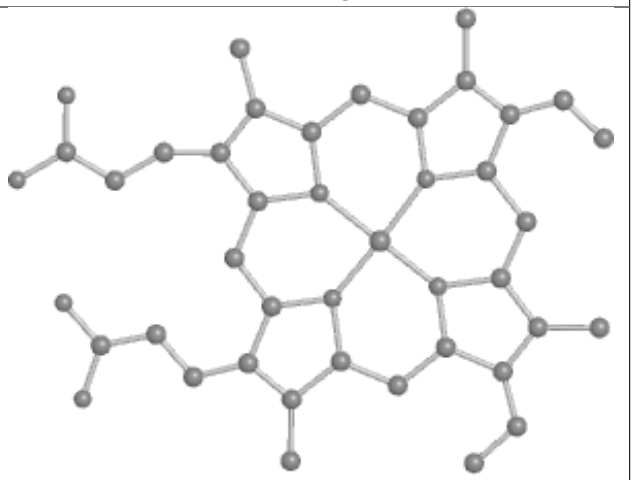
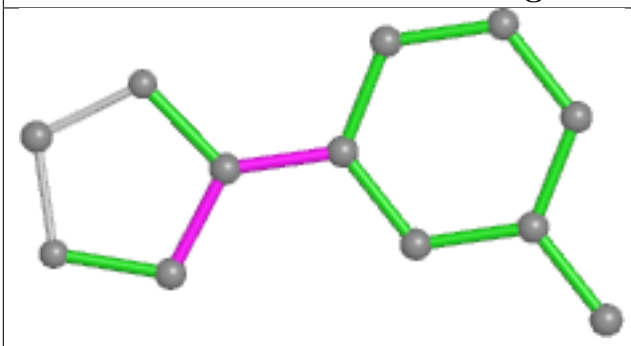


Rings

Ligand HQJ B 503



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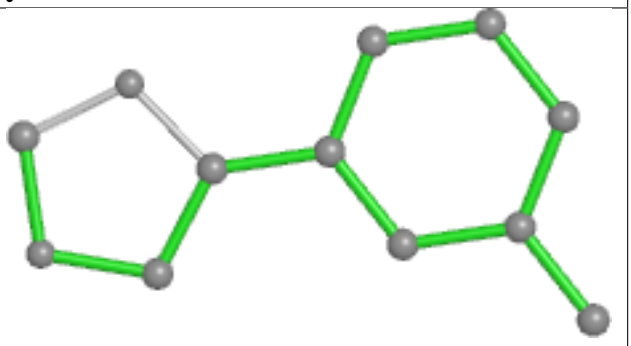

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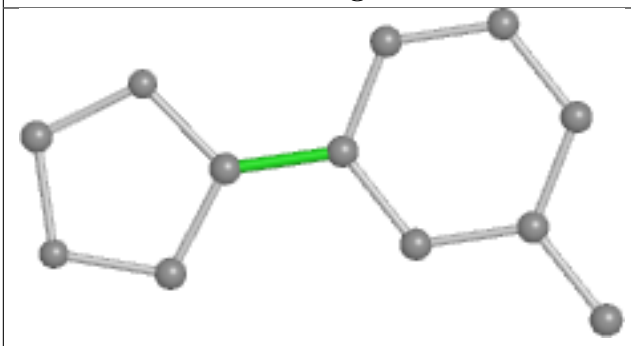

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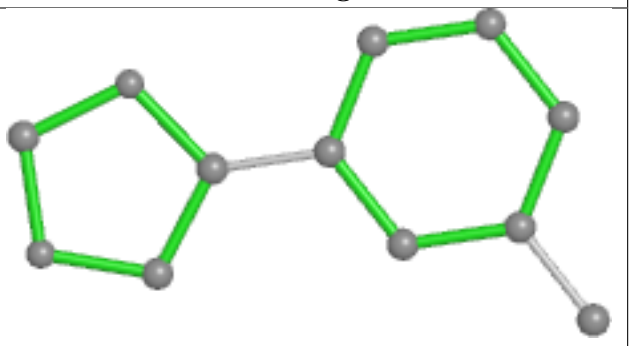
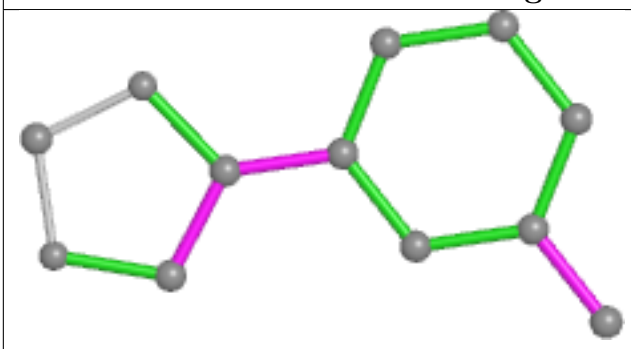


Rings

Ligand HQJ C 505



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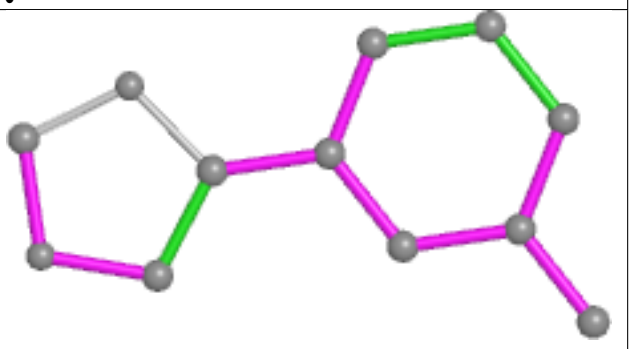

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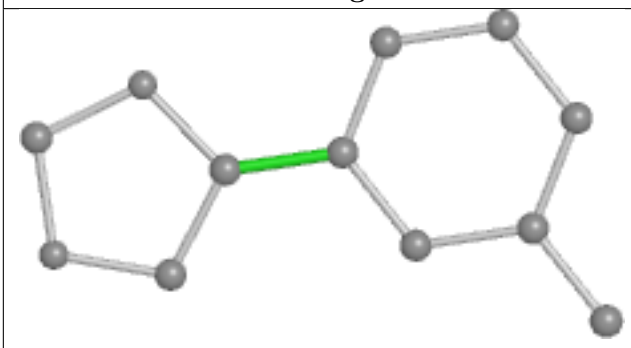

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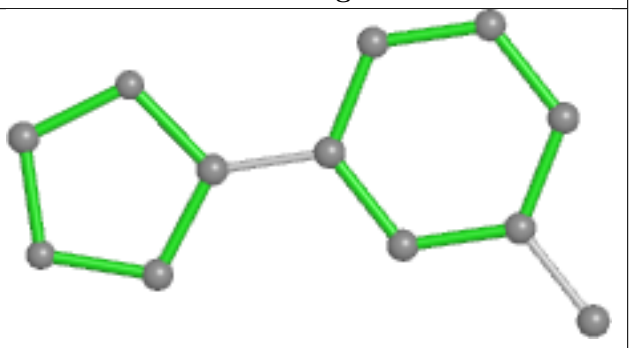
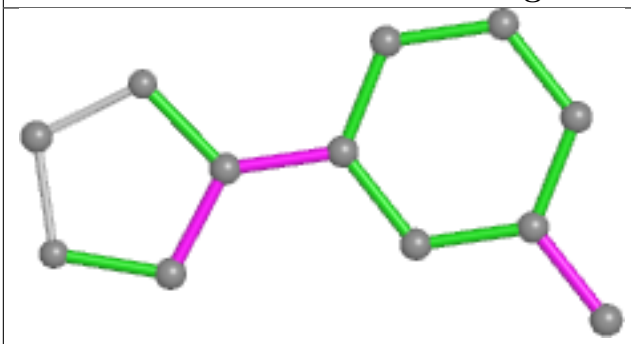
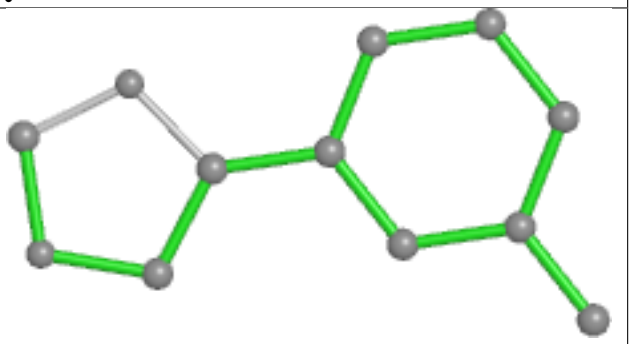


Rings

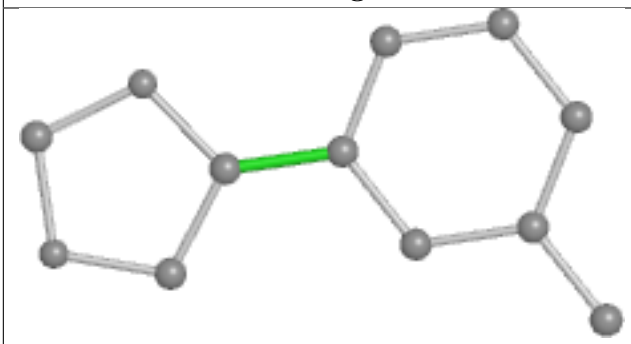
Ligand HQJ D 504



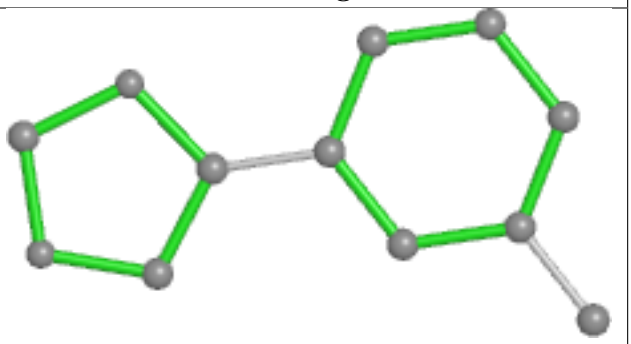
Bond lengths



Bond angles

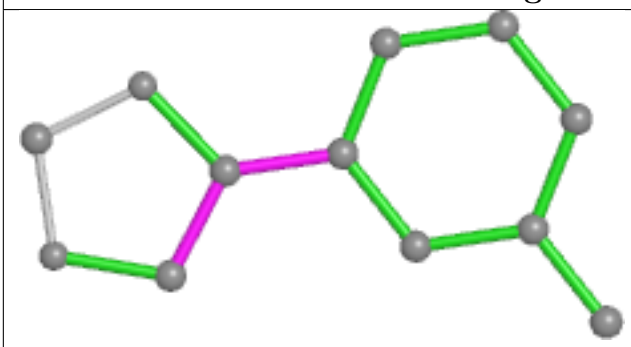


Torsions

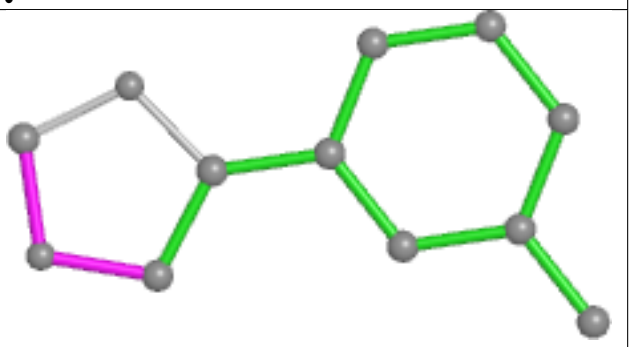


Rings

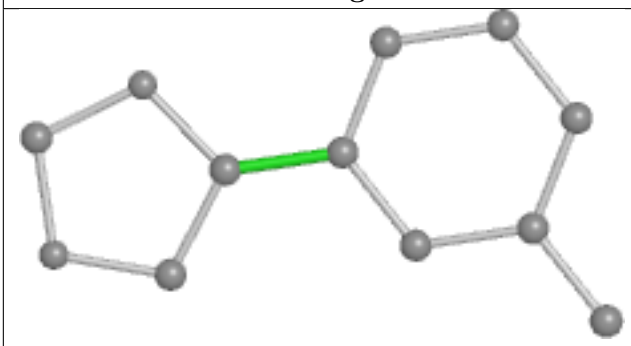
Ligand HQJ A 502



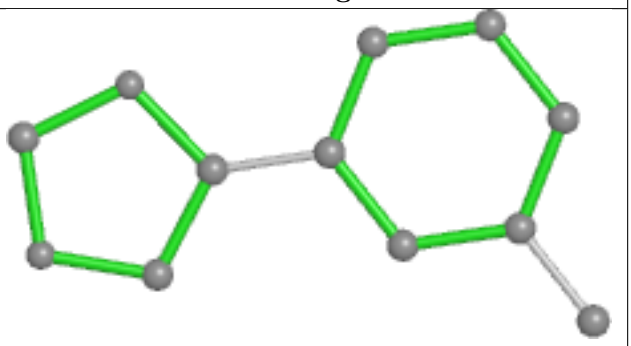
Bond lengths



Bond angles

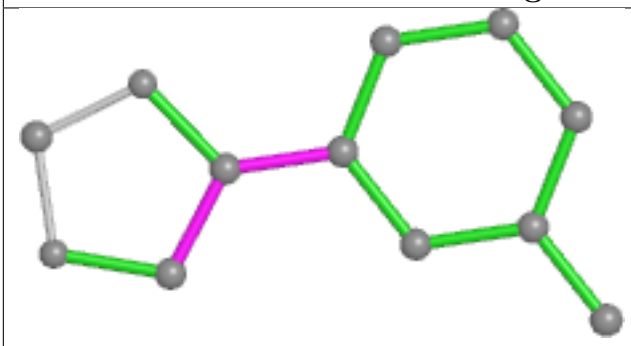


Torsions

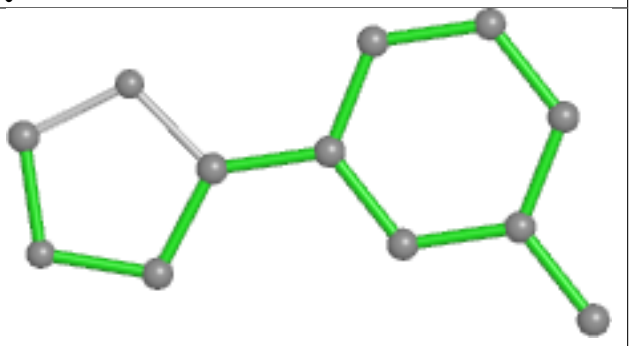


Rings

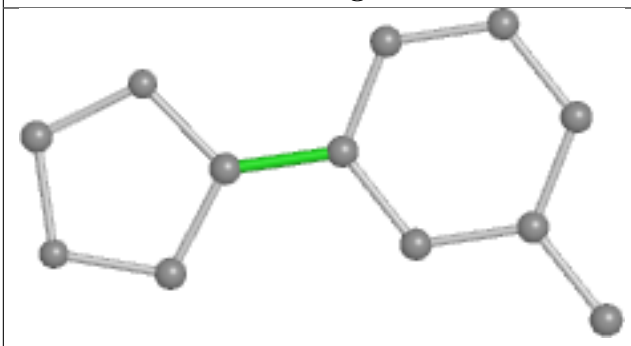
Ligand HQJ A 503



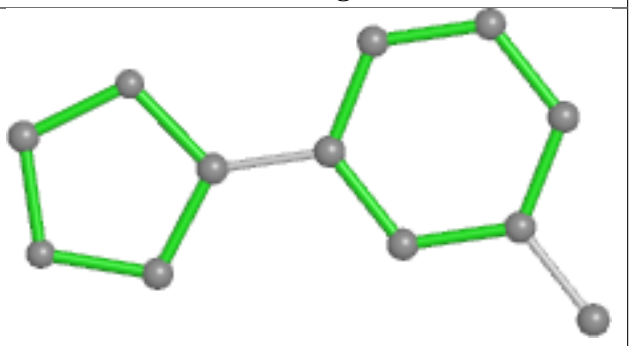
Bond lengths



Bond angles

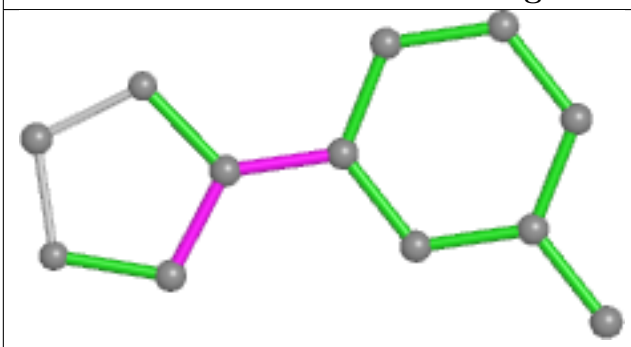


Torsions

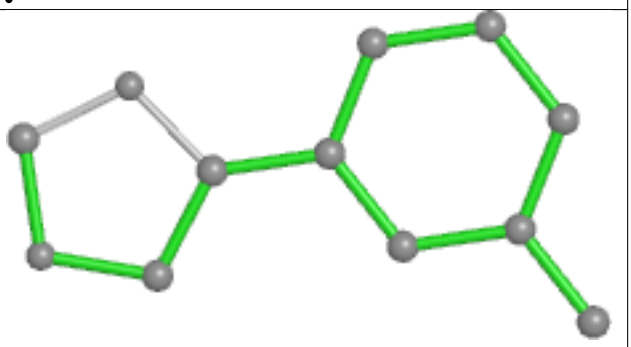


Rings

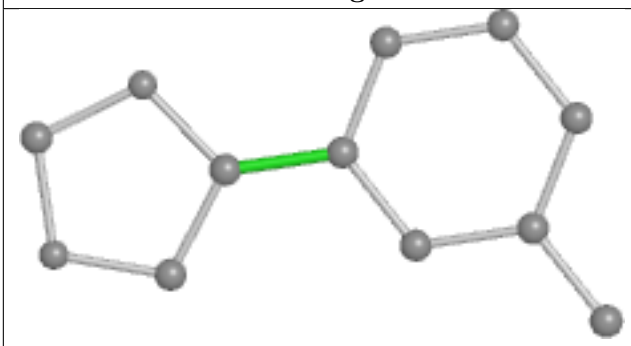
Ligand HQJ A 504



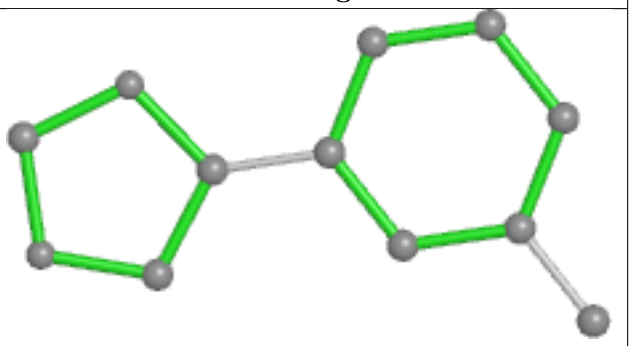
Bond lengths



Bond angles

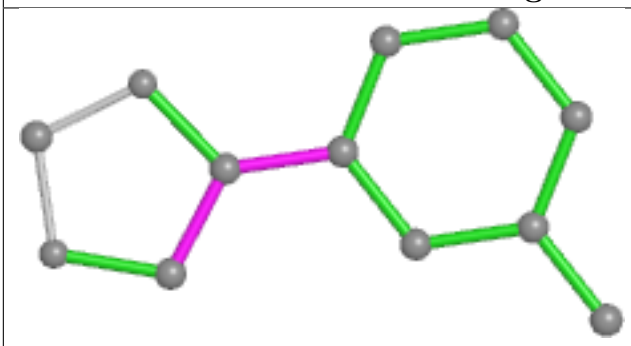


Torsions

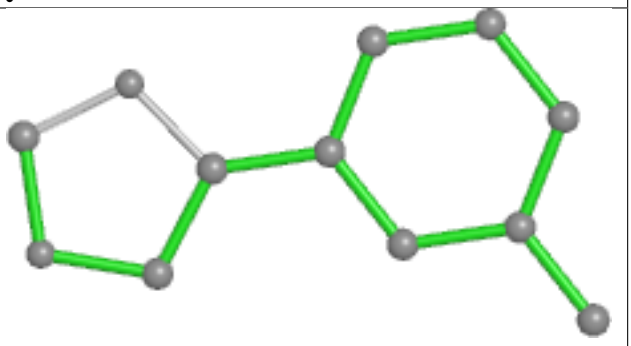


Rings

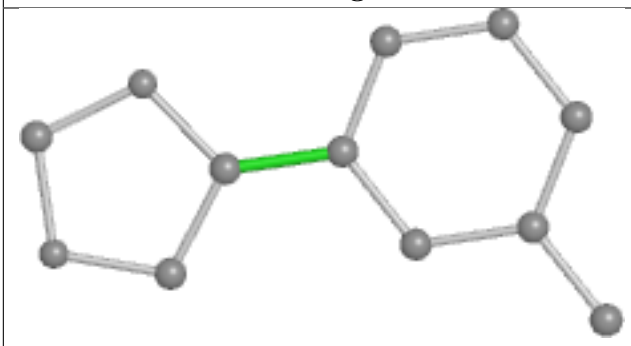
Ligand HQJ B 502



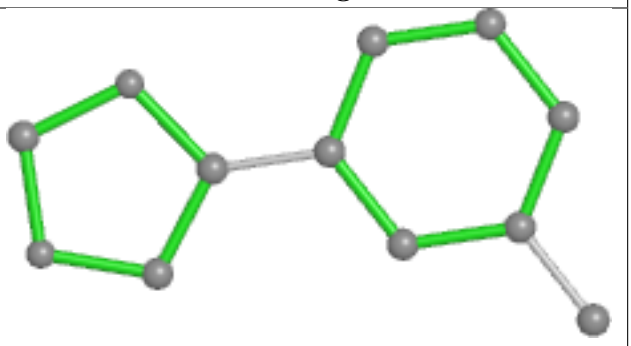
Bond lengths



Bond angles

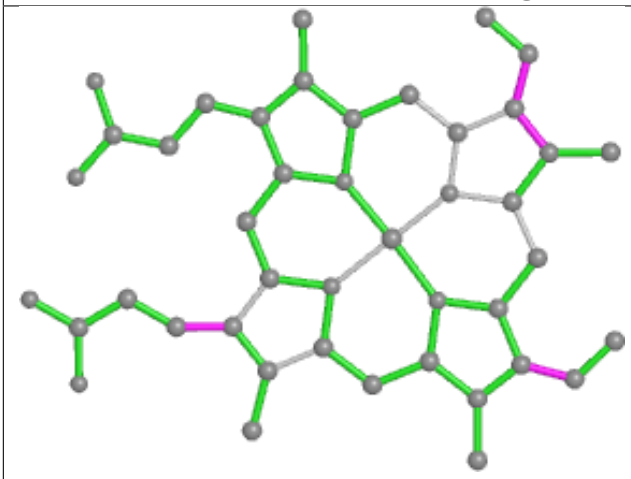


Torsions

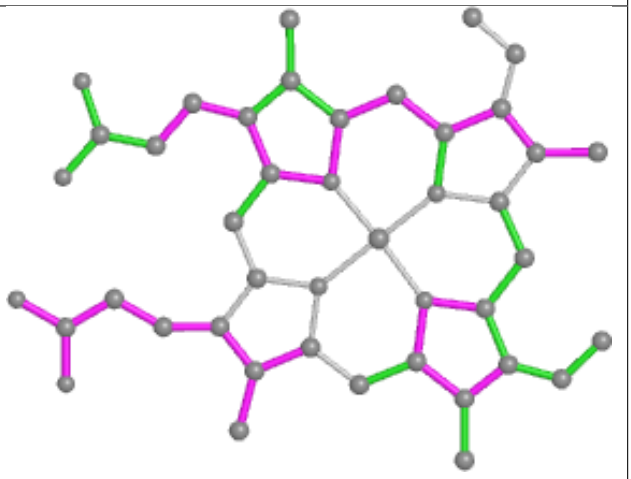


Rings

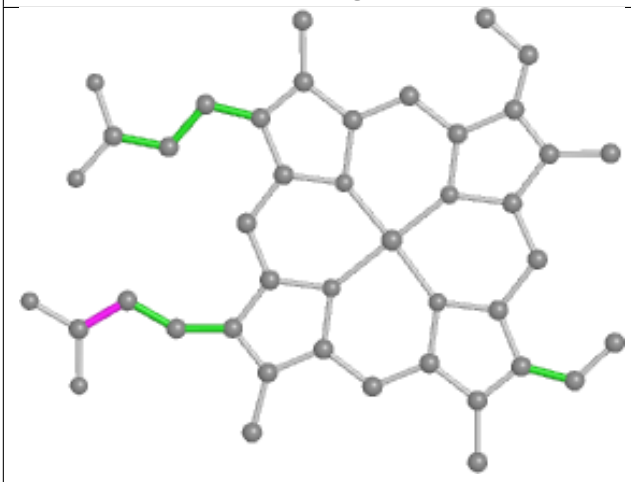
Ligand HEM D 501



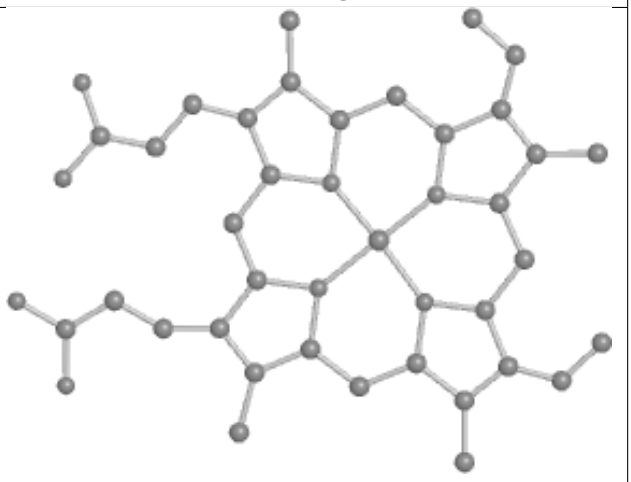
Bond lengths



Bond angles

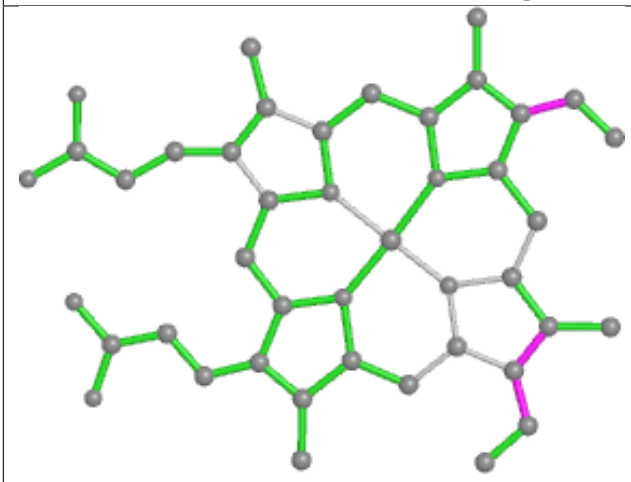


Torsions

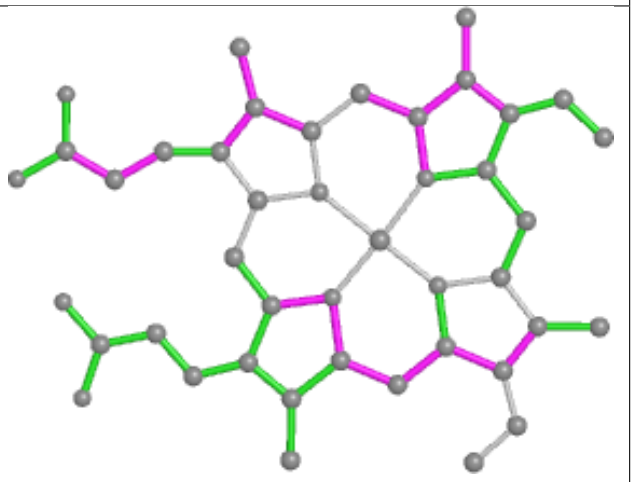


Rings

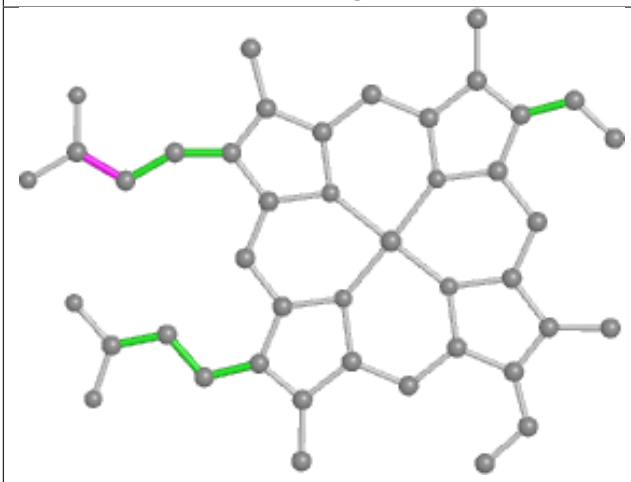
Ligand HEM A 501



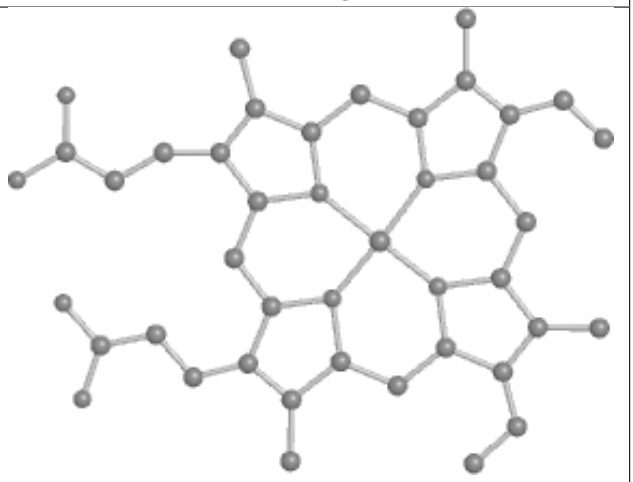
Bond lengths



Bond angles

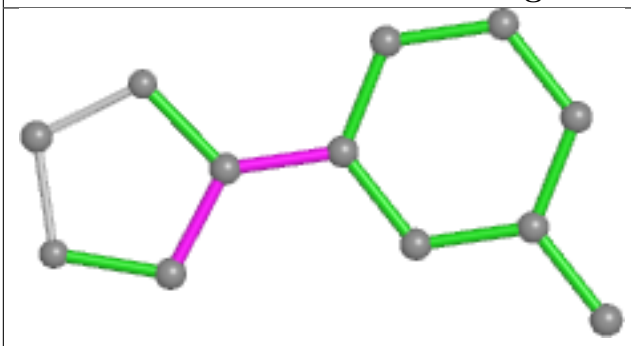


Torsions

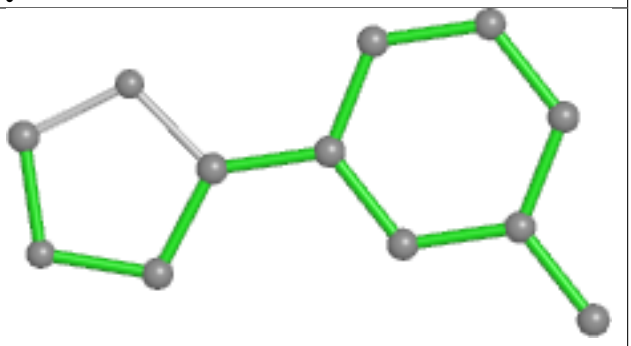


Rings

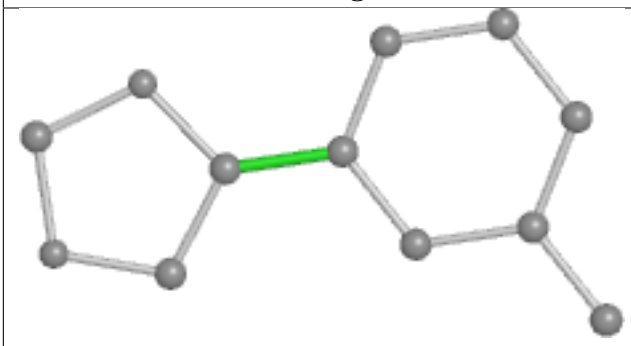
Ligand HQJ C 502



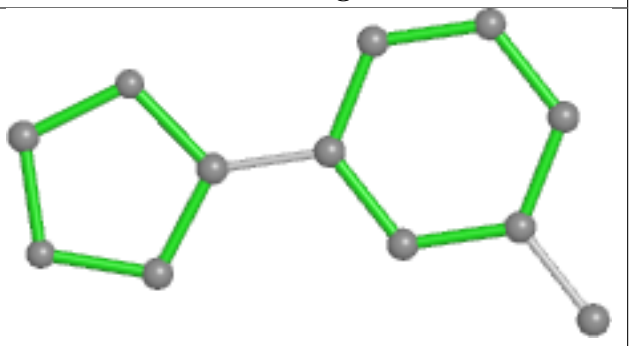
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 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	362/405 (89%)	0.20	8 (2%)	62	66	30, 43, 60, 76	0
1	B	362/405 (89%)	0.32	6 (1%)	70	74	28, 42, 59, 67	0
1	C	362/405 (89%)	0.42	16 (4%)	34	40	29, 46, 62, 79	0
1	D	372/405 (91%)	0.29	11 (2%)	50	56	29, 41, 59, 75	0
All	All	1458/1620 (90%)	0.31	41 (2%)	53	59	28, 43, 60, 79	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	189	GLN	5.3
1	D	379	THR	5.3
1	D	372	SER	4.9
1	C	186	LYS	4.1
1	A	23	PHE	4.0
1	C	140	ASN	3.7
1	A	22	GLY	3.7
1	C	95	GLY	3.7
1	A	189	GLN	3.6
1	D	373	LYS	3.5
1	D	380	GLY	3.3
1	A	68	ASP	3.2
1	C	380	GLY	3.1
1	D	376	ALA	3.1
1	B	314	PRO	3.1
1	C	360	GLN	3.0
1	C	190	MET	2.9
1	B	380	GLY	2.9
1	D	361	GLN	2.9
1	C	287	HIS	2.8
1	B	189	GLN	2.8

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Mol	Chain	Res	Type	RSRZ
1	C	359	SER	2.7
1	C	243	LEU	2.6
1	D	73	HIS	2.6
1	B	55	LEU	2.6
1	A	95	GLY	2.5
1	A	140	ASN	2.5
1	C	312	SER	2.5
1	C	191	GLN	2.4
1	A	186	LYS	2.4
1	D	371	PRO	2.4
1	A	198	LYS	2.3
1	D	377	LYS	2.3
1	D	23	PHE	2.3
1	D	375	GLU	2.3
1	C	318	GLU	2.2
1	C	27	ASN	2.2
1	C	382	THR	2.2
1	C	328	LEU	2.1
1	B	68	ASP	2.1
1	B	27	ASN	2.0

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

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

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	HQJ	A	505	12/12	0.72	0.26	50,54,60,67	0
3	HQJ	C	505	12/12	0.80	0.18	45,51,65,65	0
3	HQJ	B	505	12/12	0.88	0.15	39,43,48,51	0

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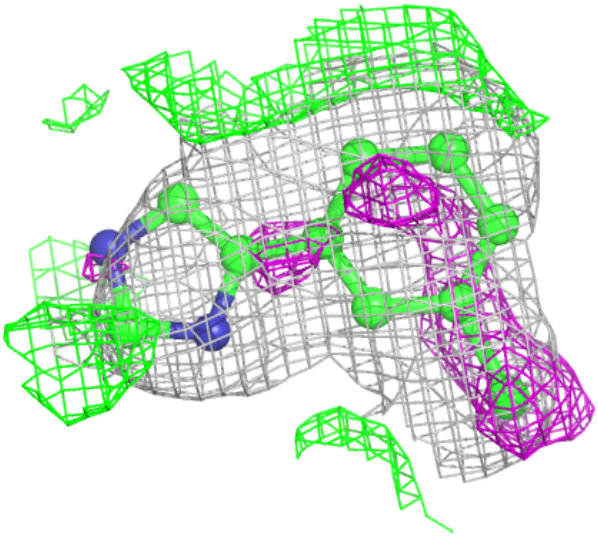
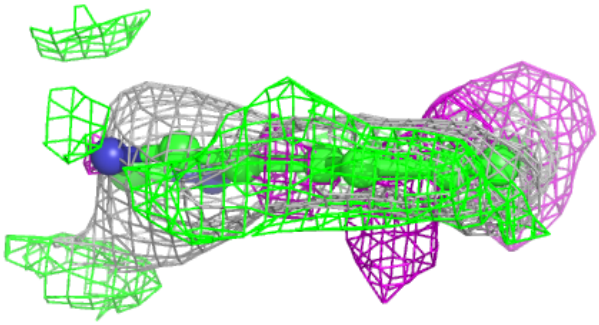
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	HQJ	C	506	12/12	0.89	0.19	45,49,53,54	0
3	HQJ	C	503	12/12	0.94	0.15	38,43,46,49	0
3	HQJ	D	503	12/12	0.95	0.13	33,36,39,44	0
3	HQJ	D	504	12/12	0.95	0.14	40,46,52,53	0
4	PO4	D	505	5/5	0.95	0.12	52,52,61,67	0
3	HQJ	A	502	12/12	0.96	0.10	31,34,37,39	0
3	HQJ	B	503	12/12	0.96	0.12	33,36,40,43	0
3	HQJ	A	503	12/12	0.96	0.10	35,37,42,42	0
3	HQJ	A	504	12/12	0.96	0.16	43,52,61,62	0
3	HQJ	C	504	12/12	0.96	0.16	39,48,57,60	0
2	HEM	C	501	43/43	0.97	0.14	34,39,46,53	0
3	HQJ	C	502	12/12	0.97	0.11	33,36,39,40	0
3	HQJ	B	504	12/12	0.97	0.13	39,45,54,57	0
3	HQJ	B	502	12/12	0.98	0.13	27,31,36,36	0
3	HQJ	D	502	12/12	0.98	0.11	29,33,35,38	0
2	HEM	A	501	43/43	0.98	0.12	30,35,42,51	0
2	HEM	D	501	43/43	0.98	0.14	30,35,40,46	0
2	HEM	B	501	43/43	0.98	0.13	30,35,40,47	0

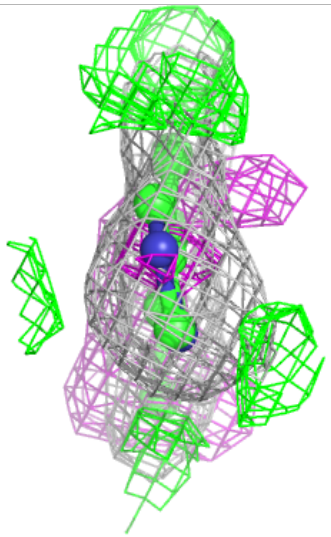
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around HQJ A 505:

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

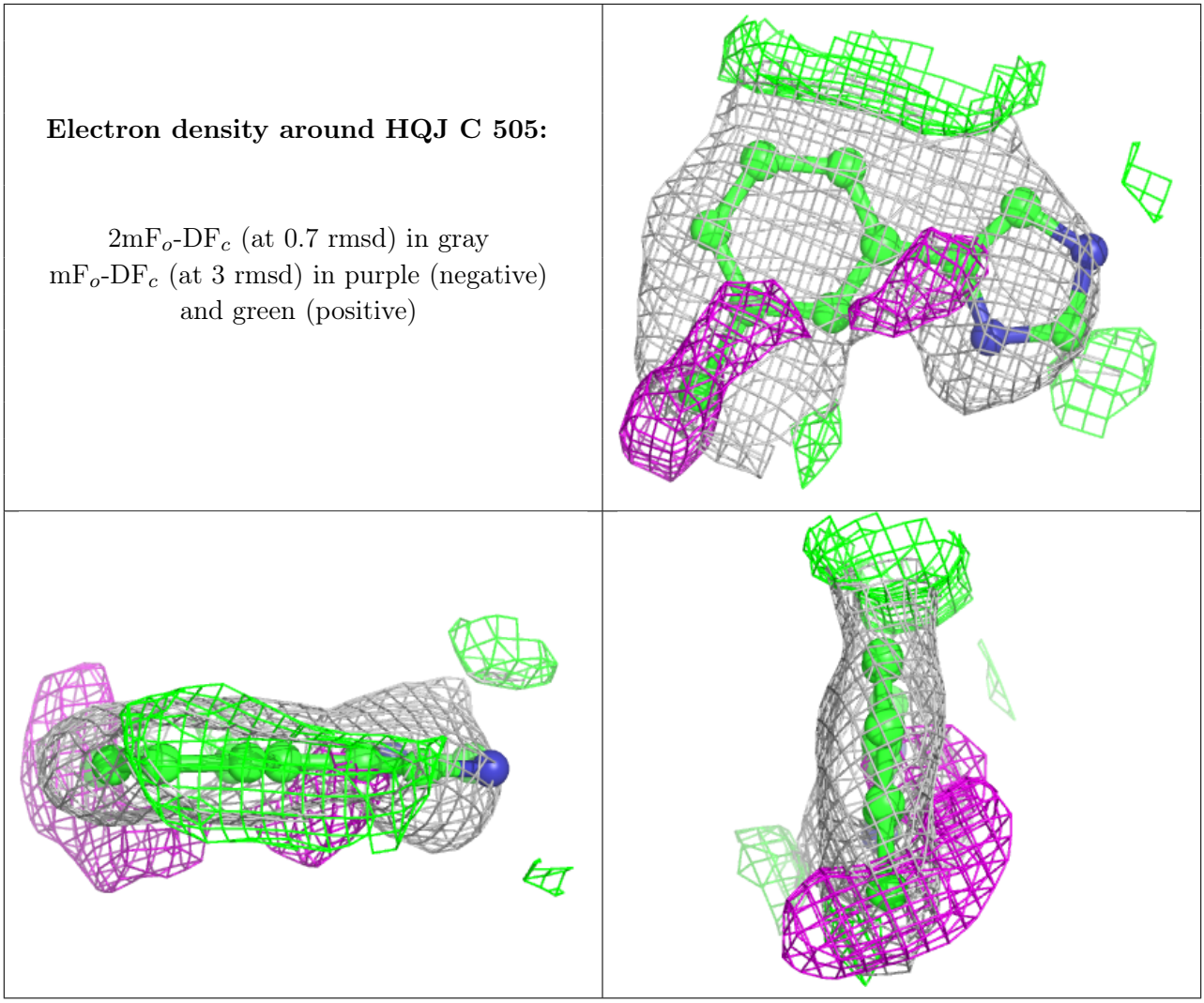






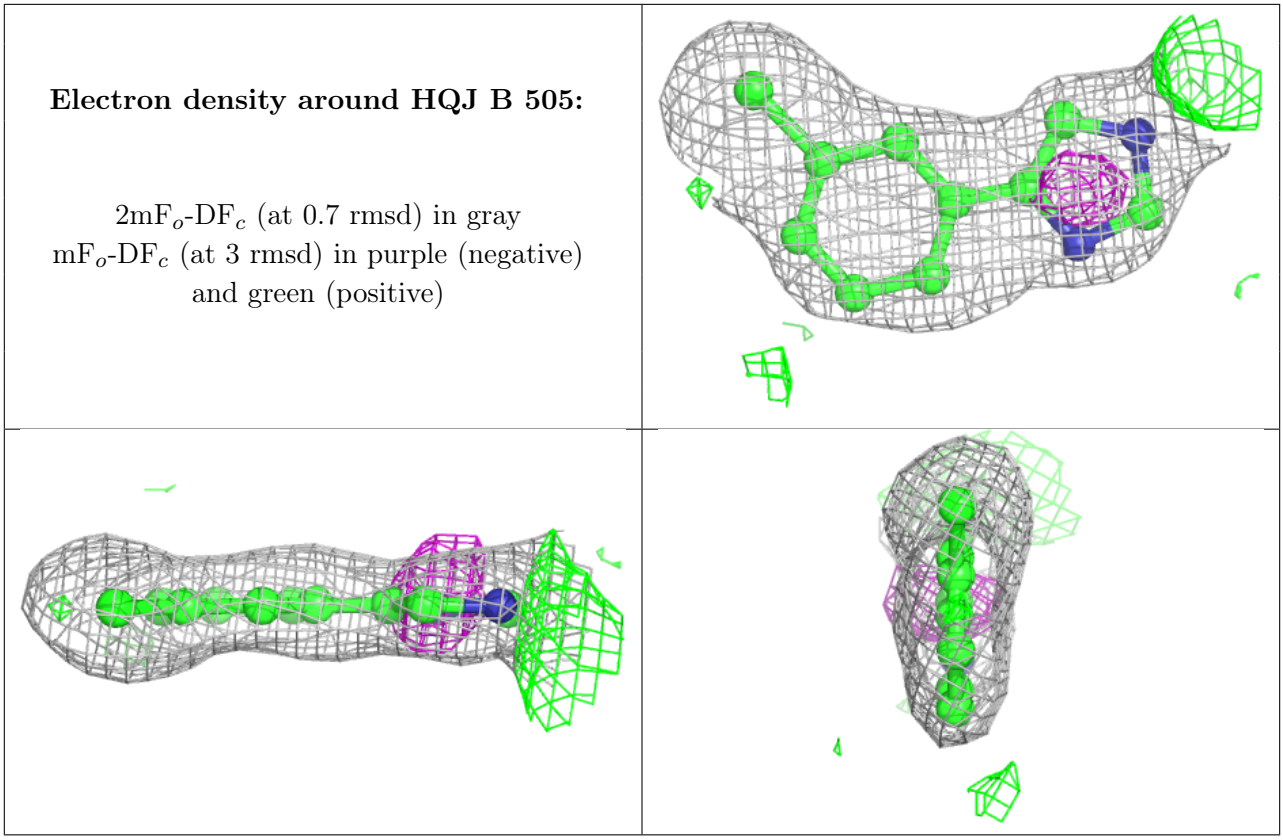
Electron density around HQJ C 505:

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



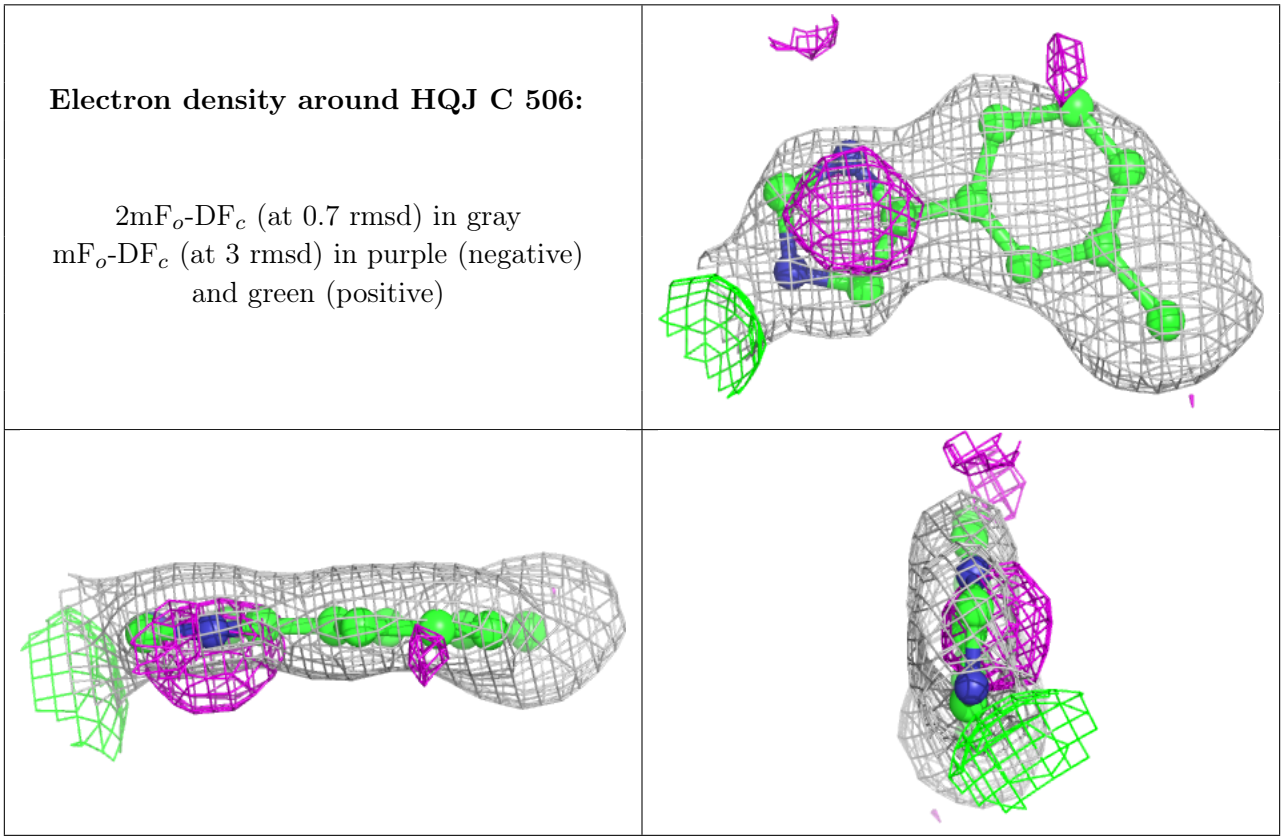
Electron density around HQJ B 505:

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



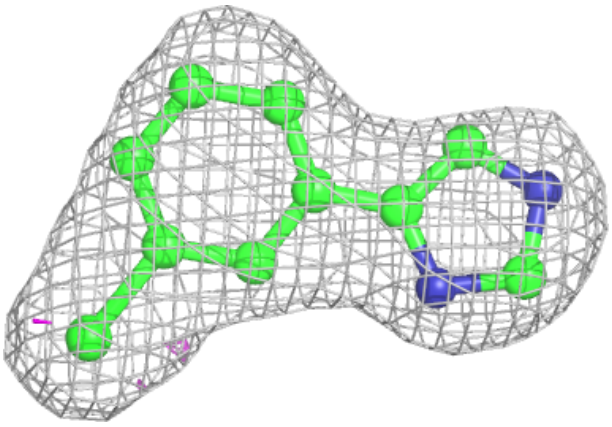
Electron density around HQJ C 506:

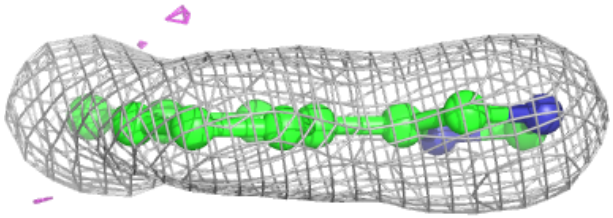
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

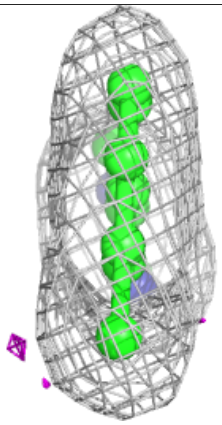


Electron density around HQJ C 503:

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

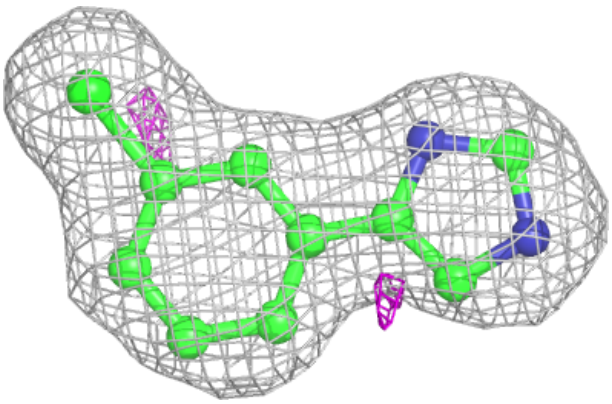


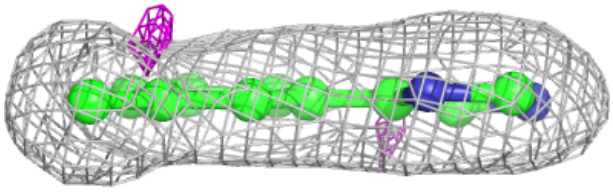


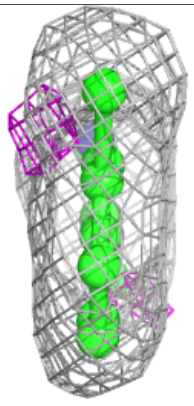


Electron density around HQJ D 503:

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

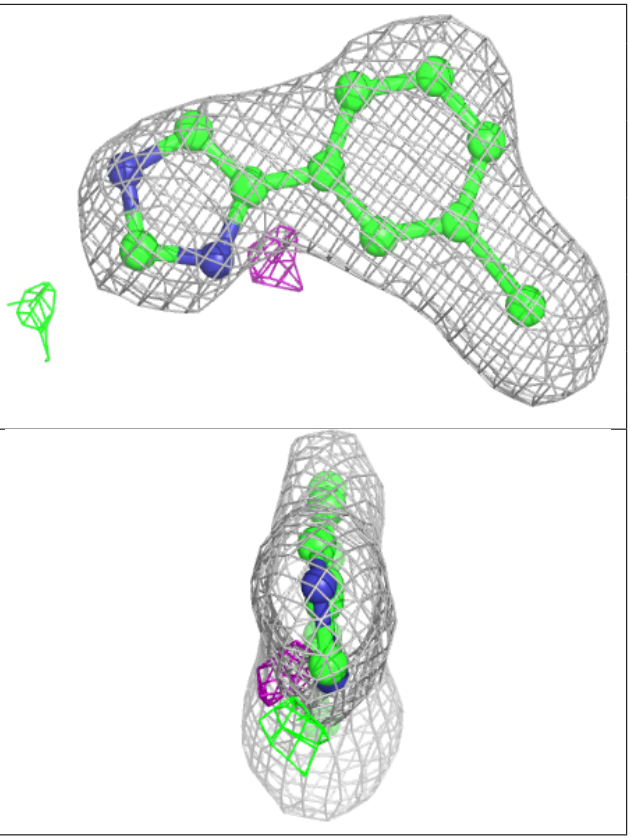






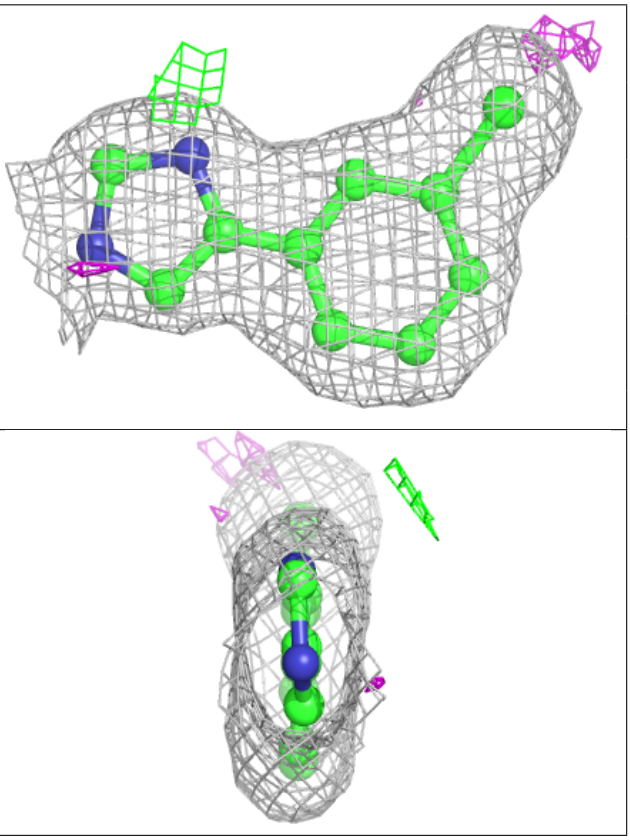
Electron density around HQJ D 504:

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



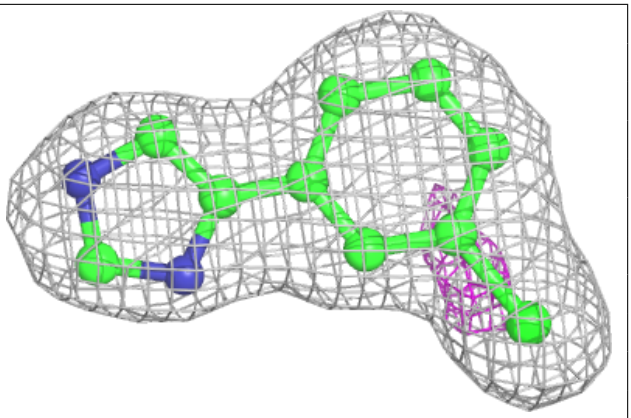
Electron density around HQJ A 502:

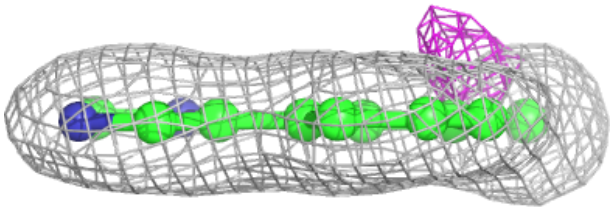
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

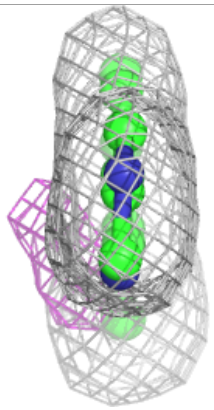


Electron density around HQJ B 503:

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

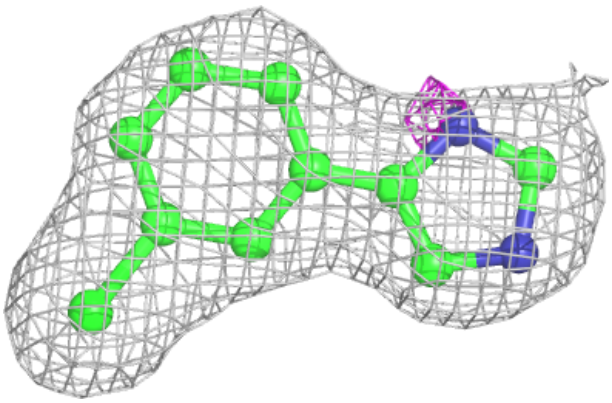


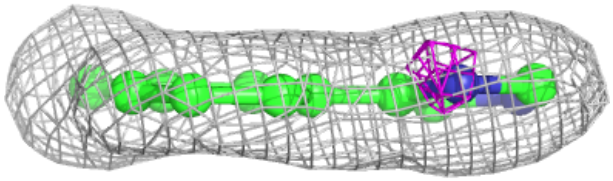


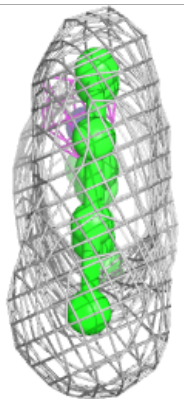


Electron density around HQJ A 503:

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

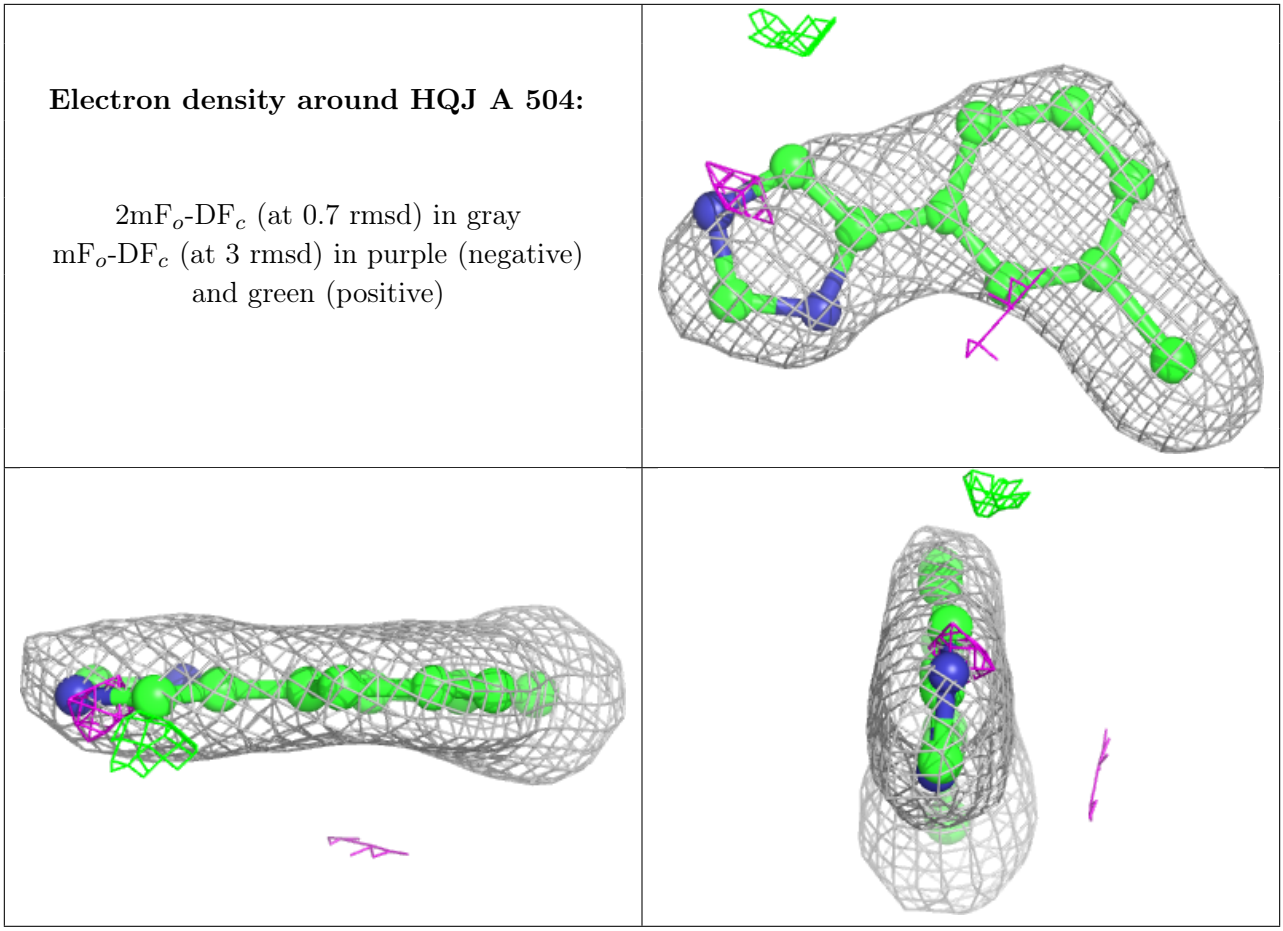






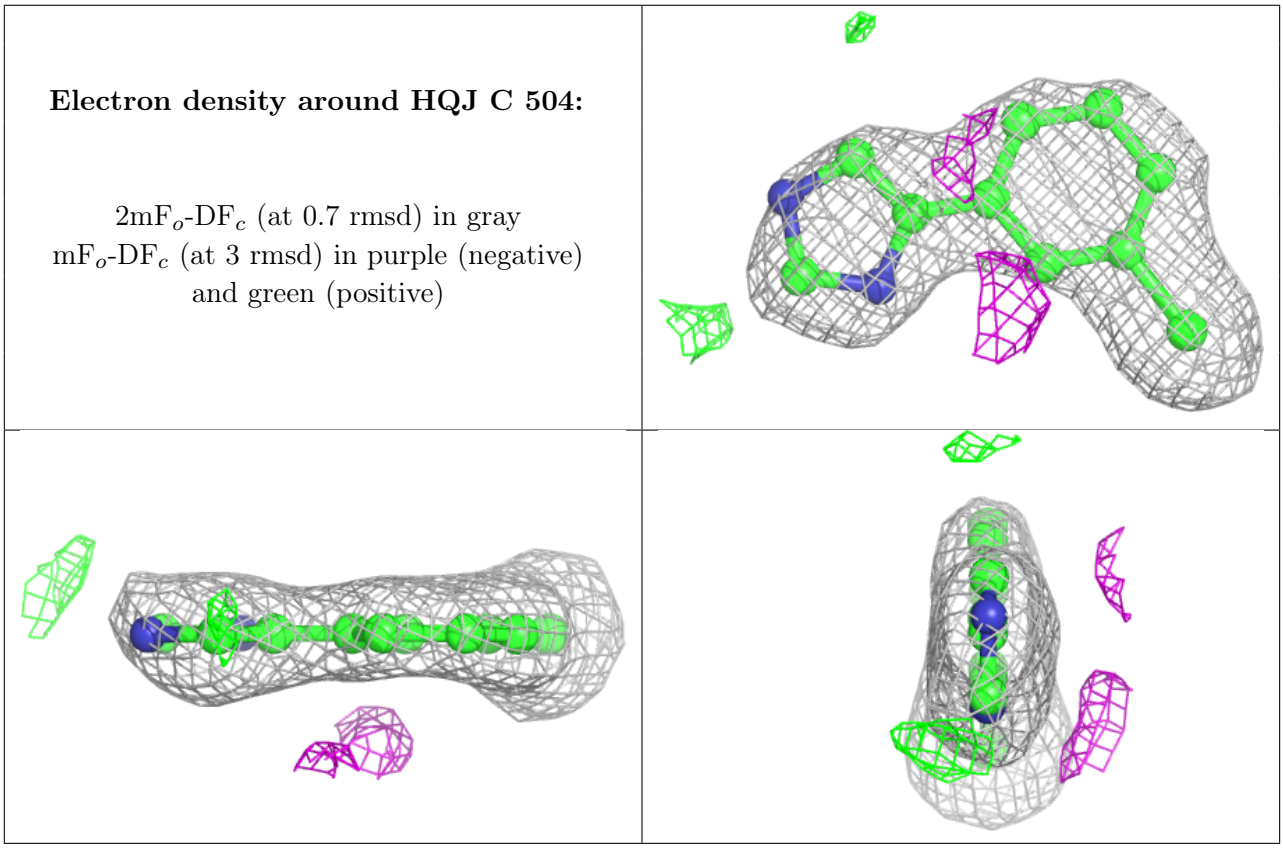
Electron density around HQJ A 504:

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



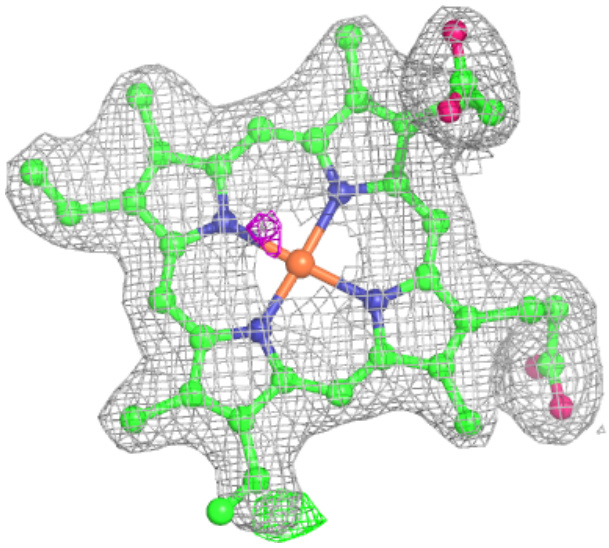
Electron density around HQJ C 504:

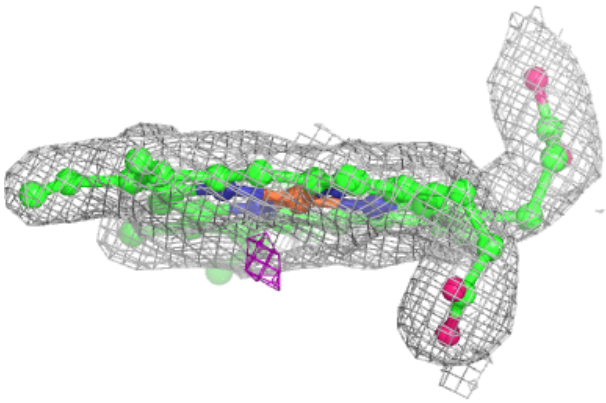
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around HEM C 501:

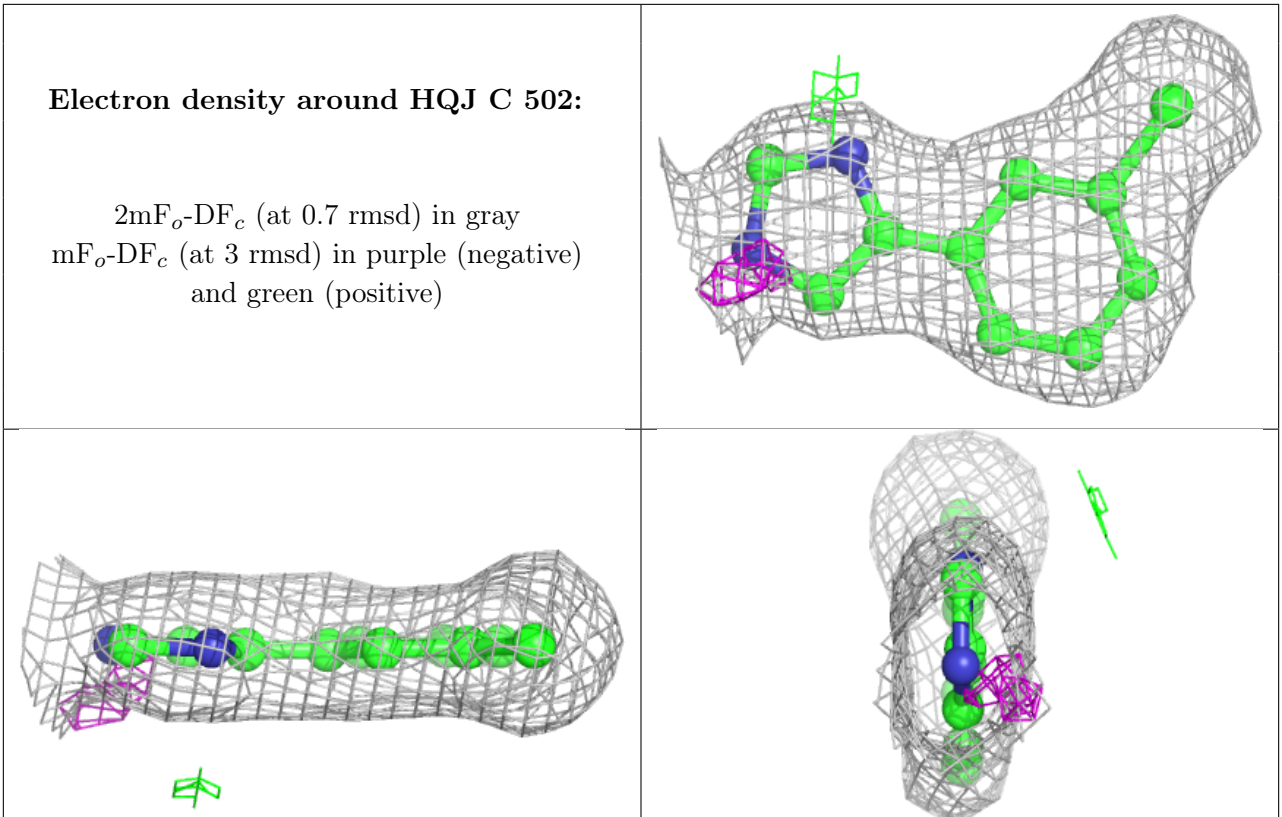
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





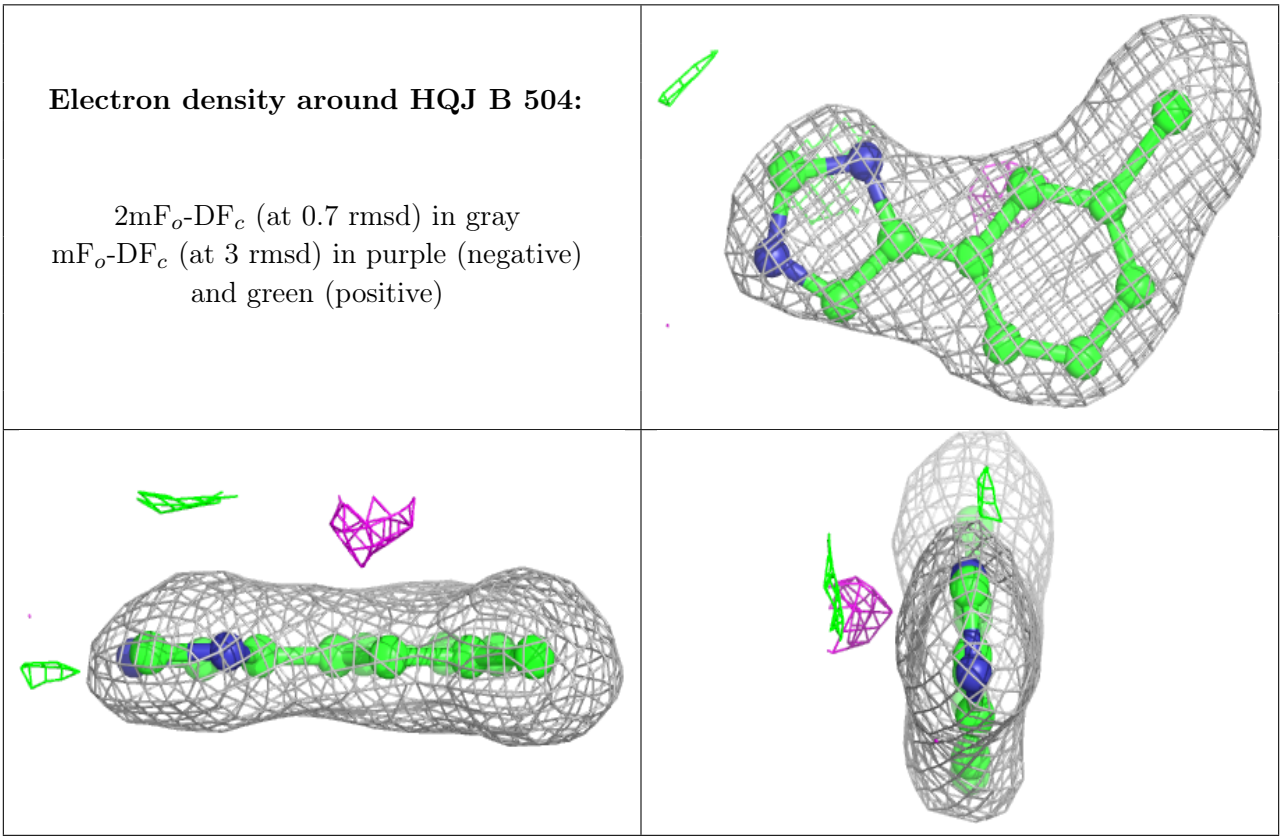
Electron density around HQJ C 502:

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



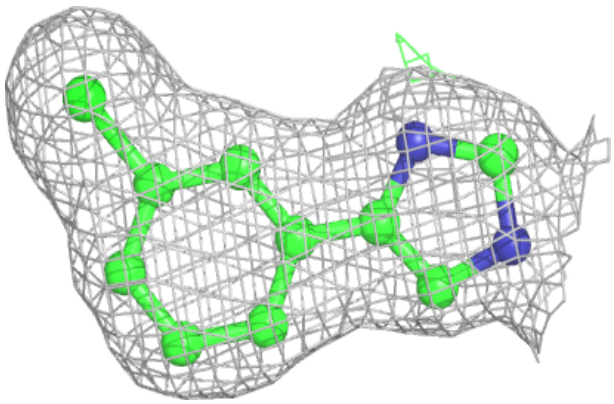
Electron density around HQJ B 504:

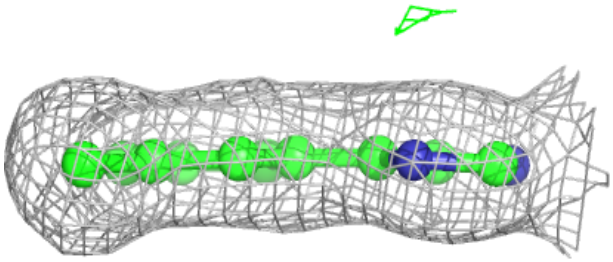
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

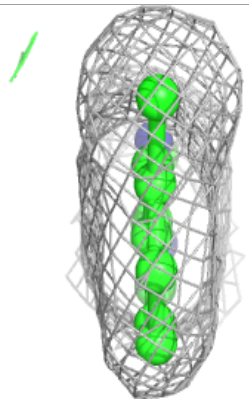


Electron density around HQJ B 502:

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

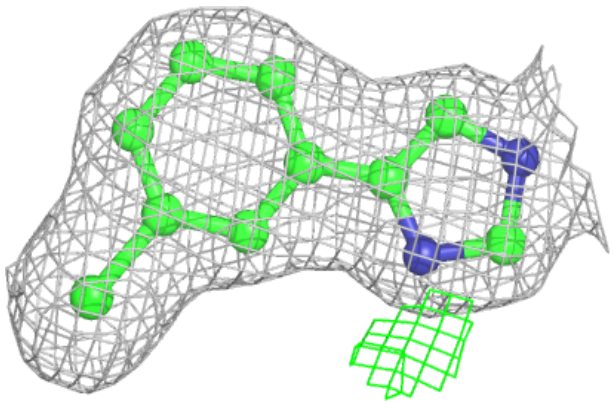


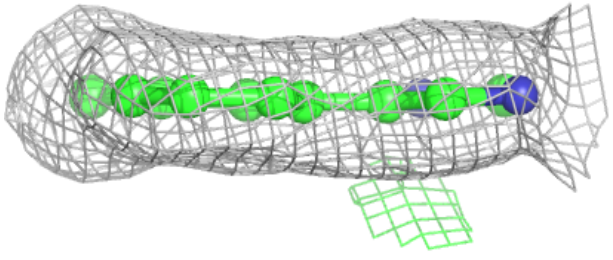


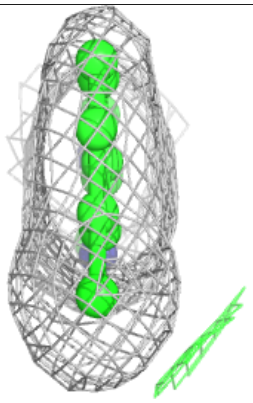


Electron density around HQJ D 502:

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

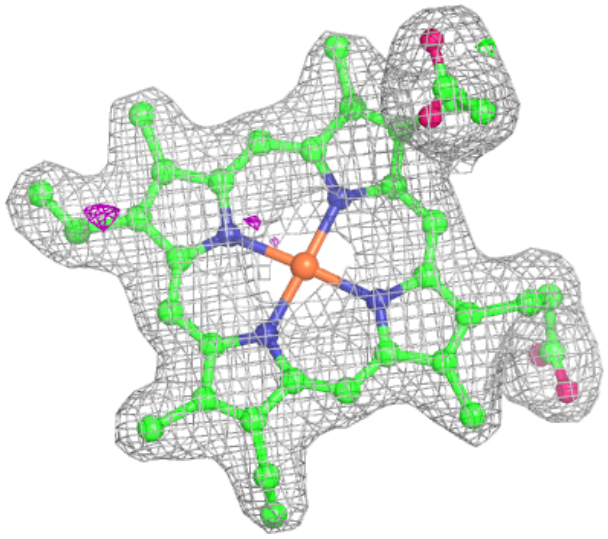


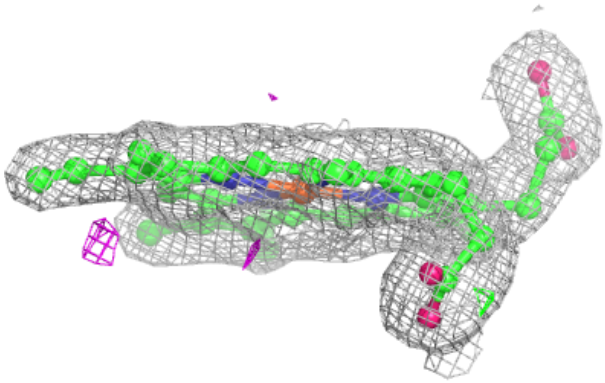


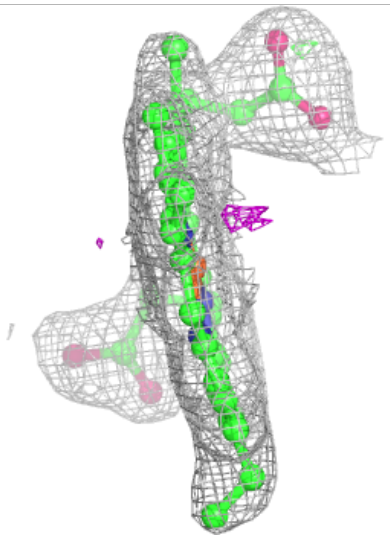


Electron density around HEM A 501:

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

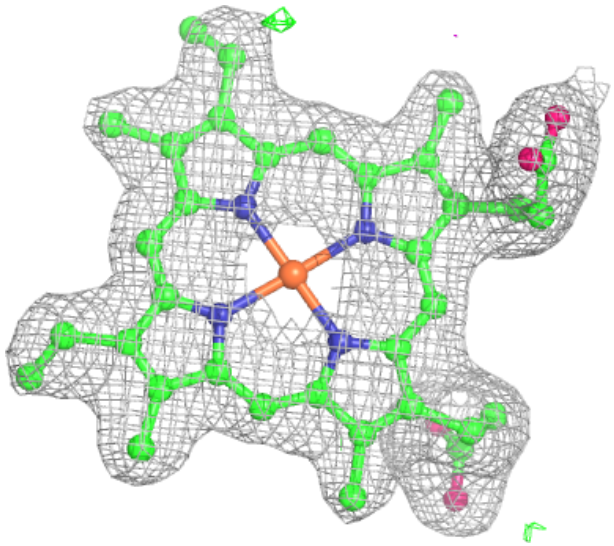


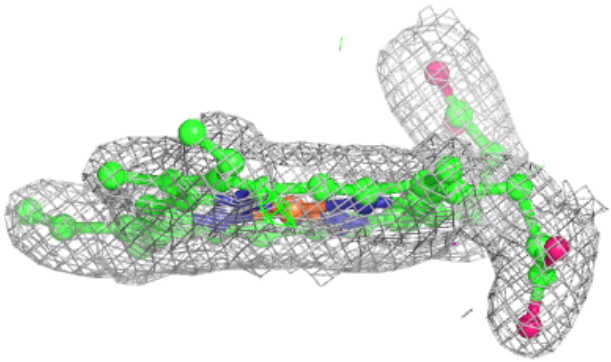




Electron density around HEM D 501:

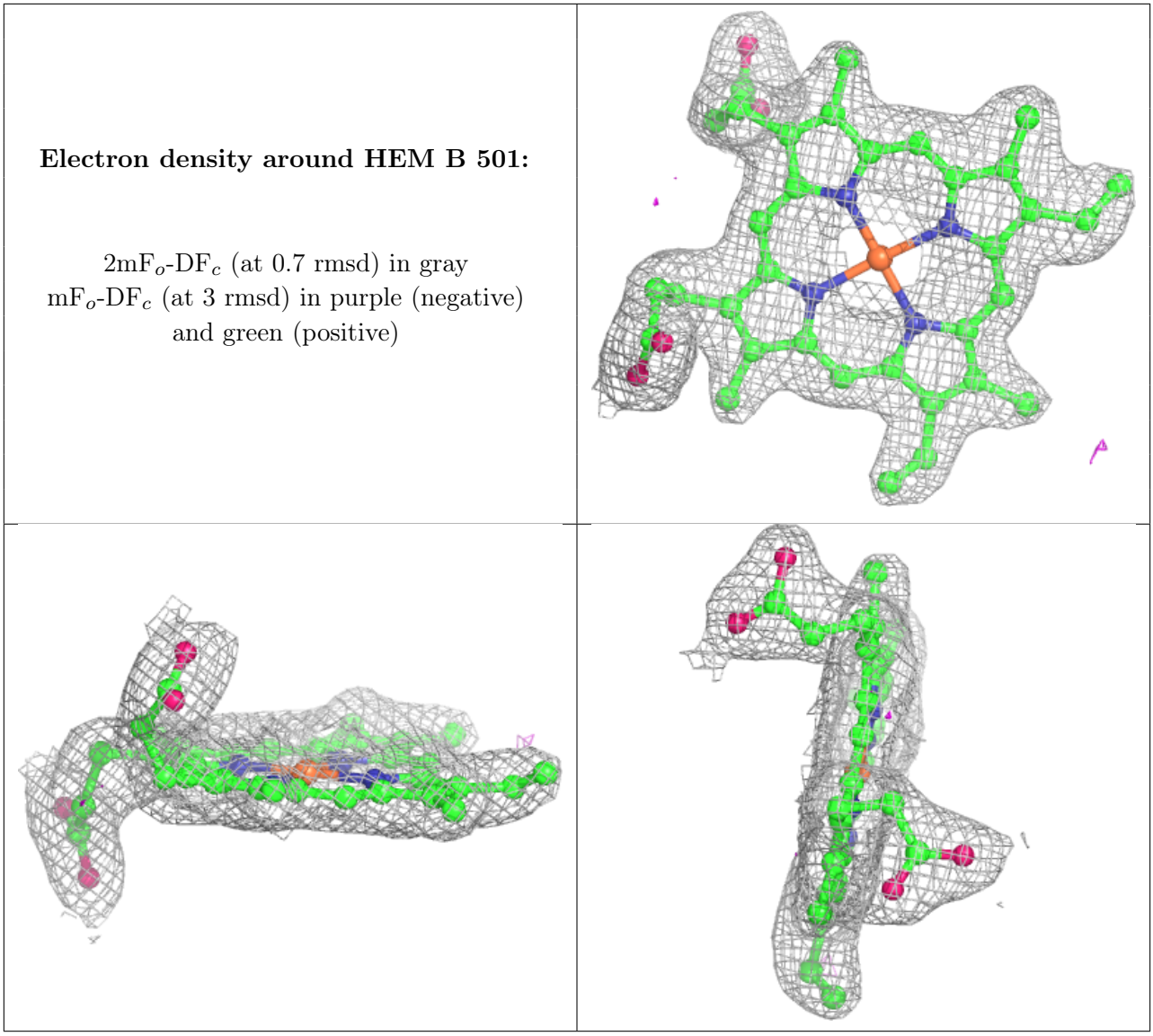
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





Electron density around HEM B 501:

$2mF_o$-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.