Full wwPDB X-ray Structure Validation Report (i)

Jun 25, 2024 – 03:24 PM EDT

PDB ID	:	6I5B
Title	:	Crystal Structure of Outer Cell Wall Cytochrome OcwA
Authors	:	Hermann, B.; Einsle, O.
Deposited on	:	2018-11-13
Resolution	:	2.20 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 (i) 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 (i)) were used in the production of this report:

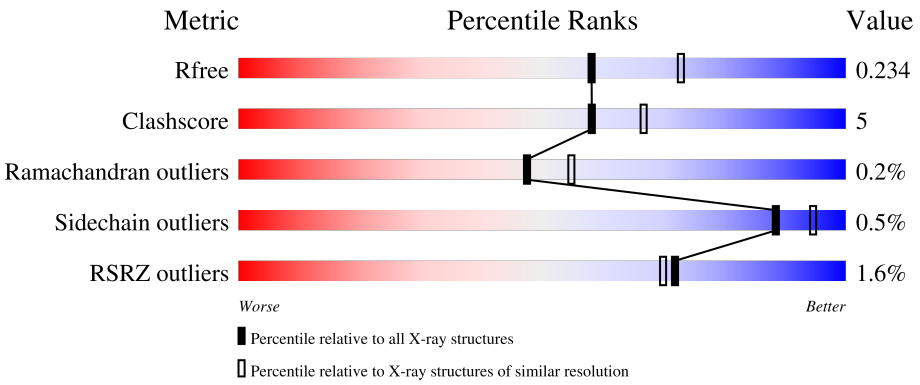
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.20 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	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	526	.% 88% • 8%
1	B	526	2% 89% • 8%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 8278 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 Uncharacterized protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	484	3667	2298	636	704	29	0	0	0
1	B	483	3659	2294	634	702	29	0	0	0

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	526	LYS	-	expression tag	UNP D5XBK3
A	527	GLY	-	expression tag	UNP D5XBK3
A	528	GLU	-	expression tag	UNP D5XBK3
A	529	LEU	-	expression tag	UNP D5XBK3
A	530	LYS	-	expression tag	UNP D5XBK3
A	531	LEU	-	expression tag	UNP D5XBK3
A	532	GLU	-	expression tag	UNP D5XBK3
A	533	GLY	-	expression tag	UNP D5XBK3
A	534	LYS	-	expression tag	UNP D5XBK3
A	535	PRO	-	expression tag	UNP D5XBK3
A	536	ILE	-	expression tag	UNP D5XBK3
A	537	PRO	-	expression tag	UNP D5XBK3
A	538	ASP	-	expression tag	UNP D5XBK3
A	539	PRO	-	expression tag	UNP D5XBK3
A	540	LEU	-	expression tag	UNP D5XBK3
A	541	LEU	-	expression tag	UNP D5XBK3
A	542	GLY	-	expression tag	UNP D5XBK3
A	543	LEU	-	expression tag	UNP D5XBK3
A	544	ASP	-	expression tag	UNP D5XBK3
A	545	SER	-	expression tag	UNP D5XBK3
A	546	THR	-	expression tag	UNP D5XBK3
A	547	ARG	-	expression tag	UNP D5XBK3
A	548	THR	-	expression tag	UNP D5XBK3
A	549	GLY	-	expression tag	UNP D5XBK3
A	550	HIS	-	expression tag	UNP D5XBK3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	551	HIS	-	expression tag	UNP D5XBK3
A	552	HIS	-	expression tag	UNP D5XBK3
A	553	HIS	-	expression tag	UNP D5XBK3
A	554	HIS	-	expression tag	UNP D5XBK3
A	555	HIS	-	expression tag	UNP D5XBK3
B	526	LYS	-	expression tag	UNP D5XBK3
B	527	GLY	-	expression tag	UNP D5XBK3
B	528	GLU	-	expression tag	UNP D5XBK3
B	529	LEU	-	expression tag	UNP D5XBK3
B	530	LYS	-	expression tag	UNP D5XBK3
B	531	LEU	-	expression tag	UNP D5XBK3
B	532	GLU	-	expression tag	UNP D5XBK3
B	533	GLY	-	expression tag	UNP D5XBK3
B	534	LYS	-	expression tag	UNP D5XBK3
B	535	PRO	-	expression tag	UNP D5XBK3
B	536	ILE	-	expression tag	UNP D5XBK3
B	537	PRO	-	expression tag	UNP D5XBK3
B	538	ASP	-	expression tag	UNP D5XBK3
B	539	PRO	-	expression tag	UNP D5XBK3
B	540	LEU	-	expression tag	UNP D5XBK3
B	541	LEU	-	expression tag	UNP D5XBK3
B	542	GLY	-	expression tag	UNP D5XBK3
B	543	LEU	-	expression tag	UNP D5XBK3
B	544	ASP	-	expression tag	UNP D5XBK3
B	545	SER	-	expression tag	UNP D5XBK3
B	546	THR	-	expression tag	UNP D5XBK3
B	547	ARG	-	expression tag	UNP D5XBK3
B	548	THR	-	expression tag	UNP D5XBK3
B	549	GLY	-	expression tag	UNP D5XBK3
B	550	HIS	-	expression tag	UNP D5XBK3
B	551	HIS	-	expression tag	UNP D5XBK3
B	552	HIS	-	expression tag	UNP D5XBK3
B	553	HIS	-	expression tag	UNP D5XBK3
B	554	HIS	-	expression tag	UNP D5XBK3
B	555	HIS	-	expression tag	UNP D5XBK3

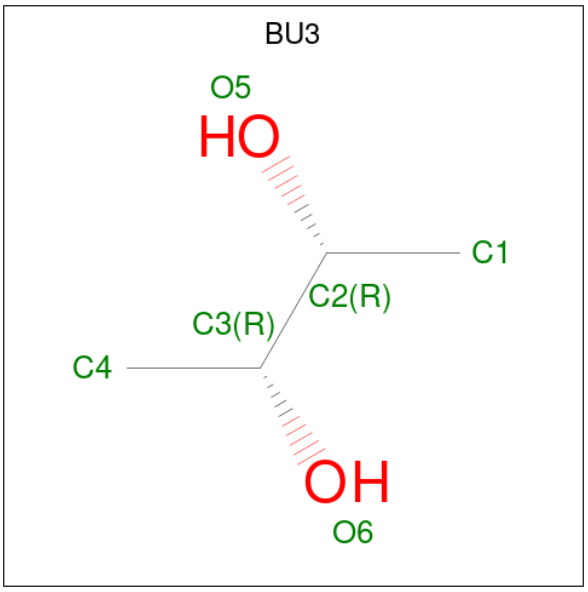
- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
2	A	1	1	1	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

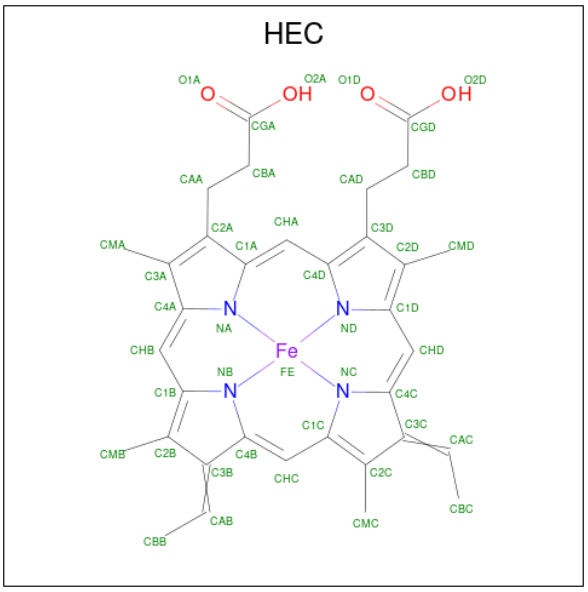
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Cl		
3	A	1	1	1	0	0

- Molecule 4 is (R,R)-2,3-BUTANEDIOL (three-letter code: BU3) (formula: $C_4H_{10}O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
4	A	1	6	4	2	0	0

- Molecule 5 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



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

- Molecule 6 is water.

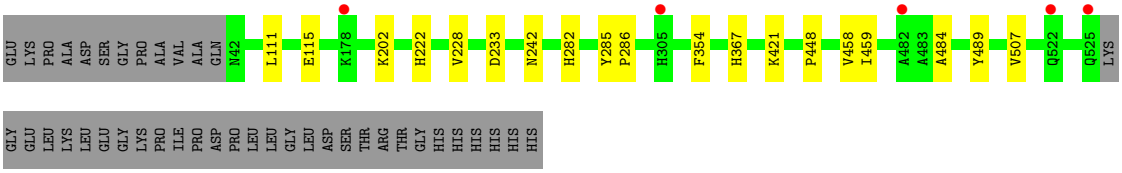
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	78	78	78	0	0
			Total	O		
6	B	92	92	92	0	0

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.

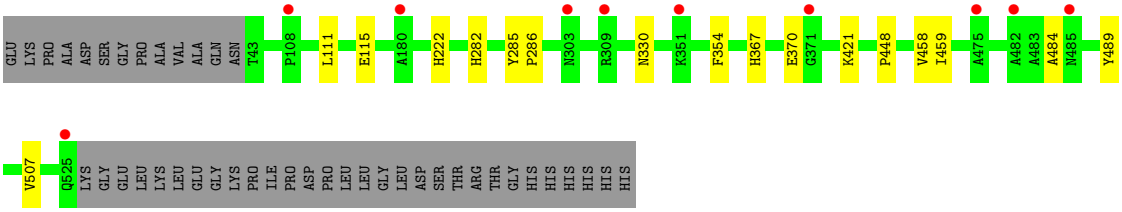
• Molecule 1: Uncharacterized protein

Chain A:



• Molecule 1: Uncharacterized protein

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	54.85Å 62.97Å 84.21Å 101.54° 99.13° 98.41°	Depositor
Resolution (Å)	80.94 – 2.20 49.06 – 2.20	Depositor EDS
% Data completeness (in resolution range)	98.1 (80.94-2.20) 98.1 (49.06-2.20)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.42 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.8.0158	Depositor
R, R_{free}	0.203 , 0.233 0.208 , 0.234	Depositor DCC
R_{free} test set	2643 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	45.7	Xtriage
Anisotropy	0.295	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 31.1	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	8278	wwPDB-VP
Average B, all atoms (Å^2)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.72% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: CL, BU3, MG, HEC

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	0.41	0/3760	0.58	0/5092
1	B	0.41	0/3752	0.59	0/5081
All	All	0.41	0/7512	0.58	0/10173

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 (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3667	0	3536	13	1
1	B	3659	0	3530	11	1
2	A	1	0	0	0	0
3	A	1	0	0	0	0
4	A	6	0	10	0	0
5	A	387	0	271	38	0
5	B	387	0	270	28	0
6	A	78	0	0	0	0
6	B	92	0	0	0	0
All	All	8278	0	7617	75	1

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 (75) 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:A:459:ILE:HD11	5:A:612:HEC:HBB3	1.66	0.76
1:A:458:VAL:HG11	5:A:612:HEC:HMA1	1.72	0.70
1:B:459:ILE:HD11	5:B:1009:HEC:HBB3	1.73	0.68
5:A:604:HEC:HBD2	5:A:604:HEC:HMD1	1.76	0.68
5:A:612:HEC:HBB3	5:A:612:HEC:HMB1	1.76	0.67
5:B:1006:HEC:HMC1	5:B:1006:HEC:HBC3	1.77	0.65
5:A:609:HEC:HBC3	5:A:609:HEC:HMC1	1.78	0.64
1:A:507:VAL:HG11	5:A:611:HEC:HMD2	1.80	0.64
5:B:1001:HEC:HBC3	5:B:1001:HEC:HMC1	1.79	0.64
5:A:610:HEC:HBB3	5:A:610:HEC:HMB1	1.81	0.63
1:B:115:GLU:HG3	5:B:1002:HEC:HMA1	1.80	0.62
5:B:1007:HEC:HMC1	5:B:1007:HEC:HBC3	1.81	0.62
5:B:1008:HEC:HMB1	5:B:1008:HEC:HBB3	1.82	0.62
5:B:1009:HEC:HBB3	5:B:1009:HEC:HMB1	1.81	0.61
5:A:606:HEC:HMC1	5:A:606:HEC:HBC3	1.81	0.61
5:A:611:HEC:HMB1	5:A:611:HEC:HBB3	1.83	0.60
1:A:222:HIS:CE1	5:A:605:HEC:HMD1	2.36	0.60
5:A:607:HEC:HMB1	5:A:607:HEC:HBB3	1.84	0.59
5:A:611:HEC:HMC1	5:A:611:HEC:HBC3	1.85	0.59
5:A:608:HEC:HBC3	5:A:608:HEC:HMC1	1.85	0.58
5:A:610:HEC:HMC1	5:A:610:HEC:HBC3	1.84	0.58
5:B:1004:HEC:HMB1	5:B:1004:HEC:HBB3	1.85	0.58
5:A:608:HEC:HMB1	5:A:608:HEC:HBB3	1.86	0.58
5:B:1005:HEC:HMC1	5:B:1005:HEC:HBC3	1.86	0.57
1:B:222:HIS:CE1	5:B:1002:HEC:HMD1	2.40	0.57
5:B:1001:HEC:HBB3	5:B:1001:HEC:HMB1	1.87	0.57
5:A:605:HEC:HMB1	5:A:605:HEC:HBB3	1.87	0.56
5:B:1003:HEC:HMB1	5:B:1003:HEC:HBB3	1.87	0.56
5:A:609:HEC:HBB3	5:A:609:HEC:HMB1	1.87	0.56
1:B:115:GLU:CG	5:B:1002:HEC:HMA1	2.35	0.56
5:B:1003:HEC:HBA2	5:B:1003:HEC:HMA2	1.90	0.54
5:B:1002:HEC:HBB3	5:B:1002:HEC:HMB1	1.90	0.54
1:B:507:VAL:HG11	5:B:1008:HEC:HMD2	1.90	0.53
5:B:1008:HEC:HBC3	5:B:1008:HEC:HMC1	1.90	0.53
5:A:612:HEC:HMC1	5:A:612:HEC:HBC3	1.91	0.53
1:B:458:VAL:HG11	5:B:1009:HEC:HMA1	1.91	0.52
5:A:606:HEC:HMB1	5:A:606:HEC:HBB3	1.90	0.52
5:A:607:HEC:HMC1	5:A:607:HEC:HBC3	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:604:HEC:HMC1	5:A:604:HEC:CBC	2.39	0.52
5:A:604:HEC:HMB1	5:A:604:HEC:HBB3	1.92	0.51
1:A:111:LEU:HD22	1:A:421:LYS:HE2	1.93	0.51
5:A:605:HEC:HMC1	5:A:605:HEC:HBC3	1.93	0.50
5:B:1009:HEC:HMC1	5:B:1009:HEC:HBC3	1.93	0.50
5:A:606:HEC:HMA2	5:A:606:HEC:HBA2	1.93	0.49
5:B:1004:HEC:HMC1	5:B:1004:HEC:HBC3	1.93	0.49
5:A:609:HEC:HMC1	5:A:609:HEC:CBC	2.42	0.49
5:A:610:HEC:HMC1	5:A:610:HEC:CBC	2.43	0.49
1:B:111:LEU:HD22	1:B:421:LYS:HE2	1.97	0.47
5:B:1009:HEC:HMC1	5:B:1009:HEC:CBC	2.45	0.47
5:A:607:HEC:HMC1	5:A:607:HEC:CBC	2.45	0.47
5:A:612:HEC:HMC1	5:A:612:HEC:CBC	2.45	0.46
5:A:604:HEC:HMB1	5:A:604:HEC:CBB	2.45	0.46
5:B:1004:HEC:HMC1	5:B:1004:HEC:CBC	2.45	0.46
5:B:1005:HEC:HMC1	5:B:1005:HEC:CBC	2.45	0.46
1:A:367:HIS:CE1	5:A:608:HEC:HMD1	2.51	0.46
5:B:1003:HEC:HMB1	5:B:1003:HEC:CBB	2.47	0.45
5:A:608:HEC:HMB1	5:A:608:HEC:CBB	2.46	0.45
1:A:115:GLU:HG3	5:A:605:HEC:HMA1	1.98	0.44
5:B:1001:HEC:HMB1	5:B:1001:HEC:CBB	2.47	0.44
1:A:115:GLU:CG	5:A:605:HEC:HMA1	2.48	0.43
1:A:448:PRO:HD2	1:B:448:PRO:HD2	1.99	0.43
5:B:1006:HEC:HMB1	5:B:1006:HEC:HBB3	2.00	0.43
5:A:606:HEC:HMC1	5:A:606:HEC:CBC	2.47	0.43
5:A:605:HEC:HMB1	5:A:605:HEC:CBB	2.48	0.42
1:B:367:HIS:CE1	5:B:1005:HEC:HMD1	2.54	0.42
5:A:611:HEC:HMC1	5:A:611:HEC:CBC	2.48	0.42
5:B:1006:HEC:HMC1	5:B:1006:HEC:CBC	2.47	0.42
1:A:484:ALA:HA	1:A:489:TYR:CD1	2.55	0.42
1:B:484:ALA:HA	1:B:489:TYR:CD1	2.55	0.42
5:A:605:HEC:HMC1	5:A:605:HEC:CBC	2.50	0.41
1:A:228:VAL:CG2	1:A:242:ASN:HB3	2.50	0.41
1:A:285:TYR:HB3	1:A:286:PRO:HD3	2.03	0.41
5:A:606:HEC:HMB1	5:A:606:HEC:CBB	2.51	0.41
1:B:285:TYR:HB3	1:B:286:PRO:HD3	2.03	0.40
1:A:228:VAL:CG2	1:A:242:ASN:CB	3.00	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:202:LYS:O	1:B:370:GLU:O[1_544]	2.05	0.15

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	482/526 (92%)	468 (97%)	13 (3%)	1 (0%)	47	55
1	B	481/526 (91%)	469 (98%)	11 (2%)	1 (0%)	47	55
All	All	963/1052 (92%)	937 (97%)	24 (2%)	2 (0%)	47	55

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	282	HIS
1	B	282	HIS

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	387/421 (92%)	385 (100%)	2 (0%)	88	94
1	B	386/421 (92%)	384 (100%)	2 (0%)	88	94
All	All	773/842 (92%)	769 (100%)	4 (0%)	88	94

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	233	ASP
1	A	354	PHE
1	B	330	ASN
1	B	354	PHE

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

Mol	Chain	Res	Type
1	B	525	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 21 ligands modelled in this entry, 2 are monoatomic - leaving 19 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	HEC	B	1006	1	32,50,50	1.46	4 (12%)	24,82,82	1.43	3 (12%)
5	HEC	A	609	1	32,50,50	1.06	2 (6%)	24,82,82	1.46	5 (20%)
5	HEC	A	610	1	32,50,50	1.04	2 (6%)	24,82,82	1.24	3 (12%)
5	HEC	A	607	1	32,50,50	1.08	2 (6%)	24,82,82	1.33	3 (12%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	HEC	B	1002	1	32,50,50	1.05	1 (3%)	24,82,82	1.35	3 (12%)
5	HEC	B	1009	1,2	32,50,50	1.13	2 (6%)	24,82,82	2.04	4 (16%)
5	HEC	A	612	1,2	32,50,50	1.11	2 (6%)	24,82,82	1.75	7 (29%)
5	HEC	B	1003	1	32,50,50	1.25	3 (9%)	24,82,82	1.27	1 (4%)
5	HEC	A	608	1,6	32,50,50	1.02	2 (6%)	24,82,82	1.33	3 (12%)
5	HEC	B	1005	1	32,50,50	1.50	2 (6%)	24,82,82	1.71	8 (33%)
5	HEC	A	606	1	32,50,50	1.01	2 (6%)	24,82,82	1.34	3 (12%)
4	BU3	A	603	-	4,5,5	0.40	0	6,6,6	0.33	0
5	HEC	A	605	1	32,50,50	0.96	1 (3%)	24,82,82	1.39	4 (16%)
5	HEC	B	1004	1	32,50,50	1.05	2 (6%)	24,82,82	1.29	3 (12%)
5	HEC	A	604	1	32,50,50	1.03	2 (6%)	24,82,82	1.43	2 (8%)
5	HEC	B	1007	1	32,50,50	1.28	3 (9%)	24,82,82	1.40	2 (8%)
5	HEC	B	1008	1	32,50,50	1.02	2 (6%)	24,82,82	1.42	4 (16%)
5	HEC	A	611	1	32,50,50	0.93	2 (6%)	24,82,82	1.63	3 (12%)
5	HEC	B	1001	1	32,50,50	1.02	2 (6%)	24,82,82	1.39	4 (16%)

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
5	HEC	B	1006	1	-	3/10/54/54	-
5	HEC	A	609	1	-	3/10/54/54	-
5	HEC	A	610	1	-	2/10/54/54	-
5	HEC	A	607	1	-	5/10/54/54	-
5	HEC	B	1002	1	-	5/10/54/54	-
5	HEC	B	1009	1,2	-	3/10/54/54	-
5	HEC	A	612	1,2	-	6/10/54/54	-
5	HEC	B	1003	1	-	7/10/54/54	-
5	HEC	A	608	1,6	-	6/10/54/54	-
5	HEC	B	1005	1	-	5/10/54/54	-
5	HEC	A	606	1	-	6/10/54/54	-
4	BU3	A	603	-	-	4/4/4/4	-
5	HEC	A	605	1	-	3/10/54/54	-
5	HEC	B	1004	1	-	5/10/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	HEC	A	604	1	-	6/10/54/54	-
5	HEC	B	1007	1	-	2/10/54/54	-
5	HEC	B	1008	1	-	5/10/54/54	-
5	HEC	A	611	1	-	1/10/54/54	-
5	HEC	B	1001	1	-	5/10/54/54	-

All (38) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	1005	HEC	CBB-CAB	-6.22	1.26	1.49
5	B	1006	HEC	CBB-CAB	4.36	1.66	1.49
5	B	1003	HEC	CBC-CAC	-4.17	1.33	1.49
5	B	1007	HEC	C4B-C3B	4.02	1.50	1.43
5	B	1006	HEC	C2B-C3B	-3.96	1.36	1.40
5	B	1009	HEC	C4B-C3B	3.93	1.50	1.43
5	A	612	HEC	C4B-C3B	3.87	1.50	1.43
5	B	1007	HEC	CBB-CAB	-3.74	1.35	1.49
5	B	1005	HEC	C4B-C3B	3.68	1.49	1.43
5	B	1001	HEC	C4B-C3B	3.68	1.49	1.43
5	A	610	HEC	C4B-C3B	3.66	1.49	1.43
5	A	608	HEC	C4B-C3B	3.60	1.49	1.43
5	A	609	HEC	C4B-C3B	3.59	1.49	1.43
5	B	1002	HEC	C4B-C3B	3.55	1.49	1.43
5	A	605	HEC	C4B-C3B	3.45	1.49	1.43
5	A	604	HEC	C4B-C3B	3.44	1.49	1.43
5	B	1004	HEC	C4B-C3B	3.21	1.48	1.43
5	A	607	HEC	C4B-C3B	3.17	1.48	1.43
5	B	1008	HEC	C4B-C3B	3.15	1.48	1.43
5	B	1003	HEC	C4B-C3B	3.09	1.48	1.43
5	A	606	HEC	C4B-C3B	3.08	1.48	1.43
5	B	1009	HEC	C2B-C3B	-3.07	1.37	1.40
5	A	607	HEC	C2B-C3B	-2.98	1.37	1.40
5	B	1006	HEC	C4B-C3B	2.96	1.48	1.43
5	A	609	HEC	C2B-C3B	-2.85	1.37	1.40
5	B	1003	HEC	C2B-C3B	-2.72	1.37	1.40
5	A	611	HEC	C4B-C3B	2.67	1.47	1.43
5	A	604	HEC	C2B-C3B	-2.64	1.38	1.40
5	A	612	HEC	C2B-C3B	-2.61	1.38	1.40
5	B	1004	HEC	C2B-C3B	-2.59	1.38	1.40
5	A	606	HEC	C2B-C3B	-2.58	1.38	1.40
5	A	610	HEC	C2B-C3B	-2.56	1.38	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	608	HEC	C2B-C3B	-2.52	1.38	1.40
5	B	1008	HEC	C2B-C3B	-2.49	1.38	1.40
5	B	1001	HEC	C2B-C3B	-2.44	1.38	1.40
5	B	1007	HEC	C2B-C3B	-2.29	1.38	1.40
5	A	611	HEC	C2B-C3B	-2.24	1.38	1.40
5	B	1006	HEC	C1D-ND	-2.14	1.31	1.36

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	B	1009	HEC	CBA-CAA-C2A	-6.87	101.03	112.60
5	A	611	HEC	CBA-CAA-C2A	-5.30	103.67	112.60
5	B	1005	HEC	CBD-CAD-C3D	-4.11	105.60	112.62
5	B	1007	HEC	CBD-CAD-C3D	-3.71	106.29	112.62
5	A	604	HEC	CBD-CAD-C3D	3.51	118.60	112.62
5	A	612	HEC	CBA-CAA-C2A	-3.48	106.73	112.60
5	B	1009	HEC	O2D-CGD-CBD	3.39	124.93	114.03
5	B	1005	HEC	CBA-CAA-C2A	3.24	118.07	112.60
5	A	612	HEC	CBD-CAD-C3D	-3.19	107.17	112.62
5	B	1008	HEC	CBA-CAA-C2A	-2.91	107.70	112.60
5	A	607	HEC	CBA-CAA-C2A	-2.76	107.96	112.60
5	B	1006	HEC	O2D-CGD-CBD	2.74	122.84	114.03
5	B	1004	HEC	CBA-CAA-C2A	-2.70	108.05	112.60
5	A	609	HEC	CBD-CAD-C3D	-2.69	108.03	112.62
5	A	608	HEC	CMC-C2C-C1C	-2.68	124.35	128.46
5	A	610	HEC	CBD-CAD-C3D	-2.62	108.14	112.62
5	B	1003	HEC	CMC-C2C-C1C	-2.59	124.48	128.46
5	A	606	HEC	CMC-C2C-C1C	-2.58	124.49	128.46
5	A	612	HEC	O2D-CGD-CBD	2.53	122.15	114.03
5	B	1008	HEC	O2D-CGD-CBD	2.51	122.10	114.03
5	B	1002	HEC	O2D-CGD-CBD	2.50	122.06	114.03
5	A	605	HEC	C3B-C4B-NB	-2.50	106.23	110.94
5	B	1002	HEC	C3B-C4B-NB	-2.45	106.32	110.94
5	B	1002	HEC	O2D-CGD-O1D	-2.44	117.22	123.30
5	A	611	HEC	O2D-CGD-CBD	2.42	121.82	114.03
5	B	1001	HEC	CBD-CAD-C3D	-2.42	108.48	112.62
5	B	1006	HEC	O2D-CGD-O1D	-2.41	117.28	123.30
5	A	611	HEC	CMC-C2C-C1C	-2.38	124.81	128.46
5	A	607	HEC	CAD-CBD-CGD	-2.36	107.15	113.76
5	A	612	HEC	C3B-C4B-NB	-2.36	106.50	110.94
5	B	1008	HEC	C3B-C4B-NB	-2.35	106.51	110.94
5	A	609	HEC	CMC-C2C-C1C	-2.34	124.88	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	612	HEC	CMB-C2B-C1B	-2.34	124.88	128.46
5	A	605	HEC	CMC-C2C-C1C	-2.30	124.93	128.46
5	A	609	HEC	O2D-CGD-CBD	2.27	121.31	114.03
5	B	1005	HEC	C3C-C4C-NC	-2.26	106.68	110.94
5	A	606	HEC	CMC-C2C-C3C	2.24	128.45	125.82
5	B	1009	HEC	CMB-C2B-C1B	-2.24	125.03	128.46
5	B	1005	HEC	CMA-C3A-C2A	2.21	129.10	124.94
5	A	609	HEC	O2D-CGD-O1D	-2.17	117.88	123.30
5	A	608	HEC	O2D-CGD-CBD	2.17	121.00	114.03
5	A	605	HEC	O2A-CGA-CBA	2.16	120.97	114.03
5	B	1007	HEC	CMB-C2B-C1B	-2.13	125.19	128.46
5	B	1008	HEC	CMC-C2C-C1C	-2.12	125.20	128.46
5	B	1005	HEC	CMB-C2B-C1B	-2.12	125.21	128.46
5	A	605	HEC	CMB-C2B-C1B	-2.12	125.21	128.46
5	A	609	HEC	CMB-C2B-C1B	-2.11	125.22	128.46
5	B	1001	HEC	CMA-C3A-C2A	2.11	128.92	124.94
5	B	1005	HEC	CMC-C2C-C1C	-2.11	125.22	128.46
5	A	604	HEC	C3C-C4C-NC	-2.10	106.97	110.94
5	B	1001	HEC	C3C-C4C-NC	-2.09	106.99	110.94
5	A	606	HEC	CBA-CAA-C2A	2.08	116.12	112.60
5	B	1004	HEC	O2A-CGA-CBA	2.08	120.72	114.03
5	A	612	HEC	O2A-CGA-O1A	-2.08	118.11	123.30
5	B	1005	HEC	O2A-CGA-CBA	2.07	120.69	114.03
5	A	612	HEC	O2A-CGA-CBA	2.07	120.68	114.03
5	A	608	HEC	C3B-C4B-NB	-2.07	107.03	110.94
5	B	1001	HEC	O2D-CGD-CBD	2.06	120.66	114.03
5	A	607	HEC	CMC-C2C-C1C	-2.06	125.30	128.46
5	B	1006	HEC	CBA-CAA-C2A	-2.05	109.14	112.60
5	B	1004	HEC	CMB-C2B-C1B	-2.04	125.32	128.46
5	B	1009	HEC	O1D-CGD-CBD	-2.03	116.55	123.08
5	B	1005	HEC	C3B-C4B-NB	-2.03	107.12	110.94
5	A	610	HEC	O2A-CGA-CBA	2.02	120.52	114.03
5	A	610	HEC	CMB-C2B-C1B	-2.00	125.39	128.46

There are no chirality outliers.

All (82) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	603	BU3	C1-C2-C3-O6
4	A	603	BU3	O5-C2-C3-C4
4	A	603	BU3	C1-C2-C3-C4
5	A	604	HEC	C2D-C3D-CAD-CBD

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Mol	Chain	Res	Type	Atoms
5	A	604	HEC	C4D-C3D-CAD-CBD
5	A	606	HEC	C1A-C2A-CAA-CBA
5	A	606	HEC	C3A-C2A-CAA-CBA
5	A	608	HEC	C3D-CAD-CBD-CGD
5	A	609	HEC	C2A-CAA-CBA-CGA
5	B	1003	HEC	C1A-C2A-CAA-CBA
5	B	1003	HEC	C3A-C2A-CAA-CBA
5	B	1005	HEC	C1A-C2A-CAA-CBA
5	B	1005	HEC	C3A-C2A-CAA-CBA
5	B	1005	HEC	C2A-CAA-CBA-CGA
5	B	1006	HEC	C2A-CAA-CBA-CGA
5	A	605	HEC	C2A-CAA-CBA-CGA
5	A	612	HEC	C2A-CAA-CBA-CGA
5	B	1002	HEC	C2A-CAA-CBA-CGA
5	A	612	HEC	C3D-CAD-CBD-CGD
5	B	1004	HEC	C3D-CAD-CBD-CGD
5	B	1008	HEC	C2A-CAA-CBA-CGA
5	A	608	HEC	C2A-CAA-CBA-CGA
5	B	1009	HEC	C3D-CAD-CBD-CGD
5	A	607	HEC	C3D-CAD-CBD-CGD
4	A	603	BU3	O5-C2-C3-O6
5	B	1001	HEC	C3D-CAD-CBD-CGD
5	A	605	HEC	CAA-CBA-CGA-O1A
5	B	1002	HEC	CAA-CBA-CGA-O1A
5	A	608	HEC	CAD-CBD-CGD-O1D
5	B	1001	HEC	CAD-CBD-CGD-O1D
5	A	607	HEC	CAD-CBD-CGD-O2D
5	B	1004	HEC	CAA-CBA-CGA-O1A
5	B	1009	HEC	CAD-CBD-CGD-O1D
5	B	1002	HEC	CAA-CBA-CGA-O2A
5	B	1003	HEC	CAD-CBD-CGD-O1D
5	A	612	HEC	CAD-CBD-CGD-O1D
5	B	1003	HEC	CAD-CBD-CGD-O2D
5	B	1004	HEC	CAA-CBA-CGA-O2A
5	A	604	HEC	CAA-CBA-CGA-O1A
5	A	608	HEC	CAD-CBD-CGD-O2D
5	A	612	HEC	CAD-CBD-CGD-O2D
5	B	1001	HEC	CAA-CBA-CGA-O1A
5	B	1003	HEC	CAA-CBA-CGA-O2A
5	A	605	HEC	CAA-CBA-CGA-O2A
5	A	607	HEC	CAD-CBD-CGD-O1D
5	B	1003	HEC	CAA-CBA-CGA-O1A

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Mol	Chain	Res	Type	Atoms
5	B	1008	HEC	CAD-CBD-CGD-O2D
5	B	1009	HEC	CAD-CBD-CGD-O2D
5	A	604	HEC	CAA-CBA-CGA-O2A
5	B	1001	HEC	CAA-CBA-CGA-O2A
5	B	1004	HEC	CAD-CBD-CGD-O2D
5	B	1006	HEC	CAA-CBA-CGA-O2A
5	A	606	HEC	CAD-CBD-CGD-O2D
5	A	604	HEC	CAD-CBD-CGD-O2D
5	B	1007	HEC	CAA-CBA-CGA-O2A
5	A	607	HEC	CAA-CBA-CGA-O2A
5	B	1001	HEC	CAD-CBD-CGD-O2D
5	B	1008	HEC	CAD-CBD-CGD-O1D
5	A	606	HEC	CAA-CBA-CGA-O1A
5	B	1004	HEC	CAD-CBD-CGD-O1D
5	B	1005	HEC	CAA-CBA-CGA-O2A
5	B	1006	HEC	CAA-CBA-CGA-O1A
5	A	606	HEC	CAA-CBA-CGA-O2A
5	A	610	HEC	CAA-CBA-CGA-O1A
5	A	612	HEC	CAA-CBA-CGA-O2A
5	A	604	HEC	CAD-CBD-CGD-O1D
5	A	608	HEC	CAA-CBA-CGA-O2A
5	A	610	HEC	CAA-CBA-CGA-O2A
5	A	612	HEC	CAA-CBA-CGA-O1A
5	B	1005	HEC	CAA-CBA-CGA-O1A
5	B	1007	HEC	CAA-CBA-CGA-O1A
5	A	606	HEC	CAD-CBD-CGD-O1D
5	A	607	HEC	CAA-CBA-CGA-O1A
5	A	609	HEC	CAD-CBD-CGD-O2D
5	B	1003	HEC	C3D-CAD-CBD-CGD
5	B	1008	HEC	CAA-CBA-CGA-O2A
5	A	608	HEC	CAA-CBA-CGA-O1A
5	B	1002	HEC	CAD-CBD-CGD-O2D
5	A	609	HEC	CAD-CBD-CGD-O1D
5	B	1002	HEC	CAD-CBD-CGD-O1D
5	A	611	HEC	CAD-CBD-CGD-O2D
5	B	1008	HEC	CAA-CBA-CGA-O1A

There are no ring outliers.

18 monomers are involved in 66 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	1006	HEC	3	0

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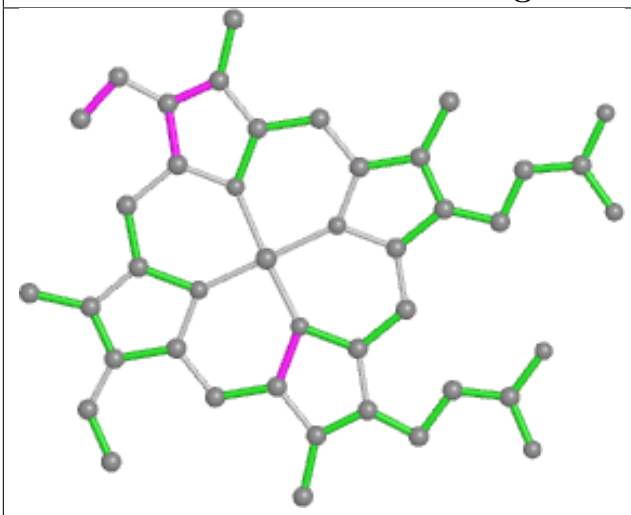
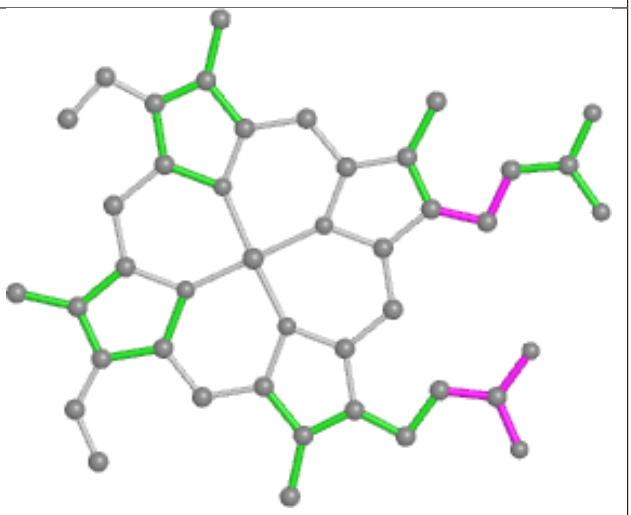
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	609	HEC	3	0
5	A	610	HEC	3	0
5	A	607	HEC	3	0
5	B	1002	HEC	4	0
5	B	1009	HEC	5	0
5	A	612	HEC	5	0
5	B	1003	HEC	3	0
5	A	608	HEC	4	0
5	B	1005	HEC	3	0
5	A	606	HEC	5	0
5	A	605	HEC	7	0
5	B	1004	HEC	3	0
5	A	604	HEC	4	0
5	B	1007	HEC	1	0
5	B	1008	HEC	3	0
5	A	611	HEC	4	0
5	B	1001	HEC	3	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.

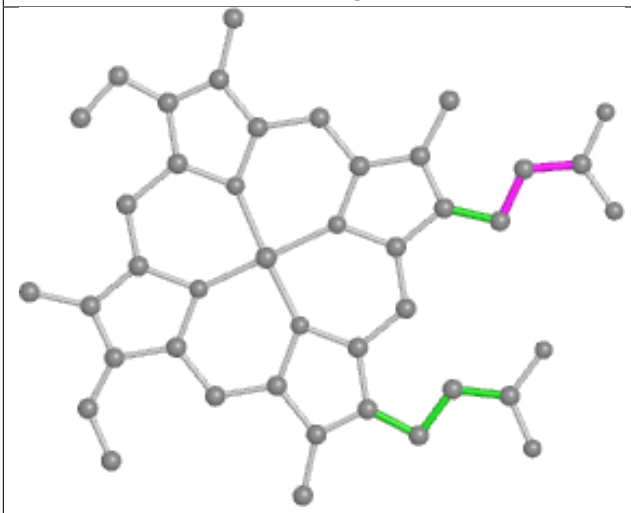
Ligand HEC B 1006



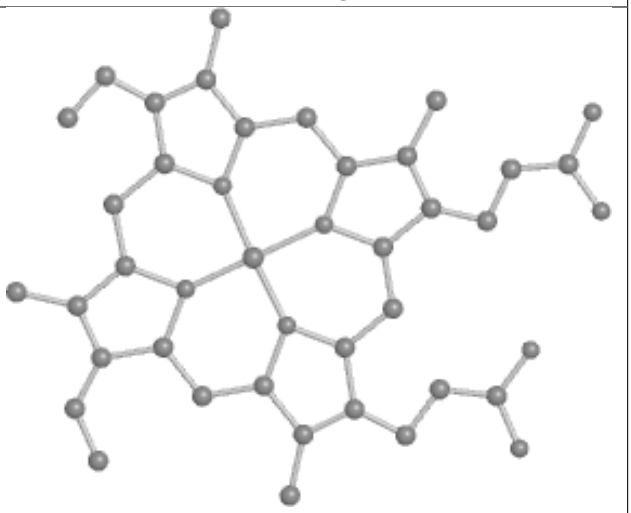
Bond lengths



Bond angles

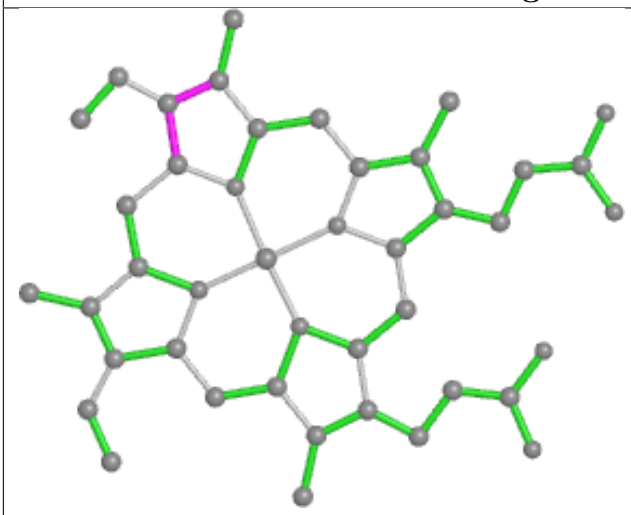


Torsions

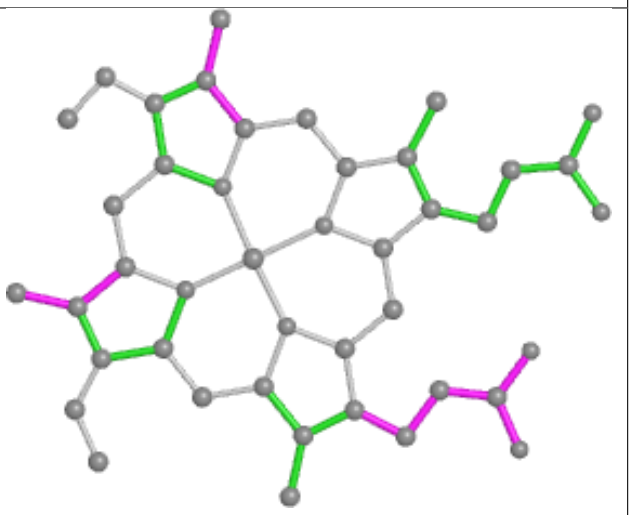


Rings

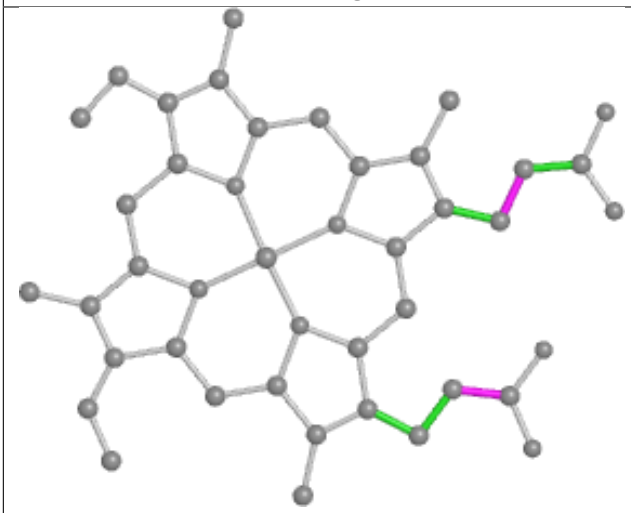
Ligand HEC A 609



Bond lengths



Bond angles



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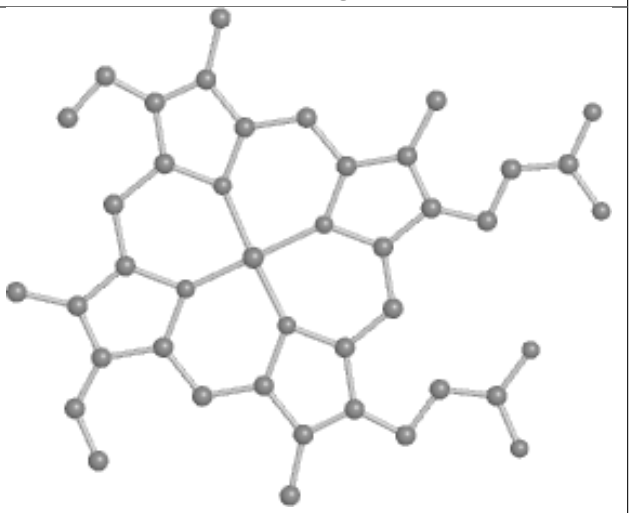
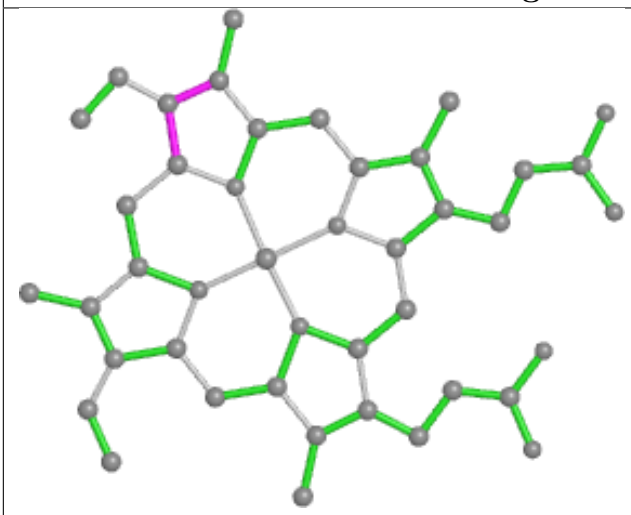
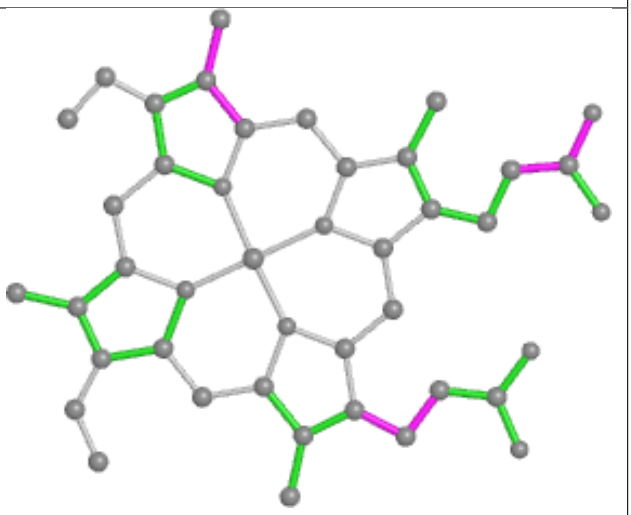


Rings

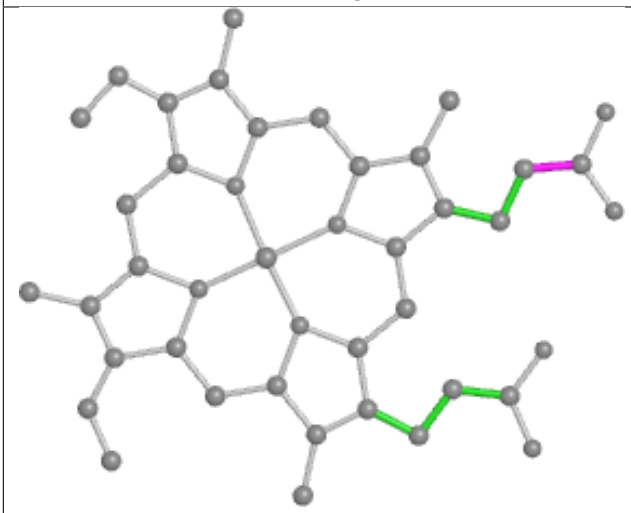
Ligand HEC A 610



Bond lengths



Bond angles



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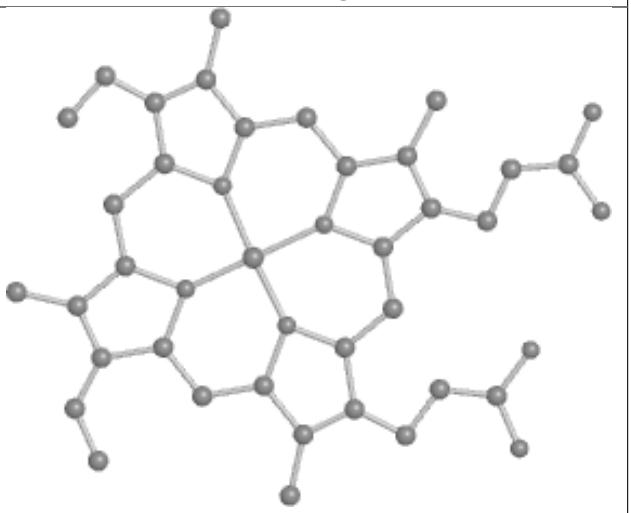
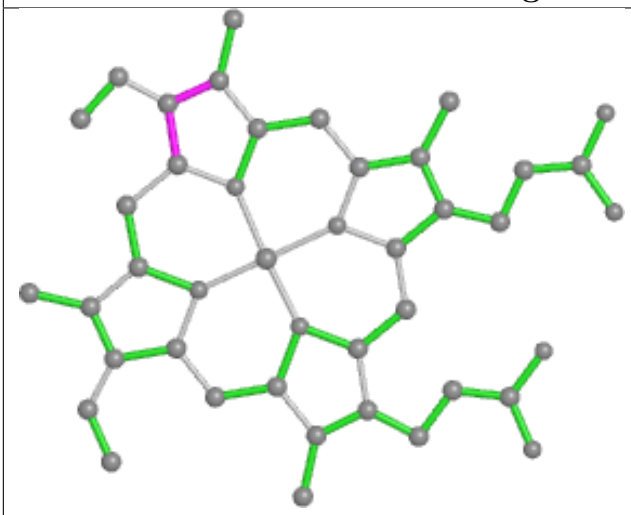
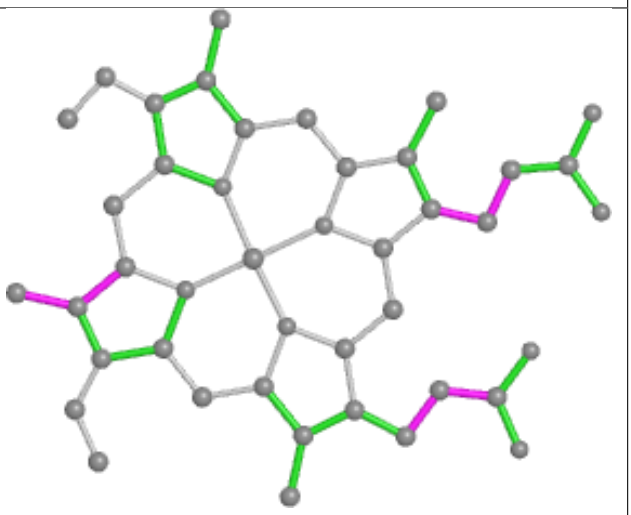


Rings

Ligand HEC A 607



Bond lengths



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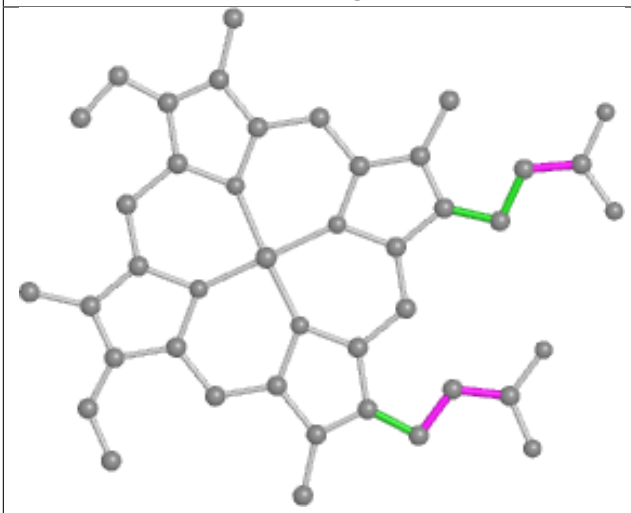
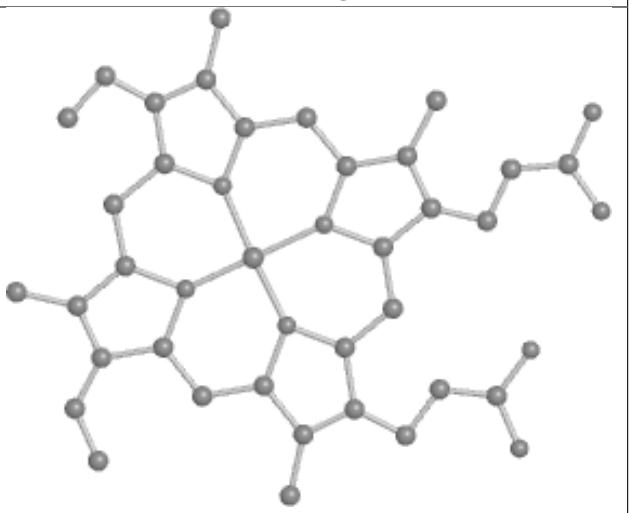
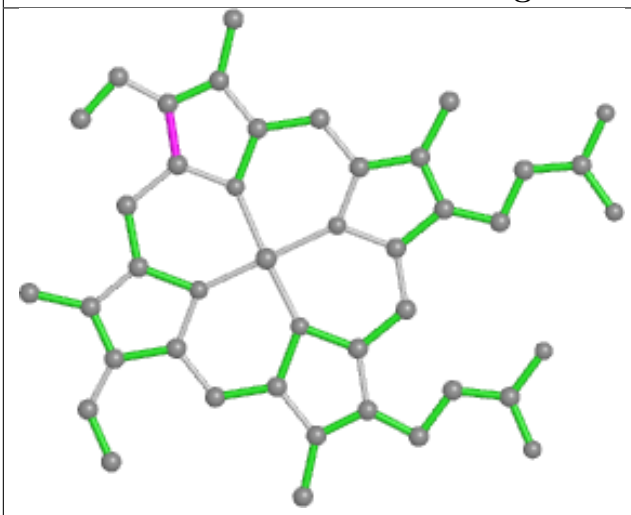


Torsions



Rings

Ligand HEC B 1002



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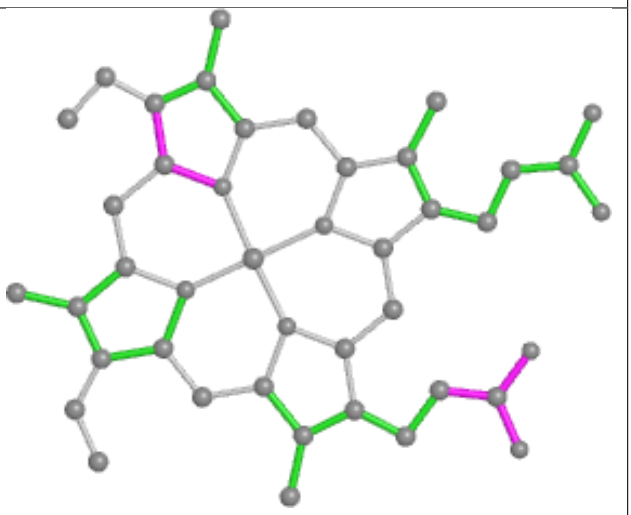
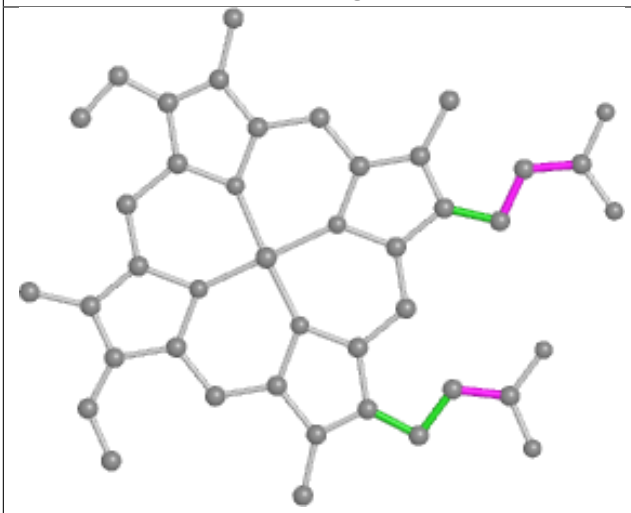


Bond angles



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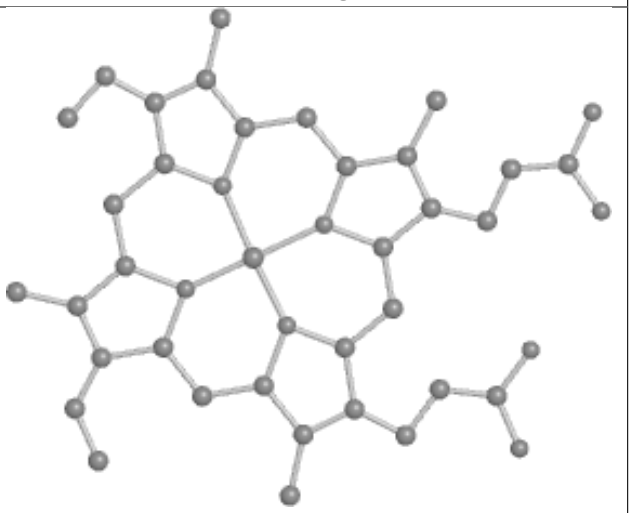
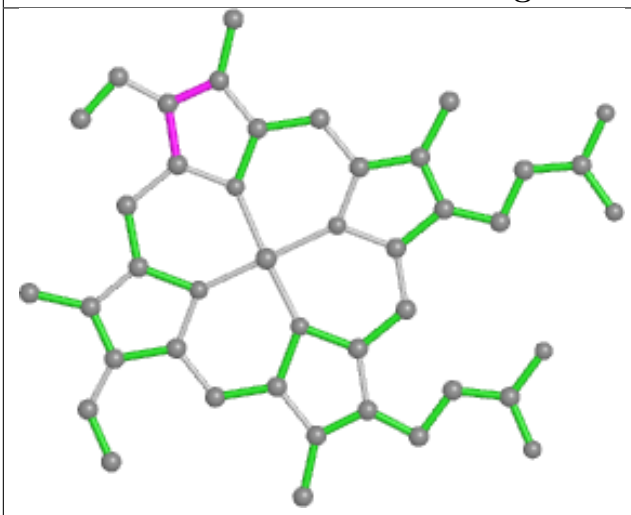


Rings

Ligand HEC B 1009



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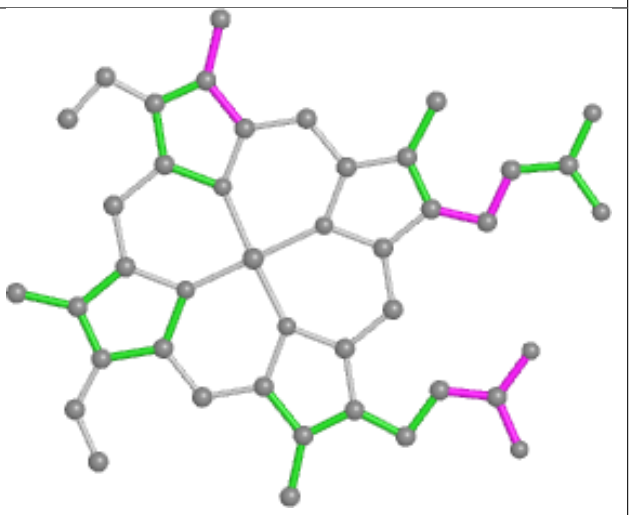
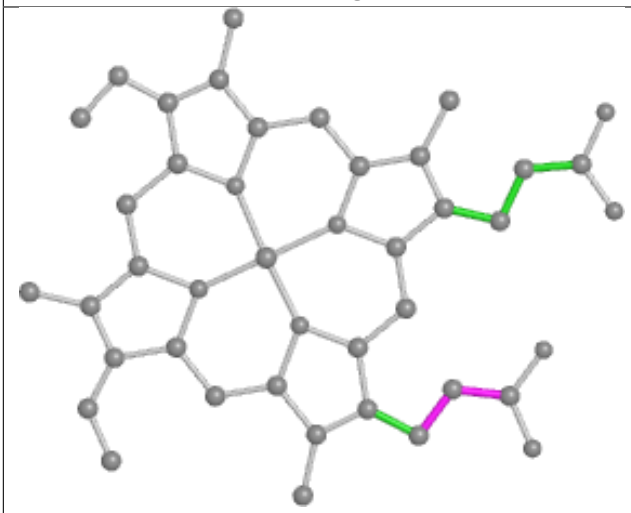


Bond angles



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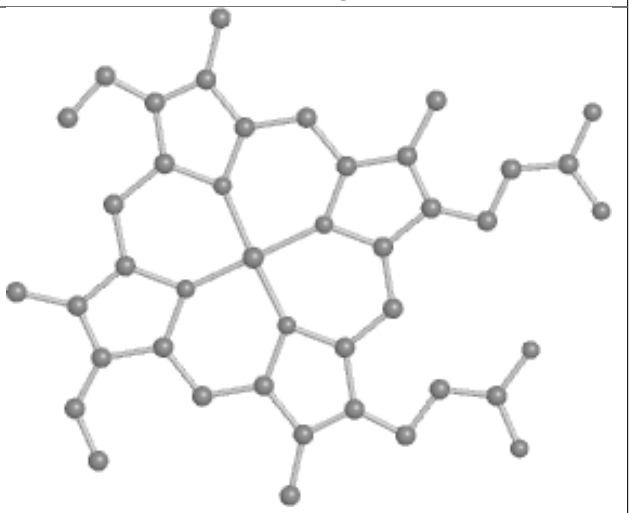
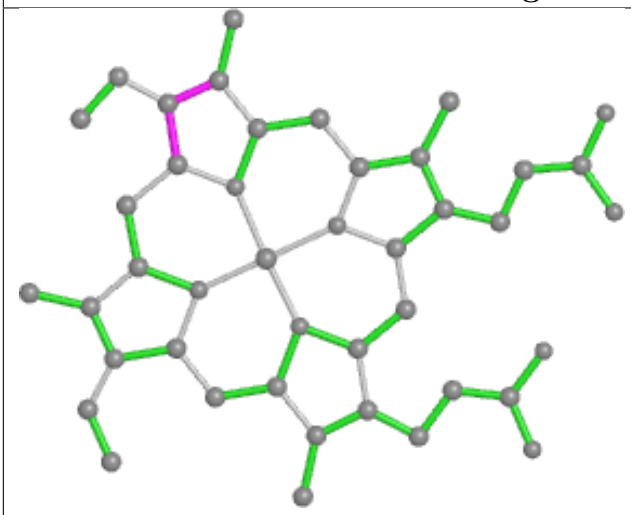


Rings

Ligand HEC A 612



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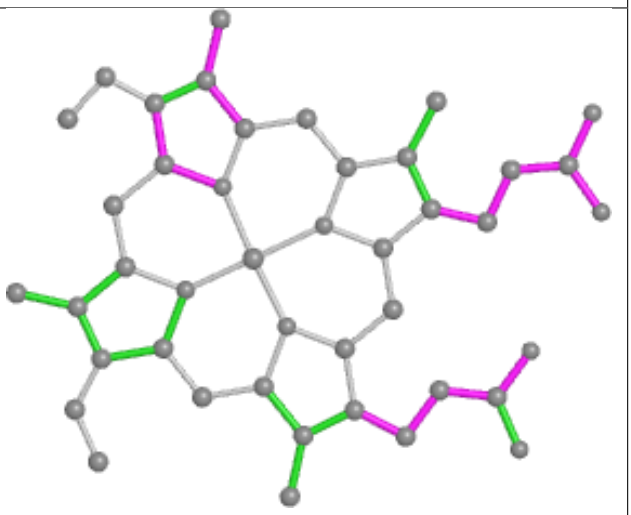

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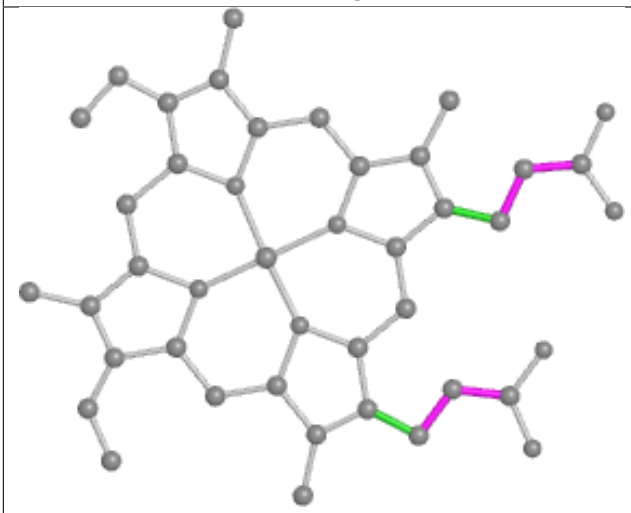

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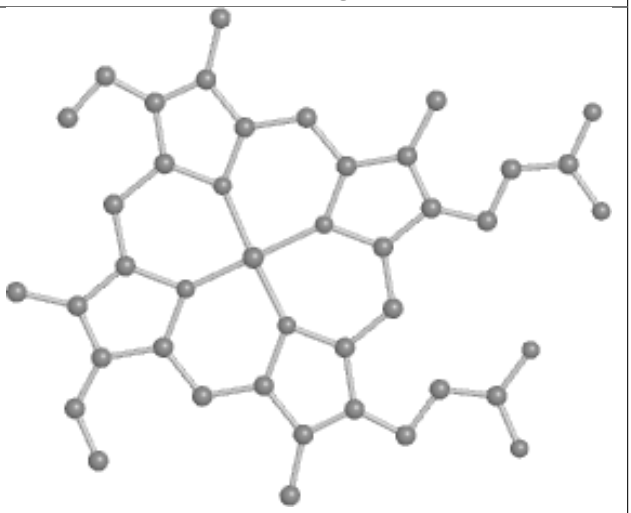
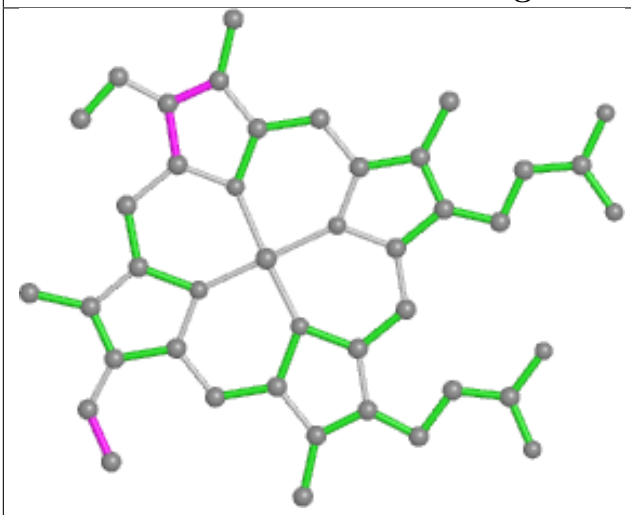


Rings

Ligand HEC B 1003



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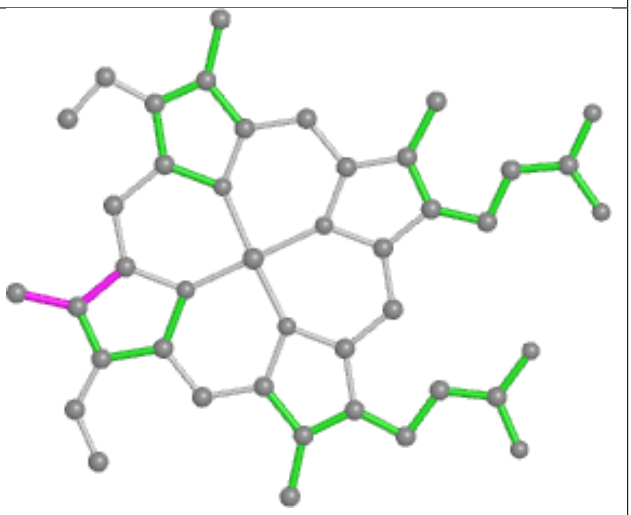

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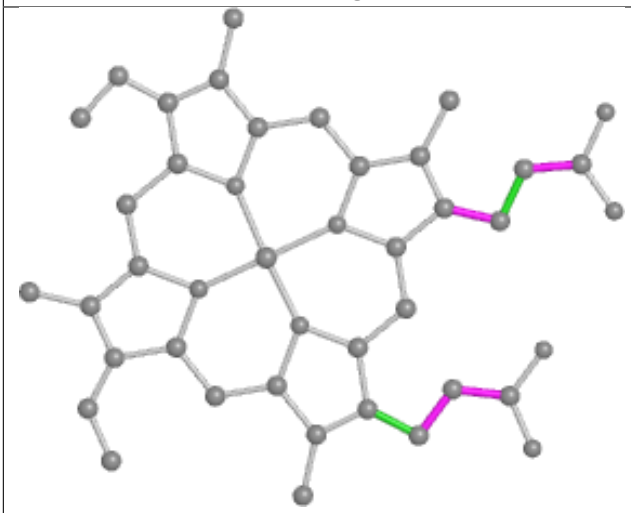

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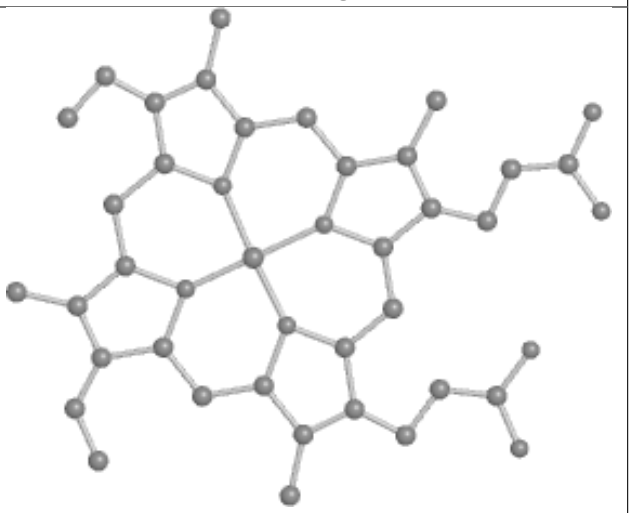
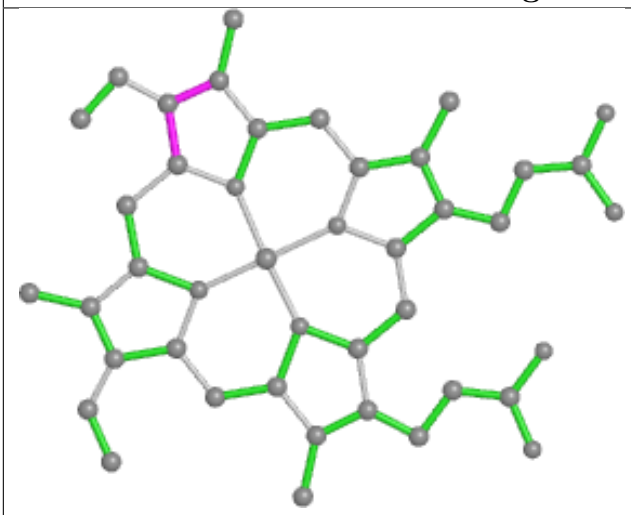


Rings

Ligand HEC A 608



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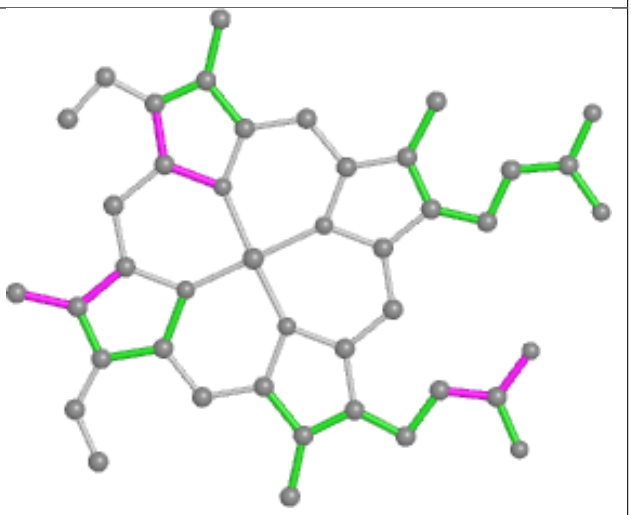
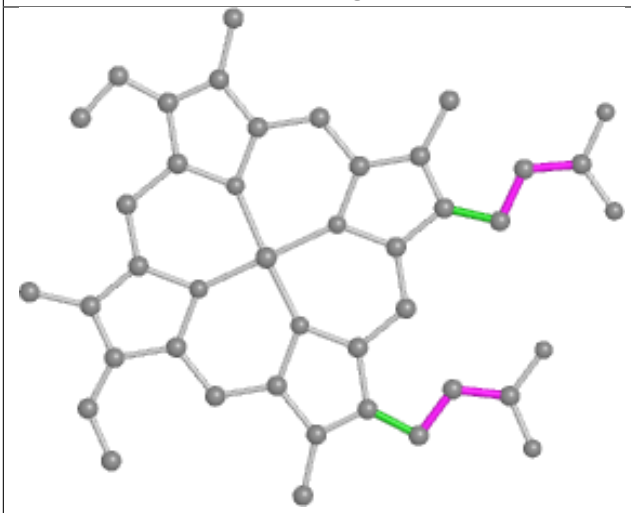


Bond angles



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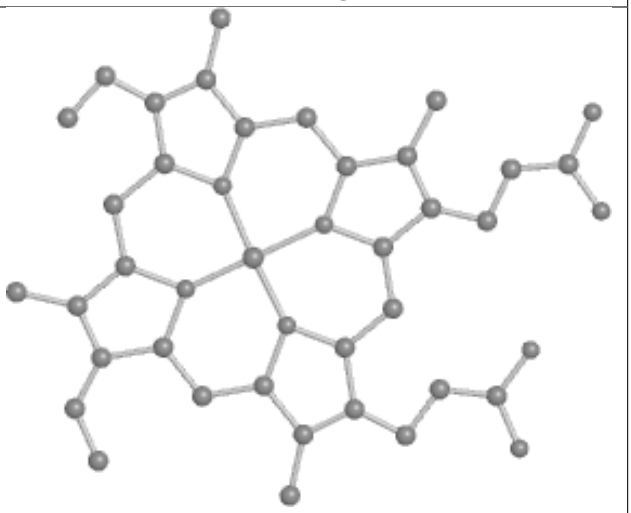
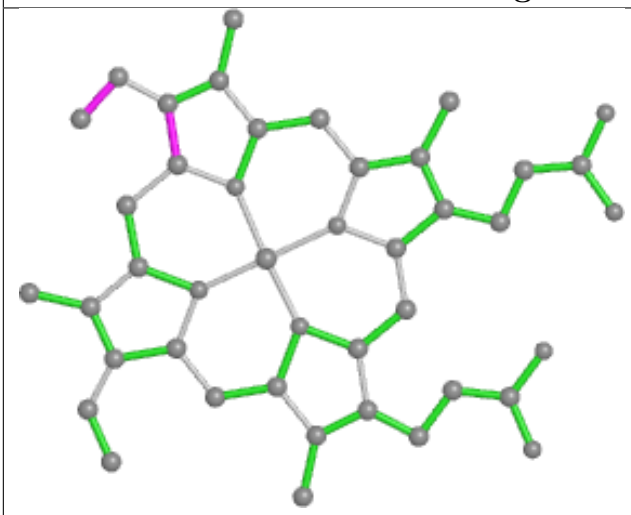


Rings

Ligand HEC B 1005



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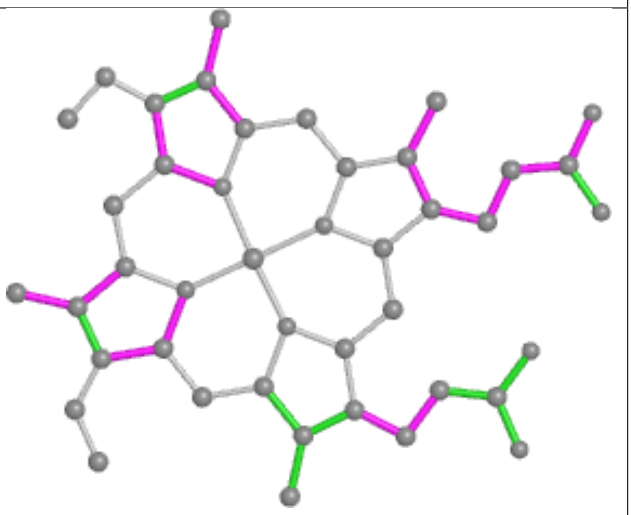

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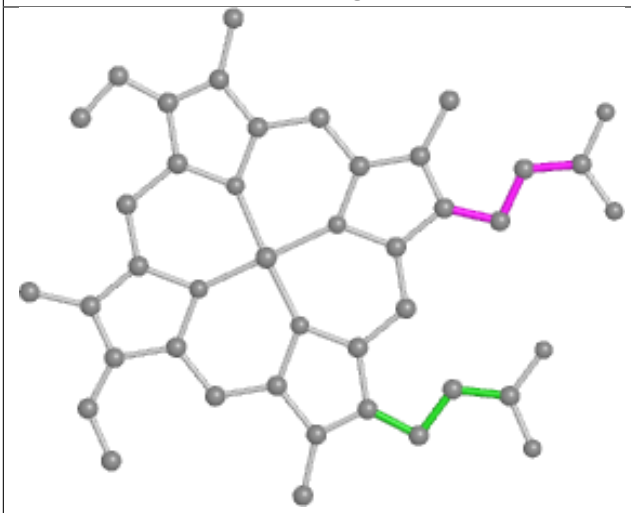

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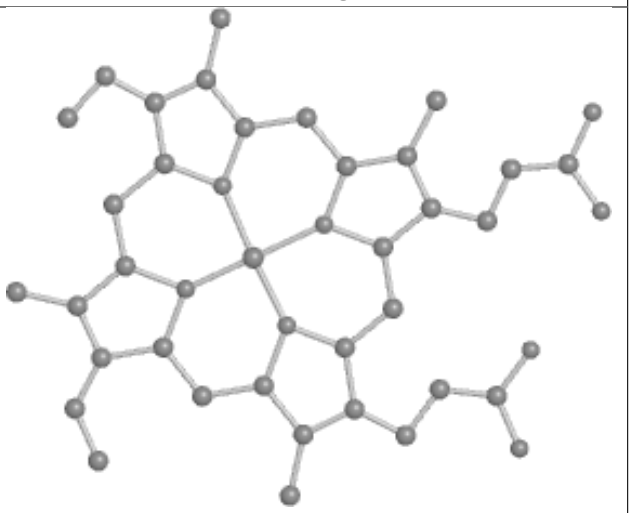
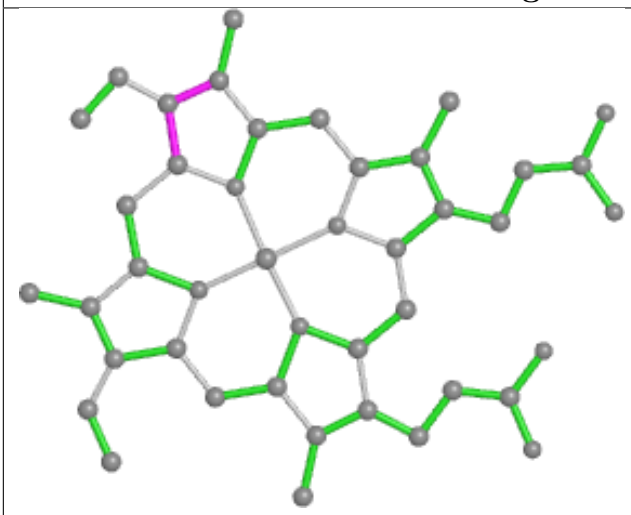


Rings

Ligand HEC A 606



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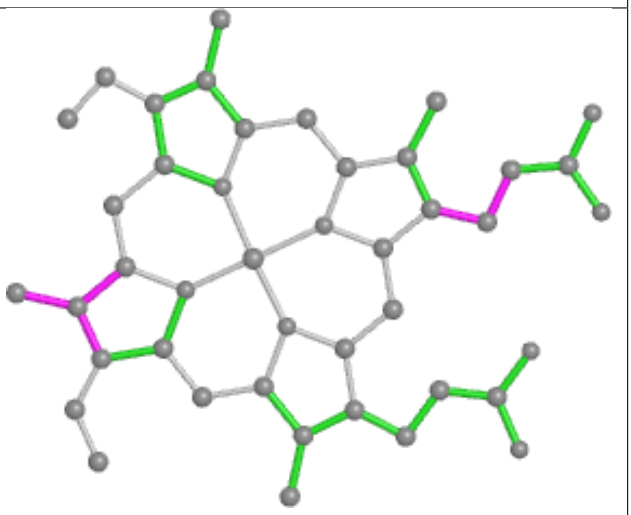
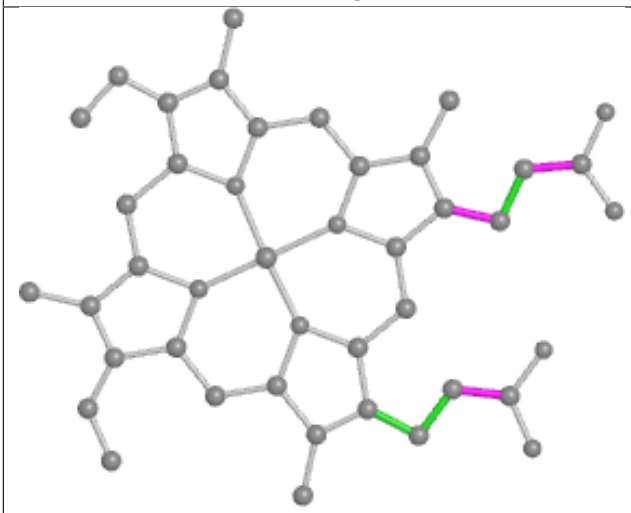


Bond angles



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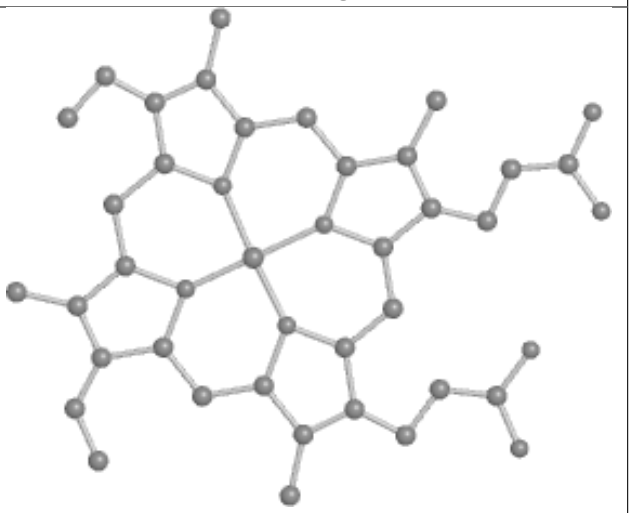

Rings

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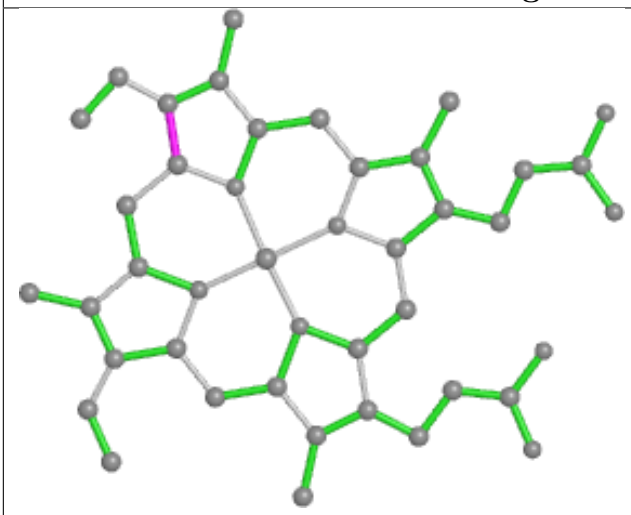

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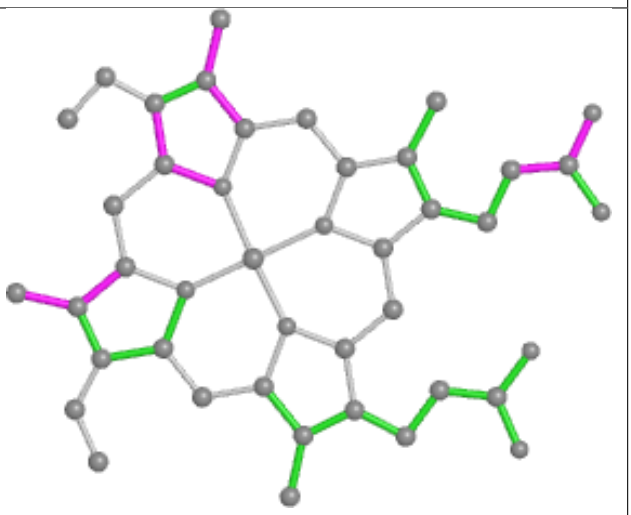

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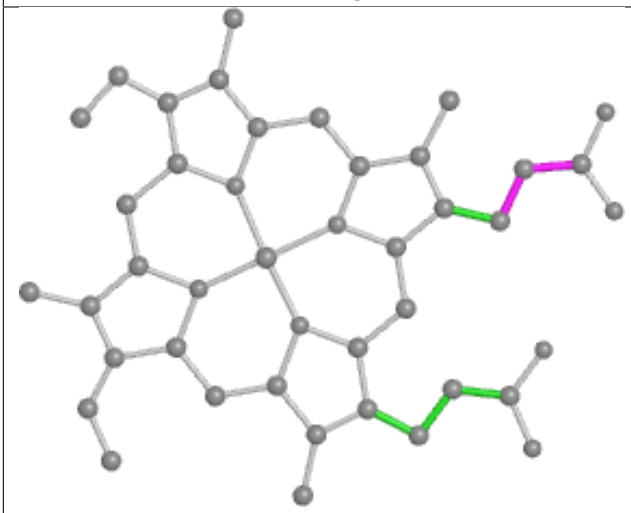

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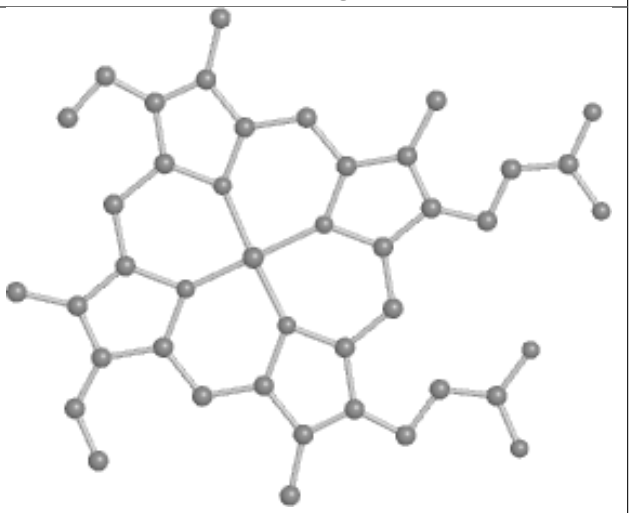
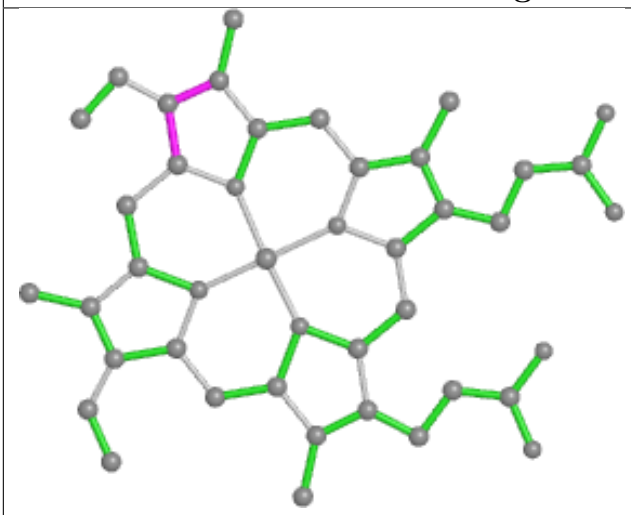


Rings

Ligand HEC B 1004



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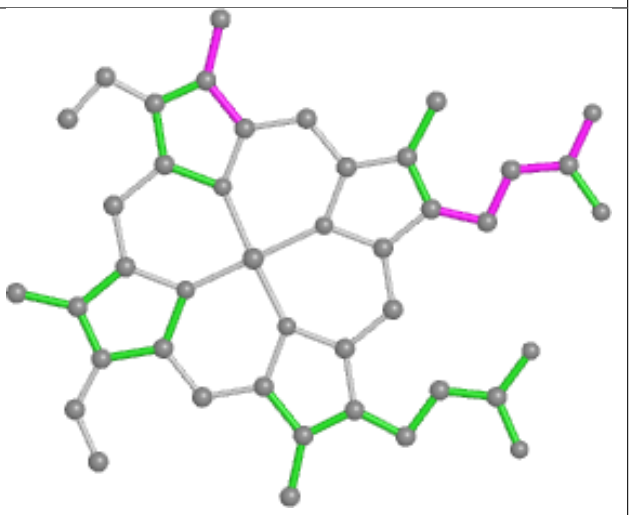
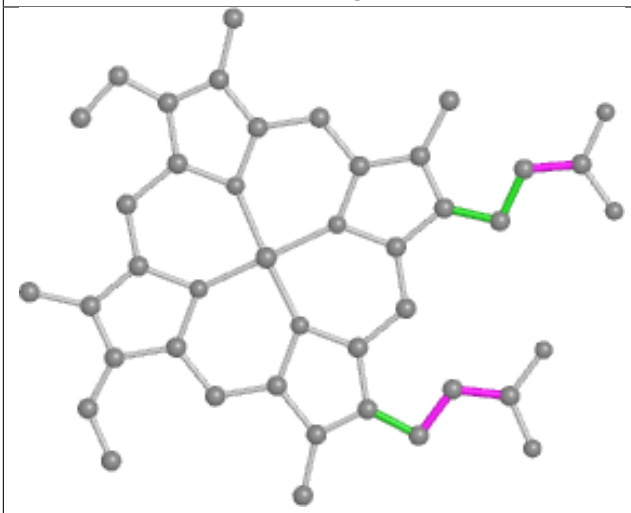


Bond angles



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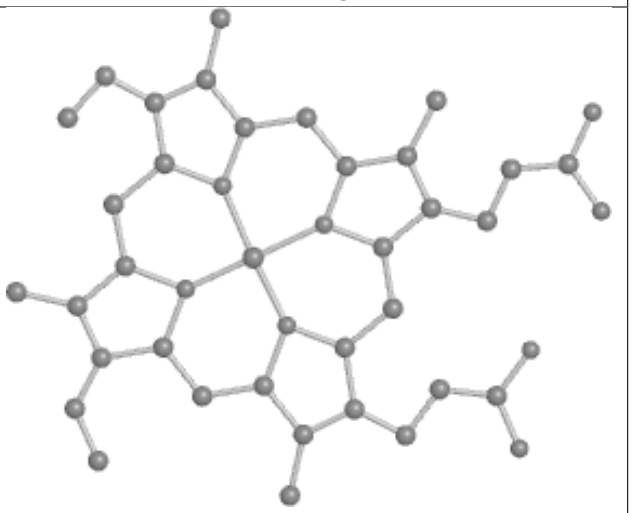
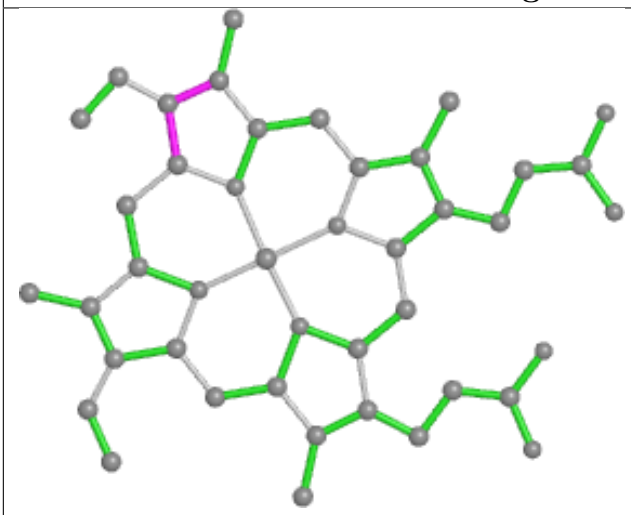
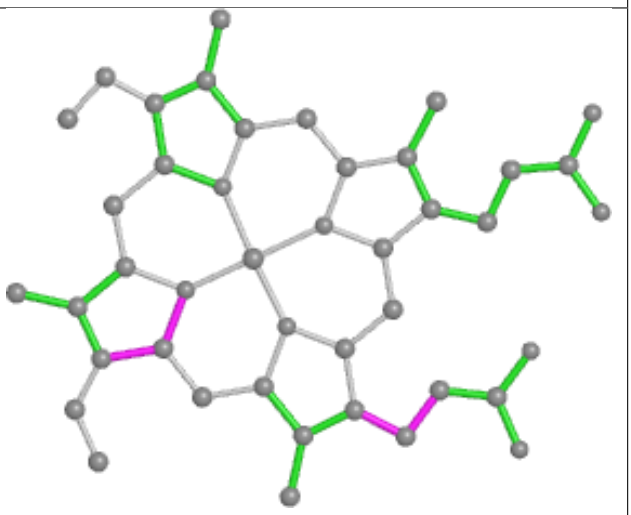


Rings

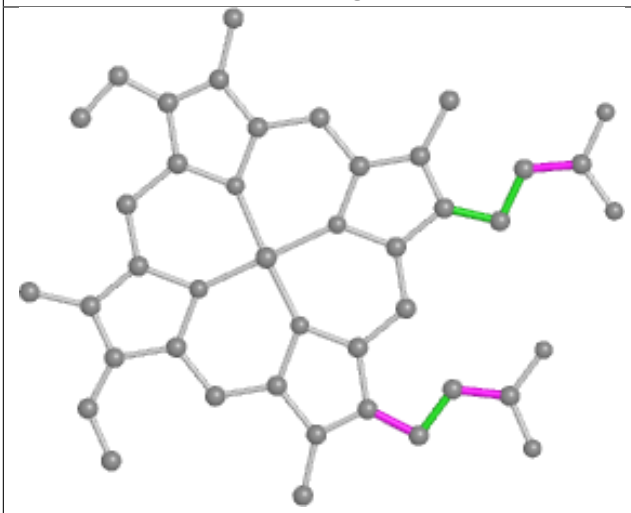
Ligand HEC A 604



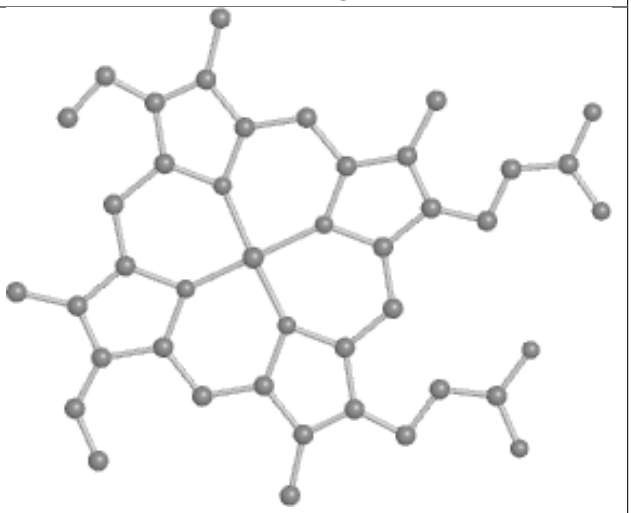
Bond lengths



Bond angles

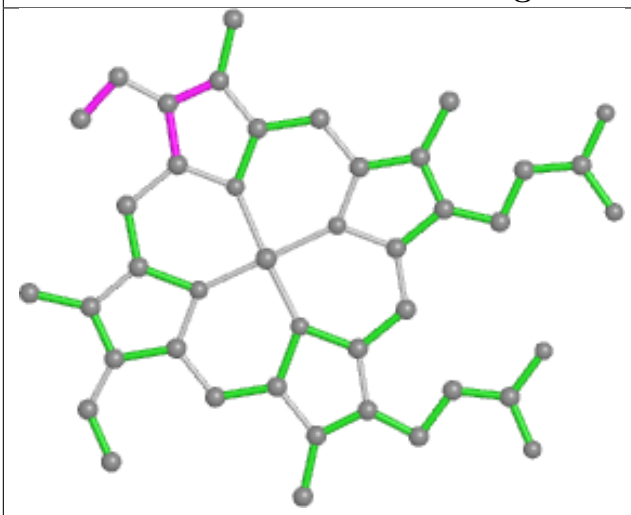


Torsions

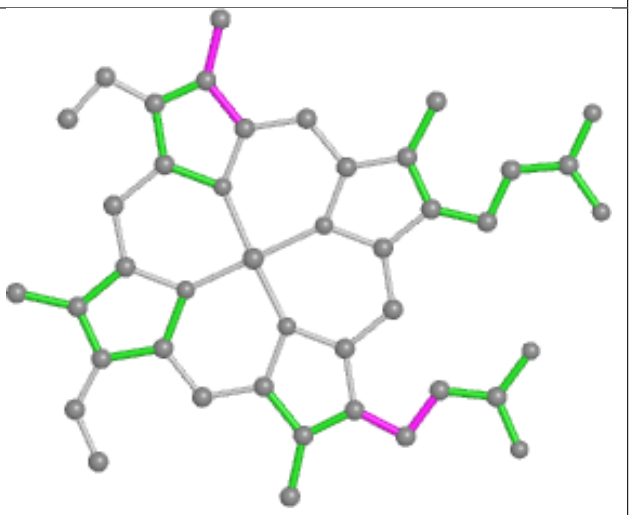


Rings

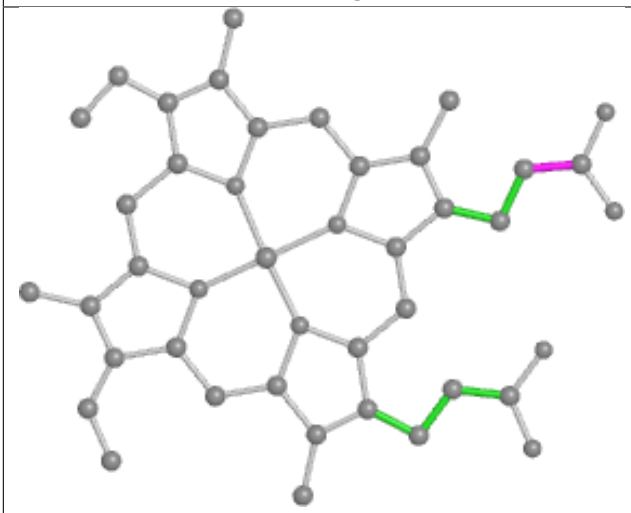
Ligand HEC B 1007



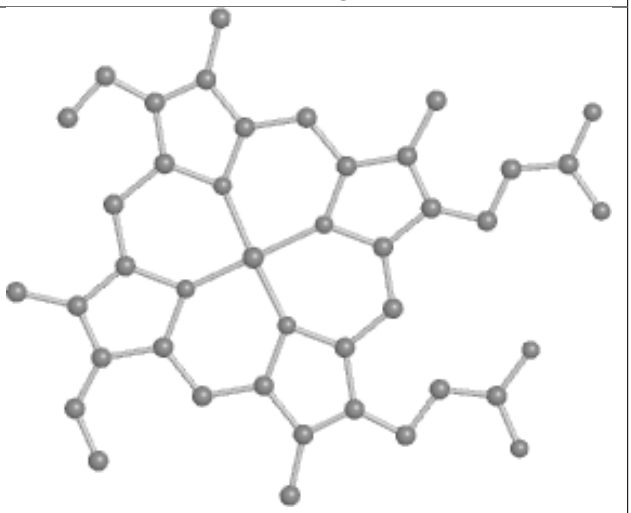
Bond lengths



Bond angles

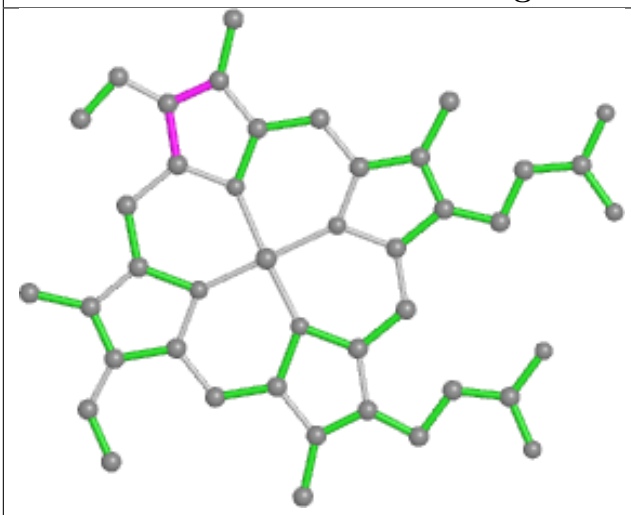


Torsions

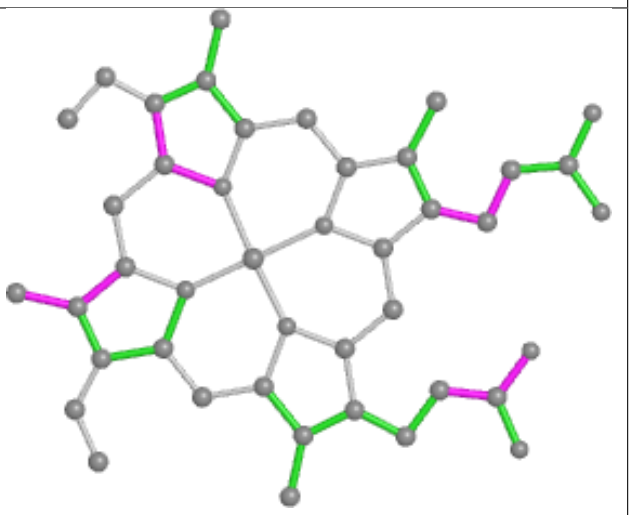


Rings

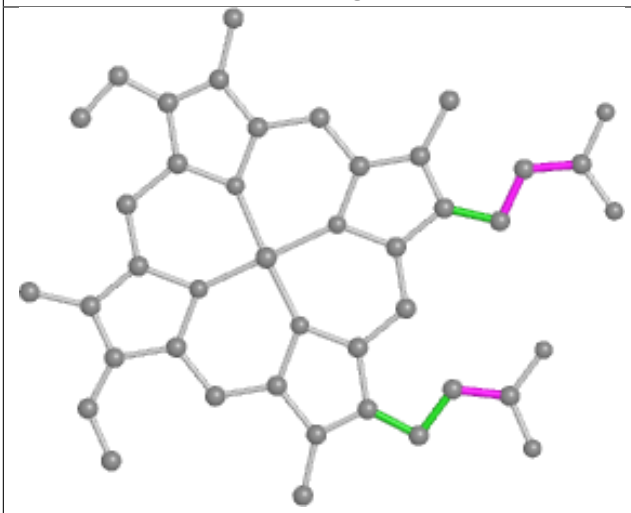
Ligand HEC B 1008



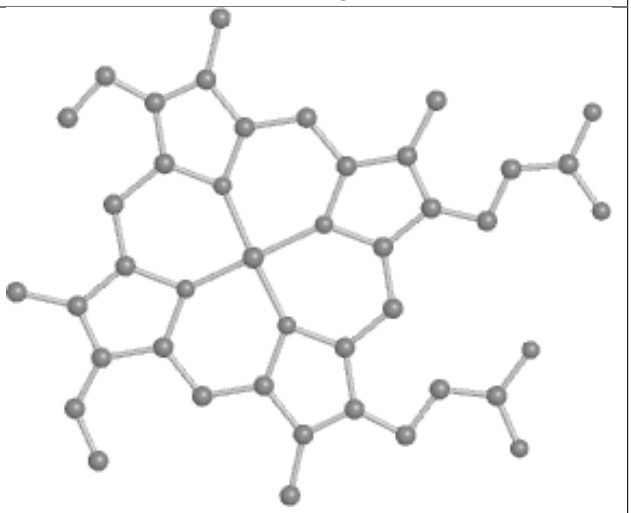
Bond lengths



Bond angles

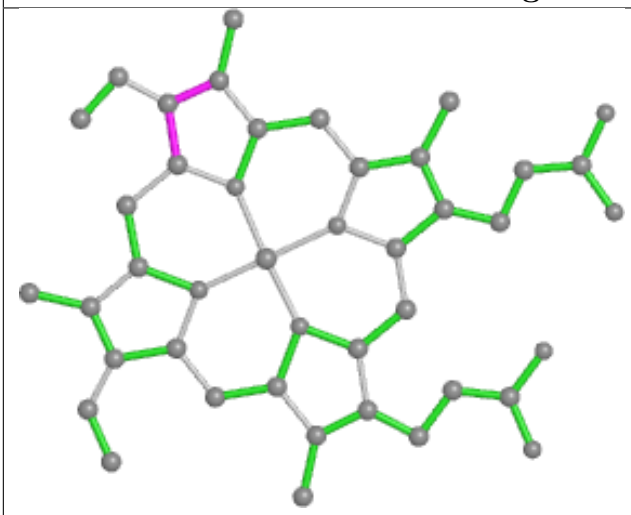


Torsions

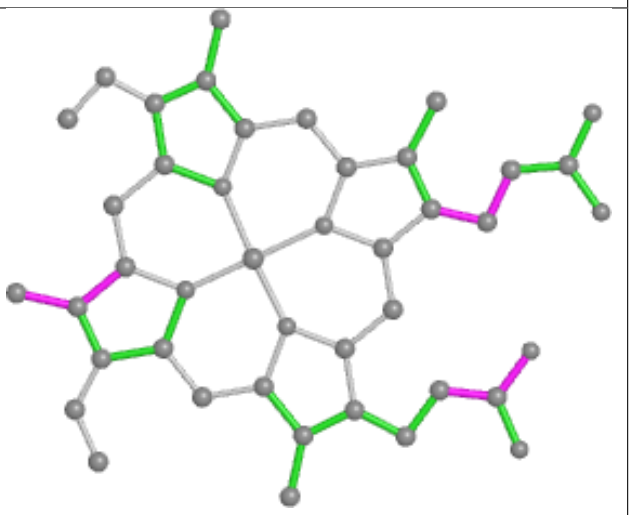


Rings

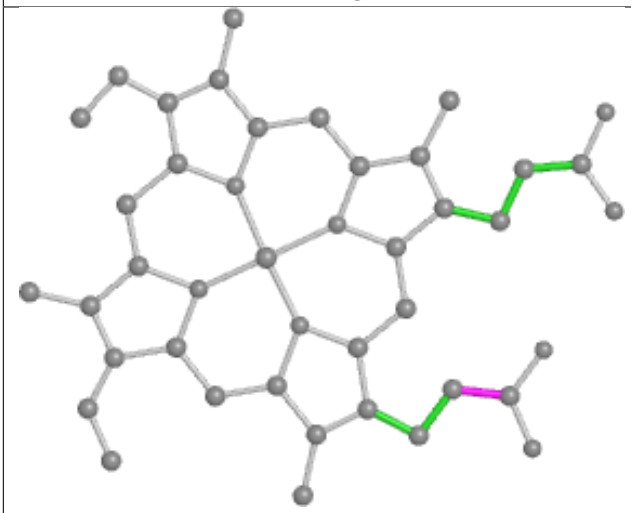
Ligand HEC A 611



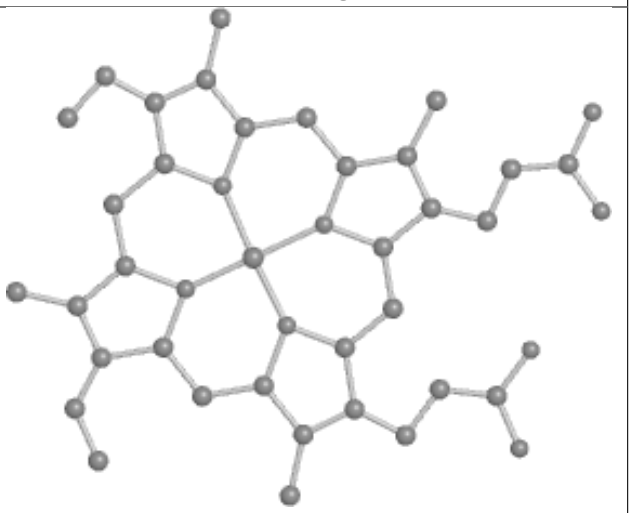
Bond lengths



Bond angles

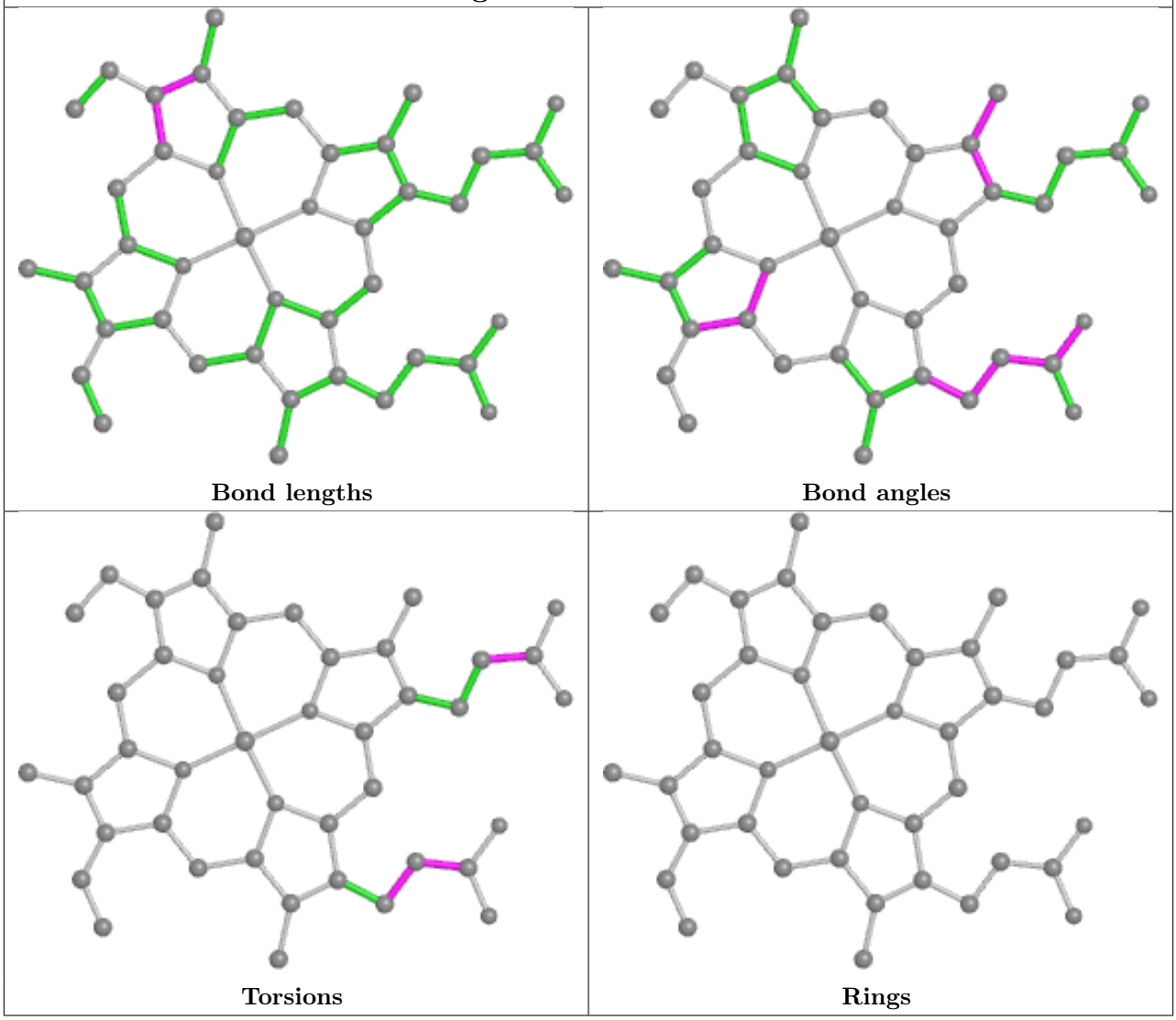


Torsions



Rings

Ligand HEC B 1001



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 (i)

6.1 Protein, DNA and RNA chains (i)

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, 95th 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	484/526 (92%)	-0.20	5 (1%)	82	81	33, 56, 84, 107	0
1	B	483/526 (91%)	-0.14	10 (2%)	63	61	35, 59, 94, 118	0
All	All	967/1052 (91%)	-0.17	15 (1%)	72	70	33, 57, 89, 118	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	305	HIS	4.7
1	A	482	ALA	4.7
1	B	482	ALA	4.7
1	B	525	GLN	4.3
1	B	371	GLY	4.1
1	A	525	GLN	3.7
1	A	178	LYS	3.2
1	B	475	ALA	3.1
1	B	108	PRO	2.8
1	B	351	LYS	2.6
1	B	309	ARG	2.4
1	B	303	ASN	2.2
1	A	522	GLN	2.2
1	B	485	ASN	2.1
1	B	180	ALA	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)

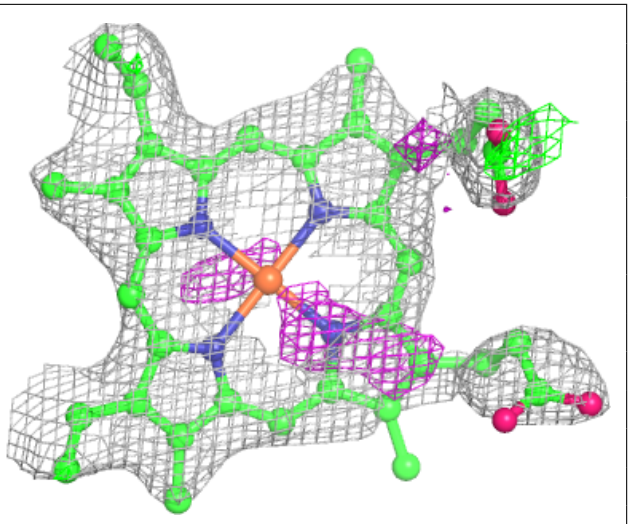
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

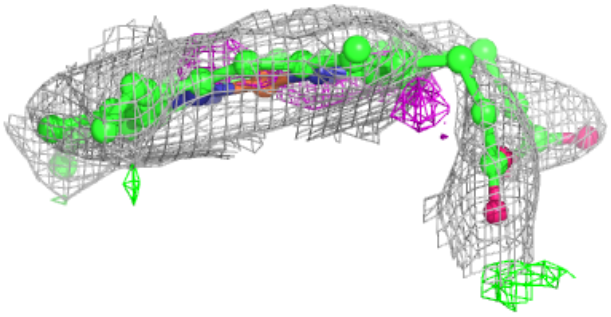
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	BU3	A	603	6/6	0.82	0.26	76,79,81,84	0
5	HEC	B	1002	43/43	0.91	0.15	62,81,100,104	0
5	HEC	A	605	43/43	0.92	0.16	51,71,98,101	0
2	MG	A	601	1/1	0.92	0.07	69,69,69,69	0
5	HEC	B	1005	43/43	0.94	0.13	50,58,90,99	0
5	HEC	B	1001	43/43	0.95	0.15	61,70,93,109	0
5	HEC	A	608	43/43	0.96	0.12	43,54,90,113	0
5	HEC	A	604	43/43	0.96	0.15	58,63,81,89	0
5	HEC	A	612	43/43	0.97	0.13	37,40,53,59	0
5	HEC	A	607	43/43	0.97	0.13	37,42,57,69	0
5	HEC	A	606	43/43	0.97	0.13	43,48,68,79	0
5	HEC	B	1004	43/43	0.97	0.13	40,43,57,71	0
5	HEC	A	611	43/43	0.97	0.12	33,35,45,58	0
5	HEC	B	1006	43/43	0.97	0.14	34,38,57,63	0
5	HEC	B	1008	43/43	0.97	0.12	35,39,52,69	0
5	HEC	B	1009	43/43	0.97	0.14	37,40,50,52	0
5	HEC	A	610	43/43	0.98	0.12	29,33,46,52	0
3	CL	A	602	1/1	0.98	0.06	51,51,51,51	0
5	HEC	B	1007	43/43	0.98	0.11	36,40,49,52	0
5	HEC	B	1003	43/43	0.98	0.13	48,52,64,75	0
5	HEC	A	609	43/43	0.98	0.13	30,34,52,64	0

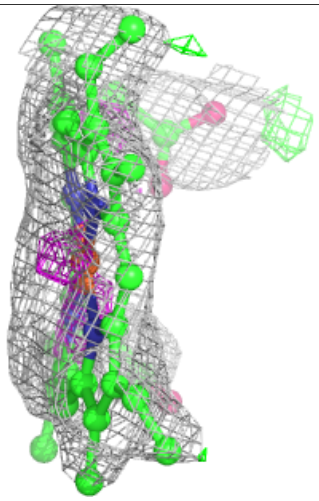
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around HEC B 1002:

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

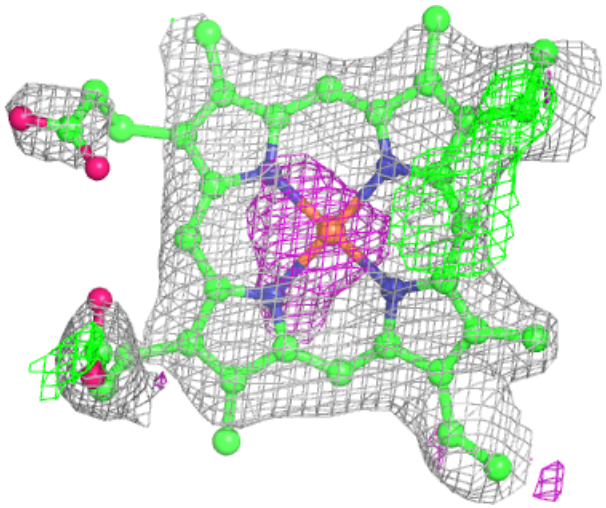


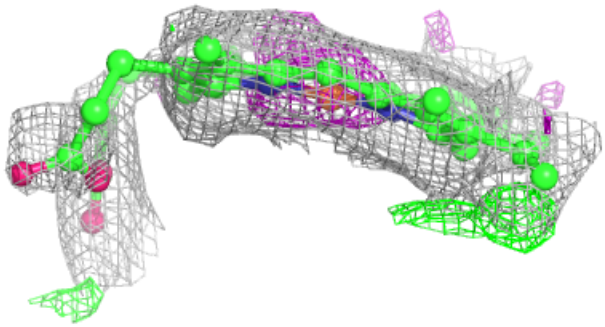


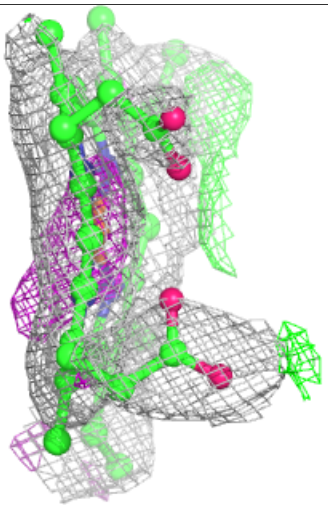


Electron density around HEC A 605:

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







Electron density around HEC B 1005:

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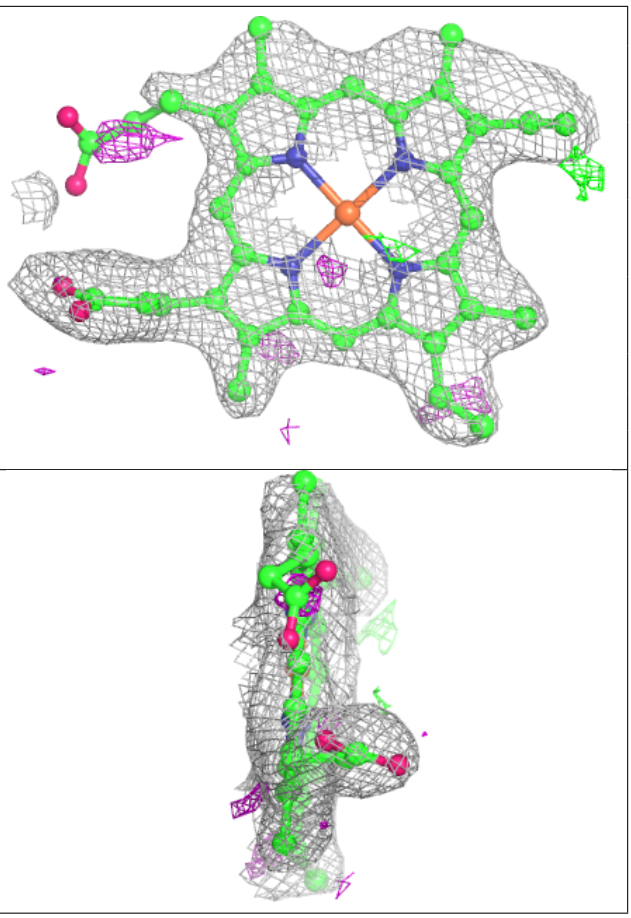
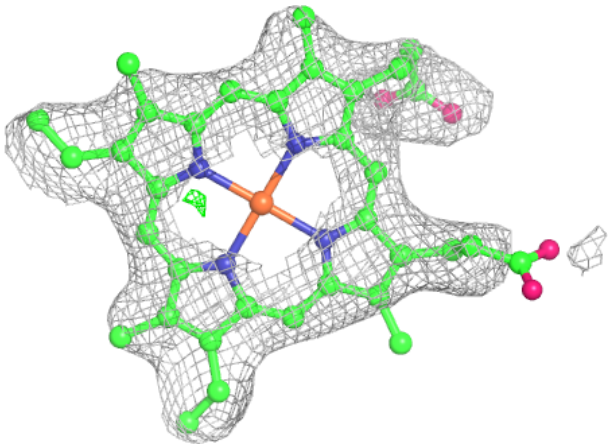
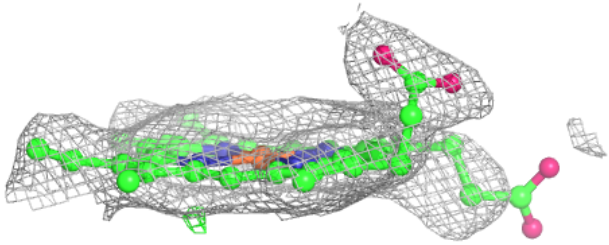
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

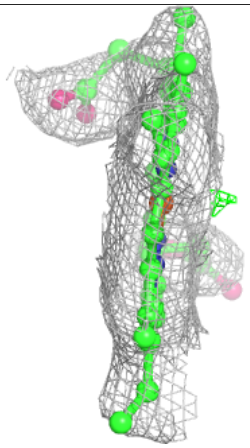


Electron density around HEC B 1001:

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

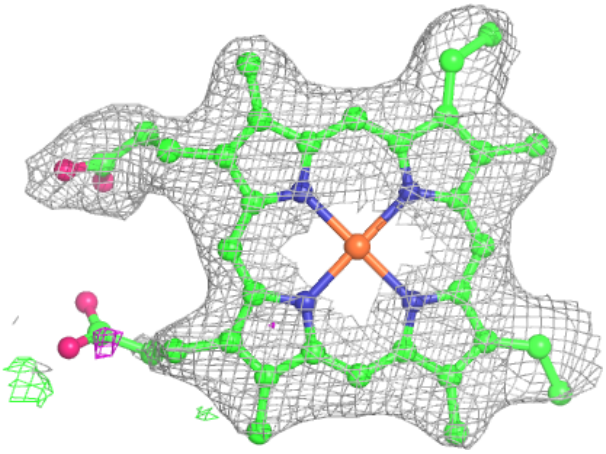


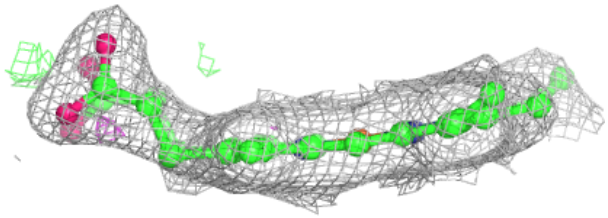


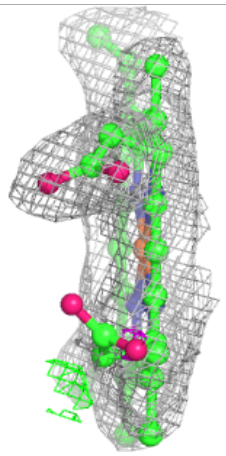


Electron density around HEC A 608:

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

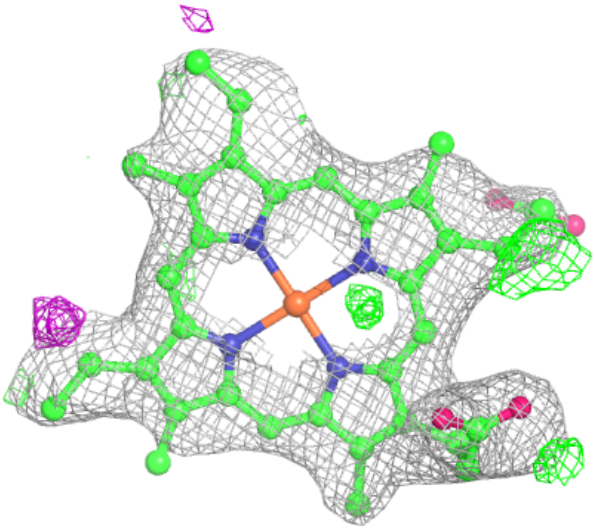


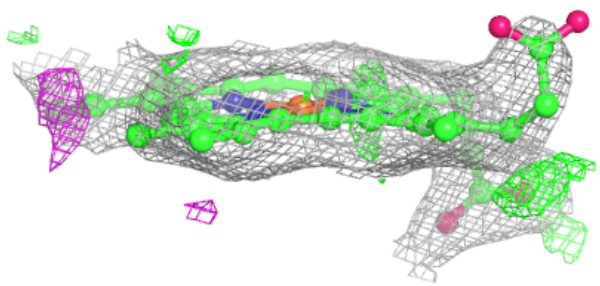


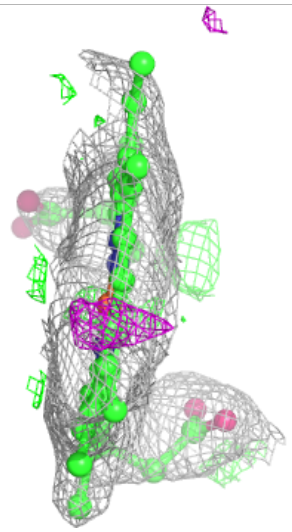


Electron density around HEC A 604:

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

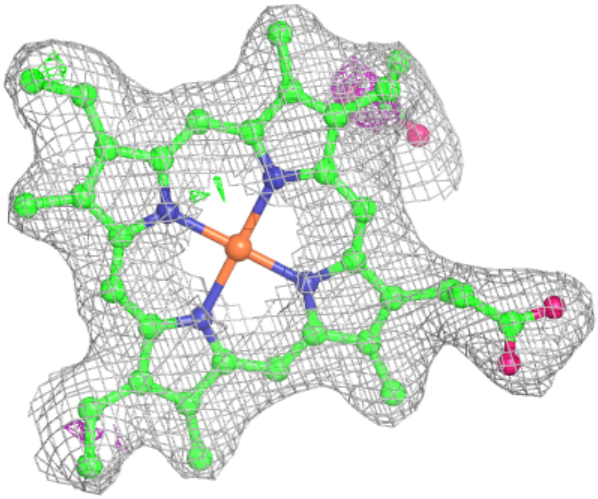


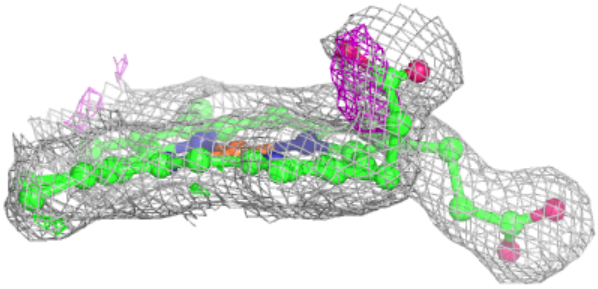


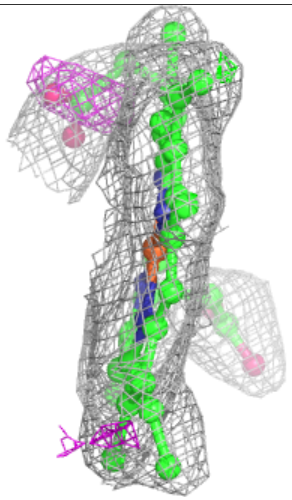


Electron density around HEC A 612:

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







Electron density around HEC A 607:

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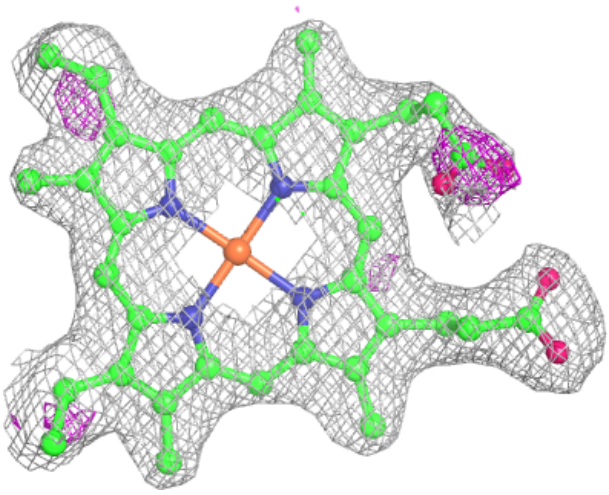
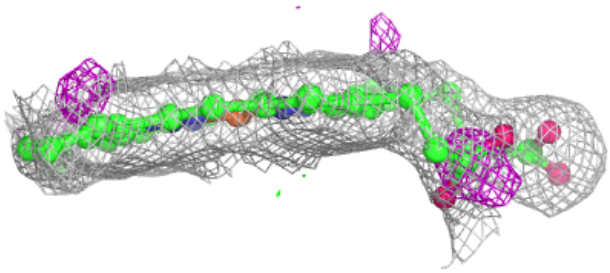
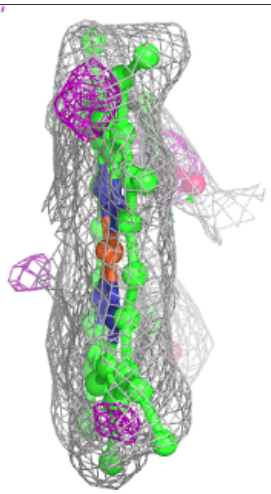
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)







Electron density around HEC A 606:

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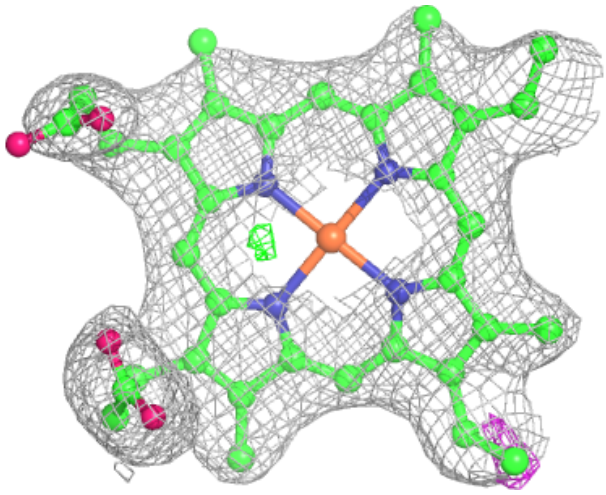
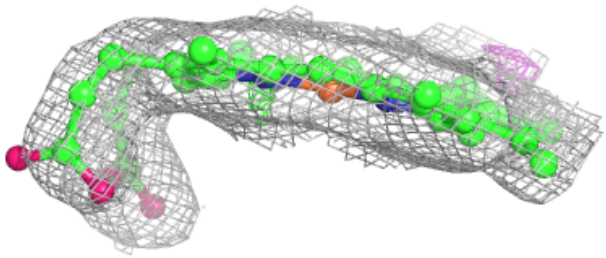
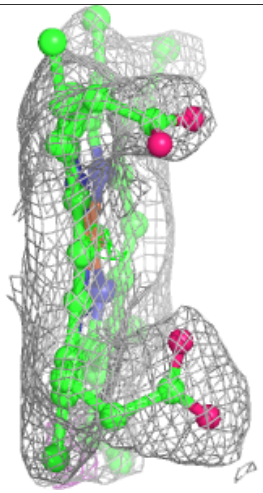
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

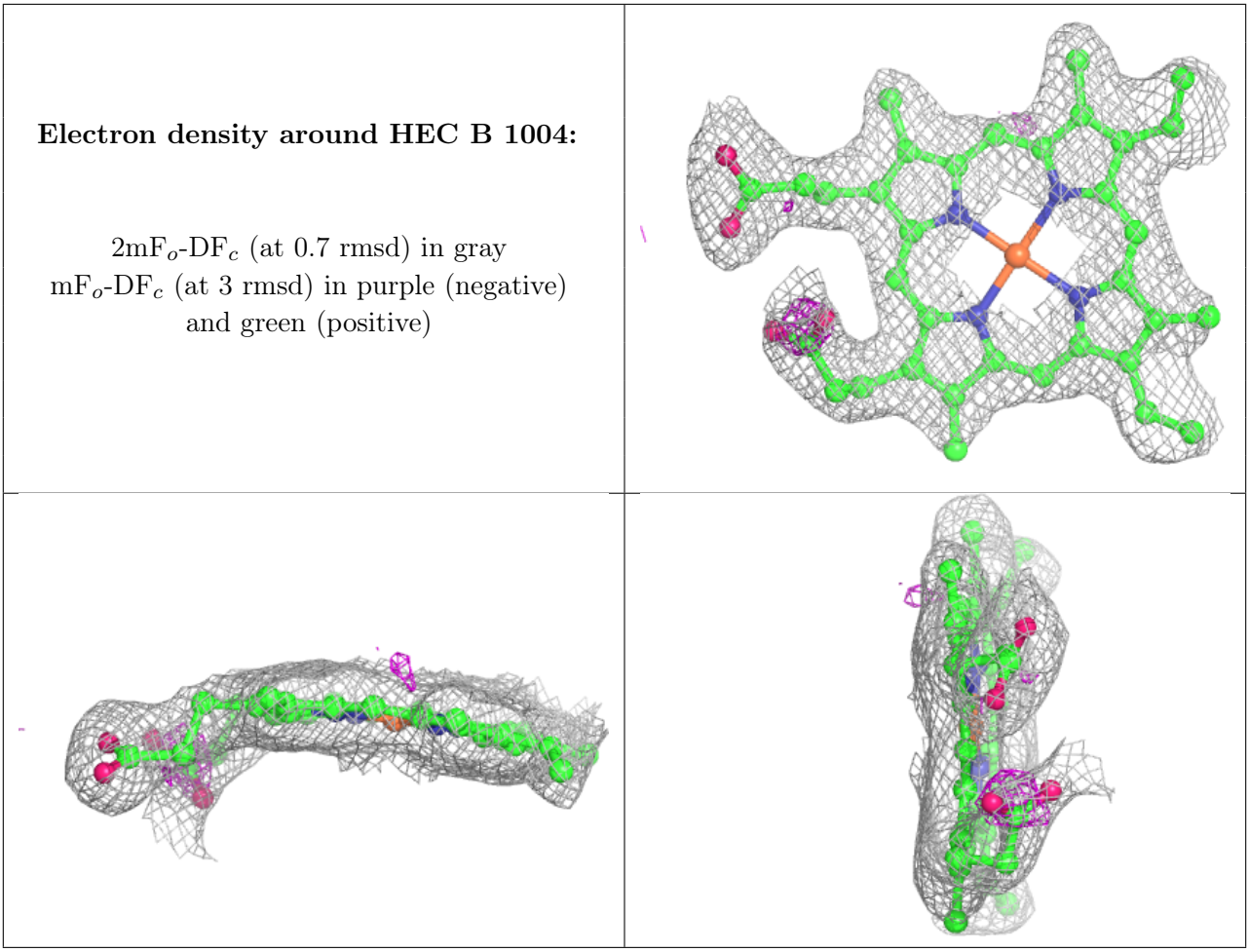






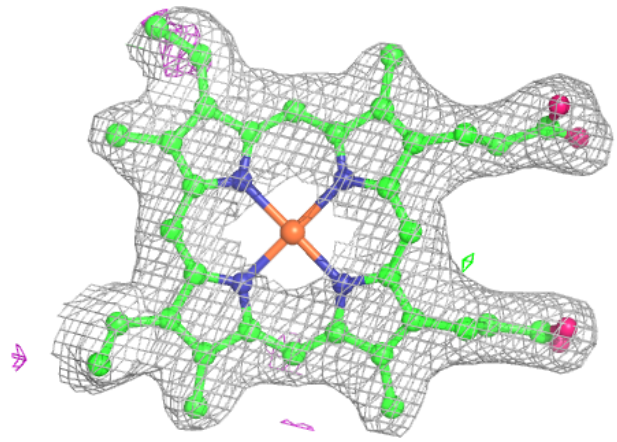
Electron density around HEC B 1004:

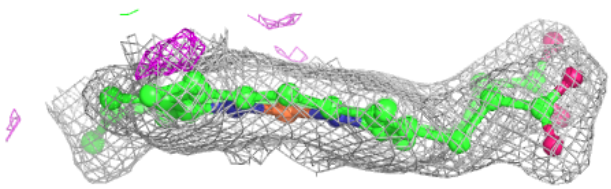
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

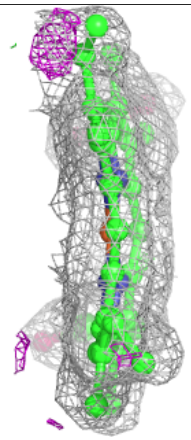


Electron density around HEC A 611:

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

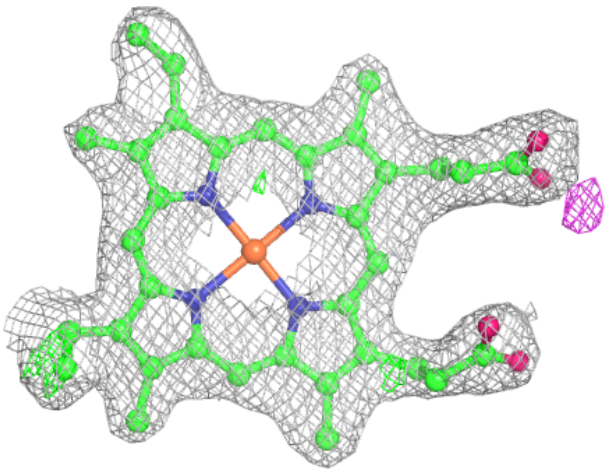


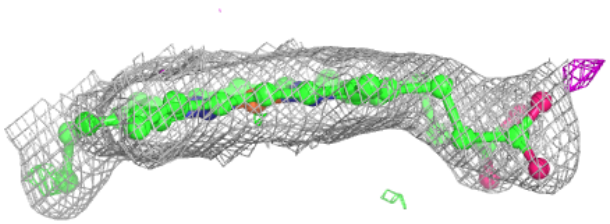


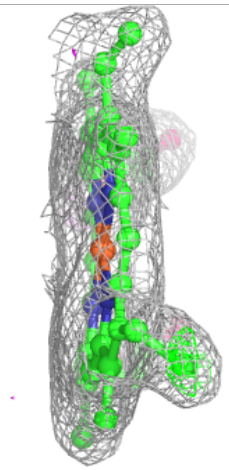


Electron density around HEC B 1006:

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

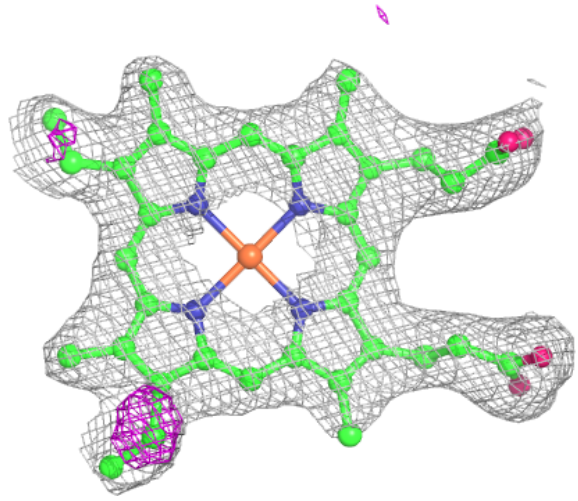


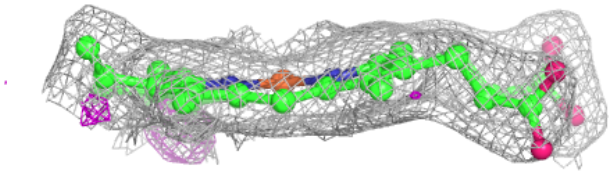


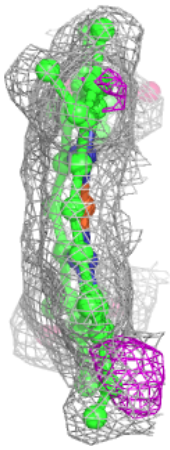


Electron density around HEC B 1008:

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

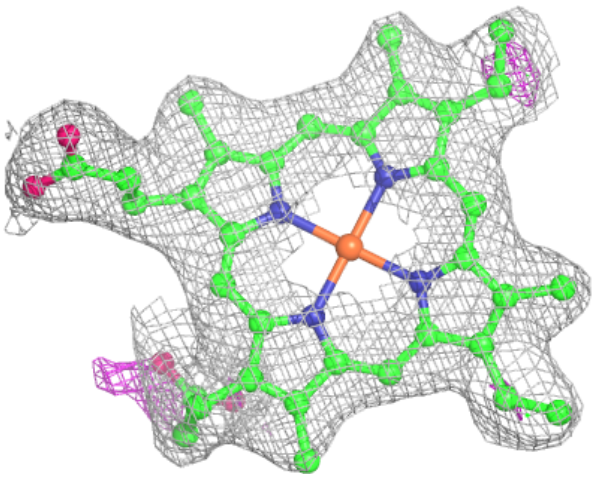


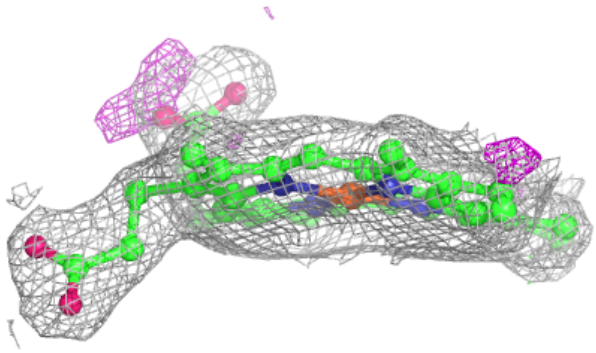


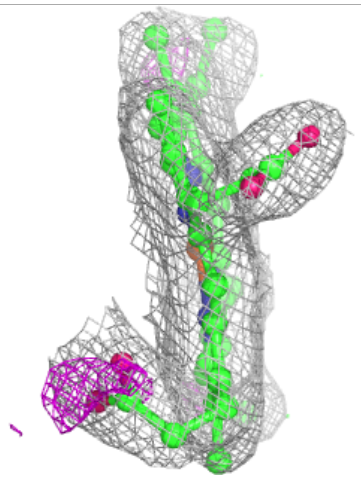


Electron density around HEC B 1009:

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

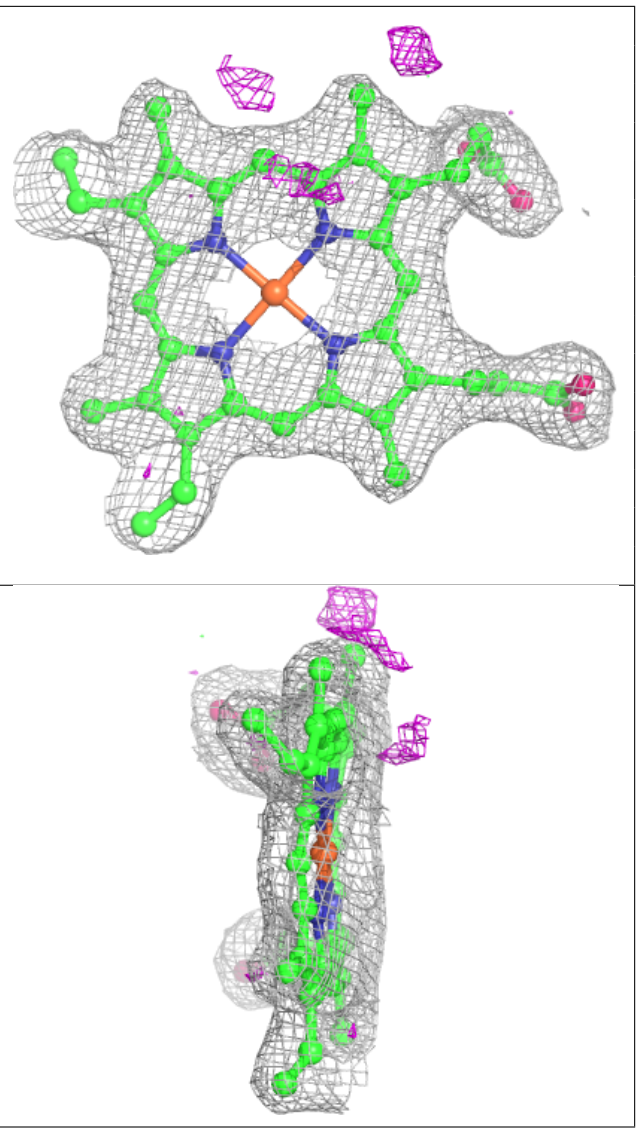






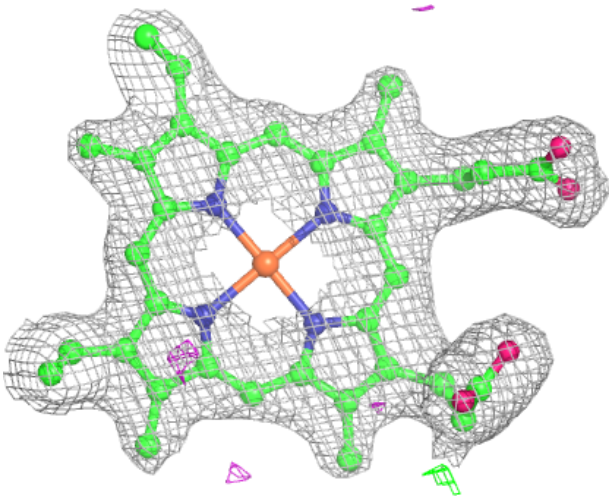
Electron density around HEC A 610:

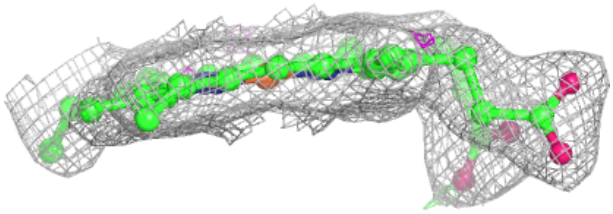
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

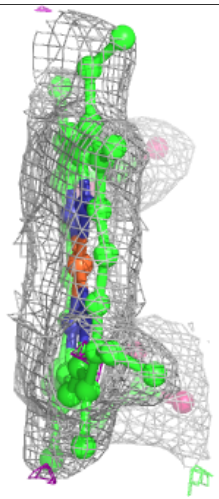


Electron density around HEC B 1007:

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

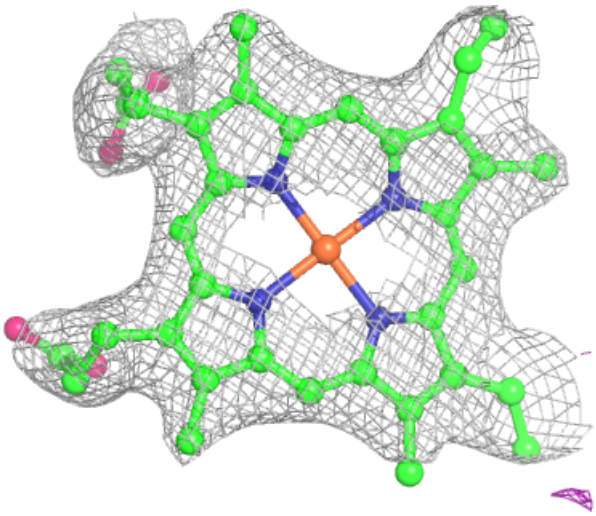


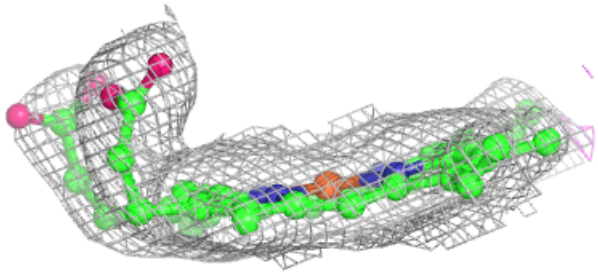


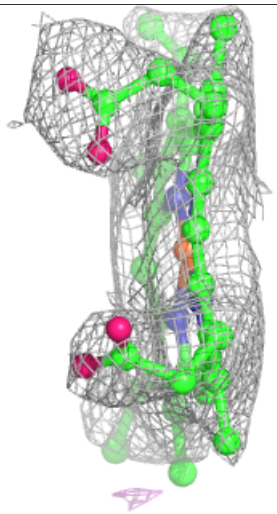


Electron density around HEC B 1003:

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

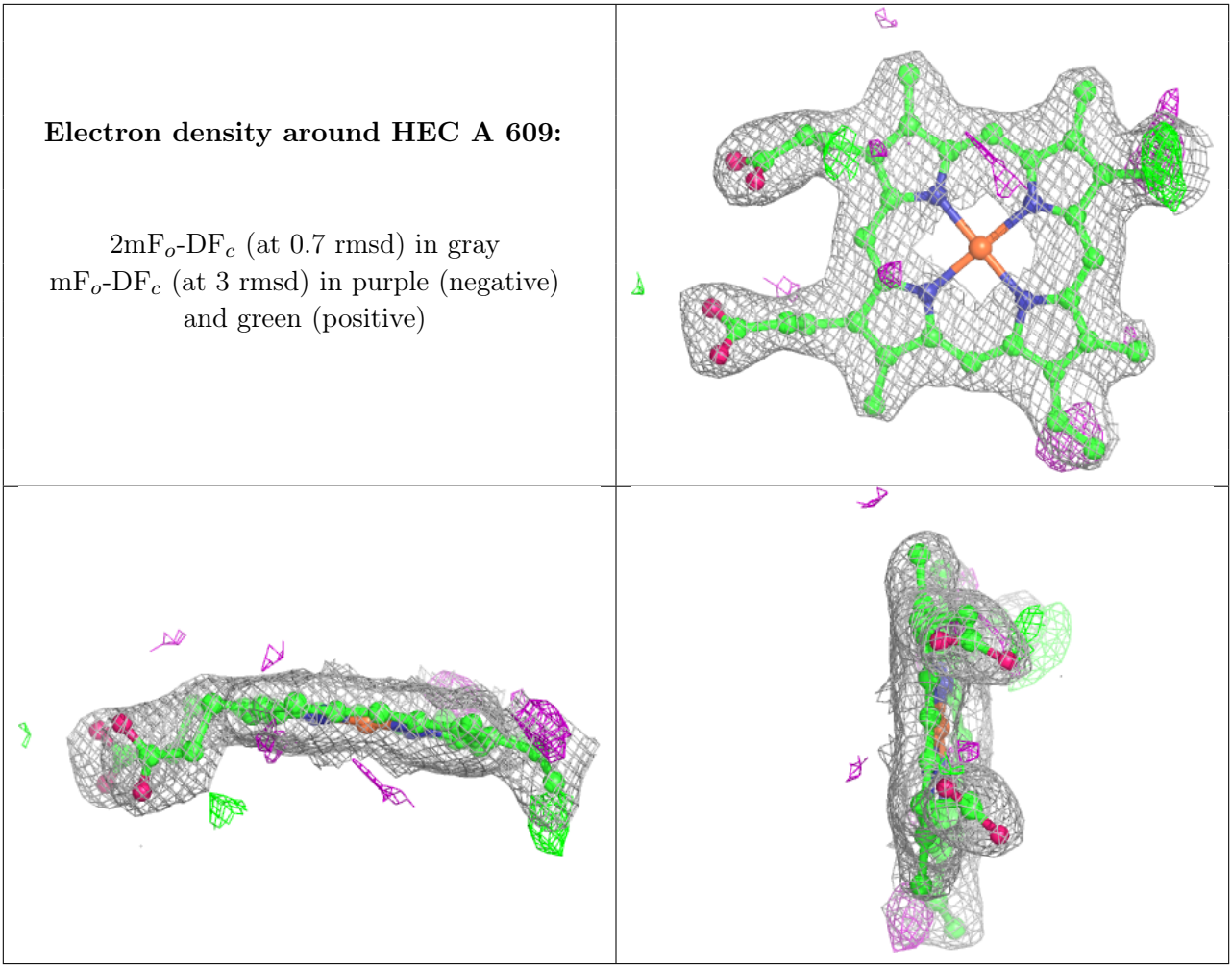






Electron density around HEC A 609:

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.