Full wwPDB X-ray Structure Validation Report ⓘ

Sep 8, 2025 – 11:40 PM JST

PDB ID	:	6M0P / pdb_00006m0p
Title	:	Hydroxylamine oxidoreductase in complex with juglone
Authors	:	Fujiwara, T.; Fujimoto, Z.; Nishigaya, Y.; Yamazaki, T.
Deposited on	:	2020-02-22
Resolution	:	2.78 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:

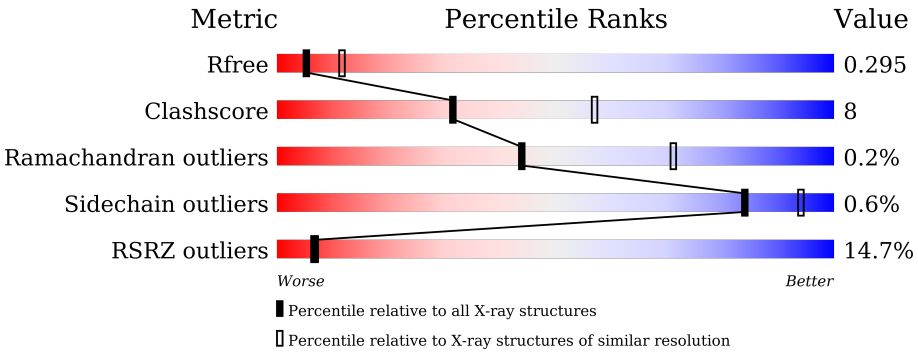
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.78 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}	164625	4924 (2.80-2.76)
Clashscore	180529	5458 (2.80-2.76)
Ramachandran outliers	177936	5386 (2.80-2.76)
Sidechain outliers	177891	5388 (2.80-2.76)
RSRZ outliers	164620	4926 (2.80-2.76)

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	570	12% 70% 18% 12%
1	C	570	14% 71% 17% · 12%
1	E	570	13% 72% 16% 12%
2	B	91	8% 58% · 38%
2	D	91	7% 56% 5% 38%
2	F	91	10% 56% 5% 38%

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 14521 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.

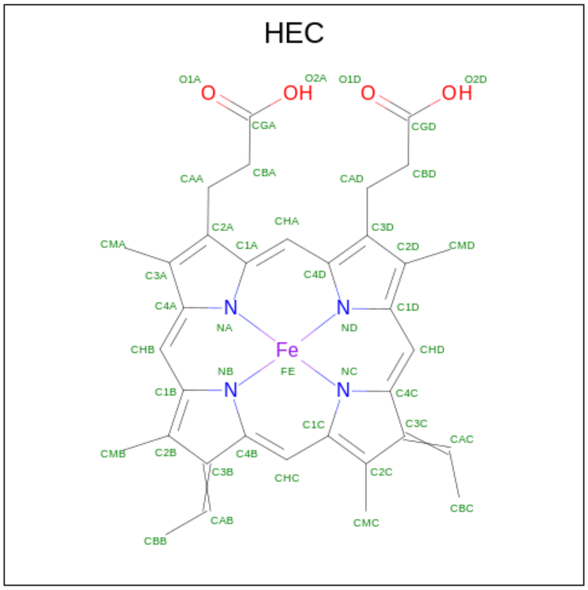
- Molecule 1 is a protein called Aerobic hydroxylamine oxidoreductase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	503	Total	C	N	O	S	0	0	0
			4009	2493	711	773	32			
1	C	503	Total	C	N	O	S	0	0	0
			4009	2493	711	773	32			
1	E	503	Total	C	N	O	S	0	0	0
			4009	2493	711	773	32			

- Molecule 2 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	56	Total	C	N	O	S	0	0	0
			423	263	75	82	3			
2	D	56	Total	C	N	O	S	0	0	0
			425	264	75	83	3			
2	F	56	Total	C	N	O	S	0	0	0
			425	264	75	83	3			

- Molecule 3 is HEME C (CCD ID: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



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

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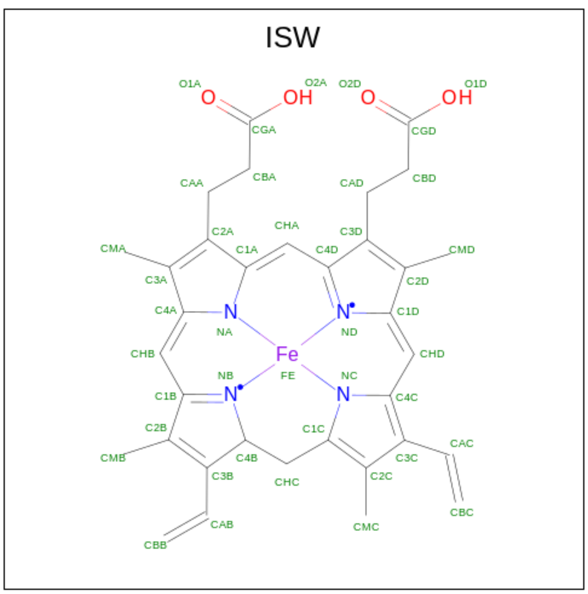
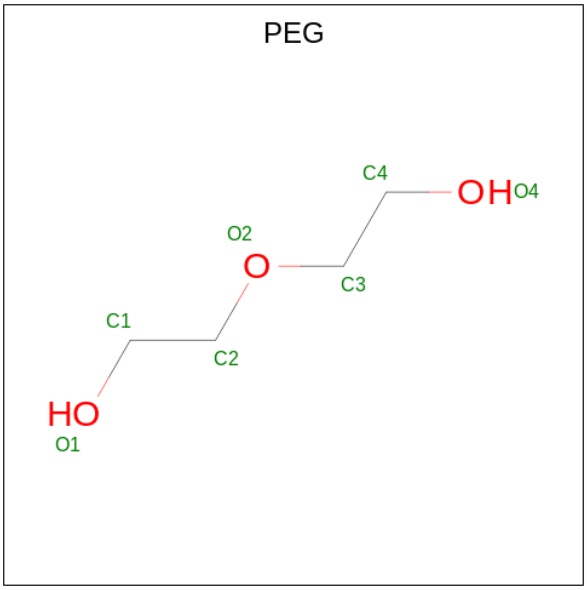
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	Fe	N	O		
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0
3	E	1	43	34	1	4	4	0	0

- Molecule 4 is {3,3'-[(9S)-8,13-diethenyl-3,7,12,17-tetramethyl-9,10-dihydroporphyrin-2,18 -diyl-kappa 4 N 21 ,N 22 ,N 23 ,N 24]dipropanoato(2-)}iron (CCD ID: ISW) (formula: $C_{34}H_{34}FeN_4O_4$).



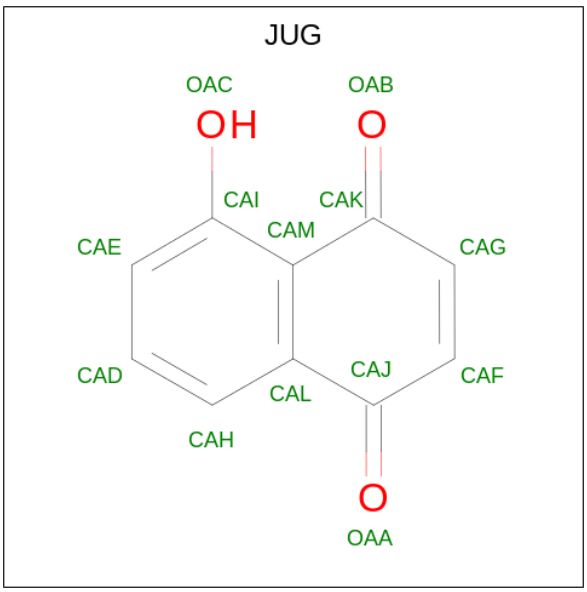
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	Fe	N	O		
4	A	1	43	34	1	4	4	0	0
4	A	1	43	34	1	4	4	0	0
4	C	1	43	34	1	4	4	0	0

- Molecule 5 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



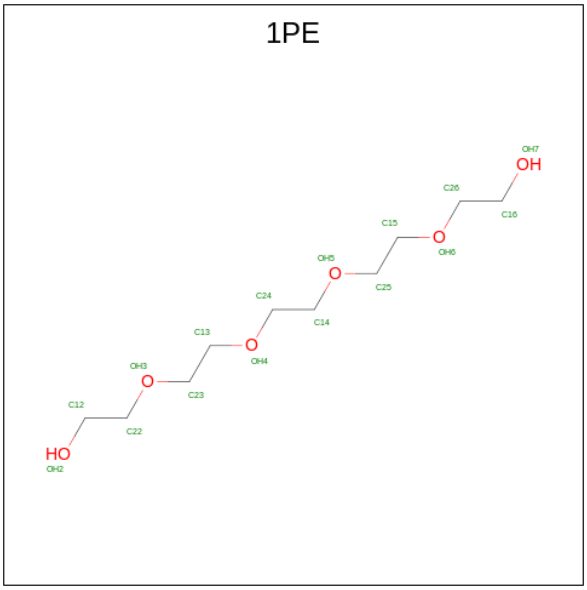
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 7 4 3	0	0
5	A	1	Total C O 7 4 3	0	0
5	E	1	Total C O 7 4 3	0	0

- Molecule 6 is 5-hydroxynaphthalene-1,4-dione (CCD ID: JUG) (formula: $C_{10}H_6O_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total C O 13 10 3	0	0
6	E	1	Total C O 13 10 3	0	0

- Molecule 7 is PENTAETHYLENE GLYCOL (CCD ID: 1PE) (formula: $C_{10}H_{22}O_6$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	C	1	Total C O 12 8 4	0	0
7	C	1	Total C O 16 10 6	0	0

- Molecule 8 is water.

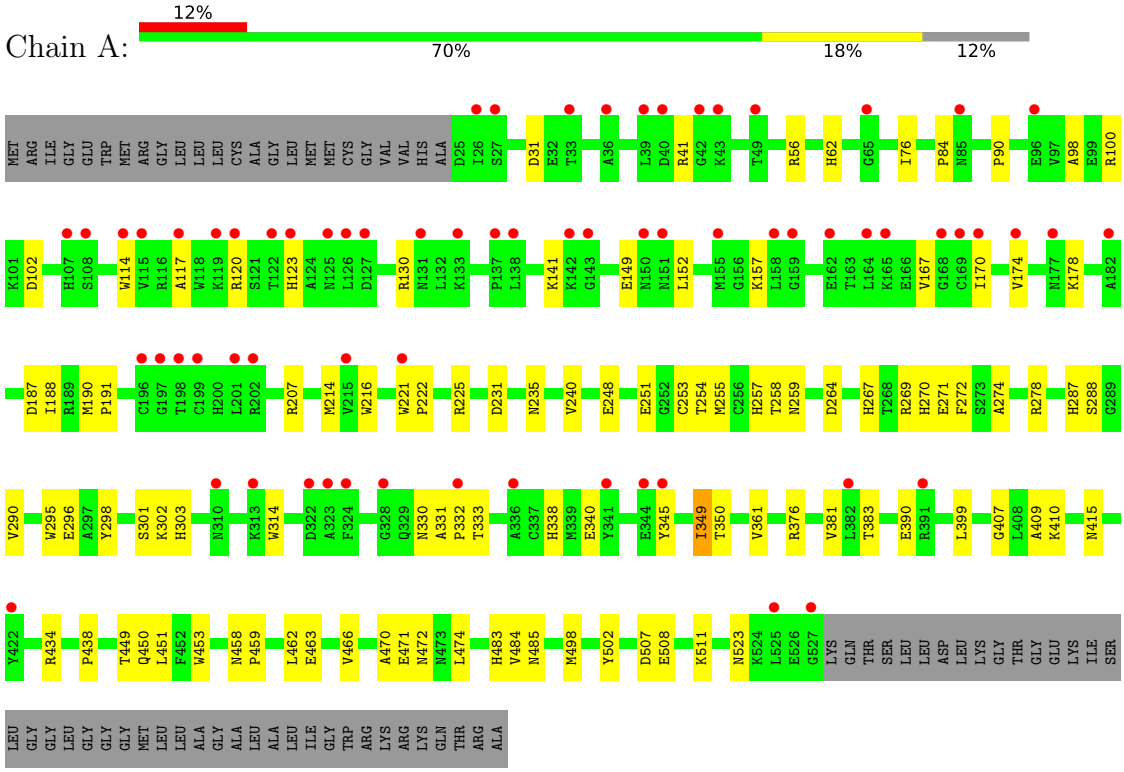
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	44	Total O 44 44	0	0
8	B	5	Total O 5 5	0	0
8	C	31	Total O 31 31	0	0
8	D	7	Total O 7 7	0	0
8	E	26	Total O 26 26	0	0
8	F	1	Total O 1 1	0	0

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.

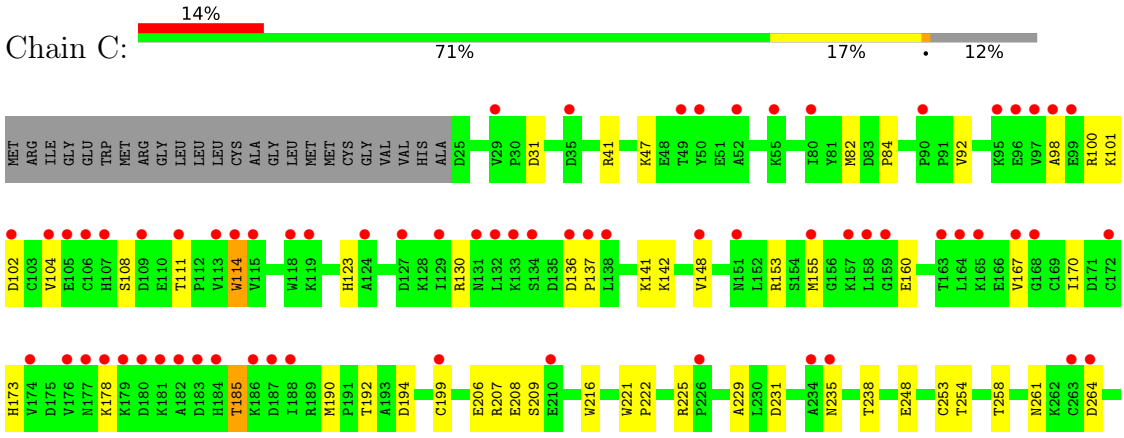
• Molecule 1: Aerobic hydroxylamine oxidoreductase

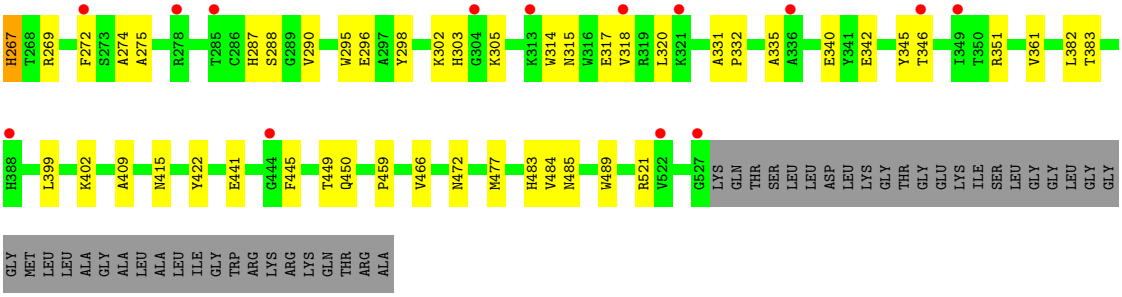
Chain A:



• Molecule 1: Aerobic hydroxylamine oxidoreductase

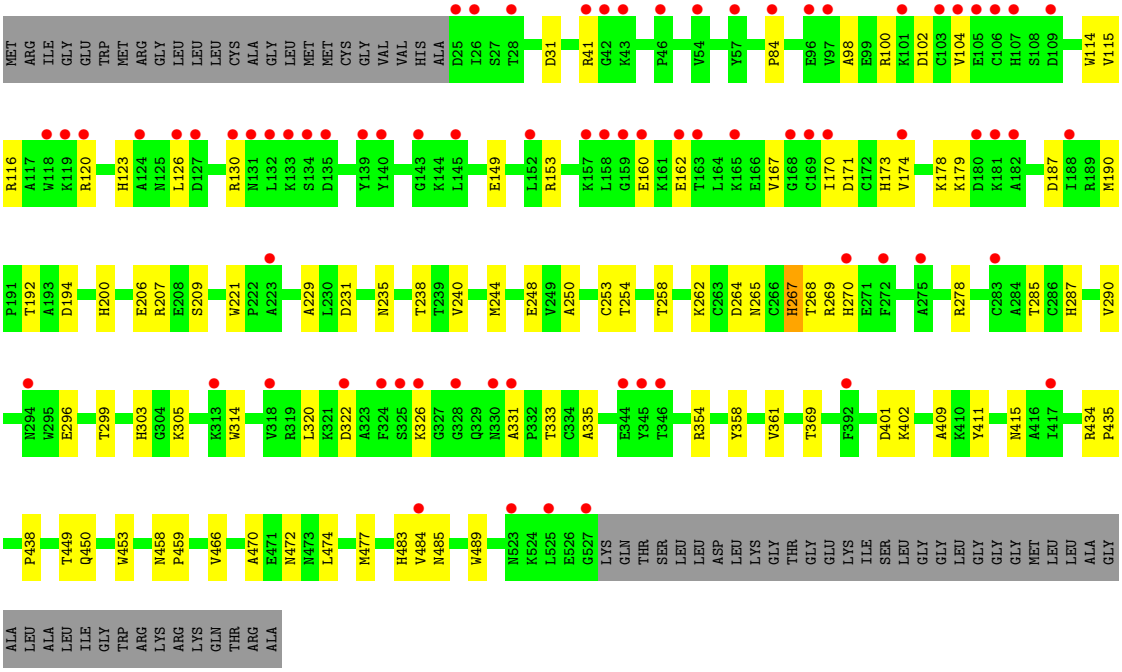
Chain C:





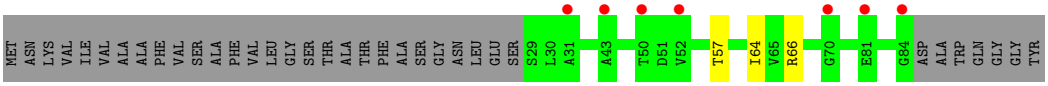
• Molecule 1: Aerobic hydroxylamine oxidoreductase

Chain E:



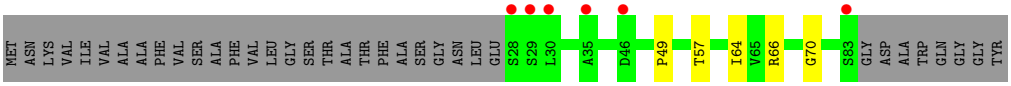
• Molecule 2: Uncharacterized protein

Chain B:



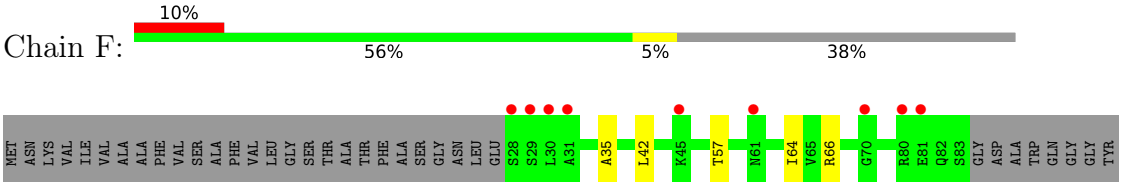
• Molecule 2: Uncharacterized protein

Chain D:



• Molecule 2: Uncharacterized protein

Chain F:


10%
56%
5%
38%
MET ASN LYS VAL ILE VAL ALA ALA PHE VAL SER ALA PHE VAL LEU GLY SER THR ALA THR PHE ALA SER GLY ASN LEU GLU S28 S29 L30 A31 A35 L42 K45 T57 N61 I64 V65 R66 G70 R80 E81 Q82 S83 GLY ASP ALA TRP GLN GLY GLY TYR

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	139.34Å 141.07Å 106.09Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.77 – 2.78 46.77 – 2.78	Depositor EDS
% Data completeness (in resolution range)	99.9 (46.77-2.78) 99.9 (46.77-2.78)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.64 (at 2.77Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.256 , 0.292 0.258 , 0.295	Depositor DCC
R_{free} test set	2661 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	47.3	Xtriage
Anisotropy	0.729	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 58.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	0.010 for k,h,-l	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	14521	wwPDB-VP
Average B, all atoms (Å^2)	63.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.74% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 1PE, JUG, ISW, HEC, PEG

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	0.09	0/4112	0.26	0/5572
1	C	0.10	0/4112	0.27	0/5572
1	E	0.10	0/4112	0.27	0/5572
2	B	0.08	0/426	0.23	0/571
2	D	0.09	0/428	0.24	0/574
2	F	0.07	0/428	0.25	0/574
All	All	0.10	0/13618	0.26	0/18435

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4009	0	3808	79	0
1	C	4009	0	3808	69	0
1	E	4009	0	3808	71	0
2	B	423	0	444	2	0
2	D	425	0	446	3	0
2	F	425	0	446	4	0
3	A	301	0	210	21	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	301	0	209	16	0
3	E	301	0	210	14	0
4	A	86	0	56	8	0
4	C	43	0	28	4	0
5	A	14	0	20	1	0
5	E	7	0	10	0	0
6	C	13	0	6	1	0
6	E	13	0	6	2	0
7	C	28	0	37	1	0
8	A	44	0	0	2	0
8	B	5	0	0	0	0
8	C	31	0	0	1	0
8	D	7	0	0	0	0
8	E	26	0	0	1	0
8	F	1	0	0	0	0
All	All	14521	0	13552	223	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 8.

All (223) 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:C:123:HIS:HB3	1:C:167:VAL:HB	1.69	0.75
1:A:100:ARG:HG2	1:A:170:ILE:HG21	1.70	0.72
1:C:264:ASP:OD2	1:C:269:ARG:NH1	2.23	0.71
1:A:123:HIS:CD2	3:A:602:HEC:ND	2.60	0.69
1:A:123:HIS:HB3	1:A:167:VAL:HB	1.75	0.68
1:E:238:THR:HG23	6:E:608:JUG:HAD	1.75	0.66
1:A:120:ARG:NH2	8:A:701:HOH:O	2.28	0.66
4:A:608:ISW:HHB	1:E:235:ASN:HA	1.78	0.65
1:C:100:ARG:HG2	1:C:170:ILE:HG21	1.77	0.65
1:A:130:ARG:NH2	8:A:702:HOH:O	2.28	0.65
1:A:130:ARG:NH1	1:A:149:GLU:OE2	2.30	0.65
1:C:235:ASN:HA	4:C:611:ISW:HHB	1.79	0.63
1:A:330:ASN:HB3	1:E:120:ARG:HH12	1.64	0.62
1:C:153:ARG:HD3	1:C:160:GLU:HA	1.81	0.61
1:A:303:HIS:CD2	3:A:607:HEC:ND	2.68	0.61
1:A:235:ASN:HA	4:A:611:ISW:HHB	1.83	0.61
1:C:82:MET:O	1:C:261:ASN:ND2	2.30	0.60
1:E:130:ARG:NH2	1:E:149:GLU:OE2	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:174:VAL:HG13	1:E:187:ASP:HB3	1.84	0.60
1:E:173:HIS:HE1	3:E:604:HEC:ND	1.99	0.60
1:E:126:LEU:HD11	1:E:167:VAL:HG23	1.82	0.60
1:E:167:VAL:HG13	3:E:602:HEC:HBC2	1.85	0.59
1:C:207:ARG:HH21	1:C:229:ALA:HA	1.68	0.58
1:C:483:HIS:O	1:C:485:ASN:N	2.37	0.58
1:A:120:ARG:NH1	1:A:271:GLU:OE1	2.36	0.58
1:E:287:HIS:HE1	3:E:606:HEC:NA	2.02	0.58
2:F:64:ILE:HB	2:F:66:ARG:HH12	1.67	0.58
1:E:483:HIS:O	1:E:485:ASN:N	2.37	0.58
1:C:114:TRP:NE1	3:C:604:HEC:O1A	2.36	0.57
2:D:64:ILE:O	2:D:66:ARG:NH1	2.37	0.57
1:A:221:TRP:CZ3	4:A:611:ISW:HBA	2.39	0.56
1:A:483:HIS:O	1:A:485:ASN:N	2.37	0.56
1:A:152:LEU:HB3	1:A:157:LYS:HB2	1.88	0.56
1:A:31:ASP:OD1	1:A:41:ARG:NH1	2.39	0.56
1:A:207:ARG:NH1	1:A:259:ASN:O	2.29	0.56
1:C:253:CYS:SG	4:C:611:ISW:HHC	2.44	0.56
3:C:605:HEC:HMA3	3:C:606:HEC:HBA2	1.88	0.56
5:A:610:PEG:H32	4:A:611:ISW:HAA	1.88	0.55
1:C:302:LYS:NZ	8:C:703:HOH:O	2.38	0.55
1:C:238:THR:HG23	6:C:608:JUG:HAD	1.88	0.55
1:C:346:THR:OG1	1:C:351:ARG:NH2	2.40	0.55
2:B:64:ILE:O	2:B:66:ARG:NH2	2.40	0.55
1:A:84:PRO:HB3	1:A:190:MET:HB2	1.89	0.55
1:A:338:HIS:HE1	3:A:605:HEC:ND	2.05	0.54
4:A:608:ISW:HHC	1:E:253:CYS:SG	2.47	0.54
1:E:123:HIS:HD2	1:E:167:VAL:HG11	1.73	0.54
1:C:141:LYS:NZ	3:C:601:HEC:O2A	2.38	0.54
1:E:264:ASP:OD2	1:E:269:ARG:NH1	2.39	0.54
3:E:605:HEC:HMA3	3:E:606:HEC:HBA2	1.90	0.53
1:C:221:TRP:CZ2	1:C:361:VAL:HG21	2.43	0.53
1:A:450:GLN:HB3	1:A:459:PRO:HG3	1.90	0.53
1:C:207:ARG:NH2	1:C:208:GLU:OE2	2.42	0.53
1:C:98:ALA:HB2	3:C:603:HEC:HMC2	1.89	0.53
1:C:231:ASP:HB2	3:C:606:HEC:HMD2	1.91	0.53
1:E:450:GLN:HB3	1:E:459:PRO:HG3	1.90	0.53
1:C:148:VAL:HG13	1:C:199:CYS:HB3	1.91	0.53
1:C:415:ASN:HA	1:C:466:VAL:HG21	1.91	0.52
3:A:605:HEC:HMA3	3:A:606:HEC:HBA2	1.92	0.52
1:C:287:HIS:CD2	3:C:606:HEC:NC	2.74	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:167:VAL:HG22	3:C:602:HEC:HBC2	1.92	0.51
1:C:192:THR:OG1	1:C:194:ASP:OD1	2.28	0.51
1:A:253:CYS:SG	4:A:611:ISW:HHC	2.50	0.51
1:E:170:ILE:HD11	1:E:178:LYS:HD3	1.93	0.51
1:E:262:LYS:NZ	1:E:265:ASN:OD1	2.43	0.51
1:A:287:HIS:HE1	3:A:606:HEC:NA	2.05	0.51
1:A:330:ASN:HB3	1:E:120:ARG:NH1	2.25	0.50
1:E:162:GLU:OE2	1:E:179:LYS:NZ	2.31	0.50
1:C:31:ASP:HA	1:C:41:ARG:HH12	1.76	0.49
1:E:290:VAL:HG22	1:E:472:ASN:HB3	1.94	0.49
1:E:415:ASN:HA	1:E:466:VAL:HG21	1.94	0.49
1:C:221:TRP:CZ3	4:C:611:ISW:HBA	2.47	0.49
1:C:84:PRO:HB3	1:C:190:MET:HB2	1.93	0.49
1:C:47:LYS:HD2	1:C:155:MET:HA	1.95	0.49
1:E:231:ASP:HB2	3:E:606:HEC:HMD2	1.94	0.49
1:A:507:ASP:OD1	1:A:511:LYS:NZ	2.33	0.49
1:C:290:VAL:HG22	1:C:472:ASN:HB3	1.94	0.49
1:C:441:GLU:OE2	1:C:449:THR:OG1	2.25	0.49
1:C:173:HIS:HE1	3:C:604:HEC:ND	2.07	0.48
1:A:287:HIS:CD2	3:A:606:HEC:NC	2.78	0.48
1:A:170:ILE:HD11	1:A:178:LYS:HD3	1.94	0.48
1:A:314:TRP:HH2	1:A:331:ALA:HB3	1.79	0.48
1:A:98:ALA:HB1	1:A:102:ASP:HB2	1.94	0.48
1:C:173:HIS:HE1	3:C:604:HEC:C4D	2.27	0.48
1:C:450:GLN:HB3	1:C:459:PRO:HG3	1.94	0.48
1:E:84:PRO:HB3	1:E:190:MET:HB2	1.96	0.48
1:E:221:TRP:CZ2	1:E:361:VAL:HG21	2.49	0.48
1:A:167:VAL:HG22	3:A:602:HEC:HBC2	1.96	0.48
1:E:477:MET:HG3	1:E:489:TRP:HB2	1.96	0.48
1:A:231:ASP:HB3	3:A:606:HEC:HBD2	1.95	0.47
1:A:381:VAL:HG11	1:A:390:GLU:HG3	1.96	0.47
1:A:415:ASN:HA	1:A:466:VAL:HG21	1.95	0.47
1:E:314:TRP:HH2	1:E:331:ALA:HB3	1.79	0.47
1:E:470:ALA:HA	1:E:474:LEU:HB3	1.96	0.47
1:C:248:GLU:HG2	1:E:402:LYS:HB2	1.96	0.47
1:A:221:TRP:CZ2	1:A:361:VAL:HG21	2.49	0.47
1:E:153:ARG:HD3	1:E:160:GLU:HA	1.96	0.47
1:E:287:HIS:CD2	3:E:606:HEC:NC	2.76	0.47
1:A:332:PRO:N	3:A:607:HEC:HBC2	2.30	0.47
1:A:231:ASP:HB2	3:A:606:HEC:HMD2	1.97	0.47
1:A:269:ARG:HA	1:A:270:HIS:HA	1.67	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:358:TYR:CZ	6:E:608:JUG:HAF	2.50	0.46
1:A:407:GLY:O	1:A:498:MET:HE1	2.16	0.46
1:C:477:MET:HG3	1:C:489:TRP:HB2	1.96	0.46
1:C:298:TYR:CE1	3:C:605:HEC:HMC2	2.51	0.46
1:E:100:ARG:NH2	1:E:171:ASP:OD1	2.45	0.46
1:A:191:PRO:HG2	3:A:604:HEC:CHD	2.46	0.46
1:E:153:ARG:HB3	1:E:160:GLU:OE2	2.16	0.46
1:C:303:HIS:CD2	3:C:607:HEC:ND	2.84	0.46
7:C:609:1PE:H252	7:C:609:1PE:H242	1.76	0.46
1:E:435:PRO:O	1:E:458:ASN:ND2	2.44	0.46
1:A:298:TYR:O	1:A:301:SER:OG	2.28	0.45
1:A:409:ALA:HB3	2:B:57:THR:HG21	1.98	0.45
1:A:222:PRO:HB2	1:A:225:ARG:HD3	1.98	0.45
1:A:434:ARG:HH22	1:A:463:GLU:CD	2.23	0.45
1:E:98:ALA:HB2	3:E:603:HEC:HMC2	1.98	0.45
1:C:254:THR:O	1:C:258:THR:HG23	2.17	0.45
1:C:315:ASN:O	1:C:318:VAL:HG22	2.16	0.45
1:E:303:HIS:CD2	3:E:607:HEC:ND	2.81	0.45
1:E:320:LEU:HD11	1:E:335:ALA:HB1	1.99	0.45
1:C:287:HIS:HE1	3:C:606:HEC:NA	2.11	0.45
1:E:322:ASP:HB3	1:E:326:LYS:HB2	1.99	0.45
1:A:90:PRO:HG3	1:A:188:ILE:O	2.17	0.45
1:C:272:PHE:CE2	3:C:604:HEC:HBC2	2.51	0.45
1:E:369:THR:HG21	2:F:42:LEU:HD11	1.99	0.45
1:E:409:ALA:HB3	2:F:57:THR:HG21	1.99	0.45
1:E:267:HIS:HE1	3:E:601:HEC:NB	2.07	0.44
1:C:320:LEU:HD11	1:C:335:ALA:HB1	1.98	0.44
1:A:272:PHE:CE2	3:A:604:HEC:HBC2	2.52	0.44
4:A:608:ISW:HBA	1:E:221:TRP:CZ3	2.52	0.44
1:C:288:SER:HB3	1:C:295:TRP:HB3	1.99	0.44
1:E:207:ARG:HH11	1:E:229:ALA:HA	1.81	0.44
1:A:270:HIS:HD2	3:A:604:HEC:NC	2.15	0.44
1:C:98:ALA:HB1	1:C:102:ASP:HB2	2.00	0.44
1:E:98:ALA:HB1	1:E:102:ASP:HB2	1.99	0.44
1:A:76:ILE:HD11	1:A:251:GLU:HG2	1.99	0.44
1:A:340:GLU:OE1	1:A:383:THR:OG1	2.29	0.44
1:C:111:THR:HB	1:C:114:TRP:HB2	2.00	0.44
1:A:56:ARG:HG3	1:A:62:HIS:CG	2.53	0.44
1:C:104:VAL:O	1:C:108:SER:OG	2.22	0.44
1:C:136:ASP:OD1	1:C:137:PRO:HD2	2.18	0.44
1:C:314:TRP:HH2	1:C:331:ALA:HB3	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:200:HIS:CE1	3:E:602:HEC:ND	2.86	0.44
1:E:269:ARG:HA	1:E:270:HIS:HA	1.67	0.44
2:D:49:PRO:O	2:D:70:GLY:N	2.51	0.43
1:A:350:THR:O	1:A:376:ARG:NH1	2.40	0.43
1:A:399:LEU:HG	1:E:248:GLU:HG3	1.99	0.43
1:A:470:ALA:HA	1:A:474:LEU:HB3	2.00	0.43
1:E:244:MET:SD	1:E:250:ALA:HB2	2.58	0.43
1:A:240:VAL:HB	1:A:449:THR:HA	2.01	0.43
1:A:298:TYR:CE1	3:A:605:HEC:HMC2	2.53	0.43
1:C:409:ALA:HB3	2:D:57:THR:HG21	2.01	0.43
1:A:451:LEU:HD11	1:A:471:GLU:HG2	2.01	0.43
1:E:434:ARG:HG3	1:E:458:ASN:HB2	2.00	0.43
1:A:141:LYS:NZ	3:A:601:HEC:O2A	2.50	0.43
1:A:167:VAL:HG13	3:A:602:HEC:HBC2	2.01	0.43
1:A:248:GLU:HG3	1:C:399:LEU:HG	2.01	0.43
1:E:206:GLU:O	1:E:209:SER:OG	2.24	0.43
1:E:296:GLU:OE1	1:E:296:GLU:N	2.44	0.43
1:C:275:ALA:HB2	1:C:317:GLU:HA	2.01	0.43
1:E:240:VAL:HB	1:E:449:THR:HA	2.00	0.43
1:A:349:ILE:HD13	3:A:606:HEC:C3A	2.49	0.42
1:C:101:LYS:HD3	1:C:101:LYS:HA	1.86	0.42
1:A:255:MET:HE2	1:A:255:MET:HB3	1.89	0.42
1:C:267:HIS:HE1	3:C:601:HEC:NB	2.15	0.42
1:E:192:THR:OG1	1:E:194:ASP:OD1	2.36	0.42
1:A:174:VAL:HG13	1:A:187:ASP:HB3	2.00	0.42
1:A:248:GLU:HG2	1:C:402:LYS:HB2	2.00	0.42
1:A:296:GLU:OE1	1:A:296:GLU:N	2.43	0.42
1:E:173:HIS:HE1	3:E:604:HEC:C4D	2.32	0.42
4:A:608:ISW:HHA	4:A:608:ISW:HAAA	2.00	0.42
1:A:274:ALA:O	1:A:278:ARG:HG3	2.20	0.42
1:A:290:VAL:HG22	1:A:472:ASN:HB3	2.00	0.42
1:C:206:GLU:O	1:C:209:SER:OG	2.24	0.42
1:C:340:GLU:HB2	1:C:345:TYR:CE2	2.54	0.42
4:C:611:ISW:HHA	4:C:611:ISW:HAAA	1.99	0.42
1:E:104:VAL:HG13	1:E:115:VAL:HG13	2.01	0.42
1:A:462:LEU:HG	1:A:508:GLU:CD	2.45	0.42
1:C:222:PRO:HB2	1:C:225:ARG:HD3	2.02	0.42
1:C:296:GLU:OE1	1:C:296:GLU:N	2.43	0.42
1:E:116:ARG:O	1:E:120:ARG:HG3	2.19	0.42
1:E:305:LYS:HD3	1:E:305:LYS:HA	1.89	0.42
1:A:214:MET:HE2	1:A:216:TRP:CE2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:333:THR:O	3:A:605:HEC:HMC3	2.20	0.42
1:C:216:TRP:NE1	1:C:221:TRP:HB2	2.35	0.41
1:C:92:VAL:HA	1:C:185:THR:HG23	2.03	0.41
1:A:257:HIS:CE1	3:A:606:HEC:HMD1	2.56	0.41
1:A:450:GLN:NE2	1:A:463:GLU:OE2	2.46	0.41
3:A:607:HEC:HBA2	1:E:269:ARG:HH22	1.85	0.41
1:C:207:ARG:NH2	1:C:229:ALA:HA	2.33	0.41
1:C:274:ALA:H	3:C:602:HEC:HBA1	1.86	0.41
1:E:254:THR:O	1:E:258:THR:HG23	2.20	0.41
1:A:117:ALA:HB1	1:A:271:GLU:HG3	2.02	0.41
1:A:302:LYS:HD3	1:A:302:LYS:HA	1.94	0.41
1:A:434:ARG:HG3	1:A:458:ASN:HB2	2.01	0.41
1:A:523:ASN:OD1	1:C:521:ARG:NH1	2.51	0.41
1:E:354:ARG:NH2	1:E:401:ASP:OD1	2.53	0.41
1:E:31:ASP:OD1	1:E:41:ARG:NH2	2.54	0.41
1:E:278:ARG:NE	3:E:601:HEC:O2D	2.34	0.41
1:A:216:TRP:CD1	1:A:221:TRP:HB2	2.55	0.41
1:C:130:ARG:HA	1:C:142:LYS:HE2	2.02	0.41
1:C:332:PRO:N	3:C:607:HEC:HBC2	2.36	0.41
1:E:411:TYR:CE1	1:E:470:ALA:HB2	2.56	0.41
1:E:438:PRO:HD3	1:E:453:TRP:CE2	2.56	0.41
1:A:254:THR:O	1:A:258:THR:HG23	2.21	0.41
1:C:340:GLU:OE1	1:C:383:THR:OG1	2.31	0.41
1:E:333:THR:O	3:E:605:HEC:HMC3	2.21	0.41
1:A:288:SER:HB3	1:A:295:TRP:HB3	2.03	0.41
1:A:410:LYS:HE3	1:A:502:TYR:CG	2.55	0.41
1:E:31:ASP:HA	1:E:41:ARG:HH22	1.86	0.41
1:E:409:ALA:HB2	2:F:35:ALA:HB3	2.02	0.41
1:E:411:TYR:CE1	1:E:415:ASN:HB2	2.56	0.41
1:C:170:ILE:HD11	1:C:178:LYS:HD3	2.03	0.41
1:E:299:THR:O	1:E:305:LYS:HG2	2.20	0.41
1:A:31:ASP:HA	1:A:41:ARG:HH22	1.87	0.40
3:A:607:HEC:HBD1	1:E:268:THR:HB	2.03	0.40
1:C:305:LYS:HA	1:C:305:LYS:HD3	1.90	0.40
1:E:265:ASN:HB3	3:E:606:HEC:HBC3	2.03	0.40
1:A:264:ASP:OD2	1:A:269:ARG:NH1	2.49	0.40
1:C:422:TYR:CE1	1:C:445:PHE:HB2	2.56	0.40
1:A:340:GLU:HB2	1:A:345:TYR:CE2	2.56	0.40
1:E:285:THR:HB	8:E:720:HOH:O	2.21	0.40
1:A:438:PRO:HD3	1:A:453:TRP:CE2	2.56	0.40
1:C:342:GLU:HA	1:C:382:LEU:HD23	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	501/570 (88%)	479 (96%)	21 (4%)	1 (0%)	44 71
1	C	501/570 (88%)	479 (96%)	21 (4%)	1 (0%)	44 71
1	E	501/570 (88%)	479 (96%)	21 (4%)	1 (0%)	44 71
2	B	54/91 (59%)	53 (98%)	1 (2%)	0	100 100
2	D	54/91 (59%)	53 (98%)	1 (2%)	0	100 100
2	F	54/91 (59%)	53 (98%)	1 (2%)	0	100 100
All	All	1665/1983 (84%)	1596 (96%)	66 (4%)	3 (0%)	44 71

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	484	VAL
1	C	484	VAL
1	E	484	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	429/477 (90%)	426 (99%)	3 (1%)	81 93
1	C	429/477 (90%)	426 (99%)	3 (1%)	81 93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	E	429/477 (90%)	427 (100%)	2 (0%)	86 95
2	B	48/73 (66%)	48 (100%)	0	100 100
2	D	49/73 (67%)	49 (100%)	0	100 100
2	F	49/73 (67%)	49 (100%)	0	100 100
All	All	1433/1650 (87%)	1425 (99%)	8 (1%)	84 94

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

Mol	Chain	Res	Type
1	A	114	TRP
1	A	267	HIS
1	A	349	ILE
1	C	114	TRP
1	C	185	THR
1	C	267	HIS
1	E	114	TRP
1	E	267	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	419	HIS
1	E	235	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

31 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	HEC	E	605	1	32,50,50	2.23	4 (12%)	24,82,82	1.51	3 (12%)
3	HEC	C	601	1	32,50,50	2.16	3 (9%)	24,82,82	1.52	4 (16%)
5	PEG	A	610	-	6,6,6	0.49	0	5,5,5	0.24	0
3	HEC	C	605	1	32,50,50	2.22	4 (12%)	24,82,82	1.52	3 (12%)
3	HEC	A	603	1	32,50,50	2.14	4 (12%)	24,82,82	1.52	4 (16%)
4	ISW	A	608	8,1	40,50,50	4.96	16 (40%)	38,82,82	4.92	16 (42%)
5	PEG	E	609	-	6,6,6	0.49	0	5,5,5	0.28	0
3	HEC	C	607	1	32,50,50	2.19	3 (9%)	24,82,82	1.39	2 (8%)
3	HEC	E	601	1	32,50,50	2.16	3 (9%)	24,82,82	1.40	4 (16%)
3	HEC	C	604	1	32,50,50	2.18	3 (9%)	24,82,82	1.43	3 (12%)
7	1PE	C	609	-	11,11,15	0.55	0	10,10,14	0.25	0
4	ISW	A	611	8,1	40,50,50	4.95	17 (42%)	38,82,82	4.97	15 (39%)
3	HEC	E	607	1	32,50,50	2.15	3 (9%)	24,82,82	1.50	3 (12%)
3	HEC	E	606	1	32,50,50	2.17	3 (9%)	24,82,82	1.46	2 (8%)
3	HEC	A	601	1	32,50,50	2.16	3 (9%)	24,82,82	1.38	2 (8%)
3	HEC	E	602	1	32,50,50	2.15	3 (9%)	24,82,82	1.34	1 (4%)
6	JUG	C	608	-	14,14,14	2.79	7 (50%)	20,20,20	1.02	1 (5%)
3	HEC	E	604	1	32,50,50	2.17	3 (9%)	24,82,82	1.48	4 (16%)
7	1PE	C	610	-	15,15,15	0.53	0	14,14,14	0.23	0
3	HEC	C	602	1	32,50,50	2.15	3 (9%)	24,82,82	1.40	2 (8%)
3	HEC	C	606	1	32,50,50	2.15	3 (9%)	24,82,82	1.44	2 (8%)
3	HEC	E	603	1	32,50,50	2.18	4 (12%)	24,82,82	1.52	4 (16%)
3	HEC	A	606	1	32,50,50	2.17	3 (9%)	24,82,82	1.41	2 (8%)
6	JUG	E	608	-	14,14,14	2.78	8 (57%)	20,20,20	1.05	0
3	HEC	A	602	1	32,50,50	2.19	4 (12%)	24,82,82	1.39	2 (8%)
3	HEC	A	605	1	32,50,50	2.22	3 (9%)	24,82,82	1.56	4 (16%)
3	HEC	A	604	1	32,50,50	2.20	3 (9%)	24,82,82	1.44	5 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	HEC	A	607	1	32,50,50	2.13	3 (9%)	24,82,82	1.53	4 (16%)
4	ISW	C	611	8,1	40,50,50	4.96	16 (40%)	38,82,82	4.95	15 (39%)
5	PEG	A	609	-	6,6,6	0.49	0	5,5,5	0.28	0
3	HEC	C	603	1	32,50,50	2.14	3 (9%)	24,82,82	1.51	3 (12%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	HEC	E	605	1	-	5/10/54/54	-
3	HEC	C	601	1	-	0/10/54/54	-
5	PEG	A	610	-	-	2/4/4/4	-
3	HEC	C	605	1	-	8/10/54/54	-
3	HEC	A	603	1	-	0/10/54/54	-
4	ISW	A	608	8,1	-	5/12/74/74	-
5	PEG	E	609	-	-	2/4/4/4	-
3	HEC	C	607	1	-	3/10/54/54	-
3	HEC	E	601	1	-	4/10/54/54	-
3	HEC	C	604	1	-	5/10/54/54	-
7	1PE	C	609	-	-	4/9/9/13	-
4	ISW	A	611	8,1	-	8/12/74/74	-
3	HEC	E	607	1	-	1/10/54/54	-
3	HEC	E	606	1	-	2/10/54/54	-
3	HEC	A	601	1	-	1/10/54/54	-
3	HEC	E	602	1	-	2/10/54/54	-
6	JUG	C	608	-	-	-	0/2/2/2
3	HEC	E	604	1	-	2/10/54/54	-
7	1PE	C	610	-	-	4/13/13/13	-
3	HEC	C	602	1	-	3/10/54/54	-
3	HEC	C	606	1	-	2/10/54/54	-
3	HEC	E	603	1	-	2/10/54/54	-
3	HEC	A	606	1	-	0/10/54/54	-
6	JUG	E	608	-	-	-	0/2/2/2
3	HEC	A	602	1	-	2/10/54/54	-
3	HEC	A	605	1	-	7/10/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	HEC	A	604	1	-	5/10/54/54	-
3	HEC	A	607	1	-	7/10/54/54	-
4	ISW	C	611	8,1	-	4/12/74/74	-
5	PEG	A	609	-	-	0/4/4/4	-
3	HEC	C	603	1	-	1/10/54/54	-

All (132) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	611	ISW	CHC-C4B	-15.01	1.30	1.53
4	A	608	ISW	CHC-C4B	-14.87	1.30	1.53
4	A	611	ISW	CHC-C4B	-14.75	1.30	1.53
4	C	611	ISW	CHD-C1D	12.55	1.67	1.35
4	A	611	ISW	CHD-C1D	12.53	1.67	1.35
4	A	608	ISW	CHD-C1D	12.47	1.67	1.35
4	A	608	ISW	C4C-CHD	11.50	1.73	1.41
4	A	611	ISW	C4C-CHD	11.42	1.72	1.41
4	C	611	ISW	C4C-CHD	11.41	1.72	1.41
4	A	611	ISW	CHA-C4D	9.71	1.69	1.41
4	C	611	ISW	CHA-C4D	9.65	1.69	1.41
4	A	608	ISW	CHA-C4D	9.64	1.69	1.41
4	A	611	ISW	CHB-C1B	9.26	1.67	1.41
4	C	611	ISW	CHB-C1B	9.23	1.67	1.41
4	A	608	ISW	CHB-C1B	9.22	1.67	1.41
4	C	611	ISW	C1D-ND	9.11	1.56	1.40
4	A	608	ISW	C1D-ND	9.09	1.56	1.40
4	A	611	ISW	C1D-ND	9.01	1.55	1.40
3	E	605	HEC	C2B-C3B	-6.51	1.34	1.40
3	C	607	HEC	C2B-C3B	-6.49	1.34	1.40
3	A	605	HEC	C3C-C2C	-6.45	1.34	1.40
3	C	605	HEC	C2B-C3B	-6.43	1.34	1.40
3	A	605	HEC	C2B-C3B	-6.34	1.34	1.40
3	E	606	HEC	C3C-C2C	-6.32	1.34	1.40
3	A	606	HEC	C2B-C3B	-6.27	1.34	1.40
3	A	604	HEC	C3C-C2C	-6.26	1.34	1.40
3	C	601	HEC	C3C-C2C	-6.24	1.34	1.40
3	A	604	HEC	C2B-C3B	-6.23	1.34	1.40
3	E	605	HEC	C3C-C2C	-6.21	1.34	1.40
3	E	601	HEC	C3C-C2C	-6.19	1.34	1.40
3	A	601	HEC	C3C-C2C	-6.19	1.34	1.40
3	A	602	HEC	C2B-C3B	-6.19	1.34	1.40
3	E	602	HEC	C2B-C3B	-6.18	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	603	HEC	C2B-C3B	-6.17	1.34	1.40
3	C	602	HEC	C2B-C3B	-6.16	1.34	1.40
3	A	606	HEC	C3C-C2C	-6.15	1.34	1.40
3	C	606	HEC	C3C-C2C	-6.15	1.34	1.40
3	C	605	HEC	C3C-C2C	-6.14	1.34	1.40
3	E	606	HEC	C2B-C3B	-6.14	1.34	1.40
3	E	604	HEC	C3C-C2C	-6.13	1.34	1.40
3	E	607	HEC	C2B-C3B	-6.10	1.34	1.40
3	C	601	HEC	C2B-C3B	-6.08	1.34	1.40
3	C	606	HEC	C2B-C3B	-6.07	1.34	1.40
3	E	601	HEC	C2B-C3B	-6.06	1.34	1.40
3	C	604	HEC	C3C-C2C	-6.05	1.34	1.40
3	E	604	HEC	C2B-C3B	-6.03	1.34	1.40
3	A	601	HEC	C2B-C3B	-6.02	1.34	1.40
3	C	604	HEC	C2B-C3B	-6.01	1.34	1.40
3	C	603	HEC	C3C-C2C	-6.00	1.34	1.40
3	A	607	HEC	C2B-C3B	-5.98	1.34	1.40
3	A	603	HEC	C3C-C2C	-5.97	1.34	1.40
3	C	603	HEC	C2B-C3B	-5.96	1.34	1.40
6	C	608	JUG	CAG-CAF	5.96	1.48	1.35
6	E	608	JUG	CAG-CAF	5.95	1.48	1.35
3	A	602	HEC	C3C-C2C	-5.93	1.34	1.40
3	A	603	HEC	C2B-C3B	-5.90	1.34	1.40
3	E	603	HEC	C3C-C2C	-5.87	1.34	1.40
3	C	607	HEC	C3C-C2C	-5.87	1.34	1.40
3	C	602	HEC	C3C-C2C	-5.81	1.34	1.40
3	E	602	HEC	C3C-C2C	-5.80	1.34	1.40
3	E	607	HEC	C3C-C2C	-5.79	1.34	1.40
3	E	603	HEC	C3D-C2D	5.75	1.54	1.37
3	E	605	HEC	C3D-C2D	5.66	1.54	1.37
4	A	611	ISW	CHC-C1C	5.65	1.65	1.51
4	A	608	ISW	C1D-C2D	5.63	1.55	1.44
3	C	605	HEC	C3D-C2D	5.63	1.54	1.37
3	C	604	HEC	C3D-C2D	5.61	1.54	1.37
3	A	607	HEC	C3C-C2C	-5.59	1.34	1.40
3	A	605	HEC	C3D-C2D	5.59	1.54	1.37
4	A	608	ISW	CHC-C1C	5.57	1.65	1.51
3	A	602	HEC	C3D-C2D	5.56	1.54	1.37
4	A	611	ISW	C1D-C2D	5.56	1.55	1.44
4	C	611	ISW	C1D-C2D	5.56	1.55	1.44
3	A	607	HEC	C3D-C2D	5.55	1.54	1.37
3	A	603	HEC	C3D-C2D	5.54	1.54	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	603	HEC	C3D-C2D	5.52	1.54	1.37
3	E	607	HEC	C3D-C2D	5.51	1.54	1.37
3	C	602	HEC	C3D-C2D	5.50	1.54	1.37
4	C	611	ISW	CHC-C1C	5.49	1.64	1.51
3	C	607	HEC	C3D-C2D	5.48	1.53	1.37
3	E	602	HEC	C3D-C2D	5.47	1.53	1.37
3	A	601	HEC	C3D-C2D	5.45	1.53	1.37
3	E	601	HEC	C3D-C2D	5.43	1.53	1.37
3	A	604	HEC	C3D-C2D	5.42	1.53	1.37
3	E	604	HEC	C3D-C2D	5.42	1.53	1.37
3	C	601	HEC	C3D-C2D	5.42	1.53	1.37
6	C	608	JUG	CAL-CAJ	5.40	1.57	1.48
6	E	608	JUG	CAL-CAJ	5.38	1.57	1.48
3	E	606	HEC	C3D-C2D	5.37	1.53	1.37
3	C	606	HEC	C3D-C2D	5.34	1.53	1.37
3	A	606	HEC	C3D-C2D	5.32	1.53	1.37
4	A	608	ISW	C4D-C3D	4.72	1.53	1.45
4	A	611	ISW	C4D-C3D	4.69	1.53	1.45
4	C	611	ISW	C4D-C3D	4.65	1.53	1.45
4	A	611	ISW	C3D-C2D	4.38	1.46	1.36
4	A	608	ISW	C1B-C2B	4.26	1.52	1.44
4	C	611	ISW	C1B-C2B	4.25	1.52	1.44
4	A	608	ISW	C4D-ND	4.21	1.47	1.38
4	A	611	ISW	C1B-C2B	4.20	1.52	1.44
4	C	611	ISW	C3D-C2D	4.18	1.45	1.36
6	C	608	JUG	CAM-CAK	4.18	1.57	1.46
4	A	608	ISW	C3D-C2D	4.13	1.45	1.36
4	C	611	ISW	C4D-ND	4.11	1.47	1.38
6	E	608	JUG	CAM-CAK	4.06	1.57	1.46
4	A	611	ISW	C4D-ND	4.04	1.47	1.38
4	C	611	ISW	C3C-CAC	3.24	1.54	1.47
4	A	611	ISW	C3C-C2C	3.23	1.44	1.40
4	A	611	ISW	C3C-CAC	3.17	1.54	1.47
4	A	608	ISW	C4B-NB	3.15	1.53	1.48
4	A	611	ISW	C4B-NB	3.13	1.53	1.48
4	A	608	ISW	C3C-C2C	3.12	1.44	1.40
4	A	608	ISW	C3C-CAC	3.12	1.54	1.47
4	C	611	ISW	C4B-NB	3.08	1.53	1.48
4	C	611	ISW	C3C-C2C	3.07	1.44	1.40
4	A	611	ISW	C4C-NC	-2.60	1.30	1.36
4	A	608	ISW	C4C-NC	-2.48	1.31	1.36
6	E	608	JUG	OAB-CAK	-2.48	1.18	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	611	ISW	C4C-NC	-2.47	1.31	1.36
3	A	602	HEC	CAD-C3D	2.45	1.55	1.52
6	C	608	JUG	OAA-CAJ	-2.45	1.19	1.24
6	E	608	JUG	OAA-CAJ	-2.44	1.19	1.24
6	C	608	JUG	OAB-CAK	-2.44	1.19	1.24
3	E	603	HEC	CAD-C3D	2.32	1.55	1.52
6	C	608	JUG	CAF-CAJ	2.15	1.51	1.46
3	C	605	HEC	CAD-C3D	2.12	1.55	1.52
6	E	608	JUG	CAF-CAJ	2.12	1.50	1.46
6	C	608	JUG	CAG-CAK	2.11	1.50	1.46
6	E	608	JUG	CAG-CAK	2.10	1.50	1.46
3	A	603	HEC	CAD-C3D	2.10	1.55	1.52
4	A	611	ISW	CMD-C2D	2.10	1.55	1.50
3	E	605	HEC	CAD-C3D	2.07	1.55	1.52
6	E	608	JUG	OAC-CAI	2.00	1.40	1.36

All (110) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	C	611	ISW	C4D-CHA-C1A	-19.12	97.33	122.56
4	A	608	ISW	C4D-CHA-C1A	-19.08	97.37	122.56
4	A	611	ISW	C4D-CHA-C1A	-19.04	97.42	122.56
4	A	611	ISW	C4A-CHB-C1B	-13.07	105.31	122.56
4	C	611	ISW	C4A-CHB-C1B	-12.59	105.94	122.56
4	A	608	ISW	C4A-CHB-C1B	-12.48	106.09	122.56
4	A	611	ISW	CBA-CAA-C2A	9.87	129.24	112.60
4	A	611	ISW	CMA-C3A-C2A	9.33	142.53	124.94
4	C	611	ISW	CMA-C3A-C2A	9.22	142.33	124.94
4	C	611	ISW	CBA-CAA-C2A	9.22	128.14	112.60
4	A	608	ISW	CBA-CAA-C2A	9.19	128.10	112.60
4	A	608	ISW	CMA-C3A-C2A	9.06	142.03	124.94
4	C	611	ISW	CHA-C4D-C3D	-7.11	114.39	124.84
4	A	608	ISW	CHA-C4D-C3D	-7.06	114.46	124.84
4	A	611	ISW	CHA-C4D-C3D	-6.79	114.86	124.84
4	A	608	ISW	C3D-C4D-ND	5.75	115.93	110.36
4	C	611	ISW	C3D-C4D-ND	5.67	115.85	110.36
4	A	611	ISW	C3D-C4D-ND	5.43	115.62	110.36
4	C	611	ISW	C3C-C4C-NC	5.03	115.72	109.21
4	C	611	ISW	CHA-C4D-ND	4.88	129.73	124.43
4	A	611	ISW	C3C-C4C-NC	4.85	115.48	109.21
4	A	608	ISW	CHA-C4D-ND	4.75	129.59	124.43
4	A	608	ISW	C3C-C4C-NC	4.72	115.32	109.21

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	611	ISW	CHA-C4D-ND	4.66	129.50	124.43
4	A	608	ISW	C1D-ND-C4D	-4.56	100.37	105.07
4	C	611	ISW	C1D-ND-C4D	-4.41	100.51	105.07
4	A	611	ISW	C1D-ND-C4D	-4.14	100.79	105.07
4	A	608	ISW	CHB-C1B-C2B	-4.06	118.64	124.98
4	C	611	ISW	CHB-C1B-C2B	-4.02	118.70	124.98
4	A	611	ISW	CHB-C1B-C2B	-3.67	119.25	124.98
3	E	605	HEC	CMC-C2C-C1C	-3.38	123.26	128.46
3	C	605	HEC	CMC-C2C-C1C	-3.33	123.34	128.46
3	C	602	HEC	CMC-C2C-C1C	-3.33	123.34	128.46
4	A	611	ISW	CAD-CBD-CGD	-3.33	106.43	113.60
3	E	603	HEC	CMC-C2C-C1C	-3.33	123.35	128.46
4	A	608	ISW	C2B-C1B-NB	3.20	113.72	109.88
3	C	606	HEC	CMC-C2C-C1C	-3.19	123.56	128.46
3	E	606	HEC	CMC-C2C-C1C	-3.16	123.61	128.46
3	E	607	HEC	CMC-C2C-C1C	-3.15	123.62	128.46
4	C	611	ISW	C2B-C1B-NB	3.14	113.64	109.88
3	A	602	HEC	CMC-C2C-C1C	-3.13	123.65	128.46
3	A	607	HEC	CMC-C2C-C1C	-3.11	123.69	128.46
3	E	604	HEC	CMC-C2C-C1C	-3.09	123.71	128.46
3	C	603	HEC	CMC-C2C-C1C	-3.03	123.81	128.46
3	C	601	HEC	CBD-CAD-C3D	-3.01	107.48	112.62
4	C	611	ISW	CAD-CBD-CGD	-3.01	107.13	113.60
4	A	611	ISW	C2B-C1B-NB	3.00	113.48	109.88
3	E	602	HEC	CMC-C2C-C1C	-2.98	123.89	128.46
3	A	605	HEC	CMC-C2C-C1C	-2.96	123.91	128.46
3	C	604	HEC	CMC-C2C-C1C	-2.93	123.97	128.46
3	A	603	HEC	CMC-C2C-C1C	-2.91	123.99	128.46
3	A	606	HEC	CMC-C2C-C1C	-2.91	123.99	128.46
3	C	607	HEC	CMC-C2C-C1C	-2.91	124.00	128.46
4	C	611	ISW	CHB-C1B-NB	2.90	127.58	124.43
3	A	604	HEC	CMC-C2C-C1C	-2.90	124.01	128.46
4	A	608	ISW	CHB-C1B-NB	2.87	127.55	124.43
3	A	603	HEC	CBA-CAA-C2A	-2.86	107.78	112.60
3	A	605	HEC	CBA-CAA-C2A	-2.81	107.86	112.60
3	C	601	HEC	CMC-C2C-C1C	-2.76	124.23	128.46
3	A	601	HEC	CMC-C2C-C1C	-2.72	124.29	128.46
3	E	604	HEC	CMB-C2B-C1B	-2.71	124.30	128.46
4	A	608	ISW	CAD-CBD-CGD	-2.67	107.85	113.60
3	C	604	HEC	CMB-C2B-C1B	-2.64	124.40	128.46
3	E	601	HEC	CMC-C2C-C1C	-2.64	124.41	128.46
3	A	605	HEC	CMB-C2B-C1B	-2.59	124.48	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	604	HEC	CMB-C2B-C1B	-2.57	124.52	128.46
3	C	605	HEC	CMB-C2B-C1B	-2.55	124.54	128.46
4	A	611	ISW	CHB-C1B-NB	2.54	127.19	124.43
3	A	607	HEC	C1D-C2D-C3D	-2.50	105.26	107.00
3	C	606	HEC	CMB-C2B-C1B	-2.49	124.64	128.46
3	E	606	HEC	CMB-C2B-C1B	-2.49	124.64	128.46
4	A	608	ISW	C1B-C2B-C3B	-2.47	103.84	106.80
4	C	611	ISW	C1B-C2B-C3B	-2.47	103.85	106.80
3	E	607	HEC	CMB-C2B-C1B	-2.45	124.69	128.46
3	A	607	HEC	CMB-C2B-C1B	-2.45	124.71	128.46
3	E	605	HEC	CBA-CAA-C2A	-2.40	108.56	112.60
3	A	603	HEC	CMB-C2B-C1B	-2.39	124.80	128.46
3	A	606	HEC	CMB-C2B-C1B	-2.31	124.91	128.46
3	C	603	HEC	CMB-C2B-C1B	-2.31	124.92	128.46
3	A	603	HEC	C1D-C2D-C3D	-2.31	105.39	107.00
4	A	611	ISW	C1B-C2B-C3B	-2.30	104.05	106.80
3	C	604	HEC	C1D-C2D-C3D	-2.30	105.40	107.00
4	C	611	ISW	CAA-C2A-C3A	2.25	133.70	127.25
4	A	611	ISW	CAA-C2A-C3A	2.24	133.69	127.25
3	E	601	HEC	CMB-C2B-C1B	-2.24	125.02	128.46
3	A	605	HEC	C1D-C2D-C3D	-2.22	105.45	107.00
3	E	605	HEC	CMB-C2B-C1B	-2.22	125.05	128.46
3	E	604	HEC	CBD-CAD-C3D	-2.21	108.84	112.62
3	A	604	HEC	CBD-CAD-C3D	-2.21	108.85	112.62
3	A	604	HEC	C1D-C2D-C3D	-2.21	105.46	107.00
3	A	601	HEC	CMB-C2B-C1B	-2.18	125.12	128.46
3	C	601	HEC	C1D-C2D-C3D	-2.17	105.49	107.00
4	A	608	ISW	CAA-C2A-C3A	2.15	133.42	127.25
3	C	601	HEC	CMB-C2B-C1B	-2.14	125.17	128.46
3	E	601	HEC	CBD-CAD-C3D	-2.13	108.98	112.62
3	C	607	HEC	C1D-C2D-C3D	-2.13	105.52	107.00
3	E	603	HEC	C1D-C2D-C3D	-2.12	105.52	107.00
3	E	607	HEC	C1D-C2D-C3D	-2.12	105.52	107.00
3	E	603	HEC	CMB-C2B-C1B	-2.09	125.26	128.46
3	C	605	HEC	C1D-C2D-C3D	-2.08	105.55	107.00
3	E	601	HEC	C1D-C2D-C3D	-2.04	105.57	107.00
3	E	603	HEC	CBA-CAA-C2A	-2.03	109.18	112.60
3	A	602	HEC	CMB-C2B-C1B	-2.03	125.35	128.46
3	C	603	HEC	C1D-C2D-C3D	-2.02	105.59	107.00
3	E	604	HEC	C1D-C2D-C3D	-2.02	105.59	107.00
3	A	607	HEC	CMC-C2C-C3C	2.02	128.19	125.82
4	A	608	ISW	O2A-CGA-CBA	2.01	120.49	114.03

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	602	HEC	CMB-C2B-C1B	-2.00	125.38	128.46
3	A	604	HEC	CMA-C3A-C2A	2.00	128.72	124.94
6	C	608	JUG	CAL-CAJ-CAF	2.00	120.04	116.99

There are no chirality outliers.

All (91) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	602	HEC	C2D-C3D-CAD-CBD
3	A	602	HEC	C4D-C3D-CAD-CBD
3	A	607	HEC	C1A-C2A-CAA-CBA
3	C	604	HEC	C2A-CAA-CBA-CGA
3	E	603	HEC	C2D-C3D-CAD-CBD
3	E	603	HEC	C4D-C3D-CAD-CBD
7	C	609	1PE	OH5-C14-C24-OH4
7	C	609	1PE	OH6-C15-C25-OH5
3	A	605	HEC	C2A-CAA-CBA-CGA
3	C	605	HEC	C2A-CAA-CBA-CGA
3	E	605	HEC	C2A-CAA-CBA-CGA
7	C	610	1PE	OH5-C14-C24-OH4
4	A	608	ISW	C4B-C3B-CAB-CBB
4	A	611	ISW	C4B-C3B-CAB-CBB
4	C	611	ISW	C4B-C3B-CAB-CBB
7	C	609	1PE	C24-C14-OH5-C25
4	A	611	ISW	C4D-C3D-CAD-CBD
7	C	610	1PE	OH6-C15-C25-OH5
4	A	611	ISW	C2B-C3B-CAB-CBB
4	A	611	ISW	C2D-C3D-CAD-CBD
3	A	604	HEC	C2A-CAA-CBA-CGA
3	A	607	HEC	C3D-CAD-CBD-CGD
3	C	603	HEC	C3D-CAD-CBD-CGD
3	C	605	HEC	C3D-CAD-CBD-CGD
3	A	604	HEC	C1A-C2A-CAA-CBA
3	A	604	HEC	C3A-C2A-CAA-CBA
3	A	605	HEC	C2D-C3D-CAD-CBD
3	A	605	HEC	C4D-C3D-CAD-CBD
3	A	607	HEC	C3A-C2A-CAA-CBA
3	C	604	HEC	C2D-C3D-CAD-CBD
3	C	604	HEC	C4D-C3D-CAD-CBD
3	C	605	HEC	C2D-C3D-CAD-CBD
3	C	605	HEC	C4D-C3D-CAD-CBD
3	E	604	HEC	C1A-C2A-CAA-CBA

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Mol	Chain	Res	Type	Atoms
3	E	604	HEC	C3A-C2A-CAA-CBA
3	E	605	HEC	C2D-C3D-CAD-CBD
3	E	605	HEC	C4D-C3D-CAD-CBD
5	E	609	PEG	C1-C2-O2-C3
3	A	601	HEC	C2A-CAA-CBA-CGA
7	C	610	1PE	C25-C15-OH6-C26
3	C	605	HEC	CAA-CBA-CGA-O1A
3	A	607	HEC	CAA-CBA-CGA-O1A
3	E	601	HEC	C2A-CAA-CBA-CGA
3	E	607	HEC	C3D-CAD-CBD-CGD
4	A	611	ISW	C2A-CAA-CBA-CGA
4	A	611	ISW	CAA-CBA-CGA-O1A
3	A	604	HEC	CAA-CBA-CGA-O1A
3	A	607	HEC	CAA-CBA-CGA-O2A
3	A	605	HEC	CAD-CBD-CGD-O1D
3	C	602	HEC	CAD-CBD-CGD-O1D
7	C	609	1PE	C15-C25-OH5-C14
3	C	602	HEC	CAD-CBD-CGD-O2D
4	A	611	ISW	CAA-CBA-CGA-O2A
4	C	611	ISW	C3D-CAD-CBD-CGD
3	A	604	HEC	CAA-CBA-CGA-O2A
4	C	611	ISW	C2B-C3B-CAB-CBB
5	A	610	PEG	O2-C3-C4-O4
3	E	602	HEC	CAD-CBD-CGD-O1D
3	A	605	HEC	CAD-CBD-CGD-O2D
5	E	609	PEG	C4-C3-O2-C2
4	A	611	ISW	C3D-CAD-CBD-CGD
3	E	602	HEC	CAD-CBD-CGD-O2D
3	C	605	HEC	CAA-CBA-CGA-O2A
3	E	601	HEC	CAD-CBD-CGD-O2D
3	C	604	HEC	CAA-CBA-CGA-O2A
3	C	604	HEC	CAA-CBA-CGA-O1A
4	A	608	ISW	C3D-CAD-CBD-CGD
4	A	608	ISW	CAA-CBA-CGA-O2A
3	C	605	HEC	CAD-CBD-CGD-O2D
3	C	606	HEC	CAD-CBD-CGD-O2D
3	A	605	HEC	CAA-CBA-CGA-O1A
3	C	606	HEC	CAD-CBD-CGD-O1D
3	E	606	HEC	CAD-CBD-CGD-O1D
5	A	610	PEG	C1-C2-O2-C3
3	A	605	HEC	CAA-CBA-CGA-O2A
3	C	605	HEC	CAD-CBD-CGD-O1D

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Mol	Chain	Res	Type	Atoms
3	E	601	HEC	CAD-CBD-CGD-O1D
3	E	605	HEC	CAD-CBD-CGD-O2D
4	A	608	ISW	CAA-CBA-CGA-O1A
4	A	608	ISW	C2B-C3B-CAB-CBB
3	C	607	HEC	CAA-CBA-CGA-O2A
3	A	607	HEC	CAD-CBD-CGD-O2D
3	E	601	HEC	CAA-CBA-CGA-O2A
3	E	606	HEC	CAD-CBD-CGD-O2D
3	C	607	HEC	CAD-CBD-CGD-O1D
3	C	607	HEC	CAD-CBD-CGD-O2D
3	E	605	HEC	CAD-CBD-CGD-O1D
3	A	607	HEC	CAD-CBD-CGD-O1D
7	C	610	1PE	OH4-C13-C23-OH3
4	C	611	ISW	CAA-CBA-CGA-O2A
3	C	602	HEC	CAA-CBA-CGA-O1A

There are no ring outliers.

27 monomers are involved in 67 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	605	HEC	2	0
3	C	601	HEC	2	0
5	A	610	PEG	1	0
3	C	605	HEC	2	0
4	A	608	ISW	4	0
3	C	607	HEC	2	0
3	E	601	HEC	2	0
3	C	604	HEC	4	0
7	C	609	1PE	1	0
4	A	611	ISW	4	0
3	E	607	HEC	1	0
3	E	606	HEC	5	0
3	A	601	HEC	1	0
3	E	602	HEC	2	0
6	C	608	JUG	1	0
3	E	604	HEC	2	0
3	C	602	HEC	2	0
3	C	606	HEC	4	0
3	E	603	HEC	1	0
3	A	606	HEC	7	0
6	E	608	JUG	2	0
3	A	602	HEC	3	0

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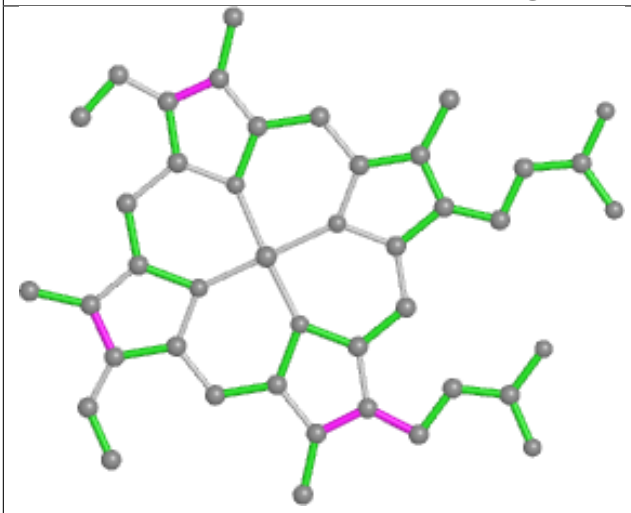
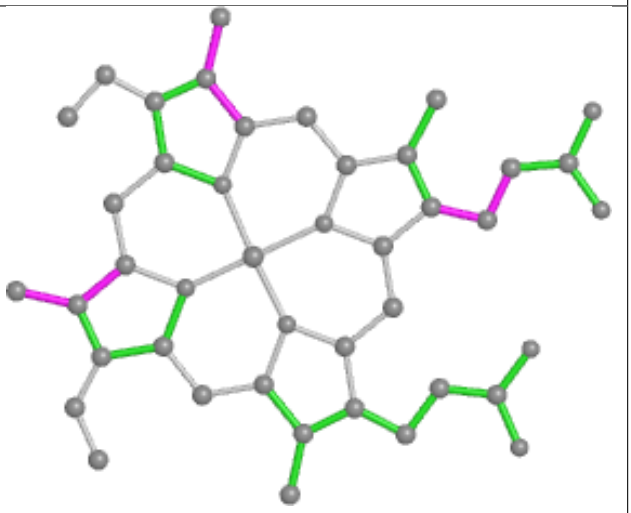
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	605	HEC	4	0
3	A	604	HEC	3	0
3	A	607	HEC	4	0
4	C	611	ISW	4	0
3	C	603	HEC	1	0

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

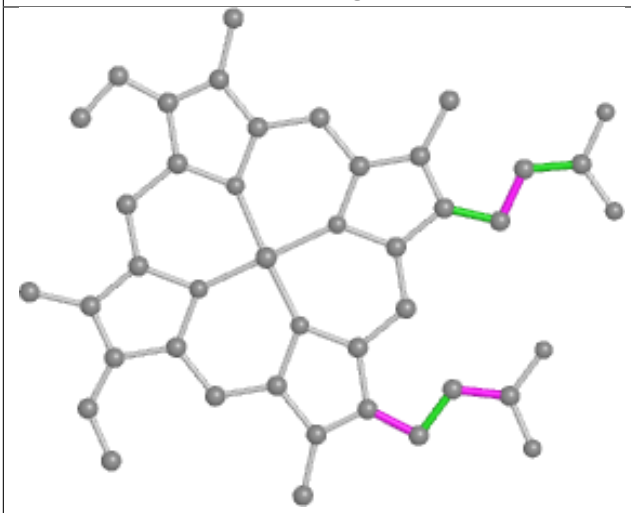
Ligand HEC E 605



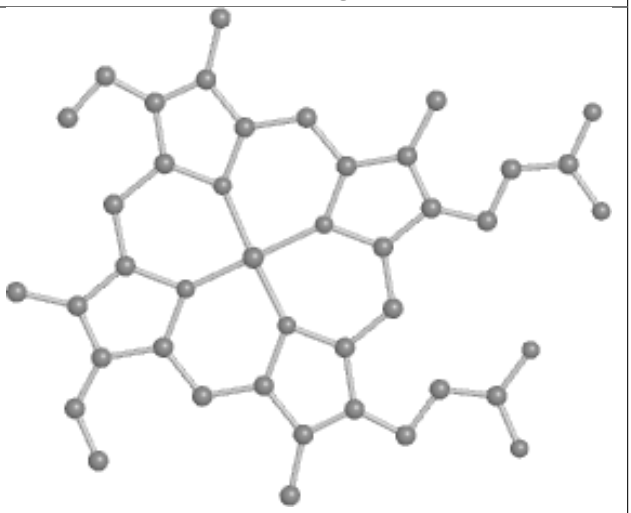
Bond lengths



Bond angles

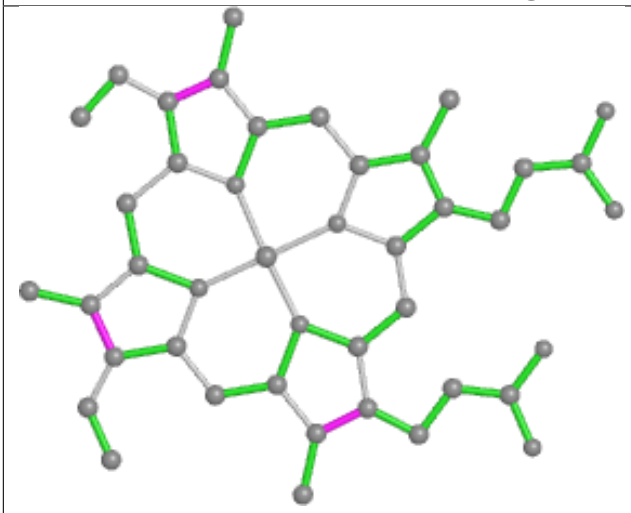


Torsions

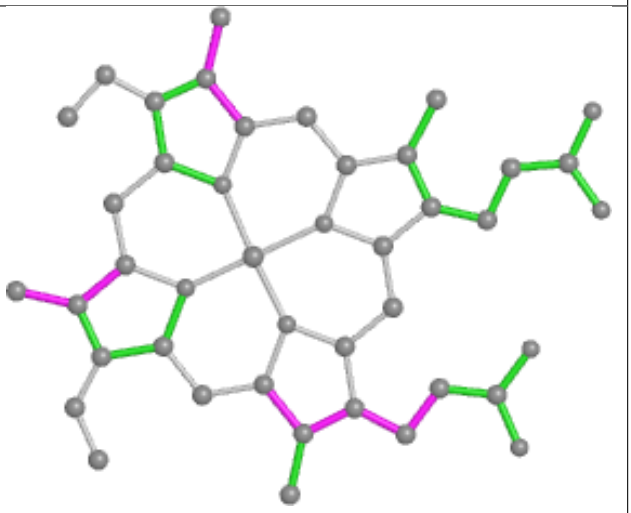


Rings

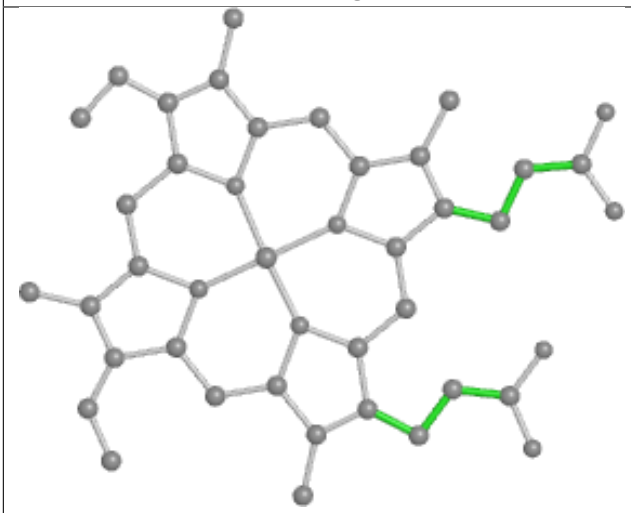
Ligand HEC C 601



Bond lengths



Bond angles



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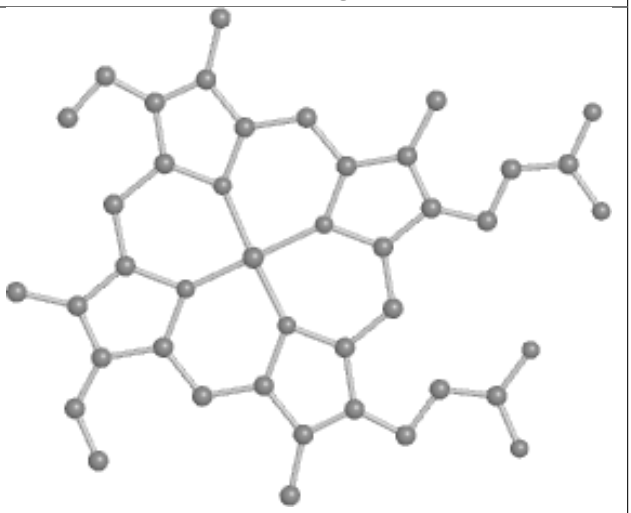
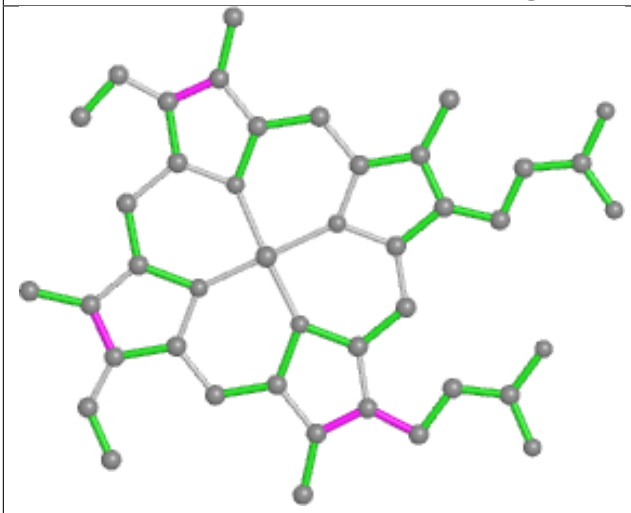
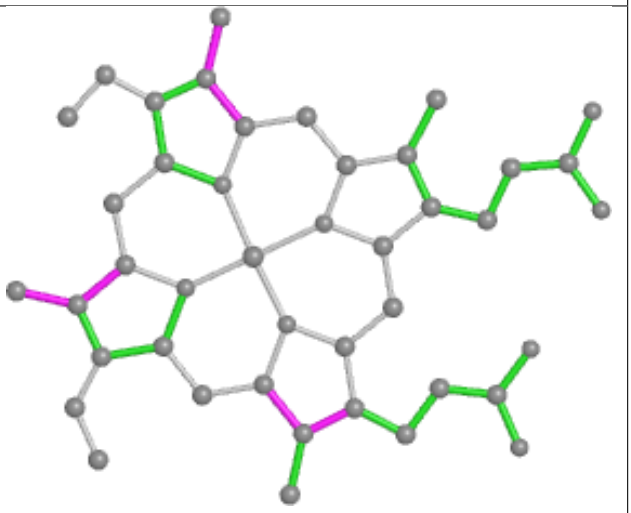


Rings

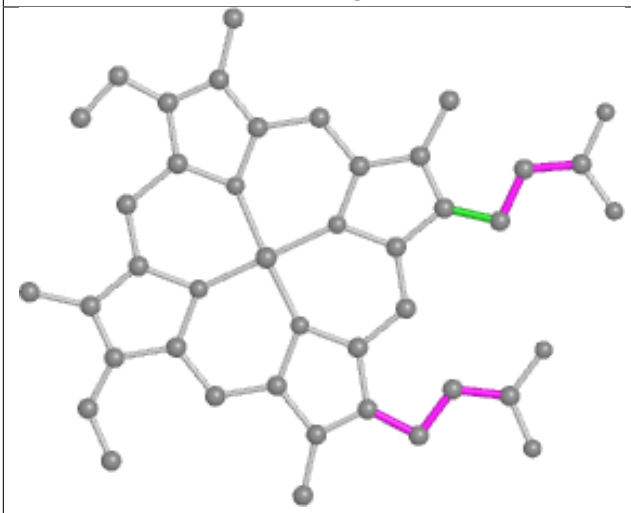
Ligand HEC C 605



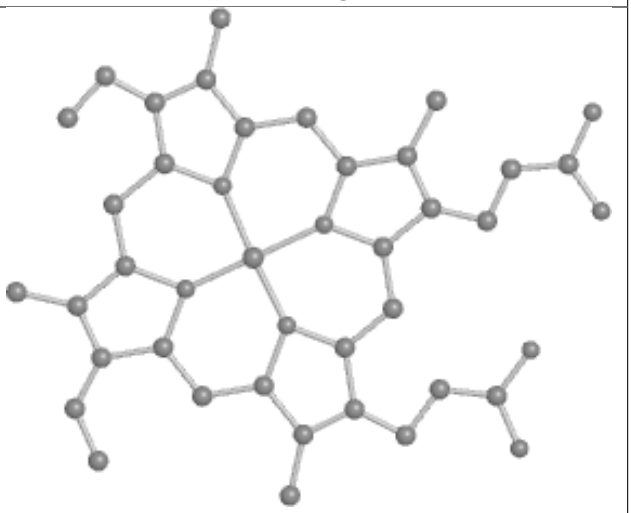
Bond lengths



Bond angles

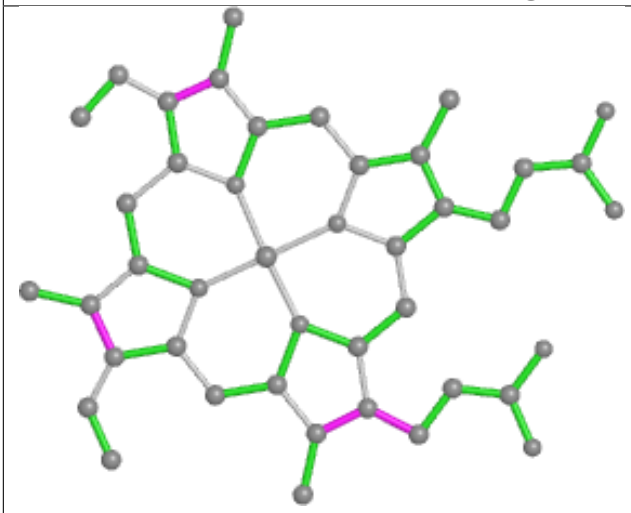


Torsions

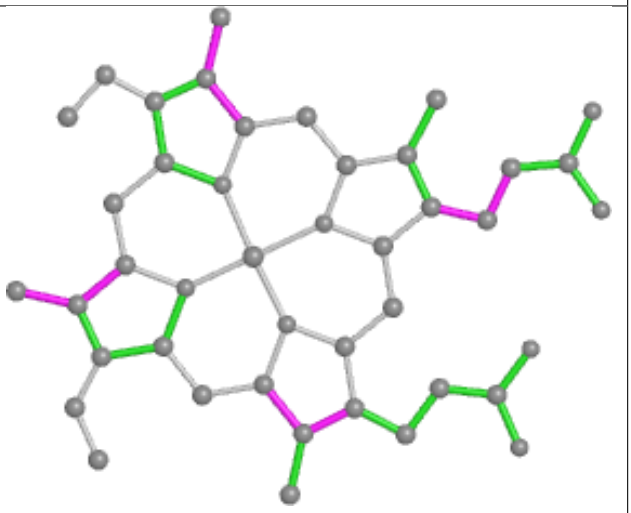


Rings

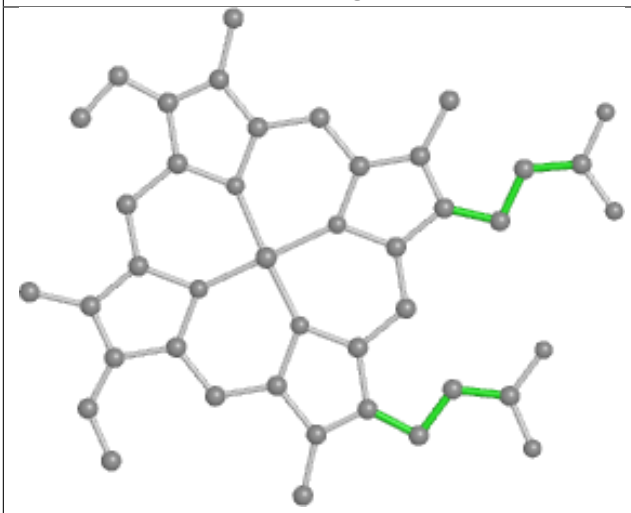
Ligand HEC A 603



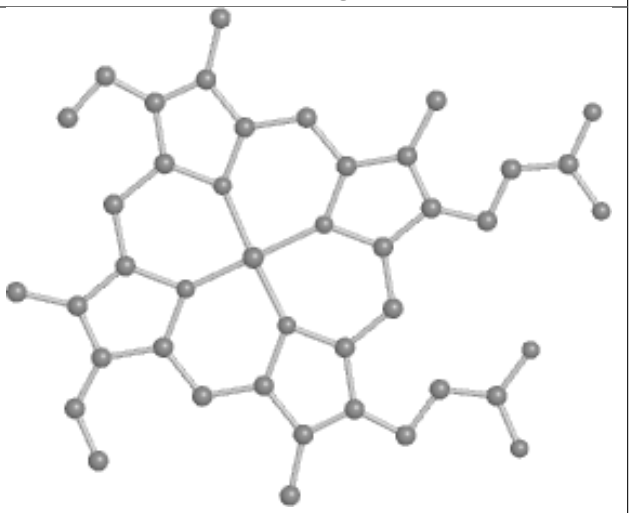
Bond lengths



Bond angles

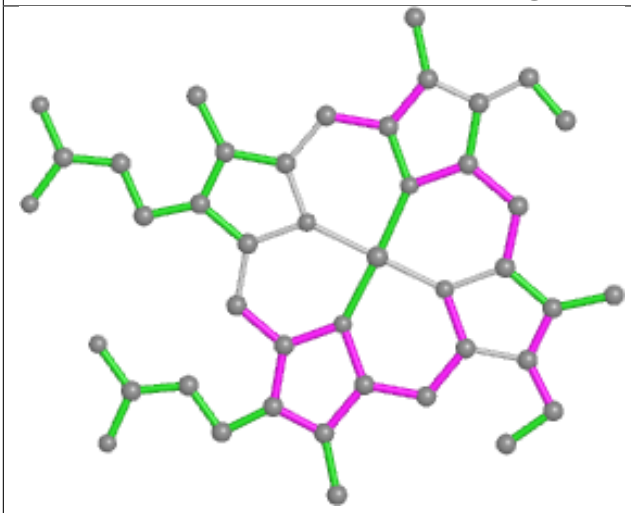


Torsions

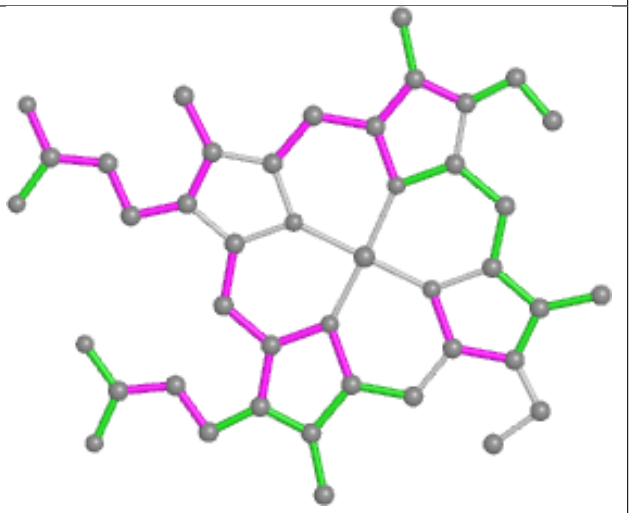


Rings

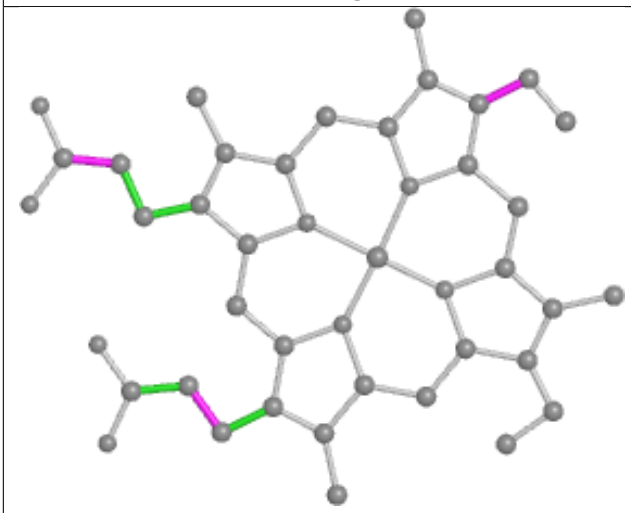
Ligand ISW A 608



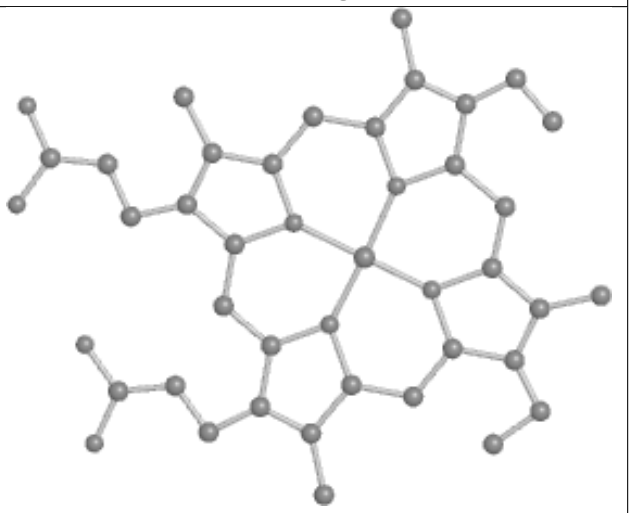
Bond lengths



Bond angles

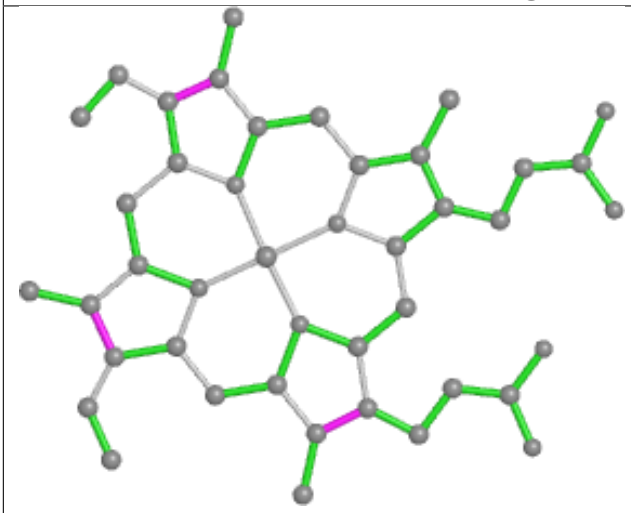


Torsions



Rings

Ligand HEC C 607



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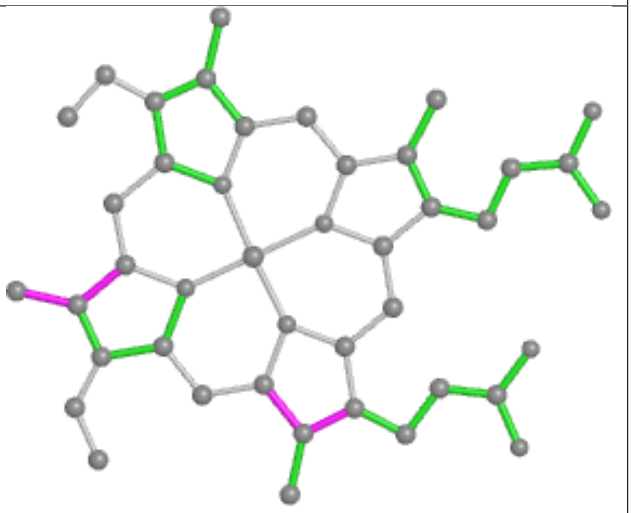

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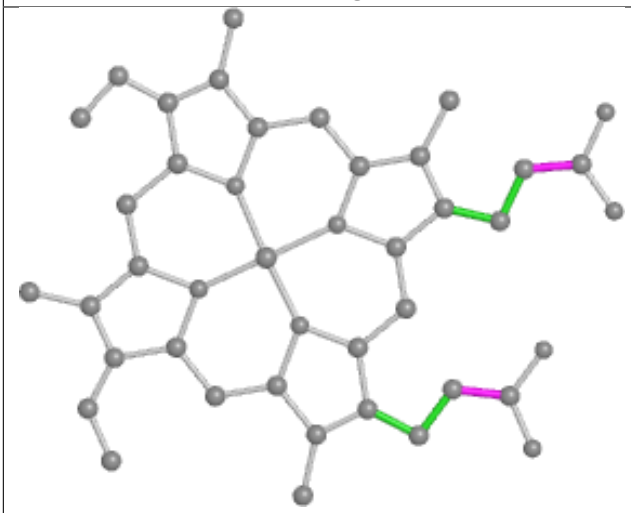

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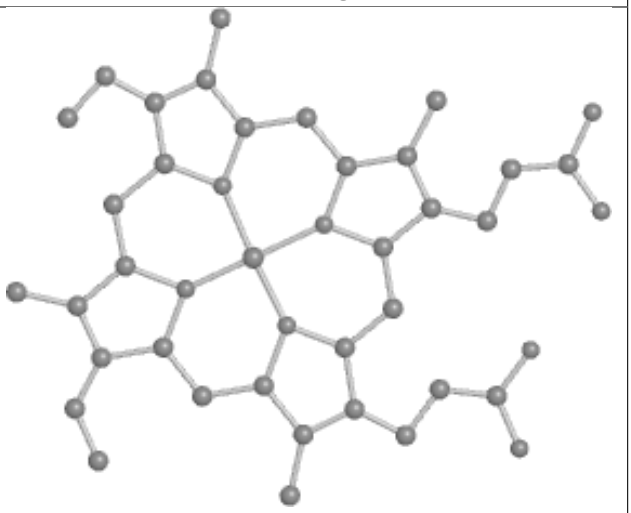
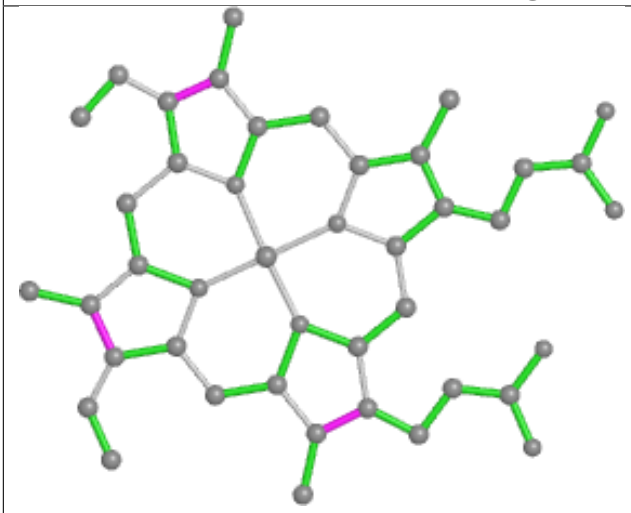
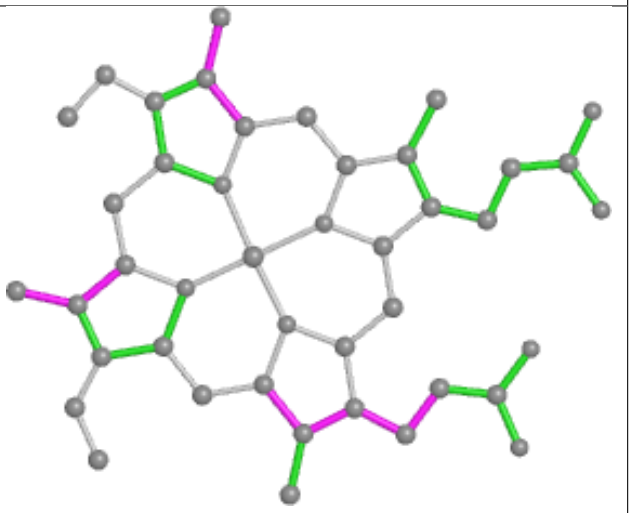


Rings

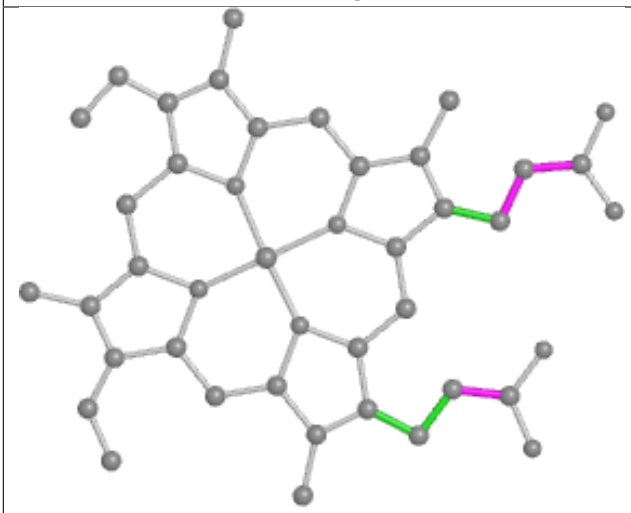
Ligand HEC E 601



Bond lengths



Bond angles



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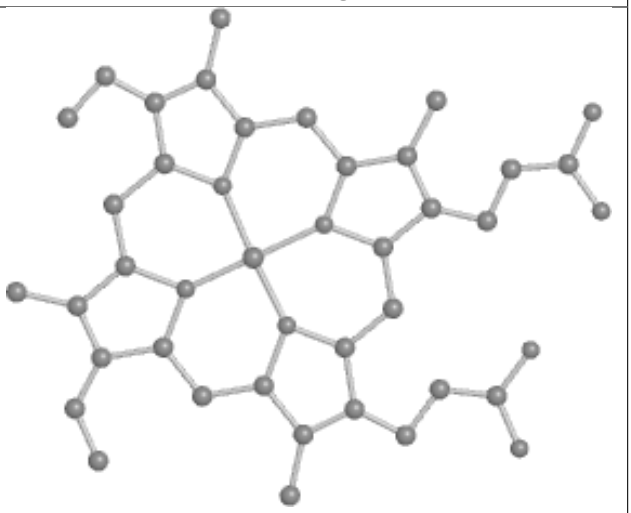
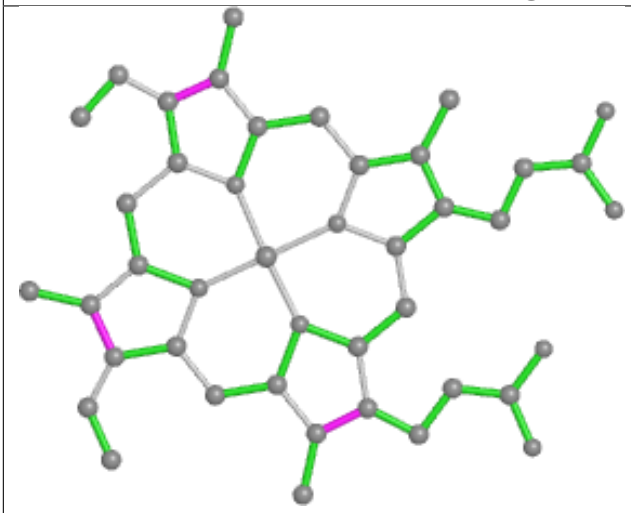
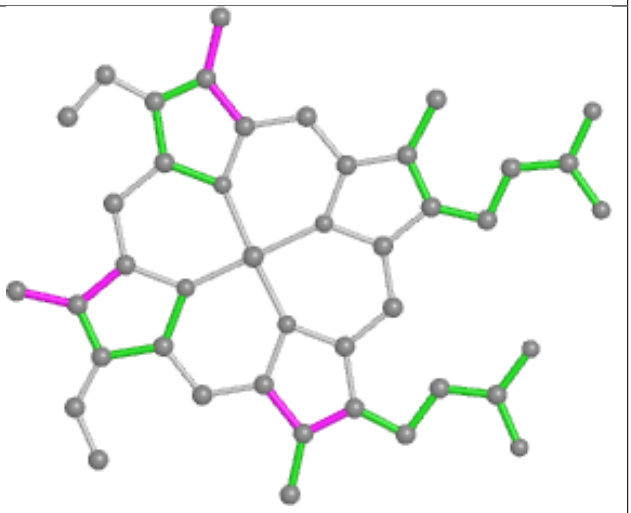


Rings

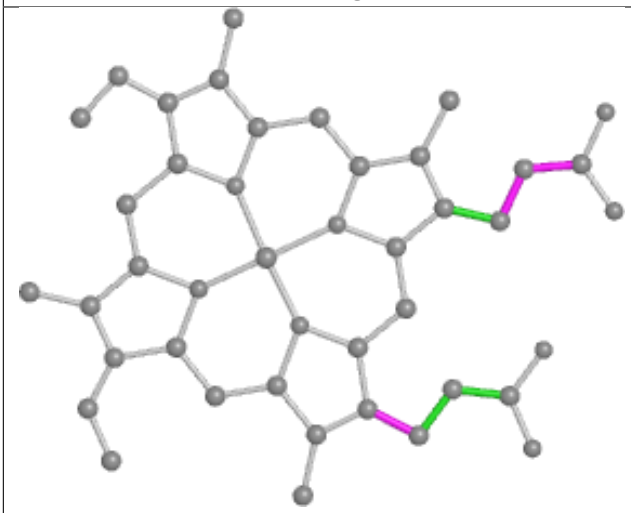
Ligand HEC C 604



Bond lengths



Bond angles



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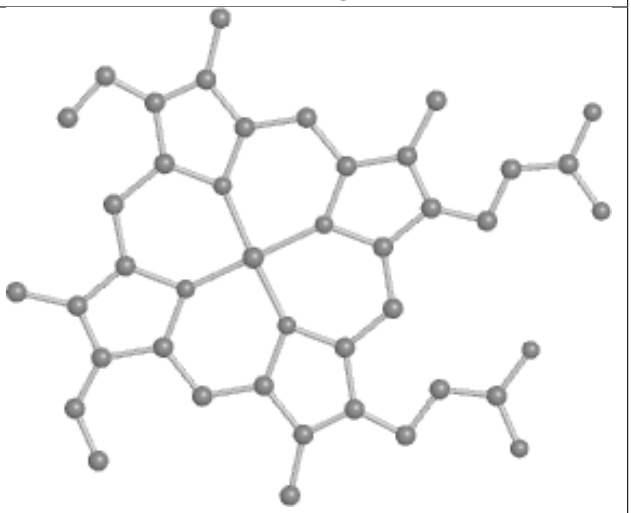
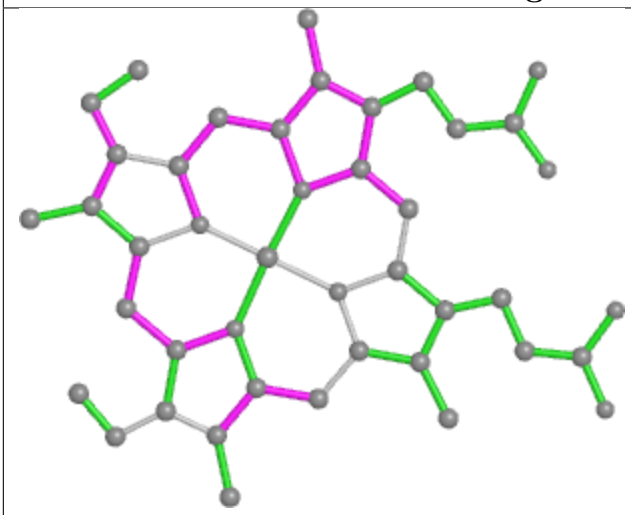
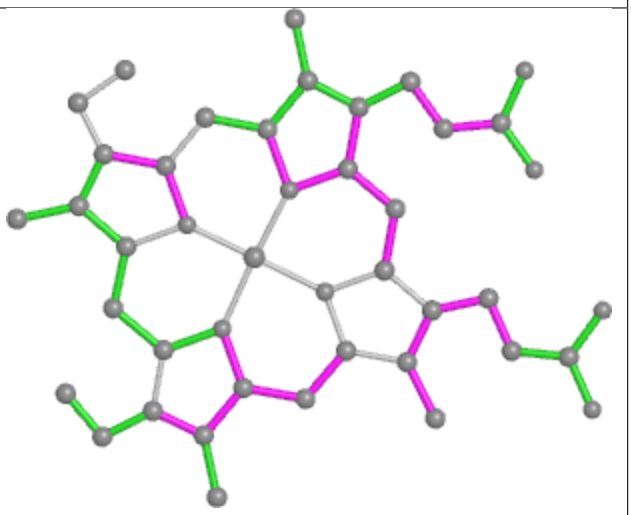


Rings

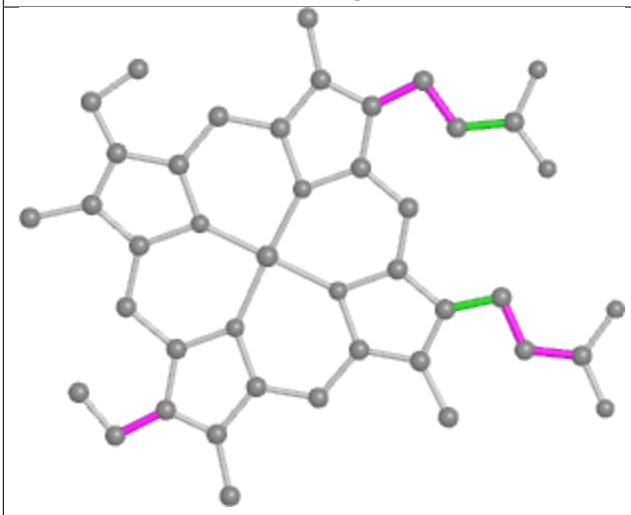
Ligand ISW A 611



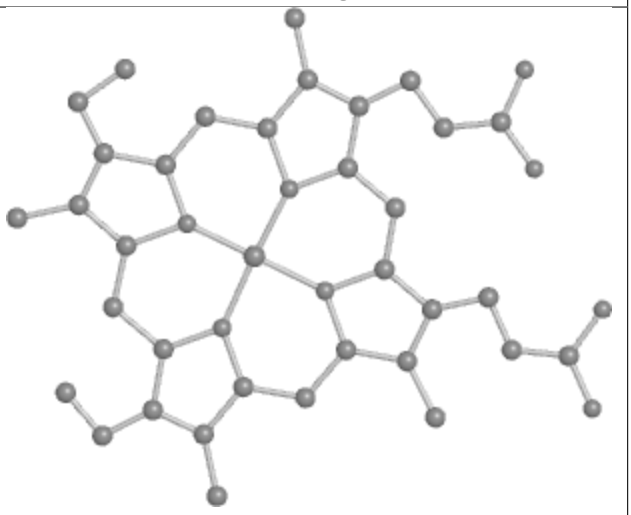
Bond lengths



Bond angles

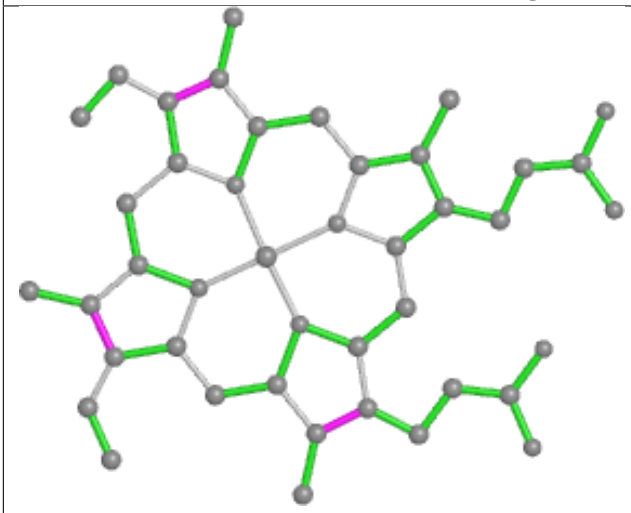


Torsions

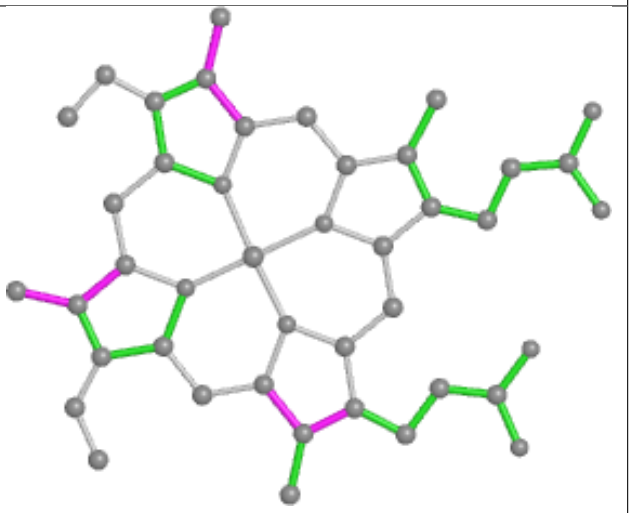


Rings

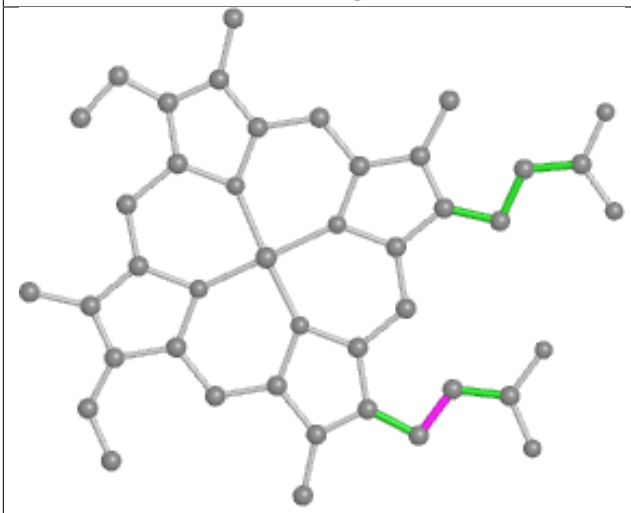
Ligand HEC E 607



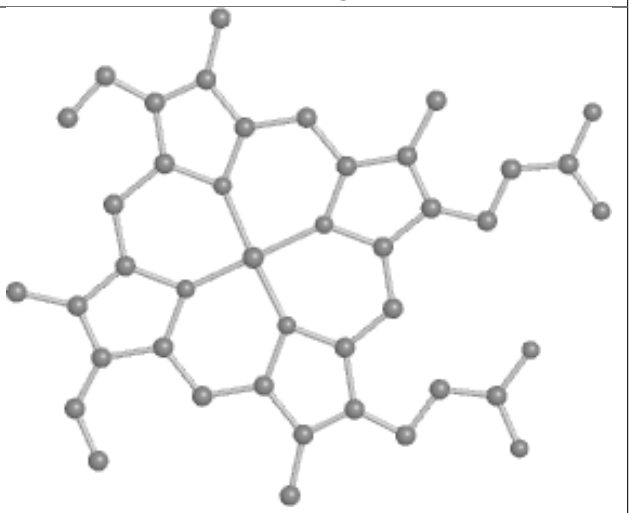
Bond lengths



Bond angles

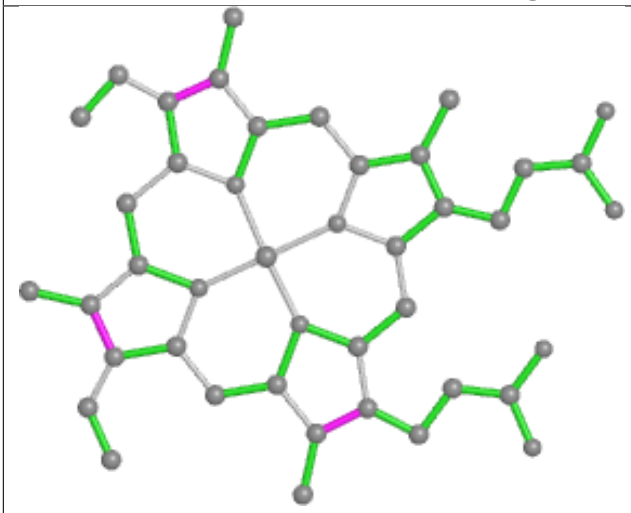


Torsions



Rings

Ligand HEC E 606



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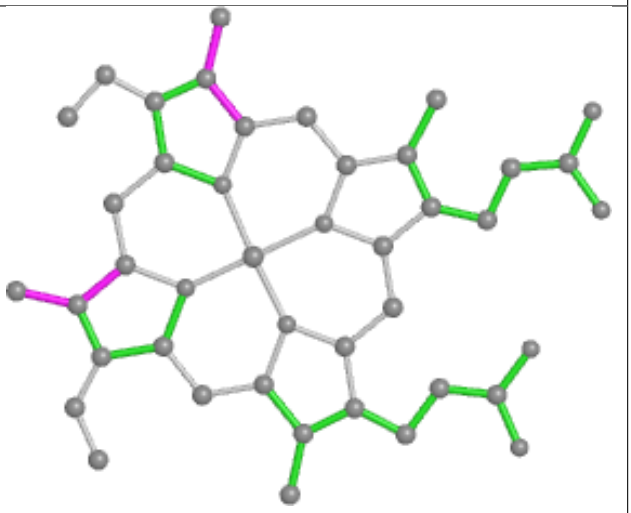

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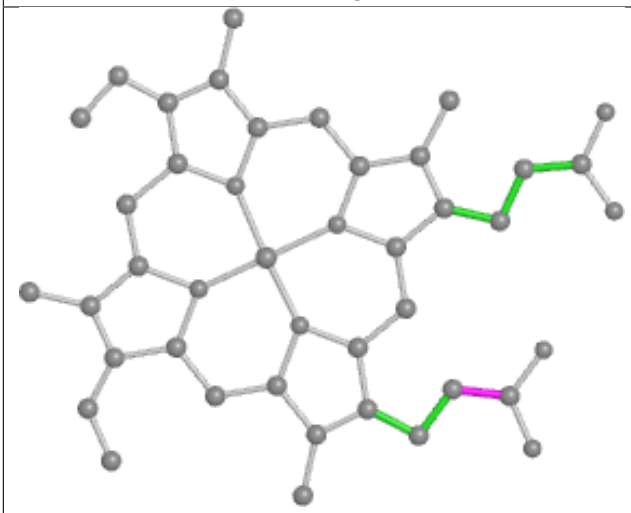

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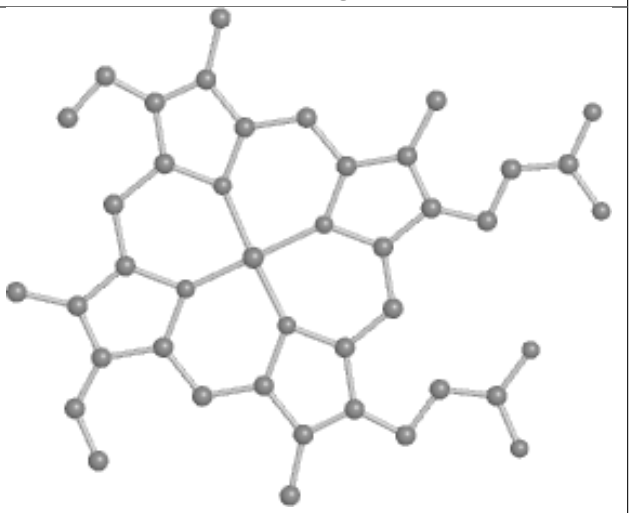
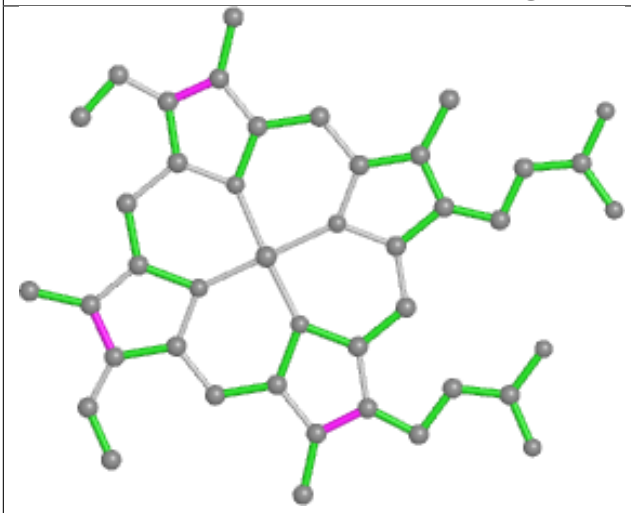


Rings

Ligand HEC A 601



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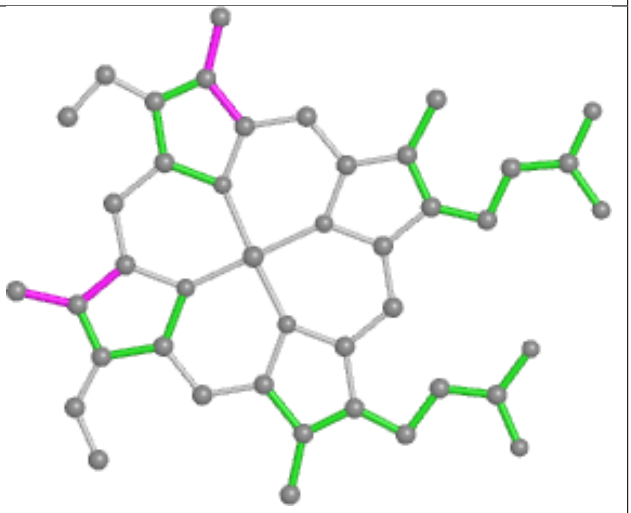
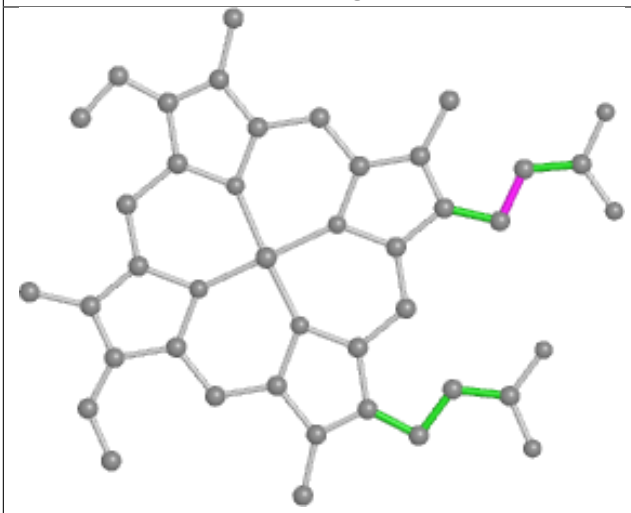


Bond angles



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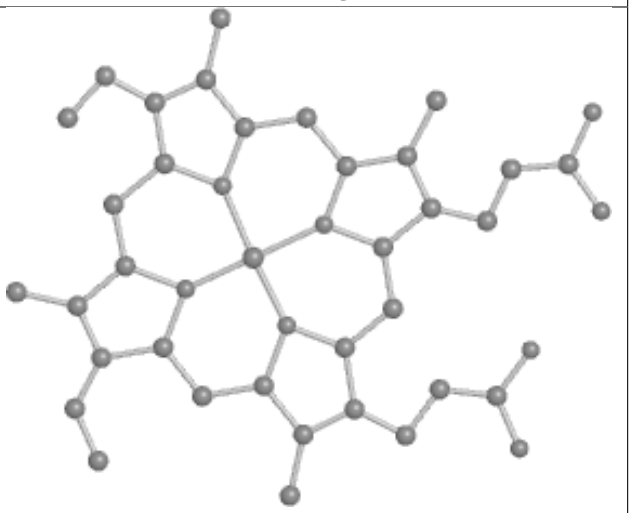
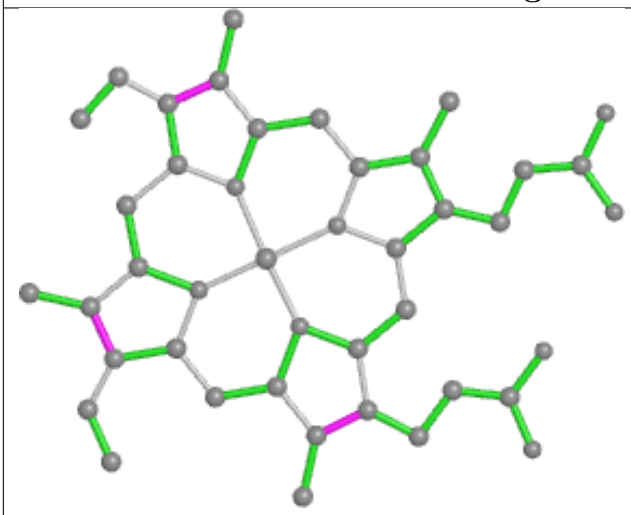


Rings

Ligand HEC E 602



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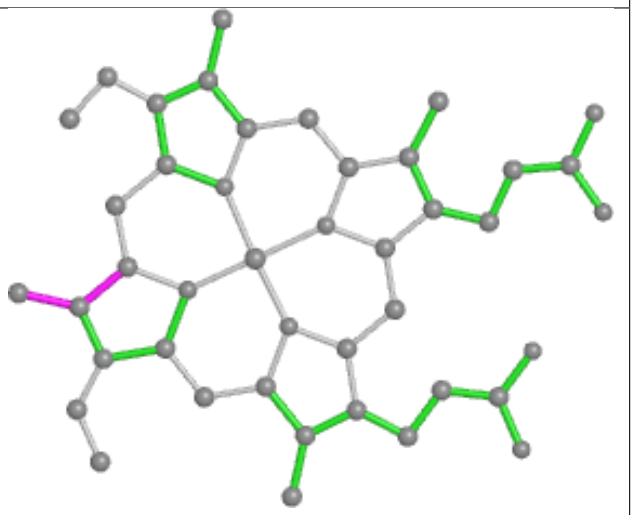
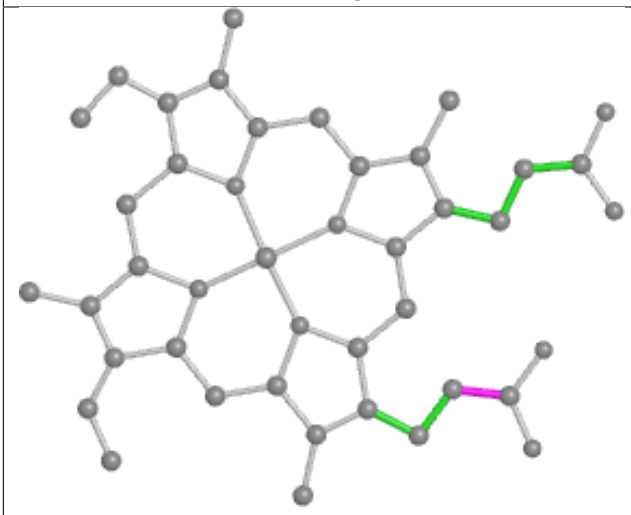


Bond angles



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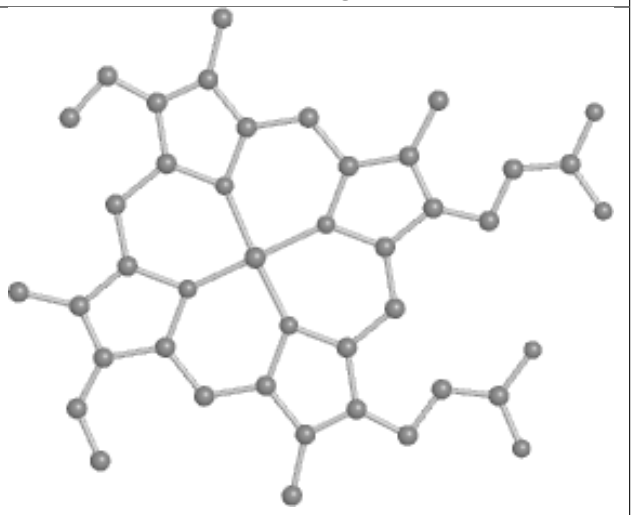
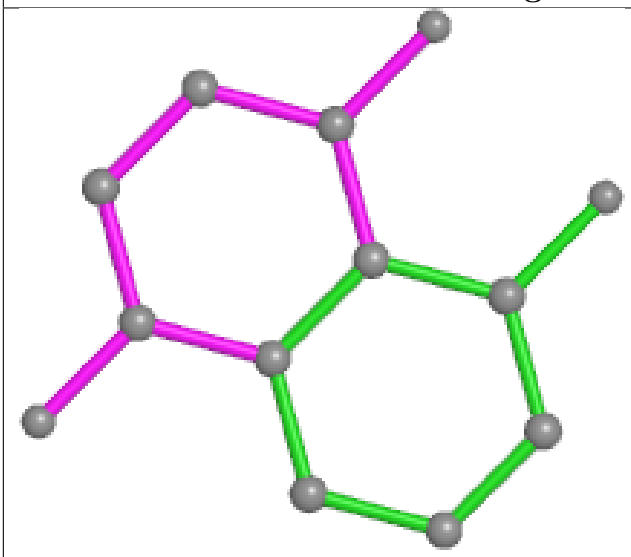


Rings

Ligand JUG C 608



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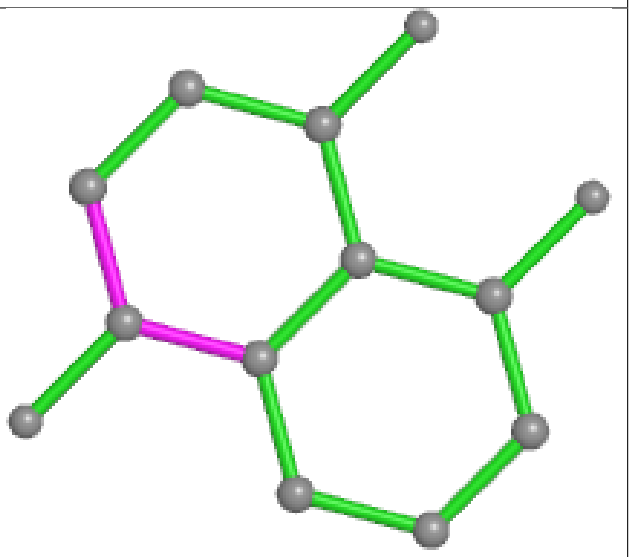
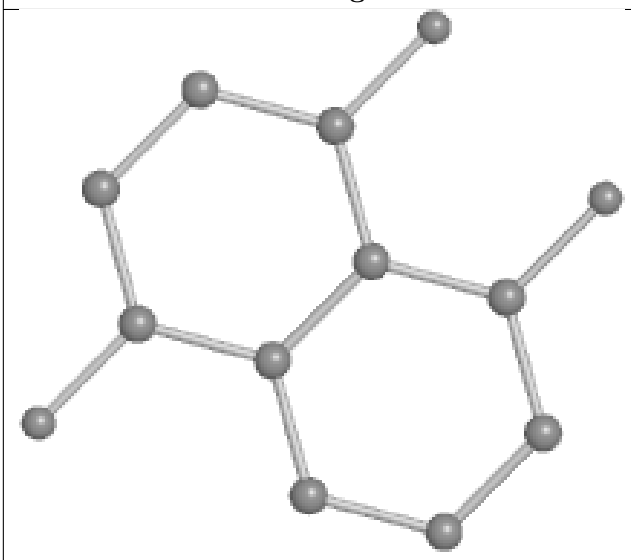


Bond angles



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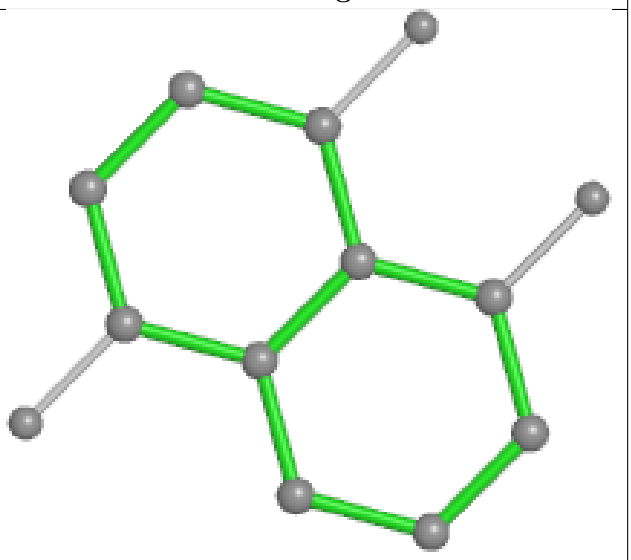
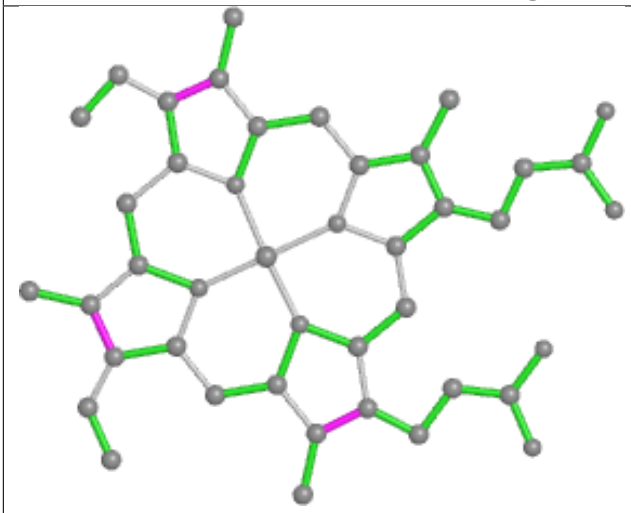


Rings

Ligand HEC E 604



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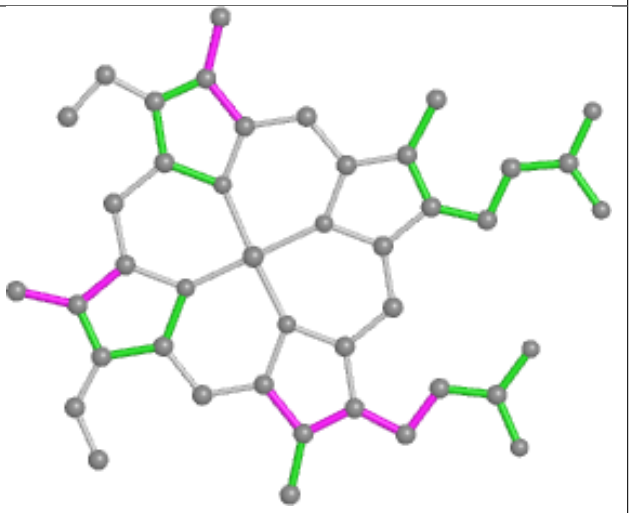
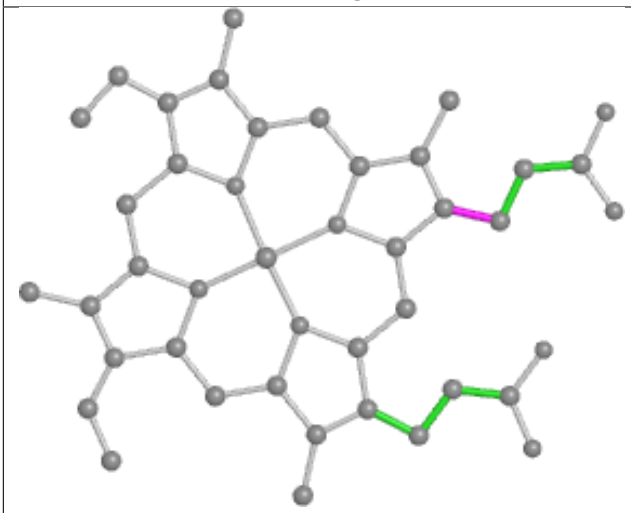


Bond angles



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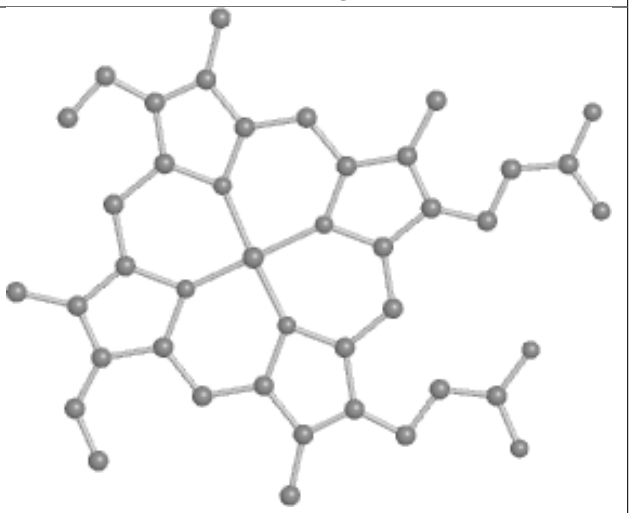
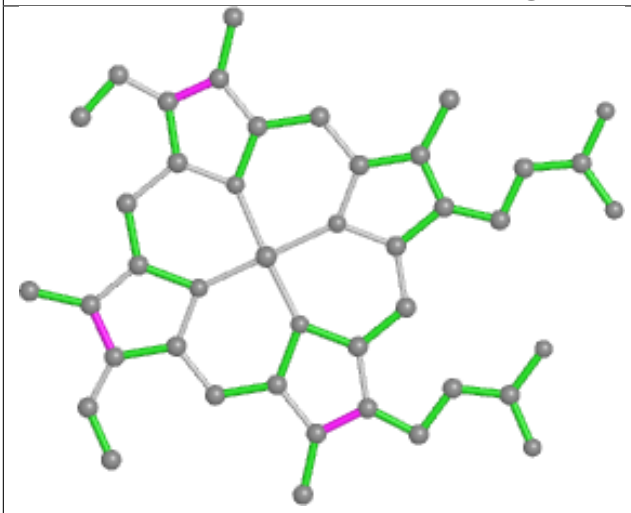


Rings

Ligand HEC C 602



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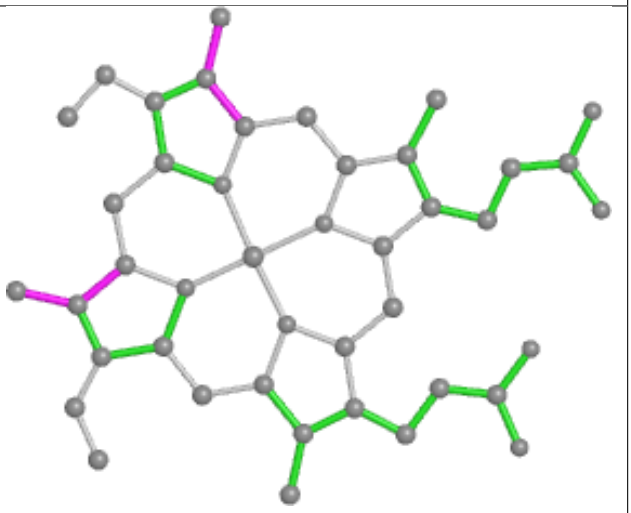
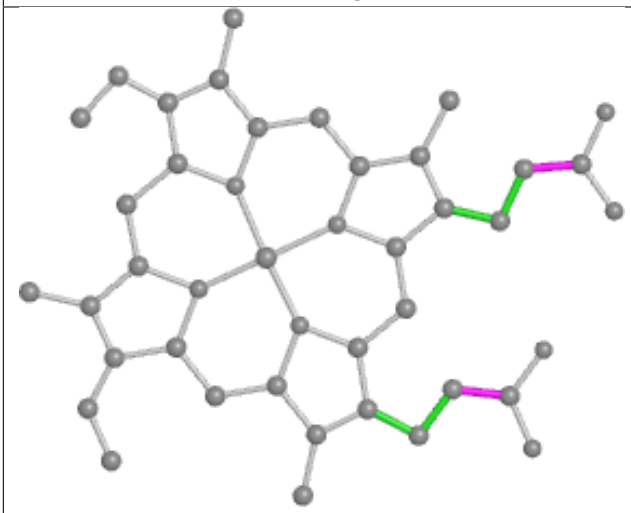


Bond angles



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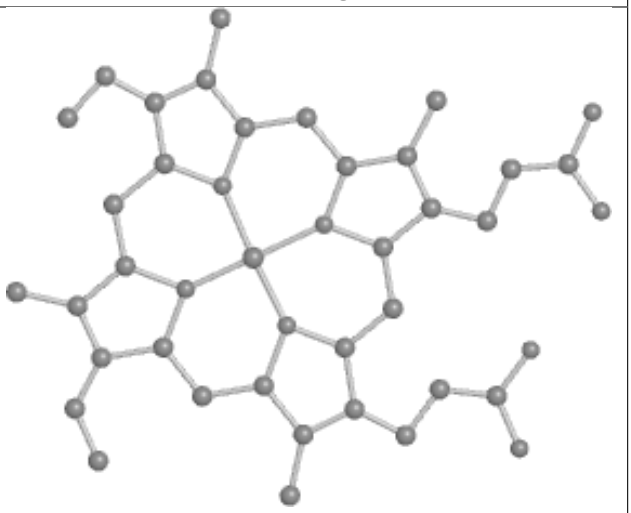
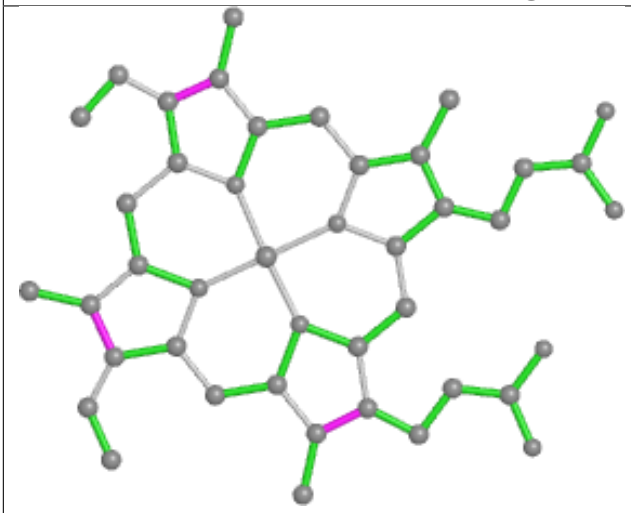


Rings

Ligand HEC C 606



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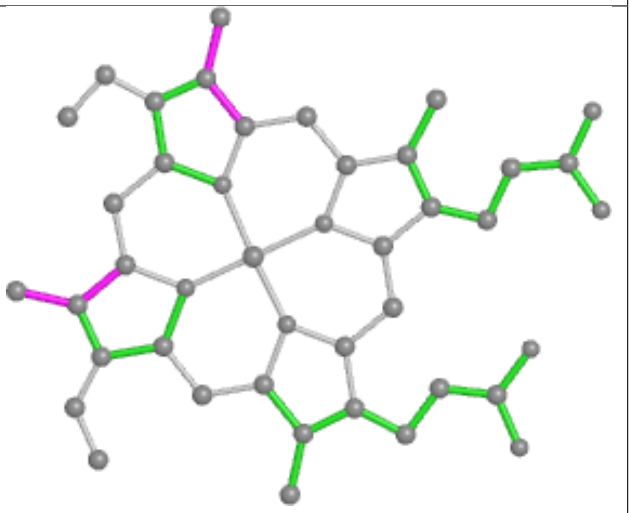
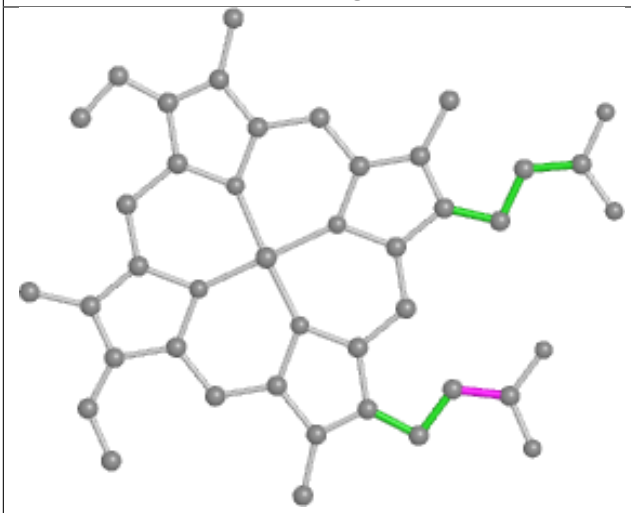


Bond angles



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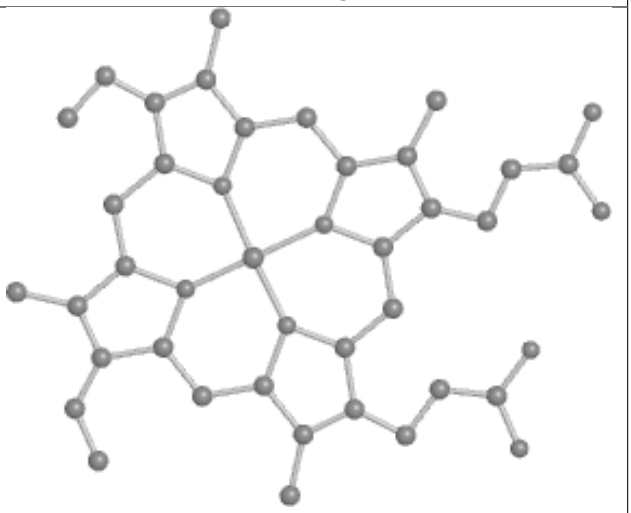
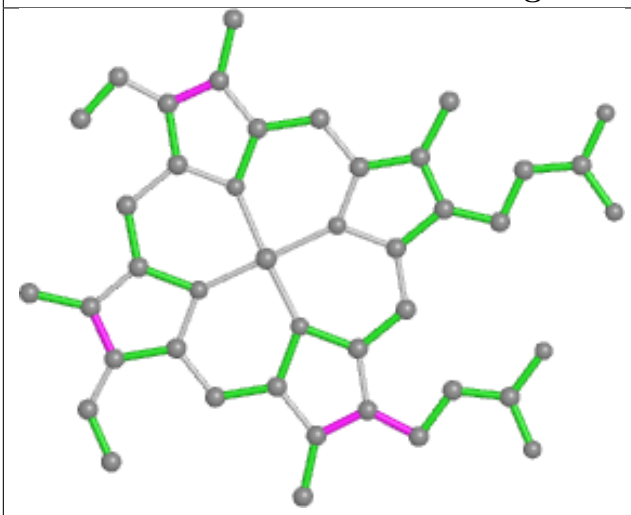


Rings

Ligand HEC E 603



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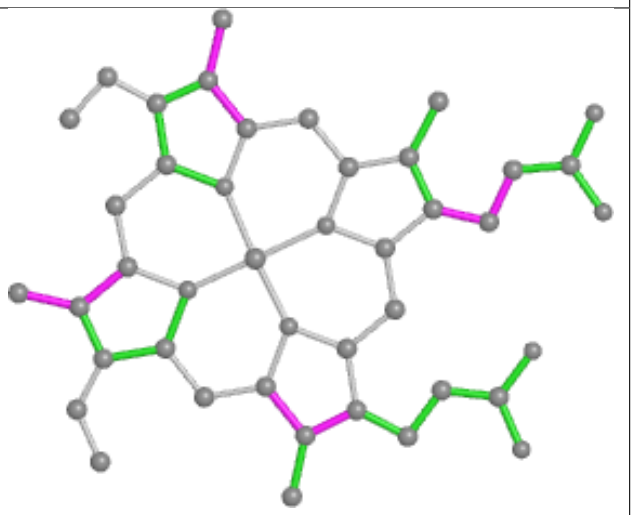
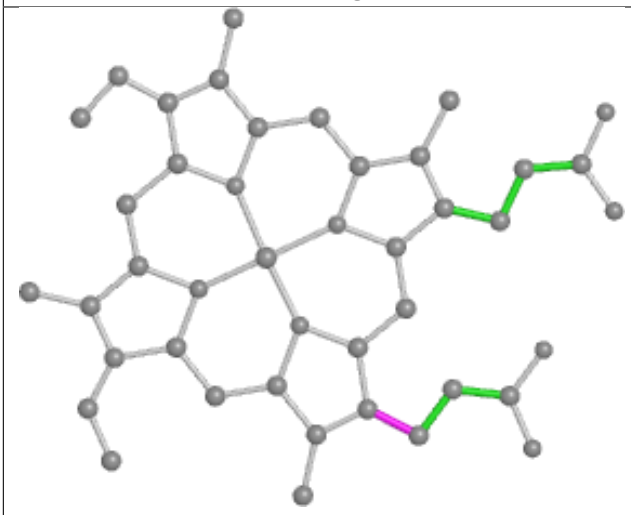
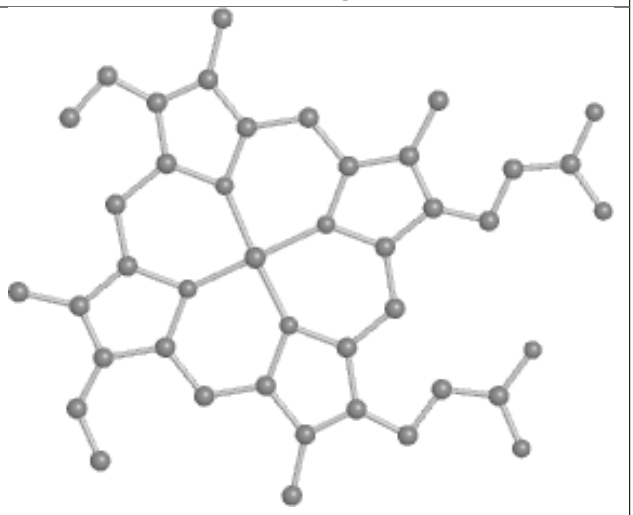


Bond angles

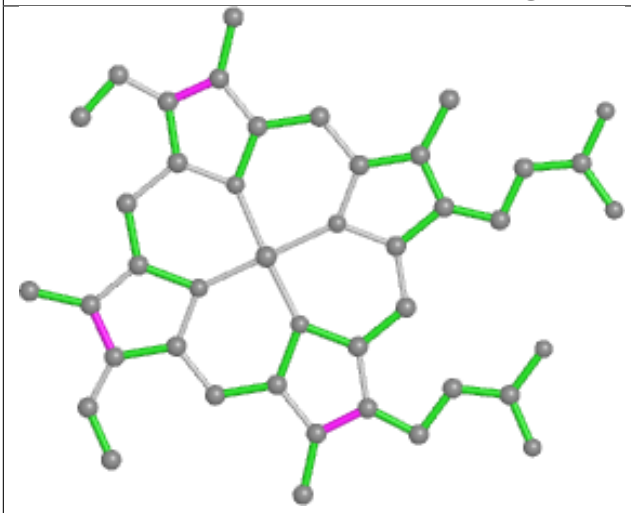


Torsions



Rings

Ligand HEC A 606



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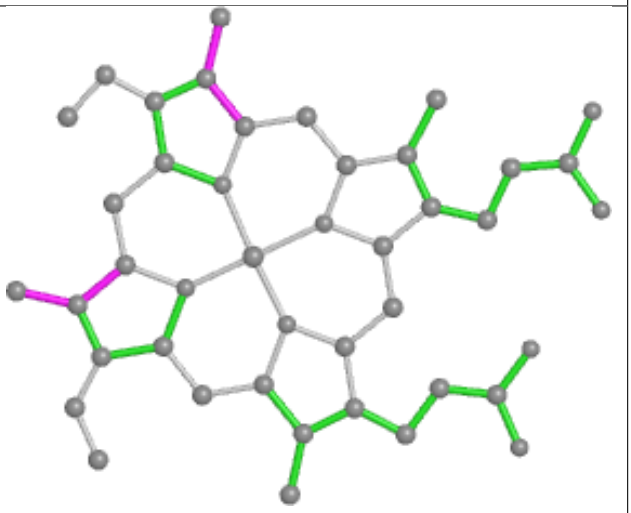
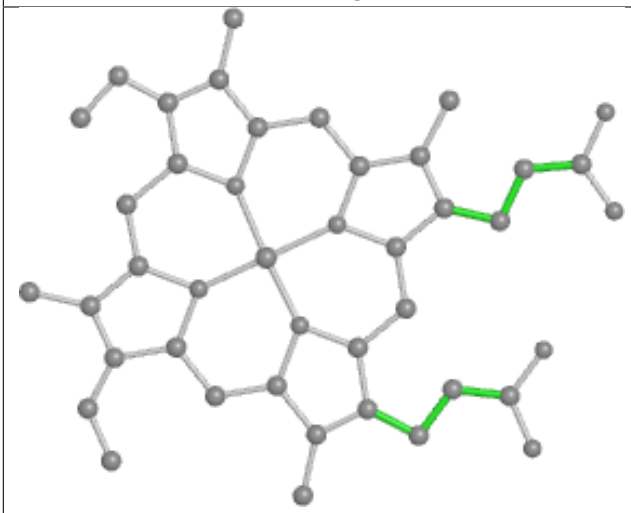
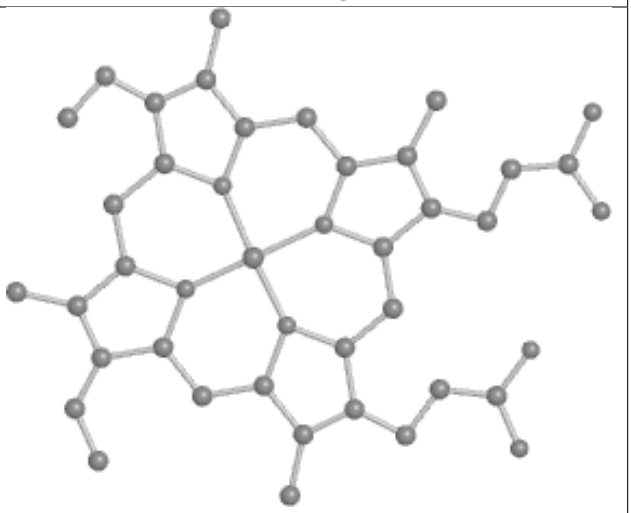


Bond angles

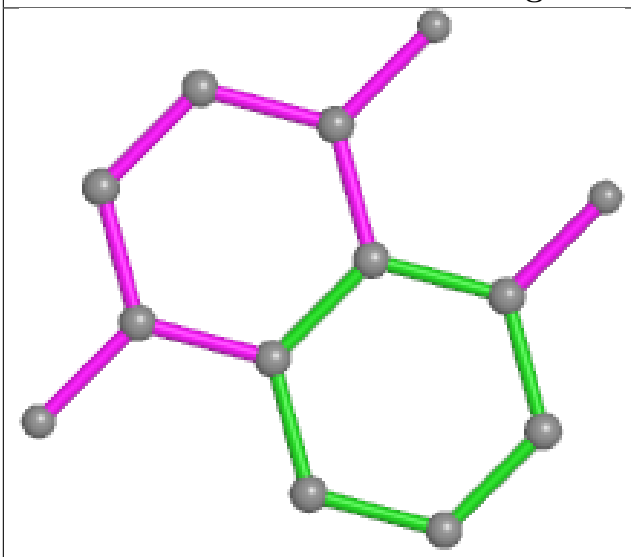


Torsions



Rings

Ligand JUG E 608



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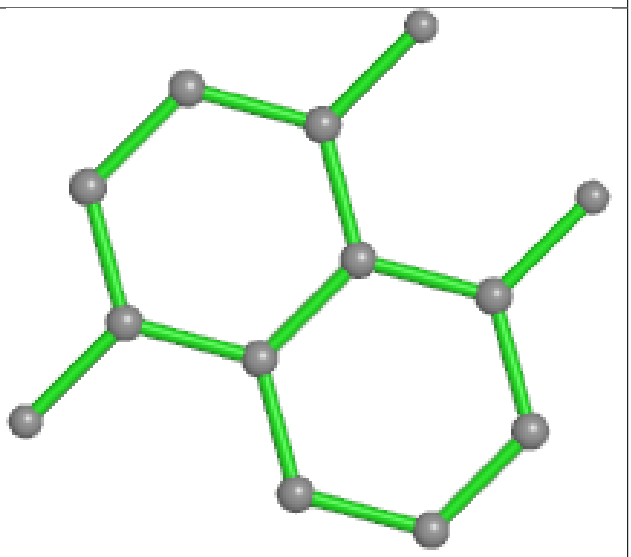

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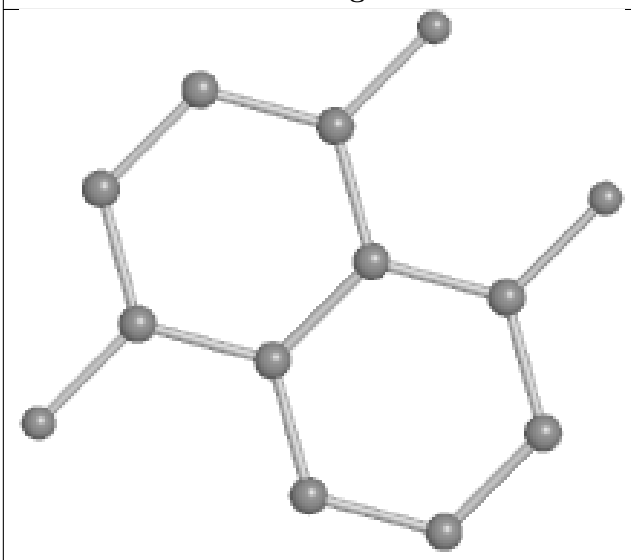

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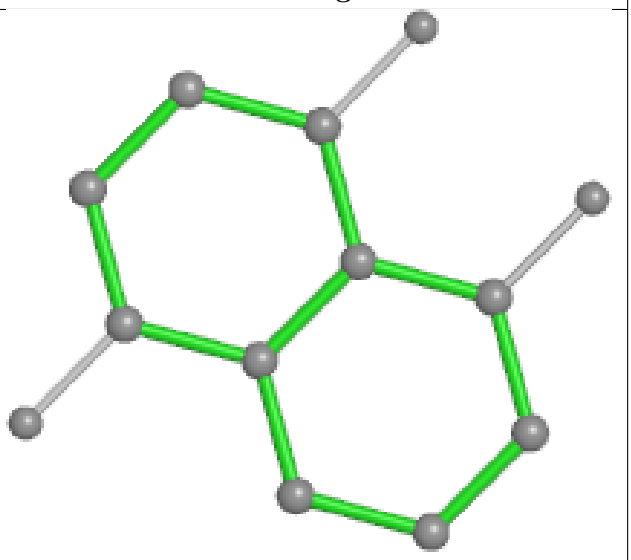
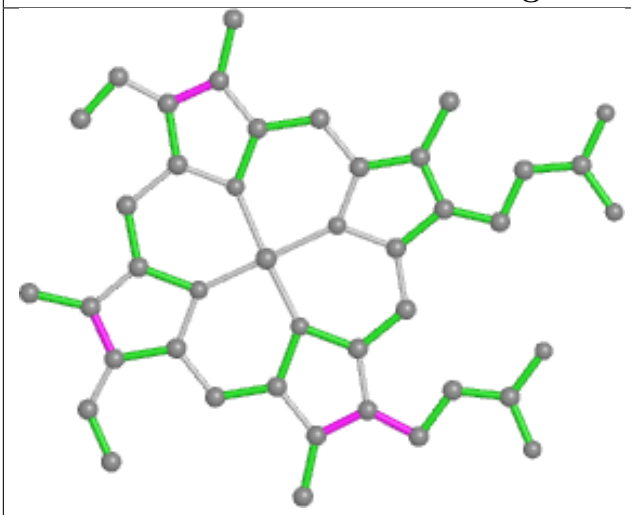


Rings

Ligand HEC A 602



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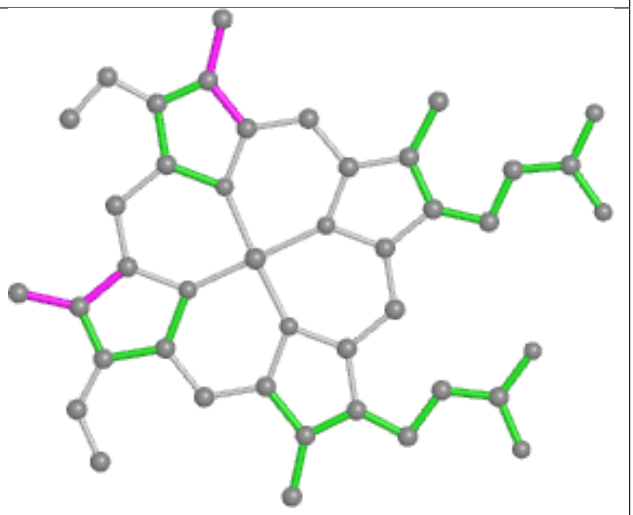

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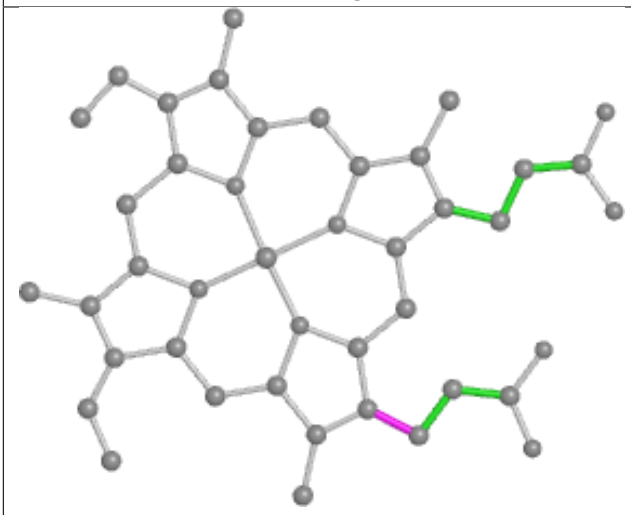

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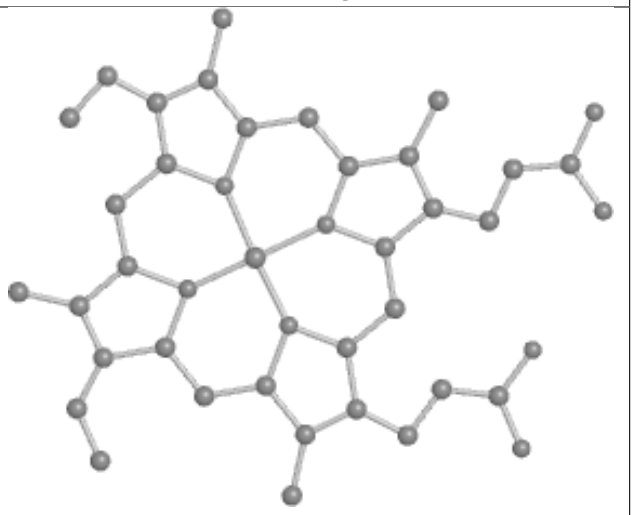
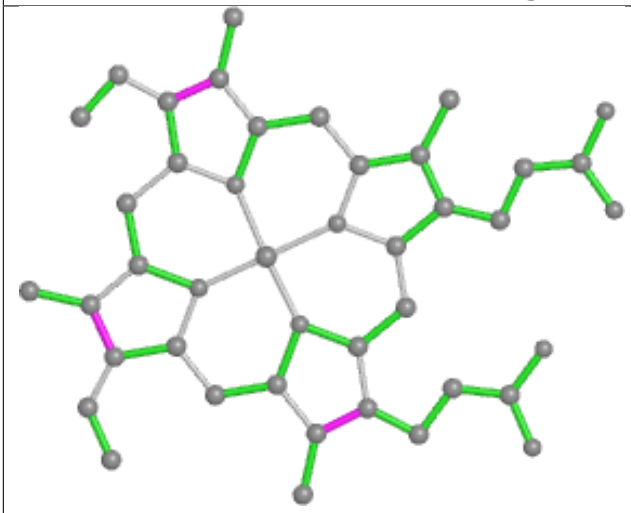
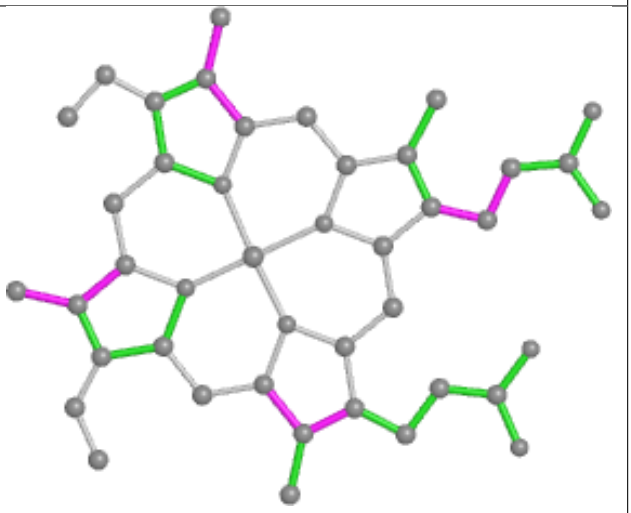


Rings

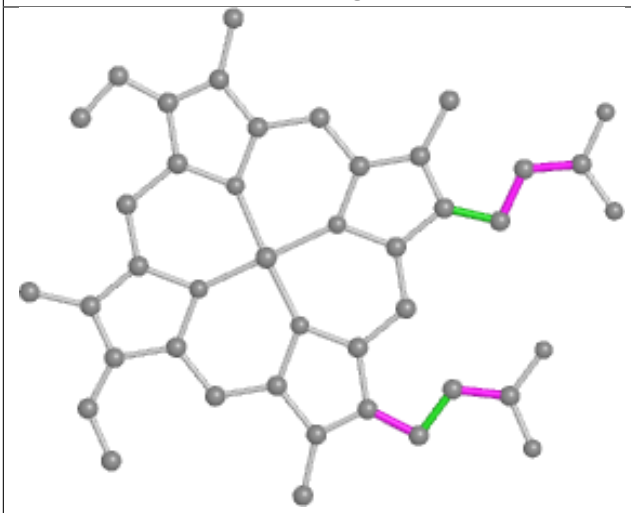
Ligand HEC A 605



Bond lengths



Bond angles



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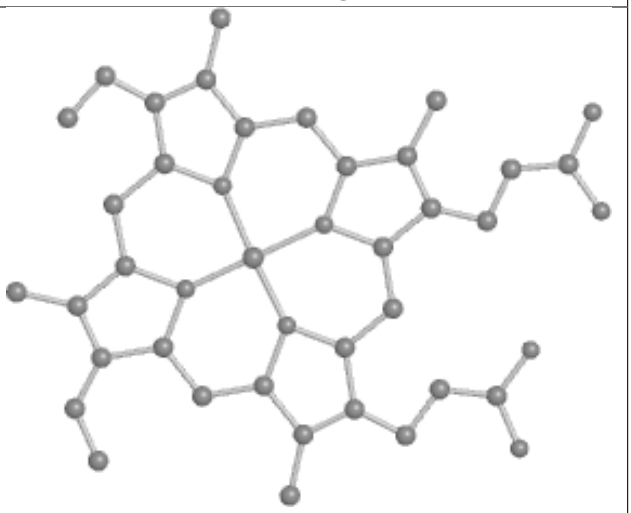
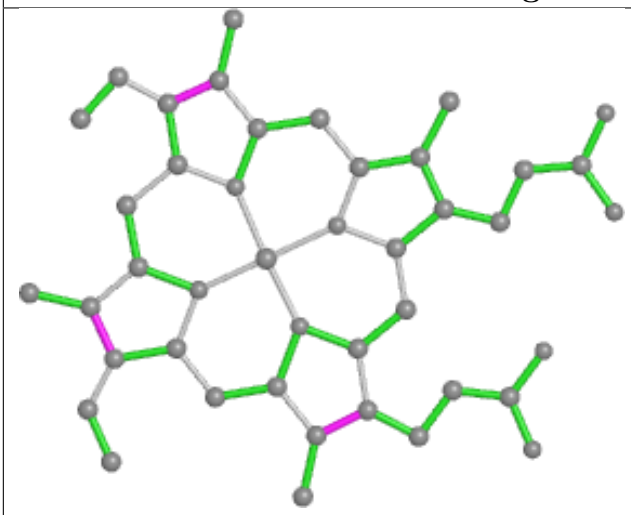


Rings

Ligand HEC A 604



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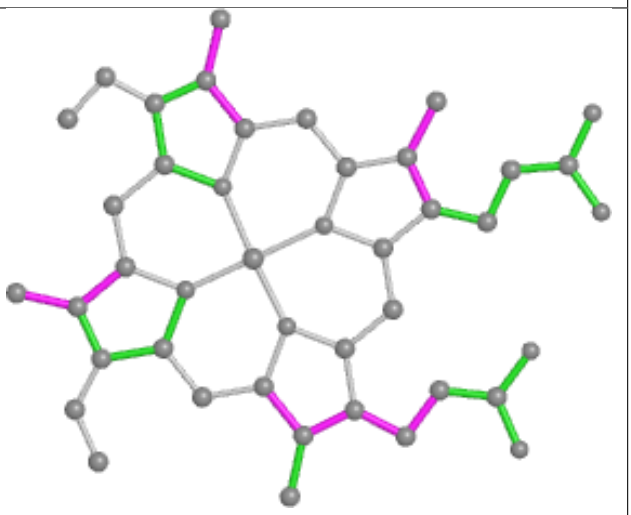
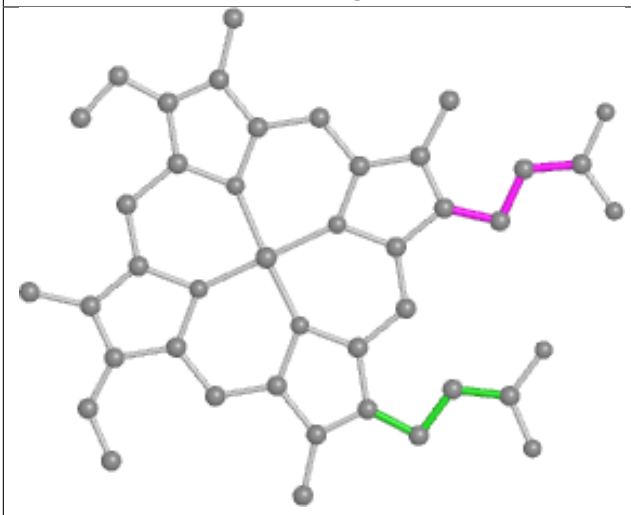


Bond angles



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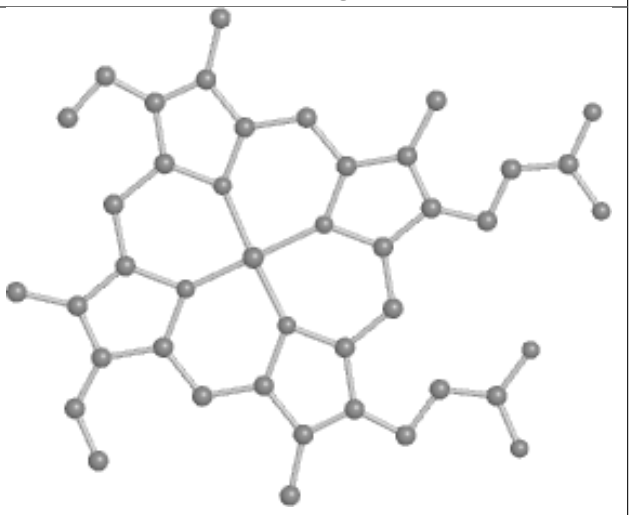
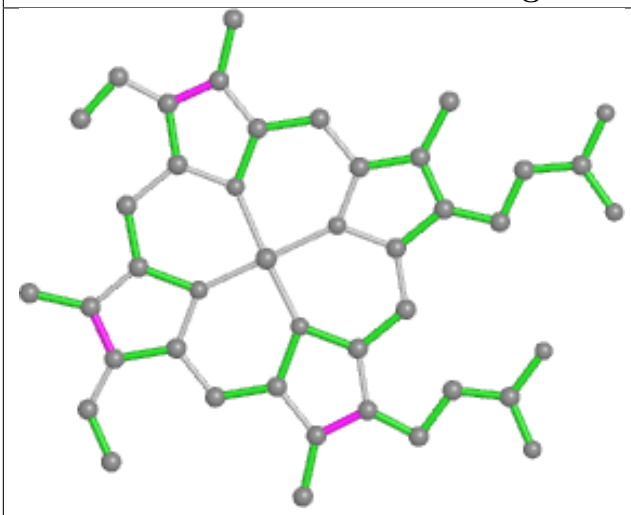
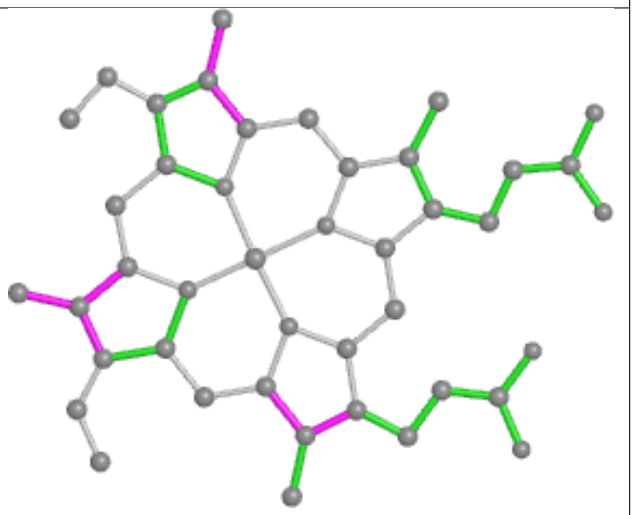


Rings

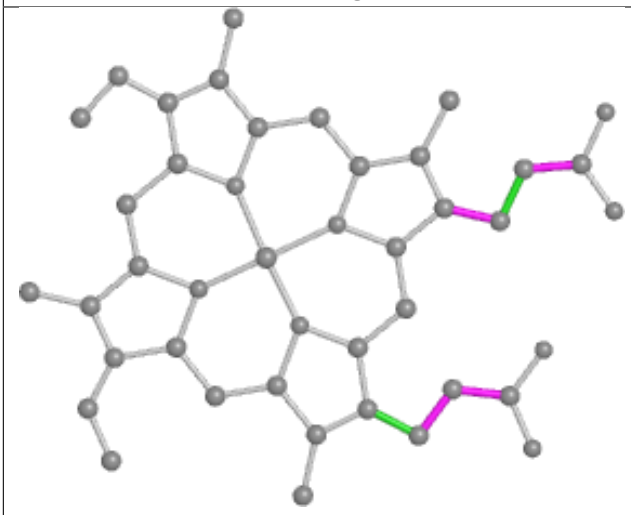
Ligand HEC A 607



Bond lengths



Bond angles



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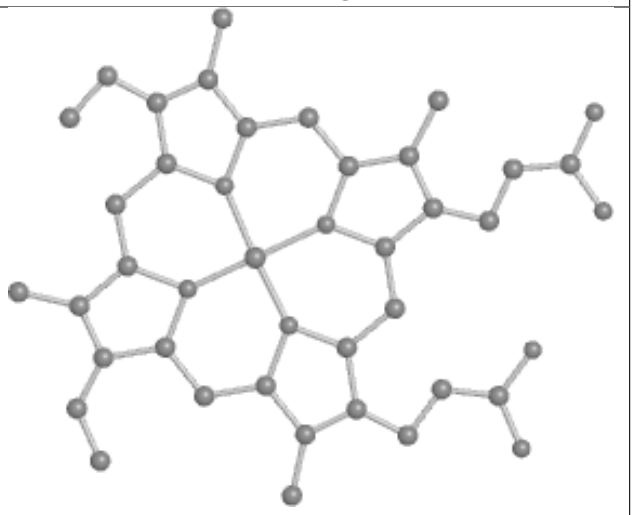
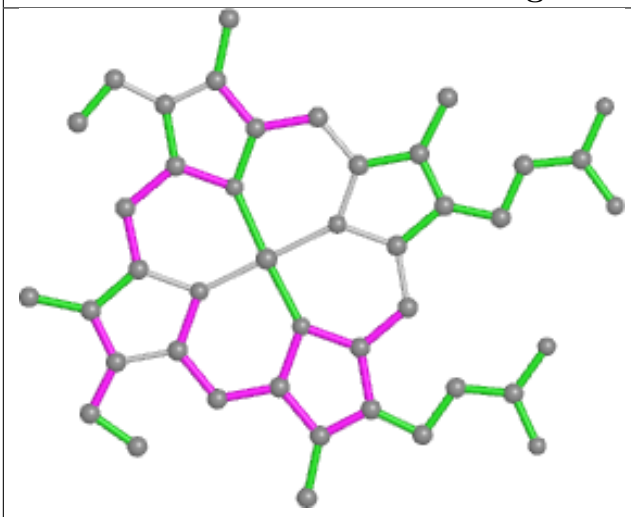
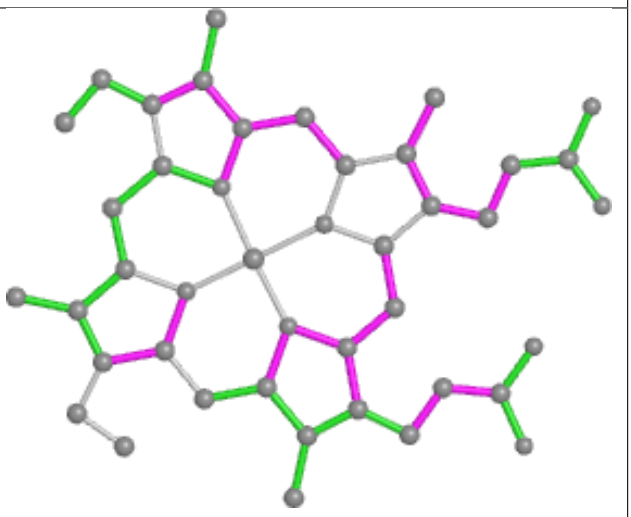


Rings

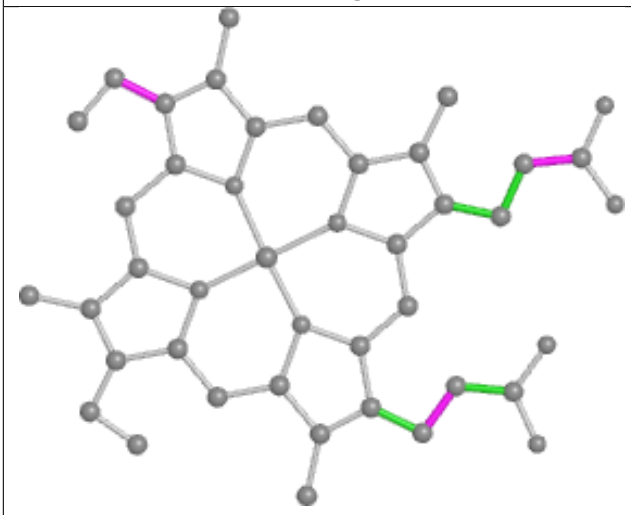
Ligand ISW C 611



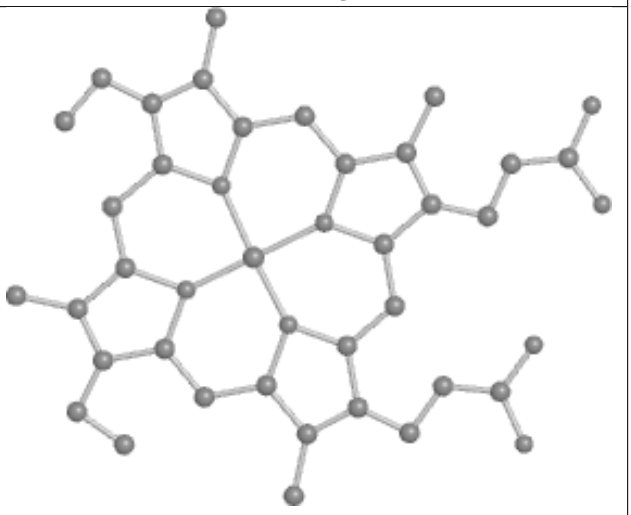
Bond lengths



Bond angles

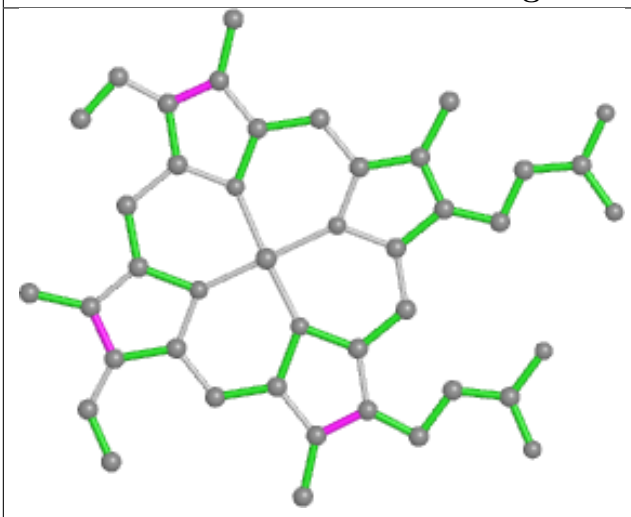


Torsions

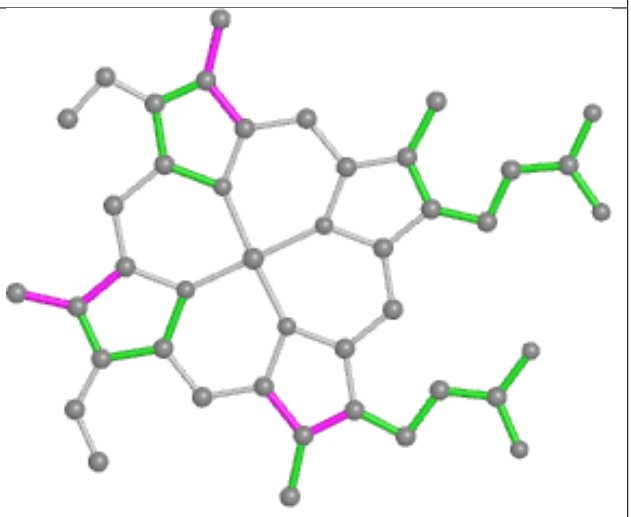


Rings

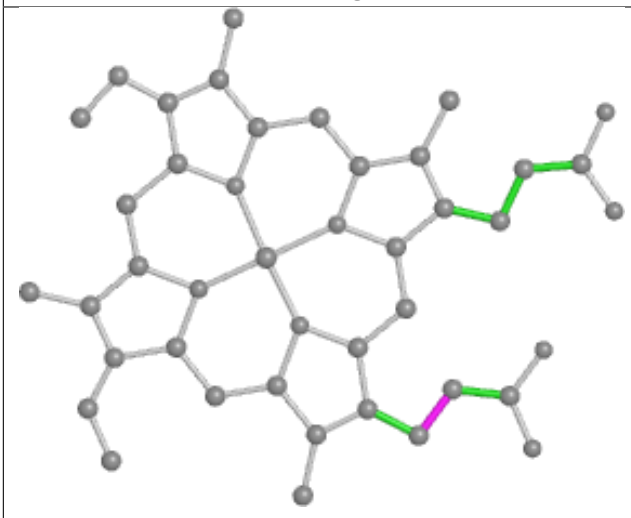
Ligand HEC C 603



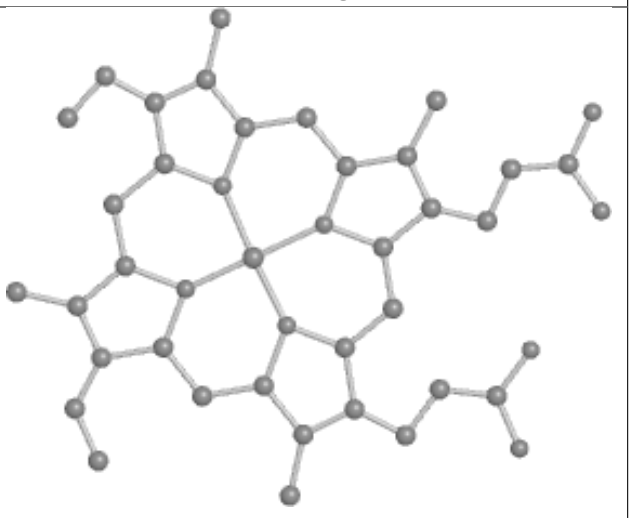
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 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	503/570 (88%)	1.07	68 (13%) 8 8	31, 60, 103, 142	0
1	C	503/570 (88%)	1.13	81 (16%) 5 5	22, 59, 103, 145	0
1	E	503/570 (88%)	1.04	75 (14%) 7 6	32, 61, 114, 171	0
2	B	56/91 (61%)	1.12	7 (12%) 9 9	48, 71, 121, 145	0
2	D	56/91 (61%)	0.75	6 (10%) 12 11	33, 48, 123, 156	0
2	F	56/91 (61%)	1.15	9 (16%) 5 5	53, 74, 133, 165	0
All	All	1677/1983 (84%)	1.07	246 (14%) 7 6	22, 61, 110, 171	0

All (246) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	159	GLY	5.6
1	C	159	GLY	4.9
1	C	158	LEU	4.8
1	A	36	ALA	4.5
1	E	170	ILE	4.4
1	C	182	ALA	4.3
2	F	70	GLY	4.1
1	A	158	LEU	4.1
1	E	181	LYS	3.9
1	E	25	ASP	3.9
1	E	109	ASP	3.9
1	C	304	GLY	3.8
1	E	159	GLY	3.8
1	C	187	ASP	3.8
1	A	198	THR	3.8
1	E	143	GLY	3.8
1	C	172	CYS	3.8
2	B	84	GLY	3.8
1	C	155	MET	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	49	THR	3.7
1	A	26	ILE	3.7
1	E	97	VAL	3.7
1	C	179	LYS	3.6
1	C	174	VAL	3.6
1	A	125	ASN	3.6
1	C	176	VAL	3.6
1	C	113	VAL	3.6
1	E	120	ARG	3.6
1	E	324	PHE	3.6
2	D	30	LEU	3.5
1	C	263	CYS	3.5
1	E	139	TYR	3.5
1	A	197	GLY	3.5
1	E	118	TRP	3.4
1	C	52	ALA	3.4
2	B	43	ALA	3.4
1	C	115	VAL	3.4
1	E	318	VAL	3.4
1	A	310	ASN	3.3
1	C	138	LEU	3.3
1	C	181	LYS	3.3
1	C	186	LYS	3.3
1	E	346	THR	3.3
1	C	95	LYS	3.2
1	E	158	LEU	3.2
1	C	127	ASP	3.2
1	C	177	ASN	3.2
1	C	119	LYS	3.2
1	E	43	LYS	3.2
2	F	30	LEU	3.2
1	C	527	GLY	3.2
1	E	275	ALA	3.2
2	B	31	ALA	3.2
1	A	199	CYS	3.2
1	E	126	LEU	3.2
1	E	134	SER	3.1
1	E	344	GLU	3.1
1	E	103	CYS	3.1
1	E	46	PRO	3.1
1	C	96	GLU	3.1
1	A	177	ASN	3.1

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Mol	Chain	Res	Type	RSRZ
1	C	234	ALA	3.1
1	A	221	TRP	3.1
1	E	42	GLY	3.1
1	C	50	TYR	3.1
1	E	96	GLU	3.0
1	A	126	LEU	3.0
1	C	167	VAL	3.0
1	A	108	SER	3.0
1	E	527	GLY	3.0
1	E	484	VAL	3.0
1	A	196	CYS	3.0
1	A	115	VAL	3.0
1	C	318	VAL	3.0
1	A	138	LEU	3.0
1	C	80	ILE	3.0
1	E	131	ASN	3.0
1	C	129	ILE	2.9
1	C	183	ASP	2.9
1	A	114	TRP	2.9
2	F	28	SER	2.9
1	E	223	ALA	2.9
1	E	322	ASP	2.9
1	C	132	LEU	2.9
1	C	165	LYS	2.8
1	E	325	SER	2.8
1	C	97	VAL	2.8
1	A	345	TYR	2.8
1	E	331	ALA	2.8
1	A	142	LYS	2.8
1	C	278	ARG	2.8
1	A	323	ALA	2.8
1	E	133	LYS	2.8
1	C	235	ASN	2.8
1	C	99	GLU	2.8
1	A	137	PRO	2.8
1	A	165	LYS	2.8
1	E	152	LEU	2.8
1	A	127	ASP	2.8
1	E	41	ARG	2.8
1	C	131	ASN	2.7
1	A	174	VAL	2.7
1	C	264	ASP	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	131	ASN	2.7
1	C	285	THR	2.7
2	F	29	SER	2.7
1	E	130	ARG	2.7
1	C	134	SER	2.7
1	C	118	TRP	2.7
1	C	106	CYS	2.7
1	A	27	SER	2.7
1	E	26	ILE	2.7
1	E	345	TYR	2.6
1	A	150	ASN	2.6
1	C	157	LYS	2.6
1	A	119	LYS	2.6
1	E	104	VAL	2.6
1	C	188	ILE	2.6
2	F	81	GLU	2.6
1	C	313	LYS	2.6
1	A	527	GLY	2.6
1	E	160	GLU	2.5
1	A	382	LEU	2.5
1	C	111	THR	2.5
1	E	163	THR	2.5
1	E	57	TYR	2.5
1	E	330	ASN	2.5
1	C	321	LYS	2.5
1	C	164	LEU	2.5
1	C	184	HIS	2.5
1	E	270	HIS	2.5
2	F	31	ALA	2.5
1	C	49	THR	2.5
1	A	39	LEU	2.5
1	A	201	LEU	2.5
1	E	145	LEU	2.5
1	C	29	VAL	2.5
1	A	324	PHE	2.5
1	C	178	LYS	2.4
1	C	336	ALA	2.4
1	A	322	ASP	2.4
1	C	180	ASP	2.4
2	B	81	GLU	2.4
1	C	137	PRO	2.4
1	A	43	LYS	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	215	VAL	2.4
1	E	107	HIS	2.4
1	E	165	LYS	2.4
1	C	124	ALA	2.4
1	A	42	GLY	2.4
1	A	33	THR	2.4
2	F	80	ARG	2.4
1	E	157	LYS	2.4
1	A	341	TYR	2.4
1	E	132	LEU	2.4
1	C	148	VAL	2.4
2	D	28	SER	2.4
1	E	135	ASP	2.4
1	A	122	THR	2.3
1	C	210	GLU	2.3
1	A	391	ARG	2.3
1	C	522	VAL	2.3
1	E	54	VAL	2.3
2	B	52	VAL	2.3
1	A	336	ALA	2.3
1	A	168	GLY	2.3
1	A	151	ASN	2.3
2	D	46	ASP	2.3
1	A	162	GLU	2.3
1	A	332	PRO	2.3
1	C	346	THR	2.3
1	E	294	ASN	2.3
1	E	101	LYS	2.3
2	D	35	ALA	2.3
1	A	328	GLY	2.3
1	C	133	LYS	2.3
1	A	344	GLU	2.3
2	F	61	ASN	2.3
1	A	107	HIS	2.3
1	C	104	VAL	2.3
1	C	114	TRP	2.3
1	E	182	ALA	2.3
1	E	328	GLY	2.3
1	A	120	ARG	2.2
1	E	105	GLU	2.2
1	E	140	TYR	2.2
1	C	35	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	E	283	CYS	2.2
1	C	272	PHE	2.2
1	E	392	PHE	2.2
1	A	155	MET	2.2
2	F	45	LYS	2.2
1	C	105	GLU	2.2
1	E	174	VAL	2.2
1	A	117	ALA	2.2
1	E	525	LEU	2.2
1	E	84	PRO	2.2
1	C	163	THR	2.2
1	C	151	ASN	2.2
1	C	109	ASP	2.2
1	E	169	CYS	2.2
1	E	124	ALA	2.2
1	C	444	GLY	2.2
1	A	96	GLU	2.1
1	C	90	PRO	2.1
2	D	83	SER	2.1
1	C	102	ASP	2.1
1	E	180	ASP	2.1
1	A	170	ILE	2.1
1	A	313	LYS	2.1
1	C	199	CYS	2.1
1	E	162	GLU	2.1
1	A	123	HIS	2.1
1	E	119	LYS	2.1
1	A	422	TYR	2.1
1	E	188	ILE	2.1
1	A	164	LEU	2.1
1	C	107	HIS	2.1
1	C	55	LYS	2.1
1	E	127	ASP	2.1
1	C	98	ALA	2.1
1	A	143	GLY	2.1
1	C	168	GLY	2.1
2	B	70	GLY	2.1
1	C	388	HIS	2.1
1	E	313	LYS	2.1
1	E	326	LYS	2.1
2	B	50	THR	2.1
1	E	417	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	65	GLY	2.1
1	E	168	GLY	2.1
1	A	133	LYS	2.0
1	E	106	CYS	2.0
1	C	349	ILE	2.0
1	E	272	PHE	2.0
2	D	29	SER	2.0
1	A	525	LEU	2.0
1	A	202	ARG	2.0
1	E	523	ASN	2.0
1	C	136	ASP	2.0
1	C	226	PRO	2.0
1	A	169	CYS	2.0
1	E	28	THR	2.0
1	A	85	ASN	2.0
1	A	40	ASP	2.0
1	A	182	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 oligosaccharides 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
5	PEG	E	609	7/7	0.62	0.21	48,55,60,62	0
7	1PE	C	609	12/16	0.68	0.21	51,61,65,66	0
7	1PE	C	610	16/16	0.75	0.20	66,78,81,82	0
3	HEC	C	603	43/43	0.79	0.21	42,84,90,92	0
6	JUG	C	608	13/13	0.83	0.16	48,54,64,70	0
5	PEG	A	609	7/7	0.84	0.15	44,50,56,56	0

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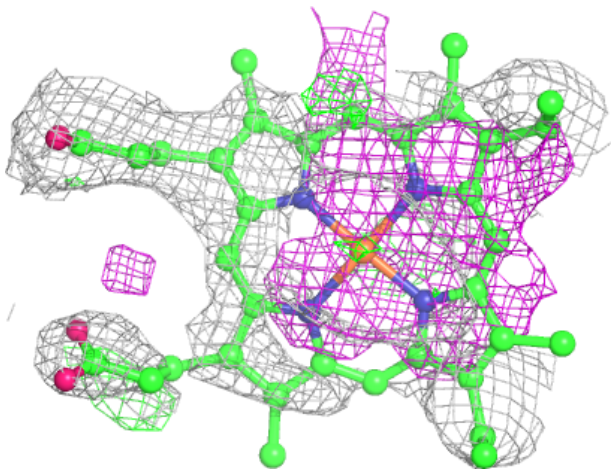
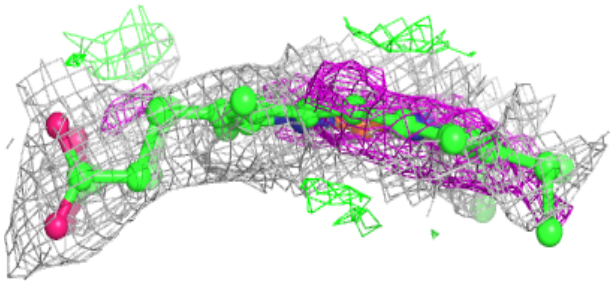
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	PEG	A	610	7/7	0.84	0.15	42,46,53,54	0
3	HEC	E	603	43/43	0.85	0.17	45,71,80,84	0
6	JUG	E	608	13/13	0.86	0.17	63,65,70,72	0
3	HEC	C	604	43/43	0.88	0.17	28,52,63,67	0
3	HEC	C	602	43/43	0.89	0.14	19,54,65,67	0
3	HEC	A	602	43/43	0.90	0.17	27,64,85,93	0
3	HEC	E	604	43/43	0.91	0.14	40,53,67,70	0
3	HEC	E	601	43/43	0.91	0.13	25,42,60,68	0
3	HEC	E	602	43/43	0.91	0.14	31,52,64,70	0
3	HEC	A	601	43/43	0.91	0.14	19,56,76,84	0
3	HEC	A	604	43/43	0.92	0.12	20,32,39,41	0
4	ISW	A	608	43/43	0.92	0.14	24,37,41,46	0
4	ISW	A	611	43/43	0.92	0.15	28,41,55,57	0
3	HEC	A	607	43/43	0.92	0.13	16,45,65,77	0
3	HEC	C	601	43/43	0.92	0.13	29,51,58,63	0
4	ISW	C	611	43/43	0.93	0.13	18,39,53,59	0
3	HEC	E	606	43/43	0.93	0.14	30,42,60,68	0
3	HEC	C	605	43/43	0.93	0.14	18,35,43,48	0
3	HEC	E	605	43/43	0.93	0.12	13,36,45,51	0
3	HEC	A	605	43/43	0.94	0.11	20,33,53,57	0
3	HEC	C	606	43/43	0.94	0.11	18,34,50,55	0
3	HEC	A	603	43/43	0.94	0.11	26,41,52,57	0
3	HEC	A	606	43/43	0.95	0.10	15,27,38,47	0
3	HEC	E	607	43/43	0.95	0.11	14,35,51,60	0
3	HEC	C	607	43/43	0.96	0.10	11,27,42,47	0

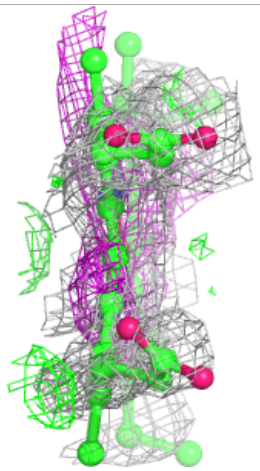
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around HEC C 603:

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

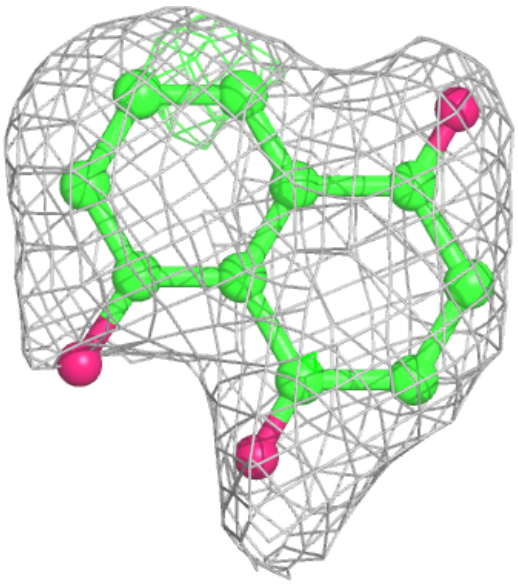


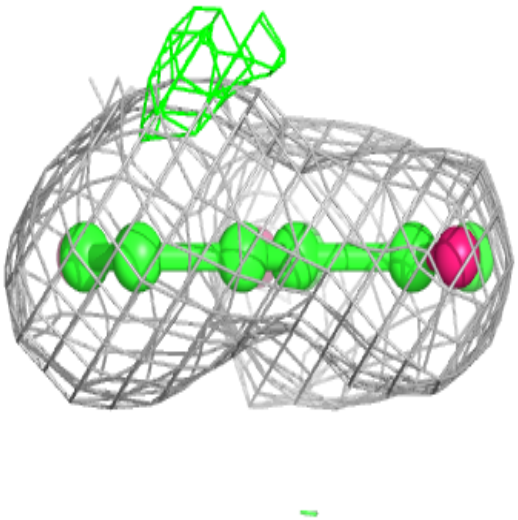


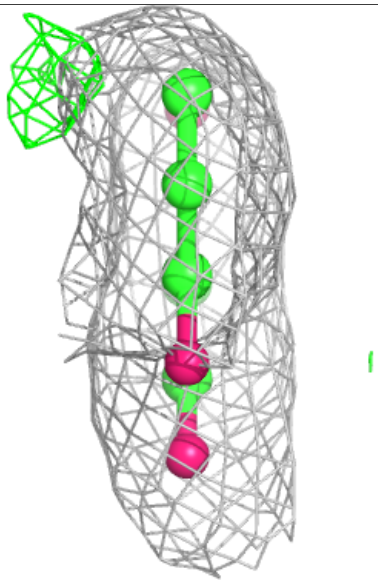


Electron density around JUG C 608:

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

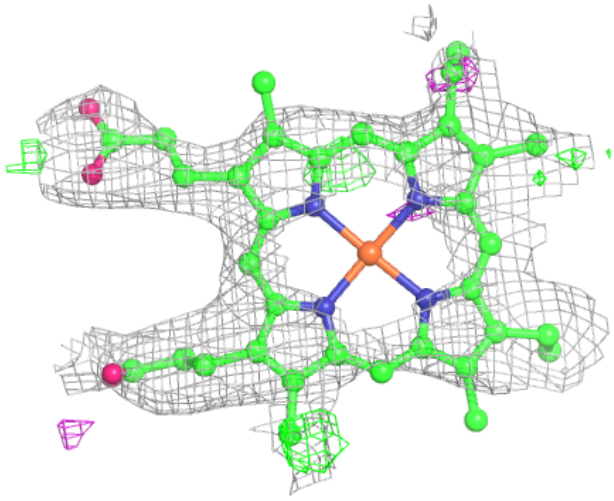


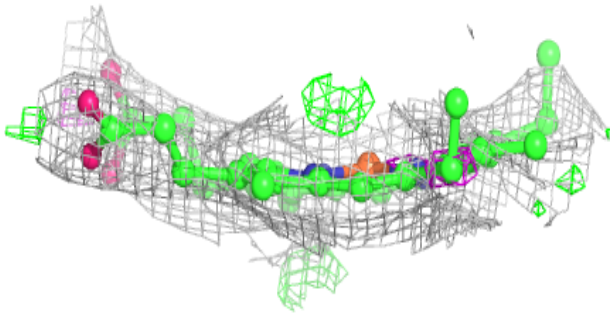


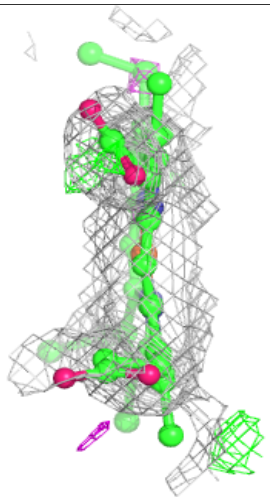


Electron density around HEC E 603:

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

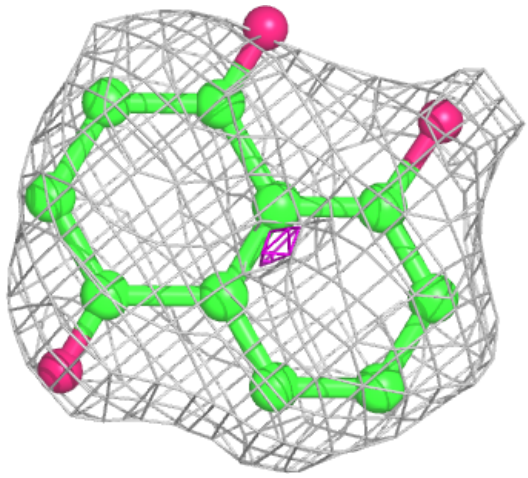


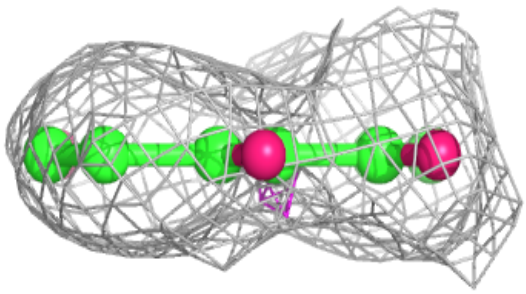


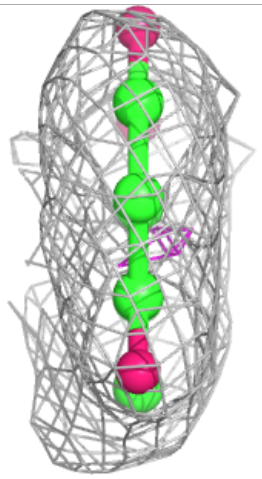


Electron density around JUG E 608:

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

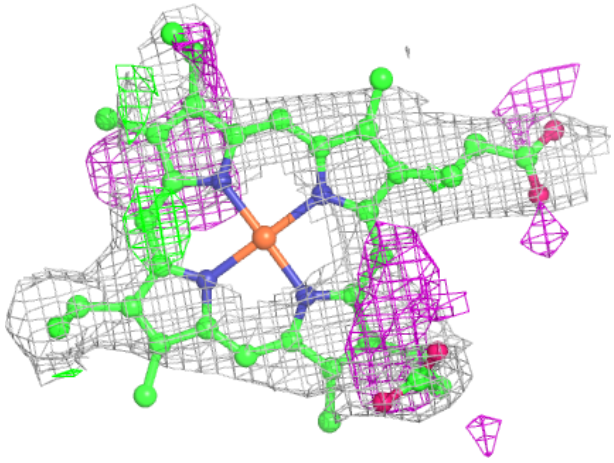


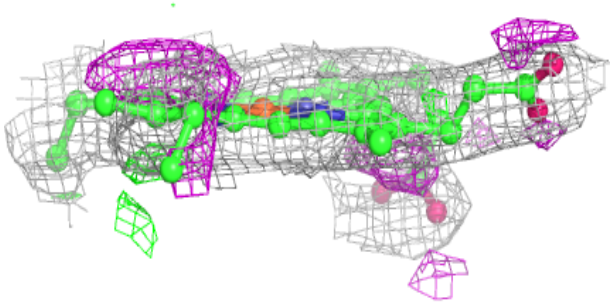


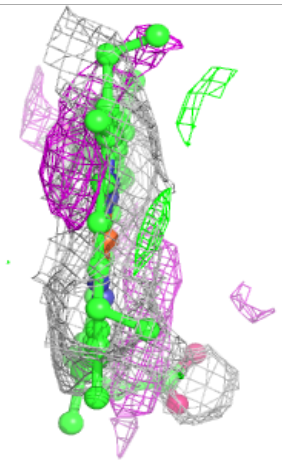


Electron density around HEC C 604:

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

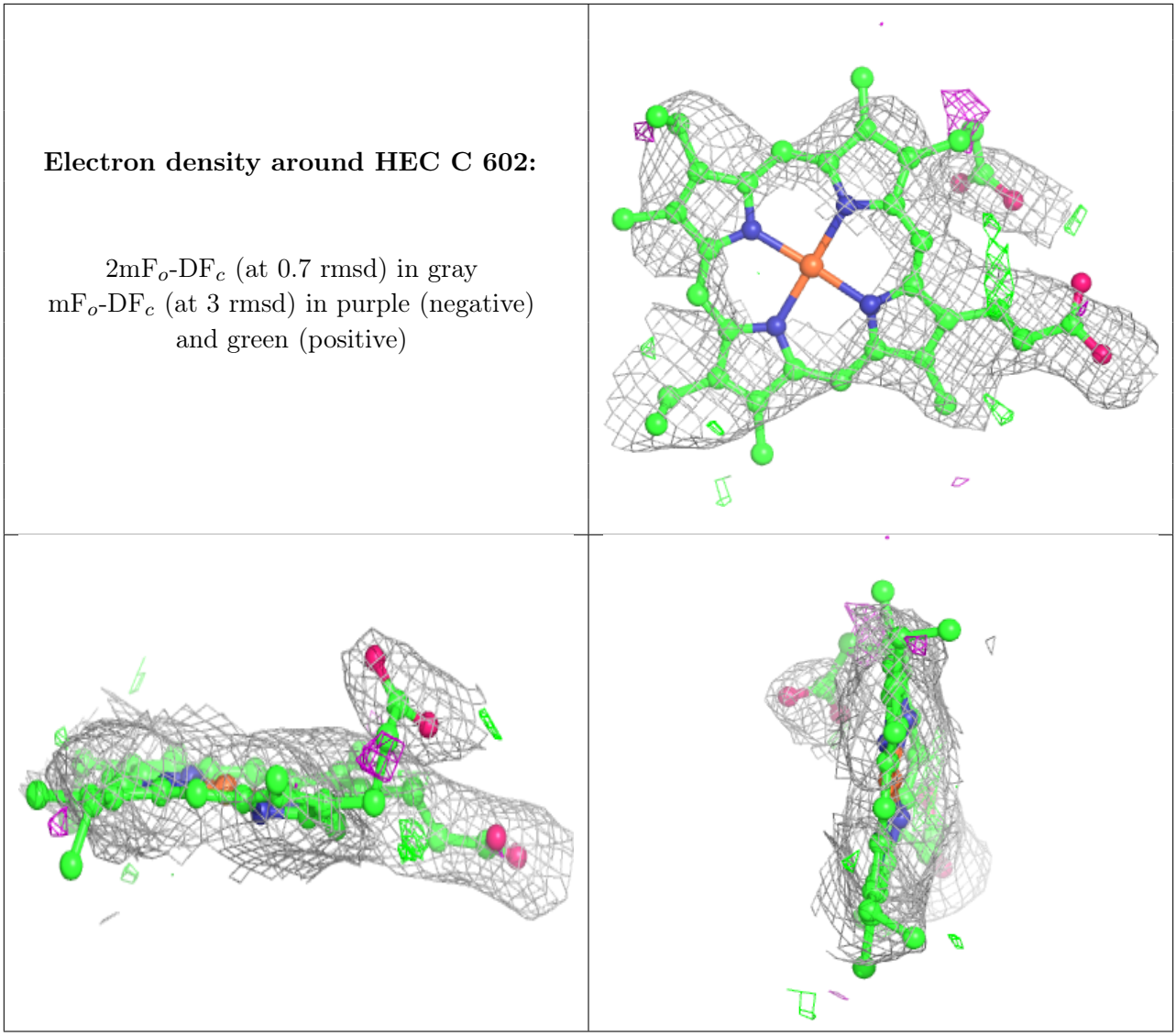






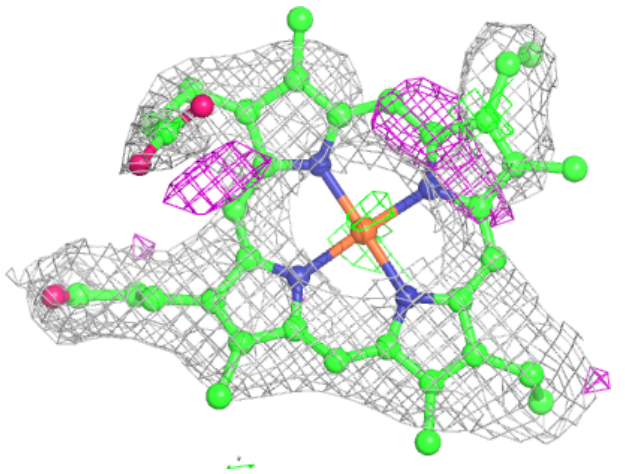
Electron density around HEC C 602:

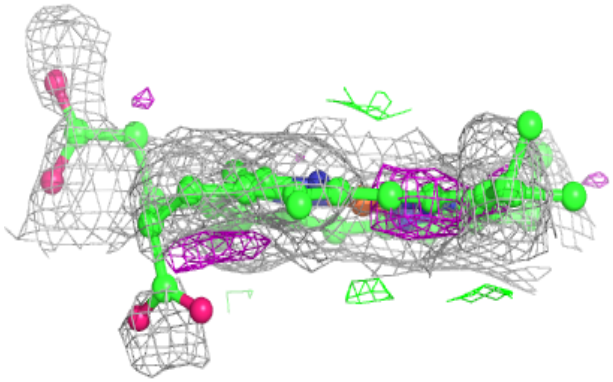
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

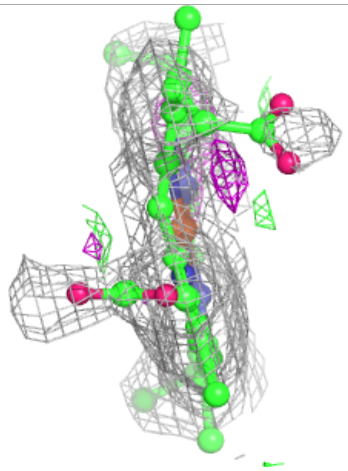


Electron density around HEC A 602:

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

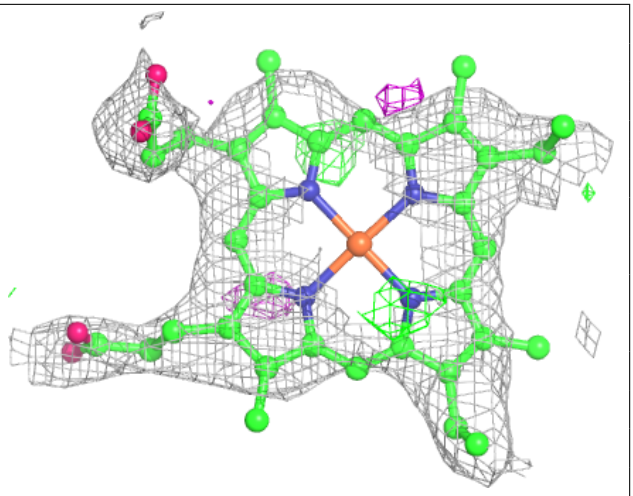


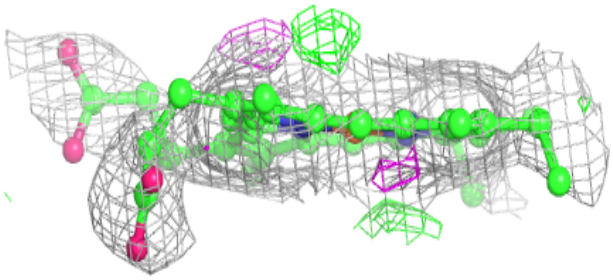


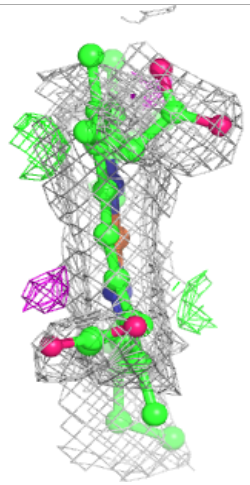


Electron density around HEC E 604:

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

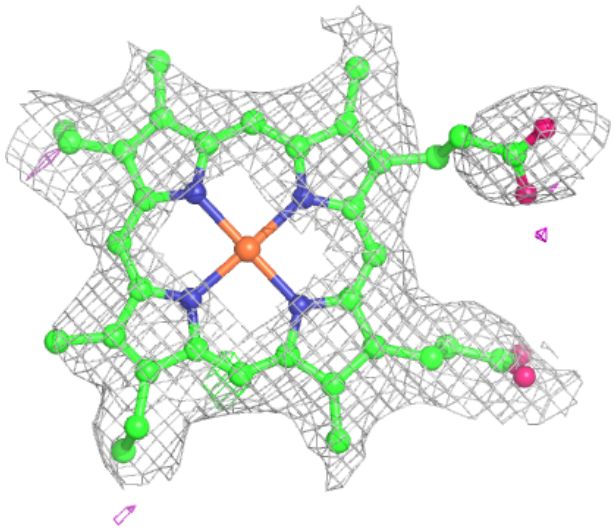


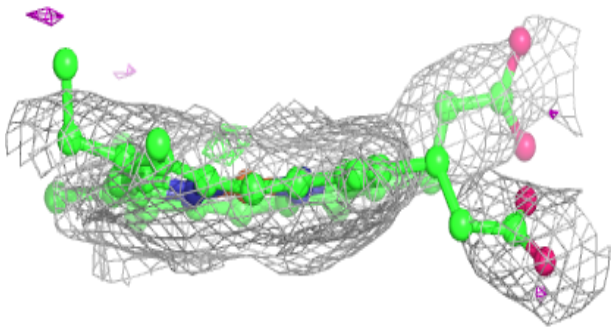


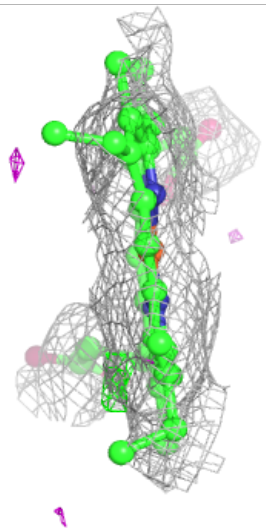


Electron density around HEC E 601:

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

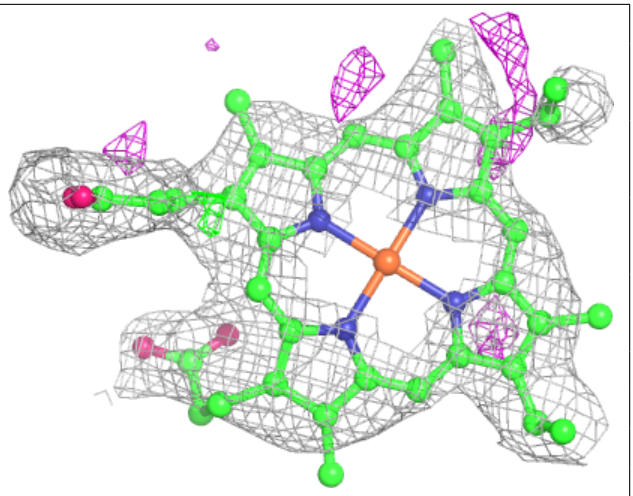


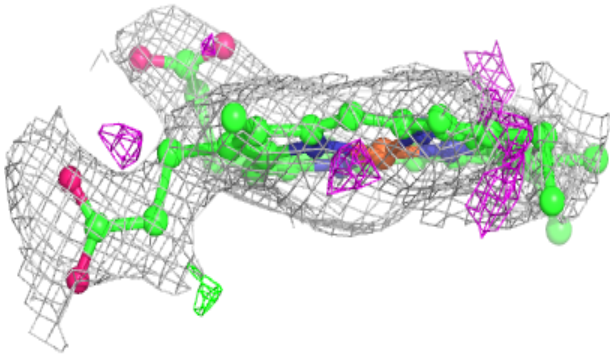


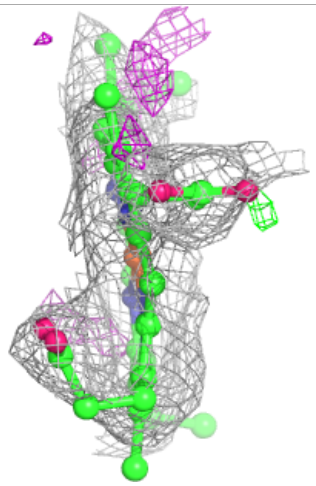


Electron density around HEC E 602:

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

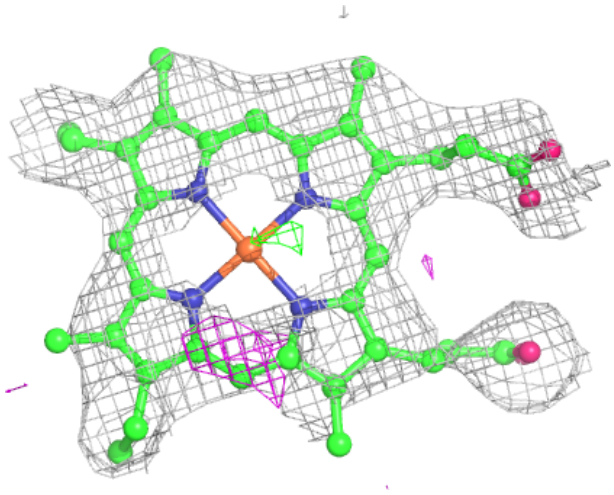


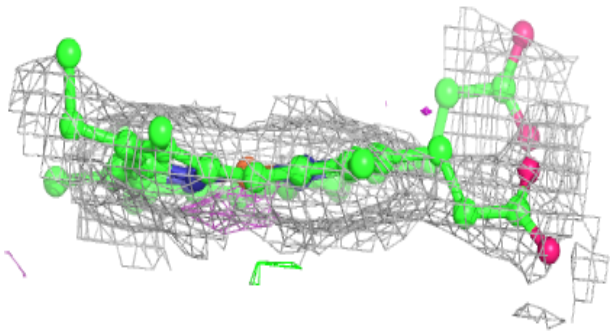


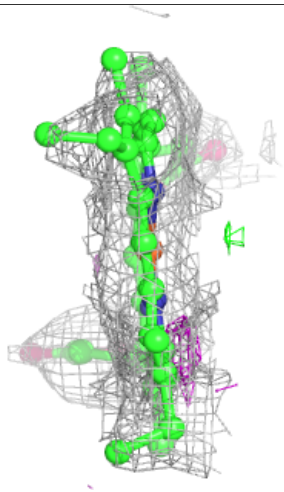


Electron density around HEC A 601:

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

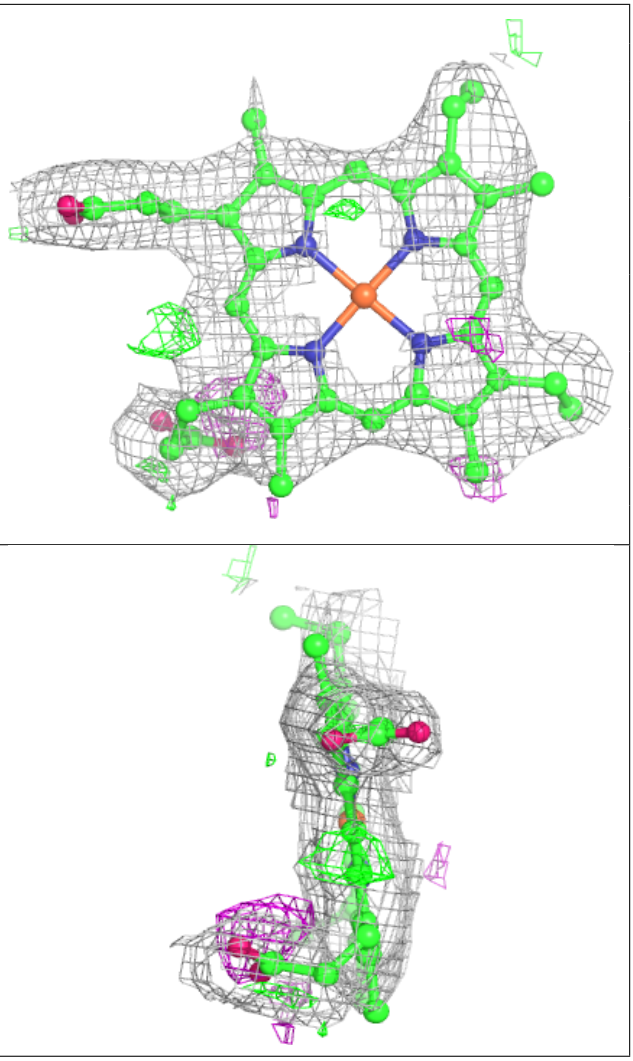






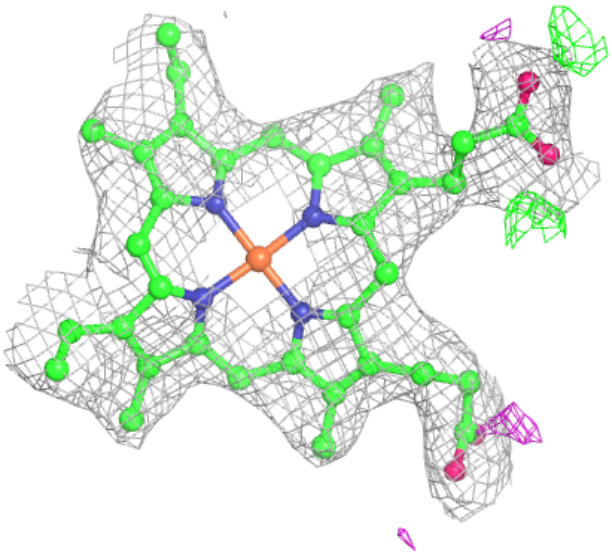
Electron density around HEC A 604:

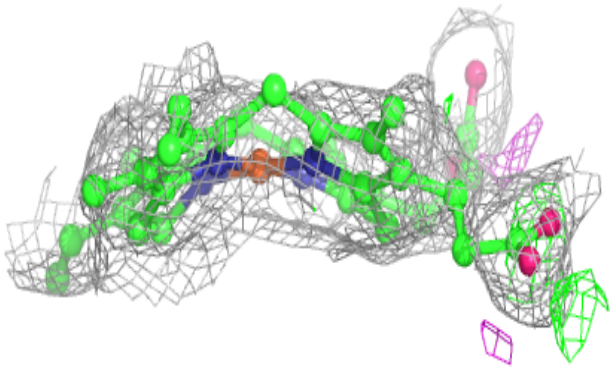
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

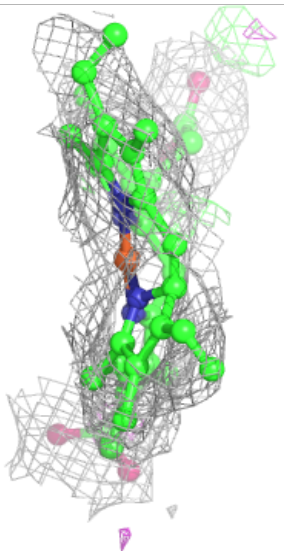


Electron density around ISW A 608:

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

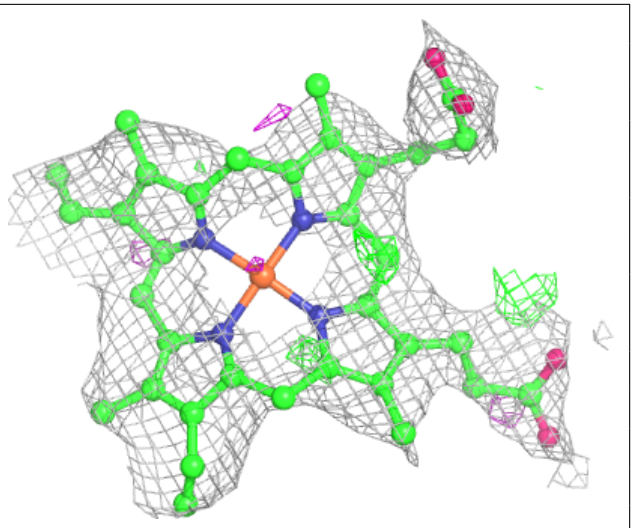


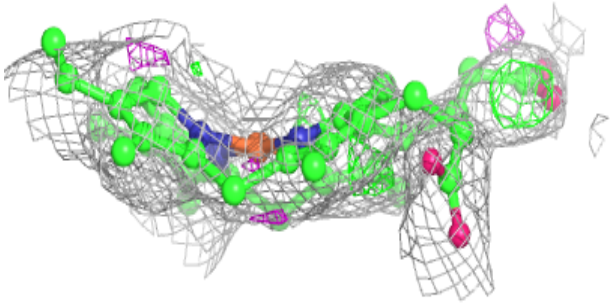


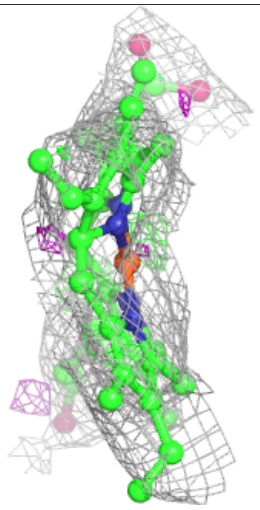


Electron density around ISW A 611:

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

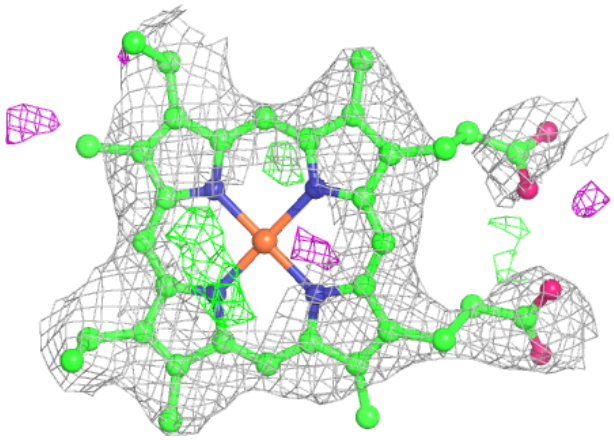


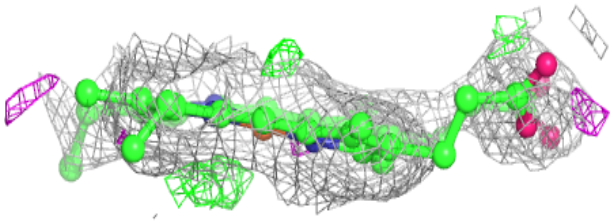


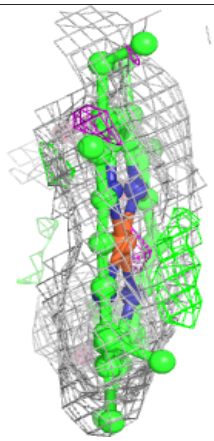


Electron density around HEC A 607:

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

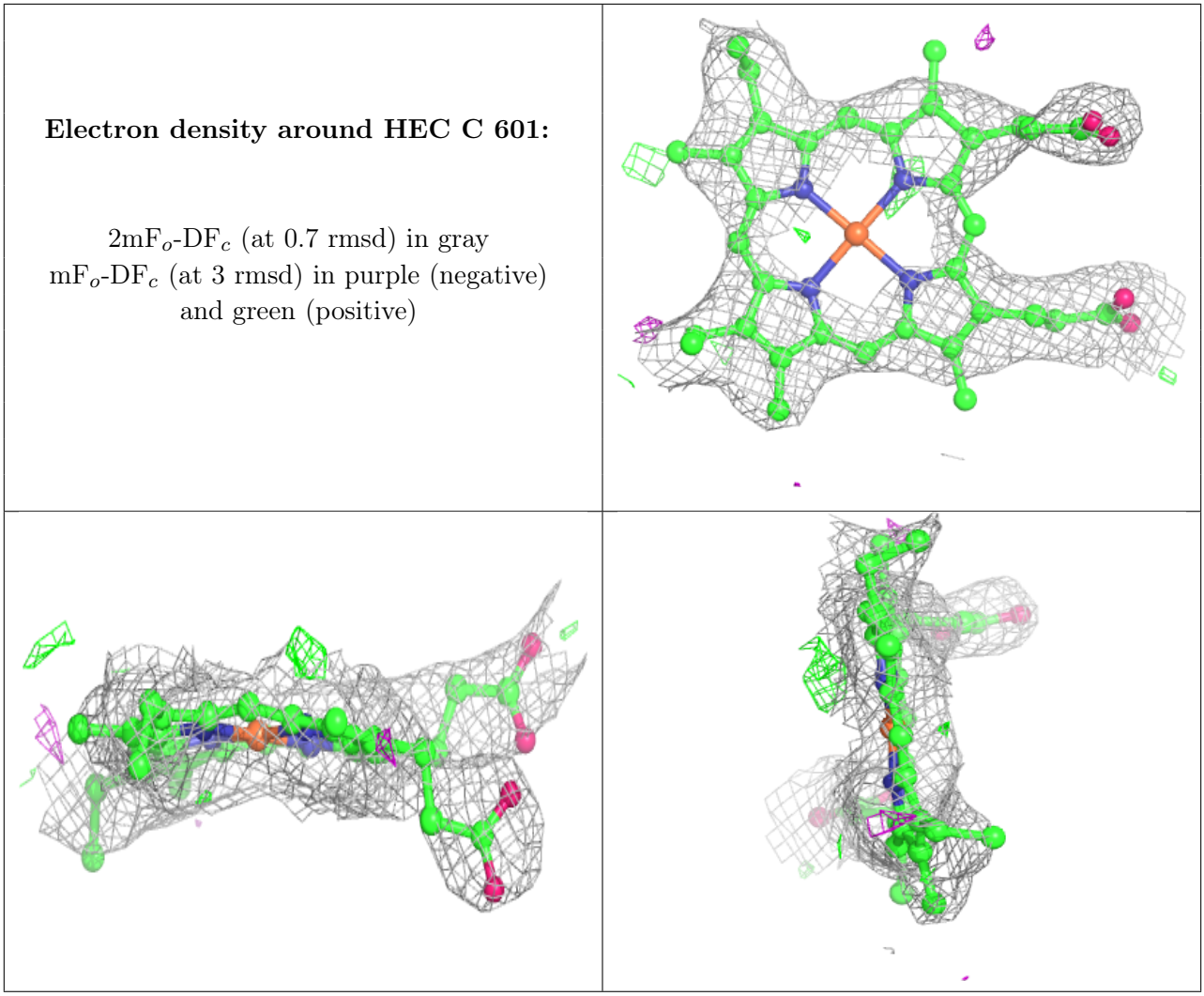






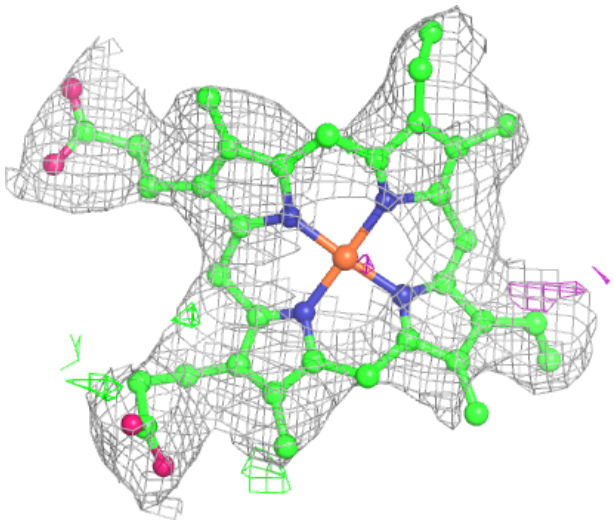
Electron density around HEC C 601:

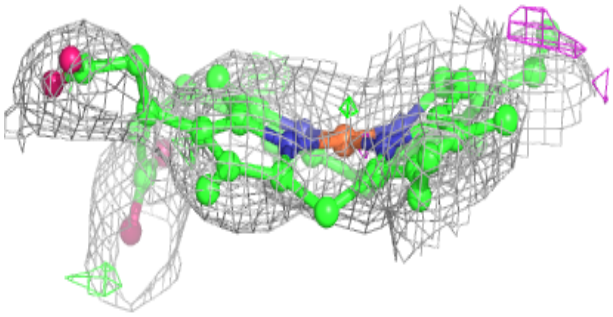
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

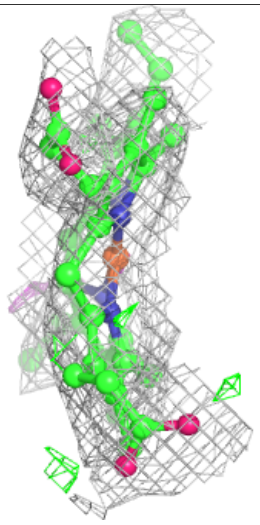


Electron density around ISW C 611:

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

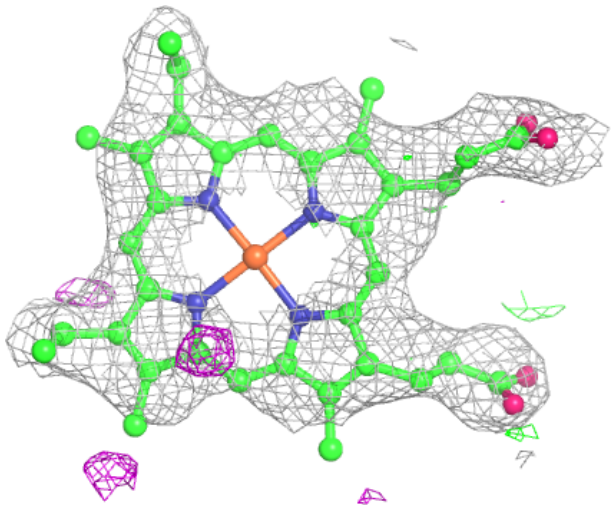


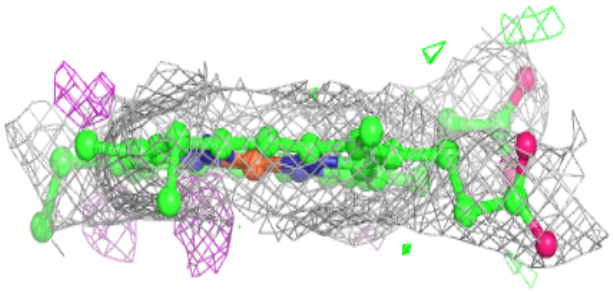


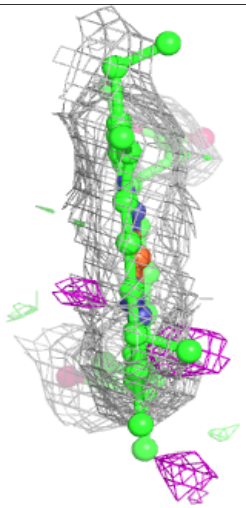


Electron density around HEC E 606:

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

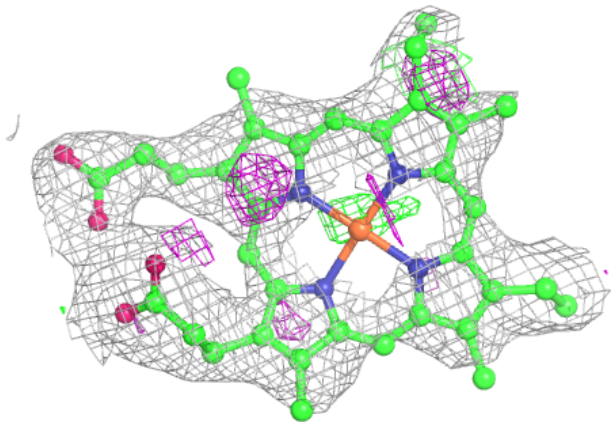


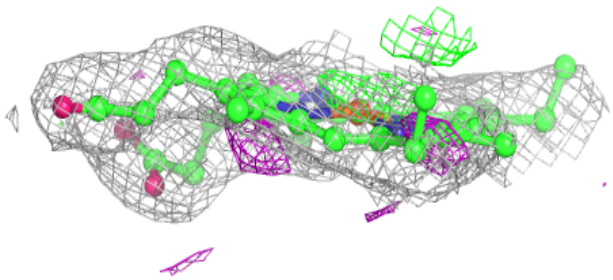


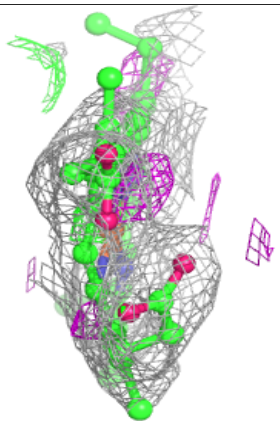


Electron density around HEC C 605:

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

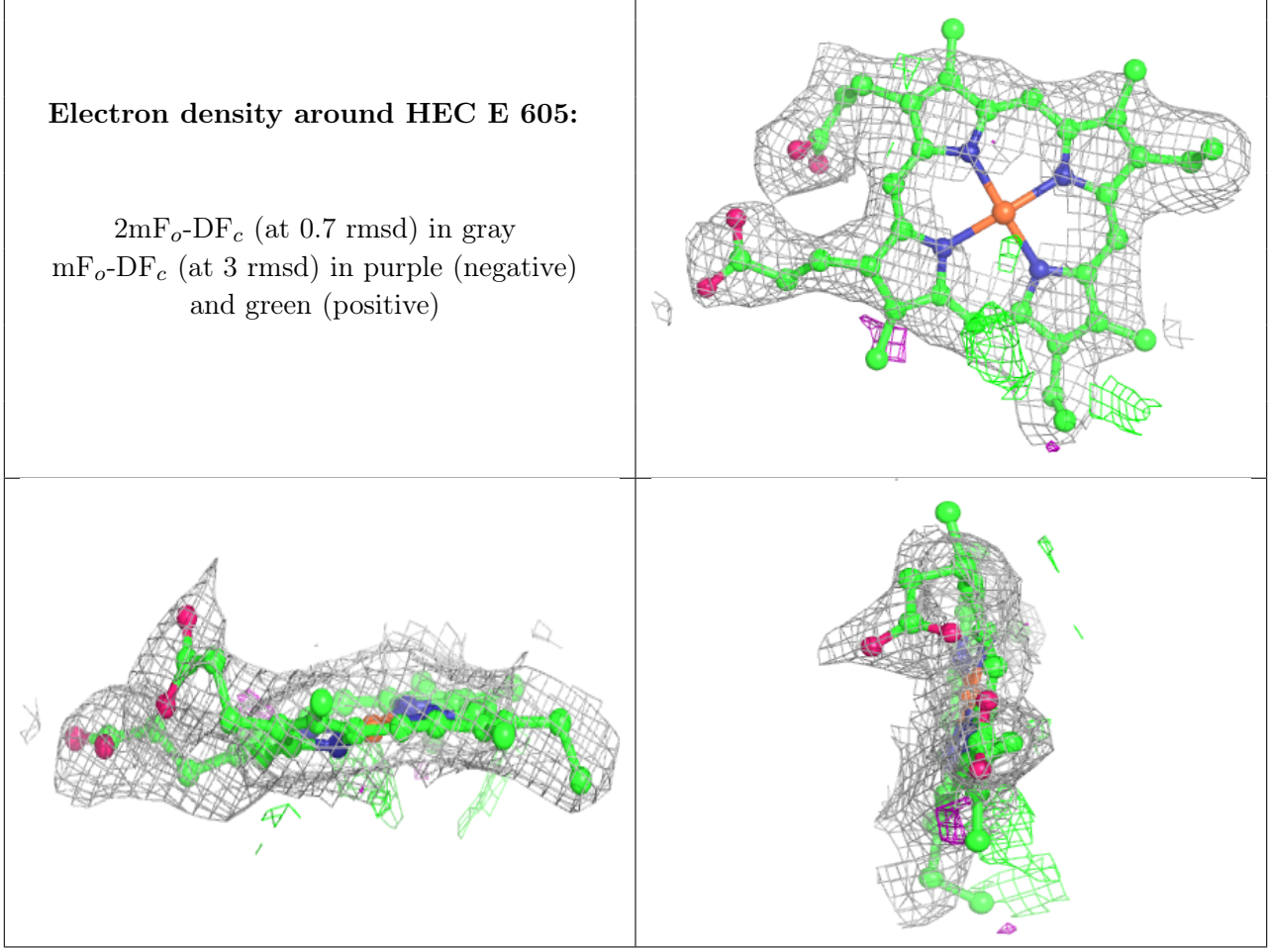






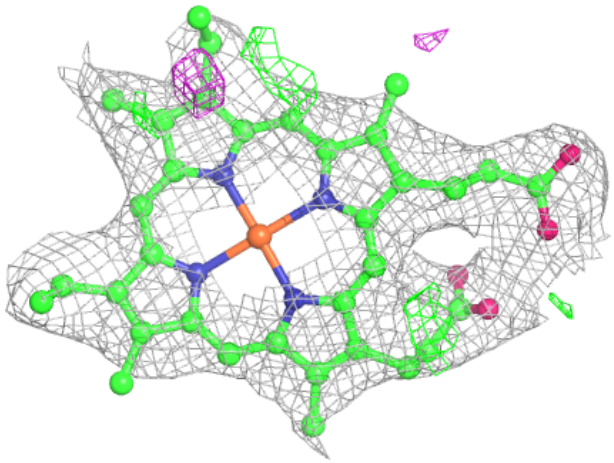
Electron density around HEC E 605:

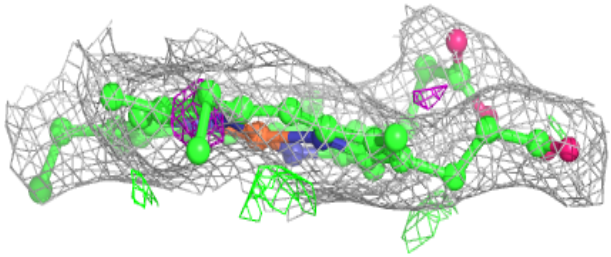
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

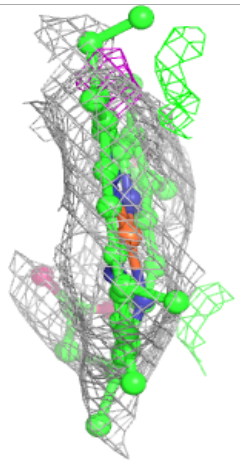


Electron density around HEC A 605:

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

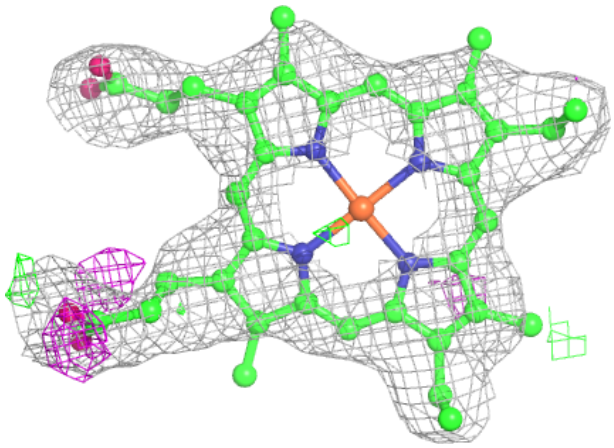


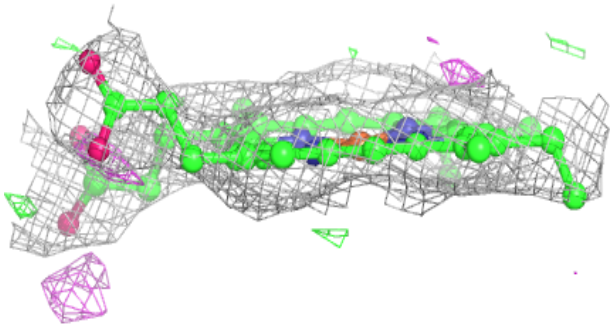


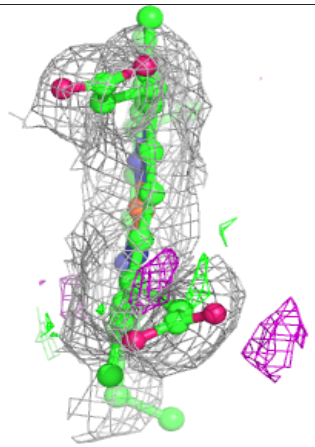


Electron density around HEC C 606:

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

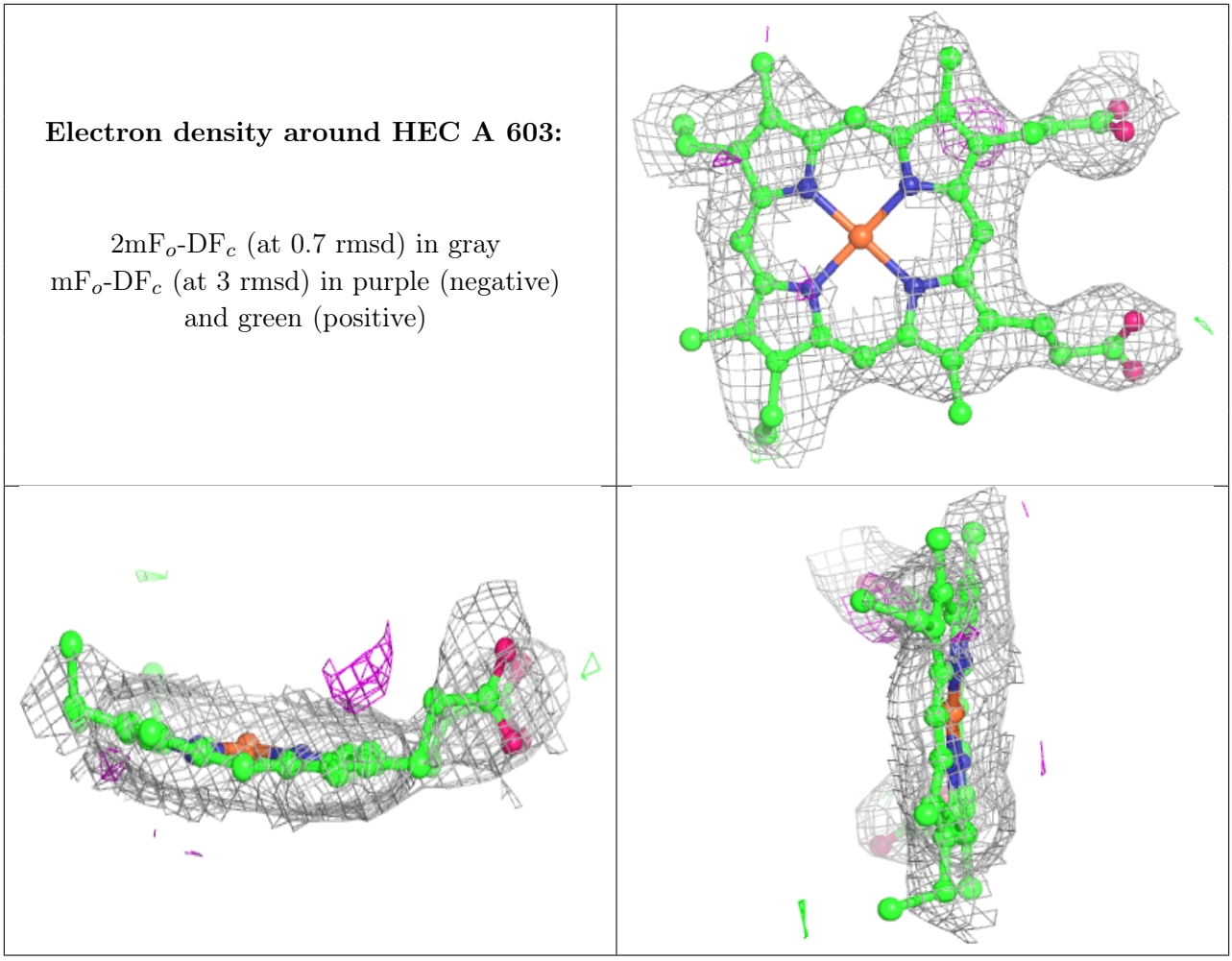






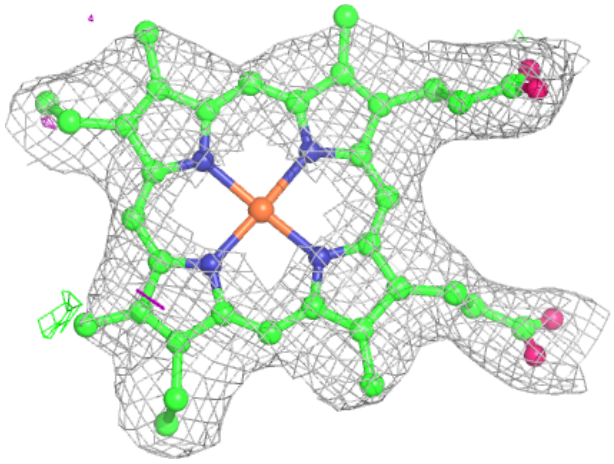
Electron density around HEC A 603:

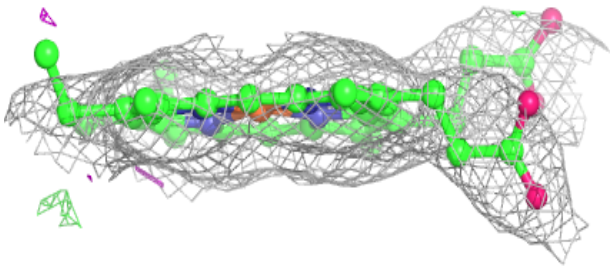
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

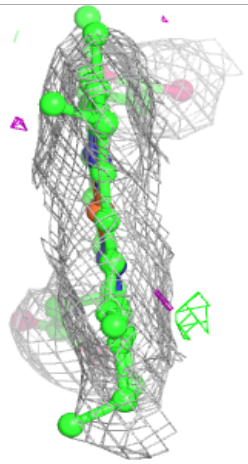


Electron density around HEC A 606:

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

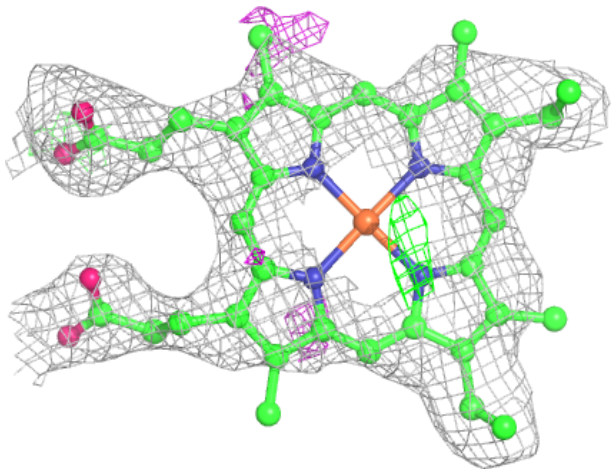


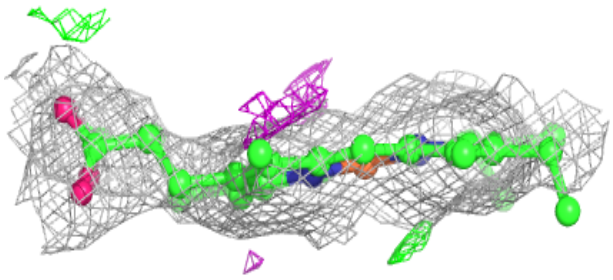


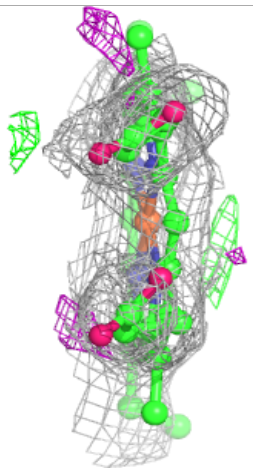


Electron density around HEC E 607:

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

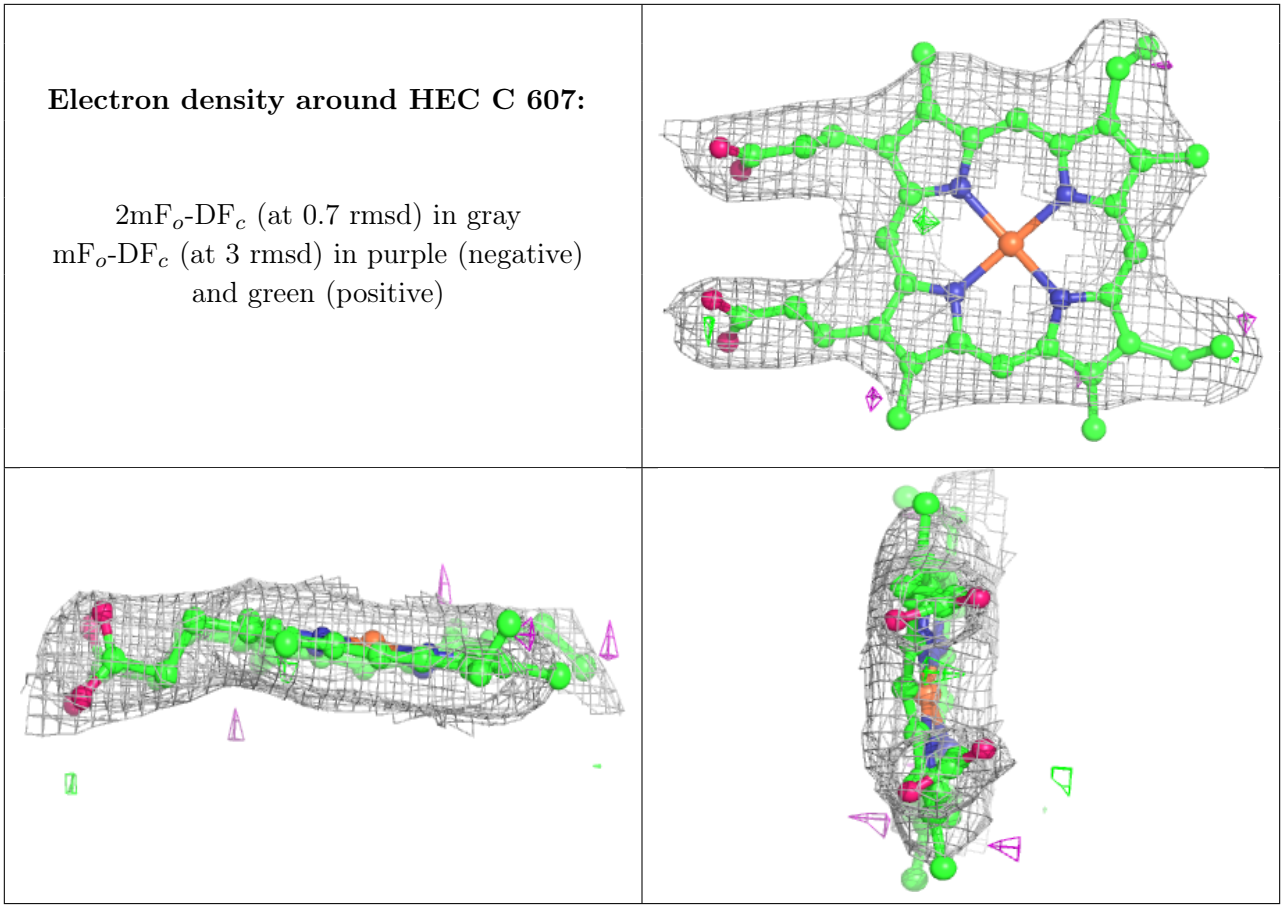






Electron density around HEC C 607:

$2mF_o$-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

There are no such residues in this entry.