Full wwPDB X-ray Structure Validation Report ⓘ

Jun 26, 2024 – 12:14 AM EDT

PDB ID	:	6V0A
Title	:	Crystal structure of cytochrome c nitrite reductase from the bacterium Geobacter lovleyi with bound sulfate
Authors	:	Satyanarayana, L.; Campecino, J.; Hegg, L.H.; Hu, J.
Deposited on	:	2019-11-18
Resolution	:	2.55 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

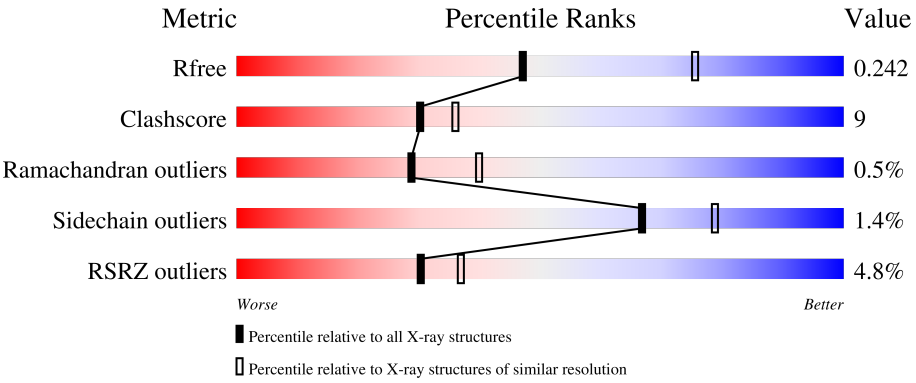
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh &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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.55 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



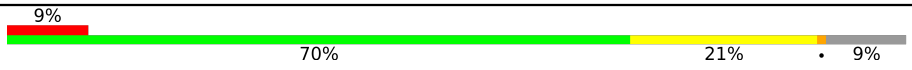
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1284 (2.56-2.52)
Clashscore	141614	1332 (2.56-2.52)
Ramachandran outliers	138981	1315 (2.56-2.52)
Sidechain outliers	138945	1315 (2.56-2.52)
RSRZ outliers	127900	1272 (2.56-2.52)

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	482	79% 12% 8%
1	B	482	80% 12% 8%
1	C	482	4% 73% 17% 8%
1	D	482	5% 72% 20% 8%
1	E	482	6% 74% 18% 8%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	482	

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SO4	A	506	-	-	X	-
3	SO4	C	506	-	-	X	-

2 Entry composition (i)

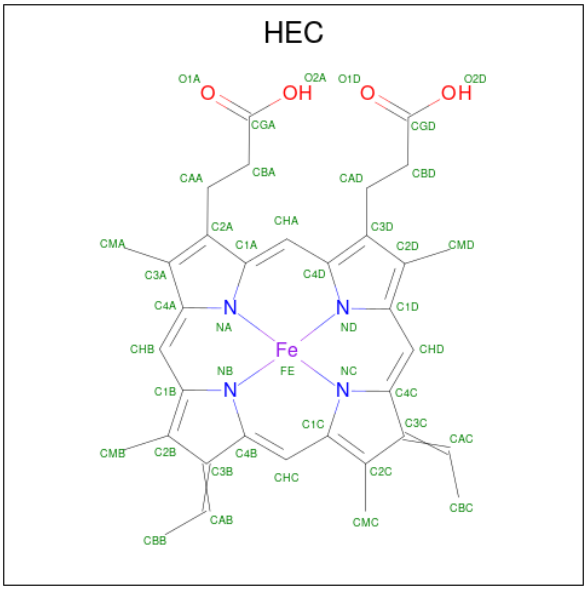
There are 4 unique types of molecules in this entry. The entry contains 23376 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Nitrite reductase (cytochrome; ammonia-forming).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	443	Total	C	N	O	S	0	0	0
			3525	2237	600	661	27			
1	B	444	Total	C	N	O	S	0	0	0
			3538	2245	604	662	27			
1	C	442	Total	C	N	O	S	0	0	0
			3525	2237	601	660	27			
1	D	444	Total	C	N	O	S	0	0	0
			3534	2243	602	662	27			
1	E	443	Total	C	N	O	S	0	0	0
			3525	2237	600	661	27			
1	F	441	Total	C	N	O	S	0	0	0
			3514	2230	598	659	27			

- Molecule 2 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



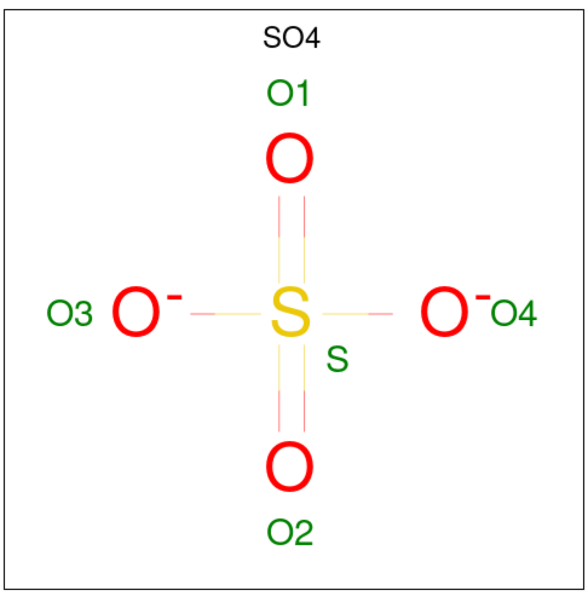
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C Fe N O 43 34 1 4 4	0	0
2	A	1	Total C Fe N O 43 34 1 4 4	0	0
2	A	1	Total C Fe N O 43 34 1 4 4	0	0
2	A	1	Total C Fe N O 43 34 1 4 4	0	0
2	A	1	Total C Fe N O 43 34 1 4 4	0	0
2	B	1	Total C Fe N O 43 34 1 4 4	0	0
2	B	1	Total C Fe N O 43 34 1 4 4	0	0
2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

Continued on next page...

Continued from previous page...

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

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S) (labeled as "Ligand of Interest" by depositor).



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

Continued on next page...

Continued from previous page...

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

- Molecule 4 is water.

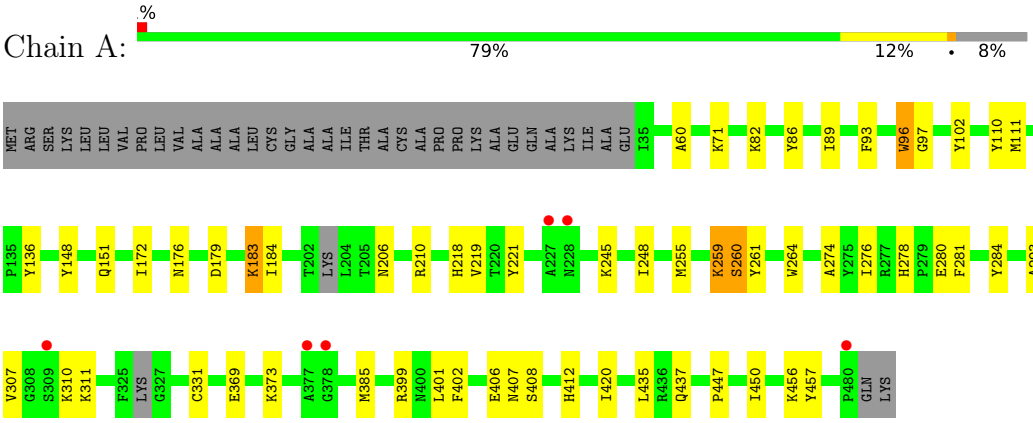
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	215	Total O 215 215	0	0
4	B	236	Total O 236 236	0	0
4	C	148	Total O 148 148	0	0
4	D	134	Total O 134 134	0	0
4	E	92	Total O 92 92	0	0
4	F	70	Total O 70 70	0	0

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.

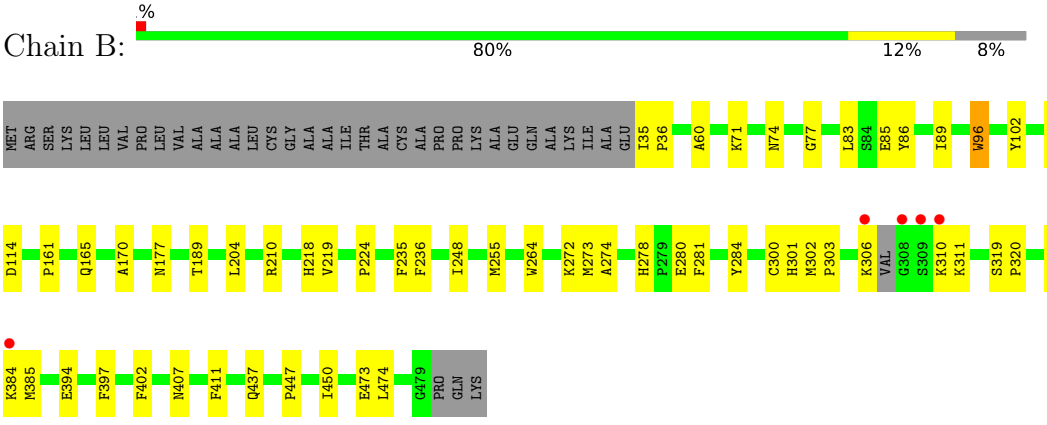
• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

Chain A:



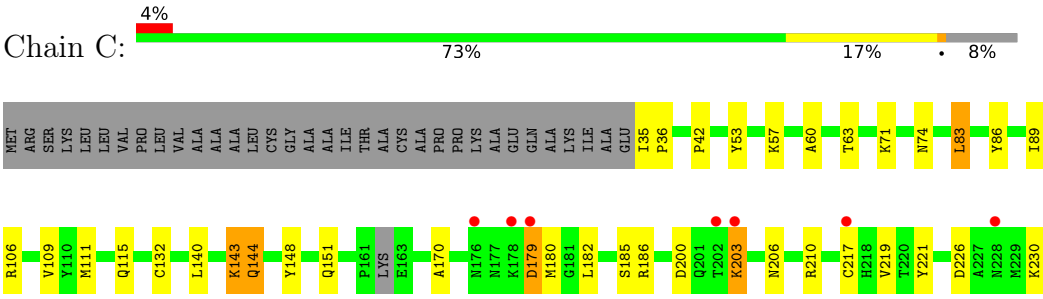
• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

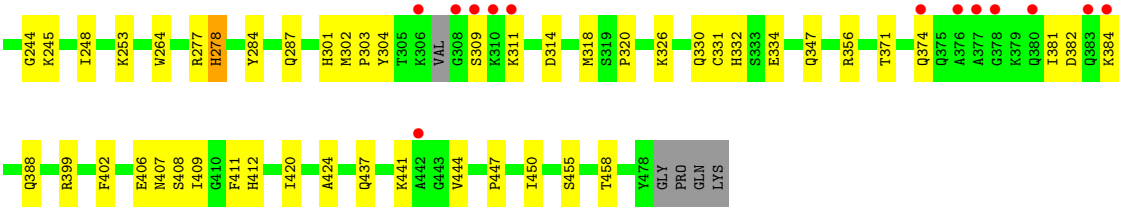
Chain B:



• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

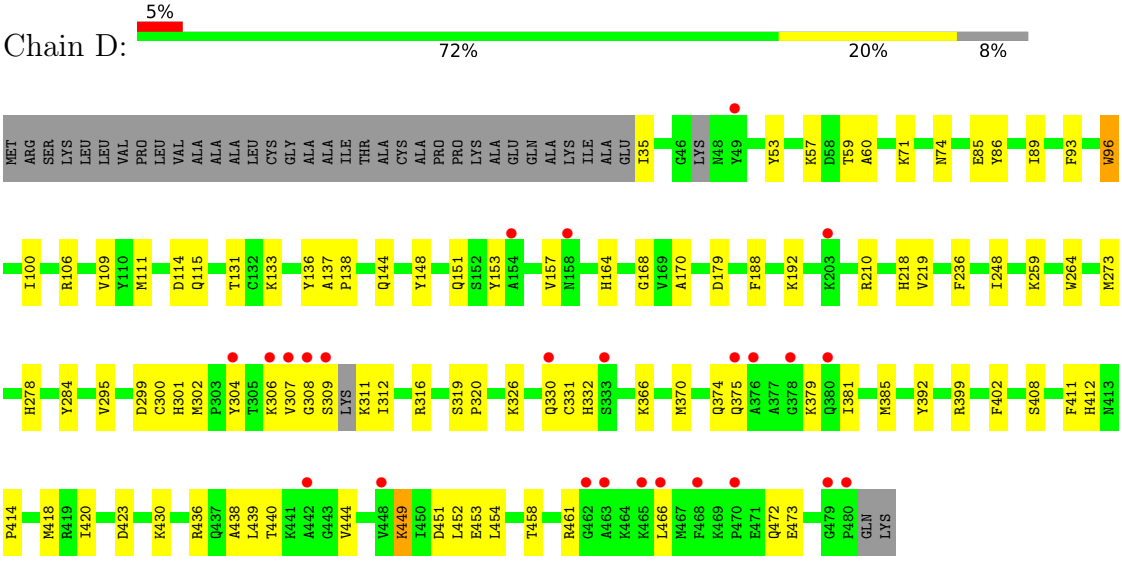
Chain C:





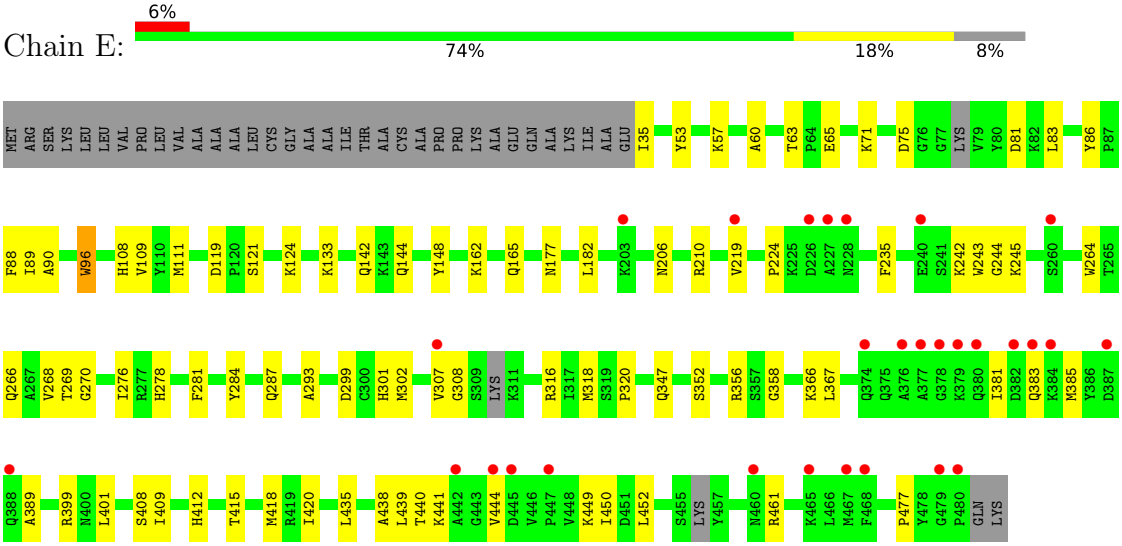
• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

Chain D:



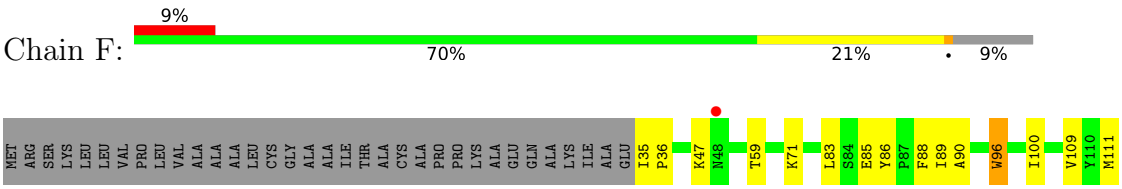
• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

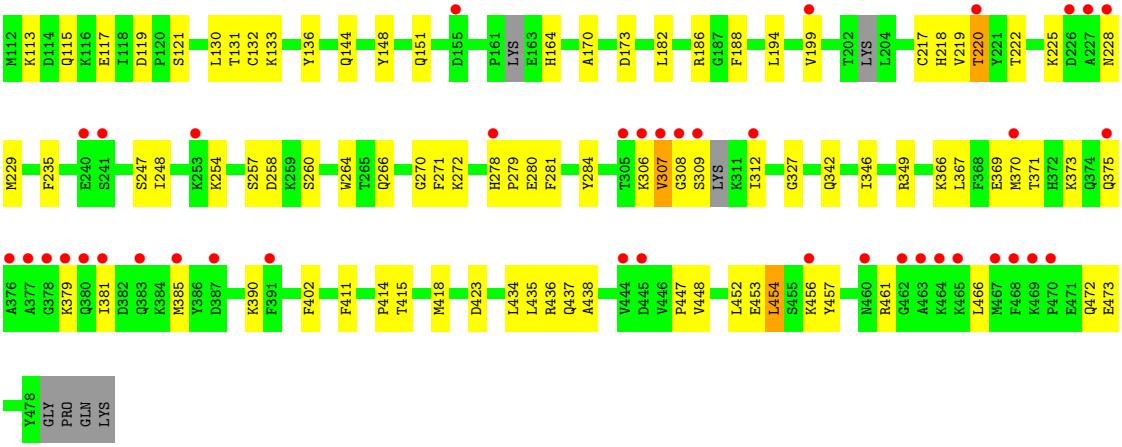
Chain E:



• Molecule 1: Nitrite reductase (cytochrome; ammonia-forming)

Chain F:




M112 K113 D114 Q115 K116 E117 T118 D119 P120 S121 L130 T131 C132 K133 Y136 Q144 Y148 Q151 D155 P161 LYS E163 H164 A170 D173 L182 R186 G187 F188 L194 V199 T202 LYS L204 C217 H218 V219 T220 V221 T222 K225 D226 A227 N228
M229 F235 E240 S241 S247 I248 K253 K254 S257 D258 K259 S260 W264 T265 Q266 G270 F271 K272 H278 P279 E280 F281 Y284 T305 K306 V307 G308 S309 LYS K311 I312 G327 Q342 I346 R349 K366 L367 F368 E369 M370 T371 H372 K373 Q374 Q375
A376 A377 G378 K379 Q380 I381 D382 Q383 K384 M385 Y386 D387 K390 F391 F402 F411 P414 T415 M418 D423 L434 L435 R436 Q437 A438 V444 D445 V446 P447 V448 L452 E453 L454 S455 K456 Y457 N460 R461 G462 A463 K464 K465 L466 M467 F468 K469 P470 E471 Q472 E473
Y478 GLY PRO GLN LYS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	110.86Å 144.62Å 234.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.66 – 2.55 29.66 – 2.55	Depositor EDS
% Data completeness (in resolution range)	99.0 (29.66-2.55) 99.0 (29.66-2.55)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.81 (at 2.54Å)	Xtriage
Refinement program	PHENIX 1.15.1_3469	Depositor
R, R_{free}	0.188 , 0.242 0.189 , 0.242	Depositor DCC
R_{free} test set	6076 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	33.7	Xtriage
Anisotropy	0.322	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 49.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	23376	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.35% 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: HEC, SO4

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	0.49	0/3610	0.63	0/4861
1	B	0.49	0/3624	0.63	0/4878
1	C	0.48	0/3610	0.62	0/4859
1	D	0.46	0/3620	0.59	0/4875
1	E	0.44	0/3610	0.59	0/4861
1	F	0.42	0/3598	0.57	0/4844
All	All	0.46	0/21672	0.60	0/29178

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	3525	0	3433	44	0
1	B	3538	0	3457	38	0
1	C	3525	0	3440	55	0
1	D	3534	0	3448	73	0
1	E	3525	0	3432	65	0
1	F	3514	0	3422	71	0
2	A	215	0	151	22	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	215	0	150	23	0
2	C	215	0	150	16	0
2	D	215	0	151	24	0
2	E	215	0	150	19	0
2	F	215	0	150	20	0
3	A	5	0	0	2	0
3	B	5	0	0	0	0
3	C	5	0	0	2	0
3	D	5	0	0	0	0
3	E	5	0	0	0	0
3	F	5	0	0	0	0
4	A	215	0	0	2	0
4	B	236	0	0	0	0
4	C	148	0	0	1	0
4	D	134	0	0	4	0
4	E	92	0	0	4	0
4	F	70	0	0	3	0
All	All	23376	0	21534	409	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 9.

All (409) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:331:CYS:SG	2:A:505:HEC:CAC	2.30	1.19
1:D:331:CYS:SG	2:D:505:HEC:CAC	2.41	1.07
1:A:331:CYS:SG	2:A:505:HEC:HAC	2.09	0.90
1:E:242:LYS:HD2	1:E:243:TRP:H	1.41	0.84
2:E:505:HEC:HBA2	2:F:505:HEC:HBA2	1.60	0.82
1:F:194:LEU:HB3	1:F:199:VAL:HG11	1.61	0.80
1:B:273:MET:HE3	1:B:394:GLU:HG2	1.67	0.77
1:C:384:LYS:O	1:C:384:LYS:HG2	1.82	0.77
1:E:111:MET:HG2	1:E:133:LYS:HG2	1.65	0.76
1:F:136:TYR:HH	1:F:164:HIS:HD1	1.33	0.76
1:C:330:GLN:OE1	1:C:331:CYS:SG	2.45	0.75
1:A:122:ARG:NH2	3:A:506:SO4:O1	2.20	0.74
1:D:300:CYS:SG	2:D:504:HEC:CAC	2.76	0.74
1:C:230:LYS:NZ	4:C:601:HOH:O	2.20	0.73
1:A:331:CYS:SG	2:A:505:HEC:CBC	2.77	0.72
2:A:505:HEC:HBA2	2:B:505:HEC:HBA2	1.71	0.70

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:35:ILE:N	4:F:601:HOH:O	2.24	0.70
1:E:383:GLN:NE2	4:E:601:HOH:O	2.24	0.70
1:D:461:ARG:HB2	1:D:466:LEU:HB2	1.75	0.69
1:F:85:GLU:HA	1:F:473:GLU:HA	1.74	0.69
1:C:437:GLN:HG3	1:D:440:THR:HG21	1.75	0.68
1:A:245:LYS:NZ	4:A:601:HOH:O	2.27	0.68
1:E:53:TYR:O	1:E:57:LYS:HG3	1.93	0.68
1:D:210:ARG:NH1	1:D:299:ASP:OD1	2.27	0.68
1:D:53:TYR:CE2	1:D:57:LYS:HE2	2.29	0.67
1:B:35:ILE:O	1:B:177:ASN:ND2	2.28	0.66
1:D:411:PHE:CD2	2:D:504:HEC:HMD2	2.31	0.66
2:D:505:HEC:HMB1	2:D:505:HEC:HBB3	1.78	0.66
1:D:35:ILE:N	4:D:603:HOH:O	2.28	0.66
1:D:106:ARG:HD3	1:D:114:ASP:OD2	1.96	0.65
2:C:504:HEC:HMB1	2:C:504:HEC:HBB3	1.78	0.65
1:F:228:ASN:ND2	4:F:602:HOH:O	2.30	0.65
2:A:501:HEC:HMC1	2:A:501:HEC:HBC3	1.80	0.64
1:E:144:GLN:HB2	1:E:148:TYR:HB2	1.80	0.63
1:E:65:GLU:HG2	1:E:75:ASP:HB3	1.80	0.63
1:C:83:LEU:HD23	1:C:90:ALA:HA	1.79	0.63
2:D:505:HEC:HMC1	2:D:505:HEC:HBC3	1.81	0.63
2:B:501:HEC:HMC1	2:B:501:HEC:HBC3	1.82	0.62
1:D:284:TYR:CZ	2:D:504:HEC:HMC2	2.34	0.62
2:C:505:HEC:HBC3	2:C:505:HEC:HMC1	1.82	0.62
1:F:111:MET:HG2	2:F:503:HEC:HMD2	1.81	0.62
2:B:504:HEC:HBC3	2:B:504:HEC:HMC1	1.82	0.62
1:E:441:LYS:O	1:E:441:LYS:HG2	1.97	0.62
2:F:505:HEC:HMB1	2:F:505:HEC:HBB3	1.80	0.62
2:B:505:HEC:HMC1	2:B:505:HEC:HBC3	1.82	0.62
1:C:455:SER:HA	1:C:458:THR:HG22	1.80	0.62
1:A:385:MET:HE1	1:A:437:GLN:HB3	1.82	0.62
1:B:60:ALA:HB2	1:B:109:VAL:HG21	1.82	0.61
2:D:503:HEC:HMB1	2:D:503:HEC:HBB3	1.82	0.61
2:C:504:HEC:HMC1	2:C:504:HEC:HBC3	1.80	0.61
1:E:367:LEU:HD11	1:E:450:ILE:HG12	1.81	0.61
2:B:505:HEC:HMB1	2:B:505:HEC:HBB3	1.82	0.61
1:D:331:CYS:O	1:D:332:HIS:ND1	2.33	0.61
1:E:111:MET:HG3	2:E:503:HEC:HMD2	1.82	0.61
1:D:86:TYR:O	1:D:89:ILE:HG12	2.01	0.60
1:A:111:MET:HG3	2:A:503:HEC:HMD2	1.83	0.60
1:E:415:THR:HG21	1:F:346:ILE:HG12	1.84	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:306:LYS:HD2	1:B:311:LYS:HD3	1.82	0.60
1:E:366:LYS:NZ	1:E:452:LEU:O	2.34	0.60
1:D:106:ARG:O	2:D:503:HEC:HBA2	2.02	0.60
2:A:505:HEC:HBC3	2:A:505:HEC:HMC1	1.83	0.60
1:C:406:GLU:OE1	1:C:408:SER:HB3	2.02	0.60
2:C:502:HEC:HMC1	2:C:502:HEC:HBC3	1.84	0.60
1:D:331:CYS:SG	2:D:505:HEC:HAC	2.36	0.60
2:F:505:HEC:HMC1	2:F:505:HEC:HBC3	1.82	0.59
1:F:218:HIS:HB3	1:F:280:GLU:HB2	1.84	0.59
1:C:182:LEU:HD11	2:C:502:HEC:HBD1	1.83	0.59
1:F:381:ILE:HG23	1:F:438:ALA:HB1	1.83	0.59
1:E:284:TYR:CZ	2:E:504:HEC:HMC2	2.38	0.59
1:F:436:ARG:NH2	1:F:447:PRO:O	2.35	0.58
2:B:504:HEC:HMB1	2:B:504:HEC:HBB3	1.86	0.58
1:E:35:ILE:N	4:E:604:HOH:O	2.36	0.58
2:E:503:HEC:HBC3	2:E:503:HEC:HMC1	1.85	0.58
1:C:303:PRO:HD2	1:C:314:ASP:HB3	1.86	0.58
2:F:503:HEC:HMC1	2:F:503:HEC:HBC3	1.86	0.57
1:C:356:ARG:NH1	1:D:423:ASP:OD1	2.37	0.57
1:A:276:ILE:H	1:A:401:LEU:HD21	1.70	0.57
1:B:284:TYR:CZ	2:B:504:HEC:HMC2	2.39	0.57
1:A:210:ARG:NH2	4:A:606:HOH:O	2.38	0.57
1:D:330:GLN:O	1:D:330:GLN:HG2	2.04	0.56
1:F:366:LYS:HD2	1:F:452:LEU:HA	1.87	0.56
1:C:132:CYS:HB3	1:C:217:CYS:HB3	1.87	0.56
1:D:85:GLU:HA	1:D:473:GLU:HA	1.88	0.56
2:B:503:HEC:HMA3	2:B:504:HEC:HBA2	1.88	0.56
2:A:504:HEC:HBB3	2:A:504:HEC:HMB1	1.88	0.55
2:D:504:HEC:HBC3	2:D:504:HEC:HMC1	1.88	0.55
2:F:504:HEC:HMC1	2:F:504:HEC:HBC3	1.88	0.55
1:E:352:SER:HB2	1:E:477:PRO:HD2	1.88	0.55
2:C:502:HEC:HMB1	2:C:502:HEC:HBB3	1.88	0.55
1:F:436:ARG:NH2	1:F:448:VAL:HA	2.21	0.55
1:D:111:MET:HG3	1:D:133:LYS:HD3	1.88	0.55
1:D:331:CYS:SG	2:D:505:HEC:C3C	2.95	0.54
1:E:83:LEU:HD23	1:E:89:ILE:HG13	1.90	0.54
1:E:381:ILE:HG23	1:E:438:ALA:HB1	1.90	0.54
1:F:222:THR:HB	1:F:235:PHE:CE1	2.42	0.54
1:D:304:TYR:O	1:D:326:LYS:NZ	2.41	0.54
1:D:451:ASP:OD2	1:D:453:GLU:HG2	2.06	0.54
1:C:332:HIS:HB3	1:C:334:GLU:OE2	2.07	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:461:ARG:HB2	1:F:466:LEU:HB2	1.90	0.54
1:C:63:THR:HG22	1:C:318:MET:CE	2.37	0.54
2:F:504:HEC:HBB3	2:F:504:HEC:HMB1	1.89	0.54
2:A:503:HEC:HMB1	2:A:503:HEC:HBB3	1.91	0.53
1:D:331:CYS:SG	2:D:505:HEC:CBC	2.96	0.53
2:E:505:HEC:CBA	2:F:505:HEC:HBA2	2.37	0.53
1:F:258:ASP:OD1	1:F:260:SER:OG	2.20	0.53
1:A:96:TRP:CE3	1:A:264:TRP:HB3	2.44	0.53
2:A:505:HEC:HMB1	2:A:505:HEC:HBB3	1.89	0.53
1:B:255:MET:HE3	1:B:274:ALA:HB3	1.91	0.53
1:B:96:TRP:CE3	1:B:264:TRP:HB3	2.44	0.53
1:A:221:TYR:OH	3:A:506:SO4:O4	2.21	0.52
1:E:182:LEU:HD11	2:E:502:HEC:HBD1	1.91	0.52
1:C:408:SER:HB2	1:C:412:HIS:CE1	2.45	0.52
2:E:501:HEC:HBC3	2:E:501:HEC:HMC1	1.91	0.52
1:E:96:TRP:CE3	1:E:264:TRP:HB3	2.45	0.52
1:E:302:MET:CE	2:E:503:HEC:HBB2	2.39	0.52
1:C:115:GLN:HE21	2:C:501:HEC:C1B	2.23	0.52
1:C:347:GLN:HG2	1:C:409:ILE:HB	1.91	0.52
1:C:371:THR:HG23	1:C:381:ILE:HD13	1.91	0.52
2:D:504:HEC:HBB3	2:D:504:HEC:HMB1	1.92	0.52
2:C:503:HEC:HMA3	2:C:504:HEC:HBA2	1.92	0.51
1:D:375:GLN:NE2	4:D:614:HOH:O	2.43	0.51
2:A:502:HEC:HMC1	2:A:502:HEC:HBC3	1.92	0.51
2:A:505:HEC:HBA2	2:B:505:HEC:CBA	2.38	0.51
1:B:407:ASN:HB3	2:B:504:HEC:CAA	2.41	0.51
2:A:503:HEC:C3A	2:A:504:HEC:HMA3	2.41	0.51
2:B:503:HEC:HMB1	2:B:503:HEC:HBB3	1.93	0.51
1:C:140:LEU:O	1:C:144:GLN:HB2	2.11	0.51
1:E:268:VAL:HG23	1:E:269:THR:HG23	1.93	0.51
1:B:170:ALA:O	2:B:502:HEC:HMC3	2.10	0.51
1:D:259:LYS:H	1:D:259:LYS:HD2	1.74	0.51
1:E:86:TYR:O	1:E:89:ILE:HG12	2.10	0.51
1:E:385:MET:HE2	1:E:438:ALA:HB2	1.92	0.51
1:A:259:LYS:O	1:A:261:TYR:N	2.44	0.50
1:C:74:ASN:HB2	1:C:106:ARG:HG3	1.93	0.50
2:D:502:HEC:HBB3	2:D:502:HEC:HMB1	1.92	0.50
1:B:85:GLU:HA	1:B:473:GLU:HA	1.93	0.50
1:B:361:LEU:HD13	1:B:397:PHE:HA	1.93	0.50
2:A:504:HEC:HMC1	2:A:504:HEC:HBC3	1.93	0.50
1:D:53:TYR:O	1:D:57:LYS:HG3	2.12	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:307:VAL:O	1:D:309:SER:N	2.44	0.50
2:E:505:HEC:HMC1	2:E:505:HEC:HBC3	1.92	0.50
1:F:411:PHE:CD2	2:F:504:HEC:HMD2	2.45	0.50
1:F:436:ARG:HH22	1:F:448:VAL:HA	1.76	0.50
1:A:86:TYR:O	1:A:89:ILE:HG12	2.11	0.49
1:F:136:TYR:OH	1:F:164:HIS:ND1	2.26	0.49
2:B:502:HEC:HMB1	2:B:502:HEC:HBB3	1.94	0.49
2:C:503:HEC:HMB1	2:C:503:HEC:HBB3	1.94	0.49
1:F:284:TYR:CZ	2:F:504:HEC:HMC2	2.48	0.49
1:A:284:TYR:CZ	2:A:504:HEC:HMC2	2.47	0.49
1:E:347:GLN:HG2	1:E:409:ILE:HB	1.94	0.49
1:C:86:TYR:O	1:C:89:ILE:HG12	2.13	0.49
1:C:304:TYR:CD2	1:C:311:LYS:HE3	2.47	0.49
2:C:501:HEC:HMC1	2:C:501:HEC:HBC3	1.94	0.49
1:A:447:PRO:HG2	1:A:450:ILE:HD13	1.94	0.49
1:D:379:LYS:HE3	1:D:444:VAL:HG22	1.95	0.49
2:E:504:HEC:HMB1	2:E:504:HEC:HBB3	1.94	0.49
1:F:194:LEU:HB3	1:F:199:VAL:CG1	2.38	0.49
1:F:367:LEU:HB3	1:F:435:LEU:CD2	2.42	0.49
1:D:144:GLN:HB2	1:D:148:TYR:HB2	1.95	0.49
1:E:63:THR:HG22	1:E:318:MET:HE2	1.93	0.49
1:F:367:LEU:HB3	1:F:435:LEU:HD23	1.93	0.49
1:E:242:LYS:NZ	1:E:243:TRP:HB3	2.27	0.49
2:E:505:HEC:HBB3	2:E:505:HEC:HMB1	1.94	0.49
2:D:501:HEC:HMC1	2:D:501:HEC:HBC3	1.95	0.48
1:B:86:TYR:O	1:B:89:ILE:HG12	2.12	0.48
1:E:301:HIS:CE1	1:E:320:PRO:HD3	2.48	0.48
2:C:505:HEC:HBB3	2:C:505:HEC:HMB1	1.95	0.48
1:D:100:ILE:O	1:D:466:LEU:HD12	2.12	0.48
1:E:244:GLY:O	1:E:287:GLN:NE2	2.36	0.48
1:A:176:ASN:ND2	1:A:179:ASP:OD1	2.37	0.48
1:A:97:GLY:HA3	1:A:122:ARG:HG3	1.96	0.48
1:C:60:ALA:HB2	1:C:109:VAL:HG21	1.96	0.48
1:D:302:MET:HE2	2:D:503:HEC:HBB2	1.95	0.48
2:D:503:HEC:HMA3	2:D:504:HEC:HBA2	1.95	0.48
1:E:177:ASN:OD1	1:E:177:ASN:N	2.47	0.48
1:A:134:THR:HG22	1:A:136:TYR:H	1.78	0.48
1:C:284:TYR:CZ	2:C:504:HEC:HMC2	2.49	0.47
1:E:219:VAL:HG12	1:E:281:PHE:HB3	1.96	0.47
1:A:219:VAL:HG12	1:A:281:PHE:HB3	1.97	0.47
1:B:301:HIS:CE1	1:B:320:PRO:HD3	2.49	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:367:LEU:HB3	1:E:435:LEU:HD23	1.95	0.47
2:B:504:HEC:HBC1	2:B:505:HEC:CHC	2.45	0.47
1:E:81:ASP:OD2	1:E:461:ARG:NH2	2.44	0.47
1:E:367:LEU:HB3	1:E:435:LEU:CD2	2.44	0.47
1:A:399:ARG:HG2	1:A:420:ILE:HG23	1.95	0.47
1:B:218:HIS:HB3	1:B:280:GLU:HB2	1.95	0.47
1:C:302:MET:HG2	1:C:314:ASP:O	2.14	0.47
1:D:375:GLN:HG3	1:D:381:ILE:HD13	1.97	0.47
1:E:307:VAL:HG12	1:E:307:VAL:O	2.15	0.47
1:F:83:LEU:HD23	1:F:90:ALA:HA	1.97	0.47
1:A:89:ILE:HB	1:A:93:PHE:CE2	2.49	0.47
1:A:304:TYR:HB2	1:A:311:LYS:HG3	1.97	0.47
1:B:302:MET:HE2	2:B:503:HEC:HBB2	1.95	0.47
1:C:111:MET:HG3	2:C:503:HEC:HMD2	1.97	0.47
1:D:148:TYR:HA	1:D:151:GLN:HE21	1.78	0.47
1:A:456:LYS:HE3	1:A:457:TYR:CZ	2.50	0.47
1:B:385:MET:HE1	1:B:437:GLN:HG2	1.97	0.47
1:F:385:MET:HE2	1:F:438:ALA:HB2	1.97	0.47
1:C:96:TRP:CE3	1:C:264:TRP:HB3	2.49	0.47
1:F:366:LYS:NZ	1:F:369:GLU:OE1	2.40	0.47
1:A:71:LYS:HA	1:A:71:LYS:HD2	1.65	0.47
1:C:248:ILE:HD13	1:C:402:PHE:CD1	2.50	0.47
1:D:436:ARG:O	1:D:440:THR:HG23	2.15	0.47
1:C:301:HIS:CE1	1:C:320:PRO:HD3	2.49	0.47
1:D:153:TYR:O	1:D:157:VAL:HG23	2.15	0.47
1:D:259:LYS:HD2	1:D:259:LYS:N	2.29	0.47
1:D:414:PRO:O	1:D:418:MET:HG2	2.15	0.47
2:A:502:HEC:HBB3	2:A:502:HEC:HMB1	1.97	0.46
2:A:503:HEC:HMC1	2:A:503:HEC:HBC3	1.97	0.46
1:D:273:MET:HE2	4:D:625:HOH:O	2.14	0.46
1:F:144:GLN:HB2	1:F:148:TYR:HB2	1.95	0.46
1:F:454:LEU:HA	1:F:457:TYR:HD1	1.81	0.46
1:A:71:LYS:HE2	1:A:407:ASN:O	2.15	0.46
1:C:206:ASN:O	1:C:210:ARG:HG3	2.16	0.46
1:F:182:LEU:HD11	2:F:502:HEC:HBD1	1.98	0.46
1:F:271:PHE:CZ	1:F:390:LYS:HD2	2.50	0.46
1:A:111:MET:HG3	1:A:133:LYS:HD3	1.98	0.46
1:C:42:PRO:HG3	1:C:170:ALA:HB1	1.98	0.46
1:C:374:GLN:HG3	1:C:444:VAL:HG21	1.98	0.46
2:E:504:HEC:HMC1	2:E:504:HEC:HBC3	1.98	0.46
1:A:255:MET:HE3	1:A:274:ALA:HB3	1.98	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:86:TYR:HB3	1:F:88:PHE:CZ	2.51	0.46
1:F:115:GLN:HE21	2:F:501:HEC:C1B	2.28	0.46
1:C:185:SER:OG	1:C:186:ARG:NH1	2.46	0.45
1:D:60:ALA:HB2	1:D:109:VAL:HG21	1.98	0.45
1:D:96:TRP:O	1:D:100:ILE:HD12	2.16	0.45
1:F:119:ASP:OD1	1:F:121:SER:OG	2.25	0.45
1:A:259:LYS:HA	1:A:259:LYS:HD3	1.54	0.45
1:D:399:ARG:HG2	1:D:420:ILE:HG23	1.98	0.45
1:E:415:THR:HB	1:F:349:ARG:HD2	1.99	0.45
1:A:111:MET:CG	1:A:133:LYS:HD3	2.46	0.45
1:A:307:VAL:O	1:A:310:LYS:HG2	2.17	0.45
1:E:440:THR:HG21	1:F:437:GLN:HG3	1.98	0.45
1:F:96:TRP:CE3	1:F:264:TRP:HB3	2.52	0.45
1:F:248:ILE:HD13	1:F:402:PHE:CD2	2.51	0.45
1:A:172:ILE:O	1:A:183:LYS:NZ	2.49	0.45
1:D:366:LYS:HG3	1:D:452:LEU:HD23	1.98	0.45
1:E:367:LEU:HD11	1:E:450:ILE:CG1	2.47	0.45
1:F:370:MET:HA	1:F:373:LYS:HB2	1.98	0.45
1:E:439:LEU:HB3	1:E:444:VAL:HB	1.97	0.45
1:B:224:PRO:HG3	1:B:235:PHE:HE2	1.81	0.45
1:C:221:TYR:OH	3:C:506:SO4:O2	2.20	0.45
1:D:374:GLN:HG3	1:D:444:VAL:HG21	1.99	0.45
1:D:71:LYS:HA	1:D:71:LYS:HD2	1.68	0.45
1:E:162:LYS:HA	1:E:165:GLN:NE2	2.31	0.45
1:D:330:GLN:O	1:D:330:GLN:CG	2.65	0.45
1:E:35:ILE:N	4:E:610:HOH:O	2.49	0.45
1:E:210:ARG:NH1	1:E:299:ASP:OD1	2.50	0.45
1:C:382:ASP:HB2	1:C:441:LYS:NZ	2.31	0.45
1:E:53:TYR:CE2	1:E:57:LYS:HE3	2.52	0.45
1:E:418:MET:HE1	1:F:415:THR:HB	1.99	0.45
1:F:130:LEU:HD23	1:F:130:LEU:HA	1.80	0.45
1:F:170:ALA:O	2:F:502:HEC:HMC3	2.17	0.45
1:A:82:LYS:HD3	1:A:102:TYR:CE2	2.52	0.45
1:F:113:LYS:HD2	1:F:117:GLU:HG3	1.98	0.45
1:F:307:VAL:O	1:F:309:SER:N	2.50	0.45
1:F:342:GLN:HG2	4:F:646:HOH:O	2.15	0.45
1:C:200:ASP:HB3	1:C:203:LYS:HG2	1.99	0.44
1:D:53:TYR:CD2	1:D:57:LYS:HE2	2.52	0.44
1:D:454:LEU:O	1:D:458:THR:HG23	2.18	0.44
2:E:503:HEC:HBB3	2:E:503:HEC:HMB1	1.99	0.44
1:F:219:VAL:O	1:F:279:PRO:HA	2.17	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:503:HEC:HBC3	2:C:503:HEC:HMC1	1.99	0.44
1:F:225:LYS:HB3	1:F:229:MET:HA	2.00	0.44
1:A:248:ILE:HD13	1:A:402:PHE:CD2	2.52	0.44
1:C:179:ASP:O	1:C:180:MET:HB2	2.17	0.44
1:D:96:TRP:CE3	1:D:264:TRP:HB3	2.52	0.44
1:F:85:GLU:HG2	1:F:472:GLN:O	2.17	0.44
1:F:111:MET:CE	1:F:133:LYS:HA	2.47	0.44
2:A:505:HEC:CBA	2:B:505:HEC:HBA2	2.44	0.44
1:C:63:THR:HG22	1:C:318:MET:HE3	2.00	0.44
1:E:88:PHE:CE2	1:E:358:GLY:HA3	2.53	0.44
1:E:244:GLY:O	1:E:245:LYS:HG2	2.17	0.44
1:D:248:ILE:HD13	1:D:402:PHE:CD2	2.52	0.44
2:F:503:HEC:HMA3	2:F:504:HEC:HBA2	2.00	0.44
1:B:306:LYS:HE3	1:B:310:LYS:C	2.38	0.44
1:D:301:HIS:CE1	1:D:320:PRO:HD3	2.52	0.44
1:D:439:LEU:HD12	1:D:439:LEU:HA	1.82	0.44
1:F:434:LEU:HD23	1:F:434:LEU:HA	1.83	0.44
1:A:184:ILE:HG22	1:A:184:ILE:O	2.18	0.44
1:B:411:PHE:CD2	2:B:504:HEC:HMD2	2.53	0.44
1:E:206:ASN:O	1:E:210:ARG:HG3	2.18	0.44
1:C:326:LYS:HB3	1:C:326:LYS:HE3	1.68	0.44
1:D:370:MET:O	1:D:374:GLN:HG2	2.16	0.44
1:D:449:LYS:HE3	1:D:449:LYS:HB3	1.86	0.44
1:E:242:LYS:HD2	1:E:243:TRP:N	2.21	0.44
2:E:501:HEC:HHC	2:E:501:HEC:HBB2	1.99	0.44
1:A:293:ALA:HB1	2:A:505:HEC:HMD2	2.00	0.44
1:C:384:LYS:O	1:C:388:GLN:HG3	2.18	0.43
1:D:89:ILE:HB	1:D:93:PHE:CE2	2.53	0.43
1:F:173:ASP:OD1	1:F:186:ARG:NH1	2.39	0.43
1:F:371:THR:O	1:F:375:GLN:HG2	2.18	0.43
2:A:505:HEC:CHA	2:A:505:HEC:HBA1	2.48	0.43
1:E:88:PHE:CD2	1:E:358:GLY:HA3	2.53	0.43
1:F:327:GLY:O	2:F:505:HEC:HMC3	2.18	0.43
1:C:278:HIS:NE2	3:C:506:SO4:O1	2.51	0.43
1:C:447:PRO:HD2	1:C:450:ILE:HD13	1.99	0.43
1:E:242:LYS:HZ2	1:E:243:TRP:HB3	1.82	0.43
1:F:71:LYS:HA	1:F:71:LYS:HD2	1.66	0.43
1:F:148:TYR:HA	1:F:151:GLN:NE2	2.33	0.43
1:C:408:SER:OG	1:C:412:HIS:N	2.49	0.43
2:F:503:HEC:HMB1	2:F:503:HEC:HBB3	2.01	0.43
1:D:85:GLU:HG2	1:D:472:GLN:O	2.19	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:302:MET:HE3	2:E:502:HEC:HMD2	1.99	0.43
1:C:53:TYR:CE2	1:C:57:LYS:HE2	2.54	0.43
1:A:408:SER:HB3	1:A:412:HIS:CE1	2.54	0.43
1:B:74:ASN:OD1	1:B:77:GLY:HA2	2.18	0.43
1:C:143:LYS:O	1:C:144:GLN:HG3	2.19	0.43
1:D:111:MET:HE2	1:D:111:MET:HB2	1.72	0.43
1:D:307:VAL:HG13	1:D:312:ILE:HD13	2.00	0.43
2:D:502:HEC:HBC3	2:D:502:HEC:HMC1	2.01	0.43
1:F:132:CYS:HB3	1:F:217:CYS:HB3	2.01	0.43
1:F:266:GLN:O	1:F:270:GLY:N	2.49	0.43
1:B:303:PRO:HB3	1:B:326:LYS:HG3	2.01	0.42
1:C:71:LYS:HA	1:C:71:LYS:HD3	1.69	0.42
1:B:302:MET:CE	2:B:502:HEC:HMD2	2.49	0.42
2:A:505:HEC:HBA2	2:B:505:HEC:CAA	2.49	0.42
1:E:142:GLN:O	1:E:142:GLN:HG2	2.18	0.42
1:B:189:THR:HB	1:B:236:PHE:CZ	2.54	0.42
1:B:447:PRO:HG2	1:B:450:ILE:HD13	2.00	0.42
1:D:59:THR:HG22	1:D:316:ARG:HA	2.02	0.42
1:D:133:LYS:O	1:D:168:GLY:HA2	2.20	0.42
1:E:108:HIS:O	1:E:111:MET:HB2	2.19	0.42
2:E:502:HEC:HMC1	2:E:502:HEC:HBC3	2.01	0.42
2:E:503:HEC:C3A	2:E:504:HEC:HMA3	2.50	0.42
1:A:435:LEU:HD23	1:A:435:LEU:HA	1.88	0.42
1:C:399:ARG:HG2	1:C:420:ILE:HG23	1.99	0.42
1:E:60:ALA:HB2	1:E:109:VAL:HG21	2.01	0.42
1:F:86:TYR:O	1:F:89:ILE:HG12	2.19	0.42
1:A:206:ASN:O	1:A:210:ARG:HG3	2.20	0.42
1:B:219:VAL:HG12	1:B:281:PHE:HB3	2.01	0.42
1:C:35:ILE:HA	1:C:36:PRO:HD3	1.85	0.42
1:F:219:VAL:O	1:F:220:THR:HB	2.20	0.42
1:F:254:LYS:O	1:F:257:SER:OG	2.28	0.42
1:F:414:PRO:O	1:F:418:MET:HG3	2.20	0.42
1:A:218:HIS:HB3	1:A:280:GLU:HB2	2.01	0.42
1:B:248:ILE:HD13	1:B:402:PHE:CD2	2.54	0.42
1:B:306:LYS:NZ	1:B:311:LYS:HB2	2.35	0.42
1:B:83:LEU:CD1	1:B:102:TYR:HB3	2.50	0.42
1:B:204:LEU:HD23	1:B:204:LEU:HA	1.86	0.42
1:D:136:TYR:OH	1:D:164:HIS:ND1	2.37	0.42
1:D:302:MET:CE	2:D:503:HEC:HBB2	2.49	0.42
1:E:119:ASP:OD1	1:E:121:SER:OG	2.27	0.42
1:F:35:ILE:HA	1:F:36:PRO:HD3	1.89	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:399:ARG:HB3	1:C:424:ALA:HB2	2.00	0.42
2:E:505:HEC:HBA2	2:F:505:HEC:CBA	2.42	0.42
1:F:86:TYR:HB3	1:F:88:PHE:CE1	2.55	0.42
1:F:100:ILE:O	1:F:461:ARG:NH1	2.44	0.42
2:F:501:HEC:HMC1	2:F:501:HEC:HBC3	2.01	0.42
1:B:74:ASN:HB2	1:B:106:ARG:HG2	2.02	0.42
1:C:148:TYR:HA	1:C:151:GLN:NE2	2.35	0.42
1:D:375:GLN:CG	1:D:381:ILE:HD13	2.50	0.42
1:D:392:TYR:CZ	1:D:430:LYS:HE3	2.54	0.42
1:F:59:THR:OG1	1:F:109:VAL:HG13	2.20	0.42
2:F:502:HEC:HBB3	2:F:502:HEC:HMB1	2.01	0.42
1:B:71:LYS:HD2	1:B:71:LYS:HA	1.73	0.41
2:D:505:HEC:HMC1	2:D:505:HEC:CBC	2.50	0.41
1:E:83:LEU:HD22	1:E:90:ALA:HA	2.01	0.41
1:F:375:GLN:HA	1:F:379:LYS:O	2.20	0.41
1:A:148:TYR:HA	1:A:151:GLN:NE2	2.35	0.41
1:B:106:ARG:NH2	1:B:114:ASP:OD1	2.43	0.41
1:B:161:PRO:O	1:B:165:GLN:HG3	2.19	0.41
1:B:407:ASN:HB3	2:B:504:HEC:HAA2	2.03	0.41
1:A:406:GLU:OE2	1:A:412:HIS:ND1	2.41	0.41
1:F:111:MET:HE2	1:F:133:LYS:HA	2.02	0.41
1:C:219:VAL:HG21	1:C:236:PHE:CZ	2.55	0.41
1:E:71:LYS:HD2	1:E:71:LYS:HA	1.79	0.41
1:F:219:VAL:HG12	1:F:281:PHE:HB3	2.02	0.41
2:B:503:HEC:C3A	2:B:504:HEC:HMA3	2.50	0.41
1:D:137:ALA:HB3	1:D:138:PRO:HD3	2.02	0.41
1:D:148:TYR:HA	1:D:151:GLN:NE2	2.35	0.41
1:D:131:THR:HG23	1:D:188:PHE:CZ	2.55	0.41
1:D:385:MET:HE1	1:D:438:ALA:N	2.35	0.41
1:A:259:LYS:O	1:A:260:SER:C	2.58	0.41
1:B:35:ILE:HG13	1:B:36:PRO:HD3	2.02	0.41
2:B:503:HEC:HMC1	2:B:503:HEC:HBC3	2.03	0.41
1:E:389:ALA:HB1	1:E:435:LEU:CD1	2.50	0.41
1:E:399:ARG:HG2	1:E:420:ILE:HG23	2.03	0.41
2:A:505:HEC:HBA1	2:A:505:HEC:HHA	2.03	0.41
1:B:300:CYS:SG	2:B:505:HEC:HHC	2.61	0.41
1:C:411:PHE:CD2	2:C:504:HEC:HMD2	2.55	0.41
1:D:115:GLN:HE21	2:D:501:HEC:C1B	2.34	0.41
1:D:218:HIS:CE1	2:D:504:HEC:HMA1	2.56	0.41
1:E:224:PRO:HG3	1:E:235:PHE:HE1	1.86	0.41
1:E:408:SER:HB3	1:E:412:HIS:CE1	2.56	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:131:THR:HG23	1:F:188:PHE:CZ	2.56	0.41
1:E:266:GLN:O	1:E:270:GLY:N	2.45	0.41
2:F:501:HEC:HHC	2:F:501:HEC:HBB2	2.02	0.41
1:A:60:ALA:HA	1:A:110:TYR:CE2	2.56	0.40
1:B:85:GLU:HB3	1:B:474:LEU:HD12	2.02	0.40
1:C:221:TYR:O	1:C:277:ARG:NH1	2.54	0.40
1:C:244:GLY:O	1:C:287:GLN:NE2	2.40	0.40
1:C:407:ASN:HB3	2:C:504:HEC:CAA	2.51	0.40
1:D:219:VAL:HG21	1:D:236:PHE:CE2	2.56	0.40
1:F:307:VAL:HG22	1:F:312:ILE:HG12	2.04	0.40
1:B:210:ARG:HH11	1:B:210:ARG:HD3	1.76	0.40
1:C:140:LEU:HD23	1:C:140:LEU:HA	1.85	0.40
1:E:293:ALA:HB1	2:E:505:HEC:HMD2	2.03	0.40
1:E:316:ARG:NE	4:E:605:HOH:O	2.38	0.40
1:A:369:GLU:HG2	1:A:373:LYS:HE3	2.03	0.40
1:D:74:ASN:ND2	4:D:613:HOH:O	2.41	0.40
1:D:295:VAL:HG22	2:D:505:HEC:HBC2	2.03	0.40
1:E:53:TYR:CZ	1:E:57:LYS:HE3	2.56	0.40
1:E:276:ILE:HB	1:E:401:LEU:HG	2.03	0.40
1:F:385:MET:HE1	1:F:437:GLN:HG2	2.03	0.40
1:F:453:GLU:O	1:F:456:LYS:HB2	2.20	0.40
1:D:408:SER:HB3	1:D:412:HIS:CE1	2.56	0.40
1:E:356:ARG:NH1	1:F:423:ASP:OD1	2.53	0.40
1:D:170:ALA:O	2:D:502:HEC:HMC3	2.21	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	435/482 (90%)	419 (96%)	14 (3%)	2 (0%)	29 40

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	B	440/482 (91%)	426 (97%)	13 (3%)	1 (0%)	47 60
1	C	436/482 (90%)	419 (96%)	14 (3%)	3 (1%)	22 30
1	D	438/482 (91%)	421 (96%)	15 (3%)	2 (0%)	29 40
1	E	435/482 (90%)	415 (95%)	18 (4%)	2 (0%)	29 40
1	F	433/482 (90%)	410 (95%)	19 (4%)	4 (1%)	17 24
All	All	2617/2892 (90%)	2510 (96%)	93 (4%)	14 (0%)	29 40

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	143	LYS
1	F	220	THR
1	A	260	SER
1	D	308	GLY
1	F	308	GLY
1	C	144	GLN
1	B	278	HIS
1	D	278	HIS
1	E	278	HIS
1	F	278	HIS
1	C	278	HIS
1	E	308	GLY
1	A	278	HIS
1	F	307	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	376/404 (93%)	373 (99%)	3 (1%)	81 88
1	B	377/404 (93%)	373 (99%)	4 (1%)	73 83
1	C	376/404 (93%)	368 (98%)	8 (2%)	53 68
1	D	377/404 (93%)	370 (98%)	7 (2%)	57 72

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	E	376/404 (93%)	373 (99%)	3 (1%)	81 88
1	F	375/404 (93%)	369 (98%)	6 (2%)	62 77
All	All	2257/2424 (93%)	2226 (99%)	31 (1%)	67 79

All (31) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	96	TRP
1	A	183	LYS
1	A	259	LYS
1	B	96	TRP
1	B	272	LYS
1	B	319	SER
1	B	384	LYS
1	C	83	LEU
1	C	96	TRP
1	C	179	ASP
1	C	203	LYS
1	C	226	ASP
1	C	245	LYS
1	C	253	LYS
1	C	309	SER
1	D	96	TRP
1	D	179	ASP
1	D	192	LYS
1	D	306	LYS
1	D	311	LYS
1	D	319	SER
1	D	449	LYS
1	E	96	TRP
1	E	124	LYS
1	E	449	LYS
1	F	47	LYS
1	F	96	TRP
1	F	247	SER
1	F	272	LYS
1	F	306	LYS
1	F	454	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	218	HIS
1	B	400	ASN
1	C	115	GLN
1	C	144	GLN
1	C	151	GLN
1	D	151	GLN
1	D	177	ASN
1	D	460	ASN
1	E	342	GLN
1	E	380	GLN
1	E	388	GLN
1	F	115	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

36 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	$\#\|Z\| > 2$
2	HEC	F	505	1	32,50,50	2.10	5 (15%)	24,82,82	1.55	5 (20%)
2	HEC	C	501	3,1	32,50,50	2.10	5 (15%)	24,82,82	1.82	7 (29%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	HEC	C	503	1	32,50,50	1.95	5 (15%)	24,82,82	1.86	7 (29%)
2	HEC	B	505	1	32,50,50	1.95	6 (18%)	24,82,82	1.96	8 (33%)
2	HEC	D	501	3,1	32,50,50	2.06	7 (21%)	24,82,82	1.75	5 (20%)
3	SO4	B	506	2	4,4,4	0.13	0	6,6,6	0.56	0
2	HEC	A	505	1	32,50,50	2.04	6 (18%)	24,82,82	2.28	6 (25%)
2	HEC	B	504	1	32,50,50	2.14	4 (12%)	24,82,82	1.70	4 (16%)
3	SO4	A	506	2	4,4,4	0.16	0	6,6,6	0.60	0
2	HEC	A	504	1	32,50,50	2.05	6 (18%)	24,82,82	1.68	5 (20%)
2	HEC	B	503	1	32,50,50	2.17	6 (18%)	24,82,82	3.58	12 (50%)
2	HEC	D	504	1	32,50,50	1.99	4 (12%)	24,82,82	1.71	7 (29%)
2	HEC	E	502	1	32,50,50	2.03	4 (12%)	24,82,82	1.58	5 (20%)
2	HEC	C	502	1	32,50,50	2.10	4 (12%)	24,82,82	1.70	4 (16%)
2	HEC	E	501	3,1	32,50,50	2.14	5 (15%)	24,82,82	1.91	6 (25%)
3	SO4	D	506	2	4,4,4	0.23	0	6,6,6	0.49	0
2	HEC	F	503	1	32,50,50	2.10	5 (15%)	24,82,82	1.68	8 (33%)
2	HEC	E	504	1	32,50,50	1.99	5 (15%)	24,82,82	1.53	4 (16%)
2	HEC	B	501	3,1	32,50,50	2.03	5 (15%)	24,82,82	1.94	6 (25%)
2	HEC	D	502	1	32,50,50	1.93	4 (12%)	24,82,82	1.89	5 (20%)
2	HEC	A	503	1	32,50,50	2.07	5 (15%)	24,82,82	1.80	5 (20%)
2	HEC	F	504	1	32,50,50	2.14	4 (12%)	24,82,82	1.58	6 (25%)
2	HEC	E	505	1	32,50,50	1.96	5 (15%)	24,82,82	2.31	9 (37%)
3	SO4	F	506	2	4,4,4	0.22	0	6,6,6	0.27	0
2	HEC	D	505	1	32,50,50	2.18	5 (15%)	24,82,82	1.91	6 (25%)
3	SO4	C	506	2	4,4,4	0.14	0	6,6,6	0.55	0
2	HEC	C	504	1	32,50,50	2.16	5 (15%)	24,82,82	1.71	7 (29%)
2	HEC	F	502	1	32,50,50	1.80	5 (15%)	24,82,82	1.42	2 (8%)
2	HEC	E	503	1	32,50,50	2.09	5 (15%)	24,82,82	1.51	5 (20%)
2	HEC	F	501	3,1	32,50,50	1.74	6 (18%)	24,82,82	1.42	3 (12%)
2	HEC	B	502	1	32,50,50	2.02	4 (12%)	24,82,82	1.86	7 (29%)
2	HEC	D	503	1	32,50,50	2.05	4 (12%)	24,82,82	1.86	8 (33%)
2	HEC	A	502	1	32,50,50	1.98	4 (12%)	24,82,82	1.72	5 (20%)
2	HEC	C	505	1	32,50,50	1.88	5 (15%)	24,82,82	2.23	9 (37%)
3	SO4	E	506	2	4,4,4	0.23	0	6,6,6	0.40	0
2	HEC	A	501	3,1	32,50,50	2.18	4 (12%)	24,82,82	1.42	2 (8%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HEC	F	505	1	-	2/10/54/54	-
2	HEC	C	501	3,1	-	2/10/54/54	-
2	HEC	C	503	1	-	0/10/54/54	-
2	HEC	B	505	1	-	5/10/54/54	-
2	HEC	D	501	3,1	-	2/10/54/54	-
2	HEC	A	505	1	-	5/10/54/54	-
2	HEC	B	504	1	-	0/10/54/54	-
2	HEC	A	504	1	-	0/10/54/54	-
2	HEC	B	503	1	-	1/10/54/54	-
2	HEC	D	504	1	-	1/10/54/54	-
2	HEC	E	502	1	-	2/10/54/54	-
2	HEC	C	502	1	-	2/10/54/54	-
2	HEC	E	501	3,1	-	2/10/54/54	-
2	HEC	F	503	1	-	0/10/54/54	-
2	HEC	E	504	1	-	2/10/54/54	-
2	HEC	B	501	3,1	-	2/10/54/54	-
2	HEC	D	502	1	-	2/10/54/54	-
2	HEC	A	503	1	-	0/10/54/54	-
2	HEC	F	504	1	-	2/10/54/54	-
2	HEC	E	505	1	-	2/10/54/54	-
2	HEC	D	505	1	-	3/10/54/54	-
2	HEC	C	504	1	-	2/10/54/54	-
2	HEC	F	502	1	-	2/10/54/54	-
2	HEC	E	503	1	-	0/10/54/54	-
2	HEC	F	501	3,1	-	2/10/54/54	-
2	HEC	B	502	1	-	2/10/54/54	-
2	HEC	D	503	1	-	3/10/54/54	-
2	HEC	A	502	1	-	2/10/54/54	-
2	HEC	C	505	1	-	7/10/54/54	-
2	HEC	A	501	3,1	-	2/10/54/54	-

All (147) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	505	HEC	C2B-C3B	-6.86	1.33	1.40

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	501	HEC	C2B-C3B	-6.61	1.33	1.40
2	A	504	HEC	C2B-C3B	-6.47	1.34	1.40
2	A	501	HEC	C2B-C3B	-6.44	1.34	1.40
2	B	503	HEC	C2B-C3B	-6.29	1.34	1.40
2	C	501	HEC	C2B-C3B	-6.21	1.34	1.40
2	C	504	HEC	C2B-C3B	-6.10	1.34	1.40
2	F	504	HEC	C2B-C3B	-6.09	1.34	1.40
2	B	502	HEC	C2B-C3B	-6.05	1.34	1.40
2	A	501	HEC	C3C-C2C	-6.04	1.34	1.40
2	B	504	HEC	C2B-C3B	-6.01	1.34	1.40
2	F	505	HEC	C2B-C3B	-6.00	1.34	1.40
2	C	502	HEC	C2B-C3B	-5.95	1.34	1.40
2	C	502	HEC	C3C-C2C	-5.94	1.34	1.40
2	C	504	HEC	C3C-C2C	-5.93	1.34	1.40
2	F	504	HEC	C3C-C2C	-5.82	1.34	1.40
2	A	502	HEC	C2B-C3B	-5.80	1.34	1.40
2	E	502	HEC	C3C-C2C	-5.77	1.34	1.40
2	D	501	HEC	C2B-C3B	-5.72	1.34	1.40
2	B	504	HEC	C3C-C2C	-5.62	1.34	1.40
2	D	502	HEC	C2B-C3B	-5.59	1.34	1.40
2	A	503	HEC	C2B-C3B	-5.56	1.34	1.40
2	F	503	HEC	C3C-C2C	-5.49	1.35	1.40
2	D	504	HEC	C2B-C3B	-5.44	1.35	1.40
2	A	505	HEC	C2B-C3B	-5.43	1.35	1.40
2	E	501	HEC	C3C-C2C	-5.41	1.35	1.40
2	D	505	HEC	C3C-C2C	-5.41	1.35	1.40
2	F	503	HEC	C2B-C3B	-5.38	1.35	1.40
2	E	504	HEC	C2B-C3B	-5.36	1.35	1.40
2	A	503	HEC	C3C-C2C	-5.36	1.35	1.40
2	E	503	HEC	C2B-C3B	-5.34	1.35	1.40
2	D	503	HEC	C2B-C3B	-5.33	1.35	1.40
2	E	503	HEC	C3C-C2C	-5.31	1.35	1.40
2	B	501	HEC	C3C-C2C	-5.26	1.35	1.40
2	F	505	HEC	C3C-C2C	-5.16	1.35	1.40
2	C	501	HEC	C3C-C2C	-5.16	1.35	1.40
2	B	501	HEC	C2B-C3B	-5.10	1.35	1.40
2	D	501	HEC	C3C-C2C	-5.09	1.35	1.40
2	B	505	HEC	C2B-C3B	-5.02	1.35	1.40
2	D	504	HEC	C3C-C2C	-4.96	1.35	1.40
2	E	504	HEC	C3C-C2C	-4.94	1.35	1.40
2	A	505	HEC	C3C-C2C	-4.93	1.35	1.40
2	D	503	HEC	C3C-C2C	-4.92	1.35	1.40

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	505	HEC	C2B-C3B	-4.91	1.35	1.40
2	E	505	HEC	C2B-C3B	-4.88	1.35	1.40
2	C	503	HEC	C2B-C3B	-4.88	1.35	1.40
2	E	502	HEC	C2B-C3B	-4.87	1.35	1.40
2	B	503	HEC	C3C-C2C	-4.82	1.35	1.40
2	C	503	HEC	C3C-C2C	-4.75	1.35	1.40
2	B	502	HEC	C3C-C2C	-4.66	1.35	1.40
2	A	504	HEC	C3C-C2C	-4.64	1.35	1.40
2	E	505	HEC	C3C-C2C	-4.64	1.35	1.40
2	B	503	HEC	CBB-CAB	-4.60	1.32	1.49
2	D	503	HEC	CBB-CAB	-4.55	1.32	1.49
2	B	505	HEC	C3C-C2C	-4.46	1.36	1.40
2	B	504	HEC	CBC-CAC	-4.44	1.32	1.49
2	D	503	HEC	CBC-CAC	-4.38	1.33	1.49
2	F	503	HEC	CBC-CAC	-4.36	1.33	1.49
2	A	502	HEC	C3C-C2C	-4.30	1.36	1.40
2	E	503	HEC	CBB-CAB	-4.29	1.33	1.49
2	B	502	HEC	CBC-CAC	-4.26	1.33	1.49
2	D	505	HEC	CBC-CAC	-4.23	1.33	1.49
2	E	501	HEC	CBB-CAB	-4.21	1.33	1.49
2	E	505	HEC	CBC-CAC	-4.20	1.33	1.49
2	F	503	HEC	CBB-CAB	-4.19	1.33	1.49
2	C	504	HEC	CBB-CAB	-4.19	1.33	1.49
2	E	503	HEC	CBC-CAC	-4.17	1.33	1.49
2	D	505	HEC	CBB-CAB	-4.15	1.33	1.49
2	F	504	HEC	CBB-CAB	-4.15	1.33	1.49
2	B	501	HEC	CBB-CAB	-4.15	1.33	1.49
2	F	502	HEC	C3C-C2C	-4.12	1.36	1.40
2	C	501	HEC	CBB-CAB	-4.10	1.34	1.49
2	F	504	HEC	CBC-CAC	-4.09	1.34	1.49
2	E	502	HEC	CBC-CAC	-4.09	1.34	1.49
2	B	503	HEC	CBC-CAC	-4.09	1.34	1.49
2	B	501	HEC	CBC-CAC	-4.08	1.34	1.49
2	A	502	HEC	CBB-CAB	-4.07	1.34	1.49
2	C	501	HEC	CBC-CAC	-4.07	1.34	1.49
2	F	502	HEC	CBB-CAB	-4.06	1.34	1.49
2	D	501	HEC	CBB-CAB	-4.04	1.34	1.49
2	C	505	HEC	C3C-C2C	-4.04	1.36	1.40
2	A	501	HEC	CBB-CAB	-4.02	1.34	1.49
2	C	504	HEC	CBC-CAC	-4.02	1.34	1.49
2	D	502	HEC	CBB-CAB	-4.02	1.34	1.49
2	F	502	HEC	CBC-CAC	-4.02	1.34	1.49

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	502	HEC	CBB-CAB	-4.02	1.34	1.49
2	A	503	HEC	CBB-CAB	-4.01	1.34	1.49
2	A	502	HEC	CBC-CAC	-4.01	1.34	1.49
2	C	503	HEC	CBB-CAB	-4.00	1.34	1.49
2	E	502	HEC	CBB-CAB	-3.99	1.34	1.49
2	C	505	HEC	CBB-CAB	-3.98	1.34	1.49
2	D	502	HEC	CBC-CAC	-3.97	1.34	1.49
2	B	505	HEC	CBB-CAB	-3.97	1.34	1.49
2	B	504	HEC	CBB-CAB	-3.96	1.34	1.49
2	A	505	HEC	CBC-CAC	-3.96	1.34	1.49
2	A	501	HEC	CBC-CAC	-3.95	1.34	1.49
2	C	503	HEC	CBC-CAC	-3.93	1.34	1.49
2	F	501	HEC	C2B-C3B	-3.92	1.36	1.40
2	F	505	HEC	CBB-CAB	-3.90	1.34	1.49
2	A	503	HEC	CBC-CAC	-3.90	1.34	1.49
2	F	505	HEC	CBC-CAC	-3.90	1.34	1.49
2	D	504	HEC	CBB-CAB	-3.89	1.34	1.49
2	E	505	HEC	CBB-CAB	-3.88	1.34	1.49
2	C	505	HEC	CBC-CAC	-3.88	1.34	1.49
2	A	504	HEC	CBC-CAC	-3.87	1.35	1.49
2	D	502	HEC	C3C-C2C	-3.84	1.36	1.40
2	A	505	HEC	CBB-CAB	-3.84	1.35	1.49
2	F	501	HEC	CBC-CAC	-3.84	1.35	1.49
2	C	502	HEC	CBB-CAB	-3.83	1.35	1.49
2	F	501	HEC	CBB-CAB	-3.83	1.35	1.49
2	C	502	HEC	CBC-CAC	-3.82	1.35	1.49
2	E	504	HEC	CBC-CAC	-3.82	1.35	1.49
2	E	501	HEC	CBC-CAC	-3.79	1.35	1.49
2	E	504	HEC	CBB-CAB	-3.79	1.35	1.49
2	D	501	HEC	CBC-CAC	-3.79	1.35	1.49
2	D	504	HEC	CBC-CAC	-3.78	1.35	1.49
2	A	504	HEC	CBB-CAB	-3.74	1.35	1.49
2	B	505	HEC	CBC-CAC	-3.66	1.35	1.49
2	F	502	HEC	C2B-C3B	-3.38	1.37	1.40
2	B	505	HEC	CAD-C3D	3.16	1.56	1.52
2	F	501	HEC	C3C-C2C	-3.05	1.37	1.40
2	A	505	HEC	CAD-C3D	3.00	1.56	1.52
2	C	501	HEC	CAD-C3D	2.89	1.56	1.52
2	F	503	HEC	CAD-C3D	2.63	1.55	1.52
2	D	505	HEC	CAD-C3D	2.45	1.55	1.52
2	D	501	HEC	CAD-C3D	2.44	1.55	1.52
2	A	505	HEC	C4B-C3B	2.44	1.47	1.43

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	505	HEC	CAD-C3D	2.42	1.55	1.52
2	B	501	HEC	CAD-C3D	2.40	1.55	1.52
2	E	501	HEC	CAD-C3D	2.38	1.55	1.52
2	B	503	HEC	C2A-C1A	2.32	1.47	1.42
2	C	503	HEC	CAD-C3D	2.31	1.55	1.52
2	A	504	HEC	CAA-C2A	2.30	1.56	1.52
2	E	505	HEC	CAD-C3D	2.29	1.55	1.52
2	F	502	HEC	CMB-C2B	2.28	1.57	1.51
2	B	503	HEC	CAA-C2A	2.26	1.56	1.52
2	C	505	HEC	CAD-C3D	2.22	1.55	1.52
2	E	504	HEC	CAA-C2A	2.18	1.56	1.52
2	D	501	HEC	CAA-C2A	2.17	1.56	1.52
2	F	501	HEC	C3C-C4C	2.15	1.47	1.43
2	E	503	HEC	CAD-C3D	2.12	1.55	1.52
2	B	505	HEC	C2A-C3A	-2.10	1.31	1.37
2	A	503	HEC	CMA-C3A	2.09	1.56	1.51
2	C	504	HEC	CAD-C3D	2.07	1.55	1.52
2	D	501	HEC	C4B-C3B	2.02	1.46	1.43
2	A	504	HEC	CAD-C3D	2.02	1.55	1.52
2	F	501	HEC	C4B-C3B	2.00	1.46	1.43

All (178) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	503	HEC	CBA-CAA-C2A	14.36	136.81	112.60
2	A	505	HEC	CBA-CAA-C2A	-6.60	101.47	112.60
2	D	505	HEC	CBA-CAA-C2A	-5.48	103.37	112.60
2	B	501	HEC	CBA-CAA-C2A	-4.86	104.42	112.60
2	A	502	HEC	CBD-CAD-C3D	-4.56	104.83	112.62
2	E	501	HEC	CBA-CAA-C2A	-4.51	105.00	112.60
2	C	505	HEC	CMC-C2C-C1C	-4.48	121.58	128.46
2	A	505	HEC	CMB-C2B-C1B	-4.36	121.76	128.46
2	E	505	HEC	CMB-C2B-C1B	-4.32	121.83	128.46
2	C	501	HEC	CMD-C2D-C1D	-4.27	121.90	128.46
2	E	505	HEC	CBA-CAA-C2A	-4.23	105.47	112.60
2	B	503	HEC	C2B-C3B-C4B	4.17	110.86	106.35
2	C	503	HEC	CBA-CAA-C2A	-4.04	105.80	112.60
2	B	504	HEC	CBA-CAA-C2A	-4.03	105.81	112.60
2	C	501	HEC	CMC-C2C-C1C	-3.99	122.33	128.46
2	D	502	HEC	CBD-CAD-C3D	-3.98	105.83	112.62
2	D	502	HEC	CMC-C2C-C1C	-3.94	122.40	128.46
2	D	501	HEC	CMC-C2C-C1C	-3.85	122.55	128.46

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	504	HEC	CMB-C2B-C1B	-3.84	122.56	128.46
2	B	505	HEC	CBD-CAD-C3D	-3.81	106.12	112.62
2	A	503	HEC	CMB-C2B-C1B	-3.80	122.62	128.46
2	E	505	HEC	CMB-C2B-C3B	3.76	130.24	125.82
2	A	505	HEC	CAD-CBD-CGD	-3.76	103.23	113.76
2	C	505	HEC	CBD-CAD-C3D	-3.72	106.27	112.62
2	C	504	HEC	CBA-CAA-C2A	-3.71	106.34	112.60
2	E	501	HEC	CMC-C2C-C1C	-3.69	122.79	128.46
2	C	503	HEC	CMB-C2B-C1B	-3.66	122.85	128.46
2	E	505	HEC	CMD-C2D-C1D	-3.65	122.85	128.46
2	B	502	HEC	CBD-CAD-C3D	-3.65	106.39	112.62
2	B	502	HEC	CMC-C2C-C1C	-3.65	122.86	128.46
2	C	505	HEC	CMC-C2C-C3C	3.63	130.09	125.82
2	E	505	HEC	CBD-CAD-C3D	-3.55	106.57	112.62
2	A	504	HEC	CMC-C2C-C1C	-3.51	123.07	128.46
2	B	503	HEC	CMC-C2C-C1C	-3.50	123.09	128.46
2	B	501	HEC	CMD-C2D-C1D	-3.45	123.16	128.46
2	D	501	HEC	CMD-C2D-C1D	-3.42	123.21	128.46
2	B	505	HEC	CBA-CAA-C2A	-3.41	106.86	112.60
2	A	503	HEC	CBD-CAD-C3D	-3.38	106.86	112.62
2	C	502	HEC	CBD-CAD-C3D	-3.35	106.90	112.62
2	F	501	HEC	CMB-C2B-C1B	-3.30	123.39	128.46
2	B	503	HEC	CBD-CAD-C3D	-3.30	106.99	112.62
2	C	505	HEC	CMB-C2B-C1B	-3.30	123.39	128.46
2	A	504	HEC	CMB-C2B-C1B	-3.29	123.41	128.46
2	E	505	HEC	CAD-CBD-CGD	-3.28	104.55	113.76
2	C	502	HEC	CMB-C2B-C1B	-3.28	123.42	128.46
2	F	502	HEC	CBD-CAD-C3D	-3.26	107.06	112.62
2	D	503	HEC	CBD-CAD-C3D	-3.25	107.08	112.62
2	B	503	HEC	CMC-C2C-C3C	3.25	129.64	125.82
2	E	503	HEC	C1D-C2D-C3D	3.24	109.25	107.00
2	D	503	HEC	CMC-C2C-C1C	-3.21	123.52	128.46
2	C	504	HEC	CMC-C2C-C1C	-3.16	123.61	128.46
2	A	503	HEC	CBA-CAA-C2A	-3.15	107.30	112.60
2	F	505	HEC	CMC-C2C-C1C	-3.15	123.63	128.46
2	C	502	HEC	CMC-C2C-C1C	-3.14	123.64	128.46
2	D	502	HEC	CMC-C2C-C3C	3.14	129.51	125.82
2	C	505	HEC	CBA-CAA-C2A	-3.14	107.32	112.60
2	B	505	HEC	CMB-C2B-C1B	-3.13	123.65	128.46
2	E	505	HEC	CMC-C2C-C1C	-3.12	123.66	128.46
2	F	502	HEC	CMB-C2B-C1B	-3.10	123.70	128.46
2	B	504	HEC	CMC-C2C-C1C	-3.09	123.72	128.46

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	501	HEC	C1D-C2D-C3D	3.08	109.14	107.00
2	D	505	HEC	CMC-C2C-C1C	-3.07	123.75	128.46
2	D	501	HEC	CBA-CAA-C2A	-3.04	107.48	112.60
2	B	505	HEC	CMC-C2C-C1C	-3.02	123.83	128.46
2	D	503	HEC	CMB-C2B-C3B	2.96	129.31	125.82
2	E	504	HEC	CMC-C2C-C1C	-2.96	123.92	128.46
2	B	501	HEC	CMC-C2C-C1C	-2.95	123.94	128.46
2	A	505	HEC	CMB-C2B-C3B	2.94	129.27	125.82
2	E	502	HEC	CMB-C2B-C1B	-2.93	123.96	128.46
2	C	505	HEC	C1D-C2D-C3D	2.92	109.03	107.00
2	E	501	HEC	CMD-C2D-C1D	-2.91	123.99	128.46
2	A	502	HEC	CMB-C2B-C1B	-2.90	124.01	128.46
2	B	502	HEC	CMB-C2B-C1B	-2.90	124.01	128.46
2	F	504	HEC	CBA-CAA-C2A	-2.89	107.73	112.60
2	D	504	HEC	CMC-C2C-C1C	-2.88	124.04	128.46
2	F	503	HEC	C1D-C2D-C3D	2.86	108.98	107.00
2	B	501	HEC	C1D-C2D-C3D	2.86	108.98	107.00
2	C	503	HEC	C1D-C2D-C3D	2.83	108.96	107.00
2	D	503	HEC	CMB-C2B-C1B	-2.82	124.13	128.46
2	A	501	HEC	CMD-C2D-C1D	-2.76	124.22	128.46
2	A	505	HEC	CMC-C2C-C1C	-2.76	124.22	128.46
2	D	502	HEC	CMB-C2B-C1B	-2.74	124.25	128.46
2	E	502	HEC	CBD-CAD-C3D	-2.74	107.94	112.62
2	F	503	HEC	CMC-C2C-C1C	-2.74	124.25	128.46
2	B	504	HEC	CMB-C2B-C1B	-2.74	124.25	128.46
2	E	504	HEC	CBA-CAA-C2A	-2.73	108.01	112.60
2	A	503	HEC	CMC-C2C-C1C	-2.72	124.28	128.46
2	B	503	HEC	CMB-C2B-C3B	2.71	129.01	125.82
2	D	505	HEC	CBD-CAD-C3D	-2.70	108.01	112.62
2	C	504	HEC	CMB-C2B-C1B	-2.70	124.32	128.46
2	D	503	HEC	C2B-C3B-C4B	2.69	109.26	106.35
2	B	505	HEC	C1D-C2D-C3D	2.66	108.85	107.00
2	A	501	HEC	CMC-C2C-C1C	-2.64	124.40	128.46
2	C	501	HEC	CMD-C2D-C3D	2.64	129.92	124.94
2	C	504	HEC	C1D-C2D-C3D	2.61	108.81	107.00
2	D	504	HEC	CMD-C2D-C1D	-2.59	124.48	128.46
2	D	501	HEC	CMC-C2C-C3C	2.58	128.86	125.82
2	C	505	HEC	CMD-C2D-C1D	-2.58	124.50	128.46
2	C	503	HEC	CMB-C2B-C3B	2.57	128.84	125.82
2	D	503	HEC	CBA-CAA-C2A	-2.56	108.28	112.60
2	C	502	HEC	CMB-C2B-C3B	2.56	128.83	125.82
2	F	503	HEC	CBD-CAD-C3D	-2.53	108.30	112.62

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	504	HEC	C1D-C2D-C3D	2.52	108.75	107.00
2	C	503	HEC	CBD-CAD-C3D	-2.52	108.33	112.62
2	C	505	HEC	CMB-C2B-C3B	2.51	128.77	125.82
2	E	501	HEC	C2B-C3B-C4B	2.46	109.00	106.35
2	F	504	HEC	C2B-C3B-C4B	2.44	108.99	106.35
2	D	505	HEC	CMC-C2C-C3C	2.43	128.68	125.82
2	B	502	HEC	CMC-C2C-C3C	2.42	128.66	125.82
2	B	501	HEC	CMB-C2B-C1B	-2.42	124.75	128.46
2	F	503	HEC	O2A-CGA-CBA	2.41	121.78	114.03
2	D	503	HEC	CMC-C2C-C3C	2.41	128.65	125.82
2	B	501	HEC	C3B-C4B-NB	-2.41	106.40	110.94
2	F	501	HEC	CMC-C2C-C1C	-2.41	124.77	128.46
2	D	502	HEC	CAA-CBA-CGA	-2.40	107.02	113.76
2	D	504	HEC	CBA-CAA-C2A	-2.40	108.56	112.60
2	E	504	HEC	CMD-C2D-C1D	-2.40	124.78	128.46
2	A	504	HEC	CMC-C2C-C3C	2.39	128.63	125.82
2	E	502	HEC	C1D-C2D-C3D	2.39	108.66	107.00
2	F	505	HEC	CBD-CAD-C3D	-2.38	108.56	112.62
2	C	503	HEC	CMC-C2C-C1C	-2.37	124.82	128.46
2	B	503	HEC	C3B-C4B-NB	-2.37	106.47	110.94
2	D	505	HEC	CAD-CBD-CGD	-2.36	107.16	113.76
2	A	502	HEC	O2A-CGA-CBA	2.35	121.59	114.03
2	E	504	HEC	CMB-C2B-C1B	-2.35	124.85	128.46
2	E	505	HEC	CMD-C2D-C3D	2.34	129.35	124.94
2	C	501	HEC	C3B-C4B-NB	-2.34	106.53	110.94
2	F	504	HEC	CMB-C2B-C1B	-2.34	124.87	128.46
2	D	501	HEC	CMB-C2B-C1B	-2.33	124.88	128.46
2	F	505	HEC	CMD-C2D-C1D	-2.33	124.88	128.46
2	F	503	HEC	CMD-C2D-C1D	-2.33	124.89	128.46
2	F	504	HEC	CMC-C2C-C1C	-2.33	124.89	128.46
2	F	505	HEC	CMB-C2B-C1B	-2.33	124.89	128.46
2	F	504	HEC	C3B-C4B-NB	-2.32	106.56	110.94
2	C	503	HEC	CMD-C2D-C1D	-2.32	124.91	128.46
2	E	503	HEC	CMB-C2B-C1B	-2.31	124.92	128.46
2	F	501	HEC	C1D-C2D-C3D	2.31	108.60	107.00
2	C	501	HEC	CMC-C2C-C3C	2.30	128.53	125.82
2	F	503	HEC	O1A-CGA-CBA	-2.30	115.71	123.08
2	F	505	HEC	CAD-CBD-CGD	-2.29	107.33	113.76
2	E	502	HEC	CMB-C2B-C3B	2.27	128.49	125.82
2	A	504	HEC	O2A-CGA-CBA	2.26	121.28	114.03
2	A	505	HEC	C1D-C2D-C3D	2.23	108.55	107.00
2	C	501	HEC	CMB-C2B-C1B	-2.23	125.04	128.46

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	504	HEC	CMB-C2B-C3B	2.22	128.43	125.82
2	E	503	HEC	O2A-CGA-CBA	2.22	121.16	114.03
2	C	505	HEC	CAD-CBD-CGD	-2.21	107.57	113.76
2	B	502	HEC	CMB-C2B-C3B	2.20	128.41	125.82
2	C	501	HEC	C2B-C3B-C4B	2.20	108.72	106.35
2	E	503	HEC	CMC-C2C-C1C	-2.17	125.13	128.46
2	C	504	HEC	CMB-C2B-C3B	2.17	128.37	125.82
2	D	503	HEC	CMD-C2D-C1D	-2.17	125.13	128.46
2	A	503	HEC	CMD-C2D-C1D	-2.16	125.14	128.46
2	E	505	HEC	CMC-C2C-C3C	2.16	128.36	125.82
2	B	502	HEC	CBA-CAA-C2A	-2.16	108.97	112.60
2	B	503	HEC	CMA-C3A-C2A	2.15	128.99	124.94
2	E	502	HEC	C4C-C3C-C2C	2.15	108.67	106.35
2	B	503	HEC	CMB-C2B-C1B	-2.14	125.18	128.46
2	D	505	HEC	C4C-C3C-C2C	2.12	108.64	106.35
2	B	504	HEC	CMB-C2B-C3B	2.12	128.31	125.82
2	D	504	HEC	O1A-CGA-CBA	-2.11	116.29	123.08
2	B	505	HEC	CMB-C2B-C3B	2.11	128.30	125.82
2	B	502	HEC	C2B-C3B-C4B	2.11	108.63	106.35
2	C	504	HEC	CMD-C2D-C1D	-2.11	125.23	128.46
2	E	503	HEC	O1A-CGA-CBA	-2.08	116.39	123.08
2	A	502	HEC	O1A-CGA-CBA	-2.08	116.41	123.08
2	D	504	HEC	C1D-C2D-C3D	2.07	108.44	107.00
2	A	502	HEC	CMC-C2C-C1C	-2.05	125.31	128.46
2	B	505	HEC	CAA-C2A-C3A	-2.05	121.35	127.25
2	B	503	HEC	O1A-CGA-CBA	-2.04	116.51	123.08
2	F	504	HEC	O2D-CGD-CBD	2.04	120.57	114.03
2	F	503	HEC	CMC-C2C-C3C	2.03	128.21	125.82
2	C	504	HEC	CMA-C3A-C2A	2.03	128.76	124.94
2	E	501	HEC	C3B-C4B-NB	-2.03	107.12	110.94
2	B	503	HEC	C4C-C3C-C2C	2.01	108.53	106.35
2	B	503	HEC	CMD-C2D-C1D	-2.01	125.37	128.46
2	B	505	HEC	C3B-C4B-NB	-2.01	107.16	110.94
2	F	503	HEC	C3C-C4C-NC	-2.00	107.17	110.94

There are no chirality outliers.

All (59) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	505	HEC	C2A-CAA-CBA-CGA
2	B	503	HEC	C2A-CAA-CBA-CGA
2	B	505	HEC	C2A-CAA-CBA-CGA

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	C	505	HEC	C2A-CAA-CBA-CGA
2	D	505	HEC	C2A-CAA-CBA-CGA
2	D	503	HEC	C2A-CAA-CBA-CGA
2	C	505	HEC	C1A-C2A-CAA-CBA
2	C	505	HEC	C3A-C2A-CAA-CBA
2	C	502	HEC	CAA-CBA-CGA-O2A
2	B	505	HEC	CAA-CBA-CGA-O2A
2	B	502	HEC	CAA-CBA-CGA-O2A
2	C	502	HEC	CAA-CBA-CGA-O1A
2	D	502	HEC	CAA-CBA-CGA-O1A
2	D	502	HEC	CAA-CBA-CGA-O2A
2	B	502	HEC	CAA-CBA-CGA-O1A
2	D	501	HEC	CAA-CBA-CGA-O2A
2	A	502	HEC	CAA-CBA-CGA-O2A
2	F	501	HEC	CAA-CBA-CGA-O2A
2	A	502	HEC	CAA-CBA-CGA-O1A
2	B	501	HEC	CAA-CBA-CGA-O1A
2	C	505	HEC	CAA-CBA-CGA-O1A
2	F	502	HEC	CAA-CBA-CGA-O1A
2	D	501	HEC	CAA-CBA-CGA-O1A
2	E	502	HEC	CAA-CBA-CGA-O1A
2	B	505	HEC	CAA-CBA-CGA-O1A
2	E	501	HEC	CAA-CBA-CGA-O2A
2	F	502	HEC	CAA-CBA-CGA-O2A
2	E	501	HEC	CAA-CBA-CGA-O1A
2	B	501	HEC	CAA-CBA-CGA-O2A
2	C	501	HEC	CAA-CBA-CGA-O2A
2	F	501	HEC	CAA-CBA-CGA-O1A
2	C	501	HEC	CAA-CBA-CGA-O1A
2	E	502	HEC	CAA-CBA-CGA-O2A
2	A	501	HEC	CAA-CBA-CGA-O2A
2	C	505	HEC	CAD-CBD-CGD-O2D
2	E	504	HEC	CAA-CBA-CGA-O2A
2	A	505	HEC	CAD-CBD-CGD-O2D
2	B	505	HEC	CAD-CBD-CGD-O2D
2	D	503	HEC	CAA-CBA-CGA-O2A
2	A	505	HEC	CAA-CBA-CGA-O1A
2	D	505	HEC	CAD-CBD-CGD-O2D
2	F	504	HEC	CAA-CBA-CGA-O2A
2	F	505	HEC	CAD-CBD-CGD-O2D
2	E	505	HEC	CAD-CBD-CGD-O2D
2	B	505	HEC	CAD-CBD-CGD-O1D

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	D	503	HEC	CAA-CBA-CGA-O1A
2	F	504	HEC	CAA-CBA-CGA-O1A
2	C	505	HEC	CAD-CBD-CGD-O1D
2	D	505	HEC	CAD-CBD-CGD-O1D
2	A	501	HEC	CAA-CBA-CGA-O1A
2	C	505	HEC	CAA-CBA-CGA-O2A
2	E	505	HEC	CAD-CBD-CGD-O1D
2	A	505	HEC	CAD-CBD-CGD-O1D
2	A	505	HEC	CAA-CBA-CGA-O2A
2	F	505	HEC	CAD-CBD-CGD-O1D
2	E	504	HEC	CAA-CBA-CGA-O1A
2	C	504	HEC	CAA-CBA-CGA-O2A
2	C	504	HEC	CAA-CBA-CGA-O1A
2	D	504	HEC	CAA-CBA-CGA-O2A

There are no ring outliers.

32 monomers are involved in 121 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	505	HEC	6	0
2	C	501	HEC	2	0
2	C	503	HEC	4	0
2	B	505	HEC	8	0
2	D	501	HEC	2	0
2	A	505	HEC	12	0
2	B	504	HEC	9	0
3	A	506	SO4	2	0
2	A	504	HEC	4	0
2	B	503	HEC	5	0
2	D	504	HEC	7	0
2	E	502	HEC	3	0
2	C	502	HEC	3	0
2	E	501	HEC	2	0
2	F	503	HEC	4	0
2	E	504	HEC	4	0
2	B	501	HEC	1	0
2	D	502	HEC	3	0
2	A	503	HEC	4	0
2	F	504	HEC	5	0
2	E	505	HEC	6	0
2	D	505	HEC	8	0
3	C	506	SO4	2	0

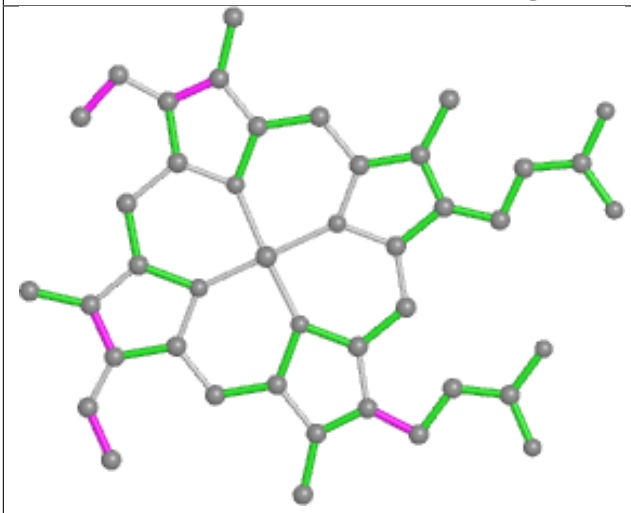
Continued on next page...

Continued from previous page...

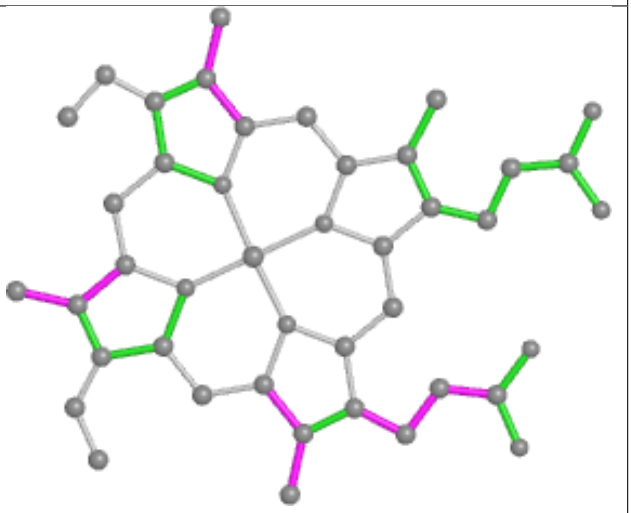
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	504	HEC	6	0
2	F	502	HEC	3	0
2	E	503	HEC	5	0
2	F	501	HEC	3	0
2	B	502	HEC	3	0
2	D	503	HEC	5	0
2	A	502	HEC	2	0
2	C	505	HEC	2	0
2	A	501	HEC	1	0

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.

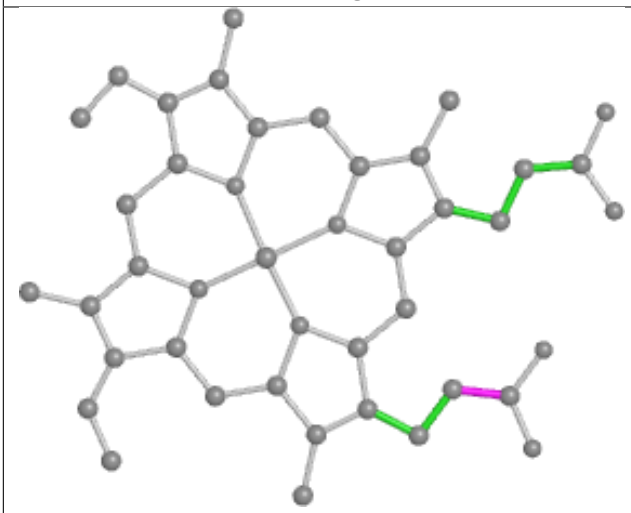
Ligand HEC F 505



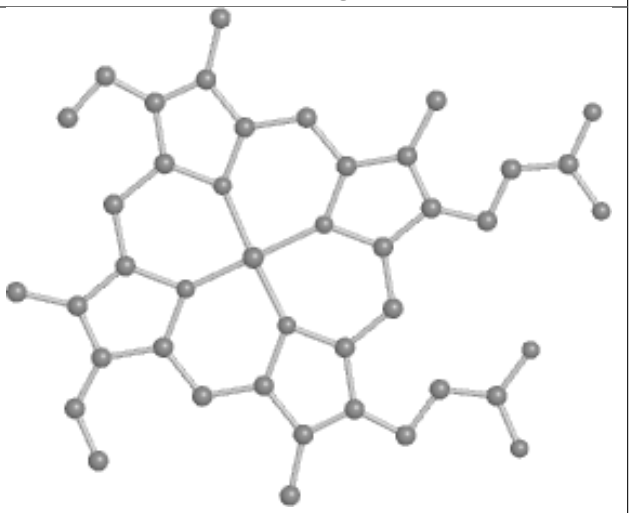
Bond lengths



Bond angles

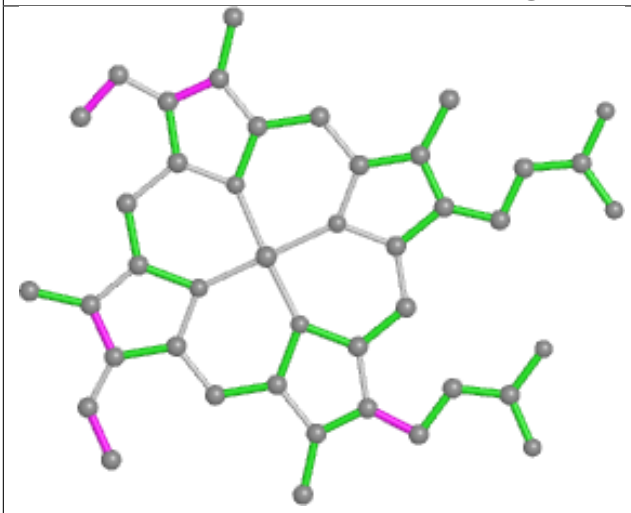


Torsions

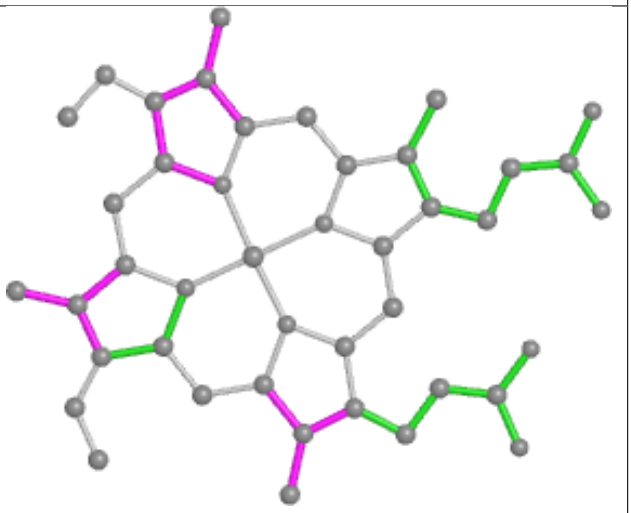


Rings

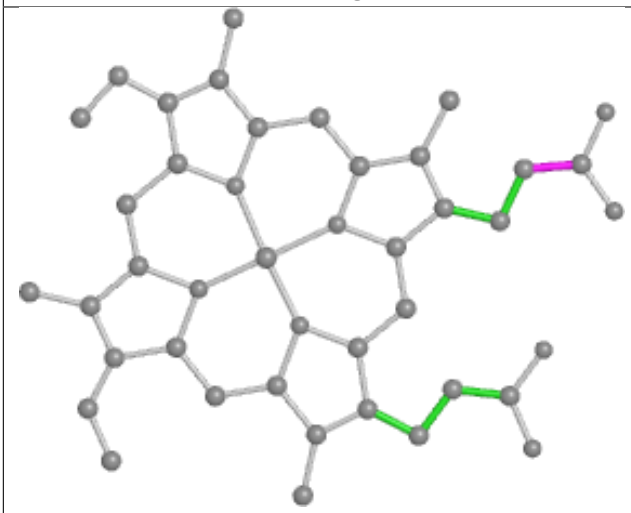
Ligand HEC C 501



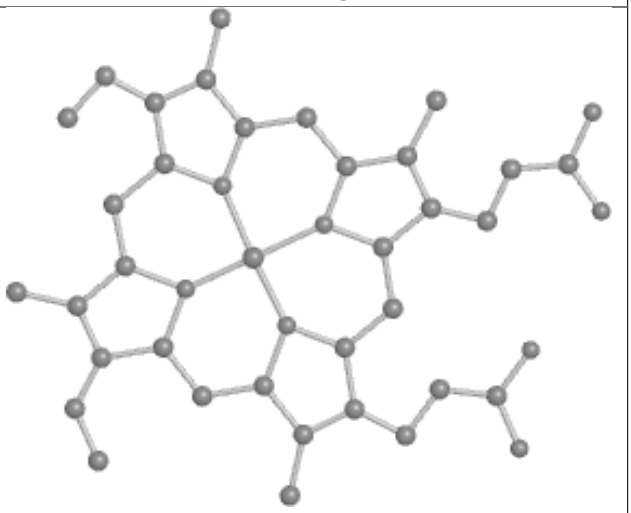
Bond lengths



Bond angles

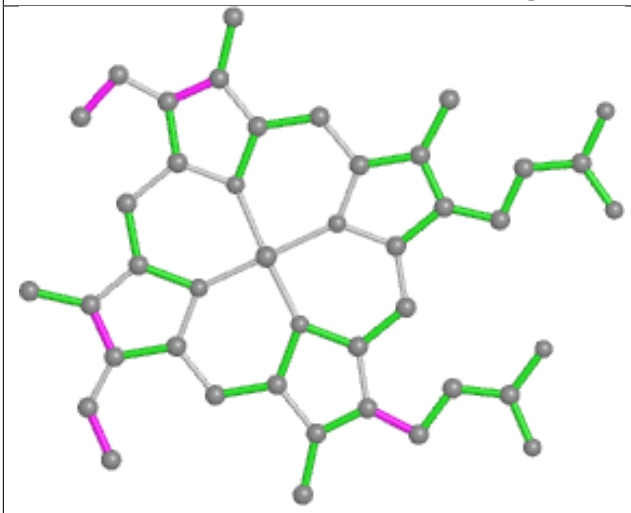


Torsions

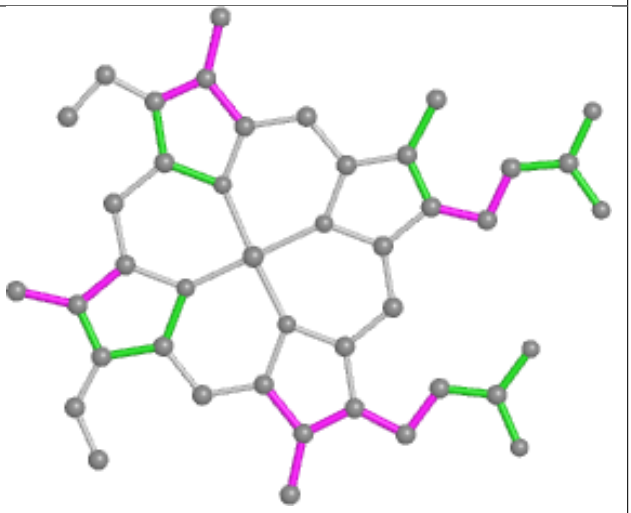


Rings

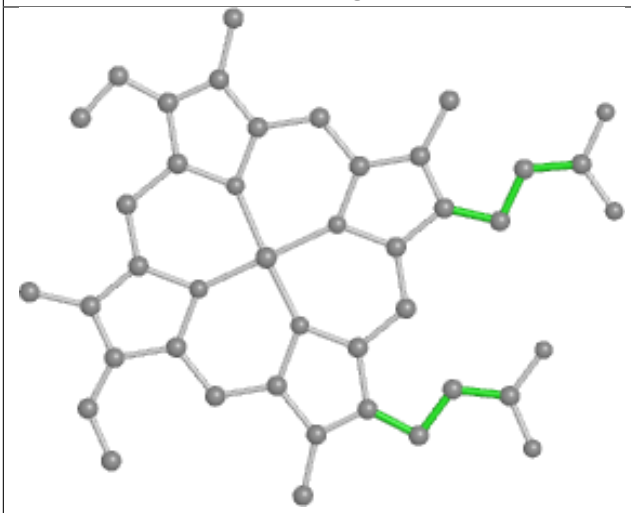
Ligand HEC C 503



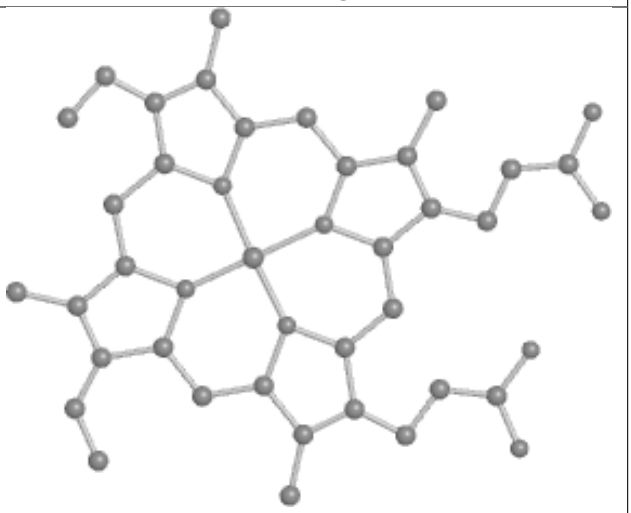
Bond lengths



Bond angles

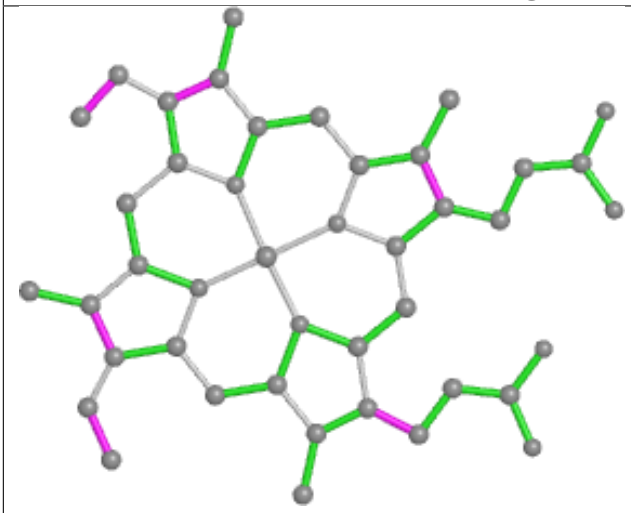


Torsions

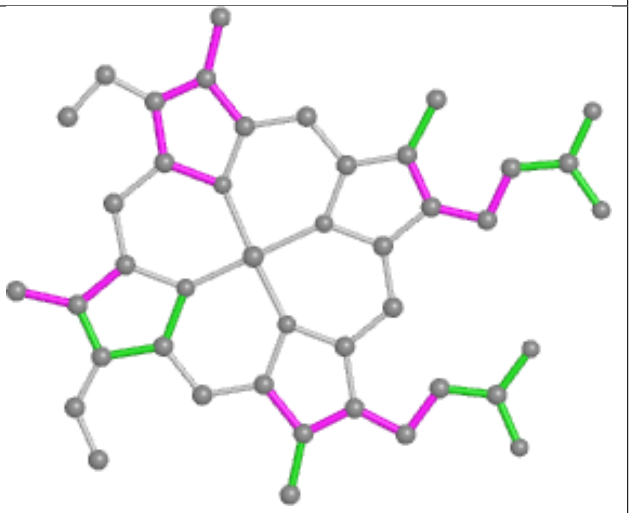


Rings

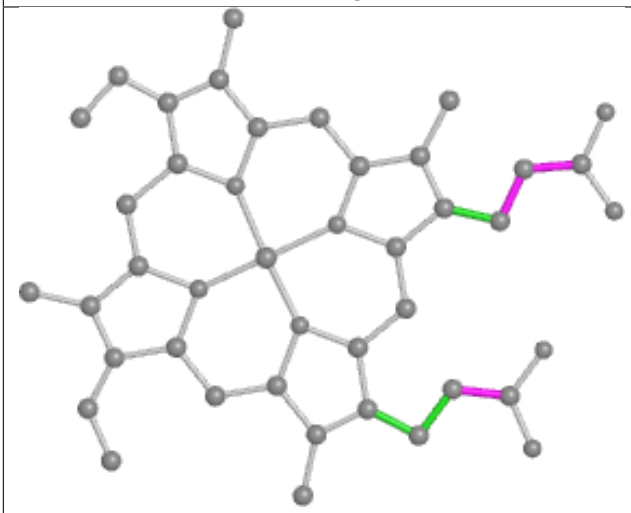
Ligand HEC B 505



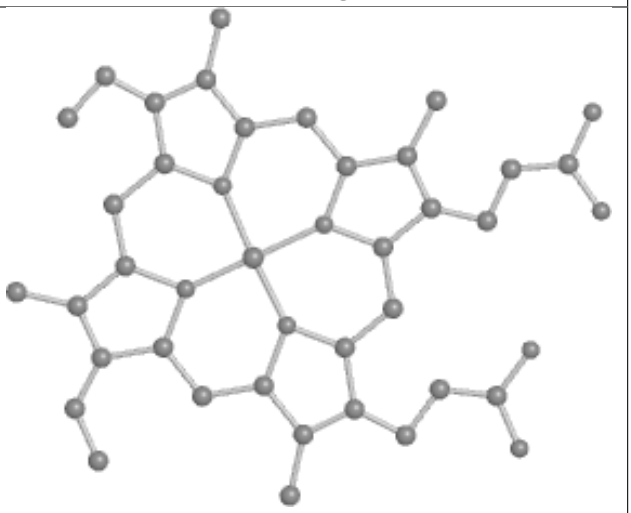
Bond lengths



Bond angles

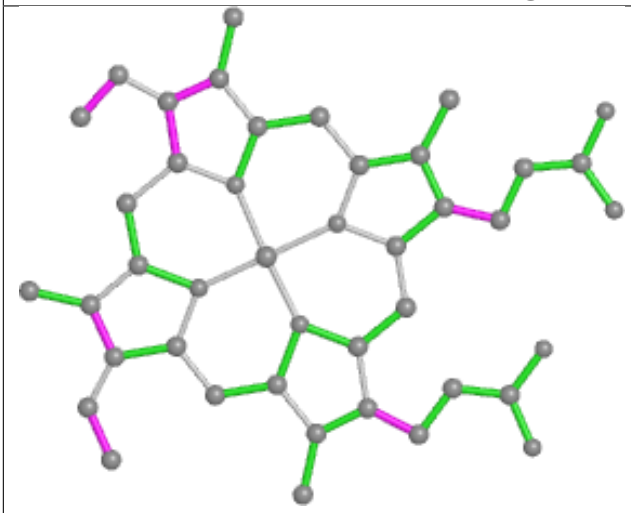


Torsions

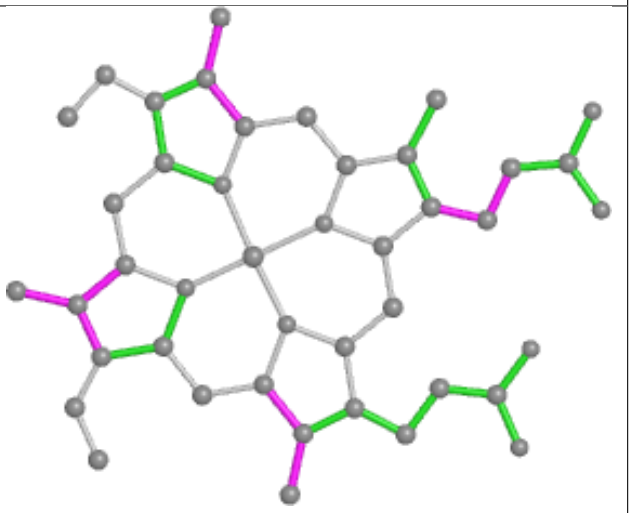


Rings

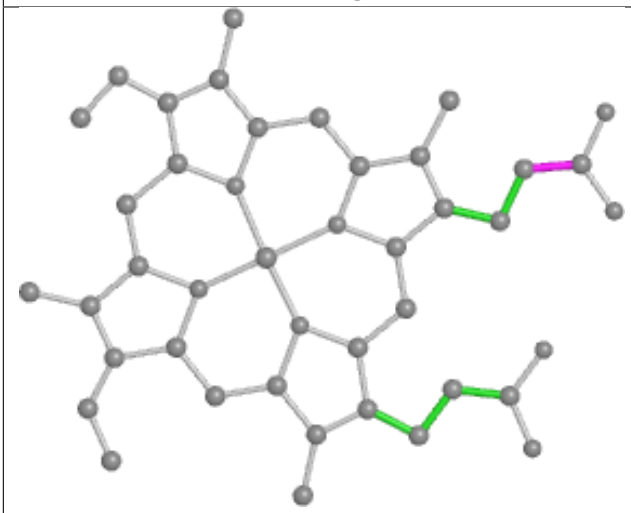
Ligand HEC D 501



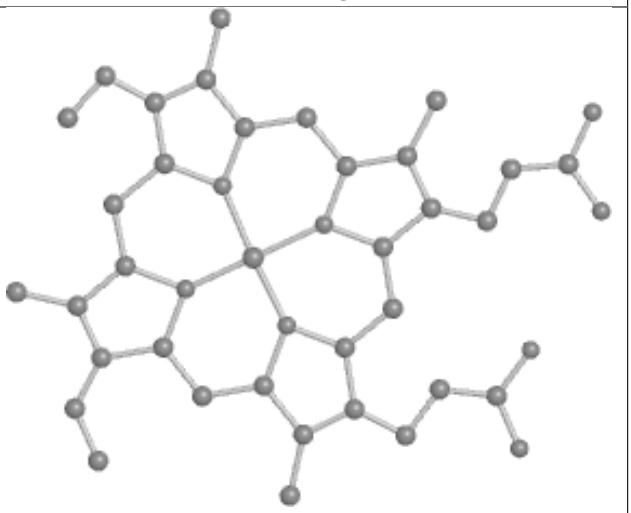
Bond lengths



Bond angles

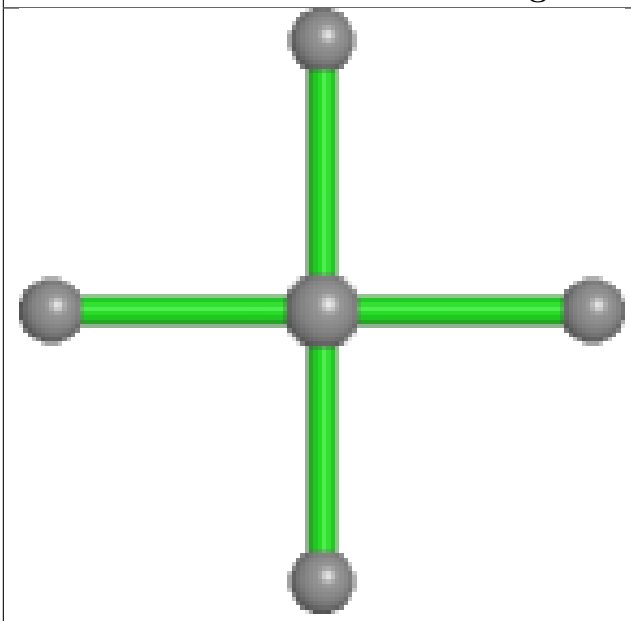


Torsions

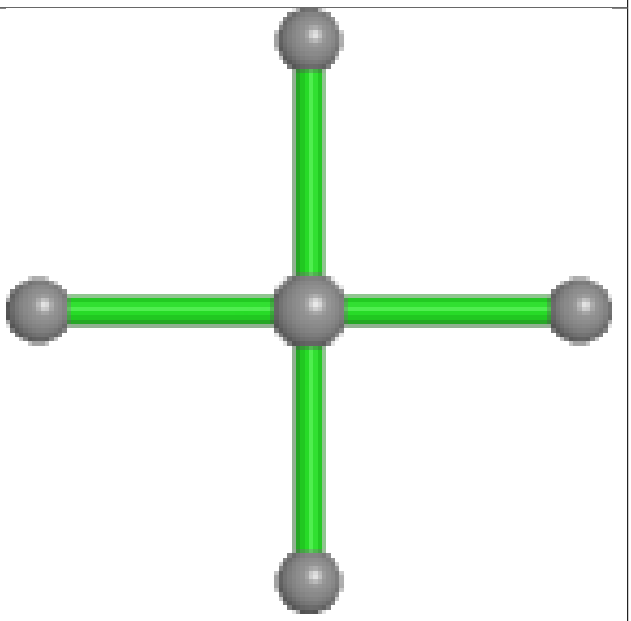


Rings

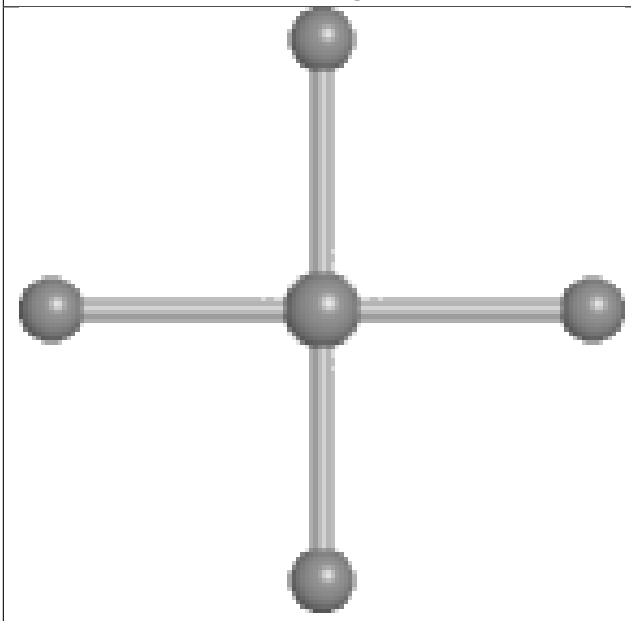
Ligand SO4 B 506



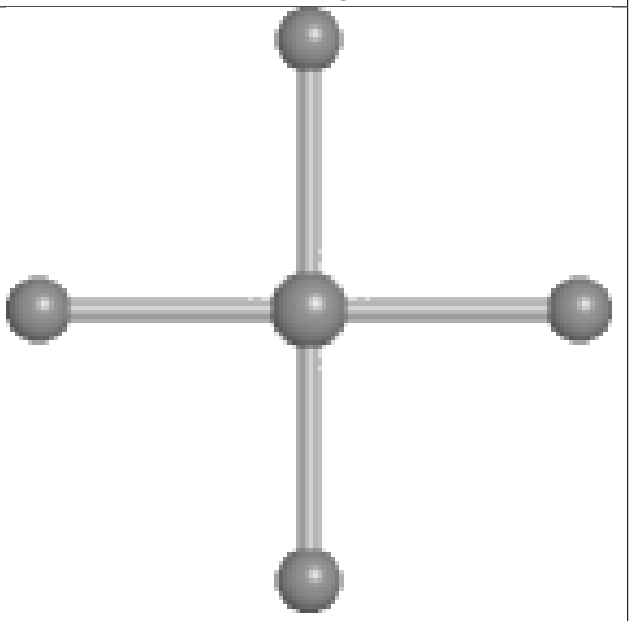
Bond lengths



Bond angles

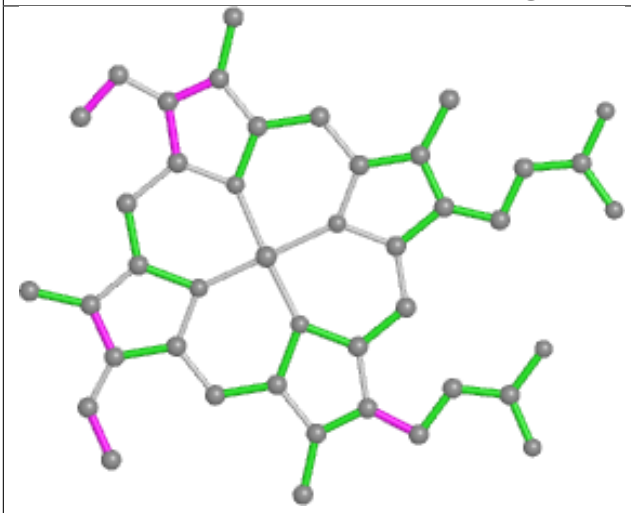


Torsions

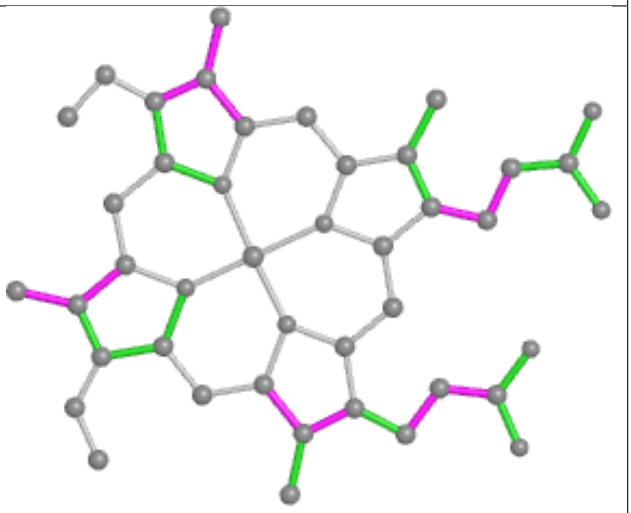


Rings

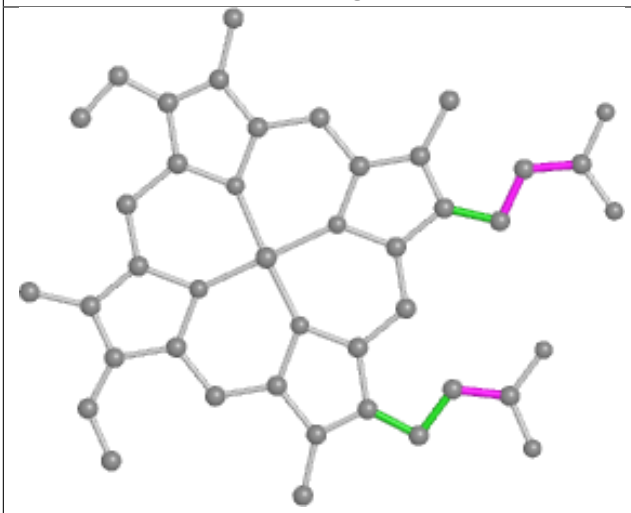
Ligand HEC A 505



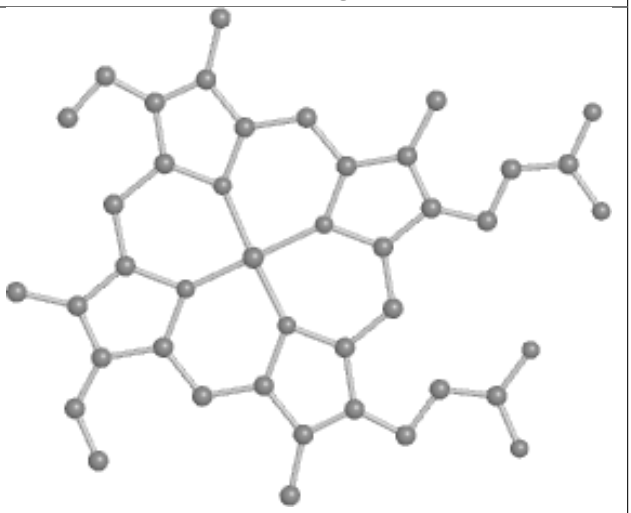
Bond lengths



Bond angles

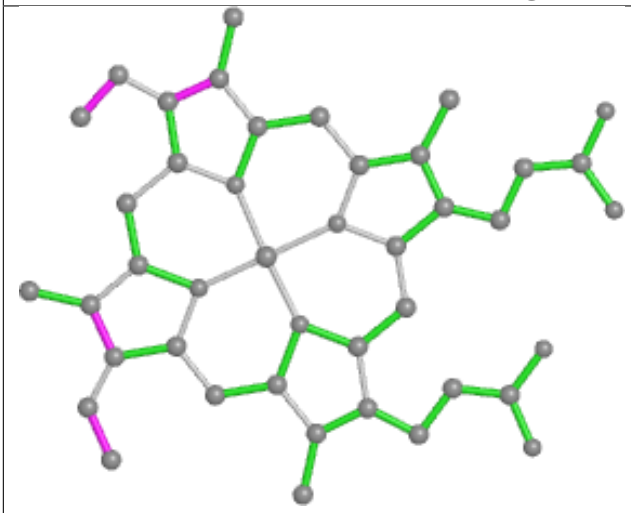


Torsions

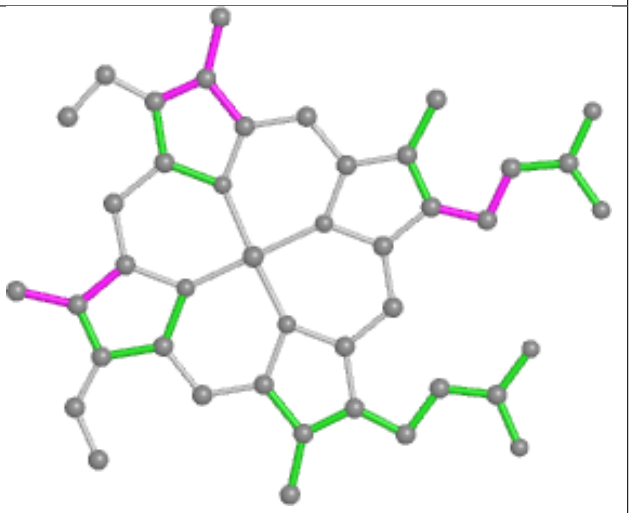


Rings

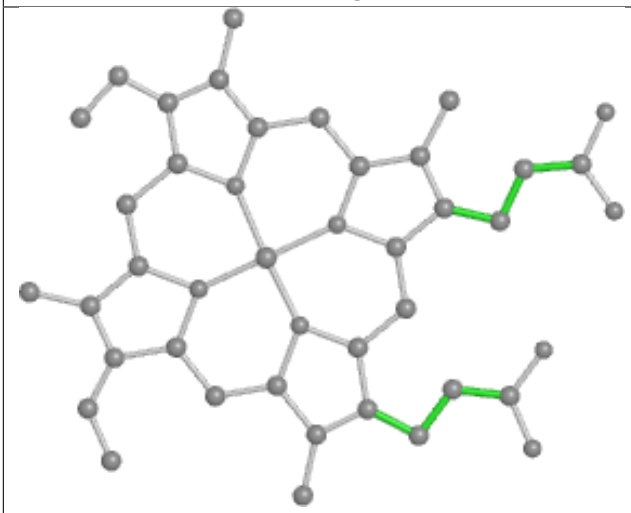
Ligand HEC B 504



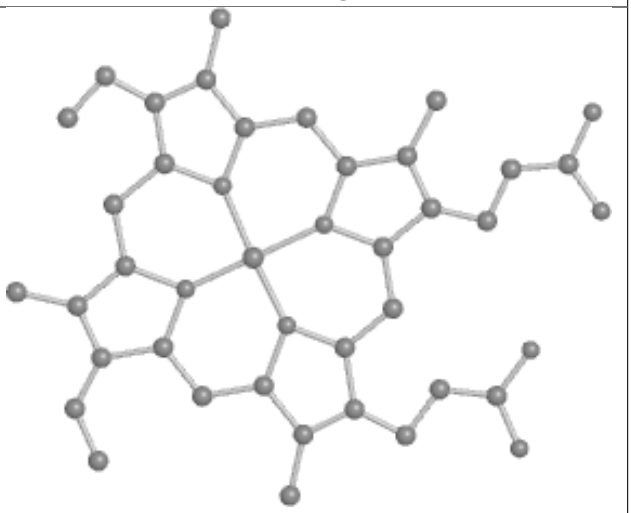
Bond lengths



Bond angles

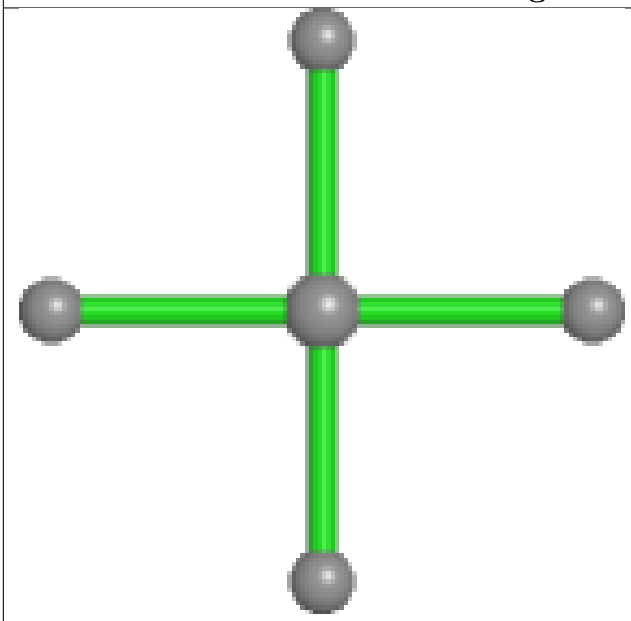


Torsions

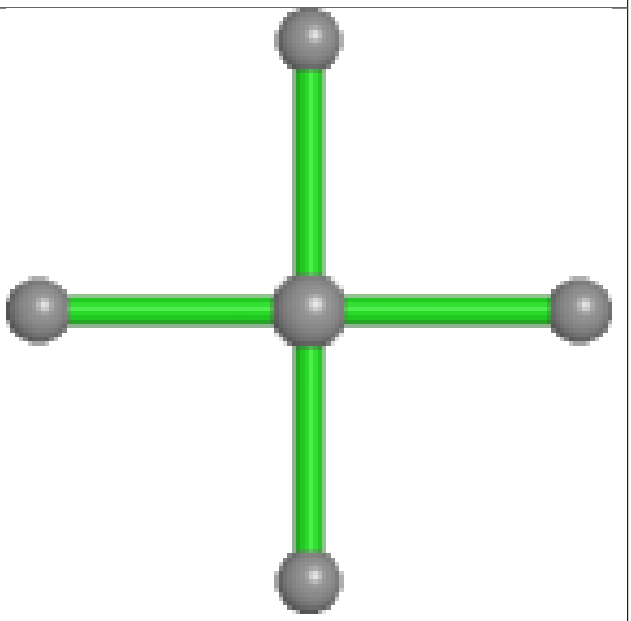


Rings

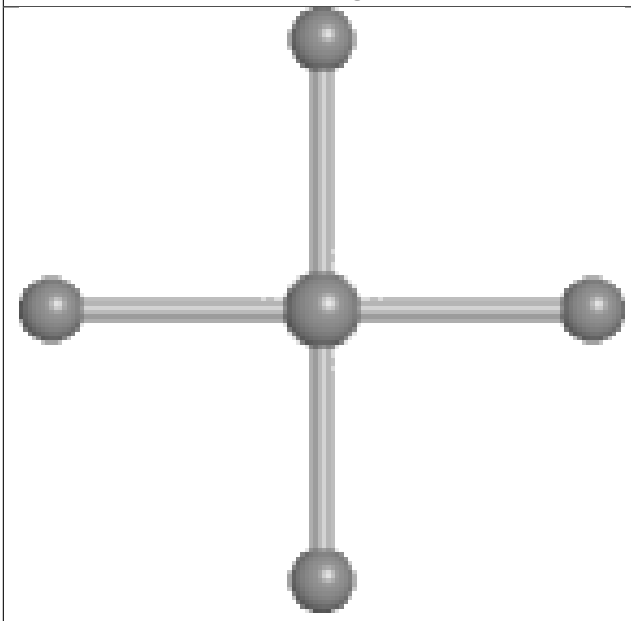
Ligand SO4 A 506



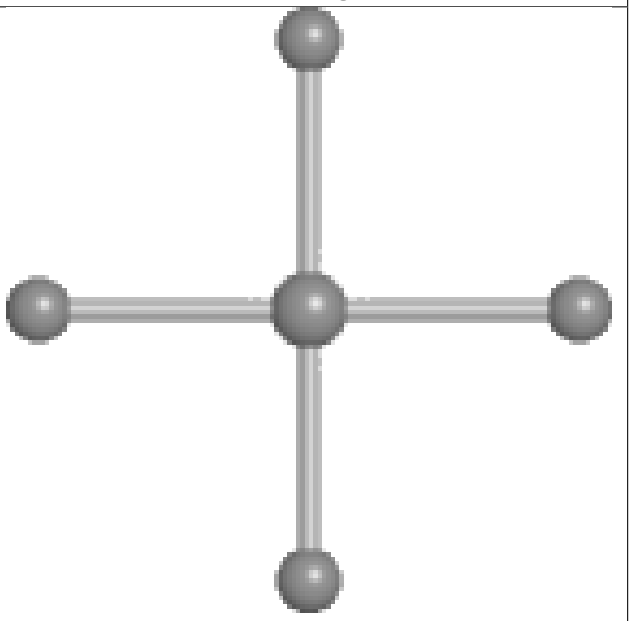
Bond lengths



Bond angles

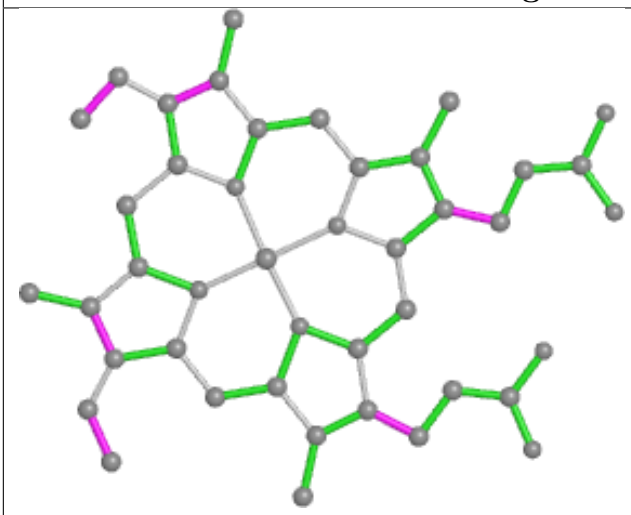


Torsions

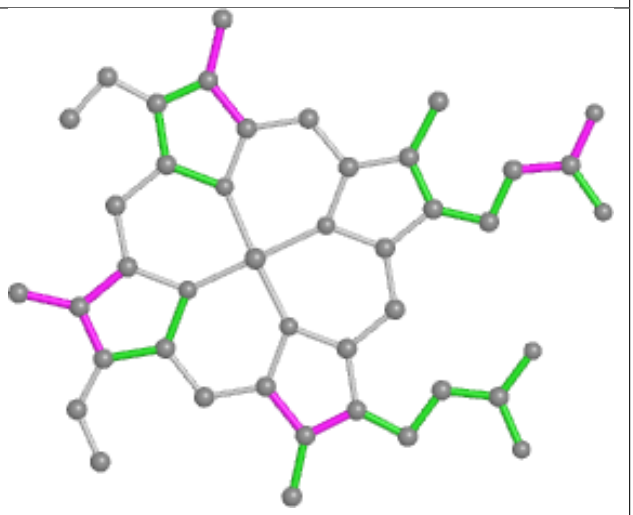


Rings

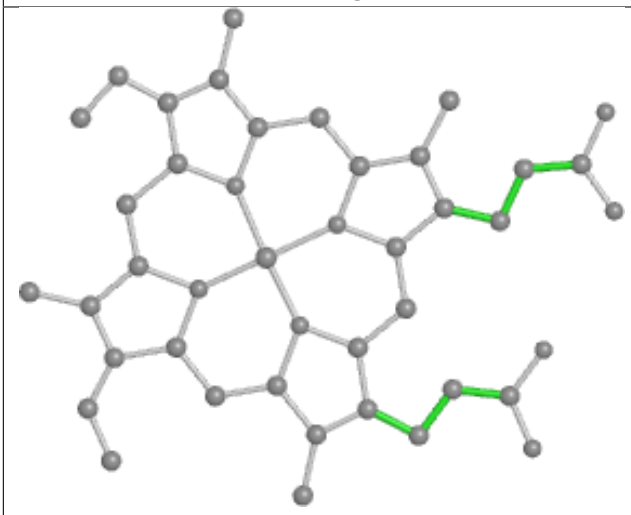
Ligand HEC A 504



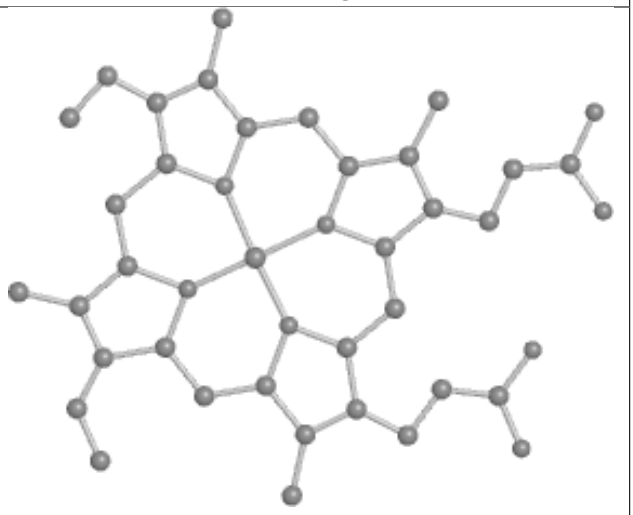
Bond lengths



Bond angles

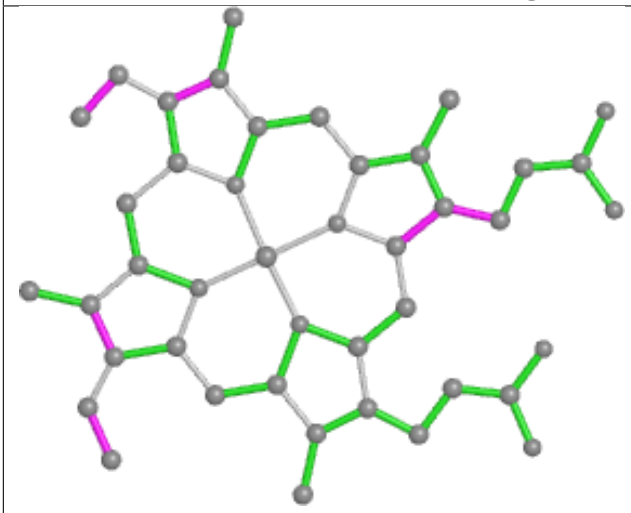


Torsions

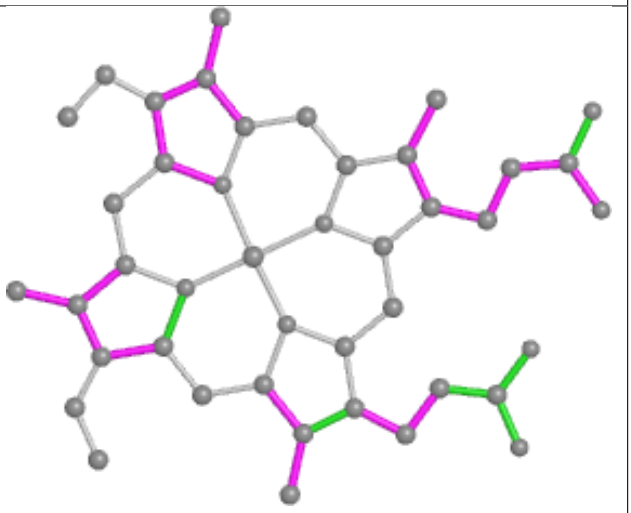


Rings

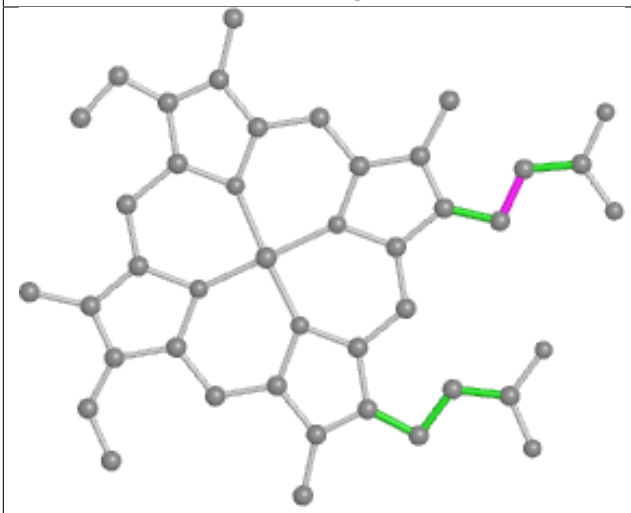
Ligand HEC B 503



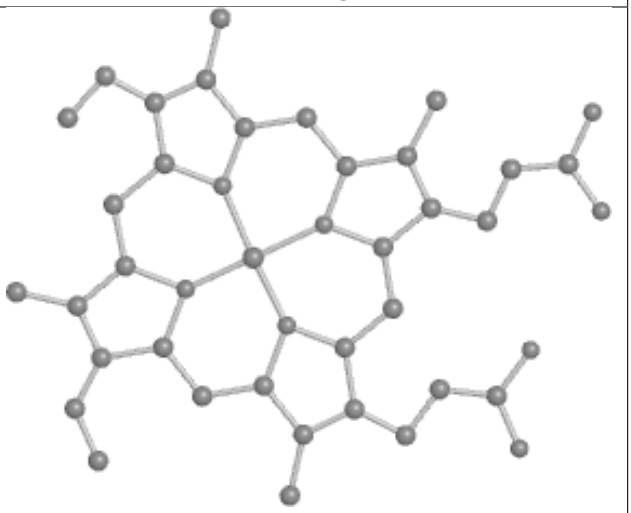
Bond lengths



Bond angles

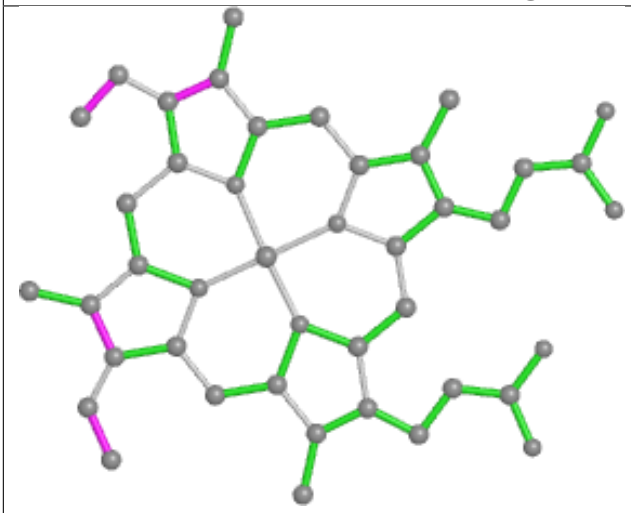


Torsions

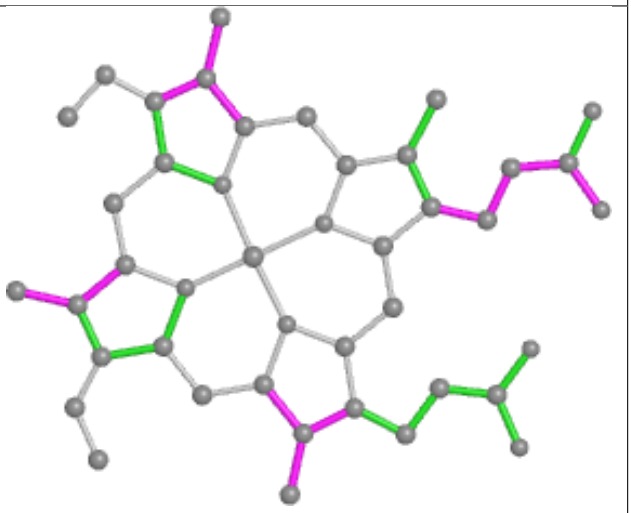


Rings

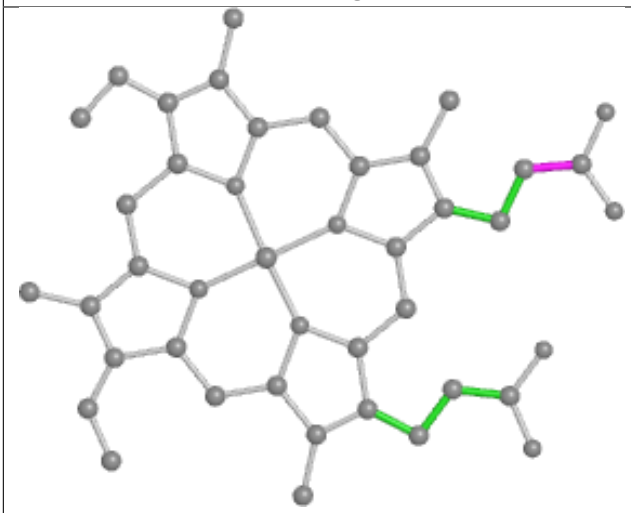
Ligand HEC D 504



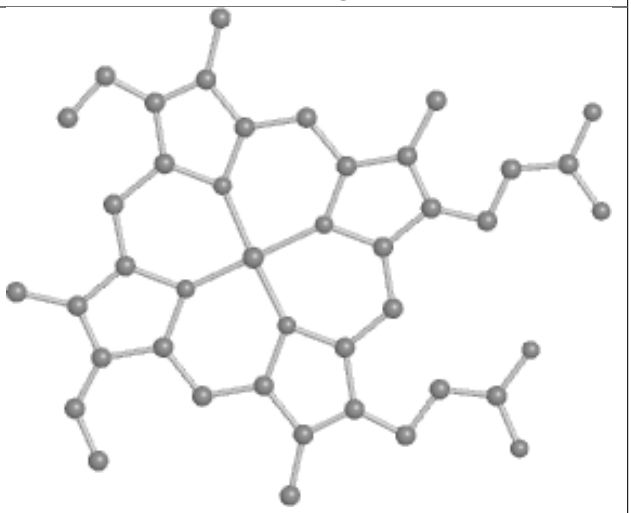
Bond lengths



Bond angles

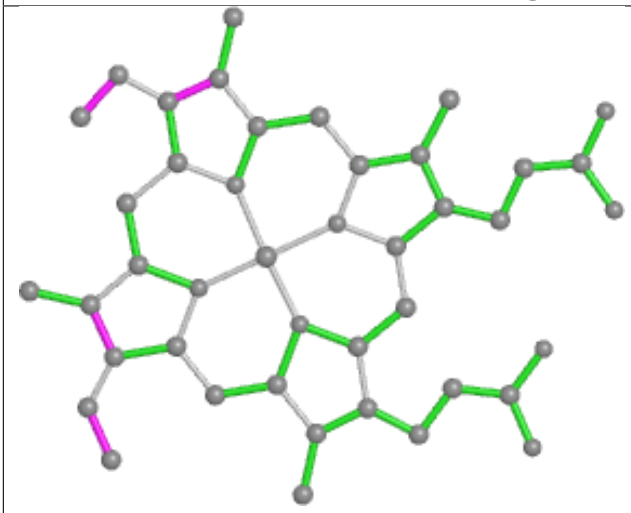


Torsions

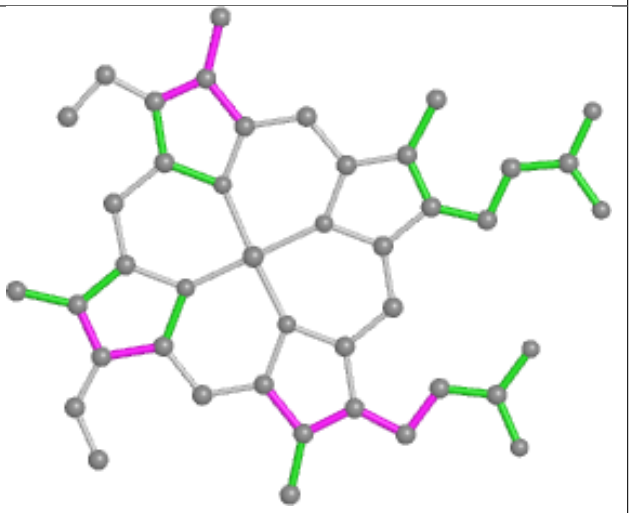


Rings

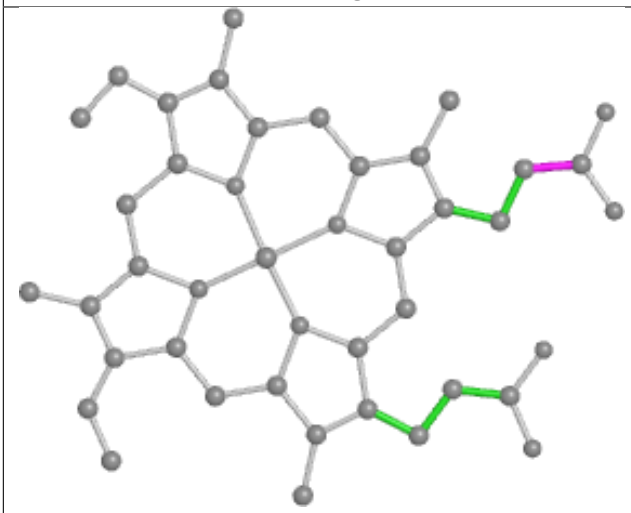
Ligand HEC E 502



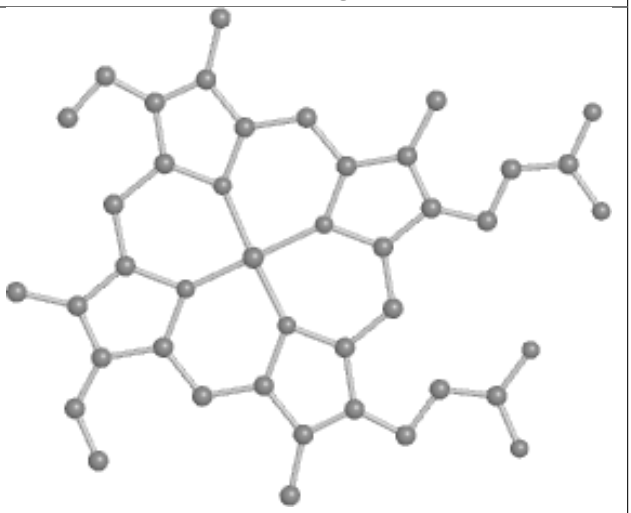
Bond lengths



Bond angles

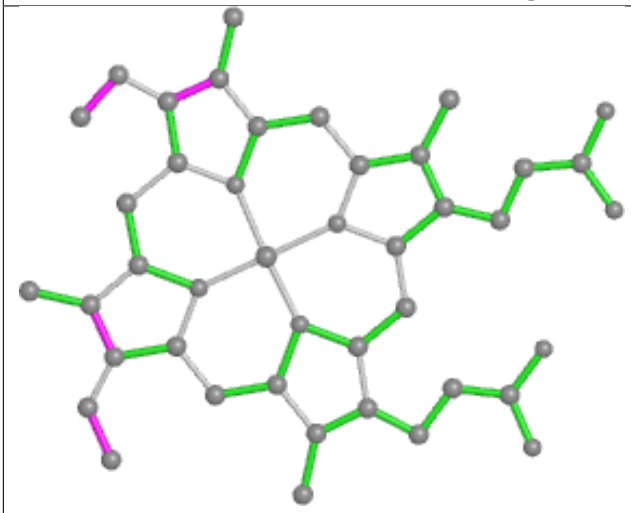


Torsions

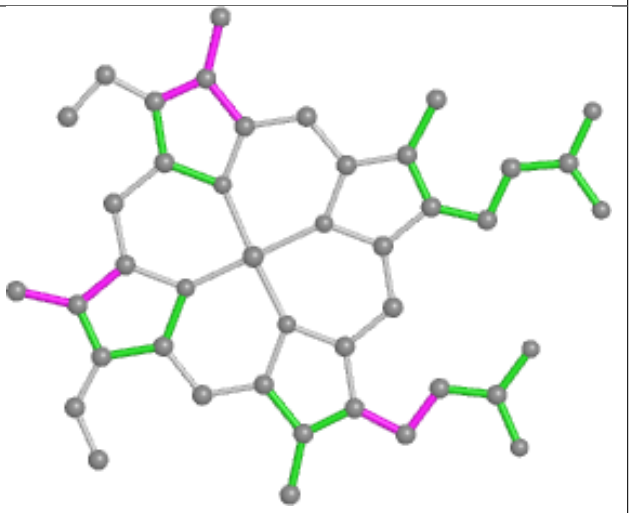


Rings

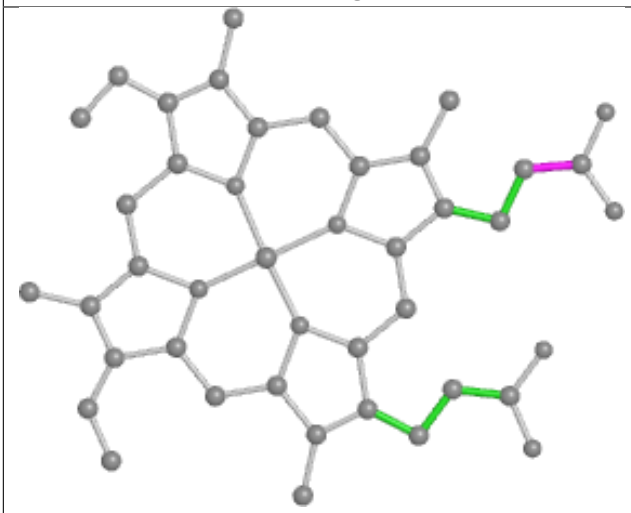
Ligand HEC C 502



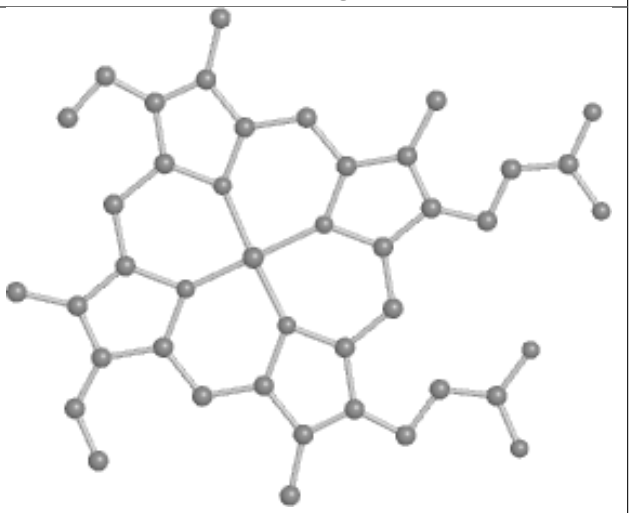
Bond lengths



Bond angles

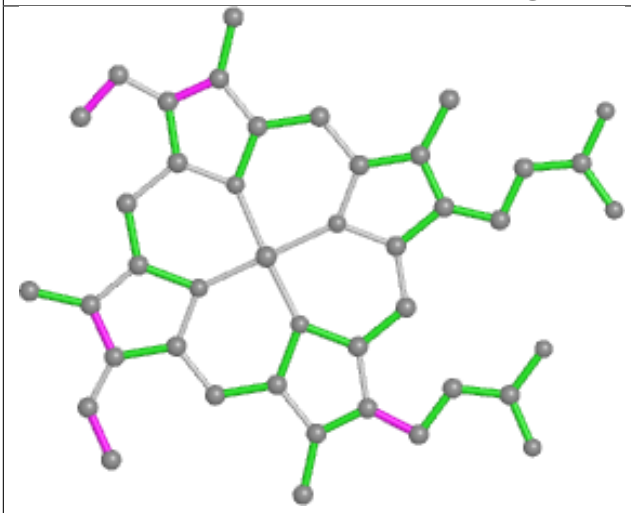


Torsions

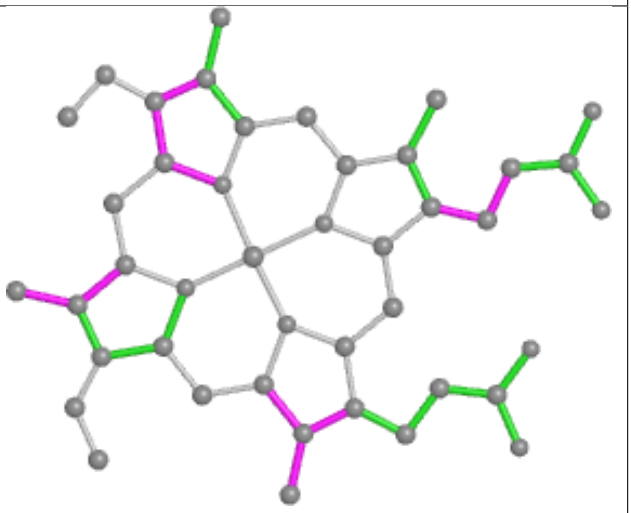


Rings

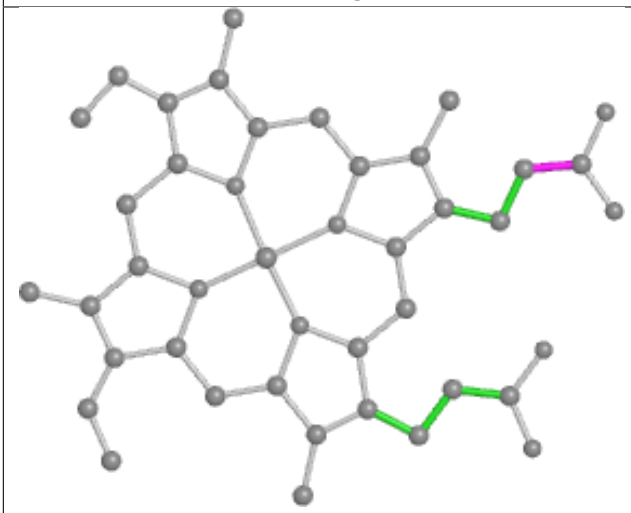
Ligand HEC E 501



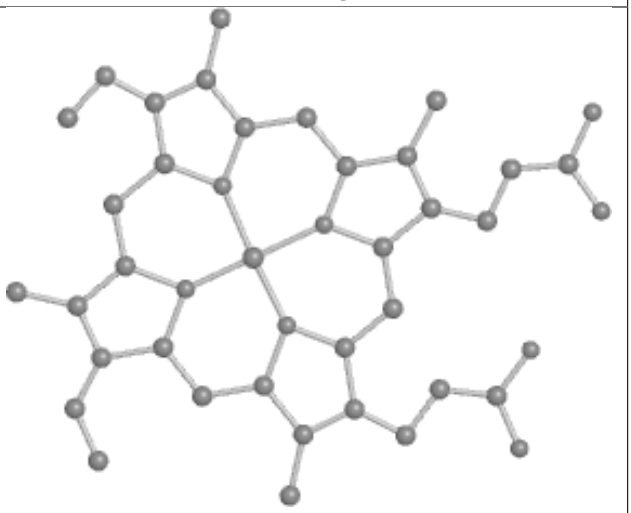
Bond lengths



Bond angles

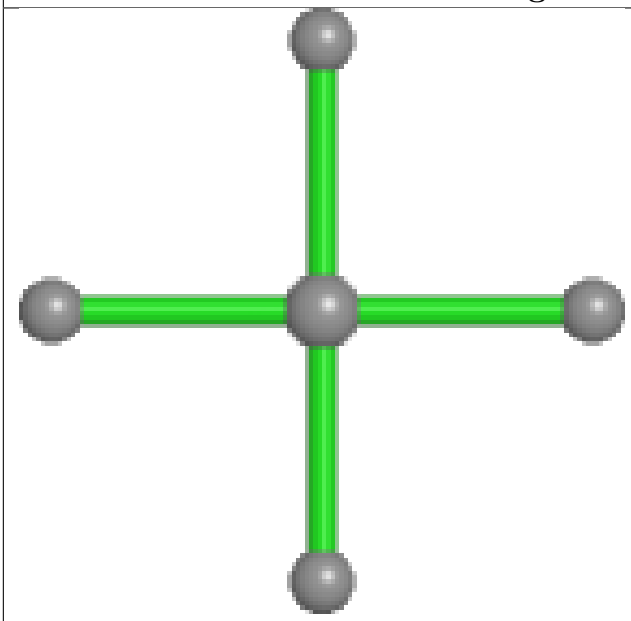


Torsions

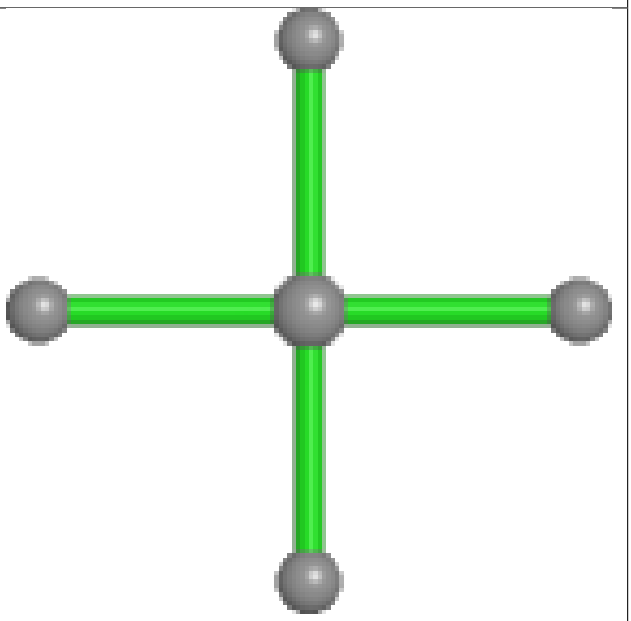


Rings

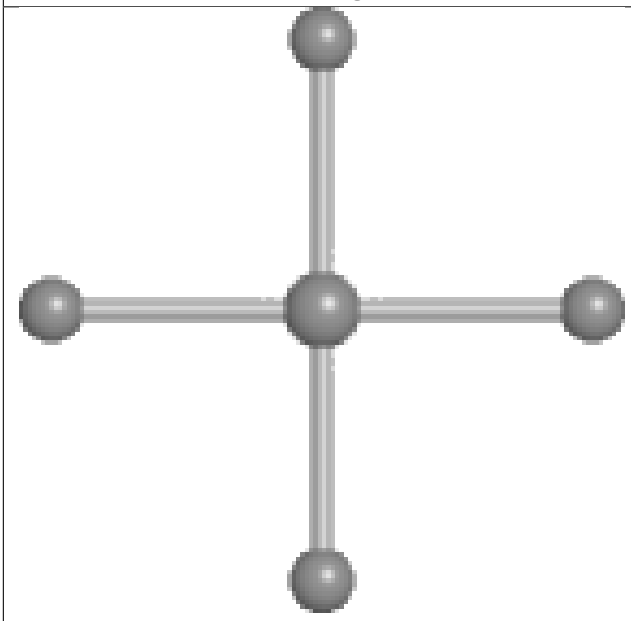
Ligand SO4 D 506



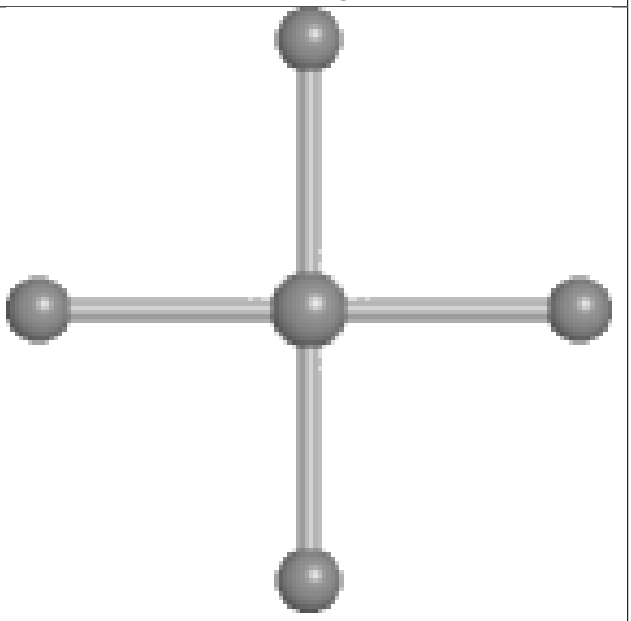
Bond lengths



Bond angles

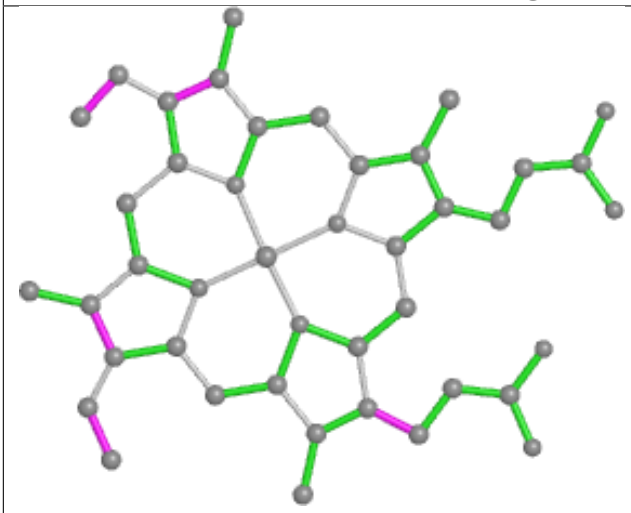


Torsions

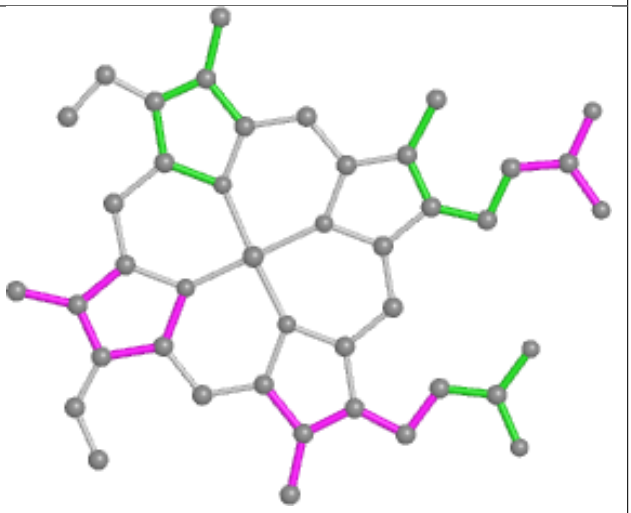


Rings

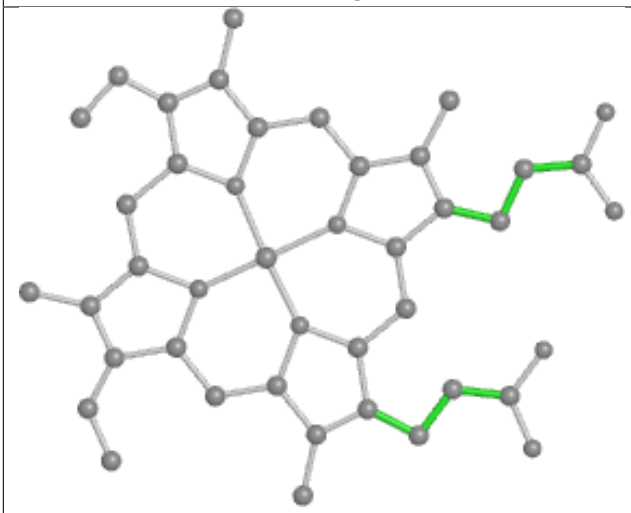
Ligand HEC F 503



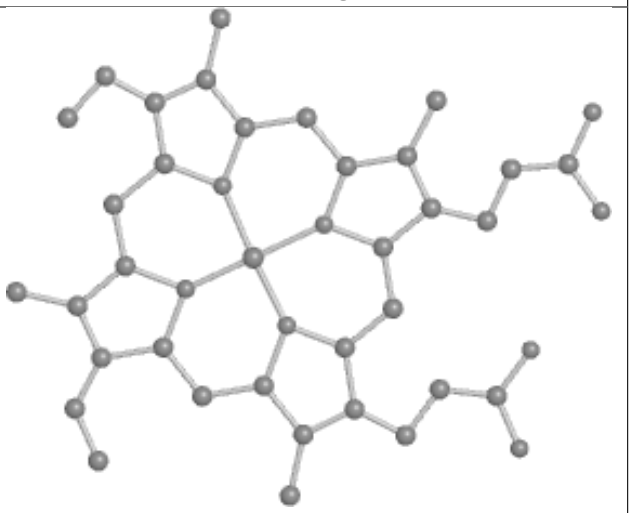
Bond lengths



Bond angles

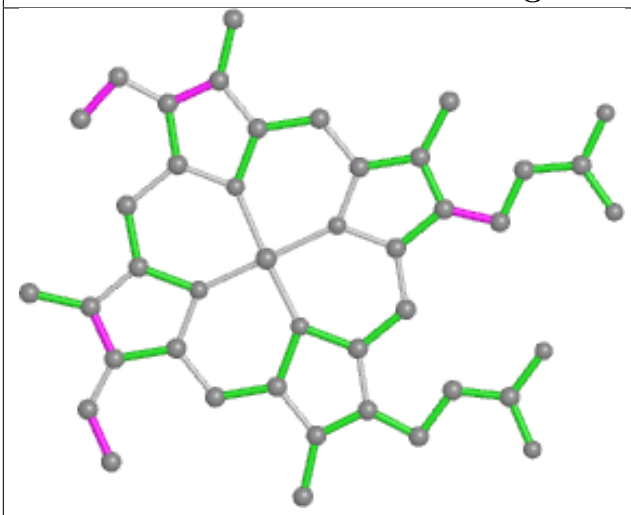


Torsions

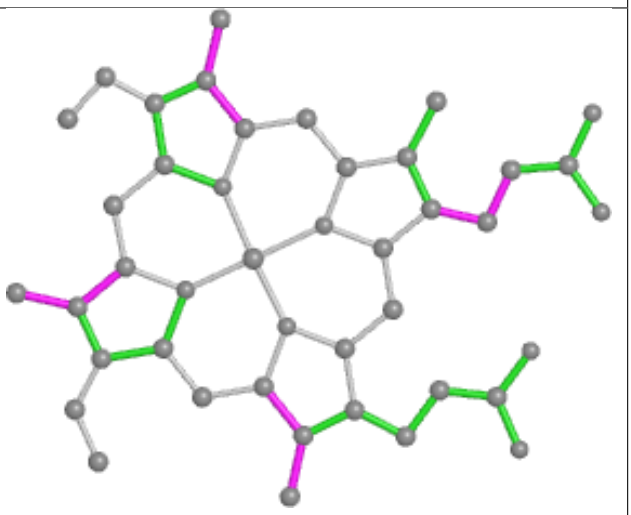


Rings

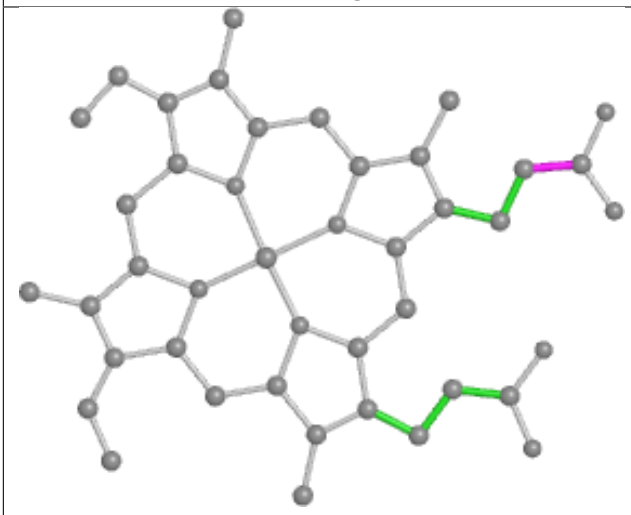
Ligand HEC E 504



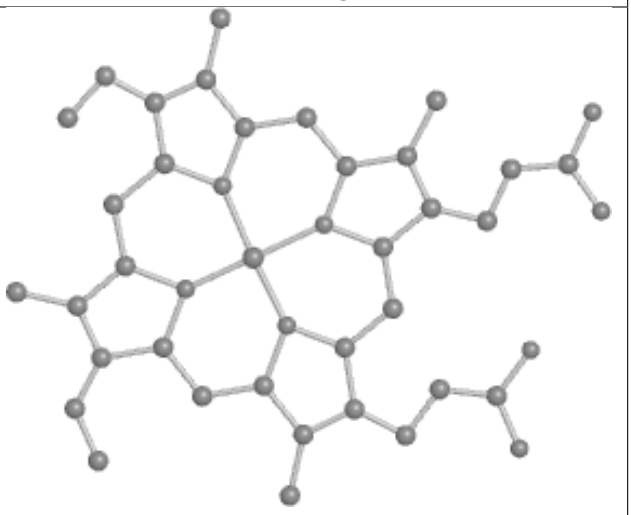
Bond lengths



Bond angles

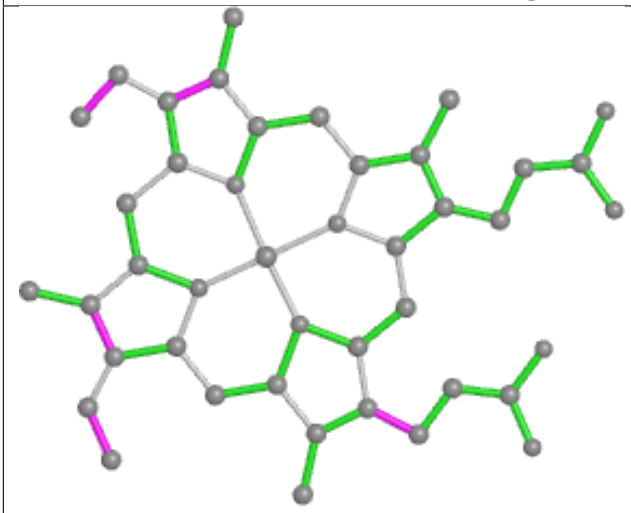


Torsions

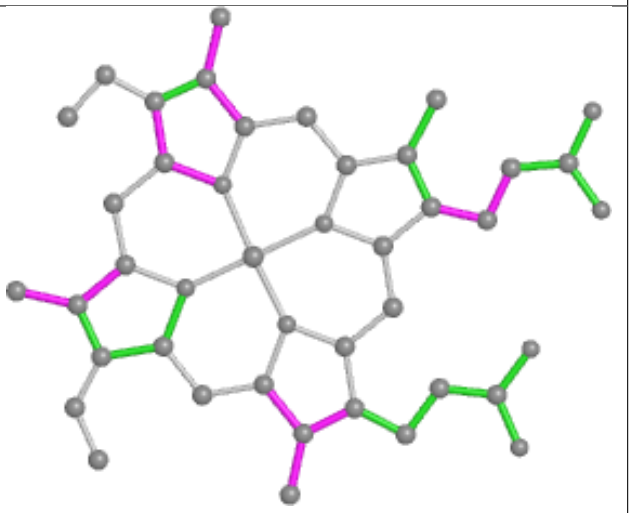


Rings

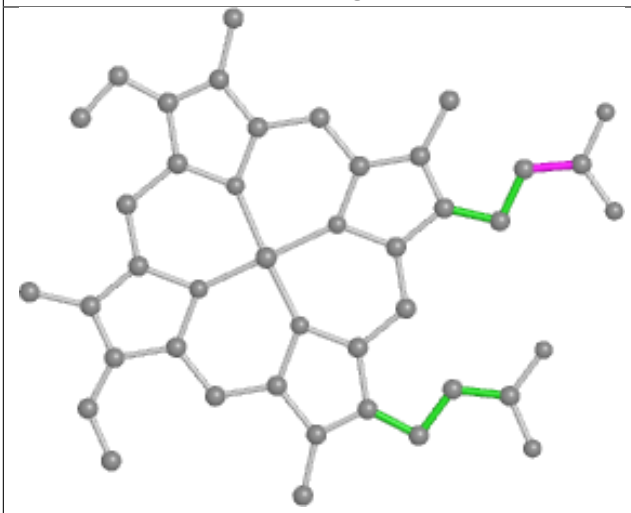
Ligand HEC B 501



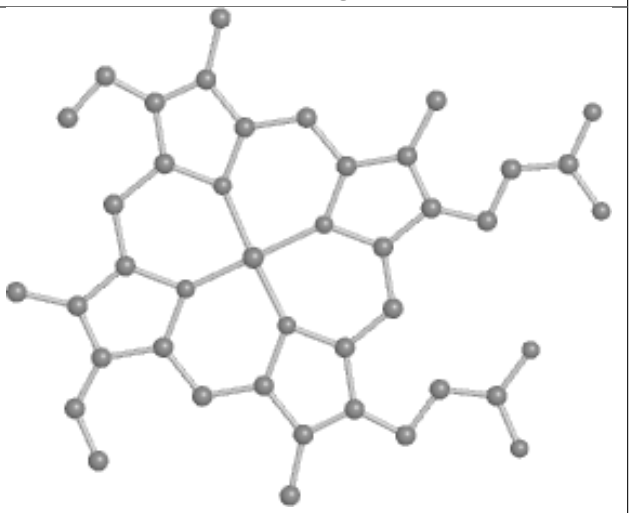
Bond lengths



Bond angles

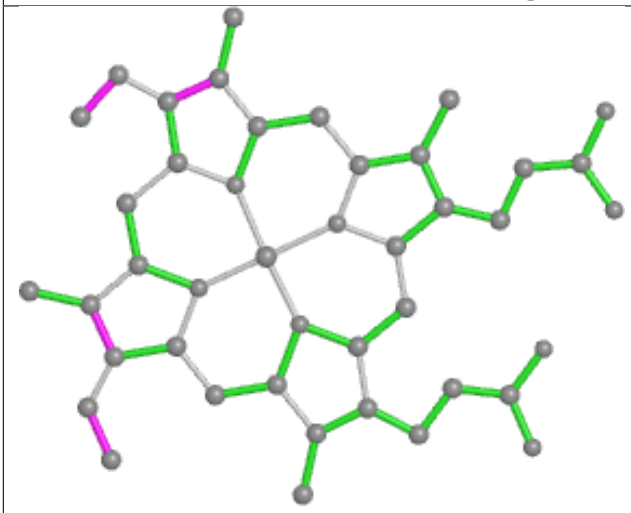


Torsions

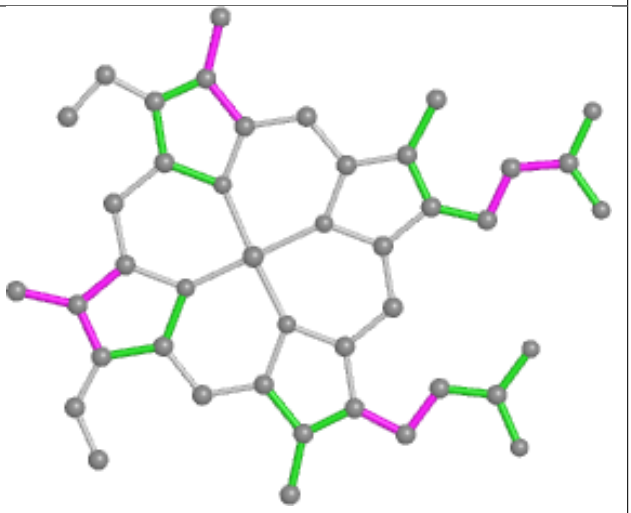


Rings

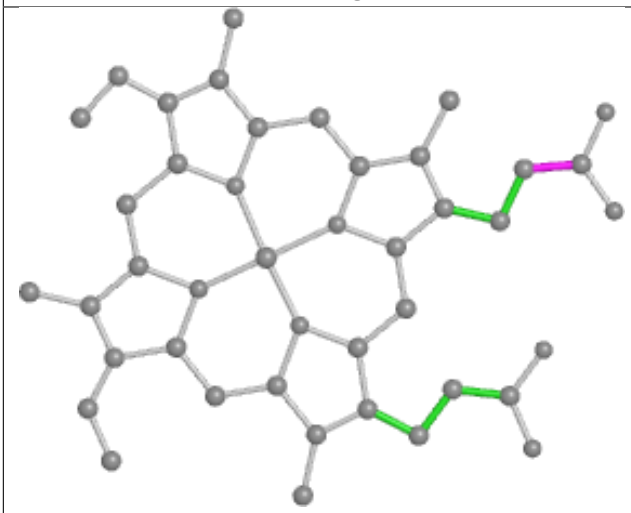
Ligand HEC D 502



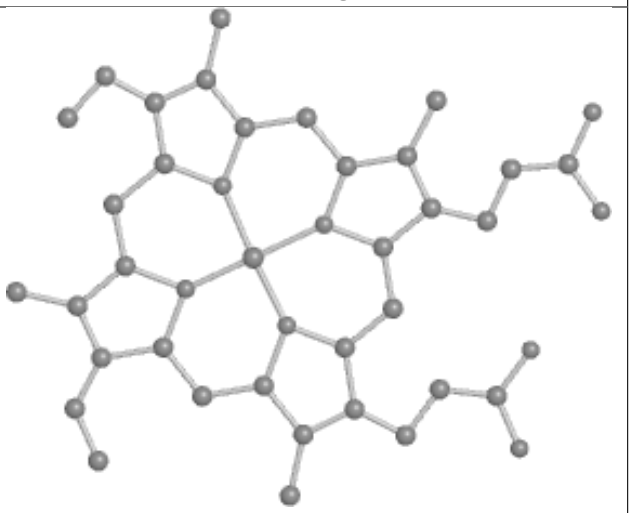
Bond lengths



Bond angles

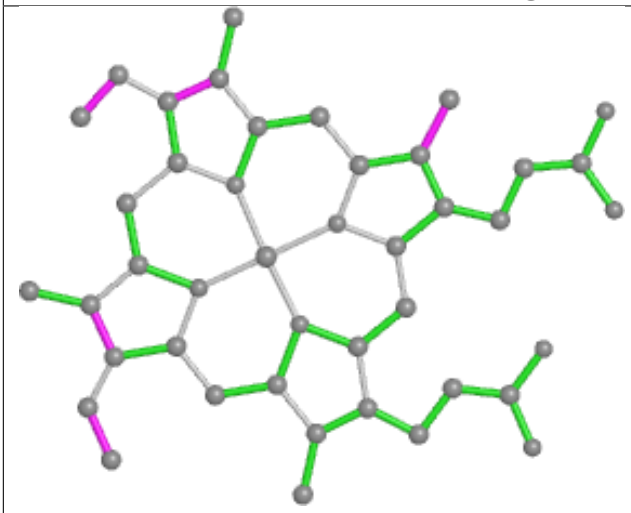


Torsions

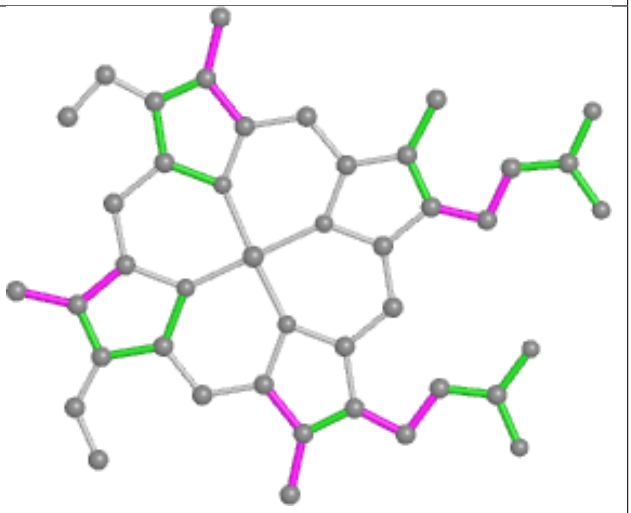


Rings

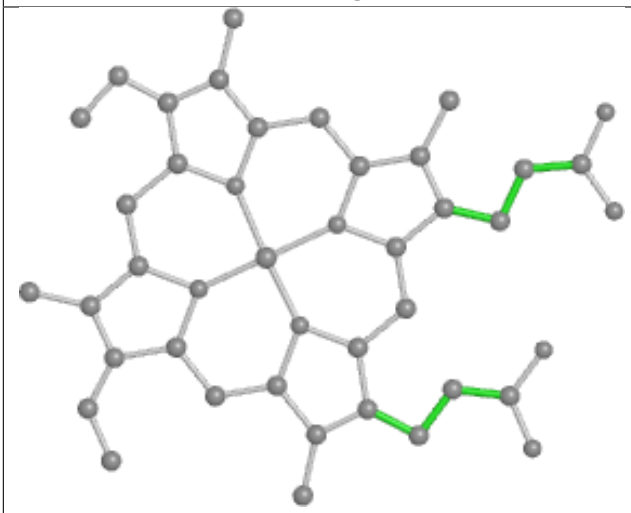
Ligand HEC A 503



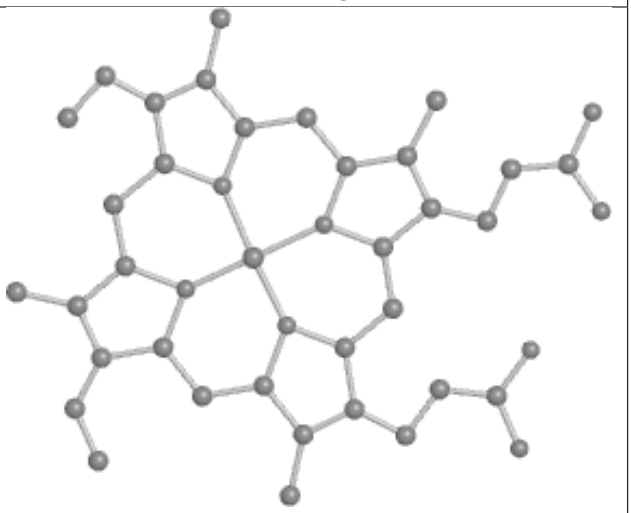
Bond lengths



Bond angles

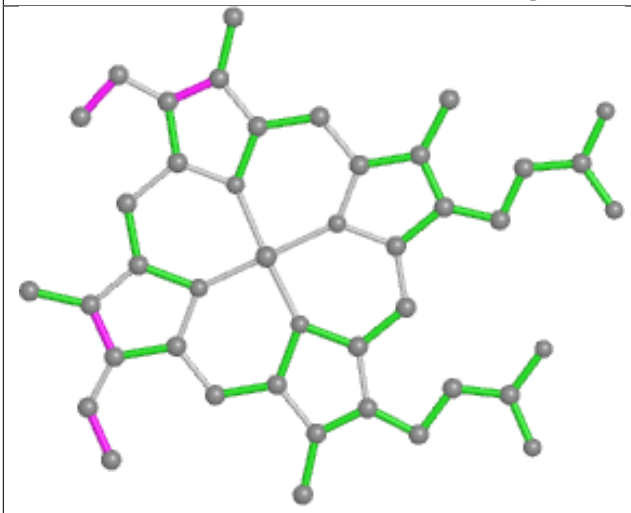


Torsions

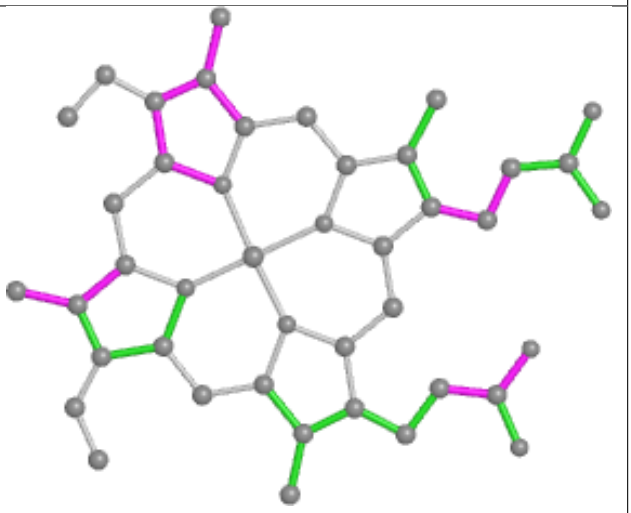


Rings

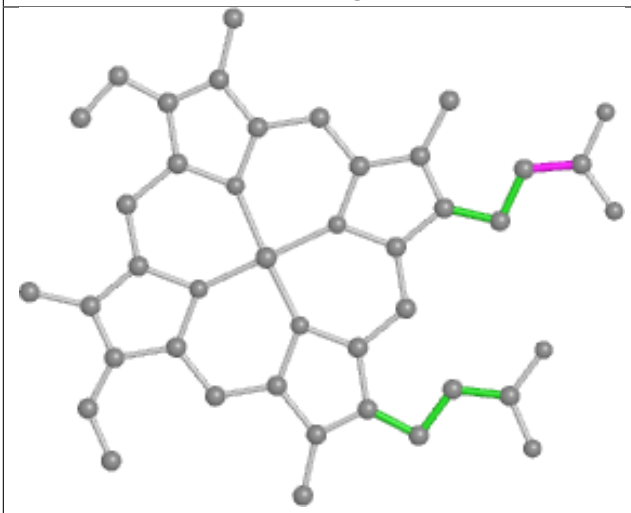
Ligand HEC F 504



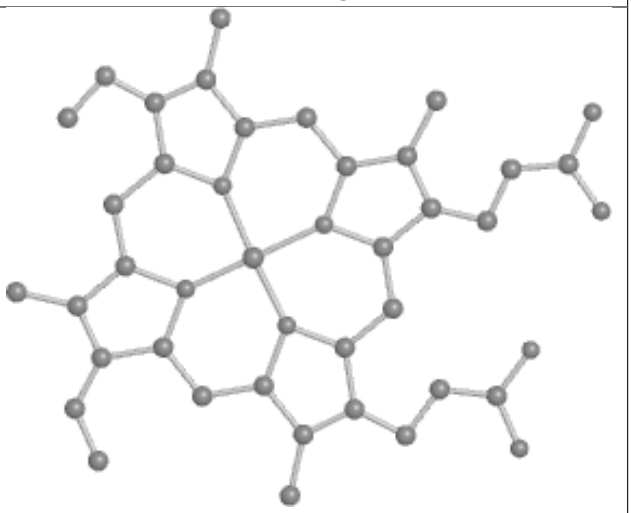
Bond lengths



Bond angles

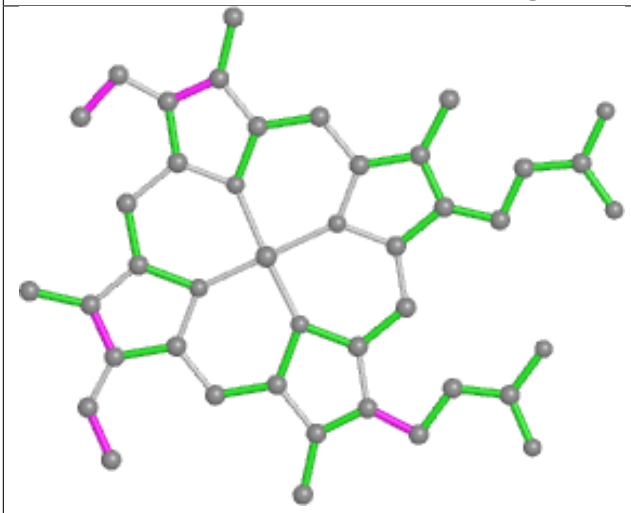


Torsions

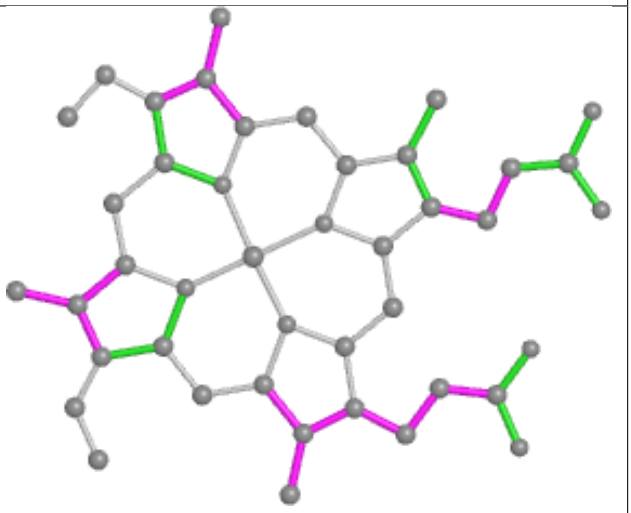


Rings

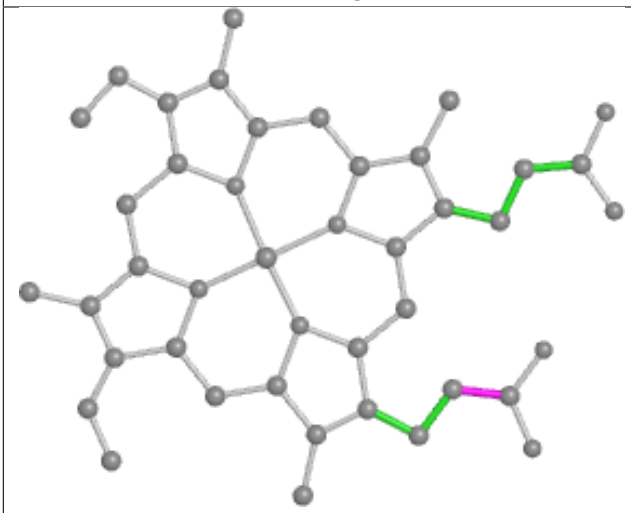
Ligand HEC E 505



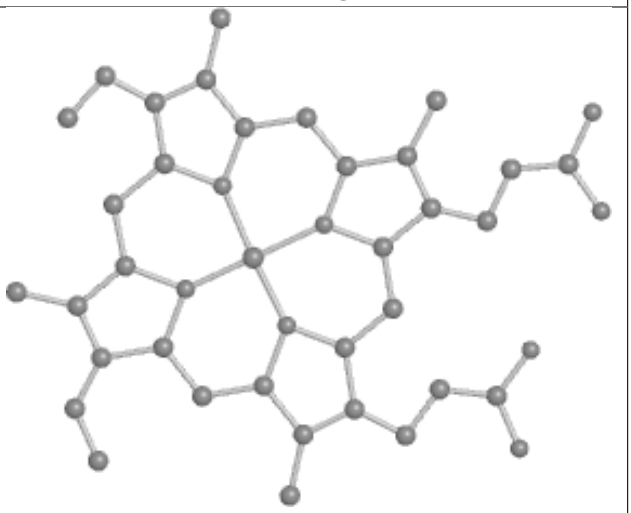
Bond lengths



Bond angles

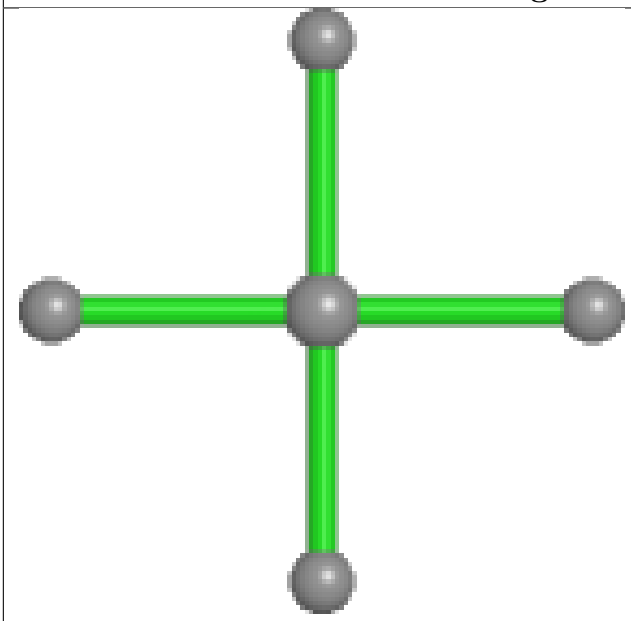


Torsions

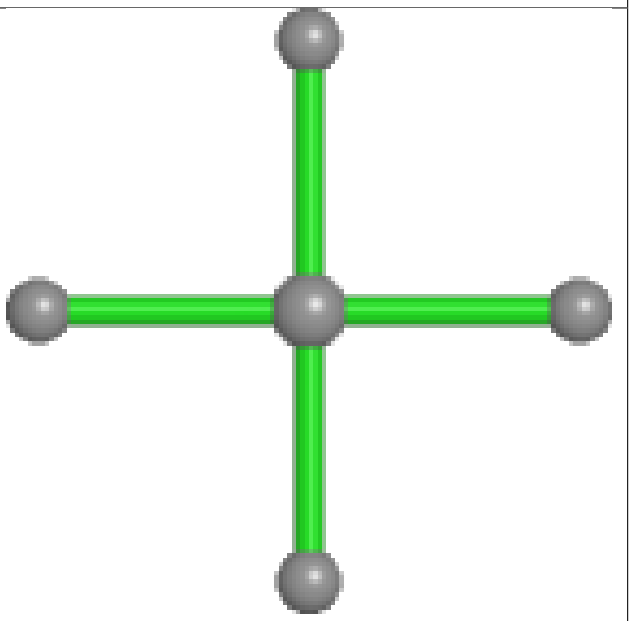


Rings

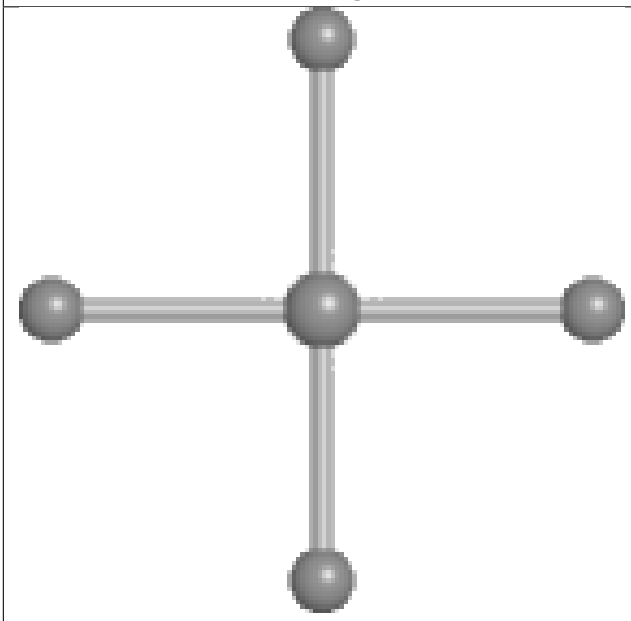
Ligand SO4 F 506



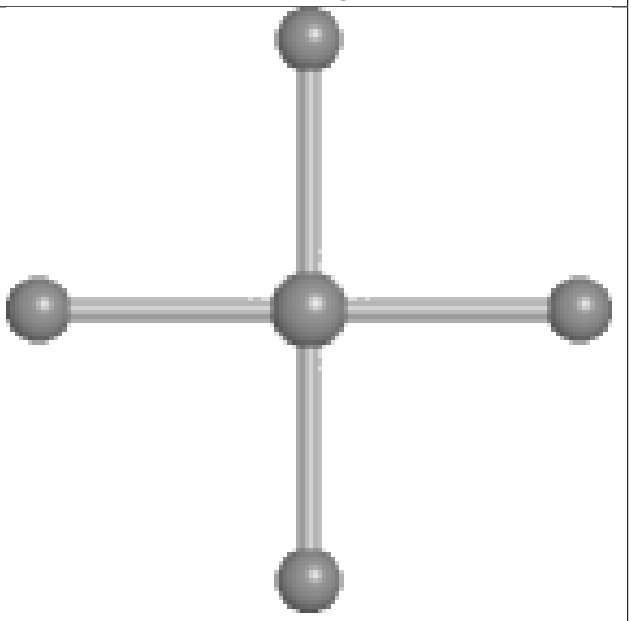
Bond lengths



Bond angles

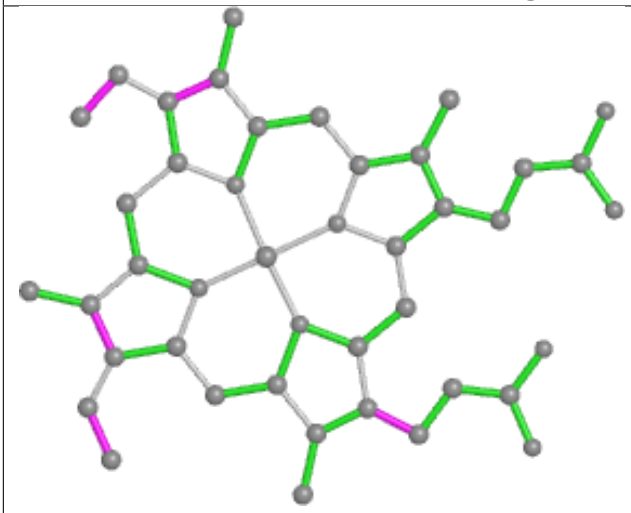


Torsions

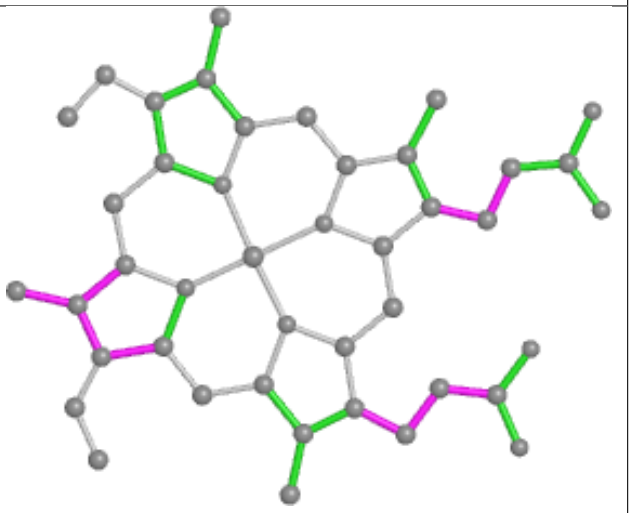


Rings

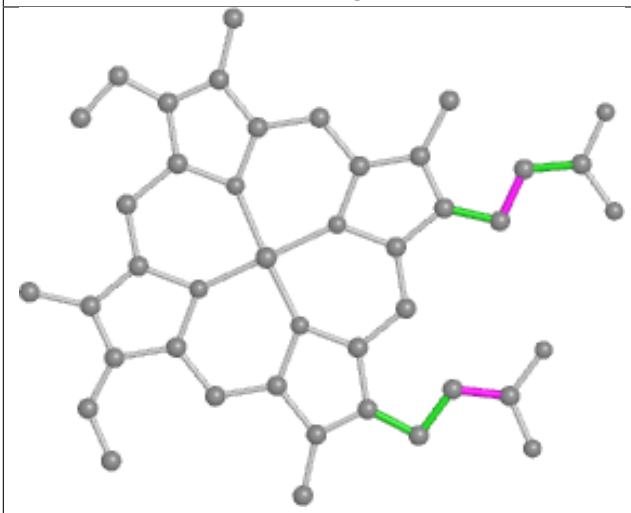
Ligand HEC D 505



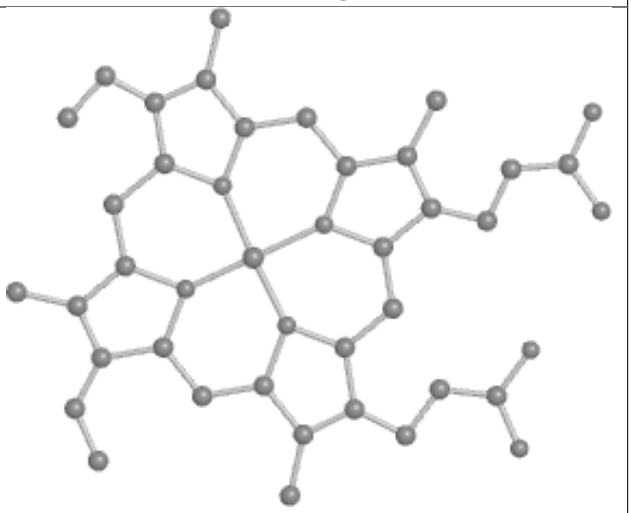
Bond lengths



Bond angles

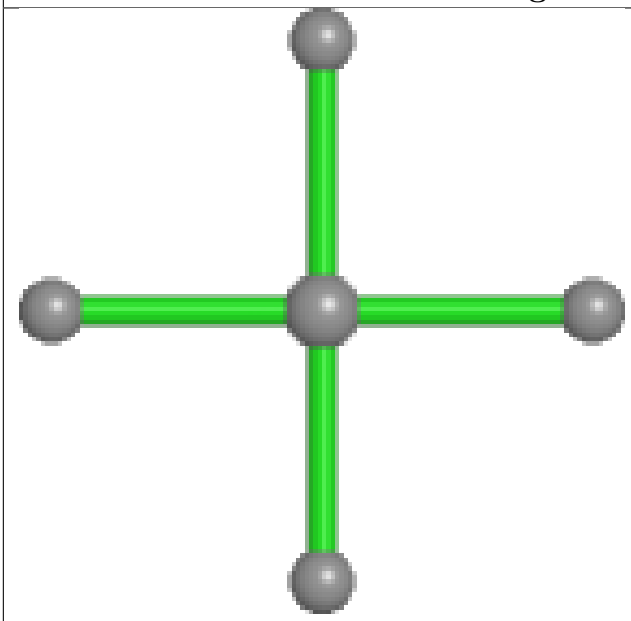


Torsions

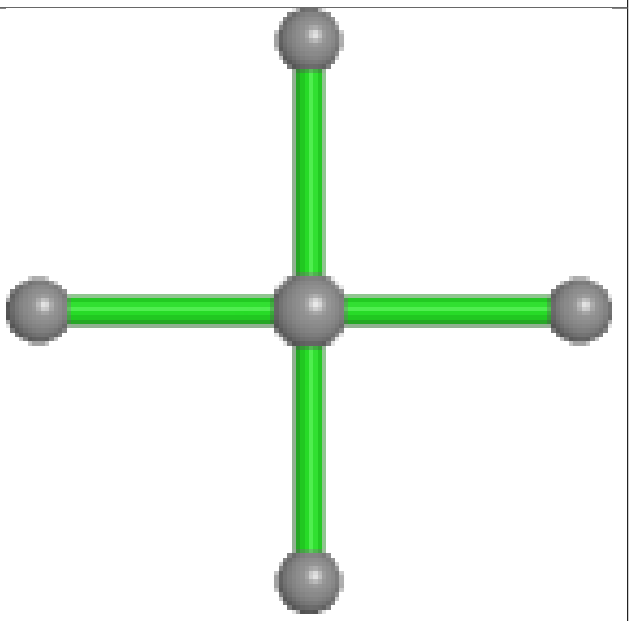


Rings

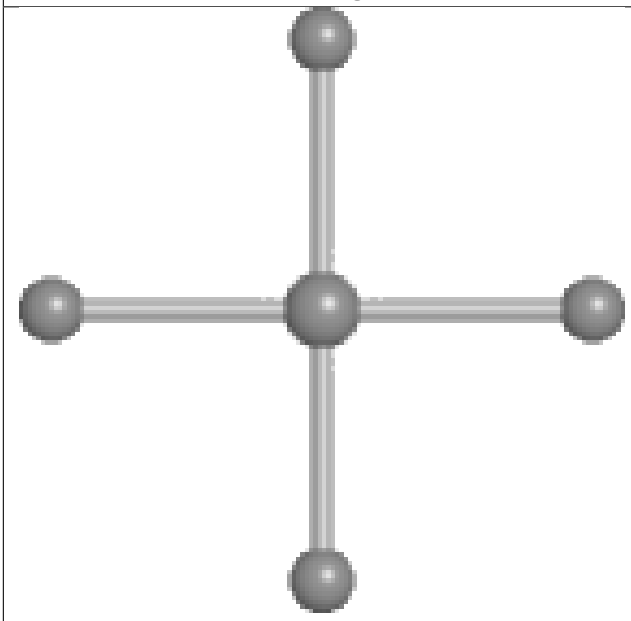
Ligand SO4 C 506



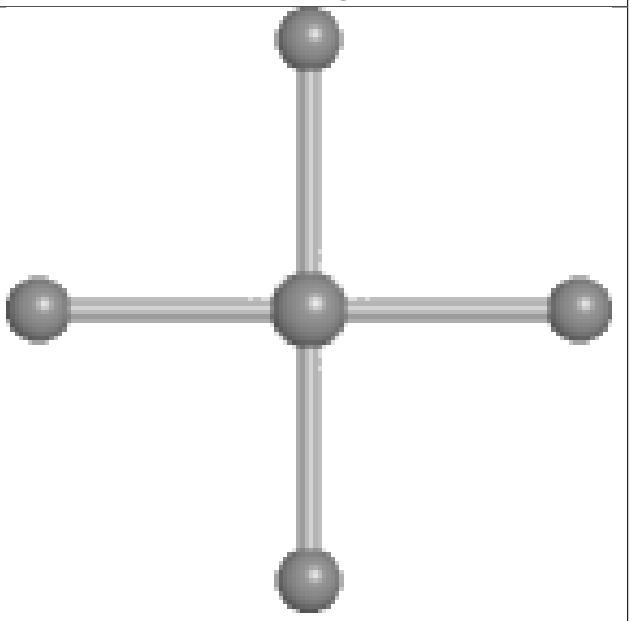
Bond lengths



Bond angles

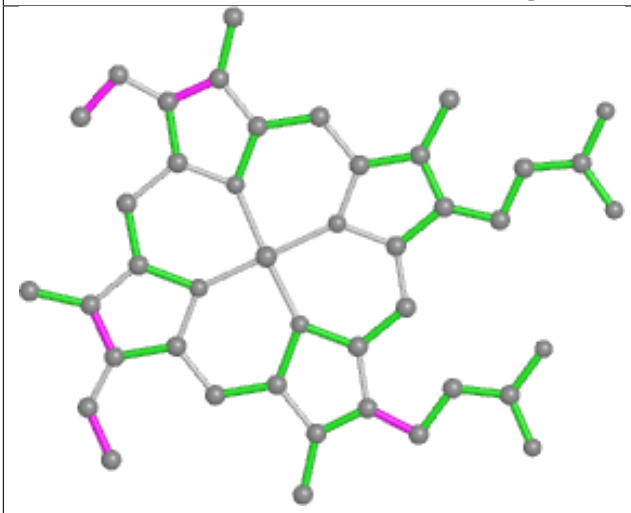


Torsions

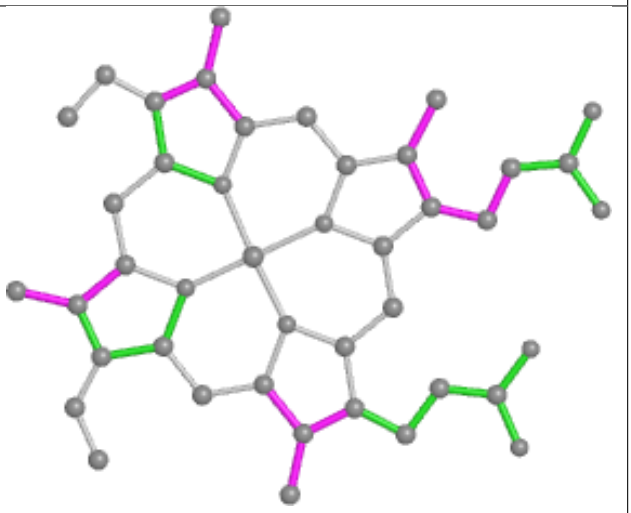


Rings

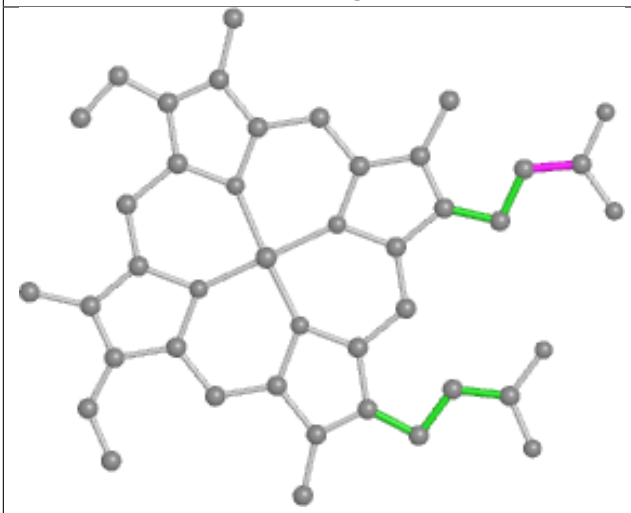
Ligand HEC C 504



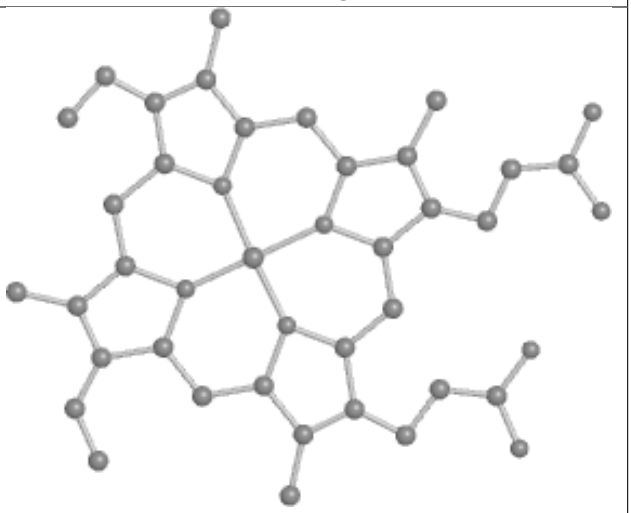
Bond lengths



Bond angles

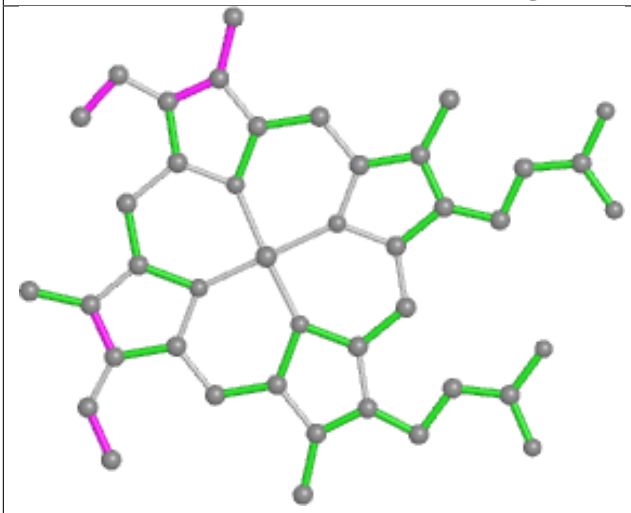


Torsions

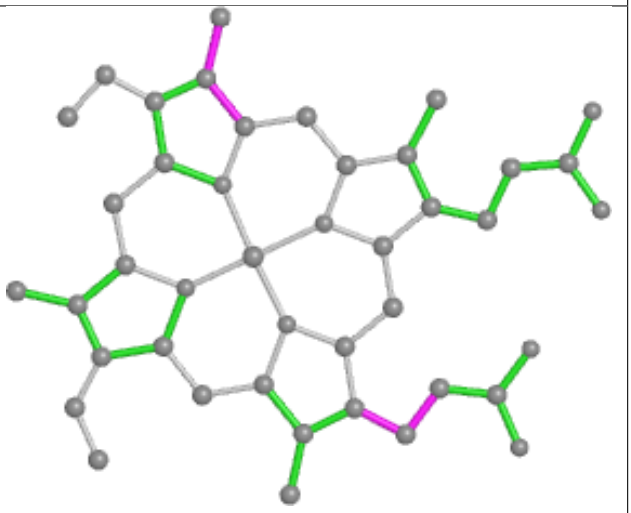


Rings

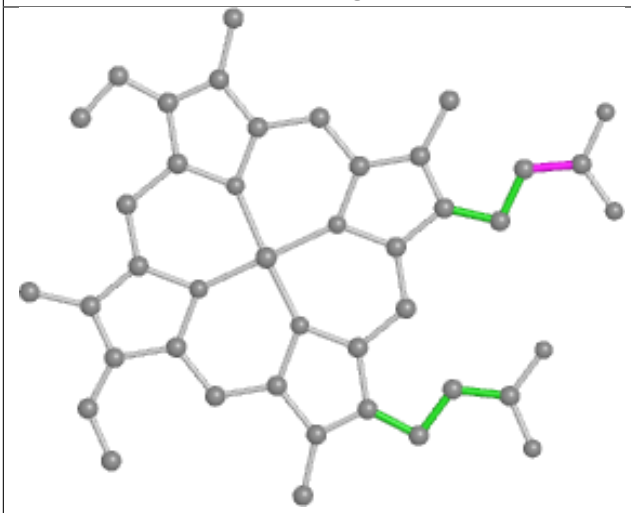
Ligand HEC F 502



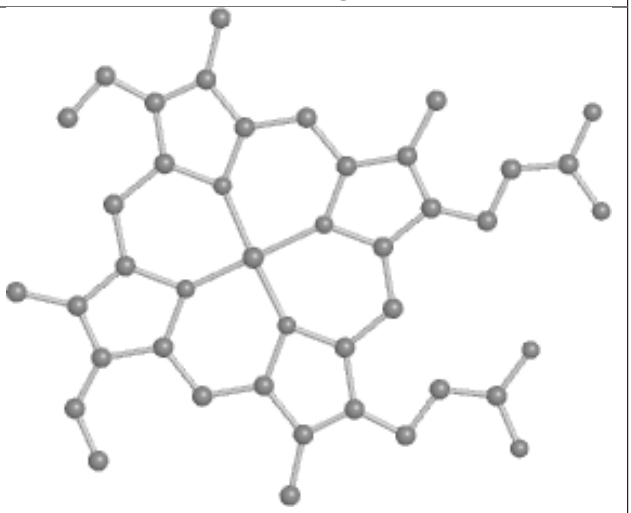
Bond lengths



Bond angles

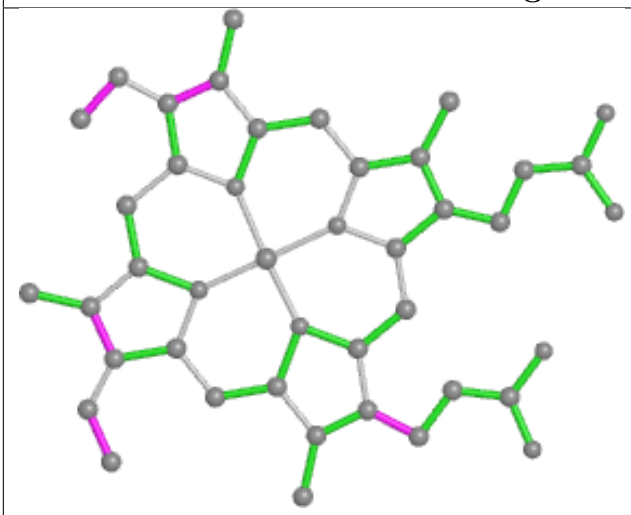


Torsions

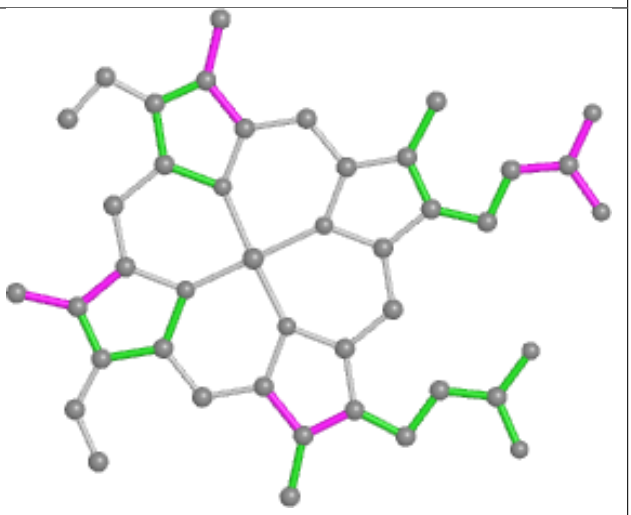


Rings

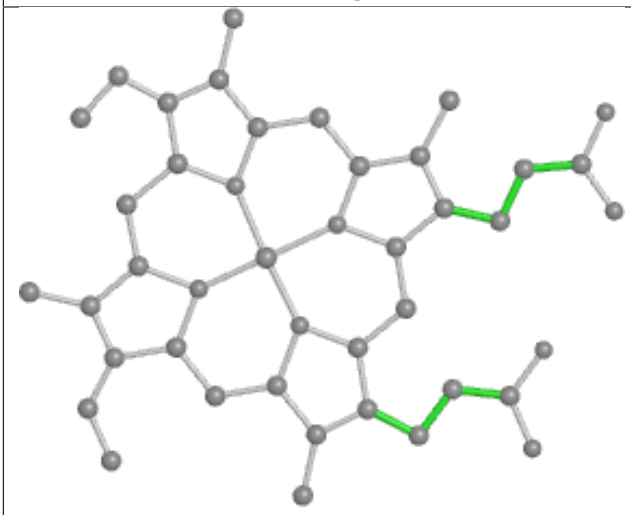
Ligand HEC E 503



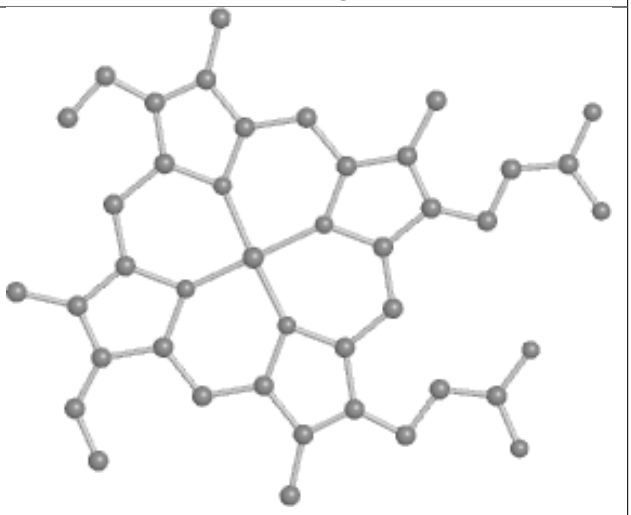
Bond lengths



Bond angles

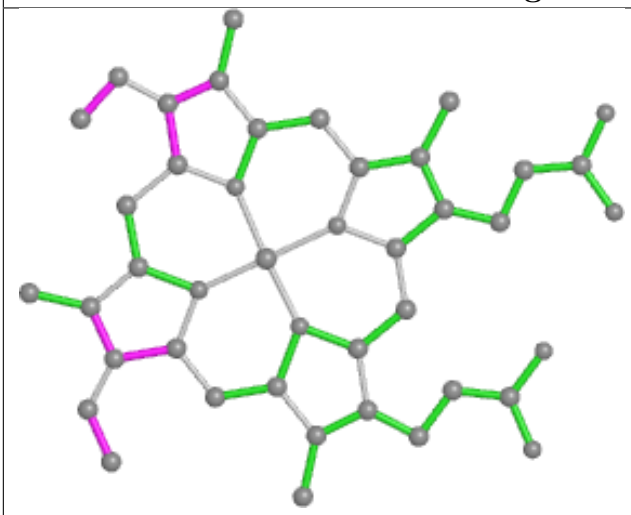


Torsions

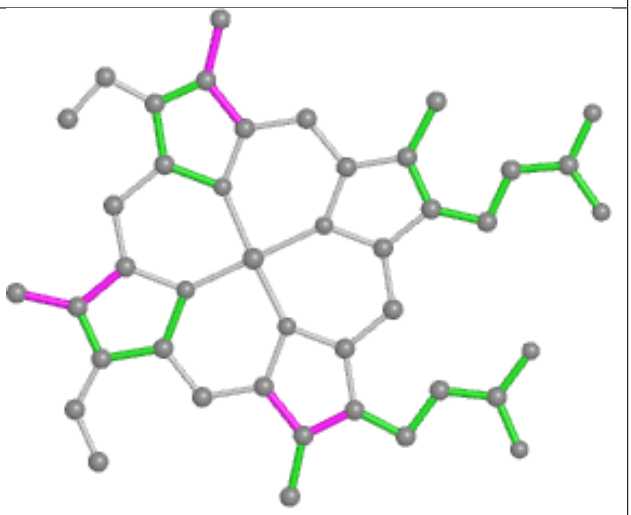


Rings

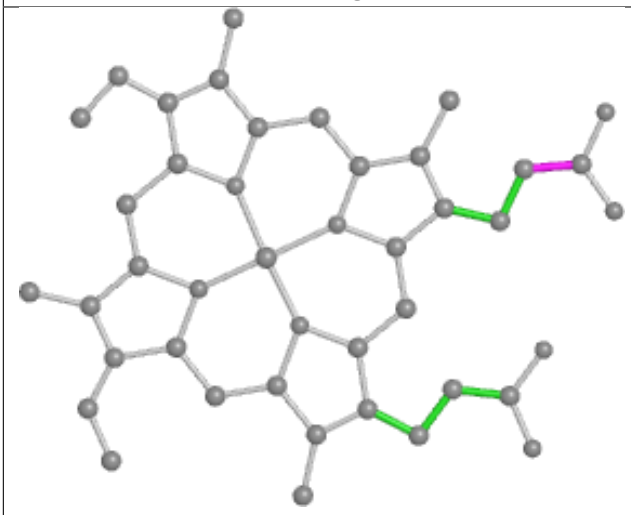
Ligand HEC F 501



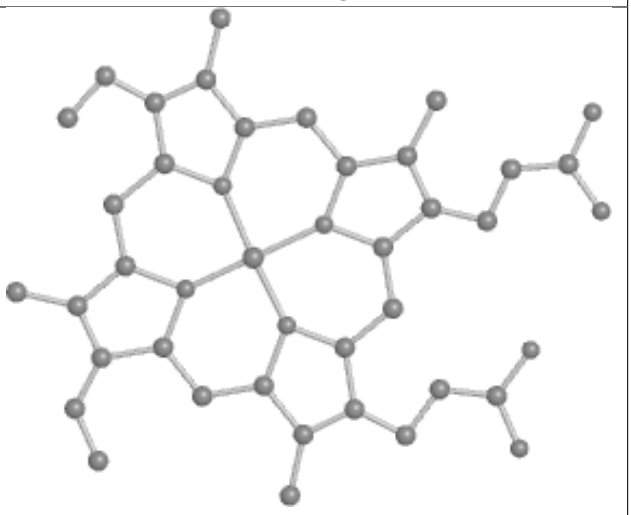
Bond lengths



Bond angles

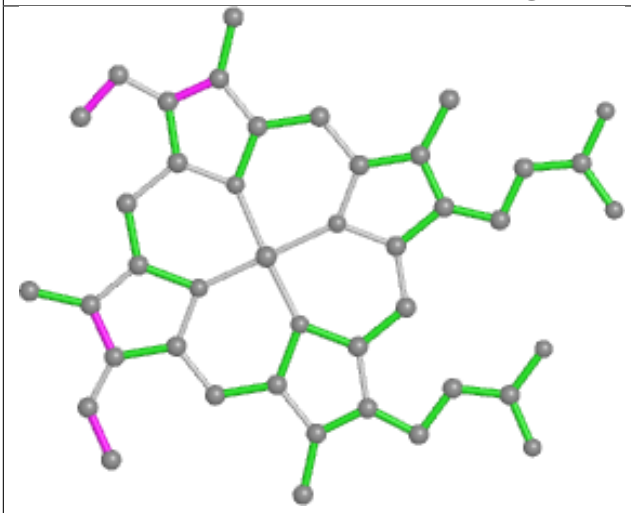


Torsions

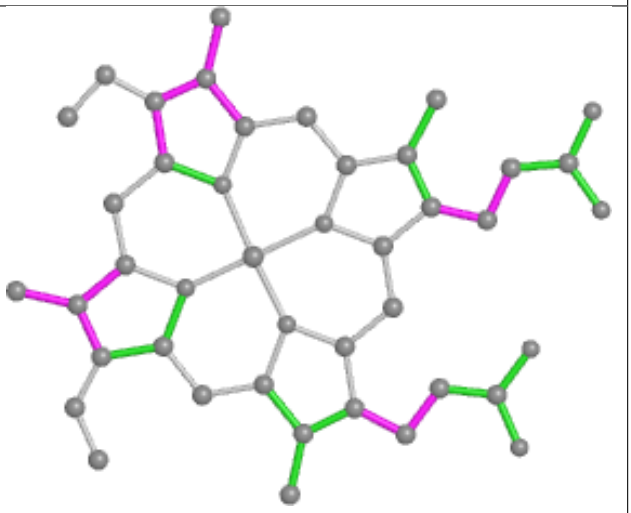


Rings

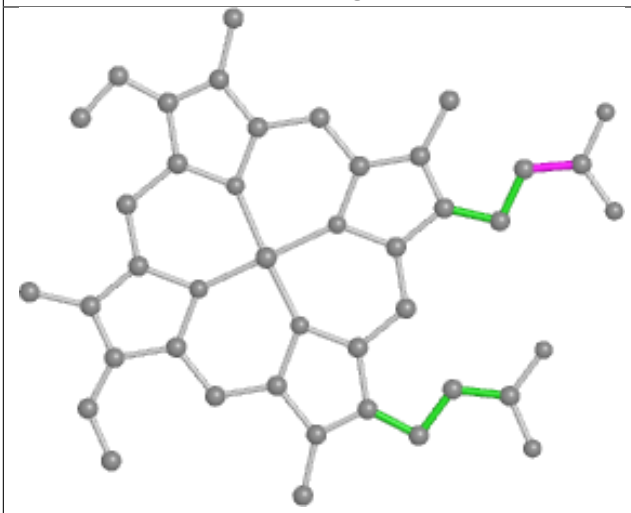
Ligand HEC B 502



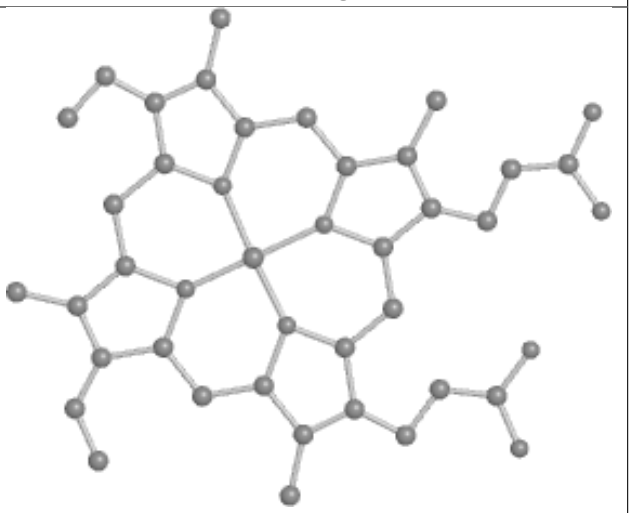
Bond lengths



Bond angles

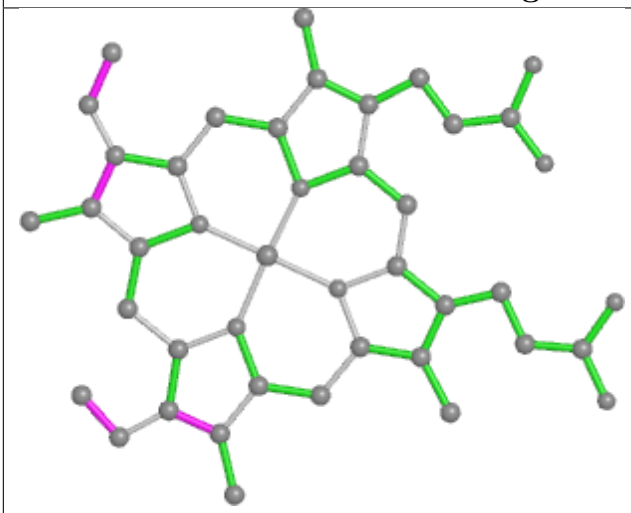


Torsions

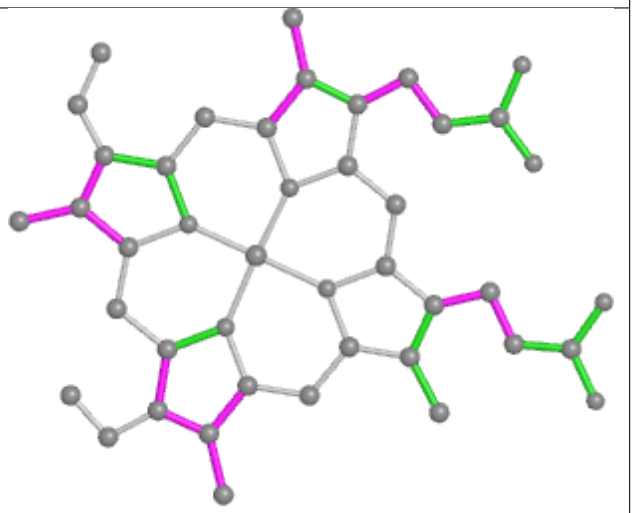


Rings

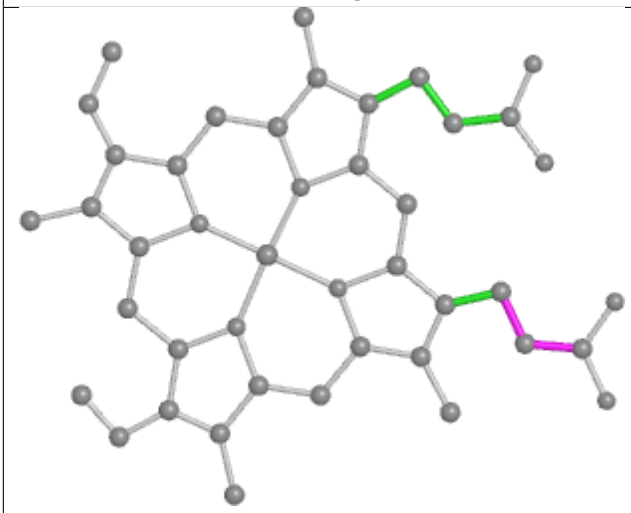
Ligand HEC D 503



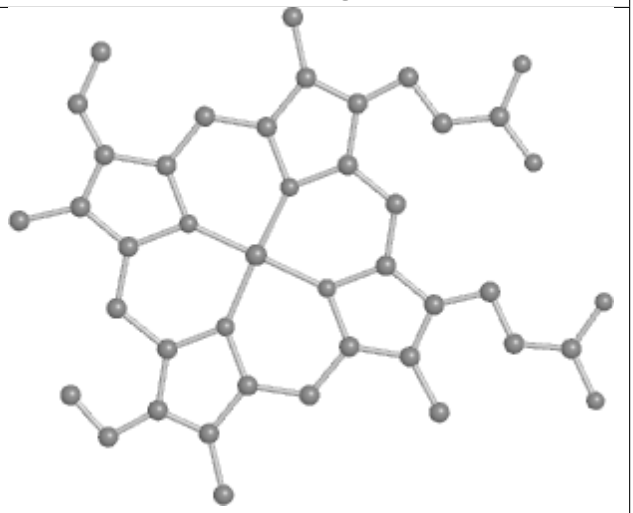
Bond lengths



Bond angles

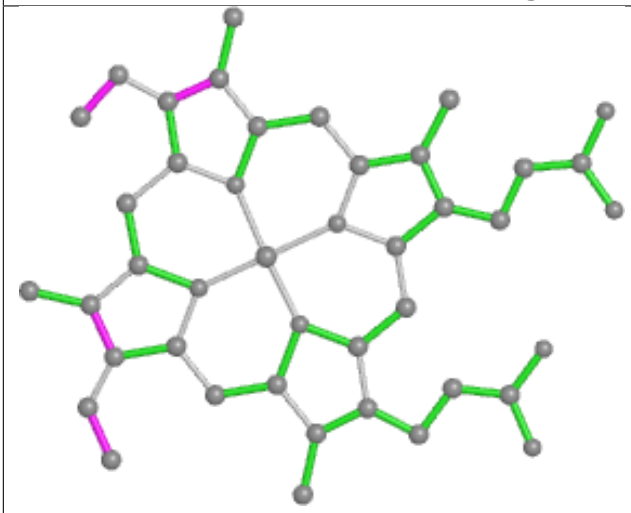


Torsions

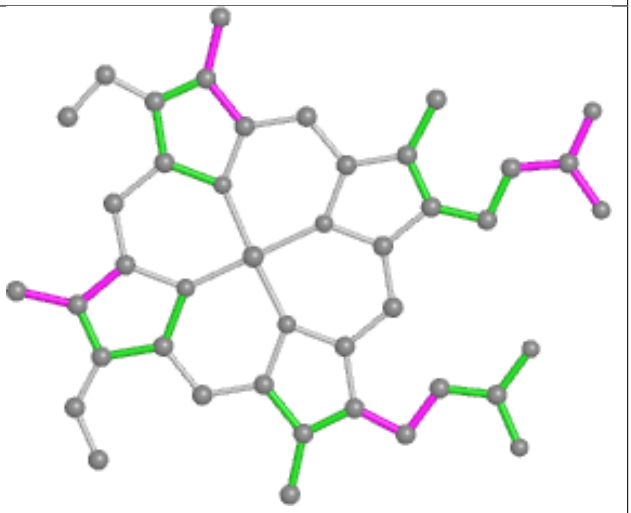


Rings

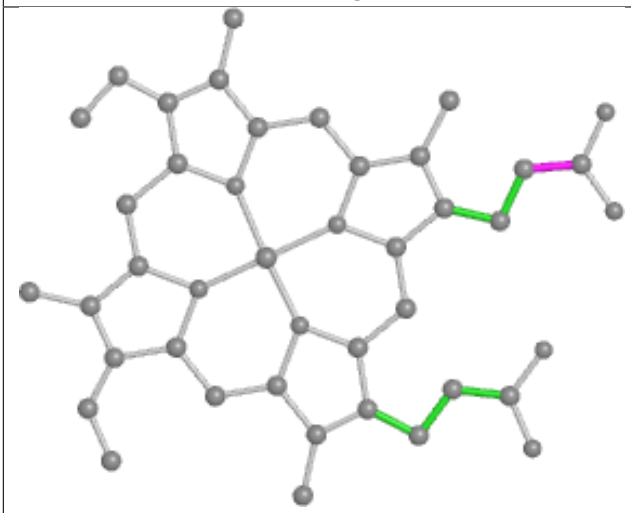
Ligand HEC A 502



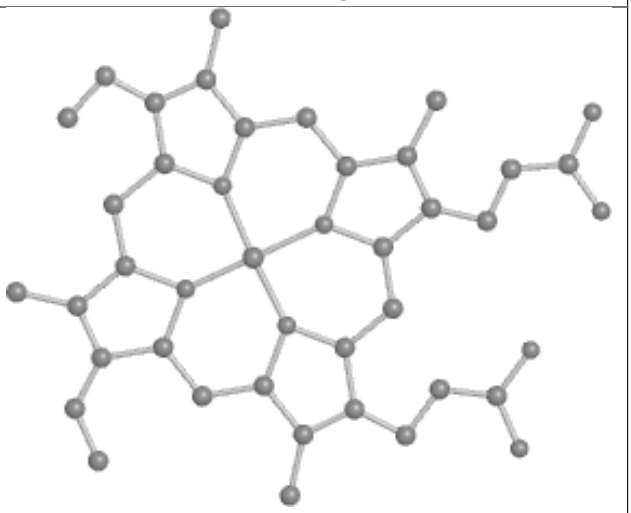
Bond lengths



Bond angles

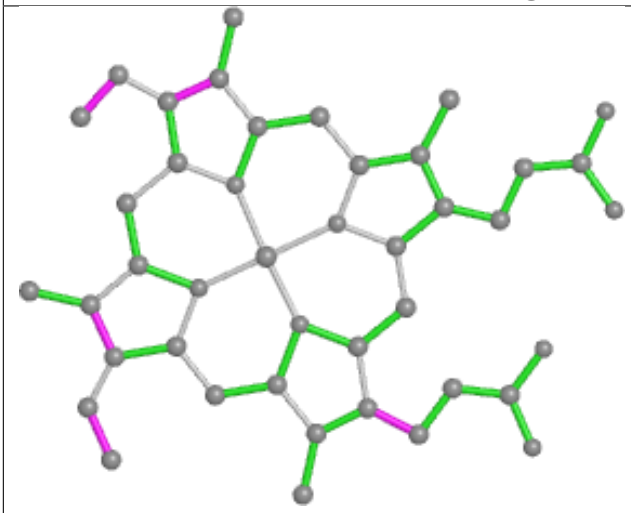


Torsions

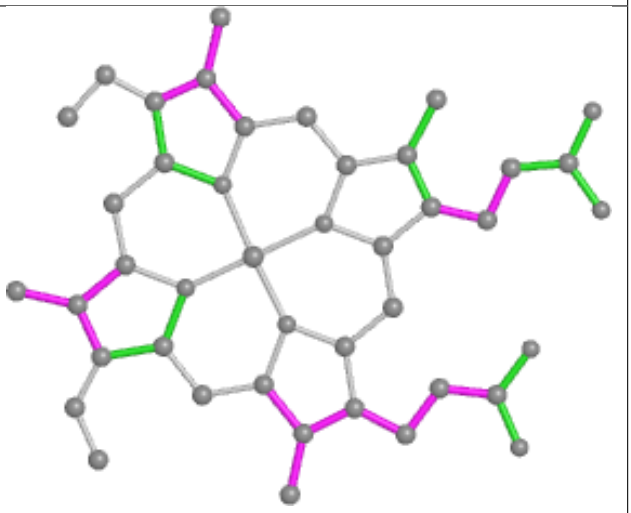


Rings

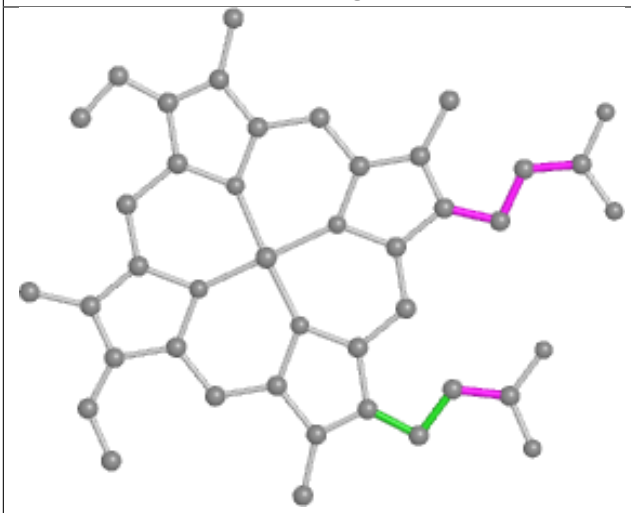
Ligand HEC C 505



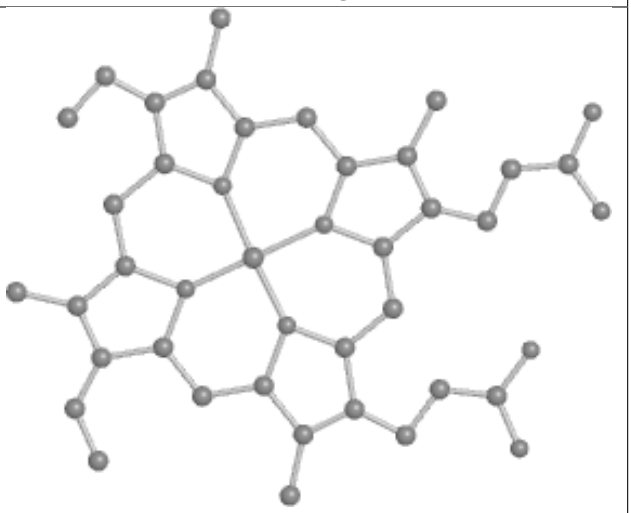
Bond lengths



Bond angles

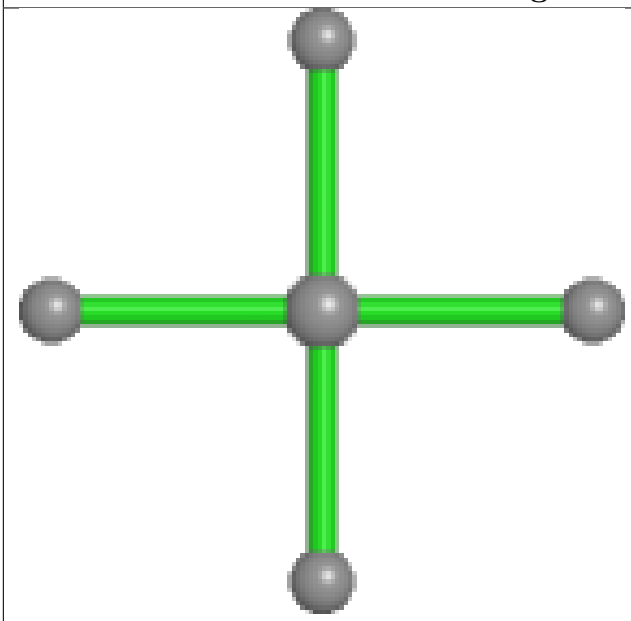


Torsions

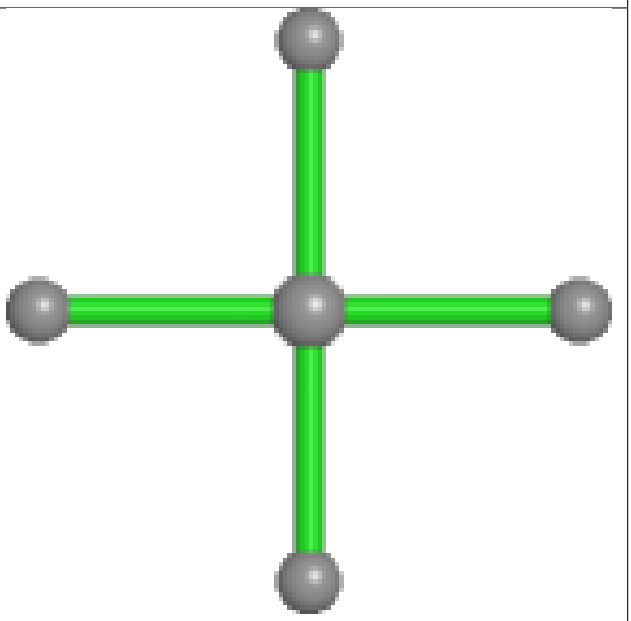


Rings

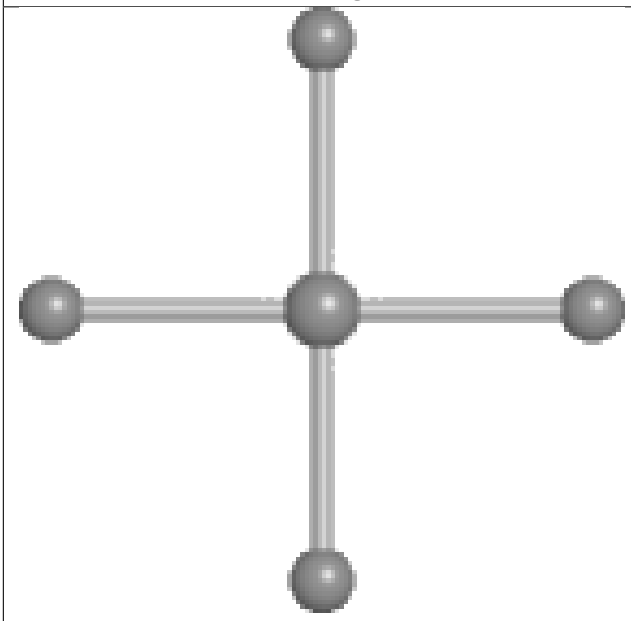
Ligand SO4 E 506



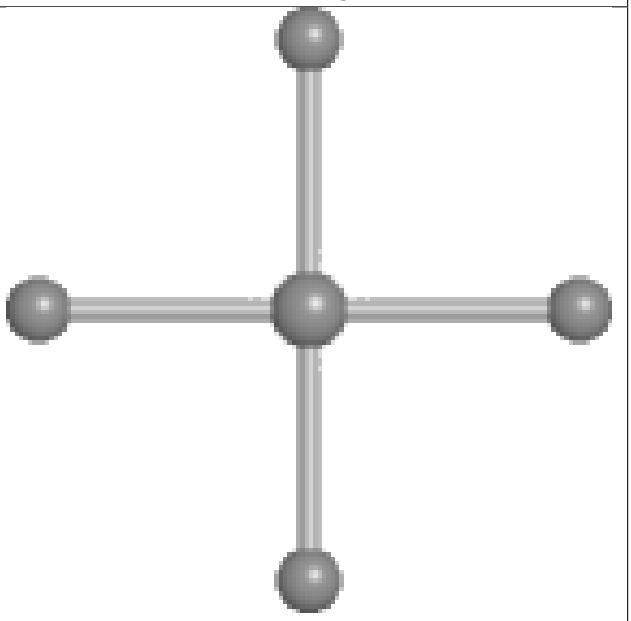
Bond lengths



Bond angles

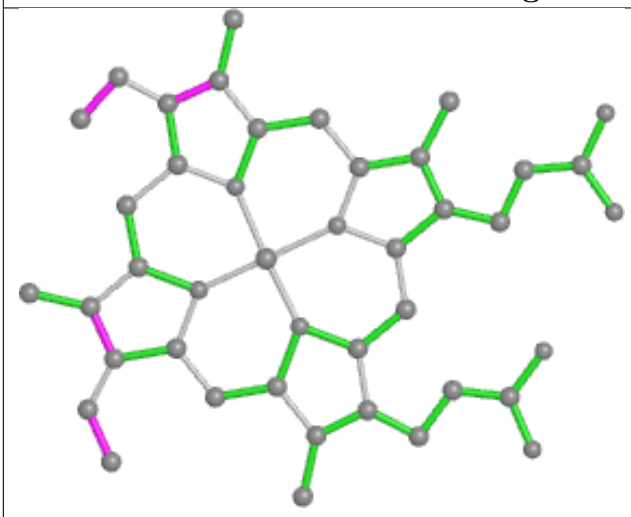


Torsions

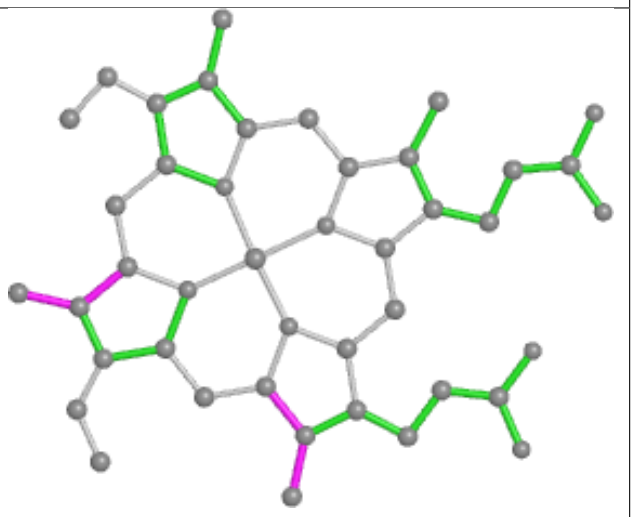


Rings

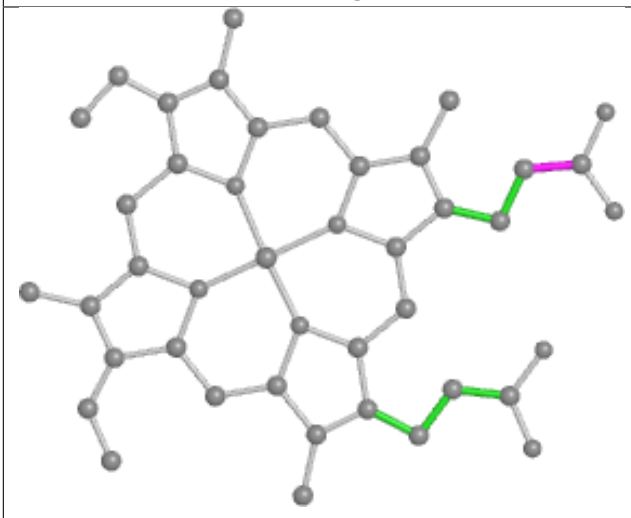
Ligand HEC A 501



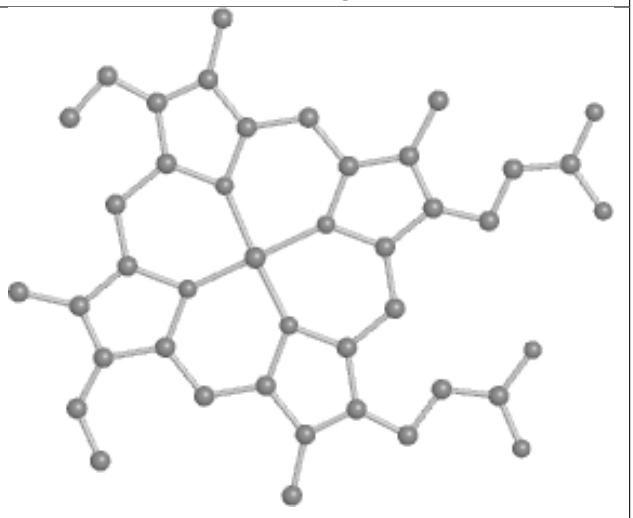
Bond lengths



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	443/482 (91%)	-0.19	6 (1%) 75 81	18, 28, 45, 64	0
1	B	444/482 (92%)	-0.22	5 (1%) 80 85	17, 28, 44, 91	0
1	C	442/482 (91%)	0.08	21 (4%) 30 37	21, 39, 60, 97	0
1	D	444/482 (92%)	0.17	25 (5%) 24 29	21, 40, 63, 99	0
1	E	443/482 (91%)	0.32	29 (6%) 18 22	28, 43, 71, 93	0
1	F	441/482 (91%)	0.41	41 (9%) 8 10	32, 48, 72, 91	0
All	All	2657/2892 (91%)	0.09	127 (4%) 30 37	17, 38, 64, 99	0

All (127) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	307	VAL	8.3
1	C	309	SER	6.3
1	C	310	LYS	6.0
1	F	376	ALA	5.7
1	B	310	LYS	5.3
1	D	308	GLY	5.3
1	F	307	VAL	5.0
1	E	377	ALA	4.8
1	F	309	SER	4.6
1	F	377	ALA	4.6
1	C	178	LYS	4.5
1	D	376	ALA	4.4
1	D	309	SER	4.1
1	E	442	ALA	4.1
1	F	308	GLY	3.8
1	D	479	GLY	3.8
1	E	480	PRO	3.7
1	E	376	ALA	3.6
1	B	306	LYS	3.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	227	ALA	3.5
1	F	380	GLN	3.4
1	C	308	GLY	3.3
1	F	444	VAL	3.3
1	D	480	PRO	3.3
1	C	384	LYS	3.3
1	E	219	VAL	3.2
1	F	463	ALA	3.2
1	E	384	LYS	3.2
1	E	445	ASP	3.2
1	E	387	ASP	3.1
1	E	380	GLN	3.1
1	C	378	GLY	3.1
1	E	378	GLY	3.1
1	E	307	VAL	3.1
1	E	227	ALA	3.0
1	D	448	VAL	3.0
1	F	462	GLY	3.0
1	D	330	GLN	3.0
1	B	309	SER	3.0
1	C	377	ALA	2.9
1	F	306	LYS	2.9
1	F	379	LYS	2.9
1	E	260	SER	2.9
1	D	380	GLN	2.9
1	A	480	PRO	2.9
1	A	228	ASN	2.9
1	B	308	GLY	2.9
1	C	442	ALA	2.8
1	E	479	GLY	2.8
1	F	465	LYS	2.7
1	F	383	GLN	2.7
1	F	468	PHE	2.7
1	C	306	LYS	2.7
1	C	179	ASP	2.7
1	F	227	ALA	2.7
1	C	383	GLN	2.7
1	F	469	LYS	2.6
1	C	376	ALA	2.6
1	F	305	THR	2.6
1	F	228	ASN	2.6
1	E	467	MET	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	E	460	ASN	2.6
1	D	466	LEU	2.6
1	D	304	TYR	2.6
1	A	378	GLY	2.5
1	F	385	MET	2.5
1	C	203	LYS	2.5
1	C	380	GLN	2.5
1	E	388	GLN	2.5
1	E	226	ASP	2.5
1	E	465	LYS	2.5
1	D	306	LYS	2.4
1	E	468	PHE	2.4
1	F	240	GLU	2.4
1	F	253	LYS	2.4
1	A	309	SER	2.4
1	E	240	GLU	2.4
1	F	220	THR	2.4
1	F	464	LYS	2.4
1	F	312	ILE	2.4
1	D	468	PHE	2.4
1	F	470	PRO	2.4
1	D	465	LYS	2.3
1	E	447	PRO	2.3
1	D	463	ALA	2.3
1	E	374	GLN	2.3
1	D	203	LYS	2.3
1	F	460	ASN	2.3
1	F	155	ASP	2.3
1	C	228	ASN	2.2
1	F	378	GLY	2.2
1	F	278	HIS	2.2
1	D	470	PRO	2.2
1	D	442	ALA	2.2
1	F	226	ASP	2.2
1	D	154	ALA	2.2
1	F	387	ASP	2.2
1	F	370	MET	2.2
1	F	467	MET	2.2
1	C	176	ASN	2.2
1	C	202	THR	2.2
1	C	240	GLU	2.2
1	E	203	LYS	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	E	382	ASP	2.1
1	F	381	ILE	2.1
1	F	456	LYS	2.1
1	A	377	ALA	2.1
1	C	374	GLN	2.1
1	D	375	GLN	2.1
1	B	384	LYS	2.1
1	C	311	LYS	2.1
1	F	199	VAL	2.1
1	E	228	ASN	2.1
1	F	241	SER	2.1
1	D	462	GLY	2.1
1	E	379	LYS	2.1
1	F	445	ASP	2.1
1	E	444	VAL	2.1
1	F	48	ASN	2.1
1	D	378	GLY	2.0
1	D	333	SER	2.0
1	E	383	GLN	2.0
1	F	391	PHE	2.0
1	C	217	CYS	2.0
1	D	158	ASN	2.0
1	D	49	TYR	2.0
1	F	375	GLN	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

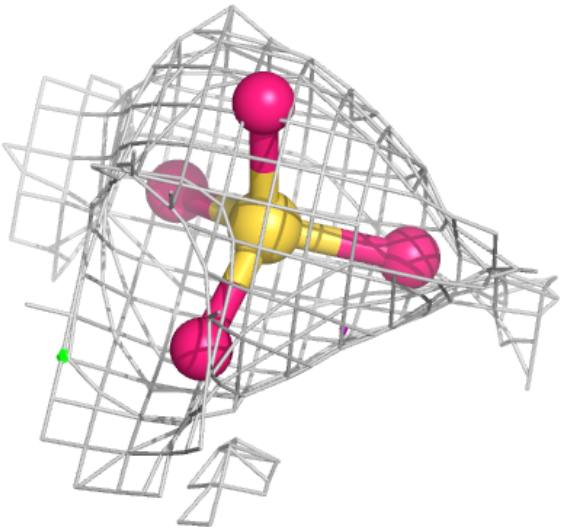
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

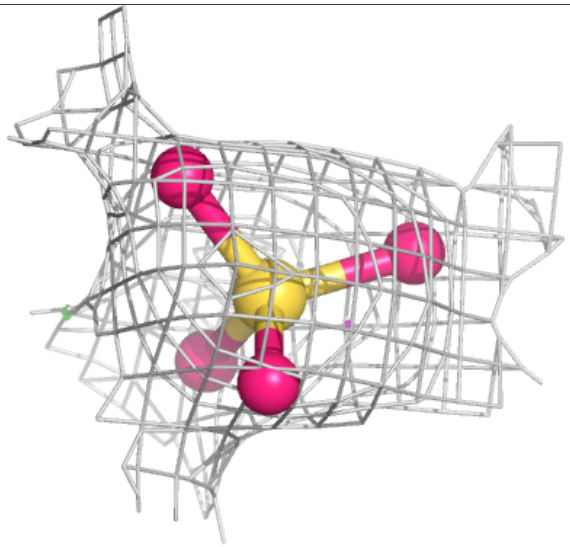
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	SO4	C	506	5/5	0.94	0.23	29,30,37,37	5
3	SO4	D	506	5/5	0.95	0.20	30,35,38,43	5
3	SO4	F	506	5/5	0.95	0.28	45,46,52,54	5
2	HEC	F	501	43/43	0.96	0.20	36,43,50,76	0
2	HEC	F	503	43/43	0.96	0.20	29,38,41,43	0
2	HEC	D	501	43/43	0.96	0.18	26,33,38,44	0
2	HEC	E	501	43/43	0.96	0.20	28,36,44,46	0
3	SO4	E	506	5/5	0.96	0.22	35,37,40,45	5
2	HEC	E	503	43/43	0.96	0.18	26,35,44,51	0
2	HEC	A	502	43/43	0.97	0.12	20,26,32,45	0
2	HEC	D	502	43/43	0.97	0.11	20,32,37,42	0
2	HEC	D	503	43/43	0.97	0.20	22,31,37,49	0
2	HEC	D	504	43/43	0.97	0.18	15,28,35,38	0
2	HEC	D	505	43/43	0.97	0.13	24,32,43,53	0
2	HEC	A	504	43/43	0.97	0.18	14,18,23,26	0
2	HEC	E	502	43/43	0.97	0.10	26,31,38,40	0
2	HEC	A	505	43/43	0.97	0.12	17,27,39,49	0
2	HEC	E	504	43/43	0.97	0.17	25,35,39,41	0
2	HEC	E	505	43/43	0.97	0.11	31,39,49,54	0
2	HEC	B	502	43/43	0.97	0.12	24,32,36,42	0
2	HEC	F	502	43/43	0.97	0.11	32,37,48,67	0
2	HEC	B	503	43/43	0.97	0.23	15,24,29,39	0
2	HEC	F	504	43/43	0.97	0.18	29,35,39,40	0
2	HEC	F	505	43/43	0.97	0.12	30,35,44,58	0
3	SO4	A	506	5/5	0.97	0.23	20,23,30,31	5
2	HEC	B	505	43/43	0.97	0.11	17,26,34,39	0
2	HEC	C	502	43/43	0.97	0.12	30,34,43,51	0
2	HEC	C	503	43/43	0.97	0.19	20,28,32,33	0
2	HEC	C	505	43/43	0.97	0.12	22,35,44,48	0
2	HEC	A	501	43/43	0.98	0.18	17,23,29,33	0
2	HEC	A	503	43/43	0.98	0.19	16,20,24,29	0
3	SO4	B	506	5/5	0.98	0.24	21,23,30,33	5
2	HEC	C	504	43/43	0.98	0.20	19,26,29,31	0
2	HEC	B	504	43/43	0.98	0.20	14,22,26,28	0
2	HEC	B	501	43/43	0.98	0.19	20,25,28,31	0
2	HEC	C	501	43/43	0.98	0.18	23,30,35,39	0

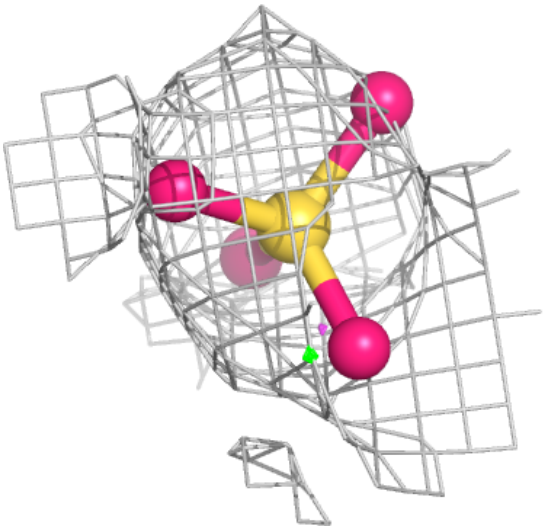
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around SO4 C 506:

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

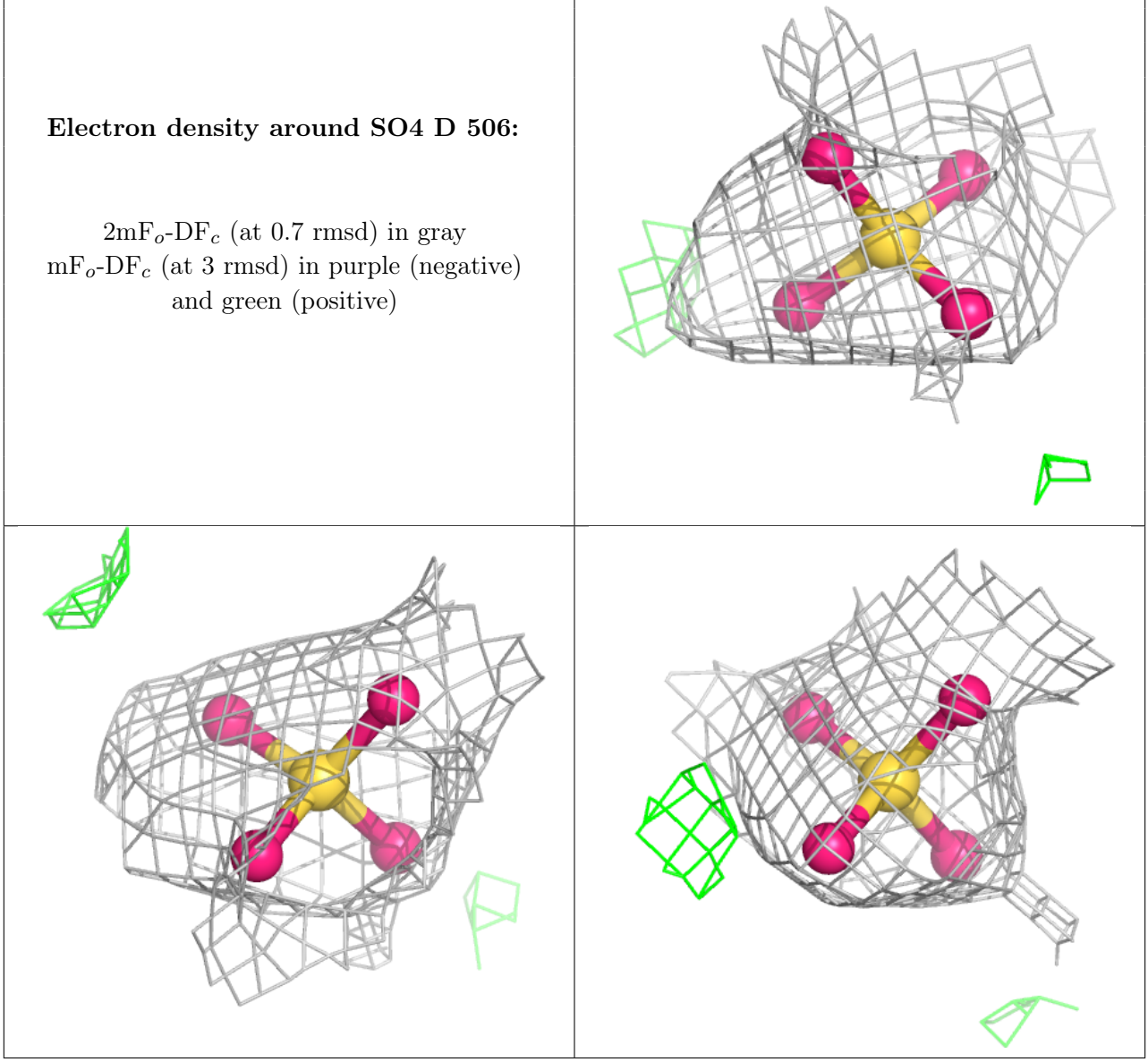






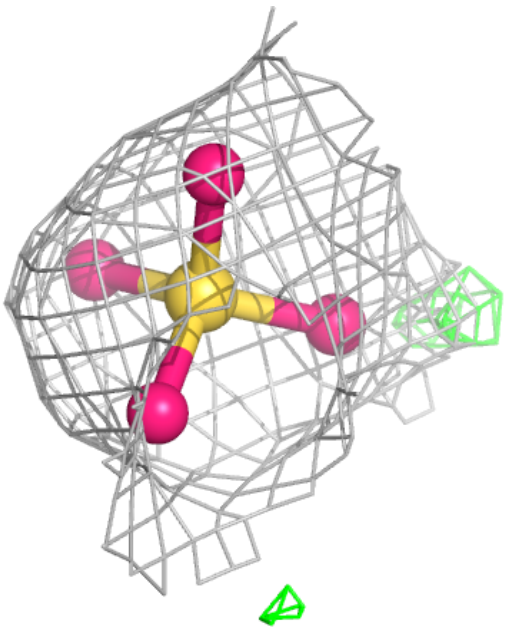
Electron density around SO4 D 506:

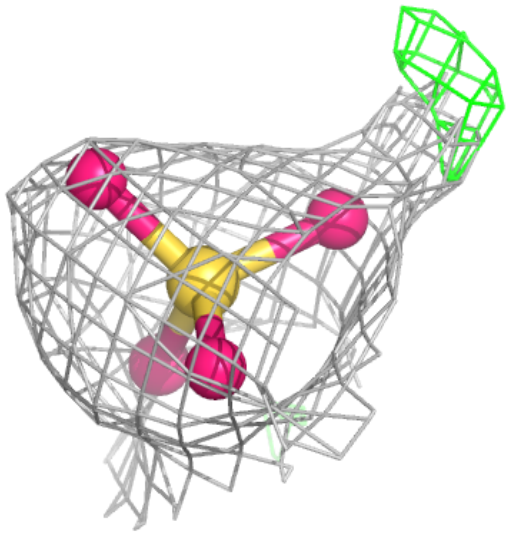
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

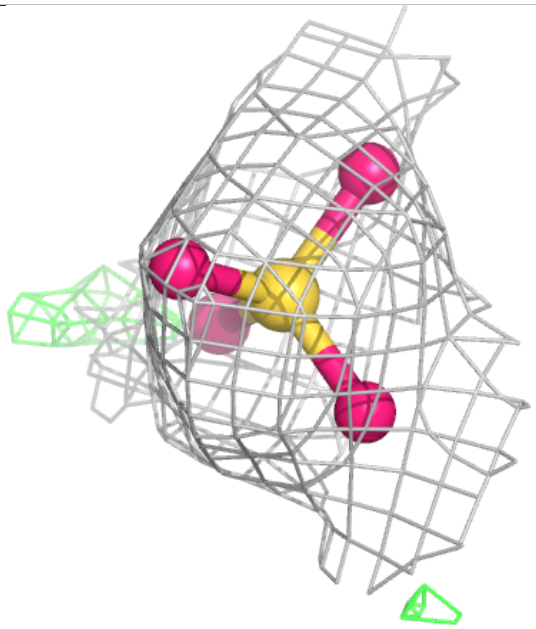


Electron density around SO4 F 506:

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

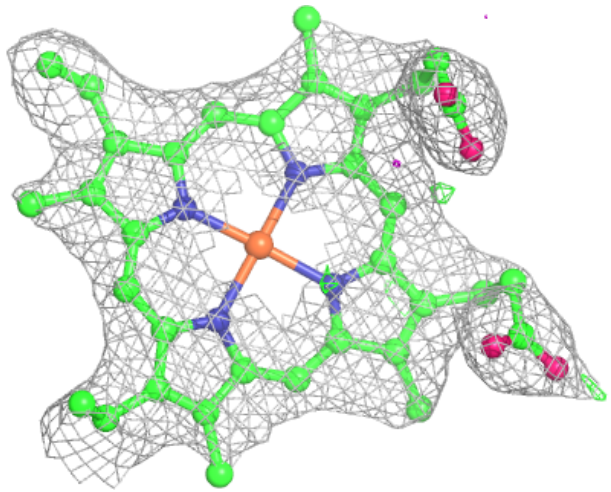


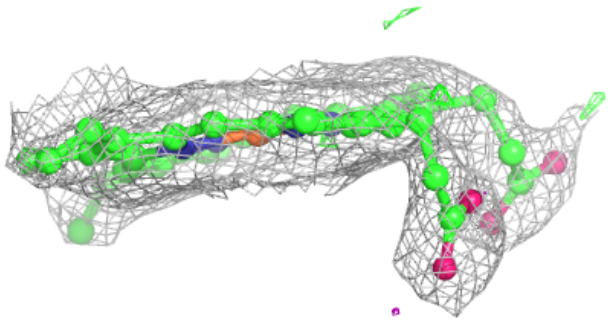


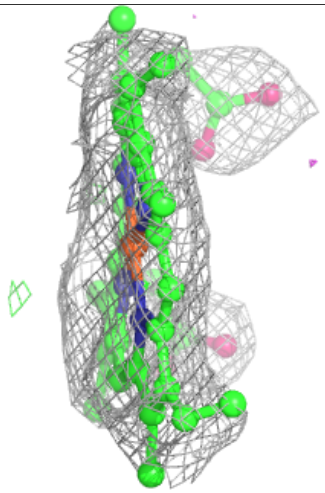


Electron density around HEC F 501:

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

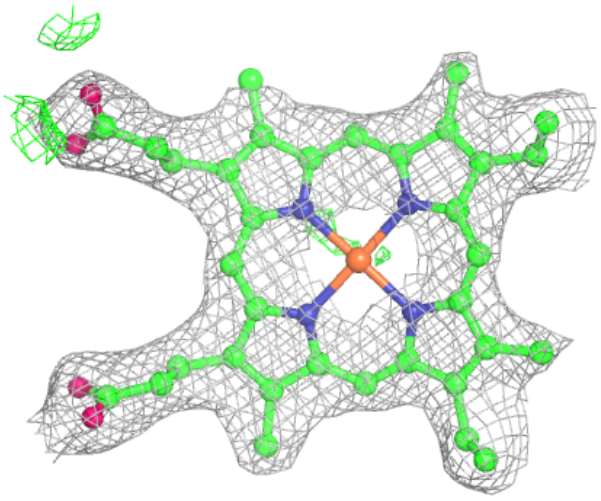


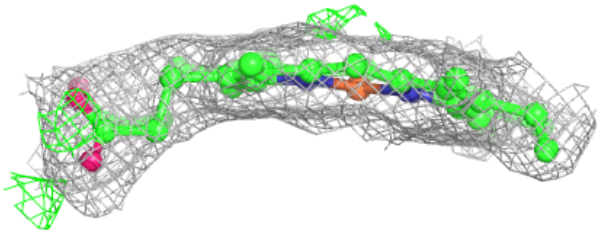


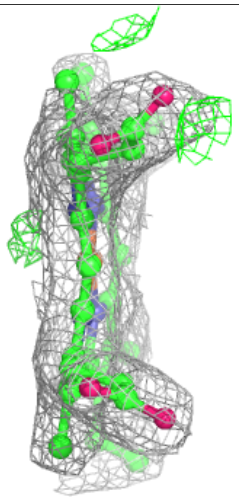


Electron density around HEC F 503:

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

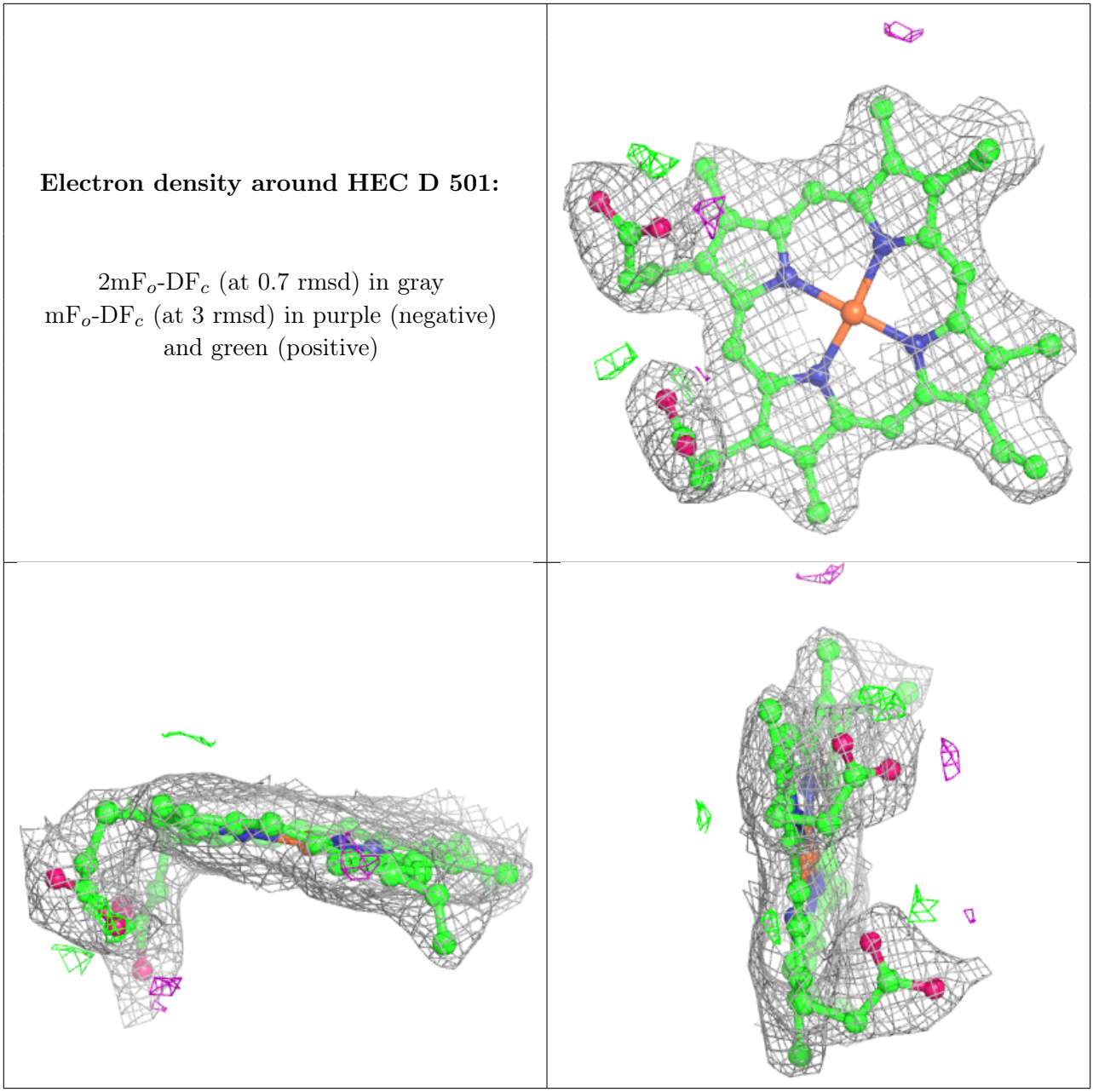






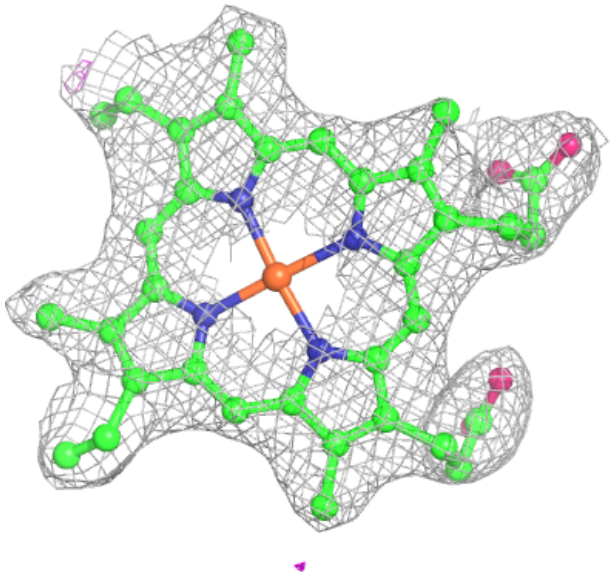
Electron density around HEC D 501:

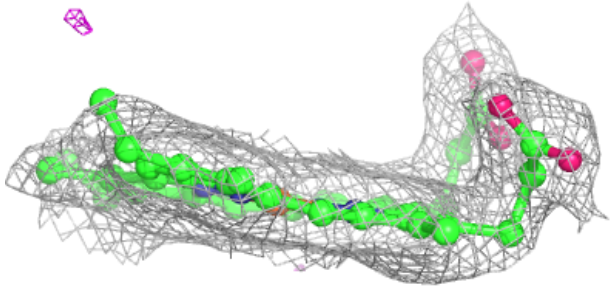
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

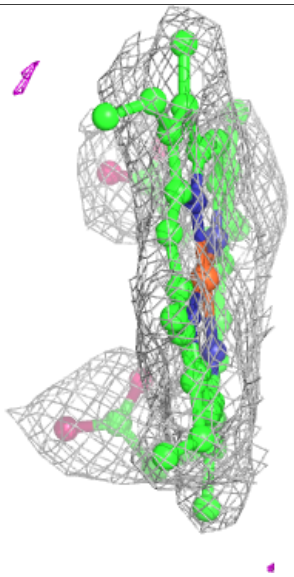


Electron density around HEC E 501:

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

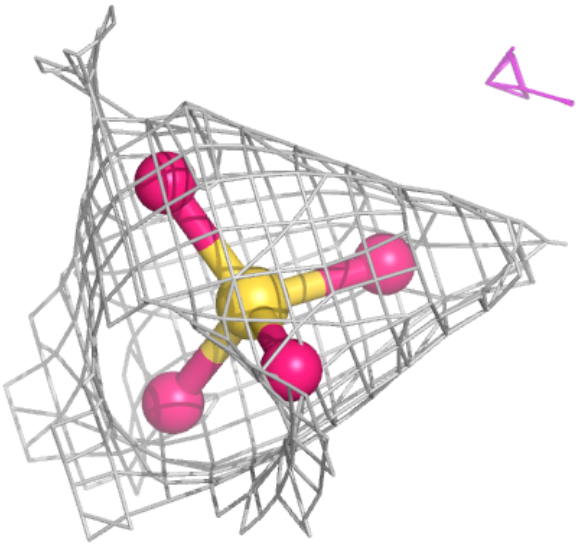


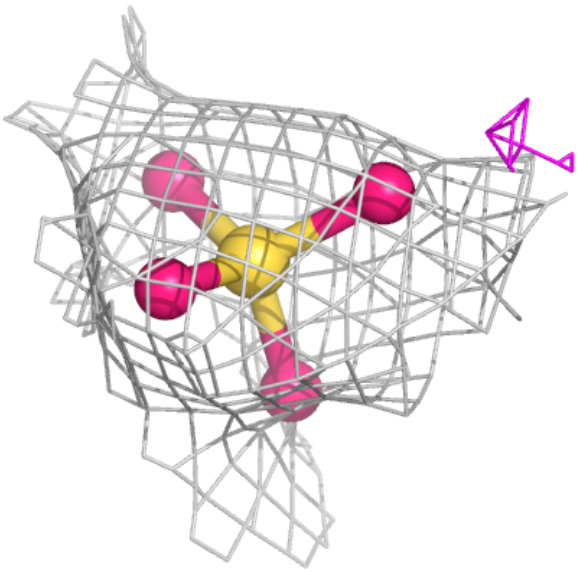


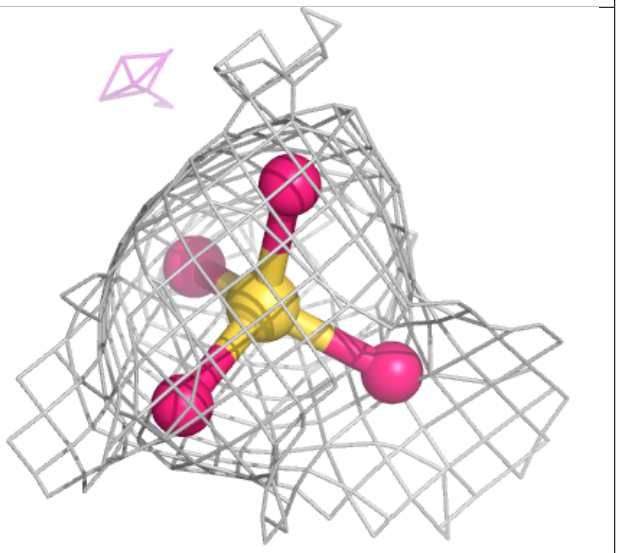


Electron density around SO4 E 506:

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

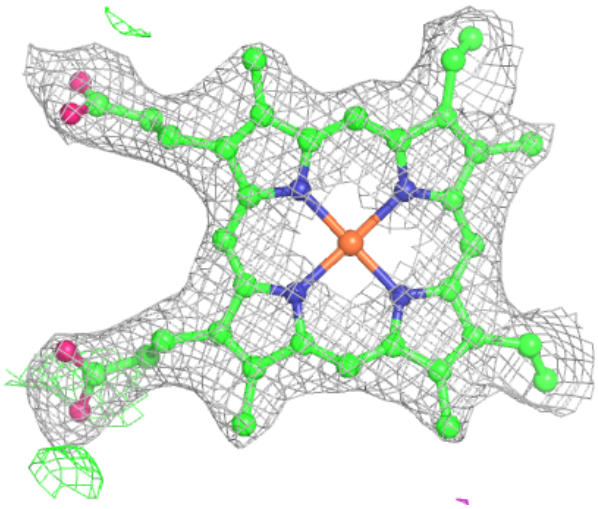


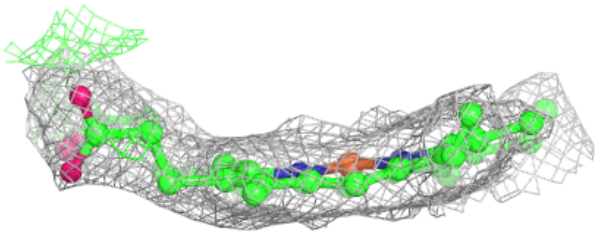




Electron density around HEC E 503:

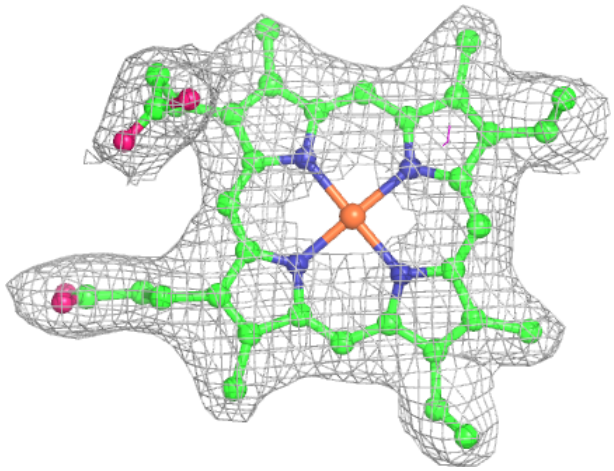
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

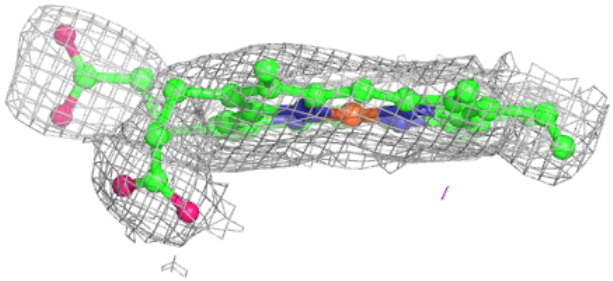


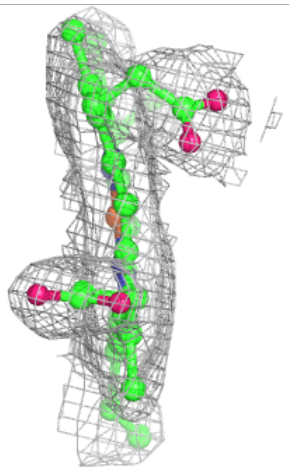


Electron density around HEC A 502:

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

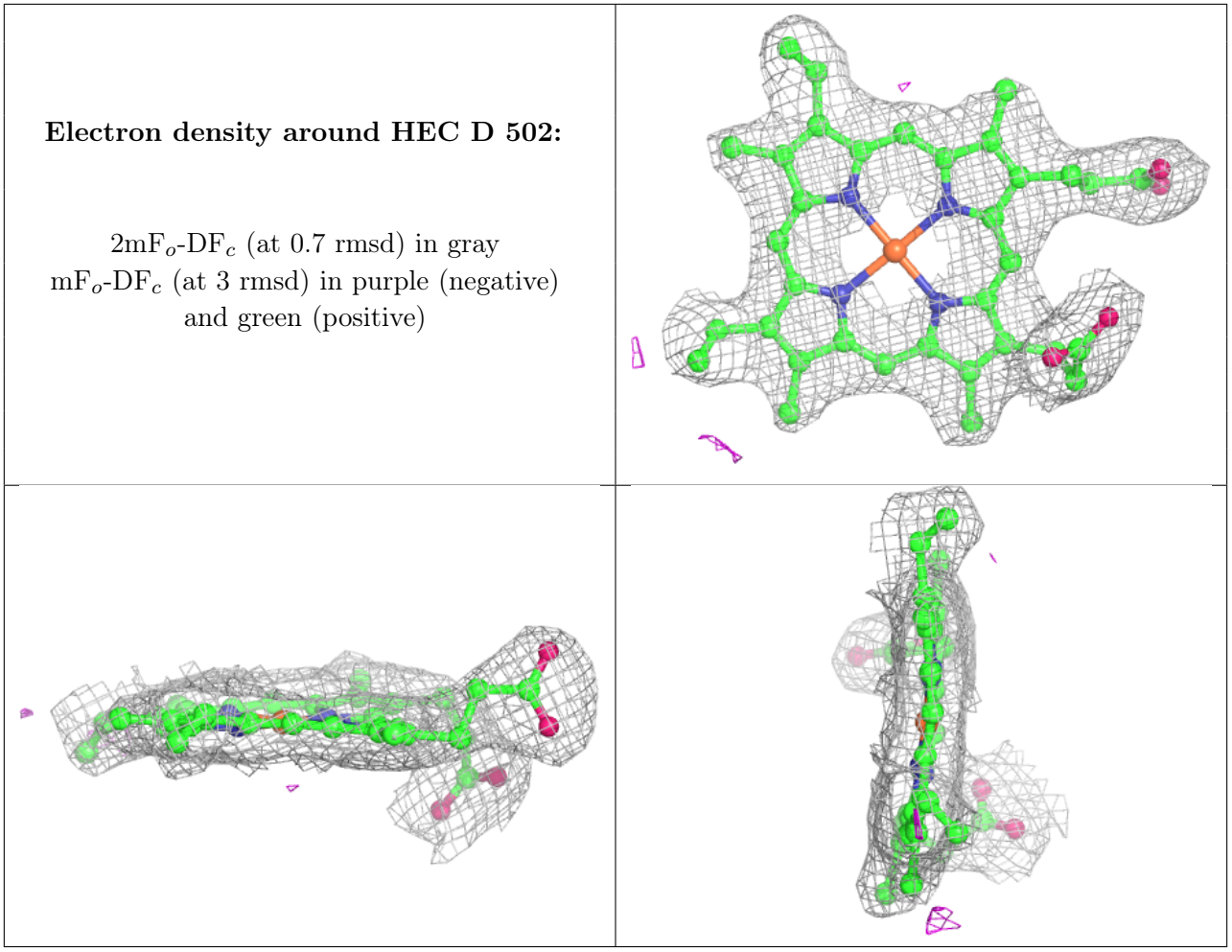






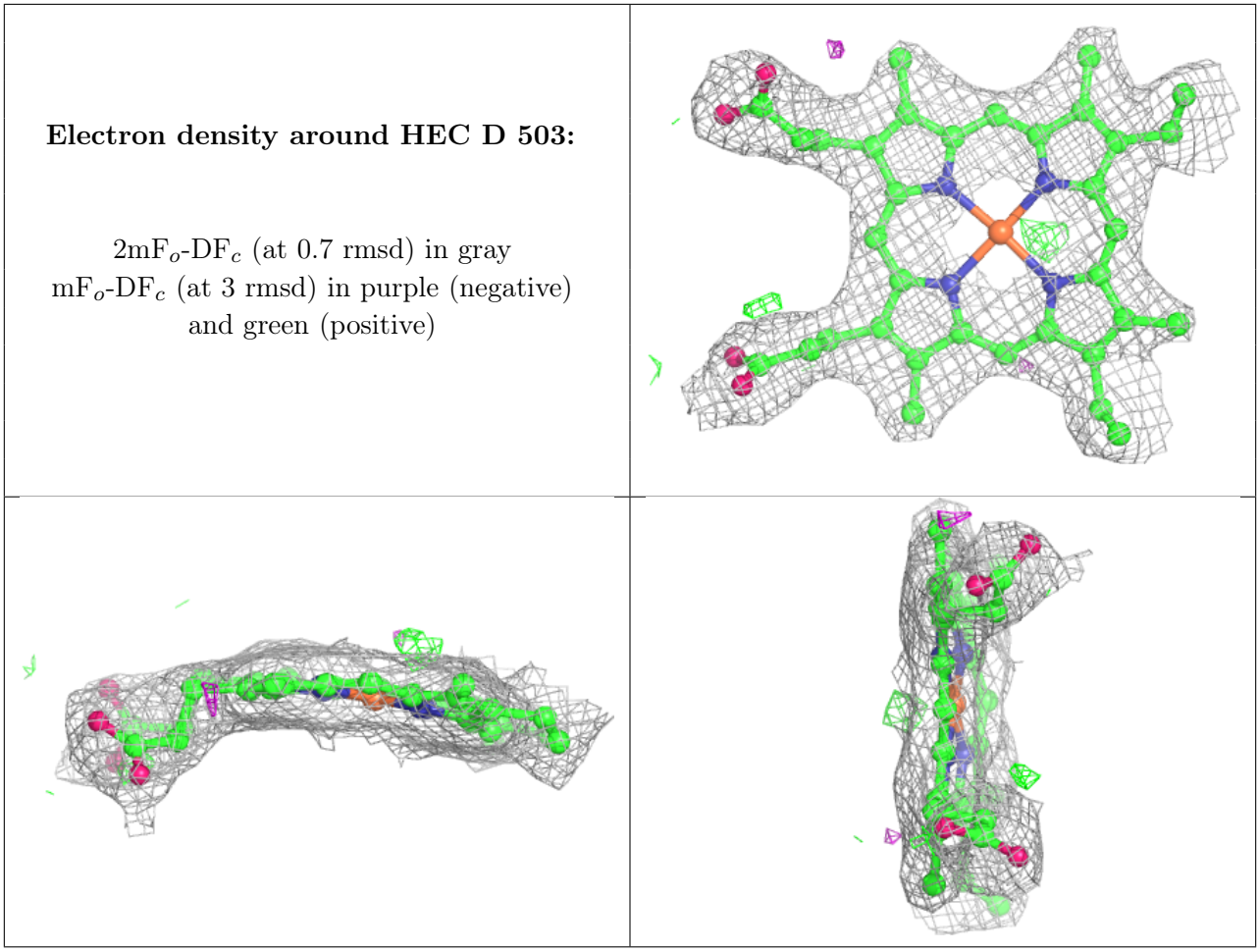
Electron density around HEC D 502:

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



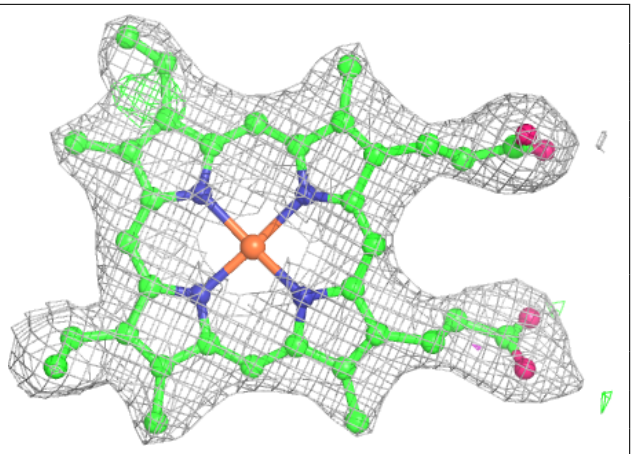
Electron density around HEC D 503:

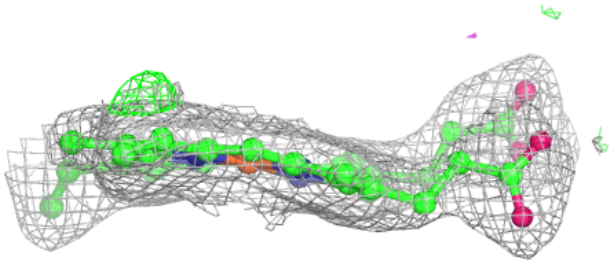
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

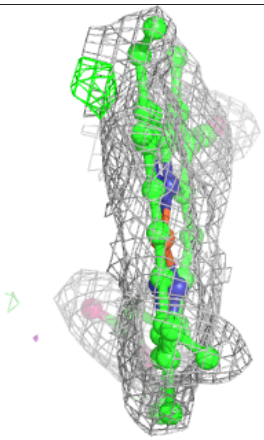


Electron density around HEC D 504:

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

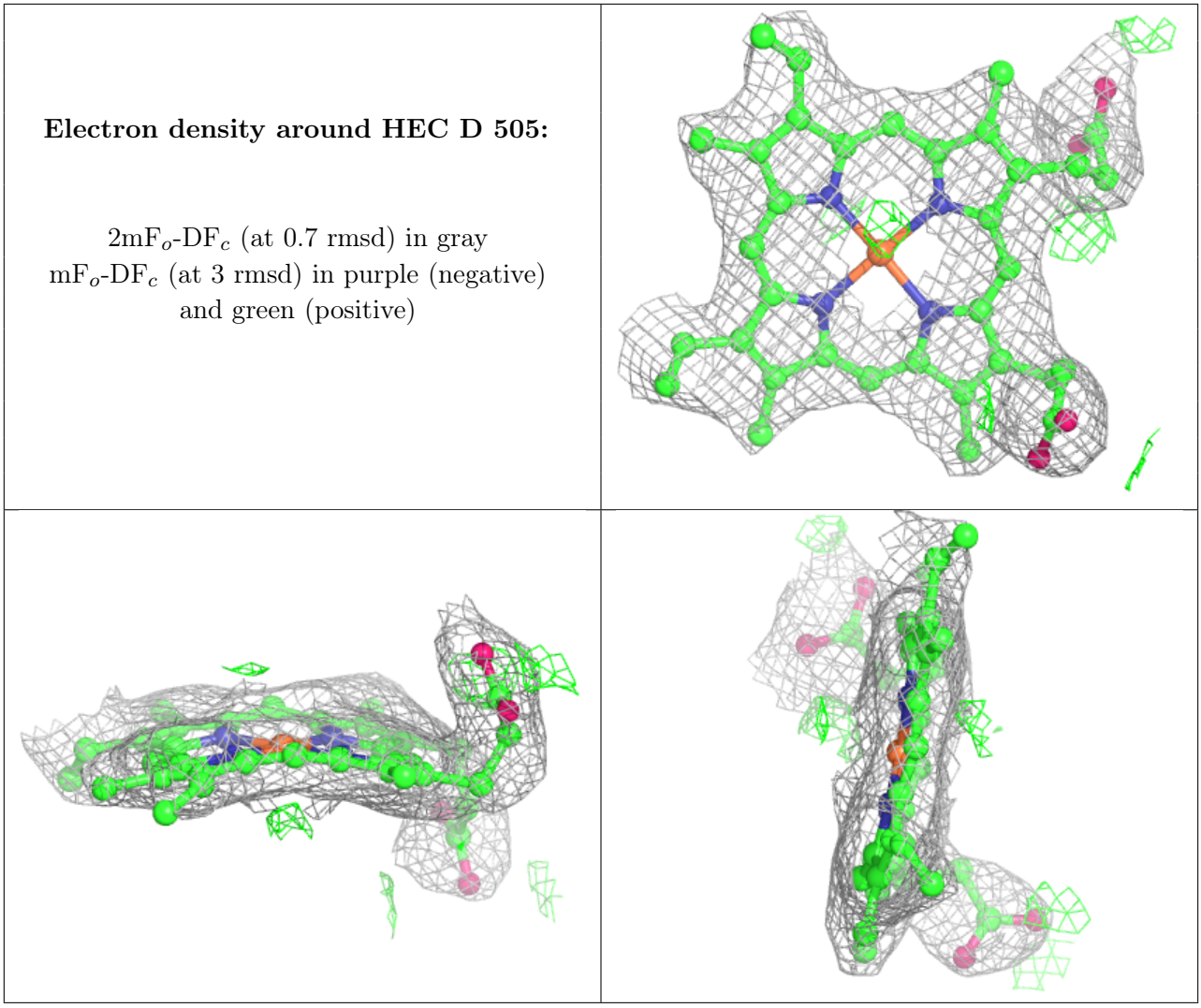






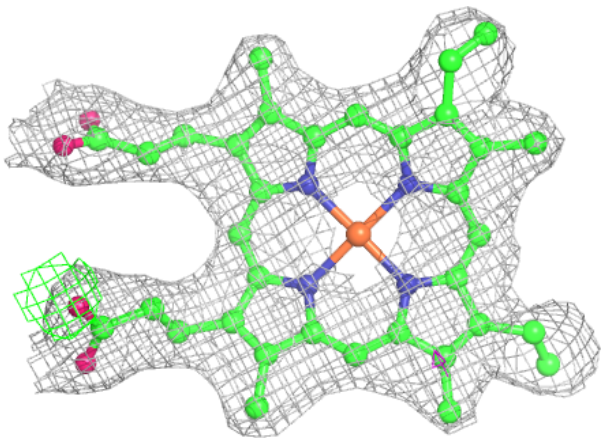
Electron density around HEC D 505:

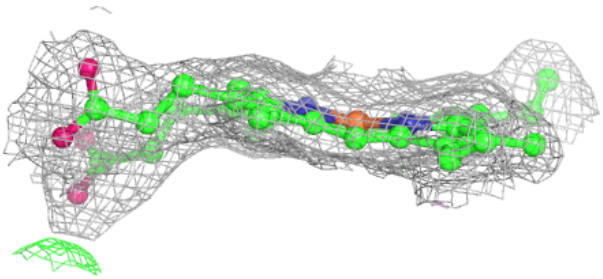
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

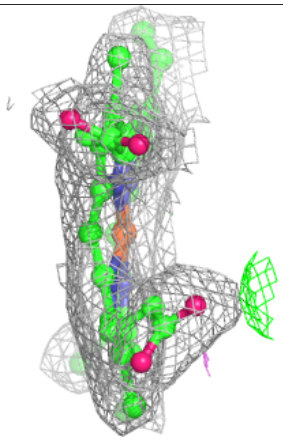


Electron density around HEC A 504:

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

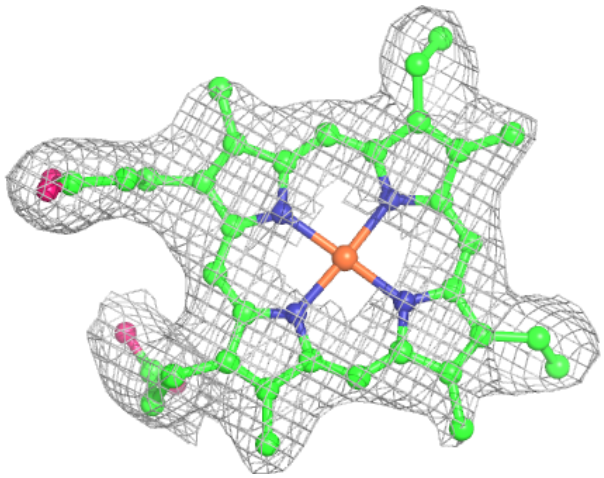


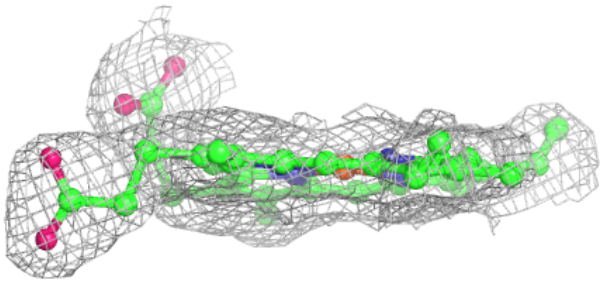


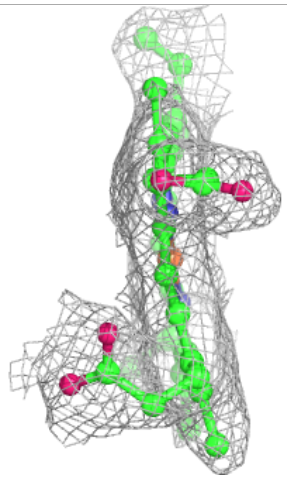


Electron density around HEC E 502:

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

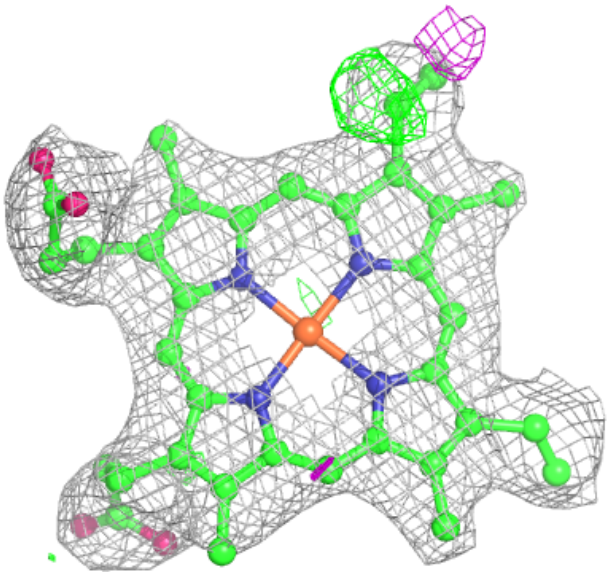


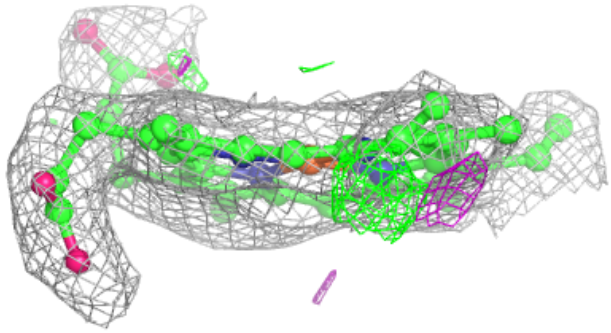


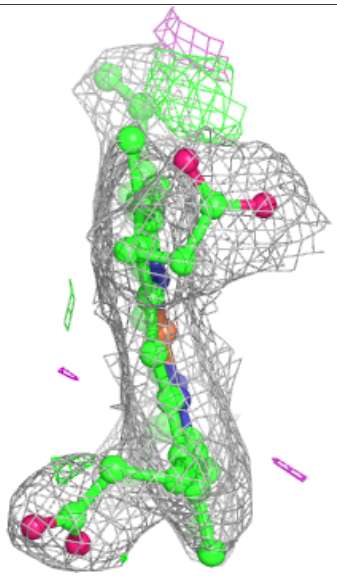


Electron density around HEC A 505:

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

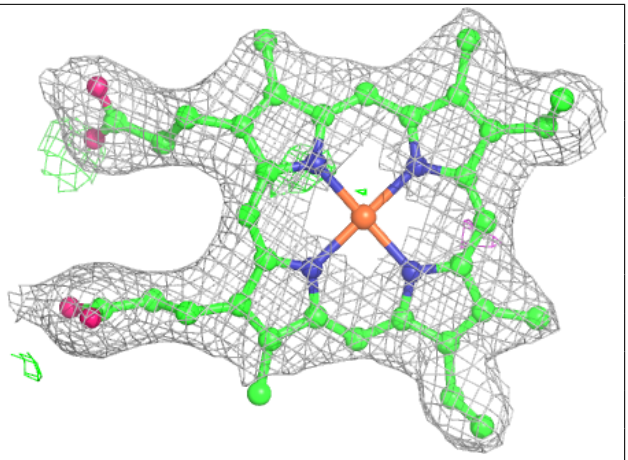


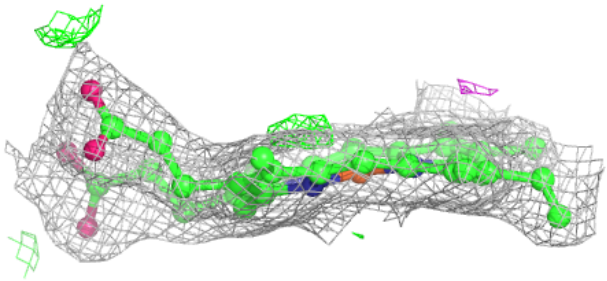


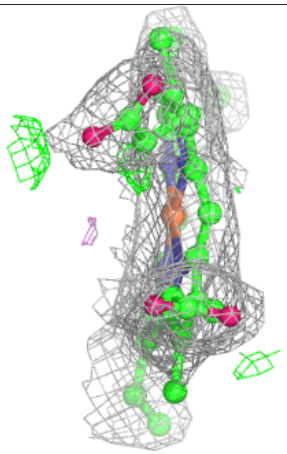


Electron density around HEC E 504:

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

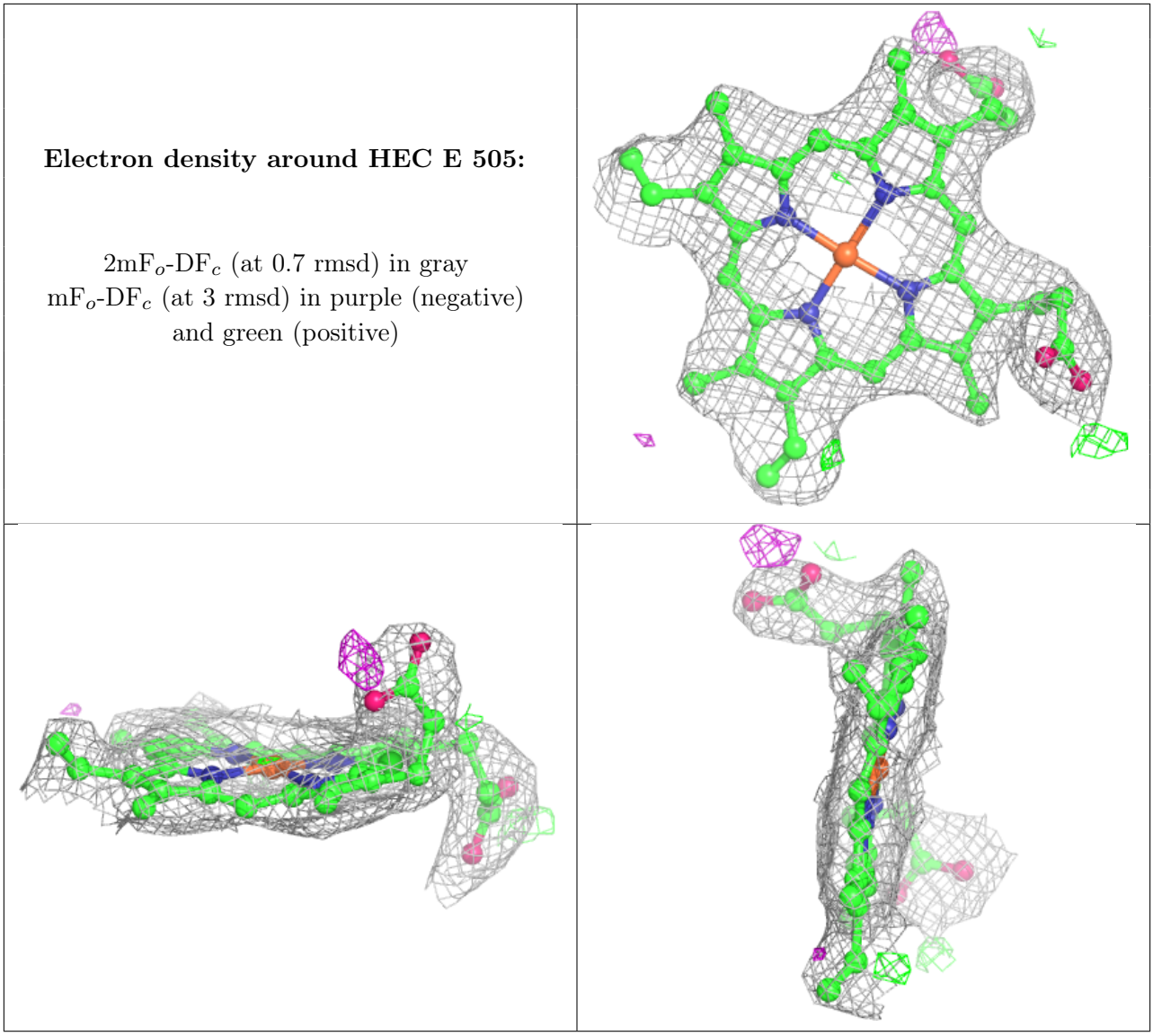






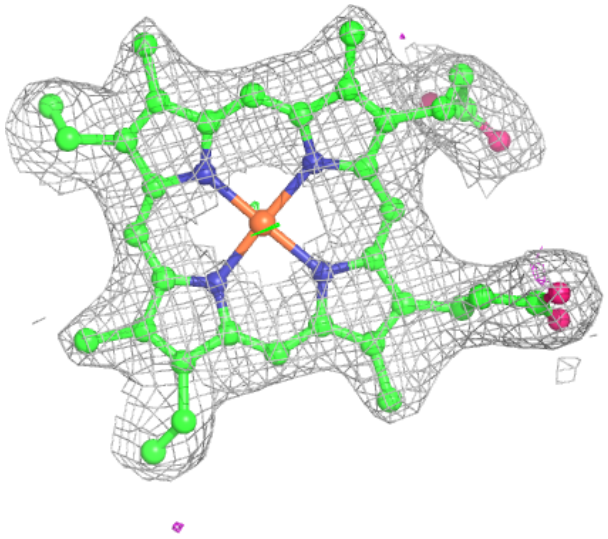
Electron density around HEC E 505:

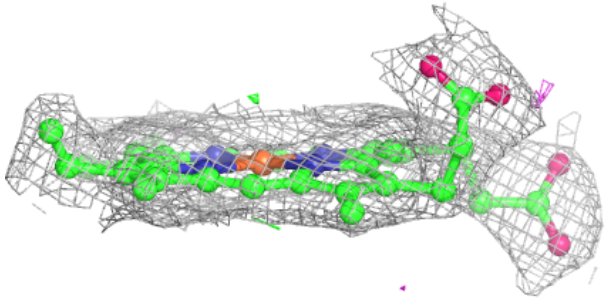
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around HEC B 502:

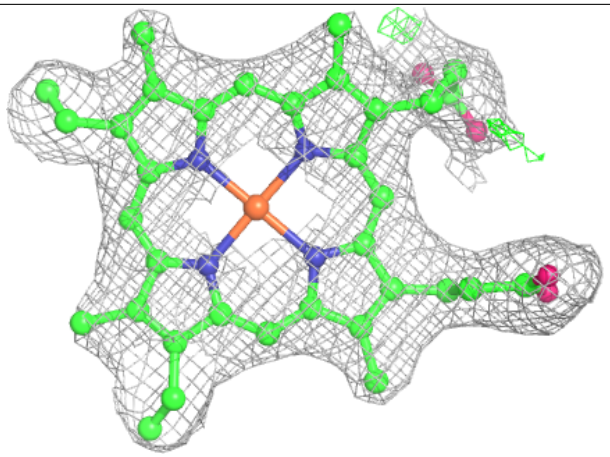
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

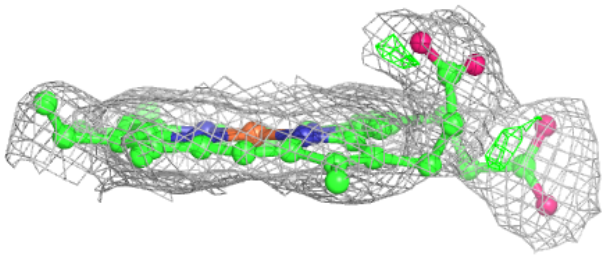


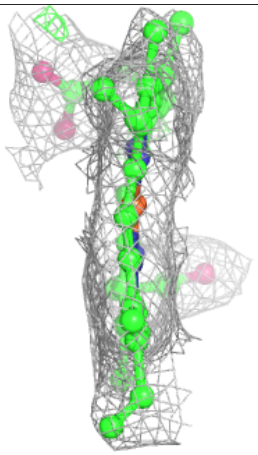


Electron density around HEC F 502:

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

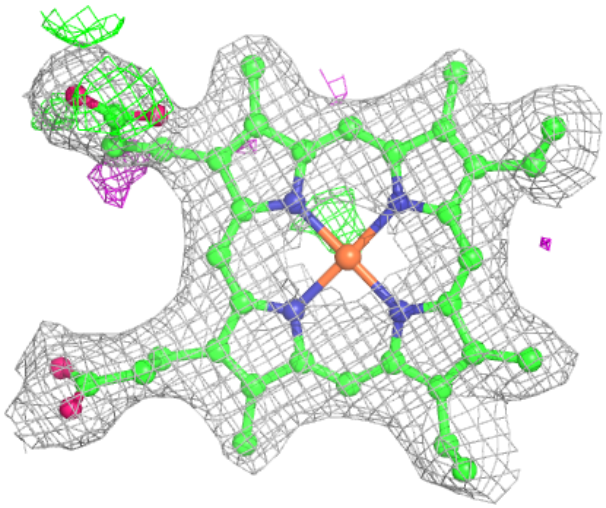


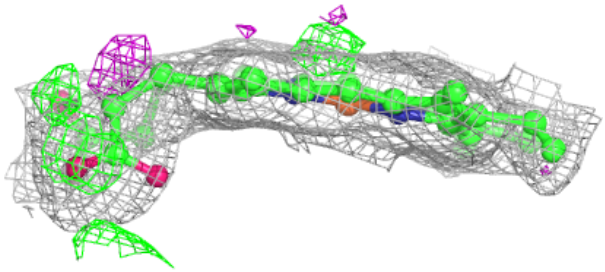




Electron density around HEC B 503:

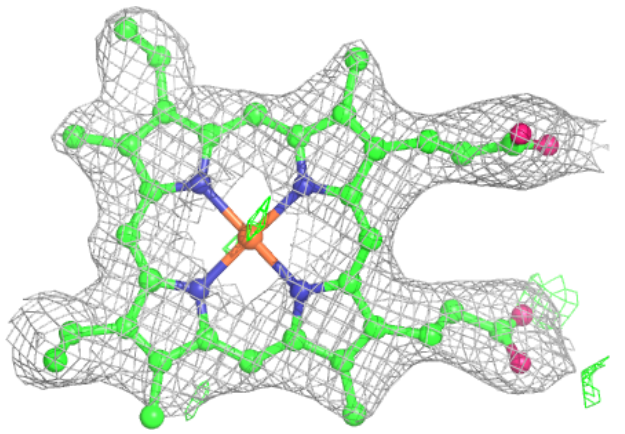
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

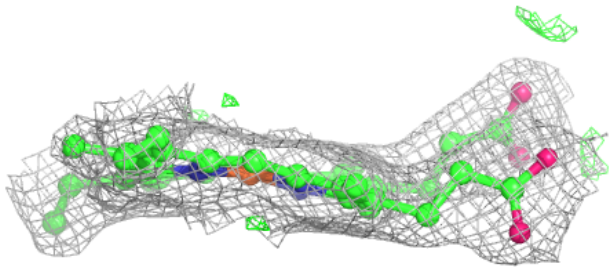


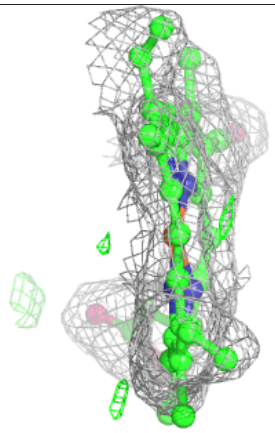


Electron density around HEC F 504:

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

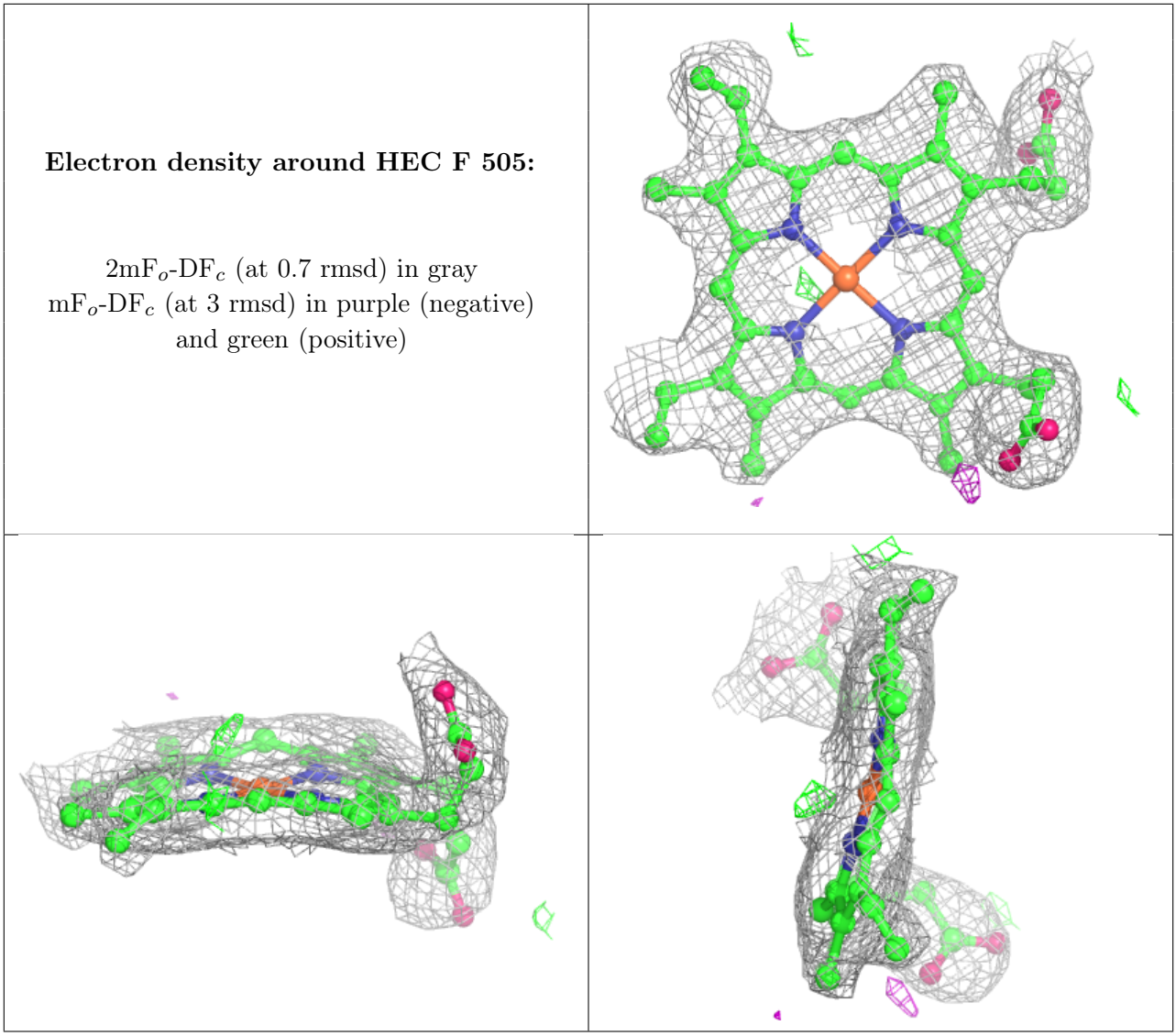






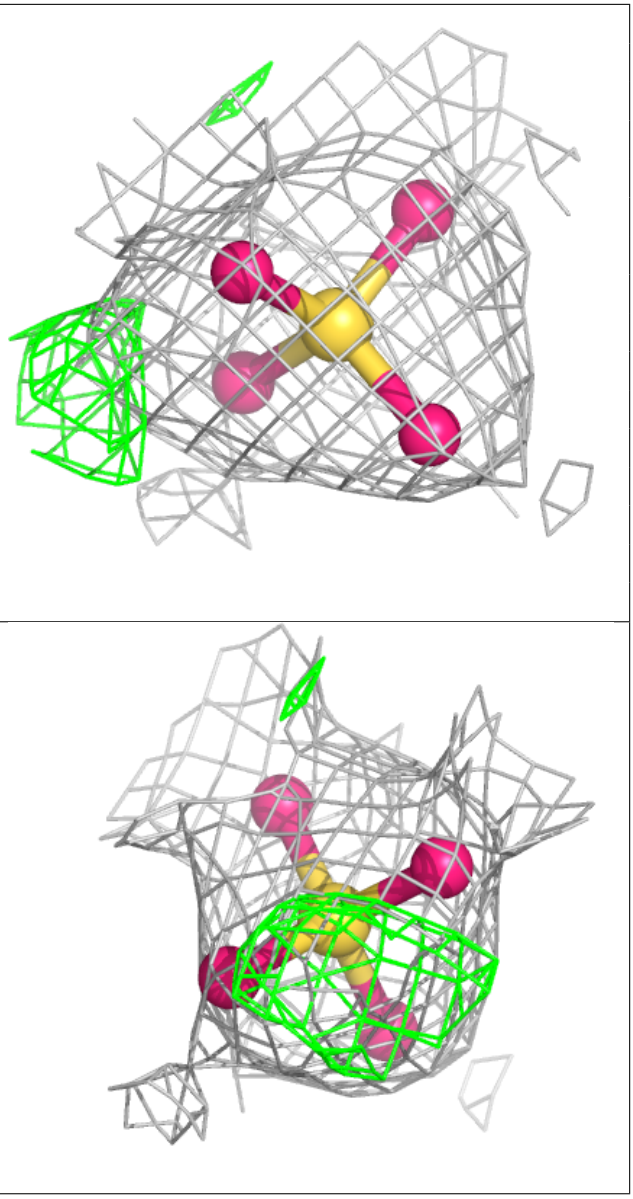
Electron density around HEC F 505:

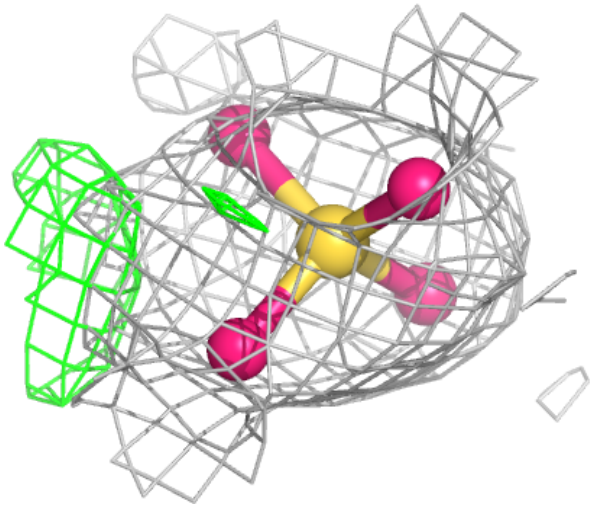
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around SO4 A 506:

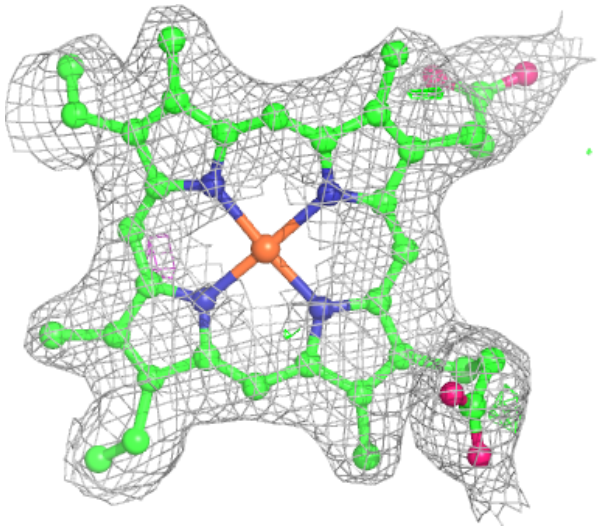
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

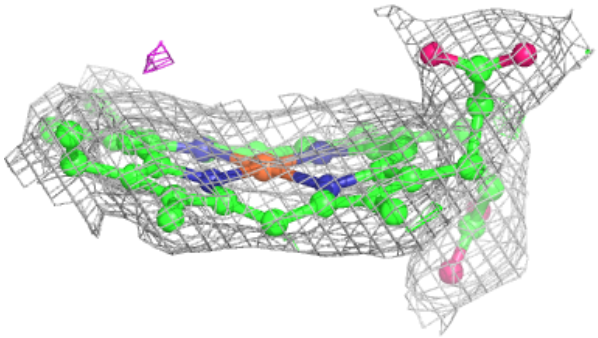


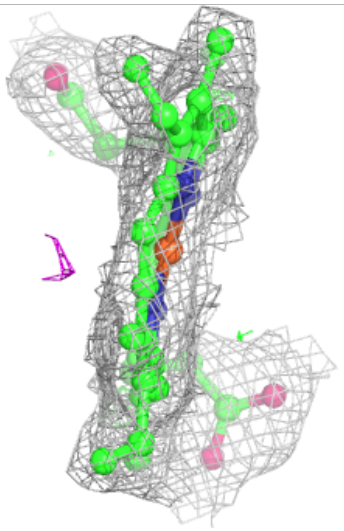


Electron density around HEC B 505:

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

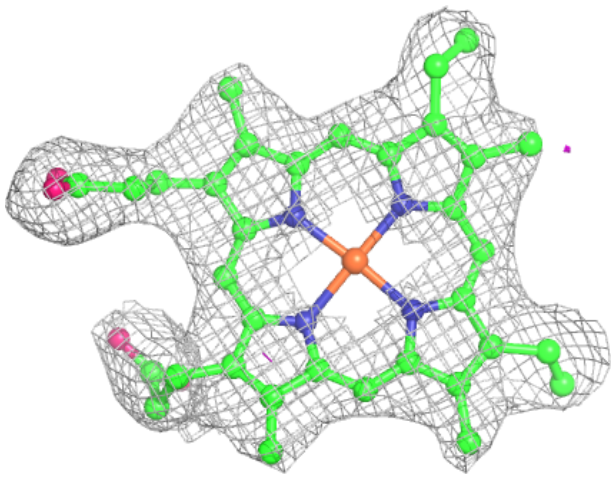


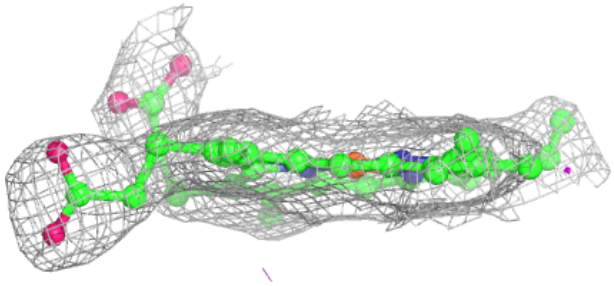


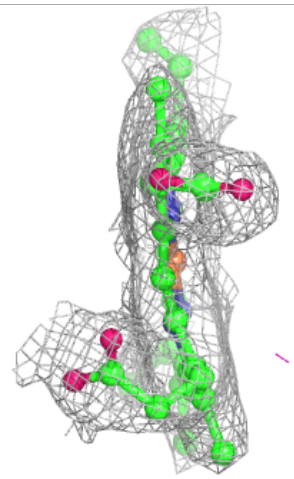


Electron density around HEC C 502:

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

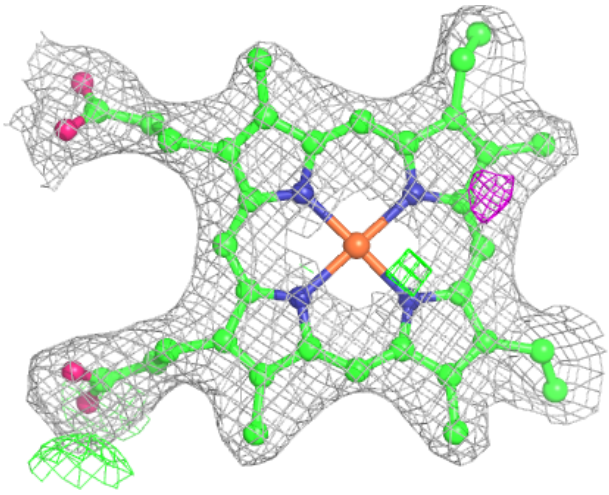


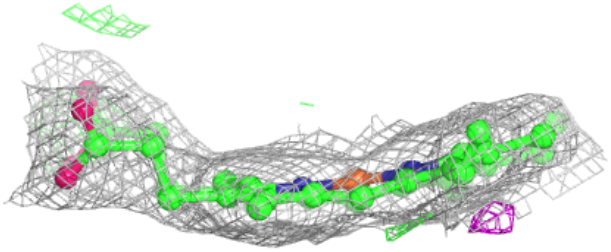


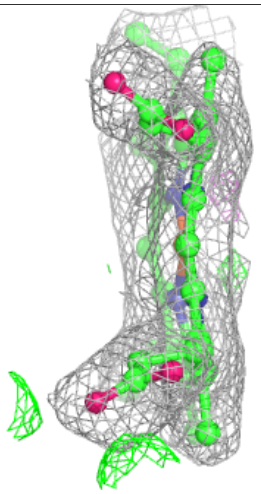


Electron density around HEC C 503:

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

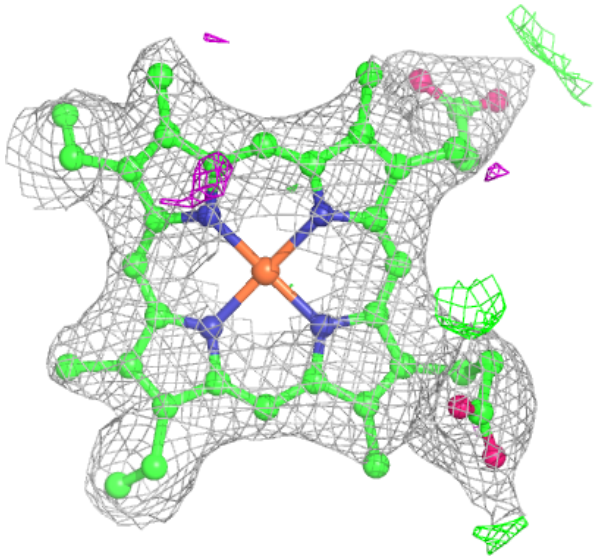


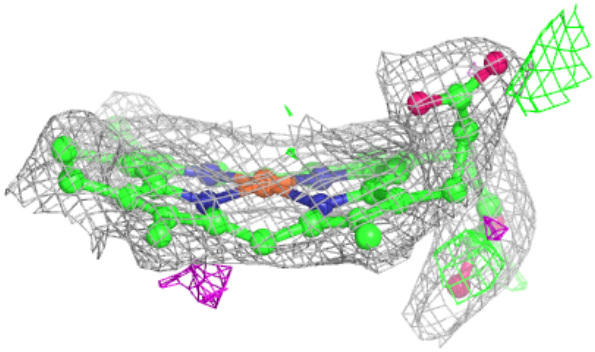


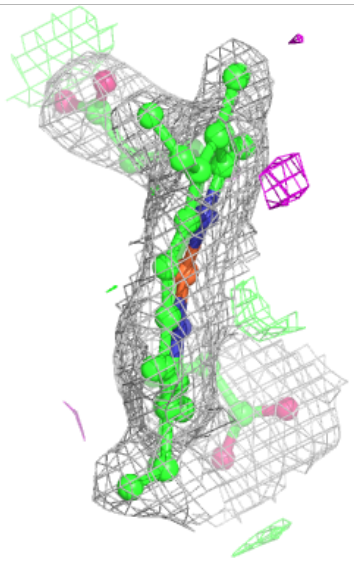


Electron density around HEC C 505:

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

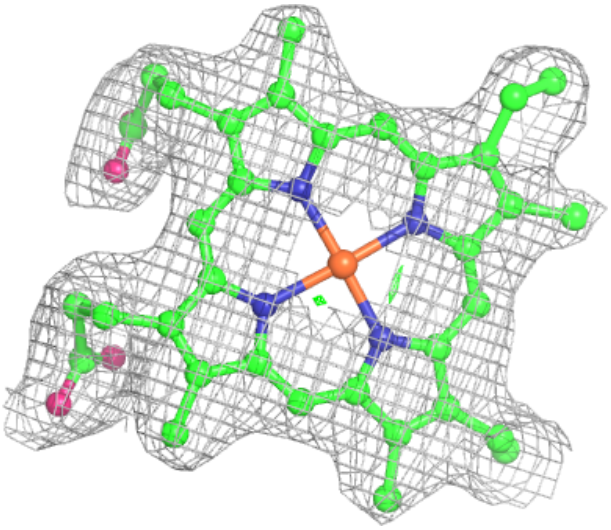


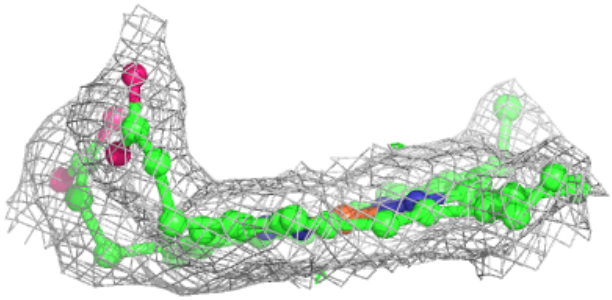


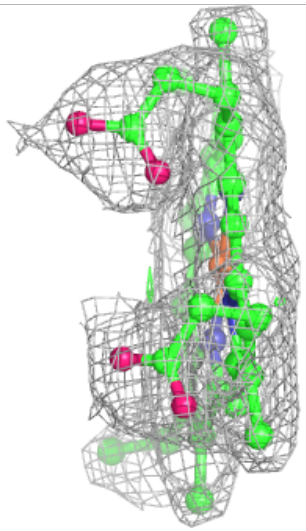


Electron density around HEC A 501:

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

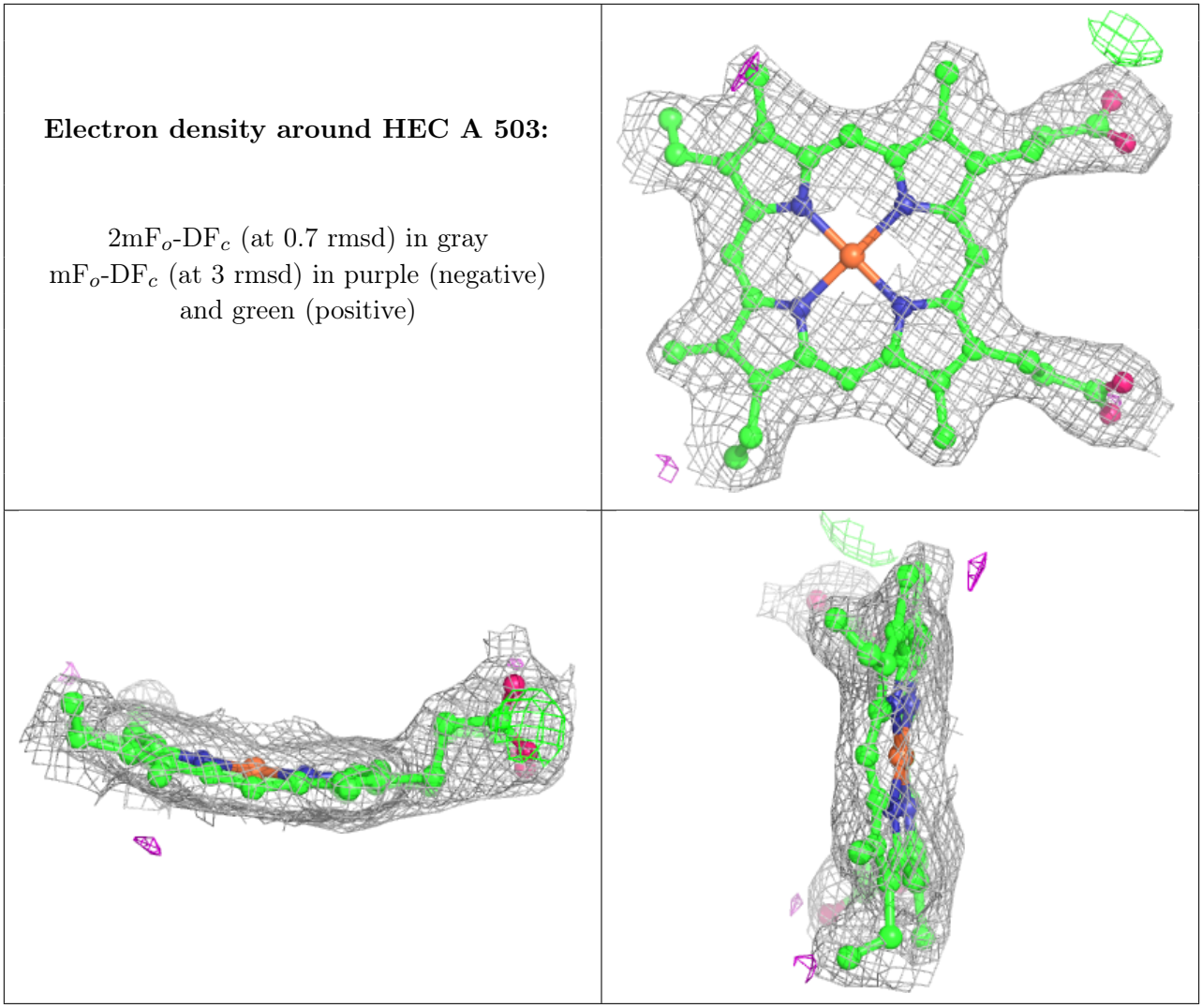






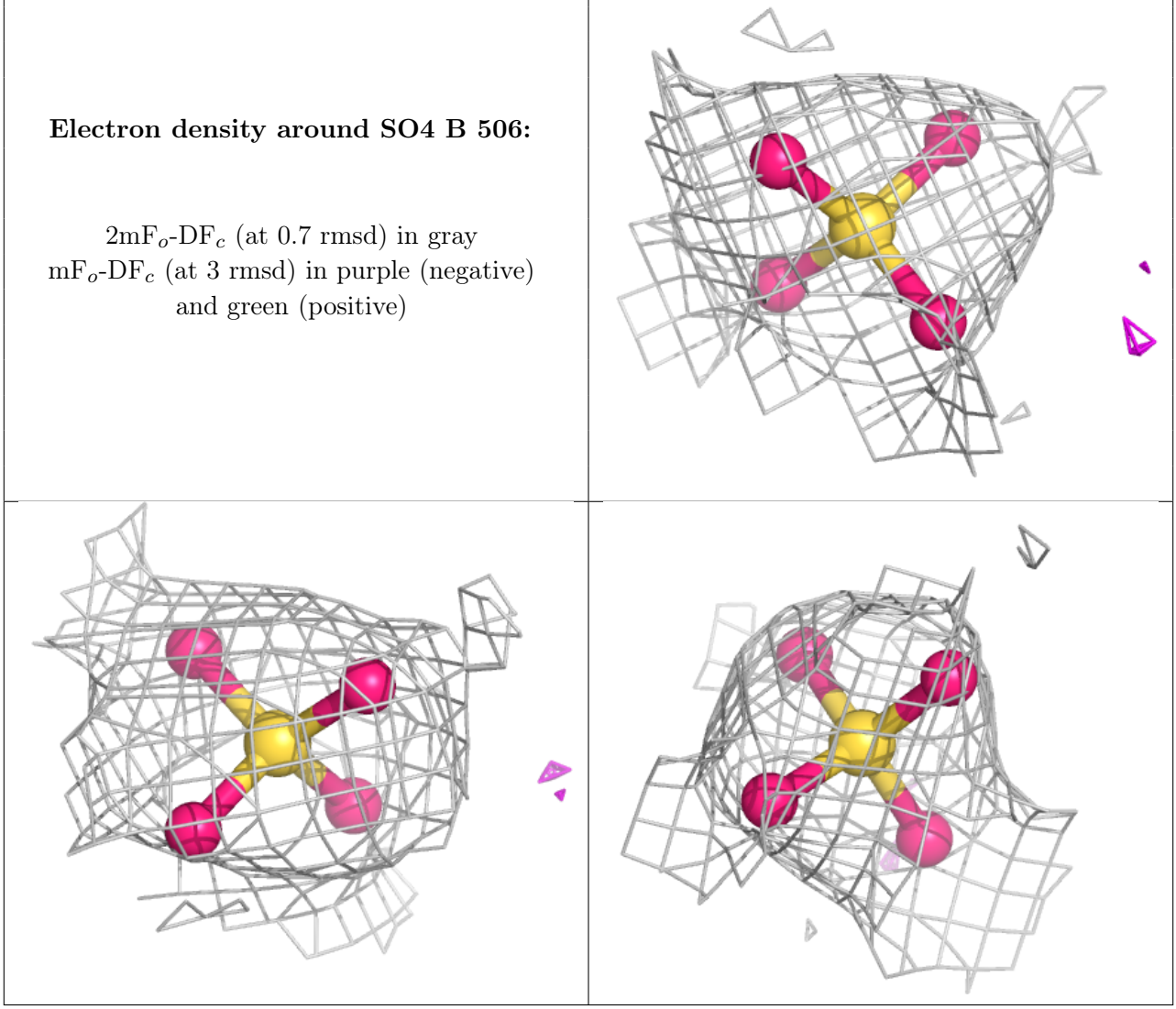
Electron density around HEC A 503:

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



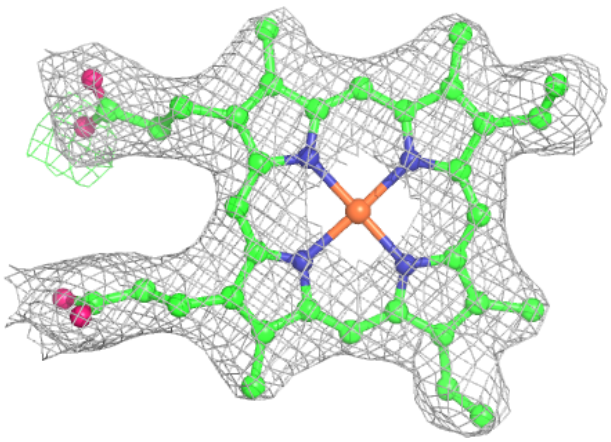
Electron density around SO4 B 506:

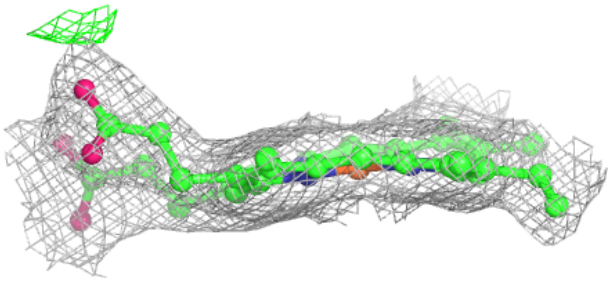
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

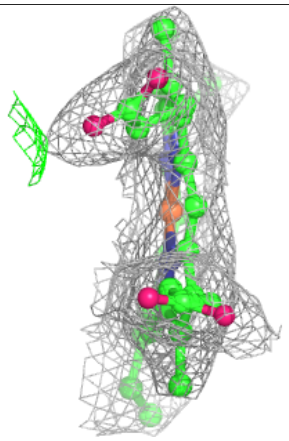


Electron density around HEC C 504:

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

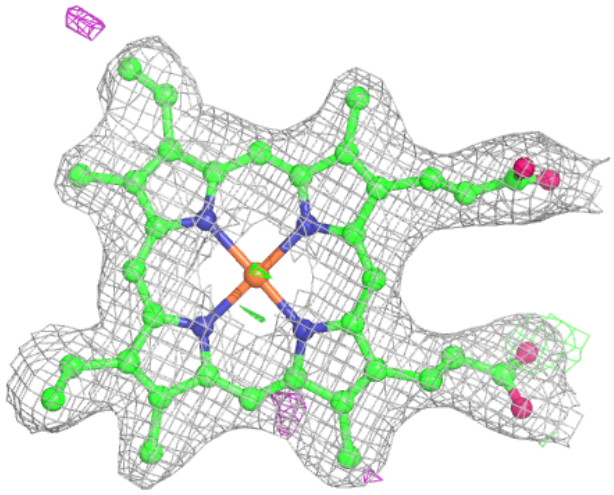


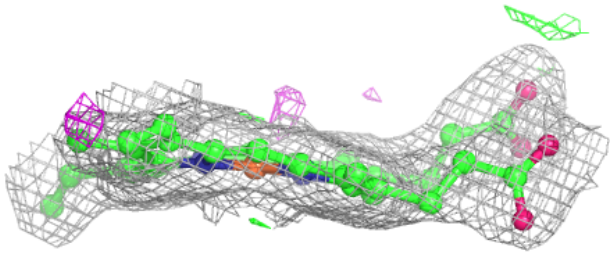


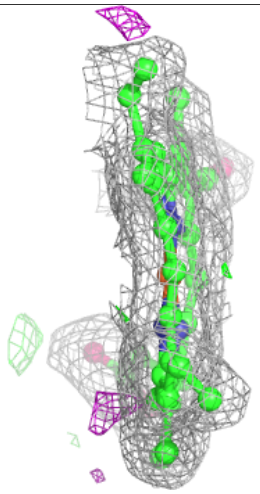


Electron density around HEC B 504:

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

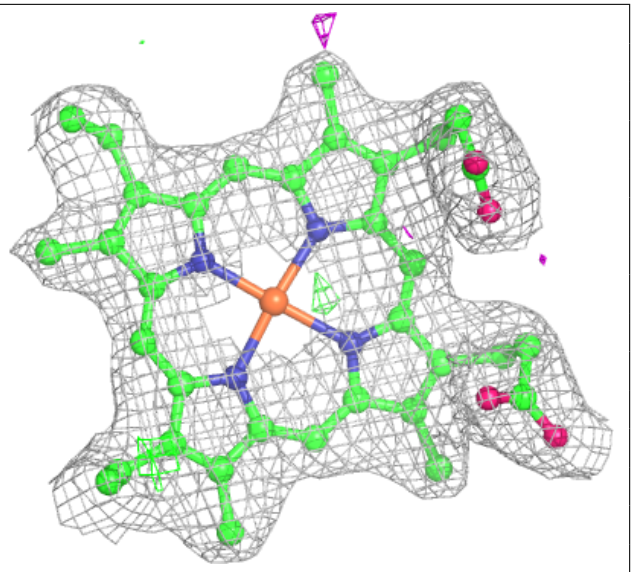


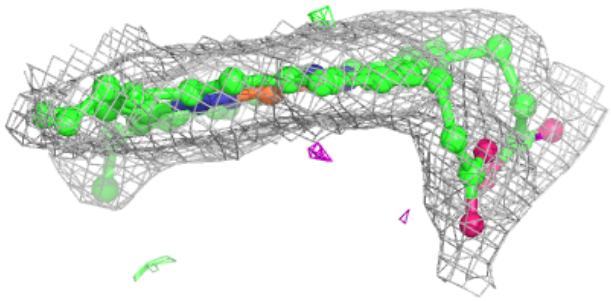


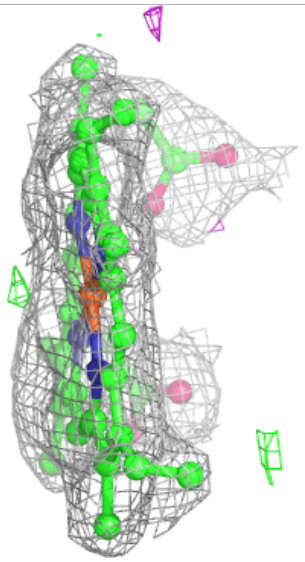


Electron density around HEC B 501:

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

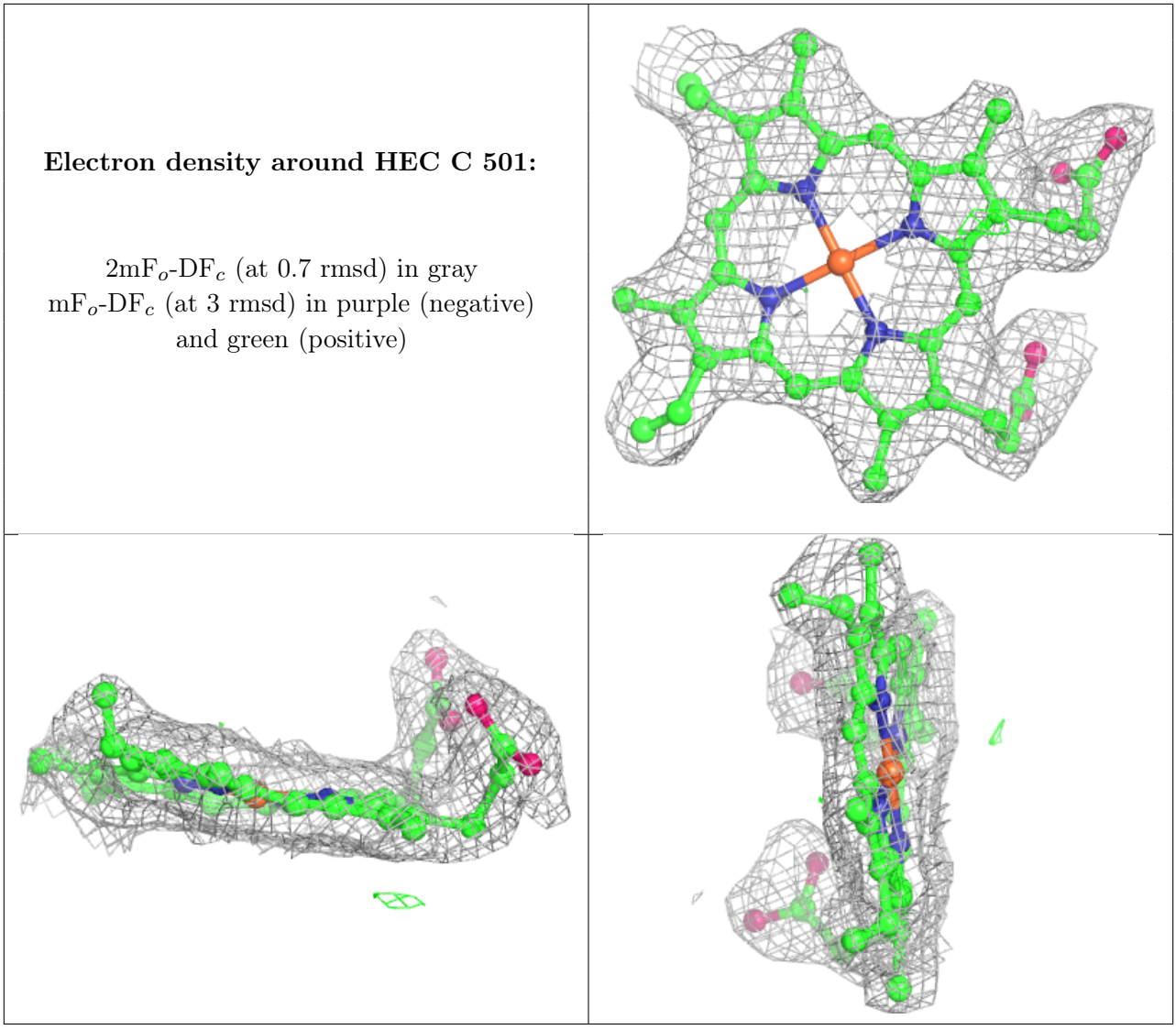






Electron density around HEC C 501:

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



6.5 Other polymers (i)

There are no such residues in this entry.