Full wwPDB X-ray Structure Validation Report ⓘ

Oct 5, 2023 – 02:57 AM EDT

PDB ID	:	6VDR
Title	:	Crystal Structure of Dehaloperoxidase B in Complex with cofactor Iron(III) Deuteroporphyrin IX and Substrate 4-bromophenol
Authors	:	Ghiladi, R.A.; de Serrano, V.S.; McGuire, A.; Malewschik, T.
Deposited on	:	2019-12-27
Resolution	:	1.87 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	:	FAILED
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	FAILED
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 1.87 Å.

There are no overall percentile quality scores available for this entry.

MolProbity and EDS failed to run properly - the sequence quality summary graphics cannot be shown.

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
2	FDE	A	201	X	-	-	-
2	FDE	B	201	X	-	-	-

2 Entry composition

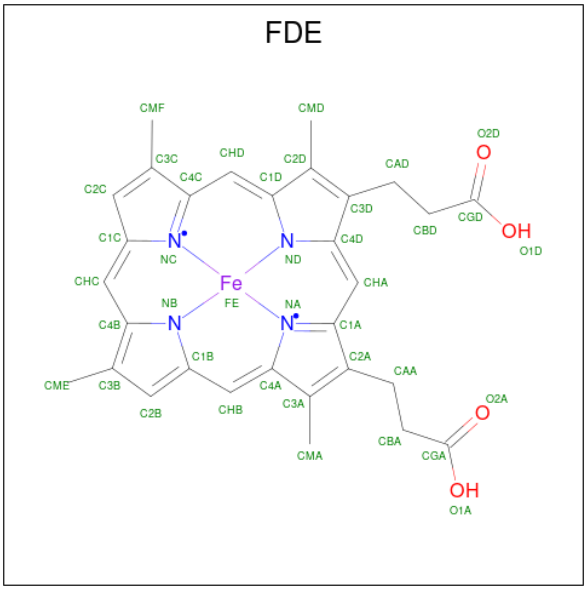
There are 6 unique types of molecules in this entry. The entry contains 2805 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Dehaloperoxidase B.

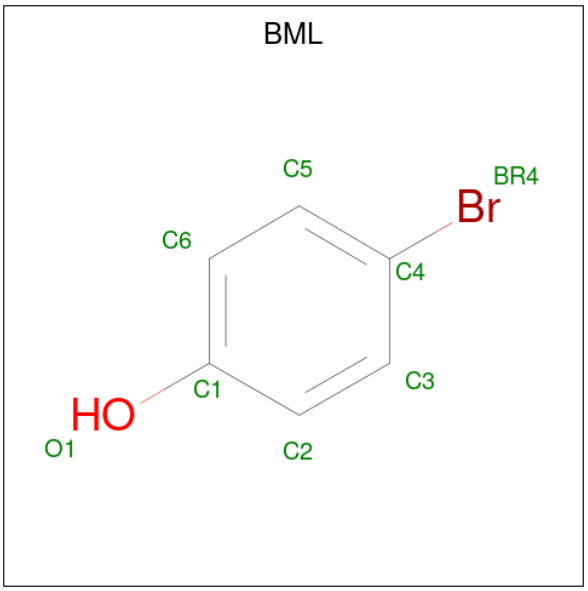
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	137	Total	C	N	O	S	0	28	0
			1280	800	220	252	8			
1	B	137	Total	C	N	O	S	0	26	0
			1268	792	220	248	8			

- Molecule 2 is FE(III) DEUTEROPORPHYRIN IX (three-letter code: FDE) (formula: $C_{30}H_{28}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



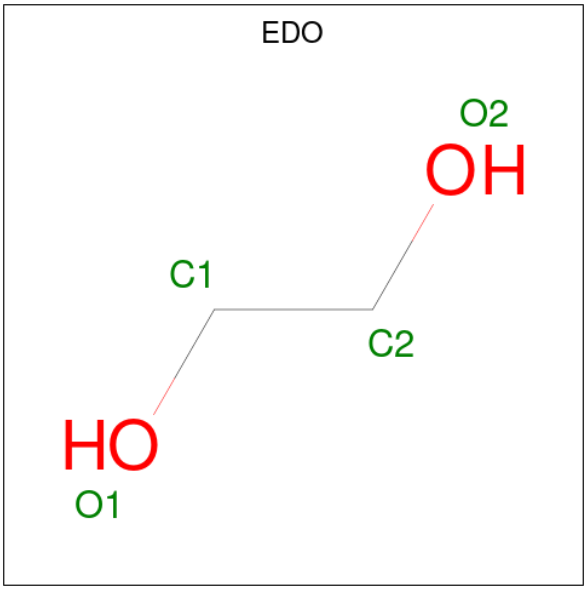
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	Fe	N	O	0	0
			39	30	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			39	30	1	4	4		

- Molecule 3 is 4-BROMOPHENOL (three-letter code: BML) (formula: C_6H_5BrO) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	Br	C	O	0	0
			8	1	6	1		
3	B	1	Total	Br	C	O	0	0
			8	1	6	1		

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

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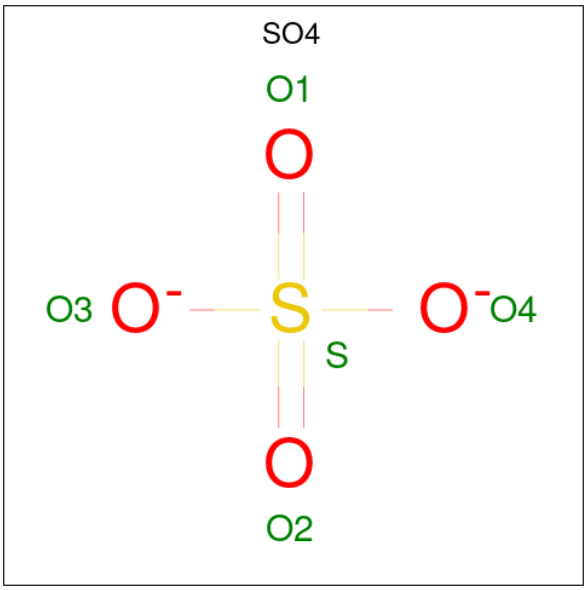
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	61	Total O 63 63	0	2
6	B	65	Total O 66 66	0	1

MolProbity and EDS failed to run properly - this section is therefore empty.

3 Data and refinement statistics (i)

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	59.40Å 67.64Å 67.65Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.28 – 1.87	Depositor
% Data completeness (in resolution range)	97.6 (37.28-1.87)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.83 (at 1.84Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.203 , 0.250	Depositor
Wilson B-factor (Å^2)	27.6	Xtriage
Anisotropy	0.436	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.468 for -h,l,k	Xtriage
Total number of atoms	2805	wwPDB-VP
Average B, all atoms (Å^2)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.90% 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.

4 Model quality

4.1 Standard geometry

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles

4.3.1 Protein backbone

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA

MolProbity failed to run properly - this section is therefore empty.

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

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

4.5 Carbohydrates

There are no monosaccharides in this entry.

4.6 Ligand geometry

12 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	$\#\|Z\| > 2$
4	EDO	A	204	-	3,3,3	0.20	0	2,2,2	0.49	0
4	EDO	B	206	-	3,3,3	0.10	0	2,2,2	0.56	0
3	BML	B	204	-	8,8,8	0.18	0	10,10,10	0.13	0
5	SO4	B	207	-	4,4,4	0.28	0	6,6,6	0.28	0
2	FDE	A	201	1	44,46,46	2.24	18 (40%)	52,76,76	2.67	21 (40%)
4	EDO	B	203	-	3,3,3	0.28	0	2,2,2	0.52	0
4	EDO	B	202	-	3,3,3	0.37	0	2,2,2	0.29	0
4	EDO	B	205	-	3,3,3	0.17	0	2,2,2	0.24	0
3	BML	A	202	-	8,8,8	0.20	0	10,10,10	0.25	0
2	FDE	B	201	1	44,46,46	2.25	16 (36%)	52,76,76	2.67	19 (36%)
4	EDO	A	203	-	3,3,3	0.24	0	2,2,2	0.16	0
5	SO4	A	205	-	4,4,4	0.33	0	6,6,6	0.21	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	204	-	-	1/1/1/1	-
4	EDO	B	206	-	-	1/1/1/1	-
3	BML	B	204	-	-	-	0/1/1/1
2	FDE	A	201	1	1/1/3/7	6/10/50/50	-
4	EDO	B	203	-	-	1/1/1/1	-
4	EDO	B	202	-	-	0/1/1/1	-
4	EDO	B	205	-	-	1/1/1/1	-
3	BML	A	202	-	-	-	0/1/1/1
2	FDE	B	201	1	1/1/3/7	4/10/50/50	-
4	EDO	A	203	-	-	0/1/1/1	-

All (34) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	201	FDE	C2A-C3A	6.00	1.49	1.36
2	A	201	FDE	C2A-C3A	5.45	1.48	1.36
2	A	201	FDE	C3D-C2D	4.92	1.47	1.36
2	B	201	FDE	C3D-C2D	4.80	1.46	1.36
2	B	201	FDE	CHB-C4A	4.35	1.46	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	201	FDE	CHB-C4A	4.31	1.46	1.35
2	A	201	FDE	CHA-C4D	3.98	1.46	1.38
2	B	201	FDE	C1C-NC	-3.92	1.32	1.40
2	A	201	FDE	C1C-NC	-3.59	1.32	1.40
2	B	201	FDE	CHA-C4D	3.48	1.45	1.38
2	B	201	FDE	C4A-NA	3.46	1.46	1.40
2	B	201	FDE	CHC-C1C	3.34	1.47	1.39
2	A	201	FDE	CHC-C1C	3.27	1.47	1.39
2	A	201	FDE	CHD-C1D	3.26	1.44	1.38
2	B	201	FDE	C1D-ND	-3.24	1.33	1.39
2	B	201	FDE	CHD-C1D	3.03	1.44	1.38
2	A	201	FDE	C1D-ND	-3.00	1.33	1.39
2	A	201	FDE	FE-ND	2.96	2.07	1.95
2	B	201	FDE	FE-ND	2.96	2.07	1.95
2	A	201	FDE	C1A-C2A	2.93	1.50	1.45
2	B	201	FDE	C4D-ND	-2.87	1.34	1.39
2	A	201	FDE	C4A-NA	2.76	1.45	1.40
2	A	201	FDE	C4D-ND	-2.74	1.34	1.39
2	A	201	FDE	C4B-CHC	2.68	1.48	1.41
2	B	201	FDE	C1A-NA	2.50	1.44	1.38
2	A	201	FDE	C4A-C3A	2.50	1.49	1.44
2	A	201	FDE	C1A-NA	2.42	1.43	1.38
2	B	201	FDE	C4B-CHC	2.41	1.47	1.41
2	B	201	FDE	C1A-C2A	2.34	1.49	1.45
2	B	201	FDE	CHD-C4C	2.33	1.44	1.39
2	A	201	FDE	CHA-C1A	2.30	1.44	1.39
2	A	201	FDE	CHD-C4C	2.14	1.44	1.39
2	A	201	FDE	C4C-NC	-2.06	1.34	1.38
2	B	201	FDE	CHA-C1A	2.05	1.43	1.39

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	201	FDE	C2C-C1C-NC	8.41	116.11	109.56
2	B	201	FDE	C2C-C1C-NC	7.30	115.24	109.56
2	B	201	FDE	CMF-C3C-C4C	6.44	135.40	125.51
2	A	201	FDE	C2B-C1B-NB	6.05	117.91	110.21
2	B	201	FDE	C2B-C1B-NB	6.01	117.86	110.21
2	A	201	FDE	C1B-C2B-C3B	-5.92	101.66	106.36
2	B	201	FDE	C1B-C2B-C3B	-5.43	102.05	106.36
2	B	201	FDE	C1B-CHB-C4A	-5.33	121.42	129.64
2	A	201	FDE	CMF-C3C-C4C	5.23	133.55	125.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	201	FDE	C1C-C2C-C3C	-4.89	103.47	108.89
2	B	201	FDE	C3D-C4D-ND	4.68	114.88	110.32
2	A	201	FDE	C3D-C4D-ND	4.30	114.51	110.32
2	B	201	FDE	C1C-C2C-C3C	-4.24	104.20	108.89
2	B	201	FDE	CME-C3B-C2B	-3.69	118.17	124.93
2	A	201	FDE	C1B-CHB-C4A	-3.67	123.98	129.64
2	B	201	FDE	C3A-C4A-NA	3.65	114.17	109.84
2	B	201	FDE	C4D-C3D-C2D	-3.46	102.62	107.13
2	B	201	FDE	C4A-NA-C1A	-3.34	101.62	105.07
2	A	201	FDE	C2A-C1A-NA	3.32	113.58	110.36
2	B	201	FDE	C4A-C3A-C2A	-3.12	103.68	106.96
2	A	201	FDE	C1D-C2D-C3D	-3.05	102.48	106.94
2	A	201	FDE	CME-C3B-C2B	-3.05	119.34	124.93
2	A	201	FDE	C4D-C3D-C2D	-2.96	103.27	107.13
2	B	201	FDE	C2A-C1A-NA	2.95	113.22	110.36
2	B	201	FDE	CMF-C3C-C2C	-2.92	118.81	125.63
2	B	201	FDE	CHA-C4D-C3D	-2.86	120.31	124.94
2	A	201	FDE	C4A-NA-C1A	-2.84	102.14	105.07
2	A	201	FDE	CHA-C1A-NA	-2.83	121.34	124.42
2	A	201	FDE	CHA-C4D-C3D	-2.83	120.35	124.94
2	A	201	FDE	C3A-C4A-NA	2.78	113.13	109.84
2	A	201	FDE	C2D-C1D-ND	2.76	114.77	109.69
2	A	201	FDE	C4C-NC-C1C	-2.73	103.26	106.71
2	B	201	FDE	C1D-C2D-C3D	-2.61	103.12	106.94
2	A	201	FDE	CMD-C2D-C1D	2.49	129.10	124.71
2	B	201	FDE	C2D-C1D-ND	2.48	114.27	109.69
2	B	201	FDE	CBD-CAD-C3D	-2.34	106.12	112.63
2	B	201	FDE	C2C-C1C-CHC	-2.29	120.13	125.72
2	A	201	FDE	C2C-C1C-CHC	-2.28	120.16	125.72
2	A	201	FDE	CMF-C3C-C2C	-2.22	120.43	125.63
2	A	201	FDE	CHD-C1D-C2D	-2.13	121.01	125.48

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	201	FDE	ND
2	B	201	FDE	ND

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	201	FDE	C3A-C2A-CAA-CBA

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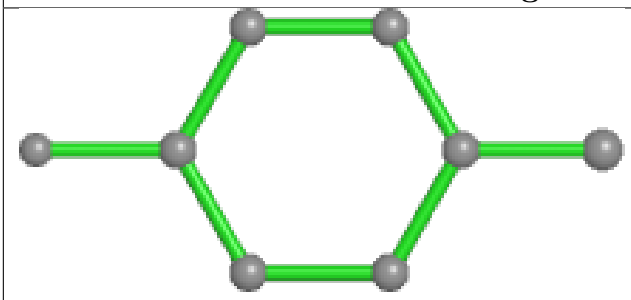
Mol	Chain	Res	Type	Atoms
2	B	201	FDE	C3A-C2A-CAA-CBA
2	A	201	FDE	C1A-C2A-CAA-CBA
2	B	201	FDE	C1A-C2A-CAA-CBA
4	B	206	EDO	O1-C1-C2-O2
4	A	204	EDO	O1-C1-C2-O2
4	B	203	EDO	O1-C1-C2-O2
2	A	201	FDE	CAA-CBA-CGA-O2A
2	A	201	FDE	CAA-CBA-CGA-O1A
2	B	201	FDE	CAA-CBA-CGA-O1A
2	B	201	FDE	CAA-CBA-CGA-O2A
2	A	201	FDE	CAD-CBD-CGD-O1D
4	B	205	EDO	O1-C1-C2-O2
2	A	201	FDE	CAD-CBD-CGD-O2D

There are no ring outliers.

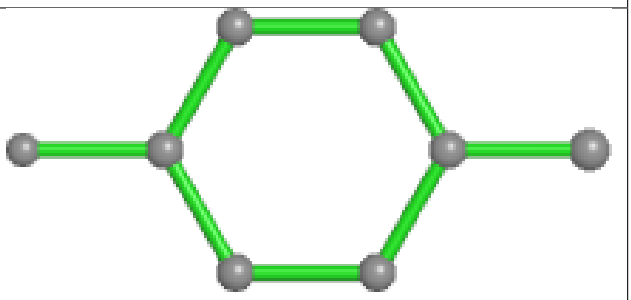
No monomer is involved in short contacts.

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.

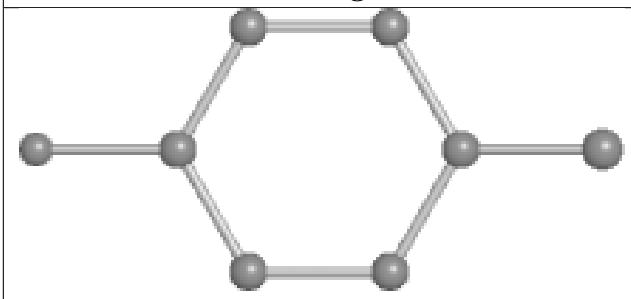
Ligand BML B 204



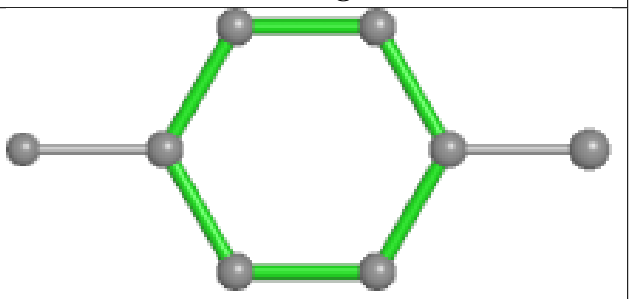
Bond lengths



Bond angles

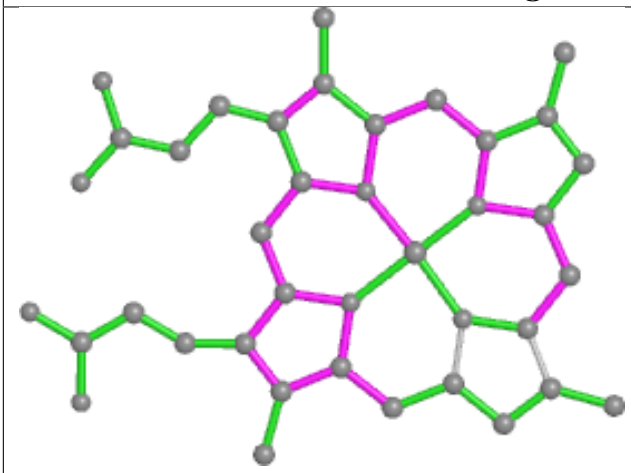


Torsions

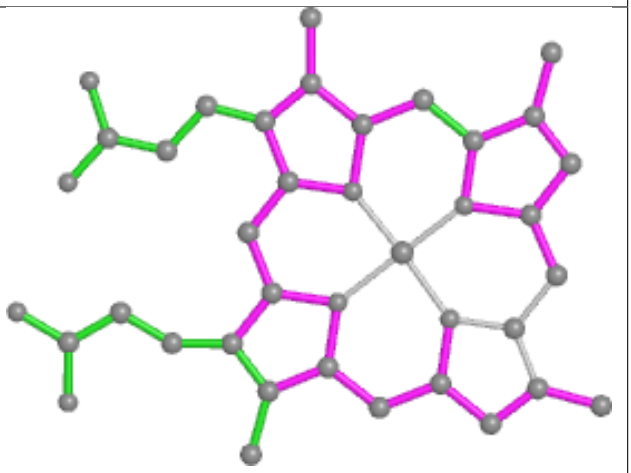


Rings

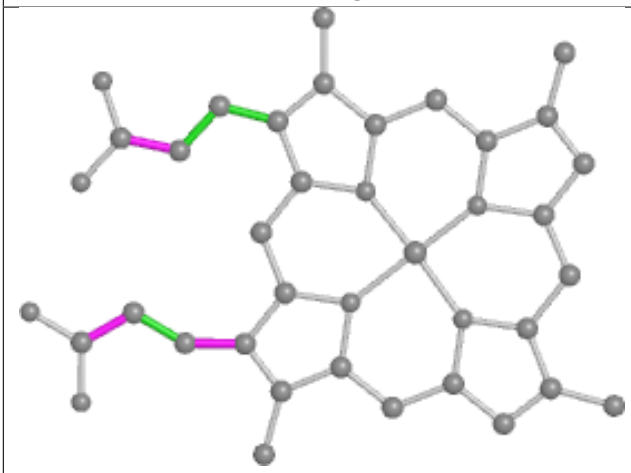
Ligand FDE A 201



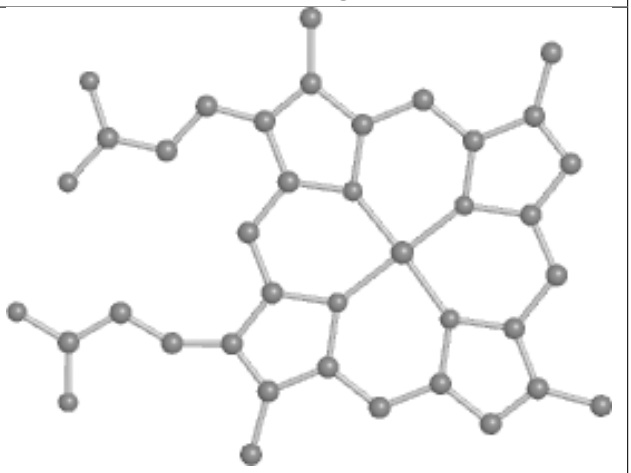
Bond lengths



Bond angles

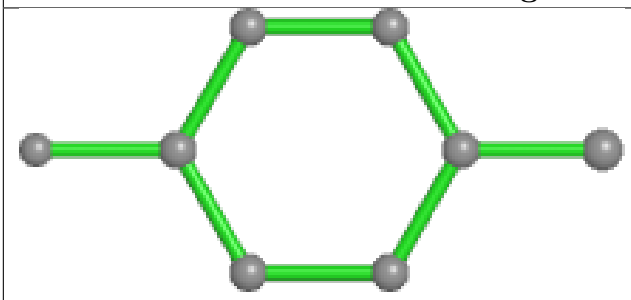


Torsions

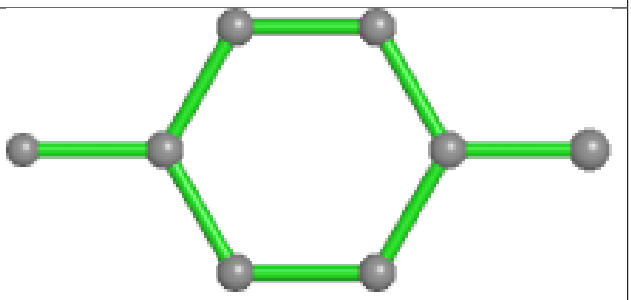


Rings

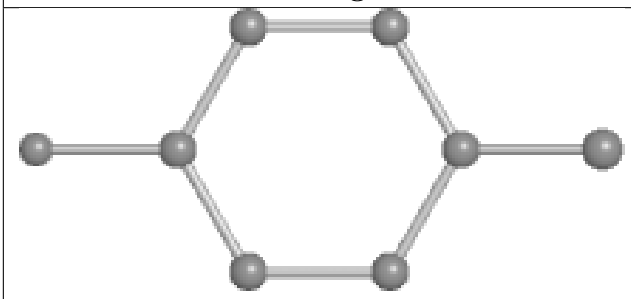
Ligand BML A 202



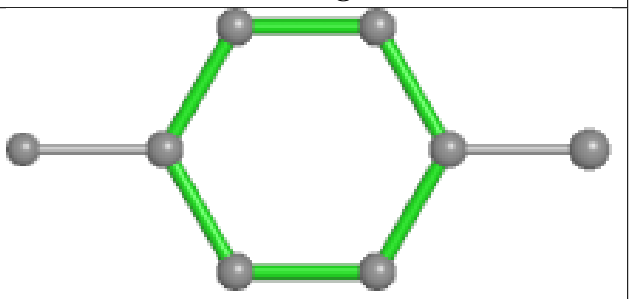
Bond lengths



Bond angles

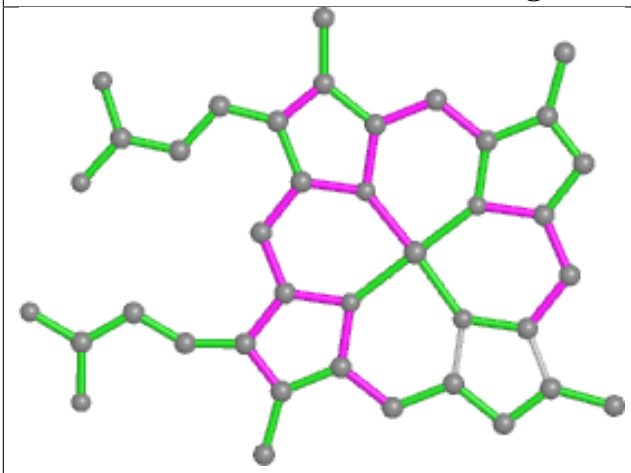


Torsions

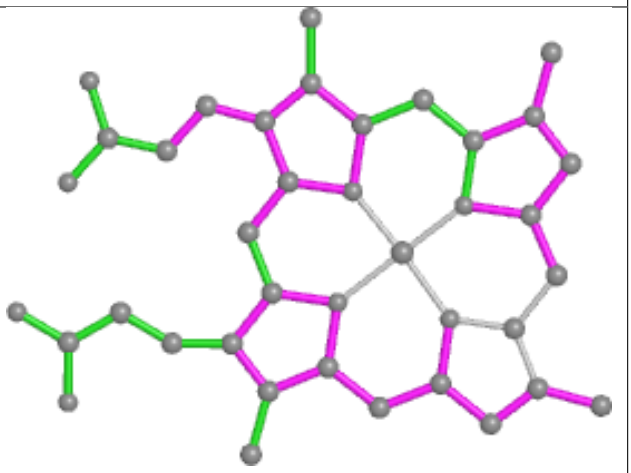


Rings

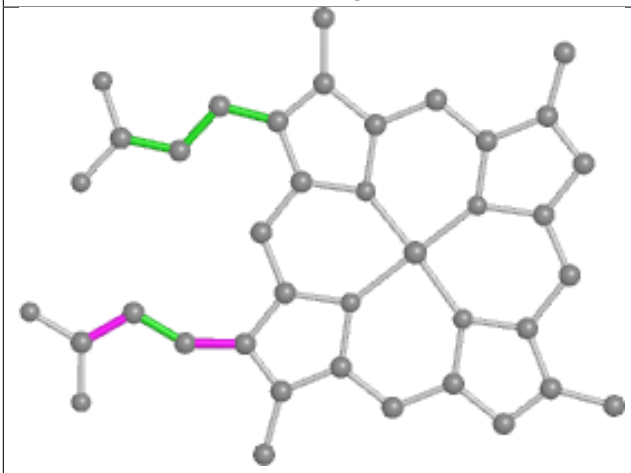
Ligand FDE B 201



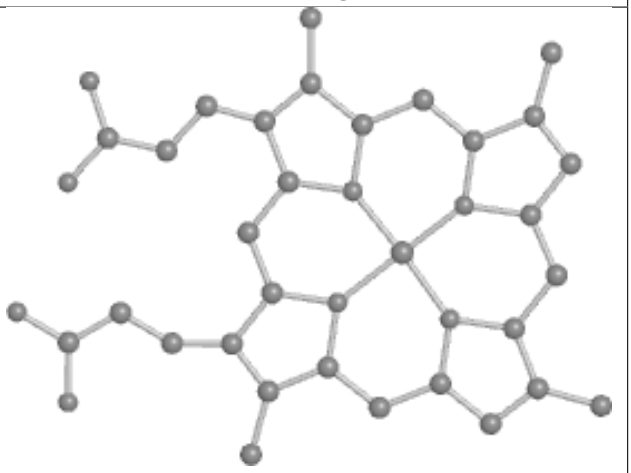
Bond lengths



Bond angles



Torsions



Rings

4.7 Other polymers (i)

There are no such residues in this entry.

4.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

5 Fit of model and data

5.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

5.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

5.4 Ligands

EDS failed to run properly - this section is therefore empty.

5.5 Other polymers

EDS failed to run properly - this section is therefore empty.