



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 2, 2026 – 01:25 AM UTC

PDB ID : 5XIC / pdb_00005xic
Title : Crystal Structure of HasAp with Fe-5,10,15-triphenylporphyrin
Authors : Shoji, O.; Uehara, H.; Sugimoto, H.; Shiro, Y.; Watanabe, Y.
Deposited on : 2017-04-26
Resolution : 1.45 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

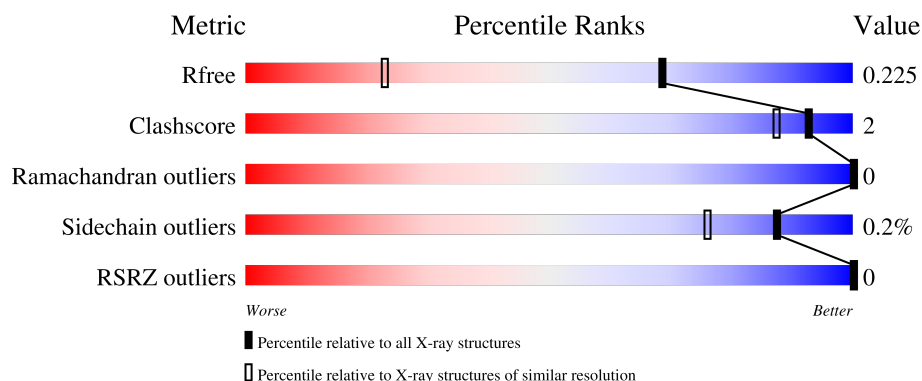
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

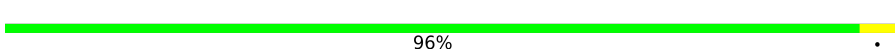
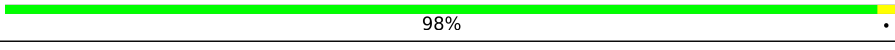
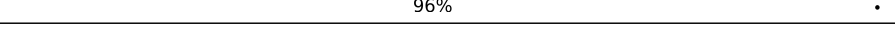
The reported resolution of this entry is 1.45 Å.

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}	180053	1756 (1.46-1.46)
Clashscore	190562	1795 (1.46-1.46)
Ramachandran outliers	187476	1776 (1.46-1.46)
Sidechain outliers	187428	1776 (1.46-1.46)
RSRZ outliers	180081	1756 (1.46-1.46)

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 $\leq 5\%$. 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.

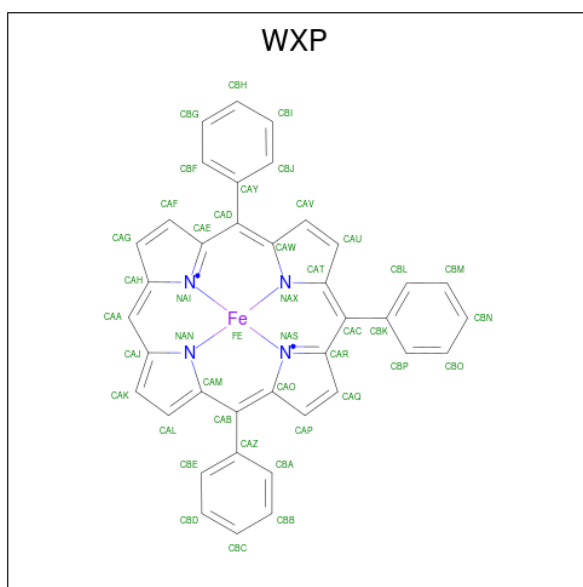
Mol	Chain	Length	Quality of chain
1	A	184	 96%
1	B	184	 98%
1	C	184	 96%
1	D	184	 97%

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 Heme acquisition protein HasAp.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	184	Total 1385	C 864	N 227	O 292	S 2	0	7	0
1	B	184	Total 1402	C 875	N 232	O 293	S 2	0	9	0
1	C	184	Total 1389	C 868	N 230	O 289	S 2	0	7	0
1	D	184	Total 1395	C 871	N 231	O 291	S 2	0	8	0

- Molecule 2 is 5,10,15-Triphenylporphyrin containing FE (CCD ID: WXP) (formula: $C_{38}H_{24}FeN_4$).



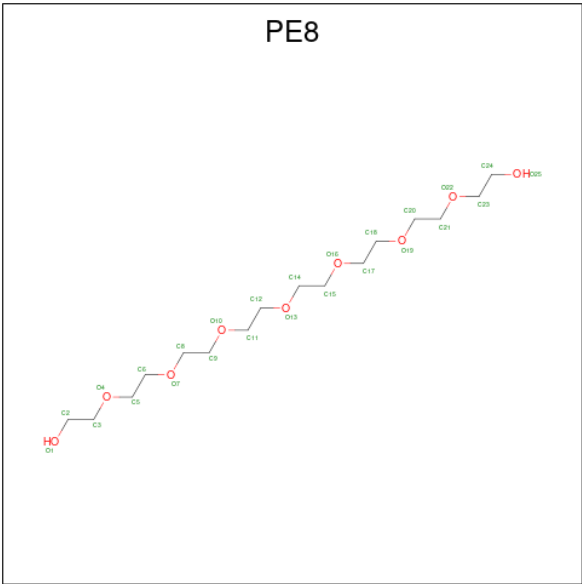
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 49	C 44	Fe 1	N 4	0	1
2	B	1	Total 49	C 44	Fe 1	N 4	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	C	1	Total	C	Fe	N	0	1
			49	44	1	4		
2	D	1	Total	C	Fe	N	0	1
			49	44	1	4		

- Molecule 3 is 3,6,9,12,15,18,21-HEPTAOXATRICOSANE-1,23-DIOL (CCD ID: PE8) (formula: C₁₆H₃₄O₉).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			25	16	9		
3	A	1	Total	C	O	0	0
			25	16	9		
3	B	1	Total	C	O	0	0
			25	16	9		
3	D	1	Total	C	O	0	0
			25	16	9		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	127	Total	O	0	0
			127	127		
4	B	117	Total	O	0	0
			117	117		
4	C	115	Total	O	0	0
			115	115		

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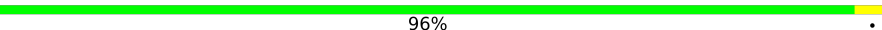
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	117	Total 117	O 117	0	0

3 Residue-property plots [i](#)

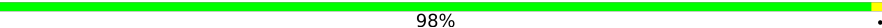
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Heme acquisition protein HasAp

Chain A:  96%



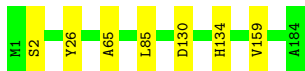
- Molecule 1: Heme acquisition protein HasAp

Chain B:  98%

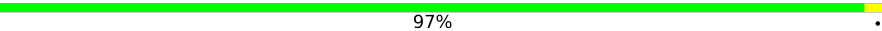


- Molecule 1: Heme acquisition protein HasAp

Chain C:  96%



- Molecule 1: Heme acquisition protein HasAp

Chain D:  97%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	45.65Å 83.46Å 83.49Å 90.00° 89.95° 90.00°	Depositor
Resolution (Å)	19.48 – 1.45 19.48 – 1.45	Depositor EDS
% Data completeness (in resolution range)	96.4 (19.48-1.45) 96.3 (19.48-1.45)	Depositor EDS
R_{merge}	0.03	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.67 (at 1.45Å)	Xtriage
Refinement program	REFMAC 5.8.0158	Depositor
R, R_{free}	0.193 , 0.218 0.202 , 0.225	Depositor DCC
R_{free} test set	5347 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å ²)	12.1	Xtriage
Anisotropy	0.049	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.44 , 39.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.466 for -h,l,k 0.467 for -h,-l,-k 0.469 for h,-k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	6343	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.97% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PE8, WXP

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	0/1418	0.70	0/1933
1	B	0.48	0/1435	0.71	0/1956
1	C	0.49	0/1422	0.71	0/1939
1	D	0.49	0/1428	0.71	0/1947
All	All	0.49	0/5703	0.71	0/7775

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1385	0	1281	4	0
1	B	1402	0	1305	2	0
1	C	1389	0	1295	5	0
1	D	1395	0	1299	5	0
2	A	49	0	0	1	0
2	B	49	0	0	0	0
2	C	49	0	0	0	0
2	D	49	0	0	0	0
3	A	50	0	68	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	25	0	34	0	0
3	D	25	0	34	0	0
4	A	127	0	0	1	1
4	B	117	0	0	0	1
4	C	115	0	0	0	0
4	D	117	0	0	0	0
All	All	6343	0	5316	17	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (17) 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:85:LEU:H	1:A:134:HIS:HD2	1.42	0.68
1:D:38[B]:VAL:O	1:D:38[B]:VAL:HG22	1.93	0.68
1:C:85:LEU:H	1:C:134:HIS:HD2	1.43	0.67
1:D:85:LEU:H	1:D:134:HIS:HD2	1.42	0.67
1:B:85:LEU:H	1:B:134:HIS:HD2	1.44	0.65
1:D:38[B]:VAL:O	1:D:38[B]:VAL:CG2	2.50	0.60
1:D:2:SER:HB2	1:D:159:VAL:HG11	1.87	0.55
1:B:2[A]:SER:HB2	1:B:159:VAL:HG21	1.88	0.55
1:A:125:ILE:HG22	4:A:416:HOH:O	2.09	0.51
1:D:2:SER:CB	1:D:159:VAL:HG11	2.41	0.51
1:A:2[A]:SER:HB2	1:A:159:VAL:HG21	1.91	0.51
1:C:2:SER:CB	1:C:159[B]:VAL:HG11	2.45	0.47
1:C:2:SER:HB2	1:C:159[A]:VAL:HG21	2.00	0.44
1:A:26[B]:TYR:CD2	1:A:65:ALA:HB2	2.54	0.43
1:C:2:SER:HB2	1:C:159[B]:VAL:HG11	2.01	0.42
1:C:26[B]:TYR:CD2	1:C:65:ALA:HB2	2.55	0.41

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:416:HOH:O	4:B:343:HOH:O[2_555]	1.55	0.65

5.3 Torsion angles

5.3.1 Protein backbone

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	189/184 (103%)	182 (96%)	7 (4%)	0	100	100
1	B	191/184 (104%)	189 (99%)	2 (1%)	0	100	100
1	C	189/184 (103%)	183 (97%)	6 (3%)	0	100	100
1	D	190/184 (103%)	183 (96%)	7 (4%)	0	100	100
All	All	759/736 (103%)	737 (97%)	22 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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	146/139 (105%)	146 (100%)	0	100	100
1	B	148/139 (106%)	148 (100%)	0	100	100
1	C	146/139 (105%)	145 (99%)	1 (1%)	76	54
1	D	147/139 (106%)	147 (100%)	0	100	100
All	All	587/556 (106%)	586 (100%)	1 (0%)	87	76

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	130	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such

sidechains are listed below:

Mol	Chain	Res	Type
1	A	134	HIS
1	A	149	GLN
1	A	166	ASN
1	B	134	HIS
1	C	127	GLN
1	C	134	HIS
1	D	134	HIS
1	D	166	ASN

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 oligosaccharides in this entry.

5.6 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	$\# Z > 2$
2	WXP	D	201[A]	-	53,53,53	3.03	20 (37%)	67,84,84	3.36	30 (44%)
2	WXP	A	201[B]	-	53,53,53	3.01	21 (39%)	67,84,84	3.33	30 (44%)
3	PE8	D	202	-	24,24,24	0.54	0	23,23,23	0.23	0
2	WXP	C	201[A]	-	53,53,53	3.01	20 (37%)	67,84,84	3.34	30 (44%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	PE8	A	203	-	24,24,24	0.52	0	23,23,23	0.21	0
2	WXP	D	201[B]	-	53,53,53	3.02	20 (37%)	67,84,84	3.36	31 (46%)
2	WXP	B	201[A]	-	53,53,53	2.97	20 (37%)	67,84,84	3.34	28 (41%)
2	WXP	C	201[B]	-	53,53,53	2.99	20 (37%)	67,84,84	3.34	30 (44%)
3	PE8	B	202	-	24,24,24	0.43	0	23,23,23	0.33	0
2	WXP	A	201[A]	-	53,53,53	3.02	21 (39%)	67,84,84	3.33	28 (41%)
2	WXP	B	201[B]	-	53,53,53	2.96	20 (37%)	67,84,84	3.36	30 (44%)
3	PE8	A	202	-	24,24,24	0.44	0	23,23,23	0.33	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
2	WXP	D	201[A]	-	-	0/12/64/64	0/3/11/11
2	WXP	A	201[B]	-	-	0/12/64/64	0/3/11/11
3	PE8	D	202	-	-	10/22/22/22	-
2	WXP	C	201[A]	-	-	0/12/64/64	0/3/11/11
3	PE8	A	203	-	-	11/22/22/22	-
2	WXP	D	201[B]	-	-	0/12/64/64	0/3/11/11
2	WXP	B	201[A]	-	-	0/12/64/64	0/3/11/11
2	WXP	C	201[B]	-	-	0/12/64/64	0/3/11/11
3	PE8	B	202	-	-	2/22/22/22	-
2	WXP	A	201[A]	-	-	0/12/64/64	0/3/11/11
2	WXP	B	201[B]	-	-	0/12/64/64	0/3/11/11
3	PE8	A	202	-	-	0/22/22/22	-

All (162) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	201[A]	WXP	FE-NAI	8.68	2.21	1.94
2	C	201[B]	WXP	FE-NAI	8.68	2.21	1.94
2	D	201[A]	WXP	FE-NAI	8.67	2.21	1.94
2	D	201[B]	WXP	FE-NAI	8.67	2.21	1.94
2	A	201[A]	WXP	FE-NAN	8.35	2.22	1.95
2	A	201[B]	WXP	FE-NAN	8.35	2.22	1.95
2	B	201[A]	WXP	FE-NAN	8.26	2.22	1.95
2	B	201[B]	WXP	FE-NAN	8.26	2.22	1.95
2	D	201[A]	WXP	FE-NAS	7.66	2.18	1.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	201[B]	WXP	FE-NAS	7.66	2.18	1.94
2	C	201[A]	WXP	FE-NAS	6.90	2.16	1.94
2	C	201[B]	WXP	FE-NAS	6.90	2.16	1.94
2	B	201[A]	WXP	FE-NAI	6.84	2.16	1.94
2	B	201[B]	WXP	FE-NAI	6.84	2.16	1.94
2	A	201[A]	WXP	FE-NAS	6.59	2.15	1.94
2	A	201[B]	WXP	FE-NAS	6.59	2.15	1.94
2	A	201[A]	WXP	FE-NAI	6.56	2.15	1.94
2	A	201[B]	WXP	FE-NAI	6.56	2.15	1.94
2	D	201[A]	WXP	FE-NAN	6.51	2.16	1.95
2	D	201[B]	WXP	FE-NAN	6.51	2.16	1.95
2	C	201[A]	WXP	FE-NAX	6.39	2.16	1.95
2	C	201[B]	WXP	FE-NAX	6.39	2.16	1.95
2	B	201[A]	WXP	FE-NAS	6.19	2.14	1.94
2	B	201[B]	WXP	FE-NAS	6.19	2.14	1.94
2	A	201[A]	WXP	FE-NAX	6.18	2.15	1.95
2	A	201[B]	WXP	FE-NAX	6.18	2.15	1.95
2	C	201[A]	WXP	FE-NAN	6.05	2.15	1.95
2	C	201[B]	WXP	FE-NAN	6.05	2.15	1.95
2	B	201[A]	WXP	FE-NAX	6.03	2.15	1.95
2	B	201[B]	WXP	FE-NAX	6.03	2.15	1.95
2	C	201[A]	WXP	CAV-CAW	-5.91	1.32	1.44
2	C	201[B]	WXP	CAV-CAW	-5.91	1.32	1.44
2	D	201[A]	WXP	CAV-CAW	-5.88	1.32	1.44
2	D	201[B]	WXP	CAV-CAW	-5.88	1.32	1.44
2	D	201[A]	WXP	FE-NAX	5.86	2.14	1.95
2	D	201[B]	WXP	FE-NAX	5.86	2.14	1.95
2	B	201[A]	WXP	CAP-CAO	-5.73	1.32	1.44
2	B	201[B]	WXP	CAP-CAO	-5.73	1.32	1.44
2	A	201[A]	WXP	CAP-CAO	-5.62	1.33	1.44
2	A	201[B]	WXP	CAP-CAO	-5.62	1.33	1.44
2	A	201[A]	WXP	CAV-CAW	-5.31	1.33	1.44
2	A	201[B]	WXP	CAV-CAW	-5.31	1.33	1.44
2	B	201[A]	WXP	CAV-CAW	-5.23	1.34	1.44
2	B	201[B]	WXP	CAV-CAW	-5.23	1.34	1.44
2	C	201[A]	WXP	CAP-CAO	-5.14	1.34	1.44
2	C	201[B]	WXP	CAP-CAO	-5.14	1.34	1.44
2	D	201[A]	WXP	CAP-CAO	-5.12	1.34	1.44
2	D	201[B]	WXP	CAP-CAO	-5.12	1.34	1.44
2	A	201[A]	WXP	CAJ-NAN	-5.00	1.32	1.39
2	A	201[B]	WXP	CAJ-NAN	-5.00	1.32	1.39
2	A	201[A]	WXP	CAU-CAT	-4.72	1.35	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	201[B]	WXP	CAU-CAT	-4.72	1.35	1.44
2	B	201[A]	WXP	CAU-CAT	-4.71	1.35	1.44
2	B	201[B]	WXP	CAU-CAT	-4.71	1.35	1.44
2	B	201[A]	WXP	CAF-CAE	-4.66	1.35	1.44
2	B	201[B]	WXP	CAF-CAE	-4.66	1.35	1.44
2	C	201[A]	WXP	CAF-CAE	-4.65	1.35	1.44
2	C	201[B]	WXP	CAF-CAE	-4.65	1.35	1.44
2	A	201[A]	WXP	CAF-CAE	-4.63	1.35	1.44
2	A	201[B]	WXP	CAF-CAE	-4.63	1.35	1.44
2	B	201[A]	WXP	CAJ-NAN	-4.61	1.33	1.39
2	B	201[B]	WXP	CAJ-NAN	-4.61	1.33	1.39
2	D	201[A]	WXP	CAF-CAE	-4.57	1.35	1.44
2	D	201[B]	WXP	CAF-CAE	-4.57	1.35	1.44
2	D	201[A]	WXP	CAQ-CAR	-4.54	1.35	1.44
2	D	201[B]	WXP	CAQ-CAR	-4.54	1.35	1.44
2	C	201[A]	WXP	CAQ-CAR	-4.51	1.35	1.44
2	C	201[B]	WXP	CAQ-CAR	-4.51	1.35	1.44
2	C	201[A]	WXP	CAG-CAH	-4.22	1.33	1.43
2	C	201[B]	WXP	CAG-CAH	-4.22	1.33	1.43
2	A	201[A]	WXP	CAG-CAH	-4.22	1.33	1.43
2	A	201[B]	WXP	CAG-CAH	-4.22	1.33	1.43
2	B	201[A]	WXP	CAQ-CAR	-4.17	1.36	1.44
2	B	201[B]	WXP	CAQ-CAR	-4.17	1.36	1.44
2	A	201[A]	WXP	CAQ-CAR	-4.15	1.36	1.44
2	A	201[B]	WXP	CAQ-CAR	-4.15	1.36	1.44
2	B	201[A]	WXP	CAG-CAH	-4.13	1.33	1.43
2	B	201[B]	WXP	CAG-CAH	-4.13	1.33	1.43
2	D	201[A]	WXP	CAG-CAH	-4.07	1.33	1.43
2	D	201[B]	WXP	CAG-CAH	-4.07	1.33	1.43
2	C	201[A]	WXP	CAU-CAT	-4.05	1.36	1.44
2	C	201[B]	WXP	CAU-CAT	-4.05	1.36	1.44
2	D	201[A]	WXP	CAU-CAT	-3.99	1.36	1.44
2	D	201[B]	WXP	CAU-CAT	-3.99	1.36	1.44
2	D	201[A]	WXP	CAJ-NAN	-3.99	1.34	1.39
2	D	201[B]	WXP	CAJ-NAN	-3.99	1.34	1.39
2	C	201[A]	WXP	CAJ-NAN	-3.85	1.34	1.39
2	C	201[B]	WXP	CAJ-NAN	-3.85	1.34	1.39
2	D	201[A]	WXP	CBK-CAC	-3.84	1.42	1.49
2	C	201[A]	WXP	CBK-CAC	-3.77	1.42	1.49
2	A	201[A]	WXP	CAZ-CAB	-3.70	1.42	1.49
2	A	201[B]	WXP	CAZ-CAB	-3.70	1.42	1.49
2	D	201[A]	WXP	CAY-CAD	-3.68	1.42	1.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	201[B]	WXP	CAY-CAD	-3.68	1.42	1.49
2	A	201[A]	WXP	CBK-CAC	-3.67	1.42	1.49
2	A	201[A]	WXP	CAY-CAD	-3.59	1.42	1.49
2	A	201[B]	WXP	CAY-CAD	-3.59	1.42	1.49
2	C	201[A]	WXP	CAZ-CAB	-3.56	1.43	1.49
2	C	201[B]	WXP	CAZ-CAB	-3.56	1.43	1.49
2	D	201[A]	WXP	CAH-NAI	-3.55	1.32	1.40
2	D	201[B]	WXP	CAH-NAI	-3.55	1.32	1.40
2	C	201[A]	WXP	CAH-NAI	-3.54	1.32	1.40
2	C	201[B]	WXP	CAH-NAI	-3.54	1.32	1.40
2	B	201[A]	WXP	CAZ-CAB	-3.54	1.43	1.49
2	B	201[B]	WXP	CAZ-CAB	-3.54	1.43	1.49
2	B	201[A]	WXP	CBK-CAC	-3.52	1.43	1.49
2	C	201[A]	WXP	CAY-CAD	-3.50	1.43	1.49
2	C	201[B]	WXP	CAY-CAD	-3.50	1.43	1.49
2	D	201[A]	WXP	CAZ-CAB	-3.49	1.43	1.49
2	D	201[B]	WXP	CAZ-CAB	-3.49	1.43	1.49
2	B	201[A]	WXP	CAY-CAD	-3.48	1.43	1.49
2	B	201[B]	WXP	CAY-CAD	-3.48	1.43	1.49
2	C	201[A]	WXP	CAK-CAJ	-3.42	1.33	1.40
2	C	201[B]	WXP	CAK-CAJ	-3.42	1.33	1.40
2	A	201[A]	WXP	CAL-CAM	-3.34	1.34	1.42
2	A	201[B]	WXP	CAL-CAM	-3.34	1.34	1.42
2	B	201[A]	WXP	CAK-CAJ	-3.34	1.33	1.40
2	B	201[B]	WXP	CAK-CAJ	-3.34	1.33	1.40
2	A	201[A]	WXP	CAK-CAJ	-3.34	1.33	1.40
2	A	201[B]	WXP	CAK-CAJ	-3.34	1.33	1.40
2	D	201[A]	WXP	CAK-CAJ	-3.29	1.33	1.40
2	D	201[B]	WXP	CAK-CAJ	-3.29	1.33	1.40
2	C	201[A]	WXP	CAL-CAM	-3.28	1.35	1.42
2	C	201[B]	WXP	CAL-CAM	-3.28	1.35	1.42
2	D	201[A]	WXP	CAL-CAM	-3.28	1.35	1.42
2	D	201[B]	WXP	CAL-CAM	-3.28	1.35	1.42
2	A	201[A]	WXP	CAH-NAI	-3.27	1.33	1.40
2	A	201[B]	WXP	CAH-NAI	-3.27	1.33	1.40
2	B	201[A]	WXP	CAL-CAM	-3.23	1.35	1.42
2	B	201[B]	WXP	CAL-CAM	-3.23	1.35	1.42
2	A	201[A]	WXP	CAM-NAN	-3.18	1.33	1.39
2	A	201[B]	WXP	CAM-NAN	-3.18	1.33	1.39
2	D	201[B]	WXP	CBK-CAC	-3.15	1.43	1.49
2	A	201[B]	WXP	CBK-CAC	-3.13	1.43	1.49
2	B	201[A]	WXP	CAH-NAI	-3.02	1.34	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	201[B]	WXP	CAH-NAI	-3.02	1.34	1.40
2	C	201[B]	WXP	CBK-CAC	-3.01	1.44	1.49
2	B	201[B]	WXP	CBK-CAC	-2.99	1.44	1.49
2	B	201[A]	WXP	CAM-NAN	-2.96	1.34	1.39
2	B	201[B]	WXP	CAM-NAN	-2.96	1.34	1.39
2	D	201[A]	WXP	CAM-NAN	-2.86	1.34	1.39
2	D	201[B]	WXP	CAM-NAN	-2.86	1.34	1.39
2	C	201[A]	WXP	CAM-NAN	-2.75	1.34	1.39
2	C	201[B]	WXP	CAM-NAN	-2.75	1.34	1.39
2	D	201[A]	WXP	CAO-NAS	-2.70	1.35	1.40
2	D	201[B]	WXP	CAO-NAS	-2.70	1.35	1.40
2	C	201[A]	WXP	CAO-NAS	-2.53	1.35	1.40
2	C	201[B]	WXP	CAO-NAS	-2.53	1.35	1.40
2	D	201[A]	WXP	CAE-NAI	-2.50	1.33	1.38
2	D	201[B]	WXP	CAE-NAI	-2.50	1.33	1.38
2	C	201[A]	WXP	CAE-NAI	-2.36	1.34	1.38
2	C	201[B]	WXP	CAE-NAI	-2.36	1.34	1.38
2	A	201[A]	WXP	CAE-NAI	-2.33	1.34	1.38
2	A	201[B]	WXP	CAE-NAI	-2.33	1.34	1.38
2	B	201[A]	WXP	CAE-NAI	-2.28	1.34	1.38
2	B	201[B]	WXP	CAE-NAI	-2.28	1.34	1.38
2	B	201[A]	WXP	CAW-NAX	-2.13	1.35	1.39
2	B	201[B]	WXP	CAW-NAX	-2.13	1.35	1.39
2	A	201[A]	WXP	CAW-NAX	-2.10	1.35	1.39
2	A	201[B]	WXP	CAW-NAX	-2.10	1.35	1.39
2	A	201[A]	WXP	CAT-NAX	-2.05	1.35	1.39
2	A	201[B]	WXP	CAT-NAX	-2.05	1.35	1.39

All (237) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	201[A]	WXP	CAQ-CAR-NAS	-11.06	99.43	110.26
2	B	201[B]	WXP	CAQ-CAR-NAS	-11.06	99.43	110.26
2	A	201[A]	WXP	CAQ-CAR-NAS	-10.81	99.67	110.26
2	A	201[B]	WXP	CAQ-CAR-NAS	-10.81	99.67	110.26
2	D	201[A]	WXP	CAQ-CAR-NAS	-10.23	100.24	110.26
2	D	201[B]	WXP	CAQ-CAR-NAS	-10.23	100.24	110.26
2	C	201[A]	WXP	CAQ-CAR-NAS	-10.11	100.36	110.26
2	C	201[B]	WXP	CAQ-CAR-NAS	-10.11	100.36	110.26
2	C	201[A]	WXP	CAU-CAT-NAX	-9.26	98.94	109.82
2	C	201[B]	WXP	CAU-CAT-NAX	-9.26	98.94	109.82
2	D	201[A]	WXP	CAU-CAT-NAX	-9.01	99.24	109.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	201[B]	WXP	CAU-CAT-NAX	-9.01	99.24	109.82
2	D	201[A]	WXP	CAO-NAS-CAR	8.91	115.76	105.21
2	D	201[B]	WXP	CAO-NAS-CAR	8.91	115.76	105.21
2	C	201[A]	WXP	CAO-NAS-CAR	8.79	115.61	105.21
2	C	201[B]	WXP	CAO-NAS-CAR	8.79	115.61	105.21
2	B	201[A]	WXP	CAO-NAS-CAR	8.72	115.53	105.21
2	B	201[B]	WXP	CAO-NAS-CAR	8.72	115.53	105.21
2	A	201[A]	WXP	CAO-NAS-CAR	8.52	115.29	105.21
2	A	201[B]	WXP	CAO-NAS-CAR	8.52	115.29	105.21
2	B	201[A]	WXP	CAU-CAT-NAX	-8.17	100.22	109.82
2	B	201[B]	WXP	CAU-CAT-NAX	-8.17	100.22	109.82
2	A	201[A]	WXP	CAU-CAT-NAX	-7.96	100.47	109.82
2	A	201[B]	WXP	CAU-CAT-NAX	-7.96	100.47	109.82
2	A	201[A]	WXP	CAF-CAE-NAI	-7.90	102.53	110.26
2	A	201[B]	WXP	CAF-CAE-NAI	-7.90	102.53	110.26
2	B	201[A]	WXP	CAF-CAE-NAI	-7.25	103.16	110.26
2	B	201[B]	WXP	CAF-CAE-NAI	-7.25	103.16	110.26
2	D	201[A]	WXP	CAF-CAE-NAI	-7.13	103.28	110.26
2	D	201[B]	WXP	CAF-CAE-NAI	-7.13	103.28	110.26
2	C	201[A]	WXP	CAF-CAE-NAI	-7.08	103.32	110.26
2	C	201[B]	WXP	CAF-CAE-NAI	-7.08	103.32	110.26
2	B	201[A]	WXP	CAG-CAH-NAI	-6.80	104.62	109.42
2	B	201[B]	WXP	CAG-CAH-NAI	-6.80	104.62	109.42
2	D	201[A]	WXP	CAG-CAH-NAI	-6.66	104.71	109.42
2	D	201[B]	WXP	CAG-CAH-NAI	-6.66	104.71	109.42
2	A	201[A]	WXP	CAG-CAH-NAI	-6.65	104.72	109.42
2	A	201[B]	WXP	CAG-CAH-NAI	-6.65	104.72	109.42
2	B	201[A]	WXP	CAV-CAW-NAX	-6.60	102.07	109.82
2	B	201[B]	WXP	CAV-CAW-NAX	-6.60	102.07	109.82
2	A	201[A]	WXP	CAV-CAW-NAX	-6.43	102.27	109.82
2	A	201[B]	WXP	CAV-CAW-NAX	-6.43	102.27	109.82
2	C	201[A]	WXP	CAV-CAW-NAX	-6.32	102.39	109.82
2	C	201[B]	WXP	CAV-CAW-NAX	-6.32	102.39	109.82
2	D	201[A]	WXP	CAK-CAJ-NAN	-6.32	104.36	109.71
2	D	201[B]	WXP	CAK-CAJ-NAN	-6.32	104.36	109.71
2	D	201[A]	WXP	CAV-CAW-NAX	-6.14	102.60	109.82
2	D	201[B]	WXP	CAV-CAW-NAX	-6.14	102.60	109.82
2	C	201[A]	WXP	CAW-NAX-CAT	6.11	115.78	105.82
2	C	201[B]	WXP	CAW-NAX-CAT	6.11	115.78	105.82
2	A	201[A]	WXP	CAK-CAJ-NAN	-6.09	104.56	109.71
2	A	201[B]	WXP	CAK-CAJ-NAN	-6.09	104.56	109.71
2	B	201[A]	WXP	CAK-CAJ-NAN	-6.05	104.59	109.71

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	201[B]	WXP	CAK-CAJ-NAN	-6.05	104.59	109.71
2	C	201[A]	WXP	CAG-CAH-NAI	-6.00	105.18	109.42
2	C	201[B]	WXP	CAG-CAH-NAI	-6.00	105.18	109.42
2	C	201[A]	WXP	CAK-CAJ-NAN	-5.98	104.65	109.71
2	C	201[B]	WXP	CAK-CAJ-NAN	-5.98	104.65	109.71
2	B	201[A]	WXP	CAW-NAX-CAT	5.91	115.46	105.82
2	B	201[B]	WXP	CAW-NAX-CAT	5.91	115.46	105.82
2	C	201[A]	WXP	CAP-CAO-NAS	-5.91	101.94	108.91
2	C	201[B]	WXP	CAP-CAO-NAS	-5.91	101.94	108.91
2	D	201[A]	WXP	CAW-NAX-CAT	5.89	115.42	105.82
2	D	201[B]	WXP	CAW-NAX-CAT	5.89	115.42	105.82
2	D	201[A]	WXP	CAP-CAO-NAS	-5.85	102.01	108.91
2	D	201[B]	WXP	CAP-CAO-NAS	-5.85	102.01	108.91
2	A	201[A]	WXP	CAW-NAX-CAT	5.78	115.24	105.82
2	A	201[B]	WXP	CAW-NAX-CAT	5.78	115.24	105.82
2	B	201[A]	WXP	CAP-CAO-NAS	-5.77	102.11	108.91
2	B	201[B]	WXP	CAP-CAO-NAS	-5.77	102.11	108.91
2	A	201[A]	WXP	CAP-CAO-NAS	-5.61	102.30	108.91
2	A	201[B]	WXP	CAP-CAO-NAS	-5.61	102.30	108.91
2	D	201[A]	WXP	CAL-CAM-NAN	-5.55	103.00	108.88
2	D	201[B]	WXP	CAL-CAM-NAN	-5.55	103.00	108.88
2	C	201[A]	WXP	CAL-CAM-NAN	-5.45	103.11	108.88
2	C	201[B]	WXP	CAL-CAM-NAN	-5.45	103.11	108.88
2	A	201[A]	WXP	CAE-NAI-CAH	5.44	113.40	106.70
2	A	201[B]	WXP	CAE-NAI-CAH	5.44	113.40	106.70
2	B	201[A]	WXP	CAL-CAM-NAN	-5.31	103.25	108.88
2	B	201[B]	WXP	CAL-CAM-NAN	-5.31	103.25	108.88
2	D	201[A]	WXP	CAE-NAI-CAH	5.27	113.19	106.70
2	D	201[B]	WXP	CAE-NAI-CAH	5.27	113.19	106.70
2	A	201[A]	WXP	CAL-CAM-NAN	-5.17	103.40	108.88
2	A	201[B]	WXP	CAL-CAM-NAN	-5.17	103.40	108.88
2	B	201[A]	WXP	CAE-NAI-CAH	5.02	112.88	106.70
2	B	201[B]	WXP	CAE-NAI-CAH	5.02	112.88	106.70
2	C	201[A]	WXP	CAE-NAI-CAH	4.86	112.68	106.70
2	C	201[B]	WXP	CAE-NAI-CAH	4.86	112.68	106.70
2	B	201[A]	WXP	CAP-CAQ-CAR	4.66	112.83	107.42
2	B	201[B]	WXP	CAP-CAQ-CAR	4.66	112.83	107.42
2	C	201[A]	WXP	CAV-CAU-CAT	4.65	113.08	107.55
2	C	201[B]	WXP	CAV-CAU-CAT	4.65	113.08	107.55
2	A	201[A]	WXP	CAP-CAQ-CAR	4.56	112.72	107.42
2	A	201[B]	WXP	CAP-CAQ-CAR	4.56	112.72	107.42
2	D	201[A]	WXP	CAV-CAU-CAT	4.47	112.86	107.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	201[B]	WXP	CAV-CAU-CAT	4.47	112.86	107.55
2	D	201[A]	WXP	CAP-CAQ-CAR	4.01	112.08	107.42
2	D	201[B]	WXP	CAP-CAQ-CAR	4.01	112.08	107.42
2	B	201[A]	WXP	CAV-CAU-CAT	3.92	112.22	107.55
2	B	201[B]	WXP	CAV-CAU-CAT	3.92	112.22	107.55
2	C	201[A]	WXP	CAP-CAQ-CAR	3.89	111.94	107.42
2	C	201[B]	WXP	CAP-CAQ-CAR	3.89	111.94	107.42
2	C	201[A]	WXP	CAC-CAT-NAX	3.88	129.77	125.62
2	C	201[B]	WXP	CAC-CAT-NAX	3.88	129.77	125.62
2	A	201[A]	WXP	CAV-CAU-CAT	3.81	112.08	107.55
2	A	201[B]	WXP	CAV-CAU-CAT	3.81	112.08	107.55
2	D	201[A]	WXP	CAC-CAT-NAX	3.70	129.58	125.62
2	D	201[B]	WXP	CAC-CAT-NAX	3.70	129.58	125.62
2	A	201[A]	WXP	CAB-CAO-NAS	3.53	129.76	125.77
2	A	201[B]	WXP	CAB-CAO-NAS	3.53	129.76	125.77
2	B	201[A]	WXP	CAB-CAO-NAS	3.41	129.62	125.77
2	B	201[B]	WXP	CAB-CAO-NAS	3.41	129.62	125.77
2	B	201[A]	WXP	CAC-CAR-NAS	3.32	129.41	125.43
2	B	201[B]	WXP	CAC-CAR-NAS	3.32	129.41	125.43
2	C	201[A]	WXP	CAD-CAW-NAX	3.23	129.07	125.62
2	C	201[B]	WXP	CAD-CAW-NAX	3.23	129.07	125.62
2	C	201[A]	WXP	CAQ-CAR-CAC	3.23	132.01	125.19
2	C	201[B]	WXP	CAQ-CAR-CAC	3.23	132.01	125.19
2	A	201[A]	WXP	CAC-CAR-NAS	3.22	129.29	125.43
2	A	201[B]	WXP	CAC-CAR-NAS	3.22	129.29	125.43
2	D	201[A]	WXP	CAQ-CAR-CAC	3.18	131.91	125.19
2	D	201[B]	WXP	CAQ-CAR-CAC	3.18	131.91	125.19
2	D	201[A]	WXP	CAD-CAW-NAX	3.12	128.96	125.62
2	D	201[B]	WXP	CAD-CAW-NAX	3.12	128.96	125.62
2	C	201[A]	WXP	CBI-CBJ-CAY	3.10	123.41	120.36
2	C	201[B]	WXP	CBI-CBJ-CAY	3.10	123.41	120.36
2	B	201[B]	WXP	CBO-CBP-CBK	3.02	123.34	120.36
2	A	201[A]	WXP	CAF-CAE-CAD	2.97	131.48	125.19
2	A	201[B]	WXP	CAF-CAE-CAD	2.97	131.48	125.19
2	B	201[A]	WXP	CBB-CBA-CAZ	2.93	123.25	120.36
2	B	201[B]	WXP	CBB-CBA-CAZ	2.93	123.25	120.36
2	A	201[A]	WXP	CBB-CBA-CAZ	2.90	123.22	120.36
2	A	201[B]	WXP	CBB-CBA-CAZ	2.90	123.22	120.36
2	B	201[A]	WXP	CAQ-CAR-CAC	2.82	131.16	125.19
2	B	201[B]	WXP	CAQ-CAR-CAC	2.82	131.16	125.19
2	C	201[A]	WXP	CBL-CBK-CAC	2.79	125.18	120.79
2	D	201[A]	WXP	CBI-CBJ-CAY	2.77	123.09	120.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	201[B]	WXP	CBI-CBJ-CAY	2.77	123.09	120.36
2	A	201[A]	WXP	CAQ-CAR-CAC	2.76	131.03	125.19
2	A	201[B]	WXP	CAQ-CAR-CAC	2.76	131.03	125.19
2	D	201[A]	WXP	CAF-CAE-CAD	2.75	131.01	125.19
2	D	201[B]	WXP	CAF-CAE-CAD	2.75	131.01	125.19
2	D	201[B]	WXP	CBO-CBP-CBK	2.73	123.05	120.36
2	C	201[B]	WXP	CBO-CBP-CBK	2.71	123.03	120.36
2	A	201[A]	WXP	CAG-CAF-CAE	2.64	110.49	107.42
2	A	201[B]	WXP	CAG-CAF-CAE	2.64	110.49	107.42
2	C	201[B]	WXP	CBP-CBK-CBL	-2.63	115.23	118.57
2	A	201[A]	WXP	CAH-CAA-CAJ	2.62	132.96	126.04
2	A	201[B]	WXP	CAH-CAA-CAJ	2.62	132.96	126.04
2	C	201[A]	WXP	CAF-CAE-CAD	2.62	130.73	125.19
2	C	201[B]	WXP	CAF-CAE-CAD	2.62	130.73	125.19
2	D	201[A]	WXP	CBL-CBK-CAC	2.60	124.87	120.79
2	B	201[A]	WXP	CAD-CAW-NAX	2.56	128.36	125.62
2	B	201[B]	WXP	CAD-CAW-NAX	2.56	128.36	125.62
2	D	201[A]	WXP	CAH-CAA-CAJ	2.56	132.78	126.04
2	D	201[B]	WXP	CAH-CAA-CAJ	2.56	132.78	126.04
2	B	201[B]	WXP	CBP-CBK-CBL	-2.54	115.34	118.57
2	B	201[A]	WXP	CAF-CAE-CAD	2.52	130.52	125.19
2	B	201[B]	WXP	CAF-CAE-CAD	2.52	130.52	125.19
2	A	201[B]	WXP	CBM-CBL-CBK	2.47	122.79	120.36
2	C	201[A]	WXP	CAZ-CAB-CAM	-2.41	113.35	117.88
2	C	201[B]	WXP	CAZ-CAB-CAM	-2.41	113.35	117.88
2	A	201[A]	WXP	CAW-CAD-CAE	2.37	129.36	124.25
2	A	201[B]	WXP	CAW-CAD-CAE	2.37	129.36	124.25
2	B	201[A]	WXP	CAC-CAT-NAX	2.37	128.15	125.62
2	B	201[B]	WXP	CAC-CAT-NAX	2.37	128.15	125.62
2	C	201[A]	WXP	CAQ-CAP-CAO	2.35	110.15	107.42
2	C	201[B]	WXP	CAQ-CAP-CAO	2.35	110.15	107.42
2	D	201[B]	WXP	CBP-CBK-CBL	-2.34	115.59	118.57
2	C	201[A]	WXP	CAB-CAO-NAS	2.34	128.41	125.77
2	C	201[B]	WXP	CAB-CAO-NAS	2.34	128.41	125.77
2	C	201[A]	WXP	CAH-CAA-CAJ	2.33	132.19	126.04
2	C	201[B]	WXP	CAH-CAA-CAJ	2.33	132.19	126.04
2	B	201[A]	WXP	CAQ-CAP-CAO	2.30	110.09	107.42
2	B	201[B]	WXP	CAQ-CAP-CAO	2.30	110.09	107.42
2	B	201[A]	WXP	CAH-CAA-CAJ	2.30	132.11	126.04
2	B	201[B]	WXP	CAH-CAA-CAJ	2.30	132.11	126.04
2	D	201[A]	WXP	CAZ-CAB-CAM	-2.30	113.56	117.88
2	D	201[B]	WXP	CAZ-CAB-CAM	-2.30	113.56	117.88

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	201[A]	WXP	CAG-CAF-CAE	2.30	110.09	107.42
2	B	201[B]	WXP	CAG-CAF-CAE	2.30	110.09	107.42
2	A	201[A]	WXP	CAD-CAW-NAX	2.27	128.05	125.62
2	A	201[B]	WXP	CAD-CAW-NAX	2.27	128.05	125.62
2	A	201[A]	WXP	CAU-CAT-CAC	2.27	131.74	125.74
2	A	201[B]	WXP	CAU-CAT-CAC	2.27	131.74	125.74
2	A	201[A]	WXP	CAQ-CAP-CAO	2.24	110.03	107.42
2	A	201[B]	WXP	CAQ-CAP-CAO	2.24	110.03	107.42
2	A	201[A]	WXP	CAY-CAD-CAE	-2.24	113.83	117.78
2	A	201[B]	WXP	CAY-CAD-CAE	-2.24	113.83	117.78
2	B	201[A]	WXP	CAU-CAT-CAC	2.21	131.58	125.74
2	B	201[B]	WXP	CAU-CAT-CAC	2.21	131.58	125.74
2	C	201[A]	WXP	CAK-CAL-CAM	2.18	110.22	107.47
2	C	201[B]	WXP	CAK-CAL-CAM	2.18	110.22	107.47
2	B	201[A]	WXP	CAL-CAK-CAJ	2.18	109.23	106.81
2	B	201[B]	WXP	CAL-CAK-CAJ	2.18	109.23	106.81
2	A	201[A]	WXP	CAL-CAK-CAJ	2.15	109.20	106.81
2	A	201[B]	WXP	CAL-CAK-CAJ	2.15	109.20	106.81
2	D	201[A]	WXP	CAK-CAL-CAM	2.15	110.17	107.47
2	D	201[B]	WXP	CAK-CAL-CAM	2.15	110.17	107.47
2	D	201[A]	WXP	CAW-CAD-CAE	2.14	128.88	124.25
2	D	201[B]	WXP	CAW-CAD-CAE	2.14	128.88	124.25
2	D	201[A]	WXP	CAQ-CAP-CAO	2.14	109.91	107.42
2	D	201[B]	WXP	CAQ-CAP-CAO	2.14	109.91	107.42
2	D	201[A]	WXP	CAL-CAK-CAJ	2.13	109.17	106.81
2	D	201[B]	WXP	CAL-CAK-CAJ	2.13	109.17	106.81
2	A	201[B]	WXP	CBP-CBK-CBL	-2.12	115.87	118.57
2	D	201[A]	WXP	CBE-CAZ-CAB	2.11	124.10	120.79
2	D	201[B]	WXP	CBE-CAZ-CAB	2.11	124.10	120.79
2	C	201[A]	WXP	CAL-CAK-CAJ	2.09	109.14	106.81
2	C	201[B]	WXP	CAL-CAK-CAJ	2.09	109.14	106.81
2	B	201[A]	WXP	CAU-CAV-CAW	2.08	110.02	107.55
2	B	201[B]	WXP	CAU-CAV-CAW	2.08	110.02	107.55
2	C	201[A]	WXP	CAG-CAF-CAE	2.08	109.84	107.42
2	C	201[B]	WXP	CAG-CAF-CAE	2.08	109.84	107.42
2	D	201[A]	WXP	CAM-CAB-CAO	2.07	129.26	124.19
2	D	201[B]	WXP	CAM-CAB-CAO	2.07	129.26	124.19
2	B	201[A]	WXP	CAW-CAD-CAE	2.06	128.71	124.25
2	B	201[B]	WXP	CAW-CAD-CAE	2.06	128.71	124.25
2	C	201[A]	WXP	CAU-CAT-CAC	2.06	131.16	125.74
2	C	201[B]	WXP	CAU-CAT-CAC	2.06	131.16	125.74
2	D	201[A]	WXP	CAU-CAT-CAC	2.04	131.13	125.74

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	201[B]	WXP	CAU-CAT-CAC	2.04	131.13	125.74
2	C	201[A]	WXP	CAW-CAD-CAE	2.03	128.64	124.25
2	C	201[B]	WXP	CAW-CAD-CAE	2.03	128.64	124.25
2	C	201[A]	WXP	CBO-CBP-CBK	2.03	122.36	120.36
2	D	201[A]	WXP	CAB-CAO-NAS	2.03	128.06	125.77
2	D	201[B]	WXP	CAB-CAO-NAS	2.03	128.06	125.77
2	D	201[A]	WXP	CAC-CAR-NAS	2.02	127.85	125.43
2	D	201[B]	WXP	CAC-CAR-NAS	2.02	127.85	125.43
2	A	201[A]	WXP	CAC-CAT-NAX	2.02	127.78	125.62
2	A	201[B]	WXP	CAC-CAT-NAX	2.02	127.78	125.62
2	B	201[A]	WXP	CAY-CAD-CAE	-2.01	114.23	117.78
2	B	201[B]	WXP	CAY-CAD-CAE	-2.01	114.23	117.78
2	C	201[A]	WXP	CAM-CAB-CAO	2.01	129.12	124.19
2	C	201[B]	WXP	CAM-CAB-CAO	2.01	129.12	124.19
2	A	201[A]	WXP	CAZ-CAB-CAM	-2.00	114.11	117.88
2	A	201[B]	WXP	CAZ-CAB-CAM	-2.00	114.11	117.88

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	202	PE8	O19-C20-C21-O22
3	D	202	PE8	O13-C14-C15-O16
3	D	202	PE8	O4-C5-C6-O7
3	D	202	PE8	O7-C8-C9-O10
3	A	203	PE8	O13-C14-C15-O16
3	D	202	PE8	O16-C17-C18-O19
3	D	202	PE8	O10-C11-C12-O13
3	D	202	PE8	O22-C23-C24-O25
3	A	203	PE8	O19-C20-C21-O22
3	A	203	PE8	O1-C2-C3-O4
3	A	203	PE8	O10-C11-C12-O13
3	D	202	PE8	C2-C3-O4-C5
3	A	203	PE8	C12-C11-O10-C9
3	A	203	PE8	C18-C17-O16-C15
3	D	202	PE8	C15-C14-O13-C12
3	D	202	PE8	O1-C2-C3-O4
3	A	203	PE8	O7-C8-C9-O10
3	A	203	PE8	C2-C3-O4-C5
3	B	202	PE8	O19-C20-C21-O22
3	B	202	PE8	O4-C5-C6-O7
3	A	203	PE8	C15-C14-O13-C12

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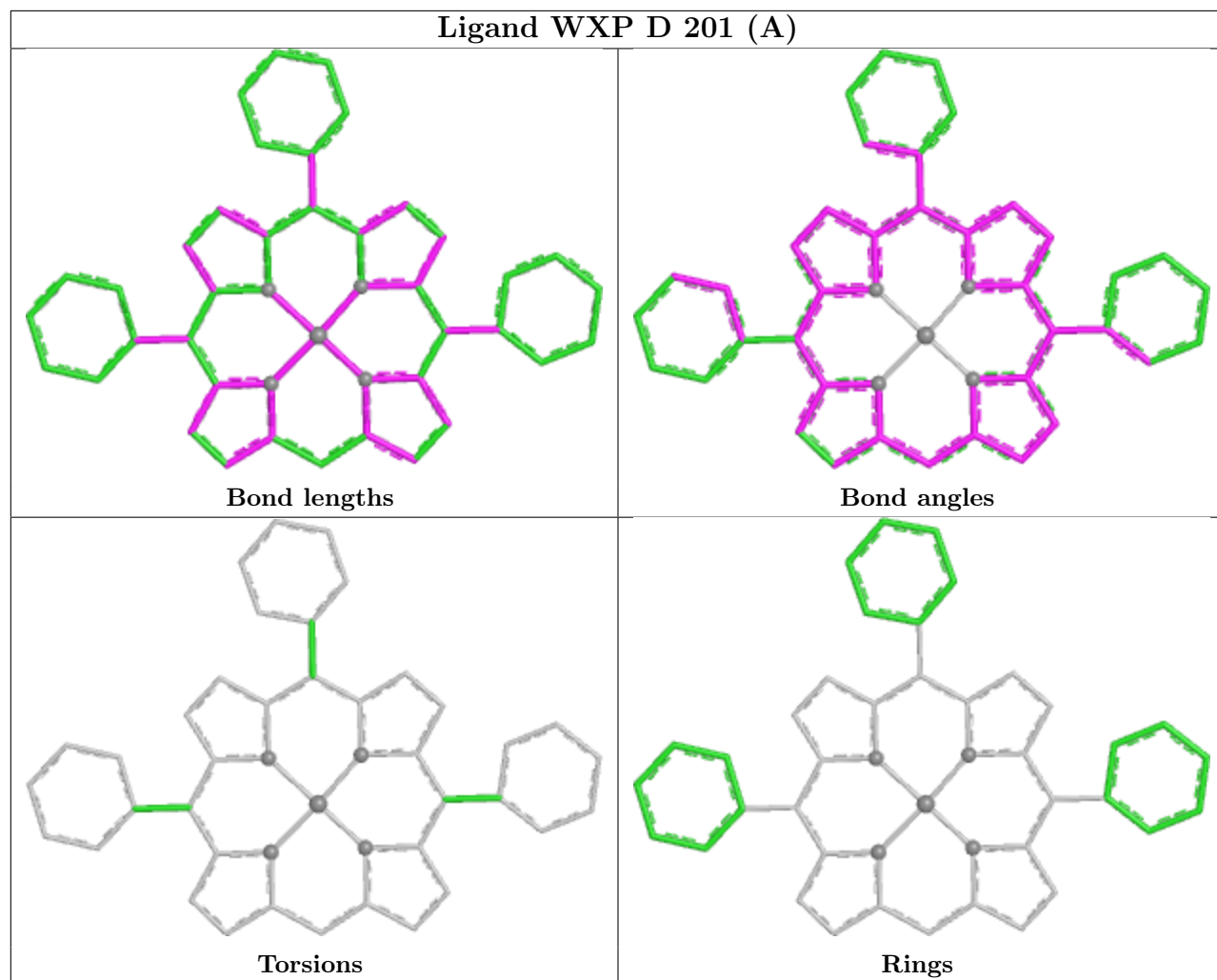
Mol	Chain	Res	Type	Atoms
3	A	203	PE8	O4-C5-C6-O7
3	A	203	PE8	O16-C17-C18-O19

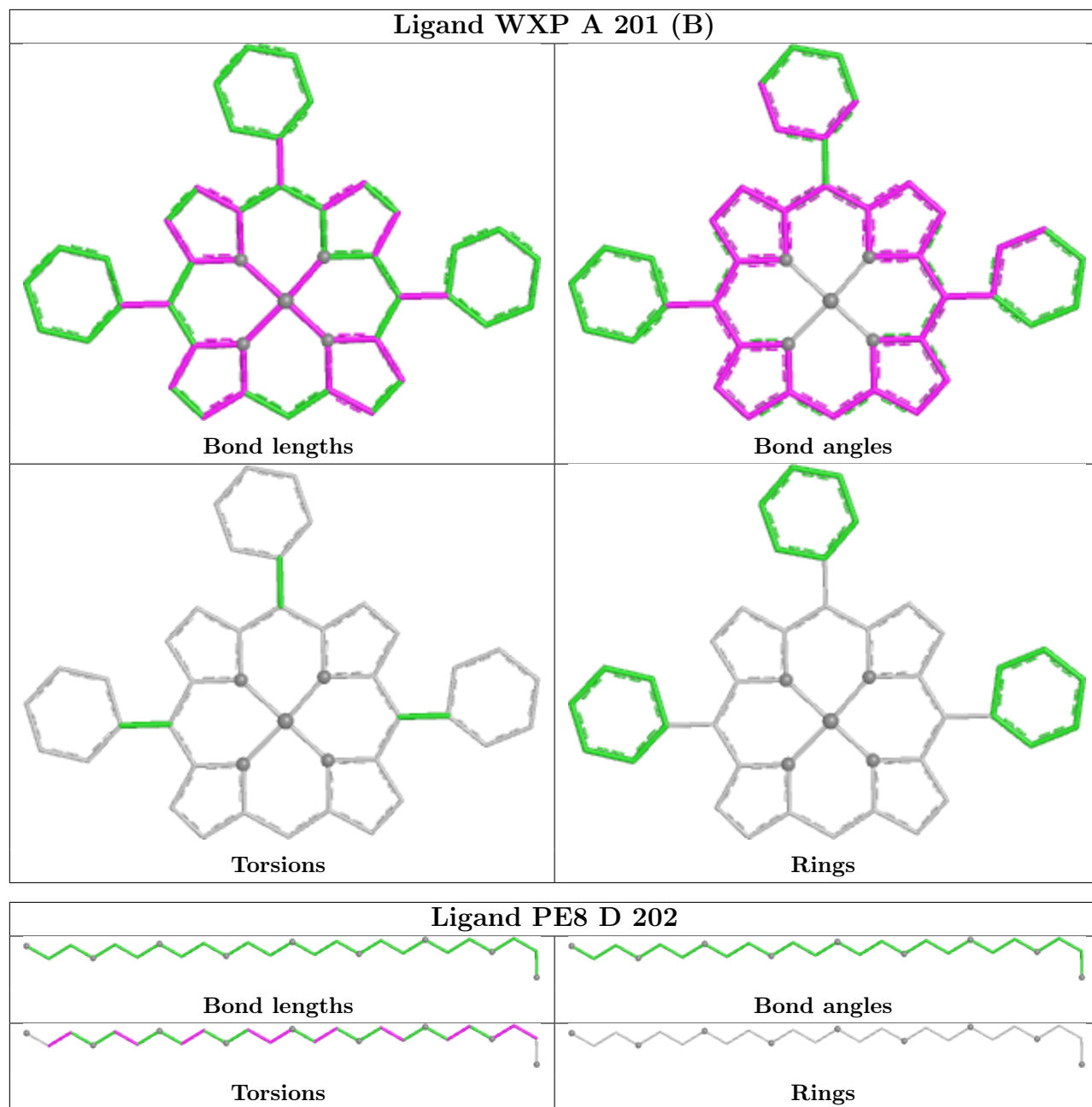
There are no ring outliers.

1 monomer is involved in 1 short contact:

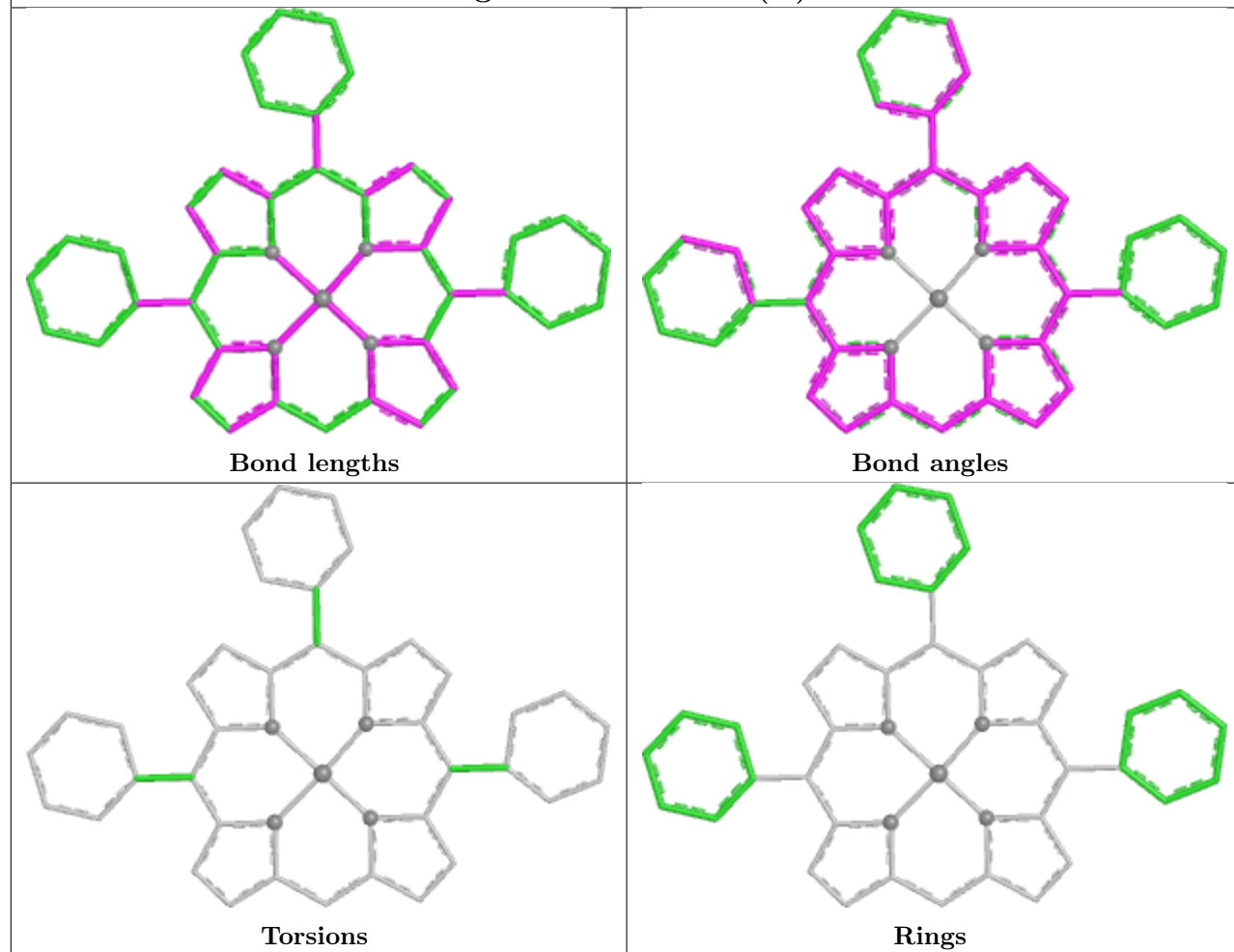
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	201[A]	WXP	1	0

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 than 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.

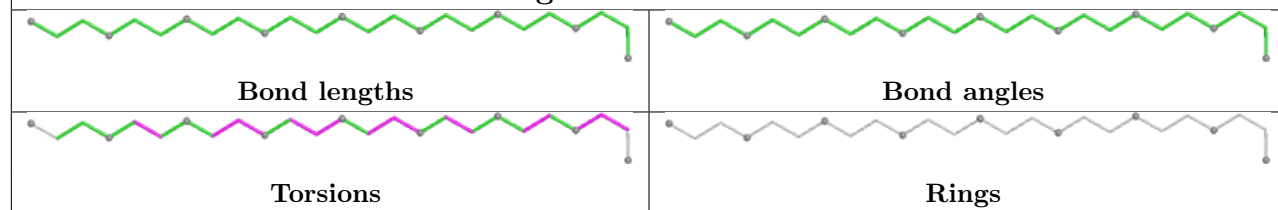




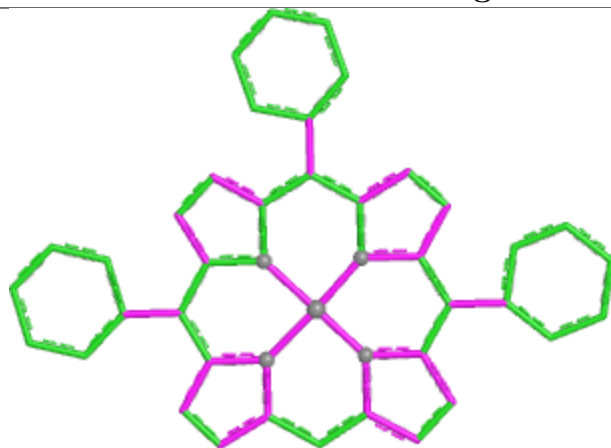
Ligand WXP C 201 (A)



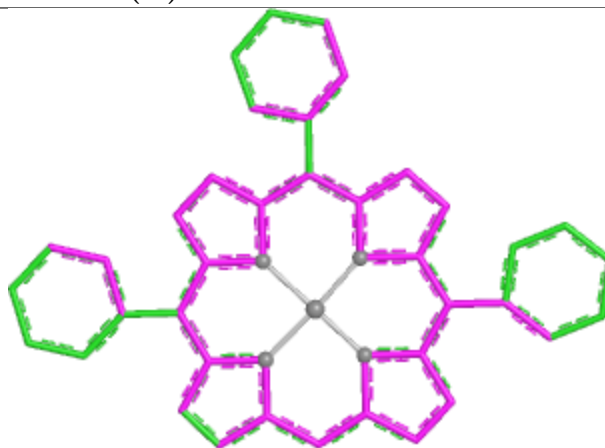
Ligand PE8 A 203



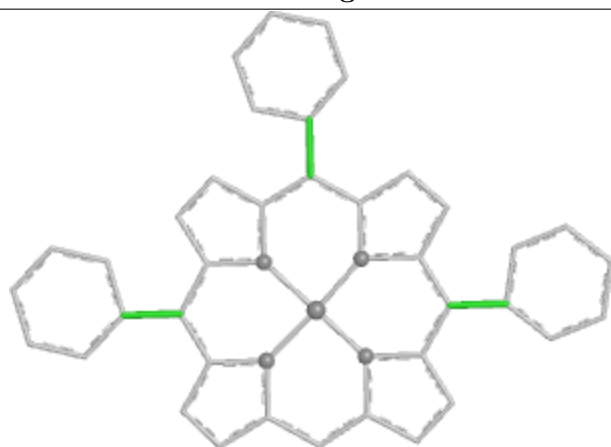
Ligand WXP D 201 (B)



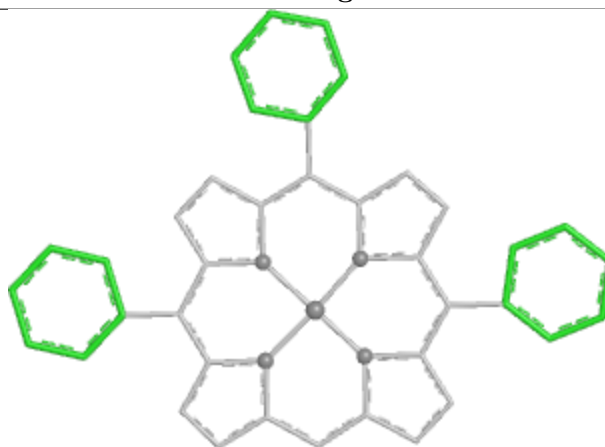
Bond lengths



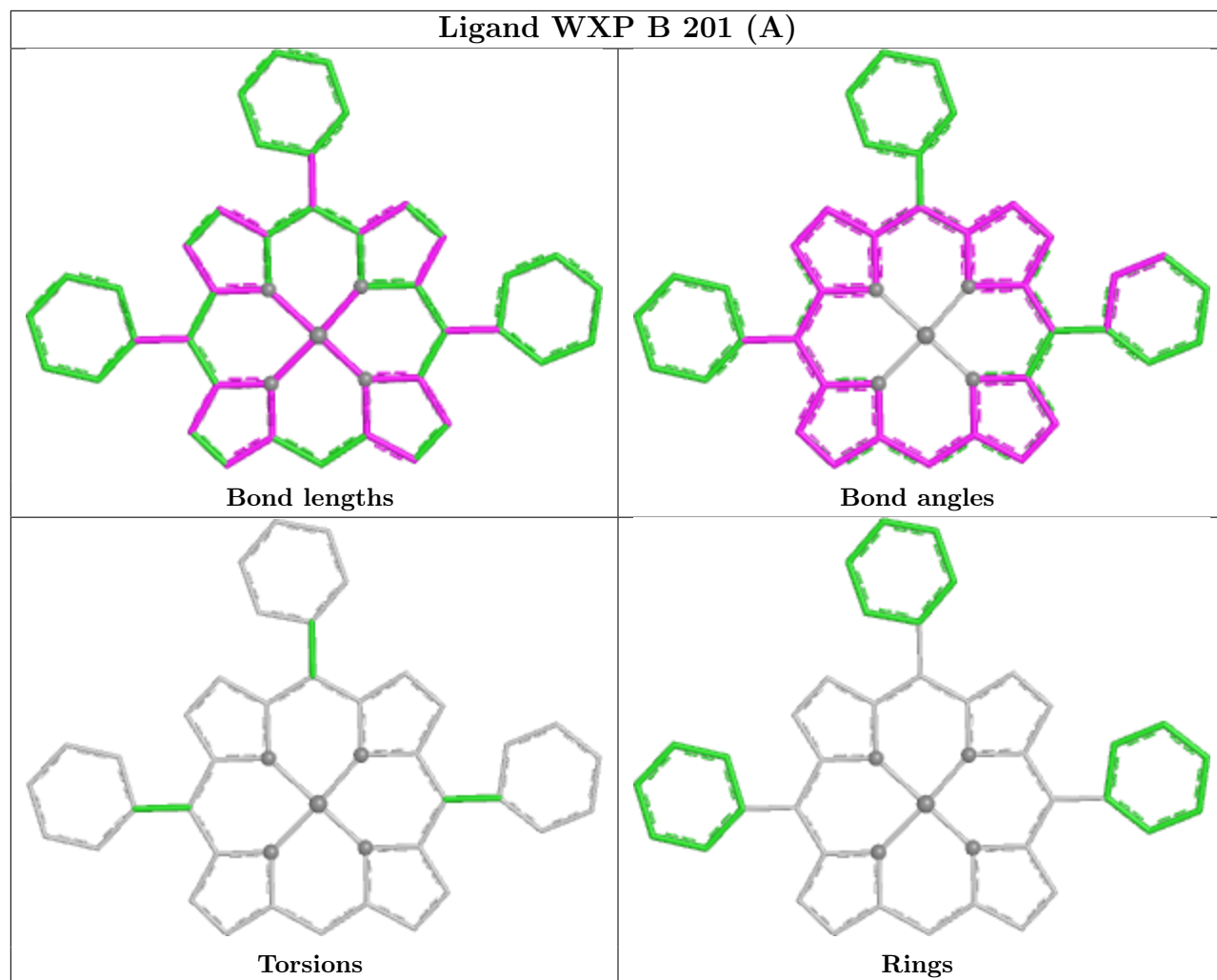
Bond angles

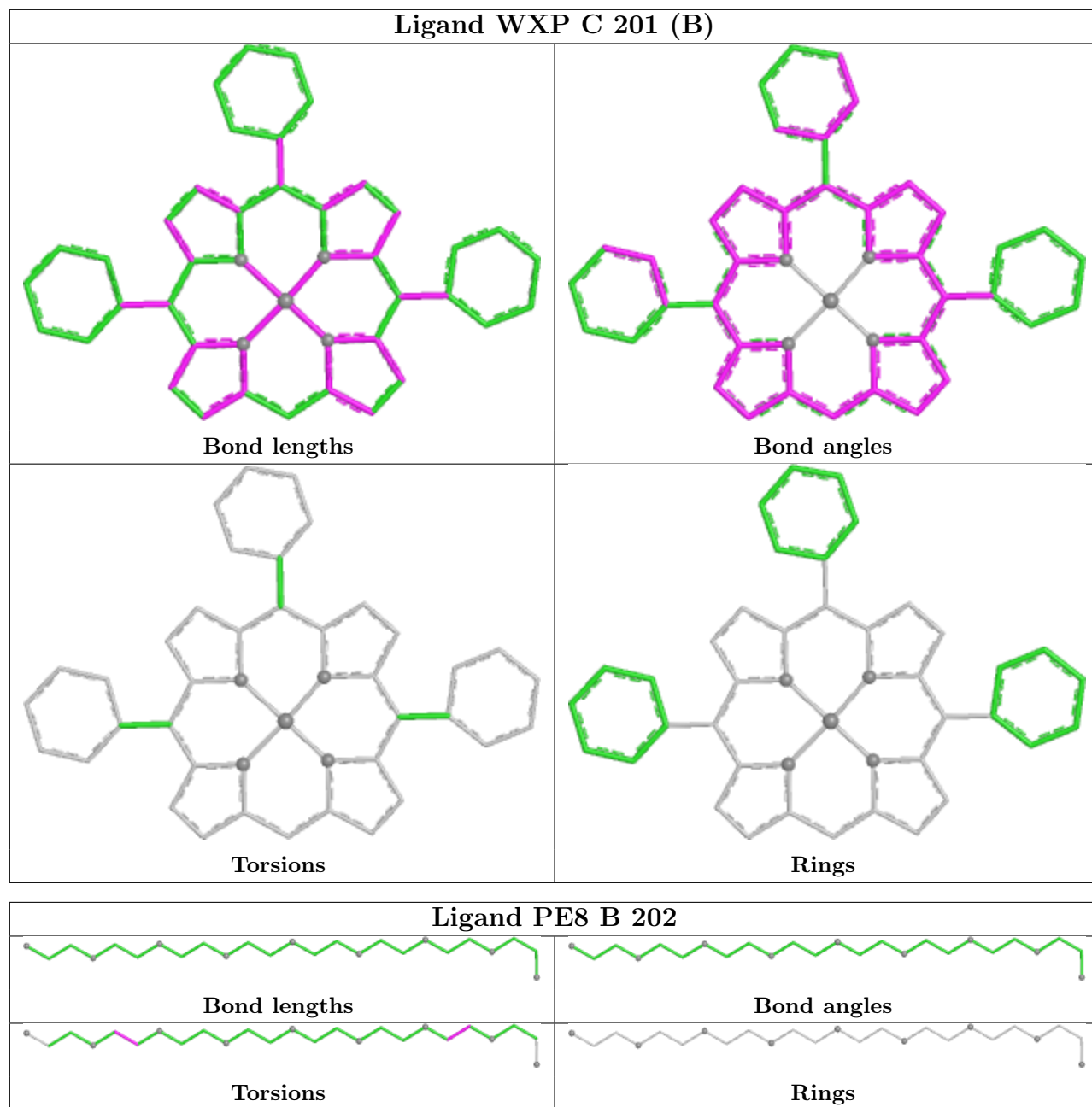


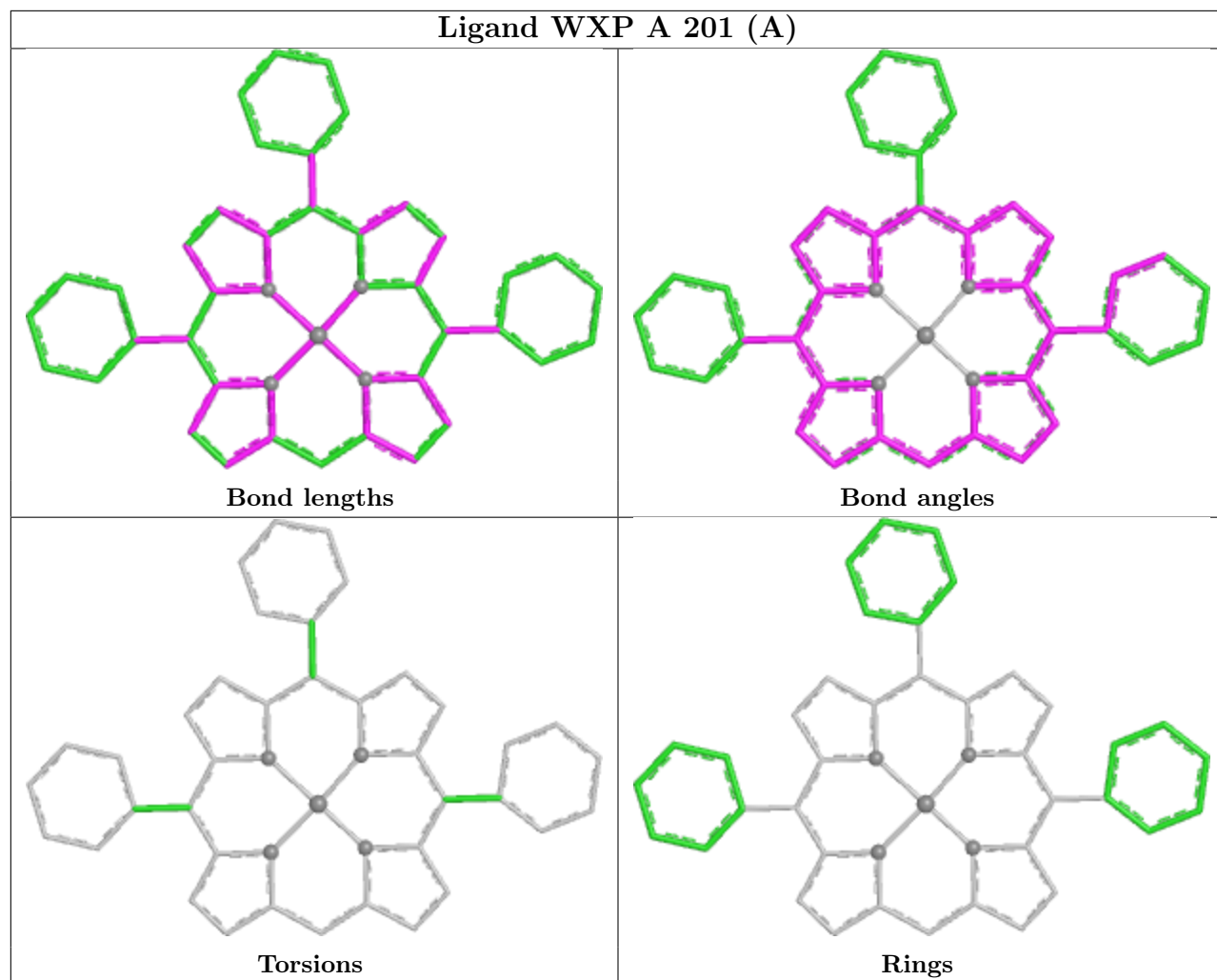
Torsions

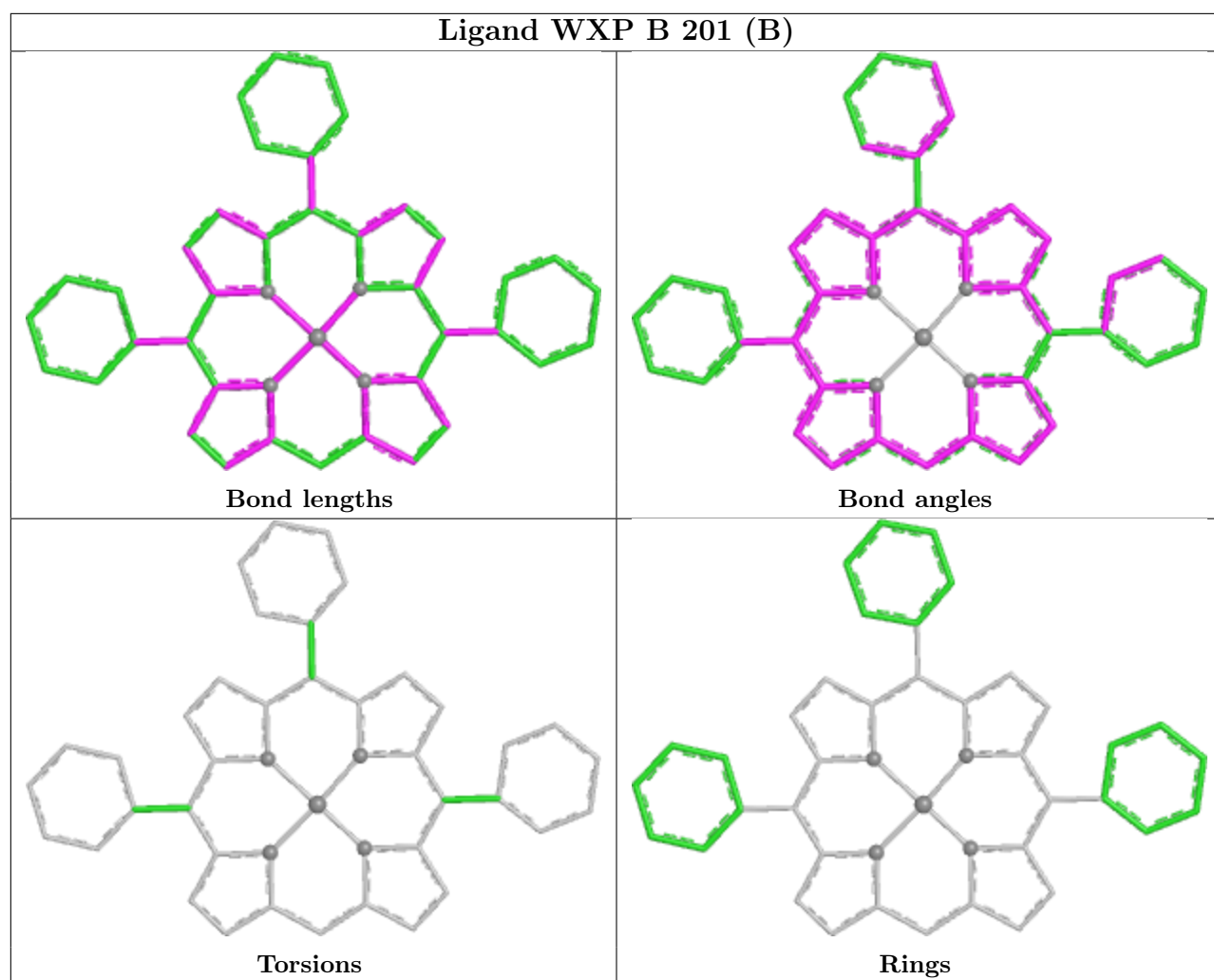


Rings









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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	184/184 (100%)	-0.77	0 100 100	5, 12, 20, 32	7 (3%)
1	B	184/184 (100%)	-0.71	0 100 100	5, 12, 20, 33	9 (4%)
1	C	184/184 (100%)	-0.71	0 100 100	5, 12, 19, 33	7 (3%)
1	D	184/184 (100%)	-0.68	0 100 100	5, 12, 20, 36	8 (4%)
All	All	736/736 (100%)	-0.72	0 100 100	5, 12, 20, 36	31 (4%)

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	PE8	A	203	25/25	0.97	0.07	39,41,44,45	0
3	PE8	B	202	25/25	0.97	0.06	16,18,21,22	0
3	PE8	D	202	25/25	0.97	0.07	40,42,46,46	0
3	PE8	A	202	25/25	0.98	0.05	15,16,20,21	0

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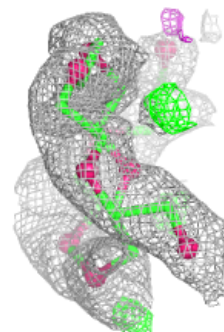
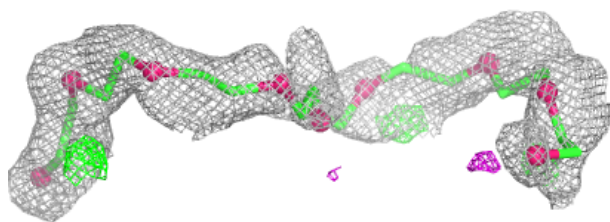
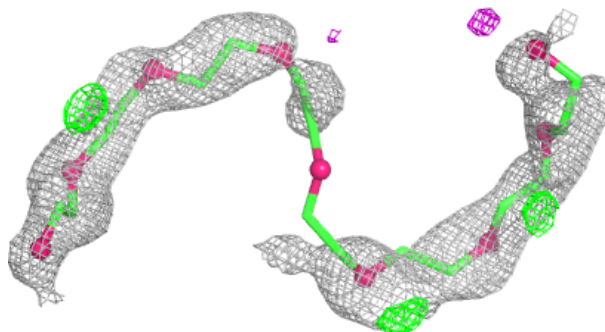
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	WXP	C	201[A]	43/43	0.99	0.04	9,11,12,12	6
2	WXP	C	201[B]	43/43	0.99	0.04	9,11,12,12	6
2	WXP	D	201[A]	43/43	0.99	0.04	9,11,12,12	6
2	WXP	D	201[B]	43/43	0.99	0.04	9,11,12,13	6
2	WXP	A	201[A]	43/43	0.99	0.04	9,11,12,13	6
2	WXP	A	201[B]	43/43	0.99	0.04	9,11,12,13	6
2	WXP	B	201[A]	43/43	0.99	0.04	9,12,13,13	6
2	WXP	B	201[B]	43/43	0.99	0.04	9,12,12,12	6

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.

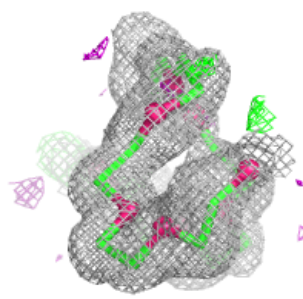
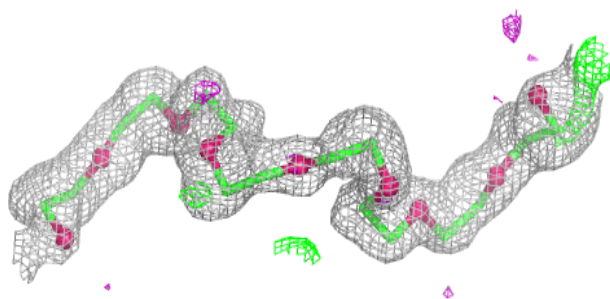
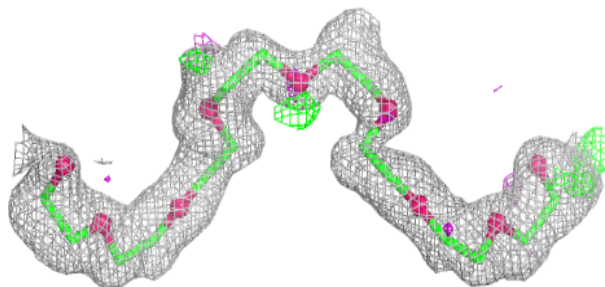
Electron density around PE8 A 203:

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

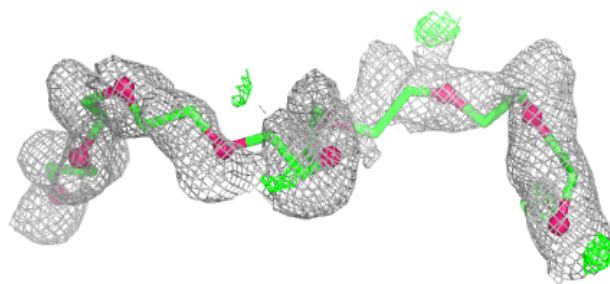
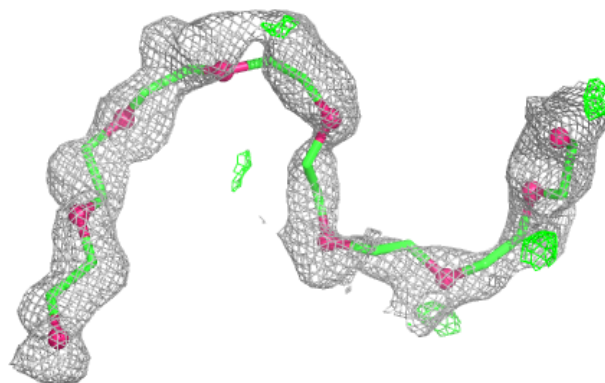


Electron density around PE8 B 202:

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

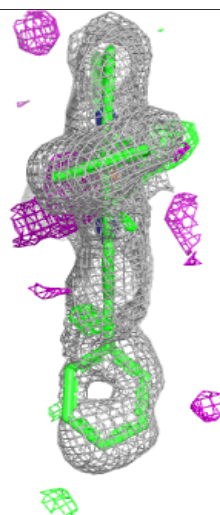
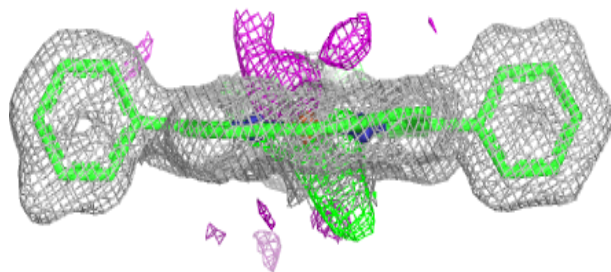
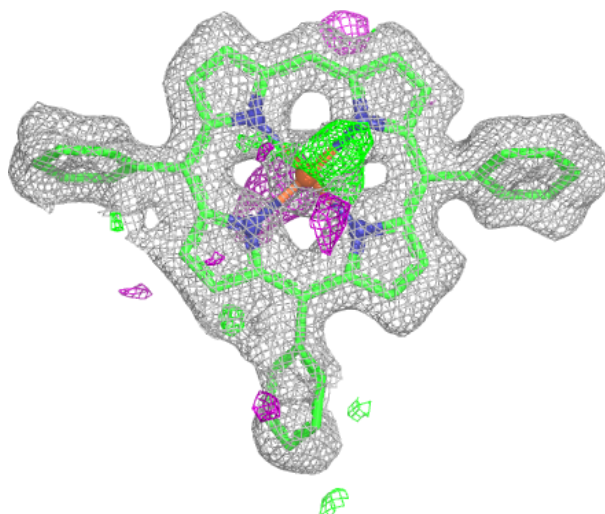
**Electron density around PE8 D 202:**

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



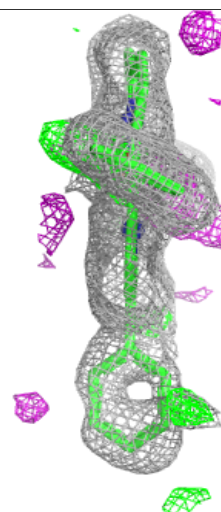
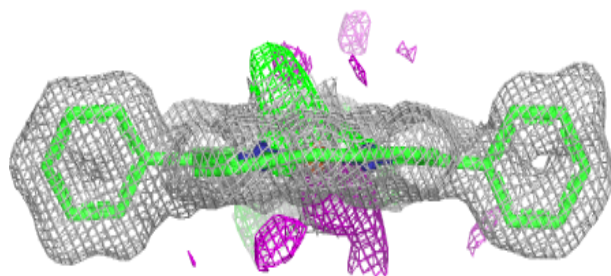
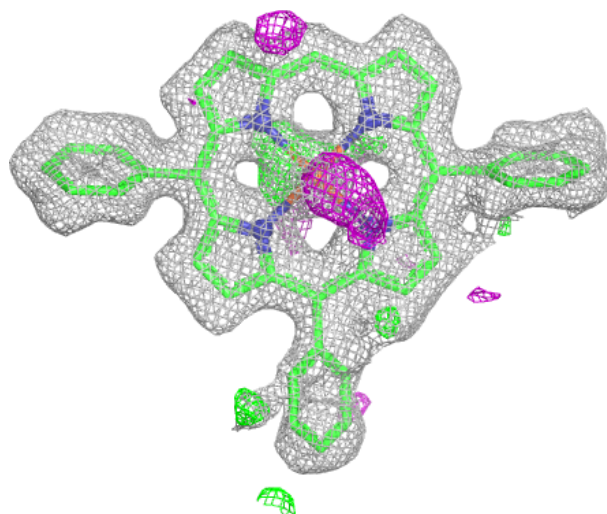
Electron density around WXP C 201 (A):

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



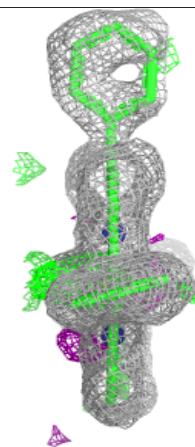
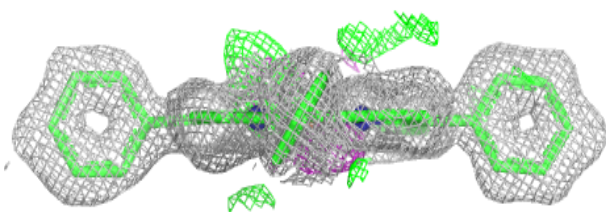
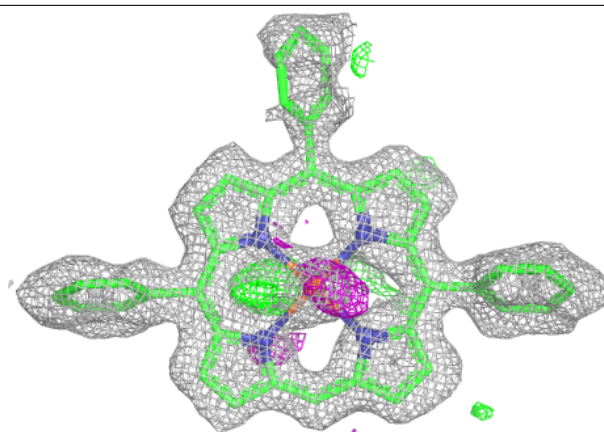
Electron density around WXP C 201 (B):

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



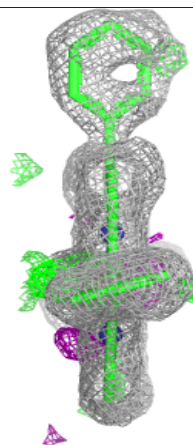
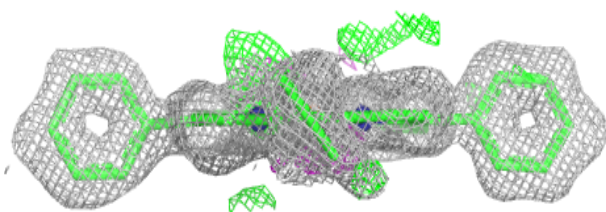
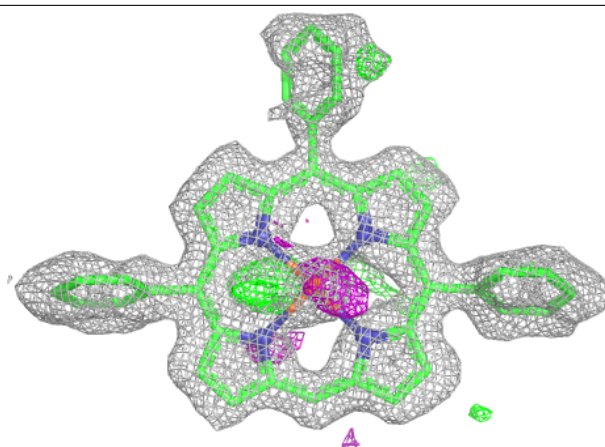
Electron density around WXP D 201 (A):

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



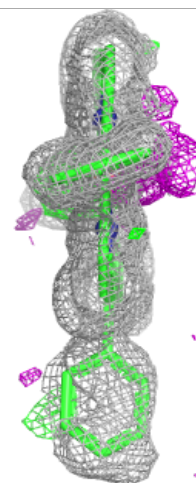
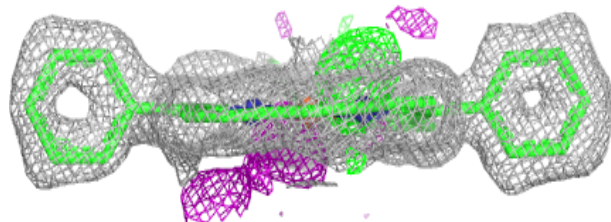
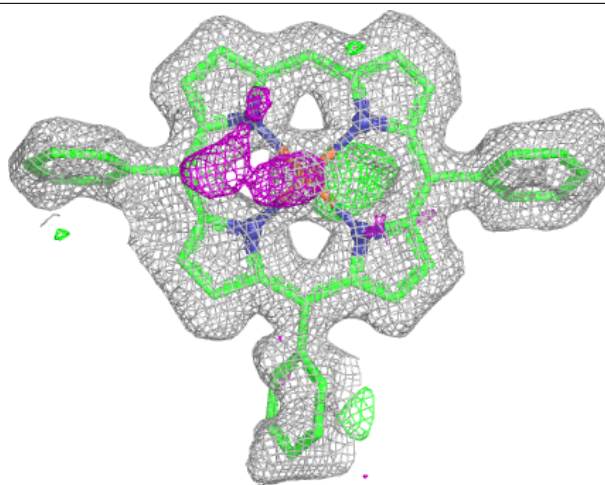
Electron density around WXP D 201 (B):

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



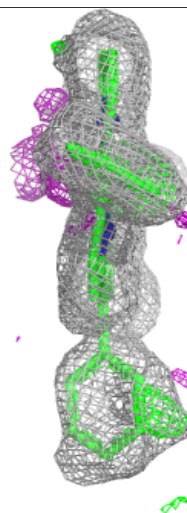
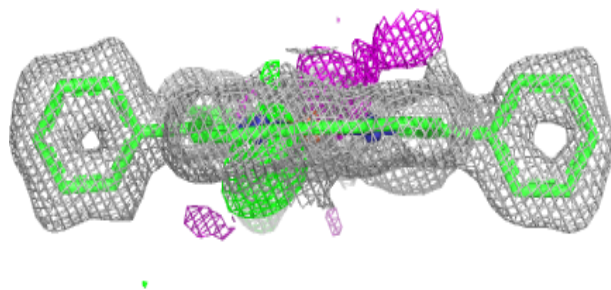
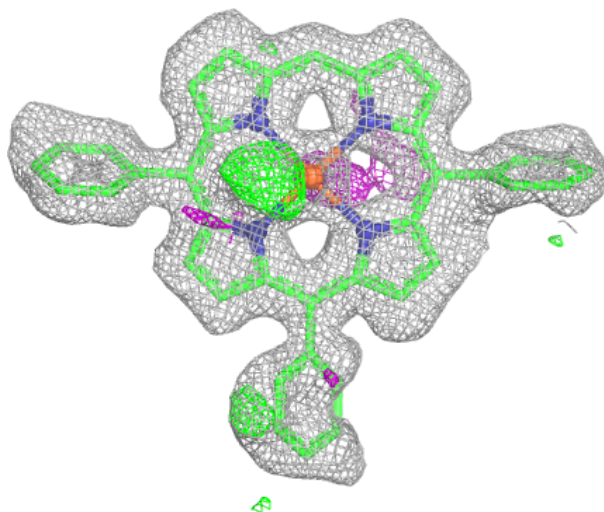
Electron density around WXP A 201 (A):

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



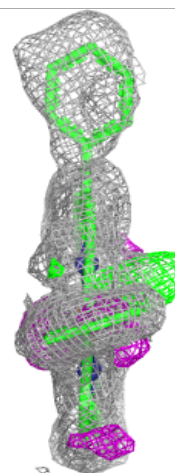
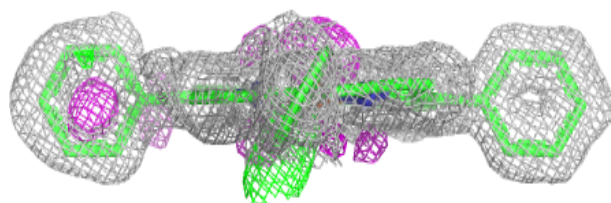
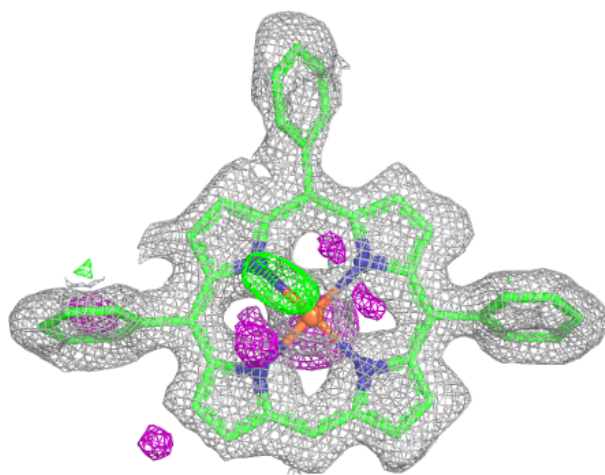
Electron density around WXP A 201 (B):

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



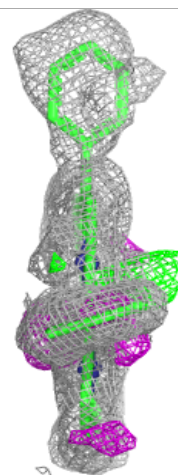
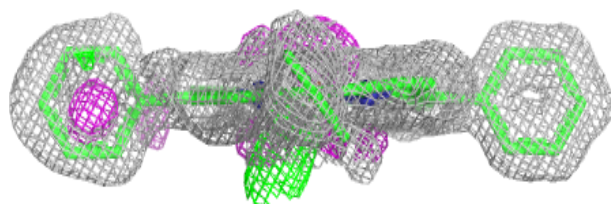
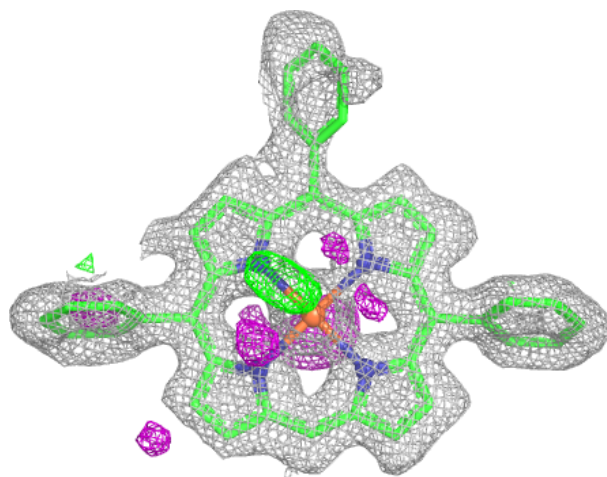
Electron density around WXP B 201 (A):

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



Electron density around WXP B 201 (B):

$2mF_o-DF_c$ (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.