



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2026 – 08:38 PM EDT

PDB ID : 3RO0 / pdb_00003ro0
Title : Crystal structure of Bacillus amyloliquefaciens pyroglutamyl peptidase I and terpyridine platinum(II)
Authors : Lo, Y.-C.; Wang, A.H.-J.
Deposited on : 2011-04-25
Resolution : 1.50 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	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

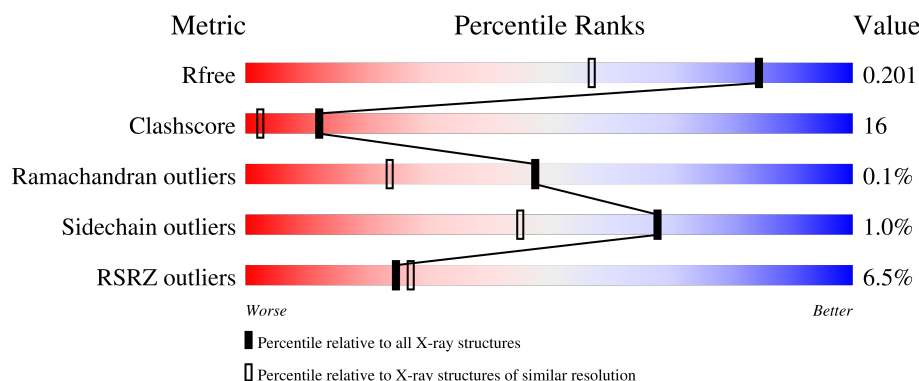
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.50 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	4037 (1.50-1.50)
Clashscore	190562	4235 (1.50-1.50)
Ramachandran outliers	187476	4153 (1.50-1.50)
Sidechain outliers	187428	4150 (1.50-1.50)
RSRZ outliers	180081	4039 (1.50-1.50)

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	223	 6% 75% 16% •• 7%
1	B	223	 5% 78% 13% •• 6%
1	C	223	 4% 76% 15% • 7%
1	D	223	 9% 74% 14% •• 8%

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	TPT	A	480	-	-	X	-
2	TPT	D	484	-	-	X	-

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 7398 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 Pyrrolidone-carboxylate peptidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	207	Total	C	N	O	S	0	0	0
			1585	1007	276	297	5			
1	B	209	Total	C	N	O	S	0	0	0
			1600	1016	278	300	6			
1	C	207	Total	C	N	O	S	0	0	0
			1584	1007	276	295	6			
1	D	206	Total	C	N	O	S	0	0	0
			1576	1002	275	294	5			

There are 40 discrepancies between the modelled and reference sequences:

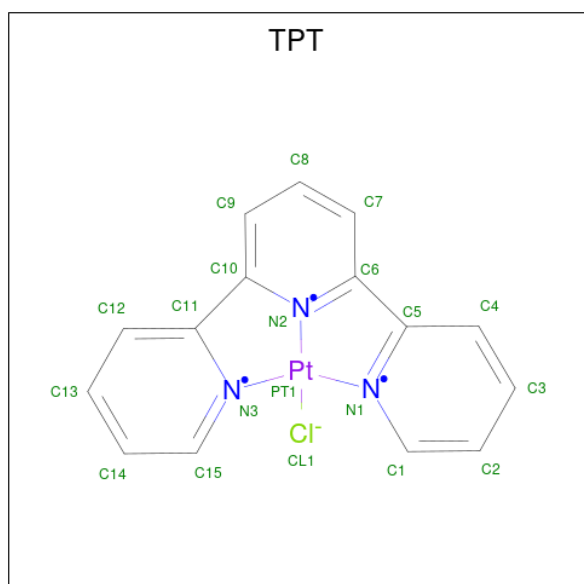
Chain	Residue	Modelled	Actual	Comment	Reference
A	58	MET	ILE	engineered mutation	UNP P46107
A	202	ALA	VAL	engineered mutation	UNP P46107
A	216	LEU	-	expression tag	UNP P46107
A	217	GLU	-	expression tag	UNP P46107
A	218	HIS	-	expression tag	UNP P46107
A	219	HIS	-	expression tag	UNP P46107
A	220	HIS	-	expression tag	UNP P46107
A	221	HIS	-	expression tag	UNP P46107
A	222	HIS	-	expression tag	UNP P46107
A	223	HIS	-	expression tag	UNP P46107
B	58	MET	ILE	engineered mutation	UNP P46107
B	202	ALA	VAL	engineered mutation	UNP P46107
B	216	LEU	-	expression tag	UNP P46107
B	217	GLU	-	expression tag	UNP P46107
B	218	HIS	-	expression tag	UNP P46107
B	219	HIS	-	expression tag	UNP P46107
B	220	HIS	-	expression tag	UNP P46107
B	221	HIS	-	expression tag	UNP P46107
B	222	HIS	-	expression tag	UNP P46107
B	223	HIS	-	expression tag	UNP P46107
C	58	MET	ILE	engineered mutation	UNP P46107

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Chain	Residue	Modelled	Actual	Comment	Reference
C	202	ALA	VAL	engineered mutation	UNP P46107
C	216	LEU	-	expression tag	UNP P46107
C	217	GLU	-	expression tag	UNP P46107
C	218	HIS	-	expression tag	UNP P46107
C	219	HIS	-	expression tag	UNP P46107
C	220	HIS	-	expression tag	UNP P46107
C	221	HIS	-	expression tag	UNP P46107
C	222	HIS	-	expression tag	UNP P46107
C	223	HIS	-	expression tag	UNP P46107
D	58	MET	ILE	engineered mutation	UNP P46107
D	202	ALA	VAL	engineered mutation	UNP P46107
D	216	LEU	-	expression tag	UNP P46107
D	217	GLU	-	expression tag	UNP P46107
D	218	HIS	-	expression tag	UNP P46107
D	219	HIS	-	expression tag	UNP P46107
D	220	HIS	-	expression tag	UNP P46107
D	221	HIS	-	expression tag	UNP P46107
D	222	HIS	-	expression tag	UNP P46107
D	223	HIS	-	expression tag	UNP P46107

- Molecule 2 is 2,2':6',2''-TERPYRIDINE PLATINUM(II) Chloride (CCD ID: TPT) (formula: $C_{15}H_{11}ClN_3Pt$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	Pt	0	0
			19	15	3	1		

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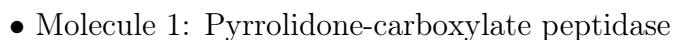
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	Pt	0	0
			19	15	3	1		
2	C	1	Total	C	N	Pt	0	0
			19	15	3	1		
2	D	1	Total	C	N	Pt	0	0
			19	15	3	1		
2	D	1	Total	C	N	Pt	0	0
			19	15	3	1		

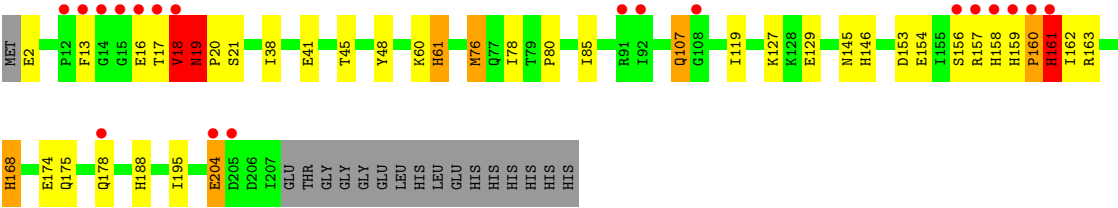
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	247	Total	O	0	0
			247	247		
3	B	247	Total	O	0	0
			247	247		
3	C	245	Total	O	0	0
			245	245		
3	D	219	Total	O	0	0
			219	219		

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- Molecule 1: Pyrrolidone-carboxylate peptidase





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	290.32Å 45.52Å 67.99Å 90.00° 91.48° 90.00°	Depositor
Resolution (Å)	30.00 – 1.50 30.00 – 1.50	Depositor EDS
% Data completeness (in resolution range)	83.1 (30.00-1.50) 83.3 (30.00-1.50)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.83 (at 1.50Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.179 , 0.205 0.175 , 0.201	Depositor DCC
R_{free} test set	6248 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	14.3	Xtriage
Anisotropy	0.566	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 44.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.022 for -h,-k,l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	7398	wwPDB-VP
Average B, all atoms (Å ²)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.23% 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

5.1 Standard geometry

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

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	1.12	1/1622 (0.1%)	1.21	7/2204 (0.3%)
1	B	1.11	0/1637	1.27	12/2224 (0.5%)
1	C	1.19	1/1621 (0.1%)	1.22	8/2202 (0.4%)
1	D	1.12	1/1613 (0.1%)	1.33	21/2192 (1.0%)
All	All	1.13	3/6493 (0.0%)	1.26	48/8822 (0.5%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	D	0	1
All	All	0	2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	76	MET	SD-CE	-10.31	1.53	1.79
1	C	162	ILE	CA-CB	6.32	1.61	1.54
1	A	19	ASN	CA-C	-5.04	1.48	1.52

All (48) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	162	ILE	N-CA-C	-9.67	96.21	109.55
1	B	15	GLY	N-CA-C	-9.27	102.86	114.92
1	B	168	HIS	CB-CG-CD2	-8.96	119.55	131.20
1	D	168	HIS	CB-CG-CD2	-8.44	120.23	131.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	17	THR	N-CA-C	-8.44	100.95	113.61
1	D	160	PRO	N-CA-C	7.79	123.60	113.86
1	B	168	HIS	CB-CG-ND1	7.62	134.13	122.70
1	C	15	GLY	N-CA-C	-7.57	104.94	113.79
1	D	107	GLN	CA-C-N	-7.52	109.39	122.09
1	D	107	GLN	C-N-CA	-7.52	109.39	122.09
1	A	168	HIS	CB-CG-CD2	-7.36	121.63	131.20
1	C	168	HIS	CB-CG-CD2	-7.18	121.87	131.20
1	B	13	PHE	N-CA-C	6.92	117.40	108.34
1	D	160	PRO	O-C-N	6.89	131.67	122.30
1	B	19	ASN	N-CA-CB	6.79	120.05	110.07
1	D	168	HIS	CB-CG-ND1	6.74	132.81	122.70
1	D	156	SER	CA-C-N	6.72	130.13	120.79
1	D	156	SER	C-N-CA	6.72	130.13	120.79
1	D	38	ILE	N-CA-C	6.51	118.42	108.71
1	A	168	HIS	CB-CG-ND1	6.49	132.43	122.70
1	C	78	ILE	N-CA-C	-6.29	101.44	109.30
1	B	14	GLY	N-CA-C	6.23	127.96	113.18
1	D	61	HIS	N-CA-C	6.20	120.92	113.23
1	D	119	ILE	N-CA-C	6.13	118.75	111.09
1	D	18	VAL	N-CA-C	5.99	116.70	107.78
1	D	78	ILE	N-CA-C	-5.96	101.86	109.30
1	B	61	HIS	N-CA-C	5.87	120.60	113.38
1	C	168	HIS	CB-CG-ND1	5.85	131.48	122.70
1	A	78	ILE	N-CA-C	-5.84	102.00	109.30
1	D	18	VAL	CA-C-N	-5.83	111.61	121.76
1	D	18	VAL	C-N-CA	-5.83	111.61	121.76
1	C	119	ILE	N-CA-C	5.71	118.22	111.09
1	B	83	VAL	N-CA-C	5.63	116.78	108.45
1	D	161	HIS	O-C-N	-5.59	114.26	122.43
1	A	61	HIS	N-CA-C	5.59	120.38	113.50
1	C	9	GLY	N-CA-C	-5.58	102.64	110.96
1	D	161	HIS	CA-CB-CG	5.53	119.33	113.80
1	C	160	PRO	N-CA-C	5.45	120.92	113.84
1	A	13	PHE	CB-CA-C	-5.45	99.51	110.30
1	D	80	PRO	N-CA-C	-5.41	102.70	111.19
1	A	83	VAL	N-CA-C	5.40	115.47	108.35
1	A	38	ILE	N-CA-C	5.38	116.72	108.71
1	D	19	ASN	N-CA-CB	5.24	117.77	110.07
1	B	160	PRO	N-CA-C	5.16	120.55	113.84
1	B	19	ASN	CA-C-N	5.13	125.42	119.47
1	B	19	ASN	C-N-CA	5.13	125.42	119.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	17	THR	N-CA-C	-5.08	107.75	114.31
1	C	92	ILE	N-CA-C	-5.05	103.31	109.01

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	13	PHE	Sidechain
1	D	161	HIS	Mainchain

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	1585	0	1583	54	0
1	B	1600	0	1602	46	0
1	C	1584	0	1589	43	0
1	D	1576	0	1577	49	0
2	A	19	0	11	17	0
2	B	19	0	11	6	0
2	C	19	0	11	4	0
2	D	38	0	22	11	0
3	A	247	0	0	21	0
3	B	247	0	0	16	0
3	C	245	0	0	16	0
3	D	219	0	0	13	0
All	All	7398	0	6406	200	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 16.

All (200) 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:13:PHE:CE2	1:A:92:ILE:HD12	1.54	1.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:480:TPT:C6	3:A:910:HOH:O	1.76	1.27
1:A:13:PHE:HE2	1:A:92:ILE:CD1	1.45	1.27
2:A:480:TPT:C7	3:A:910:HOH:O	1.81	1.20
1:A:13:PHE:CE2	1:A:92:ILE:CD1	2.21	1.12
1:C:17:THR:HA	3:C:437:HOH:O	1.50	1.07
1:B:17:THR:HA	3:B:733:HOH:O	1.55	1.04
1:A:20:PRO:HG3	3:A:559:HOH:O	1.59	1.02
2:A:480:TPT:C5	3:A:910:HOH:O	1.93	0.99
1:B:13:PHE:CD2	1:B:14:GLY:N	2.30	0.98
1:A:13:PHE:HB3	2:A:480:TPT:H4	1.44	0.98
1:D:157:ARG:HG3	3:D:958:HOH:O	1.65	0.94
1:C:14:GLY:HA2	3:C:469:HOH:O	1.68	0.94
1:C:18:VAL:HA	3:C:523:HOH:O	1.68	0.91
1:B:88:ASN:HD21	1:B:146:HIS:HD2	1.19	0.91
2:A:480:TPT:C4	3:A:910:HOH:O	2.11	0.91
1:A:13:PHE:HE2	1:A:92:ILE:HD12	0.75	0.91
1:B:13:PHE:O	3:B:602:HOH:O	1.87	0.91
1:D:157:ARG:HG2	1:D:158:HIS:CE1	2.08	0.89
1:A:88:ASN:HD21	1:A:146:HIS:HD2	1.14	0.89
1:D:204:GLU:H	1:D:204:GLU:CD	1.80	0.88
1:C:107:GLN:CD	1:C:107:GLN:H	1.83	0.87
1:A:13:PHE:HD1	1:A:95:ASN:OD1	1.58	0.85
2:D:484:TPT:C9	3:D:688:HOH:O	2.26	0.84
1:B:19:ASN:HD22	1:B:21:SER:H	1.26	0.83
1:A:48:TYR:H	1:A:146:HIS:CE1	1.97	0.82
1:A:13:PHE:CE2	1:A:92:ILE:HD11	2.14	0.81
1:D:154:GLU:OE1	1:D:157:ARG:NH2	2.15	0.80
1:D:157:ARG:CG	3:D:958:HOH:O	2.27	0.80
1:A:71:GLN:HG3	3:A:559:HOH:O	1.81	0.80
1:A:13:PHE:CB	2:A:480:TPT:H4	2.10	0.80
1:B:88:ASN:HD21	1:B:146:HIS:CD2	2.01	0.78
1:A:13:PHE:CD1	1:A:95:ASN:OD1	2.36	0.78
1:D:157:ARG:HG2	1:D:158:HIS:ND1	1.98	0.78
1:C:48:TYR:H	1:C:146:HIS:CE1	2.01	0.77
1:D:48:TYR:H	1:D:146:HIS:CE1	2.02	0.77
1:B:85:ILE:H	1:B:145:ASN:HD21	1.33	0.76
1:B:17:THR:HG23	1:B:18:VAL:HG13	1.68	0.76
1:A:13:PHE:CG	1:A:14:GLY:N	2.53	0.76
1:A:88:ASN:HD21	1:A:146:HIS:CD2	2.02	0.75
1:D:19:ASN:HD22	1:D:21:SER:H	1.35	0.75
1:A:48:TYR:H	1:A:146:HIS:HE1	1.34	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:18:VAL:O	1:B:20:PRO:HD3	1.88	0.74
1:A:19:ASN:HD22	1:A:21:SER:H	1.33	0.74
1:A:85:ILE:H	1:A:145:ASN:HD21	1.36	0.73
1:A:163:ARG:HD2	3:A:277:HOH:O	1.88	0.73
1:A:163:ARG:HH11	1:A:204:GLU:HA	1.52	0.73
1:C:18:VAL:CA	3:C:523:HOH:O	2.29	0.73
1:C:85:ILE:H	1:C:145:ASN:HD21	1.32	0.73
1:C:17:THR:CA	3:C:437:HOH:O	2.21	0.72
1:D:48:TYR:H	1:D:146:HIS:HE1	1.36	0.72
1:B:48:TYR:H	1:B:146:HIS:CE1	2.07	0.72
1:B:204:GLU:HB2	3:B:406:HOH:O	1.90	0.71
1:D:18:VAL:O	1:D:20:PRO:HD3	1.90	0.71
1:C:17:THR:O	3:C:582:HOH:O	2.08	0.71
1:A:13:PHE:CZ	1:A:93:PRO:O	2.43	0.71
1:B:48:TYR:H	1:B:146:HIS:HE1	1.39	0.71
1:D:157:ARG:CB	3:D:958:HOH:O	2.39	0.71
1:C:1:MET:HB3	3:C:254:HOH:O	1.90	0.71
1:D:85:ILE:H	1:D:145:ASN:HD21	1.39	0.71
1:C:48:TYR:H	1:C:146:HIS:HE1	1.38	0.70
1:D:107:GLN:NE2	3:D:485:HOH:O	2.22	0.70
1:D:153:ASP:O	1:D:157:ARG:HB2	1.92	0.69
1:A:61:HIS:HD2	3:A:226:HOH:O	1.74	0.69
1:D:159:HIS:HD2	2:D:484:TPT:C4	2.04	0.69
1:C:1:MET:HG3	1:C:2:GLU:H	1.58	0.69
1:D:2:GLU:N	3:D:824:HOH:O	2.26	0.68
1:A:107:GLN:NE2	3:A:319:HOH:O	2.26	0.68
1:B:45:THR:HG21	2:B:481:TPT:C3	2.24	0.67
1:B:59:LYS:N	1:B:59:LYS:HD3	2.09	0.67
1:A:41:GLU:OE2	1:A:61:HIS:HE1	1.78	0.67
1:C:163:ARG:N	1:C:163:ARG:HD2	2.09	0.67
1:B:163:ARG:HD2	3:B:631:HOH:O	1.94	0.66
1:A:13:PHE:CD2	1:A:14:GLY:N	2.64	0.66
1:D:157:ARG:HG2	1:D:158:HIS:CG	2.31	0.66
1:B:16:GLU:HB2	3:B:267:HOH:O	1.95	0.66
1:C:1:MET:HE3	1:C:2:GLU:H	1.61	0.65
1:D:174:GLU:HG3	3:D:365:HOH:O	1.95	0.65
1:C:45:THR:HG21	2:C:482:TPT:C13	2.26	0.65
1:C:15:GLY:N	3:C:469:HOH:O	2.26	0.65
1:D:154:GLU:OE2	1:D:158:HIS:HD2	1.81	0.64
1:B:13:PHE:CD2	2:B:481:TPT:H4	2.34	0.62
1:A:205:ASP:HB3	3:A:410:HOH:O	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1:MET:HG3	1:C:2:GLU:N	2.14	0.62
1:D:41:GLU:OE2	1:D:61:HIS:HE1	1.83	0.61
1:B:71:GLN:HG3	3:B:318:HOH:O	1.99	0.61
1:C:41:GLU:OE2	1:C:61:HIS:HE1	1.84	0.61
1:B:19:ASN:ND2	1:B:21:SER:H	1.95	0.60
1:C:162:ILE:C	1:C:163:ARG:HD2	2.26	0.60
1:D:61:HIS:HD2	3:D:328:HOH:O	1.82	0.60
1:B:61:HIS:HD2	3:B:475:HOH:O	1.83	0.60
1:A:2:GLU:N	3:A:649:HOH:O	2.34	0.60
1:A:14:GLY:O	3:A:509:HOH:O	2.17	0.60
1:D:157:ARG:CG	1:D:158:HIS:CE1	2.85	0.60
1:C:13:PHE:O	1:C:16:GLU:HB2	2.03	0.59
1:D:45:THR:HG21	2:D:483:TPT:C3	2.33	0.59
1:A:20:PRO:CG	3:A:559:HOH:O	2.33	0.59
1:C:17:THR:C	3:C:437:HOH:O	2.42	0.59
2:A:480:TPT:H7	3:A:910:HOH:O	1.72	0.58
1:D:161:HIS:HB2	2:D:484:TPT:H1	1.86	0.58
1:B:13:PHE:C	3:B:602:HOH:O	2.40	0.58
1:C:1:MET:CG	1:C:2:GLU:H	2.15	0.58
1:C:1:MET:CE	1:C:2:GLU:H	2.17	0.57
2:A:480:TPT:C1	3:A:284:HOH:O	2.52	0.57
1:B:13:PHE:CD2	1:B:14:GLY:CA	2.87	0.57
1:D:157:ARG:CD	1:D:158:HIS:NE2	2.68	0.56
1:B:203:HIS:HD2	3:B:769:HOH:O	1.88	0.56
1:C:18:VAL:HG23	1:C:18:VAL:O	2.04	0.56
1:A:19:ASN:ND2	1:A:21:SER:H	2.02	0.56
1:A:13:PHE:CZ	1:A:92:ILE:HD12	2.32	0.56
1:D:153:ASP:OD2	1:D:157:ARG:NH1	2.30	0.56
1:A:13:PHE:CB	2:A:480:TPT:C4	2.83	0.55
1:B:207:ILE:HD12	1:B:209:THR:HG23	1.88	0.55
1:C:1:MET:HE3	1:C:2:GLU:N	2.21	0.55
1:B:13:PHE:C	3:B:755:HOH:O	2.49	0.55
1:B:121:ARG:HG2	1:B:207:ILE:HG23	1.89	0.54
1:A:12:PRO:O	3:A:767:HOH:O	2.19	0.54
1:C:107:GLN:CD	1:C:107:GLN:N	2.61	0.54
1:D:163:ARG:HD2	3:D:790:HOH:O	2.07	0.54
1:A:3:LYS:NZ	3:A:818:HOH:O	2.40	0.53
1:A:124:GLU:HG2	3:A:283:HOH:O	2.10	0.52
1:D:168:HIS:NE2	2:D:483:TPT:H15	2.24	0.52
1:D:157:ARG:HD2	1:D:158:HIS:CD2	2.45	0.52
1:A:171:TYR:HA	3:A:559:HOH:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:18:VAL:CB	3:C:523:HOH:O	2.54	0.51
1:D:19:ASN:ND2	1:D:21:SER:H	2.04	0.51
1:A:13:PHE:HB2	2:A:480:TPT:C3	2.40	0.51
1:A:88:ASN:ND2	1:A:146:HIS:CD2	2.76	0.51
1:A:208:GLU:HA	1:A:208:GLU:OE1	2.10	0.51
1:C:27:ARG:NH2	1:C:186:LEU:HD23	2.25	0.51
2:A:480:TPT:H4	3:A:910:HOH:O	1.93	0.51
1:A:13:PHE:HB2	2:A:480:TPT:H3	1.93	0.51
1:B:33:GLU:HG2	1:B:198:VAL:HG21	1.92	0.51
1:B:45:THR:CG2	2:B:481:TPT:C3	2.89	0.51
1:C:188:HIS:HD2	3:C:245:HOH:O	1.93	0.50
1:B:161:HIS:HB3	3:B:657:HOH:O	2.11	0.50
1:C:88:ASN:OD1	1:C:146:HIS:HD2	1.94	0.50
1:D:16:GLU:CD	1:D:175:GLN:HE21	2.20	0.50
1:C:159:HIS:HE1	3:C:734:HOH:O	1.94	0.50
1:B:14:GLY:N	3:B:755:HOH:O	2.45	0.50
1:A:144:CYS:SG	2:A:480:TPT:H1	2.51	0.49
1:C:18:VAL:HB	3:C:523:HOH:O	2.10	0.49
1:B:88:ASN:ND2	1:B:146:HIS:CD2	2.77	0.49
1:C:19:ASN:HD22	1:C:21:SER:H	1.60	0.49
1:D:178:GLN:NE2	1:D:178:GLN:HA	2.27	0.49
1:D:18:VAL:O	1:D:18:VAL:HG23	2.12	0.49
1:C:61:HIS:HD2	3:C:418:HOH:O	1.94	0.49
1:C:18:VAL:O	1:C:18:VAL:CG2	2.60	0.49
1:C:168:HIS:NE2	2:C:482:TPT:H1	2.28	0.49
1:B:121:ARG:CG	1:B:207:ILE:HG23	2.43	0.48
1:D:188:HIS:HD2	3:D:279:HOH:O	1.96	0.48
1:B:17:THR:HG21	3:B:871:HOH:O	2.13	0.48
1:D:13:PHE:HB2	2:D:483:TPT:H3	1.95	0.48
1:D:60:LYS:NZ	3:D:594:HOH:O	2.47	0.48
1:D:160:PRO:HG2	2:D:484:TPT:N3	2.29	0.48
1:B:59:LYS:N	1:B:59:LYS:CD	2.77	0.47
1:C:13:PHE:HB2	2:C:482:TPT:H13	1.96	0.47
1:A:107:GLN:H	1:A:107:GLN:CD	2.22	0.47
1:C:177:LEU:O	1:D:127:LYS:HE3	2.15	0.47
1:A:45:THR:HG21	2:A:480:TPT:C3	2.45	0.46
1:B:17:THR:CG2	3:B:871:HOH:O	2.63	0.46
1:B:41:GLU:OE2	1:B:61:HIS:HE1	1.98	0.46
1:A:27:ARG:NH2	1:A:186:LEU:HD23	2.30	0.46
2:C:482:TPT:H3	3:C:730:HOH:O	2.15	0.46
1:D:159:HIS:HD2	2:D:484:TPT:C3	2.28	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:19:ASN:ND2	1:C:21:SER:H	2.14	0.46
1:C:23:GLU:HG3	3:C:384:HOH:O	2.16	0.46
1:A:188:HIS:HD2	3:A:293:HOH:O	1.98	0.46
1:A:163:ARG:HH11	1:A:204:GLU:CA	2.24	0.45
1:D:159:HIS:CD2	2:D:484:TPT:C4	2.93	0.45
1:D:204:GLU:CD	1:D:204:GLU:N	2.62	0.45
1:D:157:ARG:NH1	3:D:908:HOH:O	2.49	0.45
1:A:10:PHE:CG	2:A:480:TPT:H2	2.51	0.45
1:A:3:LYS:HE3	1:A:163:ARG:NH2	2.32	0.45
1:B:55:ARG:O	1:B:59:LYS:HD3	2.16	0.45
1:A:2:GLU:O	1:A:2:GLU:HG2	2.17	0.45
1:B:16:GLU:CB	3:B:267:HOH:O	2.58	0.44
1:A:13:PHE:HB2	2:A:480:TPT:C4	2.48	0.44
1:D:45:THR:CG2	2:D:483:TPT:C3	2.96	0.44
1:D:157:ARG:HG2	1:D:158:HIS:CD2	2.51	0.44
1:B:4:LYS:HD2	1:B:61:HIS:O	2.17	0.44
1:B:19:ASN:HD22	1:B:21:SER:N	2.06	0.44
1:D:157:ARG:HD3	1:D:158:HIS:NE2	2.33	0.44
1:A:10:PHE:CB	2:A:480:TPT:H2	2.47	0.43
1:D:157:ARG:HB2	3:D:958:HOH:O	2.13	0.43
1:B:207:ILE:HD12	1:B:209:THR:CG2	2.48	0.43
1:B:45:THR:HG23	2:B:481:TPT:C2	2.48	0.43
1:B:124:GLU:HG2	3:B:344:HOH:O	2.18	0.43
1:B:168:HIS:NE2	2:B:481:TPT:H15	2.33	0.43
1:D:159:HIS:HD2	2:D:484:TPT:H4	1.83	0.42
1:C:88:ASN:OD1	1:C:146:HIS:CD2	2.73	0.41
1:C:43:VAL:HG13	1:C:44:PRO:HD2	2.03	0.41
1:D:154:GLU:O	1:D:157:ARG:HB3	2.21	0.41
1:A:84:ALA:HB2	1:A:148:PHE:CD2	2.56	0.41
1:A:78:ILE:O	1:A:133:ALA:HA	2.20	0.40
1:B:18:VAL:C	1:B:20:PRO:HD3	2.45	0.40
1:D:129:GLU:HG3	1:D:195:ILE:HD11	2.03	0.40
1:A:19:ASN:ND2	1:A:21:SER:OG	2.54	0.40
1:B:13:PHE:CB	2:B:481:TPT:H3	2.51	0.40
1:C:51:LEU:HD22	1:C:150:GLY:HA3	2.04	0.40

There are no symmetry-related clashes.

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	205/223 (92%)	201 (98%)	4 (2%)	0	100	100
1	B	207/223 (93%)	199 (96%)	7 (3%)	1 (0%)	24	8
1	C	205/223 (92%)	201 (98%)	4 (2%)	0	100	100
1	D	204/223 (92%)	202 (99%)	2 (1%)	0	100	100
All	All	821/892 (92%)	803 (98%)	17 (2%)	1 (0%)	48	24

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	14	GLY

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	168/181 (93%)	167 (99%)	1 (1%)	78	62
1	B	170/181 (94%)	169 (99%)	1 (1%)	78	62
1	C	168/181 (93%)	167 (99%)	1 (1%)	78	62
1	D	167/181 (92%)	163 (98%)	4 (2%)	43	15
All	All	673/724 (93%)	666 (99%)	7 (1%)	68	45

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	ASN
1	B	19	ASN
1	C	107	GLN
1	D	18	VAL
1	D	19	ASN
1	D	76	MET
1	D	204	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	19	ASN
1	A	61	HIS
1	A	88	ASN
1	A	99	GLN
1	A	145	ASN
1	A	146	HIS
1	A	188	HIS
1	A	203	HIS
1	B	19	ASN
1	B	61	HIS
1	B	62	GLN
1	B	88	ASN
1	B	107	GLN
1	B	145	ASN
1	B	146	HIS
1	B	158	HIS
1	B	161	HIS
1	B	188	HIS
1	B	203	HIS
1	C	19	ASN
1	C	61	HIS
1	C	145	ASN
1	C	146	HIS
1	C	159	HIS
1	C	188	HIS
1	D	19	ASN
1	D	61	HIS
1	D	107	GLN
1	D	145	ASN
1	D	146	HIS
1	D	158	HIS
1	D	159	HIS

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Mol	Chain	Res	Type
1	D	178	GLN
1	D	188	HIS
1	D	203	HIS

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 ⓘ

5 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	TPT	D	484	1	19,23,24	2.61	9 (47%)	15,35,38	1.91	4 (26%)
2	TPT	A	480	1	19,23,24	1.93	3 (15%)	15,35,38	2.10	6 (40%)
2	TPT	C	482	1	19,23,24	1.20	3 (15%)	15,35,38	1.91	4 (26%)
2	TPT	D	483	1	19,23,24	1.43	4 (21%)	15,35,38	1.96	4 (26%)
2	TPT	B	481	1	19,23,24	1.41	2 (10%)	15,35,38	2.04	5 (33%)

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	TPT	D	484	1	-	-	0/5/5/5
2	TPT	A	480	1	-	-	0/5/5/5
2	TPT	C	482	1	-	-	0/5/5/5
2	TPT	D	483	1	-	-	0/5/5/5
2	TPT	B	481	1	-	-	0/5/5/5

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	484	TPT	C10-N2	6.79	1.42	1.37
2	A	480	TPT	C10-N2	5.56	1.42	1.37
2	D	484	TPT	C5-N1	4.05	1.44	1.36
2	D	484	TPT	C11-N3	3.73	1.40	1.37
2	B	481	TPT	C11-N3	3.47	1.40	1.37
2	A	480	TPT	C11-N3	3.09	1.40	1.37
2	D	484	TPT	C15-N3	3.02	1.40	1.30
2	D	483	TPT	C10-N2	2.71	1.39	1.37
2	D	484	TPT	C6-C5	2.54	1.51	1.45
2	B	481	TPT	C10-N2	2.45	1.39	1.37
2	A	480	TPT	C6-C5	2.40	1.51	1.45
2	D	484	TPT	C11-C10	2.40	1.51	1.45
2	D	484	TPT	C1-C2	2.38	1.42	1.35
2	D	484	TPT	C9-C10	2.33	1.43	1.38
2	D	484	TPT	C12-C11	2.25	1.43	1.38
2	D	483	TPT	C5-N1	2.21	1.41	1.36
2	C	482	TPT	C1-C2	2.15	1.41	1.35
2	C	482	TPT	C15-N3	2.13	1.37	1.30
2	D	483	TPT	C11-N3	2.11	1.39	1.37
2	D	483	TPT	C9-C10	2.06	1.43	1.38
2	C	482	TPT	C5-N1	2.06	1.40	1.36

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	481	TPT	C5-C6-N2	-4.68	109.02	115.75
2	A	480	TPT	C5-C6-N2	-4.66	109.05	115.75
2	D	483	TPT	C5-C6-N2	-4.42	109.39	115.75
2	D	484	TPT	C5-C6-N2	-4.33	109.52	115.75
2	C	482	TPT	C5-C6-N2	-4.22	109.68	115.75
2	B	481	TPT	C11-C10-N2	-3.65	111.24	116.95
2	D	483	TPT	C11-C10-N2	-3.62	111.28	116.95
2	D	483	TPT	C12-C11-N3	-3.62	119.40	125.34
2	B	481	TPT	C12-C11-N3	-3.52	119.57	125.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	484	TPT	C12-C11-N3	-3.46	119.66	125.34
2	A	480	TPT	C11-C10-N2	-3.40	111.63	116.95
2	D	484	TPT	C11-C10-N2	-3.40	111.64	116.95
2	C	482	TPT	C12-C11-N3	-3.33	119.89	125.34
2	C	482	TPT	C11-C10-N2	-3.31	111.77	116.95
2	A	480	TPT	C12-C11-N3	-3.04	120.35	125.34
2	D	484	TPT	C9-C10-N2	-2.87	120.63	125.34
2	A	480	TPT	C3-C4-C5	2.68	122.69	117.81
2	D	483	TPT	C9-C10-N2	-2.63	121.02	125.34
2	C	482	TPT	C9-C10-N2	-2.54	121.17	125.34
2	A	480	TPT	C1-C2-C3	-2.52	117.09	120.51
2	A	480	TPT	C9-C10-N2	-2.43	121.35	125.34
2	B	481	TPT	C9-C10-N2	-2.41	121.39	125.34
2	B	481	TPT	C1-C2-C3	-2.34	117.34	120.51

There are no chirality outliers.

There are no torsion outliers.

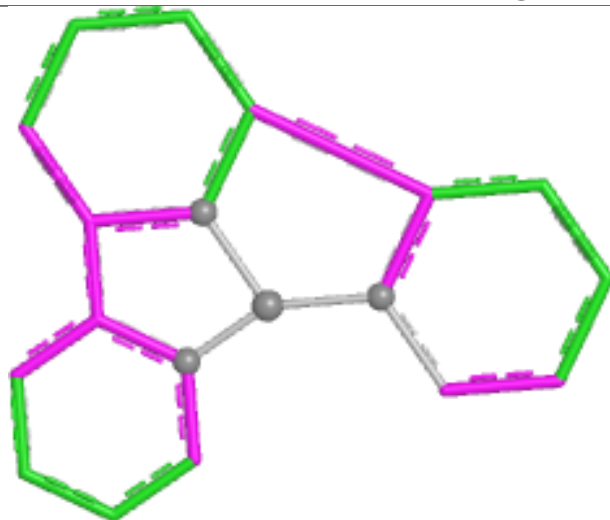
There are no ring outliers.

5 monomers are involved in 38 short contacts:

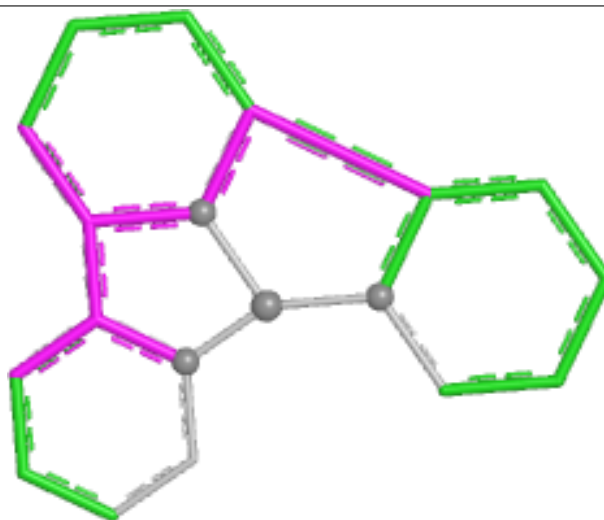
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	484	TPT	7	0
2	A	480	TPT	17	0
2	C	482	TPT	4	0
2	D	483	TPT	4	0
2	B	481	TPT	6	0

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.

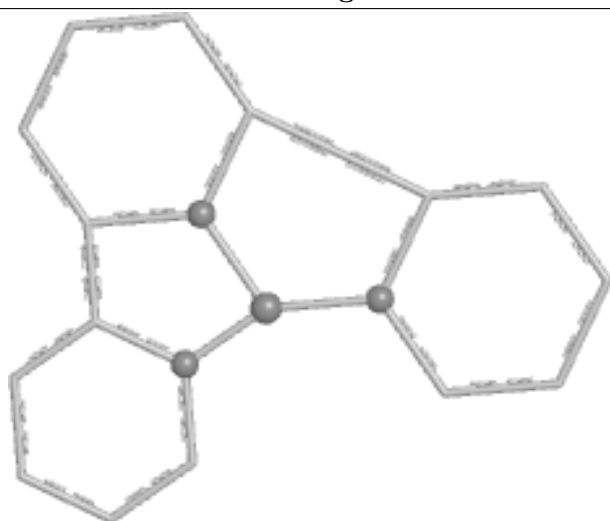
Ligand TPT D 484



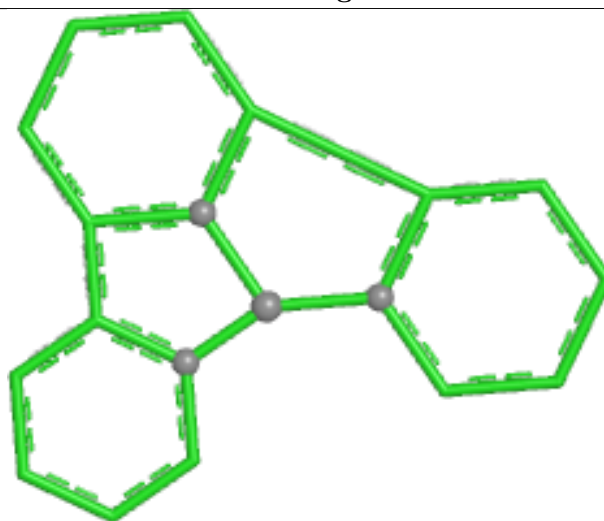
Bond lengths



Bond angles

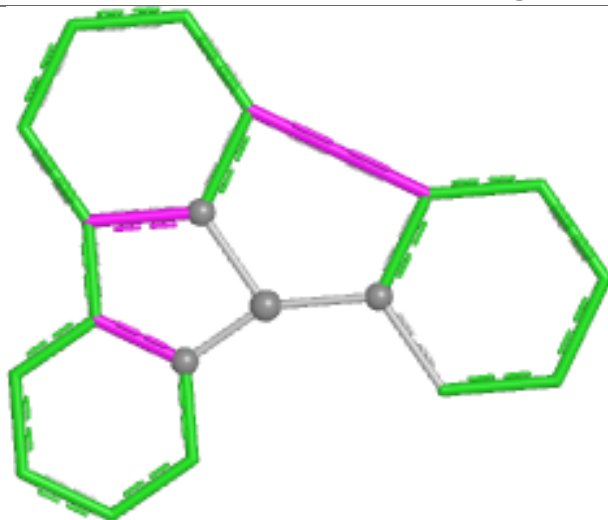


Torsions

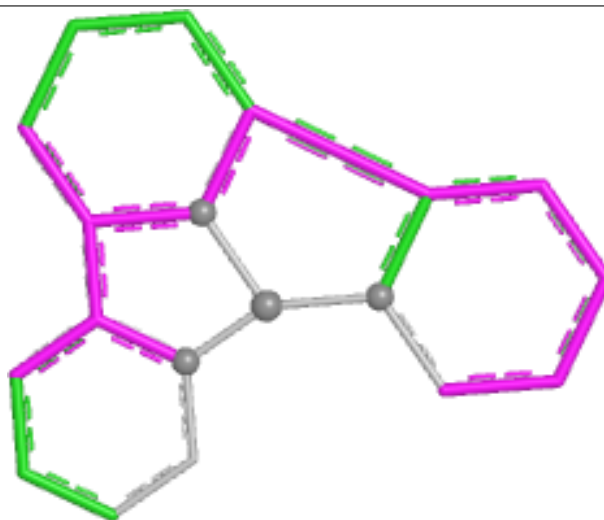


Rings

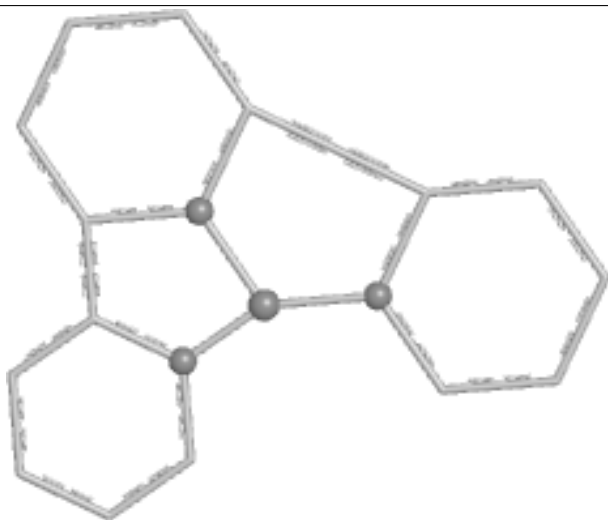
Ligand TPT A 480



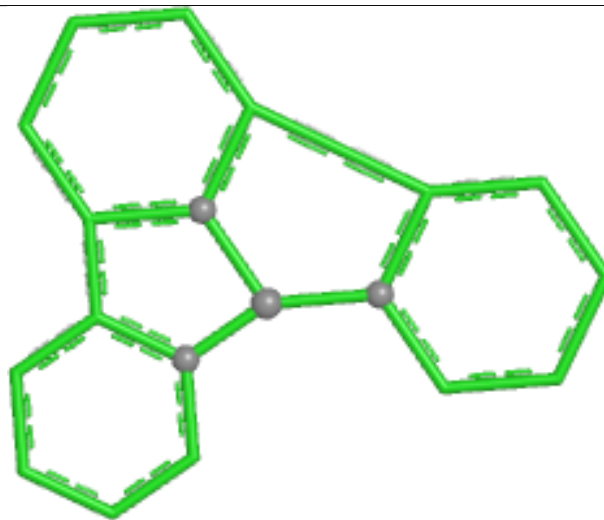
Bond lengths



Bond angles

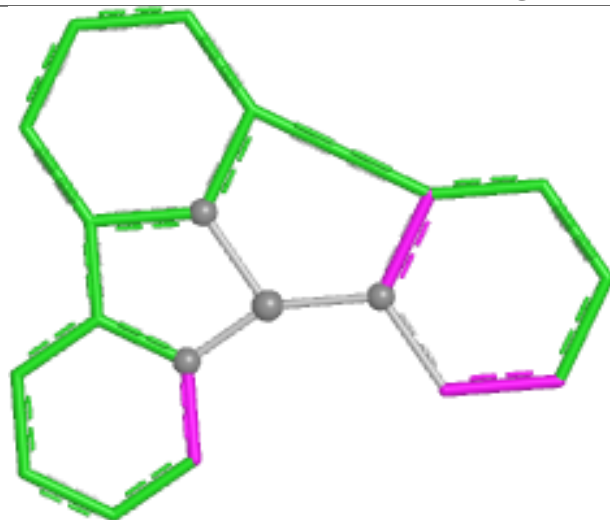


Torsions

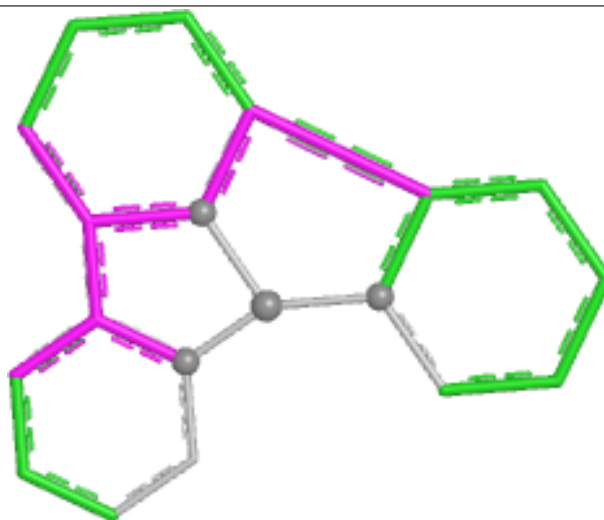


Rings

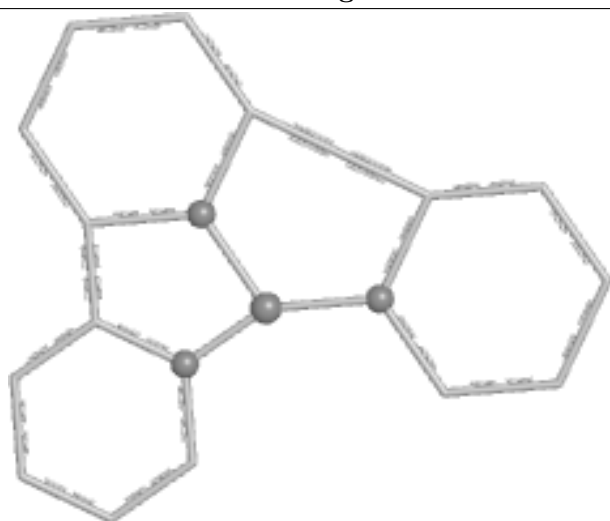
Ligand TPT C 482



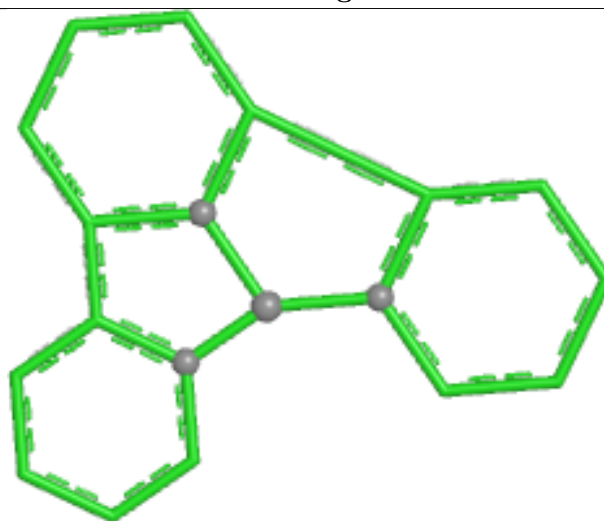
Bond lengths



Bond angles

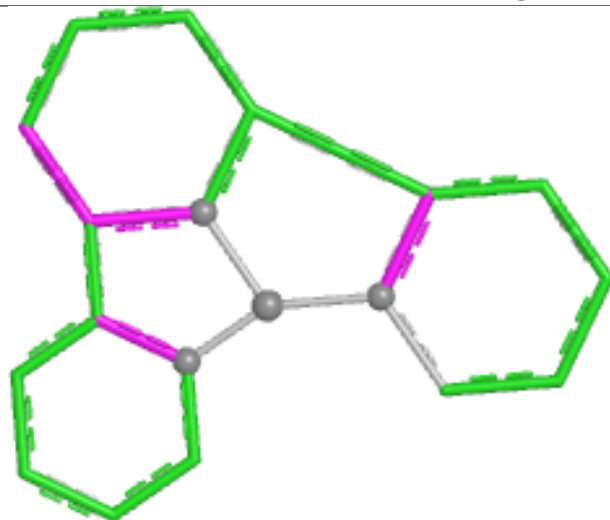


Torsions

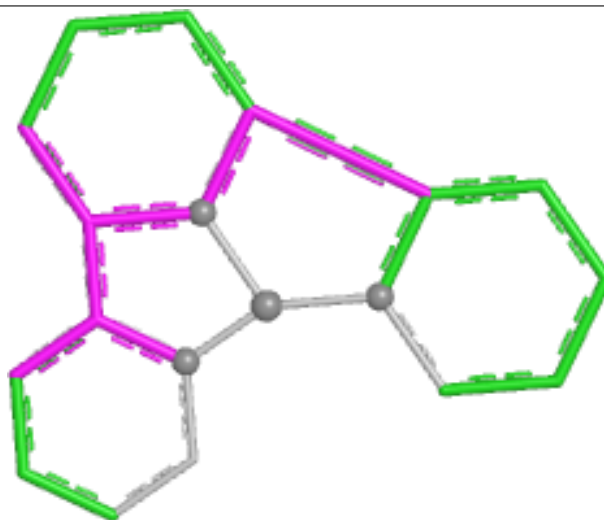


Rings

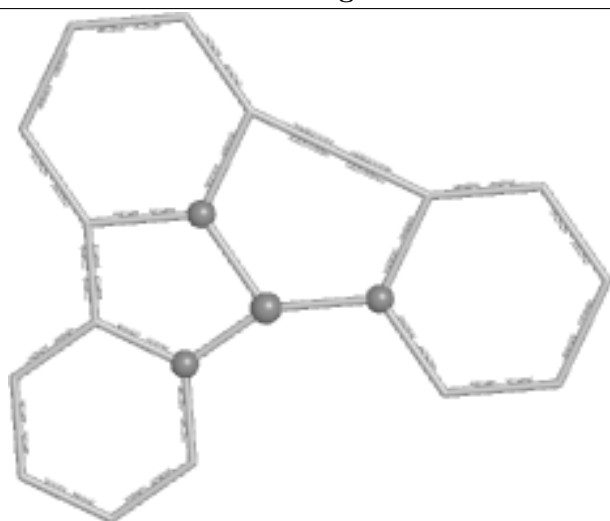
Ligand TPT D 483



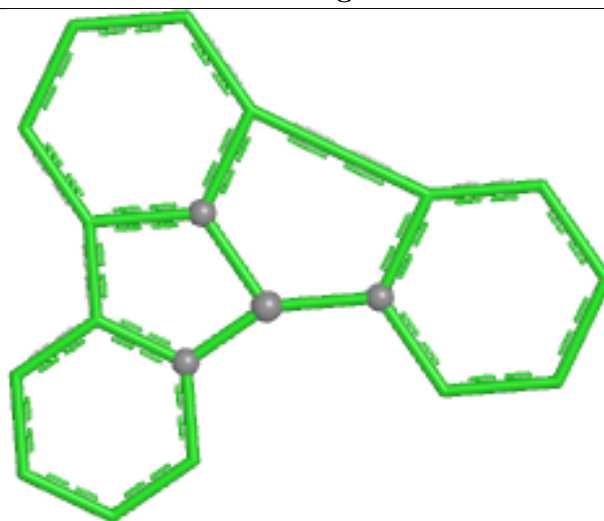
Bond lengths



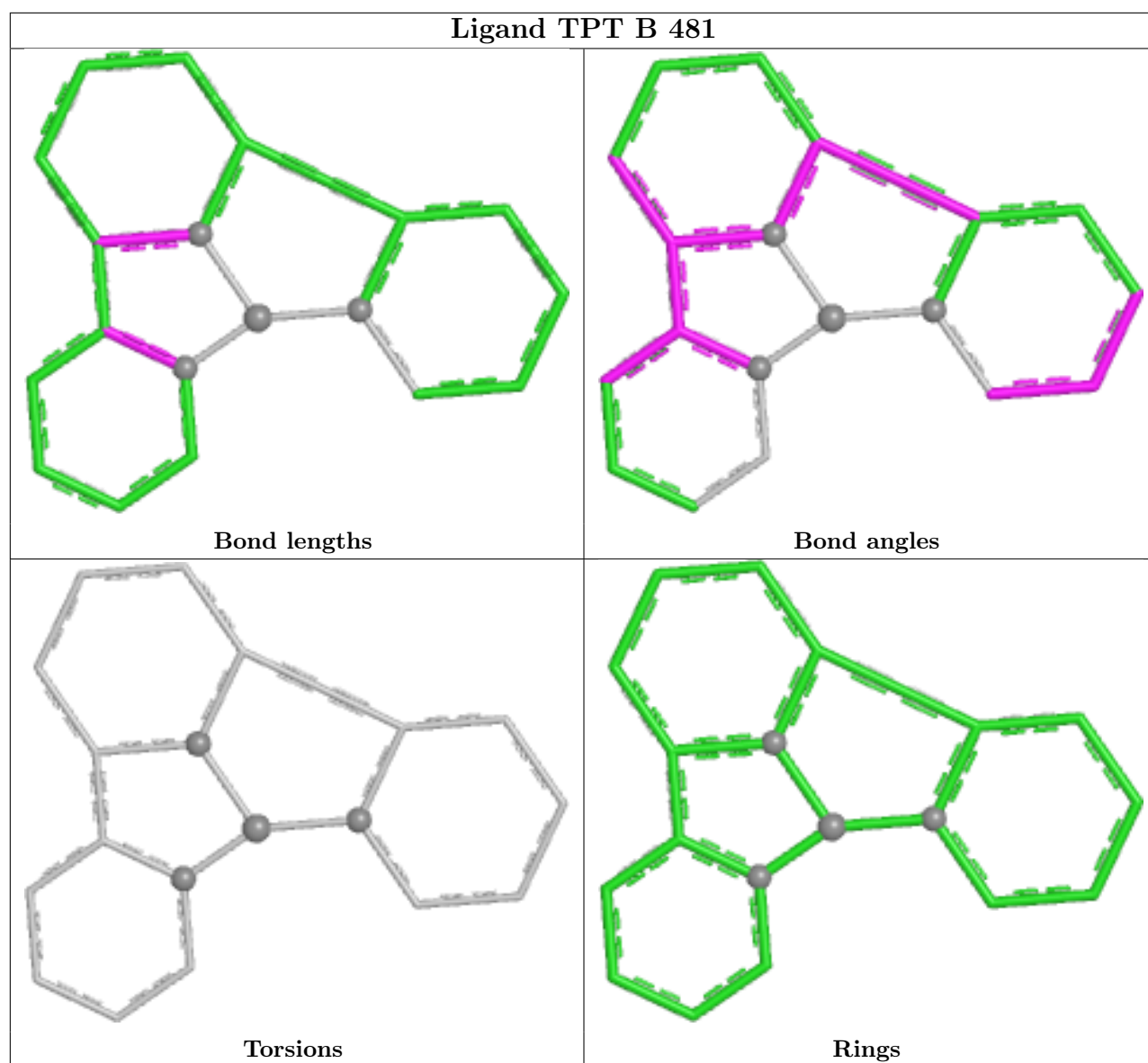
Bond angles



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	207/223 (92%)	0.02	13 (6%) 26 28	10, 15, 31, 44	0
1	B	209/223 (93%)	-0.01	12 (5%) 29 32	10, 16, 30, 50	0
1	C	207/223 (92%)	-0.13	10 (4%) 35 39	9, 14, 28, 49	0
1	D	206/223 (92%)	0.26	19 (9%) 14 15	11, 17, 34, 54	0
All	All	829/892 (92%)	0.04	54 (6%) 25 27	9, 16, 33, 54	0

All (54) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	18	VAL	9.7
1	B	18	VAL	8.1
1	A	13	PHE	8.0
1	D	18	VAL	8.0
1	C	15	GLY	7.4
1	A	18	VAL	6.3
1	C	17	THR	6.0
1	D	15	GLY	5.8
1	A	15	GLY	5.6
1	B	15	GLY	5.5
1	D	14	GLY	5.1
1	D	157	ARG	4.8
1	B	14	GLY	4.6
1	A	14	GLY	4.5
1	B	209	THR	4.5
1	C	14	GLY	4.3
1	D	161	HIS	4.3
1	D	159	HIS	4.0
1	D	160	PRO	3.9
1	C	16	GLU	3.7
1	D	17	THR	3.7

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Mol	Chain	Res	Type	RSRZ
1	B	17	THR	3.6
1	D	13	PHE	3.5
1	D	108	GLY	3.3
1	D	12	PRO	3.2
1	B	108	GLY	3.1
1	C	1	MET	3.0
1	D	16	GLU	3.0
1	B	13	PHE	3.0
1	D	178	GLN	2.9
1	B	161	HIS	2.9
1	A	91	ARG	2.8
1	A	205	ASP	2.8
1	D	91	ARG	2.8
1	B	12	PRO	2.7
1	B	16	GLU	2.7
1	A	107	GLN	2.7
1	C	178	GLN	2.7
1	D	156	SER	2.6
1	A	2	GLU	2.6
1	A	179	LYS	2.5
1	A	208	GLU	2.4
1	B	91	ARG	2.4
1	C	13	PHE	2.4
1	B	208	GLU	2.3
1	D	205	ASP	2.2
1	A	178	GLN	2.2
1	D	92	ILE	2.2
1	C	91	ARG	2.2
1	A	12	PRO	2.1
1	A	17	THR	2.1
1	C	107	GLN	2.1
1	D	204	GLU	2.1
1	D	158	HIS	2.1

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

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

6.3 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands

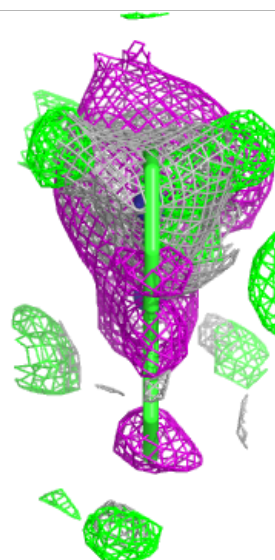
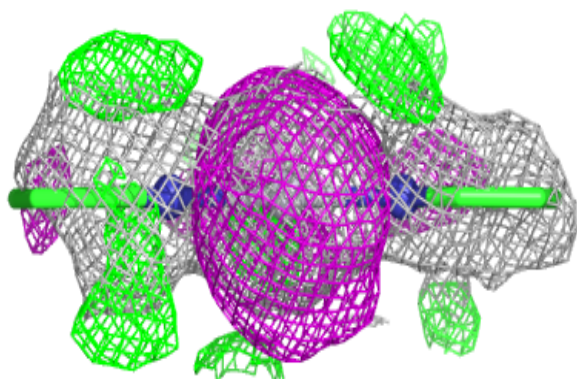
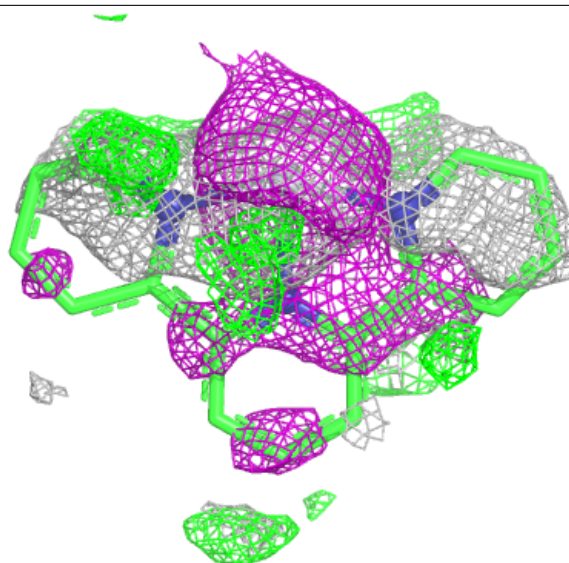
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	TPT	D	484	19/20	0.85	0.29	50,52,56,57	0
2	TPT	A	480	19/20	0.96	0.21	32,41,46,47	0
2	TPT	C	482	19/20	0.98	0.15	26,31,35,36	0
2	TPT	D	483	19/20	0.98	0.15	29,34,38,38	0
2	TPT	B	481	19/20	0.98	0.16	27,34,39,39	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.

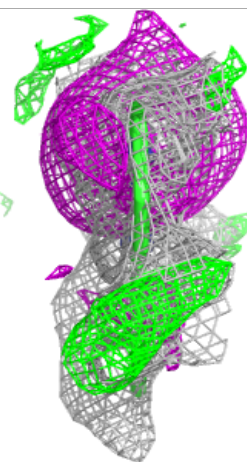
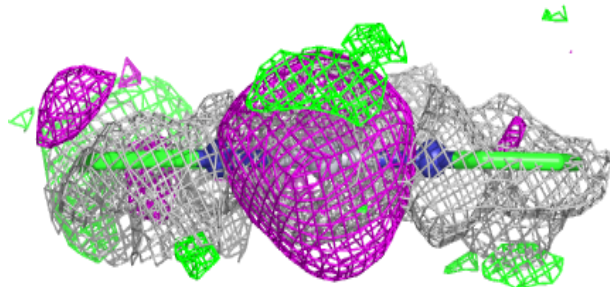
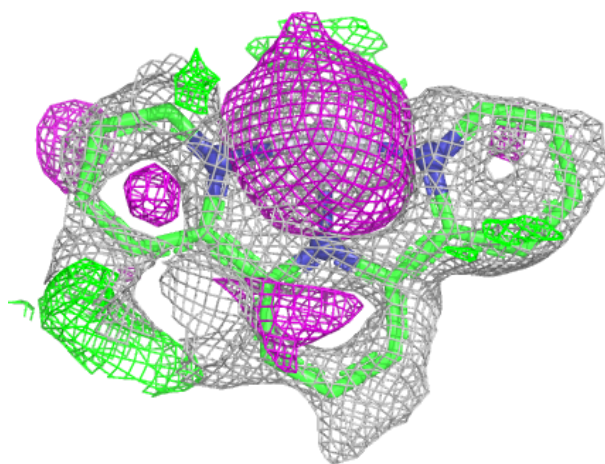
Electron density around TPT D 484:

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



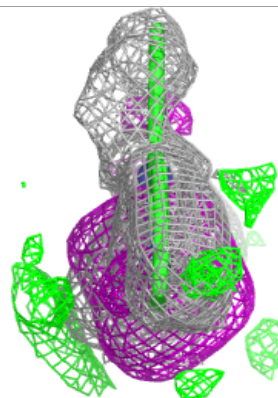
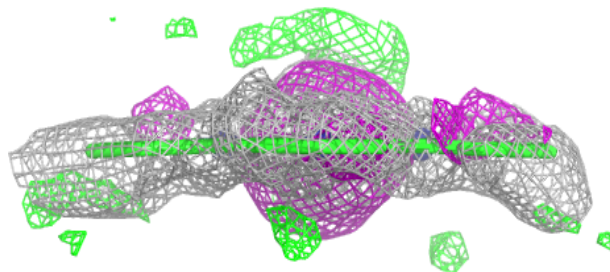
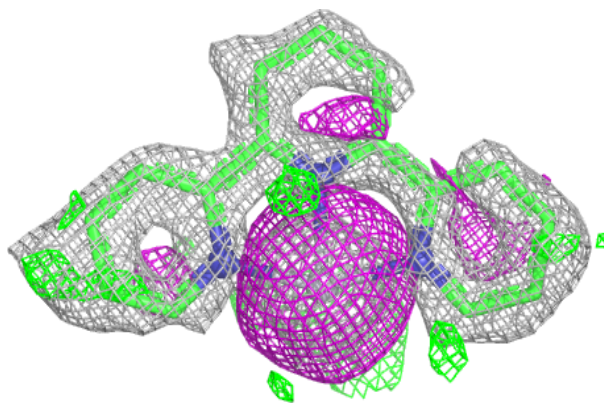
Electron density around TPT A 480:

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

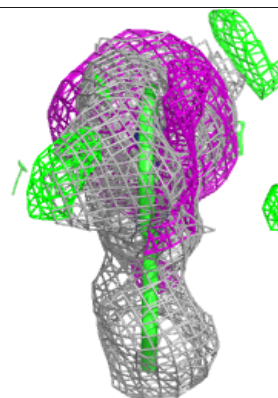
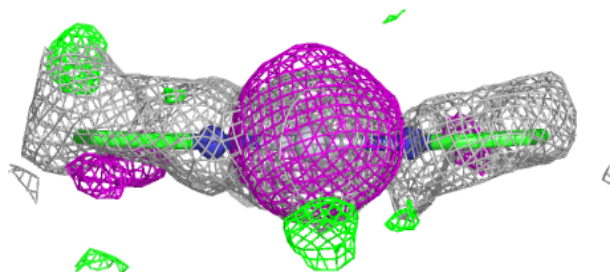
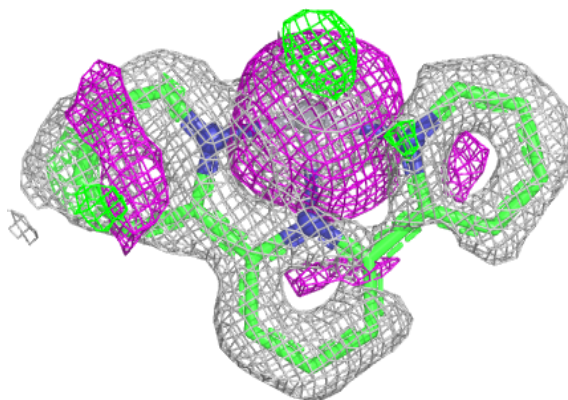


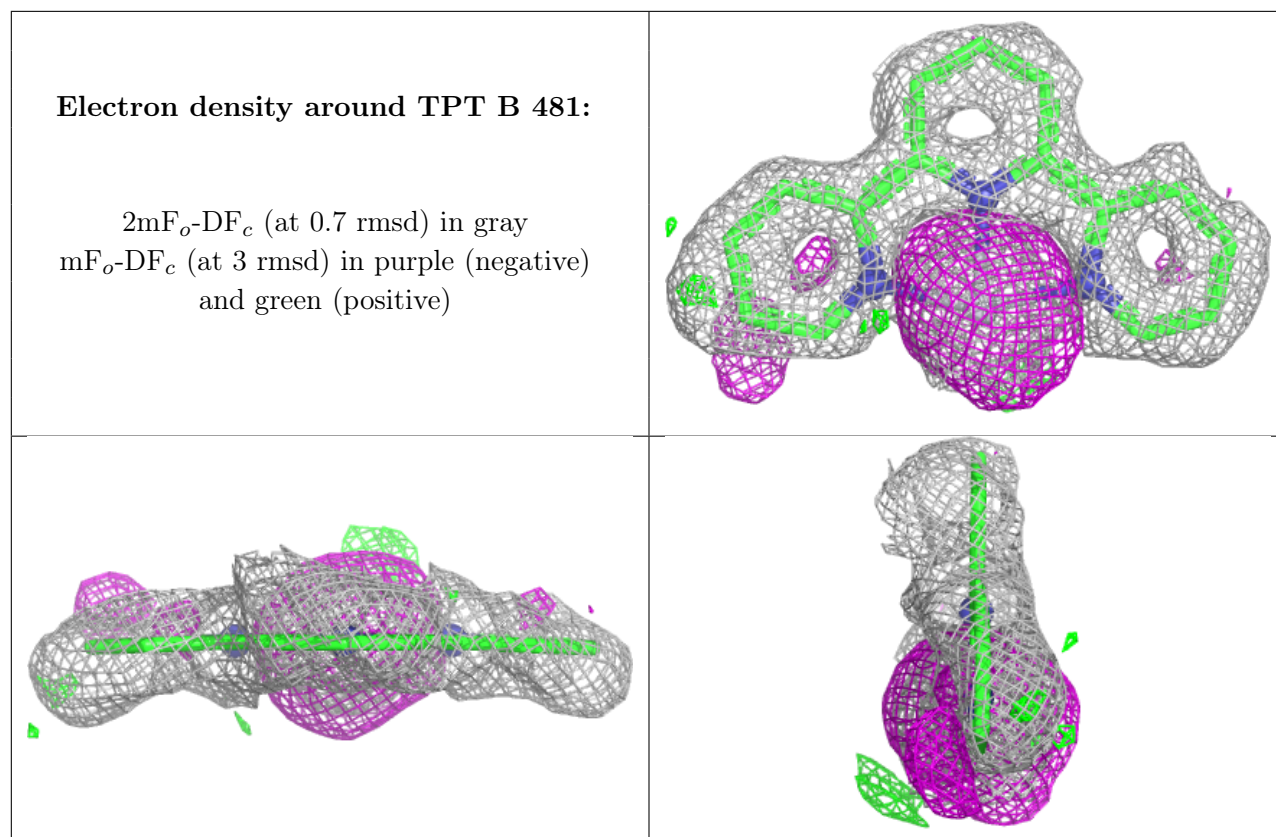
Electron density around TPT C 482:

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

**Electron density around TPT D 483:**

$2mF_o-DF_c$ (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.