Full wwPDB X-ray Structure Validation Report (i)

Dec 10, 2023 – 04:50 am GMT

PDB ID	:	2WEK
Title	:	Crystal structure of the human MGC45594 gene product in complex with diclofenac
Authors	:	Shafqat, N.; Yue, W.W.; Ugochukwu, E.; Niesen, F.; Smee, C.; Arrowsmith, C.; Weigelt, J.; Edwards, A.; Bountra, C.; Oppermann, U.
Deposited on	:	2009-03-31
Resolution	:	1.90 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 (i) 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 (i)) were used in the production of this report:

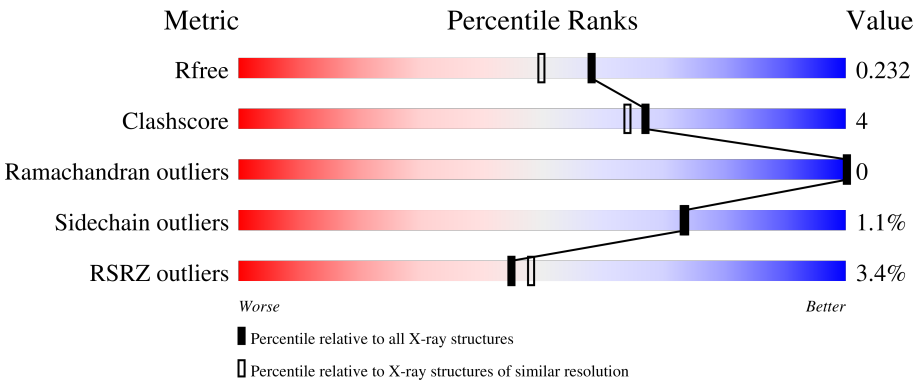
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 1.90 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	341	2% 94% 6%
1	B	341	5% 95% 5%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	DIF	B	1376	-	-	X	-
6	GOL	A	1380	-	-	X	-

2 Entry composition (i)

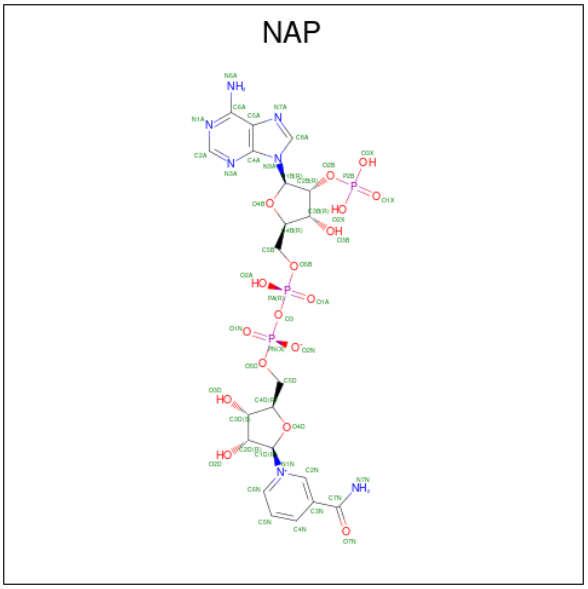
There are 7 unique types of molecules in this entry. The entry contains 5679 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ZINC-BINDING ALCOHOL DEHYDROGENASE DOMAIN-CONTAINING PROTEIN 2.

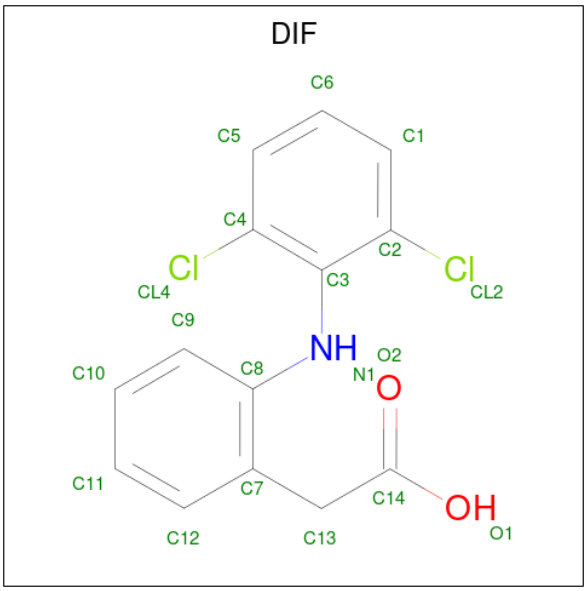
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	341	2513	1615	406	478	14	0	1	0
1	B	340	2482	1597	396	475	14	0	1	0

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$).



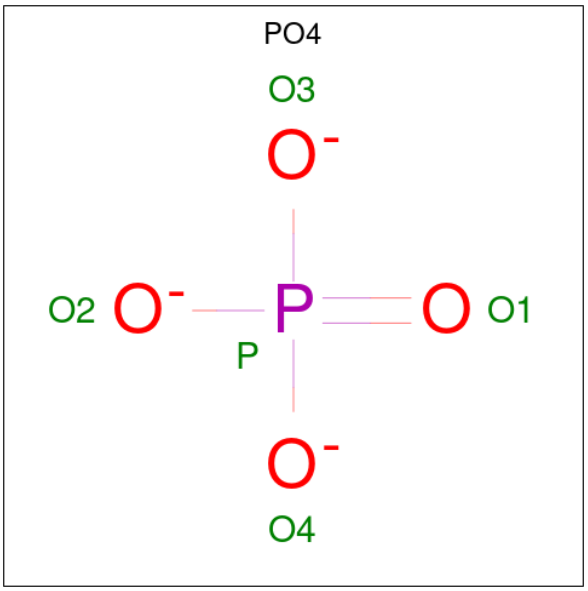
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	48	21	7	17	3	0	0
2	B	1	48	21	7	17	3	0	0

- Molecule 3 is 2-[2,6-DICHLOROPHENYL)AMINO]BENZENEACETIC ACID (three-letter code: DIF) (formula: $C_{14}H_{11}Cl_2NO_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	Cl	N	O		
3	A	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	A	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	A	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	A	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	B	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	B	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	B	1	19	14	2	1	2	0	0
			Total	C	Cl	N	O		
3	B	1	19	14	2	1	2	0	0

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).

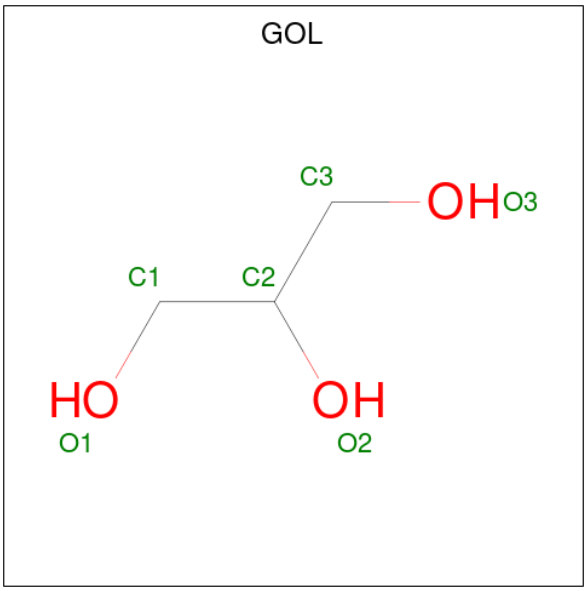


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 5 4 1	0	0
4	B	1	Total O P 5 4 1	0	0

- Molecule 5 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	2	Total Cl 2 2	0	0
5	B	1	Total Cl 1 1	0	0

- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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

- Molecule 7 is water.

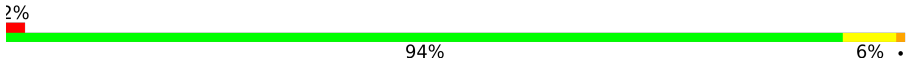
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
7	A	220	220	220	0	0
			Total	O		
7	B	173	173	173	0	0

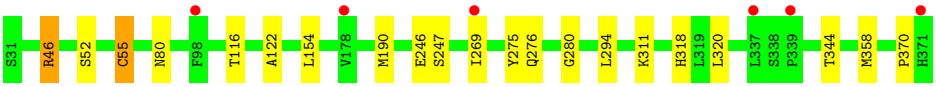
3 Residue-property plots (i)

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: ZINC-BINDING ALCOHOL DEHYDROGENASE DOMAIN-CONTAINING PROTEIN 2

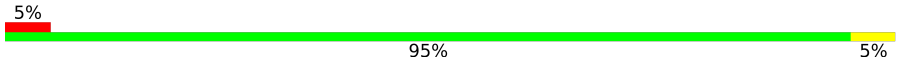
Chain A:

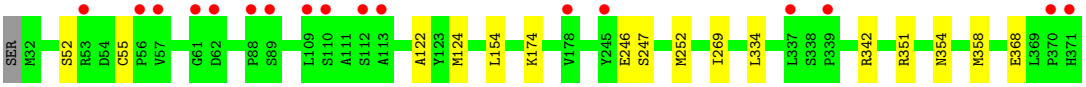




• Molecule 1: ZINC-BINDING ALCOHOL DEHYDROGENASE DOMAIN-CONTAINING PROTEIN 2

Chain B:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	46.83Å 51.57Å 75.72Å 94.61° 91.54° 101.72°	Depositor
Resolution (Å)	75.38 – 1.90 28.50 – 1.90	Depositor EDS
% Data completeness (in resolution range)	91.7 (75.38-1.90) 74.6 (28.50-1.90)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.60 (at 1.91Å)	Xtriage
Refinement program	REFMAC 5.5.0089	Depositor
R, R_{free}	0.165 , 0.214 0.189 , 0.232	Depositor DCC
R_{free} test set	2083 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å^2)	23.9	Xtriage
Anisotropy	0.049	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 41.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	5679	wwPDB-VP
Average B, all atoms (Å^2)	15.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.22% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: DIF, PO4, NAP, CL, GOL

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	0.68	1/2568 (0.0%)	0.68	0/3491
1	B	0.63	0/2535	0.67	0/3448
All	All	0.66	1/5103 (0.0%)	0.68	0/6939

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	55	CYS	CB-SG	-5.33	1.73	1.81

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	2513	0	2512	18	0
1	B	2482	0	2461	17	0
2	A	48	0	25	3	0
2	B	48	0	25	2	0
3	A	76	0	38	1	0
3	B	76	0	40	13	0
4	A	5	0	0	1	0
4	B	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	2	0	0	0	0
5	B	1	0	0	0	0
6	A	18	0	24	5	0
6	B	12	0	16	0	0
7	A	220	0	0	3	0
7	B	173	0	0	2	0
All	All	5679	0	5141	41	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 4.

All (41) 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:B:252:MET:HE1	3:B:1376:DIF:H6	1.28	1.15
1:B:252:MET:CE	3:B:1376:DIF:C6	2.29	1.10
1:B:252:MET:CE	3:B:1376:DIF:H6	1.80	1.09
3:B:1374:DIF:O1	3:B:1374:DIF:H12	1.51	1.03
1:B:252:MET:HE2	3:B:1376:DIF:C6	1.88	0.99
3:B:1374:DIF:O1	3:B:1374:DIF:C12	2.16	0.90
3:B:1374:DIF:H131	3:B:1374:DIF:CL2	2.07	0.90
1:B:252:MET:HE1	3:B:1376:DIF:C6	1.95	0.89
1:A:275:TYR:CD1	6:A:1380:GOL:O1	2.35	0.79
1:A:318[B]:HIS:HD2	7:A:2184:HOH:O	1.71	0.74
1:B:269:ILE:O	2:B:1372:NAP:H2N	1.88	0.73
1:A:116:THR:HG22	7:A:2059:HOH:O	1.91	0.69
1:A:80:ASN:OD1	6:A:1380:GOL:H12	1.96	0.66
1:A:269:ILE:O	2:A:1372:NAP:H2N	1.97	0.63
1:B:351:ARG:HG3	7:B:2153:HOH:O	2.01	0.61
1:B:354:ASN:O	1:B:358:MET:HG3	2.01	0.60
1:A:247:SER:HB3	2:A:1372:NAP:H4D	1.83	0.59
1:B:122:ALA:HB1	1:B:154:LEU:HD11	1.84	0.59
1:B:247:SER:HB3	2:B:1372:NAP:H4D	1.85	0.58
1:A:280:GLY:HA3	6:A:1380:GOL:H11	1.85	0.58
1:A:294:LEU:C	1:A:294:LEU:HD23	2.25	0.57
1:A:275:TYR:HD1	6:A:1380:GOL:O1	1.86	0.57
1:B:252:MET:CE	3:B:1376:DIF:C1	2.83	0.56
1:A:46:ARG:O	1:A:46:ARG:HD3	2.10	0.52
1:B:124:MET:CE	3:B:1374:DIF:O2	2.59	0.51
1:A:52:SER:HB2	1:A:55:CYS:SG	2.51	0.50
1:B:52:SER:HB2	1:B:55:CYS:SG	2.51	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:344:THR:HG23	1:A:370:PRO:HG3	1.94	0.49
1:A:122:ALA:HB1	1:A:154:LEU:HD11	1.95	0.48
1:B:252:MET:HE1	3:B:1376:DIF:C1	2.43	0.48
1:A:276:GLN:HG2	4:A:1377:PO4:O4	2.15	0.47
1:A:275:TYR:CE1	6:A:1380:GOL:O1	2.63	0.46
2:A:1372:NAP:H8A	2:A:1372:NAP:H3B	1.96	0.46
1:B:124:MET:HE3	3:B:1374:DIF:O2	2.16	0.46
1:B:174:LYS:HE3	7:B:2059:HOH:O	2.15	0.45
1:B:334:LEU:HD13	1:B:342:ARG:NH1	2.31	0.45
1:A:311:LYS:NZ	7:A:2182:HOH:O	2.43	0.43
1:A:344:THR:HG23	1:A:370:PRO:CG	2.49	0.43
3:A:1375:DIF:CL2	3:A:1375:DIF:C9	3.06	0.41
3:B:1374:DIF:CL2	3:B:1374:DIF:C13	2.93	0.40
1:A:190:MET:HE3	1:A:190:MET:HB2	1.92	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	340/341 (100%)	336 (99%)	4 (1%)	0	100	100
1	B	339/341 (99%)	336 (99%)	3 (1%)	0	100	100
All	All	679/682 (100%)	672 (99%)	7 (1%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	266/277 (96%)	262 (98%)	4 (2%)	65	62
1	B	258/277 (93%)	256 (99%)	2 (1%)	81	82
All	All	524/554 (95%)	518 (99%)	6 (1%)	73	73

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	ARG
1	A	246	GLU
1	A	320	LEU
1	A	358	MET
1	B	246	GLU
1	B	368	GLU

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

Mol	Chain	Res	Type
1	A	34	GLN
1	B	34	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 20 ligands modelled in this entry, 3 are monoatomic - leaving 17 for Mogul analysis.

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	PO4	A	1377	-	4,4,4	0.55	0	6,6,6	0.68	0
3	DIF	B	1373	-	20,20,20	0.73	0	27,27,27	1.38	5 (18%)
3	DIF	A	1373	-	20,20,20	0.80	0	27,27,27	1.37	4 (14%)
3	DIF	B	1376	-	20,20,20	1.10	1 (5%)	27,27,27	1.36	3 (11%)
3	DIF	A	1374	-	20,20,20	1.15	2 (10%)	27,27,27	1.21	2 (7%)
3	DIF	B	1375	-	20,20,20	0.87	0	27,27,27	1.42	5 (18%)
6	GOL	A	1380	-	5,5,5	0.36	0	5,5,5	0.28	0
6	GOL	A	1379	-	5,5,5	0.46	0	5,5,5	0.55	0
6	GOL	B	1378	-	5,5,5	0.28	0	5,5,5	0.36	0
2	NAP	A	1372	-	45,52,52	1.58	6 (13%)	56,80,80	1.28	5 (8%)
6	GOL	B	1379	-	5,5,5	0.45	0	5,5,5	0.21	0
3	DIF	A	1376	1	20,20,20	0.96	2 (10%)	27,27,27	1.50	6 (22%)
3	DIF	B	1374	-	20,20,20	0.98	1 (5%)	27,27,27	4.52	12 (44%)
4	PO4	B	1377	-	4,4,4	0.57	0	6,6,6	1.23	1 (16%)
2	NAP	B	1372	-	45,52,52	1.72	4 (8%)	56,80,80	1.24	6 (10%)
6	GOL	A	1381	-	5,5,5	0.52	0	5,5,5	0.57	0
3	DIF	A	1375	-	20,20,20	0.99	1 (5%)	27,27,27	1.25	4 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	DIF	B	1373	-	-	0/8/8/8	0/2/2/2
3	DIF	A	1373	-	-	0/8/8/8	0/2/2/2
3	DIF	B	1376	-	-	0/8/8/8	0/2/2/2
3	DIF	A	1374	-	-	0/8/8/8	0/2/2/2
3	DIF	B	1375	-	-	0/8/8/8	0/2/2/2
6	GOL	A	1380	-	-	4/4/4/4	-
6	GOL	A	1379	-	-	0/4/4/4	-
6	GOL	B	1378	-	-	4/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAP	A	1372	-	-	5/31/67/67	0/5/5/5
6	GOL	B	1379	-	-	2/4/4/4	-
3	DIF	A	1376	1	-	1/8/8/8	0/2/2/2
3	DIF	B	1374	-	-	8/8/8/8	0/2/2/2
2	NAP	B	1372	-	-	7/31/67/67	0/5/5/5
6	GOL	A	1381	-	-	3/4/4/4	-
3	DIF	A	1375	-	-	0/8/8/8	0/2/2/2

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1372	NAP	O7N-C7N	5.84	1.35	1.24
2	B	1372	NAP	O4B-C1B	5.79	1.49	1.41
2	A	1372	NAP	O7N-C7N	5.54	1.34	1.24
2	A	1372	NAP	C2N-N1N	3.92	1.39	1.35
2	A	1372	NAP	P2B-O2B	3.90	1.66	1.59
2	B	1372	NAP	P2B-O1X	3.80	1.62	1.50
2	B	1372	NAP	P2B-O2X	2.94	1.66	1.54
3	A	1374	DIF	C13-C7	2.64	1.55	1.51
2	A	1372	NAP	O4B-C1B	2.49	1.44	1.41
3	A	1376	DIF	C3-N1	-2.47	1.33	1.40
3	B	1376	DIF	C3-N1	-2.42	1.33	1.40
3	A	1374	DIF	C13-C14	2.36	1.56	1.51
2	A	1372	NAP	P2B-O1X	2.31	1.58	1.50
2	A	1372	NAP	C5A-N7A	-2.24	1.31	1.39
3	A	1375	DIF	C13-C7	2.13	1.54	1.51
3	B	1374	DIF	C8-N1	-2.09	1.34	1.39
3	A	1376	DIF	C8-N1	-2.07	1.34	1.39

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	1374	DIF	C4-C3-N1	-12.87	105.33	122.04
3	B	1374	DIF	C2-C3-N1	11.25	136.65	122.04
3	B	1374	DIF	C3-C2-CL2	8.78	129.32	119.27
3	B	1374	DIF	C7-C8-N1	8.17	125.08	118.60
3	B	1374	DIF	C3-N1-C8	6.81	137.24	123.01
2	A	1372	NAP	C6N-N1N-C2N	-4.66	117.72	121.97
3	B	1376	DIF	C2-C3-N1	-4.18	116.62	122.04
2	B	1372	NAP	N3A-C2A-N1A	-3.91	122.57	128.68
2	A	1372	NAP	N3A-C2A-N1A	-3.27	123.57	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1373	DIF	C3-C4-CL4	3.22	122.95	119.27
3	B	1376	DIF	C3-C4-CL4	3.18	122.91	119.27
3	B	1374	DIF	C3-C4-CL4	-3.17	115.64	119.27
2	B	1372	NAP	O4D-C1D-C2D	-3.16	102.30	106.93
3	B	1375	DIF	C13-C7-C8	3.06	125.77	121.41
3	B	1374	DIF	C9-C8-N1	-3.03	115.14	121.39
3	A	1376	DIF	C7-C13-C14	-3.00	106.37	112.99
3	A	1375	DIF	C13-C7-C12	-2.89	115.09	120.06
3	A	1375	DIF	C13-C7-C8	2.82	125.43	121.41
3	A	1376	DIF	C4-C3-C2	2.79	120.47	116.14
3	B	1374	DIF	C6-C1-C2	2.78	123.60	119.39
3	B	1375	DIF	C13-C7-C12	-2.77	115.30	120.06
3	B	1374	DIF	C1-C2-CL2	-2.72	112.94	118.41
3	B	1373	DIF	C13-C7-C12	-2.69	115.44	120.06
3	B	1374	DIF	C1-C2-C3	-2.66	117.73	121.96
3	A	1376	DIF	C3-C2-CL2	2.64	122.29	119.27
3	A	1374	DIF	C13-C7-C12	-2.62	115.56	120.06
3	A	1373	DIF	O2-C14-C13	-2.57	115.70	123.04
3	A	1375	DIF	C7-C8-N1	2.56	120.64	118.60
3	A	1374	DIF	C13-C7-C8	2.55	125.04	121.41
4	B	1377	PO4	O3-P-O2	2.52	116.05	107.97
3	B	1375	DIF	O2-C14-C13	-2.51	115.88	123.04
3	B	1373	DIF	C12-C7-C8	2.51	120.80	118.32
2	A	1372	NAP	O4D-C1D-C2D	-2.49	103.28	106.93
3	B	1375	DIF	C4-C3-N1	-2.47	118.84	122.04
2	A	1372	NAP	C5N-C4N-C3N	-2.42	117.48	120.34
3	B	1373	DIF	C7-C8-N1	2.42	120.52	118.60
3	A	1376	DIF	O2-C14-C13	-2.41	116.17	123.04
3	B	1374	DIF	C7-C13-C14	-2.39	107.71	112.99
2	A	1372	NAP	O2N-PN-O1N	2.36	123.91	112.24
2	B	1372	NAP	C2N-C3N-C4N	2.34	120.91	118.26
3	B	1373	DIF	C9-C8-C7	-2.30	117.04	119.76
3	A	1375	DIF	O2-C14-C13	-2.28	116.53	123.04
3	B	1374	DIF	O2-C14-C13	-2.27	116.55	123.04
3	B	1375	DIF	C3-N1-C8	2.25	127.71	123.01
2	B	1372	NAP	C4A-C5A-N7A	-2.22	107.09	109.40
3	B	1376	DIF	O2-C14-C13	-2.19	116.80	123.04
2	B	1372	NAP	C3N-C7N-N7N	-2.17	115.15	117.75
3	B	1373	DIF	C4-C3-N1	-2.15	119.25	122.04
3	A	1376	DIF	C4-C3-N1	-2.13	119.28	122.04
3	A	1373	DIF	C9-C8-C7	-2.11	117.28	119.76
2	B	1372	NAP	C6N-N1N-C2N	-2.08	120.08	121.97

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1376	DIF	C3-N1-C8	-2.07	118.70	123.01
3	A	1373	DIF	C10-C9-C8	2.04	122.86	118.62

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	1374	DIF	C2-C3-N1-C8
3	B	1374	DIF	C14-C13-C7-C8
6	A	1380	GOL	O1-C1-C2-C3
6	A	1380	GOL	C1-C2-C3-O3
6	A	1381	GOL	O1-C1-C2-C3
6	B	1378	GOL	O1-C1-C2-C3
6	B	1379	GOL	C1-C2-C3-O3
3	B	1374	DIF	C7-C8-N1-C3
3	B	1374	DIF	C4-C3-N1-C8
3	A	1376	DIF	C14-C13-C7-C8
6	A	1380	GOL	O1-C1-C2-O2
6	A	1380	GOL	O2-C2-C3-O3
6	A	1381	GOL	O1-C1-C2-O2
6	B	1378	GOL	O1-C1-C2-O2
3	B	1374	DIF	C14-C13-C7-C12
3	B	1374	DIF	C9-C8-N1-C3
2	A	1372	NAP	PA-O3-PN-O1N
6	B	1379	GOL	O2-C2-C3-O3
2	B	1372	NAP	PA-O3-PN-O1N
6	B	1378	GOL	C1-C2-C3-O3
2	A	1372	NAP	C4B-C5B-O5B-PA
2	B	1372	NAP	C4B-C5B-O5B-PA
3	B	1374	DIF	C7-C13-C14-O1
2	A	1372	NAP	O4B-C4B-C5B-O5B
3	B	1374	DIF	C7-C13-C14-O2
2	A	1372	NAP	PA-O3-PN-O2N
2	B	1372	NAP	C3B-C2B-O2B-P2B
2	B	1372	NAP	C1B-C2B-O2B-P2B
6	A	1381	GOL	C1-C2-C3-O3
2	B	1372	NAP	O4B-C4B-C5B-O5B
2	A	1372	NAP	C2B-O2B-P2B-O2X
2	B	1372	NAP	C3B-C4B-C5B-O5B
2	B	1372	NAP	PA-O3-PN-O2N
6	B	1378	GOL	O2-C2-C3-O3

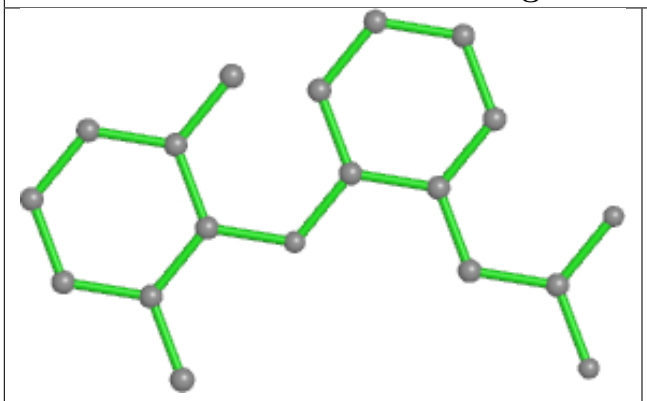
There are no ring outliers.

7 monomers are involved in 25 short contacts:

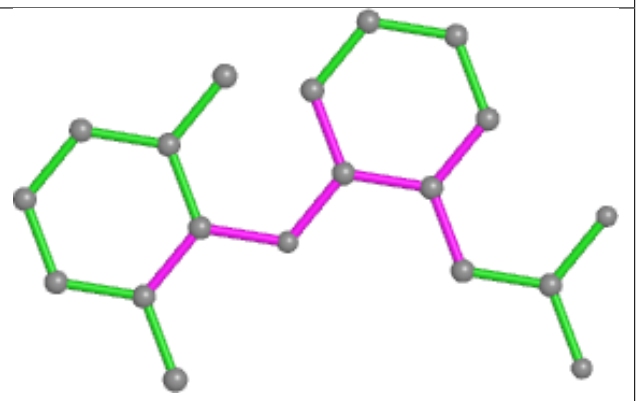
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1377	PO4	1	0
3	B	1376	DIF	7	0
6	A	1380	GOL	5	0
2	A	1372	NAP	3	0
3	B	1374	DIF	6	0
2	B	1372	NAP	2	0
3	A	1375	DIF	1	0

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

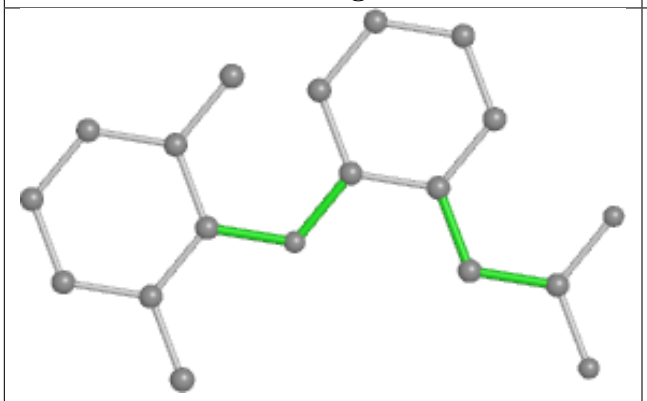
Ligand DIF B 1373



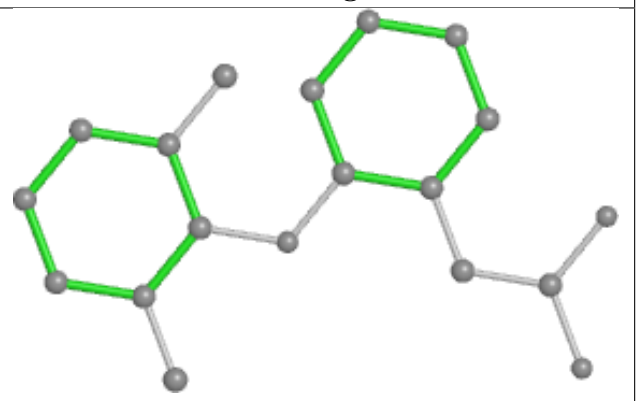
Bond lengths



Bond angles

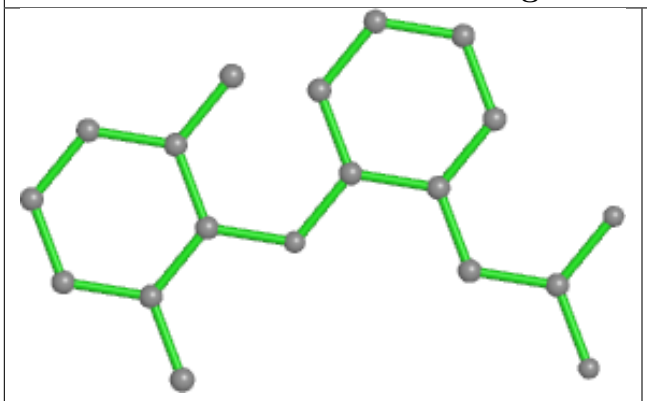


Torsions



Rings

Ligand DIF A 1373



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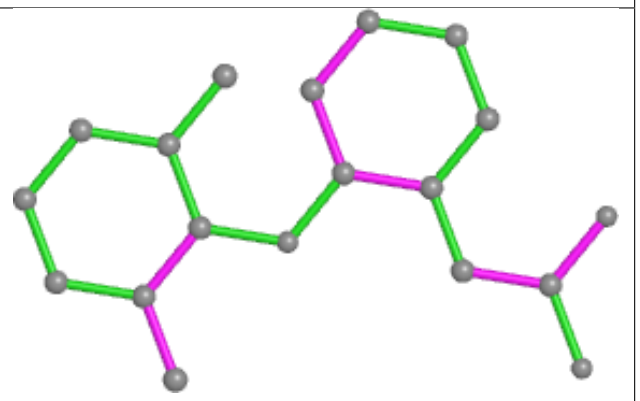

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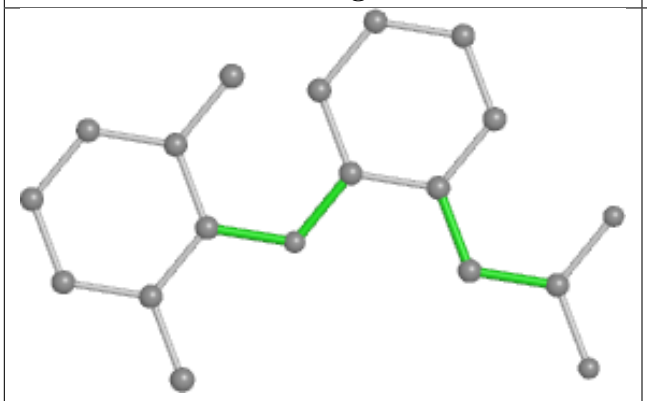
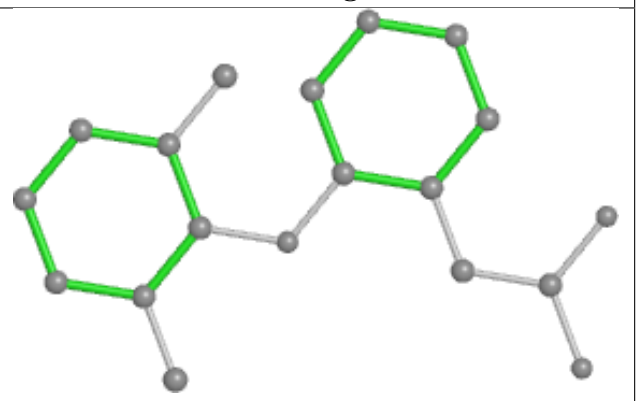
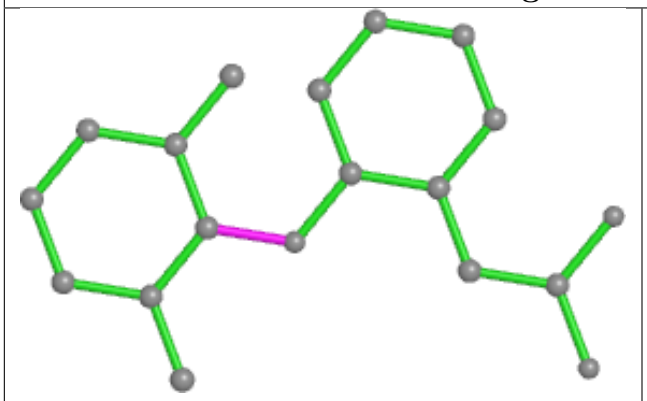


Torsions

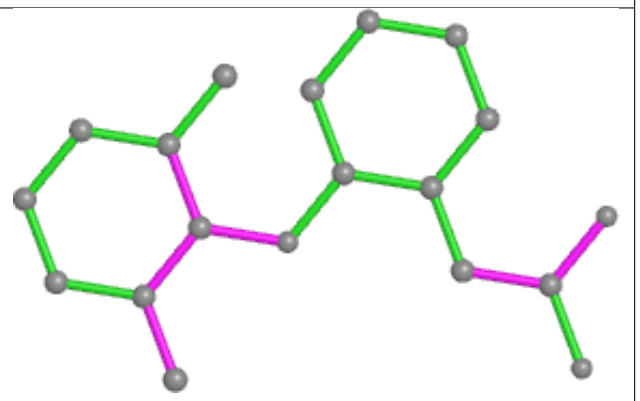


Rings

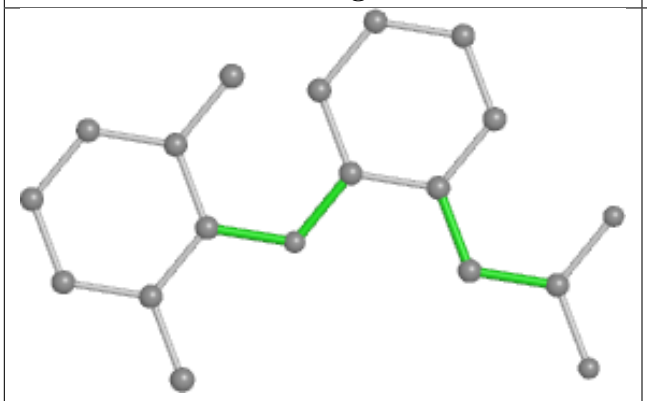
Ligand DIF B 1376



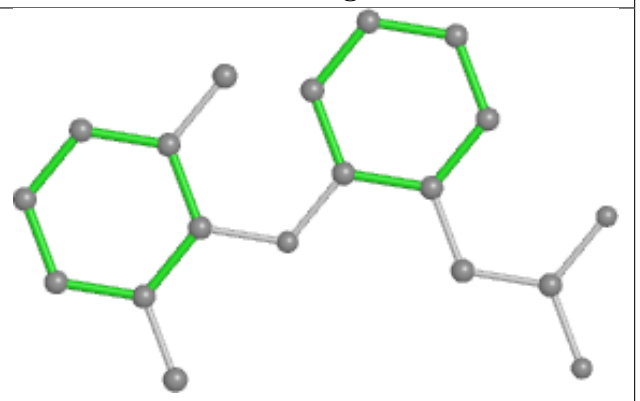
Bond lengths



Bond angles

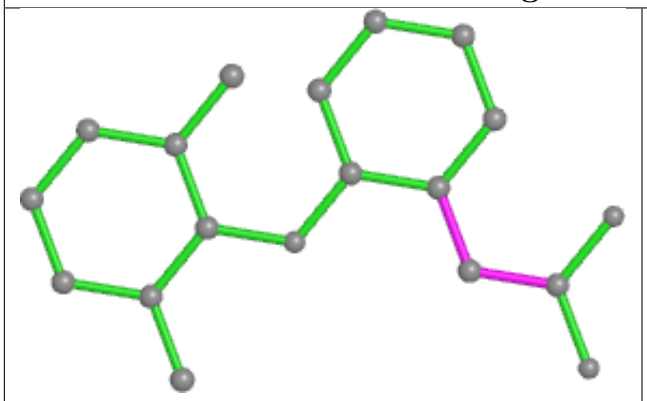


Torsions

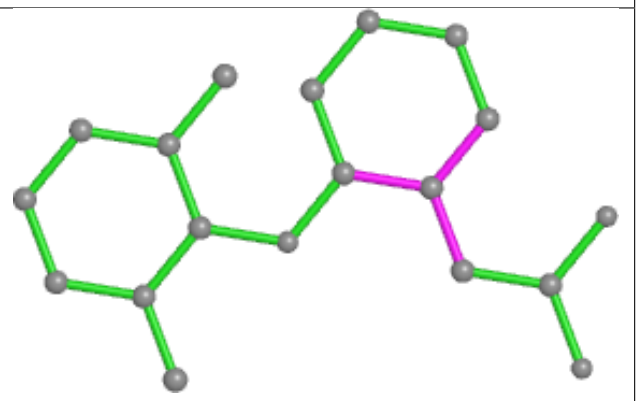


Rings

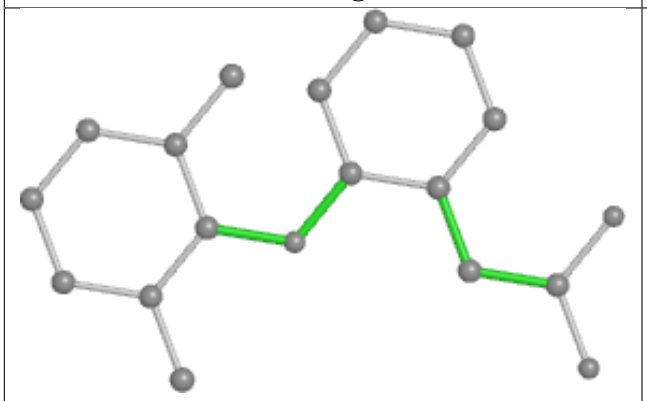
Ligand DIF A 1374



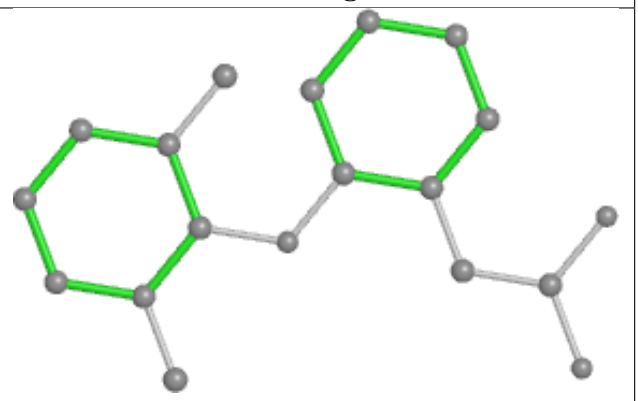
Bond lengths



Bond angles

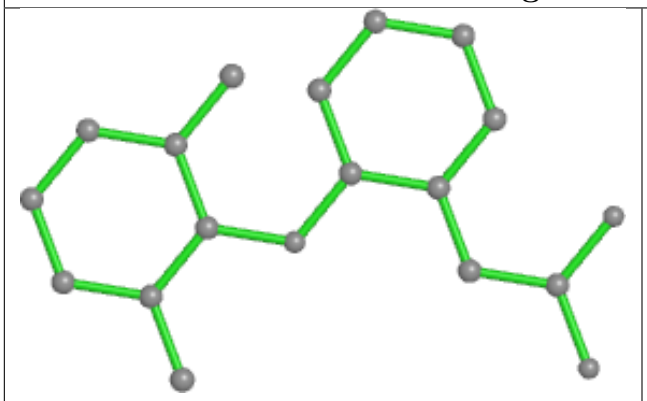


Torsions

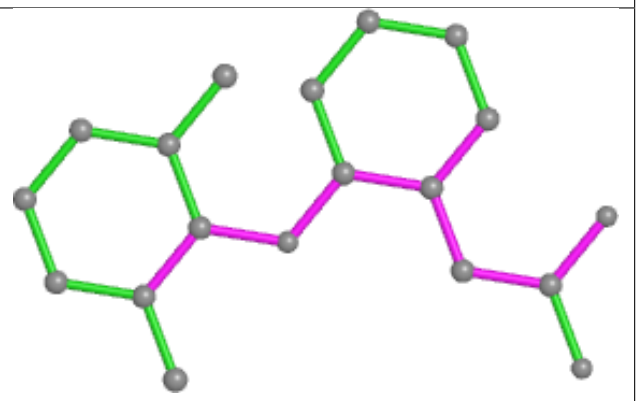


Rings

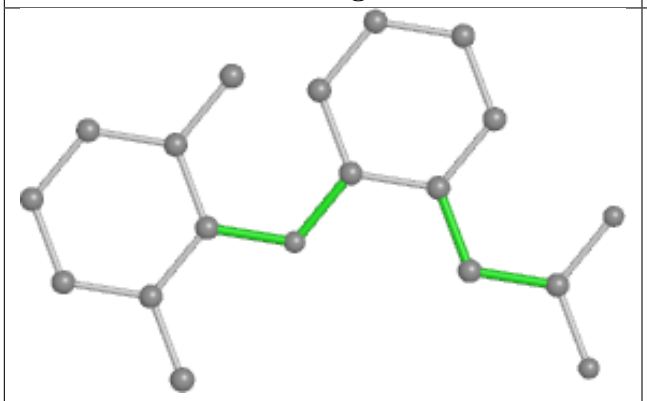
Ligand DIF B 1375



Bond lengths



Bond angles



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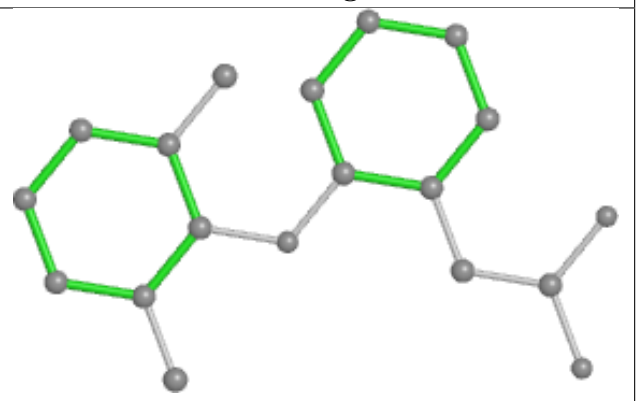
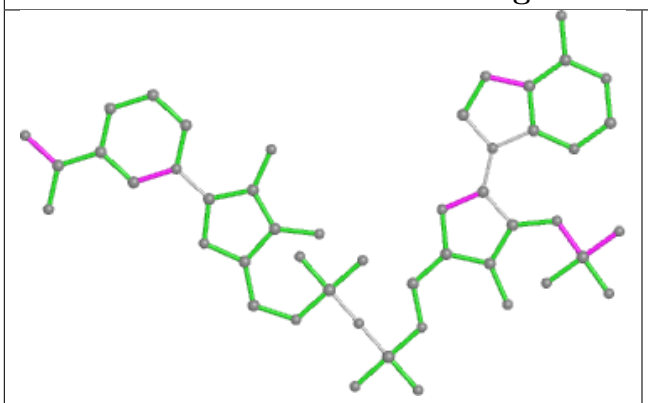
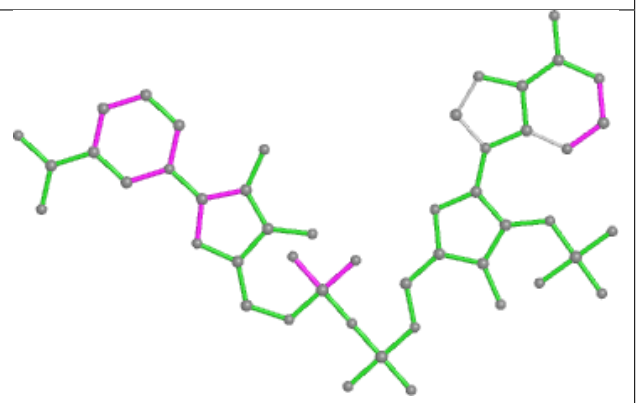


Rings

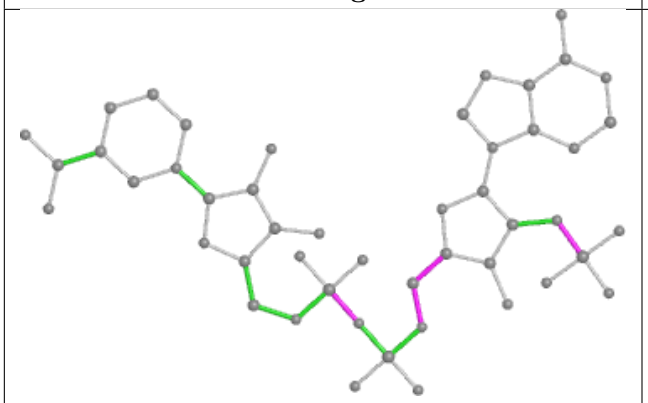
Ligand NAP A 1372



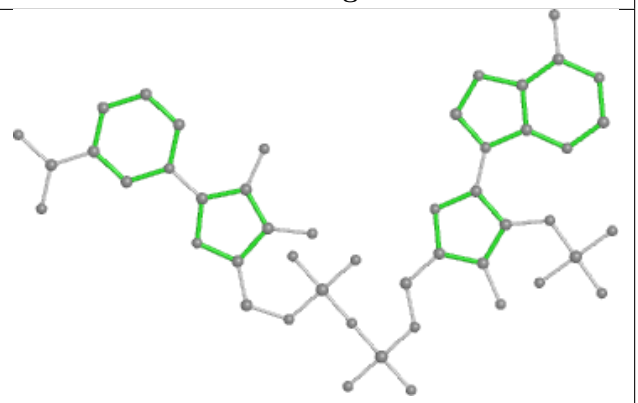
Bond lengths



Bond angles

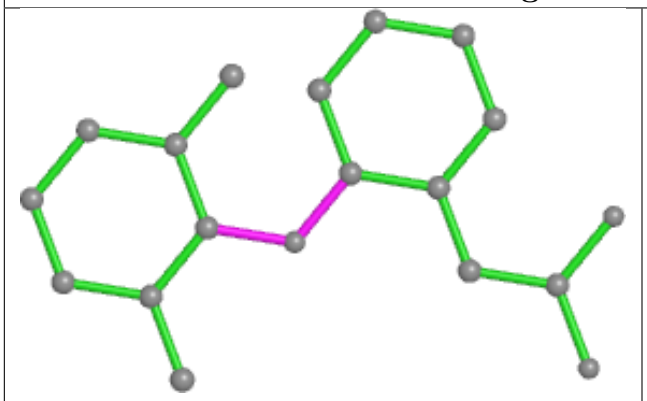


Torsions

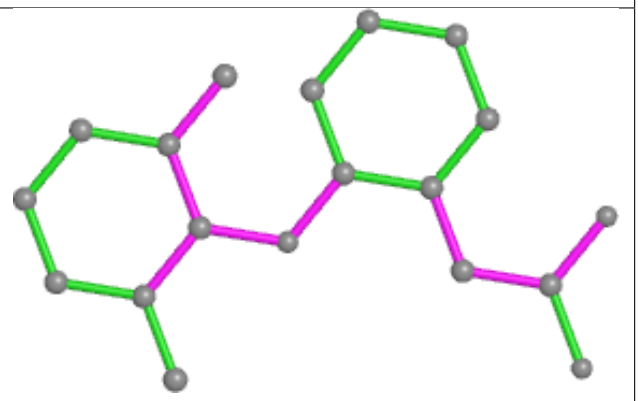


Rings

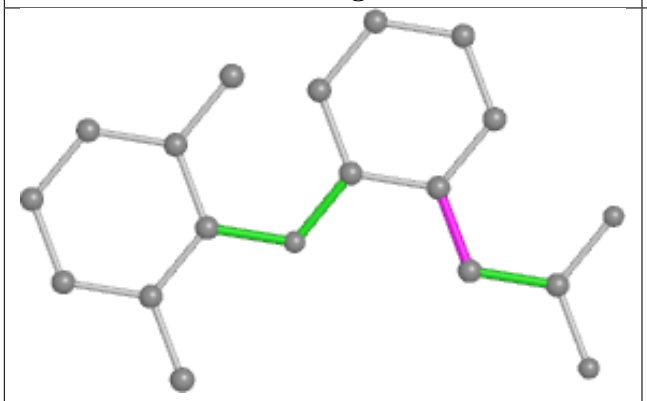
Ligand DIF A 1376



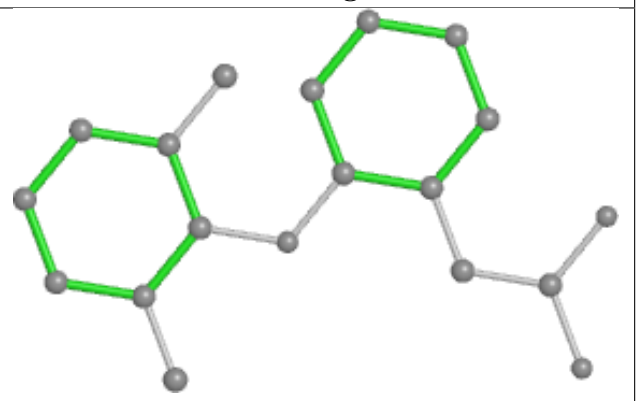
Bond lengths



Bond angles

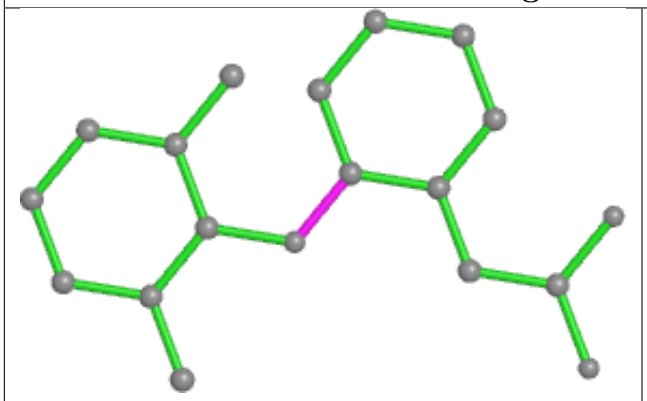


Torsions

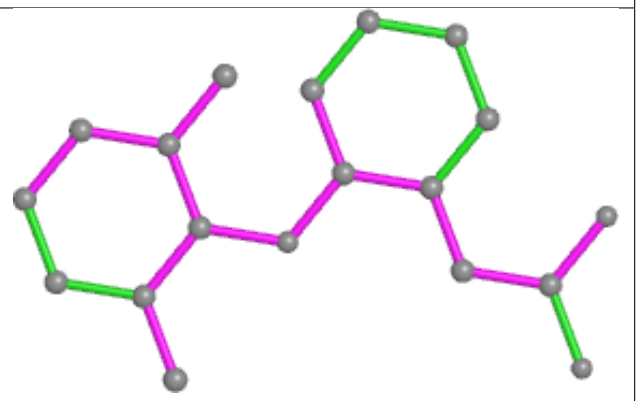


Rings

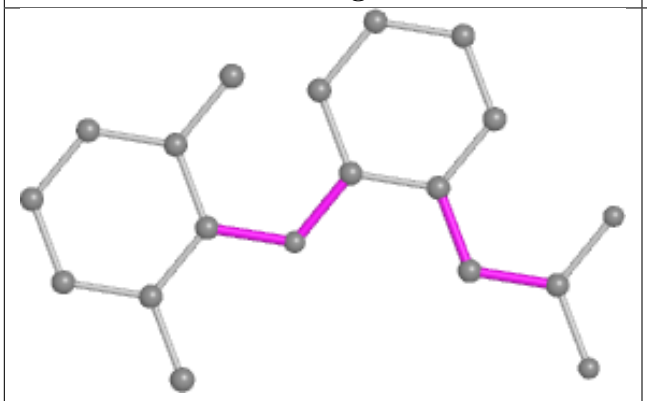
Ligand DIF B 1374



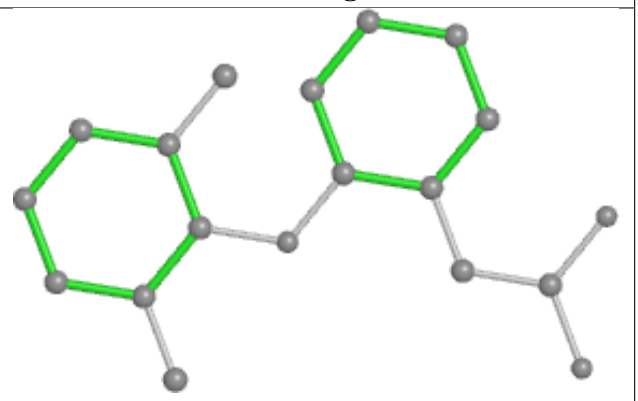
Bond lengths



Bond angles

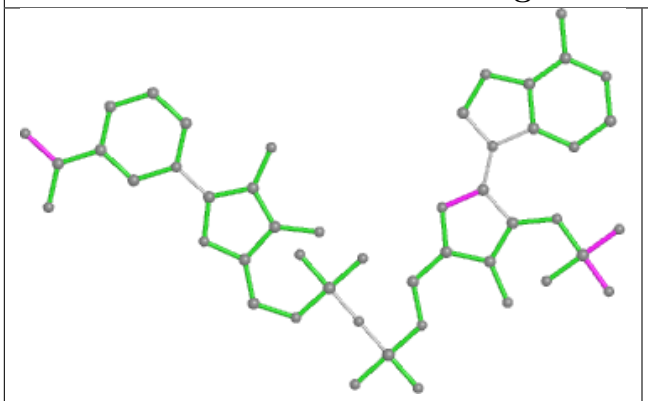


Torsions

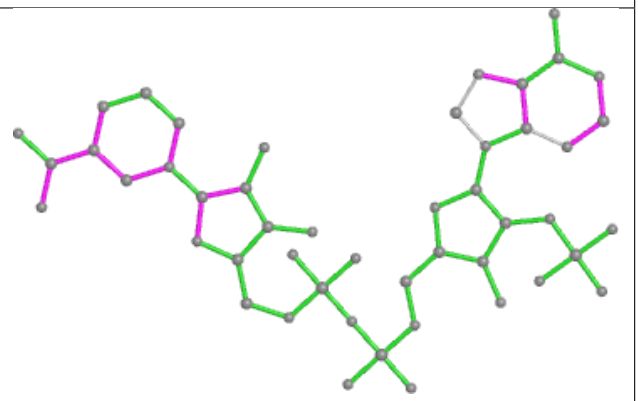


Rings

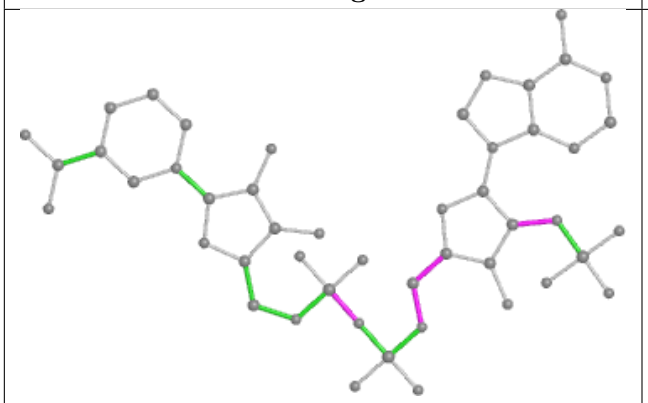
Ligand NAP B 1372



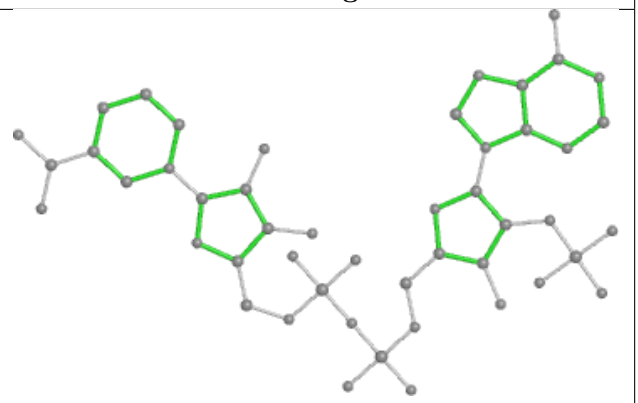
Bond lengths



Bond angles

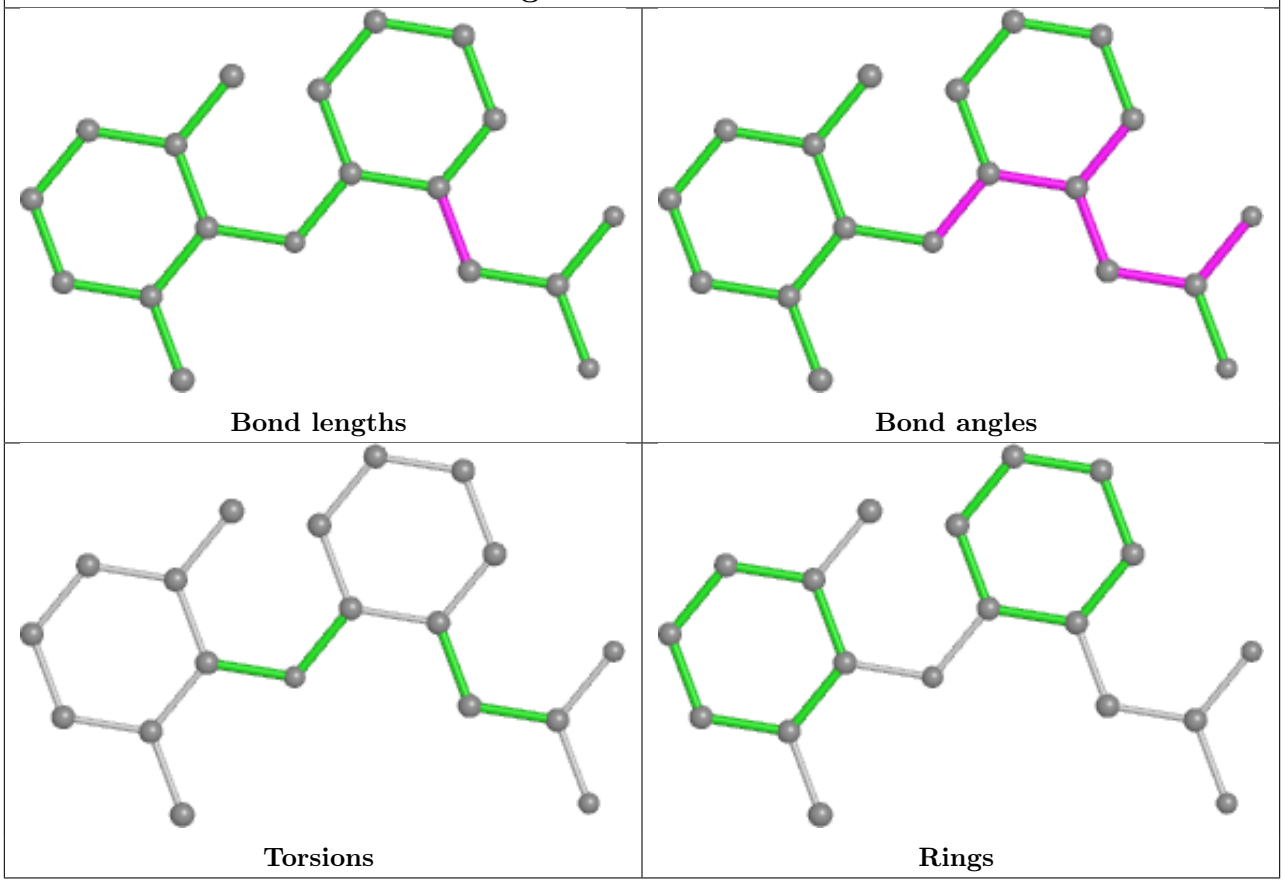


Torsions



Rings

Ligand DIF A 1375



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	341/341 (100%)	-0.06	6 (1%)	68	71	6, 12, 20, 31	0
1	B	340/341 (99%)	0.12	17 (5%)	28	32	8, 13, 21, 26	0
All	All	681/682 (99%)	0.03	23 (3%)	45	48	6, 13, 21, 31	0

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	371	HIS	4.4
1	B	62	ASP	3.3
1	B	109	LEU	3.3
1	A	339	PRO	3.1
1	B	370	PRO	2.8
1	B	113	ALA	2.8
1	B	53	ARG	2.8
1	B	339	PRO	2.7
1	B	337	LEU	2.7
1	B	110	SER	2.6
1	A	269	ILE	2.5
1	B	61	GLY	2.4
1	B	178	VAL	2.4
1	B	89	SER	2.4
1	B	57	VAL	2.3
1	A	371	HIS	2.3
1	B	245	TYR	2.2
1	A	178	VAL	2.2
1	B	88	PRO	2.2
1	A	337	LEU	2.2
1	B	112	SER	2.1
1	A	98	PHE	2.1
1	B	56	PRO	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

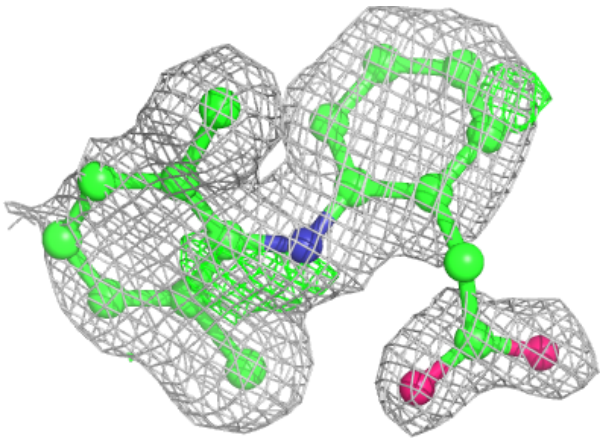
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

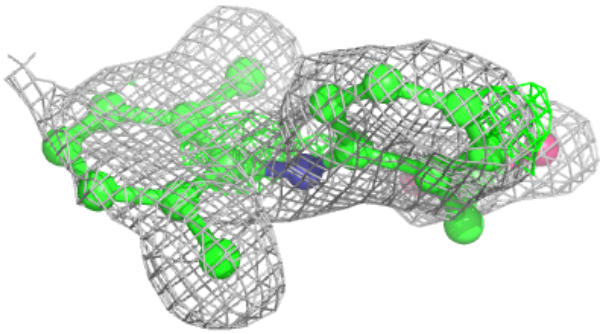
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	GOL	A	1381	6/6	0.80	0.44	20,20,20,20	0
6	GOL	A	1380	6/6	0.84	0.37	20,20,20,20	0
3	DIF	B	1376	19/19	0.85	0.25	9,23,30,30	19
3	DIF	A	1376	19/19	0.85	0.18	2,13,19,26	19
3	DIF	B	1374	19/19	0.85	0.19	31,48,64,66	0
6	GOL	B	1378	6/6	0.85	0.14	42,53,55,55	0
3	DIF	A	1375	19/19	0.86	0.14	14,19,27,31	19
3	DIF	A	1374	19/19	0.88	0.13	24,33,47,49	0
6	GOL	A	1379	6/6	0.90	0.09	39,44,47,51	0
6	GOL	B	1379	6/6	0.91	0.13	42,43,45,49	0
5	CL	B	1380	1/1	0.92	0.07	49,49,49,49	0
3	DIF	B	1375	19/19	0.92	0.14	28,37,52,58	0
5	CL	A	1378	1/1	0.92	0.07	60,60,60,60	0
3	DIF	B	1373	19/19	0.94	0.10	23,31,39,39	0
4	PO4	B	1377	5/5	0.96	0.19	36,42,52,68	0
2	NAP	B	1372	48/48	0.97	0.12	13,18,25,28	0
5	CL	A	1382	1/1	0.97	0.09	55,55,55,55	0
4	PO4	A	1377	5/5	0.97	0.14	36,39,50,56	0
3	DIF	A	1373	19/19	0.97	0.09	19,27,35,36	0
2	NAP	A	1372	48/48	0.98	0.12	9,17,27,34	0

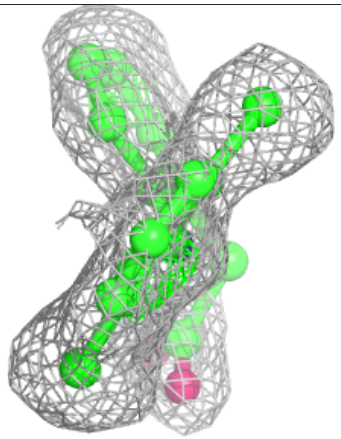
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around DIF B 1376:

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

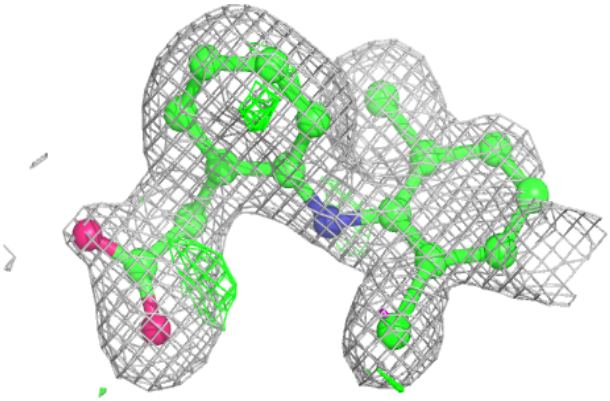


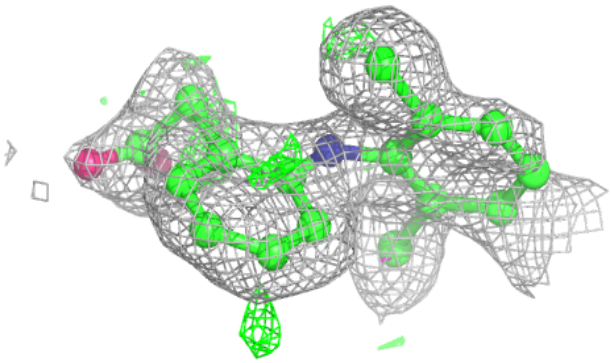


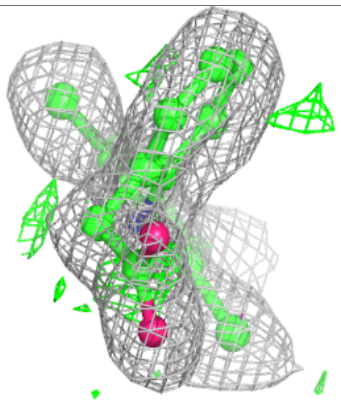


Electron density around DIF A 1376:

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

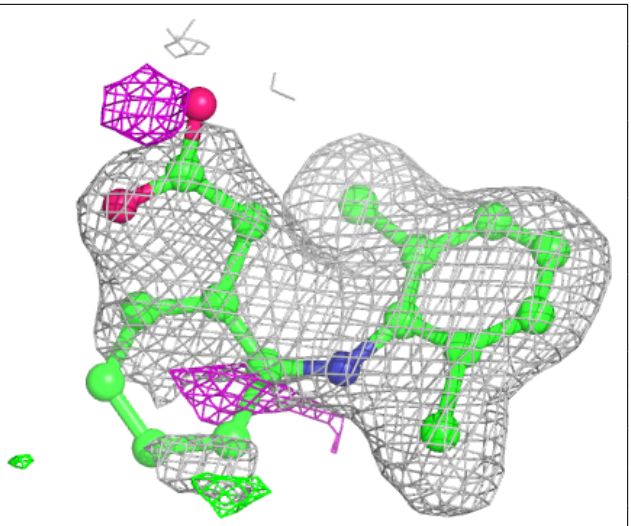


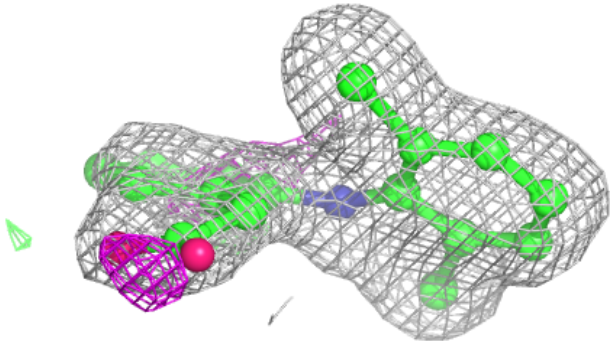


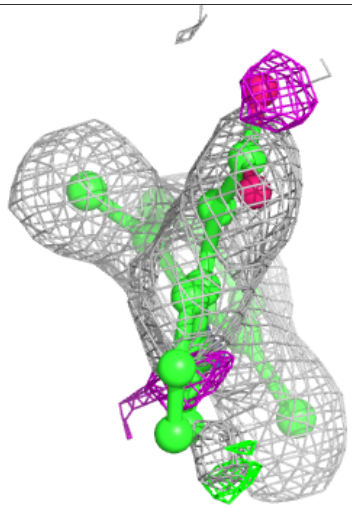


Electron density around DIF B 1374:

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

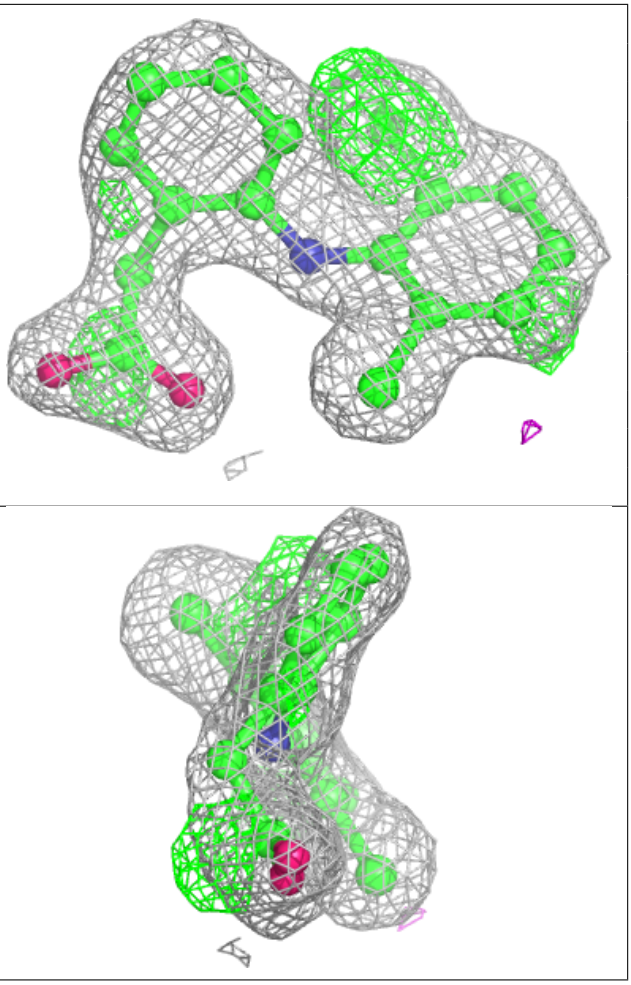






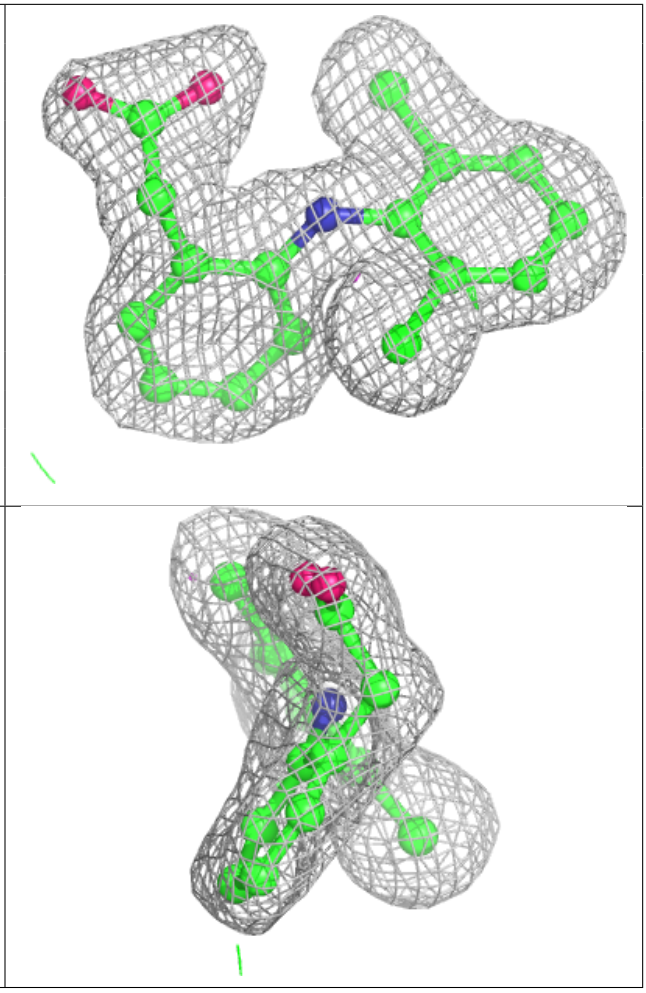
Electron density around DIF A 1375:

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



Electron density around DIF A 1374:

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



Electron density around DIF B 1375:

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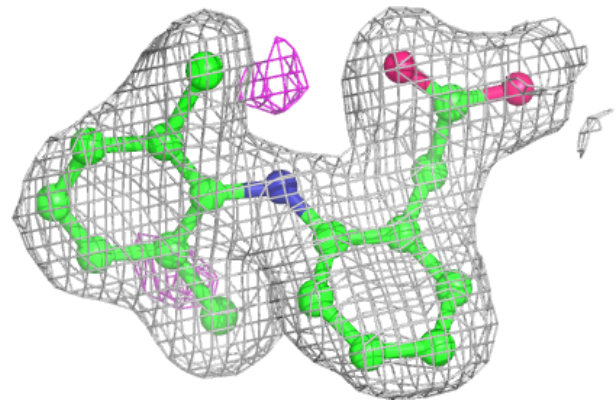
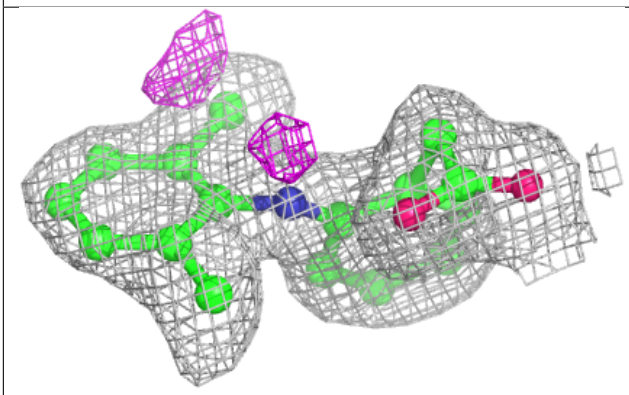
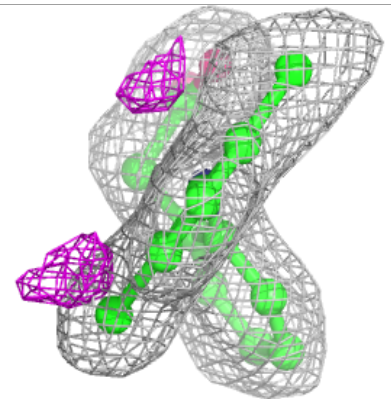
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

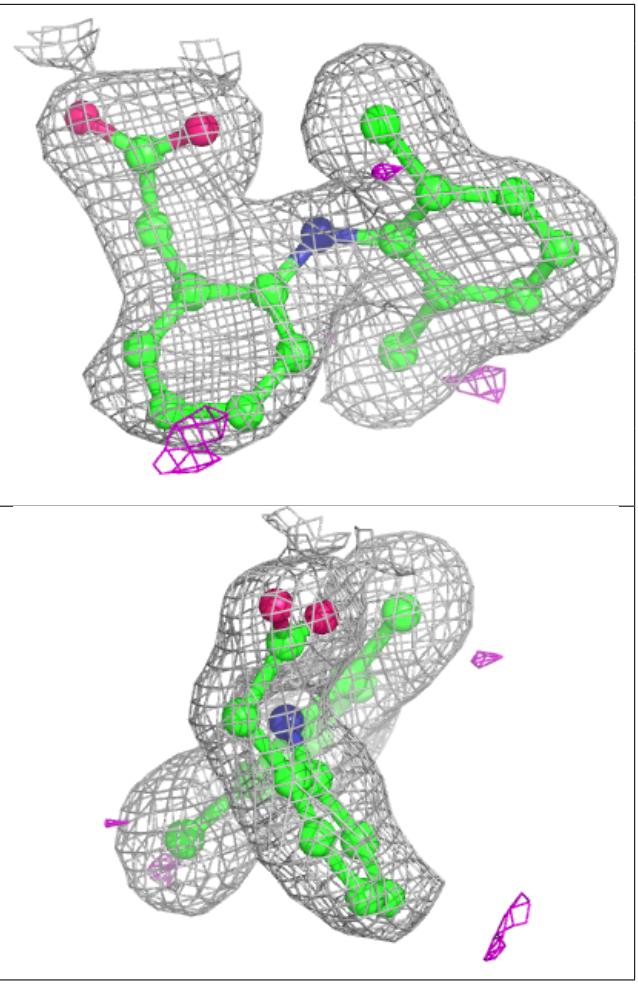






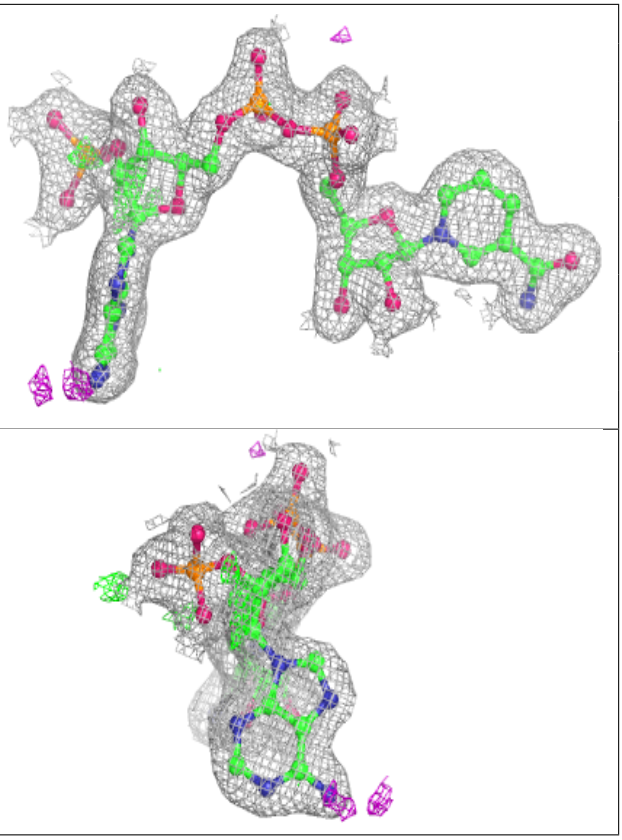
Electron density around DIF B 1373:

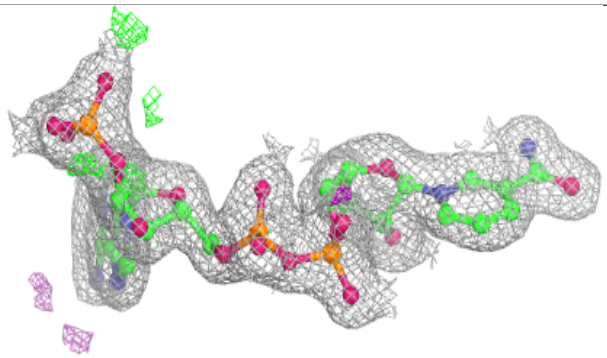
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around NAP B 1372:

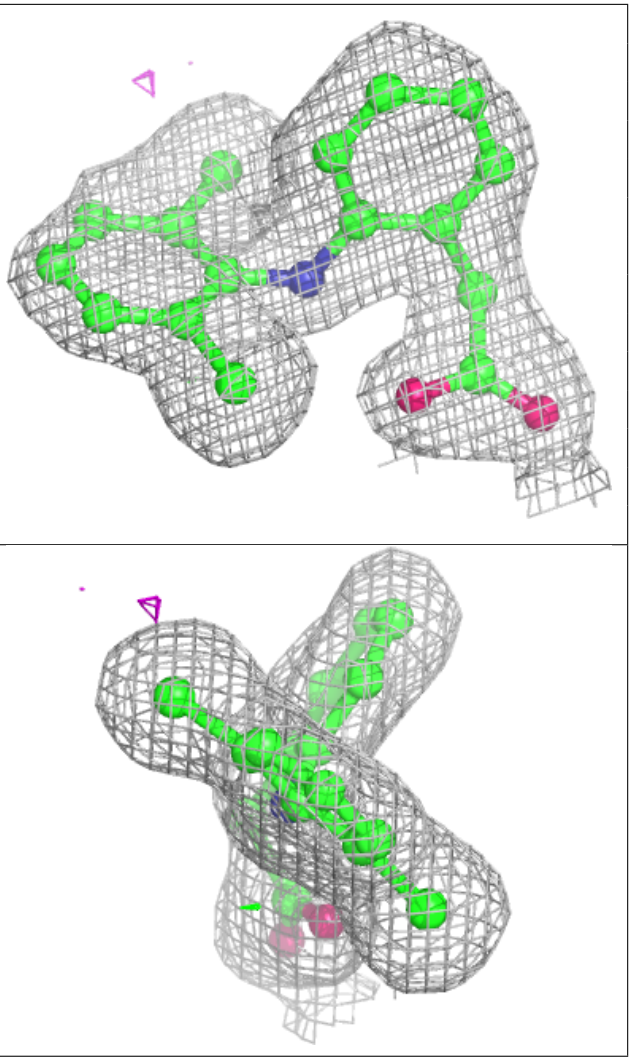
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





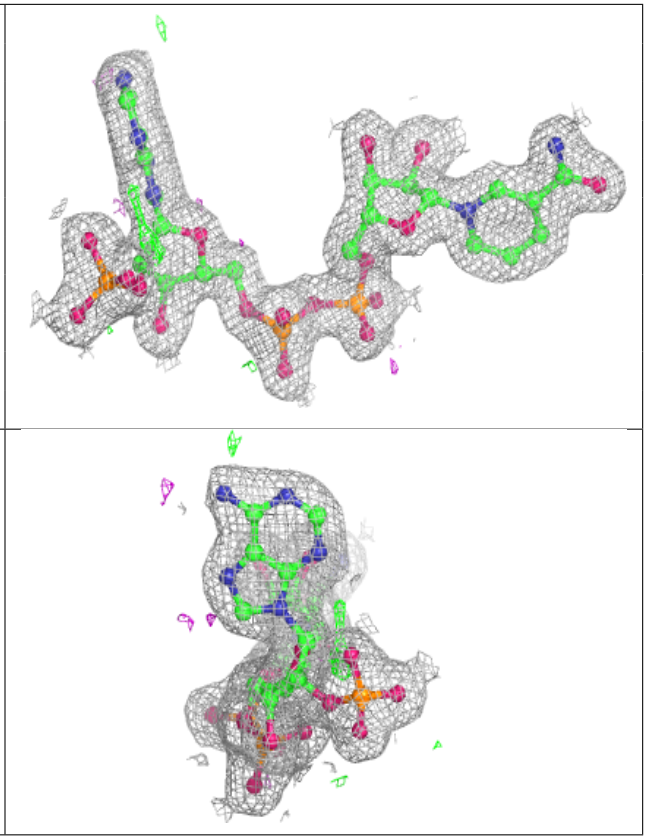
Electron density around DIF A 1373:

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



Electron density around NAP A 1372:

$2mF_o$-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.