Full wwPDB X-ray Structure Validation Report (i)

Sep 30, 2021 – 02:16 PM EDT

PDB ID	:	3OS9
Title	:	Estrogen Receptor
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Deposited on	:	2010-09-08
Resolution	:	2.30 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 following versions of software and data (see references (i)) were used in the production of this report:

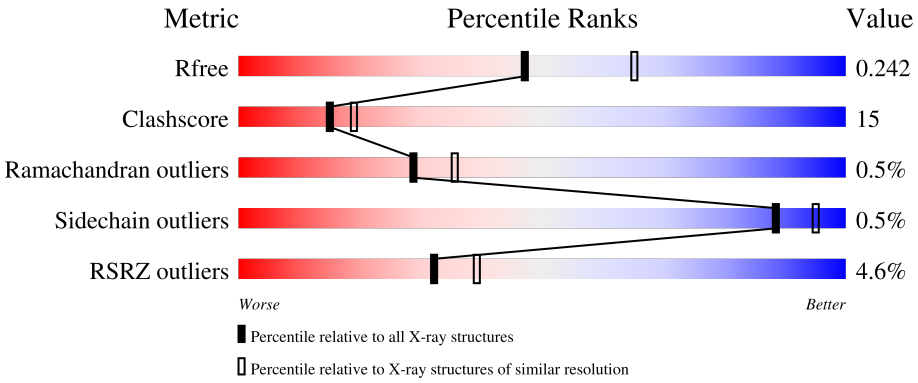
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	258	4% 72% 17% • 10%
1	B	258	5% 70% 17% • 12%
1	C	258	3% 62% 23% 14%
1	D	258	4% 60% 20% 19%

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	KN1	A	1[B]	-	-	X	-
2	KN1	B	2[C]	-	-	X	-
2	KN1	C	554	-	-	X	-
2	KN1	D	1	-	-	X	-

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 7474 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.

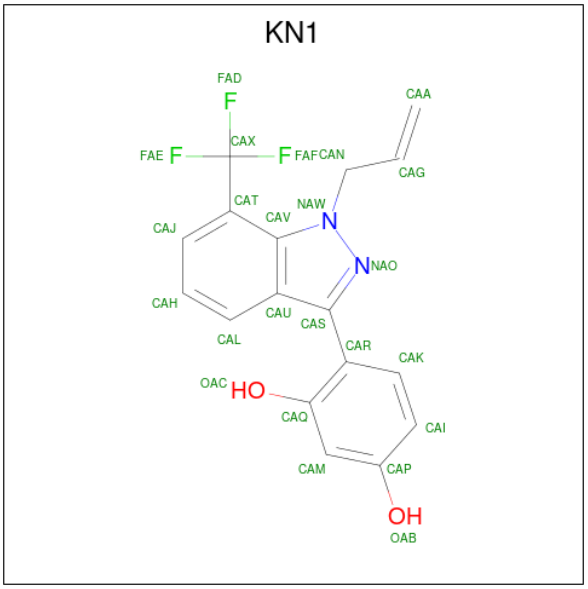
- Molecule 1 is a protein called Estrogen receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	233	Total	C	N	O	S	0	2	0
			1825	1171	315	324	15			
1	B	228	Total	C	N	O	S	0	2	0
			1814	1166	310	322	16			
1	C	221	Total	C	N	O	S	0	2	0
			1748	1125	299	309	15			
1	D	208	Total	C	N	O	S	0	2	0
			1630	1047	281	289	13			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	296	SER	-	expression tag	UNP P03372
A	297	ASN	-	expression tag	UNP P03372
A	298	ALA	-	expression tag	UNP P03372
A	372	ARG	LEU	engineered mutation	UNP P03372
A	536	SER	LEU	engineered mutation	UNP P03372
B	296	SER	-	expression tag	UNP P03372
B	297	ASN	-	expression tag	UNP P03372
B	298	ALA	-	expression tag	UNP P03372
B	372	ARG	LEU	engineered mutation	UNP P03372
B	536	SER	LEU	engineered mutation	UNP P03372
C	296	SER	-	expression tag	UNP P03372
C	297	ASN	-	expression tag	UNP P03372
C	298	ALA	-	expression tag	UNP P03372
C	372	ARG	LEU	engineered mutation	UNP P03372
C	536	SER	LEU	engineered mutation	UNP P03372
D	296	SER	-	expression tag	UNP P03372
D	297	ASN	-	expression tag	UNP P03372
D	298	ALA	-	expression tag	UNP P03372
D	372	ARG	LEU	engineered mutation	UNP P03372
D	536	SER	LEU	engineered mutation	UNP P03372

- Molecule 2 is 4-[1-allyl-7-(trifluoromethyl)-1H-indazol-3-yl]benzene-1,3-diol (three-letter code: KN1) (formula: $C_{17}H_{13}F_3N_2O_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	F	N	O	0	1
			48	34	6	4	4		
2	A	1	Total	C	F	N	O	0	1
			24	17	3	2	2		
2	B	1	Total	C	F	N	O	0	1
			48	34	6	4	4		
2	B	1	Total	C	F	N	O	0	1
			24	17	3	2	2		
2	C	1	Total	C	F	N	O	0	0
			24	17	3	2	2		
2	C	1	Total	C	F	N	O	0	0
			24	17	3	2	2		
2	D	1	Total	C	F	N	O	0	0
			24	17	3	2	2		
2	D	1	Total	C	F	N	O	0	0
			24	17	3	2	2		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	48	Total	O	0	0
			48	48		
3	B	51	Total	O	0	0
			51	51		

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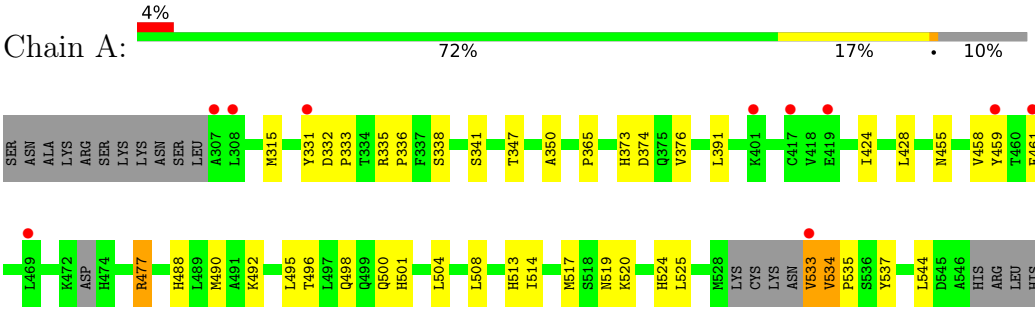
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	58	Total O 58 58	0	0
3	D	60	Total O 60 60	0	0

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.

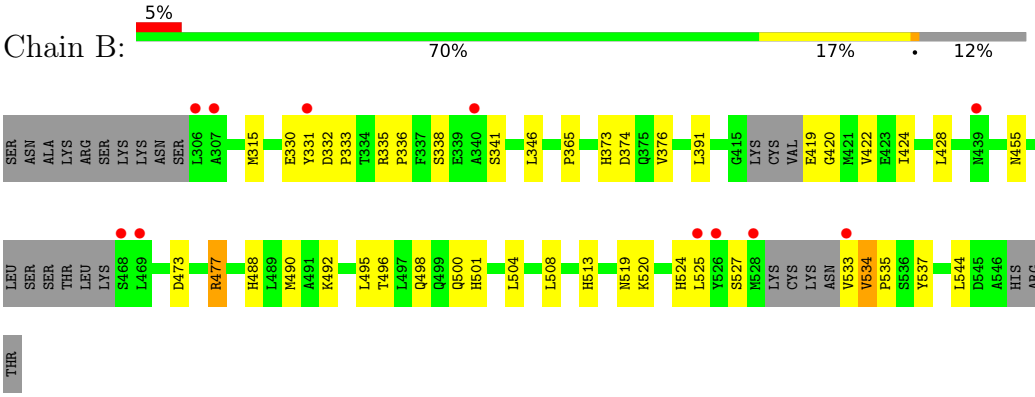
• Molecule 1: Estrogen receptor

Chain A:



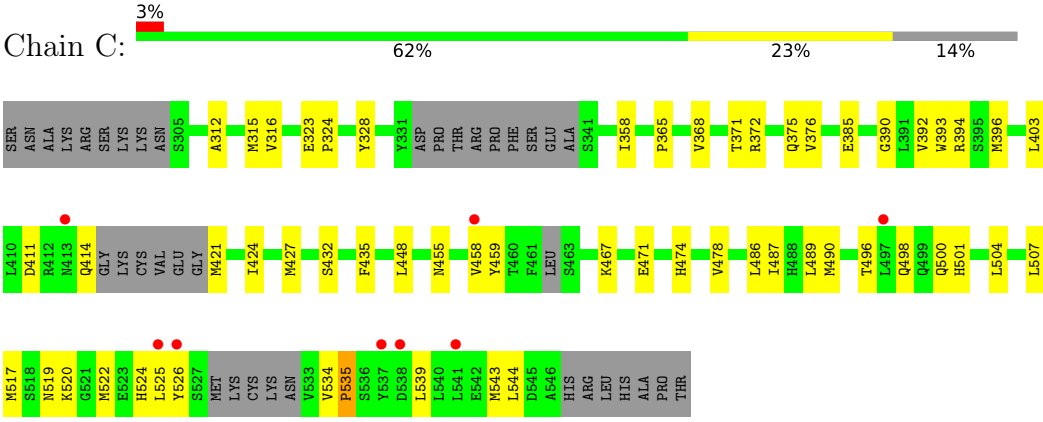
• Molecule 1: Estrogen receptor

Chain B:



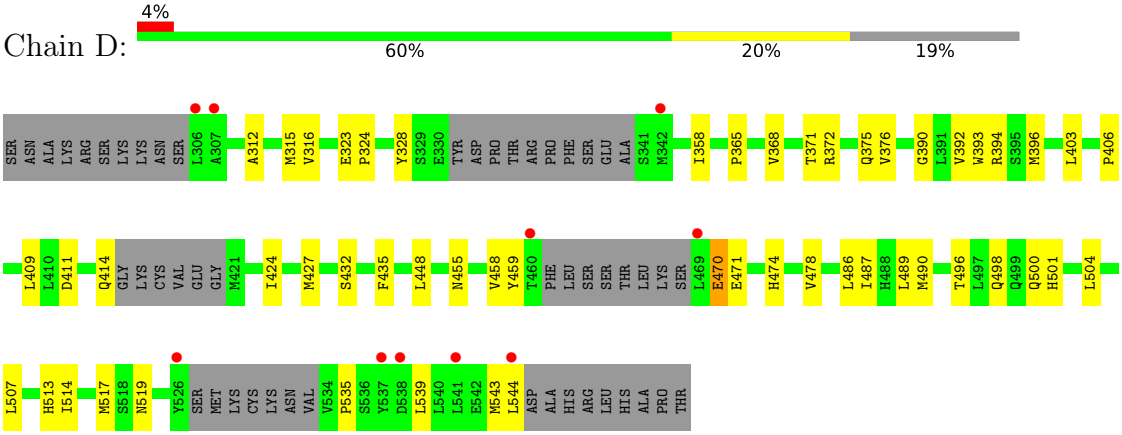
• Molecule 1: Estrogen receptor

Chain C:



• Molecule 1: Estrogen receptor

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	52.90Å 59.06Å 93.76Å 86.64° 74.64° 63.43°	Depositor
Resolution (Å)	20.00 – 2.30 20.04 – 2.30	Depositor EDS
% Data completeness (in resolution range)	91.4 (20.00-2.30) 87.5 (20.04-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.77 (at 2.30Å)	Xtriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.205 , 0.249 0.199 , 0.242	Depositor DCC
R_{free} test set	1980 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	47.4	Xtriage
Anisotropy	0.478	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 49.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.248 for h,h-k,h-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	7474	wwPDB-VP
Average B, all atoms (Å^2)	68.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.32% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: KN1

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	0.20	0/1865	0.40	0/2526
1	B	0.21	0/1855	0.39	0/2509
1	C	0.20	0/1784	0.35	0/2411
1	D	0.20	0/1663	0.36	0/2251
All	All	0.20	0/7167	0.38	0/9697

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1825	0	1822	39	0
1	B	1814	0	1827	42	0
1	C	1748	0	1762	54	0
1	D	1630	0	1624	41	0
2	A	72	0	33	17	0
2	B	72	0	33	23	0
2	C	48	0	22	22	0
2	D	48	0	22	11	0
3	A	48	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	51	0	0	0	0
3	C	58	0	0	2	0
3	D	60	0	0	0	0
All	All	7474	0	7145	217	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 15.

All (217) 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:C:525:LEU:CD1	2:C:554:KN1:HAA1	1.79	1.11
2:B:2[C]:KN1:HAN2	2:B:2[C]:KN1:FAE	1.38	1.10
2:D:1:KN1:FAE	2:D:1:KN1:HAN1	1.43	1.08
2:B:2[C]:KN1:HAN2	2:B:2[C]:KN1:CAX	1.84	1.06
1:A:477:ARG:HG3	1:A:477:ARG:HH11	1.20	1.05
1:B:477:ARG:HH11	1:B:477:ARG:HG3	1.20	1.04
1:B:525:LEU:HD11	2:B:2[C]:KN1:OAC	1.58	1.03
2:C:554:KN1:HAN1	2:C:554:KN1:FAF	1.50	1.00
2:D:1:KN1:HAK	2:D:1:KN1:HAL	1.45	0.96
1:C:525:LEU:CG	2:C:554:KN1:HAA1	1.95	0.96
1:C:525:LEU:HG	2:C:554:KN1:CAA	1.95	0.96
1:A:519:ASN:HD22	1:C:519:ASN:HD22	1.10	0.94
1:C:525:LEU:HG	2:C:554:KN1:HAA1	1.49	0.93
1:B:519:ASN:HD22	1:D:519:ASN:HD22	1.02	0.92
2:A:2[C]:KN1:HAK	2:A:2[C]:KN1:HAL	1.55	0.88
1:A:477:ARG:HH11	1:A:477:ARG:CG	1.89	0.85
1:B:477:ARG:HH11	1:B:477:ARG:CG	1.89	0.85
1:D:535:PRO:HA	1:D:539:LEU:HD23	1.60	0.84
2:C:1:KN1:HAN2	2:C:1:KN1:FAD	1.68	0.84
1:C:535:PRO:HA	1:C:539:LEU:HD23	1.60	0.83
1:C:525:LEU:CD1	2:C:554:KN1:CAA	2.59	0.80
2:B:2[C]:KN1:CAX	2:B:2[C]:KN1:CAN	2.60	0.80
2:C:554:KN1:HAG	2:C:554:KN1:FAD	1.72	0.79
2:A:1[B]:KN1:OAC	2:A:1[B]:KN1:HAL	1.83	0.79
1:C:525:LEU:HD11	2:C:554:KN1:HAA1	1.66	0.77
1:B:525:LEU:CD1	2:B:2[C]:KN1:OAC	2.34	0.76
2:B:2[C]:KN1:HAN2	2:B:2[C]:KN1:FAD	1.76	0.75
1:A:525:LEU:HD11	2:A:2[C]:KN1:OAC	1.87	0.74
1:B:477:ARG:HG3	1:B:477:ARG:NH1	1.97	0.74
1:A:477:ARG:HG3	1:A:477:ARG:NH1	1.97	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:525:LEU:CG	2:C:554:KN1:CAA	2.63	0.72
2:B:1[B]:KN1:OAC	2:B:1[B]:KN1:HAL	1.91	0.71
2:B:2[C]:KN1:FAD	2:B:2[C]:KN1:CAA	2.29	0.70
2:C:554:KN1:FAD	2:C:554:KN1:CAG	2.30	0.70
2:B:2[C]:KN1:FAD	2:B:2[C]:KN1:CAG	2.30	0.69
1:D:470:GLU:HG2	1:D:471:GLU:H	1.58	0.69
2:D:1:KN1:HAN1	2:D:1:KN1:CAX	2.23	0.68
2:B:2[C]:KN1:CAN	2:B:2[C]:KN1:FAD	2.30	0.68
2:B:2[C]:KN1:HAK	2:B:2[C]:KN1:HAL	1.75	0.68
1:C:358:ILE:HD13	1:C:543:MET:HB3	1.76	0.67
1:D:358:ILE:HD13	1:D:543:MET:HB3	1.76	0.67
2:A:1[A]:KN1:HAK	2:A:1[A]:KN1:HAL	1.77	0.67
1:A:490:MET:HB3	1:A:495:LEU:HD12	1.76	0.66
2:C:554:KN1:HAN1	2:C:554:KN1:CAX	2.25	0.66
2:D:554:KN1:HAK	2:D:554:KN1:HAL	1.78	0.66
1:B:490:MET:HB3	1:B:495:LEU:HD12	1.76	0.66
2:A:2[C]:KN1:HAK	2:A:2[C]:KN1:CAL	2.27	0.64
1:B:533:VAL:HG23	1:B:533:VAL:O	1.96	0.64
2:D:1:KN1:HAK	2:D:1:KN1:CAL	2.17	0.64
1:B:391:LEU:HB2	2:B:1[B]:KN1:HAM	1.79	0.64
1:A:498:GLN:HA	1:A:501[B]:HIS:CE1	2.33	0.63
1:C:525:LEU:HD12	2:C:554:KN1:CAA	2.27	0.63
1:B:498:GLN:HA	1:B:501[B]:HIS:CE1	2.33	0.63
2:A:1[B]:KN1:HAN2	2:A:1[B]:KN1:FAF	1.89	0.62
1:C:316:VAL:HG21	1:C:489:LEU:HD21	1.80	0.62
1:D:316:VAL:HG21	1:D:489:LEU:HD21	1.80	0.62
2:B:1[B]:KN1:FAF	2:B:1[B]:KN1:HAN2	1.90	0.61
1:C:520:LYS:O	1:C:524:HIS:HD2	1.83	0.61
1:B:332:ASP:N	1:B:333:PRO:HD3	2.17	0.60
2:C:554:KN1:CAX	2:C:554:KN1:CAN	2.80	0.60
1:C:498:GLN:HA	1:C:501[A]:HIS:CE1	2.37	0.60
1:D:498:GLN:HA	1:D:501[A]:HIS:CE1	2.37	0.60
2:C:554:KN1:HAK	2:C:554:KN1:HAL	1.84	0.59
1:A:332:ASP:N	1:A:333:PRO:HD3	2.17	0.59
2:D:554:KN1:FAE	2:D:554:KN1:HAN2	1.93	0.59
1:A:534:VAL:HG13	1:A:535:PRO:HD2	1.84	0.59
2:A:2[C]:KN1:HAN2	2:A:2[C]:KN1:FAD	1.93	0.59
1:C:376:VAL:HG22	1:C:544:LEU:HD12	1.85	0.59
1:B:473:ASP:HB3	1:B:477:ARG:HH12	1.67	0.59
1:C:522:MET:O	1:C:526:TYR:HD2	1.84	0.59
1:D:376:VAL:HG22	1:D:544:LEU:HD12	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:467:LYS:O	1:C:471:GLU:HG2	2.04	0.58
1:B:534:VAL:HG13	1:B:535:PRO:HD2	1.86	0.58
2:D:1:KN1:FAE	2:D:1:KN1:CAN	2.30	0.57
1:A:520:LYS:O	1:A:524:HIS:HD2	1.87	0.57
1:A:391:LEU:HB2	2:A:1[B]:KN1:HAM	1.86	0.57
1:B:520:LYS:O	1:B:524:HIS:HD2	1.87	0.56
1:A:533:VAL:O	1:A:533:VAL:CG1	2.54	0.56
2:B:1[A]:KN1:FAD	2:B:1[A]:KN1:CAN	2.44	0.56
1:D:470:GLU:HG3	1:D:471:GLU:HG2	1.88	0.55
1:D:514:ILE:HA	1:D:517:MET:HE2	1.88	0.55
1:D:424:ILE:HA	1:D:427:MET:HE2	1.88	0.55
1:B:496:THR:O	1:B:500:GLN:HG3	2.06	0.55
1:D:403:LEU:HD13	1:D:409:LEU:HD13	1.87	0.55
2:A:1[A]:KN1:HAK	2:A:1[A]:KN1:CAL	2.36	0.55
1:B:419:GLU:O	1:B:422:VAL:HG23	2.07	0.55
1:C:403:LEU:HD13	1:C:409:LEU:HD13	1.87	0.55
1:A:496:THR:O	1:A:500:GLN:HG3	2.07	0.55
2:A:1[B]:KN1:OAC	2:A:1[B]:KN1:CAL	2.54	0.55
2:C:1:KN1:HAK	2:C:1:KN1:HAL	1.89	0.55
1:C:358:ILE:HG23	1:C:544:LEU:HD23	1.90	0.54
1:C:424:ILE:HA	1:C:427:MET:HE2	1.90	0.54
1:C:514:ILE:HA	1:C:517:MET:HE2	1.90	0.54
1:D:496:THR:O	1:D:500:GLN:HG3	2.08	0.54
1:C:396:MET:CE	1:C:435:PHE:HB3	2.39	0.53
1:D:358:ILE:HG23	1:D:544:LEU:HD23	1.90	0.53
1:D:396:MET:CE	1:D:435:PHE:HB3	2.39	0.53
2:D:554:KN1:HAK	2:D:554:KN1:CAL	2.37	0.53
1:C:496:THR:O	1:C:500:GLN:HG3	2.09	0.53
1:A:338:SER:H	1:A:341:SER:HB3	1.74	0.53
1:B:330:GLU:HA	1:B:330:GLU:OE1	2.09	0.52
1:B:338:SER:H	1:B:341:SER:HB3	1.74	0.52
2:C:1:KN1:HAN2	2:C:1:KN1:CAX	2.38	0.52
2:B:2[C]:KN1:FAE	2:B:2[C]:KN1:CAN	2.30	0.52
1:B:488:HIS:HE1	1:B:492:LYS:HE3	1.75	0.51
2:C:554:KN1:HAK	2:C:554:KN1:CAL	2.40	0.51
1:A:488:HIS:HE1	1:A:492:LYS:HE3	1.76	0.51
1:B:488:HIS:CE1	1:B:492:LYS:HE3	2.47	0.50
2:B:1[B]:KN1:OAC	2:B:1[B]:KN1:CAL	2.59	0.49
1:A:488:HIS:CE1	1:A:492:LYS:HE3	2.47	0.49
2:B:1[A]:KN1:HAK	2:B:1[A]:KN1:HAL	1.95	0.49
1:B:373:HIS:HD2	1:B:537:TYR:OH	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:358:ILE:HD11	1:D:543:MET:HE3	1.95	0.49
1:D:455:ASN:O	1:D:458:VAL:HG12	2.13	0.49
1:A:373:HIS:HD2	1:A:537:TYR:OH	1.95	0.49
1:C:455:ASN:O	1:C:458:VAL:HG12	2.14	0.48
2:B:1[A]:KN1:FAD	2:B:1[A]:KN1:HAN2	2.02	0.48
1:B:459:TYR:HE2	1:D:513[B]:HIS:CD2	2.30	0.48
1:C:525:LEU:HD13	1:C:534:VAL:CG2	2.44	0.48
1:B:331:TYR:C	1:B:333:PRO:HD3	2.34	0.47
1:C:522:MET:O	1:C:526:TYR:CD2	2.66	0.47
2:D:554:KN1:HAN2	2:D:554:KN1:CAX	2.45	0.47
1:A:331:TYR:C	1:A:333:PRO:HD3	2.35	0.47
1:A:477:ARG:CG	1:A:477:ARG:NH1	2.60	0.47
1:D:371:THR:O	1:D:375:GLN:HG3	2.15	0.47
1:D:470:GLU:CG	1:D:471:GLU:H	2.25	0.47
1:C:371:THR:O	1:C:375:GLN:HG3	2.15	0.47
1:C:539:LEU:O	1:C:543:MET:HG3	2.15	0.47
1:D:539:LEU:O	1:D:543:MET:HG3	2.15	0.47
1:B:477:ARG:CG	1:B:477:ARG:NH1	2.60	0.47
1:A:335:ARG:HA	1:A:336:PRO:C	2.36	0.46
1:B:513[A]:HIS:CG	1:D:459:TYR:CD1	3.04	0.46
1:B:335:ARG:HA	1:B:336:PRO:C	2.36	0.46
1:A:459:TYR:HE2	1:C:513[B]:HIS:CD2	2.33	0.46
1:B:455:ASN:O	1:D:513[B]:HIS:HE1	1.99	0.45
1:C:424:ILE:HD11	1:C:524:HIS:CD2	2.52	0.45
1:A:428:LEU:HD11	2:A:1[B]:KN1:HAH	1.98	0.45
1:C:368:VAL:HA	1:C:375:GLN:NE2	2.30	0.45
1:C:358:ILE:HD11	1:C:543:MET:HE3	1.99	0.45
1:C:411:ASP:OD1	1:C:414:GLN:HG3	2.16	0.45
1:D:368:VAL:HA	1:D:375:GLN:NE2	2.30	0.45
1:A:513[A]:HIS:CG	1:C:459:TYR:CD1	3.04	0.45
2:B:2[C]:KN1:OAC	2:B:2[C]:KN1:NAO	2.45	0.45
1:C:525:LEU:HD11	2:C:554:KN1:OAC	2.16	0.45
1:D:411:ASP:OD1	1:D:414:GLN:HG3	2.16	0.45
1:B:459:TYR:CE2	1:D:513[B]:HIS:CD2	3.04	0.45
1:C:448:LEU:HD11	1:C:507:LEU:HD22	1.99	0.45
1:D:424:ILE:HA	1:D:427:MET:CE	2.47	0.45
1:D:448:LEU:HD11	1:D:507:LEU:HD22	1.99	0.45
1:A:504:LEU:O	1:A:508:LEU:HG	2.16	0.45
1:B:504:LEU:O	1:B:508:LEU:HG	2.16	0.45
1:C:424:ILE:HA	1:C:427:MET:CE	2.47	0.45
1:B:533:VAL:O	1:B:533:VAL:CG2	2.64	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:368:VAL:HG22	3:C:54:HOH:O	2.17	0.44
1:D:390:GLY:O	1:D:394:ARG:HG3	2.17	0.44
1:D:393:TRP:CE3	1:D:396:MET:HE3	2.53	0.44
1:C:385:GLU:HG3	3:C:52:HOH:O	2.17	0.44
1:B:458:VAL:HA	1:B:461:PHE:HE1	1.82	0.44
1:C:390:GLY:O	1:C:394:ARG:HG3	2.17	0.44
1:D:470:GLU:CG	1:D:471:GLU:HG2	2.47	0.44
1:A:458:VAL:HA	1:A:461:PHE:HE1	1.82	0.44
1:B:428:LEU:HD11	2:B:1[B]:KN1:HAH	1.98	0.44
1:D:312:ALA:O	1:D:316:VAL:HG23	2.17	0.44
2:A:2[C]:KN1:HAN2	2:A:2[C]:KN1:CAX	2.48	0.44
1:C:312:ALA:O	1:C:316:VAL:HG23	2.18	0.44
1:C:393:TRP:CE3	1:C:396:MET:HE3	2.53	0.44
1:B:455:ASN:O	1:B:458:VAL:HG12	2.18	0.43
1:A:455:ASN:O	1:A:458:VAL:HG12	2.19	0.43
2:D:1:KN1:CAL	2:D:554:KN1:CAL	2.97	0.43
1:A:459:TYR:CE2	1:C:513[B]:HIS:CD2	3.05	0.43
2:A:1[B]:KN1:HAN2	2:A:1[B]:KN1:CAX	2.49	0.43
2:B:1[B]:KN1:HAN2	2:B:1[B]:KN1:CAX	2.49	0.43
1:D:392:VAL:HG13	1:D:432:SER:HA	1.99	0.43
1:B:346:LEU:HB3	2:B:1[A]:KN1:CAU	2.48	0.43
1:C:323:GLU:HA	1:C:324:PRO:HD3	1.91	0.43
1:B:376:VAL:HG22	1:B:544:LEU:HD12	1.99	0.43
2:A:1[A]:KN1:CAX	2:A:1[A]:KN1:HAN1	2.49	0.43
1:C:392:VAL:HG13	1:C:432:SER:HA	1.99	0.43
1:C:396:MET:HE2	1:C:435:PHE:HB3	2.00	0.43
1:A:376:VAL:HG22	1:A:544:LEU:HD12	1.99	0.43
1:A:347:THR:HA	2:A:1[A]:KN1:HAH	2.00	0.43
1:A:533:VAL:O	1:A:533:VAL:HG12	2.19	0.42
1:A:374:ASP:CG	1:A:461:PHE:HE2	2.22	0.42
1:B:374:ASP:CG	1:B:461:PHE:HE2	2.22	0.42
1:C:328:TYR:CE2	1:C:406:PRO:HB2	2.54	0.42
2:C:1:KN1:HAK	2:C:1:KN1:CAL	2.48	0.42
1:D:323:GLU:HA	1:D:324:PRO:HD3	1.91	0.42
1:D:396:MET:HE2	1:D:435:PHE:HB3	2.01	0.42
1:C:487:ILE:HD11	1:C:504:LEU:HD22	2.00	0.42
1:A:350:ALA:HB2	2:A:1[B]:KN1:HAK	2.02	0.42
1:D:372:ARG:O	1:D:376:VAL:HG23	2.19	0.42
1:C:372:ARG:O	1:C:376:VAL:HG23	2.19	0.42
2:D:1:KN1:OAC	2:D:1:KN1:NAO	2.52	0.42
1:B:346:LEU:HB3	2:B:1[A]:KN1:CAL	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:315:MET:SD	1:B:365:PRO:HG2	2.60	0.41
2:C:554:KN1:CAG	2:C:554:KN1:CAX	2.97	0.41
1:D:470:GLU:CG	1:D:471:GLU:N	2.83	0.41
1:D:487:ILE:HD11	1:D:504:LEU:HD22	2.00	0.41
1:A:315:MET:SD	1:A:365:PRO:HG2	2.60	0.41
1:B:424:ILE:O	1:B:428:LEU:HG	2.20	0.41
1:C:421:MET:SD	2:C:1:KN1:FAD	2.68	0.41
1:A:391:LEU:HD22	2:A:1[B]:KN1:OAC	2.21	0.41
1:B:473:ASP:HB3	1:B:477:ARG:NH1	2.34	0.41
1:D:328:TYR:CE2	1:D:406:PRO:HB2	2.55	0.41
1:D:486:LEU:O	1:D:490:MET:HG3	2.20	0.41
1:A:424:ILE:O	1:A:428:LEU:HG	2.21	0.41
1:D:315:MET:SD	1:D:365:PRO:HG2	2.61	0.41
1:B:458:VAL:HA	1:B:461:PHE:CE1	2.56	0.41
1:A:458:VAL:HA	1:A:461:PHE:CE1	2.56	0.41
1:C:474:HIS:O	1:C:478:VAL:HG23	2.20	0.41
1:A:464:SER:O	1:A:465:THR:CB	2.69	0.41
1:A:514:ILE:HA	1:A:517:MET:HE2	2.02	0.41
1:C:315:MET:SD	1:C:365:PRO:HG2	2.61	0.41
1:D:474:HIS:O	1:D:478:VAL:HG23	2.20	0.41
1:B:524:HIS:HA	1:B:527:SER:HB2	2.02	0.40
1:C:486:LEU:O	1:C:490:MET:HG3	2.21	0.40
1:A:459:TYR:HD2	1:C:513[B]:HIS:CE1	2.39	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	227/258 (88%)	223 (98%)	3 (1%)	1 (0%)	34 42
1	B	222/258 (86%)	218 (98%)	2 (1%)	2 (1%)	17 20

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	C	213/258 (83%)	208 (98%)	4 (2%)	1 (0%)	29 35
1	D	200/258 (78%)	196 (98%)	4 (2%)	0	100 100
All	All	862/1032 (84%)	845 (98%)	13 (2%)	4 (0%)	29 35

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	534	VAL
1	B	534	VAL
1	B	420	GLY
1	C	535	PRO

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	197/232 (85%)	195 (99%)	2 (1%)	76 87
1	B	199/232 (86%)	198 (100%)	1 (0%)	88 95
1	C	190/232 (82%)	190 (100%)	0	100 100
1	D	174/232 (75%)	173 (99%)	1 (1%)	86 94
All	All	760/928 (82%)	756 (100%)	4 (0%)	88 95

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	477	ARG
1	A	533	VAL
1	B	477	ARG
1	D	470	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	356	HIS
1	A	373	HIS
1	A	414	GLN
1	A	488	HIS
1	A	502	GLN
1	A	519	ASN
1	A	524	HIS
1	B	356	HIS
1	B	373	HIS
1	B	414	GLN
1	B	488	HIS
1	B	502	GLN
1	B	519	ASN
1	B	524	HIS
1	C	373	HIS
1	C	488	HIS
1	C	524	HIS
1	D	373	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 monosaccharides in this entry.

5.6 Ligand geometry

10 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	KN1	B	2[C]	-	23,26,26	3.91	6 (26%)	29,39,39	1.90	8 (27%)
2	KN1	D	554	-	23,26,26	3.82	6 (26%)	29,39,39	1.70	3 (10%)
2	KN1	A	1[B]	-	23,26,26	3.30	4 (17%)	29,39,39	1.86	7 (24%)
2	KN1	B	1[A]	-	23,26,26	3.73	5 (21%)	29,39,39	2.40	6 (20%)
2	KN1	A	2[C]	-	23,26,26	3.36	5 (21%)	29,39,39	1.67	7 (24%)
2	KN1	B	1[B]	-	23,26,26	3.33	5 (21%)	29,39,39	1.85	7 (24%)
2	KN1	D	1	-	23,26,26	4.14	7 (30%)	29,39,39	1.45	5 (17%)
2	KN1	C	554	-	23,26,26	3.95	7 (30%)	29,39,39	1.41	3 (10%)
2	KN1	C	1	-	23,26,26	3.84	8 (34%)	29,39,39	1.69	4 (13%)
2	KN1	A	1[A]	-	23,26,26	3.67	7 (30%)	29,39,39	2.50	5 (17%)

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	KN1	B	2[C]	-	-	2/9/13/13	0/3/3/3
2	KN1	D	554	-	-	1/9/13/13	0/3/3/3
2	KN1	A	1[B]	-	-	2/9/13/13	0/3/3/3
2	KN1	B	1[A]	-	-	8/9/13/13	0/3/3/3
2	KN1	A	2[C]	-	-	2/9/13/13	0/3/3/3
2	KN1	B	1[B]	-	-	1/9/13/13	0/3/3/3
2	KN1	D	1	-	-	8/9/13/13	0/3/3/3
2	KN1	C	554	-	-	2/9/13/13	0/3/3/3
2	KN1	C	1	-	-	0/9/13/13	0/3/3/3
2	KN1	A	1[A]	-	-	7/9/13/13	0/3/3/3

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1	KN1	NAO-NAW	-13.97	1.22	1.37
2	C	554	KN1	NAO-NAW	-13.84	1.22	1.37
2	D	554	KN1	NAO-NAW	-13.76	1.22	1.37
2	B	2[C]	KN1	NAO-NAW	-13.72	1.22	1.37
2	C	1	KN1	NAO-NAW	-13.72	1.22	1.37
2	B	1[A]	KN1	NAO-NAW	-12.86	1.23	1.37
2	A	1[A]	KN1	NAO-NAW	-12.83	1.23	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2[C]	KN1	NAO-NAW	-12.39	1.23	1.37
2	B	1[B]	KN1	NAO-NAW	-12.36	1.23	1.37
2	A	1[B]	KN1	NAO-NAW	-12.30	1.24	1.37
2	D	1	KN1	CAR-CAS	-9.74	1.37	1.49
2	B	2[C]	KN1	CAR-CAS	-8.77	1.38	1.49
2	C	554	KN1	CAR-CAS	-7.99	1.39	1.49
2	D	554	KN1	CAR-CAS	-7.77	1.39	1.49
2	A	1[A]	KN1	CAR-CAS	-7.56	1.39	1.49
2	A	2[C]	KN1	CAR-CAS	-7.38	1.40	1.49
2	B	1[A]	KN1	CAR-CAS	-7.35	1.40	1.49
2	B	1[B]	KN1	CAR-CAS	-7.20	1.40	1.49
2	C	1	KN1	CAR-CAS	-7.18	1.40	1.49
2	A	1[B]	KN1	CAR-CAS	-7.12	1.40	1.49
2	C	554	KN1	CAN-CAG	-6.36	1.37	1.49
2	B	1[A]	KN1	CAN-CAG	-6.18	1.38	1.49
2	D	554	KN1	CAN-CAG	-6.14	1.38	1.49
2	A	1[A]	KN1	CAN-CAG	-6.06	1.38	1.49
2	C	1	KN1	CAN-CAG	-6.02	1.38	1.49
2	D	1	KN1	CAN-CAG	-5.89	1.38	1.49
2	B	2[C]	KN1	CAN-CAG	-5.69	1.38	1.49
2	B	1[B]	KN1	CAN-CAG	-5.48	1.39	1.49
2	A	2[C]	KN1	CAN-CAG	-5.45	1.39	1.49
2	A	1[B]	KN1	CAN-CAG	-5.41	1.39	1.49
2	D	1	KN1	CAS-NAO	-5.36	1.30	1.35
2	C	1	KN1	CAS-NAO	-4.71	1.31	1.35
2	C	554	KN1	CAS-NAO	-4.59	1.31	1.35
2	B	1[A]	KN1	CAX-CAT	4.17	1.55	1.50
2	D	554	KN1	CAS-NAO	-3.93	1.32	1.35
2	B	1[A]	KN1	CAS-NAO	-3.91	1.32	1.35
2	B	2[C]	KN1	CAS-NAO	-3.88	1.32	1.35
2	A	1[A]	KN1	CAS-NAO	-3.70	1.32	1.35
2	C	1	KN1	CAX-CAT	3.68	1.55	1.50
2	B	2[C]	KN1	CAU-CAV	-3.36	1.35	1.41
2	A	1[A]	KN1	CAX-CAT	3.08	1.54	1.50
2	C	554	KN1	CAU-CAV	-2.83	1.36	1.41
2	D	1	KN1	CAU-CAV	-2.65	1.36	1.41
2	D	554	KN1	CAL-CAU	-2.55	1.37	1.42
2	C	1	KN1	CAL-CAU	-2.55	1.37	1.42
2	D	1	KN1	CAL-CAU	-2.51	1.37	1.42
2	A	2[C]	KN1	CAX-CAT	2.45	1.53	1.50
2	B	1[B]	KN1	CAX-CAT	2.33	1.53	1.50
2	C	1	KN1	CAU-CAV	-2.33	1.37	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1[B]	KN1	CAX-CAT	2.32	1.53	1.50
2	B	2[C]	KN1	CAL-CAU	-2.23	1.37	1.42
2	C	554	KN1	CAL-CAU	-2.22	1.37	1.42
2	D	554	KN1	CAU-CAV	-2.22	1.37	1.41
2	A	2[C]	KN1	CAS-NAO	-2.21	1.33	1.35
2	C	554	KN1	FAD-CAX	-2.15	1.25	1.32
2	A	1[A]	KN1	CAL-CAU	-2.11	1.37	1.42
2	A	1[A]	KN1	CAU-CAV	-2.05	1.37	1.41
2	B	1[B]	KN1	CAS-NAO	-2.04	1.33	1.35
2	C	1	KN1	OAB-CAP	-2.02	1.32	1.37
2	D	1	KN1	CAN-NAW	-2.01	1.44	1.47

All (55) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1[A]	KN1	CAX-CAT-CAV	10.78	126.36	119.46
2	B	1[A]	KN1	CAX-CAT-CAV	10.08	125.91	119.46
2	D	554	KN1	CAX-CAT-CAV	6.38	123.54	119.46
2	C	1	KN1	CAX-CAT-CAV	6.28	123.47	119.46
2	A	1[B]	KN1	CAX-CAT-CAV	5.09	122.71	119.46
2	B	1[B]	KN1	CAX-CAT-CAV	4.98	122.65	119.46
2	C	554	KN1	CAR-CAS-NAO	4.84	129.06	120.78
2	A	2[C]	KN1	CAX-CAT-CAV	4.53	122.36	119.46
2	B	2[C]	KN1	FAE-CAX-CAT	-4.41	107.75	112.32
2	D	554	KN1	CAR-CAS-NAO	4.34	128.22	120.78
2	A	1[A]	KN1	CAR-CAS-NAO	4.33	128.19	120.78
2	B	2[C]	KN1	CAX-CAT-CAV	-4.17	116.79	119.46
2	B	2[C]	KN1	FAF-CAX-CAT	-4.17	107.99	112.32
2	A	2[C]	KN1	CAR-CAS-NAO	4.02	127.66	120.78
2	B	1[A]	KN1	FAF-CAX-CAT	-3.90	108.28	112.32
2	A	1[B]	KN1	CAQ-CAR-CAS	3.78	125.01	121.28
2	D	1	KN1	CAR-CAS-NAO	3.75	127.20	120.78
2	A	1[A]	KN1	FAF-CAX-CAT	-3.64	108.55	112.32
2	C	1	KN1	CAR-CAS-NAO	3.63	127.00	120.78
2	C	1	KN1	FAF-CAX-CAT	-3.63	108.56	112.32
2	D	1	KN1	CAX-CAT-CAV	3.63	121.78	119.46
2	B	1[B]	KN1	CAQ-CAR-CAS	3.61	124.85	121.28
2	B	1[B]	KN1	FAE-CAX-CAT	-3.47	108.72	112.32
2	A	1[B]	KN1	FAE-CAX-CAT	-3.44	108.75	112.32
2	A	1[A]	KN1	CAJ-CAT-CAX	-3.41	115.38	119.87
2	A	2[C]	KN1	FAF-CAX-CAT	-3.19	109.02	112.32
2	B	1[A]	KN1	FAE-CAX-CAT	3.14	115.58	112.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	2[C]	KN1	CAN-NAW-NAO	3.09	126.73	117.98
2	B	2[C]	KN1	FAD-CAX-CAT	3.03	115.47	112.32
2	B	1[B]	KN1	CAR-CAS-NAO	3.01	125.94	120.78
2	A	1[B]	KN1	CAK-CAR-CAS	-2.99	116.43	120.14
2	B	1[A]	KN1	CAR-CAS-NAO	2.97	125.88	120.78
2	B	1[B]	KN1	CAK-CAR-CAS	-2.91	116.53	120.14
2	A	1[B]	KN1	CAR-CAS-NAO	2.86	125.67	120.78
2	B	1[A]	KN1	CAJ-CAT-CAX	-2.83	116.14	119.87
2	B	2[C]	KN1	CAR-CAS-NAO	2.73	125.46	120.78
2	C	554	KN1	CAN-NAW-NAO	2.62	125.40	117.98
2	B	2[C]	KN1	CAQ-CAR-CAS	-2.60	118.71	121.28
2	D	1	KN1	FAF-CAX-CAT	-2.53	109.70	112.32
2	A	2[C]	KN1	FAD-CAX-CAT	-2.41	109.82	112.32
2	A	1[B]	KN1	FAD-CAX-CAT	-2.34	109.89	112.32
2	B	1[A]	KN1	CAN-CAG-CAA	-2.31	117.54	125.43
2	B	1[B]	KN1	FAF-CAX-CAT	-2.29	109.95	112.32
2	B	1[B]	KN1	FAD-CAX-CAT	-2.25	109.99	112.32
2	A	2[C]	KN1	FAE-CAX-CAT	-2.23	110.01	112.32
2	B	2[C]	KN1	CAJ-CAT-CAX	2.22	122.80	119.87
2	C	1	KN1	CAN-NAW-NAO	2.21	124.25	117.98
2	A	1[A]	KN1	CAN-NAW-NAO	2.21	124.23	117.98
2	A	2[C]	KN1	CAL-CAU-CAV	2.13	120.70	116.73
2	C	554	KN1	FAE-CAX-CAT	-2.11	110.13	112.32
2	A	1[B]	KN1	FAF-CAX-CAT	-2.10	110.14	112.32
2	A	2[C]	KN1	CAQ-CAR-CAS	-2.04	119.27	121.28
2	D	554	KN1	CAN-NAW-NAO	2.03	123.72	117.98
2	D	1	KN1	FAE-CAX-CAT	-2.03	110.22	112.32
2	D	1	KN1	CAL-CAU-CAV	2.02	120.50	116.73

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1[B]	KN1	CAA-CAG-CAN-NAW
2	A	2[C]	KN1	CAA-CAG-CAN-NAW
2	B	1[A]	KN1	CAA-CAG-CAN-NAW
2	B	1[A]	KN1	CAV-CAT-CAX-FAE
2	B	1[A]	KN1	CAV-CAT-CAX-FAF
2	B	1[A]	KN1	CAV-CAT-CAX-FAD
2	B	1[B]	KN1	CAA-CAG-CAN-NAW
2	B	2[C]	KN1	CAA-CAG-CAN-NAW
2	C	554	KN1	CAA-CAG-CAN-NAW

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Mol	Chain	Res	Type	Atoms
2	D	1	KN1	CAA-CAG-CAN-NAW
2	D	1	KN1	CAV-CAT-CAX-FAE
2	D	1	KN1	CAV-CAT-CAX-FAD
2	A	2[C]	KN1	CAK-CAR-CAS-CAU
2	B	2[C]	KN1	CAK-CAR-CAS-CAU
2	D	1	KN1	CAK-CAR-CAS-CAU
2	A	1[A]	KN1	CAV-CAT-CAX-FAE
2	D	1	KN1	CAV-CAT-CAX-FAF
2	A	1[A]	KN1	CAV-CAT-CAX-FAF
2	A	1[A]	KN1	CAV-CAT-CAX-FAD
2	B	1[A]	KN1	CAJ-CAT-CAX-FAE
2	B	1[A]	KN1	CAJ-CAT-CAX-FAD
2	D	1	KN1	CAJ-CAT-CAX-FAF
2	B	1[A]	KN1	CAJ-CAT-CAX-FAF
2	A	1[A]	KN1	CAK-CAR-CAS-CAU
2	B	1[A]	KN1	CAK-CAR-CAS-CAU
2	A	1[A]	KN1	CAJ-CAT-CAX-FAE
2	D	1	KN1	CAJ-CAT-CAX-FAE
2	D	1	KN1	CAJ-CAT-CAX-FAD
2	A	1[A]	KN1	CAJ-CAT-CAX-FAF
2	A	1[A]	KN1	CAJ-CAT-CAX-FAD
2	A	1[B]	KN1	CAK-CAR-CAS-NAO
2	C	554	KN1	CAK-CAR-CAS-NAO
2	D	554	KN1	CAK-CAR-CAS-CAU

There are no ring outliers.

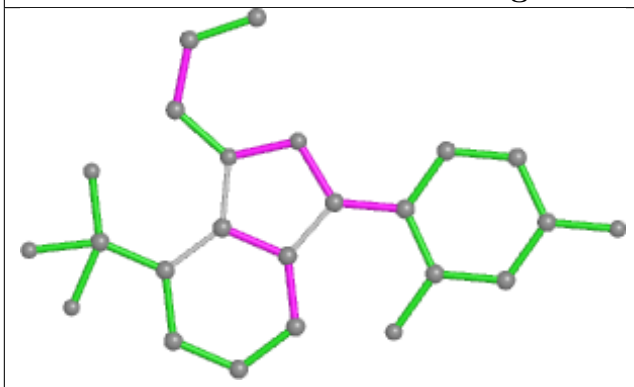
10 monomers are involved in 73 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2[C]	KN1	12	0
2	D	554	KN1	5	0
2	A	1[B]	KN1	8	0
2	B	1[A]	KN1	5	0
2	A	2[C]	KN1	5	0
2	B	1[B]	KN1	6	0
2	D	1	KN1	7	0
2	C	554	KN1	17	0
2	C	1	KN1	5	0
2	A	1[A]	KN1	4	0

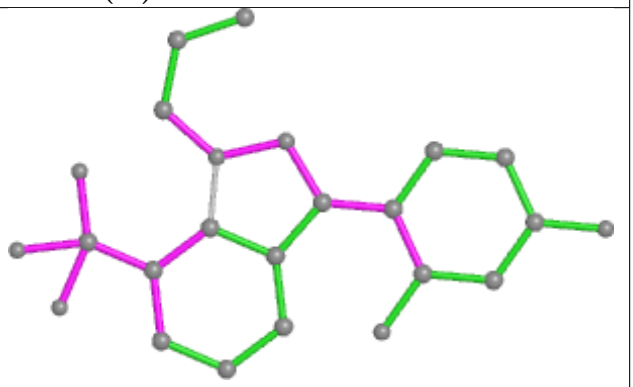
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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.

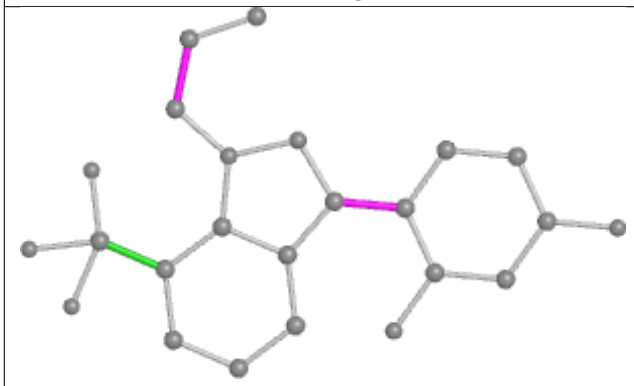
Ligand KN1 B 2 (C)



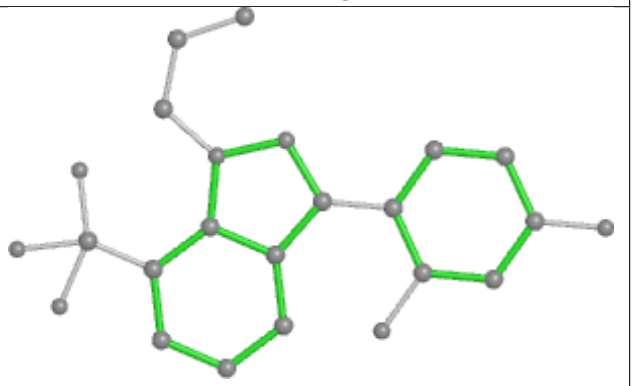
Bond lengths



Bond angles

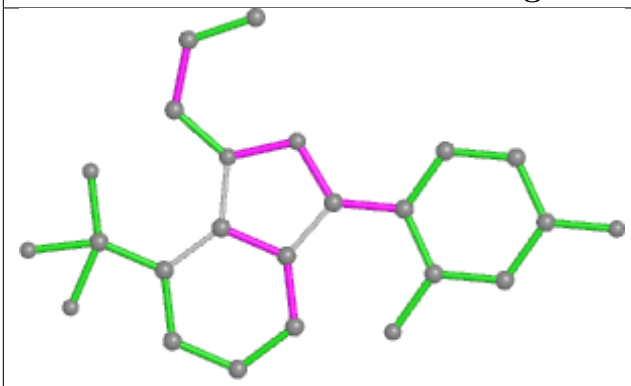


Torsions

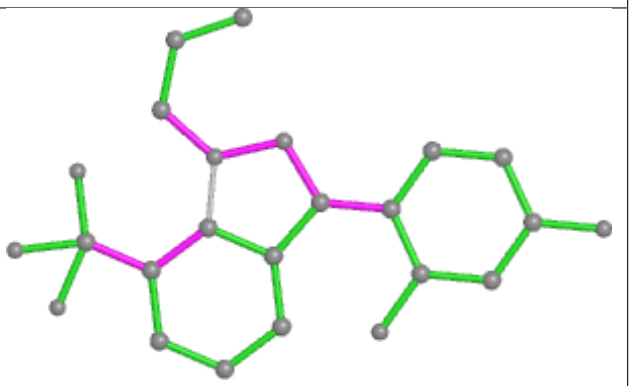


Rings

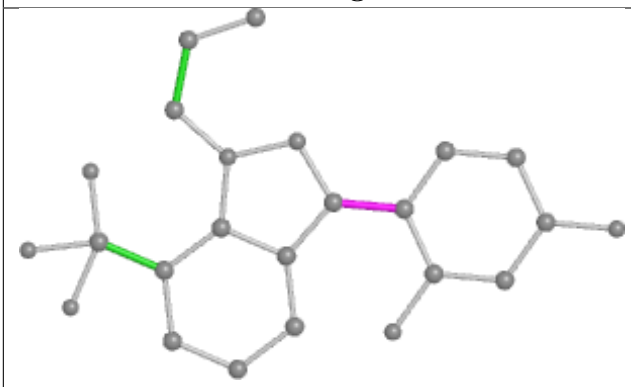
Ligand KN1 D 554



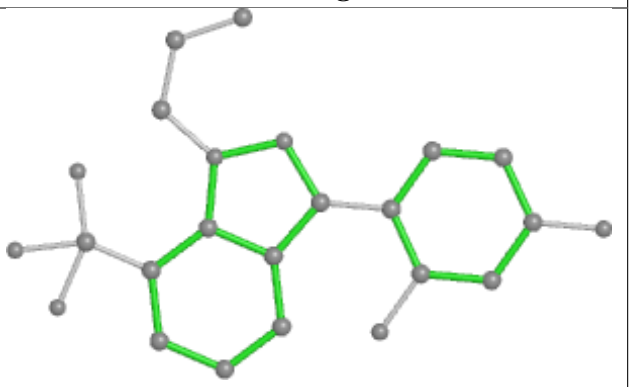
Bond lengths



Bond angles

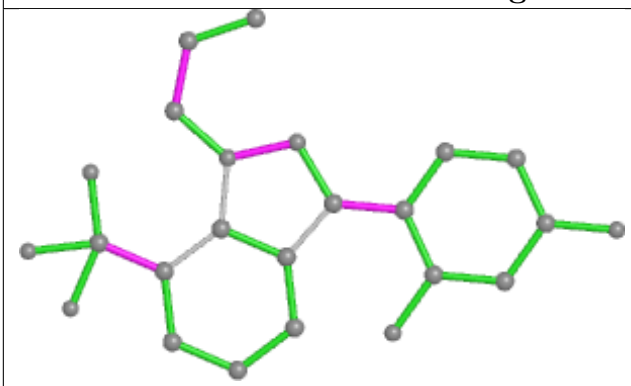


Torsions

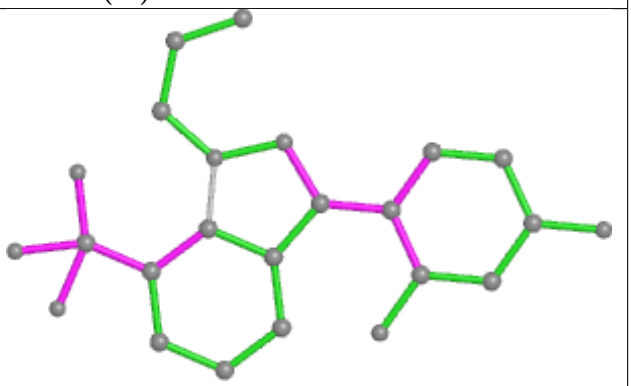


Rings

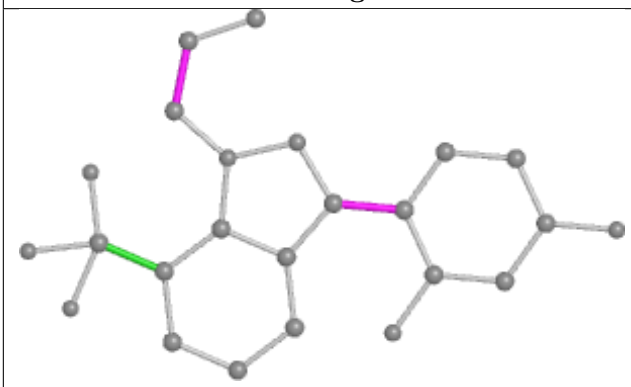
Ligand KN1 A 1 (B)



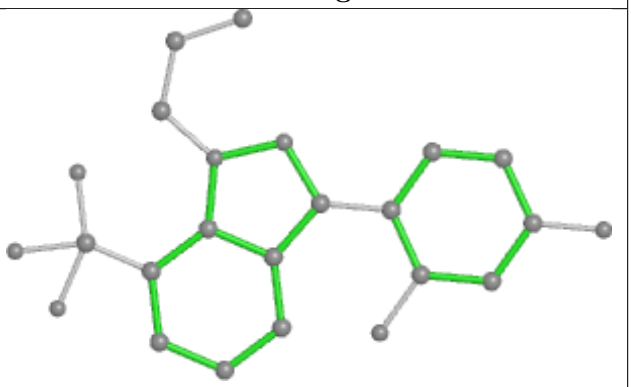
Bond lengths



Bond angles

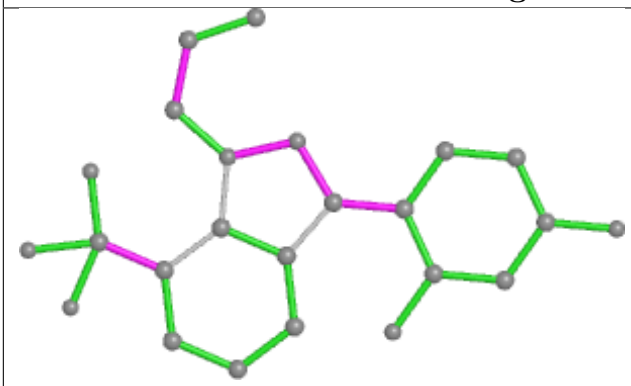


Torsions

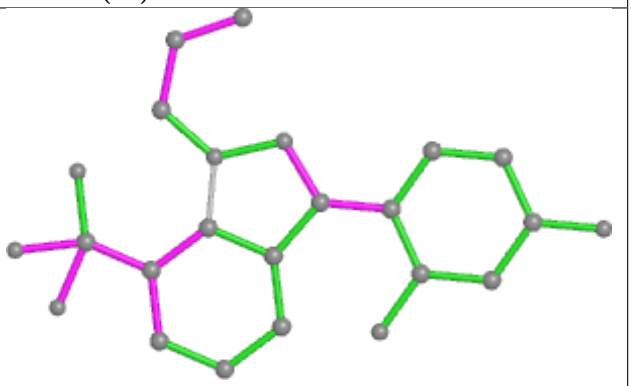


Rings

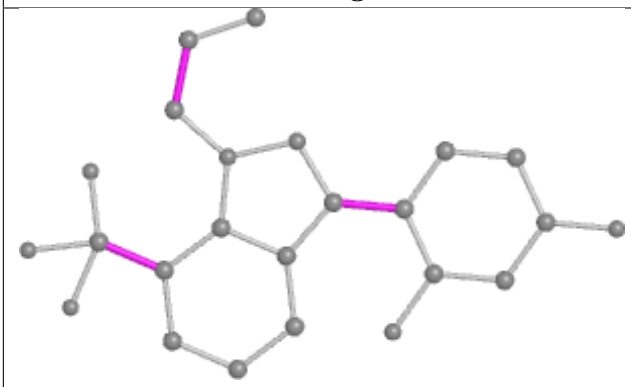
Ligand KN1 B 1 (A)



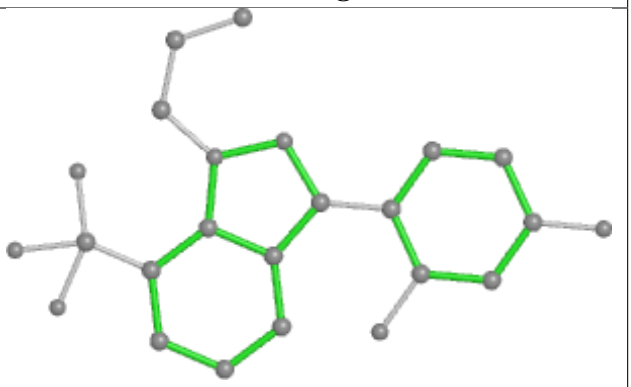
Bond lengths



Bond angles

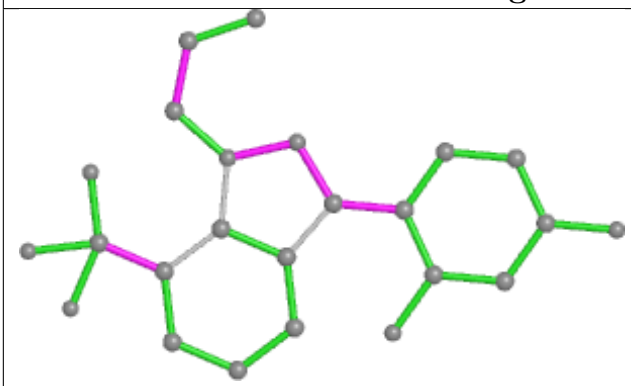


Torsions

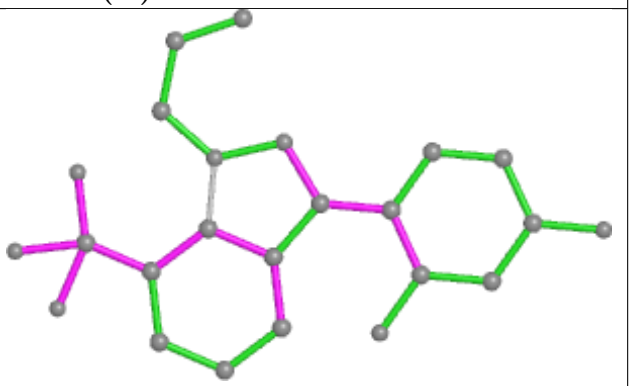


Rings

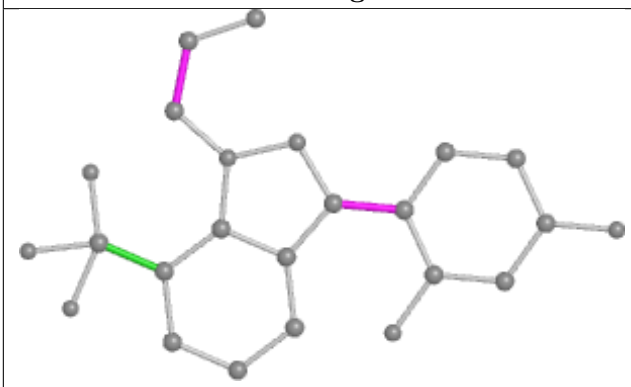
Ligand KN1 A 2 (C)



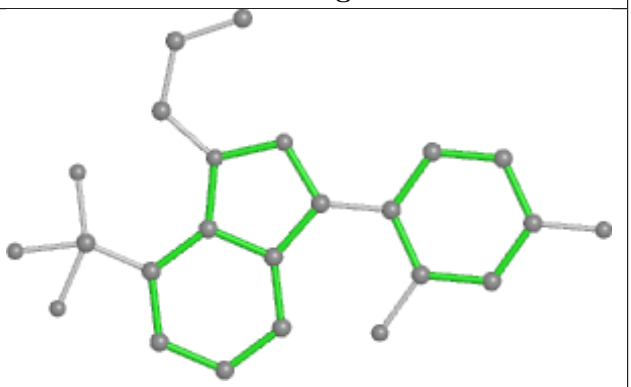
Bond lengths



Bond angles

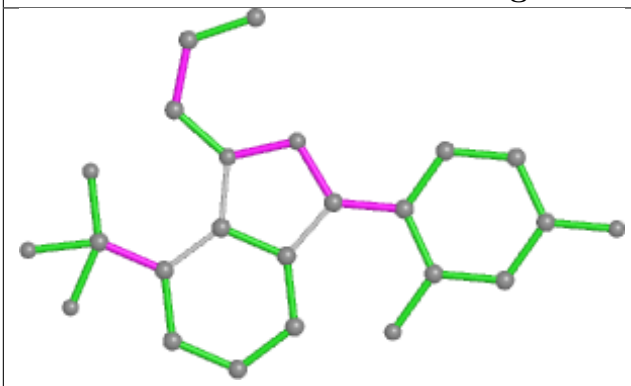


Torsions

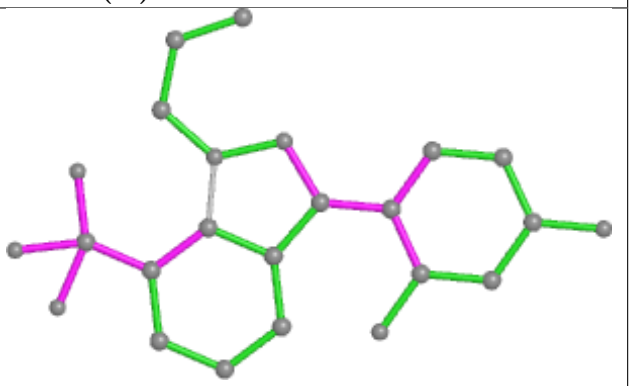


Rings

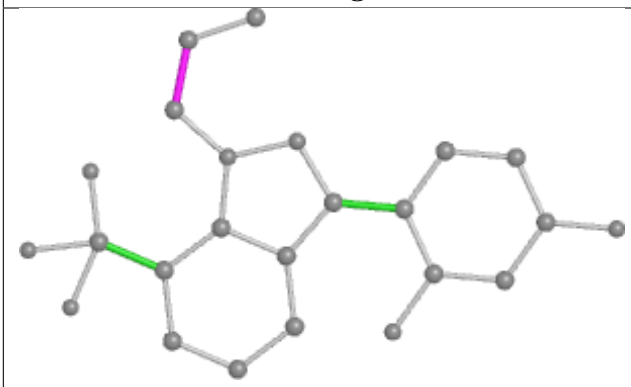
Ligand KN1 B 1 (B)



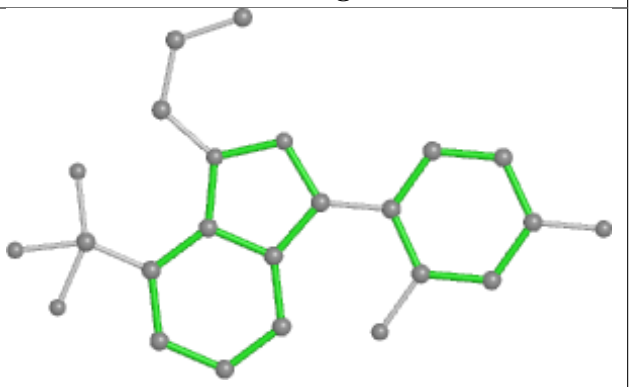
Bond lengths



Bond angles

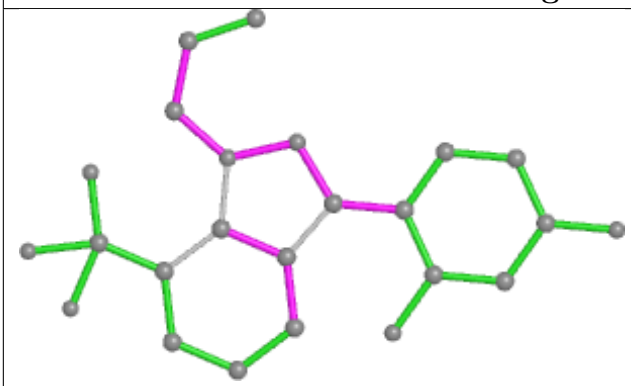


Torsions

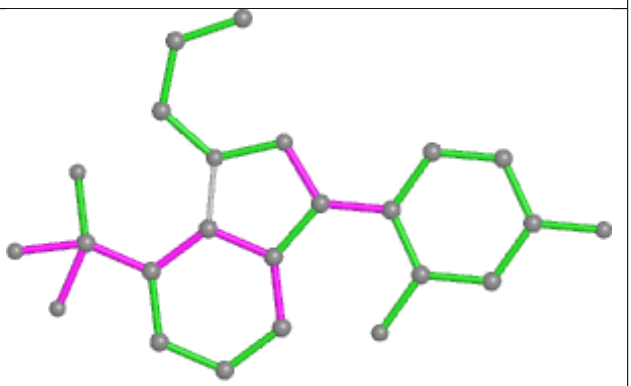


Rings

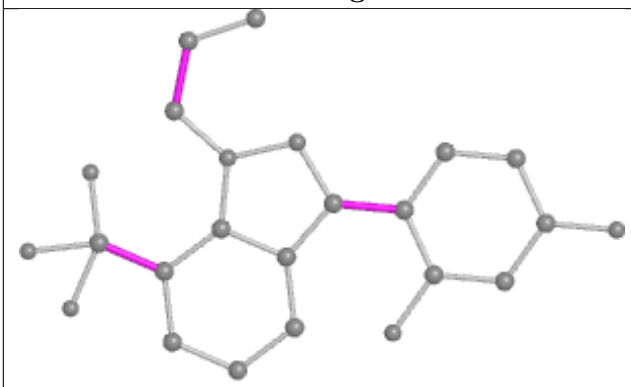
Ligand KN1 D 1



Bond lengths



Bond angles



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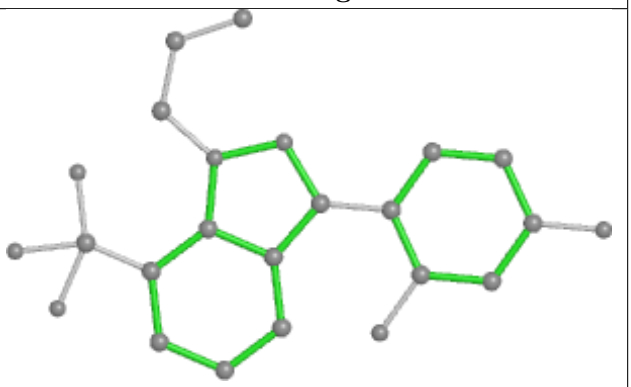
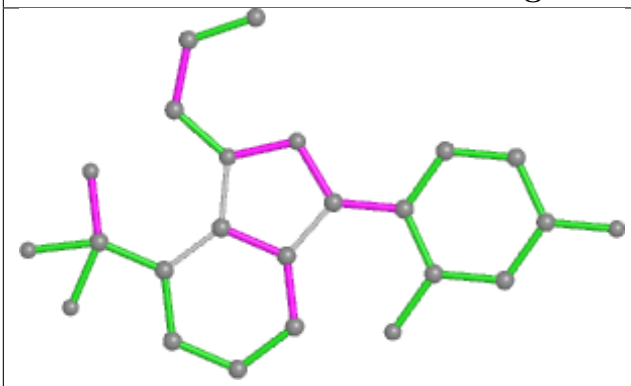
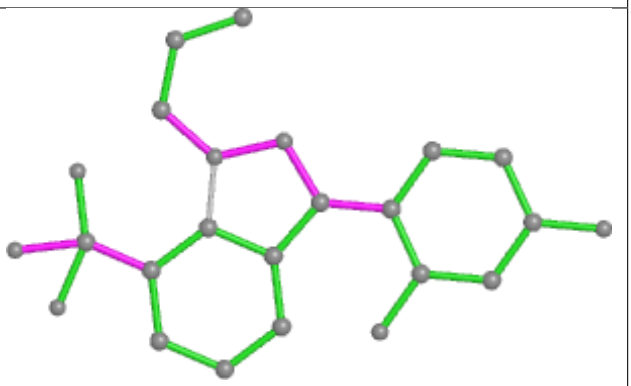


Rings

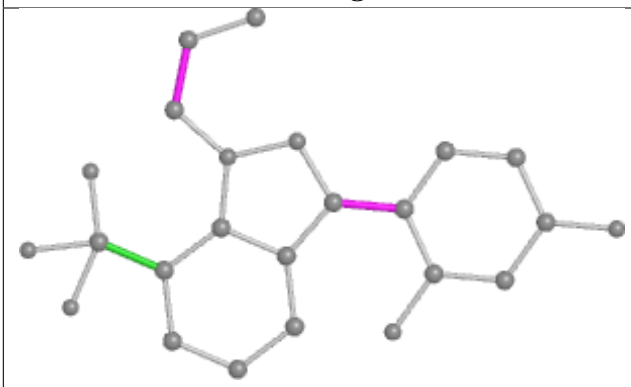
Ligand KN1 C 554



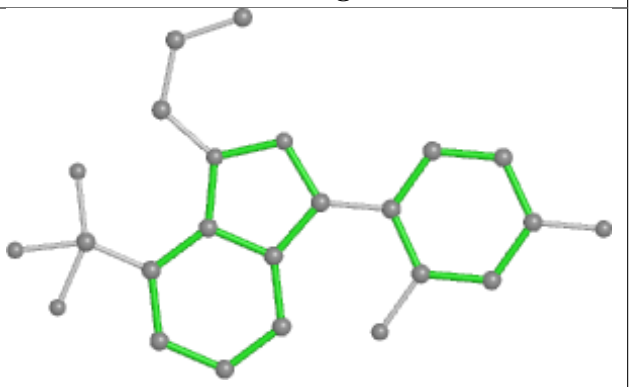
Bond lengths



Bond angles

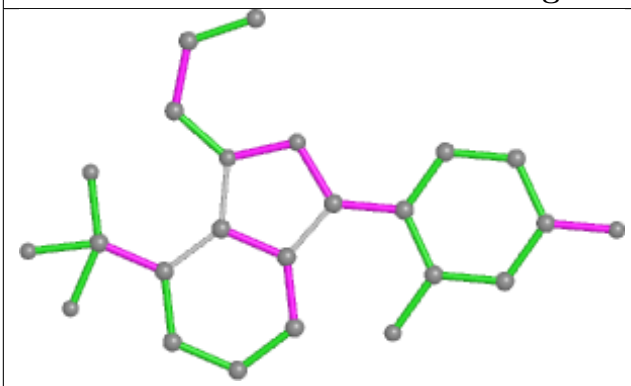


Torsions

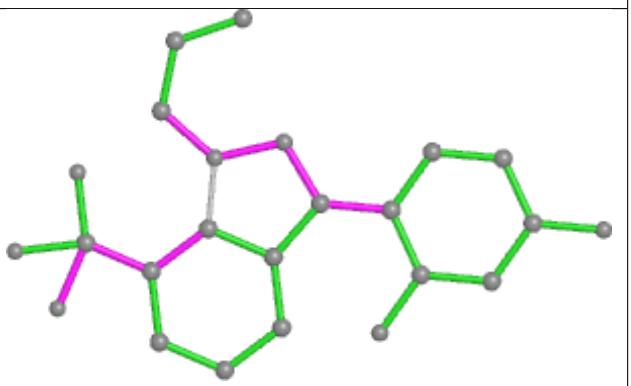


Rings

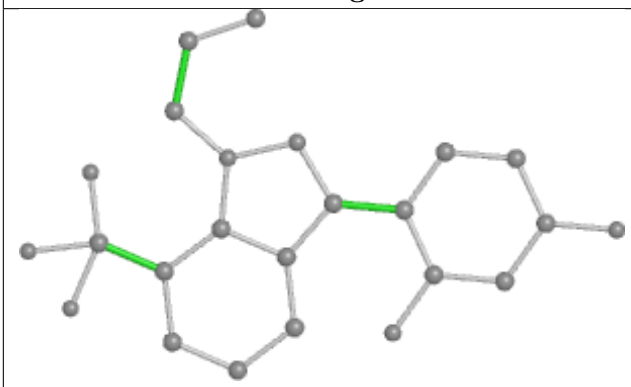
Ligand KN1 C 1



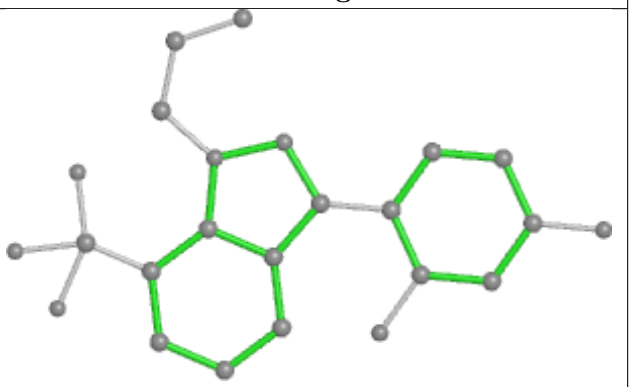
Bond lengths



Bond angles

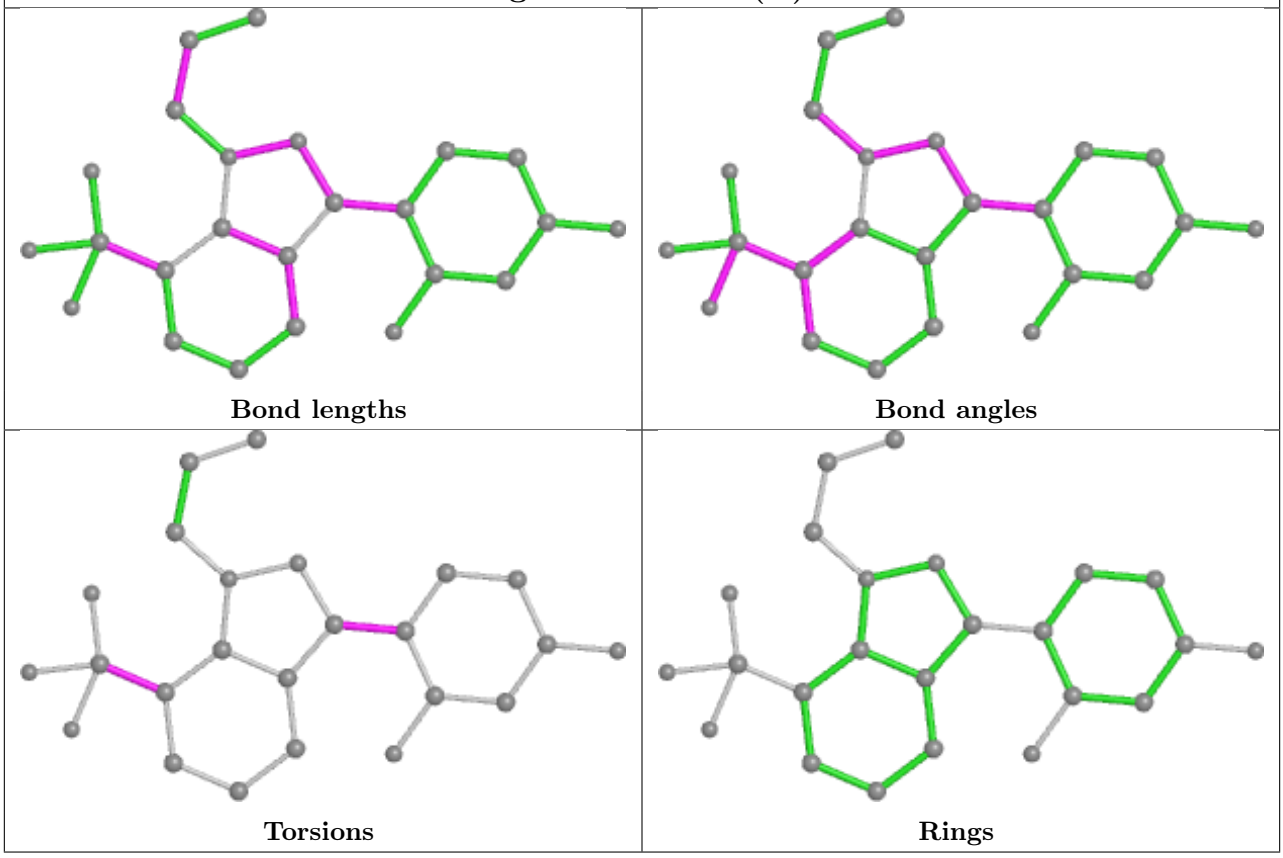


Torsions



Rings

Ligand KN1 A 1 (A)



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	233/258 (90%)	0.13	10 (4%)	35	42	37, 62, 125, 170	2 (0%)
1	B	228/258 (88%)	0.18	13 (5%)	23	30	37, 61, 120, 162	2 (0%)
1	C	221/258 (85%)	0.11	8 (3%)	42	49	35, 61, 119, 170	1 (0%)
1	D	208/258 (80%)	0.13	10 (4%)	30	37	35, 60, 118, 166	2 (0%)
All	All	890/1032 (86%)	0.14	41 (4%)	32	39	35, 61, 121, 170	7 (0%)

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	526	TYR	9.6
1	A	459	TYR	4.9
1	B	526	TYR	4.9
1	D	538	ASP	4.9
1	D	342	MET	4.6
1	A	331	TYR	4.1
1	C	538	ASP	4.0
1	B	469	LEU	3.6
1	D	469	LEU	3.6
1	B	307	ALA	3.4
1	A	461	PHE	3.4
1	C	541	LEU	3.3
1	B	306	LEU	3.3
1	B	459	TYR	3.3
1	A	307	ALA	3.1
1	D	306	LEU	2.9
1	B	340	ALA	2.9
1	C	525	LEU	2.9
1	A	401	LYS	2.8
1	B	331	TYR	2.8
1	C	458	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	417	CYS	2.6
1	A	308	LEU	2.6
1	B	468	SER	2.6
1	D	526	TYR	2.6
1	A	533	VAL	2.5
1	D	541	LEU	2.5
1	D	544	LEU	2.5
1	B	533	VAL	2.5
1	B	461	PHE	2.5
1	A	469	LEU	2.5
1	A	419	GLU	2.3
1	B	525	LEU	2.2
1	C	413	ASN	2.2
1	D	537	TYR	2.2
1	D	307	ALA	2.2
1	D	460	THR	2.2
1	C	537	TYR	2.1
1	C	497	LEU	2.1
1	B	439	ASN	2.1
1	B	528	MET	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	KN1	D	554	24/24	0.89	0.16	56,78,85,86	0
2	KN1	B	1[B]	24/24	0.91	0.20	52,57,65,67	24
2	KN1	B	1[A]	24/24	0.91	0.20	51,64,69,74	24

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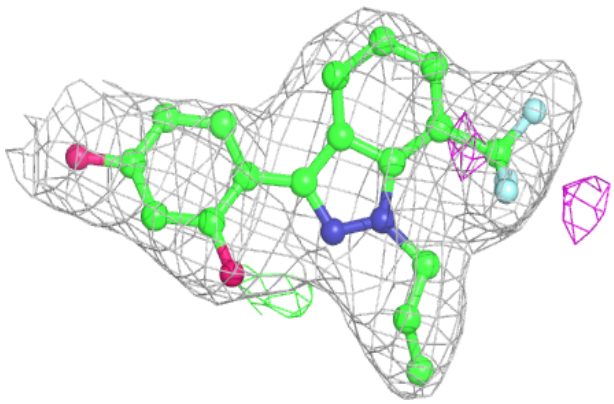
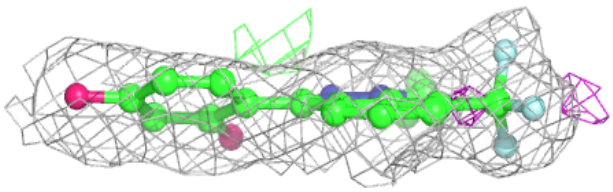
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	KN1	C	1	24/24	0.92	0.12	51,74,78,82	0
2	KN1	A	1[B]	24/24	0.94	0.21	52,56,60,63	24
2	KN1	A	2[C]	24/24	0.94	0.18	47,59,68,79	24
2	KN1	C	554	24/24	0.94	0.17	69,74,89,102	0
2	KN1	D	1	24/24	0.94	0.16	48,79,92,95	0
2	KN1	A	1[A]	24/24	0.94	0.21	48,62,68,71	24
2	KN1	B	2[C]	24/24	0.95	0.24	53,65,75,87	24

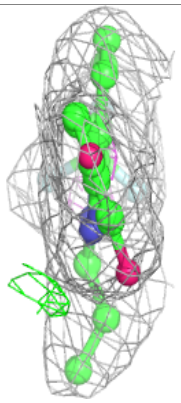
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around KN1 D 554:

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

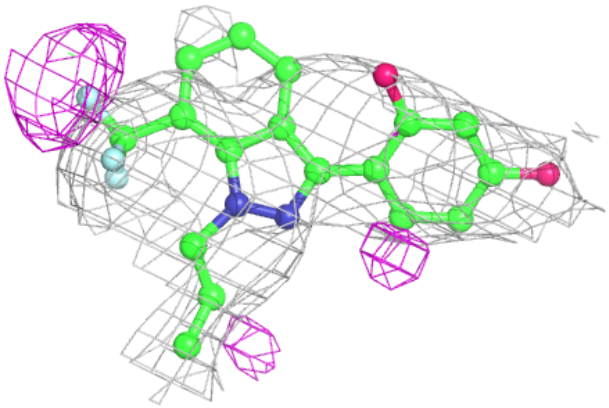


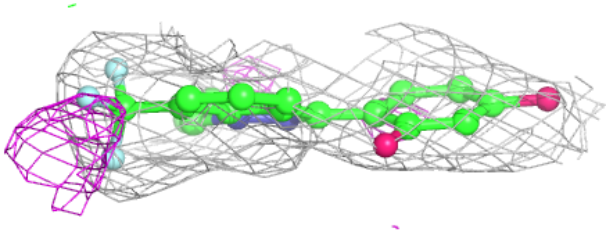


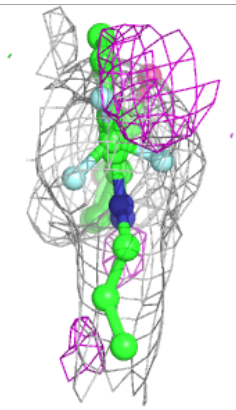


Electron density around KN1 B 1 (B):

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

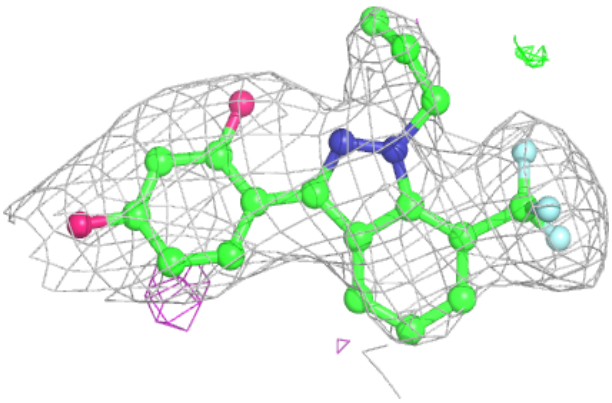


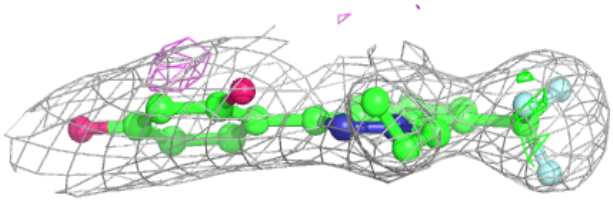


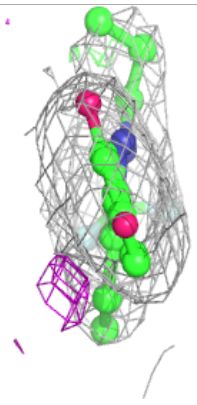


Electron density around KN1 B 1 (A):

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

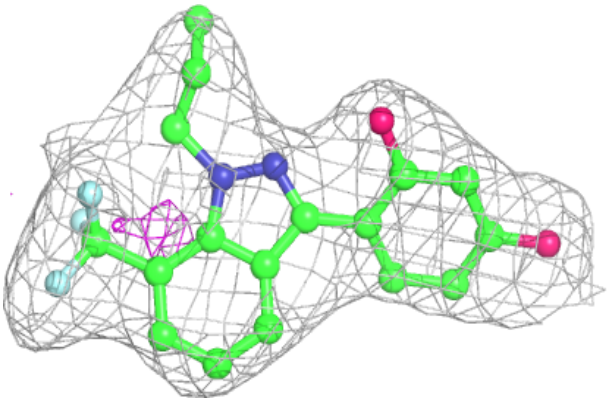


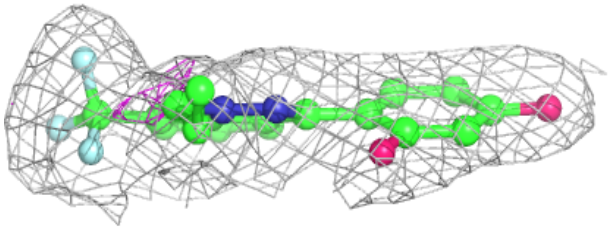


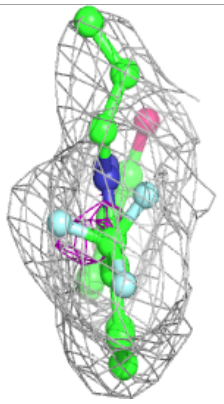


Electron density around KN1 C 1:

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

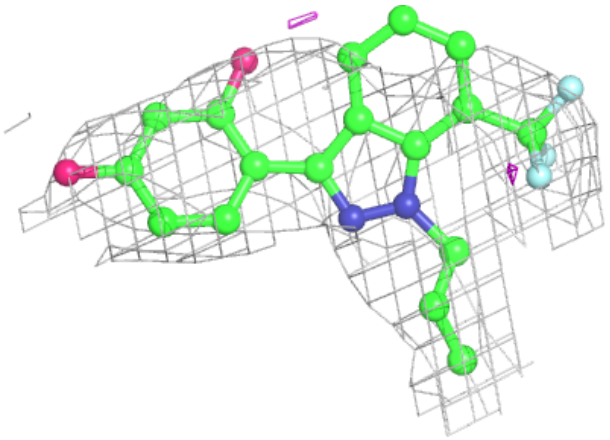


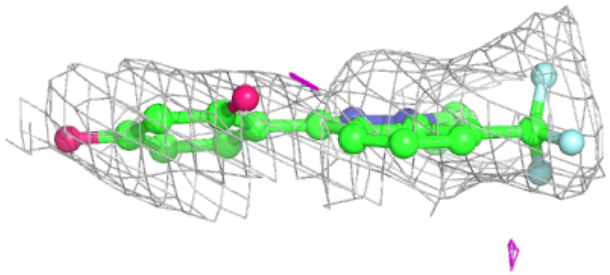


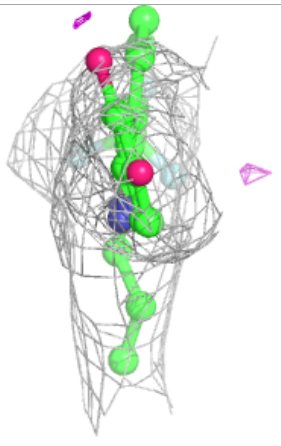


Electron density around KN1 A 1 (B):

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

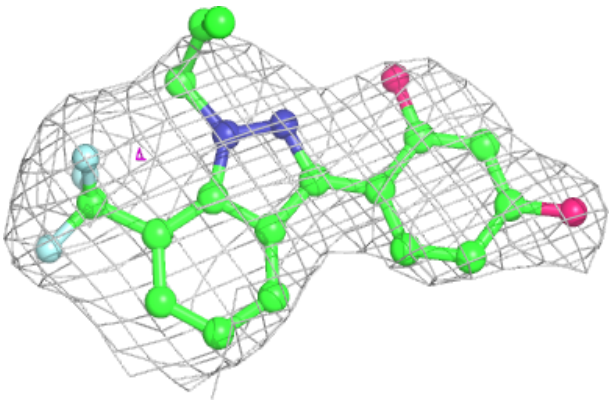


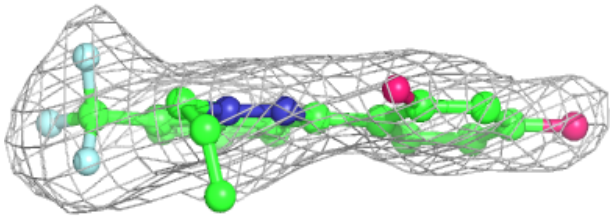


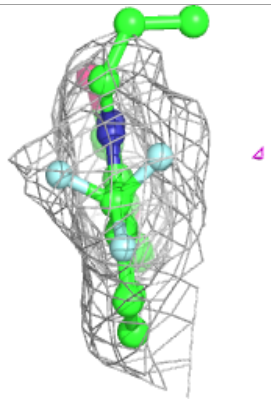


Electron density around KN1 A 2 (C):

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

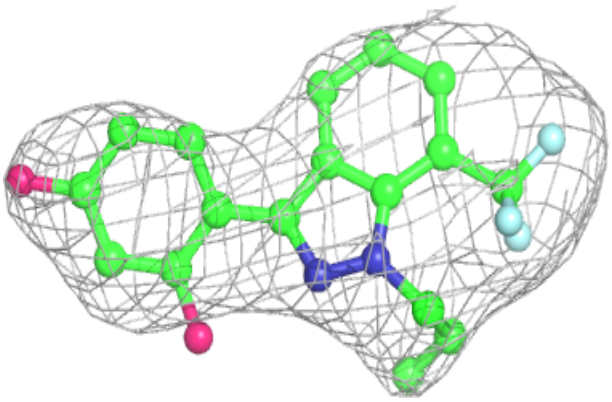


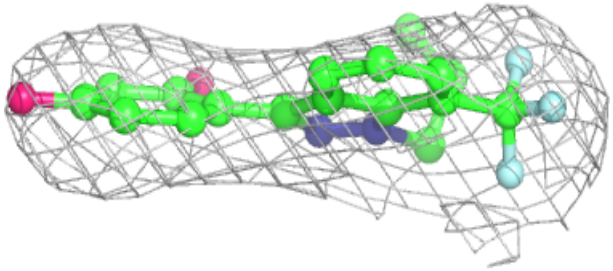


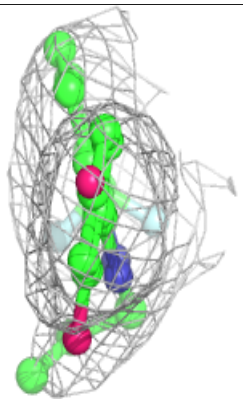


Electron density around KN1 C 554:

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

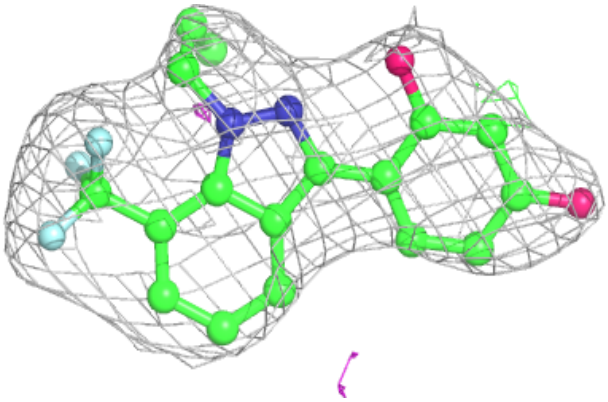


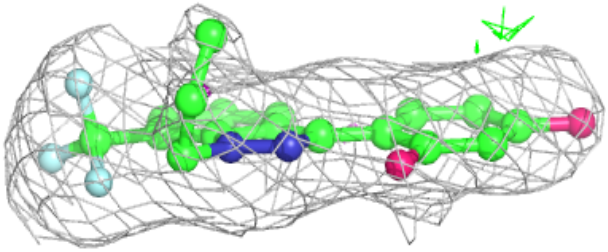


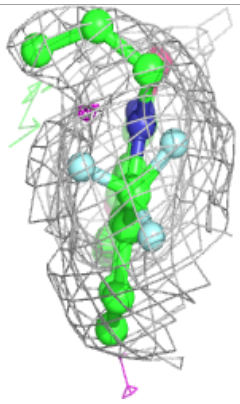


Electron density around KN1 D 1:

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

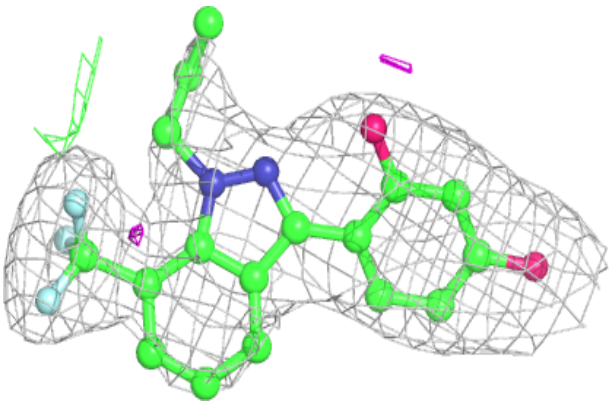


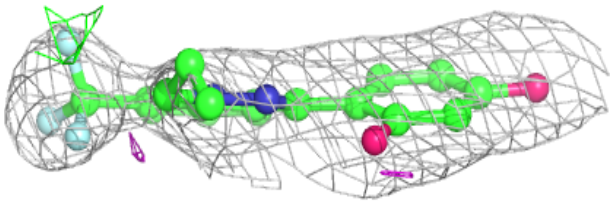


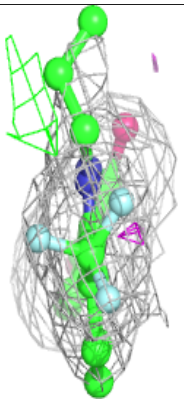


Electron density around KN1 A 1 (A):

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

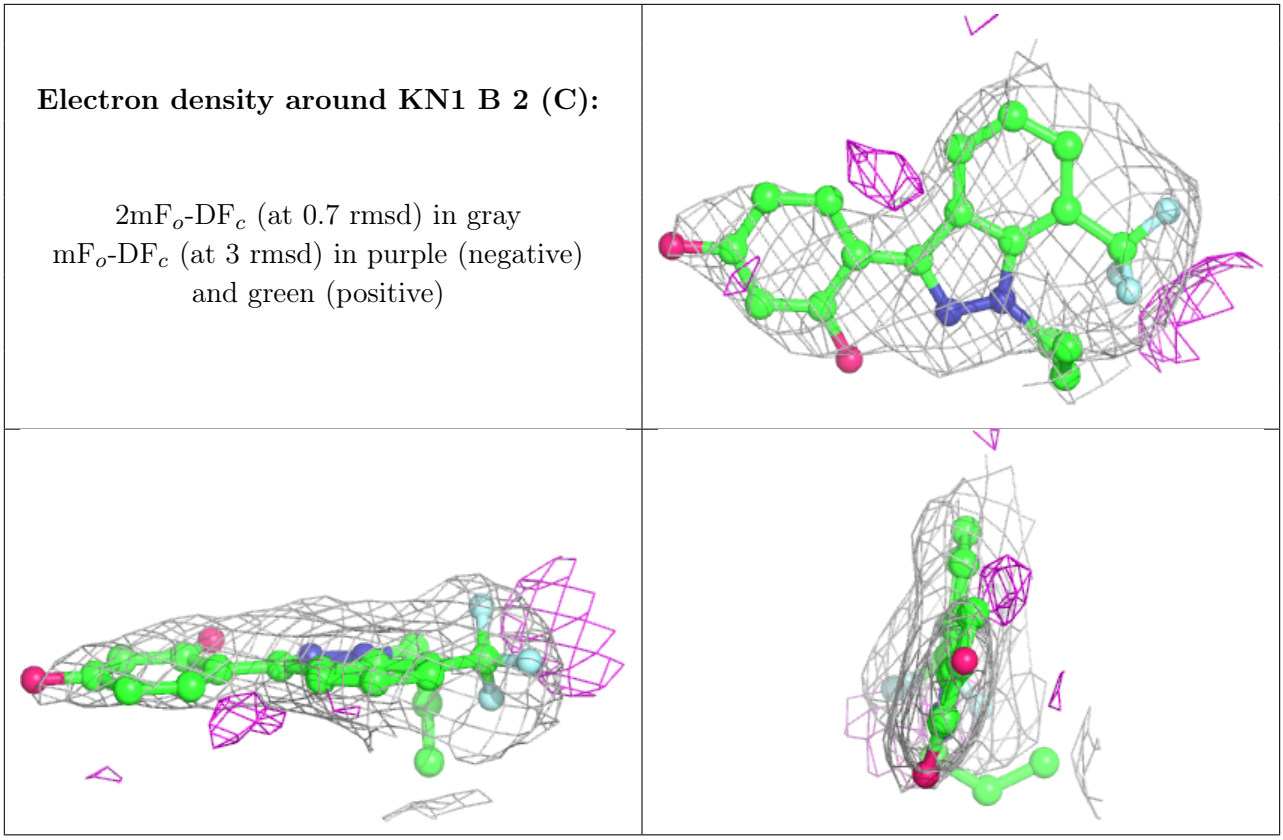






Electron density around KN1 B 2 (C):

$2mF_o$-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.