Full wwPDB X-ray Structure Validation Report ⓘ

Jun 17, 2024 – 11:31 PM EDT

PDB ID	:	5TS0
Title	:	Structure of Mycobacterium tuberculosis proteasome in complex with N,C-capped dipeptide PKS2208
Authors	:	Hsu, H.-C.; Fan, H.; Singh, P.K.; Wang, R.; Sukenick, G.; Nathan, C.; Lin, G.; Li, H.
Deposited on	:	2016-10-27
Resolution	:	2.85 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

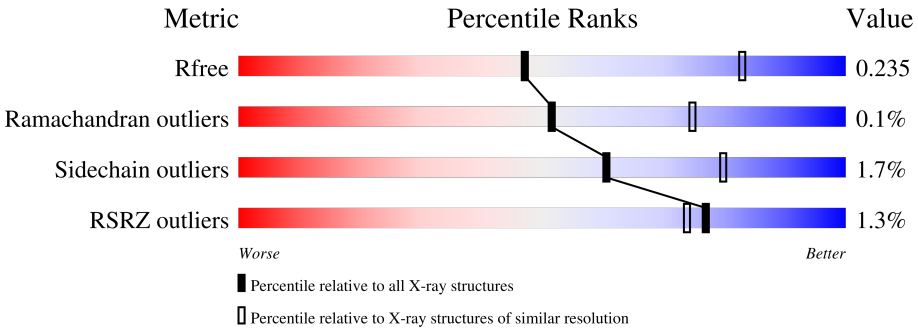
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.85 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	1031 (2.86-2.82)
Ramachandran outliers	138981	1050 (2.86-2.82)
Sidechain outliers	138945	1051 (2.86-2.82)
RSRZ outliers	127900	1019 (2.86-2.82)

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	240	89% · 9%
1	B	240	2% 88% · 10%
1	C	240	3% 88% · 10%
1	D	240	2% 90% · 10%
1	E	240	2% 89% · 9%
1	F	240	2% 88% · 10%

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Mol	Chain	Length	Quality of chain
1	G	240	2% 90% 8%
1	O	240	4% 89% 10%
1	P	240	2% 88% 9%
1	Q	240	2% 90% 9%
1	R	240	2% 90% 10%
1	S	240	2% 90% 9%
1	T	240	4% 88% 9%
1	U	240	% 88% 10%
2	H	240	91% 8%
2	I	240	90% 8%
2	J	240	91% 8%
2	K	240	90% 7%
2	L	240	92% 7%
2	M	240	91% 8%
2	N	240	% 90% 7%
2	V	240	92% 7%
2	W	240	91% 7%
2	X	240	92% 8%
2	Y	240	92% 7%
2	Z	240	91% 8%
2	a	240	91% 7%
2	b	240	92% 7%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 47311 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 Proteasome subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	218	Total	C	N	O	S	0	0	0
			1677	1050	306	317	4			
1	B	216	Total	C	N	O	S	0	0	0
			1668	1045	304	315	4			
1	C	217	Total	C	N	O	S	0	0	0
			1672	1047	305	316	4			
1	D	217	Total	C	N	O	S	0	0	0
			1670	1046	305	315	4			
1	E	218	Total	C	N	O	S	0	0	0
			1677	1050	306	317	4			
1	F	215	Total	C	N	O	S	0	0	0
			1655	1035	303	313	4			
1	G	220	Total	C	N	O	S	0	0	0
			1690	1057	308	321	4			
1	O	216	Total	C	N	O	S	0	0	0
			1664	1043	304	313	4			
1	P	218	Total	C	N	O	S	0	0	0
			1677	1050	306	317	4			
1	Q	218	Total	C	N	O	S	0	0	0
			1678	1050	306	318	4			
1	R	217	Total	C	N	O	S	0	0	0
			1670	1046	305	315	4			
1	S	218	Total	C	N	O	S	0	0	0
			1678	1050	306	318	4			
1	T	218	Total	C	N	O	S	0	0	0
			1679	1051	306	318	4			
1	U	217	Total	C	N	O	S	0	0	0
			1670	1046	305	315	4			

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	9	MET	-	initiating methionine	UNP A5U4D5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	9	MET	-	initiating methionine	UNP A5U4D5
C	9	MET	-	initiating methionine	UNP A5U4D5
D	9	MET	-	initiating methionine	UNP A5U4D5
E	9	MET	-	initiating methionine	UNP A5U4D5
F	9	MET	-	initiating methionine	UNP A5U4D5
G	9	MET	-	initiating methionine	UNP A5U4D5
O	9	MET	-	initiating methionine	UNP A5U4D5
P	9	MET	-	initiating methionine	UNP A5U4D5
Q	9	MET	-	initiating methionine	UNP A5U4D5
R	9	MET	-	initiating methionine	UNP A5U4D5
S	9	MET	-	initiating methionine	UNP A5U4D5
T	9	MET	-	initiating methionine	UNP A5U4D5
U	9	MET	-	initiating methionine	UNP A5U4D5

- Molecule 2 is a protein called Proteasome subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	H	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	I	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	J	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	K	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	L	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	M	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	N	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	V	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	W	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	X	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	Y	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			
2	Z	222	Total	C	N	O	S	0	0	0
			1638	1027	282	324	5			
2	a	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	b	223	Total	C	N	O	S	0	0	0
			1642	1029	283	325	5			

There are 84 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	235	HIS	-	expression tag	UNP A5U4D6
H	236	HIS	-	expression tag	UNP A5U4D6
H	237	HIS	-	expression tag	UNP A5U4D6
H	238	HIS	-	expression tag	UNP A5U4D6
H	239	HIS	-	expression tag	UNP A5U4D6
H	240	HIS	-	expression tag	UNP A5U4D6
I	235	HIS	-	expression tag	UNP A5U4D6
I	236	HIS	-	expression tag	UNP A5U4D6
I	237	HIS	-	expression tag	UNP A5U4D6
I	238	HIS	-	expression tag	UNP A5U4D6
I	239	HIS	-	expression tag	UNP A5U4D6
I	240	HIS	-	expression tag	UNP A5U4D6
J	235	HIS	-	expression tag	UNP A5U4D6
J	236	HIS	-	expression tag	UNP A5U4D6
J	237	HIS	-	expression tag	UNP A5U4D6
J	238	HIS	-	expression tag	UNP A5U4D6
J	239	HIS	-	expression tag	UNP A5U4D6
J	240	HIS	-	expression tag	UNP A5U4D6
K	235	HIS	-	expression tag	UNP A5U4D6
K	236	HIS	-	expression tag	UNP A5U4D6
K	237	HIS	-	expression tag	UNP A5U4D6
K	238	HIS	-	expression tag	UNP A5U4D6
K	239	HIS	-	expression tag	UNP A5U4D6
K	240	HIS	-	expression tag	UNP A5U4D6
L	235	HIS	-	expression tag	UNP A5U4D6
L	236	HIS	-	expression tag	UNP A5U4D6
L	237	HIS	-	expression tag	UNP A5U4D6
L	238	HIS	-	expression tag	UNP A5U4D6
L	239	HIS	-	expression tag	UNP A5U4D6
L	240	HIS	-	expression tag	UNP A5U4D6
M	235	HIS	-	expression tag	UNP A5U4D6
M	236	HIS	-	expression tag	UNP A5U4D6
M	237	HIS	-	expression tag	UNP A5U4D6
M	238	HIS	-	expression tag	UNP A5U4D6
M	239	HIS	-	expression tag	UNP A5U4D6
M	240	HIS	-	expression tag	UNP A5U4D6

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Chain	Residue	Modelled	Actual	Comment	Reference
N	235	HIS	-	expression tag	UNP A5U4D6
N	236	HIS	-	expression tag	UNP A5U4D6
N	237	HIS	-	expression tag	UNP A5U4D6
N	238	HIS	-	expression tag	UNP A5U4D6
N	239	HIS	-	expression tag	UNP A5U4D6
N	240	HIS	-	expression tag	UNP A5U4D6
V	235	HIS	-	expression tag	UNP A5U4D6
V	236	HIS	-	expression tag	UNP A5U4D6
V	237	HIS	-	expression tag	UNP A5U4D6
V	238	HIS	-	expression tag	UNP A5U4D6
V	239	HIS	-	expression tag	UNP A5U4D6
V	240	HIS	-	expression tag	UNP A5U4D6
W	235	HIS	-	expression tag	UNP A5U4D6
W	236	HIS	-	expression tag	UNP A5U4D6
W	237	HIS	-	expression tag	UNP A5U4D6
W	238	HIS	-	expression tag	UNP A5U4D6
W	239	HIS	-	expression tag	UNP A5U4D6
W	240	HIS	-	expression tag	UNP A5U4D6
X	235	HIS	-	expression tag	UNP A5U4D6
X	236	HIS	-	expression tag	UNP A5U4D6
X	237	HIS	-	expression tag	UNP A5U4D6
X	238	HIS	-	expression tag	UNP A5U4D6
X	239	HIS	-	expression tag	UNP A5U4D6
X	240	HIS	-	expression tag	UNP A5U4D6
Y	235	HIS	-	expression tag	UNP A5U4D6
Y	236	HIS	-	expression tag	UNP A5U4D6
Y	237	HIS	-	expression tag	UNP A5U4D6
Y	238	HIS	-	expression tag	UNP A5U4D6
Y	239	HIS	-	expression tag	UNP A5U4D6
Y	240	HIS	-	expression tag	UNP A5U4D6
Z	235	HIS	-	expression tag	UNP A5U4D6
Z	236	HIS	-	expression tag	UNP A5U4D6
Z	237	HIS	-	expression tag	UNP A5U4D6
Z	238	HIS	-	expression tag	UNP A5U4D6
Z	239	HIS	-	expression tag	UNP A5U4D6
Z	240	HIS	-	expression tag	UNP A5U4D6
a	235	HIS	-	expression tag	UNP A5U4D6
a	236	HIS	-	expression tag	UNP A5U4D6
a	237	HIS	-	expression tag	UNP A5U4D6
a	238	HIS	-	expression tag	UNP A5U4D6
a	239	HIS	-	expression tag	UNP A5U4D6
a	240	HIS	-	expression tag	UNP A5U4D6

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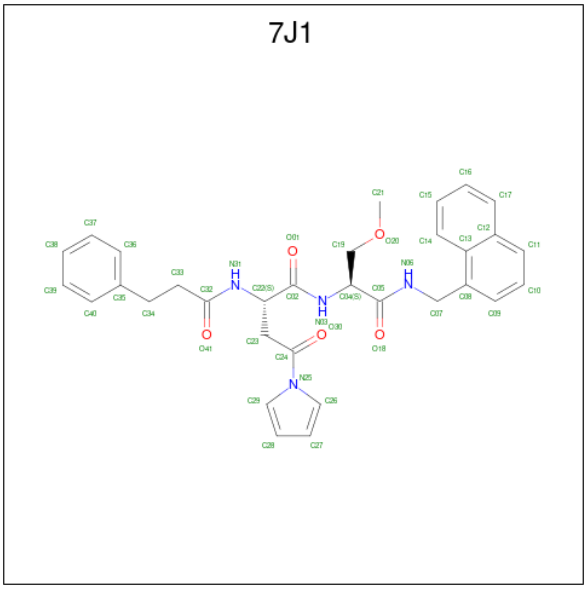
Chain	Residue	Modelled	Actual	Comment	Reference
b	235	HIS	-	expression tag	UNP A5U4D6
b	236	HIS	-	expression tag	UNP A5U4D6
b	237	HIS	-	expression tag	UNP A5U4D6
b	238	HIS	-	expression tag	UNP A5U4D6
b	239	HIS	-	expression tag	UNP A5U4D6
b	240	HIS	-	expression tag	UNP A5U4D6

- Molecule 3 is (2S)-N-{(2S)-3-methoxy-1-[(naphthalen-1-ylmethyl)amino]-1-oxopropan-2-yl}-4-oxo-2-[(3-phenylpropanoyl)amino]-4-(1H-pyrrol-1-yl)butanamide (non-preferred name) (three-letter code: 7J1) (formula: $C_{32}H_{34}N_4O_5$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	H	1	Total	C	N	O	0	0
			41	32	4	5		
3	I	1	Total	C	N	O	0	0
			41	32	4	5		
3	J	1	Total	C	N	O	0	0
			41	32	4	5		
3	K	1	Total	C	N	O	0	0
			41	32	4	5		
3	L	1	Total	C	N	O	0	0
			41	32	4	5		
3	M	1	Total	C	N	O	0	0
			41	32	4	5		
3	N	1	Total	C	N	O	0	0
			41	32	4	5		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	V	1	Total	C	N	O	0	0
			41	32	4	5		
3	W	1	Total	C	N	O	0	0
			41	32	4	5		
3	X	1	Total	C	N	O	0	0
			41	32	4	5		
3	Y	1	Total	C	N	O	0	0
			41	32	4	5		
3	Z	1	Total	C	N	O	0	0
			41	32	4	5		
3	a	1	Total	C	N	O	0	0
			41	32	4	5		
3	b	1	Total	C	N	O	0	0
			41	32	4	5		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	12	Total	O	0	0
			12	12		
4	B	7	Total	O	0	0
			7	7		
4	C	9	Total	O	0	0
			9	9		
4	D	5	Total	O	0	0
			5	5		
4	E	7	Total	O	0	0
			7	7		
4	F	8	Total	O	0	0
			8	8		
4	G	4	Total	O	0	0
			4	4		
4	H	14	Total	O	0	0
			14	14		
4	I	25	Total	O	0	0
			25	25		
4	J	13	Total	O	0	0
			13	13		
4	K	19	Total	O	0	0
			19	19		
4	L	14	Total	O	0	0
			14	14		

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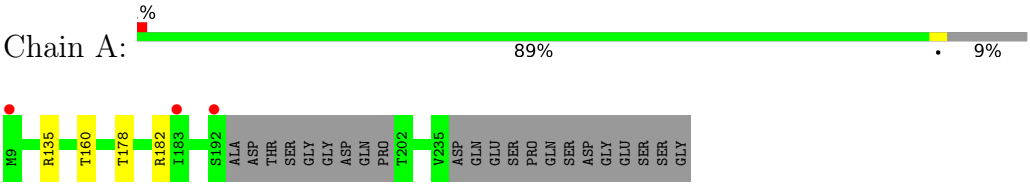
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	M	20	Total O 20 20	0	0
4	N	11	Total O 11 11	0	0
4	O	10	Total O 10 10	0	0
4	P	4	Total O 4 4	0	0
4	Q	5	Total O 5 5	0	0
4	R	9	Total O 9 9	0	0
4	S	15	Total O 15 15	0	0
4	T	6	Total O 6 6	0	0
4	U	10	Total O 10 10	0	0
4	V	19	Total O 19 19	0	0
4	W	12	Total O 12 12	0	0
4	X	13	Total O 13 13	0	0
4	Y	26	Total O 26 26	0	0
4	Z	19	Total O 19 19	0	0
4	a	16	Total O 16 16	0	0
4	b	16	Total O 16 16	0	0

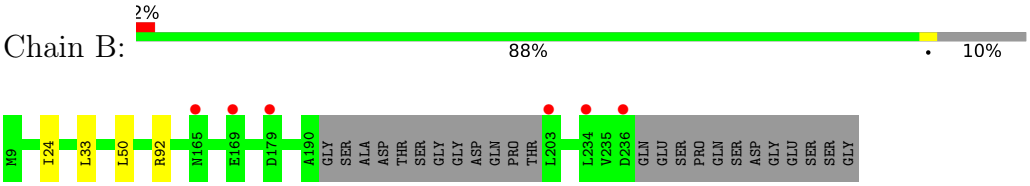
3 Residue-property plots (i)

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.

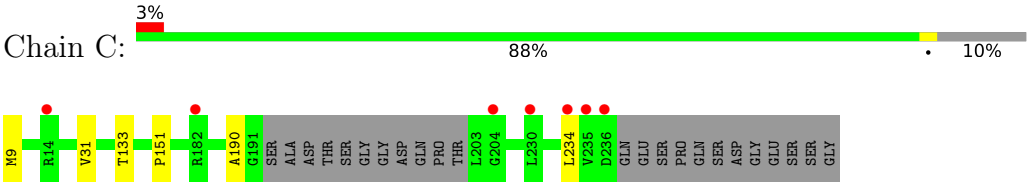
• Molecule 1: Proteasome subunit alpha



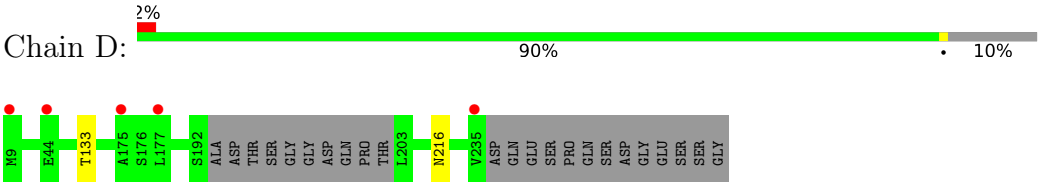
• Molecule 1: Proteasome subunit alpha



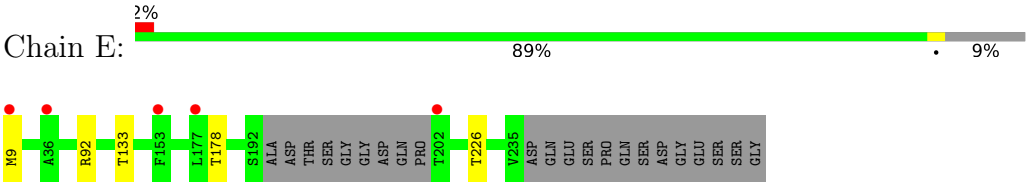
• Molecule 1: Proteasome subunit alpha



• Molecule 1: Proteasome subunit alpha

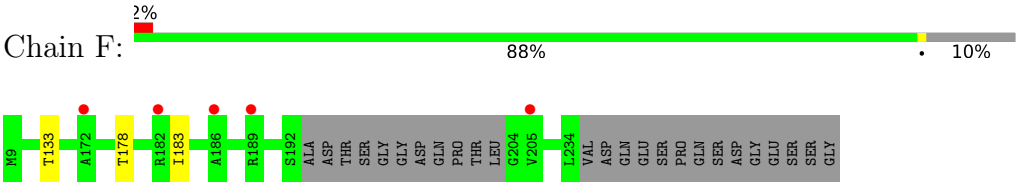


• Molecule 1: Proteasome subunit alpha



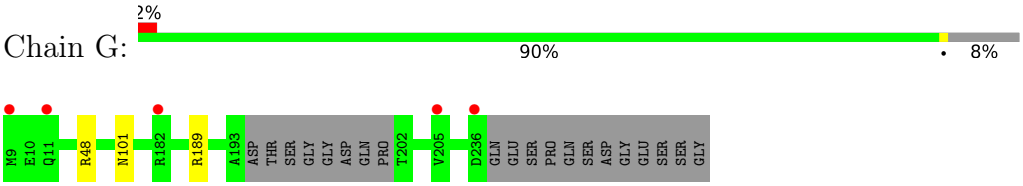
• Molecule 1: Proteasome subunit alpha

Chain F:



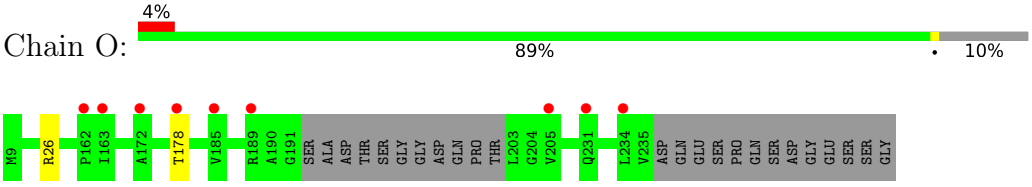
• Molecule 1: Proteasome subunit alpha

Chain G:



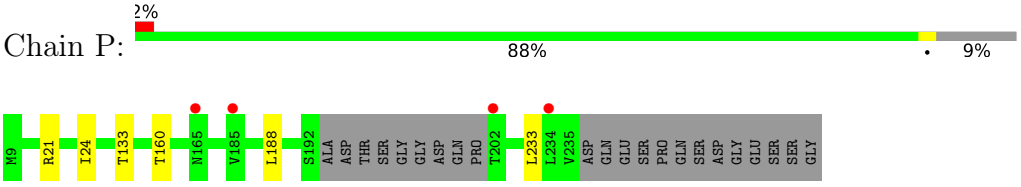
• Molecule 1: Proteasome subunit alpha

Chain O:



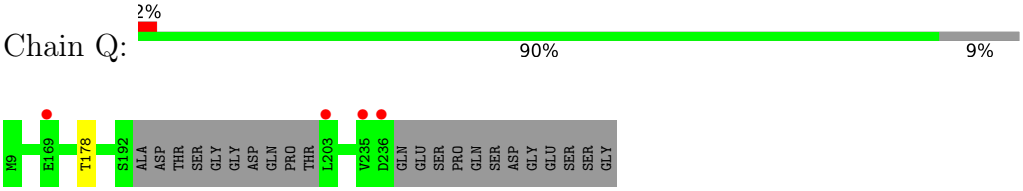
• Molecule 1: Proteasome subunit alpha

Chain P:



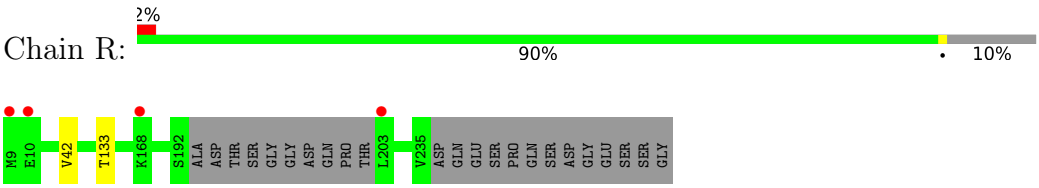
• Molecule 1: Proteasome subunit alpha

Chain Q:



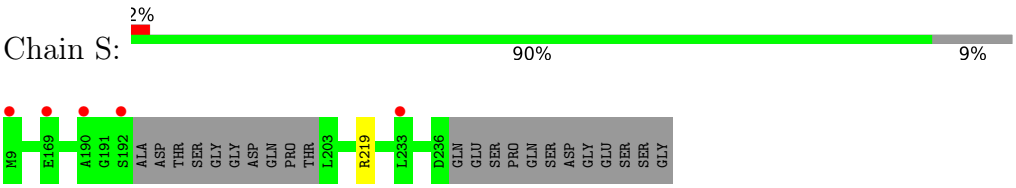
• Molecule 1: Proteasome subunit alpha

Chain R:



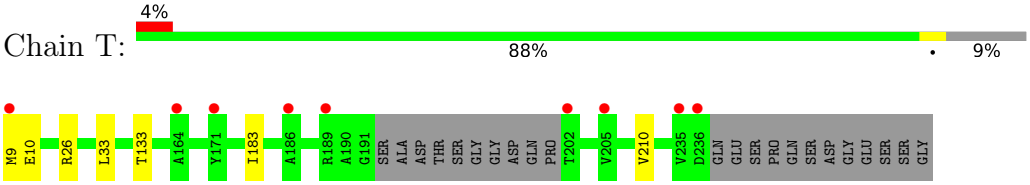
• Molecule 1: Proteasome subunit alpha

Chain S:



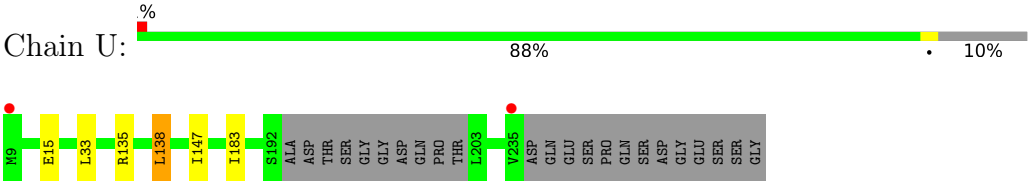
• Molecule 1: Proteasome subunit alpha

Chain T:



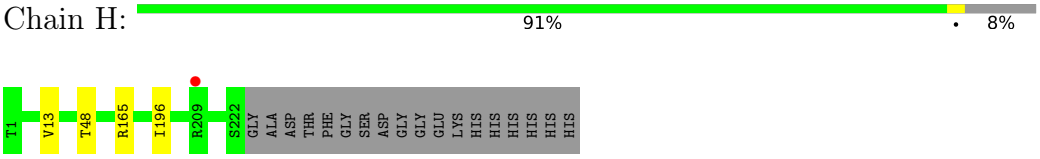
• Molecule 1: Proteasome subunit alpha

Chain U:



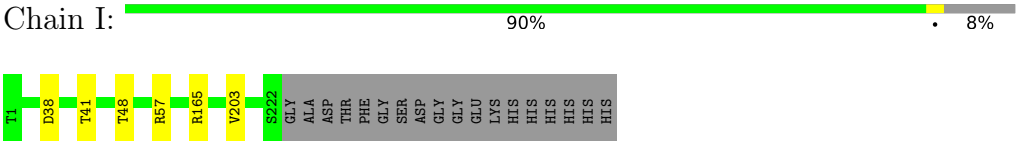
• Molecule 2: Proteasome subunit beta

Chain H:



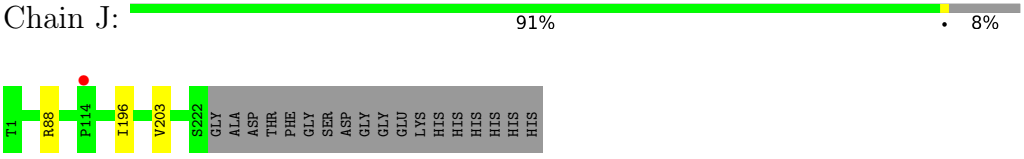
• Molecule 2: Proteasome subunit beta

Chain I:



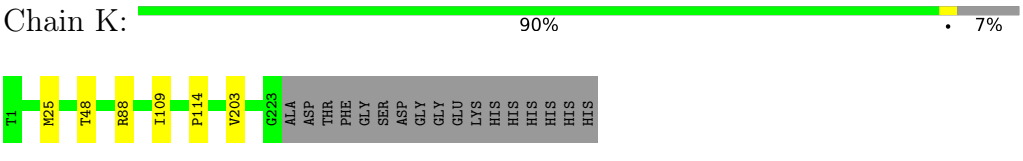
• Molecule 2: Proteasome subunit beta

Chain J:



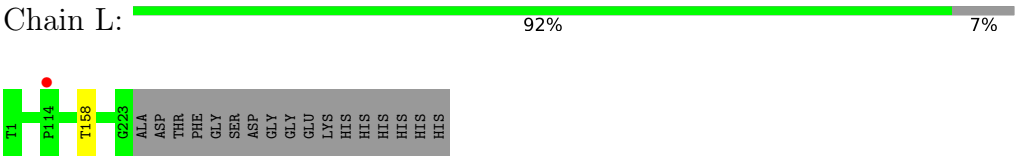
• Molecule 2: Proteasome subunit beta

Chain K:



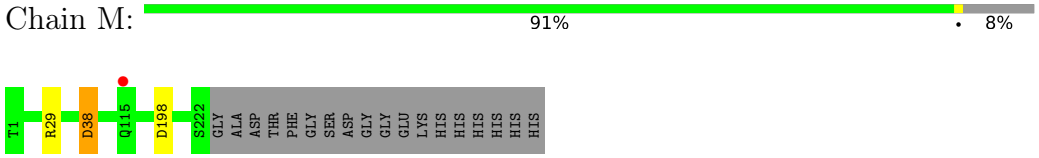
• Molecule 2: Proteasome subunit beta

Chain L:



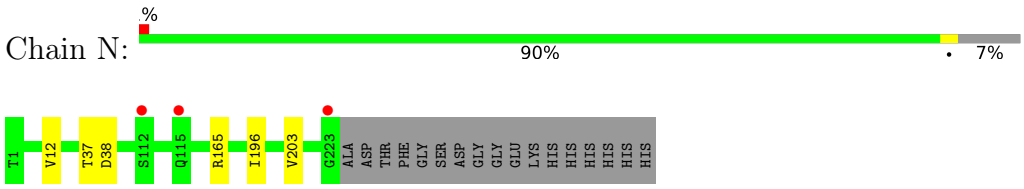
• Molecule 2: Proteasome subunit beta

Chain M:



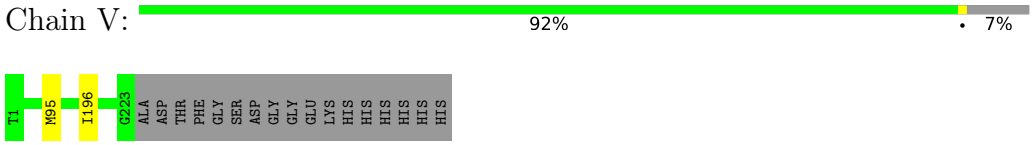
• Molecule 2: Proteasome subunit beta

Chain N:



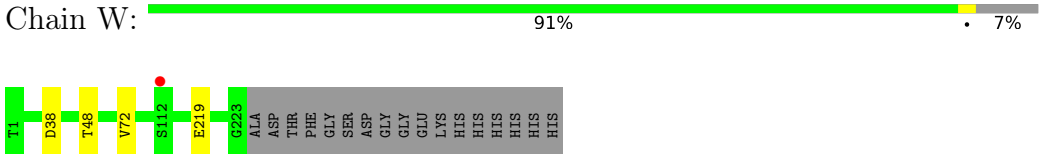
• Molecule 2: Proteasome subunit beta

Chain V:



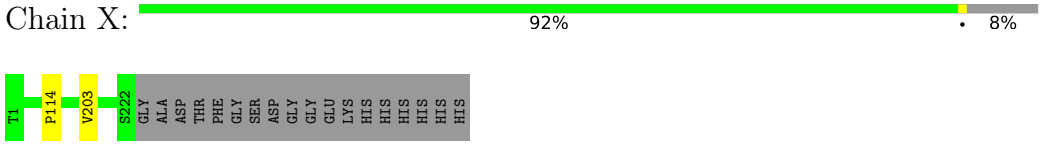
• Molecule 2: Proteasome subunit beta

Chain W:



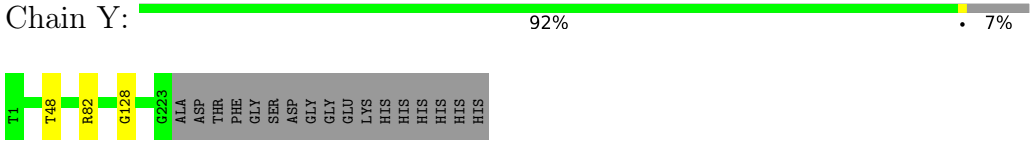
• Molecule 2: Proteasome subunit beta

Chain X:



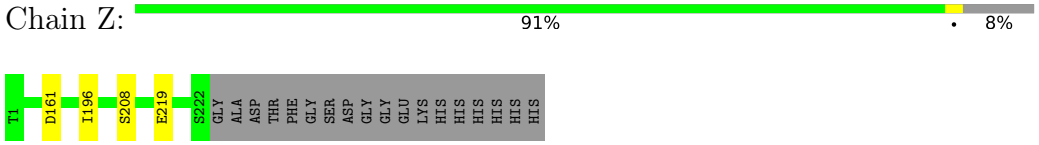
• Molecule 2: Proteasome subunit beta

Chain Y:



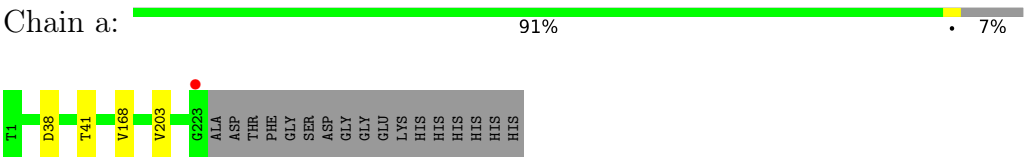
• Molecule 2: Proteasome subunit beta

Chain Z:



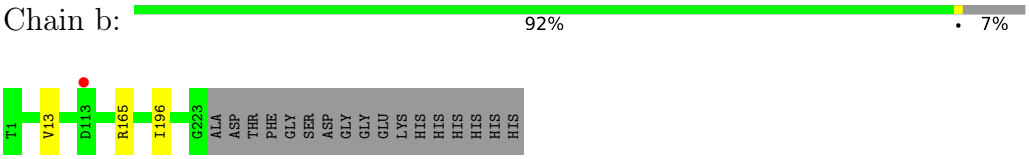
• Molecule 2: Proteasome subunit beta

Chain a:



• Molecule 2: Proteasome subunit beta

Chain b:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	120.55Å 198.54Å 165.72Å 90.00° 103.24° 90.00°	Depositor
Resolution (Å)	49.61 – 2.85 49.83 – 2.85	Depositor EDS
% Data completeness (in resolution range)	96.9 (49.61-2.85) 94.2 (49.83-2.85)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.17 (at 2.86Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.177 , 0.235 0.178 , 0.235	Depositor DCC
R_{free} test set	8304 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å^2)	48.8	Xtriage
Anisotropy	0.092	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 47.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	47311	wwPDB-VP
Average B, all atoms (Å^2)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.19% 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: 7J1

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	0.53	0/1701	0.72	0/2297
1	B	0.50	0/1692	0.73	2/2285 (0.1%)
1	C	0.48	0/1696	0.68	0/2290
1	D	0.53	1/1694 (0.1%)	0.72	0/2287
1	E	0.49	0/1701	0.71	0/2297
1	F	0.51	0/1679	0.71	0/2266
1	G	0.47	0/1714	0.71	0/2315
1	O	0.50	0/1688	0.70	0/2279
1	P	0.49	0/1701	0.72	3/2297 (0.1%)
1	Q	0.51	0/1702	0.72	0/2298
1	R	0.51	0/1694	0.73	0/2287
1	S	0.51	0/1702	0.72	1/2298 (0.0%)
1	T	0.56	2/1703 (0.1%)	0.77	3/2300 (0.1%)
1	U	0.57	2/1694 (0.1%)	0.81	3/2287 (0.1%)
2	H	0.49	0/1662	0.73	0/2254
2	I	0.52	1/1662 (0.1%)	0.75	0/2254
2	J	0.49	0/1662	0.75	0/2254
2	K	0.48	0/1666	0.76	0/2259
2	L	0.50	0/1666	0.72	0/2259
2	M	0.48	0/1662	0.72	2/2254 (0.1%)
2	N	0.49	0/1666	0.75	0/2259
2	V	0.48	0/1666	0.71	1/2259 (0.0%)
2	W	0.52	0/1666	0.76	1/2259 (0.0%)
2	X	0.52	0/1662	0.75	0/2254
2	Y	0.54	0/1666	0.73	1/2259 (0.0%)
2	Z	0.52	0/1662	0.75	1/2254 (0.0%)
2	a	0.49	0/1666	0.73	1/2259 (0.0%)
2	b	0.54	0/1666	0.74	0/2259
All	All	0.51	6/47061 (0.0%)	0.73	19/63679 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if

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

Mol	Chain	#Chirality outliers	#Planarity outliers
2	Y	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	U	15	GLU	CD-OE2	-7.91	1.17	1.25
1	T	10	GLU	CB-CG	6.17	1.63	1.52
1	D	216	ASN	C-N	-5.87	1.20	1.34
1	T	10	GLU	CG-CD	5.26	1.59	1.51
1	U	15	GLU	CD-OE1	-5.19	1.20	1.25
2	I	38	ASP	CB-CG	-5.15	1.41	1.51

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	U	15	GLU	CA-CB-CG	-9.44	92.64	113.40
2	Y	82	ARG	NE-CZ-NH1	-6.76	116.92	120.30
1	T	9	MET	CB-CG-SD	6.70	132.49	112.40
1	T	9	MET	N-CA-C	6.67	129.00	111.00
1	S	219	ARG	NE-CZ-NH1	6.21	123.40	120.30
1	U	33	LEU	CA-CB-CG	6.17	129.49	115.30
2	Z	161	ASP	CB-CG-OD1	6.17	123.85	118.30
1	P	188	LEU	CA-CB-CG	6.02	129.14	115.30
1	U	138	LEU	CA-CB-CG	5.62	128.22	115.30
2	M	38	ASP	CB-CG-OD1	5.40	123.16	118.30
1	P	233	LEU	CB-CG-CD2	-5.38	101.85	111.00
1	P	21	ARG	NE-CZ-NH1	5.28	122.94	120.30
2	W	38	ASP	CB-CG-OD2	-5.16	113.65	118.30
2	M	198	ASP	CB-CG-OD1	5.15	122.93	118.30
1	B	92	ARG	NE-CZ-NH2	-5.14	117.73	120.30
1	B	33	LEU	CA-CB-CG	5.11	127.05	115.30
2	V	95	MET	CG-SD-CE	5.11	108.37	100.20
2	a	38	ASP	CB-CG-OD1	5.10	122.89	118.30
1	T	33	LEU	CA-CB-CG	5.04	126.90	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	Y	128	GLY	Peptide

5.2 Too-close contacts

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	214/240 (89%)	208 (97%)	6 (3%)	0	100	100
1	B	212/240 (88%)	208 (98%)	4 (2%)	0	100	100
1	C	213/240 (89%)	205 (96%)	5 (2%)	3 (1%)	11	24
1	D	213/240 (89%)	204 (96%)	9 (4%)	0	100	100
1	E	214/240 (89%)	207 (97%)	7 (3%)	0	100	100
1	F	211/240 (88%)	204 (97%)	7 (3%)	0	100	100
1	G	216/240 (90%)	211 (98%)	5 (2%)	0	100	100
1	O	212/240 (88%)	204 (96%)	8 (4%)	0	100	100
1	P	214/240 (89%)	208 (97%)	6 (3%)	0	100	100
1	Q	214/240 (89%)	207 (97%)	7 (3%)	0	100	100
1	R	213/240 (89%)	209 (98%)	4 (2%)	0	100	100
1	S	214/240 (89%)	205 (96%)	9 (4%)	0	100	100
1	T	214/240 (89%)	207 (97%)	7 (3%)	0	100	100
1	U	213/240 (89%)	205 (96%)	8 (4%)	0	100	100
2	H	220/240 (92%)	216 (98%)	4 (2%)	0	100	100
2	I	220/240 (92%)	216 (98%)	4 (2%)	0	100	100
2	J	220/240 (92%)	215 (98%)	5 (2%)	0	100	100
2	K	221/240 (92%)	217 (98%)	3 (1%)	1 (0%)	29	51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	L	221/240 (92%)	218 (99%)	3 (1%)	0	100 100
2	M	220/240 (92%)	215 (98%)	5 (2%)	0	100 100
2	N	221/240 (92%)	215 (97%)	6 (3%)	0	100 100
2	V	221/240 (92%)	218 (99%)	3 (1%)	0	100 100
2	W	221/240 (92%)	217 (98%)	4 (2%)	0	100 100
2	X	220/240 (92%)	213 (97%)	6 (3%)	1 (0%)	29 51
2	Y	221/240 (92%)	217 (98%)	4 (2%)	0	100 100
2	Z	220/240 (92%)	218 (99%)	2 (1%)	0	100 100
2	a	221/240 (92%)	216 (98%)	5 (2%)	0	100 100
2	b	221/240 (92%)	218 (99%)	3 (1%)	0	100 100
All	All	6075/6720 (90%)	5921 (98%)	149 (2%)	5 (0%)	51 75

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	190	ALA
1	C	234	LEU
1	C	151	PRO
2	X	114	PRO
2	K	114	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	167/184 (91%)	163 (98%)	4 (2%)	49 72
1	B	166/184 (90%)	164 (99%)	2 (1%)	71 85
1	C	166/184 (90%)	163 (98%)	3 (2%)	59 78
1	D	166/184 (90%)	165 (99%)	1 (1%)	86 93
1	E	167/184 (91%)	162 (97%)	5 (3%)	41 65

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	164/184 (89%)	161 (98%)	3 (2%)	59	78
1	G	168/184 (91%)	165 (98%)	3 (2%)	59	78
1	O	165/184 (90%)	163 (99%)	2 (1%)	71	85
1	P	167/184 (91%)	164 (98%)	3 (2%)	59	78
1	Q	167/184 (91%)	166 (99%)	1 (1%)	86	93
1	R	166/184 (90%)	164 (99%)	2 (1%)	71	85
1	S	167/184 (91%)	167 (100%)	0	100	100
1	T	167/184 (91%)	163 (98%)	4 (2%)	49	72
1	U	166/184 (90%)	162 (98%)	4 (2%)	49	72
2	H	165/178 (93%)	161 (98%)	4 (2%)	49	72
2	I	165/178 (93%)	160 (97%)	5 (3%)	41	65
2	J	165/178 (93%)	162 (98%)	3 (2%)	59	78
2	K	165/178 (93%)	160 (97%)	5 (3%)	41	65
2	L	165/178 (93%)	164 (99%)	1 (1%)	86	93
2	M	165/178 (93%)	163 (99%)	2 (1%)	71	85
2	N	165/178 (93%)	159 (96%)	6 (4%)	35	60
2	V	165/178 (93%)	164 (99%)	1 (1%)	86	93
2	W	165/178 (93%)	162 (98%)	3 (2%)	59	78
2	X	165/178 (93%)	164 (99%)	1 (1%)	86	93
2	Y	165/178 (93%)	164 (99%)	1 (1%)	86	93
2	Z	165/178 (93%)	162 (98%)	3 (2%)	59	78
2	a	165/178 (93%)	162 (98%)	3 (2%)	59	78
2	b	165/178 (93%)	162 (98%)	3 (2%)	59	78
All	All	4639/5068 (92%)	4561 (98%)	78 (2%)	60	80

All (78) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	135	ARG
1	A	160	THR
1	A	178	THR
1	A	182	ARG
1	B	24	ILE
1	B	50	LEU

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Mol	Chain	Res	Type
1	C	9	MET
1	C	31	VAL
1	C	133	THR
1	D	133	THR
1	E	9	MET
1	E	92	ARG
1	E	133	THR
1	E	178	THR
1	E	226	THR
1	F	133	THR
1	F	178	THR
1	F	183	ILE
1	G	48	ARG
1	G	101	ASN
1	G	189	ARG
2	H	13	VAL
2	H	48	THR
2	H	165	ARG
2	H	196	ILE
2	I	41	THR
2	I	48	THR
2	I	57	ARG
2	I	165	ARG
2	I	203	VAL
2	J	88	ARG
2	J	196	ILE
2	J	203	VAL
2	K	25	MET
2	K	48	THR
2	K	88	ARG
2	K	109	ILE
2	K	203	VAL
2	L	158	THR
2	M	29	ARG
2	M	38	ASP
2	N	12	VAL
2	N	37	THR
2	N	38	ASP
2	N	165	ARG
2	N	196	ILE
2	N	203	VAL
1	O	26	ARG

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Mol	Chain	Res	Type
1	O	178	THR
1	P	24	ILE
1	P	133	THR
1	P	160	THR
1	Q	178	THR
1	R	42	VAL
1	R	133	THR
1	T	26	ARG
1	T	133	THR
1	T	183	ILE
1	T	210	VAL
1	U	135	ARG
1	U	138	LEU
1	U	147	ILE
1	U	183	ILE
2	V	196	ILE
2	W	48	THR
2	W	72	VAL
2	W	219	GLU
2	X	203	VAL
2	Y	48	THR
2	Z	196	ILE
2	Z	208	SER
2	Z	219	GLU
2	a	41	THR
2	a	168	VAL
2	a	203	VAL
2	b	13	VAL
2	b	165	ARG
2	b	196	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	129	HIS
2	K	110	HIS
2	b	137	GLN

5.3.3 RNA

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)

14 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	$\#\|Z\| > 2$
3	7J1	Y	301	-	42,44,44	2.06	9 (21%)	52,58,58	1.08	6 (11%)
3	7J1	X	301	-	42,44,44	2.17	8 (19%)	52,58,58	1.12	5 (9%)
3	7J1	H	301	-	42,44,44	2.55	8 (19%)	52,58,58	1.18	5 (9%)
3	7J1	L	301	-	42,44,44	2.44	8 (19%)	52,58,58	1.15	6 (11%)
3	7J1	a	301	-	42,44,44	2.46	9 (21%)	52,58,58	1.06	2 (3%)
3	7J1	Z	301	-	42,44,44	2.36	7 (16%)	52,58,58	1.14	5 (9%)
3	7J1	J	301	-	42,44,44	2.18	9 (21%)	52,58,58	1.27	7 (13%)
3	7J1	K	301	-	42,44,44	2.63	8 (19%)	52,58,58	1.10	3 (5%)
3	7J1	b	301	-	42,44,44	2.50	10 (23%)	52,58,58	1.06	3 (5%)
3	7J1	M	301	-	42,44,44	2.08	9 (21%)	52,58,58	1.28	9 (17%)
3	7J1	N	301	-	42,44,44	2.25	8 (19%)	52,58,58	1.04	3 (5%)
3	7J1	W	301	-	42,44,44	2.21	11 (26%)	52,58,58	1.22	4 (7%)
3	7J1	V	301	-	42,44,44	2.49	8 (19%)	52,58,58	1.07	5 (9%)
3	7J1	I	301	-	42,44,44	2.50	9 (21%)	52,58,58	1.08	2 (3%)

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	7J1	Y	301	-	-	2/33/37/37	0/4/4/4
3	7J1	X	301	-	-	3/33/37/37	0/4/4/4
3	7J1	H	301	-	-	5/33/37/37	0/4/4/4
3	7J1	L	301	-	-	2/33/37/37	0/4/4/4
3	7J1	a	301	-	-	3/33/37/37	0/4/4/4
3	7J1	Z	301	-	-	3/33/37/37	0/4/4/4
3	7J1	J	301	-	-	3/33/37/37	0/4/4/4
3	7J1	K	301	-	-	6/33/37/37	0/4/4/4
3	7J1	b	301	-	-	1/33/37/37	0/4/4/4
3	7J1	M	301	-	-	2/33/37/37	0/4/4/4
3	7J1	N	301	-	-	3/33/37/37	0/4/4/4
3	7J1	W	301	-	-	5/33/37/37	0/4/4/4
3	7J1	V	301	-	-	3/33/37/37	0/4/4/4
3	7J1	I	301	-	-	3/33/37/37	0/4/4/4

All (121) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	I	301	7J1	C26-C27	8.98	1.57	1.38
3	K	301	7J1	C29-C28	8.77	1.57	1.38
3	K	301	7J1	C26-C27	8.55	1.56	1.38
3	a	301	7J1	C26-N25	8.53	1.51	1.39
3	Z	301	7J1	C29-C28	8.17	1.55	1.38
3	H	301	7J1	C26-N25	8.13	1.50	1.39
3	K	301	7J1	C26-N25	8.04	1.50	1.39
3	L	301	7J1	C29-C28	8.01	1.55	1.38
3	Z	301	7J1	C26-C27	7.79	1.55	1.38
3	V	301	7J1	C29-C28	7.79	1.55	1.38
3	H	301	7J1	C29-C28	7.76	1.55	1.38
3	b	301	7J1	C29-C28	7.56	1.54	1.38
3	I	301	7J1	C29-C28	7.56	1.54	1.38
3	N	301	7J1	C26-C27	7.53	1.54	1.38
3	V	301	7J1	C26-N25	7.47	1.49	1.39
3	W	301	7J1	C29-C28	7.35	1.54	1.38
3	H	301	7J1	C26-C27	7.34	1.54	1.38
3	Y	301	7J1	C29-C28	7.29	1.54	1.38
3	b	301	7J1	C26-N25	7.26	1.49	1.39
3	a	301	7J1	C29-C28	7.25	1.53	1.38
3	N	301	7J1	C29-C28	7.24	1.53	1.38
3	V	301	7J1	C26-C27	7.24	1.53	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	X	301	7J1	C26-C27	7.23	1.53	1.38
3	L	301	7J1	C26-C27	7.10	1.53	1.38
3	L	301	7J1	C26-N25	7.04	1.49	1.39
3	J	301	7J1	C29-C28	7.01	1.53	1.38
3	J	301	7J1	C26-C27	6.96	1.53	1.38
3	X	301	7J1	C29-C28	6.83	1.53	1.38
3	b	301	7J1	C26-C27	6.76	1.52	1.38
3	I	301	7J1	C29-N25	6.70	1.48	1.39
3	a	301	7J1	C26-C27	6.50	1.52	1.38
3	Y	301	7J1	C26-C27	6.45	1.52	1.38
3	W	301	7J1	C26-C27	6.38	1.52	1.38
3	M	301	7J1	C29-C28	6.32	1.51	1.38
3	W	301	7J1	C26-N25	6.08	1.47	1.39
3	Z	301	7J1	C26-N25	6.07	1.47	1.39
3	M	301	7J1	C26-C27	5.94	1.51	1.38
3	M	301	7J1	C26-N25	5.90	1.47	1.39
3	b	301	7J1	C29-N25	5.62	1.47	1.39
3	Y	301	7J1	C26-N25	5.33	1.46	1.39
3	X	301	7J1	C26-N25	5.28	1.46	1.39
3	V	301	7J1	C29-N25	5.23	1.46	1.39
3	N	301	7J1	C29-N25	5.21	1.46	1.39
3	H	301	7J1	C29-N25	5.10	1.46	1.39
3	J	301	7J1	C26-N25	4.97	1.46	1.39
3	I	301	7J1	C26-N25	4.91	1.46	1.39
3	N	301	7J1	C26-N25	4.62	1.45	1.39
3	K	301	7J1	C29-N25	4.52	1.45	1.39
3	a	301	7J1	C29-N25	4.35	1.45	1.39
3	V	301	7J1	C27-C28	4.29	1.55	1.40
3	X	301	7J1	C29-N25	4.25	1.45	1.39
3	L	301	7J1	C29-N25	4.24	1.45	1.39
3	a	301	7J1	C27-C28	4.23	1.55	1.40
3	Z	301	7J1	C29-N25	4.12	1.45	1.39
3	b	301	7J1	C27-C28	3.92	1.53	1.40
3	L	301	7J1	C27-C28	3.87	1.53	1.40
3	H	301	7J1	C27-C28	3.87	1.53	1.40
3	W	301	7J1	C27-C28	3.84	1.53	1.40
3	K	301	7J1	C27-C28	3.80	1.53	1.40
3	N	301	7J1	C27-C28	3.73	1.53	1.40
3	H	301	7J1	C04-N03	-3.73	1.38	1.45
3	M	301	7J1	C29-N25	3.70	1.44	1.39
3	J	301	7J1	C33-C32	3.69	1.58	1.51
3	J	301	7J1	C29-N25	3.62	1.44	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	Z	301	7J1	C27-C28	3.61	1.52	1.40
3	W	301	7J1	C29-N25	3.58	1.44	1.39
3	Z	301	7J1	C04-N03	-3.51	1.38	1.45
3	I	301	7J1	C27-C28	3.50	1.52	1.40
3	b	301	7J1	C04-N03	-3.41	1.38	1.45
3	J	301	7J1	C02-N03	3.33	1.41	1.34
3	X	301	7J1	C27-C28	3.27	1.51	1.40
3	V	301	7J1	C04-N03	-3.22	1.39	1.45
3	I	301	7J1	C32-N31	3.10	1.40	1.34
3	M	301	7J1	C27-C28	3.08	1.51	1.40
3	a	301	7J1	C23-C22	3.06	1.60	1.53
3	L	301	7J1	C23-C22	3.02	1.60	1.53
3	K	301	7J1	C02-N03	3.00	1.40	1.34
3	a	301	7J1	C32-N31	3.00	1.40	1.34
3	J	301	7J1	C27-C28	2.97	1.50	1.40
3	X	301	7J1	C04-C05	-2.95	1.45	1.52
3	L	301	7J1	C22-C02	2.94	1.60	1.52
3	M	301	7J1	C23-C24	-2.93	1.45	1.51
3	J	301	7J1	C32-N31	2.93	1.40	1.34
3	b	301	7J1	C19-C04	2.92	1.60	1.52
3	Y	301	7J1	C29-N25	2.82	1.43	1.39
3	K	301	7J1	C33-C32	2.75	1.56	1.51
3	Z	301	7J1	C32-N31	2.71	1.39	1.34
3	b	301	7J1	C22-N31	-2.70	1.40	1.45
3	M	301	7J1	C02-N03	2.70	1.40	1.34
3	Y	301	7J1	C07-C08	-2.67	1.44	1.52
3	Y	301	7J1	C27-C28	2.56	1.49	1.40
3	V	301	7J1	C05-N06	2.55	1.39	1.33
3	W	301	7J1	C32-N31	2.53	1.39	1.34
3	I	301	7J1	C02-N03	2.52	1.39	1.34
3	H	301	7J1	C05-N06	2.51	1.39	1.33
3	N	301	7J1	C04-N03	-2.45	1.40	1.45
3	N	301	7J1	C05-N06	2.40	1.38	1.33
3	M	301	7J1	C05-N06	2.38	1.38	1.33
3	b	301	7J1	C10-C09	2.36	1.43	1.38
3	a	301	7J1	C02-N03	2.35	1.39	1.34
3	I	301	7J1	C05-N06	2.35	1.38	1.33
3	a	301	7J1	C04-C05	-2.34	1.46	1.52
3	Y	301	7J1	C07-N06	-2.34	1.41	1.46
3	W	301	7J1	C10-C09	2.32	1.43	1.38
3	N	301	7J1	C32-N31	2.30	1.38	1.34
3	H	301	7J1	C04-C05	2.29	1.58	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	L	301	7J1	C10-C09	2.26	1.43	1.38
3	X	301	7J1	C04-N03	-2.26	1.41	1.45
3	I	301	7J1	C23-C24	-2.25	1.47	1.51
3	W	301	7J1	C19-C04	2.24	1.58	1.52
3	Y	301	7J1	C32-N31	2.23	1.38	1.34
3	M	301	7J1	C10-C09	2.22	1.43	1.38
3	b	301	7J1	C07-N06	-2.18	1.41	1.46
3	V	301	7J1	C04-C05	2.14	1.58	1.52
3	X	301	7J1	C10-C09	2.12	1.43	1.38
3	W	301	7J1	C13-C12	-2.10	1.39	1.43
3	W	301	7J1	C05-N06	2.08	1.38	1.33
3	W	301	7J1	C02-N03	2.07	1.38	1.34
3	J	301	7J1	C05-N06	2.06	1.38	1.33
3	K	301	7J1	C32-N31	2.04	1.38	1.34
3	Y	301	7J1	C04-N03	-2.01	1.41	1.45

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	W	301	7J1	C33-C32-N31	4.06	122.88	115.83
3	I	301	7J1	C23-C22-C02	-3.86	101.33	110.42
3	H	301	7J1	C33-C32-N31	3.52	121.93	115.83
3	X	301	7J1	C19-C04-C05	-3.40	102.33	110.32
3	W	301	7J1	C23-C22-C02	-3.31	102.62	110.42
3	J	301	7J1	O41-C32-N31	-3.30	117.38	122.95
3	K	301	7J1	O41-C32-N31	-3.29	117.39	122.95
3	Z	301	7J1	C23-C22-C02	-3.22	102.84	110.42
3	J	301	7J1	C33-C32-N31	3.17	121.33	115.83
3	Z	301	7J1	C33-C32-N31	3.17	121.32	115.83
3	L	301	7J1	C33-C32-N31	3.16	121.32	115.83
3	J	301	7J1	C26-C27-C28	-3.15	102.47	107.13
3	M	301	7J1	C26-C27-C28	-3.15	102.47	107.13
3	W	301	7J1	O41-C32-N31	-3.15	117.64	122.95
3	H	301	7J1	O41-C32-N31	-3.11	117.71	122.95
3	N	301	7J1	C33-C32-N31	3.04	121.11	115.83
3	N	301	7J1	C23-C22-C02	-3.02	103.32	110.42
3	K	301	7J1	C33-C32-N31	3.01	121.06	115.83
3	V	301	7J1	C33-C32-N31	3.00	121.04	115.83
3	M	301	7J1	C33-C32-N31	2.92	120.90	115.83
3	V	301	7J1	O41-C32-N31	-2.92	118.02	122.95
3	Y	301	7J1	C23-C22-C02	-2.89	103.62	110.42
3	M	301	7J1	C19-C04-C05	-2.88	103.55	110.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	H	301	7J1	C19-C04-N03	-2.86	104.74	111.40
3	X	301	7J1	O41-C32-N31	-2.82	118.20	122.95
3	Y	301	7J1	C26-C27-C28	-2.78	103.02	107.13
3	M	301	7J1	C23-C22-C02	-2.70	104.07	110.42
3	X	301	7J1	C04-C05-N06	2.66	121.90	116.54
3	V	301	7J1	C05-C04-N03	-2.58	104.13	111.16
3	M	301	7J1	C04-N03-C02	2.58	127.20	121.67
3	N	301	7J1	O41-C32-N31	-2.58	118.61	122.95
3	Y	301	7J1	C33-C32-N31	2.57	120.29	115.83
3	M	301	7J1	C29-C28-C27	-2.56	103.34	107.13
3	b	301	7J1	C26-C27-C28	-2.55	103.36	107.13
3	L	301	7J1	O01-C02-N03	-2.53	118.25	122.93
3	X	301	7J1	C05-C04-N03	-2.51	104.32	111.16
3	a	301	7J1	C33-C32-N31	2.49	120.16	115.83
3	H	301	7J1	C23-C22-C02	-2.45	104.65	110.42
3	V	301	7J1	C23-C22-C02	-2.42	104.71	110.42
3	J	301	7J1	C23-C22-C02	-2.42	104.73	110.42
3	W	301	7J1	C05-C04-N03	-2.42	104.58	111.16
3	a	301	7J1	C19-C04-C05	-2.38	104.73	110.32
3	M	301	7J1	O41-C32-N31	-2.37	118.96	122.95
3	Z	301	7J1	C19-C04-N03	-2.36	105.91	111.40
3	b	301	7J1	C05-C04-N03	-2.35	104.76	111.16
3	Y	301	7J1	O20-C19-C04	-2.34	102.83	109.39
3	M	301	7J1	C19-C04-N03	-2.31	106.03	111.40
3	X	301	7J1	C34-C33-C32	2.30	118.02	112.72
3	I	301	7J1	C33-C32-N31	2.29	119.80	115.83
3	M	301	7J1	C04-C05-N06	2.28	121.15	116.54
3	L	301	7J1	C05-C04-N03	-2.25	105.03	111.16
3	Z	301	7J1	C02-C22-N31	-2.24	105.07	111.16
3	J	301	7J1	C04-N03-C02	2.22	126.44	121.67
3	Y	301	7J1	C23-C22-N31	2.21	114.92	110.60
3	Y	301	7J1	O41-C32-N31	-2.20	119.23	122.95
3	V	301	7J1	C04-C05-N06	2.19	120.95	116.54
3	H	301	7J1	C17-C12-C11	-2.14	118.18	123.19
3	K	301	7J1	C23-C22-C02	-2.10	105.48	110.42
3	b	301	7J1	C33-C32-N31	2.09	119.45	115.83
3	L	301	7J1	C19-C04-C05	-2.08	105.44	110.32
3	J	301	7J1	C29-C28-C27	-2.08	104.06	107.13
3	L	301	7J1	C23-C22-C02	-2.08	105.53	110.42
3	J	301	7J1	C23-C24-N25	2.07	121.29	118.42
3	Z	301	7J1	O41-C32-C33	-2.03	118.30	122.02
3	L	301	7J1	C17-C12-C11	-2.03	118.45	123.19

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	H	301	7J1	N03-C04-C19-O20
3	H	301	7J1	C05-C04-C19-O20
3	I	301	7J1	N03-C04-C19-O20
3	I	301	7J1	C05-C04-C19-O20
3	J	301	7J1	C05-C04-C19-O20
3	K	301	7J1	N31-C22-C23-C24
3	L	301	7J1	N03-C04-C19-O20
3	L	301	7J1	C05-C04-C19-O20
3	M	301	7J1	N03-C04-C19-O20
3	M	301	7J1	C05-C04-C19-O20
3	N	301	7J1	N03-C04-C19-O20
3	N	301	7J1	C05-C04-C19-O20
3	W	301	7J1	N03-C04-C19-O20
3	W	301	7J1	C05-C04-C19-O20
3	X	301	7J1	N03-C04-C19-O20
3	X	301	7J1	C05-C04-C19-O20
3	Y	301	7J1	N03-C04-C19-O20
3	Y	301	7J1	C05-C04-C19-O20
3	Z	301	7J1	N03-C04-C19-O20
3	Z	301	7J1	C05-C04-C19-O20
3	a	301	7J1	N03-C04-C19-O20
3	a	301	7J1	C05-C04-C19-O20
3	J	301	7J1	N03-C04-C19-O20
3	X	301	7J1	C04-C19-O20-C21
3	Z	301	7J1	C04-C19-O20-C21
3	b	301	7J1	C04-C19-O20-C21
3	I	301	7J1	C04-C19-O20-C21
3	W	301	7J1	C04-C19-O20-C21
3	N	301	7J1	C32-C33-C34-C35
3	K	301	7J1	C02-C22-C23-C24
3	J	301	7J1	C04-C19-O20-C21
3	K	301	7J1	C05-C04-C19-O20
3	K	301	7J1	N03-C04-C19-O20
3	K	301	7J1	C33-C34-C35-C40
3	K	301	7J1	C33-C34-C35-C36
3	W	301	7J1	C33-C34-C35-C40
3	H	301	7J1	C04-C19-O20-C21
3	V	301	7J1	C22-C23-C24-O30
3	V	301	7J1	C22-C23-C24-N25
3	a	301	7J1	C22-C23-C24-N25

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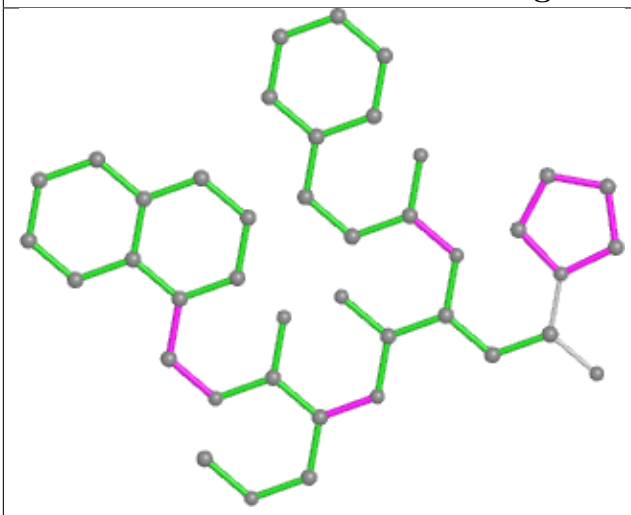
Mol	Chain	Res	Type	Atoms
3	W	301	7J1	C33-C34-C35-C36
3	V	301	7J1	C05-C04-C19-O20
3	H	301	7J1	C33-C34-C35-C40
3	H	301	7J1	C33-C34-C35-C36

There are no ring outliers.

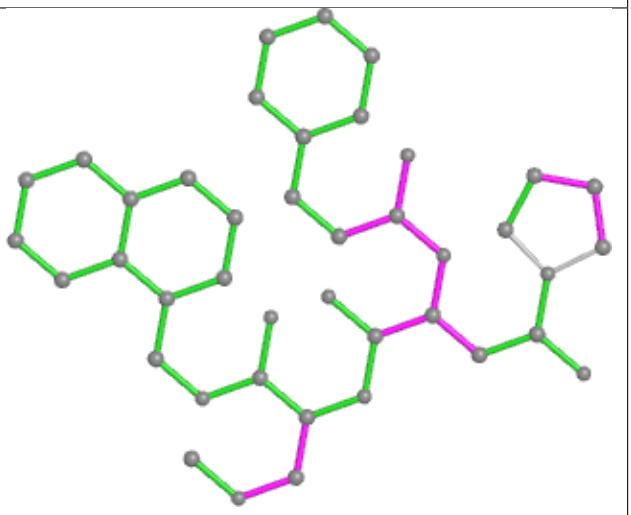
No monomer is involved in short contacts.

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

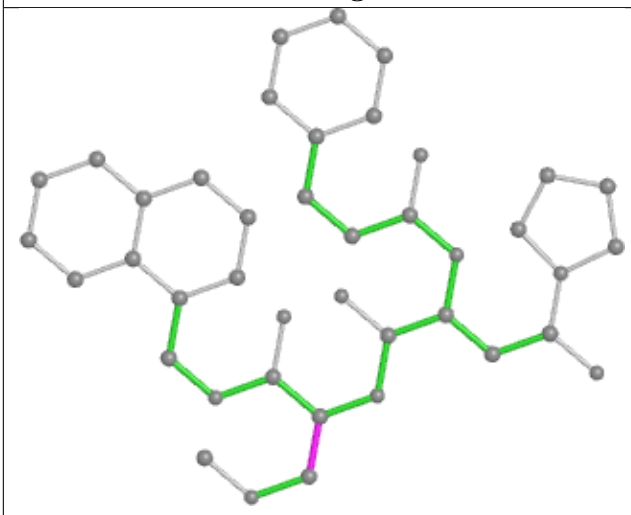
Ligand 7J1 Y 301



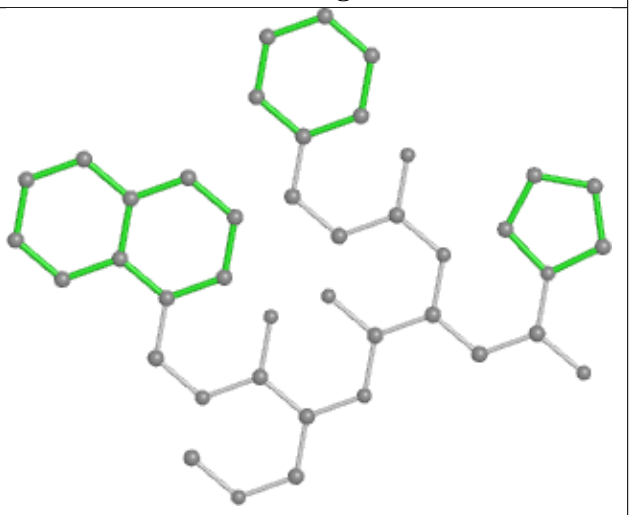
Bond lengths



Bond angles

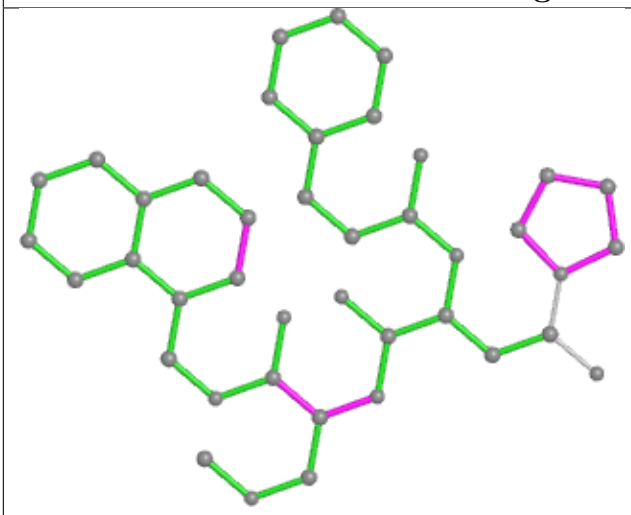


Torsions



Rings

Ligand 7J1 X 301



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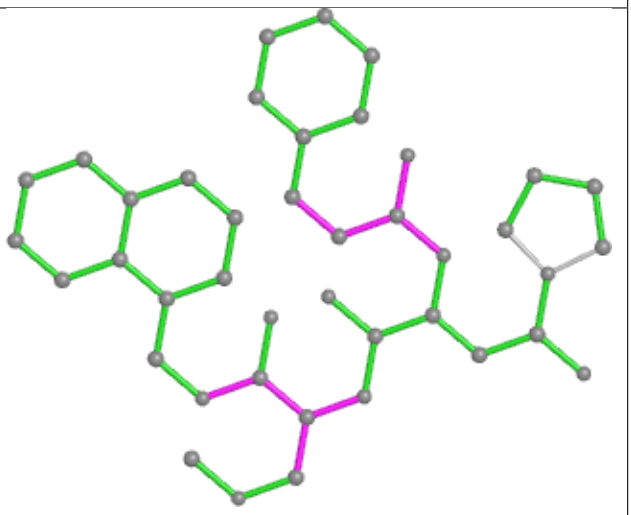
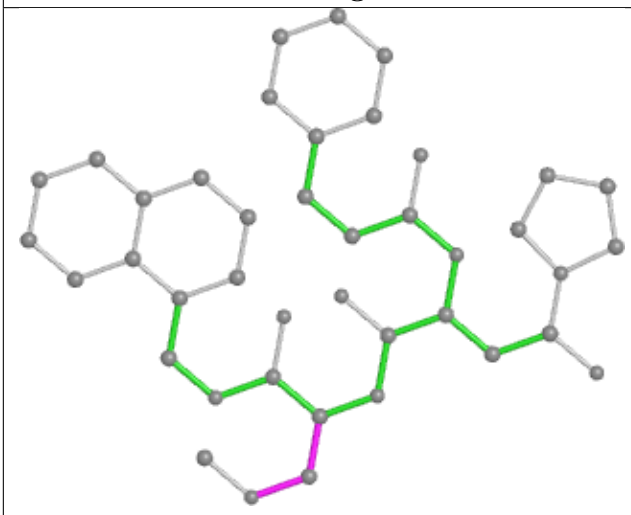


Bond angles



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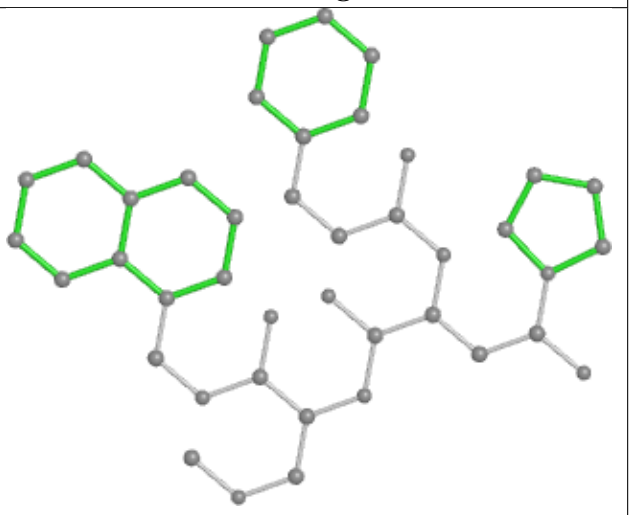
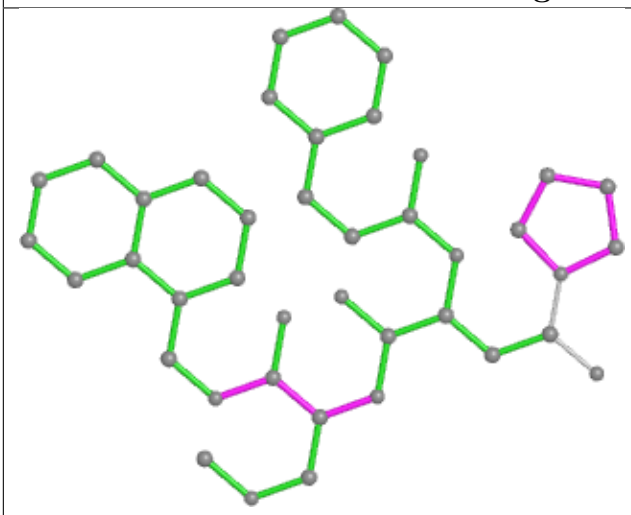


Rings

Ligand 7J1 H 301



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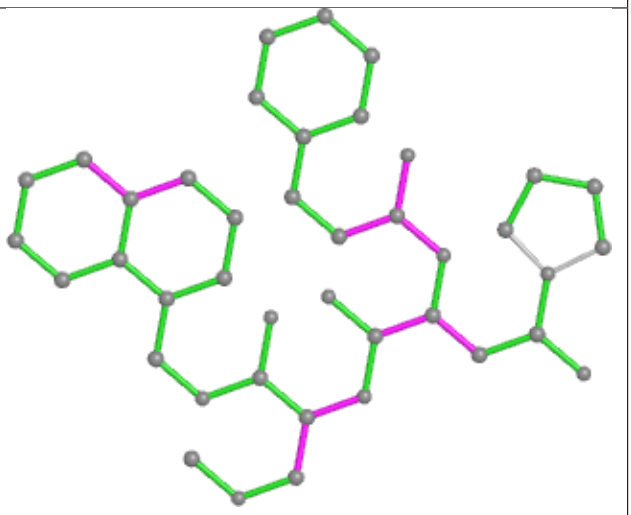
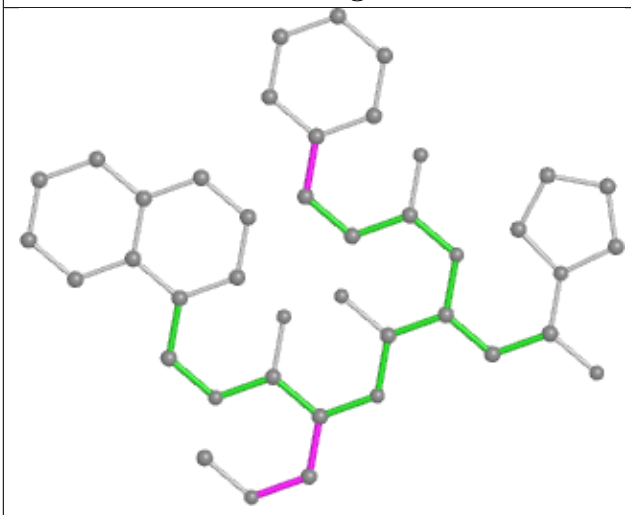
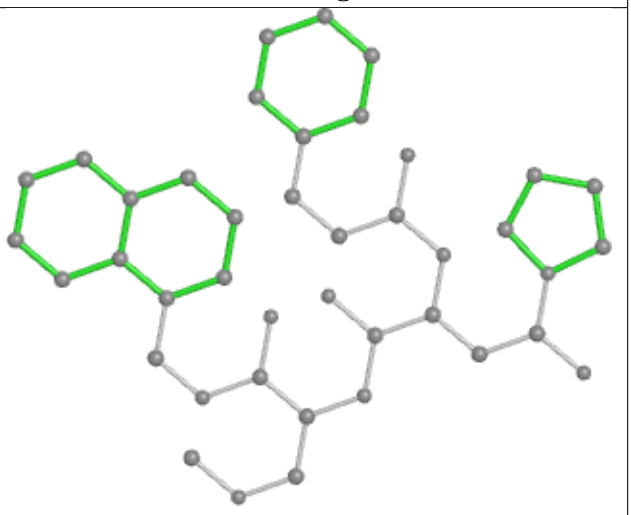


Bond angles

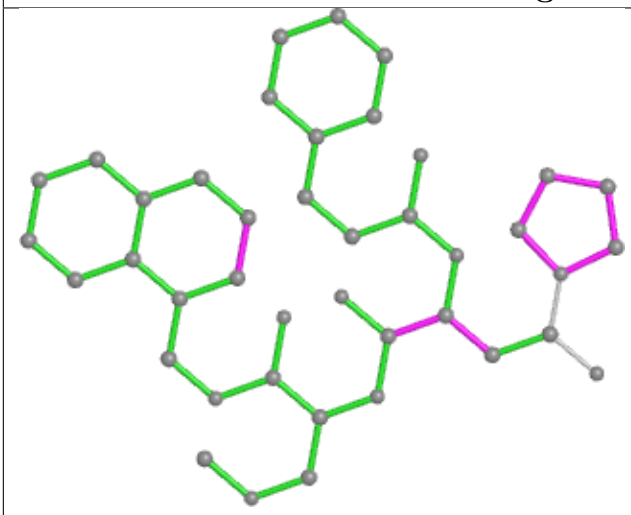


Torsions

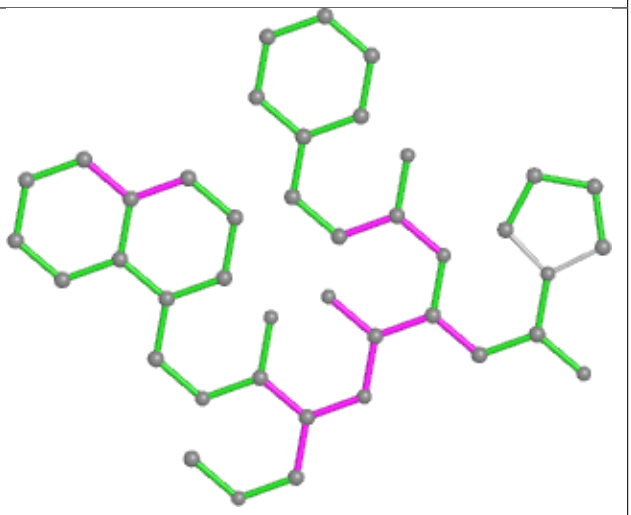


Rings

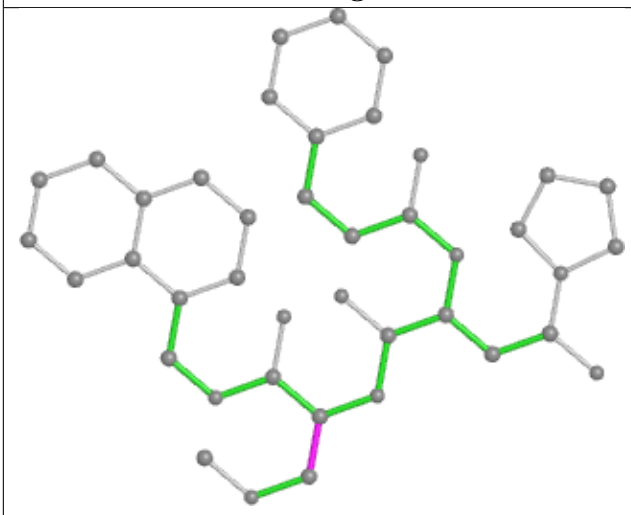
Ligand 7J1 L 301



Bond lengths



Bond angles



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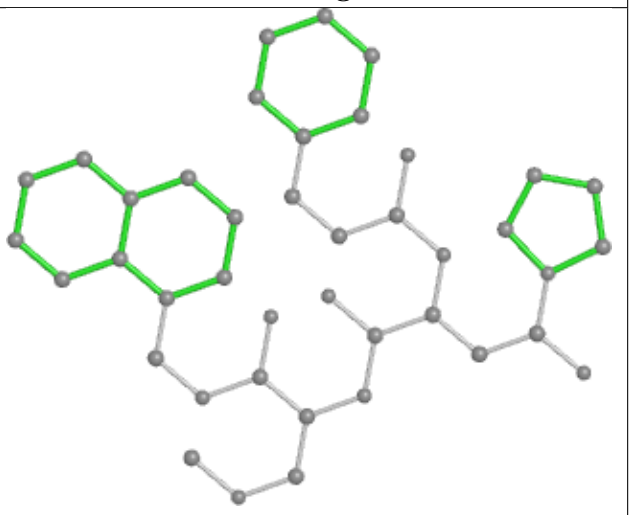
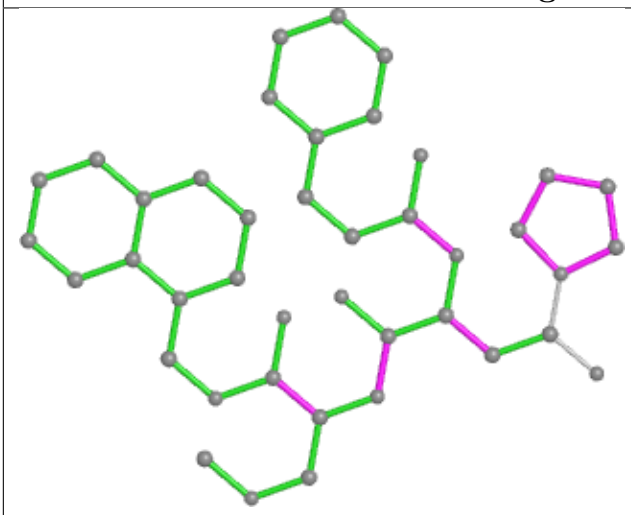
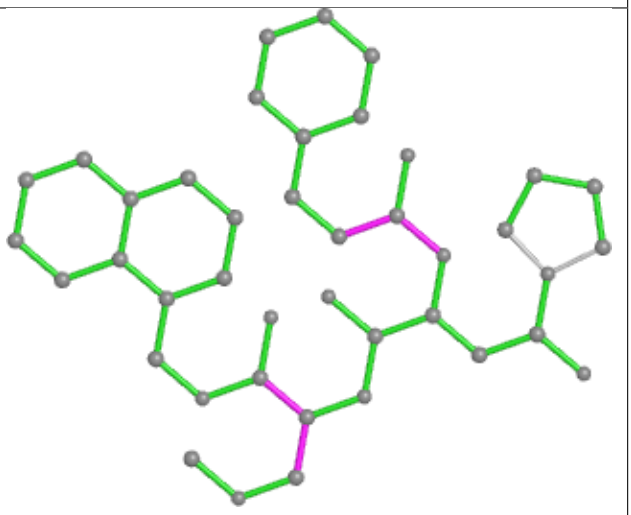


Rings

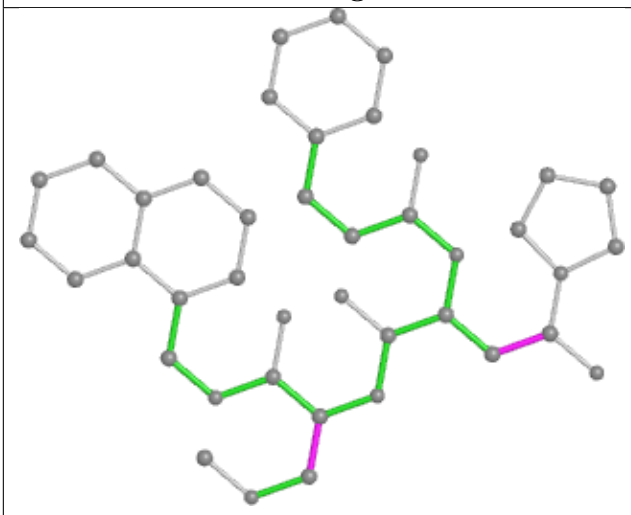
Ligand 7J1 a 301



Bond lengths



Bond angles



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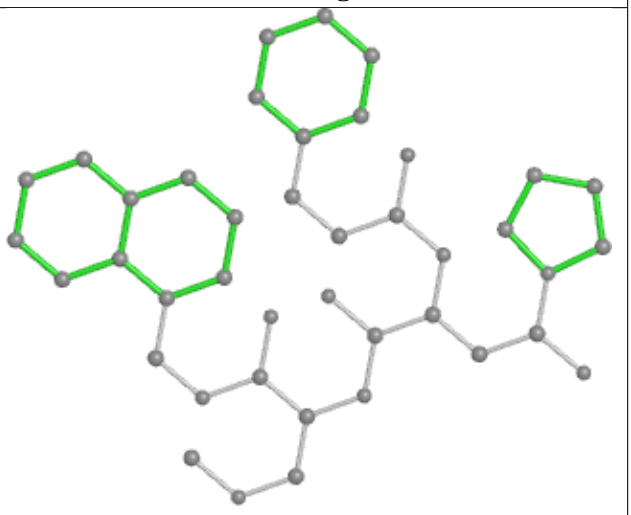
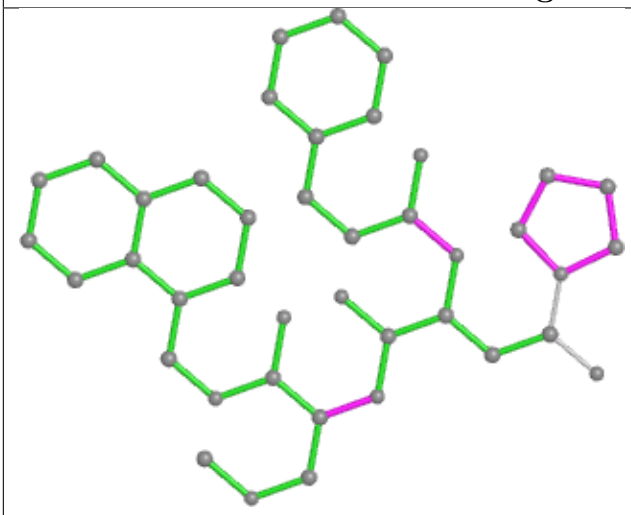


Rings

Ligand 7J1 Z 301



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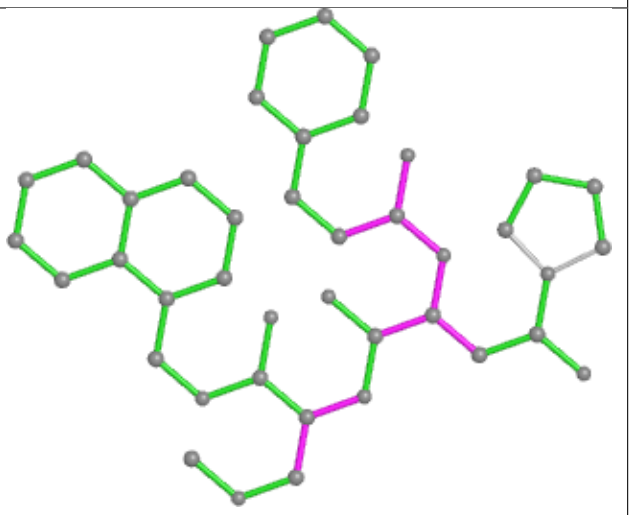
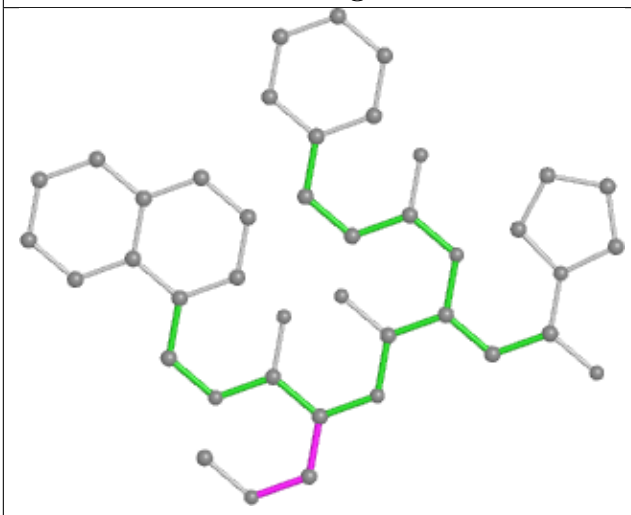


Bond angles



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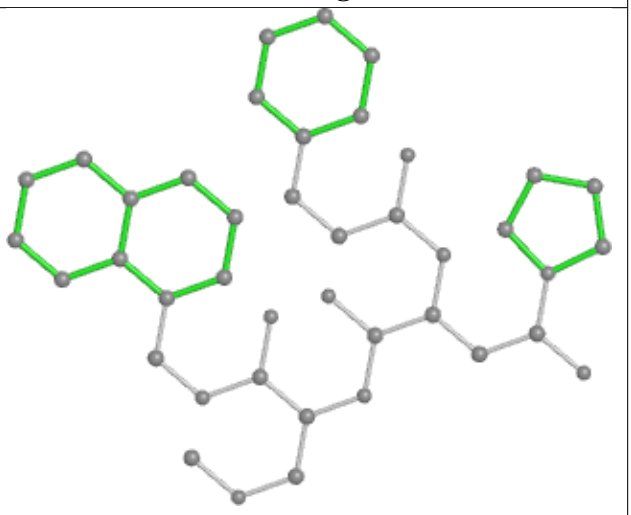
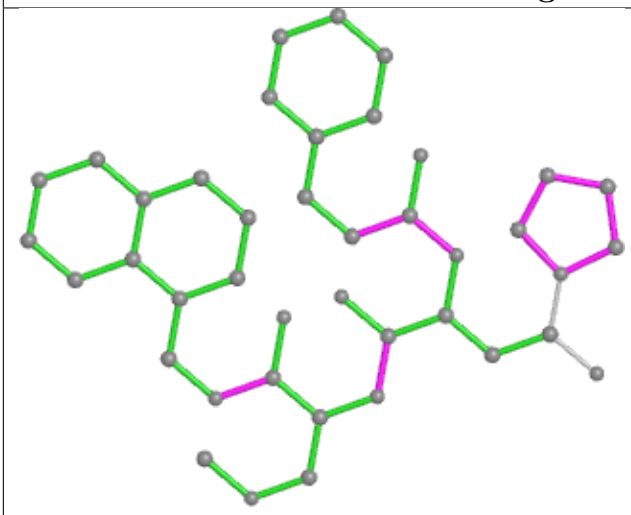


Rings

Ligand 7J1 J 301



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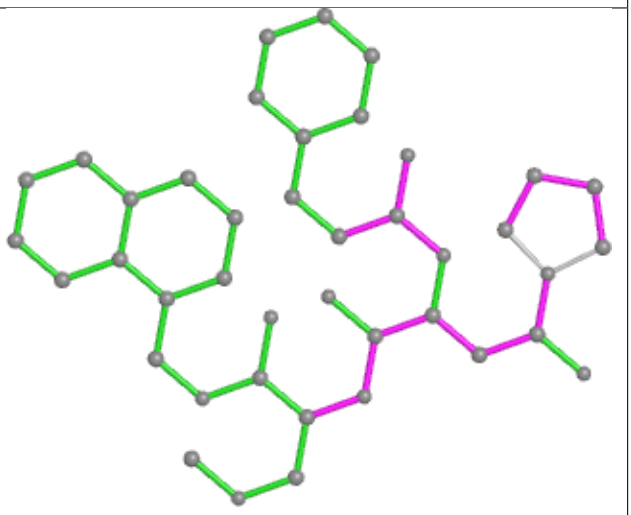
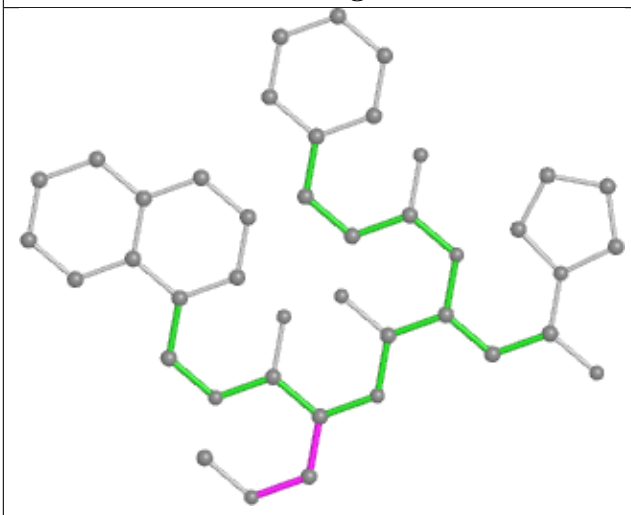


Bond angles



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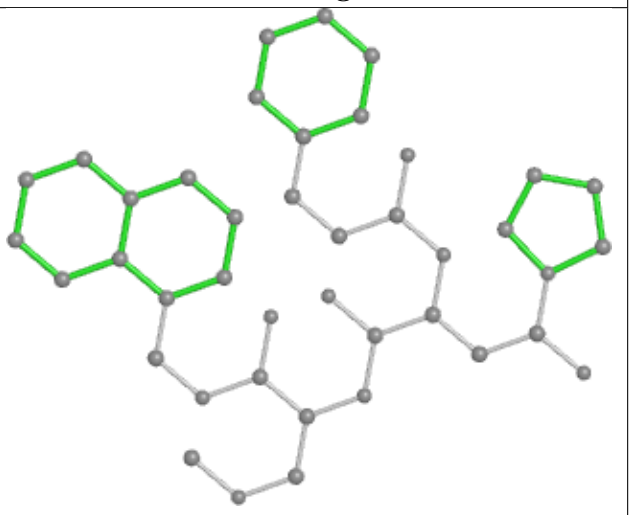
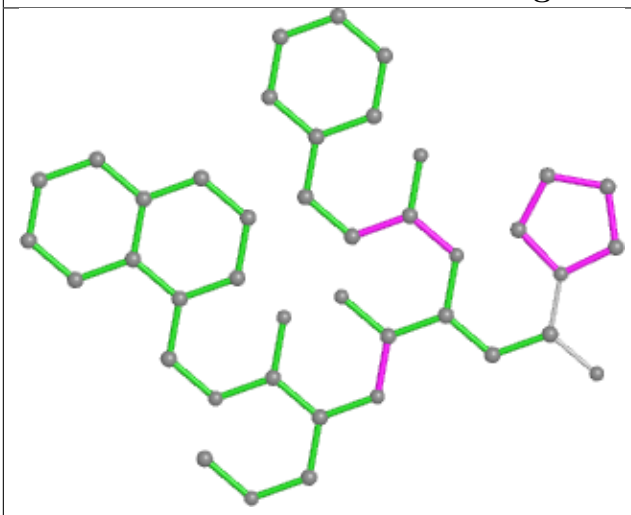


Rings

Ligand 7J1 K 301



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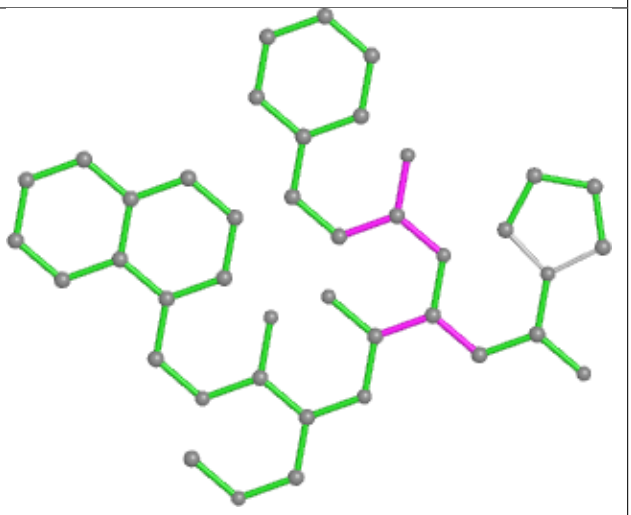
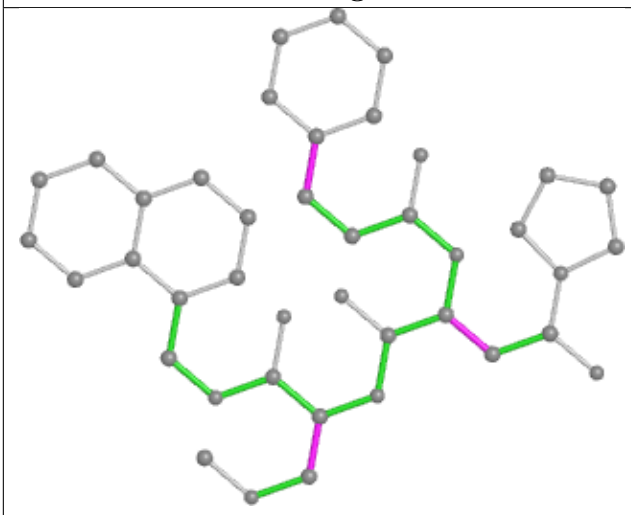
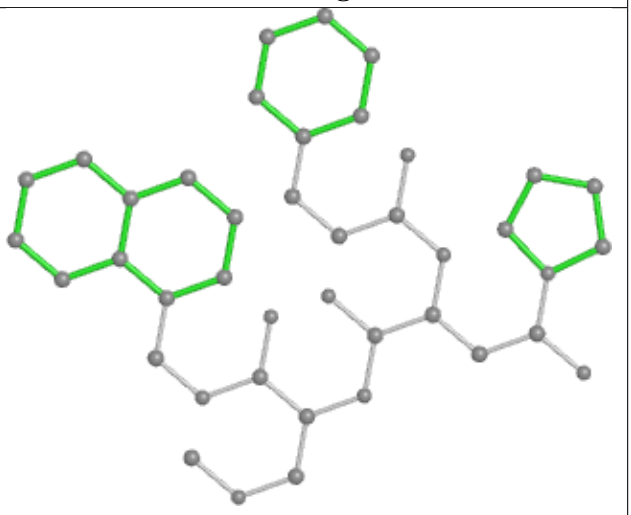


Bond angles

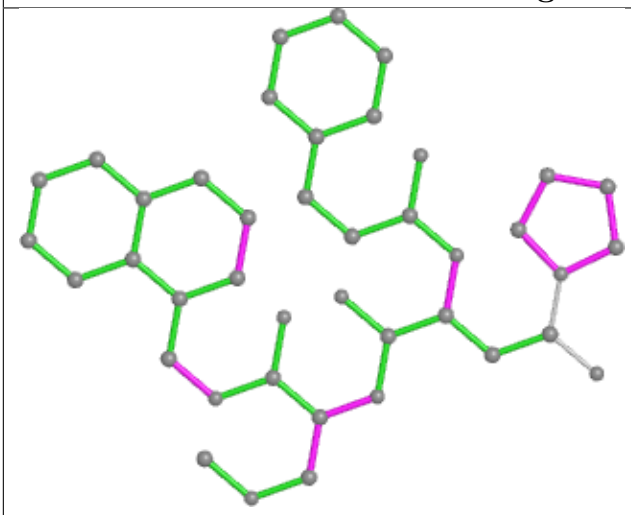


Torsions

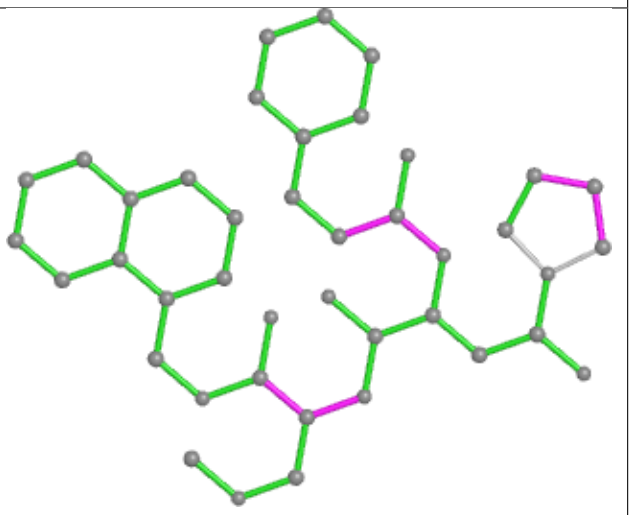


Rings

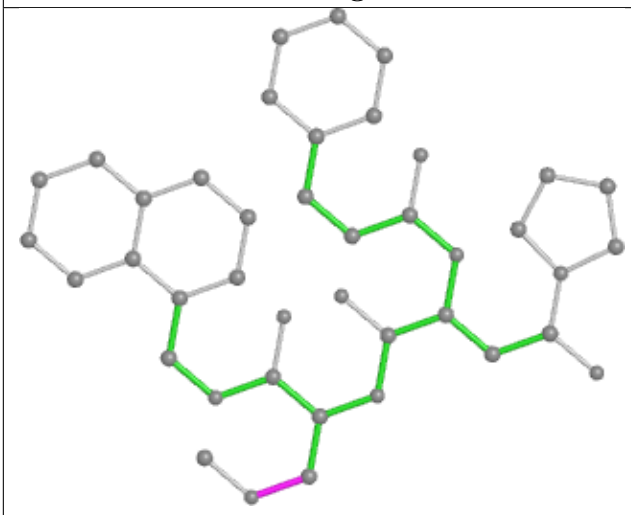
Ligand 7J1 b 301



Bond lengths



Bond angles



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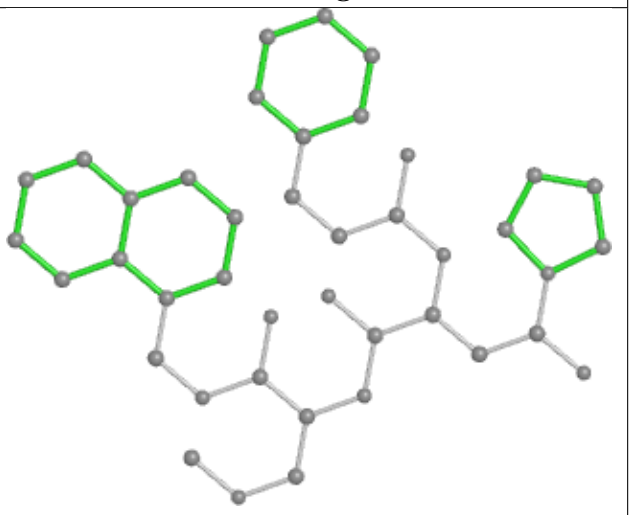
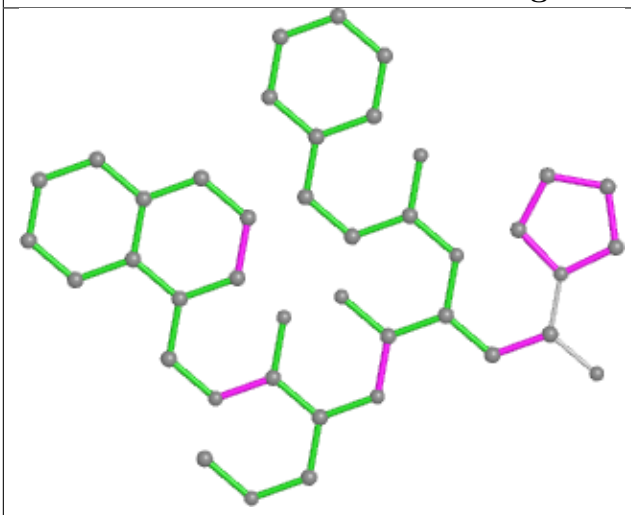


Rings

Ligand 7J1 M 301



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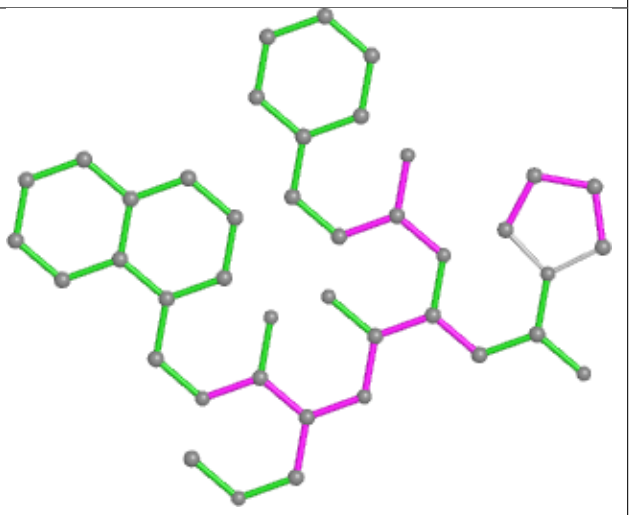
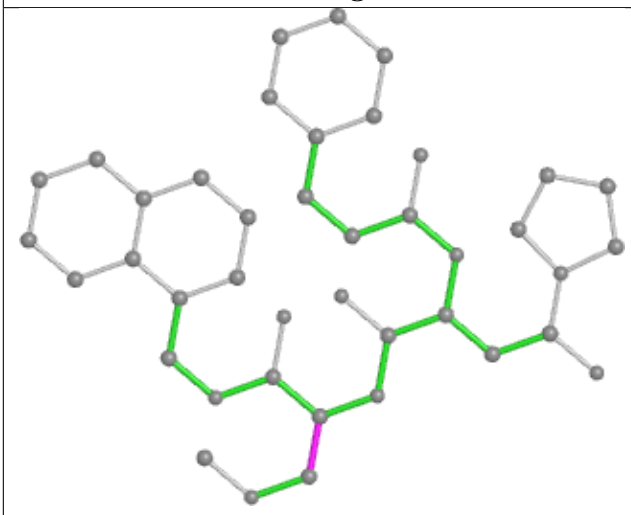


Bond angles



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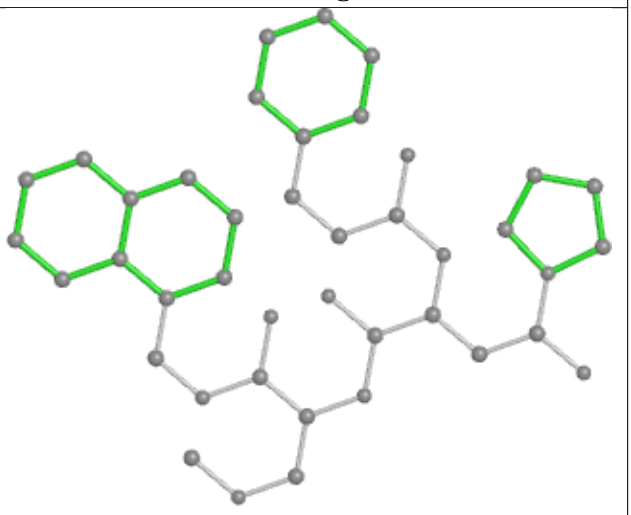
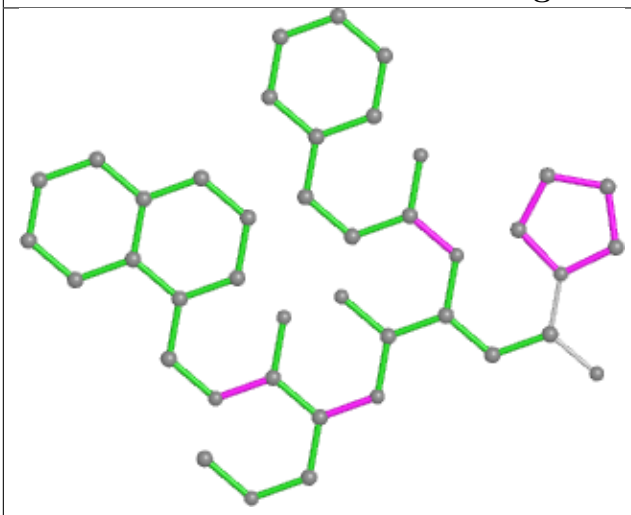
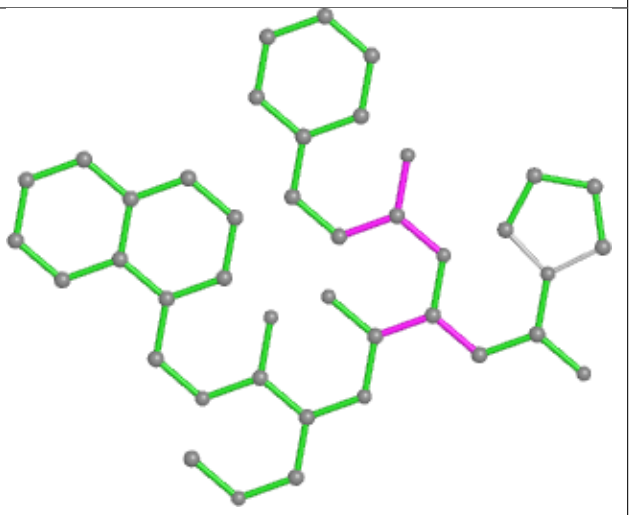


Rings

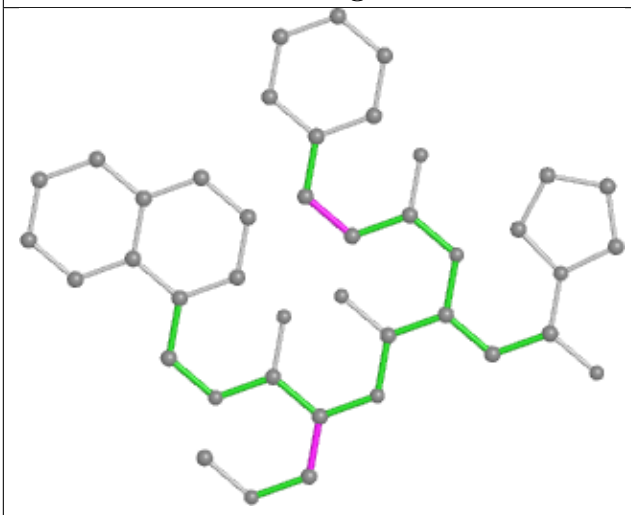
Ligand 7J1 N 301



Bond lengths



Bond angles



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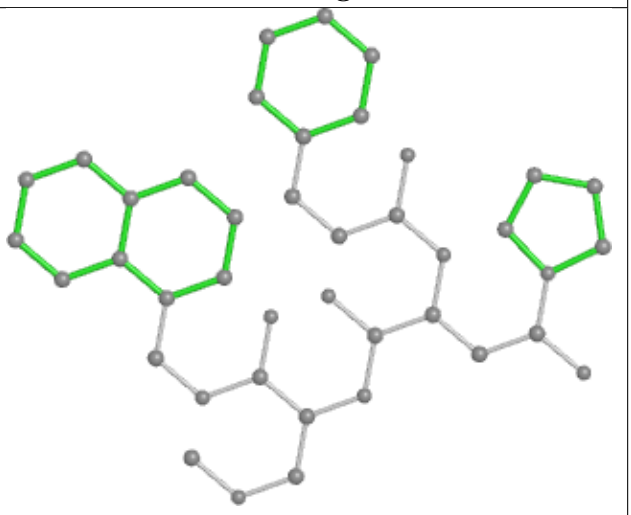
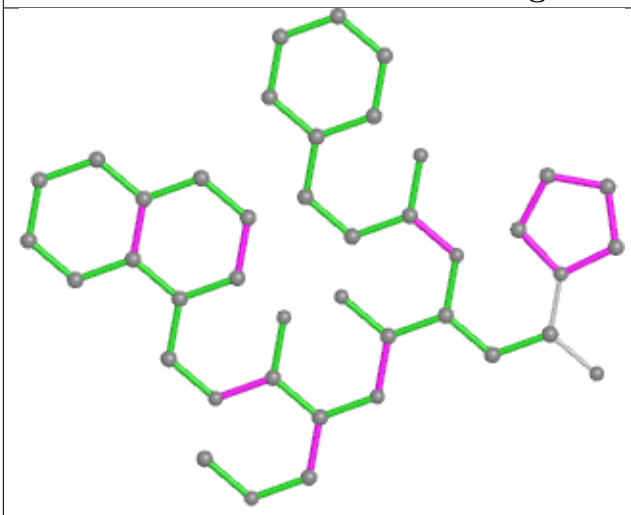
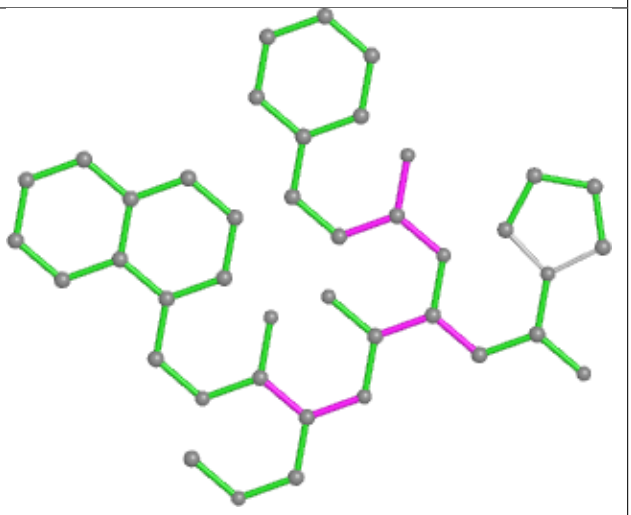


Rings

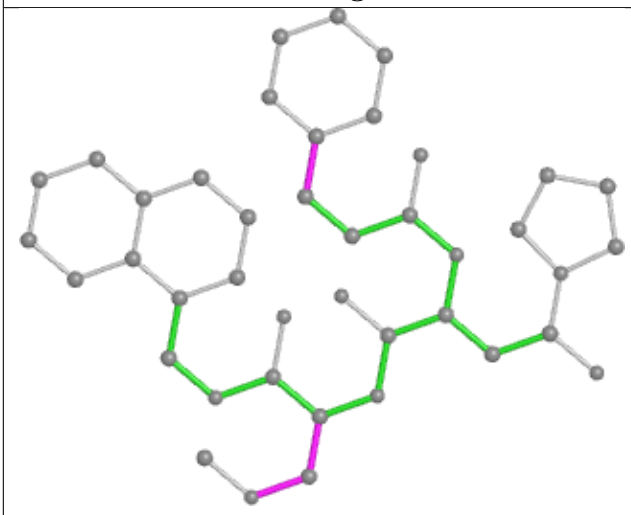
Ligand 7J1 W 301



Bond lengths



Bond angles



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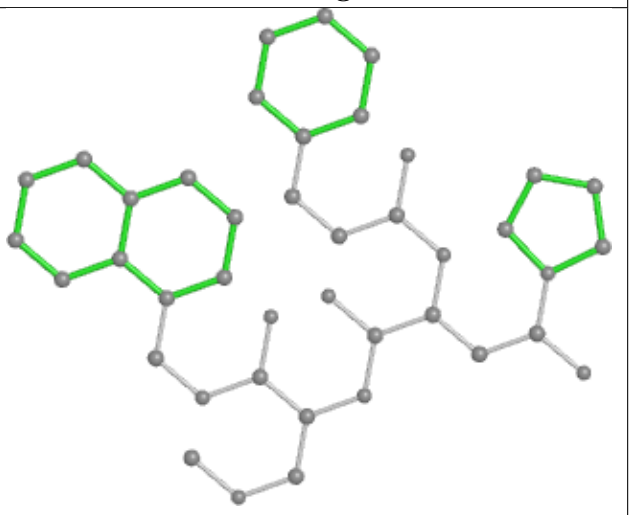
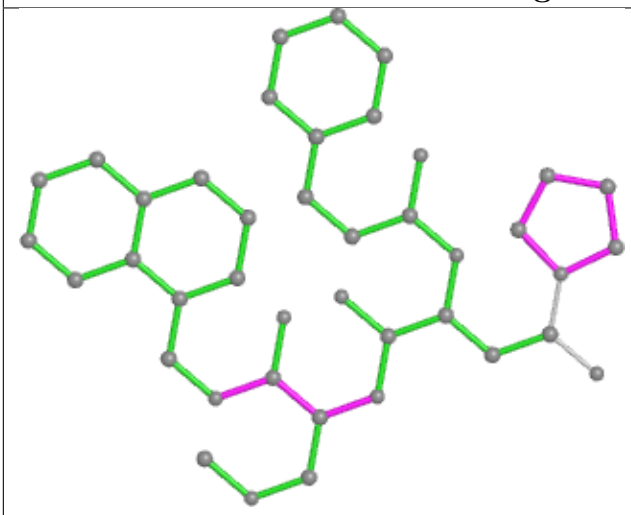
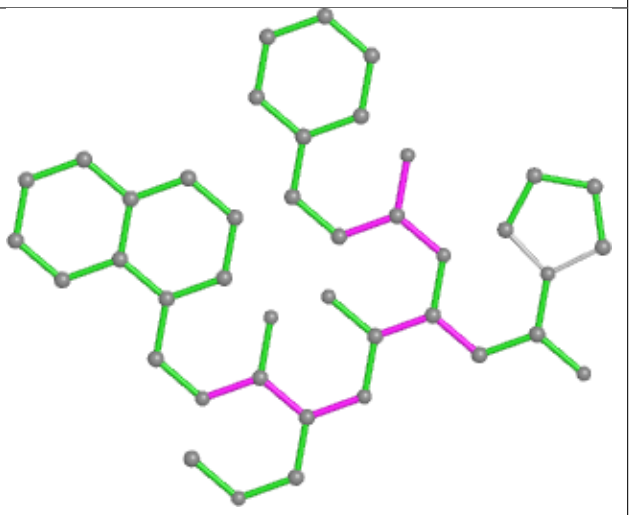


Rings

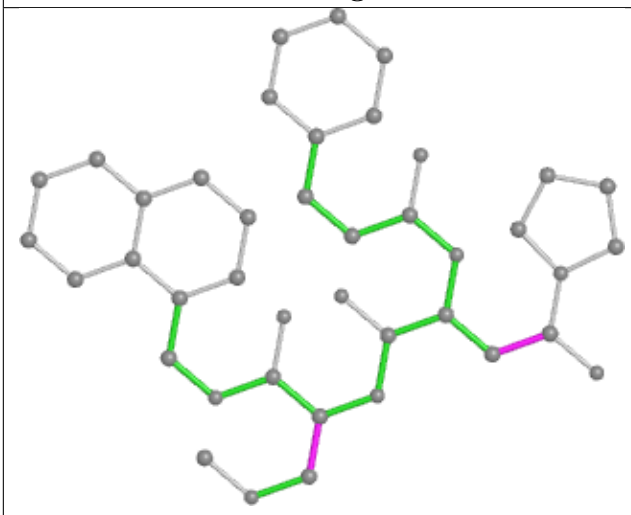
Ligand 7J1 V 301



Bond lengths



Bond angles



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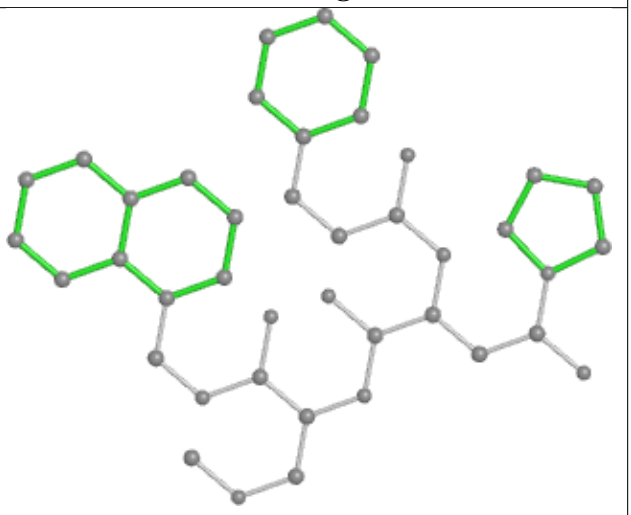
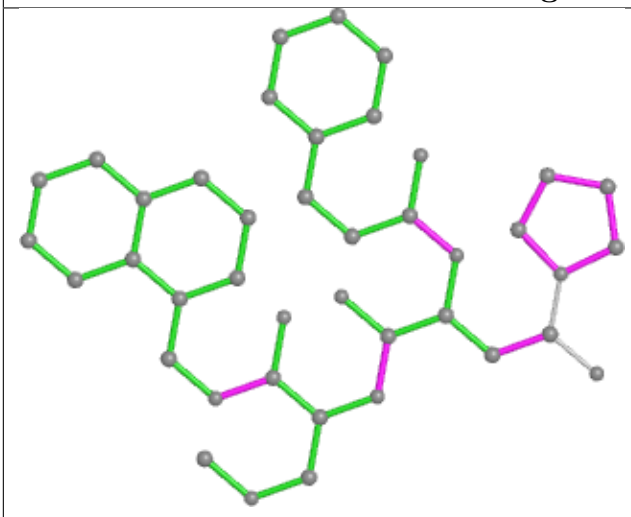
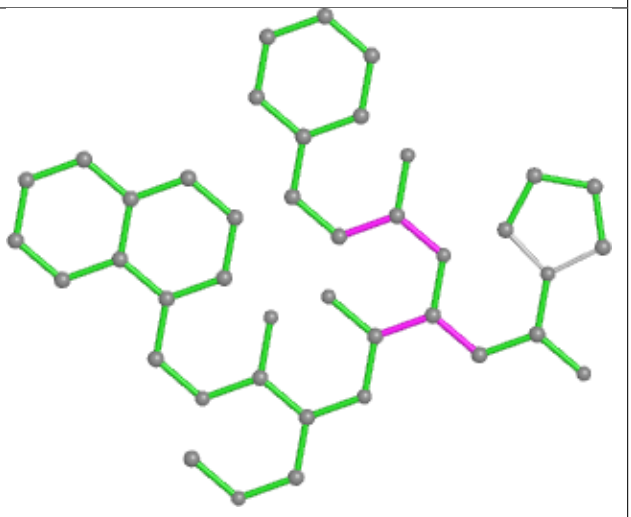


Rings

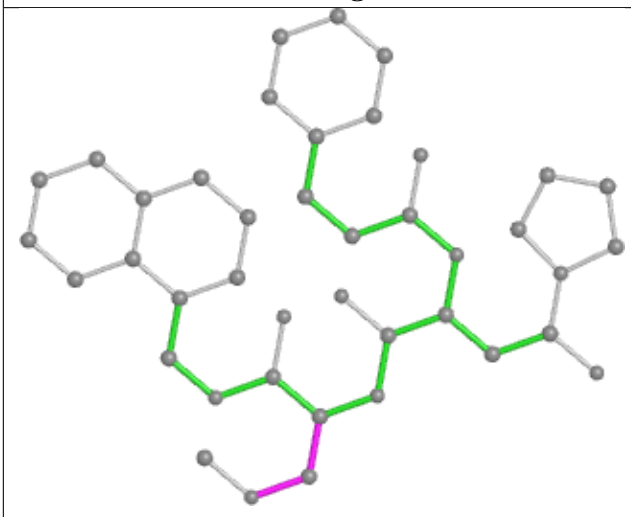
Ligand 7J1 I 301



Bond lengths



Bond angles



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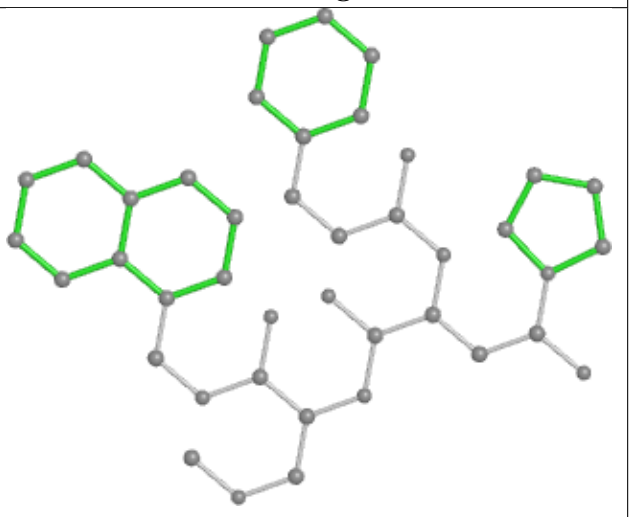

Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	218/240 (90%)	-0.27	3 (1%)	75	71	30, 50, 78, 104	0
1	B	216/240 (90%)	-0.13	6 (2%)	53	47	34, 59, 93, 129	0
1	C	217/240 (90%)	-0.11	7 (3%)	47	41	34, 63, 97, 118	0
1	D	217/240 (90%)	-0.01	5 (2%)	60	55	34, 61, 91, 112	0
1	E	218/240 (90%)	-0.16	5 (2%)	60	55	28, 59, 87, 129	0
1	F	215/240 (89%)	-0.11	5 (2%)	60	55	34, 63, 93, 108	0
1	G	220/240 (91%)	-0.36	5 (2%)	60	55	33, 53, 83, 103	0
1	O	216/240 (90%)	-0.00	9 (4%)	36	28	30, 65, 99, 127	0
1	P	218/240 (90%)	-0.18	4 (1%)	68	63	34, 58, 90, 117	0
1	Q	218/240 (90%)	-0.18	4 (1%)	68	63	30, 53, 81, 124	0
1	R	217/240 (90%)	-0.15	4 (1%)	68	63	30, 53, 81, 99	0
1	S	218/240 (90%)	-0.21	5 (2%)	60	55	28, 50, 89, 104	0
1	T	218/240 (90%)	-0.08	9 (4%)	37	29	33, 59, 91, 118	0
1	U	217/240 (90%)	-0.29	2 (0%)	84	83	32, 52, 87, 105	0
2	H	222/240 (92%)	-0.32	1 (0%)	91	89	30, 44, 67, 111	0
2	I	222/240 (92%)	-0.45	0	100	100	29, 40, 60, 78	0
2	J	222/240 (92%)	-0.52	1 (0%)	91	89	30, 42, 65, 103	0
2	K	223/240 (92%)	-0.41	0	100	100	28, 45, 66, 84	0
2	L	223/240 (92%)	-0.43	1 (0%)	92	91	31, 43, 70, 95	0
2	M	222/240 (92%)	-0.42	1 (0%)	91	89	30, 44, 68, 111	0
2	N	223/240 (92%)	-0.31	3 (1%)	77	74	34, 49, 76, 115	0
2	V	223/240 (92%)	-0.39	0	100	100	31, 41, 63, 79	0
2	W	223/240 (92%)	-0.38	1 (0%)	92	91	30, 42, 66, 92	0
2	X	222/240 (92%)	-0.49	0	100	100	29, 40, 64, 108	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
2	Y	223/240 (92%)	-0.44	0 100 100	28, 41, 63, 99	0
2	Z	222/240 (92%)	-0.44	0 100 100	29, 42, 68, 95	0
2	a	223/240 (92%)	-0.42	1 (0%) 92 91	32, 46, 75, 99	0
2	b	223/240 (92%)	-0.40	1 (0%) 92 91	28, 42, 64, 97	0
All	All	6159/6720 (91%)	-0.29	83 (1%) 77 74	28, 48, 86, 129	0

All (83) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	N	223	GLY	7.3
1	A	183	ILE	4.9
1	U	9	MET	4.3
2	N	115	GLN	4.3
1	T	189	ARG	3.9
1	O	185	VAL	3.7
1	B	203	LEU	3.7
1	P	202	THR	3.6
1	P	234	LEU	3.6
1	O	163	ILE	3.5
1	Q	236	ASP	3.5
1	B	236	ASP	3.5
2	L	114	PRO	3.3
1	Q	235	VAL	3.3
1	D	235	VAL	3.3
1	A	192	SER	3.3
1	G	236	ASP	3.3
1	B	234	LEU	3.2
2	a	223	GLY	3.2
1	S	9	MET	3.1
1	B	165	ASN	3.1
1	F	182	ARG	3.0
1	S	192	SER	3.0
2	W	112	SER	2.9
1	B	179	ASP	2.9
1	C	235	VAL	2.9
1	A	9	MET	2.9
1	O	189	ARG	2.9
1	O	162	PRO	2.8
1	T	236	ASP	2.8
1	O	172	ALA	2.8
1	C	230	LEU	2.7

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Mol	Chain	Res	Type	RSRZ
1	T	9	MET	2.7
1	C	236	ASP	2.7
1	S	233	LEU	2.7
1	Q	169	GLU	2.7
1	Q	203	LEU	2.7
1	C	204	GLY	2.7
1	D	44	GLU	2.6
1	T	205	VAL	2.6
1	F	172	ALA	2.5
1	O	178	THR	2.5
2	J	114	PRO	2.5
1	O	234	LEU	2.5
1	C	234	LEU	2.4
1	T	235	VAL	2.4
1	E	202	THR	2.4
1	T	164	ALA	2.4
1	B	169	GLU	2.4
1	G	11	GLN	2.4
1	C	14	ARG	2.4
1	F	186	ALA	2.4
1	E	153	PHE	2.3
1	G	9	MET	2.3
1	R	168	LYS	2.3
1	R	203	LEU	2.3
1	T	202	THR	2.3
1	S	190	ALA	2.3
1	T	186	ALA	2.3
2	N	112	SER	2.3
1	E	9	MET	2.3
1	C	182	ARG	2.3
1	P	165	ASN	2.3
1	E	177	LEU	2.3
1	R	9	MET	2.3
2	b	113	ASP	2.3
1	D	177	LEU	2.3
1	S	169	GLU	2.2
1	D	175	ALA	2.2
1	D	9	MET	2.2
2	M	115	GLN	2.2
1	T	171	TYR	2.1
1	G	182	ARG	2.1
1	R	10	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	F	205	VAL	2.1
1	O	231	GLN	2.1
1	E	36	ALA	2.1
2	H	209	ARG	2.1
1	G	205	VAL	2.0
1	P	185	VAL	2.0
1	O	205	VAL	2.0
1	F	189	ARG	2.0
1	U	235	VAL	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)

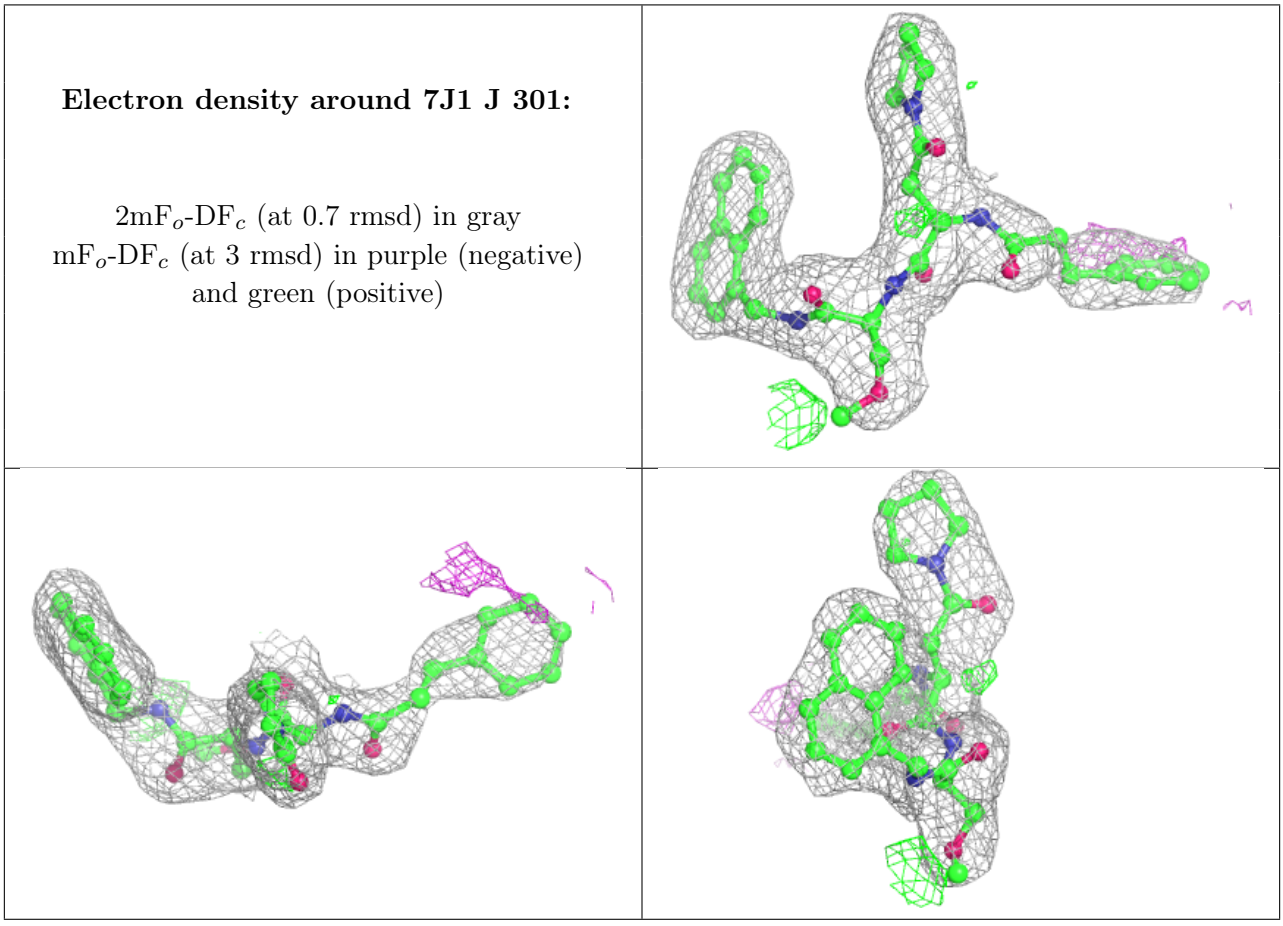
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	7J1	J	301	41/41	0.93	0.19	20,33,54,57	0
3	7J1	K	301	41/41	0.94	0.18	39,50,63,72	0
3	7J1	X	301	41/41	0.94	0.18	29,36,57,63	0
3	7J1	L	301	41/41	0.95	0.17	23,38,55,59	0
3	7J1	M	301	41/41	0.95	0.17	30,37,53,58	0
3	7J1	N	301	41/41	0.95	0.17	35,46,62,67	0
3	7J1	V	301	41/41	0.95	0.17	31,43,50,55	0
3	7J1	I	301	41/41	0.95	0.18	25,38,47,54	0
3	7J1	Y	301	41/41	0.95	0.16	21,38,57,63	0
3	7J1	Z	301	41/41	0.95	0.19	29,38,53,60	0
3	7J1	a	301	41/41	0.95	0.18	29,38,49,59	0
3	7J1	b	301	41/41	0.95	0.17	27,36,53,66	0
3	7J1	W	301	41/41	0.96	0.17	24,36,55,63	0
3	7J1	H	301	41/41	0.96	0.15	24,36,51,63	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.

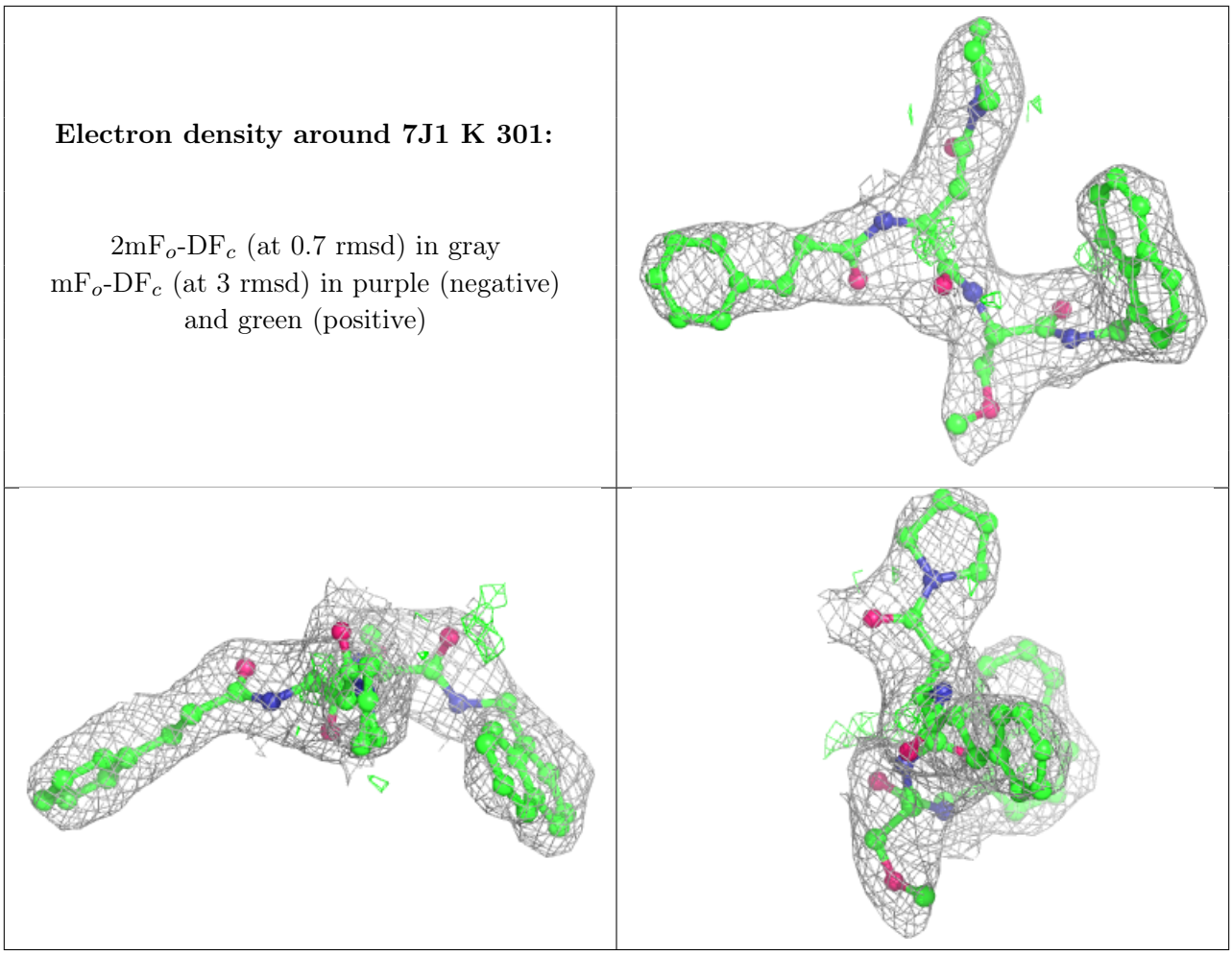
Electron density around 7J1 J 301:

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



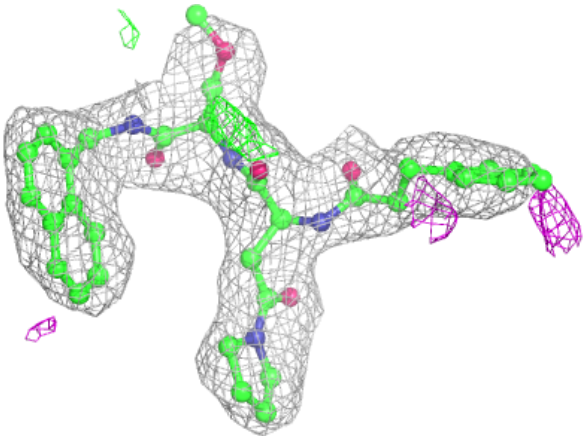
Electron density around 7J1 K 301:

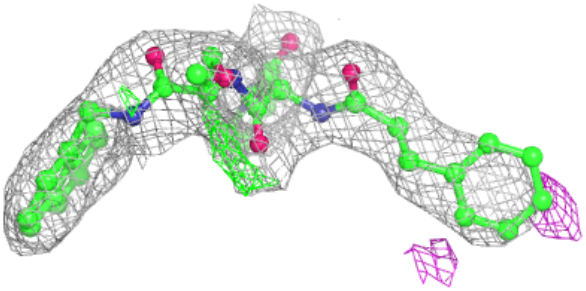
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

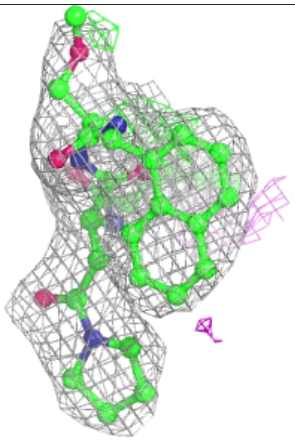


Electron density around 7J1 X 301:

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

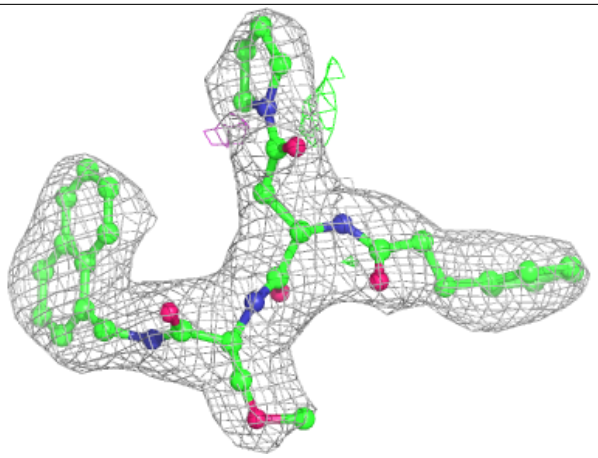


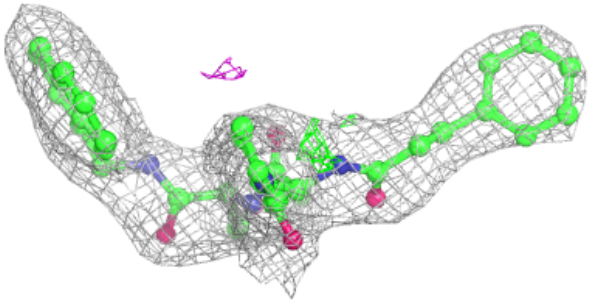


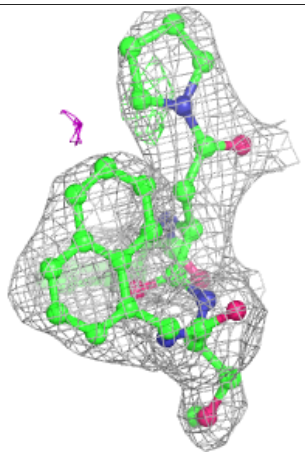


Electron density around 7J1 L 301:

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

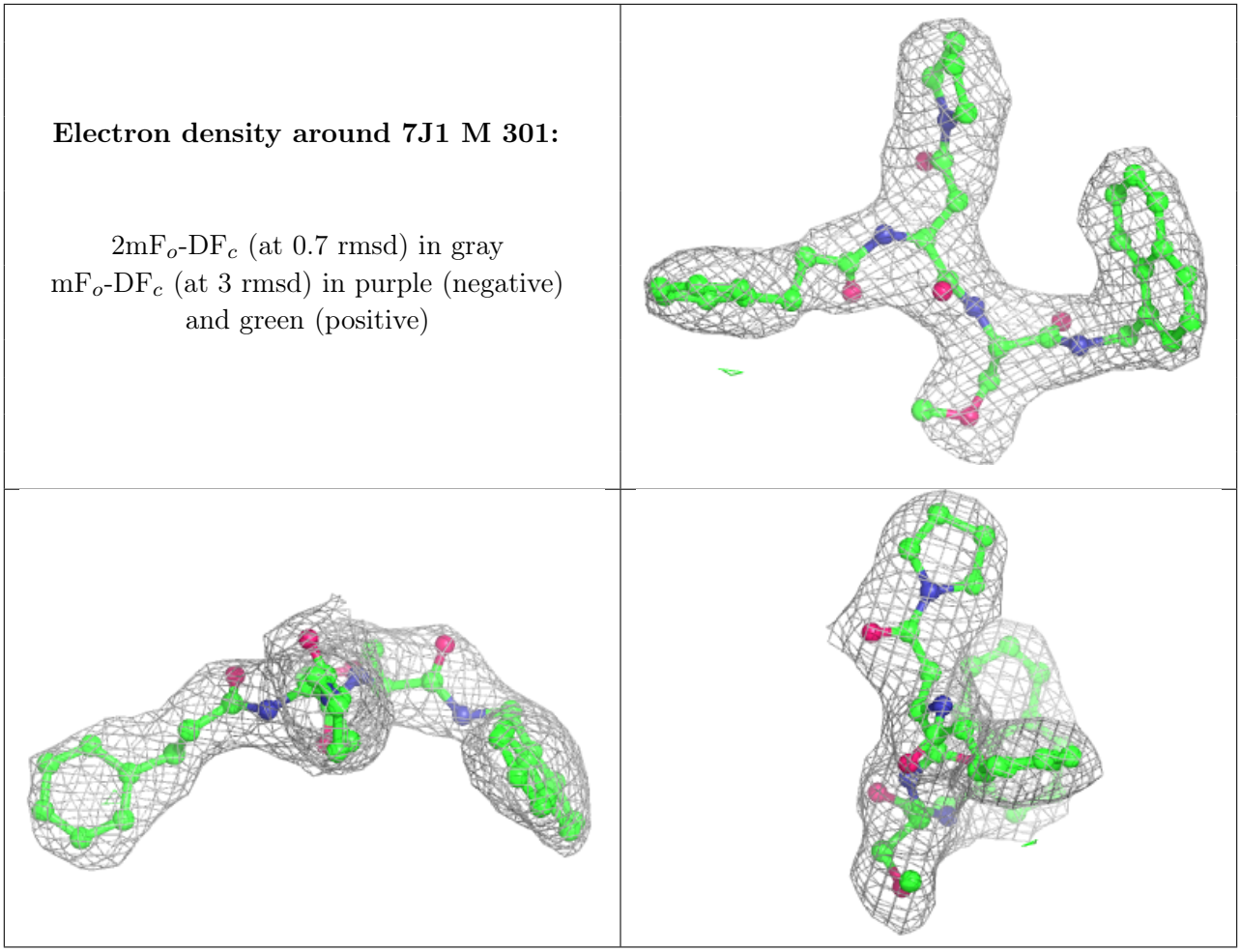






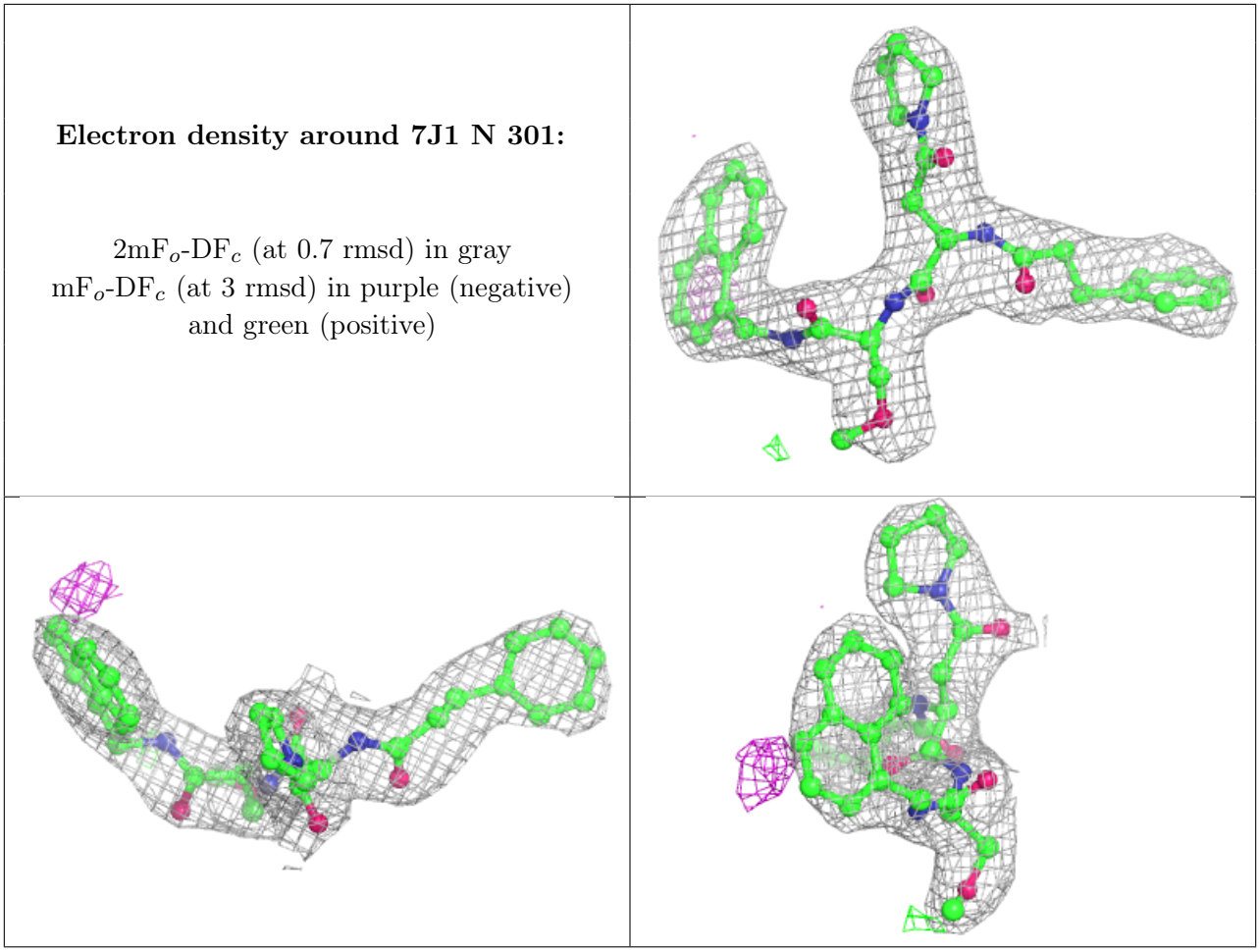
Electron density around 7J1 M 301:

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



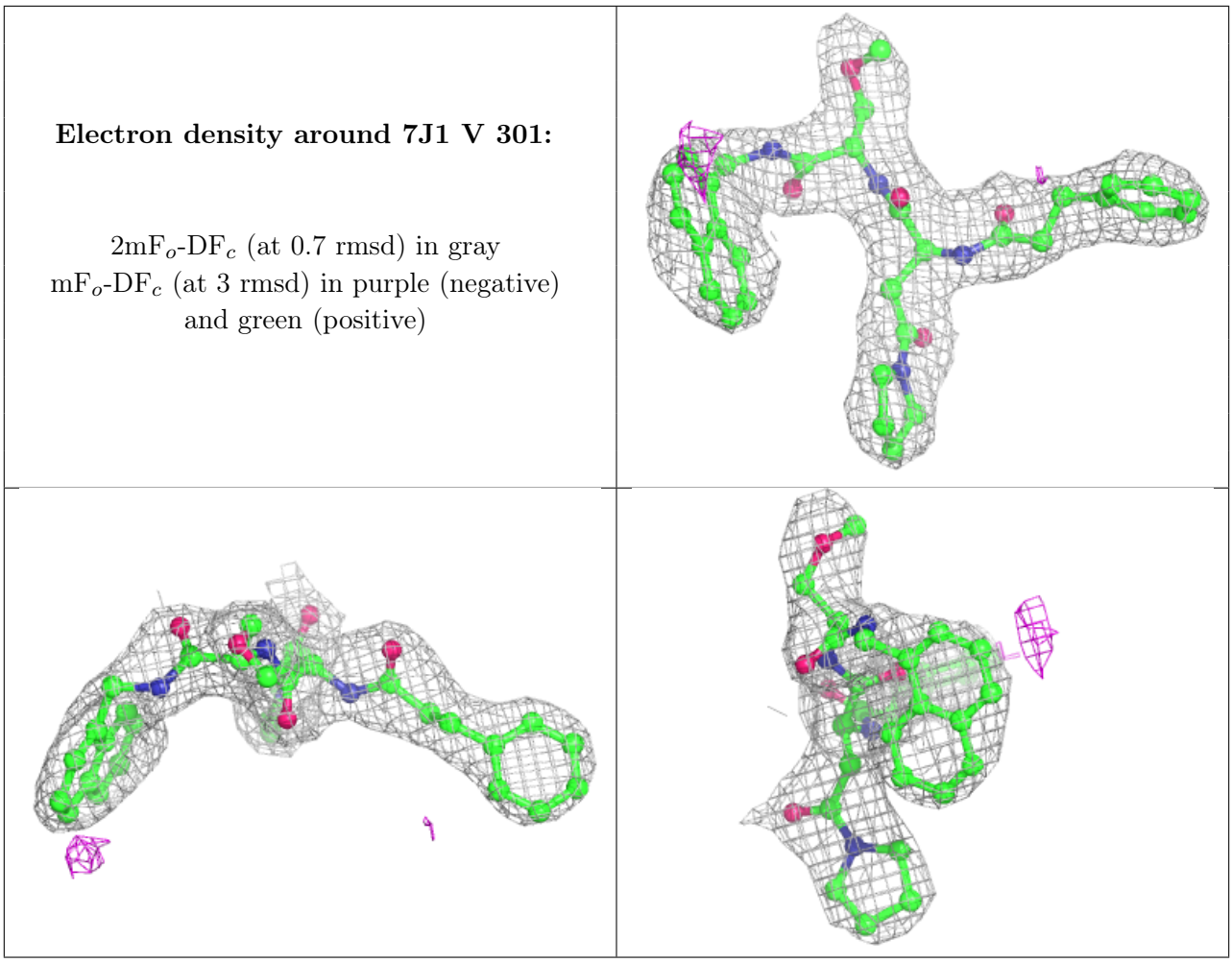
Electron density around 7J1 N 301:

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



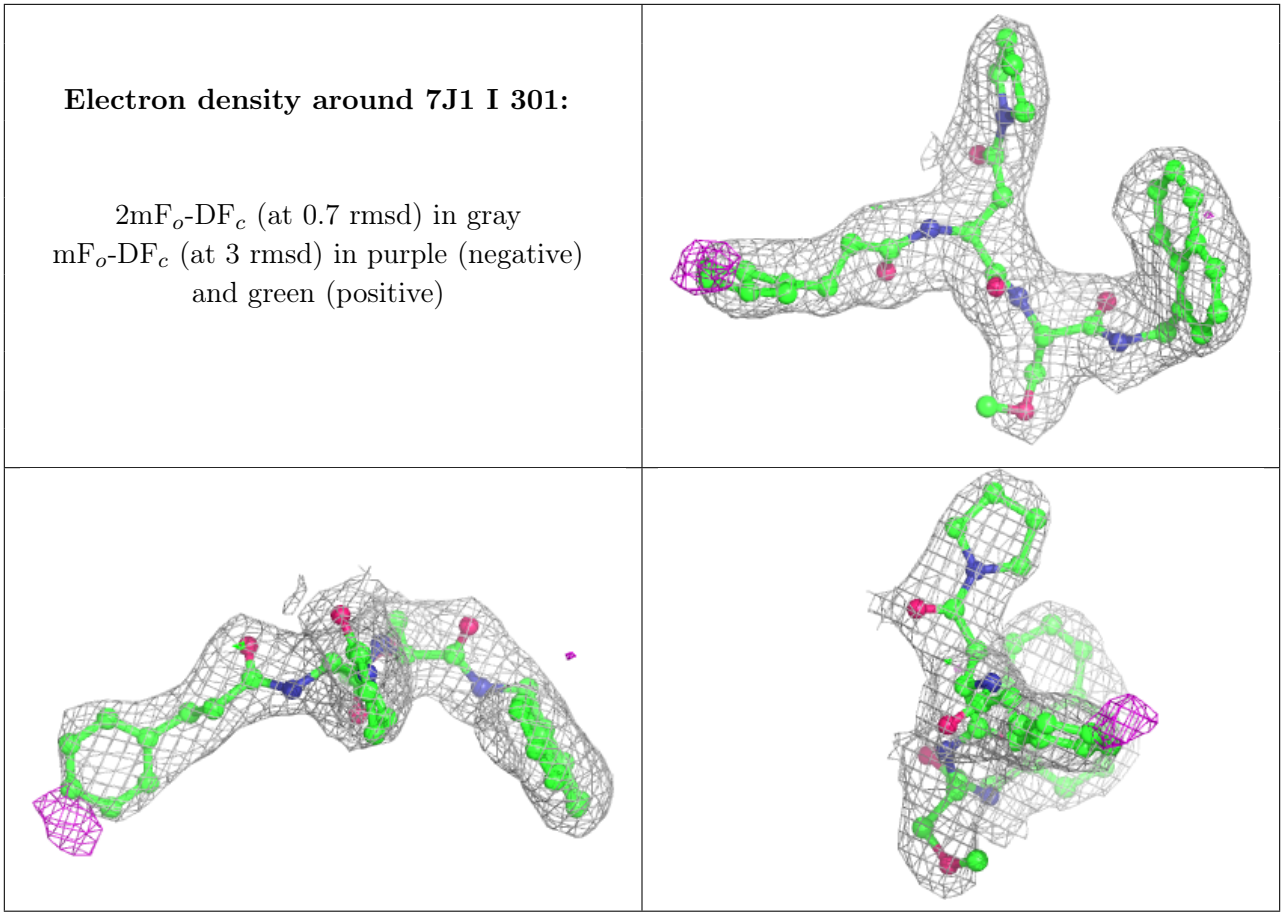
Electron density around 7J1 V 301:

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



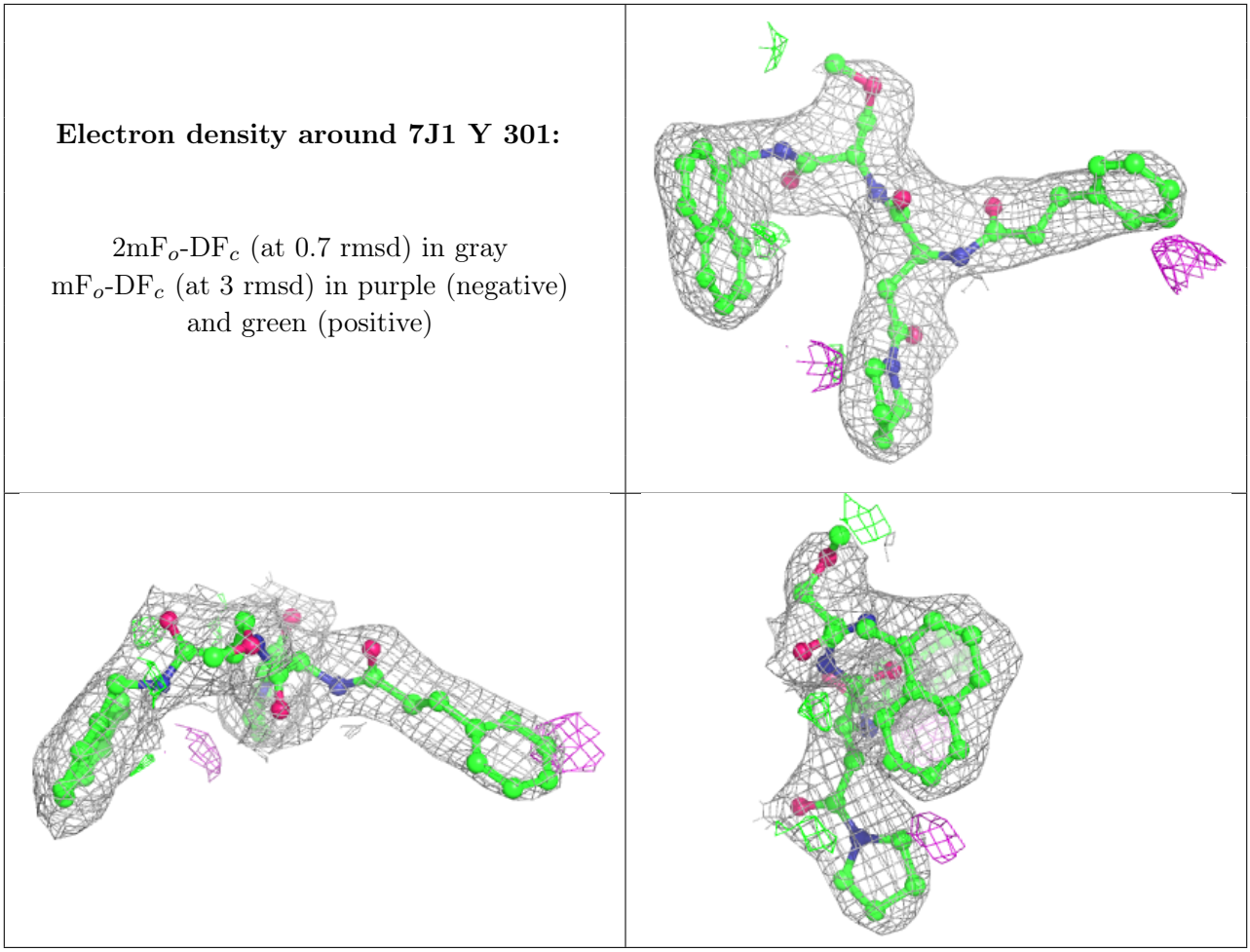
Electron density around 7J1 I 301:

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



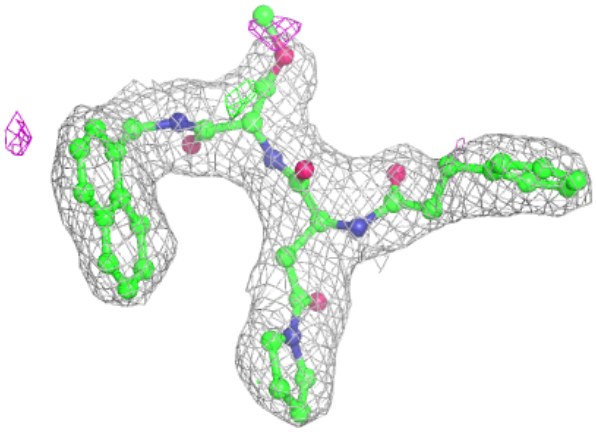
Electron density around 7J1 Y 301:

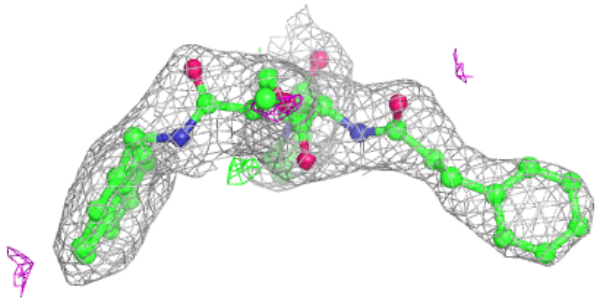
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

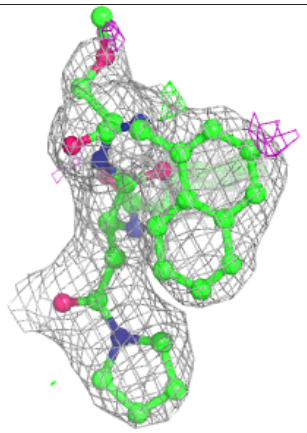


Electron density around 7J1 Z 301:

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

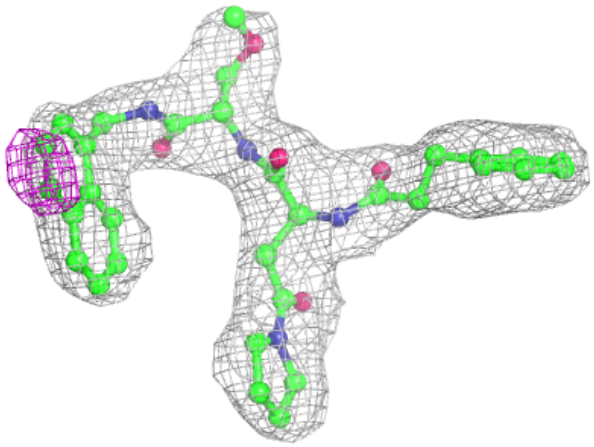


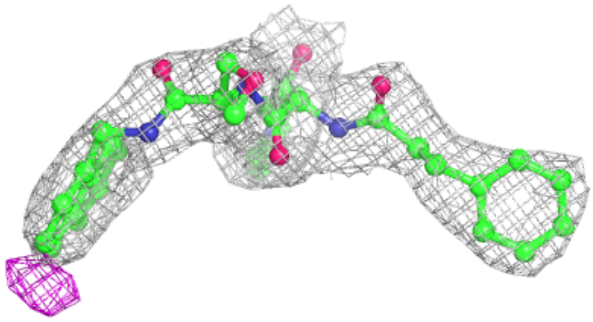


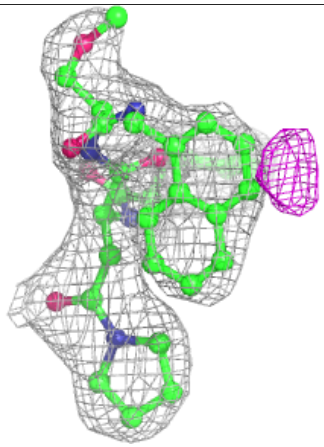


Electron density around 7J1 a 301:

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

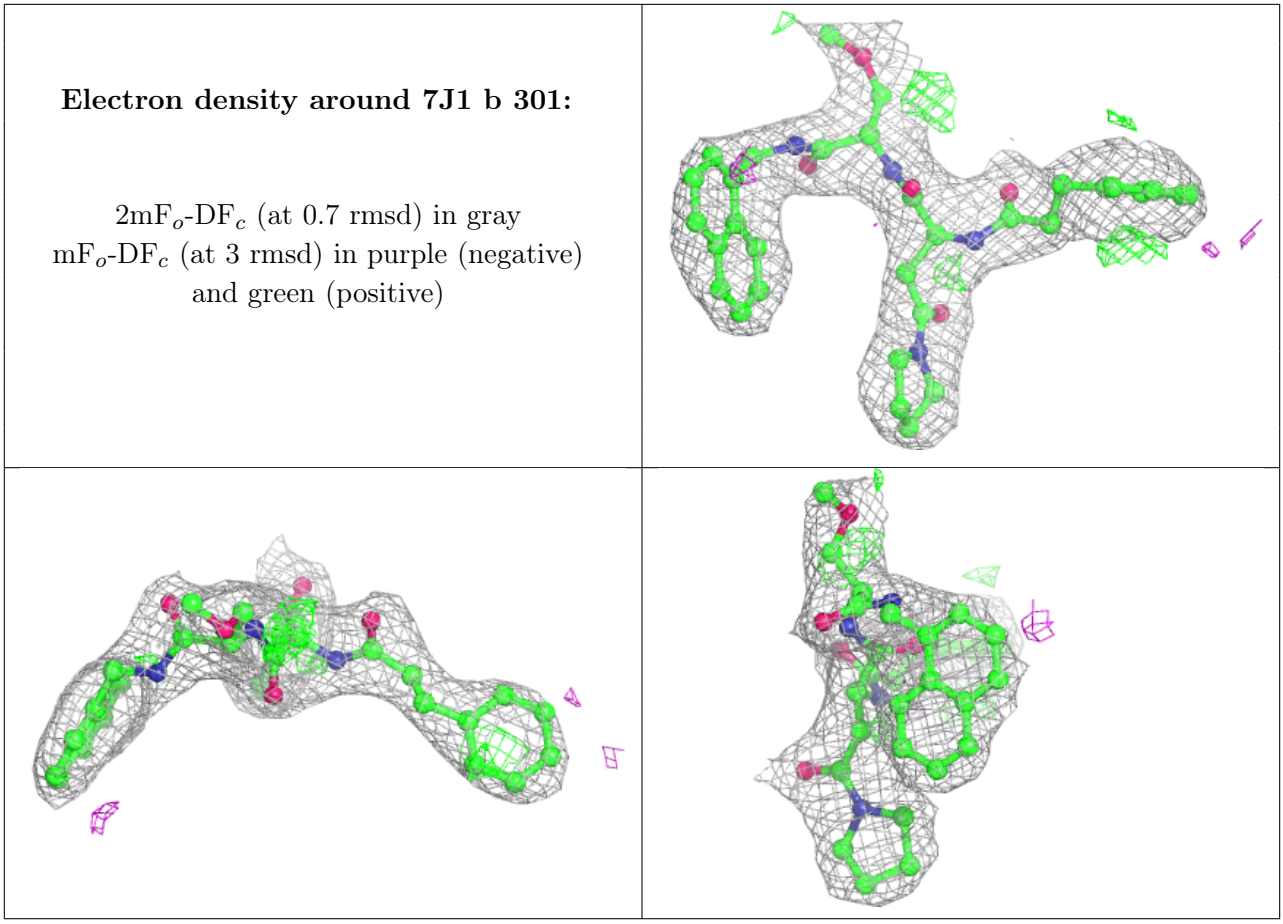






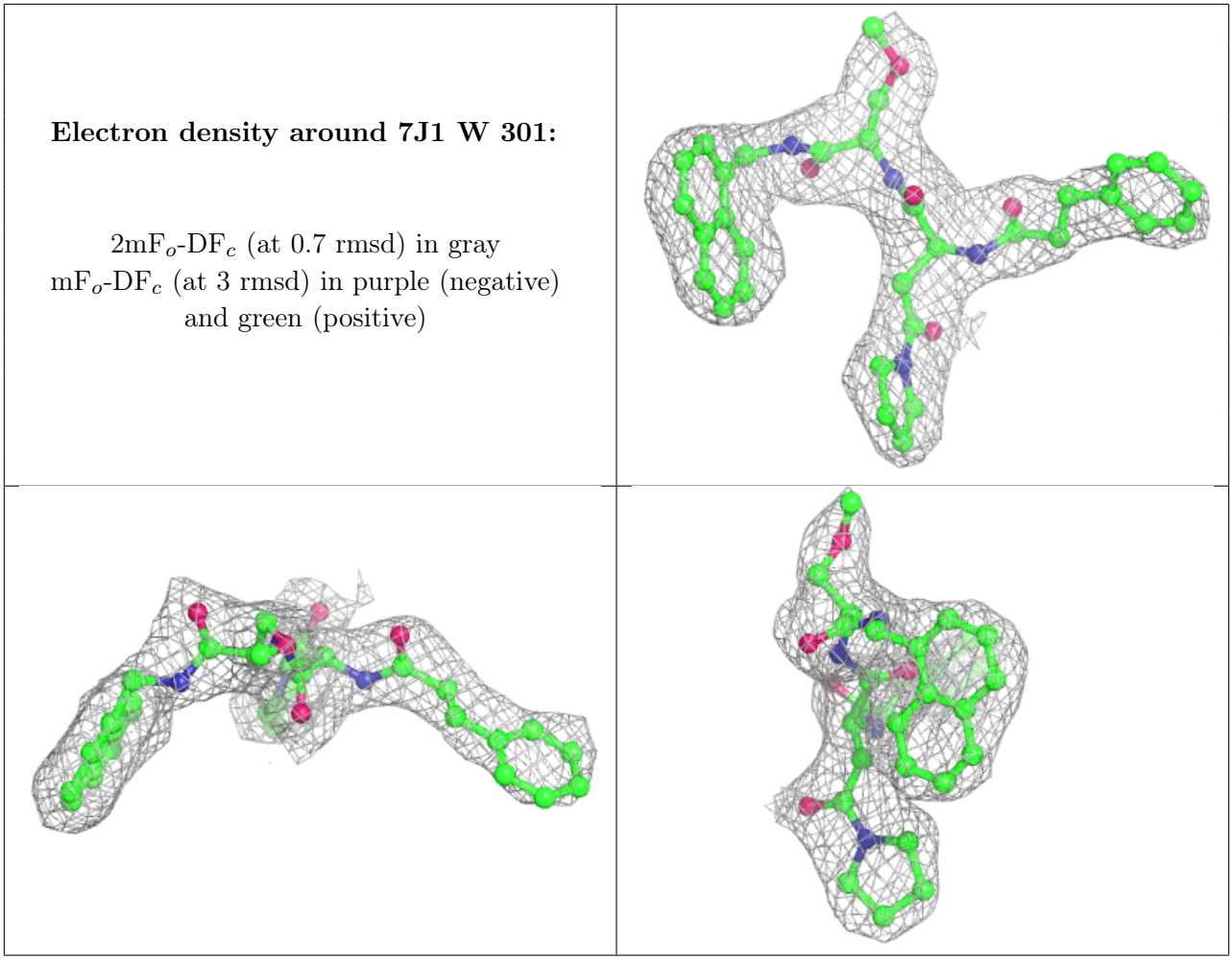
Electron density around 7J1 b 301:

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



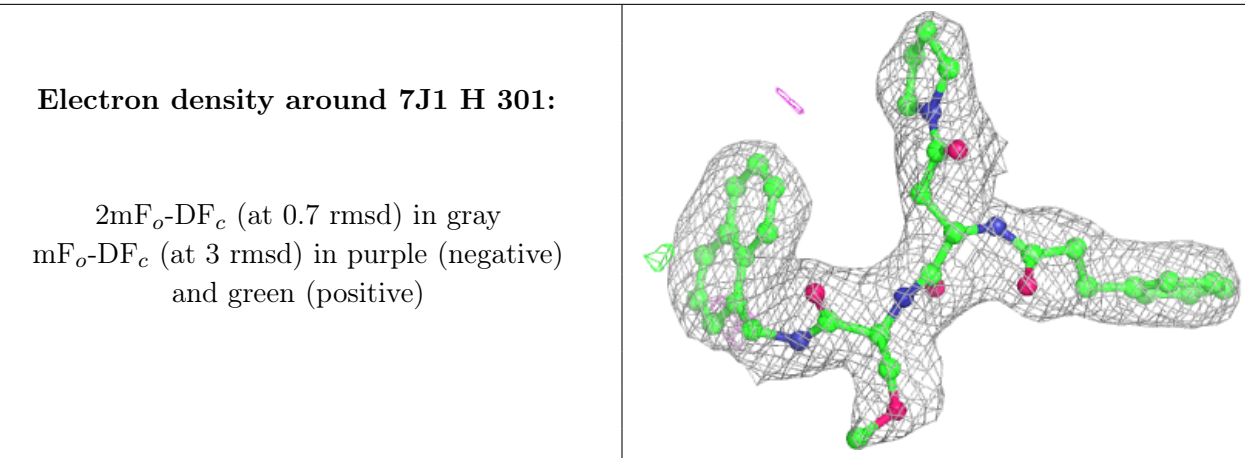
Electron density around 7J1 W 301:

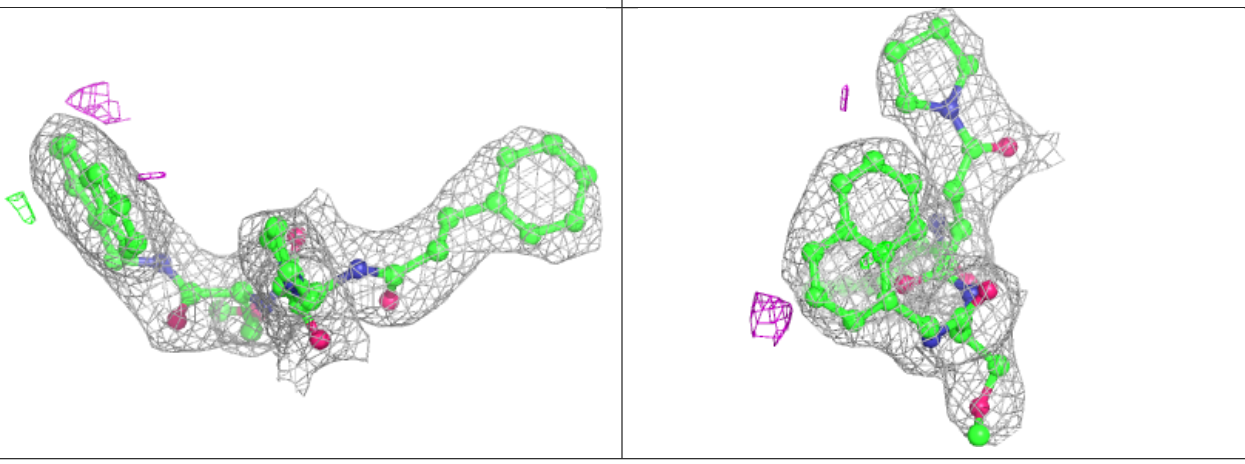
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around 7J1 H 301:

$2mF_o$-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.