



# wwPDB X-ray Structure Validation Summary Report ⓘ

May 13, 2020 – 09:26 am BST

PDB ID : 3BXX  
Title : Binding of two substrate analogue molecules to dihydroflavonol 4-reductase alters the functional geometry of the catalytic site  
Authors : Trabelsi, N.; Petit, P.; Granier, T.; Langlois d'Estaintot, B.; Delrot, S.; Gallois, B.  
Deposited on : 2008-01-15  
Resolution : 2.90 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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.

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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	:	2.11
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)	:	2.11

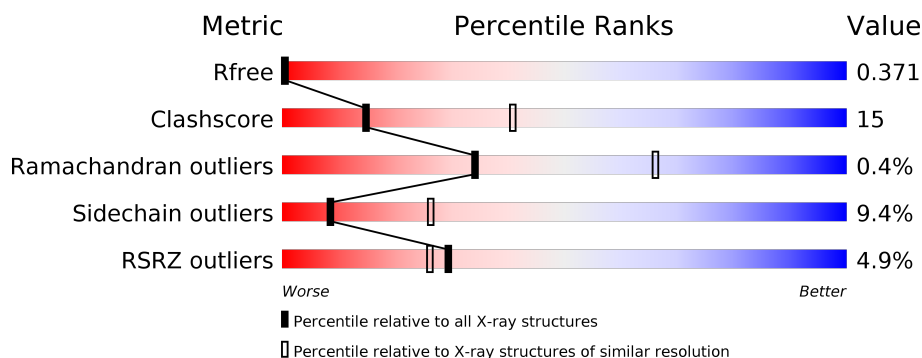
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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

Mol	Chain	Length	Quality of chain
1	A	337	<div> <div>3%</div> <div>65%</div> <div>29%</div> <div>• •</div> </div>
1	B	337	<div> <div>70%</div> <div>24%</div> <div>• •</div> </div>
1	C	337	<div> <div>%</div> <div>66%</div> <div>28%</div> <div>• •</div> </div>
1	D	337	<div> <div>10%</div> <div>56%</div> <div>35%</div> <div>5%</div> <div>•</div> </div>
1	E	337	<div> <div>12%</div> <div>56%</div> <div>36%</div> <div>• •</div> </div>
1	F	337	<div> <div>2%</div> <div>63%</div> <div>29%</div> <div>• •</div> </div>

## 2 Entry composition [i](#)

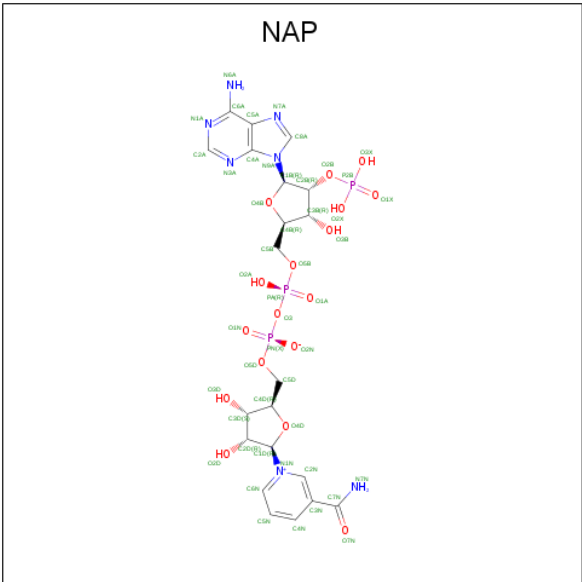
There are 4 unique types of molecules in this entry. The entry contains 15797 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 dihydroflavonol 4-reductase.

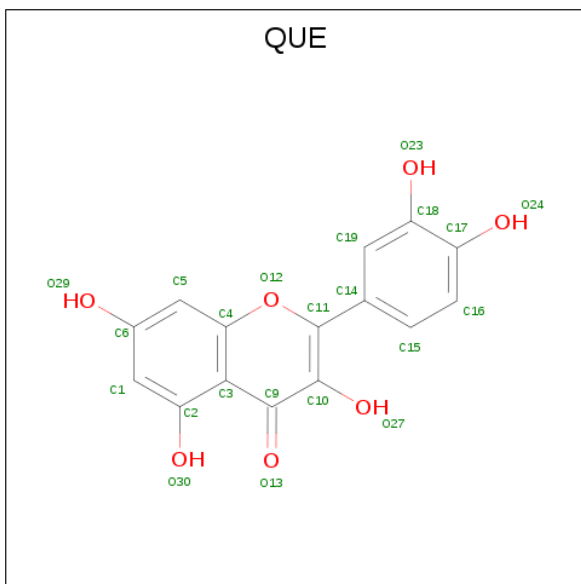
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	B	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	C	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	D	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	E	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	F	324	Total	C	N	O	S	0	0	0
			2527	1619	417	471	20			

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: C<sub>21</sub>H<sub>28</sub>N<sub>7</sub>O<sub>17</sub>P<sub>3</sub>).



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

- Molecule 3 is 3,5,7,3',4'-PENTAHYDROXYFLAVONE (three-letter code: QUE) (formula: C<sub>15</sub>H<sub>10</sub>O<sub>7</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			22	15	7		
3	B	1	Total	C	O	0	0
			22	15	7		
3	B	1	Total	C	O	0	0
			22	15	7		
3	C	1	Total	C	O	0	0
			22	15	7		
3	C	1	Total	C	O	0	0
			22	15	7		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total	C	O	0	0
			22	15	7		
3	D	1	Total	C	O	0	0
			22	15	7		
3	F	1	Total	C	O	0	0
			22	15	7		
3	F	1	Total	C	O	0	0
			22	15	7		

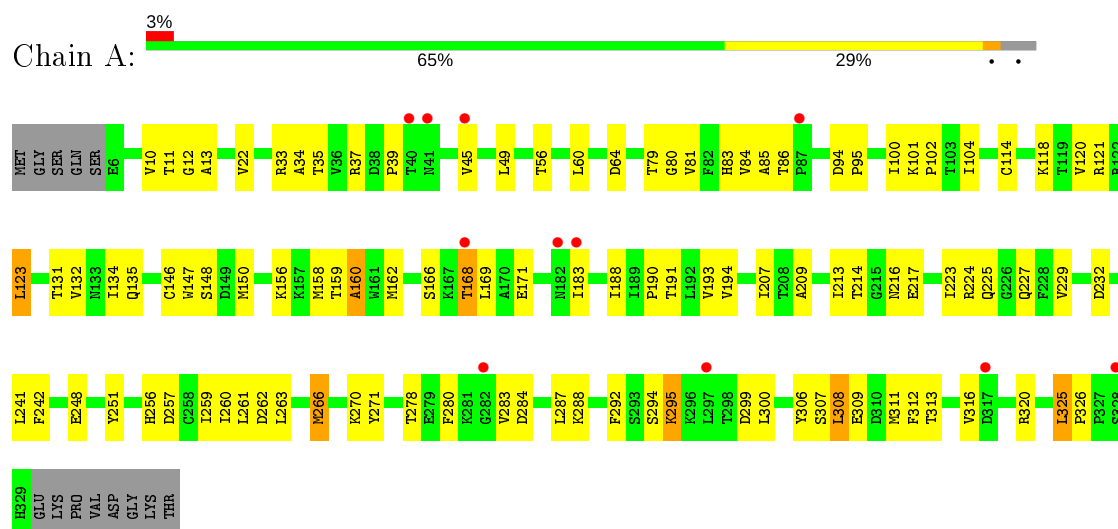
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	19	Total	O	0	0
			19	19		
4	B	15	Total	O	0	0
			15	15		
4	C	16	Total	O	0	0
			16	16		
4	D	29	Total	O	0	0
			29	29		
4	E	33	Total	O	0	0
			33	33		
4	F	17	Total	O	0	0
			17	17		

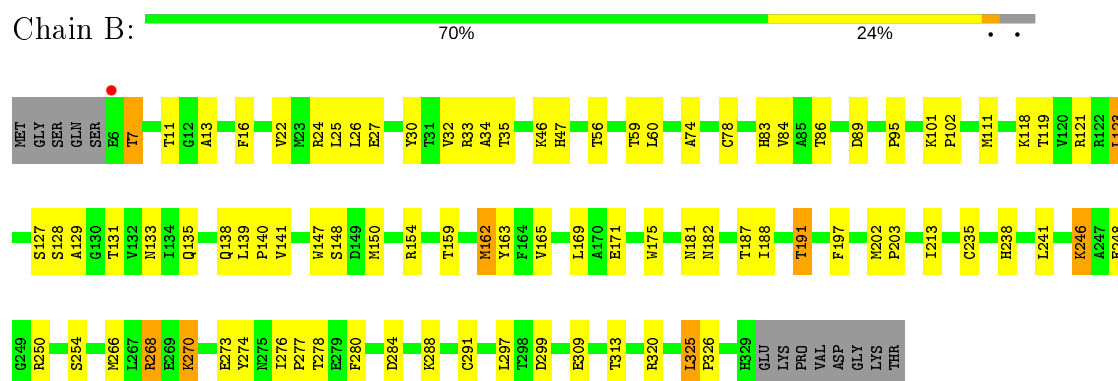
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

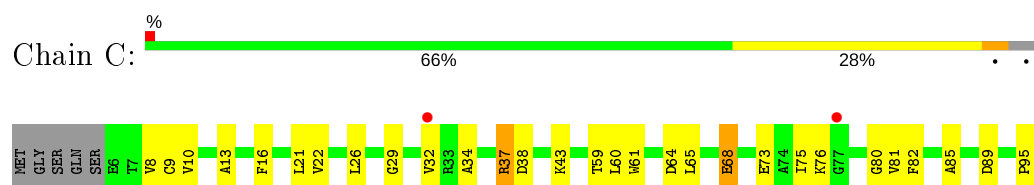
- Molecule 1: dihydroflavonol 4-reductase

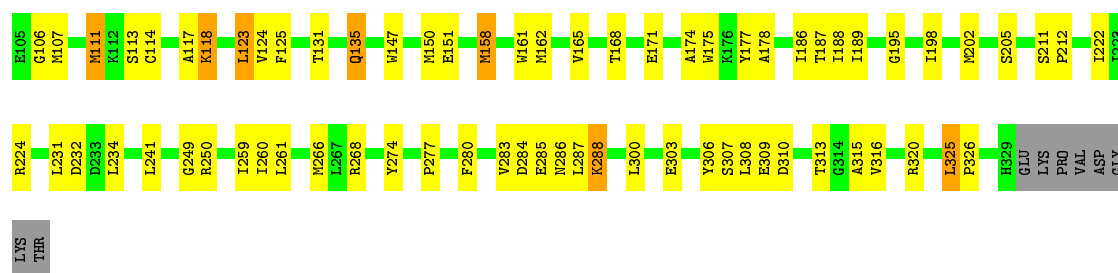


- Molecule 1: dihydroflavonol 4-reductase

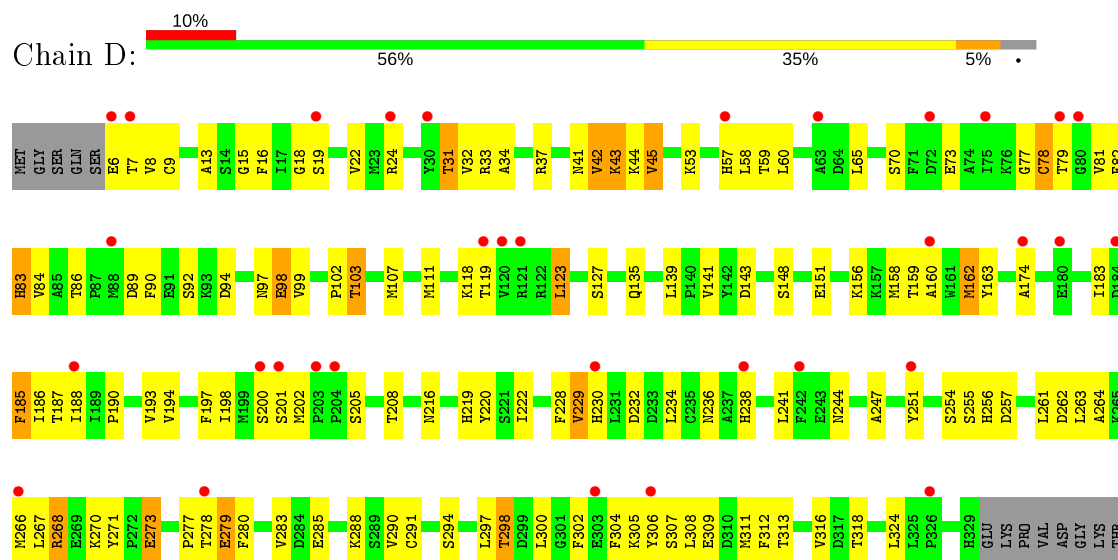


- Molecule 1: dihydroflavonol 4-reductase

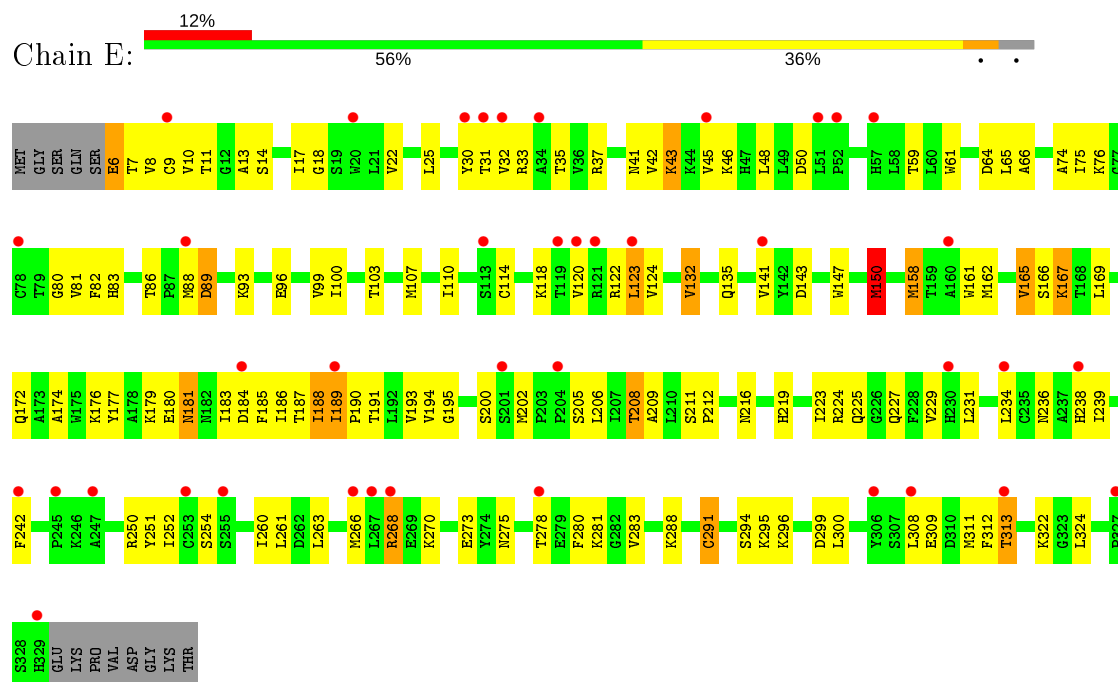




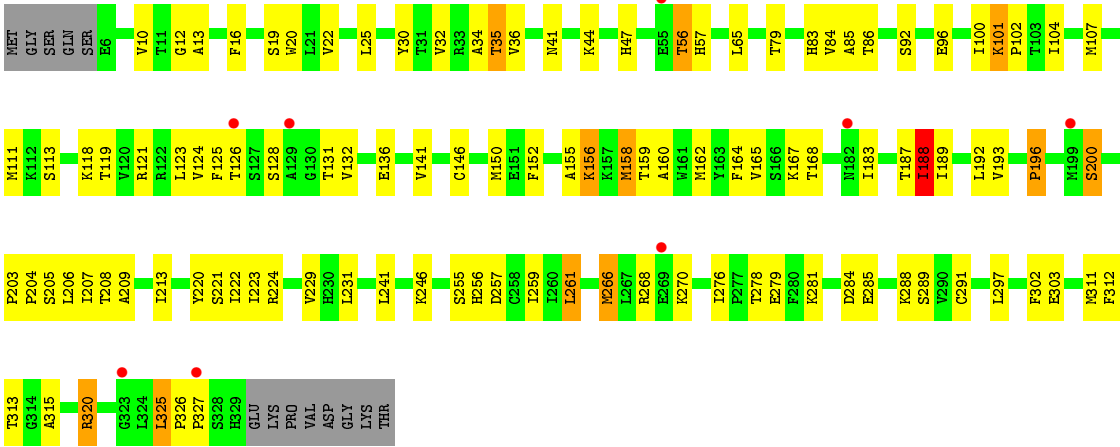
• Molecule 1: dihydroflavonol 4-reductase



• Molecule 1: dihydroflavonol 4-reductase



• Molecule 1: dihydroflavonol 4-reductase





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	174.94Å 174.94Å 290.17Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	75.81 – 2.90 75.75 – 2.90	Depositor EDS
% Data completeness (in resolution range)	100.0 (75.81-2.90) 100.0 (75.75-2.90)	Depositor EDS
$R_{merge}$	0.15	Depositor
$R_{sym}$	0.15	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	5.65 (at 2.91Å)	Xtriage
Refinement program	REFMAC	Depositor
R, $R_{free}$	0.288 , 0.366 0.292 , 0.371	Depositor DCC
$R_{free}$ test set	2967 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.9	Xtriage
Anisotropy	0.025	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 44.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.87	EDS
Total number of atoms	15797	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 28.75 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.7460e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup> Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.63	0/2591	1.03	7/3513 (0.2%)
1	B	0.62	0/2591	1.10	10/3513 (0.3%)
1	C	0.64	0/2591	1.10	5/3513 (0.1%)
1	D	0.62	0/2591	1.08	5/3513 (0.1%)
1	E	0.66	0/2591	1.13	1/3513 (0.0%)
1	F	0.62	0/2587	1.09	6/3508 (0.2%)
All	All	0.63	0/15542	1.09	34/21073 (0.2%)

There are no bond length outliers.

The worst 5 of 34 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	320	ARG	NE-CZ-NH1	5.92	123.26	120.30
1	D	60	LEU	CA-CB-CG	5.86	128.78	115.30
1	B	299	ASP	CB-CG-OD1	5.85	123.57	118.30
1	C	64	ASP	CB-CG-OD1	5.71	123.44	118.30
1	D	162	MET	CG-SD-CE	5.70	109.32	100.20

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2531	0	2508	62	0
1	B	2531	0	2508	68	0
1	C	2531	0	2508	67	0
1	D	2531	0	2508	101	0
1	E	2531	0	2508	114	0
1	F	2527	0	2504	68	0
2	A	48	0	25	1	0
2	B	48	0	25	1	0
2	C	48	0	25	5	0
2	D	48	0	25	3	0
2	E	48	0	25	6	0
2	F	48	0	25	2	0
3	A	22	0	6	0	0
3	B	44	0	11	4	0
3	C	44	0	14	0	0
3	D	44	0	13	2	0
3	F	44	0	17	5	0
4	A	19	0	0	2	0
4	B	15	0	0	3	0
4	C	16	0	0	2	0
4	D	29	0	0	9	0
4	E	33	0	0	4	0
4	F	17	0	0	0	0
All	All	15797	0	15255	469	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.

The worst 5 of 469 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:E:236:ASN:HA	1:E:239:ILE:HD12	1.36	1.06
1:F:132:VAL:HG22	1:F:146:CYS:O	1.57	1.02
1:E:193:VAL:HG21	1:E:234:LEU:HD22	1.41	0.99
1:B:141:VAL:HG22	1:B:291:CYS:HB3	1.44	0.99
1:B:95:PRO:HB3	1:B:162:MET:HE2	1.46	0.95

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	322/337 (96%)	297 (92%)	25 (8%)	0	100	100
1	B	322/337 (96%)	297 (92%)	25 (8%)	0	100	100
1	C	322/337 (96%)	300 (93%)	22 (7%)	0	100	100
1	D	322/337 (96%)	280 (87%)	37 (12%)	5 (2%)	9	32
1	E	322/337 (96%)	278 (86%)	43 (13%)	1 (0%)	41	71
1	F	322/337 (96%)	292 (91%)	29 (9%)	1 (0%)	41	71
All	All	1932/2022 (96%)	1744 (90%)	181 (9%)	7 (0%)	34	66

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	70	SER
1	D	42	VAL
1	D	273	GLU
1	D	83	HIS
1	D	148	SER

### 5.3.2 Protein sidechains

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	278/293 (95%)	255 (92%)	23 (8%)	11	32
1	B	278/293 (95%)	261 (94%)	17 (6%)	18	48
1	C	278/293 (95%)	256 (92%)	22 (8%)	12	34

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	278/293 (95%)	247 (89%)	31 (11%)	6	18
1	E	278/293 (95%)	242 (87%)	36 (13%)	4	13
1	F	277/293 (94%)	250 (90%)	27 (10%)	8	25
All	All	1667/1758 (95%)	1511 (91%)	156 (9%)	8	26

5 of 156 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	98	GLU
1	D	279	GLU
1	F	222	ILE
1	D	118	LYS
1	D	162	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	97	ASN
1	D	216	ASN
1	E	181	ASN
1	C	181	ASN
1	E	236	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

15 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	QUE	B	342	-	21,24,24	1.91	3 (14%)	28,36,36	2.14	9 (32%)
3	QUE	A	342	-	21,24,24	2.04	6 (28%)	28,36,36	2.50	10 (35%)
3	QUE	C	342	-	21,24,24	1.87	5 (23%)	28,36,36	2.72	9 (32%)
2	NAP	D	338	-	45,52,52	1.63	4 (8%)	56,80,80	1.90	15 (26%)
3	QUE	C	341	-	21,24,24	1.75	5 (23%)	28,36,36	1.84	8 (28%)
2	NAP	F	338	-	45,52,52	1.72	4 (8%)	56,80,80	1.59	13 (23%)
2	NAP	C	338	-	45,52,52	1.73	5 (11%)	56,80,80	1.79	13 (23%)
3	QUE	F	341	-	21,24,24	2.26	4 (19%)	28,36,36	2.11	9 (32%)
2	NAP	E	338	-	45,52,52	1.68	5 (11%)	56,80,80	2.37	21 (37%)
2	NAP	B	338	-	45,52,52	1.80	5 (11%)	56,80,80	1.64	7 (12%)
3	QUE	F	342	-	21,24,24	1.85	5 (23%)	28,36,36	2.25	11 (39%)
2	NAP	A	338	-	45,52,52	1.80	4 (8%)	56,80,80	1.31	7 (12%)
3	QUE	B	341	-	21,24,24	1.65	3 (14%)	28,36,36	1.94	4 (14%)
3	QUE	D	342	-	21,24,24	2.32	5 (23%)	28,36,36	2.02	8 (28%)
3	QUE	D	341	-	21,24,24	2.19	4 (19%)	28,36,36	2.15	8 (28%)

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	QUE	B	342	-	-	3/4/4/4	0/3/3/3
3	QUE	A	342	-	-	2/4/4/4	0/3/3/3
3	QUE	C	342	-	-	2/4/4/4	0/3/3/3
2	NAP	D	338	-	-	4/31/67/67	0/5/5/5
3	QUE	C	341	-	-	2/4/4/4	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAP	F	338	-	-	7/31/67/67	0/5/5/5
2	NAP	C	338	-	-	5/31/67/67	0/5/5/5
3	QUE	F	341	-	-	2/4/4/4	0/3/3/3
2	NAP	E	338	-	-	13/31/67/67	0/5/5/5
2	NAP	B	338	-	-	6/31/67/67	0/5/5/5
3	QUE	F	342	-	-	2/4/4/4	0/3/3/3
2	NAP	A	338	-	-	4/31/67/67	0/5/5/5
3	QUE	B	341	-	-	2/4/4/4	0/3/3/3
3	QUE	D	342	-	-	2/4/4/4	0/3/3/3
3	QUE	D	341	-	-	2/4/4/4	0/3/3/3

The worst 5 of 67 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	338	NAP	O7N-C7N	9.12	1.41	1.24
2	A	338	NAP	O7N-C7N	9.01	1.41	1.24
2	F	338	NAP	O7N-C7N	8.86	1.41	1.24
2	D	338	NAP	O7N-C7N	8.41	1.40	1.24
2	E	338	NAP	O7N-C7N	8.22	1.39	1.24

The worst 5 of 152 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	342	QUE	C15-C14-C11	7.49	130.74	120.29
3	A	342	QUE	C15-C14-C11	7.06	130.14	120.29
2	D	338	NAP	N3A-C2A-N1A	-6.89	117.91	128.68
2	E	338	NAP	N3A-C2A-N1A	-6.74	118.14	128.68
3	B	341	QUE	O12-C4-C5	6.32	123.51	116.11

There are no chirality outliers.

5 of 58 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	342	QUE	C10-C11-C14-C15
3	C	342	QUE	C10-C11-C14-C15
2	F	338	NAP	C2B-O2B-P2B-O3X
2	F	338	NAP	O4D-C1D-N1N-C2N
2	C	338	NAP	C5D-O5D-PN-O2N

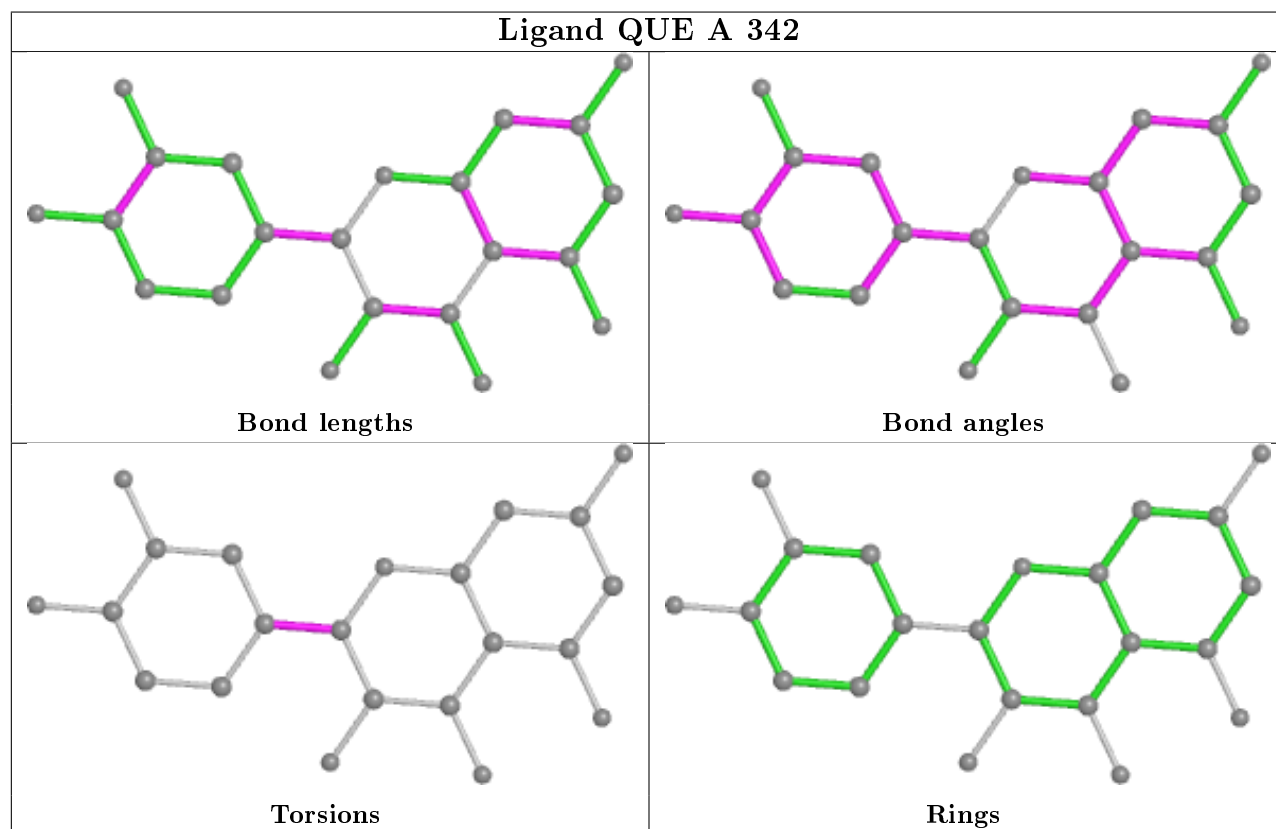
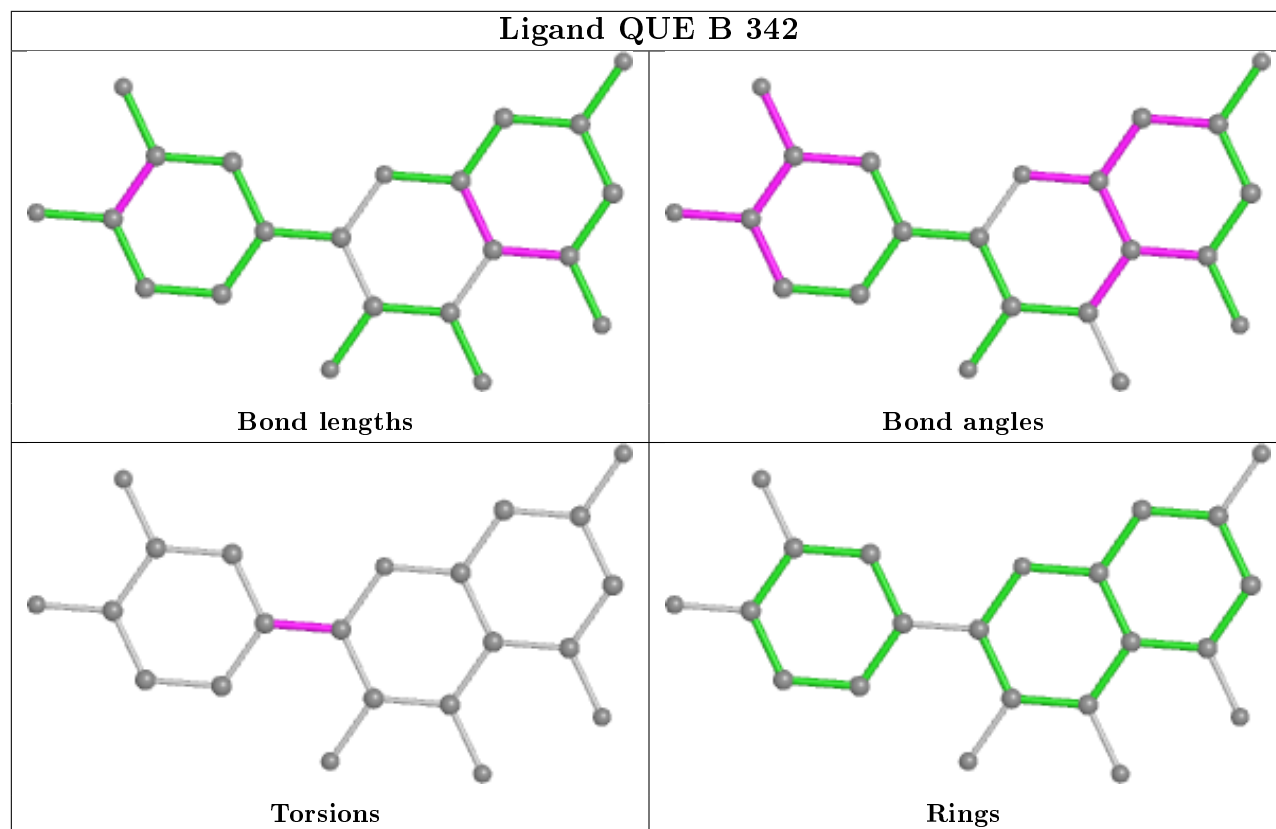
There are no ring outliers.

11 monomers are involved in 29 short contacts:

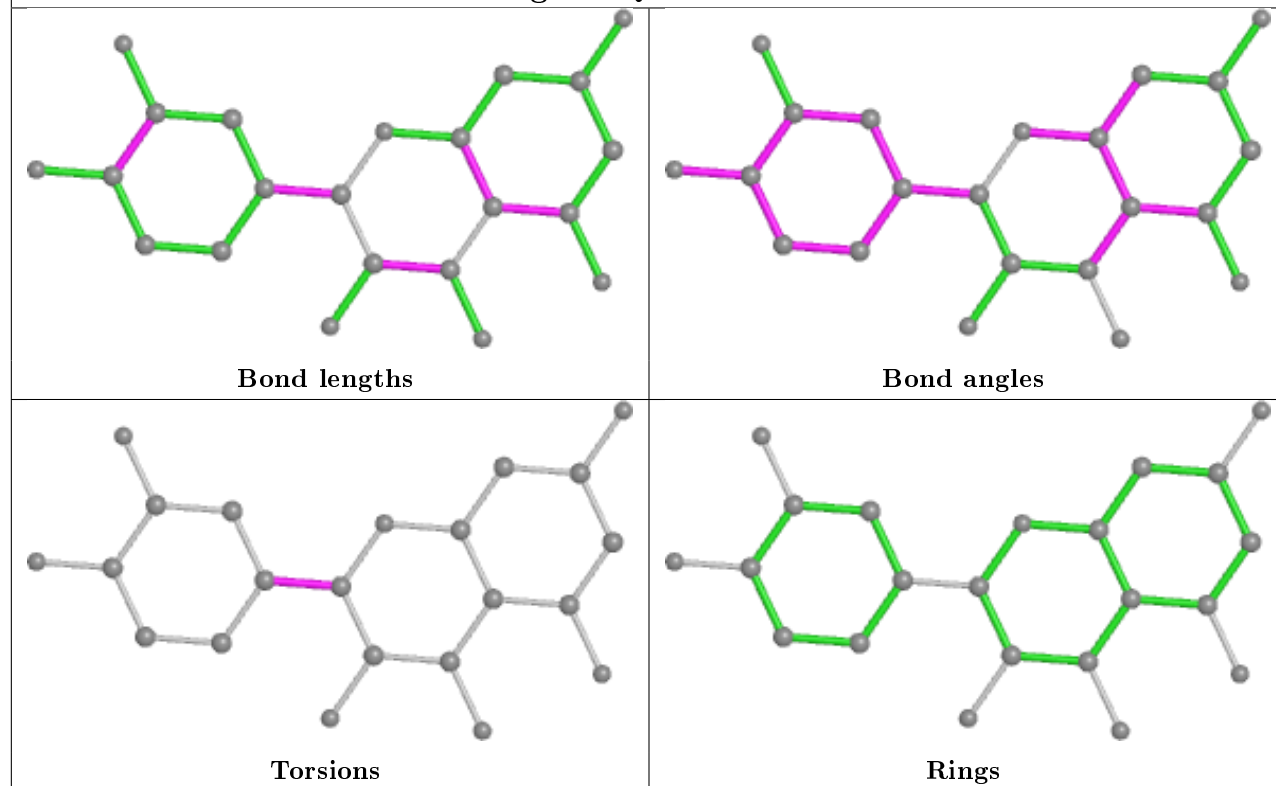
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	342	QUE	3	0
2	D	338	NAP	3	0
2	F	338	NAP	2	0
2	C	338	NAP	5	0
3	F	341	QUE	1	0
2	E	338	NAP	6	0
2	B	338	NAP	1	0
3	F	342	QUE	4	0
2	A	338	NAP	1	0
3	B	341	QUE	1	0
3	D	342	QUE	2	0

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

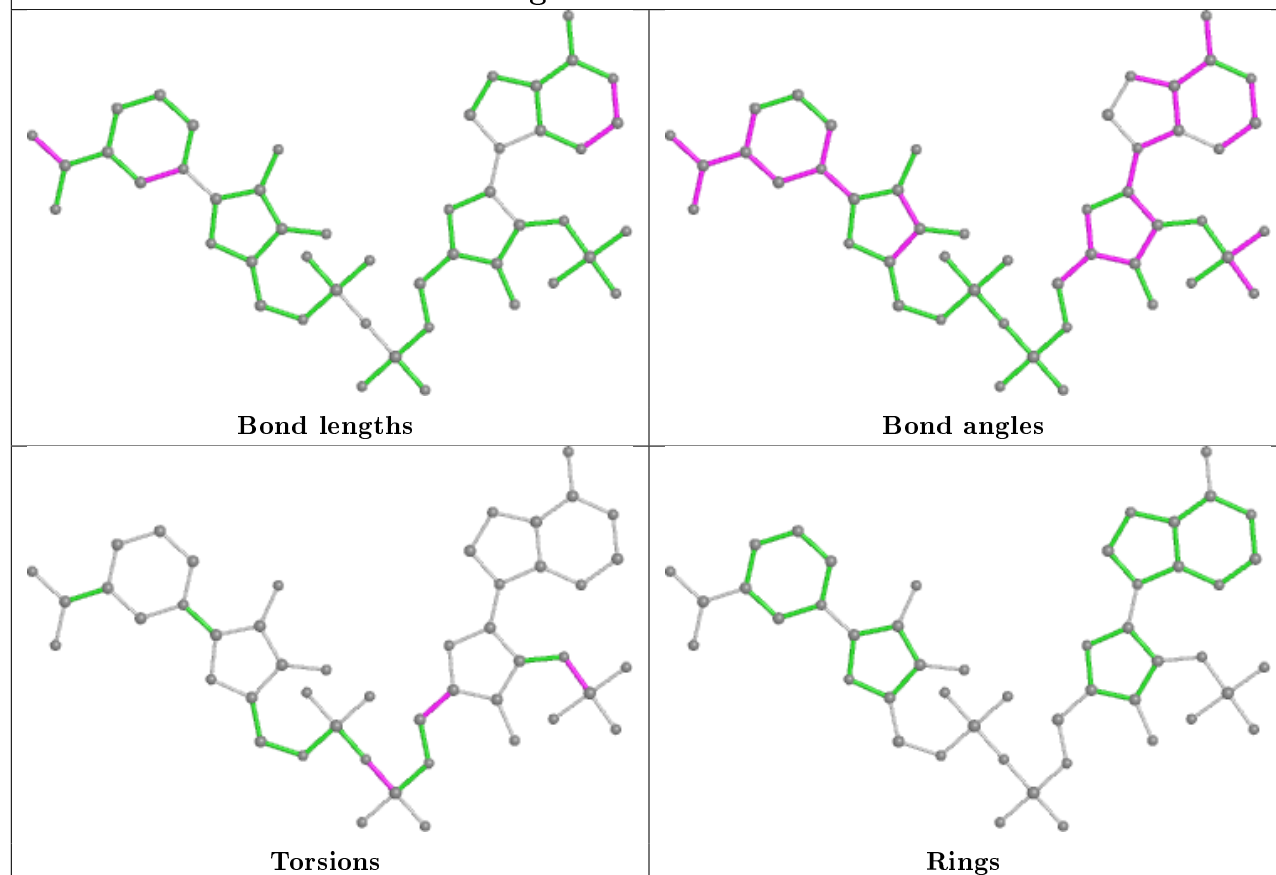




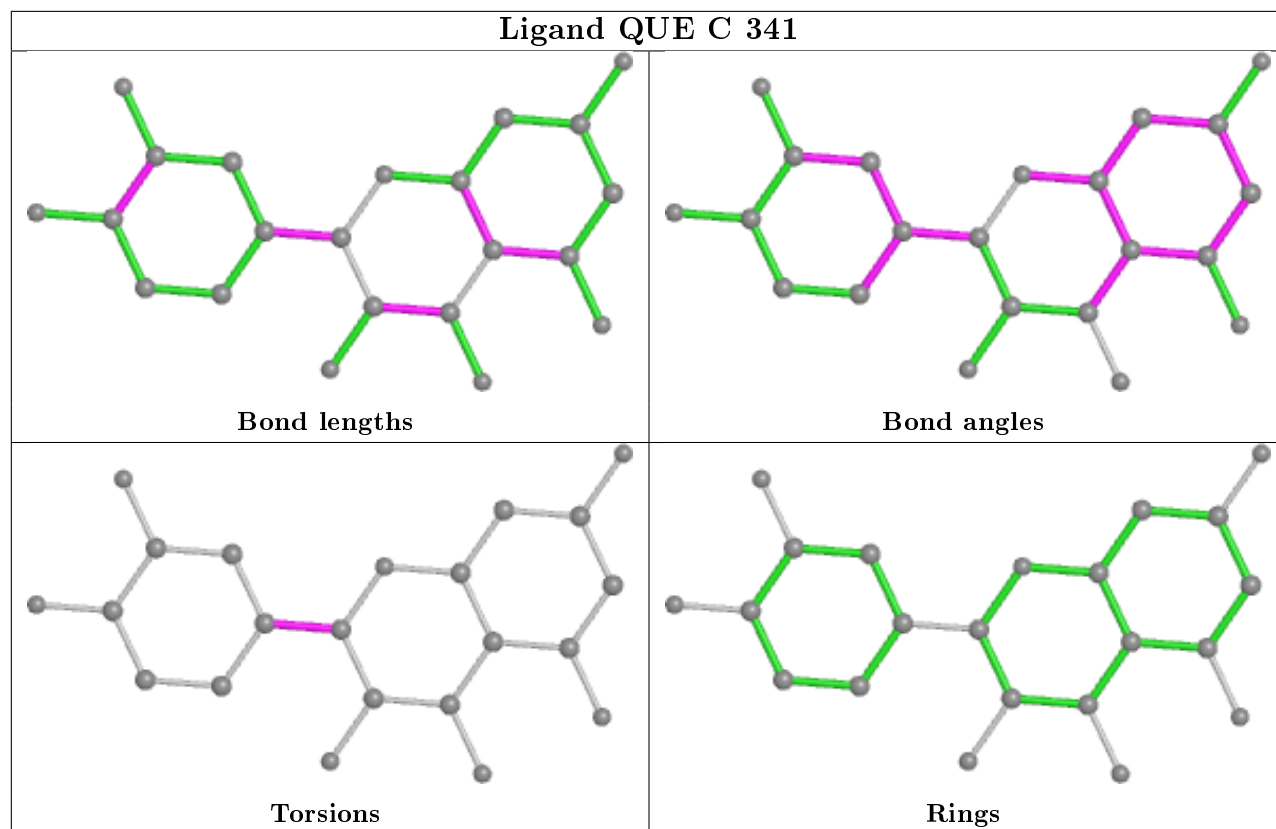
## Ligand QUE C 342



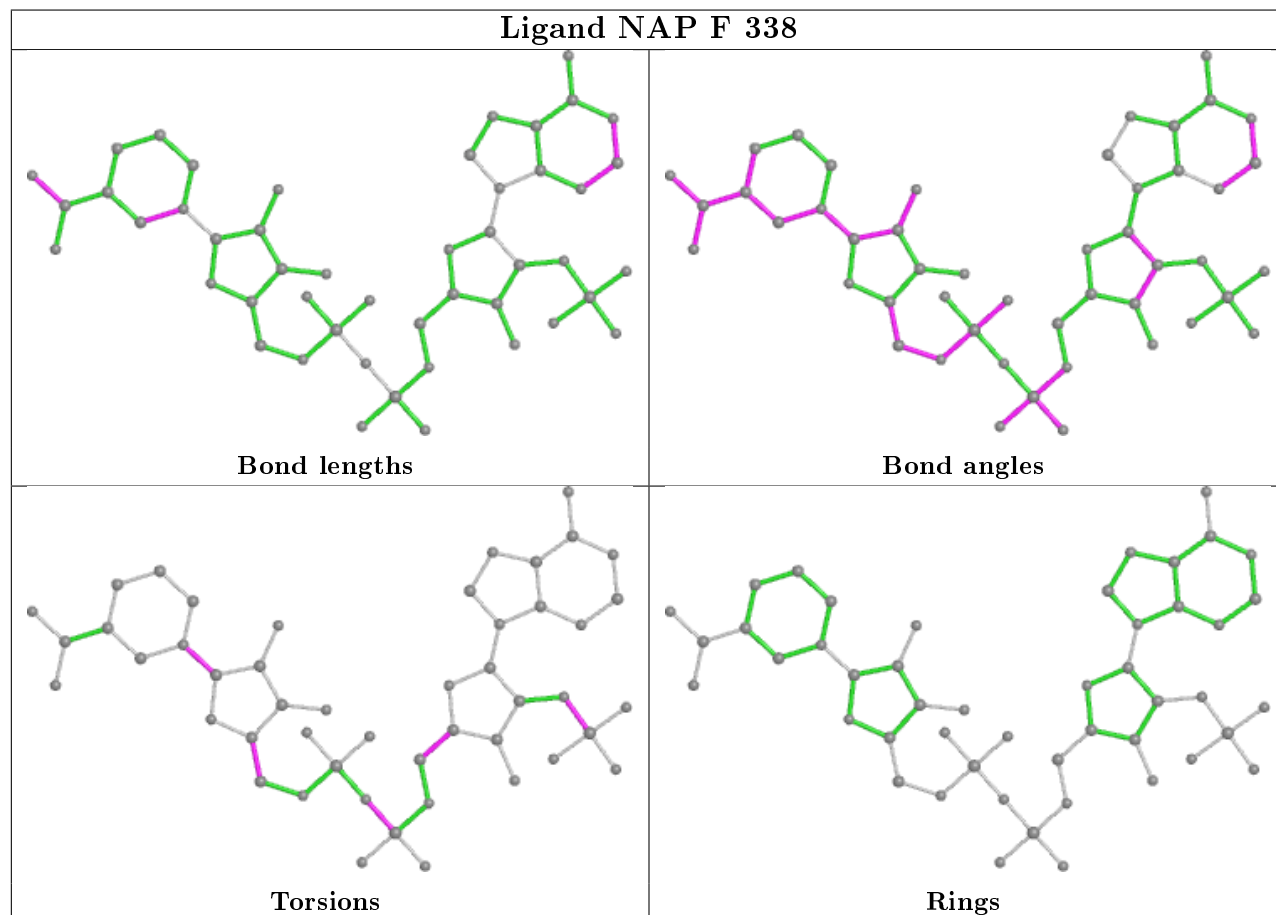
## Ligand NAP D 338

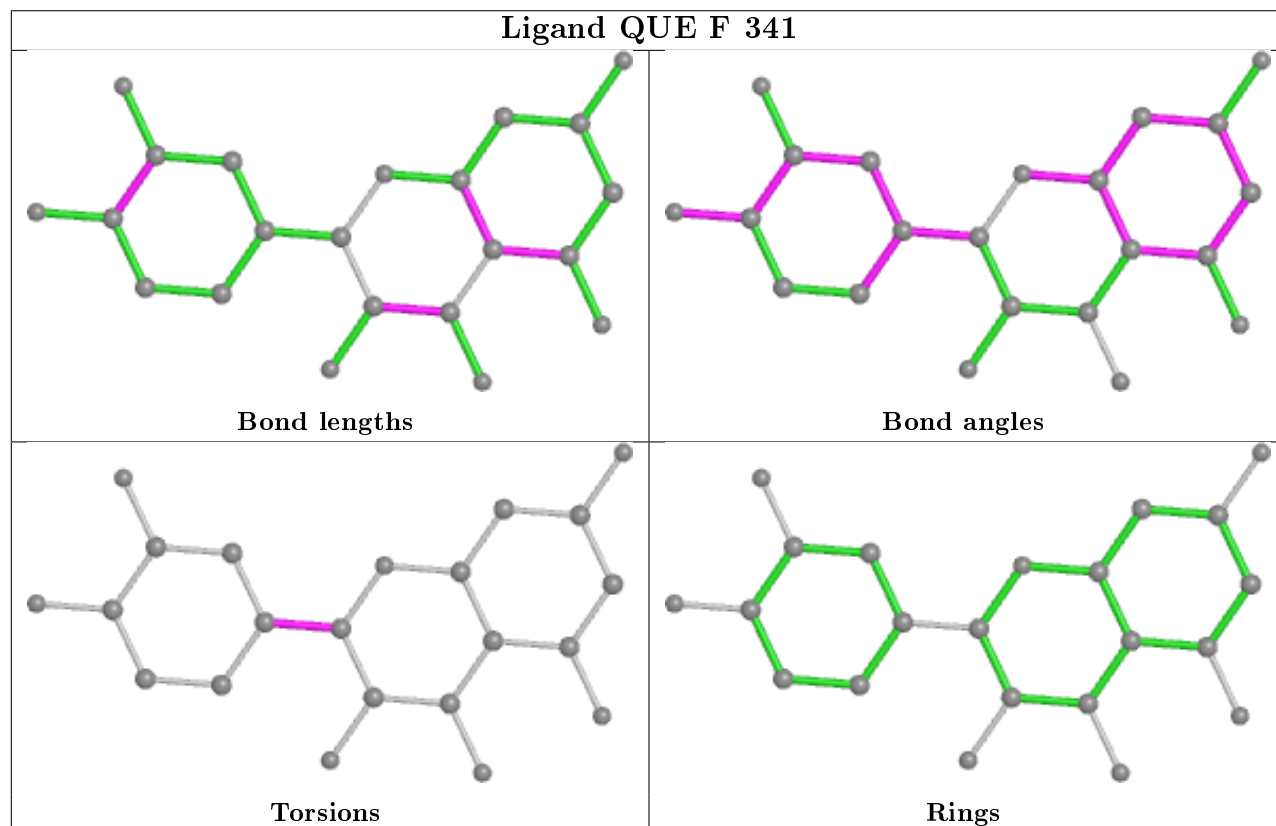
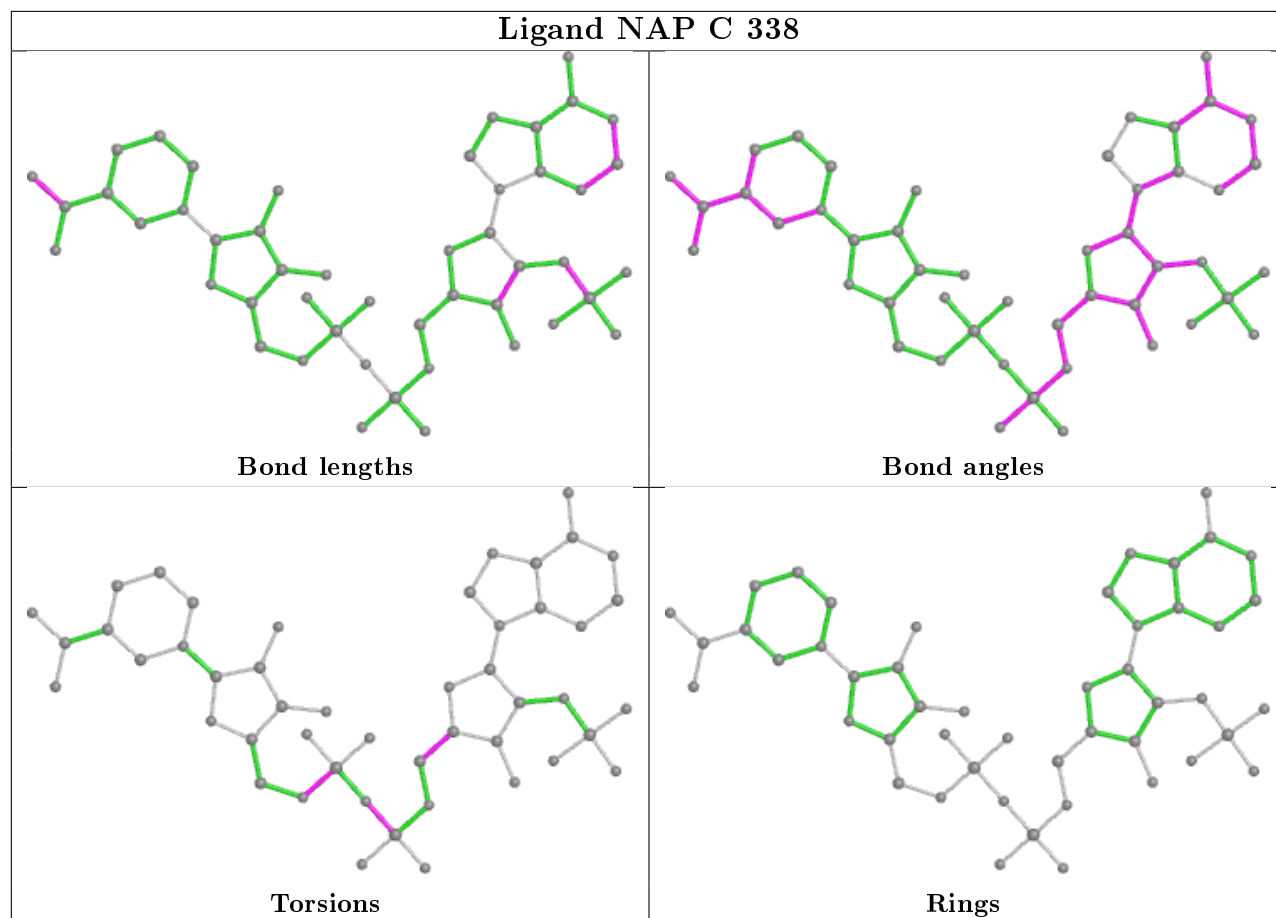


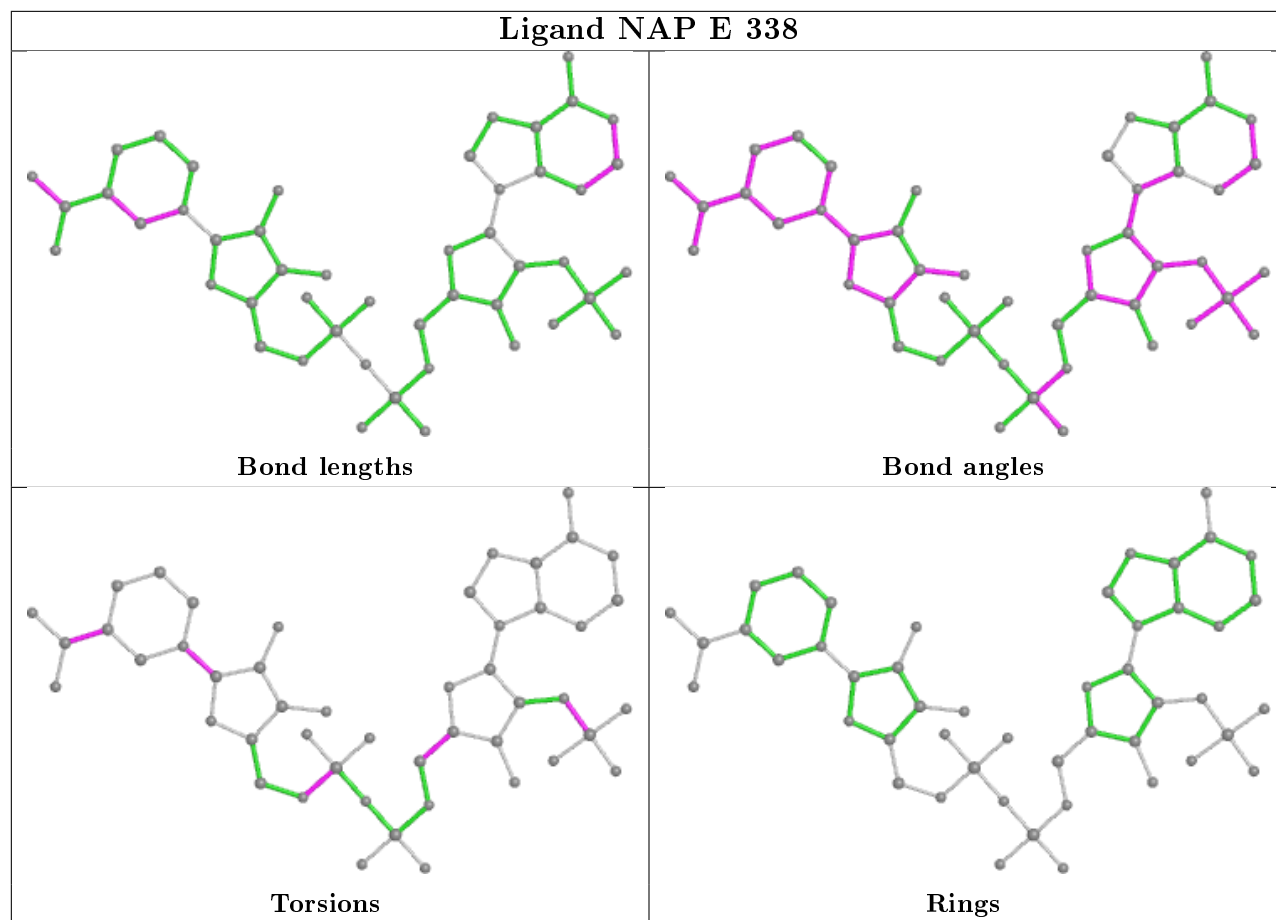
## Ligand QUE C 341

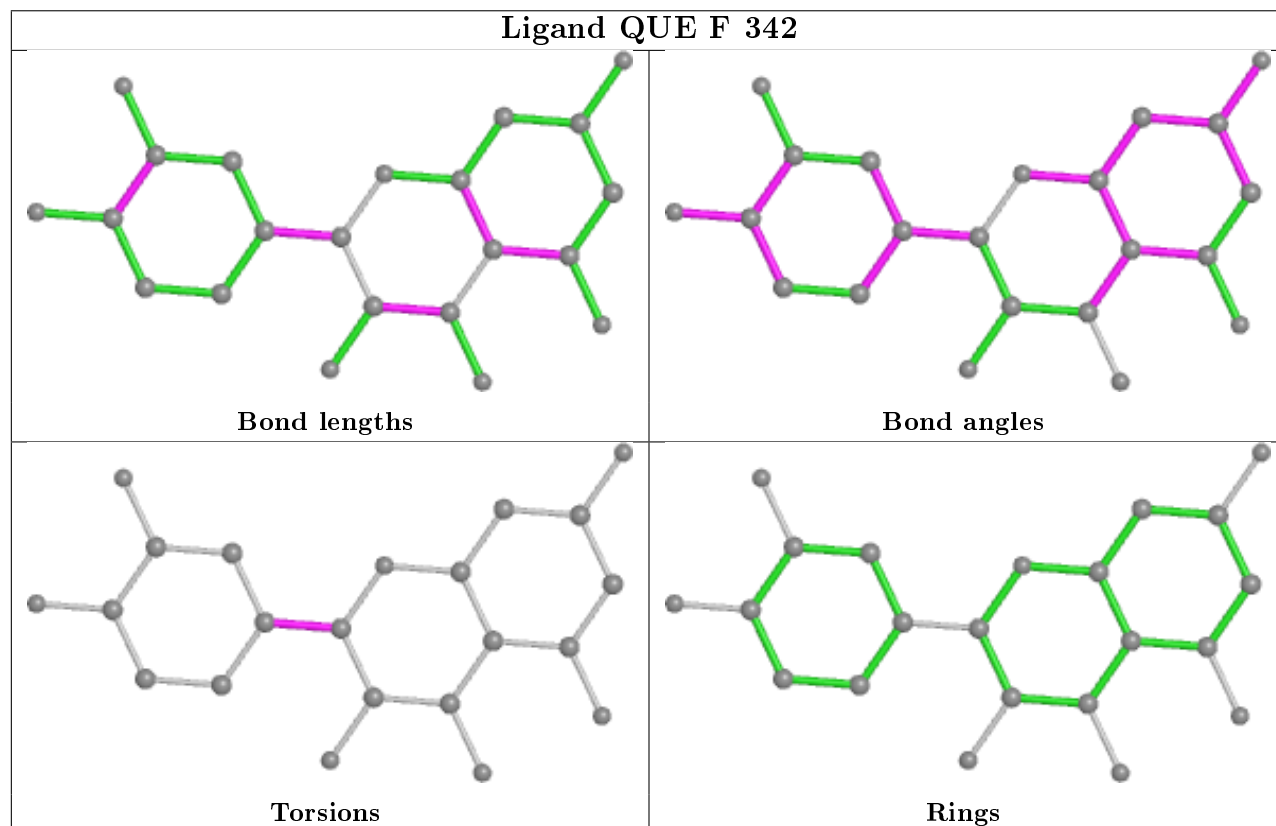
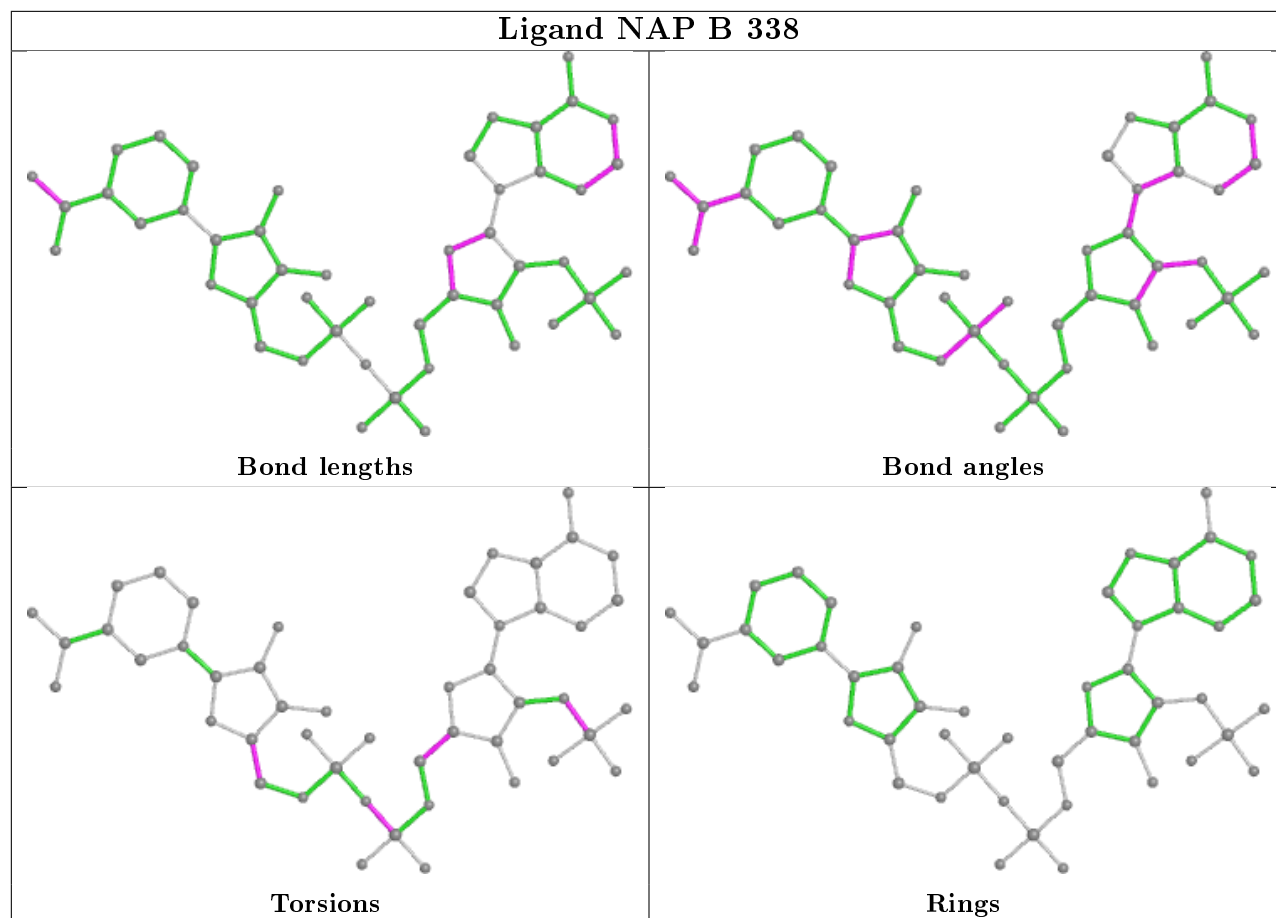


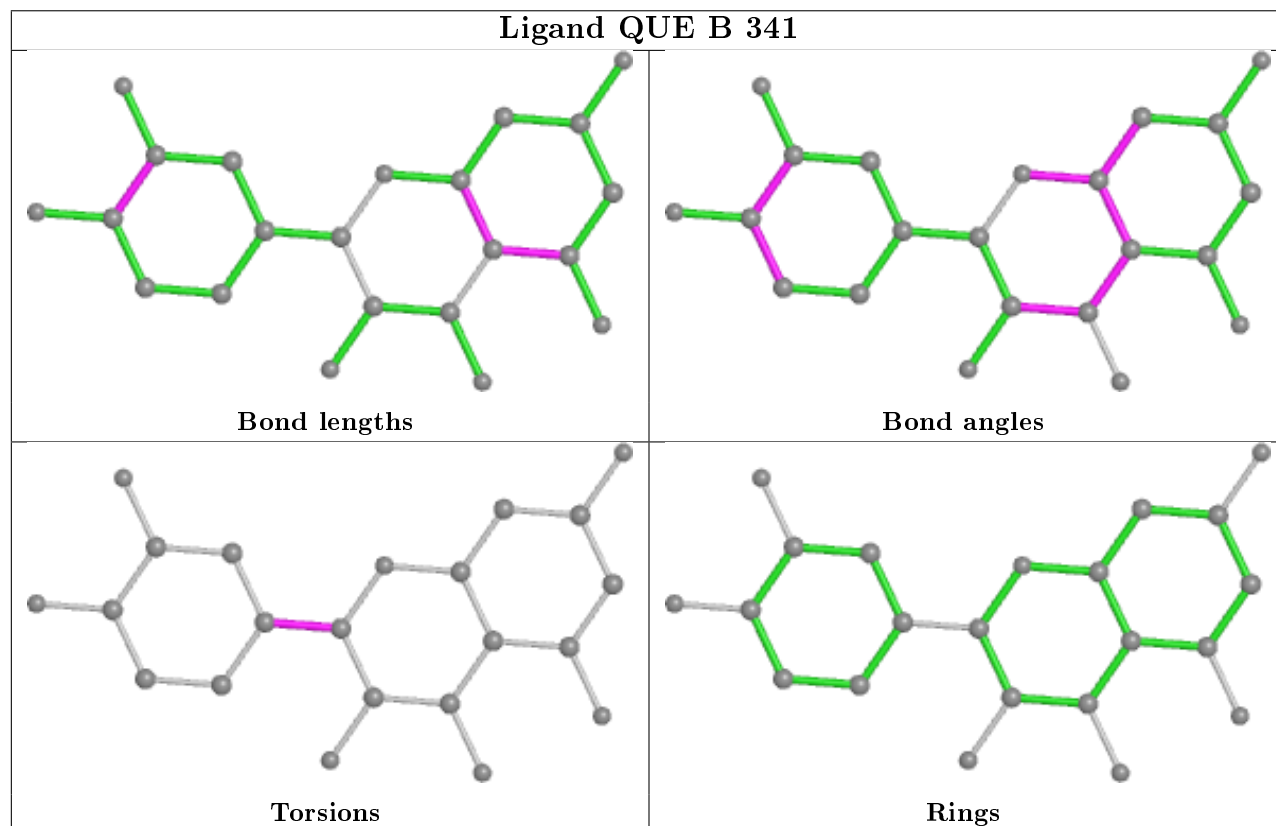
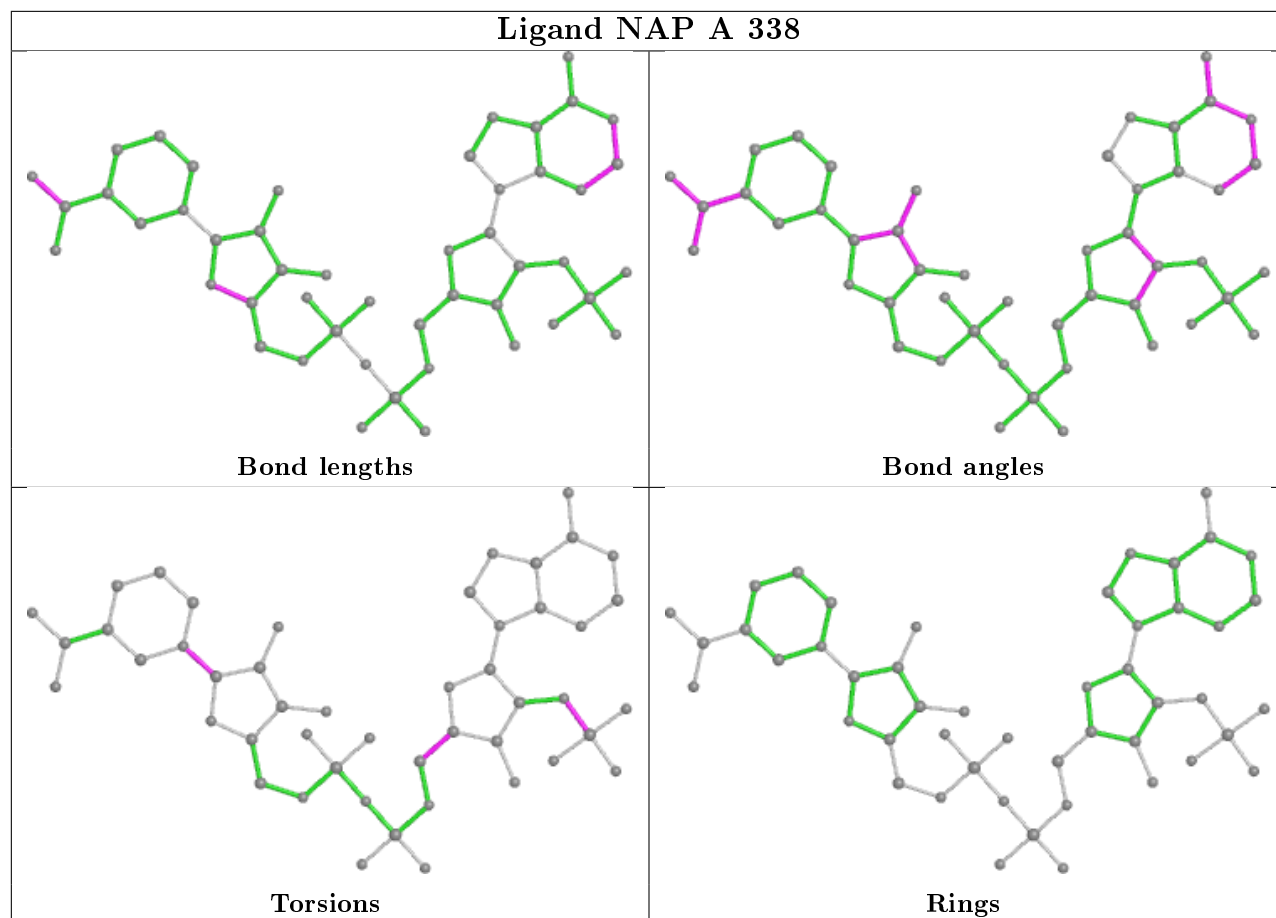
## Ligand NAP F 338

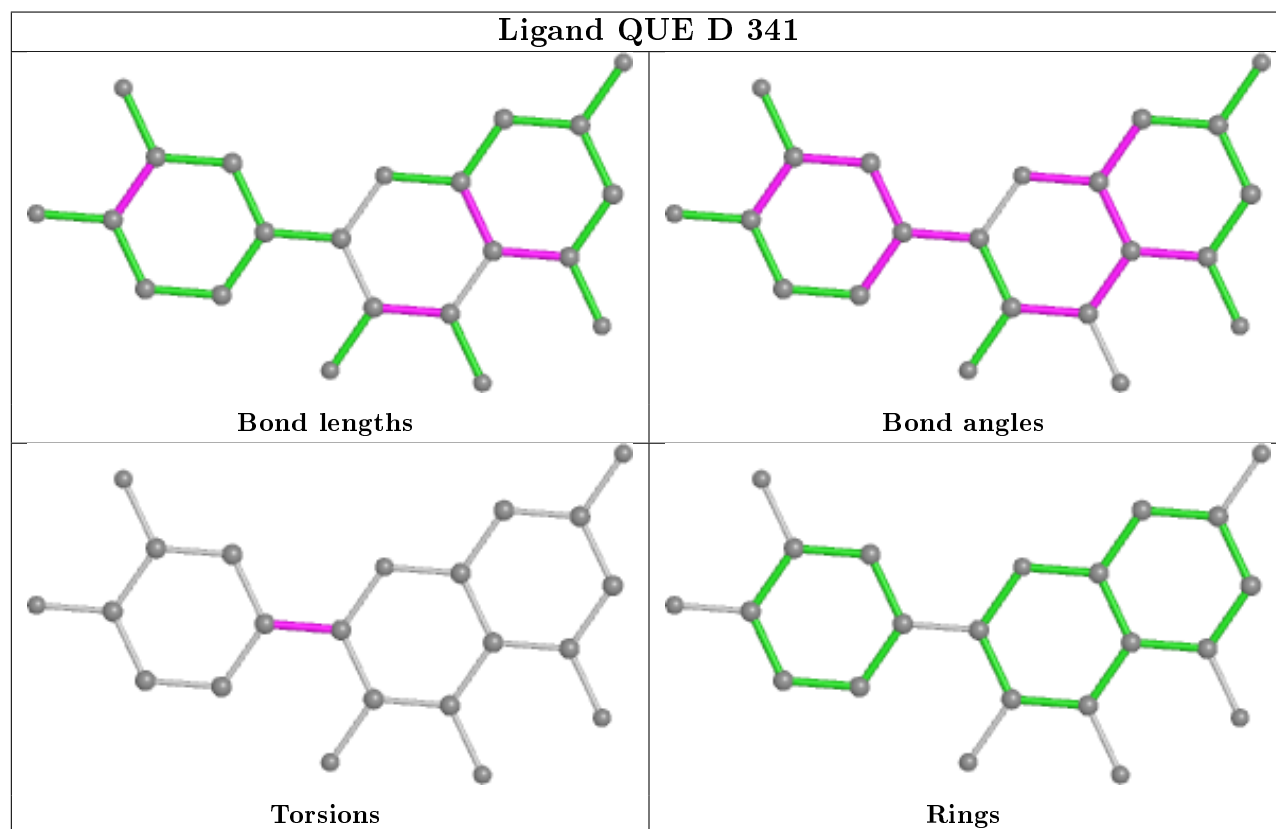
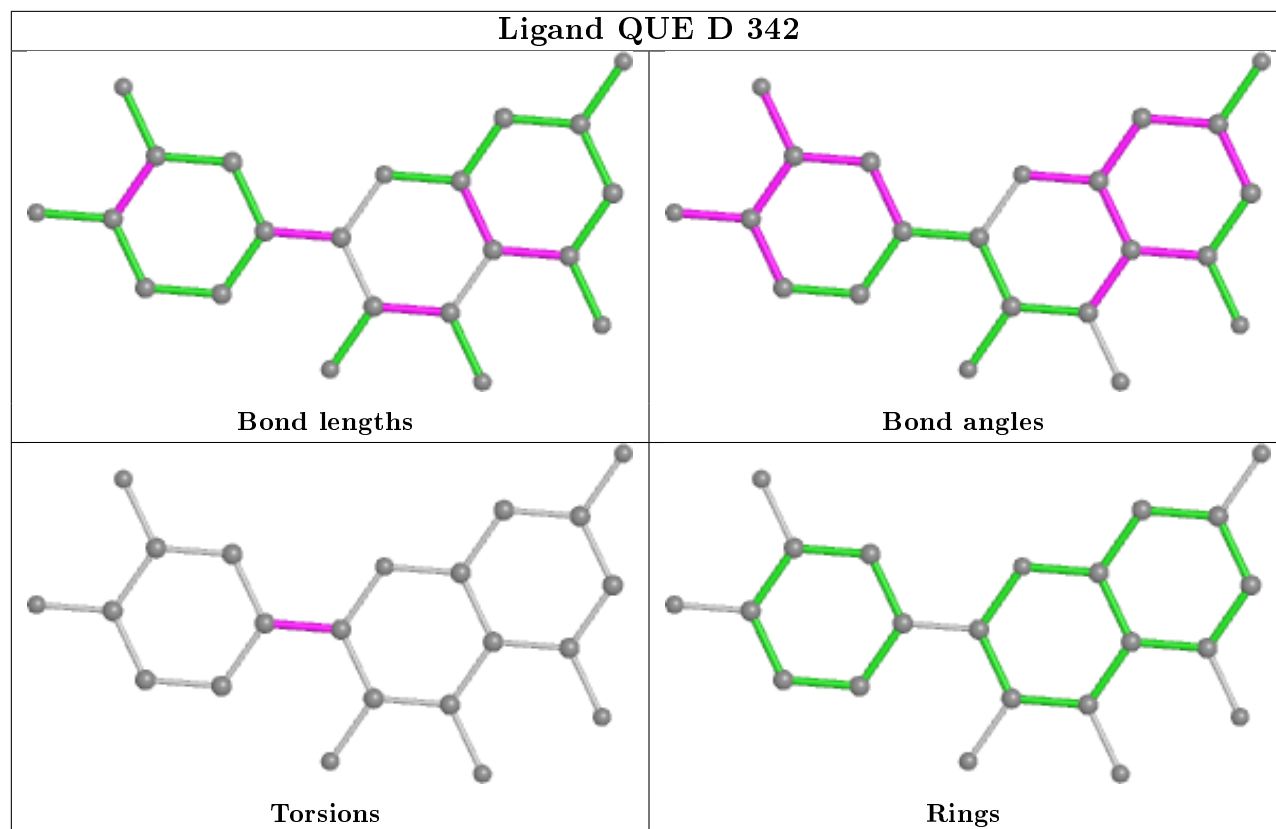














## 5.7 Other polymers [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	324/337 (96%)	0.46	11 (3%) 45 40	14, 28, 41, 46	0
1	B	324/337 (96%)	0.19	1 (0%) 94 94	4, 20, 38, 43	0
1	C	324/337 (96%)	0.18	2 (0%) 89 89	4, 19, 38, 42	0
1	D	324/337 (96%)	0.89	33 (10%) 6 5	13, 28, 42, 47	0
1	E	324/337 (96%)	0.97	40 (12%) 4 3	13, 29, 43, 48	0
1	F	324/337 (96%)	0.37	8 (2%) 57 55	12, 28, 42, 46	0
All	All	1944/2022 (96%)	0.51	95 (4%) 29 26	4, 26, 41, 48	0

The worst 5 of 95 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	182	ASN	4.7
1	D	120	VAL	4.5
1	D	278	THR	4.5
1	D	230	HIS	4.4
1	E	20	TRP	4.4

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

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

### 6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 6.4 Ligands

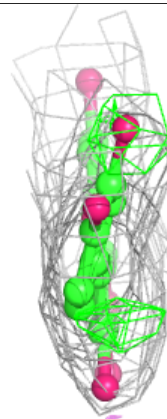
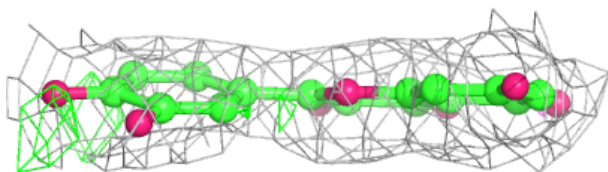
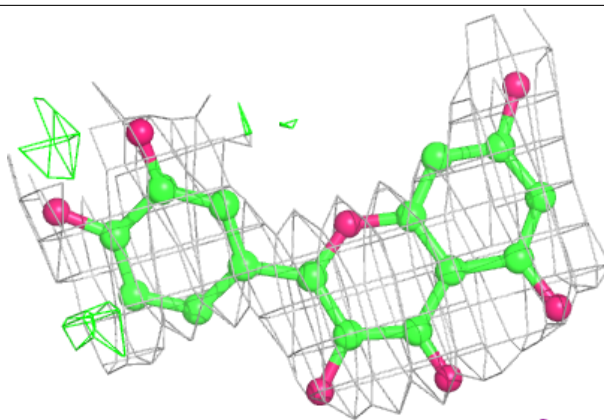
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	QUE	F	342	22/22	0.84	0.26	22,23,23,24	0
3	QUE	D	342	22/22	0.85	0.31	24,24,25,25	0
3	QUE	F	341	22/22	0.88	0.34	18,19,20,21	0
3	QUE	C	342	22/22	0.89	0.24	10,12,13,13	0
3	QUE	A	342	22/22	0.89	0.21	18,19,20,20	0
3	QUE	D	341	22/22	0.90	0.32	24,25,26,26	0
2	NAP	A	338	48/48	0.92	0.22	17,20,26,27	0
3	QUE	B	342	22/22	0.93	0.23	11,11,12,13	0
2	NAP	E	338	48/48	0.93	0.19	14,17,21,21	0
2	NAP	F	338	48/48	0.93	0.20	14,18,21,22	0
2	NAP	D	338	48/48	0.94	0.20	11,18,21,22	0
3	QUE	B	341	22/22	0.94	0.23	11,11,12,12	0
3	QUE	C	341	22/22	0.95	0.26	8,9,10,10	0
2	NAP	B	338	48/48	0.96	0.17	4,6,13,14	0
2	NAP	C	338	48/48	0.97	0.17	4,4,9,10	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.

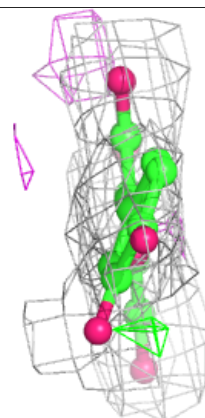
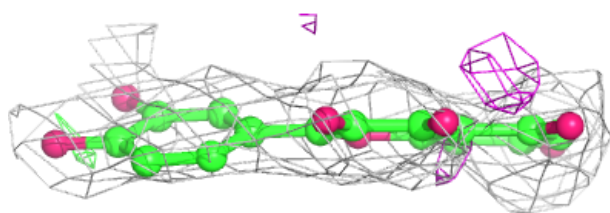
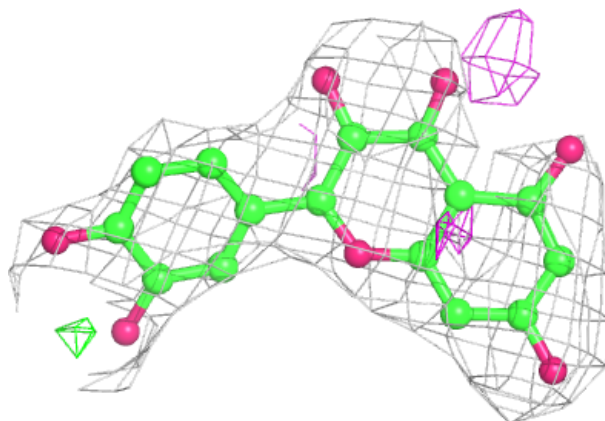
**Electron density around QUE F 342:**

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

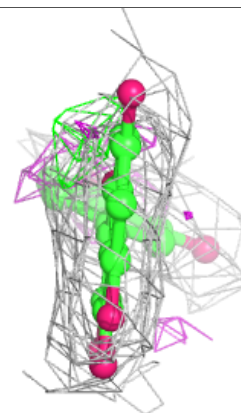
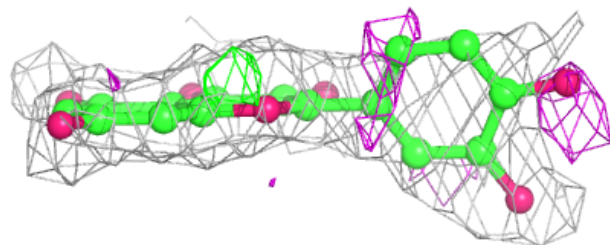
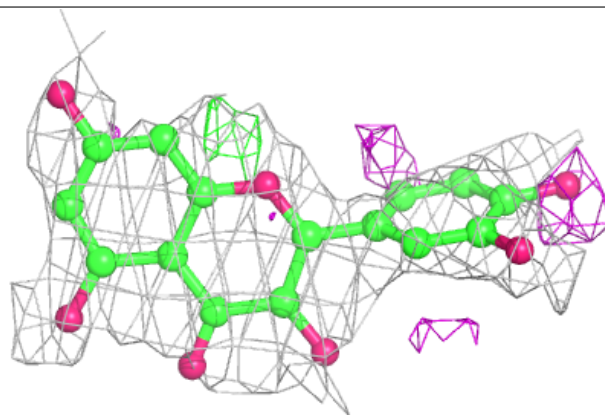


**Electron density around QUE D 342:**

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

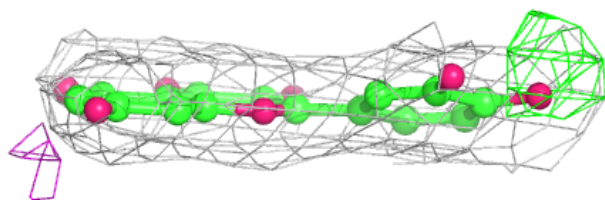
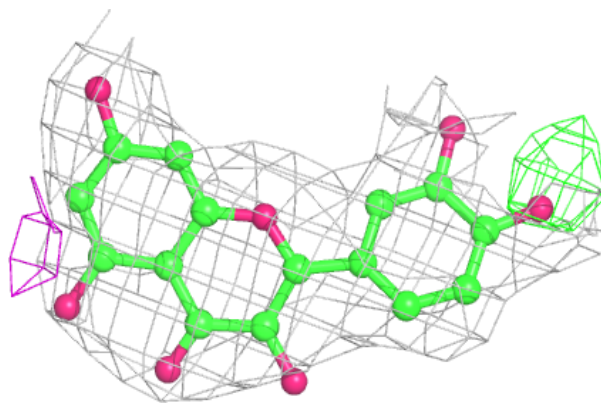
**Electron density around QUE F 341:**

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



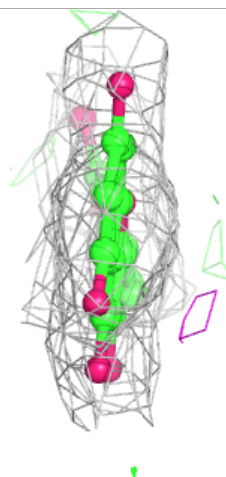
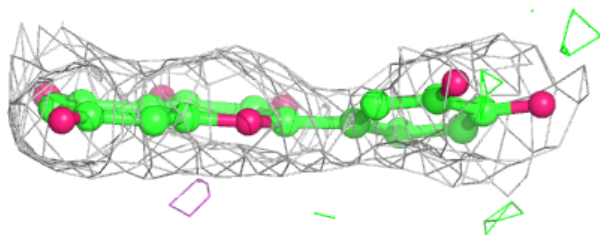
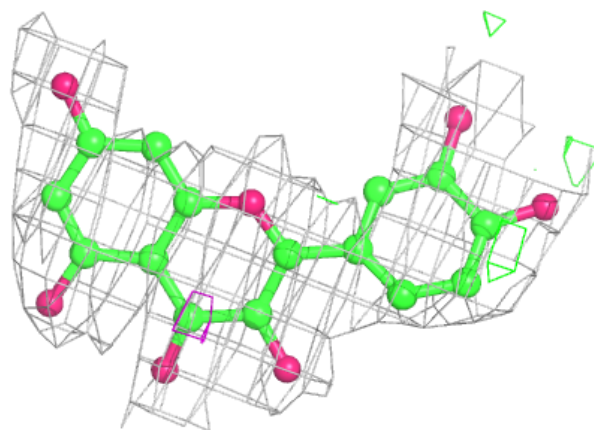
**Electron density around QUE C 342:**

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



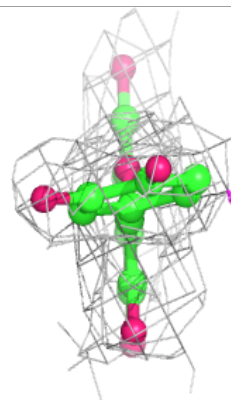
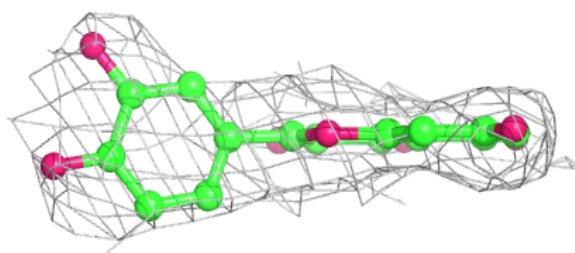
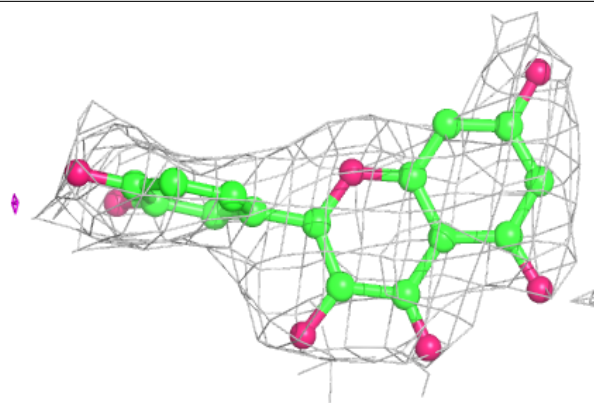
**Electron density around QUE A 342:**

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

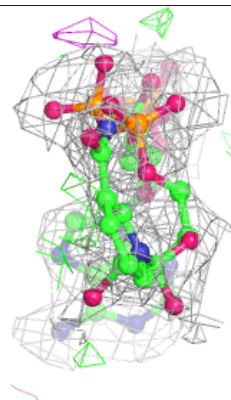
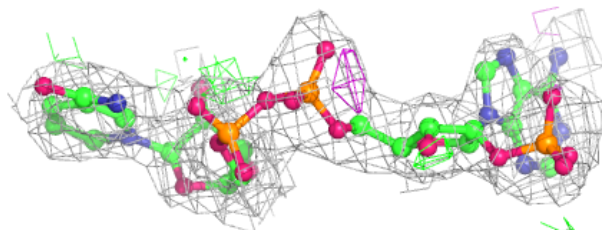
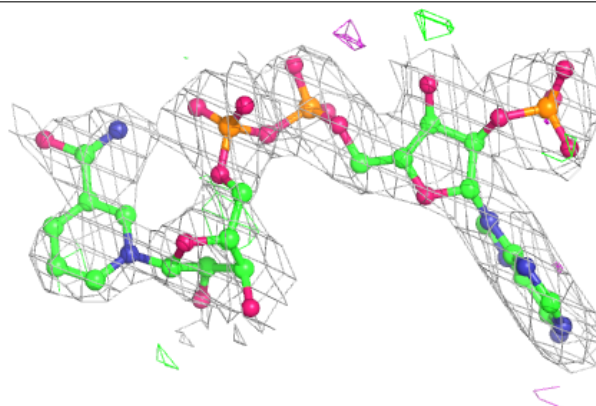


**Electron density around QUE D 341:**

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

**Electron density around NAP A 338:**

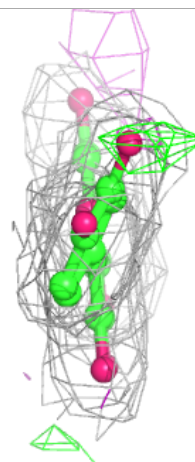
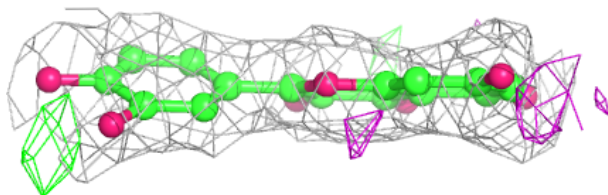
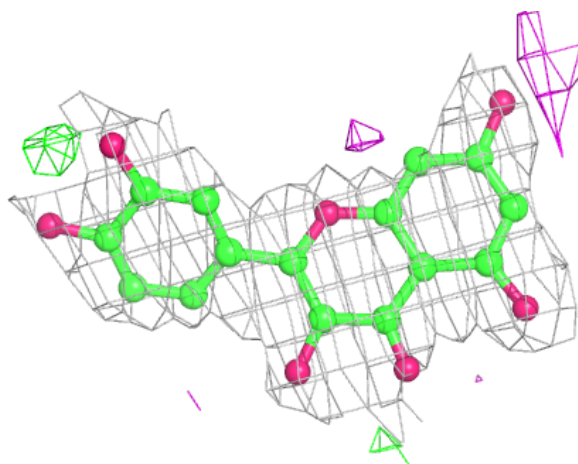
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





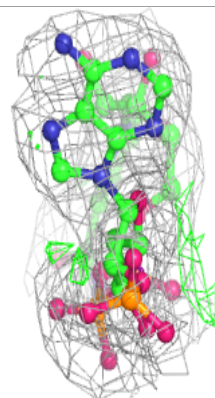
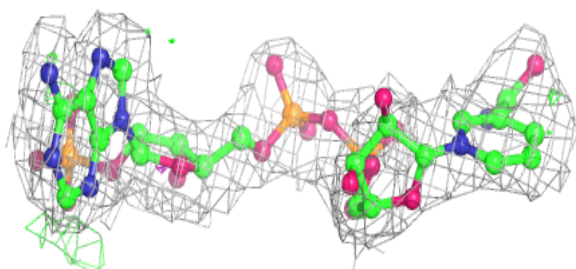
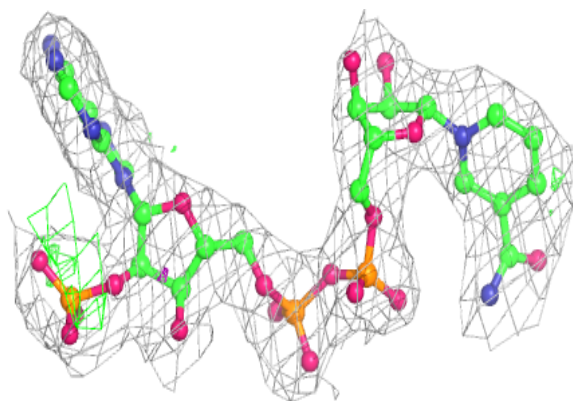
**Electron density around QUE B 342:**

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

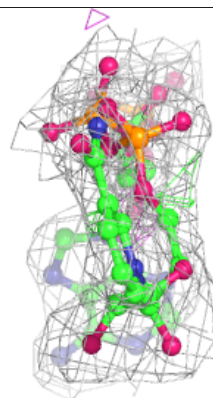
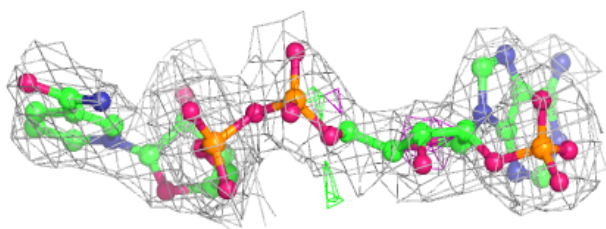
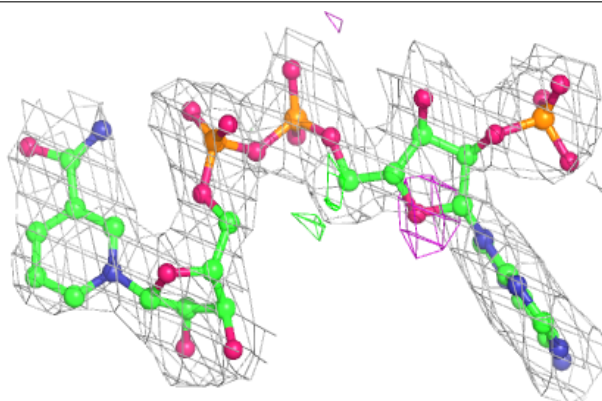


**Electron density around NAP E 338:**

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and green (positive)

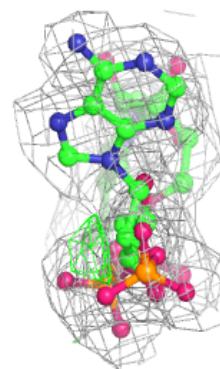
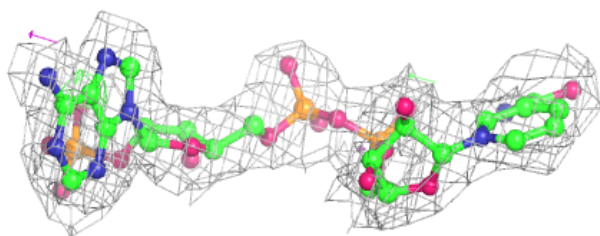
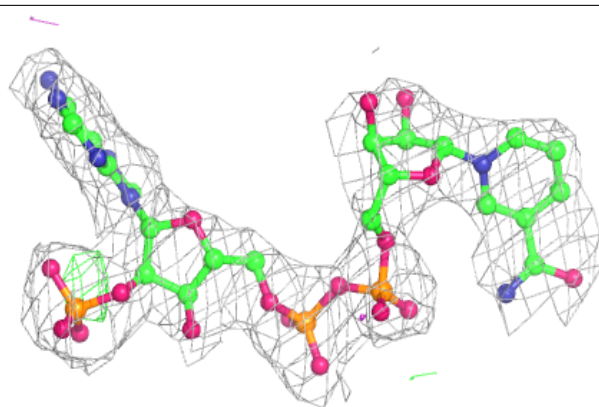
**Electron density around NAP F 338:**

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and green (positive)

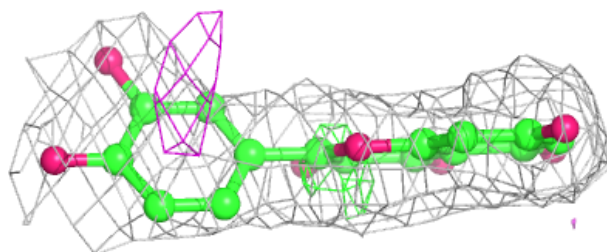
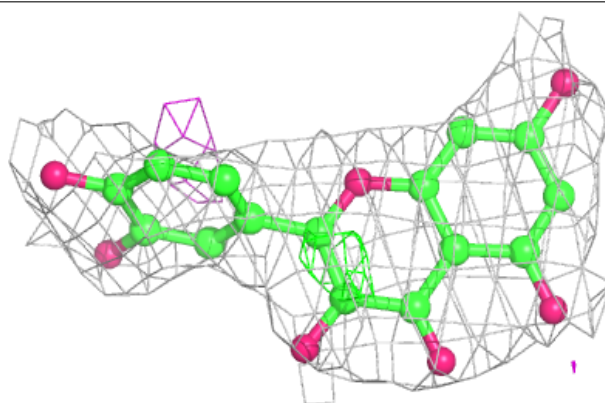


**Electron density around NAP D 338:**

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

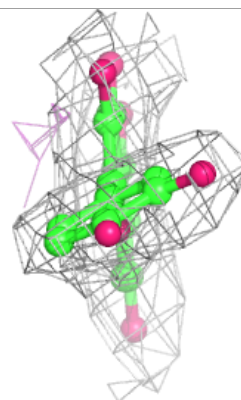
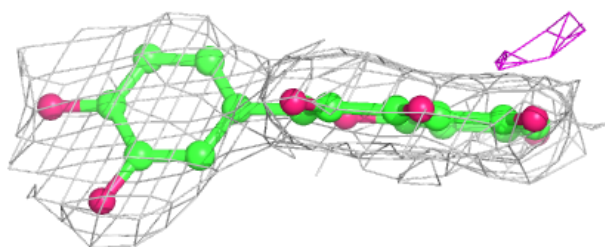
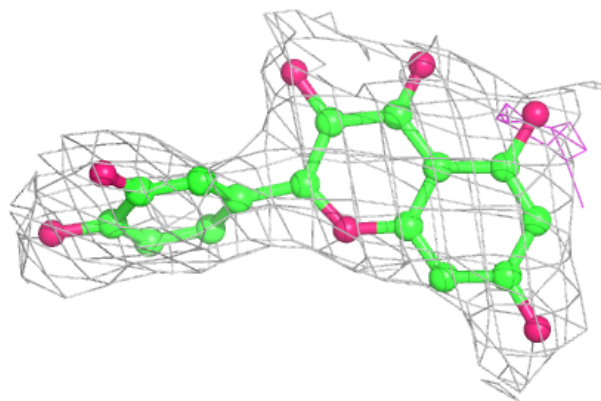
**Electron density around QUE B 341:**

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

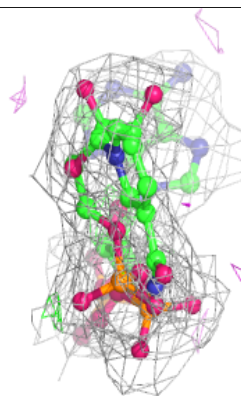
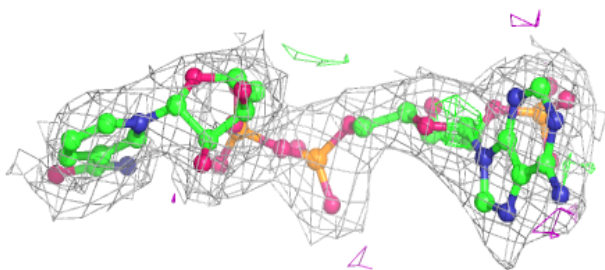
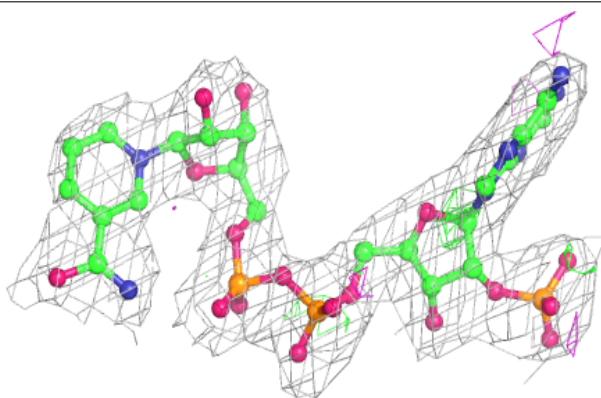


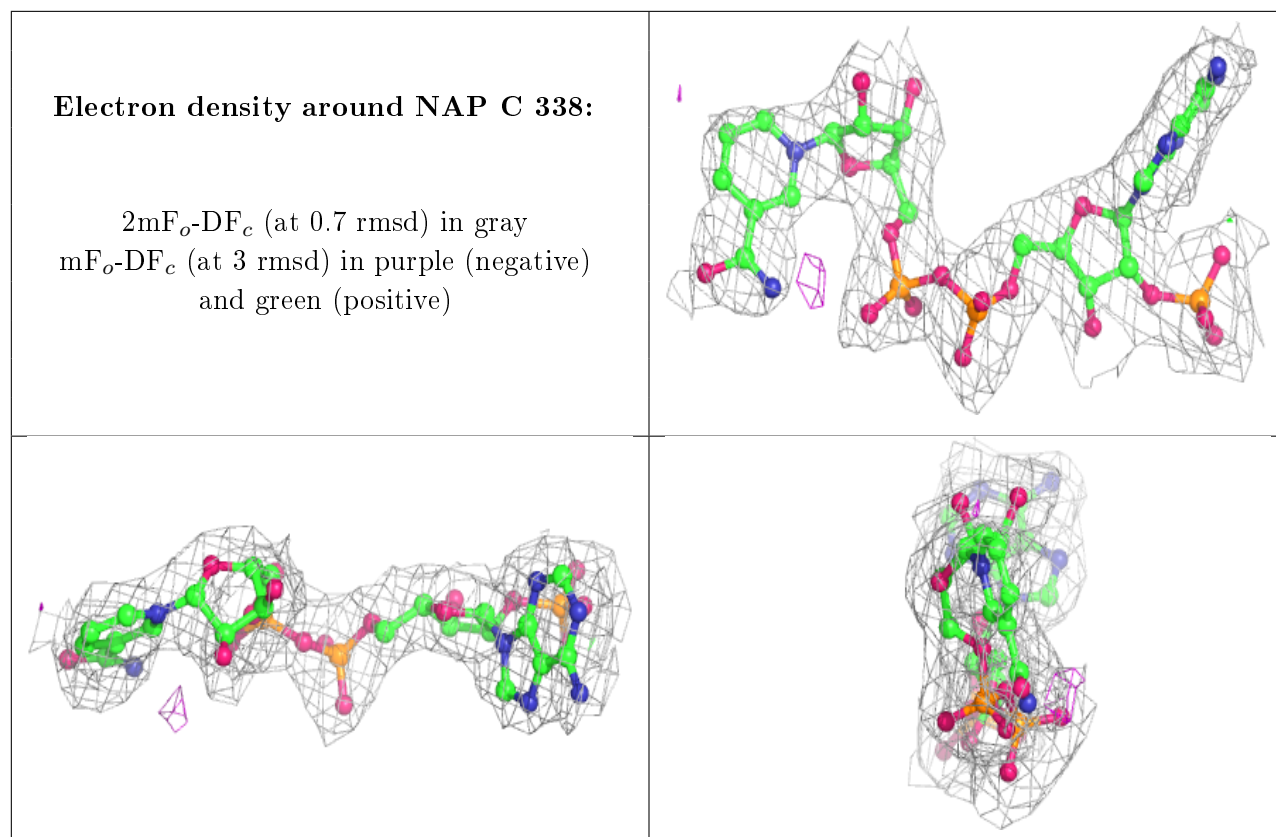
**Electron density around QUE C 341:**

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

**Electron density around NAP B 338:**

$2mF_o-DF_c$  (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.