



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 25, 2023 – 12:48 AM EST

PDB ID : 4R4K  
Title : Crystal structure of a cystatin-like protein (BACCAC\_01506) from *Bacteroides caccae* ATCC 43185 at 1.69 Å resolution  
Authors : Joint Center for Structural Genomics (JCSG)  
Deposited on : 2014-08-19  
Resolution : 1.69 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](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.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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 : 2.31.2  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

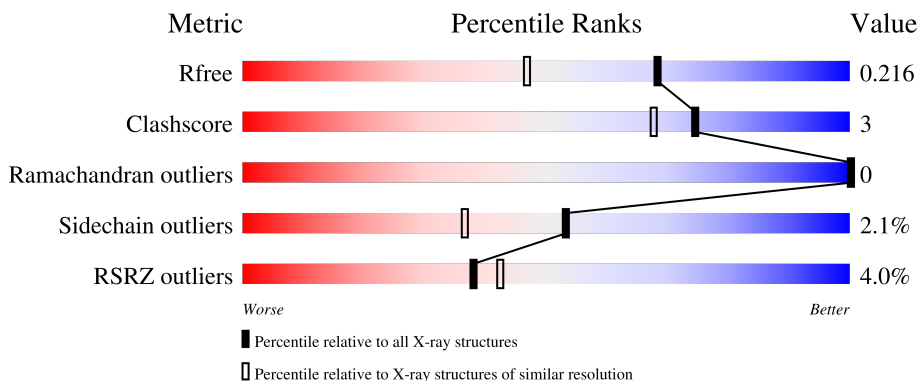
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.69 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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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  $\geq 3$ , 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	154	
1	B	154	
1	C	154	
1	D	154	

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 5977 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 Uncharacterized protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	151	1281	831	193	255	1	1	0	7	0
1	B	152	1316	853	200	261	1	1	0	14	0
1	C	151	1268	818	192	256	1	1	0	6	0
1	D	148	1280	828	189	261	1	1	0	12	0

There are 4 discrepancies between the modelled and reference sequences:

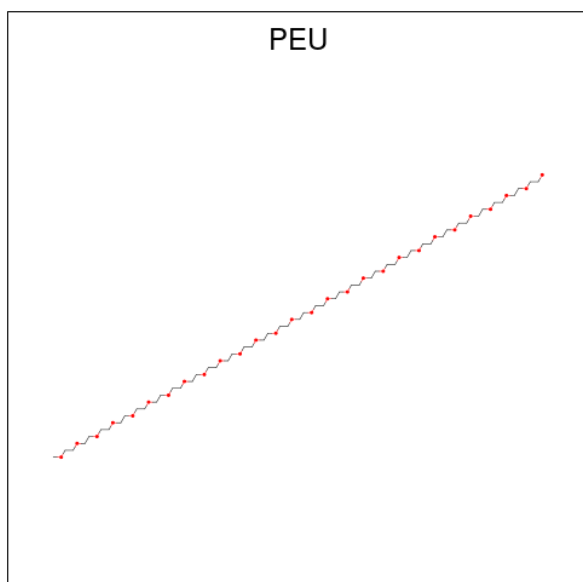
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP A5ZF42
B	0	GLY	-	expression tag	UNP A5ZF42
C	0	GLY	-	expression tag	UNP A5ZF42
D	0	GLY	-	expression tag	UNP A5ZF42

- Molecule 2 is ACETATE ION (three-letter code: ACT) (formula: C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	A	1	Total C O 4 2 2	0	0
2	D	1	Total C O 4 2 2	0	0

- Molecule 3 is 2,5,8,11,14,17,20,23,26,29,32,35,38,41,44,47,50,53,56,59,62,65,68,71,74,77,80-HEPTACOSAOXADOCTACONTAN-82-OL (three-letter code: PEU) (formula: C<sub>55</sub>H<sub>112</sub>O<sub>28</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			16	10	6		
3	A	1	Total	C	O	0	0
			7	4	3		
3	A	1	Total	C	O	0	0
			10	6	4		
3	B	1	Total	C	O	0	0
			16	10	6		
3	B	1	Total	C	O	0	0
			10	6	4		
3	B	1	Total	C	O	0	0
			10	6	4		
3	C	1	Total	C	O	0	0
			28	18	10		
3	C	1	Total	C	O	0	0
			7	4	3		
3	C	1	Total	C	O	0	0
			10	6	4		
3	C	1	Total	C	O	0	0
			10	6	4		
3	C	1	Total	C	O	0	0
			10	6	4		
3	D	1	Total	C	O	0	0
			16	10	6		
3	D	1	Total	C	O	0	0
			7	4	3		

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Cl	0	0
			1	1		
4	C	1	Total	Cl	0	0
			1	1		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



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

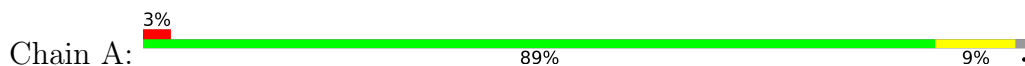
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	148	Total O 153 153	0	5
6	B	142	Total O 146 146	0	4
6	C	161	Total O 163 163	0	2
6	D	171	Total O 171 171	0	0

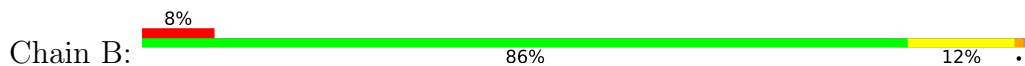
### 3 Residue-property plots [i](#)

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.

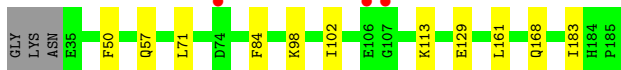
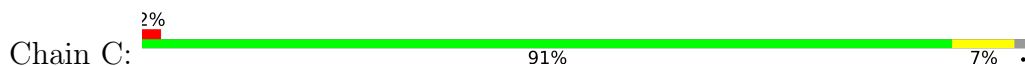
- Molecule 1: Uncharacterized protein



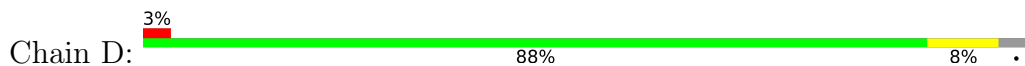
- Molecule 1: Uncharacterized protein



- Molecule 1: Uncharacterized protein



- Molecule 1: Uncharacterized protein



## 4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	107.36Å 62.82Å 115.35Å 90.00° 106.57° 90.00°	Depositor
Resolution (Å)	29.76 – 1.69 29.75 – 1.70	Depositor EDS
% Data completeness (in resolution range)	99.0 (29.76-1.69) 99.0 (29.75-1.70)	Depositor EDS
$R_{merge}$	0.11	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.52 (at 1.70Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, $R_{free}$	0.175 , 0.203 0.190 , 0.216	Depositor DCC
$R_{free}$ test set	4057 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	22.9	Xtrriage
Anisotropy	0.049	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.38 , 47.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.026 for $1/2^*h+3/2^*k, 1/2^*h-1/2^*k, -1/2^*h-1/2^*k-l$ 0.022 for $1/2^*h-3/2^*k, -1/2^*h-1/2^*k, -1/2^*h+1/2^*k-l$	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	5977	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	29.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.35% of the height of the origin peak. No significant pseudotranslation is detected.*

<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: PEU, CL, GOL, ACT

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	0.54	0/1334	0.68	0/1800
1	B	0.58	0/1380	0.73	0/1863
1	C	0.57	0/1314	0.72	0/1774
1	D	0.56	0/1341	0.71	0/1809
All	All	0.56	0/5369	0.71	0/7246

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [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	1281	0	1229	11	0
1	B	1316	0	1276	11	1
1	C	1268	0	1204	8	1
1	D	1280	0	1222	6	0
2	A	12	0	9	1	0
2	D	4	0	3	0	0
3	A	33	0	43	5	0
3	B	36	0	47	0	0
3	C	65	0	85	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	D	23	0	30	1	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
5	B	12	0	16	0	0
5	D	12	0	16	0	0
6	A	153	0	0	3	0
6	B	146	0	0	2	0
6	C	163	0	0	2	0
6	D	171	0	0	0	0
All	All	5977	0	5180	34	1

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 3.

All (34) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:LYS:NZ	6:B:389:HOH:O	2.21	0.72
1:D:156:TRP:HE1	3:D:204:PEU:HDA1	1.57	0.70
1:B:73:ALA:HA	1:B:163:ILE:HD12	1.75	0.68
1:A:93:ASP:OD2	3:A:206:PEU:HDC2	2.03	0.57
1:A:101[B]:ARG:NH2	6:A:343:HOH:O	2.37	0.56
1:D:103[A]:GLU:HG3	1:D:109:ILE:HG12	1.88	0.54
1:C:71:LEU:HD22	1:C:161:LEU:HB3	1.89	0.54
1:B:165[A]:GLU:HA	1:B:165[A]:GLU:OE1	2.07	0.53
1:C:71:LEU:HD23	6:C:322:HOH:O	2.09	0.52
3:A:206:PEU:HCW2	1:C:183:ILE:HD11	1.91	0.52
1:B:71:LEU:HD22	1:B:161[A]:LEU:HB3	1.91	0.52
1:A:183:ILE:HD11	3:A:206:PEU:ODB	2.10	0.52
1:B:101[A]:ARG:NH1	6:B:403:HOH:O	2.42	0.51
1:D:101:ARG:HG2	1:D:111:VAL:HG22	1.92	0.51
1:C:71:LEU:CD2	1:C:161:LEU:HB3	2.42	0.50
1:B:103:GLU:HG3	1:B:109:ILE:HG12	1.94	0.50
1:B:85:THR:OG1	1:B:87:GLU:OE1	2.27	0.49
1:D:85:THR:OG1	1:D:87:GLU:OE1	2.28	0.49
1:B:73:ALA:HB3	1:B:78[B]:THR:HG22	1.95	0.48
3:A:204:PEU:HDA2	6:A:335:HOH:O	2.13	0.48
1:A:72:LEU:HG	1:A:159[A]:TYR:OH	2.13	0.47
1:A:175:GLU:OE2	1:B:48:ASP:OD2	2.33	0.47
1:B:73:ALA:CA	1:B:163:ILE:HD12	2.45	0.47
1:A:160:ASP:OD2	1:D:160:ASP:OD2	2.33	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:168[B]:GLN:HG3	6:C:326:HOH:O	2.15	0.46
3:A:206:PEU:CCW	1:C:183:ILE:HD11	2.46	0.45
1:A:162:PRO:HA	6:A:433:HOH:O	2.16	0.45
1:A:101[A]:ARG:NH1	1:A:129:GLU:OE2	2.49	0.44
1:D:72:LEU:HB3	1:D:159:TYR:CE2	2.53	0.43
1:A:85:THR:OG1	1:A:87:GLU:OE1	2.30	0.43
1:A:102:ILE:HG12	1:C:102:ILE:HG12	2.01	0.42
1:C:50:PHE:CZ	1:C:57:GLN:HG3	2.55	0.42
1:A:125:GLU:OE2	2:A:203:ACT:H1	2.19	0.41
1:B:50:PHE:CZ	1:B:57:GLN:HG3	2.56	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:129:GLU:OE1	1:C:129:GLU:OE2[1_565]	2.10	0.10

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	156/154 (101%)	152 (97%)	4 (3%)	0	100	100
1	B	164/154 (106%)	161 (98%)	3 (2%)	0	100	100
1	C	155/154 (101%)	152 (98%)	3 (2%)	0	100	100
1	D	158/154 (103%)	156 (99%)	2 (1%)	0	100	100
All	All	633/616 (103%)	621 (98%)	12 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	138/134 (103%)	137 (99%)	1 (1%)	84	77
1	B	144/134 (108%)	139 (96%)	5 (4%)	36	17
1	C	137/134 (102%)	134 (98%)	3 (2%)	52	34
1	D	141/134 (105%)	137 (97%)	4 (3%)	43	25
All	All	560/536 (104%)	547 (98%)	13 (2%)	53	33

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	84	PHE
1	B	77	GLU
1	B	84	PHE
1	B	113	LYS
1	B	161[A]	LEU
1	B	161[B]	LEU
1	C	84	PHE
1	C	98	LYS
1	C	113	LYS
1	D	38	GLN
1	D	84	PHE
1	D	100[A]	GLU
1	D	100[B]	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 23 ligands modelled in this entry, 2 are monoatomic - leaving 21 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
5	GOL	B	201	-	5,5,5	0.28	0	5,5,5	0.25	0
3	PEU	C	203	-	9,9,82	0.46	0	8,8,81	0.29	0
3	PEU	A	205	-	6,6,82	0.47	0	5,5,81	0.25	0
2	ACT	D	201	-	3,3,3	0.72	0	3,3,3	0.82	0
5	GOL	D	203	-	5,5,5	0.40	0	5,5,5	0.46	0
2	ACT	A	203	-	3,3,3	0.75	0	3,3,3	0.83	0
3	PEU	C	201	-	27,27,82	0.54	0	26,26,81	0.51	0
3	PEU	C	204	-	9,9,82	0.45	0	8,8,81	0.41	0
3	PEU	B	203	-	15,15,82	0.51	0	14,14,81	0.39	0
2	ACT	A	202	-	3,3,3	0.81	0	3,3,3	0.74	0
3	PEU	A	206	-	9,9,82	0.44	0	8,8,81	0.53	0
3	PEU	C	205	-	9,9,82	0.49	0	8,8,81	0.38	0
3	PEU	B	205	-	9,9,82	0.45	0	8,8,81	0.38	0
5	GOL	D	202	-	5,5,5	0.40	0	5,5,5	0.56	0
3	PEU	C	202	-	6,6,82	0.40	0	5,5,81	0.37	0
2	ACT	A	201	-	3,3,3	0.75	0	3,3,3	0.81	0
3	PEU	A	204	-	15,15,82	0.52	0	14,14,81	0.31	0
5	GOL	B	202	-	5,5,5	0.37	0	5,5,5	0.23	0
3	PEU	D	205	-	6,6,82	0.42	0	5,5,81	0.13	0
3	PEU	D	204	-	15,15,82	0.52	0	14,14,81	0.27	0
3	PEU	B	204	-	9,9,82	0.45	0	8,8,81	0.36	0

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
5	GOL	B	202	-	-	4/4/4/4	-
3	PEU	D	205	-	-	3/4/4/80	-
3	PEU	A	206	-	-	5/7/7/80	-
5	GOL	B	201	-	-	2/4/4/4	-
5	GOL	D	203	-	-	0/4/4/4	-
3	PEU	C	205	-	-	5/7/7/80	-
3	PEU	B	205	-	-	4/7/7/80	-
3	PEU	C	201	-	-	8/25/25/80	-
3	PEU	C	203	-	-	3/7/7/80	-
3	PEU	D	204	-	-	6/13/13/80	-
3	PEU	C	202	-	-	2/4/4/80	-
5	GOL	D	202	-	-	4/4/4/4	-
3	PEU	A	205	-	-	3/4/4/80	-
3	PEU	C	204	-	-	3/7/7/80	-
3	PEU	B	204	-	-	4/7/7/80	-
3	PEU	B	203	-	-	3/13/13/80	-
3	PEU	A	204	-	-	4/13/13/80	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (63) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	201	GOL	O1-C1-C2-C3
5	B	202	GOL	O1-C1-C2-C3
5	B	202	GOL	C1-C2-C3-O3
5	D	202	GOL	O1-C1-C2-C3
5	D	202	GOL	C1-C2-C3-O3
3	B	205	PEU	ODB-CDC-CDD-ODE
3	C	204	PEU	OCV-CCW-CCX-OCY
3	A	204	PEU	OCY-CCZ-CDA-ODB
3	D	204	PEU	OCS-CCT-CCU-OCV
3	C	204	PEU	OCY-CCZ-CDA-ODB

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Mol	Chain	Res	Type	Atoms
3	C	202	PEU	ODB-CDC-CDD-ODE
5	B	201	GOL	O1-C1-C2-O2
3	C	201	PEU	OCM-CCN-CCO-OCF
3	B	204	PEU	ODB-CDC-CDD-ODE
3	C	201	PEU	OBD-CBE-CBF-OBG
3	C	205	PEU	OCV-CCW-CCX-OCY
3	D	205	PEU	ODB-CDC-CDD-ODE
3	B	203	PEU	OCV-CCW-CCX-OCY
3	A	205	PEU	ODB-CDC-CDD-ODE
3	A	206	PEU	ODB-CDC-CDD-ODE
3	B	204	PEU	OCV-CCW-CCX-OCY
3	C	203	PEU	OCV-CCW-CCX-OCY
3	C	201	PEU	OCJ-CCK-CCL-OCM
3	C	201	PEU	OCS-CCT-CCU-OCV
3	A	205	PEU	OCY-CCZ-CDA-ODB
3	C	202	PEU	OCY-CCZ-CDA-ODB
5	B	202	GOL	O1-C1-C2-O2
5	D	202	GOL	O2-C2-C3-O3
3	D	205	PEU	OCY-CCZ-CDA-ODB
3	D	204	PEU	OCY-CCZ-CDA-ODB
3	B	205	PEU	OCY-CCZ-CDA-ODB
5	B	202	GOL	O2-C2-C3-O3
5	D	202	GOL	O1-C1-C2-O2
3	C	201	PEU	CCK-CCL-OCM-CCN
3	C	201	PEU	OBD-CCH-CCI-OCJ
3	B	204	PEU	OCY-CCZ-CDA-ODB
3	B	205	PEU	OCV-CCW-CCX-OCY
3	C	201	PEU	CCH-CCI-OCJ-CCK
3	A	204	PEU	CCQ-CCR-OCS-CCT
3	C	205	PEU	OCY-CCZ-CDA-ODB
3	C	204	PEU	CDA-CCZ-OCY-CCX
3	D	204	PEU	CDD-CDC-ODB-CDA
3	A	206	PEU	CDA-CCZ-OCY-CCX
3	A	204	PEU	CCZ-CDA-ODB-CDC
3	A	206	PEU	OCV-CCW-CCX-OCY
3	D	205	PEU	CDD-CDC-ODB-CDA
3	D	204	PEU	CCX-CCW-OCV-CCU
3	C	203	PEU	OCY-CCZ-CDA-ODB
3	D	204	PEU	CCQ-CCR-OCS-CCT
3	B	204	PEU	CDA-CCZ-OCY-CCX
3	A	205	PEU	CDD-CDC-ODB-CDA
3	B	203	PEU	OCY-CCZ-CDA-ODB

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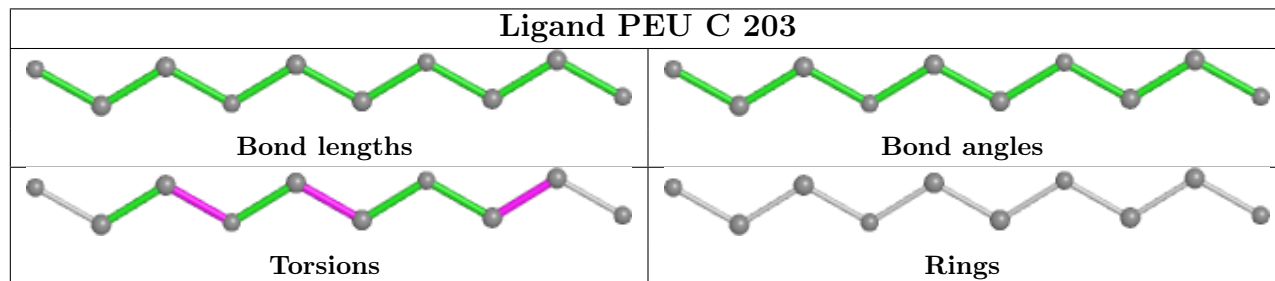
Mol	Chain	Res	Type	Atoms
3	A	204	PEU	ODB-CDC-CDD-ODE
3	B	205	PEU	CDA-CCZ-OCY-CCX
3	C	205	PEU	CDA-CCZ-OCY-CCX
3	C	201	PEU	CCT-CCU-OCV-CCW
3	A	206	PEU	CCW-CCX-OCY-CCZ
3	B	203	PEU	CCQ-CCR-OCS-CCT
3	C	205	PEU	CDD-CDC-ODB-CDA
3	D	204	PEU	CDA-CCZ-OCY-CCX
3	A	206	PEU	CDD-CDC-ODB-CDA
3	C	203	PEU	CDD-CDC-ODB-CDA
3	C	205	PEU	CCW-CCX-OCY-CCZ

There are no ring outliers.

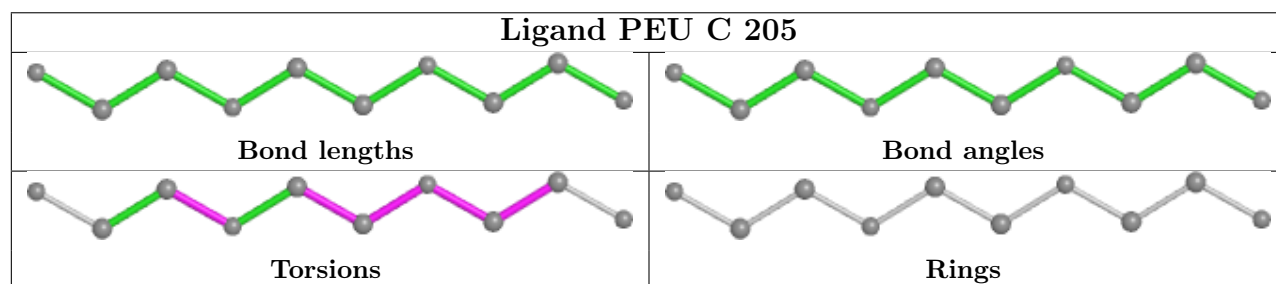
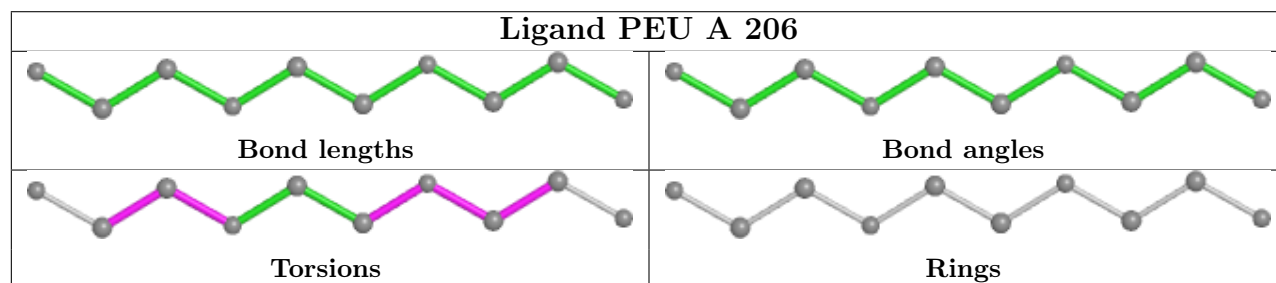
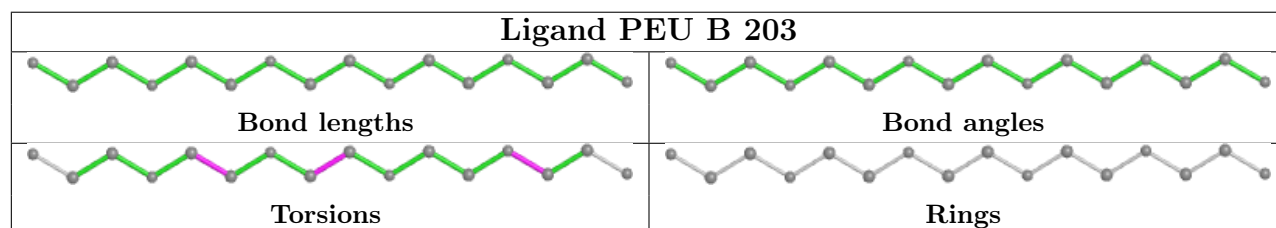
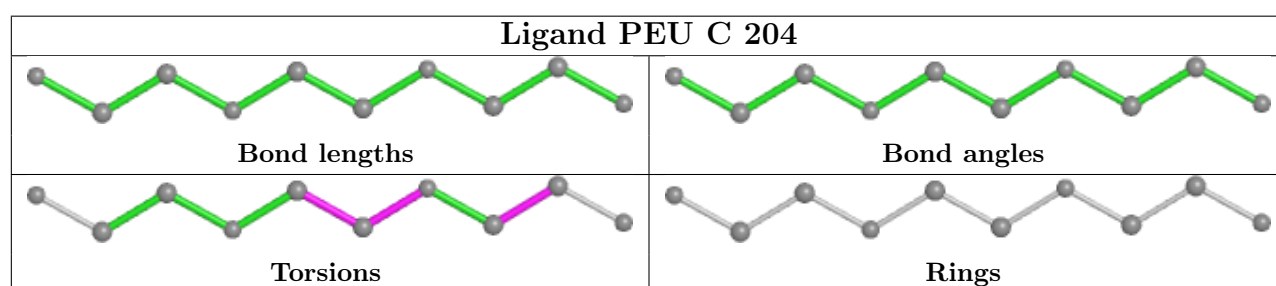
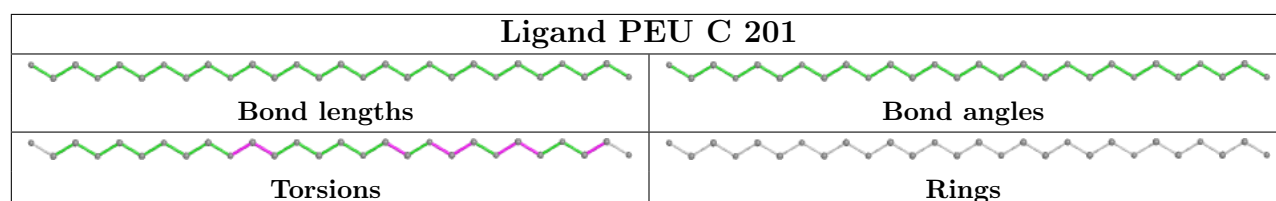
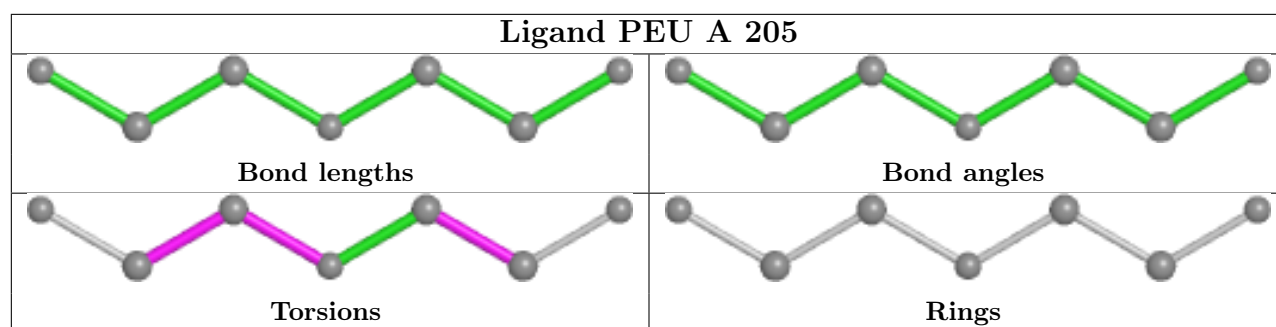
4 monomers are involved in 7 short contacts:

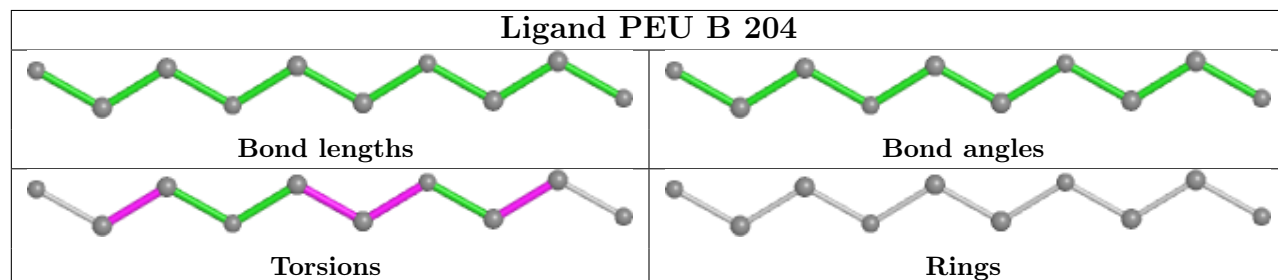
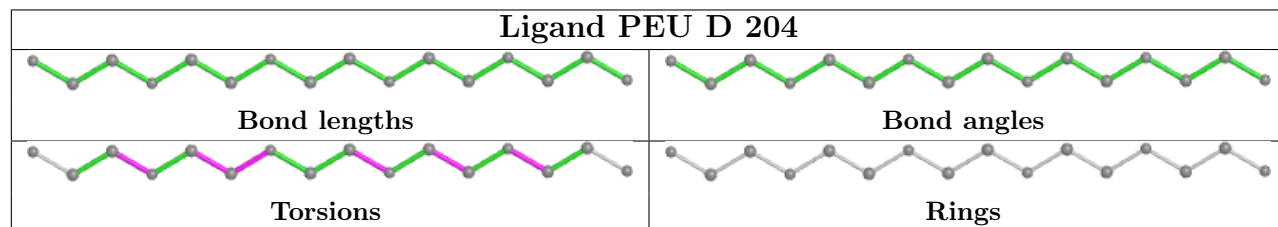
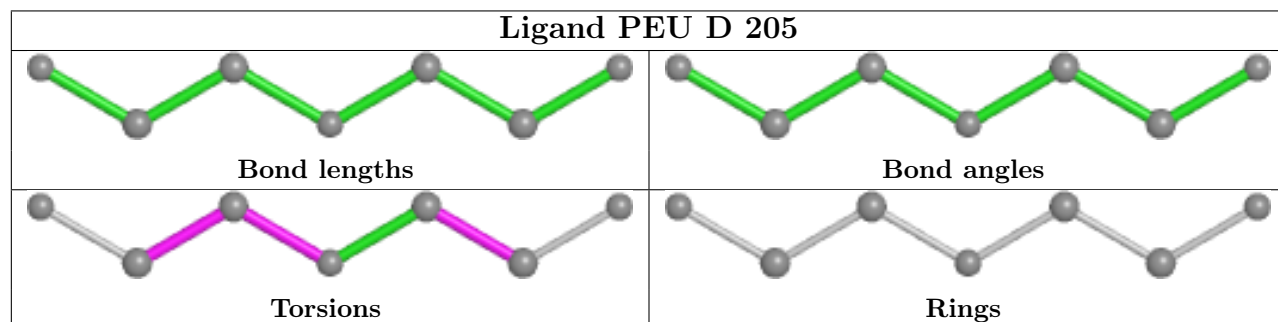
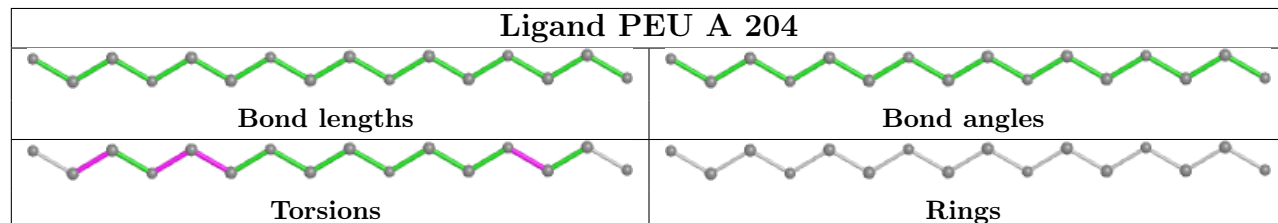
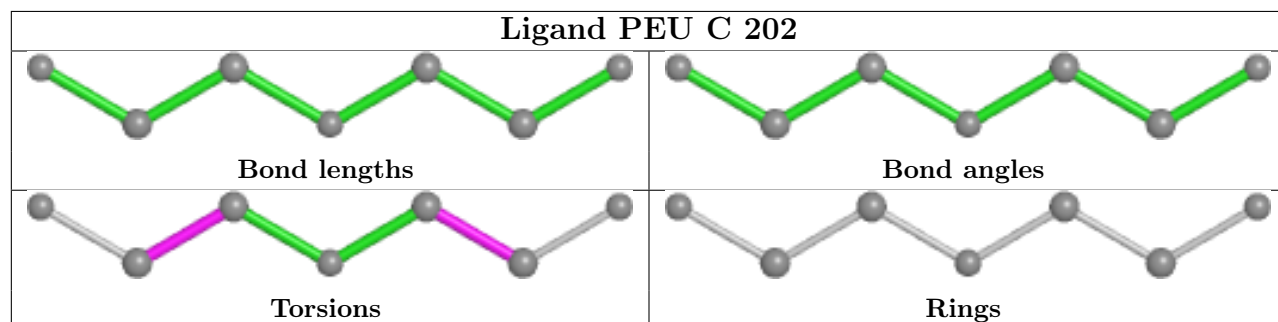
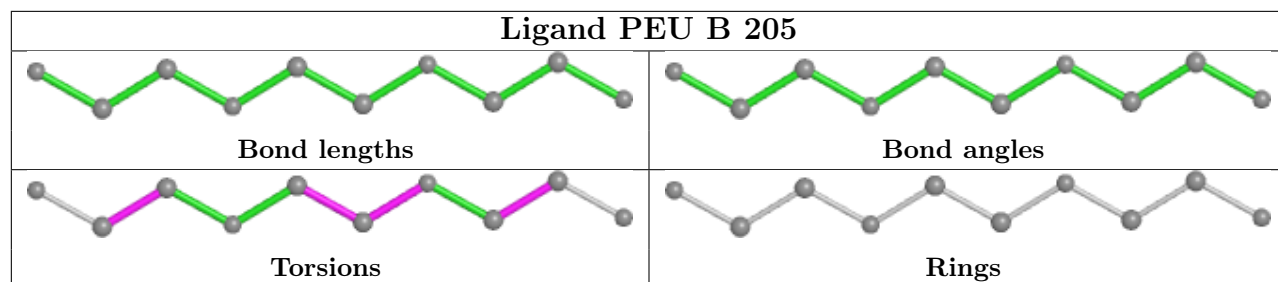
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	203	ACT	1	0
3	A	206	PEU	4	0
3	A	204	PEU	1	0
3	D	204	PEU	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.









## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	150/154 (97%)	-0.02	4 (2%) 54 58	17, 25, 42, 89	0
1	B	151/154 (98%)	0.36	13 (8%) 10 12	14, 26, 59, 90	0
1	C	150/154 (97%)	-0.00	3 (2%) 65 69	14, 23, 44, 73	0
1	D	147/154 (95%)	-0.03	4 (2%) 54 58	16, 24, 44, 95	0
All	All	598/616 (97%)	0.08	24 (4%) 38 42	14, 25, 47, 95	0

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	74	ASP	5.7
1	B	105	GLU	5.4
1	D	106	GLU	5.3
1	A	35	GLU	5.1
1	C	74[A]	ASP	4.3
1	B	161[A]	LEU	4.0
1	D	107	GLY	3.9
1	A	159[A]	TYR	3.8
1	B	34	ASN	3.6
1	B	107	GLY	3.5
1	B	75	ASP	3.2
1	D	105	GLU	3.1
1	C	107	GLY	2.9
1	B	73	ALA	2.9
1	A	36	ILE	2.7
1	C	106	GLU	2.7
1	B	162	PRO	2.5
1	B	78[A]	THR	2.5
1	B	168	GLN	2.5
1	B	77	GLU	2.4
1	B	72	LEU	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	106	GLU	2.3
1	A	38	GLN	2.2
1	D	104	GLN	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<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.

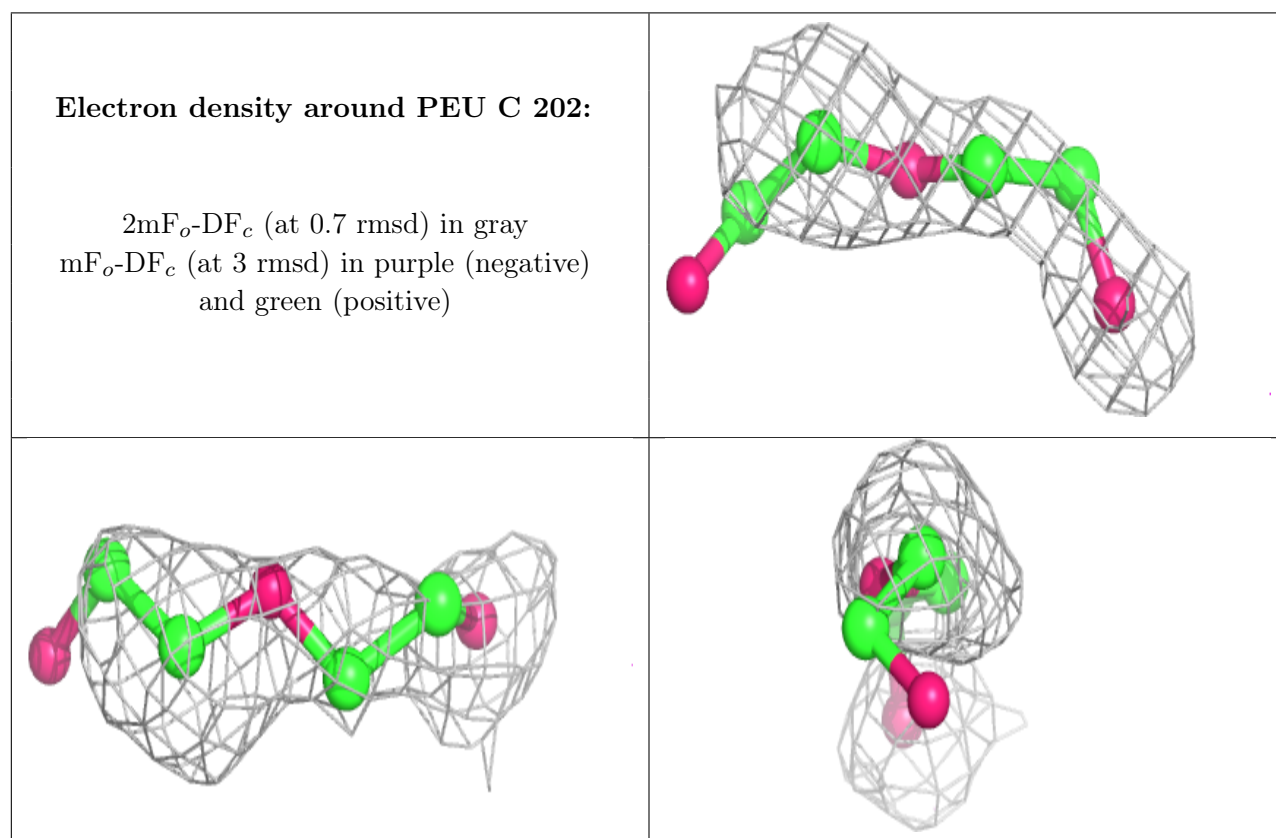
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	PEU	C	202	7/83	0.50	0.35	53,64,75,82	0
3	PEU	C	205	10/83	0.69	0.18	40,65,68,74	0
3	PEU	D	204	16/83	0.73	0.19	43,58,67,70	0
3	PEU	A	205	7/83	0.75	0.18	51,54,59,63	0
3	PEU	A	204	16/83	0.75	0.15	48,59,66,69	0
2	ACT	A	202	4/4	0.78	0.18	48,57,60,61	0
5	GOL	B	202	6/6	0.78	0.30	43,52,57,59	0
3	PEU	A	206	10/83	0.79	0.19	48,58,64,70	0
3	PEU	D	205	7/83	0.80	0.18	37,55,68,70	0
5	GOL	D	202	6/6	0.81	0.15	46,46,59,59	0
3	PEU	B	203	16/83	0.85	0.14	28,49,57,59	0
3	PEU	B	204	10/83	0.85	0.11	47,53,57,62	0
3	PEU	B	205	10/83	0.85	0.15	34,48,55,57	0
5	GOL	B	201	6/6	0.87	0.11	34,50,58,62	0
3	PEU	C	203	10/83	0.89	0.17	41,50,63,65	0
5	GOL	D	203	6/6	0.89	0.09	25,33,35,35	0
3	PEU	C	204	10/83	0.90	0.12	37,42,57,60	0
3	PEU	C	201	28/83	0.90	0.13	24,38,47,51	0
2	ACT	A	201	4/4	0.90	0.16	36,46,48,61	0
2	ACT	A	203	4/4	0.90	0.14	52,55,58,64	0

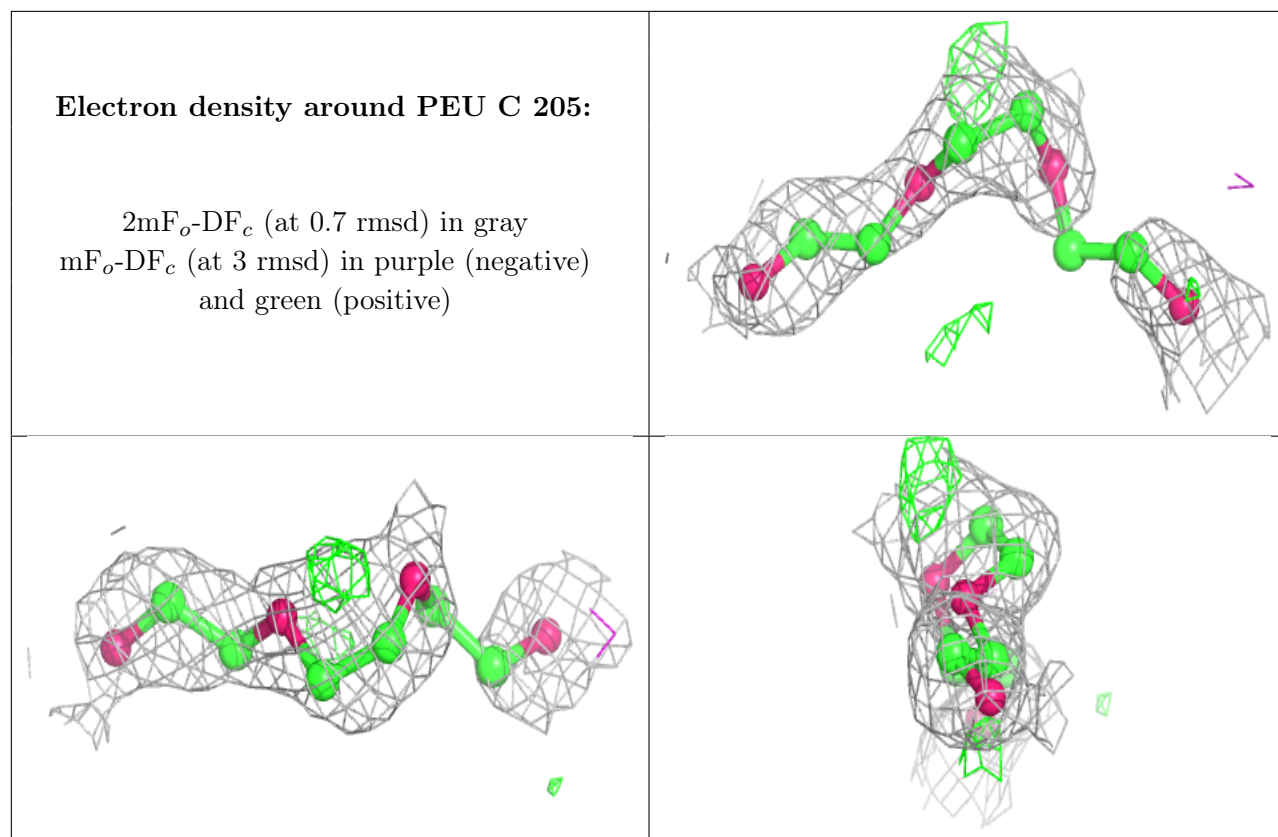
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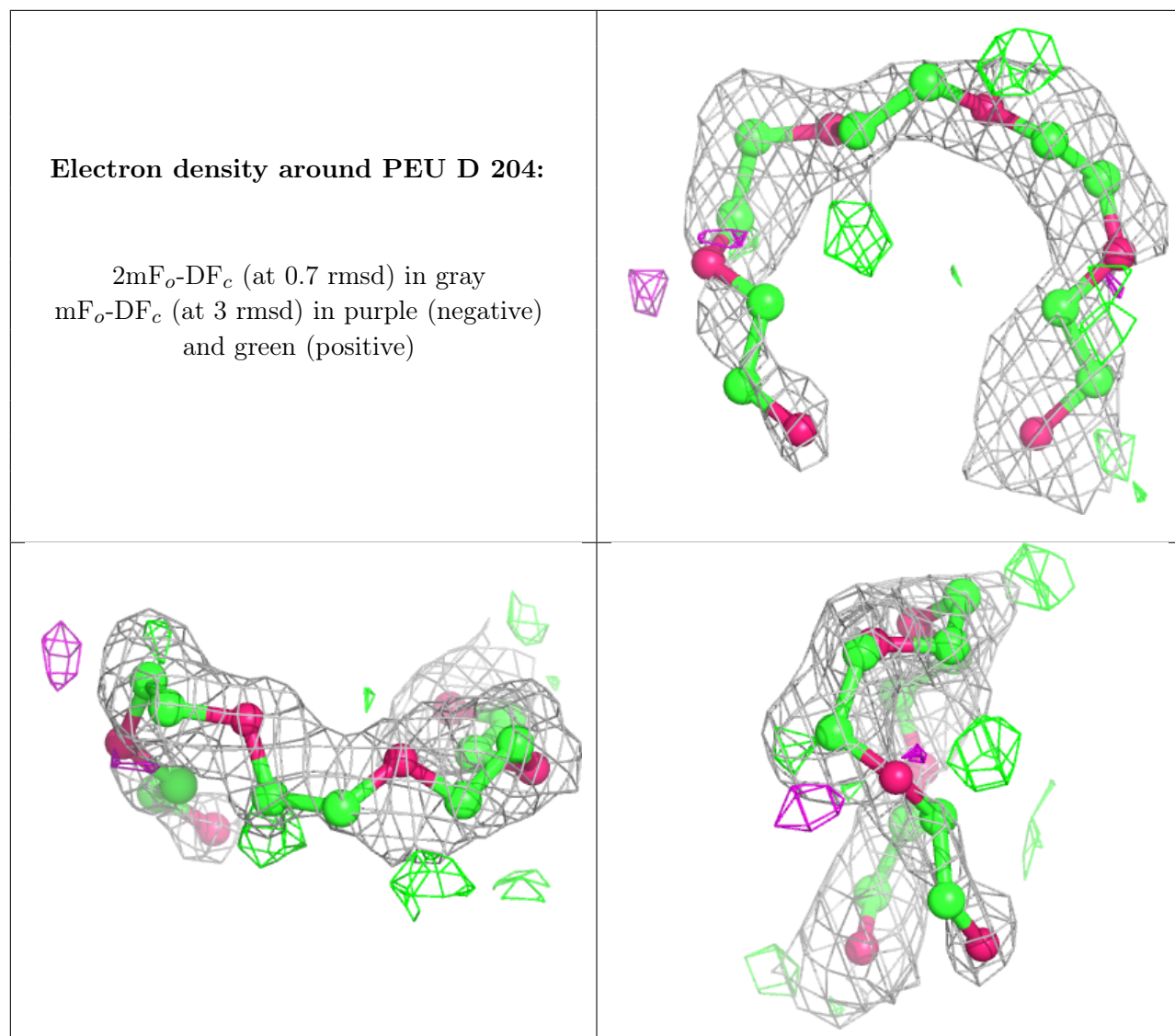
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	CL	A	207	1/1	0.92	0.05	65,65,65,65	0
2	ACT	D	201	4/4	0.94	0.14	56,57,60,62	0
4	CL	C	206	1/1	0.99	0.04	23,23,23,23	0

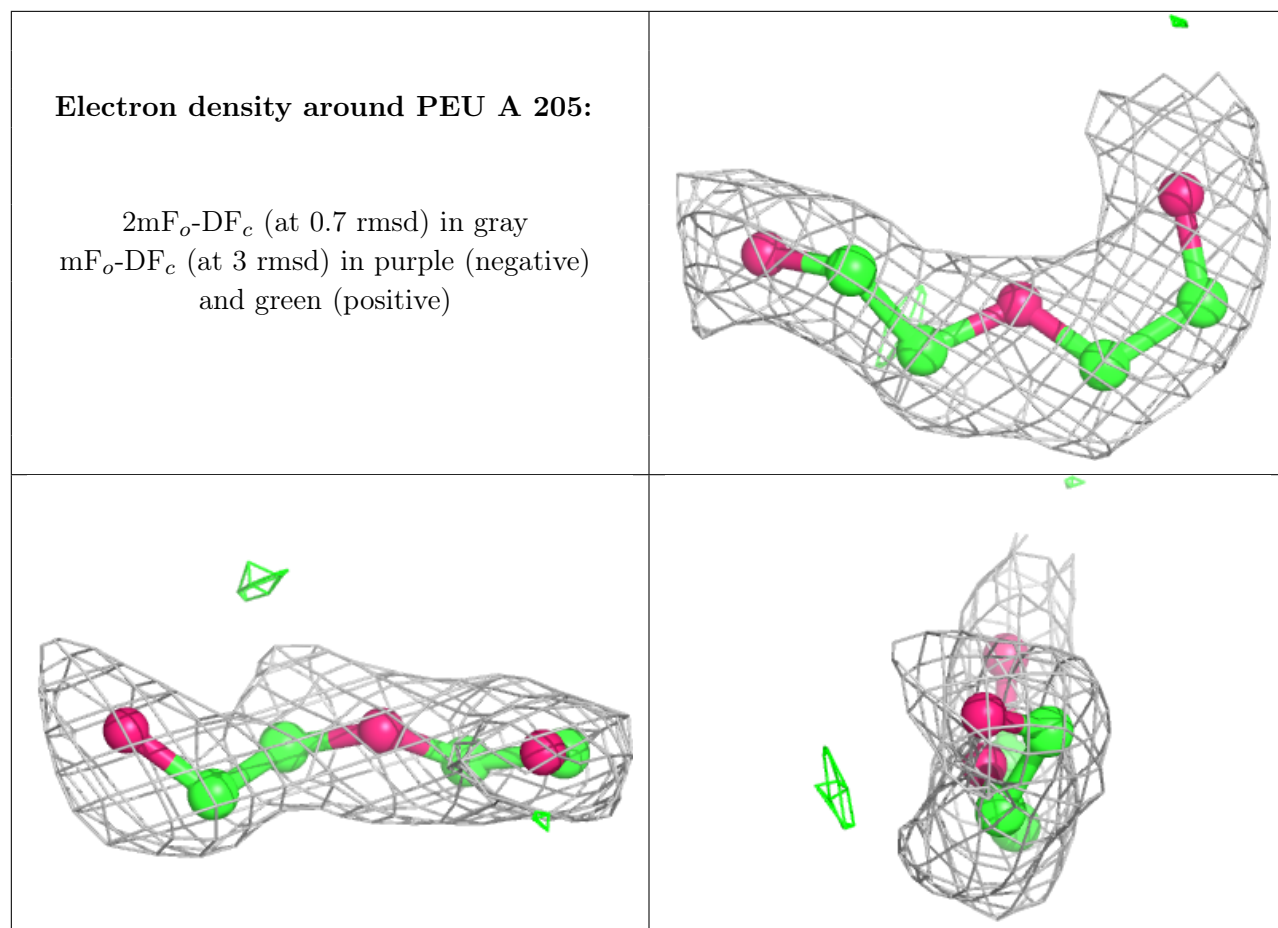
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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





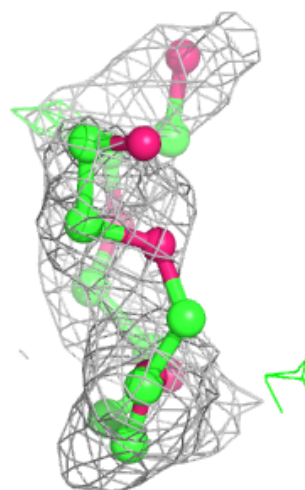
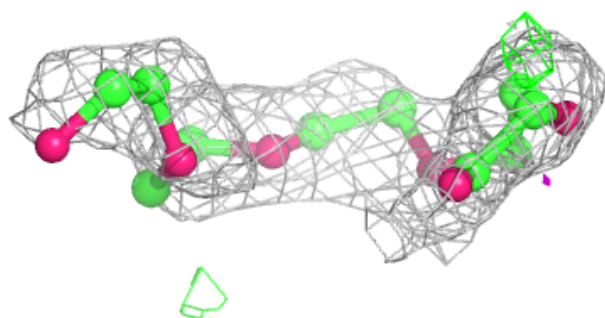
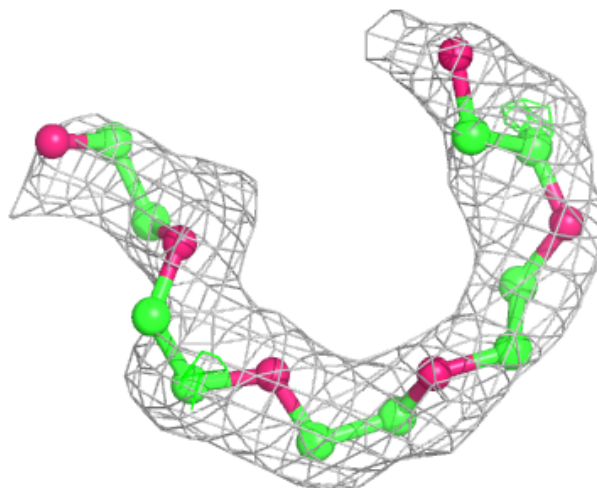


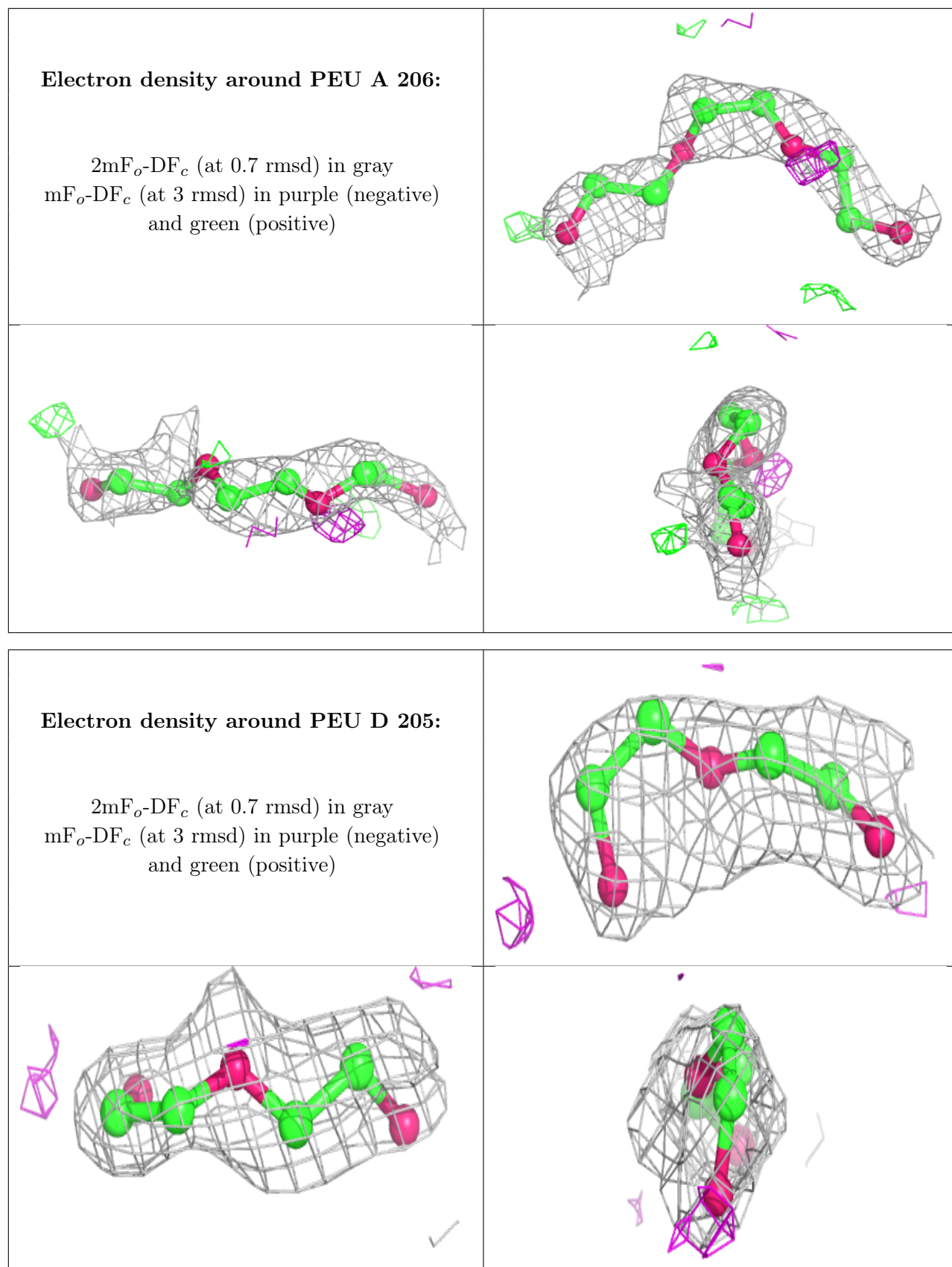




**Electron density around PEU A 204:**

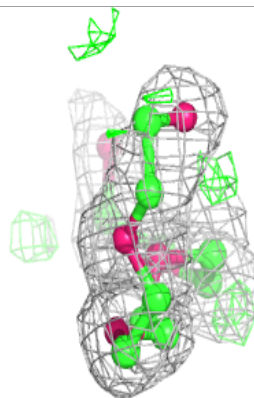
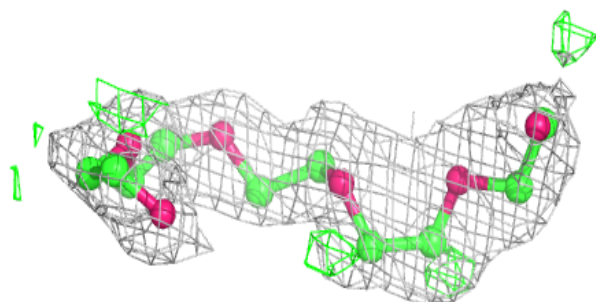
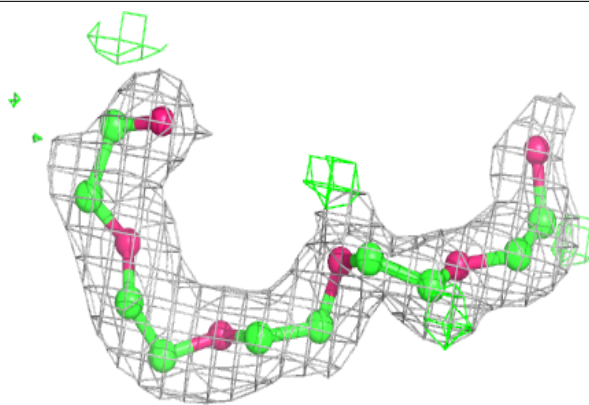
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



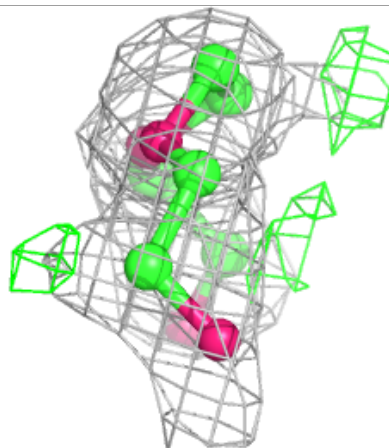
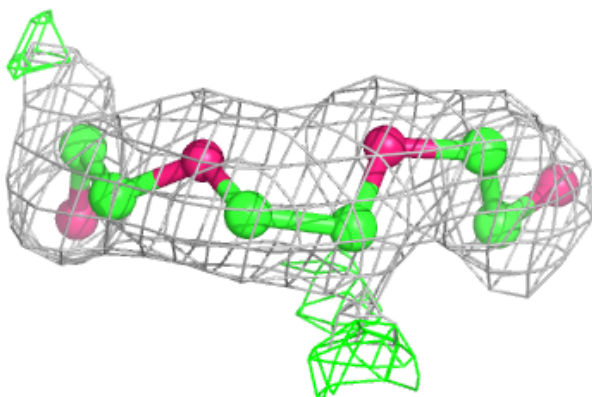
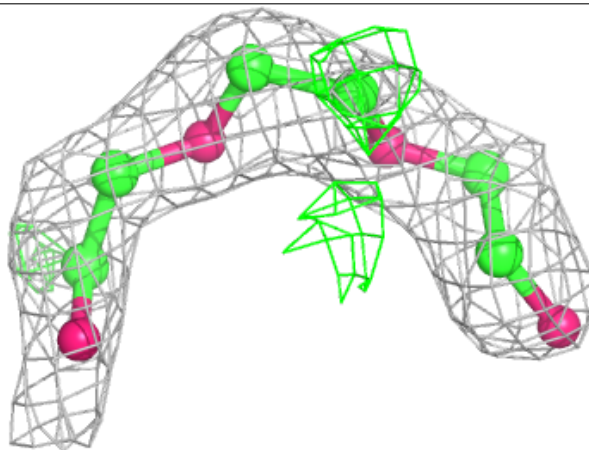


**Electron density around PEU B 203:**

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

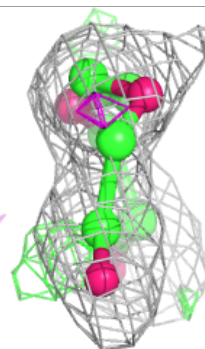
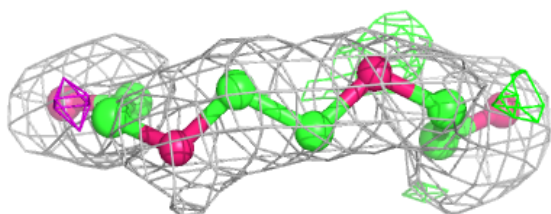
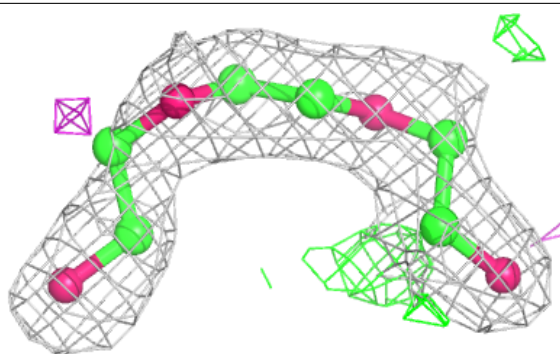
**Electron density around PEU B 204:**

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and green (positive)

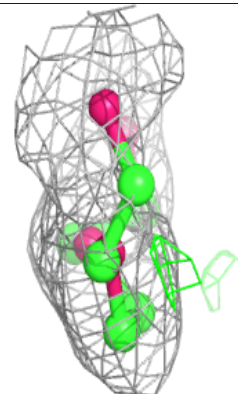
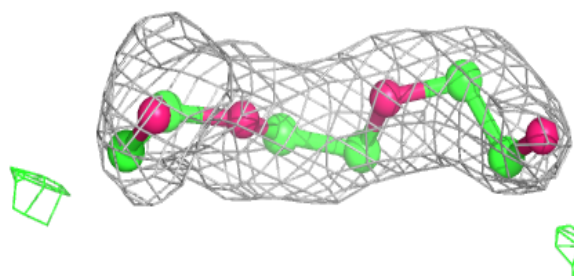
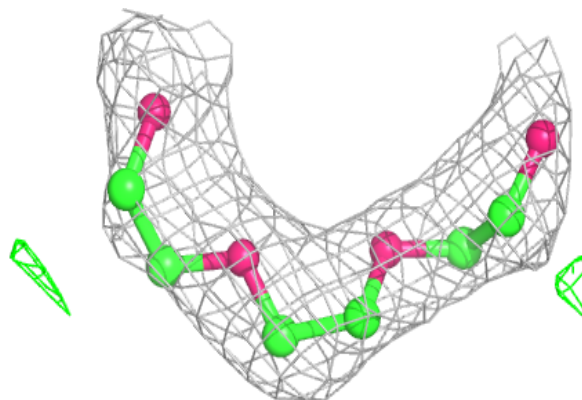


**Electron density around PEU B 205:**

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and green (positive)

**Electron density around PEU C 203:**

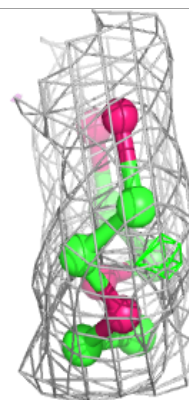
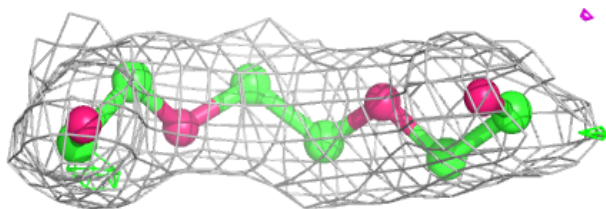
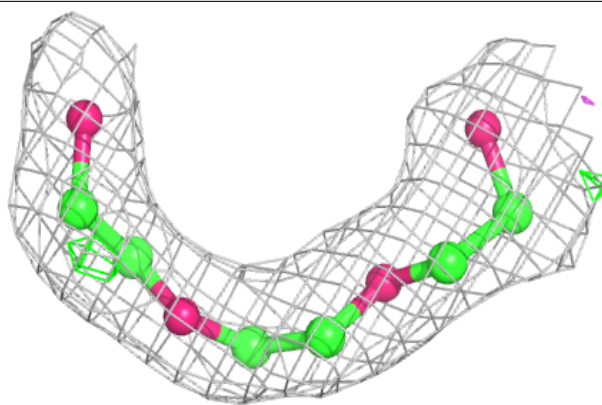
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



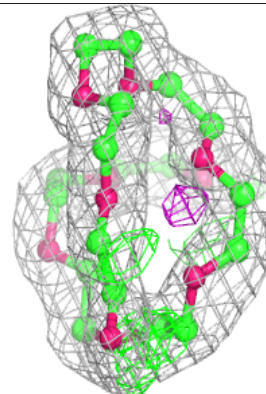
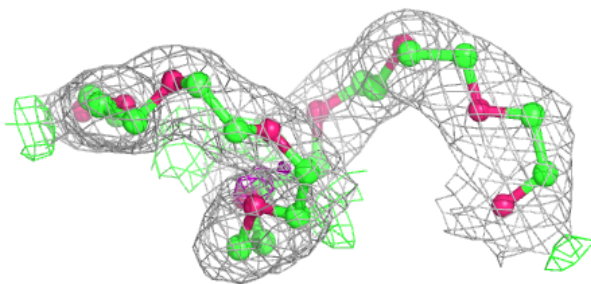
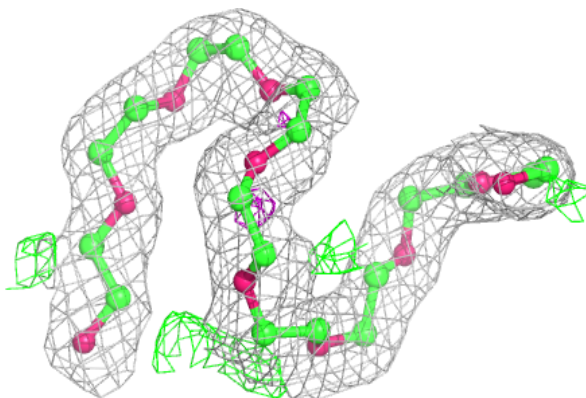


**Electron density around PEU C 204:**

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

**Electron density around PEU C 201:**

$2mF_o-DF_c$  (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.