



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 7, 2026 – 12:37 AM UTC

PDB ID : 5XA9 / pdb_00005xa9
Title : Complete structure factors and an atomic model of the calcium pump (SERCA1A) and associated phospholipids in the E2-ALF-(TG) crystals of C2 symmetry
Authors : Norimatsu, Y.; Hasegawa, K.; Shimizu, N.; Toyoshima, C.
Deposited on : 2017-03-11
Resolution : 3.20 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

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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

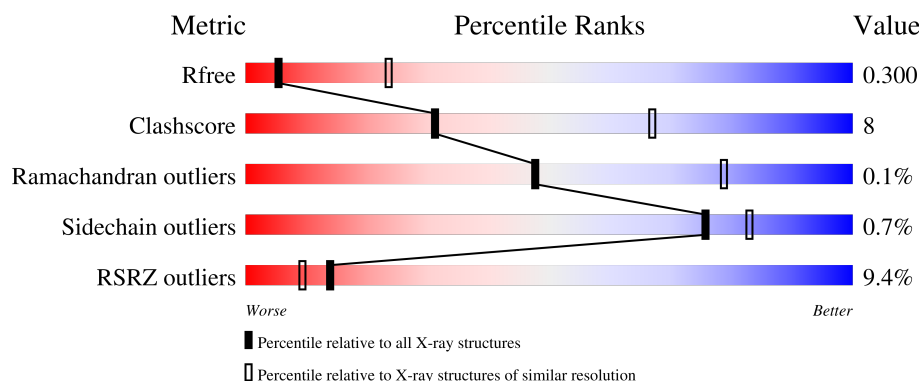
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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}	180053	1466 (3.20-3.20)
Clashscore	190562	1573 (3.20-3.20)
Ramachandran outliers	187476	1548 (3.20-3.20)
Sidechain outliers	187428	1547 (3.20-3.20)
RSRZ outliers	180081	1466 (3.20-3.20)

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 $\leq 5\%$. 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	995	9% 82% 18%

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 8671 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 Sarcoplasmic/endoplasmic reticulum calcium ATPase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	995	Total	C	N	O	S	0	0	0
			7674	4878	1287	1452	57			

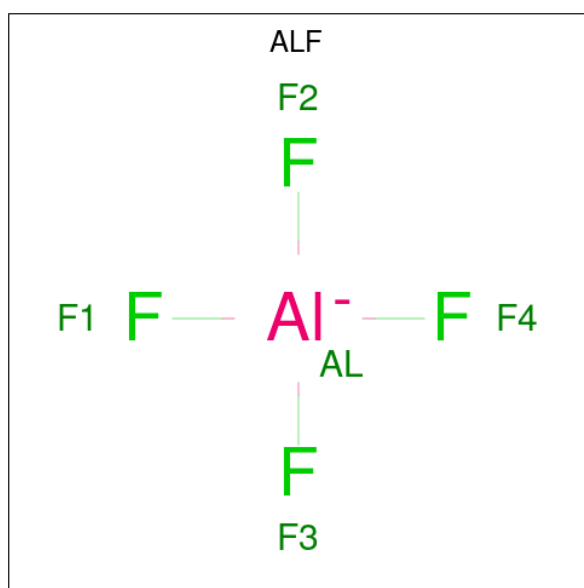
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	ACE	-	acetylation	UNP P04191

- Molecule 2 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

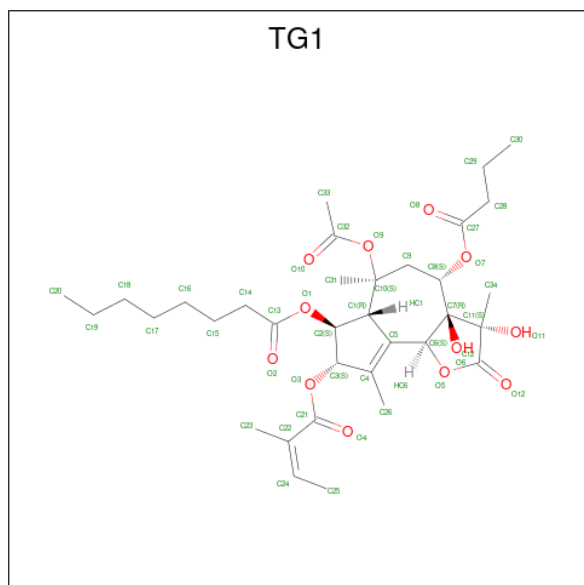
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mg	0	0
			1	1		

- Molecule 3 is TETRAFLUOROALUMINATE ION (CCD ID: ALF) (formula: AlF_4^-).



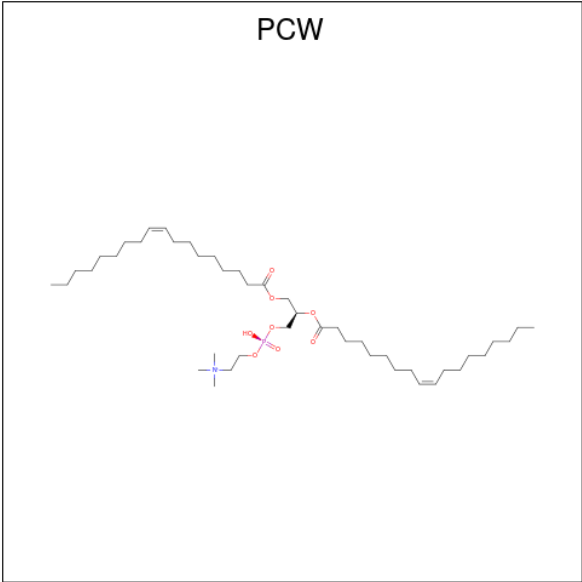
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	Al	F	0	0
			5	1	4		

- Molecule 4 is OCTANOIC ACID [3S-[3ALPHA, 3ABETA, 4ALPHA, 6BETA, 6ABETA, 7BETA, 8ALPHA(Z), 9BALPHA]]-6-(ACETYLOXY)-2,3,-3A,4,5,6,6A,7,8,9B-DECAHYDRO-3,3A-DIHYDROXY-3,6,9-TRIMETHYL-8-[(2-METHYL-1-OXO-2-BUTENYL)OXY]-2-OXO-4-(1-OXOBUTOXY)-AZULENO[4,5-B]FURAN-7-YL ESTER (CCD ID: TG1) (formula: C₃₄H₅₀O₁₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			46	34	12		

- Molecule 5 is 1,2-DIOLEOYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PCW) (formula: C₄₄H₈₅NO₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	197	Total 197	O 197	0	0

3 Residue-property plots

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: Sarcoplasmic/endoplasmic reticulum calcium ATPase 1



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	177.40Å 70.10Å 141.90Å 90.00° 107.00° 90.00°	Depositor
Resolution (Å)	135.70 – 3.20 135.70 – 3.20	Depositor EDS
% Data completeness (in resolution range)	100.0 (135.70-3.20) 100.0 (135.70-3.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	6.50 (at 3.19Å)	Xtriage
Refinement program	PHENIX 1.9_1692	Depositor
R, R_{free}	0.215 , 0.235 0.286 , 0.300	Depositor DCC
R_{free} test set	1380 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å ²)	110.0	Xtriage
Anisotropy	0.145	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 118.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	8671	wwPDB-VP
Average B, all atoms (Å ²)	148.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.70% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: ACE, TG1, ALF, MG, PCW

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	0.35	2/7813 (0.0%)	0.73	8/10594 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	887	ASP	C-N	6.99	1.44	1.33
1	A	401	PRO	N-CD	5.04	1.54	1.47

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	400	LYS	CB-CA-C	7.70	120.81	108.87
1	A	967	TRP	CB-CA-C	5.49	119.58	110.90
1	A	194	VAL	CA-C-N	5.46	125.55	119.32
1	A	194	VAL	C-N-CA	5.46	125.55	119.32
1	A	865	VAL	N-CA-CB	5.39	119.34	112.34

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	7674	0	7767	138	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	1	0	0	0	0
3	A	5	0	0	1	0
4	A	46	0	50	2	0
5	A	748	0	612	9	0
6	A	197	0	0	2	0
All	All	8671	0	8429	138	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 8.

The worst 5 of 138 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:A:75:LEU:HD21	5:A:1017:PCW:C32	1.81	1.11
1:A:886:LEU:CG	1:A:887:ASP:H	1.61	1.09
1:A:886:LEU:HG	1:A:887:ASP:N	1.51	1.04
1:A:90:GLU:HG2	1:A:91:PRO:HD3	1.37	1.02
1:A:90:GLU:CG	1:A:91:PRO:HD3	1.90	1.02

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	993/995 (100%)	925 (93%)	67 (7%)	1 (0%)	48 79

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	885	GLY

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	840/840 (100%)	834 (99%)	6 (1%)	76	83

5 of 6 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	352	LYS
1	A	484	THR
1	A	544	LYS
1	A	137	VAL
1	A	45	GLU

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

Mol	Chain	Res	Type
1	A	250	GLN
1	A	612	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 37 ligands modelled in this entry, 1 is monoatomic - leaving 36 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	PCW	A	1004	-	21,21,53	0.68	0	27,29,61	1.13	1 (3%)
5	PCW	A	1020	-	21,21,53	0.75	1 (4%)	27,29,61	1.07	1 (3%)
4	TG1	A	1003	-	44,48,48	2.29	12 (27%)	47,72,72	3.64	13 (27%)
5	PCW	A	1031	-	21,21,53	0.78	0	27,29,61	1.04	1 (3%)
5	PCW	A	1024	-	21,21,53	0.78	0	27,29,61	1.04	1 (3%)
5	PCW	A	1025	-	21,21,53	0.68	0	27,29,61	1.07	1 (3%)
5	PCW	A	1013	-	21,21,53	0.84	0	27,29,61	1.05	1 (3%)
5	PCW	A	1018	-	21,21,53	0.80	0	27,29,61	1.09	1 (3%)
5	PCW	A	1034	-	21,21,53	0.95	0	27,29,61	1.07	1 (3%)
5	PCW	A	1036	-	21,21,53	1.07	1 (4%)	27,29,61	1.09	1 (3%)
5	PCW	A	1019	-	21,21,53	0.92	0	27,29,61	1.06	1 (3%)
5	PCW	A	1010	-	21,21,53	0.87	1 (4%)	27,29,61	1.12	2 (7%)
5	PCW	A	1037	-	21,21,53	1.01	0	27,29,61	2.54	3 (11%)
5	PCW	A	1006	-	21,21,53	0.84	0	27,29,61	1.11	2 (7%)
5	PCW	A	1021	-	21,21,53	0.68	0	27,29,61	1.04	1 (3%)
5	PCW	A	1016	-	21,21,53	0.87	0	27,29,61	1.18	2 (7%)
5	PCW	A	1017	-	21,21,53	0.89	0	27,29,61	1.08	1 (3%)
5	PCW	A	1012	-	21,21,53	0.78	0	27,29,61	1.07	1 (3%)
5	PCW	A	1027	-	21,21,53	0.77	0	27,29,61	1.02	1 (3%)
5	PCW	A	1007	-	21,21,53	0.85	0	27,29,61	1.09	1 (3%)
5	PCW	A	1009	-	21,21,53	0.99	0	27,29,61	1.09	1 (3%)
5	PCW	A	1032	-	21,21,53	0.95	0	27,29,61	1.09	1 (3%)
5	PCW	A	1023	-	21,21,53	0.93	0	27,29,61	1.31	2 (7%)
5	PCW	A	1014	-	21,21,53	0.93	0	27,29,61	1.11	1 (3%)
5	PCW	A	1033	-	21,21,53	0.77	0	27,29,61	1.06	1 (3%)
5	PCW	A	1015	-	21,21,53	0.89	1 (4%)	27,29,61	1.01	1 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	PCW	A	1005	-	21,21,53	0.72	0	27,29,61	1.15	2 (7%)
5	PCW	A	1011	-	21,21,53	0.71	0	27,29,61	1.06	1 (3%)
3	ALF	A	1002	-	4,4,4	1.37	0	-		
5	PCW	A	1008	-	21,21,53	0.89	1 (4%)	27,29,61	1.01	1 (3%)
5	PCW	A	1029	-	21,21,53	0.68	0	27,29,61	1.04	1 (3%)
5	PCW	A	1028	-	21,21,53	0.69	0	27,29,61	1.07	1 (3%)
5	PCW	A	1035	-	21,21,53	0.90	0	27,29,61	1.12	1 (3%)
5	PCW	A	1026	-	21,21,53	0.81	0	27,29,61	1.07	1 (3%)
5	PCW	A	1030	-	21,21,53	1.05	1 (4%)	27,29,61	1.08	2 (7%)
5	PCW	A	1022	-	21,21,53	1.02	1 (4%)	27,29,61	1.16	2 (7%)

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	PCW	A	1004	-	-	4/23/23/57	-
5	PCW	A	1020	-	-	3/23/23/57	-
4	TG1	A	1003	-	-	18/33/99/99	0/3/3/3
5	PCW	A	1031	-	-	8/23/23/57	-
5	PCW	A	1024	-	-	4/23/23/57	-
5	PCW	A	1025	-	-	3/23/23/57	-
5	PCW	A	1013	-	-	3/23/23/57	-
5	PCW	A	1018	-	-	2/23/23/57	-
5	PCW	A	1034	-	-	7/23/23/57	-
5	PCW	A	1036	-	-	8/23/23/57	-
5	PCW	A	1019	-	-	3/23/23/57	-
5	PCW	A	1010	-	-	5/23/23/57	-
5	PCW	A	1037	-	-	6/23/23/57	-
5	PCW	A	1006	-	-	9/23/23/57	-
5	PCW	A	1021	-	-	8/23/23/57	-
5	PCW	A	1016	-	-	7/23/23/57	-
5	PCW	A	1017	-	-	8/23/23/57	-
5	PCW	A	1012	-	-	7/23/23/57	-
5	PCW	A	1027	-	-	3/23/23/57	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PCW	A	1007	-	-	5/23/23/57	-
5	PCW	A	1009	-	-	4/23/23/57	-
5	PCW	A	1032	-	-	3/23/23/57	-
5	PCW	A	1023	-	-	11/23/23/57	-
5	PCW	A	1014	-	-	8/23/23/57	-
5	PCW	A	1033	-	-	3/23/23/57	-
5	PCW	A	1015	-	-	1/23/23/57	-
5	PCW	A	1005	-	-	6/23/23/57	-
5	PCW	A	1011	-	-	4/23/23/57	-
5	PCW	A	1008	-	-	6/23/23/57	-
5	PCW	A	1029	-	-	5/23/23/57	-
5	PCW	A	1028	-	-	5/23/23/57	-
5	PCW	A	1035	-	-	4/23/23/57	-
5	PCW	A	1026	-	-	6/23/23/57	-
5	PCW	A	1030	-	-	3/23/23/57	-
5	PCW	A	1022	-	-	6/23/23/57	-

The worst 5 of 19 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1003	TG1	O12-C12	7.75	1.37	1.20
4	A	1003	TG1	C4-C5	5.77	1.58	1.33
4	A	1003	TG1	C11-C7	4.55	1.61	1.55
4	A	1003	TG1	O5-C12	4.46	1.42	1.35
4	A	1003	TG1	C1-C5	4.01	1.57	1.51

The worst 5 of 56 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1003	TG1	O12-C12-C11	-16.27	111.82	128.28
4	A	1003	TG1	O5-C12-O12	-12.01	106.05	121.60
5	A	1037	PCW	O11-C11-C12	-11.79	83.02	124.77
4	A	1003	TG1	C10-O9-C32	7.44	138.78	121.36
4	A	1003	TG1	O9-C32-C33	-5.19	101.88	110.67

There are no chirality outliers.

5 of 196 torsion outliers are listed below:

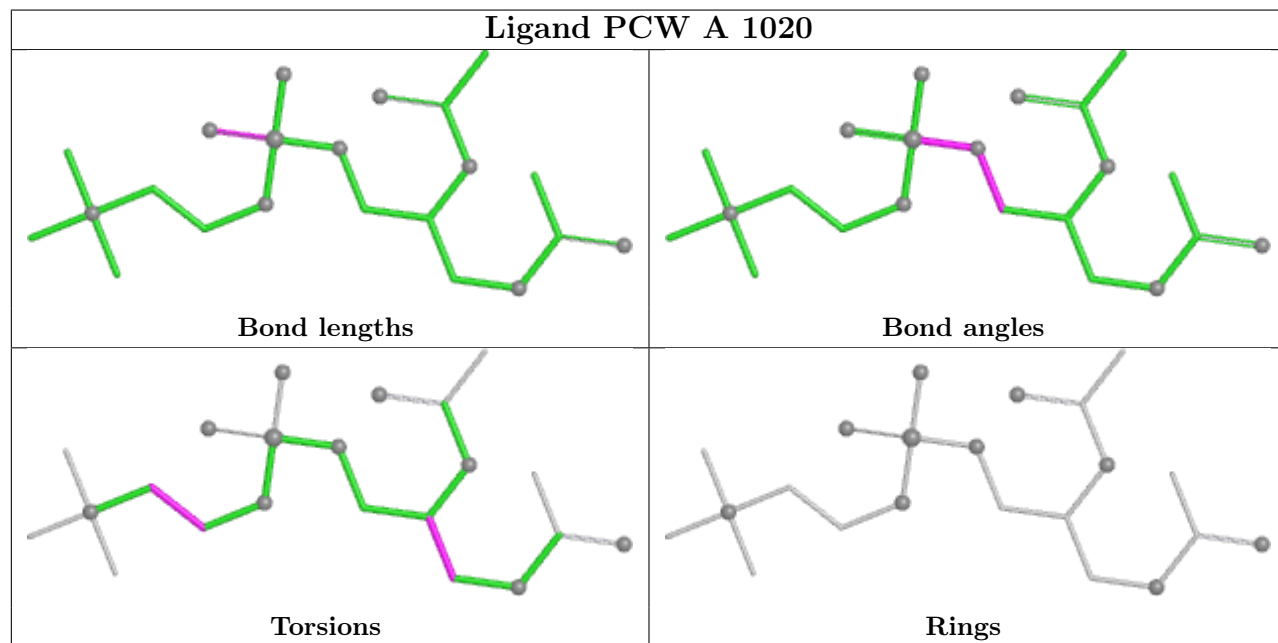
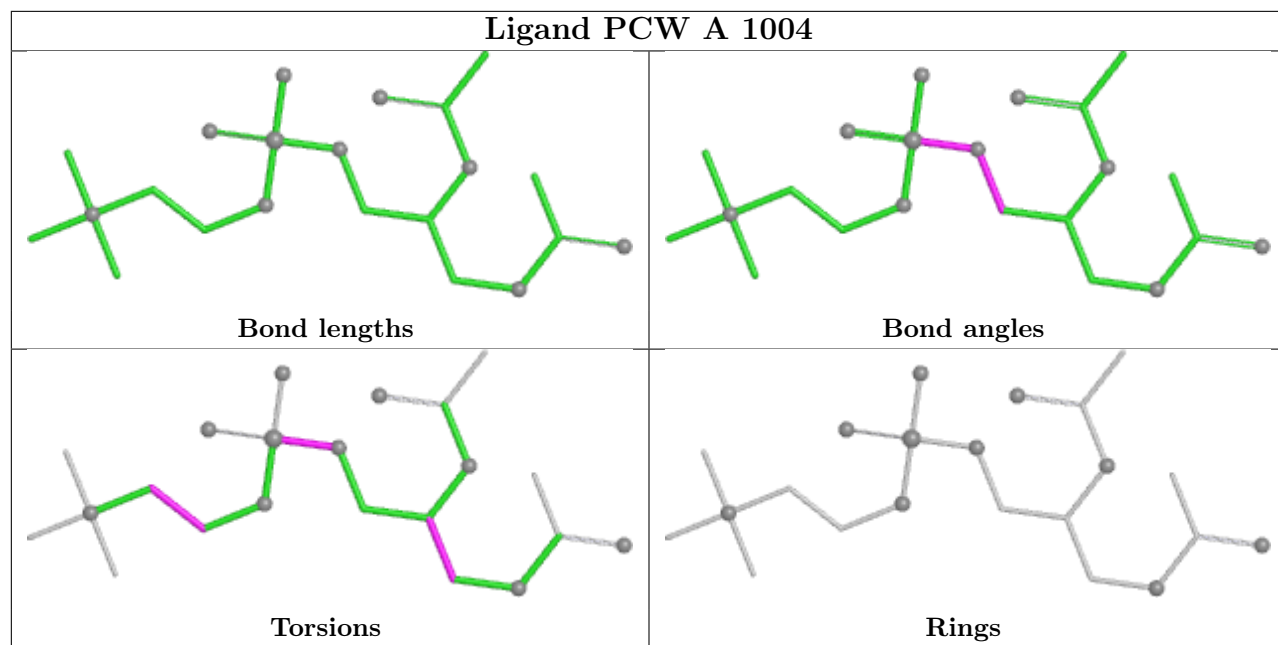
Mol	Chain	Res	Type	Atoms
4	A	1003	TG1	C31-C10-O9-C32
4	A	1003	TG1	C22-C21-O3-C3
4	A	1003	TG1	O3-C21-C22-C24
5	A	1005	PCW	C1-O3P-P-O2P
5	A	1007	PCW	C32-C31-O2-C2

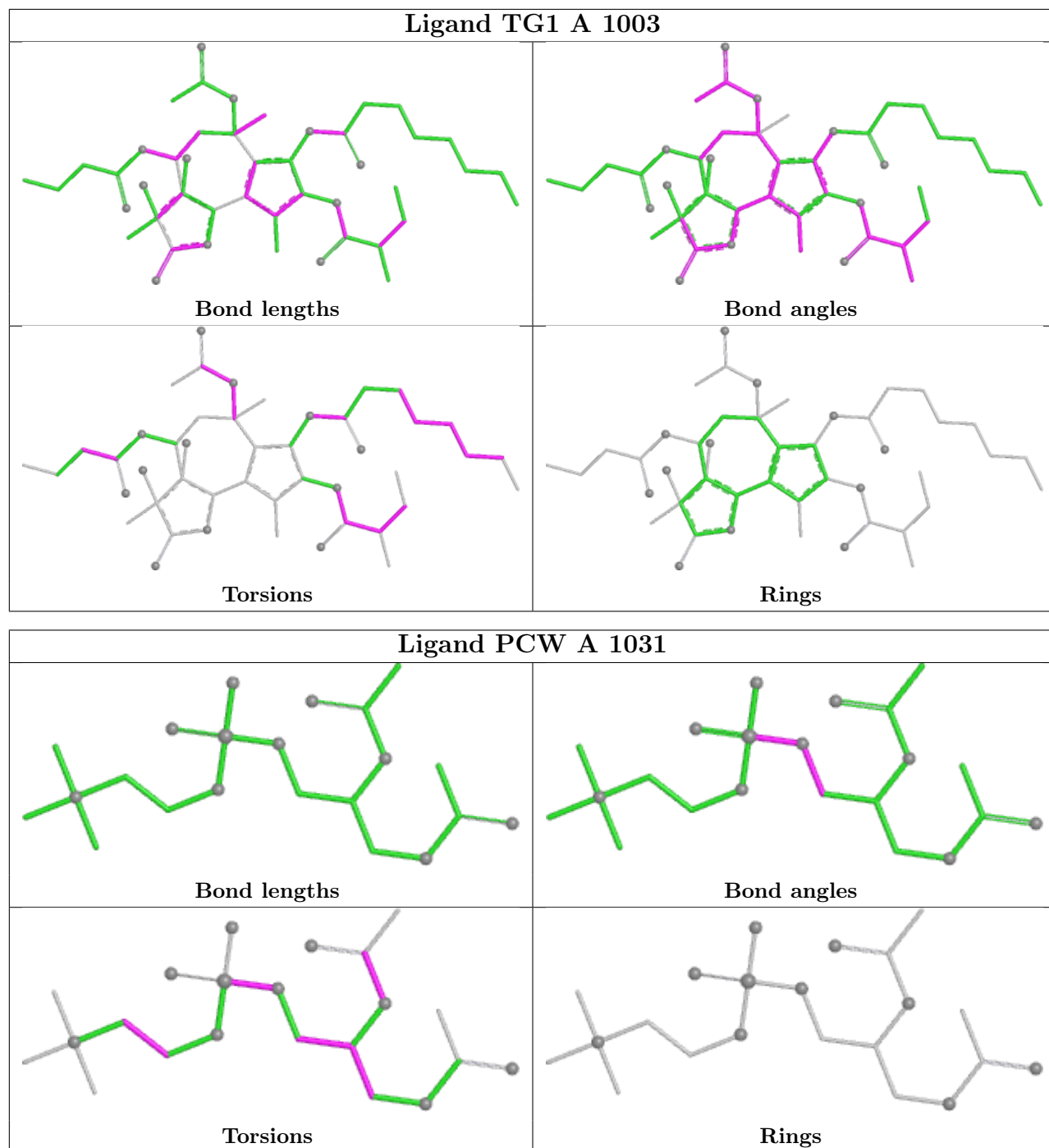
There are no ring outliers.

9 monomers are involved in 12 short contacts:

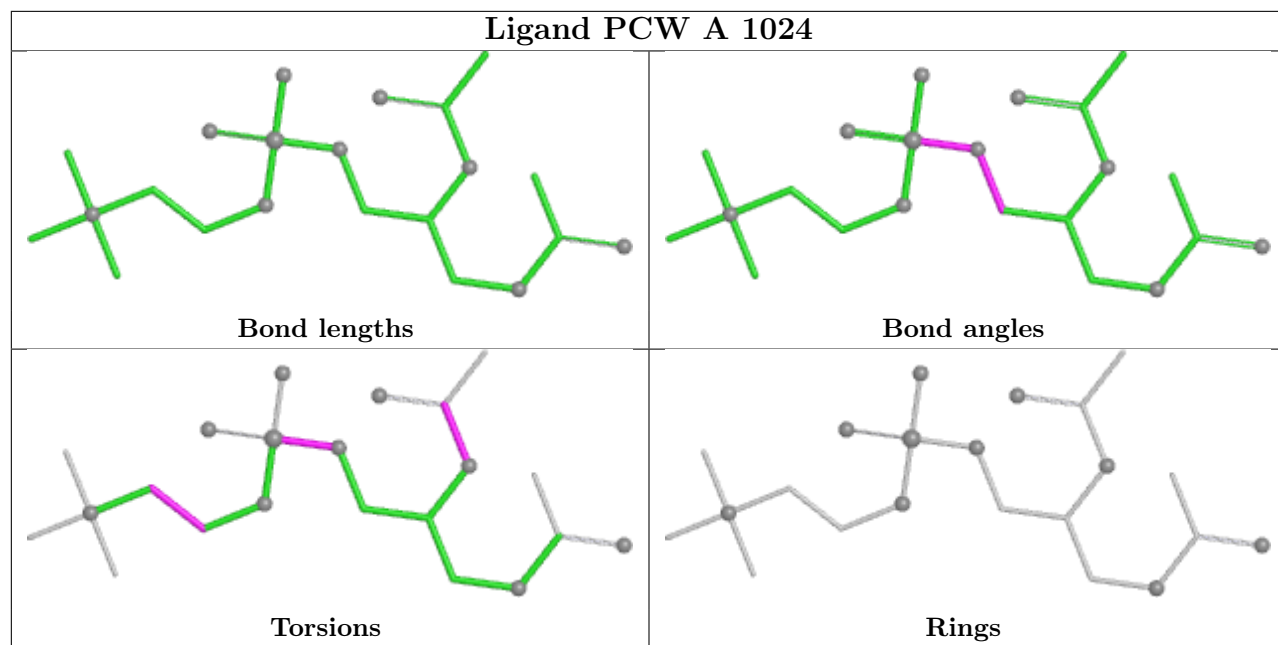
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1004	PCW	1	0
4	A	1003	TG1	2	0
5	A	1025	PCW	1	0
5	A	1013	PCW	2	0
5	A	1010	PCW	1	0
5	A	1017	PCW	2	0
5	A	1027	PCW	1	0
5	A	1007	PCW	1	0
3	A	1002	ALF	1	0

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.

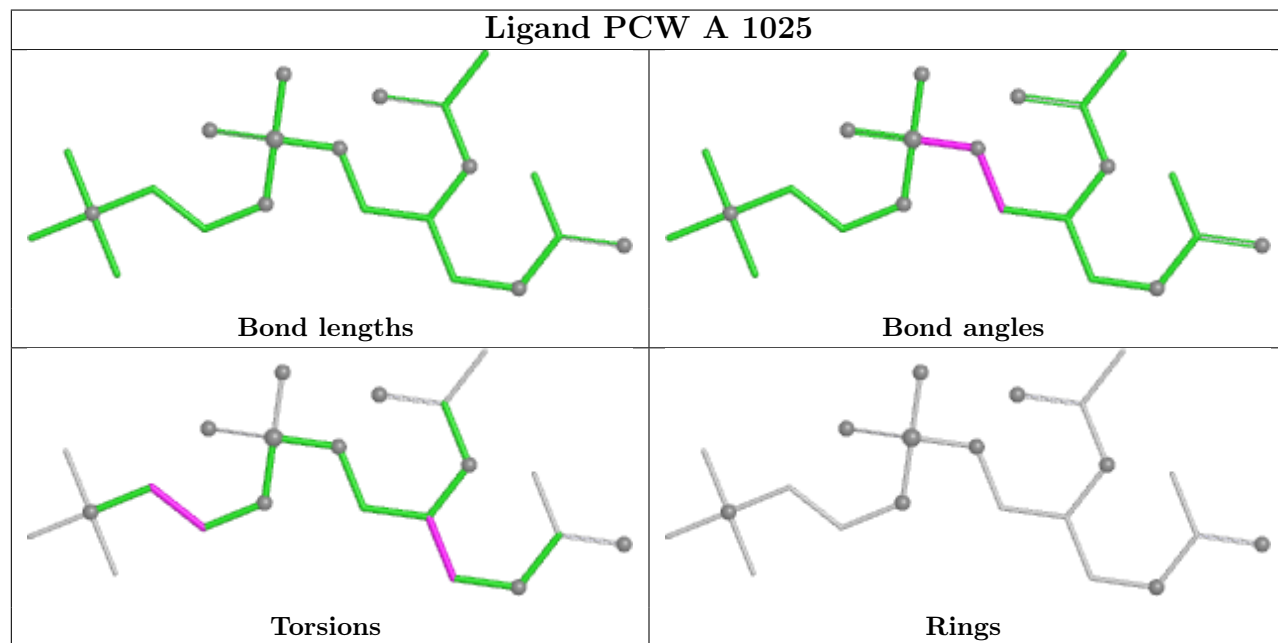




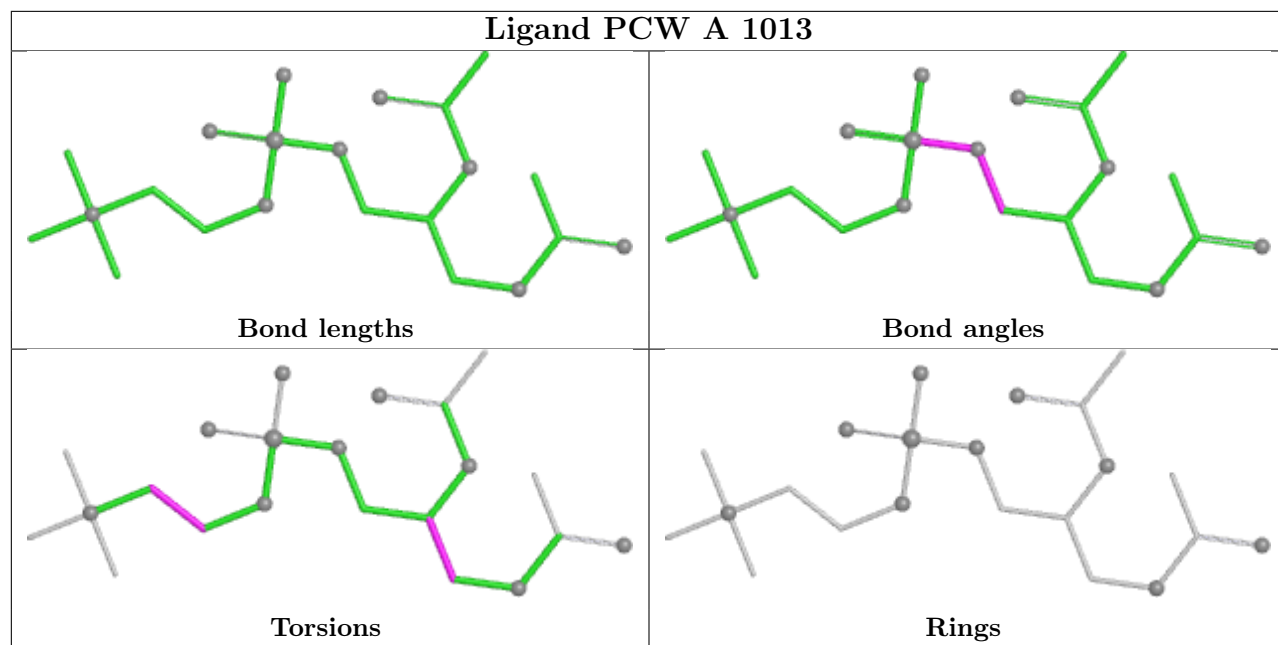
Ligand PCW A 1024



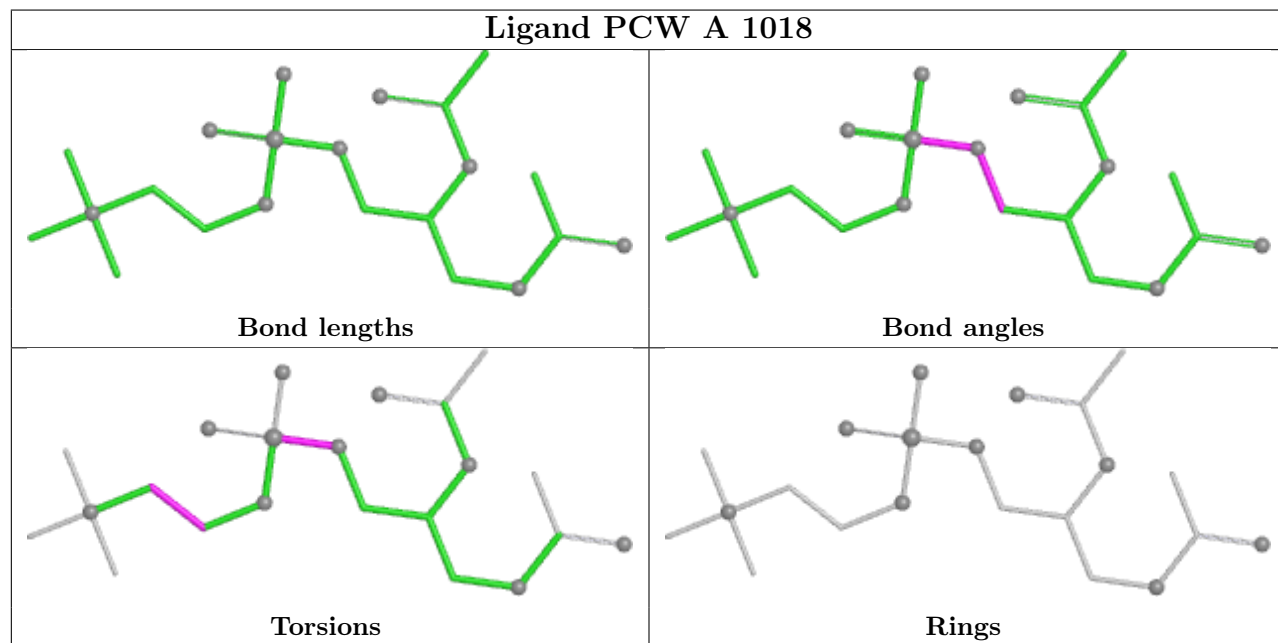
Ligand PCW A 1025

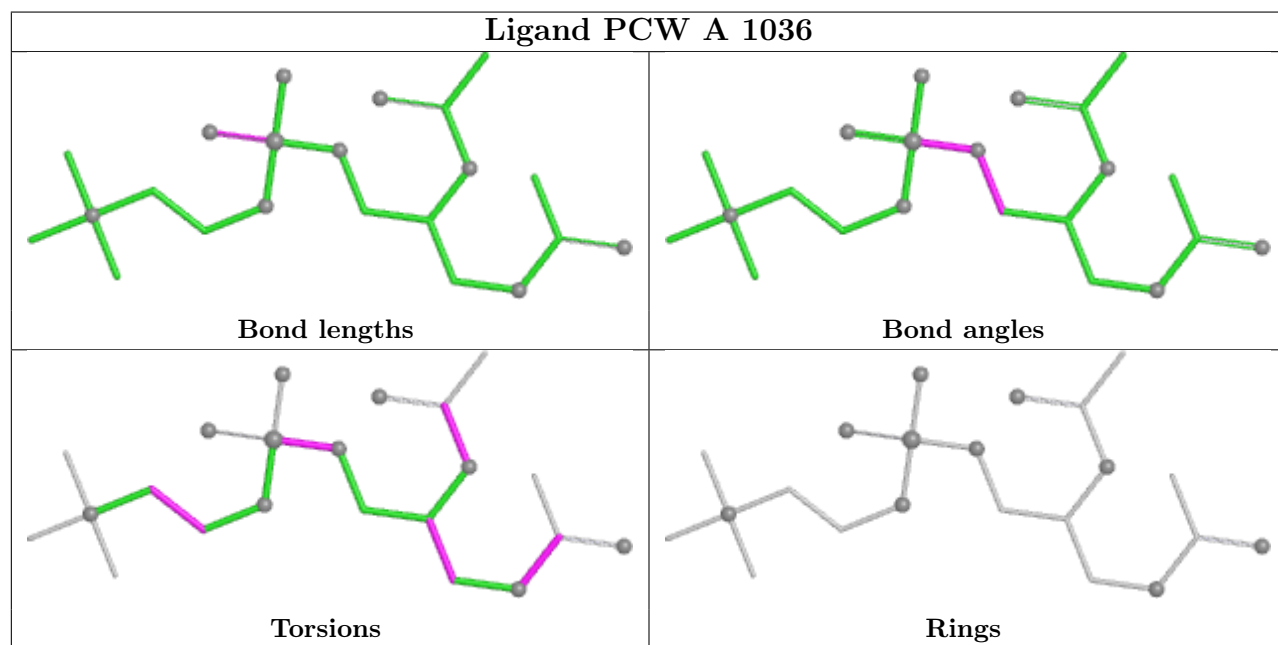
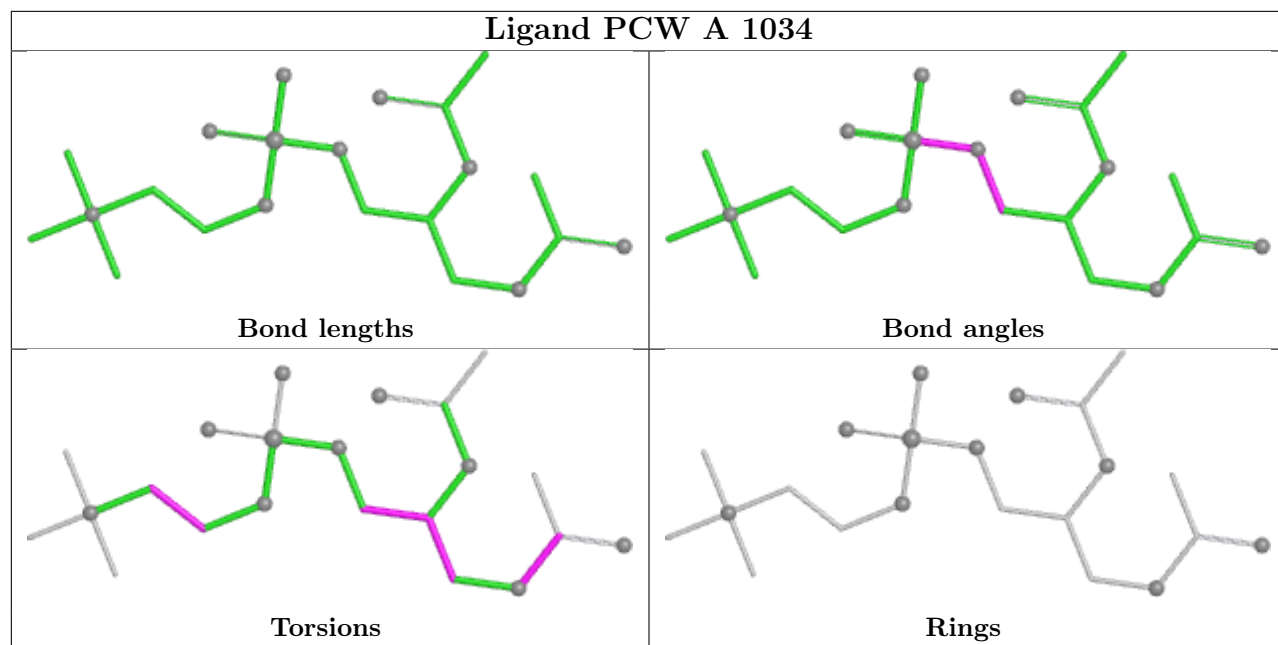


Ligand PCW A 1013

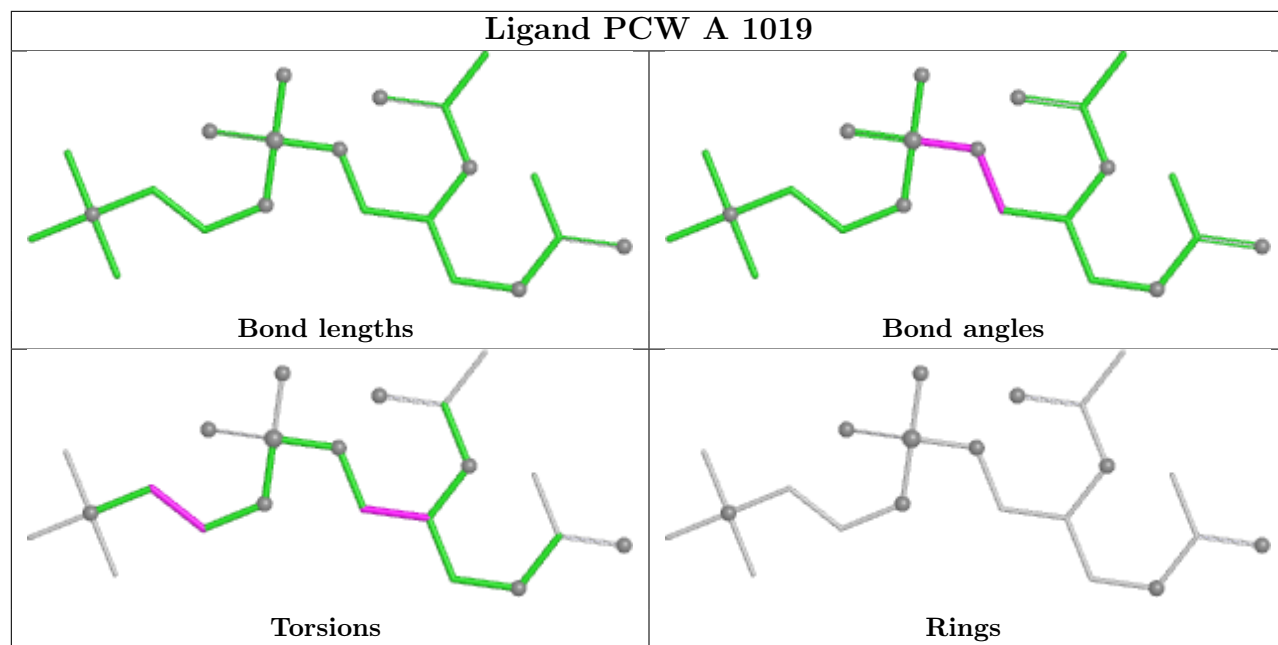


Ligand PCW A 1018

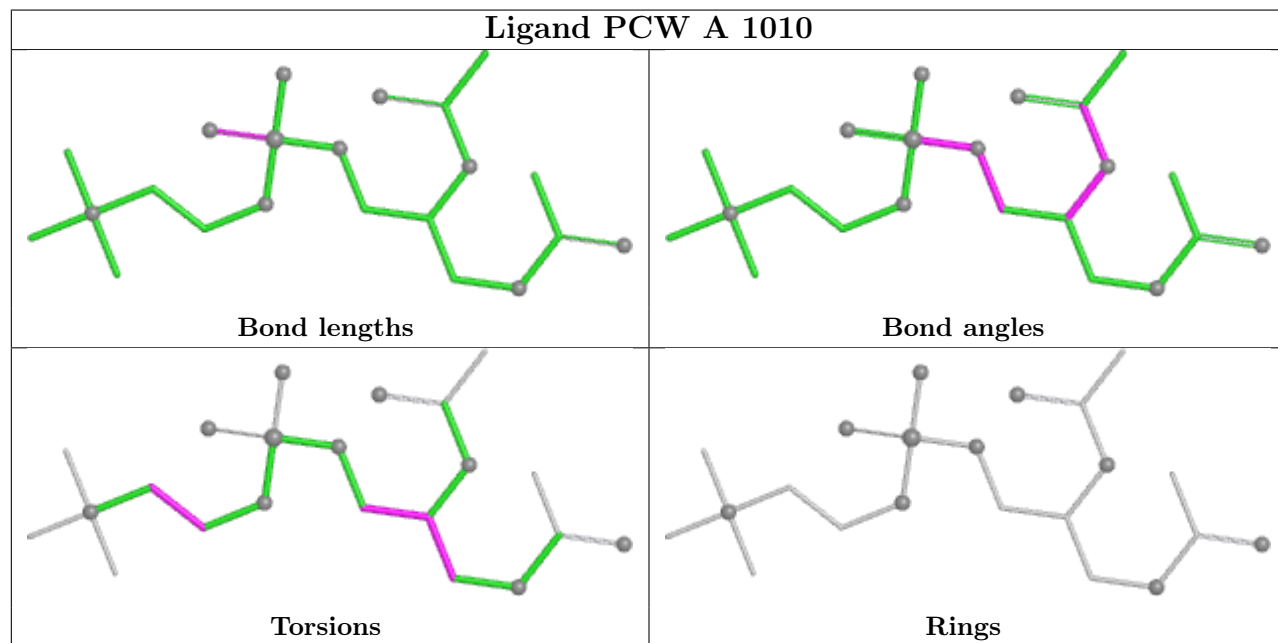




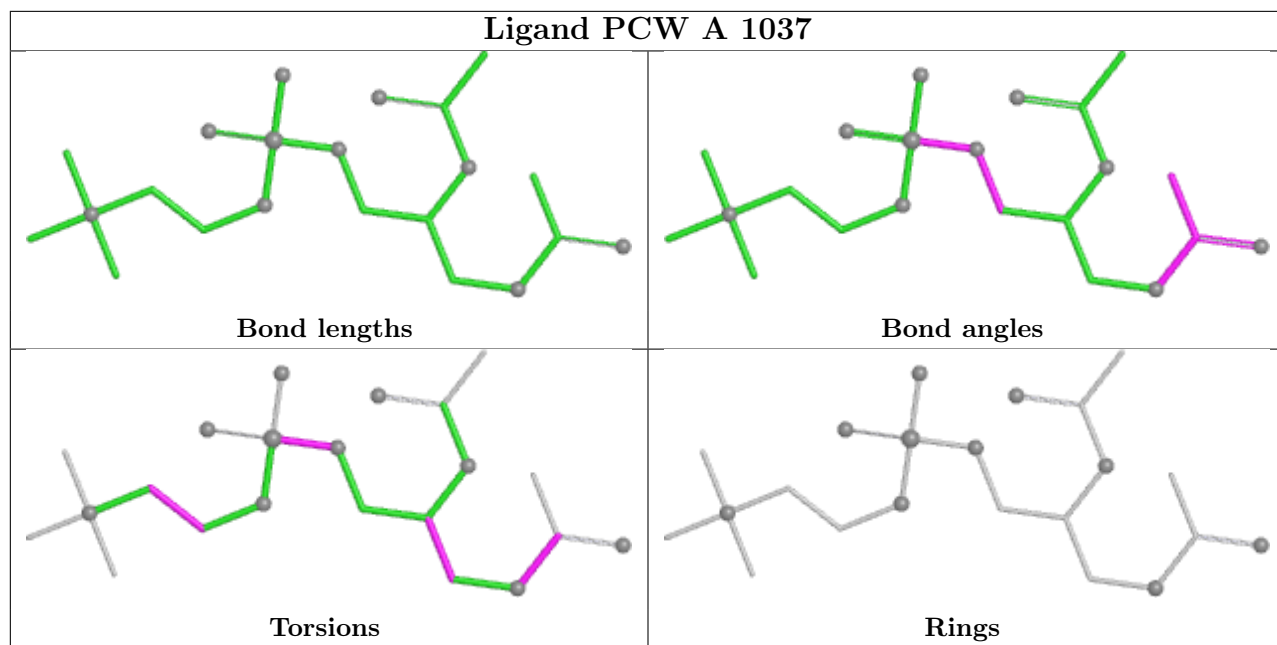
Ligand PCW A 1019



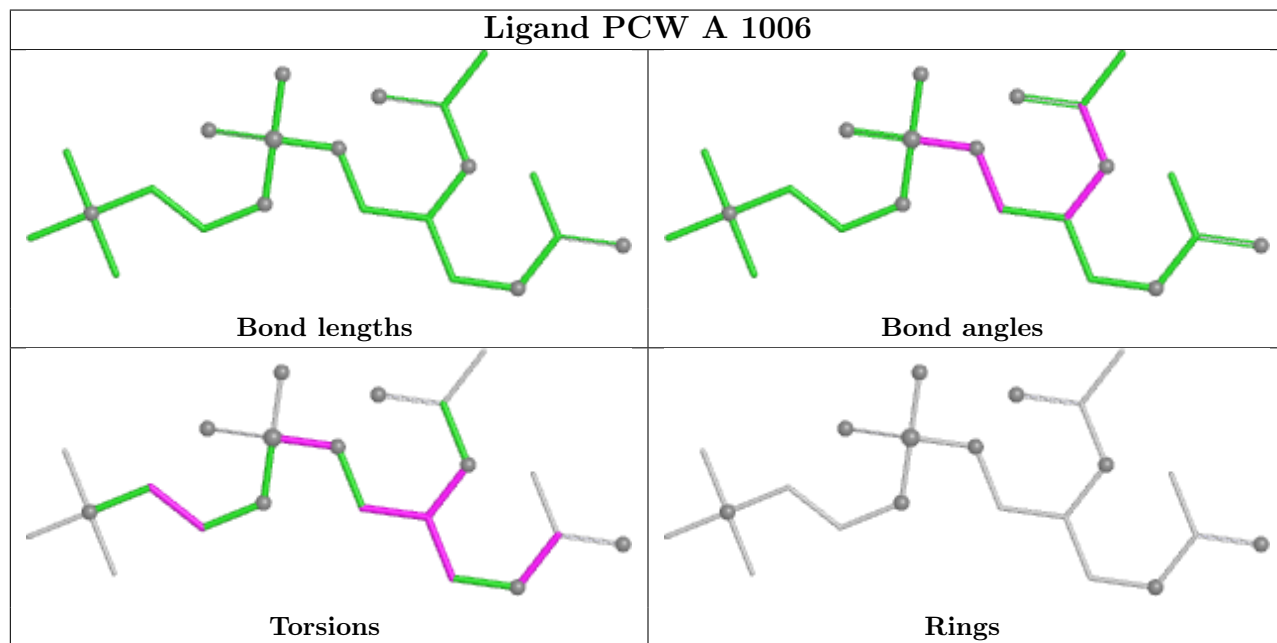
Ligand PCW A 1010

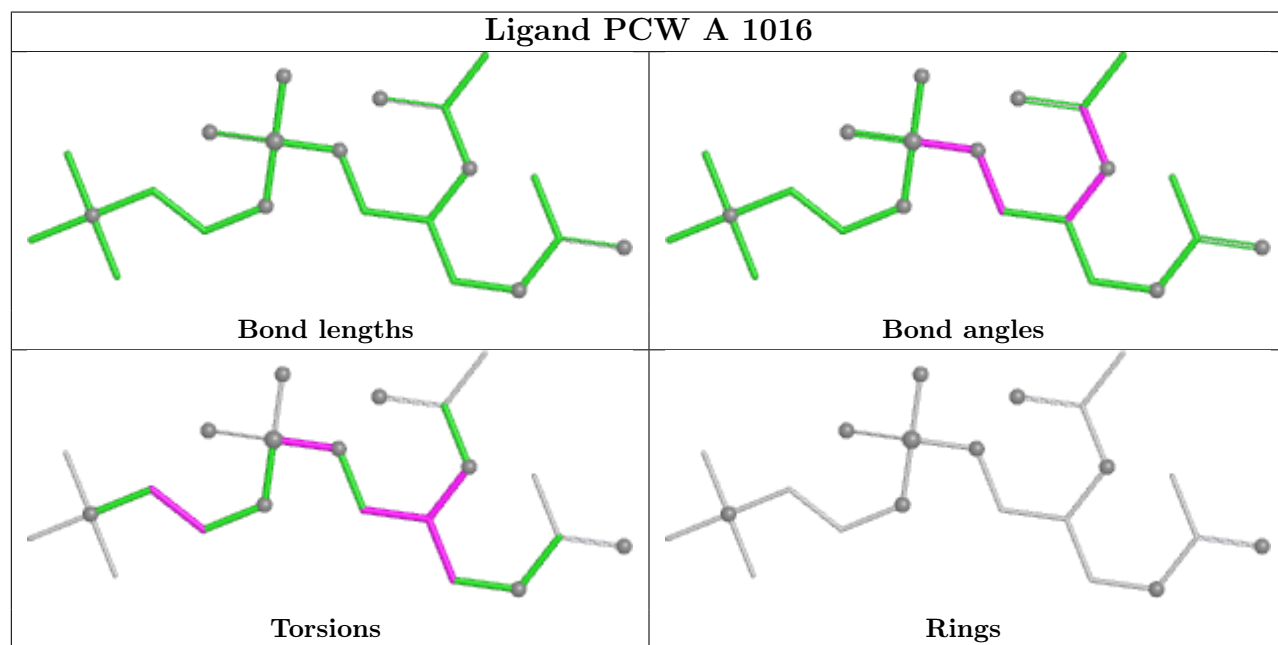
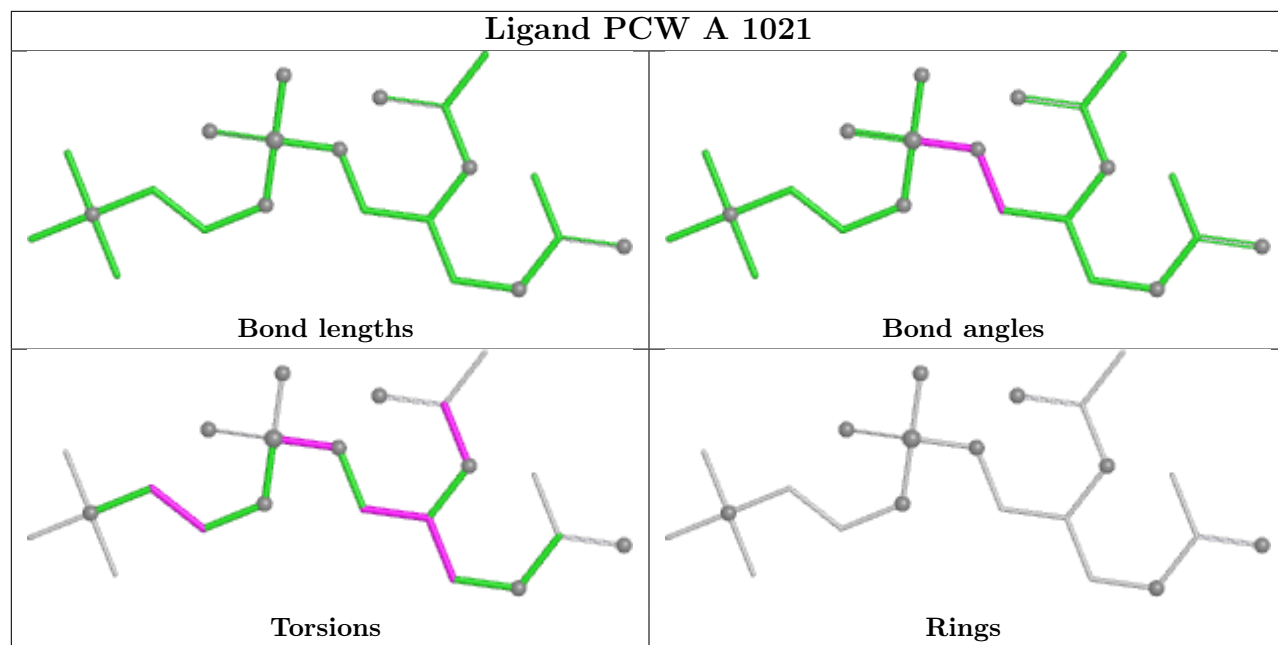


Ligand PCW A 1037

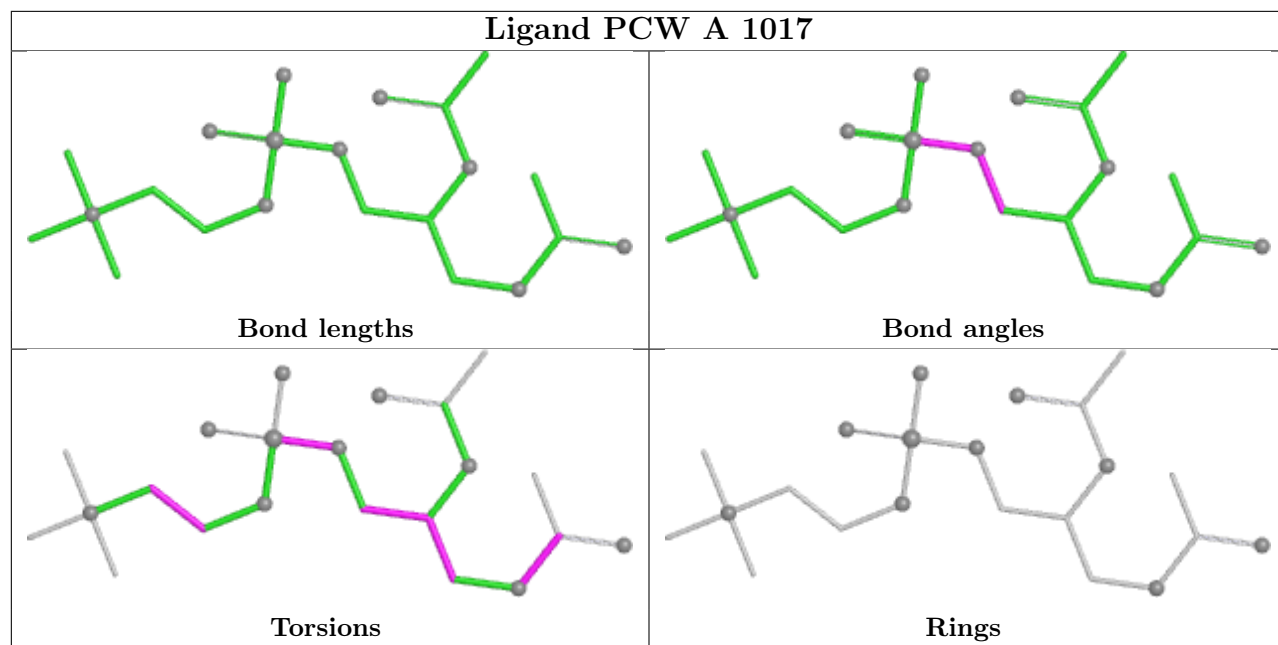


Ligand PCW A 1006

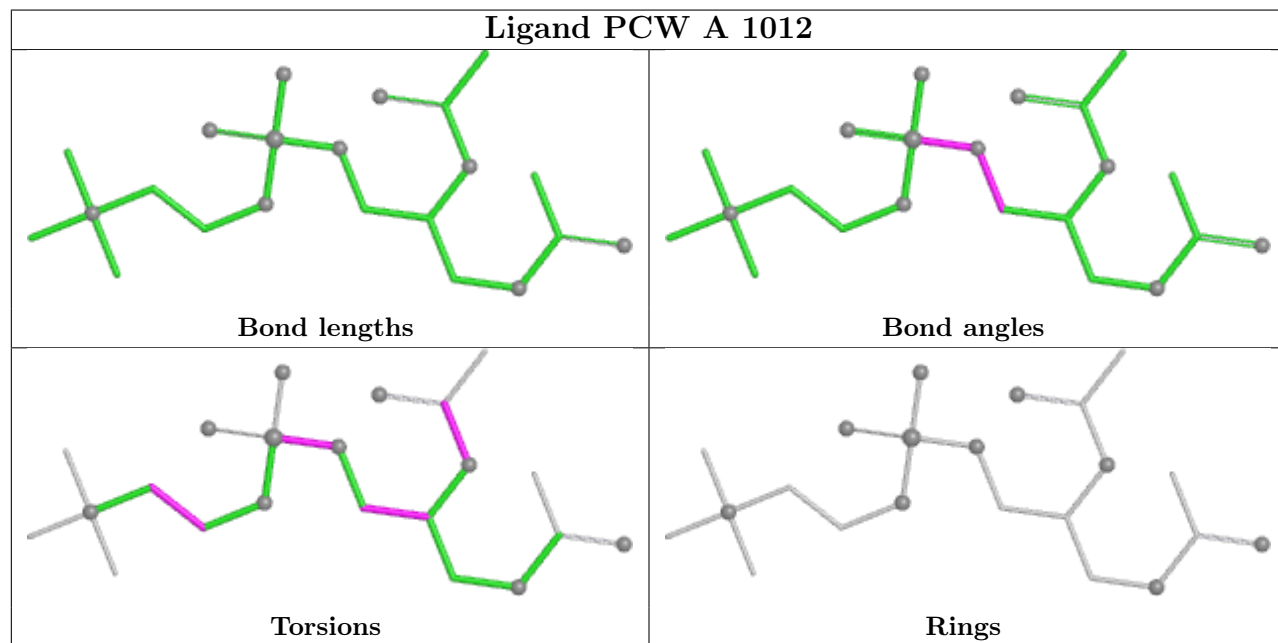




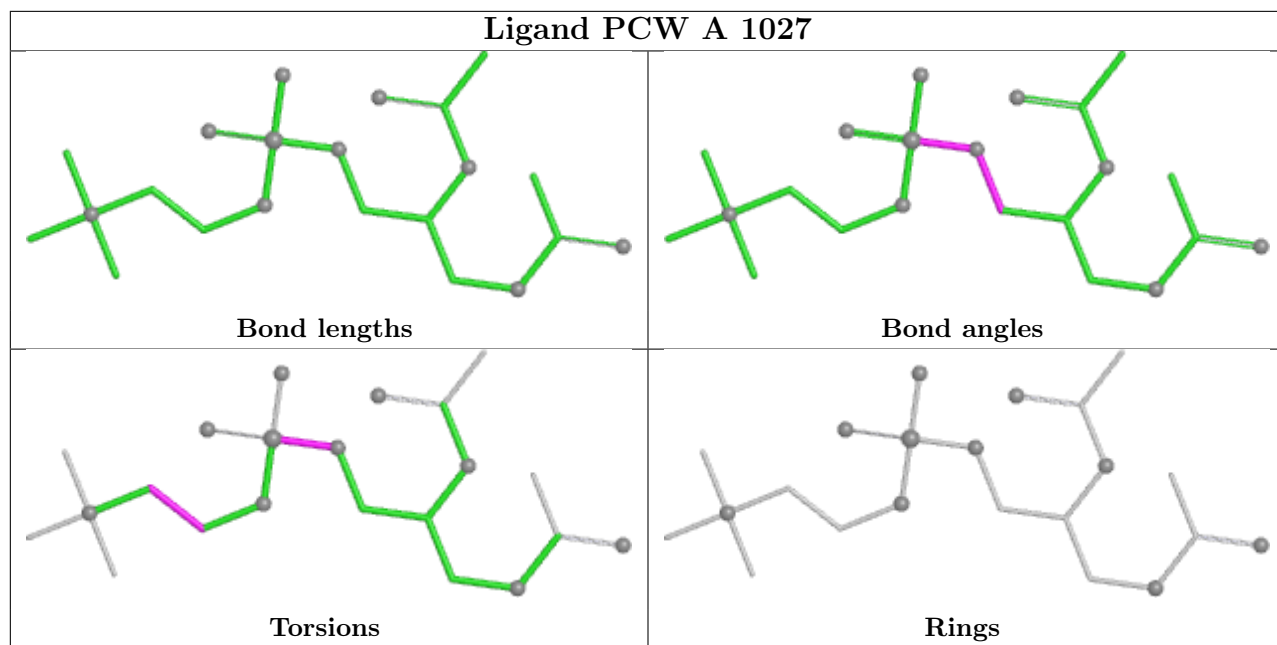
Ligand PCW A 1017



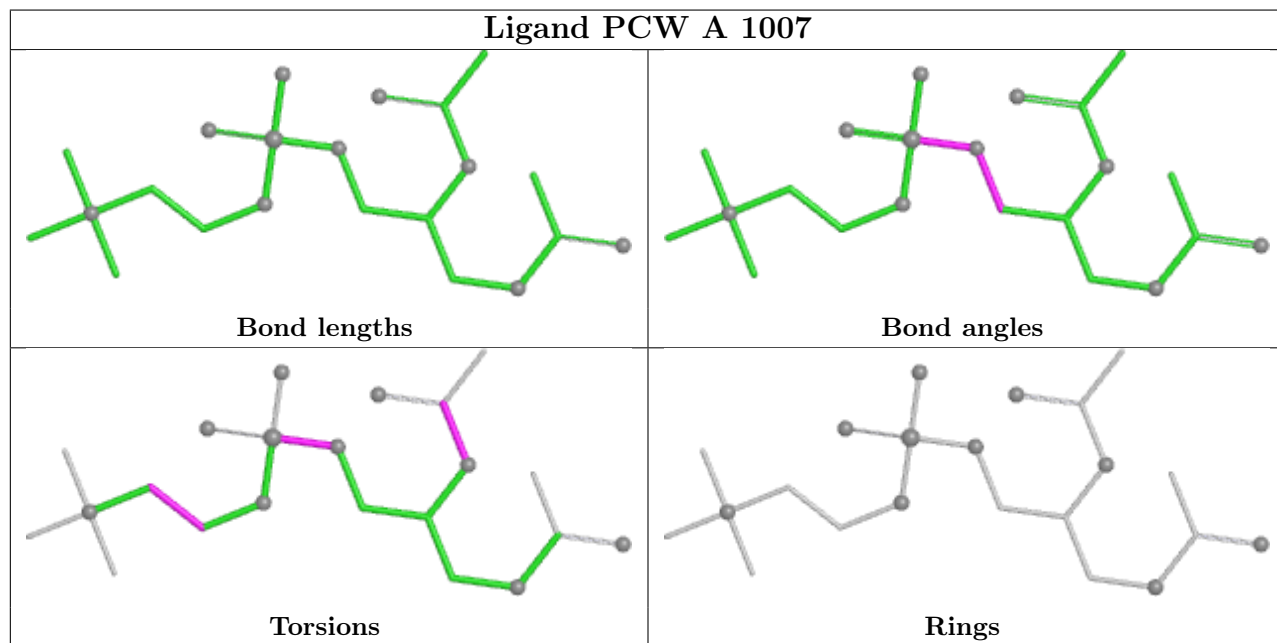
Ligand PCW A 1012



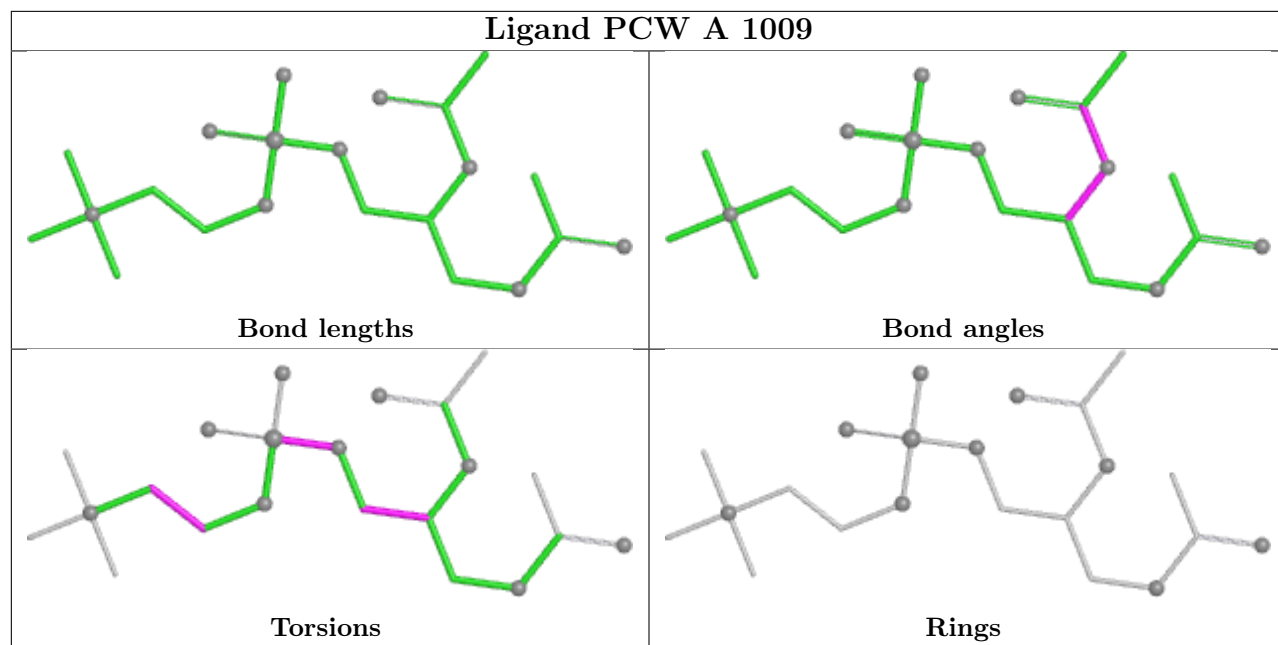
Ligand PCW A 1027



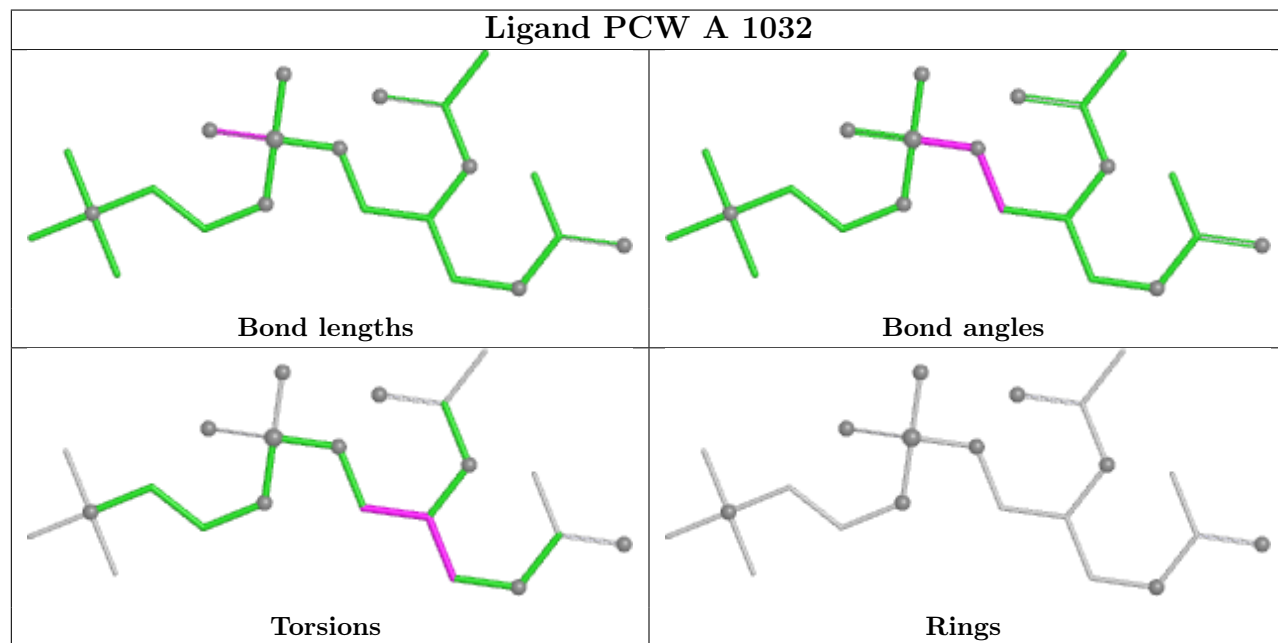
Ligand PCW A 1007



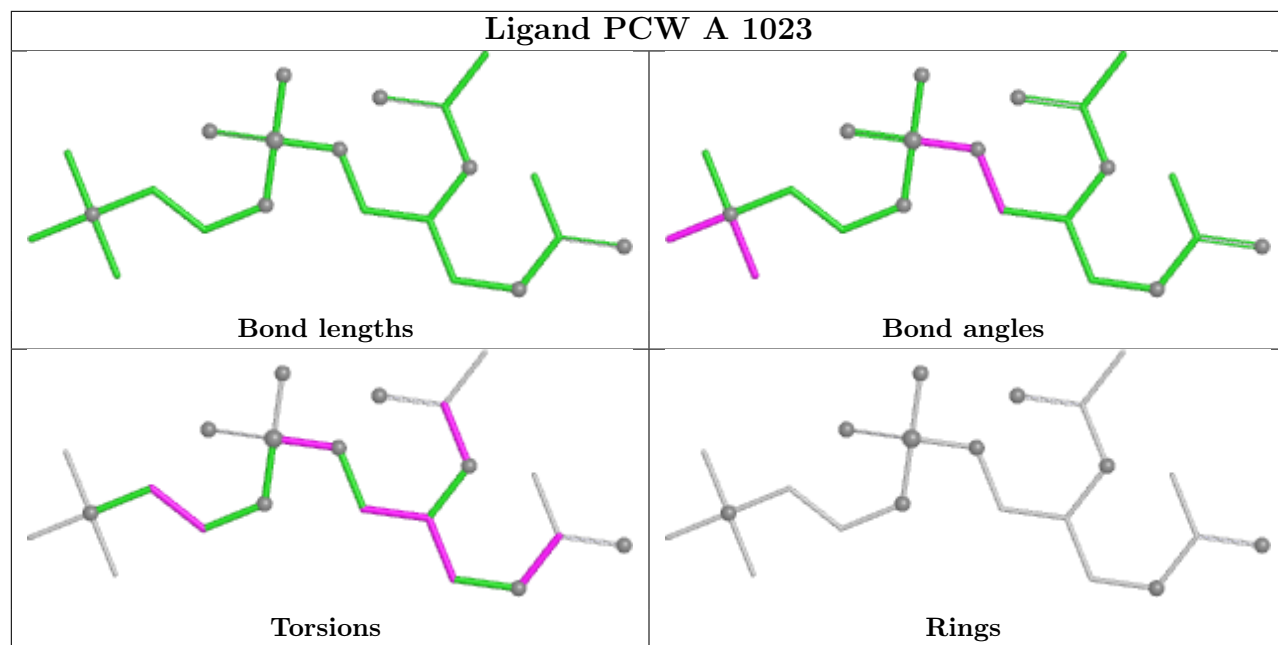
Ligand PCW A 1009



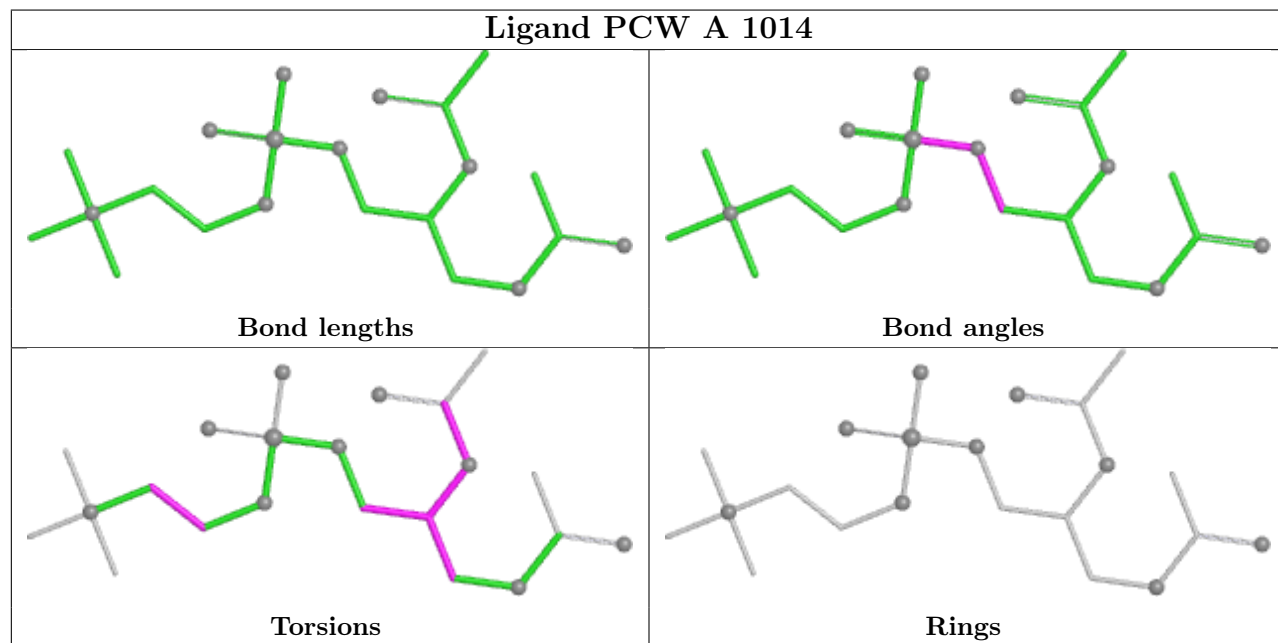
Ligand PCW A 1032



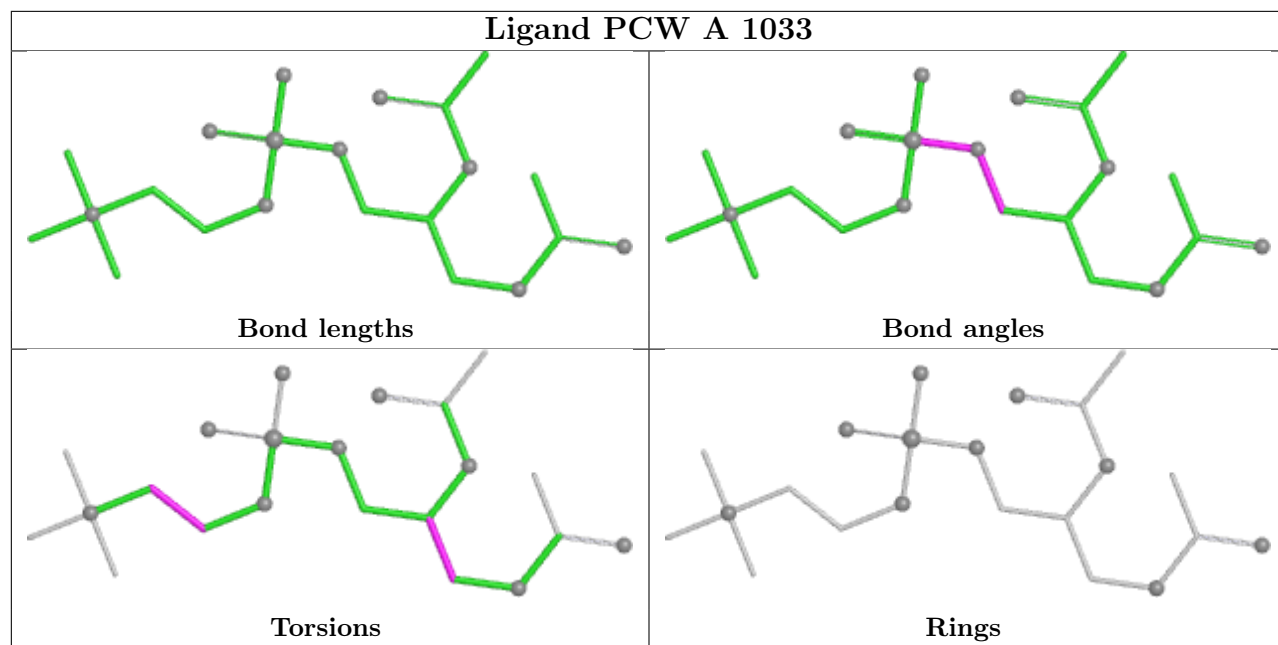
Ligand PCW A 1023



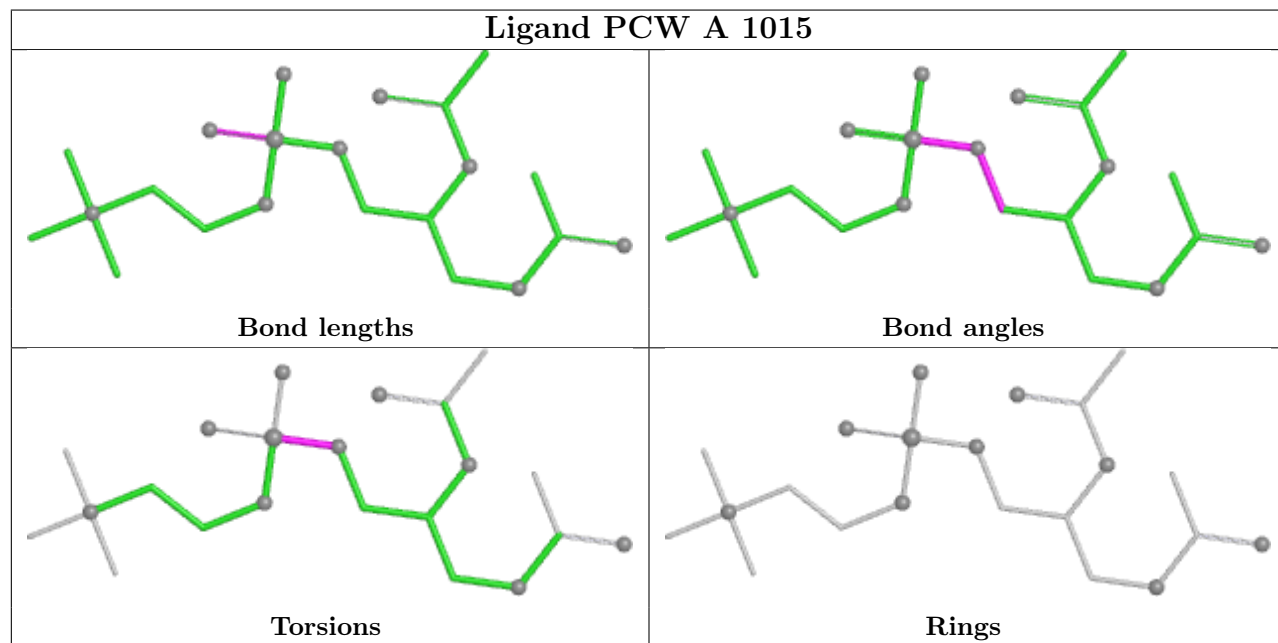
Ligand PCW A 1014



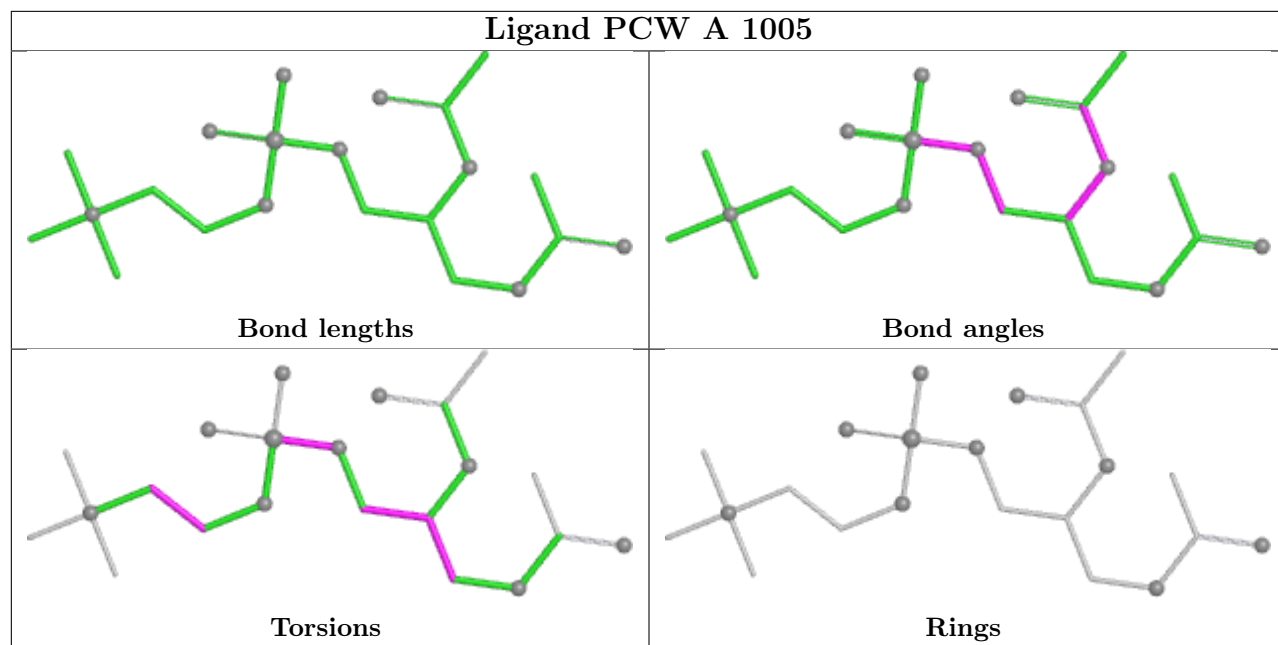
Ligand PCW A 1033



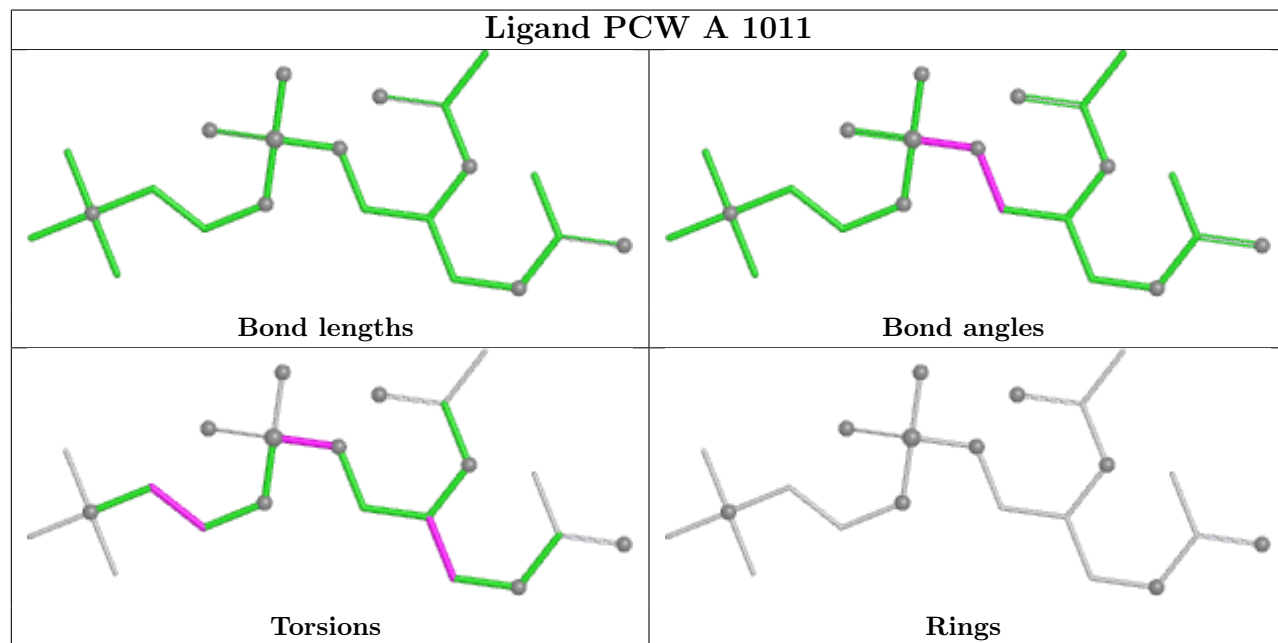
Ligand PCW A 1015



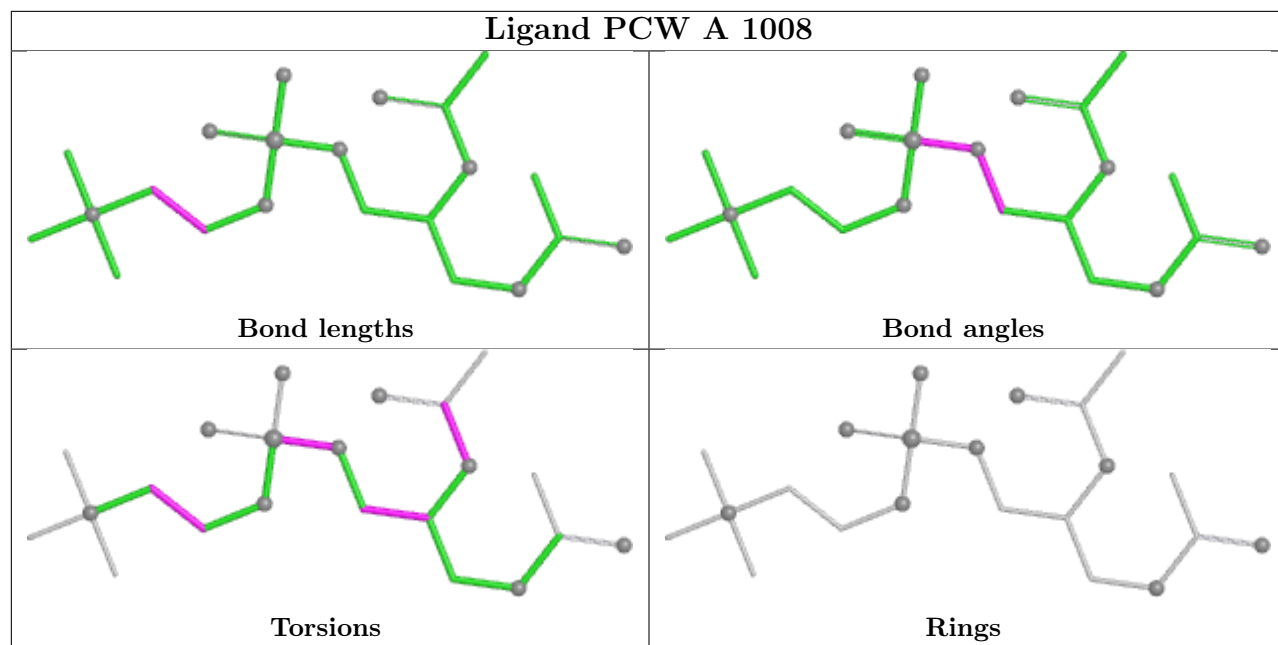
Ligand PCW A 1005



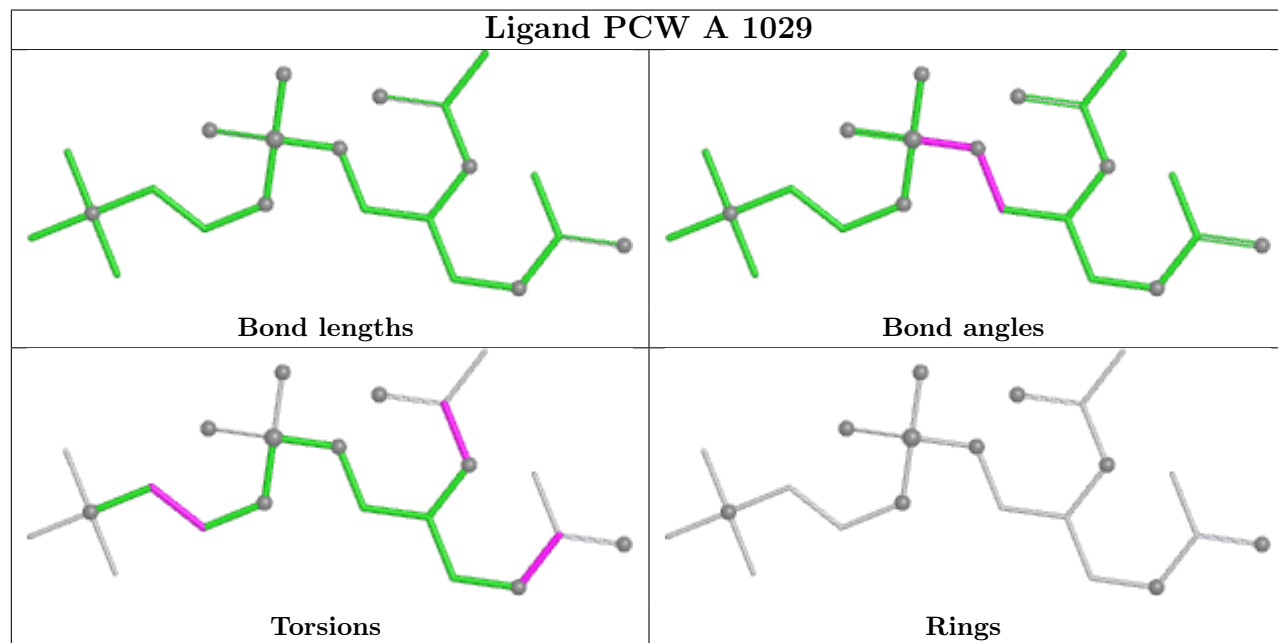
Ligand PCW A 1011



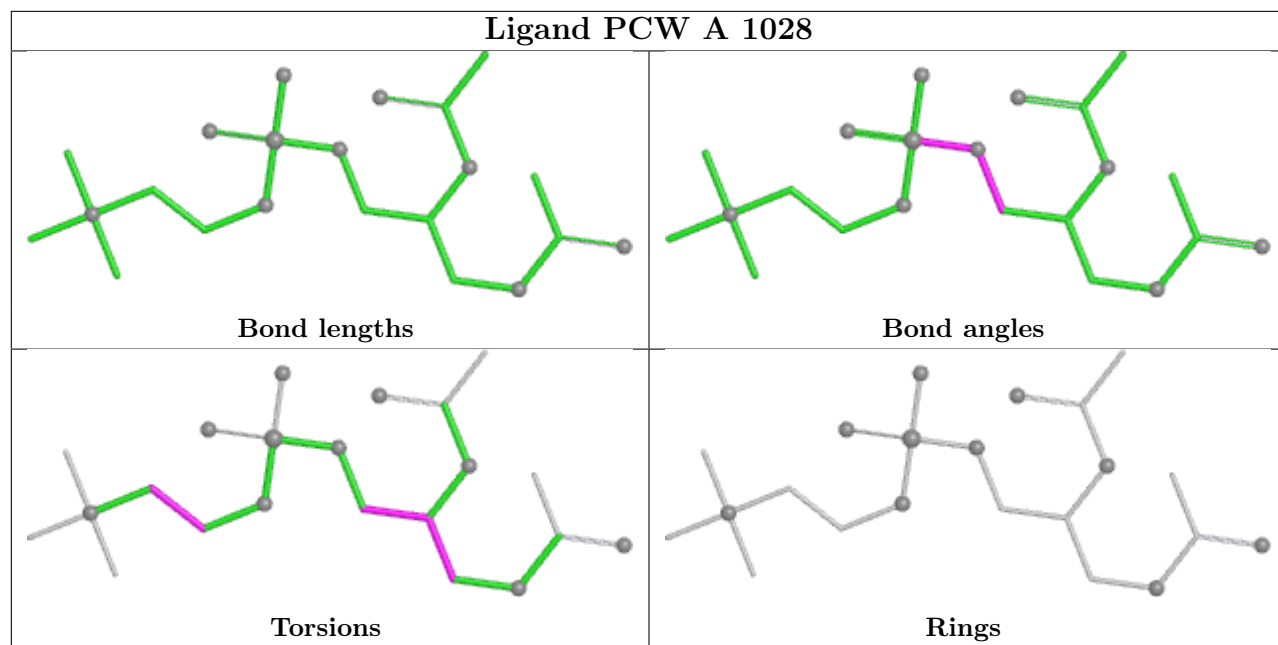
Ligand PCW A 1008



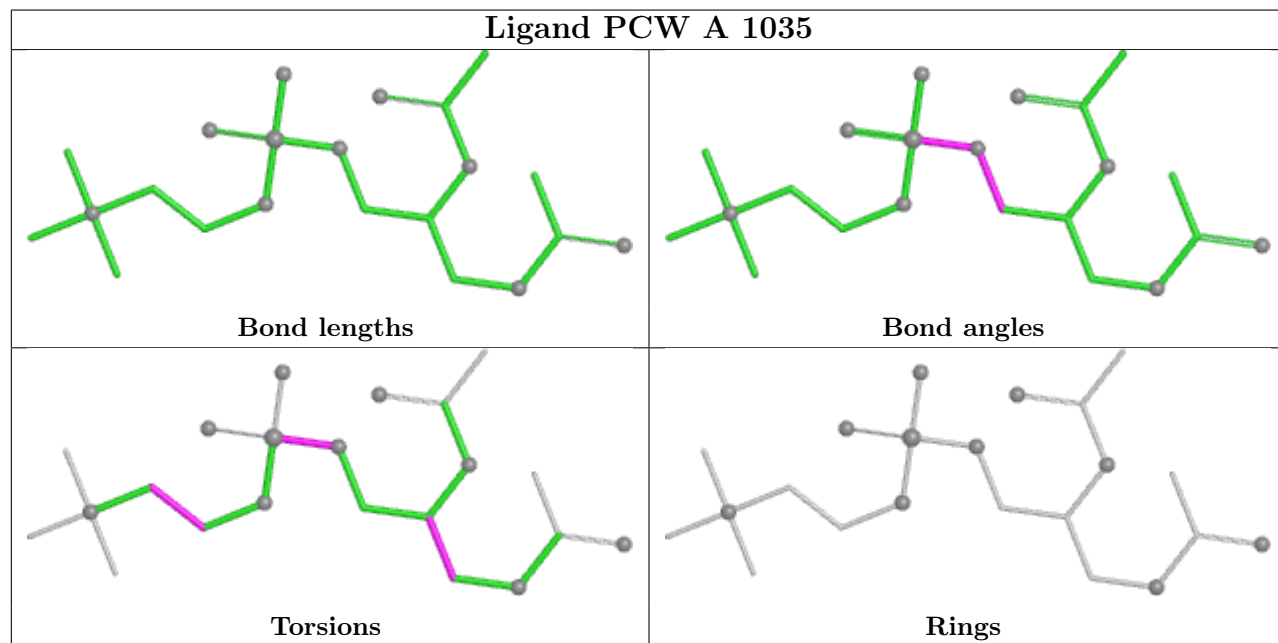
Ligand PCW A 1029



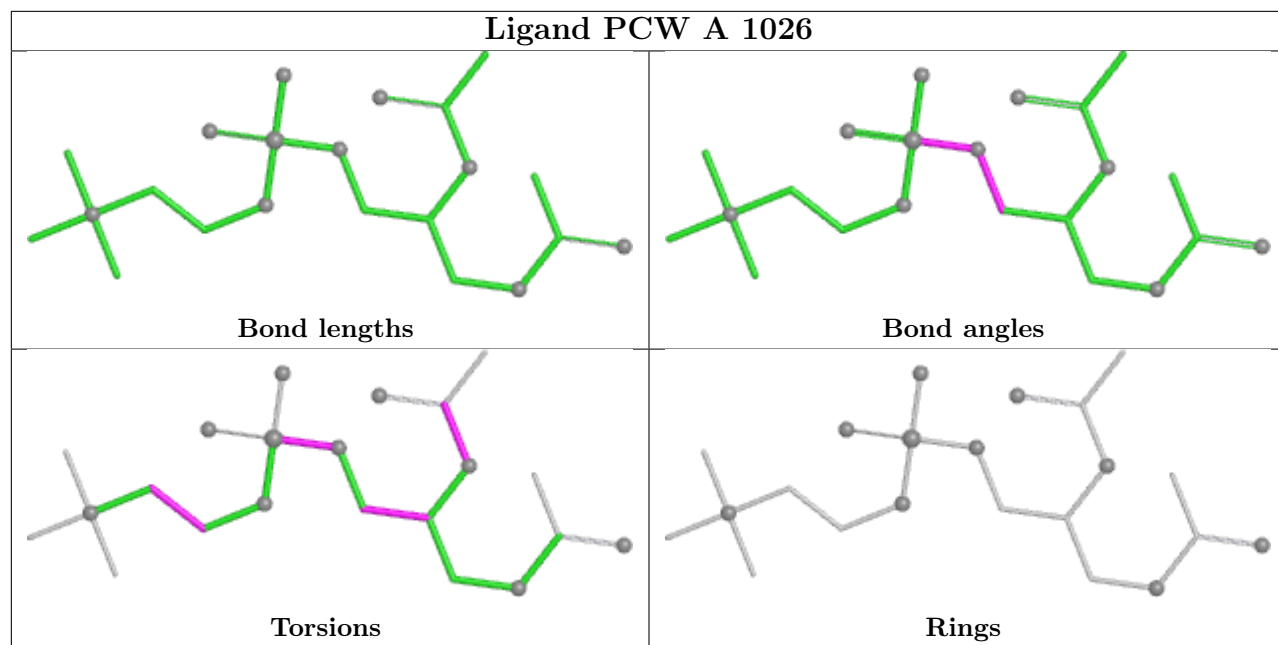
Ligand PCW A 1028



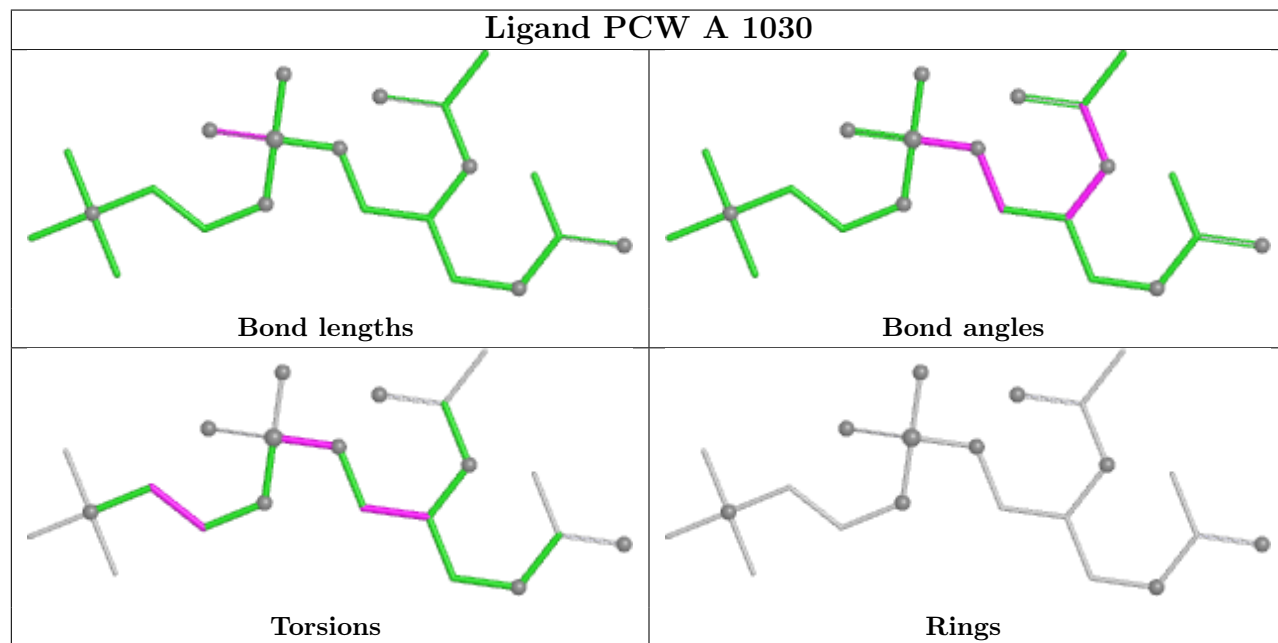
Ligand PCW A 1035

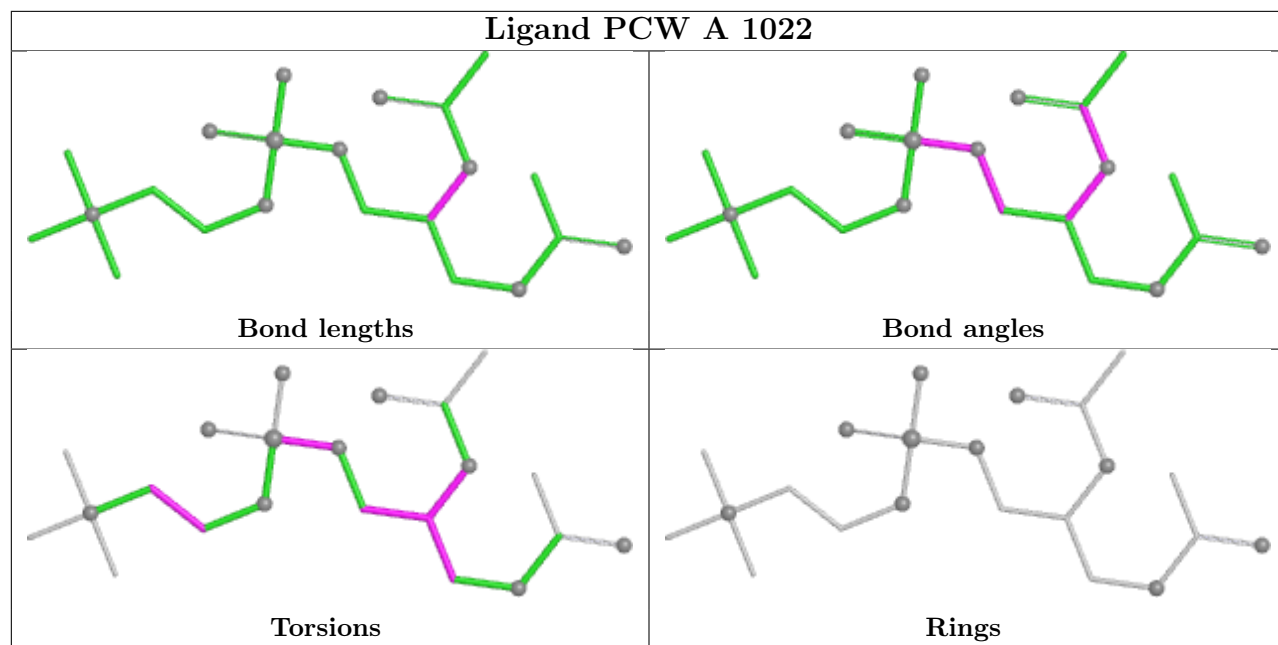


Ligand PCW A 1026



Ligand PCW A 1030





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	994/995 (99%)	0.66	93 (9%) 14 9	62, 114, 245, 480	0

The worst 5 of 93 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	96	LEU	13.5
1	A	95	LEU	12.3
1	A	980	LEU	9.3
1	A	839	ALA	8.7
1	A	97	ILE	6.5

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 oligosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	PCW	A	1033	22/54	-0.17	0.25	256,256,256,256	0
5	PCW	A	1037	22/54	0.04	0.28	292,292,292,292	0

Continued on next page...

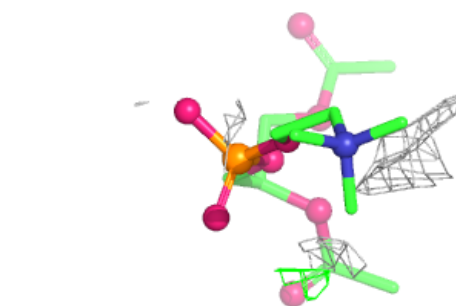
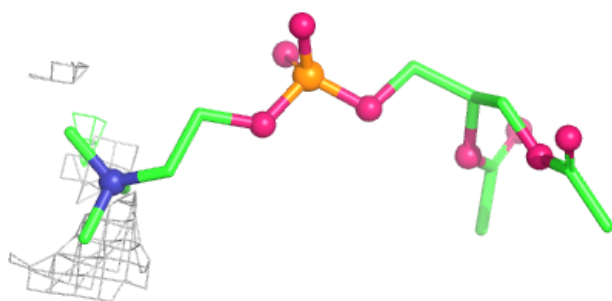
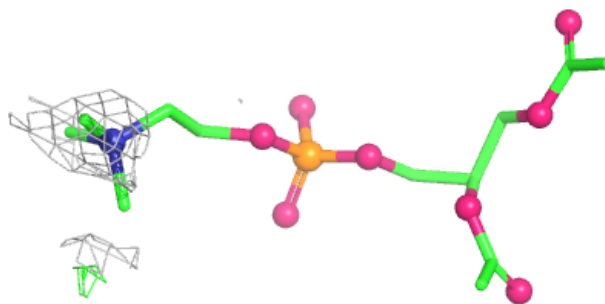
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	PCW	A	1034	22/54	0.11	0.23	262,262,262,262	0
5	PCW	A	1032	22/54	0.13	0.27	266,266,266,266	0
5	PCW	A	1030	22/54	0.15	0.28	285,285,285,285	0
5	PCW	A	1027	22/54	0.17	0.25	296,296,296,296	0
5	PCW	A	1024	22/54	0.24	0.22	263,263,263,263	0
5	PCW	A	1026	22/54	0.26	0.24	220,220,220,220	0
5	PCW	A	1017	22/54	0.27	0.28	274,274,274,274	0
5	PCW	A	1019	22/54	0.32	0.20	264,264,264,264	0
5	PCW	A	1020	22/54	0.32	0.16	268,268,268,268	0
5	PCW	A	1022	22/54	0.33	0.23	273,273,273,273	0
5	PCW	A	1009	22/54	0.34	0.25	278,278,278,278	0
5	PCW	A	1015	22/54	0.35	0.15	287,287,287,287	0
5	PCW	A	1012	22/54	0.37	0.15	274,274,274,274	0
5	PCW	A	1011	22/54	0.37	0.19	253,253,253,253	0
5	PCW	A	1035	22/54	0.40	0.17	241,241,241,241	0
5	PCW	A	1010	22/54	0.41	0.21	272,272,272,272	0
5	PCW	A	1031	22/54	0.42	0.23	255,255,255,255	0
5	PCW	A	1025	22/54	0.44	0.17	275,275,275,275	0
5	PCW	A	1013	22/54	0.44	0.20	272,272,272,272	0
5	PCW	A	1004	22/54	0.46	0.26	281,281,281,281	0
5	PCW	A	1007	22/54	0.47	0.16	259,259,259,259	0
5	PCW	A	1016	22/54	0.48	0.23	315,315,315,315	0
5	PCW	A	1008	22/54	0.51	0.14	279,279,279,279	0
5	PCW	A	1018	22/54	0.52	0.22	300,300,300,300	0
5	PCW	A	1028	22/54	0.56	0.16	268,268,268,268	0
5	PCW	A	1006	22/54	0.56	0.23	297,297,297,297	0
5	PCW	A	1014	22/54	0.61	0.15	283,283,283,283	0
5	PCW	A	1023	22/54	0.65	0.19	260,260,260,260	0
5	PCW	A	1005	22/54	0.66	0.22	260,260,260,260	0
5	PCW	A	1029	22/54	0.67	0.17	257,257,257,257	0
5	PCW	A	1036	22/54	0.68	0.21	250,250,250,250	0
5	PCW	A	1021	22/54	0.68	0.14	255,255,255,255	0
4	TG1	A	1003	46/46	0.86	0.21	199,203,205,206	0
3	ALF	A	1002	5/5	0.94	0.09	58,61,66,79	0
2	MG	A	1001	1/1	0.99	0.05	67,67,67,67	0

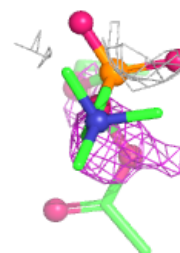
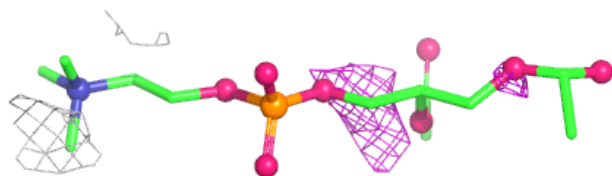
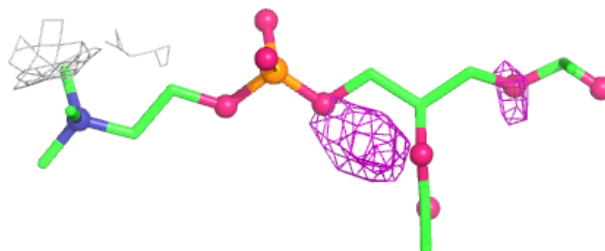
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around PCW A 1033:

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

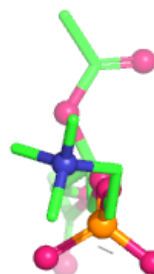
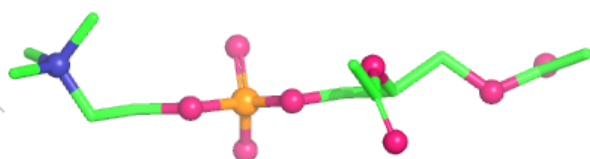
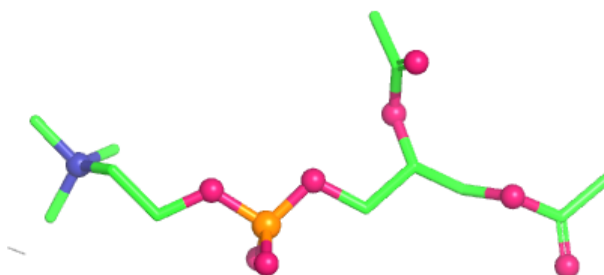
**Electron density around PCW A 1037:**

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

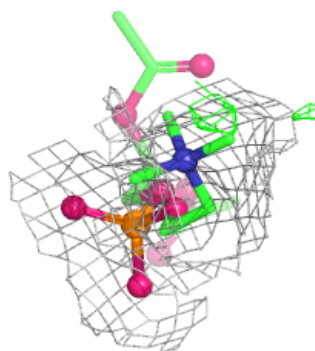
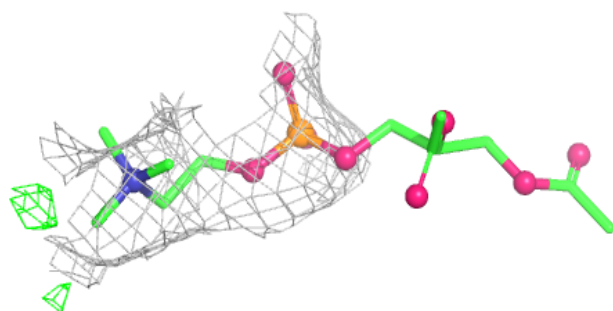
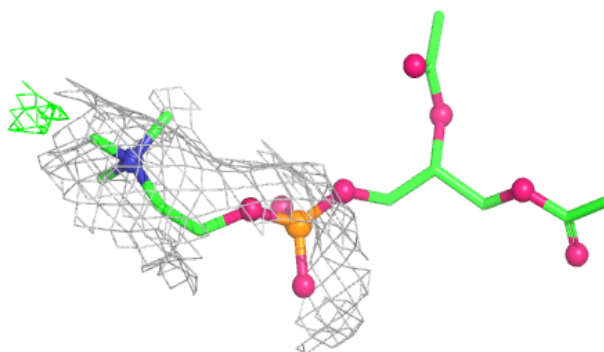


Electron density around PCW A 1034:

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

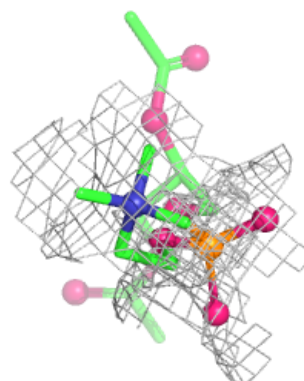
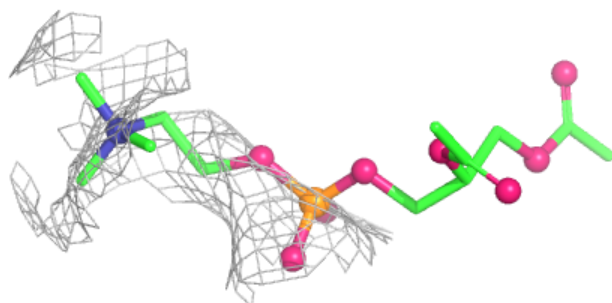
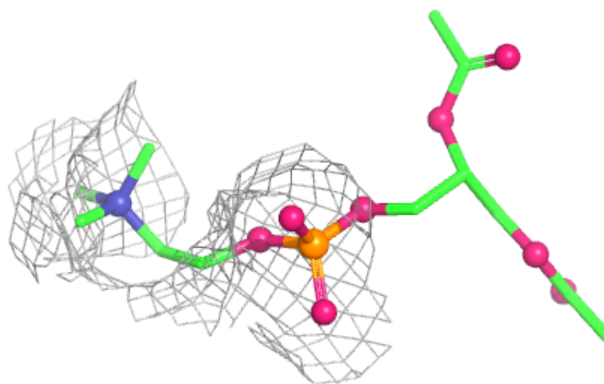
**Electron density around PCW A 1032:**

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

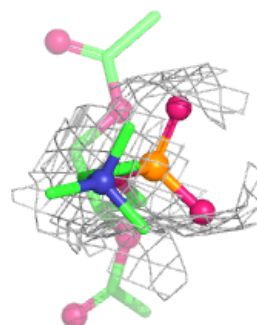
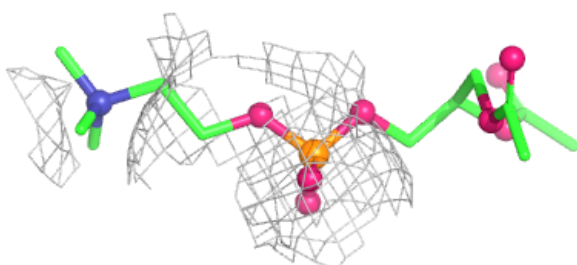
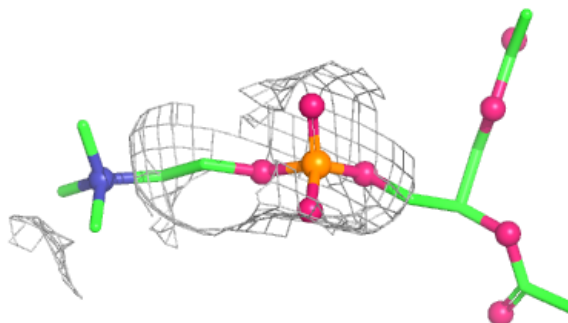


Electron density around PCW A 1030:

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

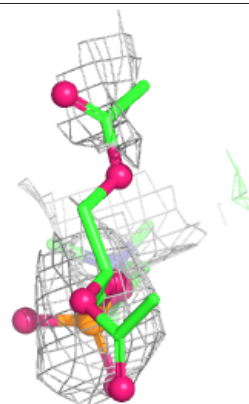
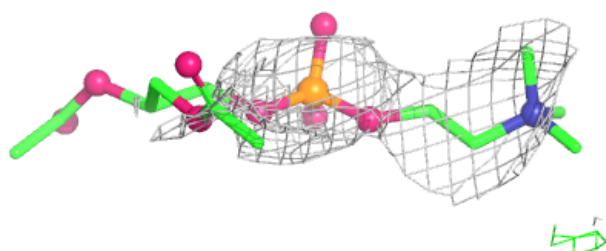
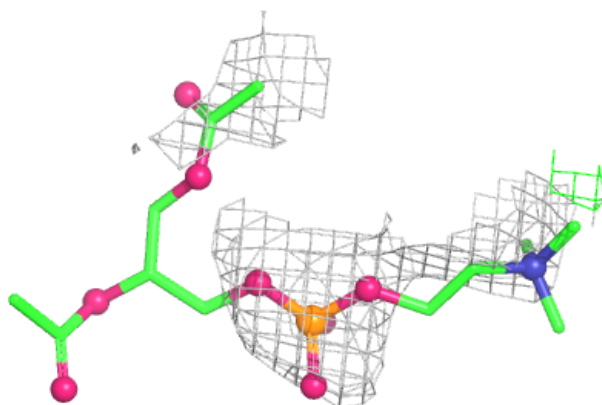
**Electron density around PCW A 1027:**

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

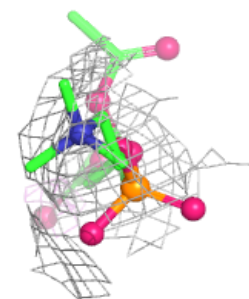
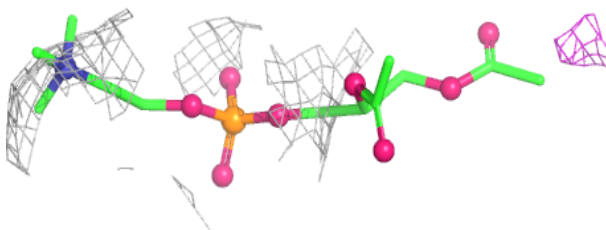
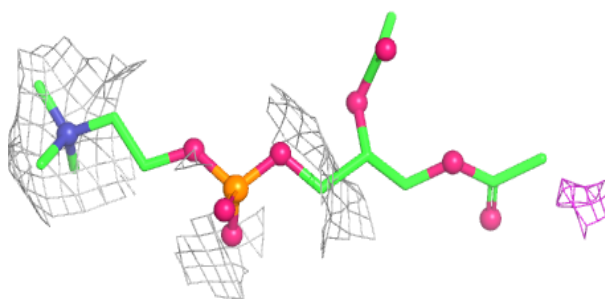


Electron density around PCW A 1024:

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

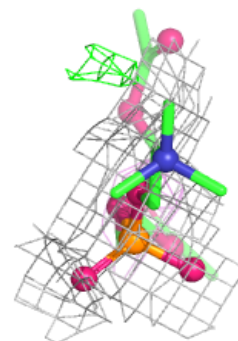
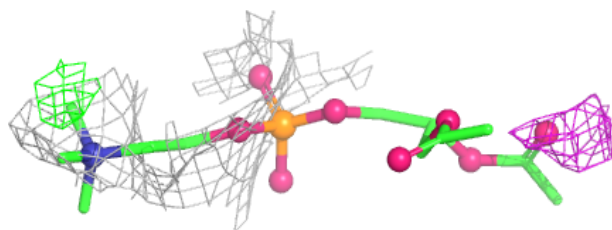
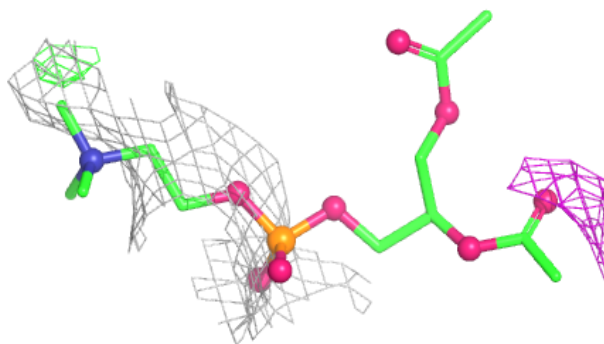
**Electron density around PCW A 1026:**

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

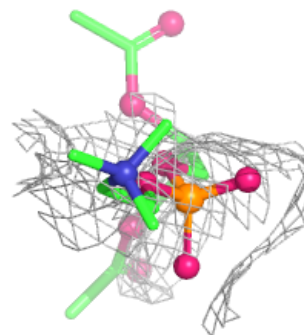
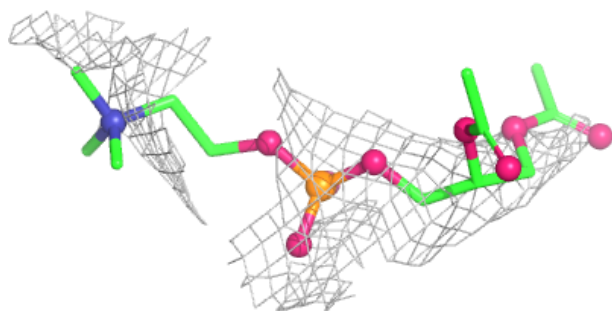
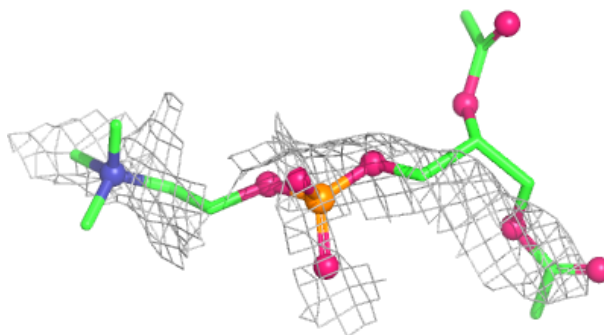


Electron density around PCW A 1017:

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

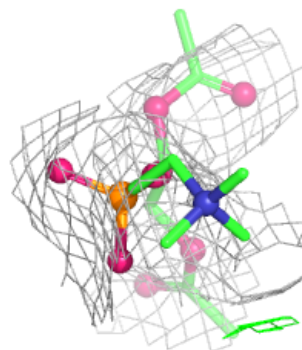
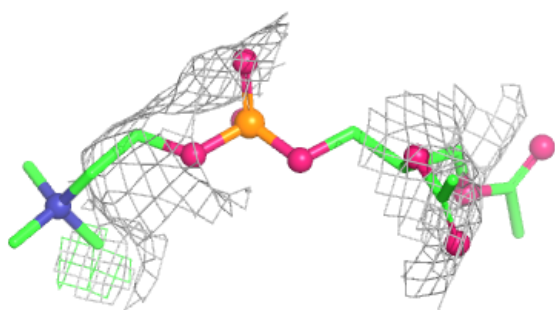
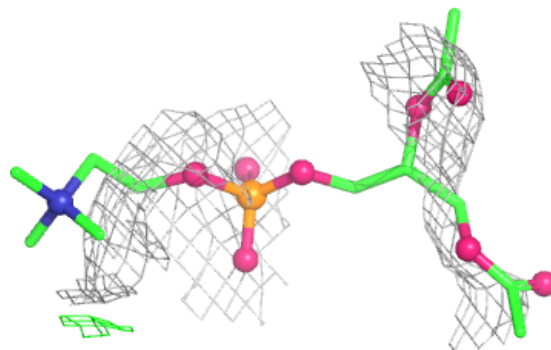
**Electron density around PCW A 1019:**

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

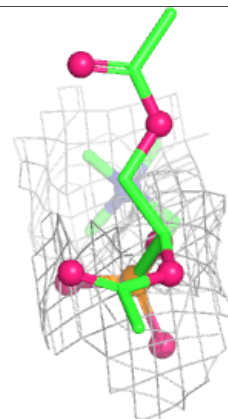
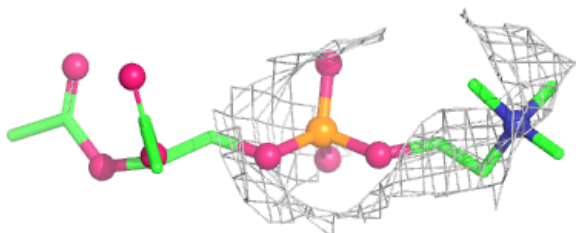
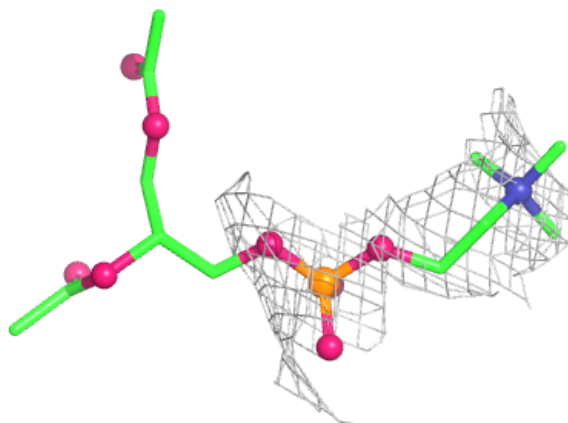


Electron density around PCW A 1020:

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

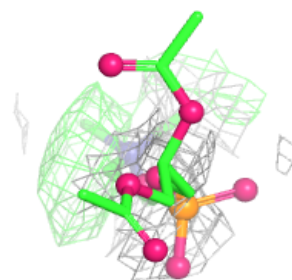
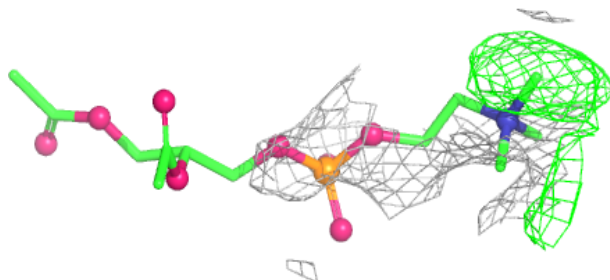
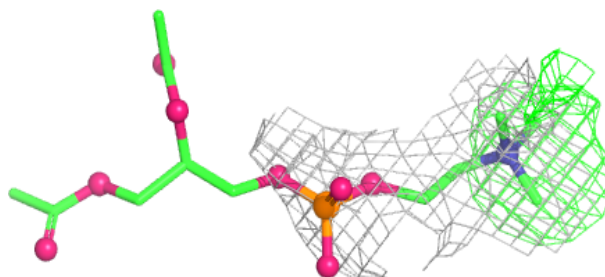
**Electron density around PCW A 1022:**

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

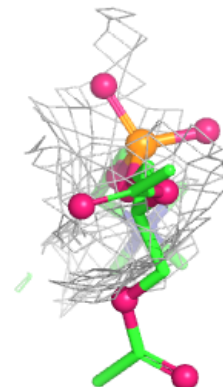
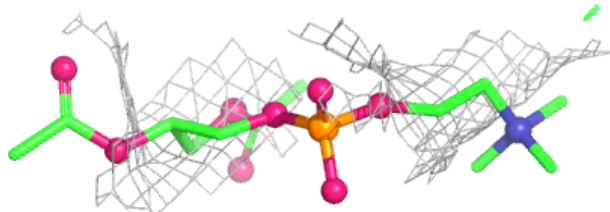
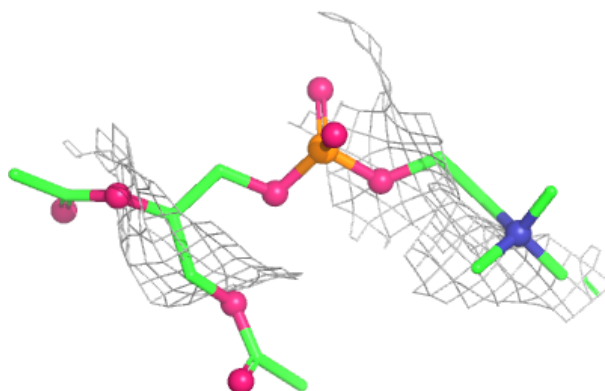


Electron density around PCW A 1009:

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

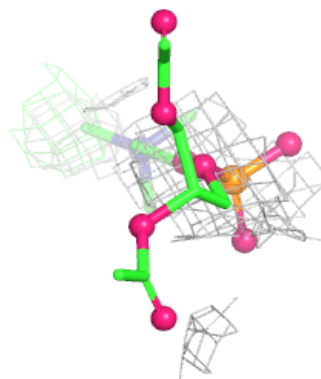
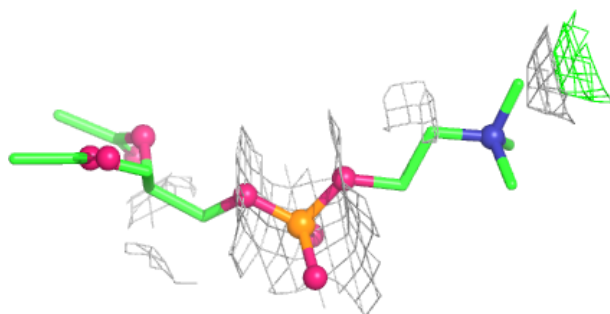
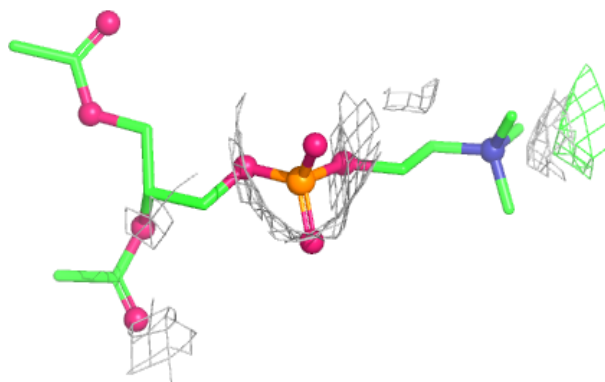
**Electron density around PCW A 1015:**

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

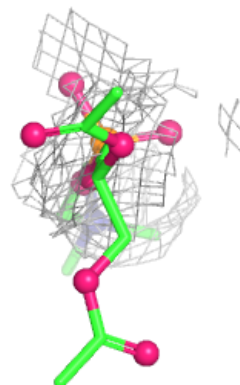
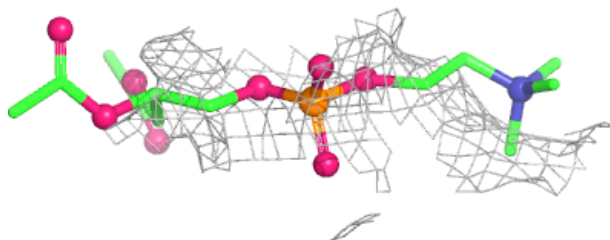
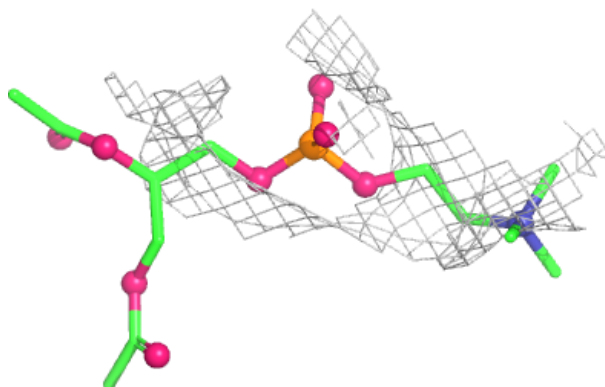


Electron density around PCW A 1012:

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

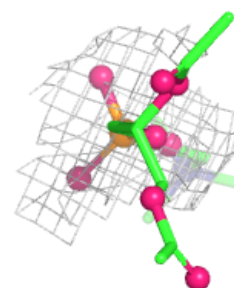
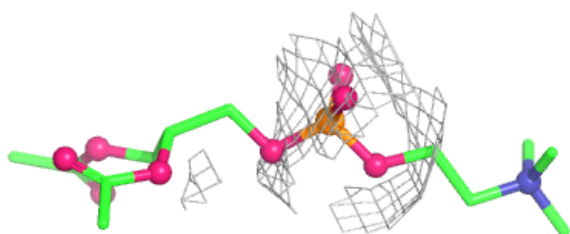
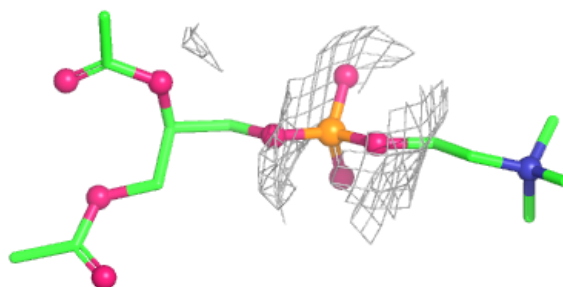
**Electron density around PCW A 1011:**

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

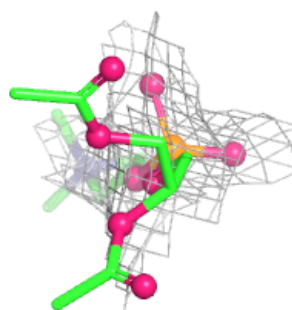
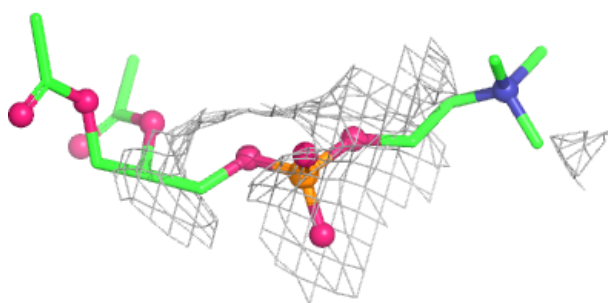
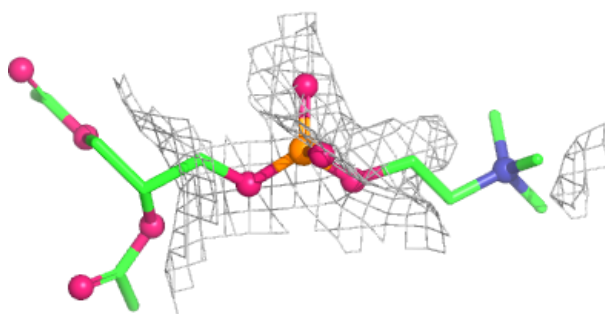


Electron density around PCW A 1035:

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

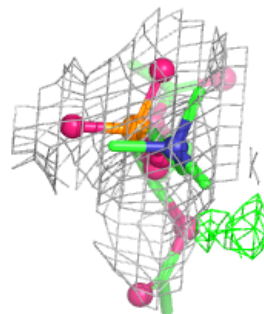
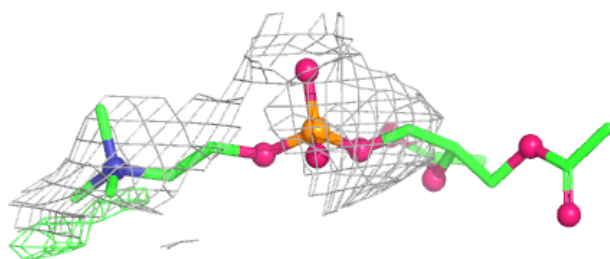
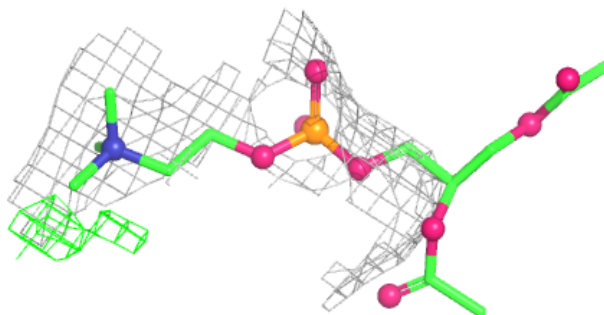
**Electron density around PCW A 1010:**

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

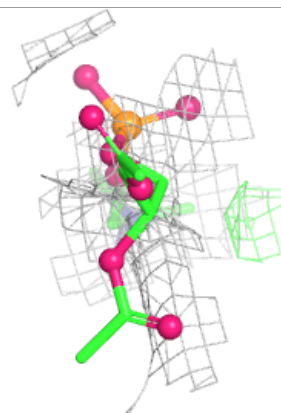
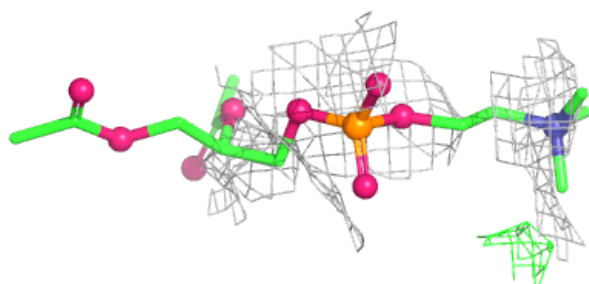
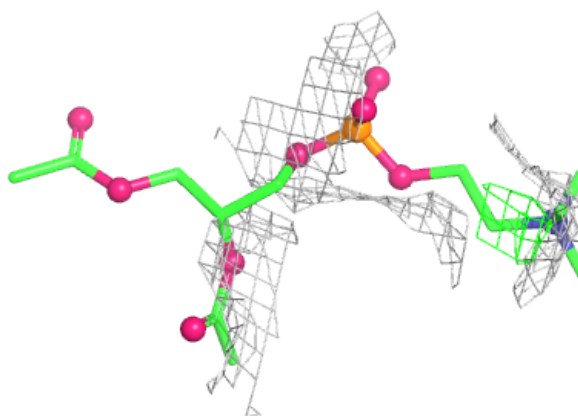


Electron density around PCW A 1031:

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

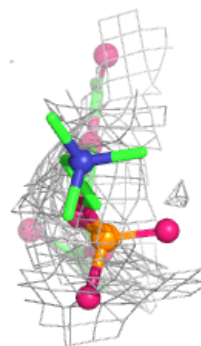
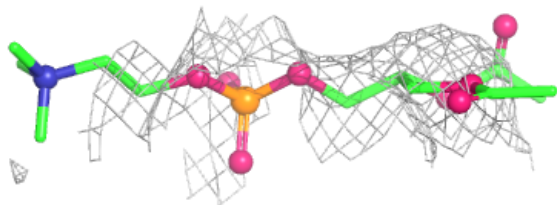
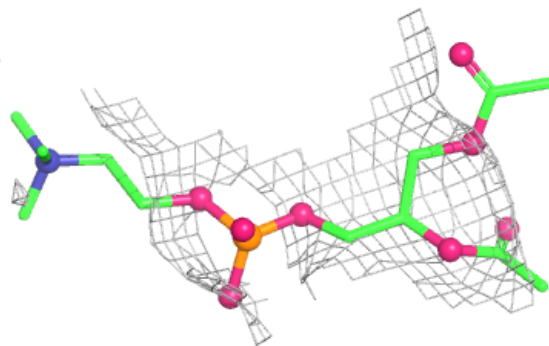
**Electron density around PCW A 1025:**

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

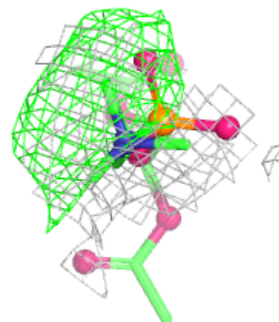
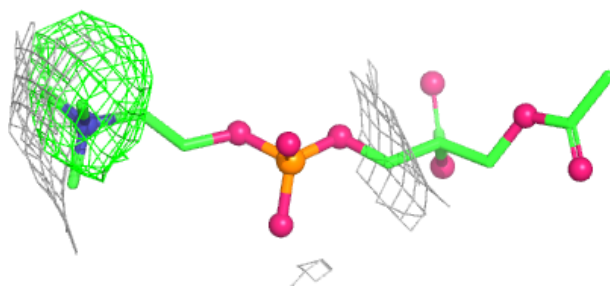
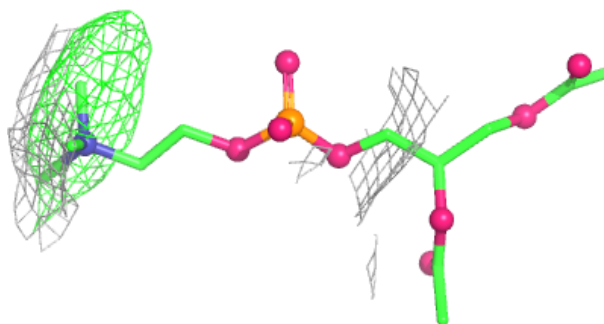


Electron density around PCW A 1013:

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

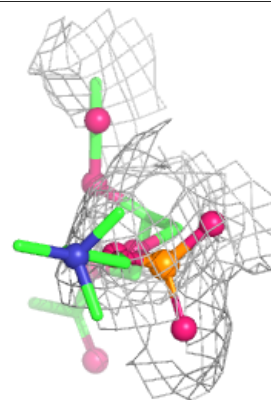
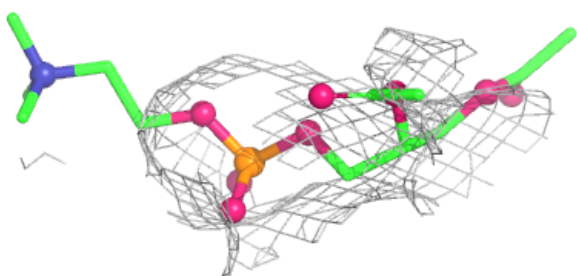
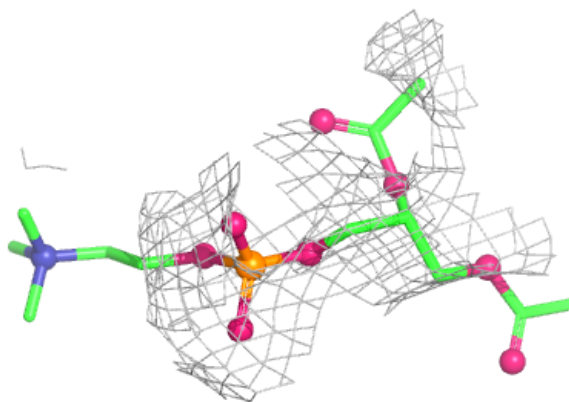
**Electron density around PCW A 1004:**

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

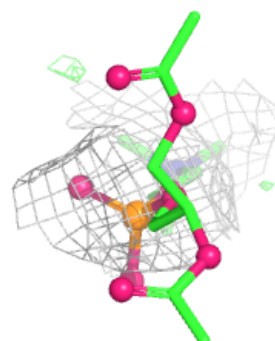
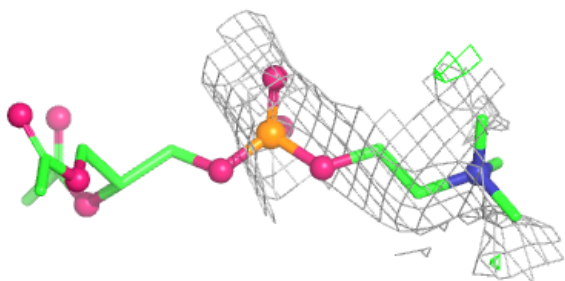
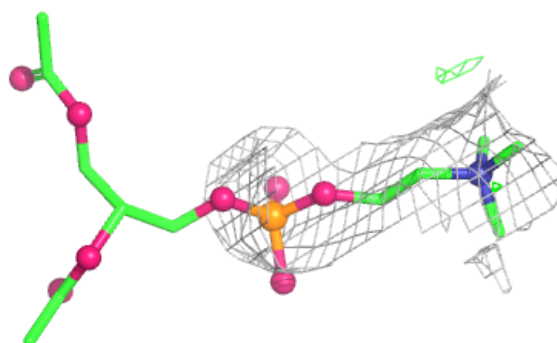


Electron density around PCW A 1007:

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

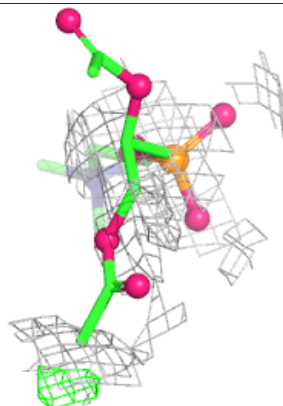
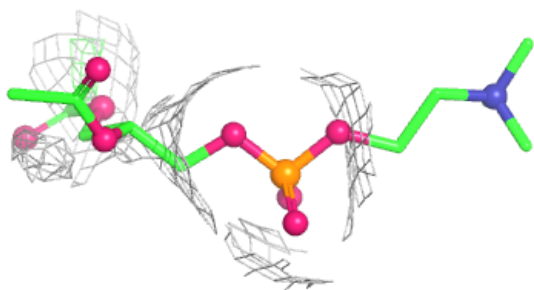
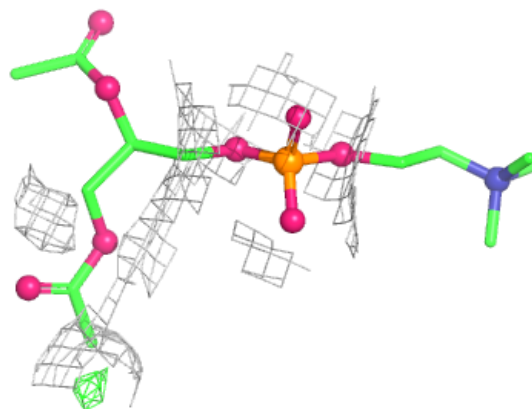
**Electron density around PCW A 1016:**

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

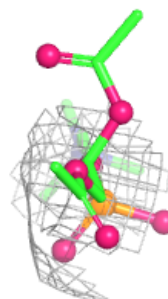
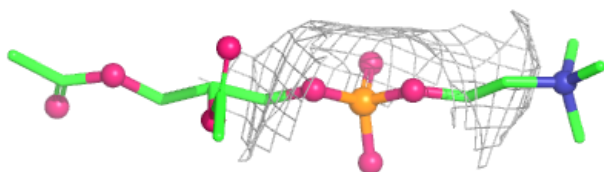
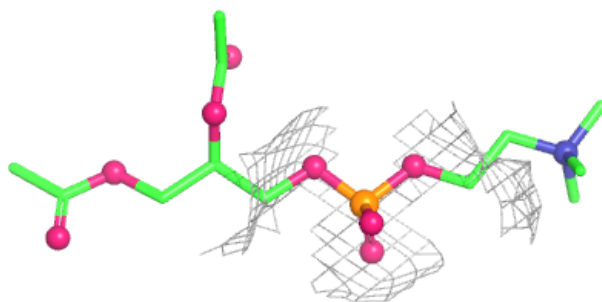


Electron density around PCW A 1008:

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

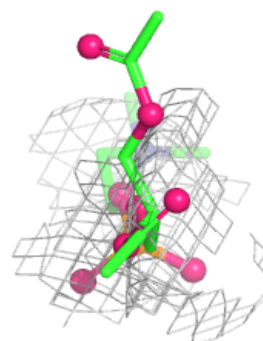
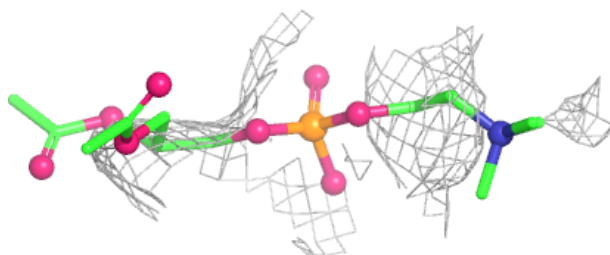
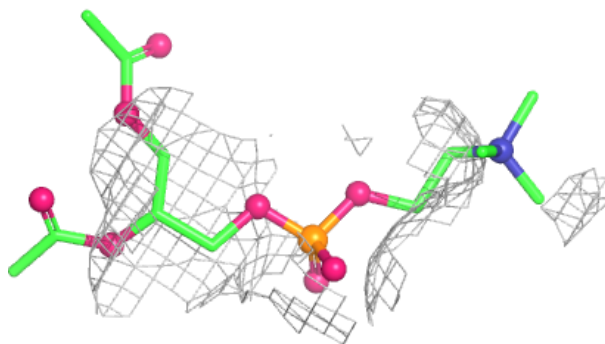
**Electron density around PCW A 1018:**

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

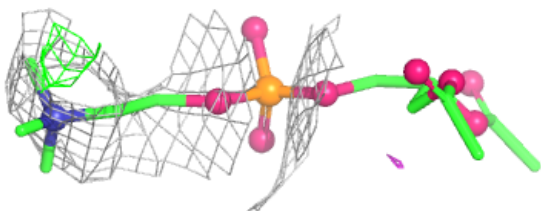
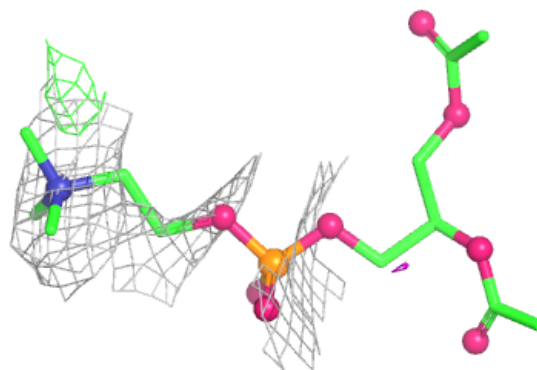


Electron density around PCW A 1028:

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

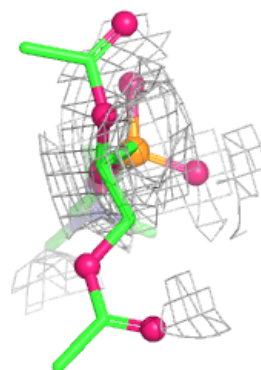
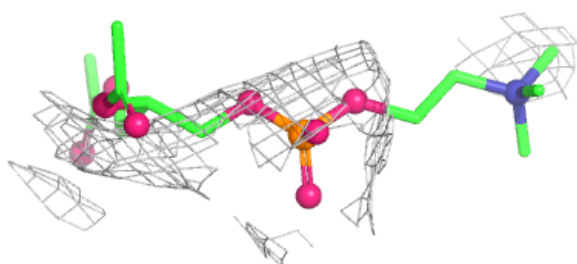
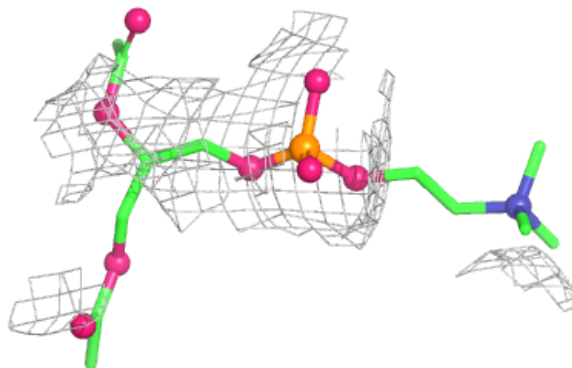
**Electron density around PCW A 1006:**

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

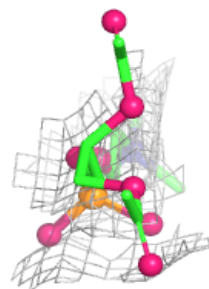
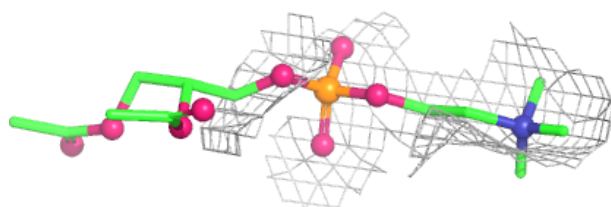
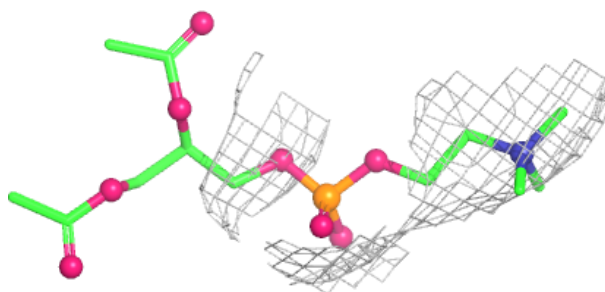


Electron density around PCW A 1014:

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

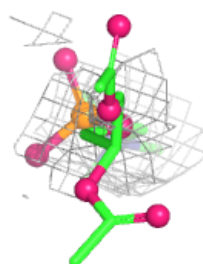
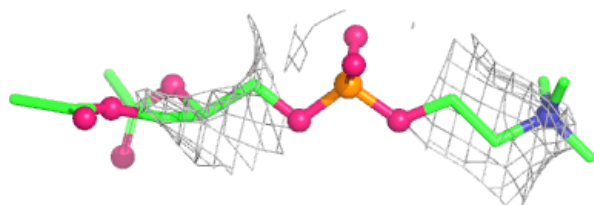
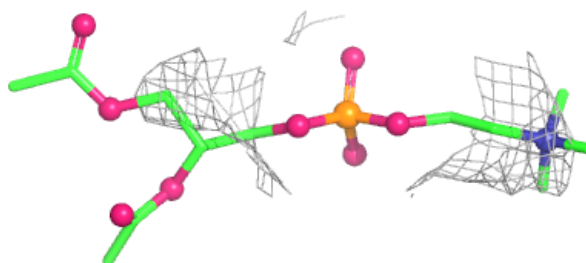
**Electron density around PCW A 1023:**

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

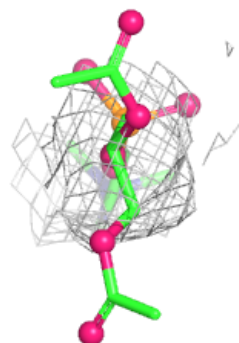
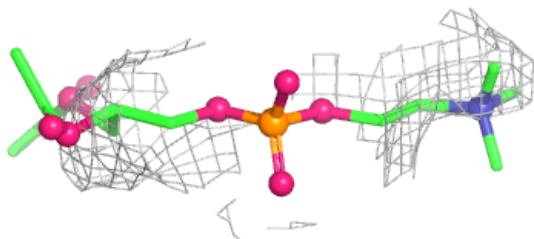
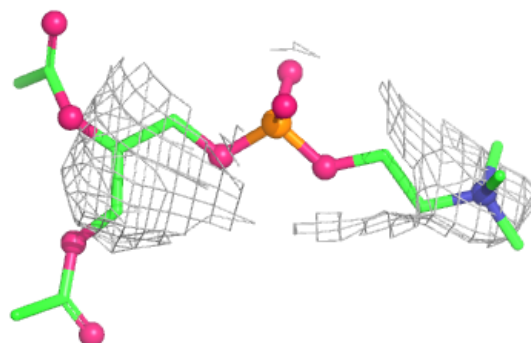


Electron density around PCW A 1005:

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

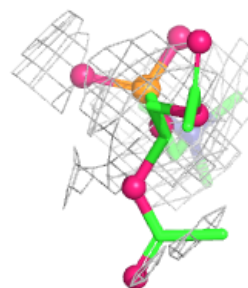
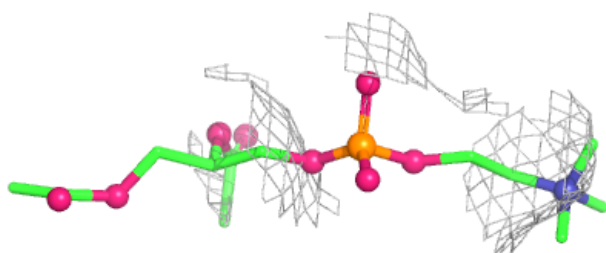
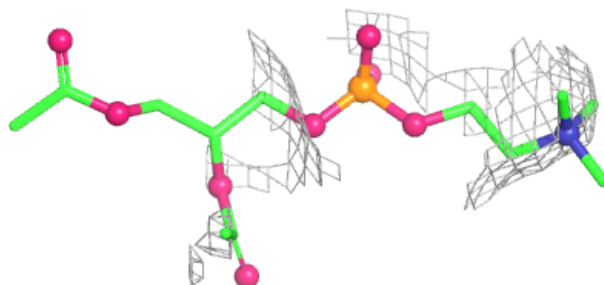
**Electron density around PCW A 1029:**

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

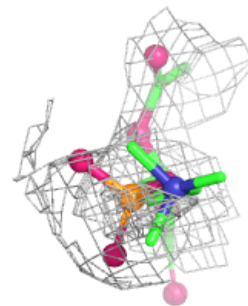
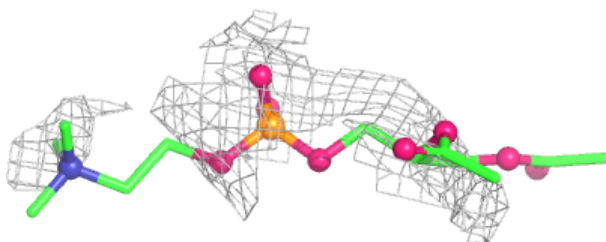
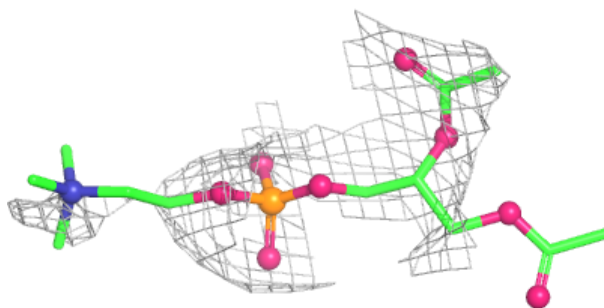


Electron density around PCW A 1036:

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

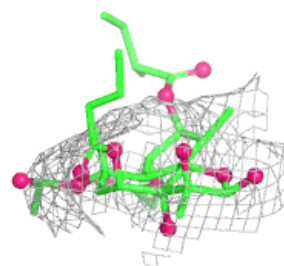
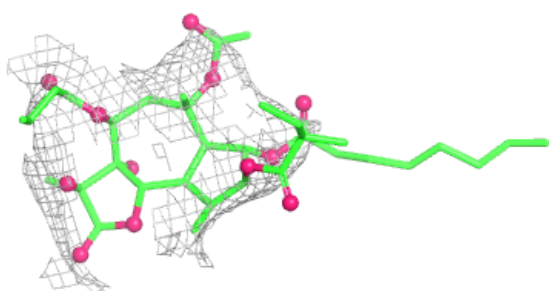
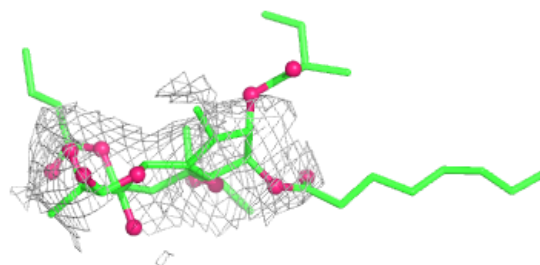
**Electron density around PCW A 1021:**

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



Electron density around TG1 A 1003:

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



6.5 Other polymers ⓘ

There are no such residues in this entry.