



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 12:43 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 Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 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

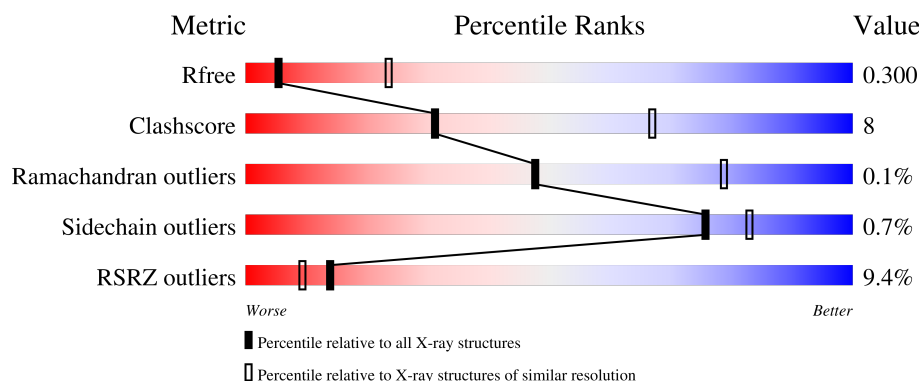
1 Overall quality at a glance

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	

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			

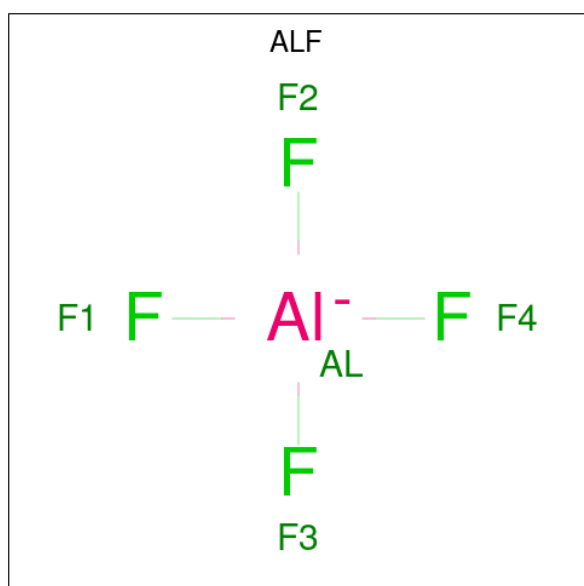
There is a discrepancy between the modelled and reference sequences:

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

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

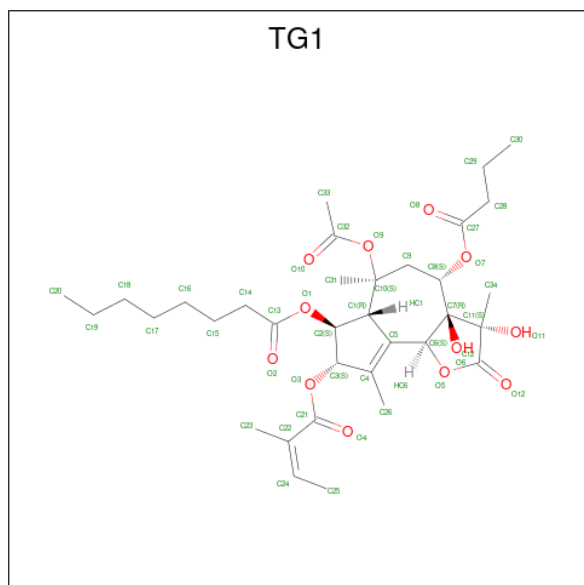
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mg	0	0
			1	1		

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



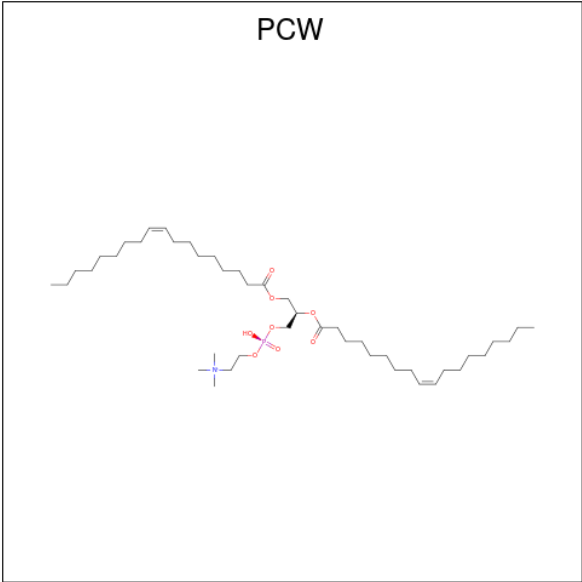
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	Al	F	0	0
			5	1	4		

- Molecule 4 is OCTANOIC ACID [3S-[3ALPHA, 3ABETA, 4ALPHA, 6BETA, 6ABETA, 7BETA, 8ALPHA(Z), 9BETA]]-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		
5	A	1	Total	C	N	O	P	0	0
			22	12	1	8	1		

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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 [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: 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

All (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
1	A	936	SER	N-CA-C	-5.18	105.64	111.28
1	A	89	VAL	N-CA-C	5.11	115.84	110.62
1	A	937	ILE	CB-CA-C	-5.08	105.47	111.97

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
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.

All (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
1:A:99:ILE:O	1:A:103:ILE:HG12	1.67	0.94
1:A:93:VAL:HG12	1:A:97:ILE:HD11	1.50	0.92
1:A:941:MET:HE3	1:A:941:MET:HA	1.54	0.89
1:A:529:ARG:NH1	6:A:1101:HOH:O	2.07	0.88
1:A:90:GLU:O	1:A:94:ILE:HG13	1.76	0.86
1:A:72:SER:HB3	1:A:91:PRO:HG3	1.57	0.84
1:A:89:VAL:O	1:A:93:VAL:HG23	1.76	0.84
1:A:772:VAL:HG21	4:A:1003:TG1:H24	1.63	0.80
1:A:57:PHE:HE1	1:A:98:LEU:HG	1.45	0.80
1:A:486:GLU:O	1:A:491:ARG:NH2	2.16	0.79
1:A:88:PHE:HE1	5:A:1013:PCW:H2	1.46	0.78
1:A:941:MET:HE3	1:A:941:MET:CA	2.14	0.78
1:A:88:PHE:CE1	5:A:1013:PCW:H2	2.20	0.76
1:A:62:VAL:HG13	1:A:98:LEU:HD11	1.67	0.75
1:A:396:LEU:HA	1:A:400:LYS:O	1.88	0.73
1:A:90:GLU:CG	1:A:91:PRO:CD	2.67	0.73
1:A:512:MET:HB2	1:A:567:ARG:HB3	1.70	0.72
1:A:260:LEU:HD11	1:A:306:ALA:HB1	1.73	0.71
1:A:886:LEU:HG	1:A:887:ASP:H	0.68	0.71
1:A:72:SER:CB	1:A:91:PRO:HG3	2.21	0.70
1:A:266:LEU:HD21	5:A:1004:PCW:C12	2.22	0.70
1:A:90:GLU:HG3	1:A:91:PRO:HD3	1.72	0.69
1:A:90:GLU:HG3	1:A:91:PRO:CD	2.23	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:529:ARG:NH2	6:A:1102:HOH:O	2.19	0.67
1:A:802:LEU:C	1:A:936:SER:OG	2.39	0.65
1:A:304:VAL:HG23	1:A:792:LEU:HD12	1.80	0.64
1:A:69:ALA:HA	1:A:94:ILE:HD12	1.79	0.63
1:A:941:MET:HA	1:A:941:MET:CE	2.22	0.62
1:A:66:LEU:HD13	1:A:98:LEU:CD2	2.30	0.62
1:A:851:ALA:HB1	1:A:899:MET:HG3	1.81	0.61
1:A:798:VAL:CG1	1:A:943:LEU:HD13	2.32	0.60
1:A:488:SER:HB3	1:A:491:ARG:HE	1.67	0.60
1:A:94:ILE:HA	1:A:97:ILE:HD12	1.83	0.60
1:A:491:ARG:NH1	1:A:588:GLU:OE1	2.35	0.60
1:A:63:ARG:HD3	5:A:1027:PCW:C12	2.32	0.60
1:A:266:LEU:HD13	5:A:1025:PCW:C12	2.32	0.59
1:A:646:GLU:OE2	1:A:651:ARG:NH1	2.35	0.59
1:A:129:VAL:HG12	1:A:151:VAL:HG22	1.84	0.59
1:A:366:MET:HE2	1:A:384:ILE:HD11	1.84	0.58
1:A:352:LYS:NZ	1:A:353:THR:OG1	2.36	0.58
1:A:761:ILE:HG21	1:A:828:LEU:HD13	1.85	0.58
1:A:57:PHE:CE1	1:A:98:LEU:HG	2.34	0.58
1:A:93:VAL:O	1:A:97:ILE:HG13	2.05	0.57
1:A:86:THR:HG21	1:A:956:ILE:HG22	1.85	0.57
1:A:529:ARG:HG3	1:A:594:VAL:HG22	1.86	0.57
1:A:604:ARG:HB2	1:A:607:VAL:HG23	1.86	0.56
1:A:269:VAL:O	1:A:273:LEU:HG	2.06	0.56
1:A:887:ASP:HB3	1:A:890:ILE:HD11	1.88	0.56
1:A:762:ARG:HG2	1:A:829:ILE:HD11	1.86	0.56
1:A:950:VAL:HG12	1:A:952:PRO:HD2	1.88	0.56
1:A:369:ILE:HG13	1:A:528:VAL:HG13	1.89	0.55
1:A:529:ARG:HG2	1:A:592:THR:HG22	1.89	0.55
1:A:684:LYS:NZ	1:A:707:ASP:OD1	2.37	0.54
1:A:529:ARG:NH2	1:A:568:ASP:OD2	2.41	0.54
1:A:939:LEU:O	1:A:943:LEU:HG	2.08	0.53
1:A:342:LEU:HD13	1:A:716:ILE:HG21	1.89	0.53
1:A:757:MET:HA	1:A:760:PHE:CE2	2.43	0.53
1:A:179:ILE:HG13	1:A:180:LEU:HG	1.91	0.52
1:A:844:VAL:HG22	1:A:907:ILE:HG21	1.91	0.52
1:A:760:PHE:HA	1:A:763:TYR:HB3	1.92	0.52
1:A:88:PHE:O	1:A:91:PRO:HD2	2.10	0.52
1:A:425:LEU:O	1:A:469:ASN:ND2	2.36	0.52
1:A:66:LEU:HD13	1:A:98:LEU:HD21	1.92	0.51
1:A:304:VAL:CG2	1:A:792:LEU:HD12	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:798:VAL:HG11	1:A:943:LEU:HD13	1.93	0.51
1:A:174:ARG:HB3	1:A:186:SER:HB3	1.92	0.51
1:A:803:PRO:N	1:A:936:SER:OG	2.44	0.51
1:A:787:LEU:HD11	1:A:848:THR:HG21	1.94	0.50
1:A:843:TYR:OH	1:A:973:ILE:O	2.25	0.50
1:A:301:ALA:HA	1:A:789:PRO:HB3	1.94	0.50
1:A:100:ALA:O	1:A:104:VAL:HG23	2.12	0.50
1:A:941:MET:CA	1:A:941:MET:CE	2.85	0.49
1:A:990:ASN:O	5:A:1010:PCW:H63	2.13	0.49
1:A:253:LEU:HD23	4:A:1003:TG1:H301	1.94	0.49
1:A:311:LEU:HD13	1:A:764:LEU:HD12	1.94	0.49
1:A:289:ILE:O	5:A:1017:PCW:O2P	2.31	0.49
1:A:971:LEU:N	1:A:971:LEU:HD23	2.28	0.48
1:A:701:THR:HG22	1:A:718:ILE:HB	1.95	0.48
1:A:787:LEU:CD1	1:A:848:THR:HG21	2.43	0.48
1:A:518:PRO:HB3	1:A:549:ILE:HD13	1.95	0.48
1:A:287:SER:OG	1:A:288:TRP:N	2.47	0.48
1:A:971:LEU:O	1:A:975:LEU:HB2	2.15	0.47
1:A:304:VAL:HG23	1:A:792:LEU:CD1	2.43	0.47
1:A:940:SER:HA	1:A:943:LEU:HD12	1.97	0.47
1:A:66:LEU:HD13	1:A:98:LEU:HD23	1.97	0.47
1:A:528:VAL:N	1:A:535:VAL:O	2.48	0.47
1:A:754:TYR:O	1:A:758:LYS:N	2.46	0.47
1:A:323:THR:HG23	1:A:333:VAL:HB	1.97	0.46
1:A:347:VAL:HB	1:A:698:THR:HG22	1.97	0.46
1:A:72:SER:C	1:A:91:PRO:HG3	2.40	0.46
1:A:47:LYS:HB3	1:A:52:LEU:HD11	1.96	0.46
1:A:678:ARG:O	1:A:678:ARG:HG2	2.16	0.46
1:A:969:MET:HE3	1:A:972:LYS:HB2	1.97	0.46
1:A:484:THR:HB	1:A:496:VAL:HG12	1.98	0.45
1:A:942:SER:O	1:A:946:LEU:N	2.44	0.45
1:A:567:ARG:NE	1:A:589:THR:O	2.51	0.44
1:A:347:VAL:HG11	1:A:691:LEU:HD13	1.99	0.44
1:A:150:ILE:HG22	1:A:220:LEU:HD11	2.00	0.44
1:A:899:MET:HE1	1:A:969:MET:HB3	2.00	0.43
1:A:529:ARG:HD3	1:A:592:THR:HG21	1.99	0.43
1:A:836:ARG:NH1	1:A:918:GLU:O	2.31	0.43
1:A:335:SER:O	1:A:338:SER:OG	2.28	0.43
1:A:351:ASP:OD2	3:A:1002:ALF:F2	2.26	0.43
1:A:903:VAL:HA	1:A:970:VAL:HG13	2.01	0.43
1:A:62:VAL:HG13	1:A:98:LEU:CD1	2.44	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:756:ASN:HB3	1:A:808:GLY:HA2	2.00	0.42
1:A:774:CYS:SG	1:A:848:THR:HG21	2.60	0.42
1:A:128:LYS:HG2	1:A:139:ARG:HG2	2.00	0.42
1:A:447:THR:HG22	1:A:451:LYS:HE3	2.02	0.42
1:A:606:GLU:O	1:A:610:SER:OG	2.31	0.42
1:A:88:PHE:C	1:A:91:PRO:HD2	2.44	0.42
1:A:196:ASP:HB3	1:A:199:ALA:HB2	2.01	0.42
1:A:272:TRP:HE3	1:A:273:LEU:HD23	1.84	0.42
1:A:527:TYR:CG	1:A:534:ARG:HD3	2.55	0.42
1:A:802:LEU:HB2	1:A:803:PRO:HD3	2.01	0.42
1:A:865:VAL:HG13	1:A:869:GLN:HG3	2.02	0.42
1:A:879:ASP:OD1	1:A:882:HIS:HB3	2.20	0.41
1:A:95:LEU:HD12	1:A:95:LEU:HA	1.75	0.41
1:A:795:VAL:HA	1:A:799:THR:HB	2.01	0.41
1:A:820:PRO:HA	1:A:821:PRO:HD3	1.95	0.41
1:A:367:PHE:CE1	1:A:596:VAL:HB	2.56	0.41
1:A:161:ALA:HA	1:A:210:SER:HB2	2.03	0.41
1:A:823:SER:HA	1:A:824:PRO:HD3	1.93	0.41
1:A:926:PRO:HB3	1:A:928:TRP:CE2	2.56	0.41
1:A:769:VAL:HG12	1:A:841:GLY:HA3	2.01	0.41
1:A:932:TRP:HE1	5:A:1007:PCW:H51	1.85	0.41
1:A:57:PHE:HA	1:A:62:VAL:HG11	2.02	0.40
1:A:319:LEU:HD23	1:A:336:LEU:HB3	2.03	0.40
1:A:884:GLU:O	1:A:886:LEU:N	2.53	0.40
1:A:42:PRO:HG2	1:A:236:ARG:CZ	2.51	0.40
1:A:895:GLU:HG3	1:A:960:LYS:HD3	2.04	0.40
1:A:758:LYS:HE2	1:A:762:ARG:NH2	2.36	0.40
1:A:799:THR:HG21	1:A:905:VAL:HG22	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	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 ⓘ

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

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	GLU
1	A	137	VAL
1	A	155	VAL
1	A	352	LYS
1	A	484	THR
1	A	544	LYS

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 ⓘ

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 [i](#)

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%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
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%)
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	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
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	-
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	-

All (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
4	A	1003	TG1	C24-C22	3.77	1.53	1.31
4	A	1003	TG1	C3-C4	3.37	1.54	1.50
4	A	1003	TG1	C9-C8	2.39	1.55	1.52
4	A	1003	TG1	O3-C21	2.37	1.39	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1003	TG1	O7-C8	-2.36	1.42	1.46
5	A	1008	PCW	C5-C4	2.30	1.58	1.51
5	A	1030	PCW	P-O2P	2.30	1.58	1.50
5	A	1015	PCW	P-O2P	2.16	1.58	1.50
4	A	1003	TG1	C31-C10	2.14	1.56	1.52
5	A	1036	PCW	P-O2P	2.07	1.58	1.50
5	A	1022	PCW	O2-C2	2.04	1.51	1.46
5	A	1010	PCW	P-O2P	2.01	1.57	1.50
5	A	1020	PCW	P-O2P	2.01	1.57	1.50
4	A	1003	TG1	O1-C13	2.00	1.39	1.34

All (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
4	A	1003	TG1	C23-C22-C24	-4.41	106.20	123.12
4	A	1003	TG1	C26-C4-C5	-4.27	119.40	130.03
4	A	1003	TG1	C10-C1-C5	3.68	120.07	115.07
4	A	1003	TG1	O3-C21-O4	-3.51	116.86	123.40
5	A	1016	PCW	C2-O2-C31	3.13	123.38	117.85
4	A	1003	TG1	O9-C32-O10	-3.04	118.32	123.61
5	A	1037	PCW	O3-C11-C12	-2.90	100.06	112.38
5	A	1022	PCW	C2-O2-C31	2.85	122.88	117.85
4	A	1003	TG1	C23-C22-C21	-2.81	108.91	116.12
5	A	1005	PCW	P-O3P-C1	-2.66	106.09	121.35
5	A	1004	PCW	P-O3P-C1	-2.61	106.41	121.35
5	A	1014	PCW	P-O3P-C1	-2.60	106.43	121.35
5	A	1035	PCW	P-O3P-C1	-2.56	106.67	121.35
5	A	1021	PCW	P-O3P-C1	-2.53	106.87	121.35
5	A	1006	PCW	C2-O2-C31	2.48	122.22	117.85
5	A	1031	PCW	P-O3P-C1	-2.47	107.20	121.35
5	A	1023	PCW	P-O3P-C1	-2.47	107.21	121.35
4	A	1003	TG1	O1-C2-C3	-2.43	105.58	110.18
5	A	1019	PCW	P-O3P-C1	-2.42	107.48	121.35
5	A	1024	PCW	P-O3P-C1	-2.39	107.64	121.35
5	A	1029	PCW	P-O3P-C1	-2.39	107.67	121.35
5	A	1010	PCW	P-O3P-C1	-2.38	107.70	121.35
5	A	1033	PCW	P-O3P-C1	-2.38	107.72	121.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1020	PCW	P-O3P-C1	-2.37	107.76	121.35
5	A	1011	PCW	P-O3P-C1	-2.36	107.84	121.35
5	A	1026	PCW	P-O3P-C1	-2.36	107.85	121.35
5	A	1025	PCW	P-O3P-C1	-2.34	107.95	121.35
5	A	1018	PCW	P-O3P-C1	-2.33	108.00	121.35
5	A	1005	PCW	C2-O2-C31	2.27	121.86	117.85
5	A	1016	PCW	P-O3P-C1	-2.27	108.33	121.35
5	A	1027	PCW	P-O3P-C1	-2.27	108.37	121.35
5	A	1028	PCW	P-O3P-C1	-2.26	108.37	121.35
5	A	1037	PCW	P-O3P-C1	-2.26	108.37	121.35
5	A	1032	PCW	P-O3P-C1	-2.25	108.43	121.35
5	A	1007	PCW	P-O3P-C1	-2.25	108.44	121.35
5	A	1023	PCW	C8-N-C7	2.25	114.89	108.98
4	A	1003	TG1	C10-C9-C8	2.25	125.58	116.81
5	A	1034	PCW	P-O3P-C1	-2.24	108.53	121.35
5	A	1030	PCW	C2-O2-C31	2.23	121.78	117.85
5	A	1017	PCW	P-O3P-C1	-2.22	108.64	121.35
5	A	1015	PCW	P-O3P-C1	-2.21	108.70	121.35
5	A	1022	PCW	P-O3P-C1	-2.17	108.91	121.35
5	A	1013	PCW	P-O3P-C1	-2.14	109.09	121.35
5	A	1036	PCW	P-O3P-C1	-2.12	109.20	121.35
5	A	1030	PCW	P-O3P-C1	-2.09	109.35	121.35
5	A	1012	PCW	P-O3P-C1	-2.08	109.46	121.35
5	A	1010	PCW	C2-O2-C31	2.06	121.49	117.85
4	A	1003	TG1	O5-C6-C5	-2.05	108.12	111.17
5	A	1006	PCW	P-O3P-C1	-2.05	109.58	121.35
5	A	1009	PCW	C2-O2-C31	2.05	121.46	117.85
5	A	1008	PCW	P-O3P-C1	-2.02	109.78	121.35

There are no chirality outliers.

All (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
5	A	1007	PCW	C1-O3P-P-O4P
5	A	1008	PCW	O4P-C4-C5-N
5	A	1008	PCW	C32-C31-O2-C2
5	A	1009	PCW	O4P-C4-C5-N

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Mol	Chain	Res	Type	Atoms
5	A	1011	PCW	O4P-C4-C5-N
5	A	1012	PCW	C32-C31-O2-C2
5	A	1012	PCW	C1-O3P-P-O1P
5	A	1012	PCW	C1-O3P-P-O4P
5	A	1014	PCW	C32-C31-O2-C2
5	A	1016	PCW	C1-O3P-P-O2P
5	A	1017	PCW	C1-O3P-P-O2P
5	A	1019	PCW	O3P-C1-C2-O2
5	A	1019	PCW	O4P-C4-C5-N
5	A	1021	PCW	C32-C31-O2-C2
5	A	1023	PCW	C32-C31-O2-C2
5	A	1023	PCW	C1-O3P-P-O1P
5	A	1023	PCW	C1-O3P-P-O4P
5	A	1024	PCW	O4P-C4-C5-N
5	A	1024	PCW	C32-C31-O2-C2
5	A	1026	PCW	O4P-C4-C5-N
5	A	1026	PCW	C1-O3P-P-O2P
5	A	1027	PCW	C1-O3P-P-O4P
5	A	1028	PCW	O4P-C4-C5-N
5	A	1029	PCW	C32-C31-O2-C2
5	A	1031	PCW	O3P-C1-C2-O2
5	A	1031	PCW	C32-C31-O2-C2
5	A	1033	PCW	O4P-C4-C5-N
5	A	1036	PCW	O4P-C4-C5-N
5	A	1007	PCW	O31-C31-O2-C2
5	A	1012	PCW	O31-C31-O2-C2
5	A	1021	PCW	O31-C31-O2-C2
5	A	1023	PCW	O31-C31-O2-C2
5	A	1029	PCW	O31-C31-O2-C2
5	A	1008	PCW	O31-C31-O2-C2
5	A	1014	PCW	O31-C31-O2-C2
5	A	1024	PCW	O31-C31-O2-C2
5	A	1031	PCW	O31-C31-O2-C2
5	A	1026	PCW	C32-C31-O2-C2
5	A	1029	PCW	C12-C11-O3-C3
5	A	1036	PCW	C32-C31-O2-C2
5	A	1006	PCW	O11-C11-O3-C3
5	A	1023	PCW	O11-C11-O3-C3
5	A	1006	PCW	C12-C11-O3-C3
5	A	1023	PCW	C12-C11-O3-C3
5	A	1034	PCW	C12-C11-O3-C3
5	A	1036	PCW	O31-C31-O2-C2

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Mol	Chain	Res	Type	Atoms
5	A	1029	PCW	O11-C11-O3-C3
5	A	1034	PCW	O11-C11-O3-C3
4	A	1003	TG1	O4-C21-O3-C3
5	A	1036	PCW	C12-C11-O3-C3
5	A	1037	PCW	O11-C11-O3-C3
5	A	1037	PCW	C12-C11-O3-C3
4	A	1003	TG1	O10-C32-O9-C10
4	A	1003	TG1	C21-C22-C24-C25
5	A	1010	PCW	O3P-C1-C2-O2
5	A	1036	PCW	O11-C11-O3-C3
5	A	1026	PCW	O31-C31-O2-C2
4	A	1003	TG1	O4-C21-C22-C24
4	A	1003	TG1	C16-C17-C18-C19
5	A	1021	PCW	C1-C2-C3-O3
5	A	1017	PCW	C12-C11-O3-C3
5	A	1005	PCW	O2-C2-C3-O3
5	A	1010	PCW	O2-C2-C3-O3
5	A	1021	PCW	O2-C2-C3-O3
5	A	1008	PCW	O3P-C1-C2-C3
5	A	1010	PCW	O3P-C1-C2-C3
5	A	1016	PCW	O3P-C1-C2-C3
5	A	1021	PCW	O3P-C1-C2-C3
5	A	1031	PCW	O3P-C1-C2-C3
5	A	1032	PCW	O3P-C1-C2-C3
5	A	1022	PCW	C1-C2-C3-O3
5	A	1033	PCW	C1-C2-C3-O3
5	A	1034	PCW	C1-C2-C3-O3
5	A	1035	PCW	C1-C2-C3-O3
5	A	1036	PCW	C1-C2-C3-O3
5	A	1014	PCW	O3P-C1-C2-O2
5	A	1017	PCW	O3P-C1-C2-O2
5	A	1026	PCW	O3P-C1-C2-O2
5	A	1033	PCW	O2-C2-C3-O3
5	A	1005	PCW	O3P-C1-C2-C3
5	A	1009	PCW	O3P-C1-C2-C3
4	A	1003	TG1	C14-C15-C16-C17
5	A	1005	PCW	C1-C2-C3-O3
5	A	1006	PCW	C1-C2-C3-O3
5	A	1010	PCW	C1-C2-C3-O3
5	A	1011	PCW	C1-C2-C3-O3
5	A	1014	PCW	C1-C2-C3-O3
5	A	1016	PCW	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
5	A	1017	PCW	C1-C2-C3-O3
5	A	1020	PCW	C1-C2-C3-O3
5	A	1025	PCW	C1-C2-C3-O3
5	A	1008	PCW	O3P-C1-C2-O2
5	A	1013	PCW	O2-C2-C3-O3
5	A	1014	PCW	O2-C2-C3-O3
5	A	1017	PCW	O2-C2-C3-O3
5	A	1022	PCW	O2-C2-C3-O3
5	A	1023	PCW	O2-C2-C3-O3
5	A	1034	PCW	O2-C2-C3-O3
5	A	1017	PCW	O3P-C1-C2-C3
5	A	1019	PCW	O3P-C1-C2-C3
5	A	1026	PCW	O3P-C1-C2-C3
5	A	1017	PCW	O11-C11-O3-C3
5	A	1006	PCW	C1-C2-O2-C31
5	A	1005	PCW	O3P-C1-C2-O2
5	A	1009	PCW	O3P-C1-C2-O2
5	A	1012	PCW	O3P-C1-C2-O2
5	A	1021	PCW	O3P-C1-C2-O2
5	A	1028	PCW	O3P-C1-C2-O2
5	A	1034	PCW	O3P-C1-C2-O2
5	A	1004	PCW	C1-C2-C3-O3
5	A	1037	PCW	C1-C2-C3-O3
4	A	1003	TG1	C17-C18-C19-C20
5	A	1006	PCW	O2-C2-C3-O3
5	A	1020	PCW	O2-C2-C3-O3
5	A	1036	PCW	O2-C2-C3-O3
5	A	1004	PCW	O4P-C4-C5-N
5	A	1005	PCW	O4P-C4-C5-N
5	A	1006	PCW	O4P-C4-C5-N
5	A	1007	PCW	O4P-C4-C5-N
5	A	1010	PCW	O4P-C4-C5-N
5	A	1012	PCW	O4P-C4-C5-N
5	A	1013	PCW	O4P-C4-C5-N
5	A	1014	PCW	O4P-C4-C5-N
5	A	1016	PCW	O4P-C4-C5-N
5	A	1017	PCW	O4P-C4-C5-N
5	A	1018	PCW	O4P-C4-C5-N
5	A	1020	PCW	O4P-C4-C5-N
5	A	1021	PCW	O4P-C4-C5-N
5	A	1022	PCW	O4P-C4-C5-N
5	A	1023	PCW	O4P-C4-C5-N

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Mol	Chain	Res	Type	Atoms
5	A	1025	PCW	O4P-C4-C5-N
5	A	1027	PCW	O4P-C4-C5-N
5	A	1029	PCW	O4P-C4-C5-N
5	A	1031	PCW	O4P-C4-C5-N
5	A	1034	PCW	O4P-C4-C5-N
5	A	1035	PCW	O4P-C4-C5-N
5	A	1037	PCW	O4P-C4-C5-N
5	A	1006	PCW	O3P-C1-C2-C3
5	A	1014	PCW	O3P-C1-C2-C3
5	A	1023	PCW	O3P-C1-C2-C3
5	A	1028	PCW	O3P-C1-C2-C3
5	A	1006	PCW	O3P-C1-C2-O2
5	A	1032	PCW	O3P-C1-C2-O2
5	A	1004	PCW	O2-C2-C3-O3
5	A	1011	PCW	O2-C2-C3-O3
5	A	1016	PCW	O2-C2-C3-O3
5	A	1028	PCW	C1-C2-C3-O3
5	A	1004	PCW	C1-O3P-P-O2P
5	A	1006	PCW	C1-O3P-P-O2P
5	A	1007	PCW	C1-O3P-P-O2P
5	A	1008	PCW	C1-O3P-P-O2P
5	A	1009	PCW	C1-O3P-P-O2P
5	A	1011	PCW	C1-O3P-P-O2P
5	A	1015	PCW	C1-O3P-P-O2P
5	A	1018	PCW	C1-O3P-P-O2P
5	A	1021	PCW	C1-O3P-P-O2P
5	A	1022	PCW	C1-O3P-P-O2P
5	A	1024	PCW	C1-O3P-P-O2P
5	A	1027	PCW	C1-O3P-P-O2P
5	A	1030	PCW	C1-O3P-P-O2P
5	A	1031	PCW	C1-O3P-P-O2P
5	A	1035	PCW	C1-O3P-P-O2P
5	A	1036	PCW	C1-O3P-P-O2P
5	A	1037	PCW	C1-O3P-P-O2P
5	A	1014	PCW	C1-C2-O2-C31
5	A	1022	PCW	C3-C2-O2-C31
5	A	1016	PCW	O3P-C1-C2-O2
5	A	1023	PCW	O3P-C1-C2-O2
5	A	1025	PCW	O2-C2-C3-O3
5	A	1035	PCW	O2-C2-C3-O3
5	A	1037	PCW	O2-C2-C3-O3
4	A	1003	TG1	O4-C21-C22-C23

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Mol	Chain	Res	Type	Atoms
5	A	1031	PCW	O2-C2-C3-O3
5	A	1013	PCW	C1-C2-C3-O3
5	A	1016	PCW	C3-C2-O2-C31
4	A	1003	TG1	O2-C13-O1-C2
4	A	1003	TG1	C15-C16-C17-C18
5	A	1012	PCW	O3P-C1-C2-C3
5	A	1034	PCW	O3P-C1-C2-C3
5	A	1032	PCW	C1-C2-C3-O3
5	A	1028	PCW	O2-C2-C3-O3
5	A	1022	PCW	O3P-C1-C2-O2
5	A	1023	PCW	C1-C2-C3-O3
5	A	1031	PCW	C1-C2-C3-O3
4	A	1003	TG1	O3-C21-C22-C23
4	A	1003	TG1	O7-C27-C28-C29
5	A	1030	PCW	O4P-C4-C5-N
4	A	1003	TG1	C14-C13-O1-C2
5	A	1030	PCW	O3P-C1-C2-O2
4	A	1003	TG1	O8-C27-C28-C29
4	A	1003	TG1	C23-C22-C24-C25

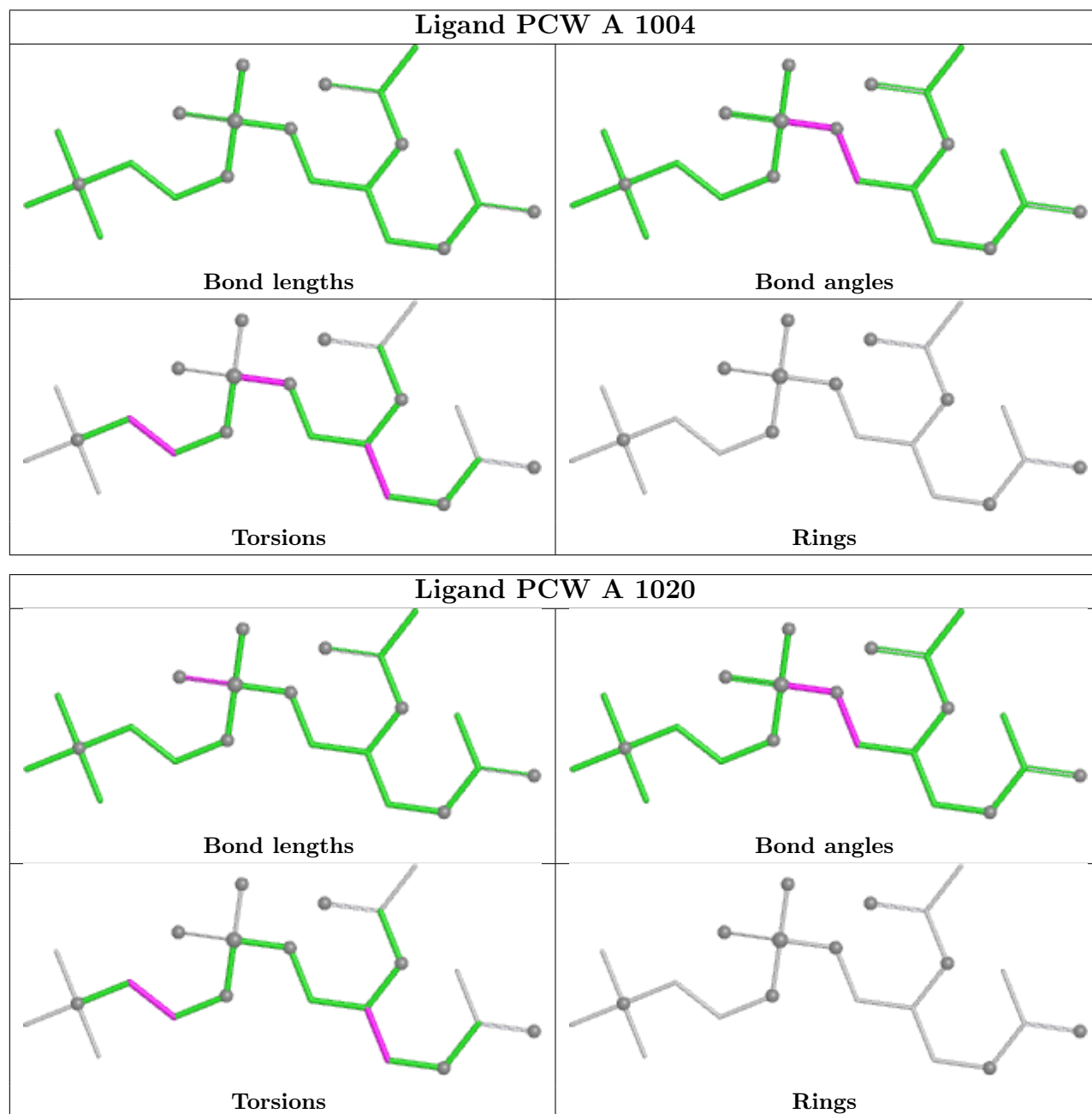
There are no ring outliers.

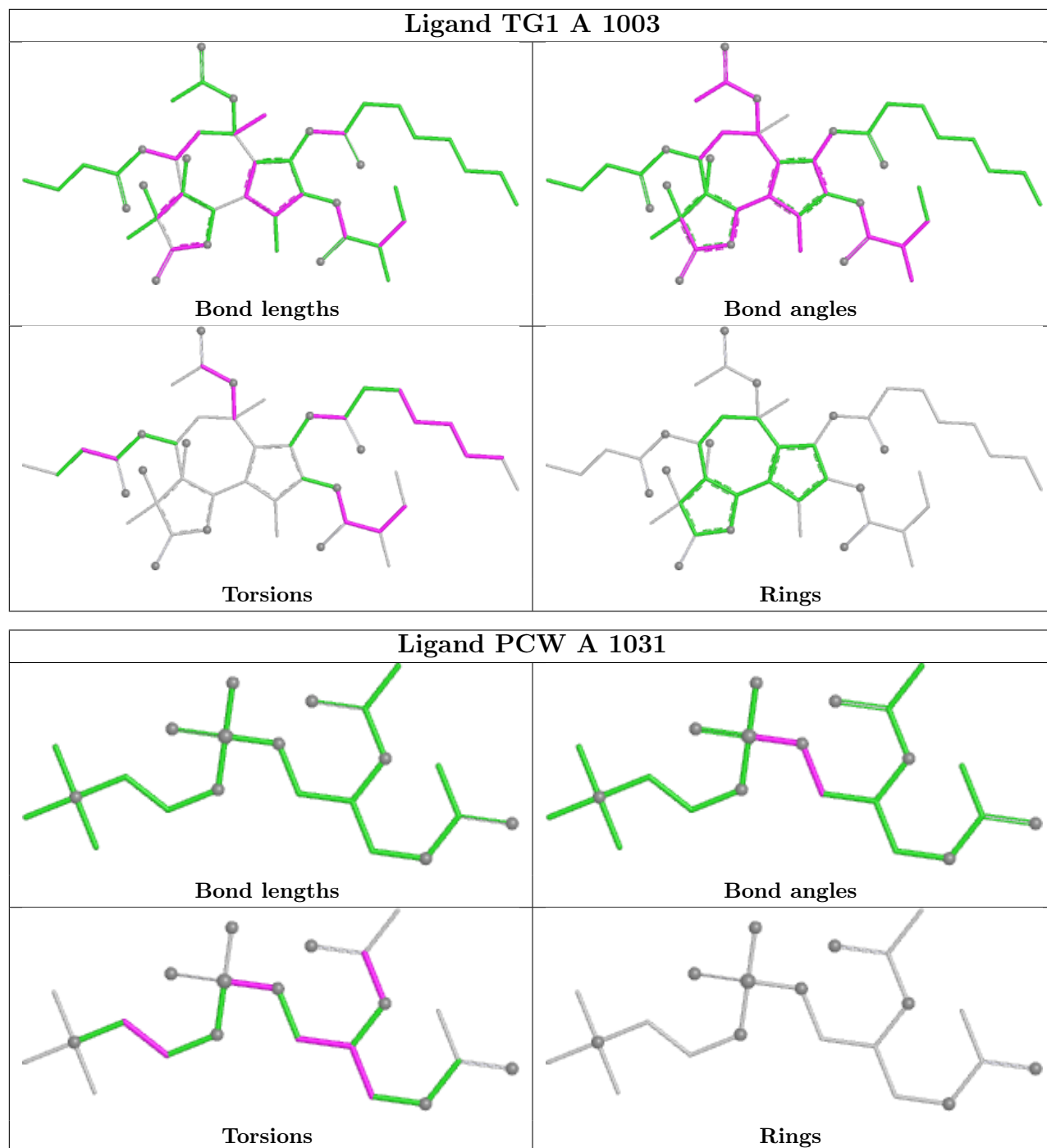
9 monomers are involved in 12 short contacts:

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

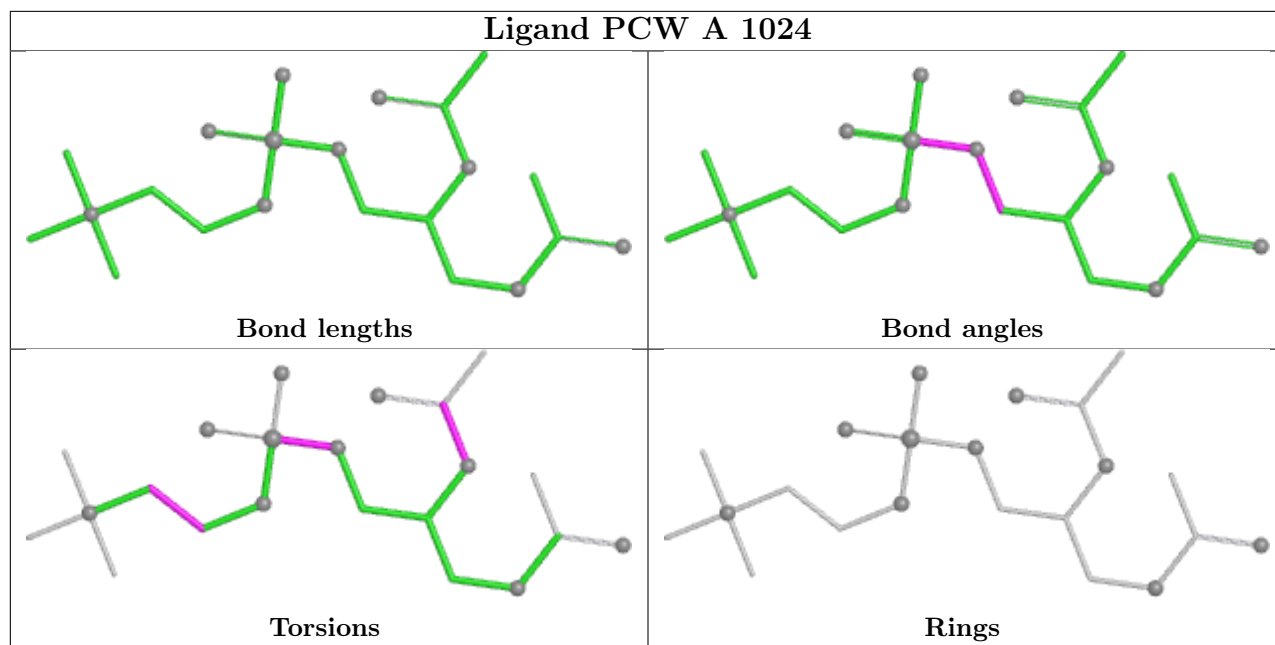
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

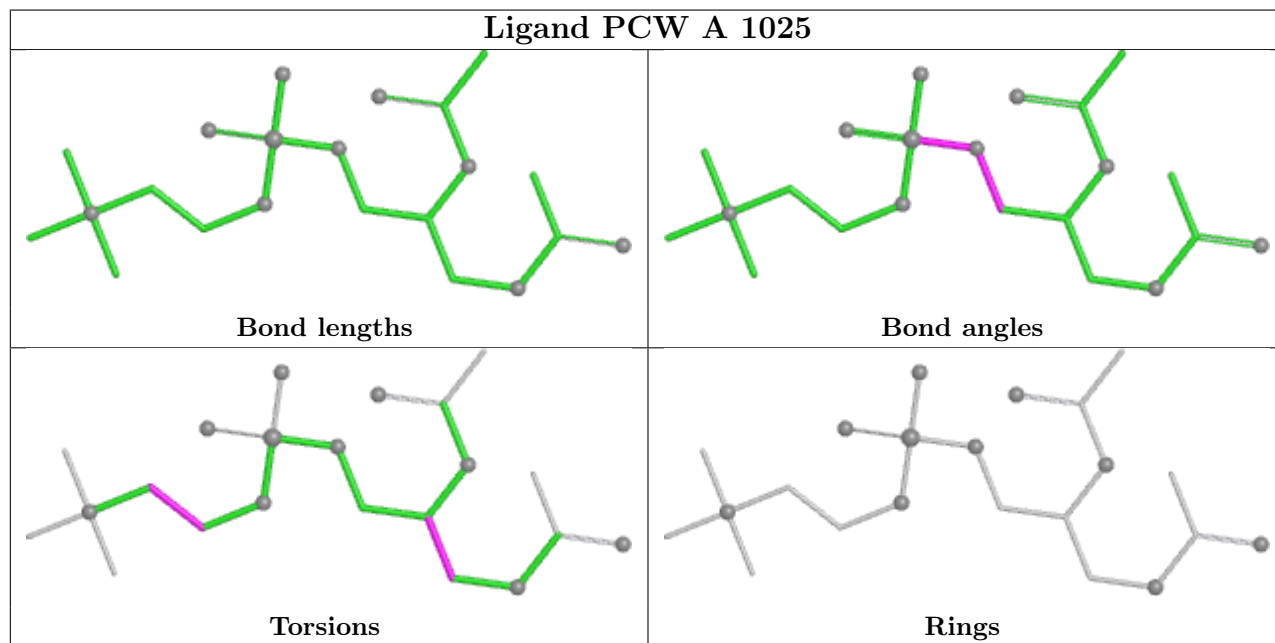




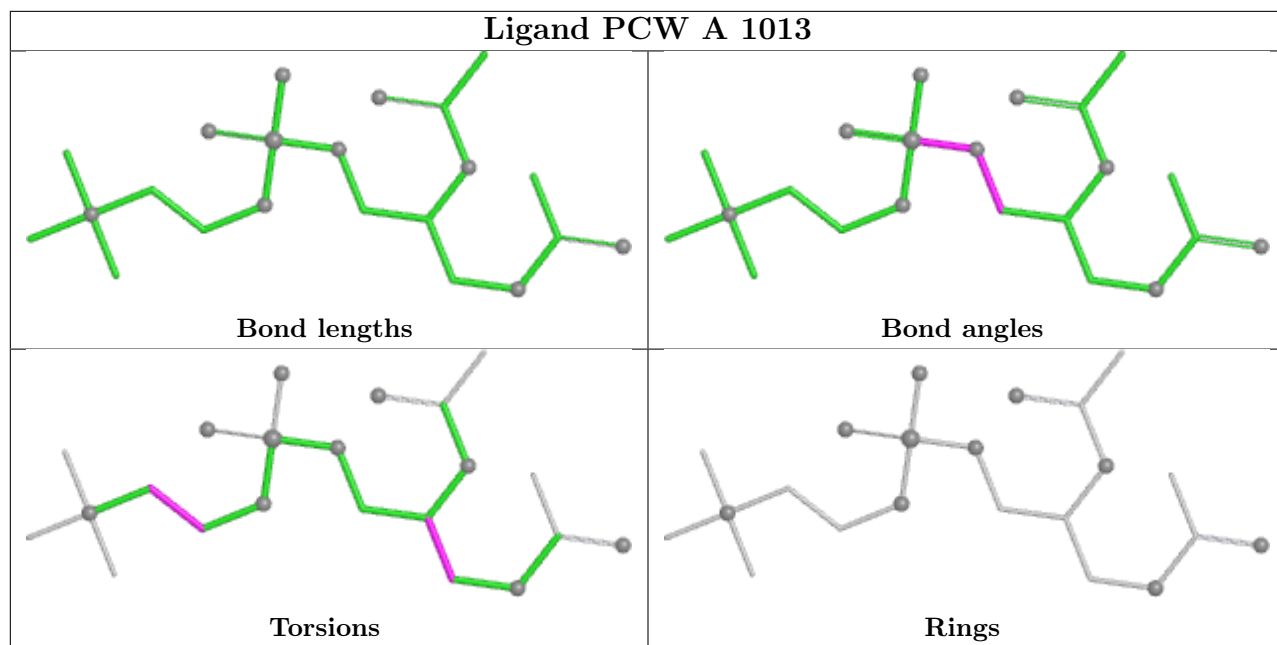
Ligand PCW A 1024



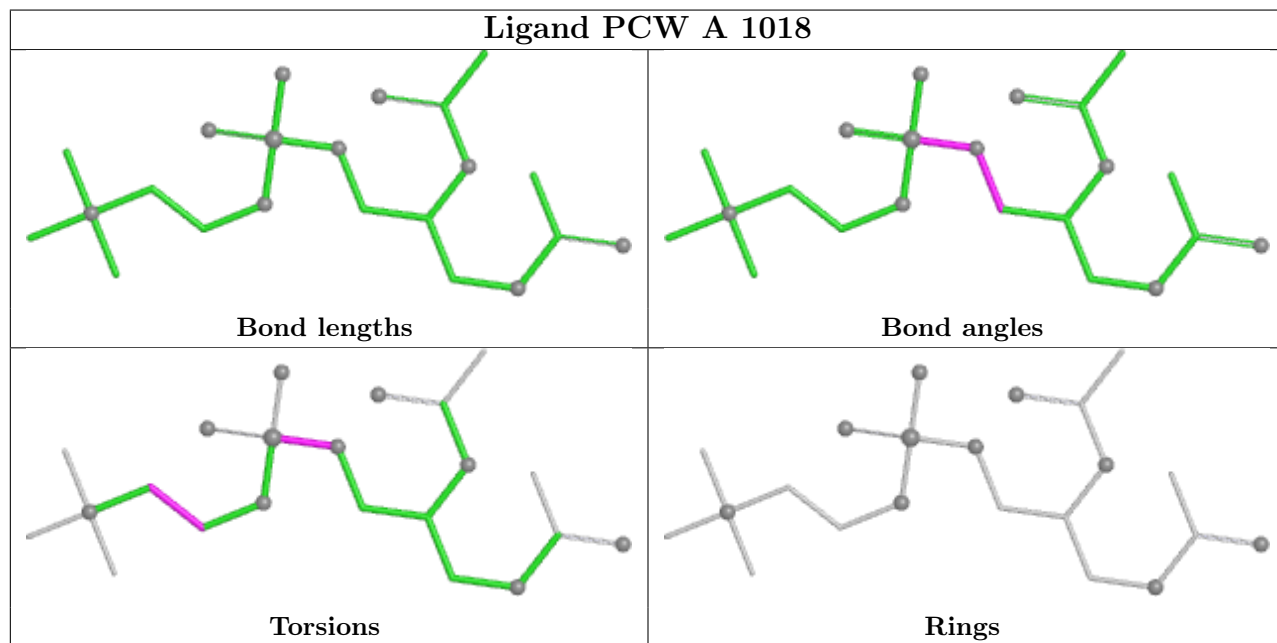
Ligand PCW A 1025

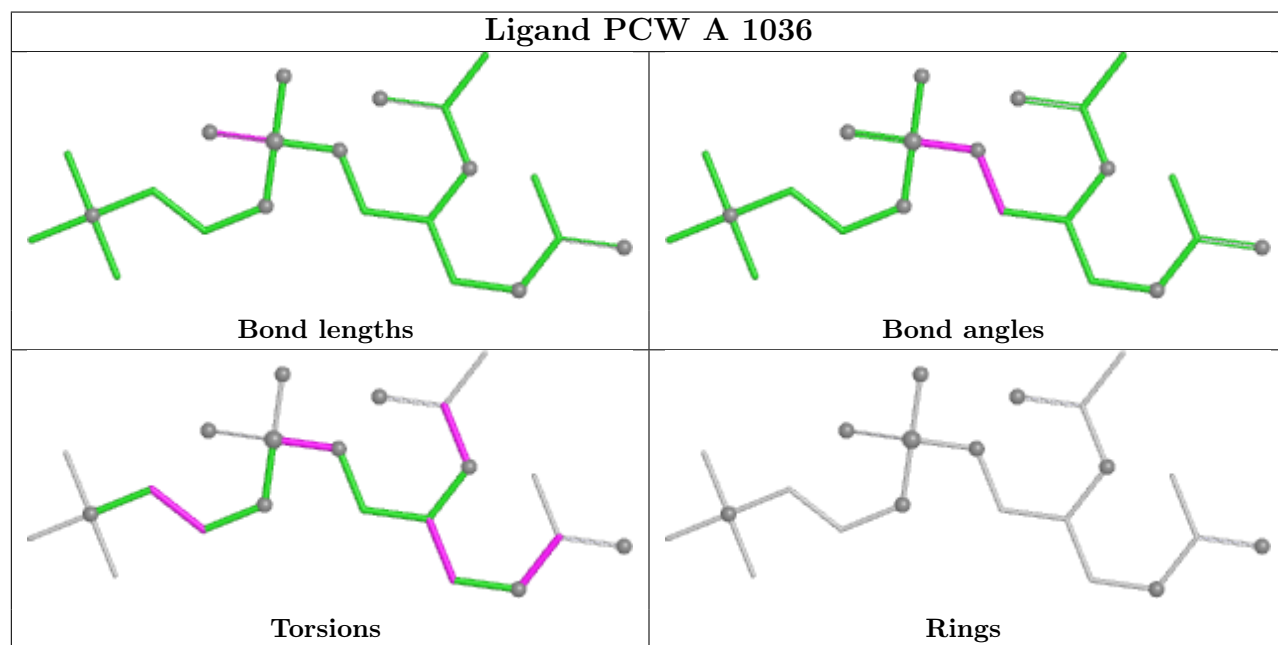
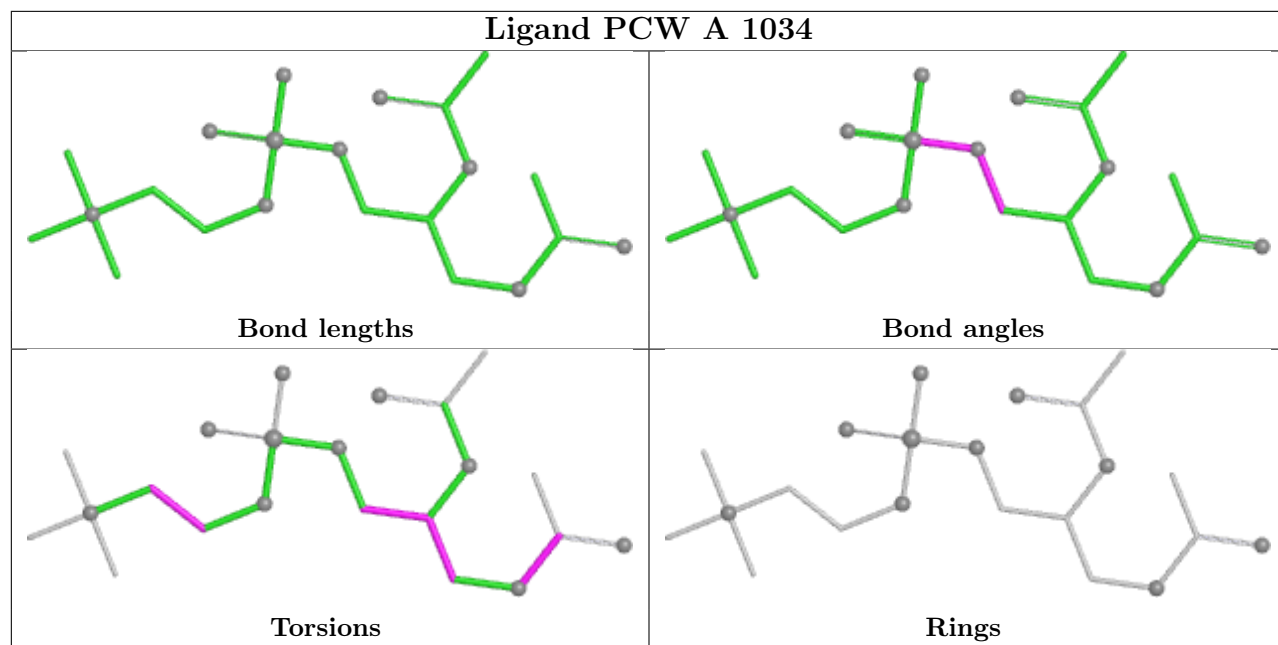


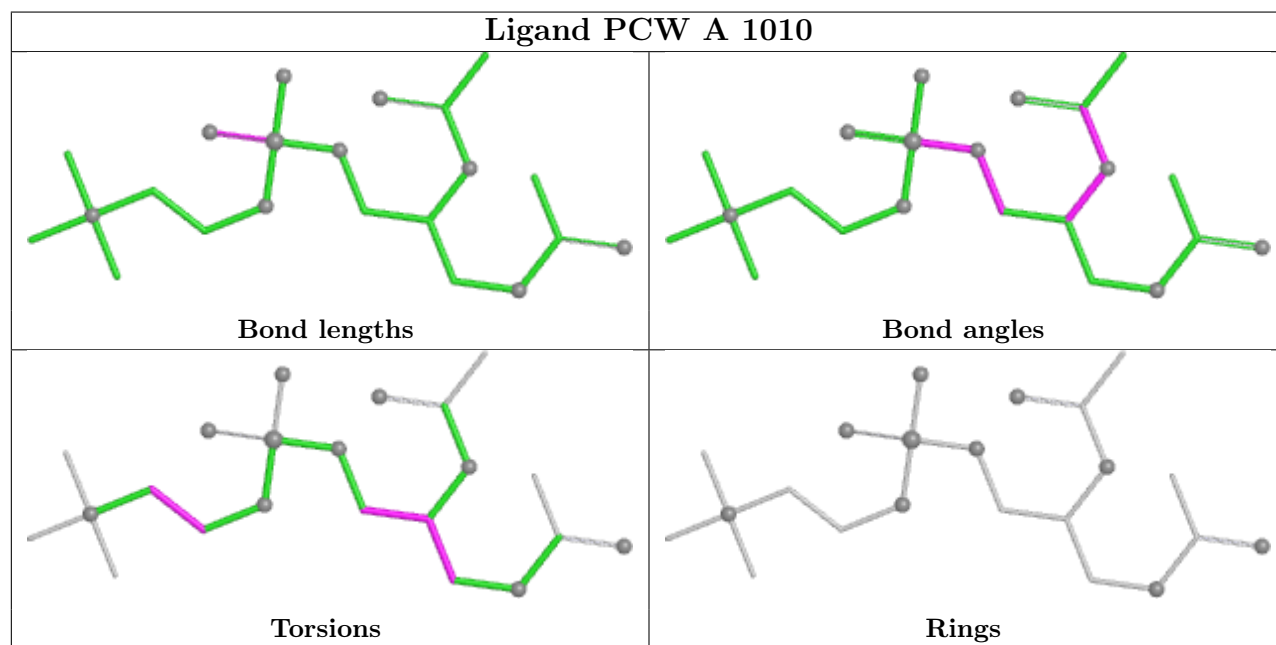
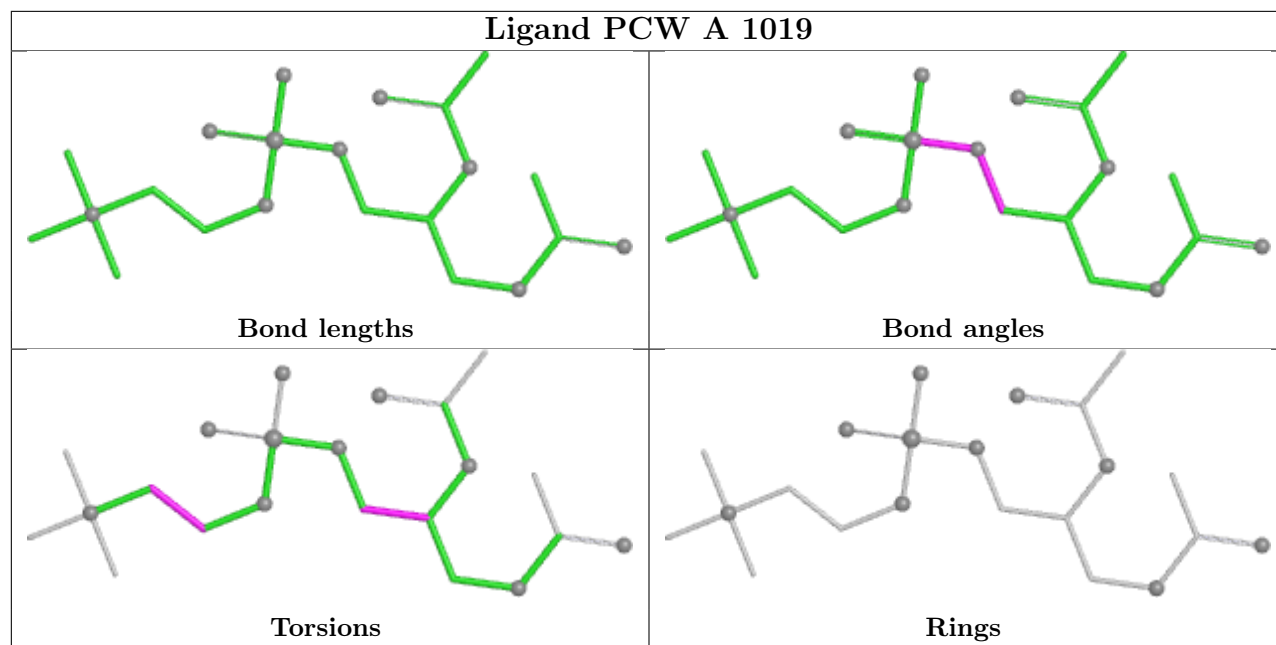
Ligand PCW A 1013



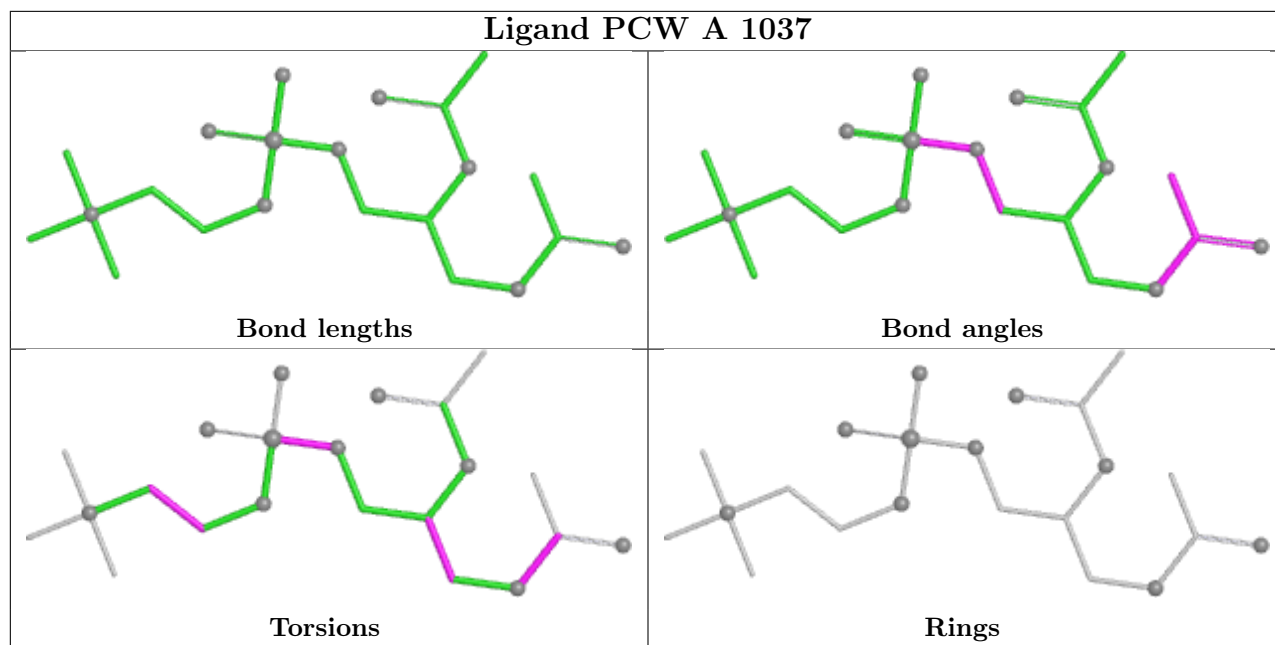
Ligand PCW A 1018



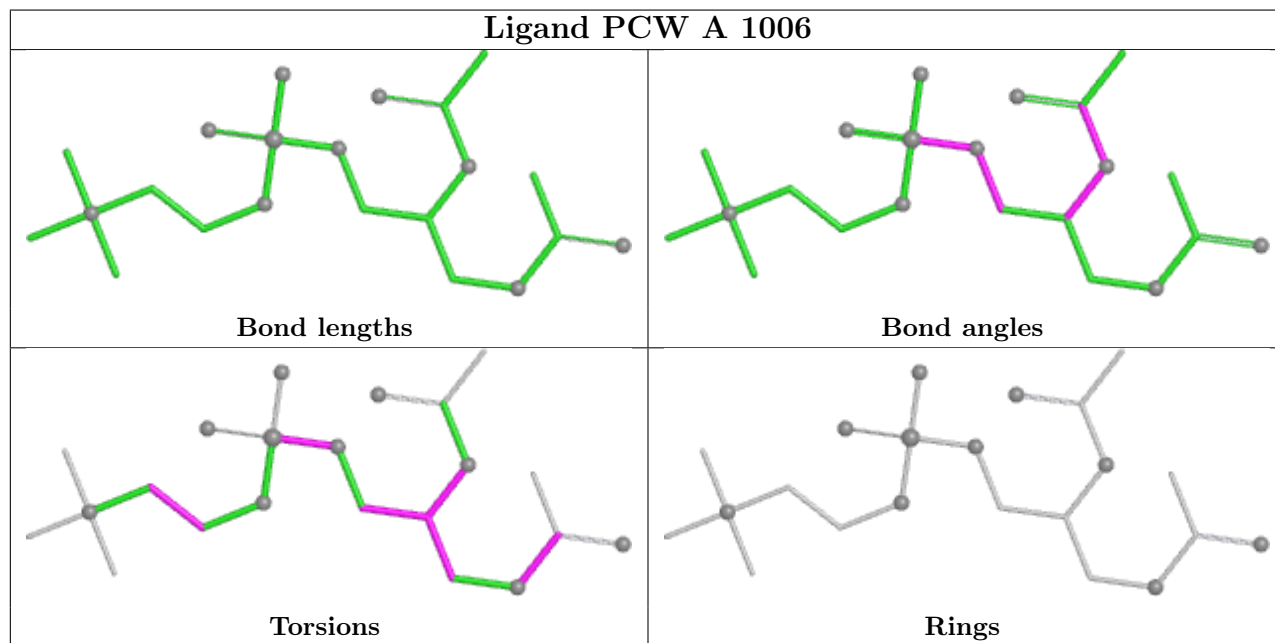




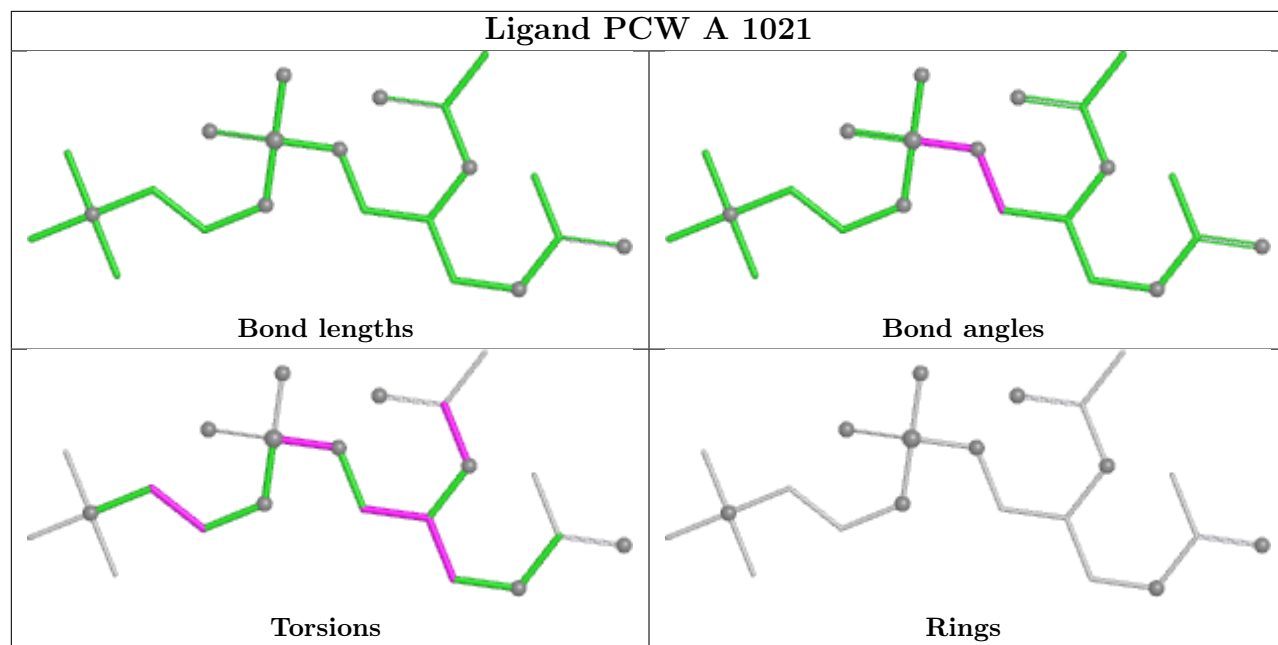
Ligand PCW A 1037



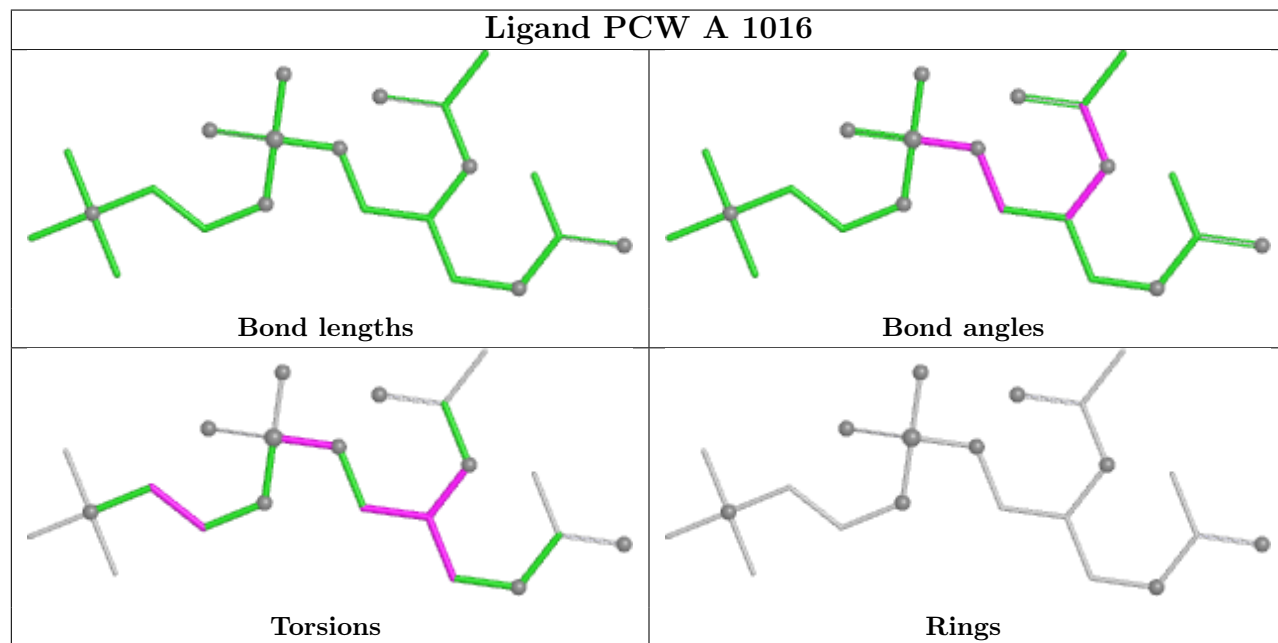
Ligand PCW A 1006



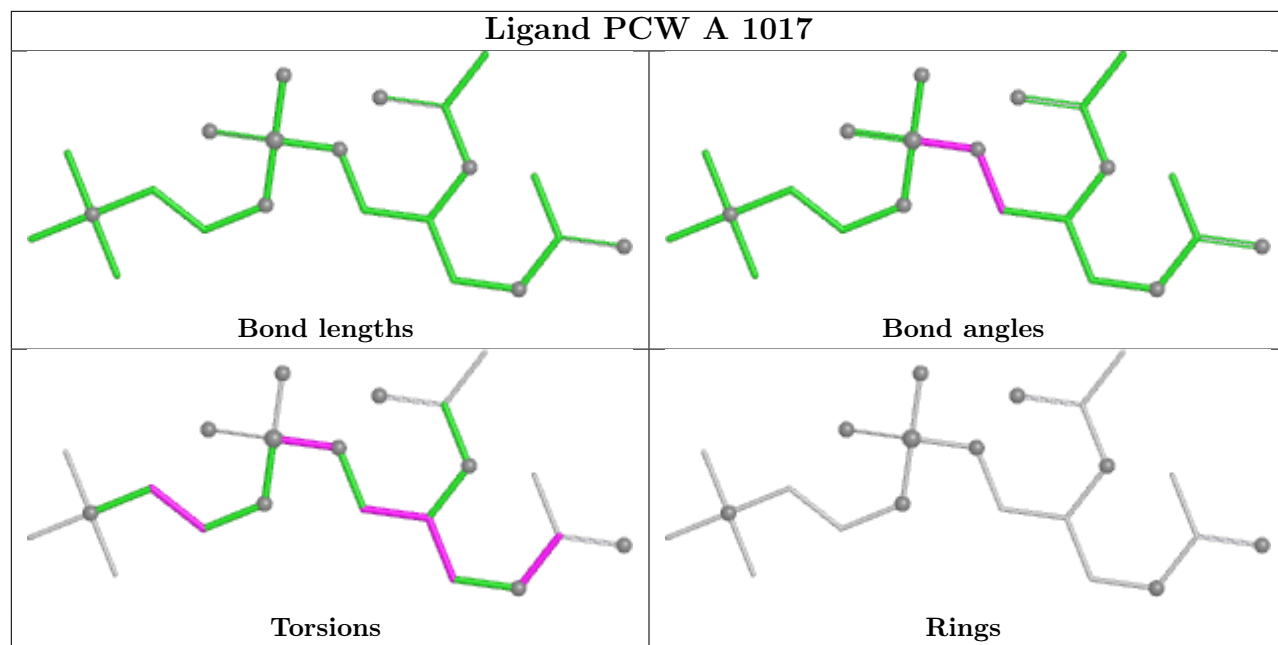
Ligand PCW A 1021



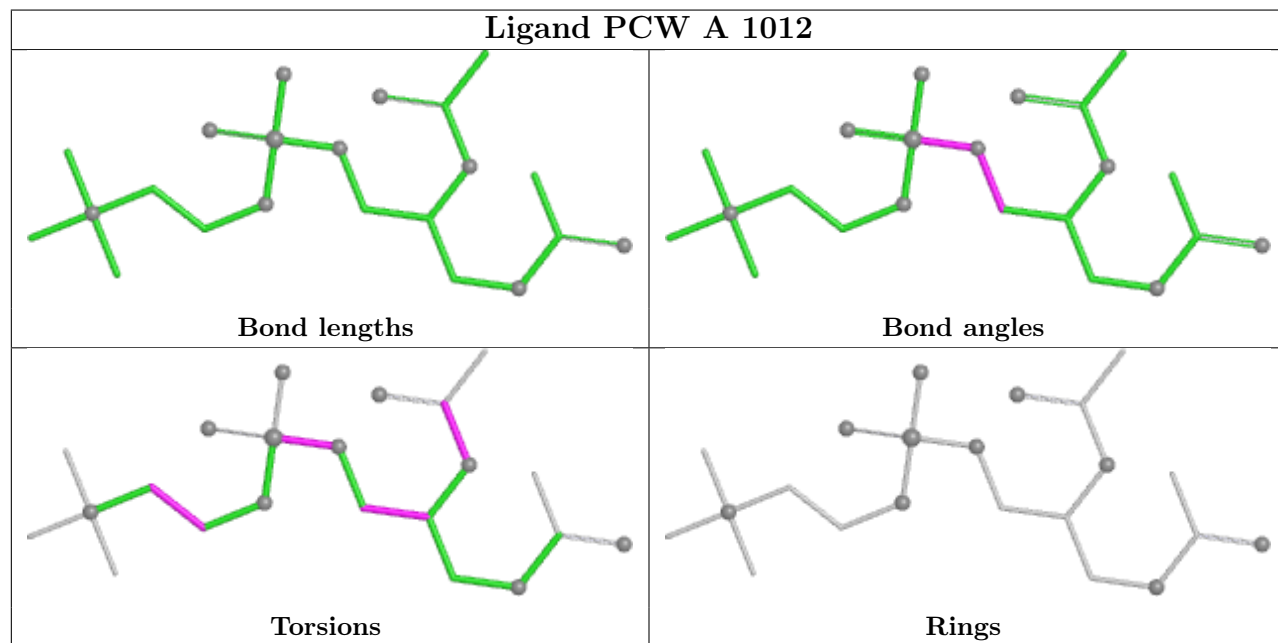
Ligand PCW A 1016



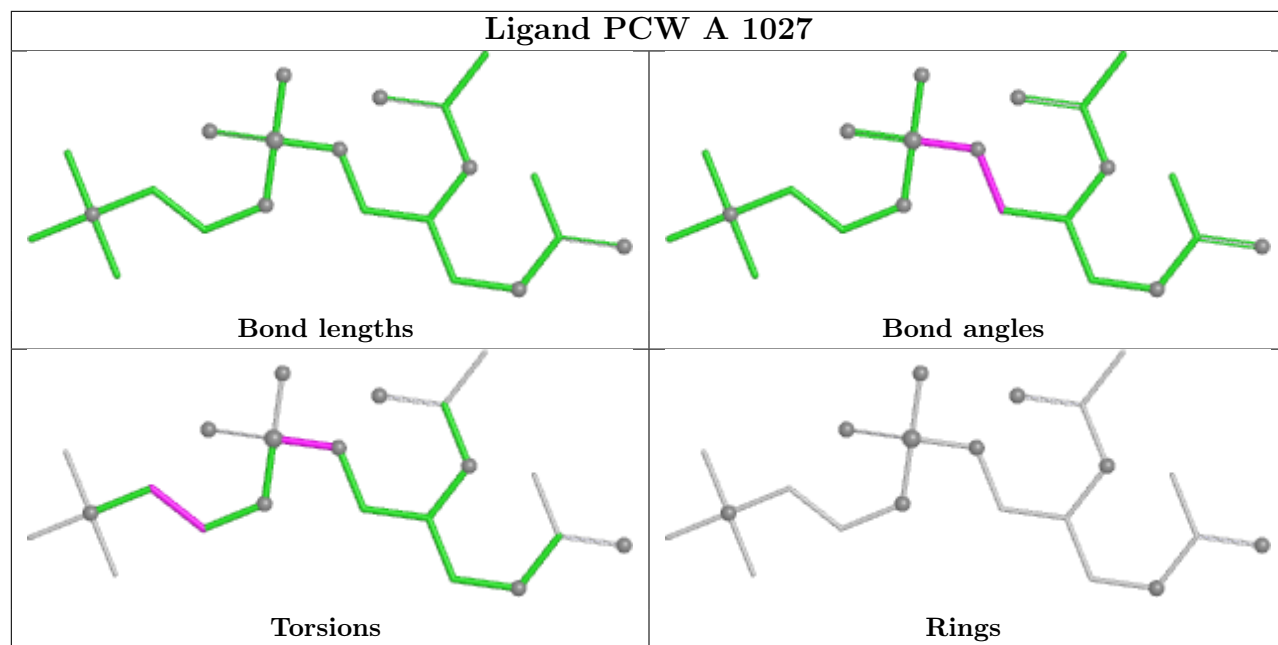
Ligand PCW A 1017



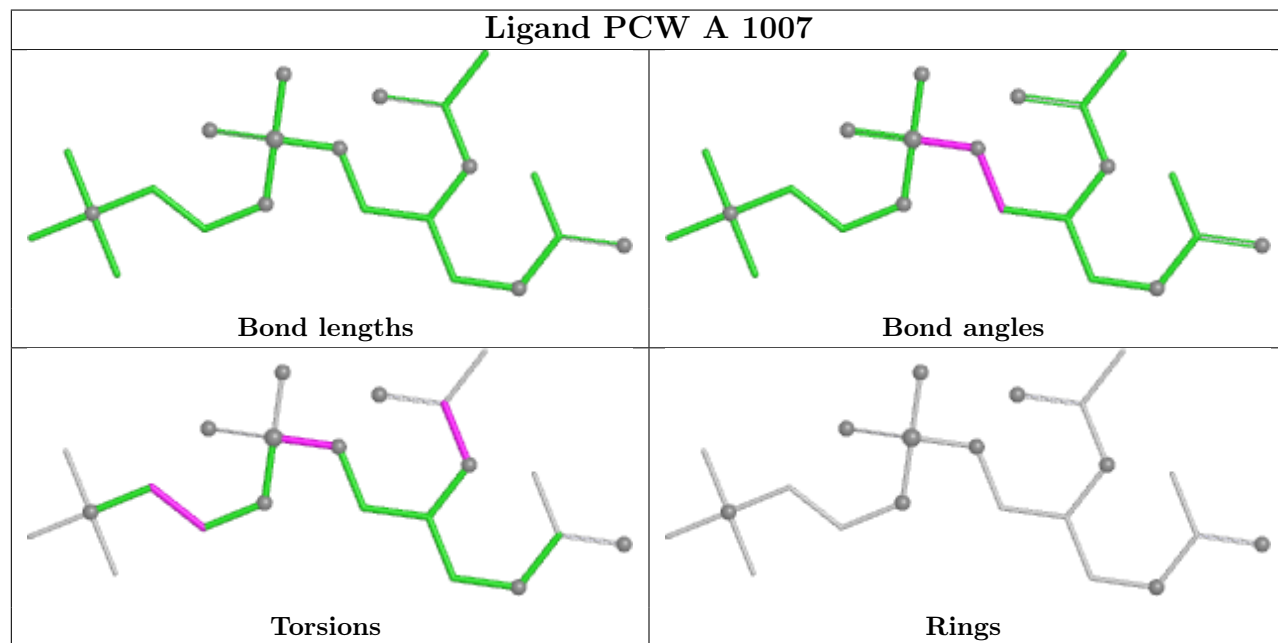
Ligand PCW A 1012



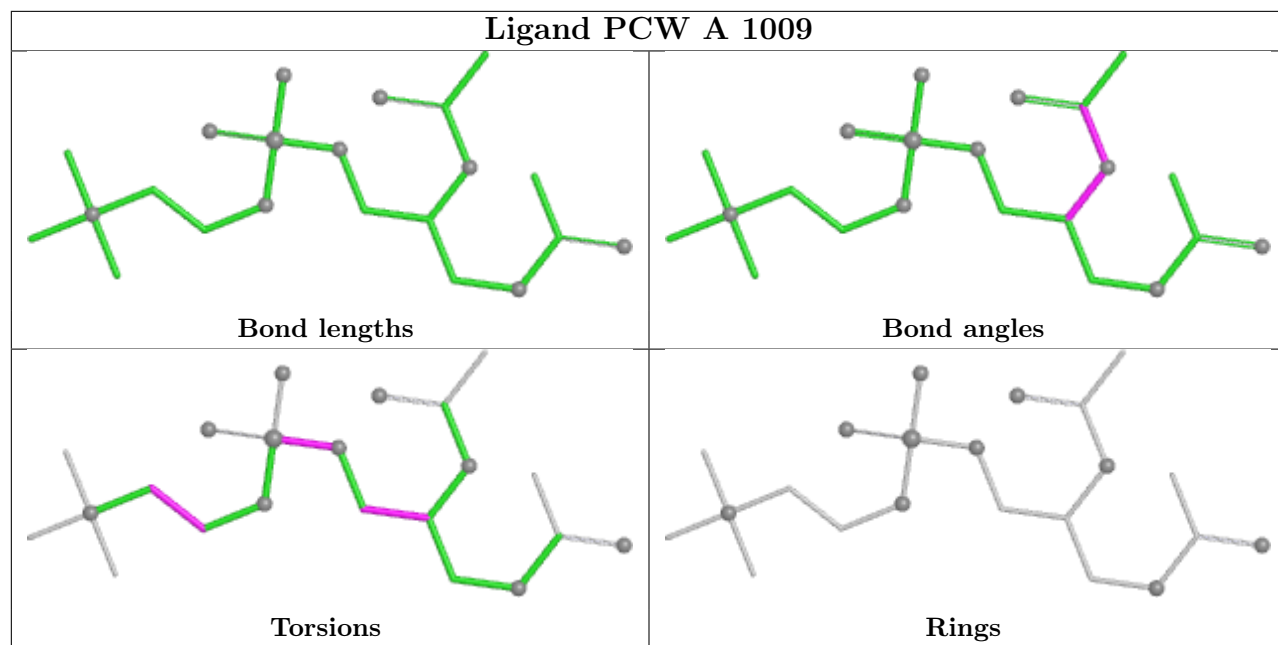
Ligand PCW A 1027



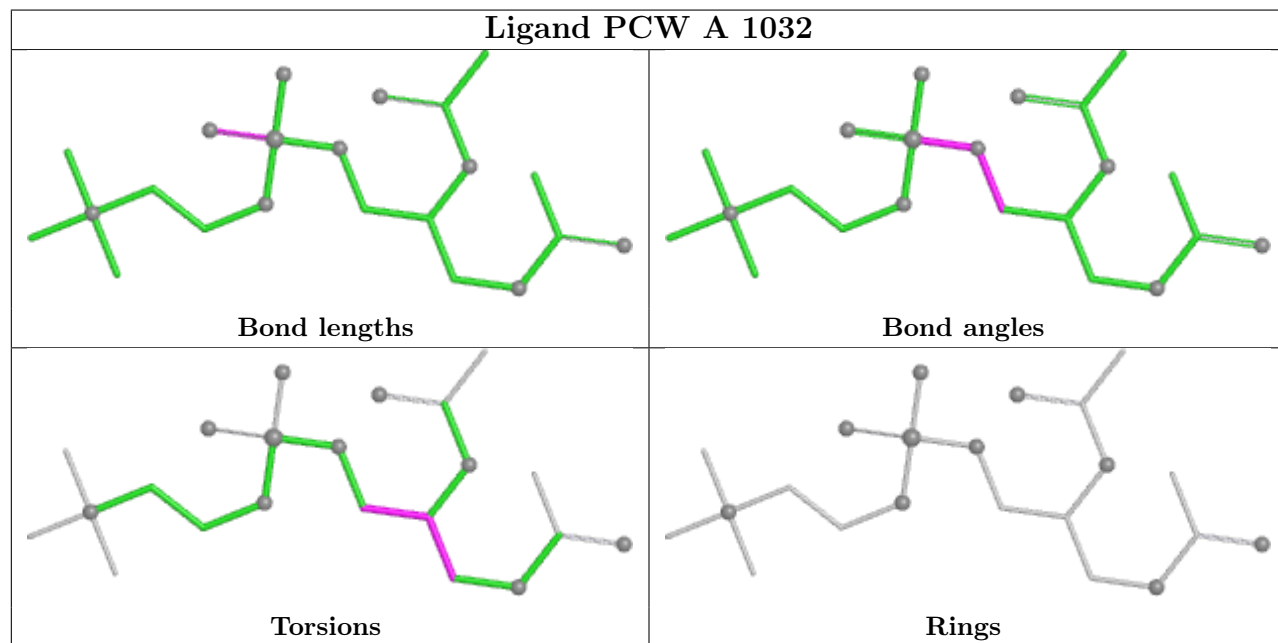
Ligand PCW A 1007



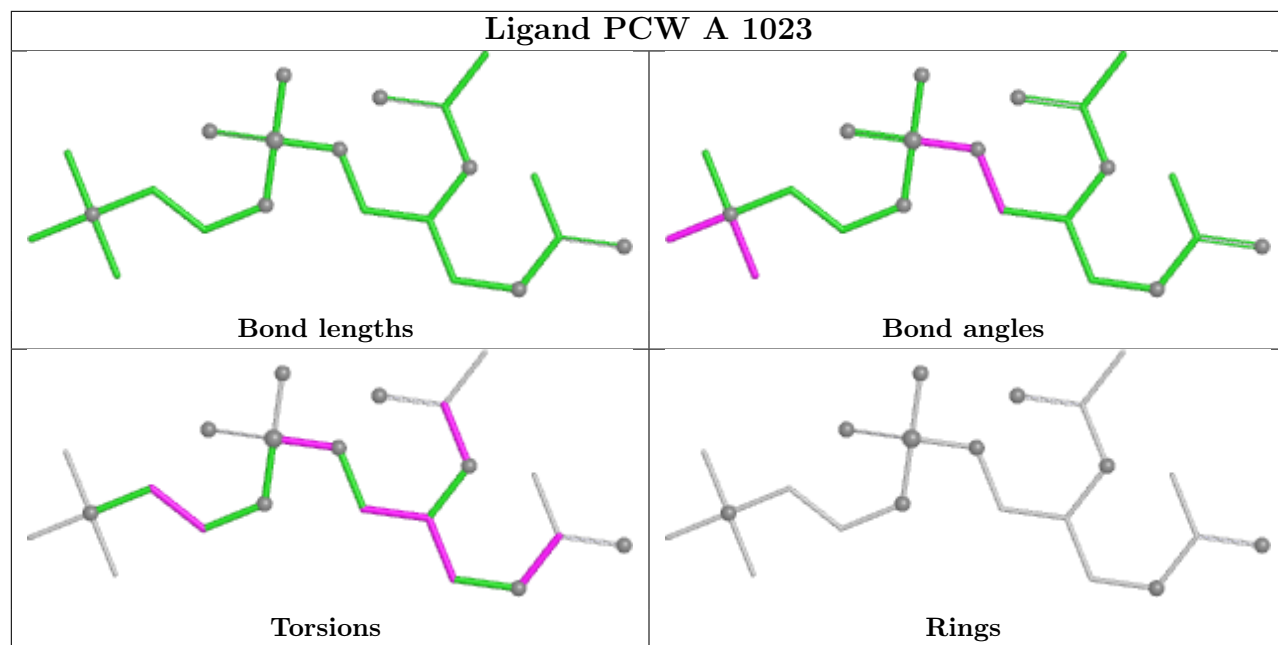
Ligand PCW A 1009



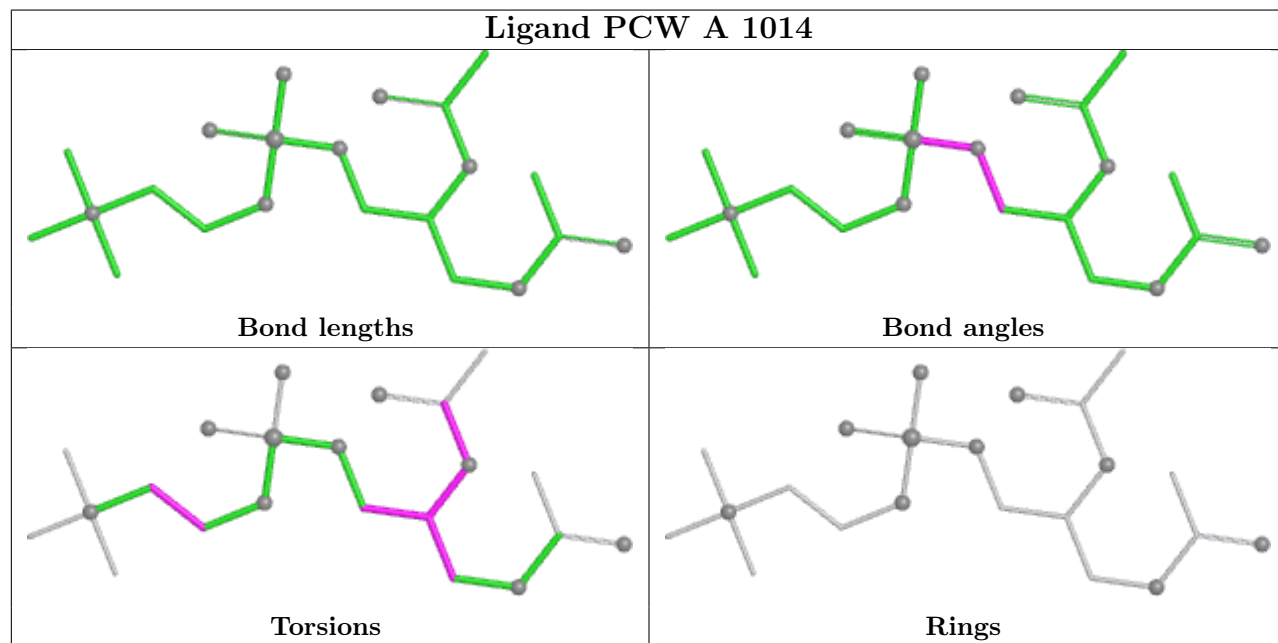
Ligand PCW A 1032



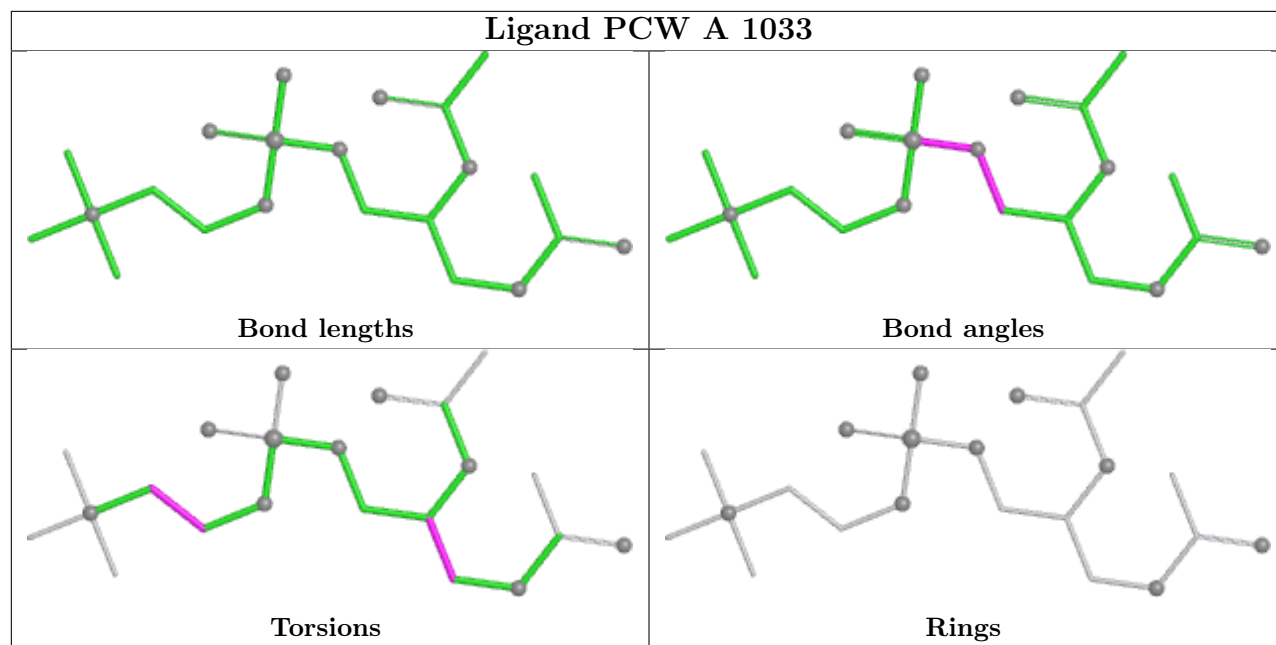
Ligand PCW A 1023



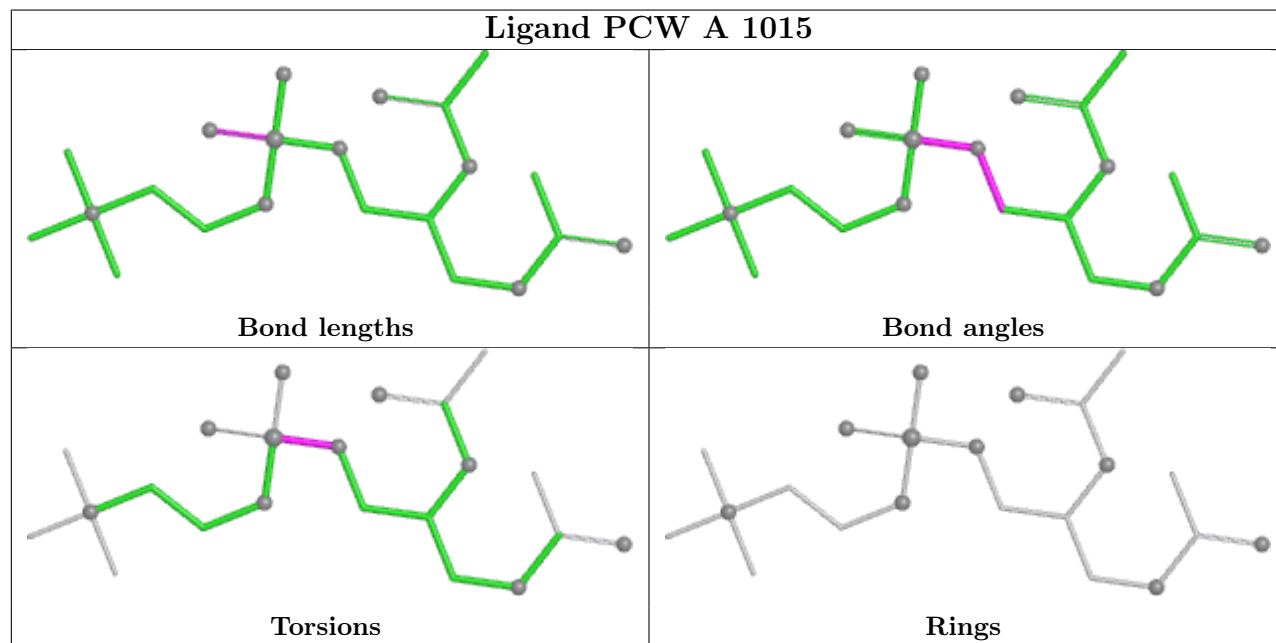
Ligand PCW A 1014

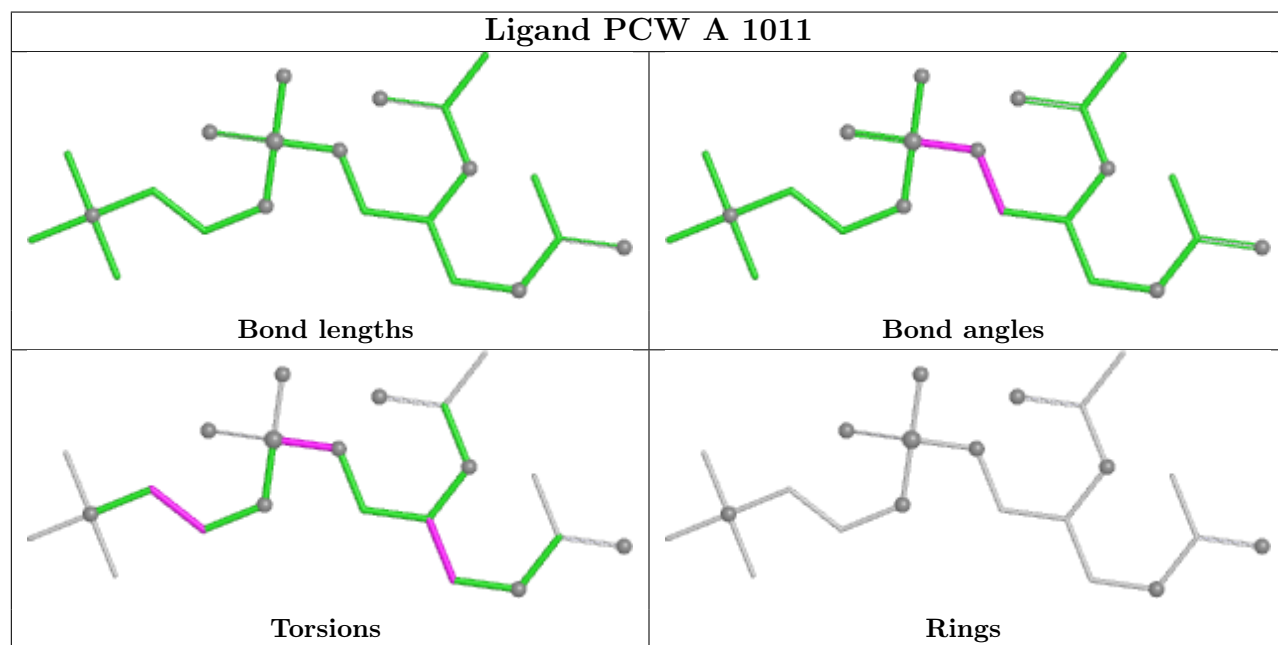
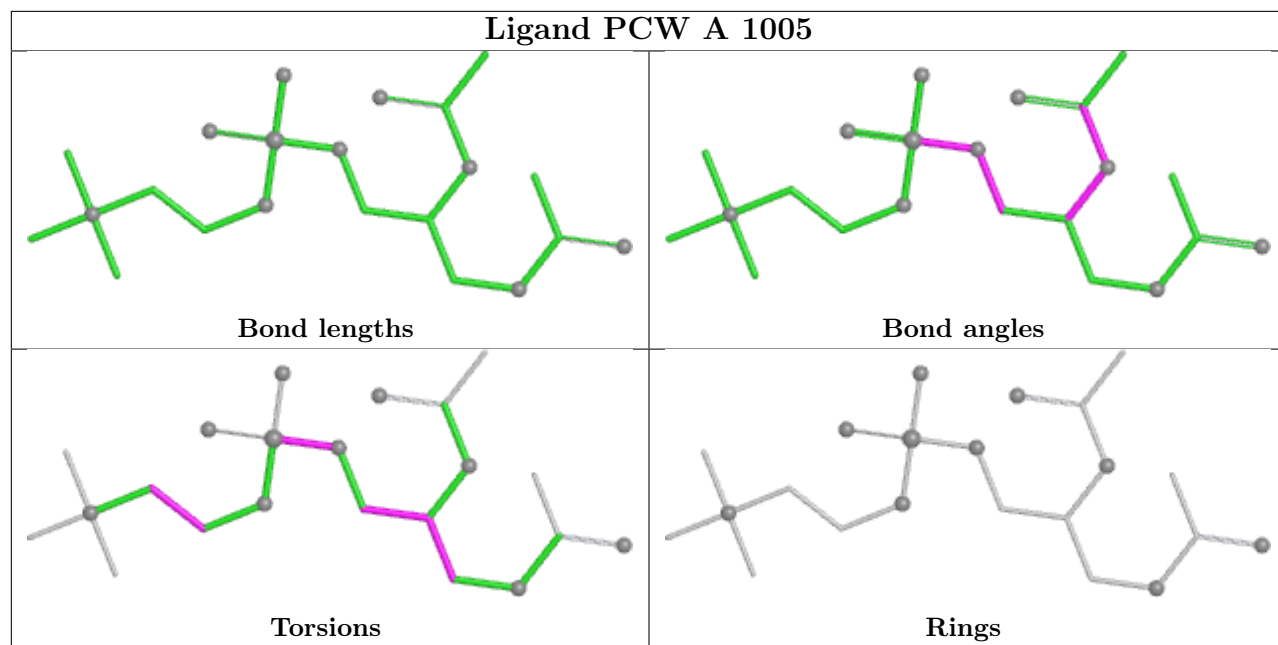


Ligand PCW A 1033

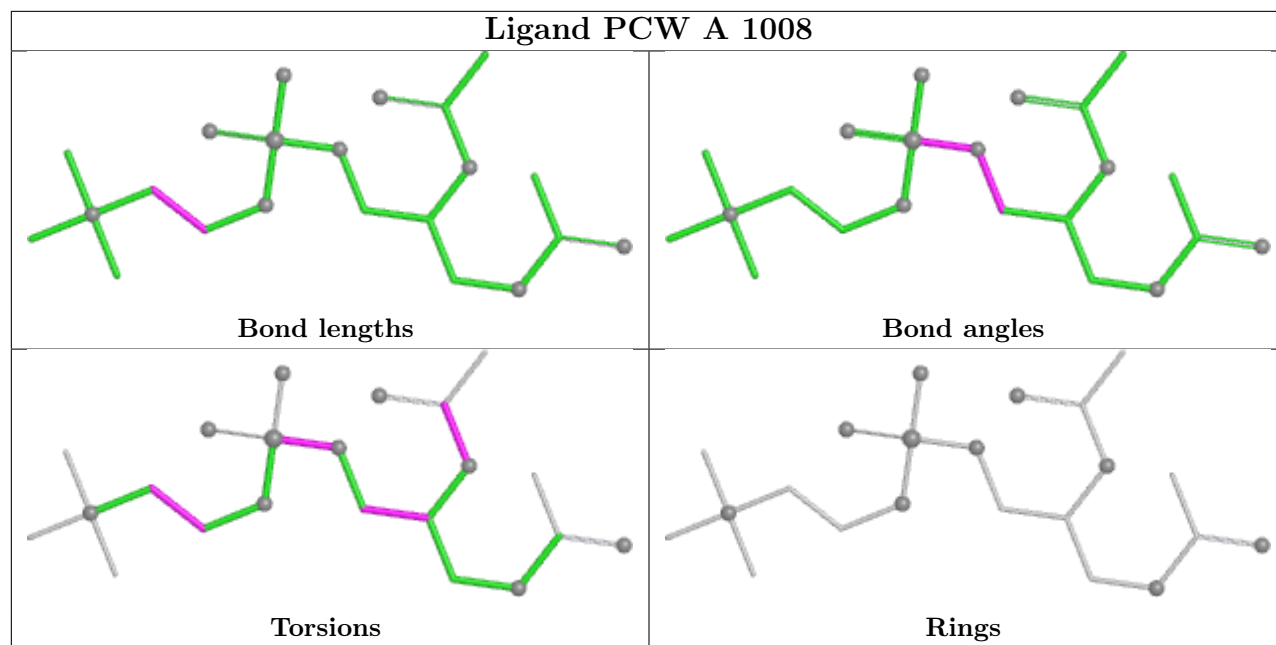


Ligand PCW A 1015

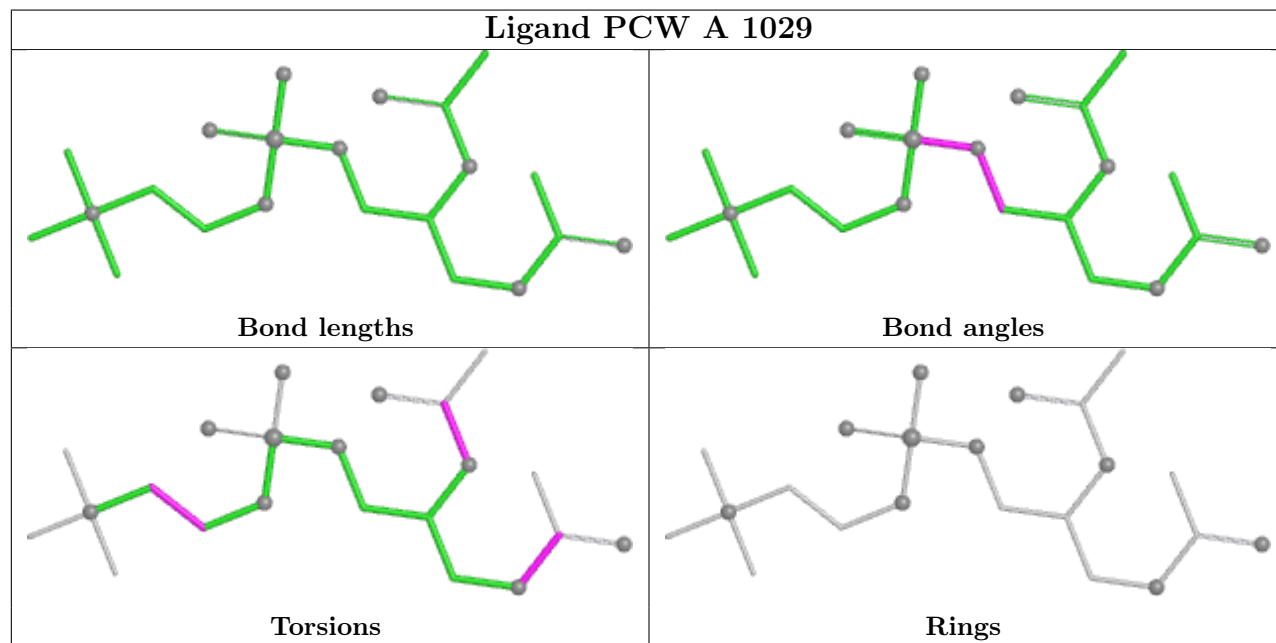




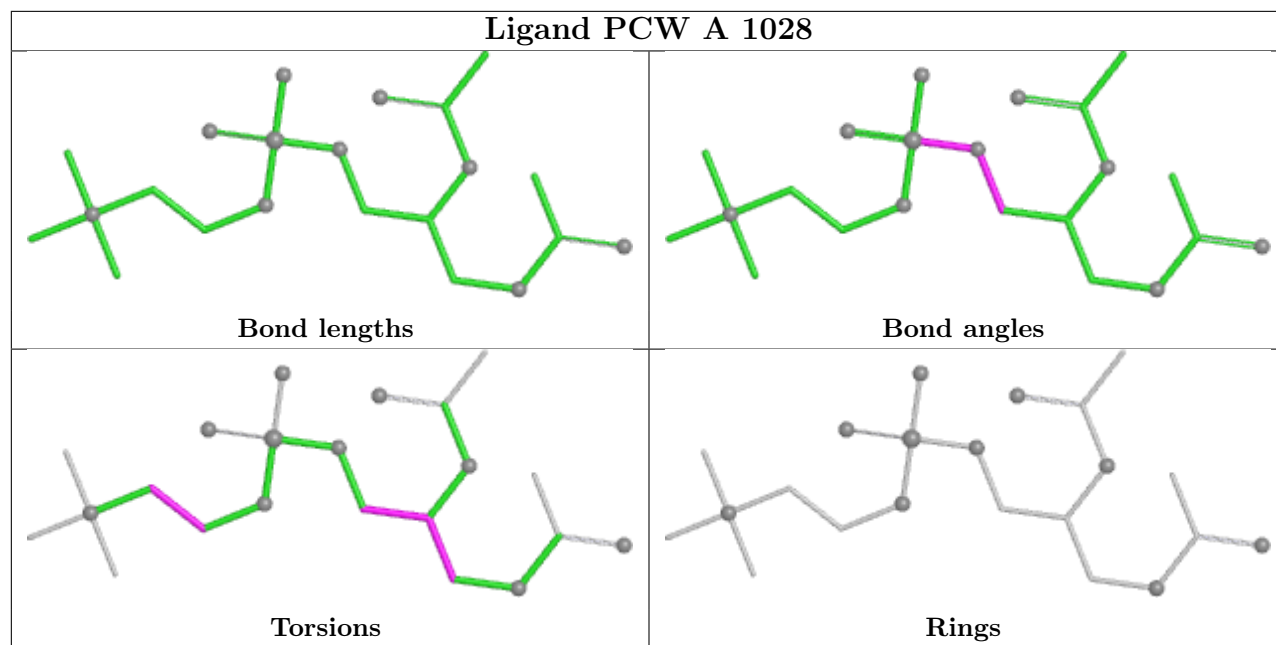
Ligand PCW A 1008



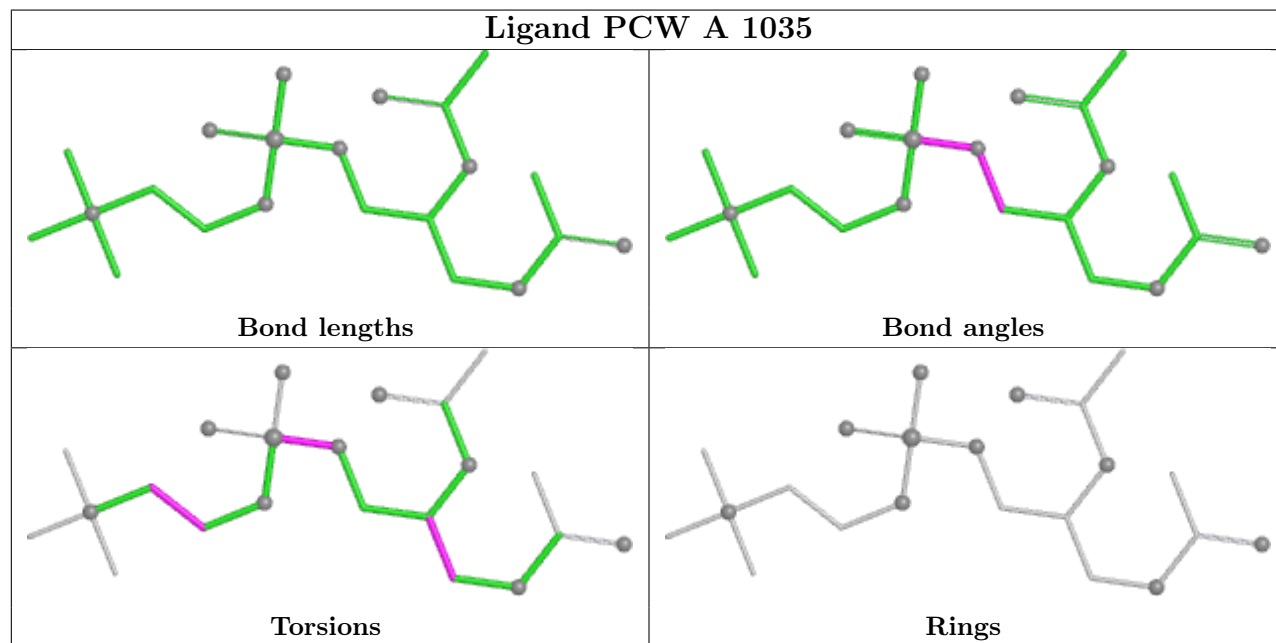
Ligand PCW A 1029



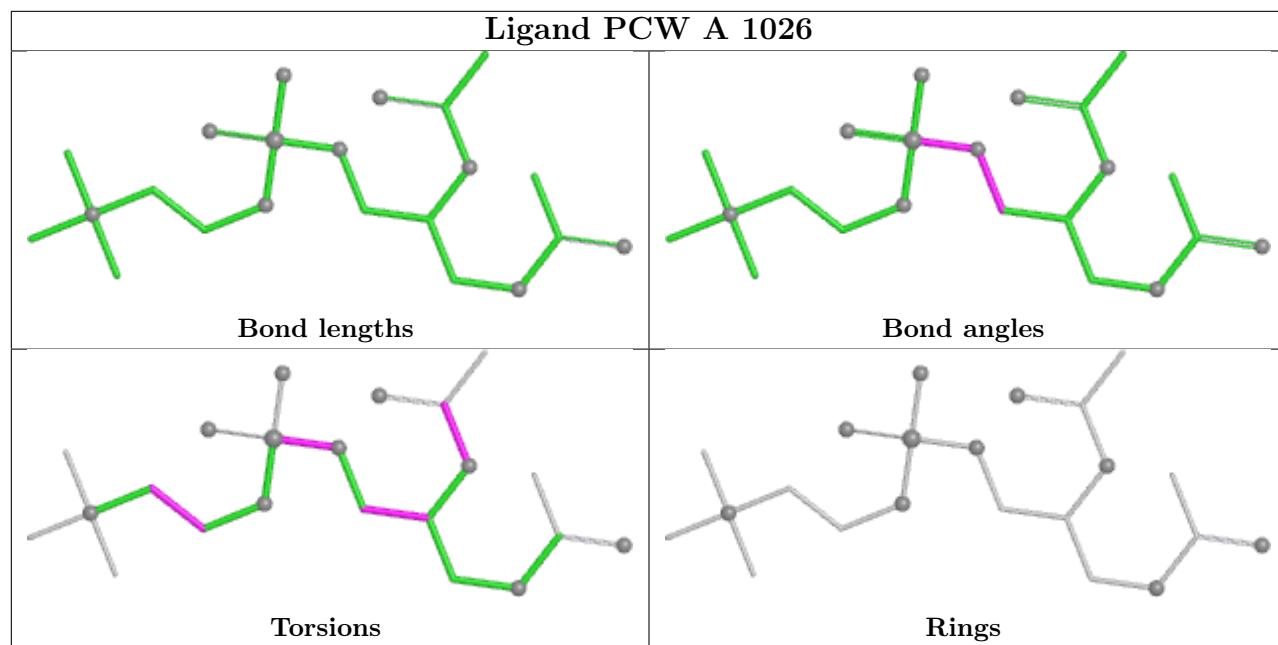
Ligand PCW A 1028



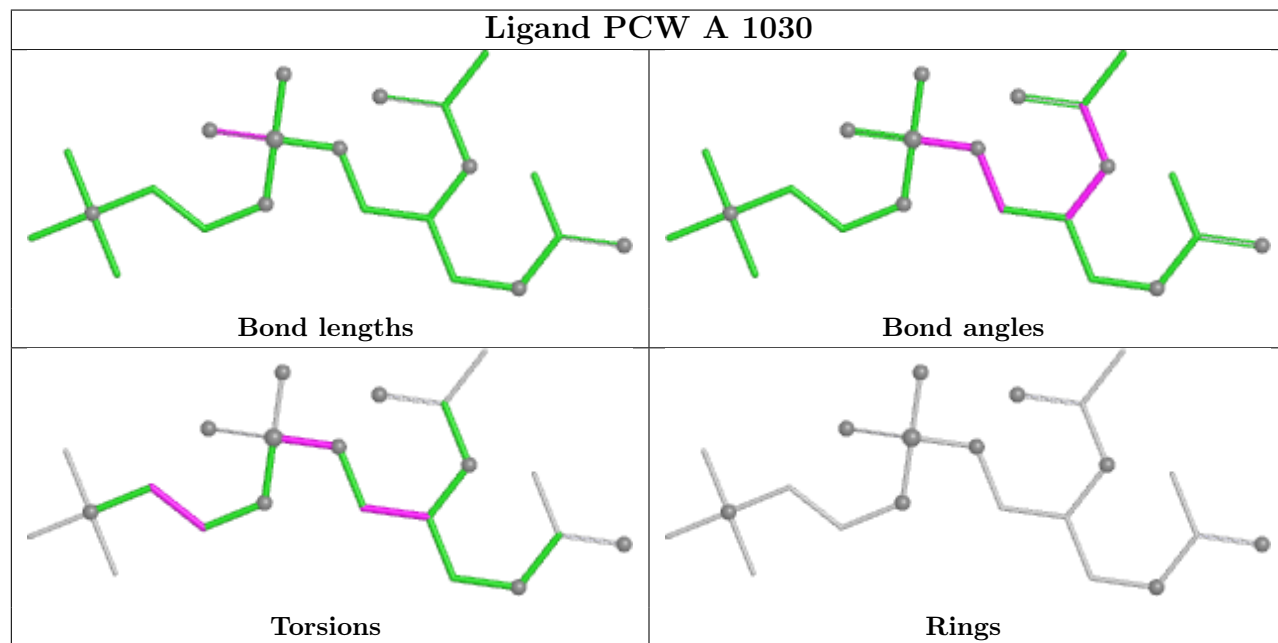
Ligand PCW A 1035

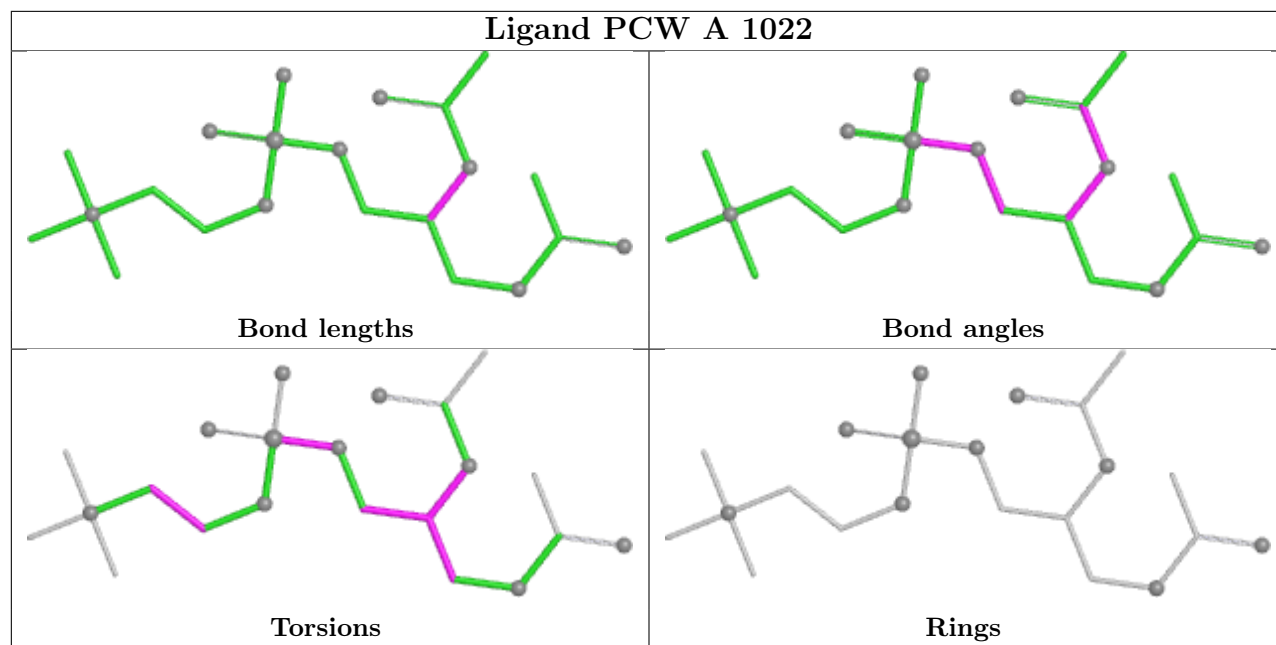


Ligand PCW A 1026



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 ⓘ

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, 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

All (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
1	A	975	LEU	6.3
1	A	939	LEU	5.7
1	A	65	LEU	5.7
1	A	296	PHE	5.6
1	A	979	GLY	5.5
1	A	92	PHE	5.4
1	A	773	VAL	5.4
1	A	70	CYS	5.2
1	A	68	ALA	5.1
1	A	910	CYS	5.0
1	A	93	VAL	5.0
1	A	99	ILE	4.7
1	A	776	PHE	4.6
1	A	842	GLY	4.3
1	A	64	ILE	4.2
1	A	771	GLU	4.1
1	A	769	VAL	4.0
1	A	94	ILE	4.0
1	A	974	SER	4.0
1	A	73	PHE	3.7
1	A	781	LEU	3.5
1	A	273	LEU	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	270	ALA	3.2
1	A	67	LEU	3.2
1	A	976	PRO	3.2
1	A	907	ILE	3.2
1	A	350	SER	3.2
1	A	238	GLN	3.2
1	A	793	LEU	3.1
1	A	726	VAL	3.1
1	A	702	GLY	3.1
1	A	984	LEU	3.1
1	A	843	TYR	3.0
1	A	772	VAL	3.0
1	A	215	ALA	3.0
1	A	100	ALA	2.9
1	A	98	LEU	2.9
1	A	733	MET	2.9
1	A	838	MET	2.8
1	A	744	VAL	2.8
1	A	268	CYS	2.8
1	A	983	ILE	2.8
1	A	269	VAL	2.7
1	A	797	LEU	2.7
1	A	971	LEU	2.7
1	A	71	ILE	2.7
1	A	938	CYS	2.7
1	A	846	ALA	2.7
1	A	304	VAL	2.6
1	A	913	LEU	2.6
1	A	799	THR	2.6
1	A	844	VAL	2.6
1	A	243	GLU	2.6
1	A	841	GLY	2.6
1	A	777	LEU	2.5
1	A	835	PHE	2.5
1	A	402	ILE	2.5
1	A	927	PRO	2.5
1	A	780	ALA	2.4
1	A	905	VAL	2.4
1	A	704	GLY	2.4
1	A	787	LEU	2.4
1	A	792	LEU	2.3
1	A	942	SER	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	395	VAL	2.3
1	A	941	MET	2.3
1	A	305	ALA	2.3
1	A	302	LEU	2.3
1	A	331	ALA	2.2
1	A	289	ILE	2.2
1	A	298	ILE	2.2
1	A	274	ILE	2.2
1	A	69	ALA	2.2
1	A	525	CYS	2.2
1	A	66	LEU	2.1
1	A	261	SER	2.1
1	A	964	LEU	2.0
1	A	909	MET	2.0
1	A	707	ASP	2.0
1	A	784	PRO	2.0
1	A	712	LYS	2.0
1	A	977	VAL	2.0
1	A	953	LEU	2.0
1	A	335	SER	2.0
1	A	631	THR	2.0
1	A	848	THR	2.0
1	A	400	LYS	2.0
1	A	384	ILE	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

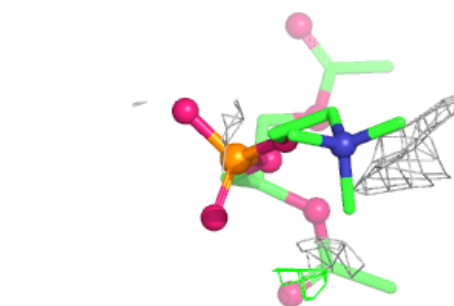
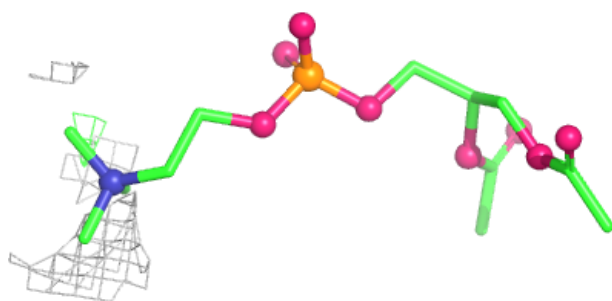
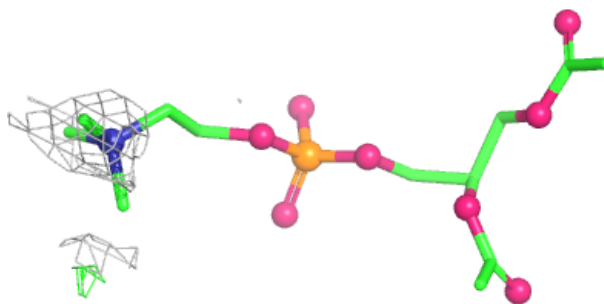
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	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
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

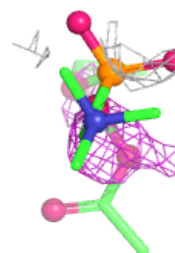
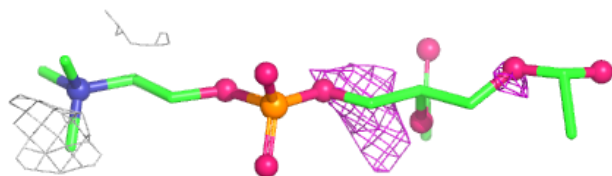
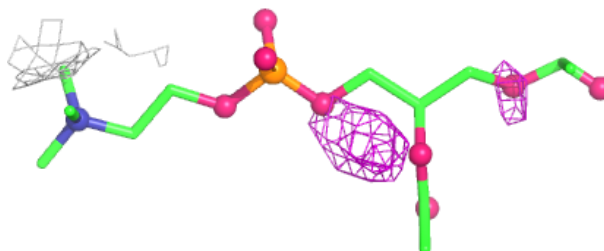
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

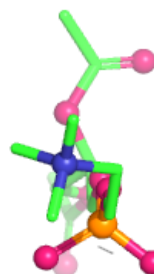
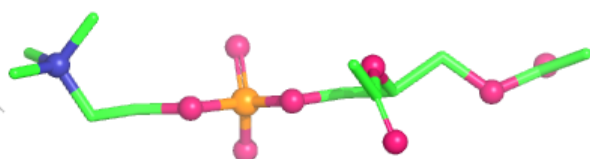
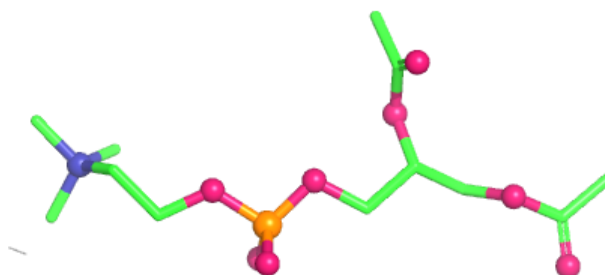
**Electron density around PCW A 1037:**

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

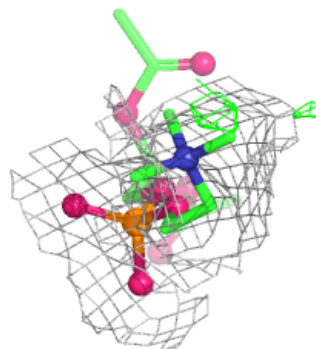
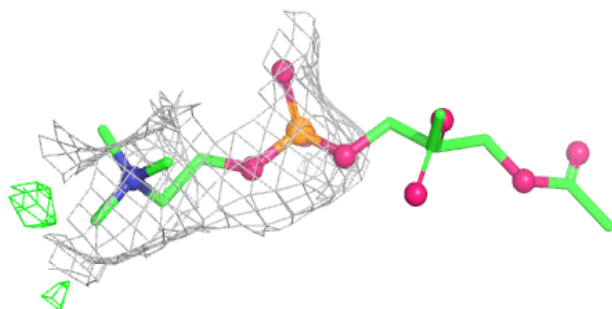
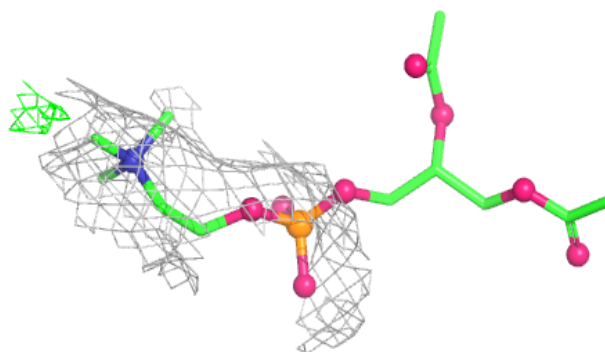


Electron density around PCW A 1034:

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

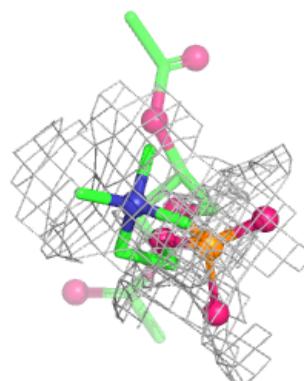
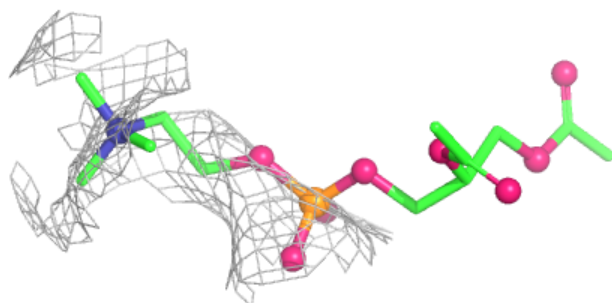
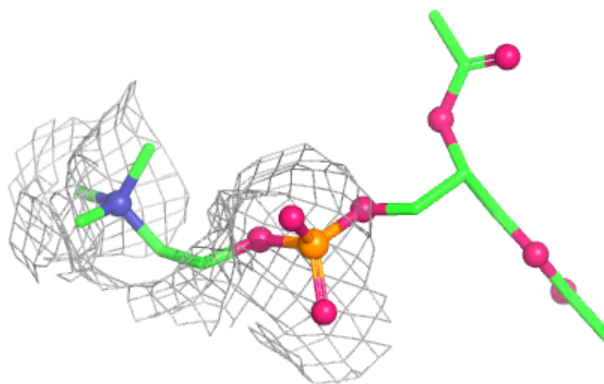
**Electron density around PCW A 1032:**

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

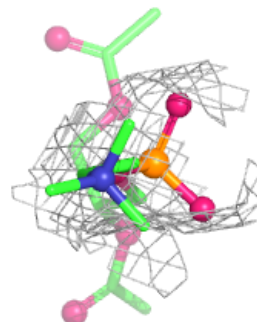
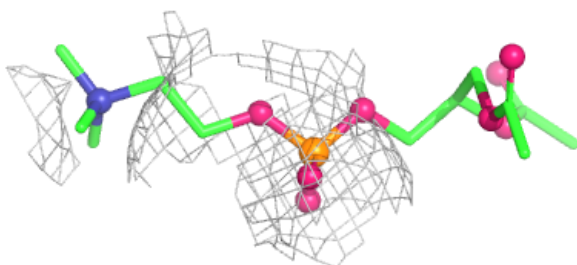
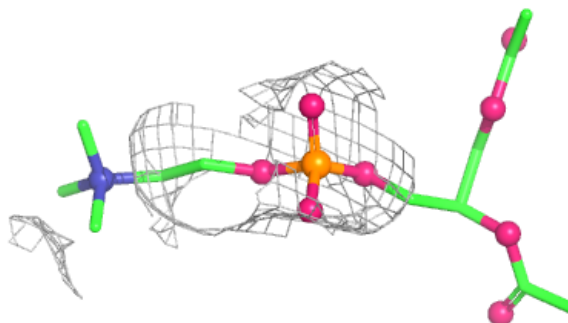


Electron density around PCW A 1030:

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

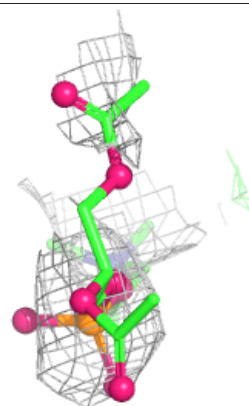
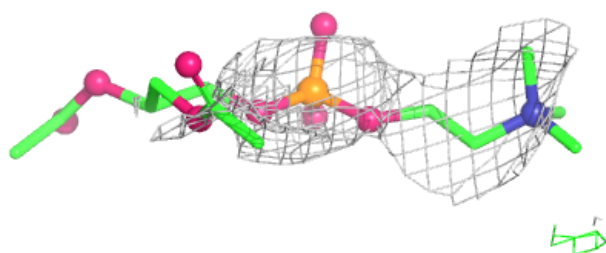
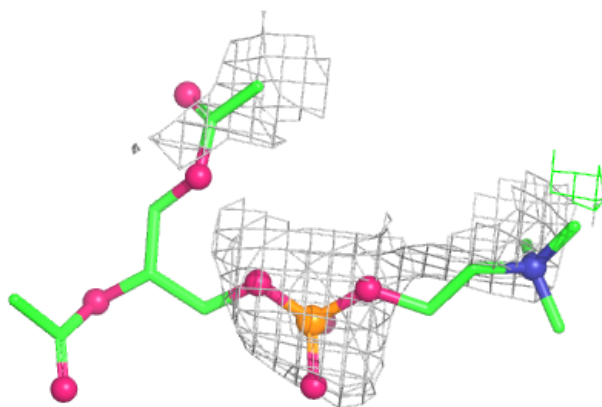
**Electron density around PCW A 1027:**

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

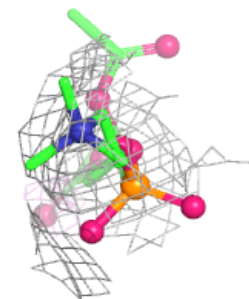
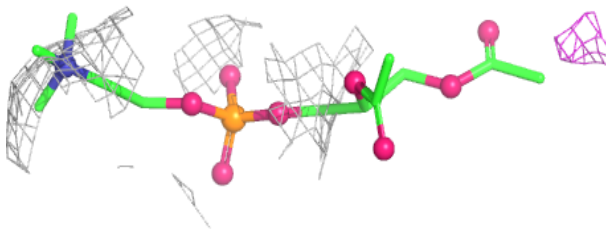
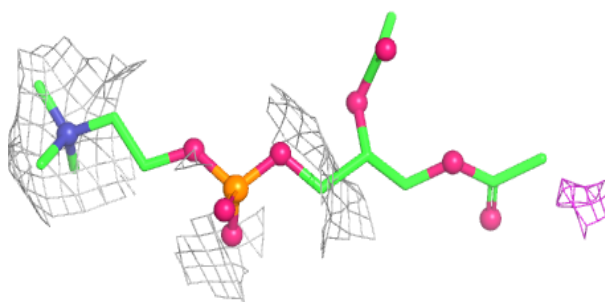


Electron density around PCW A 1024:

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

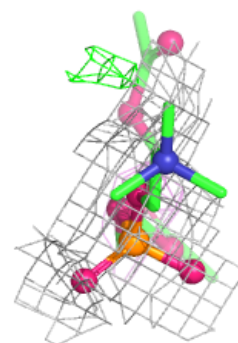
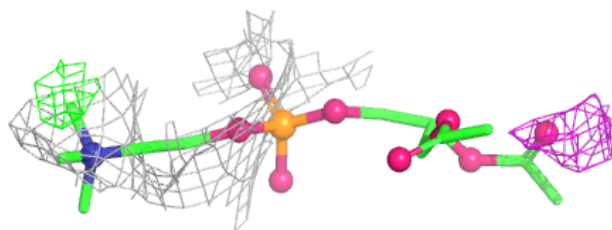
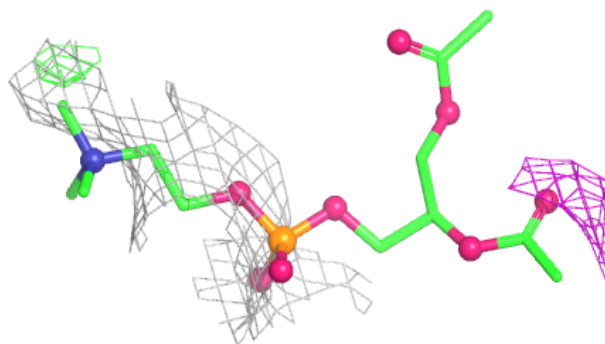
**Electron density around PCW A 1026:**

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

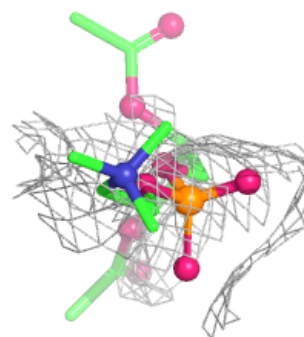
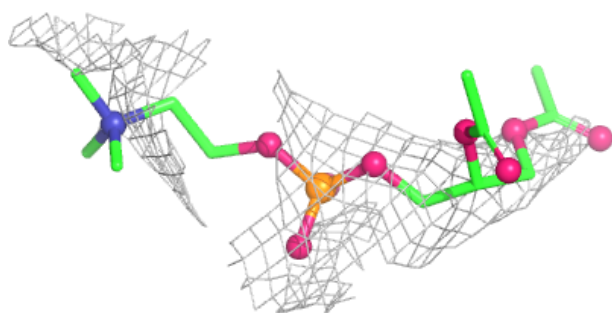
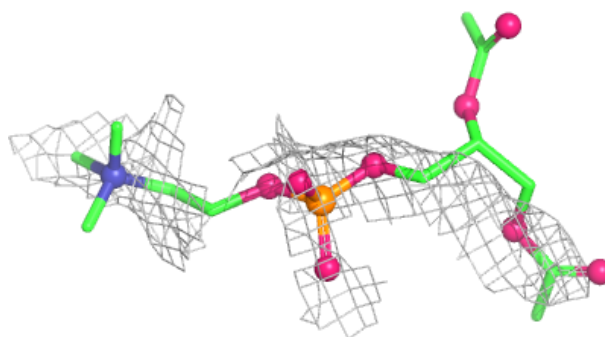


Electron density around PCW A 1017:

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

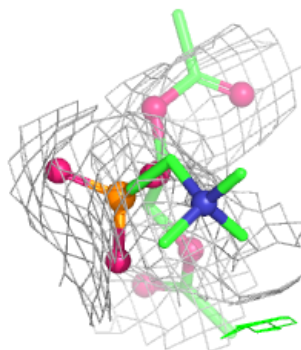
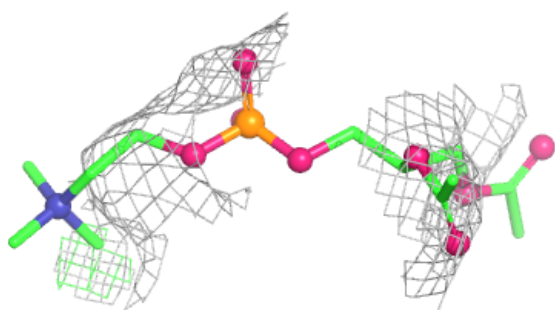
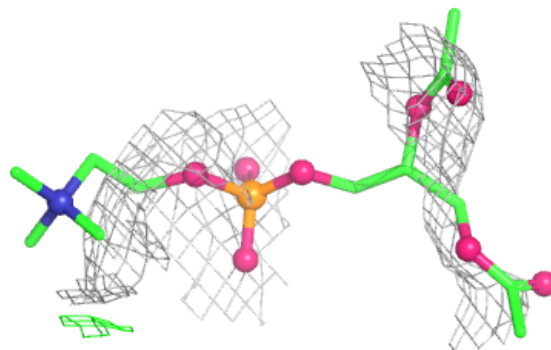
**Electron density around PCW A 1019:**

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

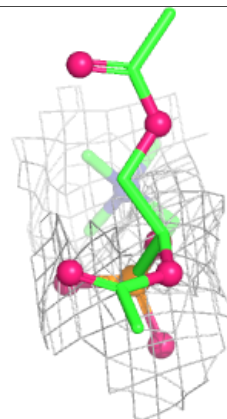
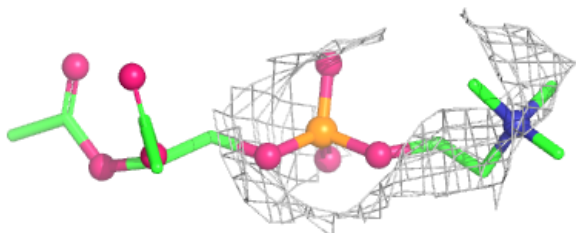
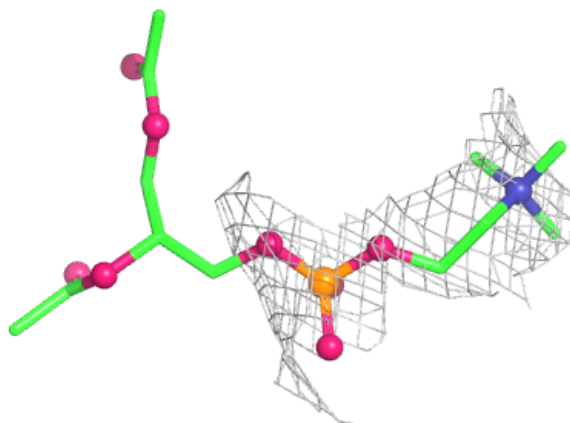


Electron density around PCW A 1020:

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and green (positive)

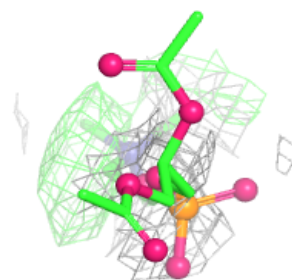
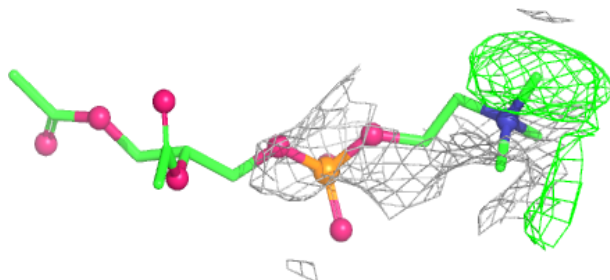
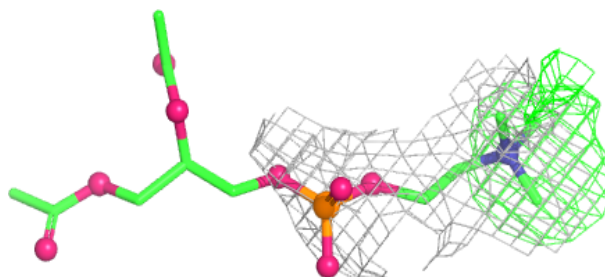
**Electron density around PCW A 1022:**

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and green (positive)

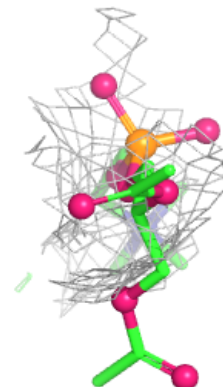
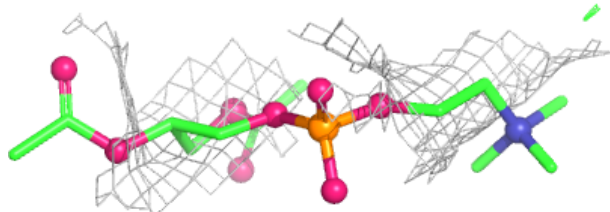
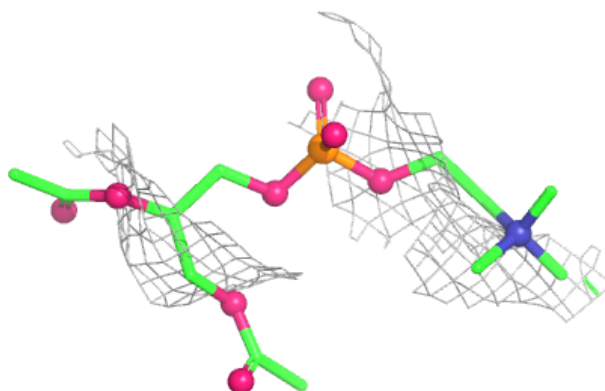


Electron density around PCW A 1009:

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

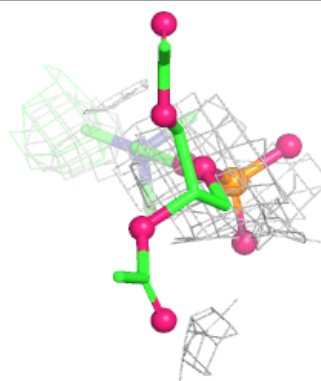
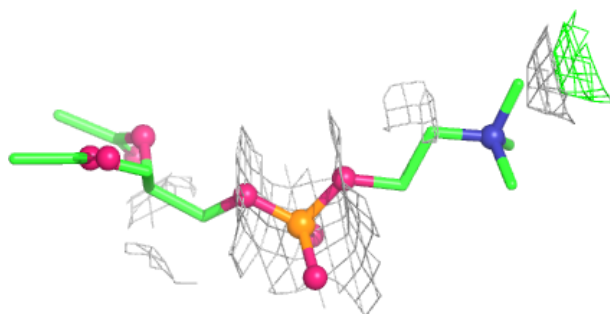
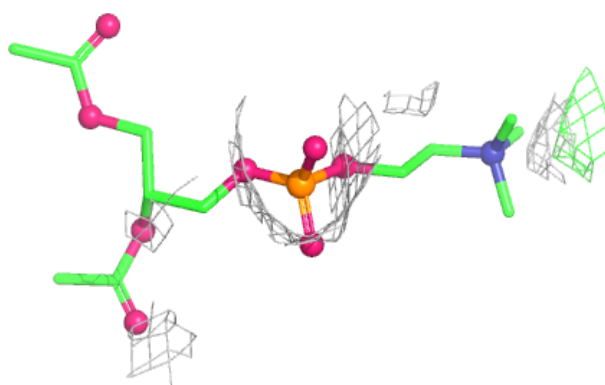
**Electron density around PCW A 1015:**

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and green (positive)

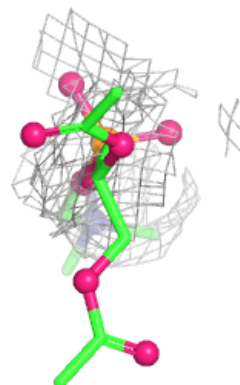
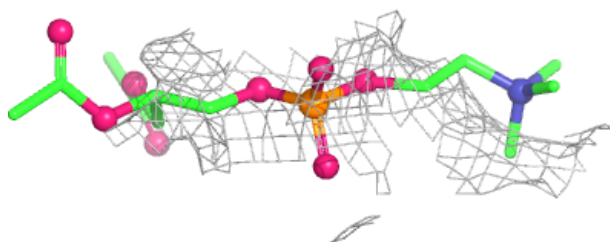
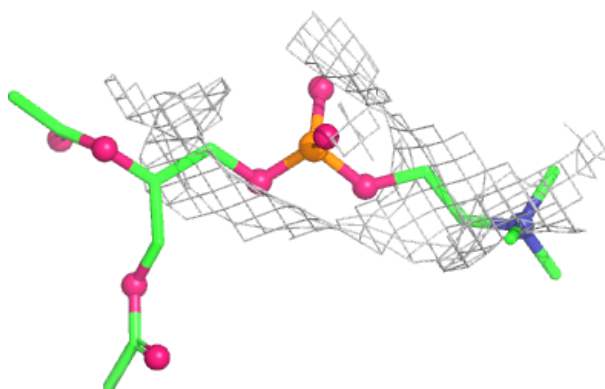


Electron density around PCW A 1012:

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

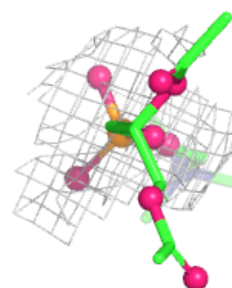
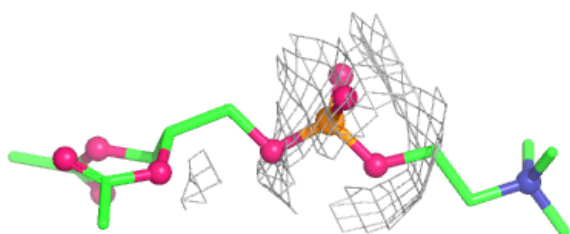
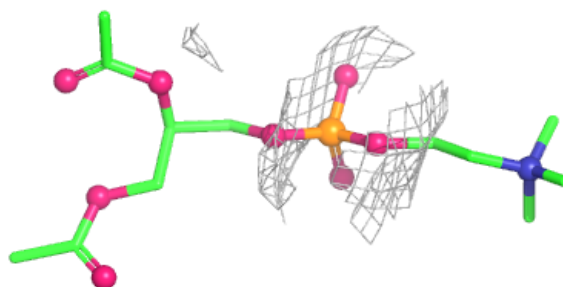
**Electron density around PCW A 1011:**

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

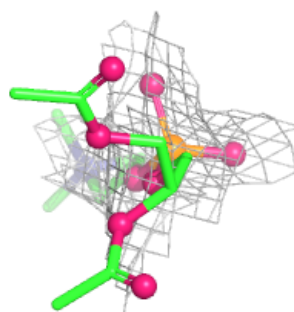
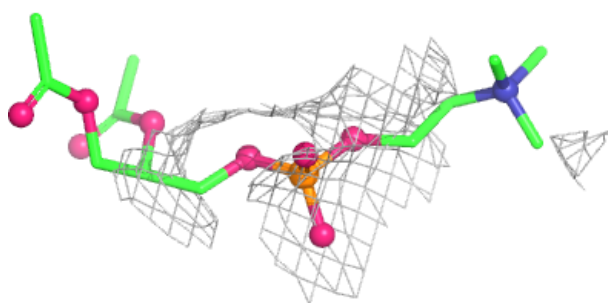
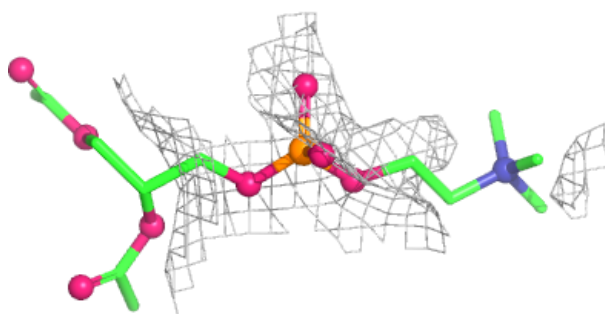


Electron density around PCW A 1035:

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

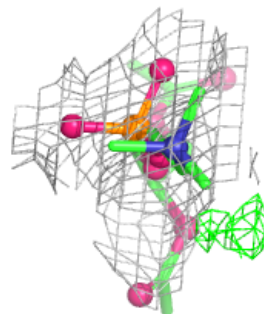
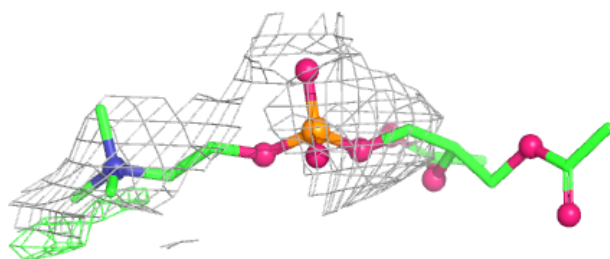
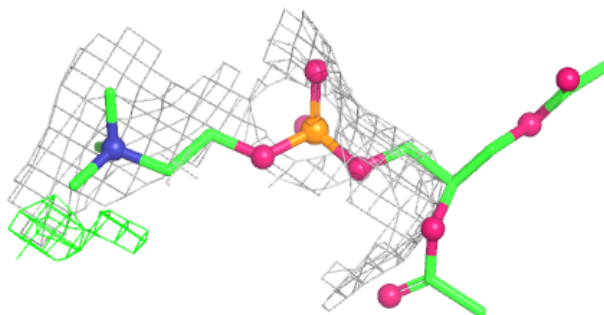
**Electron density around PCW A 1010:**

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and green (positive)

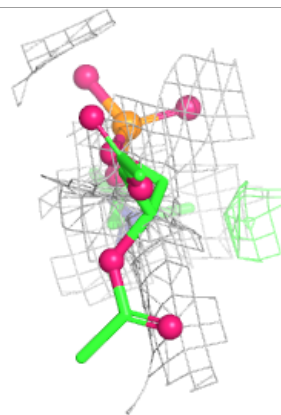
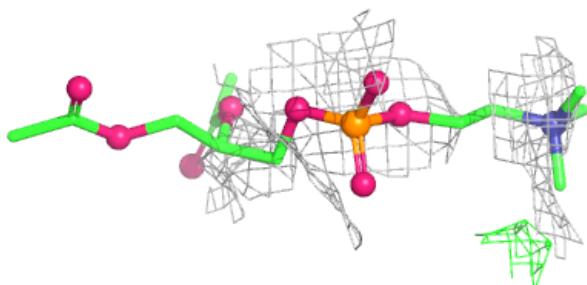
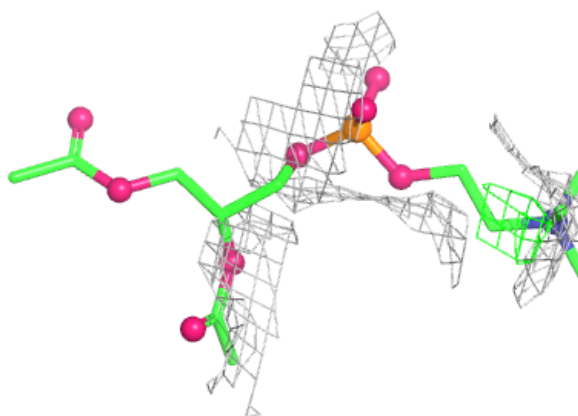


Electron density around PCW A 1031:

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

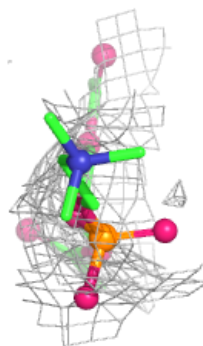
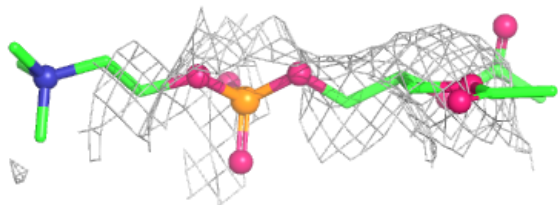
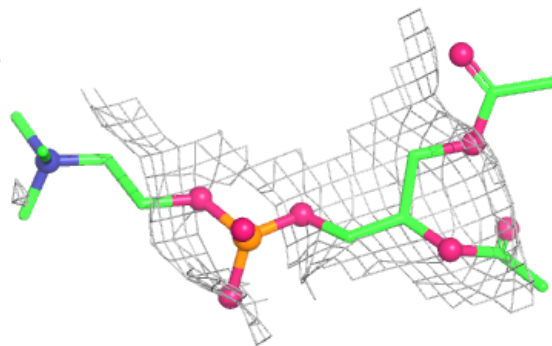
**Electron density around PCW A 1025:**

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

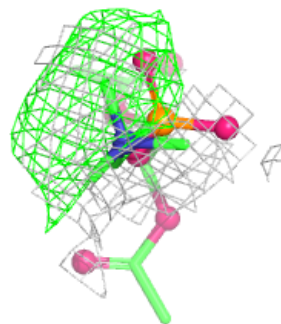
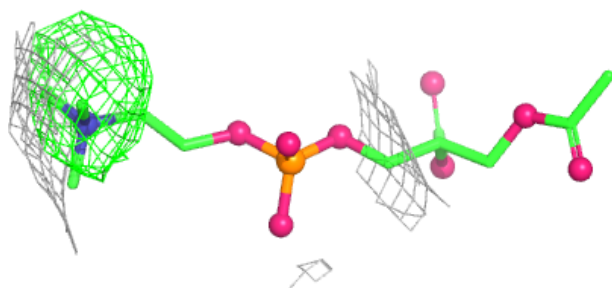
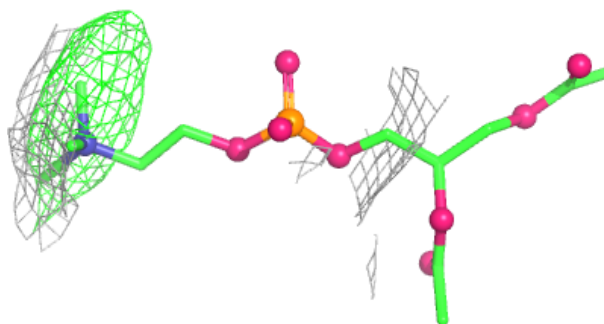


Electron density around PCW A 1013:

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

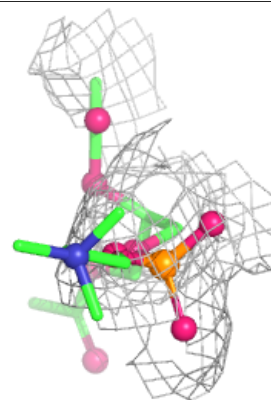
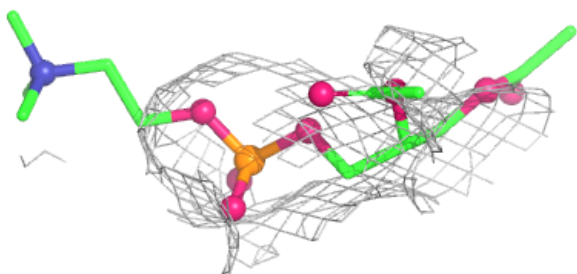
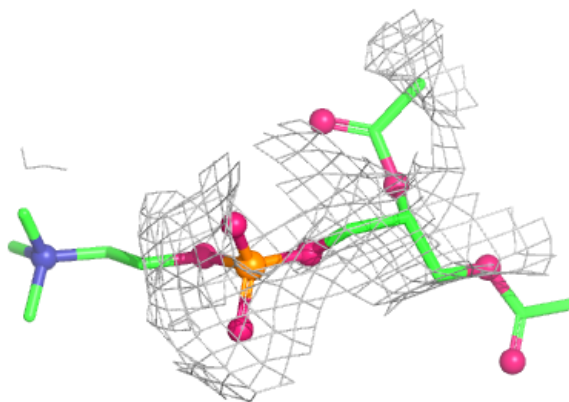
**Electron density around PCW A 1004:**

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

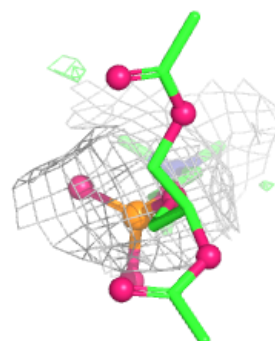
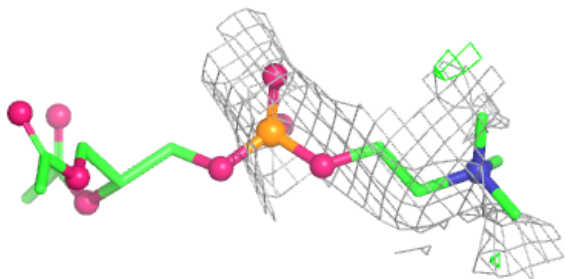
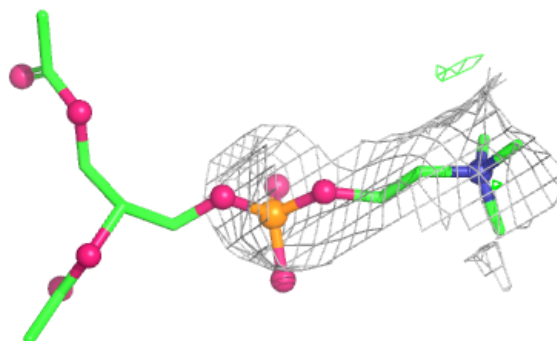


Electron density around PCW A 1007:

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

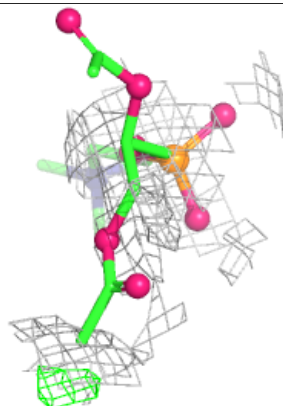
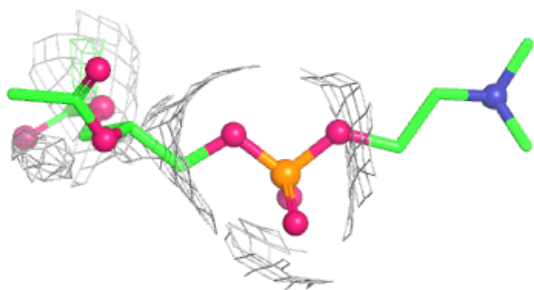
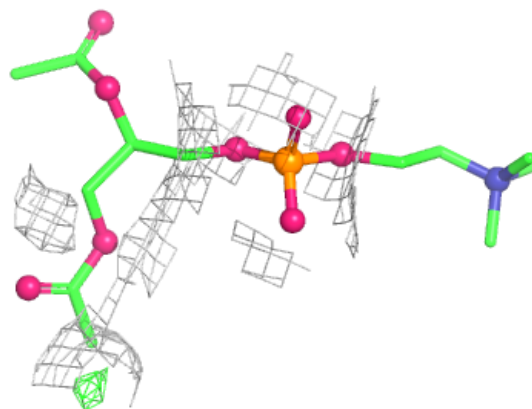
**Electron density around PCW A 1016:**

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

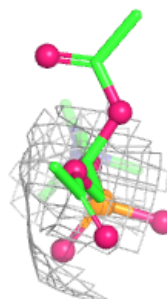
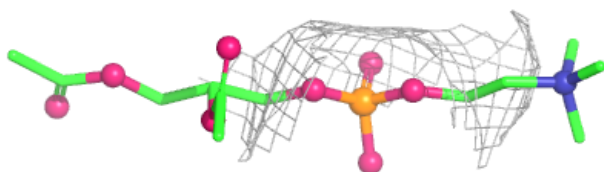
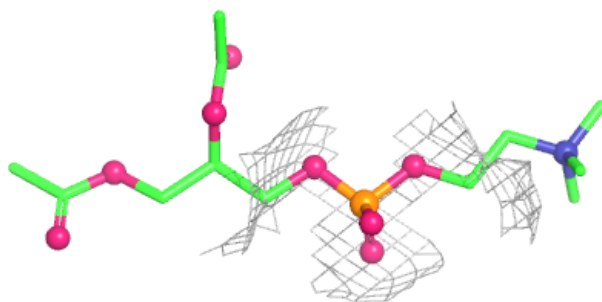


Electron density around PCW A 1008:

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

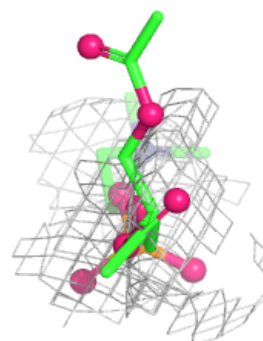
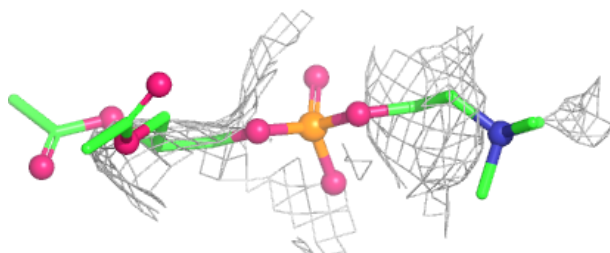
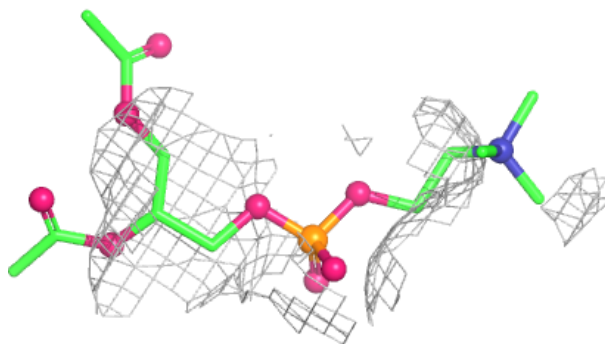
**Electron density around PCW A 1018:**

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

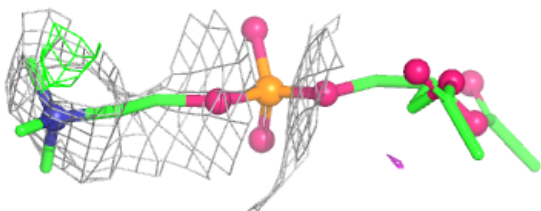
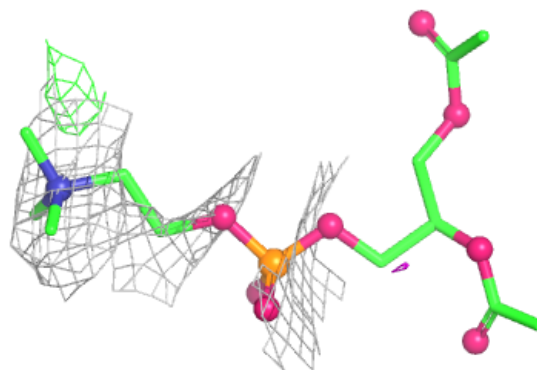


Electron density around PCW A 1028:

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

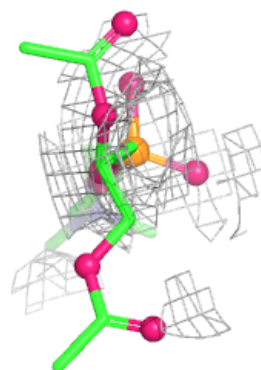
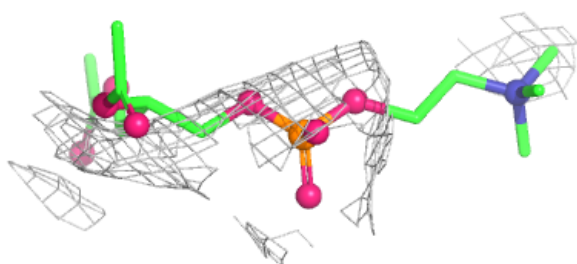
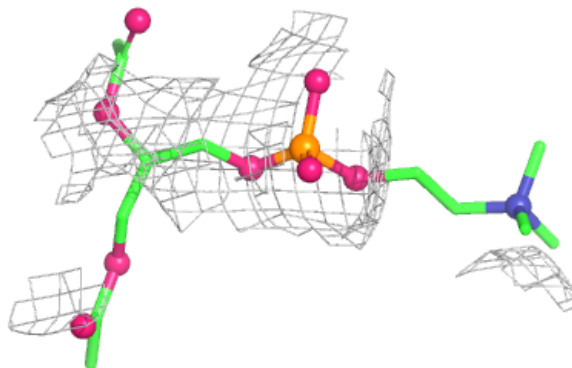
**Electron density around PCW A 1006:**

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

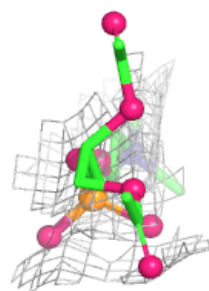
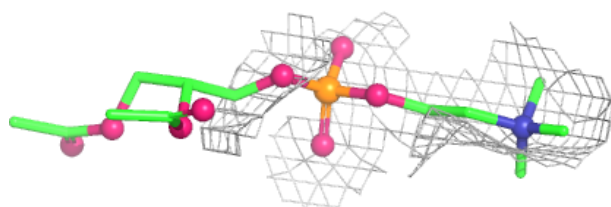
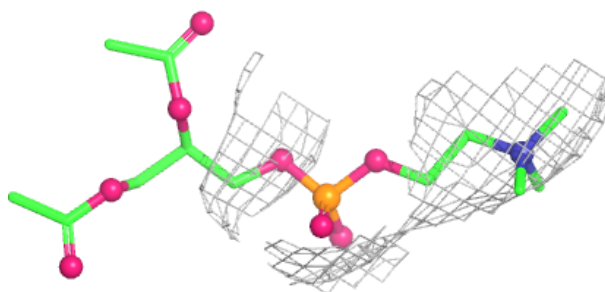


Electron density around PCW A 1014:

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

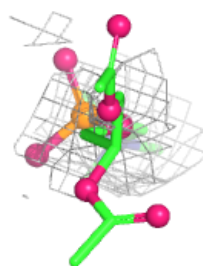
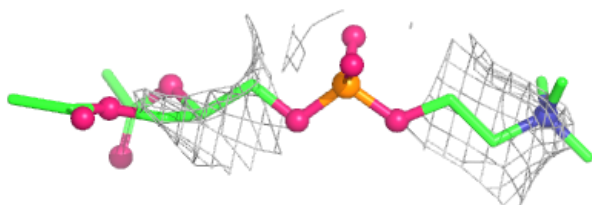
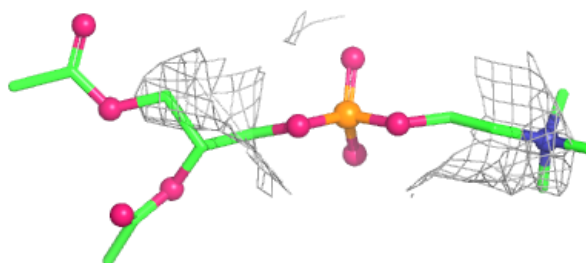
**Electron density around PCW A 1023:**

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

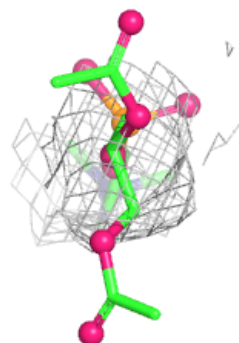
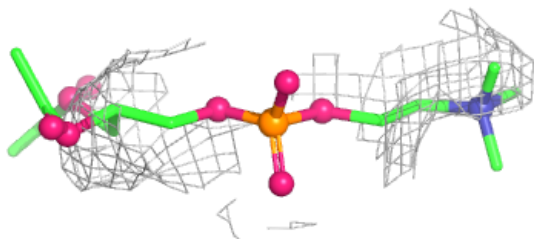
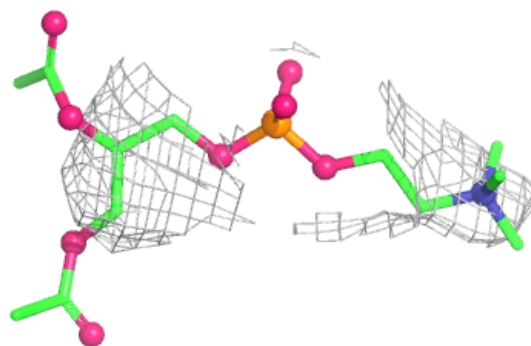


Electron density around PCW A 1005:

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

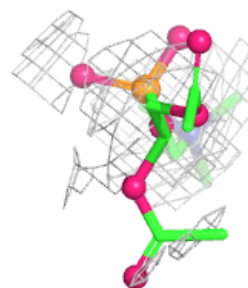
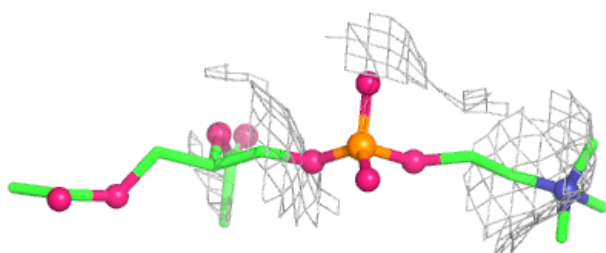
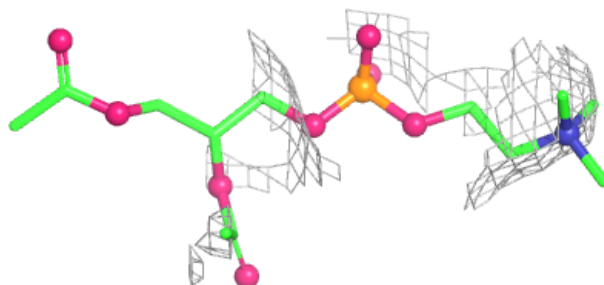
**Electron density around PCW A 1029:**

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

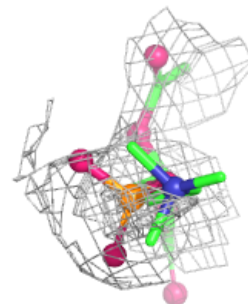
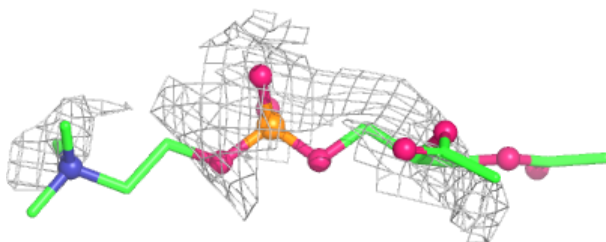
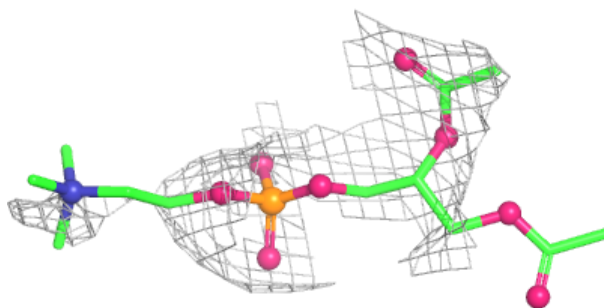


Electron density around PCW A 1036:

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

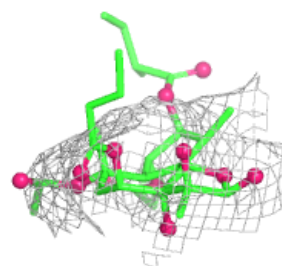
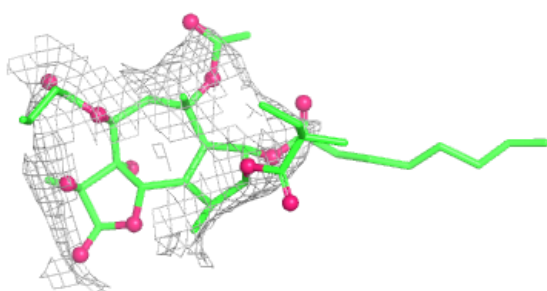
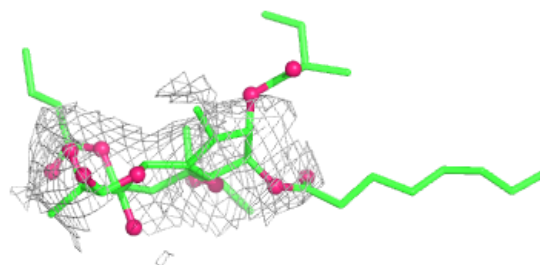
**Electron density around PCW A 1021:**

$2mF_o-DF_c$ (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 [i](#)

There are no such residues in this entry.