



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 23, 2025 – 02:45 PM JST

PDB ID : 9M56 / pdb\_00009m56  
Title : Bovine Heart Cytochrome c Oxidase in the Fully Reduced State  
Authors : Muramoto, K.; Shinzawa-Itoh, K.  
Deposited on : 2025-03-05  
Resolution : 1.60 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0rc1  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 2.0rc1  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.006 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.44

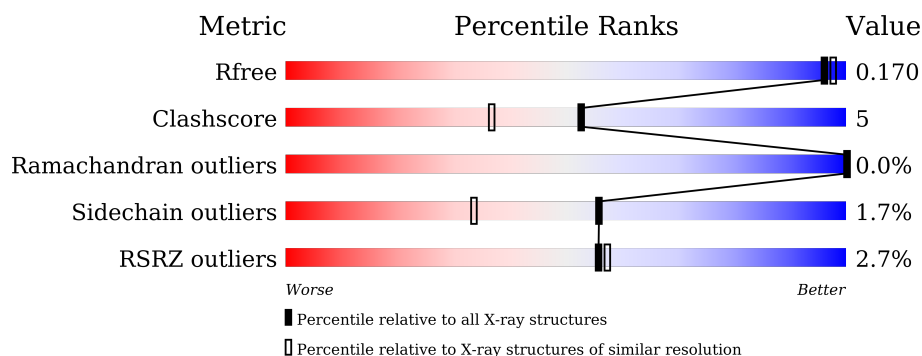
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.60 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.



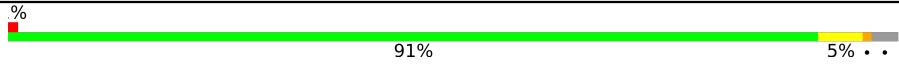

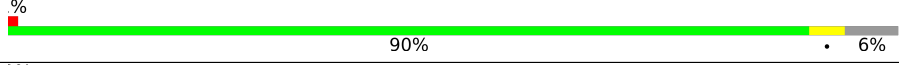
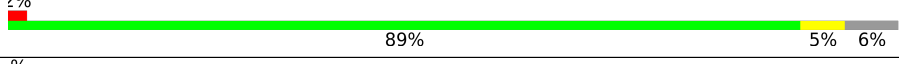


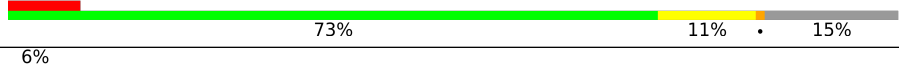
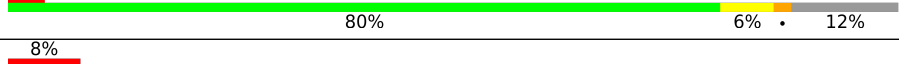

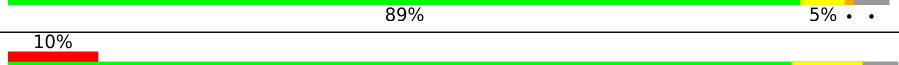
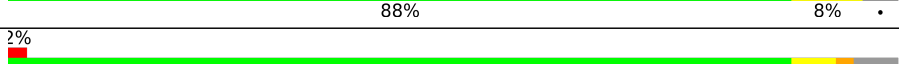

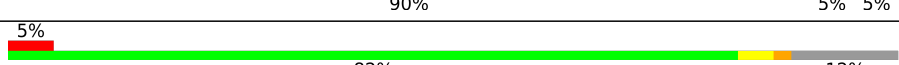
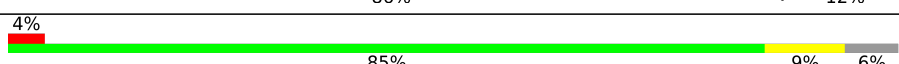
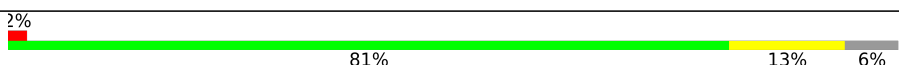
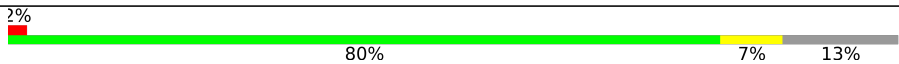
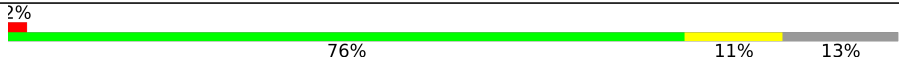
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	4274 (1.60-1.60)
Clashscore	180529	4682 (1.60-1.60)
Ramachandran outliers	177936	4583 (1.60-1.60)
Sidechain outliers	177891	4582 (1.60-1.60)
RSRZ outliers	164620	4272 (1.60-1.60)

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

Mol	Chain	Length	Quality of chain
1	A	514	<div> <div></div> <div>91%</div> <div>8%</div> <div>.</div> </div>
1	N	514	<div> <div></div> <div>91%</div> <div>8%</div> <div>.</div> </div>
2	B	227	<div> <div>5%</div> <div>83%</div> <div>15%</div> <div>.</div> </div>
2	O	227	<div> <div>4%</div> <div>84%</div> <div>14%</div> <div>.</div> </div>
3	C	261	<div> <div></div> <div>87%</div> <div>12%</div> <div>.</div> </div>
3	P	261	<div> <div></div> <div>86%</div> <div>11%</div> <div>..</div> </div>

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Mol	Chain	Length	Quality of chain
4	D	147	
4	Q	147	
5	E	109	
5	R	109	
6	F	98	
6	S	98	
7	G	85	
7	T	85	
8	H	85	
8	U	85	
9	I	73	
9	V	73	
10	J	59	
10	W	59	
11	K	56	
11	X	56	
12	L	47	
12	Y	47	
13	M	46	
13	Z	46	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
19	LFA	P	311	-	-	-	X

## 2 Entry composition

There are 28 unique types of molecules in this entry. The entry contains 33023 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 Cytochrome c oxidase subunit 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	513	Total	C	N	O	S	0	15	0
			4130	2757	636	696	41			
1	N	513	Total	C	N	O	S	0	15	0
			4130	2757	636	696	41			

- Molecule 2 is a protein called Cytochrome c oxidase subunit 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	227	Total	C	N	O	S	0	5	0
			1870	1216	288	347	19			
2	O	227	Total	C	N	O	S	0	5	0
			1870	1216	288	347	19			

- Molecule 3 is a protein called Cytochrome c oxidase subunit 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	258	Total	C	N	O	S	0	9	0
			2171	1449	342	364	16			
3	P	258	Total	C	N	O	S	0	9	0
			2172	1449	343	364	16			

- Molecule 4 is a protein called Cytochrome c oxidase subunit 4 isoform 1, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	143	Total	C	N	O	S	0	1	0
			1192	776	195	217	4			
4	Q	137	Total	C	N	O	S	0	1	0
			1148	749	188	207	4			

- Molecule 5 is a protein called Cytochrome c oxidase subunit 5A.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	102	Total	C	N	O	S	0	0	0
			825	528	139	156	2			
5	R	102	Total	C	N	O	S	0	0	0
			825	528	139	156	2			

- Molecule 6 is a protein called Cytochrome c oxidase subunit 5B, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	91	Total	C	N	O	S	0	2	0
			709	441	124	138	6			
6	S	91	Total	C	N	O	S	0	2	0
			709	441	124	138	6			

- Molecule 7 is a protein called Cytochrome c oxidase subunit 6A2, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	72	Total	C	N	O	S	0	1	0
			606	396	114	95	1			
7	T	72	Total	C	N	O	S	0	1	0
			606	396	114	95	1			

- Molecule 8 is a protein called Cytochrome c oxidase subunit 6B1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	75	Total	C	N	O	S	0	0	0
			628	395	114	114	5			
8	U	75	Total	C	N	O	S	0	0	0
			628	395	114	114	5			

- Molecule 9 is a protein called Cytochrome c oxidase subunit 6C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	I	70	Total	C	N	O	S	0	0	0
			575	375	103	93	4			
9	V	70	Total	C	N	O	S	0	0	0
			575	375	103	93	4			

- Molecule 10 is a protein called Cytochrome c oxidase subunit 7A1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	56	Total	C	N	O	S	0	0	0
			441	285	73	80	3			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	W	56	Total	C	N	O	S	0	0	0
			441	285	73	80	3			

- Molecule 11 is a protein called Cytochrome c oxidase subunit 7B, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	K	49	Total	C	N	O	S	0	0	0
			384	250	65	67	2			
11	X	49	Total	C	N	O	S	0	0	0
			384	250	65	67	2			

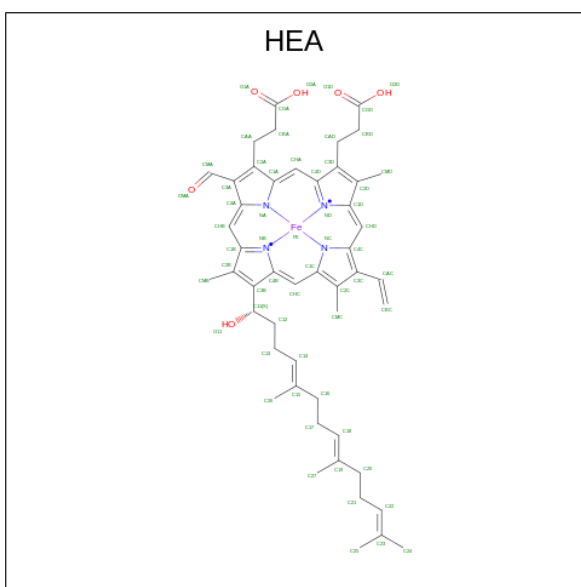
- Molecule 12 is a protein called Cytochrome c oxidase subunit 7C, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
12	L	44	Total	C	N	O	S	0	0	0
			360	242	59	57	2			
12	Y	44	Total	C	N	O	S	0	0	0
			360	242	59	57	2			

- Molecule 13 is a protein called Cytochrome c oxidase subunit 8B, mitochondrial.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
13	M	40	Total	C	N	O	0	0	0
			311	208	48	55			
13	Z	40	Total	C	N	O	0	0	0
			311	208	48	55			

- Molecule 14 is HEME-A (CCD ID: HEA) (formula:  $C_{49}H_{56}FeN_4O_6$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
14	A	1	Total 60	C 49	Fe 1	N 4	O 6	0	0
14	A	1	Total 60	C 49	Fe 1	N 4	O 6	0	0
14	N	1	Total 60	C 49	Fe 1	N 4	O 6	0	0
14	N	1	Total 60	C 49	Fe 1	N 4	O 6	0	0

- Molecule 15 is COPPER (II) ION (CCD ID: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
15	A	1	Total	Cu	0	0
			1	1		
15	N	1	Total	Cu	0	0
			1	1		

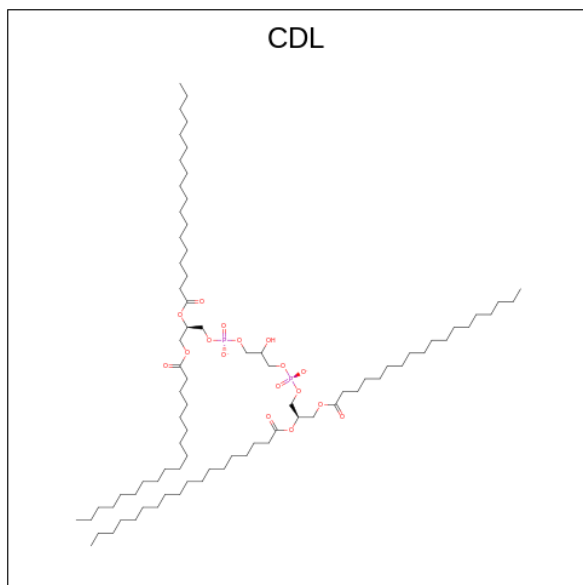
- Molecule 16 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
16	A	1	Total	Mg	0	0
			1	1		
16	N	1	Total	Mg	0	0
			1	1		

- Molecule 17 is SODIUM ION (CCD ID: NA) (formula: Na).

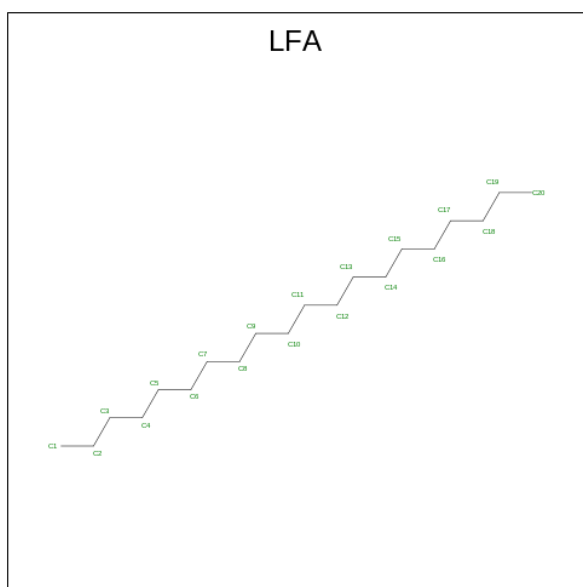
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	A	1	Total	Na	0	0
			1	1		
17	N	1	Total	Na	0	0
			1	1		

- Molecule 18 is CARDIOLIPIN (CCD ID: CDL) (formula:  $C_{81}H_{156}O_{17}P_2$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
18	A	1	Total	C	O	P	0	0
			64	45	17	2		
18	C	1	Total	C	O	P	0	0
			87	68	17	2		
18	L	1	Total	C	O	P	0	0
			94	75	17	2		
18	P	1	Total	C	O	P	0	0
			87	68	17	2		
18	V	1	Total	C	O	P	0	0
			64	45	17	2		
18	Y	1	Total	C	O	P	0	0
			94	75	17	2		

- Molecule 19 is EICOSANE (CCD ID: LFA) (formula:  $C_{20}H_{42}$ ).



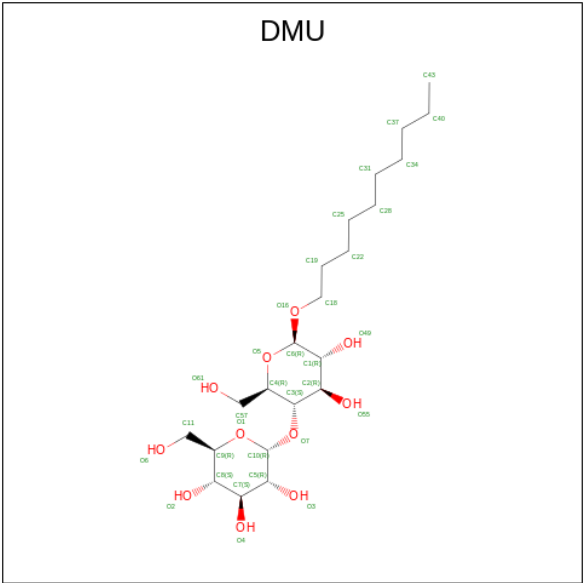
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	A	1	Total C 14 14	0	0
19	B	1	Total C 17 17	0	0
19	C	1	Total C 11 11	0	0
19	C	1	Total C 6 6	0	0
19	C	1	Total C 18 18	0	0
19	C	1	Total C 11 11	0	0
19	C	1	Total C 14 14	0	0
19	C	1	Total C 11 11	0	0
19	C	1	Total C 15 15	0	0
19	C	1	Total C 13 13	0	0
19	C	1	Total C 15 15	0	0
19	G	1	Total C 14 14	0	0
19	N	1	Total C 14 14	0	0
19	O	1	Total C 17 17	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
19	O	1	Total C 11 11	0	0
19	P	1	Total C 15 15	0	0
19	P	1	Total C 11 11	0	0
19	P	1	Total C 6 6	0	0
19	P	1	Total C 18 18	0	0
19	P	1	Total C 11 11	0	0
19	P	1	Total C 14 14	0	0
19	P	1	Total C 11 11	0	0
19	P	1	Total C 15 15	0	0
19	P	1	Total C 13 13	0	0
19	T	1	Total C 14 14	0	0
19	T	1	Total C 11 11	0	0

- Molecule 20 is DECYL-BETA-D-MALTOPYRANOSIDE (CCD ID: DMU) (formula: C<sub>22</sub>H<sub>42</sub>O<sub>11</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
20	A	1	Total C 7 7	0	0
20	A	1	Total C O 33 22 11	0	0
20	A	1	Total C O 11 10 1	0	0
20	B	1	Total C O 11 10 1	0	0
20	B	1	Total C O 11 10 1	0	0
20	B	1	Total C O 22 16 6	0	0
20	B	1	Total C O 22 16 6	0	0
20	C	1	Total C O 11 10 1	0	0
20	C	1	Total C O 33 22 11	0	0
20	C	1	Total C 7 7	0	0
20	C	1	Total C O 22 16 6	0	0
20	C	1	Total C O 33 22 11	0	0
20	C	1	Total C O 33 22 11	0	0
20	C	1	Total C O 33 22 11	0	0
20	D	1	Total C O 33 22 11	0	0
20	G	1	Total C O 11 10 1	0	0
20	G	1	Total C O 22 16 6	0	0
20	H	1	Total C O 33 22 11	0	0
20	J	1	Total C O 11 10 1	0	0
20	L	1	Total C O 22 16 6	0	0
20	M	1	Total C O 33 22 11	0	0
20	M	1	Total C 8 8	0	0

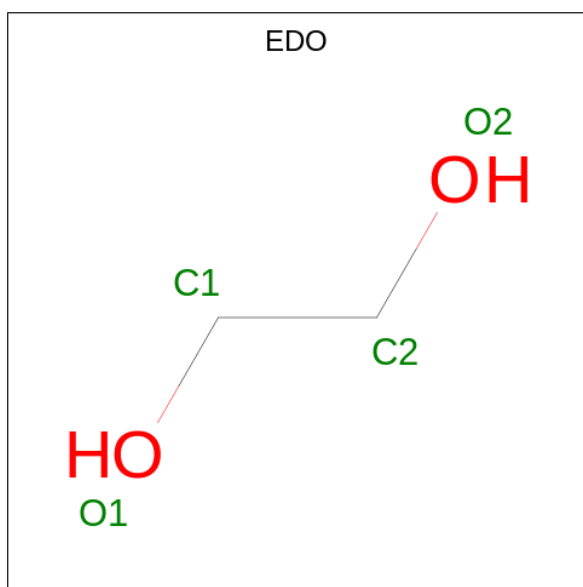
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
20	N	1	Total C 7 7	0	0
20	N	1	Total C O 33 22 11	0	0
20	N	1	Total C O 33 22 11	0	0
20	O	1	Total C O 22 16 6	0	0
20	O	1	Total C O 11 10 1	0	0
20	O	1	Total C O 11 10 1	0	0
20	O	1	Total C O 22 16 6	0	0
20	P	1	Total C O 11 10 1	0	0
20	P	1	Total C O 33 22 11	0	0
20	P	1	Total C 7 7	0	0
20	P	1	Total C O 22 16 6	0	0
20	P	1	Total C O 33 22 11	0	0
20	P	1	Total C O 33 22 11	0	0
20	P	1	Total C O 33 22 11	0	0
20	Q	1	Total C O 33 22 11	0	0
20	T	1	Total C O 22 16 6	0	0
20	W	1	Total C O 11 10 1	0	0
20	Y	1	Total C O 22 16 6	0	0
20	Z	1	Total C O 33 22 11	0	0
20	Z	1	Total C 8 8	0	0

- Molecule 21 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).





Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
21	A	1	Total	C	O	0	0
			4	2	2		
21	A	1	Total	C	O	0	0
			4	2	2		
21	A	1	Total	C	O	0	0
			4	2	2		
21	B	1	Total	C	O	0	0
			4	2	2		
21	C	1	Total	C	O	0	0
			4	2	2		
21	C	1	Total	C	O	0	0
			4	2	2		
21	C	1	Total	C	O	0	0
			4	2	2		
21	E	1	Total	C	O	0	0
			4	2	2		
21	E	1	Total	C	O	0	0
			4	2	2		
21	E	1	Total	C	O	0	0
			4	2	2		
21	F	1	Total	C	O	0	0
			4	2	2		
21	F	1	Total	C	O	0	0
			4	2	2		
21	F	1	Total	C	O	0	0
			4	2	2		
21	G	1	Total	C	O	0	0
			4	2	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
21	N	1	Total	C	O	0	0
			4	2	2		
21	N	1	Total	C	O	0	0
			4	2	2		
21	N	1	Total	C	O	0	0
			4	2	2		
21	N	1	Total	C	O	0	0
			4	2	2		
21	N	1	Total	C	O	0	0
			4	2	2		
21	O	1	Total	C	O	0	0
			4	2	2		
21	P	1	Total	C	O	0	0
			4	2	2		
21	P	1	Total	C	O	0	0
			4	2	2		
21	P	1	Total	C	O	0	0
			4	2	2		
21	R	1	Total	C	O	0	0
			4	2	2		
21	R	1	Total	C	O	0	0
			4	2	2		
21	R	1	Total	C	O	0	0
			4	2	2		
21	S	1	Total	C	O	0	0
			4	2	2		
21	S	1	Total	C	O	0	0
			4	2	2		
21	T	1	Total	C	O	0	0
			4	2	2		

- Molecule 22 is (1R)-2-{{[(2S)-2,3-DIHYDROXYPROPYL]OXY}(HYDROXY)PHOSPHORYL]OXY}-1-[(PALMITOYLOXY)METHYL]ETHYL (11E)-OCTADEC-11-ENOATE (CCD ID: PGV) (formula: C<sub>40</sub>H<sub>77</sub>O<sub>10</sub>P).



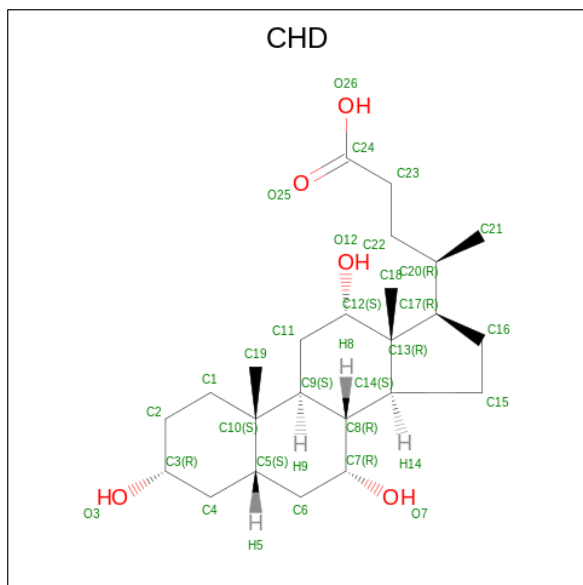
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
22	A	1	Total 51	C 40	O 10	P 1	0	0
22	C	1	Total 51	C 40	O 10	P 1	0	0
22	N	1	Total 51	C 40	O 10	P 1	0	0
22	P	1	Total 51	C 40	O 10	P 1	0	0

- Molecule 23 is DINUCLEAR COPPER ION (CCD ID: CUA) (formula:  $\text{Cu}_2$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
23	B	1	Total Cu 2 2	0	0
23	O	1	Total Cu 2 2	0	0

- Molecule 24 is CHOLIC ACID (CCD ID: CHD) (formula:  $C_{24}H_{40}O_5$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
24	B	1	Total C O 29 24 5	0	0
24	C	1	Total C O 29 24 5	0	0
24	C	1	Total C O 29 24 5	0	0
24	G	1	Total C O 29 24 5	0	0
24	P	1	Total C O 29 24 5	0	0
24	P	1	Total C O 29 24 5	0	0

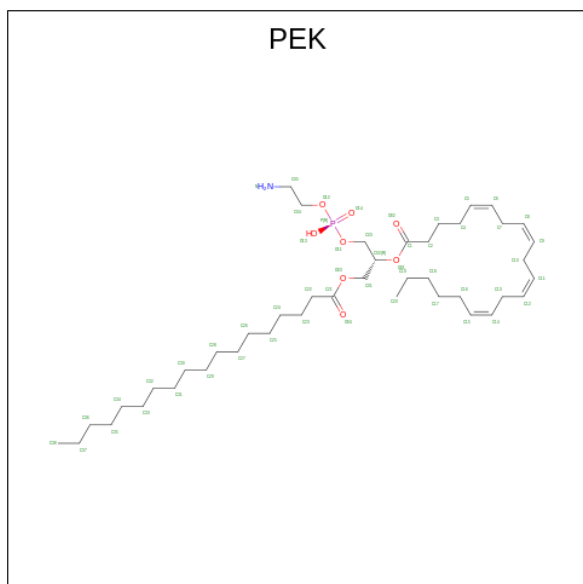
- Molecule 25 is UNKNOWN ATOM OR ION (CCD ID: UNX) (formula: X).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
25	C	1	Total X 1 1	0	0
25	P	1	Total X 1 1	0	0

- Molecule 26 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
26	F	1	Total	Zn	0	0
			1	1		
26	S	1	Total	Zn	0	0
			1	1		

- Molecule 27 is (1S)-2-{[(2-AMINOETHOXY)(HYDROXY)PHOSPHORYL]OXY}-1-[(STEAROYLOXY)METHYL]ETHYL (5E,8E,11E,14E)-ICOSA-5,8,11,14-TETRAENOATE (CCD ID: PEK) (formula: C<sub>43</sub>H<sub>78</sub>NO<sub>8</sub>P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
27	G	1	Total	C	N	O	P	0	0
			53	43	1	8	1		
27	T	1	Total	C	N	O	P	0	0
			53	43	1	8	1		

- Molecule 28 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
28	A	234	Total	O	0	11
			245	245		
28	B	169	Total	O	0	2
			171	171		
28	C	102	Total	O	0	1
			103	103		
28	D	139	Total	O	0	9
			148	148		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
28	E	107	Total 114	O 114	0	7
28	F	104	Total 111	O 111	0	7
28	G	48	Total 49	O 49	0	1
28	H	63	Total 63	O 63	0	0
28	I	39	Total 39	O 39	0	0
28	J	21	Total 21	O 21	0	0
28	K	22	Total 22	O 22	0	0
28	L	27	Total 29	O 29	0	2
28	M	21	Total 21	O 21	0	0
28	N	224	Total 234	O 234	0	10
28	O	142	Total 143	O 143	0	1
28	P	99	Total 100	O 100	0	1
28	Q	77	Total 81	O 81	0	4
28	R	88	Total 96	O 96	0	8
28	S	91	Total 97	O 97	0	6
28	T	36	Total 37	O 37	0	1
28	U	48	Total 48	O 48	0	0
28	V	25	Total 25	O 25	0	0
28	W	16	Total 16	O 16	0	0
28	X	18	Total 18	O 18	0	0
28	Y	25	Total 27	O 27	0	2

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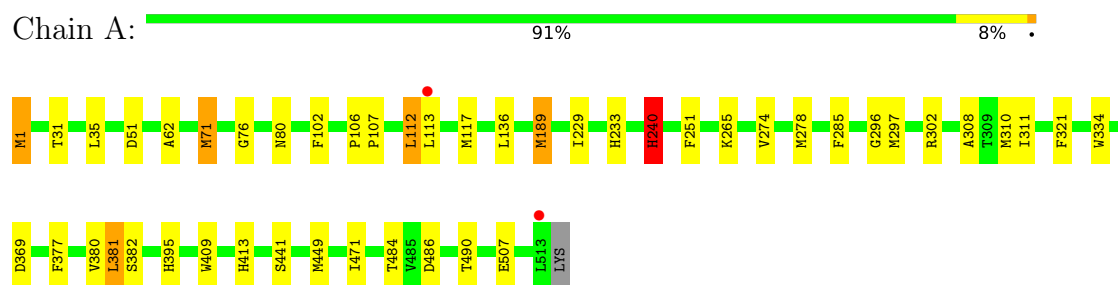
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
28	Z	18	Total	O	0	0
			18	18		

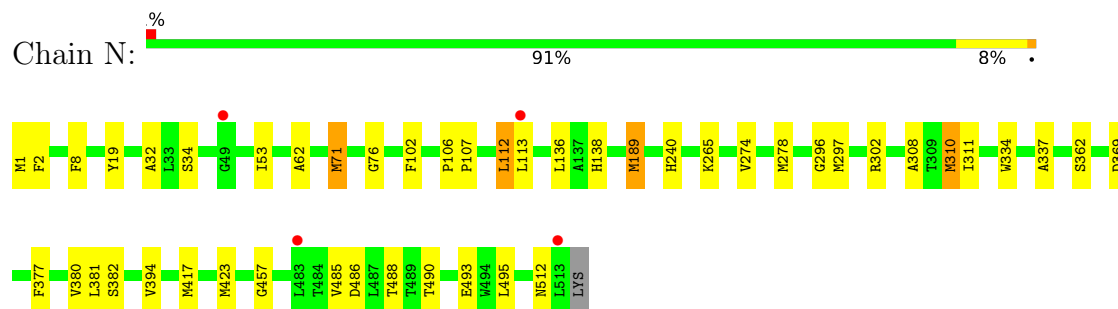
### 3 Residue-property plots [i](#)

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.

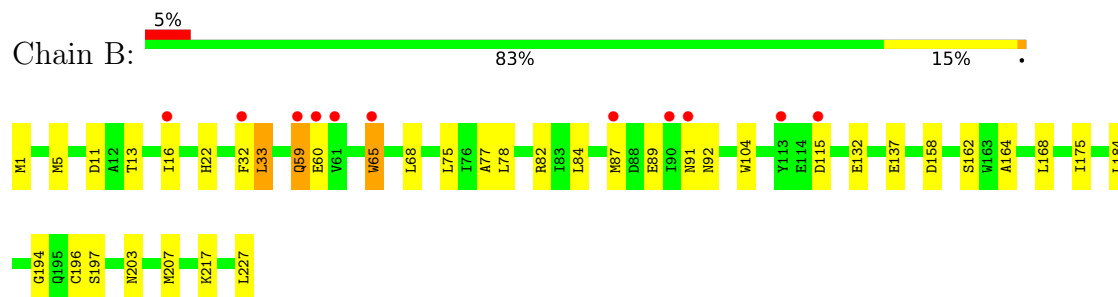
- Molecule 1: Cytochrome c oxidase subunit 1



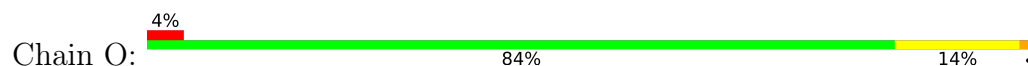
- Molecule 1: Cytochrome c oxidase subunit 1



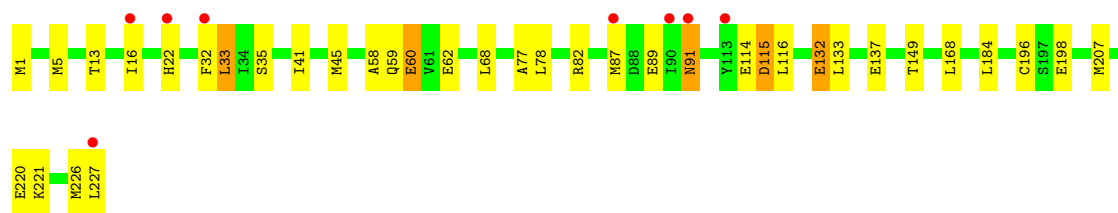
- Molecule 2: Cytochrome c oxidase subunit 2



- Molecule 2: Cytochrome c oxidase subunit 2

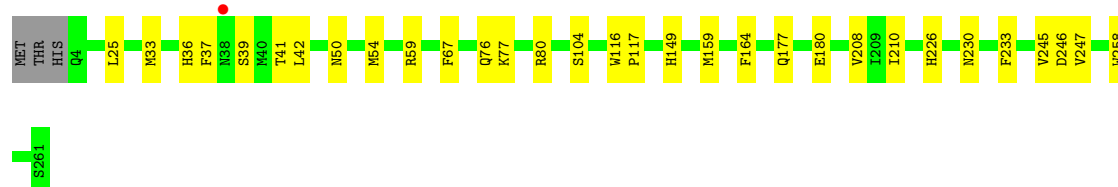






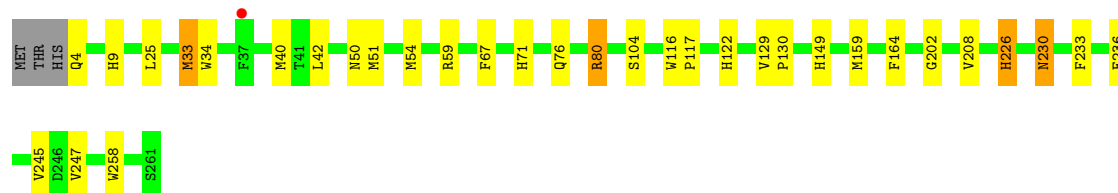
• Molecule 3: Cytochrome c oxidase subunit 3

Chain C: 87% 12%



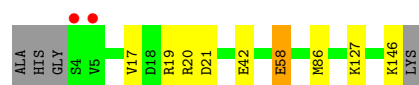
• Molecule 3: Cytochrome c oxidase subunit 3

Chain P: 86% 11%



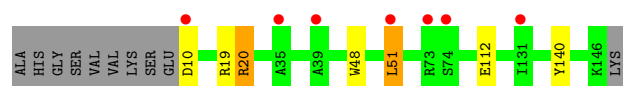
• Molecule 4: Cytochrome c oxidase subunit 4 isoform 1, mitochondrial

Chain D: 91% 5%



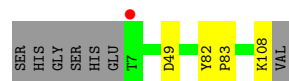
• Molecule 4: Cytochrome c oxidase subunit 4 isoform 1, mitochondrial

Chain Q: 88% 5% 7%

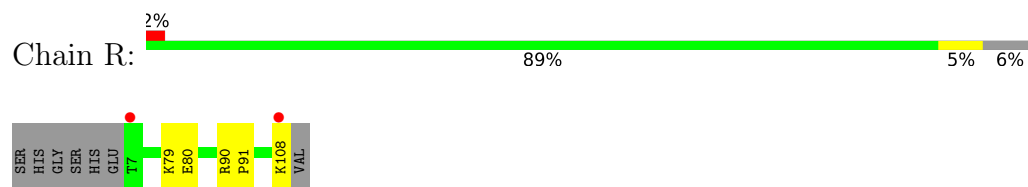


• Molecule 5: Cytochrome c oxidase subunit 5A

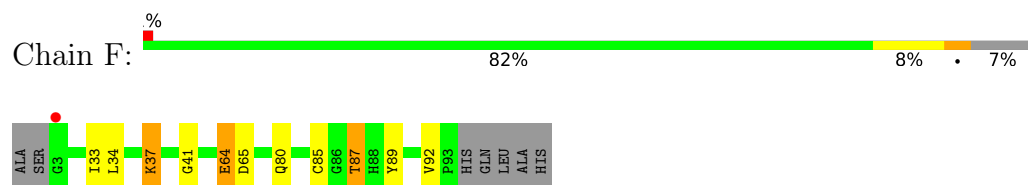
Chain E: 90% 6%



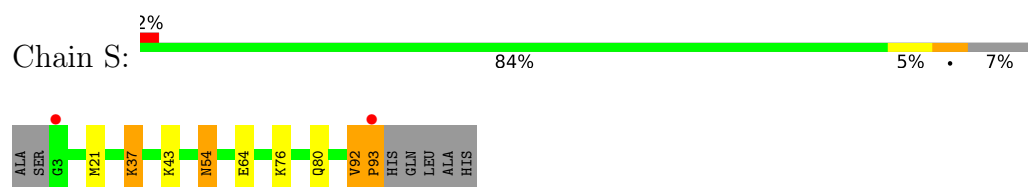
- Molecule 5: Cytochrome c oxidase subunit 5A



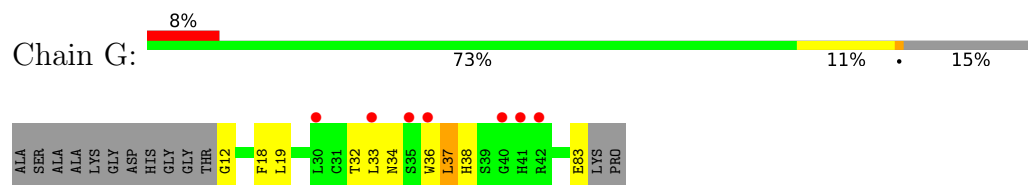
- Molecule 6: Cytochrome c oxidase subunit 5B, mitochondrial



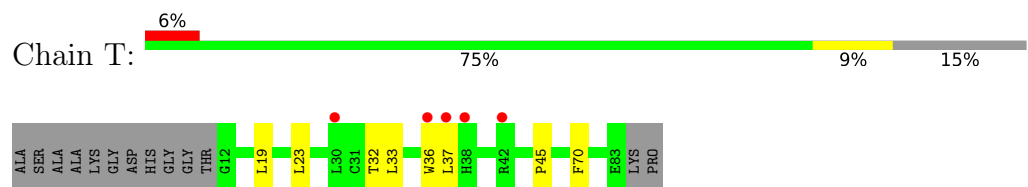
- Molecule 6: Cytochrome c oxidase subunit 5B, mitochondrial



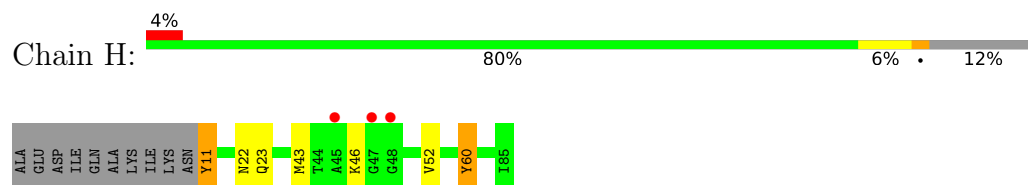
- Molecule 7: Cytochrome c oxidase subunit 6A2, mitochondrial



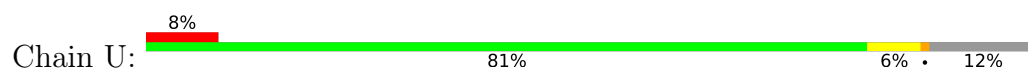
- Molecule 7: Cytochrome c oxidase subunit 6A2, mitochondrial

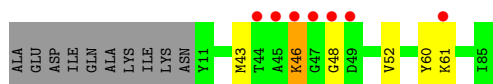


- Molecule 8: Cytochrome c oxidase subunit 6B1

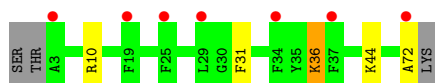
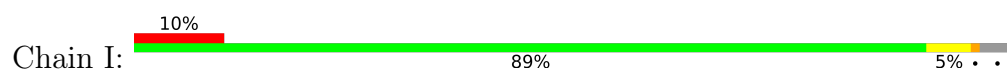


- Molecule 8: Cytochrome c oxidase subunit 6B1

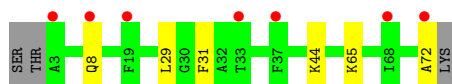
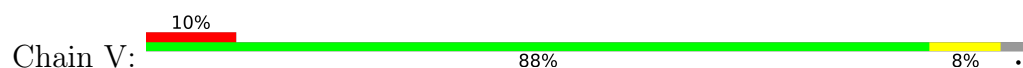




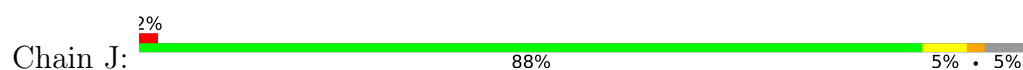
- Molecule 9: Cytochrome c oxidase subunit 6C



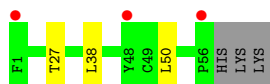
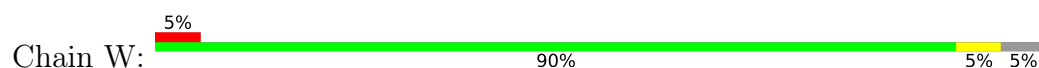
- Molecule 9: Cytochrome c oxidase subunit 6C



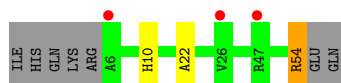
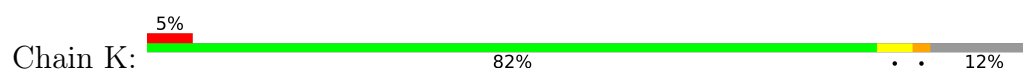
- Molecule 10: Cytochrome c oxidase subunit 7A1



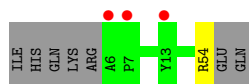
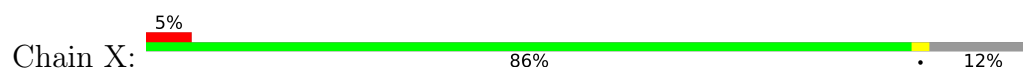
- Molecule 10: Cytochrome c oxidase subunit 7A1



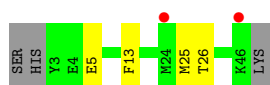
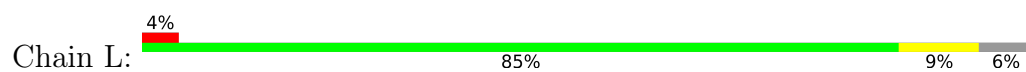
- Molecule 11: Cytochrome c oxidase subunit 7B, mitochondrial



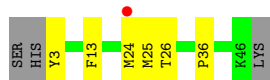
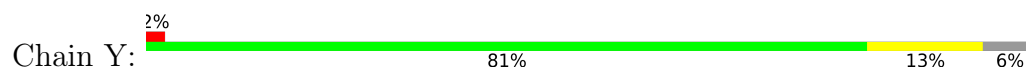
- Molecule 11: Cytochrome c oxidase subunit 7B, mitochondrial



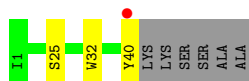
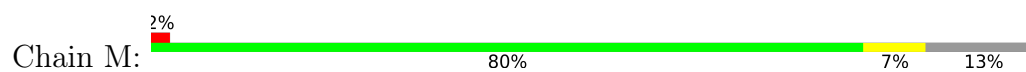
- Molecule 12: Cytochrome c oxidase subunit 7C, mitochondrial



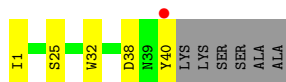
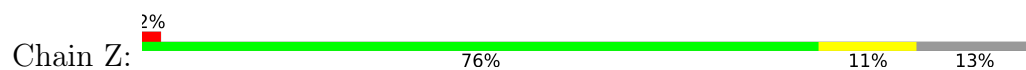
- Molecule 12: Cytochrome c oxidase subunit 7C, mitochondrial



- Molecule 13: Cytochrome c oxidase subunit 8B, mitochondrial



- Molecule 13: Cytochrome c oxidase subunit 8B, mitochondrial



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	181.80Å 204.10Å 177.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.00 – 1.60 40.00 – 1.60	Depositor EDS
% Data completeness (in resolution range)	100.0 (40.00-1.60) 100.0 (40.00-1.60)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.74 (at 1.60Å)	Xtriage
Refinement program	REFMAC 5.8.0253	Depositor
R, $R_{free}$	0.126 , 0.155 0.144 , 0.170	Depositor DCC
$R_{free}$ test set	43296 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	31.1	Xtriage
Anisotropy	0.586	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 59.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.003 for l,-k,h	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	33023	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.72% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality [i](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: DMU, ZN, MG, CDL, NA, HEA, UNX, FME, CU, LFA, PGV, EDO, CHD, PEK, CUA

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	1.05	8/4259 (0.2%)	1.17	7/5816 (0.1%)
1	N	1.01	4/4259 (0.1%)	1.20	9/5816 (0.2%)
2	B	1.12	0/1908	1.25	9/2598 (0.3%)
2	O	1.09	4/1908 (0.2%)	1.23	2/2598 (0.1%)
3	C	1.01	1/2258 (0.0%)	1.13	3/3084 (0.1%)
3	P	1.00	3/2258 (0.1%)	1.15	5/3084 (0.2%)
4	D	1.08	2/1226 (0.2%)	1.16	4/1657 (0.2%)
4	Q	1.03	0/1182	1.28	4/1598 (0.3%)
5	E	1.04	1/843 (0.1%)	1.16	1/1145 (0.1%)
5	R	1.03	0/843	1.27	1/1145 (0.1%)
6	F	1.11	2/724 (0.3%)	1.18	0/983
6	S	1.13	3/724 (0.4%)	1.19	1/983 (0.1%)
7	G	1.07	0/633	1.19	1/864 (0.1%)
7	T	1.09	2/633 (0.3%)	1.16	0/864
8	H	1.04	1/648 (0.2%)	1.26	0/877
8	U	1.06	0/648	1.27	0/877
9	I	1.11	1/588 (0.2%)	1.37	1/781 (0.1%)
9	V	1.10	0/588	1.41	1/781 (0.1%)
10	J	1.02	0/451	1.26	1/610 (0.2%)
10	W	1.01	0/451	1.29	0/610
11	K	1.14	1/398 (0.3%)	1.30	1/546 (0.2%)
11	X	1.10	0/398	1.23	1/546 (0.2%)
12	L	1.14	1/372 (0.3%)	1.28	2/500 (0.4%)
12	Y	1.18	1/372 (0.3%)	1.24	2/500 (0.4%)
13	M	1.04	0/321	1.09	0/440
13	Z	1.01	0/321	1.23	0/440
All	All	1.06	35/29214 (0.1%)	1.21	56/39743 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a

sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	N	0	1
All	All	0	3

The worst 5 of 35 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	233	HIS	CE1-NE2	8.71	1.41	1.32
1	A	413	HIS	CE1-NE2	-8.39	1.24	1.32
11	K	10	HIS	CE1-NE2	8.20	1.40	1.32
4	D	21	ASP	CG-OD2	7.75	1.40	1.25
4	D	58	GLU	CD-OE1	7.12	1.38	1.25

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	N	71	MET	CG-SD-CE	-11.98	74.55	100.90
1	A	71	MET	CG-SD-CE	-11.36	75.90	100.90
9	V	72	ALA	CA-C-O	-10.47	103.00	120.80
1	N	240	HIS	CA-CB-CG	-10.22	103.58	113.80
4	D	58	GLU	CB-CG-CD	10.04	129.67	112.60

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	240	HIS	Sidechain
1	A	296	GLY	Mainchain
1	N	296	GLY	Mainchain

## 5.2 Too-close contacts

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	4130	0	4102	40	0
1	N	4130	0	4102	44	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1870	0	1870	27	0
2	O	1870	0	1870	29	0
3	C	2171	0	2080	31	0
3	P	2172	0	2081	25	0
4	D	1192	0	1178	7	0
4	Q	1148	0	1131	4	0
5	E	825	0	823	1	0
5	R	825	0	823	3	0
6	F	709	0	691	9	0
6	S	709	0	691	6	0
7	G	606	0	577	8	0
7	T	606	0	577	4	0
8	H	628	0	580	11	0
8	U	628	0	580	7	0
9	I	575	0	584	7	0
9	V	575	0	584	3	0
10	J	441	0	439	3	0
10	W	441	0	439	2	0
11	K	384	0	366	2	0
11	X	384	0	366	0	0
12	L	360	0	360	3	0
12	Y	360	0	360	8	0
13	M	311	0	321	2	0
13	Z	311	0	321	5	0
14	A	120	0	108	3	0
14	N	120	0	108	4	0
15	A	1	0	0	0	0
15	N	1	0	0	0	0
16	A	1	0	0	0	0
16	N	1	0	0	0	0
17	A	1	0	0	0	0
17	N	1	0	0	0	0
18	A	64	0	72	0	0
18	C	87	0	124	16	0
18	L	94	0	141	2	0
18	P	87	0	124	12	0
18	V	64	0	72	1	0
18	Y	94	0	141	8	0
19	A	14	0	27	6	0
19	B	17	0	33	0	0
19	C	114	0	204	10	0
19	G	14	0	27	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	N	14	0	27	5	0
19	O	28	0	54	0	0
19	P	114	0	201	7	0
19	T	25	0	48	7	0
20	A	51	0	76	2	0
20	B	66	0	104	0	0
20	C	172	0	231	2	0
20	D	33	0	40	2	0
20	G	33	0	52	0	0
20	H	33	0	29	1	0
20	J	11	0	21	0	0
20	L	22	0	31	1	0
20	M	41	0	56	0	0
20	N	73	0	77	0	0
20	O	66	0	104	1	0
20	P	172	0	231	3	0
20	Q	33	0	42	3	0
20	T	22	0	31	0	0
20	W	11	0	21	0	0
20	Y	22	0	31	2	0
20	Z	41	0	56	0	0
21	A	12	0	18	0	0
21	B	4	0	6	0	0
21	C	12	0	17	0	0
21	E	12	0	18	0	0
21	F	12	0	18	0	0
21	G	4	0	6	0	0
21	N	20	0	30	0	0
21	O	4	0	6	0	0
21	P	12	0	18	0	0
21	R	12	0	18	0	0
21	S	8	0	12	0	0
21	T	4	0	6	0	0
22	A	51	0	76	0	0
22	C	51	0	76	3	0
22	N	51	0	76	0	0
22	P	51	0	76	0	0
23	B	2	0	0	0	0
23	O	2	0	0	0	0
24	B	29	0	39	0	0
24	C	58	0	78	3	0
24	G	29	0	39	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	P	58	0	78	3	0
25	C	1	0	0	1	0
25	P	1	0	0	1	0
26	F	1	0	0	0	0
26	S	1	0	0	0	0
27	G	53	0	77	0	0
27	T	53	0	77	5	0
28	A	245	0	0	7	0
28	B	171	0	0	4	0
28	C	103	0	0	6	0
28	D	148	0	0	2	0
28	E	114	0	0	0	0
28	F	111	0	0	1	0
28	G	49	0	0	1	0
28	H	63	0	0	4	0
28	I	39	0	0	2	0
28	J	21	0	0	0	0
28	K	22	0	0	0	0
28	L	29	0	0	1	0
28	M	21	0	0	0	0
28	N	234	0	0	9	0
28	O	143	0	0	2	0
28	P	100	0	0	3	0
28	Q	81	0	0	2	0
28	R	96	0	0	1	0
28	S	97	0	0	1	0
28	T	37	0	0	0	0
28	U	48	0	0	0	0
28	V	25	0	0	0	0
28	W	16	0	0	0	0
28	X	18	0	0	0	0
28	Y	27	0	0	1	0
28	Z	18	0	0	0	0
All	All	33023	0	31505	308	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 5.

The worst 5 of 308 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)
19:C:309:LFA:H12	28:C:481:HOH:O	1.35	1.21
1:A:112:LEU:HG	28:A:2018:HOH:O	1.34	1.20
1:A:31:THR:O	1:A:35:LEU:HD23	1.45	1.16
1:N:112:LEU:HG	28:N:3015:HOH:O	1.47	1.13
8:H:52:VAL:HG12	8:U:46:LYS:HG2	1.29	1.10

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	526/514 (102%)	511 (97%)	15 (3%)	0	100	100
1	N	526/514 (102%)	515 (98%)	11 (2%)	0	100	100
2	B	230/227 (101%)	225 (98%)	4 (2%)	1 (0%)	30	14
2	O	230/227 (101%)	224 (97%)	6 (3%)	0	100	100
3	C	265/261 (102%)	260 (98%)	5 (2%)	0	100	100
3	P	265/261 (102%)	261 (98%)	4 (2%)	0	100	100
4	D	142/147 (97%)	139 (98%)	3 (2%)	0	100	100
4	Q	136/147 (92%)	133 (98%)	3 (2%)	0	100	100
5	E	100/109 (92%)	100 (100%)	0	0	100	100
5	R	100/109 (92%)	100 (100%)	0	0	100	100
6	F	91/98 (93%)	91 (100%)	0	0	100	100
6	S	91/98 (93%)	90 (99%)	1 (1%)	0	100	100
7	G	71/85 (84%)	67 (94%)	4 (6%)	0	100	100
7	T	71/85 (84%)	69 (97%)	2 (3%)	0	100	100
8	H	73/85 (86%)	71 (97%)	2 (3%)	0	100	100
8	U	73/85 (86%)	72 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	I	68/73 (93%)	67 (98%)	1 (2%)	0	100	100
9	V	68/73 (93%)	67 (98%)	1 (2%)	0	100	100
10	J	54/59 (92%)	54 (100%)	0	0	100	100
10	W	54/59 (92%)	54 (100%)	0	0	100	100
11	K	47/56 (84%)	47 (100%)	0	0	100	100
11	X	47/56 (84%)	46 (98%)	1 (2%)	0	100	100
12	L	42/47 (89%)	41 (98%)	1 (2%)	0	100	100
12	Y	42/47 (89%)	41 (98%)	1 (2%)	0	100	100
13	M	38/46 (83%)	38 (100%)	0	0	100	100
13	Z	38/46 (83%)	38 (100%)	0	0	100	100
All	All	3488/3614 (96%)	3421 (98%)	66 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	92	ASN

### 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	440/426 (103%)	438 (100%)	2 (0%)	86	78
1	N	440/426 (103%)	438 (100%)	2 (0%)	86	78
2	B	215/210 (102%)	208 (97%)	7 (3%)	33	12
2	O	215/210 (102%)	208 (97%)	7 (3%)	33	12
3	C	232/226 (103%)	230 (99%)	2 (1%)	75	62
3	P	232/226 (103%)	228 (98%)	4 (2%)	56	33
4	D	128/129 (99%)	128 (100%)	0	100	100
4	Q	122/129 (95%)	120 (98%)	2 (2%)	58	37

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	E	89/95 (94%)	89 (100%)	0	100	100
5	R	89/95 (94%)	88 (99%)	1 (1%)	70	53
6	F	78/81 (96%)	74 (95%)	4 (5%)	20	5
6	S	78/81 (96%)	74 (95%)	4 (5%)	20	5
7	G	63/69 (91%)	61 (97%)	2 (3%)	34	12
7	T	63/69 (91%)	60 (95%)	3 (5%)	21	5
8	H	67/75 (89%)	65 (97%)	2 (3%)	36	14
8	U	67/75 (89%)	64 (96%)	3 (4%)	23	6
9	I	55/58 (95%)	54 (98%)	1 (2%)	54	31
9	V	55/58 (95%)	52 (94%)	3 (6%)	18	4
10	J	47/50 (94%)	46 (98%)	1 (2%)	48	25
10	W	47/50 (94%)	46 (98%)	1 (2%)	48	25
11	K	39/46 (85%)	38 (97%)	1 (3%)	41	17
11	X	39/46 (85%)	39 (100%)	0	100	100
12	L	37/40 (92%)	37 (100%)	0	100	100
12	Y	37/40 (92%)	37 (100%)	0	100	100
13	M	34/38 (90%)	34 (100%)	0	100	100
13	Z	34/38 (90%)	33 (97%)	1 (3%)	37	15
All	All	3042/3086 (99%)	2989 (98%)	53 (2%)	56	33

5 of 53 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	O	91	ASN
4	Q	10	ASP
9	V	29	LEU
2	O	115	ASP
3	P	33[B]	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 28 such sidechains are listed below:

Mol	Chain	Res	Type
10	J	29	ASN
11	X	35	GLN
1	N	422	ASN

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Mol	Chain	Res	Type
6	S	54	ASN
1	N	170	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FME	O	1	2	8,9,10	0.66	0	7,9,11	0.99	0
1	FME	N	1	1	8,9,10	0.68	0	7,9,11	1.12	1 (14%)
1	FME	A	1	1	8,9,10	0.50	0	7,9,11	0.98	1 (14%)
2	FME	B	1	2	8,9,10	1.30	1 (12%)	7,9,11	1.31	1 (14%)

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
2	FME	O	1	2	-	0/7/9/11	-
1	FME	N	1	1	-	3/7/9/11	-
1	FME	A	1	1	-	3/7/9/11	-
2	FME	B	1	2	-	0/7/9/11	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1	FME	CG-SD	-3.22	1.64	1.81

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1	FME	CG-CB-CA	-2.94	104.78	112.95
1	N	1	FME	O-C-CA	-2.18	119.08	124.78
1	A	1	FME	C-CA-N	2.01	113.36	109.73

There are no chirality outliers.

5 of 6 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1	FME	N-CA-CB-CG
1	N	1	FME	N-CA-CB-CG
1	N	1	FME	C-CA-CB-CG
1	N	1	FME	CA-CB-CG-SD
1	A	1	FME	CA-CB-CG-SD

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	O	1	FME	2	0
1	A	1	FME	1	0

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 131 ligands modelled in this entry, 8 are monoatomic and 2 are unknown - leaving 121 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
21	EDO	C	321	-	3,3,3	0.33	0	2,2,2	0.17	0
20	DMU	Z	102	-	7,7,34	0.25	0	6,6,45	0.65	0
27	PEK	G	101	-	52,52,52	0.64	1 (1%)	55,57,57	0.66	1 (1%)
21	EDO	C	322	-	3,3,3	0.87	0	2,2,2	0.83	0
24	CHD	P	306	-	32,32,32	0.67	0	51,51,51	1.37	8 (15%)
19	LFA	C	309	-	17,17,19	0.23	0	16,16,18	0.19	0
20	DMU	N	615	-	34,34,34	0.91	1 (2%)	45,45,45	1.38	5 (11%)
20	DMU	C	323	-	34,34,34	0.81	1 (2%)	45,45,45	1.14	4 (8%)
21	EDO	G	105	-	3,3,3	0.52	0	2,2,2	0.30	0
24	CHD	G	102	-	32,32,32	0.71	0	51,51,51	0.75	0
20	DMU	C	318	-	34,34,34	0.93	3 (8%)	45,45,45	1.21	3 (6%)
20	DMU	P	319	-	34,34,34	0.85	2 (5%)	45,45,45	1.16	3 (6%)
20	DMU	Q	201	-	34,34,34	1.29	7 (20%)	45,45,45	1.65	9 (20%)
21	EDO	N	612	-	3,3,3	0.27	0	2,2,2	0.24	0
19	LFA	O	301	-	16,16,19	0.17	0	15,15,18	0.17	0
20	DMU	N	607	-	6,6,34	0.40	0	5,5,45	0.32	0
18	CDL	A	606	-	63,63,99	0.44	0	69,75,111	0.93	4 (5%)
21	EDO	F	103	-	3,3,3	0.49	0	2,2,2	0.13	0
20	DMU	P	307	-	10,10,34	0.27	0	9,9,45	0.68	0
21	EDO	O	308	-	3,3,3	0.11	0	2,2,2	0.43	0
19	LFA	C	308	-	5,5,19	0.20	0	4,4,18	0.14	0
21	EDO	A	611	-	3,3,3	0.19	0	2,2,2	0.29	0
20	DMU	O	307	-	22,22,34	0.71	1 (4%)	27,27,45	1.22	4 (14%)
20	DMU	C	317	-	22,22,34	0.68	1 (4%)	27,27,45	1.43	3 (11%)
24	CHD	P	302	-	32,32,32	0.96	2 (6%)	51,51,51	0.78	1 (1%)
21	EDO	P	321	-	3,3,3	0.18	0	2,2,2	0.12	0
22	PGV	N	614	-	50,50,50	0.72	1 (2%)	53,56,56	1.19	2 (3%)
20	DMU	A	608	-	6,6,34	0.49	0	5,5,45	0.32	0
20	DMU	O	305	-	10,10,34	0.13	0	9,9,45	0.63	0
14	HEA	N	601	1	57,67,67	1.61	15 (26%)	61,103,103	2.14	18 (29%)
21	EDO	A	610	-	3,3,3	0.63	0	2,2,2	0.57	0
21	EDO	S	102	-	3,3,3	0.38	0	2,2,2	0.45	0
18	CDL	P	305	-	86,86,99	0.56	0	92,98,111	0.88	8 (8%)
20	DMU	H	101	-	34,34,34	1.13	5 (14%)	45,45,45	1.44	8 (17%)
19	LFA	P	308	-	10,10,19	0.24	0	9,9,18	0.19	0
18	CDL	Y	101	-	93,93,99	0.38	0	99,105,111	0.49	0
19	LFA	G	106	-	13,13,19	0.50	0	12,12,18	0.39	0



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
24	CHD	B	306	-	32,32,32	0.77	1 (3%)	51,51,51	0.76	0
20	DMU	C	319	-	34,34,34	0.69	0	45,45,45	1.34	7 (15%)
20	DMU	M	102	-	7,7,34	0.33	0	6,6,45	0.45	0
20	DMU	B	308	-	22,22,34	0.50	0	27,27,45	1.33	3 (11%)
20	DMU	Y	102	-	22,22,34	0.63	0	27,27,45	1.19	2 (7%)
19	LFA	C	324	-	14,14,19	0.22	0	13,13,18	0.13	0
19	LFA	C	314	-	12,12,19	0.20	0	11,11,18	0.12	0
21	EDO	A	612	-	3,3,3	0.56	0	2,2,2	0.33	0
20	DMU	P	320	-	34,34,34	0.87	2 (5%)	45,45,45	1.17	4 (8%)
21	EDO	R	201	-	3,3,3	0.15	0	2,2,2	0.15	0
14	HEA	A	601	1	57,67,67	1.69	12 (21%)	61,103,103	2.22	16 (26%)
20	DMU	B	304	-	22,22,34	0.90	0	27,27,45	1.06	1 (3%)
20	DMU	P	316	-	34,34,34	0.94	2 (5%)	45,45,45	1.67	8 (17%)
20	DMU	P	324	-	34,34,34	0.64	0	45,45,45	1.40	4 (8%)
20	DMU	L	102	-	22,22,34	0.62	0	27,27,45	1.07	1 (3%)
21	EDO	F	101	-	3,3,3	0.33	0	2,2,2	0.10	0
20	DMU	A	614	-	10,10,34	0.34	0	9,9,45	0.53	0
19	LFA	C	311	-	13,13,19	0.23	0	12,12,18	0.10	0
14	HEA	N	602	1	57,67,67	1.59	11 (19%)	61,103,103	2.63	26 (42%)
14	HEA	A	602	1	57,67,67	1.62	11 (19%)	61,103,103	2.41	25 (40%)
20	DMU	M	101	-	34,34,34	1.06	2 (5%)	45,45,45	0.96	2 (4%)
27	PEK	T	102	-	52,52,52	0.76	2 (3%)	55,57,57	1.08	3 (5%)
20	DMU	C	316	-	6,6,34	0.28	0	5,5,45	0.45	0
19	LFA	B	307	-	16,16,19	0.26	0	15,15,18	0.17	0
19	LFA	P	310	-	17,17,19	0.20	0	16,16,18	0.13	0
21	EDO	R	202	-	3,3,3	0.28	0	2,2,2	0.36	0
21	EDO	E	203	-	3,3,3	0.11	0	2,2,2	0.13	0
21	EDO	T	105	-	3,3,3	0.37	0	2,2,2	0.24	0
20	DMU	O	303	-	22,22,34	0.68	1 (4%)	27,27,45	1.54	4 (14%)
19	LFA	A	607	-	13,13,19	0.38	0	12,12,18	0.19	0
21	EDO	S	103	-	3,3,3	0.19	0	2,2,2	0.20	0
21	EDO	P	322	-	3,3,3	0.38	0	2,2,2	0.20	0
19	LFA	C	313	-	14,14,19	0.19	0	13,13,18	0.41	0
21	EDO	C	320	-	3,3,3	0.15	0	2,2,2	0.08	0
20	DMU	C	315	-	34,34,34	0.86	1 (2%)	45,45,45	1.35	5 (11%)
19	LFA	N	606	-	13,13,19	0.30	0	12,12,18	0.49	0
22	PGV	P	304	-	50,50,50	0.70	0	53,56,56	1.03	4 (7%)
21	EDO	N	613	-	3,3,3	0.65	0	2,2,2	0.05	0
19	LFA	P	312	-	13,13,19	0.14	0	12,12,18	0.10	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
20	DMU	O	306	-	10,10,34	0.34	0	9,9,45	0.55	0
19	LFA	T	101	-	13,13,19	0.65	0	12,12,18	0.49	0
21	EDO	R	203	-	3,3,3	0.22	0	2,2,2	0.31	0
21	EDO	N	610	-	3,3,3	0.15	0	2,2,2	0.39	0
21	EDO	F	104	-	3,3,3	0.10	0	2,2,2	0.29	0
20	DMU	C	306	-	10,10,34	0.40	0	9,9,45	0.56	0
21	EDO	N	611	-	3,3,3	0.64	0	2,2,2	0.39	0
19	LFA	C	310	-	10,10,19	0.18	0	9,9,18	0.07	0
19	LFA	P	314	-	14,14,19	0.37	0	13,13,18	0.26	0
20	DMU	T	104	-	22,22,34	0.69	0	27,27,45	1.42	3 (11%)
21	EDO	E	202	-	3,3,3	0.24	0	2,2,2	0.13	0
19	LFA	C	312	-	10,10,19	0.21	0	9,9,18	0.23	0
20	DMU	Z	101	-	34,34,34	1.10	2 (5%)	45,45,45	1.12	3 (6%)
20	DMU	P	317	-	6,6,34	0.28	0	5,5,45	0.47	0
20	DMU	N	608	-	34,34,34	1.35	4 (11%)	45,45,45	1.26	5 (11%)
20	DMU	B	303	-	10,10,34	0.29	0	9,9,45	0.56	0
23	CUA	O	304	2	0,1,1	-	-	-	-	-
20	DMU	G	104	-	22,22,34	0.81	1 (4%)	27,27,45	0.99	2 (7%)
22	PGV	C	303	-	50,50,50	0.63	0	53,56,56	1.07	4 (7%)
20	DMU	G	103	-	10,10,34	0.34	0	9,9,45	0.56	0
20	DMU	W	101	-	10,10,34	0.21	0	9,9,45	0.58	0
20	DMU	D	201	-	34,34,34	1.54	7 (20%)	45,45,45	1.44	4 (8%)
20	DMU	B	302	-	10,10,34	0.21	0	9,9,45	0.66	0
18	CDL	C	304	-	86,86,99	0.53	0	92,98,111	1.17	9 (9%)
18	CDL	L	101	-	93,93,99	0.42	0	99,105,111	0.54	1 (1%)
19	LFA	P	311	-	10,10,19	0.15	0	9,9,18	0.10	0
20	DMU	A	609	-	34,34,34	1.18	4 (11%)	45,45,45	1.33	7 (15%)
20	DMU	J	101	-	10,10,34	0.18	0	9,9,45	0.60	0
20	DMU	P	318	-	22,22,34	0.87	1 (4%)	27,27,45	1.40	3 (11%)
18	CDL	V	101	-	63,63,99	0.43	0	69,75,111	0.87	3 (4%)
21	EDO	P	323	-	3,3,3	0.42	0	2,2,2	0.75	0
22	PGV	A	613	-	50,50,50	0.66	0	53,56,56	1.05	2 (3%)
19	LFA	C	307	-	10,10,19	0.23	0	9,9,18	0.24	0
19	LFA	P	309	-	5,5,19	0.20	0	4,4,18	0.09	0
21	EDO	E	201	-	3,3,3	0.18	0	2,2,2	0.11	0
21	EDO	B	305	-	3,3,3	0.11	0	2,2,2	0.29	0
19	LFA	P	313	-	10,10,19	0.27	0	9,9,18	0.27	0
19	LFA	P	301	-	14,14,19	0.13	0	13,13,18	0.11	0
21	EDO	N	609	-	3,3,3	0.52	0	2,2,2	0.44	0
19	LFA	T	103	-	10,10,19	0.21	0	9,9,18	0.23	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
19	LFA	P	315	-	12,12,19	0.18	0	11,11,18	0.21	0
24	CHD	C	301	-	32,32,32	1.10	3 (9%)	51,51,51	0.83	2 (3%)
19	LFA	O	302	-	10,10,19	0.25	0	9,9,18	0.14	0
23	CUA	B	301	2	0,1,1	-	-	-	-	-
24	CHD	C	305	-	32,32,32	0.61	0	51,51,51	1.41	7 (13%)

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
21	EDO	C	321	-	-	0/1/1/1	-
20	DMU	Z	102	-	-	2/5/5/59	-
27	PEK	G	101	-	-	13/56/56/56	-
21	EDO	C	322	-	-	1/1/1/1	-
24	CHD	P	306	-	-	8/9/74/74	0/4/4/4
19	LFA	C	309	-	-	11/15/15/17	-
20	DMU	N	615	-	-	8/19/59/59	0/2/2/2
20	DMU	C	323	-	-	5/19/59/59	0/2/2/2
21	EDO	G	105	-	-	0/1/1/1	-
24	CHD	G	102	-	-	2/9/74/74	0/4/4/4
20	DMU	C	318	-	-	11/19/59/59	0/2/2/2
20	DMU	P	319	-	-	14/19/59/59	0/2/2/2
20	DMU	Q	201	-	-	8/19/59/59	0/2/2/2
21	EDO	N	612	-	-	1/1/1/1	-
19	LFA	O	301	-	-	7/14/14/17	-
20	DMU	N	607	-	-	1/4/4/59	-
18	CDL	A	606	-	-	34/74/74/110	-
21	EDO	F	103	-	-	0/1/1/1	-
20	DMU	P	307	-	-	4/8/8/59	-
21	EDO	O	308	-	-	0/1/1/1	-
19	LFA	C	308	-	-	1/3/3/17	-
21	EDO	A	611	-	-	1/1/1/1	-
20	DMU	O	307	-	-	5/13/33/59	0/1/1/2
20	DMU	C	317	-	-	8/13/33/59	0/1/1/2
24	CHD	P	302	-	-	2/9/74/74	0/4/4/4
21	EDO	P	321	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
22	PGV	N	614	-	-	9/55/55/55	-
20	DMU	A	608	-	-	3/4/4/59	-
20	DMU	O	305	-	-	5/8/8/59	-
14	HEA	N	601	1	-	4/32/76/76	-
21	EDO	A	610	-	-	0/1/1/1	-
21	EDO	S	102	-	-	0/1/1/1	-
18	CDL	P	305	-	-	53/97/97/110	-
20	DMU	H	101	-	-	9/19/59/59	0/2/2/2
19	LFA	P	308	-	-	4/8/8/17	-
18	CDL	Y	101	-	-	52/104/104/110	-
19	LFA	G	106	-	-	5/11/11/17	-
24	CHD	B	306	-	-	2/9/74/74	0/4/4/4
20	DMU	C	319	-	-	11/19/59/59	0/2/2/2
20	DMU	M	102	-	-	3/5/5/59	-
20	DMU	B	308	-	-	9/13/33/59	0/1/1/2
20	DMU	Y	102	-	-	10/13/33/59	0/1/1/2
19	LFA	C	324	-	-	8/12/12/17	-
19	LFA	C	314	-	-	3/10/10/17	-
21	EDO	A	612	-	-	0/1/1/1	-
20	DMU	P	320	-	-	8/19/59/59	0/2/2/2
21	EDO	R	201	-	-	1/1/1/1	-
14	HEA	A	601	1	-	4/32/76/76	-
20	DMU	B	304	-	-	8/13/33/59	0/1/1/2
20	DMU	P	316	-	-	7/19/59/59	0/2/2/2
20	DMU	P	324	-	-	7/19/59/59	0/2/2/2
20	DMU	L	102	-	-	10/13/33/59	0/1/1/2
21	EDO	F	101	-	-	0/1/1/1	-
20	DMU	A	614	-	-	3/8/8/59	-
19	LFA	C	311	-	-	5/11/11/17	-
14	HEA	N	602	1	-	4/32/76/76	-
14	HEA	A	602	1	-	6/32/76/76	-
20	DMU	M	101	-	-	5/19/59/59	0/2/2/2
27	PEK	T	102	-	-	19/56/56/56	-
20	DMU	C	316	-	-	3/4/4/59	-
19	LFA	B	307	-	-	9/14/14/17	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	LFA	P	310	-	-	10/15/15/17	-
21	EDO	R	202	-	-	0/1/1/1	-
21	EDO	E	203	-	-	0/1/1/1	-
21	EDO	T	105	-	-	0/1/1/1	-
20	DMU	O	303	-	-	4/13/33/59	0/1/1/2
19	LFA	A	607	-	-	4/11/11/17	-
21	EDO	S	103	-	-	0/1/1/1	-
21	EDO	P	322	-	-	0/1/1/1	-
19	LFA	C	313	-	-	3/12/12/17	-
21	EDO	C	320	-	-	0/1/1/1	-
20	DMU	C	315	-	-	11/19/59/59	0/2/2/2
19	LFA	N	606	-	-	4/11/11/17	-
22	PGV	P	304	-	-	9/55/55/55	-
21	EDO	N	613	-	-	0/1/1/1	-
19	LFA	P	312	-	-	7/11/11/17	-
20	DMU	O	306	-	-	4/8/8/59	-
19	LFA	T	101	-	-	5/11/11/17	-
21	EDO	R	203	-	-	0/1/1/1	-
21	EDO	N	610	-	-	0/1/1/1	-
21	EDO	F	104	-	-	0/1/1/1	-
20	DMU	C	306	-	-	2/8/8/59	-
21	EDO	N	611	-	-	0/1/1/1	-
19	LFA	C	310	-	-	6/8/8/17	-
19	LFA	P	314	-	-	5/12/12/17	-
20	DMU	T	104	-	-	7/13/33/59	0/1/1/2
21	EDO	E	202	-	-	0/1/1/1	-
19	LFA	C	312	-	-	3/8/8/17	-
20	DMU	Z	101	-	-	8/19/59/59	0/2/2/2
20	DMU	P	317	-	-	2/4/4/59	-
20	DMU	N	608	-	-	6/19/59/59	0/2/2/2
20	DMU	B	303	-	-	5/8/8/59	-
20	DMU	G	104	-	-	5/13/33/59	0/1/1/2
22	PGV	C	303	-	-	14/55/55/55	-
20	DMU	G	103	-	-	4/8/8/59	-
20	DMU	W	101	-	-	4/8/8/59	-
20	DMU	D	201	-	-	8/19/59/59	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	DMU	B	302	-	-	3/8/8/59	-
18	CDL	C	304	-	-	45/97/97/110	-
18	CDL	L	101	-	-	47/104/104/110	-
19	LFA	P	311	-	-	6/8/8/17	-
20	DMU	A	609	-	-	6/19/59/59	0/2/2/2
20	DMU	J	101	-	-	4/8/8/59	-
20	DMU	P	318	-	-	8/13/33/59	0/1/1/2
18	CDL	V	101	-	-	45/74/74/110	-
21	EDO	P	323	-	-	0/1/1/1	-
22	PGV	A	613	-	-	12/55/55/55	-
19	LFA	C	307	-	-	6/8/8/17	-
19	LFA	P	309	-	-	1/3/3/17	-
21	EDO	E	201	-	-	0/1/1/1	-
21	EDO	B	305	-	-	0/1/1/1	-
19	LFA	P	313	-	-	5/8/8/17	-
19	LFA	P	301	-	-	7/12/12/17	-
21	EDO	N	609	-	-	0/1/1/1	-
19	LFA	T	103	-	-	4/8/8/17	-
19	LFA	P	315	-	-	5/10/10/17	-
24	CHD	C	301	-	-	2/9/74/74	0/4/4/4
19	LFA	O	302	-	-	4/8/8/17	-
24	CHD	C	305	-	-	8/9/74/74	0/4/4/4

The worst 5 of 107 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
14	A	601	HEA	C3A-C2A	4.44	1.46	1.40
14	A	602	HEA	CHD-C1D	4.26	1.45	1.35
14	N	602	HEA	C2A-C1A	4.20	1.52	1.42
20	D	201	DMU	O49-C1	-4.04	1.33	1.43
14	N	602	HEA	C3D-C2D	4.01	1.45	1.36

The worst 5 of 251 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	A	601	HEA	C3D-C4D-ND	8.27	118.37	110.36
20	P	316	DMU	O16-C6-C1	7.14	119.45	108.30
14	N	602	HEA	C3D-C4D-ND	6.93	117.07	110.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	A	602	HEA	C2B-C1B-NB	6.57	117.75	109.88
14	N	601	HEA	C13-C12-C11	-6.37	104.77	114.35

There are no chirality outliers.

5 of 795 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
18	A	606	CDL	C1-CA2-OA2-PA1
18	A	606	CDL	CA3-OA5-PA1-OA3
18	A	606	CDL	CB3-OB5-PB2-OB3
18	A	606	CDL	CB3-OB5-PB2-OB4
18	A	606	CDL	C51-CB5-OB6-CB4

There are no ring outliers.

41 monomers are involved in 116 short contacts:

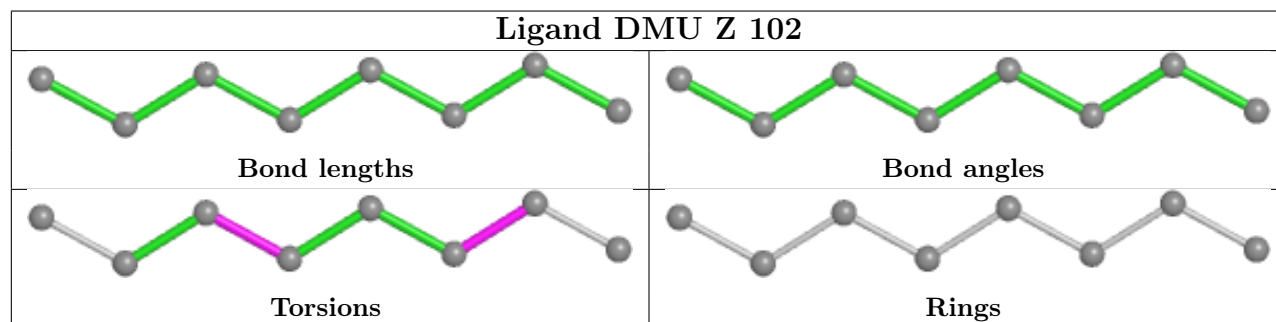
Mol	Chain	Res	Type	Clashes	Symm-Clashes
24	P	306	CHD	2	0
19	C	309	LFA	3	0
20	C	323	DMU	1	0
24	G	102	CHD	1	0
20	P	319	DMU	1	0
20	Q	201	DMU	3	0
24	P	302	CHD	1	0
20	A	608	DMU	1	0
14	N	601	HEA	3	0
18	P	305	CDL	12	0
20	H	101	DMU	1	0
19	P	308	LFA	2	0
18	Y	101	CDL	8	0
19	G	106	LFA	7	0
20	C	319	DMU	1	0
20	Y	102	DMU	2	0
19	C	314	LFA	1	0
14	A	601	HEA	2	0
20	P	324	DMU	2	0
20	L	102	DMU	1	0
14	N	602	HEA	1	0
14	A	602	HEA	1	0
27	T	102	PEK	5	0
19	P	310	LFA	2	0

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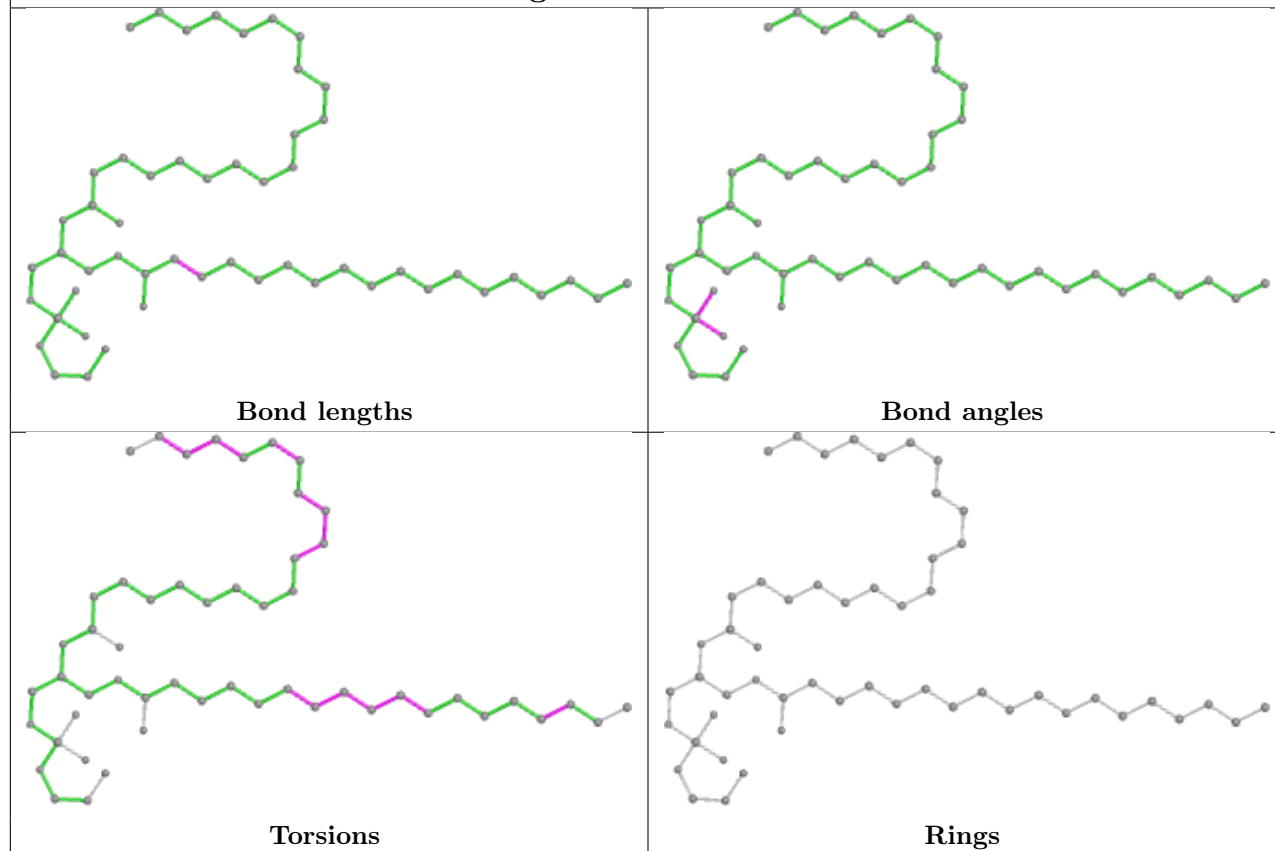
Mol	Chain	Res	Type	Clashes	Symm-Clashes
20	O	303	DMU	1	0
19	A	607	LFA	6	0
19	C	313	LFA	3	0
19	N	606	LFA	5	0
19	T	101	LFA	7	0
19	P	314	LFA	1	0
19	C	312	LFA	2	0
22	C	303	PGV	3	0
20	D	201	DMU	2	0
18	C	304	CDL	16	0
18	L	101	CDL	2	0
20	A	609	DMU	1	0
18	V	101	CDL	1	0
19	C	307	LFA	2	0
19	P	313	LFA	2	0
24	C	301	CHD	1	0
24	C	305	CHD	2	0

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

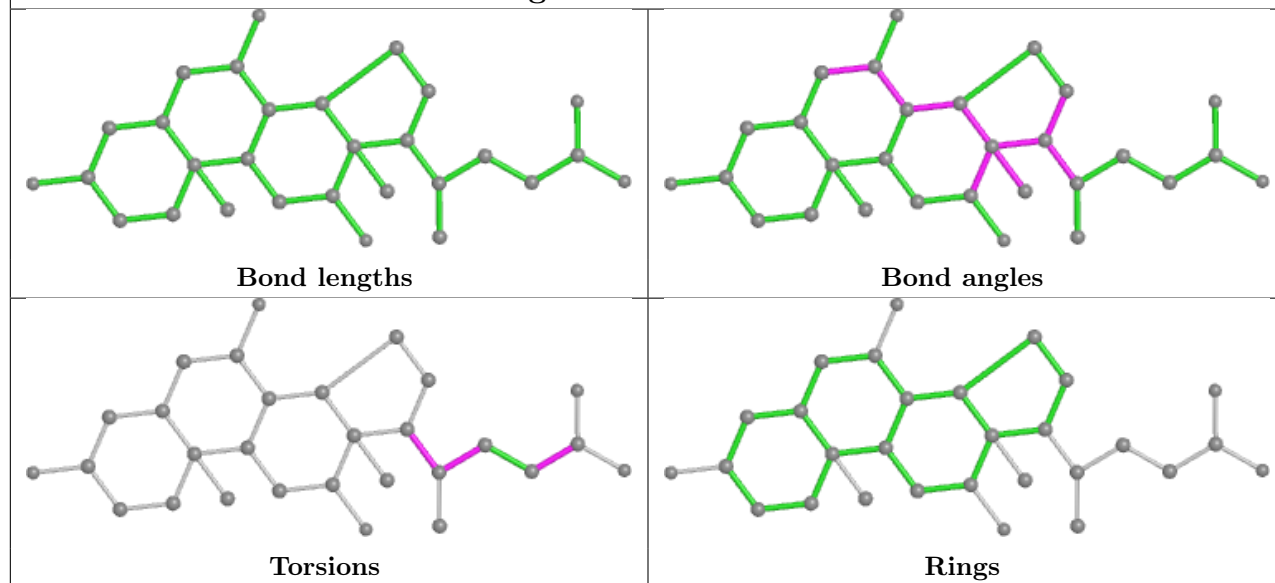


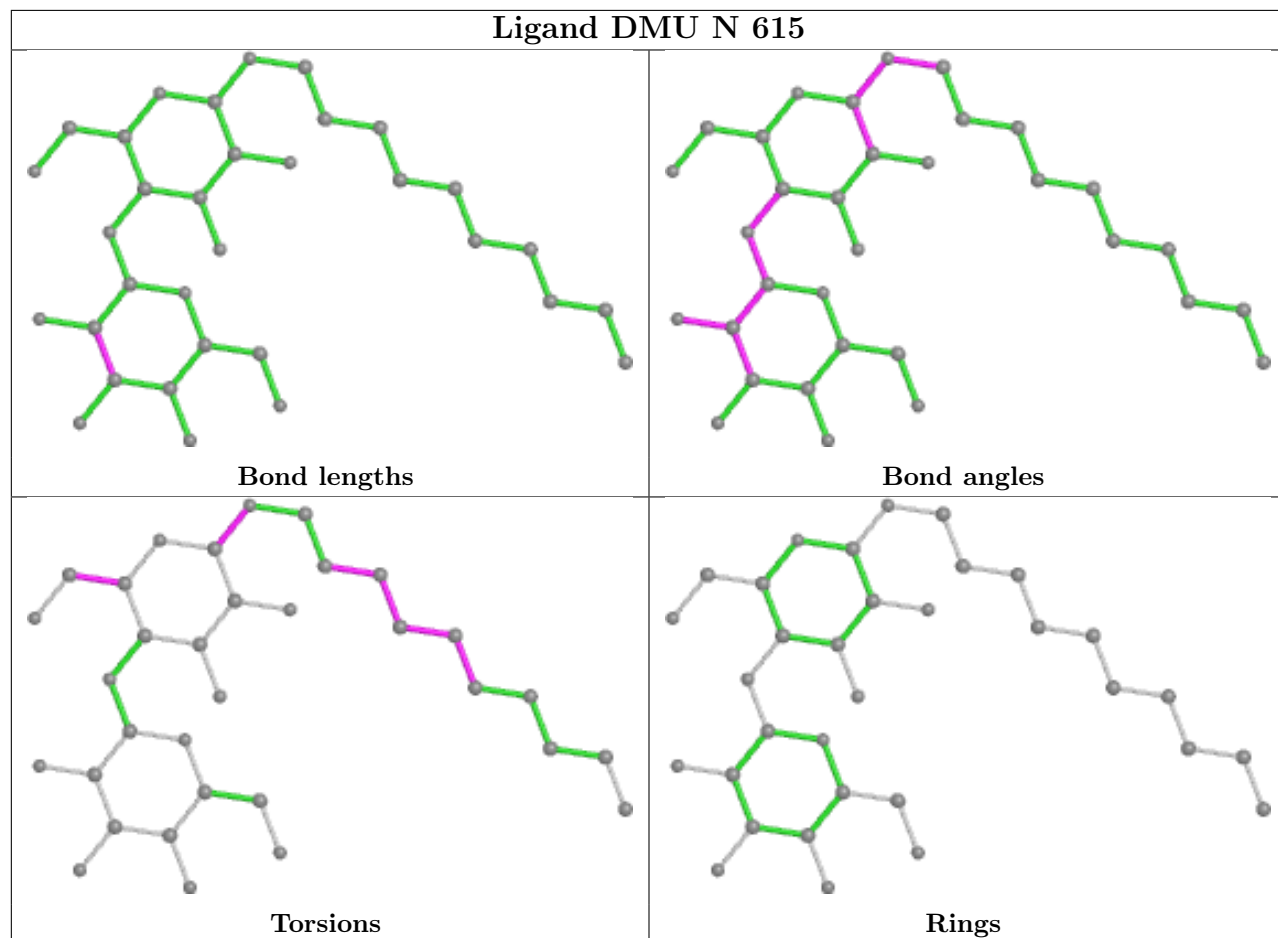
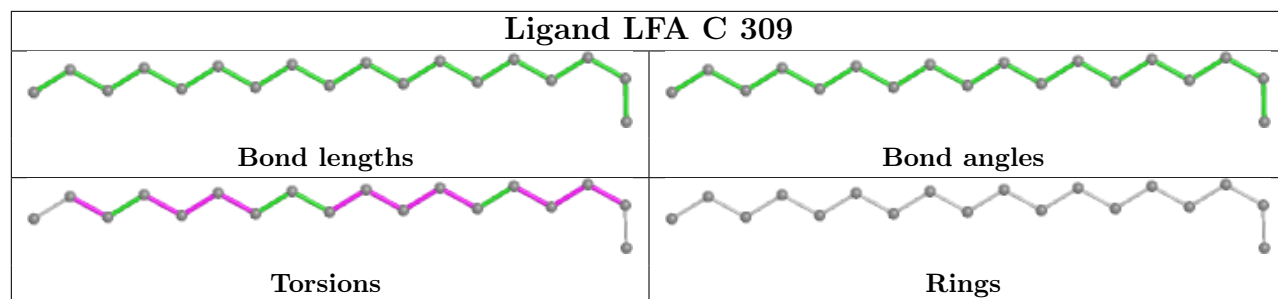


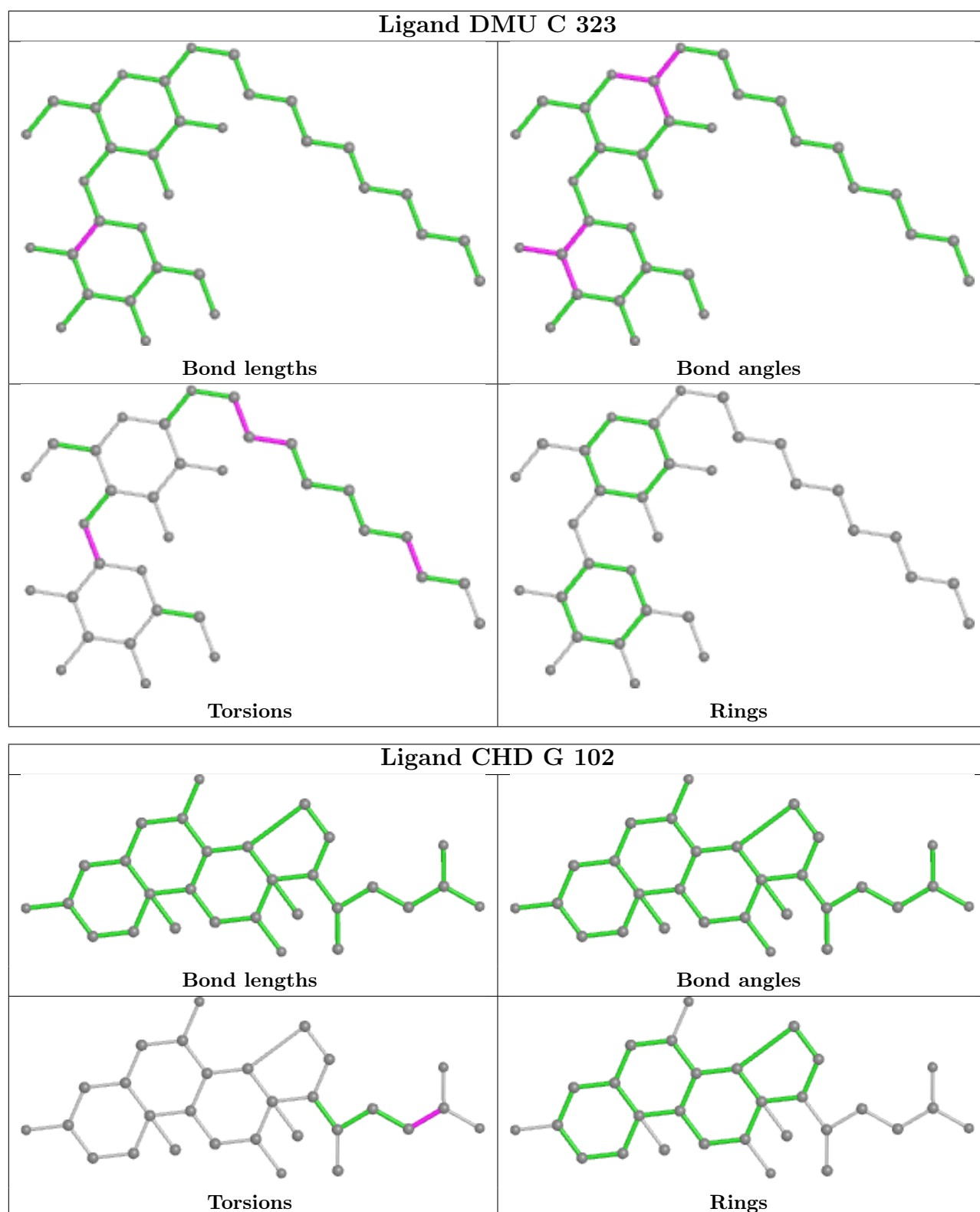
## Ligand PEK G 101

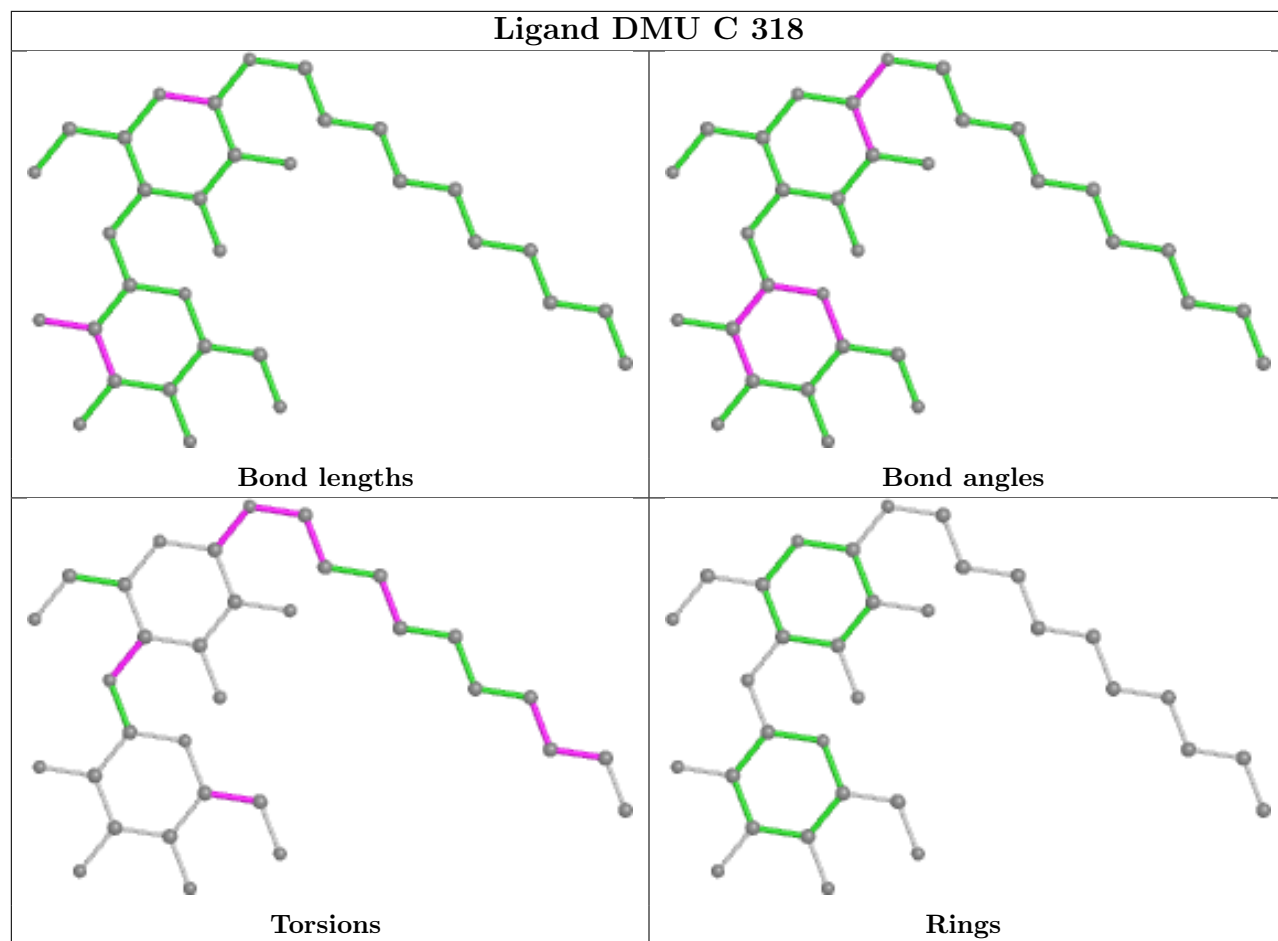


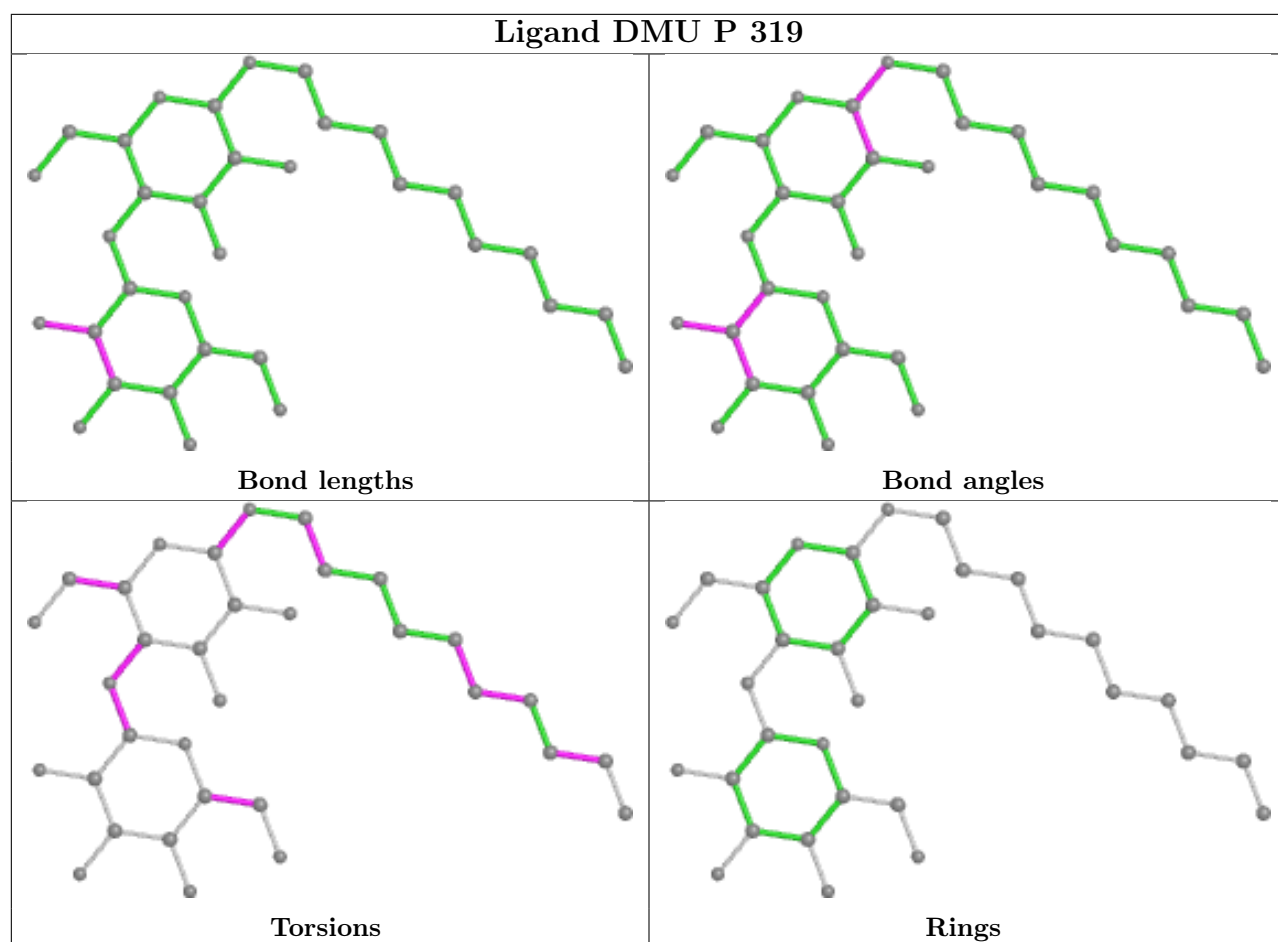
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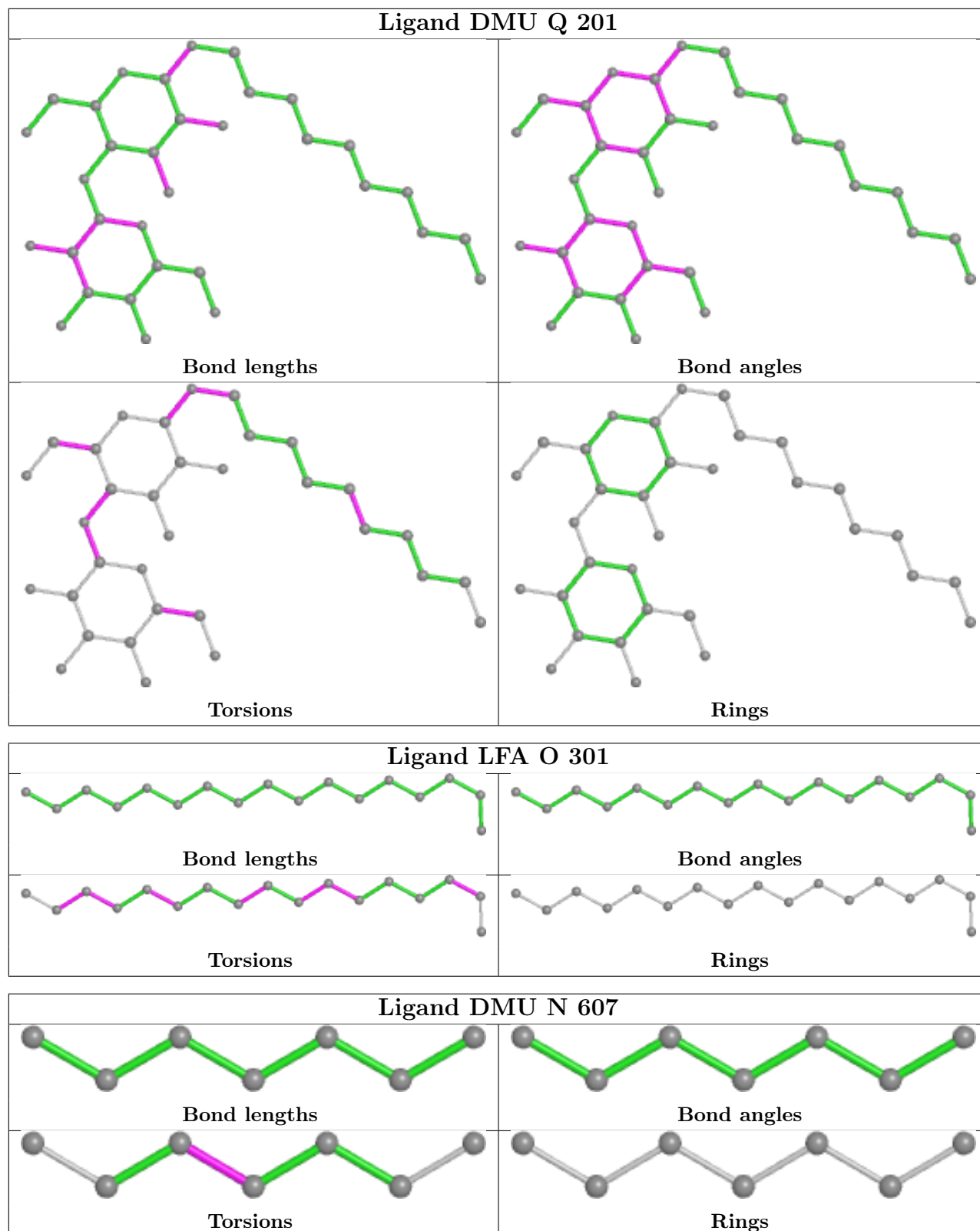


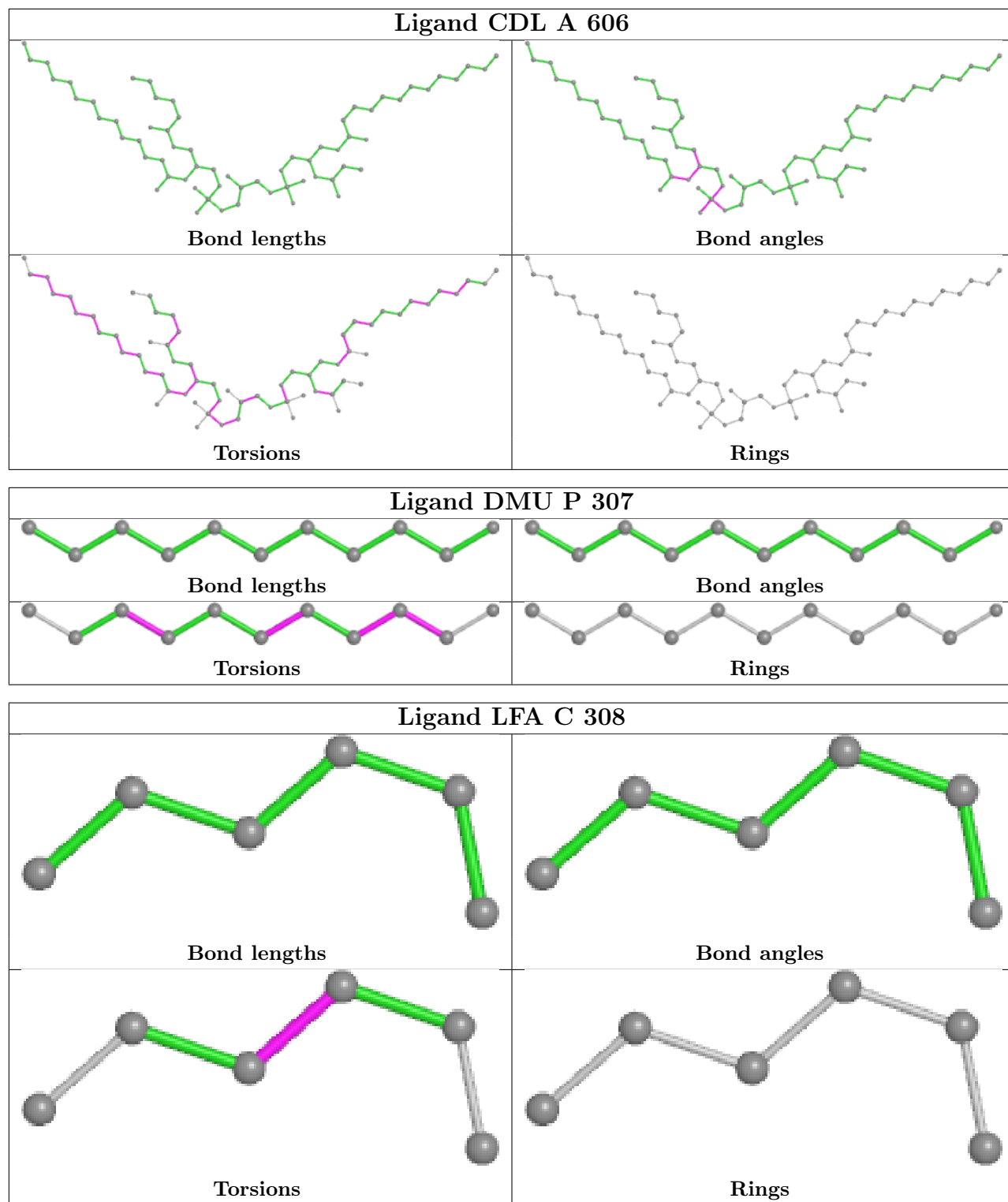


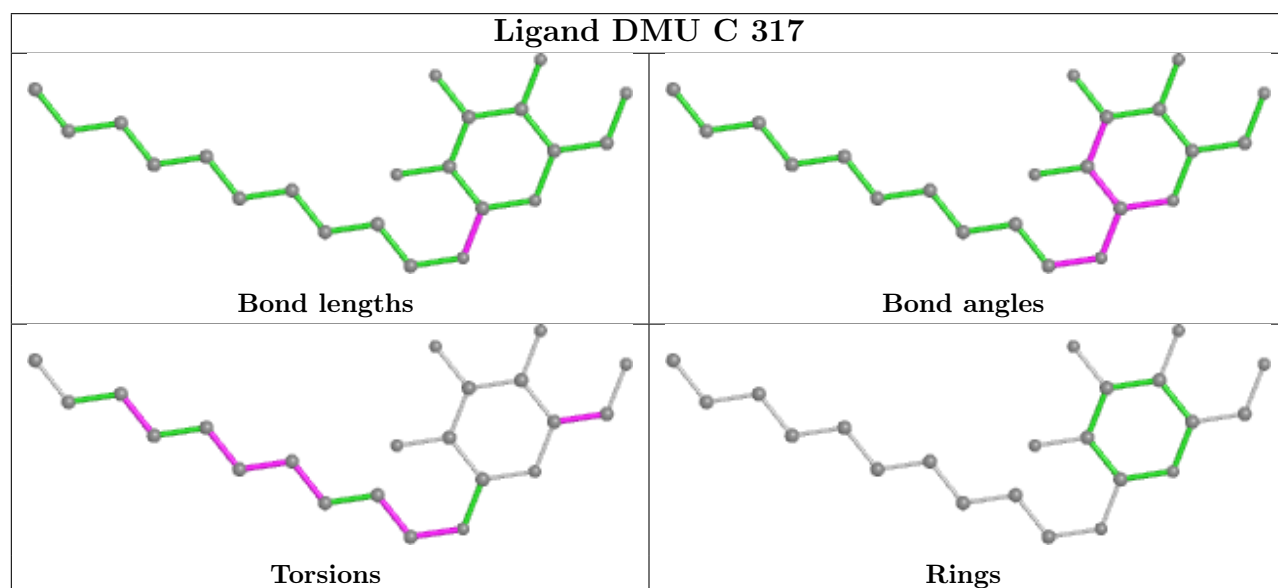
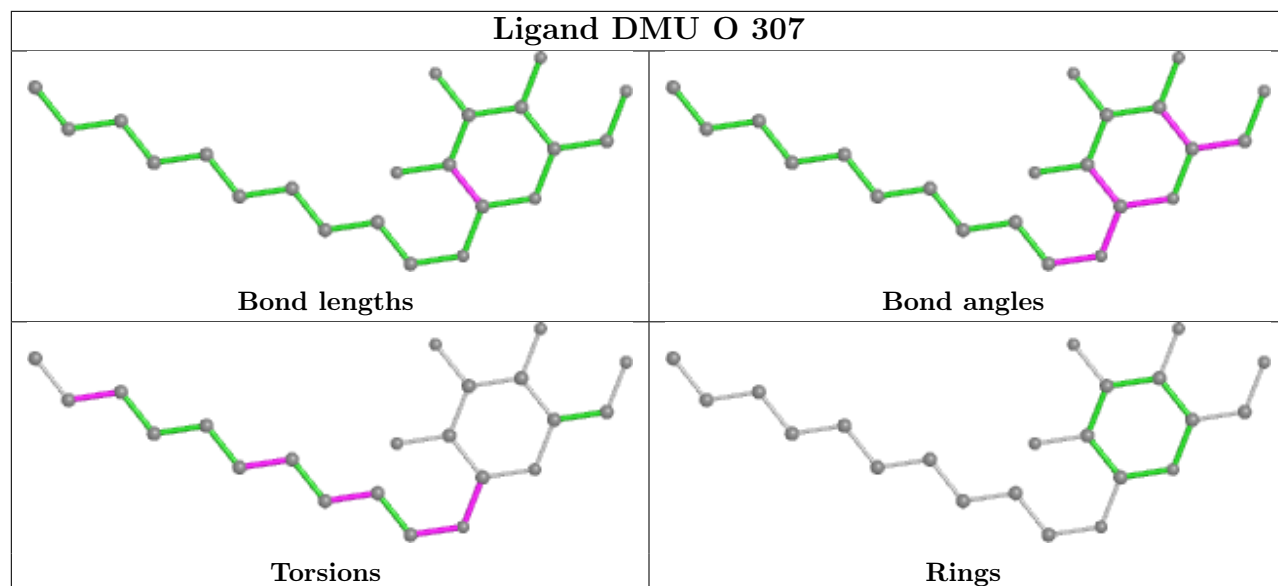




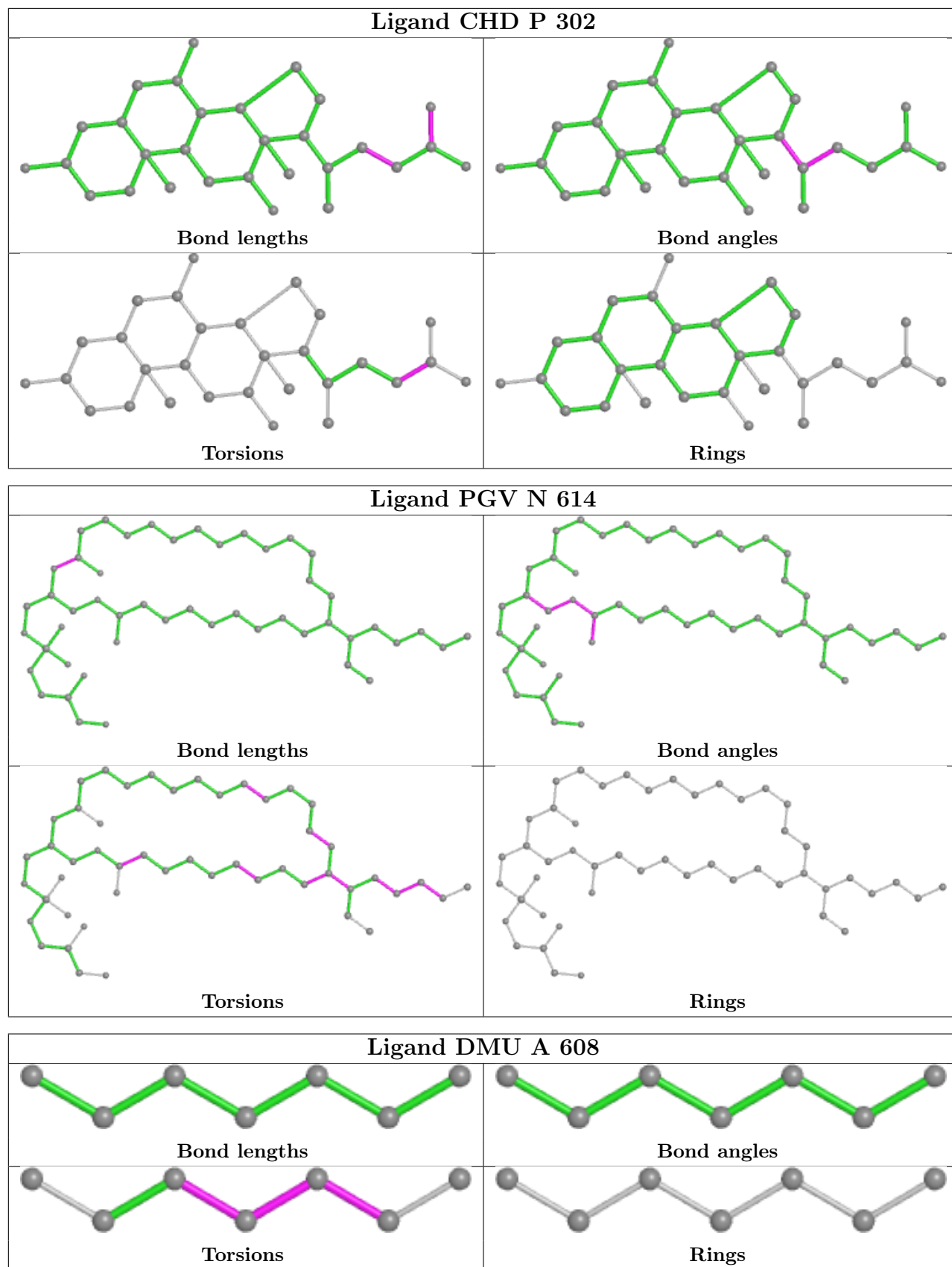


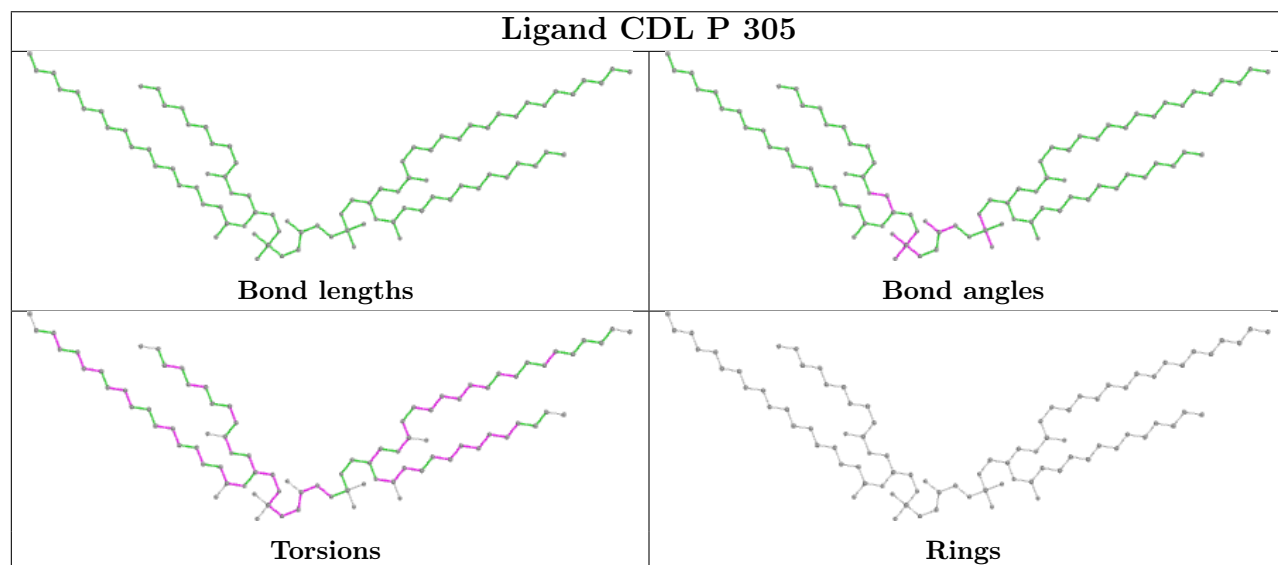
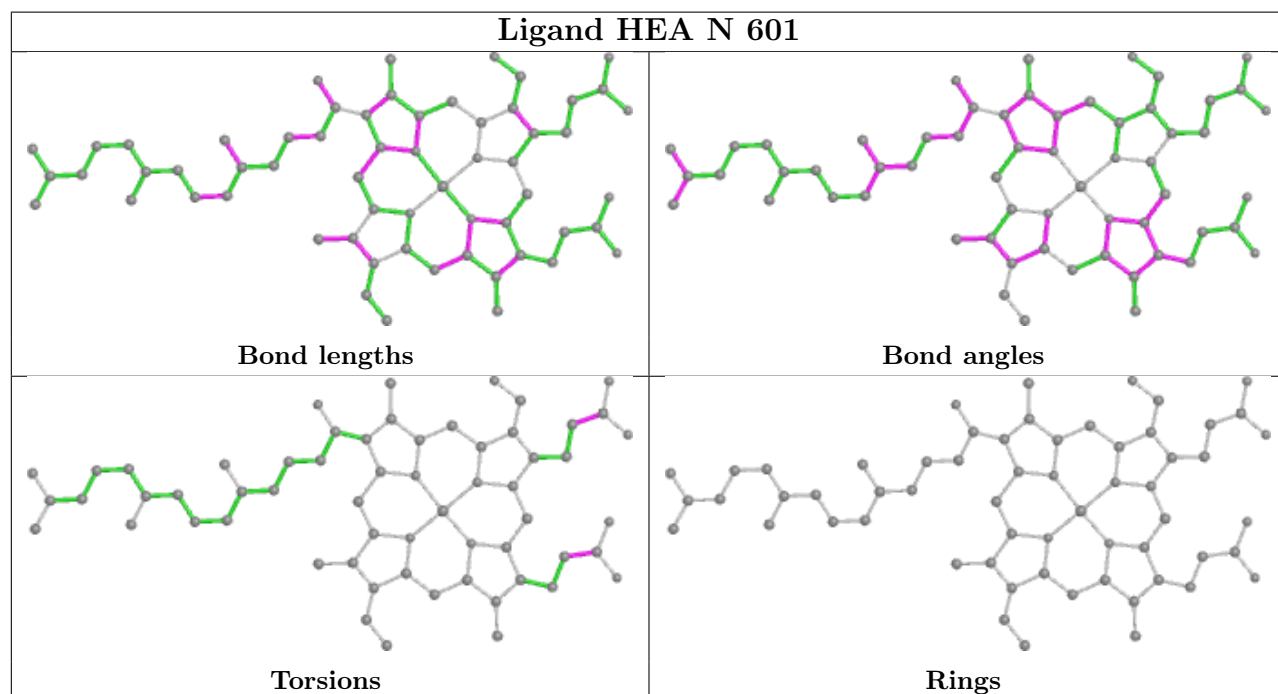
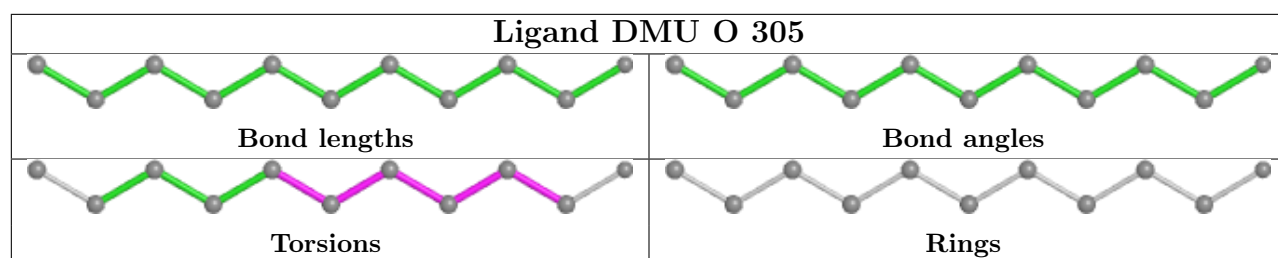


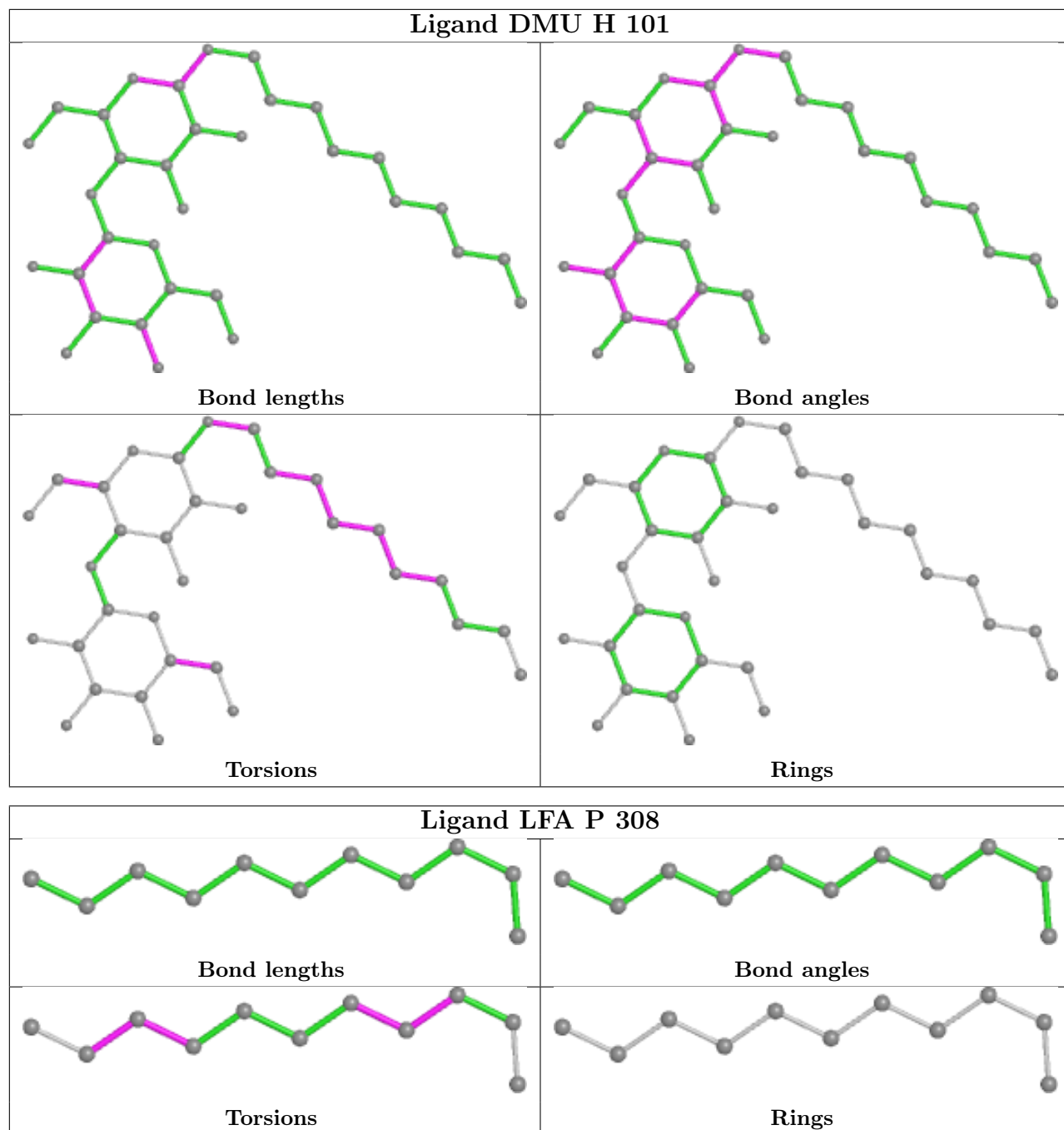


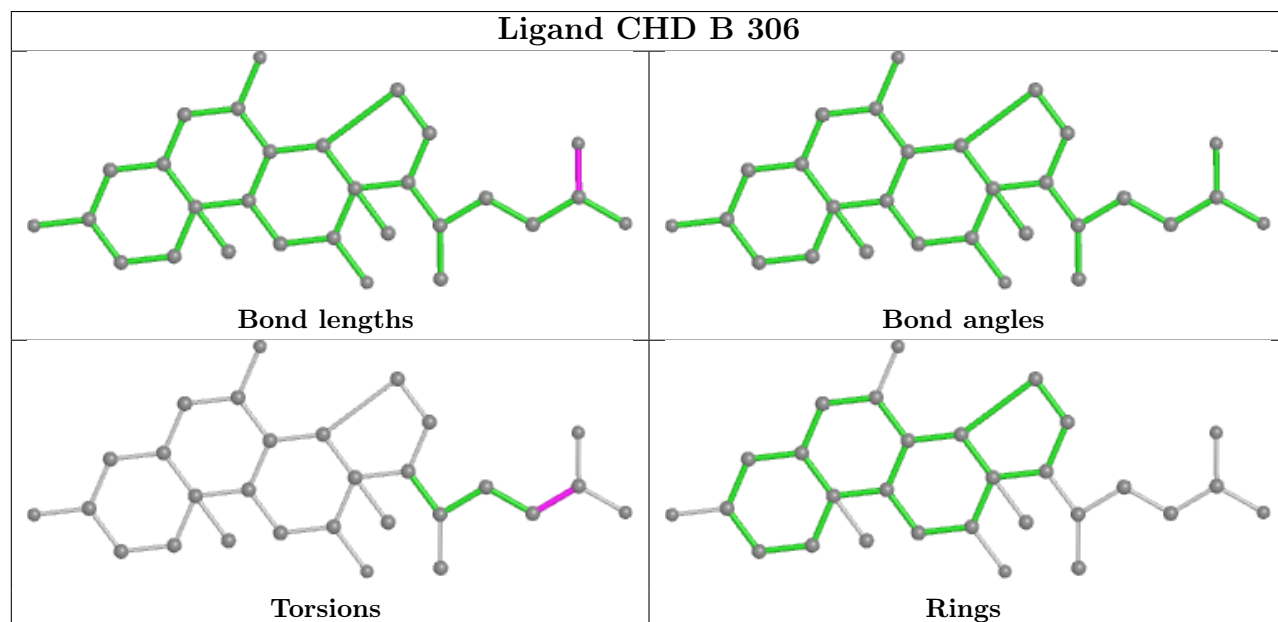
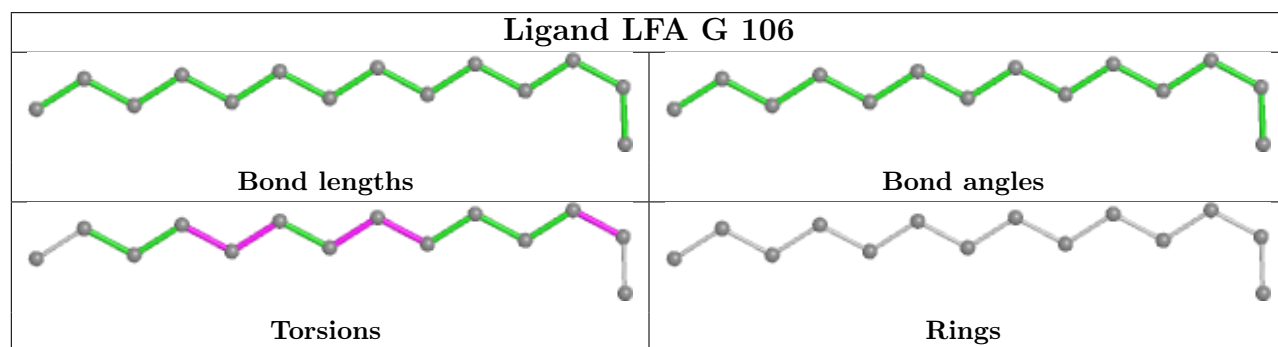
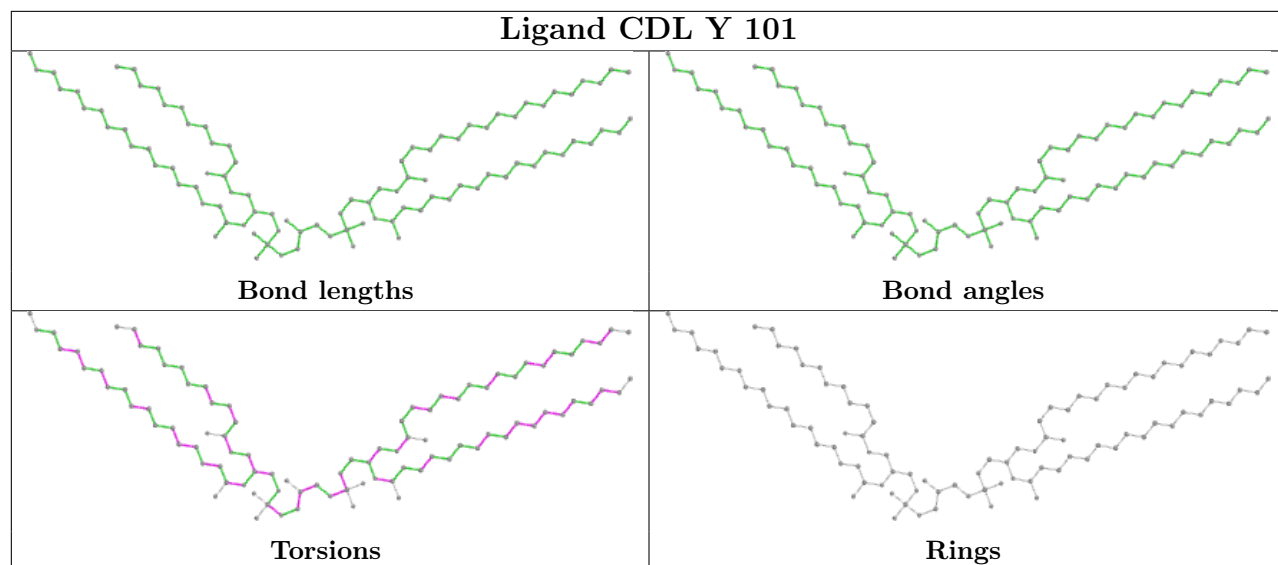


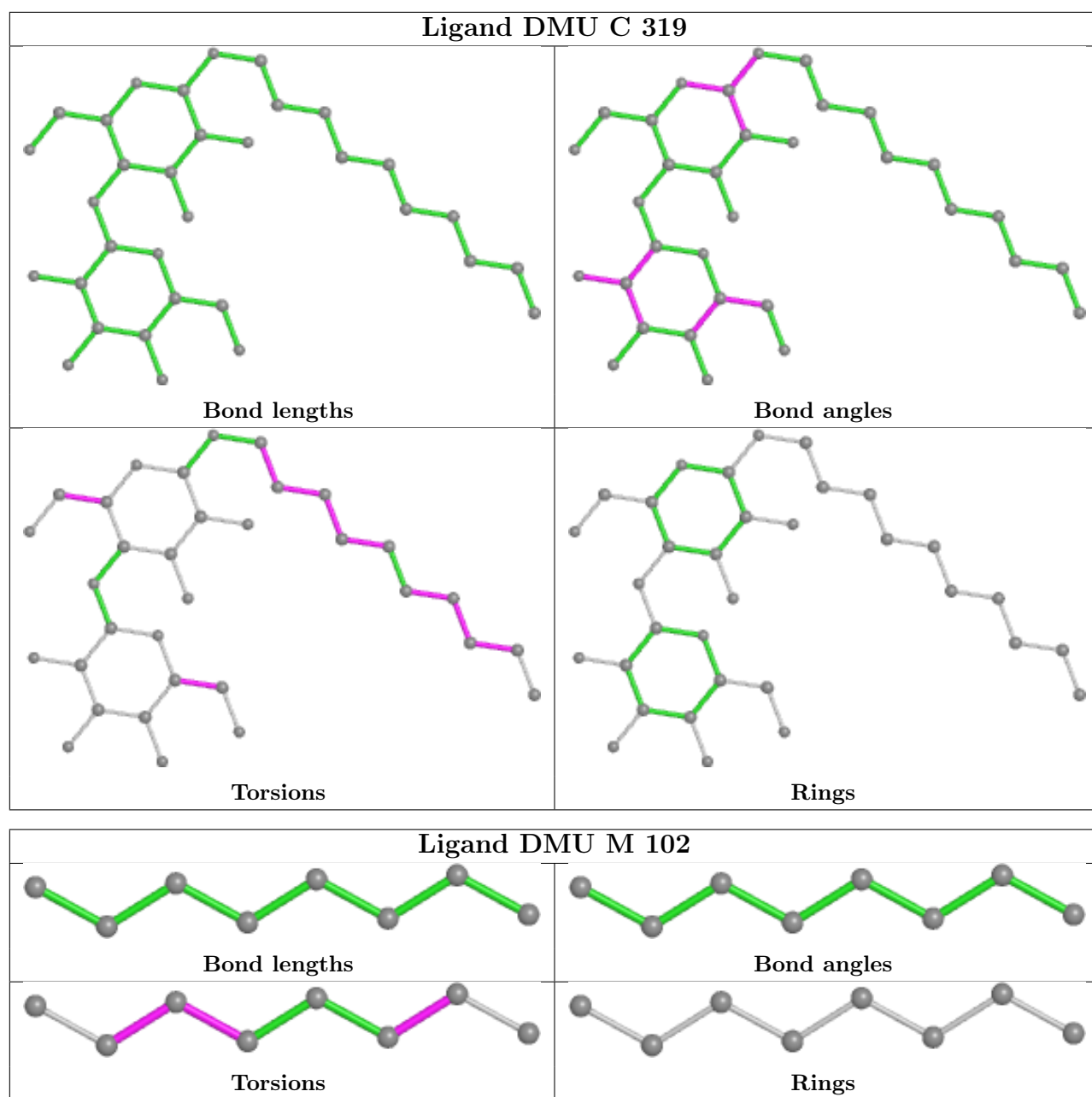


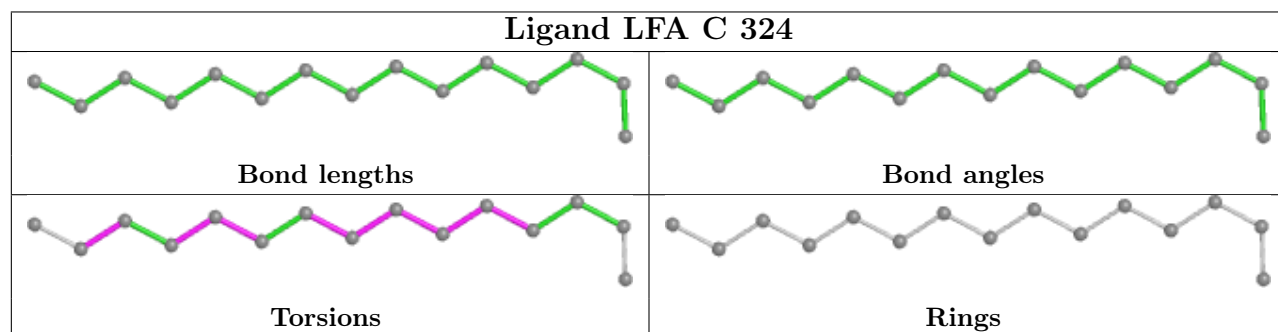
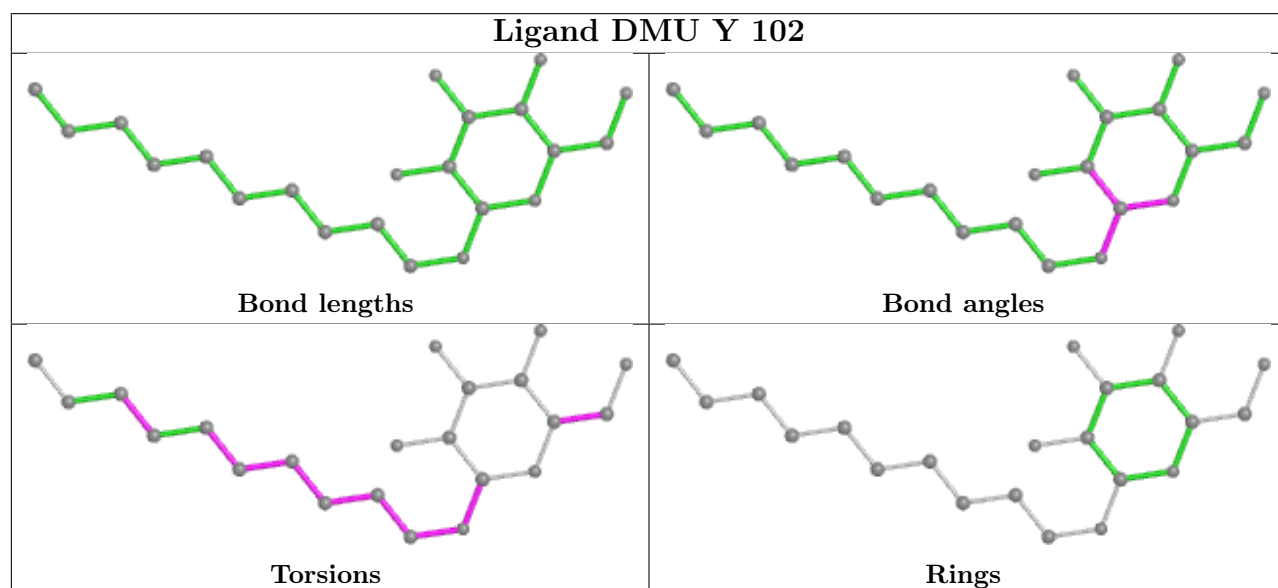
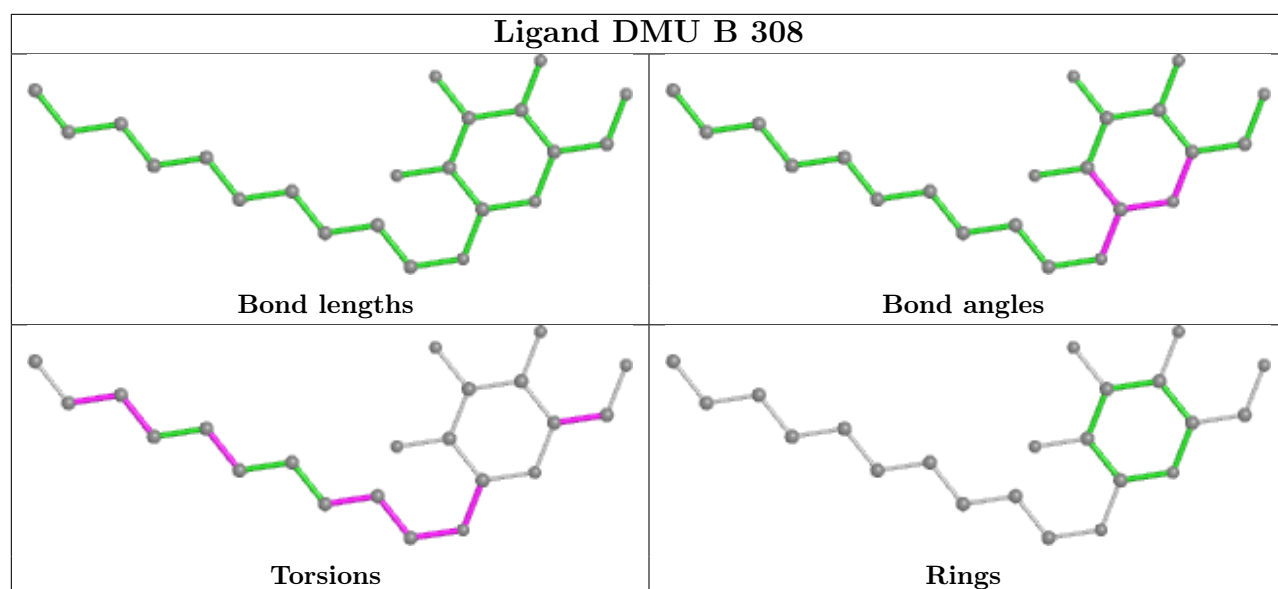


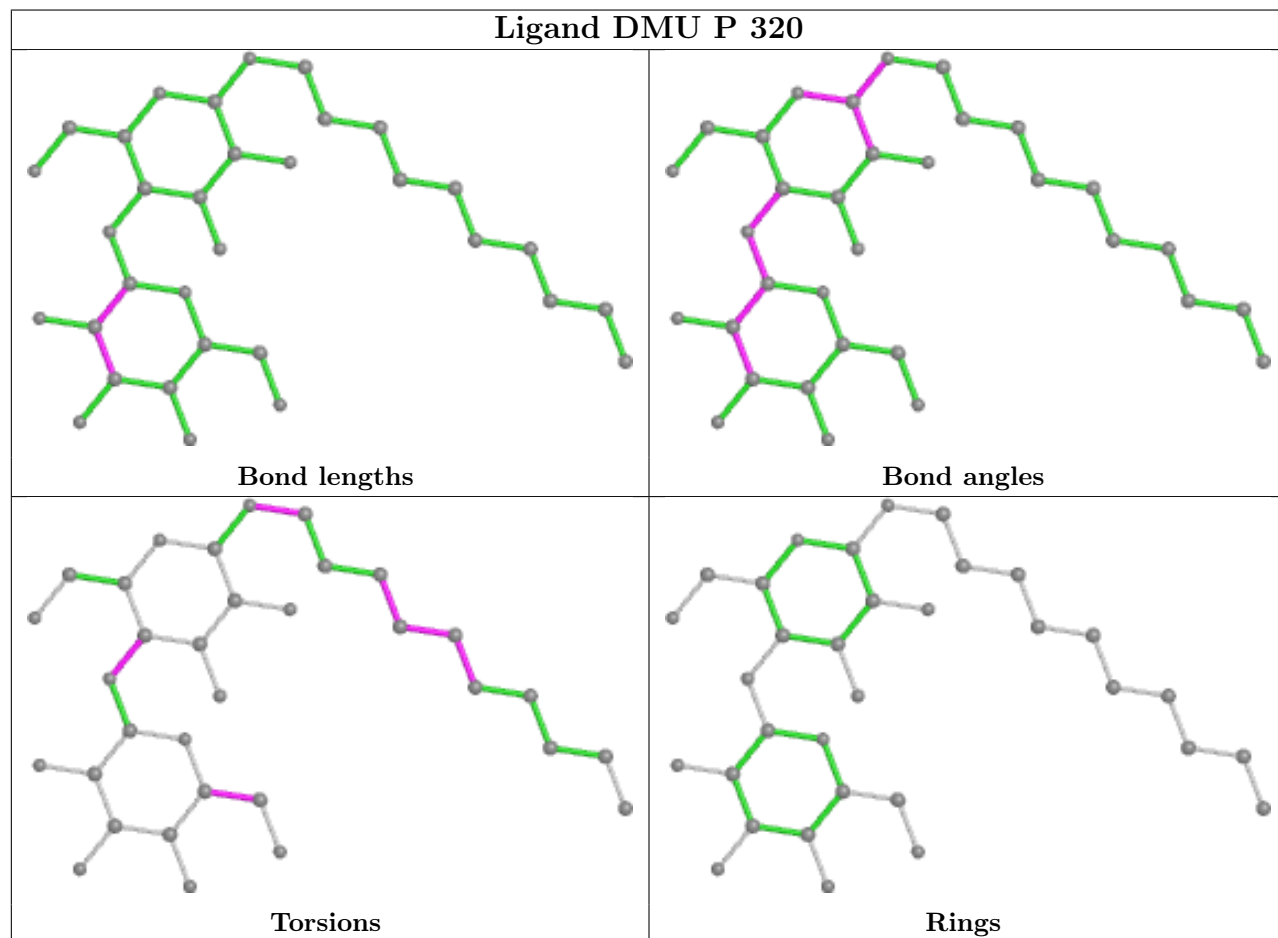
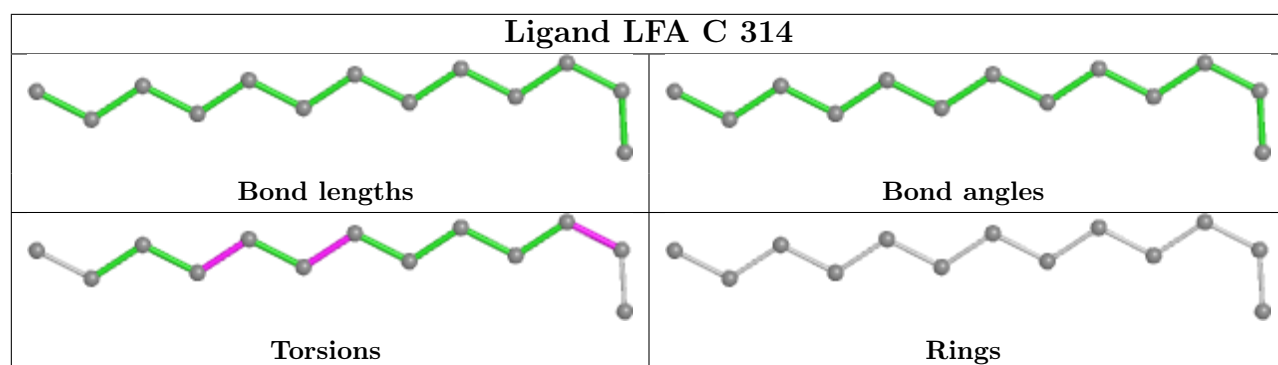


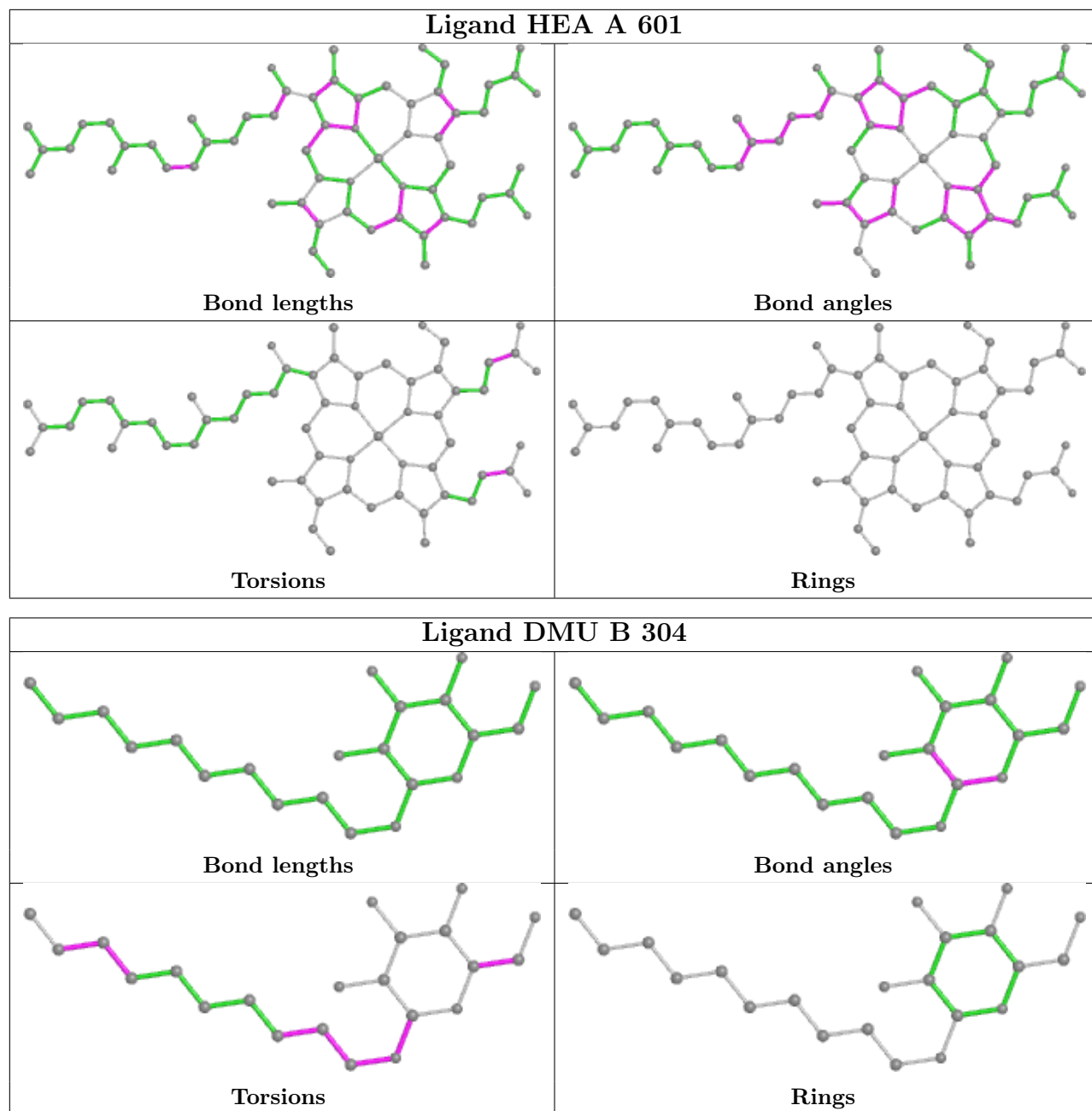




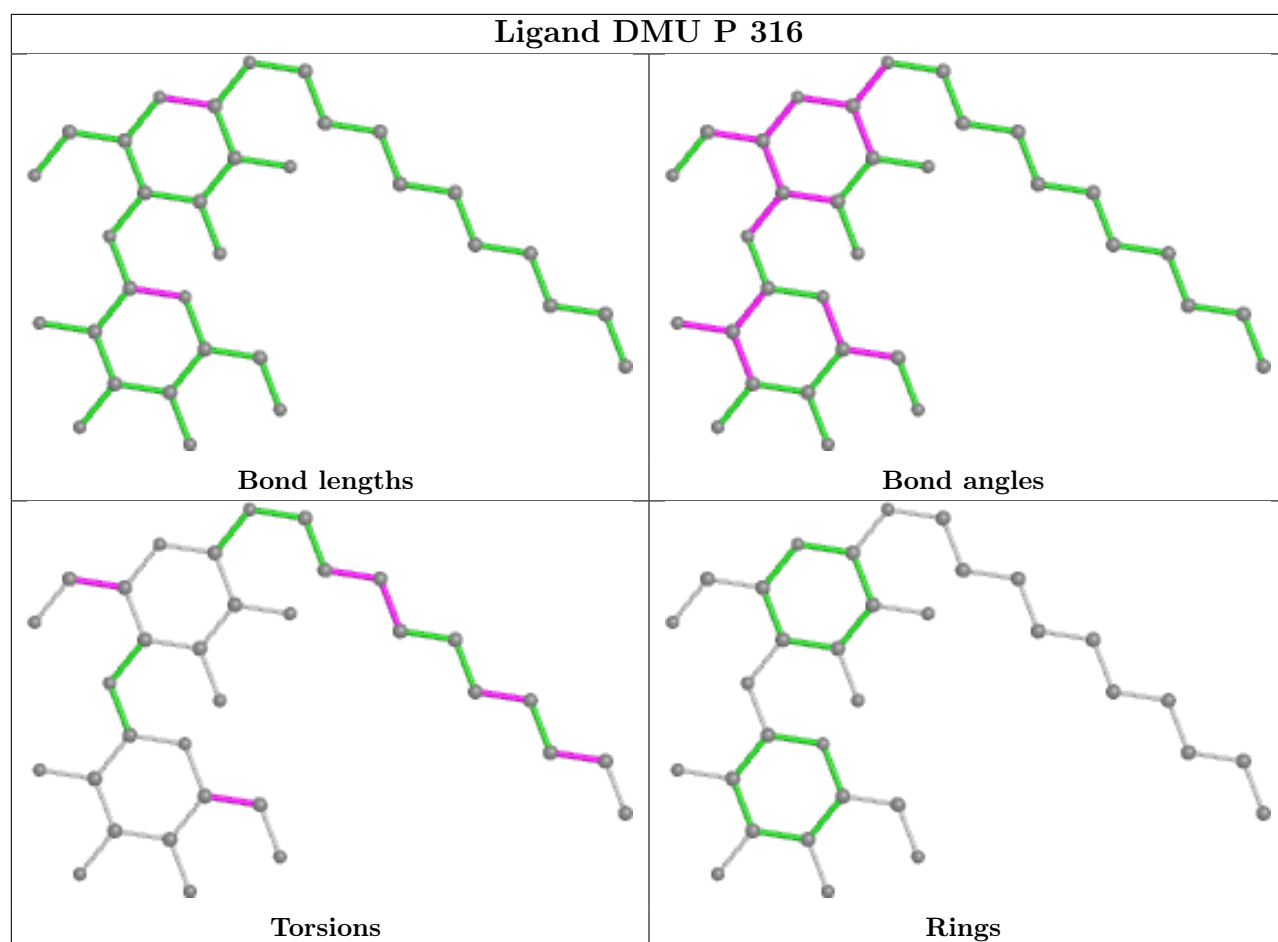


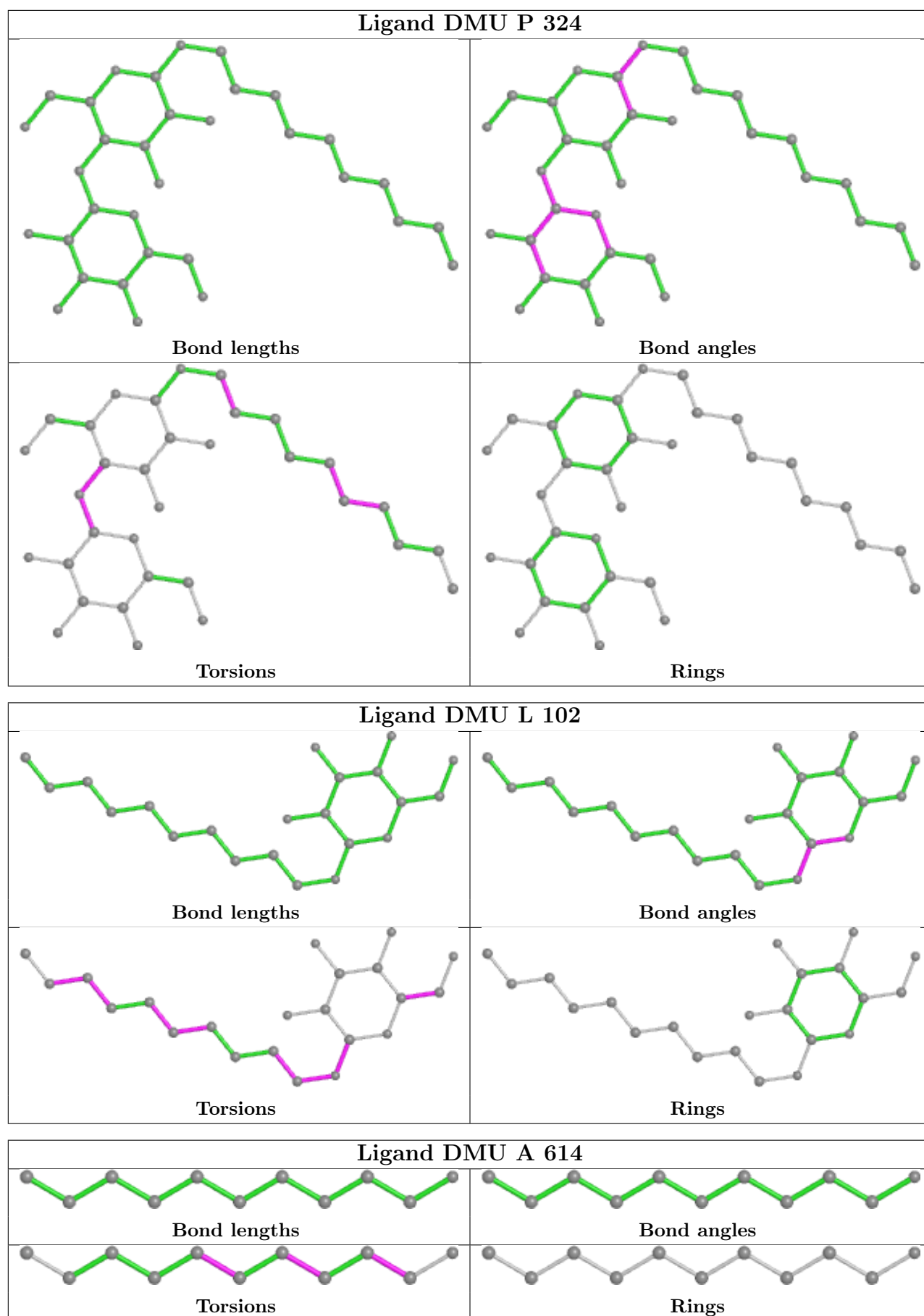


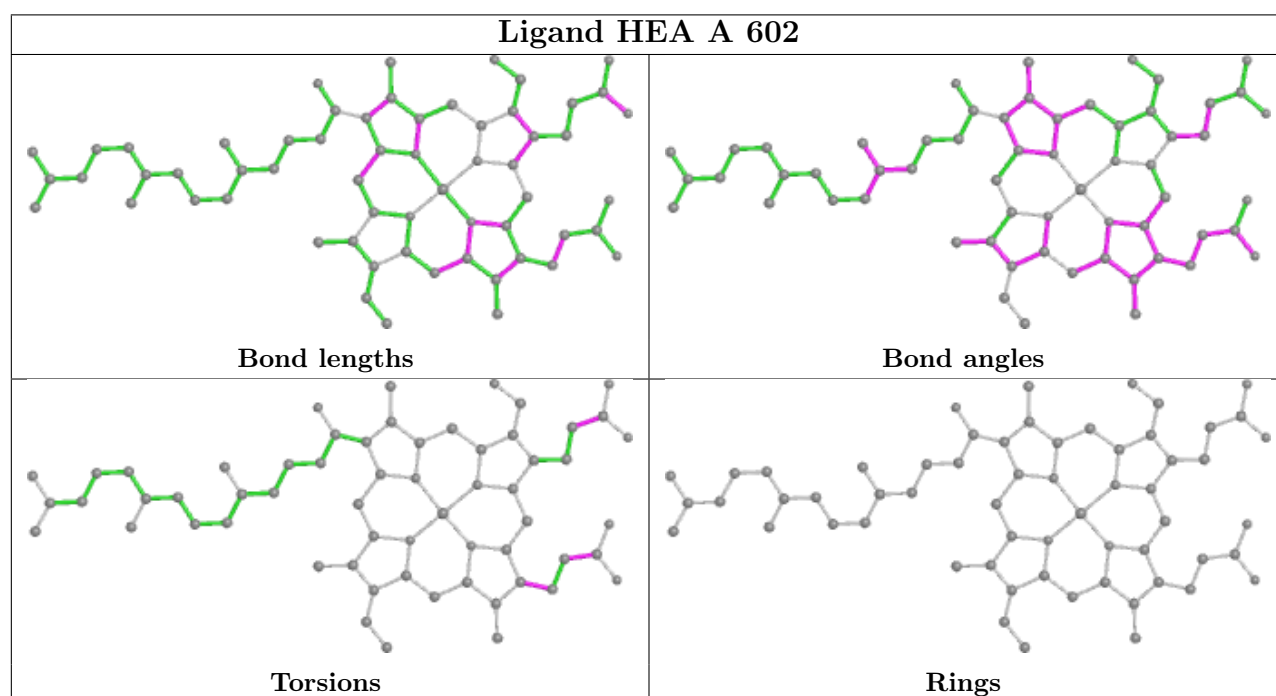
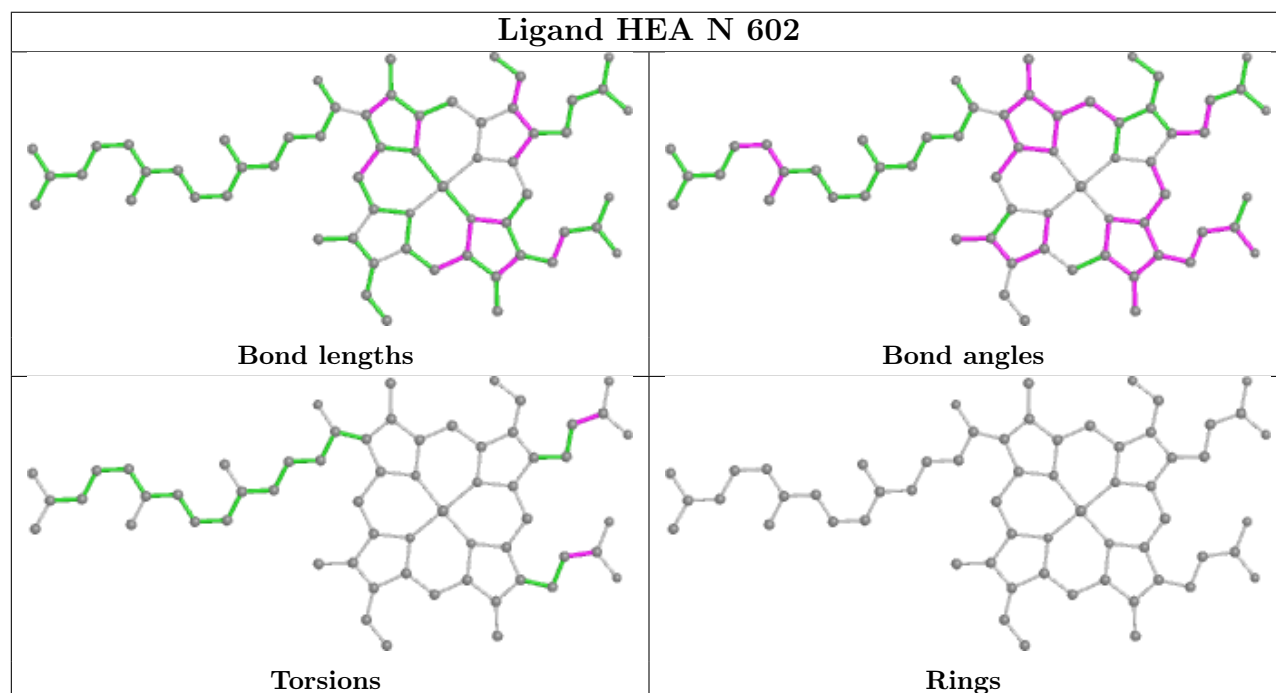
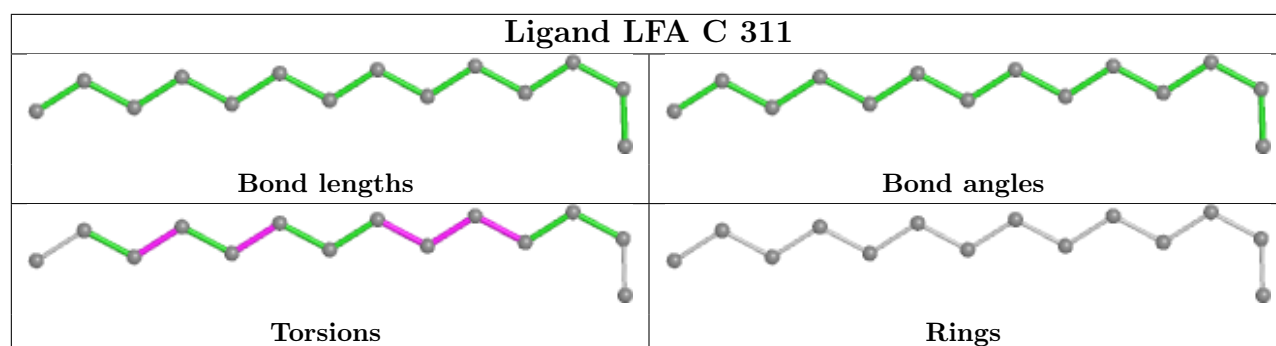


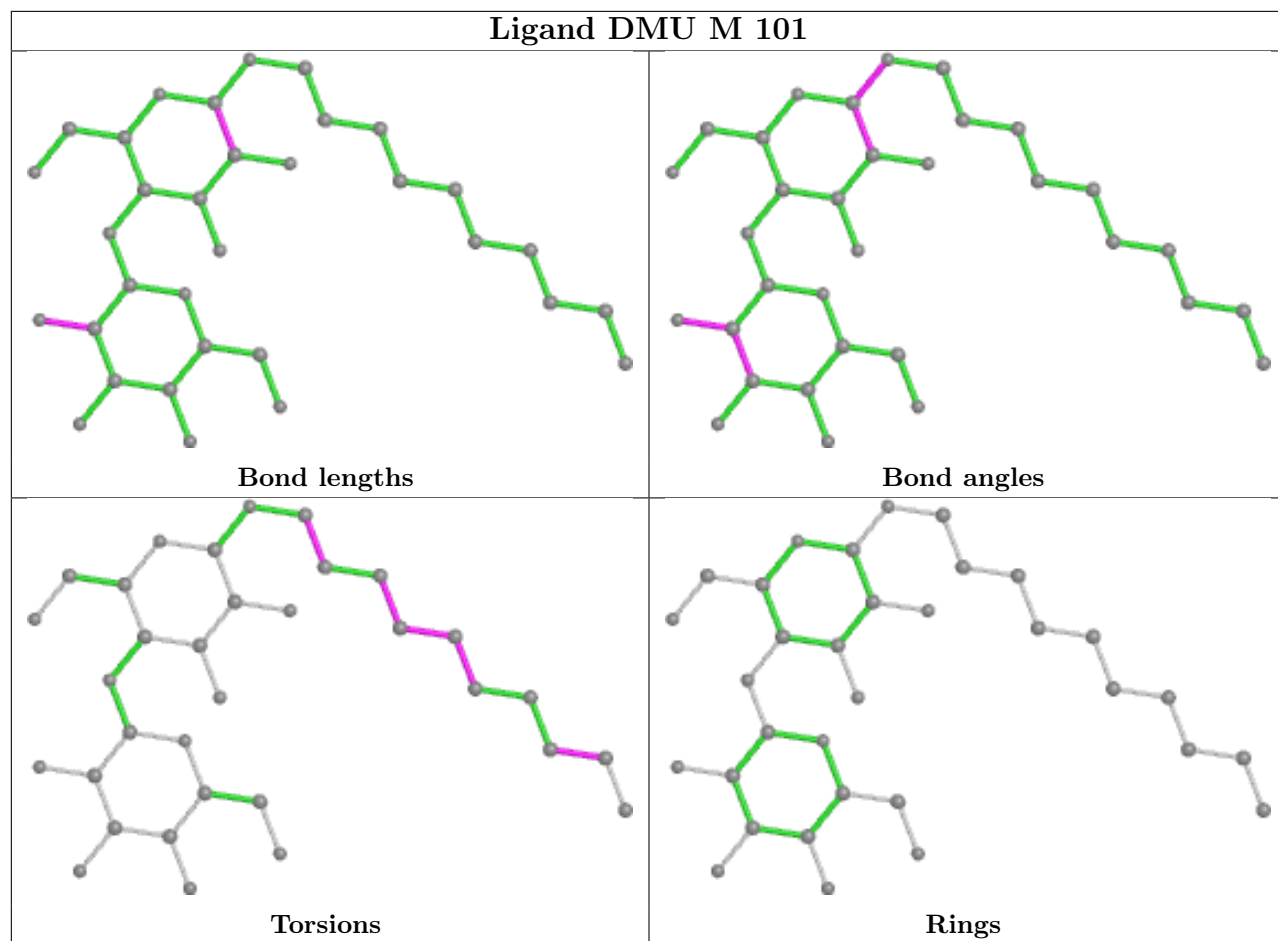


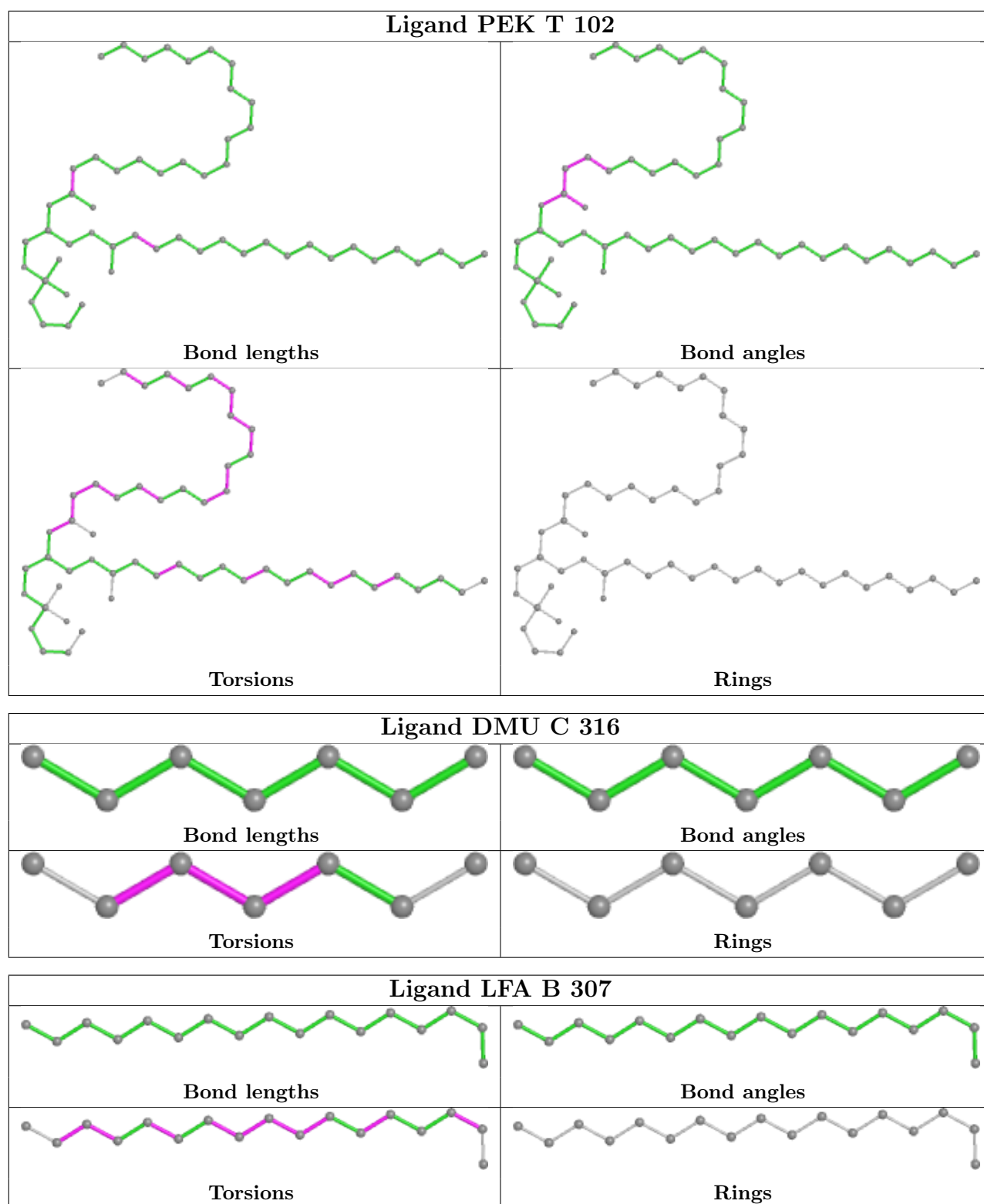


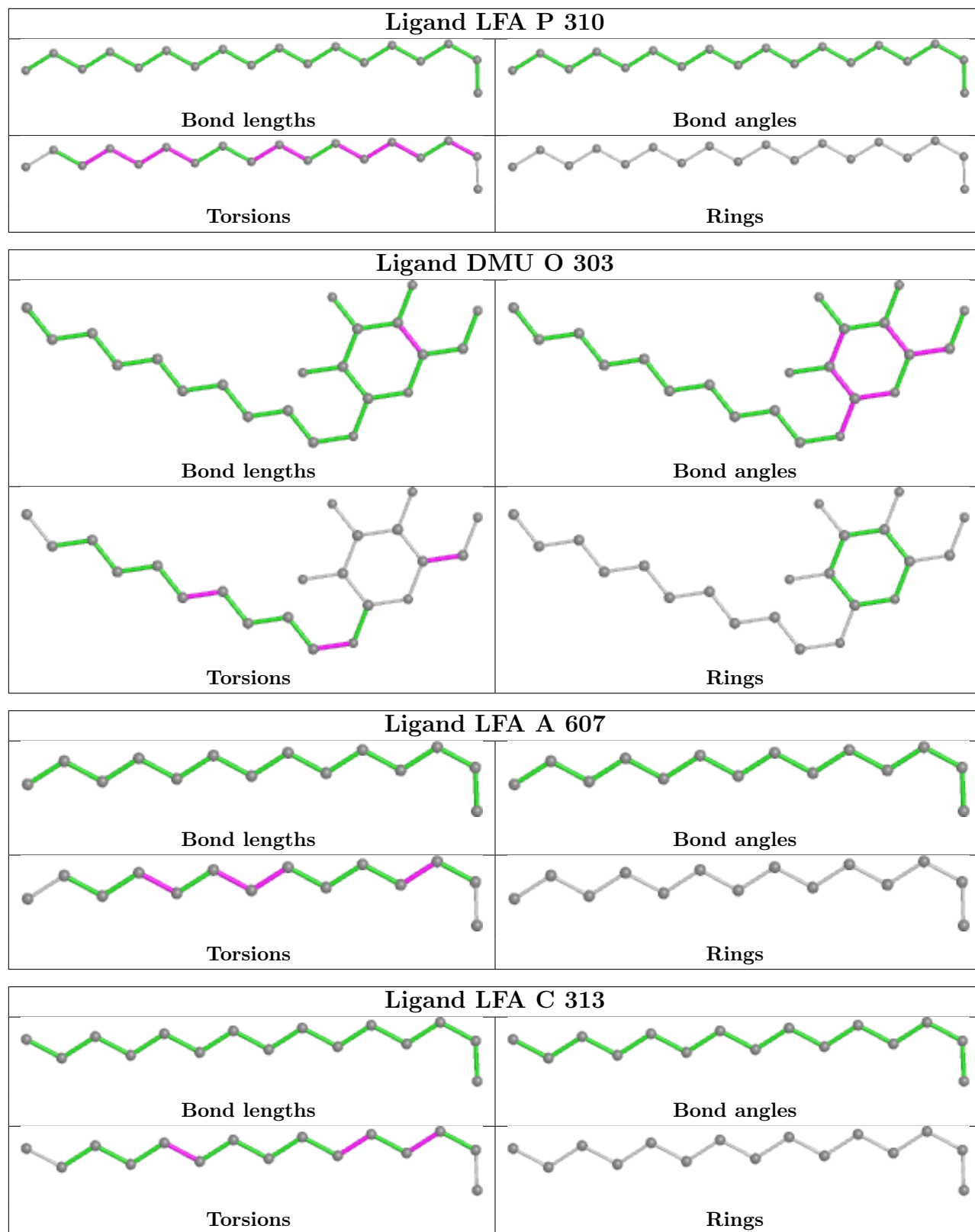


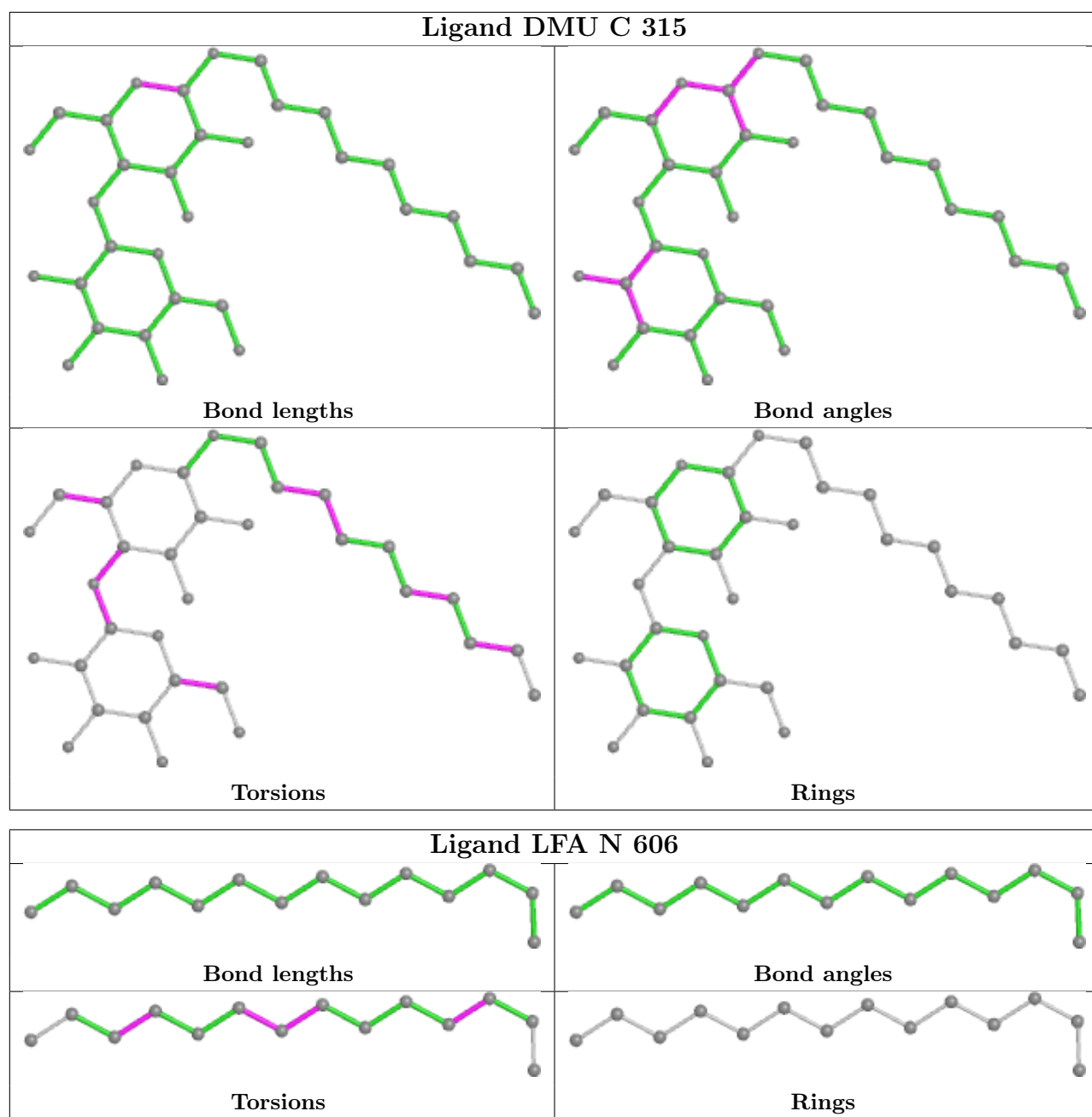


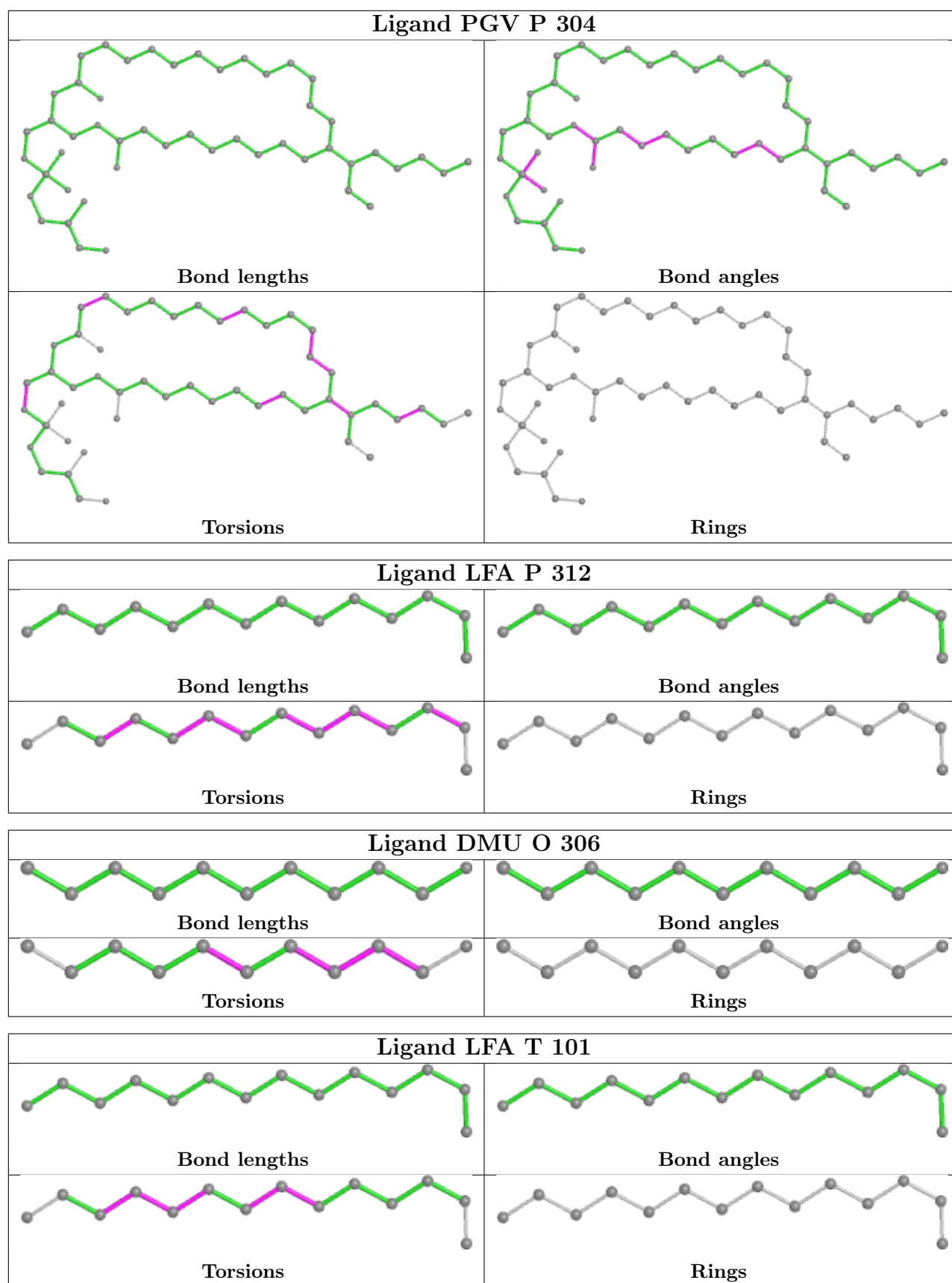




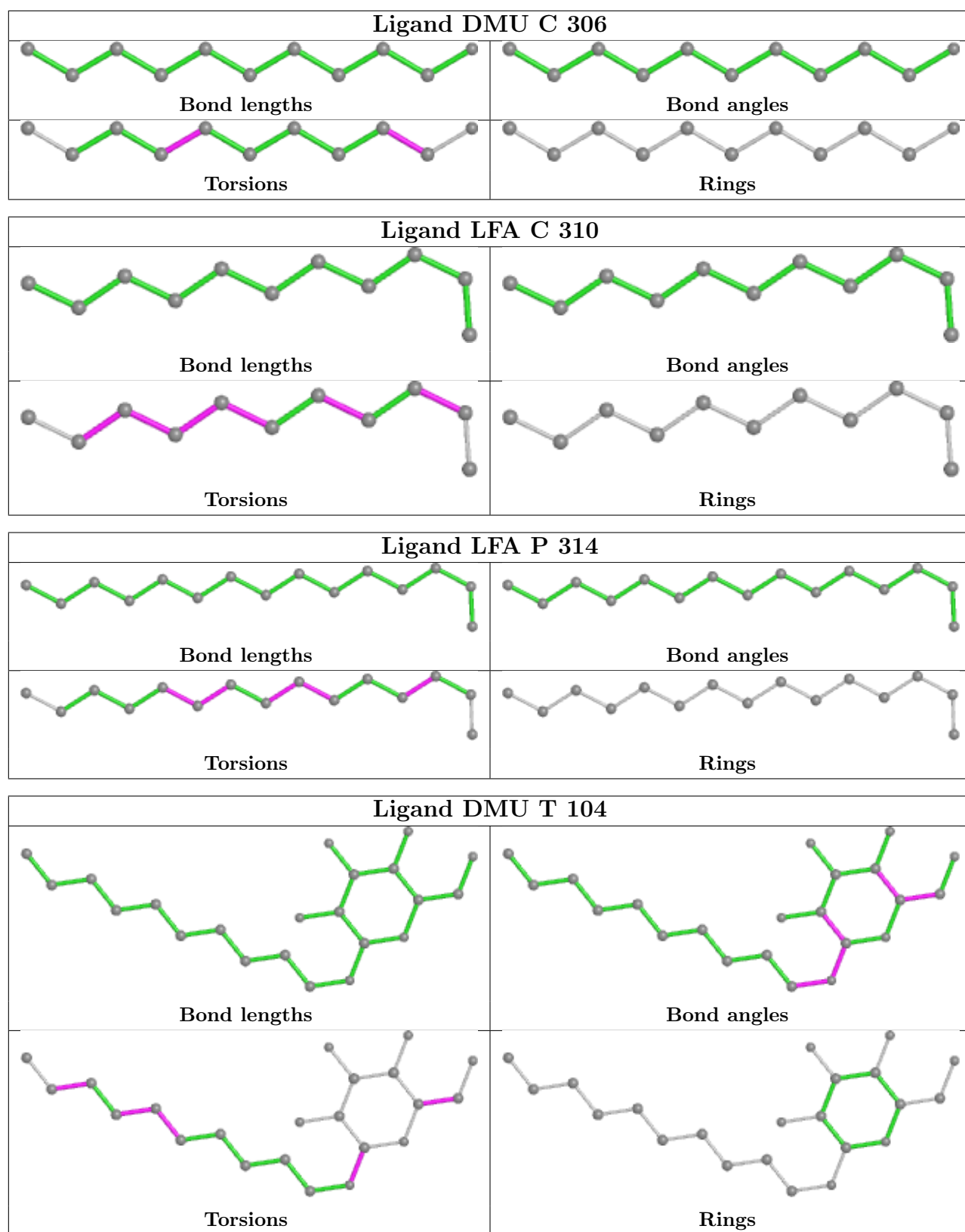


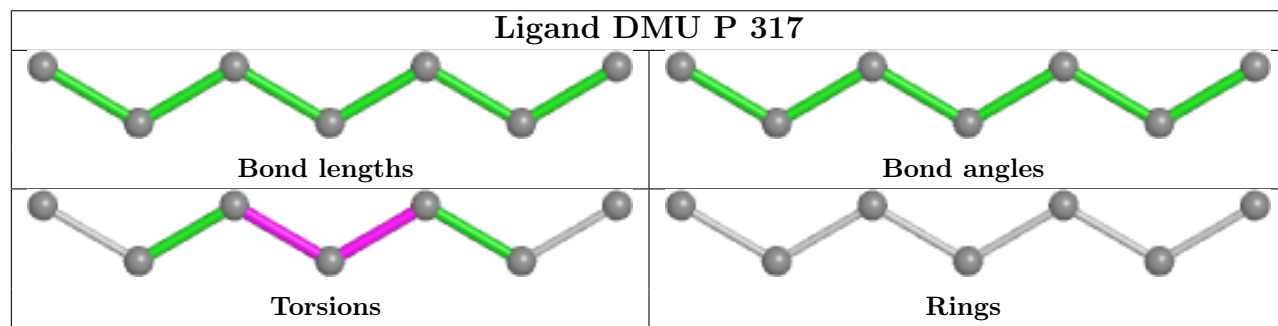
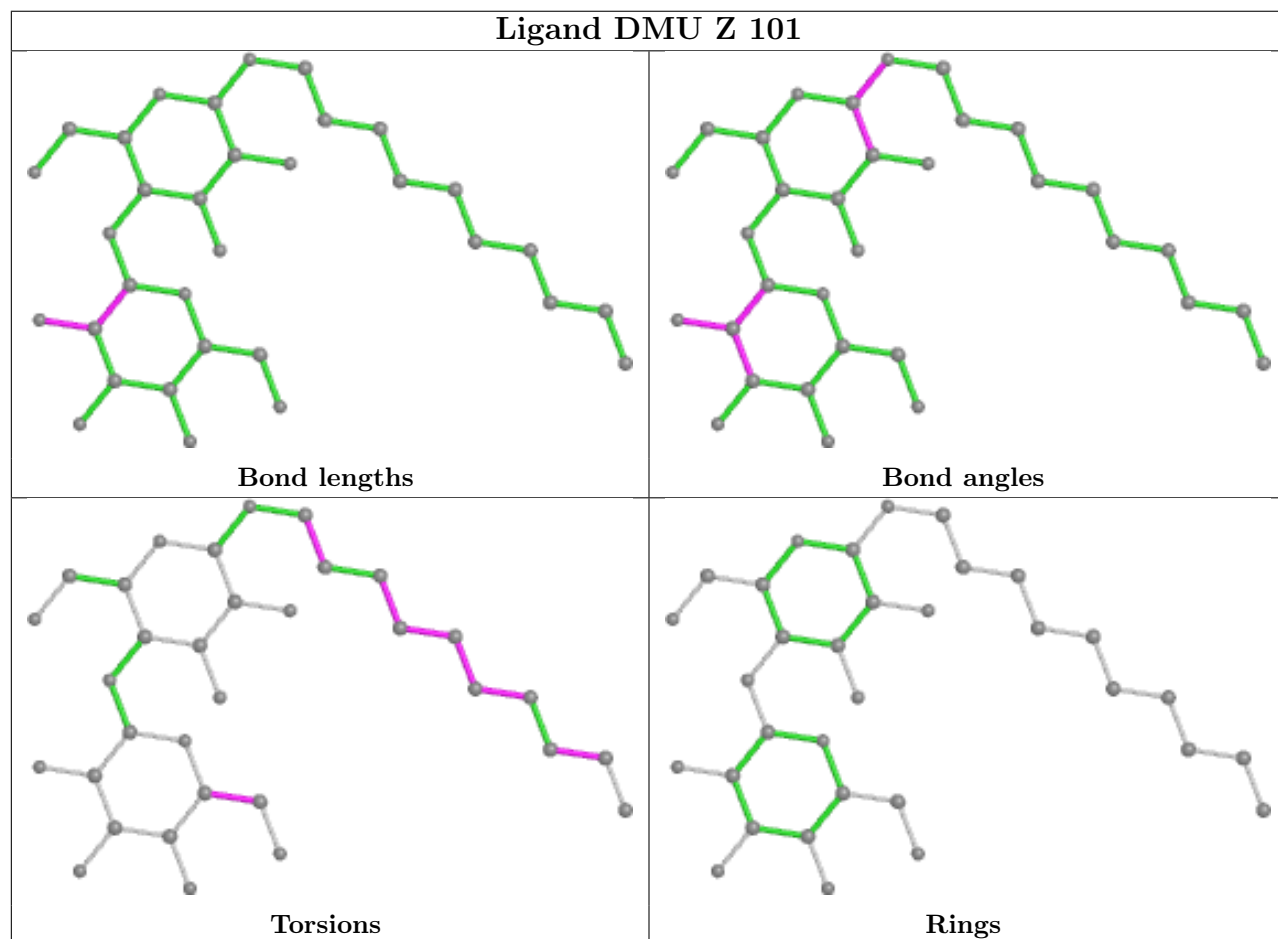
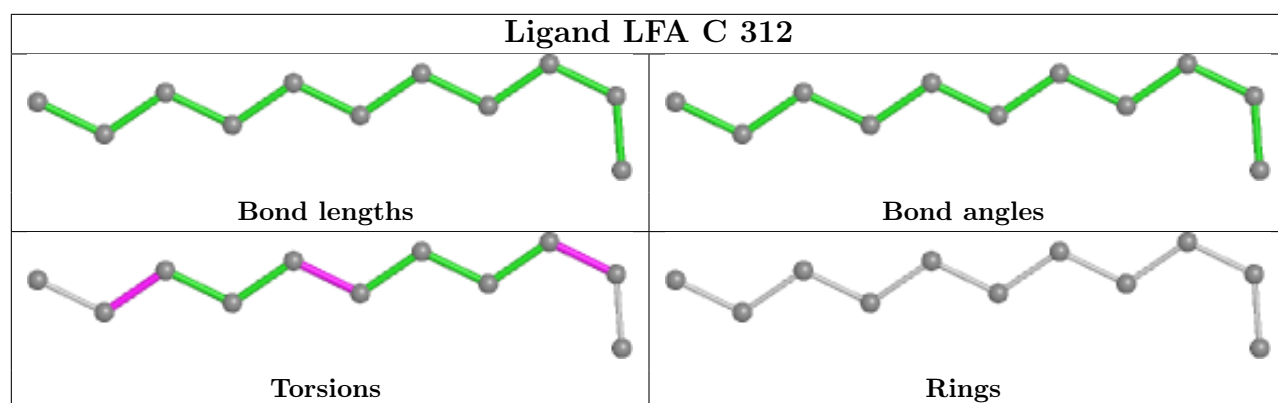


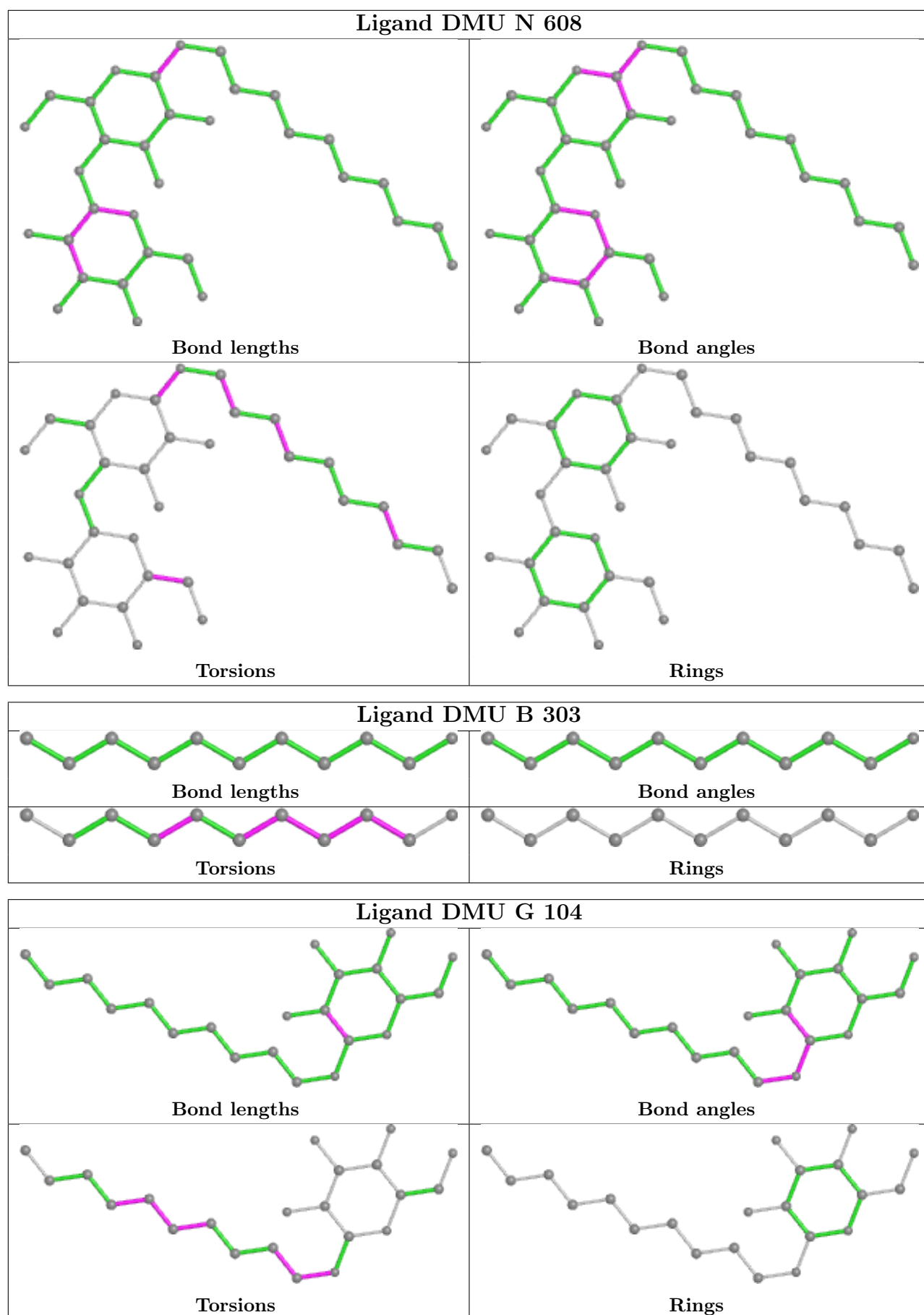


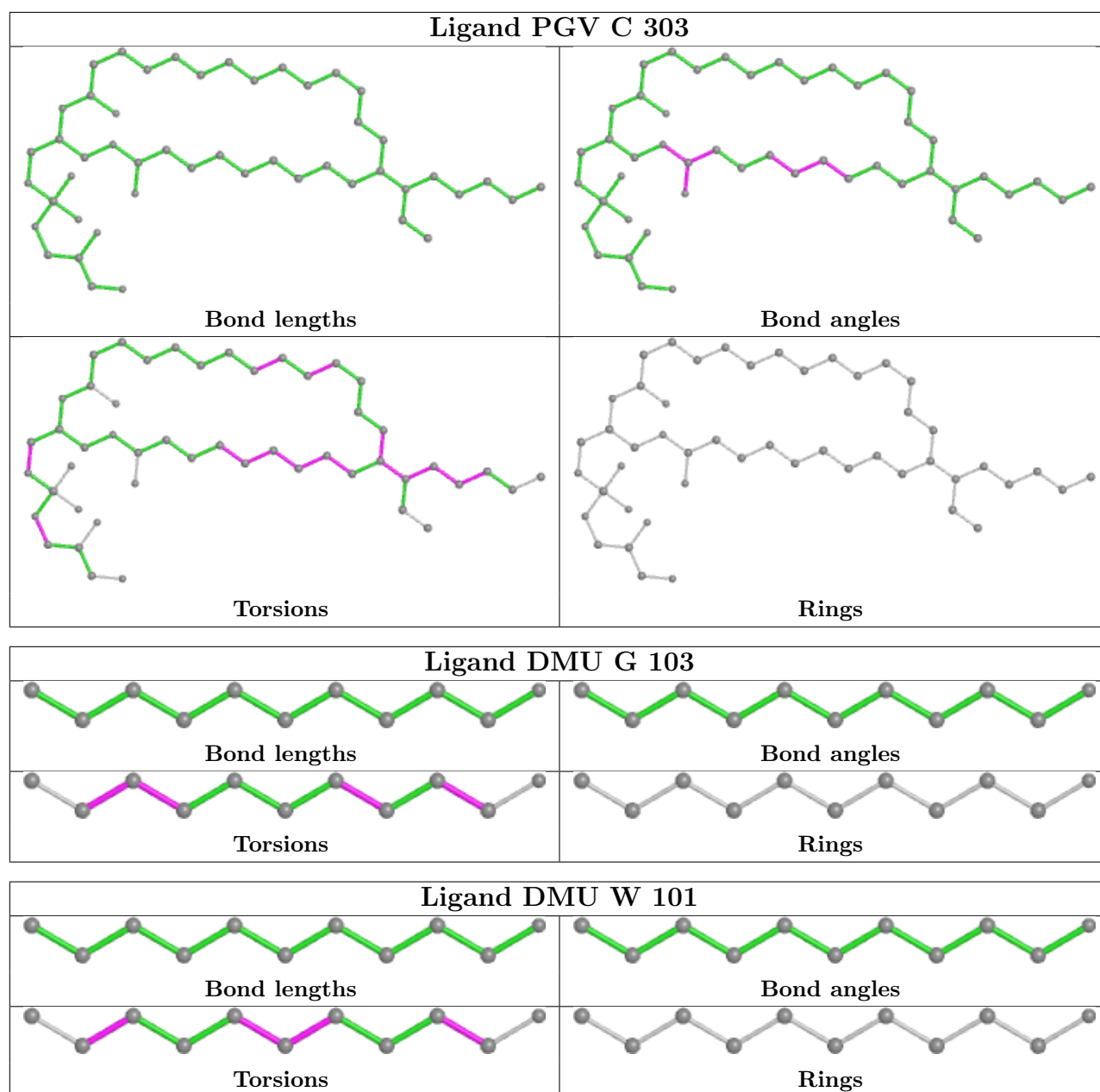


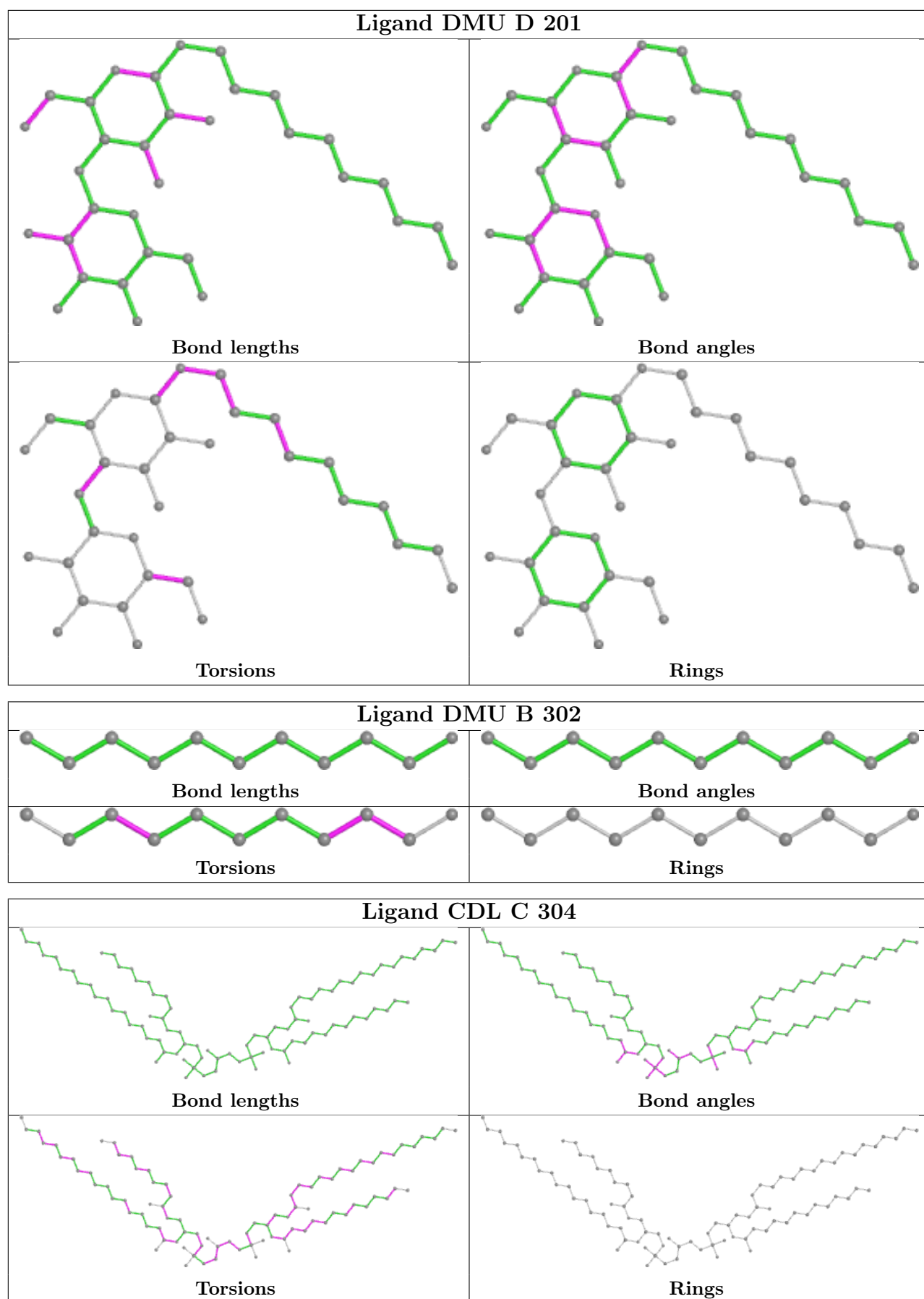


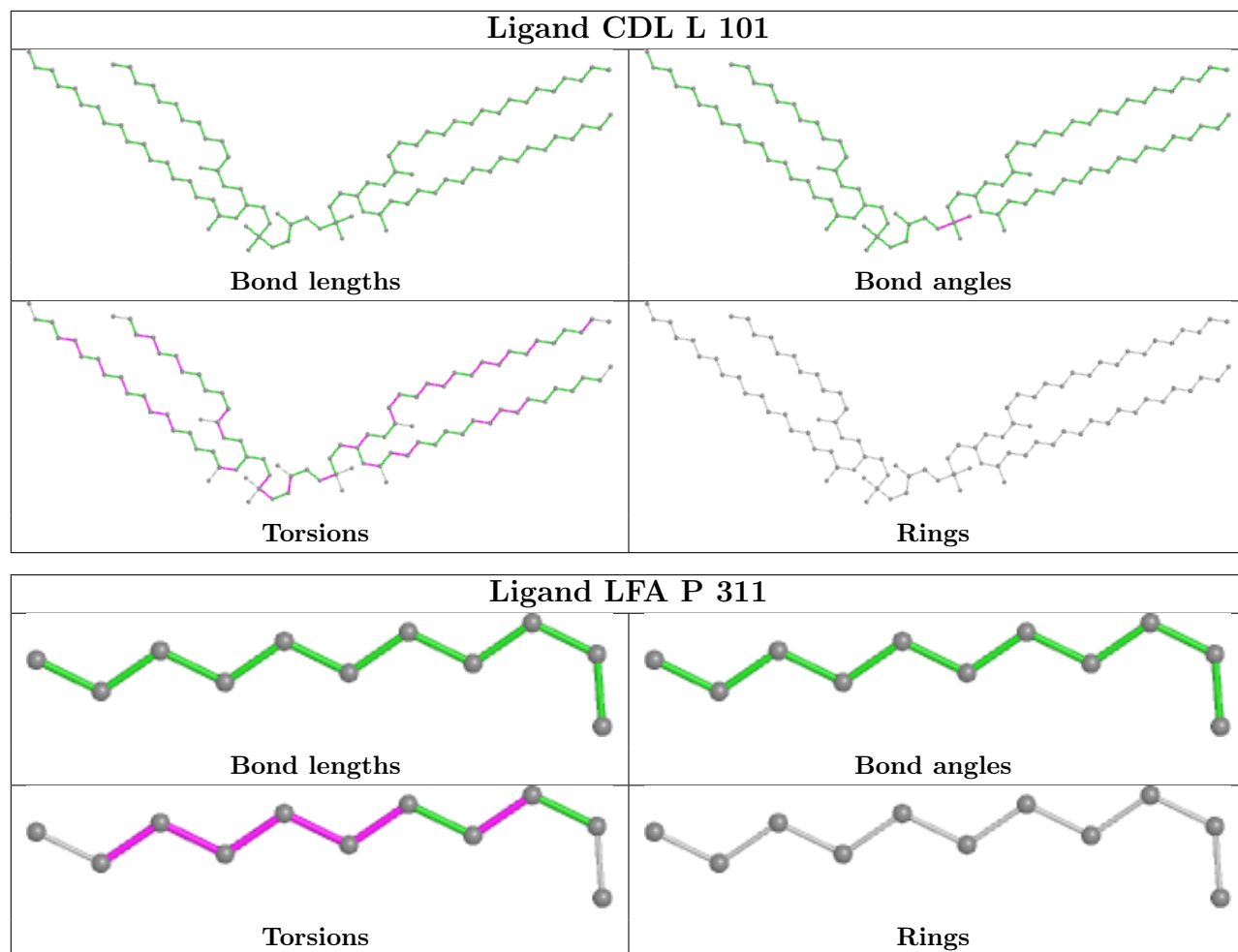


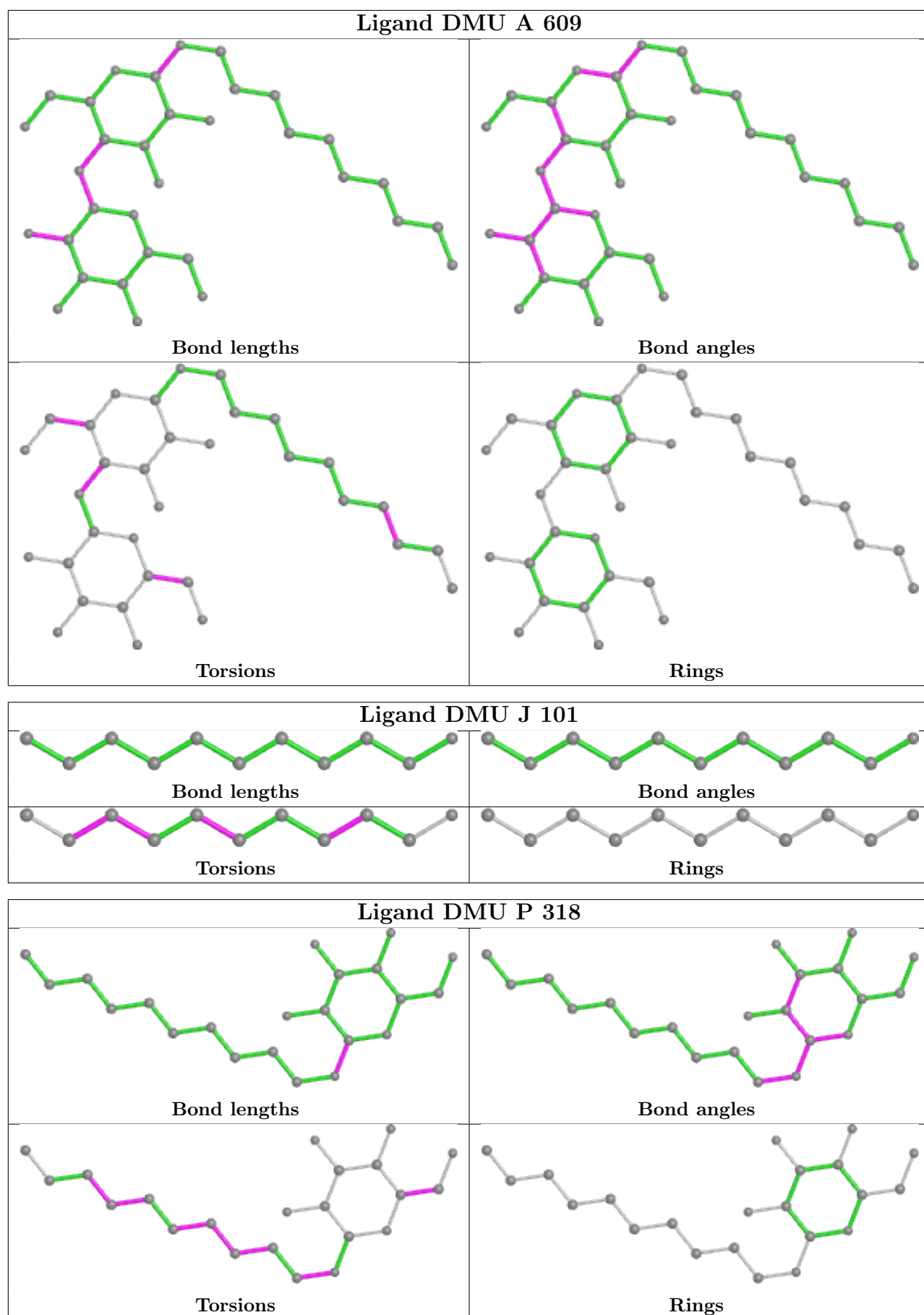


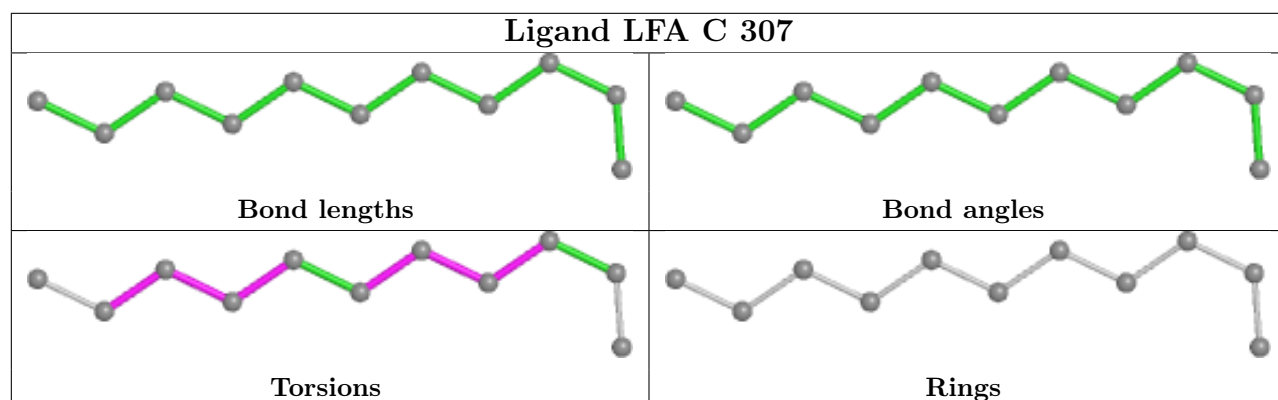
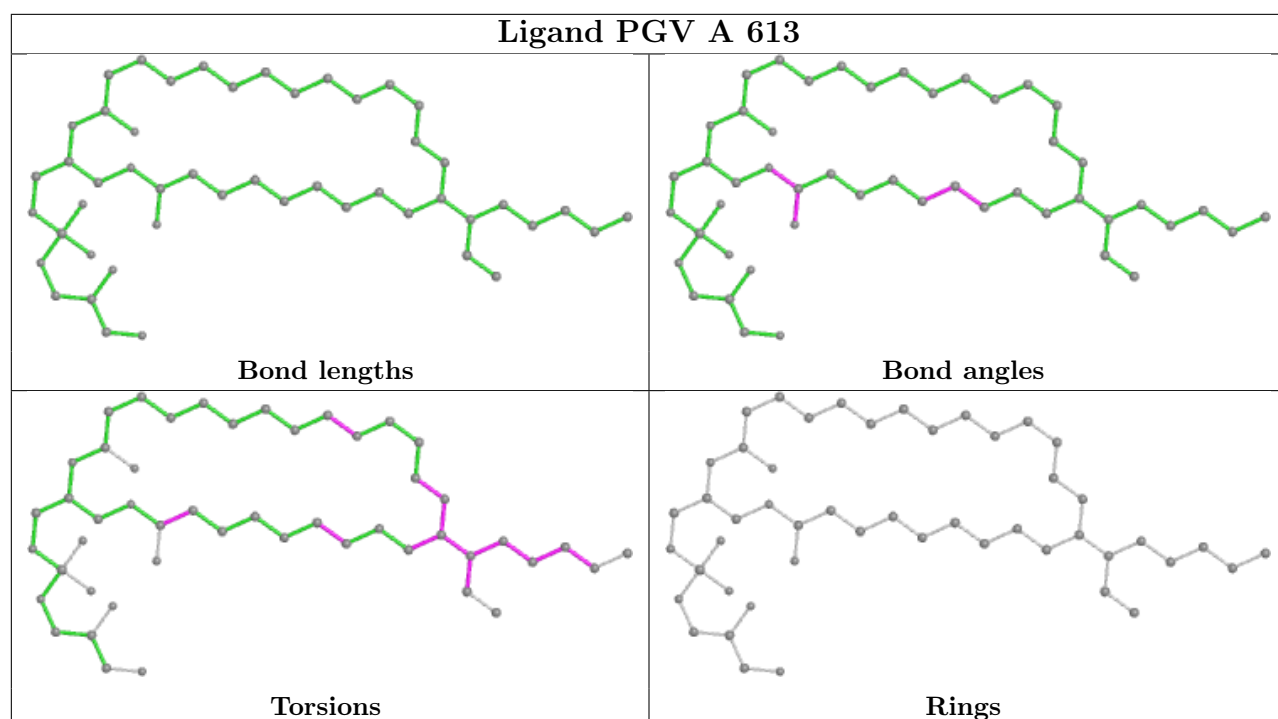
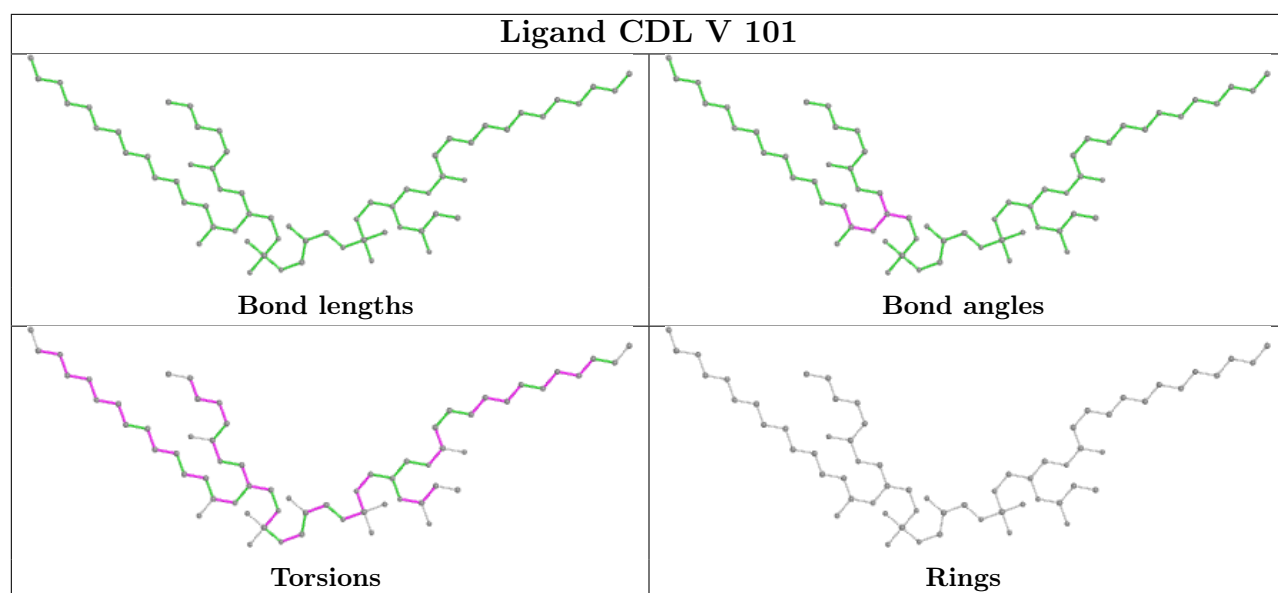




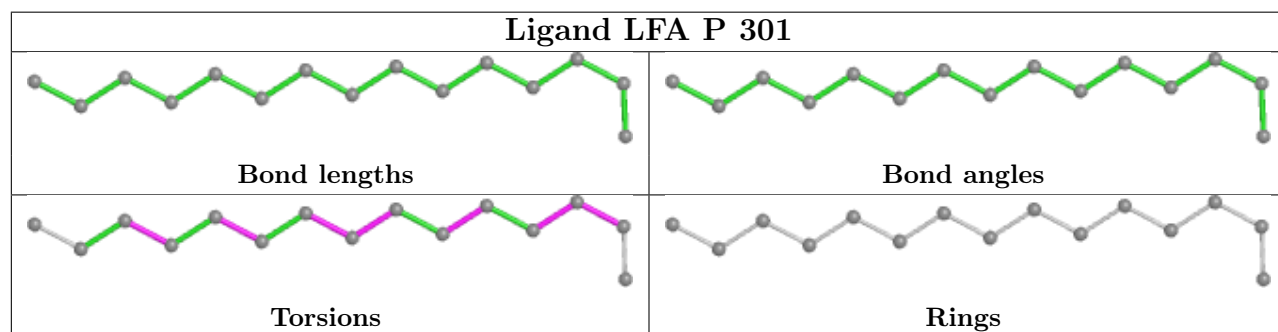
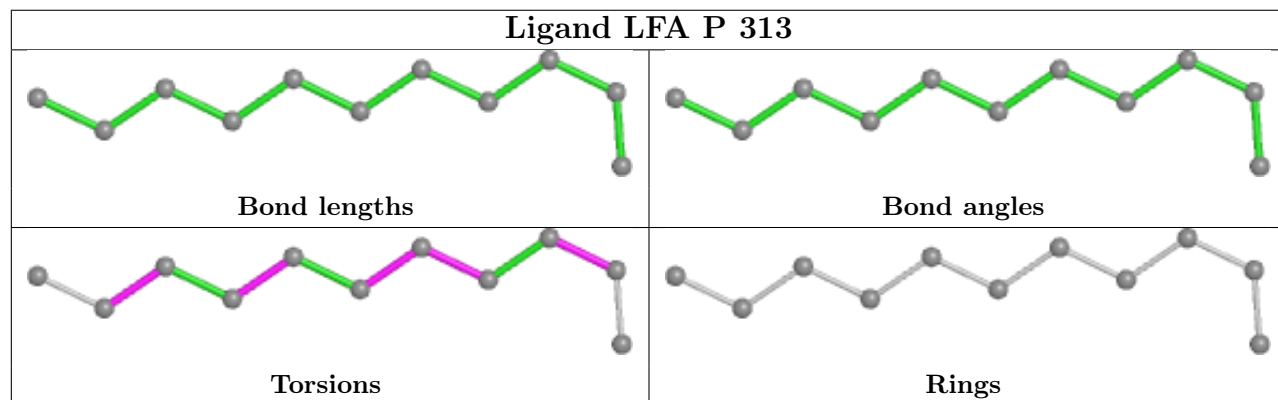
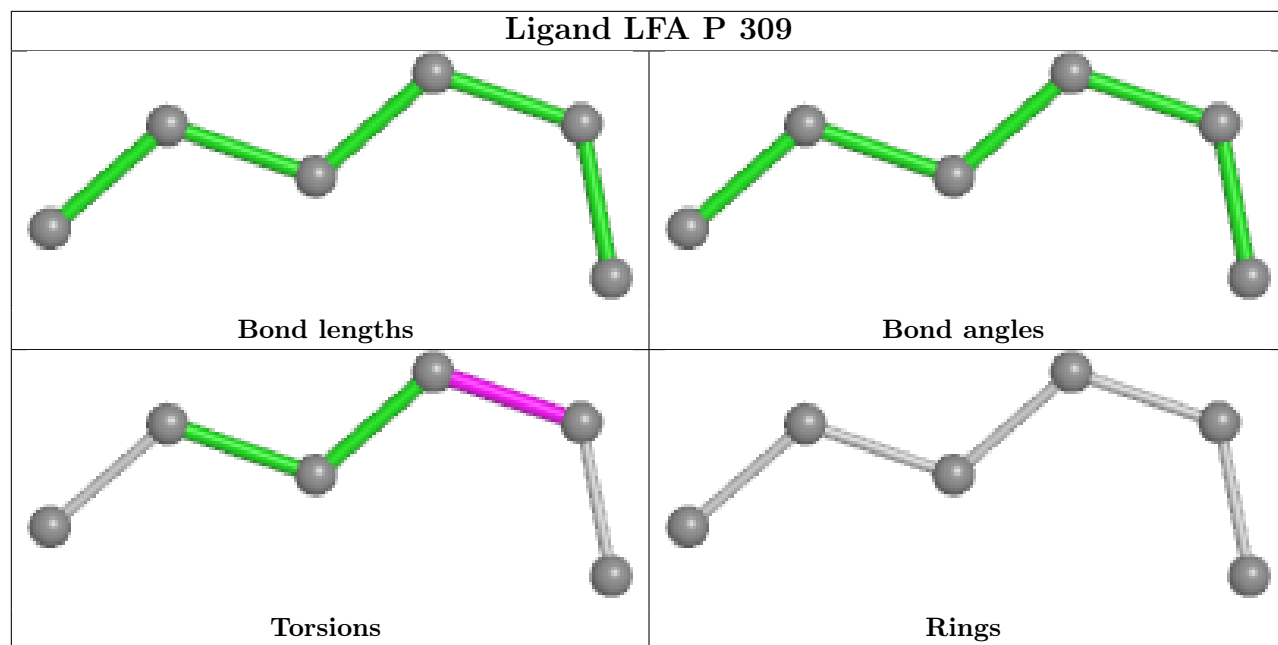


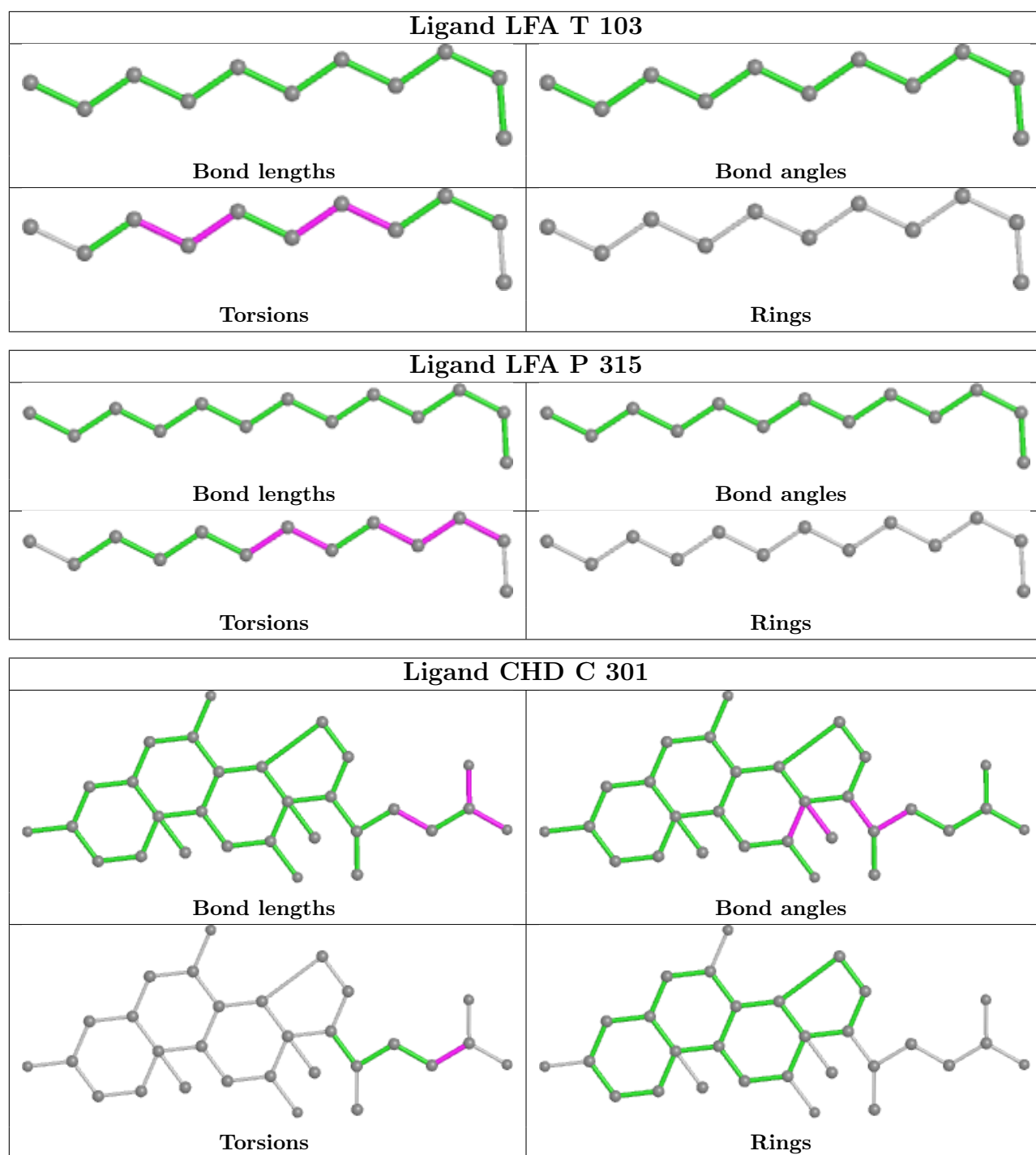


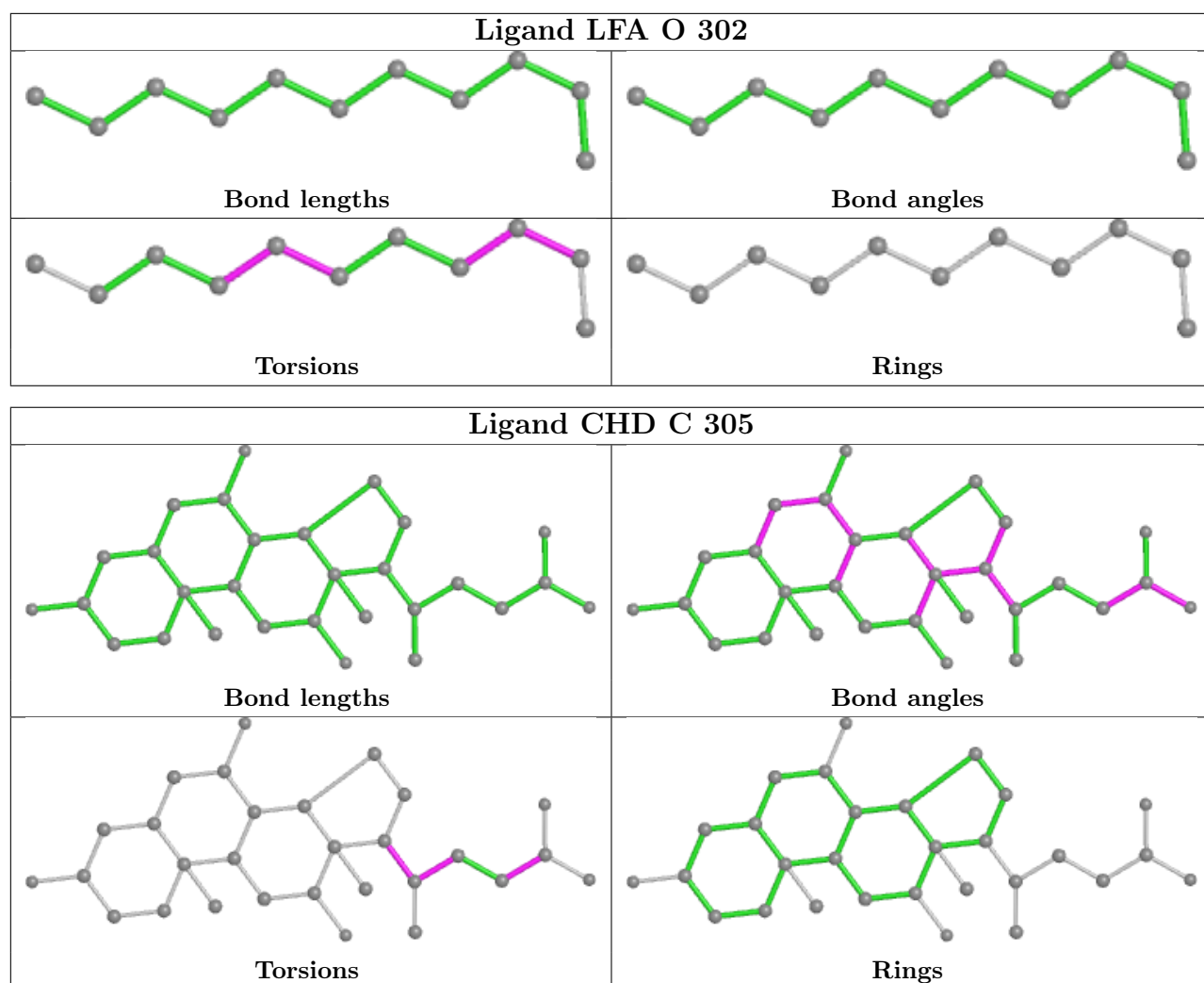












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	512/514 (99%)	-0.25	2 (0%) 89 90	16, 33, 41, 58	15 (2%)
1	N	512/514 (99%)	-0.14	4 (0%) 82 85	16, 35, 44, 62	15 (2%)
2	B	226/227 (99%)	0.17	11 (4%) 36 35	22, 39, 60, 89	5 (2%)
2	O	226/227 (99%)	0.17	8 (3%) 47 48	23, 44, 66, 96	5 (2%)
3	C	258/261 (98%)	-0.13	1 (0%) 89 90	17, 36, 46, 64	9 (3%)
3	P	258/261 (98%)	-0.13	1 (0%) 89 90	16, 36, 47, 68	9 (3%)
4	D	143/147 (97%)	0.05	2 (1%) 73 76	20, 42, 57, 73	1 (0%)
4	Q	137/147 (93%)	0.38	7 (5%) 34 34	24, 52, 79, 90	1 (0%)
5	E	102/109 (93%)	-0.04	1 (0%) 79 82	35, 42, 56, 75	0
5	R	102/109 (93%)	0.11	2 (1%) 64 67	37, 50, 67, 85	0
6	F	91/98 (92%)	0.04	1 (1%) 77 80	20, 42, 65, 73	2 (2%)
6	S	91/98 (92%)	0.12	2 (2%) 62 65	19, 40, 63, 71	2 (2%)
7	G	72/85 (84%)	0.34	7 (9%) 15 14	21, 42, 82, 102	1 (1%)
7	T	72/85 (84%)	0.43	5 (6%) 24 23	22, 44, 75, 105	1 (1%)
8	H	75/85 (88%)	0.34	3 (4%) 43 43	36, 45, 90, 130	0
8	U	75/85 (88%)	0.45	7 (9%) 16 14	40, 47, 89, 124	0
9	I	70/73 (95%)	0.54	7 (10%) 14 13	39, 51, 77, 96	0
9	V	70/73 (95%)	0.64	7 (10%) 14 13	39, 58, 78, 102	0
10	J	56/59 (94%)	0.34	1 (1%) 67 69	37, 46, 73, 87	0
10	W	56/59 (94%)	0.47	3 (5%) 32 31	37, 48, 72, 89	0
11	K	49/56 (87%)	0.41	3 (6%) 28 28	39, 47, 64, 85	0
11	X	49/56 (87%)	0.77	3 (6%) 28 28	45, 55, 73, 103	0
12	L	44/47 (93%)	0.01	2 (4%) 39 38	33, 38, 51, 59	0
12	Y	44/47 (93%)	0.12	1 (2%) 61 63	38, 44, 59, 62	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
13	M	40/46 (86%)	0.15	1 (2%) 58 60	35, 39, 57, 75	0
13	Z	40/46 (86%)	0.47	1 (2%) 58 60	42, 48, 69, 82	0
All	All	3470/3614 (96%)	0.06	93 (2%) 56 57	16, 40, 66, 130	66 (1%)

The worst 5 of 93 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
7	T	36	TRP	6.6
2	O	113	TYR	5.5
1	N	113[A]	LEU	4.9
11	X	6	ALA	4.8
1	A	113[A]	LEU	4.8

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
1	FME	A	1	10/11	0.93	0.14	42,51,82,101	0
1	FME	N	1	10/11	0.95	0.13	45,50,81,99	0
2	FME	B	1	10/11	0.97	0.09	36,37,48,77	0
2	FME	O	1	10/11	0.97	0.09	40,43,52,76	0

## 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, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
20	DMU	C	317	22/33	0.70	0.33	44,64,74,80	22

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
20	DMU	P	318	22/33	0.72	0.36	44,66,86,96	22
19	LFA	P	311	11/20	0.73	0.41	58,67,71,74	11
24	CHD	P	306	29/29	0.73	0.22	66,86,116,130	0
21	EDO	P	323	4/4	0.75	0.36	33,33,41,44	4
20	DMU	A	608	7/33	0.76	0.38	53,55,64,71	7
19	LFA	P	308	11/20	0.79	0.35	38,49,63,65	11
24	CHD	C	305	29/29	0.80	0.18	65,90,115,123	0
20	DMU	B	308	22/33	0.81	0.31	54,73,83,91	22
20	DMU	O	303	22/33	0.81	0.29	46,66,85,98	22
20	DMU	P	320	33/33	0.82	0.28	52,76,88,96	33
19	LFA	C	311	14/20	0.82	0.37	39,64,70,72	14
19	LFA	P	313	11/20	0.82	0.33	41,59,68,72	11
20	DMU	C	315	33/33	0.82	0.34	45,58,70,77	33
20	DMU	N	607	7/33	0.83	0.39	53,69,72,72	7
19	LFA	C	310	11/20	0.83	0.38	56,75,96,97	11
19	LFA	C	308	6/20	0.83	0.40	43,53,62,62	6
19	LFA	P	312	14/20	0.83	0.35	43,68,78,83	14
21	EDO	C	322	4/4	0.83	0.29	35,37,41,44	4
21	EDO	E	201	4/4	0.83	0.34	44,45,47,53	4
19	LFA	C	324	15/20	0.83	0.39	56,60,67,72	15
20	DMU	C	318	33/33	0.83	0.32	44,56,67,100	33
20	DMU	M	102	8/33	0.83	0.29	48,56,61,65	8
20	DMU	N	608	33/33	0.84	0.25	45,60,79,85	33
20	DMU	G	103	11/33	0.84	0.33	48,58,62,71	11
20	DMU	P	317	7/33	0.84	0.29	54,58,67,73	7
19	LFA	P	301	15/20	0.84	0.33	52,61,67,68	15
19	LFA	C	312	11/20	0.84	0.33	46,58,73,76	11
20	DMU	P	319	33/33	0.85	0.32	49,60,88,103	33
19	LFA	P	309	6/20	0.85	0.33	41,51,53,55	6
19	LFA	P	315	13/20	0.85	0.29	50,59,79,80	13
19	LFA	T	103	11/20	0.85	0.33	55,62,77,80	11
20	DMU	P	316	33/33	0.85	0.28	47,58,75,77	33
19	LFA	C	314	13/20	0.85	0.28	53,61,75,80	13
19	LFA	O	302	11/20	0.85	0.31	47,59,69,71	11
21	EDO	C	320	4/4	0.86	0.37	56,56,63,82	4
18	CDL	V	101	64/100	0.86	0.19	56,94,138,149	0
19	LFA	C	313	15/20	0.86	0.26	47,52,75,76	15
19	LFA	G	106	14/20	0.86	0.28	47,54,70,74	14
20	DMU	C	316	7/33	0.86	0.28	59,59,65,70	7
21	EDO	A	611	4/4	0.86	0.27	36,41,50,52	4
20	DMU	Q	201	33/33	0.87	0.22	41,60,72,79	33
20	DMU	W	101	11/33	0.87	0.35	64,70,76,83	11

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
20	DMU	Y	102	22/33	0.87	0.39	57,71,81,85	22
20	DMU	C	319	33/33	0.87	0.23	46,73,80,82	33
20	DMU	C	323	33/33	0.87	0.17	39,53,79,89	33
19	LFA	T	101	14/20	0.87	0.28	48,52,63,70	14
18	CDL	P	305	87/100	0.87	0.20	43,91,141,183	0
18	CDL	A	606	64/100	0.87	0.18	50,87,120,147	0
18	CDL	C	304	87/100	0.87	0.19	43,83,122,135	0
20	DMU	P	324	33/33	0.87	0.19	45,57,95,99	33
19	LFA	C	307	11/20	0.88	0.31	43,54,65,69	11
20	DMU	T	104	22/33	0.88	0.24	42,56,68,68	22
19	LFA	O	301	17/20	0.88	0.27	44,61,76,80	17
20	DMU	N	615	33/33	0.88	0.23	36,50,68,73	33
18	CDL	Y	101	94/100	0.88	0.17	53,91,141,152	0
20	DMU	A	609	33/33	0.88	0.20	39,54,62,68	33
20	DMU	A	614	11/33	0.88	0.34	52,65,68,70	11
20	DMU	B	302	11/33	0.88	0.29	48,57,66,80	11
21	EDO	N	610	4/4	0.88	0.22	37,39,50,51	4
20	DMU	B	304	22/33	0.88	0.22	47,70,80,89	22
20	DMU	H	101	33/33	0.88	0.22	37,49,57,70	33
19	LFA	P	310	18/20	0.88	0.24	35,53,61,64	18
19	LFA	B	307	17/20	0.89	0.28	43,63,75,79	17
19	LFA	C	309	18/20	0.89	0.23	32,47,62,63	18
19	LFA	A	607	14/20	0.89	0.27	38,50,70,75	14
19	LFA	P	314	15/20	0.89	0.21	44,52,66,69	15
20	DMU	G	104	22/33	0.90	0.27	44,59,68,73	22
19	LFA	N	606	14/20	0.90	0.25	36,49,67,68	14
20	DMU	J	101	11/33	0.90	0.35	65,71,82,92	11
21	EDO	A	610	4/4	0.90	0.17	27,31,32,35	4
20	DMU	Z	102	8/33	0.91	0.29	54,58,60,61	8
21	EDO	F	101	4/4	0.91	0.18	46,47,48,55	4
21	EDO	N	609	4/4	0.91	0.15	30,31,33,35	4
20	DMU	D	201	33/33	0.91	0.18	31,50,60,73	33
21	EDO	P	321	4/4	0.91	0.20	51,52,60,75	4
20	DMU	O	305	11/33	0.91	0.29	47,52,67,73	11
18	CDL	L	101	94/100	0.91	0.16	45,86,134,154	0
20	DMU	B	303	11/33	0.91	0.25	46,62,69,76	11
20	DMU	O	307	22/33	0.92	0.18	40,52,61,63	22
20	DMU	P	307	11/33	0.92	0.28	50,56,60,62	11
20	DMU	L	102	22/33	0.92	0.32	51,62,75,79	22
21	EDO	S	102	4/4	0.92	0.11	22,23,30,31	4
21	EDO	F	103	4/4	0.92	0.15	23,23,31,31	4
20	DMU	Z	101	33/33	0.92	0.11	50,58,83,86	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
20	DMU	C	306	11/33	0.93	0.24	56,60,68,71	11
21	EDO	N	613	4/4	0.93	0.23	34,34,34,37	4
21	EDO	R	203	4/4	0.93	0.20	45,47,57,59	4
20	DMU	O	306	11/33	0.95	0.25	51,57,63,63	11
20	DMU	M	101	33/33	0.95	0.09	43,53,69,78	0
21	EDO	E	202	4/4	0.95	0.15	37,37,38,38	4
21	EDO	E	203	4/4	0.95	0.17	38,40,47,47	4
21	EDO	C	321	4/4	0.95	0.15	37,37,40,41	4
27	PEK	T	102	53/53	0.95	0.13	37,57,103,130	0
21	EDO	R	201	4/4	0.96	0.29	67,69,70,70	4
21	EDO	N	612	4/4	0.96	0.12	36,38,39,42	4
21	EDO	A	612	4/4	0.96	0.18	28,28,29,29	4
24	CHD	C	301	29/29	0.96	0.08	34,38,42,46	0
21	EDO	O	308	4/4	0.96	0.10	33,34,34,36	4
21	EDO	G	105	4/4	0.96	0.12	33,36,37,41	4
27	PEK	G	101	53/53	0.96	0.12	35,55,109,130	0
21	EDO	N	611	4/4	0.96	0.18	29,31,32,33	4
22	PGV	N	614	51/51	0.97	0.09	32,42,74,85	0
24	CHD	B	306	29/29	0.97	0.07	31,35,40,47	0
21	EDO	P	322	4/4	0.97	0.15	37,40,41,42	4
21	EDO	R	202	4/4	0.97	0.11	38,40,41,41	4
24	CHD	P	302	29/29	0.97	0.07	34,38,43,47	0
21	EDO	S	103	4/4	0.97	0.11	33,36,37,41	4
25	UNX	P	303	1/1	0.97	0.24	44,44,44,44	0
21	EDO	T	105	4/4	0.97	0.09	34,37,38,40	4
22	PGV	C	303	51/51	0.97	0.10	32,41,104,118	0
24	CHD	G	102	29/29	0.98	0.06	31,35,39,46	0
21	EDO	F	104	4/4	0.98	0.07	33,36,36,39	4
22	PGV	P	304	51/51	0.98	0.09	32,42,91,112	0
25	UNX	C	302	1/1	0.98	0.17	44,44,44,44	0
17	NA	A	605	1/1	0.98	0.11	37,37,37,37	0
22	PGV	A	613	51/51	0.98	0.09	31,41,79,89	0
21	EDO	B	305	4/4	0.98	0.08	28,31,31,33	4
16	MG	N	604	1/1	0.99	0.03	35,35,35,35	0
14	HEA	A	601	60/60	0.99	0.06	28,30,44,52	0
17	NA	N	605	1/1	0.99	0.08	43,43,43,43	0
14	HEA	A	602	60/60	0.99	0.05	27,31,37,43	0
14	HEA	N	601	60/60	0.99	0.06	30,33,47,51	0
14	HEA	N	602	60/60	0.99	0.05	30,32,38,43	0
16	MG	A	604	1/1	1.00	0.03	32,32,32,32	0
15	CU	A	603	1/1	1.00	0.02	30,30,30,30	0
15	CU	N	603	1/1	1.00	0.01	32,32,32,32	0

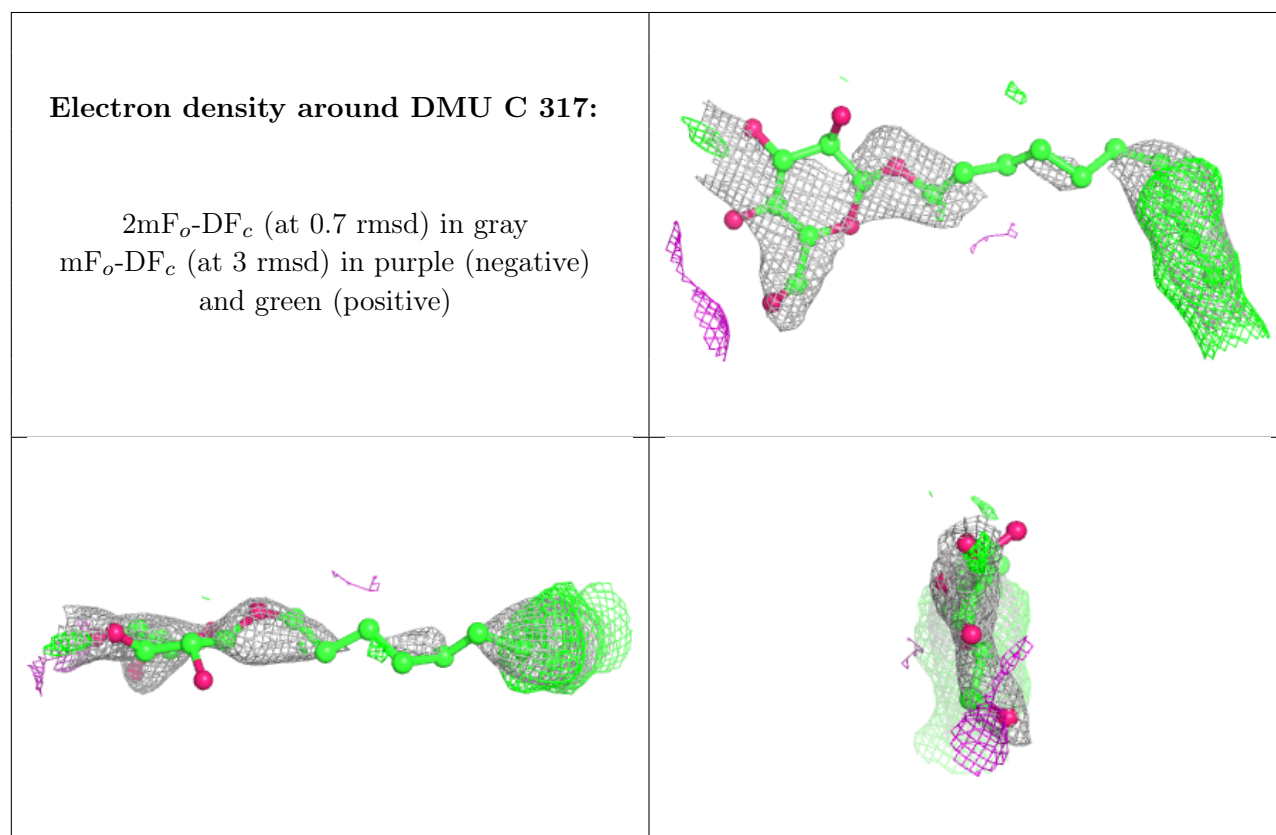
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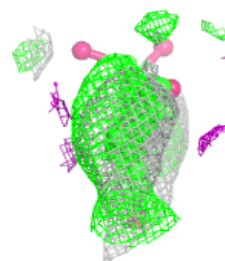
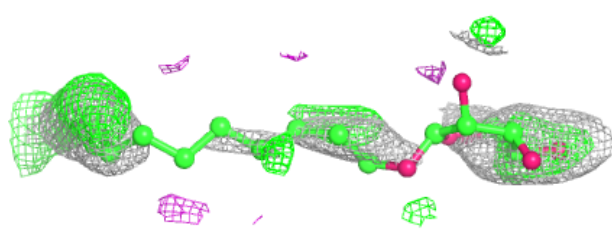
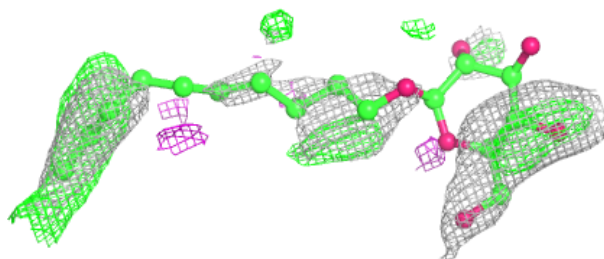
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
26	ZN	F	102	1/1	1.00	0.01	37,37,37,37	0
26	ZN	S	101	1/1	1.00	0.02	37,37,37,37	0
23	CUA	B	301	2/2	1.00	0.02	32,32,32,32	0
23	CUA	O	304	2/2	1.00	0.02	35,35,35,35	0

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.

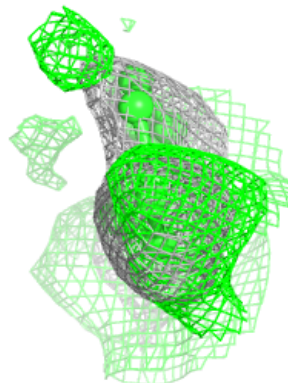
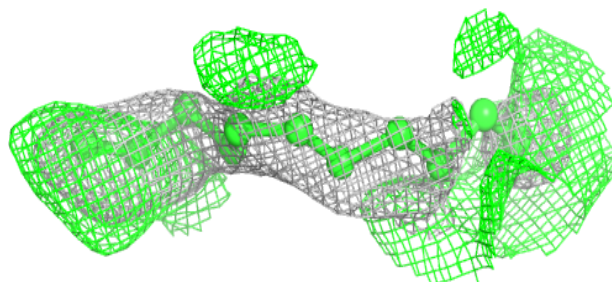
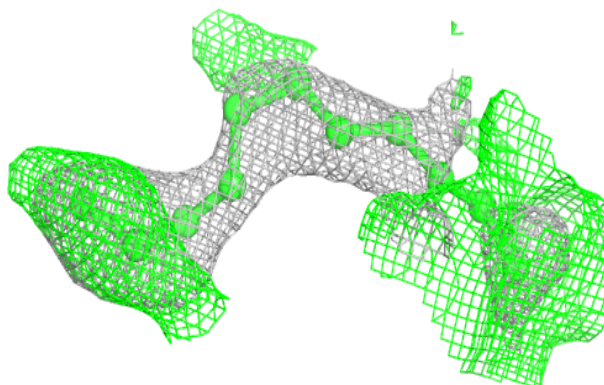


**Electron density around DMU P 318:**

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

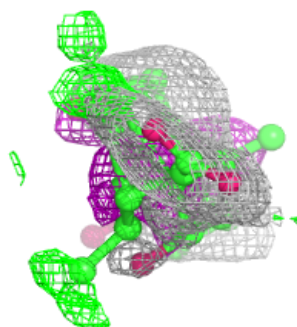
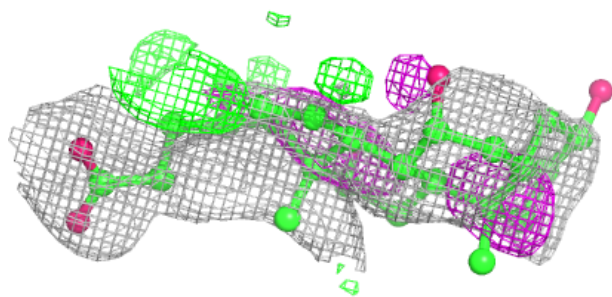
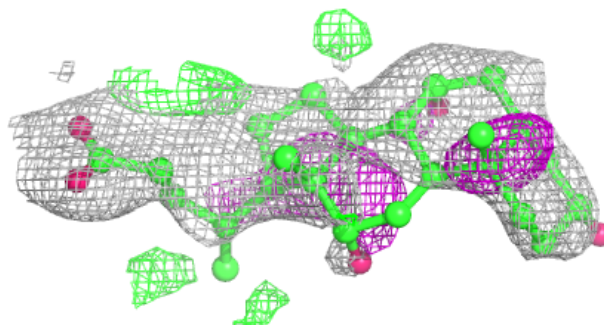
**Electron density around LFA P 311:**

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

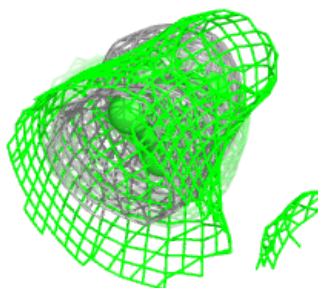
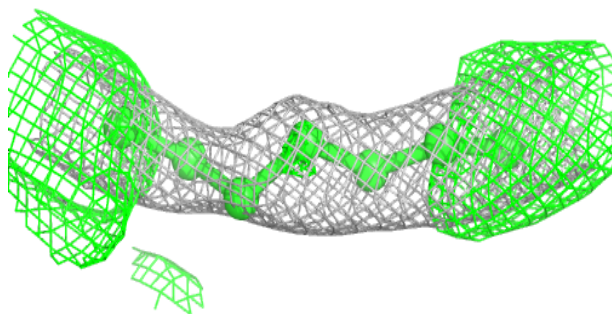
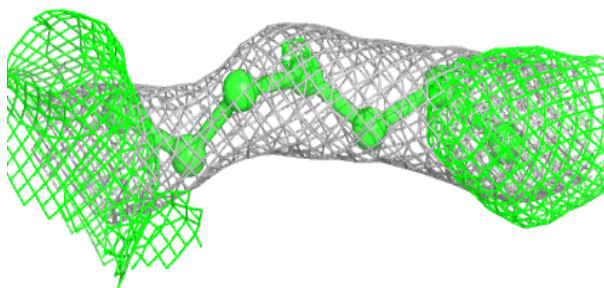


**Electron density around CHD P 306:**

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

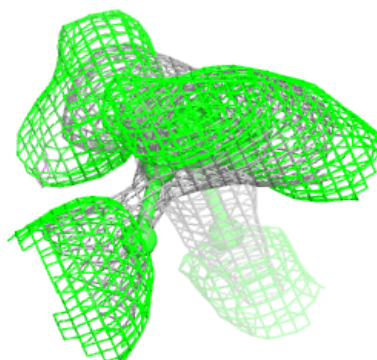
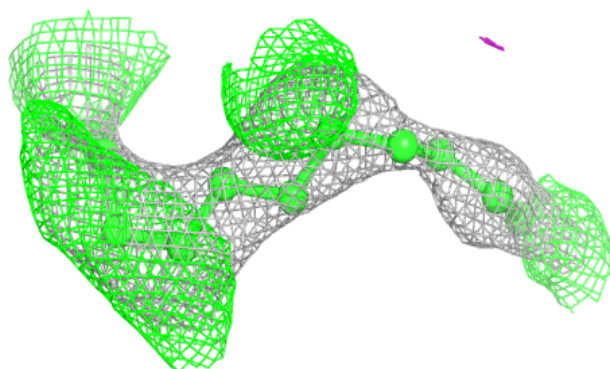
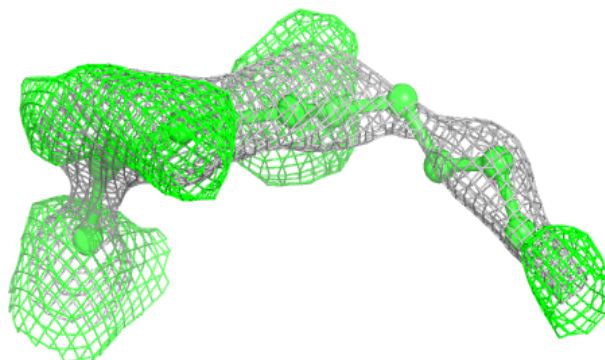
**Electron density around DMU A 608:**

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

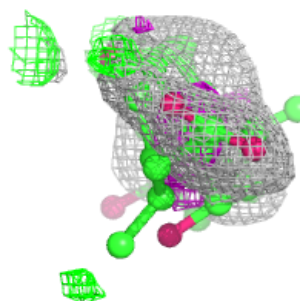
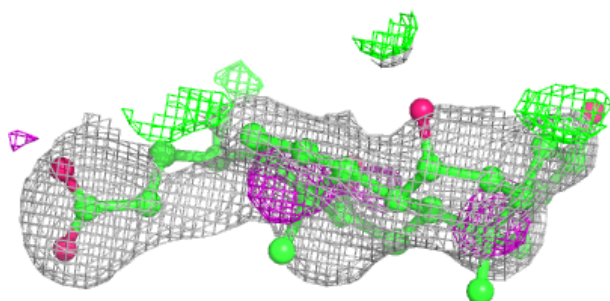
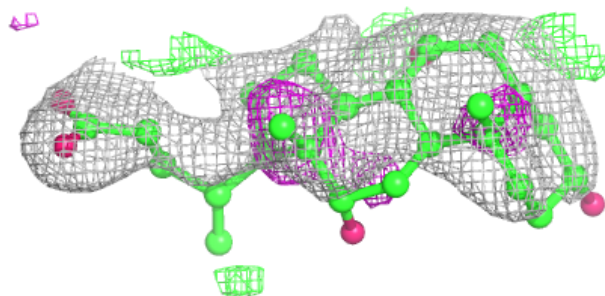


**Electron density around LFA P 308:**

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

**Electron density around CHD C 305:**

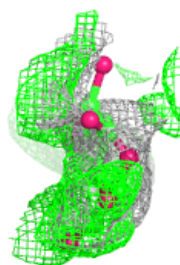
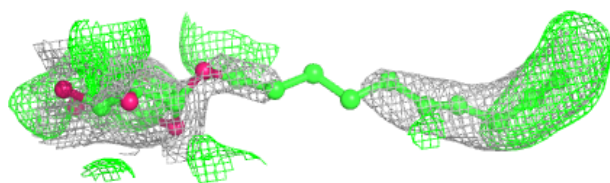
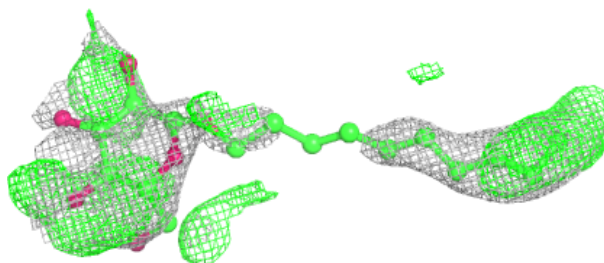
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



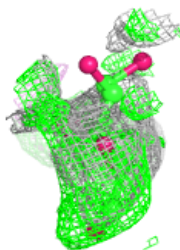
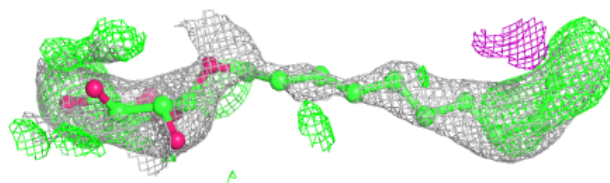
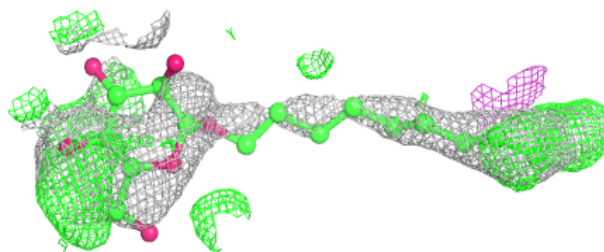


**Electron density around DMU B 308:**

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

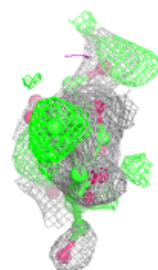
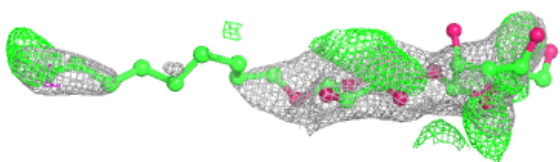
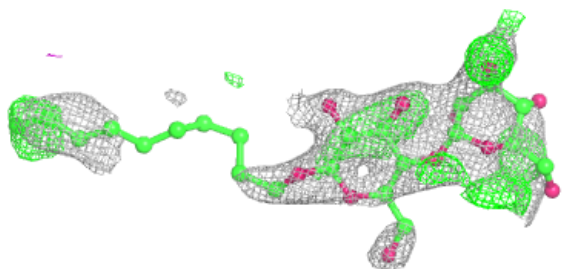
**Electron density around DMU O 303:**

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

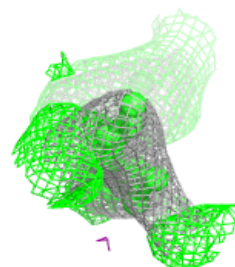
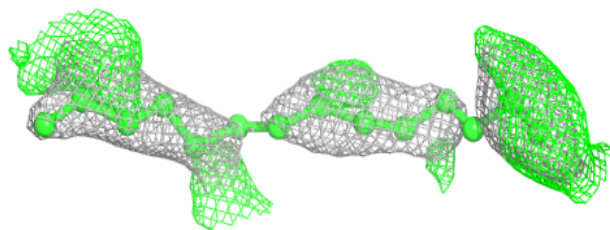
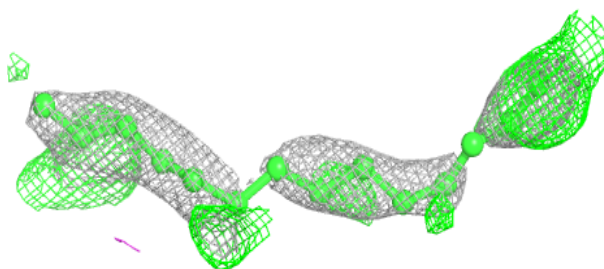


**Electron density around DMU P 320:**

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

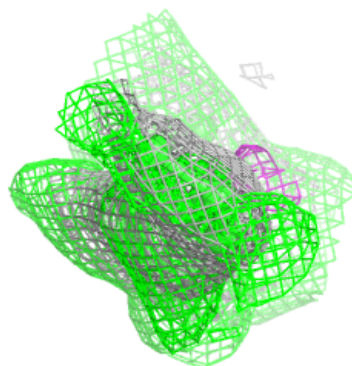
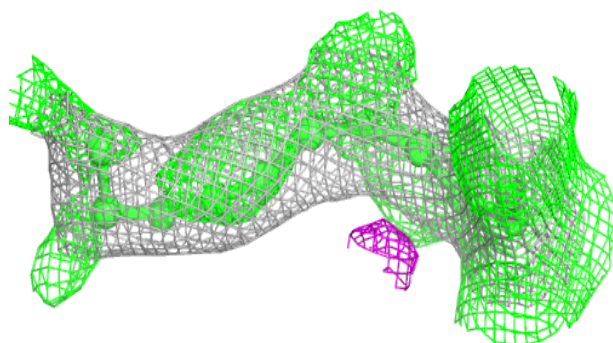
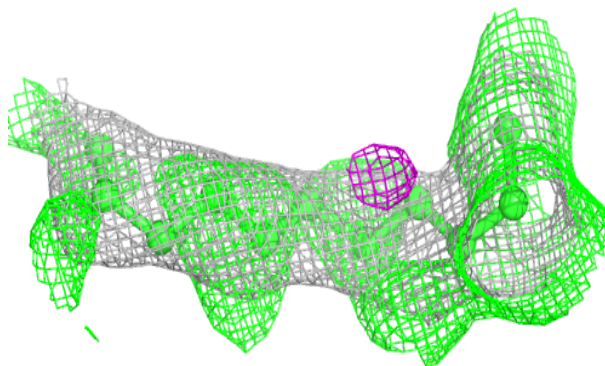
**Electron density around LFA C 311:**

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

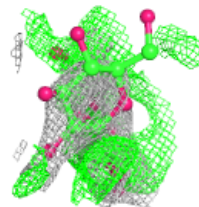
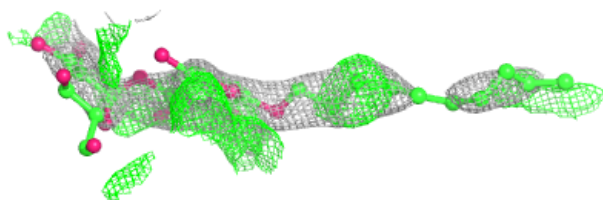
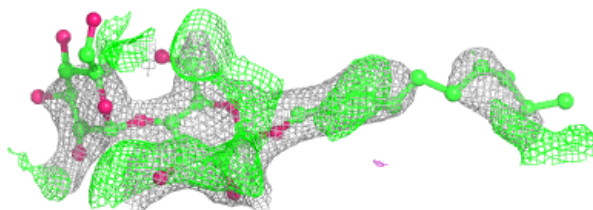


**Electron density around LFA P 313:**

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

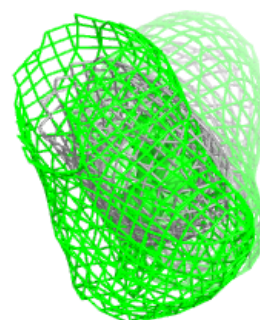
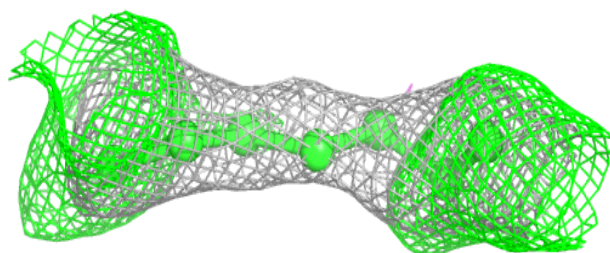
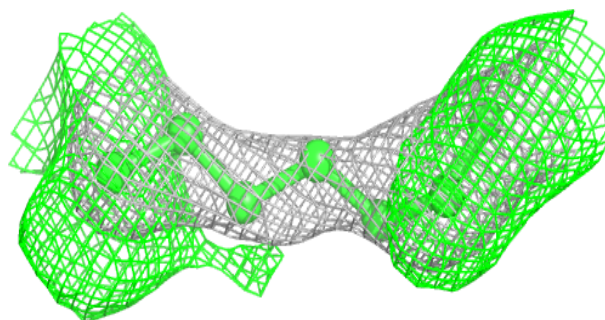
**Electron density around DMU C 315:**

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

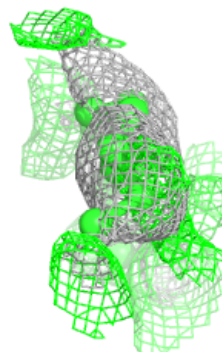
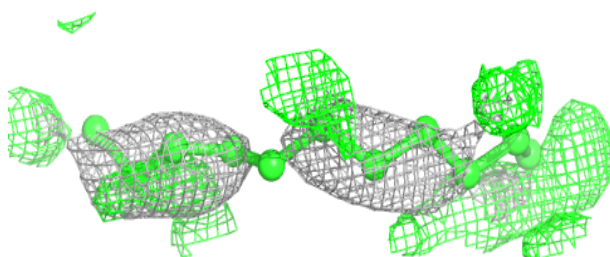
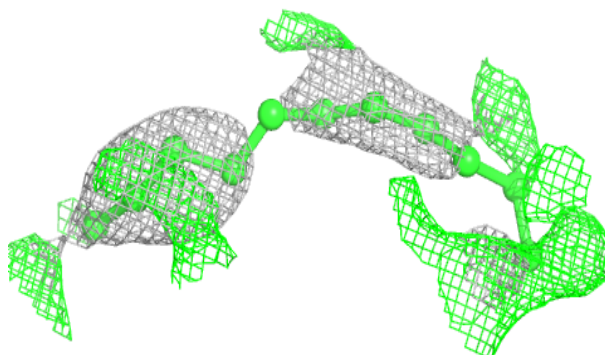


**Electron density around DMU N 607:**

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

**Electron density around LFA C 310:**

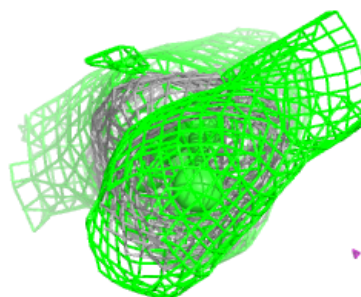
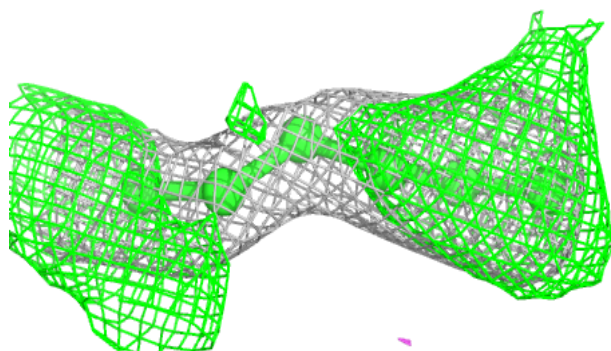
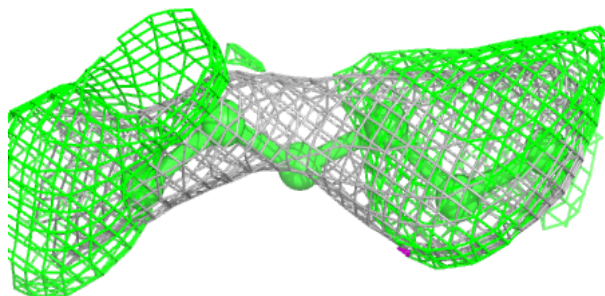
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



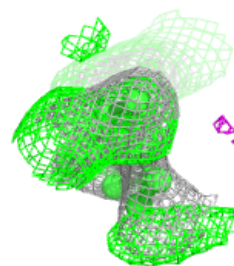
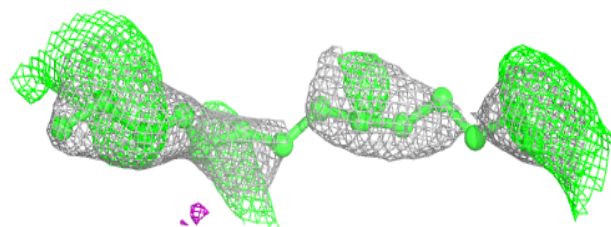
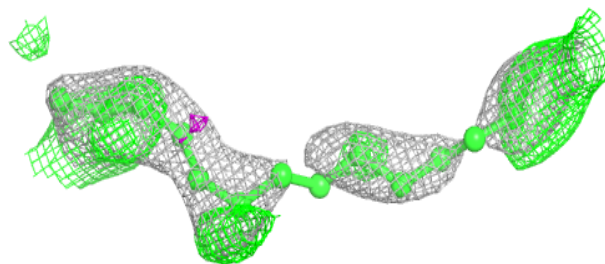


**Electron density around LFA C 308:**

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

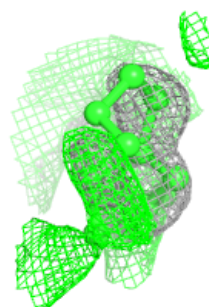
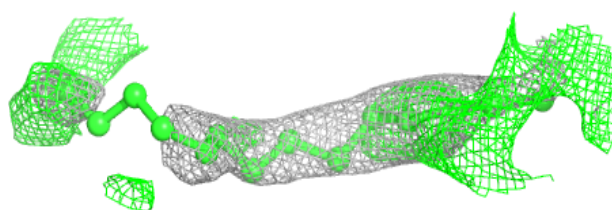
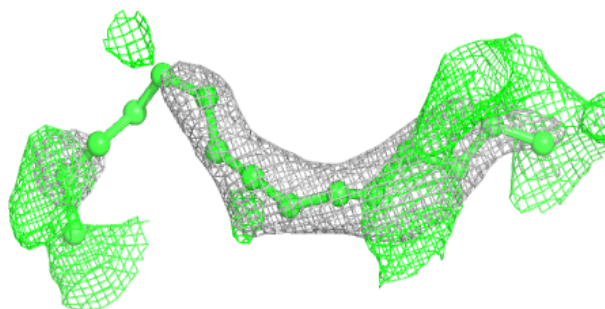
**Electron density around LFA P 312:**

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

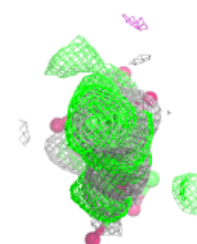
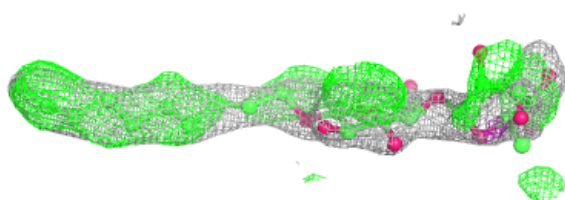
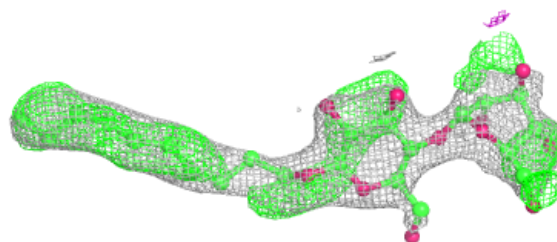


**Electron density around LFA C 324:**

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

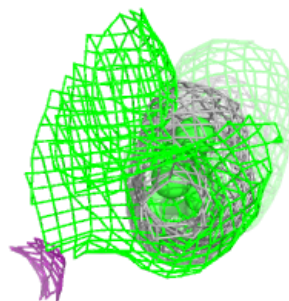
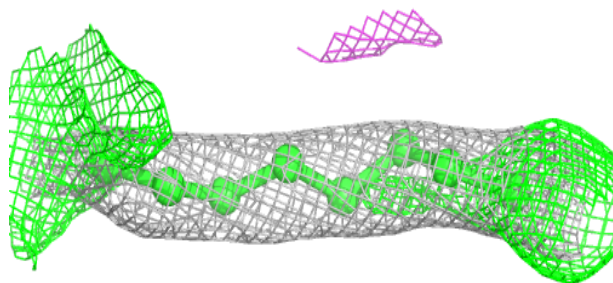
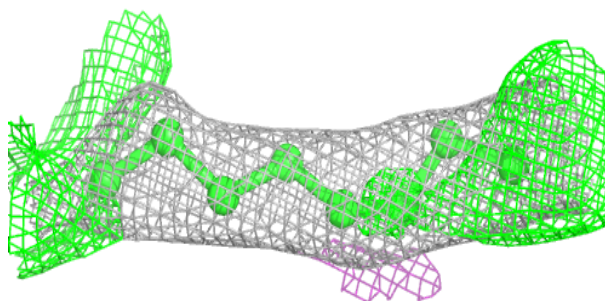
**Electron density around DMU C 318:**

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

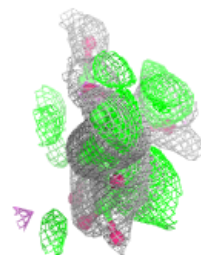
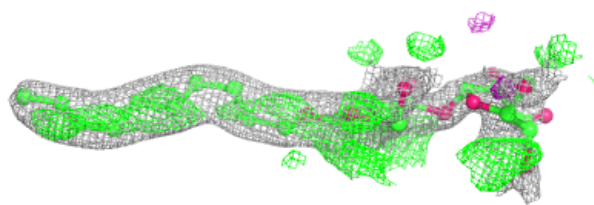
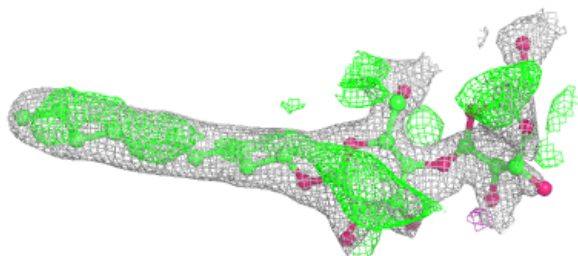


**Electron density around DMU M 102:**

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

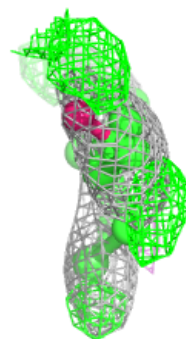
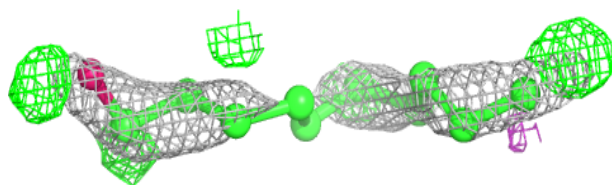
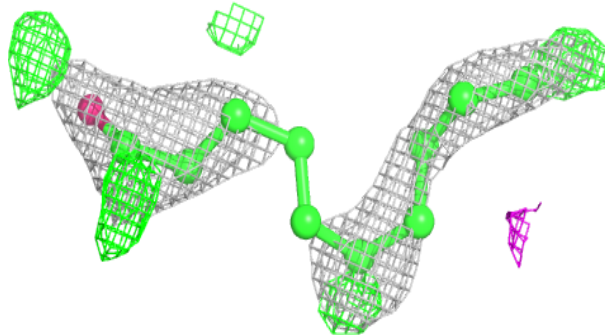
**Electron density around DMU N 608:**

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

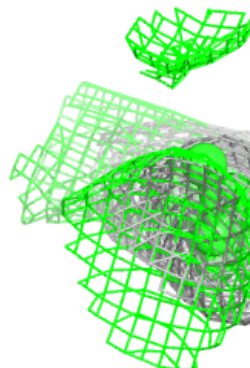
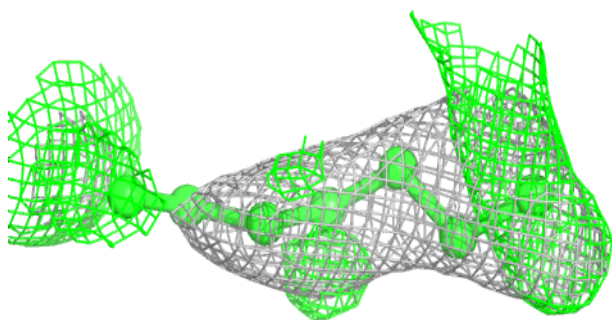
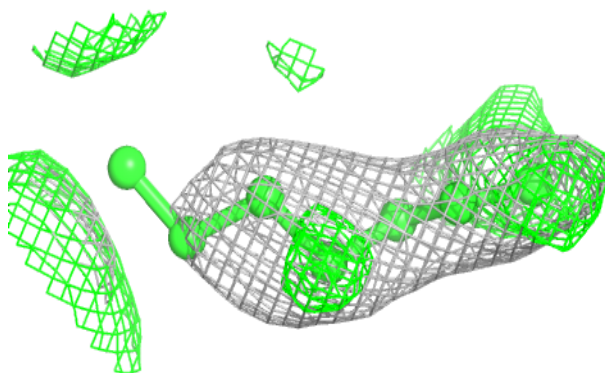


**Electron density around DMU G 103:**

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

**Electron density around DMU P 317:**

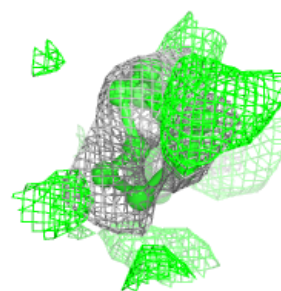
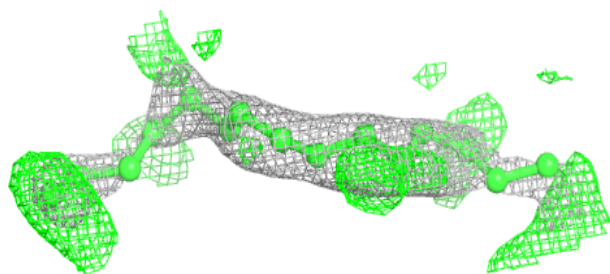
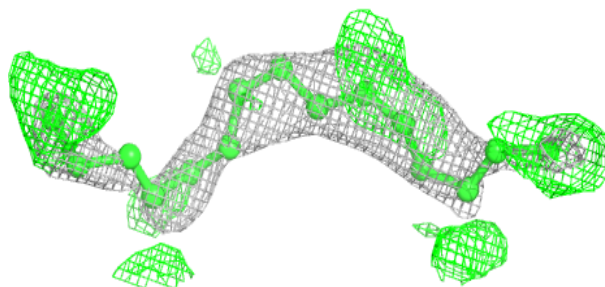
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



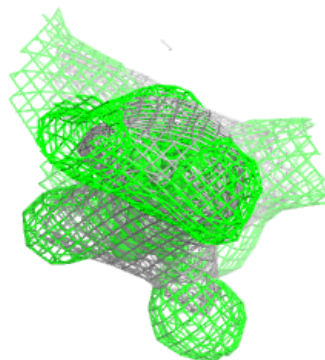
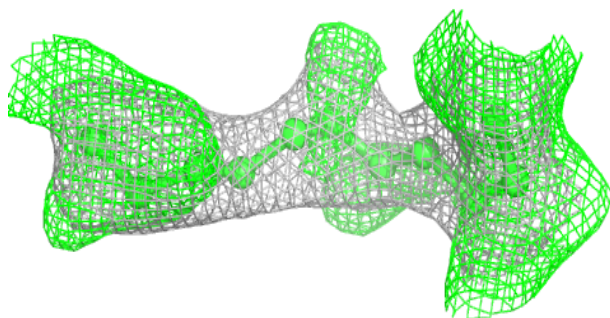
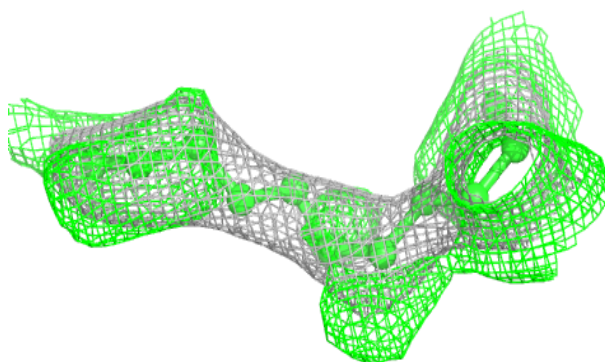


**Electron density around LFA P 301:**

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

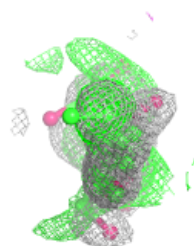
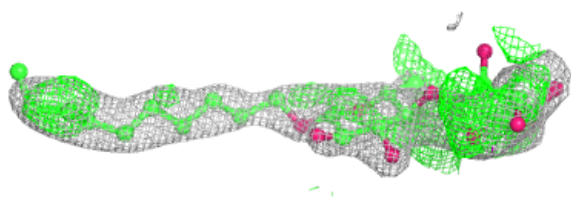
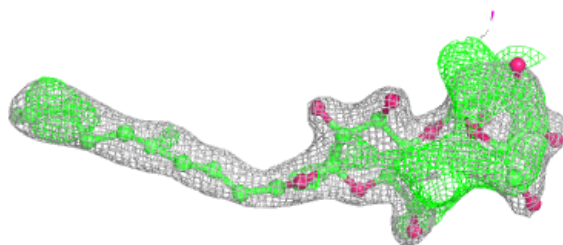
**Electron density around LFA C 312:**

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

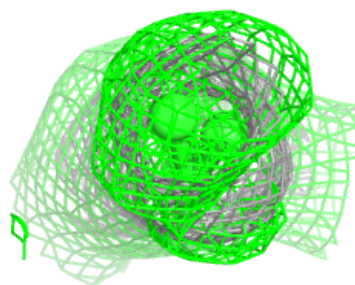
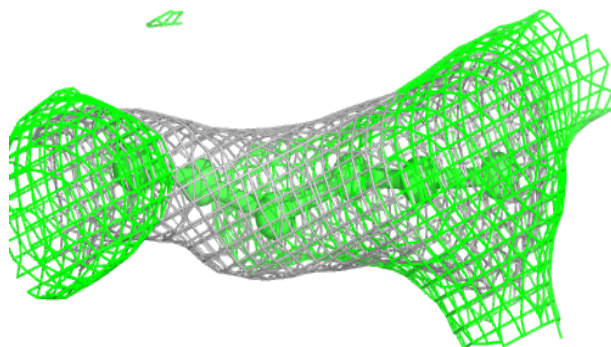
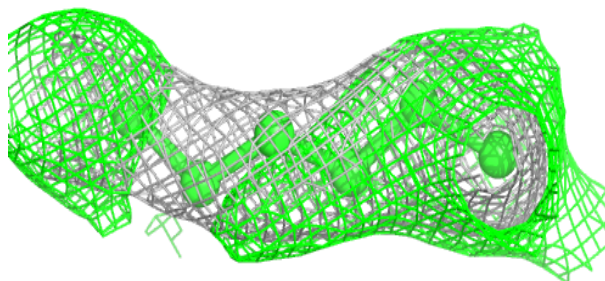


**Electron density around DMU P 319:**

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

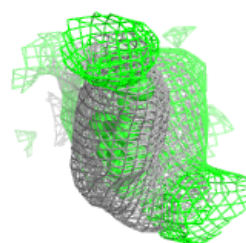
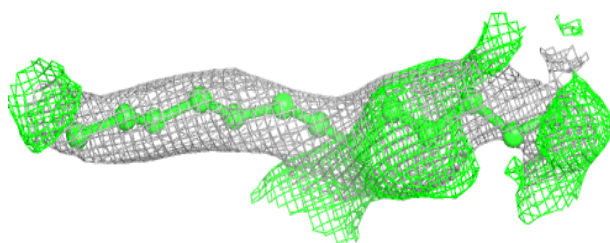
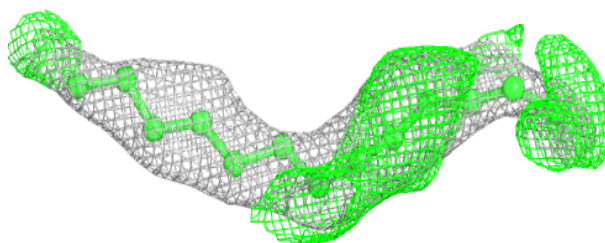
**Electron density around LFA P 309:**

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

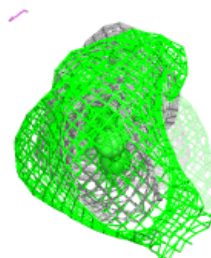
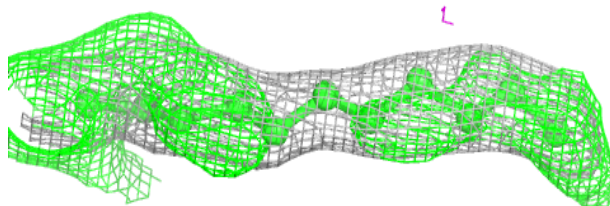
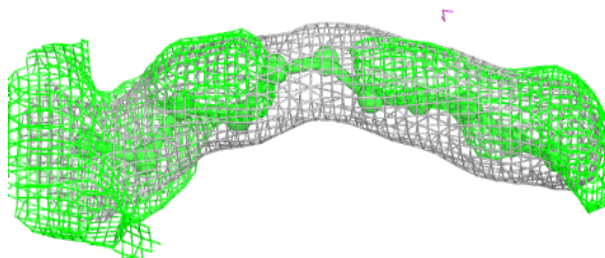


**Electron density around LFA P 315:**

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

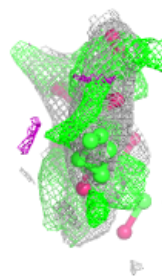
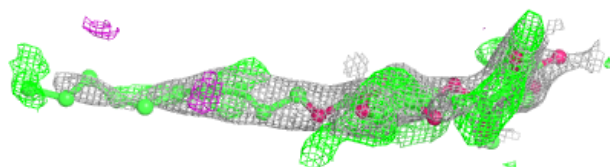
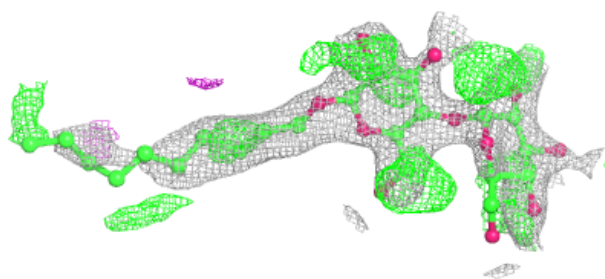
**Electron density around LFA T 103:**

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

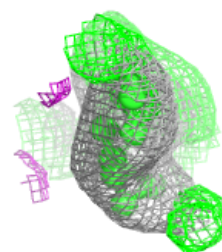
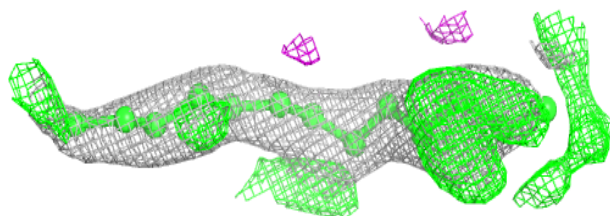
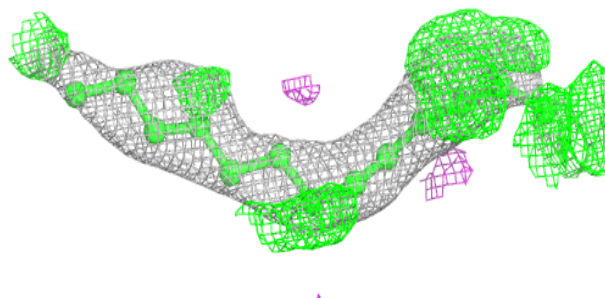


**Electron density around DMU P 316:**

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

**Electron density around LFA C 314:**

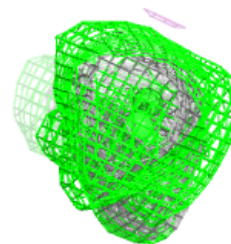
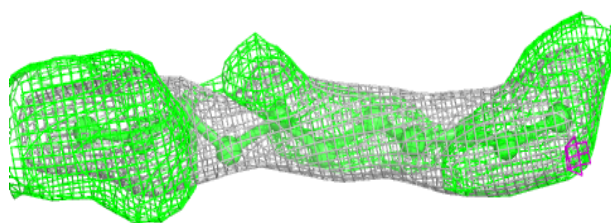
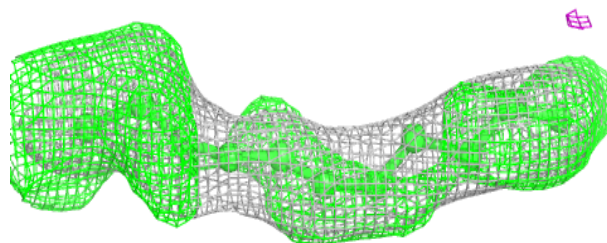
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



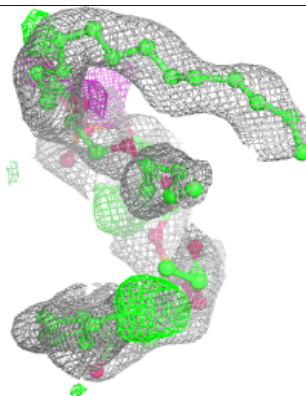
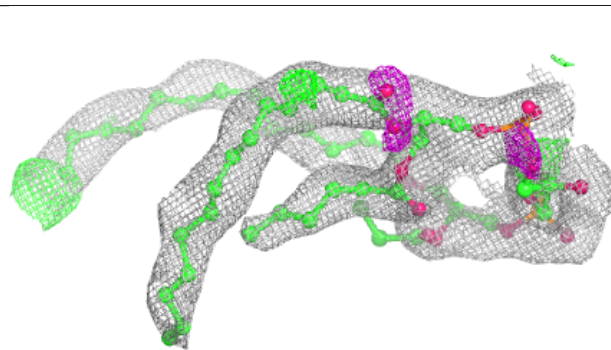
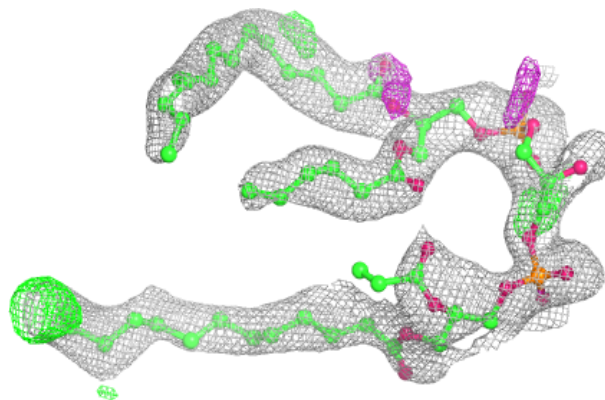


**Electron density around LFA O 302:**

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

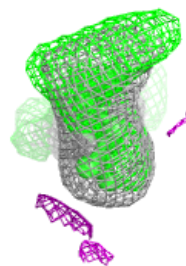
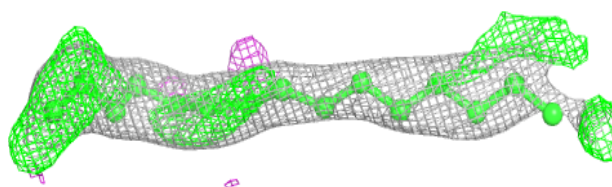
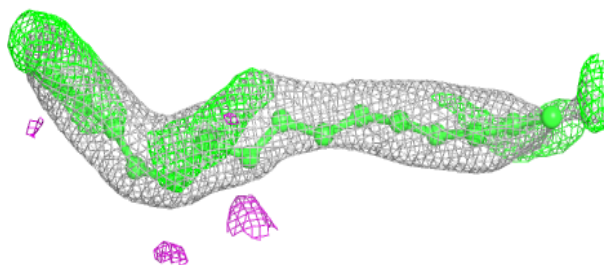
**Electron density around CDL V 101:**

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

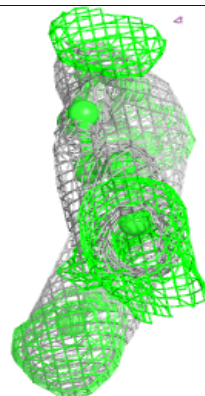
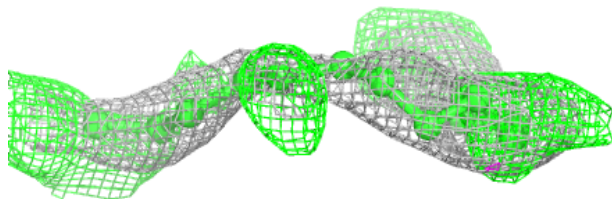
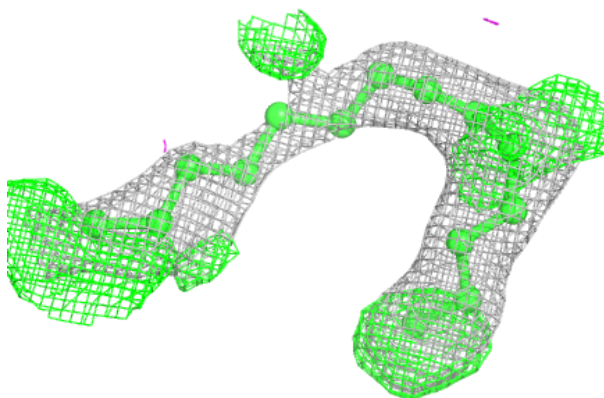


**Electron density around LFA C 313:**

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

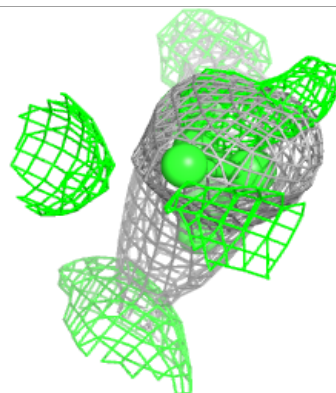
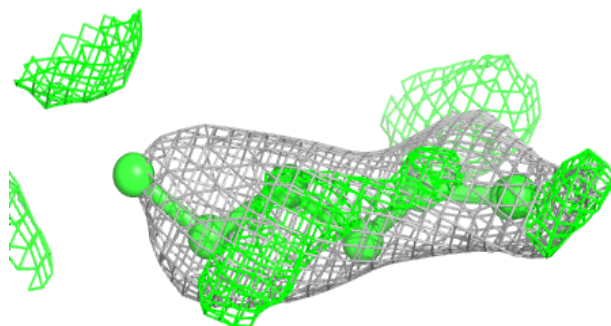
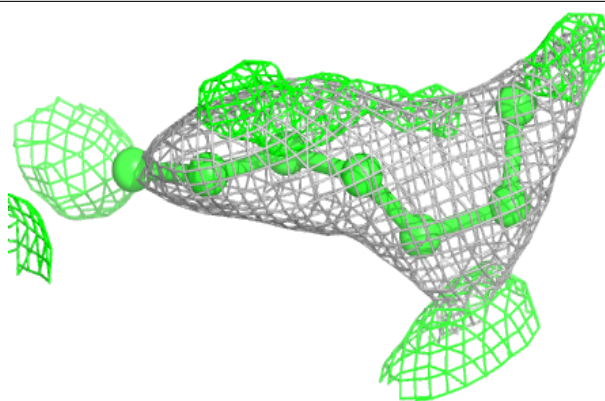
**Electron density around LFA G 106:**

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

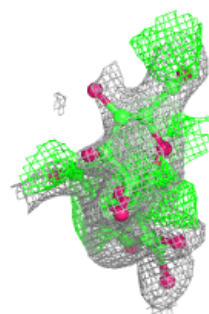
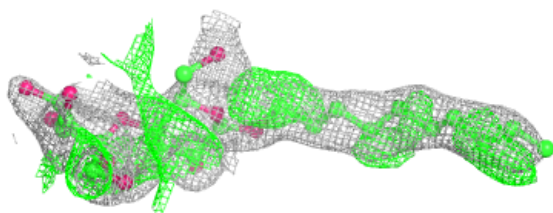
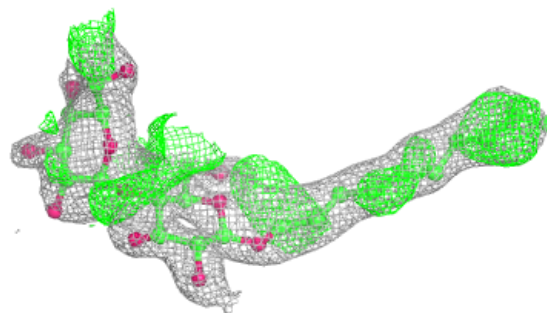


**Electron density around DMU C 316:**

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

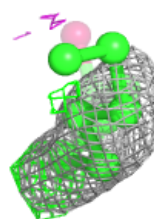
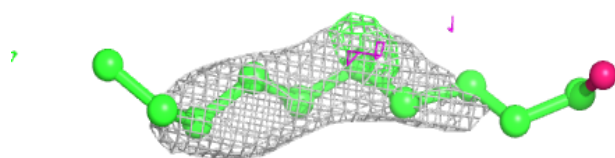
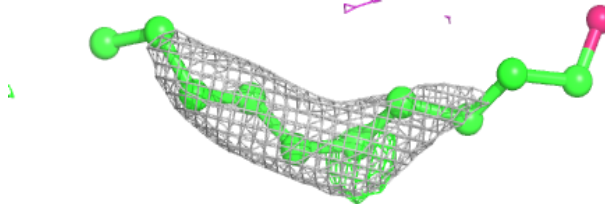
**Electron density around DMU Q 201:**

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

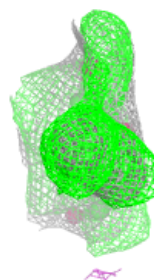
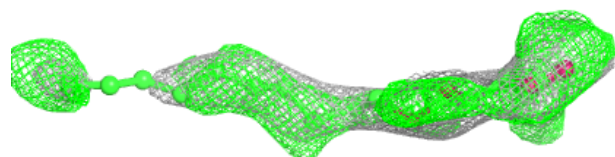
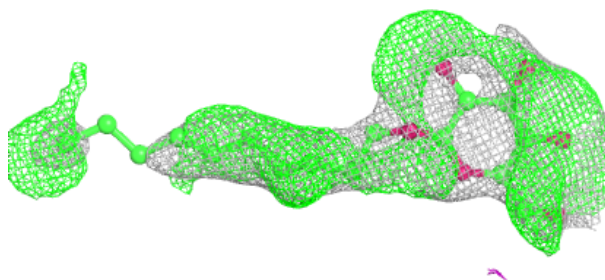


**Electron density around DMU W 101:**

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

**Electron density around DMU Y 102:**

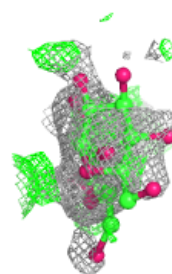
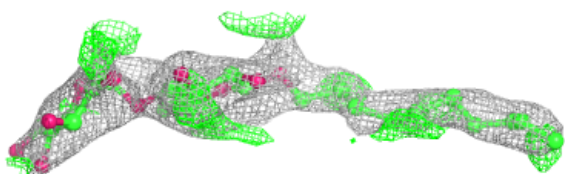
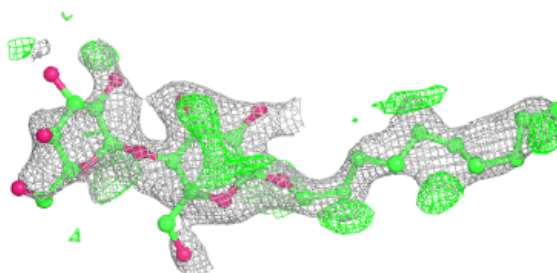
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



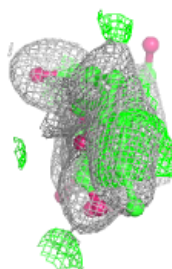
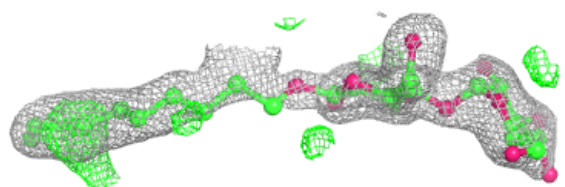
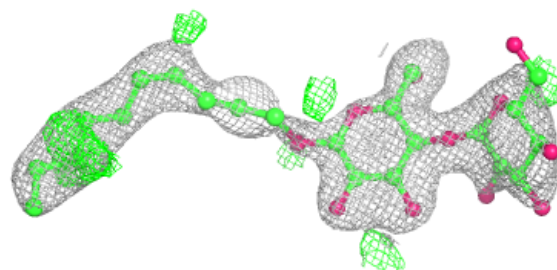


**Electron density around DMU C 319:**

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

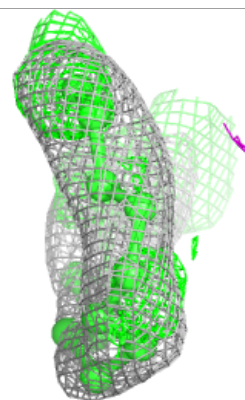
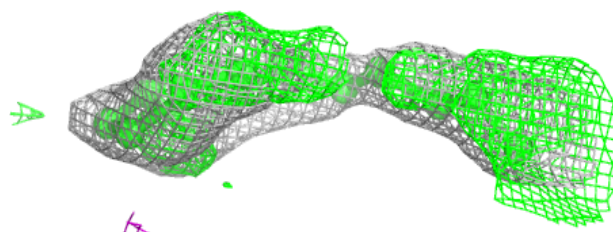
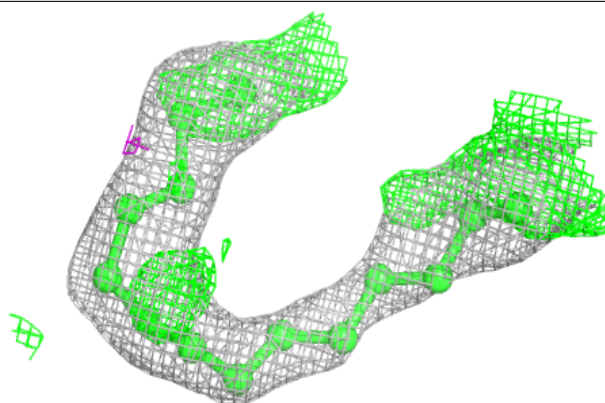
**Electron density around DMU C 323:**

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

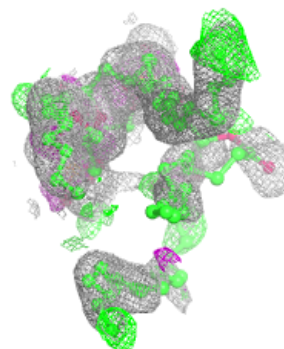
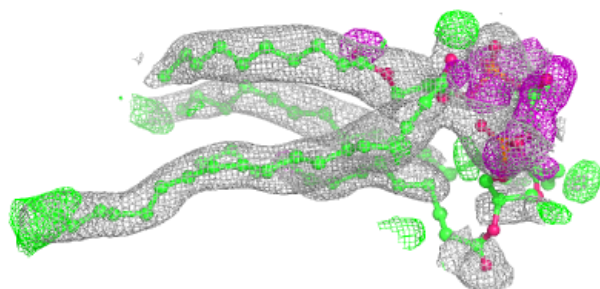
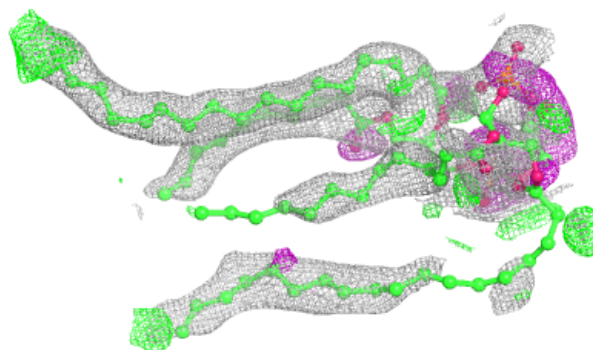


**Electron density around LFA T 101:**

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

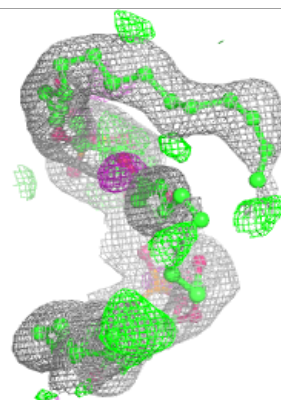
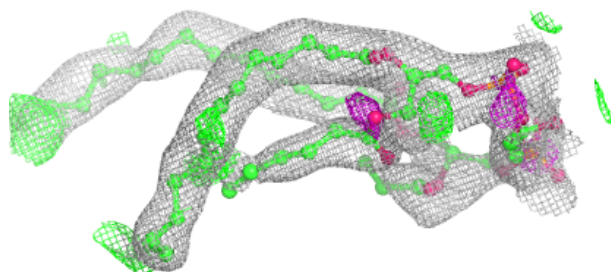
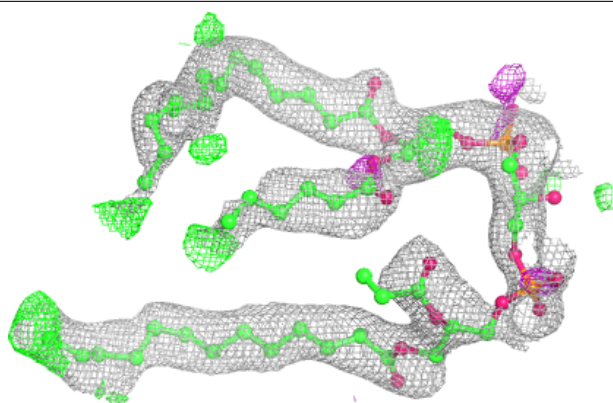
**Electron density around CDL P 305:**

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

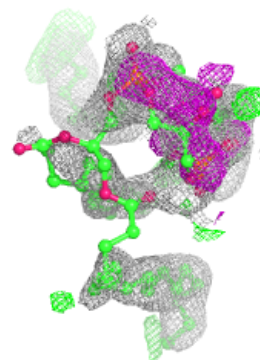
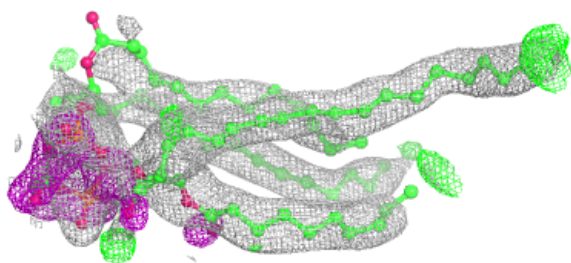
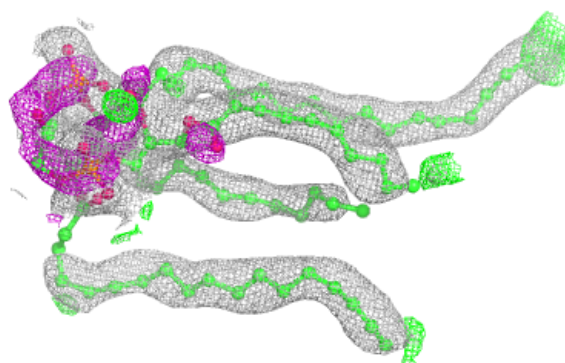


**Electron density around CDL A 606:**

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

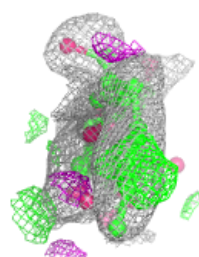
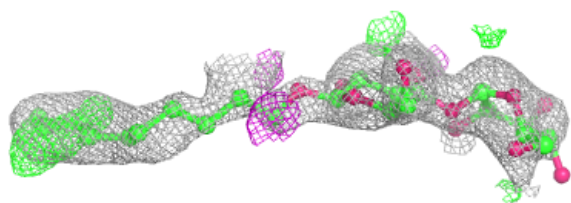
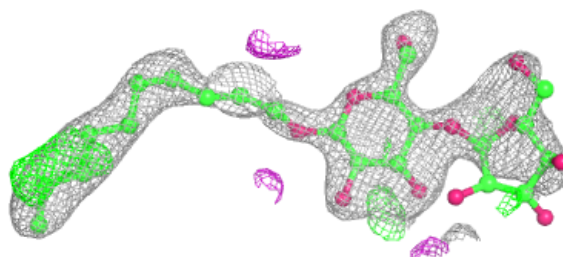
**Electron density around CDL C 304:**

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

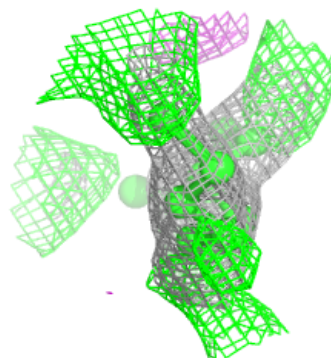
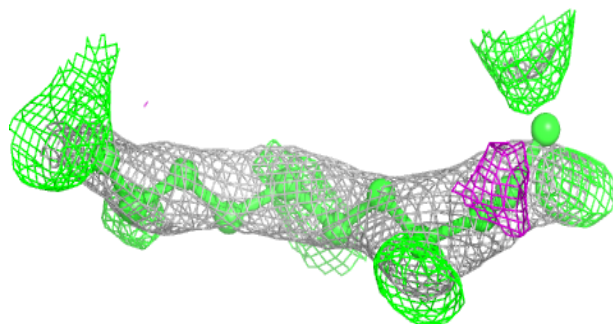
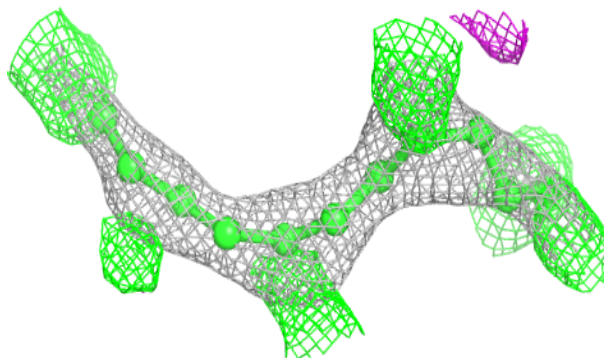


**Electron density around DMU P 324:**

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

**Electron density around LFA C 307:**

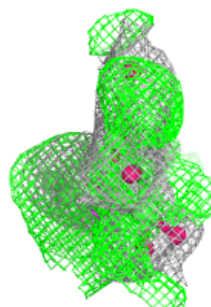
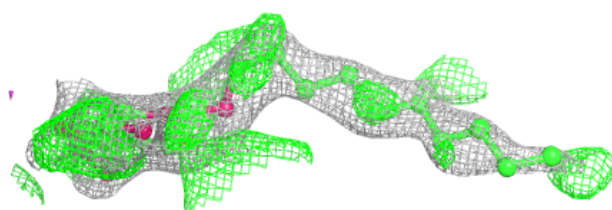
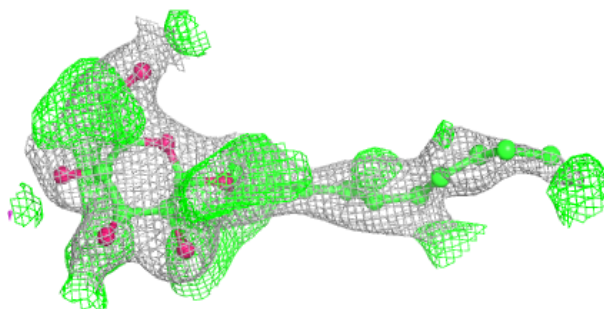
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



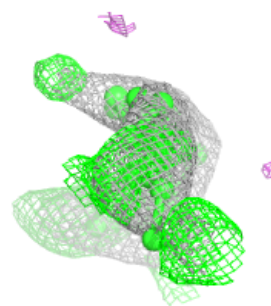
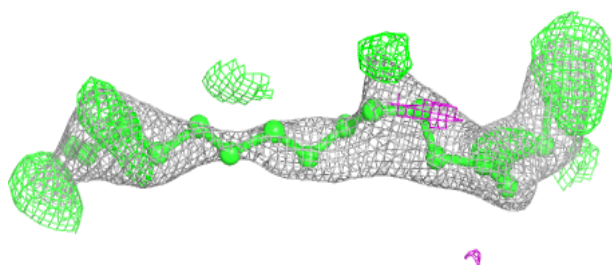
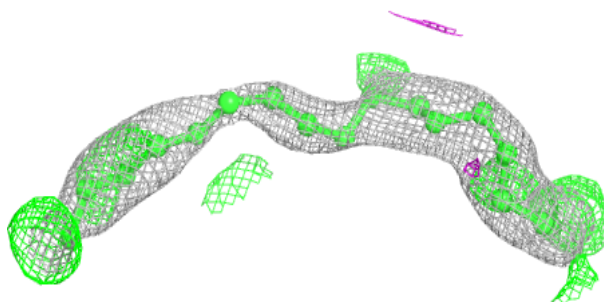


**Electron density around DMU T 104:**

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

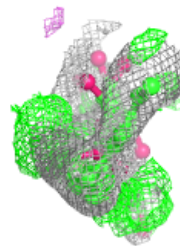
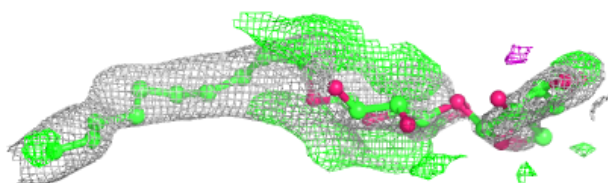
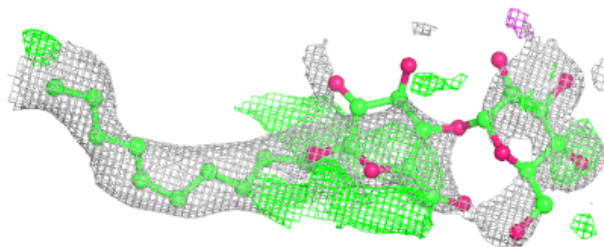
**Electron density around LFA O 301:**

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



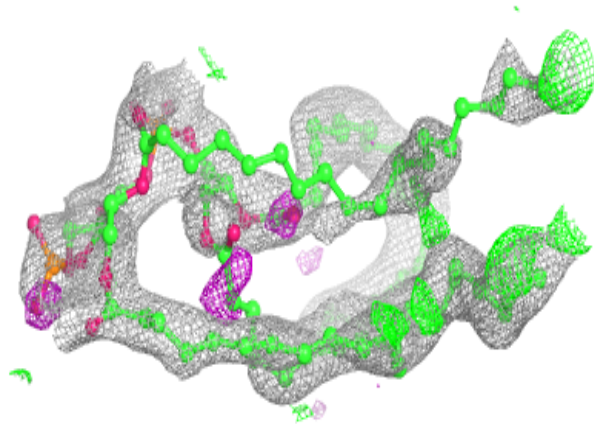
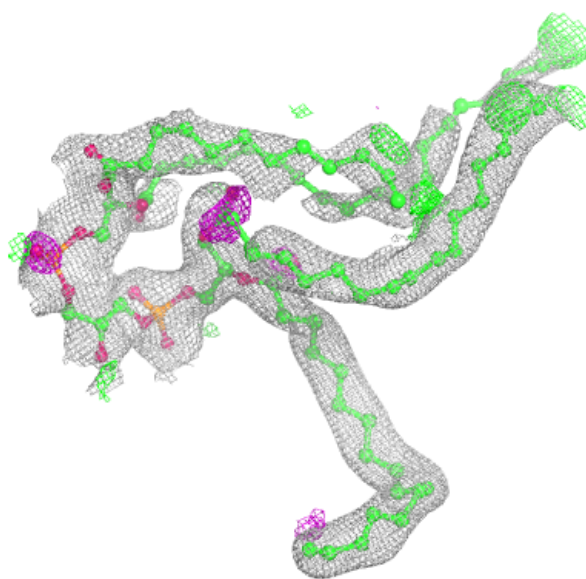
**Electron density around DMU N 615:**

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



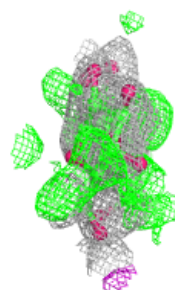
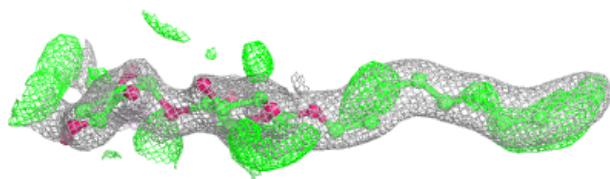
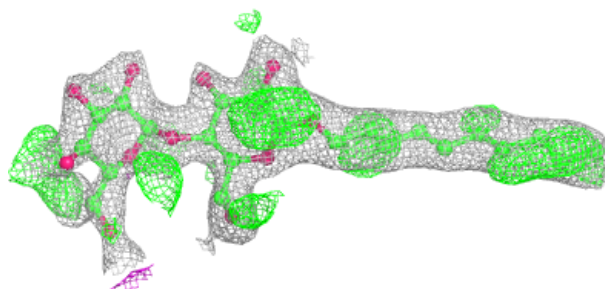
**Electron density around CDL Y 101:**

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

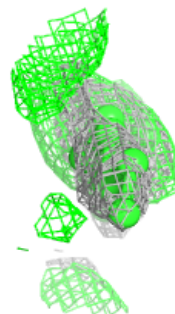
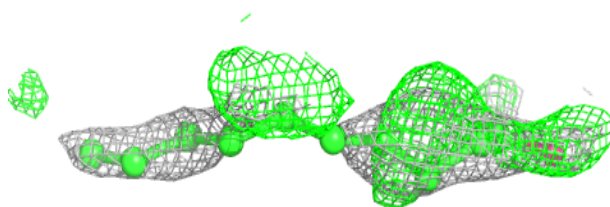
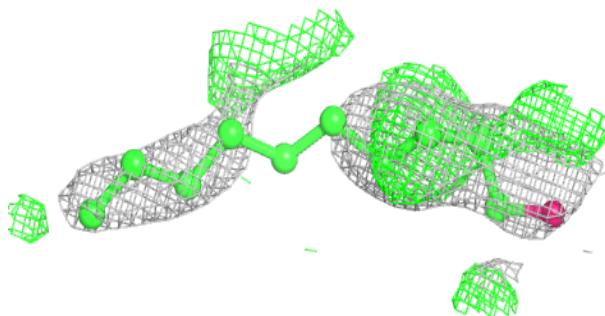


**Electron density around DMU A 609:**

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

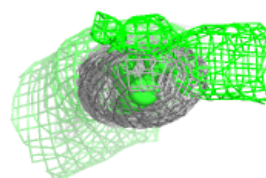
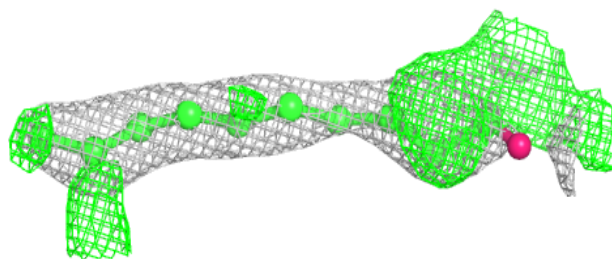
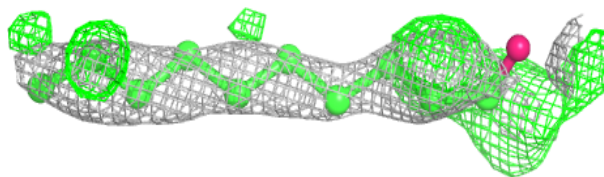
**Electron density around DMU A 614:**

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

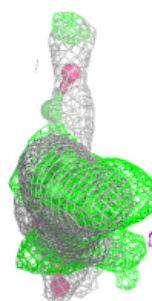
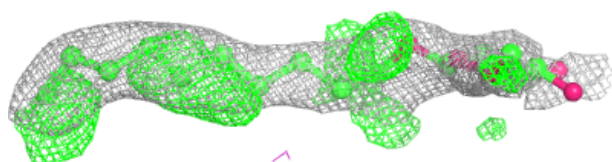
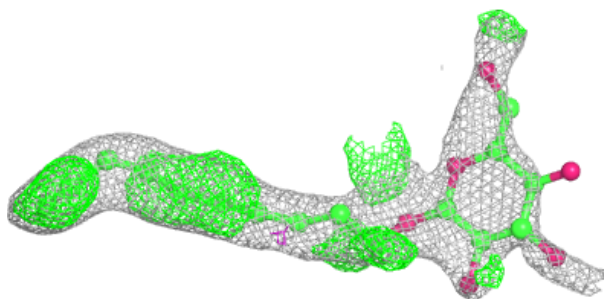


**Electron density around DMU B 302:**

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

**Electron density around DMU B 304:**

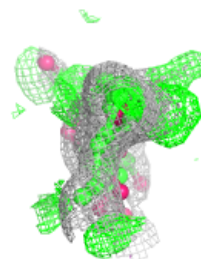
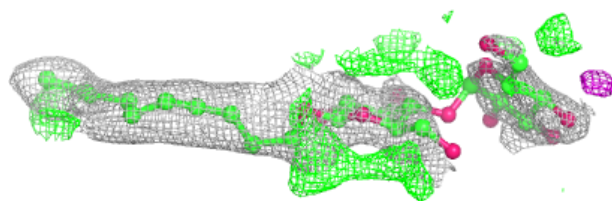
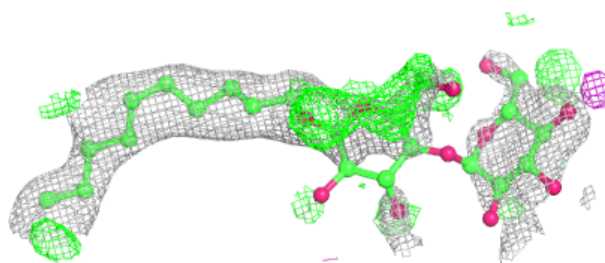
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



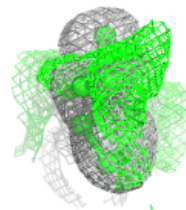
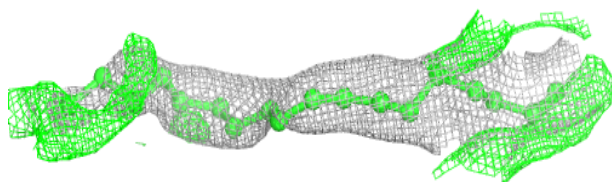
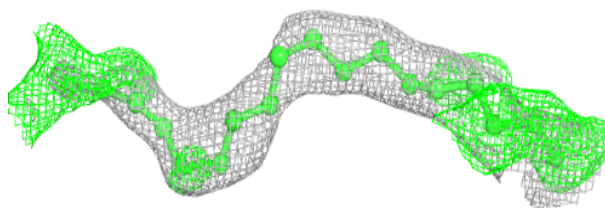


**Electron density around DMU H 101:**

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

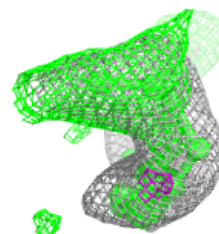
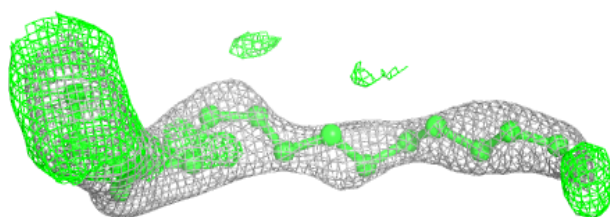
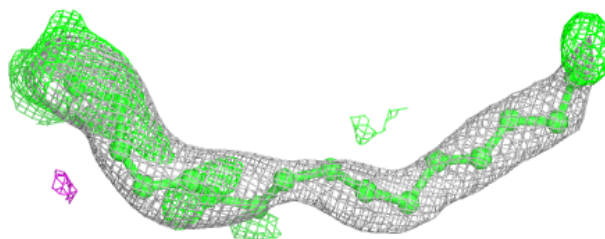
**Electron density around LFA P 310:**

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

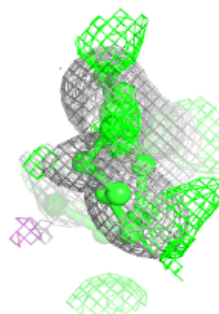
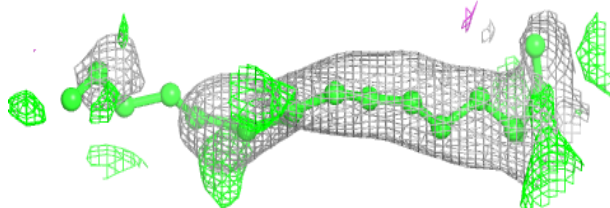
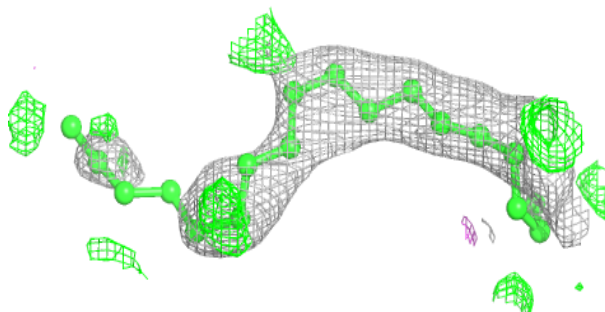


**Electron density around LFA B 307:**

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

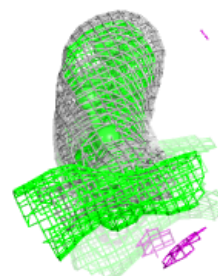
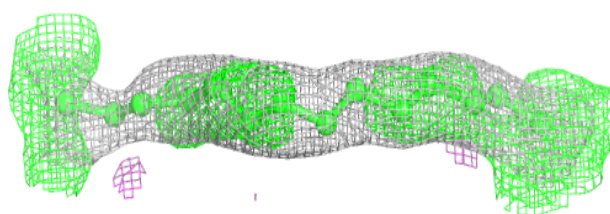
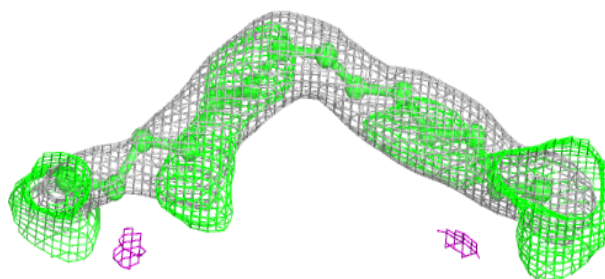
**Electron density around LFA C 309:**

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

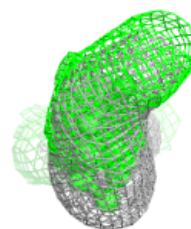
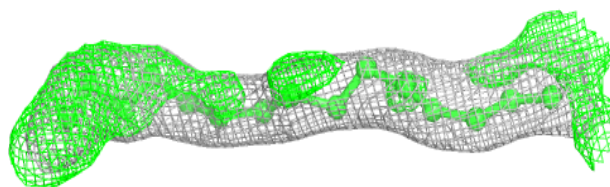
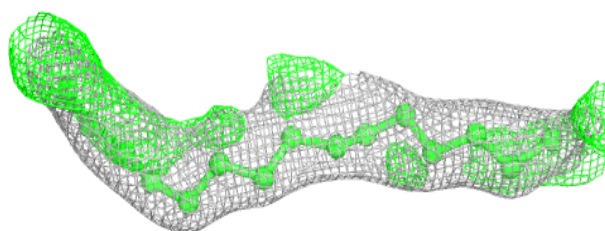


**Electron density around LFA A 607:**

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

**Electron density around LFA P 314:**

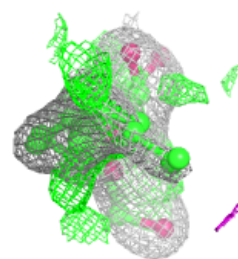
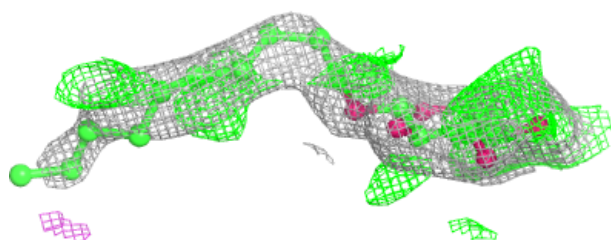
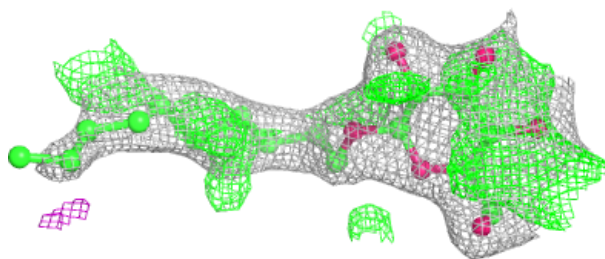
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



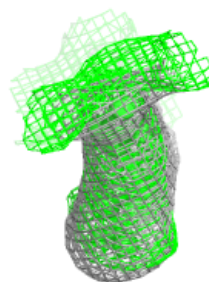
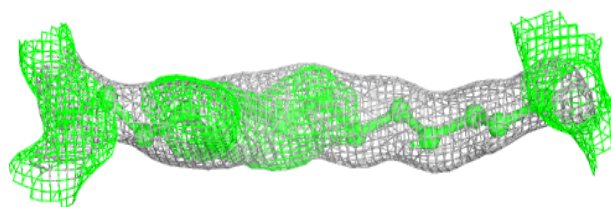
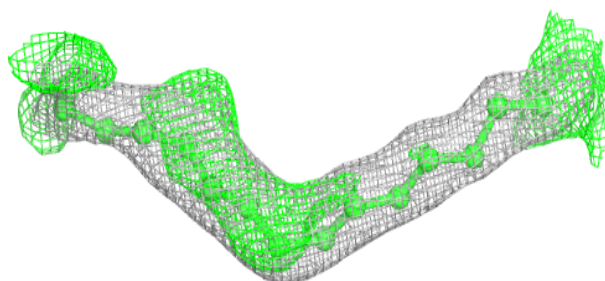


**Electron density around DMU G 104:**

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

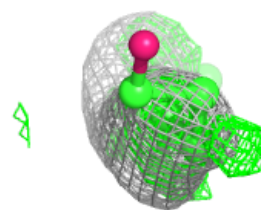
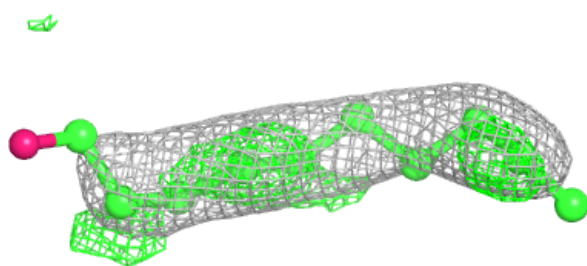
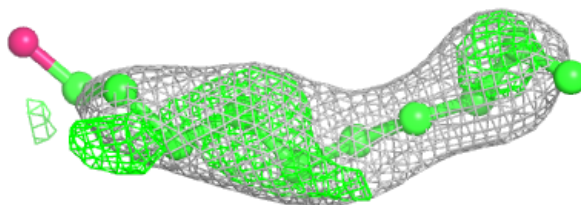
**Electron density around LFA N 606:**

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

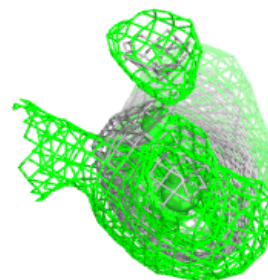
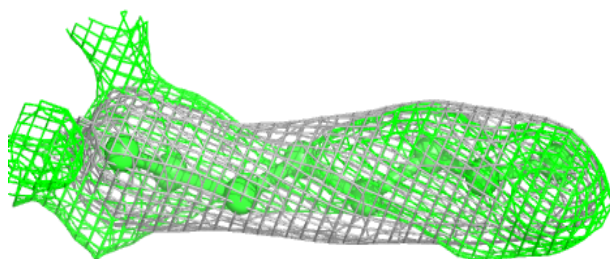
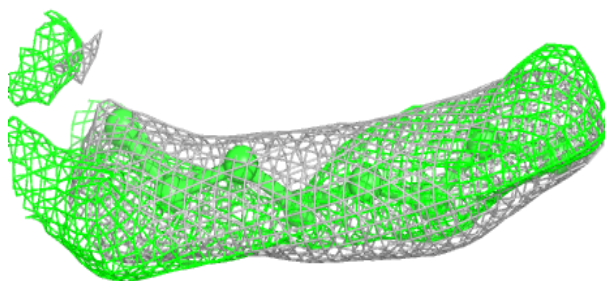


**Electron density around DMU J 101:**

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

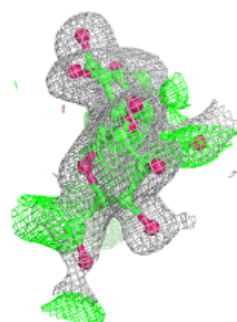
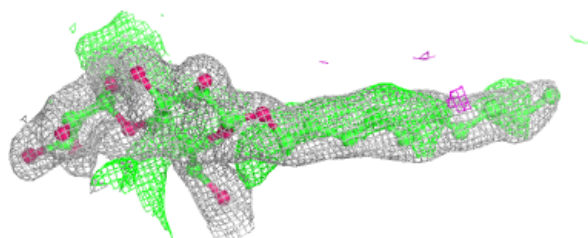
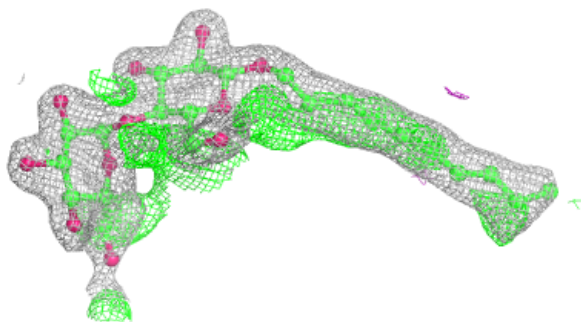
**Electron density around DMU Z 102:**

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

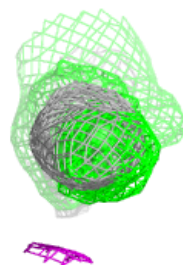
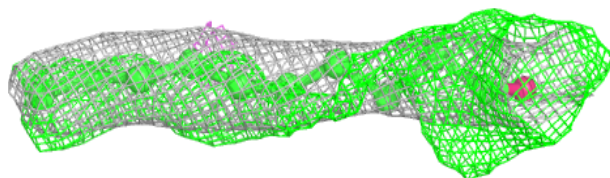
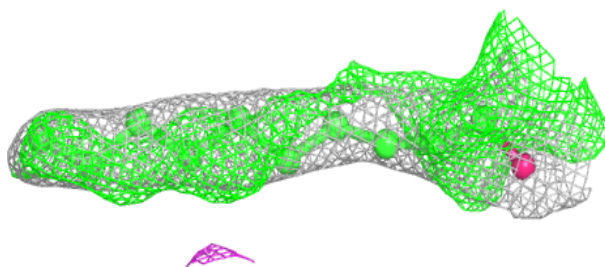


**Electron density around DMU D 201:**

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

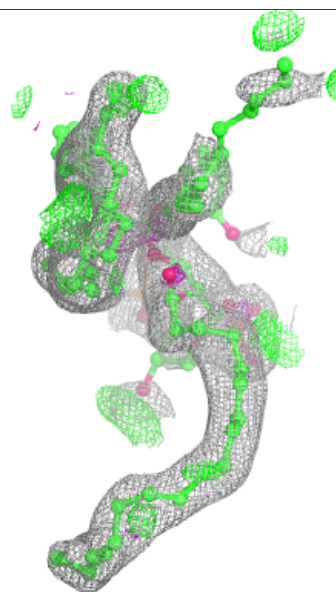
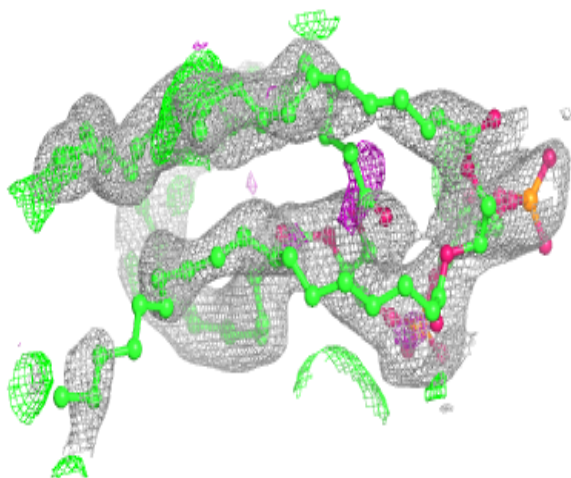
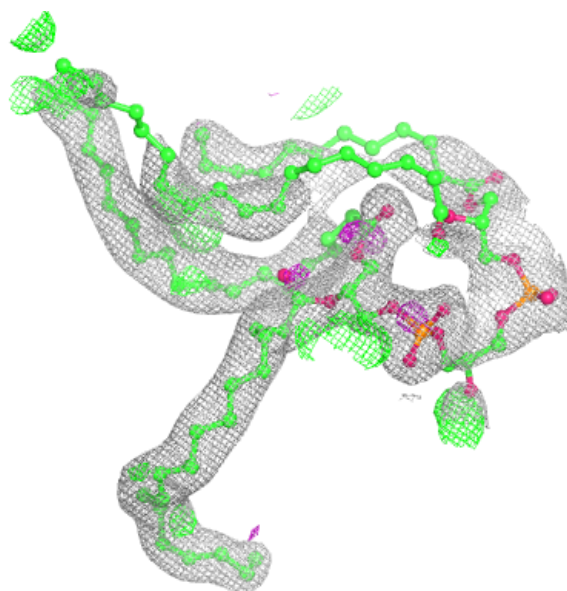
**Electron density around DMU O 305:**

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



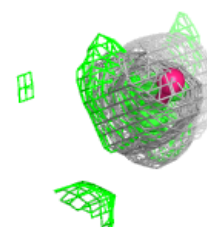
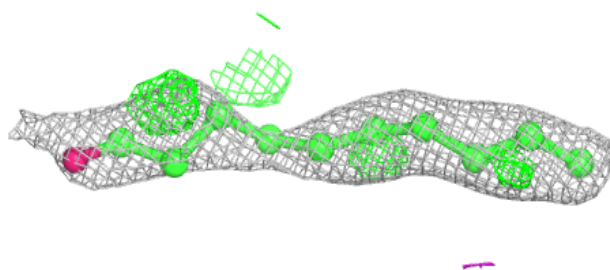
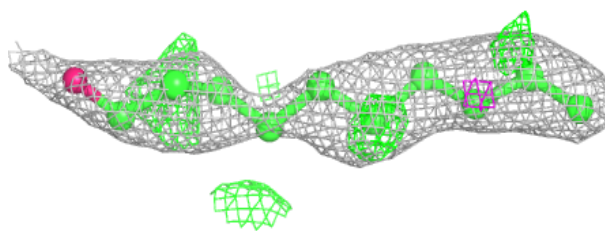
**Electron density around CDL L 101:**

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

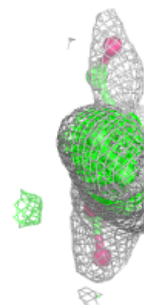
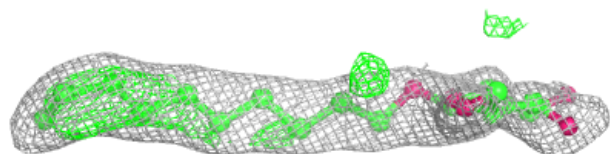
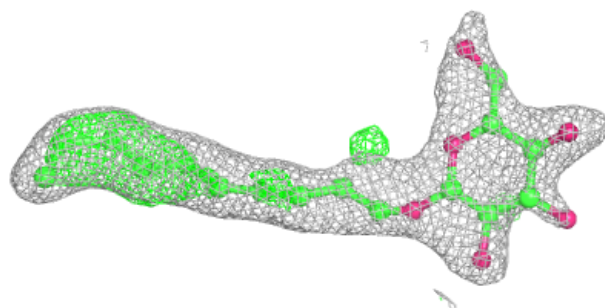


**Electron density around DMU B 303:**

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

**Electron density around DMU O 307:**

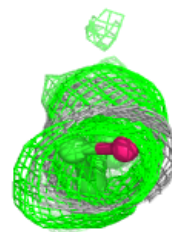
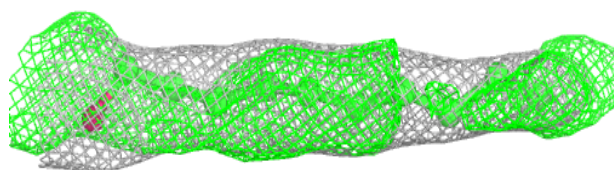
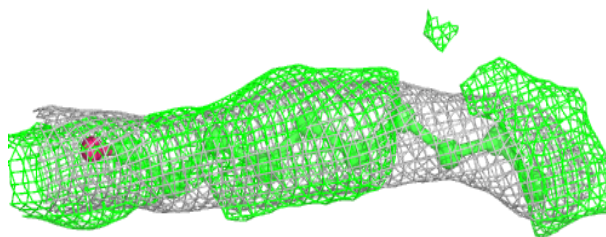
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



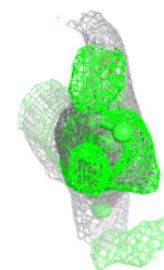
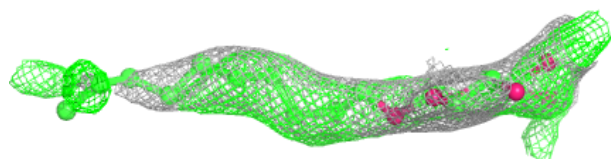
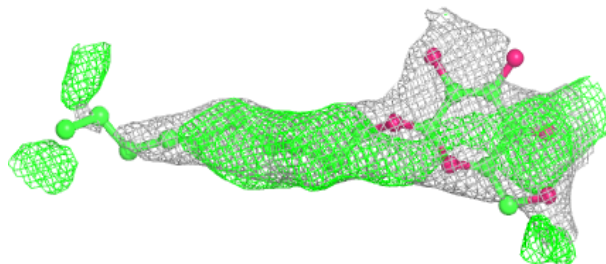


**Electron density around DMU P 307:**

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

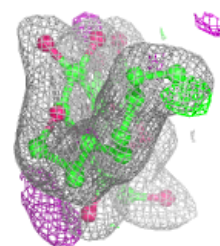
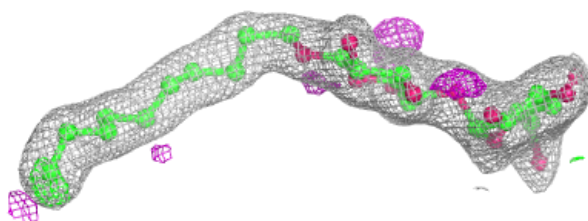
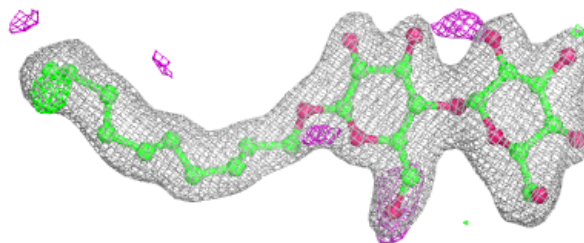
**Electron density around DMU L 102:**

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

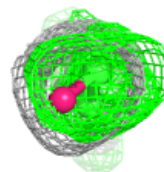
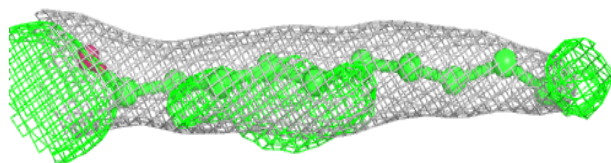
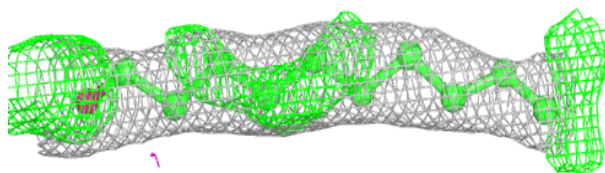


**Electron density around DMU Z 101:**

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

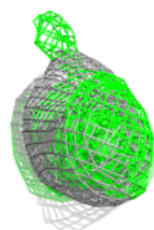
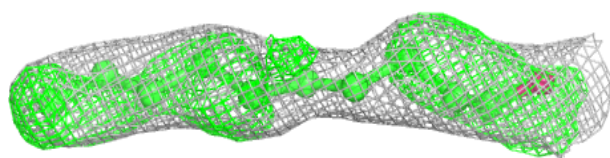
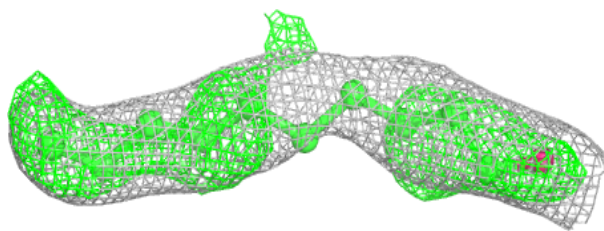
**Electron density around DMU C 306:**

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

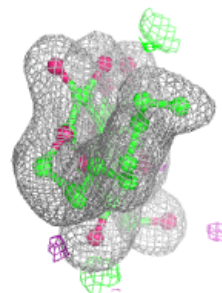
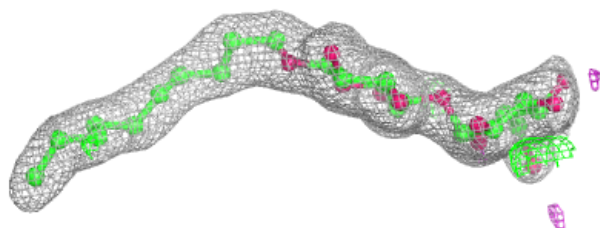
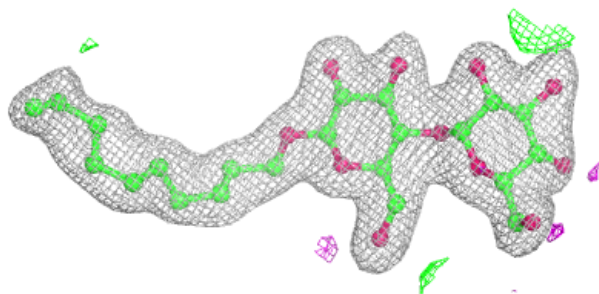


**Electron density around DMU O 306:**

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

**Electron density around DMU M 101:**

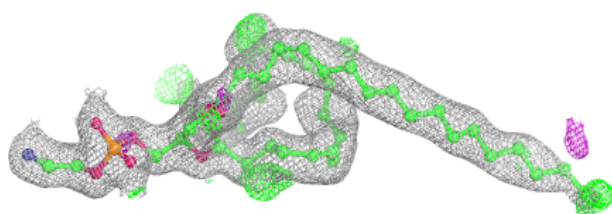
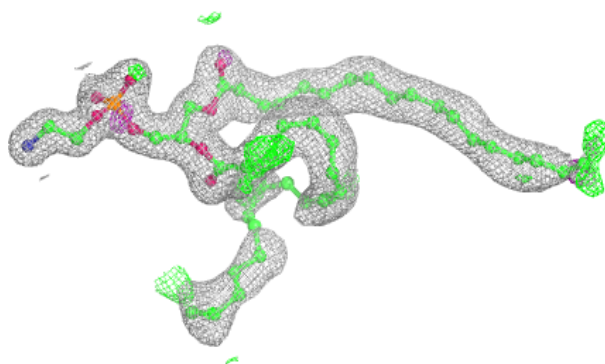
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



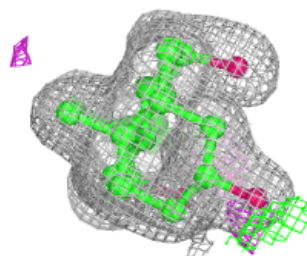
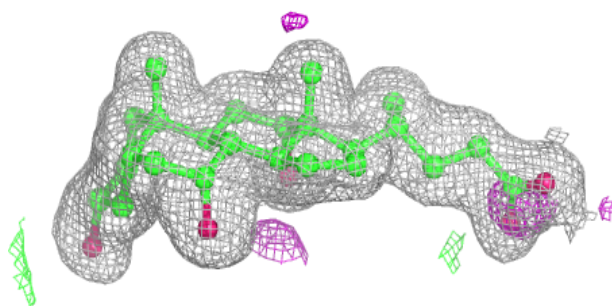
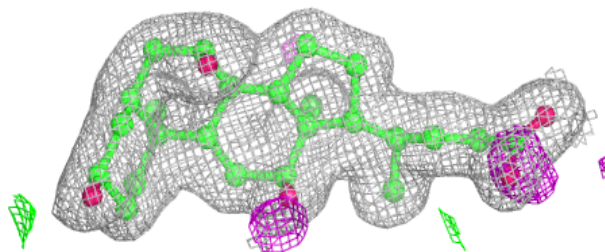


**Electron density around PEK T 102:**

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

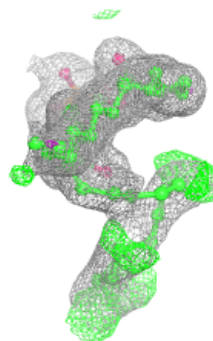
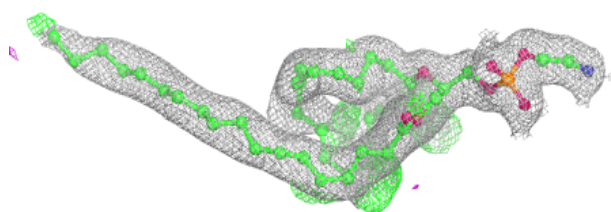
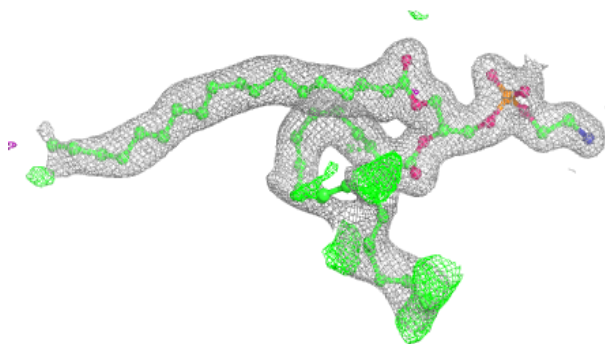
**Electron density around CHD C 301:**

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

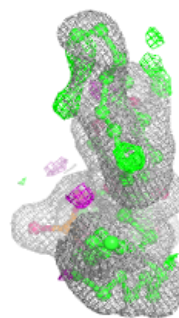
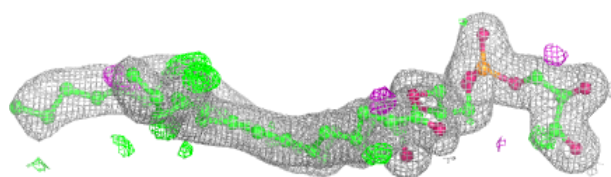
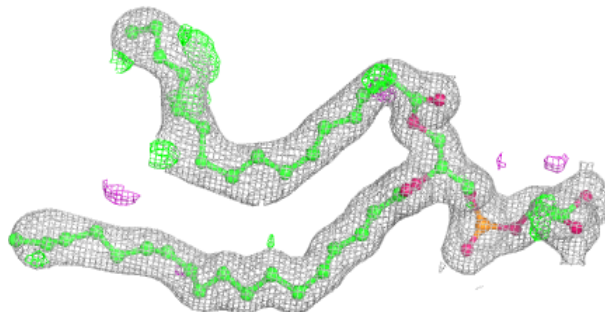


**Electron density around PEK G 101:**

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

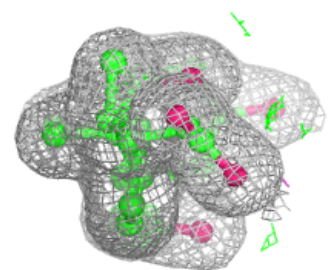
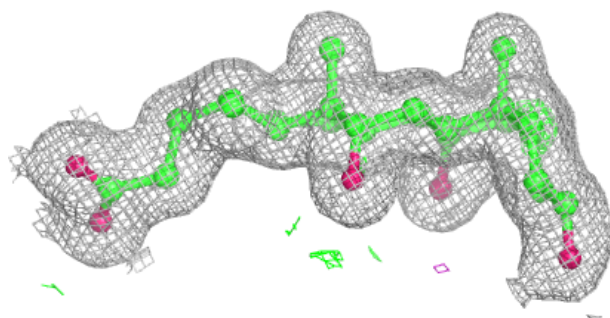
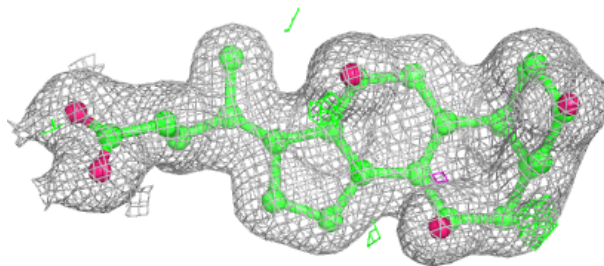
**Electron density around PGV N 614:**

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

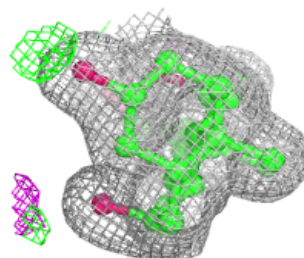
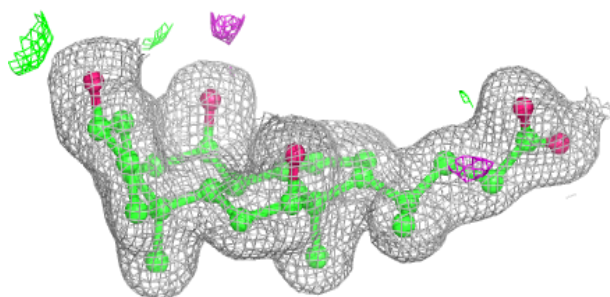
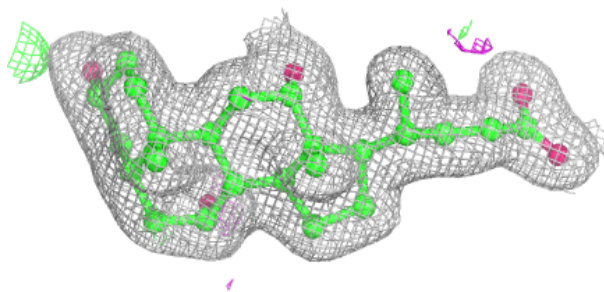


**Electron density around CHD B 306:**

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

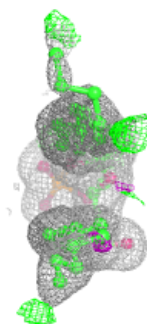
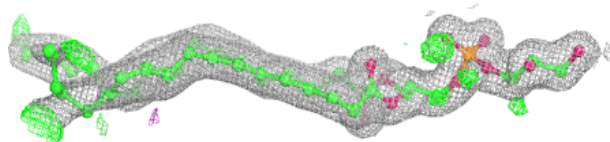
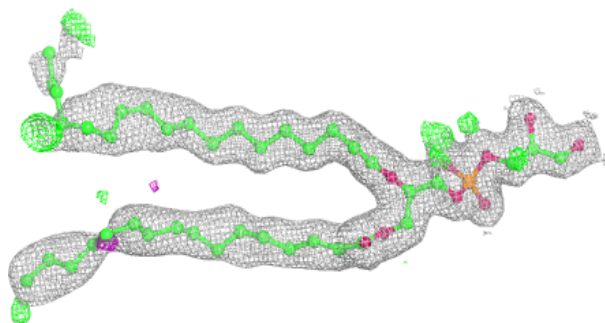
**Electron density around CHD P 302:**

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

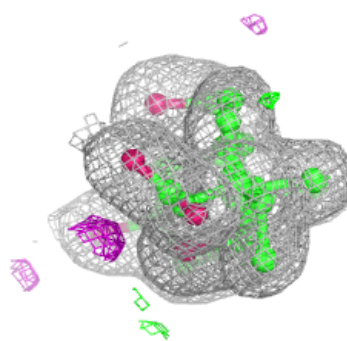
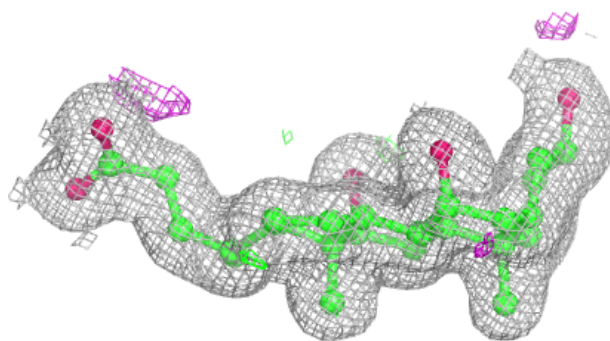
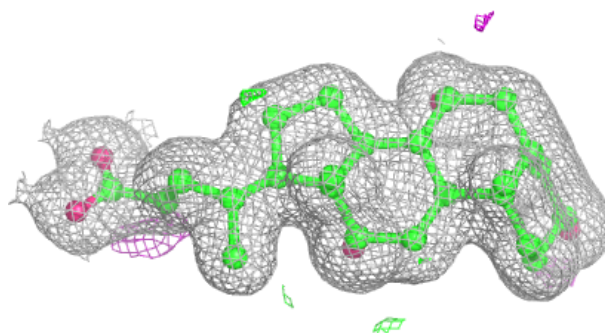


**Electron density around PGV C 303:**

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

**Electron density around CHD G 102:**

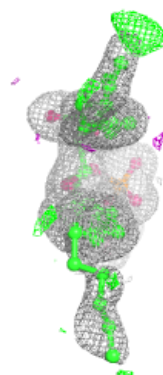
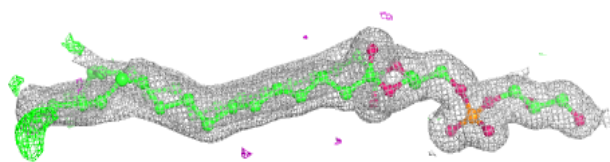
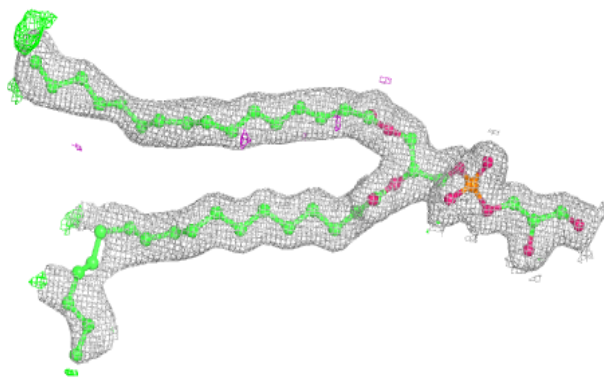
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



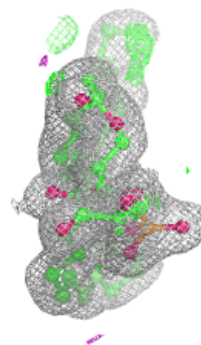
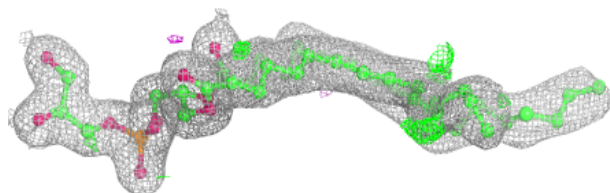
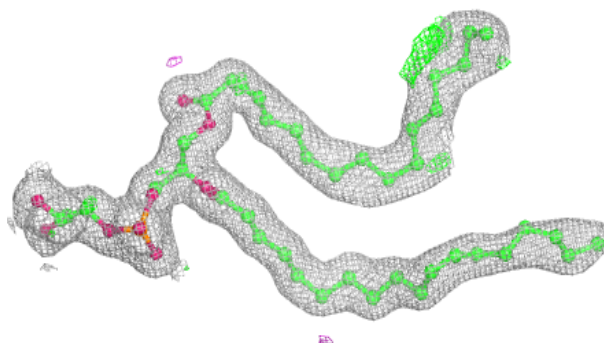


**Electron density around PGV P 304:**

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

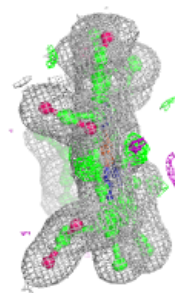
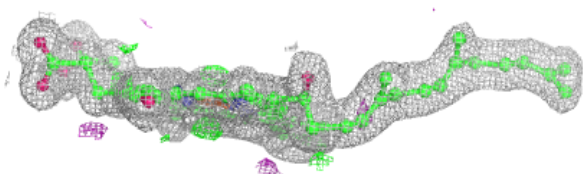
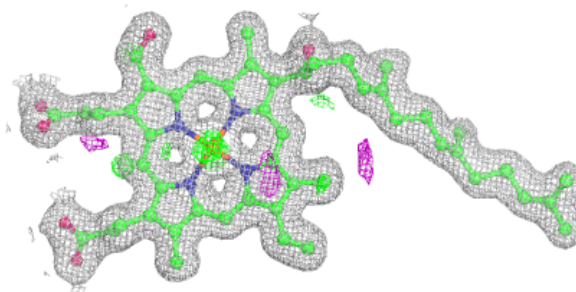
**Electron density around PGV A 613:**

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

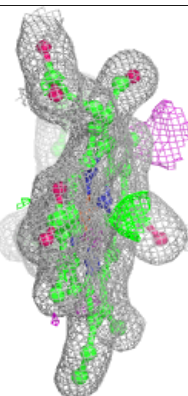
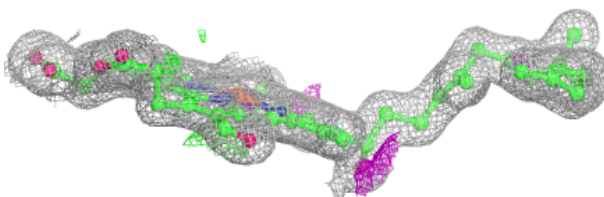
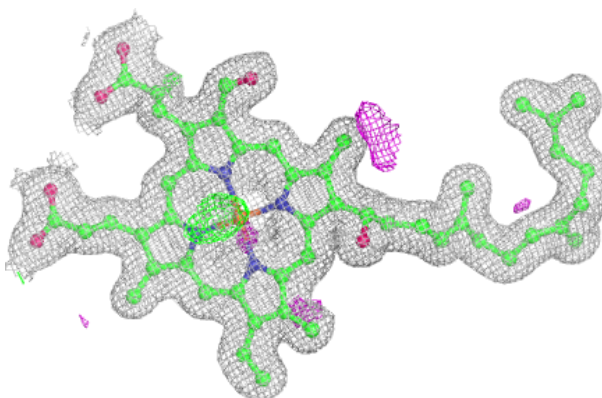


**Electron density around HEA A 601:**

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

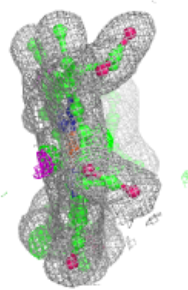
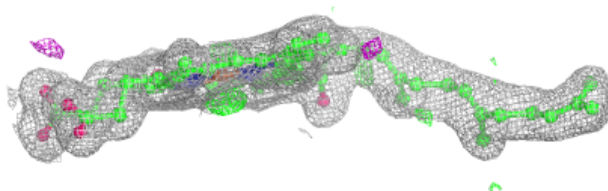
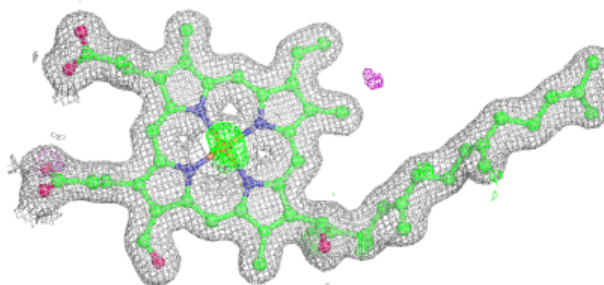
**Electron density around HEA A 602:**

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

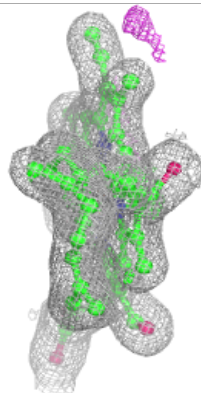
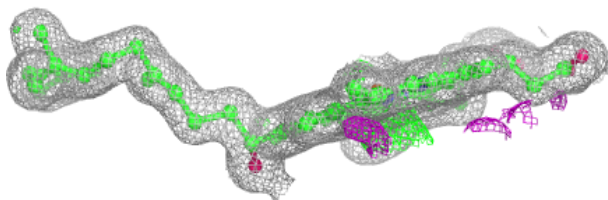
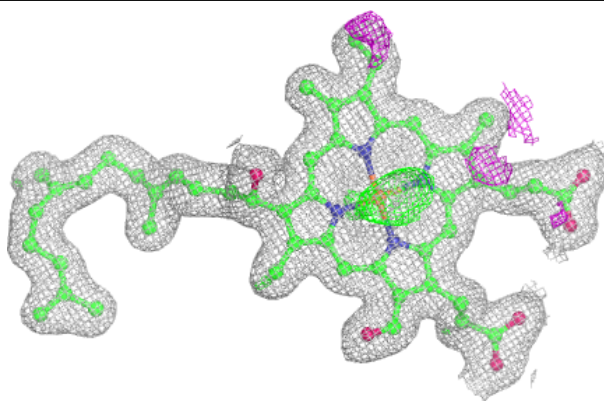


**Electron density around HEA N 601:**

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

**Electron density around HEA N 602:**

$2mF_o-DF_c$  (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.