



## wwPDB EM Validation Summary Report ⓘ

Nov 16, 2022 – 07:07 AM EST

PDB ID : 7KSQ  
EMDB ID : EMD-23023  
Title : The Structure of the moss PSI-LHCI reveals the evolution of the LHCI antenna  
Authors : Riddle, R.; Gorski, C.; Toporik, H.; Dobson, Z.; Da, Z.; Williams, D.; Mazor, Y.  
Deposited on : 2020-11-23  
Resolution : 2.80 Å(reported)

This is a wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

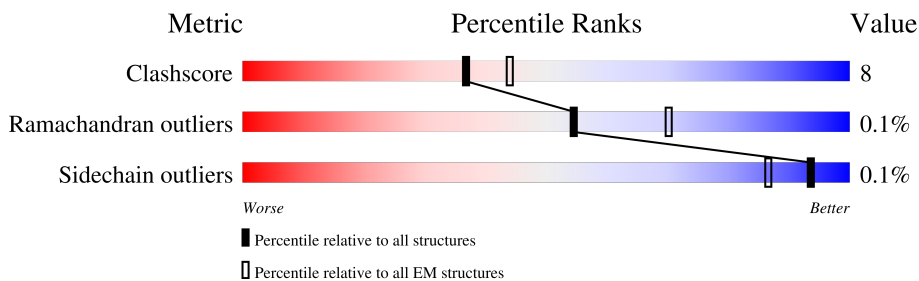
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.80 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.






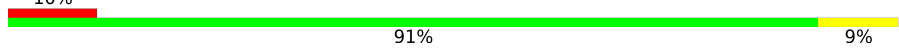






Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	742	
2	B	732	
3	1	192	
4	2	203	
5	3	218	
6	4	203	
7	C	80	
8	D	142	

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Mol	Chain	Length	Quality of chain
9	E	63	 75% 25%
10	F	160	 85% 15%
11	G	91	 91% 9%
12	H	87	 10% 91% 9%
13	I	34	 85% 15%
14	J	41	 78% 22%
15	K	81	 89% 11%
16	L	160	 90% 10%
17	M	30	 87% 13%
18	O	88	 88% 10%

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	CL0	A	1011	X	-	-	-
20	CLA	1	602	X	-	-	-
20	CLA	1	603	X	-	-	-
20	CLA	1	604	X	-	-	-
20	CLA	1	606	X	-	-	-
20	CLA	1	608	X	-	-	-
20	CLA	1	609	X	-	-	-
20	CLA	1	610	X	-	-	-
20	CLA	1	612	X	-	-	-
20	CLA	1	613	X	-	-	-
20	CLA	1	614	X	-	-	-
20	CLA	1	615	X	-	-	-
20	CLA	2	603	X	-	-	-
20	CLA	2	604	X	-	-	-
20	CLA	2	609	X	-	-	-
20	CLA	2	610	X	-	-	-
20	CLA	2	612	X	-	-	-
20	CLA	2	613	X	-	-	-
20	CLA	2	614	X	-	-	-
20	CLA	3	602	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
20	CLA	3	604	X	-	-	-
20	CLA	3	605	X	-	-	-
20	CLA	3	606	X	-	-	-
20	CLA	3	607	X	-	-	-
20	CLA	3	609	X	-	-	-
20	CLA	3	610	X	-	-	-
20	CLA	3	611	X	-	-	-
20	CLA	3	612	X	-	-	-
20	CLA	3	613	X	-	-	-
20	CLA	3	614	X	-	-	-
20	CLA	3	617	X	-	-	-
20	CLA	4	601	X	-	-	-
20	CLA	4	602	X	-	-	-
20	CLA	4	603	X	-	-	-
20	CLA	4	604	X	-	-	-
20	CLA	4	609	X	-	-	-
20	CLA	4	610	X	-	-	-
20	CLA	4	612	X	-	-	-
20	CLA	4	613	X	-	-	-
20	CLA	4	614	X	-	-	-
20	CLA	A	1022	X	-	-	-
20	CLA	A	1101	X	-	-	-
20	CLA	A	1103	X	-	-	-
20	CLA	A	1105	X	-	-	-
20	CLA	A	1106	X	-	-	-
20	CLA	A	1108	X	-	-	-
20	CLA	A	1109	X	-	-	-
20	CLA	A	1110	X	-	-	-
20	CLA	A	1114	X	-	-	-
20	CLA	A	1116	X	-	-	-
20	CLA	A	1117	X	-	-	-
20	CLA	A	1119	X	-	-	-
20	CLA	A	1121	X	-	-	-
20	CLA	A	1122	X	-	-	-
20	CLA	A	1125	X	-	-	-
20	CLA	A	1131	X	-	-	-
20	CLA	A	1132	X	-	-	-
20	CLA	A	1136	X	-	-	-
20	CLA	A	1137	X	-	-	-
20	CLA	A	1138	X	-	-	-
20	CLA	A	1139	X	-	-	-
20	CLA	A	1801	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
20	CLA	B	1012	X	-	-	-
20	CLA	B	1021	X	-	-	-
20	CLA	B	1201	X	-	-	-
20	CLA	B	1202	X	-	-	-
20	CLA	B	1203	X	-	-	-
20	CLA	B	1204	X	-	-	-
20	CLA	B	1205	X	-	-	-
20	CLA	B	1208	X	-	-	-
20	CLA	B	1210	X	-	-	-
20	CLA	B	1211	X	-	-	-
20	CLA	B	1215	X	-	-	-
20	CLA	B	1216	X	-	-	-
20	CLA	B	1220	X	-	-	-
20	CLA	B	1222	X	-	-	-
20	CLA	B	1223	X	-	-	-
20	CLA	B	1224	X	-	-	-
20	CLA	B	1226	X	-	-	-
20	CLA	B	1228	X	-	-	-
20	CLA	B	1229	X	-	-	-
20	CLA	B	1230	X	-	-	-
20	CLA	B	1232	X	-	-	-
20	CLA	B	1234	X	-	-	-
20	CLA	B	1235	X	-	-	-
20	CLA	B	1237	X	-	-	-
20	CLA	B	1238	X	-	-	-
20	CLA	B	1240	X	-	-	-
20	CLA	F	301	X	-	-	-
20	CLA	F	302	X	-	-	-
20	CLA	F	303	X	-	-	-
20	CLA	G	201	X	-	-	-
20	CLA	G	202	X	-	-	-
20	CLA	H	200	X	-	-	-
20	CLA	J	102	X	-	-	-
20	CLA	K	201	X	-	-	-
20	CLA	K	202	X	-	-	-
20	CLA	K	203	X	-	-	-
20	CLA	K	204	X	-	-	-
20	CLA	L	303	X	-	-	-
20	CLA	O	201	X	-	-	-
20	CLA	O	202	X	-	-	-
20	CLA	O	203	X	-	-	-
28	CHL	1	601	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
28	CHL	1	607	X	-	-	-
28	CHL	2	601	X	-	-	-
28	CHL	2	602	X	-	-	-
28	CHL	2	606	X	-	-	-
28	CHL	2	607	X	-	-	-
28	CHL	2	608	X	-	-	-
28	CHL	2	611	X	-	-	-
28	CHL	2	615	X	-	-	-
28	CHL	3	608	X	-	-	-
28	CHL	4	606	X	-	-	-
28	CHL	4	607	X	-	-	-
28	CHL	4	608	X	-	-	-
28	CHL	4	615	X	-	-	-
29	LUT	2	623	X	-	-	-
29	LUT	4	623	X	-	-	-

## 2 Entry composition

There are 30 unique types of molecules in this entry. The entry contains 36553 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Photosystem I P700 chlorophyll a apoprotein A1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	742	5837	3827	993	998	19	0	0

- Molecule 2 is a protein called Photosystem I P700 chlorophyll a apoprotein A2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	732	5845	3836	995	998	16	0	0

- Molecule 3 is a protein called Chlorophyll a-b binding protein, chloroplastic.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	1	192	1473	961	247	264	1	0	0

- Molecule 4 is a protein called Chlorophyll a-b binding protein, chloroplastic.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	2	203	1567	1021	262	280	4	0	0

- Molecule 5 is a protein called Chlorophyll a-b binding protein, chloroplastic.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	3	218	1678	1099	272	300	7	0	0

- Molecule 6 is a protein called Chlorophyll a-b binding protein, chloroplastic.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	4	203	1574	1024	264	281	5	0	0

- Molecule 7 is a protein called Photosystem I iron-sulfur center.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	C	80	596	365	103	117	11	0	0

- Molecule 8 is a protein called PsaD.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	D	142	1109	711	195	200	3	0	0

- Molecule 9 is a protein called PsaE.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	E	63	500	317	89	94	0	0

- Molecule 10 is a protein called PSI-F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	F	160	1239	801	215	220	3	0	0

- Molecule 11 is a protein called PSI-G.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	G	91	689	444	119	126	0	0

- Molecule 12 is a protein called PsaH.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	H	87	659	418	114	126	1	0	0

- Molecule 13 is a protein called Photosystem I reaction center subunit VIII.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	I	34	266	181	35	48	2	0	0

- Molecule 14 is a protein called Photosystem I reaction center subunit IX.



Mol	Chain	Residues	Atoms					AltConf	Trace
14	J	41	Total	C	N	O	S	0	0
			325	222	48	54	1		

- Molecule 15 is a protein called PsaK.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	K	81	Total	C	N	O	S	0	0
			561	352	97	108	4		

- Molecule 16 is a protein called PSI subunit V.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	L	160	Total	C	N	O	S	0	0
			1171	771	188	210	2		

- Molecule 17 is a protein called Photosystem I reaction center subunit XII.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	M	30	Total	C	N	O	0	0
			223	146	36	41		

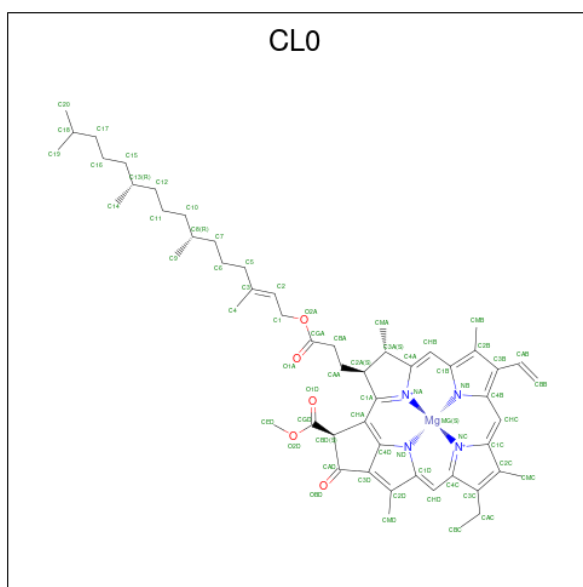
- Molecule 18 is a protein called PsaO.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	O	88	Total	C	N	O	S	0	0
			655	432	113	109	1		

There are 2 discrepancies between the modelled and reference sequences:

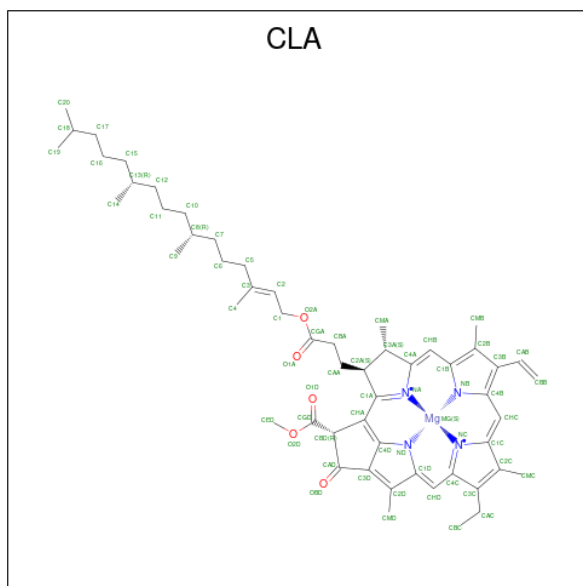
Chain	Residue	Modelled	Actual	Comment	Reference
O	62	ARG	LYS	conflict	UNP A0A2K1JDE1
O	130	PHE	LEU	conflict	UNP A0A2K1JDE1

- Molecule 19 is CHLOROPHYLL A ISOMER (three-letter code: CL0) (formula: C<sub>55</sub>H<sub>72</sub>MgN<sub>4</sub>O<sub>5</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
19	A	1	65	55	1	4	5	0

- Molecule 20 is CHLOROPHYLL A (three-letter code: CLA) (formula:  $C_{55}H_{72}MgN_4O_5$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
20	A	1	2384	1954	43	172	215	0
20	A	1	2384	1954	43	172	215	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	A	1	Total 2384	C 1954	Mg 43	N 172	O 215	0
20	B	1	Total 2177	C 1777	Mg 40	N 160	O 200	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	B	1	2177	1777	40	160	200	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	1	1	614	494	12	48	60	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	2	1	378	308	7	28	35	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	3	1	648	525	13	52	58	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	4	1	527	427	10	40	50	0
20	F	1	118	93	3	12	10	0
20	F	1	118	93	3	12	10	0
20	F	1	118	93	3	12	10	0

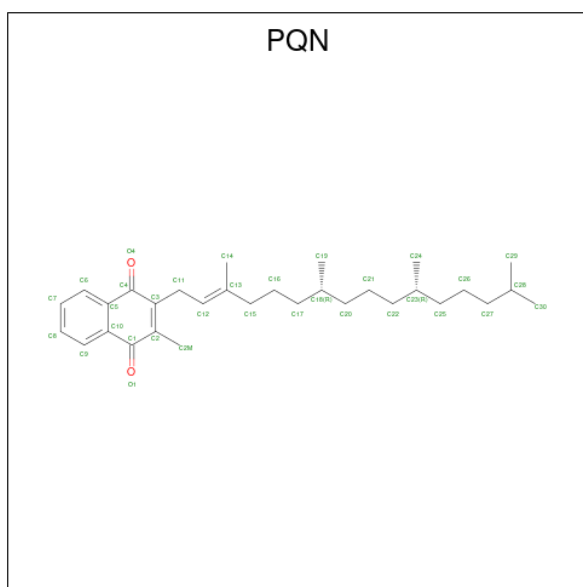
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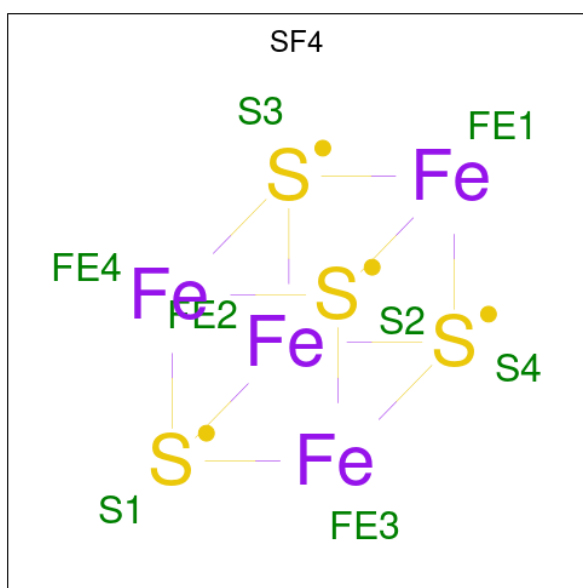
Mol	Chain	Residues	Atoms					AltConf
20	G	1	Total	C	Mg	N	O	0
			151	121	3	12	15	
20	G	1	Total	C	Mg	N	O	0
			151	121	3	12	15	
20	G	1	Total	C	Mg	N	O	0
			151	121	3	12	15	
20	H	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
20	I	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
20	J	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
20	K	1	Total	C	Mg	N	O	0
			173	138	4	16	15	
20	K	1	Total	C	Mg	N	O	0
			173	138	4	16	15	
20	K	1	Total	C	Mg	N	O	0
			173	138	4	16	15	
20	K	1	Total	C	Mg	N	O	0
			173	138	4	16	15	
20	L	1	Total	C	Mg	N	O	0
			155	125	3	12	15	
20	L	1	Total	C	Mg	N	O	0
			155	125	3	12	15	
20	L	1	Total	C	Mg	N	O	0
			155	125	3	12	15	
20	O	1	Total	C	Mg	N		0
			81	66	3	12		
20	O	1	Total	C	Mg	N		0
			81	66	3	12		
20	O	1	Total	C	Mg	N		0
			81	66	3	12		

- Molecule 21 is PHYLLOQUINONE (three-letter code: PQN) (formula: C<sub>31</sub>H<sub>46</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			AltConf
21	A	1	Total	C	O	0
			33	31	2	
21	B	1	Total	C	O	0
			33	31	2	

- Molecule 22 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe<sub>4</sub>S<sub>4</sub>).



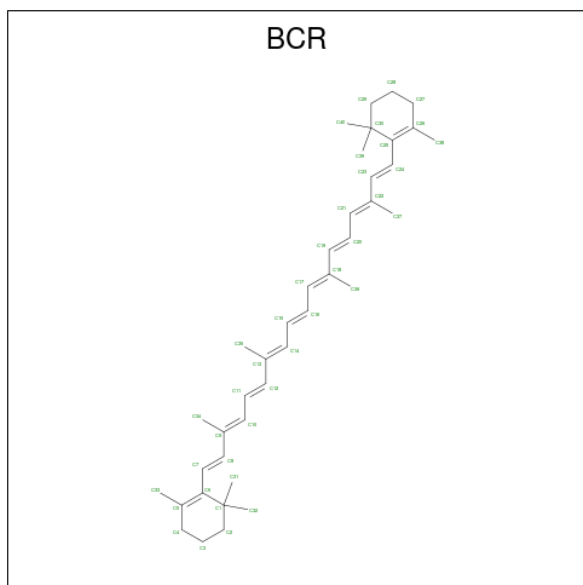
Mol	Chain	Residues	Atoms			AltConf
22	A	1	Total	Fe	S	0
			8	4	4	
22	C	1	Total	Fe	S	0
			16	8	8	

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Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
22	C	1	16	8	8	0

- Molecule 23 is BETA-CAROTENE (three-letter code: BCR) (formula: C<sub>40</sub>H<sub>56</sub>) (labeled as "Ligand of Interest" by depositor).



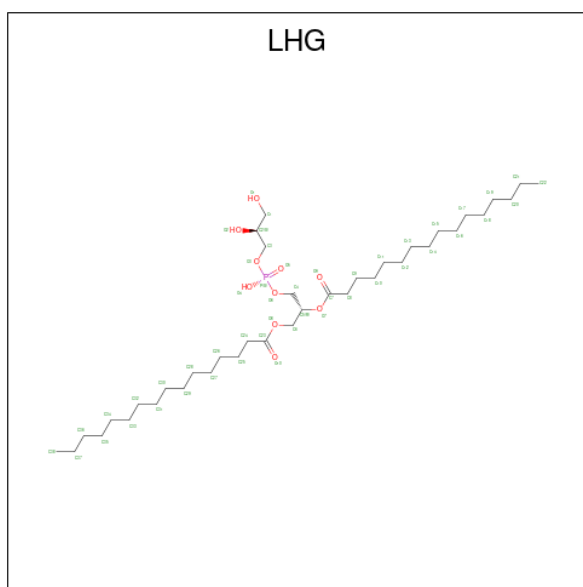
Mol	Chain	Residues	Atoms		AltConf
			Total	C	
23	A	1	240	240	0
23	A	1	240	240	0
23	A	1	240	240	0
23	A	1	240	240	0
23	A	1	240	240	0
23	A	1	240	240	0
23	B	1	280	280	0
23	B	1	280	280	0
23	B	1	280	280	0
23	B	1	280	280	0

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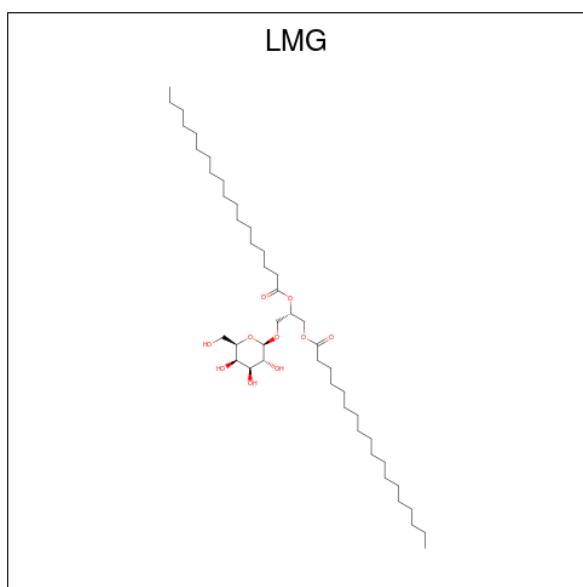
Mol	Chain	Residues	Atoms		AltConf
23	B	1	Total 280	C 280	0
23	B	1	Total 280	C 280	0
23	B	1	Total 280	C 280	0
23	1	1	Total 25	C 25	0
23	3	1	Total 80	C 80	0
23	3	1	Total 80	C 80	0
23	F	1	Total 40	C 40	0
23	G	1	Total 40	C 40	0
23	I	1	Total 80	C 80	0
23	I	1	Total 80	C 80	0
23	J	1	Total 80	C 80	0
23	J	1	Total 80	C 80	0
23	K	1	Total 40	C 40	0
23	L	1	Total 80	C 80	0
23	L	1	Total 80	C 80	0
23	M	1	Total 40	C 40	0
23	O	1	Total 14	C 14	0

- Molecule 24 is 1,2-DIPALMITOYL-PHOSPHATIDYL-GLYCEROLE (three-letter code: LHG) (formula: C<sub>38</sub>H<sub>75</sub>O<sub>10</sub>P) (labeled as "Ligand of Interest" by depositor).



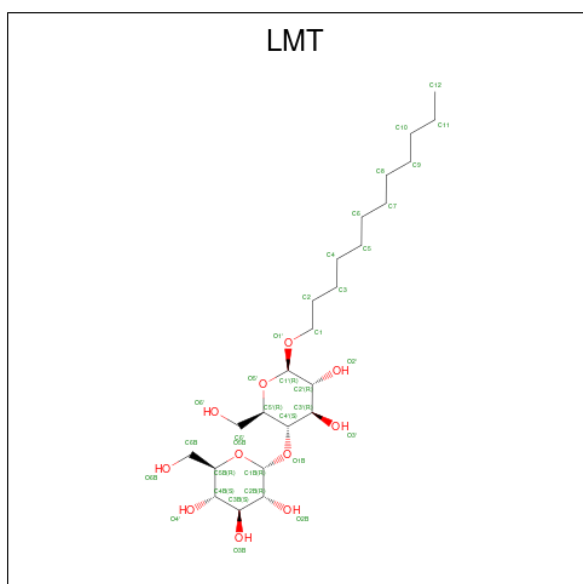
Mol	Chain	Residues	Atoms			AltConf	
			Total	C	O		P
24	A	1	80	58	20	2	0
24	A	1	80	58	20	2	0
24	B	1	35	24	10	1	0
24	1	1	37	26	10	1	0
24	2	1	32	21	10	1	0
24	3	1	34	23	10	1	0
24	4	1	38	27	10	1	0

- Molecule 25 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (three-letter code: LMG) (formula: C<sub>45</sub>H<sub>86</sub>O<sub>10</sub>) (labeled as "Ligand of Interest" by depositor).



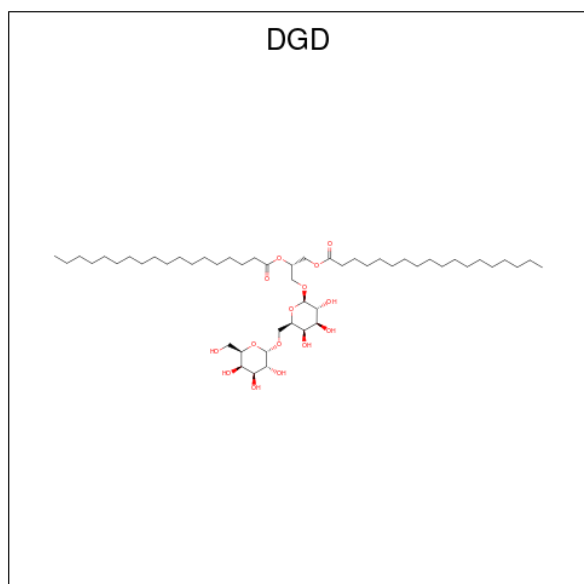
Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
25	A	1	34	24	10	0
25	2	1	36	26	10	0
25	J	1	75	55	20	0
25	J	1	75	55	20	0

- Molecule 26 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula:  $C_{24}H_{46}O_{11}$ ) (labeled as "Ligand of Interest" by depositor).



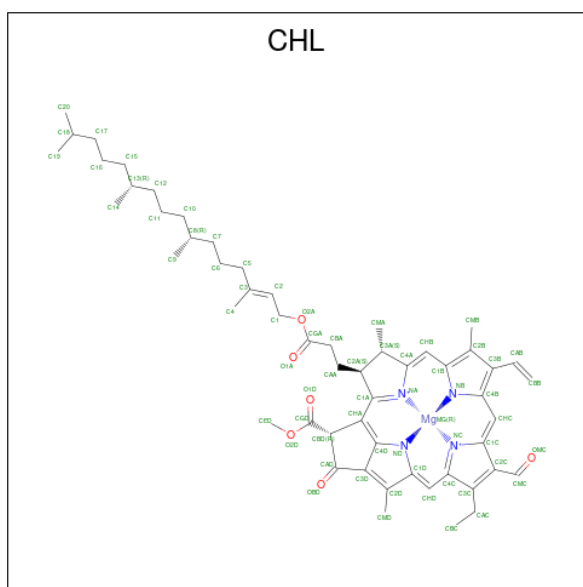
Mol	Chain	Residues	Atoms			AltConf
26	A	1	Total	C	O	0
			33	22	11	
26	B	1	Total	C	O	0
			31	20	11	
26	1	1	Total	C	O	0
			35	24	11	
26	4	1	Total	C	O	0
			35	24	11	
26	G	1	Total	C	O	0
			66	44	22	
26	G	1	Total	C	O	0
			66	44	22	

- Molecule 27 is DIGALACTOSYL DIACYL GLYCEROL (DGDG) (three-letter code: DGD) (formula:  $C_{51}H_{96}O_{15}$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
27	B	1	Total	C	O	0
			61	46	15	

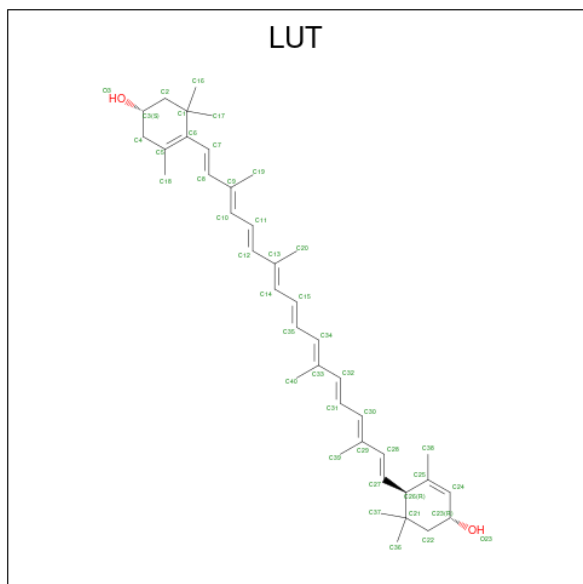
- Molecule 28 is CHLOROPHYLL B (three-letter code: CHL) (formula:  $C_{55}H_{70}MgN_4O_6$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
28	1	1	Total 103	C 81	Mg 2	N 8	O 12	0
28	1	1	Total 103	C 81	Mg 2	N 8	O 12	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	2	1	Total 366	C 289	Mg 7	N 28	O 42	0
28	3	1	Total 47	C 36	Mg 1	N 4	O 6	0
28	4	1	Total 188	C 146	Mg 4	N 16	O 22	0
28	4	1	Total 188	C 146	Mg 4	N 16	O 22	0
28	4	1	Total 188	C 146	Mg 4	N 16	O 22	0
28	4	1	Total 188	C 146	Mg 4	N 16	O 22	0



- Molecule 29 is (3R,3'R,6S)-4,5-DIDEHYDRO-5,6-DIHYDRO-BETA,BETA-CAROTENE-3,3'-DIOL (three-letter code: LUT) (formula:  $C_{40}H_{56}O_2$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
29	1	1	Total	C	O	0
			84	80	4	
29	1	1	Total	C	O	0
			84	80	4	
29	2	1	Total	C	O	0
			126	120	6	
29	2	1	Total	C	O	0
			126	120	6	
29	2	1	Total	C	O	0
			126	120	6	
29	3	1	Total	C	O	0
			84	80	4	
29	3	1	Total	C	O	0
			84	80	4	
29	4	1	Total	C	O	0
			126	120	6	
29	4	1	Total	C	O	0
			126	120	6	
29	4	1	Total	C	O	0
			126	120	6	

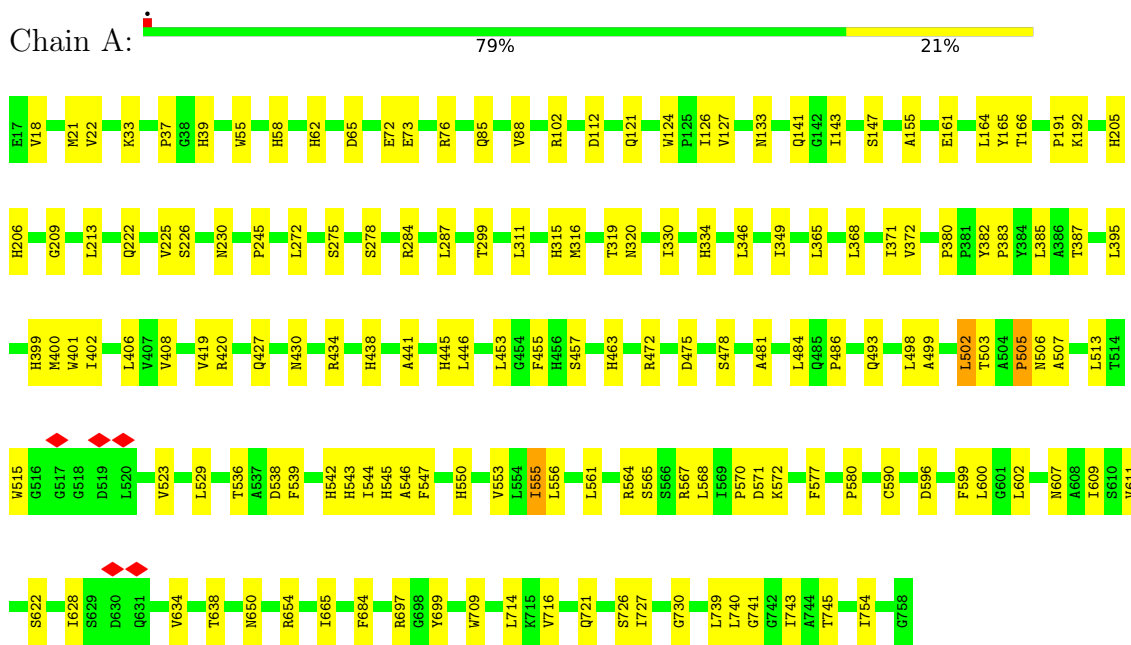
- Molecule 30 is water.

Mol	Chain	Residues	Atoms		AltConf
30	A	15	Total 15	O 15	0
30	B	23	Total 23	O 23	0
30	3	1	Total 1	O 1	0
30	4	1	Total 1	O 1	0
30	C	2	Total 2	O 2	0
30	D	1	Total 1	O 1	0
30	F	1	Total 1	O 1	0
30	G	1	Total 1	O 1	0

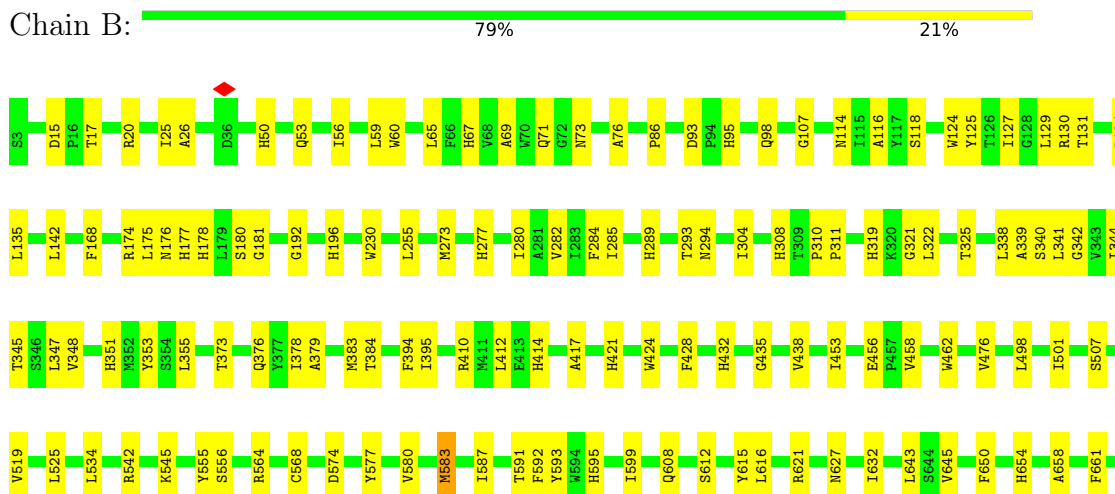
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: Photosystem I P700 chlorophyll a apoprotein A1

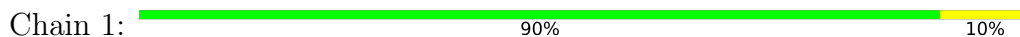


- Molecule 2: Photosystem I P700 chlorophyll a apoprotein A2

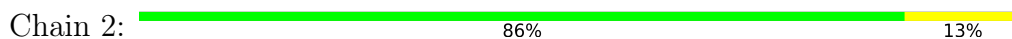




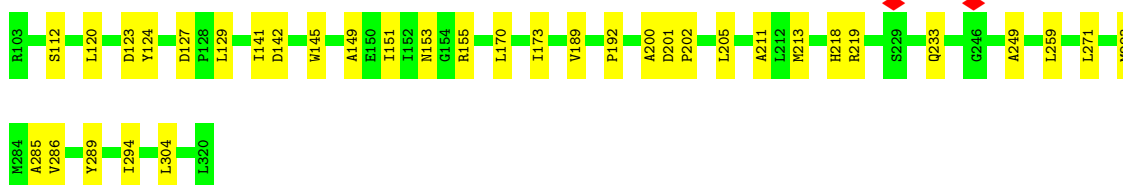
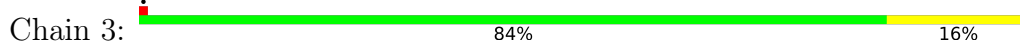
- Molecule 3: Chlorophyll a-b binding protein, chloroplastic



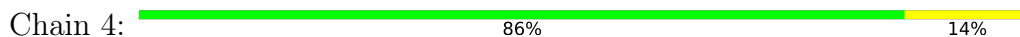
- Molecule 4: Chlorophyll a-b binding protein, chloroplastic



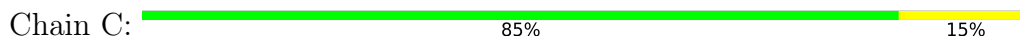
- Molecule 5: Chlorophyll a-b binding protein, chloroplastic



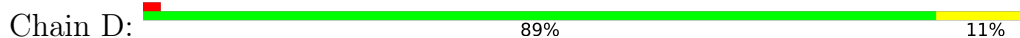
- Molecule 6: Chlorophyll a-b binding protein, chloroplastic



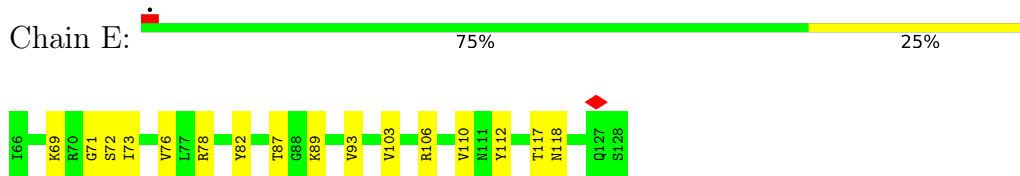
- Molecule 7: Photosystem I iron-sulfur center



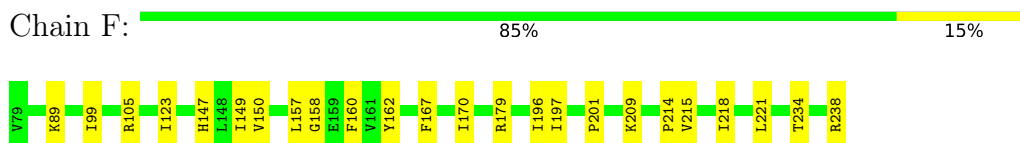
- Molecule 8: PsaD



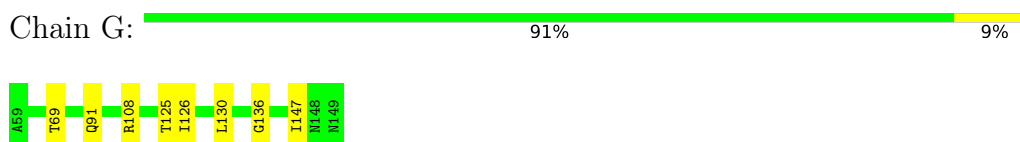
- Molecule 9: PsaE



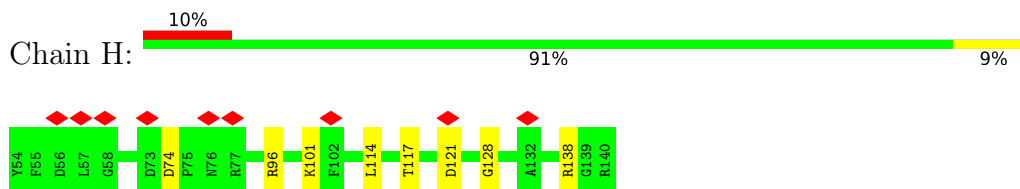
- Molecule 10: PSI-F



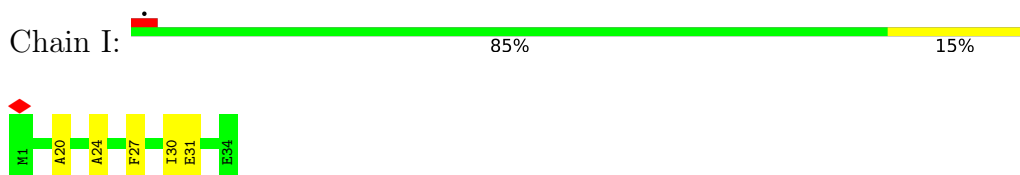
- Molecule 11: PSI-G



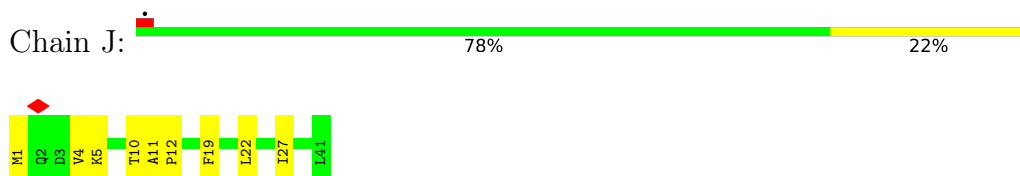
- Molecule 12: PsaH



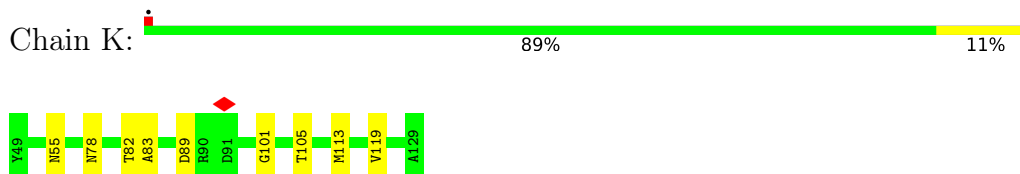
- Molecule 13: Photosystem I reaction center subunit VIII




- Molecule 14: Photosystem I reaction center subunit IX




- Molecule 15: PsaK




## • Molecule 16: PSI subunit V

Chain L:  90% 10%

## • Molecule 17: Photosystem I reaction center subunit XII

Chain M:  87% 13%

## • Molecule 18: PsaO

Chain O:  88% 10%

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	114608	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	1.6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	33.849	Depositor
Minimum map value	-23.604	Depositor
Average map value	0.022	Depositor
Map value standard deviation	0.825	Depositor
Recommended contour level	1.5	Depositor
Map size (Å)	291.2, 291.2, 291.2	wwPDB
Map dimensions	280, 280, 280	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0400001, 1.0400001, 1.0400001	Depositor

## 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: DGD, LMG, CLA, SF4, CL0, CHL, LHG, LUT, BCR, PQN, LMT

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.35	1/6032 (0.0%)	0.61	3/8227 (0.0%)
2	B	0.35	0/6059	0.62	5/8267 (0.1%)
3	1	0.31	0/1522	0.52	0/2081
4	2	0.27	0/1618	0.51	1/2218 (0.0%)
5	3	0.29	0/1729	0.55	0/2349
6	4	0.30	0/1623	0.57	0/2219
7	C	0.30	0/606	0.56	0/821
8	D	0.28	0/1136	0.54	0/1538
9	E	0.30	0/511	0.46	0/694
10	F	0.32	0/1265	0.59	1/1710 (0.1%)
11	G	0.27	0/704	0.44	0/960
12	H	0.29	0/673	0.58	1/909 (0.1%)
13	I	0.30	0/273	0.69	0/373
14	J	0.28	0/334	0.50	0/457
15	K	0.25	0/567	0.48	0/768
16	L	0.30	0/1202	0.58	0/1645
17	M	0.24	0/224	0.41	0/302
18	O	0.34	0/680	0.73	1/933 (0.1%)
All	All	0.32	1/26758 (0.0%)	0.58	12/36471 (0.0%)

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
2	B	0	1

All (1) bond length outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	499	ALA	C-N	5.58	1.44	1.34

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	498	LEU	CA-CB-CG	8.99	135.98	115.30
1	A	502	LEU	CA-CB-CG	8.33	134.46	115.30
10	F	157	LEU	CA-CB-CG	7.59	132.75	115.30
4	2	85	ASP	CB-CG-OD1	7.11	124.70	118.30
2	B	583	MET	CG-SD-CE	5.91	109.65	100.20

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	667	TRP	Peptide

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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5837	0	5725	120	0
2	B	5845	0	5618	117	0
3	1	1473	0	1448	17	0
4	2	1567	0	1527	21	0
5	3	1678	0	1638	31	0
6	4	1574	0	1549	22	0
7	C	596	0	573	9	0
8	D	1109	0	1111	12	0
9	E	500	0	494	10	0
10	F	1239	0	1288	21	0
11	G	689	0	681	6	0
12	H	659	0	636	6	0
13	I	266	0	274	6	0
14	J	325	0	341	8	0
15	K	561	0	574	7	0
16	L	1171	0	1186	14	0
17	M	223	0	244	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	O	655	0	599	7	0
19	A	65	0	72	6	0
20	1	614	0	508	10	0
20	2	378	0	334	5	0
20	3	648	0	530	16	0
20	4	527	0	448	9	0
20	A	2384	0	2226	105	0
20	B	2177	0	1998	106	0
20	F	118	0	69	4	0
20	G	151	0	121	1	0
20	H	45	0	33	2	0
20	I	65	0	72	7	0
20	J	45	0	33	0	0
20	K	173	0	118	3	0
20	L	155	0	131	9	0
20	O	81	0	9	0	0
21	A	33	0	46	2	0
21	B	33	0	46	5	0
22	A	8	0	0	0	0
22	C	16	0	0	0	0
23	1	25	0	33	0	0
23	3	80	0	112	5	0
23	A	240	0	336	8	0
23	B	280	0	392	28	0
23	F	40	0	56	2	0
23	G	40	0	56	4	0
23	I	80	0	112	5	0
23	J	80	0	112	4	0
23	K	40	0	56	1	0
23	L	80	0	112	7	0
23	M	40	0	56	5	0
23	O	14	0	20	0	0
24	1	37	0	44	1	0
24	2	32	0	34	2	0
24	3	34	0	38	1	0
24	4	38	0	46	2	0
24	A	80	0	106	4	0
24	B	35	0	40	0	0
25	2	36	0	42	0	0
25	A	34	0	38	2	0
25	J	75	0	90	4	0
26	1	35	0	46	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
26	4	35	0	45	3	0
26	A	33	0	39	1	0
26	B	31	0	35	0	0
26	G	66	0	80	3	0
27	B	61	0	83	5	0
28	1	103	0	78	3	0
28	2	366	0	290	11	0
28	3	47	0	31	3	0
28	4	188	0	128	1	0
29	1	84	0	112	8	0
29	2	126	0	165	10	0
29	3	84	0	110	9	0
29	4	126	0	166	7	0
30	3	1	0	0	0	0
30	4	1	0	0	0	0
30	A	15	0	0	0	0
30	B	23	0	0	0	0
30	C	2	0	0	0	0
30	D	1	0	0	0	0
30	F	1	0	0	0	0
30	G	1	0	0	0	0
All	All	36553	0	35639	597	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 597 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)
20:A:1134:CLA:H2A	20:A:1134:CLA:HED3	1.63	0.80
20:4:601:CLA:HBB2	20:4:602:CLA:HHD	1.64	0.79
20:3:610:CLA:HAB	29:3:620:LUT:H32	1.67	0.75
20:4:610:CLA:HAB	29:4:620:LUT:H32	1.69	0.75
1:A:209:GLY:HA3	20:A:1111:CLA:HBB1	1.71	0.72

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 PDB entries followed by that with respect to all EM entries.

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	740/742 (100%)	699 (94%)	38 (5%)	3 (0%)	34	66
2	B	730/732 (100%)	708 (97%)	22 (3%)	0	100	100
3	1	190/192 (99%)	182 (96%)	8 (4%)	0	100	100
4	2	201/203 (99%)	198 (98%)	3 (2%)	0	100	100
5	3	216/218 (99%)	206 (95%)	10 (5%)	0	100	100
6	4	201/203 (99%)	197 (98%)	4 (2%)	0	100	100
7	C	78/80 (98%)	74 (95%)	4 (5%)	0	100	100
8	D	140/142 (99%)	136 (97%)	4 (3%)	0	100	100
9	E	61/63 (97%)	56 (92%)	5 (8%)	0	100	100
10	F	158/160 (99%)	153 (97%)	5 (3%)	0	100	100
11	G	89/91 (98%)	88 (99%)	1 (1%)	0	100	100
12	H	85/87 (98%)	82 (96%)	3 (4%)	0	100	100
13	I	32/34 (94%)	31 (97%)	1 (3%)	0	100	100
14	J	39/41 (95%)	39 (100%)	0	0	100	100
15	K	79/81 (98%)	78 (99%)	1 (1%)	0	100	100
16	L	158/160 (99%)	149 (94%)	9 (6%)	0	100	100
17	M	28/30 (93%)	28 (100%)	0	0	100	100
18	O	86/88 (98%)	75 (87%)	11 (13%)	0	100	100
All	All	3311/3347 (99%)	3179 (96%)	129 (4%)	3 (0%)	54	81

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	506	ASN
1	A	505	PRO
1	A	284	ARG

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	603/603 (100%)	603 (100%)	0	100	100
2	B	595/595 (100%)	595 (100%)	0	100	100
3	1	148/148 (100%)	148 (100%)	0	100	100
4	2	160/160 (100%)	159 (99%)	1 (1%)	86	96
5	3	169/171 (99%)	169 (100%)	0	100	100
6	4	161/162 (99%)	160 (99%)	1 (1%)	86	96
7	C	67/67 (100%)	67 (100%)	0	100	100
8	D	114/115 (99%)	114 (100%)	0	100	100
9	E	55/55 (100%)	55 (100%)	0	100	100
10	F	130/131 (99%)	130 (100%)	0	100	100
11	G	72/72 (100%)	72 (100%)	0	100	100
12	H	66/68 (97%)	66 (100%)	0	100	100
13	I	30/30 (100%)	30 (100%)	0	100	100
14	J	35/35 (100%)	35 (100%)	0	100	100
15	K	57/58 (98%)	57 (100%)	0	100	100
16	L	116/118 (98%)	116 (100%)	0	100	100
17	M	25/25 (100%)	25 (100%)	0	100	100
18	O	60/72 (83%)	59 (98%)	1 (2%)	60	87
All	All	2663/2685 (99%)	2660 (100%)	3 (0%)	93	98

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	2	174	ASN
6	4	174	ARG
18	O	61	ARG

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

Mol	Chain	Res	Type
4	2	174	ASN
5	3	303	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

219 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z  > 2$	Counts	RMSZ	# $ Z  > 2$
20	CLA	B	1214	-	59,67,73	1.60	9 (15%)	68,105,113	1.59	11 (16%)
20	CLA	B	1225	-	65,73,73	1.43	7 (10%)	76,113,113	1.52	10 (13%)
20	CLA	A	1113	-	45,53,73	1.76	5 (11%)	52,89,113	1.73	11 (21%)
20	CLA	B	1227	-	45,53,73	1.78	8 (17%)	52,89,113	1.87	13 (25%)
20	CLA	G	201	-	50,58,73	1.70	6 (12%)	58,95,113	1.50	9 (15%)
23	BCR	A	4002	-	41,41,41	1.07	2 (4%)	56,56,56	1.19	5 (8%)
20	CLA	A	1103	-	65,73,73	1.51	7 (10%)	76,113,113	1.32	7 (9%)
20	CLA	B	1206	-	47,55,73	1.70	6 (12%)	54,91,113	1.68	7 (12%)
21	PQN	B	2002	-	34,34,34	0.41	0	42,45,45	1.07	1 (2%)
20	CLA	G	202	-	46,54,73	1.73	5 (10%)	53,90,113	1.50	6 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
20	CLA	1	608	-	50,58,73	1.66	6 (12%)	58,95,113	1.60	8 (13%)
20	CLA	A	1140	-	51,59,73	1.74	7 (13%)	59,96,113	1.54	10 (16%)
20	CLA	A	1101	-	50,58,73	1.66	7 (14%)	58,95,113	1.59	9 (15%)
23	BCR	J	212	-	41,41,41	1.09	2 (4%)	56,56,56	1.27	6 (10%)
20	CLA	2	613	-	65,73,73	1.48	6 (9%)	76,113,113	1.37	9 (11%)
23	BCR	L	419	-	41,41,41	1.00	1 (2%)	56,56,56	1.55	13 (23%)
28	CHL	1	601	-	56,64,74	1.97	13 (23%)	61,102,114	2.82	22 (36%)
22	SF4	A	3001	2,1	0,12,12	-	-	-		
23	BCR	A	4003	-	41,41,41	1.02	1 (2%)	56,56,56	1.34	8 (14%)
20	CLA	L	302	-	60,68,73	1.53	6 (10%)	70,107,113	1.38	9 (12%)
20	CLA	B	1202	-	65,73,73	1.42	7 (10%)	76,113,113	1.63	9 (11%)
25	LMG	A	5002	-	34,34,55	0.96	0	42,42,63	1.22	3 (7%)
26	LMT	G	402	-	32,32,36	1.27	5 (15%)	43,43,47	0.90	0
20	CLA	3	604	-	50,58,73	1.70	6 (12%)	58,95,113	1.63	10 (17%)
29	LUT	1	620	-	42,43,43	2.62	2 (4%)	51,60,60	2.02	15 (29%)
20	CLA	4	603	-	55,63,73	1.57	6 (10%)	64,101,113	1.46	9 (14%)
23	BCR	B	4005	-	41,41,41	1.04	2 (4%)	56,56,56	1.19	5 (8%)
20	CLA	A	1137	-	45,53,73	1.82	6 (13%)	52,89,113	1.53	7 (13%)
20	CLA	3	612	-	45,53,73	1.79	5 (11%)	52,89,113	1.52	8 (15%)
26	LMT	1	631	-	36,36,36	1.18	5 (13%)	47,47,47	0.96	2 (4%)
20	CLA	1	615	-	46,54,73	1.78	6 (13%)	53,90,113	1.59	7 (13%)
20	CLA	2	603	-	46,54,73	1.71	6 (13%)	53,90,113	1.54	7 (13%)
20	CLA	1	613	-	55,63,73	1.60	5 (9%)	64,101,113	1.46	8 (12%)
20	CLA	A	1104	-	65,73,73	1.46	7 (10%)	76,113,113	1.38	10 (13%)
20	CLA	B	1221	-	54,62,73	1.61	7 (12%)	62,99,113	1.79	10 (16%)
23	BCR	B	4004	-	41,41,41	1.06	2 (4%)	56,56,56	1.28	6 (10%)
20	CLA	A	1105	-	50,58,73	1.62	6 (12%)	58,95,113	1.85	9 (15%)
20	CLA	B	1219	-	45,53,73	1.73	7 (15%)	52,89,113	1.88	10 (19%)
20	CLA	B	1021	-	65,73,73	1.43	8 (12%)	76,113,113	1.41	10 (13%)
20	CLA	3	603	-	55,63,73	1.65	7 (12%)	64,101,113	1.49	8 (12%)
20	CLA	A	1109	-	65,73,73	1.44	7 (10%)	76,113,113	1.40	9 (11%)
24	LHG	4	630	-	37,37,48	0.83	2 (5%)	40,43,54	1.23	3 (7%)
29	LUT	3	620	-	42,43,43	2.31	1 (2%)	51,60,60	1.75	6 (11%)
20	CLA	B	1220	-	45,53,73	1.72	7 (15%)	52,89,113	1.61	7 (13%)
24	LHG	2	630	-	31,31,48	0.78	0	34,37,54	1.21	3 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
20	CLA	A	1133	-	45,53,73	1.85	7 (15%)	52,89,113	1.36	6 (11%)
20	CLA	3	602	-	60,68,73	1.51	6 (10%)	70,107,113	1.68	9 (12%)
23	BCR	I	120	-	41,41,41	1.06	2 (4%)	56,56,56	1.74	13 (23%)
28	CHL	2	611	-	56,64,74	2.02	14 (25%)	61,102,114	2.65	22 (36%)
20	CLA	A	1118	-	55,63,73	1.66	6 (10%)	64,101,113	1.35	7 (10%)
20	CLA	3	617	-	46,54,73	1.73	6 (13%)	53,90,113	1.49	8 (15%)
23	BCR	A	4007	-	41,41,41	1.12	1 (2%)	56,56,56	1.83	17 (30%)
20	CLA	B	1230	-	45,53,73	1.75	7 (15%)	52,89,113	1.53	9 (17%)
20	CLA	O	201	-	29,35,73	2.67	9 (31%)	28,60,113	1.73	6 (21%)
20	CLA	B	1235	-	55,63,73	1.57	6 (10%)	64,101,113	1.48	7 (10%)
20	CLA	B	1023	-	61,69,73	1.47	8 (13%)	71,108,113	1.67	14 (19%)
20	CLA	K	204	-	45,53,73	1.79	7 (15%)	52,89,113	1.66	11 (21%)
20	CLA	1	612	-	46,54,73	1.75	5 (10%)	53,90,113	1.45	9 (16%)
20	CLA	F	301	-	45,53,73	1.74	6 (13%)	52,89,113	1.64	6 (11%)
23	BCR	L	420	-	41,41,41	0.99	1 (2%)	56,56,56	1.47	10 (17%)
20	CLA	B	1210	-	65,73,73	1.45	7 (10%)	76,113,113	1.67	10 (13%)
24	LHG	B	5101	-	34,34,48	0.74	1 (2%)	37,40,54	1.27	4 (10%)
20	CLA	B	1222	-	46,54,73	1.69	6 (13%)	53,90,113	1.81	10 (18%)
24	LHG	3	630	-	33,33,48	0.74	0	36,39,54	1.27	4 (11%)
26	LMT	4	631	-	36,36,36	1.21	5 (13%)	47,47,47	0.94	0
20	CLA	1	609	-	60,68,73	1.55	5 (8%)	70,107,113	1.65	9 (12%)
28	CHL	3	608	-	47,55,74	2.15	13 (27%)	50,91,114	2.89	19 (38%)
20	CLA	4	611	-	55,63,73	1.60	6 (10%)	64,101,113	1.57	10 (15%)
20	CLA	A	5005	-	50,58,73	1.65	6 (12%)	58,95,113	1.53	10 (17%)
20	CLA	L	301	-	50,58,73	1.69	6 (12%)	58,95,113	1.78	12 (20%)
20	CLA	1	611	-	46,54,73	1.77	6 (13%)	53,90,113	1.41	8 (15%)
29	LUT	2	621	-	42,43,43	2.30	1 (2%)	51,60,60	1.79	11 (21%)
20	CLA	B	1237	-	65,73,73	1.55	8 (12%)	76,113,113	1.39	10 (13%)
23	BCR	1	623	-	25,25,41	1.03	2 (8%)	33,33,56	1.28	5 (15%)
20	CLA	A	1121	-	51,59,73	1.64	6 (11%)	59,96,113	1.67	9 (15%)
29	LUT	4	621	-	42,43,43	2.41	2 (4%)	51,60,60	2.81	15 (29%)
20	CLA	B	1211	-	56,64,73	1.55	6 (10%)	65,102,113	1.64	10 (15%)
23	BCR	B	4017	-	41,41,41	1.12	2 (4%)	56,56,56	1.25	5 (8%)
20	CLA	A	1122	-	60,68,73	1.52	7 (11%)	70,107,113	1.50	8 (11%)
20	CLA	1	604	-	50,58,73	1.66	6 (12%)	58,95,113	1.69	10 (17%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
28	CHL	2	608	-	48,56,74	2.11	13 (27%)	51,92,114	2.94	19 (37%)
20	CLA	B	1216	-	55,63,73	1.51	7 (12%)	64,101,113	1.76	12 (18%)
20	CLA	B	1223	-	65,73,73	1.49	7 (10%)	76,113,113	1.55	9 (11%)
20	CLA	O	203	-	29,35,73	2.69	9 (31%)	28,60,113	1.74	6 (21%)
28	CHL	1	607	-	47,55,74	2.23	14 (29%)	50,91,114	2.97	21 (42%)
29	LUT	1	621	-	42,43,43	2.56	2 (4%)	51,60,60	1.93	10 (19%)
20	CLA	A	1022	-	65,73,73	1.50	8 (12%)	76,113,113	1.33	9 (11%)
29	LUT	3	621	-	42,43,43	2.35	1 (2%)	51,60,60	2.09	11 (21%)
20	CLA	1	602	-	60,68,73	1.49	7 (11%)	70,107,113	1.63	10 (14%)
20	CLA	3	605	-	29,35,73	2.69	9 (31%)	28,60,113	1.77	7 (25%)
20	CLA	4	613	-	55,63,73	1.60	6 (10%)	64,101,113	1.48	7 (10%)
20	CLA	B	1204	-	61,69,73	1.48	5 (8%)	71,108,113	1.32	8 (11%)
20	CLA	B	1234	-	51,59,73	1.62	7 (13%)	59,96,113	1.63	9 (15%)
20	CLA	2	604	-	50,58,73	1.68	6 (12%)	58,95,113	1.53	8 (13%)
20	CLA	B	1236	-	47,55,73	1.70	6 (12%)	54,91,113	1.60	9 (16%)
20	CLA	3	606	-	46,54,73	1.76	7 (15%)	53,90,113	1.46	6 (11%)
20	CLA	A	1115	-	54,62,73	1.57	6 (11%)	62,99,113	1.56	12 (19%)
20	CLA	A	1127	-	65,73,73	1.44	7 (10%)	76,113,113	1.75	11 (14%)
20	CLA	A	1138	-	60,68,73	1.50	6 (10%)	70,107,113	1.58	10 (14%)
20	CLA	B	1229	-	55,63,73	1.67	7 (12%)	64,101,113	1.45	7 (10%)
23	BCR	J	213	-	41,41,41	1.04	2 (4%)	56,56,56	1.34	7 (12%)
28	CHL	2	607	-	47,55,74	2.20	13 (27%)	50,91,114	2.90	20 (40%)
20	CLA	B	1240	-	65,73,73	1.49	7 (10%)	76,113,113	1.50	10 (13%)
20	CLA	1	603	-	55,63,73	1.58	6 (10%)	64,101,113	1.45	12 (18%)
23	BCR	B	4010	-	41,41,41	1.11	1 (2%)	56,56,56	1.69	13 (23%)
19	CL0	A	1011	-	65,73,73	1.45	8 (12%)	76,113,113	1.41	7 (9%)
23	BCR	3	623	-	41,41,41	1.05	2 (4%)	56,56,56	1.23	7 (12%)
20	CLA	A	1111	-	65,73,73	1.48	7 (10%)	76,113,113	1.50	8 (10%)
20	CLA	4	609	-	55,63,73	1.55	6 (10%)	64,101,113	1.84	10 (15%)
20	CLA	2	609	-	55,63,73	1.59	6 (10%)	64,101,113	1.78	9 (14%)
23	BCR	F	416	-	41,41,41	1.03	1 (2%)	56,56,56	1.34	10 (17%)
20	CLA	A	1107	-	45,53,73	1.79	6 (13%)	52,89,113	1.66	8 (15%)
26	LMT	G	401	-	36,36,36	1.18	5 (13%)	47,47,47	1.03	1 (2%)
20	CLA	A	1108	-	45,53,73	1.68	7 (15%)	52,89,113	1.90	9 (17%)
20	CLA	B	1226	-	55,63,73	1.62	7 (12%)	64,101,113	1.97	10 (15%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
29	LUT	4	620	-	42,43,43	2.42	2 (4%)	51,60,60	2.05	10 (19%)
23	BCR	B	4014	-	41,41,41	1.05	2 (4%)	56,56,56	1.39	8 (14%)
22	SF4	C	1003	7	0,12,12	-	-	-	-	-
20	CLA	A	1134	-	45,53,73	1.72	6 (13%)	52,89,113	1.70	7 (13%)
20	CLA	O	202	-	29,35,73	2.69	9 (31%)	28,60,113	1.73	6 (21%)
20	CLA	B	1228	-	49,57,73	1.67	6 (12%)	55,93,113	1.59	9 (16%)
20	CLA	B	1208	-	45,53,73	1.73	6 (13%)	52,89,113	1.69	11 (21%)
20	CLA	K	203	-	29,35,73	2.69	9 (31%)	28,60,113	1.72	6 (21%)
29	LUT	4	623	-	42,43,43	2.33	1 (2%)	51,60,60	1.92	10 (19%)
20	CLA	B	1201	-	50,58,73	1.67	6 (12%)	58,95,113	1.59	13 (22%)
20	CLA	B	1217	-	45,53,73	1.76	6 (13%)	52,89,113	1.51	7 (13%)
20	CLA	3	611	-	41,49,73	1.86	6 (14%)	47,84,113	1.53	6 (12%)
20	CLA	B	1231	-	45,53,73	1.81	6 (13%)	52,89,113	1.63	9 (17%)
21	PQN	A	2001	-	34,34,34	0.40	0	42,45,45	1.04	1 (2%)
23	BCR	A	4008	-	41,41,41	1.04	1 (2%)	56,56,56	1.81	14 (25%)
25	LMG	J	301	-	49,49,55	0.81	0	57,57,63	1.27	4 (7%)
20	CLA	3	610	-	55,63,73	1.59	6 (10%)	64,101,113	1.43	8 (12%)
23	BCR	B	4009	-	41,41,41	1.02	1 (2%)	56,56,56	1.53	10 (17%)
23	BCR	3	624	-	41,41,41	0.99	2 (4%)	56,56,56	1.33	9 (16%)
20	CLA	B	1238	-	65,73,73	1.46	6 (9%)	76,113,113	1.40	10 (13%)
20	CLA	A	1128	-	65,73,73	1.57	7 (10%)	76,113,113	1.56	12 (15%)
23	BCR	M	4021	-	41,41,41	1.00	2 (4%)	56,56,56	1.28	9 (16%)
20	CLA	1	610	-	55,63,73	1.60	7 (12%)	64,101,113	1.82	11 (17%)
20	CLA	3	614	-	48,56,73	1.72	5 (10%)	55,92,113	1.67	9 (16%)
20	CLA	A	1139	-	50,58,73	1.68	7 (14%)	58,95,113	1.60	7 (12%)
24	LHG	A	5001	-	48,48,48	0.66	1 (2%)	51,54,54	1.27	6 (11%)
20	CLA	A	1112	-	45,53,73	1.77	7 (15%)	52,89,113	1.50	10 (19%)
20	CLA	B	1205	-	65,73,73	1.45	7 (10%)	76,113,113	1.53	11 (14%)
20	CLA	A	1801	-	50,58,73	1.67	7 (14%)	58,95,113	1.65	8 (13%)
20	CLA	A	1114	-	45,53,73	1.72	6 (13%)	52,89,113	1.92	10 (19%)
20	CLA	A	1135	-	51,59,73	1.72	8 (15%)	59,96,113	1.53	10 (16%)
20	CLA	A	1136	-	65,73,73	1.48	6 (9%)	76,113,113	1.48	9 (11%)
20	CLA	B	1012	-	55,63,73	1.62	7 (12%)	64,101,113	1.63	10 (15%)
25	LMG	2	631	-	36,36,55	0.94	0	44,44,63	1.20	4 (9%)
28	CHL	2	615	-	47,55,74	2.20	13 (27%)	50,91,114	2.87	19 (38%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
22	SF4	C	1002	7	0,12,12	-	-	-		
20	CLA	K	201	-	55,63,73	1.59	6 (10%)	64,101,113	1.47	6 (9%)
20	CLA	A	1124	-	57,65,73	1.49	6 (10%)	66,103,113	1.48	7 (10%)
26	LMT	A	5004	-	34,34,36	1.23	5 (14%)	45,45,47	1.03	1 (2%)
20	CLA	A	1125	-	60,68,73	1.54	8 (13%)	70,107,113	1.92	13 (18%)
20	CLA	B	1232	-	45,53,73	1.82	6 (13%)	52,89,113	1.95	11 (21%)
20	CLA	A	1110	-	55,63,73	1.61	6 (10%)	64,101,113	1.59	9 (14%)
20	CLA	B	1203	-	65,73,73	1.42	7 (10%)	76,113,113	1.47	10 (13%)
23	BCR	A	4011	-	41,41,41	1.04	2 (4%)	56,56,56	1.20	6 (10%)
20	CLA	K	202	-	46,54,73	1.74	6 (13%)	53,90,113	1.56	7 (13%)
20	CLA	2	610	-	60,68,73	1.51	6 (10%)	70,107,113	1.27	6 (8%)
23	BCR	I	118	-	41,41,41	1.04	2 (4%)	56,56,56	1.28	8 (14%)
28	CHL	4	608	-	51,59,74	2.10	14 (27%)	55,96,114	2.73	21 (38%)
20	CLA	A	1131	-	65,73,73	1.43	6 (9%)	76,113,113	1.34	9 (11%)
20	CLA	B	1215	-	60,68,73	1.49	7 (11%)	70,107,113	1.85	13 (18%)
20	CLA	A	1120	-	45,53,73	1.72	6 (13%)	52,89,113	1.57	6 (11%)
20	CLA	4	614	-	46,54,73	1.75	6 (13%)	53,90,113	1.55	8 (15%)
20	CLA	3	613	-	55,63,73	1.62	6 (10%)	64,101,113	1.44	7 (10%)
20	CLA	B	1239	-	45,53,73	1.75	6 (13%)	52,89,113	1.66	8 (15%)
20	CLA	A	1117	-	65,73,73	1.42	6 (9%)	76,113,113	1.68	14 (18%)
23	BCR	B	4006	-	41,41,41	1.05	2 (4%)	56,56,56	1.20	6 (10%)
20	CLA	3	609	-	60,68,73	1.51	6 (10%)	70,107,113	1.44	8 (11%)
20	CLA	G	218	-	55,63,73	1.62	6 (10%)	64,101,113	1.42	7 (10%)
20	CLA	L	303	-	45,53,73	1.72	7 (15%)	52,89,113	1.82	8 (15%)
20	CLA	F	302	-	46,54,73	1.75	6 (13%)	53,90,113	1.53	8 (15%)
20	CLA	3	607	-	60,68,73	1.53	5 (8%)	70,107,113	1.38	7 (10%)
20	CLA	4	610	-	55,63,73	1.56	7 (12%)	64,101,113	1.72	9 (14%)
20	CLA	J	102	-	45,53,73	1.78	6 (13%)	52,89,113	1.66	8 (15%)
25	LMG	J	302	-	26,26,55	1.13	1 (3%)	34,34,63	1.15	4 (11%)
20	CLA	A	1132	-	65,73,73	1.39	7 (10%)	76,113,113	1.82	14 (18%)
29	LUT	2	623	-	42,43,43	2.44	1 (2%)	51,60,60	1.93	12 (23%)
20	CLA	I	121	-	65,73,73	1.43	7 (10%)	76,113,113	1.48	9 (11%)
23	BCR	O	301	-	14,14,41	1.03	1 (7%)	19,20,56	1.00	1 (5%)
24	LHG	1	630	-	36,36,48	0.68	0	39,42,54	1.23	4 (10%)
20	CLA	4	612	-	46,54,73	1.77	5 (10%)	53,90,113	1.45	8 (15%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
20	CLA	A	1130	-	60,68,73	1.51	6 (10%)	70,107,113	1.49	13 (18%)
20	CLA	B	1212	-	45,53,73	1.69	7 (15%)	52,89,113	1.80	8 (15%)
20	CLA	A	1106	-	55,63,73	1.54	7 (12%)	64,101,113	1.76	7 (10%)
20	CLA	B	1213	-	55,63,73	1.50	7 (12%)	64,101,113	1.65	10 (15%)
20	CLA	A	1013	-	56,64,73	1.49	8 (14%)	65,102,113	1.94	13 (20%)
20	CLA	2	612	-	52,60,73	1.66	6 (11%)	60,97,113	1.54	9 (15%)
28	CHL	4	615	-	43,51,74	2.22	13 (30%)	45,86,114	3.03	18 (40%)
20	CLA	1	614	-	46,54,73	1.74	6 (13%)	53,90,113	1.68	9 (16%)
20	CLA	A	1126	-	60,68,73	1.45	8 (13%)	70,107,113	1.96	16 (22%)
20	CLA	4	604	-	50,58,73	1.64	5 (10%)	58,95,113	1.57	9 (15%)
28	CHL	4	607	-	47,55,74	2.21	13 (27%)	50,91,114	2.87	18 (36%)
20	CLA	A	1102	-	45,53,73	1.76	6 (13%)	52,89,113	1.57	9 (17%)
24	LHG	A	5003	-	30,30,48	0.77	1 (3%)	33,36,54	1.24	3 (9%)
27	DGD	B	5002	-	62,62,67	0.98	3 (4%)	76,76,81	1.27	8 (10%)
20	CLA	A	1116	-	54,62,73	1.63	7 (12%)	62,99,113	1.47	9 (14%)
20	CLA	H	200	-	45,53,73	1.78	5 (11%)	52,89,113	1.53	9 (17%)
20	CLA	4	601	-	50,58,73	1.70	6 (12%)	58,95,113	1.55	7 (12%)
28	CHL	2	601	-	66,74,74	1.85	13 (19%)	73,114,114	2.56	22 (30%)
23	BCR	G	311	-	41,41,41	0.99	1 (2%)	56,56,56	1.34	9 (16%)
29	LUT	2	620	-	42,43,43	2.37	1 (2%)	51,60,60	2.31	20 (39%)
28	CHL	4	606	-	47,55,74	2.19	14 (29%)	50,91,114	2.89	19 (38%)
20	CLA	A	1119	-	65,73,73	1.40	7 (10%)	76,113,113	1.57	11 (14%)
20	CLA	A	8895	-	65,73,73	1.48	7 (10%)	76,113,113	1.54	6 (7%)
23	BCR	A	4001	-	41,41,41	1.05	2 (4%)	56,56,56	1.35	7 (12%)
20	CLA	4	602	-	60,68,73	1.49	6 (10%)	70,107,113	1.55	7 (10%)
28	CHL	2	606	-	46,54,74	2.22	14 (30%)	49,90,114	2.91	18 (36%)
20	CLA	B	1224	-	61,69,73	1.51	8 (13%)	71,108,113	1.65	12 (16%)
28	CHL	2	602	-	56,64,74	2.04	14 (25%)	61,102,114	2.67	22 (36%)
23	BCR	K	301	-	41,41,41	1.03	1 (2%)	56,56,56	1.29	5 (8%)
20	CLA	B	1209	-	45,53,73	1.82	6 (13%)	52,89,113	1.67	8 (15%)
20	CLA	2	614	-	50,58,73	1.66	6 (12%)	58,95,113	1.64	9 (15%)
20	CLA	1	606	-	45,53,73	1.74	6 (13%)	52,89,113	1.75	10 (19%)
20	CLA	F	303	-	29,35,73	2.69	9 (31%)	28,60,113	1.74	6 (21%)
26	LMT	B	5001	-	32,32,36	1.27	6 (18%)	43,43,47	0.95	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	CLA	B	1214	-	-	9/30/108/115	-
20	CLA	B	1225	-	-	14/37/115/115	-
20	CLA	A	1113	-	-	6/13/91/115	-
20	CLA	B	1227	-	-	2/13/91/115	-
20	CLA	G	201	-	1/1/12/20	6/19/97/115	-
23	BCR	A	4002	-	-	9/29/63/63	0/2/2/2
20	CLA	A	1103	-	1/1/15/20	16/37/115/115	-
20	CLA	B	1206	-	-	7/16/94/115	-
28	CHL	1	601	-	3/3/18/26	11/27/125/137	-
20	CLA	G	202	-	1/1/11/20	8/15/93/115	-
20	CLA	1	608	-	1/1/12/20	3/19/97/115	-
20	CLA	A	1140	-	-	7/21/99/115	-
20	CLA	A	1101	-	1/1/12/20	9/19/97/115	-
21	PQN	B	2002	-	-	8/23/43/43	0/2/2/2
20	CLA	2	613	-	1/1/15/20	13/37/115/115	-
23	BCR	J	212	-	-	14/29/63/63	0/2/2/2
23	BCR	L	419	-	-	5/29/63/63	0/2/2/2
23	BCR	A	4003	-	-	15/29/63/63	0/2/2/2
22	SF4	A	3001	2,1	-	-	0/6/5/5
20	CLA	L	302	-	-	12/31/109/115	-
20	CLA	B	1202	-	1/1/15/20	12/37/115/115	-
25	LMG	A	5002	-	-	13/29/49/70	0/1/1/1
26	LMT	G	402	-	-	6/17/57/61	0/2/2/2
20	CLA	3	604	-	1/1/12/20	6/19/97/115	-
29	LUT	1	620	-	-	5/29/67/67	0/2/2/2
20	CLA	4	603	-	1/1/13/20	12/25/103/115	-
23	BCR	B	4005	-	-	8/29/63/63	0/2/2/2
20	CLA	3	612	-	1/1/11/20	4/13/91/115	-
20	CLA	A	1137	-	1/1/11/20	7/13/91/115	-
26	LMT	1	631	-	-	8/21/61/61	0/2/2/2
20	CLA	1	615	-	1/1/11/20	8/15/93/115	-
20	CLA	2	603	-	1/1/11/20	6/15/93/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	CLA	1	613	-	1/1/13/20	9/25/103/115	-
20	CLA	A	1104	-	-	16/37/115/115	-
20	CLA	B	1221	-	-	3/24/102/115	-
23	BCR	B	4004	-	-	14/29/63/63	0/2/2/2
20	CLA	A	1105	-	1/1/12/20	1/19/97/115	-
20	CLA	B	1219	-	-	3/13/91/115	-
20	CLA	B	1021	-	1/1/15/20	16/37/115/115	-
20	CLA	3	603	-	-	11/25/103/115	-
20	CLA	A	1109	-	1/1/15/20	10/37/115/115	-
24	LHG	4	630	-	-	17/42/42/53	-
29	LUT	3	620	-	-	2/29/67/67	0/2/2/2
20	CLA	B	1220	-	1/1/11/20	6/13/91/115	-
24	LHG	2	630	-	-	10/36/36/53	-
20	CLA	3	602	-	1/1/14/20	6/31/109/115	-
20	CLA	A	1133	-	-	7/13/91/115	-
23	BCR	I	120	-	-	14/29/63/63	0/2/2/2
28	CHL	2	611	-	3/3/18/26	8/27/125/137	-
20	CLA	A	1118	-	-	15/25/103/115	-
20	CLA	3	617	-	1/1/11/20	7/15/93/115	-
23	BCR	A	4007	-	-	8/29/63/63	0/2/2/2
20	CLA	B	1230	-	1/1/11/20	7/13/91/115	-
20	CLA	O	201	-	1/1/5/20	-	-
20	CLA	B	1235	-	1/1/13/20	8/25/103/115	-
20	CLA	B	1023	-	-	8/33/111/115	-
20	CLA	K	204	-	1/1/11/20	6/13/91/115	-
20	CLA	1	612	-	1/1/11/20	6/15/93/115	-
20	CLA	F	301	-	1/1/11/20	3/13/91/115	-
23	BCR	L	420	-	-	7/29/63/63	0/2/2/2
20	CLA	B	1210	-	1/1/15/20	23/37/115/115	-
28	CHL	3	608	-	3/3/16/26	5/17/115/137	-
20	CLA	B	1222	-	1/1/11/20	6/15/93/115	-
24	LHG	B	5101	-	-	9/39/39/53	-
24	LHG	3	630	-	-	12/38/38/53	-
20	CLA	1	609	-	1/1/14/20	8/31/109/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	LMT	4	631	-	-	4/21/61/61	0/2/2/2
20	CLA	4	611	-	-	7/25/103/115	-
20	CLA	A	5005	-	-	4/19/97/115	-
20	CLA	L	301	-	-	8/19/97/115	-
20	CLA	1	611	-	-	6/15/93/115	-
29	LUT	2	621	-	-	2/29/67/67	0/2/2/2
20	CLA	B	1237	-	1/1/15/20	11/37/115/115	-
23	BCR	1	623	-	-	5/18/35/63	0/1/1/2
20	CLA	A	1121	-	1/1/12/20	7/21/99/115	-
29	LUT	4	621	-	-	4/29/67/67	0/2/2/2
20	CLA	B	1211	-	1/1/13/20	13/27/105/115	-
23	BCR	B	4017	-	-	17/29/63/63	0/2/2/2
20	CLA	A	1122	-	1/1/14/20	13/31/109/115	-
20	CLA	1	604	-	1/1/12/20	4/19/97/115	-
28	CHL	2	608	-	3/3/16/26	9/18/116/137	-
20	CLA	B	1216	-	1/1/13/20	7/25/103/115	-
20	CLA	B	1223	-	1/1/15/20	7/37/115/115	-
20	CLA	O	203	-	1/1/5/20	-	-
28	CHL	1	607	-	3/3/16/26	9/17/115/137	-
29	LUT	1	621	-	-	5/29/67/67	0/2/2/2
20	CLA	A	1022	-	1/1/15/20	9/37/115/115	-
29	LUT	3	621	-	-	8/29/67/67	0/2/2/2
20	CLA	1	602	-	1/1/14/20	2/31/109/115	-
20	CLA	3	605	-	1/1/5/20	-	-
20	CLA	4	613	-	1/1/13/20	9/25/103/115	-
20	CLA	B	1204	-	1/1/14/20	8/33/111/115	-
20	CLA	B	1234	-	1/1/12/20	5/21/99/115	-
20	CLA	2	604	-	1/1/12/20	4/19/97/115	-
20	CLA	3	606	-	1/1/11/20	8/15/93/115	-
20	CLA	B	1236	-	-	3/16/94/115	-
20	CLA	A	1115	-	-	5/24/102/115	-
20	CLA	A	1138	-	1/1/14/20	8/31/109/115	-
20	CLA	B	1229	-	1/1/13/20	9/25/103/115	-
28	CHL	2	607	-	3/3/16/26	8/17/115/137	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	CLA	A	1127	-	-	20/37/115/115	-
23	BCR	J	213	-	-	8/29/63/63	0/2/2/2
20	CLA	B	1240	-	1/1/15/20	13/37/115/115	-
20	CLA	1	603	-	1/1/13/20	15/25/103/115	-
23	BCR	B	4010	-	-	7/29/63/63	0/2/2/2
19	CL0	A	1011	-	2/2/20/25	7/37/135/135	-
23	BCR	3	623	-	-	14/29/63/63	0/2/2/2
20	CLA	A	1111	-	-	15/37/115/115	-
20	CLA	4	609	-	1/1/13/20	9/25/103/115	-
20	CLA	2	609	-	1/1/13/20	2/25/103/115	-
23	BCR	F	416	-	-	17/29/63/63	0/2/2/2
20	CLA	A	1107	-	-	7/13/91/115	-
26	LMT	G	401	-	-	5/21/61/61	0/2/2/2
20	CLA	A	1108	-	1/1/11/20	5/13/91/115	-
20	CLA	B	1226	-	1/1/13/20	8/25/103/115	-
29	LUT	4	620	-	-	9/29/67/67	0/2/2/2
23	BCR	B	4014	-	-	19/29/63/63	0/2/2/2
22	SF4	C	1003	7	-	-	0/6/5/5
20	CLA	A	1134	-	-	7/13/91/115	-
20	CLA	O	202	-	1/1/5/20	-	-
20	CLA	B	1228	-	1/1/11/20	7/18/96/115	-
20	CLA	B	1208	-	1/1/11/20	2/13/91/115	-
20	CLA	K	203	-	1/1/5/20	-	-
29	LUT	4	623	-	1/1/12/27	12/29/67/67	0/2/2/2
20	CLA	B	1201	-	1/1/12/20	9/19/97/115	-
20	CLA	B	1217	-	-	5/13/91/115	-
20	CLA	3	611	-	1/1/10/20	4/8/86/115	-
20	CLA	B	1231	-	-	6/13/91/115	-
21	PQN	A	2001	-	-	6/23/43/43	0/2/2/2
23	BCR	A	4008	-	-	11/29/63/63	0/2/2/2
25	LMG	J	301	-	-	15/44/64/70	0/1/1/1
20	CLA	3	610	-	1/1/13/20	8/25/103/115	-
23	BCR	B	4009	-	-	3/29/63/63	0/2/2/2
23	BCR	3	624	-	-	16/29/63/63	0/2/2/2
20	CLA	B	1238	-	1/1/15/20	15/37/115/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	CLA	A	1128	-	-	12/37/115/115	-
23	BCR	M	4021	-	-	7/29/63/63	0/2/2/2
20	CLA	1	610	-	1/1/13/20	6/25/103/115	-
20	CLA	3	614	-	1/1/11/20	8/17/95/115	-
20	CLA	A	1139	-	1/1/12/20	6/19/97/115	-
24	LHG	A	5001	-	-	20/53/53/53	-
20	CLA	B	1205	-	1/1/15/20	10/37/115/115	-
20	CLA	A	1112	-	-	4/13/91/115	-
20	CLA	A	1801	-	1/1/12/20	8/19/97/115	-
20	CLA	A	1114	-	1/1/11/20	6/13/91/115	-
20	CLA	A	1135	-	-	8/21/99/115	-
20	CLA	A	1136	-	1/1/15/20	10/37/115/115	-
20	CLA	B	1012	-	1/1/13/20	15/25/103/115	-
28	CHL	2	615	-	3/3/16/26	11/17/115/137	-
25	LMG	2	631	-	-	6/31/51/70	0/1/1/1
22	SF4	C	1002	7	-	-	0/6/5/5
20	CLA	K	201	-	1/1/13/20	7/25/103/115	-
20	CLA	A	1124	-	-	11/28/106/115	-
26	LMT	A	5004	-	-	7/19/59/61	0/2/2/2
20	CLA	A	1125	-	1/1/14/20	16/31/109/115	-
20	CLA	B	1232	-	1/1/11/20	4/13/91/115	-
20	CLA	A	1110	-	1/1/13/20	8/25/103/115	-
20	CLA	B	1203	-	1/1/15/20	13/37/115/115	-
23	BCR	A	4011	-	-	19/29/63/63	0/2/2/2
20	CLA	K	202	-	1/1/11/20	9/15/93/115	-
20	CLA	2	610	-	1/1/14/20	9/31/109/115	-
28	CHL	4	608	-	3/3/17/26	8/21/119/137	-
23	BCR	I	118	-	-	12/29/63/63	0/2/2/2
20	CLA	A	1131	-	1/1/15/20	4/37/115/115	-
20	CLA	B	1215	-	1/1/14/20	11/31/109/115	-
20	CLA	4	614	-	1/1/11/20	7/15/93/115	-
20	CLA	A	1120	-	-	3/13/91/115	-
20	CLA	3	613	-	1/1/13/20	10/25/103/115	-
20	CLA	B	1239	-	-	5/13/91/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
20	CLA	A	1117	-	1/1/15/20	12/37/115/115	-
23	BCR	B	4006	-	-	12/29/63/63	0/2/2/2
20	CLA	3	609	-	1/1/14/20	11/31/109/115	-
20	CLA	G	218	-	-	6/25/103/115	-
20	CLA	L	303	-	1/1/11/20	7/13/91/115	-
20	CLA	F	302	-	1/1/11/20	4/15/93/115	-
20	CLA	3	607	-	1/1/14/20	18/31/109/115	-
20	CLA	4	610	-	1/1/13/20	6/25/103/115	-
20	CLA	J	102	-	1/1/11/20	10/13/91/115	-
29	LUT	2	623	-	1/1/12/27	9/29/67/67	0/2/2/2
20	CLA	A	1132	-	1/1/15/20	9/37/115/115	-
25	LMG	J	302	-	-	5/21/41/70	0/1/1/1
20	CLA	I	121	-	-	13/37/115/115	-
23	BCR	O	301	-	-	3/5/22/63	0/1/1/2
24	LHG	1	630	-	-	15/41/41/53	-
20	CLA	4	612	-	1/1/11/20	6/15/93/115	-
28	CHL	4	615	-	3/3/15/26	2/12/110/137	-
20	CLA	A	1130	-	-	8/31/109/115	-
20	CLA	A	1106	-	1/1/13/20	7/25/103/115	-
20	CLA	B	1212	-	-	1/13/91/115	-
20	CLA	A	1013	-	-	3/27/105/115	-
20	CLA	2	612	-	1/1/12/20	5/22/100/115	-
20	CLA	B	1213	-	-	7/25/103/115	-
20	CLA	1	614	-	1/1/11/20	7/15/93/115	-
20	CLA	A	1126	-	-	13/31/109/115	-
20	CLA	4	604	-	1/1/12/20	6/19/97/115	-
28	CHL	4	607	-	3/3/16/26	7/17/115/137	-
20	CLA	A	1102	-	-	5/13/91/115	-
24	LHG	A	5003	-	-	13/35/35/53	-
27	DGD	B	5002	-	-	18/50/90/95	0/2/2/2
20	CLA	A	1116	-	1/1/12/20	7/24/102/115	-
20	CLA	H	200	-	1/1/11/20	6/13/91/115	-
20	CLA	4	601	-	1/1/12/20	9/19/97/115	-
28	CHL	2	601	-	3/3/20/26	22/39/137/137	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
23	BCR	G	311	-	-	8/29/63/63	0/2/2/2
29	LUT	2	620	-	-	7/29/67/67	0/2/2/2
28	CHL	4	606	-	3/3/16/26	8/17/115/137	-
20	CLA	A	1119	-	1/1/15/20	10/37/115/115	-
20	CLA	A	8895	-	-	10/37/115/115	-
28	CHL	2	606	-	3/3/16/26	7/15/113/137	-
20	CLA	4	602	-	1/1/14/20	2/31/109/115	-
23	BCR	A	4001	-	-	15/29/63/63	0/2/2/2
20	CLA	B	1224	-	1/1/14/20	11/33/111/115	-
28	CHL	2	602	-	3/3/18/26	14/27/125/137	-
23	BCR	K	301	-	-	14/29/63/63	0/2/2/2
20	CLA	B	1209	-	-	4/13/91/115	-
20	CLA	2	614	-	1/1/12/20	4/19/97/115	-
20	CLA	1	606	-	1/1/11/20	6/13/91/115	-
20	CLA	F	303	-	1/1/5/20	-	-
26	LMT	B	5001	-	-	5/17/57/61	0/2/2/2

The worst 5 of 1232 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
29	1	620	LUT	C24-C25	15.99	1.53	1.33
29	1	621	LUT	C24-C25	15.52	1.52	1.33
29	2	623	LUT	C24-C25	15.07	1.51	1.33
29	4	620	LUT	C24-C25	14.76	1.51	1.33
29	2	620	LUT	C24-C25	14.53	1.51	1.33

The worst 5 of 1982 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	2	609	CLA	C4A-NA-C1A	10.19	111.29	106.71
20	4	609	CLA	C4A-NA-C1A	9.93	111.17	106.71
20	1	609	CLA	C4A-NA-C1A	9.33	110.90	106.71
20	A	1106	CLA	C4A-NA-C1A	9.24	110.86	106.71
20	1	610	CLA	C4A-NA-C1A	9.21	110.84	106.71

5 of 148 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
19	A	1011	CL0	NA
19	A	1011	CL0	NC
20	A	1022	CLA	ND
20	A	1101	CLA	ND
20	A	1103	CLA	ND

5 of 1811 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
20	A	1013	CLA	CBD-CGD-O2D-CED
20	A	1022	CLA	C1A-C2A-CAA-CBA
20	A	1022	CLA	C3A-C2A-CAA-CBA
20	A	1102	CLA	C1A-C2A-CAA-CBA
20	A	1102	CLA	C3A-C2A-CAA-CBA

There are no ring outliers.

167 monomers are involved in 367 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
20	B	1214	CLA	3	0
20	B	1225	CLA	6	0
20	A	1113	CLA	1	0
20	B	1227	CLA	2	0
20	A	1103	CLA	4	0
20	B	1206	CLA	4	0
21	B	2002	PQN	5	0
20	G	202	CLA	1	0
20	A	1140	CLA	4	0
20	A	1101	CLA	2	0
23	J	212	BCR	1	0
20	2	613	CLA	1	0
23	L	419	BCR	3	0
28	1	601	CHL	1	0
23	A	4003	BCR	2	0
20	L	302	CLA	5	0
20	B	1202	CLA	6	0
25	A	5002	LMG	2	0
20	3	604	CLA	1	0
29	1	620	LUT	3	0
20	4	603	CLA	4	0
23	B	4005	BCR	3	0
20	A	1137	CLA	3	0
20	3	612	CLA	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
26	1	631	LMT	2	0
20	A	1104	CLA	5	0
20	B	1221	CLA	5	0
23	B	4004	BCR	1	0
20	A	1105	CLA	1	0
20	B	1219	CLA	1	0
20	B	1021	CLA	3	0
20	A	1109	CLA	2	0
24	4	630	LHG	2	0
29	3	620	LUT	7	0
20	B	1220	CLA	2	0
24	2	630	LHG	2	0
20	A	1133	CLA	2	0
20	3	602	CLA	3	0
23	I	120	BCR	5	0
20	A	1118	CLA	4	0
20	3	617	CLA	1	0
23	A	4007	BCR	2	0
20	B	1230	CLA	3	0
20	B	1235	CLA	2	0
20	B	1023	CLA	5	0
20	K	204	CLA	2	0
20	F	301	CLA	4	0
23	L	420	BCR	4	0
20	B	1210	CLA	6	0
24	3	630	LHG	1	0
26	4	631	LMT	3	0
20	1	609	CLA	3	0
28	3	608	CHL	3	0
20	A	5005	CLA	4	0
20	L	301	CLA	1	0
29	2	621	LUT	2	0
20	B	1237	CLA	8	0
29	4	621	LUT	2	0
23	B	4017	BCR	6	0
20	A	1122	CLA	4	0
28	2	608	CHL	3	0
20	B	1216	CLA	2	0
20	B	1223	CLA	6	0
28	1	607	CHL	2	0
29	1	621	LUT	5	0
20	A	1022	CLA	8	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
29	3	621	LUT	2	0
20	1	602	CLA	2	0
20	B	1204	CLA	5	0
20	2	604	CLA	1	0
20	B	1236	CLA	1	0
20	3	606	CLA	1	0
20	A	1115	CLA	1	0
20	A	1127	CLA	6	0
20	A	1138	CLA	5	0
20	B	1229	CLA	1	0
23	J	213	BCR	3	0
20	B	1240	CLA	2	0
20	1	603	CLA	4	0
23	B	4010	BCR	5	0
19	A	1011	CL0	6	0
23	3	623	BCR	1	0
20	A	1111	CLA	6	0
20	2	609	CLA	1	0
23	F	416	BCR	2	0
20	A	1107	CLA	1	0
26	G	401	LMT	3	0
20	A	1108	CLA	3	0
20	B	1226	CLA	3	0
29	4	620	LUT	4	0
23	B	4014	BCR	7	0
20	A	1134	CLA	2	0
20	B	1228	CLA	3	0
20	B	1208	CLA	4	0
29	4	623	LUT	1	0
20	B	1201	CLA	3	0
20	B	1217	CLA	4	0
20	B	1231	CLA	1	0
21	A	2001	PQN	2	0
23	A	4008	BCR	2	0
25	J	301	LMG	3	0
20	3	610	CLA	4	0
23	B	4009	BCR	2	0
23	3	624	BCR	4	0
20	B	1238	CLA	7	0
20	A	1128	CLA	5	0
23	M	4021	BCR	5	0
20	1	610	CLA	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
20	A	1139	CLA	2	0
24	A	5001	LHG	3	0
20	B	1205	CLA	4	0
20	A	1801	CLA	2	0
20	A	1114	CLA	2	0
20	A	1135	CLA	2	0
20	A	1136	CLA	3	0
20	B	1012	CLA	6	0
20	K	201	CLA	1	0
20	A	1124	CLA	3	0
26	A	5004	LMT	1	0
20	A	1125	CLA	2	0
20	B	1232	CLA	1	0
20	A	1110	CLA	2	0
20	B	1203	CLA	4	0
23	A	4011	BCR	1	0
20	2	610	CLA	2	0
23	I	118	BCR	1	0
28	4	608	CHL	1	0
20	A	1131	CLA	2	0
20	B	1215	CLA	2	0
20	A	1120	CLA	1	0
20	3	613	CLA	2	0
20	B	1239	CLA	2	0
20	A	1117	CLA	7	0
23	B	4006	BCR	4	0
20	3	609	CLA	4	0
20	L	303	CLA	4	0
20	3	607	CLA	1	0
20	4	610	CLA	3	0
25	J	302	LMG	1	0
20	A	1132	CLA	4	0
29	2	623	LUT	2	0
20	I	121	CLA	7	0
24	1	630	LHG	1	0
20	A	1130	CLA	3	0
20	B	1212	CLA	1	0
20	A	1106	CLA	2	0
20	B	1213	CLA	3	0
20	A	1013	CLA	2	0
20	A	1126	CLA	5	0
20	A	1102	CLA	4	0

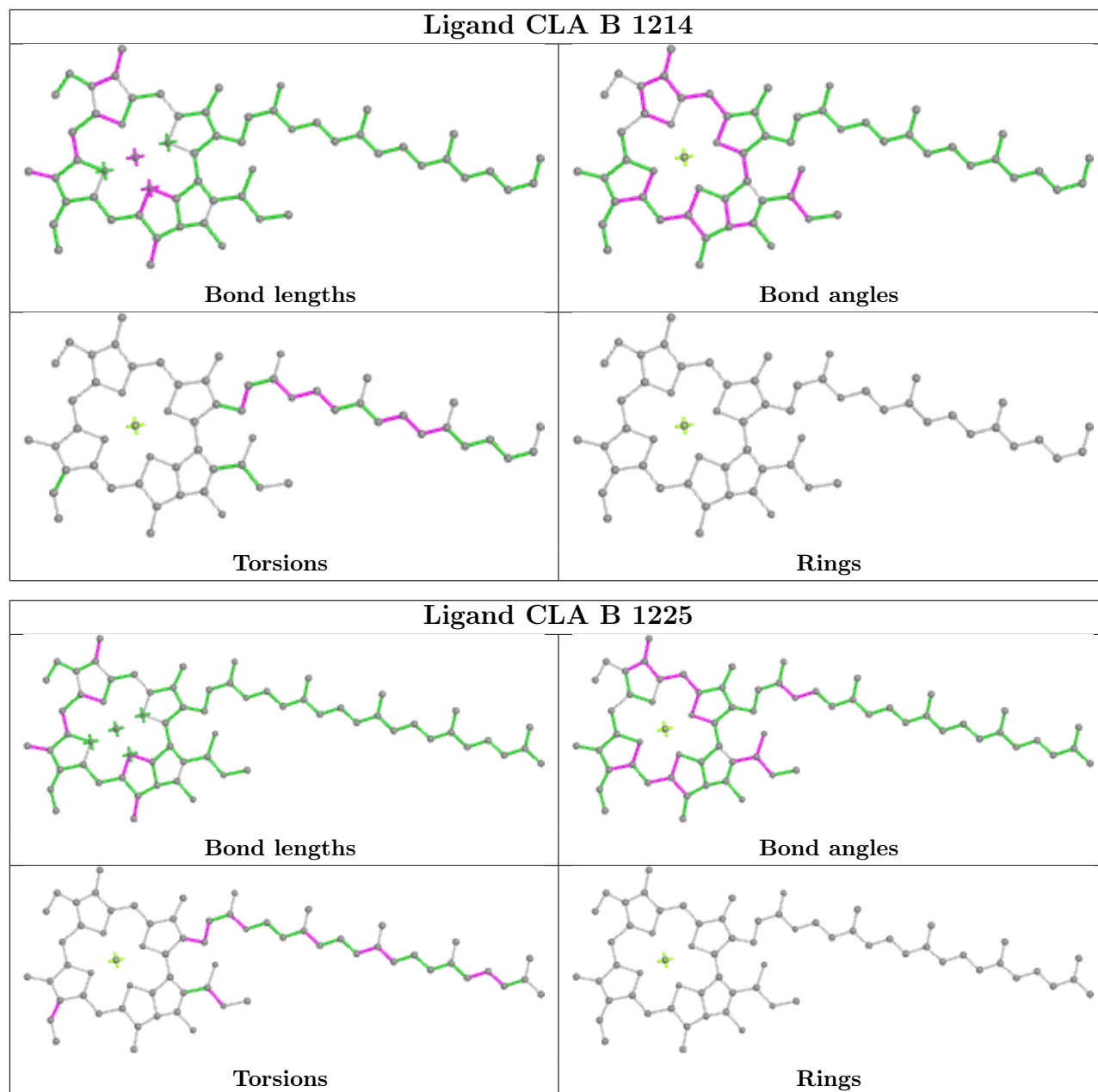
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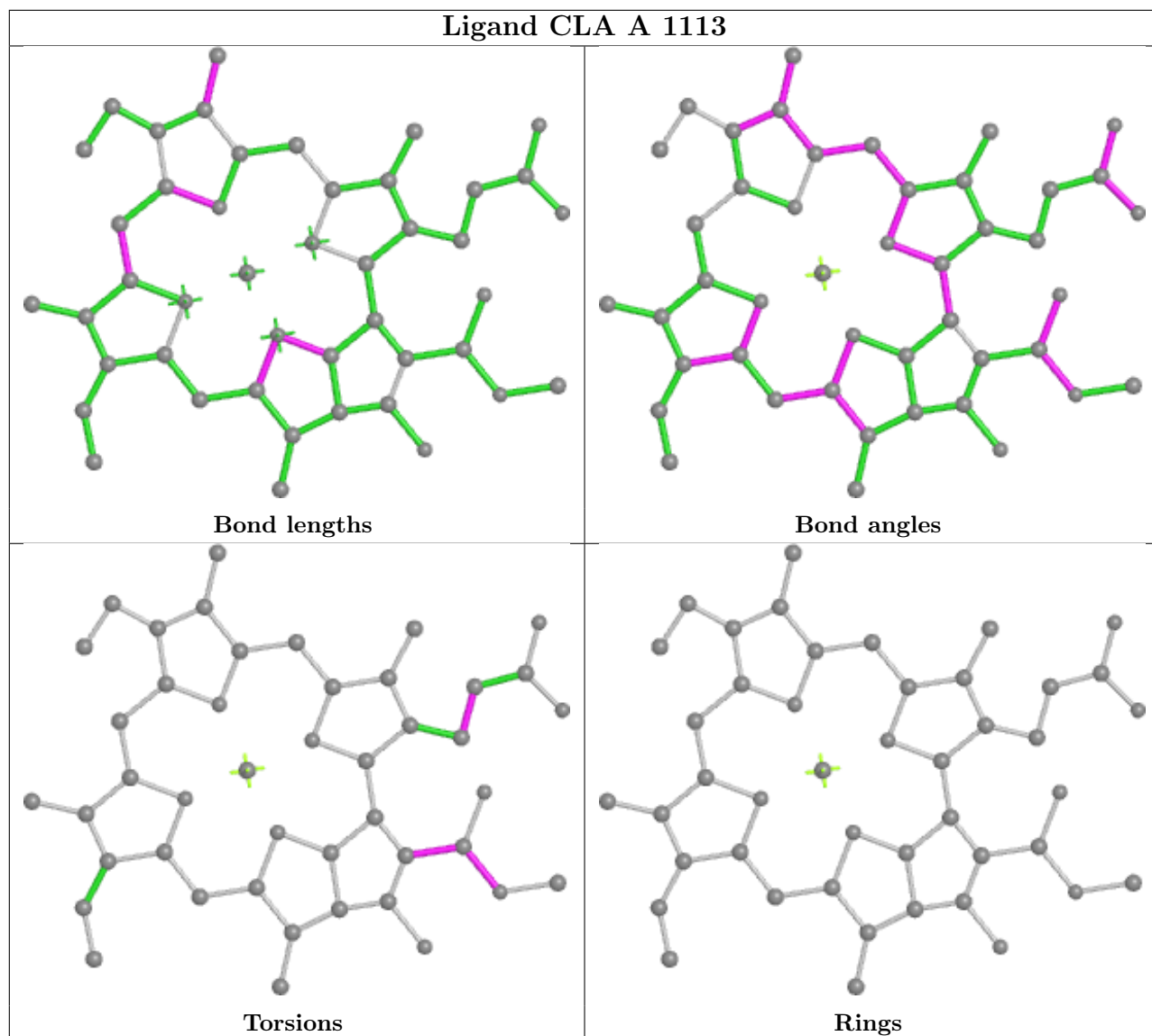
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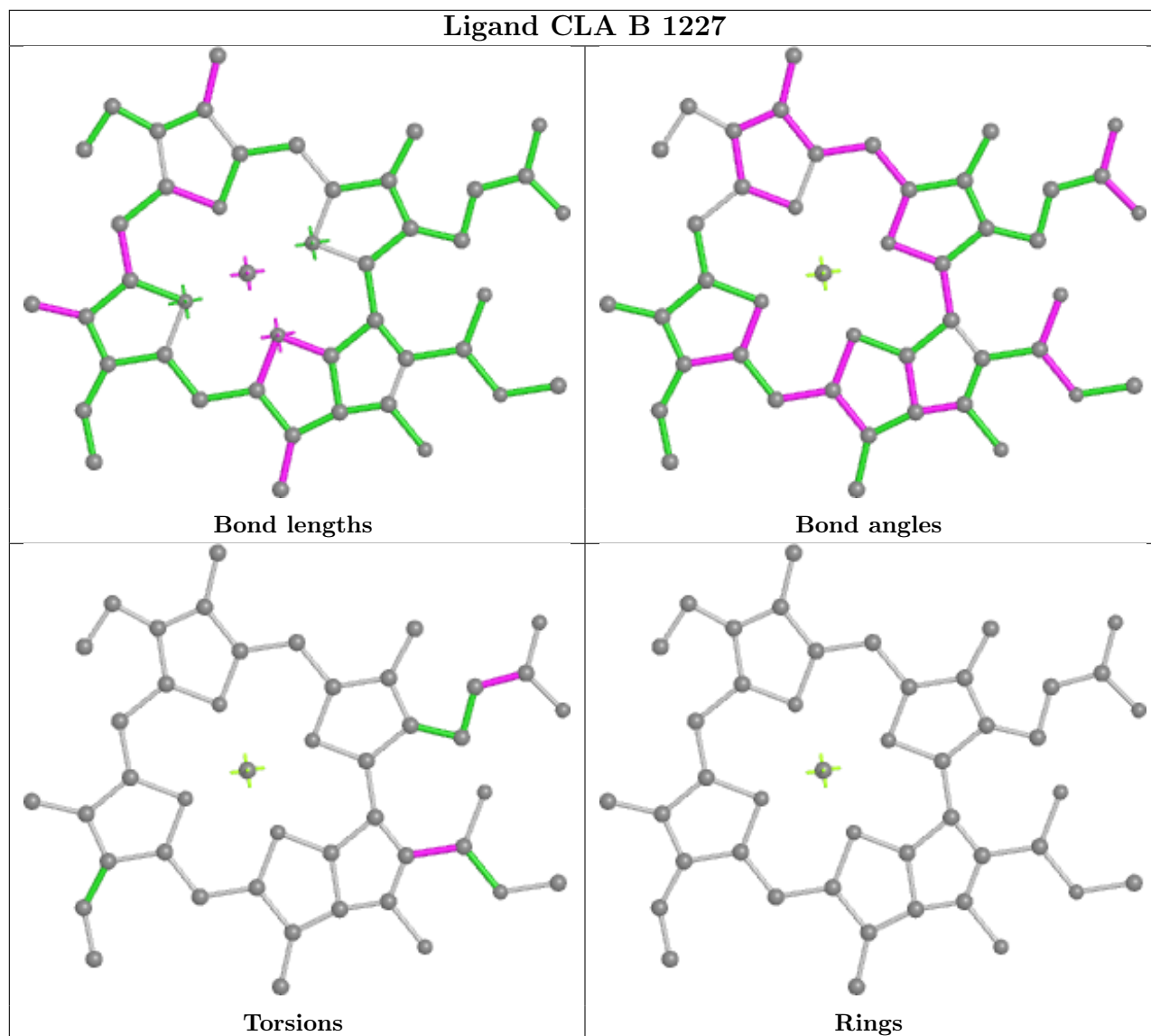
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24	A	5003	LHG	1	0
27	B	5002	DGD	5	0
20	A	1116	CLA	4	0
20	H	200	CLA	2	0
20	4	601	CLA	1	0
28	2	601	CHL	7	0
23	G	311	BCR	4	0
29	2	620	LUT	6	0
20	A	1119	CLA	2	0
20	A	8895	CLA	3	0
23	A	4001	BCR	1	0
20	4	602	CLA	2	0
20	B	1224	CLA	4	0
28	2	602	CHL	2	0
23	K	301	BCR	1	0
20	B	1209	CLA	2	0
20	1	606	CLA	1	0

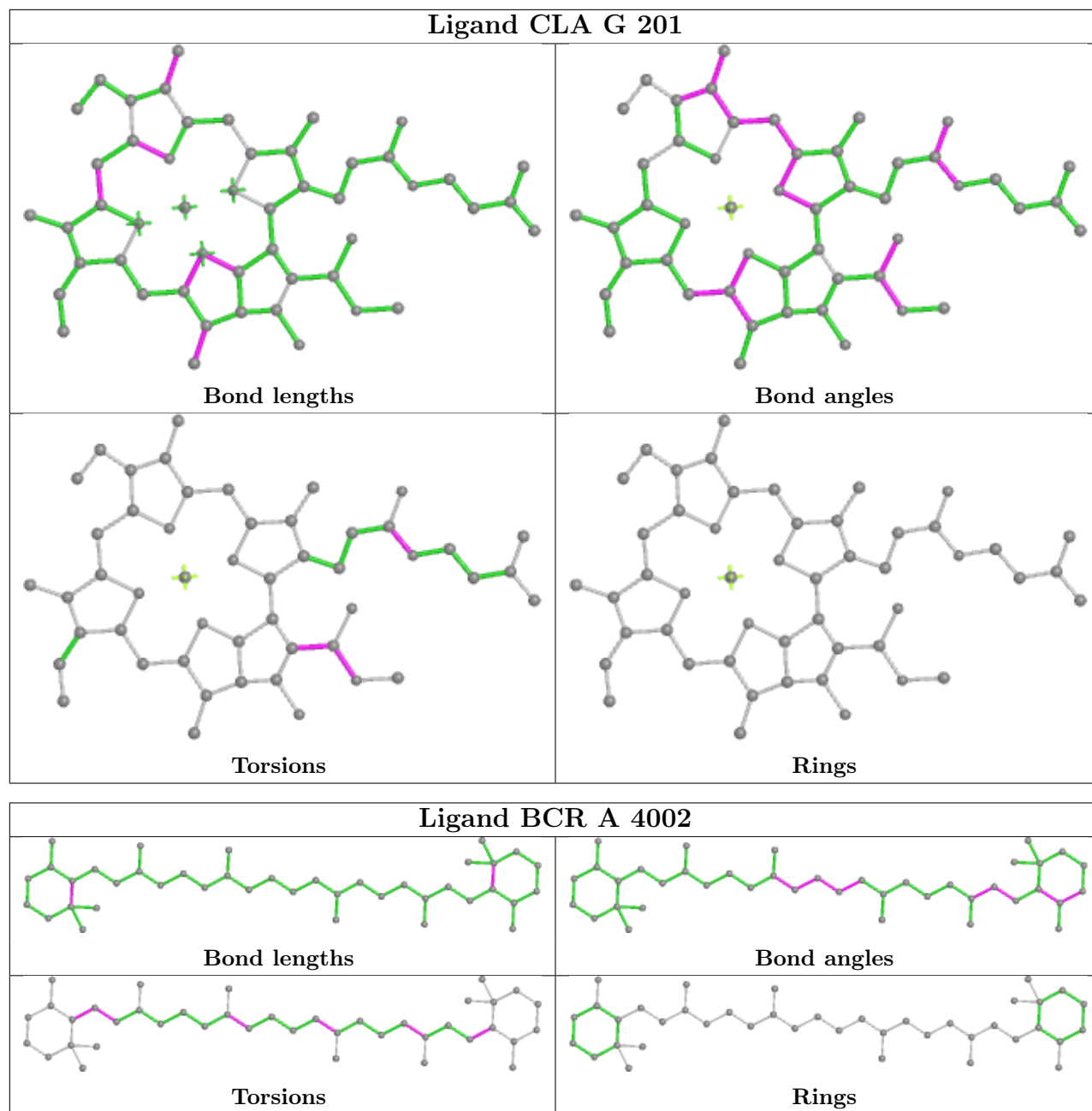
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

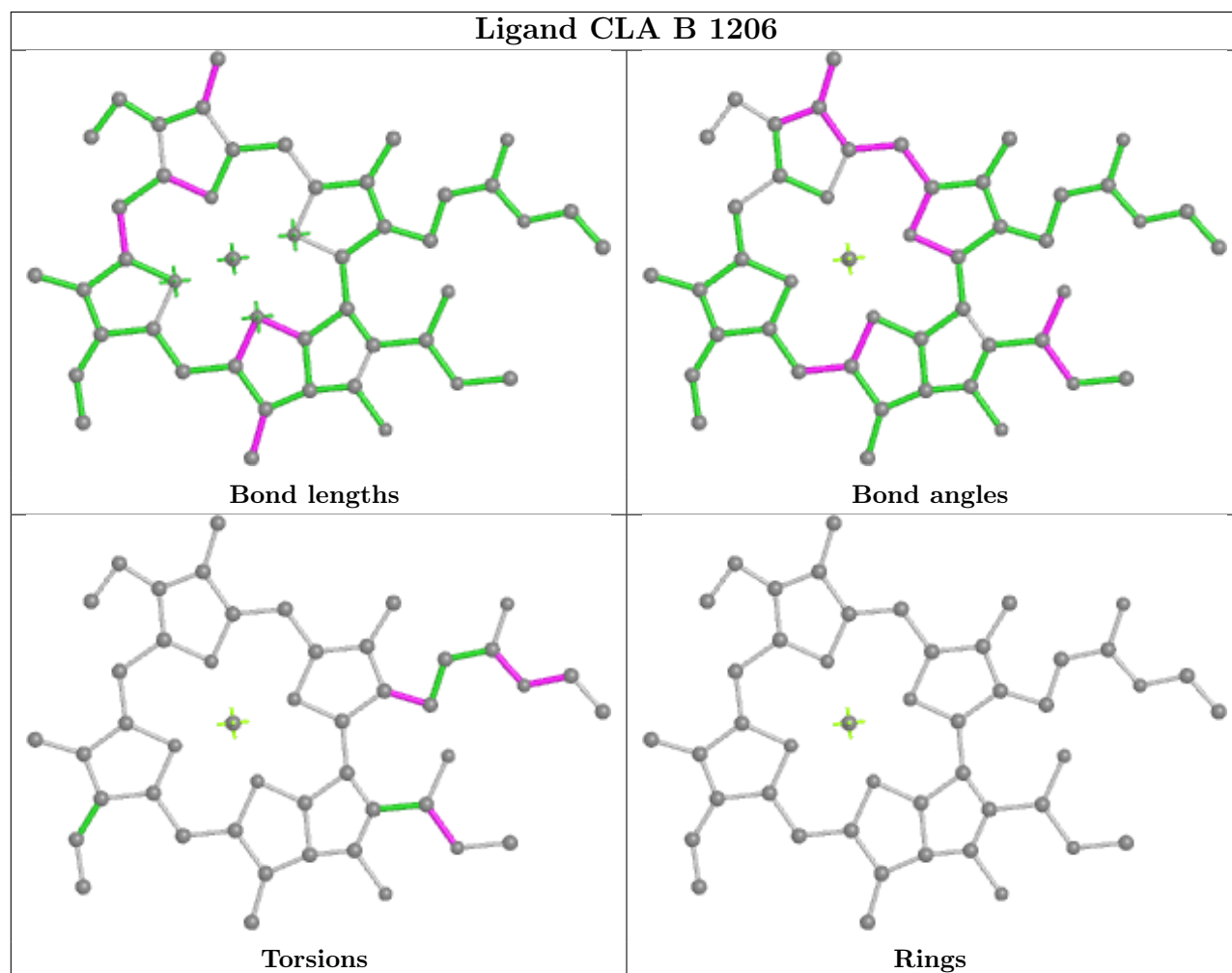
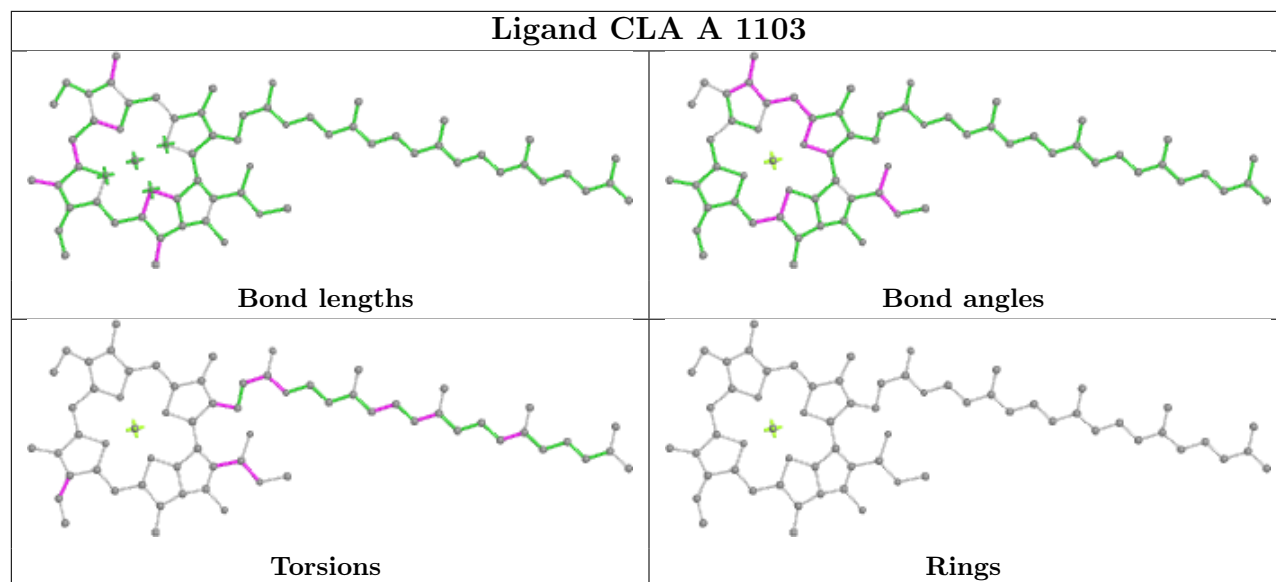


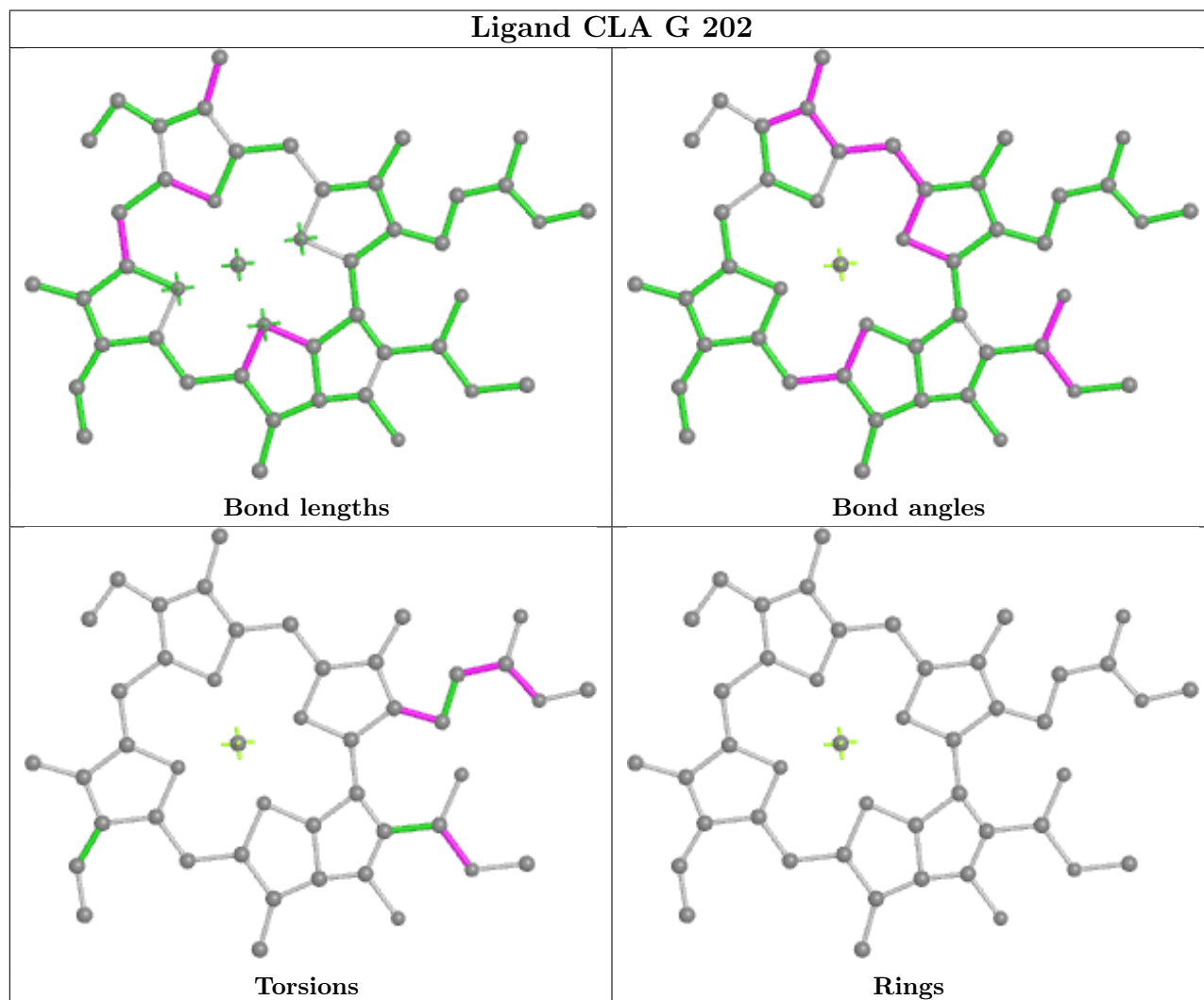
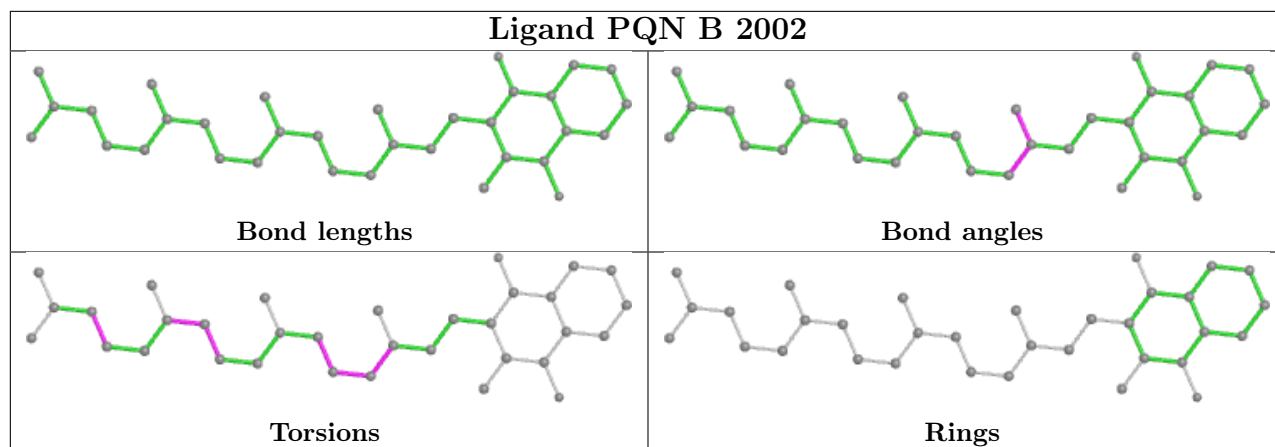


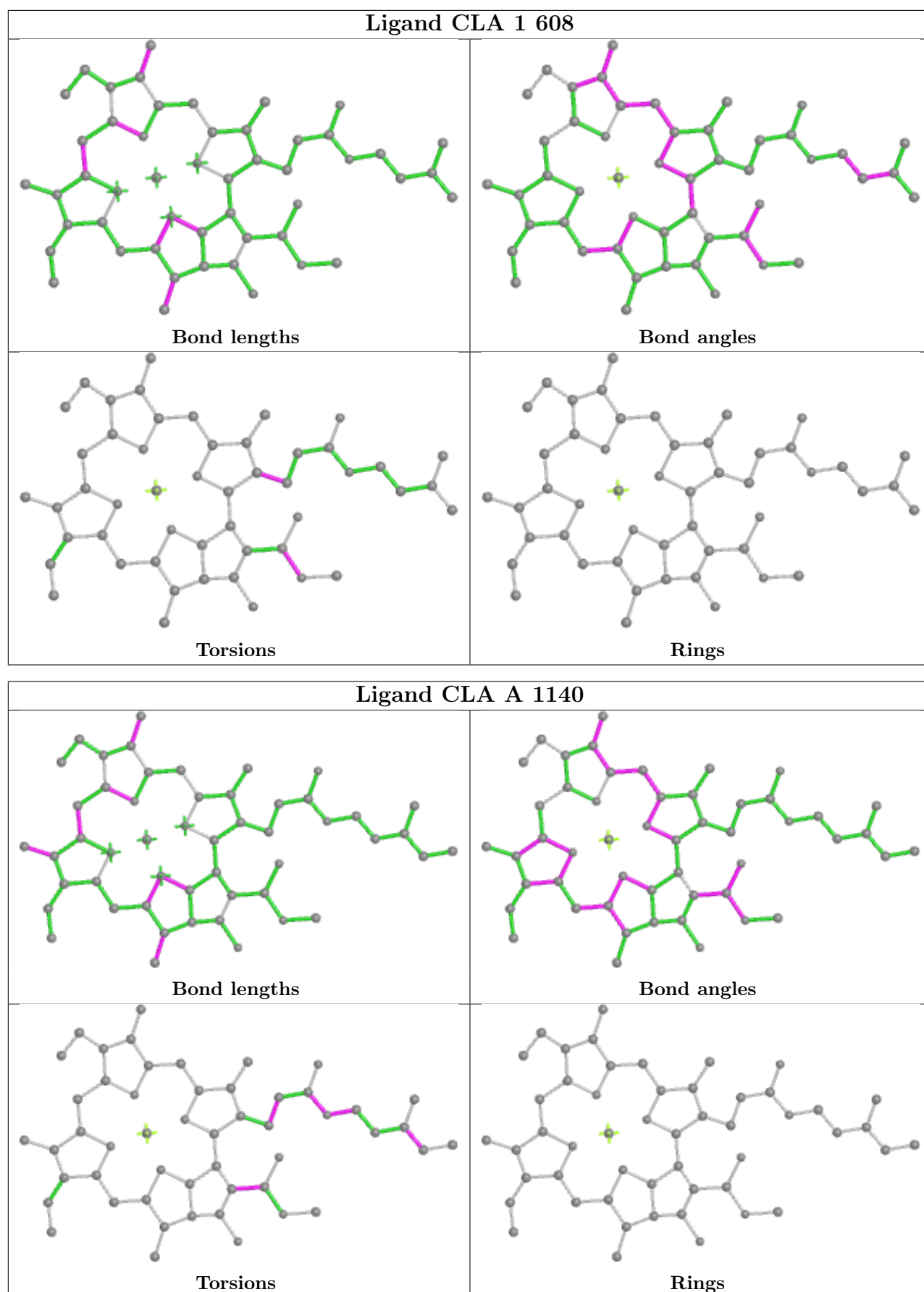


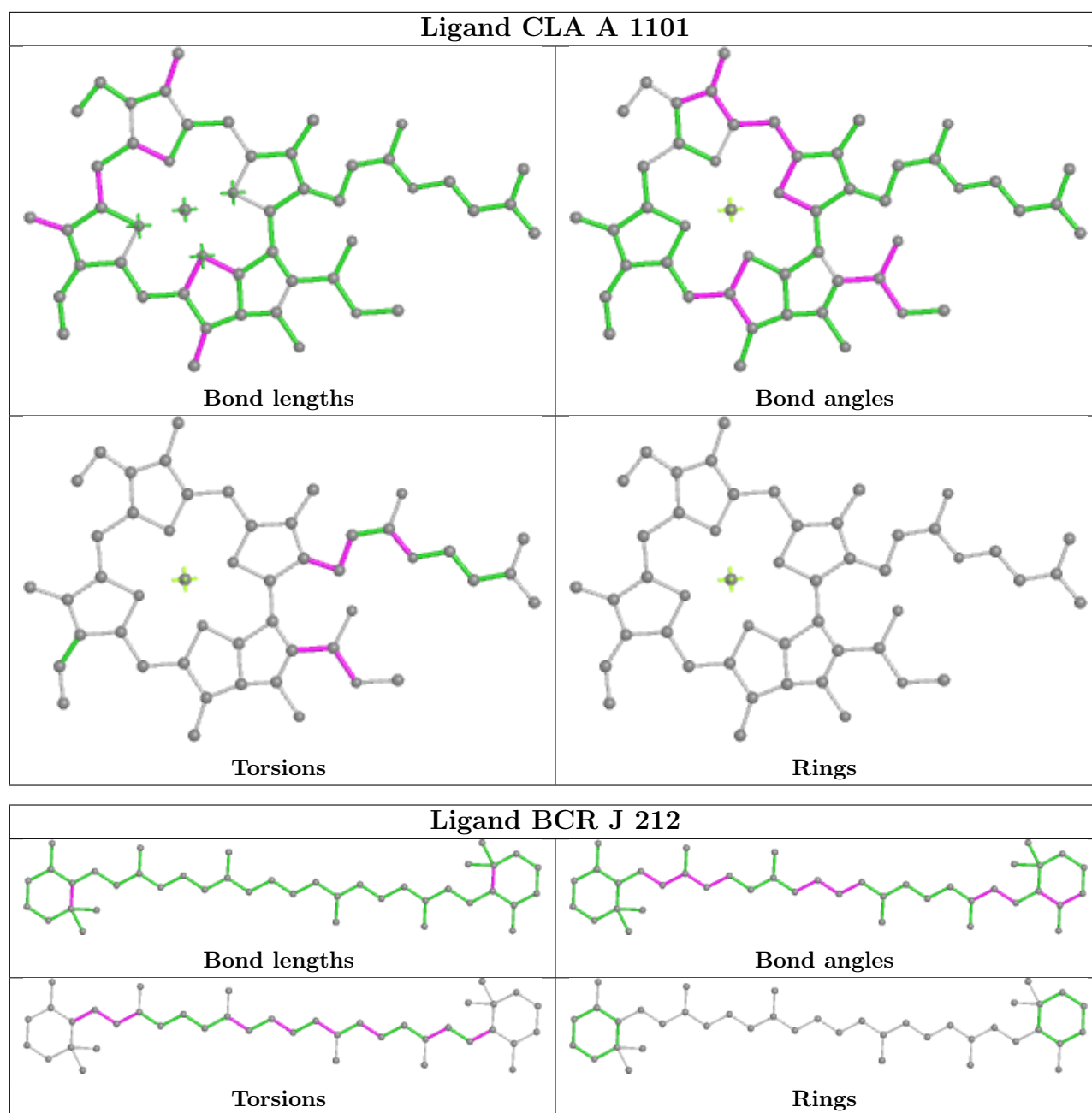




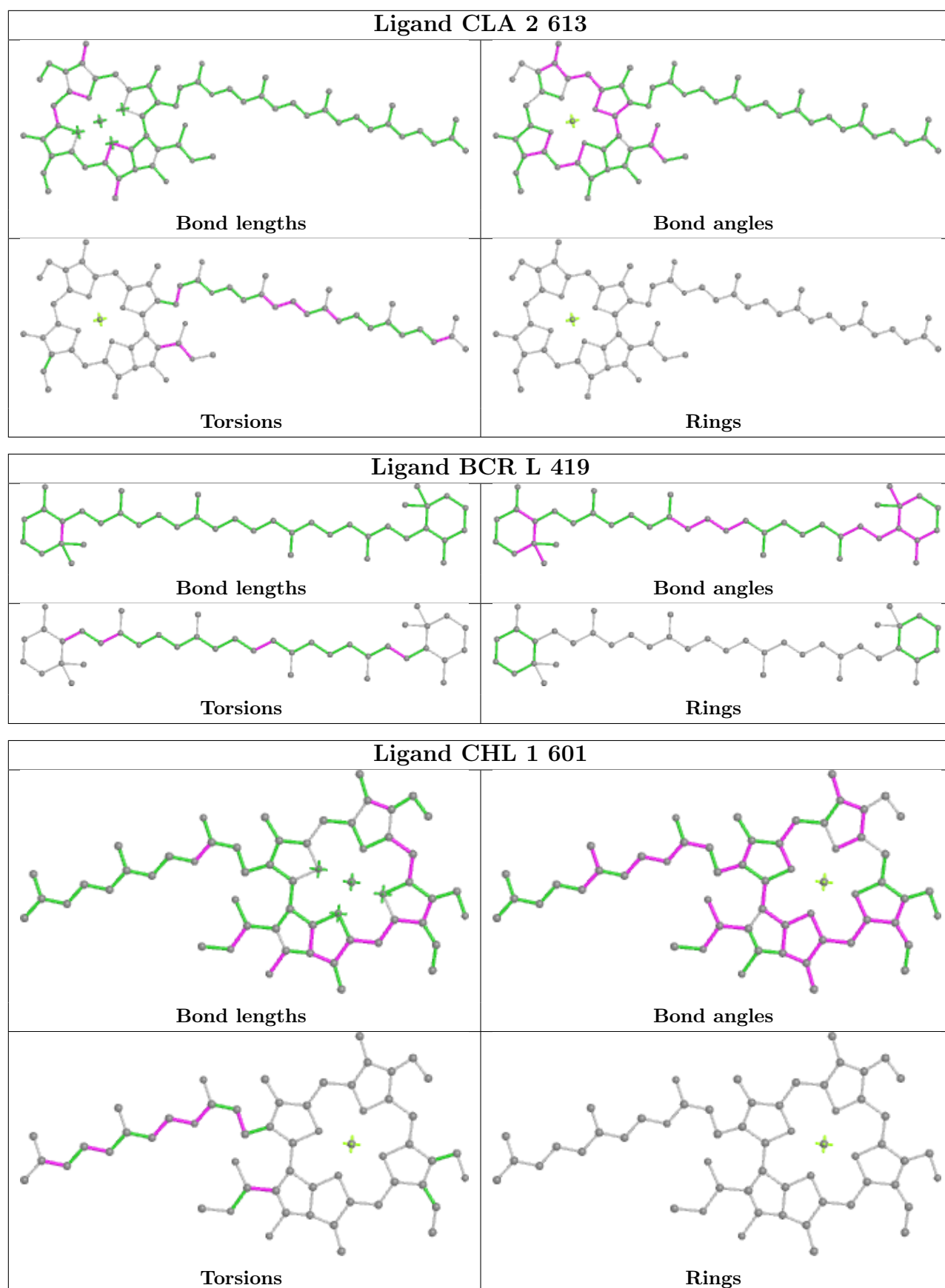


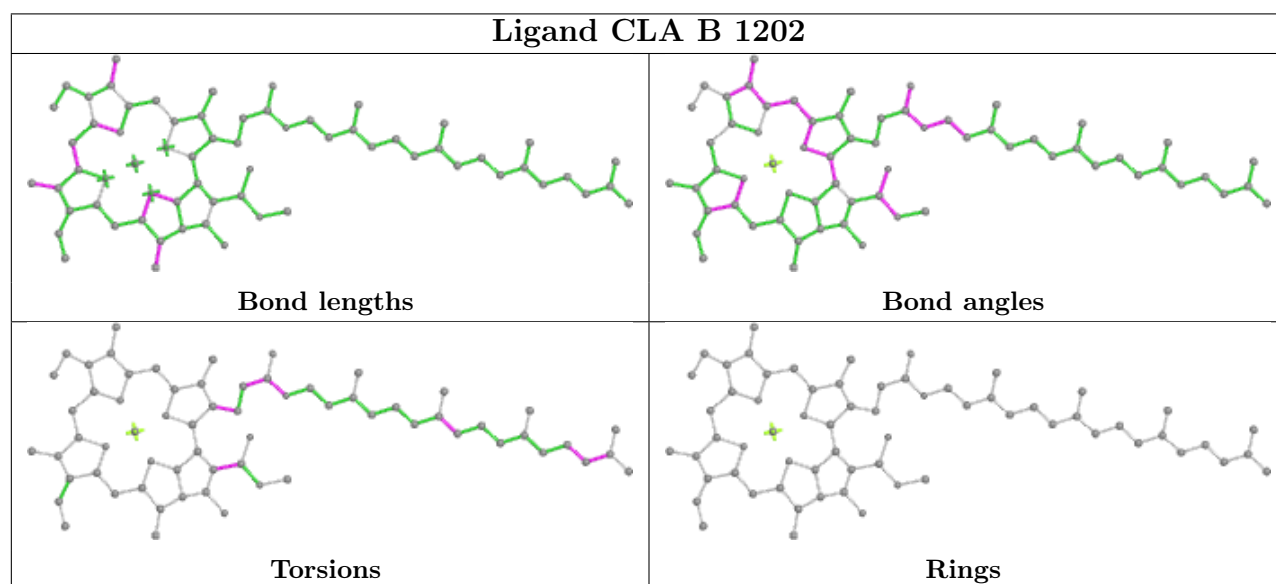
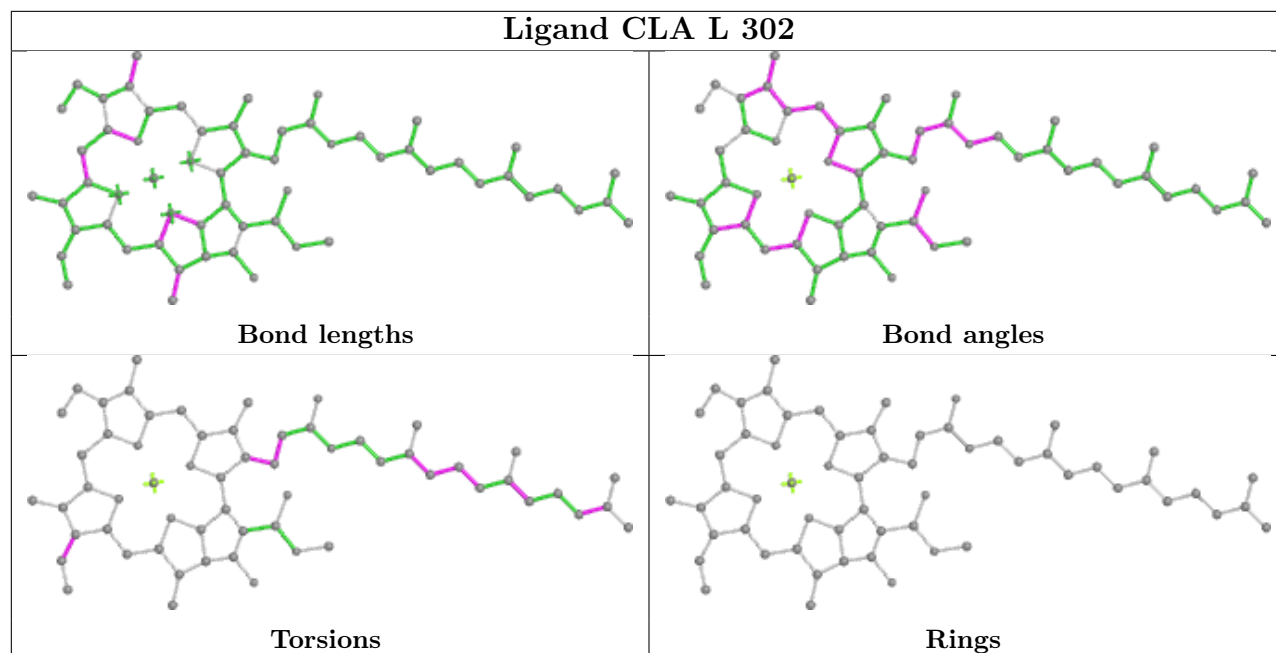
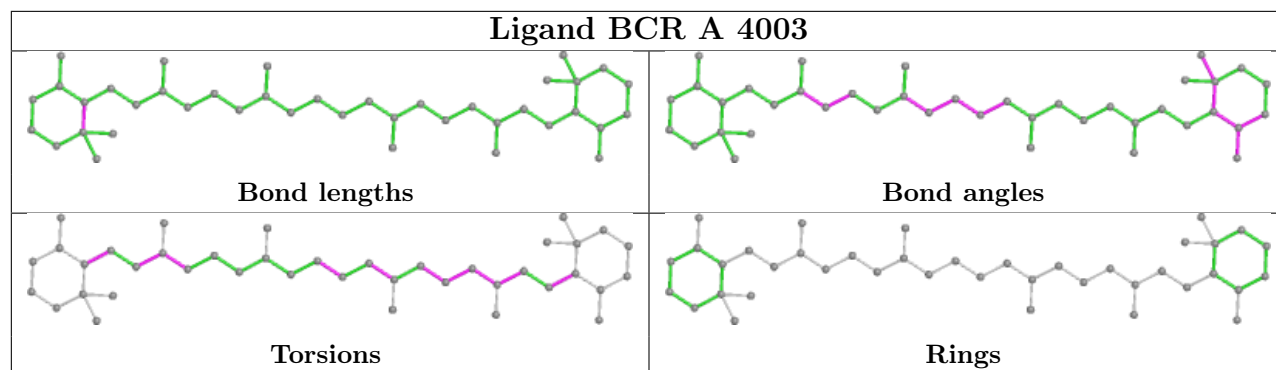


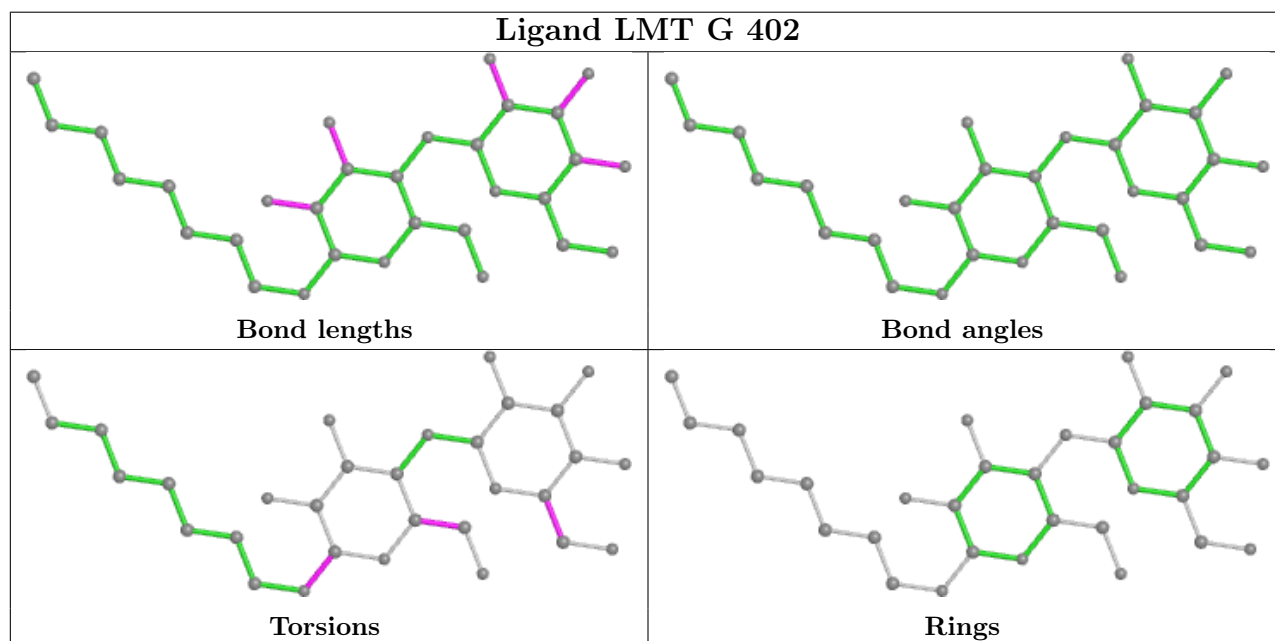
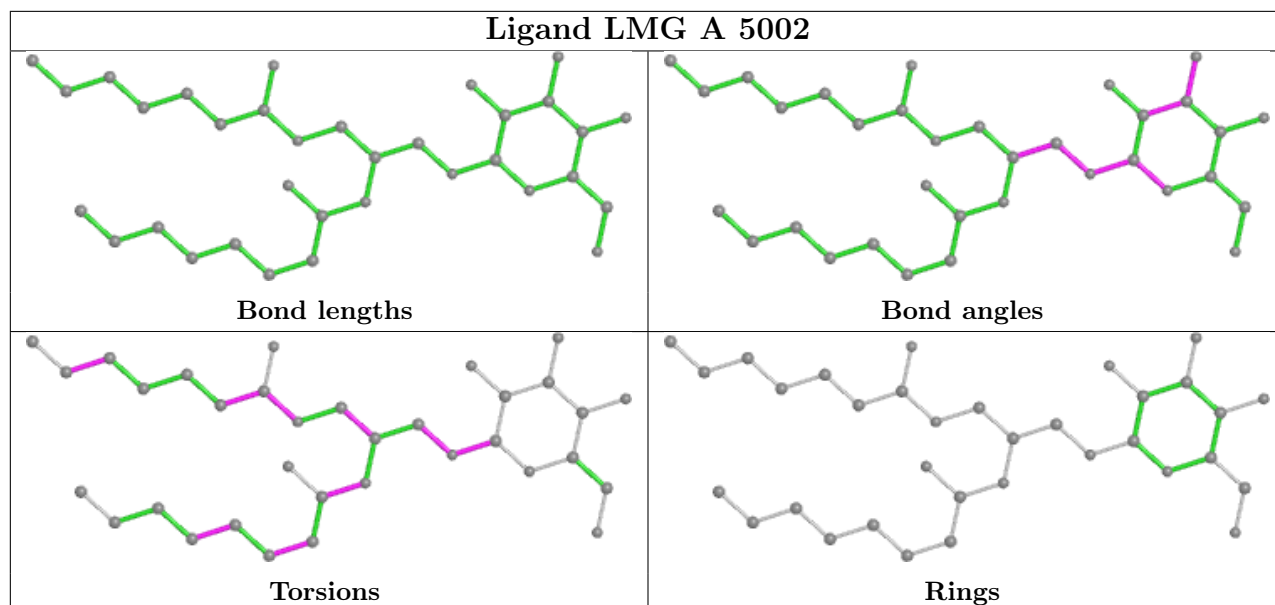


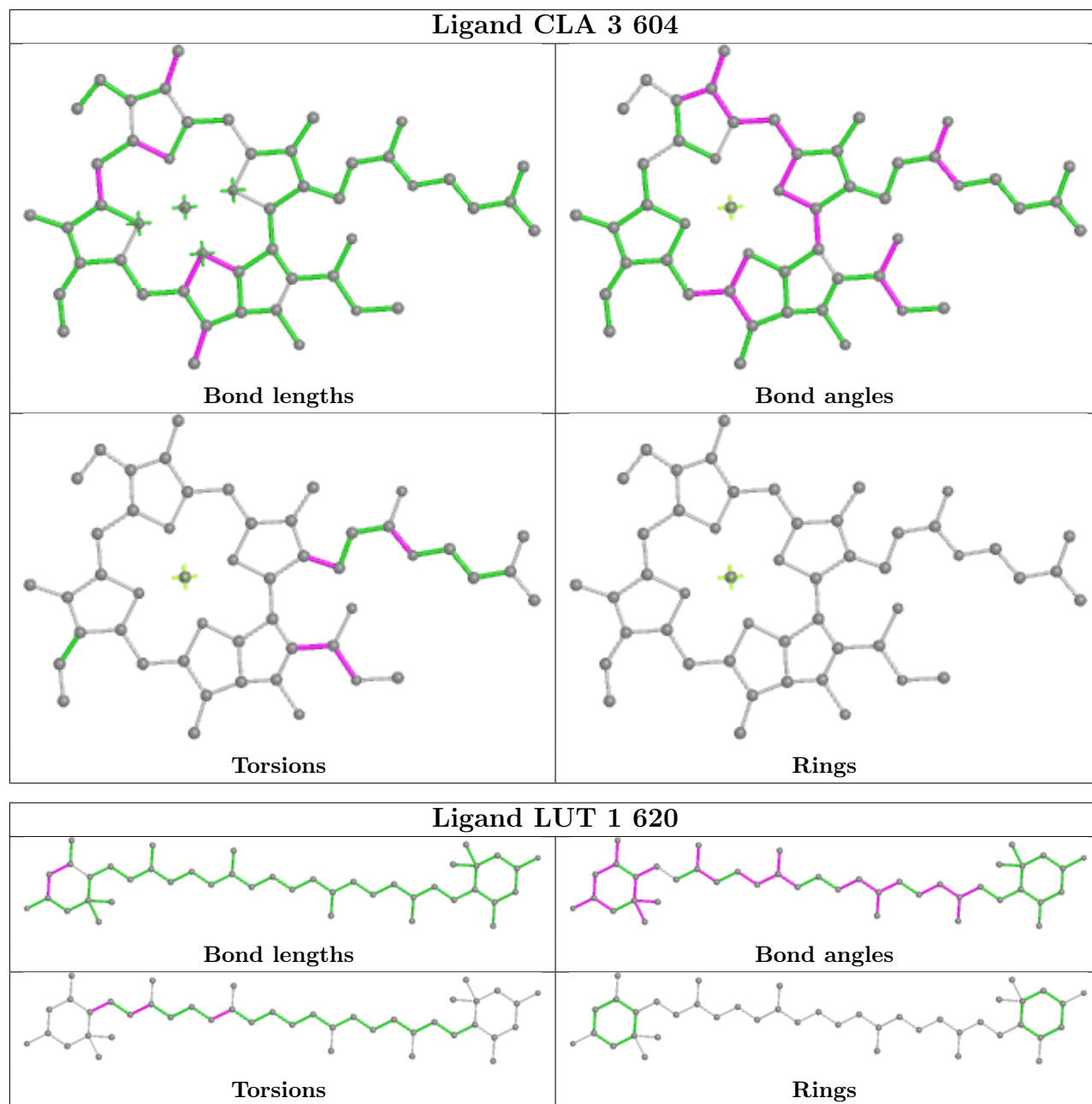


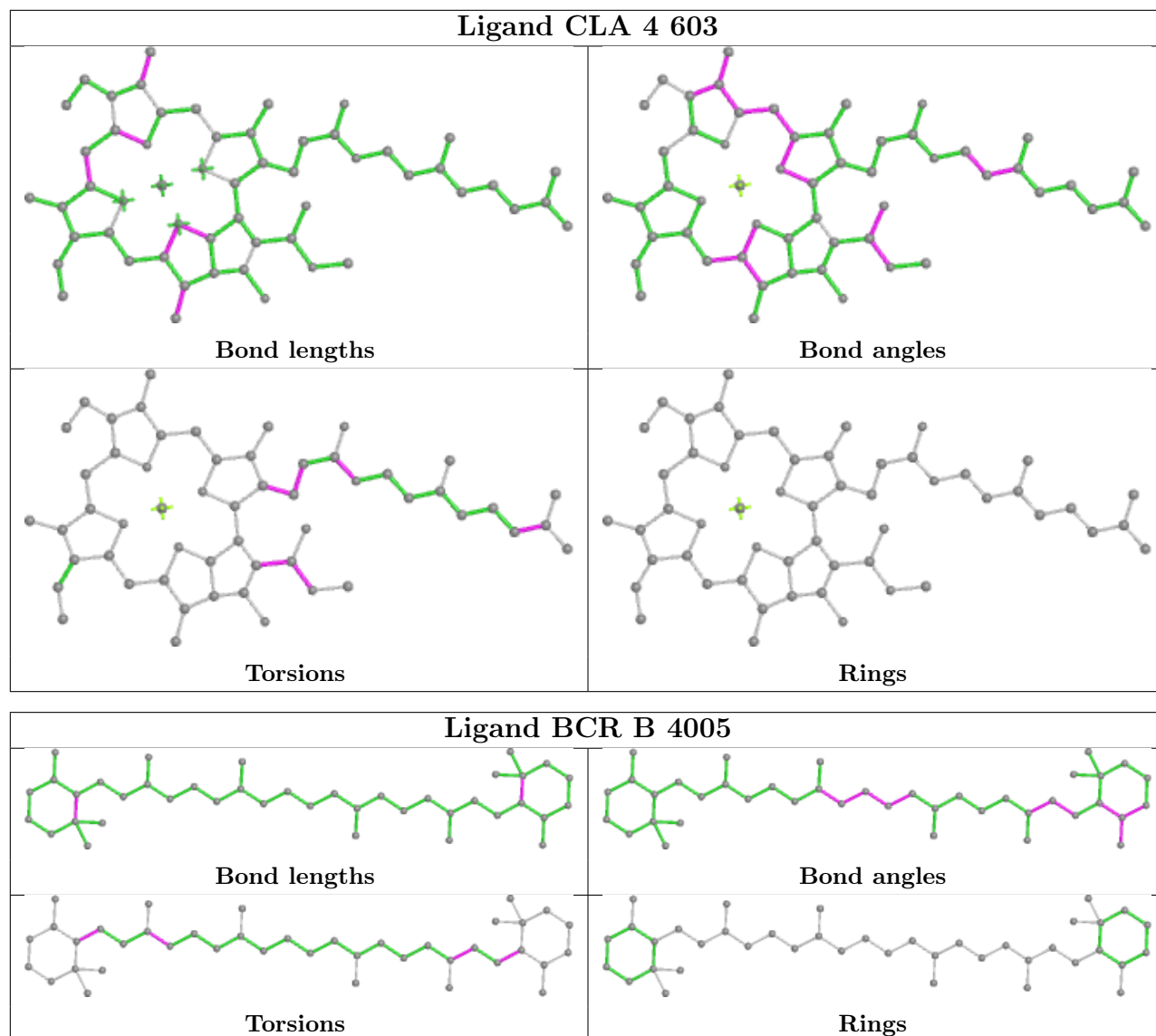


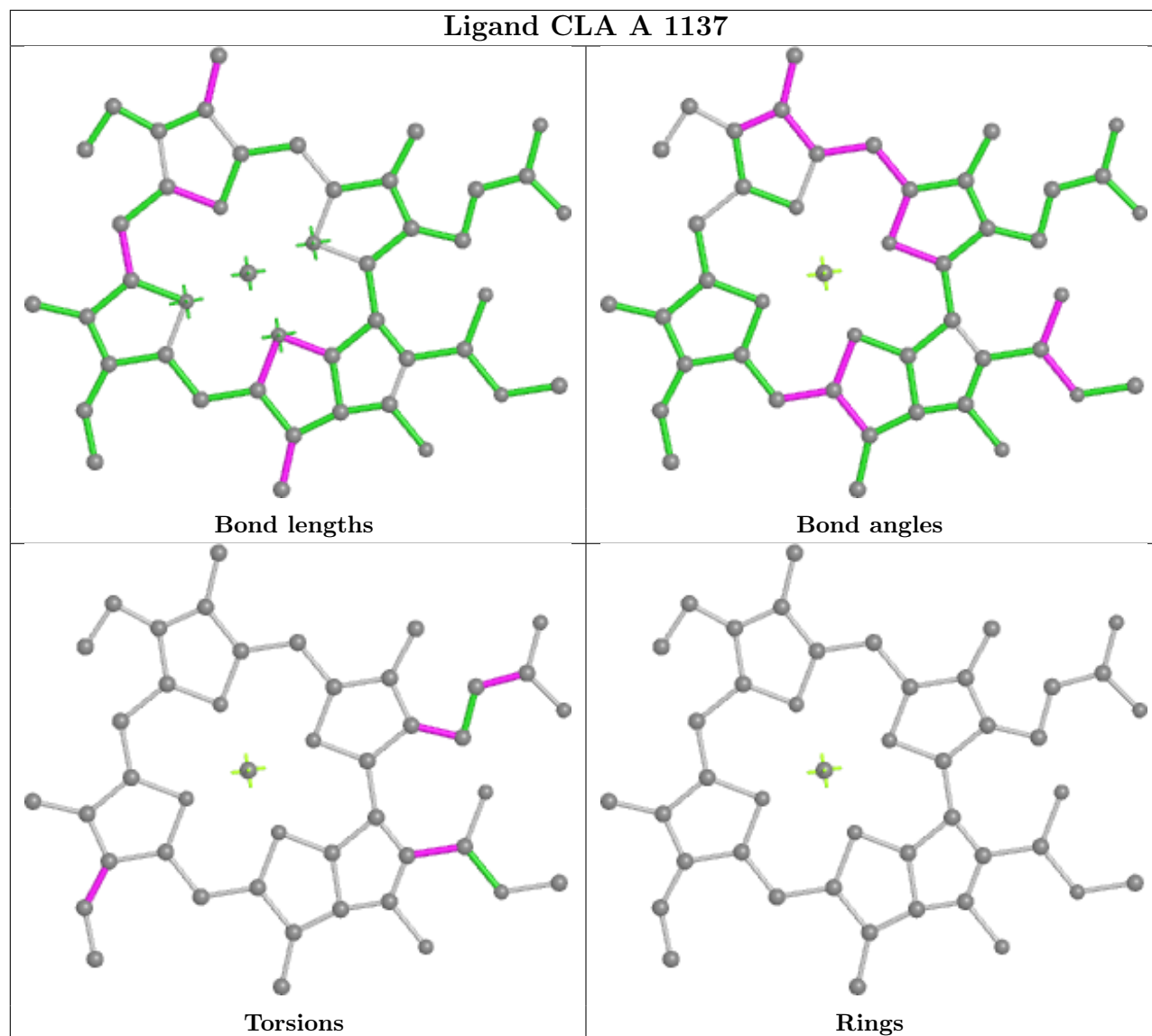


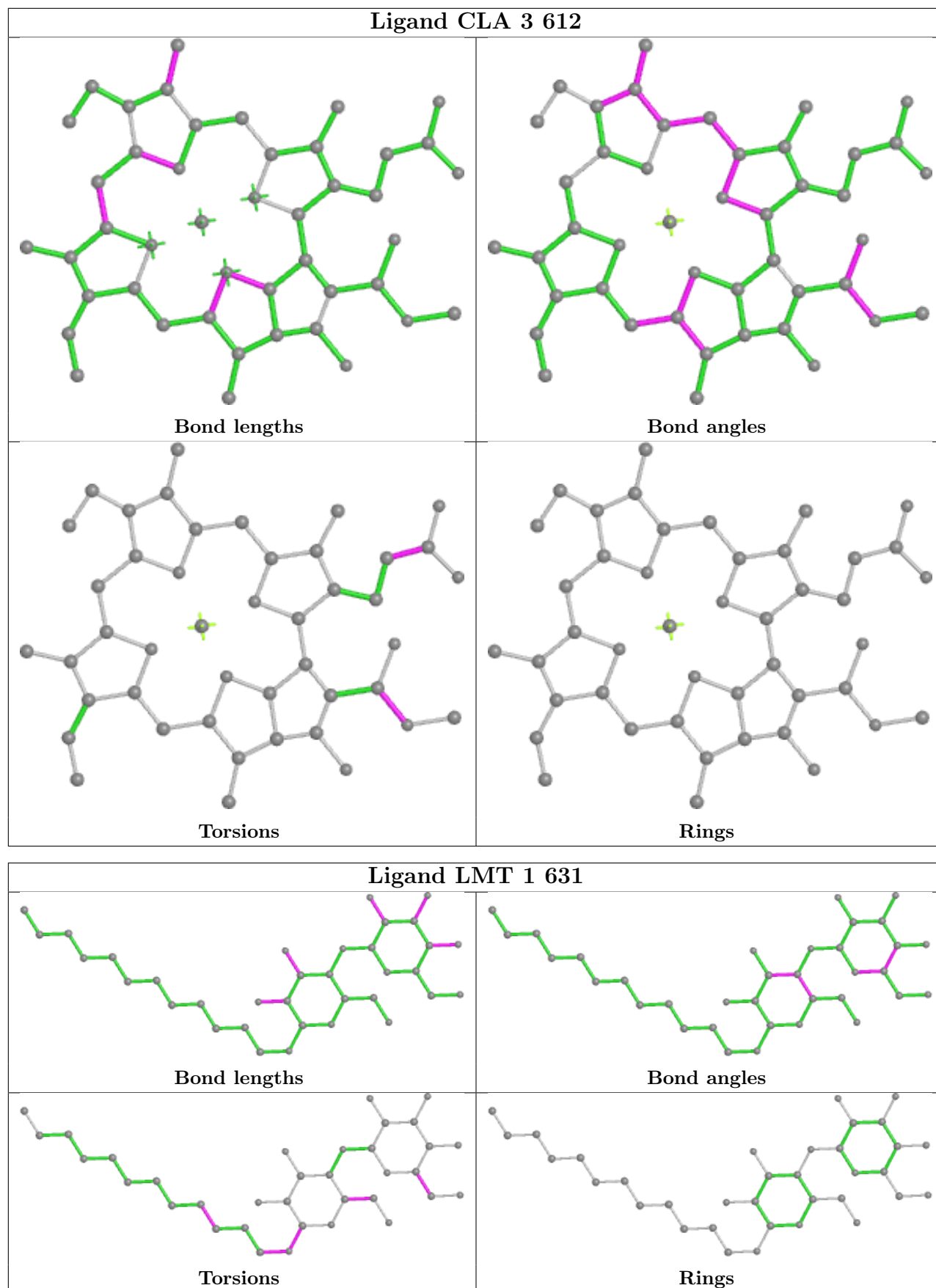


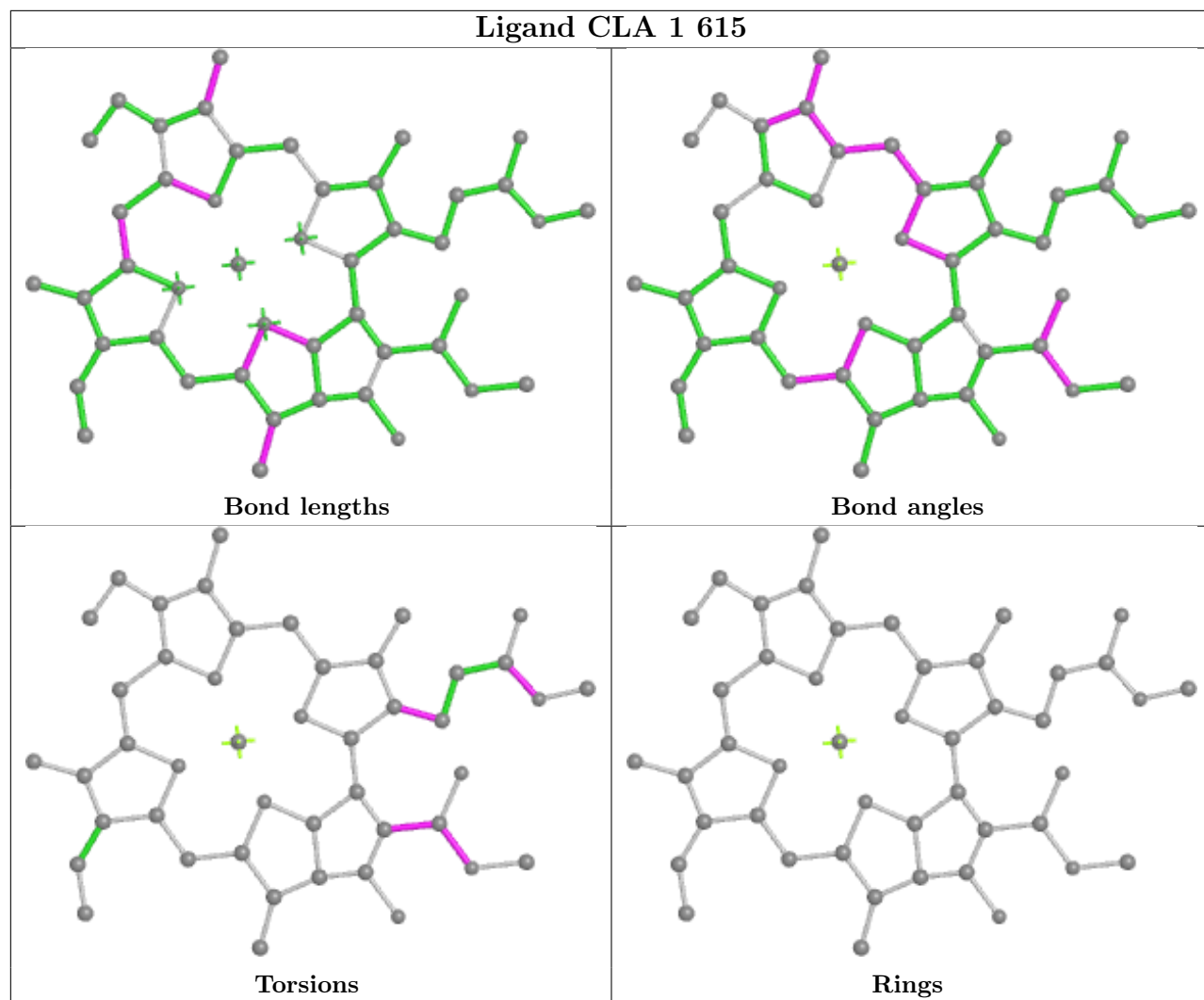




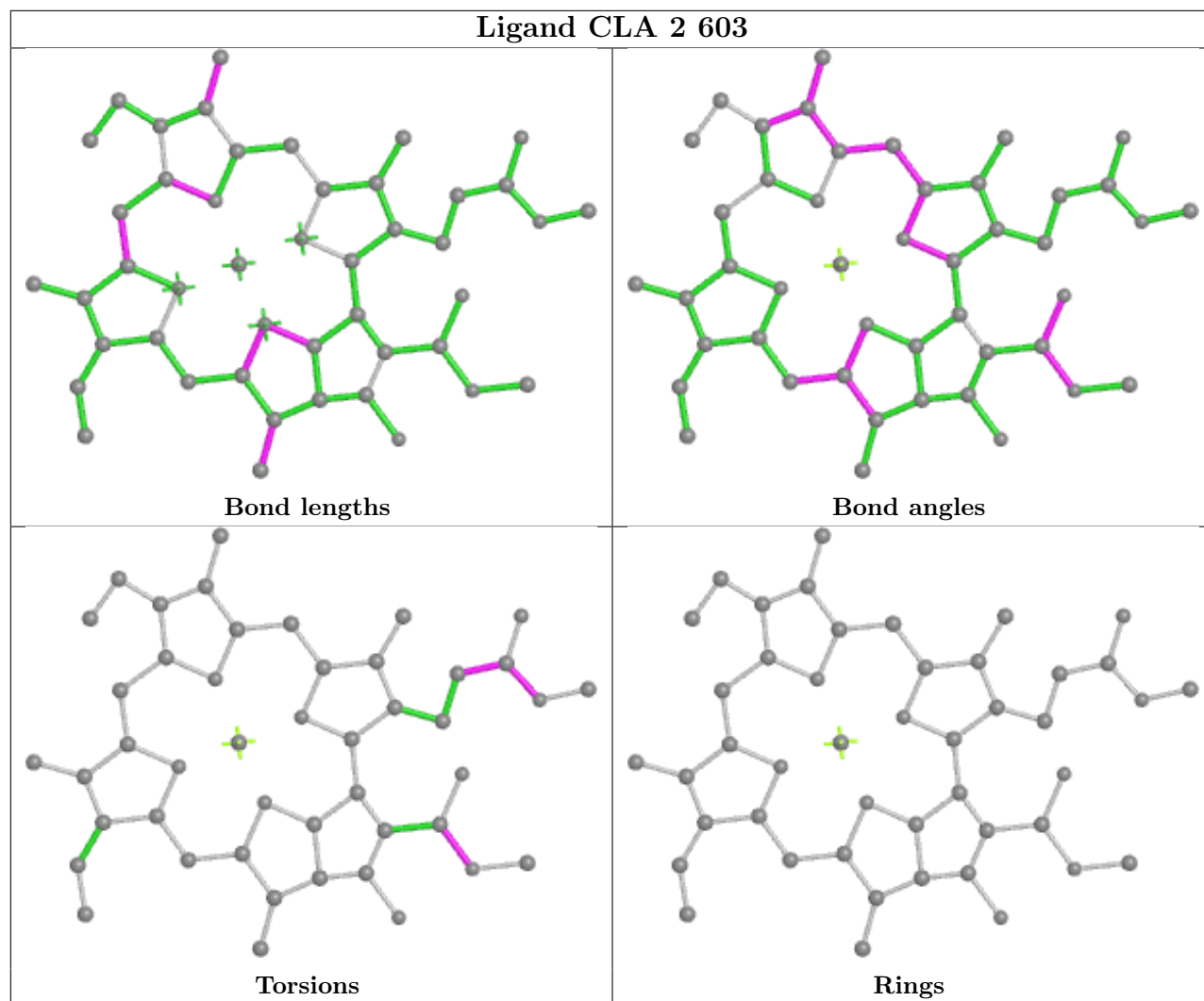


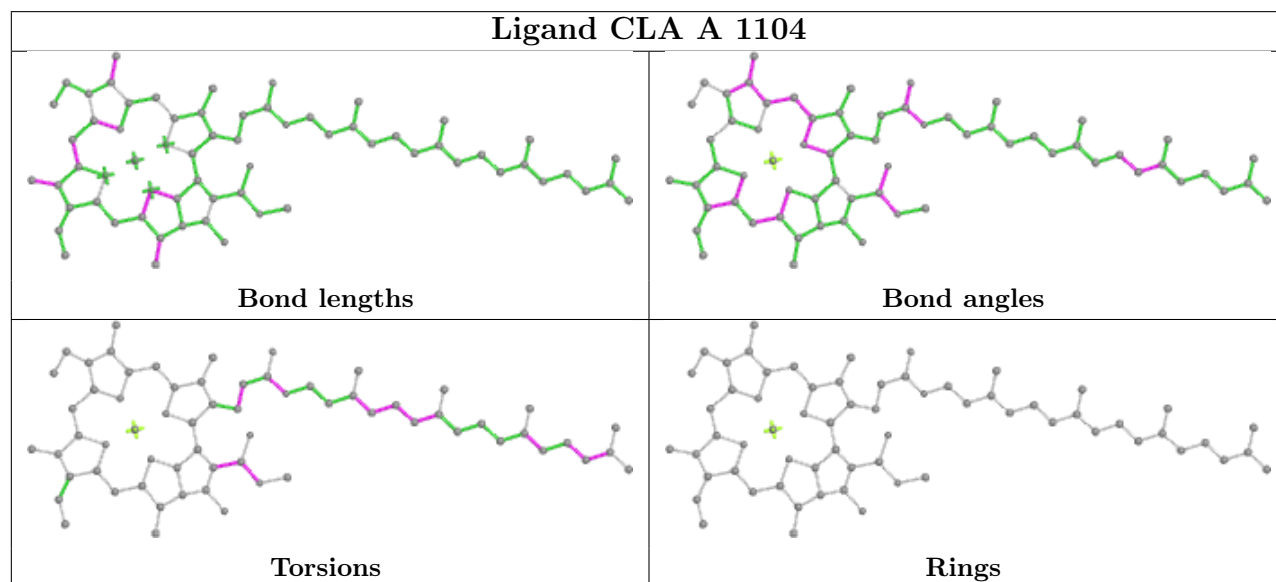
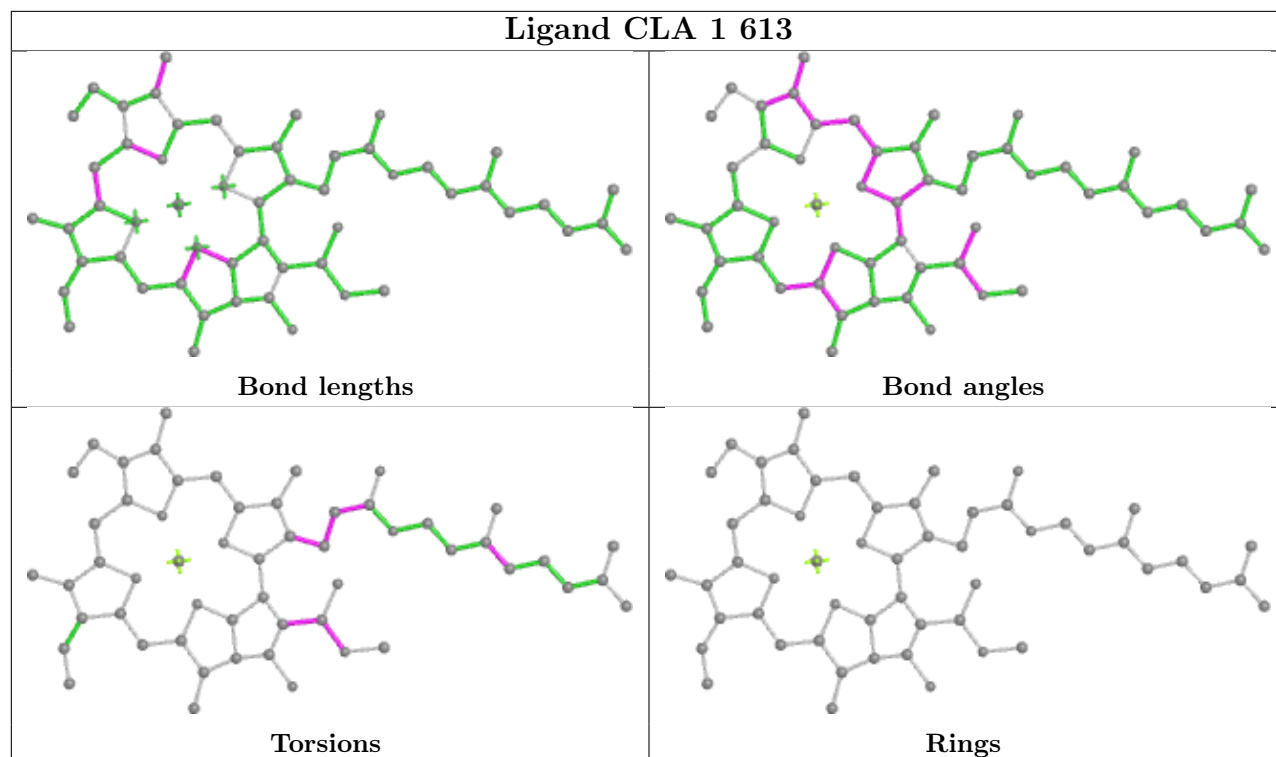


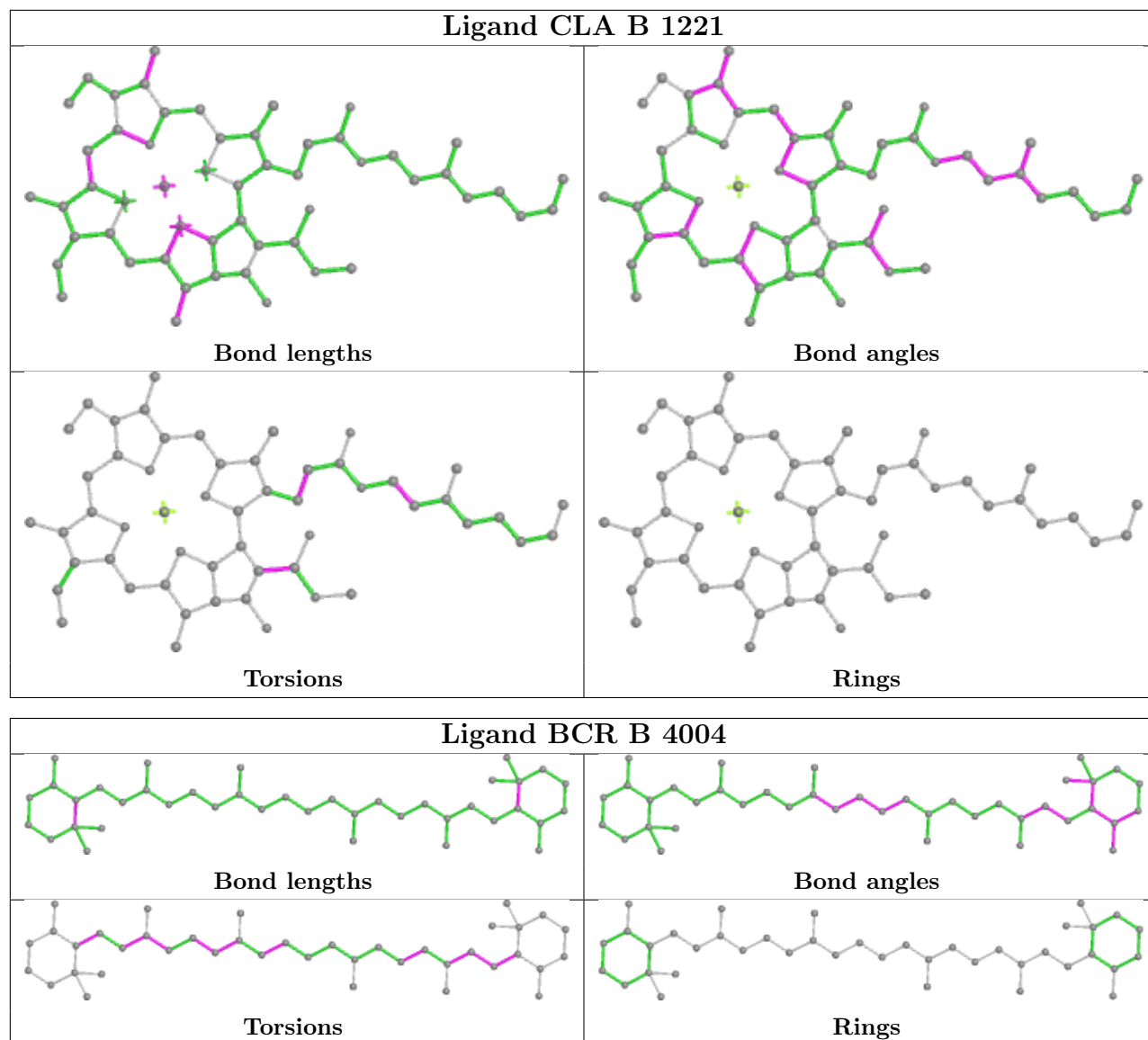


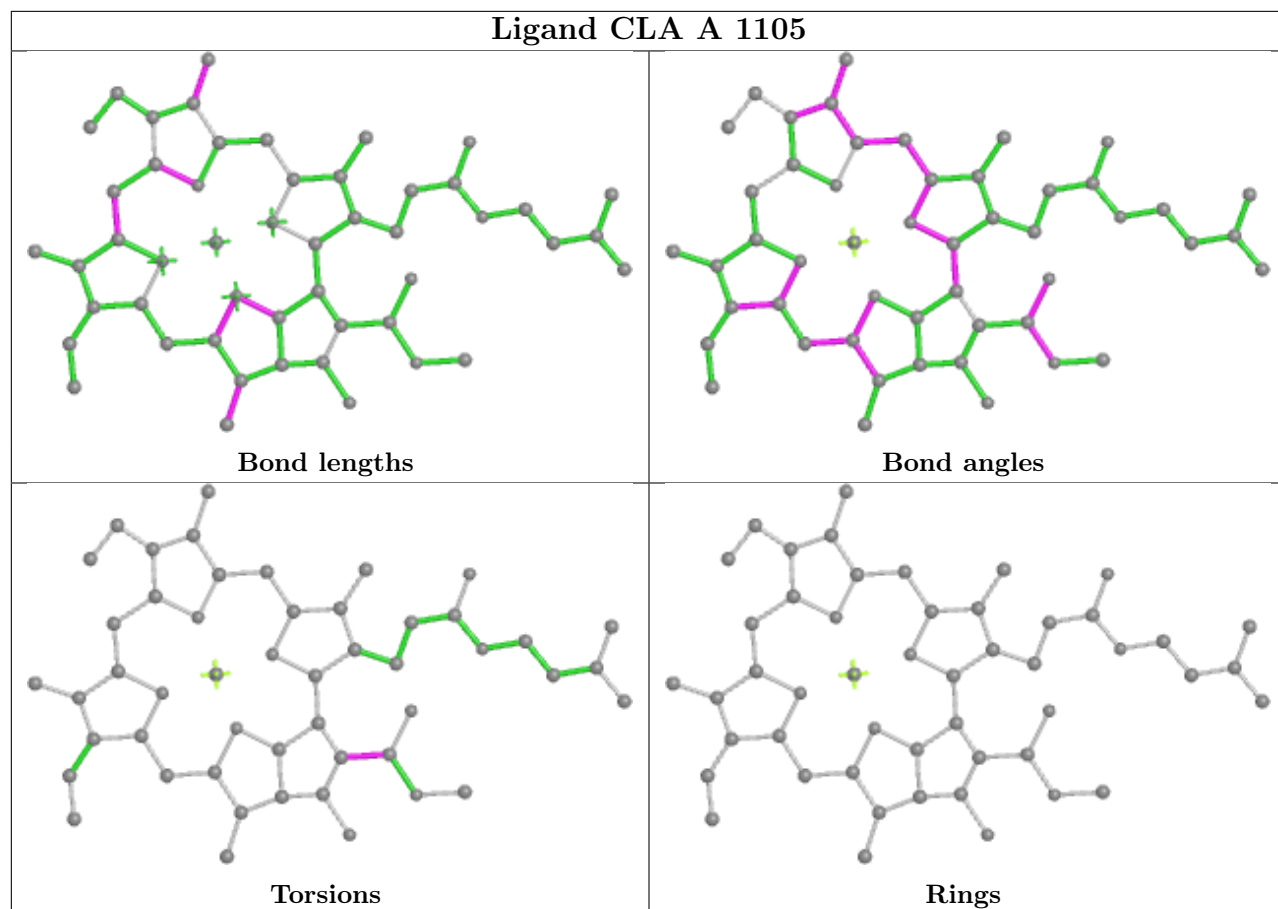


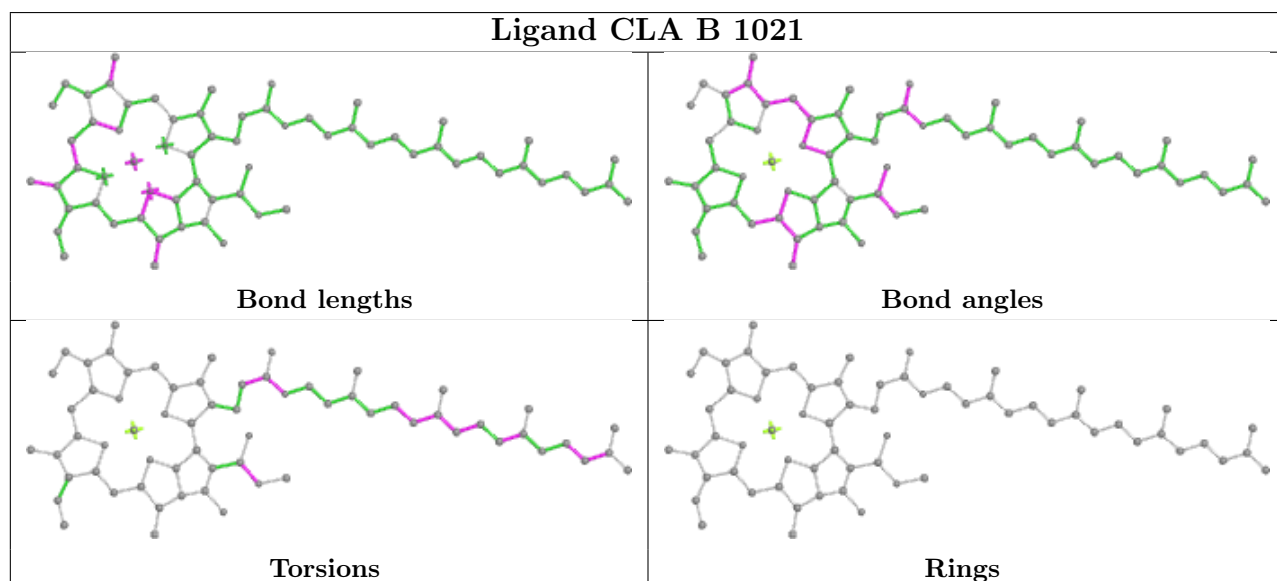
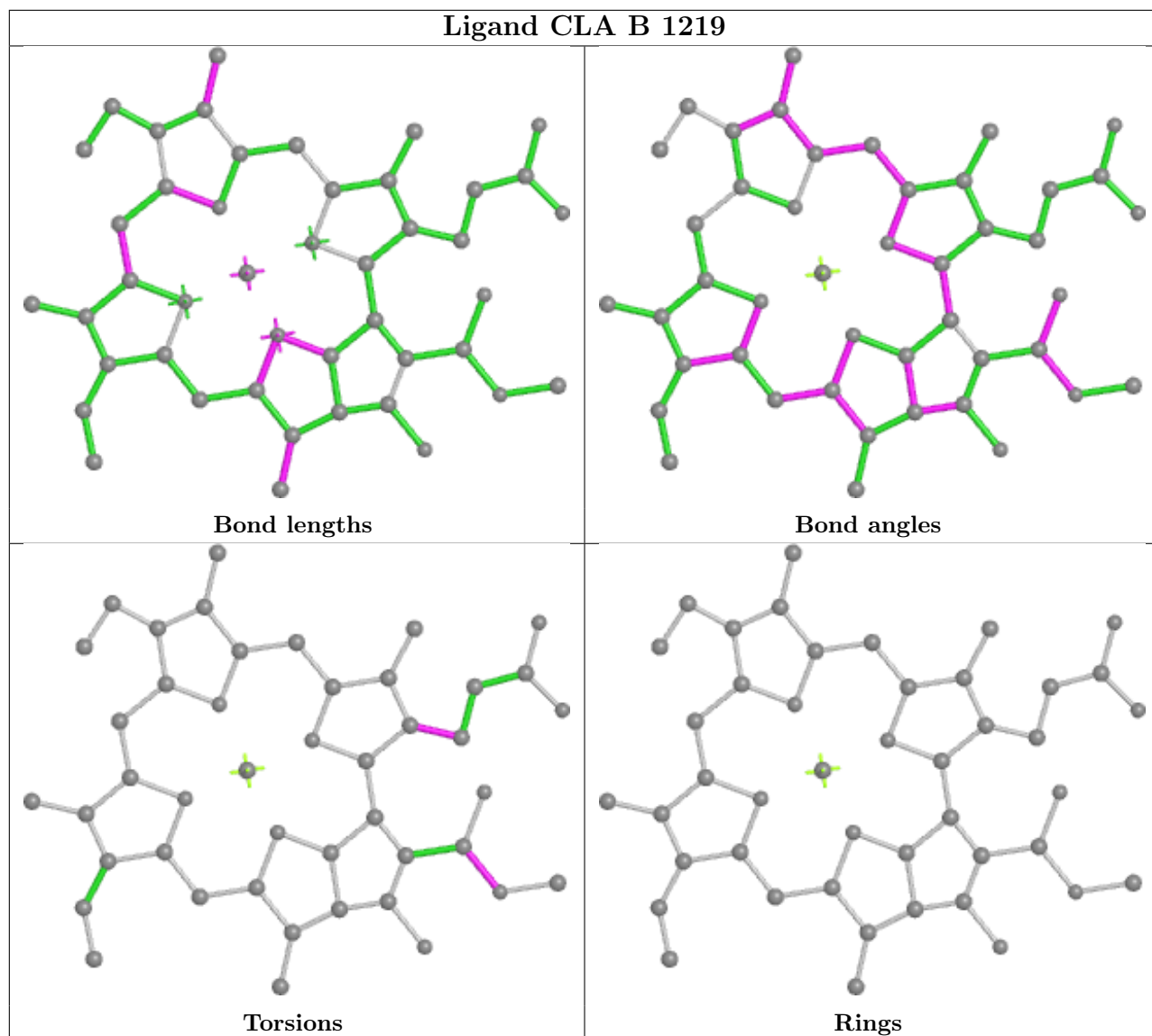


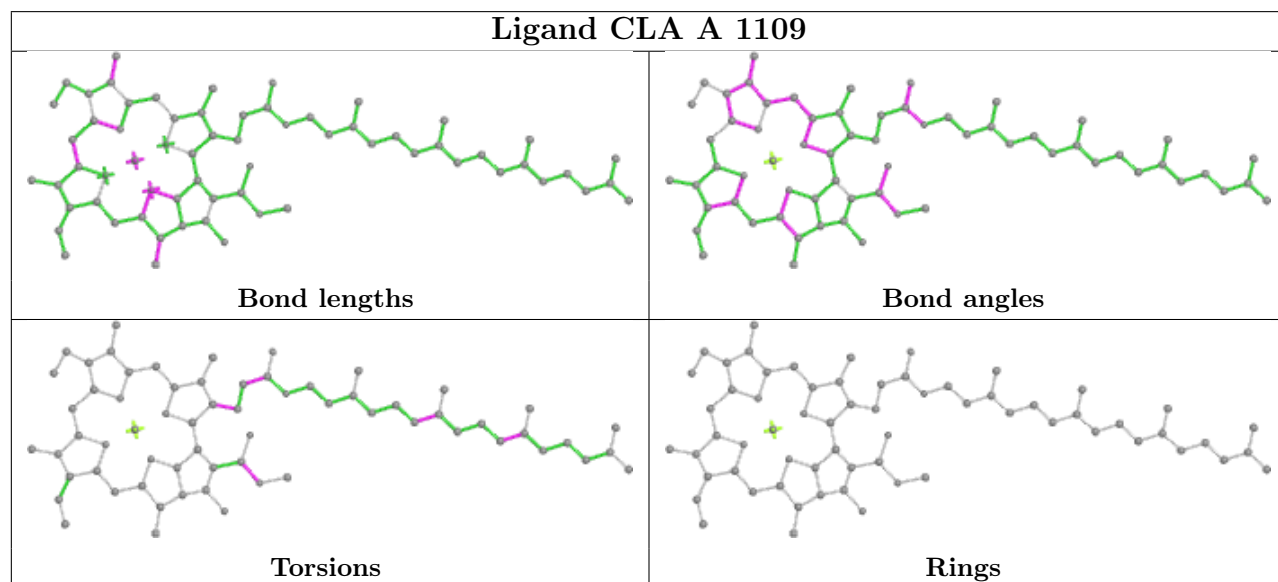
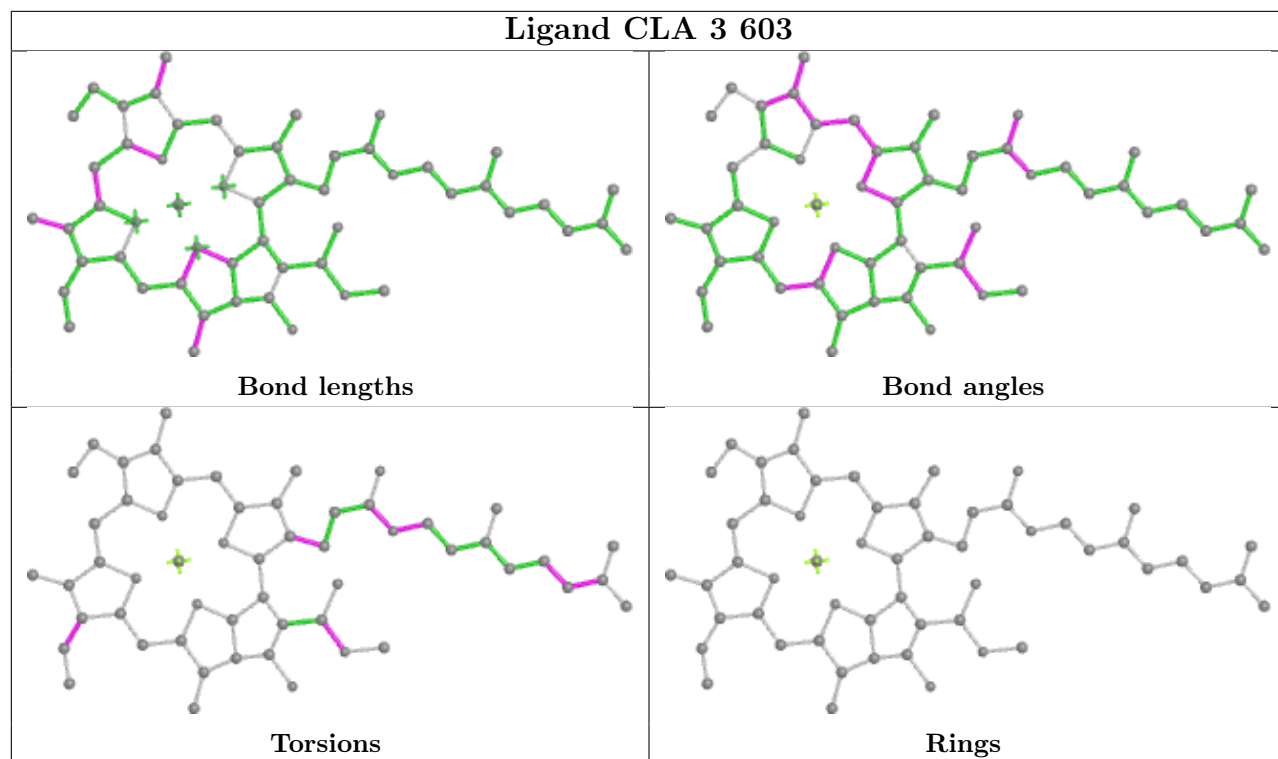


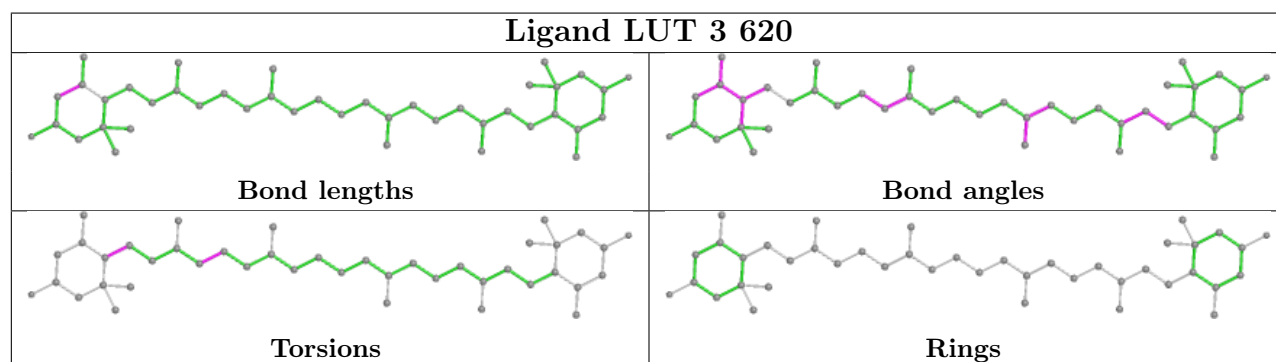
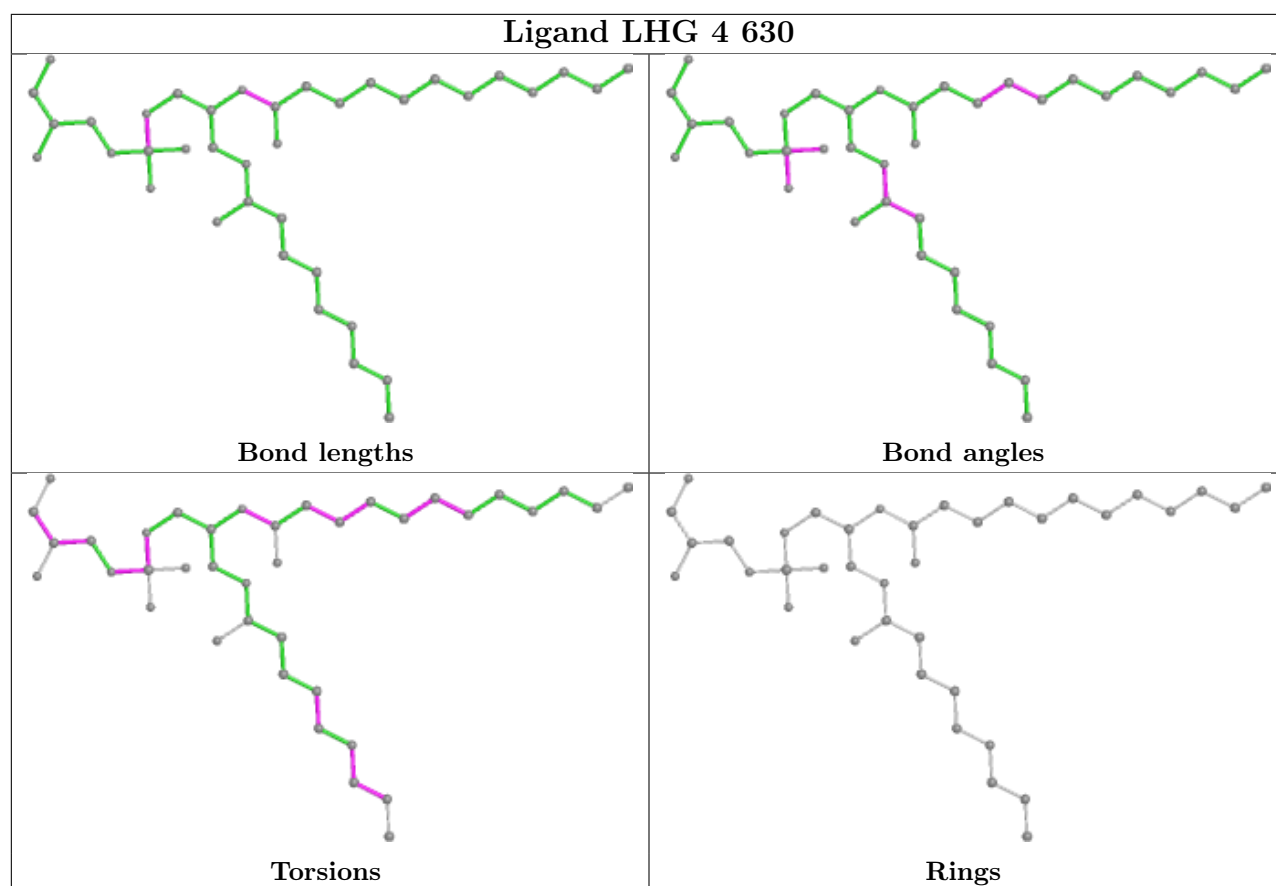


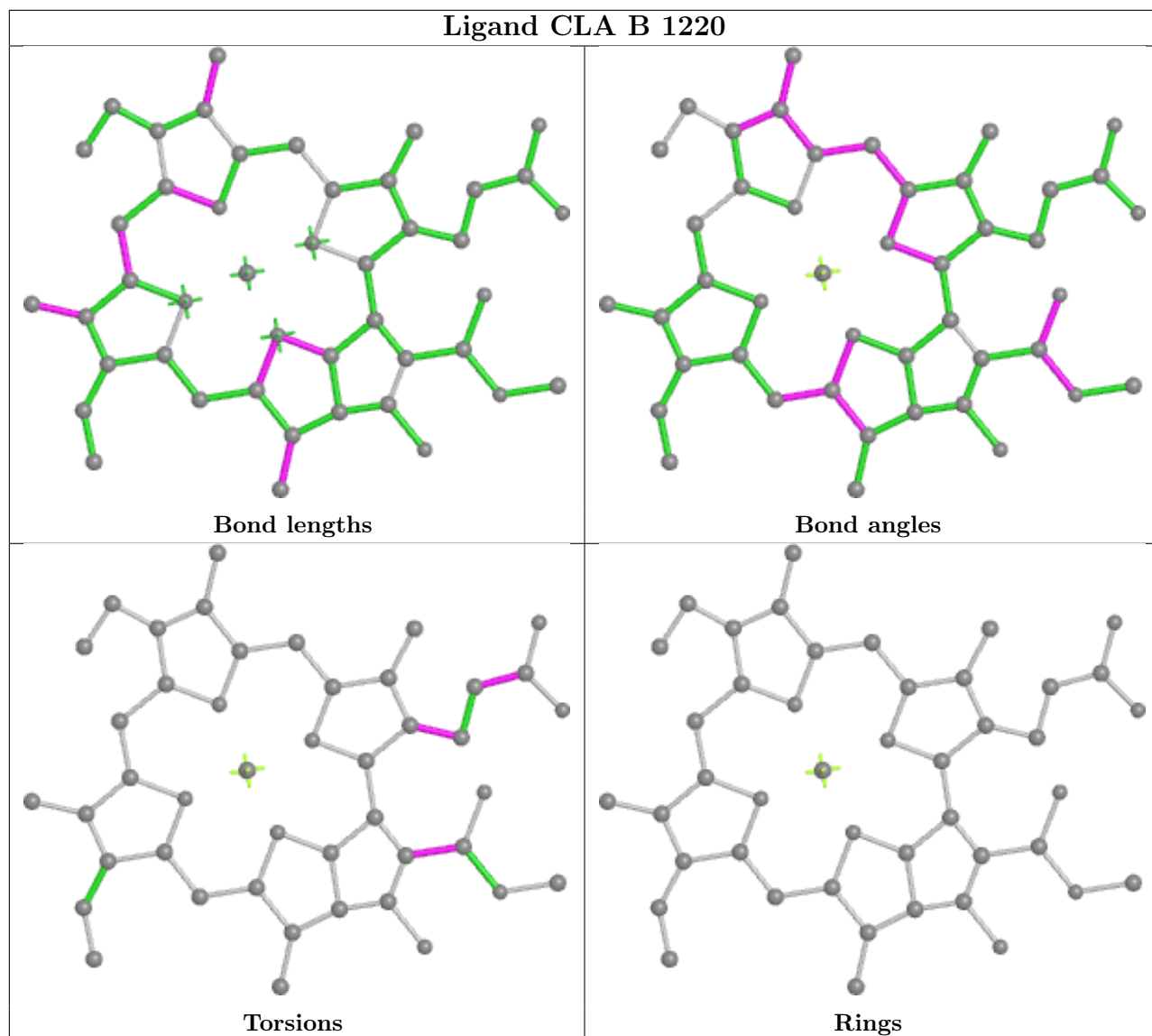




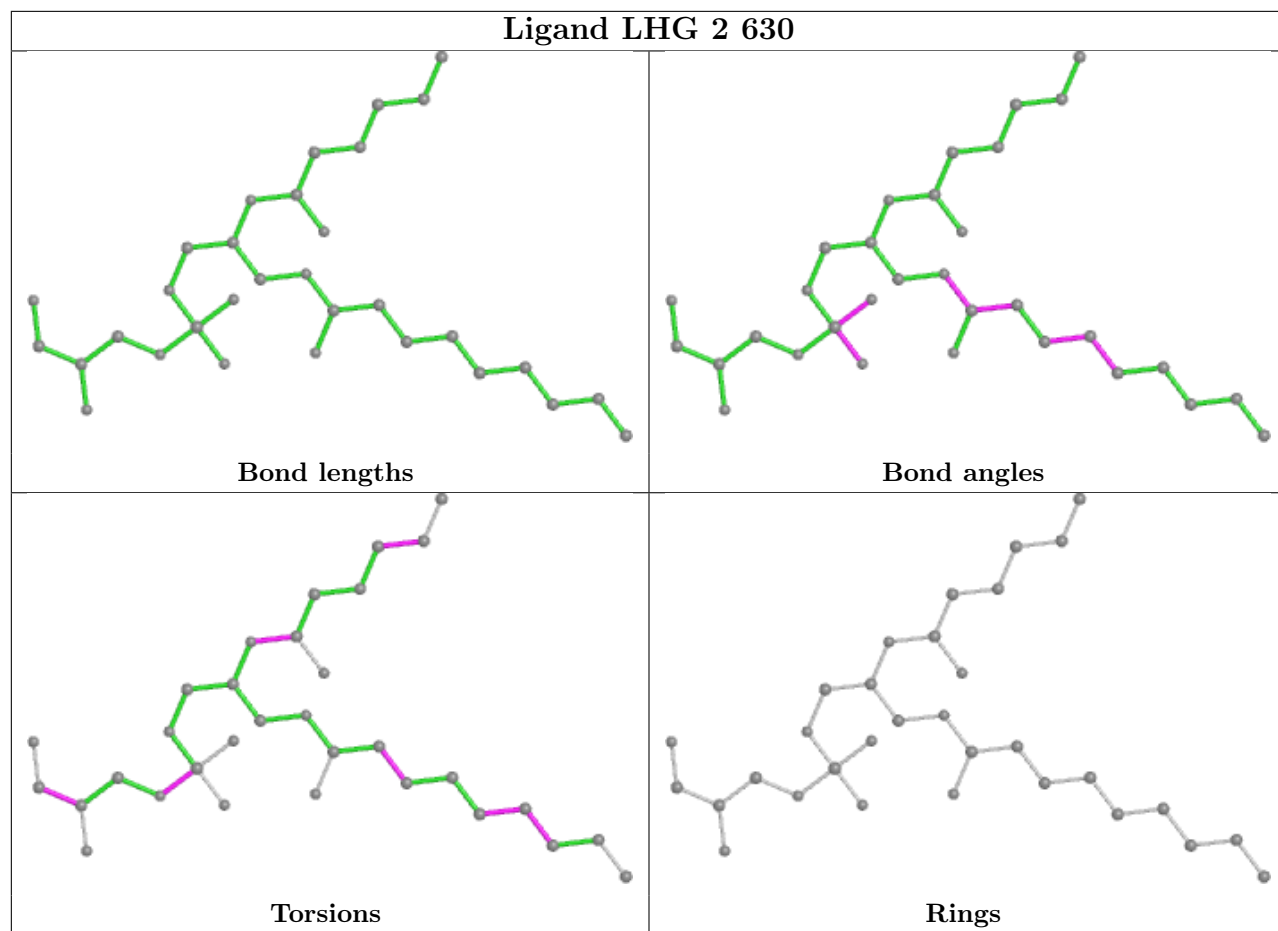


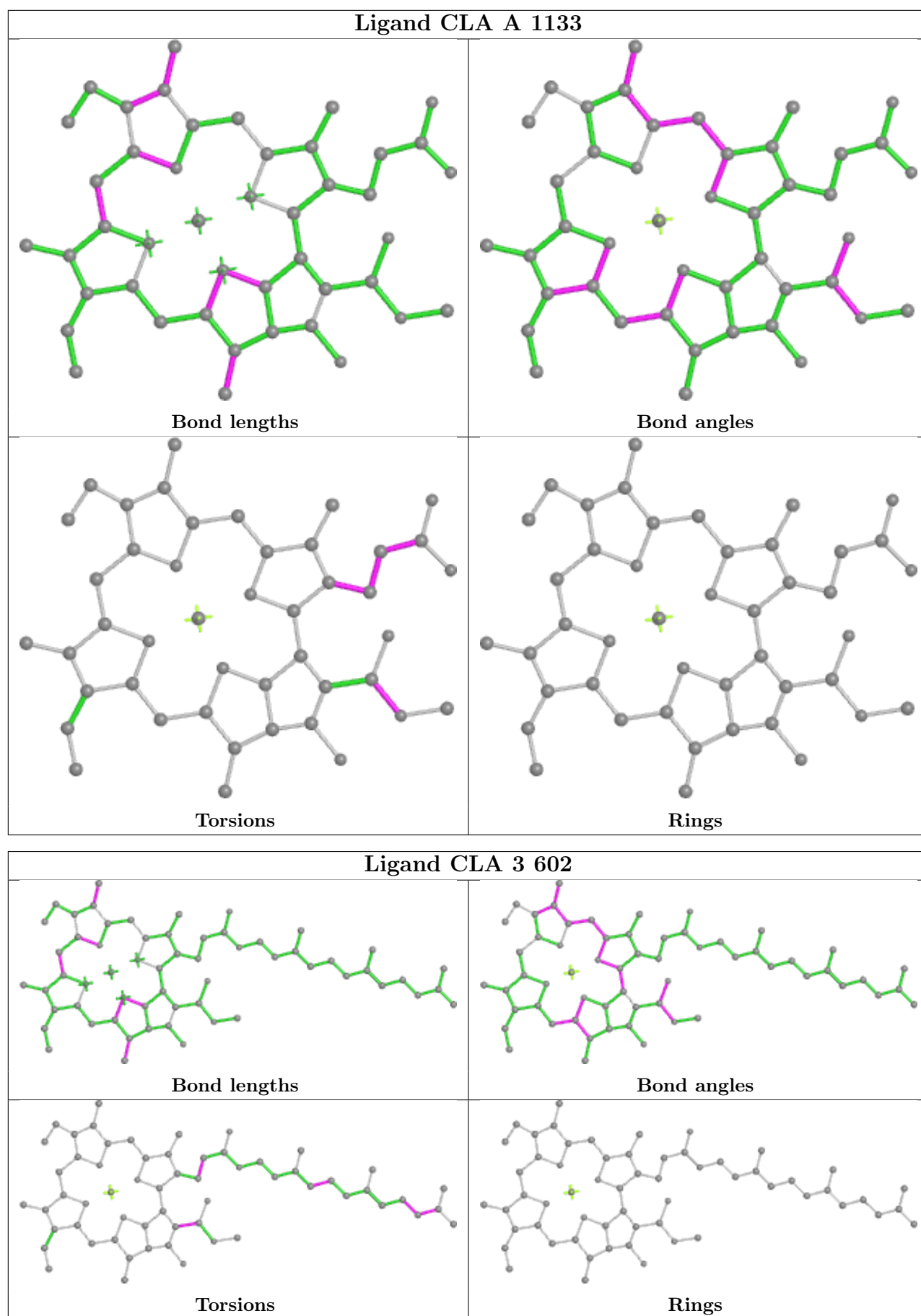


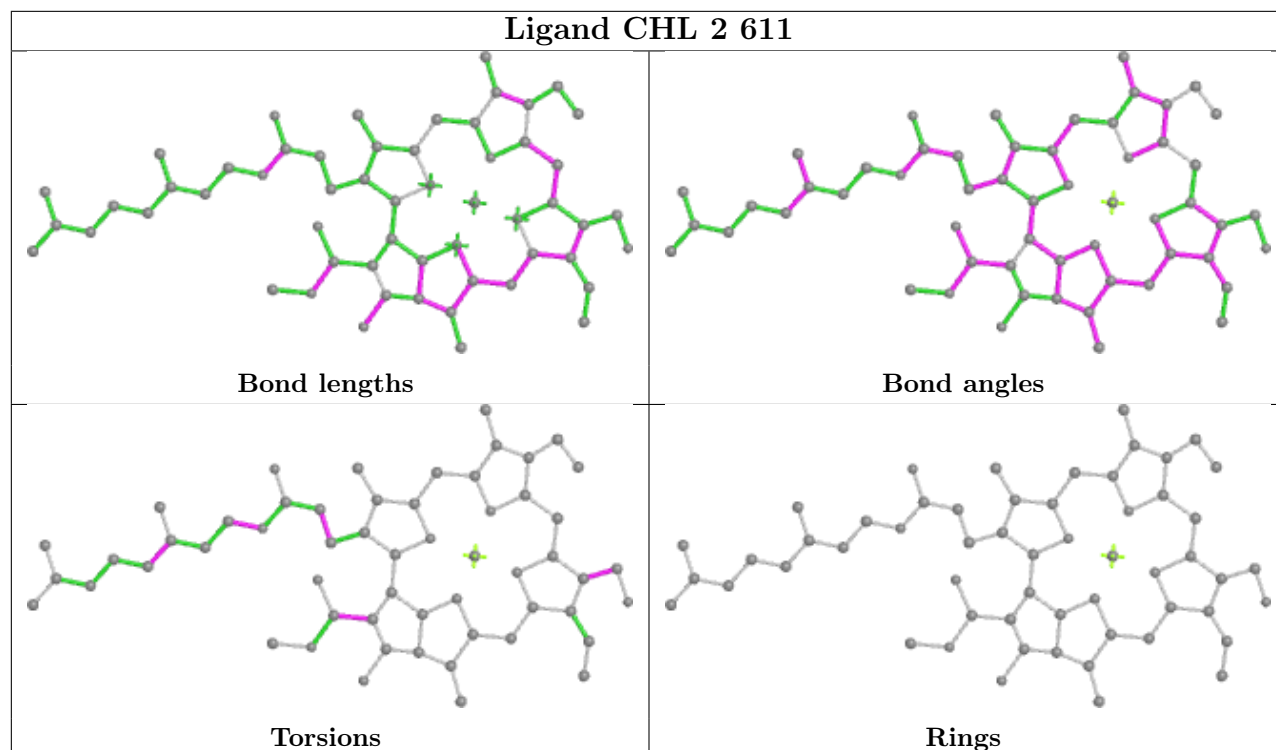
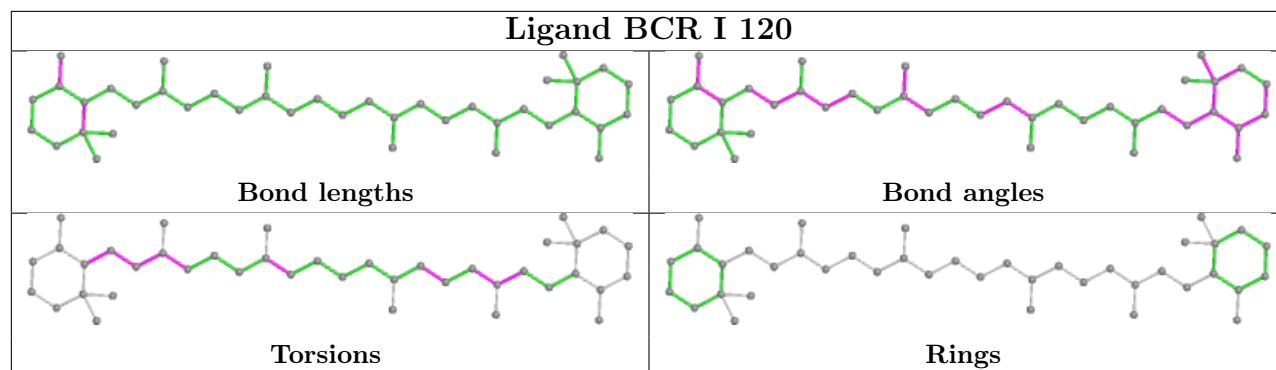


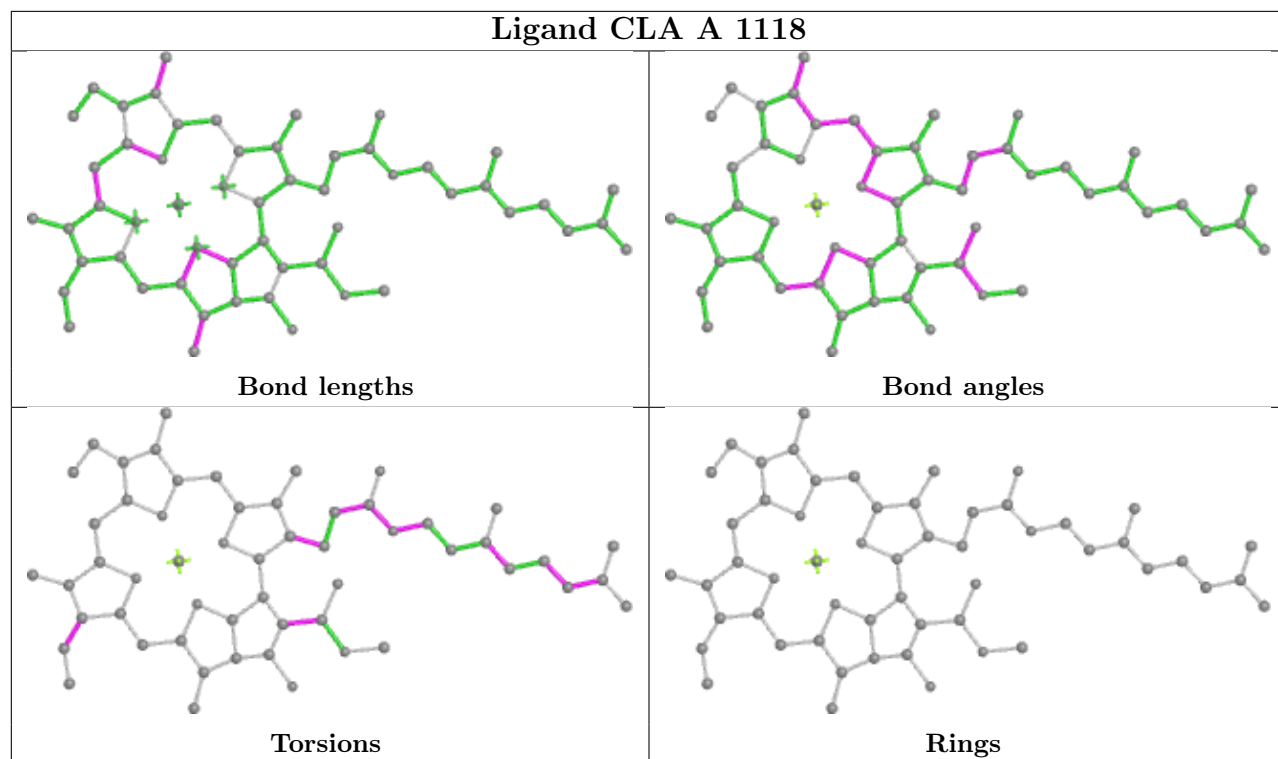


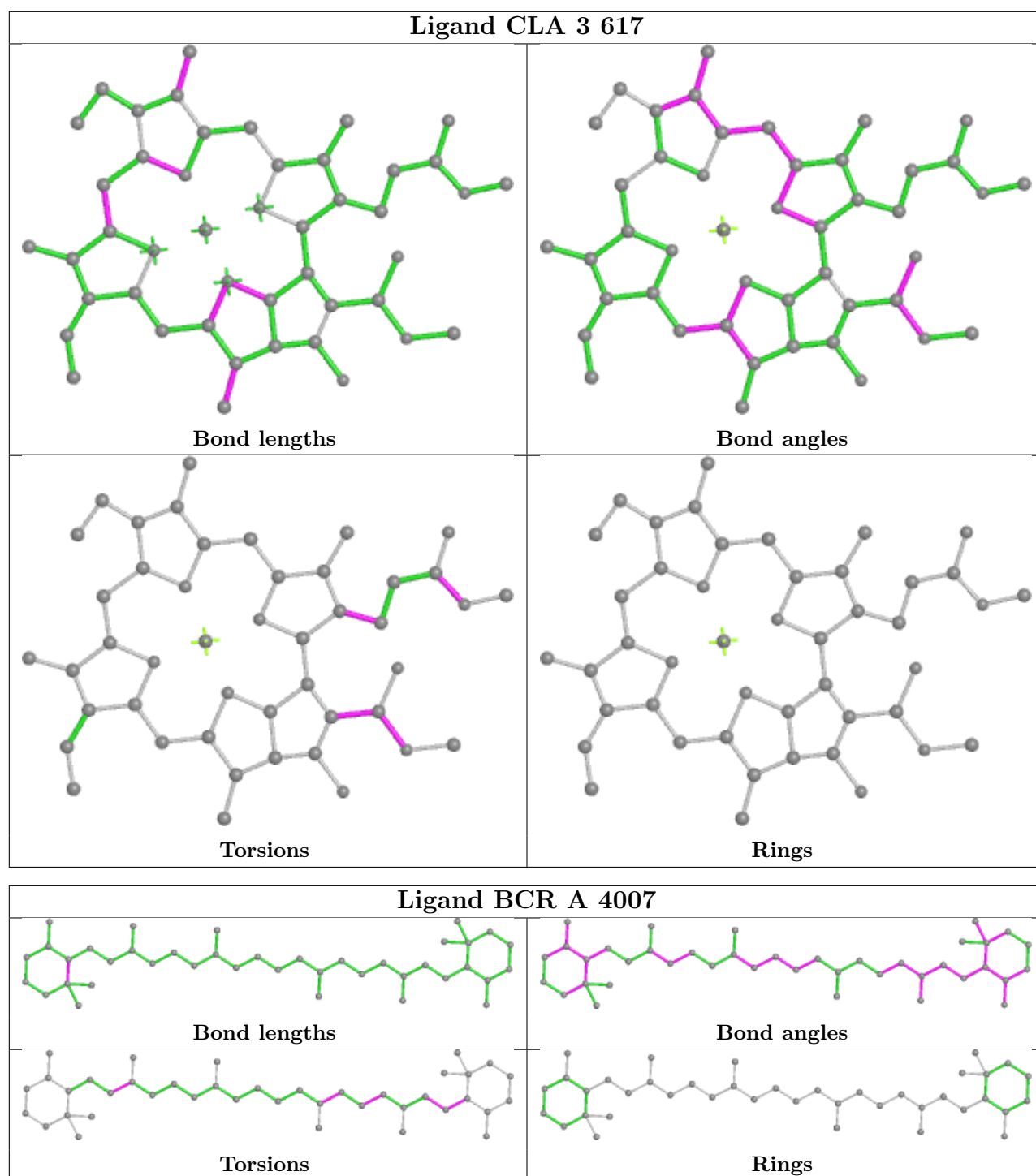


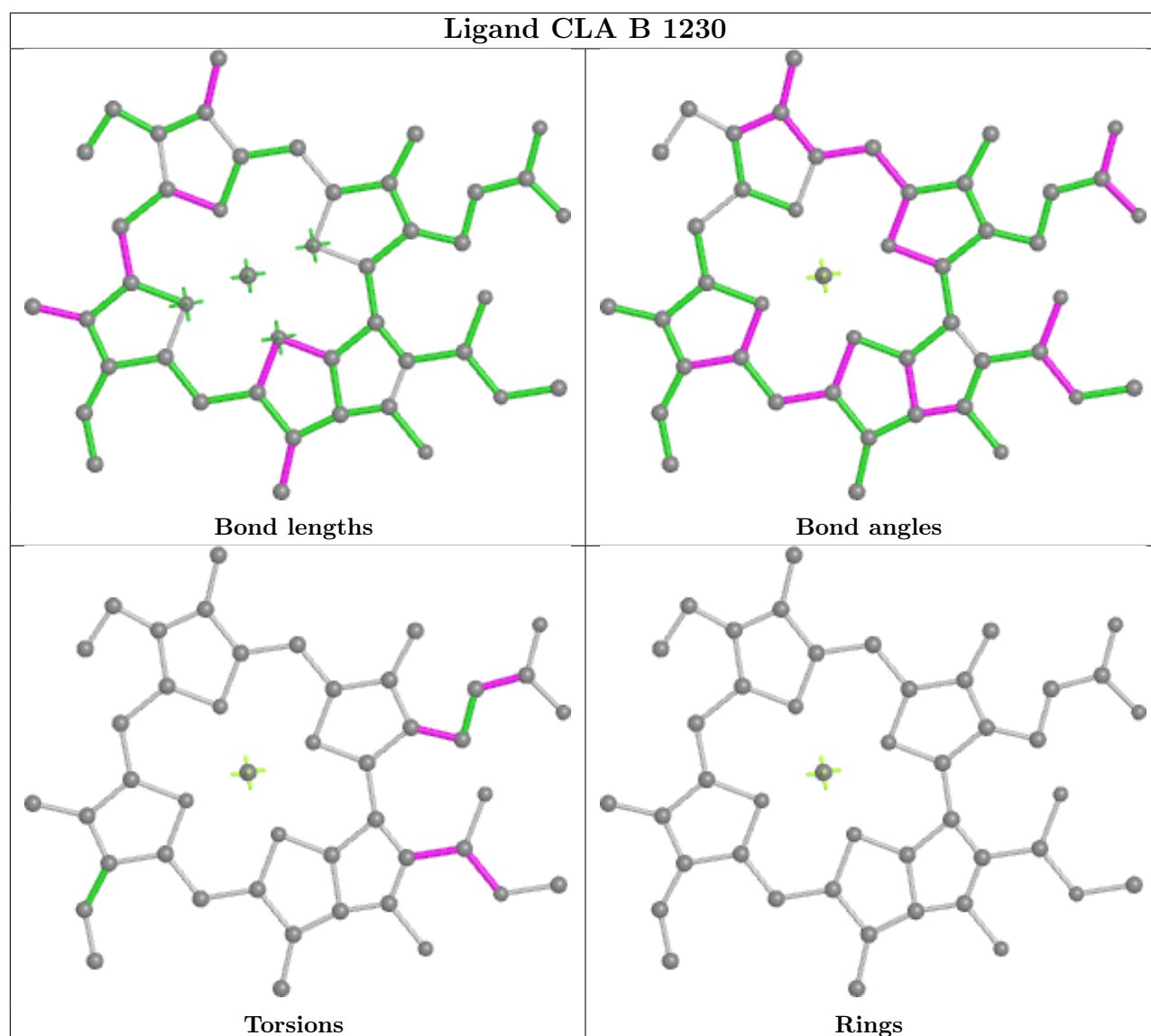


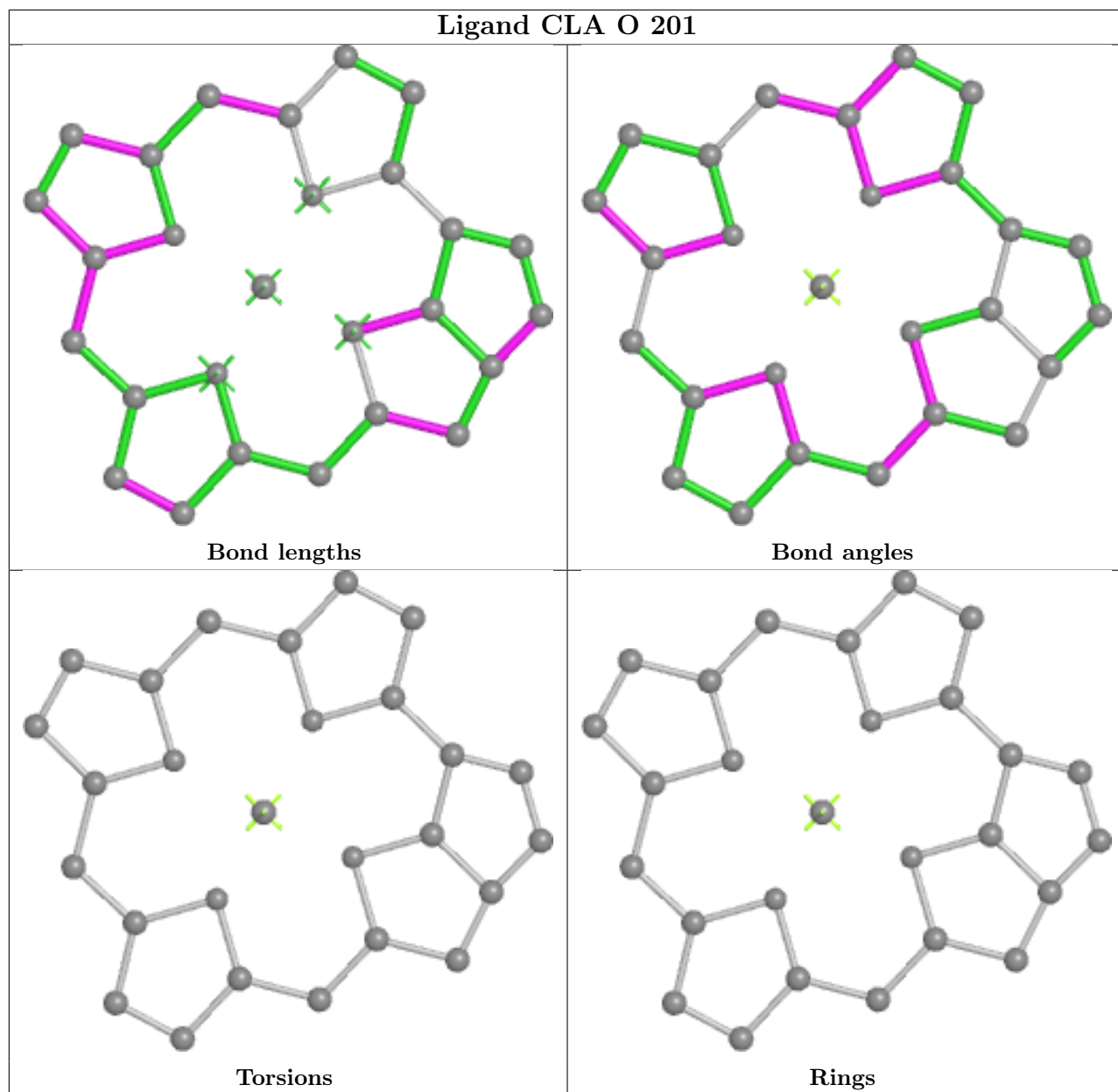


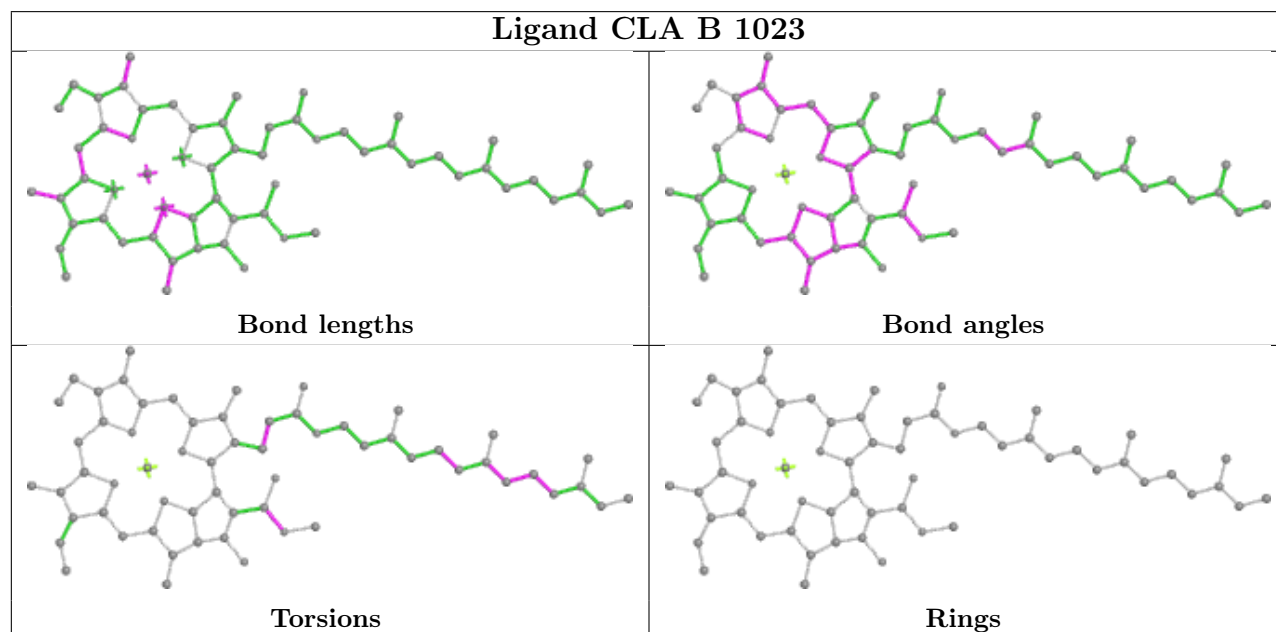
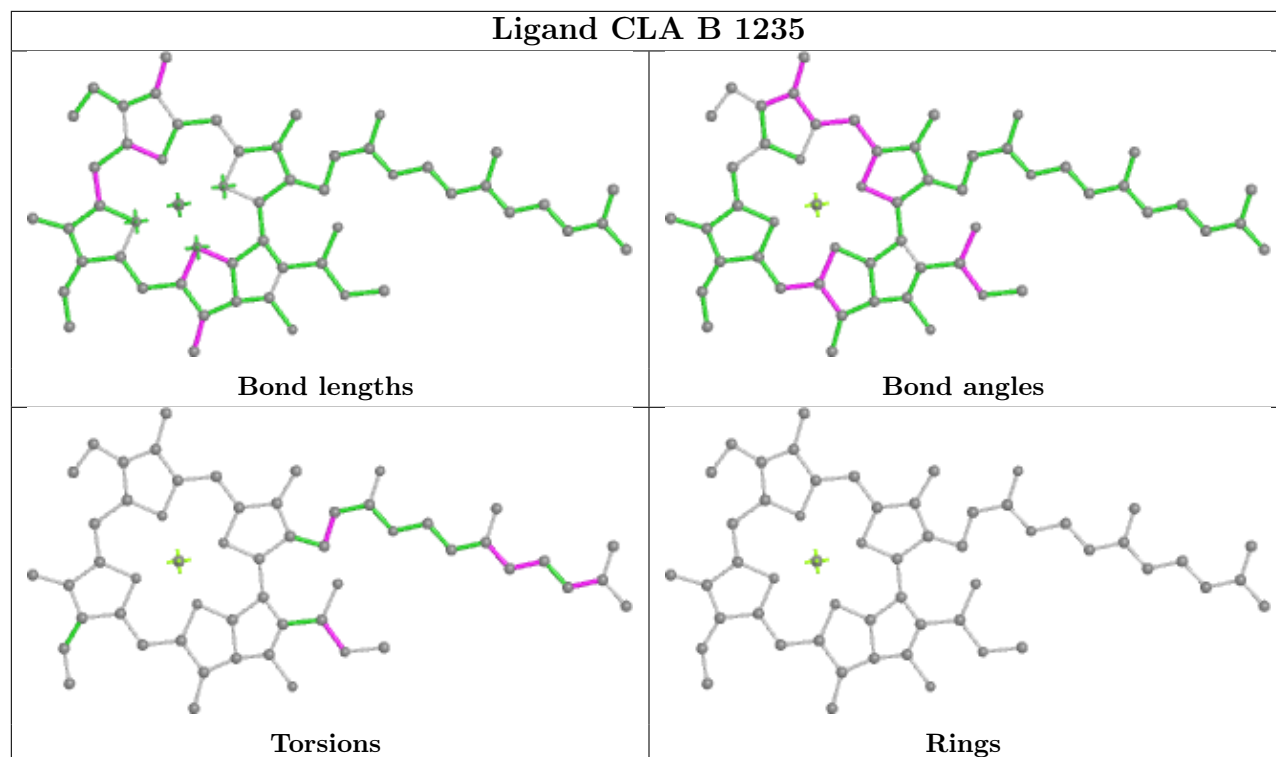




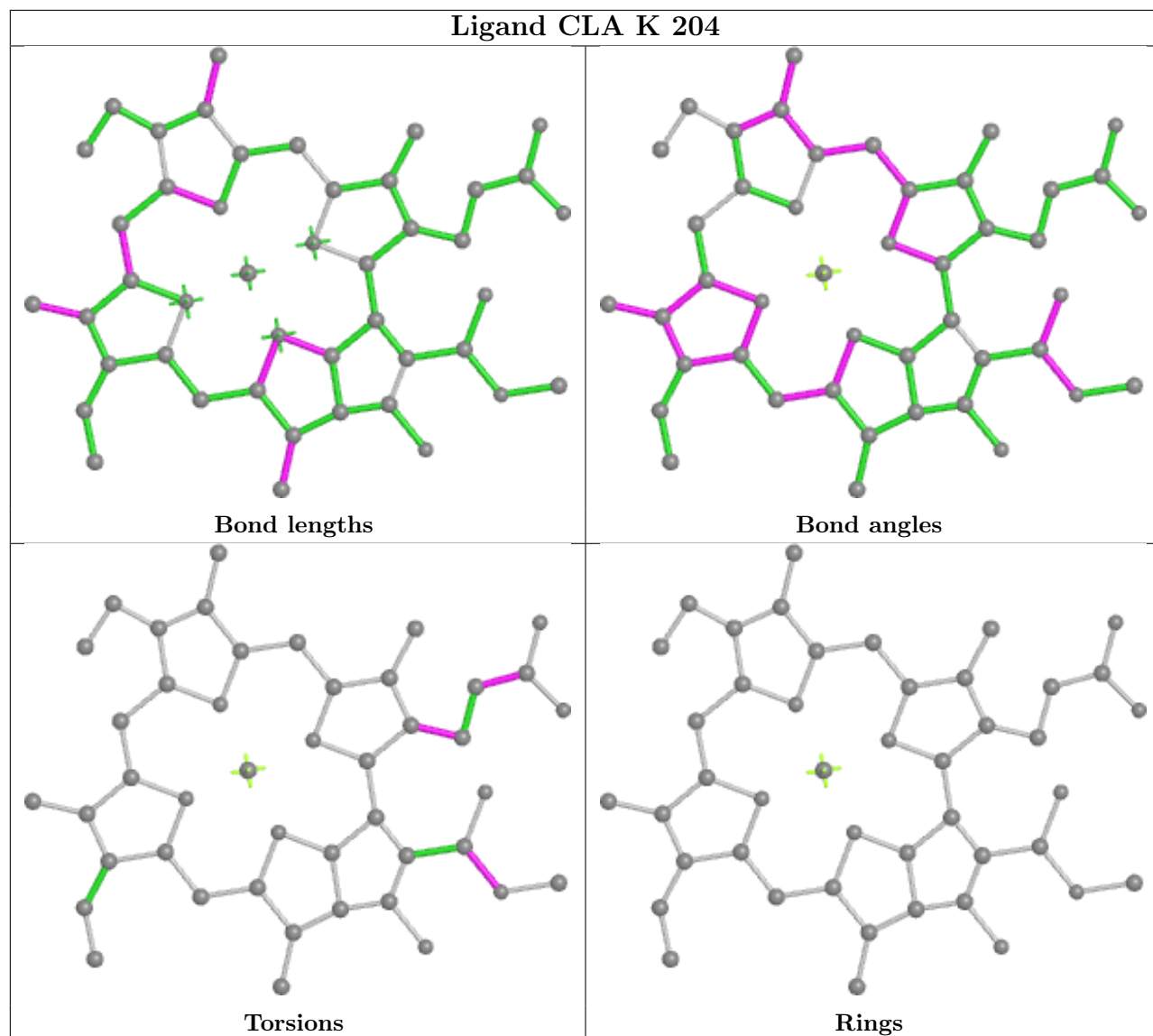


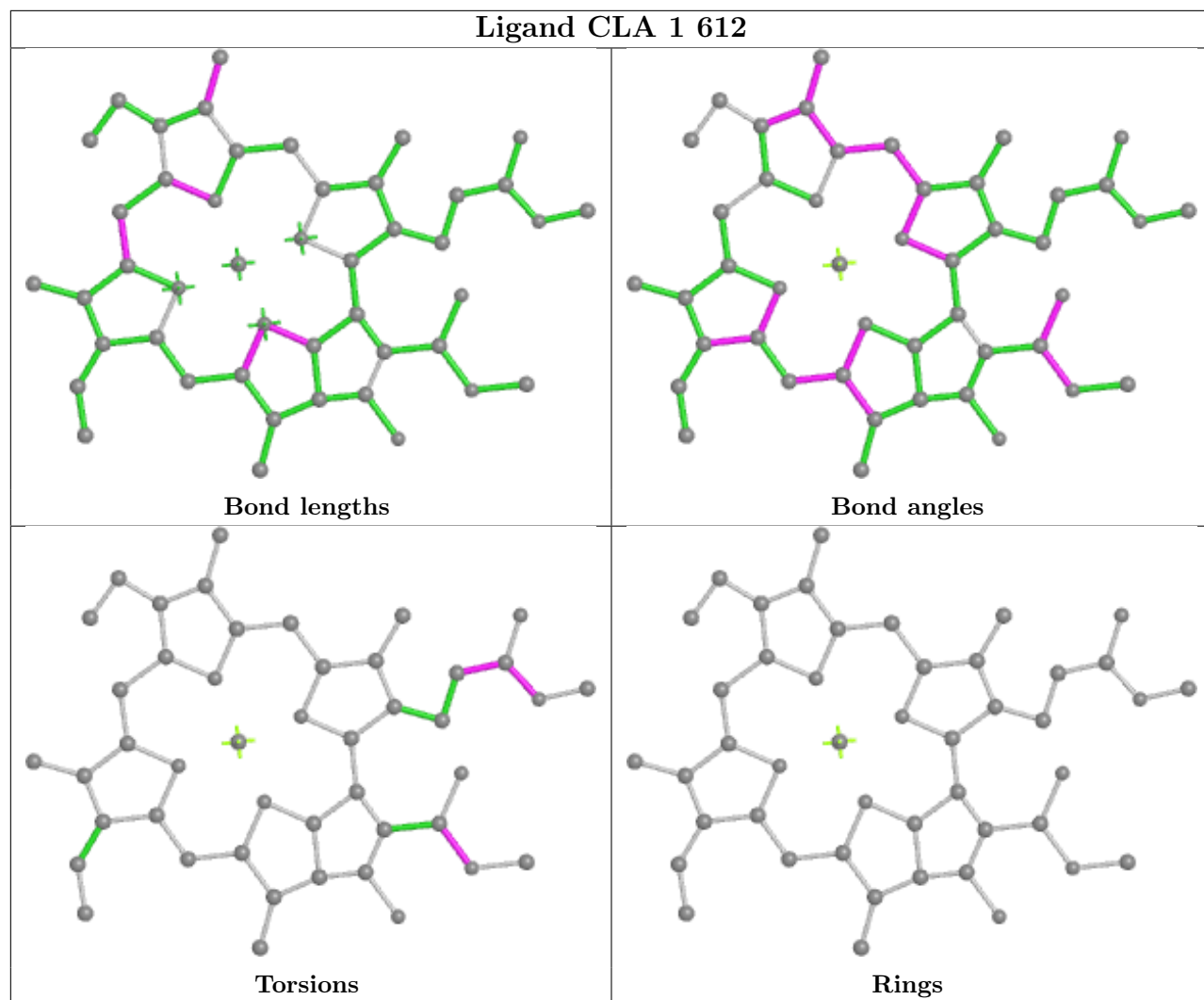


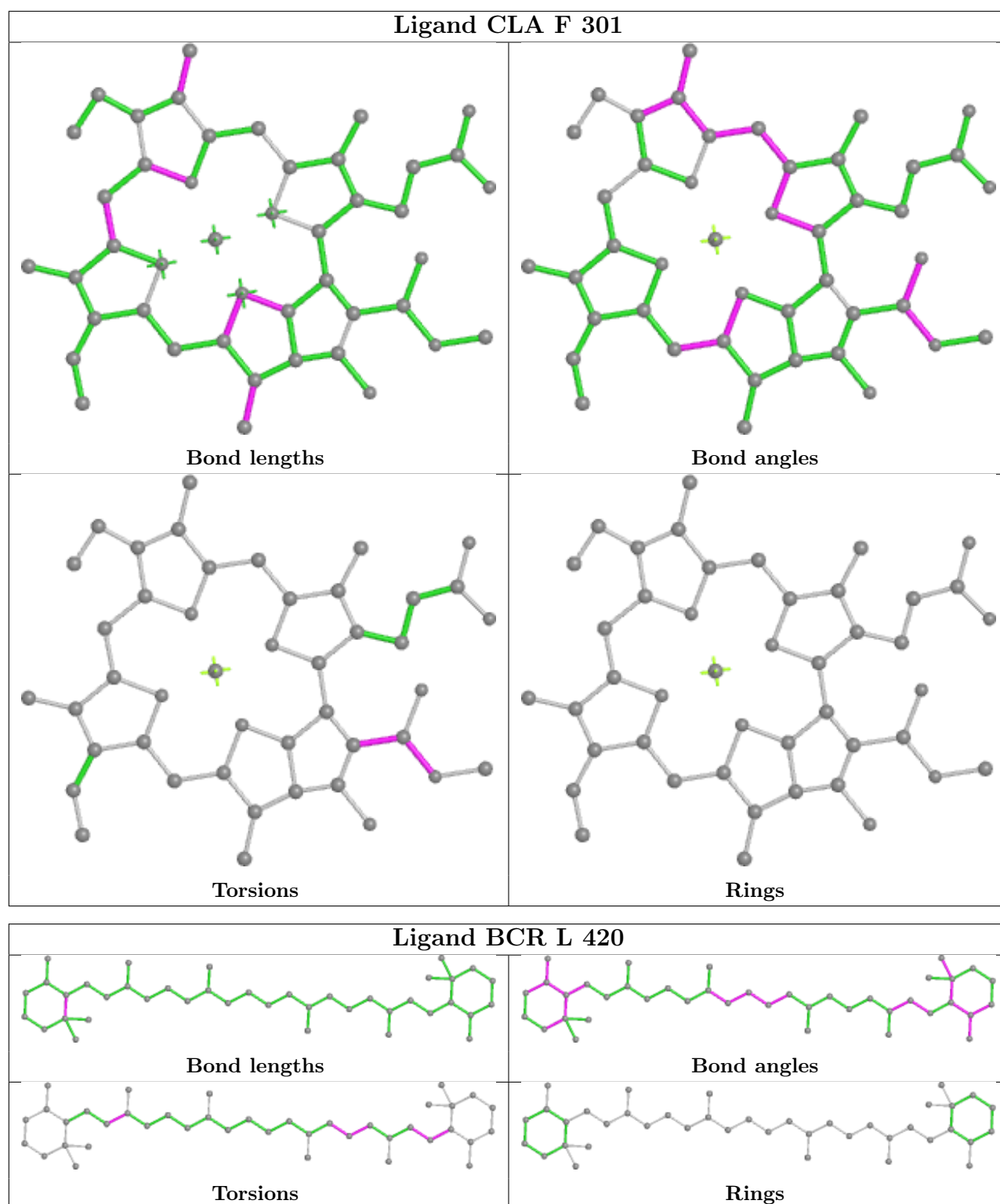


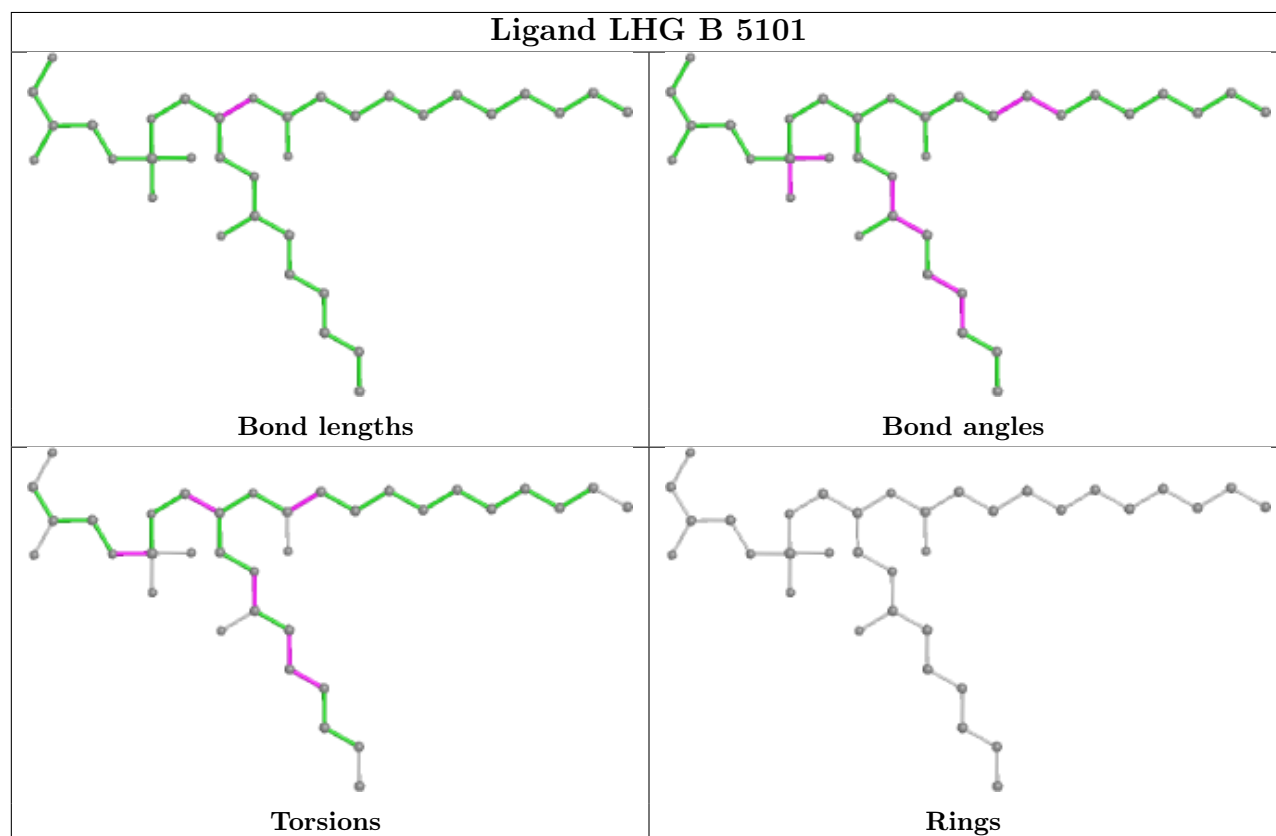
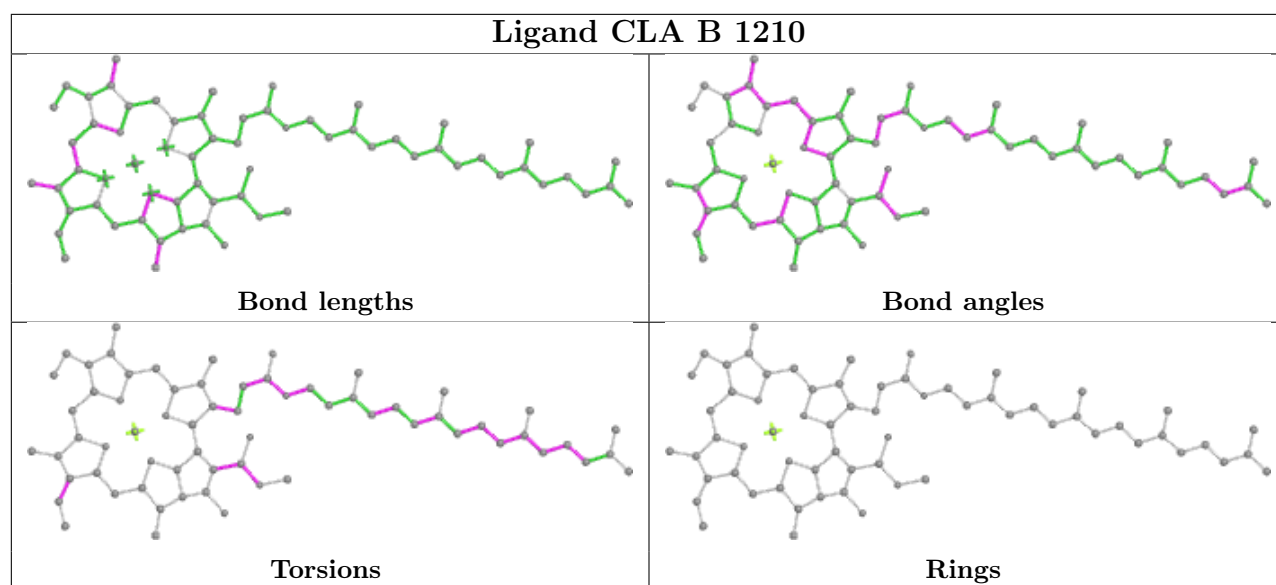


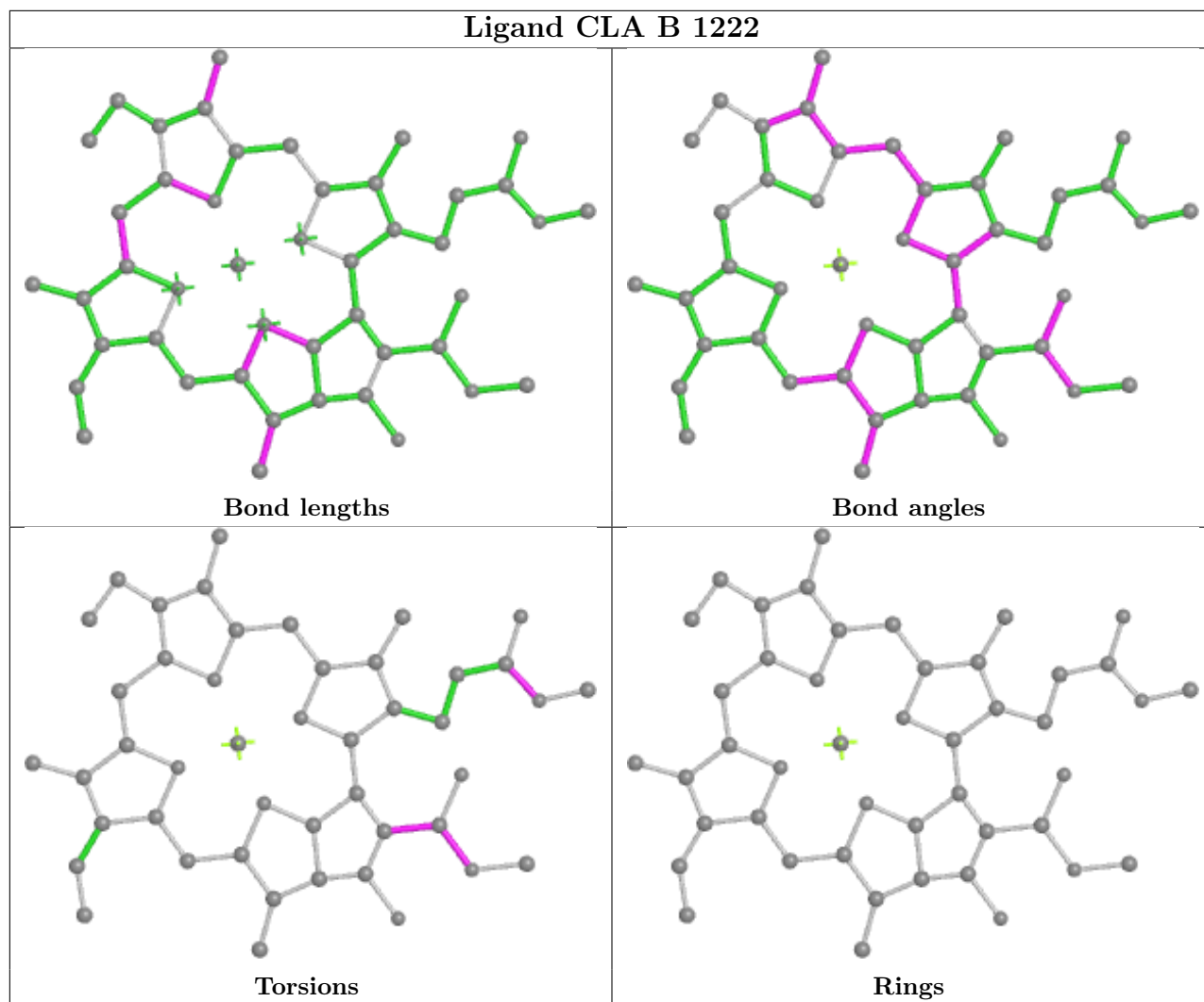


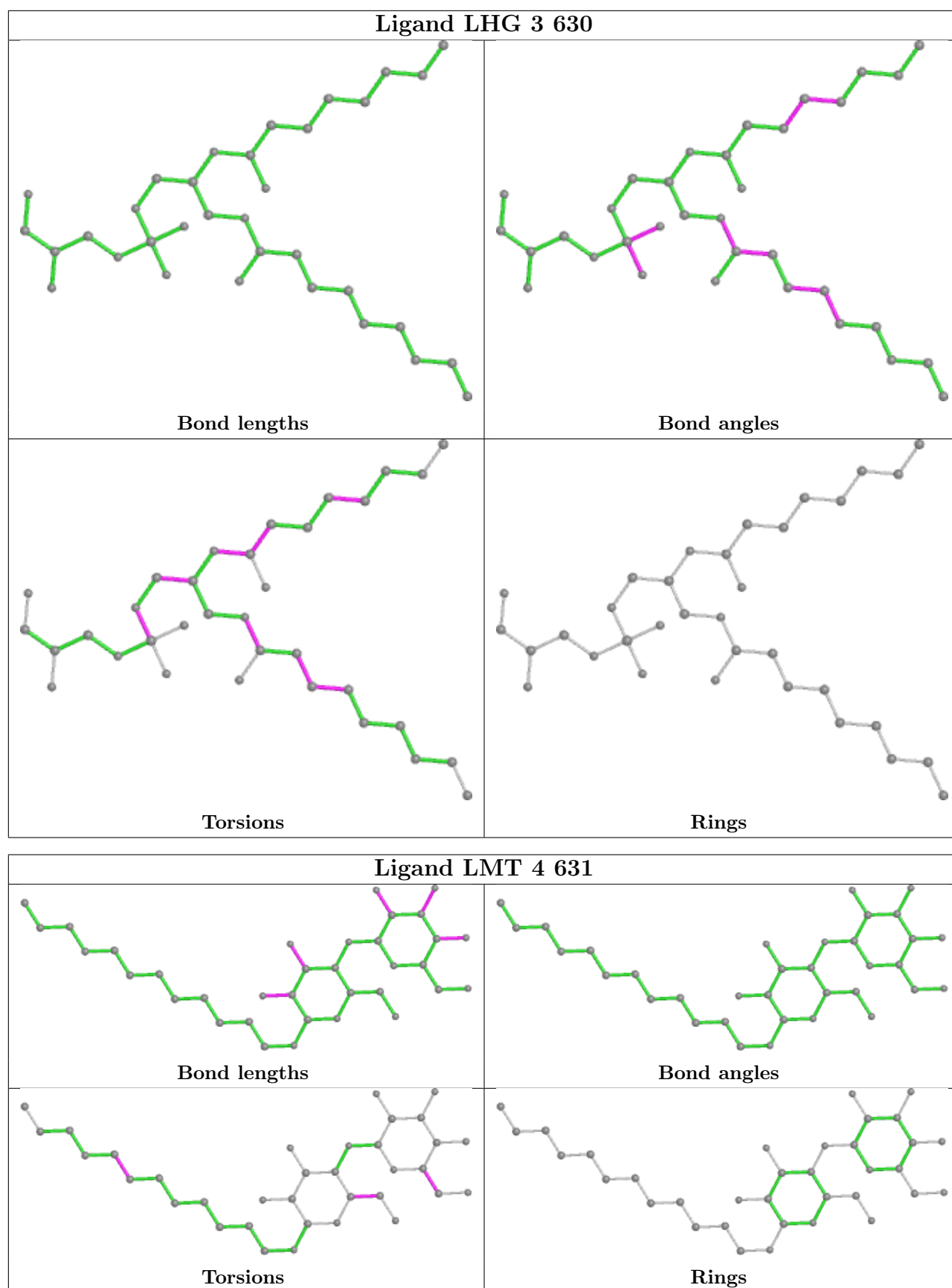


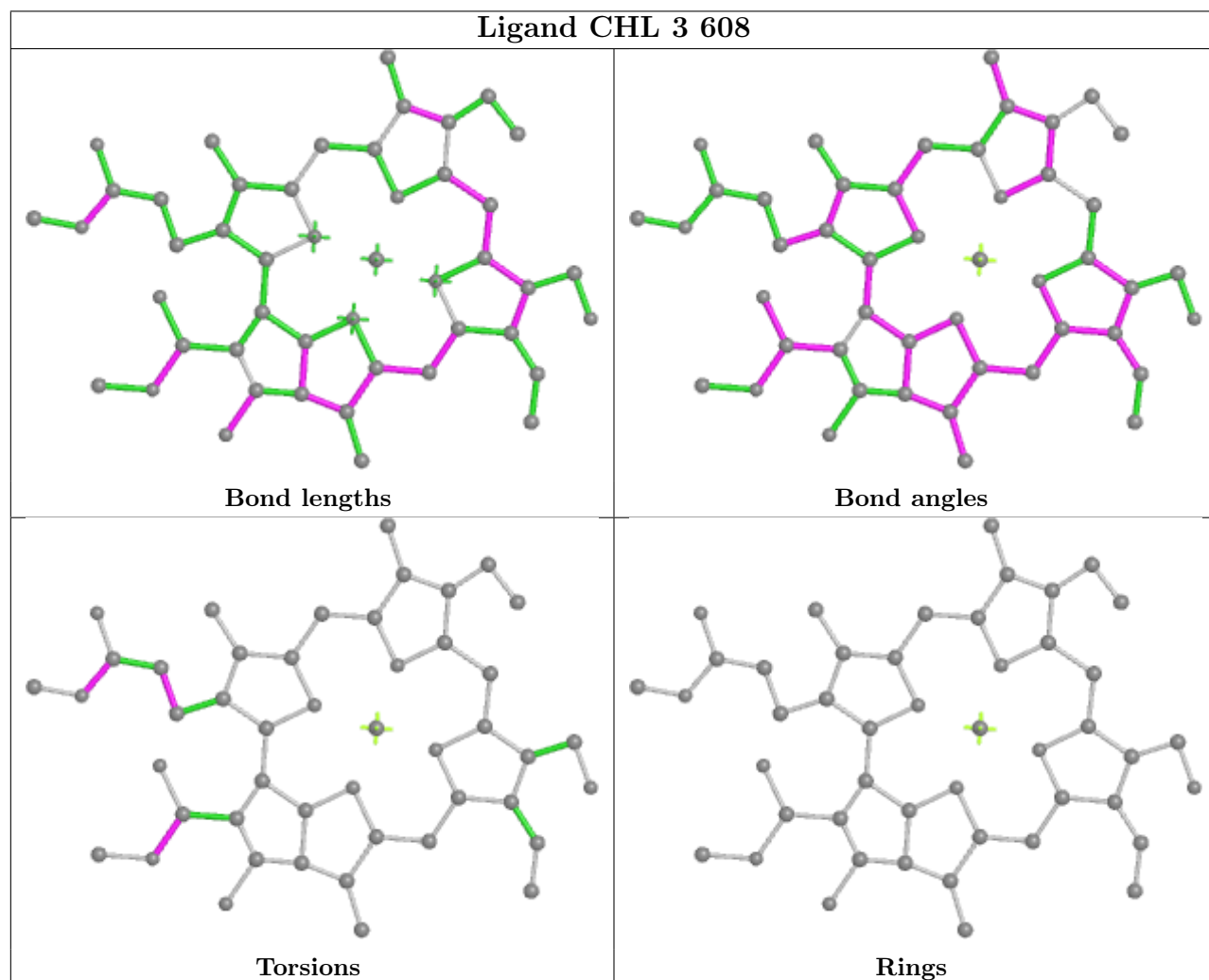
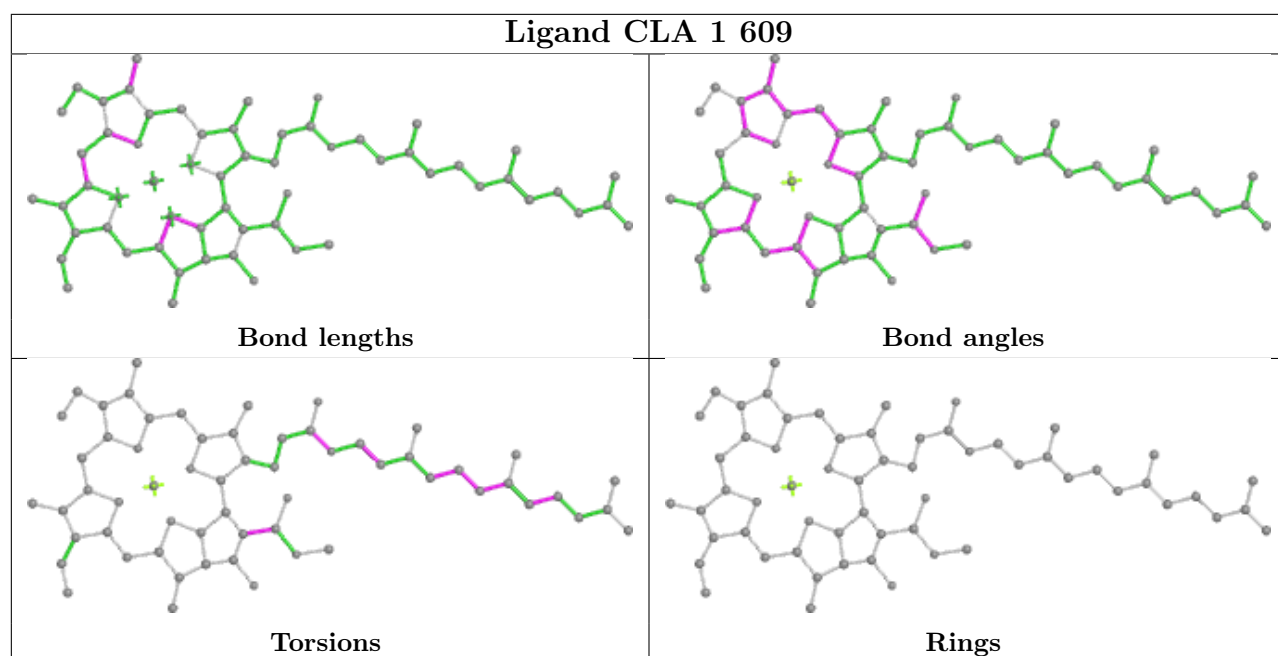


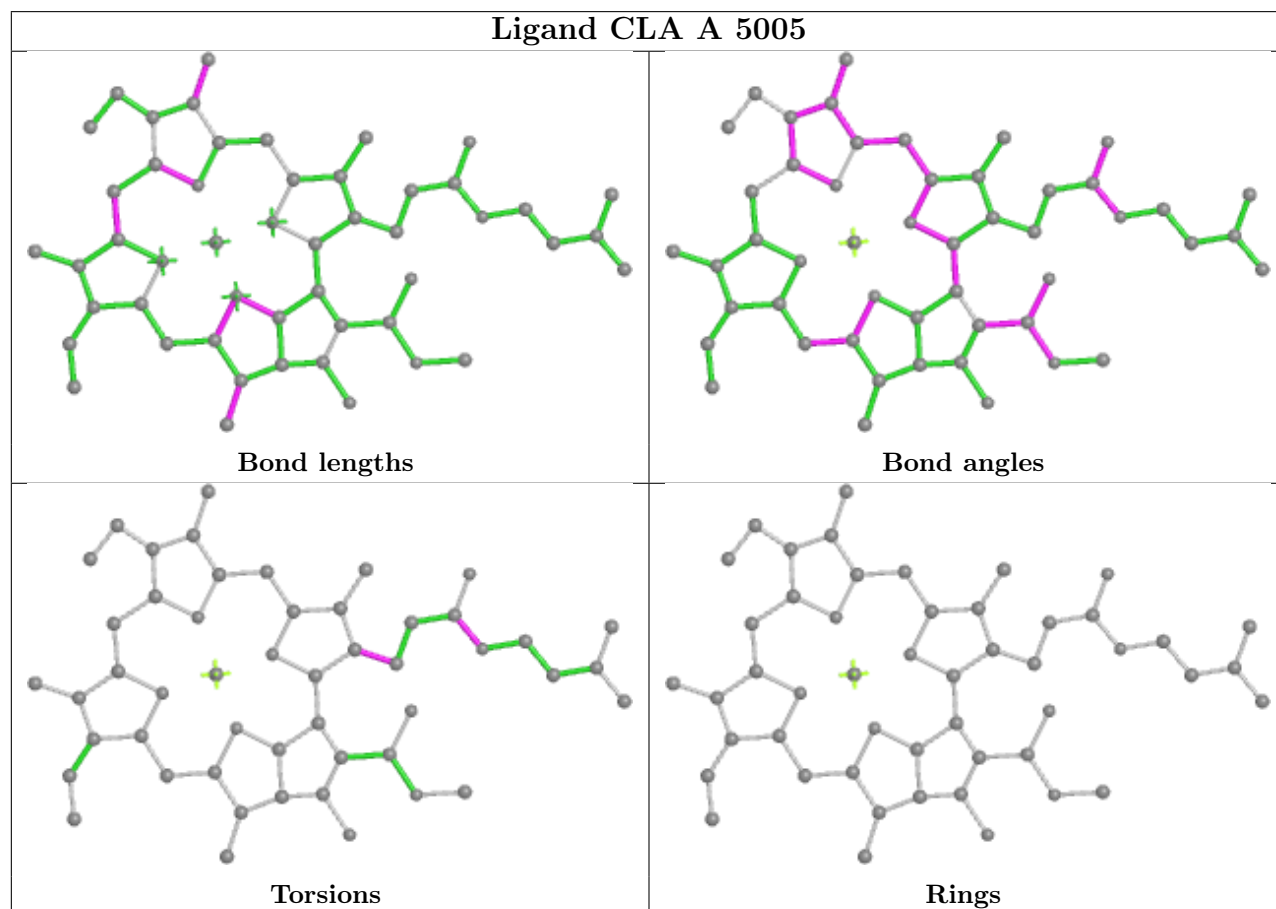
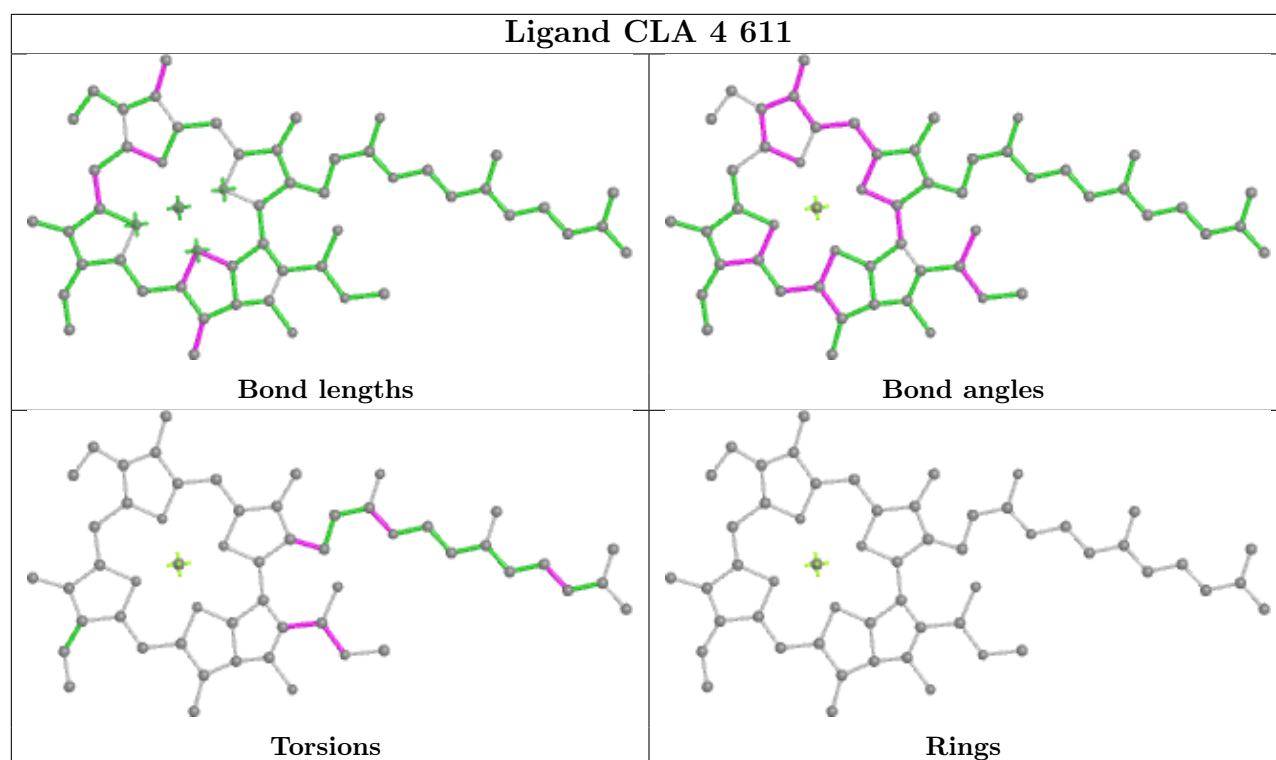




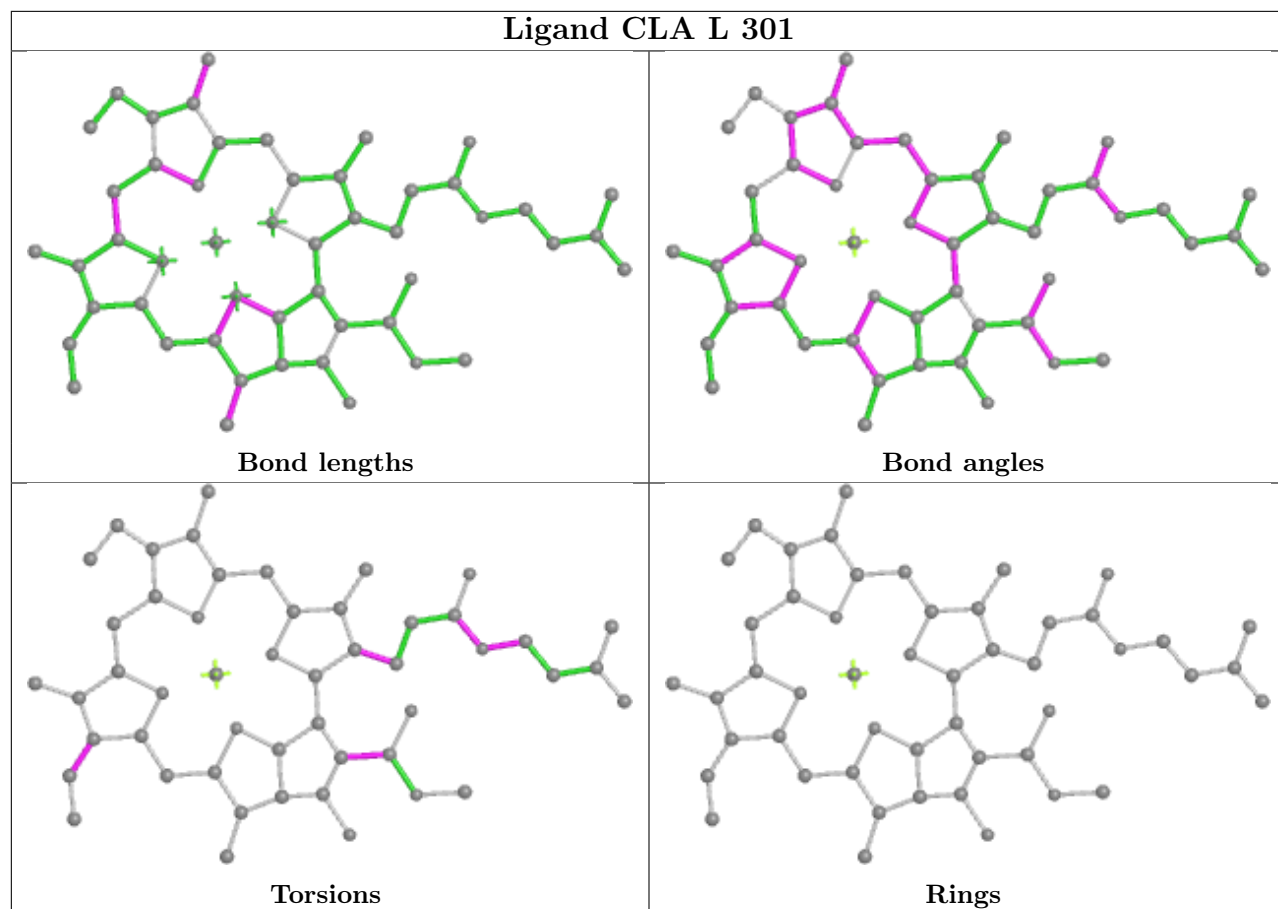


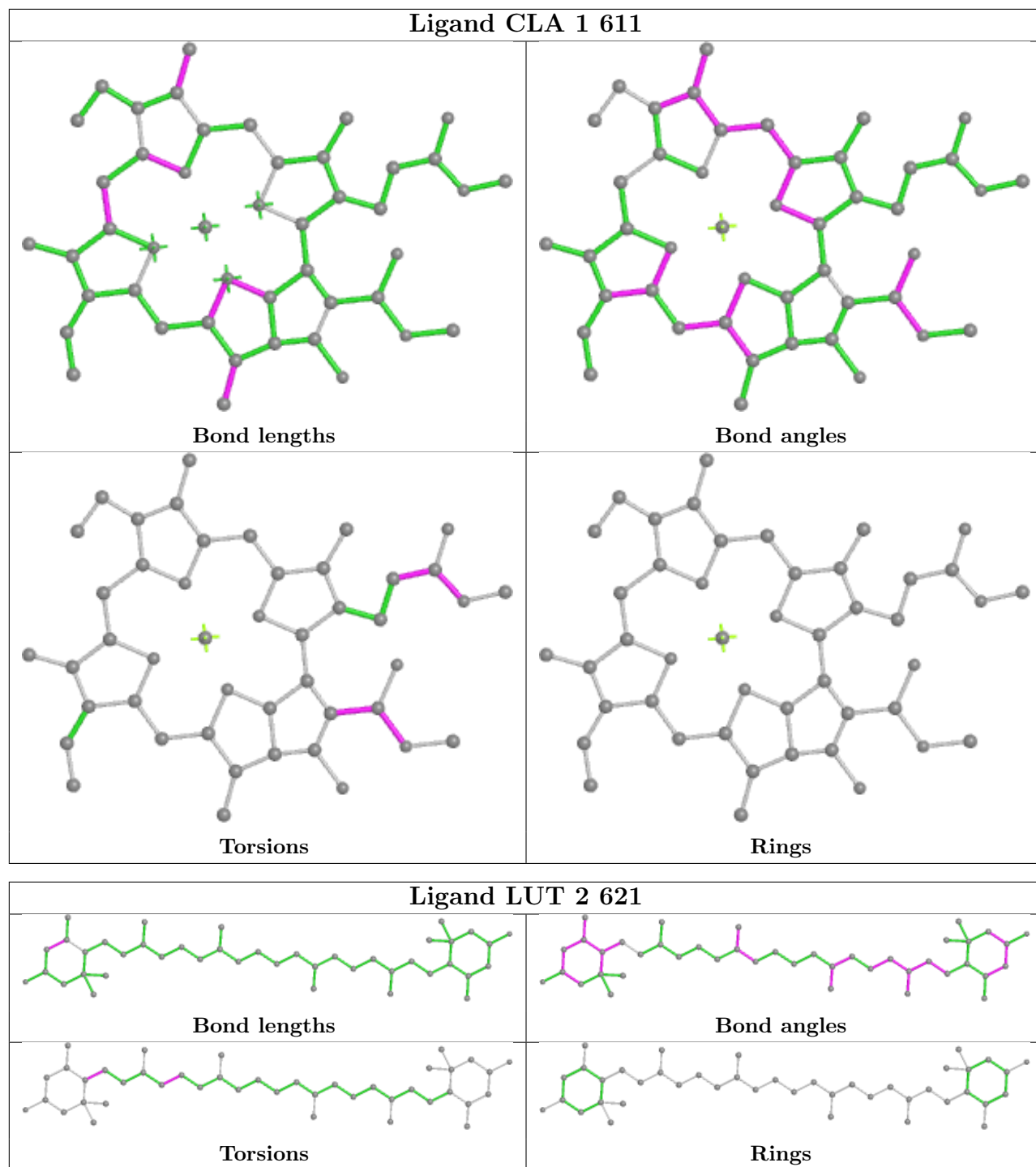


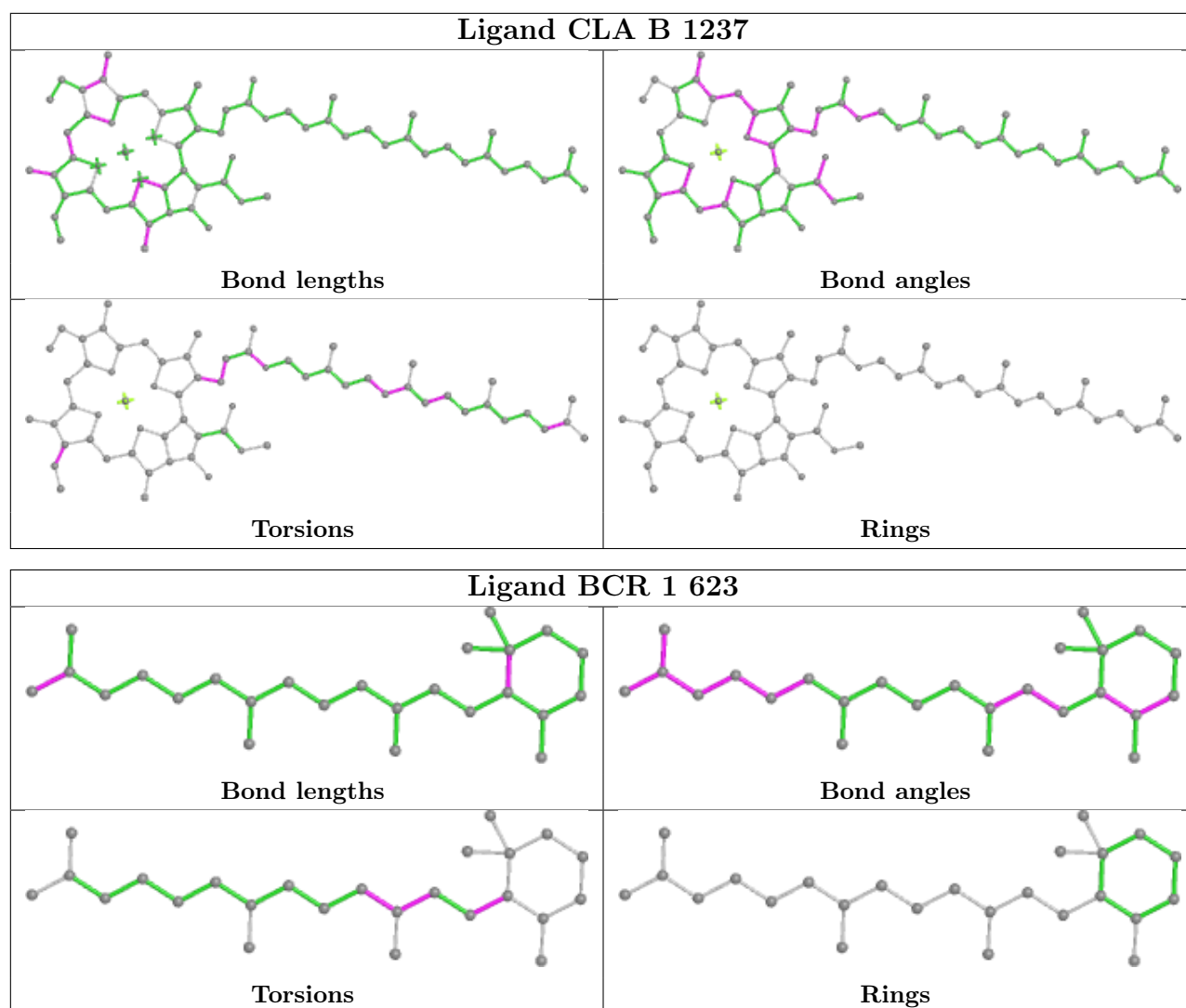


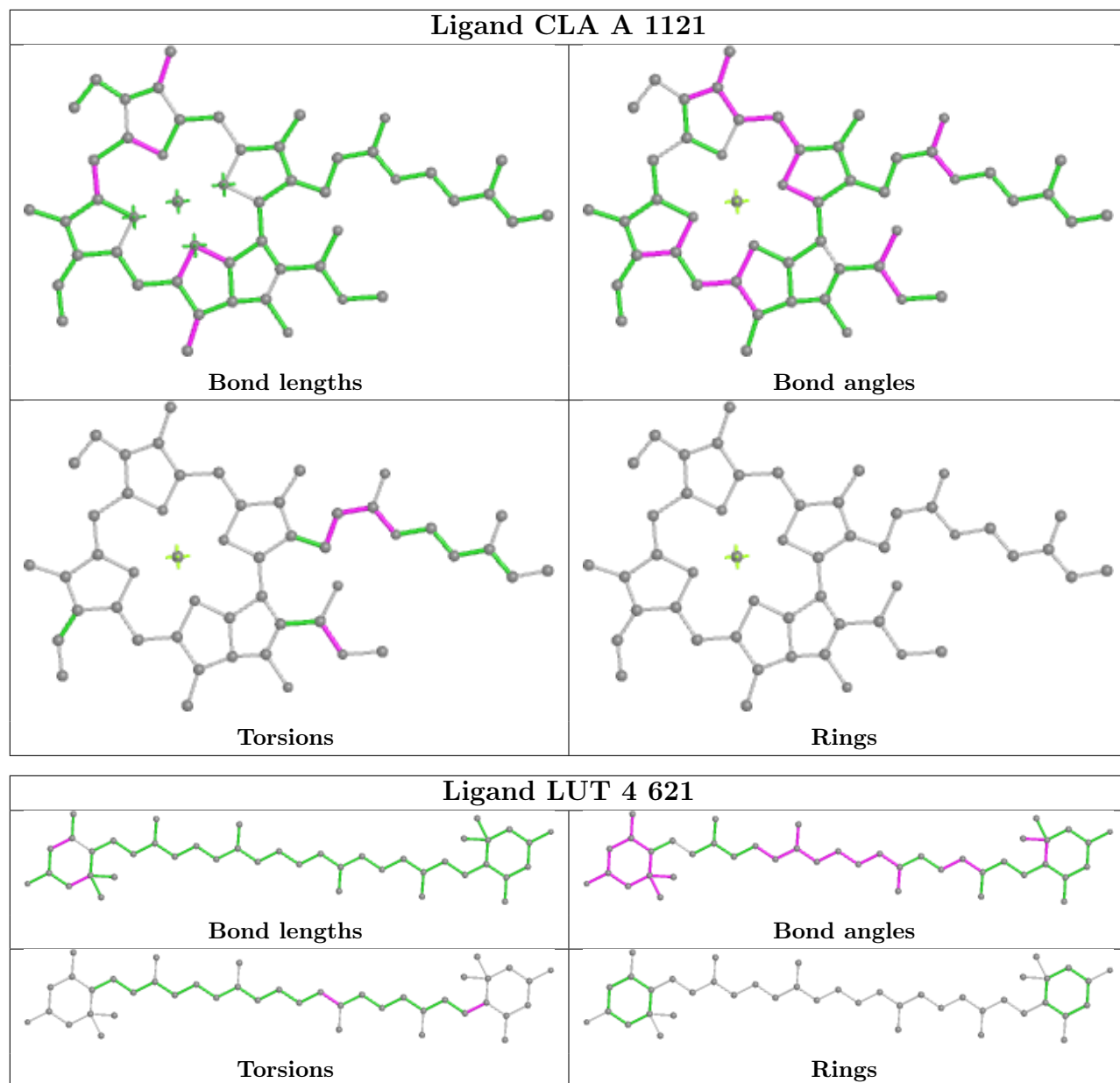


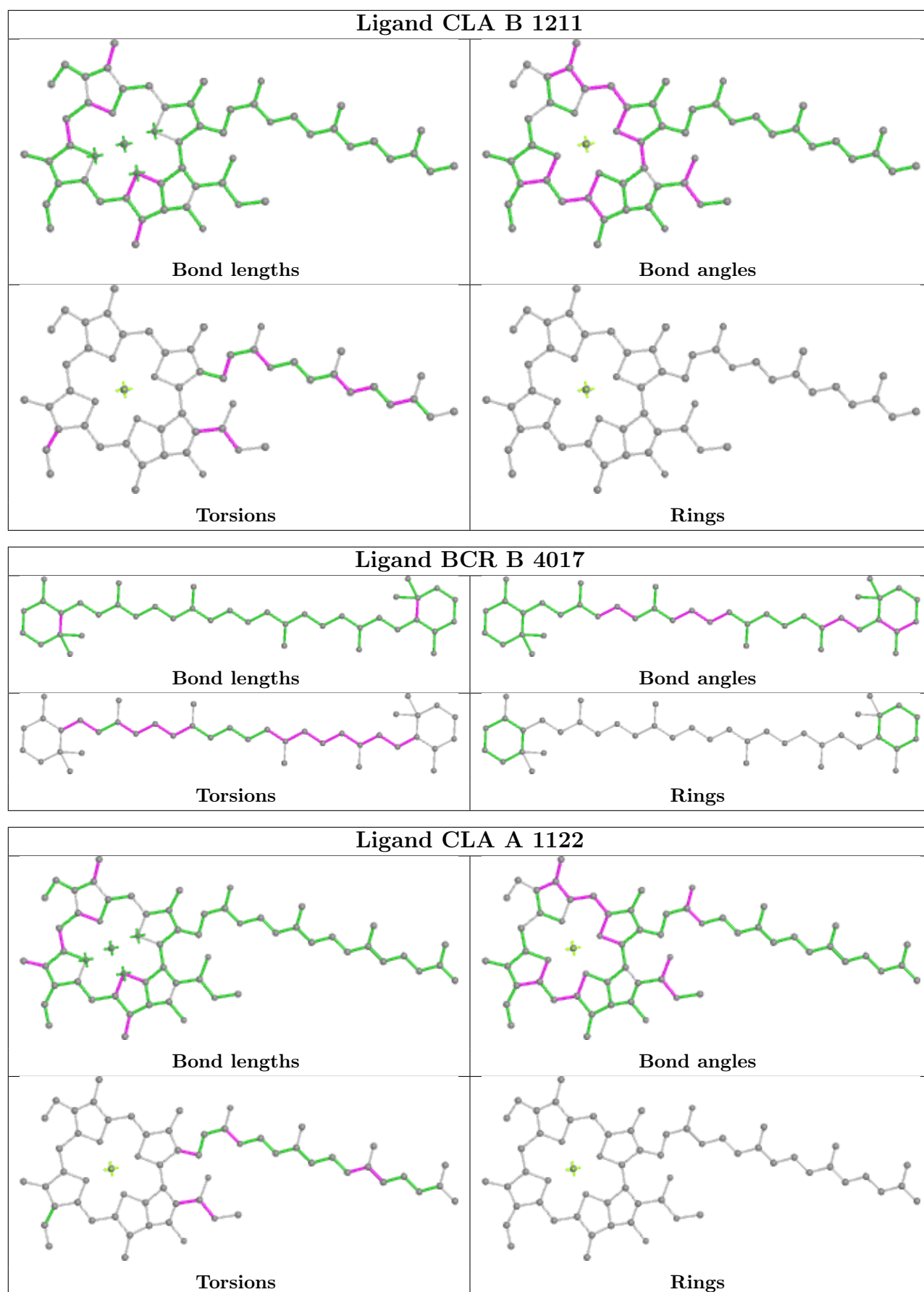


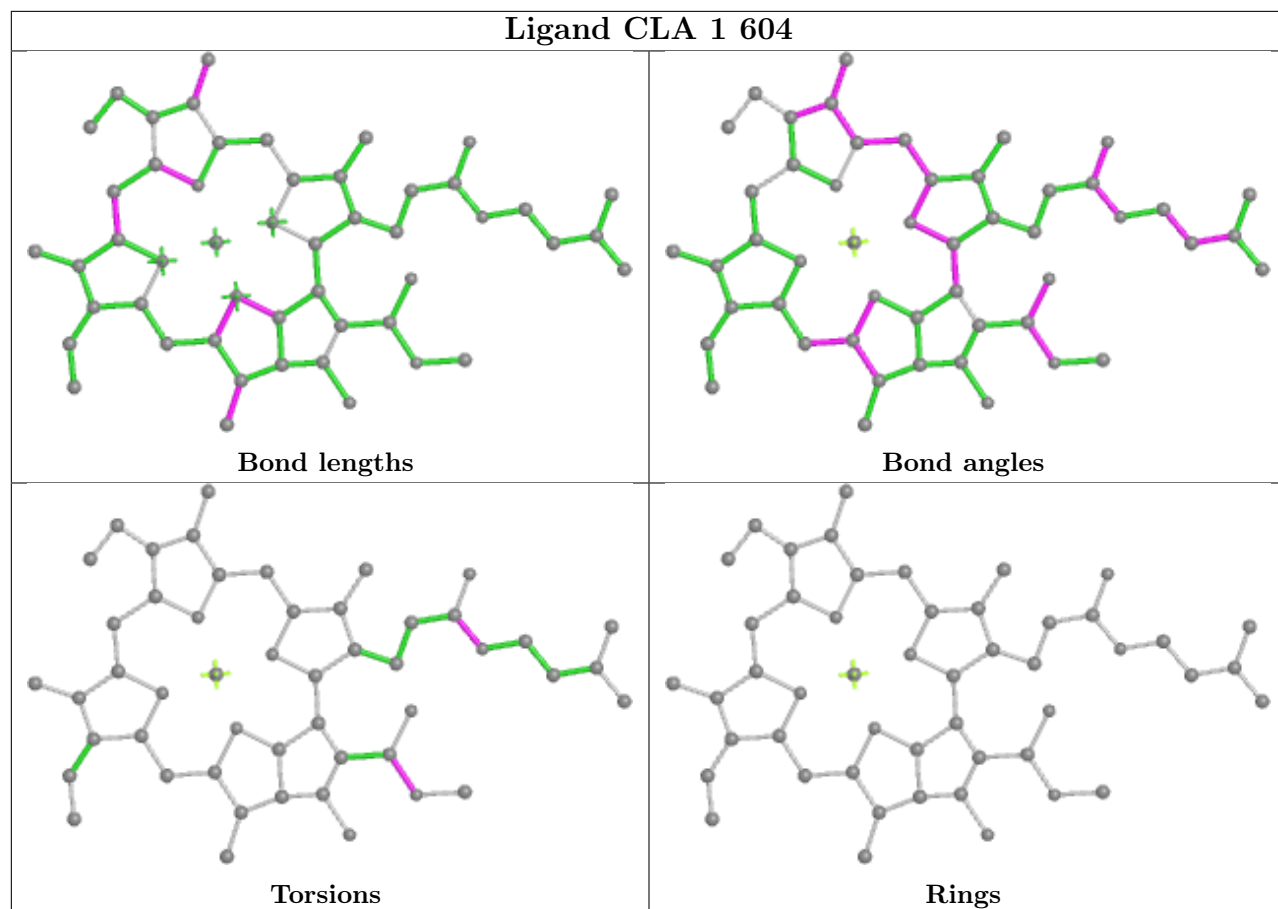


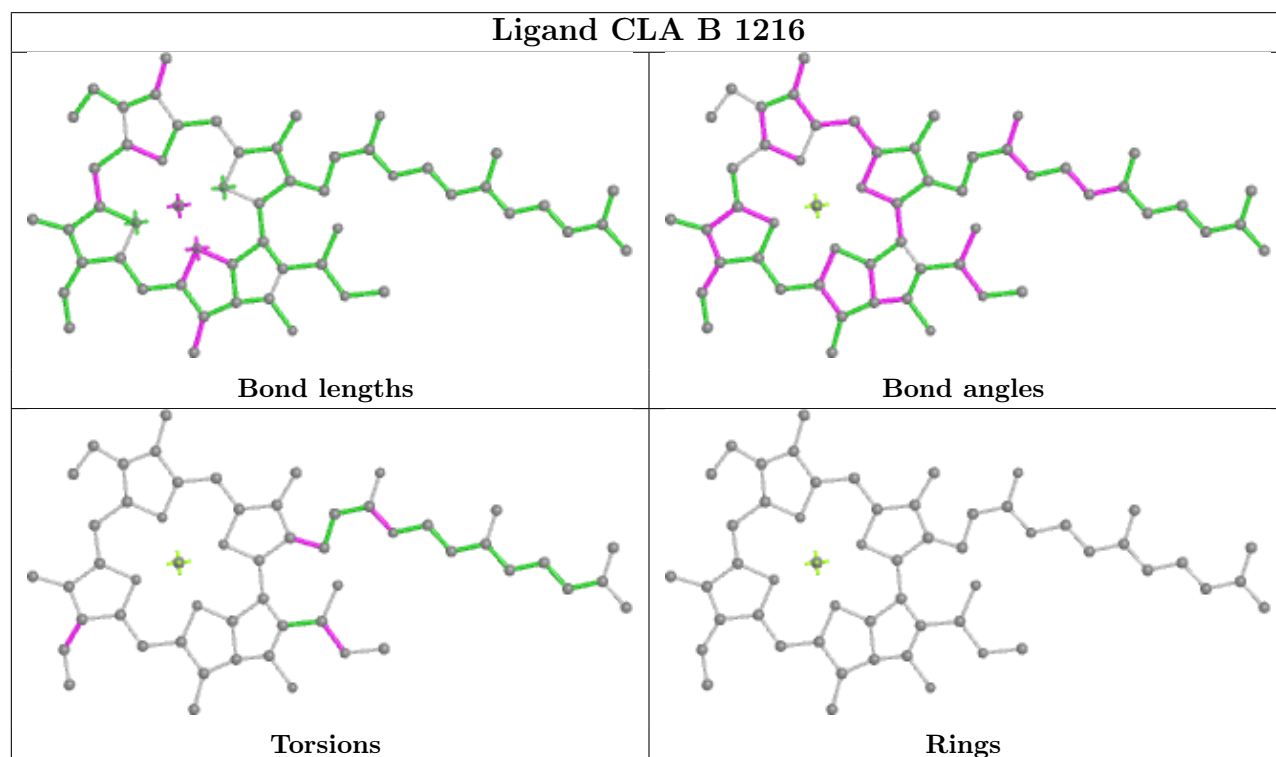
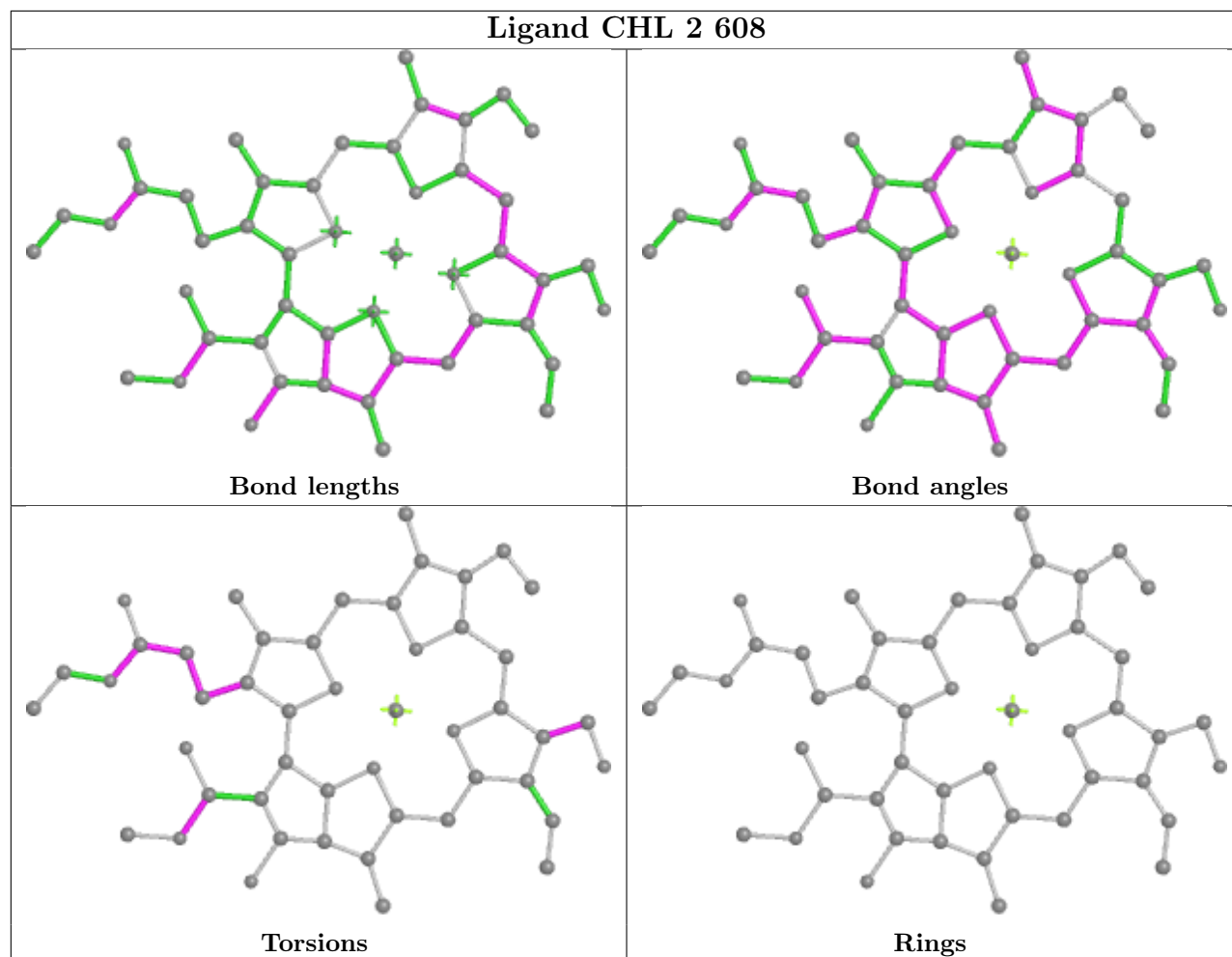


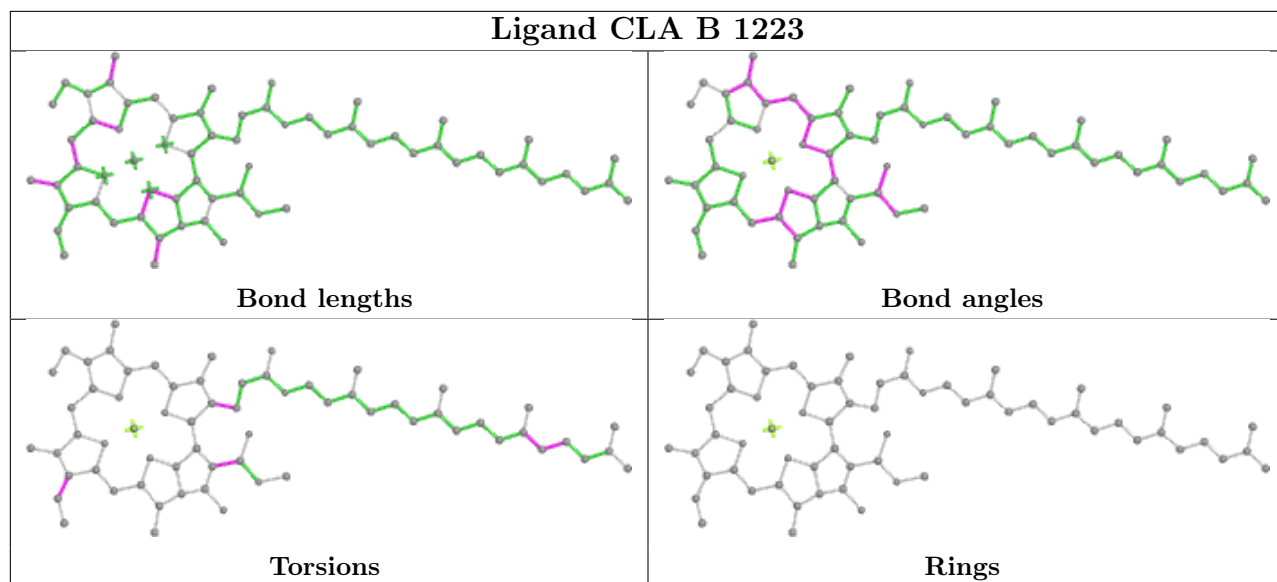




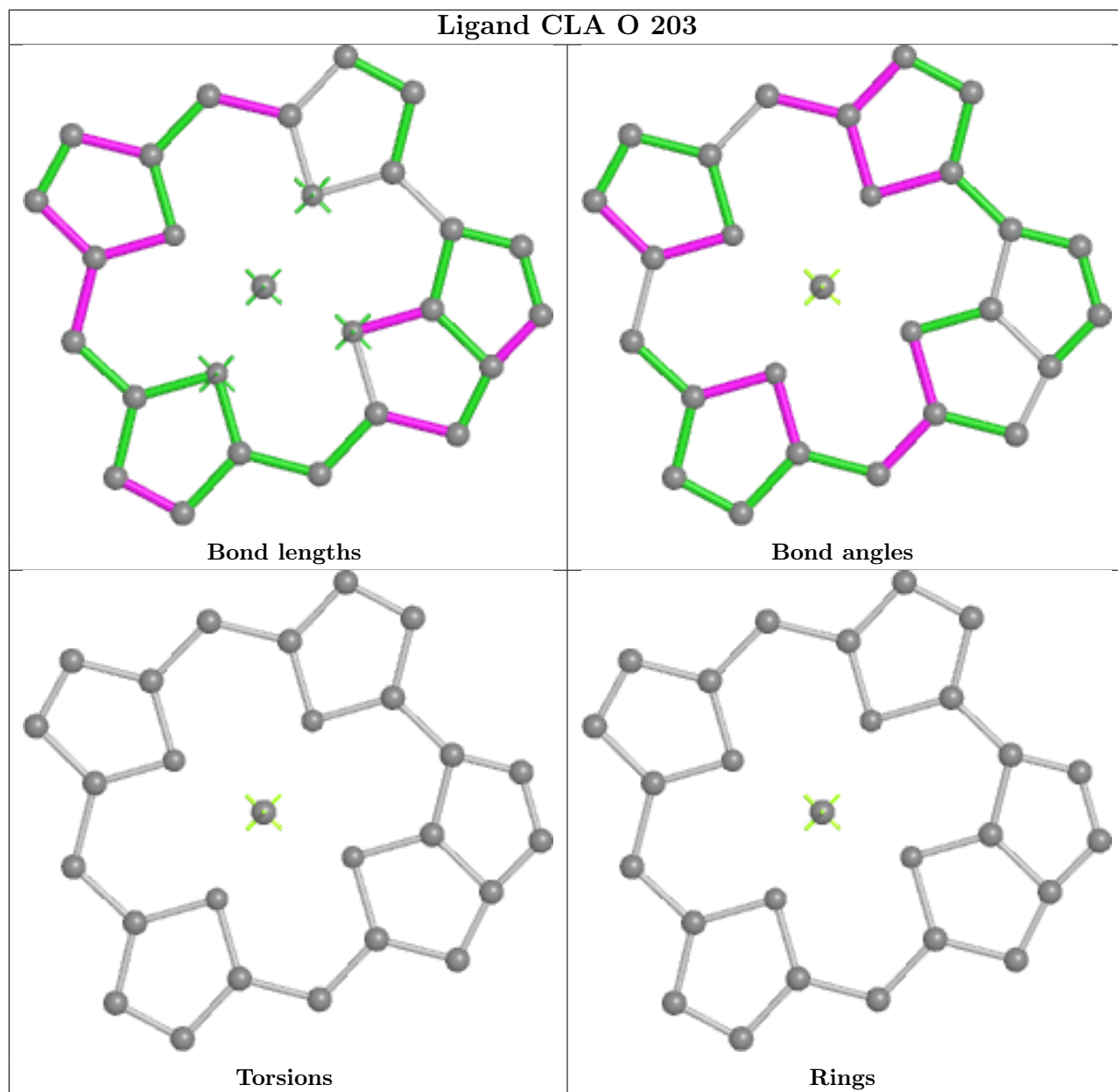


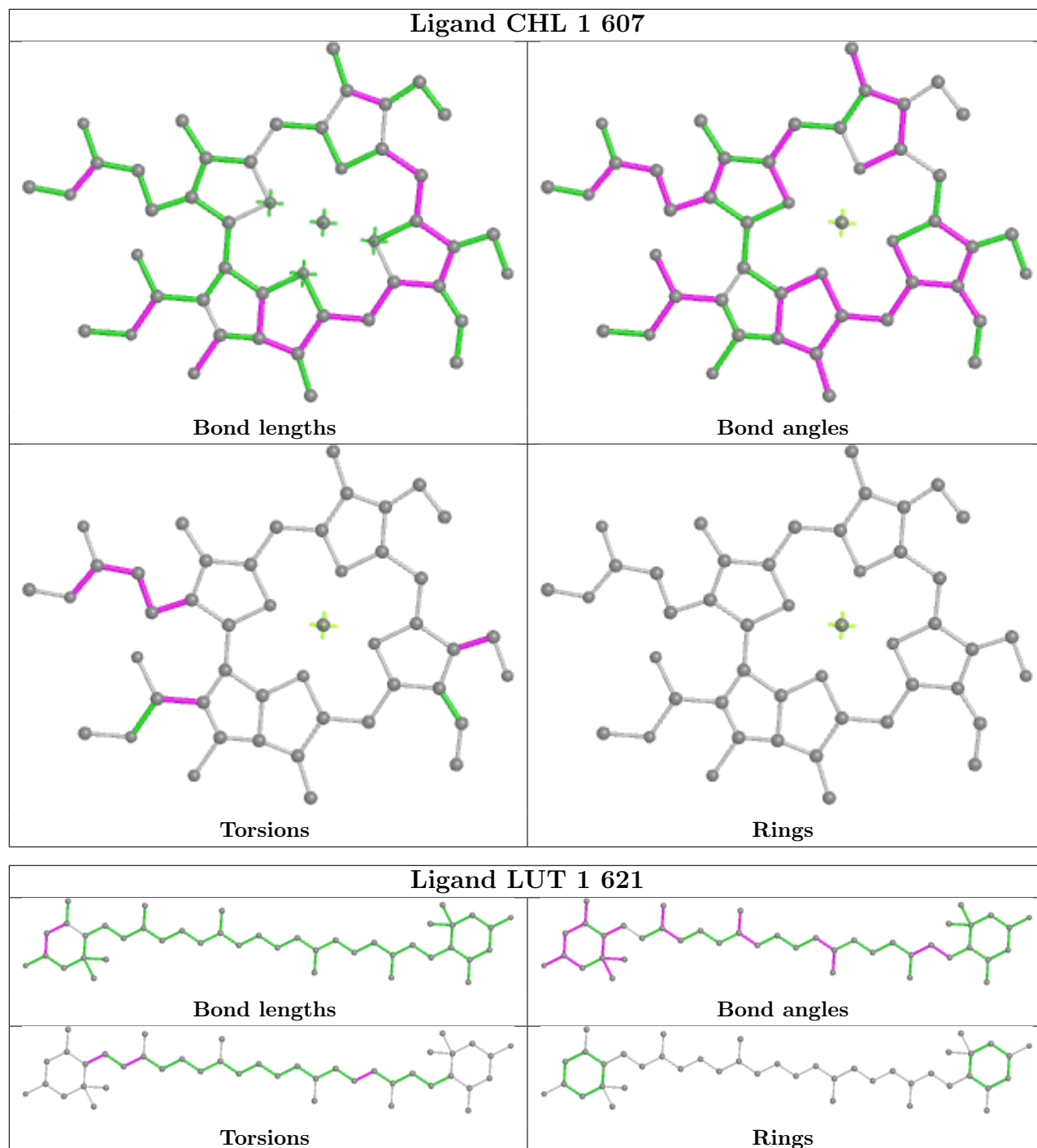


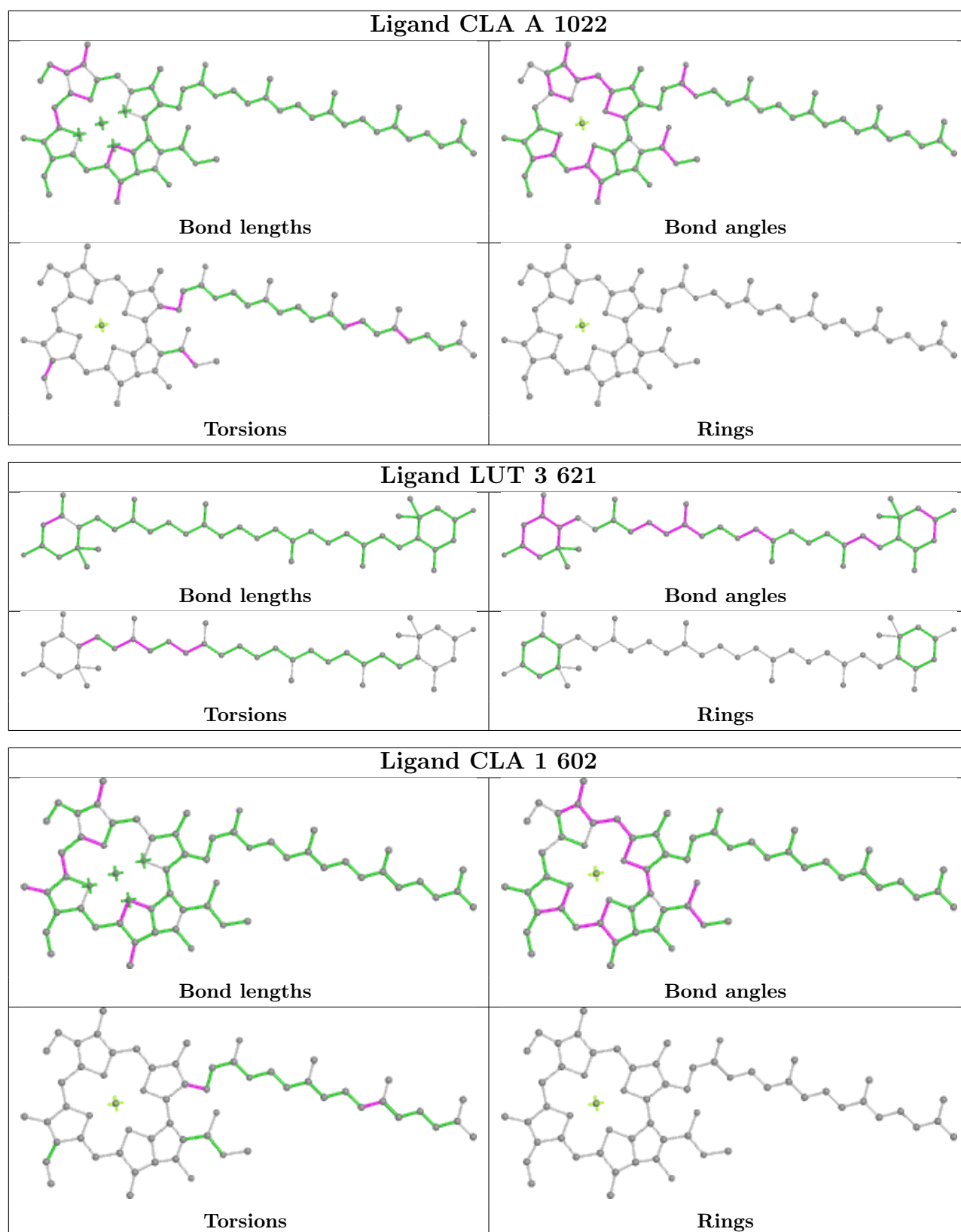


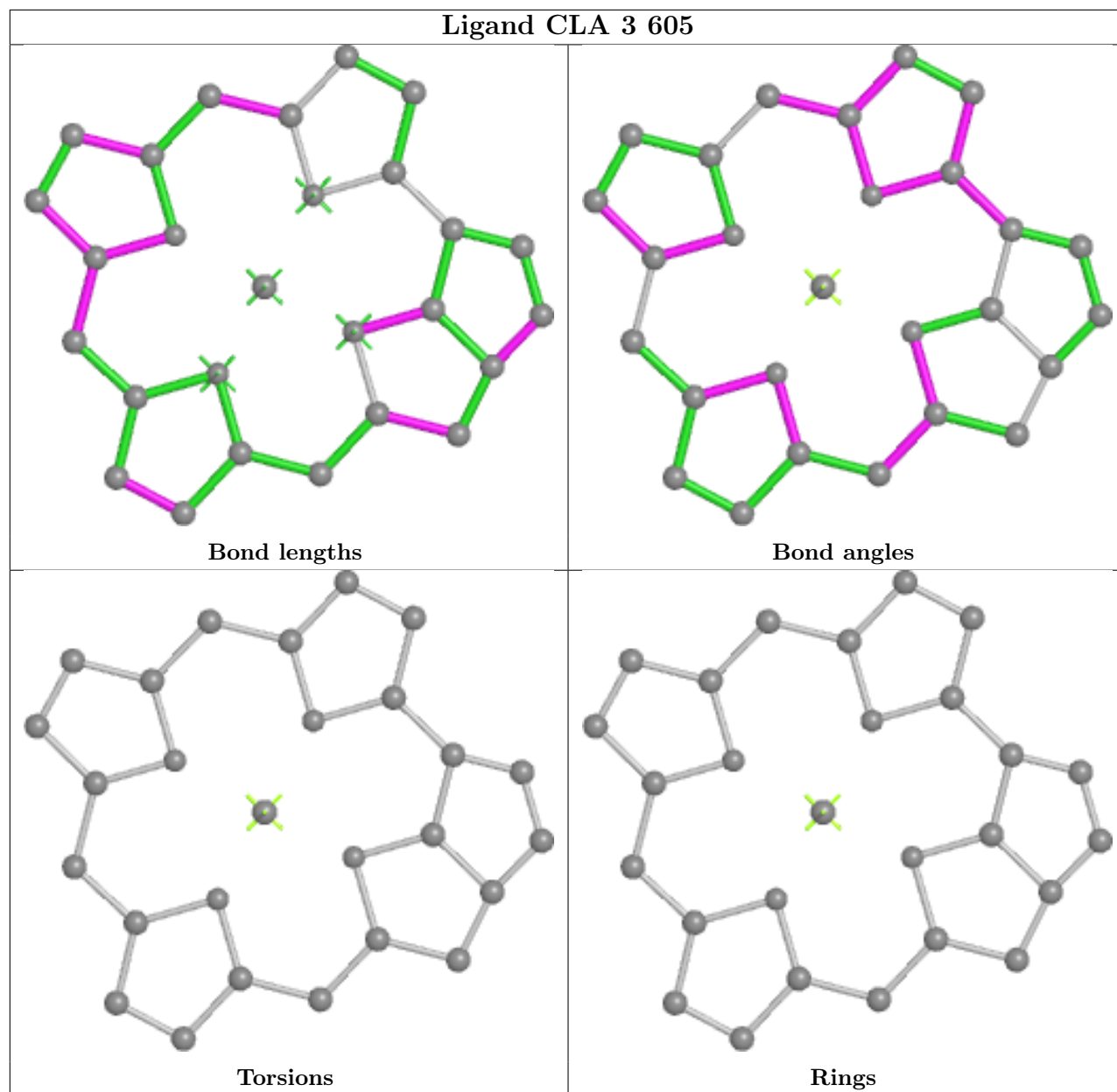


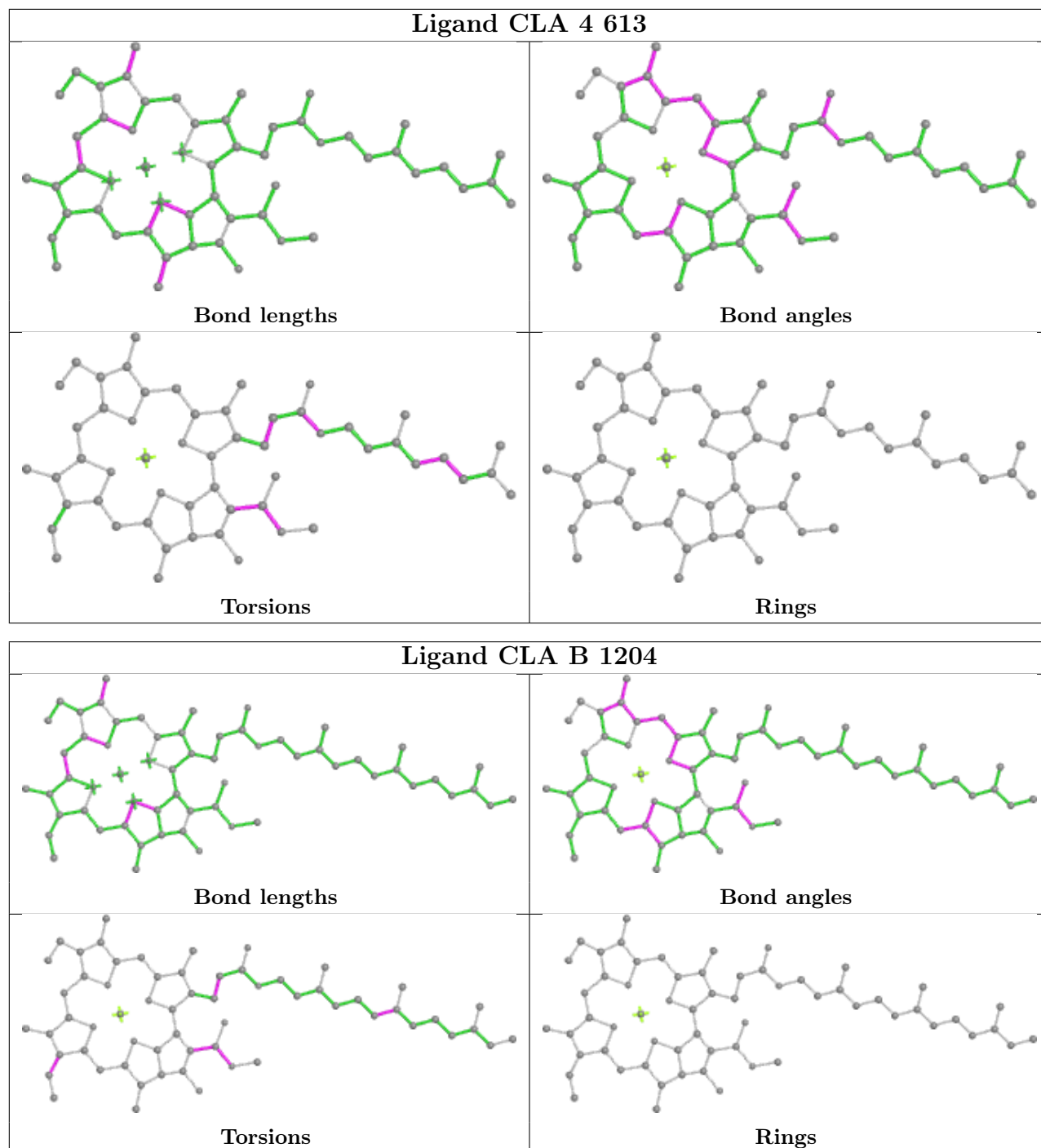


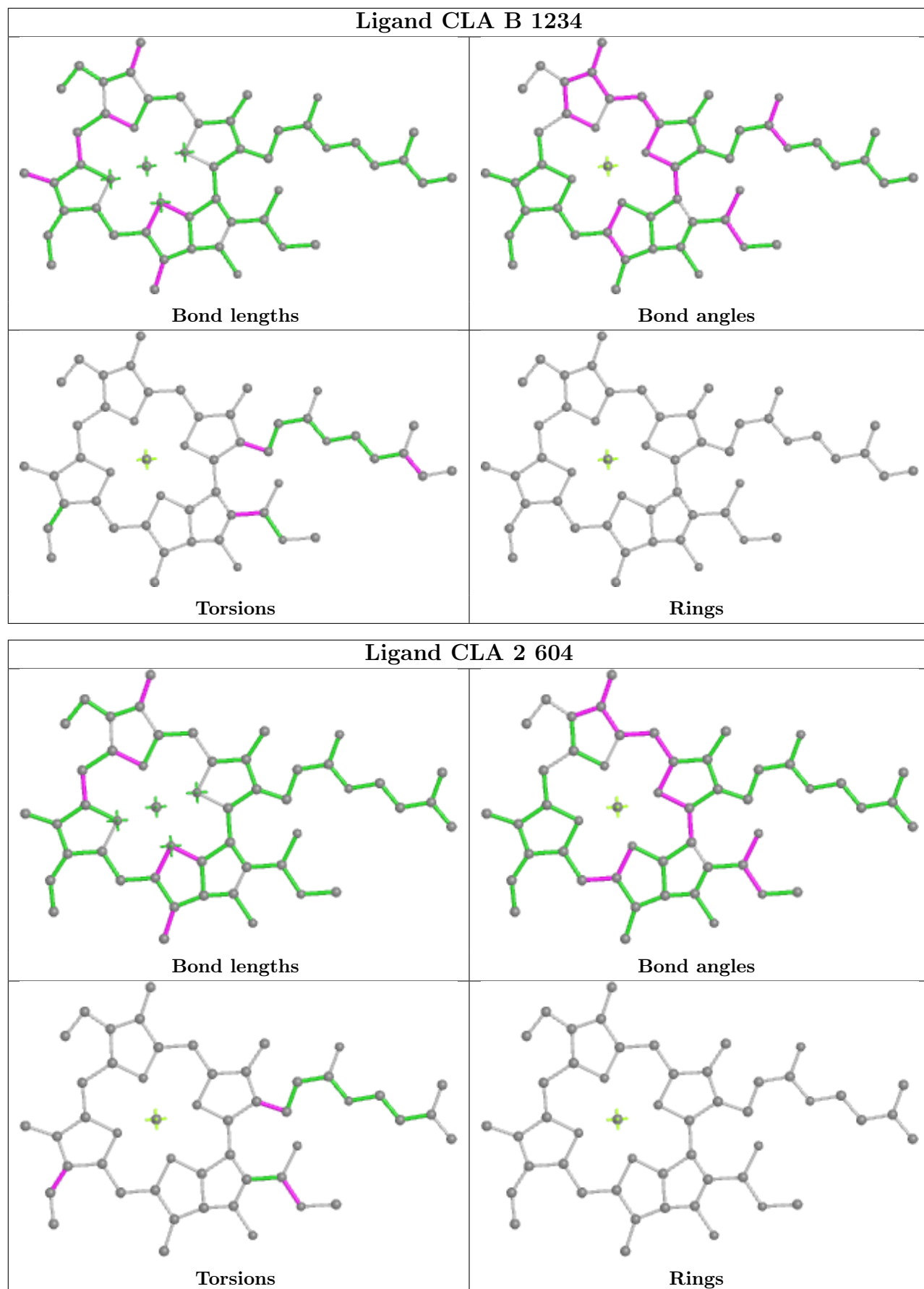


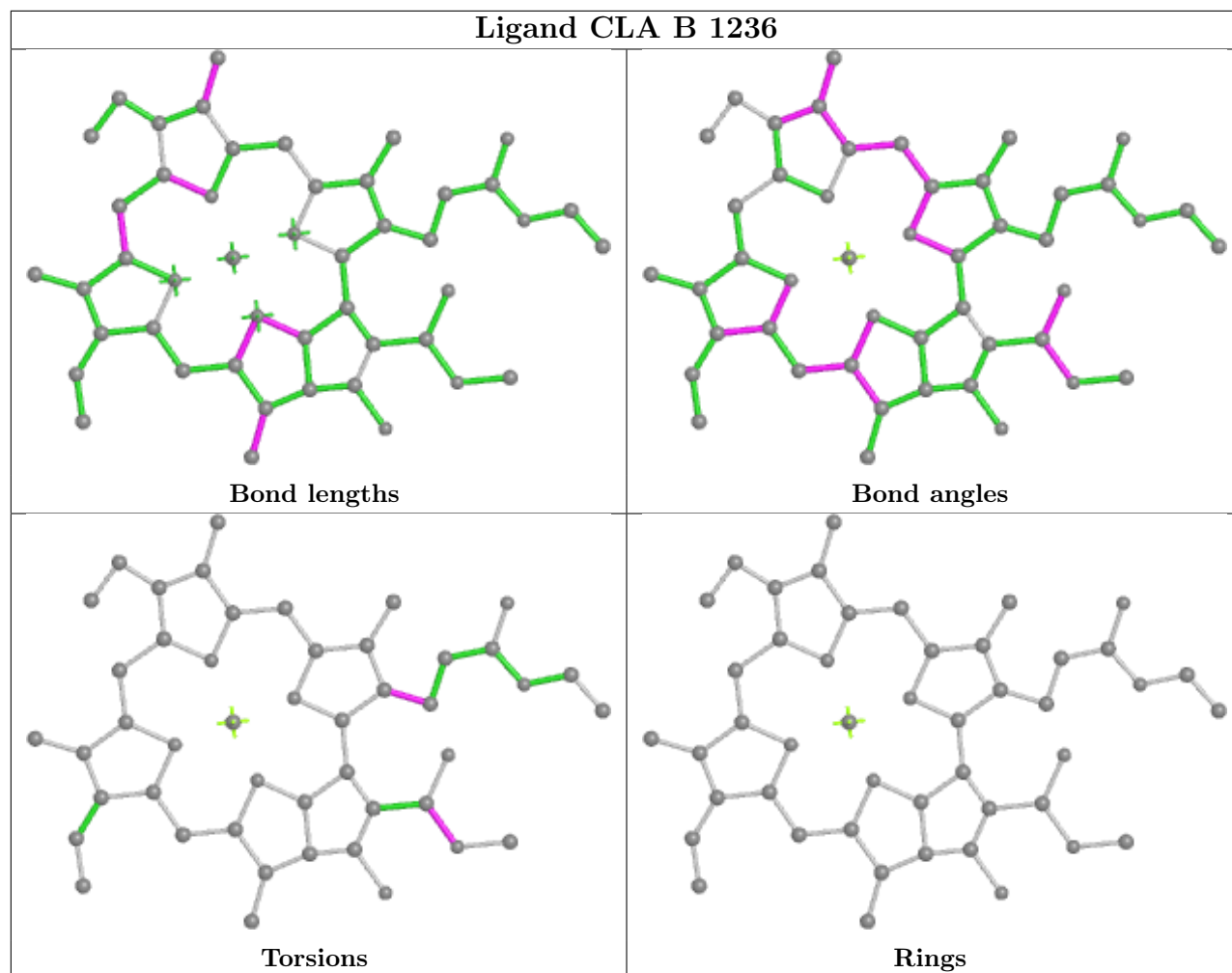


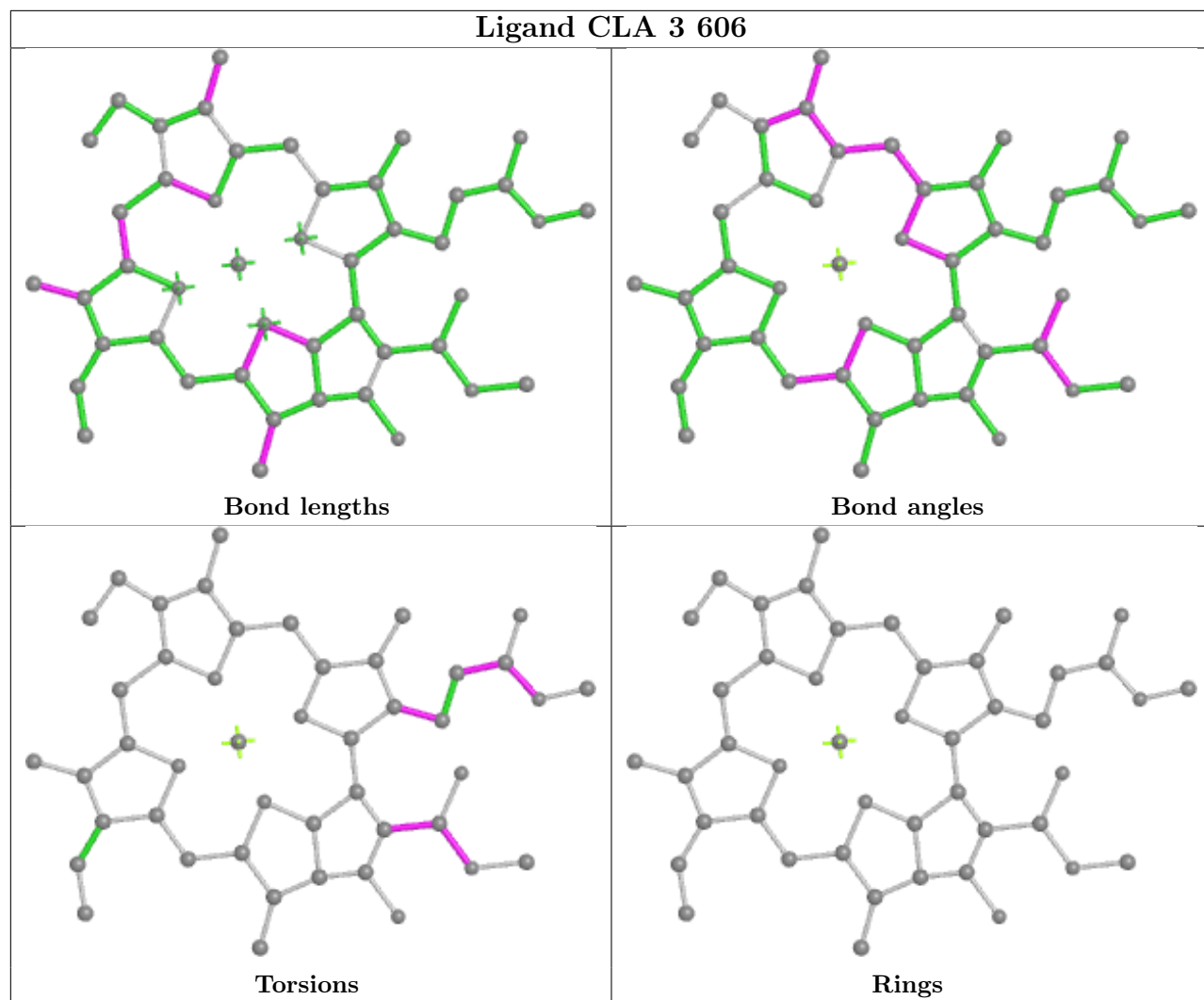




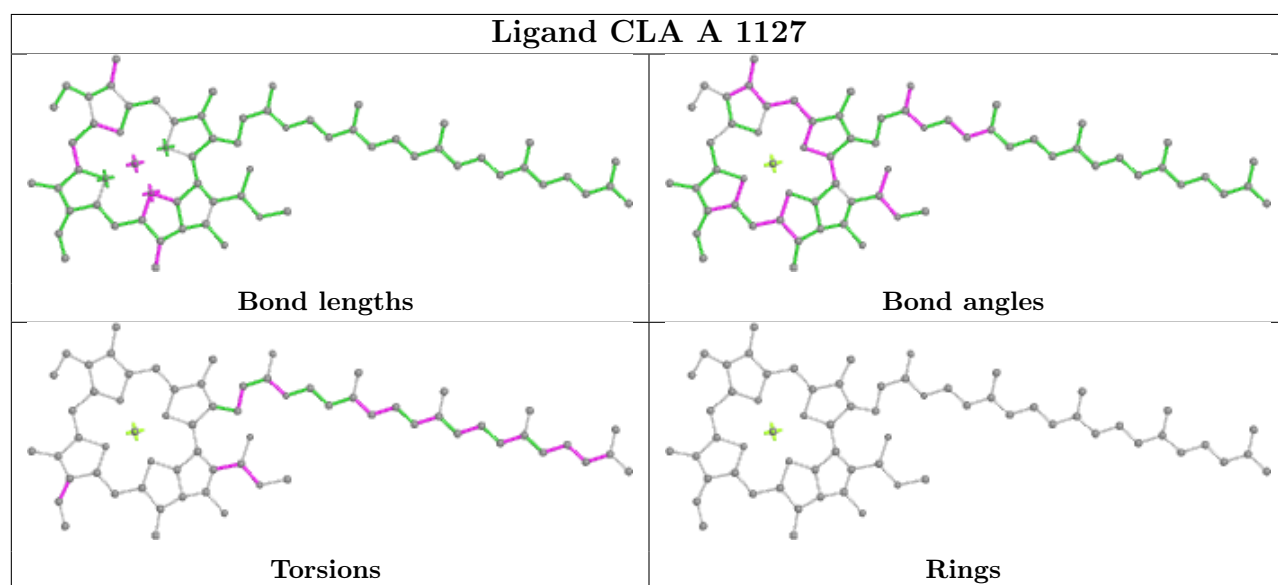
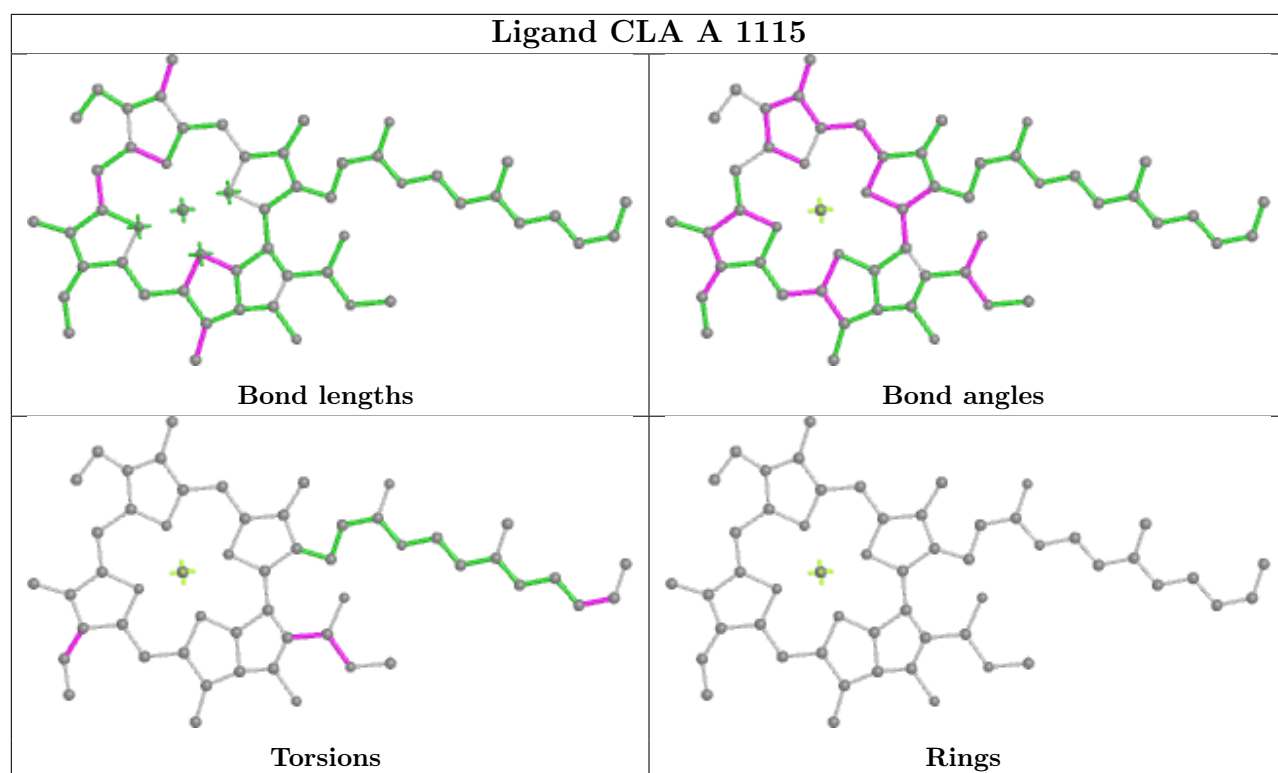


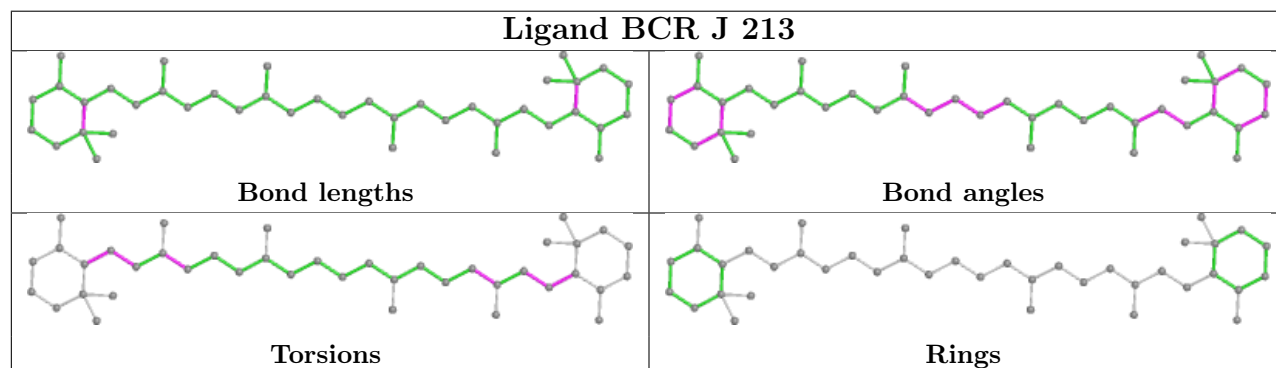
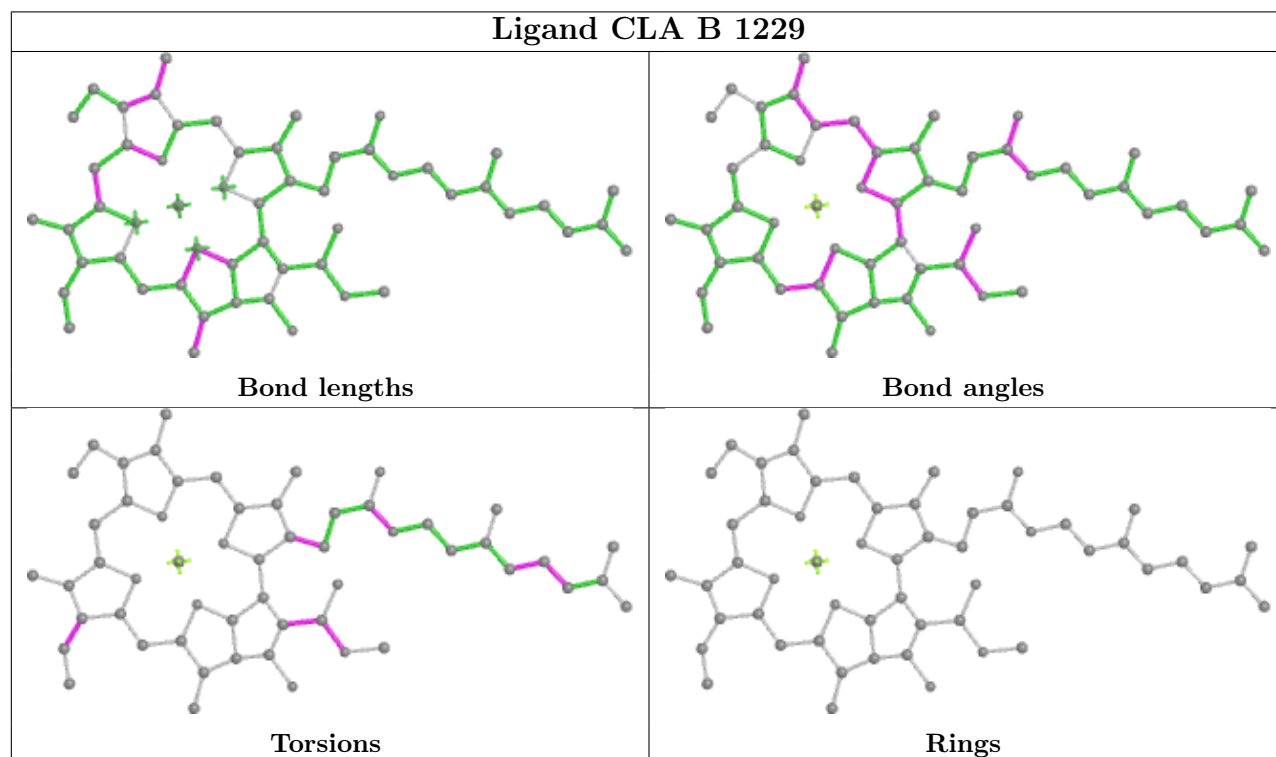
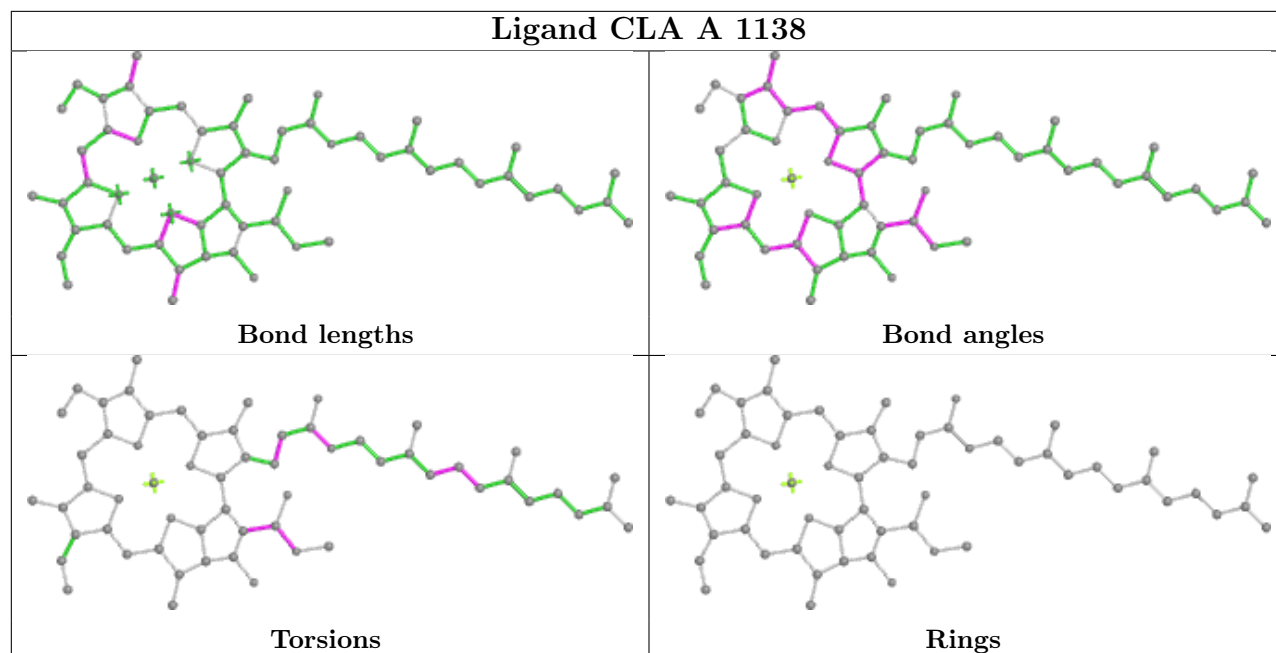


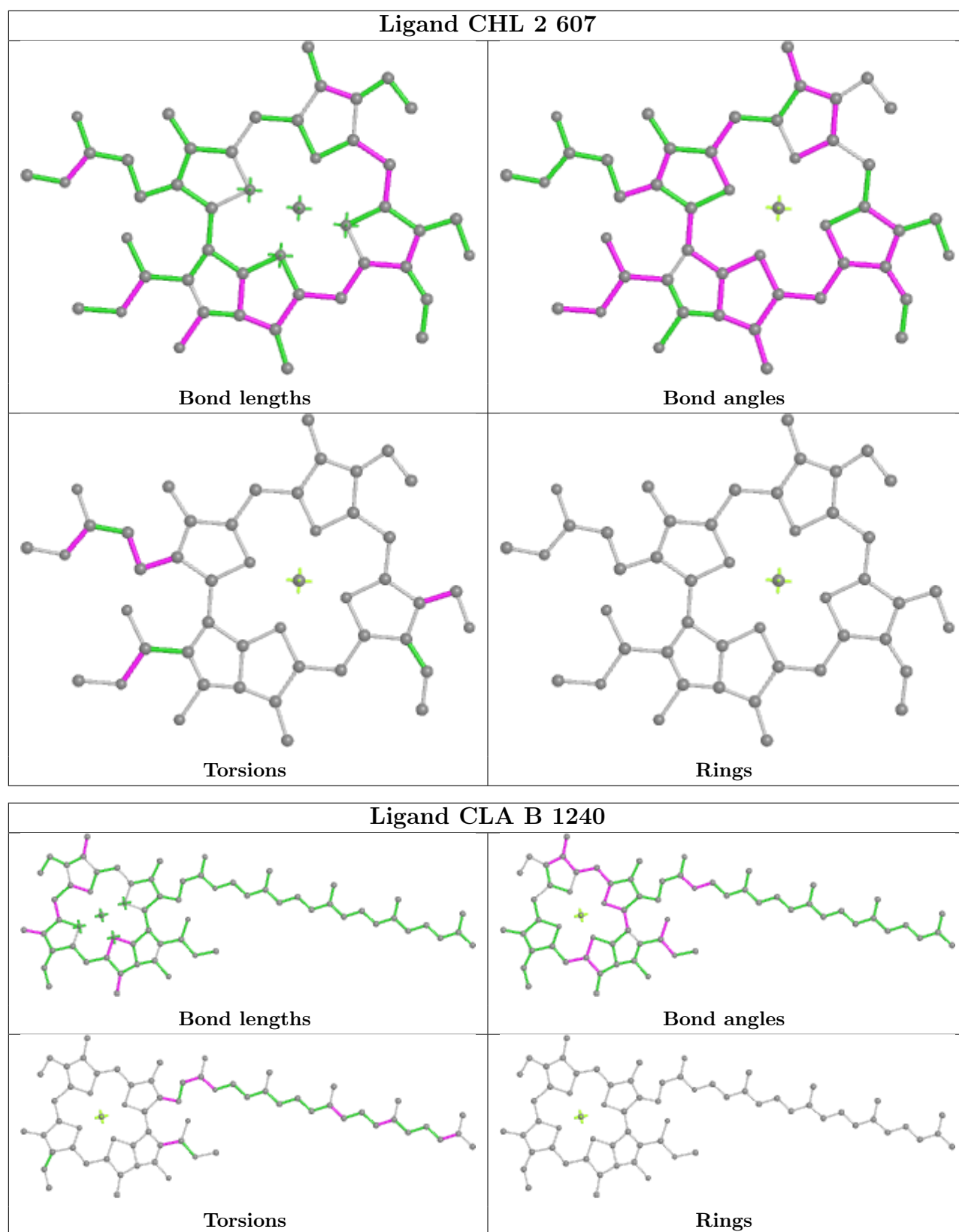


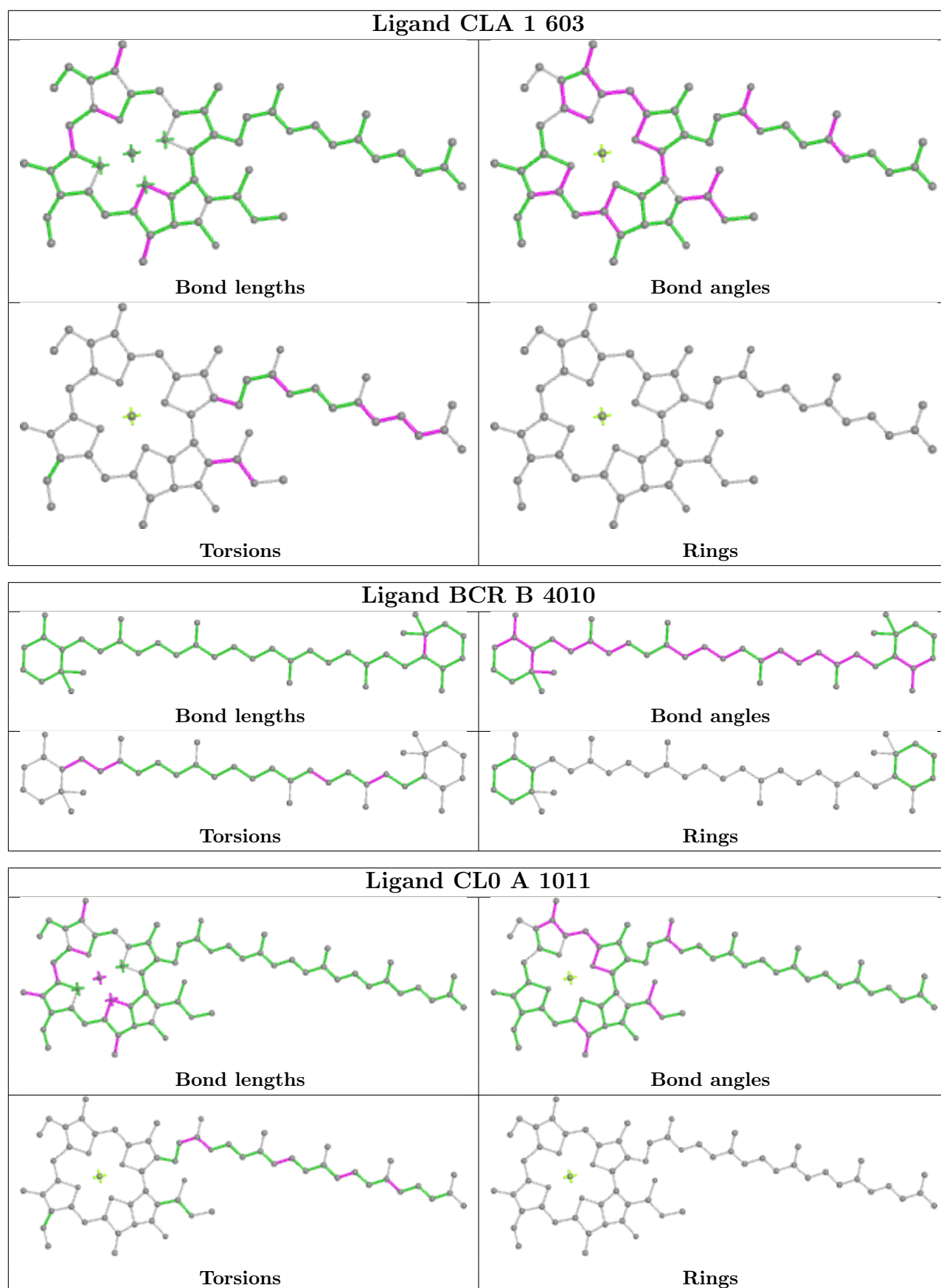


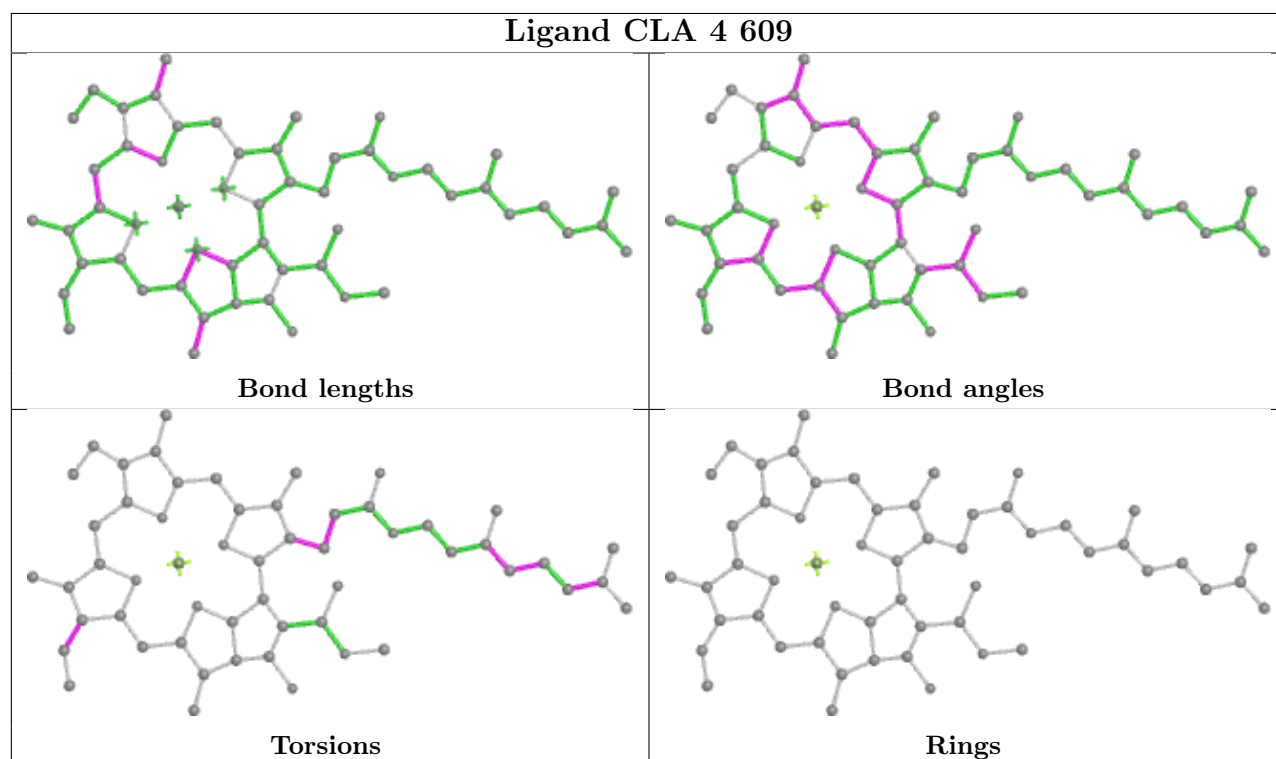
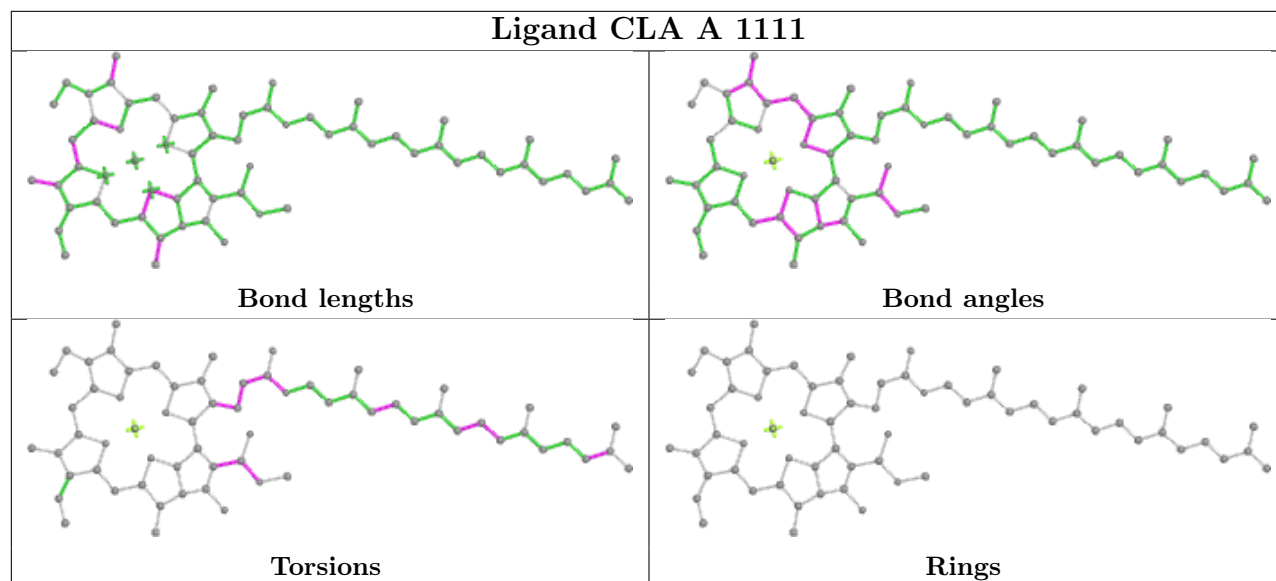
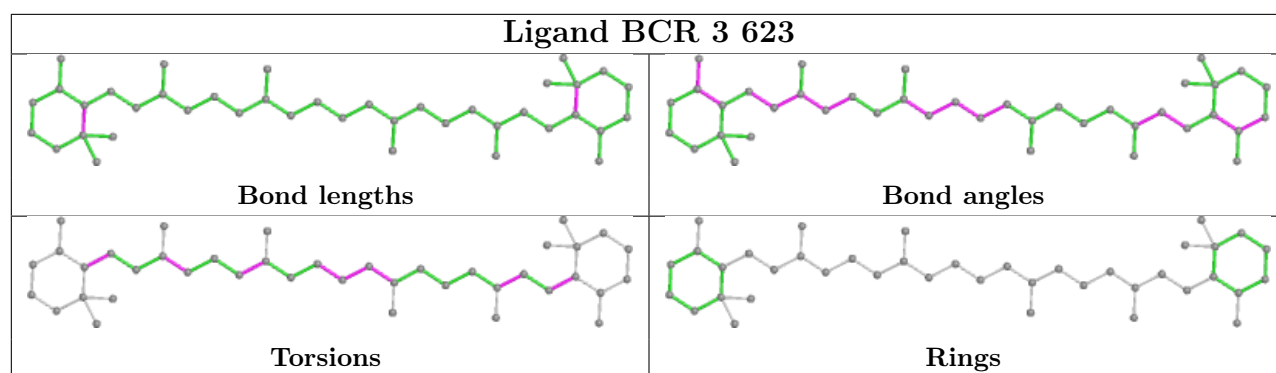


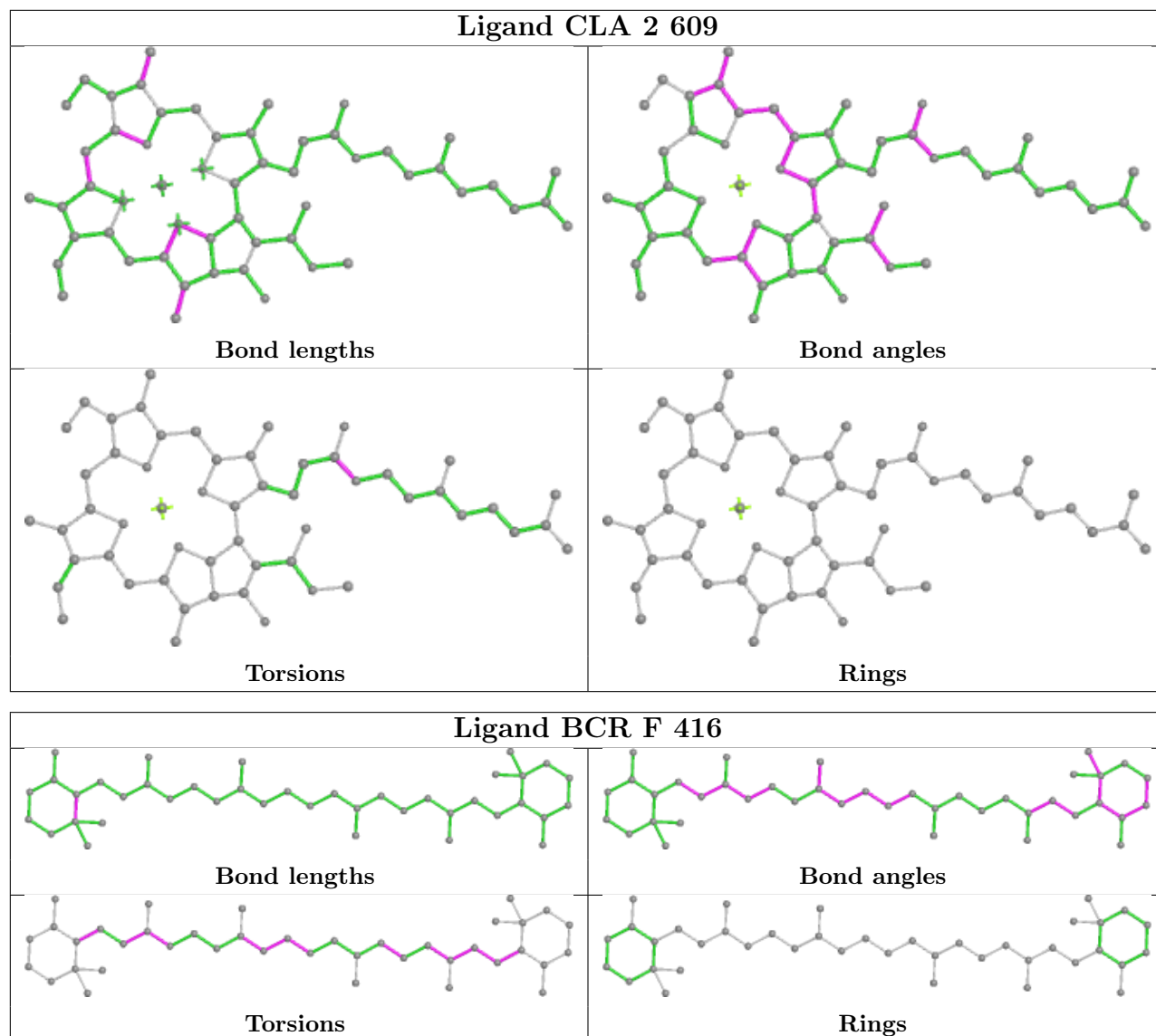


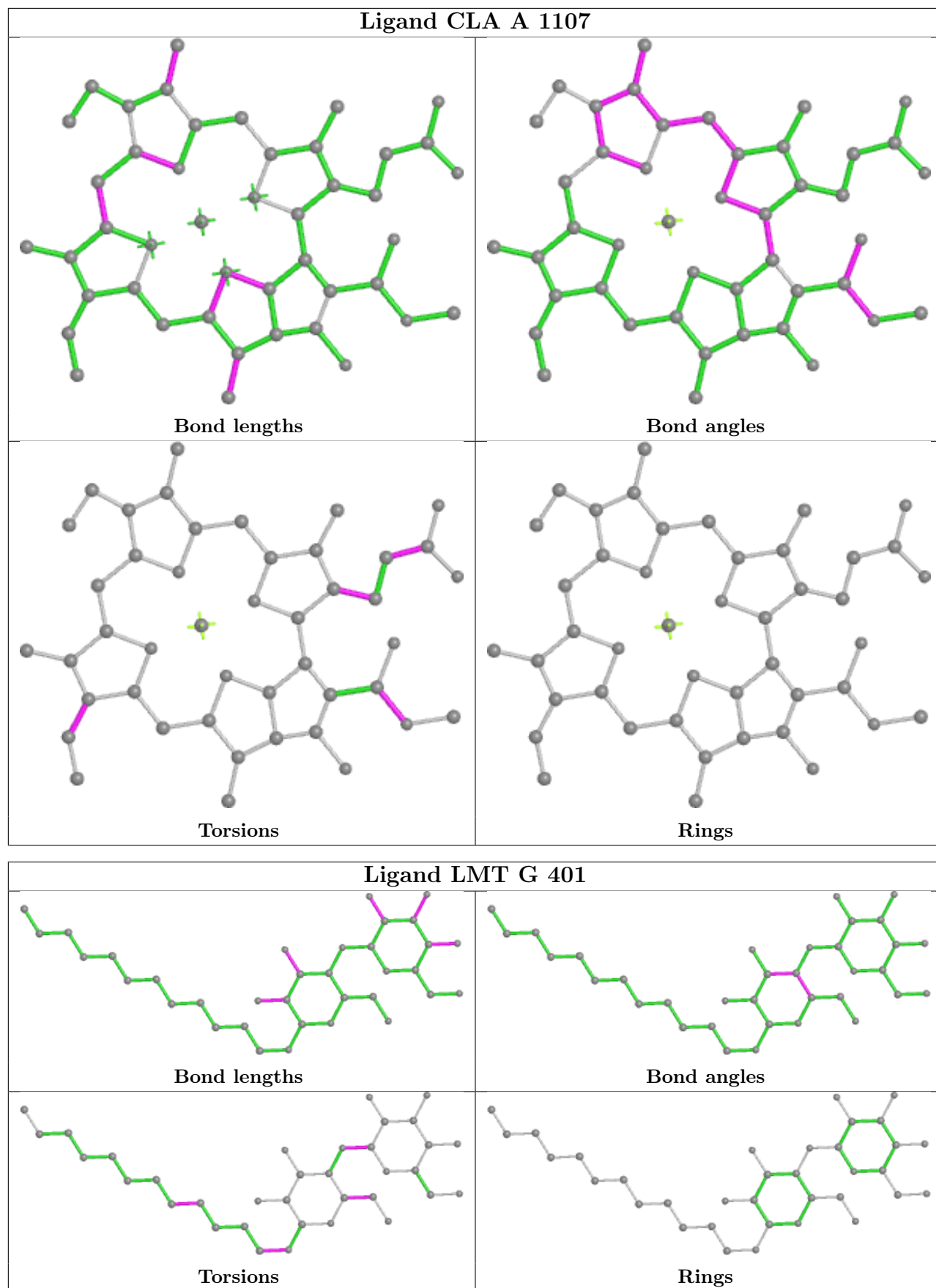


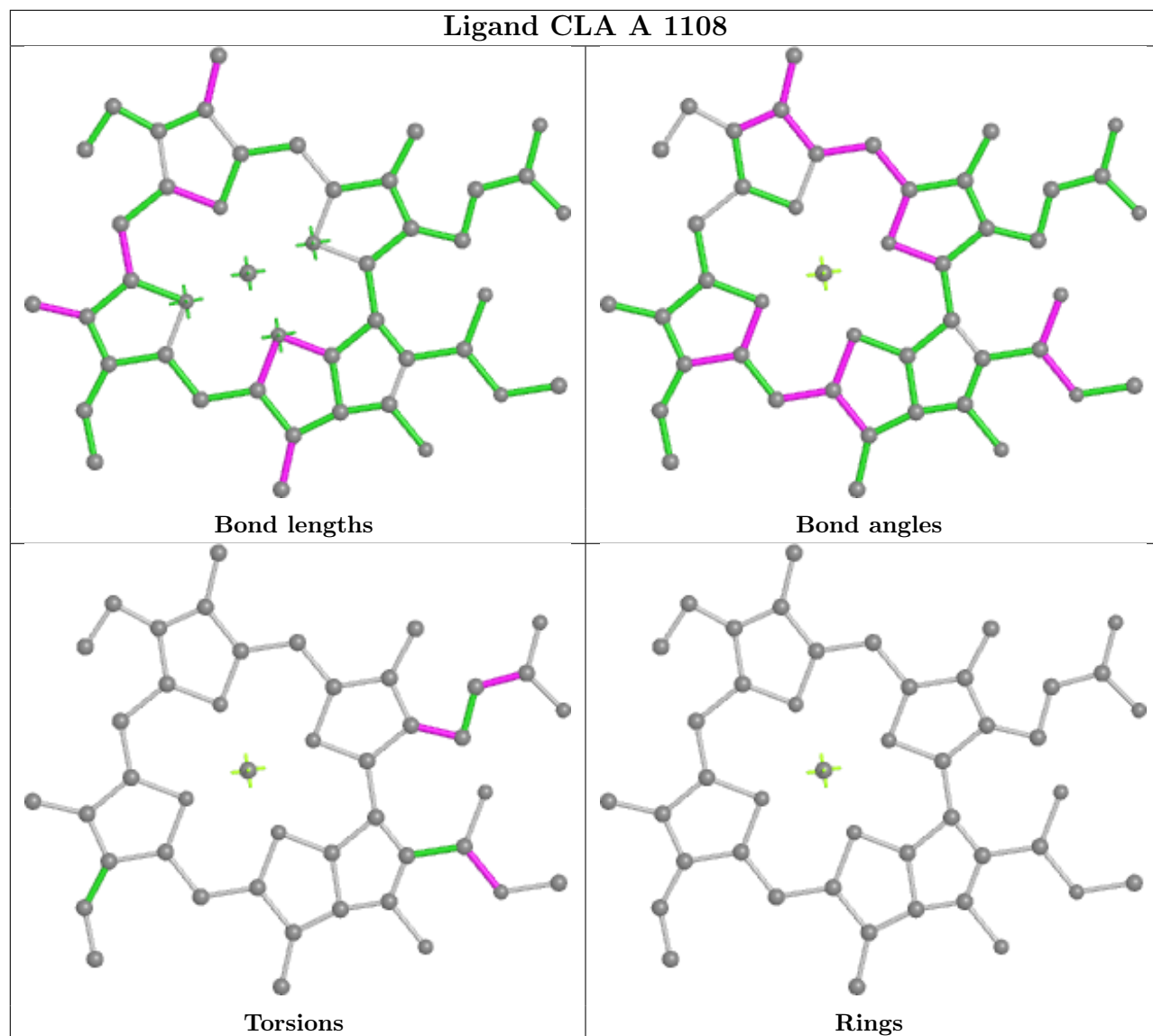




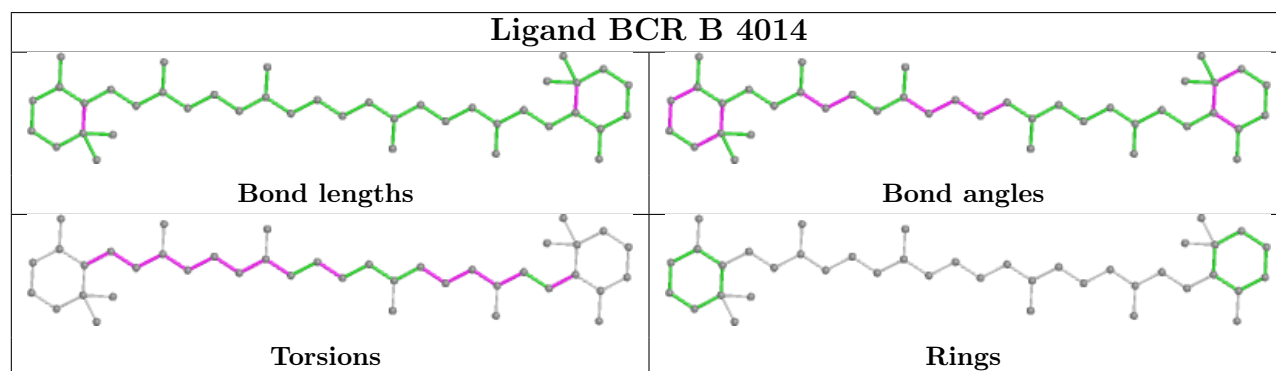
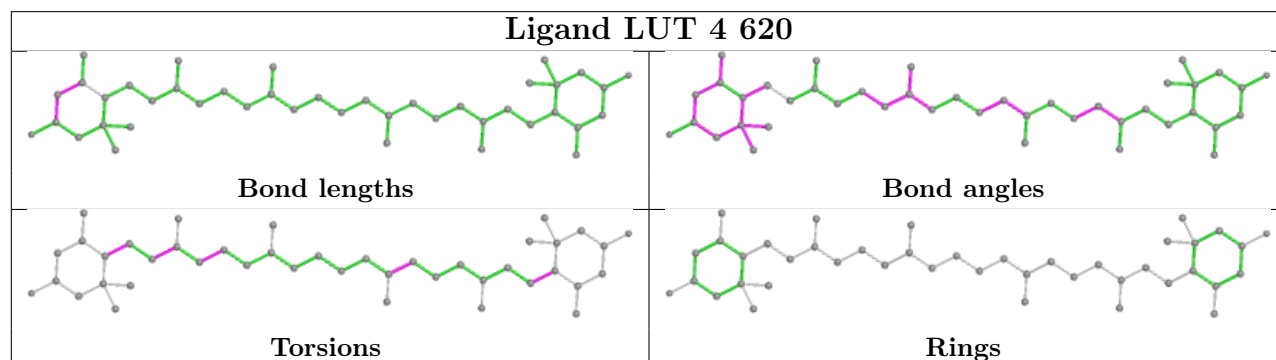
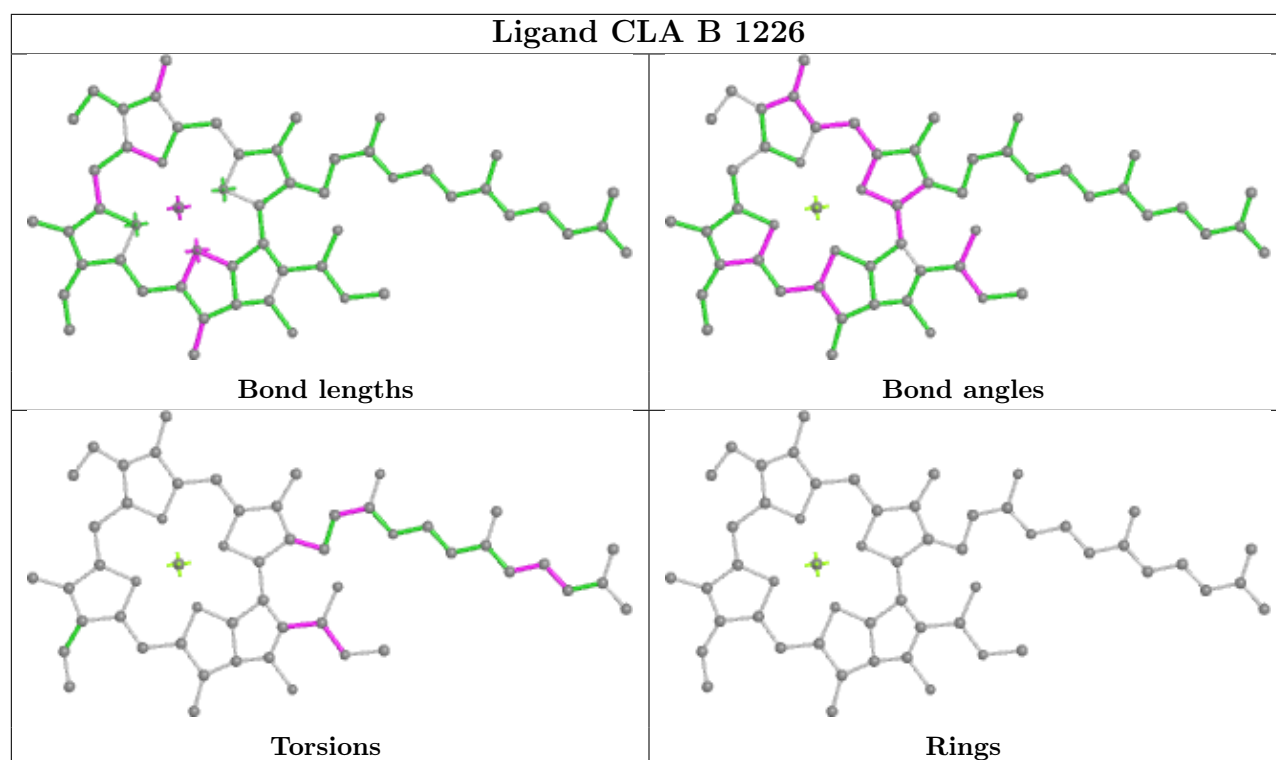


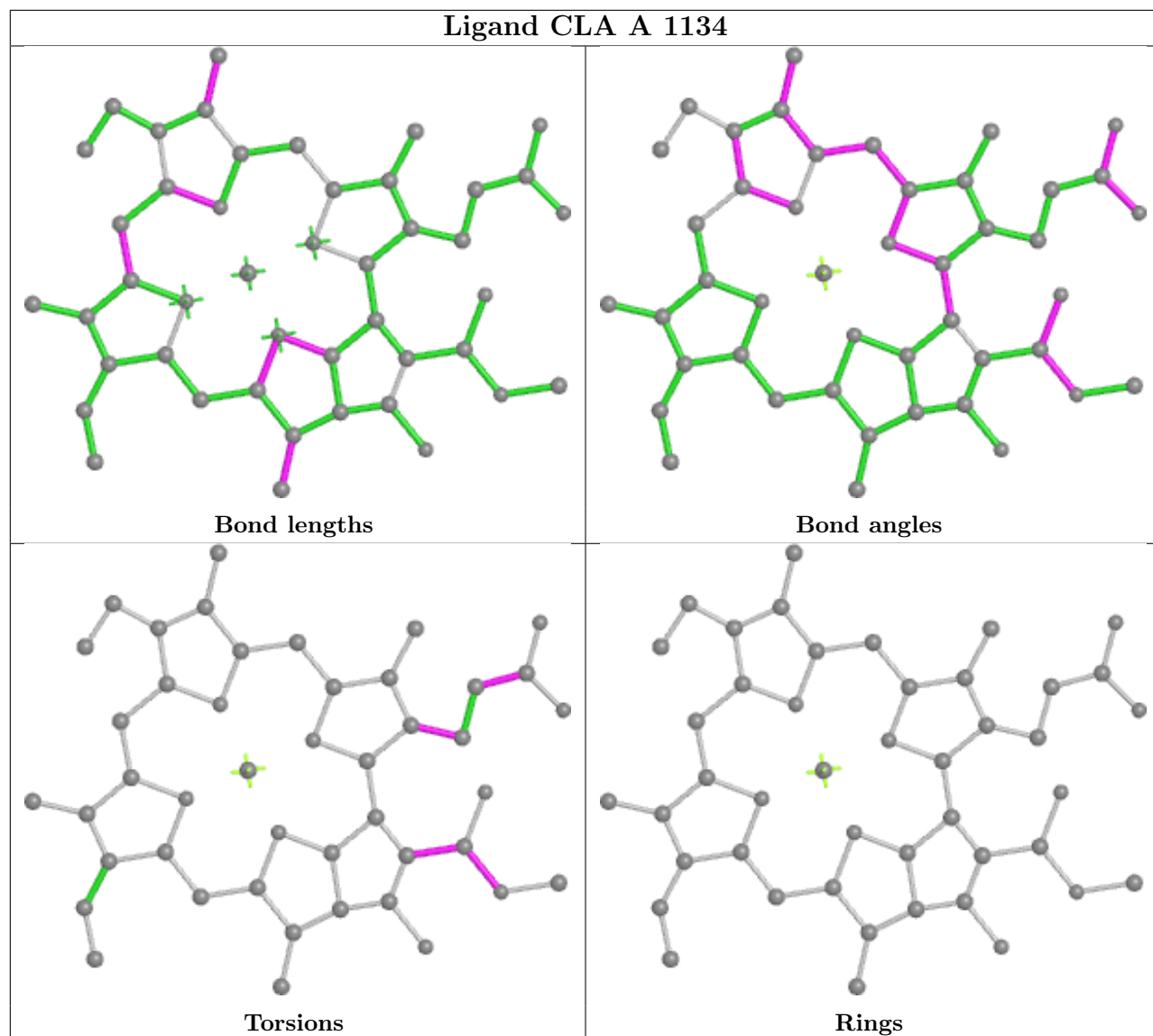


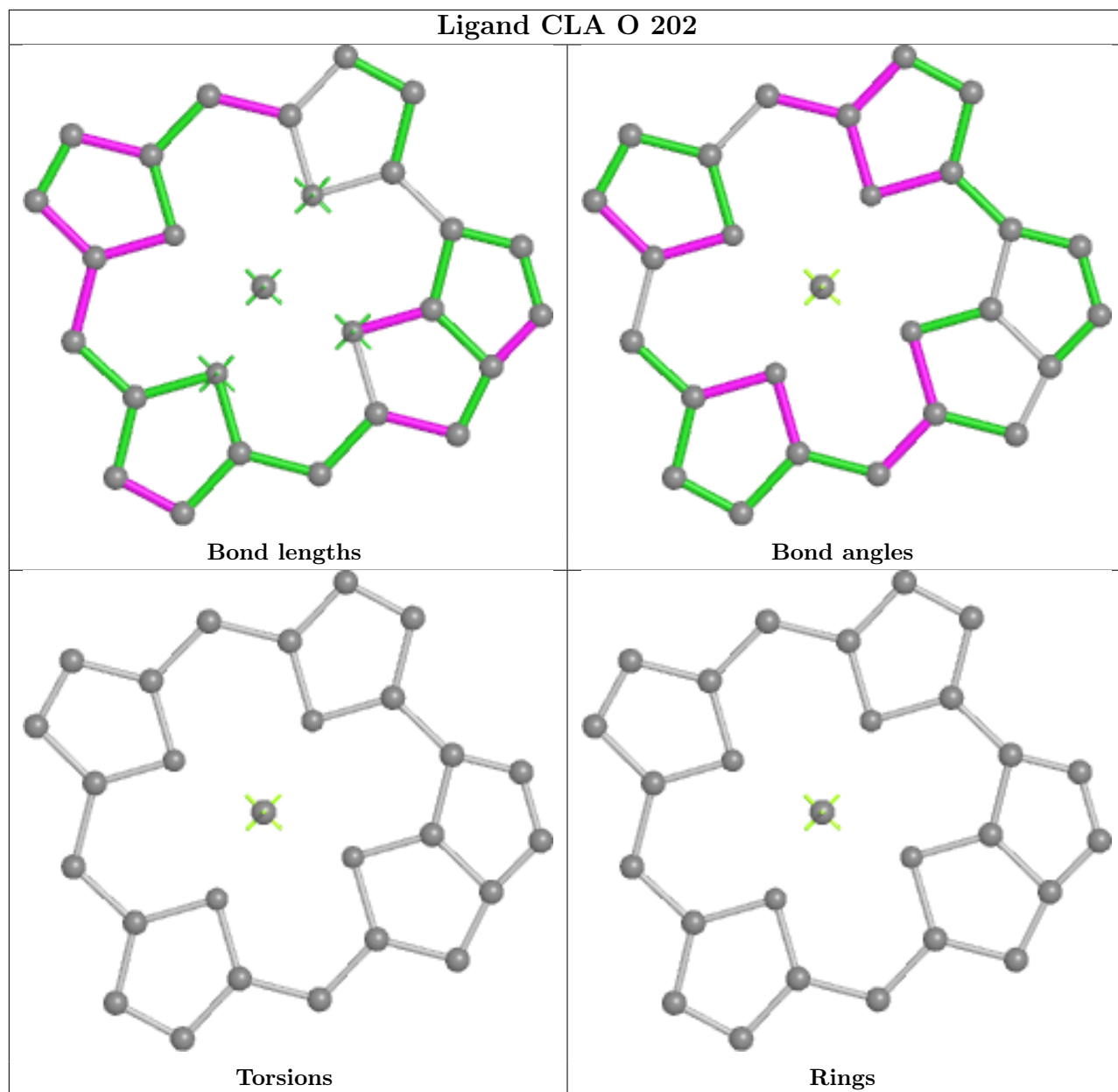


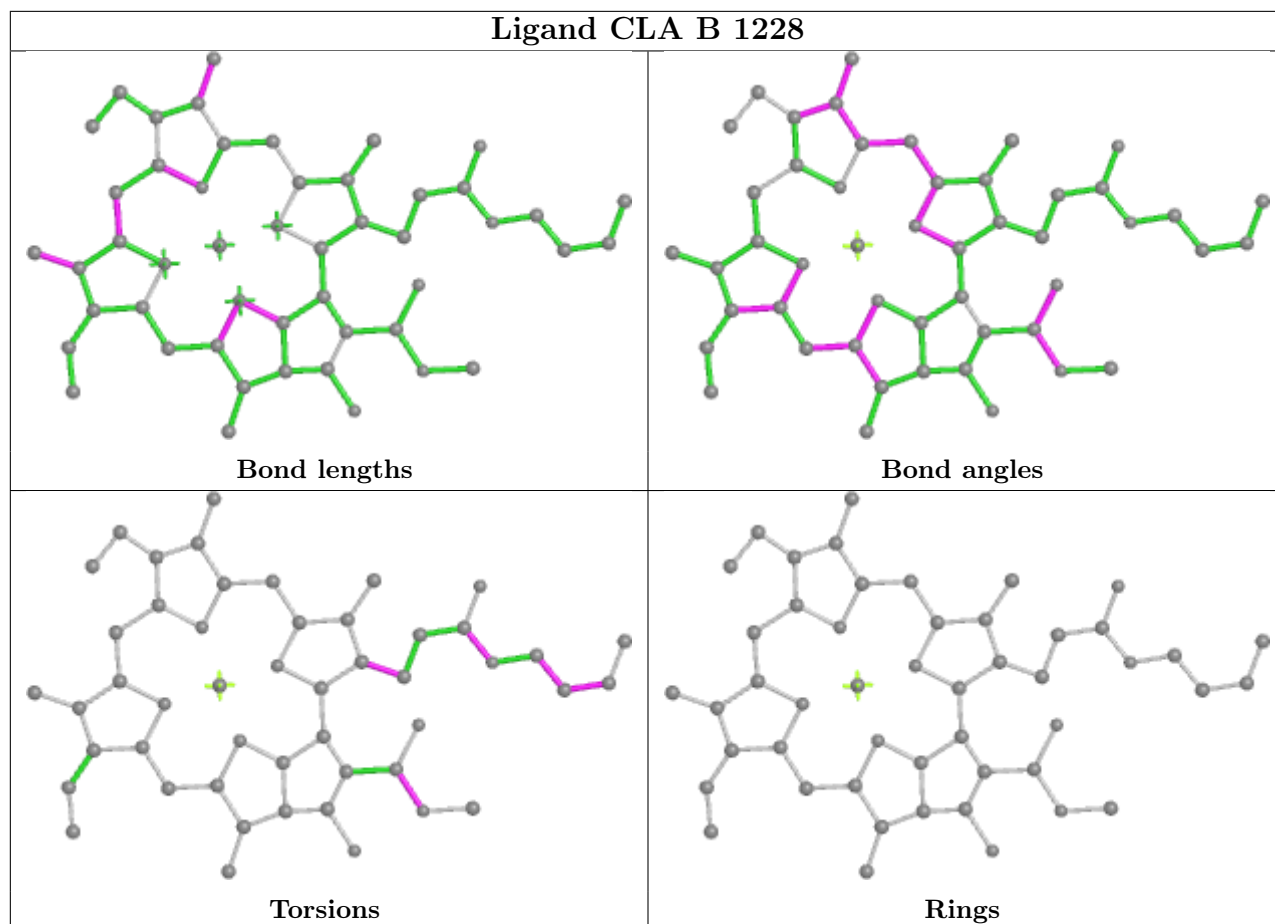


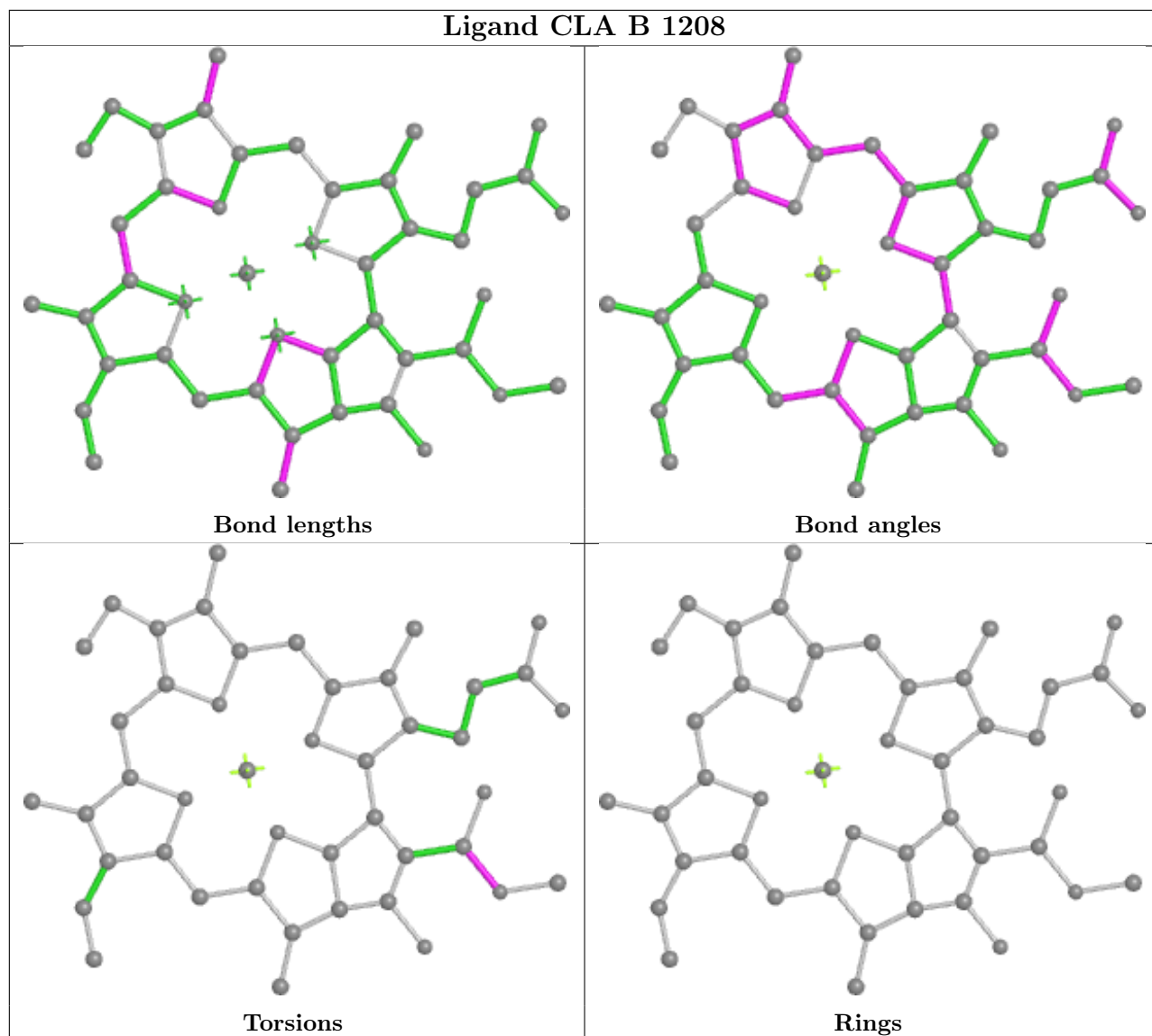


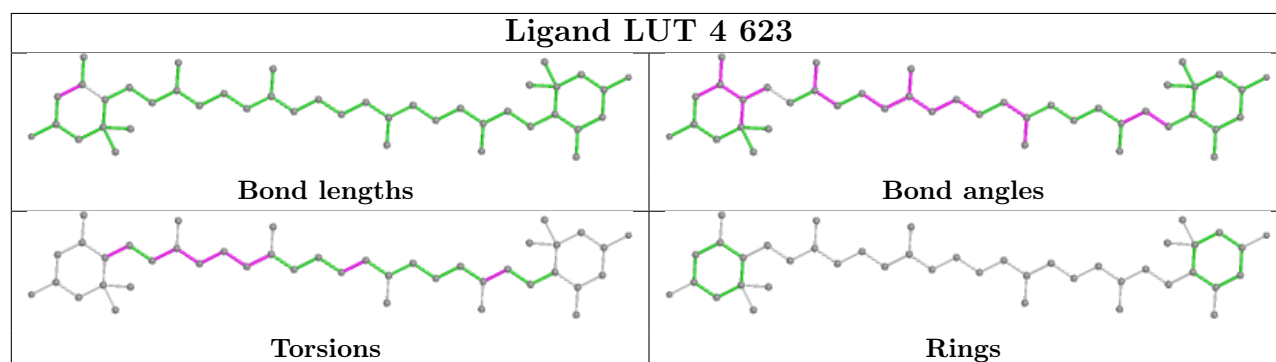
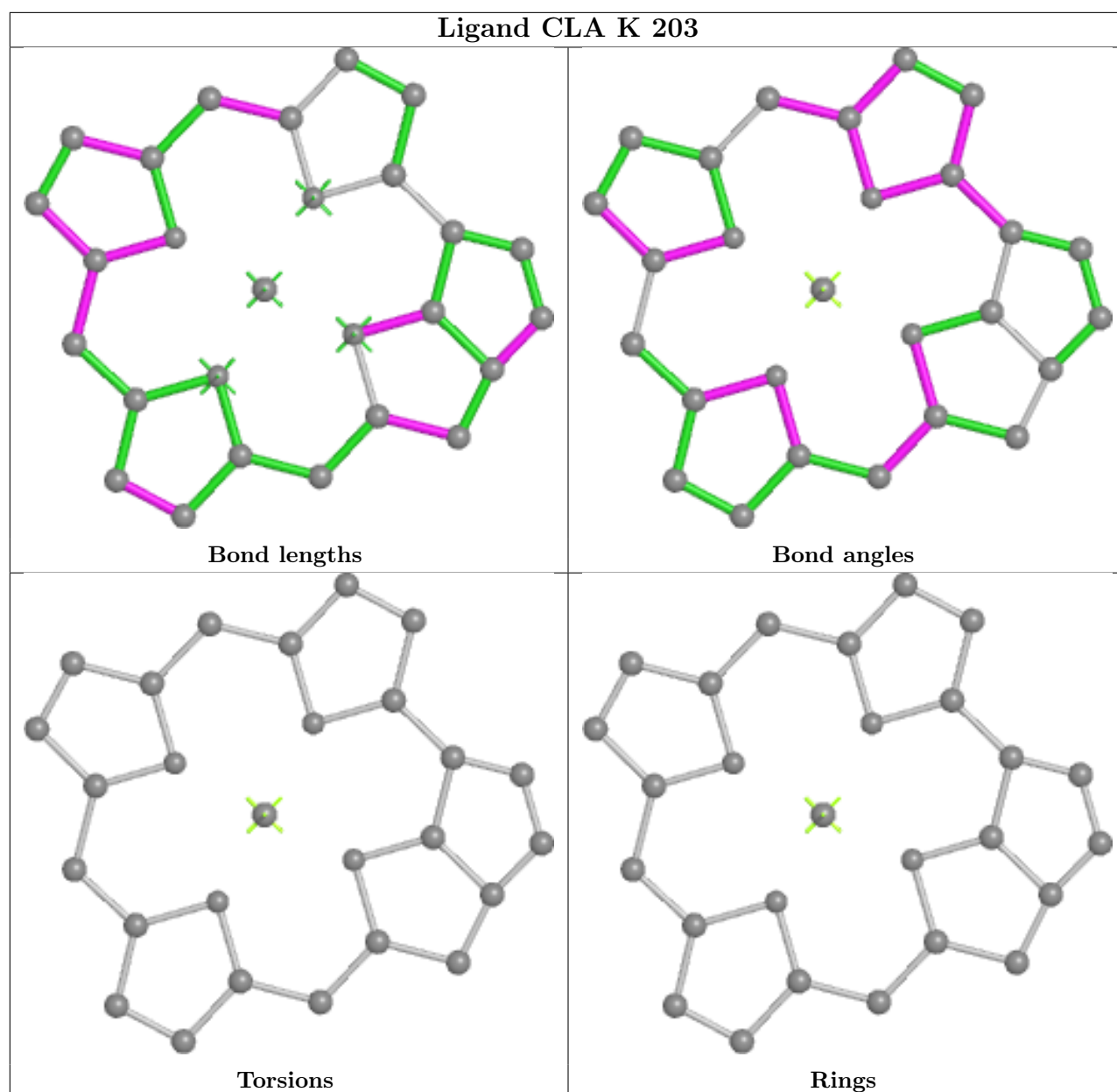


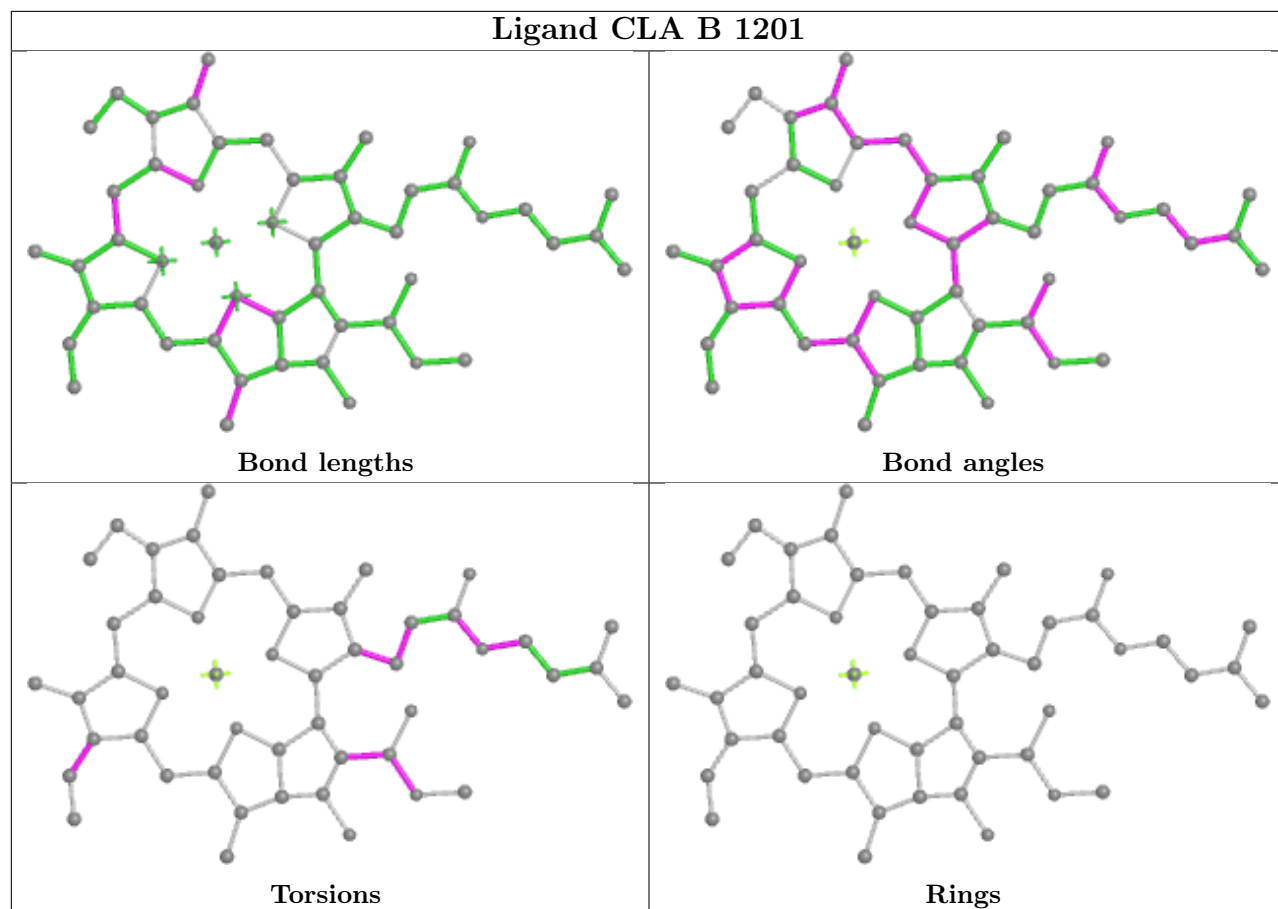


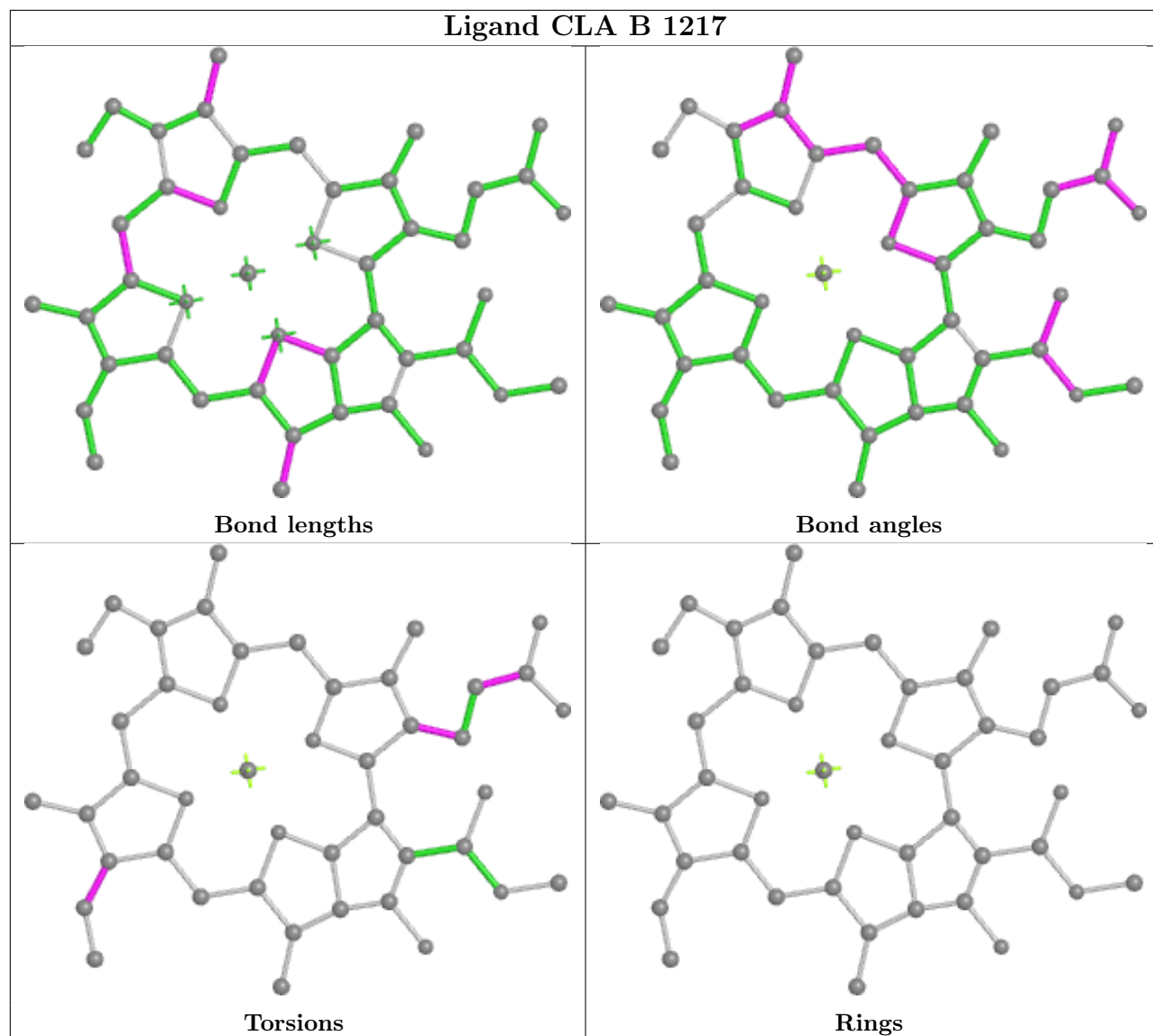




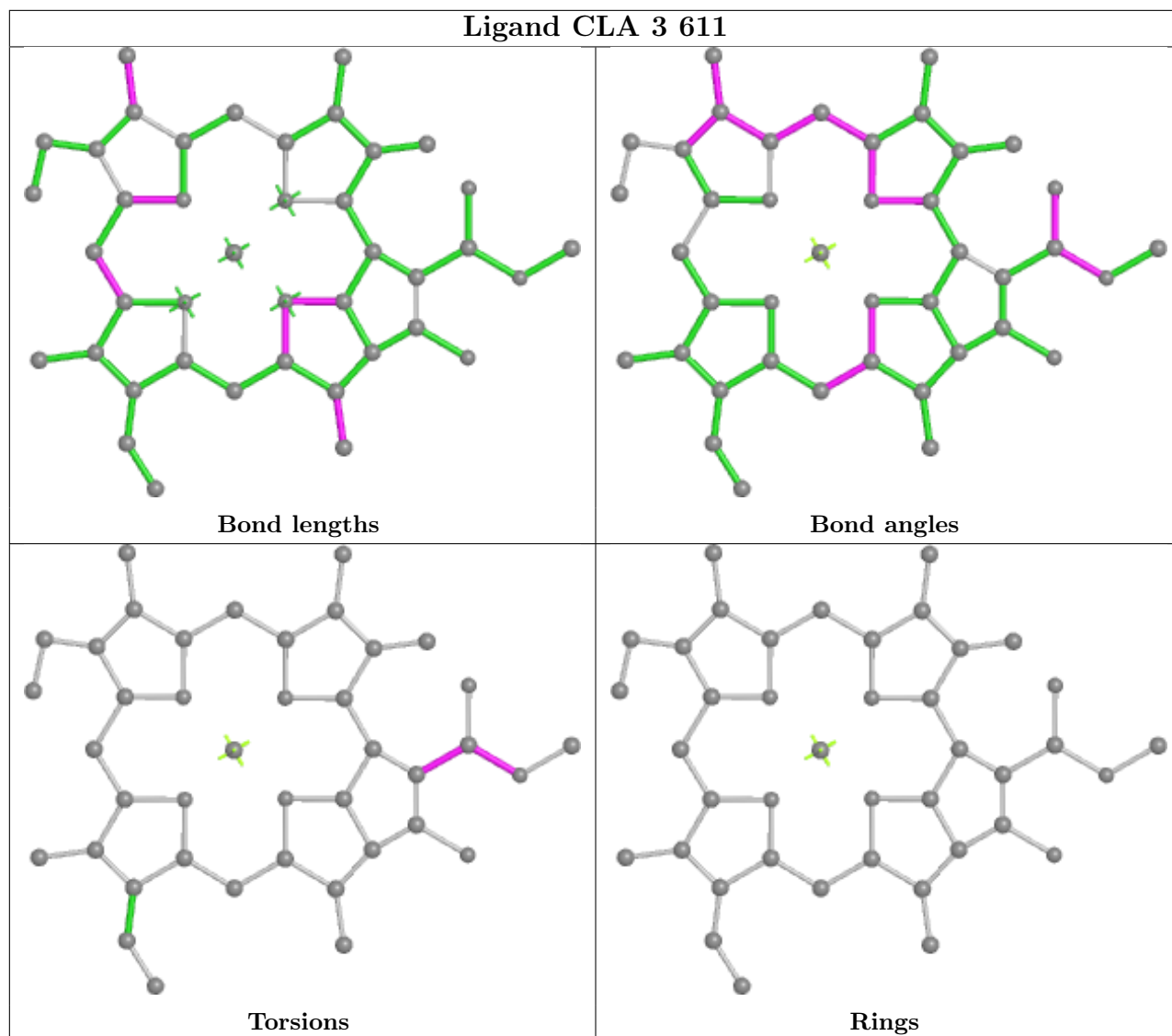


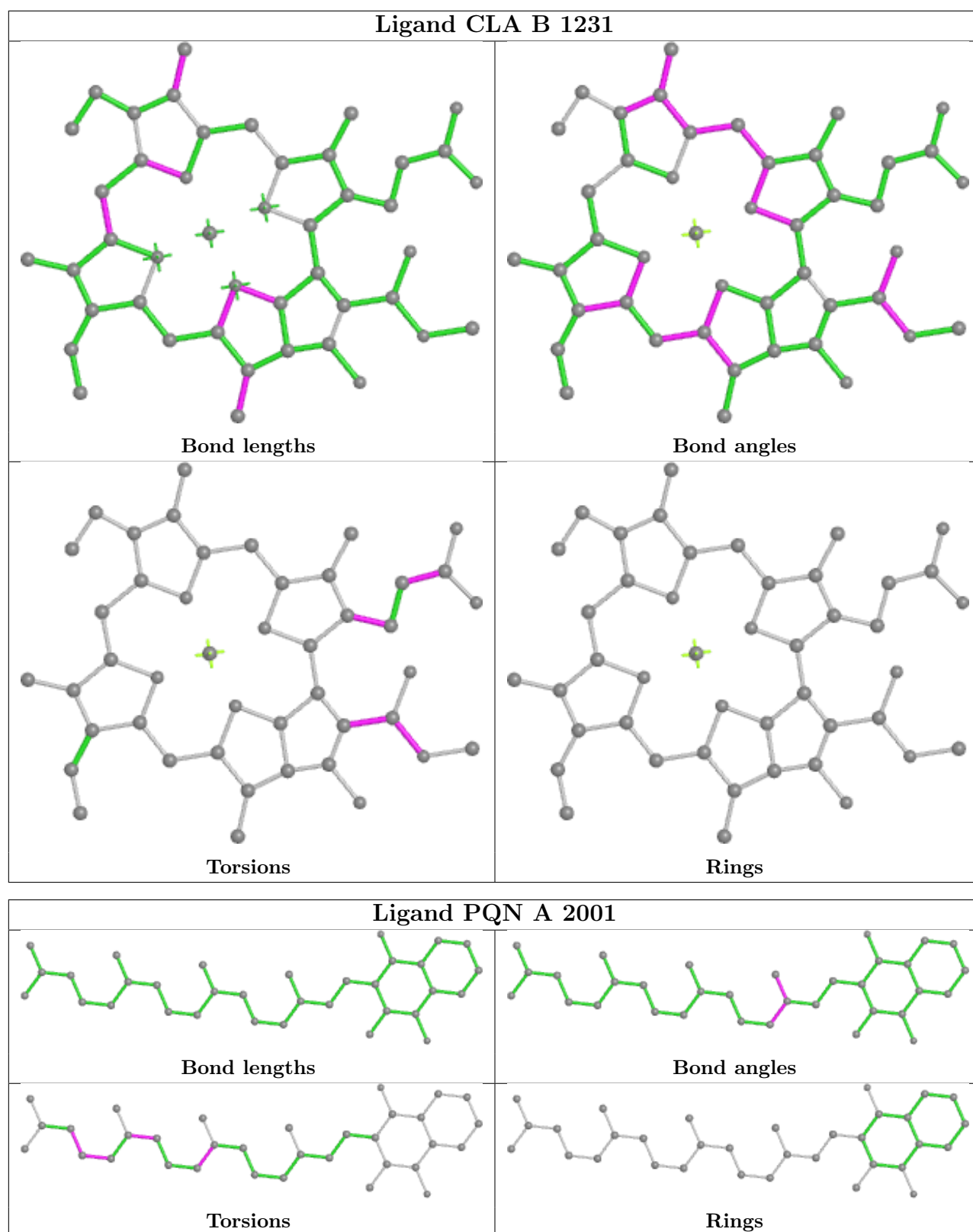


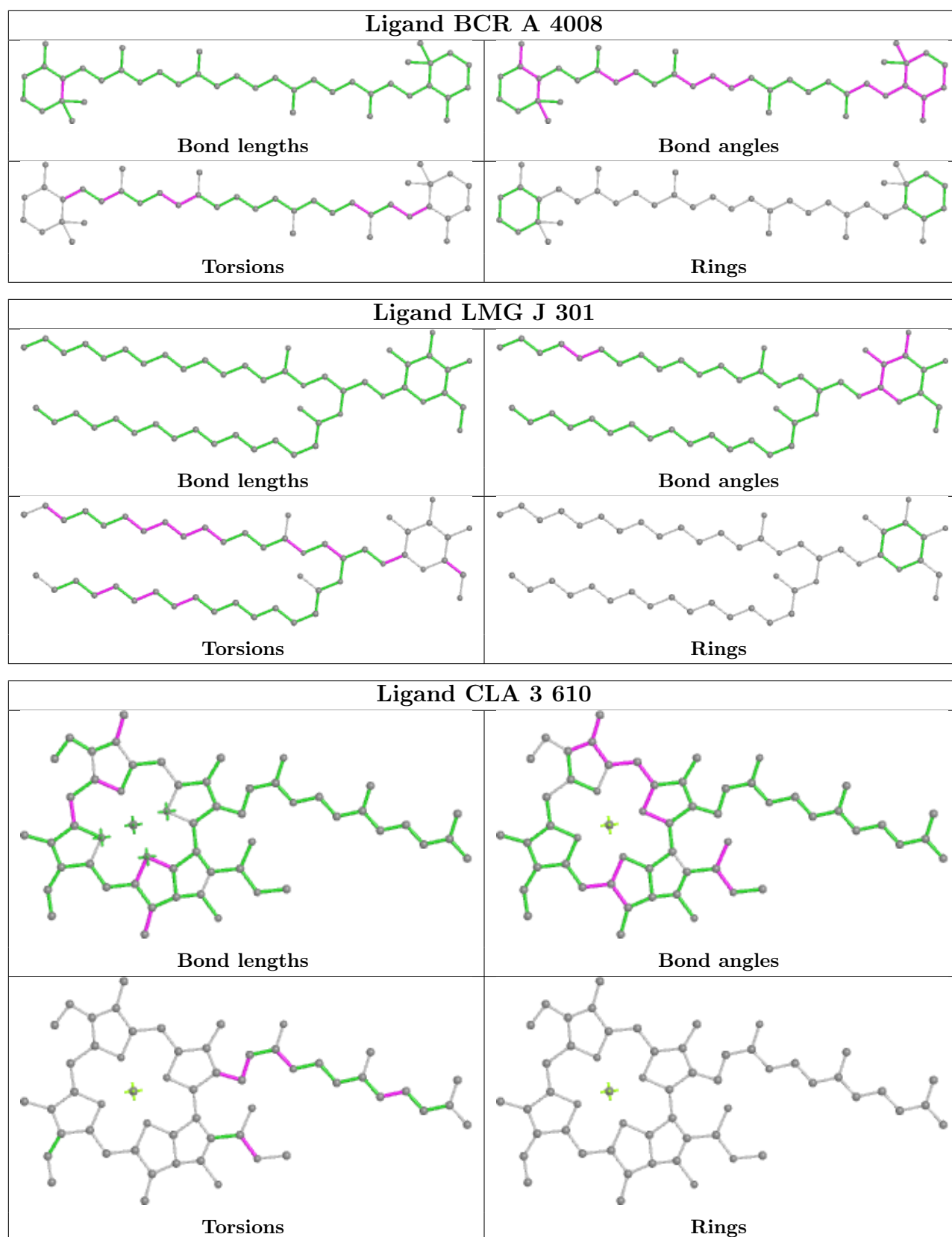


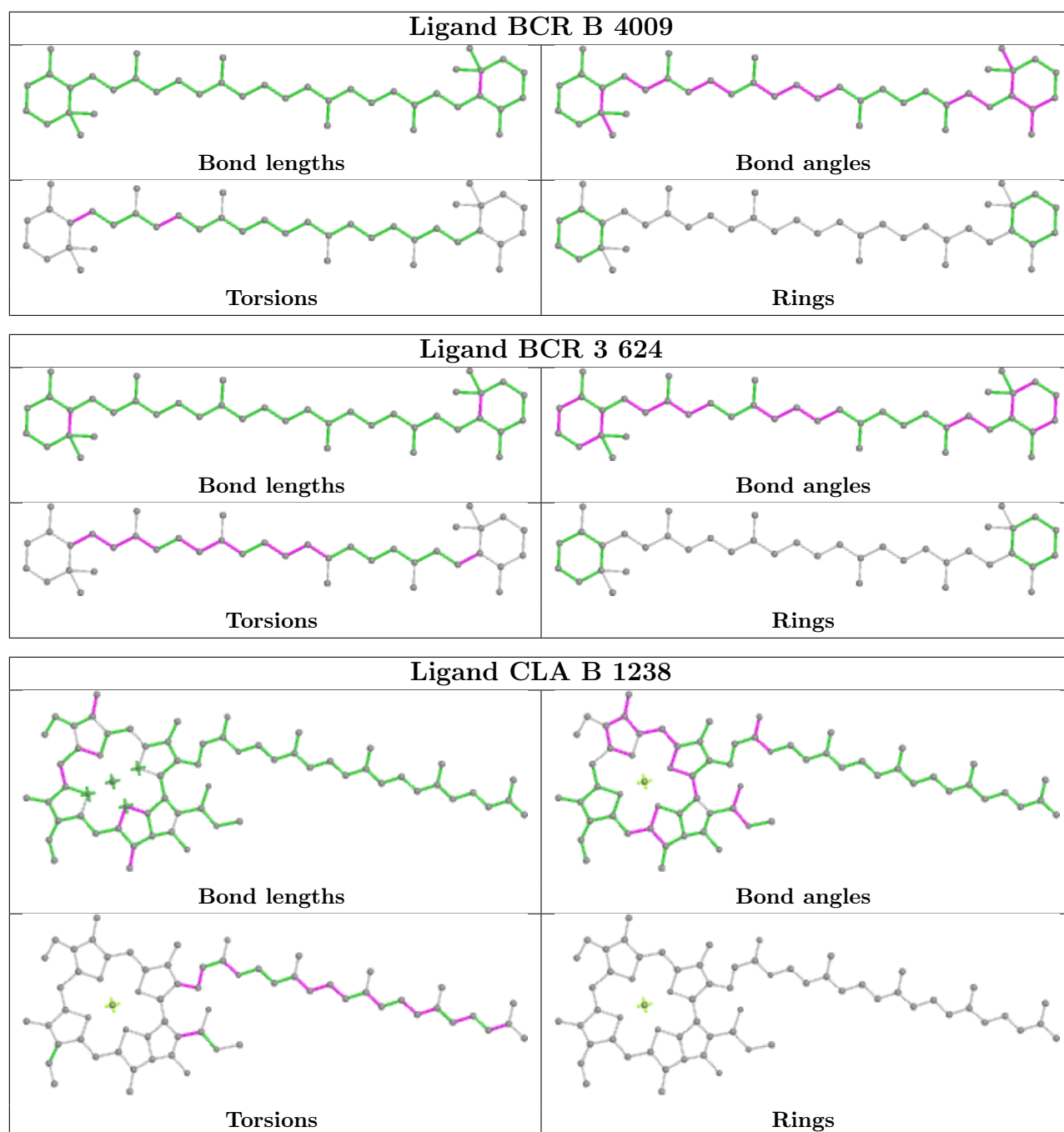


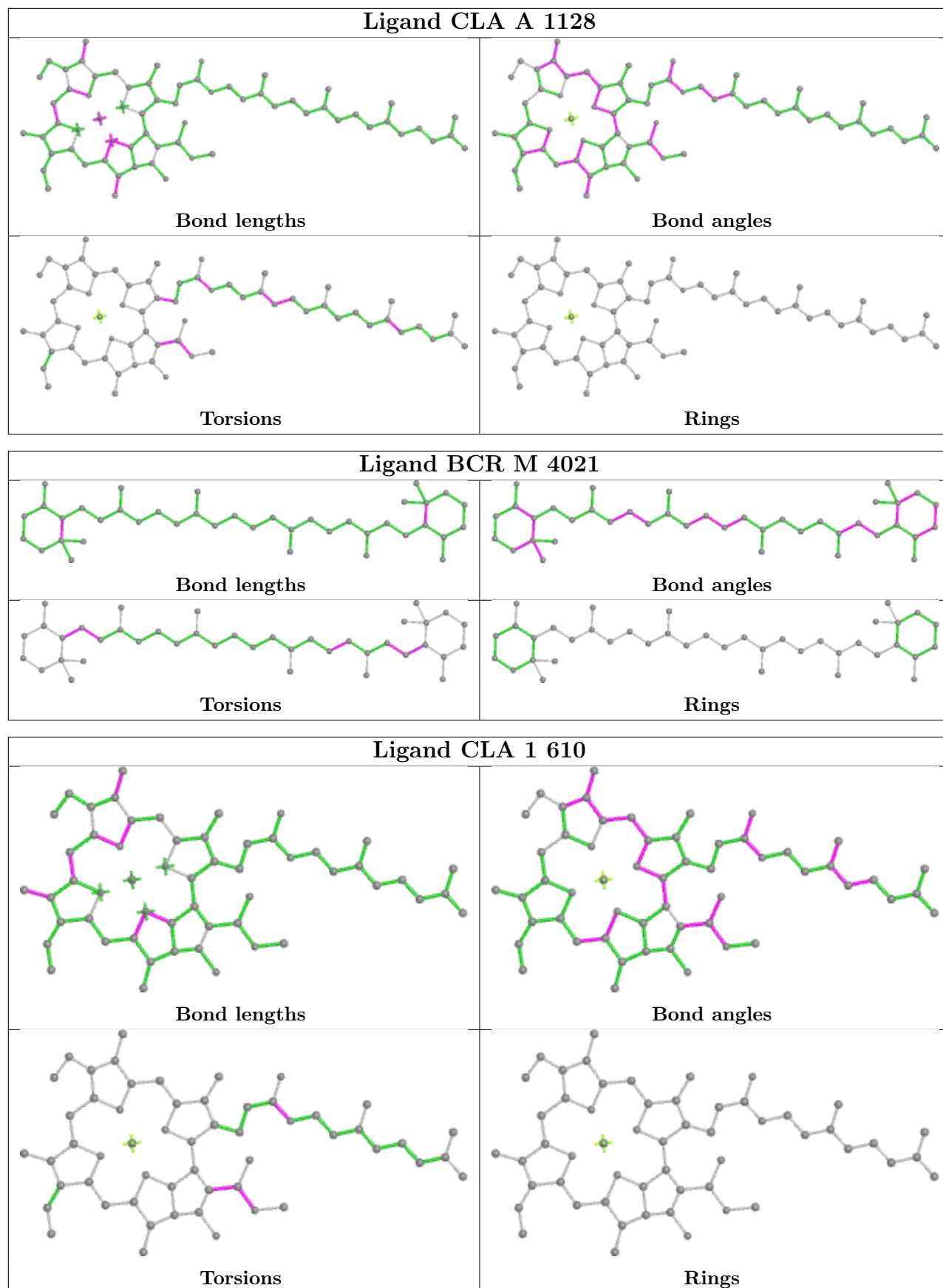


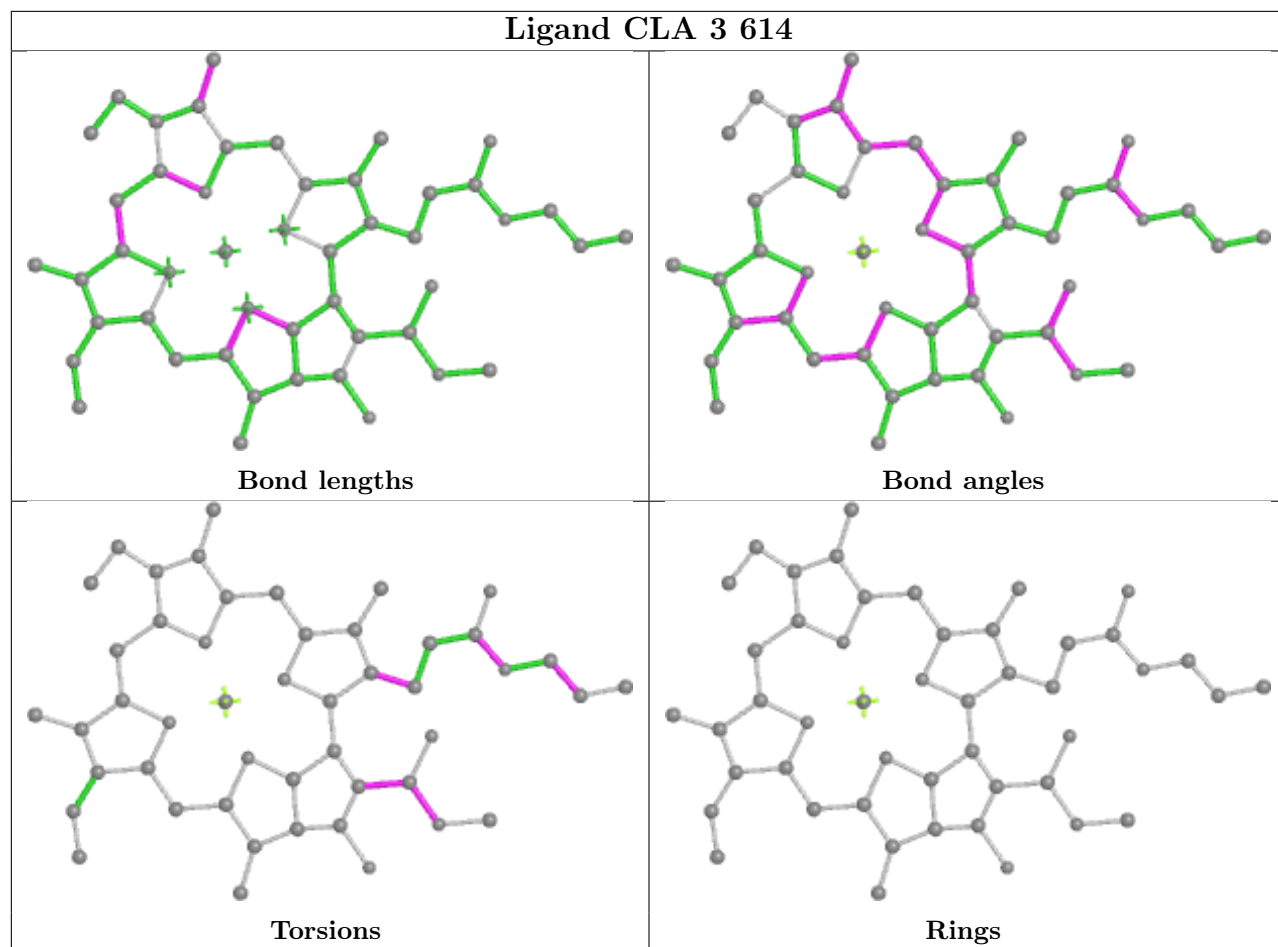


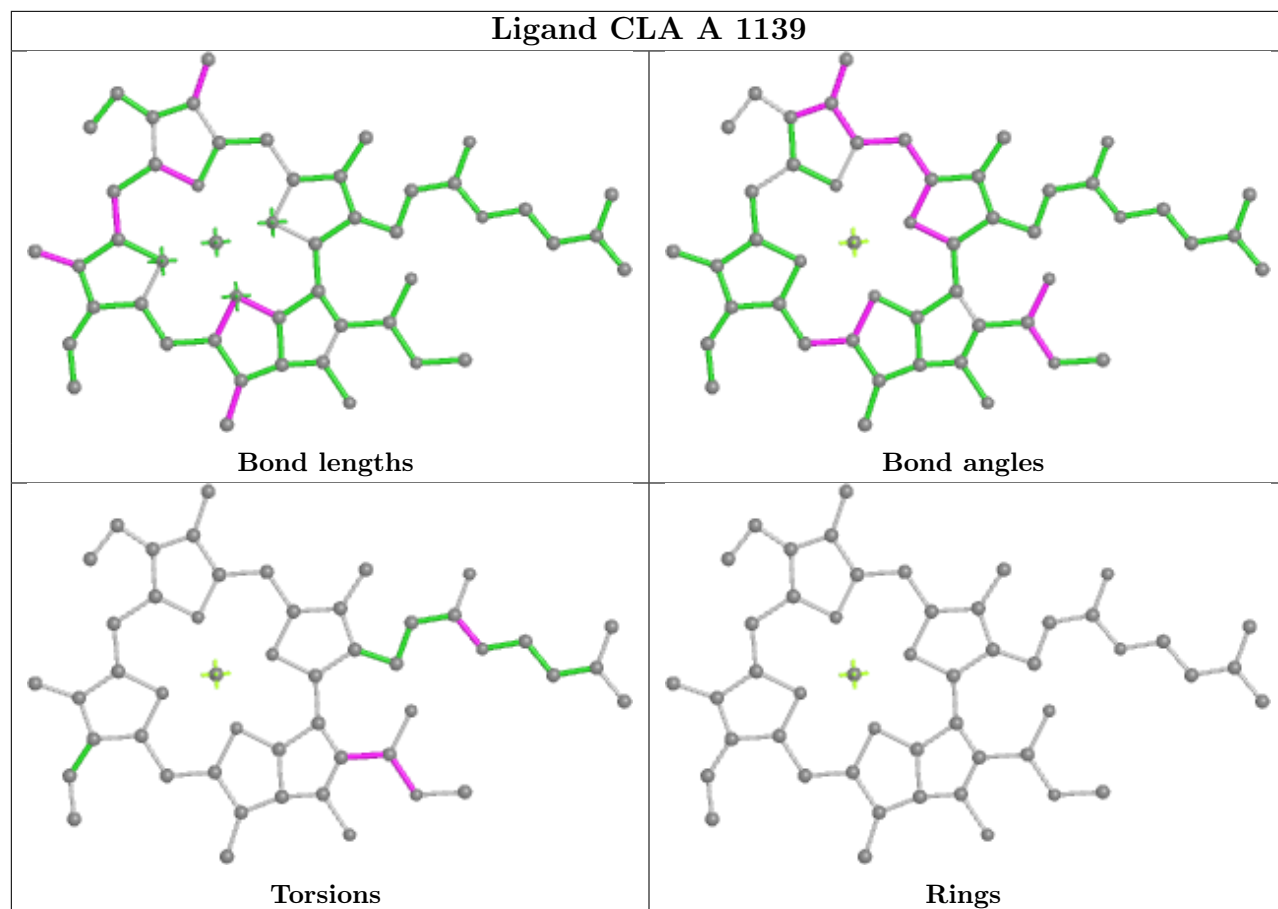


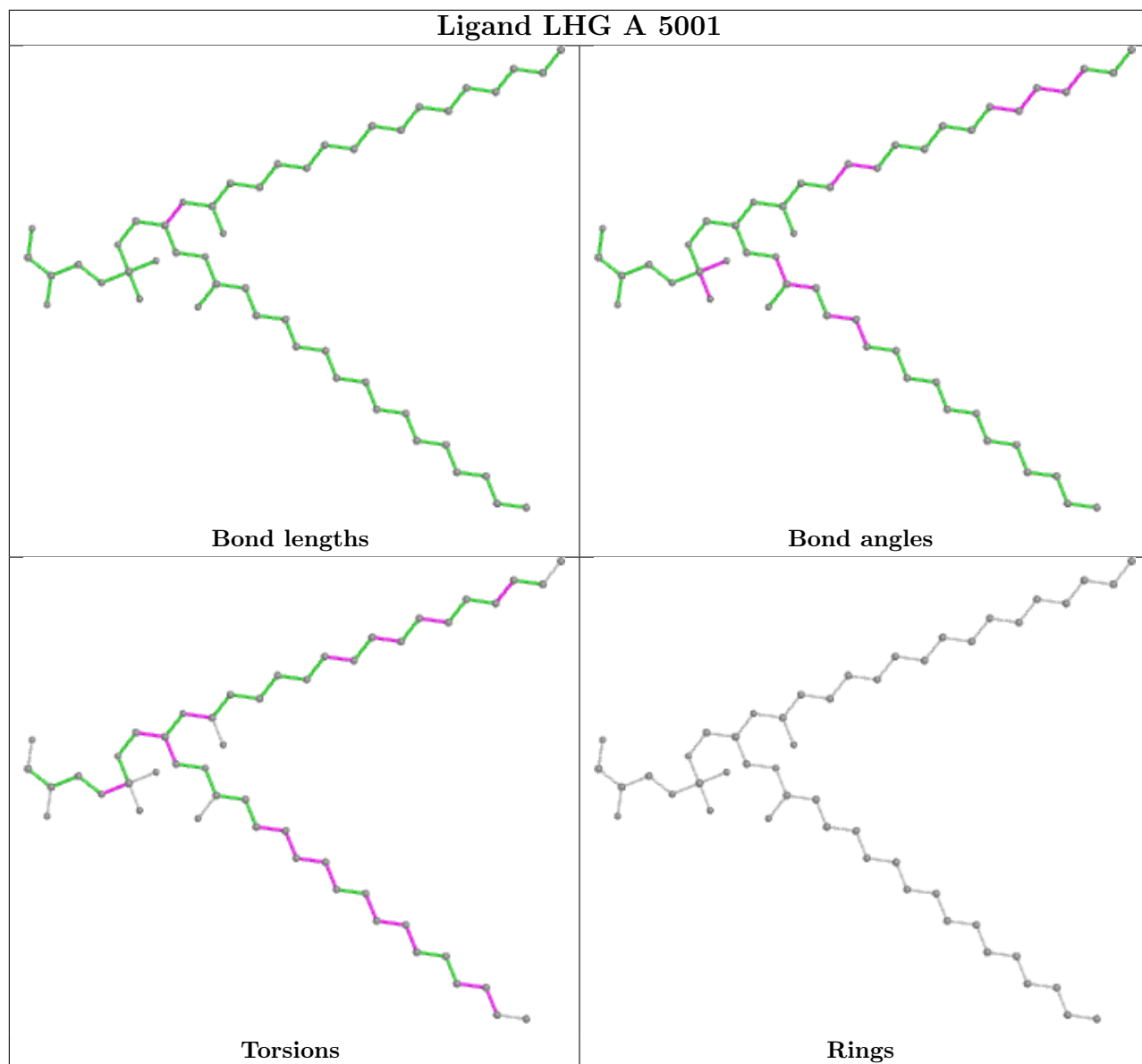




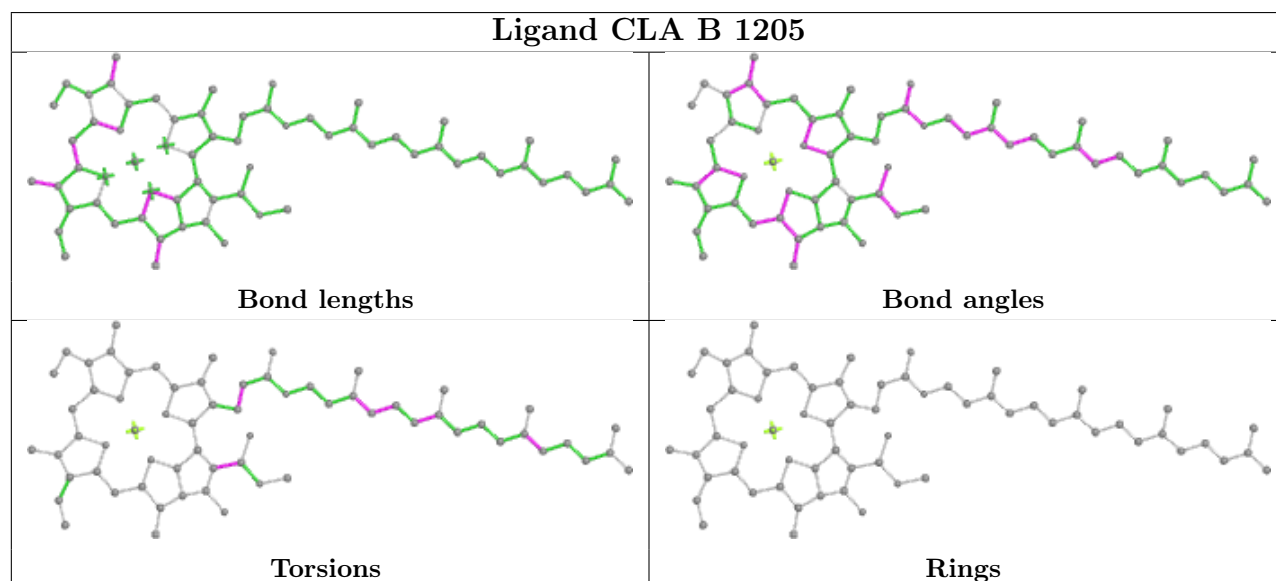
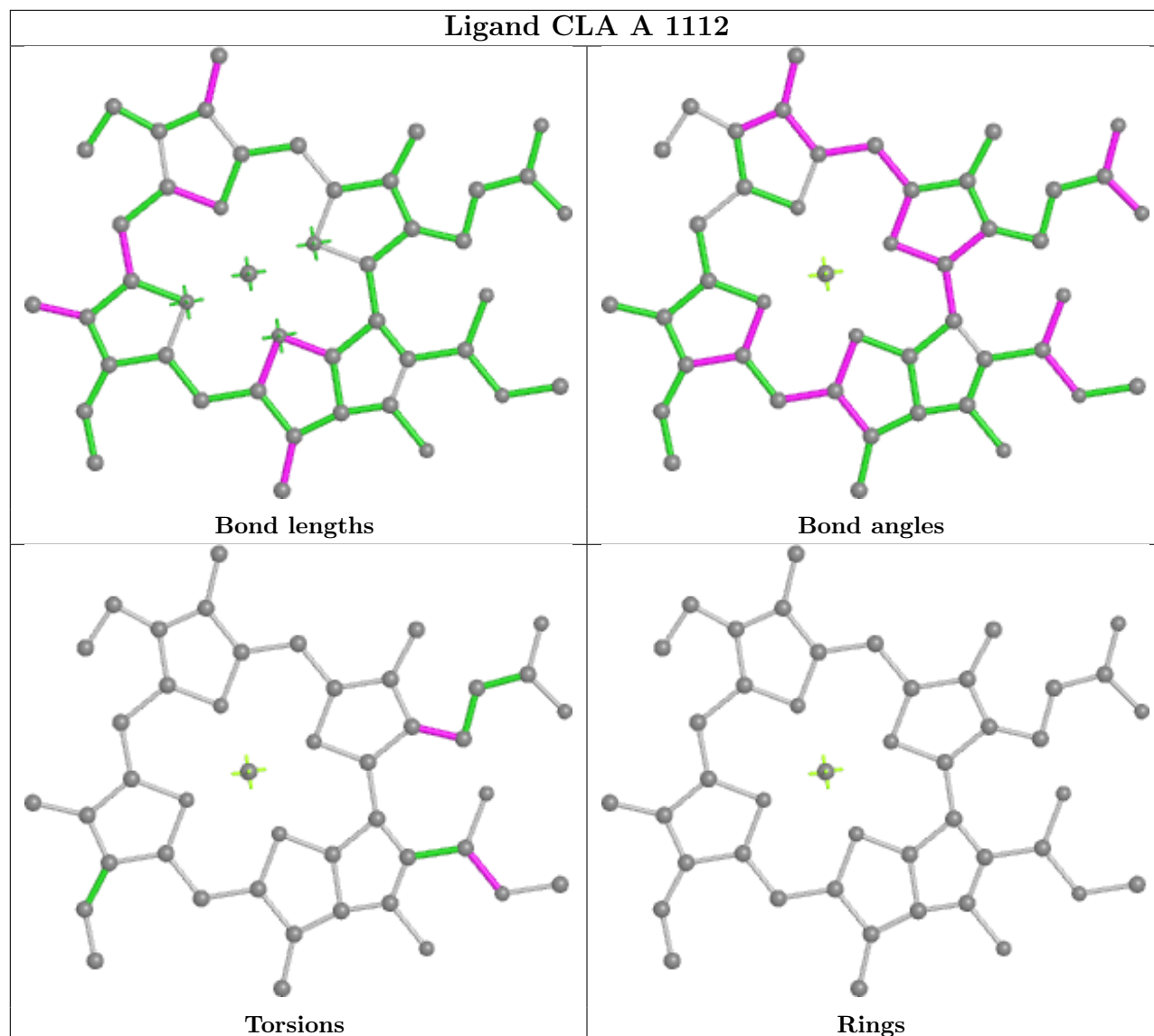


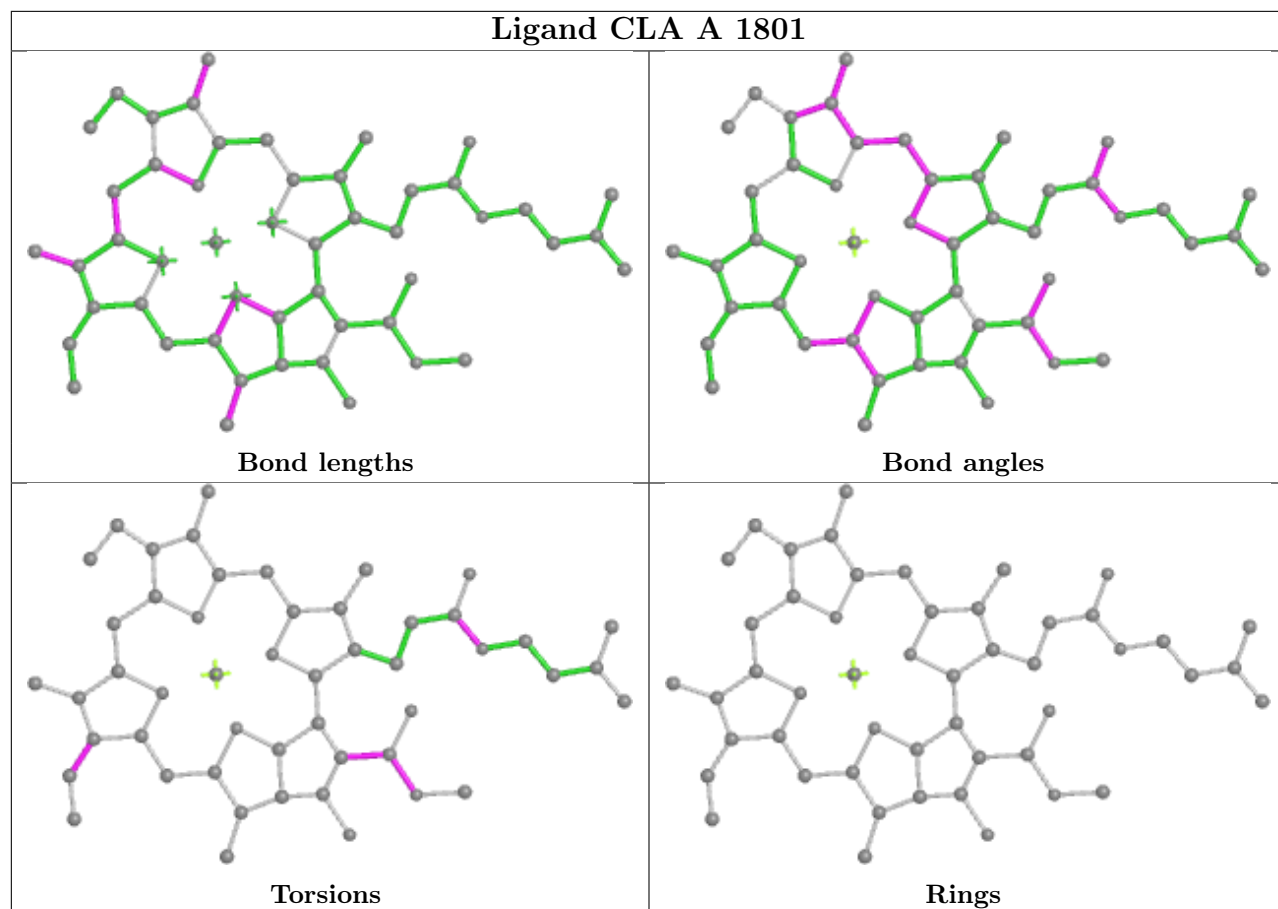


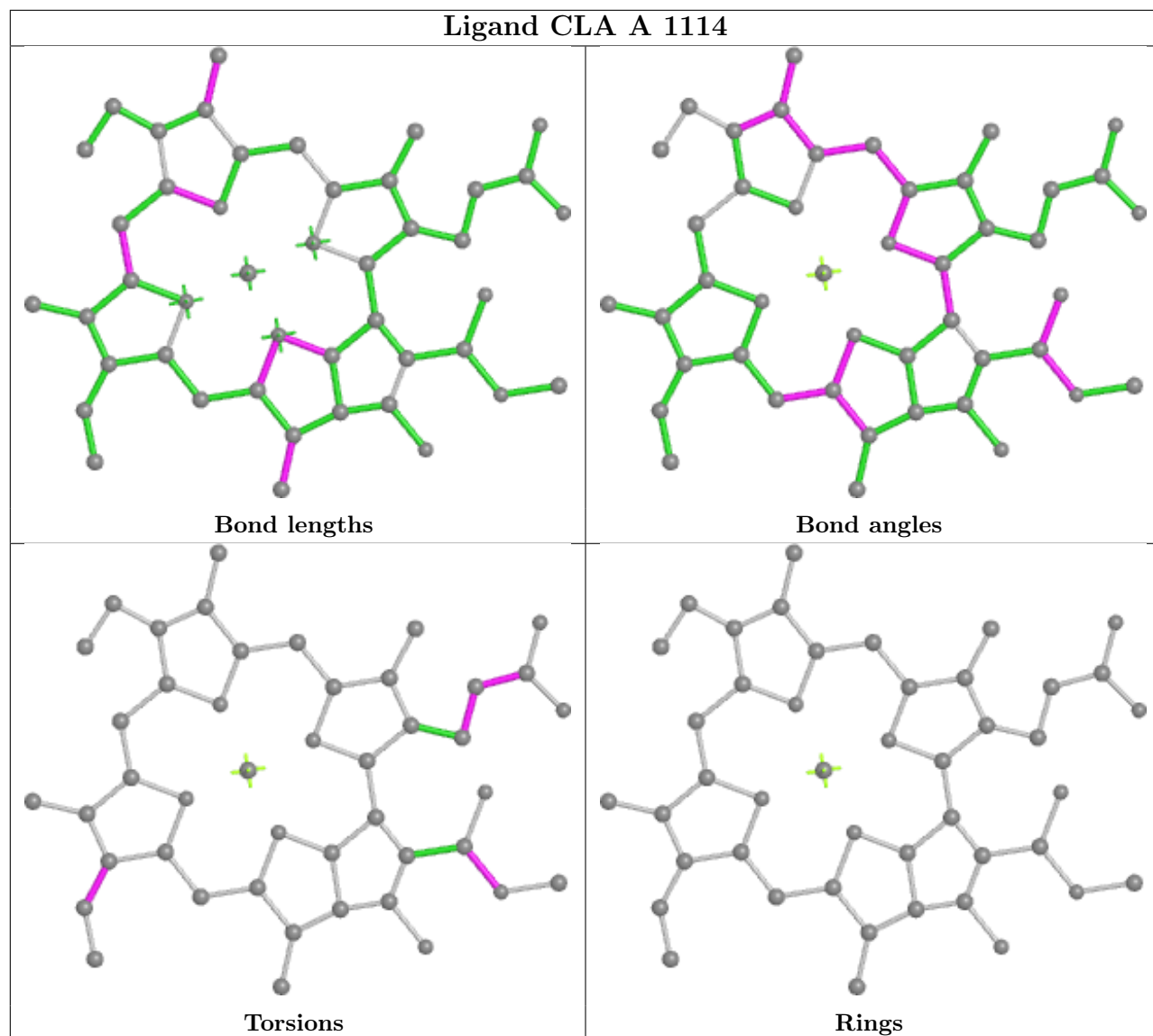


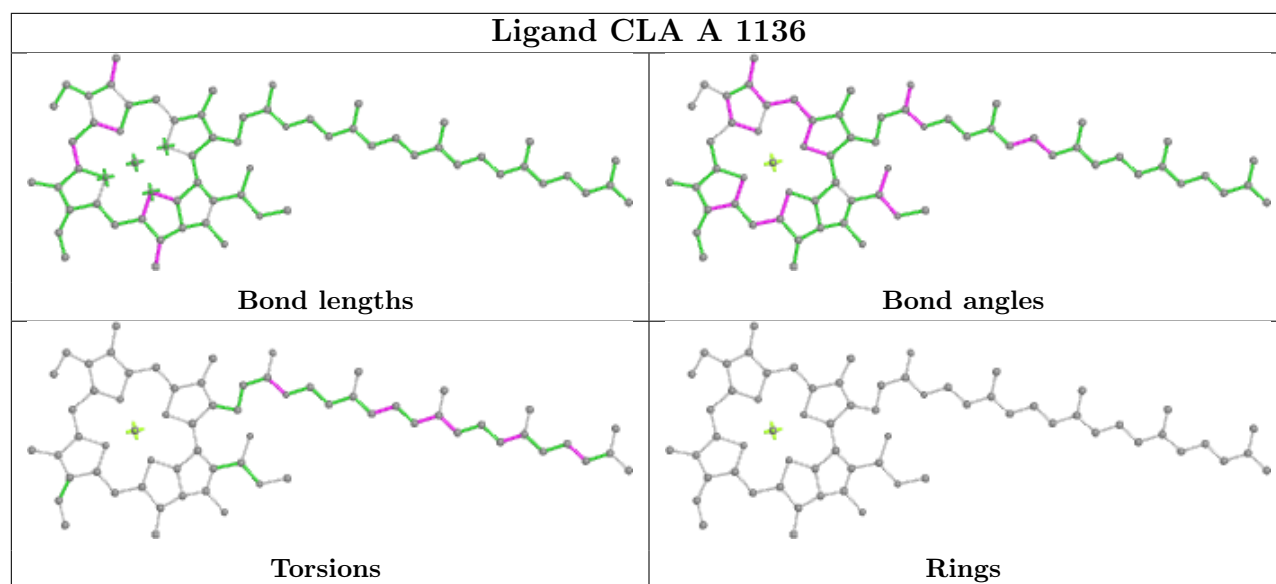
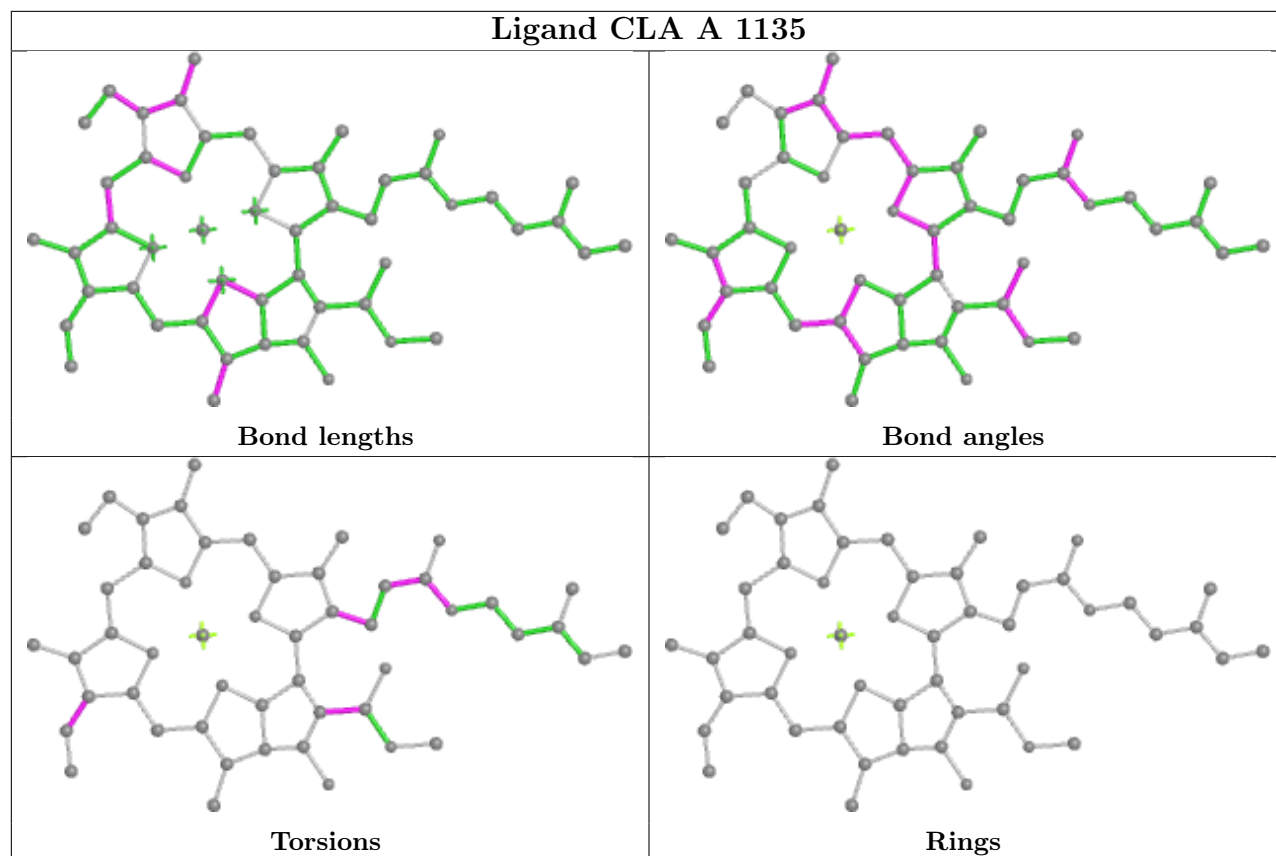


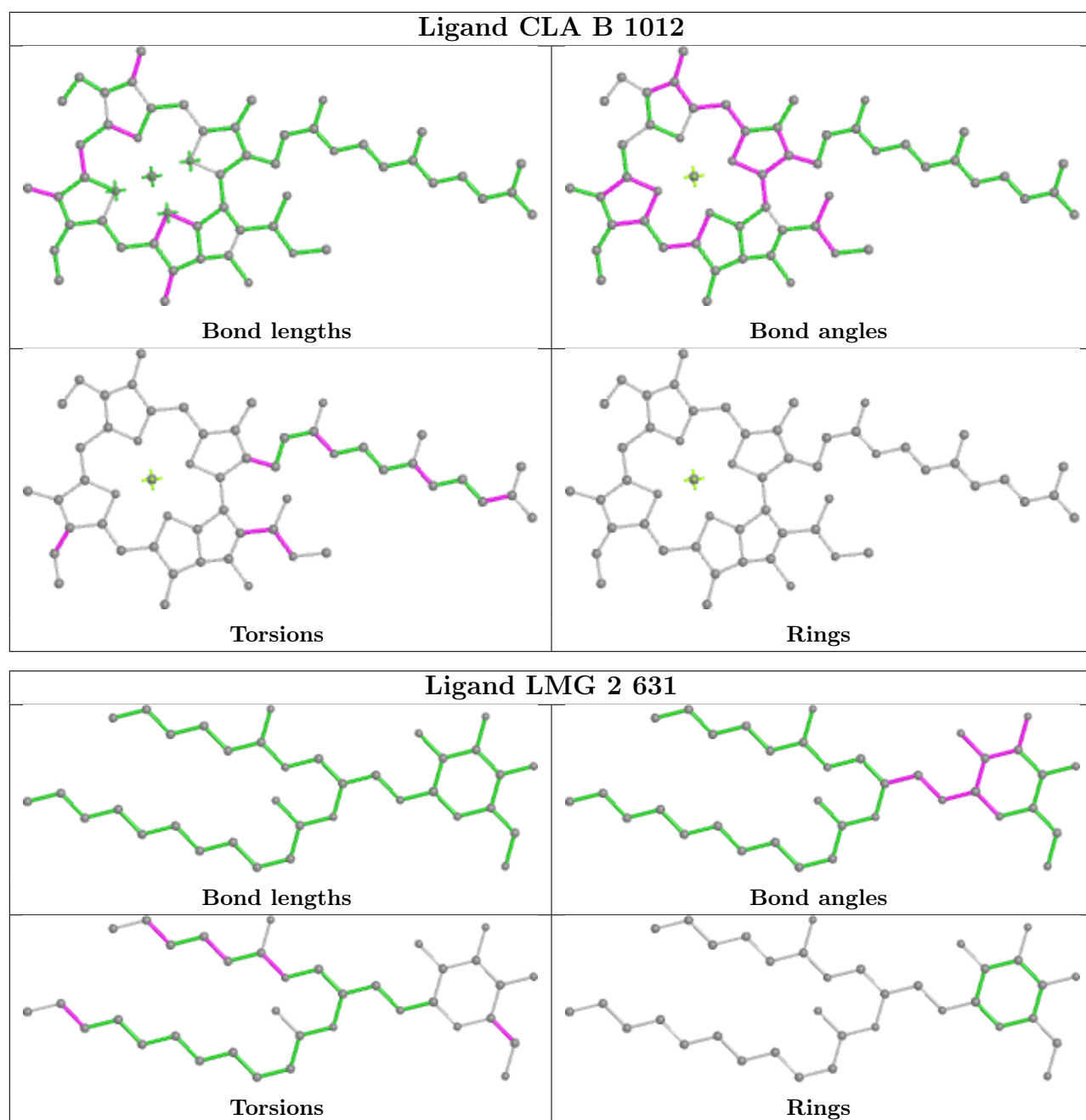


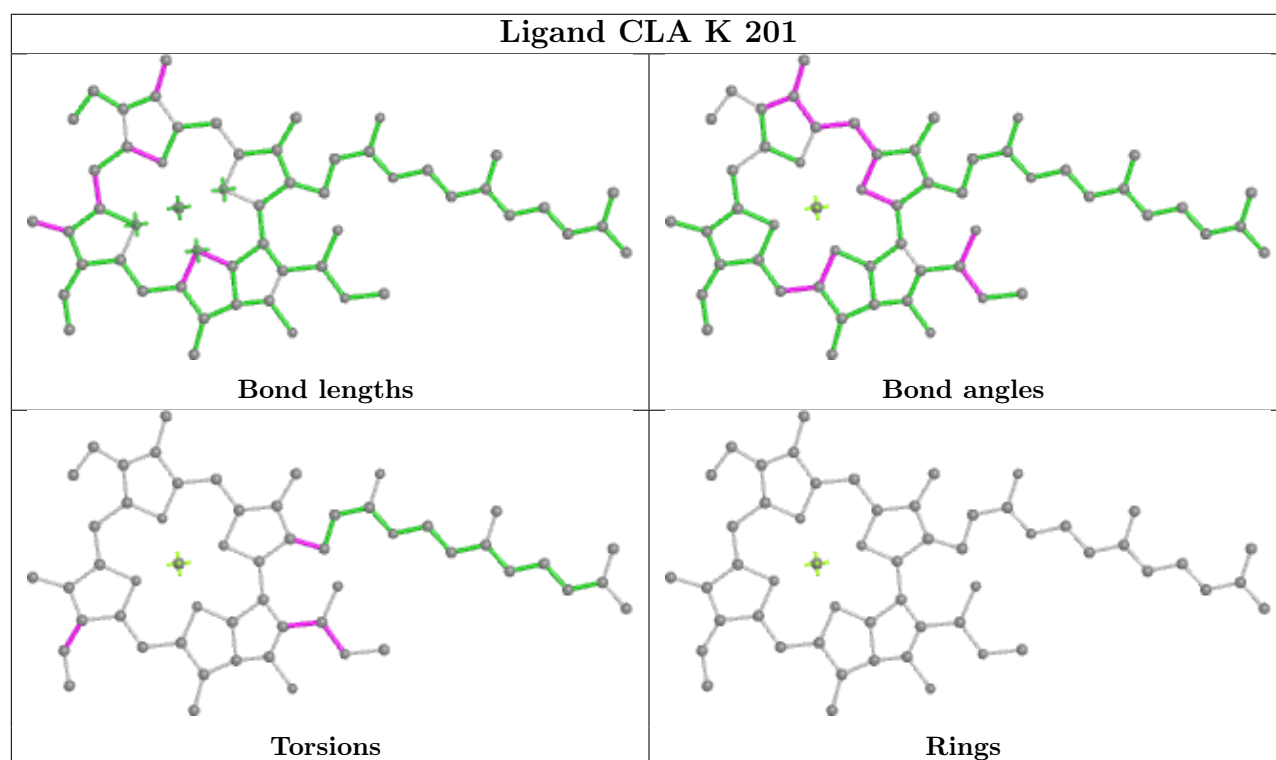
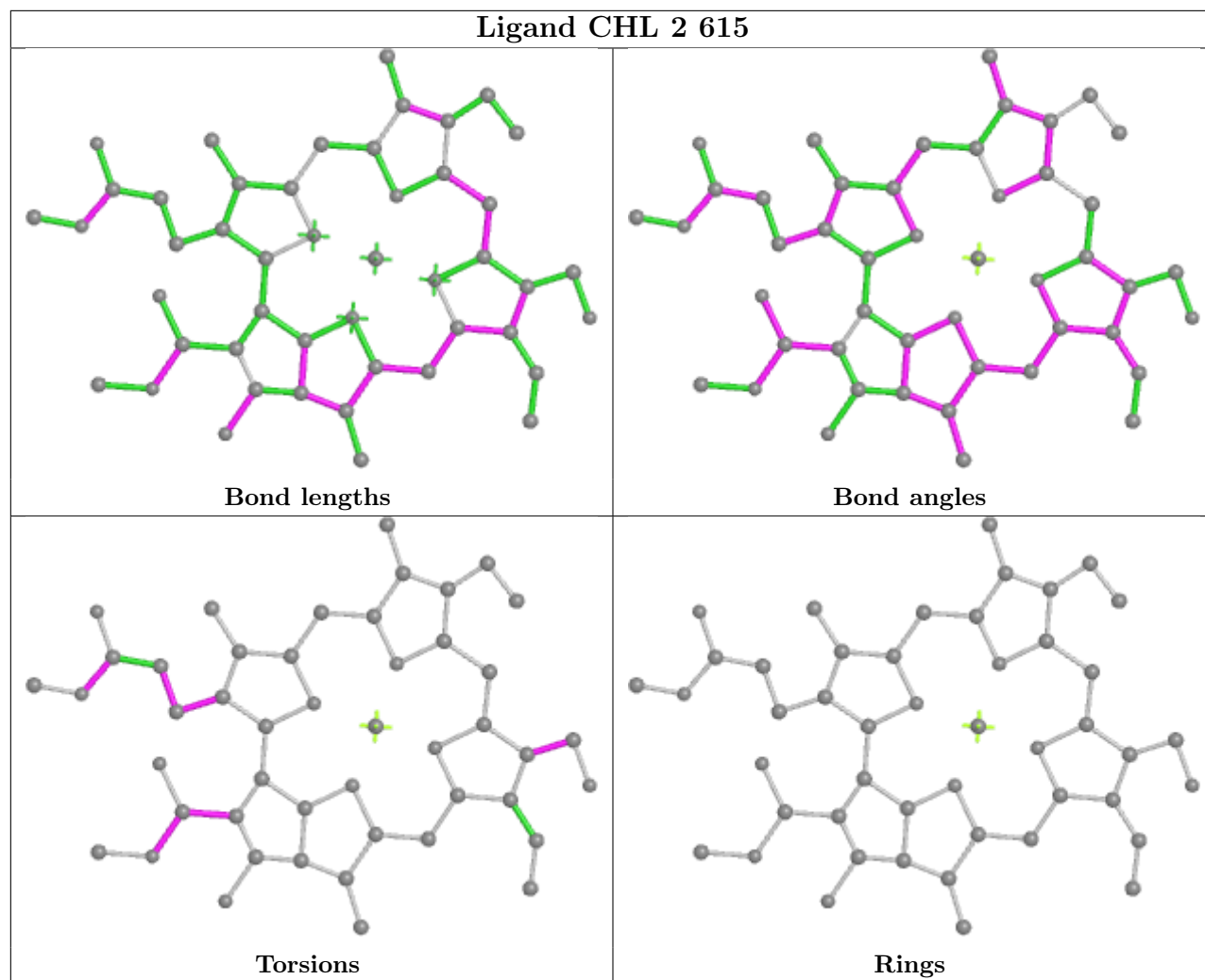


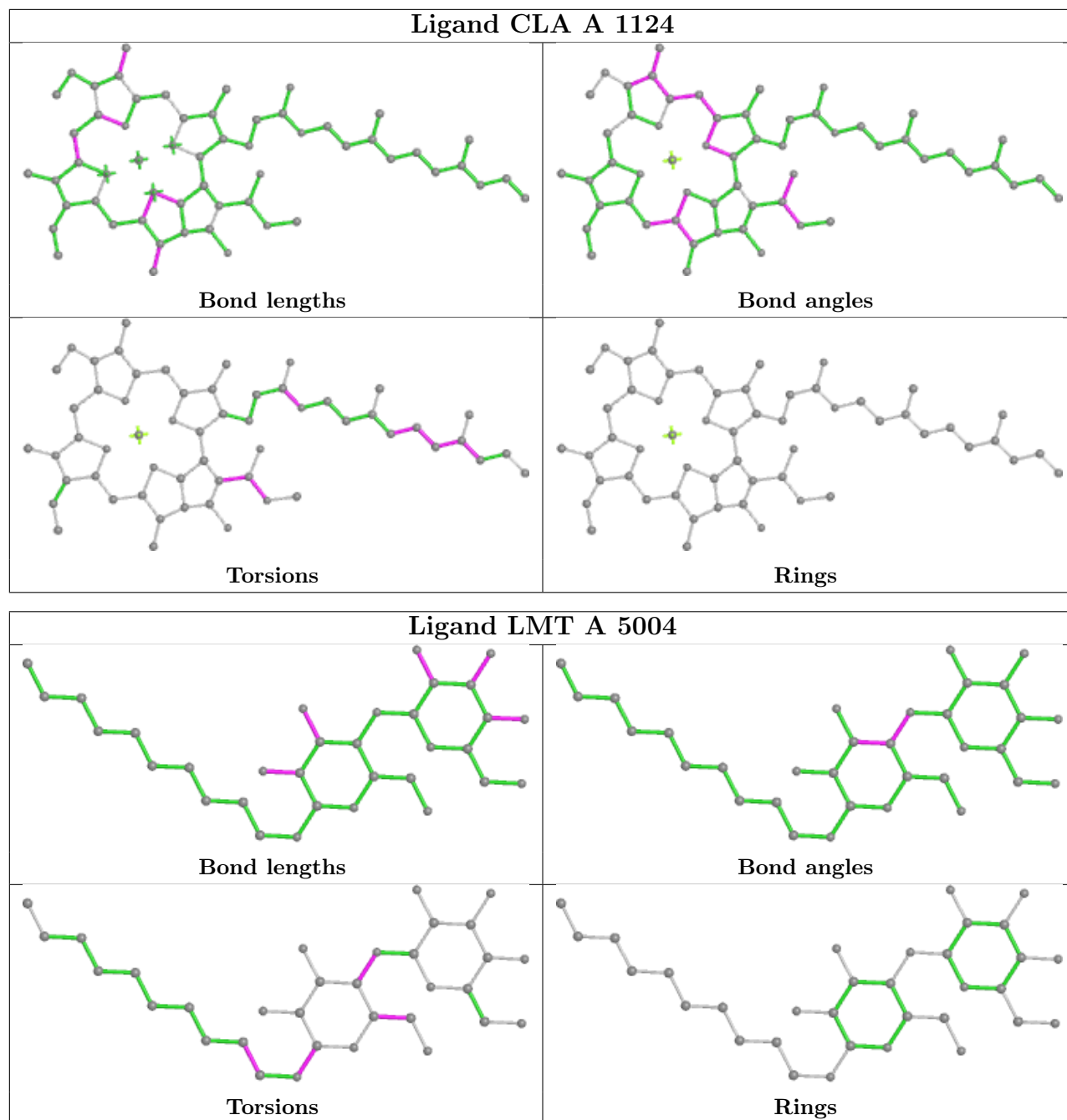


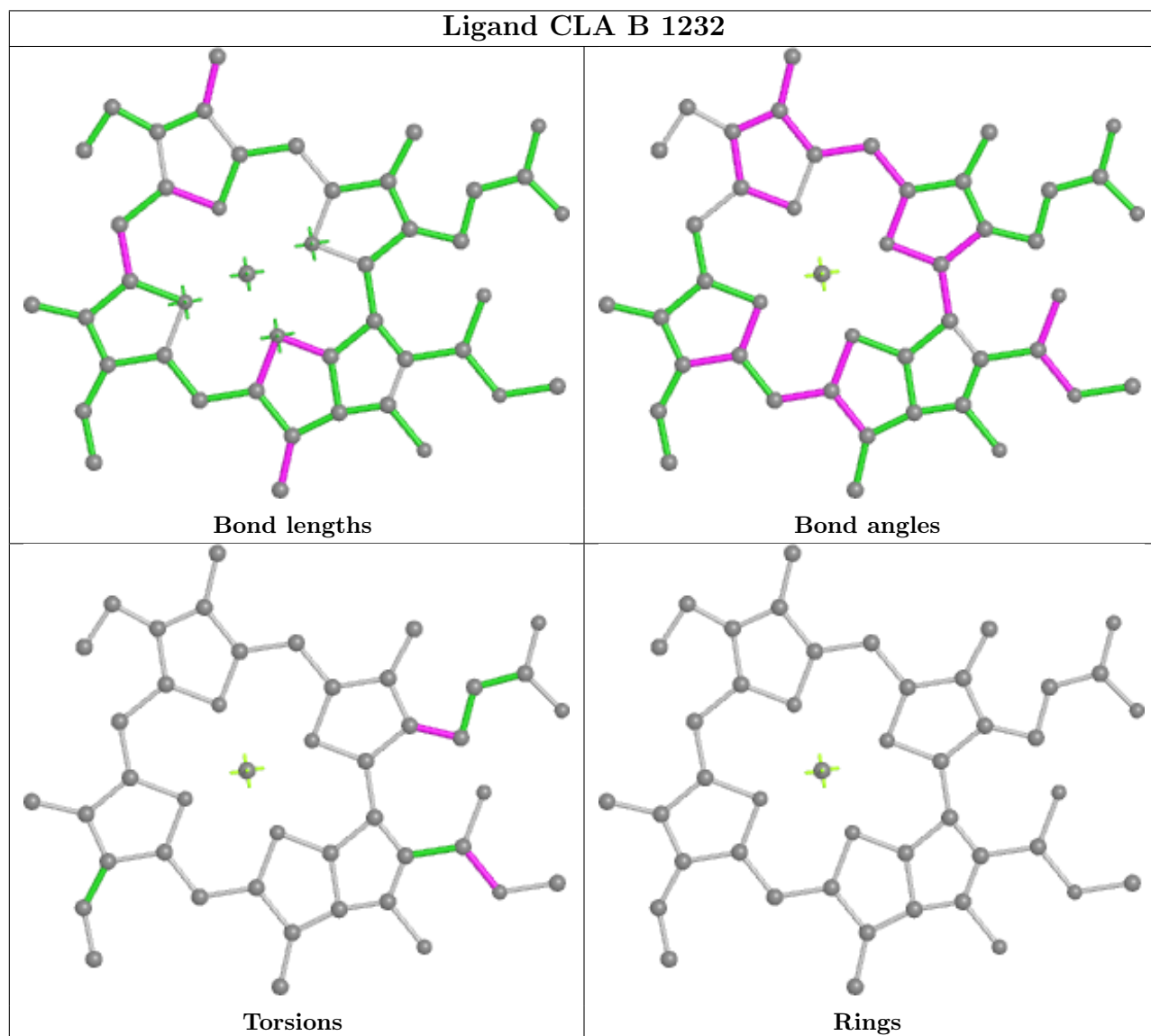
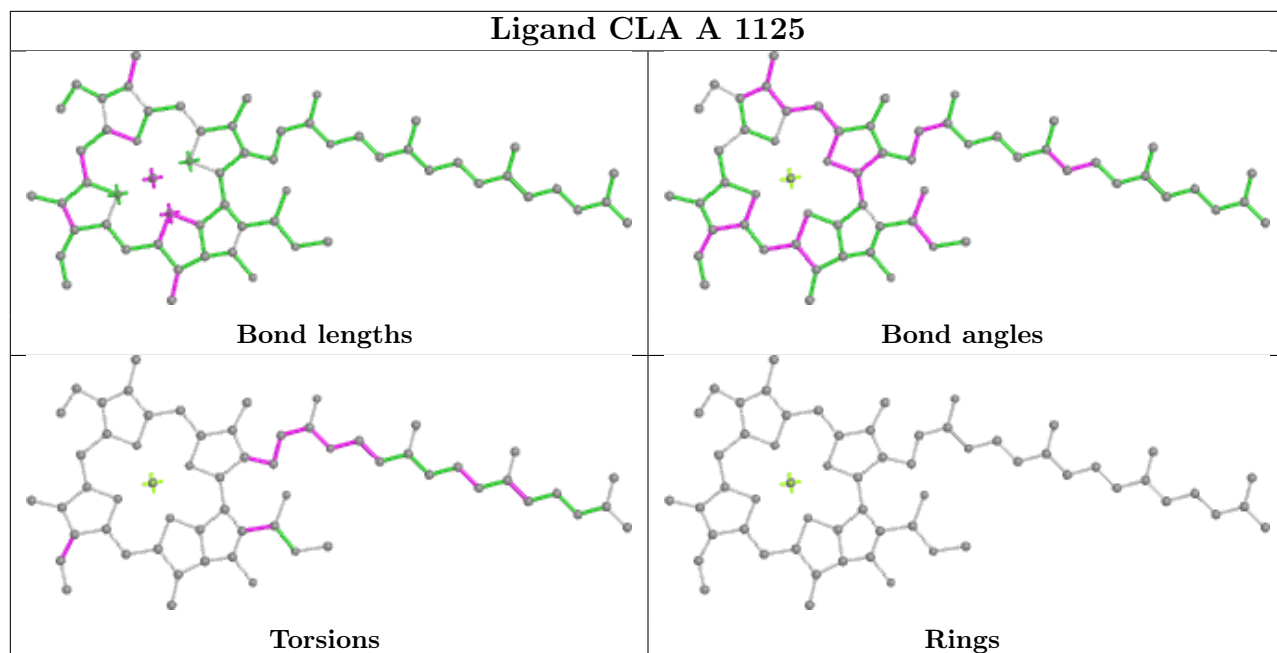




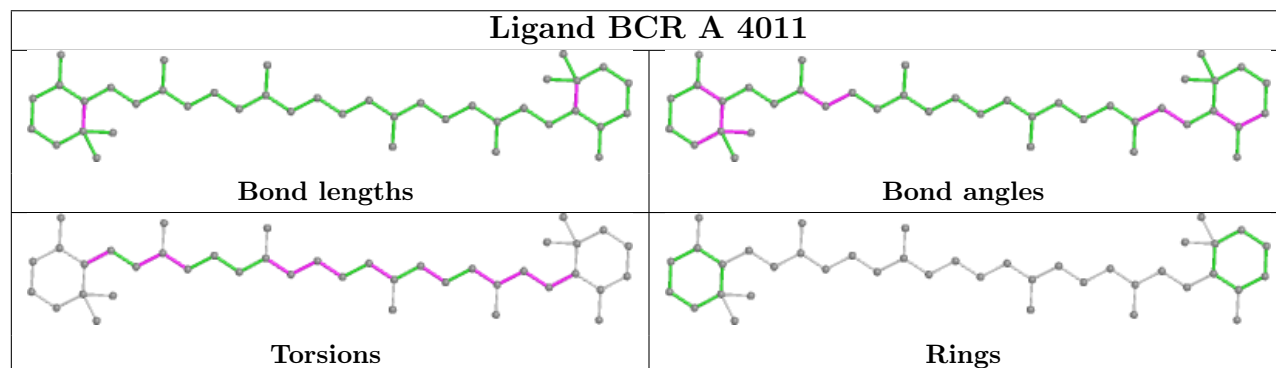
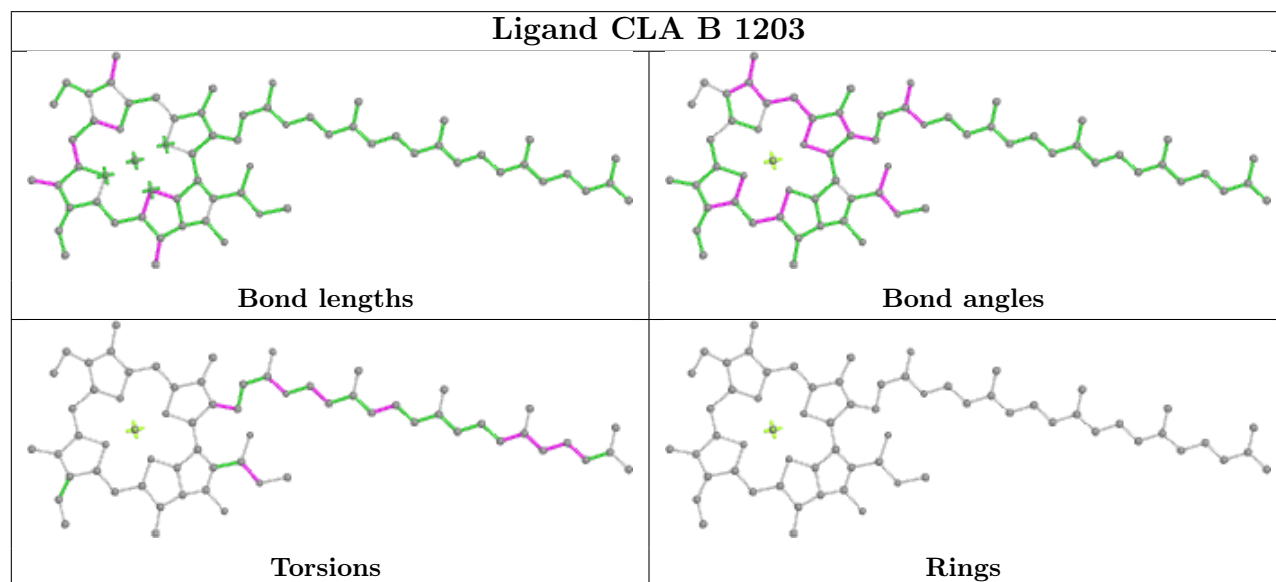
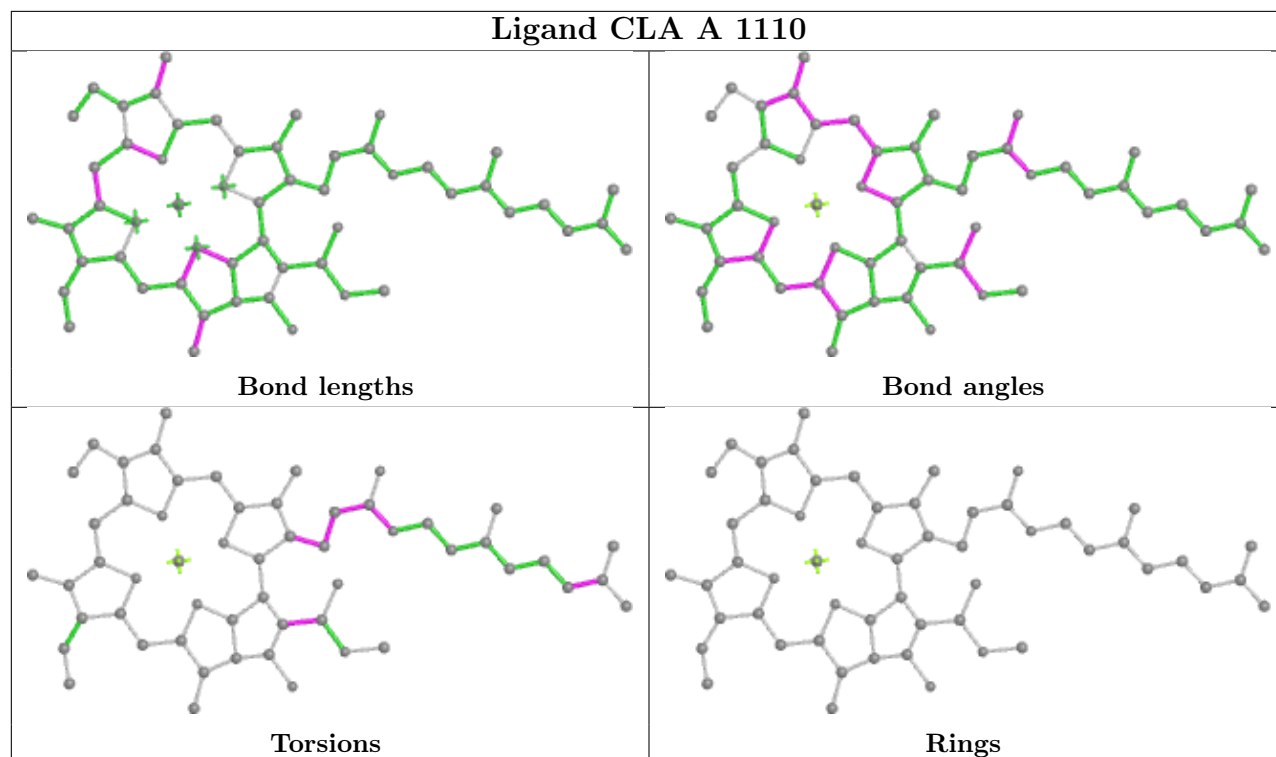


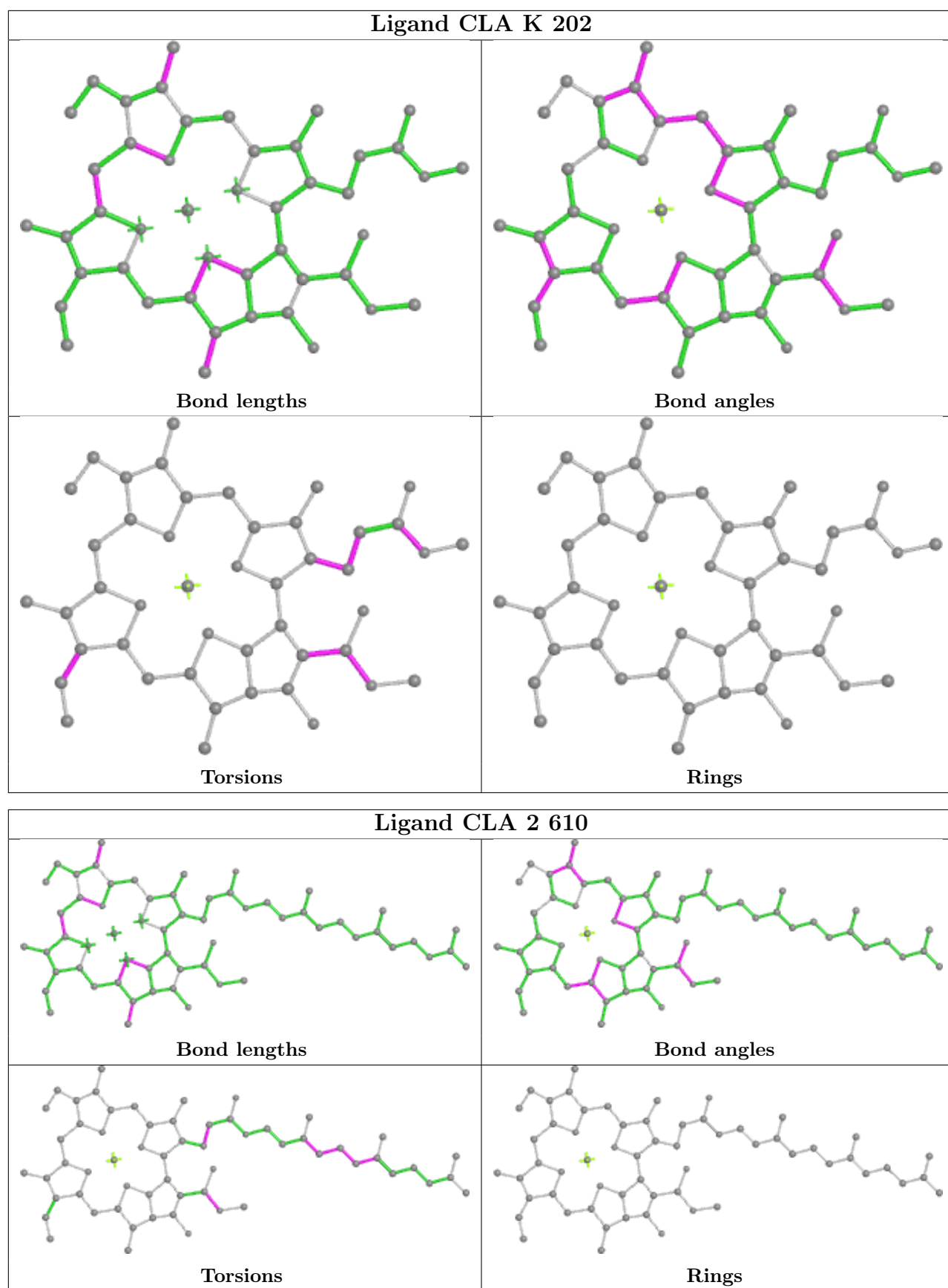


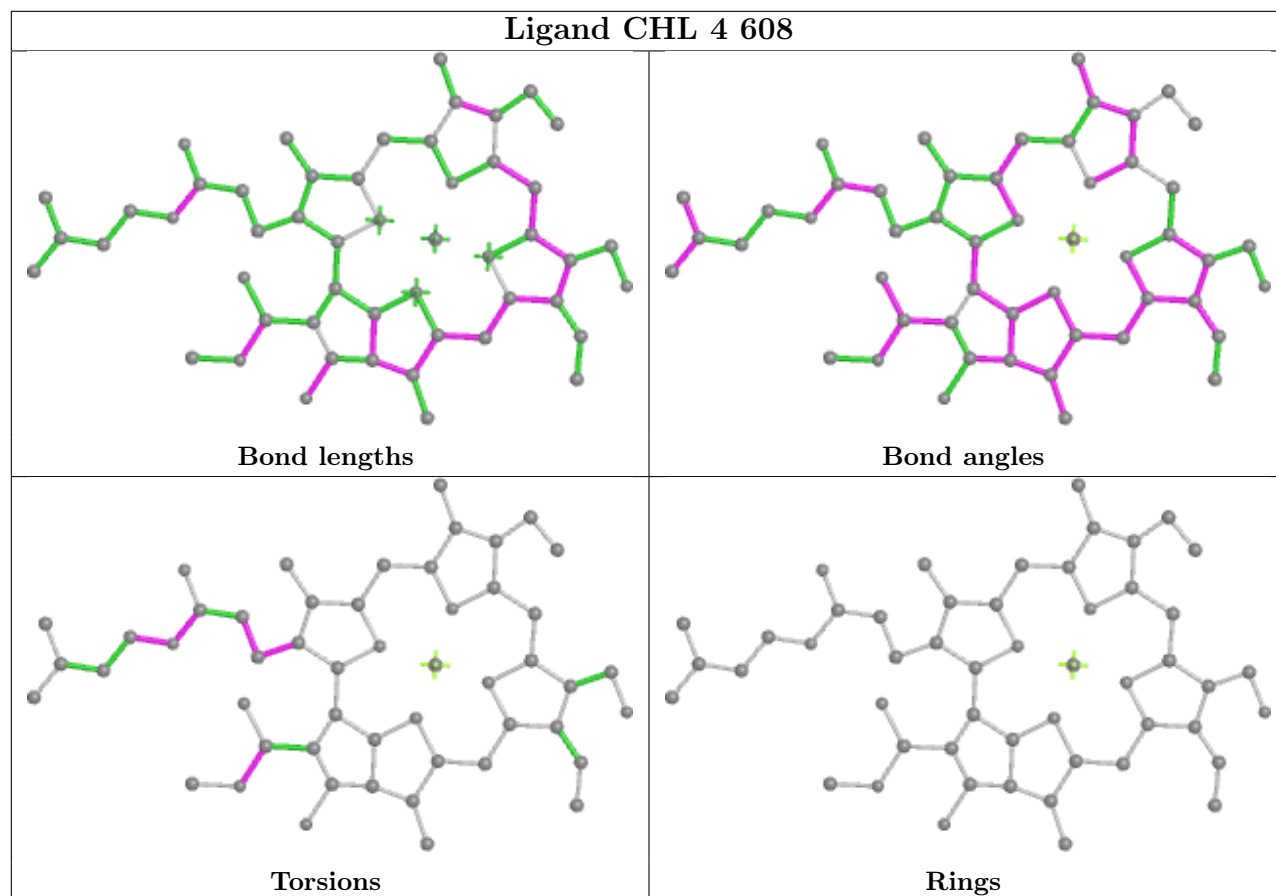
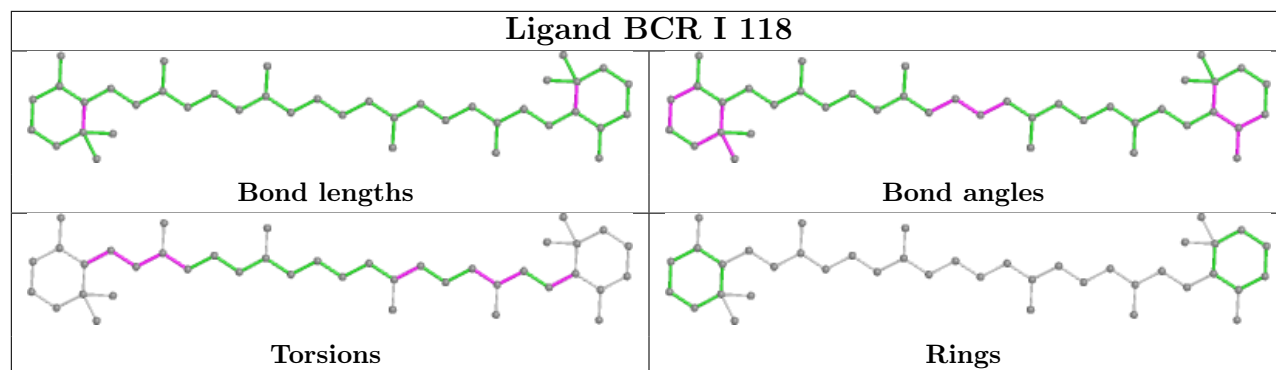


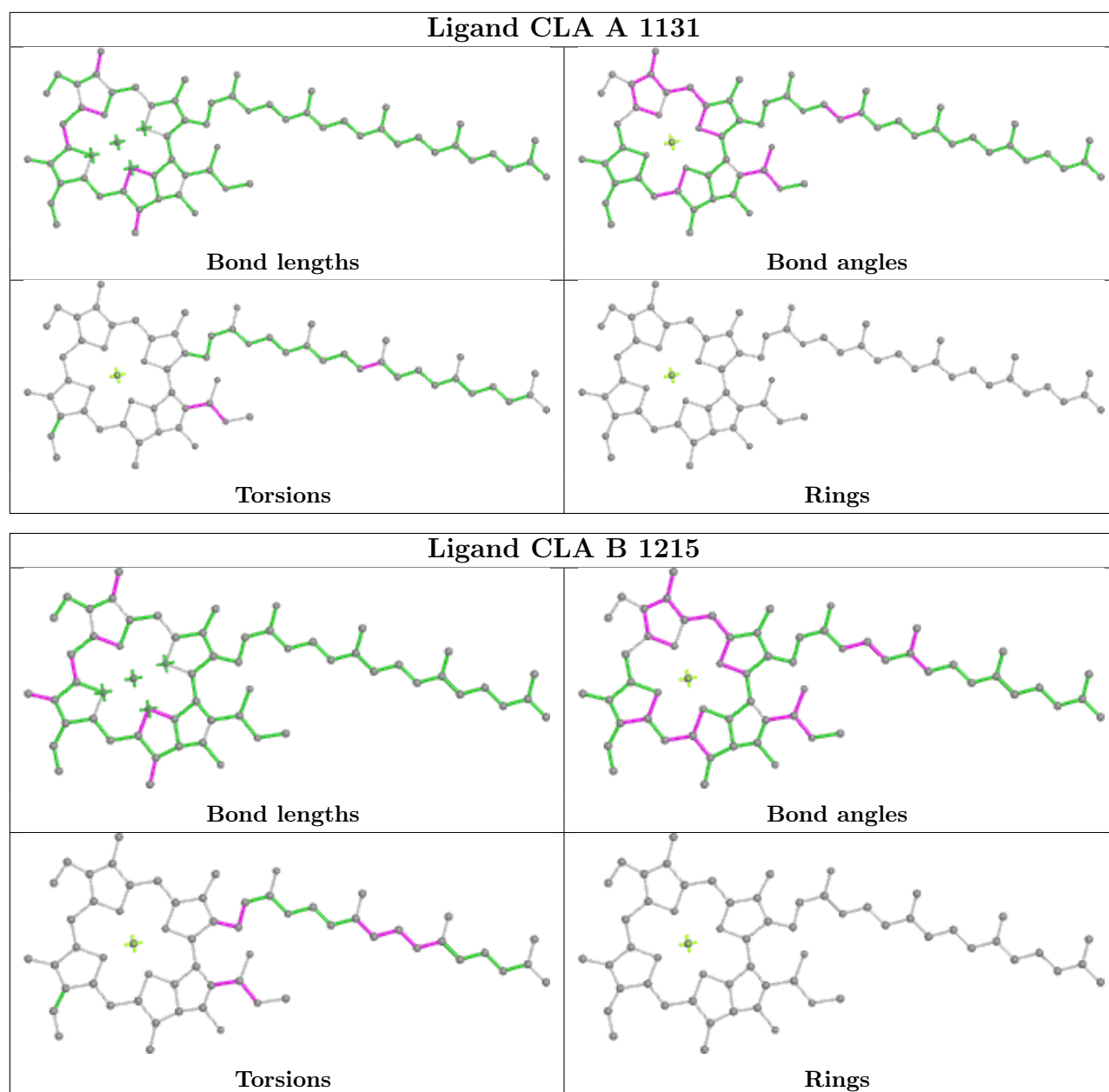


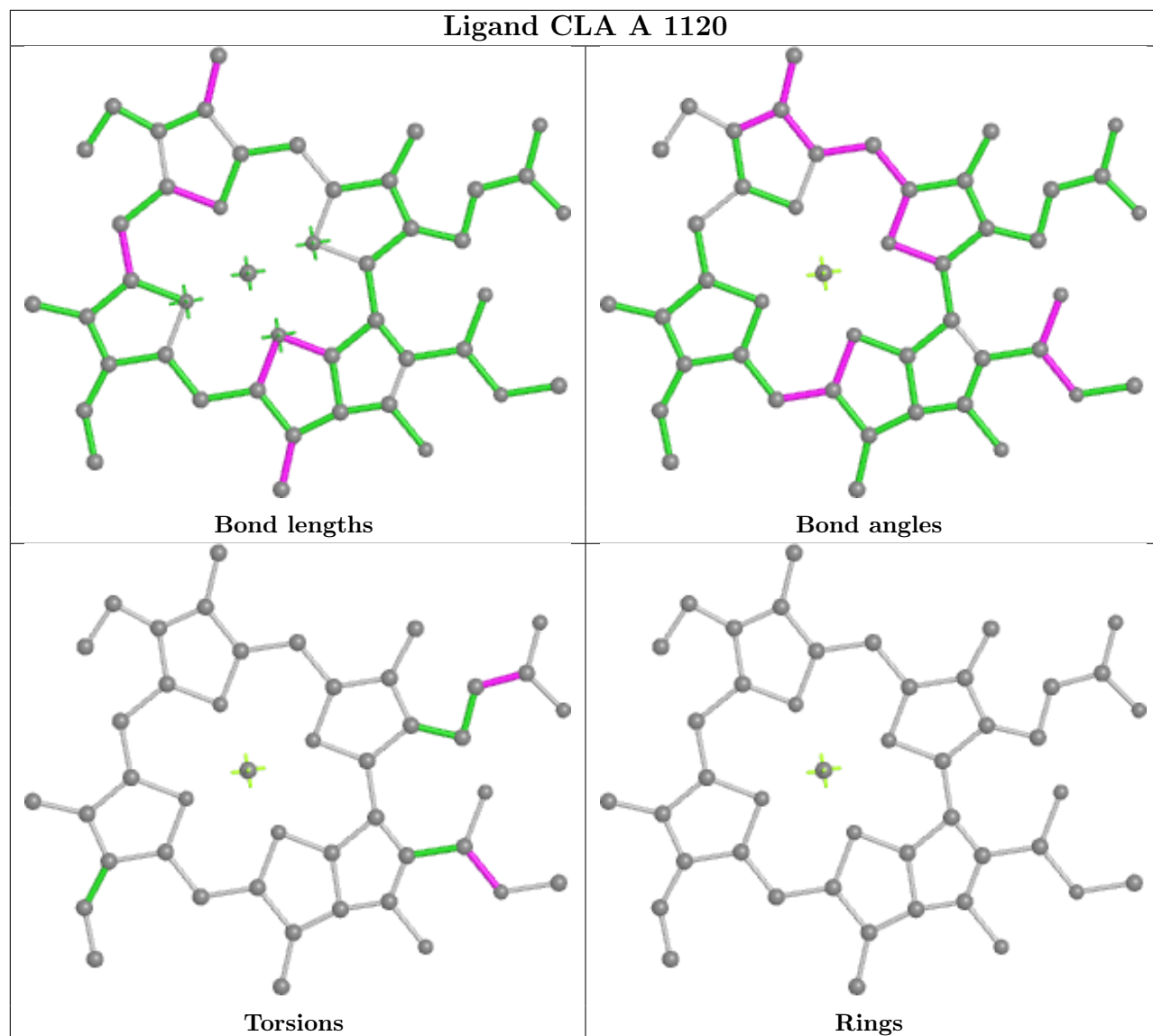


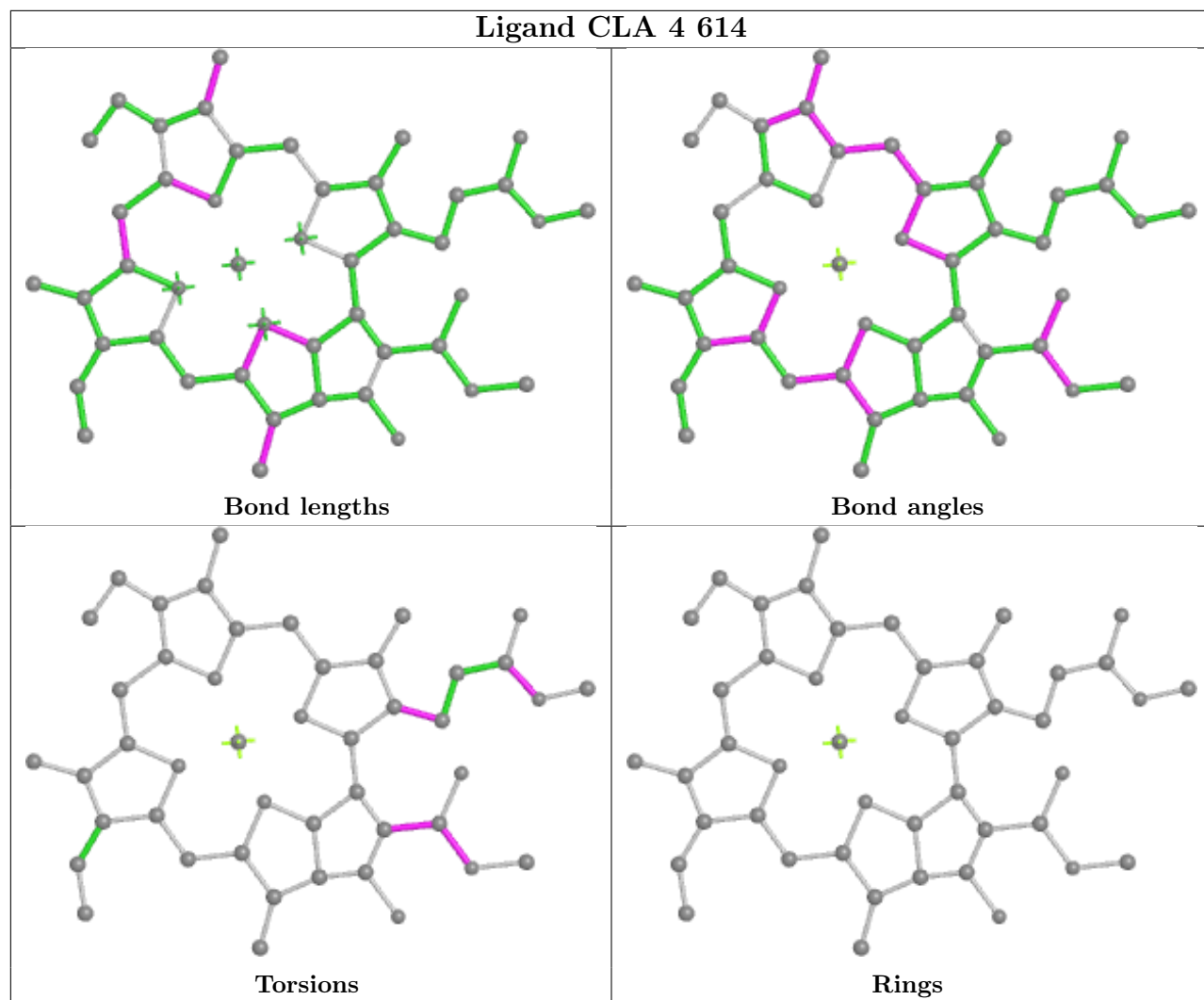


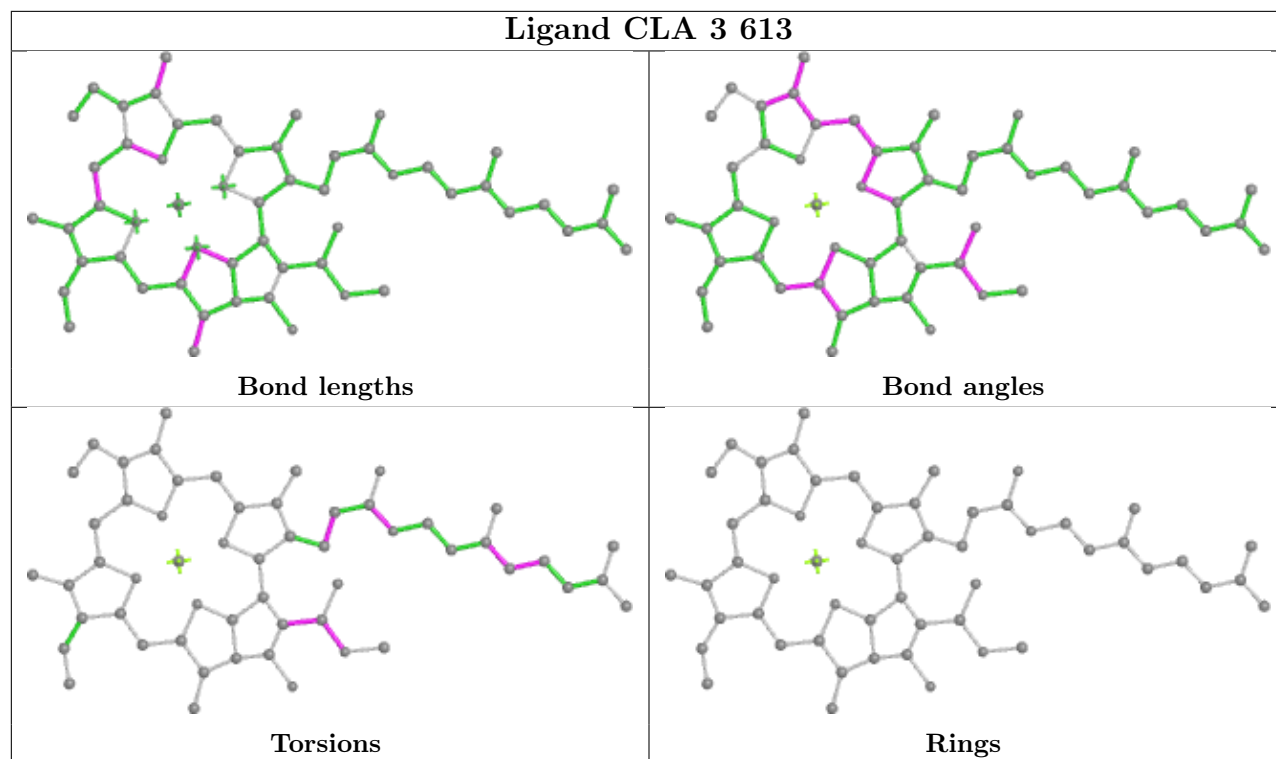


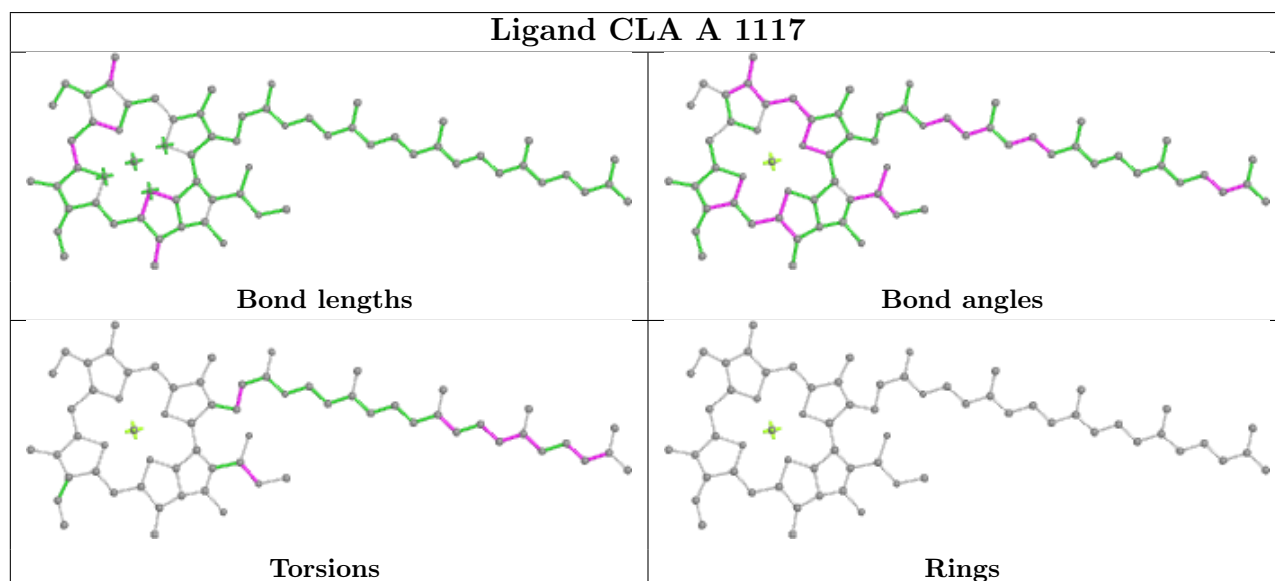
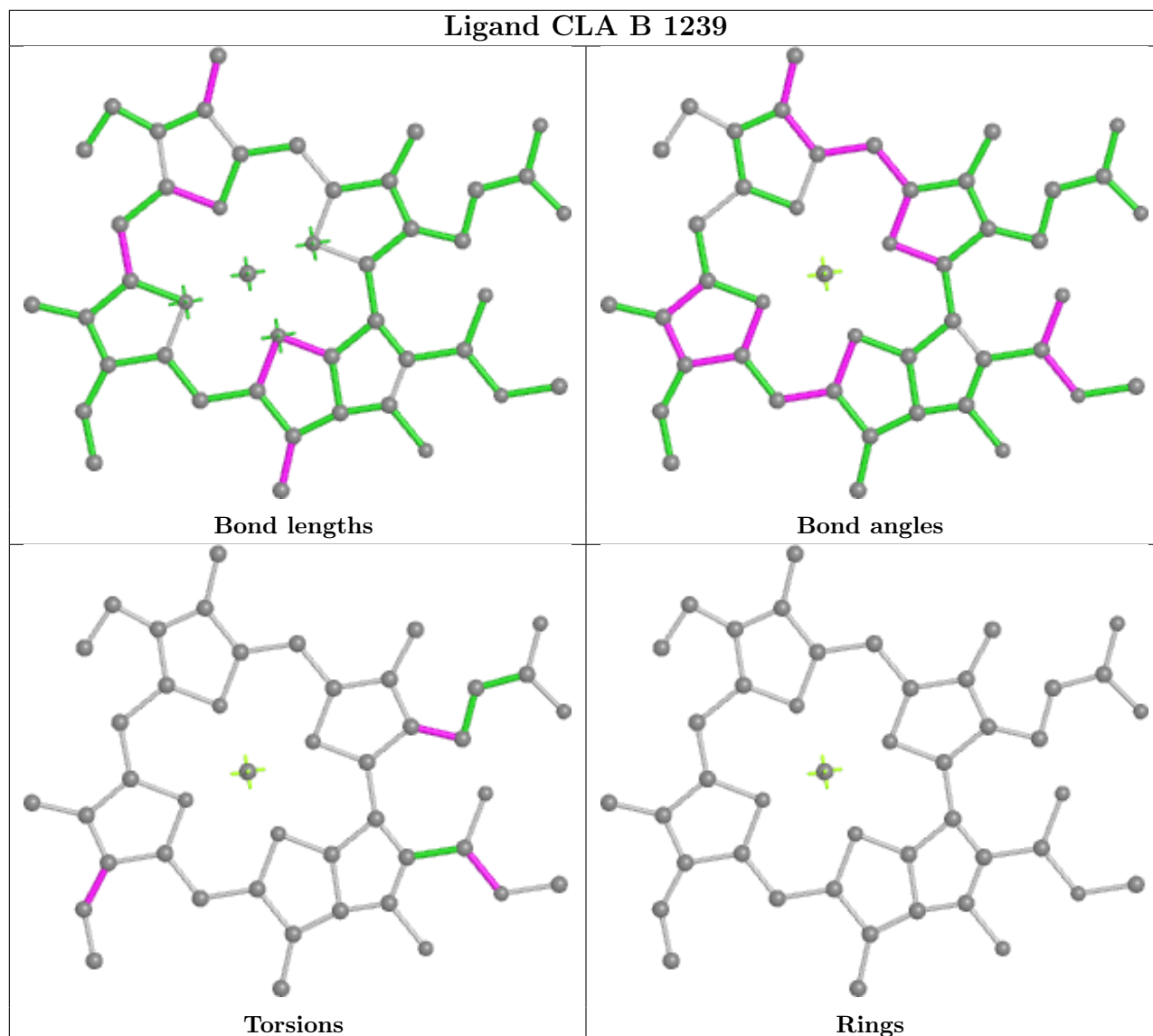




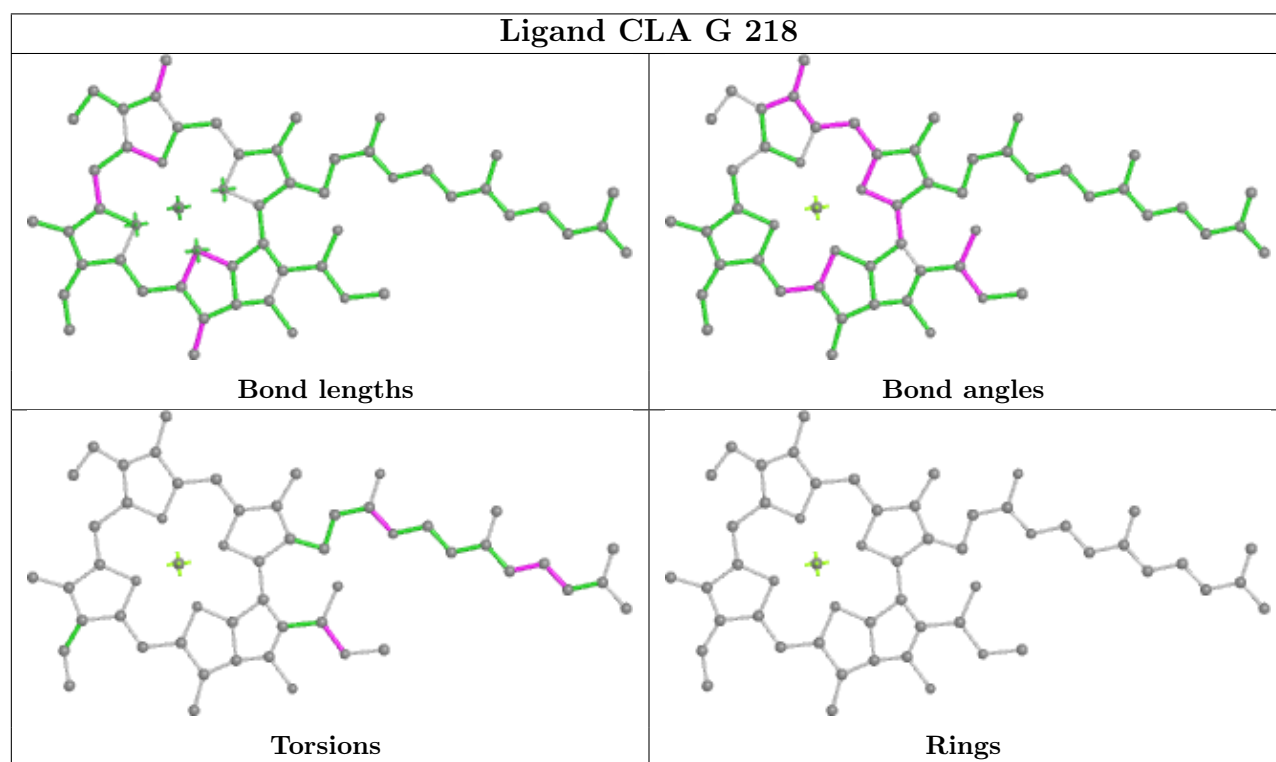
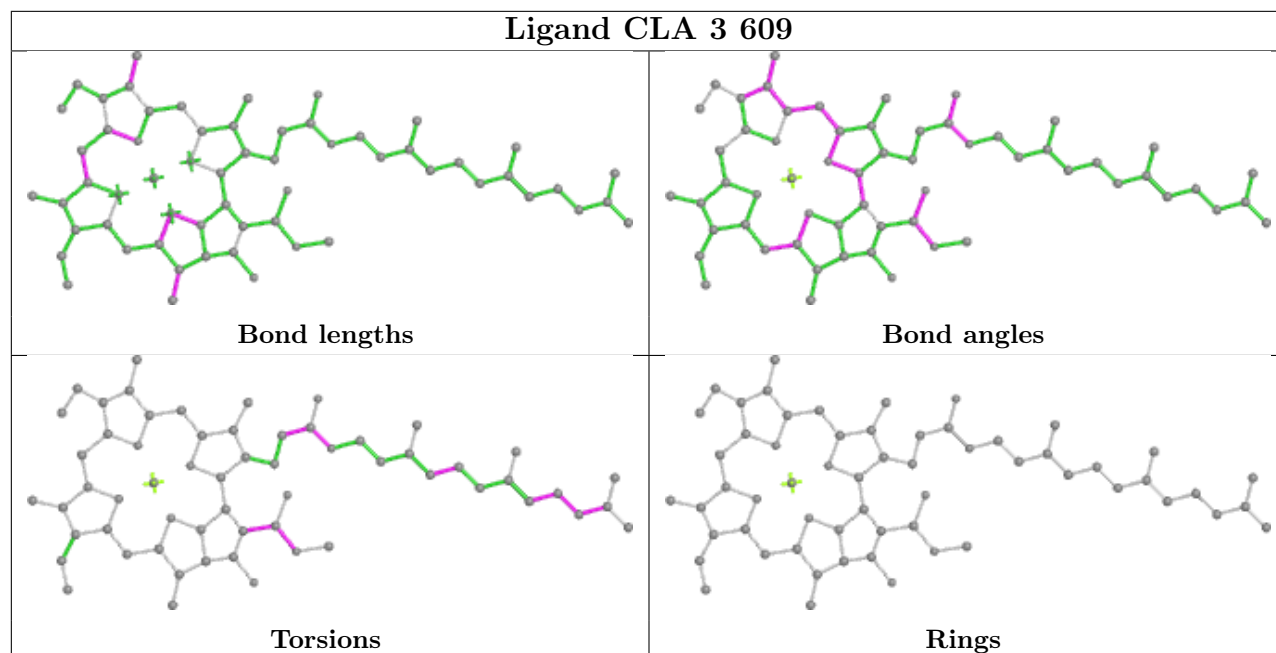
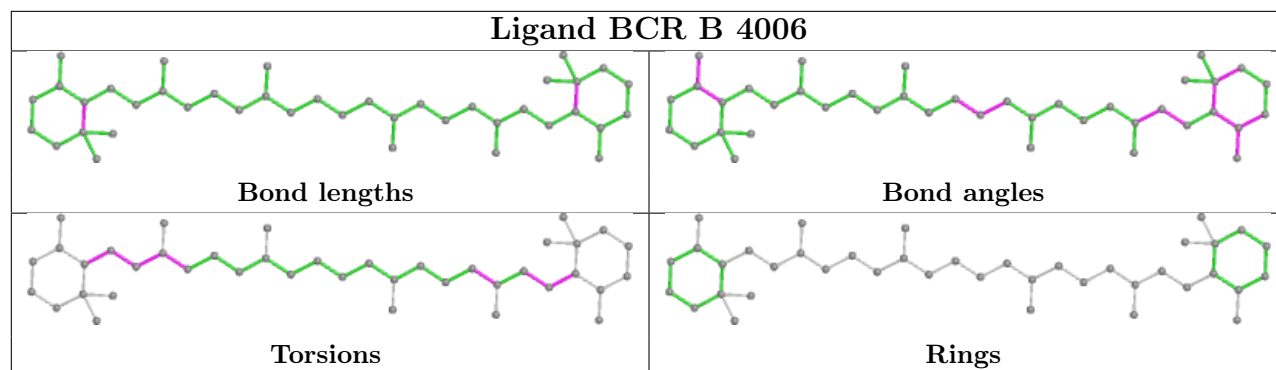


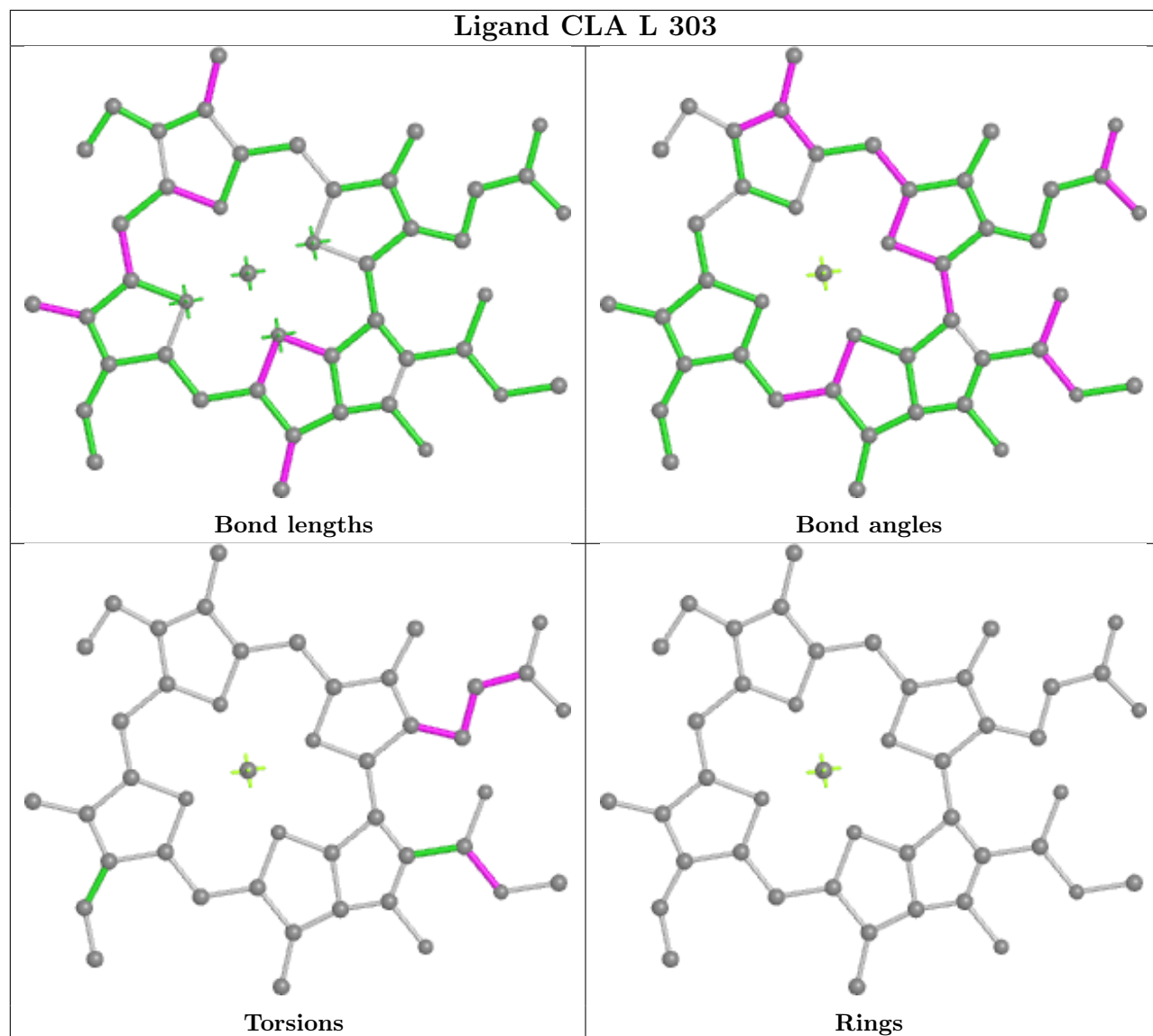


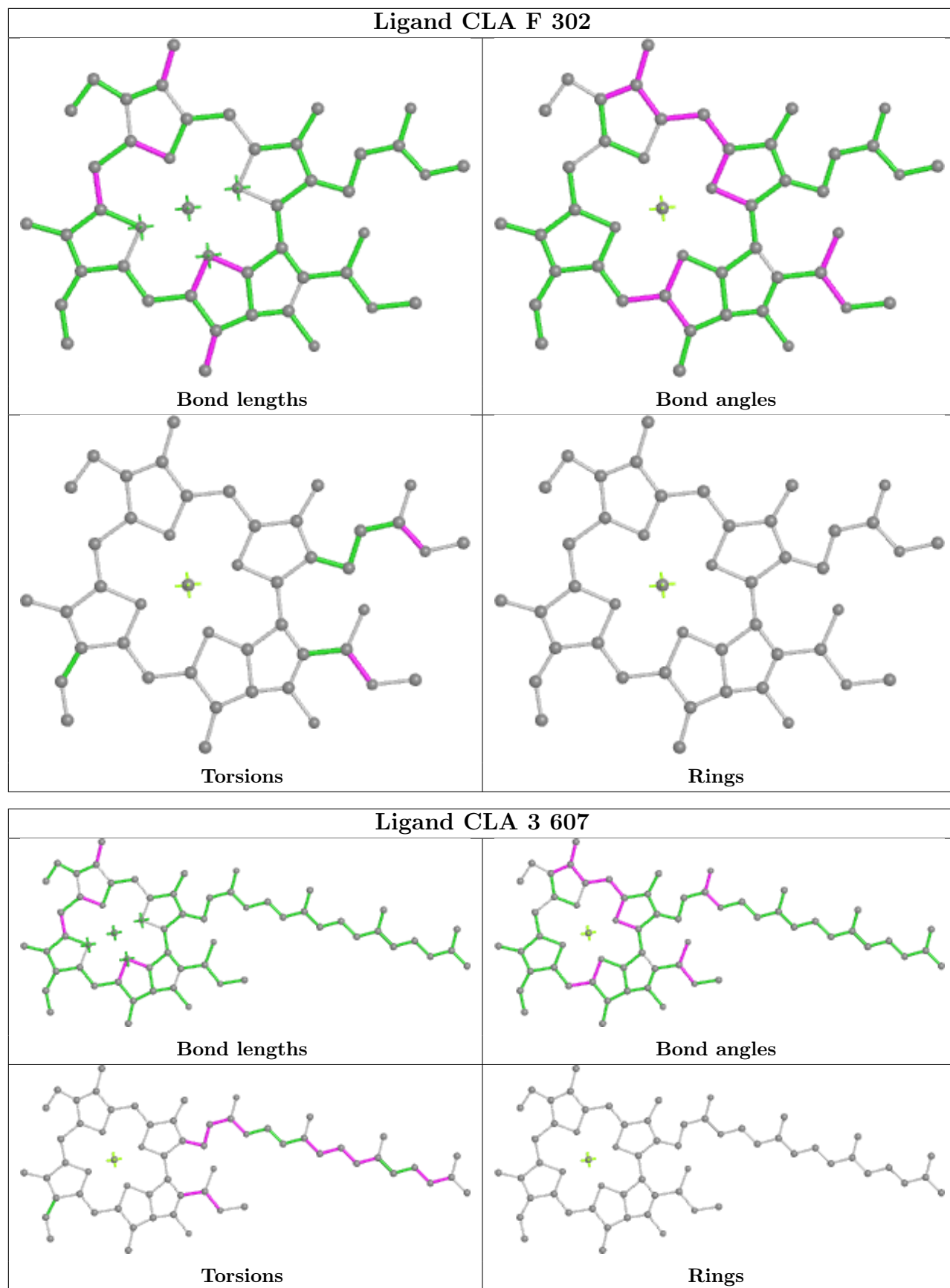


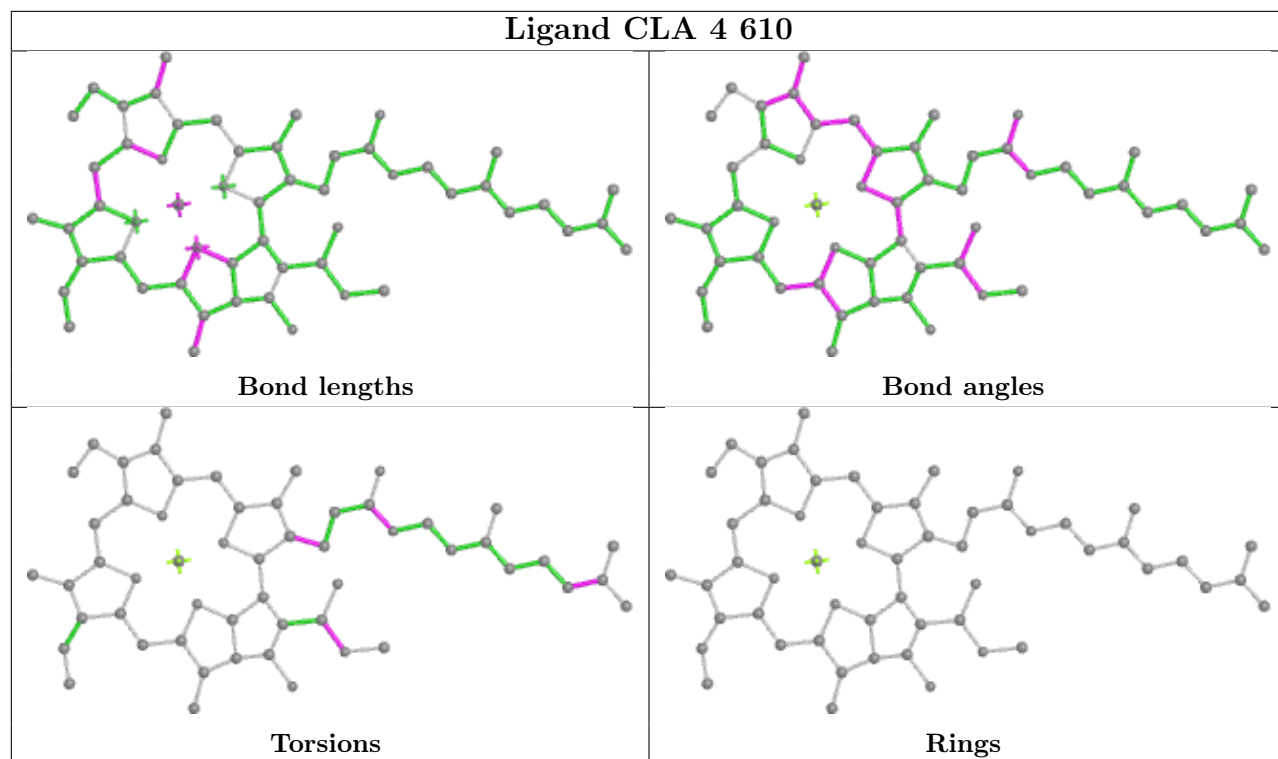


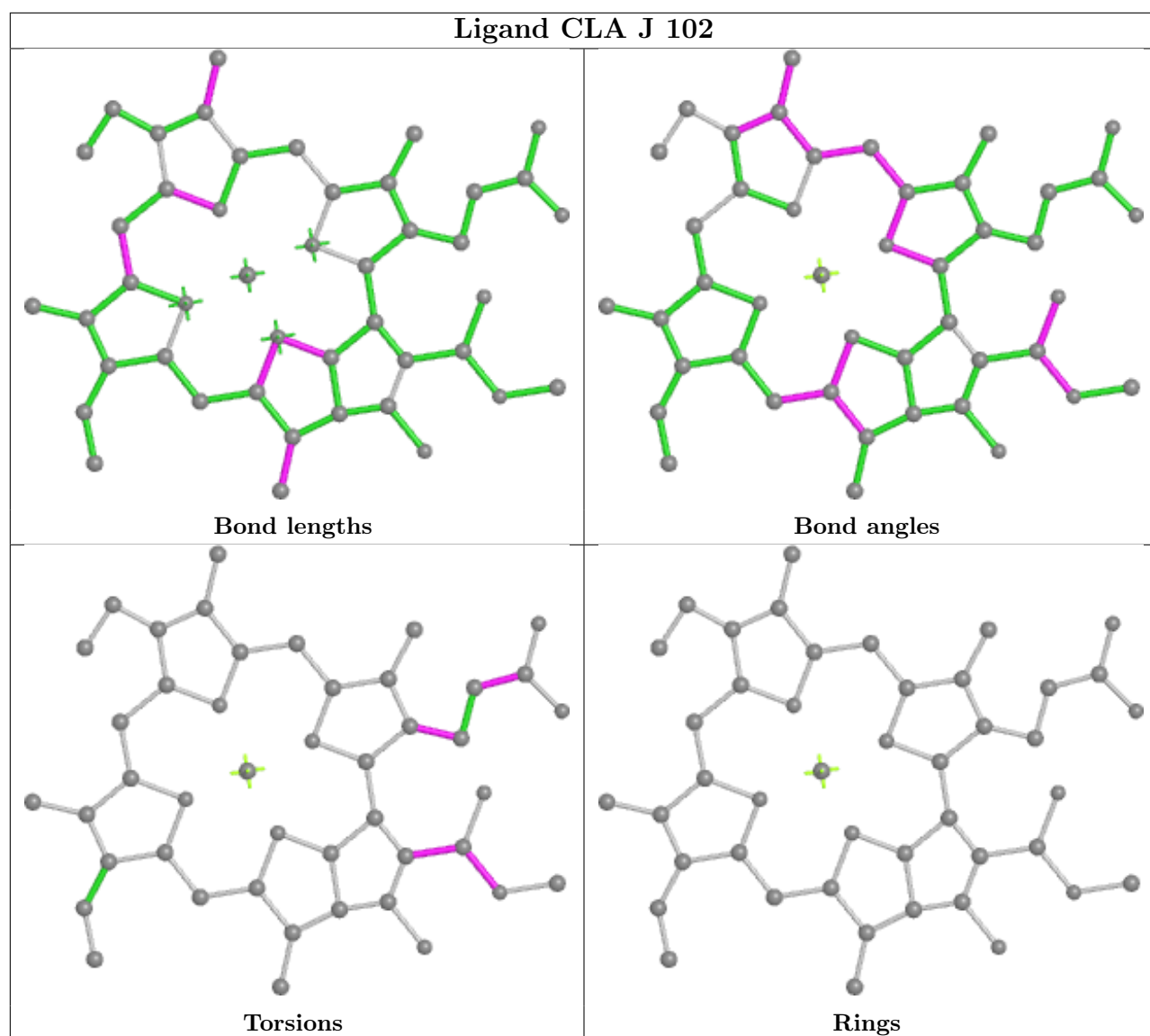


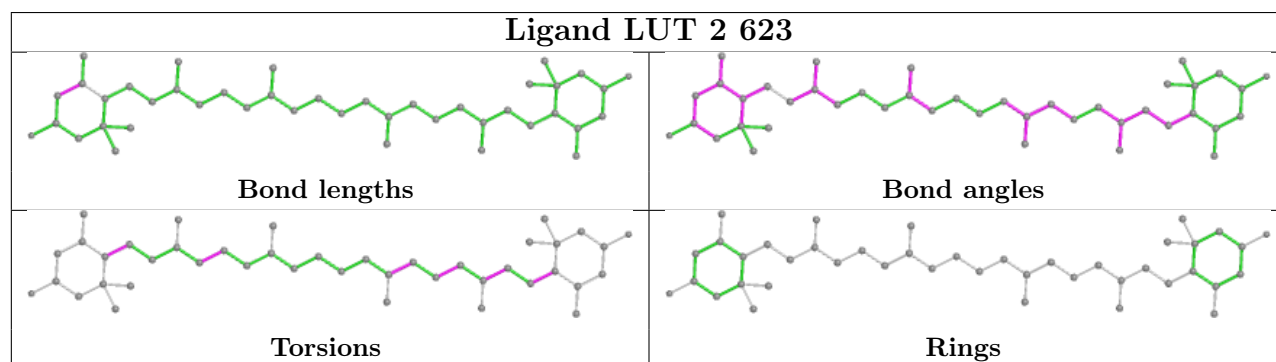
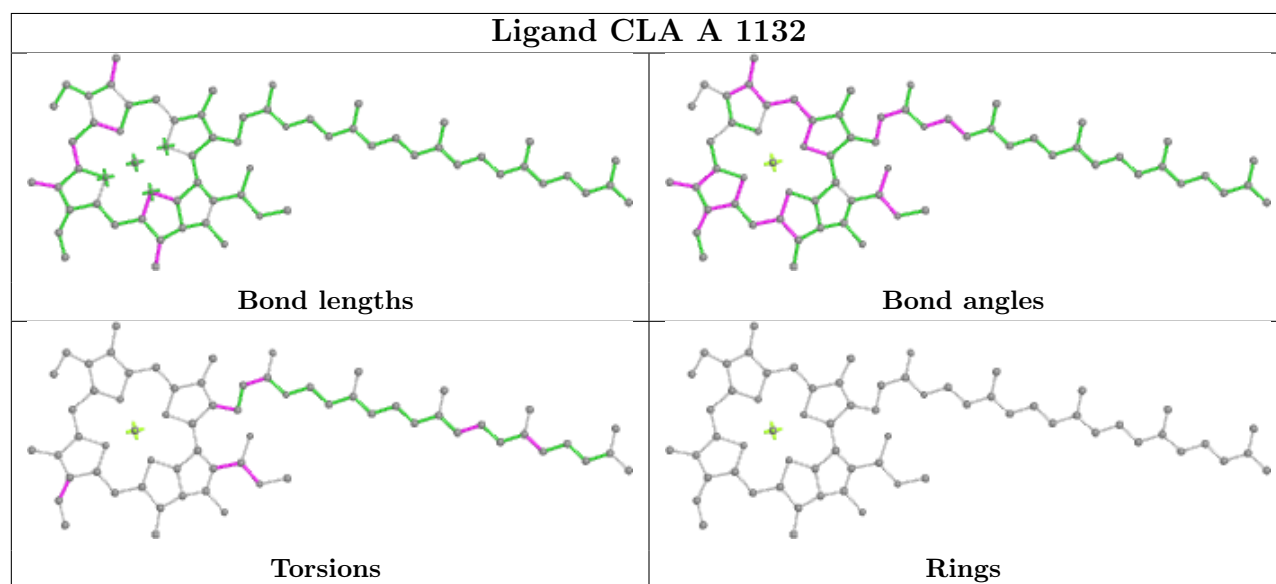
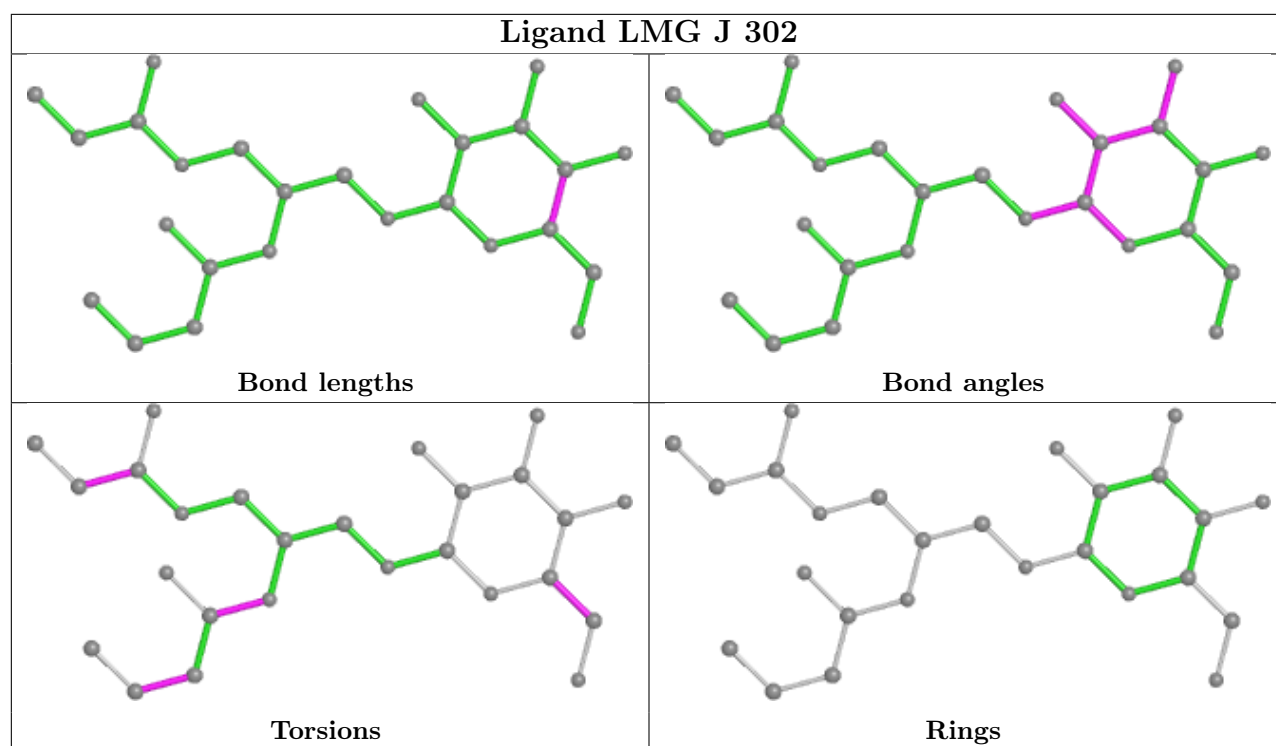


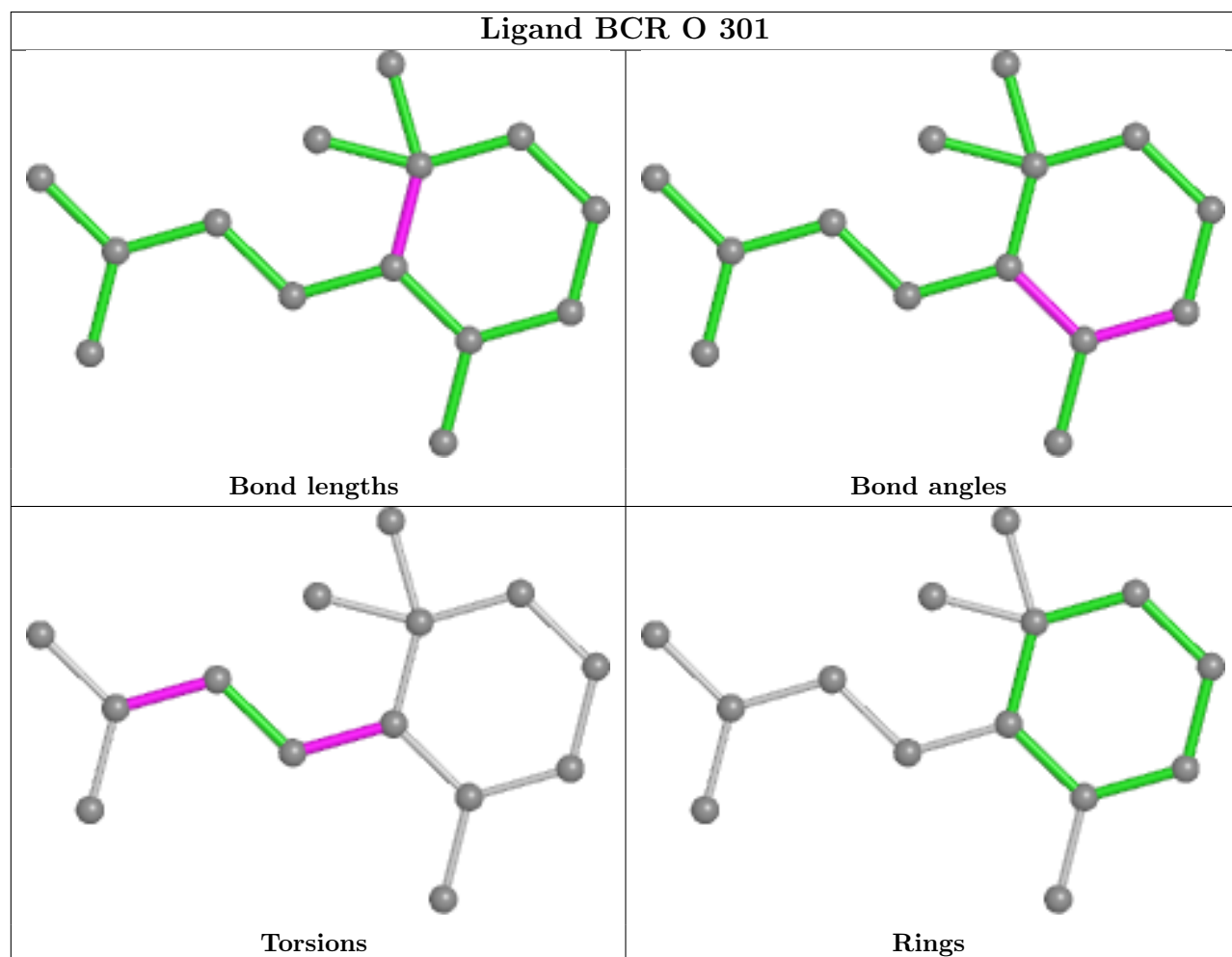
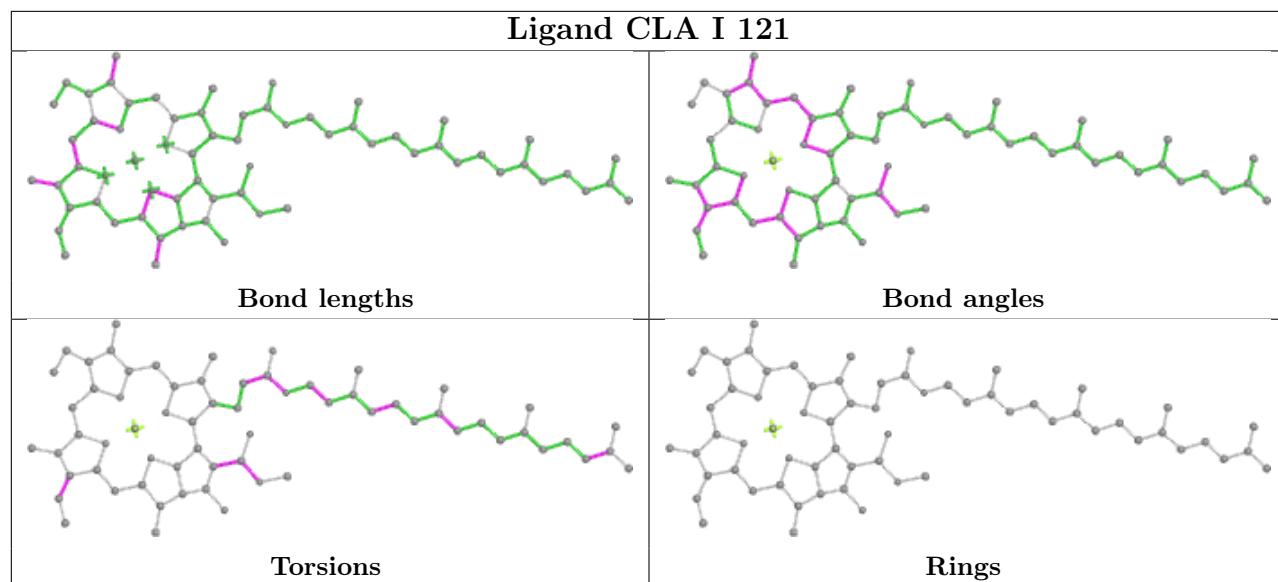


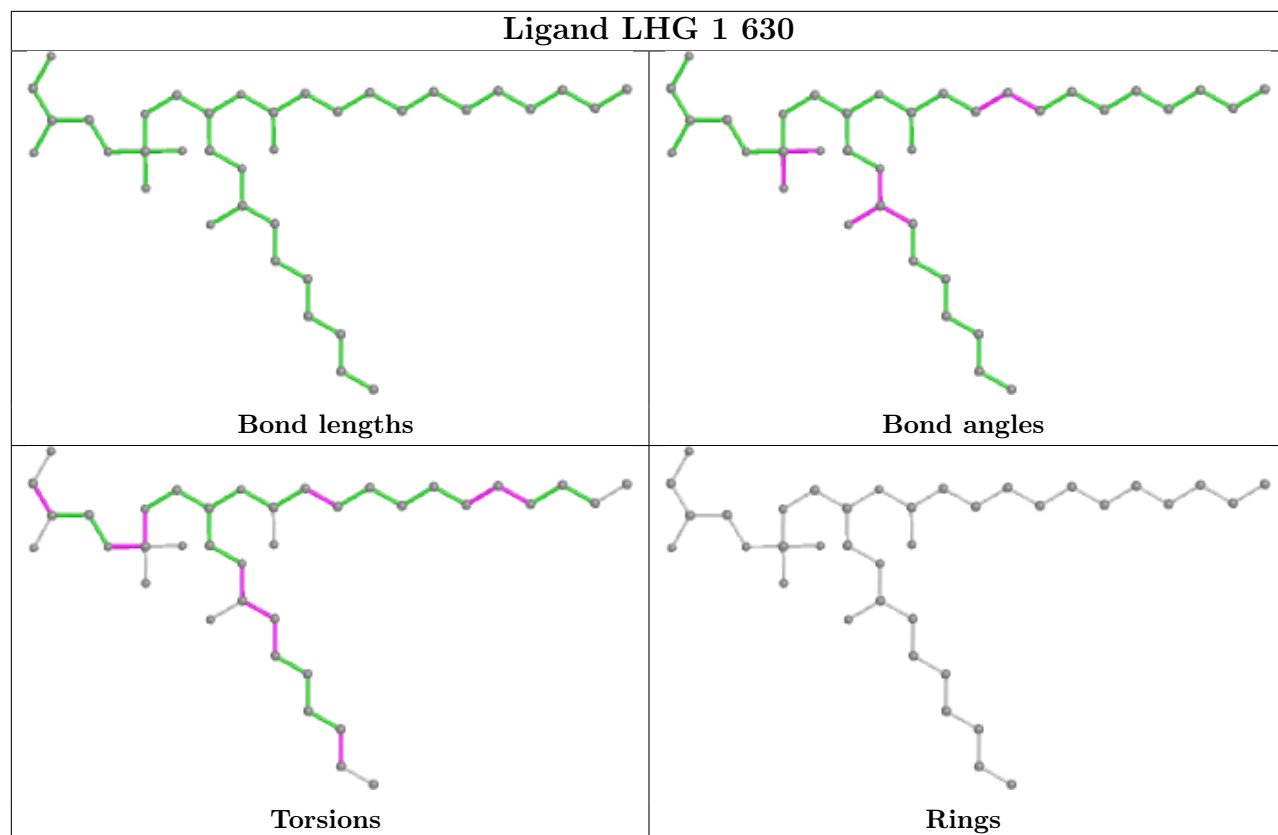




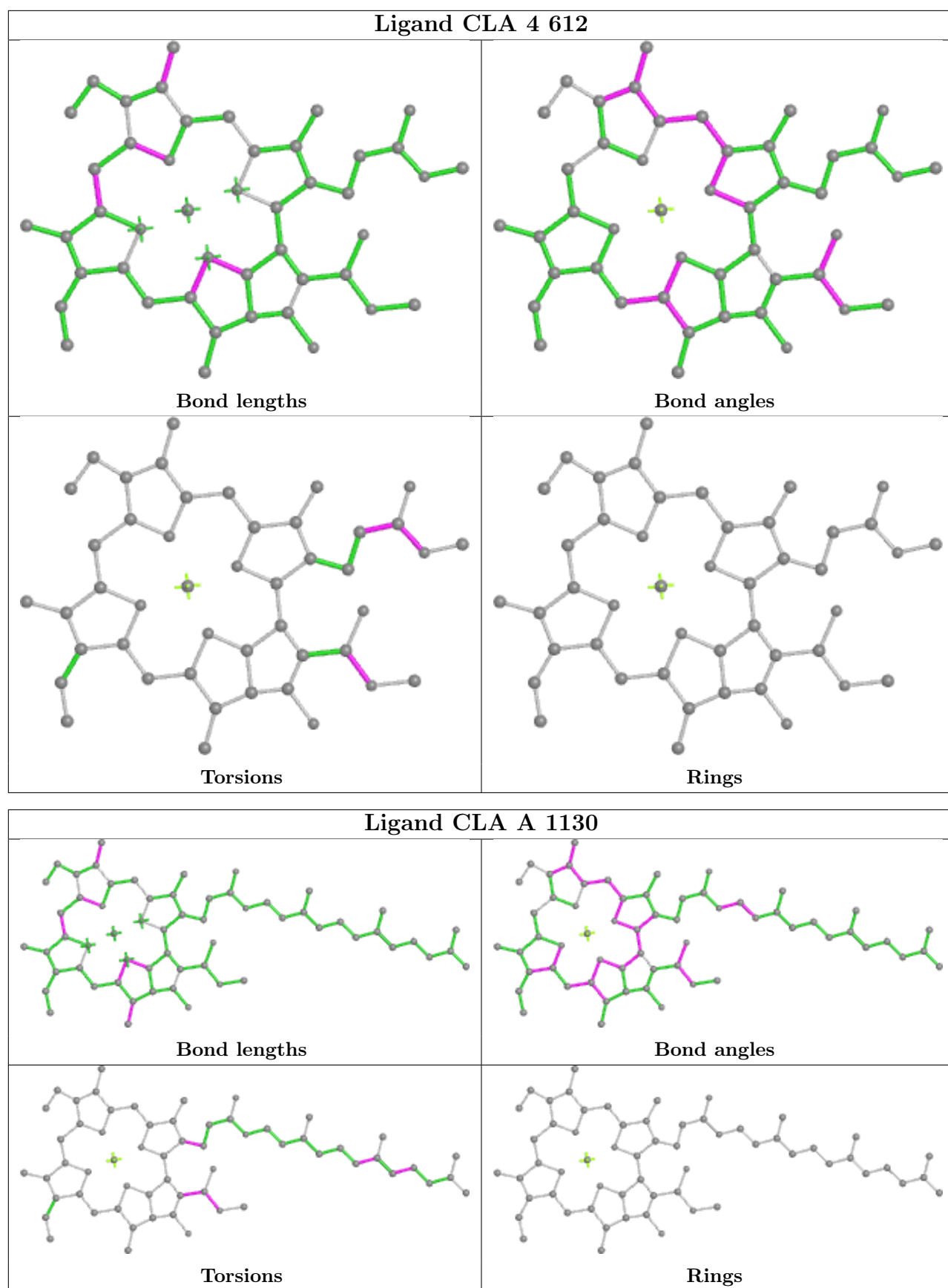


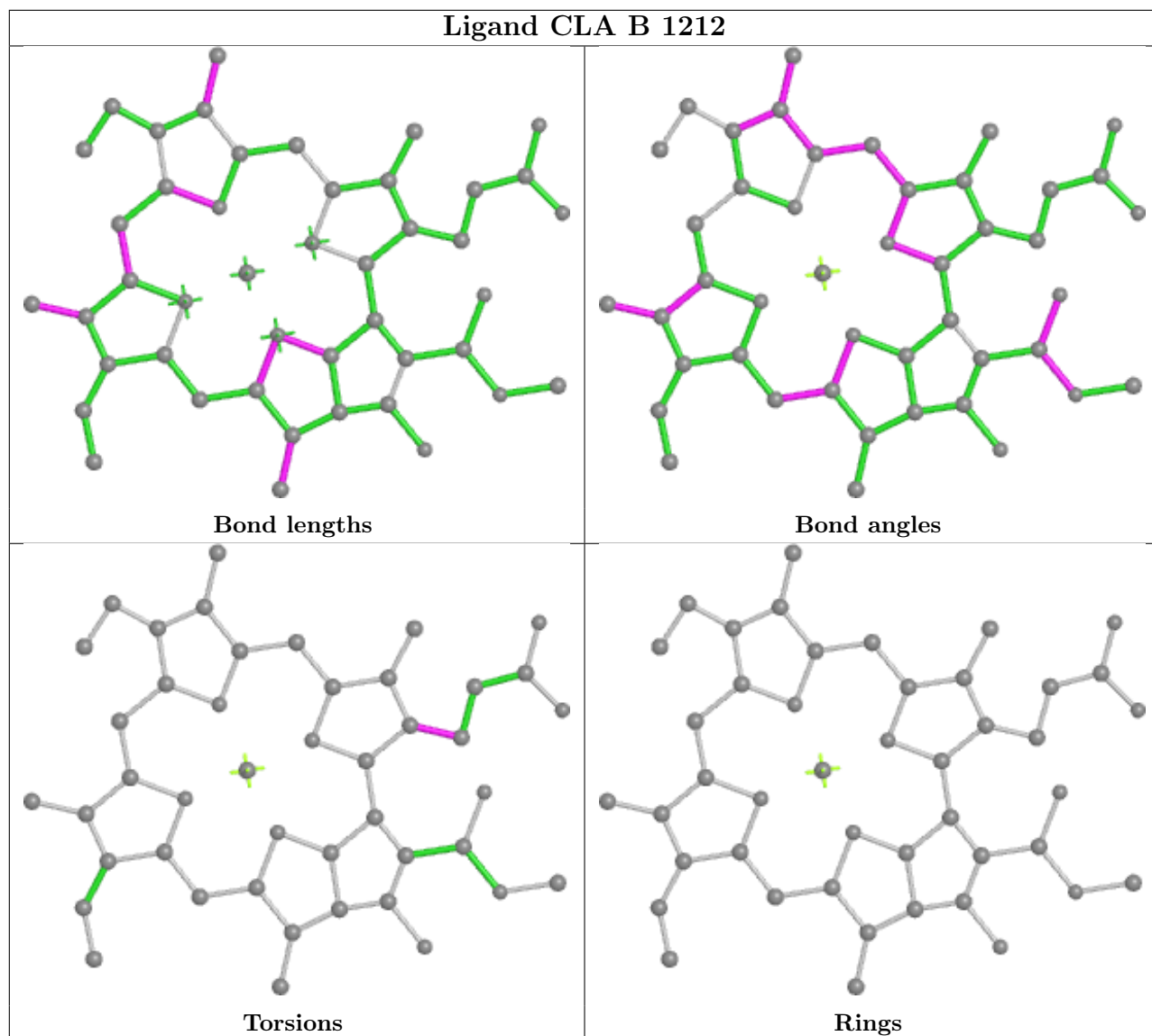


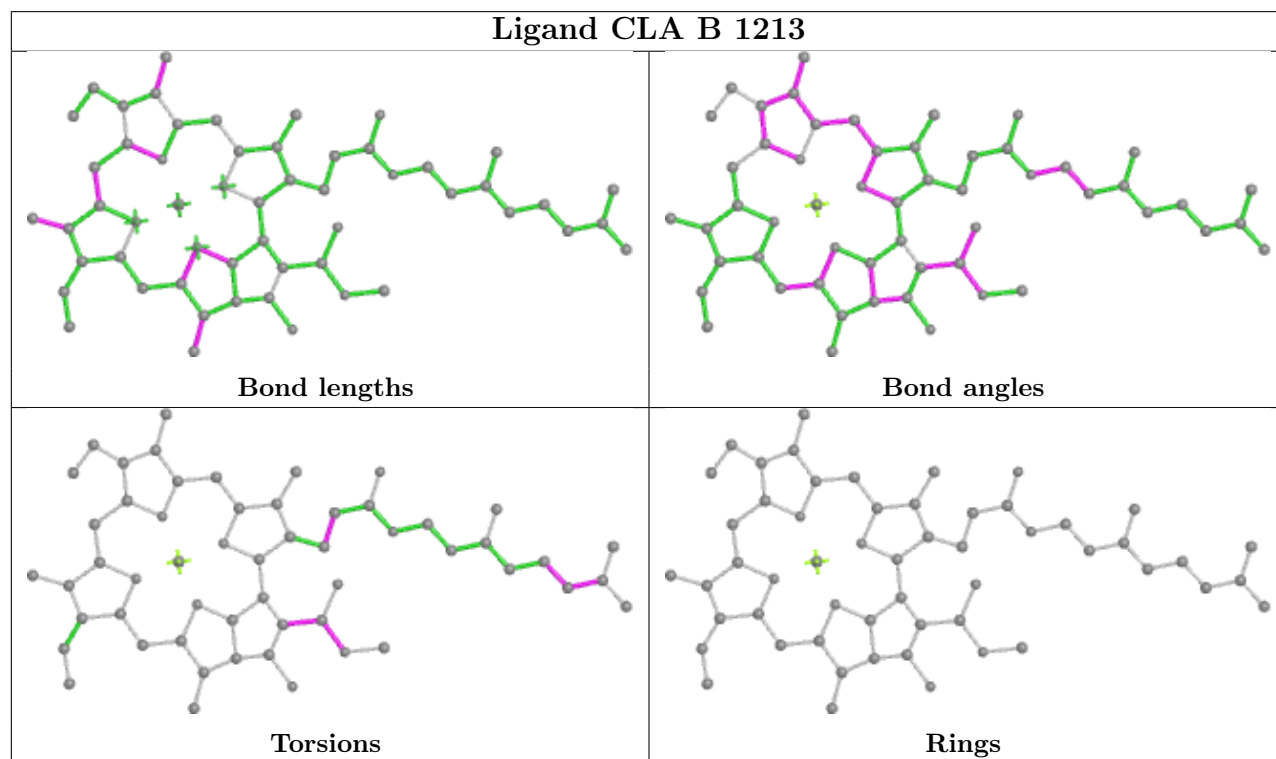
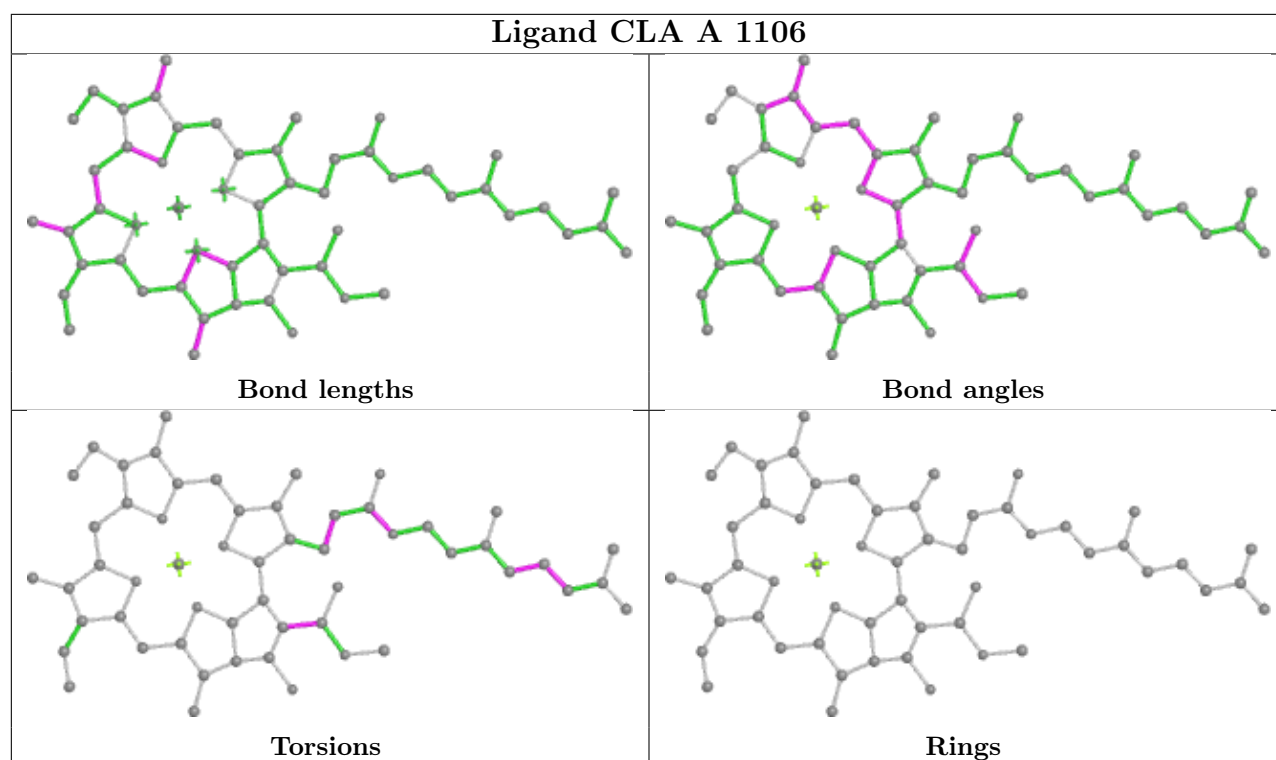


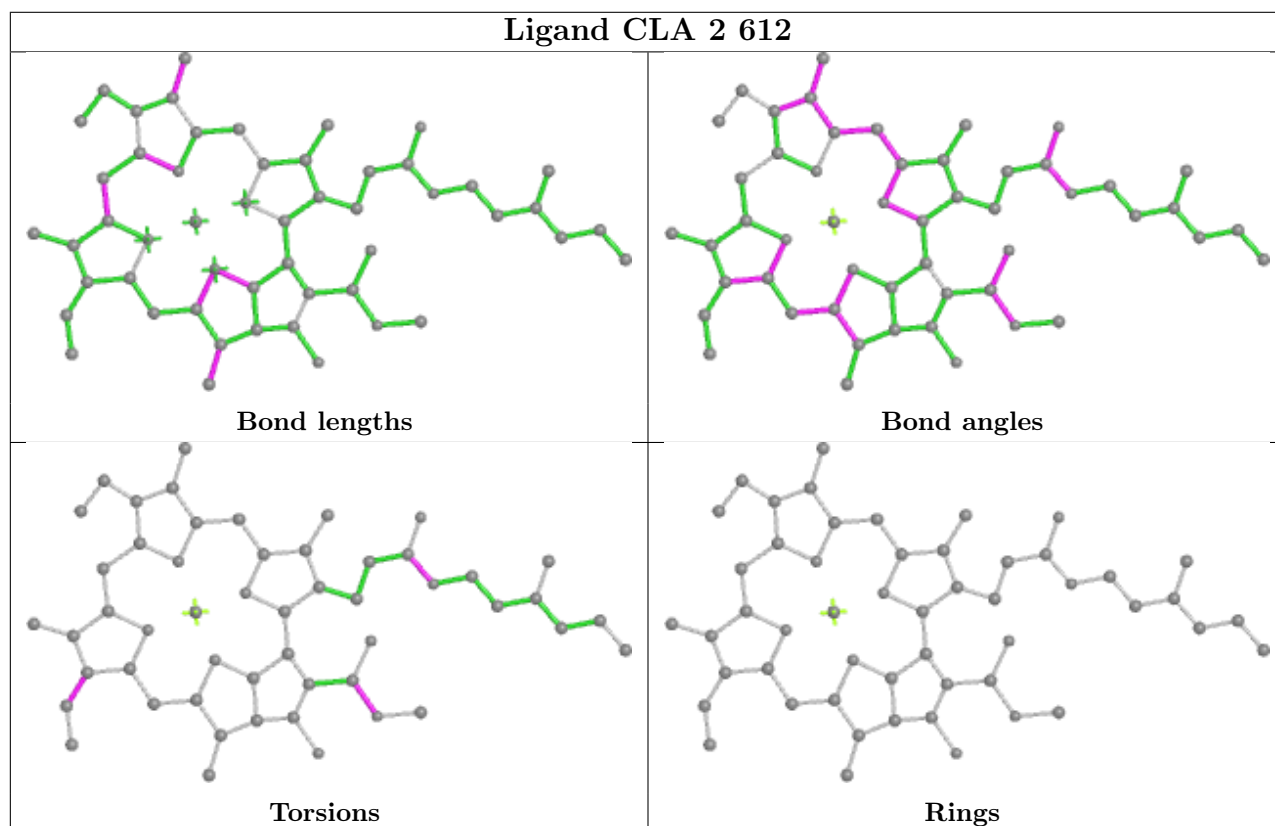
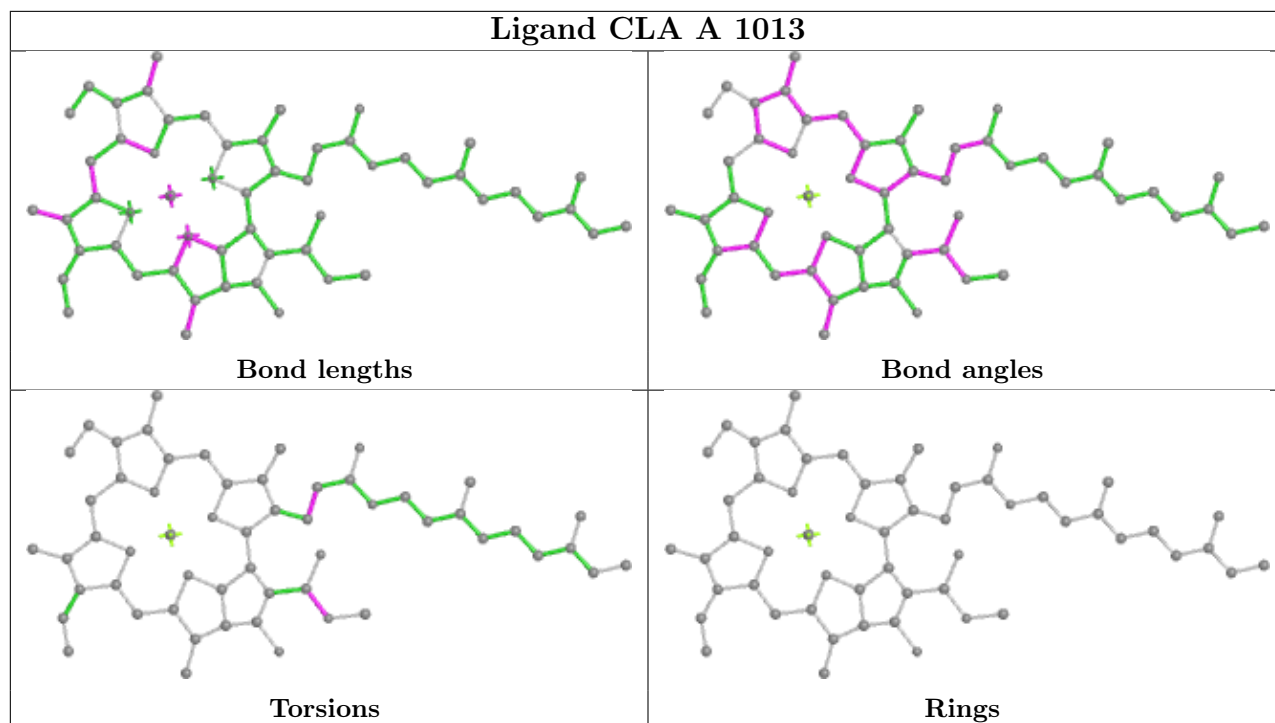


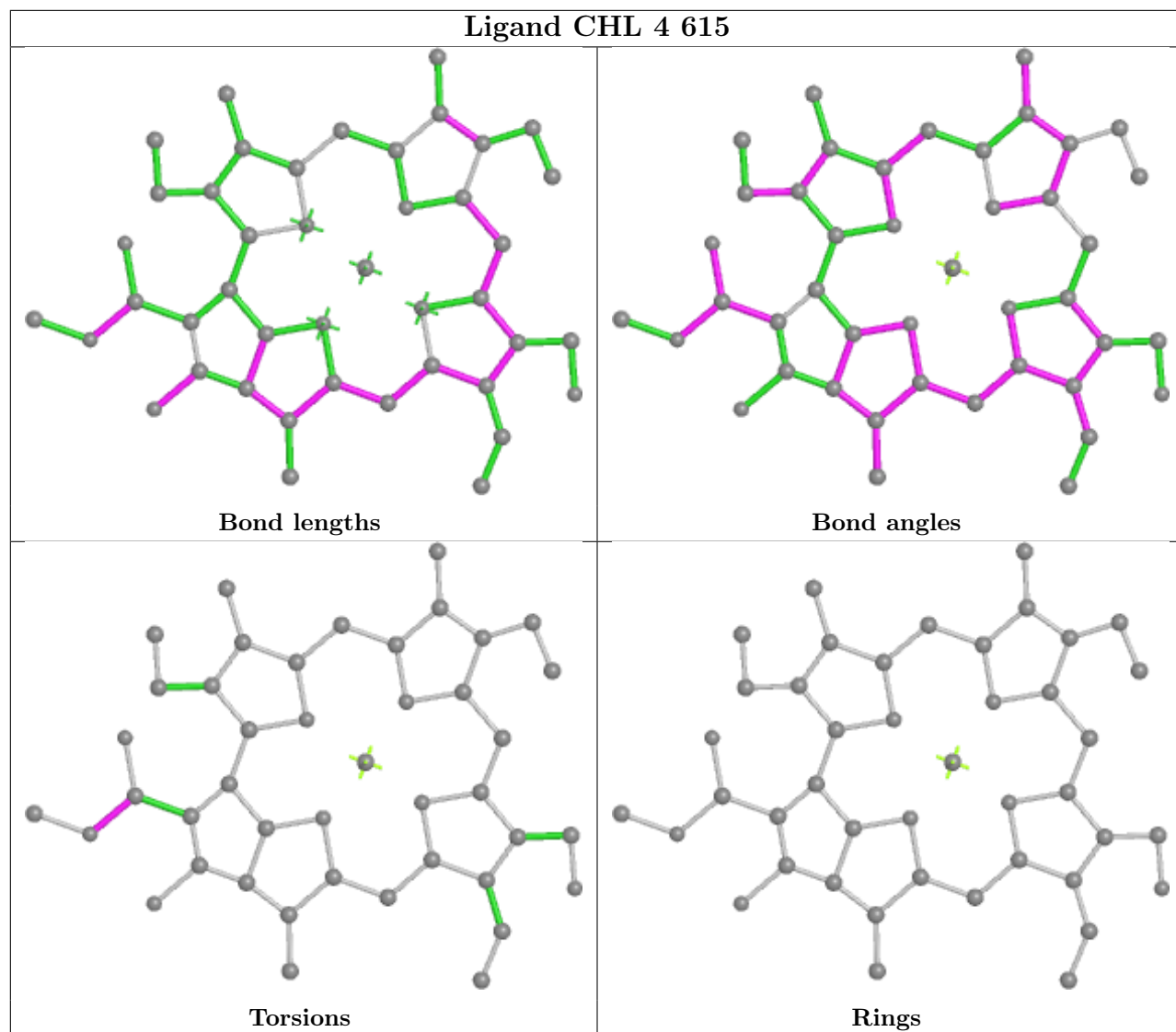


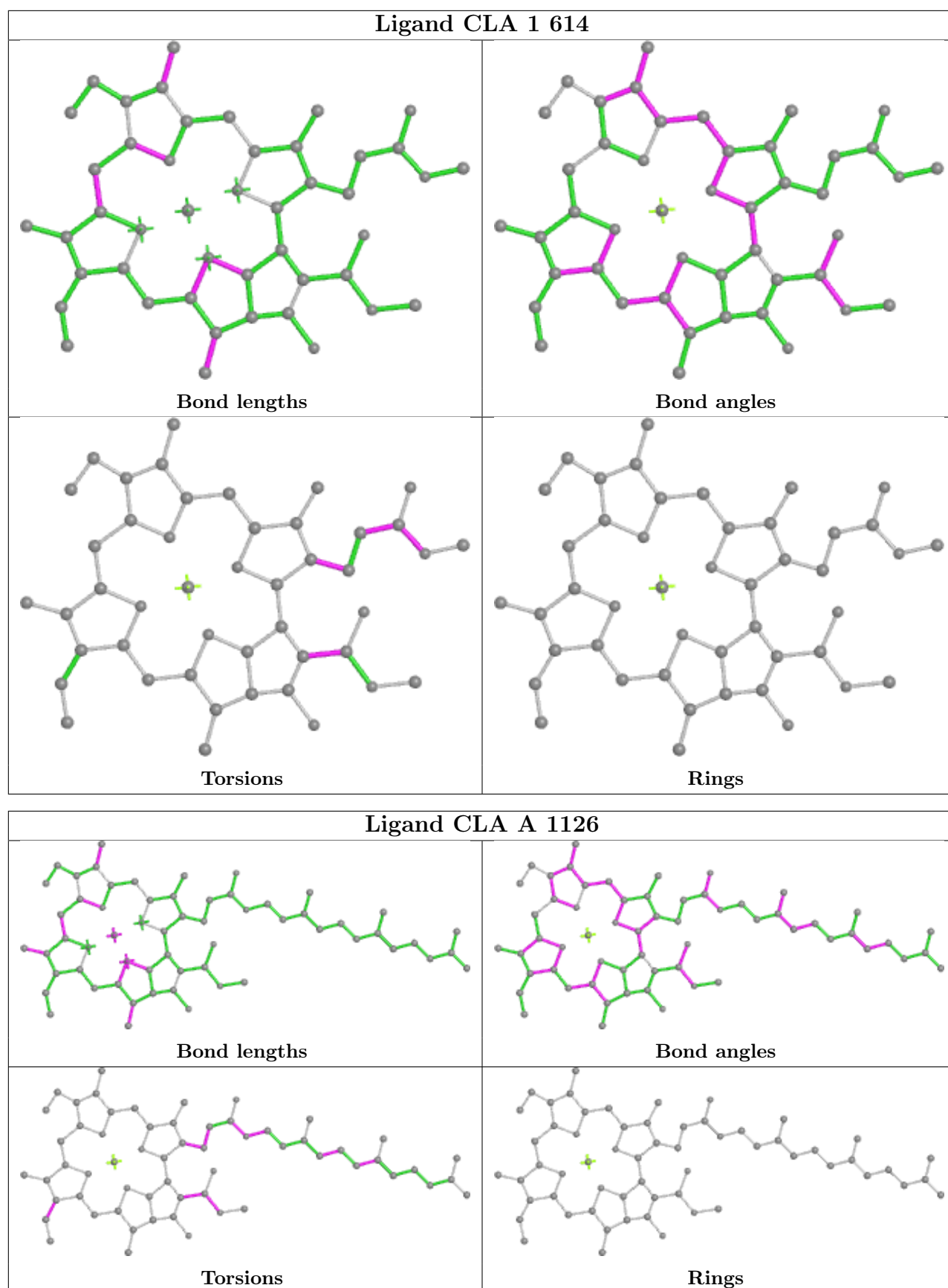


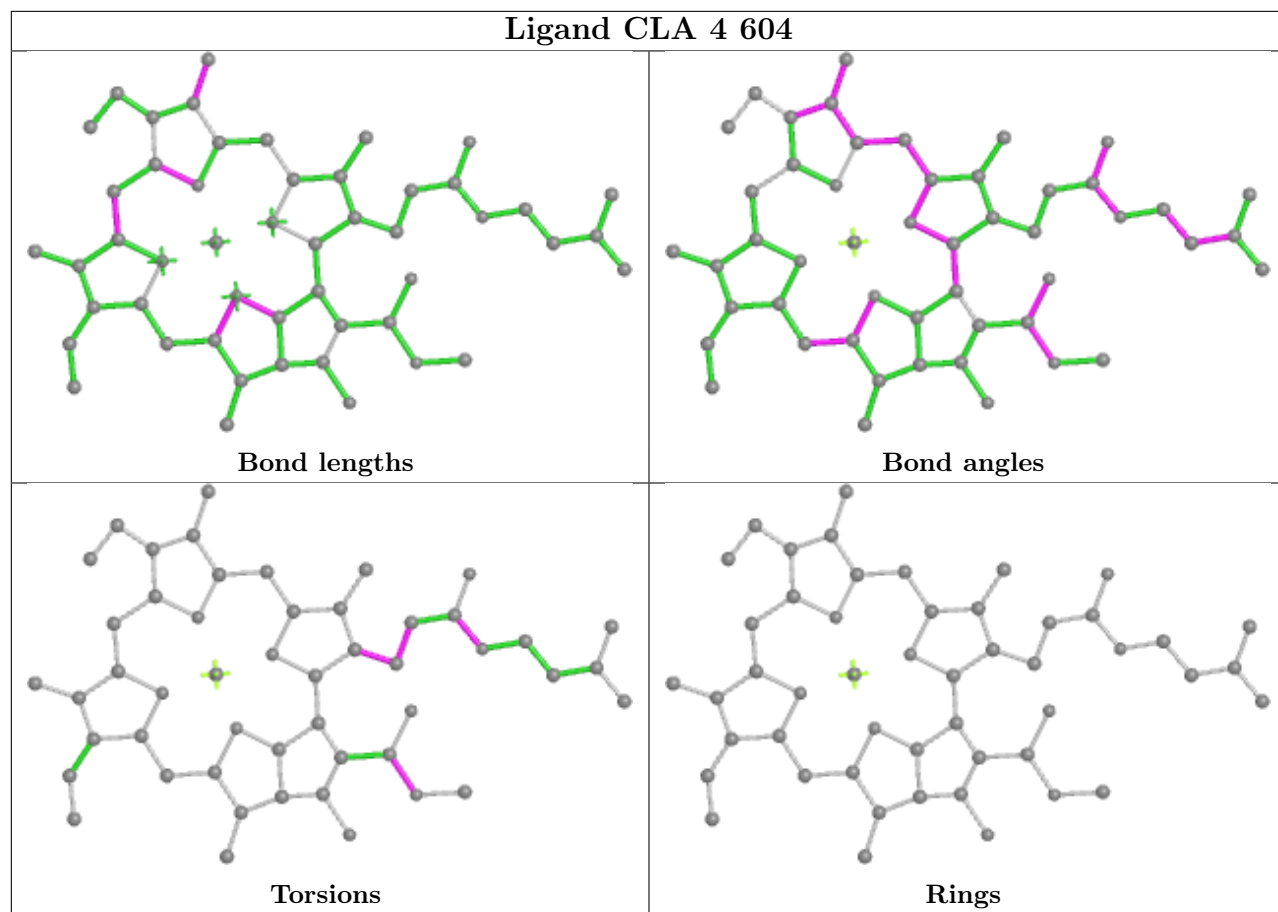


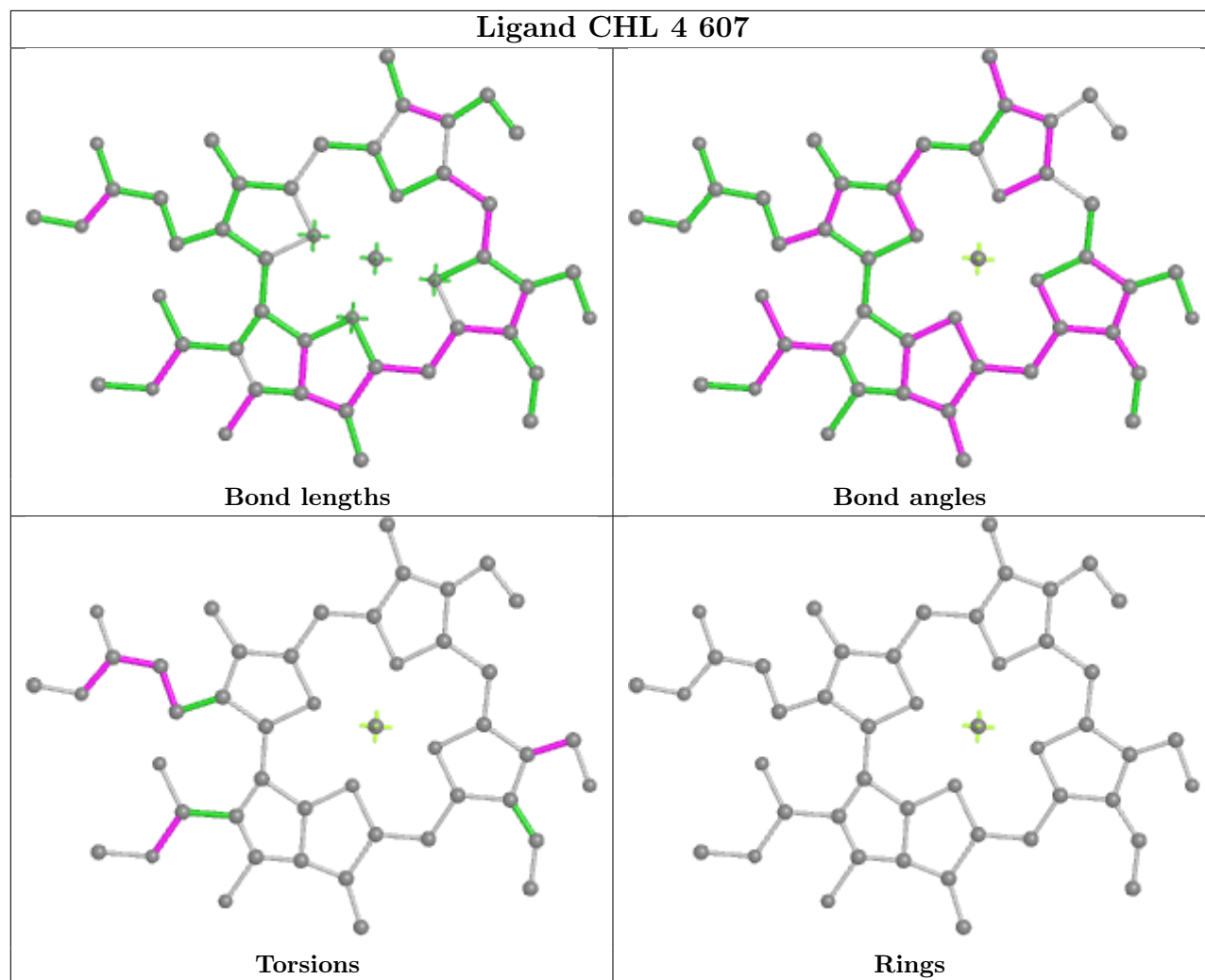




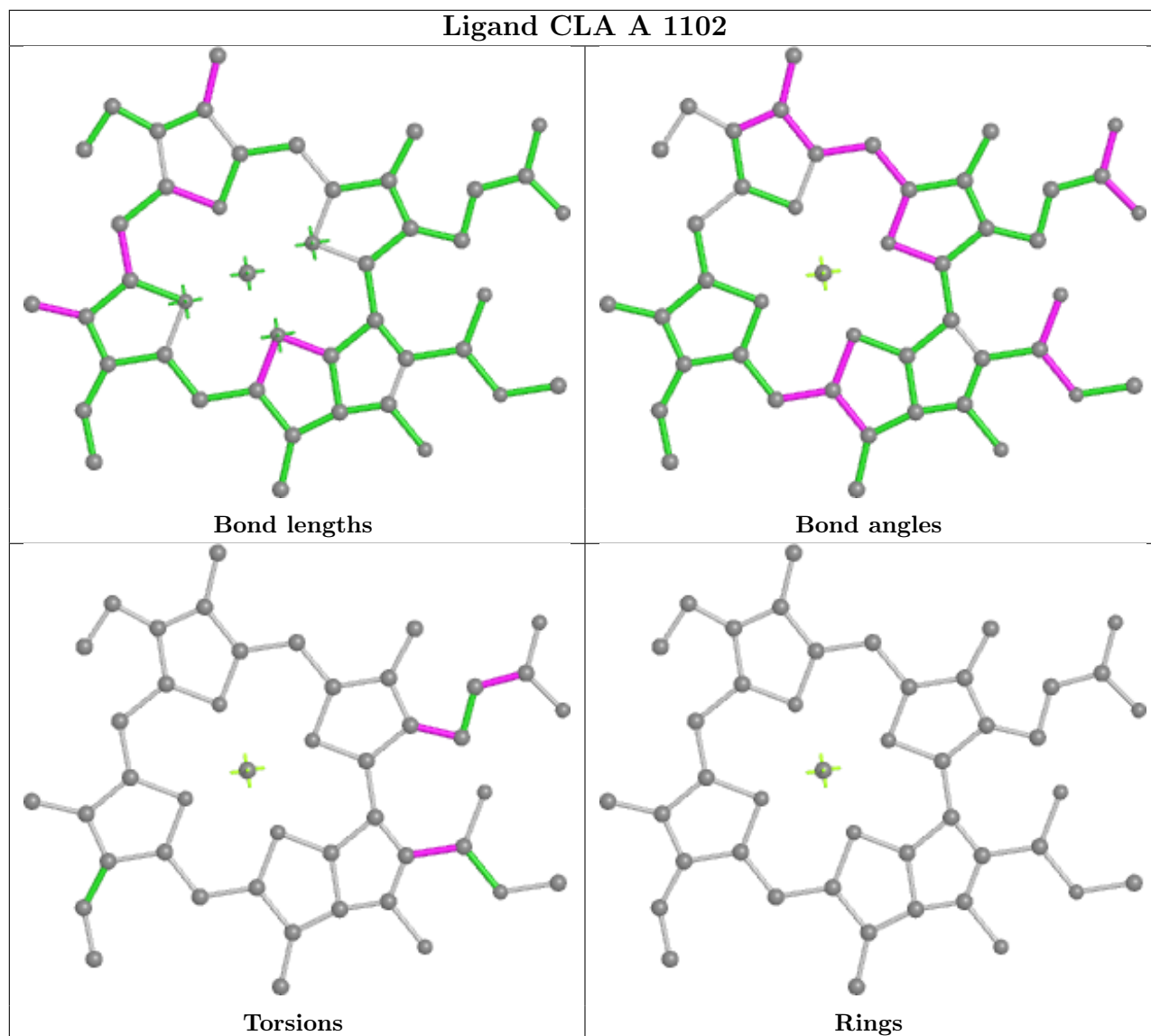


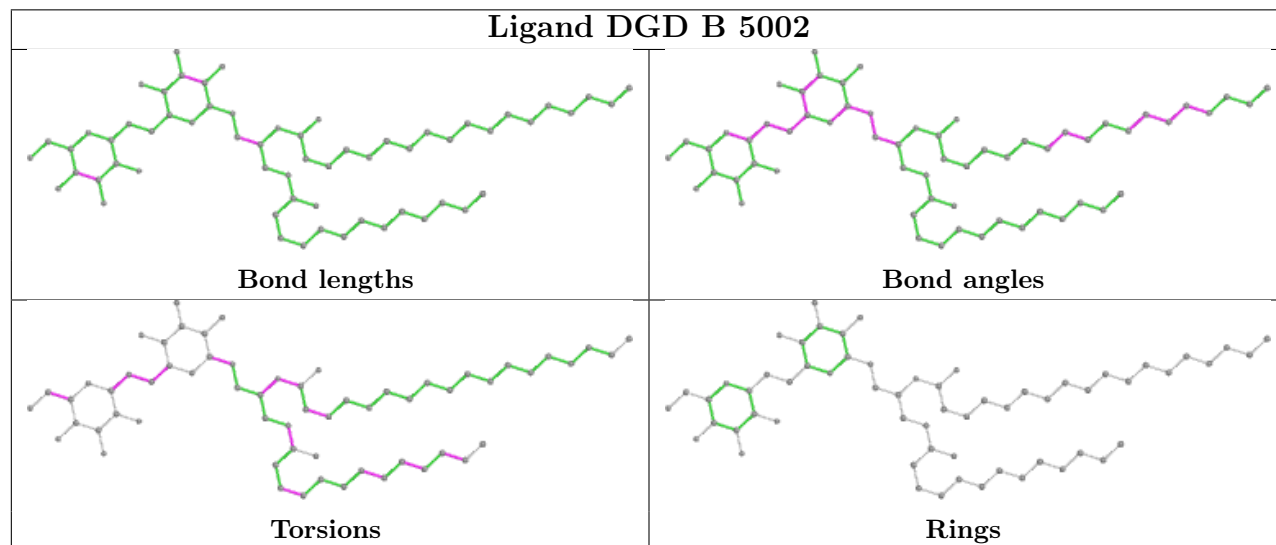
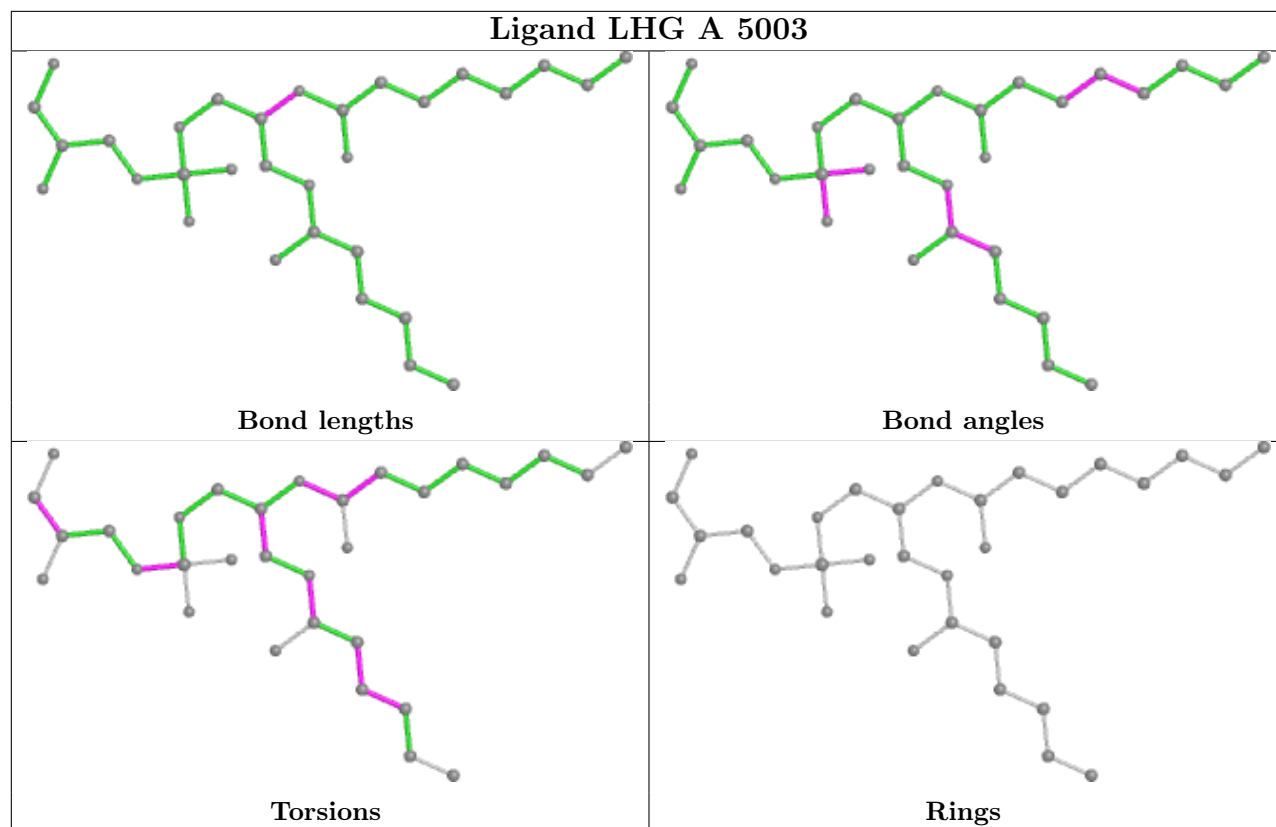


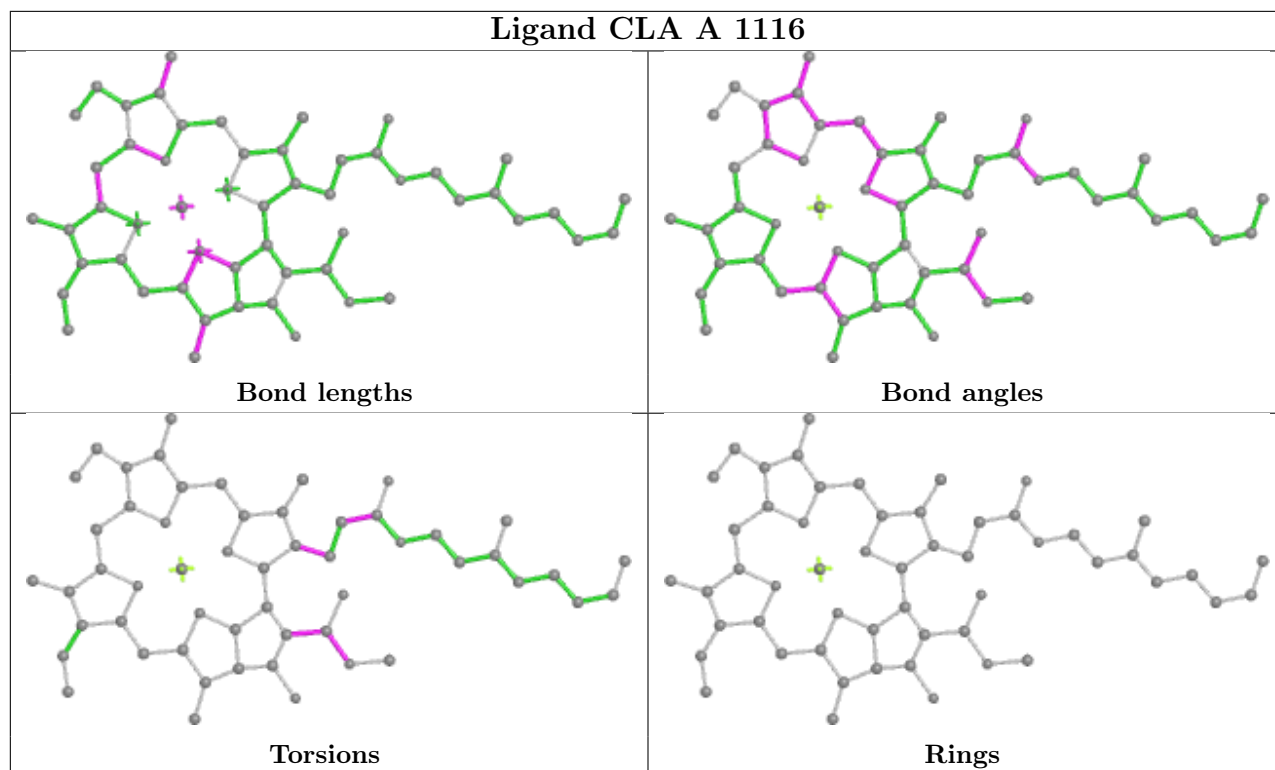


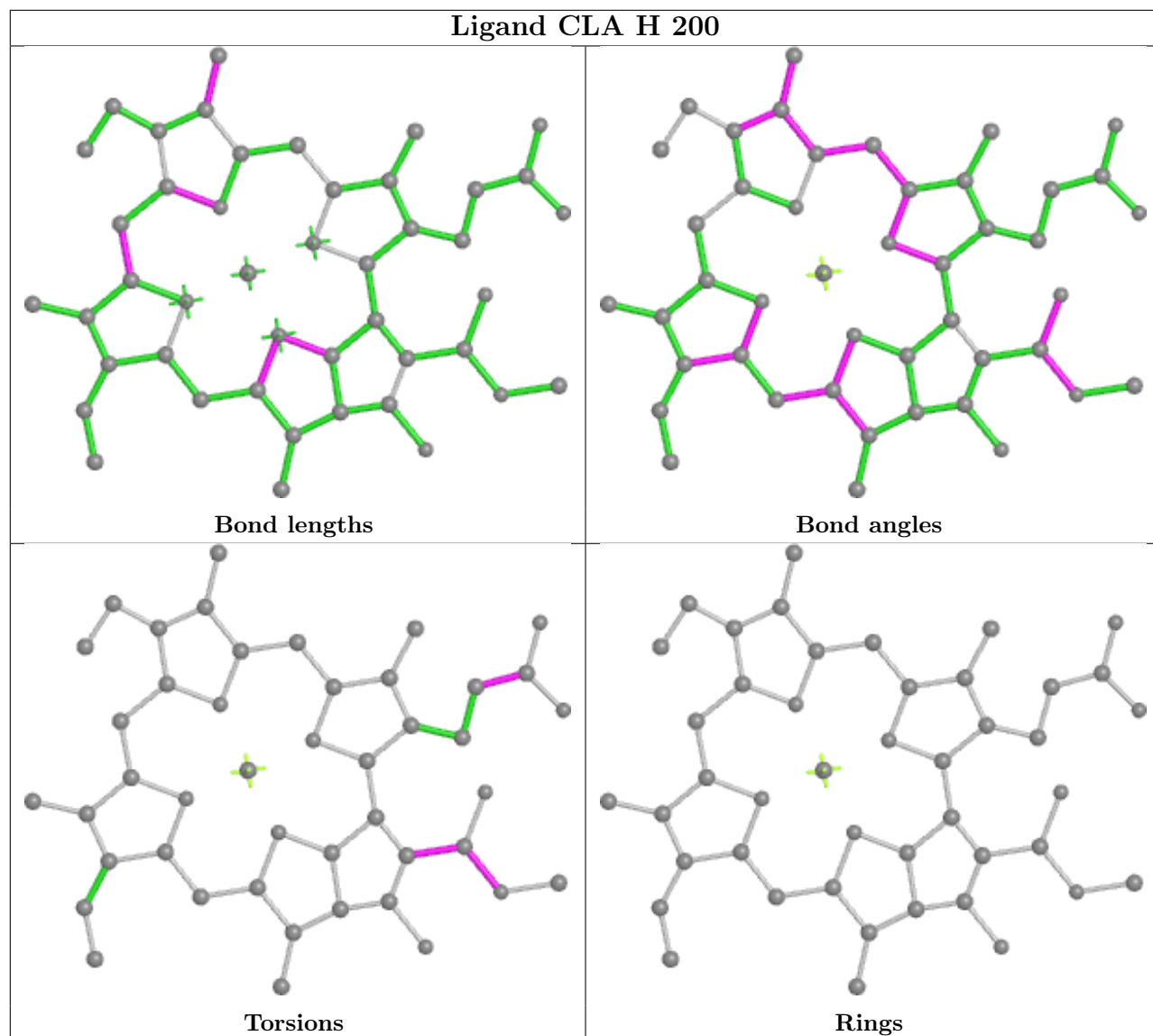


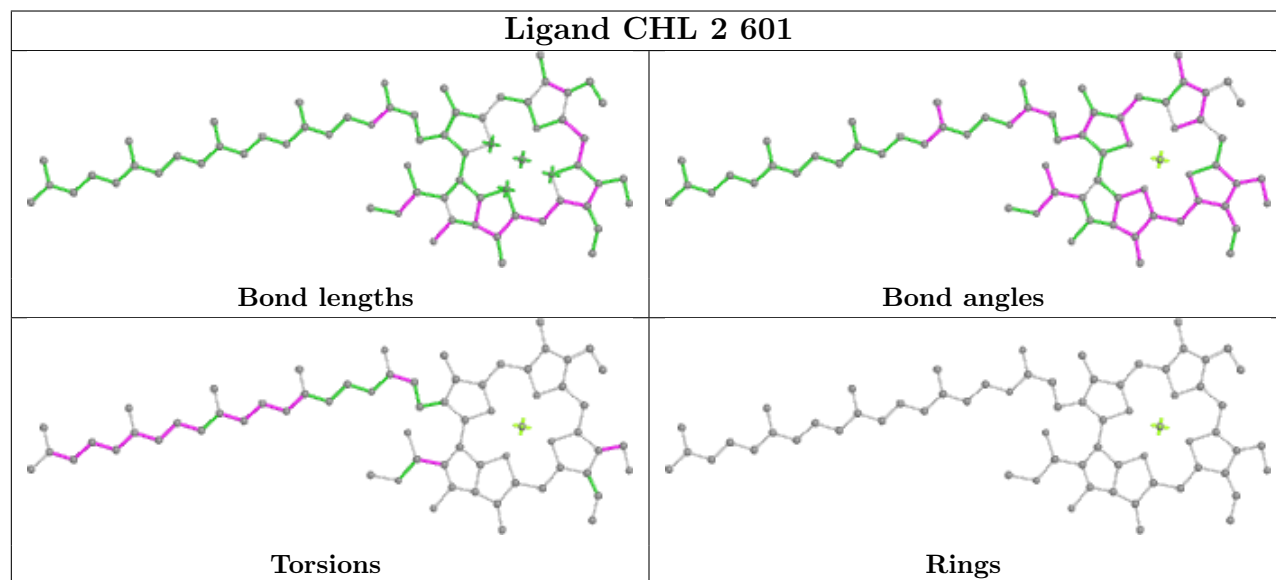
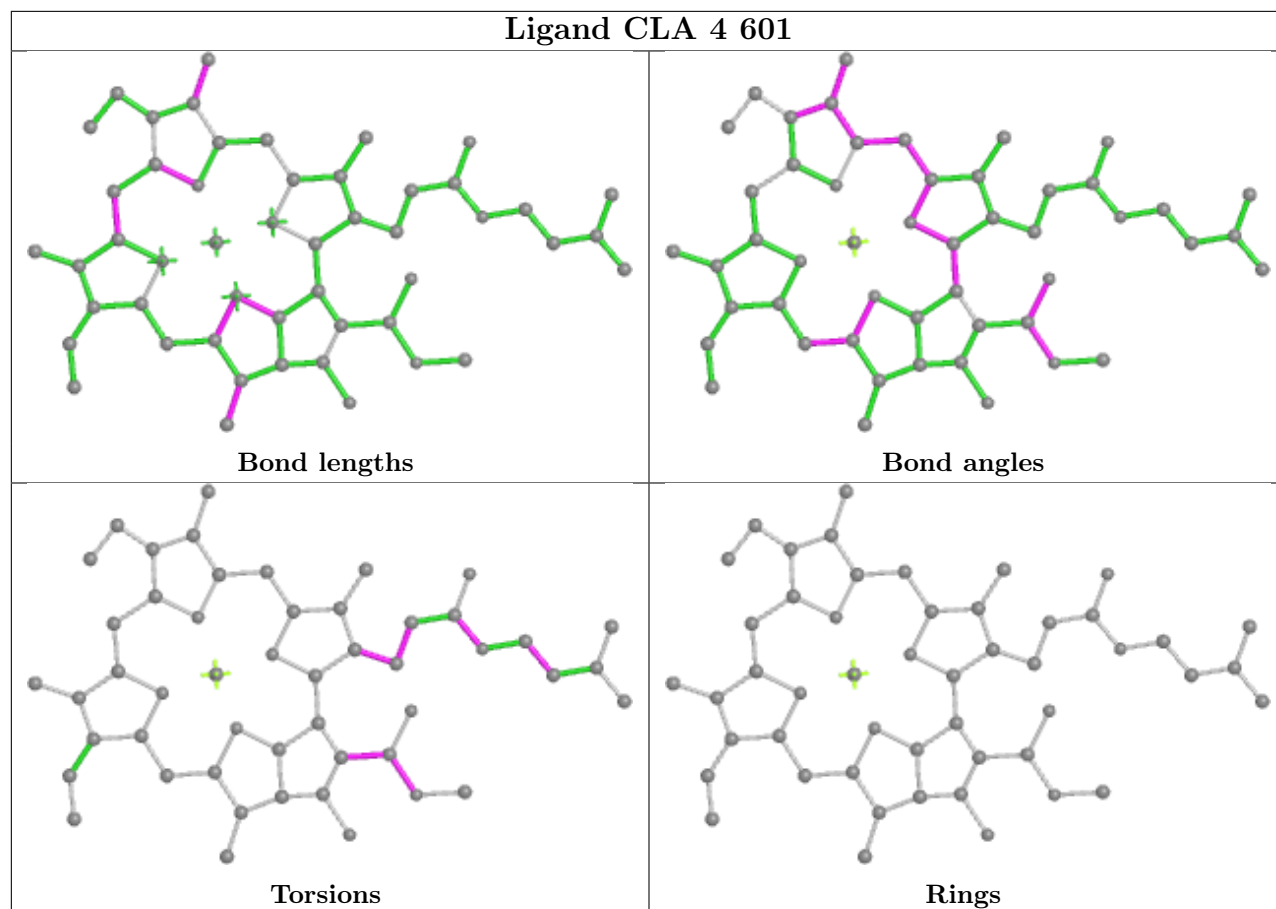


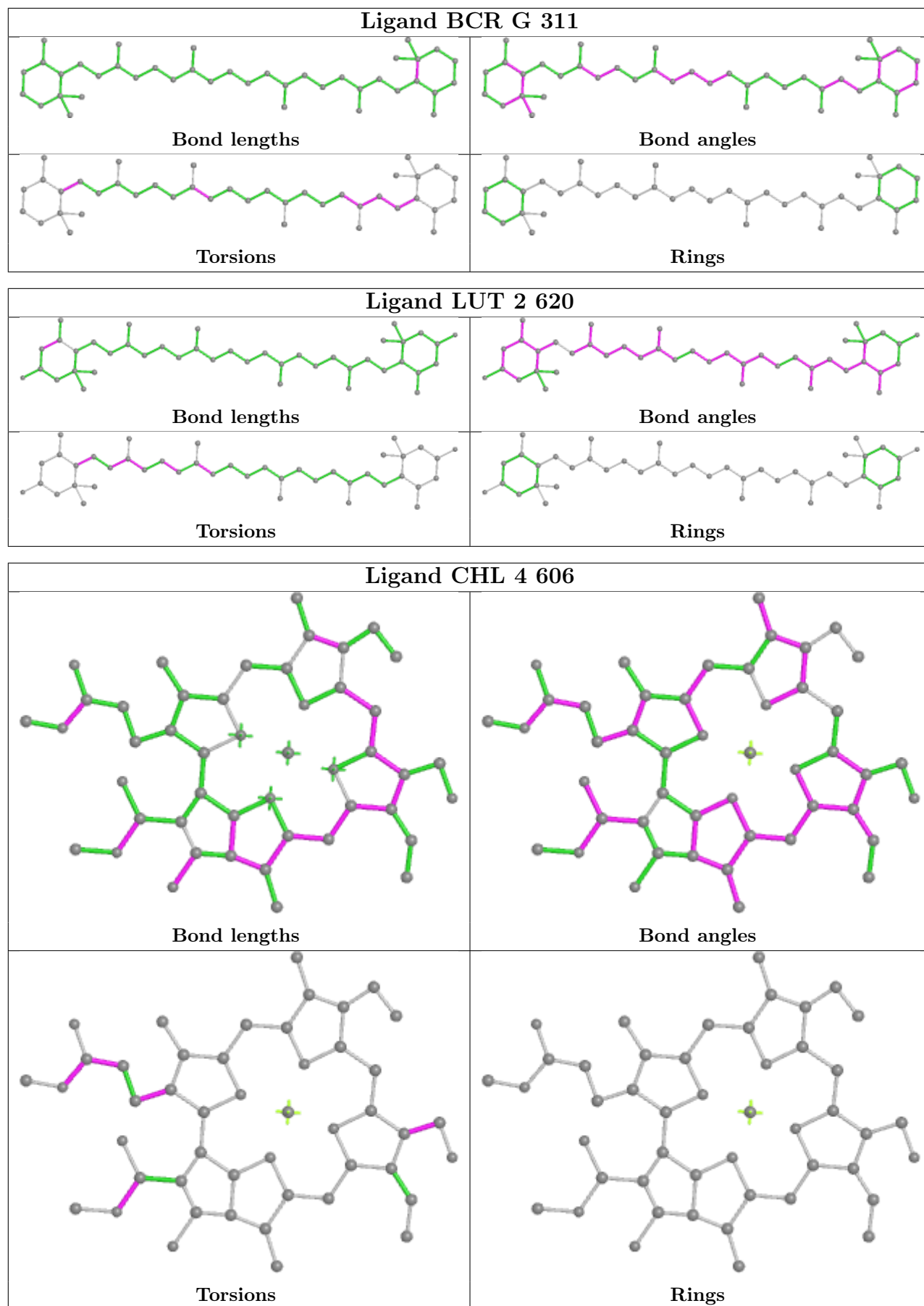


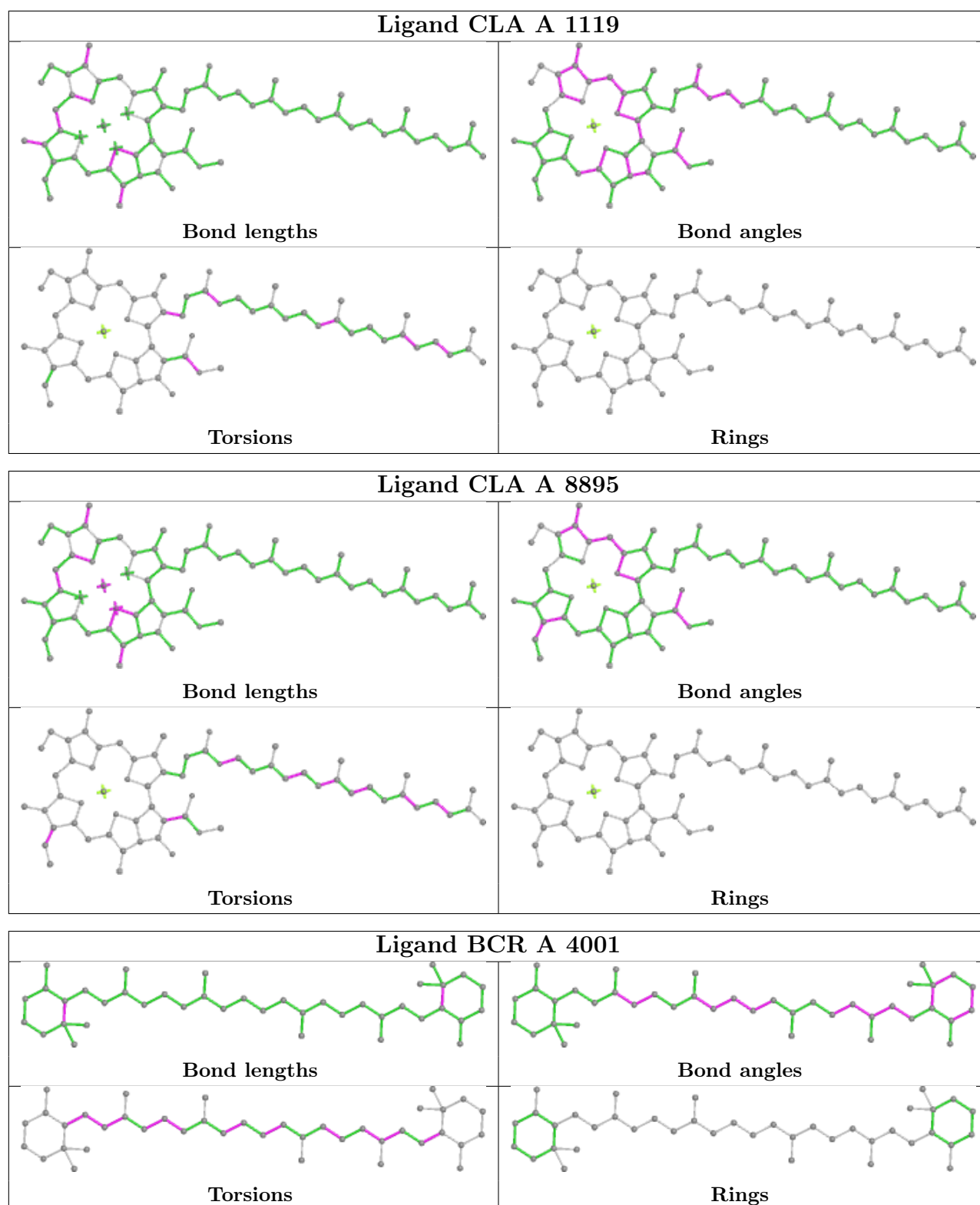


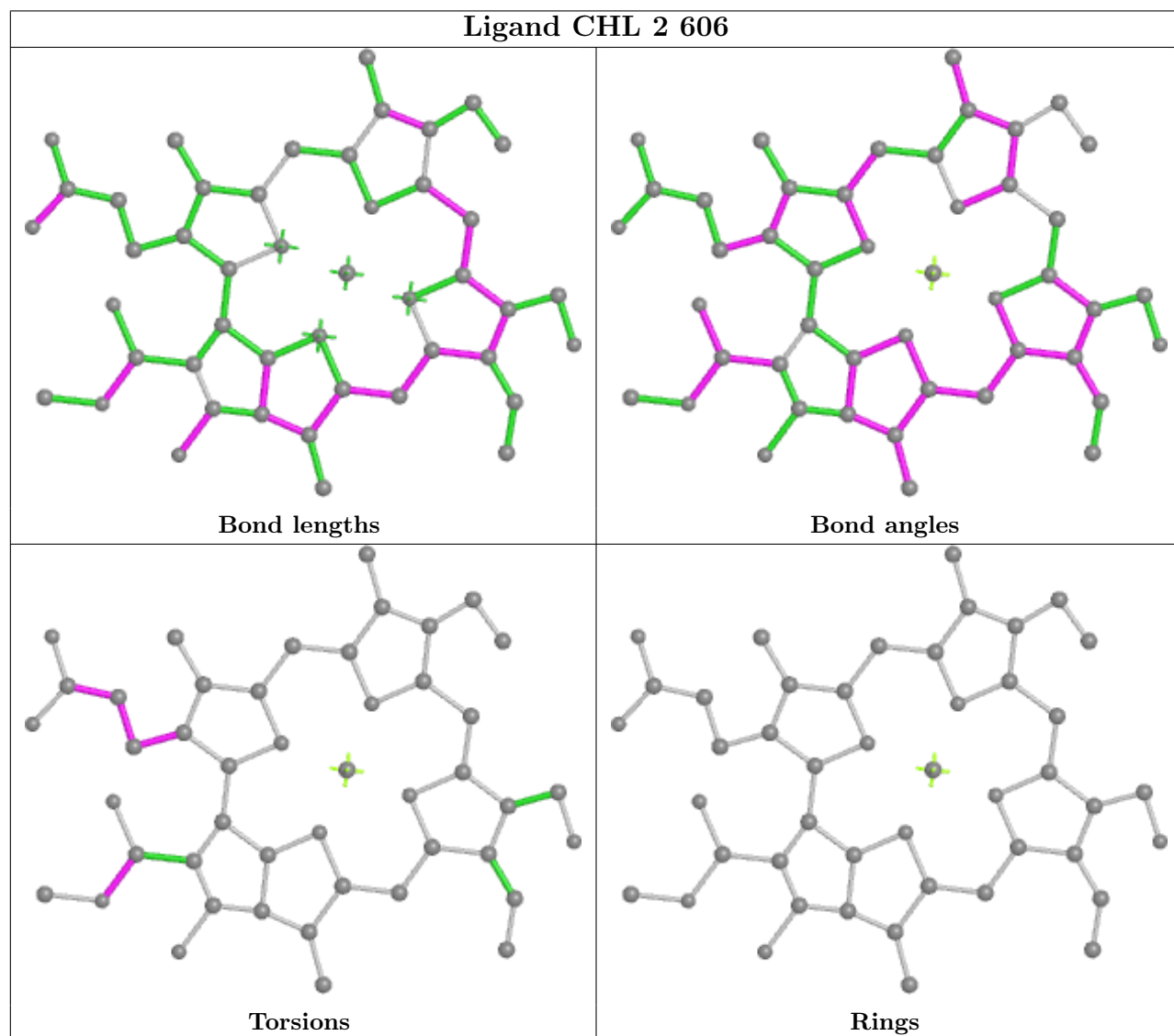
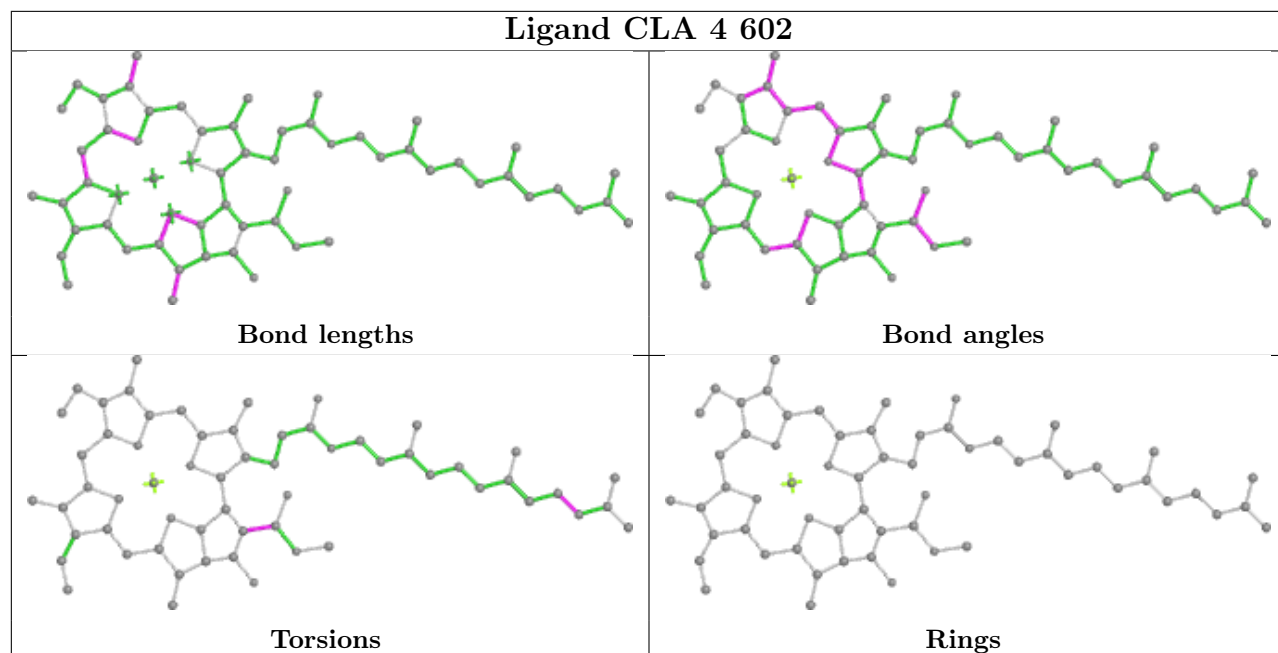




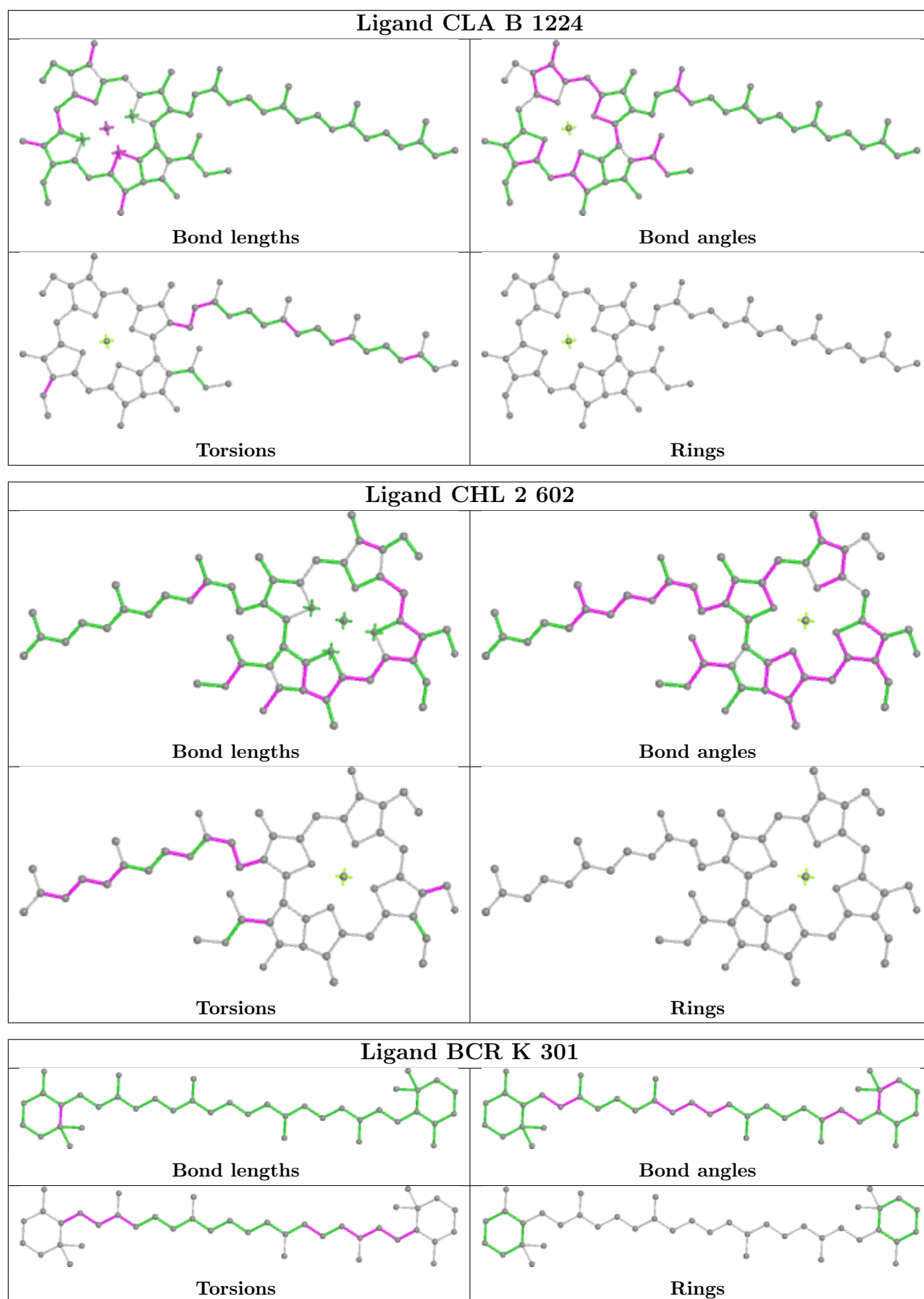


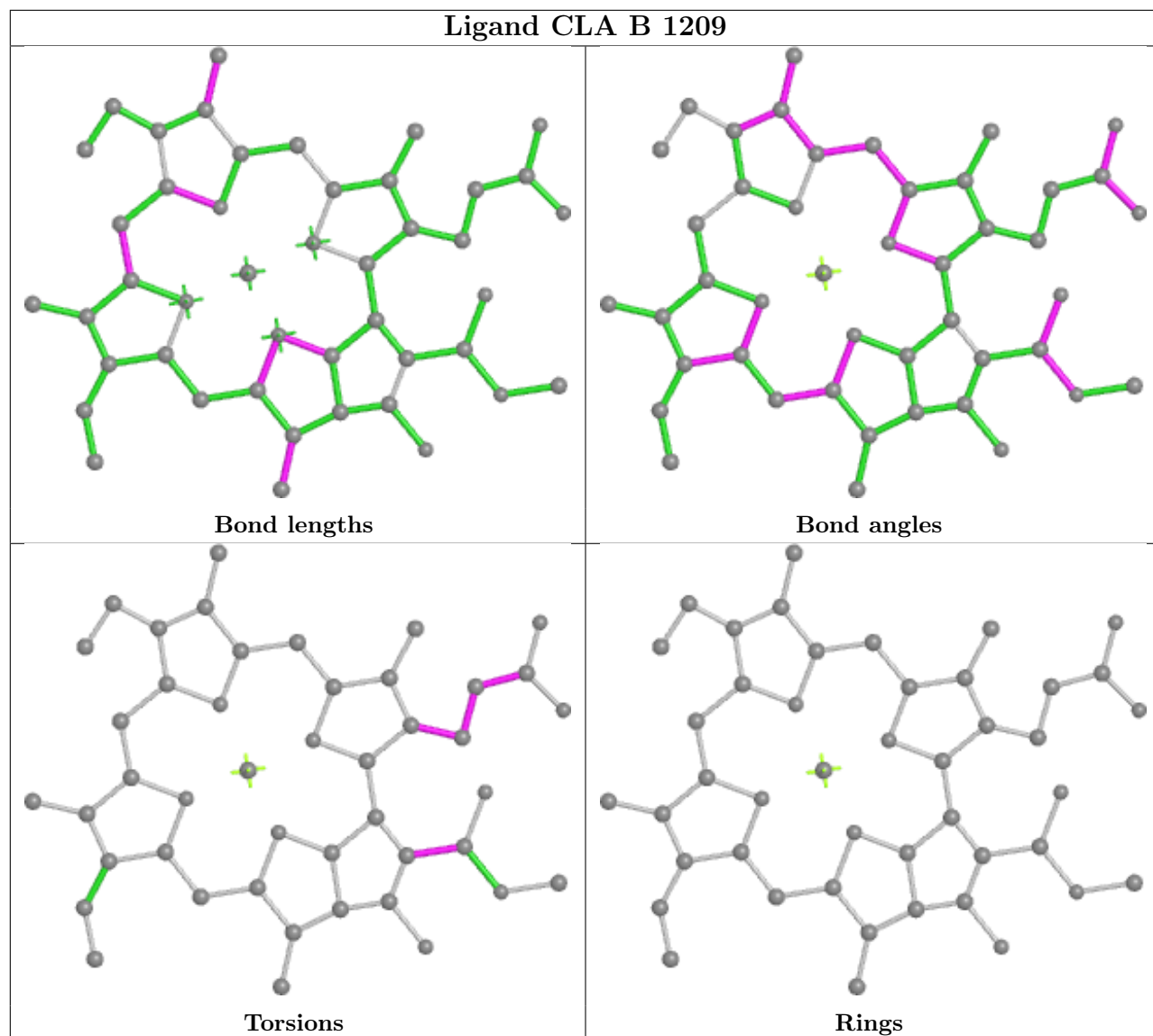


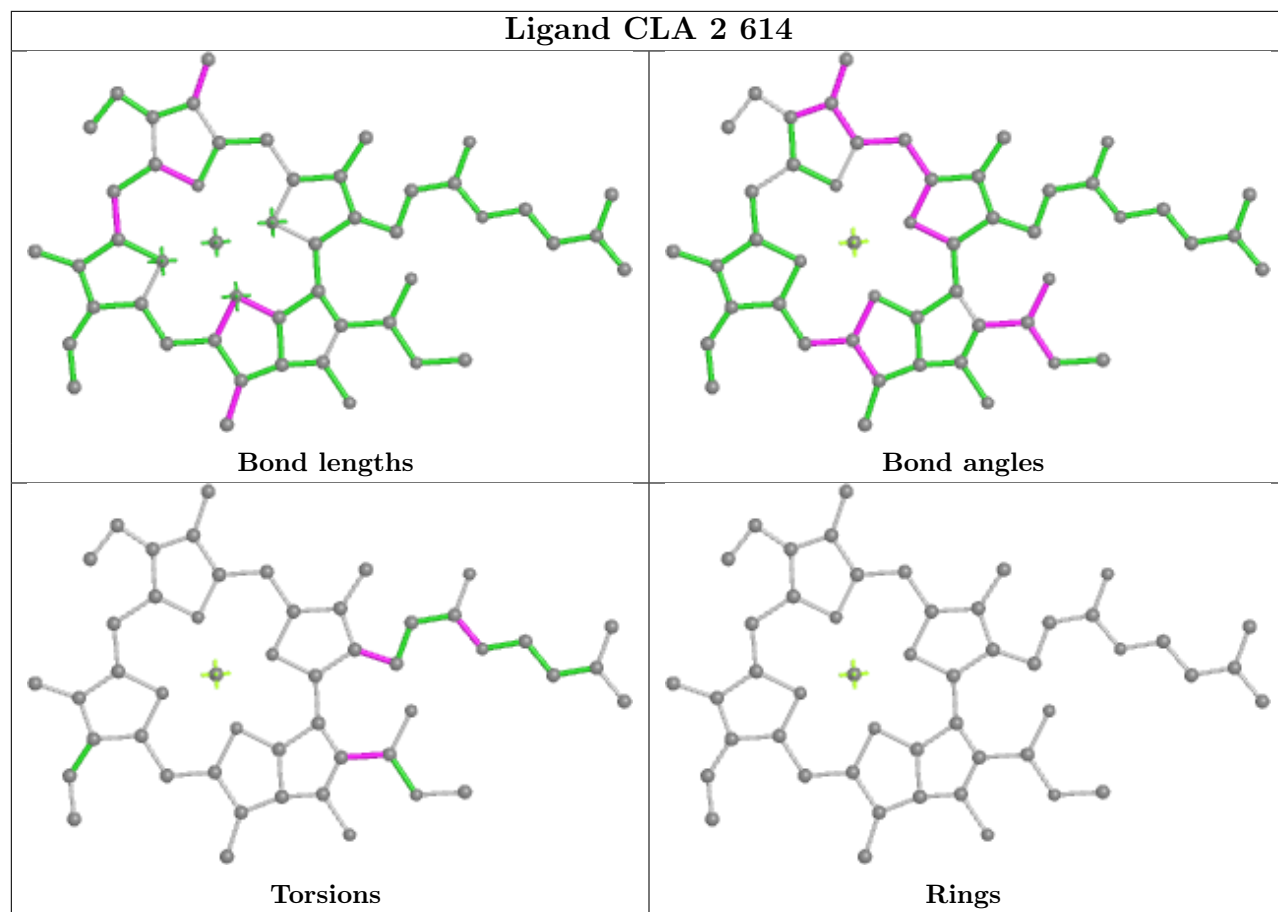


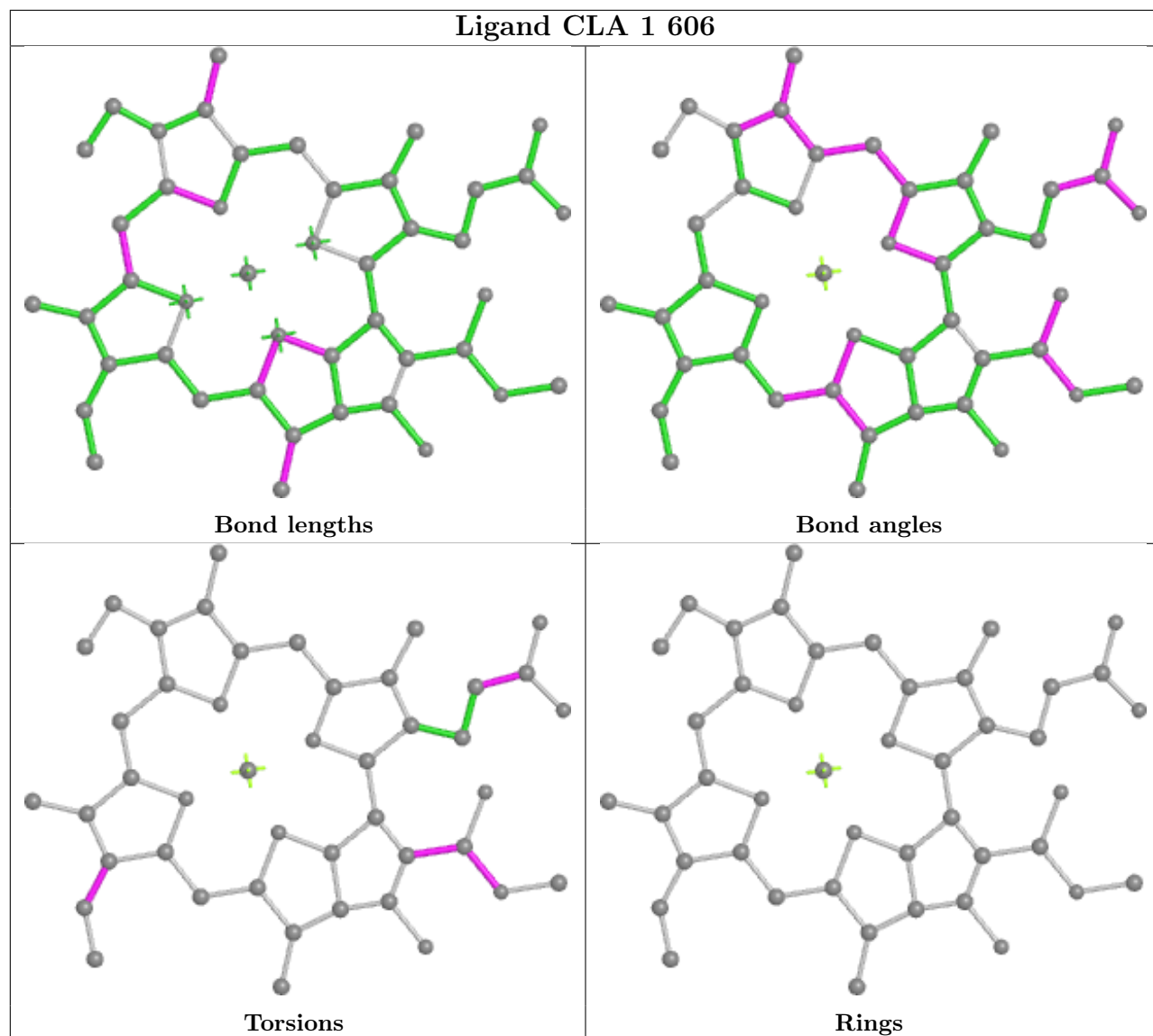


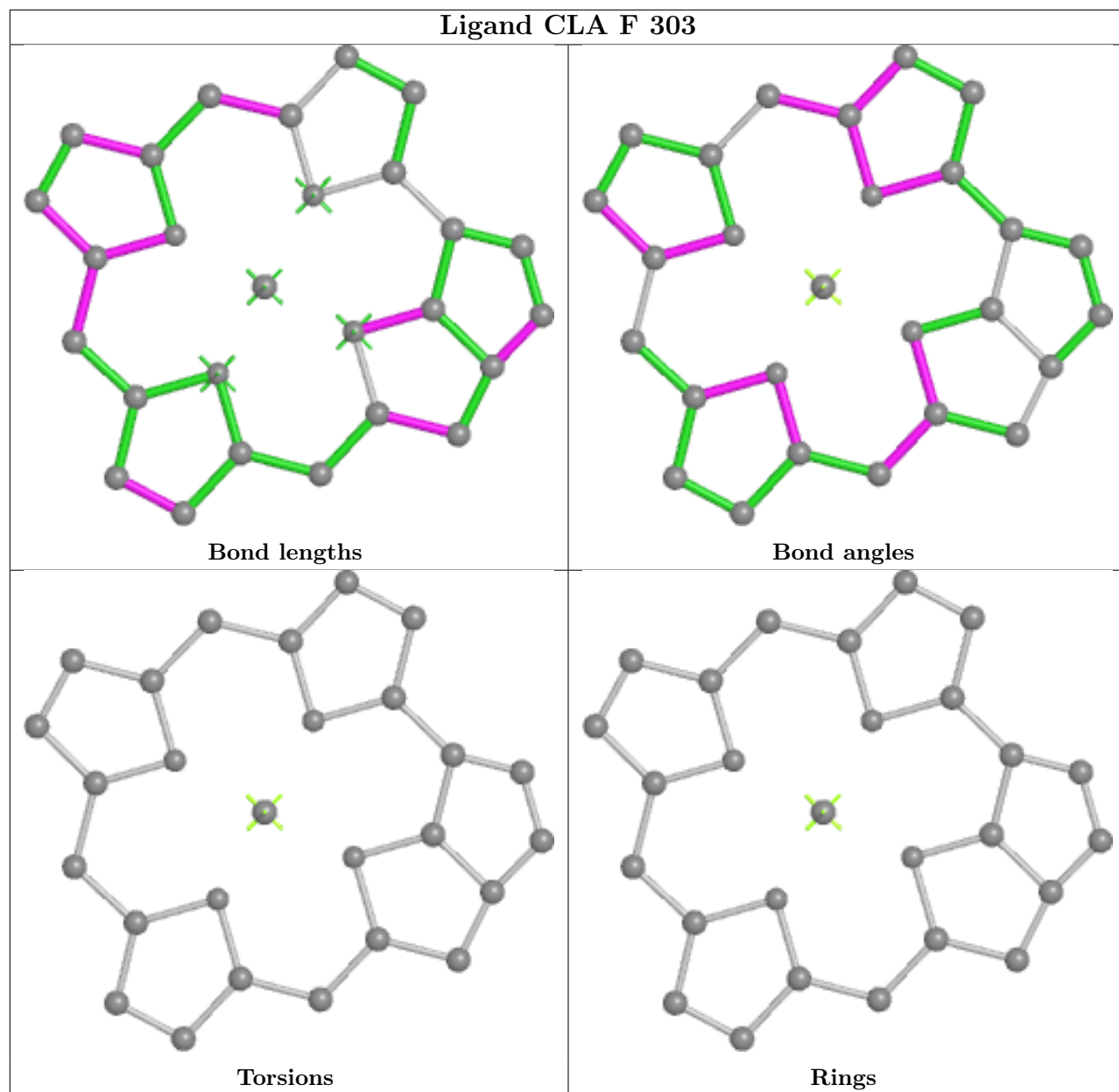


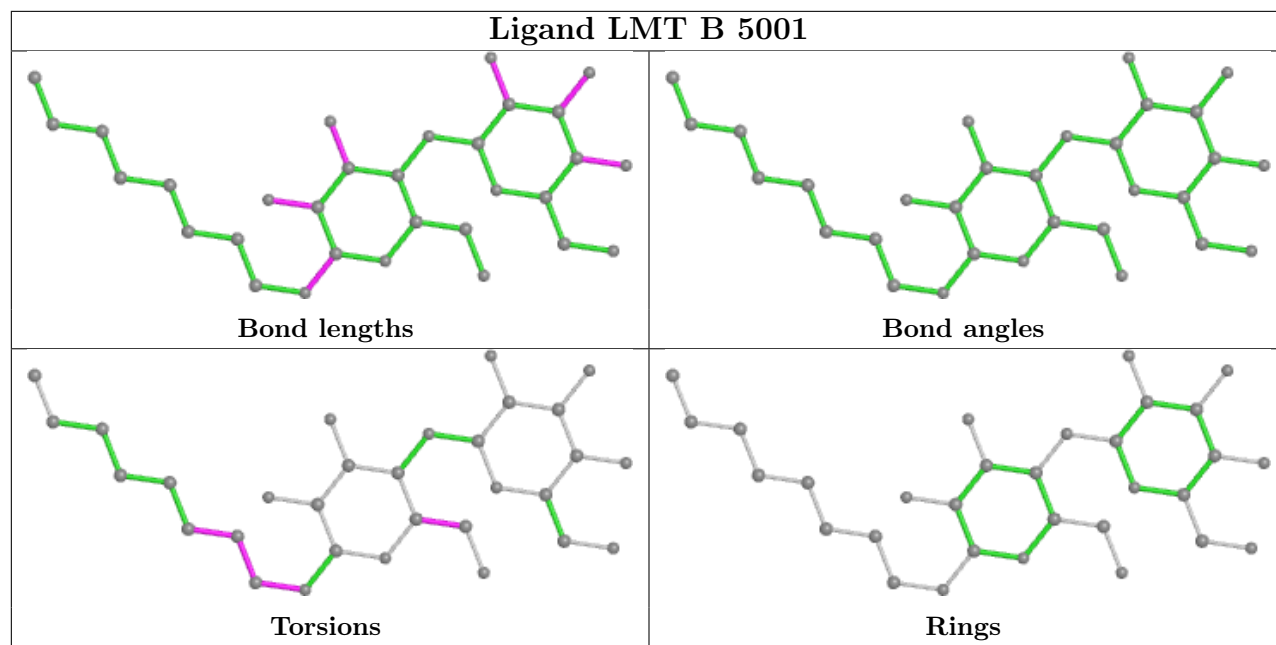












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

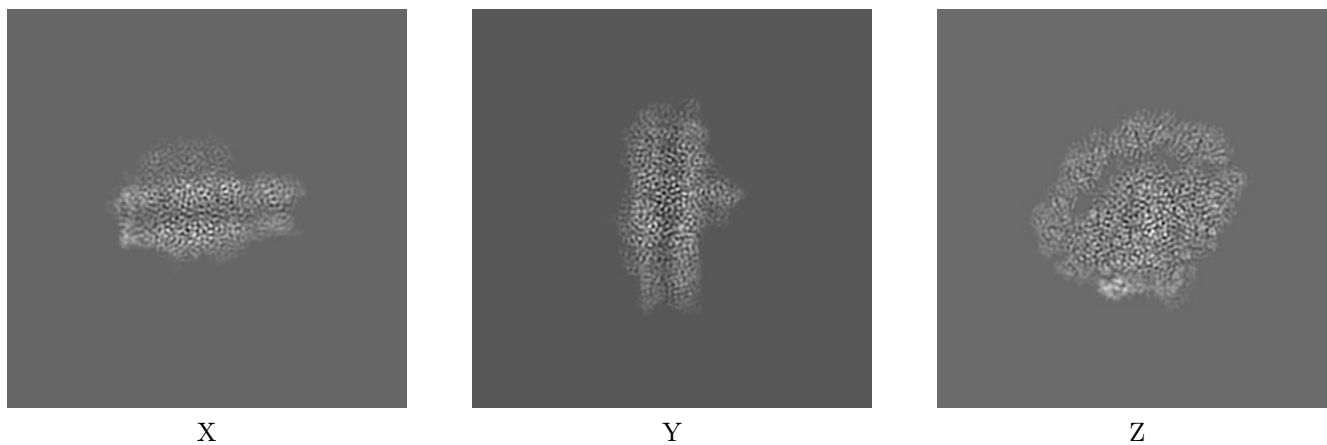
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23023. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

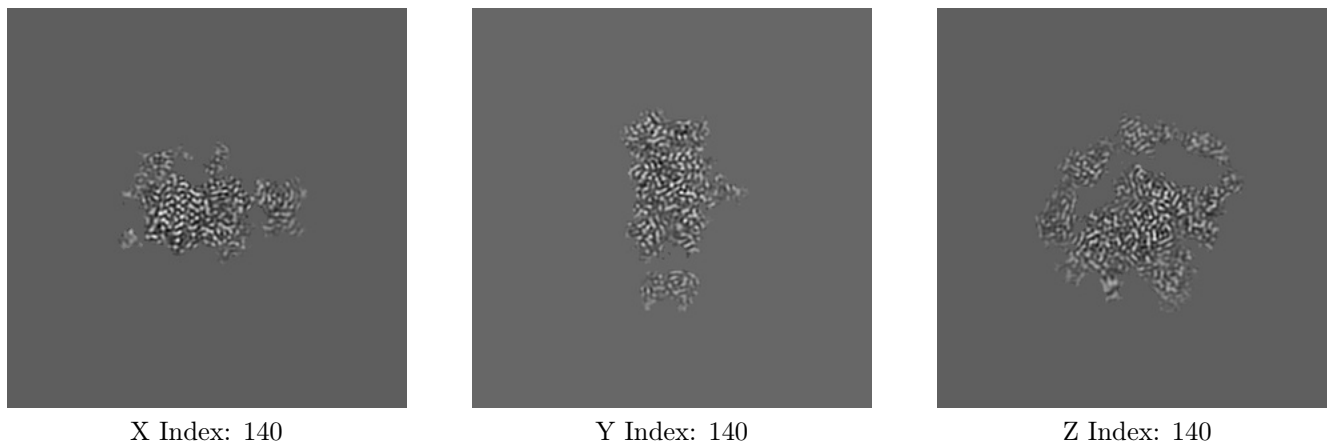
#### 6.1.1 Primary map



The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

#### 6.2.1 Primary map



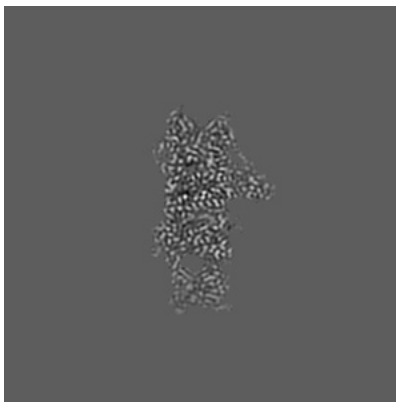
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

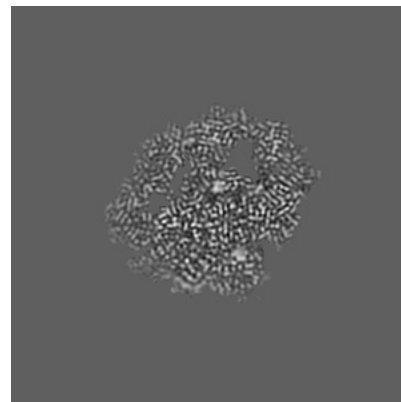
### 6.3.1 Primary map



X Index: 150



Y Index: 133

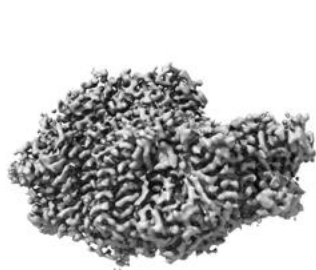


Z Index: 148

The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

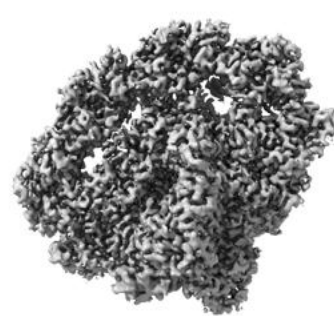
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 1.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.



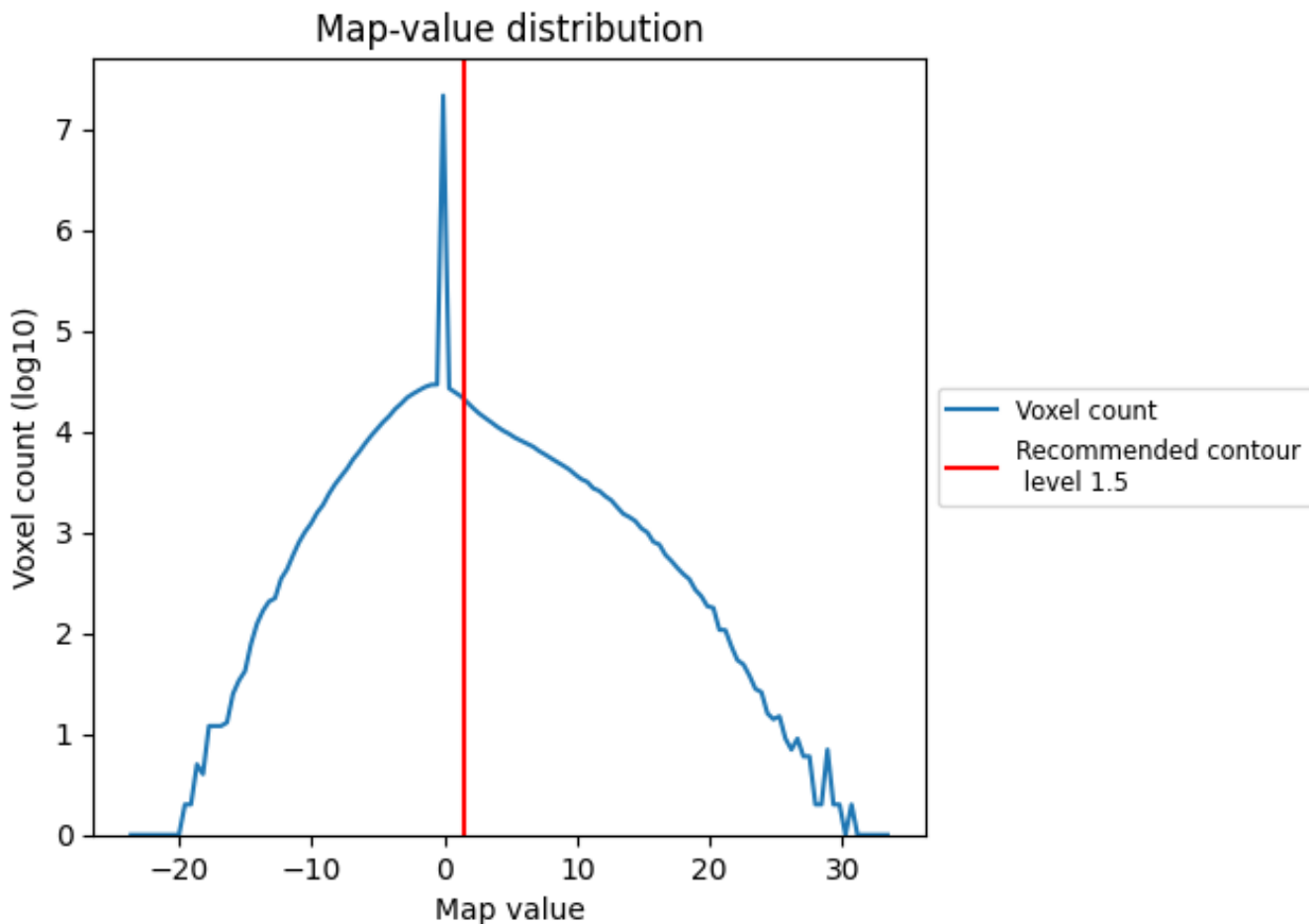
## 6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

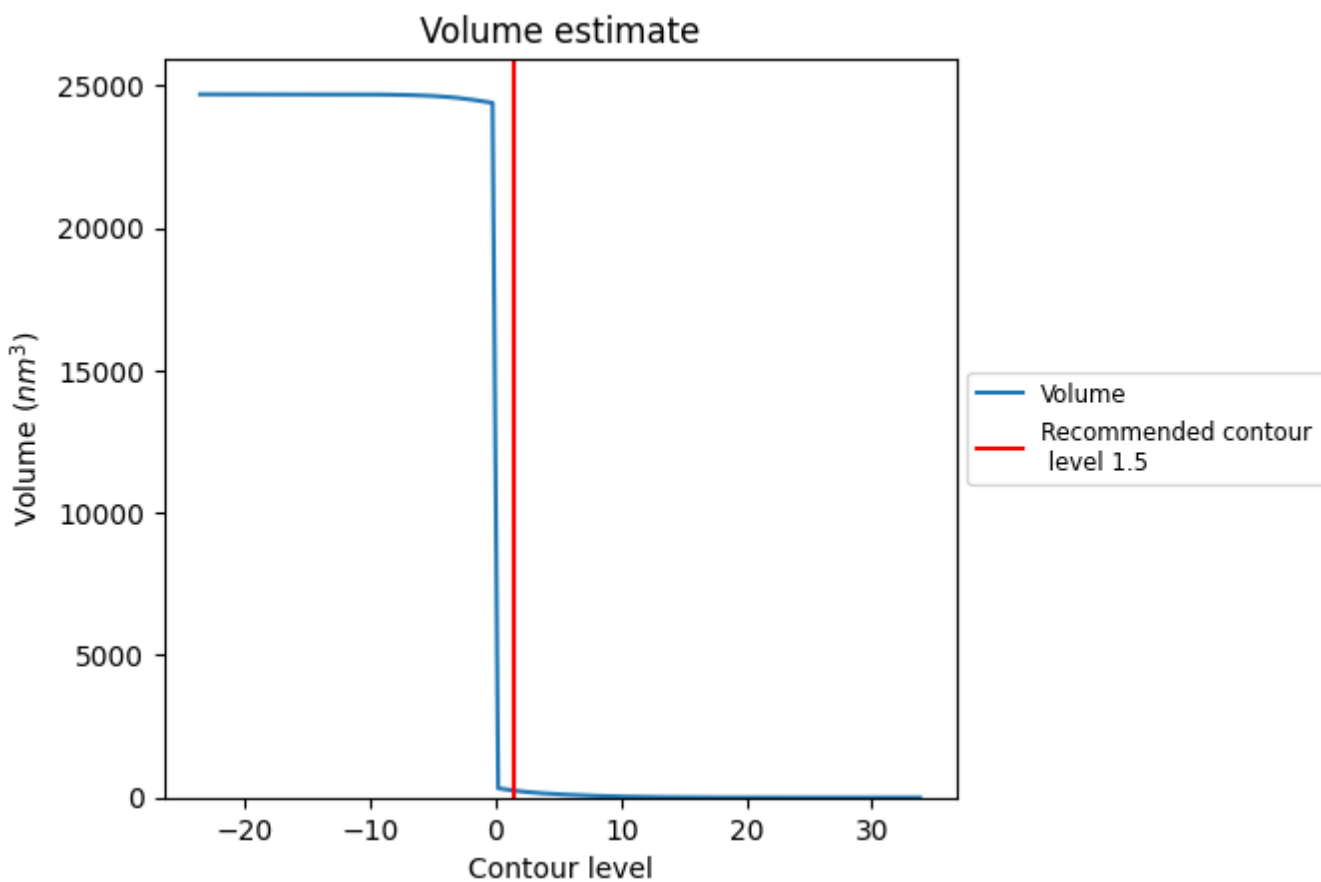
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

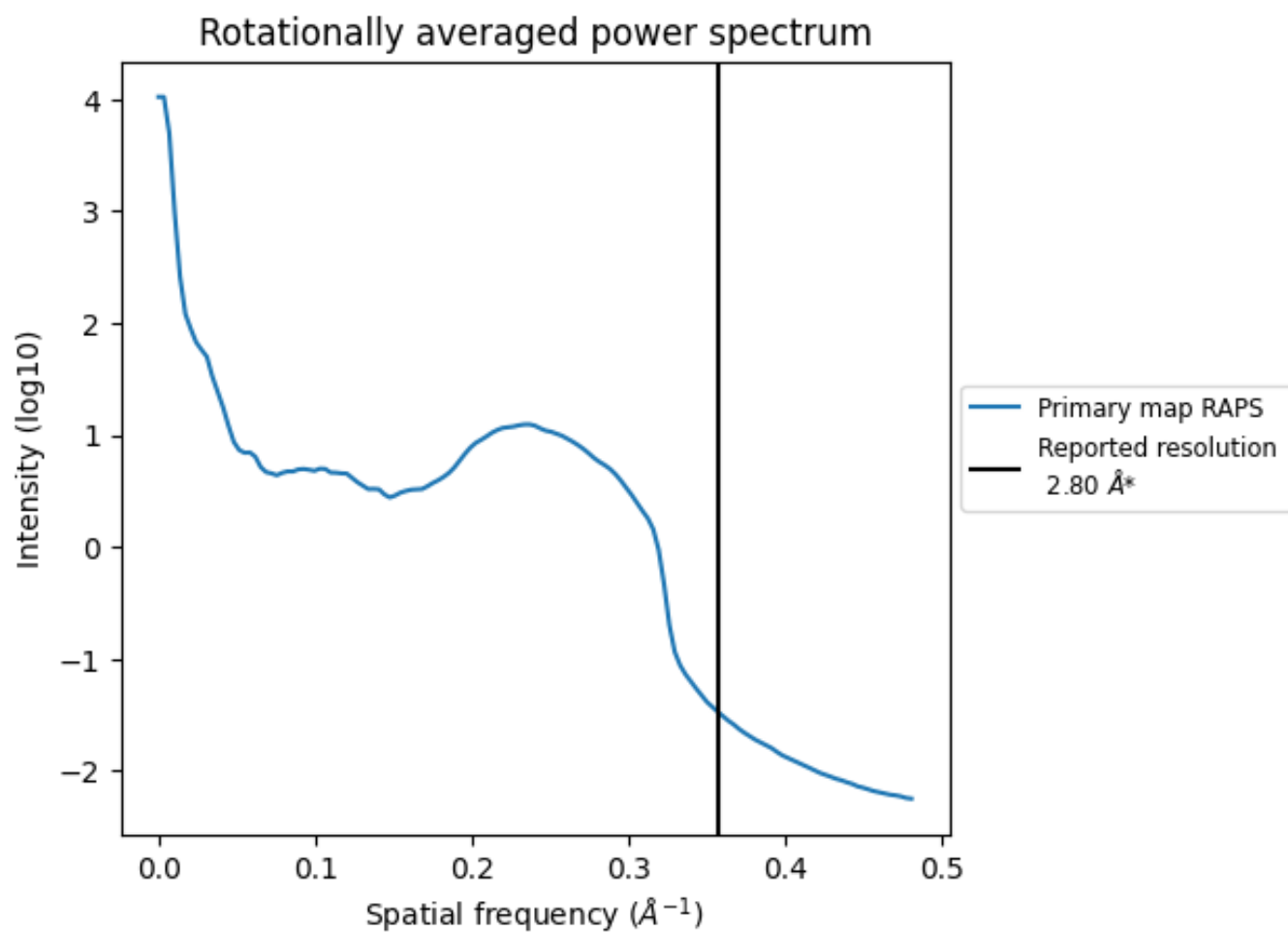
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 242 nm<sup>3</sup>; this corresponds to an approximate mass of 219 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum [i](#)



\*Reported resolution corresponds to spatial frequency of 0.357 Å<sup>-1</sup>

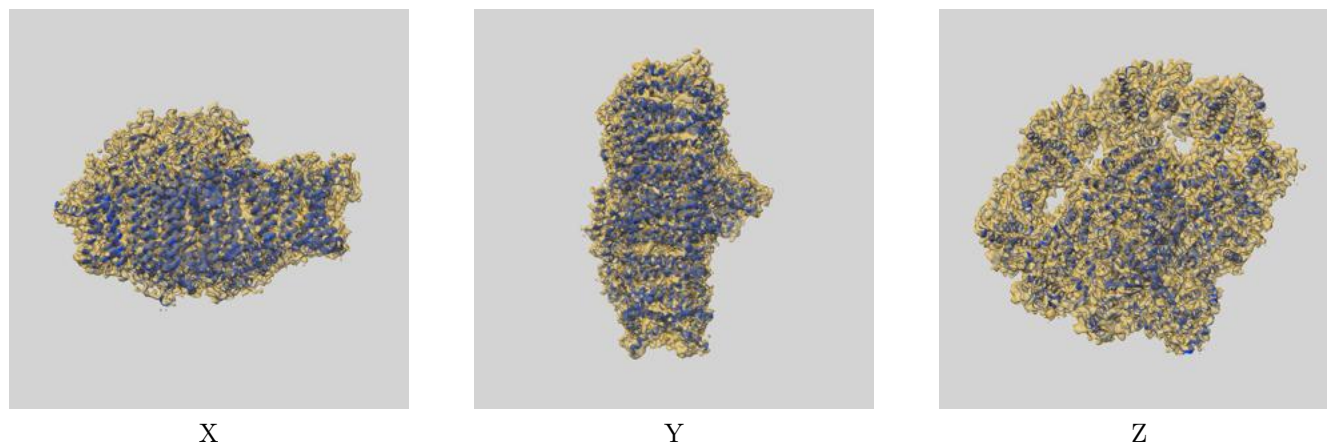
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

## 9 Map-model fit [i](#)

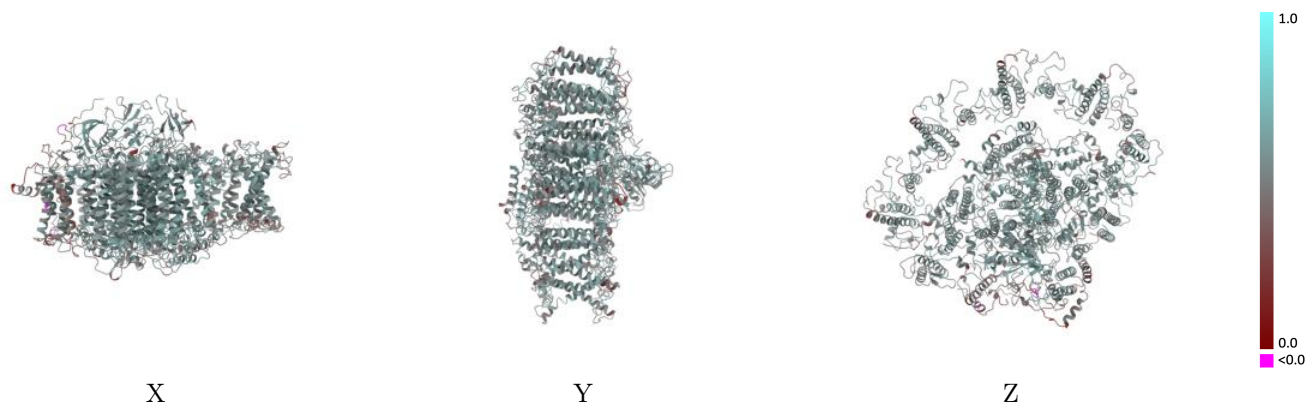
This section contains information regarding the fit between EMDB map EMD-23023 and PDB model 7KSQ. Per-residue inclusion information can be found in section 3 on page 27.

### 9.1 Map-model overlay [i](#)



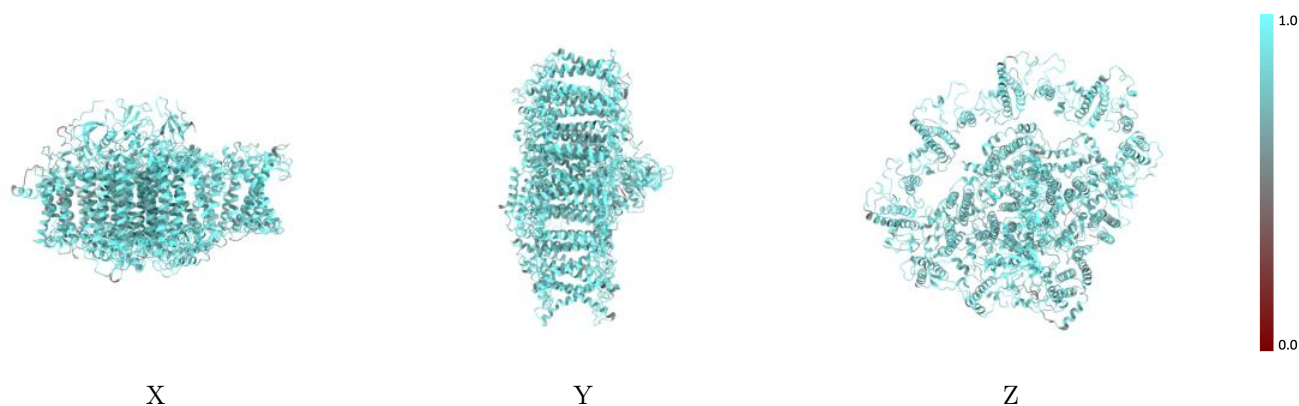
The images above show the 3D surface view of the map at the recommended contour level 1.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



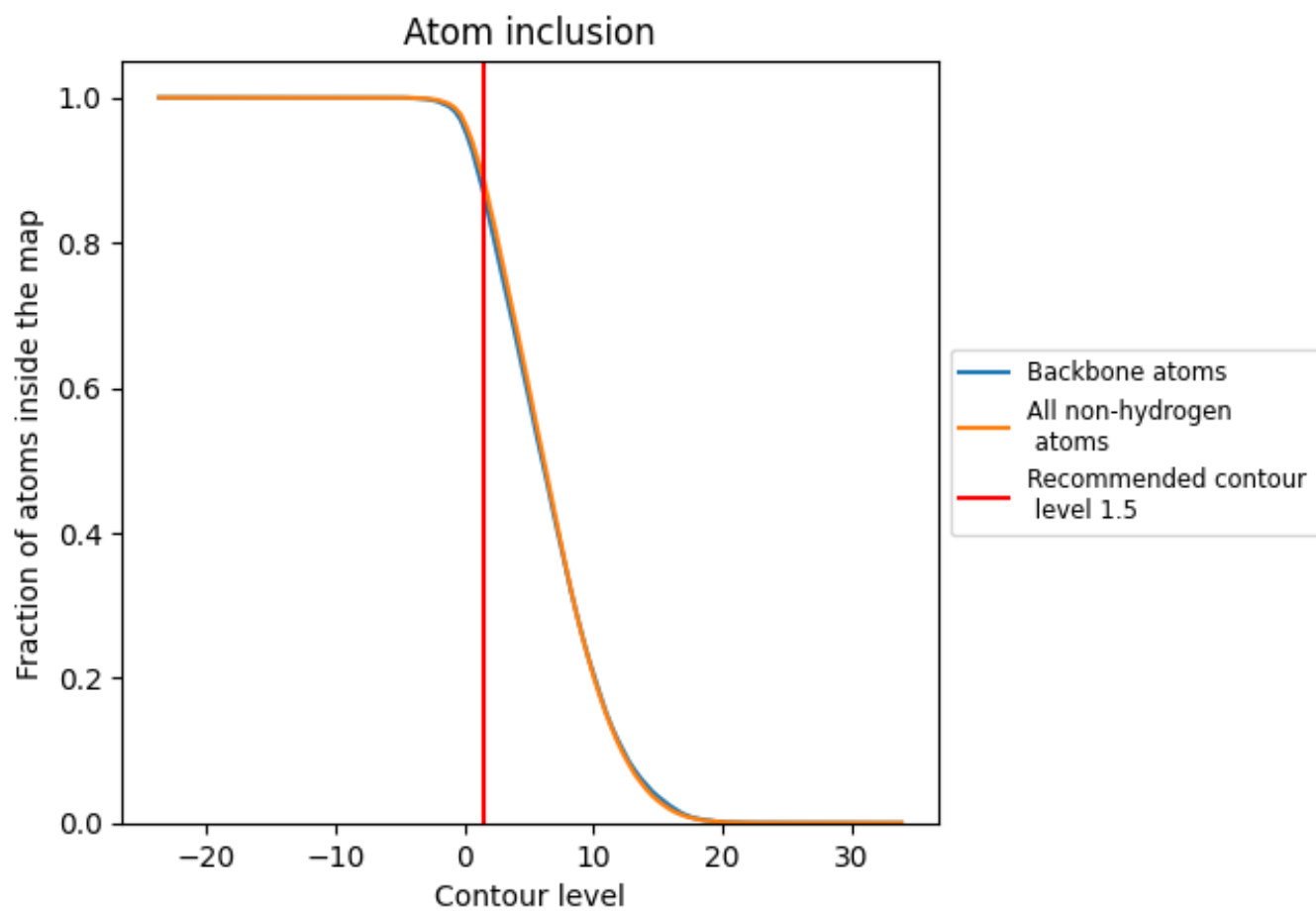
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (1.5).

## 9.4 Atom inclusion [i](#)









































At the recommended contour level, 87% of all backbone atoms, 89% of all non-hydrogen atoms, are inside the map.



## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (1.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8880	 0.5440
1	 0.8665	 0.5280
2	 0.8613	 0.5260
3	 0.8622	 0.5330
4	 0.8647	 0.5220
A	 0.9090	 0.5680
B	 0.9184	 0.5730
C	 0.9348	 0.5700
D	 0.8775	 0.5340
E	 0.8742	 0.5380
F	 0.8720	 0.5480
G	 0.8724	 0.5400
H	 0.7220	 0.4090
I	 0.8741	 0.5450
J	 0.8936	 0.5590
K	 0.8309	 0.5070
L	 0.8481	 0.5110
M	 0.8538	 0.5130
O	 0.8952	 0.3850

