



wwPDB EM Validation Summary Report ⓘ

Apr 28, 2024 – 01:37 AM JST

PDB ID : 7Y3F
EMDB ID : EMD-33593
Title : Structure of the Anabaena PSI-monomer-IsiA supercomplex
Authors : Nagao, R.; Kato, K.; Hamaguchi, T.; Kawakami, K.; Yonekura, K.; Shen, J.R.
Deposited on : 2022-06-10
Resolution : 2.62 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

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>.

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

EMDB validation analysis : 0.0.1.dev92
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 : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

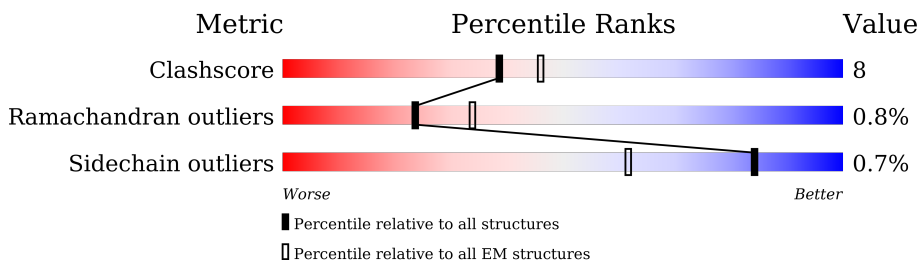
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.62 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 ≥ 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	752	
2	B	741	
3	C	81	
4	D	139	
5	E	70	
6	F	164	
7	I	46	
8	J	49	

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Mol	Chain	Length	Quality of chain
9	K	82	
10	M	40	
11	X	44	
12	1	476	
13	2	325	
13	3	325	
13	6	325	
14	4	344	
14	5	344	

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
15	CL0	A	801	X	-	-	-
16	CLA	1	501	X	-	-	-
16	CLA	1	502	X	-	-	-
16	CLA	1	503	X	-	-	-
16	CLA	1	505	X	-	-	-
16	CLA	1	506	X	-	-	-
16	CLA	1	507	X	-	-	-
16	CLA	1	508	X	-	-	-
16	CLA	1	509	X	-	-	-
16	CLA	1	510	X	-	-	-
16	CLA	1	511	X	-	-	-
16	CLA	1	512	X	-	-	-
16	CLA	1	513	X	-	-	-
16	CLA	1	514	X	-	-	-
16	CLA	1	515	X	-	-	-
16	CLA	1	521	X	-	-	-
16	CLA	1	525	X	-	-	-
16	CLA	1	526	X	-	-	-
16	CLA	2	401	X	-	-	-
16	CLA	2	402	X	-	-	-
16	CLA	2	403	X	-	-	-
16	CLA	2	404	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
16	CLA	2	405	X	-	-	-
16	CLA	2	406	X	-	-	-
16	CLA	3	401	X	-	-	-
16	CLA	4	402	X	-	-	-
16	CLA	4	403	X	-	-	-
16	CLA	4	404	X	-	-	-
16	CLA	4	405	X	-	-	-
16	CLA	4	406	X	-	-	-
16	CLA	4	407	X	-	-	-
16	CLA	4	408	X	-	-	-
16	CLA	4	409	X	-	-	-
16	CLA	4	410	X	-	-	-
16	CLA	4	411	X	-	-	-
16	CLA	5	403	X	-	-	-
16	CLA	5	404	X	-	-	-
16	CLA	5	405	X	-	-	-
16	CLA	5	406	X	-	-	-
16	CLA	5	407	X	-	-	-
16	CLA	5	408	X	-	-	-
16	CLA	5	409	X	-	-	-
16	CLA	5	410	X	-	-	-
16	CLA	5	411	X	-	-	-
16	CLA	5	412	X	-	-	-
16	CLA	5	413	X	-	-	-
16	CLA	5	414	X	-	-	-
16	CLA	5	415	X	-	-	-
16	CLA	5	416	X	-	-	-
16	CLA	5	417	X	-	-	-
16	CLA	5	418	X	-	-	-
16	CLA	5	419	X	-	-	-
16	CLA	5	421	X	-	-	-
16	CLA	5	422	X	-	-	-
16	CLA	6	401	X	-	-	-
16	CLA	6	402	X	-	-	-
16	CLA	6	403	X	-	-	-
16	CLA	6	404	X	-	-	-
16	CLA	6	405	X	-	-	-
16	CLA	6	406	X	-	-	-
16	CLA	6	407	X	-	-	-
16	CLA	6	408	X	-	-	-
16	CLA	6	409	X	-	-	-
16	CLA	A	802	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
16	CLA	A	803	X	-	-	-
16	CLA	A	804	X	-	-	-
16	CLA	A	805	X	-	-	-
16	CLA	A	806	X	-	-	-
16	CLA	A	807	X	-	-	-
16	CLA	A	808	X	-	-	-
16	CLA	A	809	X	-	-	-
16	CLA	A	811	X	-	-	-
16	CLA	A	812	X	-	-	-
16	CLA	A	813	X	-	-	-
16	CLA	A	814	X	-	-	-
16	CLA	A	815	X	-	-	-
16	CLA	A	816	X	-	-	-
16	CLA	A	819	X	-	-	-
16	CLA	A	820	X	-	-	-
16	CLA	A	822	X	-	-	-
16	CLA	A	826	X	-	-	-
16	CLA	A	827	X	-	-	-
16	CLA	A	828	X	-	-	-
16	CLA	A	829	X	-	-	-
16	CLA	A	830	X	-	-	-
16	CLA	A	831	X	-	-	-
16	CLA	A	833	X	-	-	-
16	CLA	A	834	X	-	-	-
16	CLA	A	835	X	-	-	-
16	CLA	A	836	X	-	-	-
16	CLA	A	837	X	-	-	-
16	CLA	A	838	X	-	-	-
16	CLA	A	839	X	-	-	-
16	CLA	A	840	X	-	-	-
16	CLA	A	841	X	-	-	-
16	CLA	A	842	X	-	-	-
16	CLA	A	843	X	-	-	-
16	CLA	B	801	X	-	-	-
16	CLA	B	802	X	-	-	-
16	CLA	B	803	X	-	-	-
16	CLA	B	804	X	-	-	-
16	CLA	B	805	X	-	-	-
16	CLA	B	806	X	-	-	-
16	CLA	B	807	X	-	-	-
16	CLA	B	808	X	-	-	-
16	CLA	B	809	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
16	CLA	B	810	X	-	-	-
16	CLA	B	811	X	-	-	-
16	CLA	B	812	X	-	-	-
16	CLA	B	813	X	-	-	-
16	CLA	B	814	X	-	-	-
16	CLA	B	817	X	-	-	-
16	CLA	B	818	X	-	-	-
16	CLA	B	819	X	-	-	-
16	CLA	B	822	X	-	-	-
16	CLA	B	823	X	-	-	-
16	CLA	B	824	X	-	-	-
16	CLA	B	825	X	-	-	-
16	CLA	B	826	X	-	-	-
16	CLA	B	827	X	-	-	-
16	CLA	B	828	X	-	-	-
16	CLA	B	829	X	-	-	-
16	CLA	B	830	X	-	-	-
16	CLA	B	831	X	-	-	-
16	CLA	B	832	X	-	-	-
16	CLA	B	833	X	-	-	-
16	CLA	B	834	X	-	-	-
16	CLA	B	835	X	-	-	-
16	CLA	B	836	X	-	-	-
16	CLA	B	837	X	-	-	-
16	CLA	B	838	X	-	-	-
16	CLA	B	839	X	-	-	-
16	CLA	B	840	X	-	-	-
16	CLA	F	201	X	-	-	-
16	CLA	F	204	X	-	-	-
16	CLA	J	101	X	-	-	-
16	CLA	J	102	X	-	-	-
16	CLA	K	101	X	-	-	-
16	CLA	K	103	X	-	-	-
16	CLA	X	101	X	-	-	-

2 Entry composition

There are 23 unique types of molecules in this entry. The entry contains 39463 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	5824	3821	1003	979	21	0	0

- Molecule 2 is a protein called Photosystem I P700 chlorophyll a apoprotein A2 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	739	5919	3906	990	1005	18	0	0

- Molecule 3 is a protein called Photosystem I iron-sulfur center.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	80	599	367	103	118	11	0	0

- Molecule 4 is a protein called Photosystem I reaction center subunit II.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	135	1043	668	179	195	1	0	0

- Molecule 5 is a protein called Photosystem I reaction center subunit IV.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	E	61	490	313	84	93	0	0

- Molecule 6 is a protein called Photosystem I reaction center subunit III.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	141	1080	690	184	204	2	0	0

- Molecule 7 is a protein called Photosystem I reaction center subunit VIII.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	I	31	253	177	35	41	0	0

- Molecule 8 is a protein called Photosystem I reaction center subunit IX.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	J	43	347	236	52	59	0	0

- Molecule 9 is a protein called Unknown.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	K	72	360	216	72	72	0	0

- Molecule 10 is a protein called PsaM.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	M	30	235	157	36	42	0	0

- Molecule 11 is a protein called Photosystem I 4.8 kDa protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	X	29	243	170	37	36	0	0

- Molecule 12 is a protein called Photosystem I reaction center subunit XI.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	1	466	3590	2380	578	624	8	0	0

- Molecule 13 is a protein called IsiA.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	2	302	1474	870	302	302	0	0
13	3	277	1354	800	277	277	0	0

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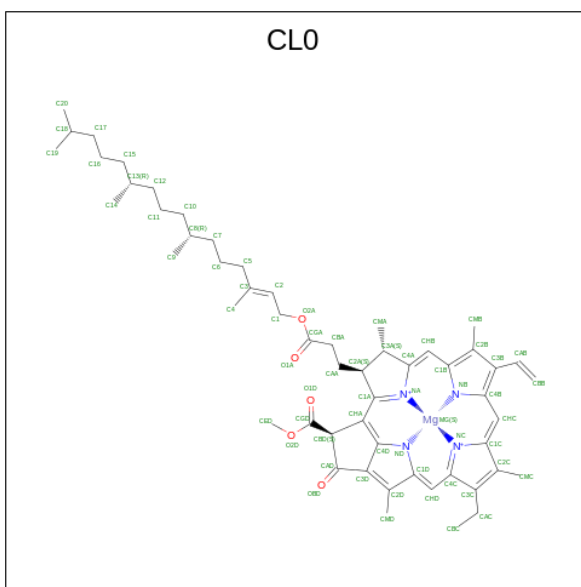
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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	6	303	1479	873	303	303	0	0

- Molecule 14 is a protein called Iron stress-induced chlorophyll-binding protein.

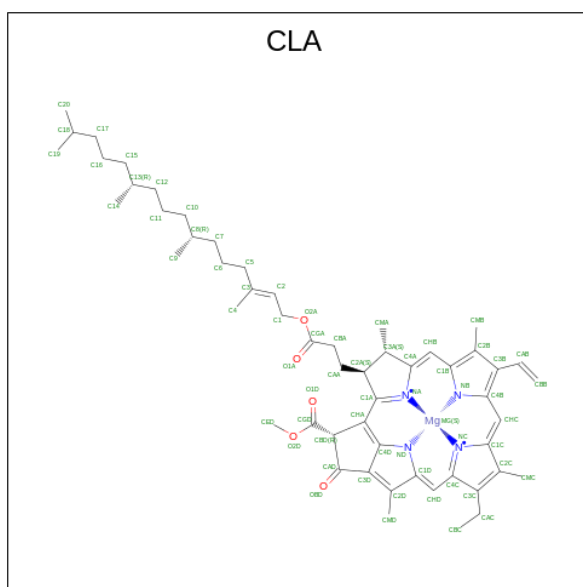
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	4	329	2562	1709	424	425	4	0	0
14	5	332	2589	1725	429	431	4	0	0

- Molecule 15 is CHLOROPHYLL A ISOMER (three-letter code: CL0) (formula: $C_{55}H_{72}MgN_4O_5$).



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

- Molecule 16 is CHLOROPHYLL A (three-letter code: CLA) (formula: $C_{55}H_{72}MgN_4O_5$).



Mol	Chain	Residues	Atoms				AltConf	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			54	44	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			51	41	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			54	44	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			65	55	1	4	5	
16	A	1	Total	C	Mg	N	O	0
			45	35	1	4	5	

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
16	A	1	45	35	1	4	5	0
16	A	1	49	39	1	4	5	0
16	A	1	54	44	1	4	5	0
16	A	1	54	44	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	50	40	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	49	39	1	4	5	0
16	A	1	51	41	1	4	5	0
16	A	1	47	37	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	55	45	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	50	40	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	51	41	1	4	5	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
16	A	1	45	35	1	4	5	0
16	A	1	51	41	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	A	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	54	44	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	45	35	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	56	46	1	4	5	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
16	B	1	45	35	1	4	5	0
16	B	1	55	45	1	4	5	0
16	B	1	59	49	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	47	37	1	4	5	0
16	B	1	45	35	1	4	5	0
16	B	1	55	45	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	58	48	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	45	35	1	4	5	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
16	B	1	45	35	1	4	5	0
16	B	1	60	50	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	B	1	65	55	1	4	5	0
16	F	1	51	41	1	4	5	0
16	F	1	45	35	1	4	5	0
16	J	1	45	35	1	4	5	0
16	J	1	45	35	1	4	5	0
16	K	1	41	33	1	4	3	0
16	K	1	45	35	1	4	5	0
16	X	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	51	41	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	51	41	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	65	55	1	4	5	0
16	1	1	65	55	1	4	5	0
16	1	1	52	42	1	4	5	0
16	1	1	45	35	1	4	5	0
16	1	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	2	1	45	35	1	4	5	0
16	3	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0

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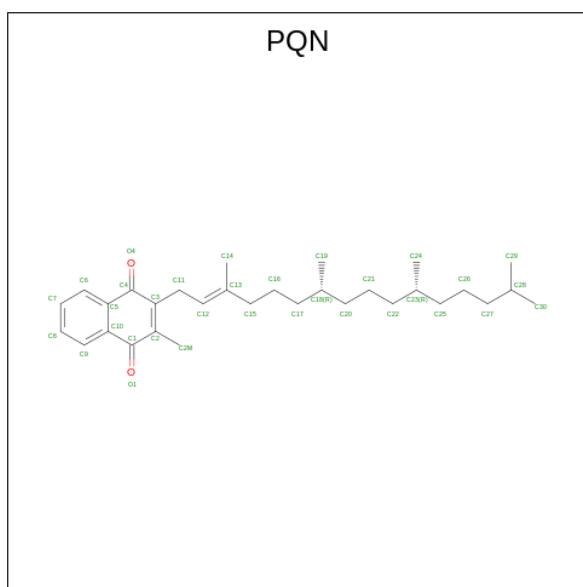
Mol	Chain	Residues	Atoms					AltConf
			Total	C	Mg	N	O	
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16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	4	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0
16	5	1	45	35	1	4	5	0

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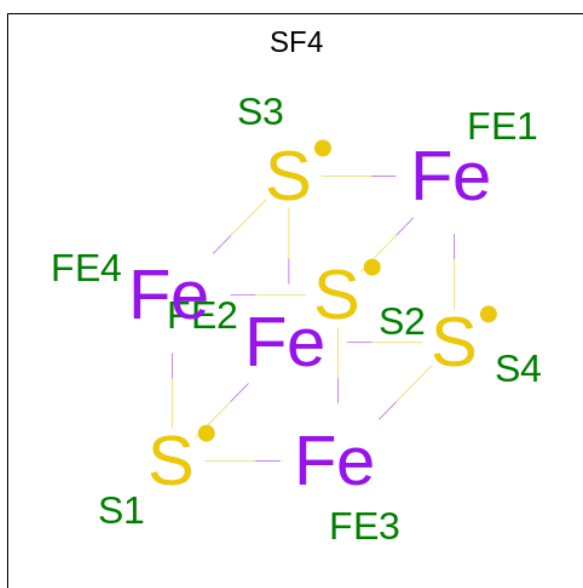
Mol	Chain	Residues	Atoms					AltConf
16	5	1	Total	C	Mg	N	O	0
			41	33	1	4	3	
16	5	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	5	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	5	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	5	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	5	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	
16	6	1	Total	C	Mg	N	O	0
			41	33	1	4	3	
16	6	1	Total	C	Mg	N	O	0
			45	35	1	4	5	

- Molecule 17 is PHYLLOQUINONE (three-letter code: PQN) (formula: C₃₁H₄₆O₂).



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

- Molecule 18 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



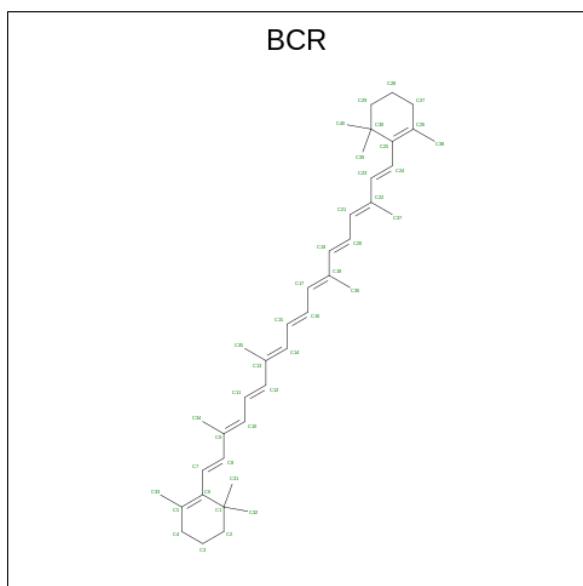
Mol	Chain	Residues	Atoms			AltConf
18	A	1	Total	Fe	S	0
			8	4	4	
18	C	1	Total	Fe	S	0
			8	4	4	

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Mol	Chain	Residues	Atoms			AltConf
			Total	Fe	S	
18	C	1	8	4	4	0

- Molecule 19 is BETA-CAROTENE (three-letter code: BCR) (formula: $C_{40}H_{56}$).



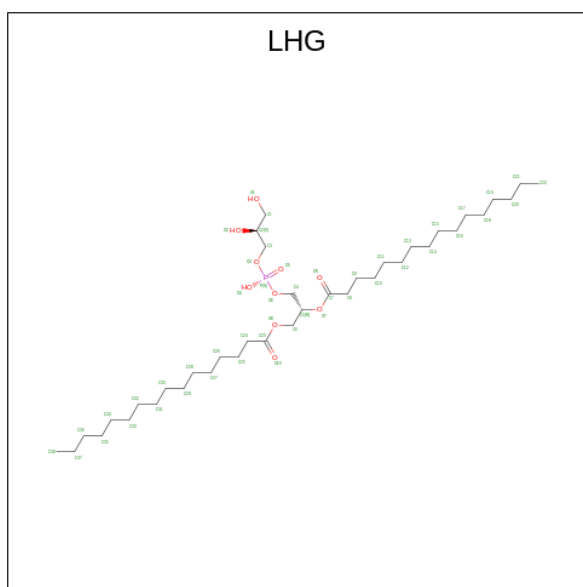
Mol	Chain	Residues	Atoms		AltConf
19	A	1	Total	C	0
			40	40	
19	A	1	Total	C	0
			40	40	
19	A	1	Total	C	0
			40	40	
19	A	1	Total	C	0
			40	40	
19	A	1	Total	C	0
			40	40	
19	B	1	Total	C	0
			40	40	
19	B	1	Total	C	0
			40	40	
19	B	1	Total	C	0
			40	40	
19	B	1	Total	C	0
			40	40	

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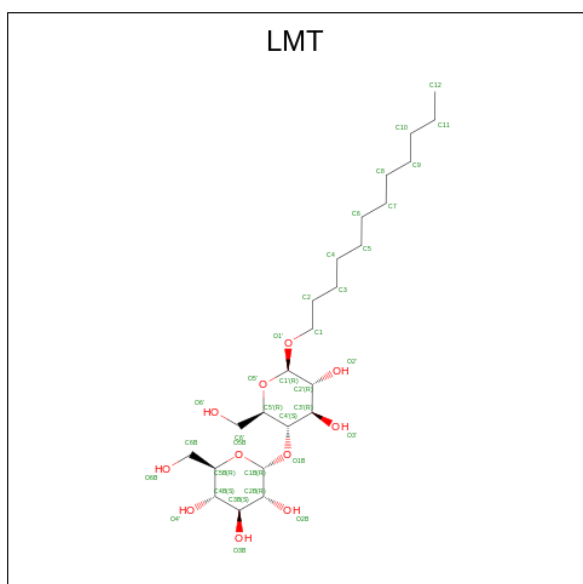
Mol	Chain	Residues	Atoms	AltConf
19	B	1	Total C 40 40	0
19	B	1	Total C 40 40	0
19	B	1	Total C 40 40	0
19	F	1	Total C 40 40	0
19	F	1	Total C 40 40	0
19	I	1	Total C 40 40	0
19	I	1	Total C 40 40	0
19	J	1	Total C 40 40	0
19	J	1	Total C 40 40	0
19	K	1	Total C 40 40	0
19	M	1	Total C 40 40	0
19	1	1	Total C 40 40	0
19	1	1	Total C 40 40	0
19	1	1	Total C 40 40	0
19	1	1	Total C 40 40	0
19	1	1	Total C 40 40	0
19	4	1	Total C 40 40	0
19	5	1	Total C 40 40	0
19	5	1	Total C 40 40	0

- Molecule 20 is 1,2-DIPALMITOYL-PHOSPHATIDYL-GLYCEROLE (three-letter code: LHG) (formula: C₃₈H₇₅O₁₀P).



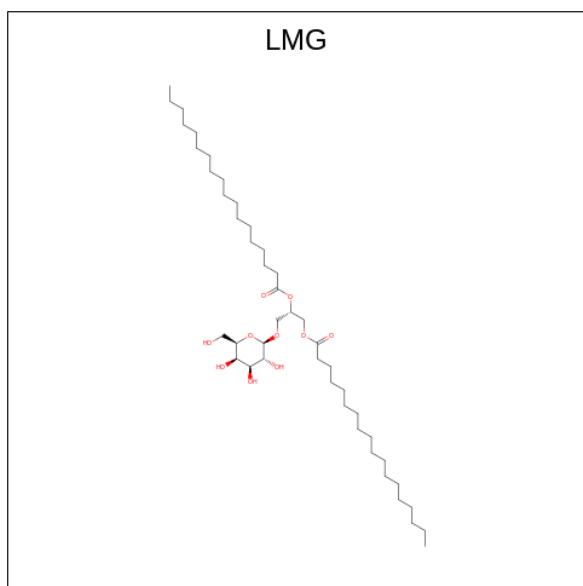
Mol	Chain	Residues	Atoms			AltConf	
			Total	C	O		P
20	A	1	49	38	10	1	0
20	A	1	27	16	10	1	0
20	B	1	49	38	10	1	0
20	F	1	49	38	10	1	0

- Molecule 21 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula: $C_{24}H_{46}O_{11}$).



Mol	Chain	Residues	Atoms			AltConf
21	A	1	Total	C	O	0
			35	24	11	
21	B	1	Total	C	O	0
			35	24	11	
21	B	1	Total	C	O	0
			35	24	11	
21	M	1	Total	C	O	0
			35	24	11	
21	1	1	Total	C	O	0
			35	24	11	
21	5	1	Total	C	O	0
			35	24	11	

- Molecule 22 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (three-letter code: LMG) (formula: $C_{45}H_{86}O_{10}$).



Mol	Chain	Residues	Atoms			AltConf
22	B	1	Total	C	O	0
			55	45	10	

- Molecule 23 is water.

Mol	Chain	Residues	Atoms		AltConf
23	A	9	Total	O	0
			9	9	
23	B	12	Total	O	0
			12	12	

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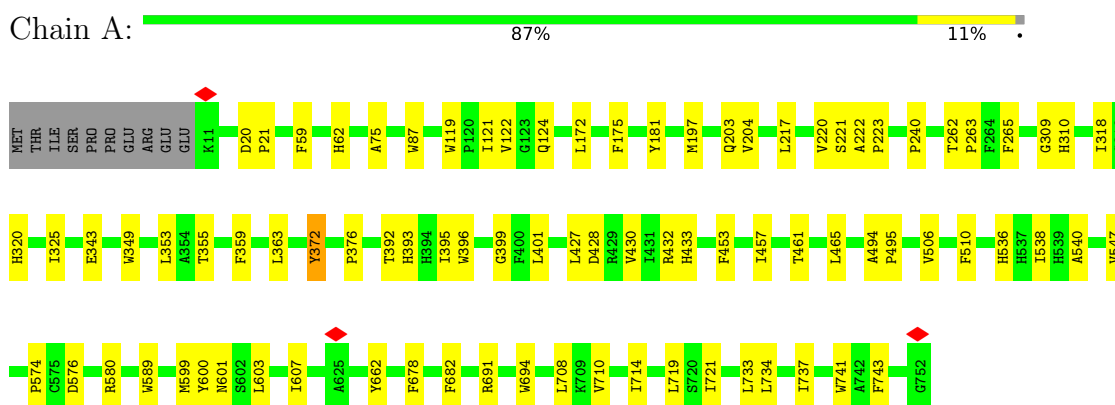
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Mol	Chain	Residues	Atoms	AltConf
23	F	2	Total O 2 2	0
23	K	1	Total O 1 1	0
23	1	2	Total O 2 2	0

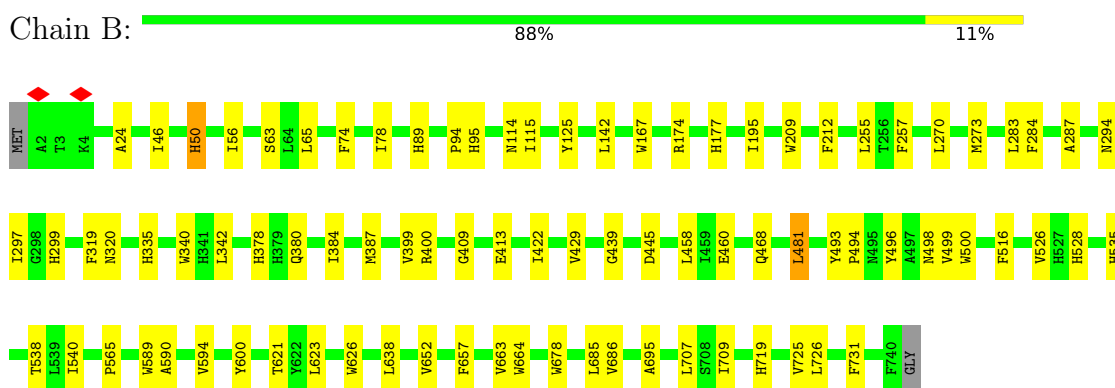
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.

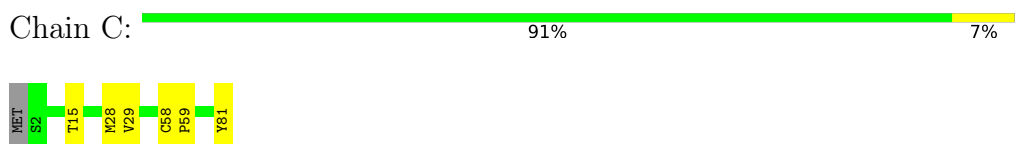
- Molecule 1: Photosystem I P700 chlorophyll a apoprotein A1



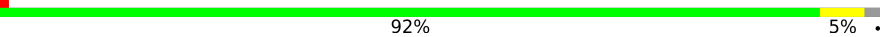
- Molecule 2: Photosystem I P700 chlorophyll a apoprotein A2 1



- Molecule 3: Photosystem I iron-sulfur center




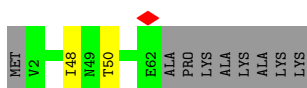
- Molecule 4: Photosystem I reaction center subunit II

Chain D:  92% 5%




- Molecule 5: Photosystem I reaction center subunit IV

Chain E:  84% 13%



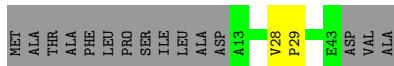
- Molecule 6: Photosystem I reaction center subunit III

Chain F:  79% 7% 14%




- Molecule 7: Photosystem I reaction center subunit VIII

Chain I:  63% 33%




- Molecule 8: Photosystem I reaction center subunit IX

Chain J:  82% 6% 12%




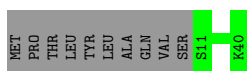
- Molecule 9: Unknown

Chain K:  80% 7% 12%

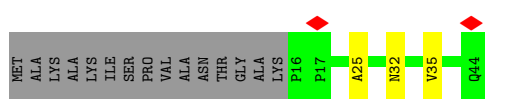


- Molecule 10: PsaM

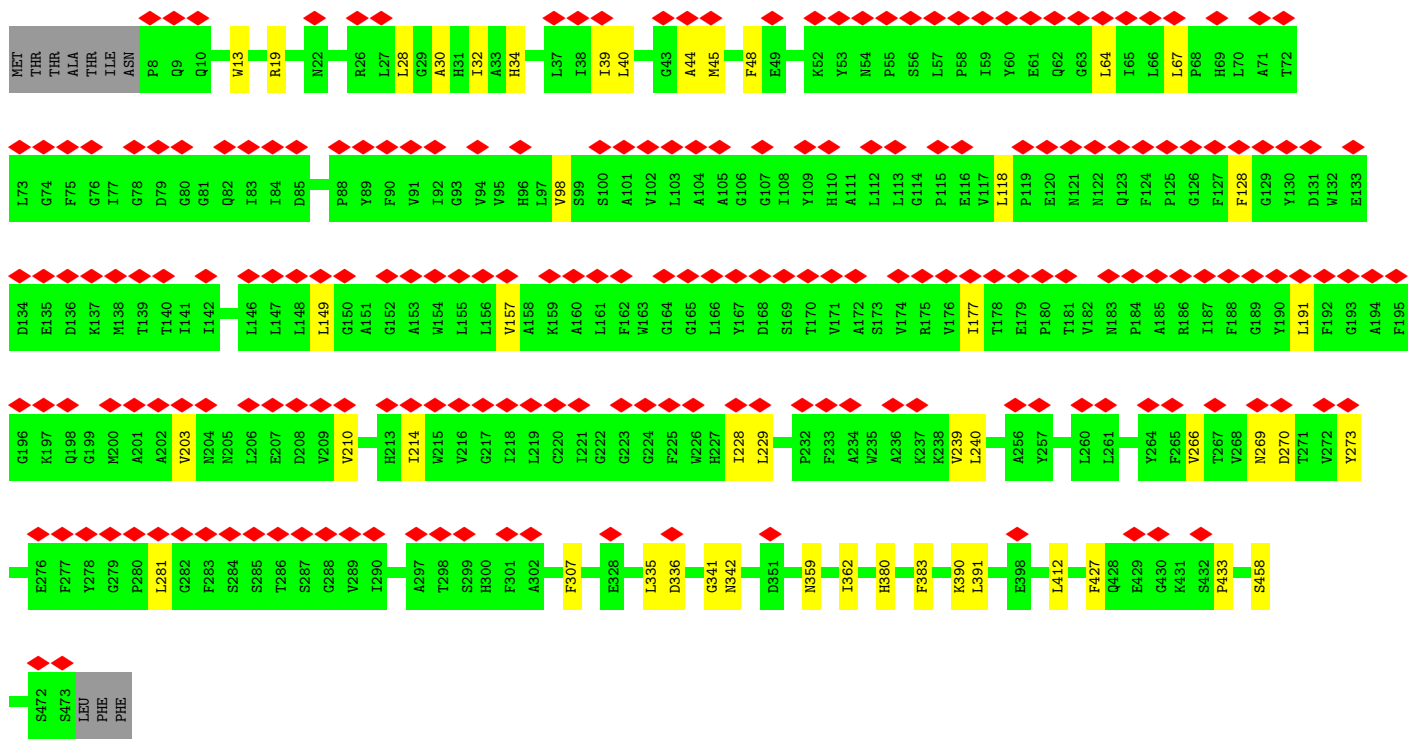
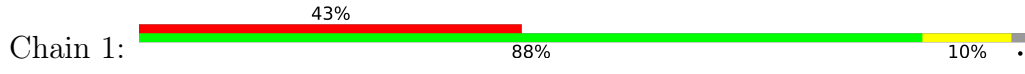
Chain M:  75% 25%



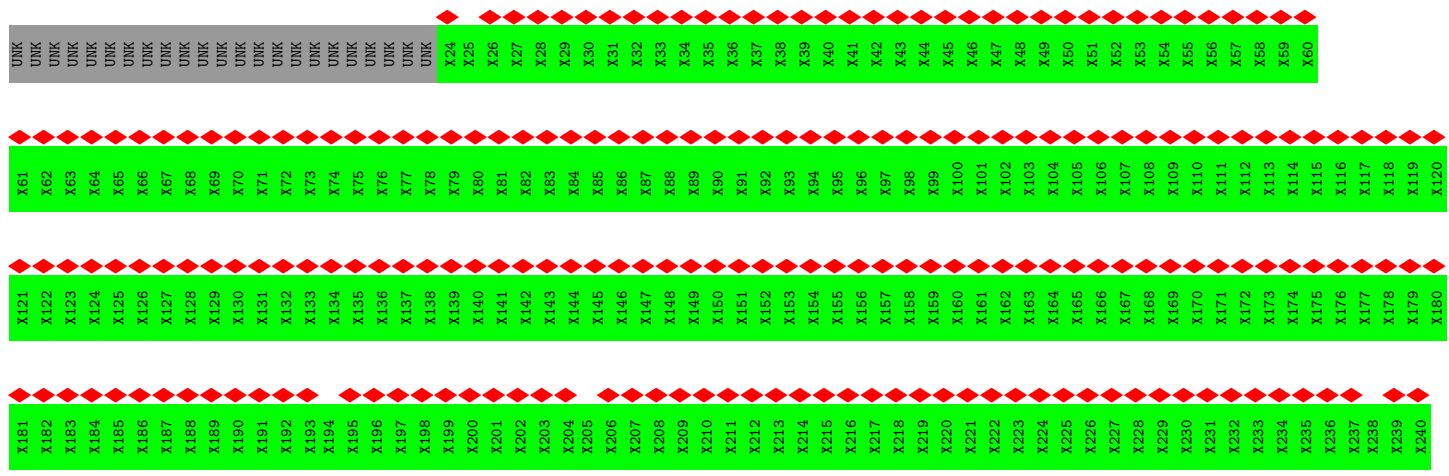
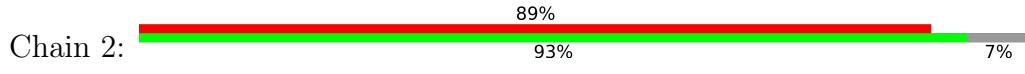
- Molecule 11: Photosystem I 4.8 kDa protein

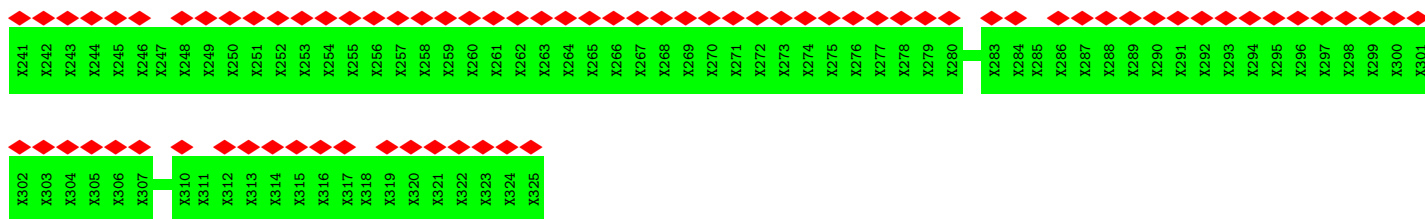


• Molecule 12: Photosystem I reaction center subunit XI

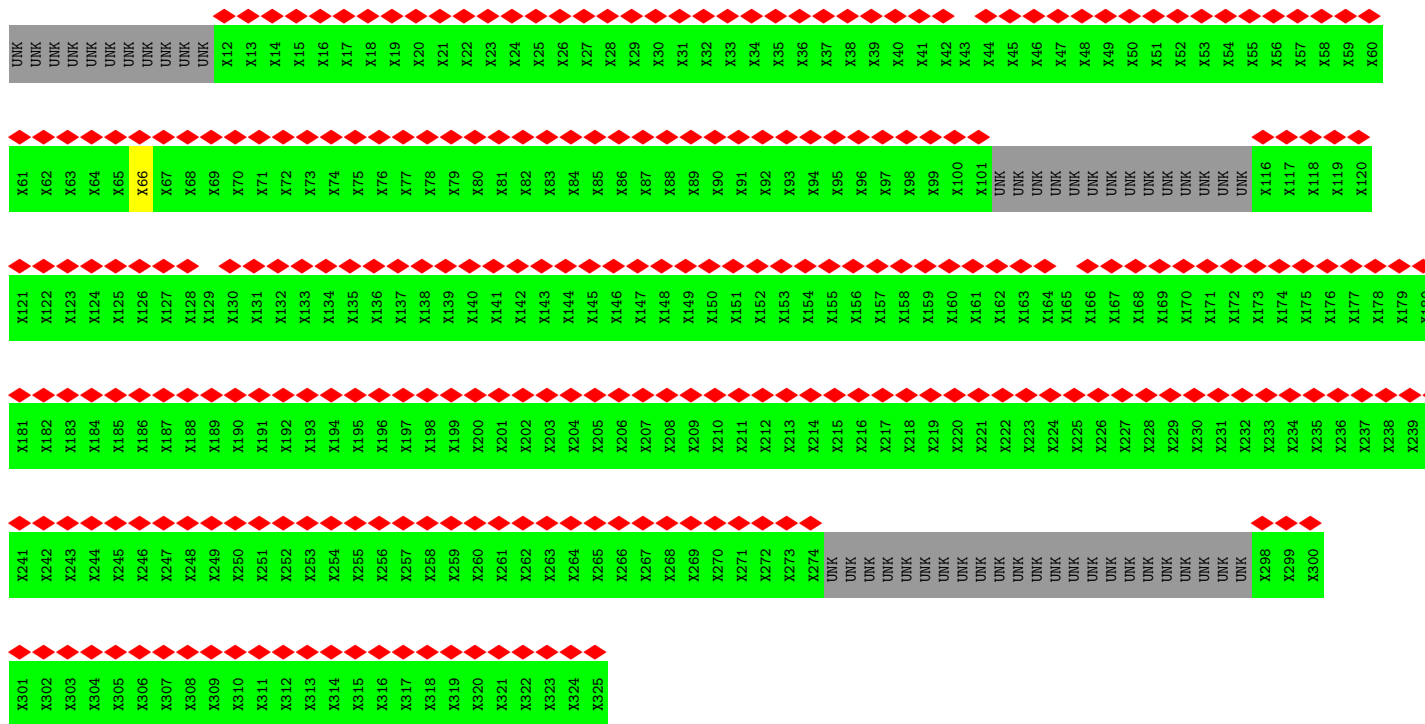
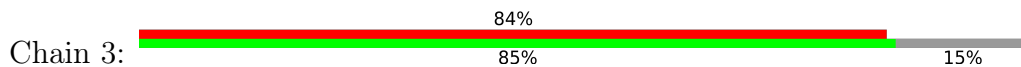


• Molecule 13: IsiA

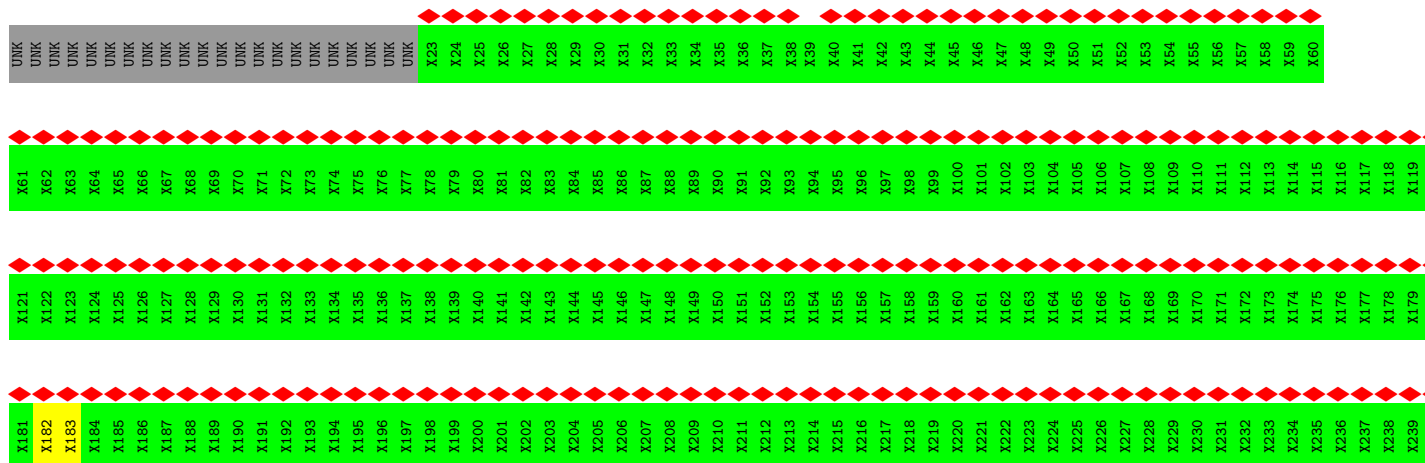
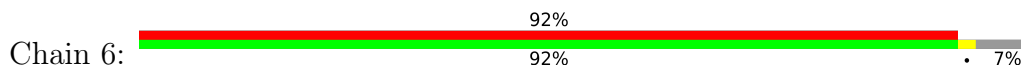




• Molecule 13: IsiA

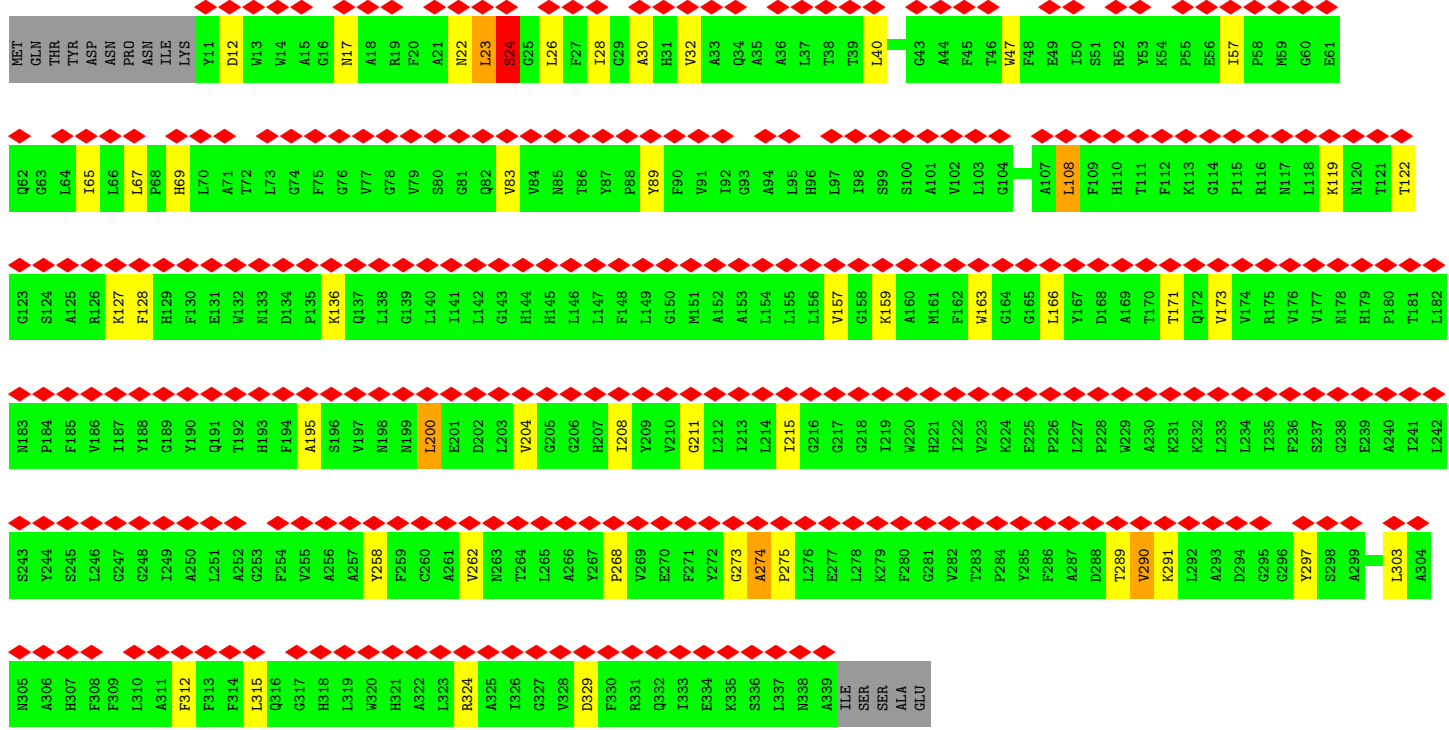
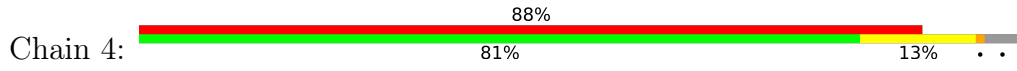


• Molecule 13: IsiA

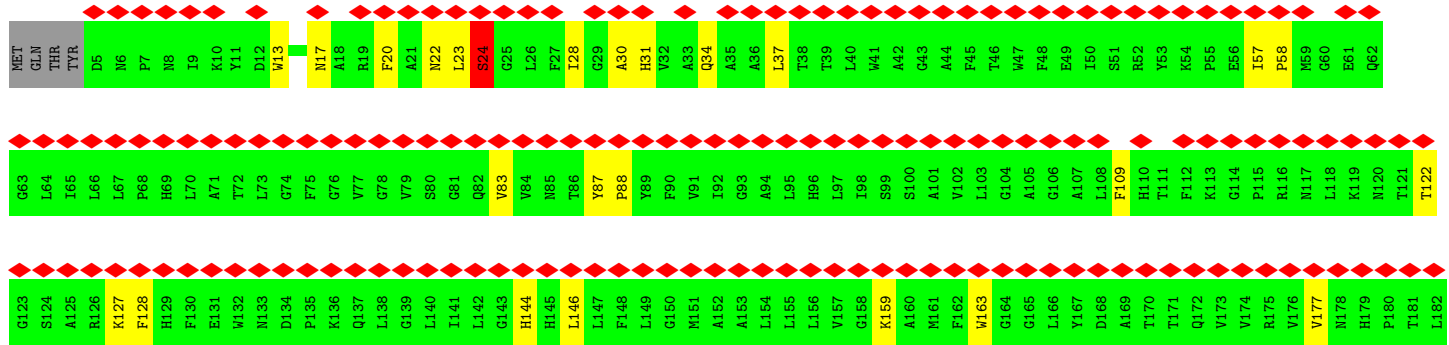
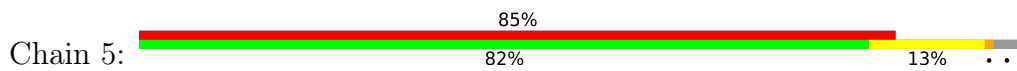


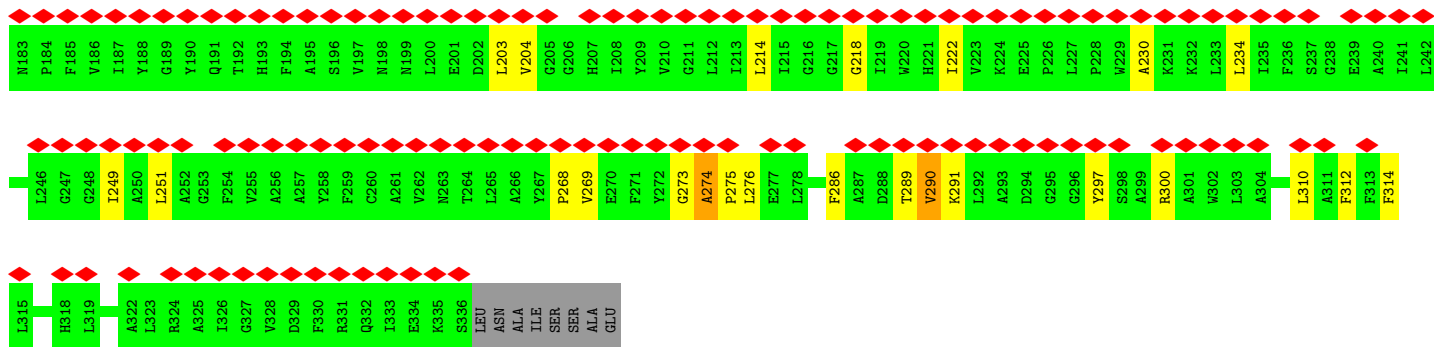


• Molecule 14: Iron stress-induced chlorophyll-binding protein



• Molecule 14: Iron stress-induced chlorophyll-binding protein





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	47602	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	JEOL CRYO ARM 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	11.70	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.157	Depositor
Minimum map value	-0.084	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.016	Depositor
Map size (Å)	229.68001, 229.68001, 229.68001	wwPDB
Map dimensions	232, 232, 232	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.99, 0.99, 0.99	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: BCR, CLO, PQN, LHG, CLA, LMG, LMT, SF4

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	0.61	0/6023	0.71	0/8216
2	B	0.60	0/6143	0.72	0/8398
3	C	0.63	0/609	0.79	0/826
4	D	0.63	0/1067	0.76	0/1441
5	E	0.64	0/499	0.77	0/677
6	F	0.63	0/1104	0.76	0/1500
7	I	0.63	0/262	0.68	0/358
8	J	0.61	0/358	0.67	0/490
10	M	0.64	0/239	0.68	0/326
11	X	0.59	0/253	0.67	0/347
12	1	0.67	0/3702	0.72	0/5059
14	4	0.68	0/2648	0.79	0/3611
14	5	0.69	0/2676	0.77	0/3649
All	All	0.64	0/25583	0.74	0/34898

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5824	0	5701	79	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	5919	0	5676	87	0
3	C	599	0	577	5	0
4	D	1043	0	1049	5	0
5	E	490	0	484	2	0
6	F	1080	0	1076	9	0
7	I	253	0	255	1	0
8	J	347	0	352	3	0
9	K	360	0	77	5	0
10	M	235	0	251	0	0
11	X	243	0	244	2	0
12	1	3590	0	3568	33	0
13	2	1474	0	277	0	0
13	3	1354	0	264	1	0
13	6	1479	0	284	3	0
14	4	2562	0	2544	35	0
14	5	2589	0	2569	38	0
15	A	65	0	72	7	0
16	1	959	0	764	39	0
16	2	270	0	198	8	0
16	3	45	0	33	2	0
16	4	450	0	330	13	0
16	5	851	0	623	46	0
16	6	401	0	293	10	0
16	A	2460	0	2456	138	0
16	B	2489	0	2585	161	0
16	F	96	0	74	8	0
16	J	90	0	66	4	0
16	K	86	0	62	10	0
16	X	45	0	33	2	0
17	A	33	0	46	5	0
17	B	33	0	46	5	0
18	A	8	0	0	0	0
18	C	16	0	0	1	0
19	1	200	0	280	8	0
19	4	40	0	56	3	0
19	5	80	0	112	5	0
19	A	240	0	336	14	0
19	B	280	0	392	15	0
19	F	80	0	112	4	0
19	I	80	0	112	7	0
19	J	80	0	112	4	0
19	K	40	0	56	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	M	40	0	56	2	0
20	A	76	0	98	4	0
20	B	49	0	74	3	0
20	F	49	0	74	0	0
21	1	35	0	46	0	0
21	5	35	0	46	0	0
21	A	35	0	46	0	0
21	B	70	0	92	0	0
21	M	35	0	46	2	0
22	B	55	0	86	3	0
23	1	2	0	0	0	0
23	A	9	0	0	0	0
23	B	12	0	0	0	0
23	F	2	0	0	0	0
23	K	1	0	0	0	0
All	All	39463	0	35161	592	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 592 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)
14:5:28:ILE:HD11	16:5:414:CLA:HBC3	1.49	0.94
16:A:804:CLA:H201	16:B:802:CLA:H141	1.49	0.92
16:B:807:CLA:H92	16:B:807:CLA:HMC2	1.56	0.86
14:4:157:VAL:HG11	14:4:208:ILE:HD11	1.64	0.79
14:5:276:LEU:HD23	14:5:300:ARG:HD2	1.66	0.77

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	740/752 (98%)	714 (96%)	26 (4%)	0	100	100
2	B	737/741 (100%)	713 (97%)	22 (3%)	2 (0%)	41	62
3	C	78/81 (96%)	76 (97%)	2 (3%)	0	100	100
4	D	133/139 (96%)	130 (98%)	3 (2%)	0	100	100
5	E	59/70 (84%)	59 (100%)	0	0	100	100
6	F	139/164 (85%)	137 (99%)	1 (1%)	1 (1%)	22	41
7	I	29/46 (63%)	28 (97%)	1 (3%)	0	100	100
8	J	41/49 (84%)	40 (98%)	1 (2%)	0	100	100
10	M	28/40 (70%)	28 (100%)	0	0	100	100
11	X	27/44 (61%)	26 (96%)	1 (4%)	0	100	100
12	1	464/476 (98%)	446 (96%)	18 (4%)	0	100	100
14	4	327/344 (95%)	290 (89%)	26 (8%)	11 (3%)	3	5
14	5	330/344 (96%)	289 (88%)	31 (9%)	10 (3%)	4	6
All	All	3132/3290 (95%)	2976 (95%)	132 (4%)	24 (1%)	24	36

5 of 24 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	481	LEU
14	4	274	ALA
14	5	274	ALA
6	F	26	ALA
14	4	24	SER

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	595/605 (98%)	593 (100%)	2 (0%)	92	97
2	B	601/602 (100%)	600 (100%)	1 (0%)	93	98
3	C	68/69 (99%)	68 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	D	108/110 (98%)	108 (100%)	0	100	100
5	E	54/60 (90%)	54 (100%)	0	100	100
6	F	110/129 (85%)	110 (100%)	0	100	100
7	I	28/39 (72%)	28 (100%)	0	100	100
8	J	38/42 (90%)	38 (100%)	0	100	100
10	M	25/34 (74%)	25 (100%)	0	100	100
11	X	24/34 (71%)	23 (96%)	1 (4%)	30	53
12	1	364/373 (98%)	363 (100%)	1 (0%)	92	97
14	4	252/266 (95%)	244 (97%)	8 (3%)	39	63
14	5	256/266 (96%)	252 (98%)	4 (2%)	62	81
All	All	2523/2629 (96%)	2506 (99%)	17 (1%)	84	93

5 of 17 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
14	5	37	LEU
14	5	144	HIS
14	4	24	SER
14	4	69	HIS
14	4	108	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 8 such sidechains are listed below:

Mol	Chain	Res	Type
14	5	133	ASN
12	1	269	ASN
4	D	39	GLN
2	B	619	ASN
6	F	38	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

201 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
16	CLA	A	832	-	50,58,73	2.11	15 (30%)	58,95,113	3.14	28 (48%)
16	CLA	1	501	20	45,53,73	2.34	16 (35%)	52,89,113	3.12	26 (50%)
16	CLA	A	811	-	45,53,73	2.29	16 (35%)	52,89,113	3.20	26 (50%)
16	CLA	5	422	-	45,53,73	2.54	16 (35%)	52,89,113	3.17	23 (44%)
16	CLA	5	421	-	45,53,73	2.53	17 (37%)	52,89,113	3.15	25 (48%)
16	CLA	A	804	-	65,73,73	1.89	15 (23%)	76,113,113	2.78	27 (35%)
16	CLA	A	802	23	65,73,73	1.85	16 (24%)	76,113,113	2.81	28 (36%)
16	CLA	3	401	-	45,53,73	2.55	17 (37%)	52,89,113	3.17	22 (42%)
16	CLA	B	803	-	65,73,73	1.91	15 (23%)	76,113,113	2.55	28 (36%)
16	CLA	4	406	-	45,53,73	2.47	16 (35%)	52,89,113	3.15	21 (40%)
16	CLA	B	824	2	65,73,73	1.91	16 (24%)	76,113,113	2.78	28 (36%)
16	CLA	B	835	23	45,53,73	2.33	17 (37%)	52,89,113	3.16	20 (38%)
16	CLA	A	831	-	65,73,73	1.93	16 (24%)	76,113,113	2.86	23 (30%)
16	CLA	K	101	-	42,49,73	2.31	15 (35%)	48,83,113	3.12	21 (43%)
16	CLA	5	407	-	45,53,73	2.51	16 (35%)	52,89,113	3.16	24 (46%)
16	CLA	B	807	-	65,73,73	1.94	16 (24%)	76,113,113	2.66	25 (32%)
19	BCR	1	522	-	41,41,41	1.64	9 (21%)	56,56,56	1.23	9 (16%)
16	CLA	1	508	-	45,53,73	2.43	17 (37%)	52,89,113	3.12	25 (48%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	A	830	-	65,73,73	1.93	15 (23%)	76,113,113	2.61	21 (27%)
16	CLA	1	511	-	51,59,73	2.32	16 (31%)	59,96,113	3.03	27 (45%)
19	BCR	B	844	-	41,41,41	1.67	9 (21%)	56,56,56	1.33	8 (14%)
16	CLA	5	408	-	45,53,73	2.56	17 (37%)	52,89,113	3.31	22 (42%)
16	CLA	B	815	-	45,53,73	2.37	14 (31%)	52,89,113	3.22	25 (48%)
16	CLA	A	842	-	65,73,73	1.96	17 (26%)	76,113,113	2.77	24 (31%)
16	CLA	B	834	-	65,73,73	1.93	17 (26%)	76,113,113	2.66	28 (36%)
16	CLA	A	817	23	49,57,73	2.33	16 (32%)	55,93,113	3.07	24 (43%)
16	CLA	A	813	-	54,62,73	2.15	17 (31%)	62,99,113	2.98	27 (43%)
16	CLA	A	826	23	65,73,73	2.00	18 (27%)	76,113,113	2.64	30 (39%)
16	CLA	5	418	-	45,53,73	2.54	17 (37%)	52,89,113	3.14	24 (46%)
16	CLA	A	812	16	65,73,73	1.87	16 (24%)	76,113,113	2.77	29 (38%)
16	CLA	1	521	23	52,60,73	2.31	16 (30%)	60,97,113	3.01	25 (41%)
20	LHG	B	850	-	48,48,48	0.27	0	51,54,54	0.33	0
17	PQN	B	842	-	34,34,34	1.66	2 (5%)	42,45,45	0.83	1 (2%)
19	BCR	A	846	-	41,41,41	1.62	9 (21%)	56,56,56	1.35	10 (17%)
16	CLA	2	402	-	45,53,73	2.55	17 (37%)	52,89,113	3.15	22 (42%)
16	CLA	6	402	-	45,53,73	2.54	17 (37%)	52,89,113	3.16	23 (44%)
16	CLA	A	841	-	65,73,73	1.95	17 (26%)	76,113,113	2.80	28 (36%)
16	CLA	5	403	-	45,53,73	2.51	16 (35%)	52,89,113	3.28	21 (40%)
16	CLA	2	404	-	45,53,73	2.53	17 (37%)	52,89,113	3.19	22 (42%)
16	CLA	A	808	-	51,59,73	2.22	15 (29%)	59,96,113	3.09	25 (42%)
19	BCR	K	102	-	41,41,41	1.65	8 (19%)	56,56,56	1.38	9 (16%)
21	LMT	B	851	-	36,36,36	0.51	1 (2%)	47,47,47	0.69	1 (2%)
16	CLA	B	825	23	65,73,73	2.00	15 (23%)	76,113,113	2.81	33 (43%)
16	CLA	5	404	-	45,53,73	2.42	17 (37%)	52,89,113	3.15	20 (38%)
16	CLA	1	512	12	45,53,73	2.44	16 (35%)	52,89,113	3.22	26 (50%)
16	CLA	A	803	-	65,73,73	1.96	14 (21%)	76,113,113	2.72	30 (39%)
16	CLA	J	101	8	45,53,73	2.39	16 (35%)	52,89,113	3.13	24 (46%)
16	CLA	5	412	-	45,53,73	2.52	16 (35%)	52,89,113	3.19	24 (46%)
20	LHG	A	853	16	26,26,48	0.32	0	29,32,54	0.48	0
16	CLA	1	513	-	45,53,73	2.48	16 (35%)	52,89,113	3.11	23 (44%)
19	BCR	B	846	-	41,41,41	1.58	10 (24%)	56,56,56	1.32	7 (12%)
16	CLA	B	829	-	65,73,73	1.90	17 (26%)	76,113,113	2.81	28 (36%)
16	CLA	1	526	-	45,53,73	2.53	17 (37%)	52,89,113	3.20	23 (44%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	4	409	-	45,53,73	2.53	17 (37%)	52,89,113	3.25	22 (42%)
16	CLA	B	833	-	58,66,73	2.02	17 (29%)	67,104,113	2.90	27 (40%)
16	CLA	2	403	-	45,53,73	2.54	17 (37%)	52,89,113	3.16	23 (44%)
16	CLA	B	814	-	56,64,73	2.12	16 (28%)	65,102,113	2.99	25 (38%)
16	CLA	6	403	-	45,53,73	2.52	17 (37%)	52,89,113	3.14	24 (46%)
16	CLA	1	506	-	45,53,73	2.47	16 (35%)	52,89,113	3.17	23 (44%)
16	CLA	B	809	2	65,73,73	1.84	15 (23%)	76,113,113	2.69	27 (35%)
19	BCR	1	523	-	41,41,41	1.61	10 (24%)	56,56,56	1.35	8 (14%)
19	BCR	M	102	-	41,41,41	1.65	8 (19%)	56,56,56	1.35	8 (14%)
16	CLA	4	402	-	45,53,73	2.51	17 (37%)	52,89,113	3.27	23 (44%)
16	CLA	B	837	-	60,68,73	2.01	16 (26%)	70,107,113	2.79	26 (37%)
16	CLA	6	407	-	45,53,73	2.55	17 (37%)	52,89,113	3.18	22 (42%)
16	CLA	B	836	23	45,53,73	2.44	16 (35%)	52,89,113	3.16	24 (46%)
22	LMG	B	849	-	55,55,55	0.24	0	63,63,63	0.39	0
20	LHG	A	852	-	48,48,48	0.30	0	51,54,54	0.50	0
16	CLA	6	408	-	41,49,73	2.59	16 (39%)	47,84,113	3.34	22 (46%)
16	CLA	B	801	-	65,73,73	1.90	16 (24%)	76,113,113	2.89	30 (39%)
16	CLA	4	410	14	45,53,73	2.56	17 (37%)	52,89,113	3.19	22 (42%)
16	CLA	6	405	-	45,53,73	2.55	17 (37%)	52,89,113	3.15	25 (48%)
16	CLA	A	824	-	51,59,73	2.22	16 (31%)	59,96,113	3.14	25 (42%)
19	BCR	B	848	-	41,41,41	1.65	11 (26%)	56,56,56	1.36	9 (16%)
16	CLA	F	204	23	45,53,73	2.38	16 (35%)	52,89,113	3.19	23 (44%)
16	CLA	A	835	-	65,73,73	1.88	14 (21%)	76,113,113	2.81	28 (36%)
16	CLA	5	410	-	45,53,73	2.49	17 (37%)	52,89,113	3.19	23 (44%)
16	CLA	B	820	-	47,55,73	2.35	16 (34%)	54,91,113	3.23	27 (50%)
16	CLA	B	816	-	55,63,73	2.08	14 (25%)	64,101,113	3.12	27 (42%)
16	CLA	A	807	-	65,73,73	1.93	16 (24%)	76,113,113	2.77	25 (32%)
16	CLA	B	818	-	65,73,73	1.86	14 (21%)	76,113,113	2.87	28 (36%)
16	CLA	1	514	-	45,53,73	2.52	17 (37%)	52,89,113	3.22	22 (42%)
16	CLA	A	827	23	55,63,73	2.12	15 (27%)	64,101,113	2.93	23 (35%)
16	CLA	1	520	-	65,73,73	1.94	14 (21%)	76,113,113	2.80	27 (35%)
16	CLA	B	840	23	65,73,73	1.93	16 (24%)	76,113,113	2.63	24 (31%)
16	CLA	5	409	-	45,53,73	2.45	17 (37%)	52,89,113	3.27	22 (42%)
21	LMT	5	401	-	36,36,36	0.43	0	47,47,47	0.75	1 (2%)
19	BCR	F	202	-	41,41,41	1.63	10 (24%)	56,56,56	1.32	8 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	1	519	12	65,73,73	2.08	14 (21%)	76,113,113	2.69	26 (34%)
15	CL0	A	801	-	65,73,73	1.97	18 (27%)	76,113,113	2.85	30 (39%)
16	CLA	2	405	-	45,53,73	2.55	16 (35%)	52,89,113	3.15	23 (44%)
16	CLA	A	840	-	65,73,73	1.88	18 (27%)	76,113,113	2.86	24 (31%)
16	CLA	A	806	-	65,73,73	1.89	16 (24%)	76,113,113	2.87	28 (36%)
16	CLA	A	834	-	65,73,73	1.87	14 (21%)	76,113,113	2.69	29 (38%)
16	CLA	5	411	-	45,53,73	2.45	16 (35%)	52,89,113	3.08	23 (44%)
16	CLA	J	102	-	45,53,73	2.43	16 (35%)	52,89,113	3.18	24 (46%)
16	CLA	K	103	23	45,53,73	2.39	17 (37%)	52,89,113	3.23	24 (46%)
19	BCR	A	850	-	41,41,41	1.61	12 (29%)	56,56,56	1.30	7 (12%)
19	BCR	1	517	-	41,41,41	1.74	8 (19%)	56,56,56	1.53	9 (16%)
16	CLA	1	505	-	45,53,73	2.52	17 (37%)	52,89,113	3.19	23 (44%)
16	CLA	6	404	-	45,53,73	2.55	17 (37%)	52,89,113	3.20	23 (44%)
19	BCR	1	516	-	41,41,41	1.66	7 (17%)	56,56,56	1.53	10 (17%)
16	CLA	1	507	-	45,53,73	2.55	16 (35%)	52,89,113	3.20	22 (42%)
16	CLA	4	404	-	45,53,73	2.57	17 (37%)	52,89,113	3.17	23 (44%)
21	LMT	M	101	-	36,36,36	0.47	0	47,47,47	0.67	0
19	BCR	B	847	-	41,41,41	1.62	10 (24%)	56,56,56	1.35	7 (12%)
18	SF4	C	101	3	0,12,12	-	-	-	-	-
19	BCR	B	843	-	41,41,41	1.64	8 (19%)	56,56,56	1.35	8 (14%)
19	BCR	B	845	-	41,41,41	1.60	8 (19%)	56,56,56	1.36	8 (14%)
16	CLA	1	510	-	45,53,73	2.48	16 (35%)	52,89,113	3.13	24 (46%)
16	CLA	A	825	-	47,55,73	2.29	18 (38%)	54,91,113	3.17	21 (38%)
17	PQN	A	844	-	34,34,34	1.56	2 (5%)	42,45,45	1.12	4 (9%)
16	CLA	B	808	-	65,73,73	1.86	16 (24%)	76,113,113	2.92	29 (38%)
16	CLA	4	407	14	45,53,73	2.54	16 (35%)	52,89,113	3.25	25 (48%)
16	CLA	6	401	-	45,53,73	2.56	17 (37%)	52,89,113	3.16	23 (44%)
16	CLA	A	829	-	65,73,73	1.91	15 (23%)	76,113,113	2.82	30 (39%)
16	CLA	1	515	12	45,53,73	2.56	16 (35%)	52,89,113	3.18	23 (44%)
16	CLA	2	406	-	45,53,73	2.53	17 (37%)	52,89,113	3.17	21 (40%)
16	CLA	B	823	-	65,73,73	1.97	15 (23%)	76,113,113	2.85	33 (43%)
16	CLA	B	822	23	55,63,73	2.22	16 (29%)	64,101,113	2.83	27 (42%)
16	CLA	A	839	-	65,73,73	1.92	16 (24%)	76,113,113	2.85	28 (36%)
16	CLA	A	819	-	54,62,73	2.13	16 (29%)	62,99,113	2.94	25 (40%)
16	CLA	A	821	-	50,58,73	2.25	17 (34%)	58,95,113	3.11	25 (43%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	A	833	-	65,73,73	2.05	18 (27%)	76,113,113	2.78	29 (38%)
16	CLA	5	413	14	45,53,73	2.52	17 (37%)	52,89,113	3.20	23 (44%)
16	CLA	A	814	-	65,73,73	1.95	16 (24%)	76,113,113	2.67	25 (32%)
16	CLA	A	809	1	65,73,73	2.02	15 (23%)	76,113,113	2.75	31 (40%)
16	CLA	B	812	-	45,53,73	2.36	16 (35%)	52,89,113	3.27	27 (51%)
16	CLA	B	821	-	45,53,73	2.44	15 (33%)	52,89,113	3.17	25 (48%)
16	CLA	A	836	-	51,59,73	2.17	17 (33%)	59,96,113	3.00	26 (44%)
16	CLA	4	411	-	45,53,73	2.55	17 (37%)	52,89,113	3.20	23 (44%)
16	CLA	B	838	-	65,73,73	1.88	15 (23%)	76,113,113	2.70	27 (35%)
16	CLA	6	409	13	45,53,73	2.55	17 (37%)	52,89,113	3.17	23 (44%)
19	BCR	A	847	-	41,41,41	1.64	8 (19%)	56,56,56	1.27	7 (12%)
16	CLA	X	101	11	45,53,73	2.37	18 (40%)	52,89,113	3.12	22 (42%)
19	BCR	A	848	-	41,41,41	1.65	10 (24%)	56,56,56	1.34	9 (16%)
16	CLA	4	405	-	45,53,73	2.55	17 (37%)	52,89,113	3.24	25 (48%)
19	BCR	I	101	-	41,41,41	1.64	9 (21%)	56,56,56	1.42	9 (16%)
21	LMT	B	852	-	36,36,36	0.49	0	47,47,47	0.94	3 (6%)
16	CLA	5	416	-	41,49,73	2.57	17 (41%)	47,84,113	3.37	23 (48%)
16	CLA	B	832	-	65,73,73	1.87	15 (23%)	76,113,113	2.93	24 (31%)
16	CLA	A	820	-	65,73,73	1.91	16 (24%)	76,113,113	2.85	28 (36%)
16	CLA	A	816	-	45,53,73	2.36	14 (31%)	52,89,113	3.18	25 (48%)
18	SF4	C	102	3	0,12,12	-	-	-	-	-
16	CLA	A	818	-	54,62,73	2.14	15 (27%)	62,99,113	3.15	22 (35%)
16	CLA	B	811	-	65,73,73	1.93	15 (23%)	76,113,113	2.68	25 (32%)
16	CLA	5	405	-	45,53,73	2.52	17 (37%)	52,89,113	3.30	23 (44%)
16	CLA	B	804	2	54,62,73	2.18	16 (29%)	62,99,113	2.91	30 (48%)
19	BCR	5	402	-	41,41,41	1.67	8 (19%)	56,56,56	1.41	8 (14%)
16	CLA	B	802	23	65,73,73	1.93	18 (27%)	76,113,113	2.85	30 (39%)
19	BCR	A	849	-	41,41,41	1.66	7 (17%)	56,56,56	1.58	11 (19%)
16	CLA	A	822	23	65,73,73	1.97	15 (23%)	76,113,113	2.65	26 (34%)
18	SF4	A	845	1,2	0,12,12	-	-	-	-	-
16	CLA	B	806	-	65,73,73	1.90	16 (24%)	76,113,113	2.71	27 (35%)
16	CLA	5	415	-	45,53,73	2.53	17 (37%)	52,89,113	3.36	22 (42%)
16	CLA	B	810	-	65,73,73	1.92	16 (24%)	76,113,113	2.85	25 (32%)
19	BCR	4	401	-	41,41,41	1.67	8 (19%)	56,56,56	1.48	9 (16%)
21	LMT	A	854	-	36,36,36	0.42	0	47,47,47	0.99	4 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	4	403	-	45,53,73	2.52	16 (35%)	52,89,113	3.28	22 (42%)
16	CLA	B	831	-	65,73,73	2.03	17 (26%)	76,113,113	2.77	29 (38%)
16	CLA	1	504	-	45,53,73	2.44	17 (37%)	52,89,113	3.43	23 (44%)
19	BCR	J	103	-	41,41,41	1.60	8 (19%)	56,56,56	1.31	7 (12%)
19	BCR	F	205	-	41,41,41	1.65	8 (19%)	56,56,56	1.32	8 (14%)
16	CLA	1	509	-	45,53,73	2.37	15 (33%)	52,89,113	3.24	24 (46%)
16	CLA	A	828	-	65,73,73	1.91	17 (26%)	76,113,113	2.78	25 (32%)
16	CLA	1	503	-	51,59,73	2.36	16 (31%)	59,96,113	2.97	27 (45%)
16	CLA	A	815	-	45,53,73	2.36	18 (40%)	52,89,113	3.15	24 (46%)
16	CLA	B	830	-	65,73,73	1.96	16 (24%)	76,113,113	2.59	27 (35%)
19	BCR	5	420	-	41,41,41	1.71	8 (19%)	56,56,56	1.33	9 (16%)
16	CLA	5	417	14	45,53,73	2.53	17 (37%)	52,89,113	3.19	24 (46%)
16	CLA	F	201	23	51,59,73	2.15	16 (31%)	59,96,113	2.85	24 (40%)
16	CLA	6	406	-	45,53,73	2.55	17 (37%)	52,89,113	3.14	23 (44%)
16	CLA	B	813	-	65,73,73	1.90	15 (23%)	76,113,113	2.83	23 (30%)
16	CLA	B	827	-	65,73,73	1.94	16 (24%)	76,113,113	2.97	28 (36%)
16	CLA	B	826	-	65,73,73	1.92	16 (24%)	76,113,113	2.82	23 (30%)
16	CLA	B	839	-	65,73,73	1.92	18 (27%)	76,113,113	2.83	27 (35%)
16	CLA	A	823	-	49,57,73	2.20	16 (32%)	55,93,113	3.38	25 (45%)
16	CLA	1	525	-	45,53,73	2.52	16 (35%)	52,89,113	3.13	24 (46%)
16	CLA	5	414	-	45,53,73	2.44	17 (37%)	52,89,113	3.06	22 (42%)
16	CLA	1	502	-	45,53,73	2.50	16 (35%)	52,89,113	3.28	22 (42%)
16	CLA	B	841	-	65,73,73	1.90	18 (27%)	76,113,113	2.86	23 (30%)
16	CLA	5	406	-	45,53,73	2.54	17 (37%)	52,89,113	3.21	24 (46%)
16	CLA	A	843	23	65,73,73	1.97	16 (24%)	76,113,113	2.79	27 (35%)
16	CLA	B	828	-	65,73,73	1.90	15 (23%)	76,113,113	2.59	25 (32%)
19	BCR	A	851	-	41,41,41	1.69	8 (19%)	56,56,56	1.40	10 (17%)
16	CLA	B	819	23	65,73,73	2.02	15 (23%)	76,113,113	2.69	29 (38%)
16	CLA	A	837	1	45,53,73	2.38	17 (37%)	52,89,113	3.24	24 (46%)
16	CLA	2	401	-	45,53,73	2.54	16 (35%)	52,89,113	3.24	21 (40%)
19	BCR	I	102	-	41,41,41	1.69	7 (17%)	56,56,56	1.68	12 (21%)
21	LMT	1	524	-	36,36,36	0.53	1 (2%)	47,47,47	0.64	1 (2%)
19	BCR	J	104	-	41,41,41	1.58	9 (21%)	56,56,56	1.38	9 (16%)
16	CLA	B	805	-	65,73,73	1.93	15 (23%)	76,113,113	2.83	29 (38%)
16	CLA	A	810	1	65,73,73	1.98	17 (26%)	76,113,113	2.71	26 (34%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
16	CLA	B	817	-	59,67,73	2.02	16 (27%)	68,105,113	2.91	27 (39%)
16	CLA	A	838	-	51,59,73	2.18	17 (33%)	59,96,113	3.10	25 (42%)
19	BCR	1	518	-	41,41,41	1.72	8 (19%)	56,56,56	1.49	10 (17%)
16	CLA	4	408	14	45,53,73	2.52	17 (37%)	52,89,113	3.14	22 (42%)
16	CLA	5	419	-	45,53,73	2.50	17 (37%)	52,89,113	3.21	22 (42%)
19	BCR	B	853	-	41,41,41	1.65	9 (21%)	56,56,56	1.29	7 (12%)
20	LHG	F	203	-	48,48,48	0.27	0	51,54,54	0.37	0
16	CLA	A	805	16	54,62,73	2.15	14 (25%)	62,99,113	3.02	29 (46%)

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
16	CLA	A	832	-	-	3/19/97/115	-
16	CLA	1	501	20	1/1/11/20	5/13/91/115	-
16	CLA	A	811	-	1/1/11/20	2/13/91/115	-
16	CLA	5	422	-	1/1/11/20	6/13/91/115	-
16	CLA	5	421	-	1/1/11/20	7/13/91/115	-
16	CLA	A	804	-	1/1/15/20	11/37/115/115	-
16	CLA	A	802	23	1/1/15/20	3/37/115/115	-
16	CLA	3	401	-	1/1/11/20	5/13/91/115	-
16	CLA	B	803	-	1/1/15/20	8/37/115/115	-
16	CLA	4	406	-	1/1/11/20	6/13/91/115	-
16	CLA	B	824	2	1/1/15/20	10/37/115/115	-
16	CLA	B	835	23	1/1/11/20	6/13/91/115	-
16	CLA	A	831	-	1/1/15/20	5/37/115/115	-
16	CLA	K	101	-	1/1/9/20	3/7/81/115	-
16	CLA	5	407	-	1/1/11/20	3/13/91/115	-
16	CLA	B	807	-	1/1/15/20	5/37/115/115	-
19	BCR	1	522	-	-	4/29/63/63	0/2/2/2
16	CLA	1	508	-	1/1/11/20	6/13/91/115	-
16	CLA	A	830	-	1/1/15/20	9/37/115/115	-
16	CLA	1	511	-	1/1/12/20	7/21/99/115	-
19	BCR	B	844	-	-	6/29/63/63	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	CLA	5	408	-	1/1/11/20	4/13/91/115	-
16	CLA	B	815	-	-	4/13/91/115	-
16	CLA	A	842	-	1/1/15/20	8/37/115/115	-
16	CLA	B	834	-	1/1/15/20	7/37/115/115	-
16	CLA	A	817	23	-	4/18/96/115	-
16	CLA	A	813	-	1/1/12/20	11/24/102/115	-
16	CLA	A	826	23	1/1/15/20	11/37/115/115	-
16	CLA	5	418	-	1/1/11/20	6/13/91/115	-
16	CLA	A	812	16	1/1/15/20	7/37/115/115	-
16	CLA	1	521	23	1/1/12/20	6/22/100/115	-
20	LHG	B	850	-	-	15/53/53/53	-
17	PQN	B	842	-	-	2/23/43/43	0/2/2/2
19	BCR	A	846	-	-	9/29/63/63	0/2/2/2
16	CLA	2	402	-	1/1/11/20	5/13/91/115	-
16	CLA	6	402	-	1/1/11/20	6/13/91/115	-
16	CLA	A	841	-	1/1/15/20	8/37/115/115	-
16	CLA	5	403	-	1/1/11/20	6/13/91/115	-
16	CLA	2	404	-	1/1/11/20	5/13/91/115	-
16	CLA	A	808	-	1/1/12/20	4/21/99/115	-
19	BCR	K	102	-	-	12/29/63/63	0/2/2/2
21	LMT	B	851	-	-	6/21/61/61	0/2/2/2
16	CLA	B	825	23	1/1/15/20	14/37/115/115	-
16	CLA	5	404	-	1/1/11/20	4/13/91/115	-
16	CLA	1	512	12	1/1/11/20	5/13/91/115	-
16	CLA	A	803	-	1/1/15/20	11/37/115/115	-
16	CLA	J	101	8	1/1/11/20	8/13/91/115	-
16	CLA	5	412	-	1/1/11/20	5/13/91/115	-
20	LHG	A	853	16	-	8/31/31/53	-
16	CLA	1	513	-	1/1/11/20	2/13/91/115	-
19	BCR	B	846	-	-	6/29/63/63	0/2/2/2
16	CLA	B	829	-	1/1/15/20	19/37/115/115	-
16	CLA	1	526	-	1/1/11/20	6/13/91/115	-
16	CLA	4	409	-	1/1/11/20	3/13/91/115	-
16	CLA	B	833	-	1/1/13/20	10/29/107/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	CLA	2	403	-	1/1/11/20	2/13/91/115	-
16	CLA	B	814	-	1/1/13/20	9/27/105/115	-
16	CLA	6	403	-	1/1/11/20	4/13/91/115	-
16	CLA	1	506	-	1/1/11/20	6/13/91/115	-
16	CLA	B	809	2	1/1/15/20	10/37/115/115	-
19	BCR	1	523	-	-	5/29/63/63	0/2/2/2
19	BCR	M	102	-	-	10/29/63/63	0/2/2/2
16	CLA	4	402	-	1/1/11/20	6/13/91/115	-
16	CLA	B	837	-	1/1/14/20	7/31/109/115	-
16	CLA	6	407	-	1/1/11/20	5/13/91/115	-
16	CLA	B	836	23	1/1/11/20	4/13/91/115	-
22	LMG	B	849	-	-	16/50/70/70	0/1/1/1
20	LHG	A	852	-	-	21/53/53/53	-
16	CLA	6	408	-	1/1/10/20	2/8/86/115	-
16	CLA	B	801	-	1/1/15/20	11/37/115/115	-
16	CLA	4	410	14	1/1/11/20	5/13/91/115	-
16	CLA	6	405	-	1/1/11/20	5/13/91/115	-
16	CLA	A	824	-	-	7/21/99/115	-
19	BCR	B	848	-	-	2/29/63/63	0/2/2/2
16	CLA	F	204	23	1/1/11/20	0/13/91/115	-
16	CLA	A	835	-	1/1/15/20	11/37/115/115	-
16	CLA	5	410	-	1/1/11/20	2/13/91/115	-
16	CLA	B	820	-	-	5/16/94/115	-
16	CLA	B	816	-	-	6/25/103/115	-
16	CLA	A	807	-	1/1/15/20	9/37/115/115	-
16	CLA	B	818	-	1/1/15/20	12/37/115/115	-
16	CLA	1	514	-	1/1/11/20	5/13/91/115	-
16	CLA	A	827	23	1/1/13/20	5/25/103/115	-
16	CLA	1	520	-	-	9/37/115/115	-
16	CLA	B	840	23	1/1/15/20	11/37/115/115	-
16	CLA	5	409	-	1/1/11/20	6/13/91/115	-
21	LMT	5	401	-	-	3/21/61/61	0/2/2/2
19	BCR	F	202	-	-	4/29/63/63	0/2/2/2
16	CLA	1	519	12	-	11/37/115/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
15	CL0	A	801	-	2/2/20/25	2/37/135/135	-
16	CLA	2	405	-	1/1/11/20	5/13/91/115	-
16	CLA	A	840	-	1/1/15/20	11/37/115/115	-
16	CLA	A	806	-	1/1/15/20	13/37/115/115	-
16	CLA	A	834	-	1/1/15/20	7/37/115/115	-
16	CLA	5	411	-	1/1/11/20	5/13/91/115	-
16	CLA	J	102	-	1/1/11/20	5/13/91/115	-
16	CLA	K	103	23	1/1/11/20	3/13/91/115	-
19	BCR	A	850	-	-	6/29/63/63	0/2/2/2
19	BCR	1	517	-	-	12/29/63/63	0/2/2/2
16	CLA	1	505	-	1/1/11/20	3/13/91/115	-
16	CLA	6	404	-	1/1/11/20	5/13/91/115	-
19	BCR	1	516	-	-	11/29/63/63	0/2/2/2
16	CLA	1	507	-	1/1/11/20	6/13/91/115	-
16	CLA	4	404	-	1/1/11/20	1/13/91/115	-
21	LMT	M	101	-	-	4/21/61/61	0/2/2/2
19	BCR	B	847	-	-	7/29/63/63	0/2/2/2
19	BCR	B	843	-	-	8/29/63/63	0/2/2/2
18	SF4	C	101	3	-	-	0/6/5/5
19	BCR	B	845	-	-	9/29/63/63	0/2/2/2
16	CLA	1	510	-	1/1/11/20	5/13/91/115	-
16	CLA	A	825	-	-	7/16/94/115	-
17	PQN	A	844	-	-	3/23/43/43	0/2/2/2
16	CLA	B	808	-	1/1/15/20	10/37/115/115	-
16	CLA	4	407	14	1/1/11/20	5/13/91/115	-
16	CLA	6	401	-	1/1/11/20	6/13/91/115	-
16	CLA	A	829	-	1/1/15/20	14/37/115/115	-
16	CLA	1	515	12	1/1/11/20	5/13/91/115	-
16	CLA	2	406	-	1/1/11/20	7/13/91/115	-
16	CLA	B	823	-	1/1/15/20	8/37/115/115	-
16	CLA	B	822	23	1/1/13/20	10/25/103/115	-
16	CLA	A	839	-	1/1/15/20	10/37/115/115	-
16	CLA	A	819	-	1/1/12/20	6/24/102/115	-
16	CLA	A	821	-	-	7/19/97/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	CLA	A	833	-	1/1/15/20	10/37/115/115	-
16	CLA	5	413	14	1/1/11/20	4/13/91/115	-
16	CLA	A	814	-	1/1/15/20	15/37/115/115	-
16	CLA	A	809	1	1/1/15/20	11/37/115/115	-
16	CLA	B	812	-	1/1/11/20	0/13/91/115	-
16	CLA	B	821	-	-	3/13/91/115	-
16	CLA	A	836	-	1/1/12/20	5/21/99/115	-
16	CLA	4	411	-	1/1/11/20	7/13/91/115	-
16	CLA	B	838	-	1/1/15/20	8/37/115/115	-
16	CLA	6	409	13	1/1/11/20	5/13/91/115	-
19	BCR	A	847	-	-	5/29/63/63	0/2/2/2
16	CLA	X	101	11	1/1/11/20	7/13/91/115	-
19	BCR	A	848	-	-	3/29/63/63	0/2/2/2
16	CLA	4	405	-	1/1/11/20	2/13/91/115	-
19	BCR	I	101	-	-	1/29/63/63	0/2/2/2
21	LMT	B	852	-	-	5/21/61/61	0/2/2/2
16	CLA	5	416	-	1/1/10/20	4/8/86/115	-
16	CLA	B	832	-	1/1/15/20	9/37/115/115	-
16	CLA	A	820	-	1/1/15/20	14/37/115/115	-
16	CLA	A	816	-	1/1/11/20	3/13/91/115	-
18	SF4	C	102	3	-	-	0/6/5/5
16	CLA	A	818	-	-	1/24/102/115	-
16	CLA	B	811	-	1/1/15/20	5/37/115/115	-
16	CLA	5	405	-	1/1/11/20	2/13/91/115	-
16	CLA	B	804	2	1/1/12/20	6/24/102/115	-
19	BCR	5	402	-	-	4/29/63/63	0/2/2/2
16	CLA	B	802	23	1/1/15/20	8/37/115/115	-
19	BCR	A	849	-	-	16/29/63/63	0/2/2/2
16	CLA	A	822	23	1/1/15/20	10/37/115/115	-
19	BCR	4	401	-	-	19/29/63/63	0/2/2/2
16	CLA	B	806	-	1/1/15/20	11/37/115/115	-
16	CLA	5	415	-	1/1/11/20	5/13/91/115	-
16	CLA	B	810	-	1/1/15/20	10/37/115/115	-
18	SF4	A	845	1,2	-	-	0/6/5/5
21	LMT	A	854	-	-	6/21/61/61	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	CLA	4	403	-	1/1/11/20	5/13/91/115	-
16	CLA	B	831	-	1/1/15/20	7/37/115/115	-
16	CLA	1	504	-	-	5/13/91/115	-
19	BCR	J	103	-	-	8/29/63/63	0/2/2/2
19	BCR	F	205	-	-	2/29/63/63	0/2/2/2
16	CLA	1	509	-	1/1/11/20	5/13/91/115	-
16	CLA	A	828	-	1/1/15/20	6/37/115/115	-
16	CLA	1	503	-	1/1/12/20	7/21/99/115	-
16	CLA	A	815	-	1/1/11/20	2/13/91/115	-
16	CLA	B	830	-	1/1/15/20	11/37/115/115	-
19	BCR	5	420	-	-	9/29/63/63	0/2/2/2
16	CLA	5	417	14	1/1/11/20	6/13/91/115	-
16	CLA	F	201	23	1/1/12/20	8/21/99/115	-
16	CLA	6	406	-	1/1/11/20	2/13/91/115	-
16	CLA	B	813	-	1/1/15/20	9/37/115/115	-
16	CLA	B	827	-	1/1/15/20	11/37/115/115	-
16	CLA	B	826	-	1/1/15/20	10/37/115/115	-
16	CLA	B	839	-	1/1/15/20	9/37/115/115	-
16	CLA	A	823	-	-	10/18/96/115	-
16	CLA	1	525	-	1/1/11/20	8/13/91/115	-
16	CLA	5	414	-	1/1/11/20	7/13/91/115	-
16	CLA	1	502	-	1/1/11/20	6/13/91/115	-
16	CLA	5	406	-	1/1/11/20	5/13/91/115	-
16	CLA	B	841	-	-	8/37/115/115	-
16	CLA	A	843	23	1/1/15/20	10/37/115/115	-
16	CLA	B	828	-	1/1/15/20	10/37/115/115	-
19	BCR	A	851	-	-	9/29/63/63	0/2/2/2
16	CLA	B	819	23	1/1/15/20	10/37/115/115	-
16	CLA	A	837	1	1/1/11/20	7/13/91/115	-
16	CLA	2	401	-	1/1/11/20	5/13/91/115	-
19	BCR	I	102	-	-	7/29/63/63	0/2/2/2
21	LMT	1	524	-	-	7/21/61/61	0/2/2/2
19	BCR	J	104	-	-	11/29/63/63	0/2/2/2
16	CLA	B	805	-	1/1/15/20	11/37/115/115	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
16	CLA	A	810	1	-	12/37/115/115	-
16	CLA	B	817	-	1/1/13/20	5/30/108/115	-
16	CLA	A	838	-	1/1/12/20	7/21/99/115	-
19	BCR	1	518	-	-	6/29/63/63	0/2/2/2
16	CLA	4	408	14	1/1/11/20	4/13/91/115	-
16	CLA	5	419	-	1/1/11/20	5/13/91/115	-
19	BCR	B	853	-	-	6/29/63/63	0/2/2/2
20	LHG	F	203	-	-	20/53/53/53	-
16	CLA	A	805	16	1/1/12/20	8/24/102/115	-

The worst 5 of 2785 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	B	842	PQN	C3-C2	7.90	1.49	1.35
17	A	844	PQN	C3-C2	7.37	1.48	1.35
16	B	822	CLA	C3B-C2B	6.39	1.49	1.40
16	A	837	CLA	C3B-C2B	6.33	1.49	1.40
16	A	826	CLA	C3B-C2B	6.27	1.49	1.40

The worst 5 of 4163 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	B	816	CLA	C1D-ND-C4D	-11.19	98.39	106.33
16	A	823	CLA	C1D-ND-C4D	-11.09	98.46	106.33
16	1	520	CLA	C1D-ND-C4D	-11.05	98.48	106.33
16	B	841	CLA	C1D-ND-C4D	-10.97	98.54	106.33
16	B	832	CLA	C1D-ND-C4D	-10.81	98.66	106.33

5 of 141 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
15	A	801	CL0	NC
15	A	801	CL0	ND
16	A	802	CLA	ND
16	A	803	CLA	ND
16	A	804	CLA	ND

5 of 1379 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	A	806	CLA	CBA-CGA-O2A-C1
16	A	806	CLA	O1A-CGA-O2A-C1
16	A	806	CLA	CHA-CBD-CGD-O1D
16	A	806	CLA	CHA-CBD-CGD-O2D
16	A	806	CLA	CAD-CBD-CGD-O1D

There are no ring outliers.

183 monomers are involved in 464 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	A	832	CLA	2	0
16	1	501	CLA	4	0
16	A	811	CLA	4	0
16	5	422	CLA	2	0
16	5	421	CLA	2	0
16	A	804	CLA	3	0
16	A	802	CLA	5	0
16	3	401	CLA	2	0
16	B	803	CLA	3	0
16	B	824	CLA	6	0
16	B	835	CLA	3	0
16	A	831	CLA	6	0
16	K	101	CLA	6	0
16	5	407	CLA	6	0
16	B	807	CLA	7	0
16	1	508	CLA	2	0
16	A	830	CLA	2	0
16	1	511	CLA	4	0
19	B	844	BCR	4	0
16	5	408	CLA	2	0
16	B	815	CLA	3	0
16	A	842	CLA	6	0
16	B	834	CLA	6	0
16	A	817	CLA	1	0
16	A	813	CLA	1	0
16	A	826	CLA	6	0
16	5	418	CLA	1	0
16	A	812	CLA	3	0
16	1	521	CLA	3	0
20	B	850	LHG	3	0
17	B	842	PQN	5	0
19	A	846	BCR	4	0
16	2	402	CLA	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	6	402	CLA	1	0
16	A	841	CLA	6	0
16	5	403	CLA	2	0
16	2	404	CLA	1	0
16	A	808	CLA	1	0
19	K	102	BCR	6	0
16	B	825	CLA	6	0
16	5	404	CLA	6	0
16	1	512	CLA	4	0
16	A	803	CLA	5	0
16	J	101	CLA	2	0
16	5	412	CLA	4	0
20	A	853	LHG	1	0
16	1	513	CLA	1	0
16	B	829	CLA	6	0
16	1	526	CLA	1	0
16	4	409	CLA	1	0
16	B	833	CLA	5	0
16	2	403	CLA	1	0
16	B	814	CLA	2	0
16	6	403	CLA	1	0
16	1	506	CLA	1	0
16	B	809	CLA	8	0
19	1	523	BCR	5	0
19	M	102	BCR	2	0
16	4	402	CLA	1	0
16	B	837	CLA	1	0
16	6	407	CLA	1	0
22	B	849	LMG	3	0
20	A	852	LHG	3	0
16	6	408	CLA	1	0
16	B	801	CLA	5	0
16	4	410	CLA	1	0
16	6	405	CLA	1	0
16	A	824	CLA	1	0
16	F	204	CLA	2	0
16	A	835	CLA	2	0
16	5	410	CLA	1	0
16	B	820	CLA	2	0
16	B	816	CLA	1	0
16	A	807	CLA	4	0
16	B	818	CLA	3	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	1	514	CLA	2	0
16	A	827	CLA	3	0
16	1	520	CLA	5	0
16	B	840	CLA	4	0
16	5	409	CLA	1	0
19	F	202	BCR	4	0
16	1	519	CLA	2	0
15	A	801	CL0	7	0
16	2	405	CLA	1	0
16	A	840	CLA	4	0
16	A	806	CLA	5	0
16	A	834	CLA	7	0
16	5	411	CLA	1	0
16	J	102	CLA	2	0
16	K	103	CLA	4	0
19	A	850	BCR	2	0
19	1	517	BCR	2	0
16	6	404	CLA	1	0
19	1	516	BCR	1	0
16	4	404	CLA	1	0
21	M	101	LMT	2	0
19	B	847	BCR	4	0
19	B	843	BCR	2	0
19	B	845	BCR	3	0
16	1	510	CLA	3	0
16	A	825	CLA	2	0
17	A	844	PQN	5	0
16	B	808	CLA	5	0
16	4	407	CLA	1	0
16	6	401	CLA	1	0
16	A	829	CLA	10	0
16	1	515	CLA	2	0
16	2	406	CLA	3	0
16	B	823	CLA	5	0
16	B	822	CLA	3	0
16	A	839	CLA	7	0
16	A	819	CLA	5	0
16	A	821	CLA	5	0
16	A	833	CLA	9	0
16	5	413	CLA	4	0
16	A	814	CLA	3	0
16	A	809	CLA	5	0

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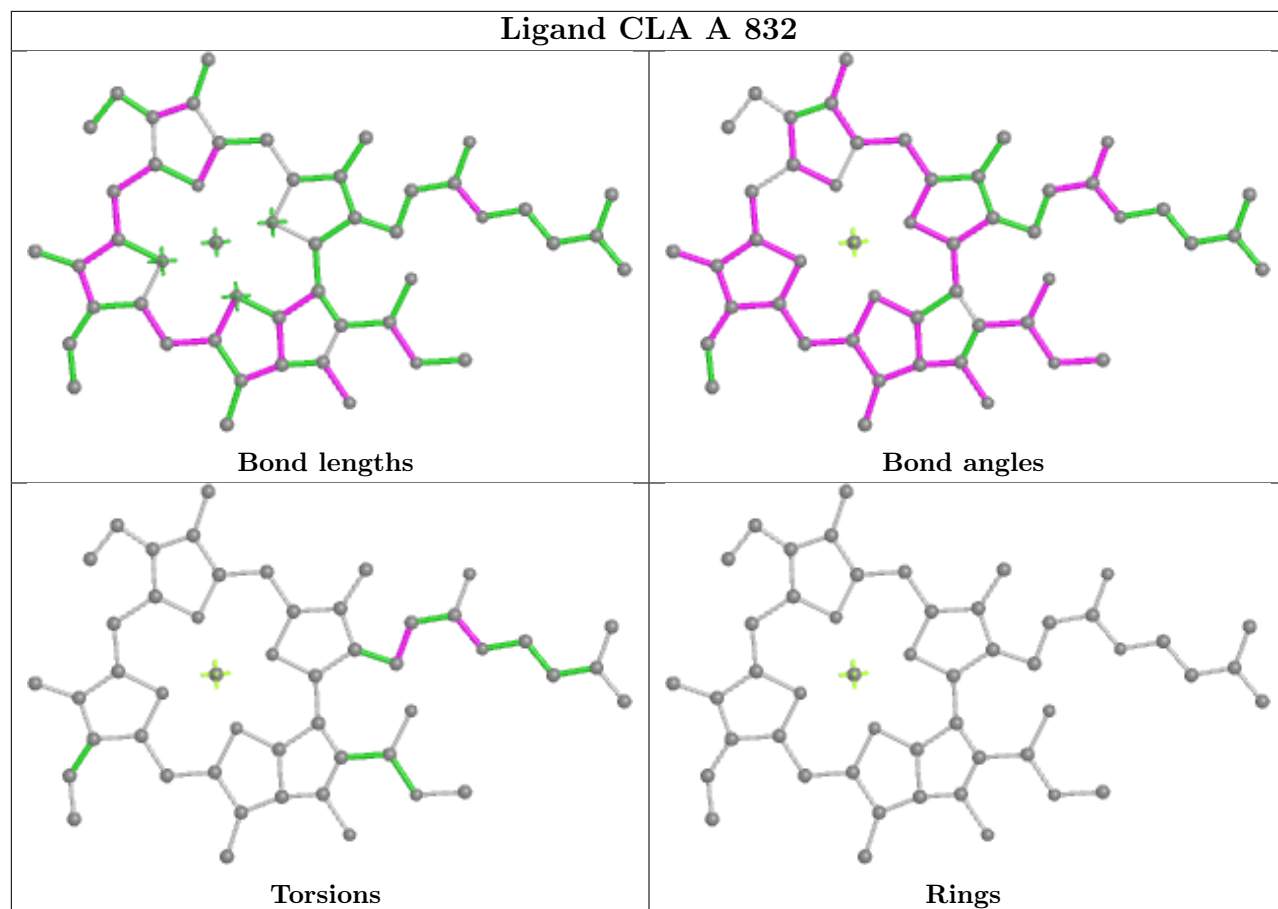
Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	B	812	CLA	3	0
16	B	821	CLA	3	0
16	A	836	CLA	2	0
16	4	411	CLA	3	0
16	B	838	CLA	5	0
16	6	409	CLA	2	0
16	X	101	CLA	2	0
19	A	848	BCR	1	0
16	4	405	CLA	1	0
19	I	101	BCR	2	0
16	5	416	CLA	1	0
16	B	832	CLA	4	0
16	A	820	CLA	4	0
16	A	816	CLA	1	0
18	C	102	SF4	1	0
16	A	818	CLA	2	0
16	B	811	CLA	2	0
16	5	405	CLA	1	0
16	B	804	CLA	3	0
19	5	402	BCR	4	0
16	B	802	CLA	12	0
19	A	849	BCR	2	0
16	A	822	CLA	6	0
16	B	806	CLA	6	0
16	5	415	CLA	2	0
16	B	810	CLA	5	0
19	4	401	BCR	3	0
16	4	403	CLA	1	0
16	B	831	CLA	4	0
16	1	504	CLA	2	0
19	J	103	BCR	3	0
16	1	509	CLA	2	0
16	A	828	CLA	4	0
16	1	503	CLA	1	0
16	A	815	CLA	2	0
16	B	830	CLA	7	0
19	5	420	BCR	1	0
16	5	417	CLA	2	0
16	F	201	CLA	6	0
16	6	406	CLA	1	0
16	B	813	CLA	7	0
16	B	827	CLA	7	0

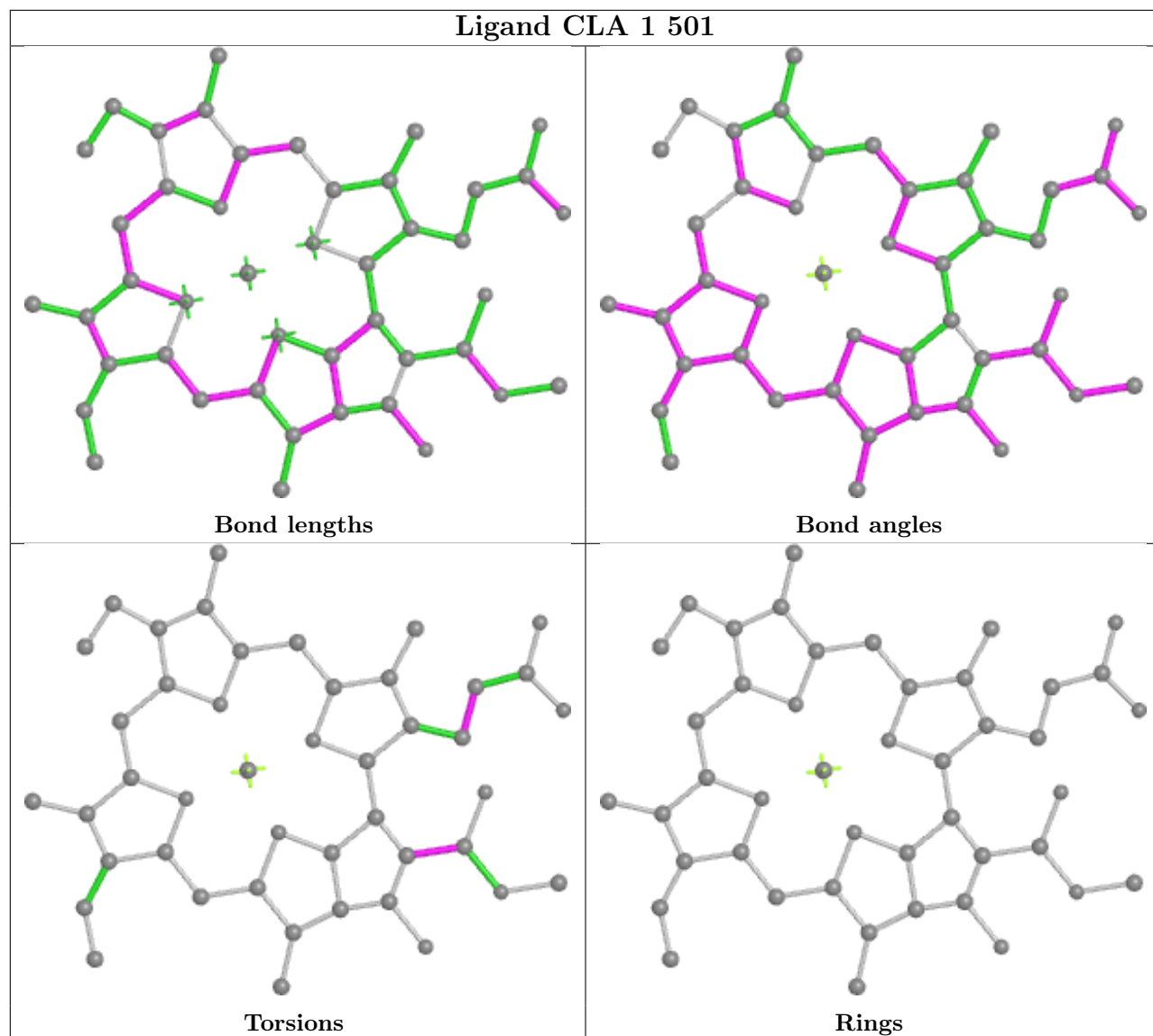
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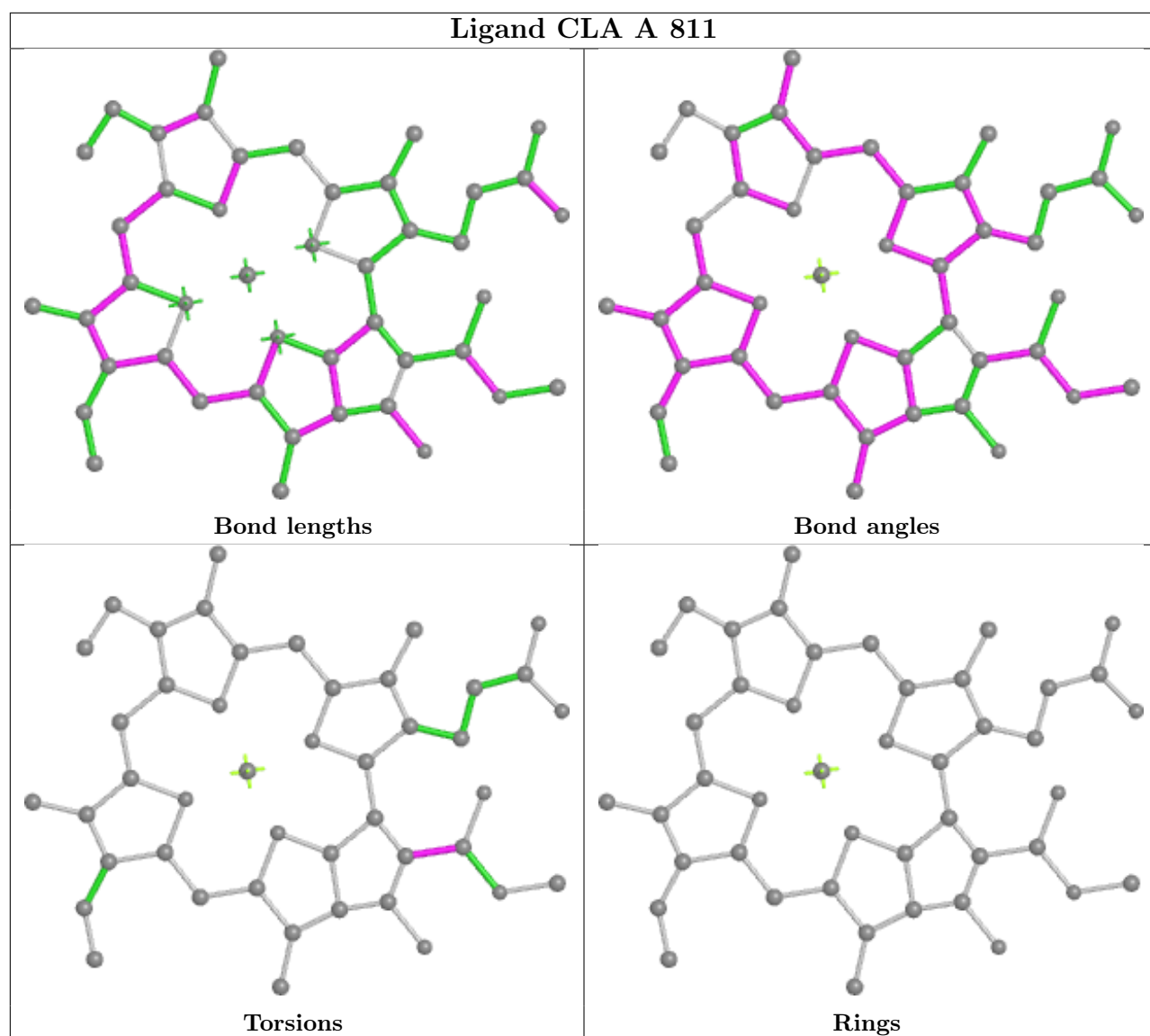
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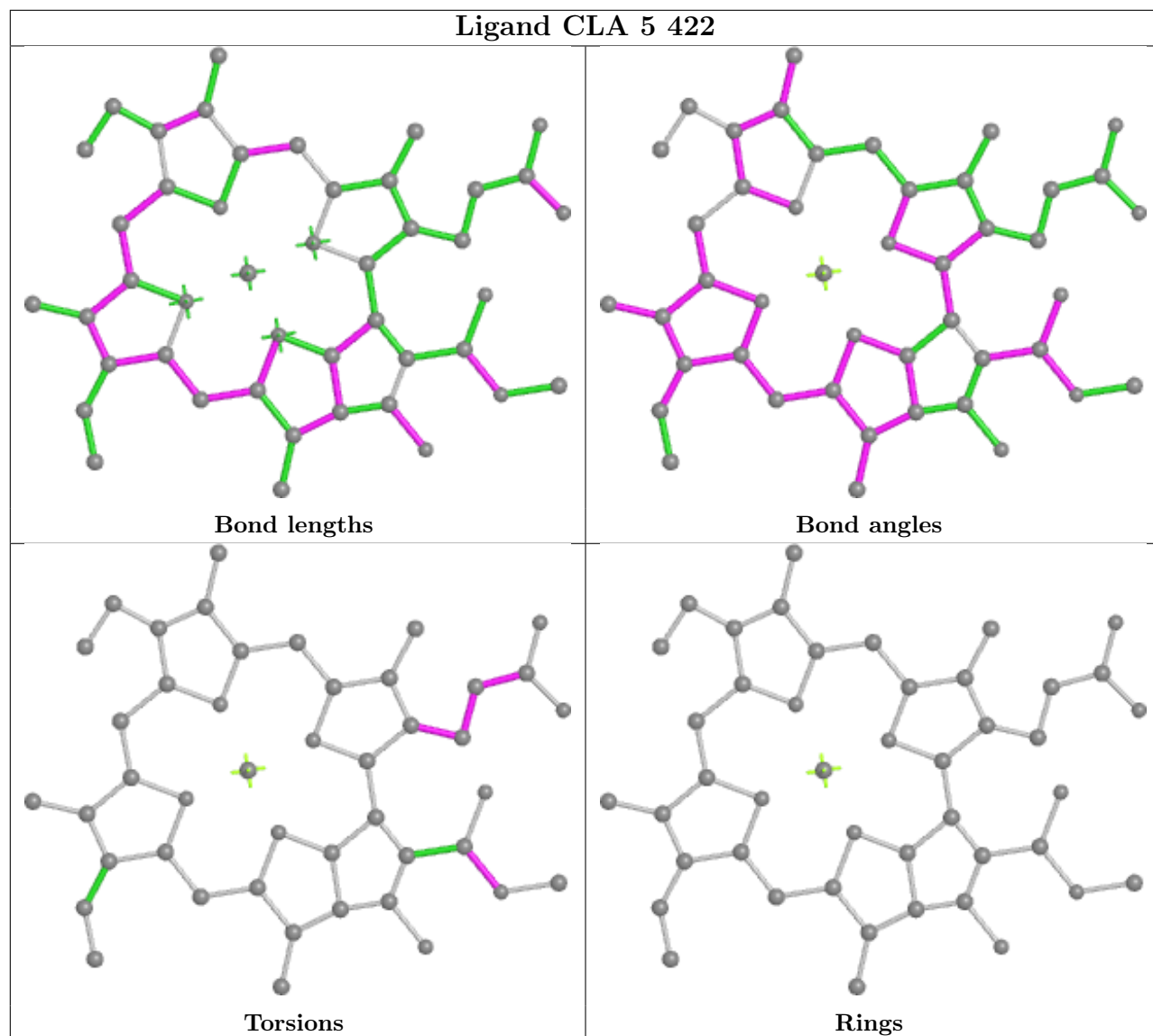
Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	B	826	CLA	4	0
16	B	839	CLA	13	0
16	A	823	CLA	2	0
16	1	525	CLA	1	0
16	5	414	CLA	5	0
16	1	502	CLA	1	0
16	B	841	CLA	6	0
16	5	406	CLA	2	0
16	A	843	CLA	5	0
16	B	828	CLA	6	0
19	A	851	BCR	5	0
16	B	819	CLA	5	0
16	A	837	CLA	2	0
16	2	401	CLA	1	0
19	I	102	BCR	5	0
19	J	104	BCR	1	0
16	B	805	CLA	1	0
16	A	810	CLA	4	0
16	B	817	CLA	3	0
16	A	838	CLA	1	0
16	4	408	CLA	3	0
16	5	419	CLA	4	0
19	B	853	BCR	3	0
16	A	805	CLA	2	0

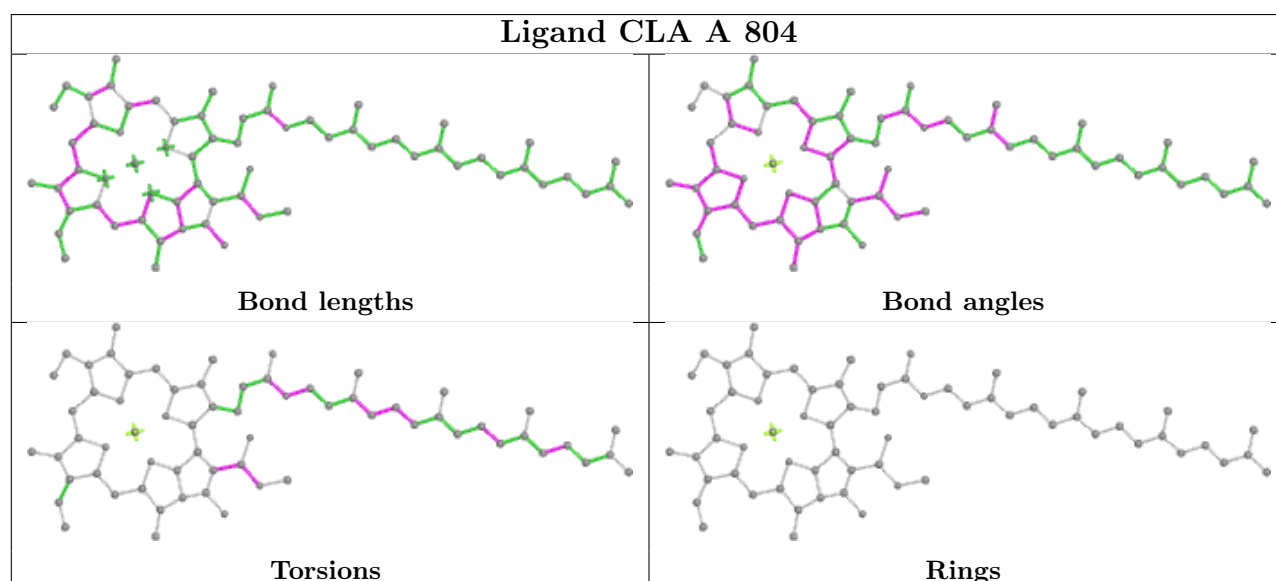
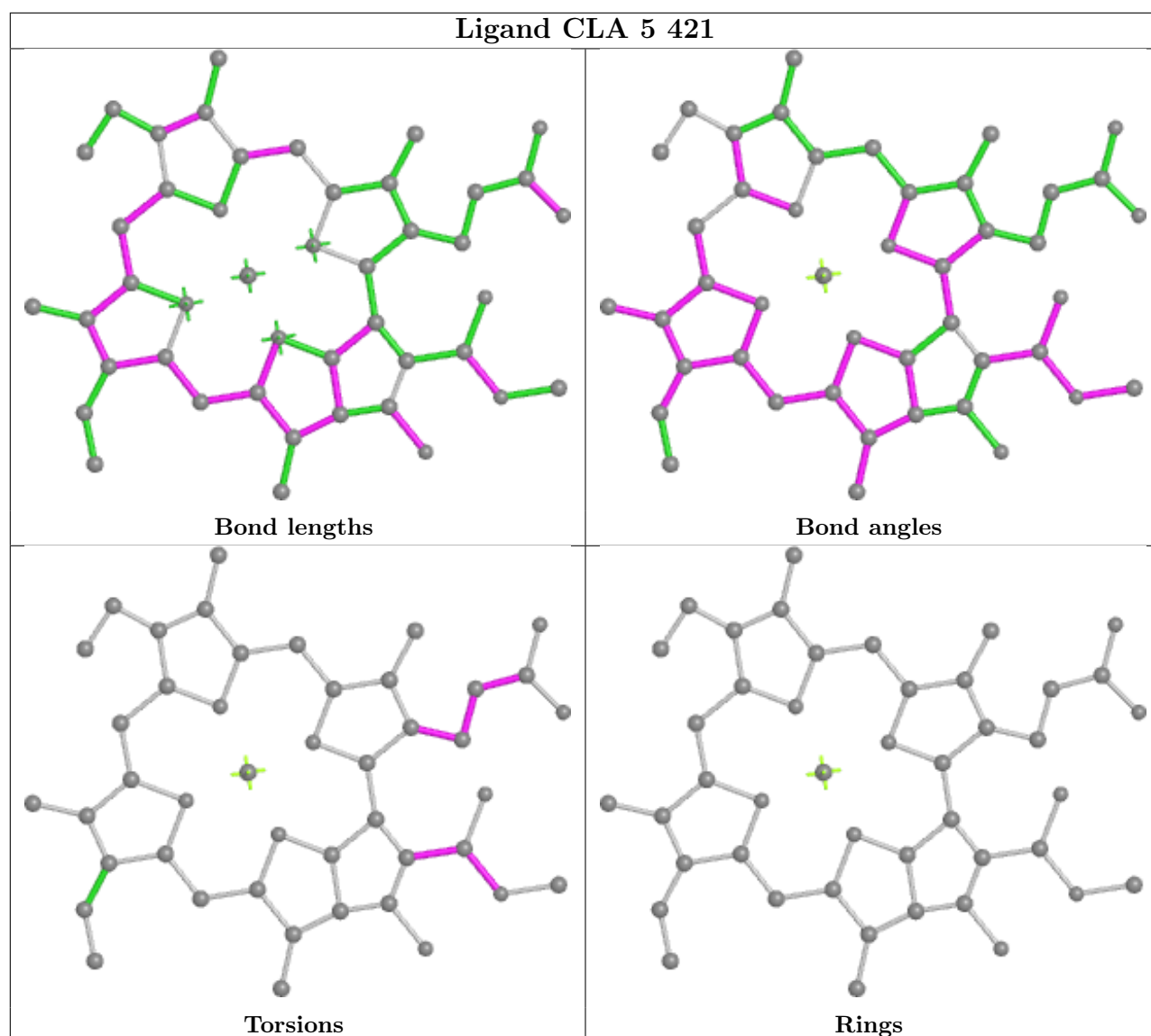
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

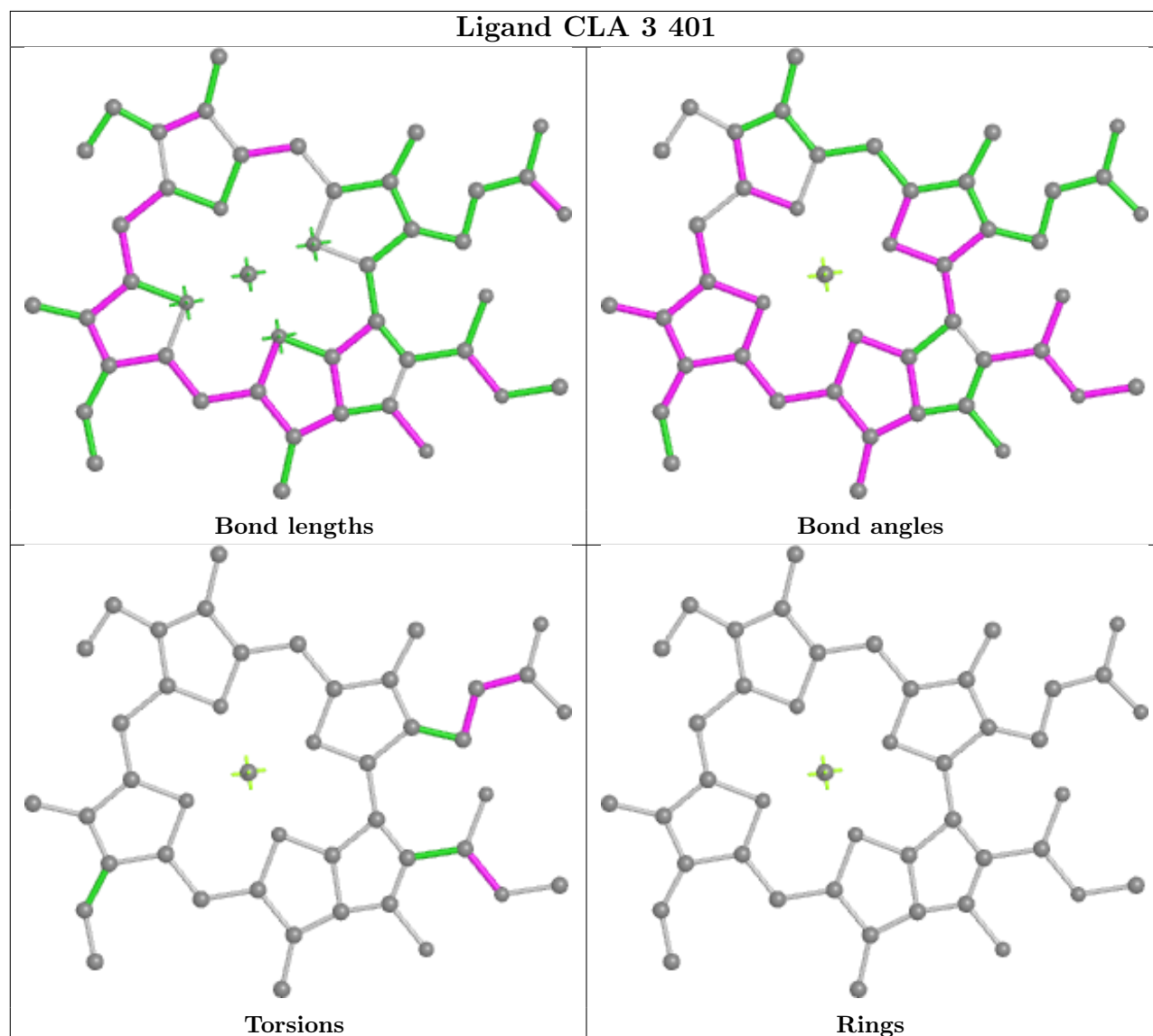
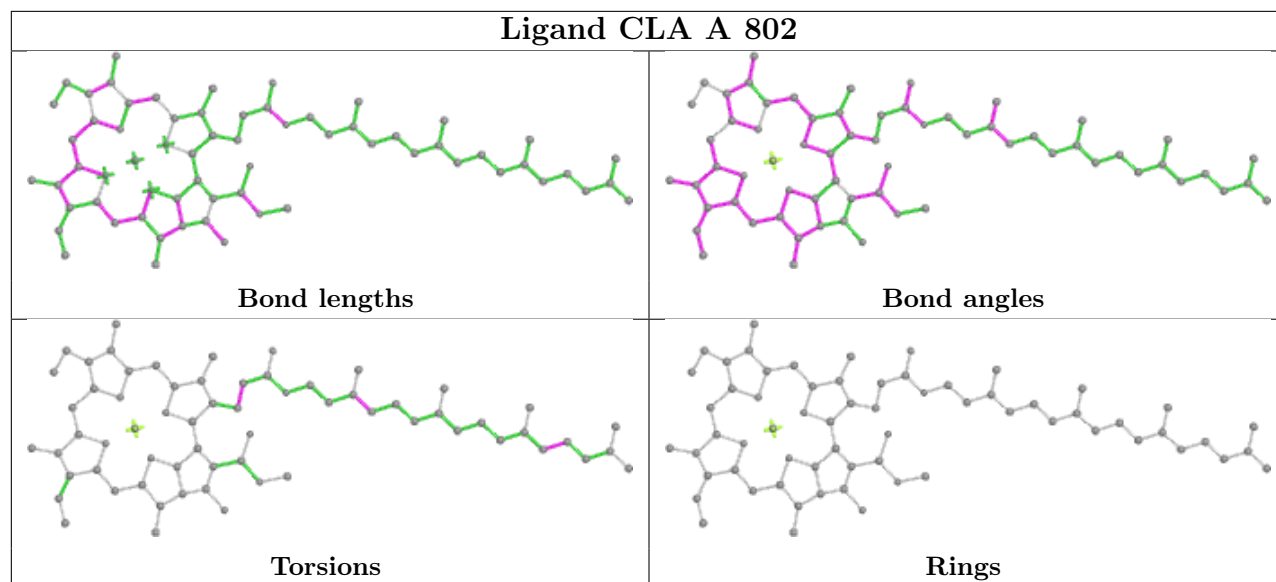


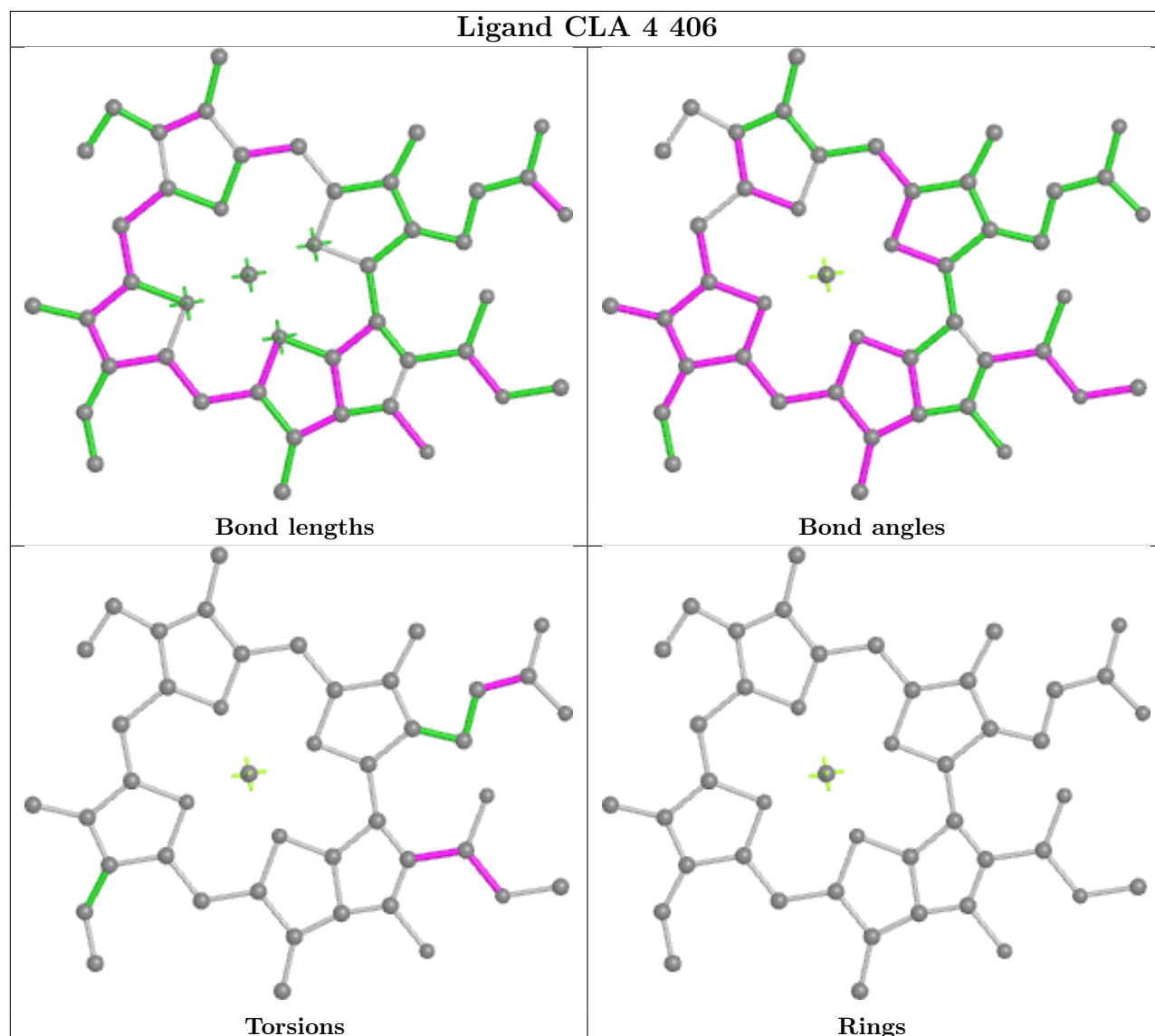
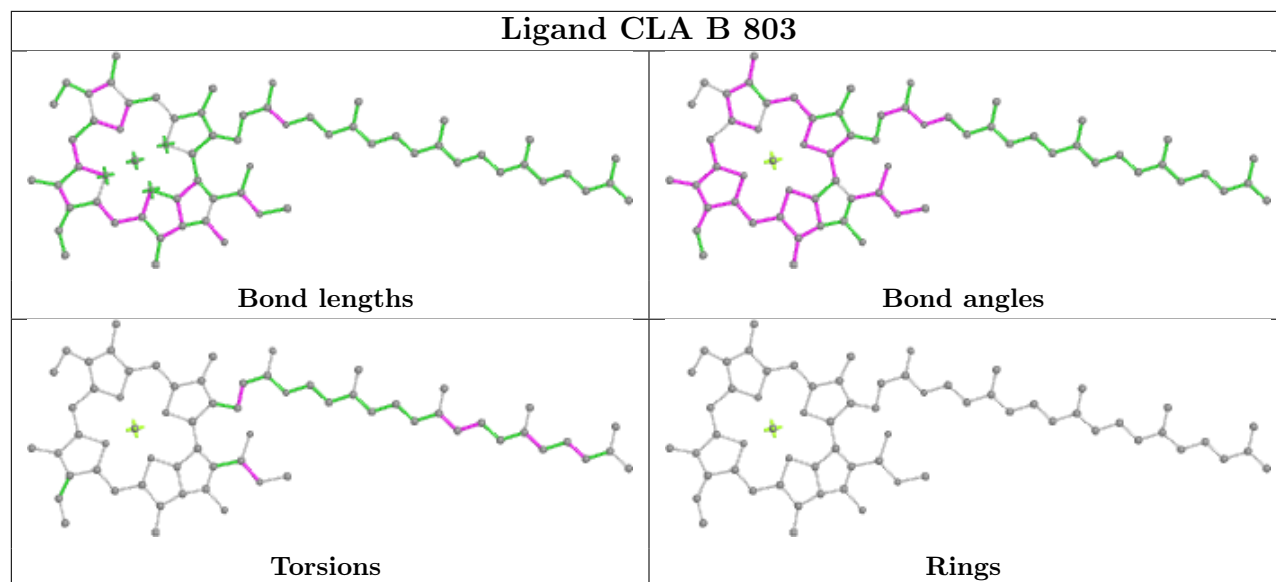


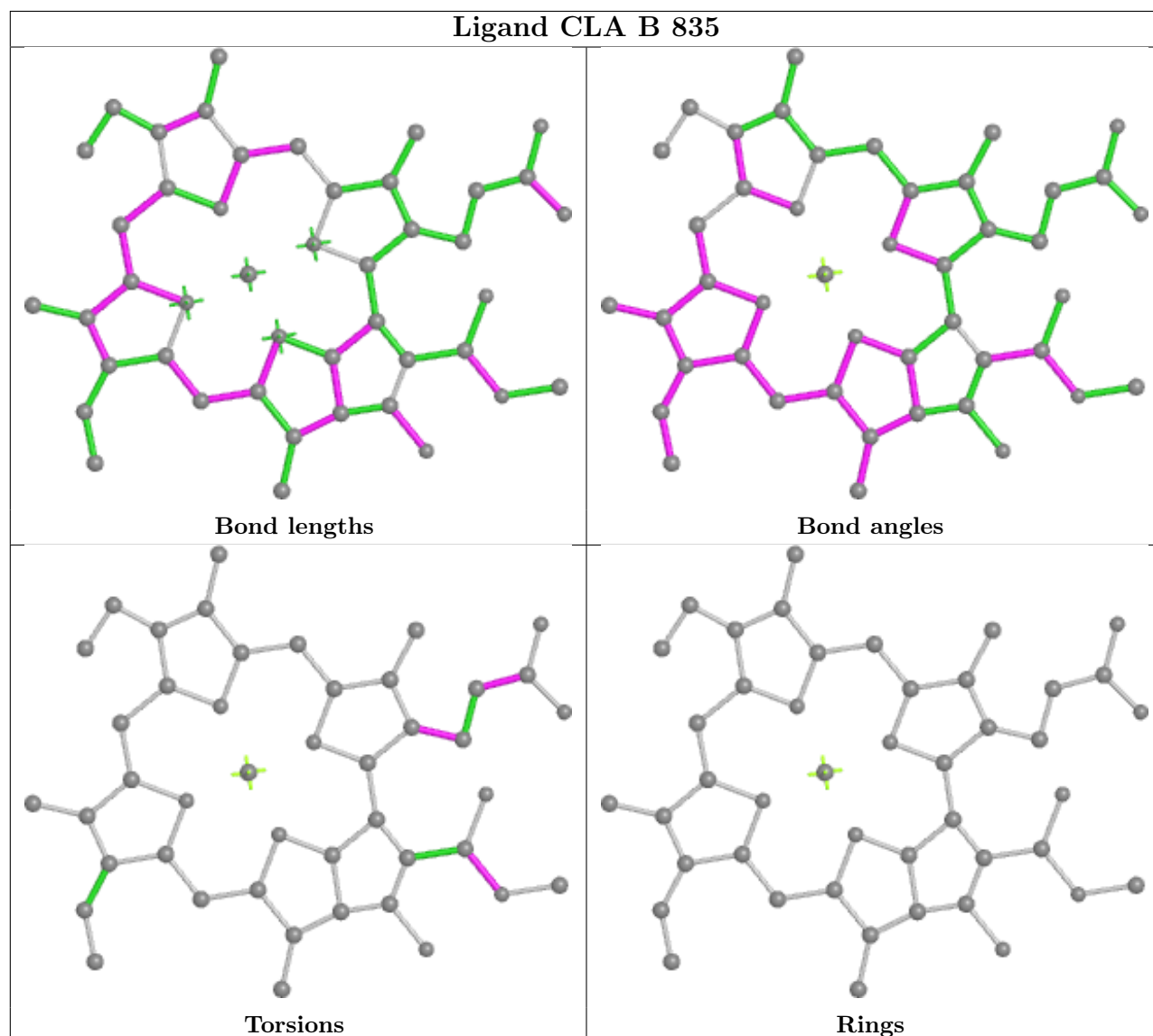
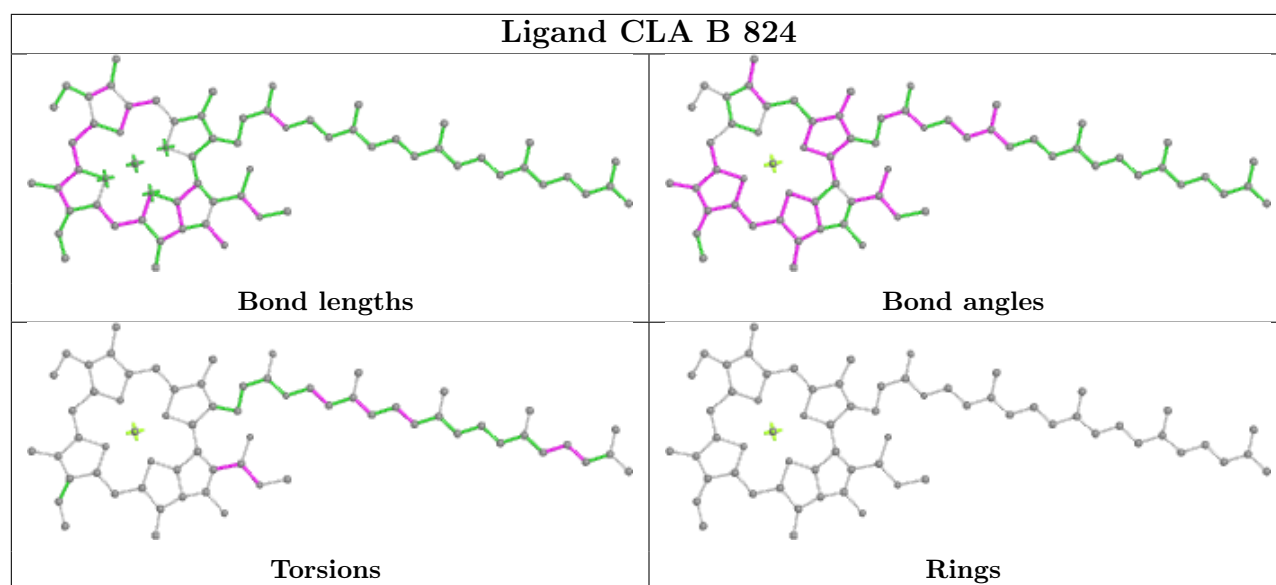


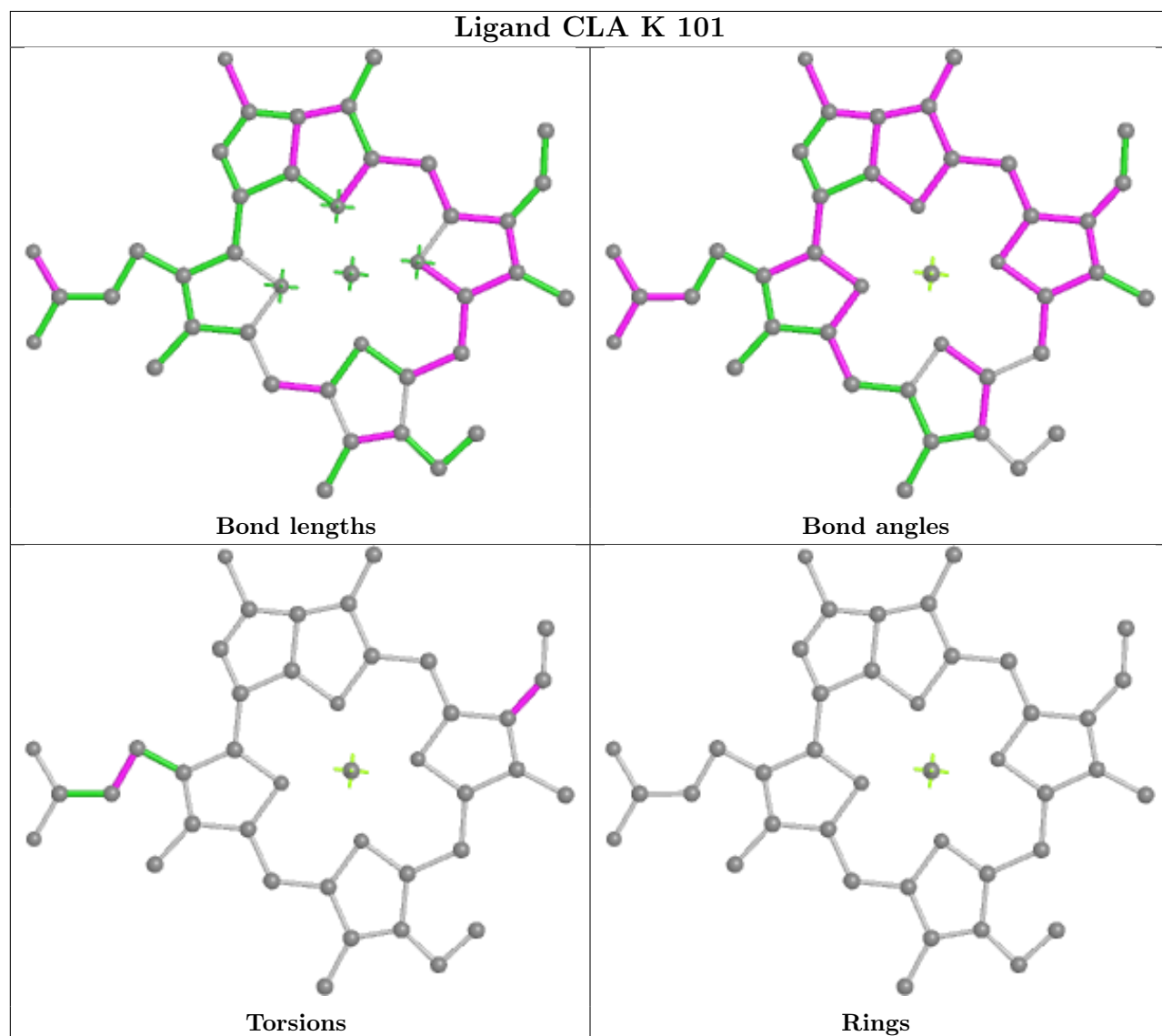
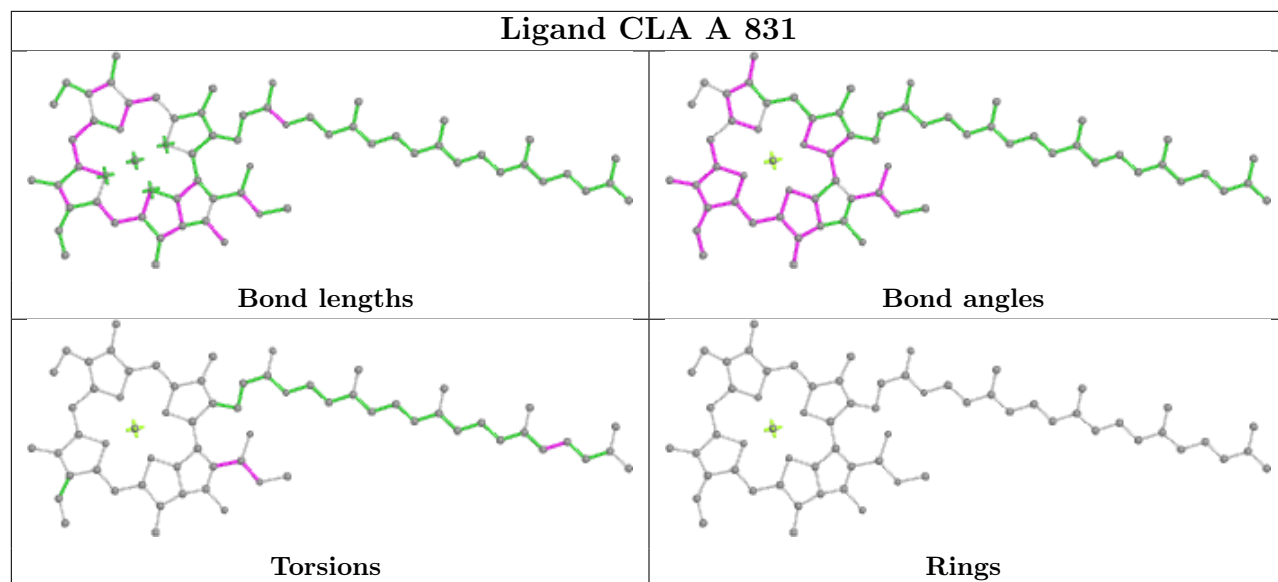


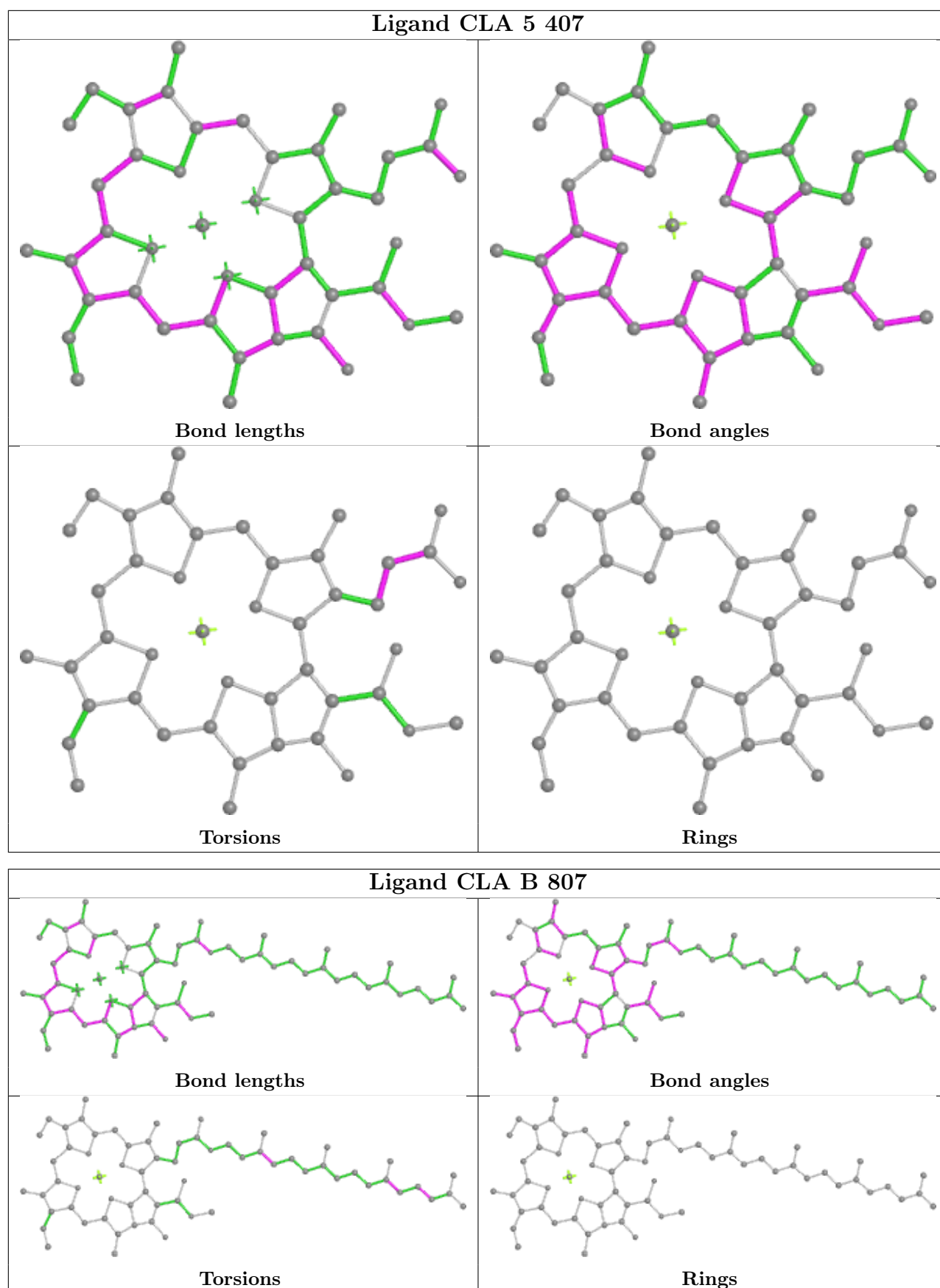


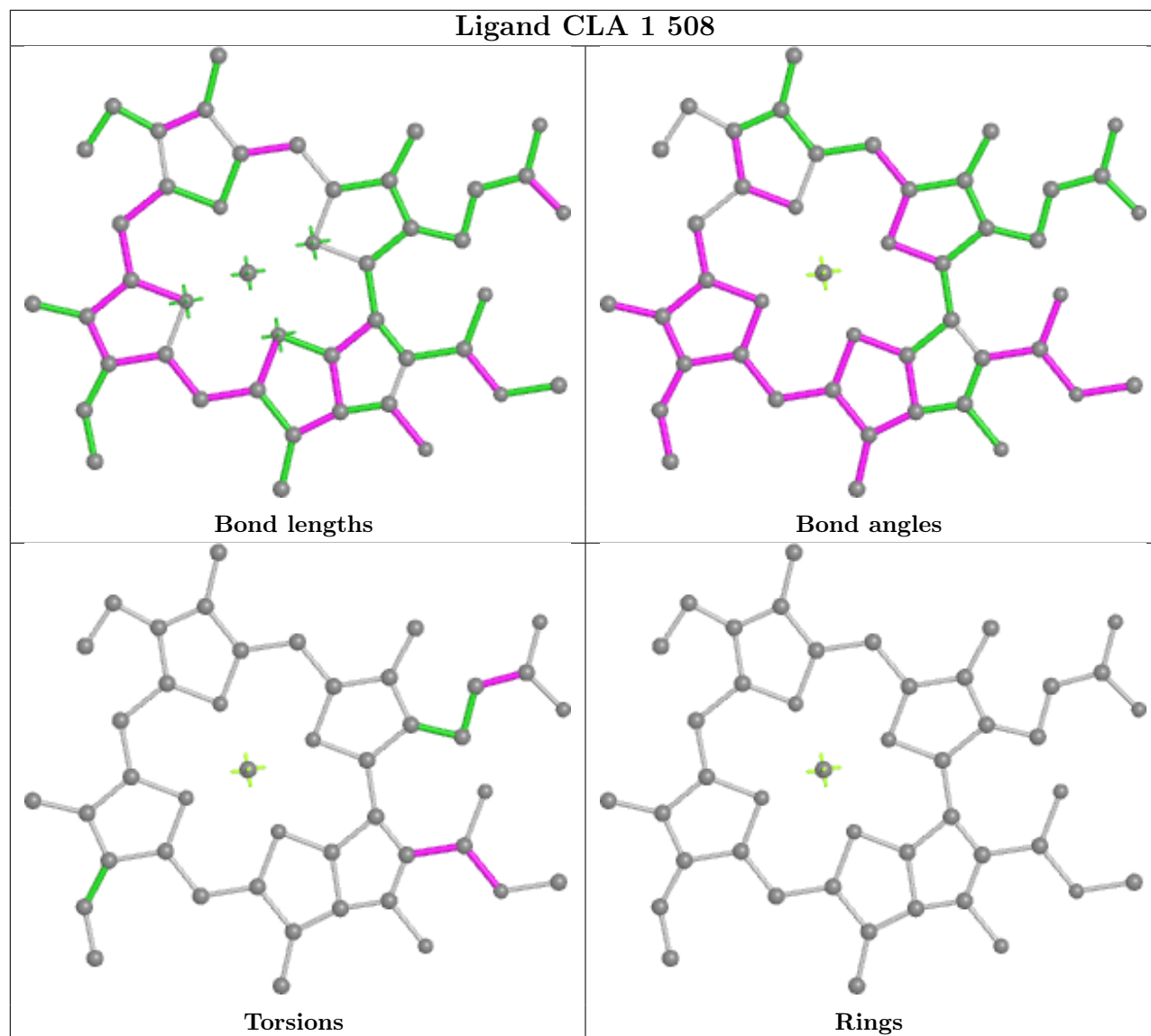
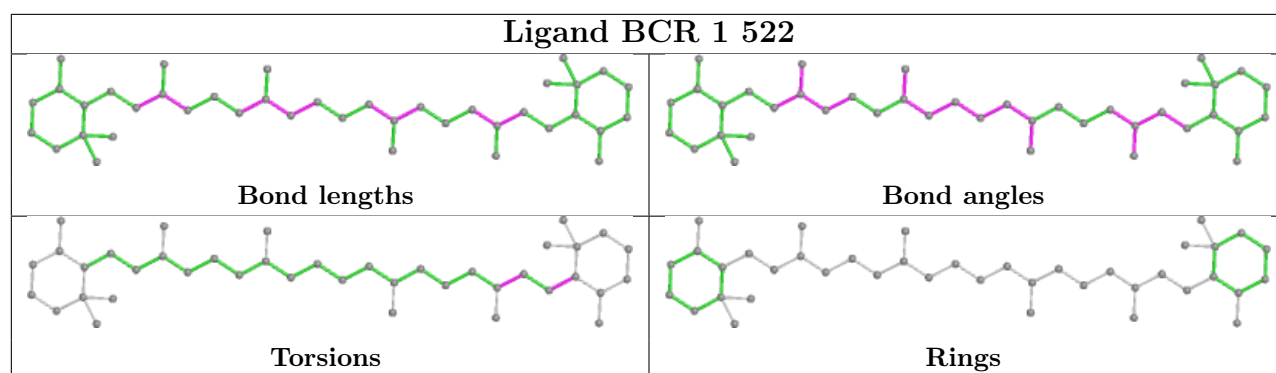


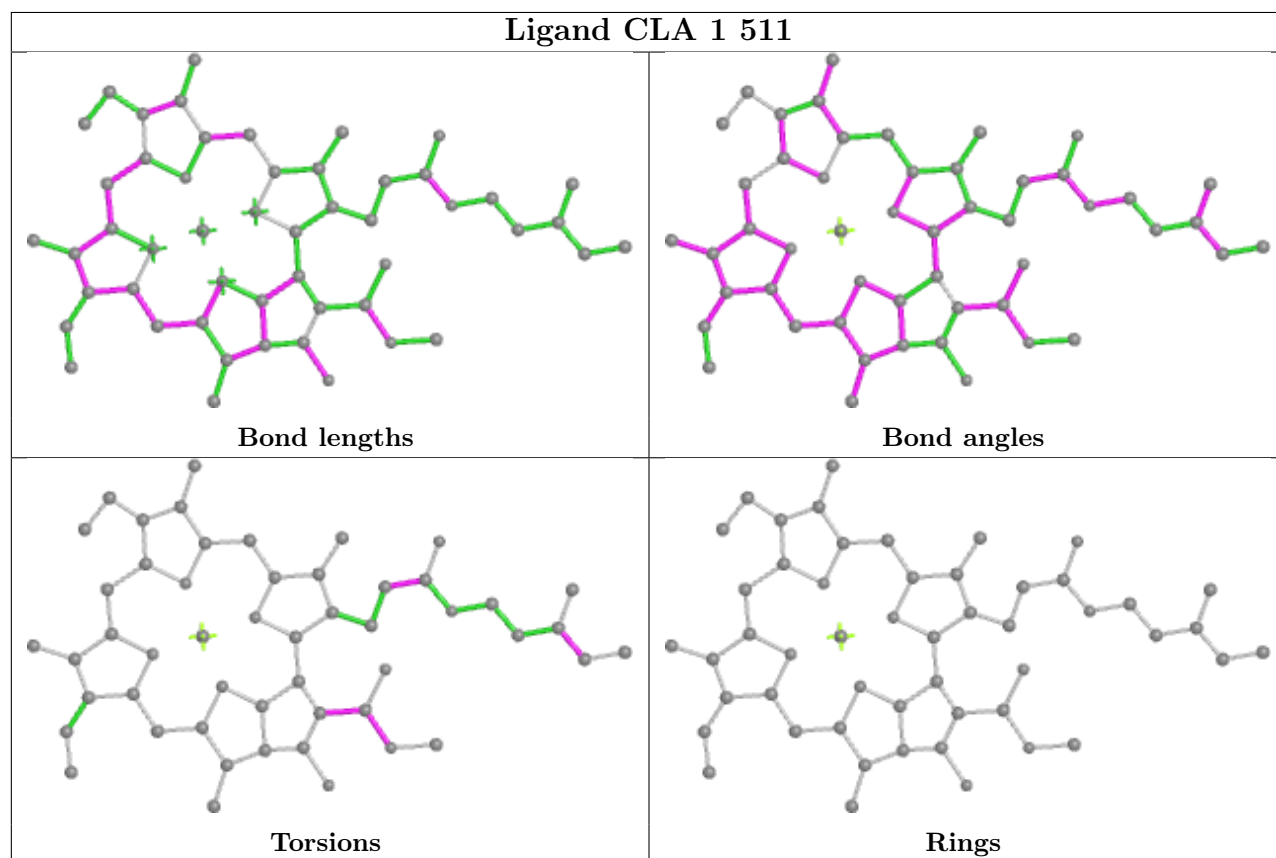
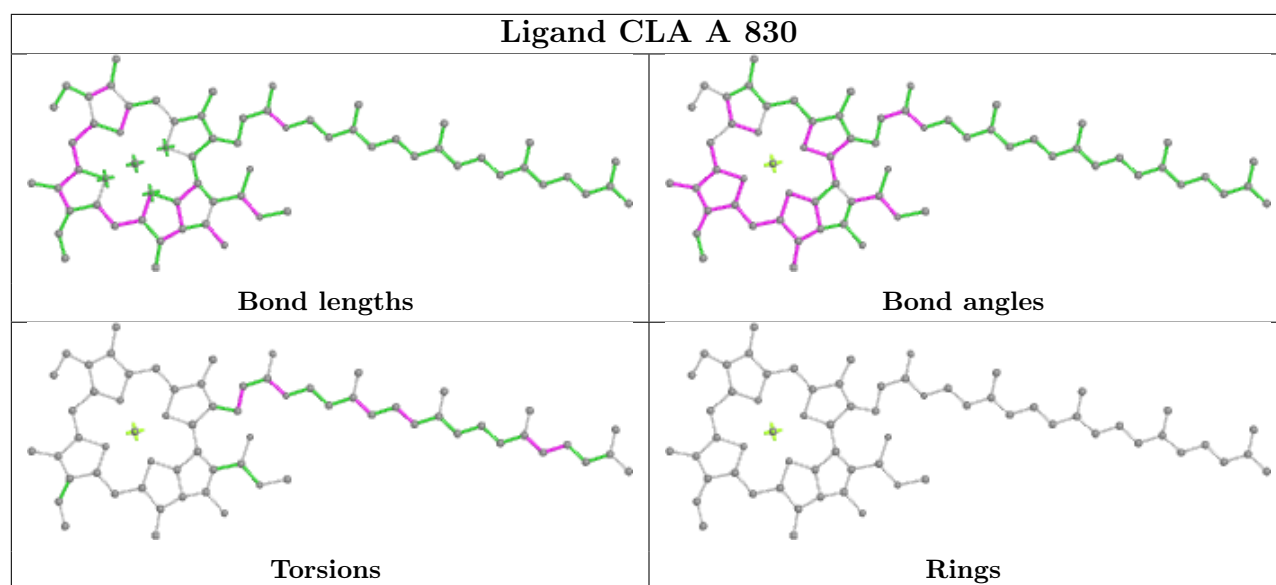


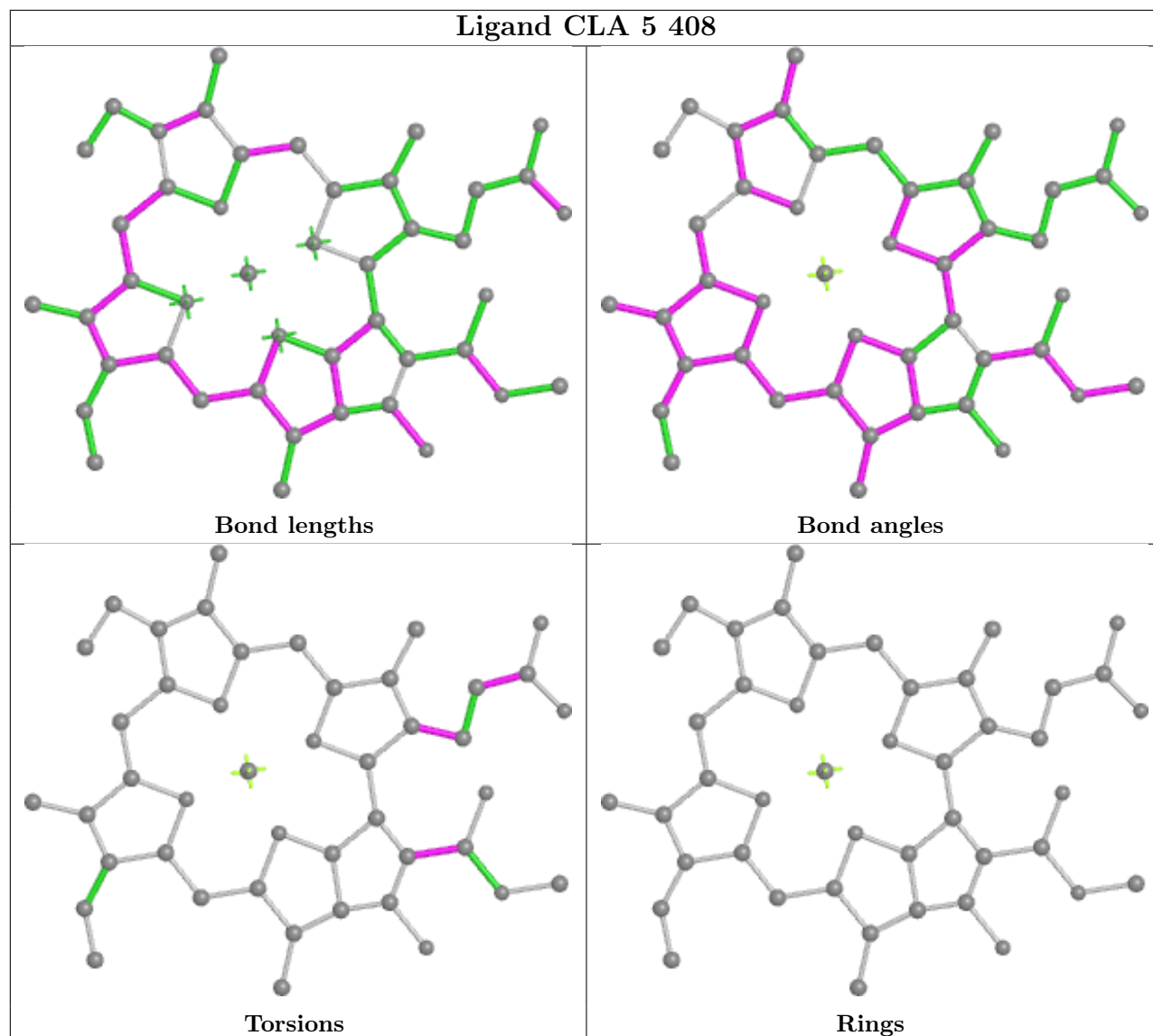
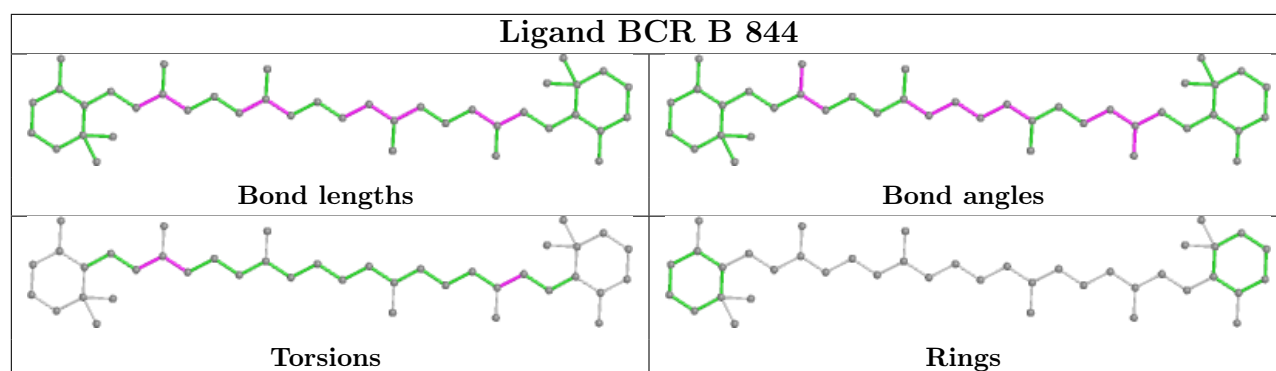


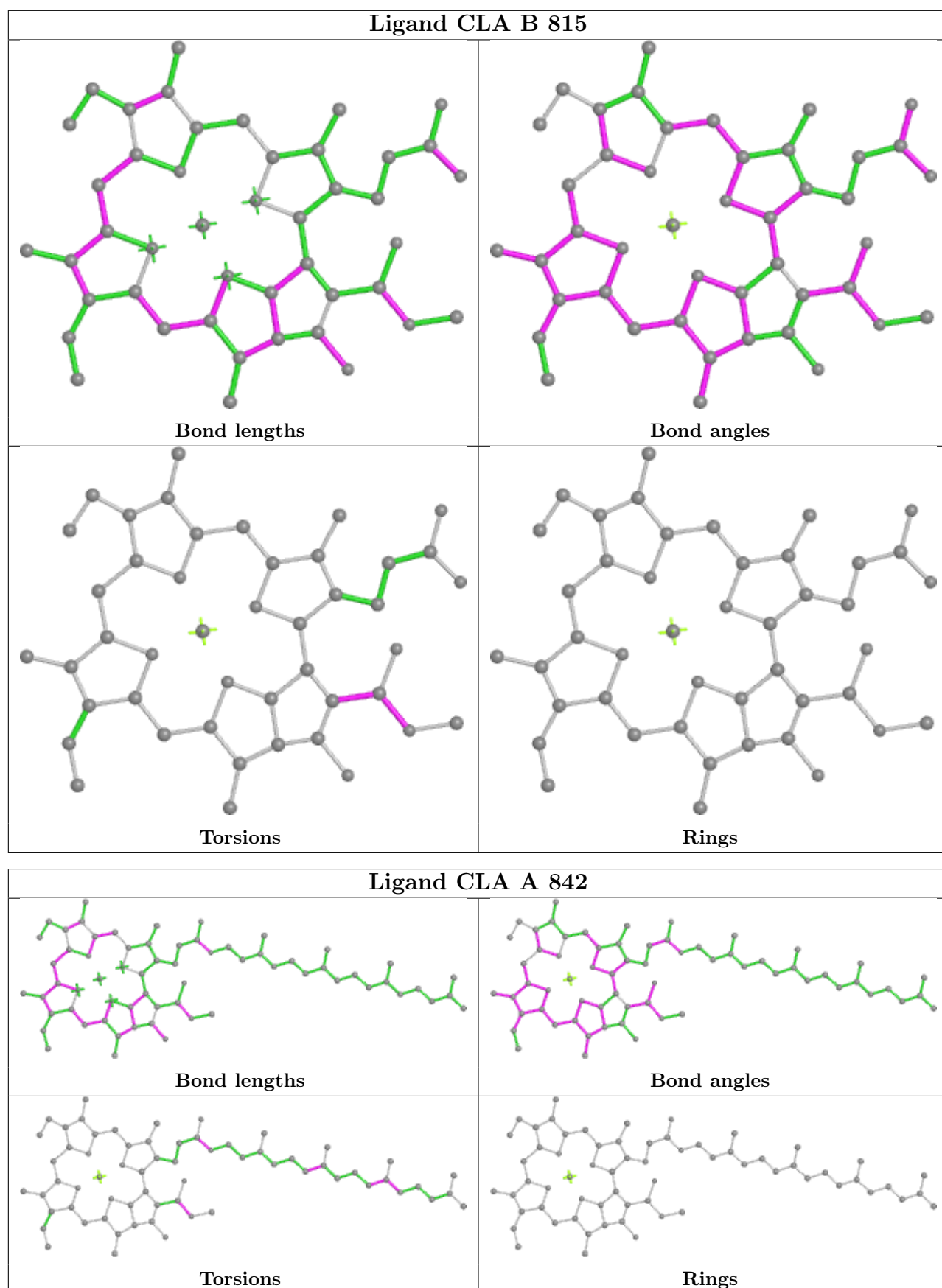


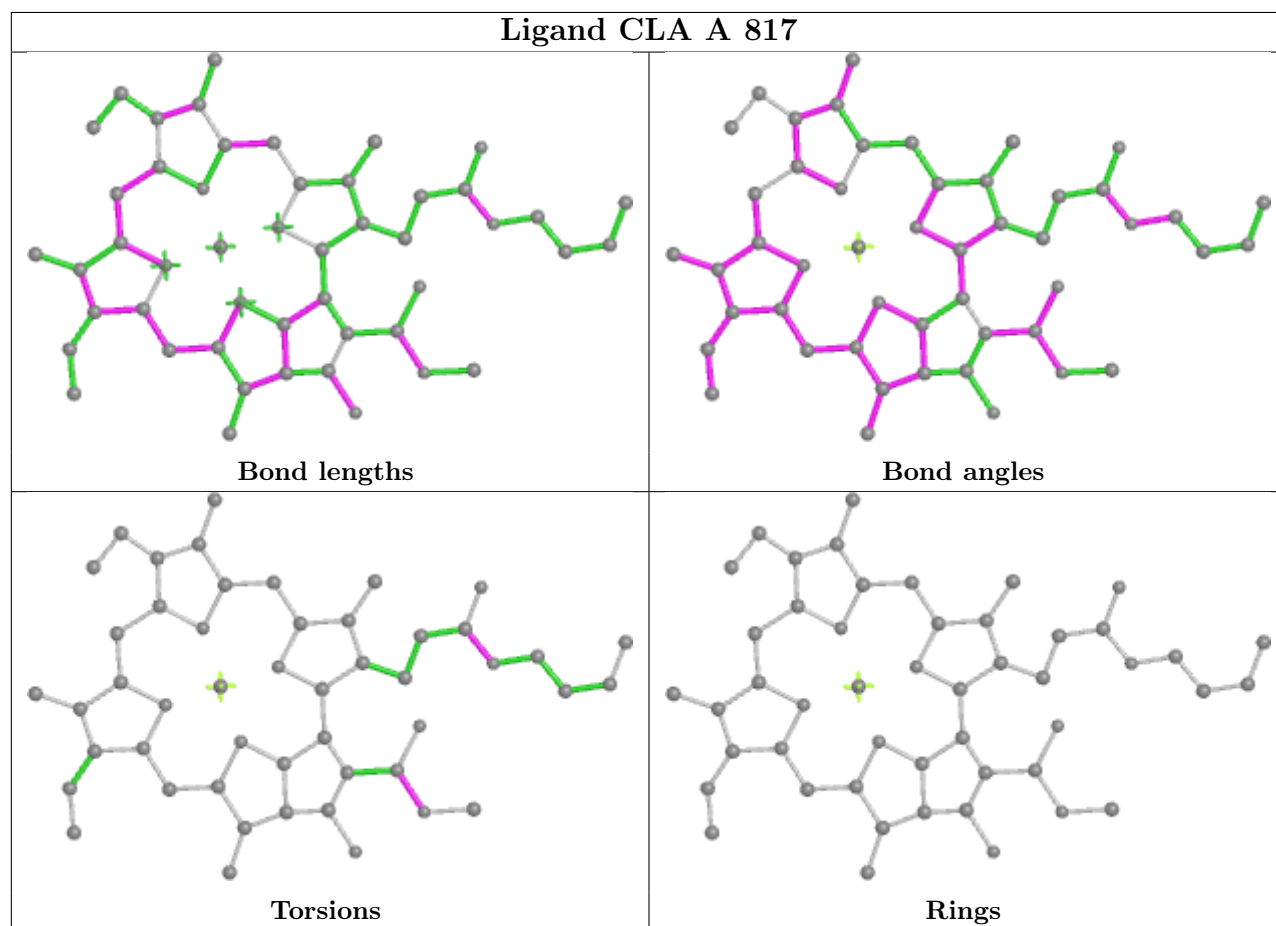
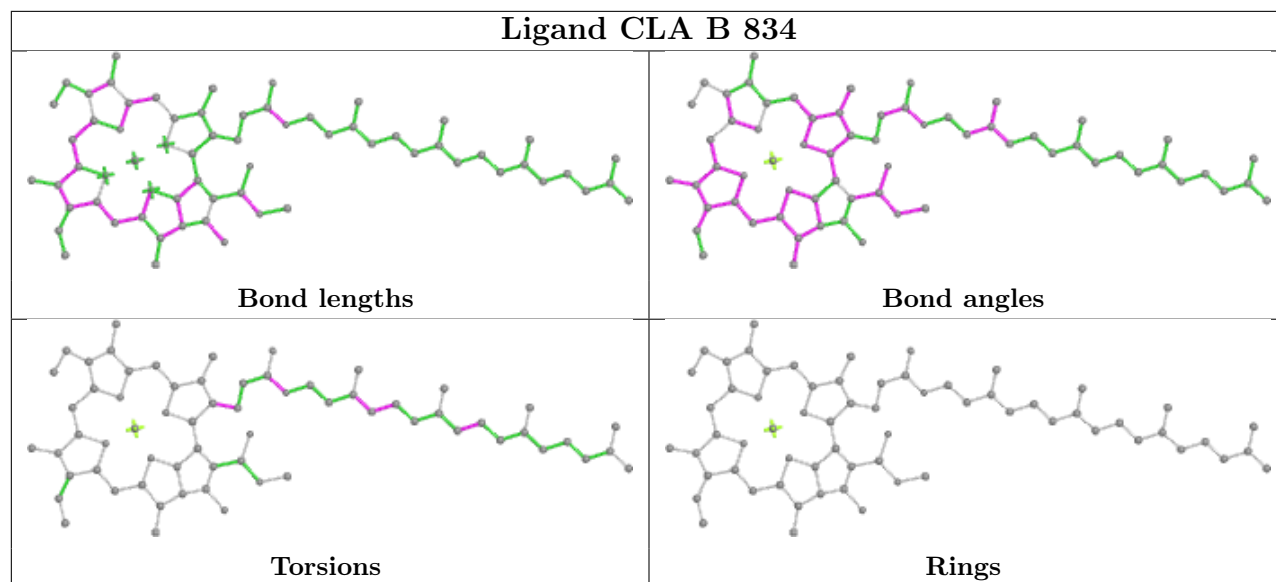


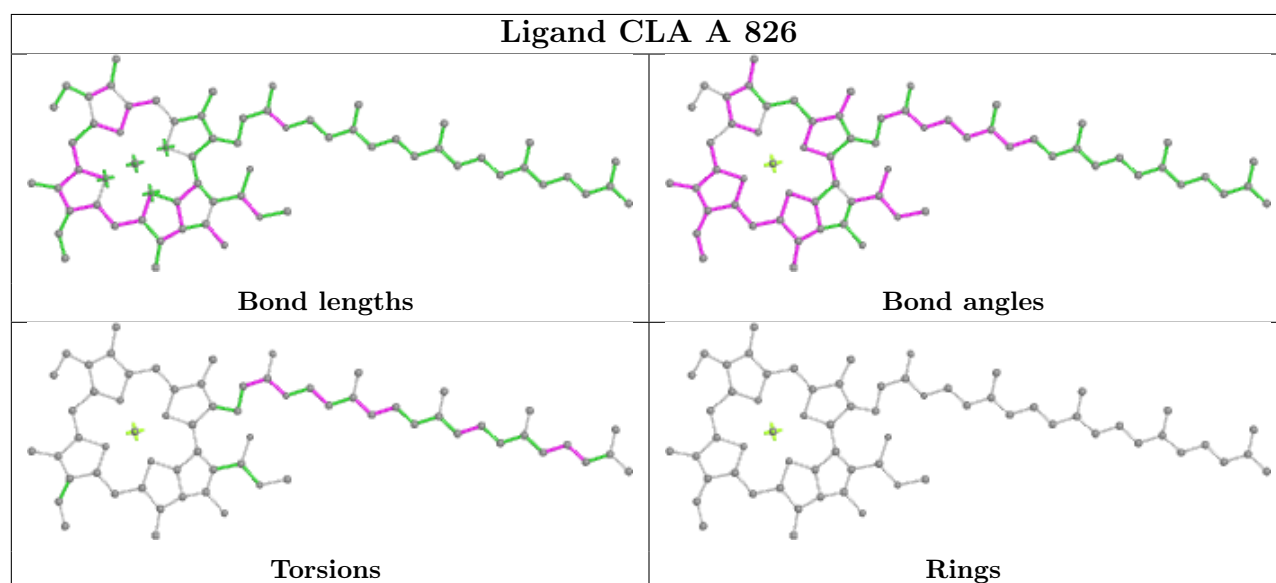
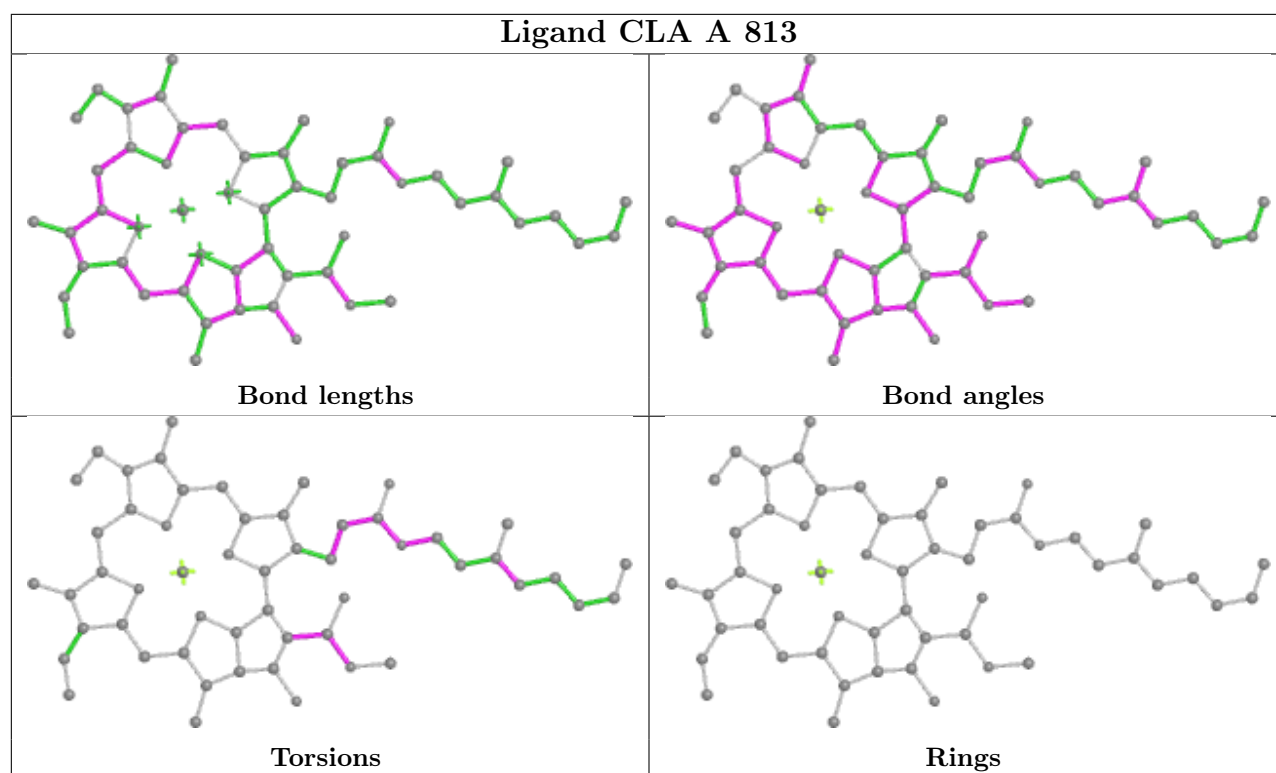


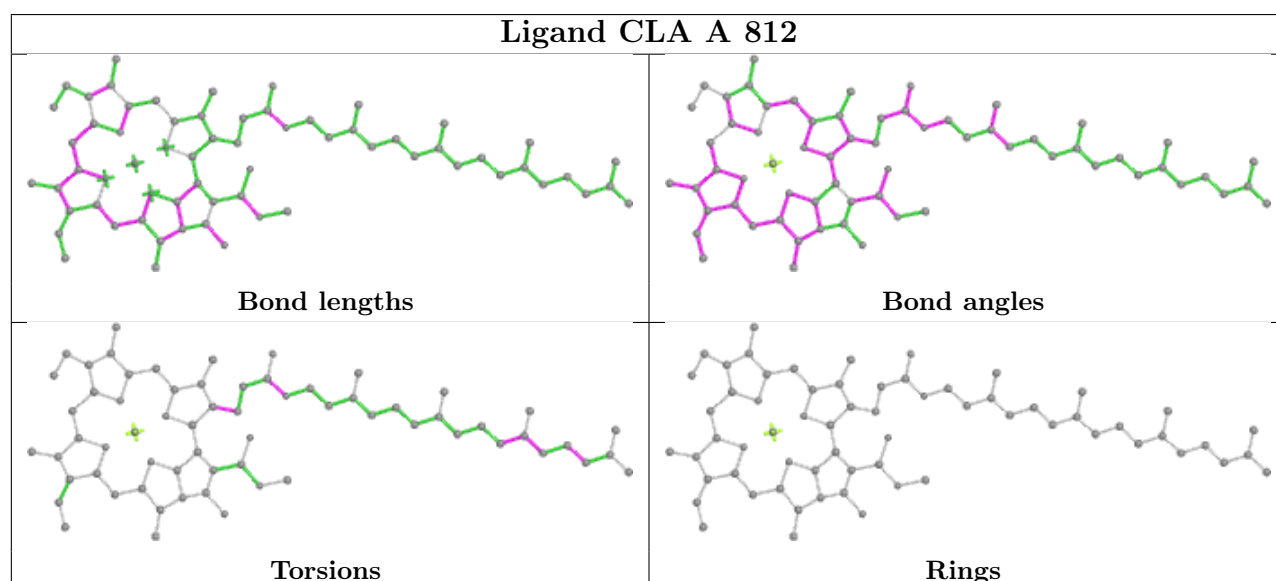
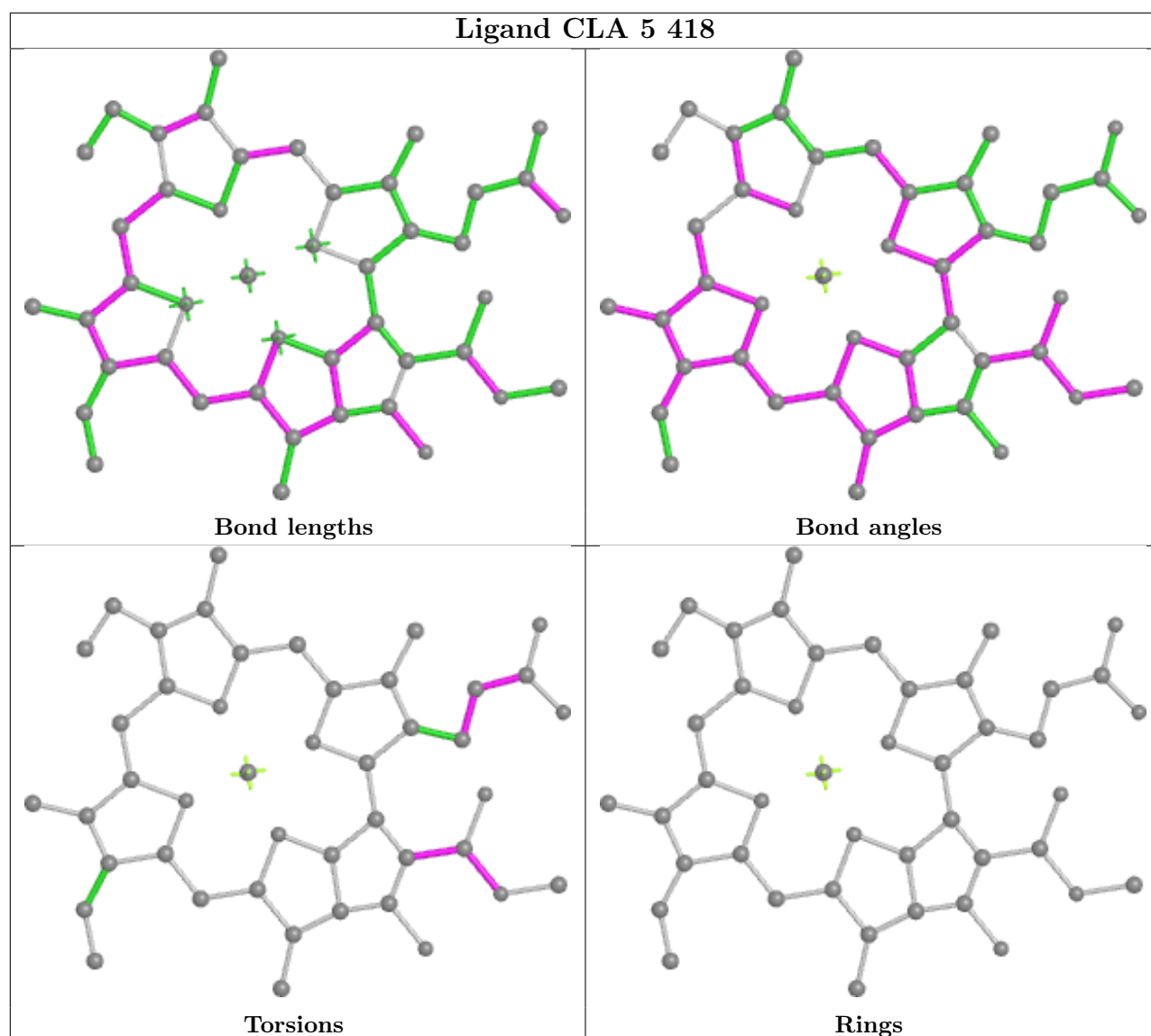


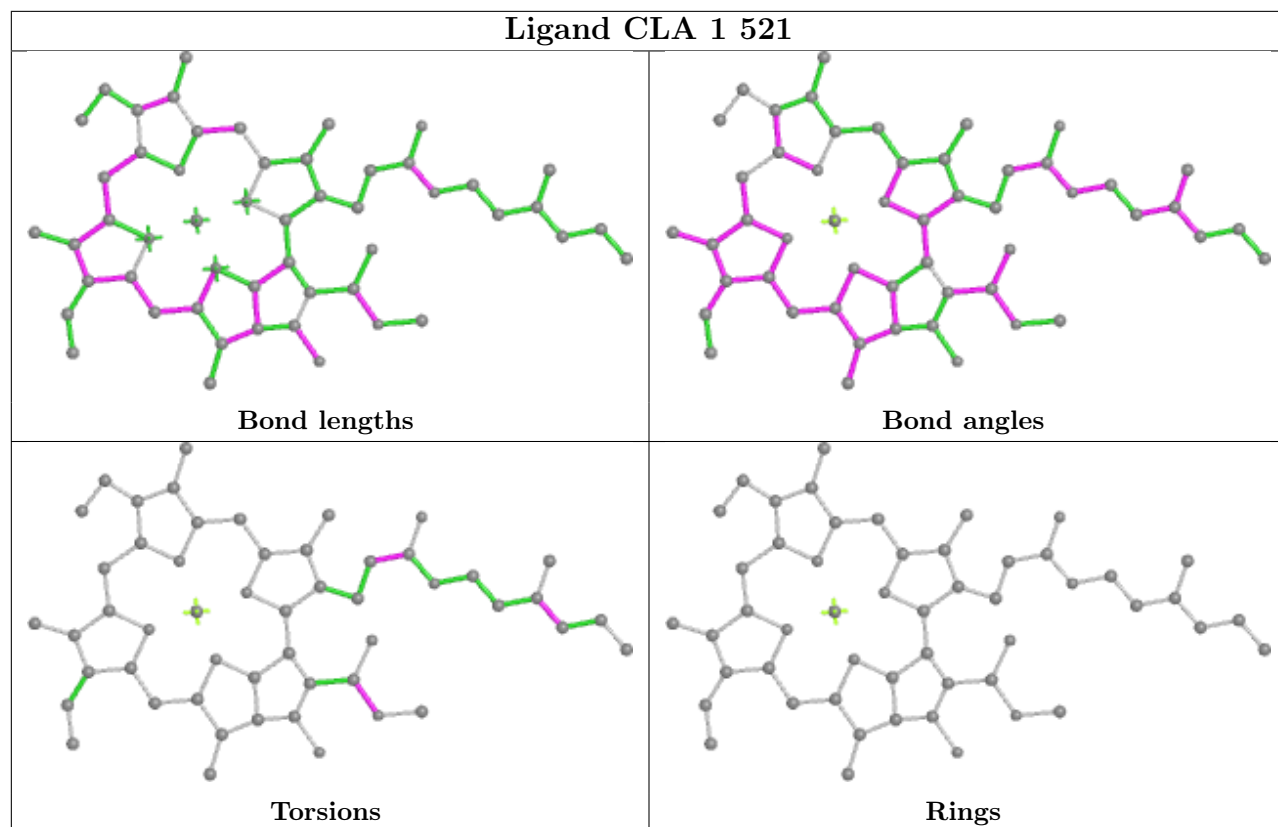


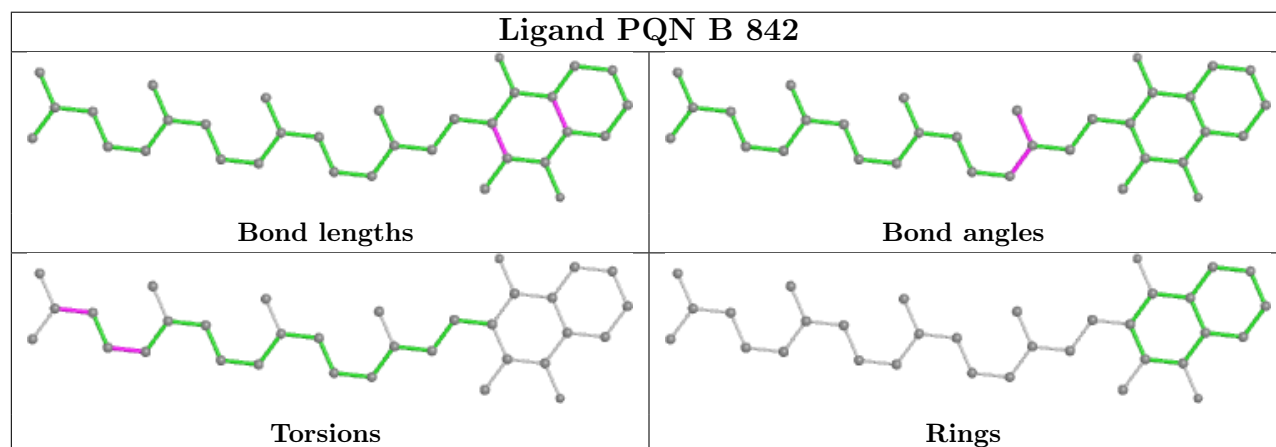
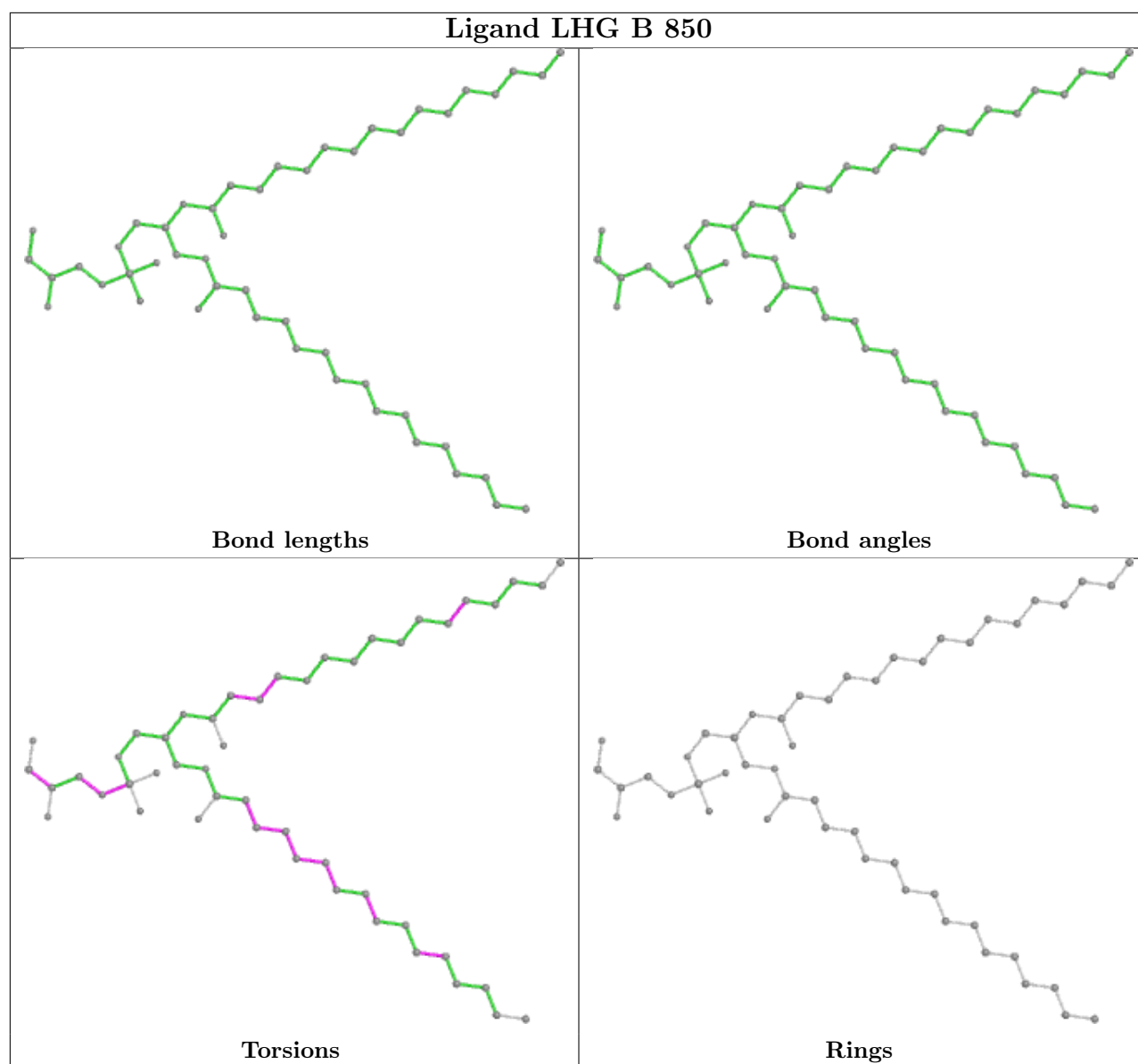


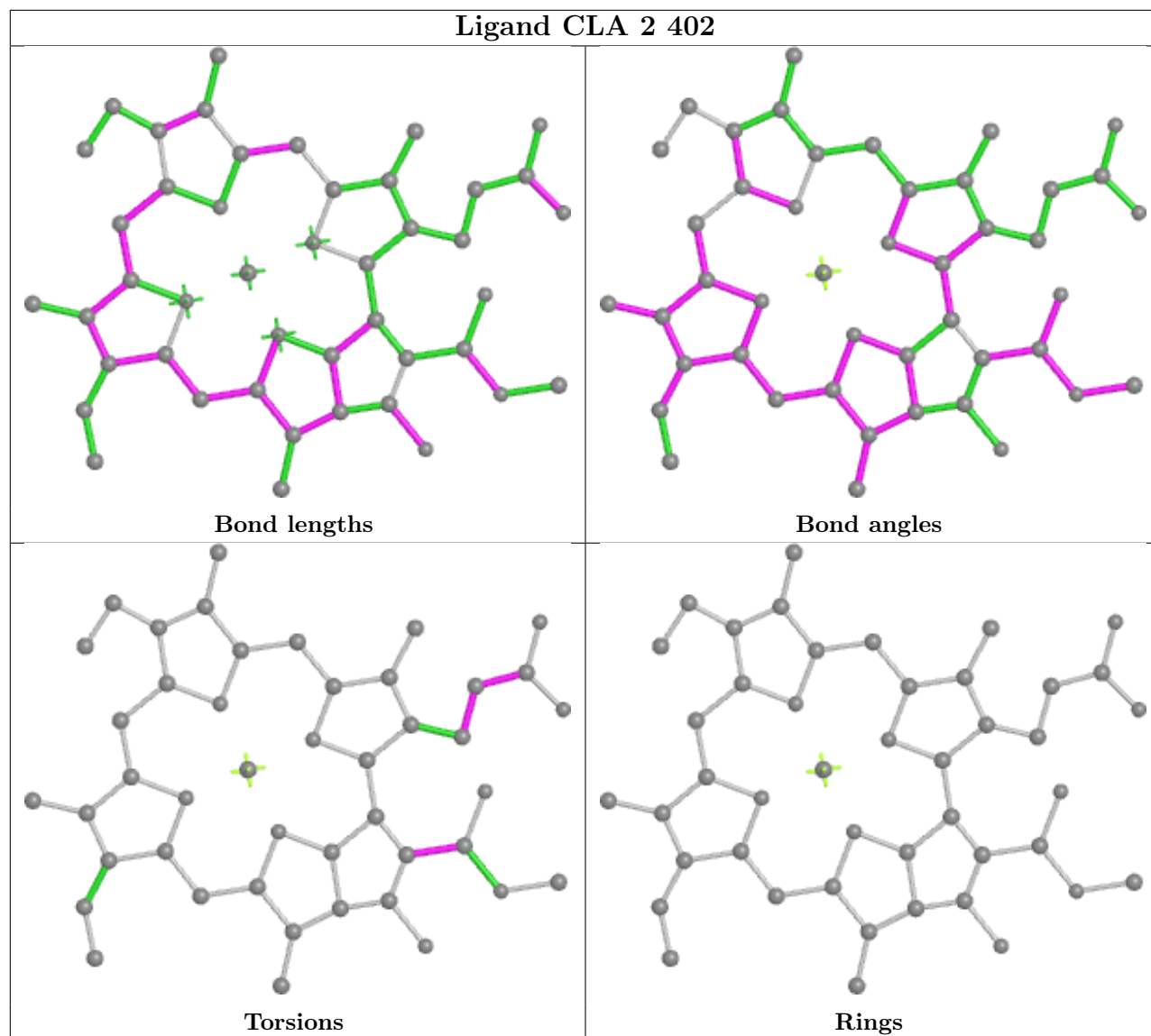
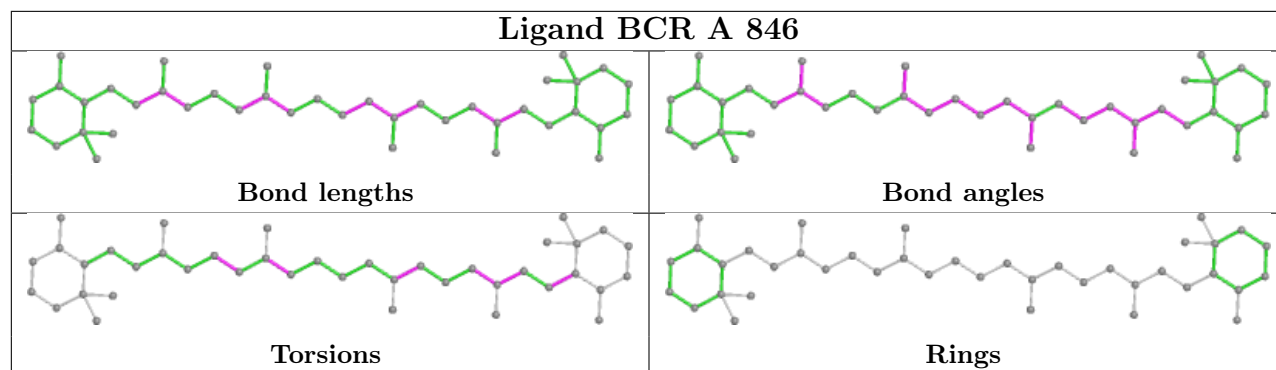


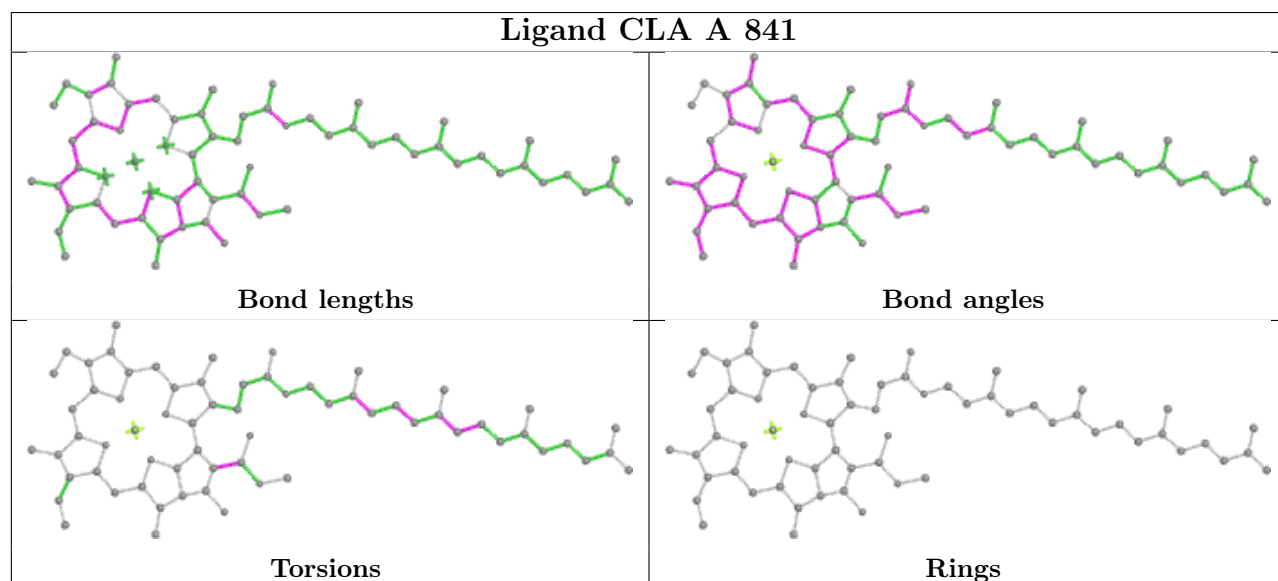
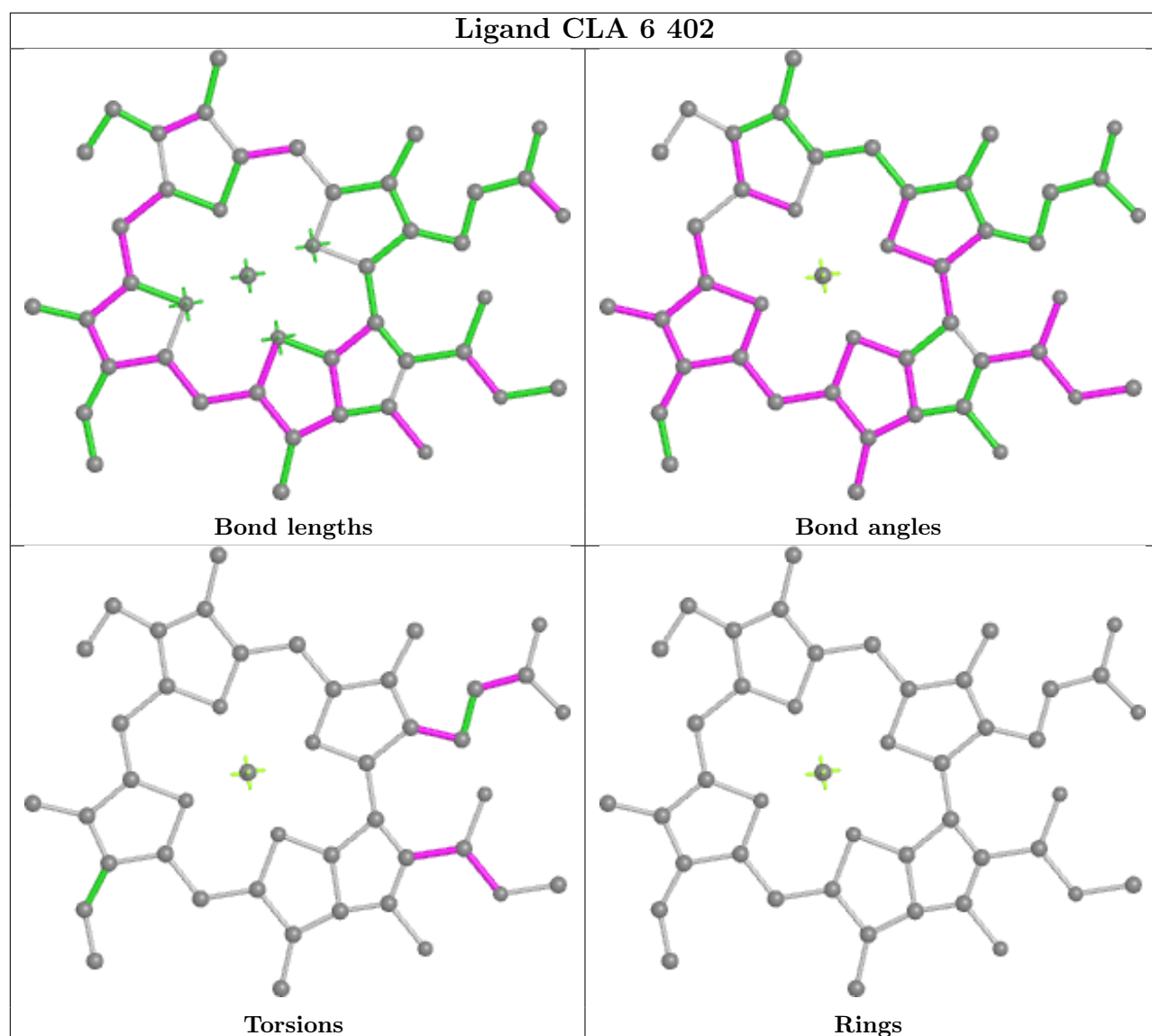


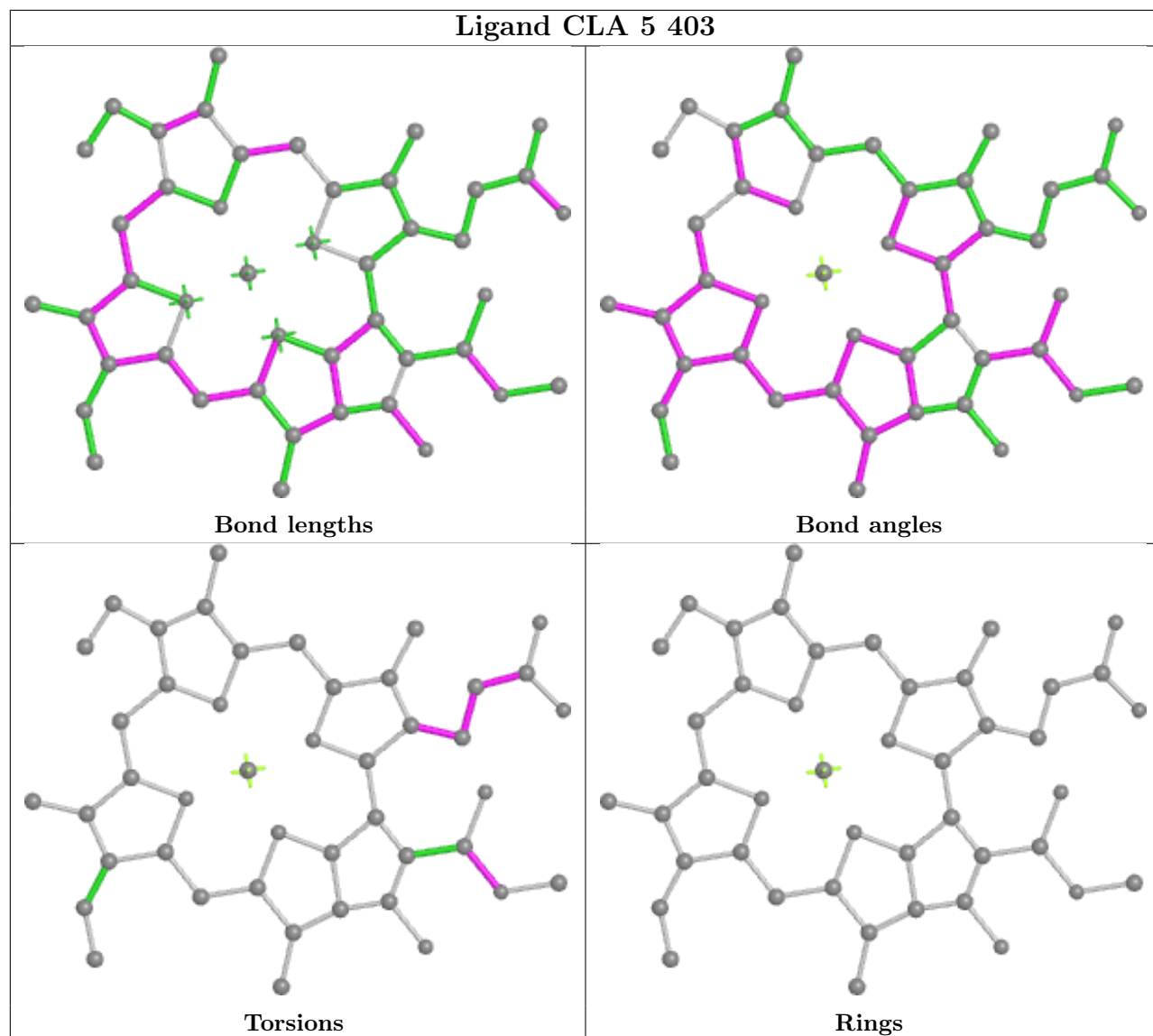


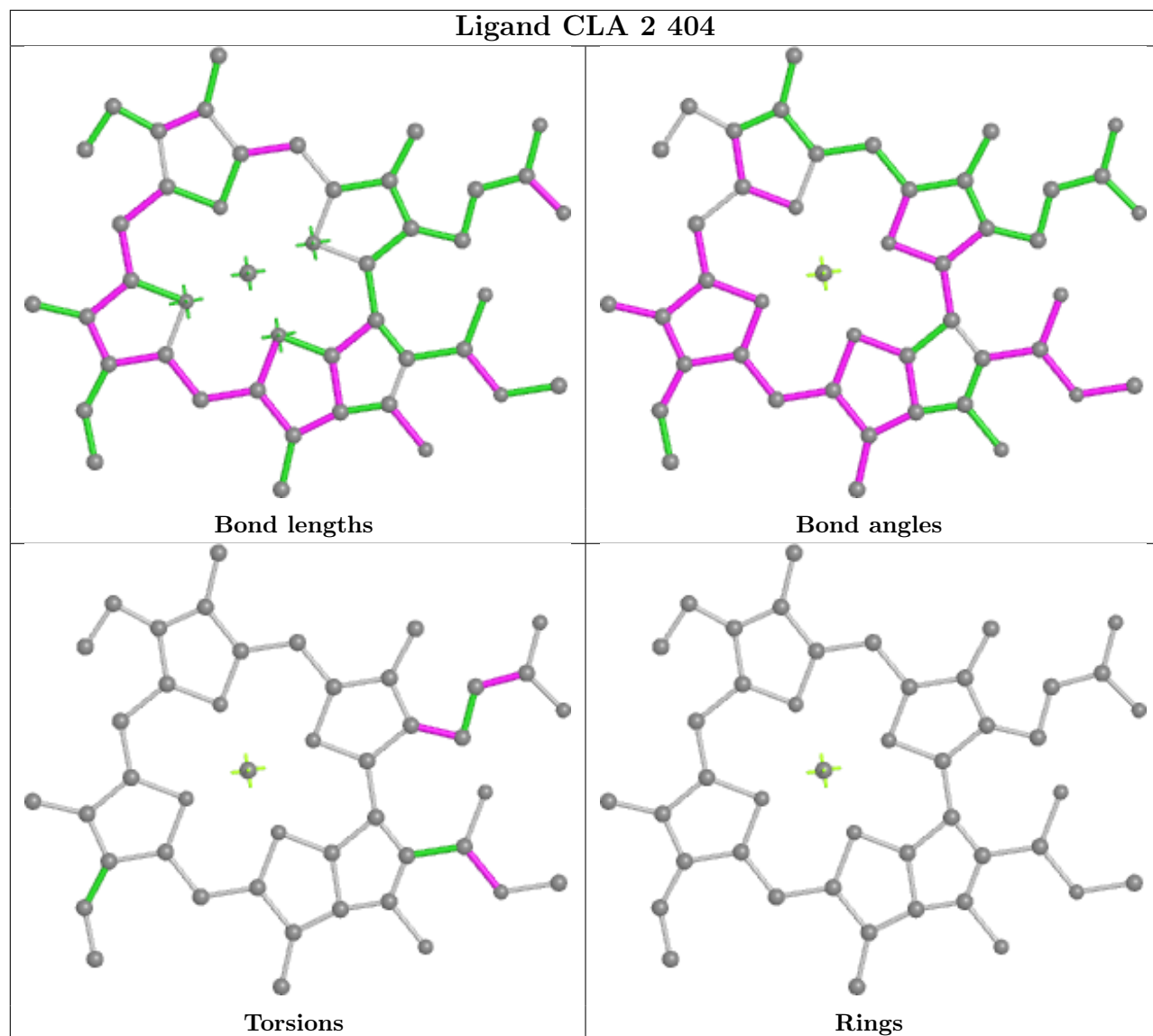


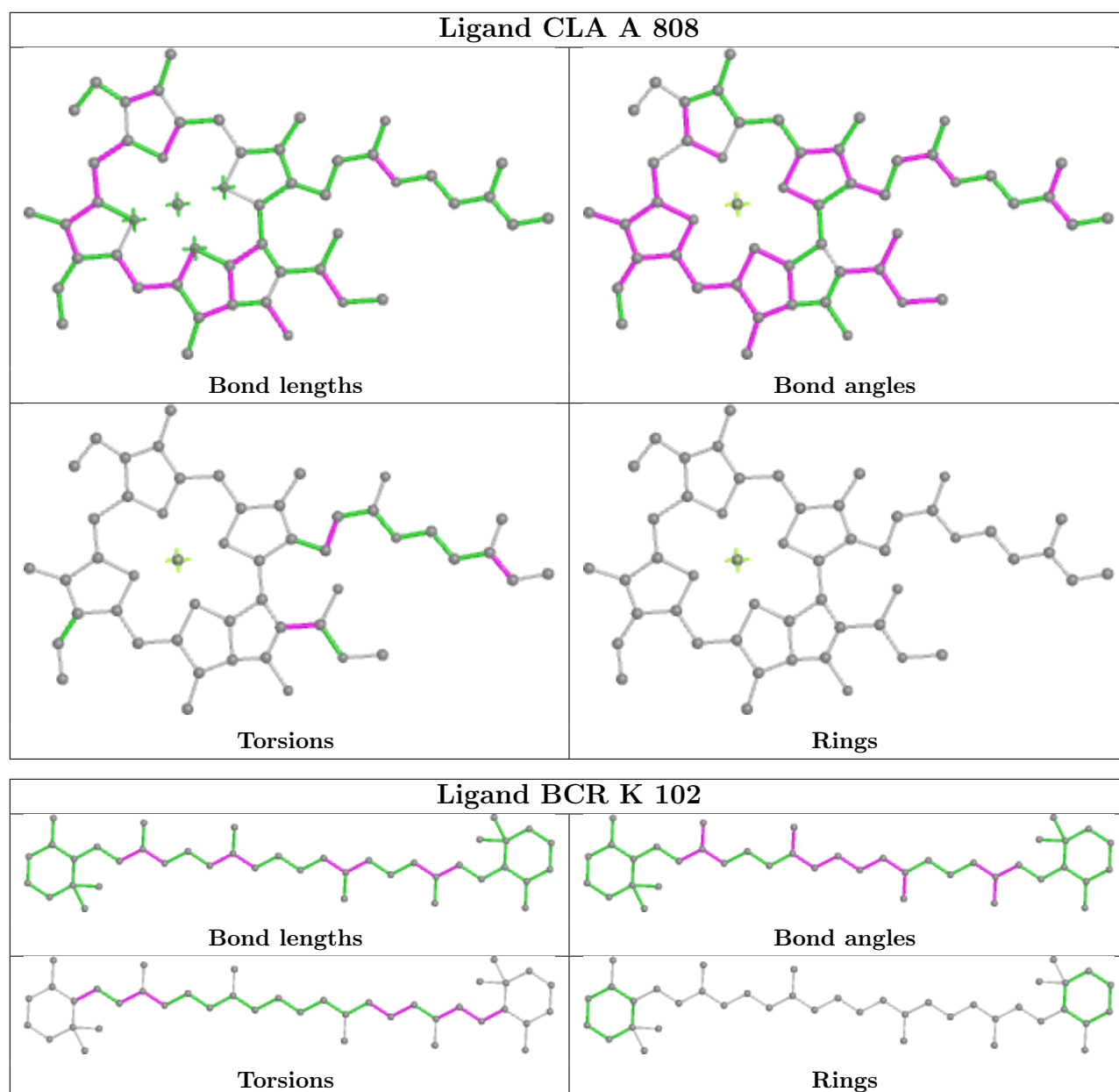


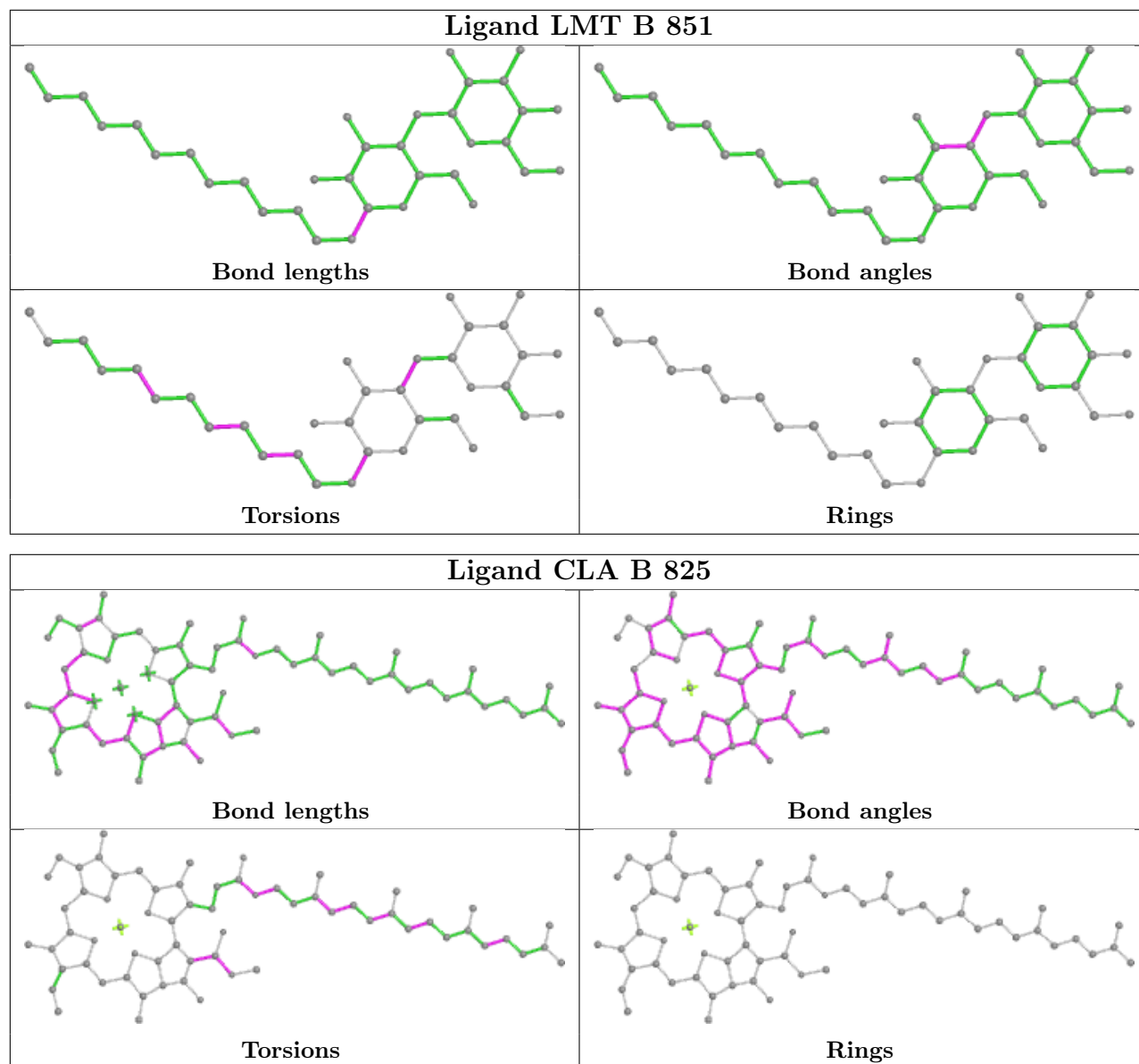


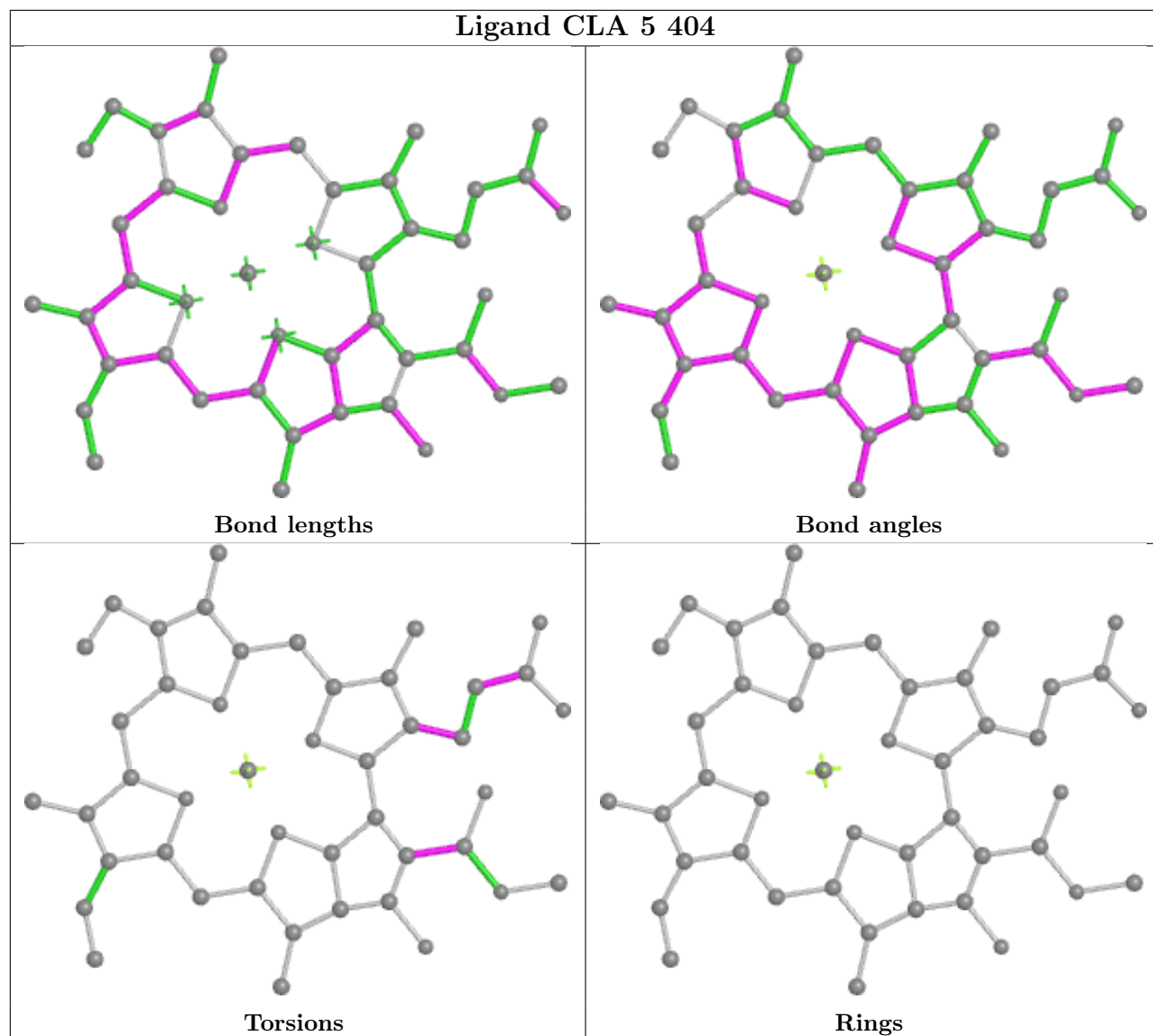


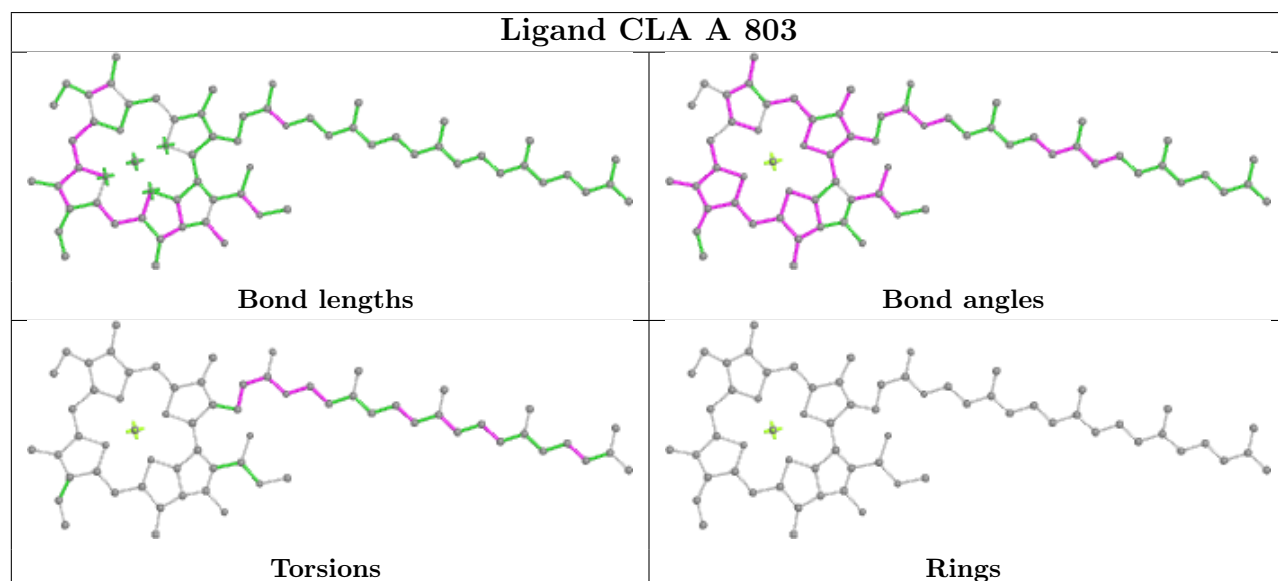
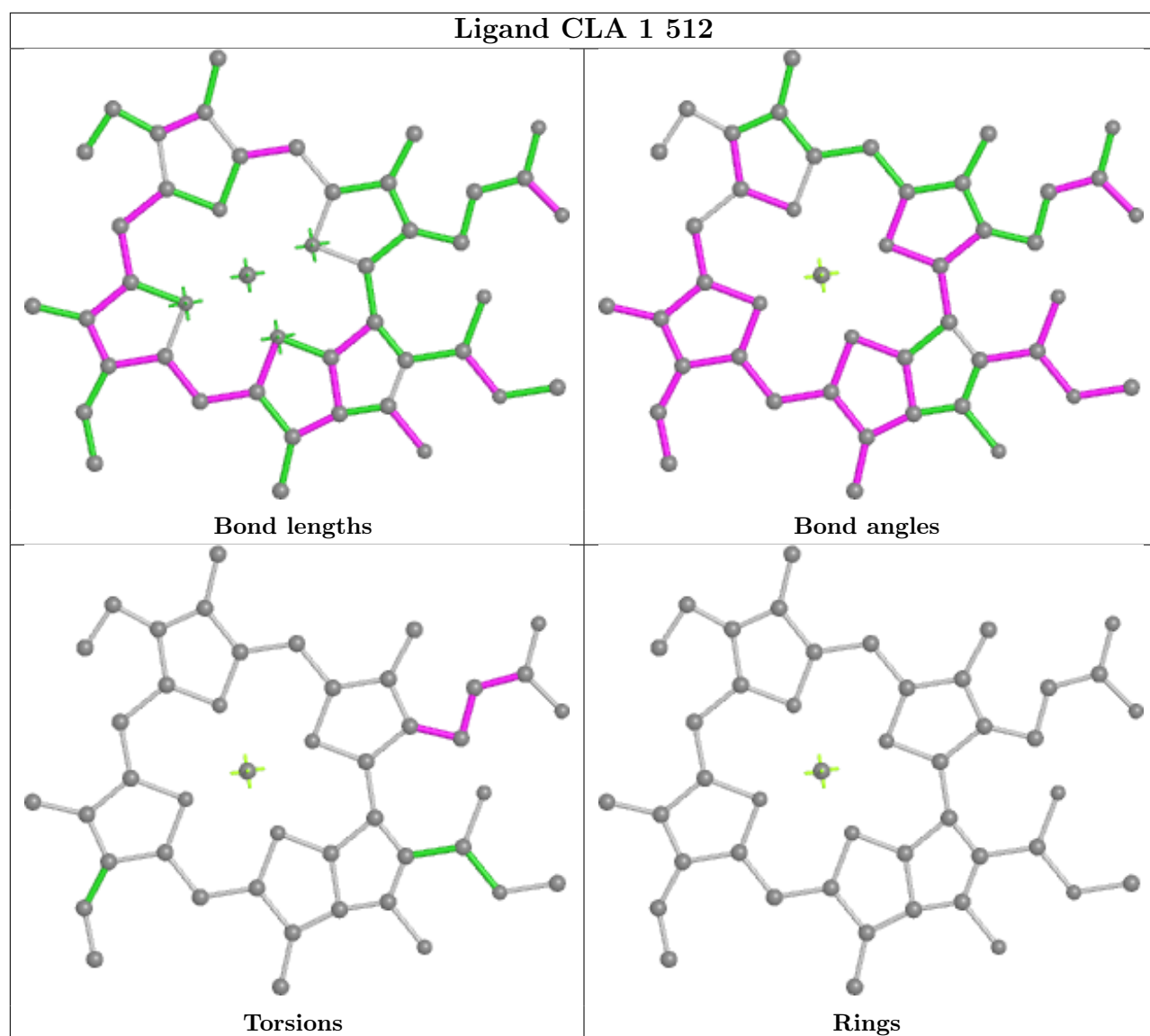


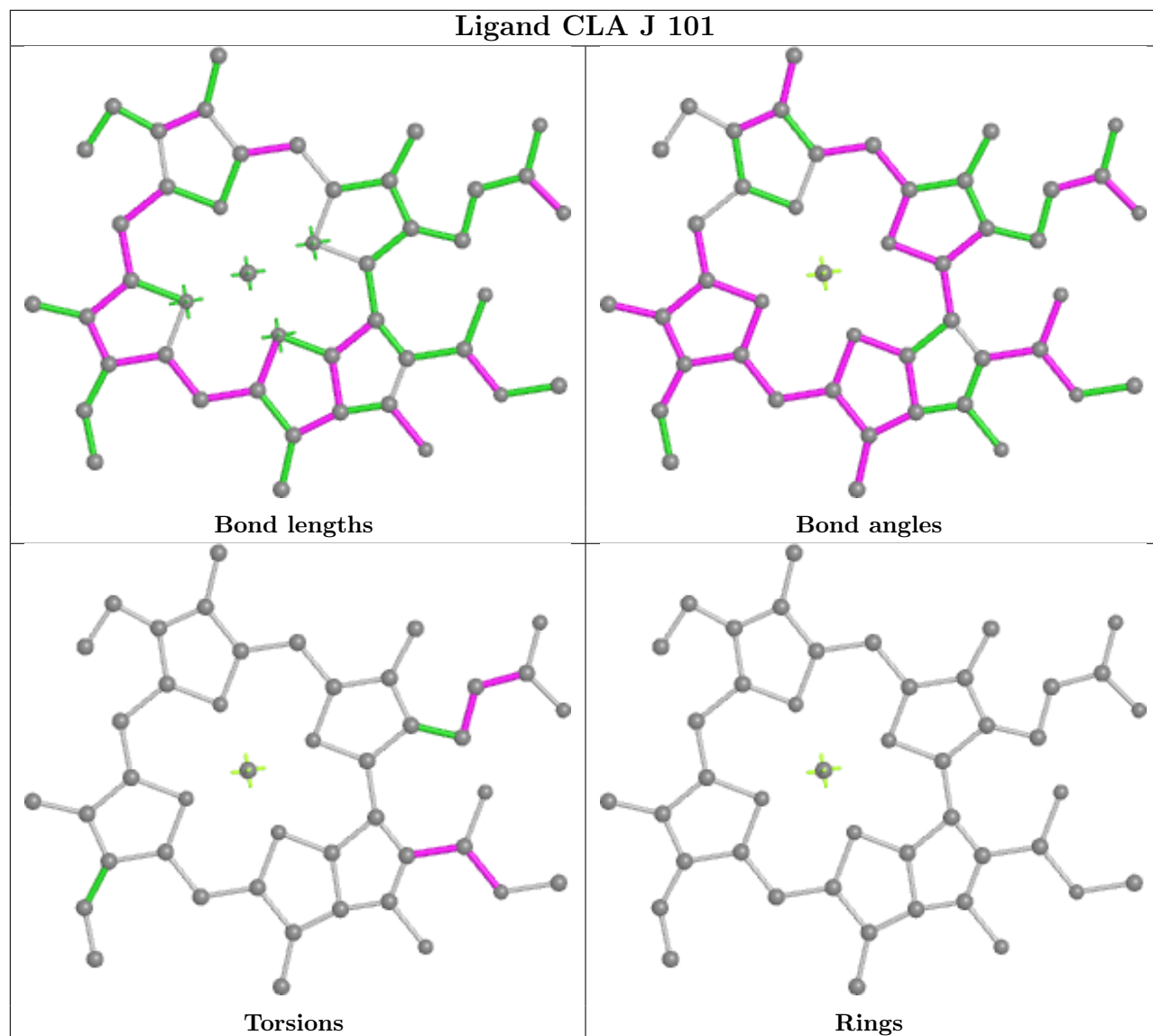


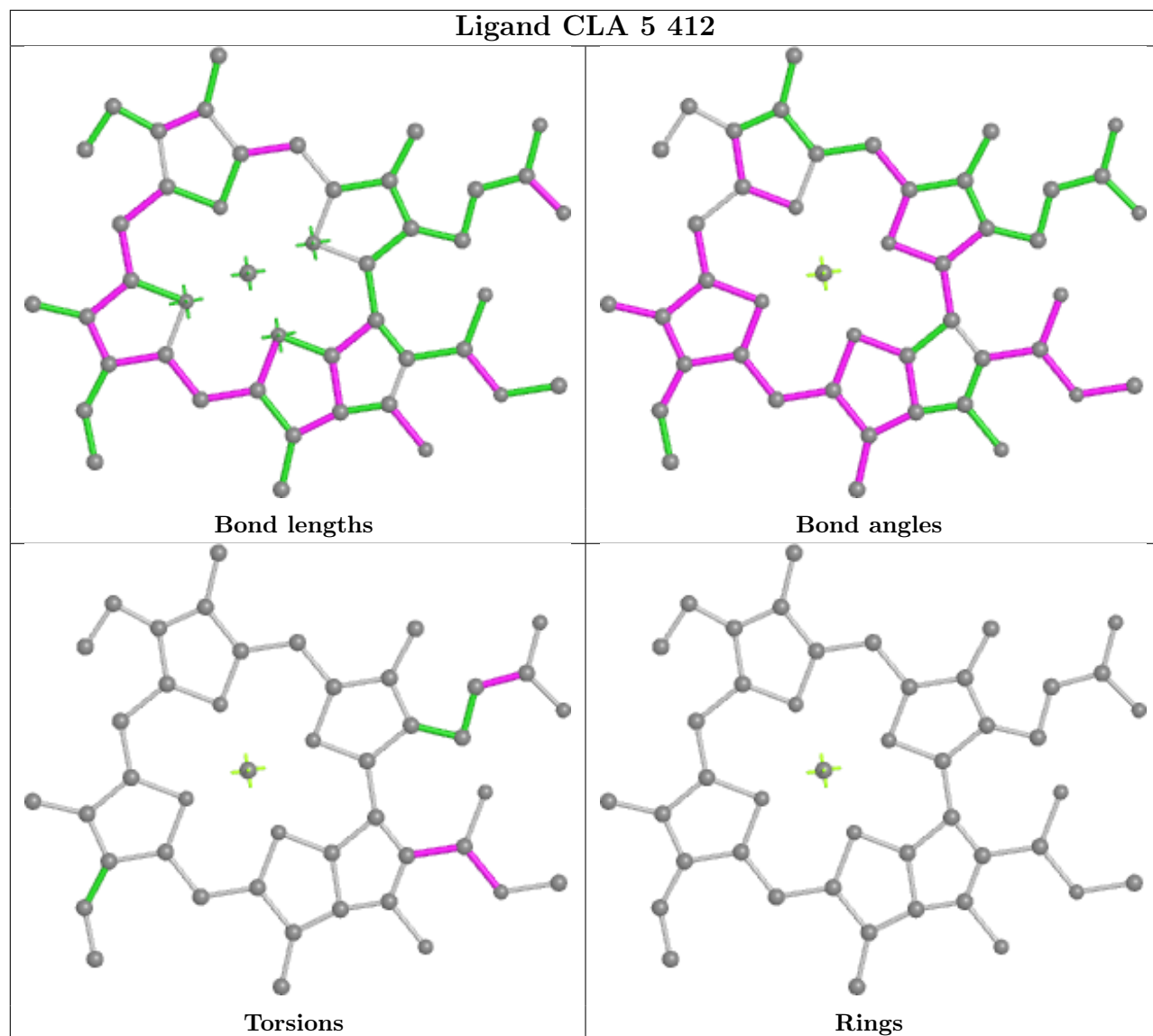


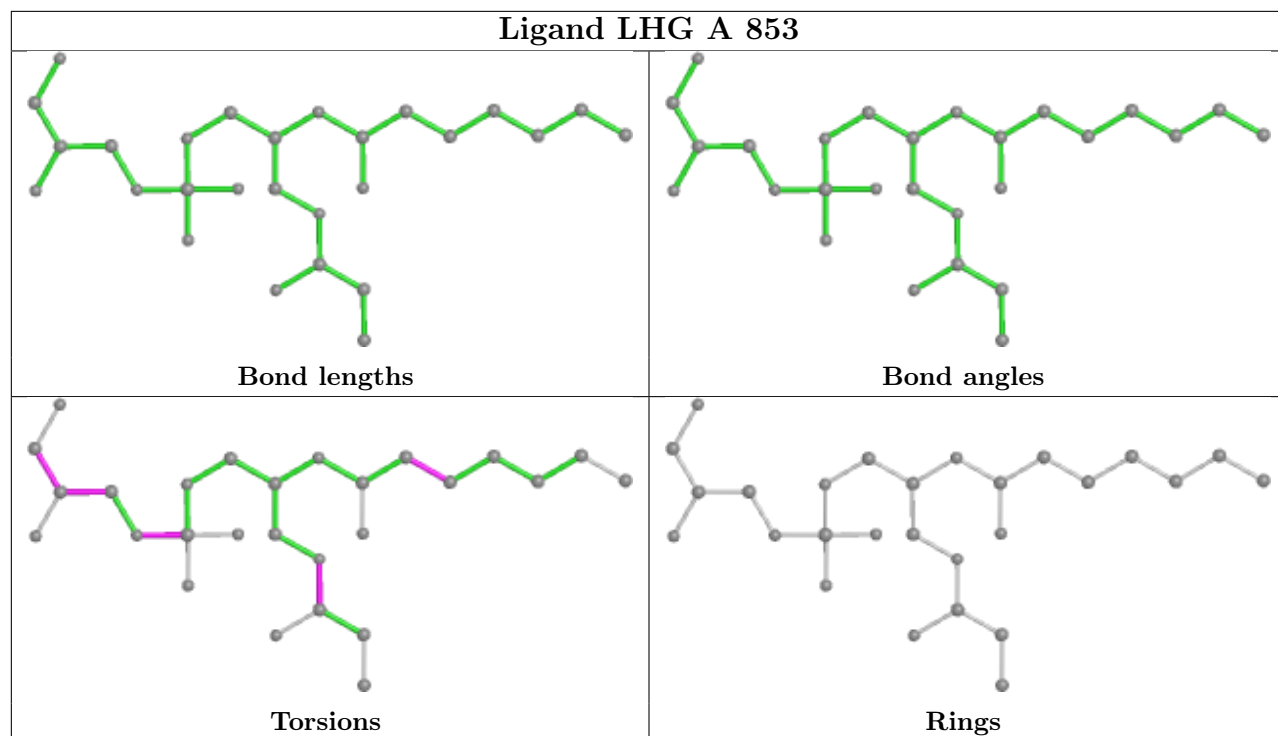


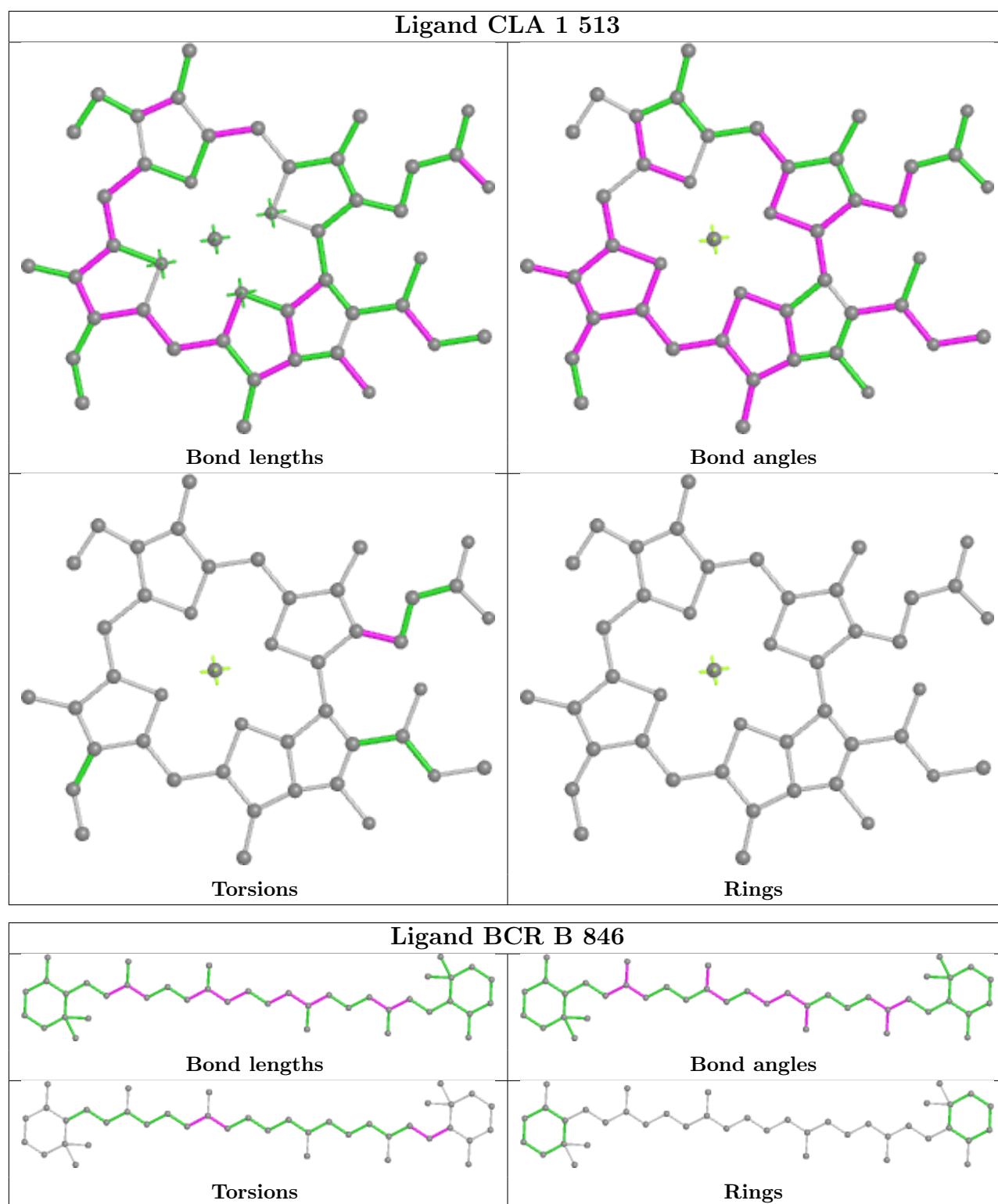


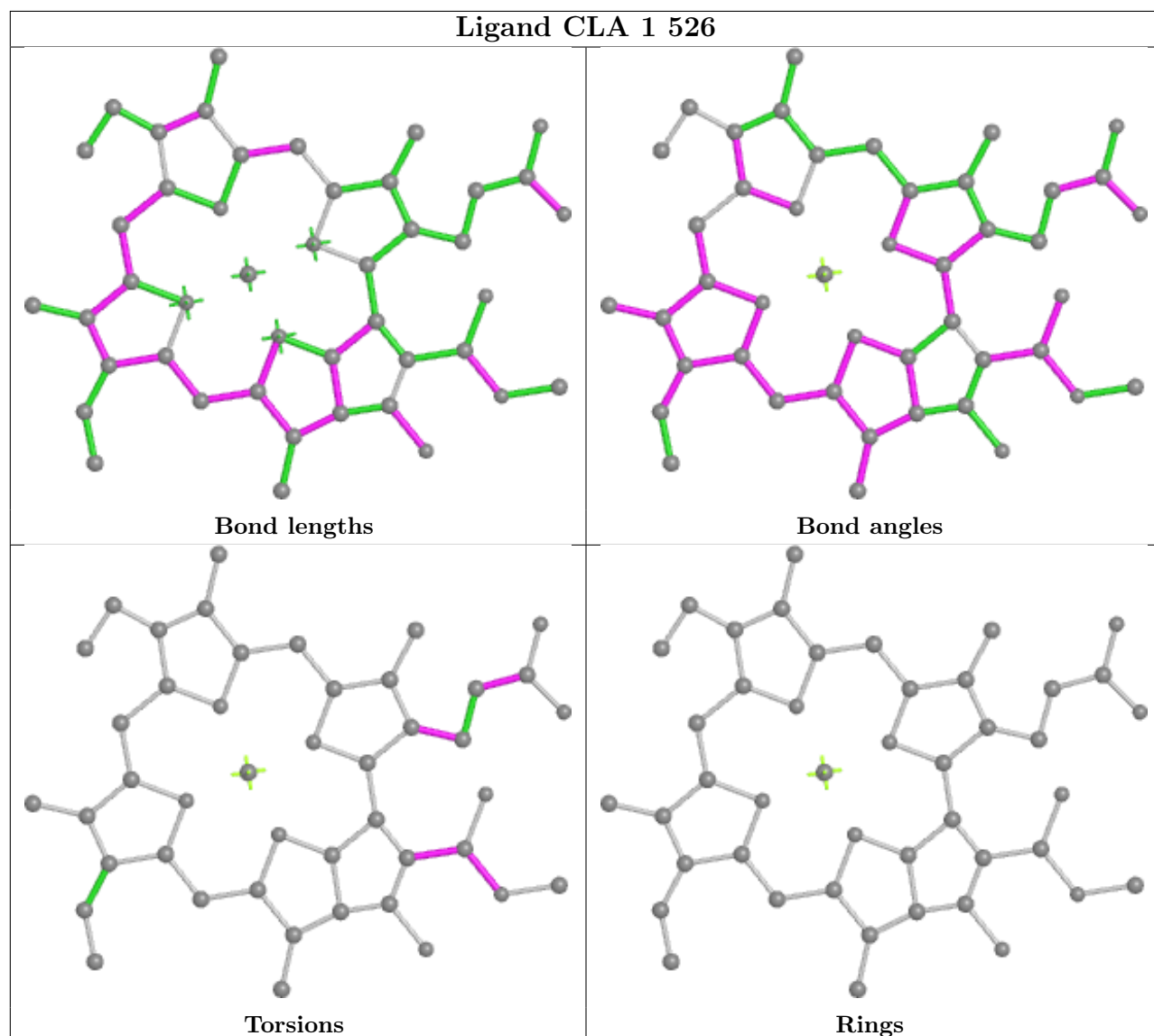
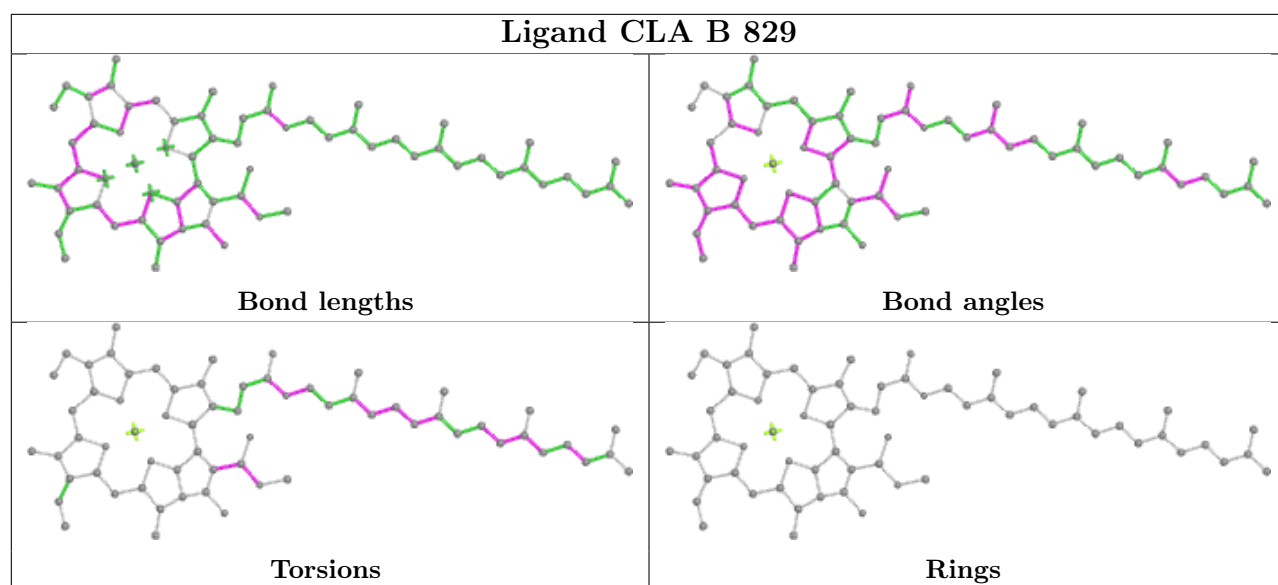


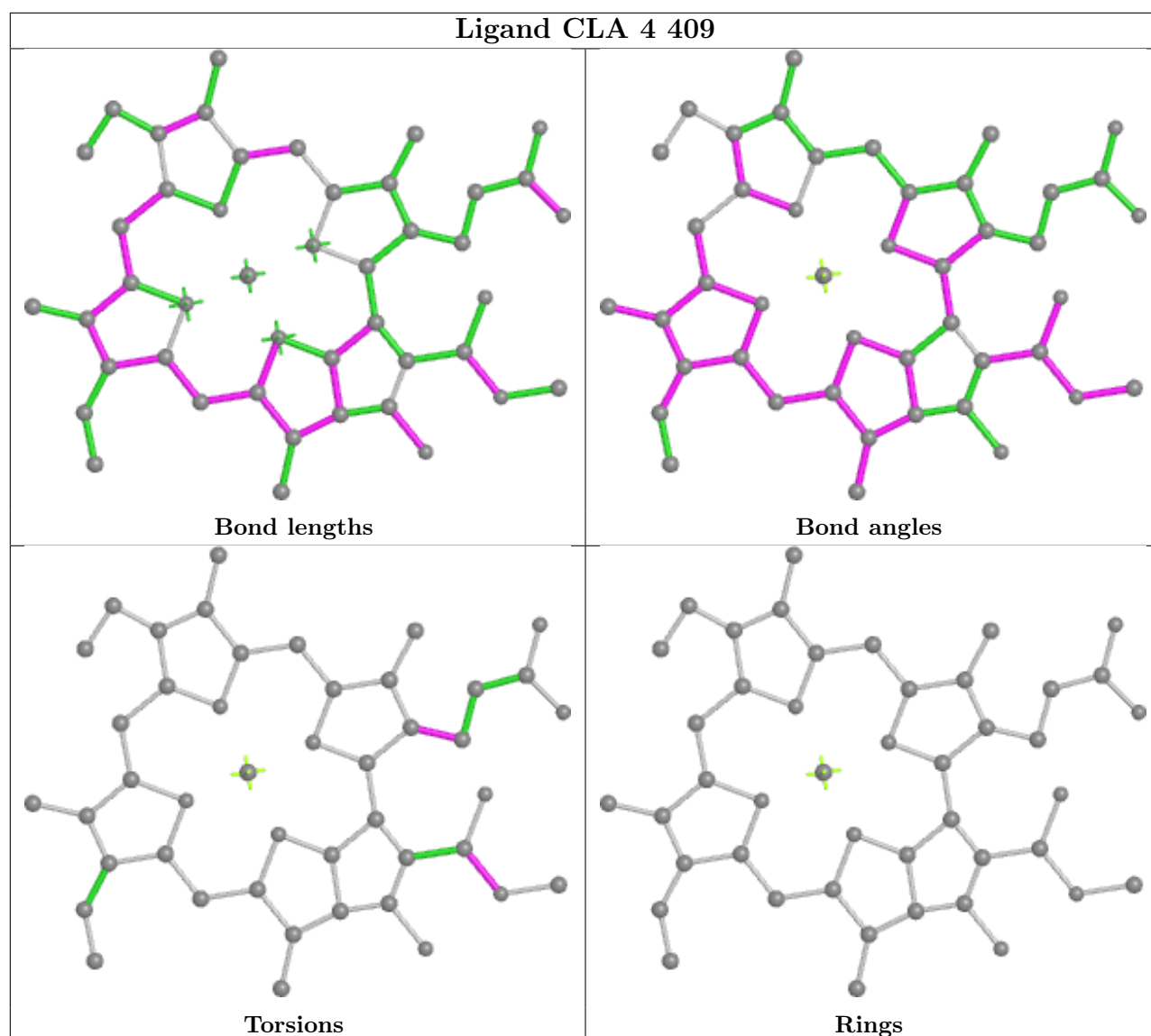


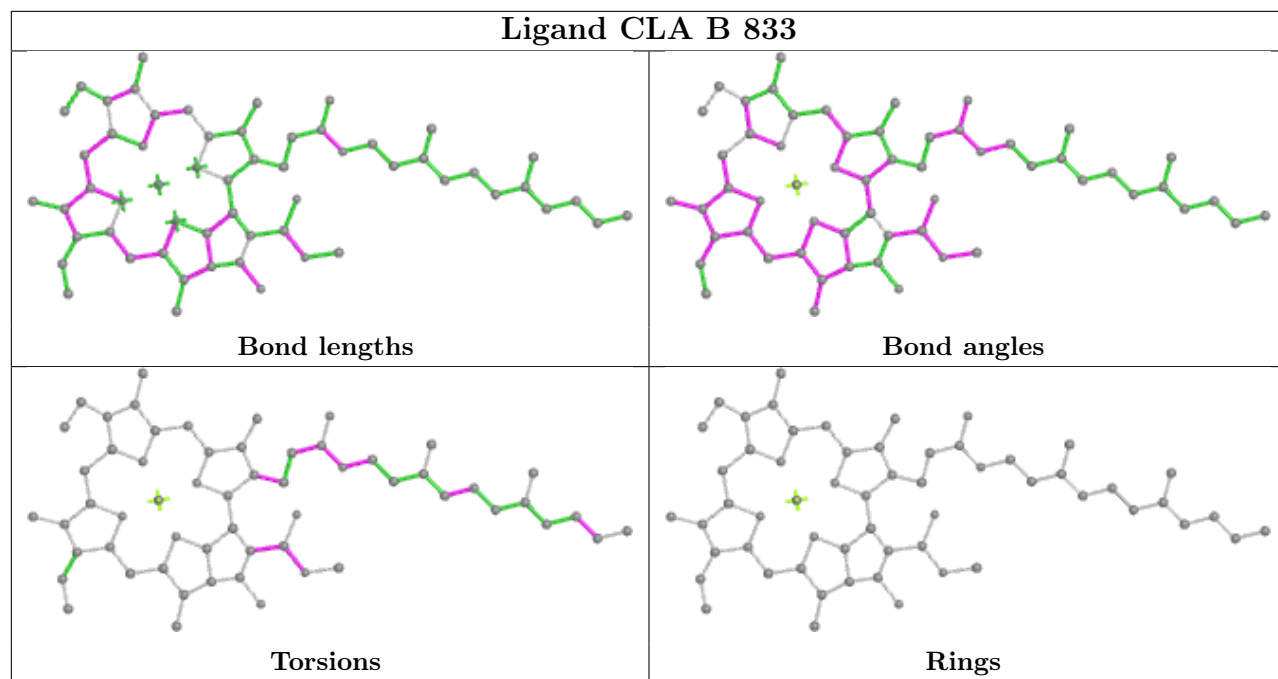


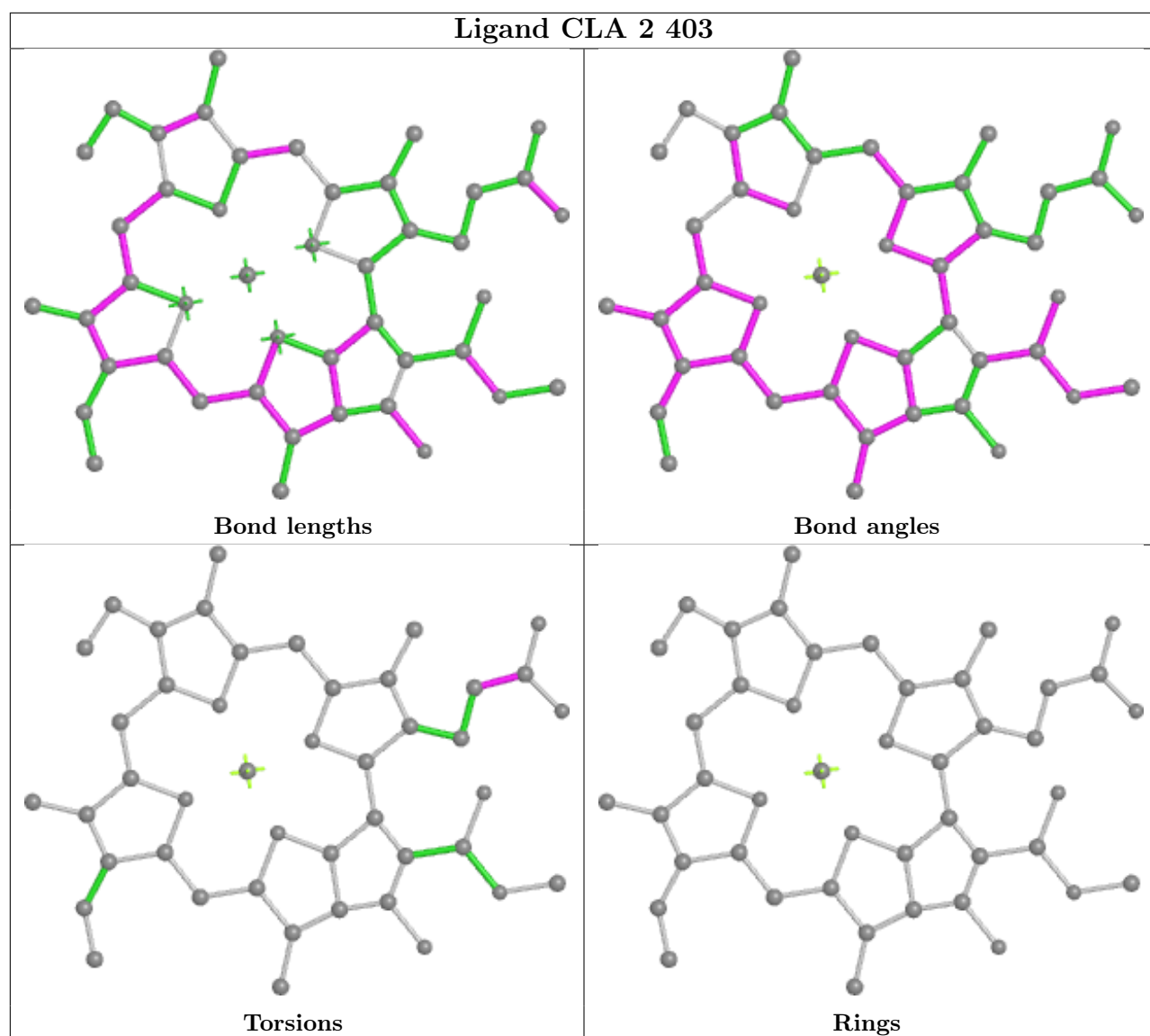


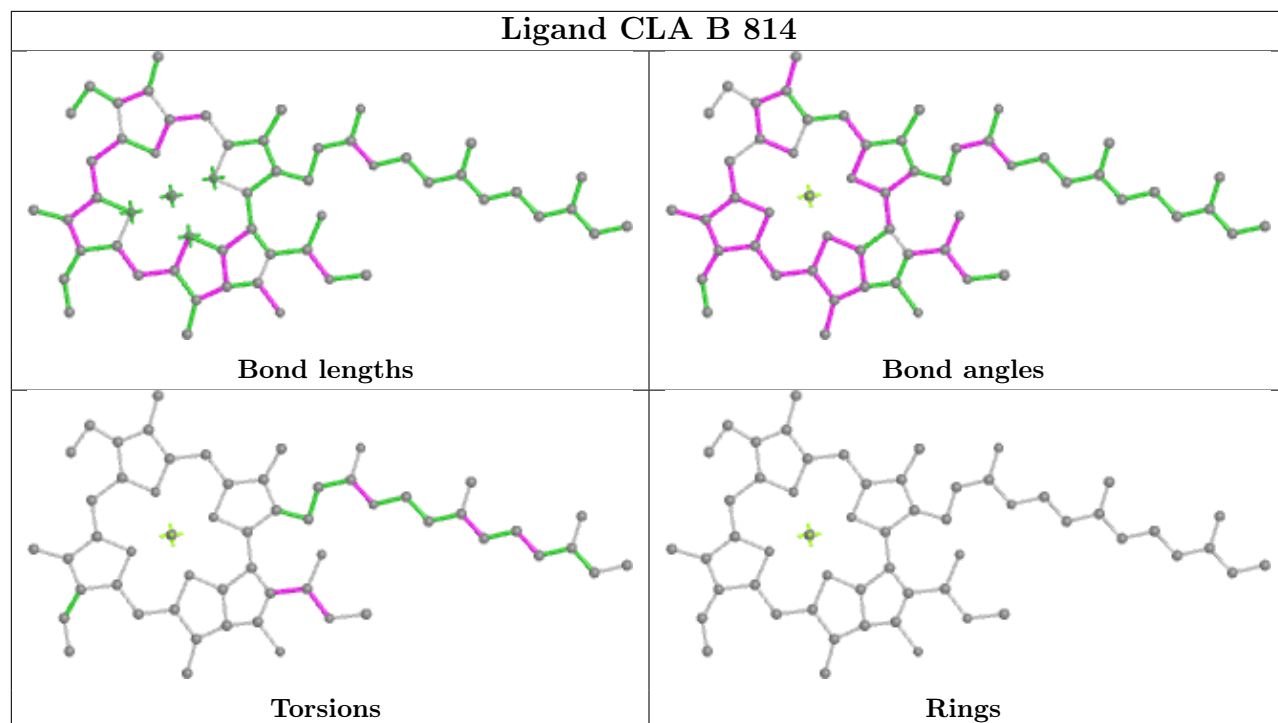


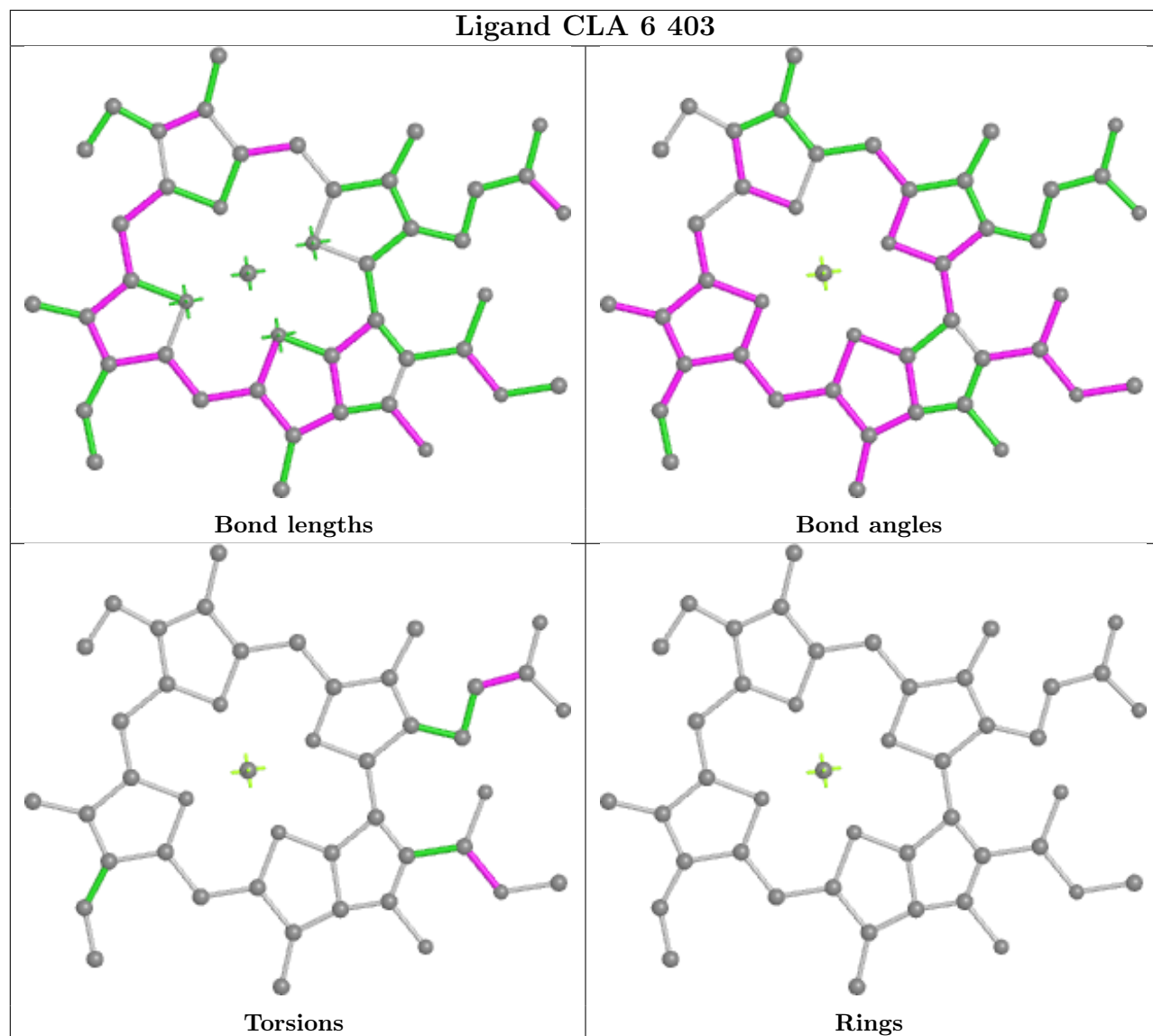


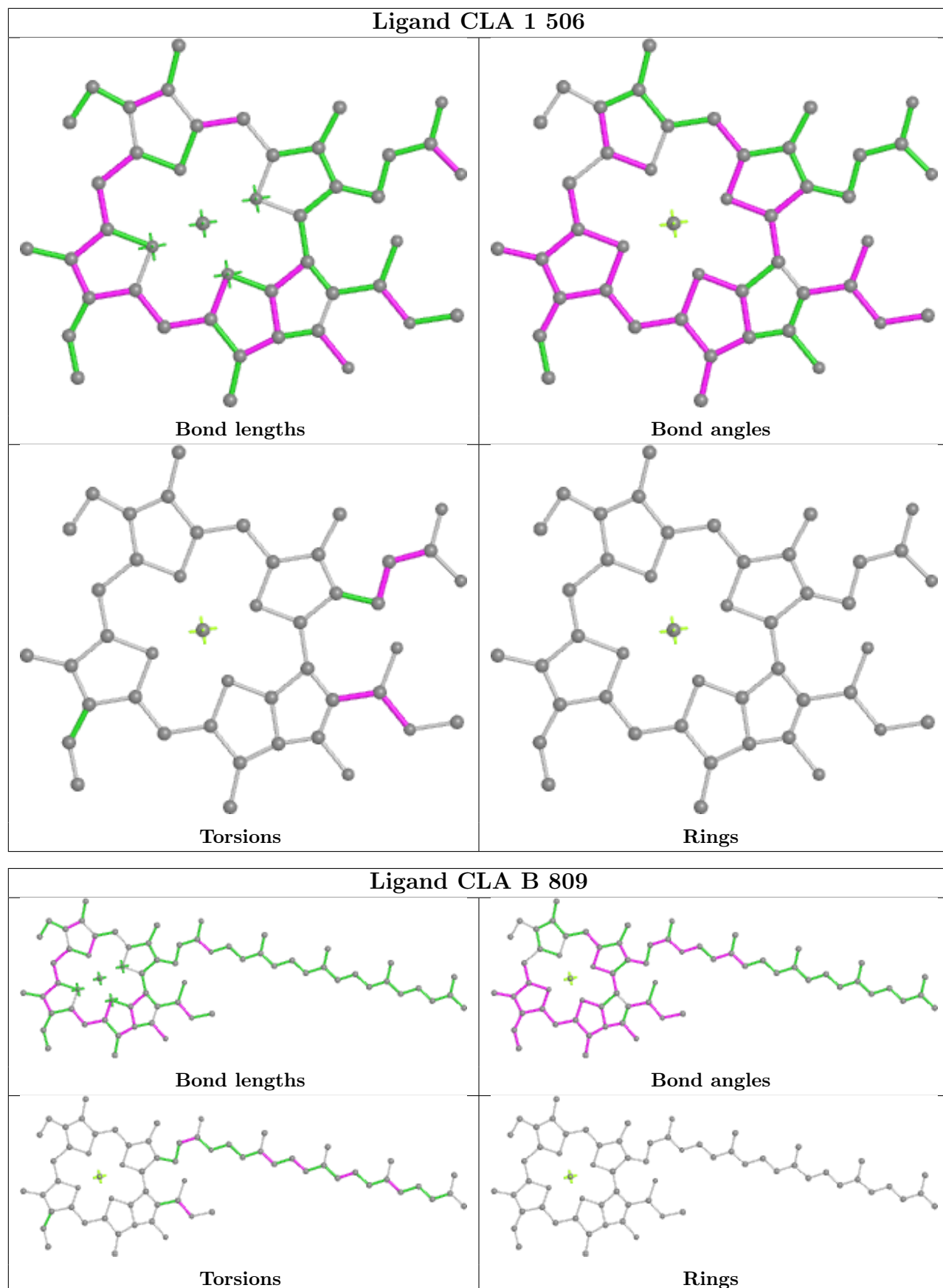


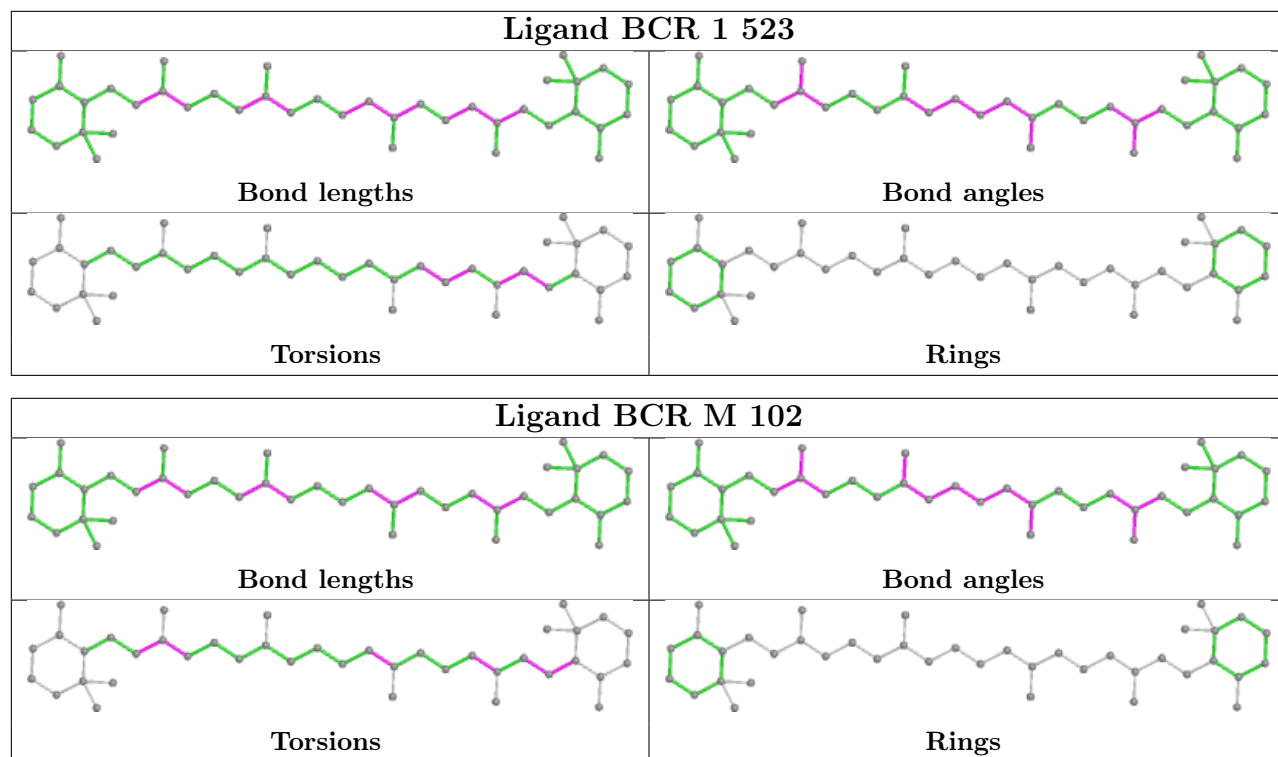


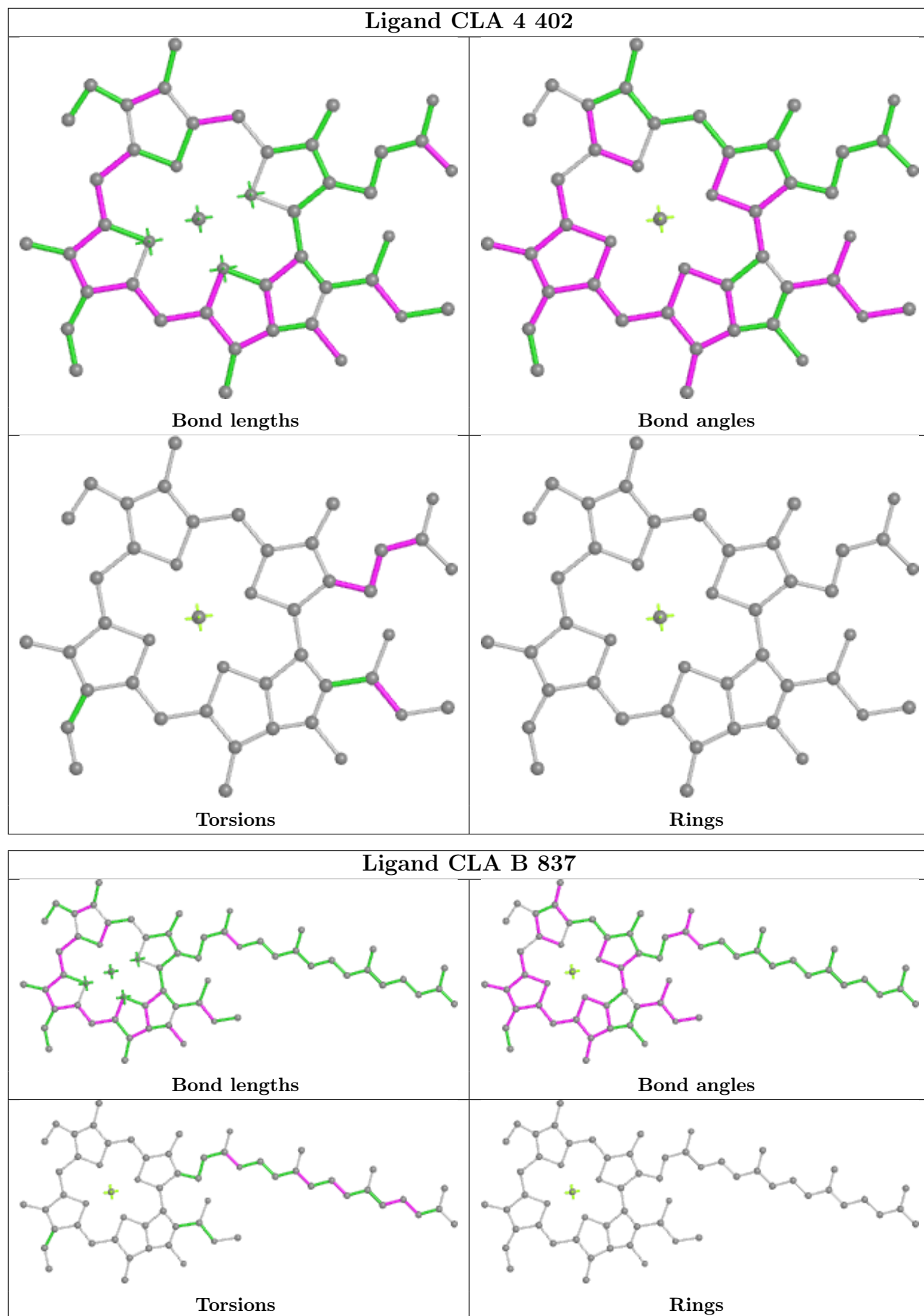


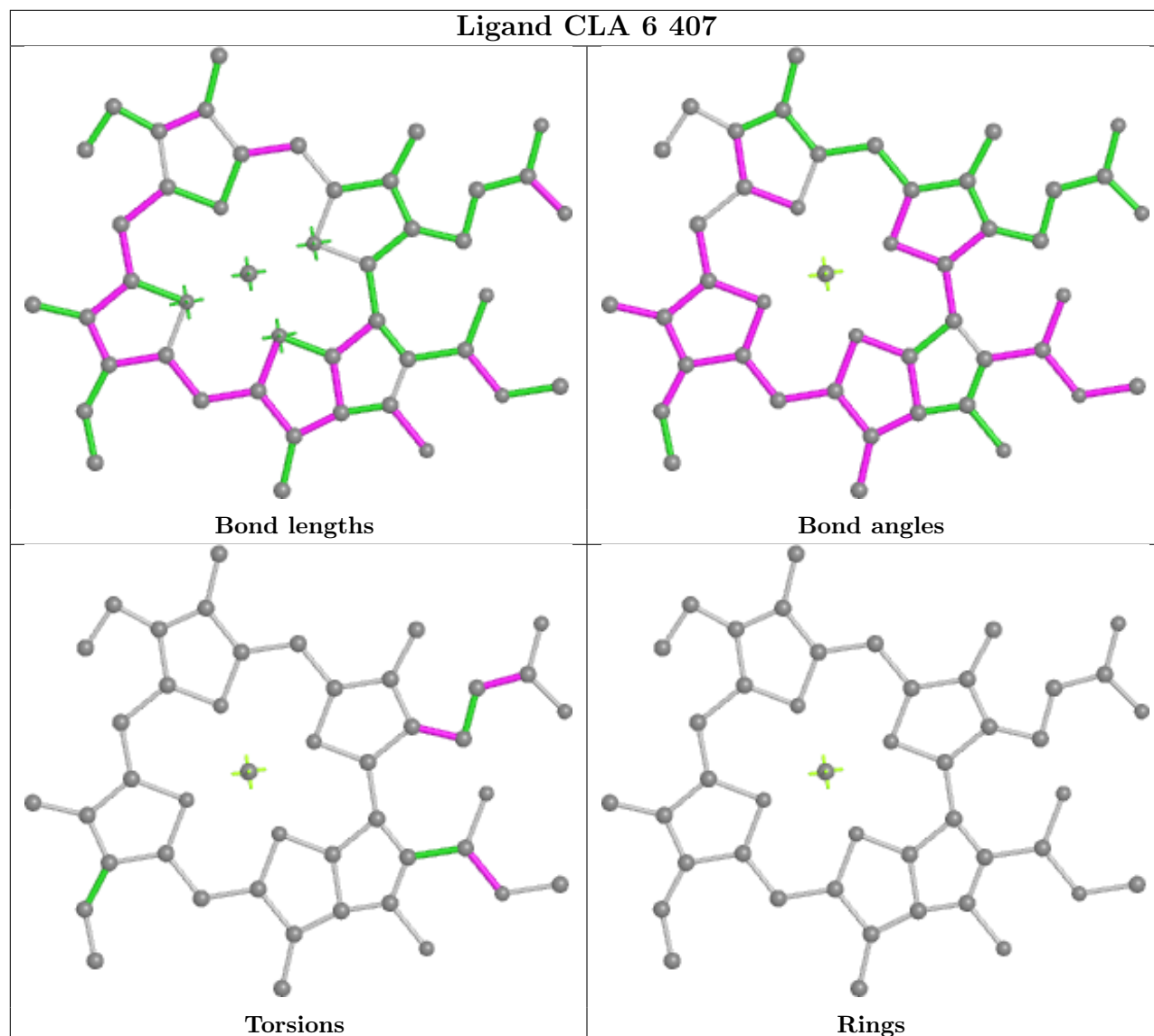


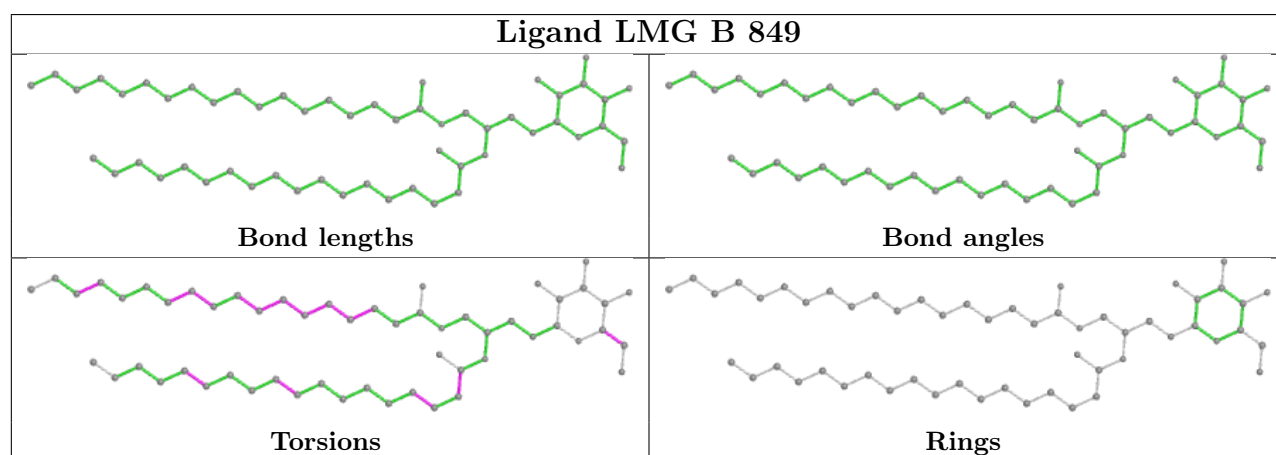
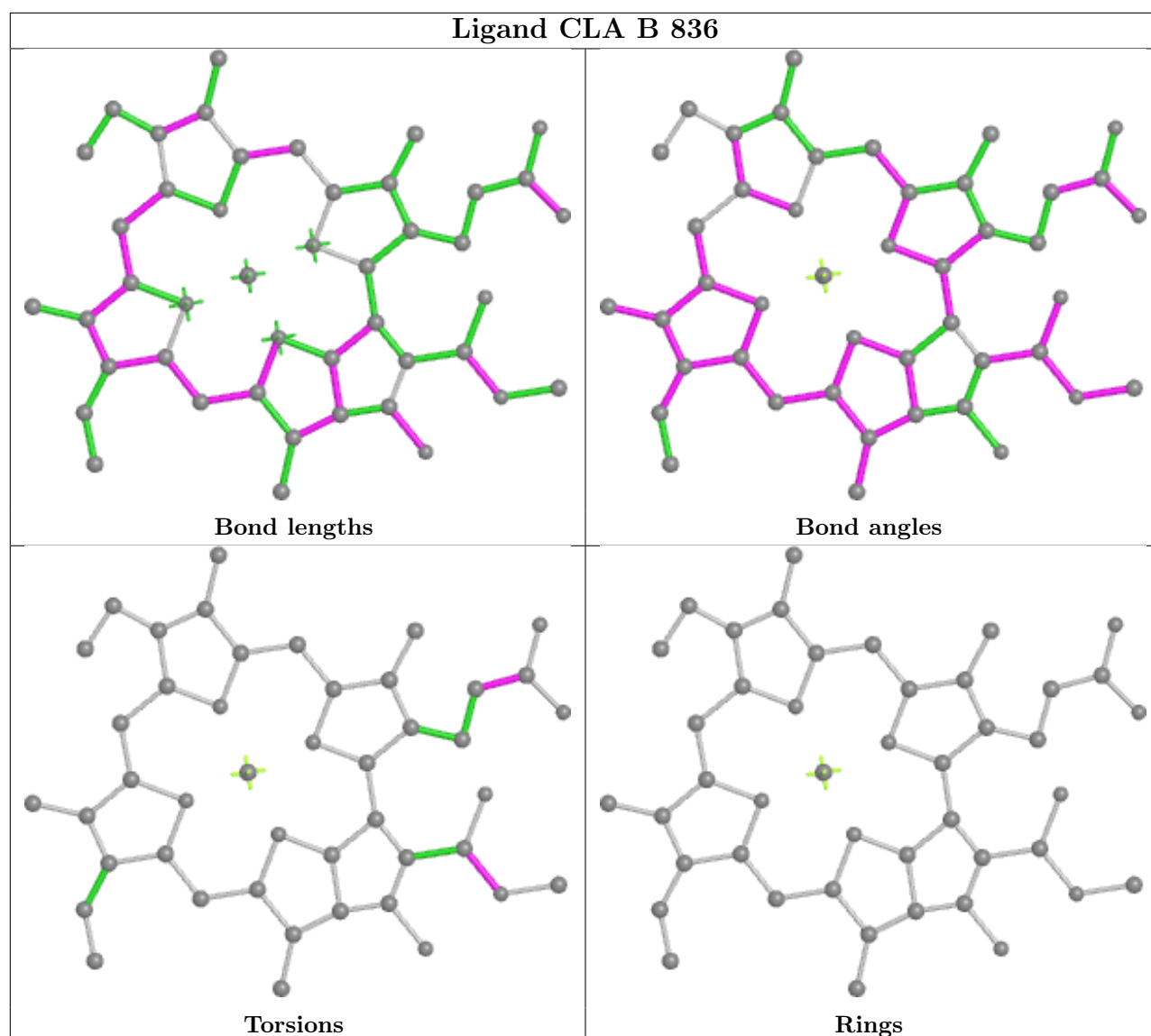


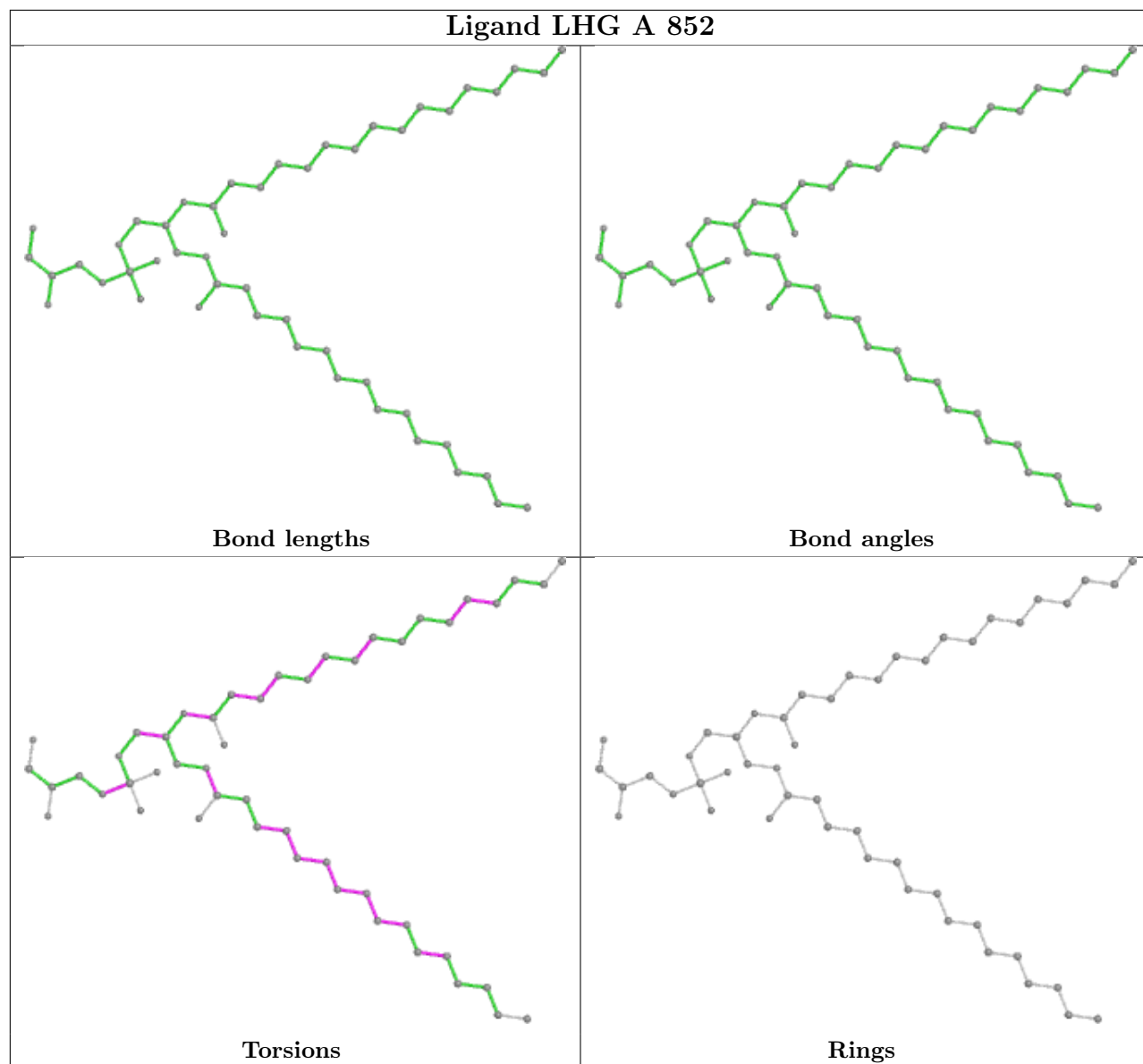


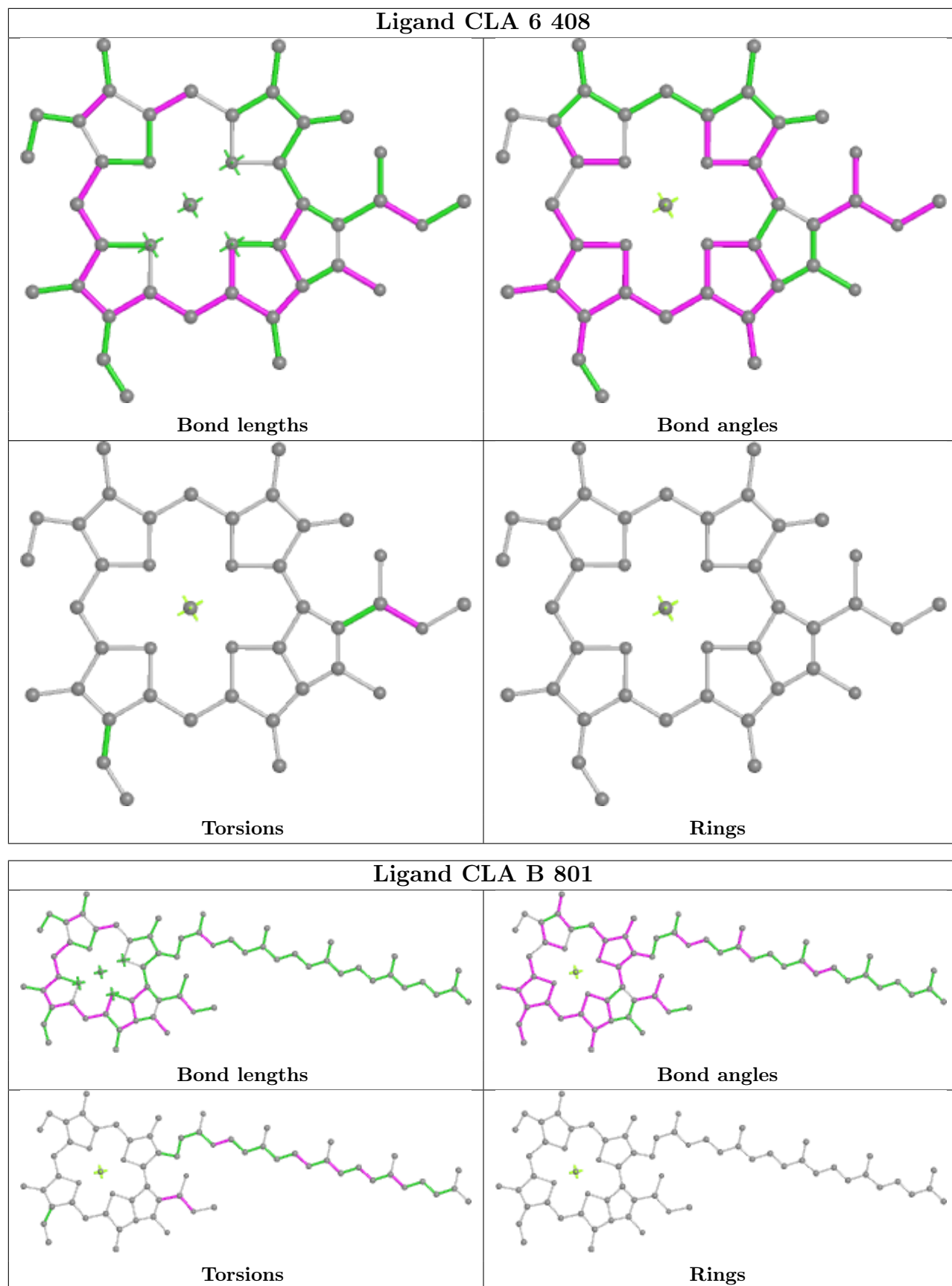


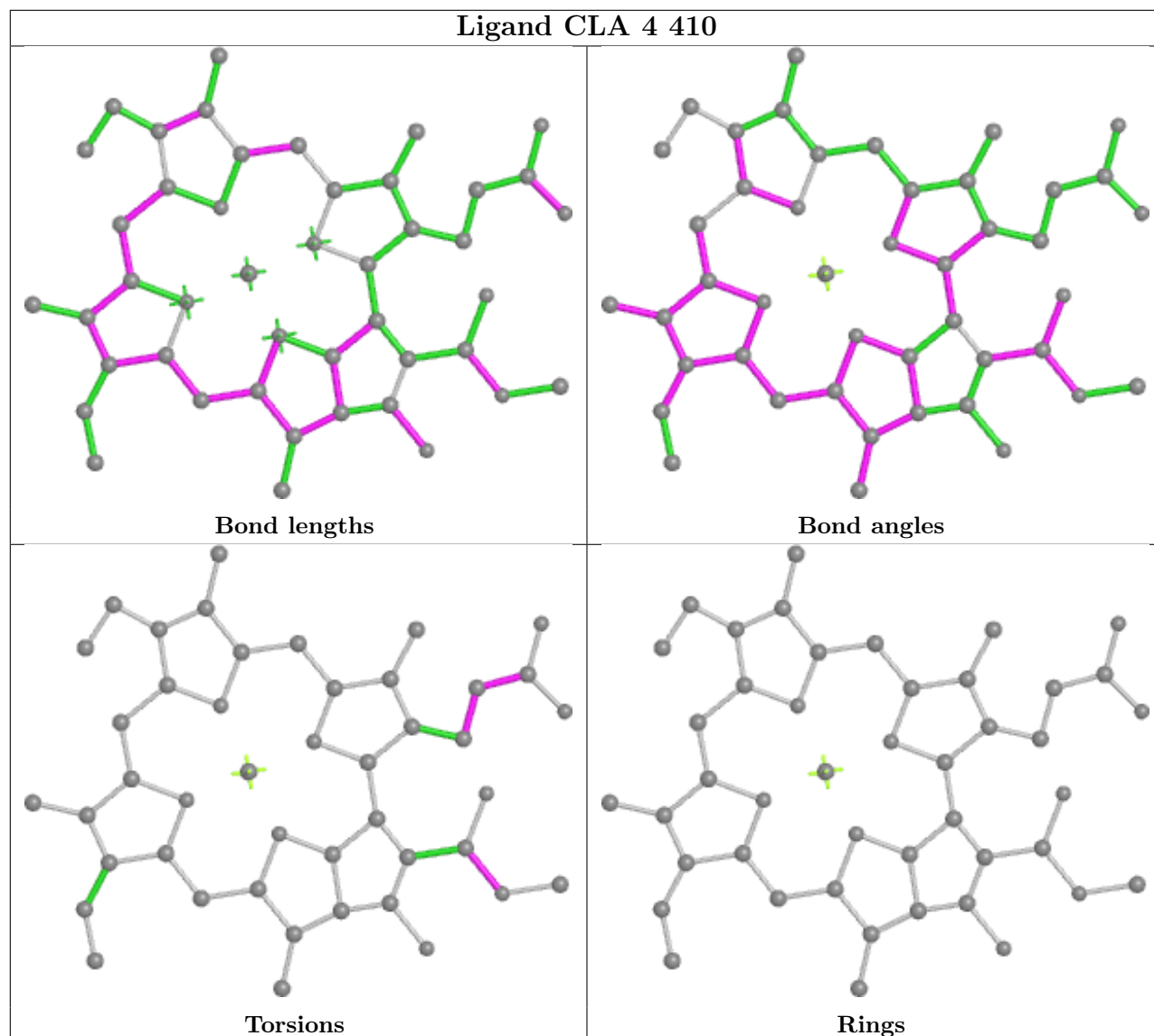


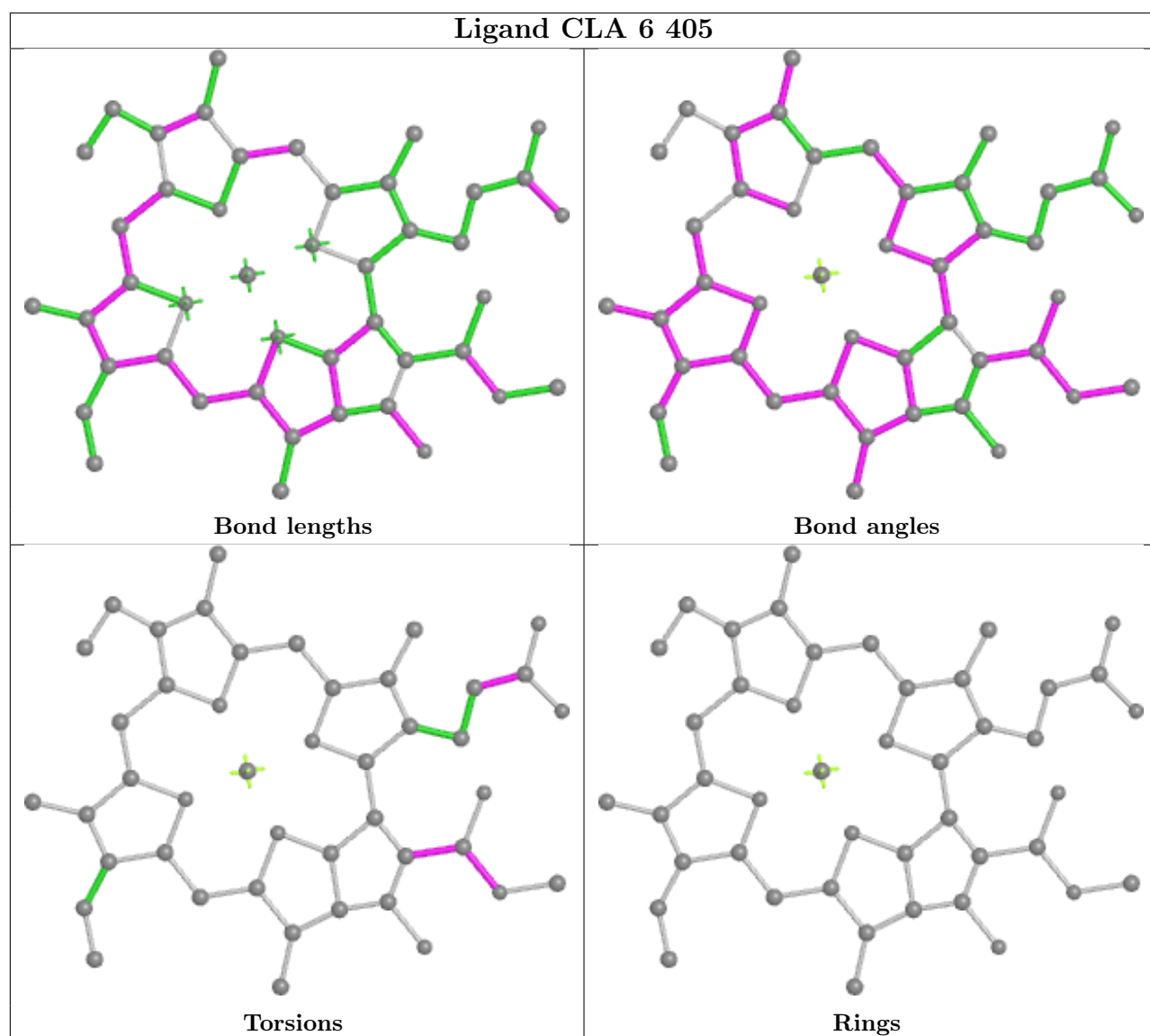


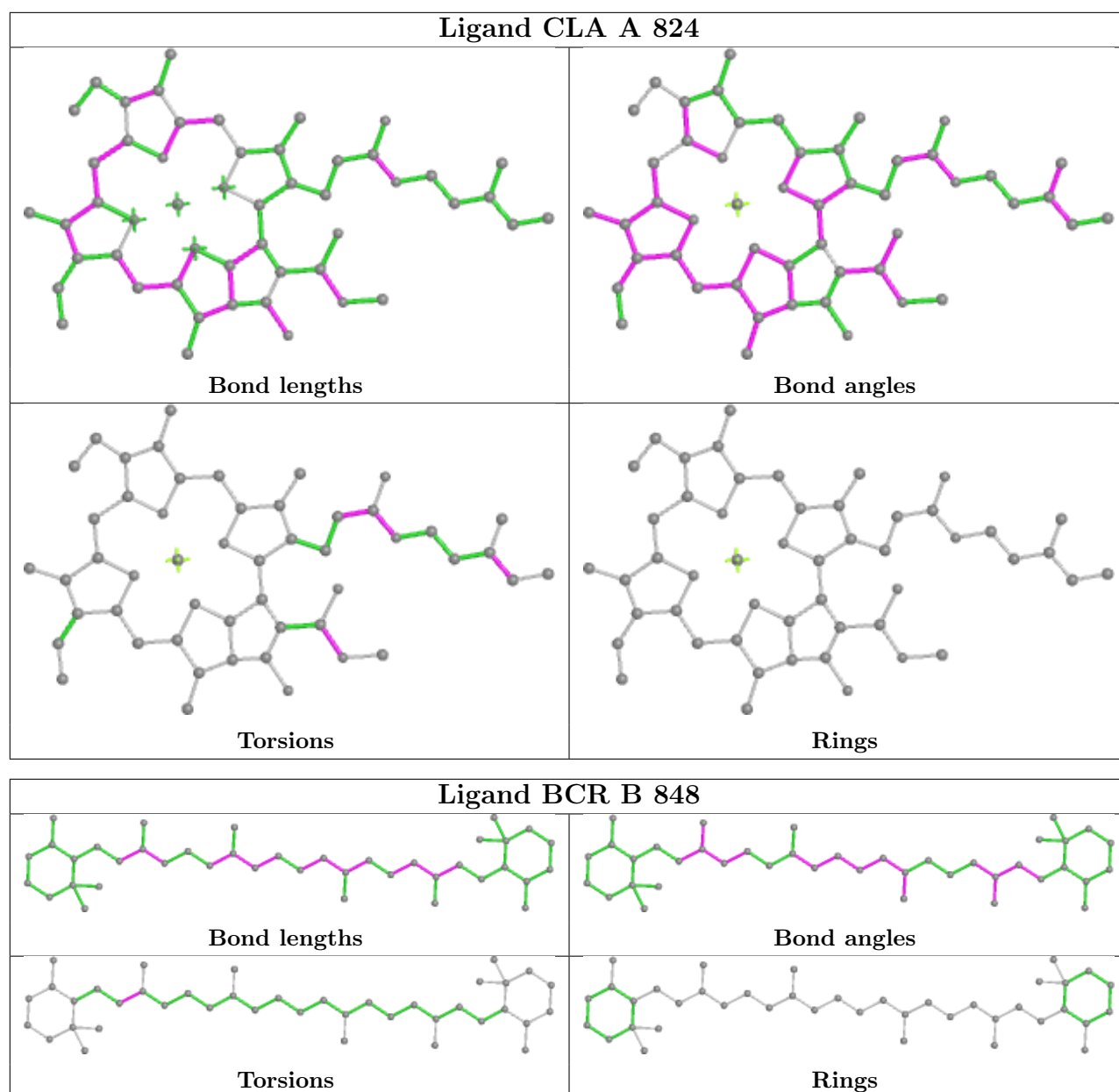


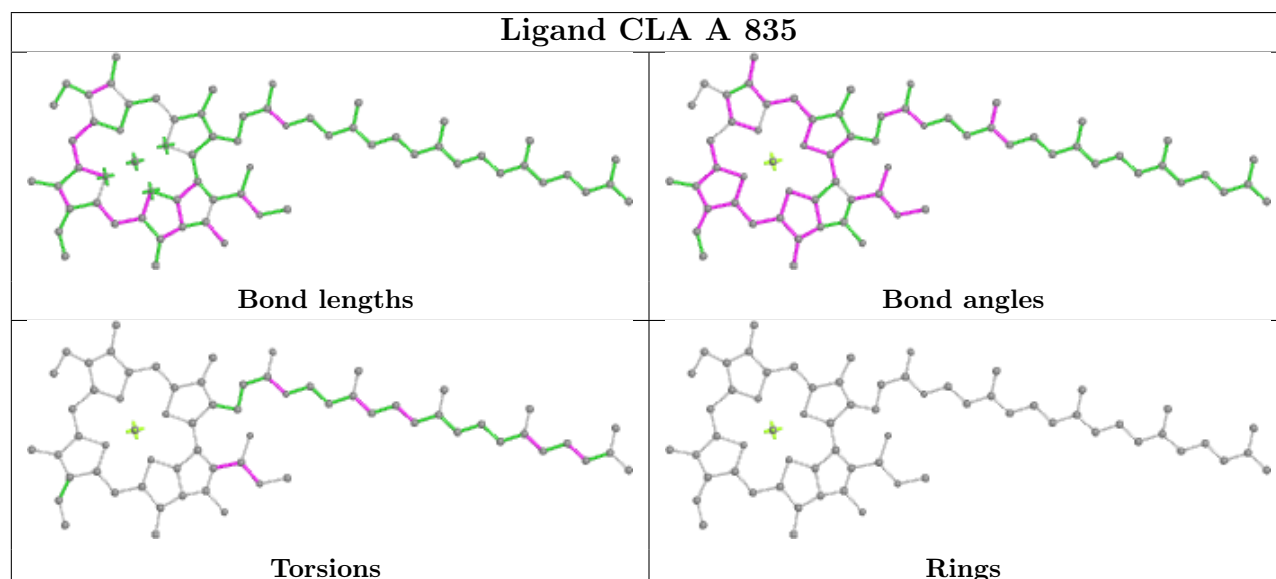
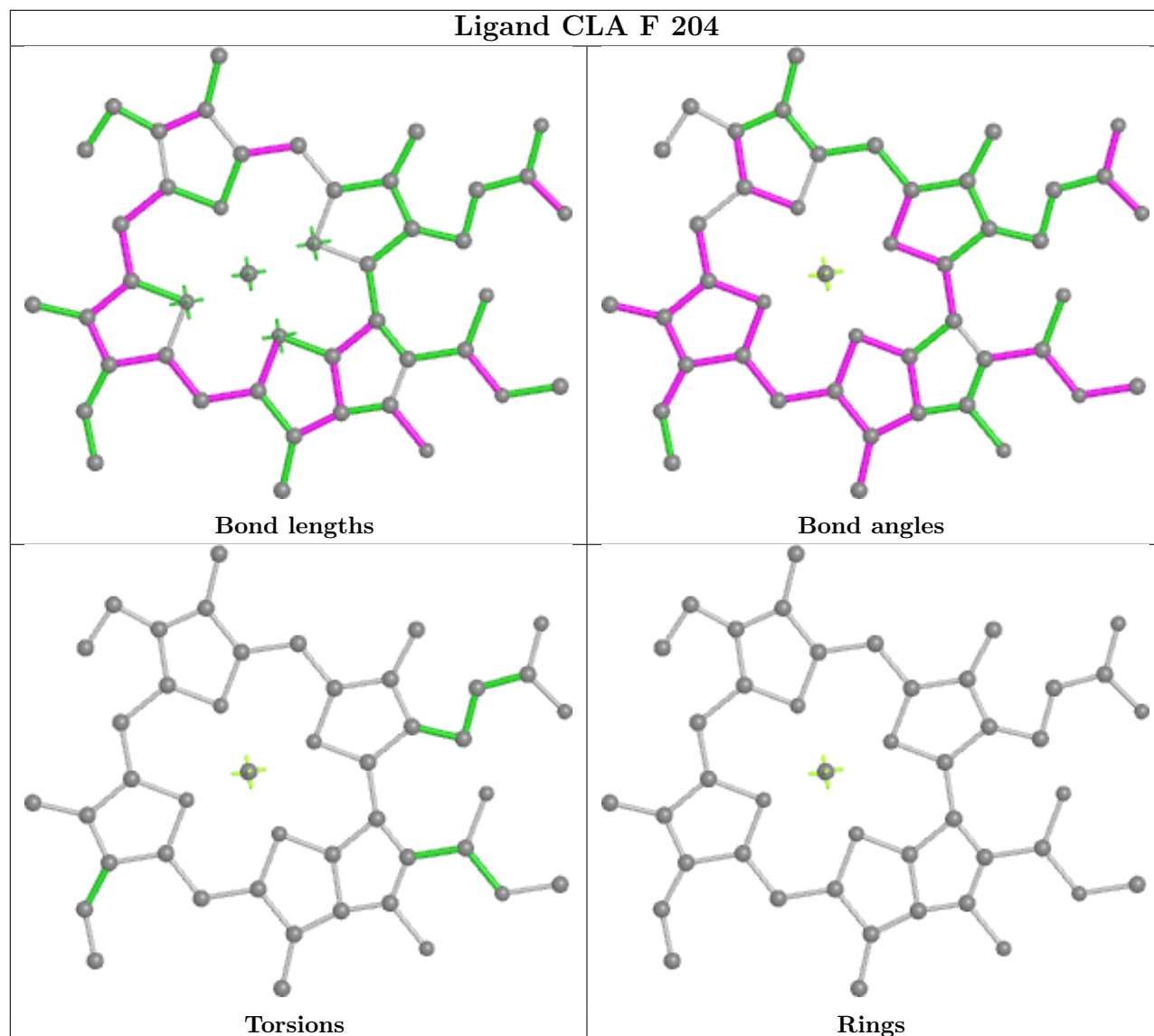


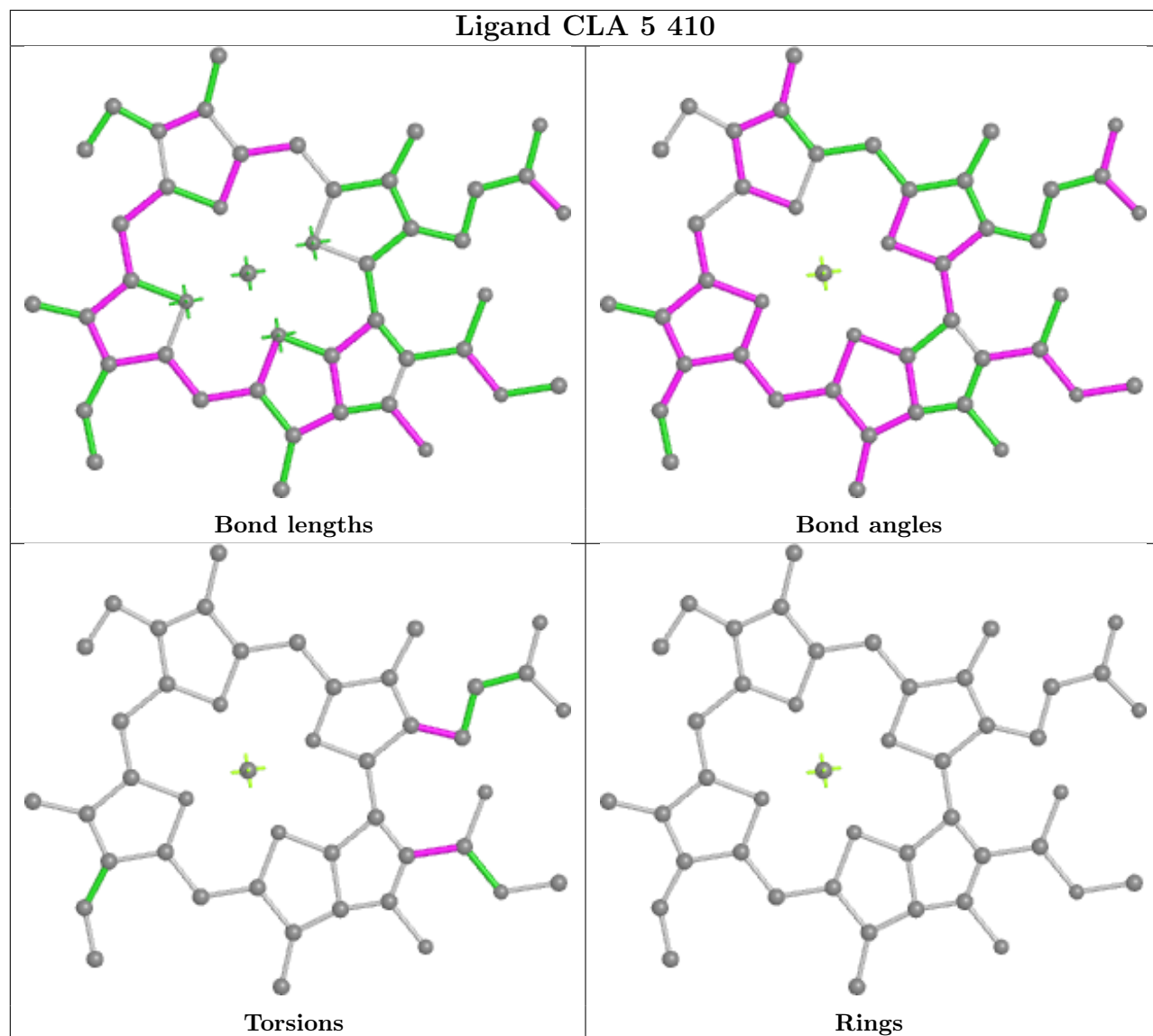


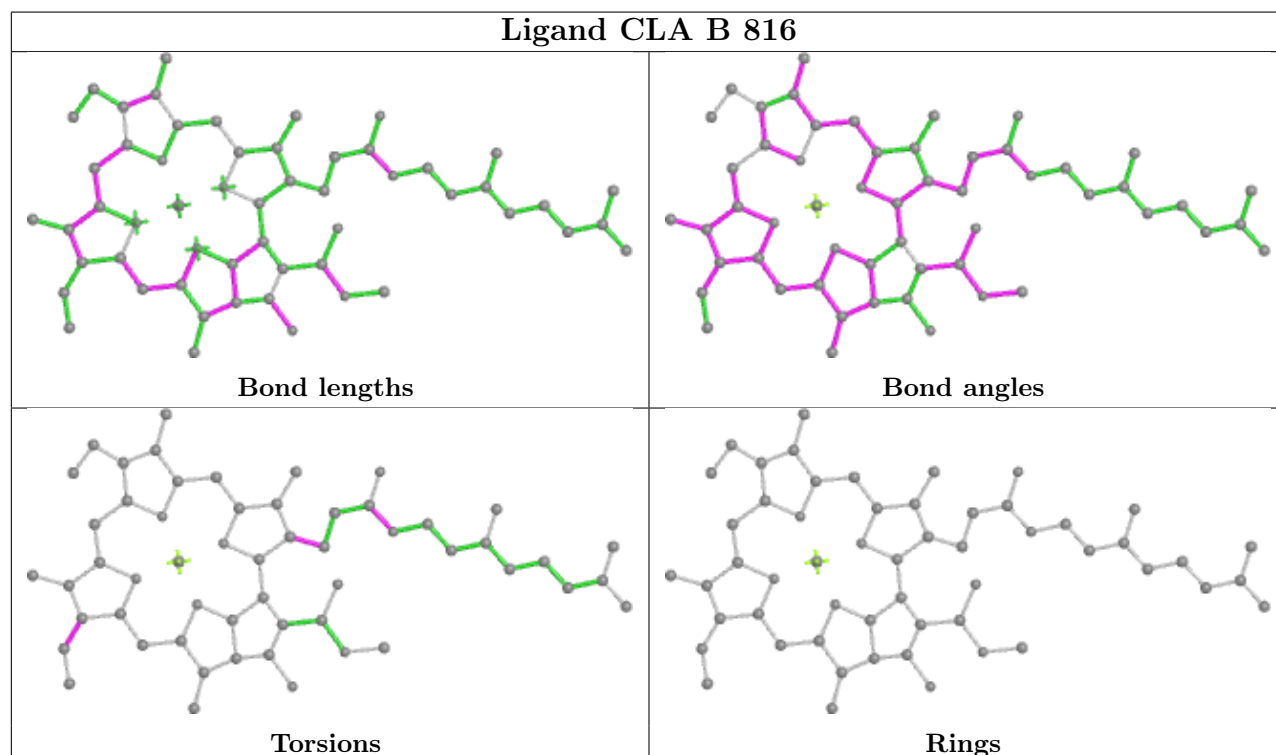
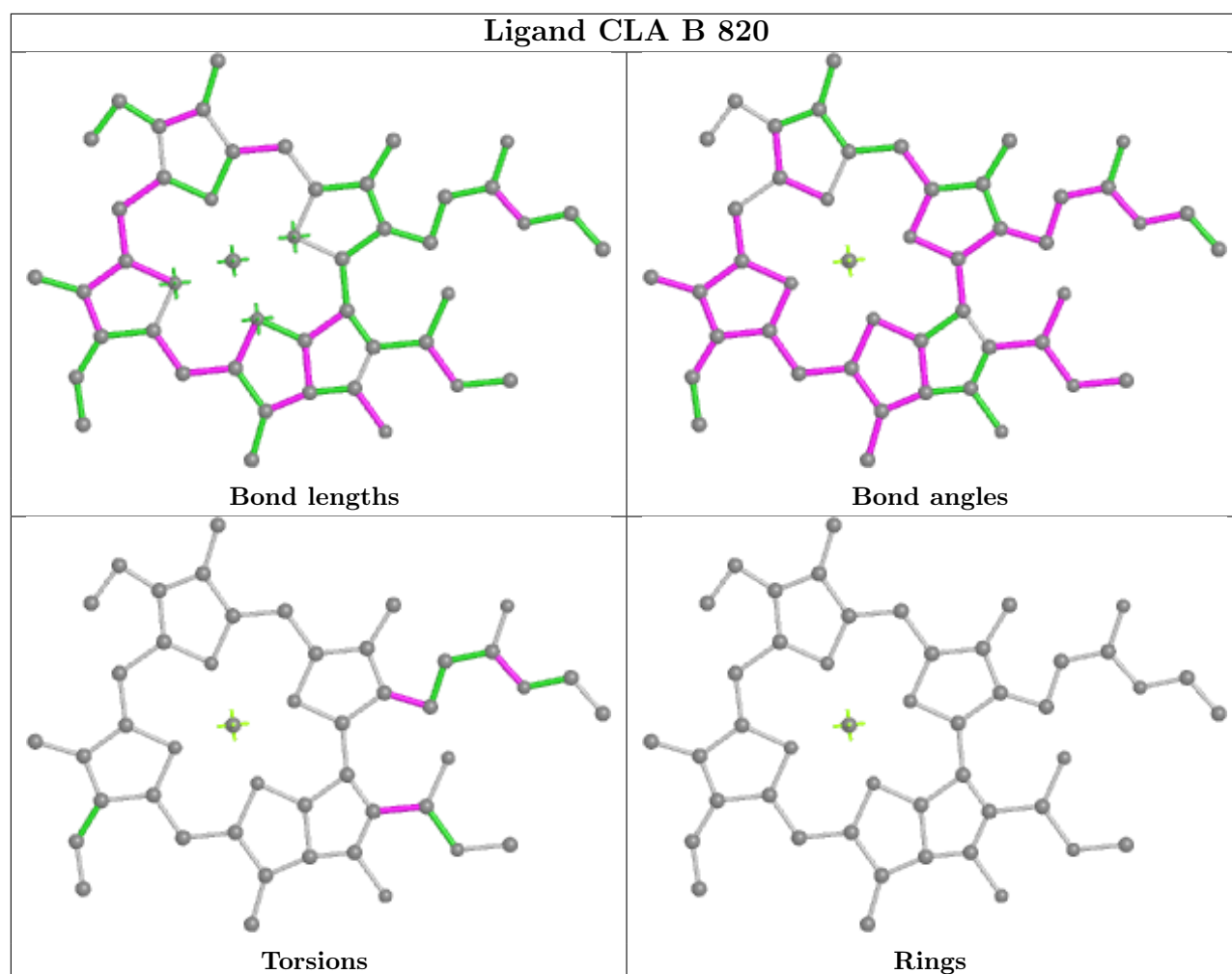


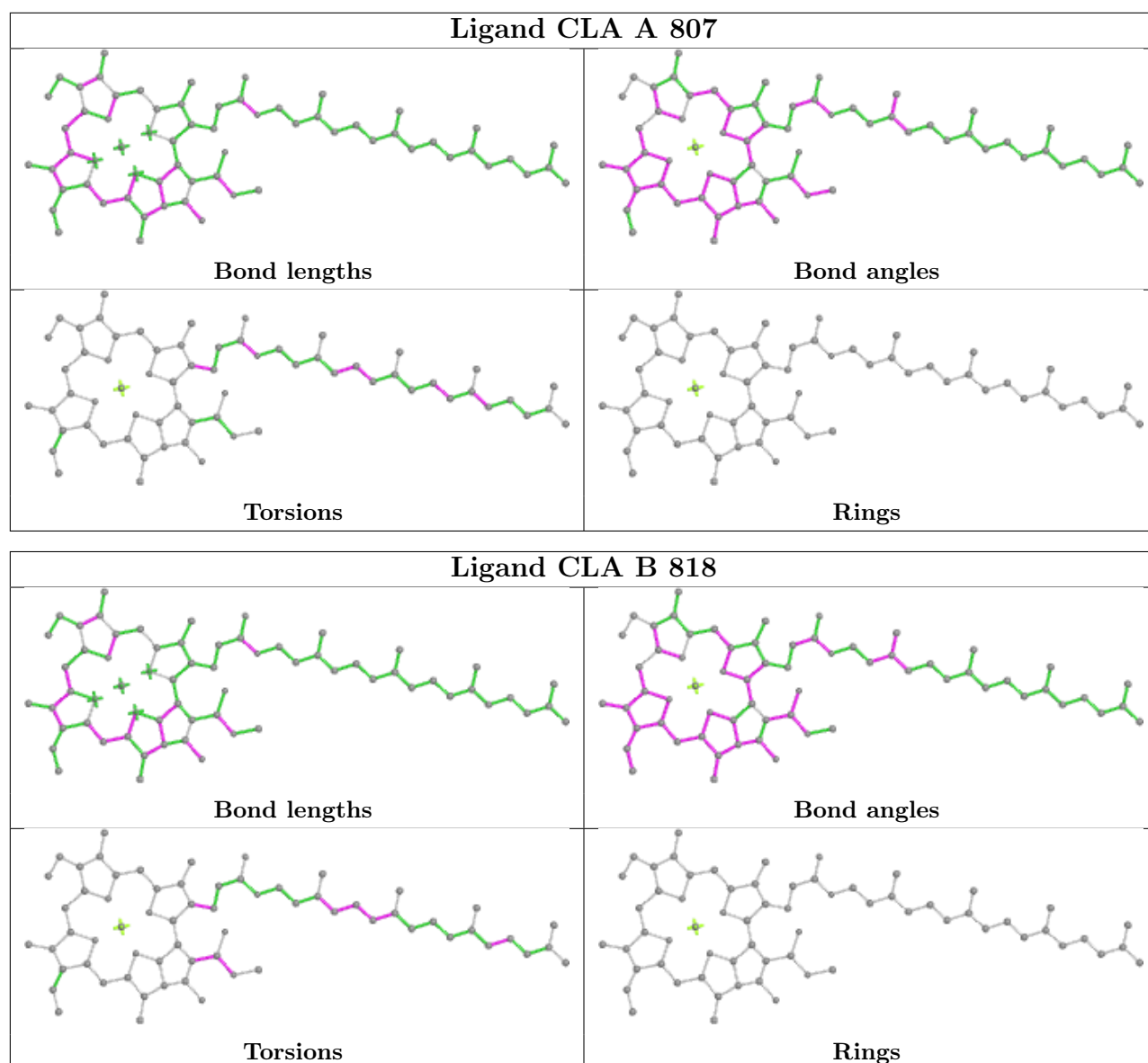


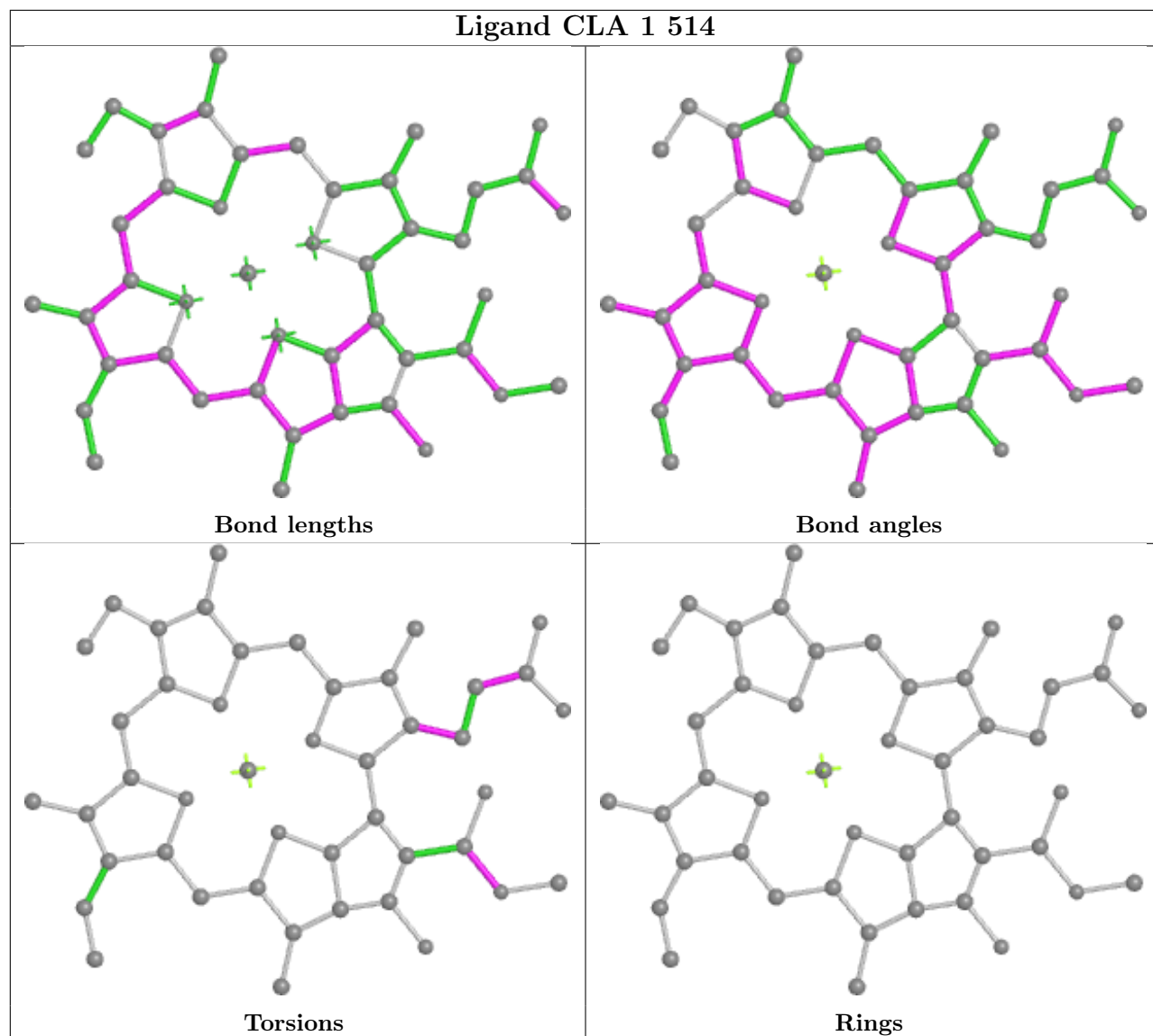


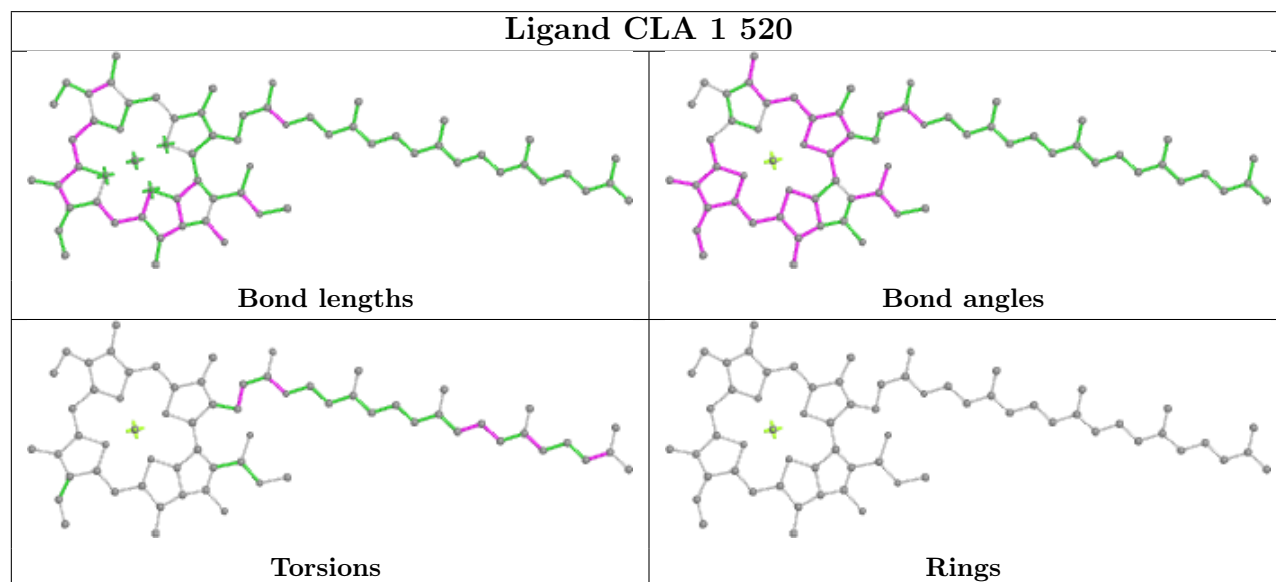
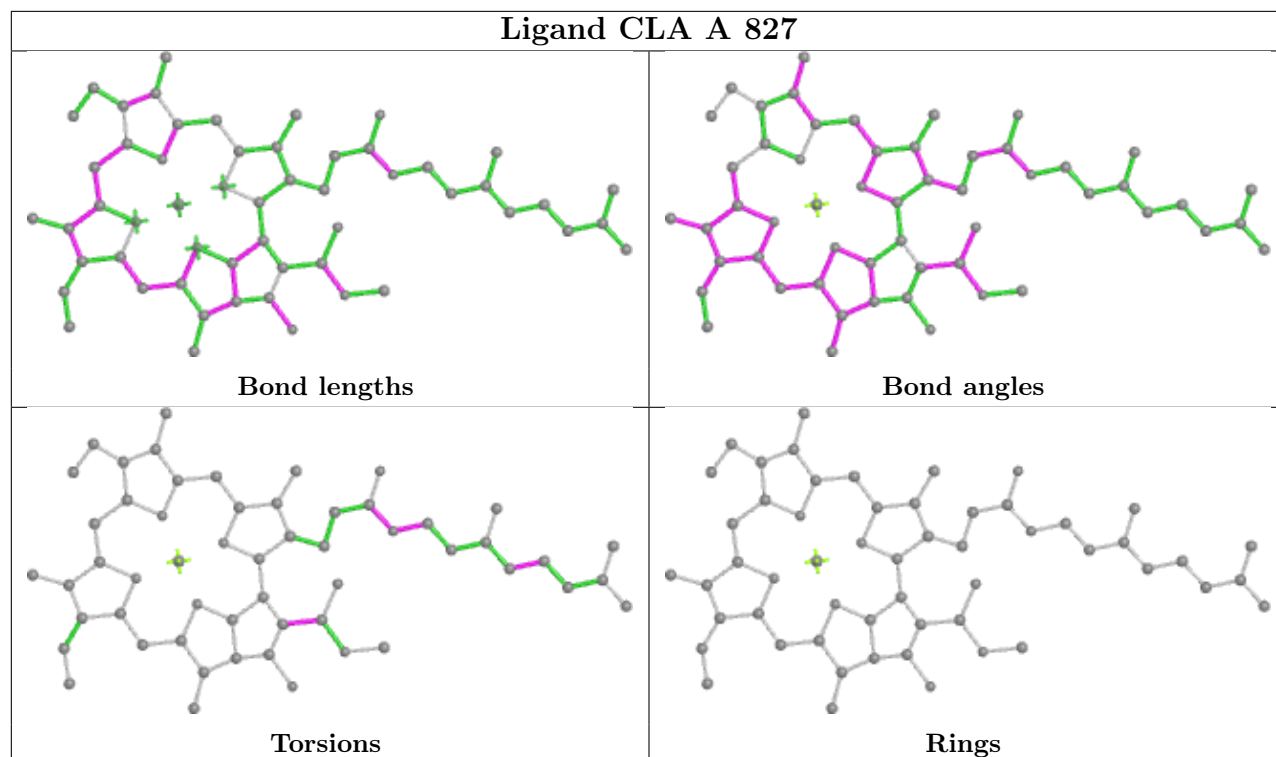


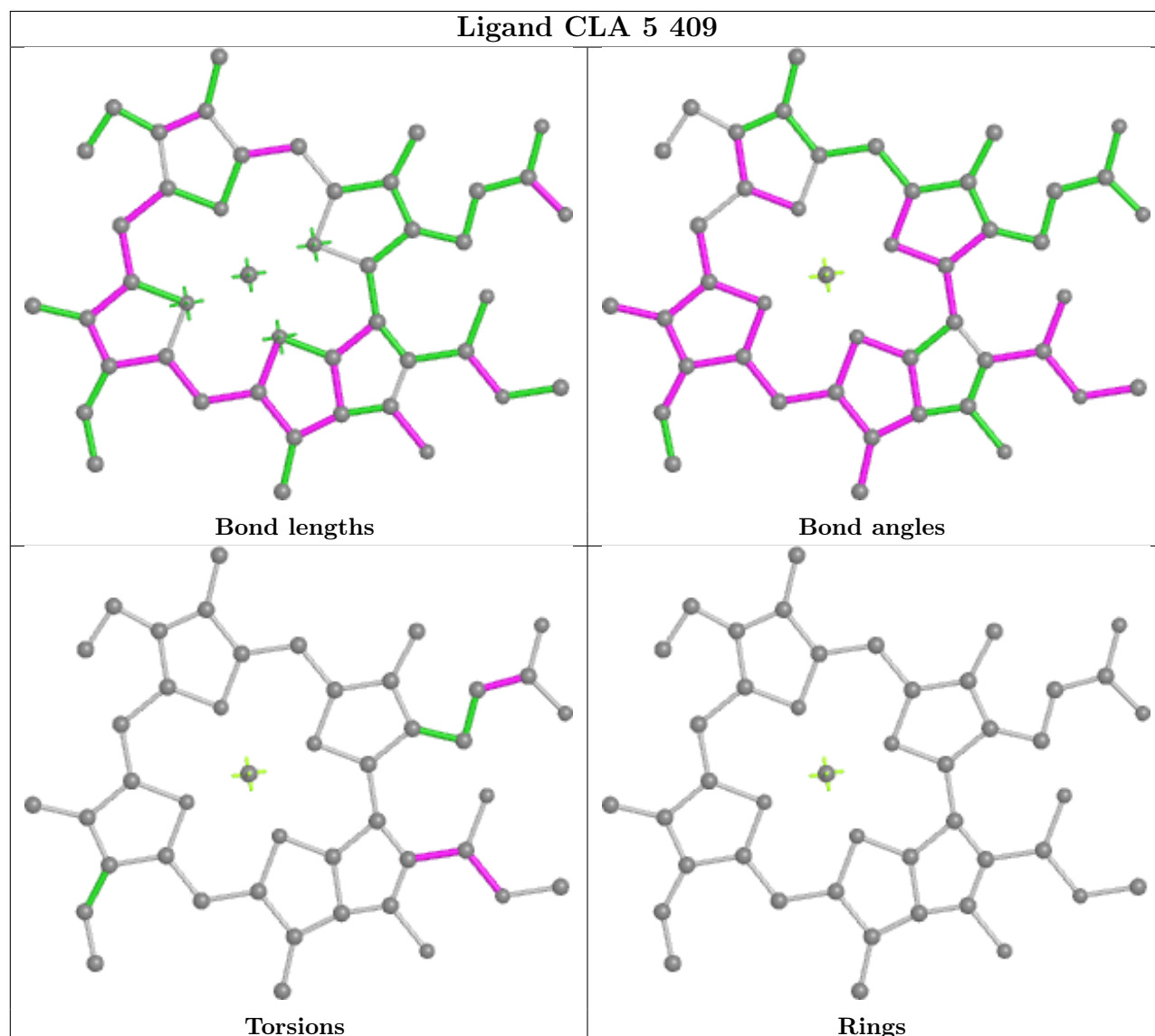
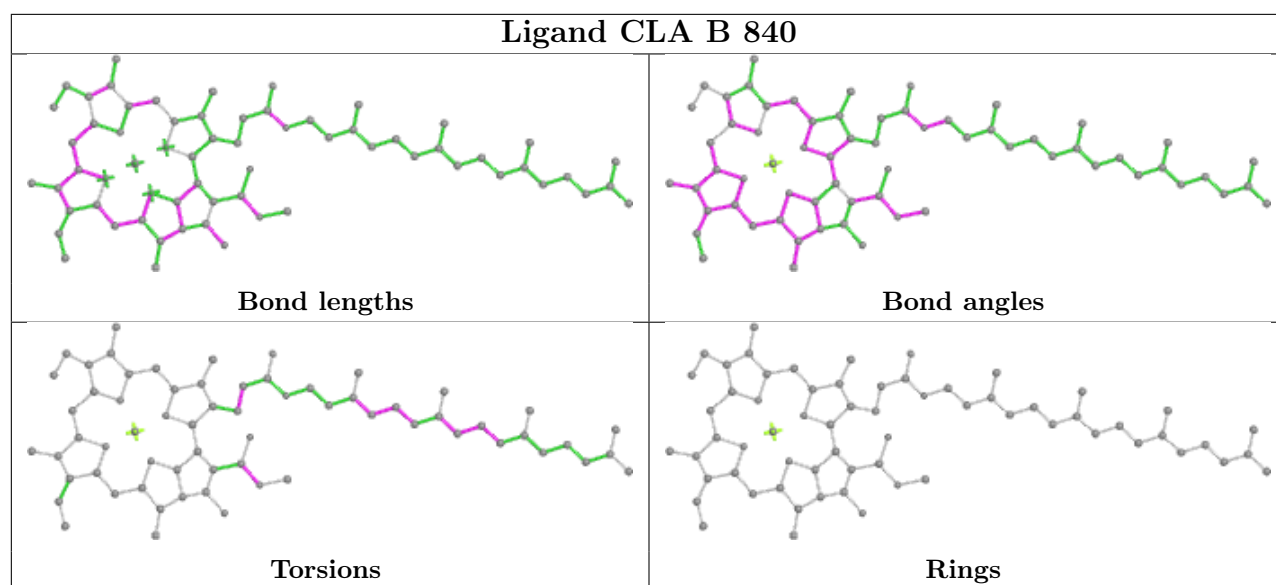


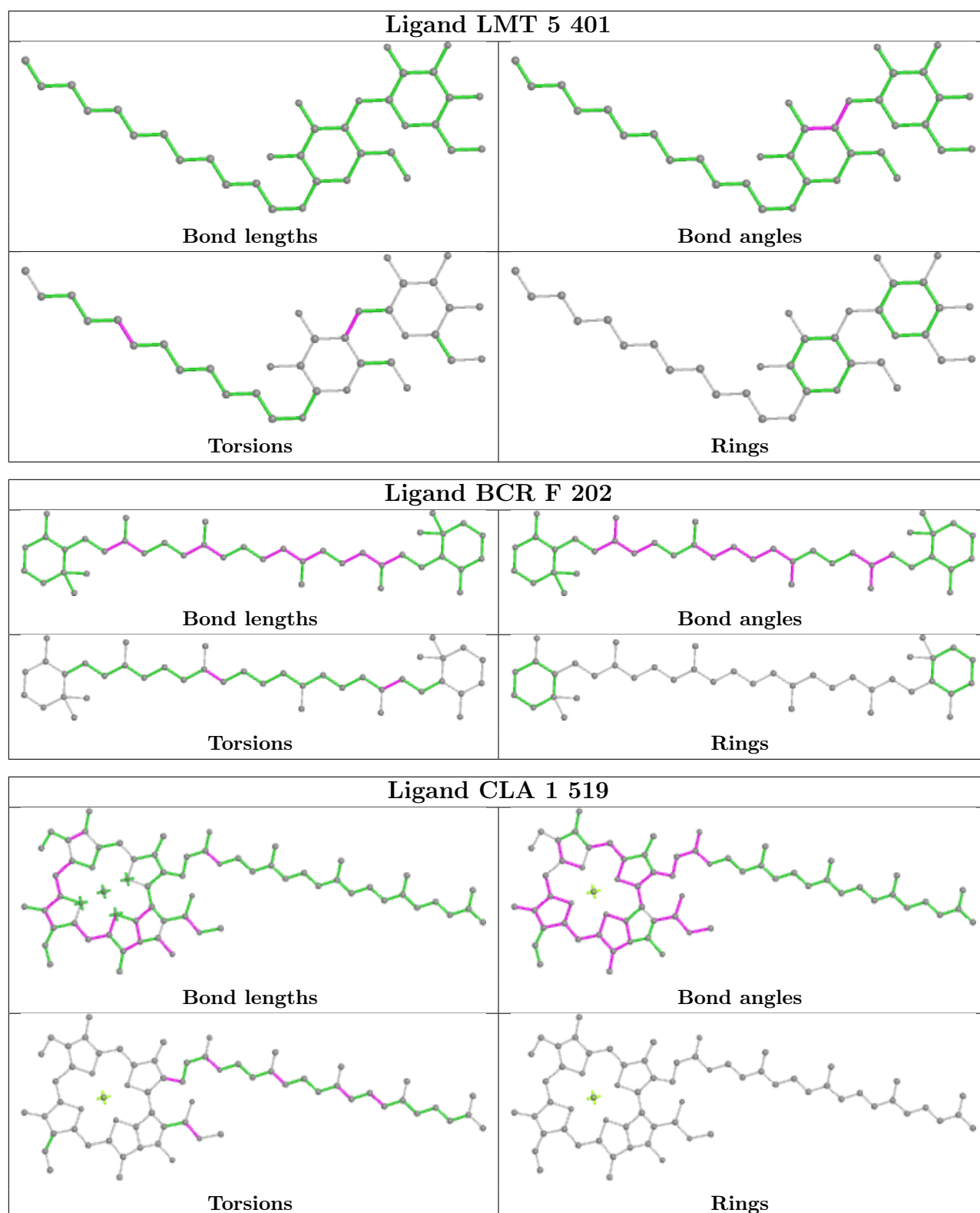


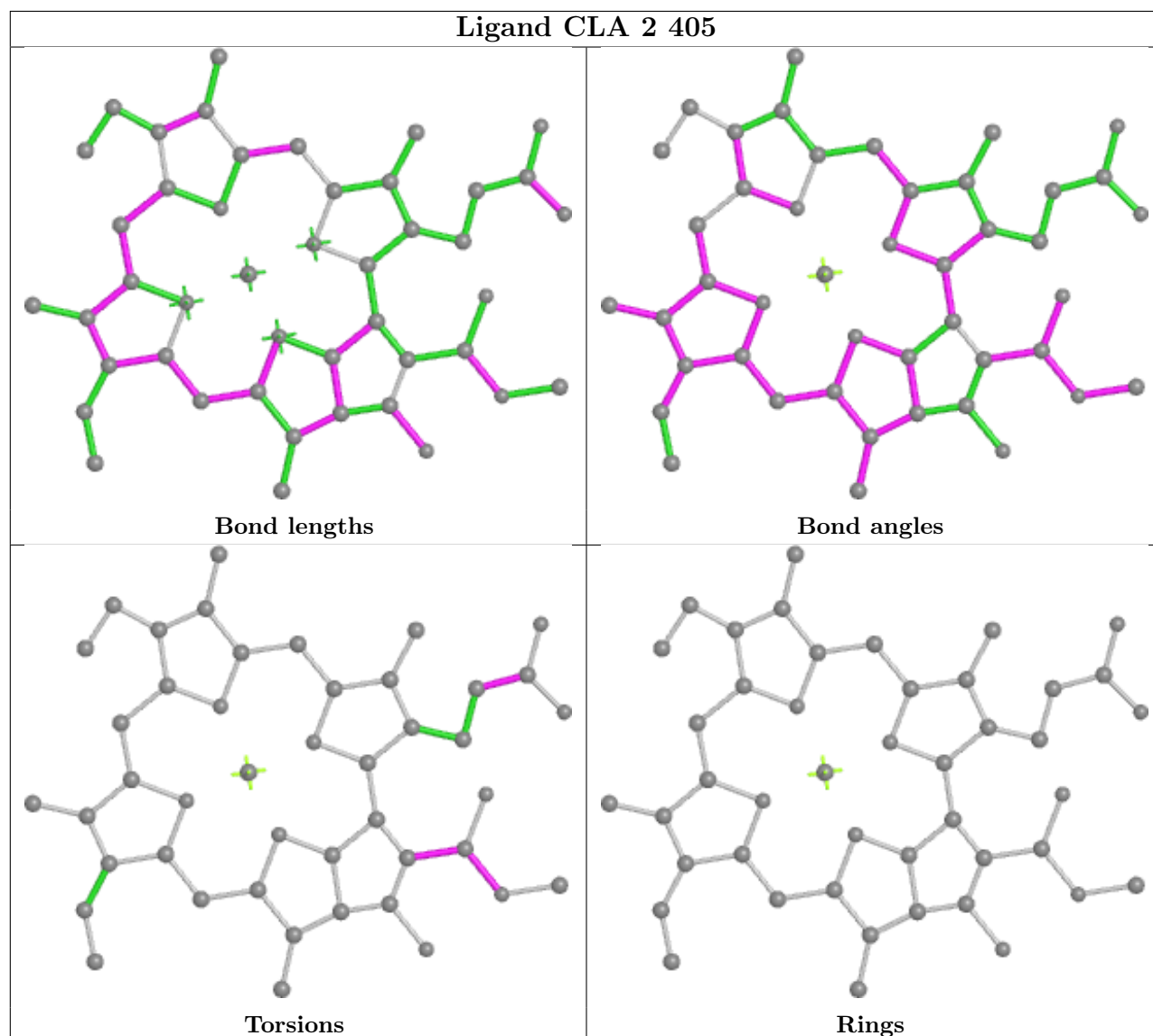
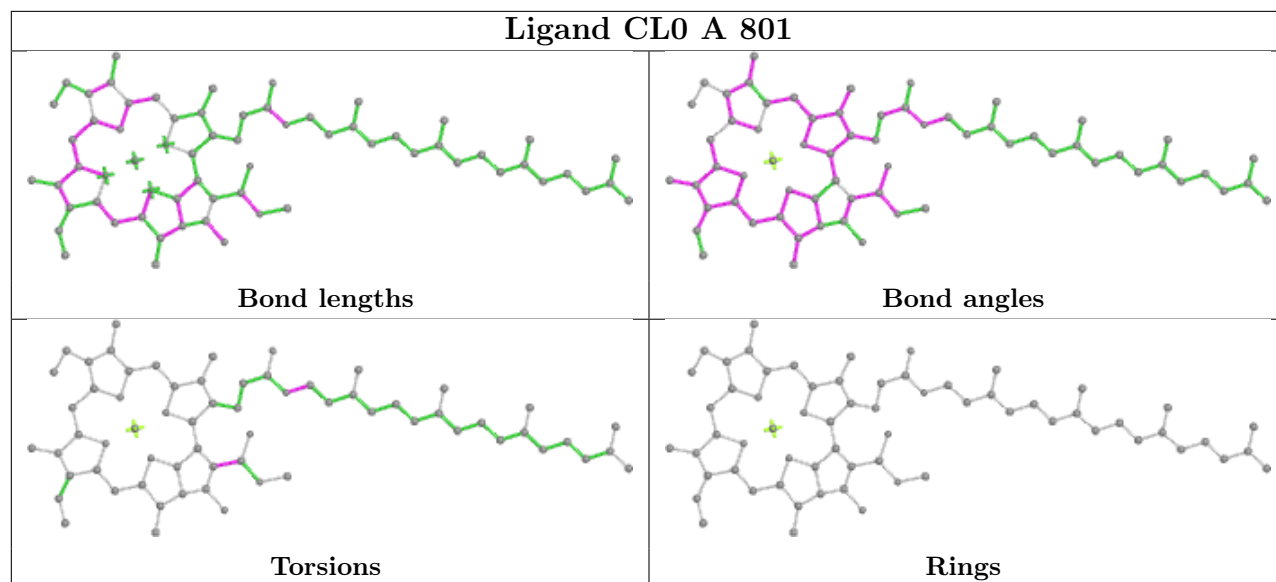


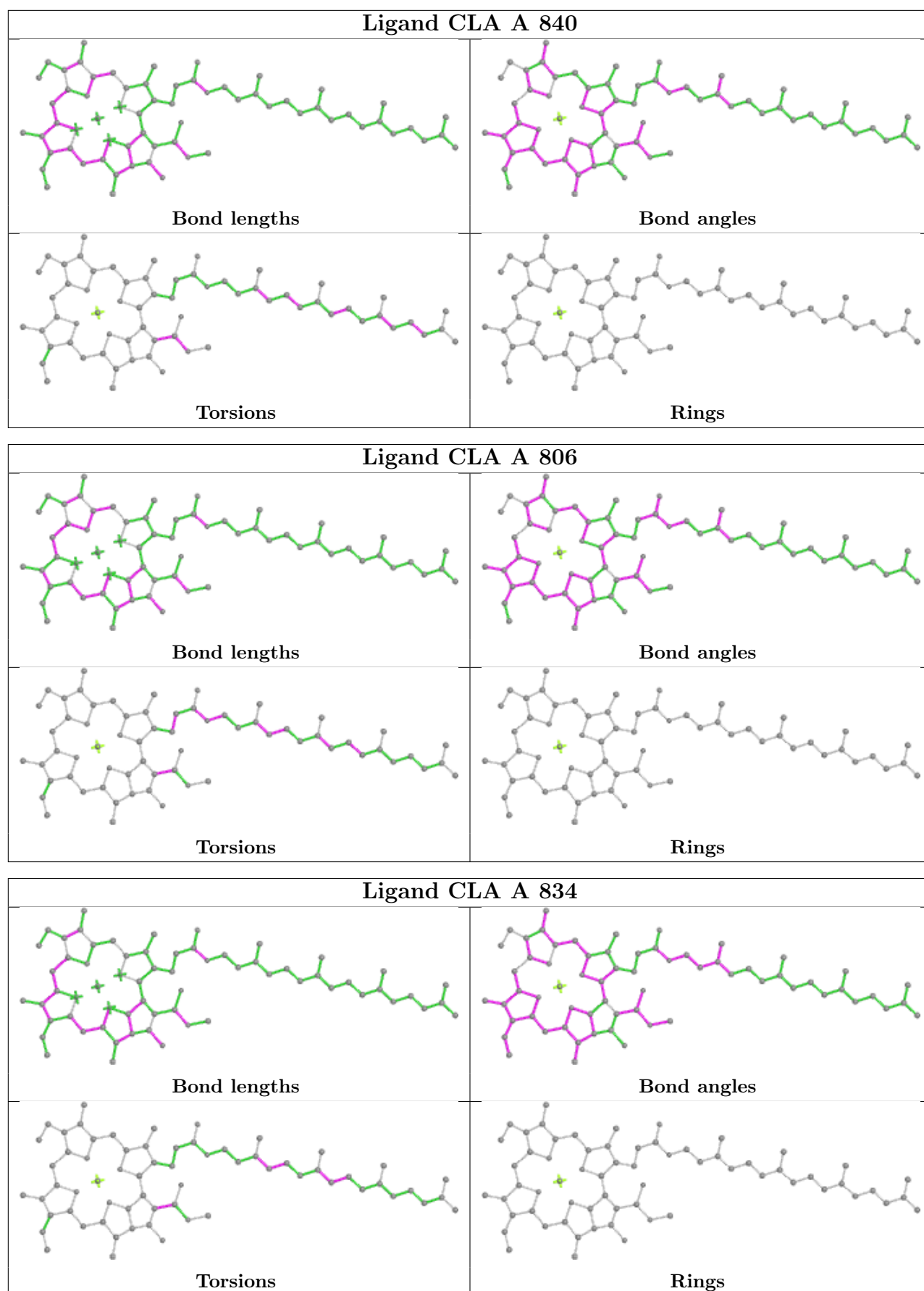


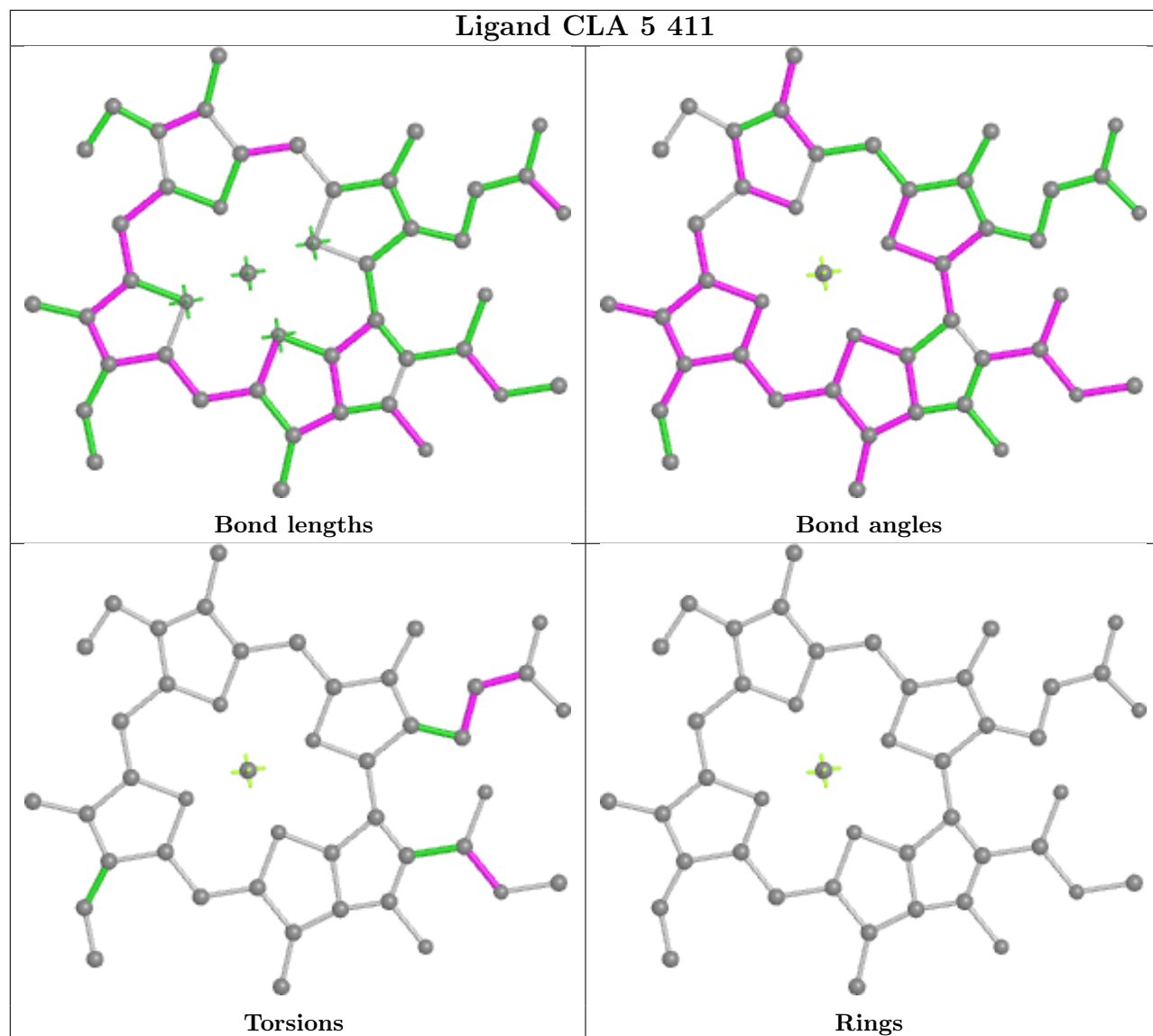


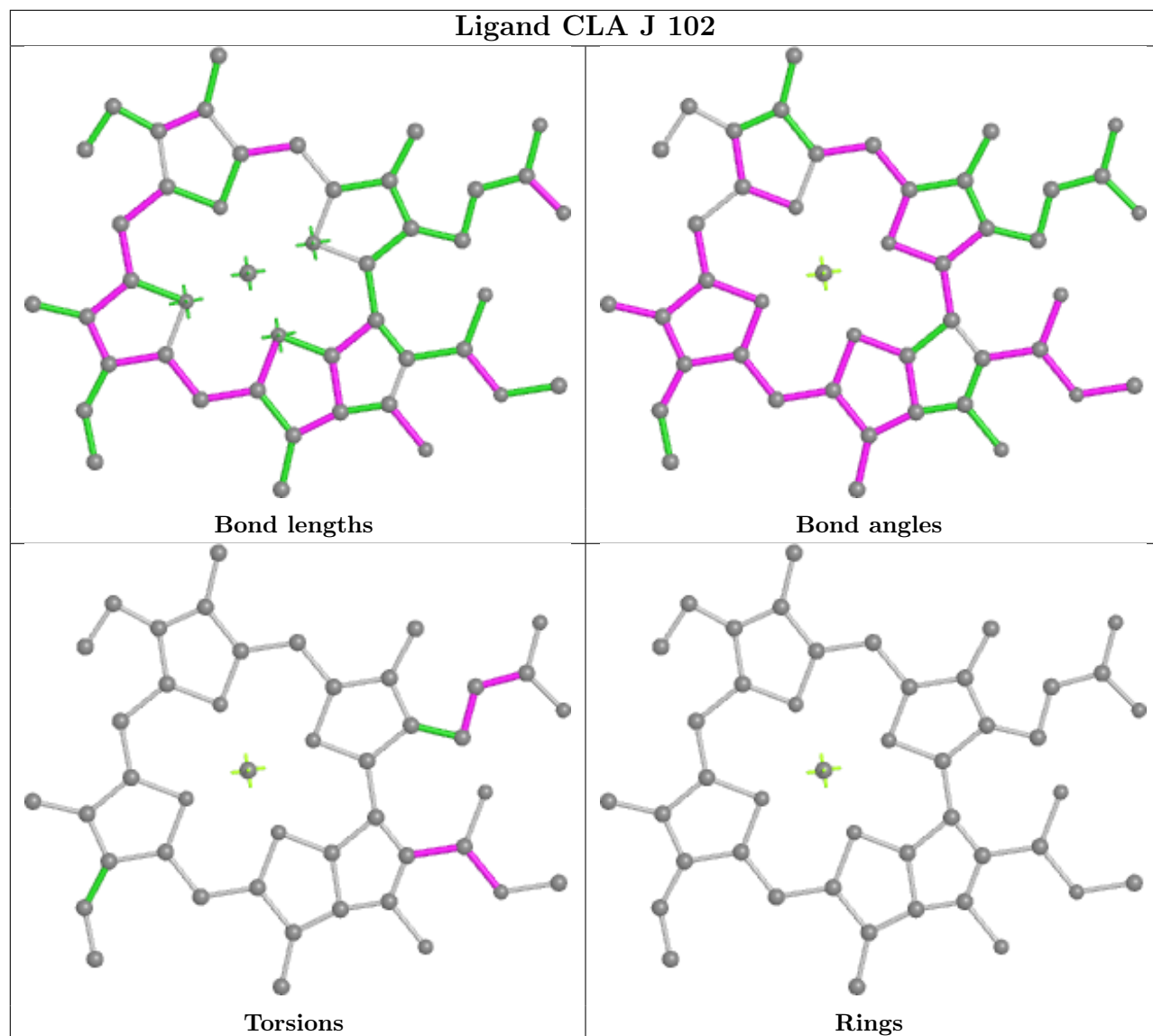


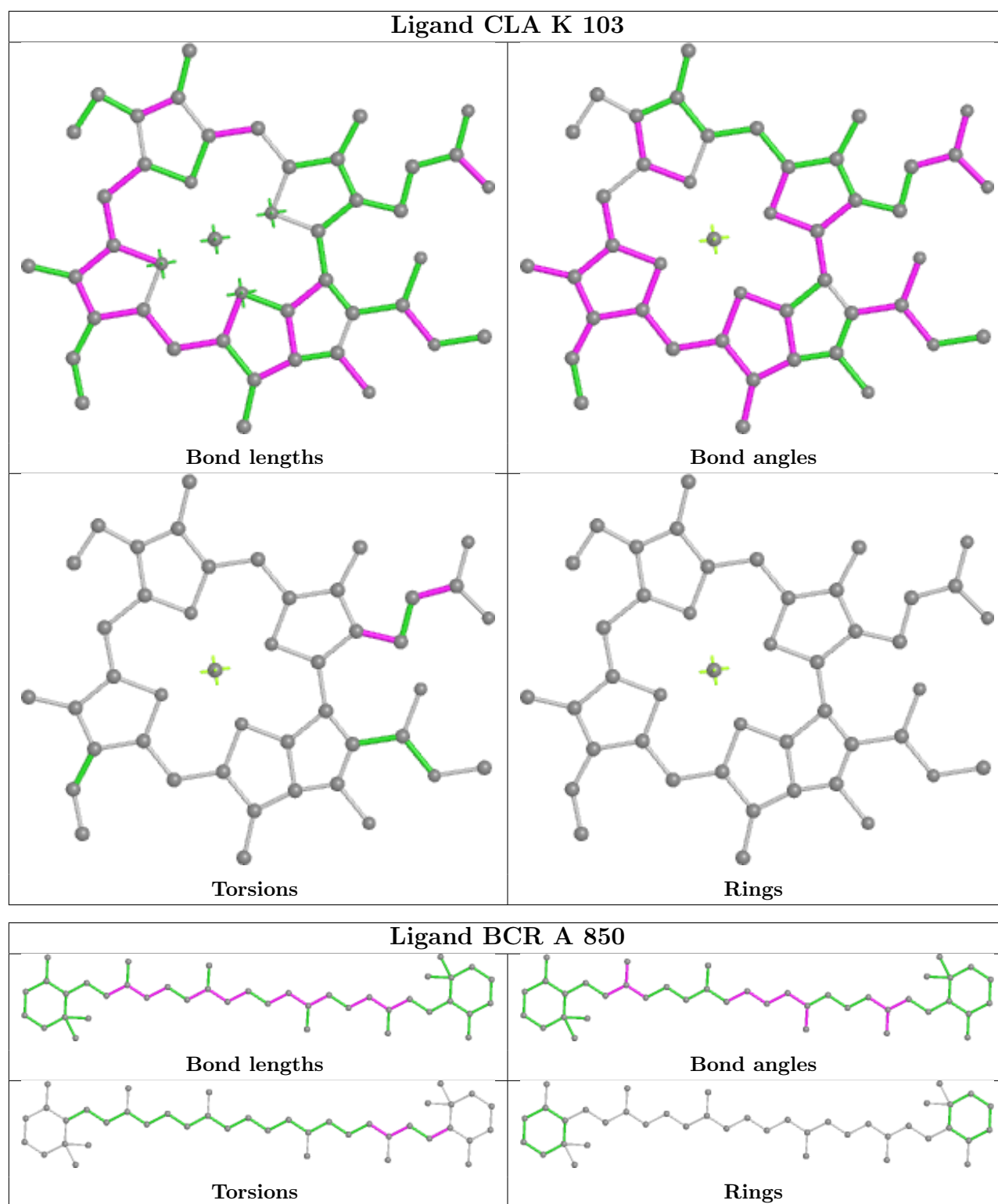


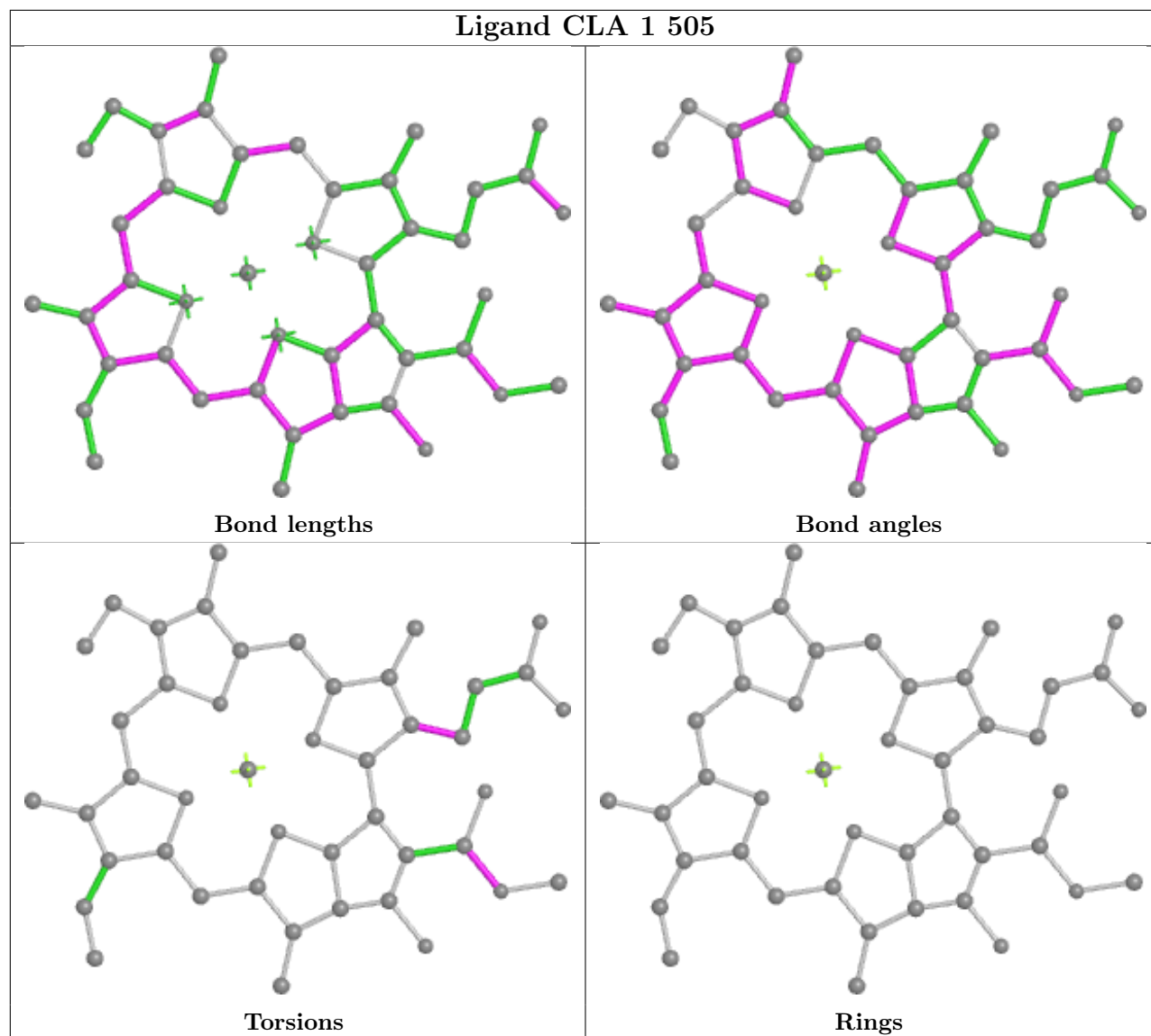
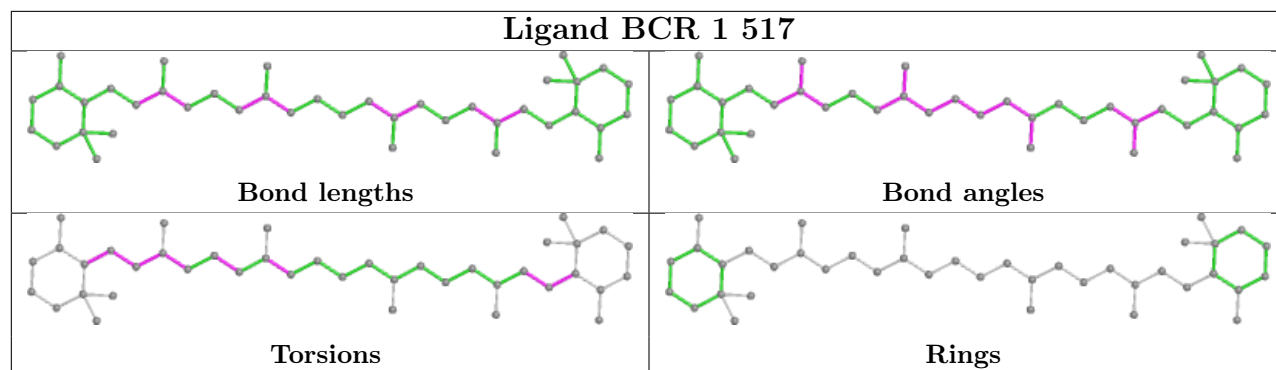


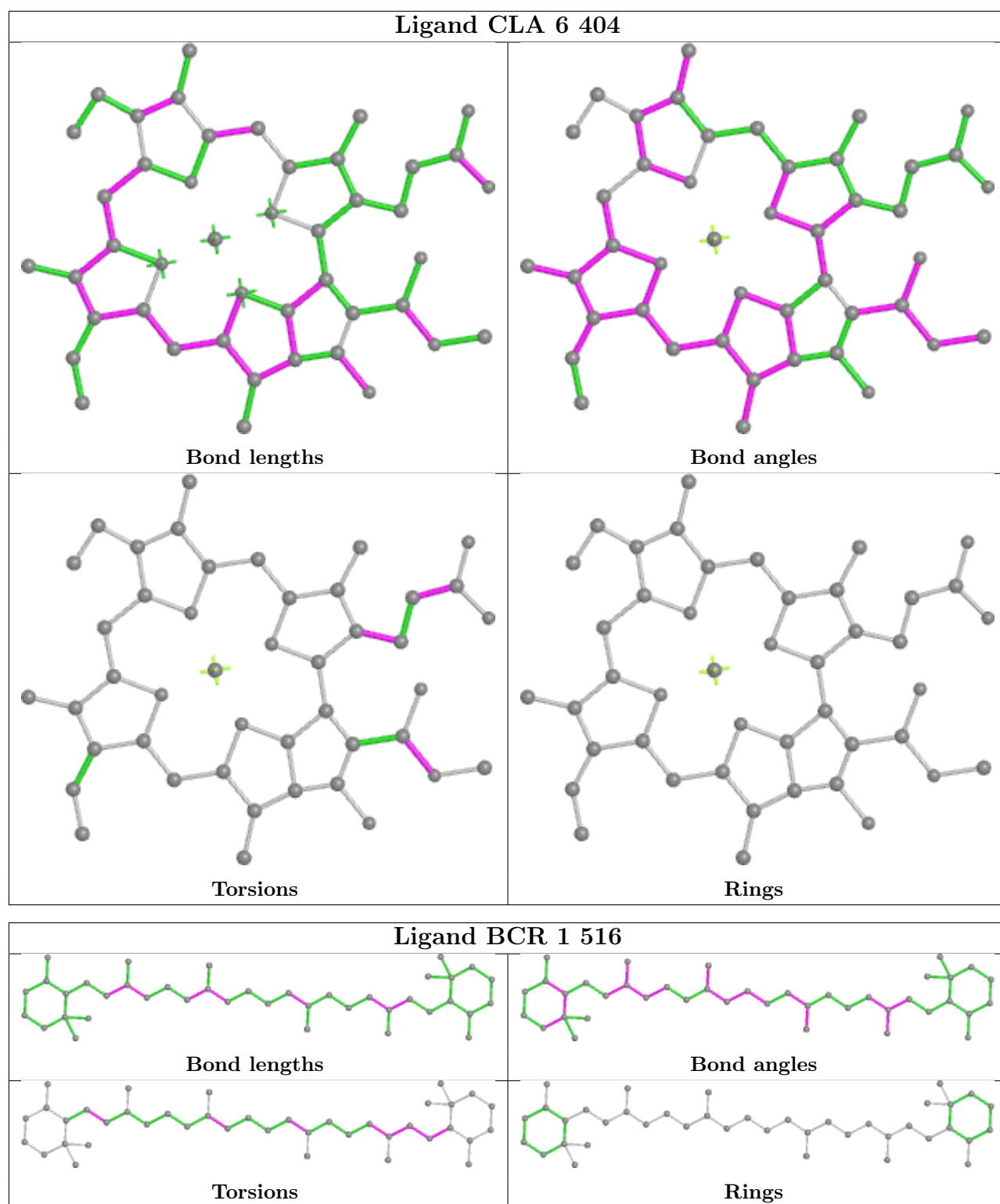


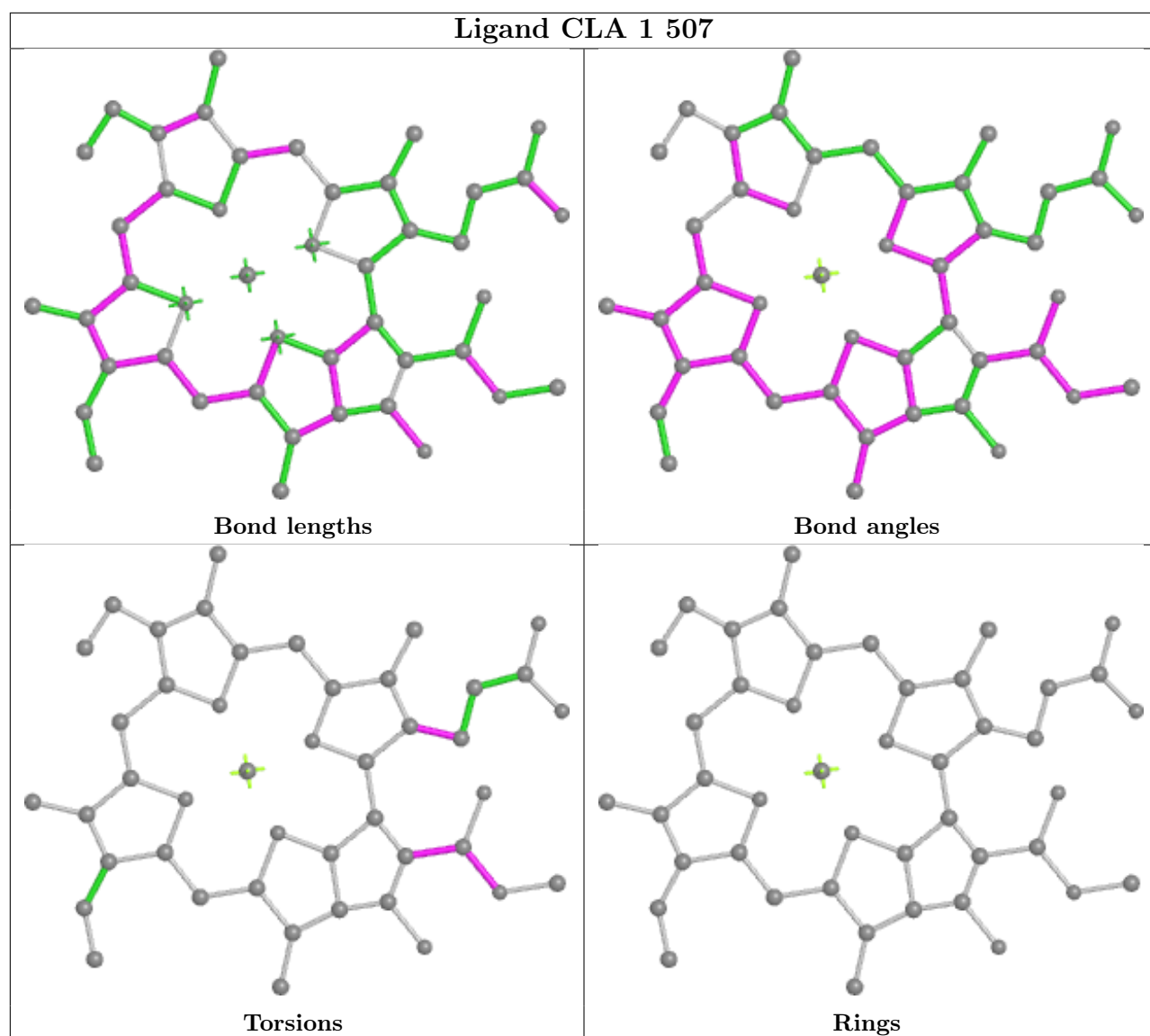


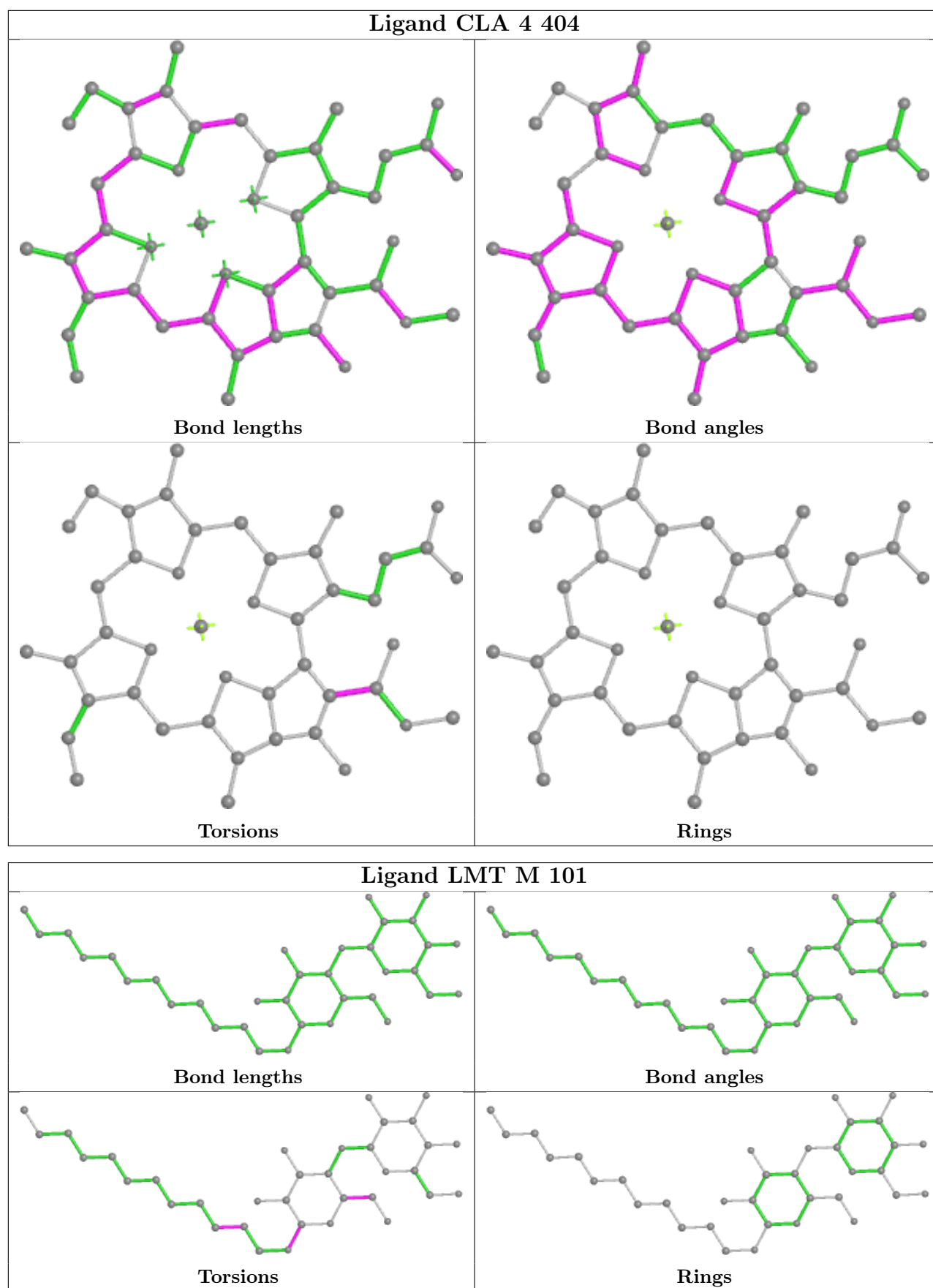


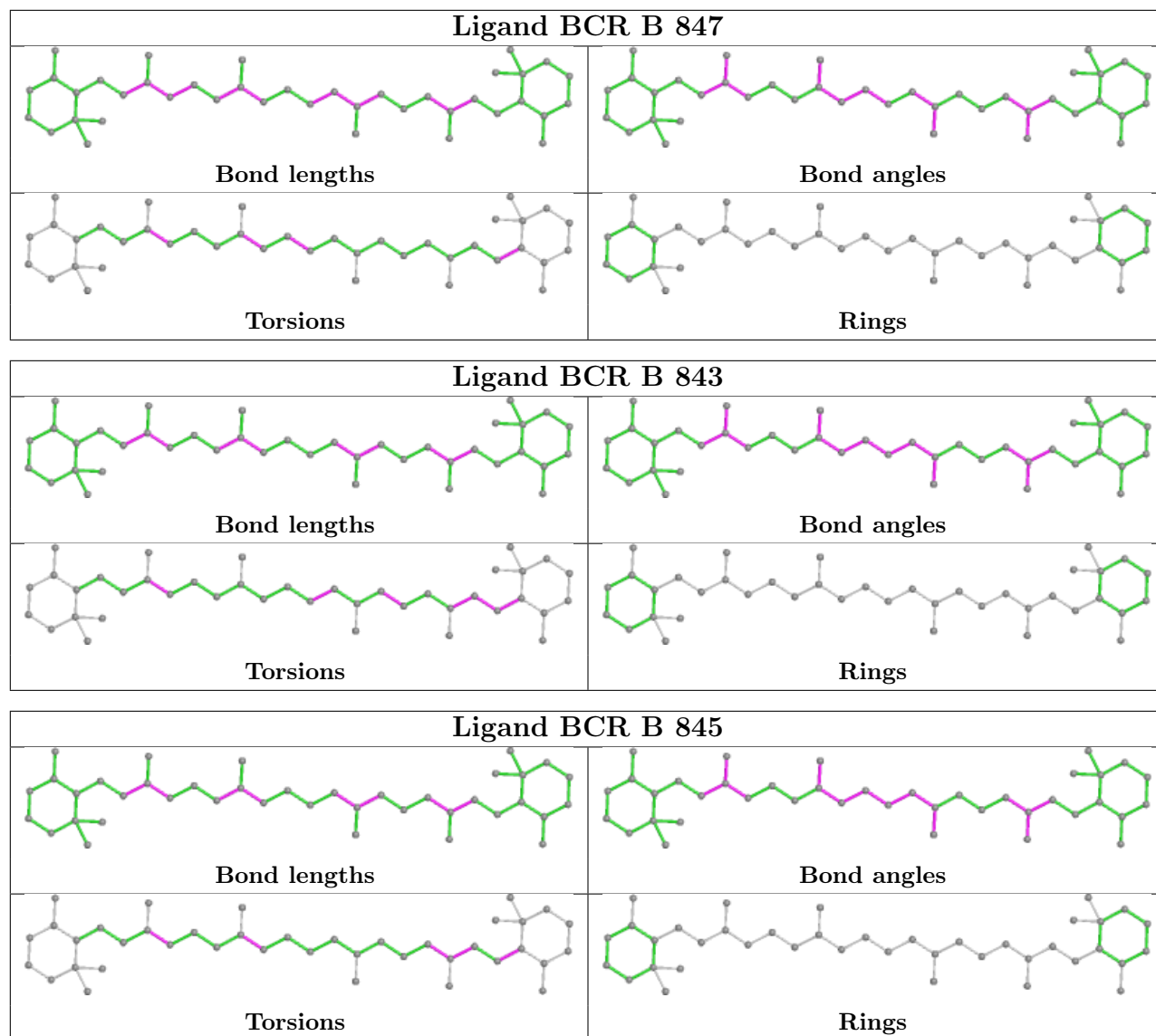


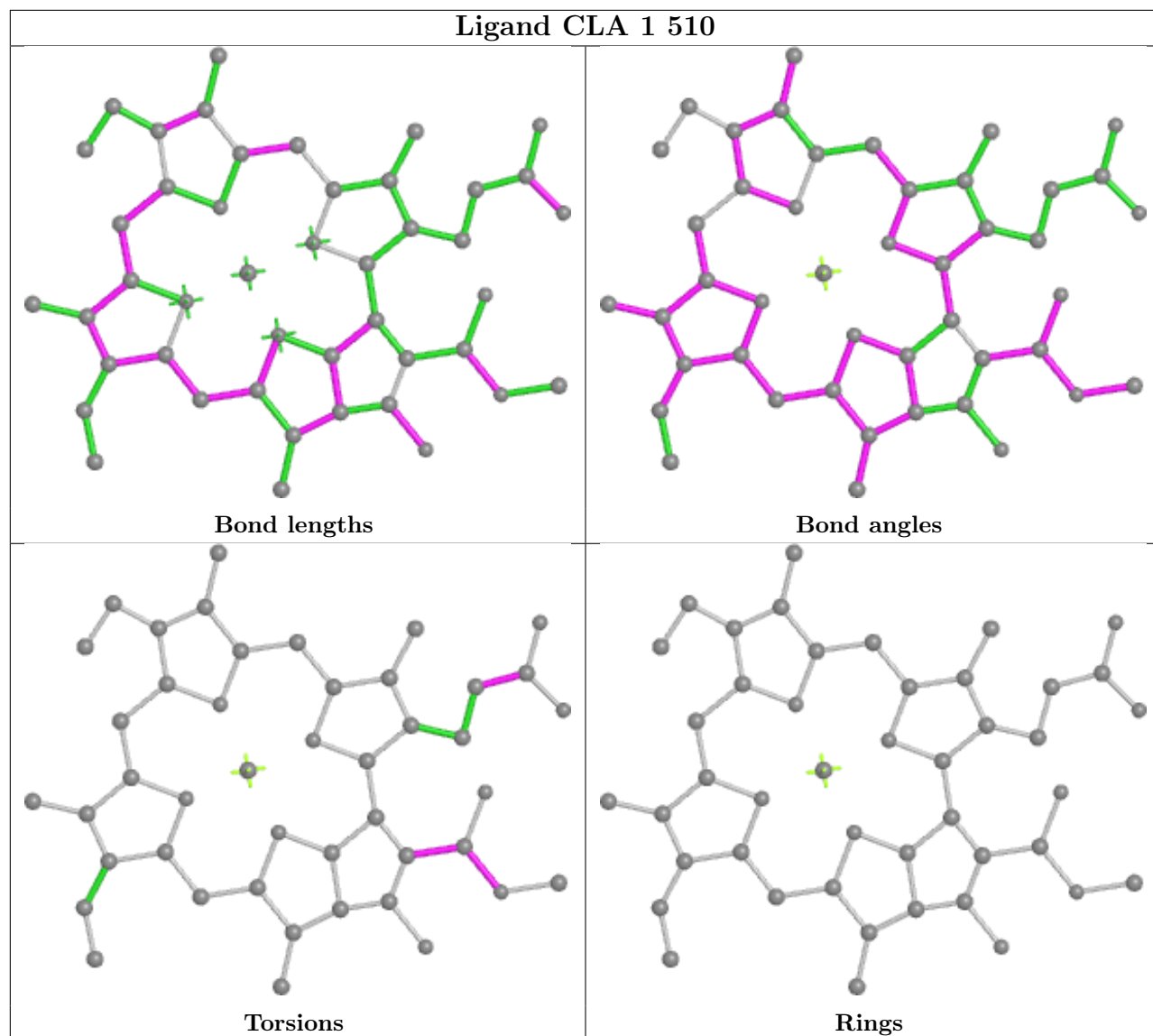


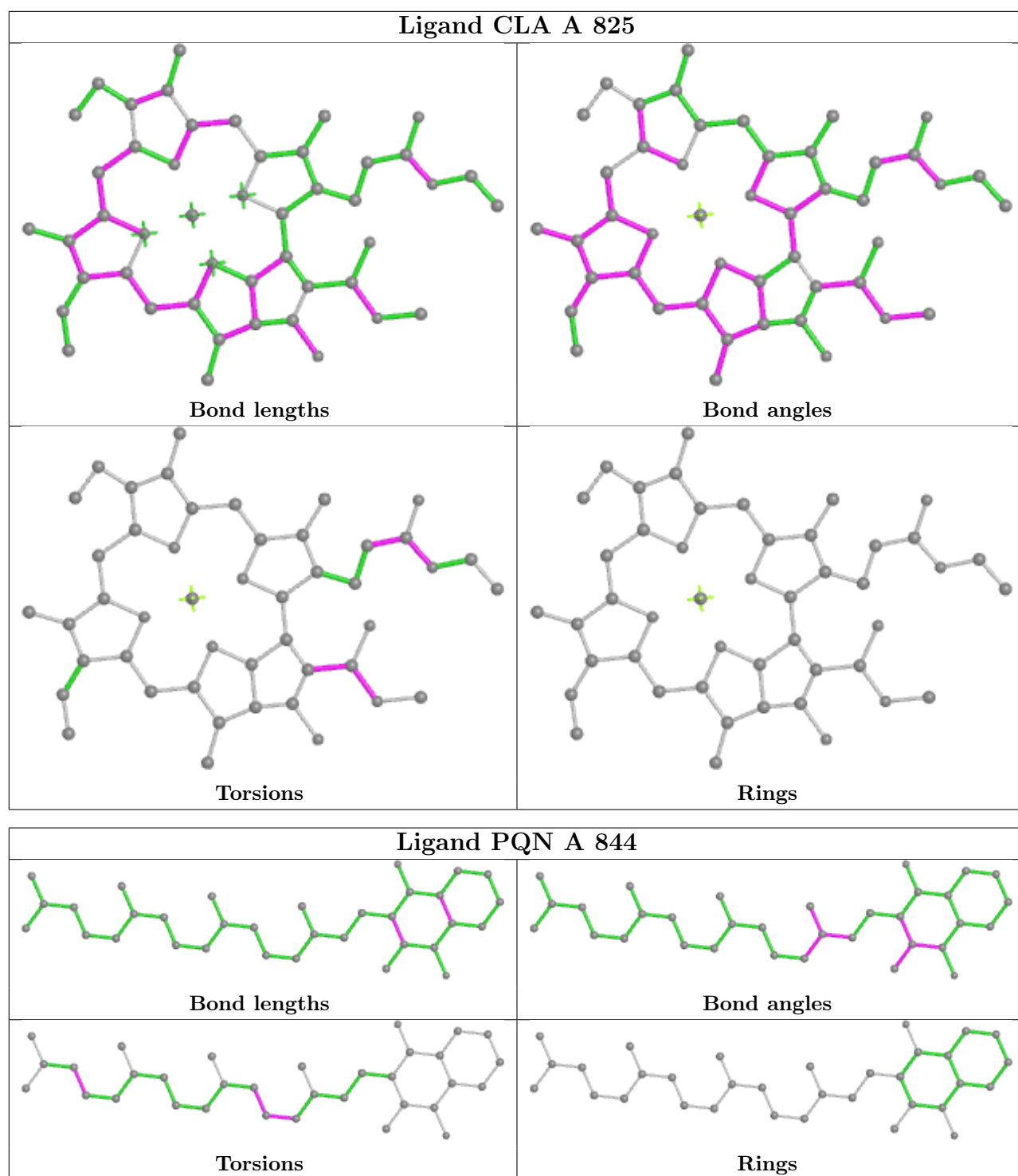


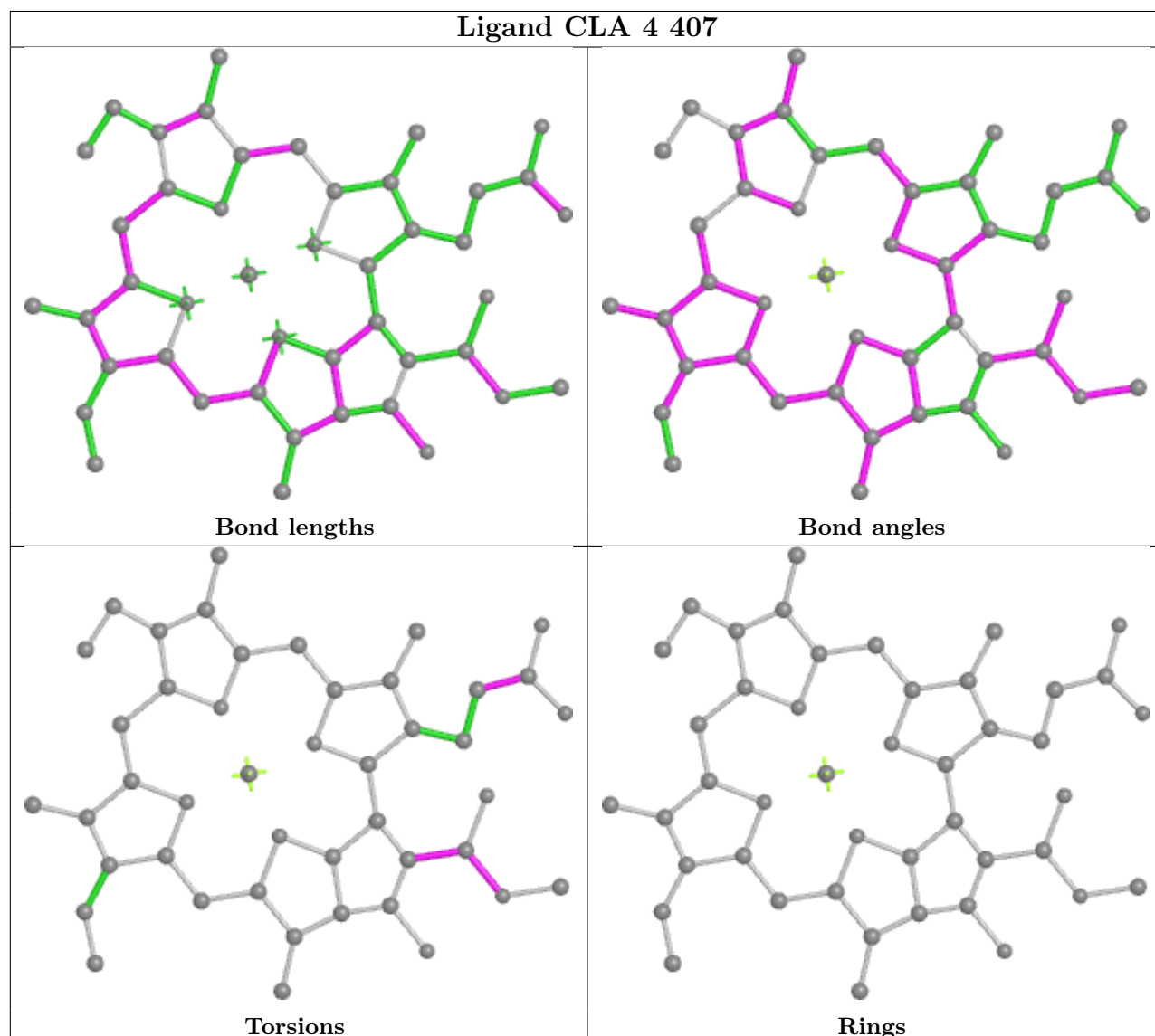
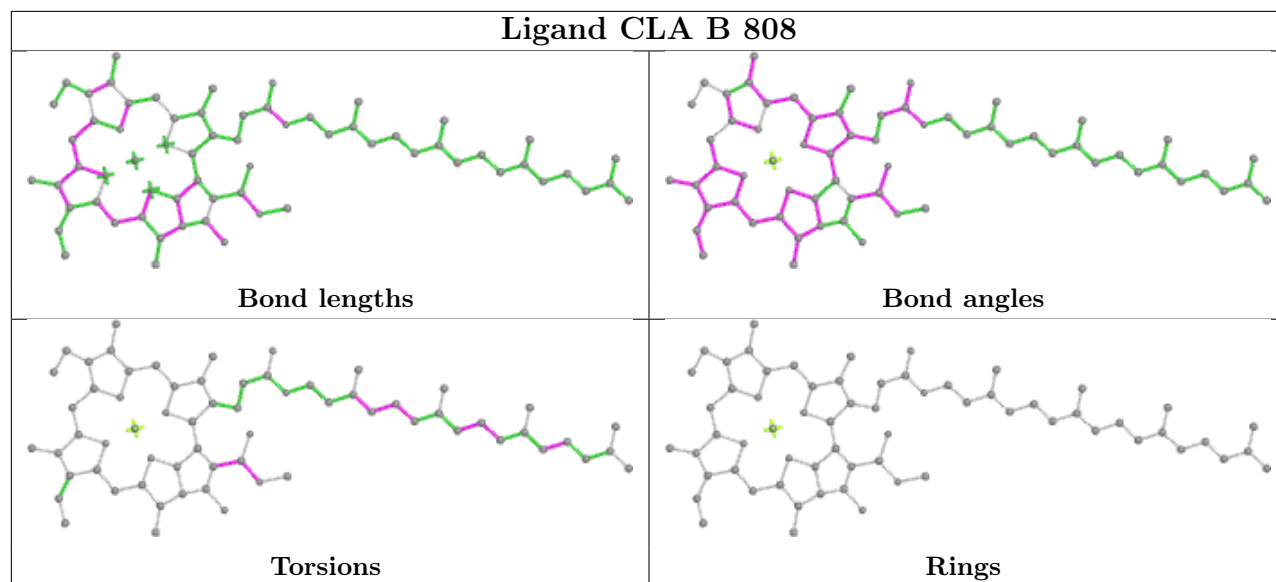


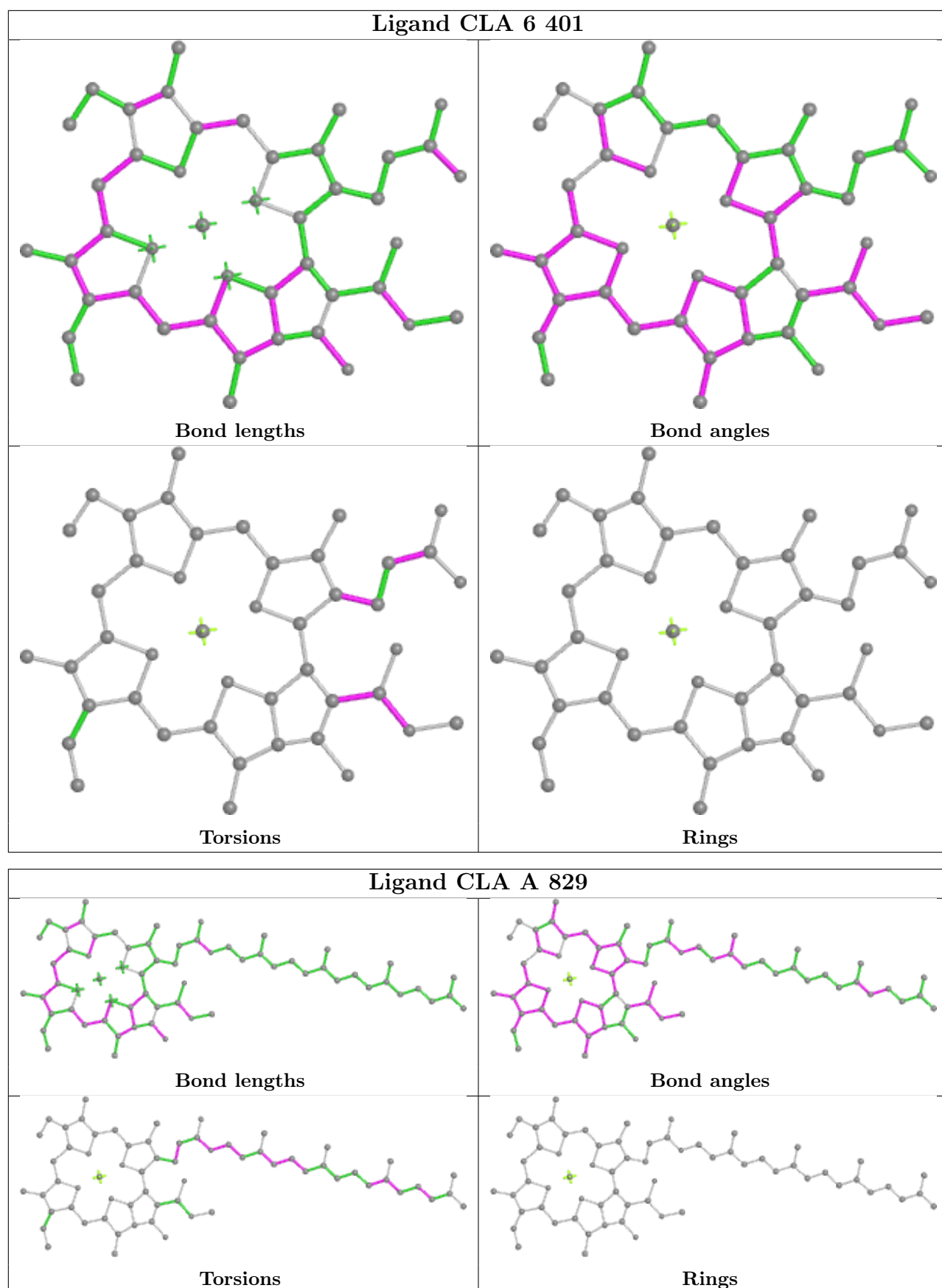


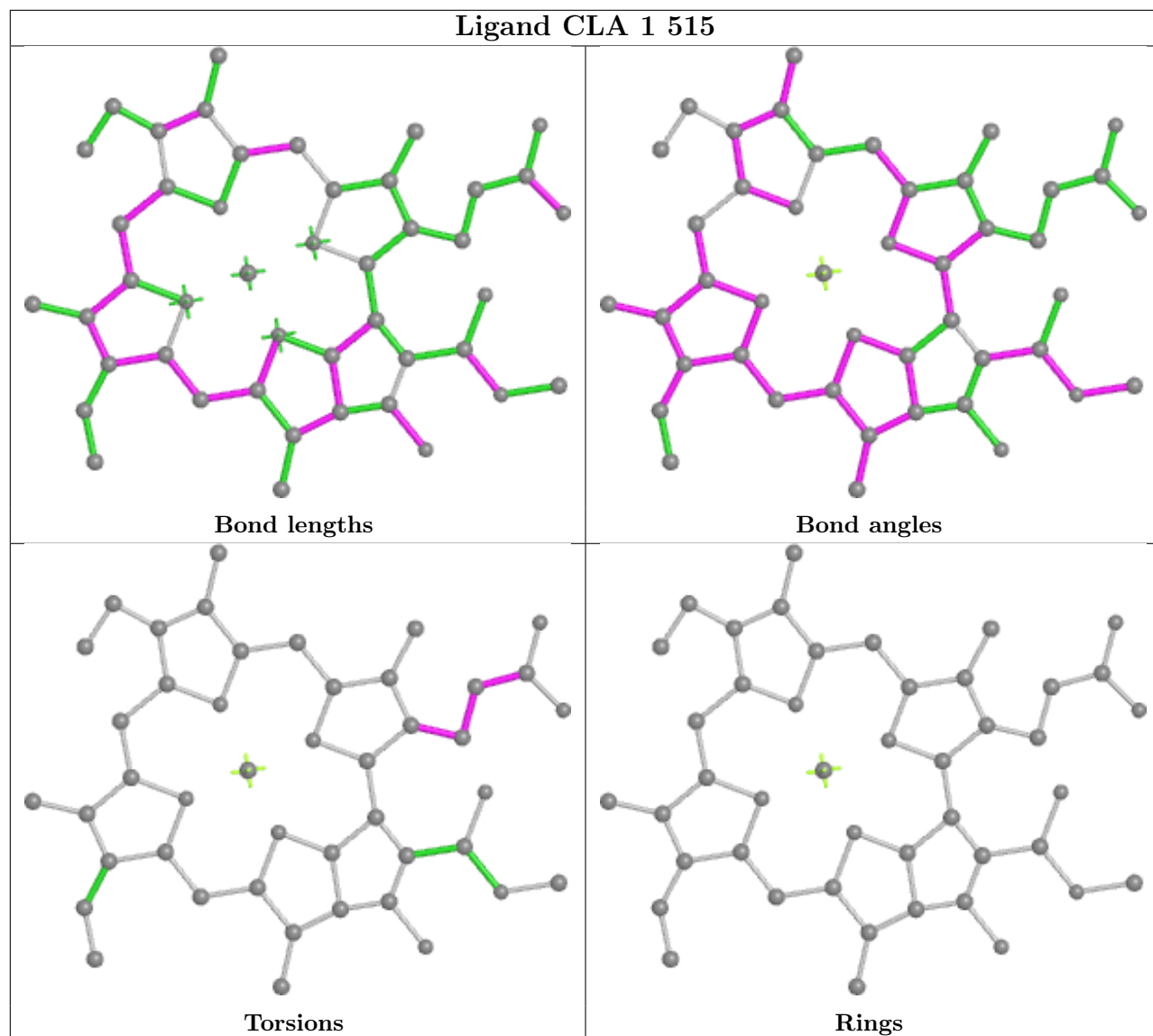


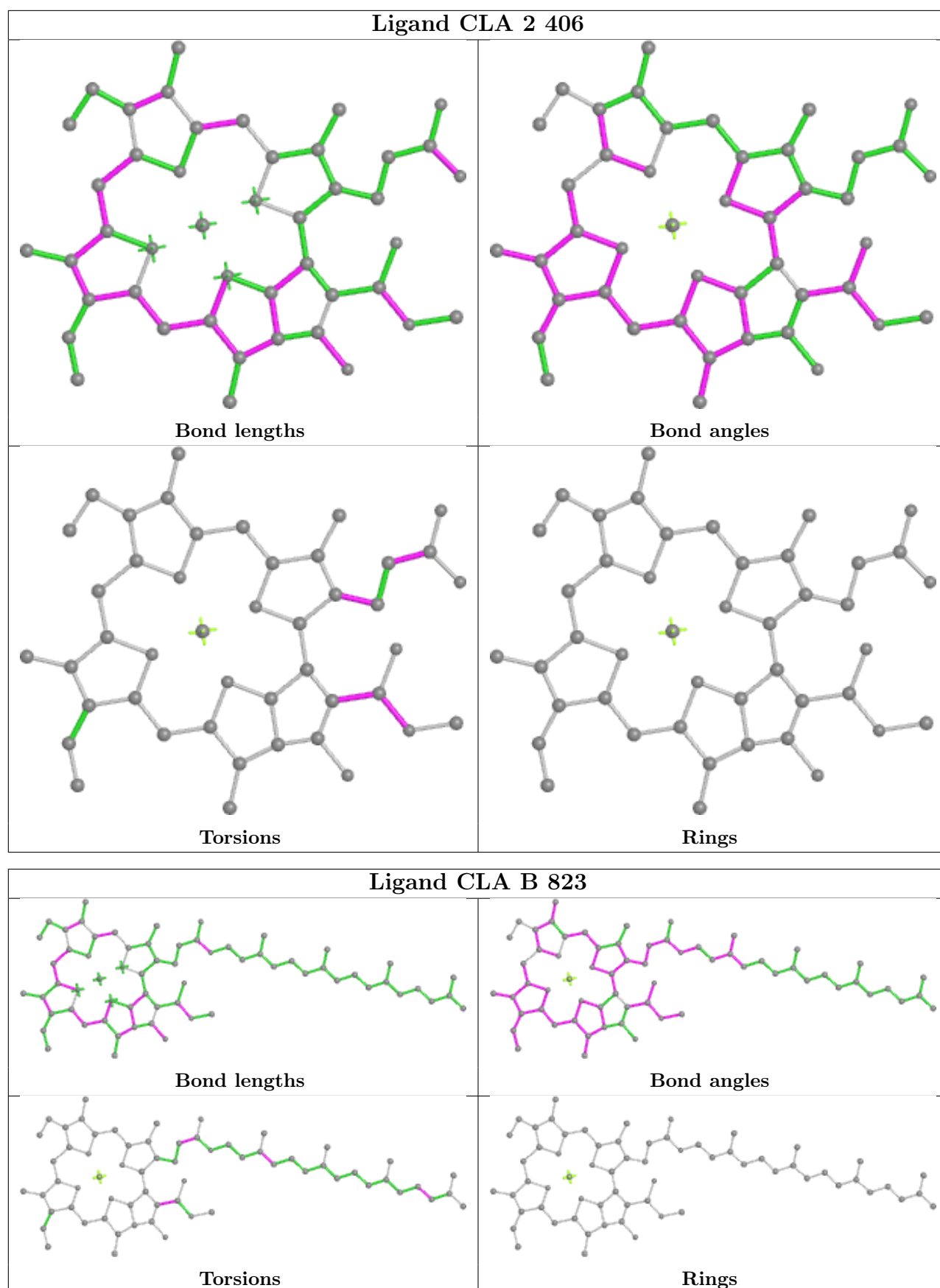


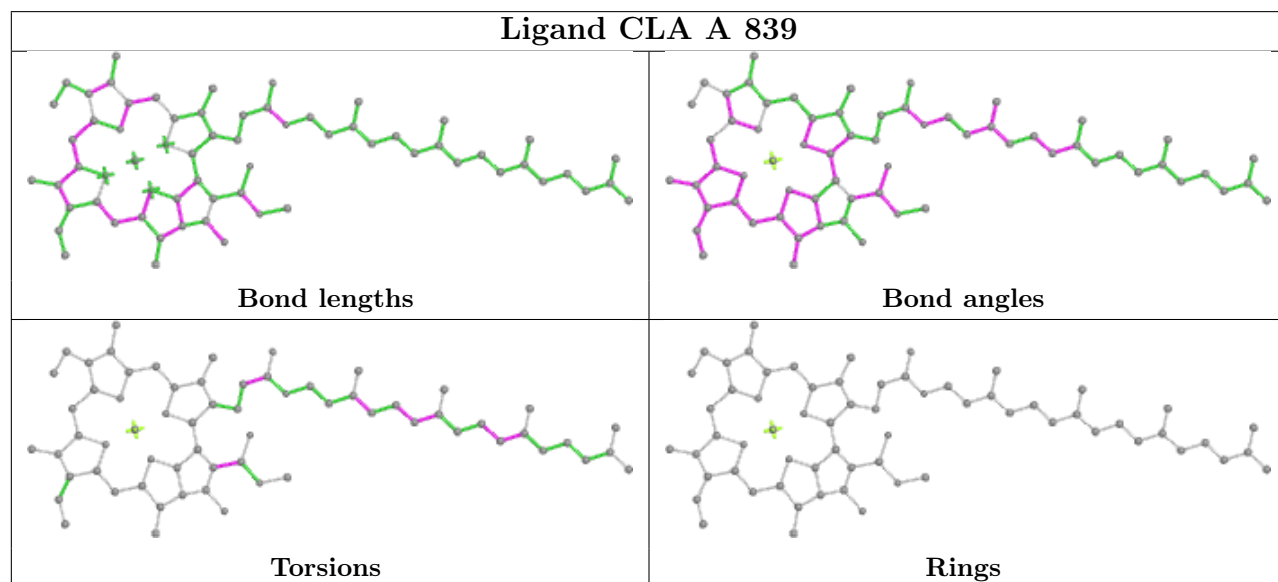
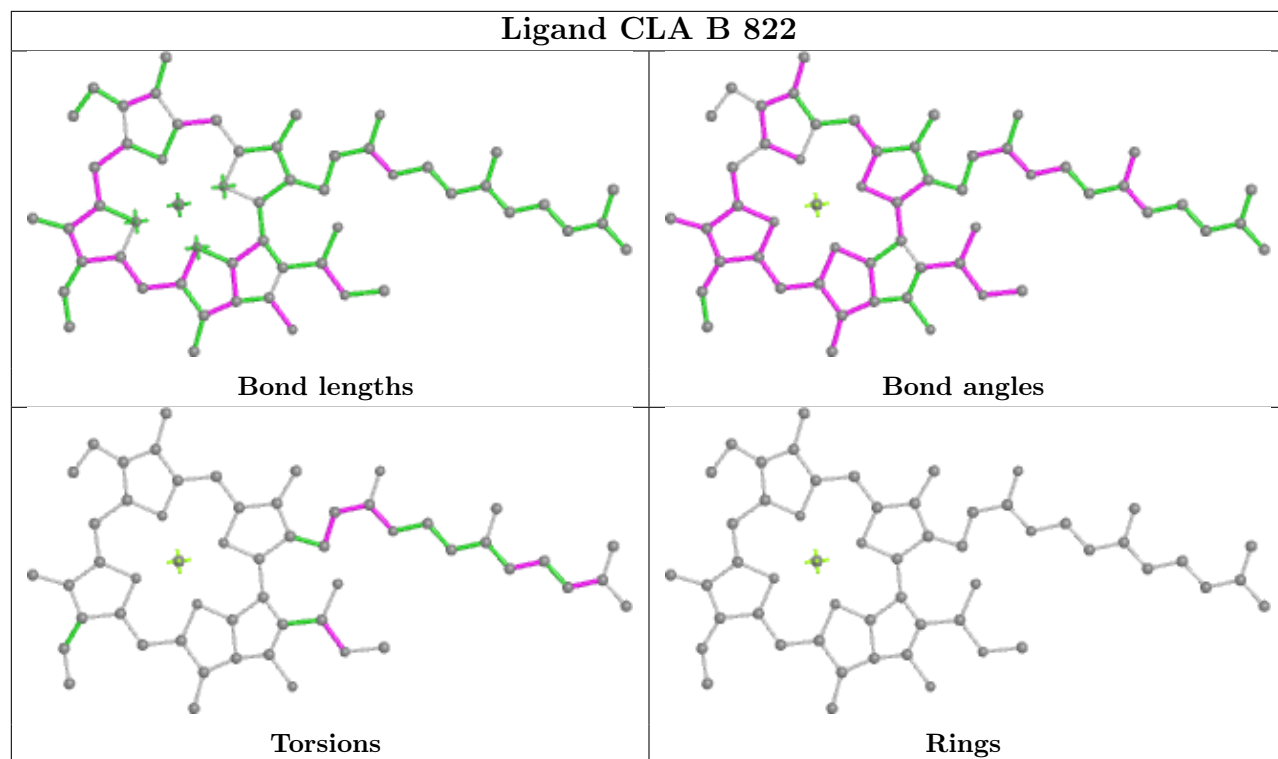


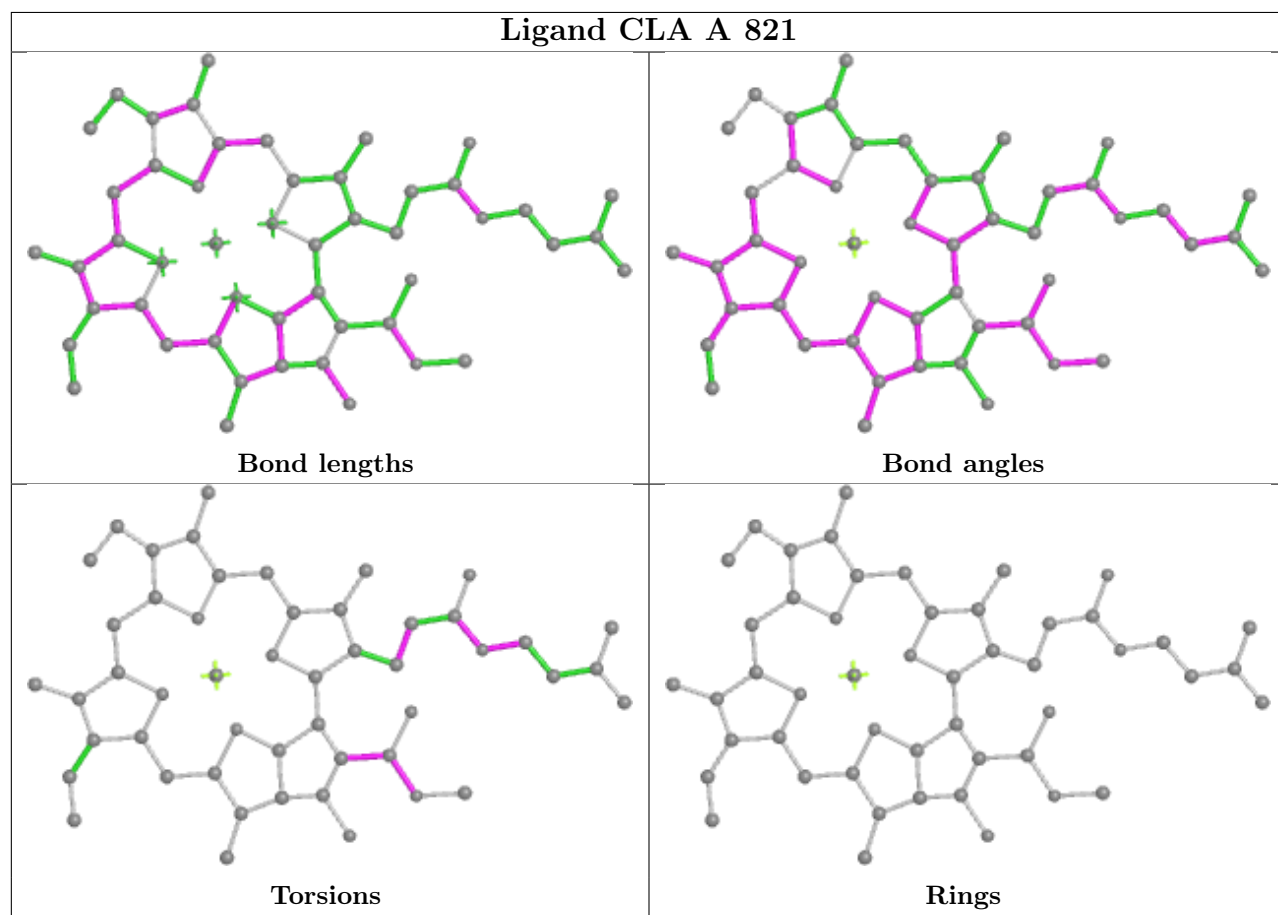
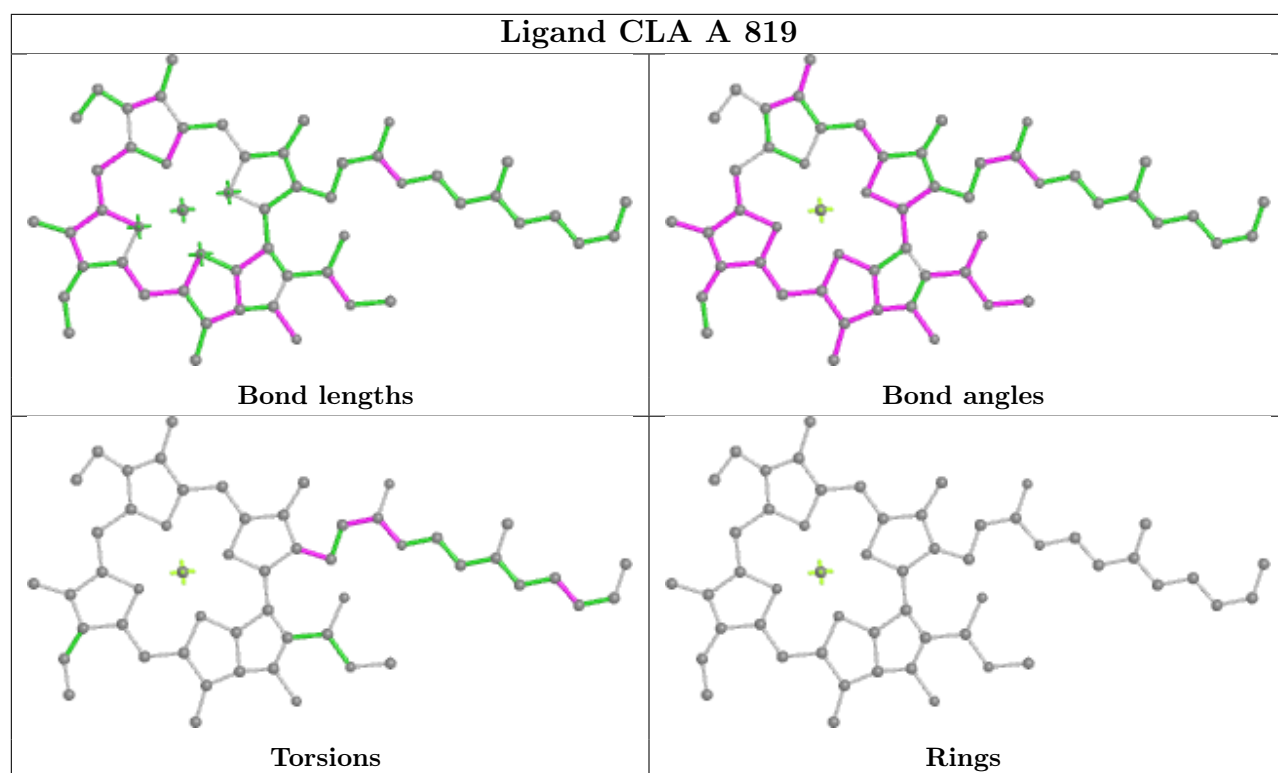


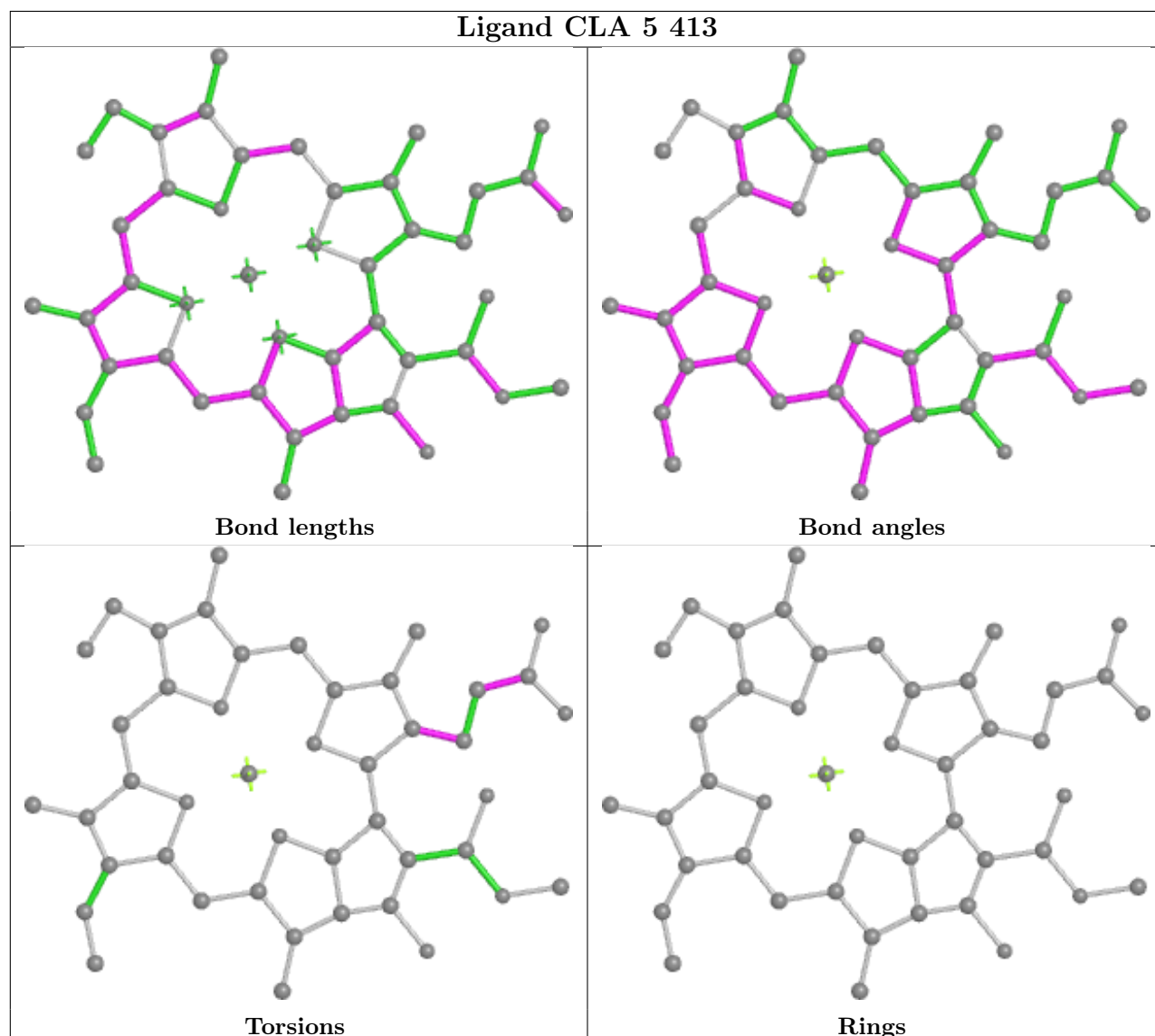
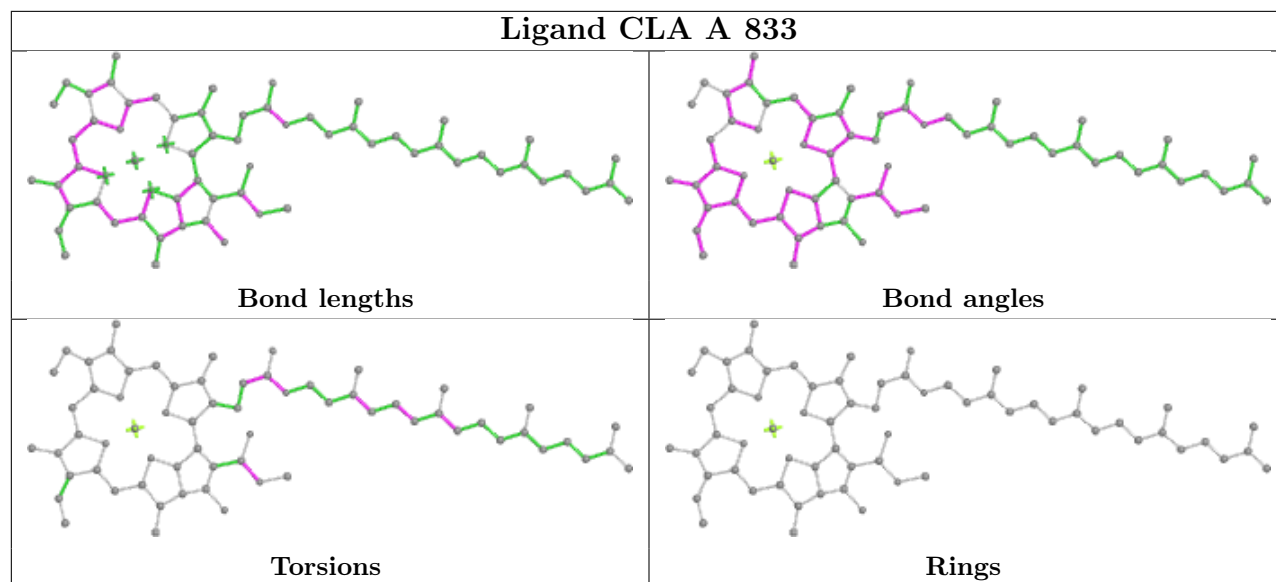


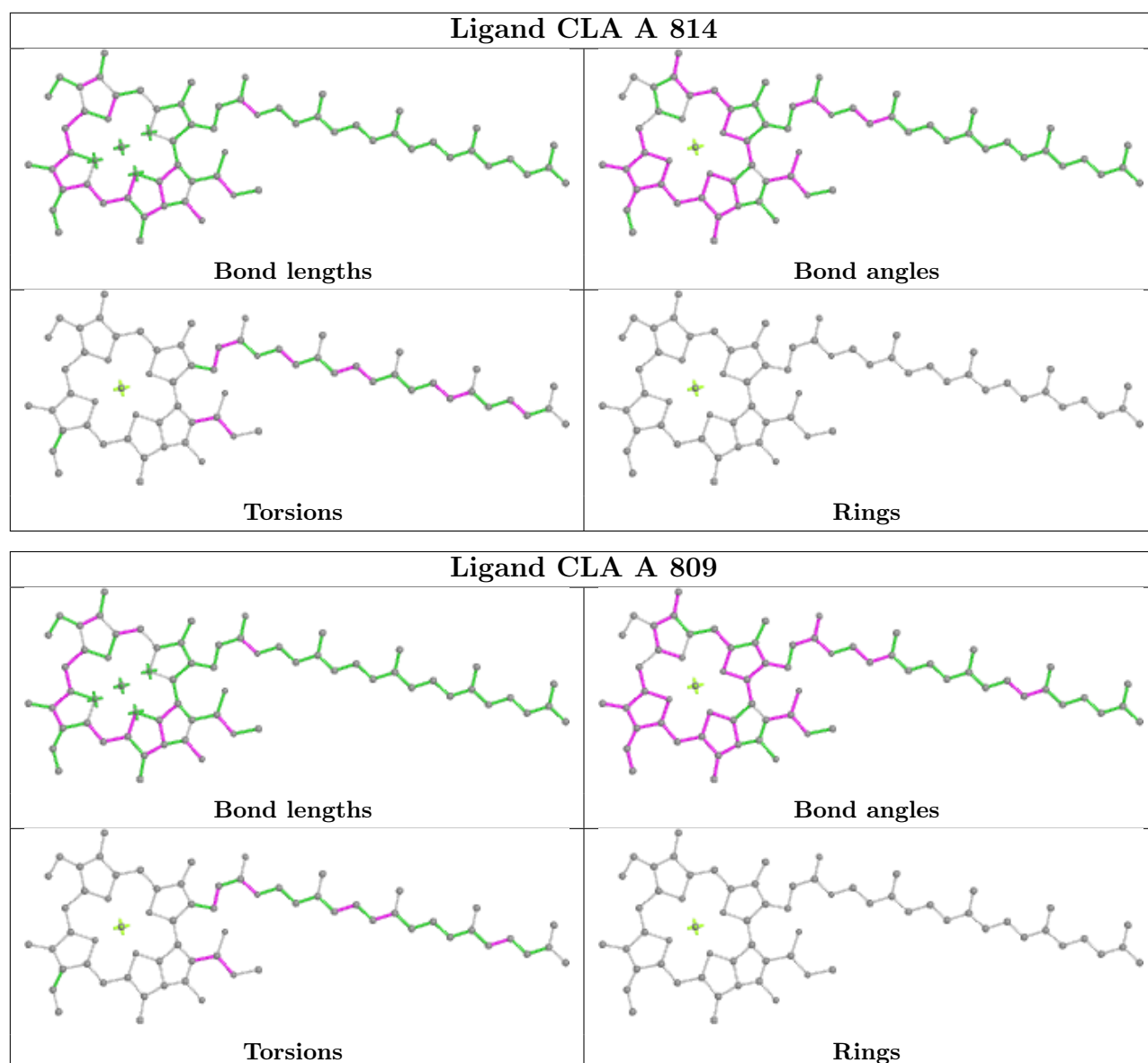


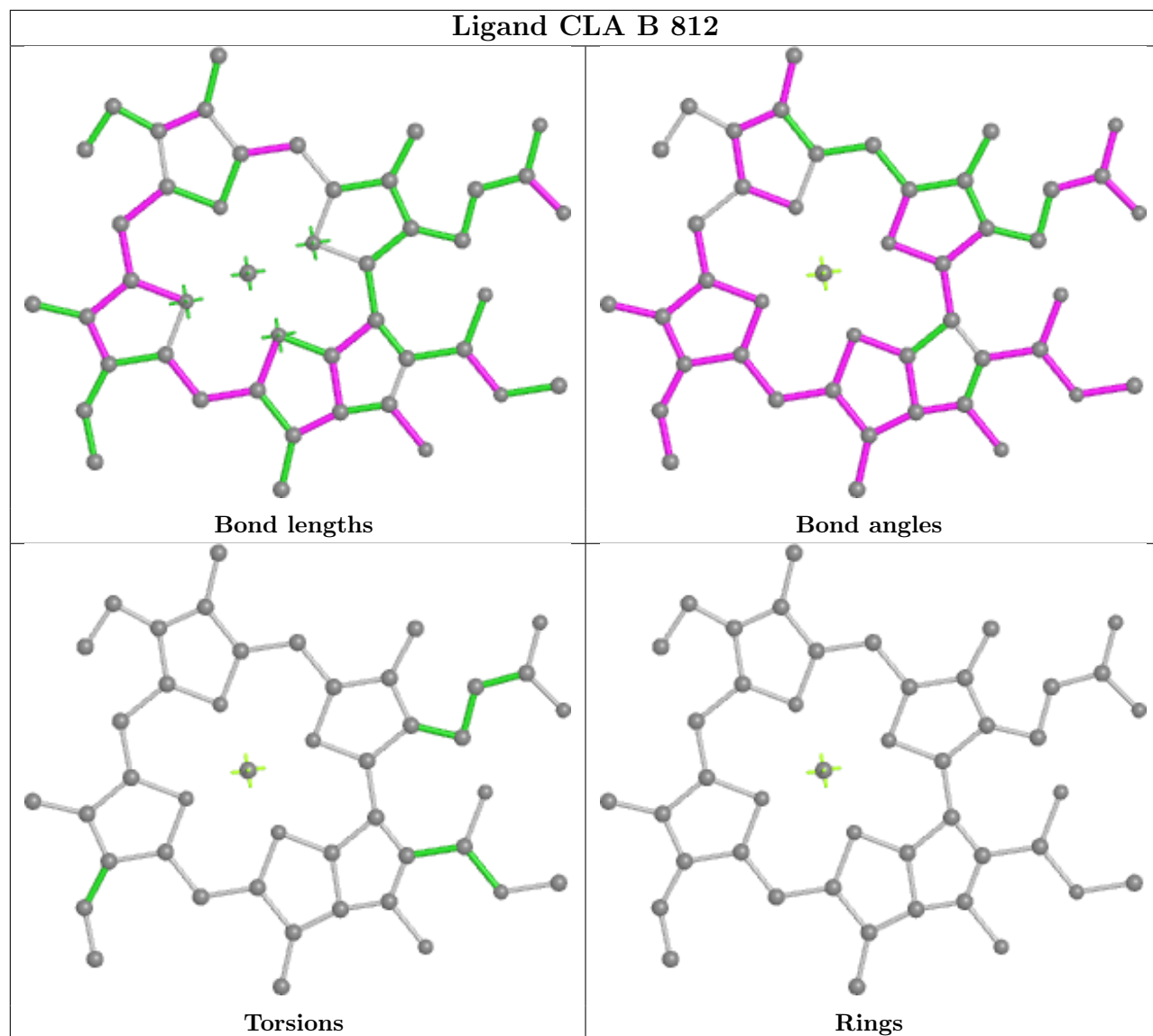


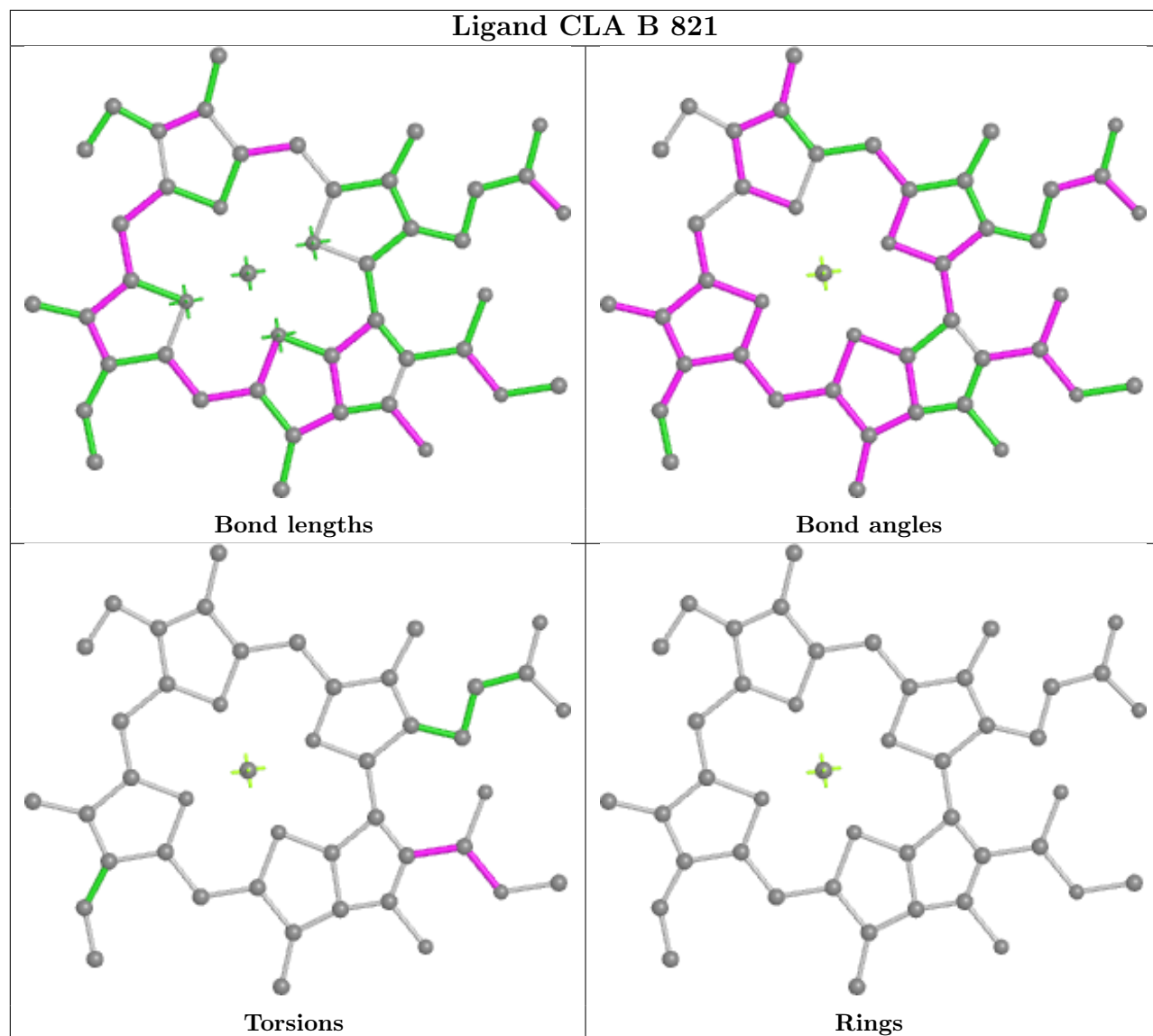


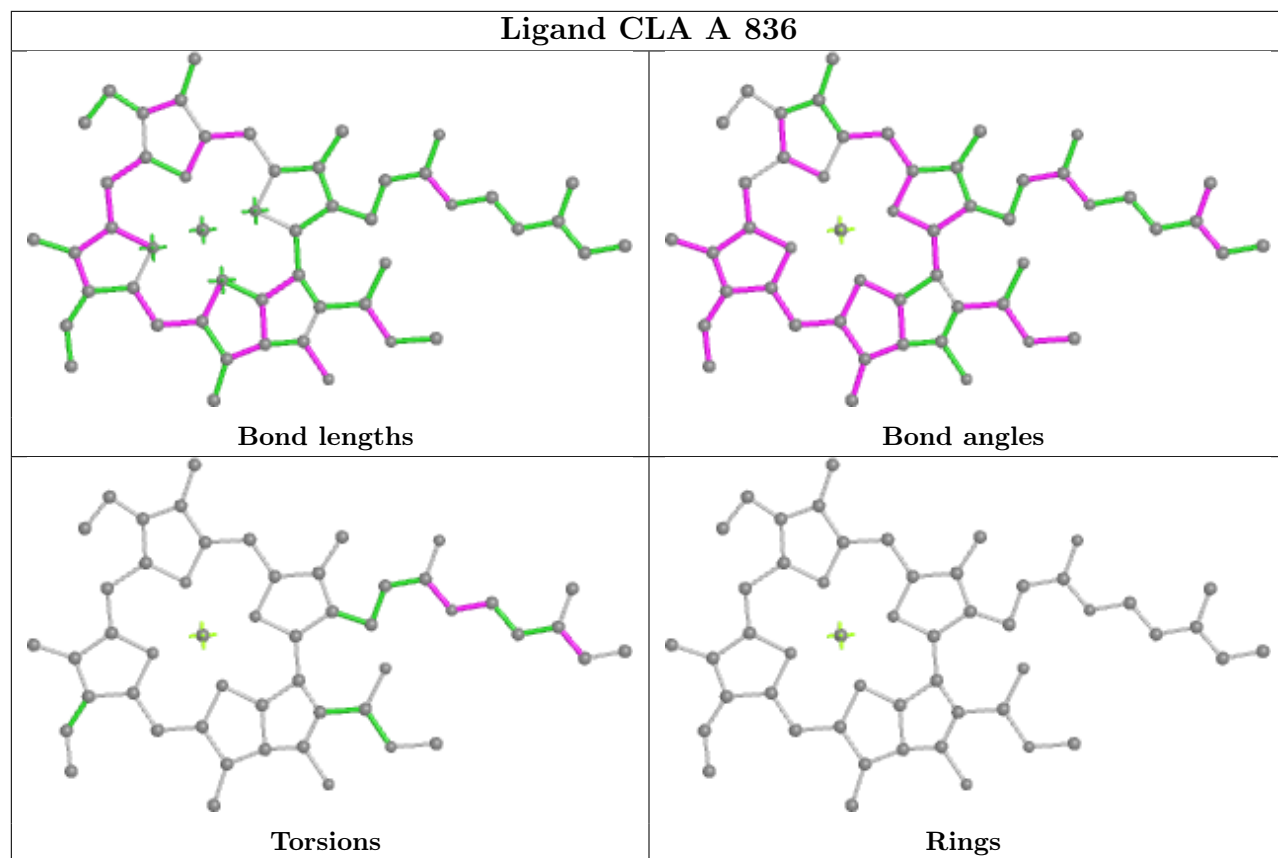


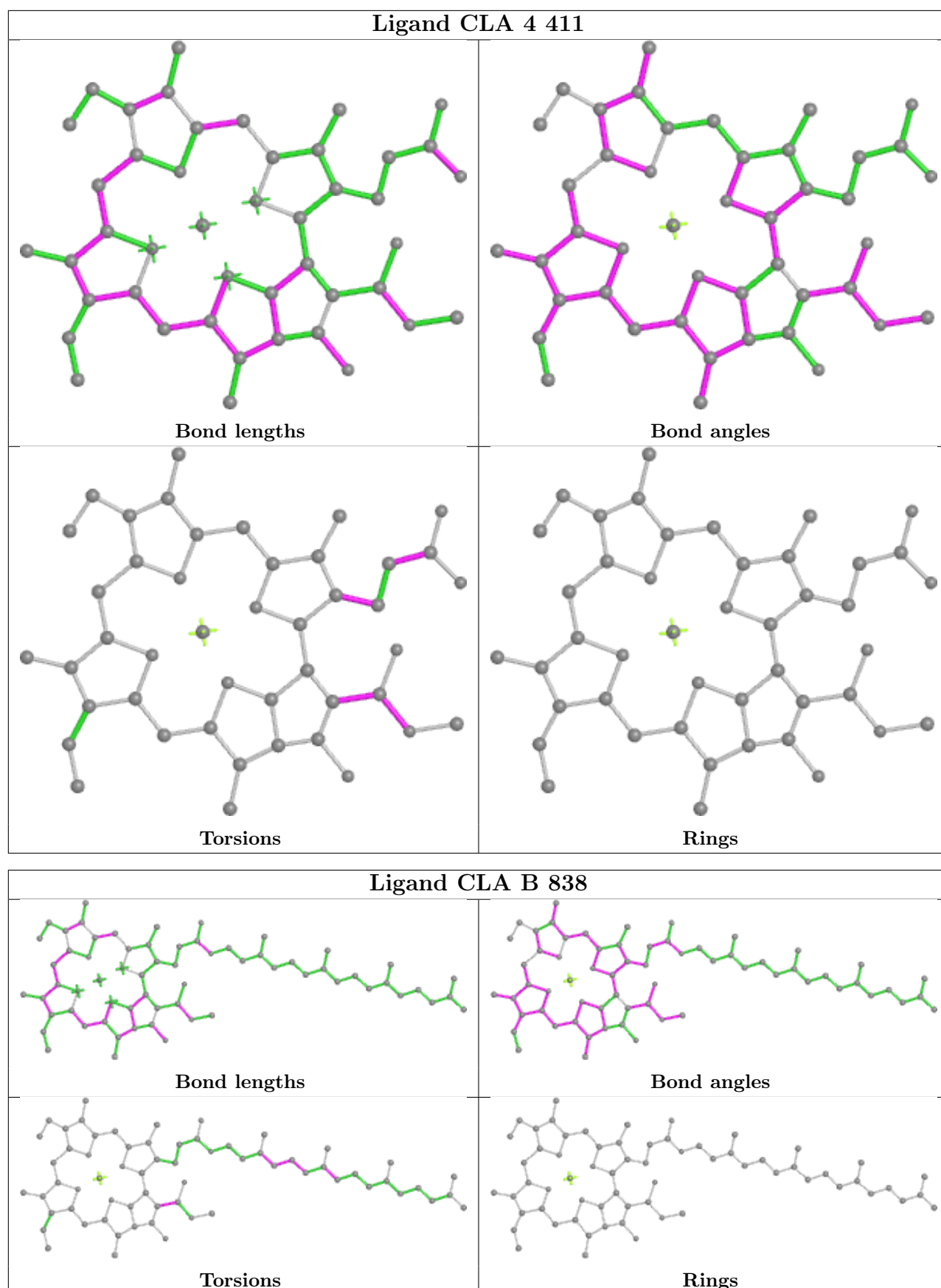


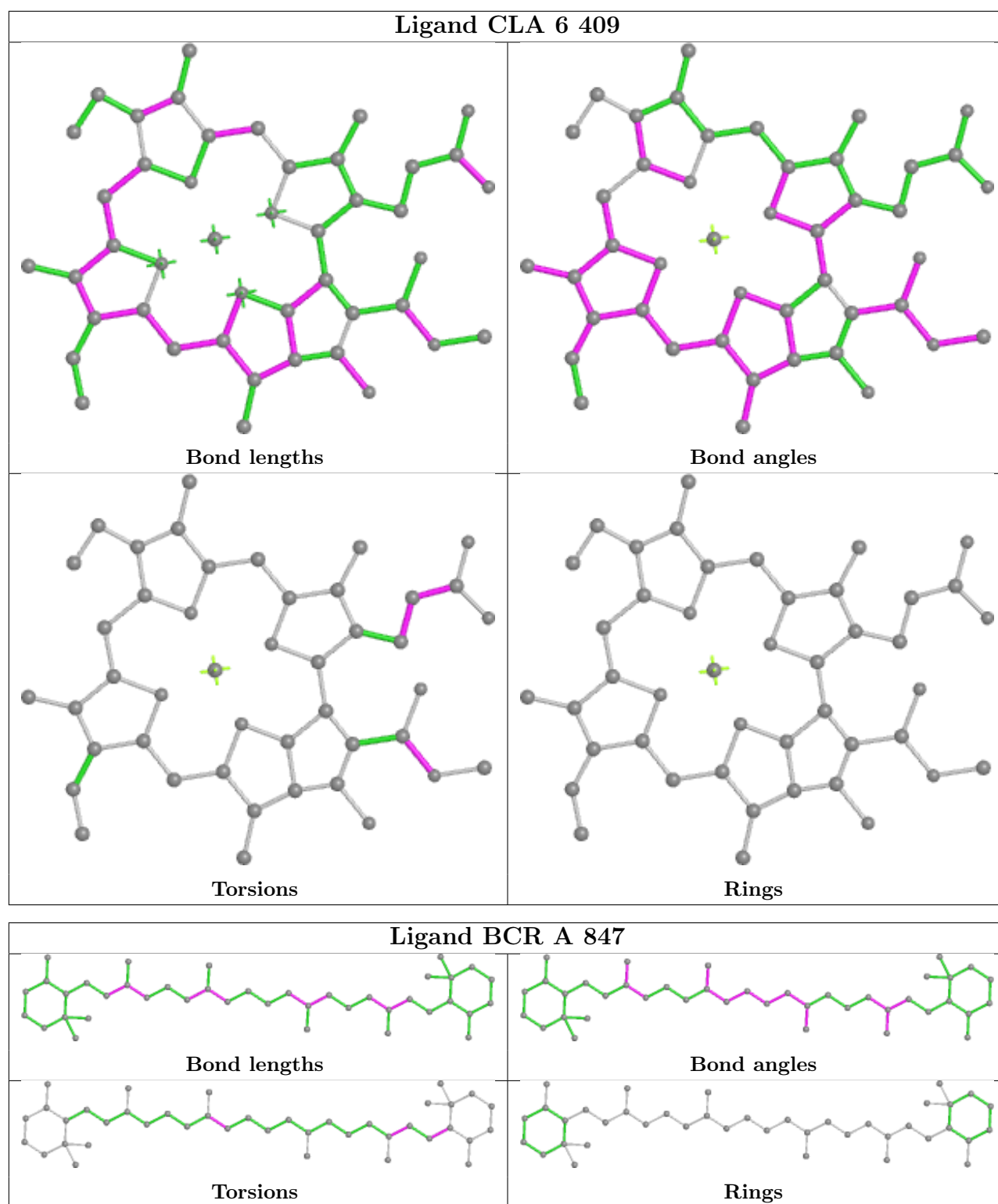


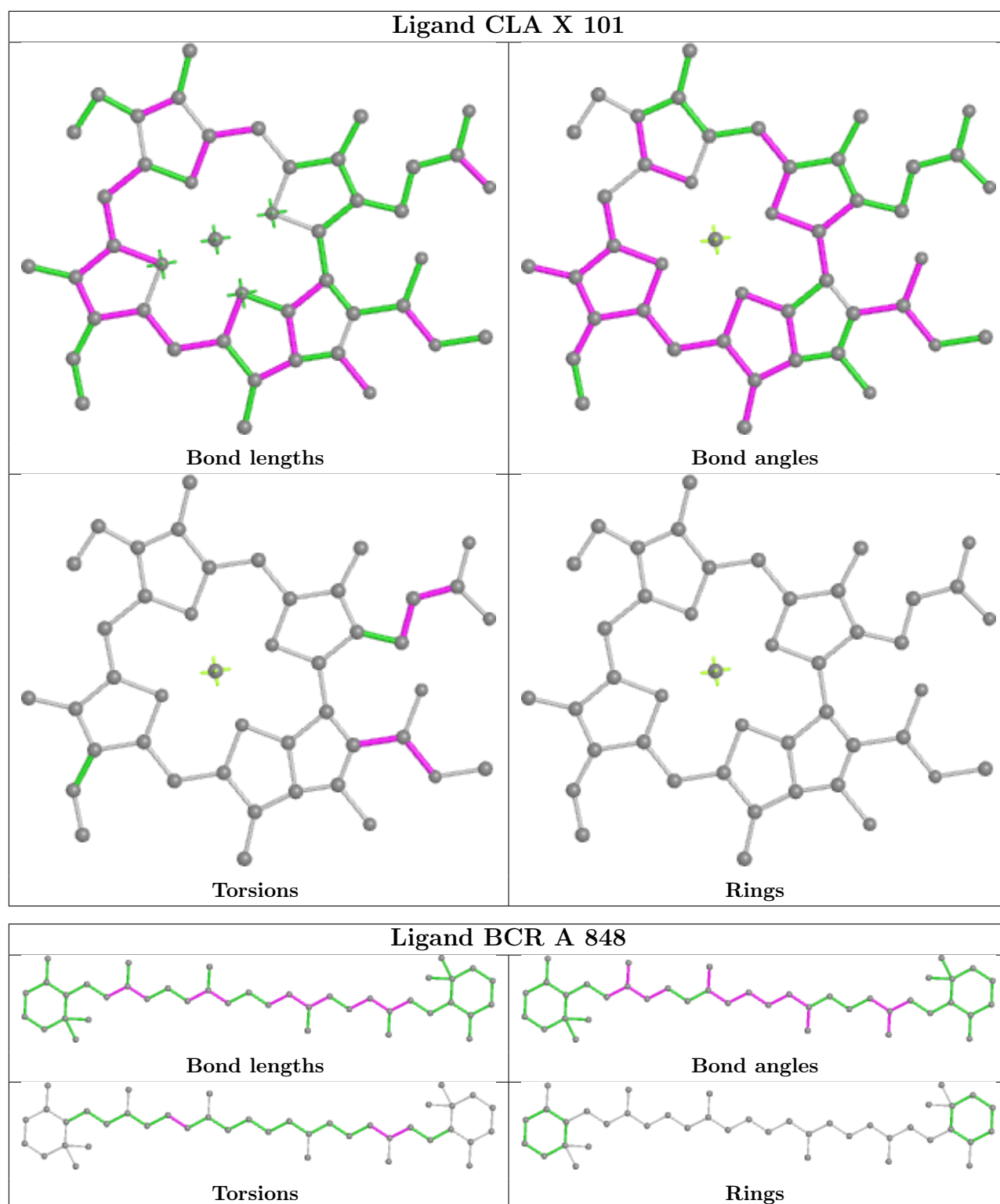


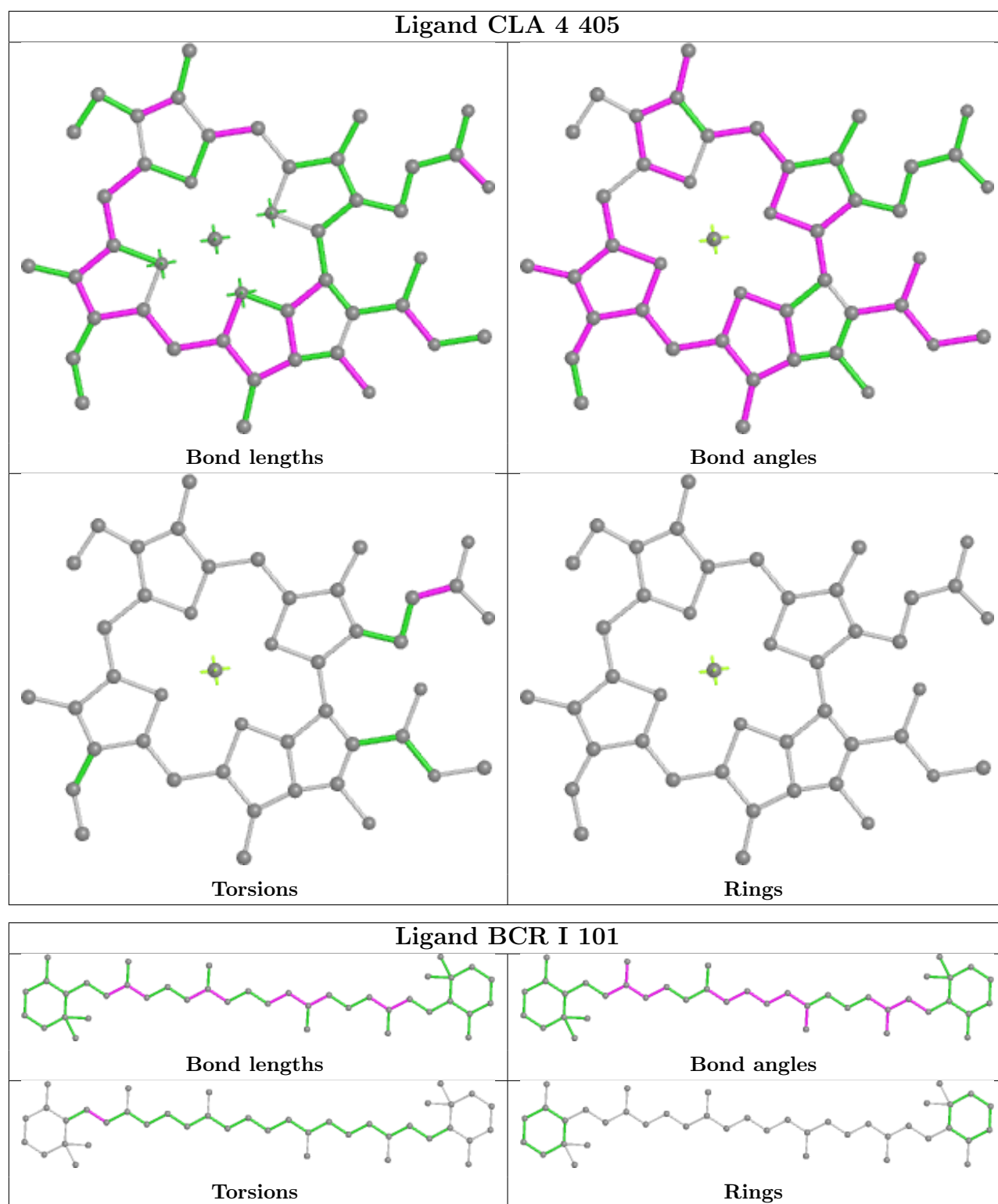


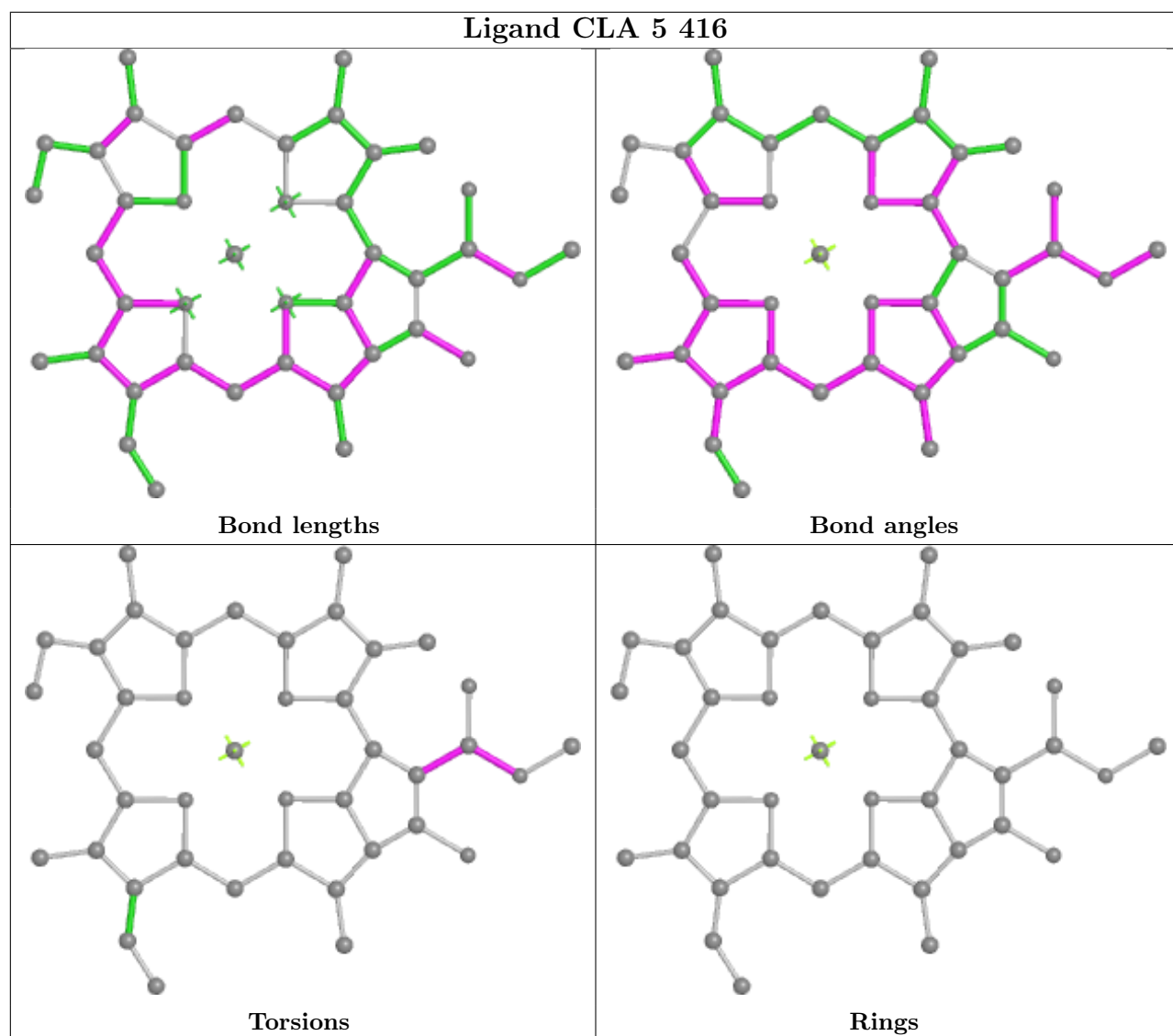
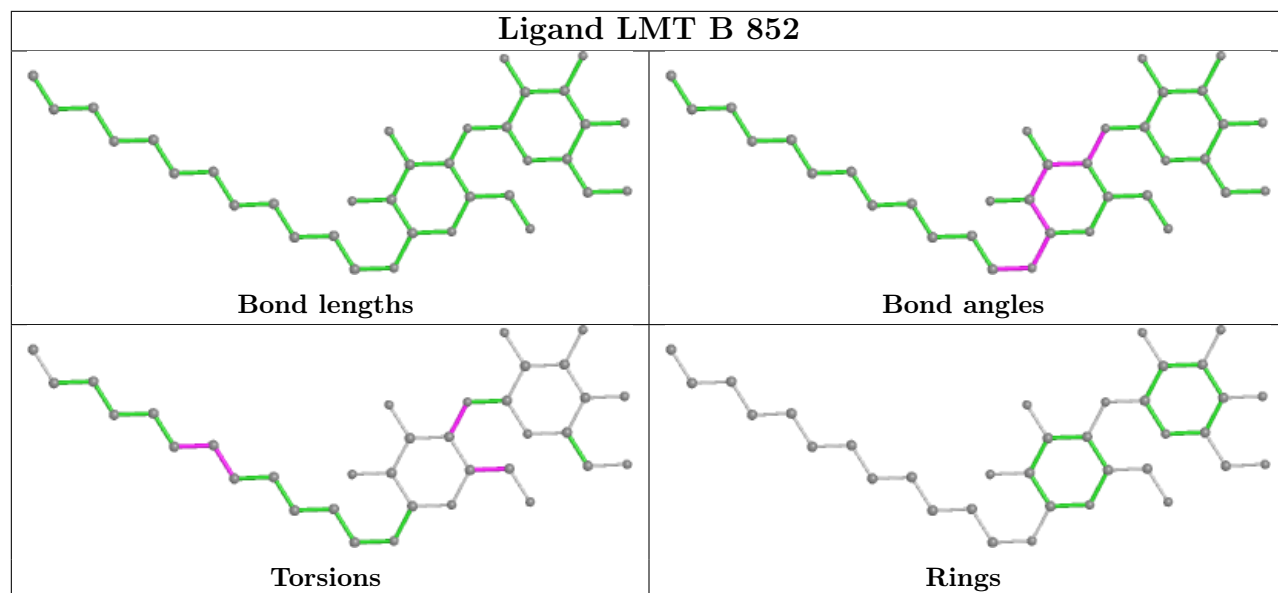


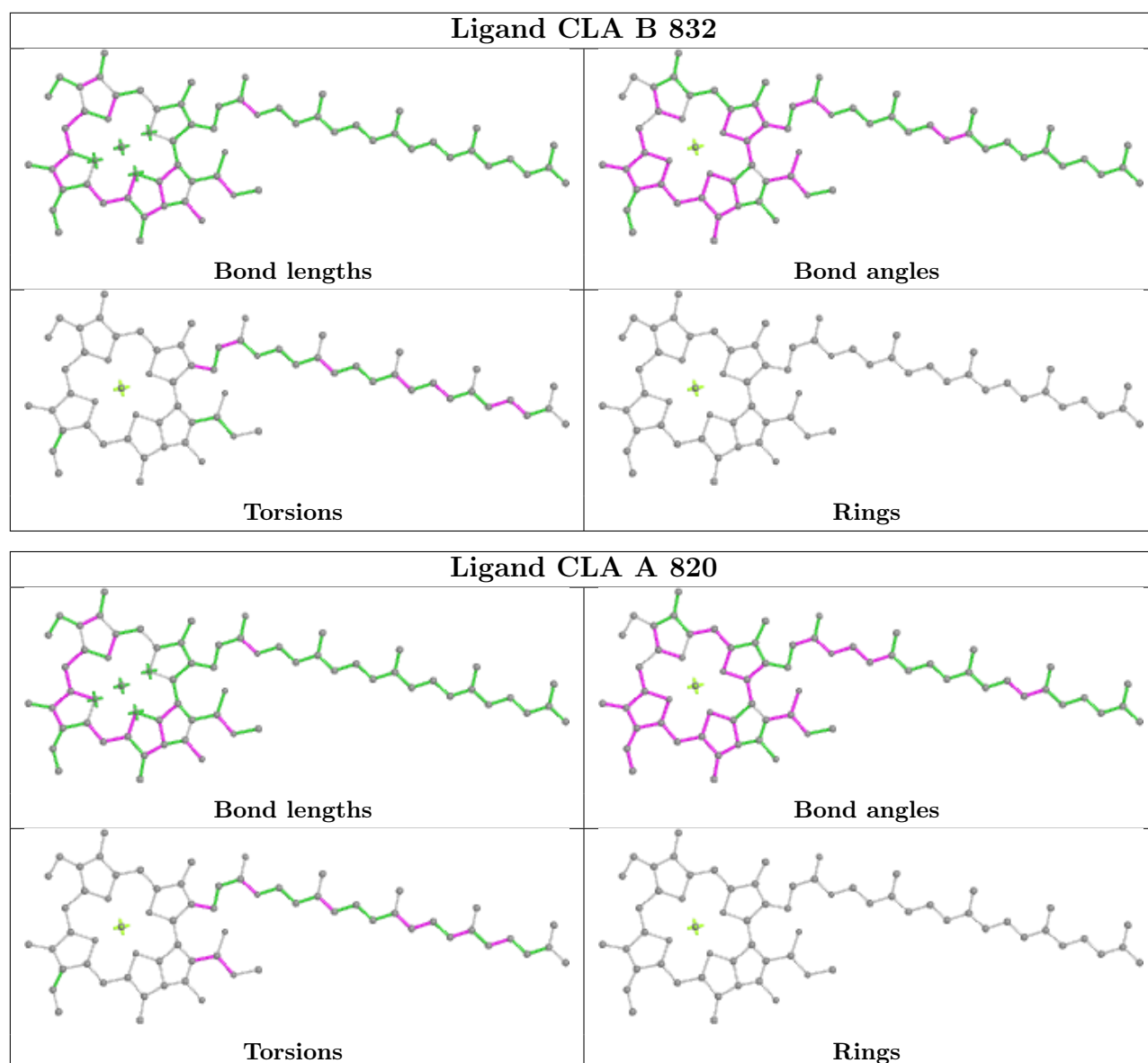


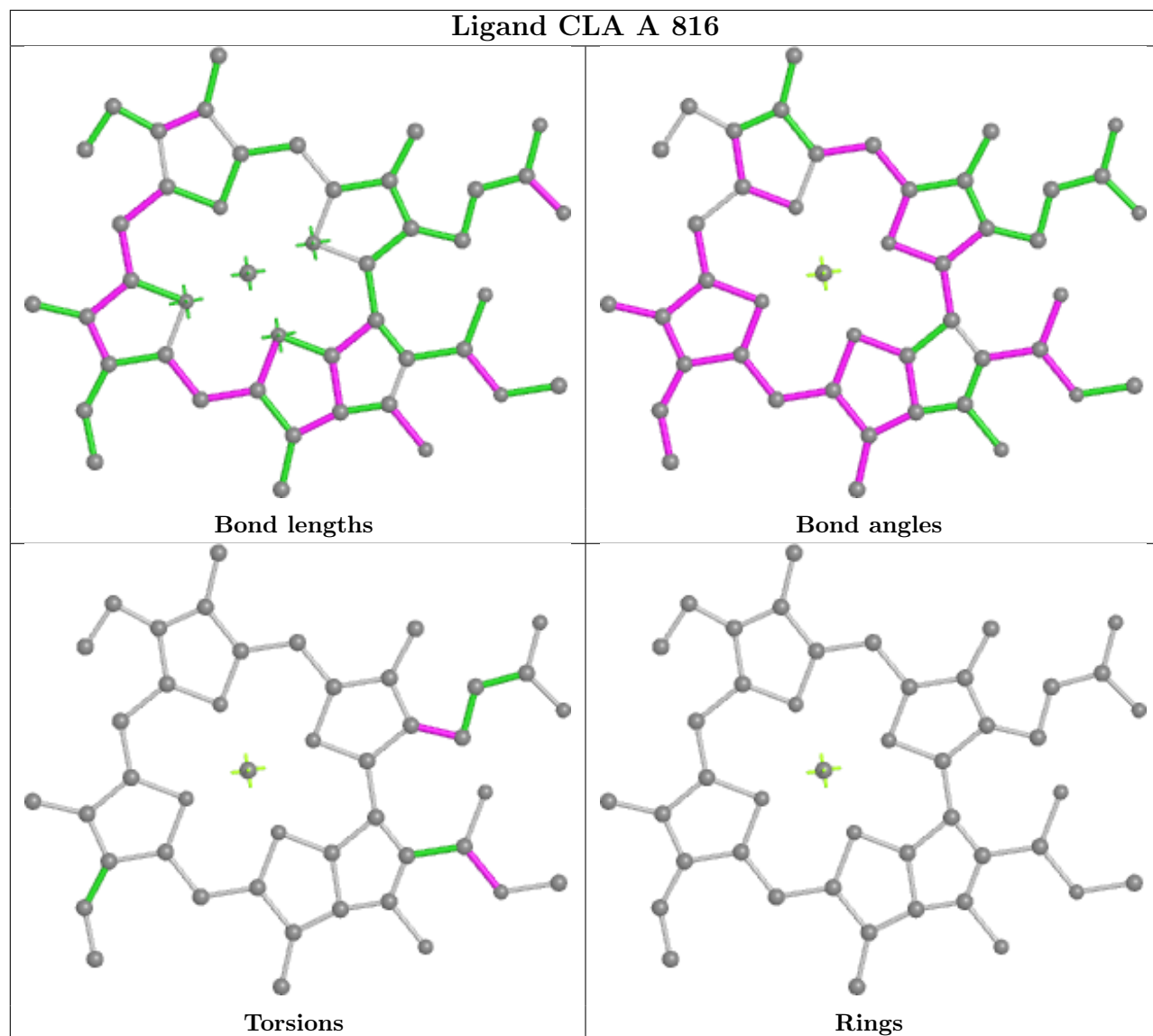


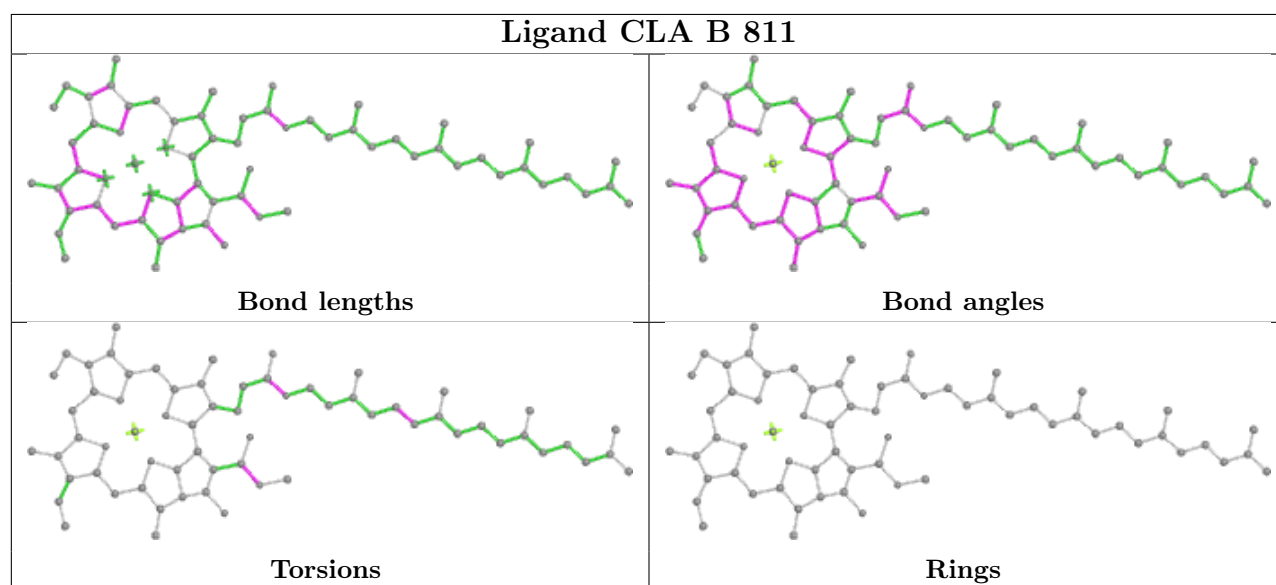
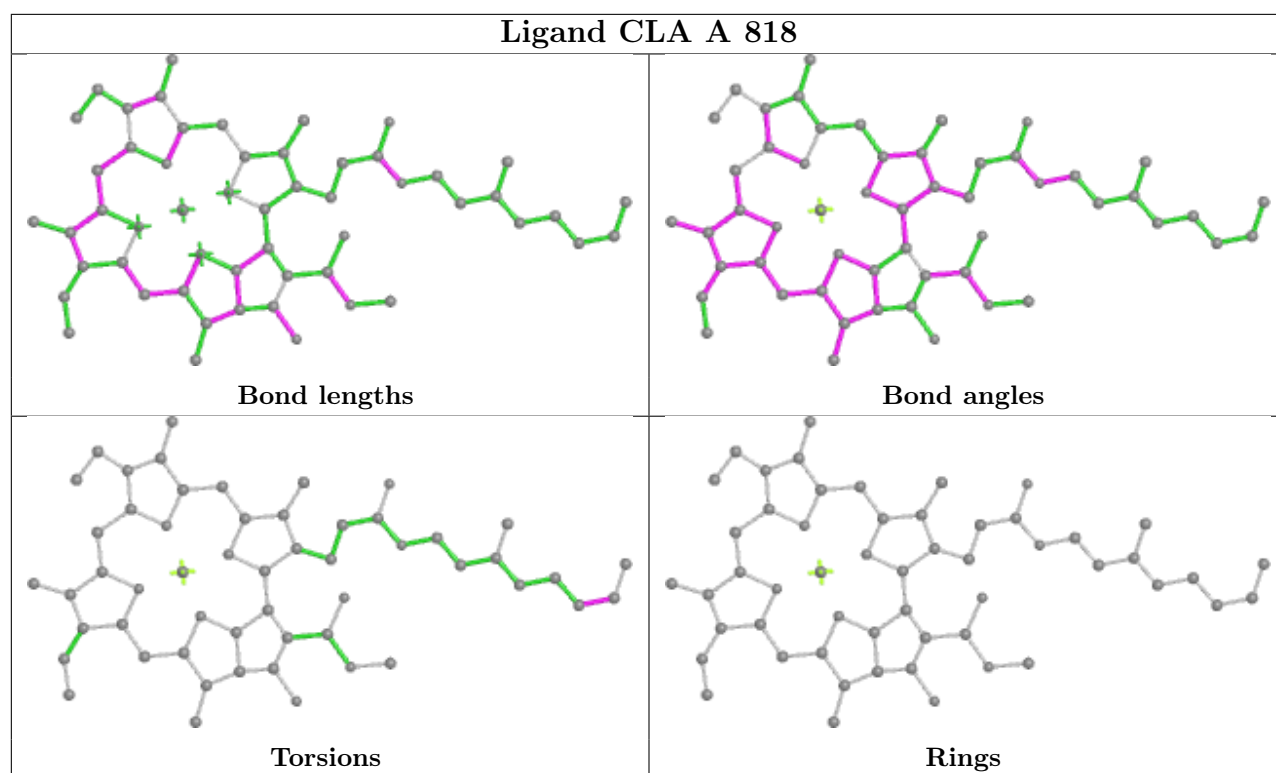


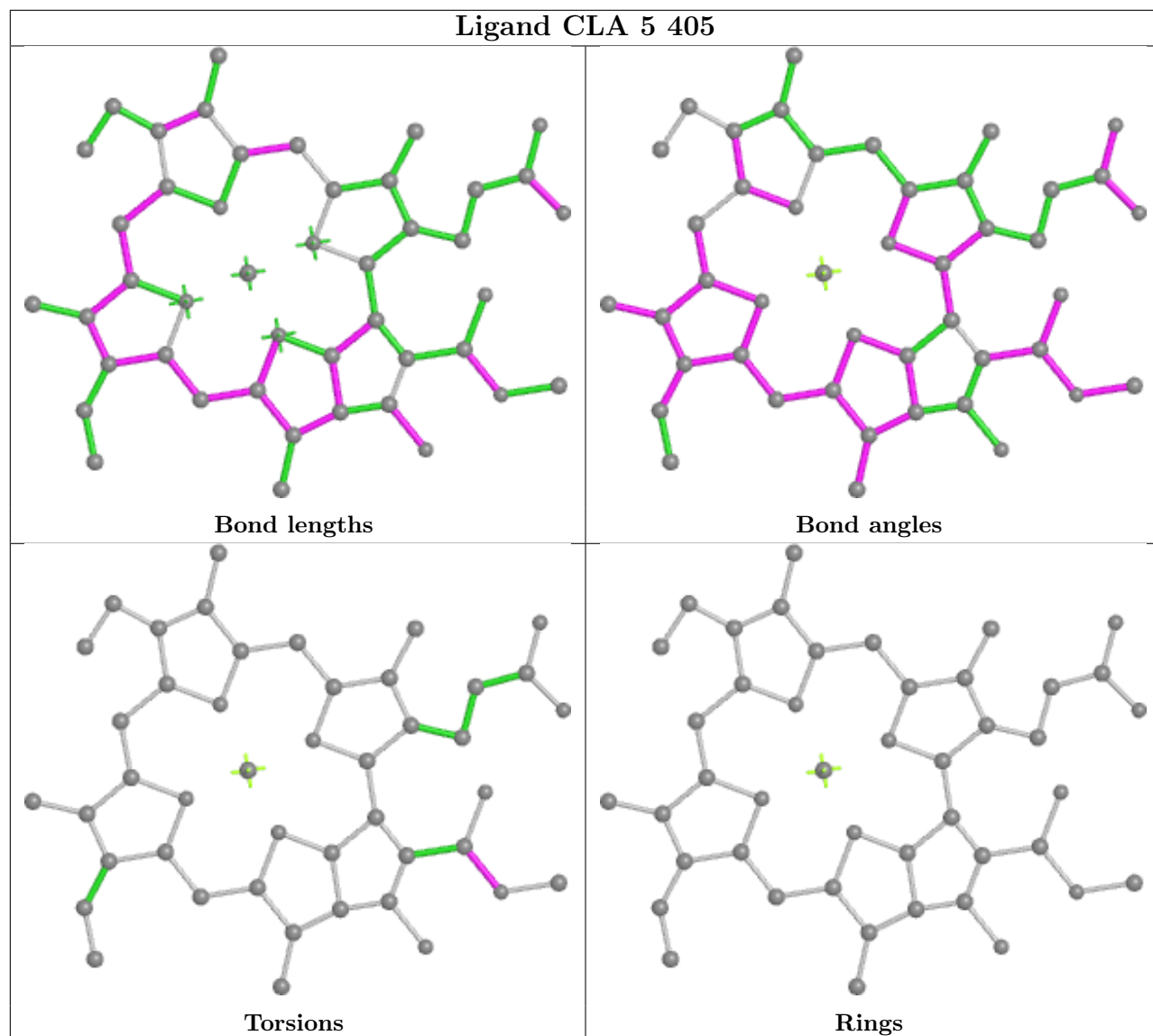


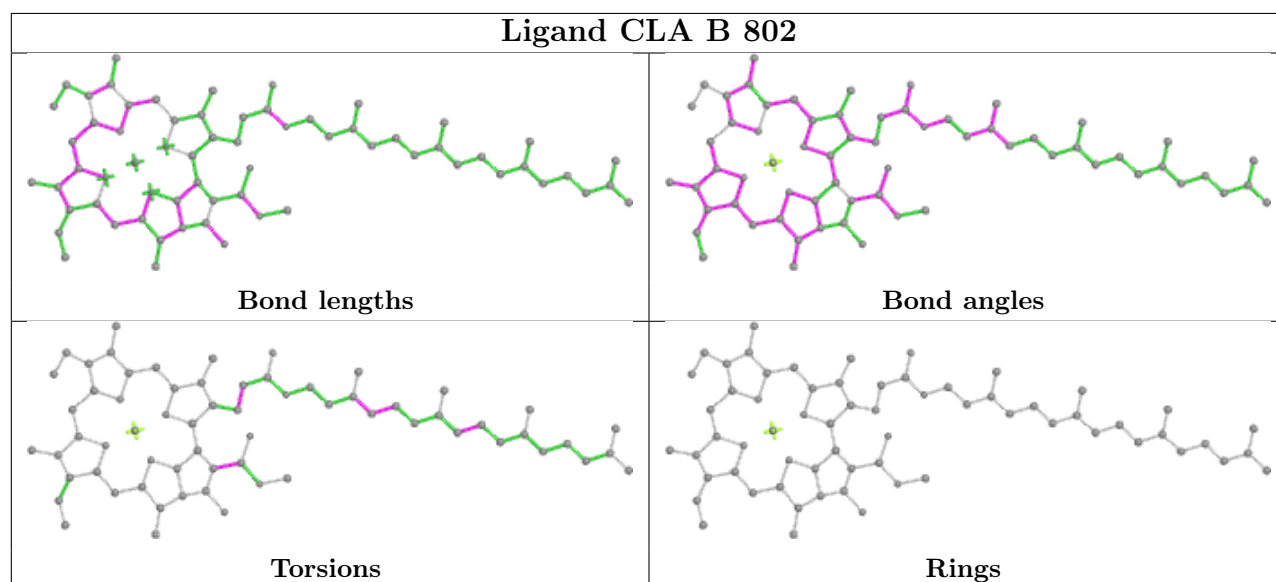
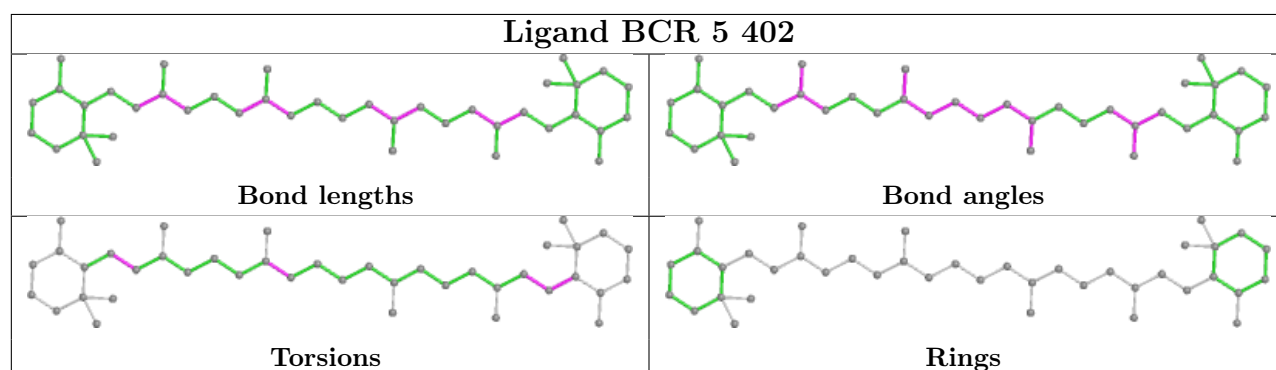
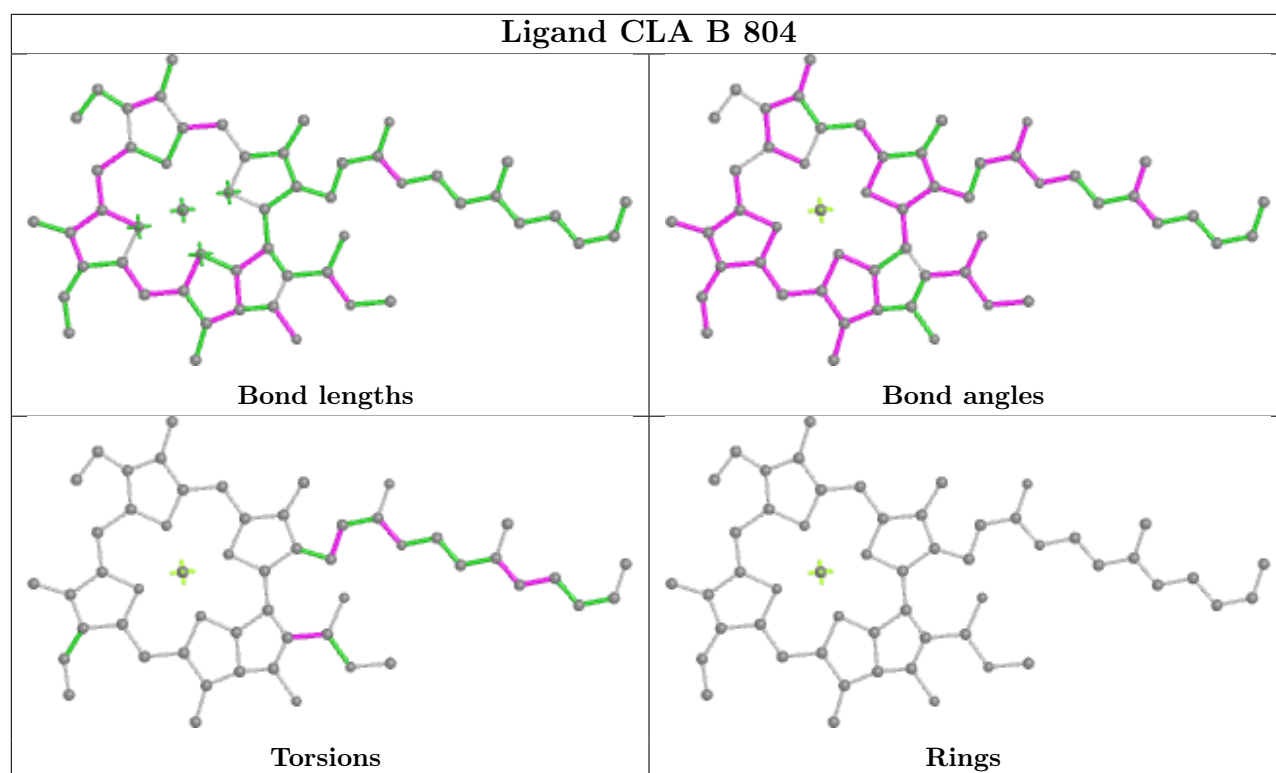


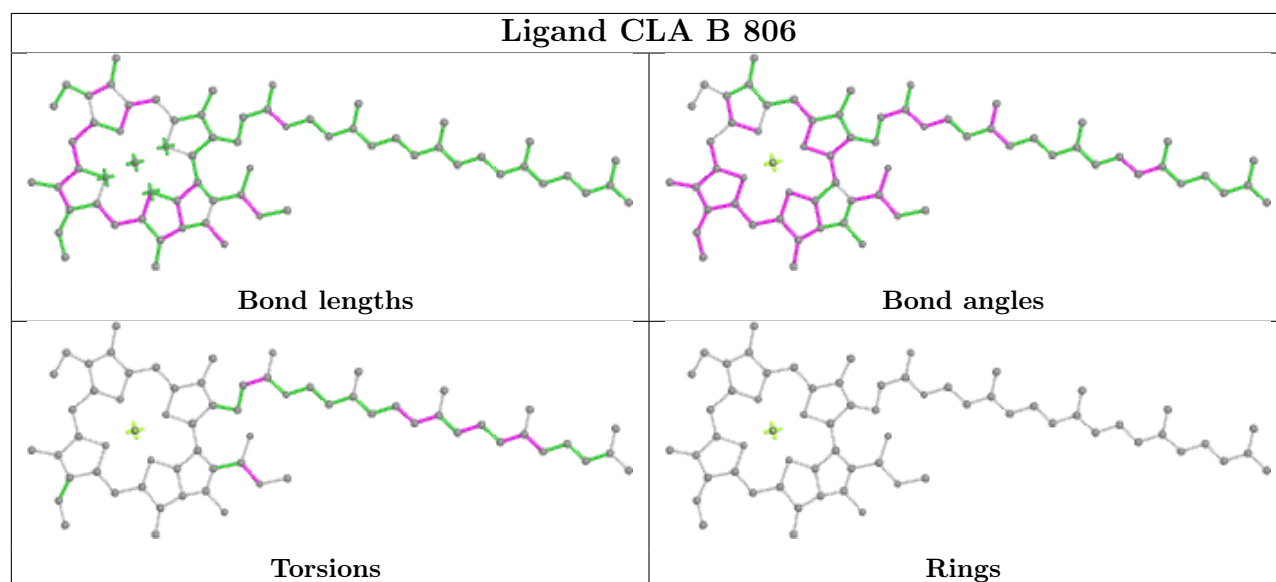
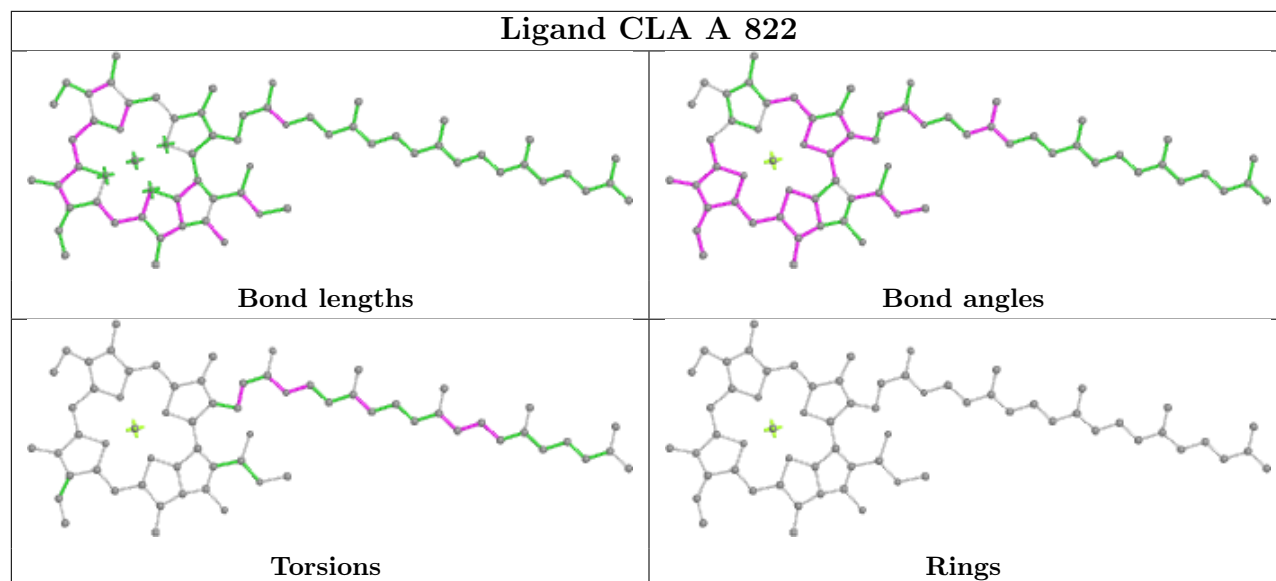
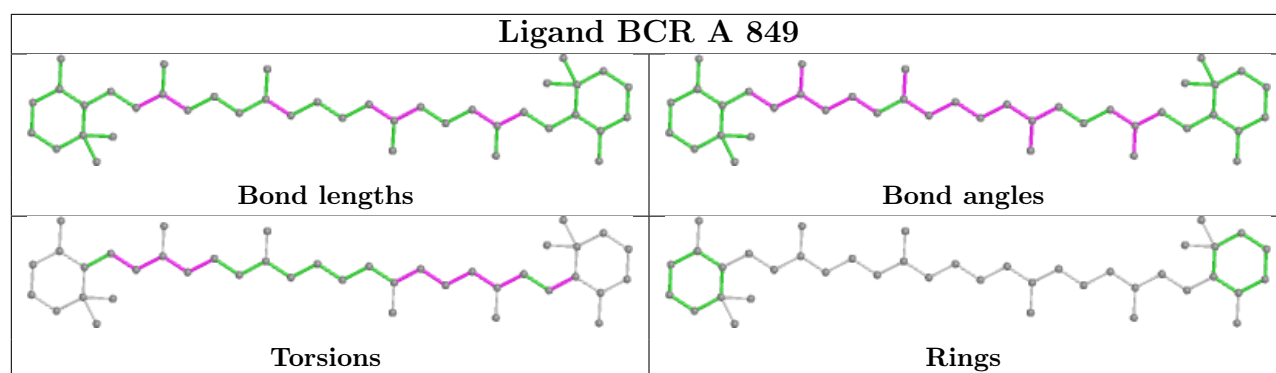


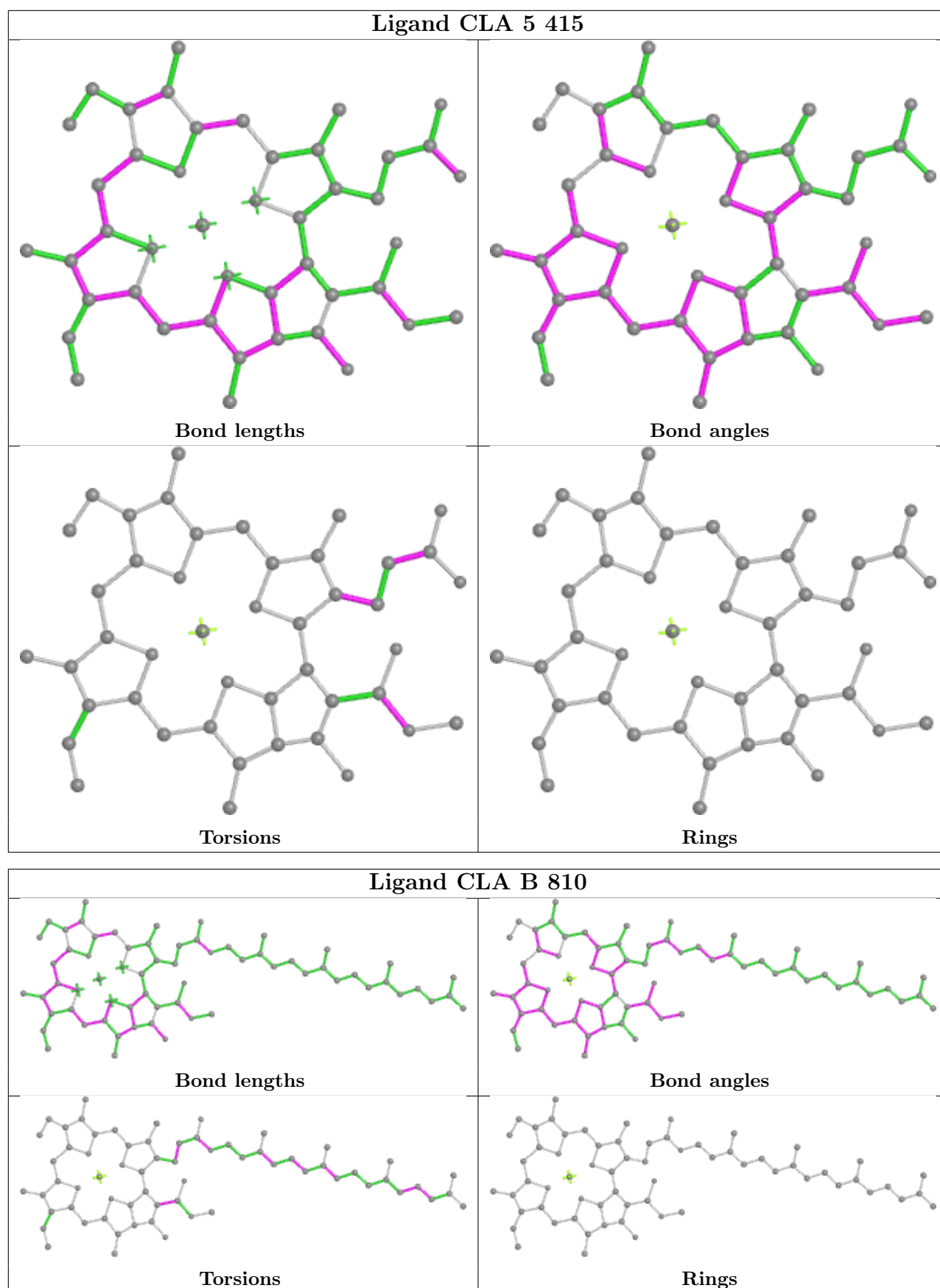


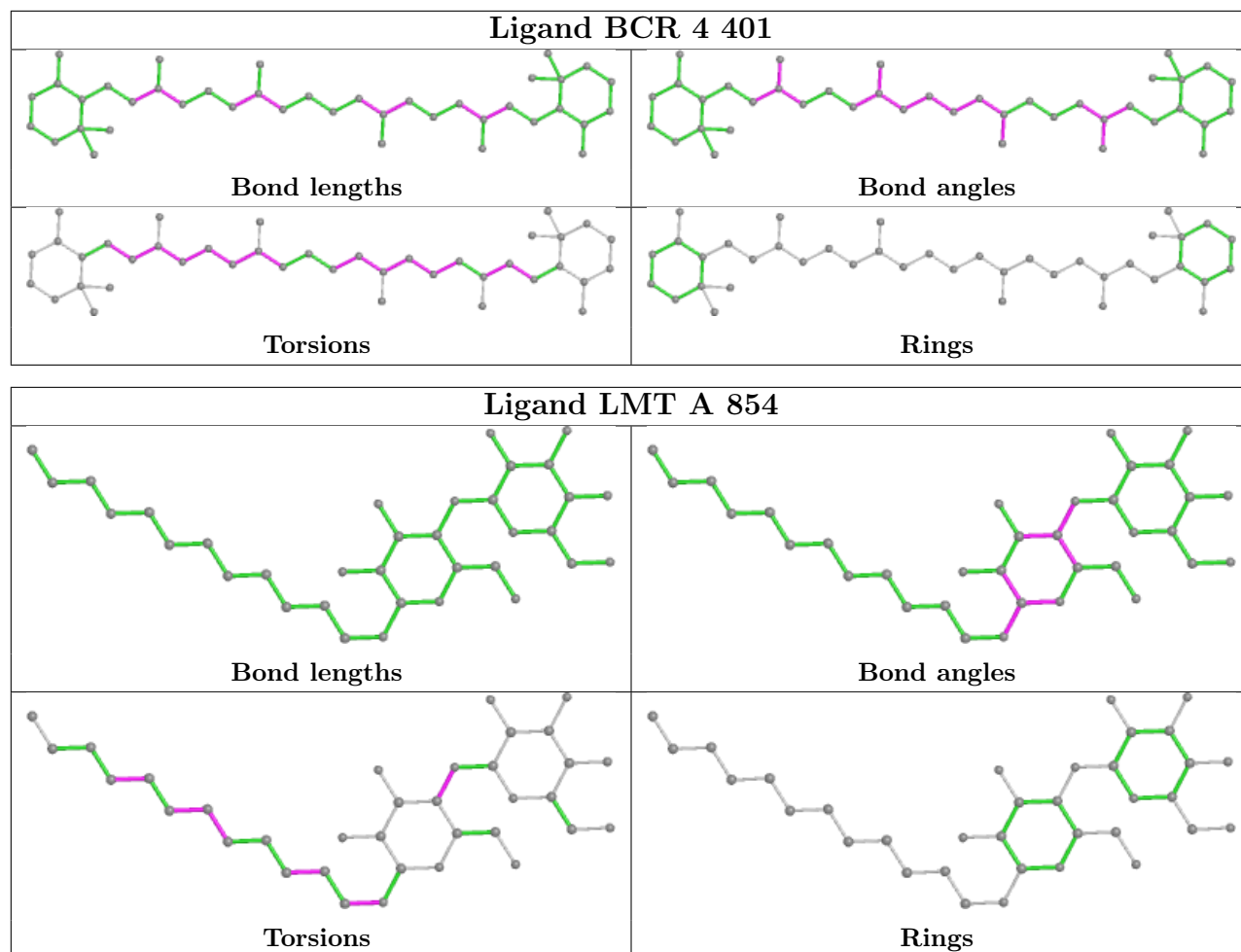


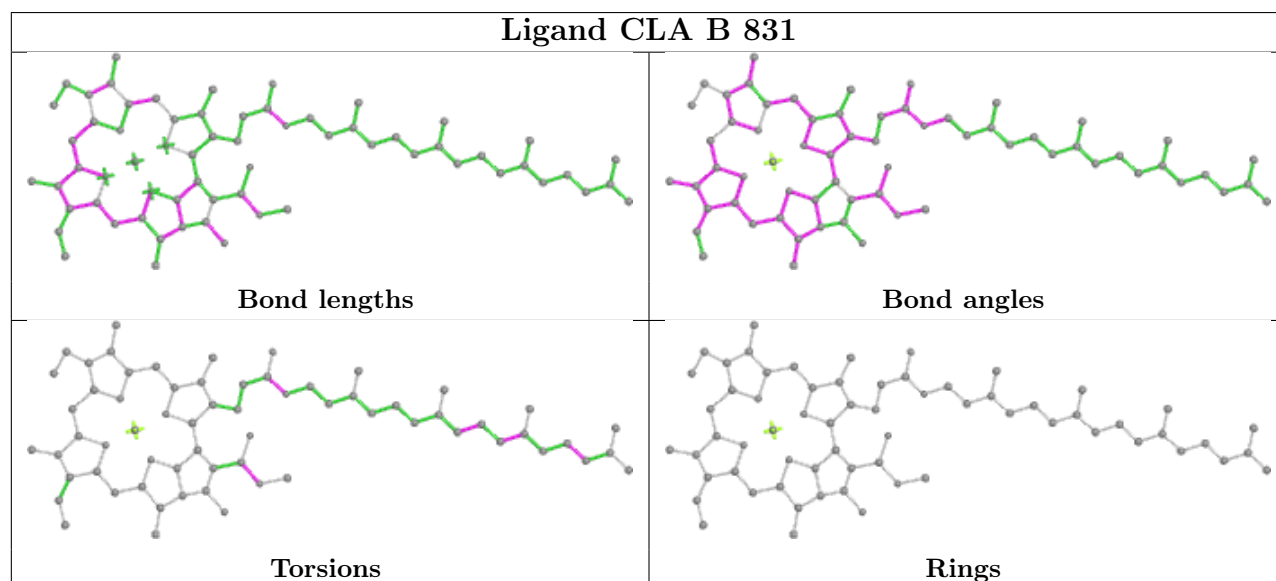
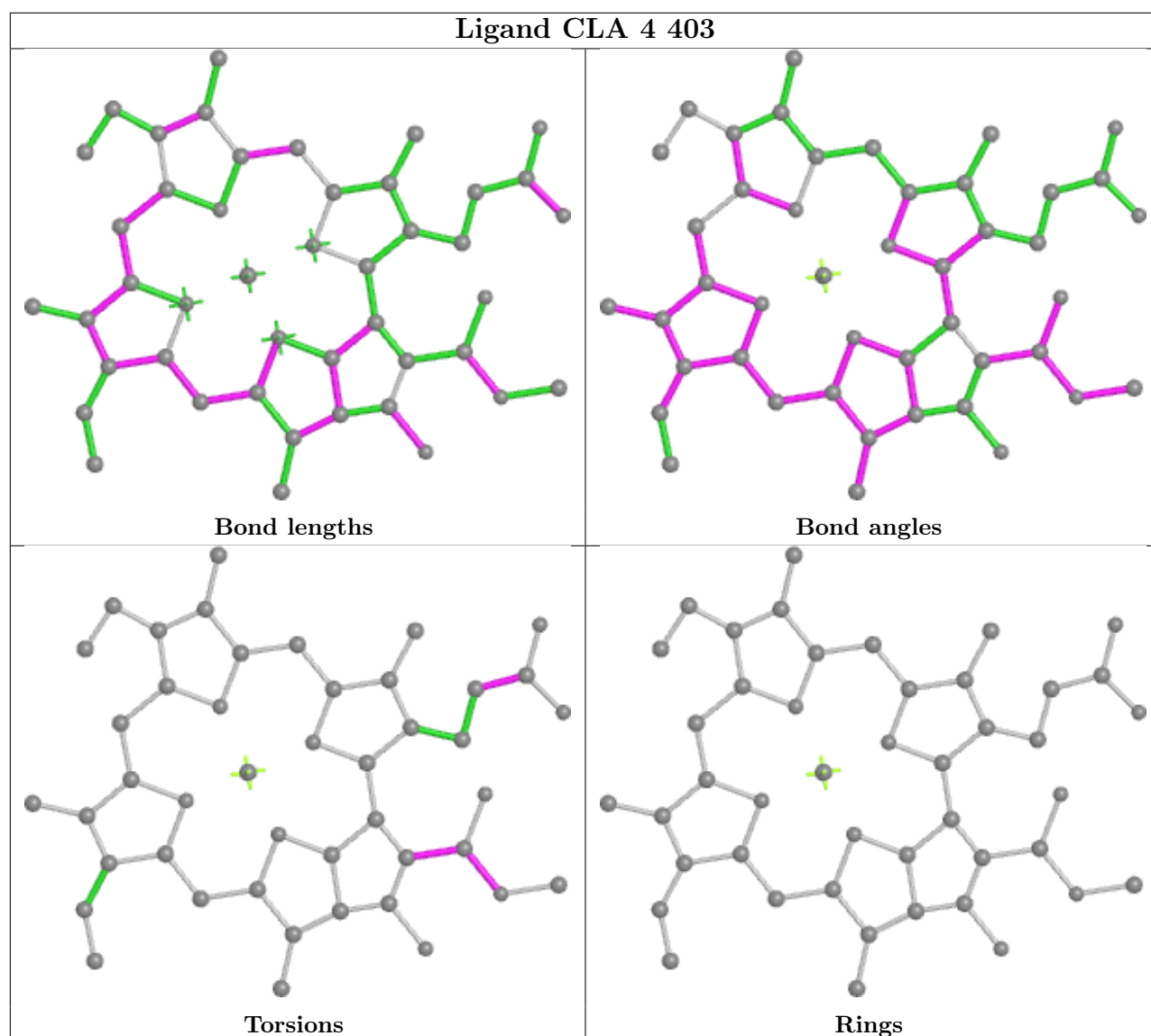


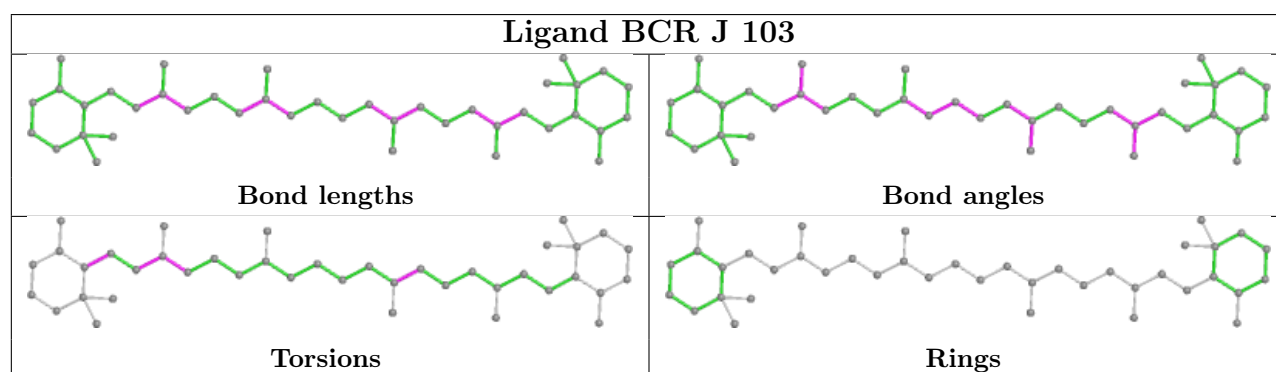
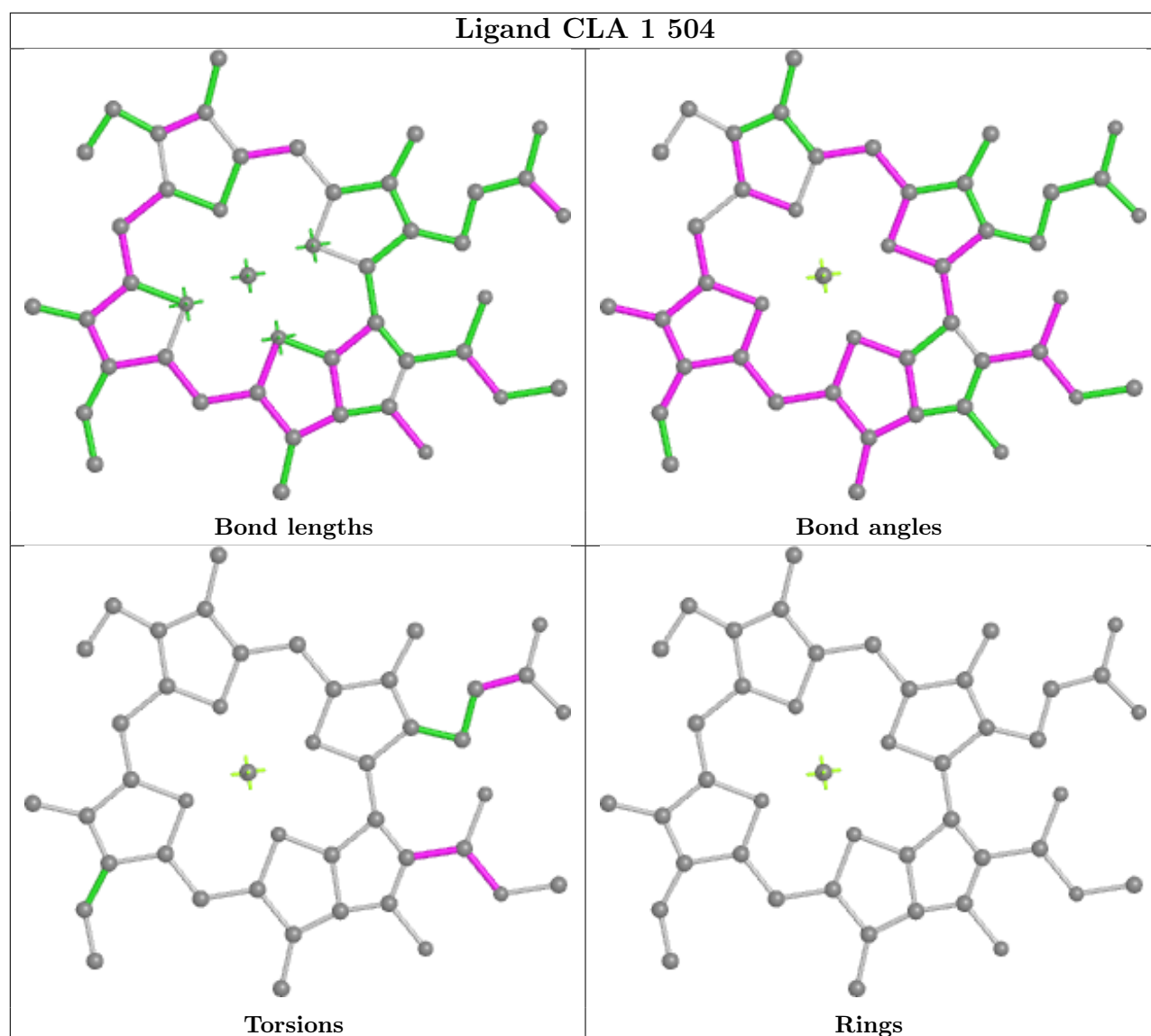


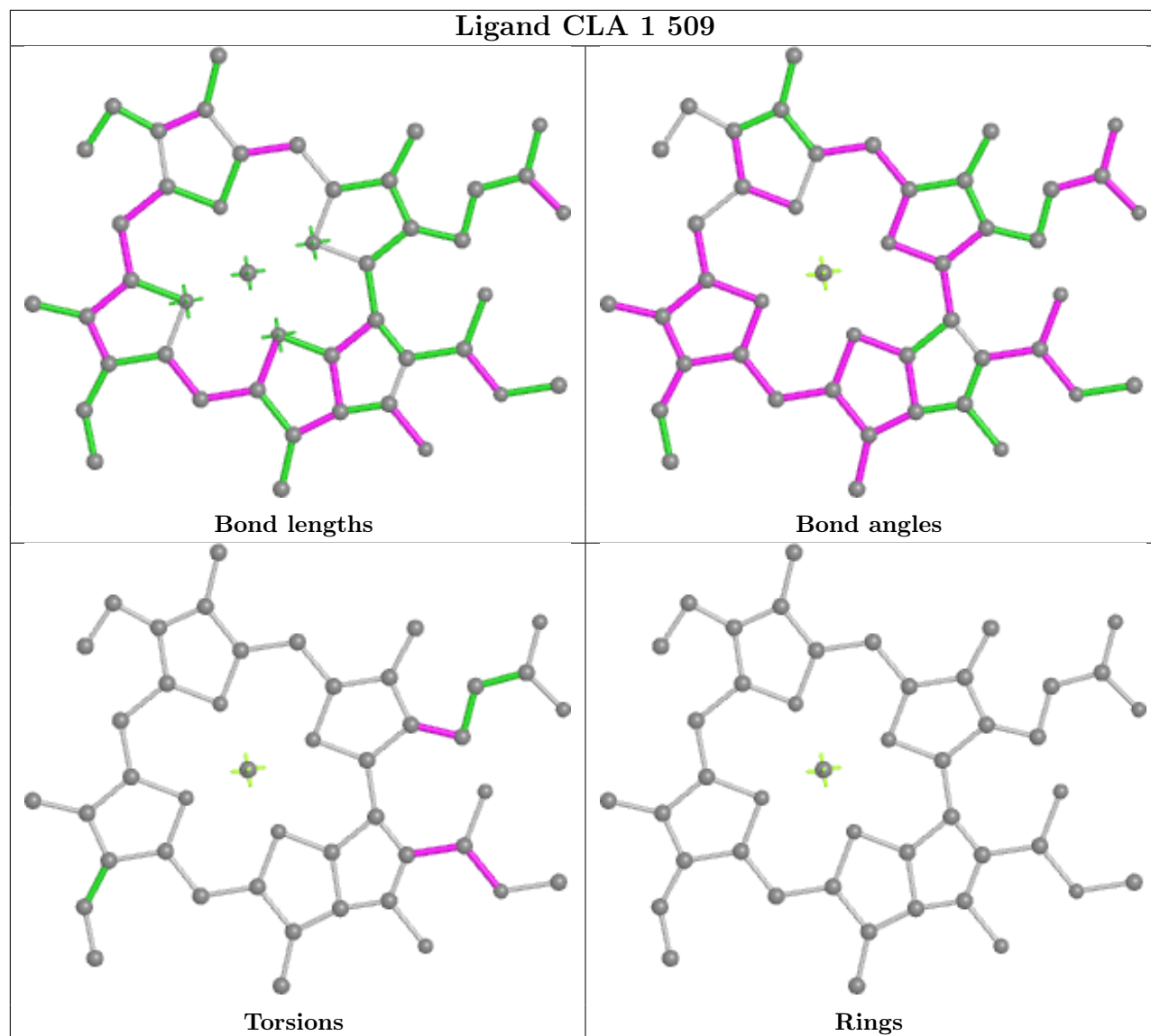
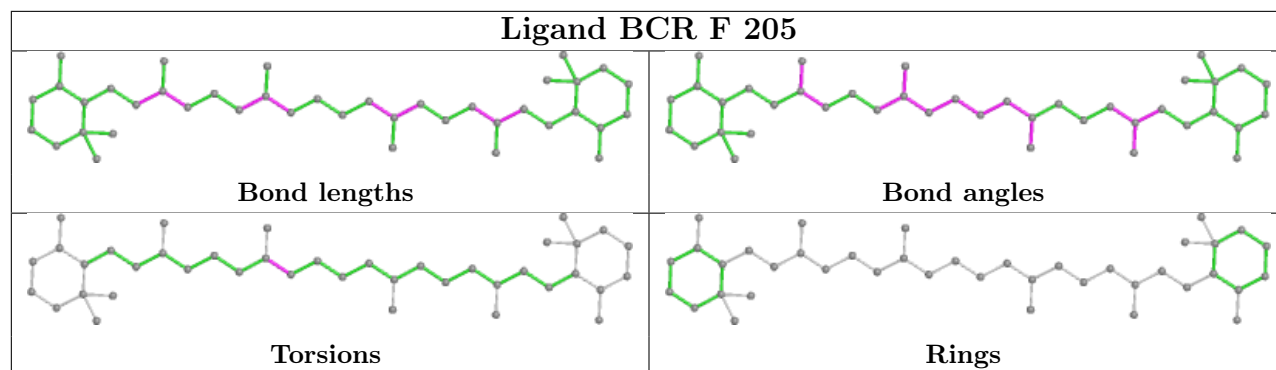


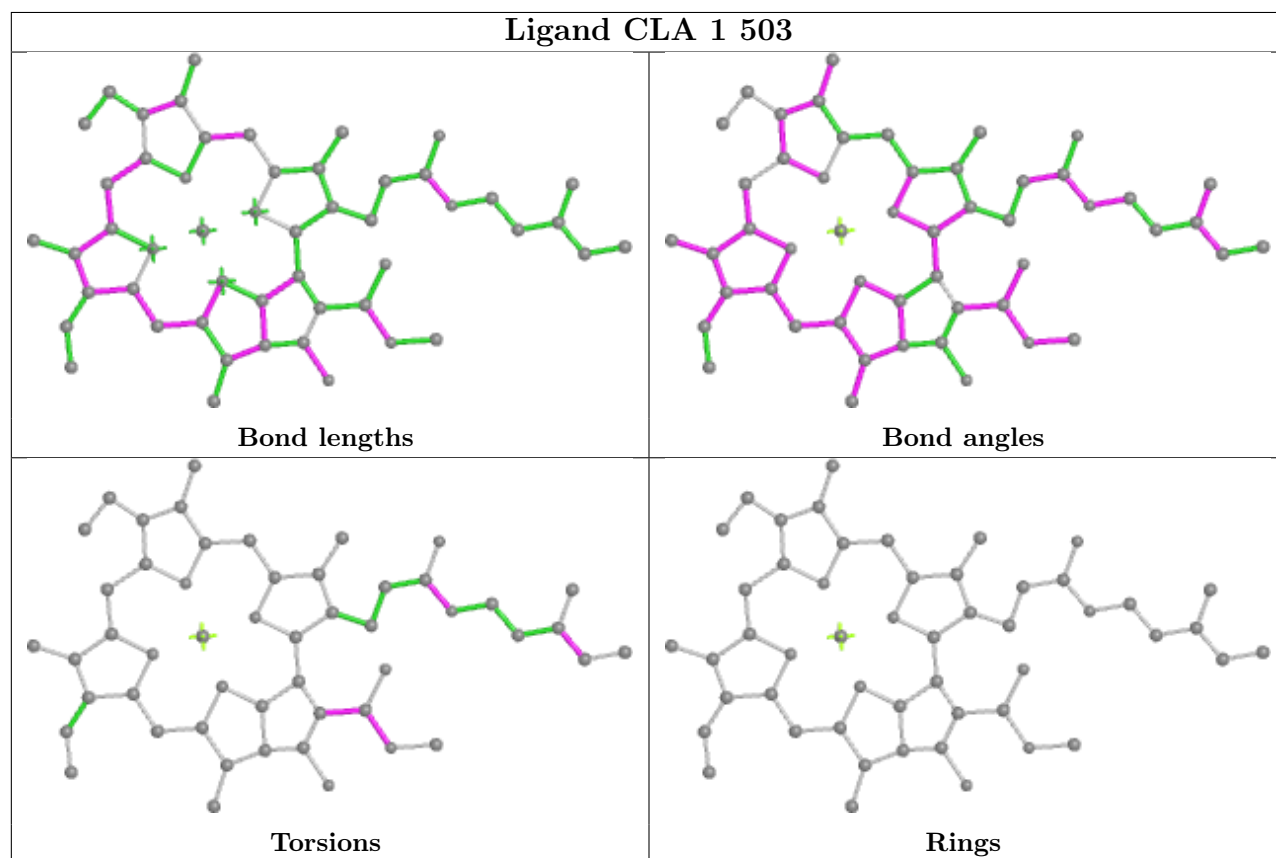
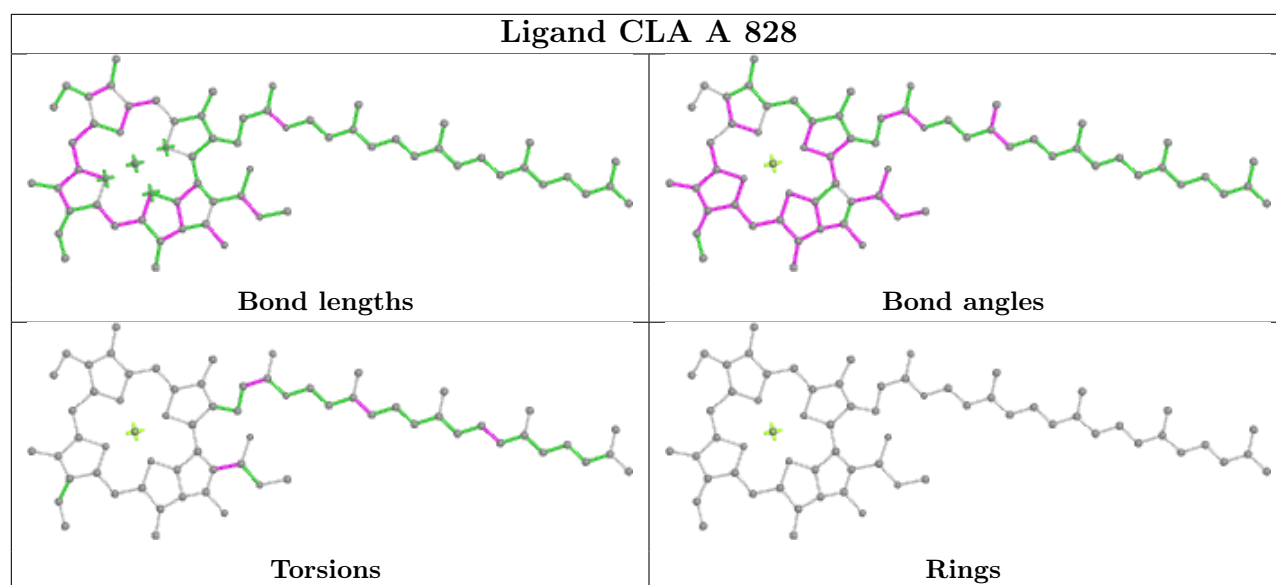


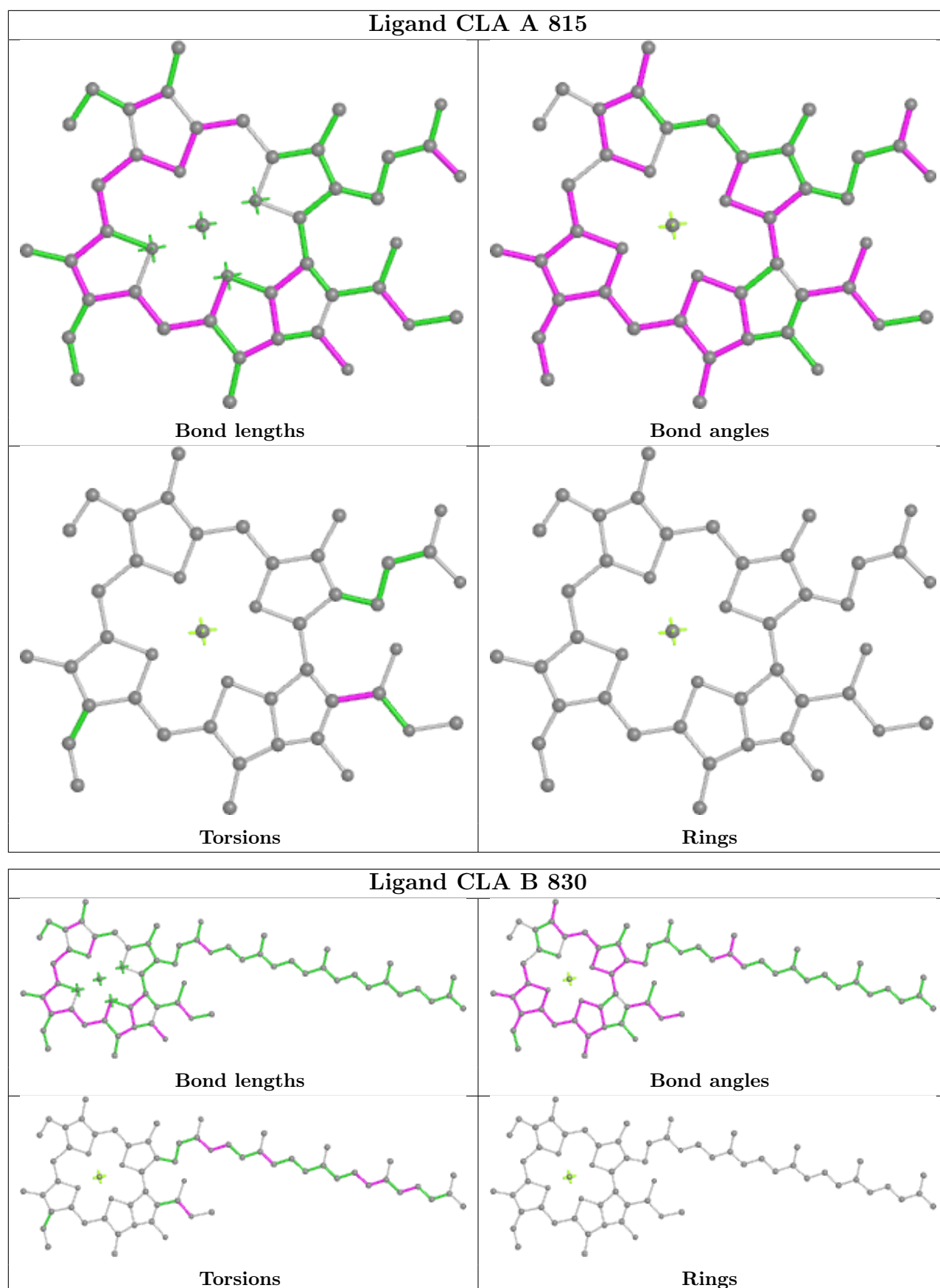


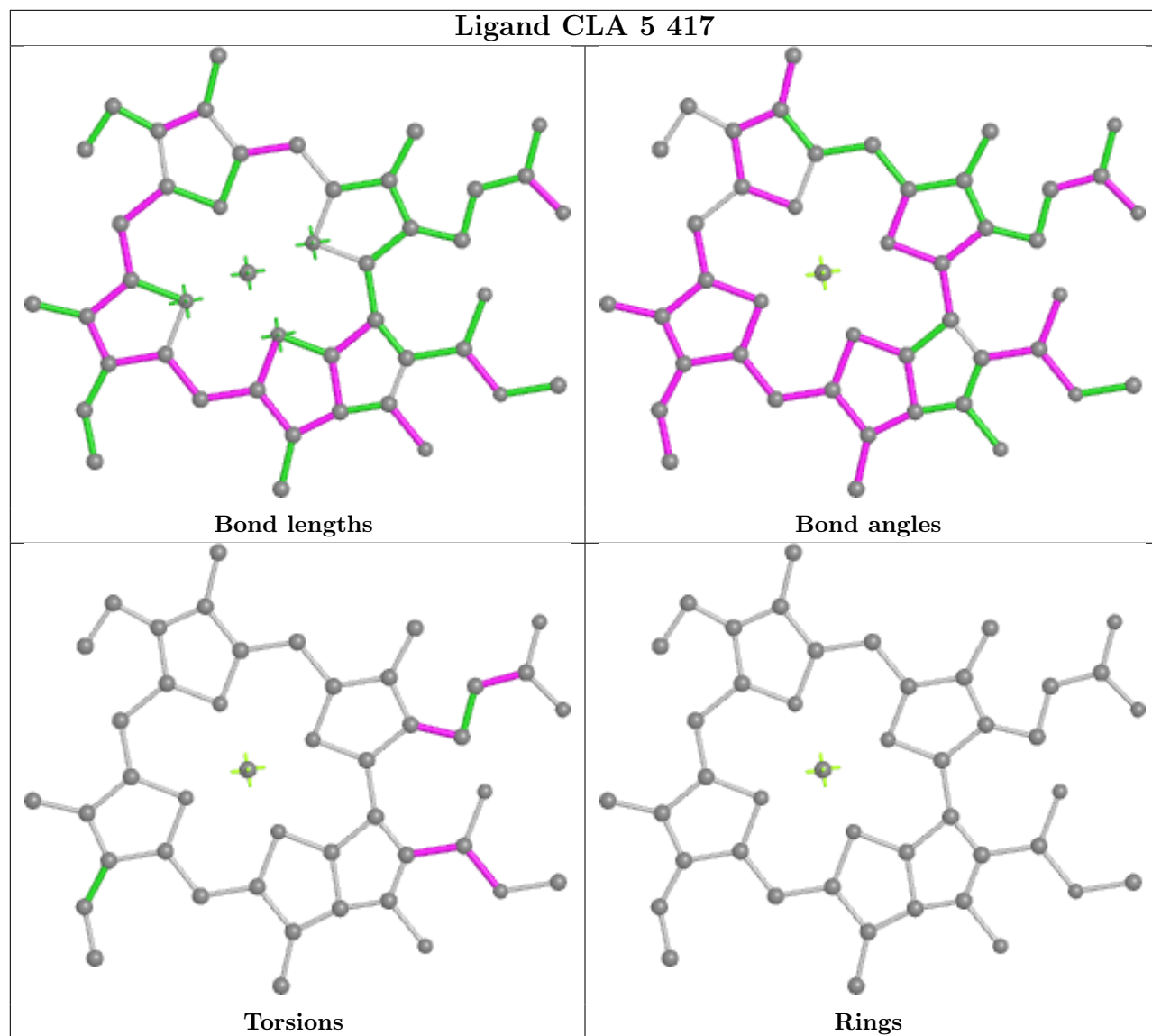
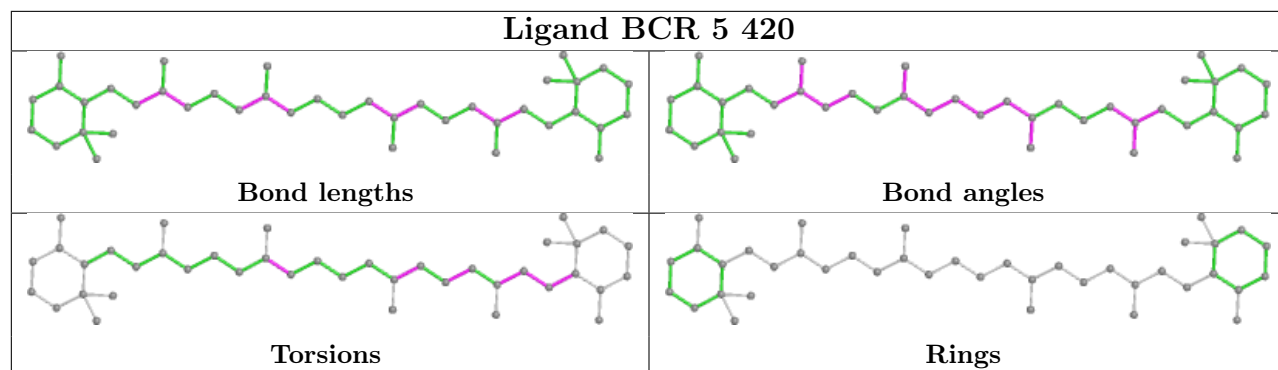


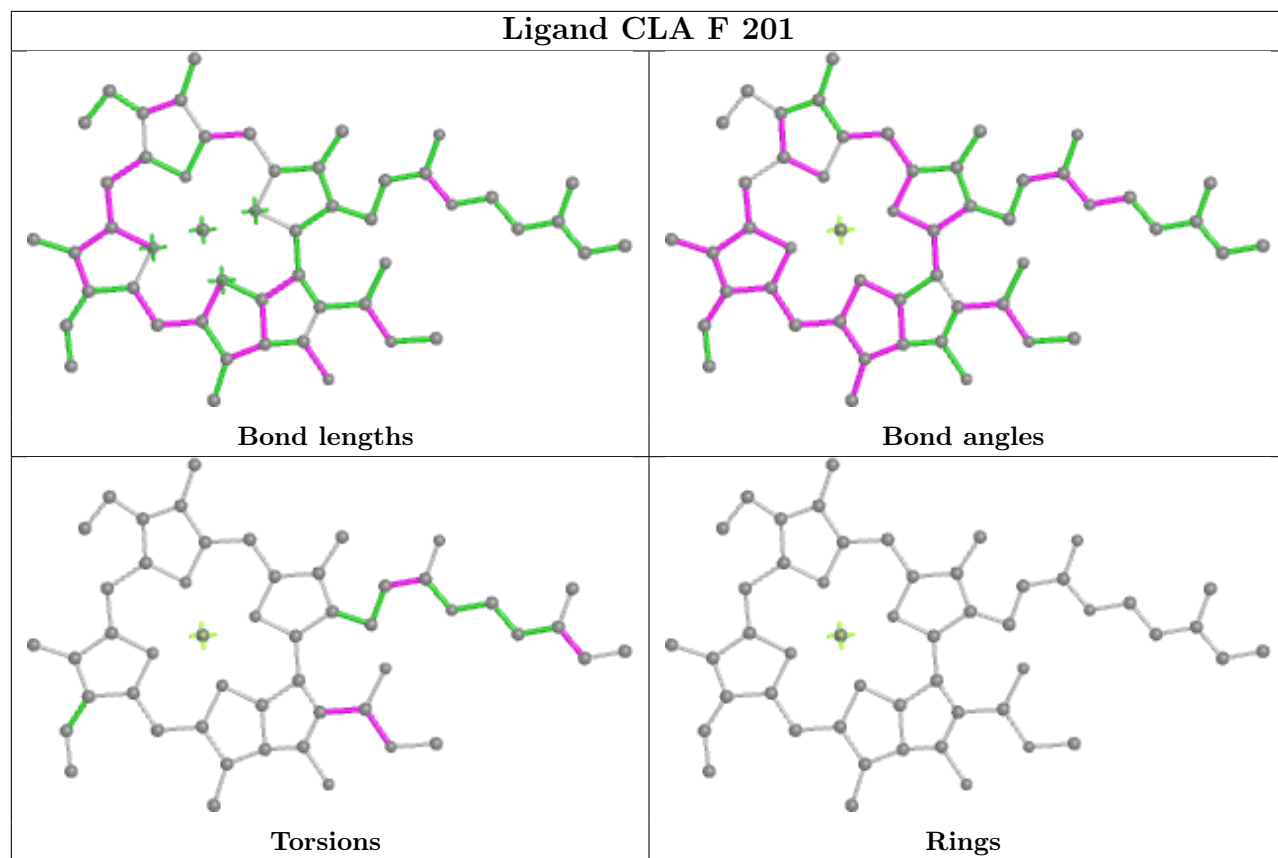


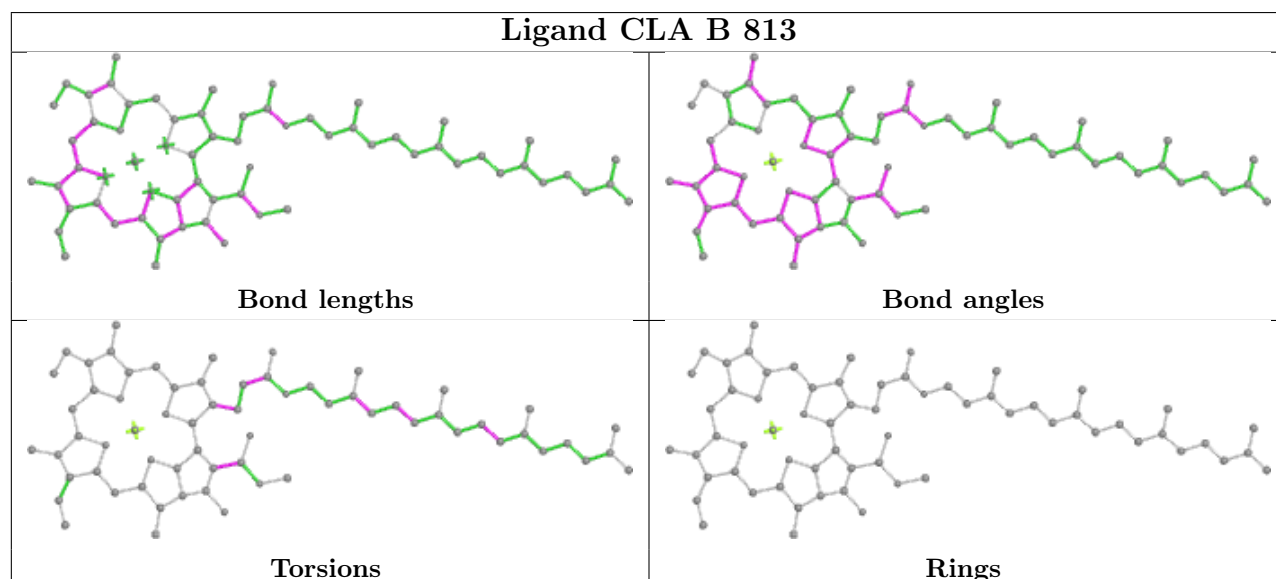
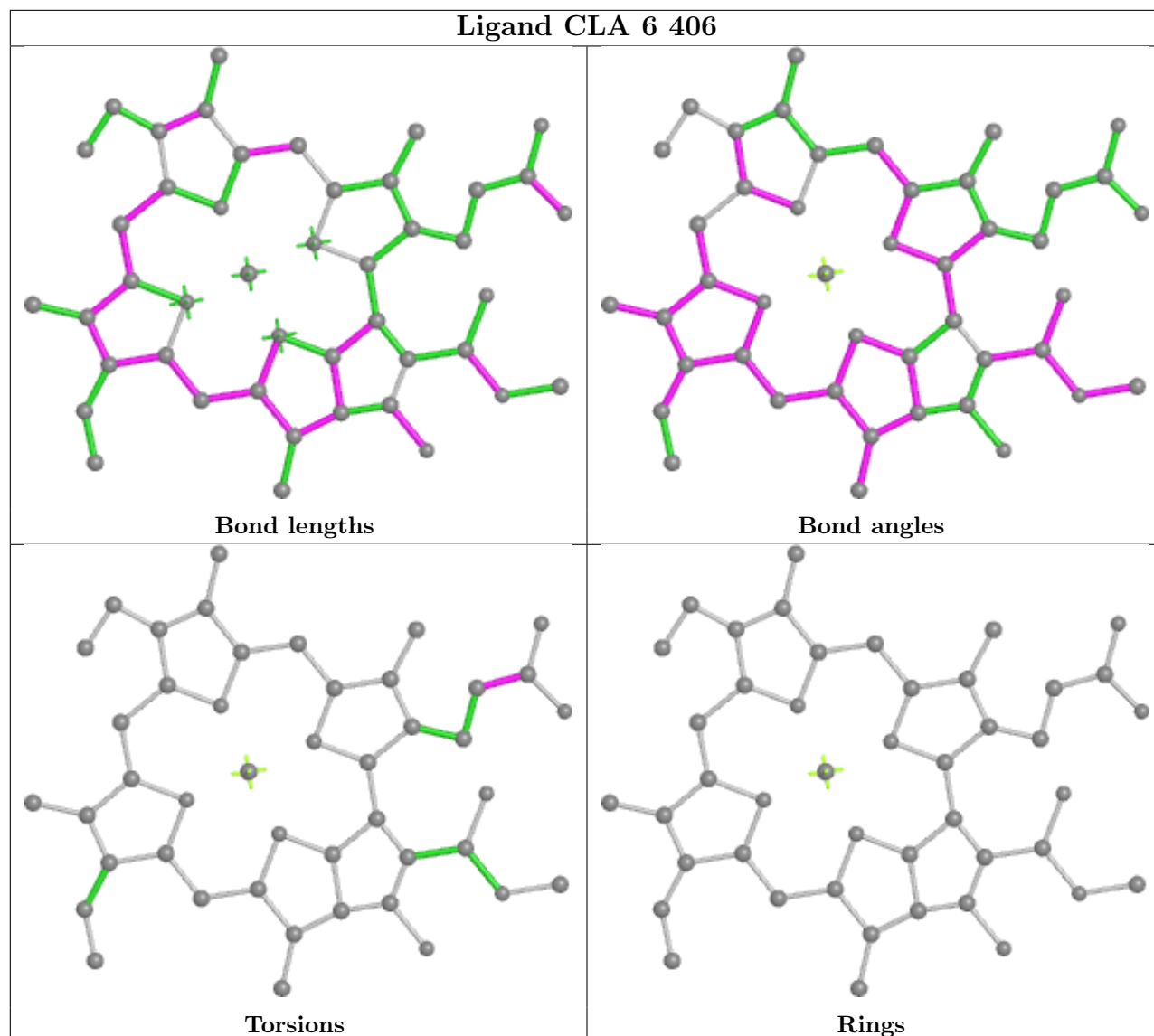


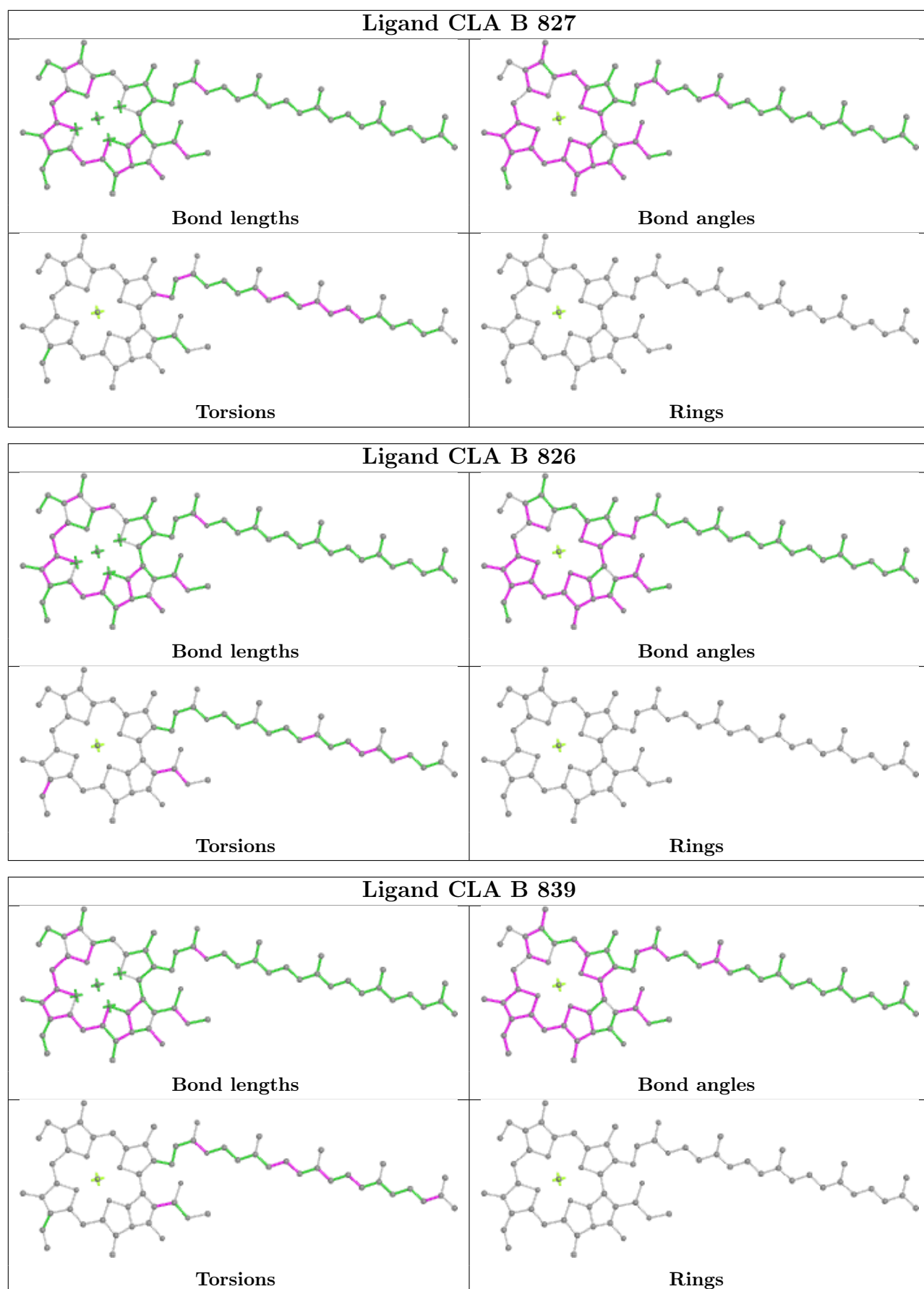


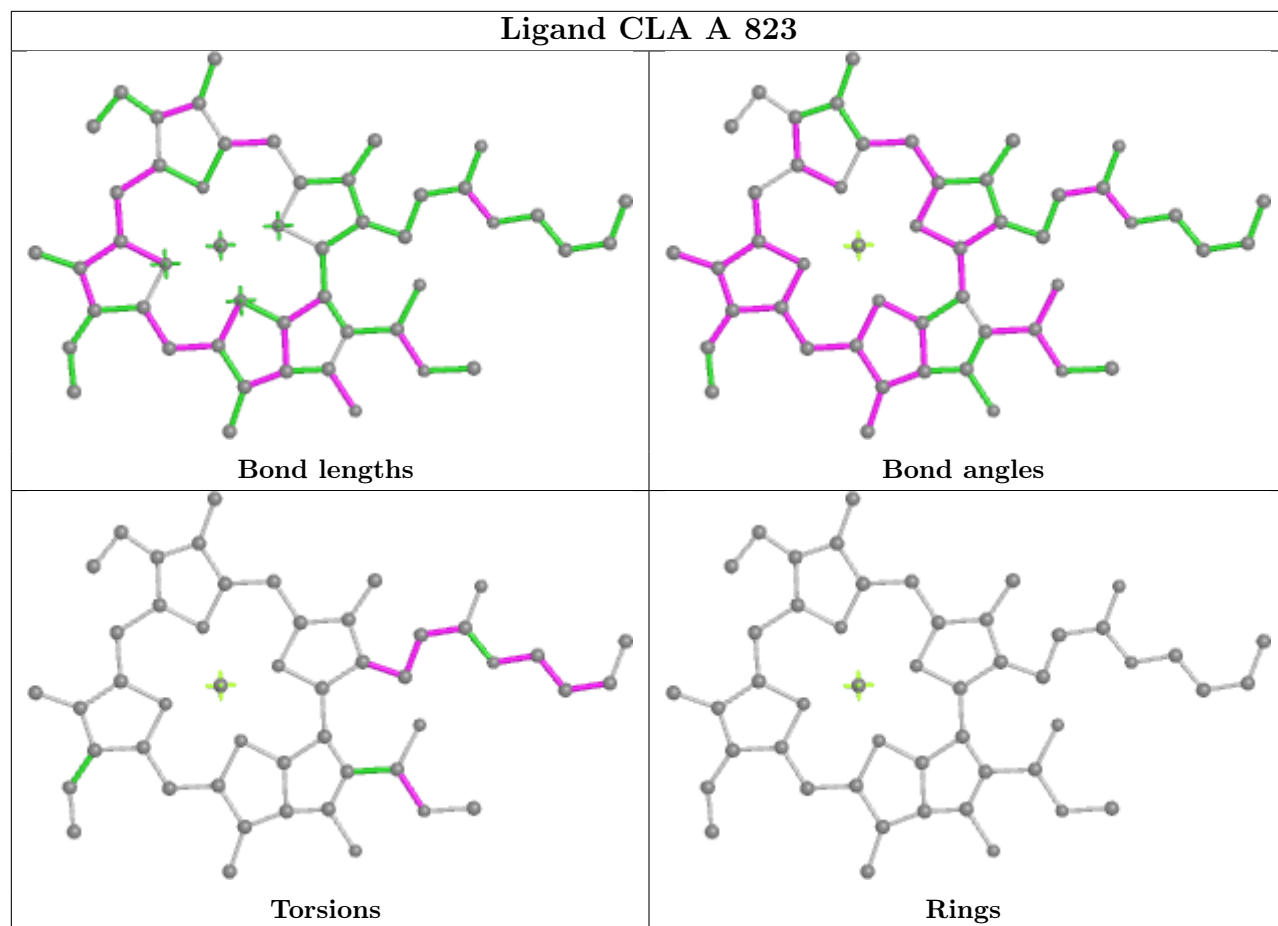


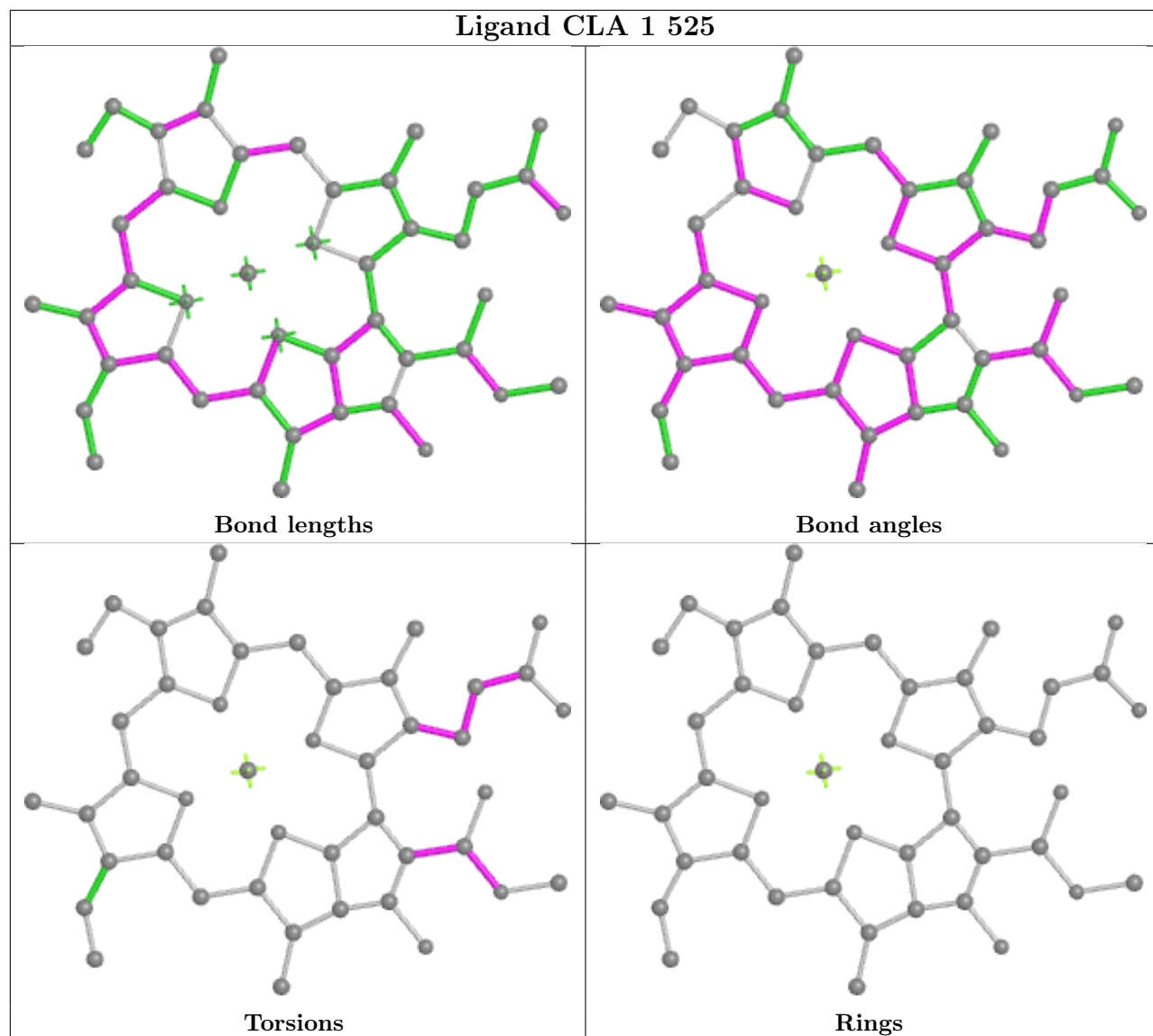


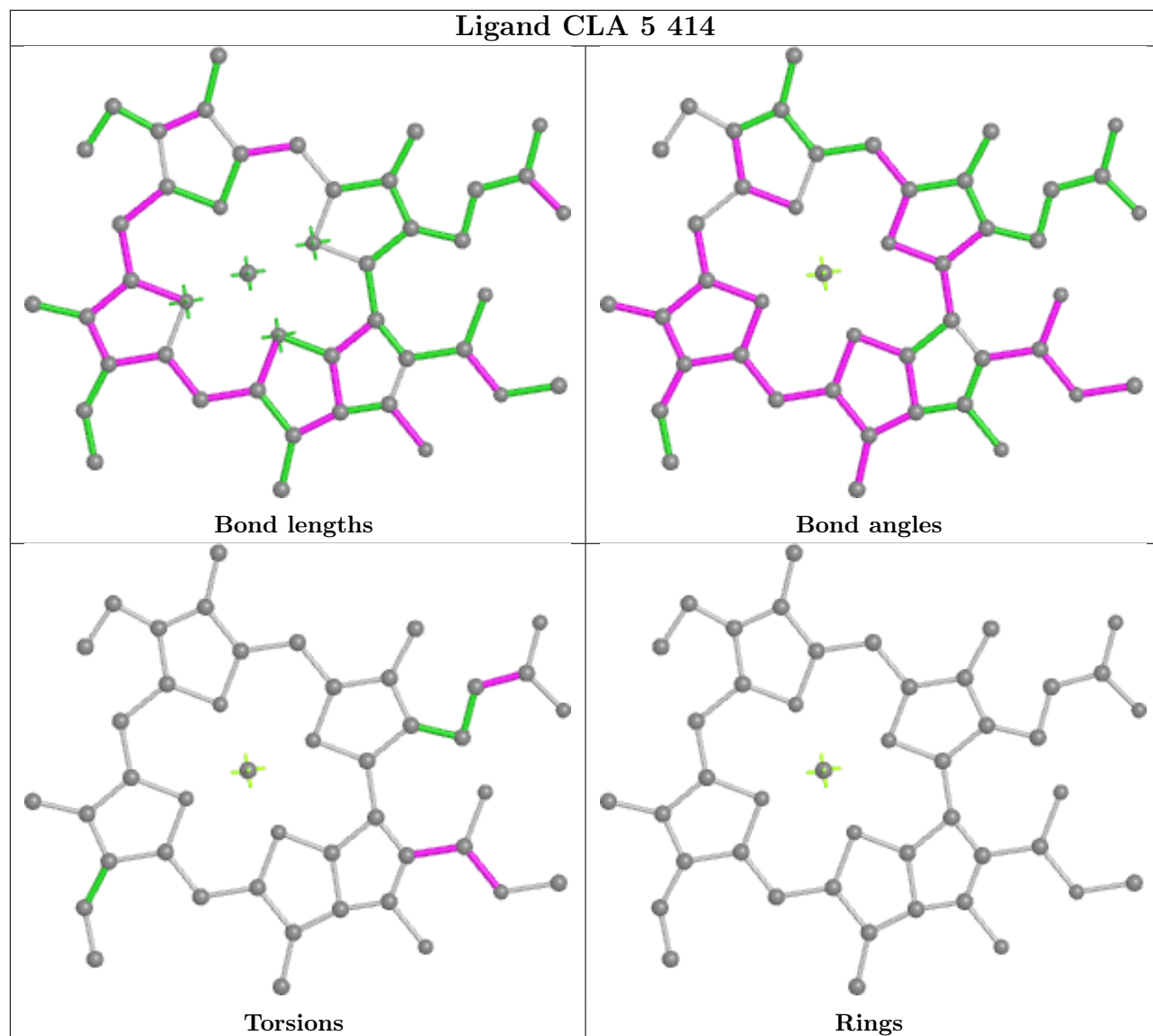


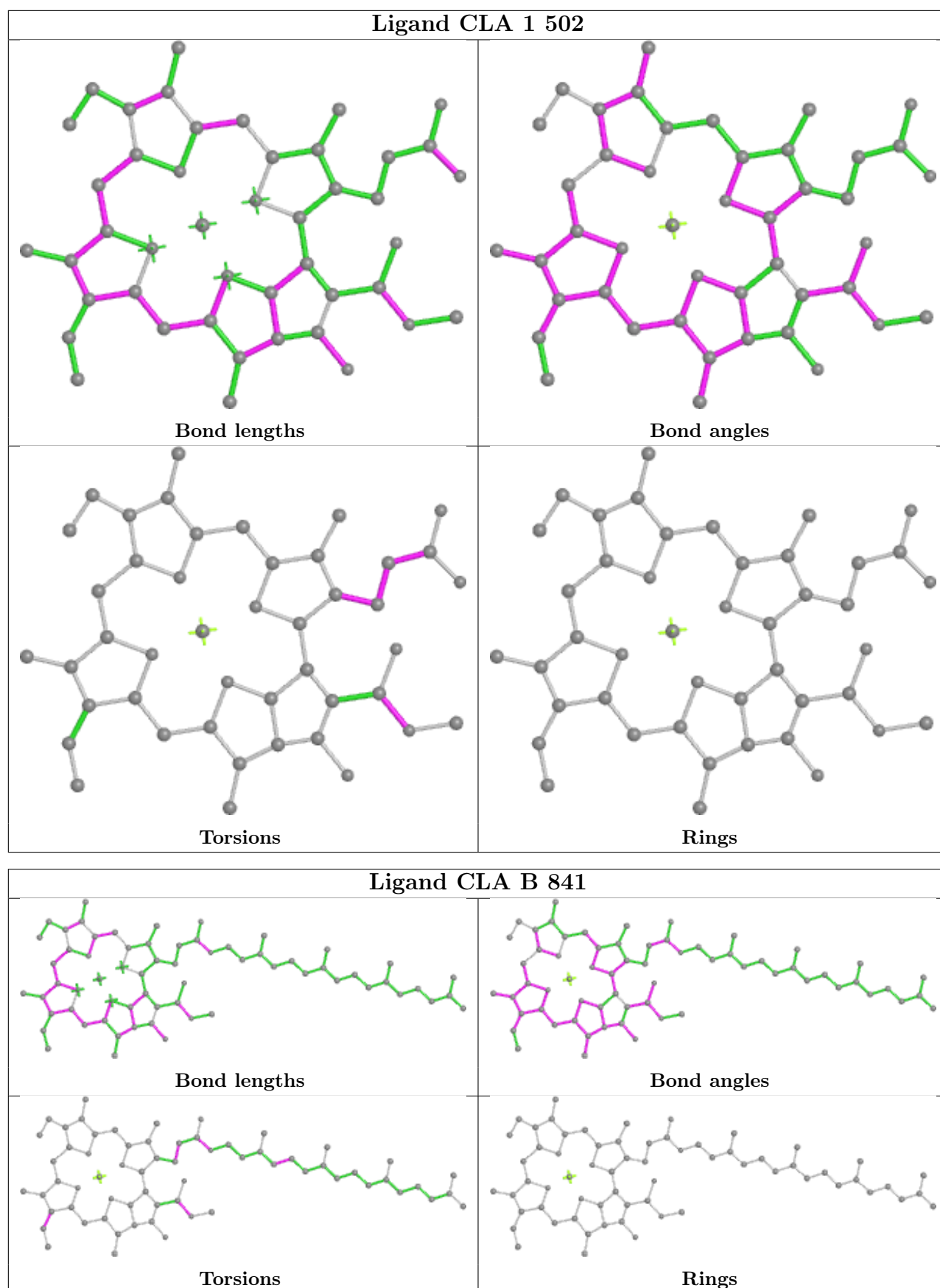




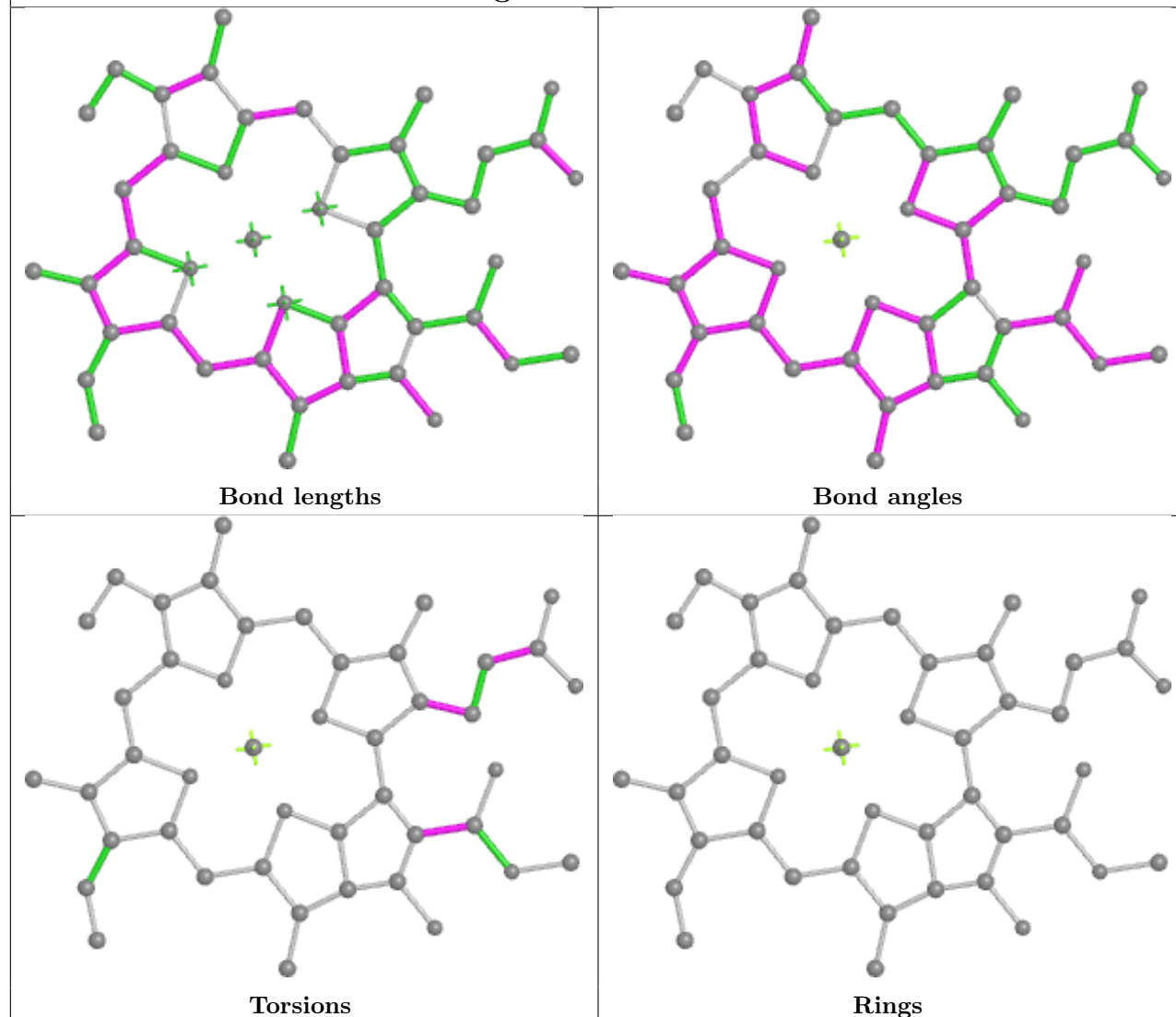




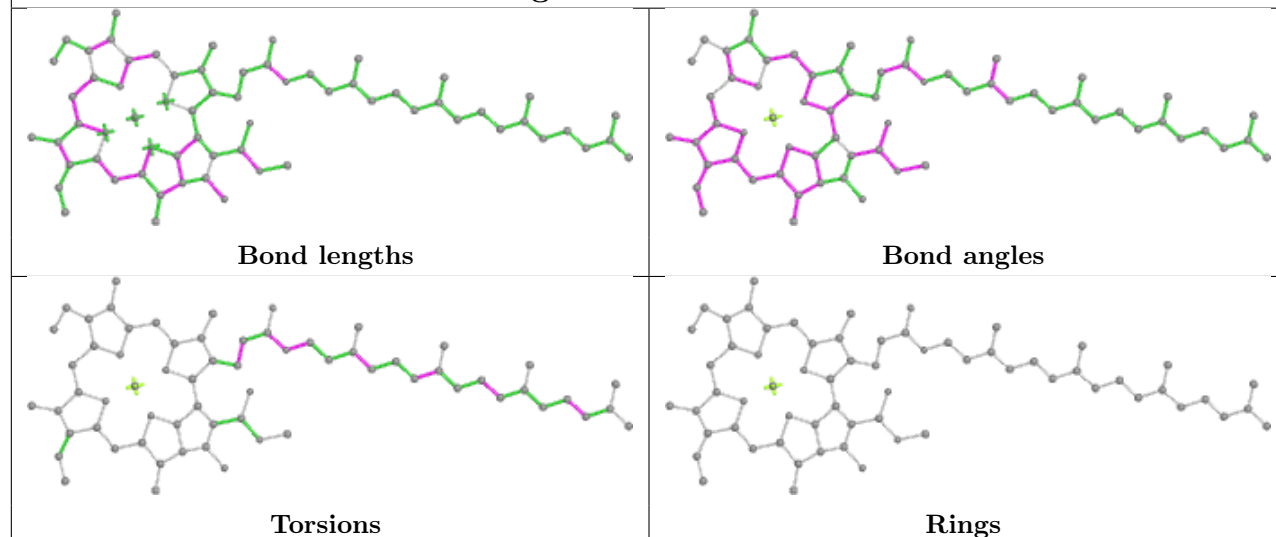


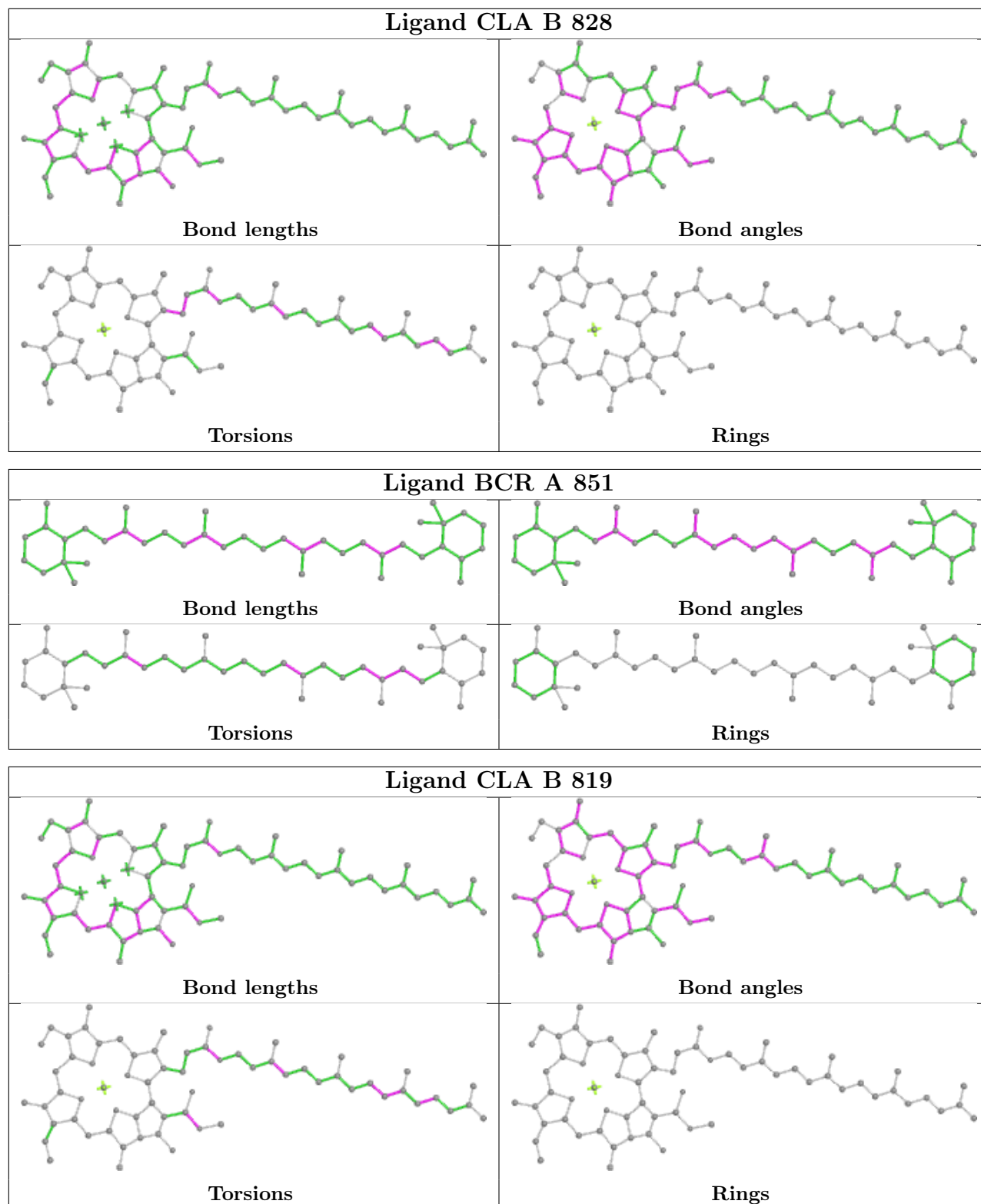


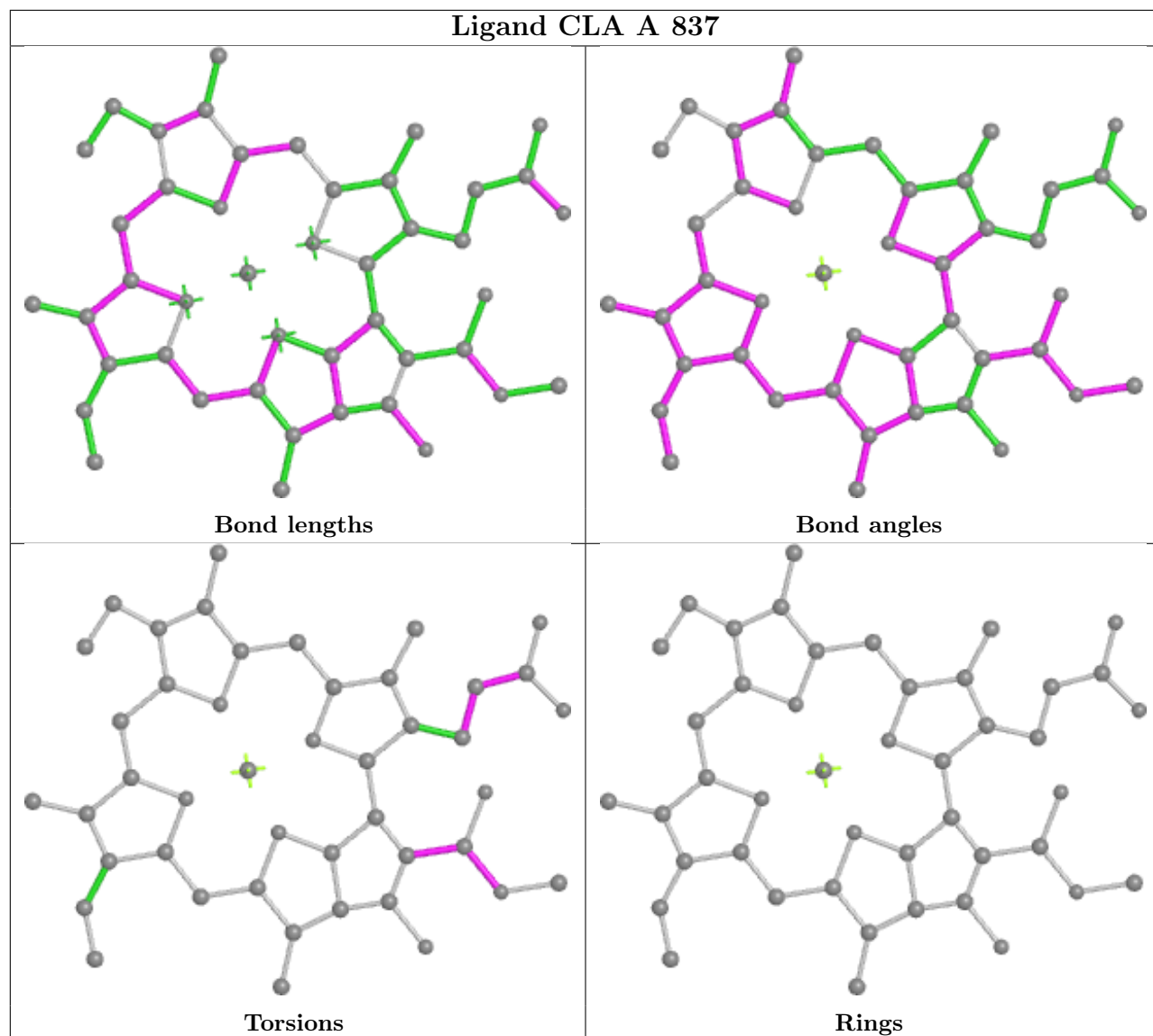
Ligand CLA 5 406

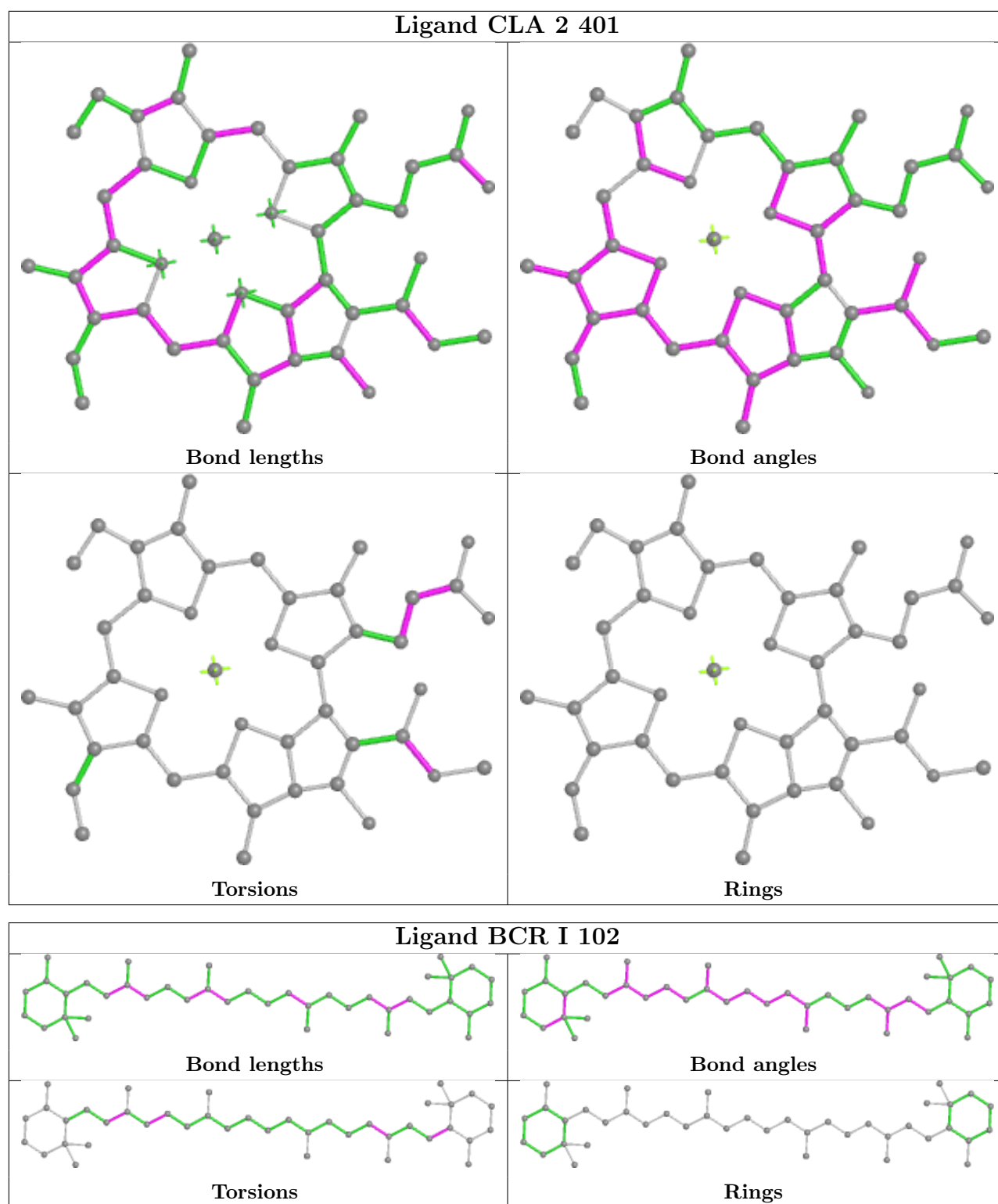


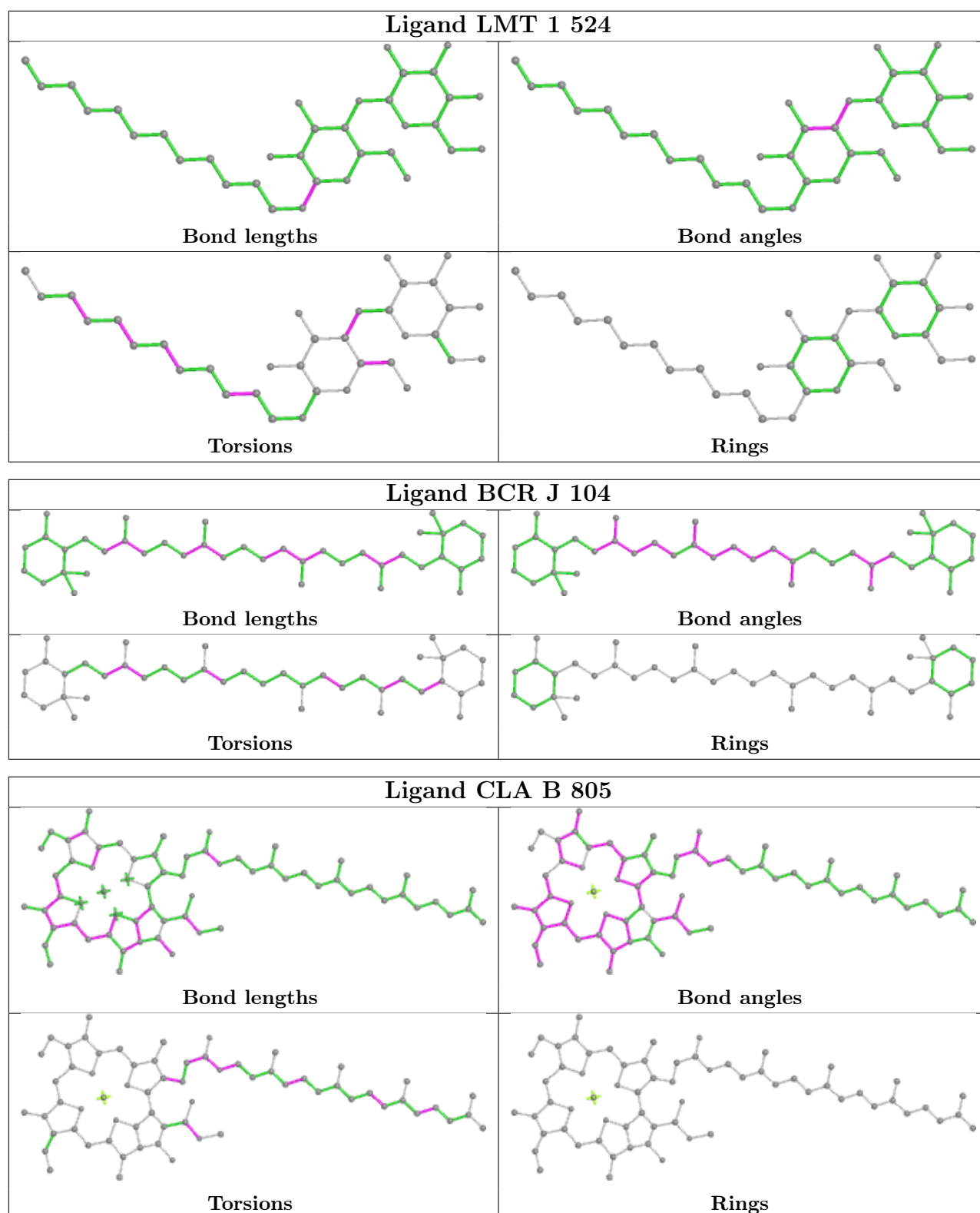
Ligand CLA A 843

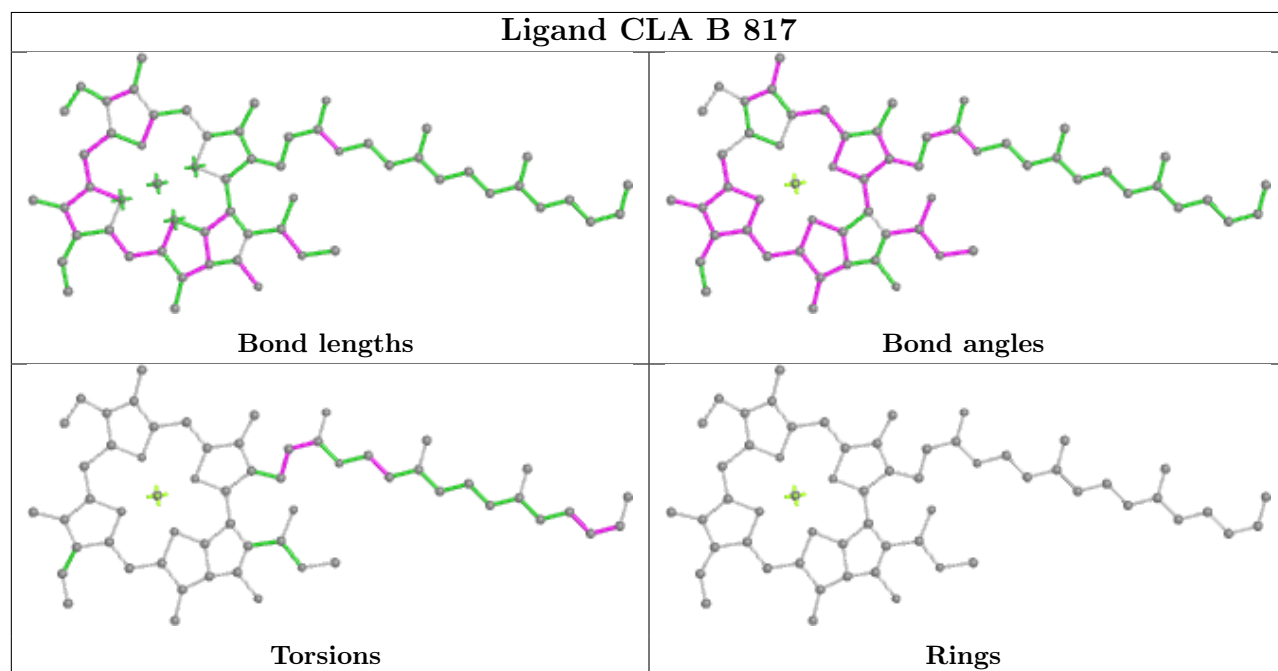
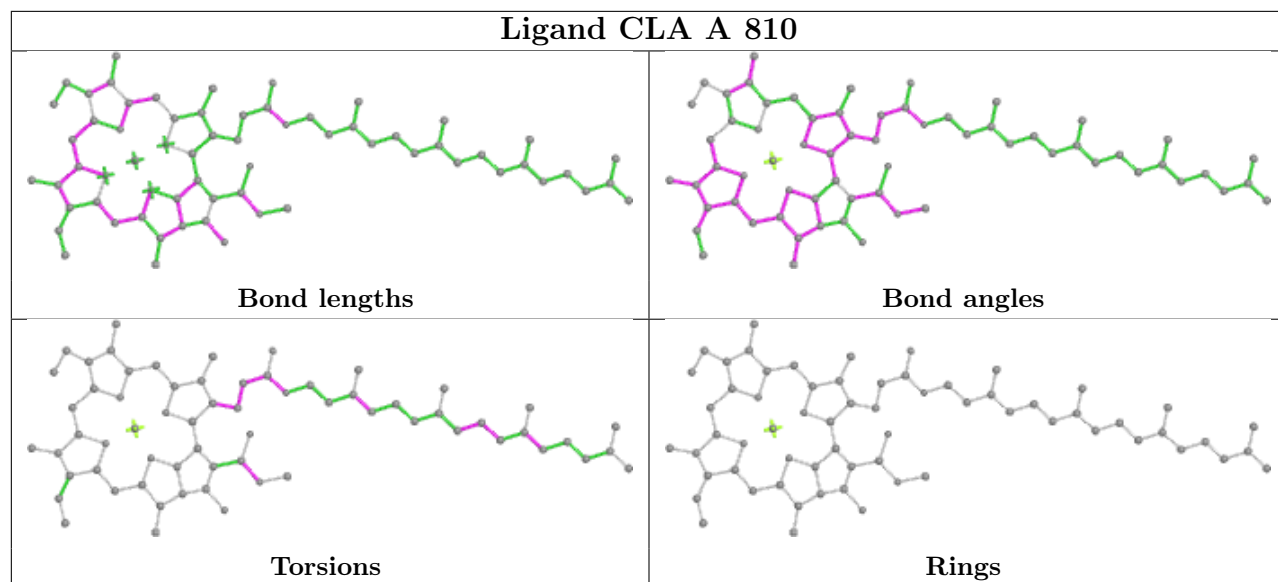


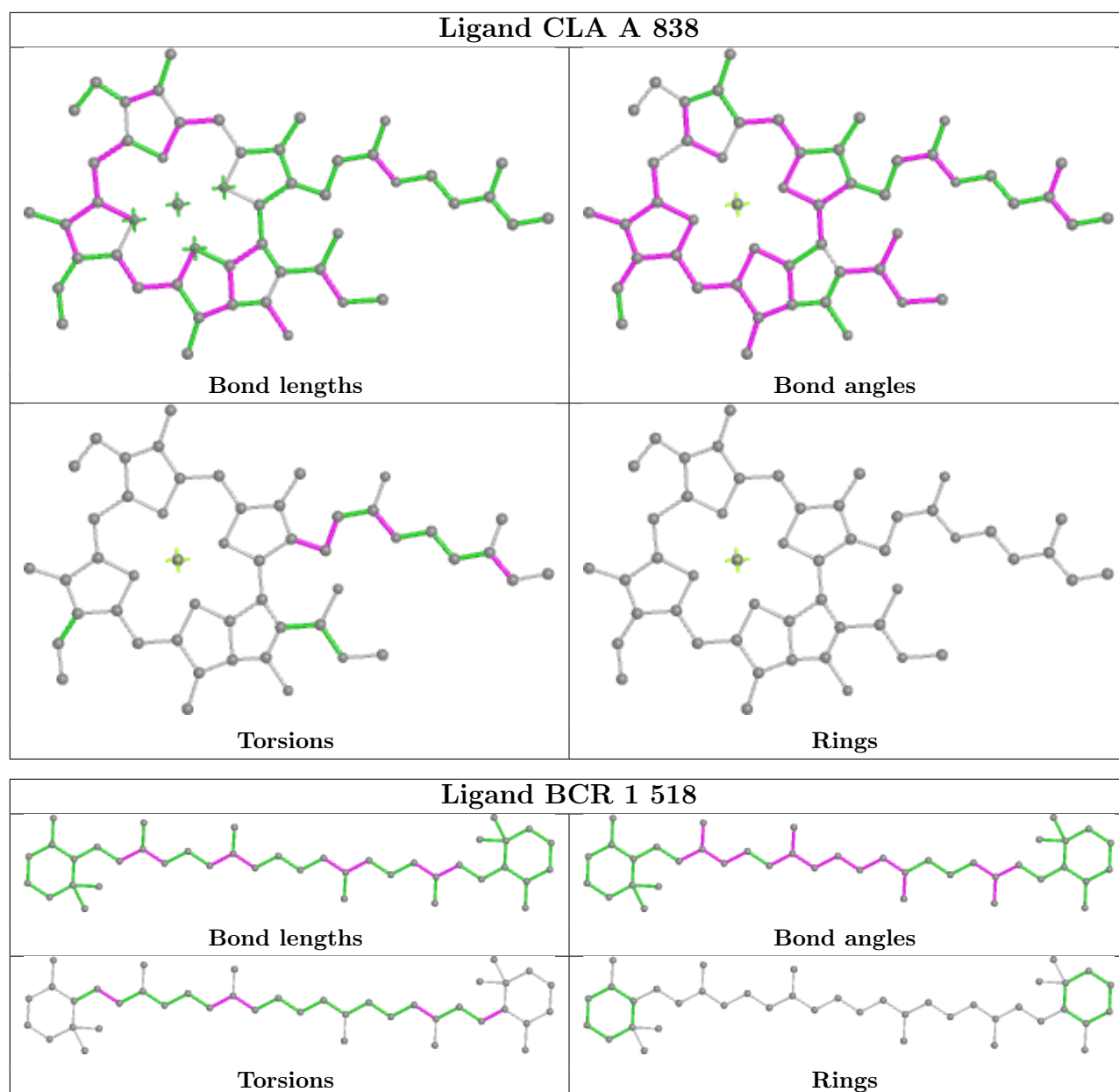


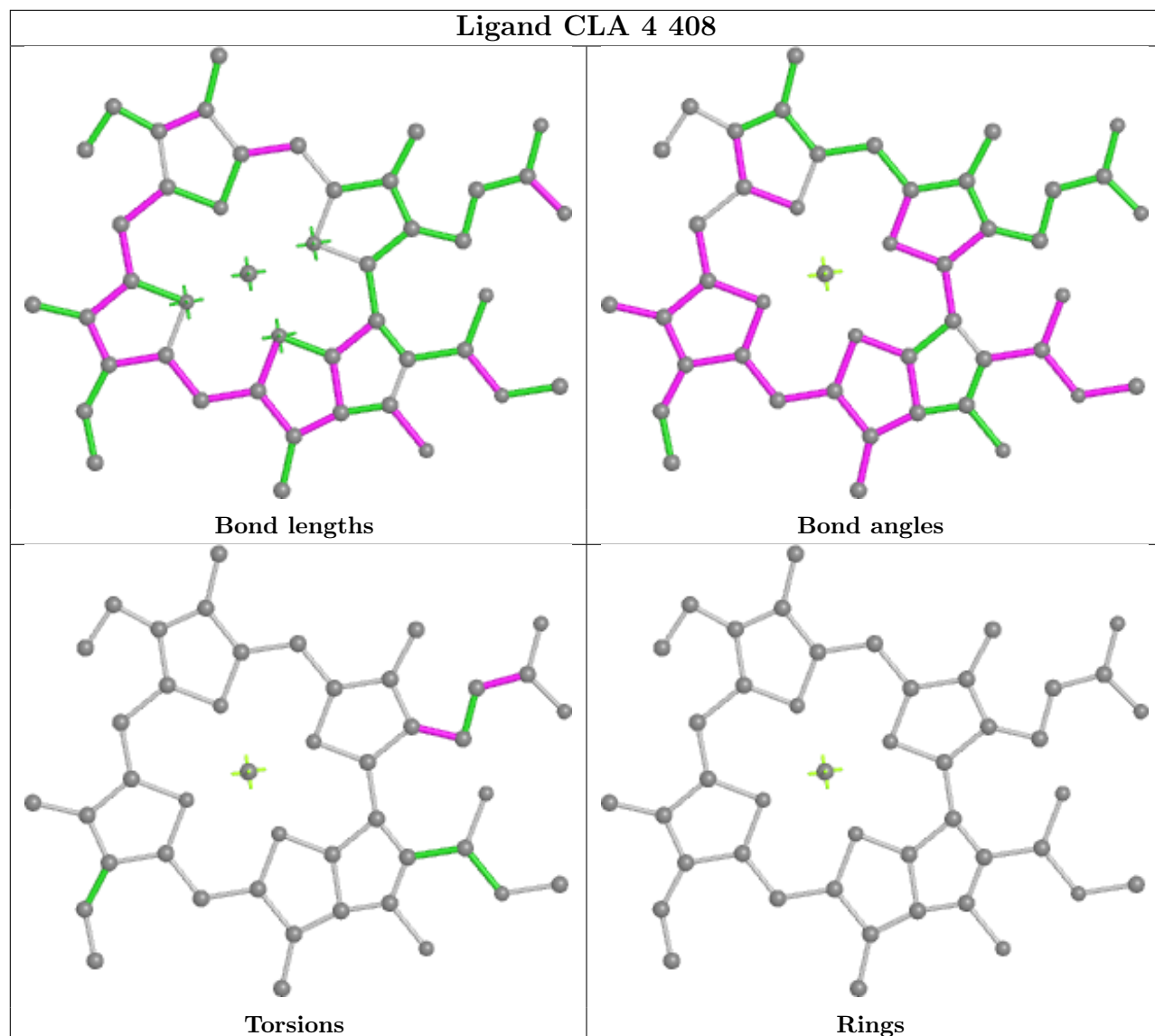


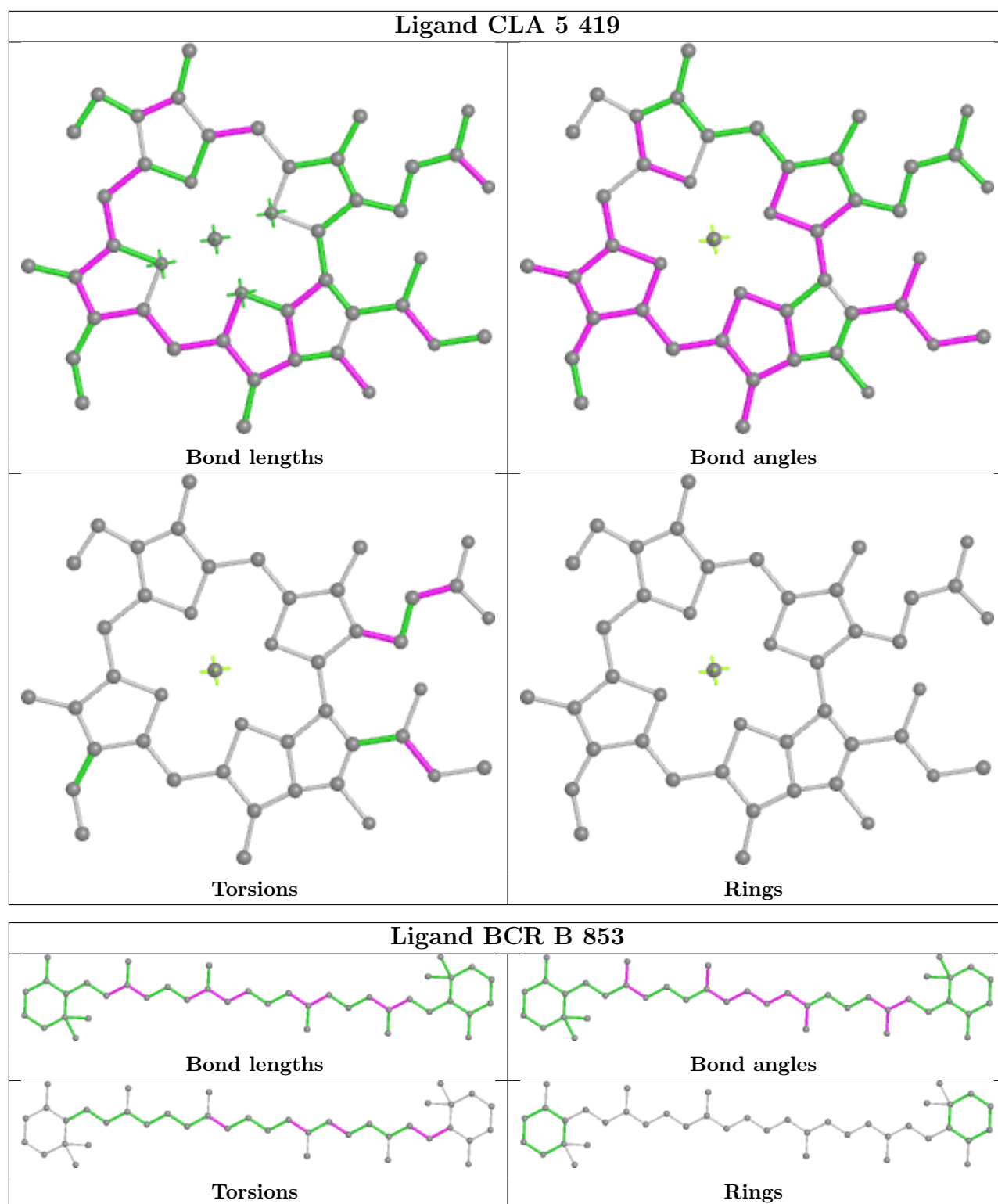


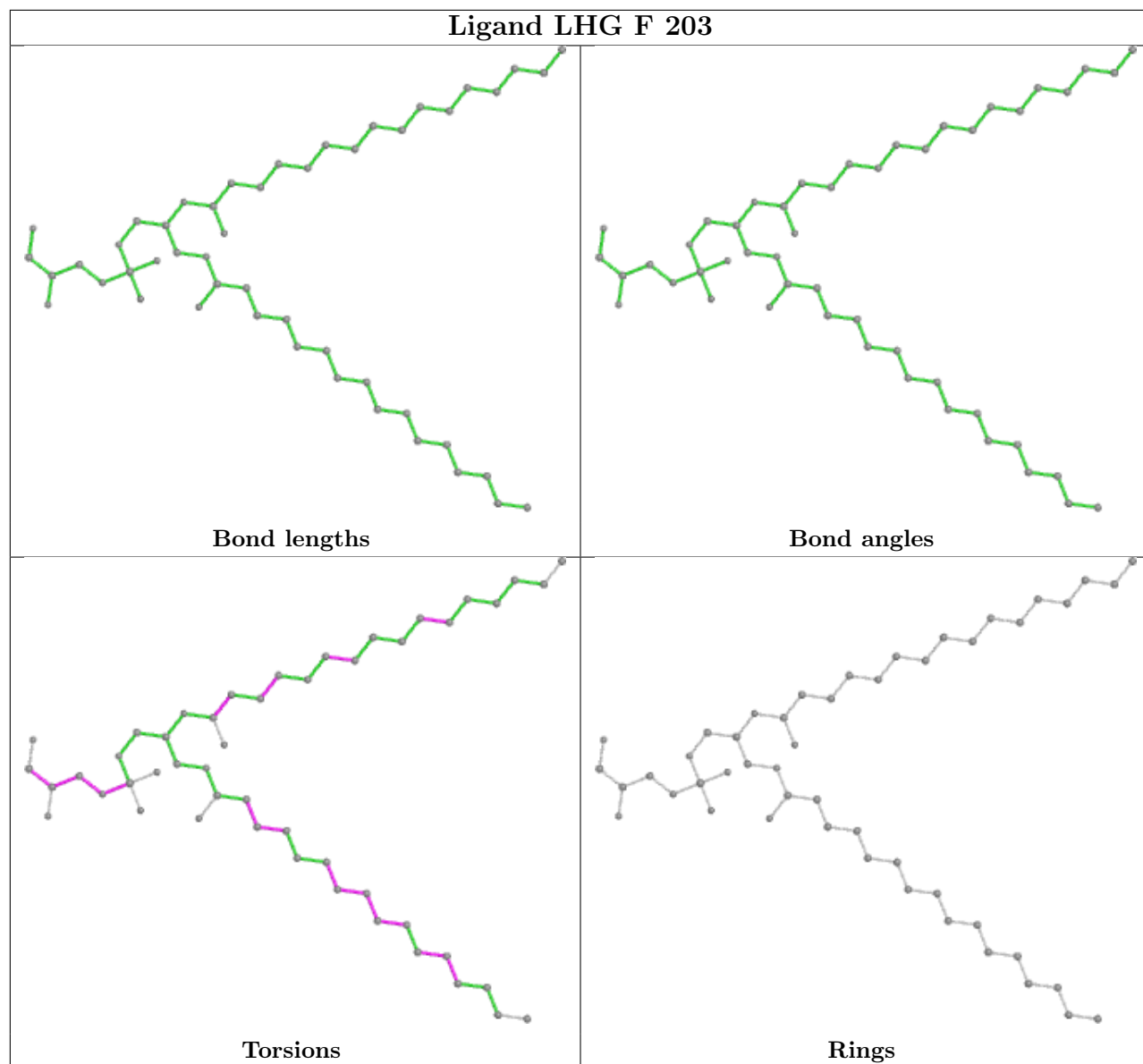


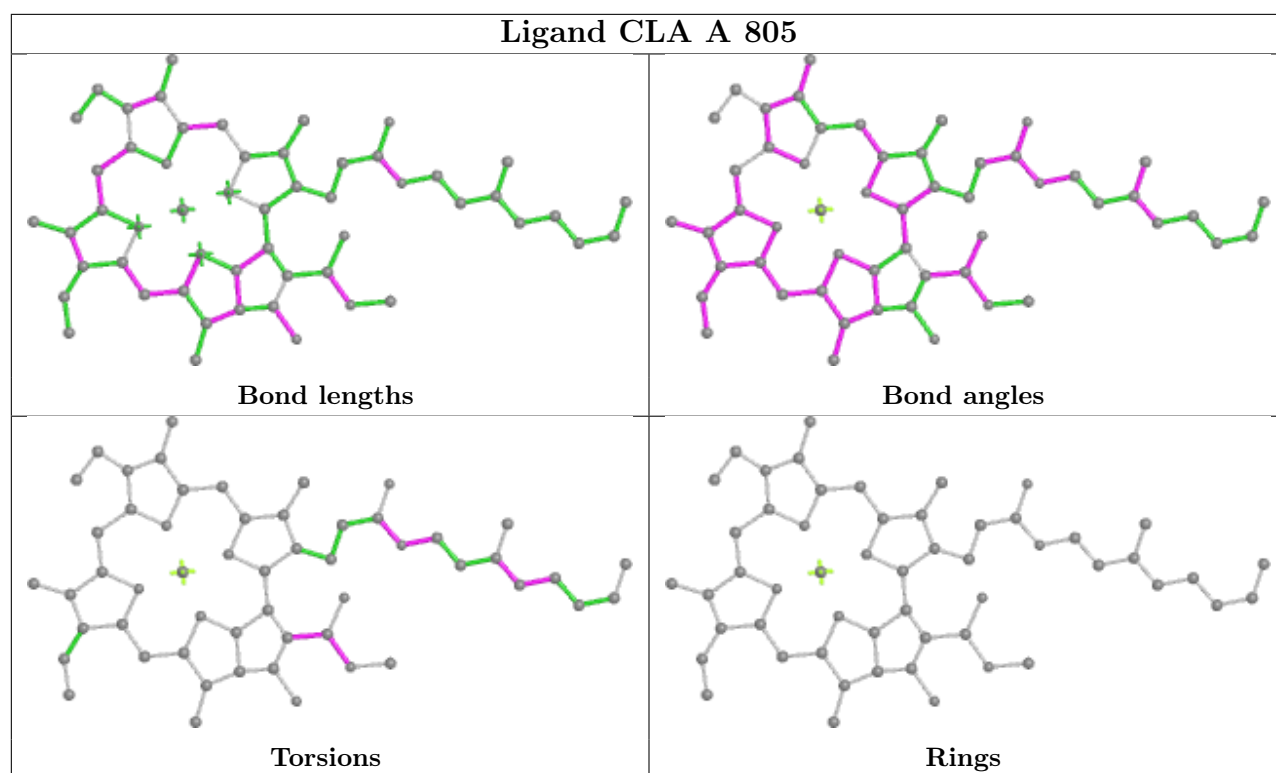












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

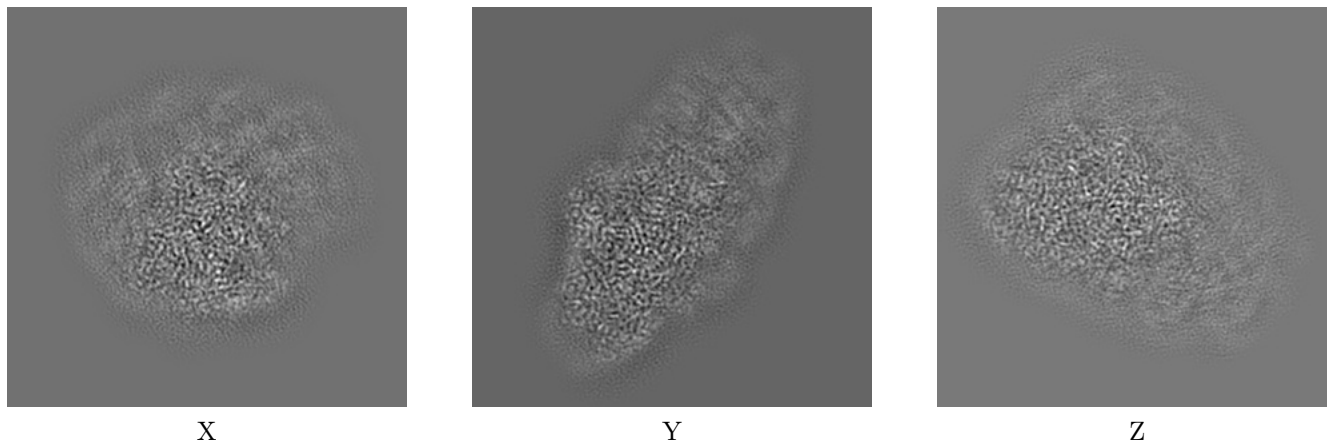
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-33593. These allow visual inspection of the internal detail of the map and identification of artifacts.

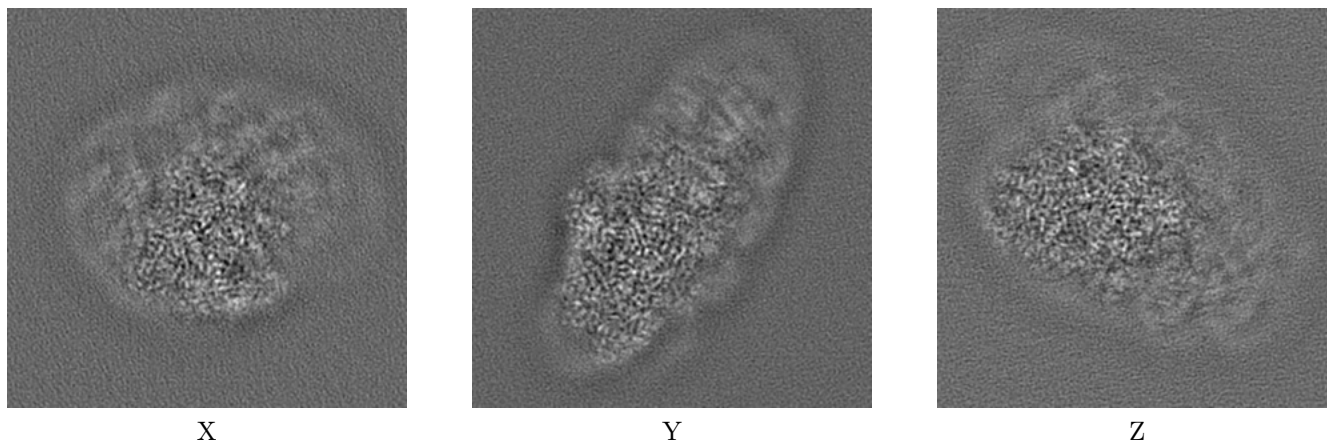
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

6.1.1 Primary map



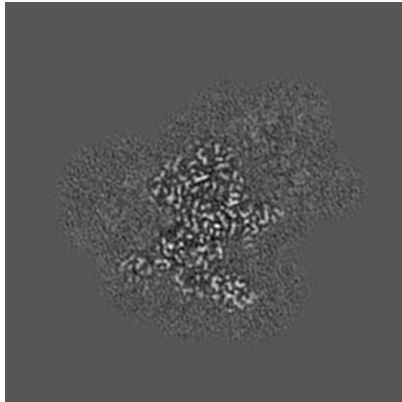
6.1.2 Raw map



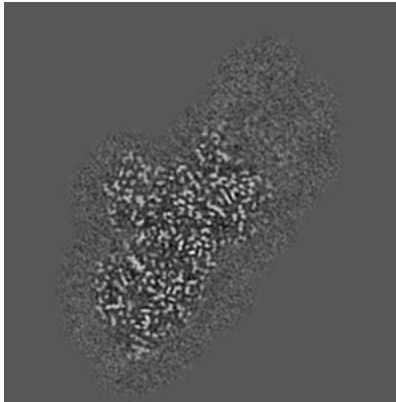
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

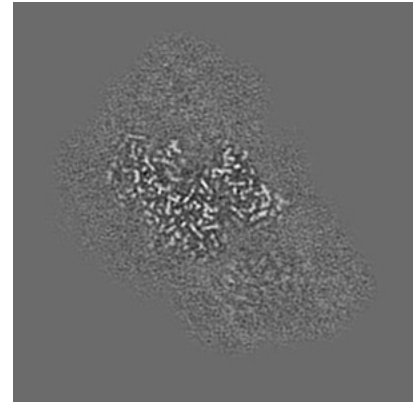
6.2.1 Primary map



X Index: 116

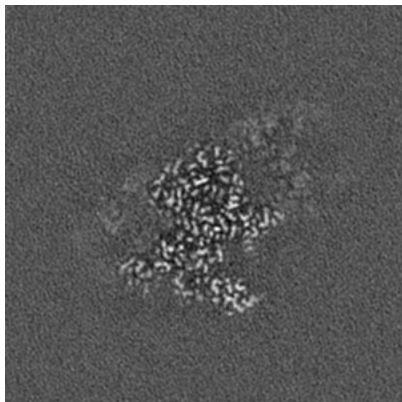


Y Index: 116

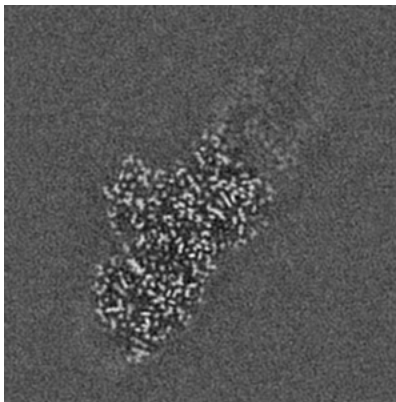


Z Index: 116

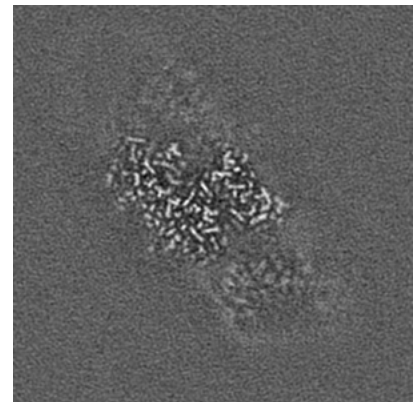
6.2.2 Raw map



X Index: 116



Y Index: 116

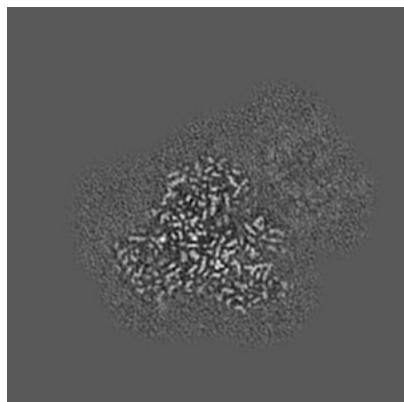


Z Index: 116

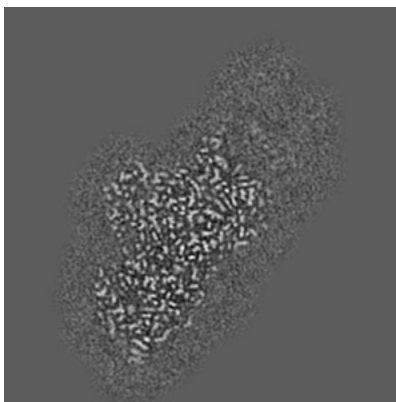
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

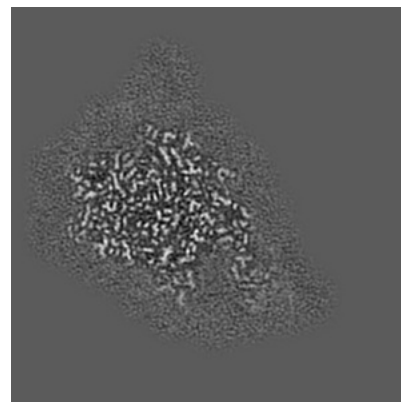
6.3.1 Primary map



X Index: 102

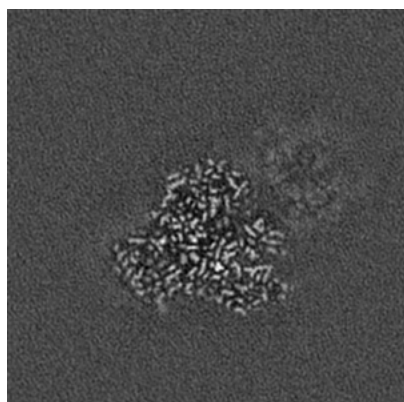


Y Index: 117

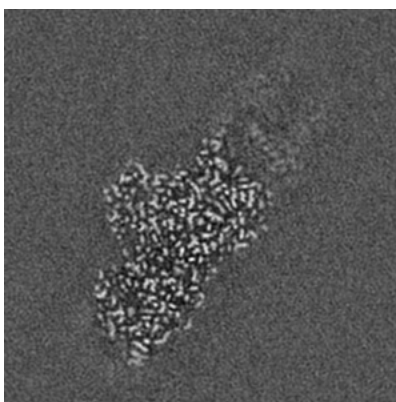


Z Index: 96

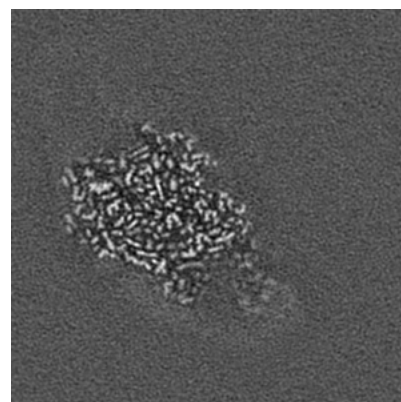
6.3.2 Raw map



X Index: 102



Y Index: 117

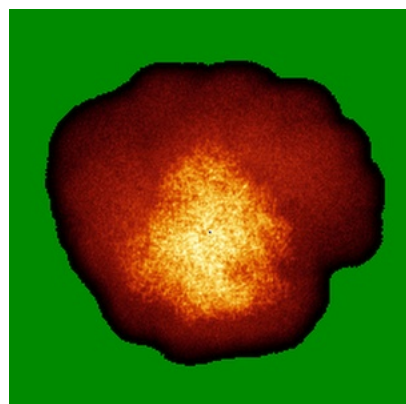


Z Index: 92

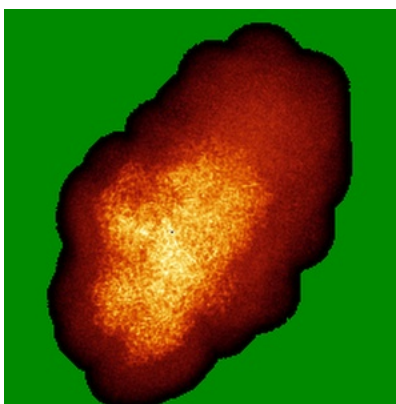
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

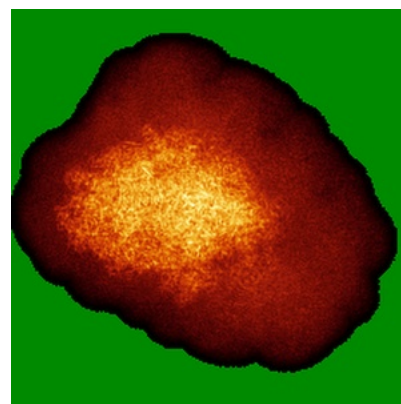
6.4.1 Primary map



X

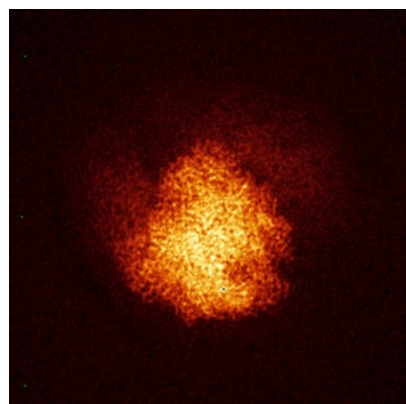


Y

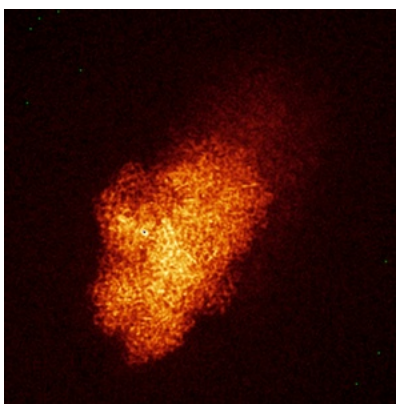


Z

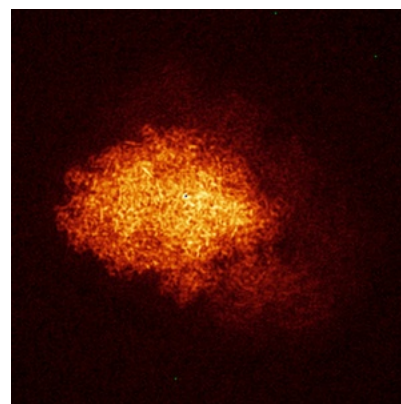
6.4.2 Raw map



X



Y

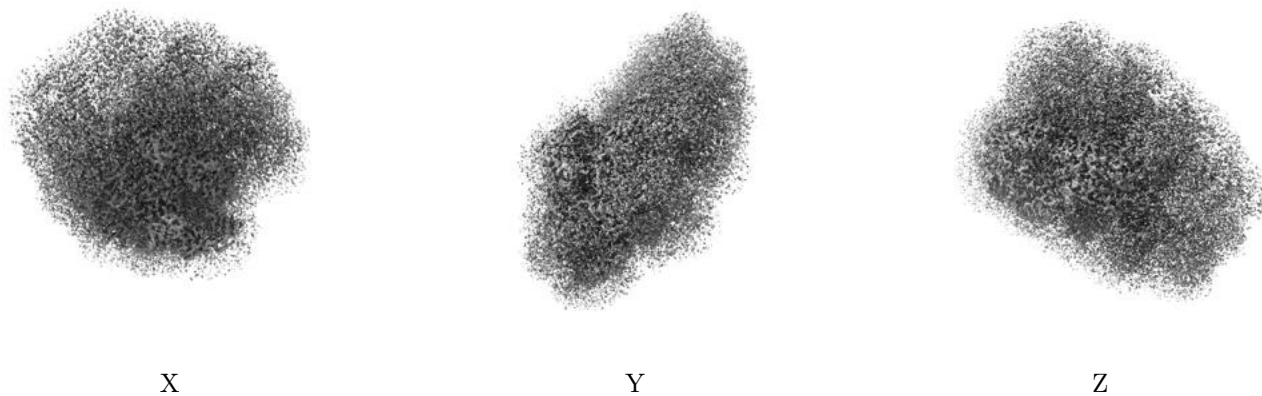


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

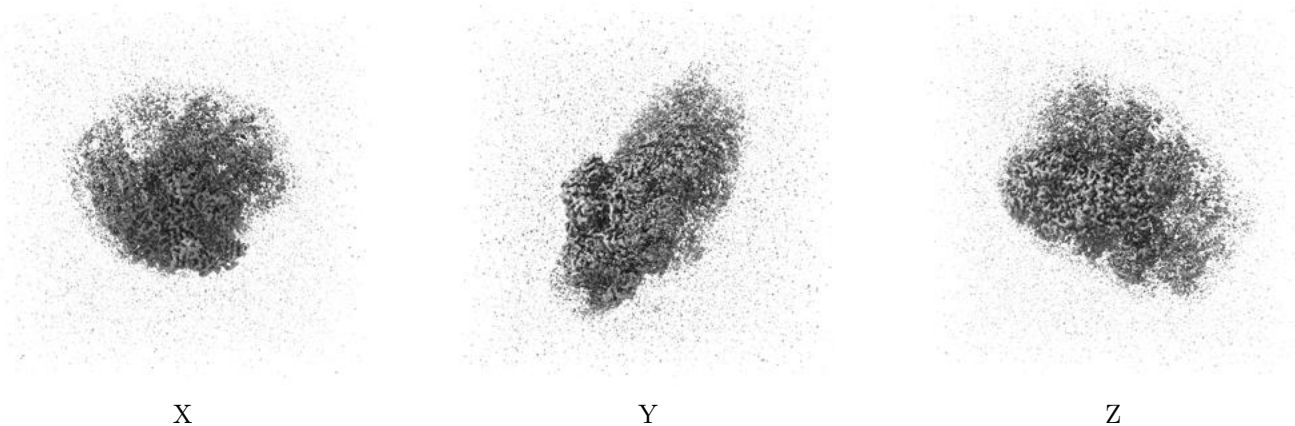
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.016. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

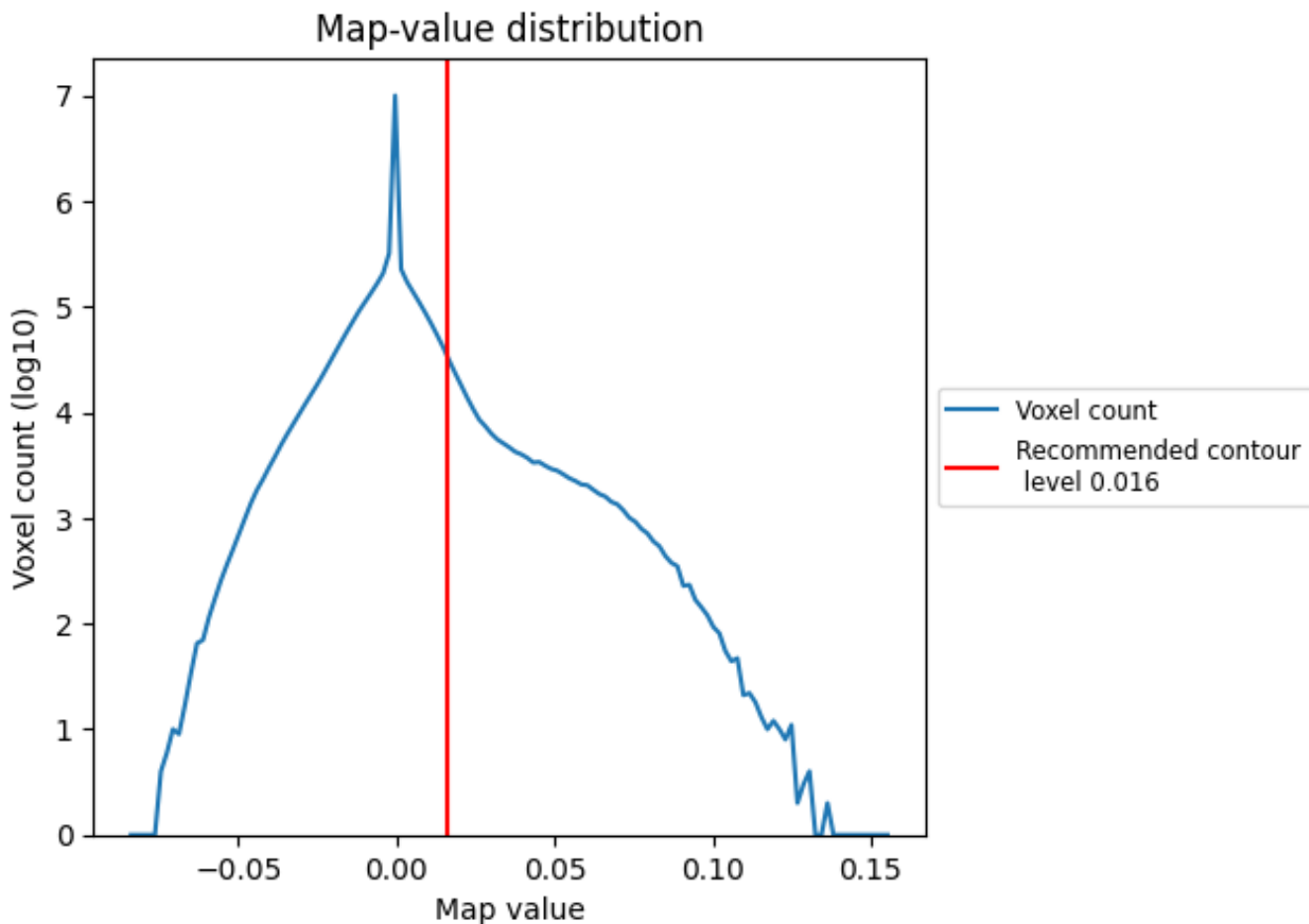
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

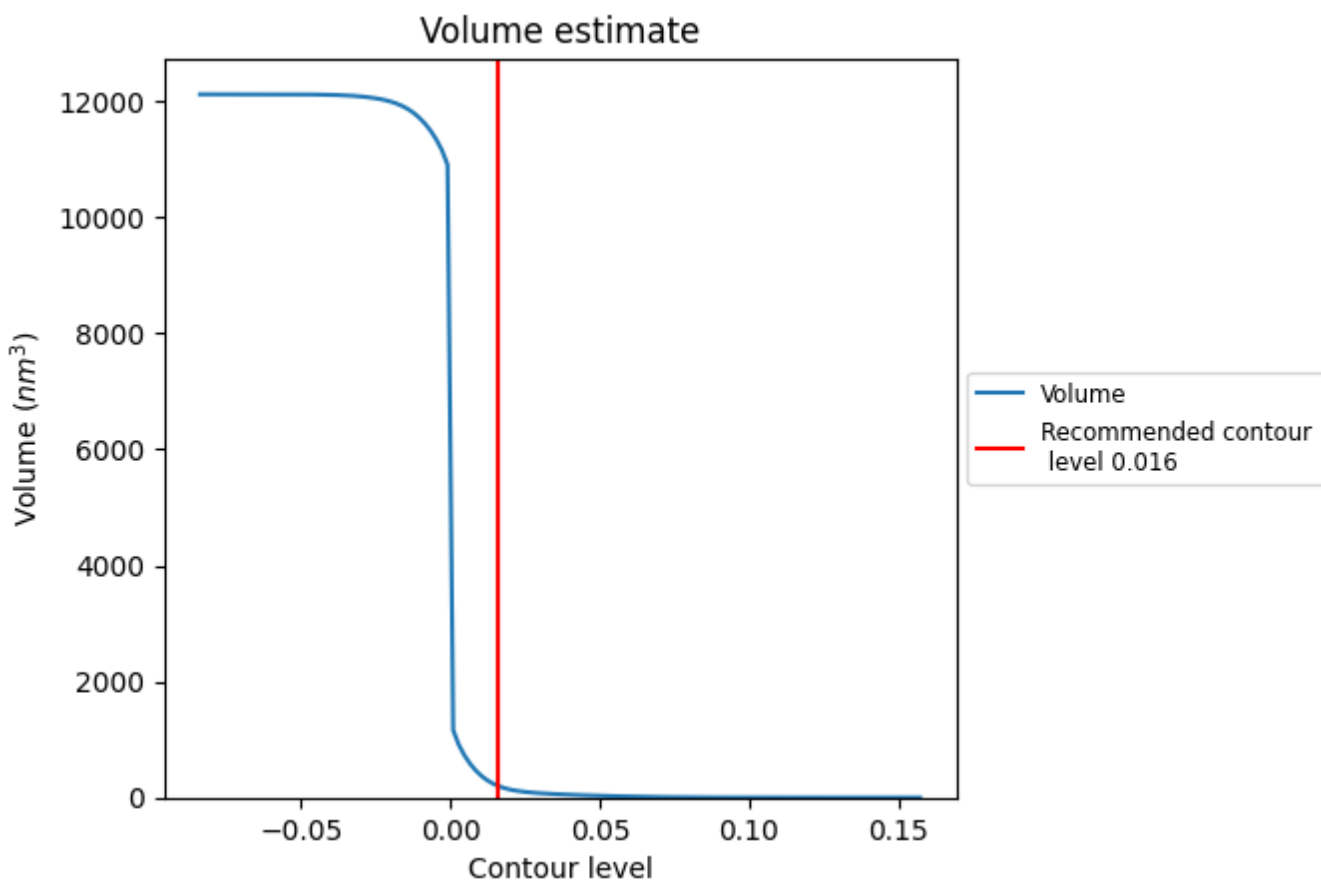
This section contains the results of statistical analysis of the map.

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.

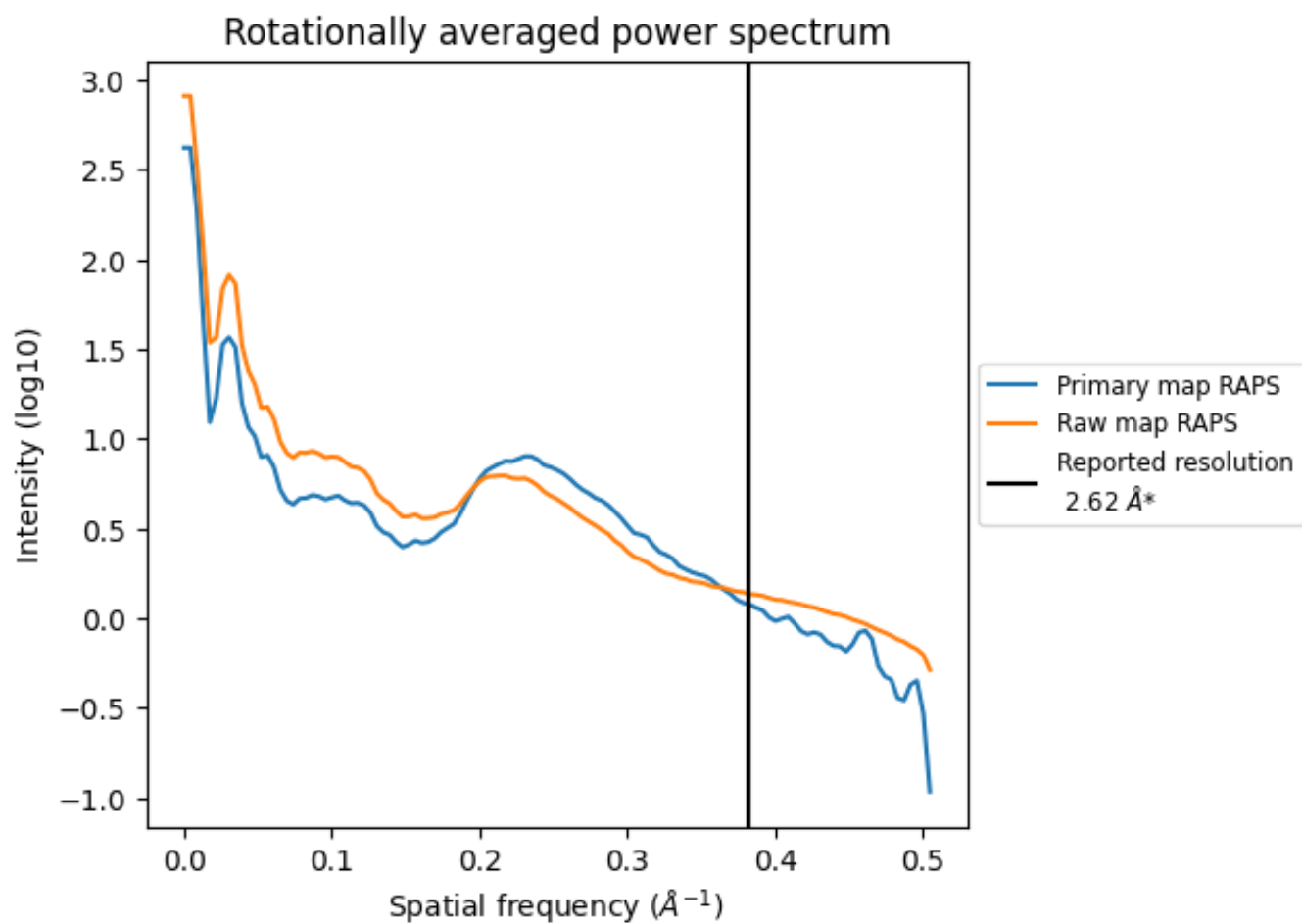
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 199 nm³; this corresponds to an approximate mass of 180 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](#)

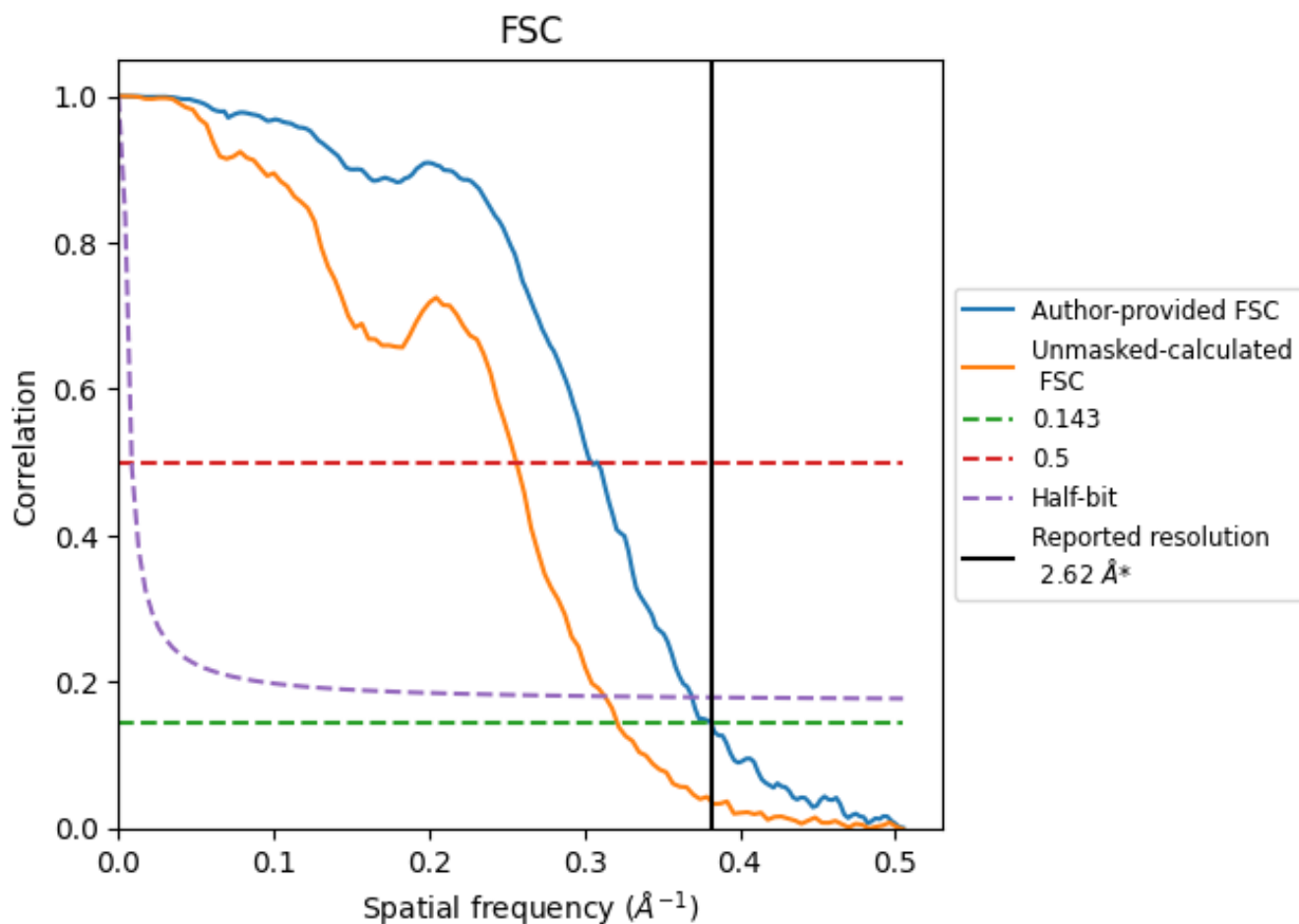


*Reported resolution corresponds to spatial frequency of 0.382 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.382 Å⁻¹

8.2 Resolution estimates [i](#)

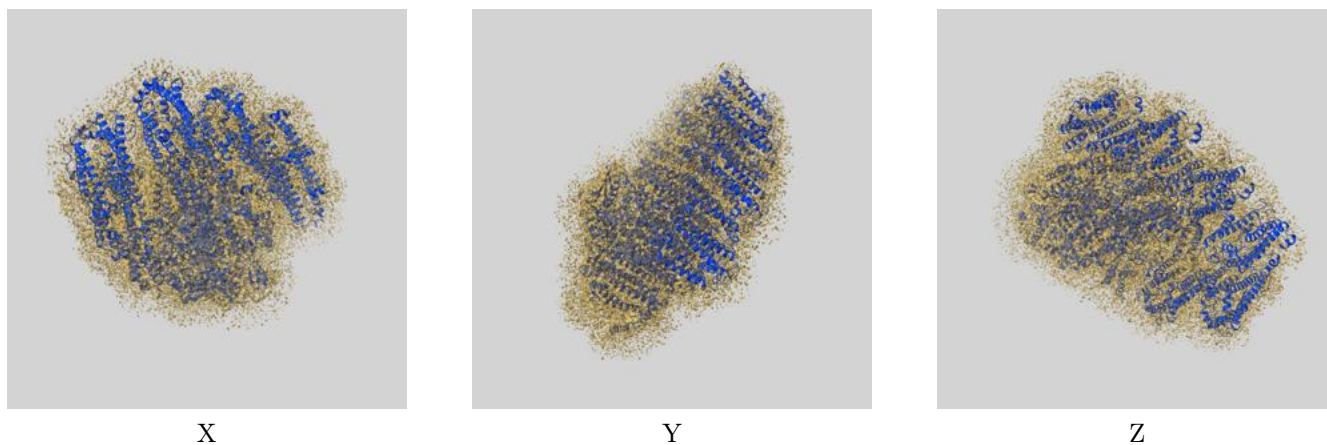
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.62	-	-
Author-provided FSC curve	2.62	3.29	2.71
Unmasked-calculated*	3.11	3.91	3.19

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.11 differs from the reported value 2.62 by more than 10 %

9 Map-model fit [i](#)

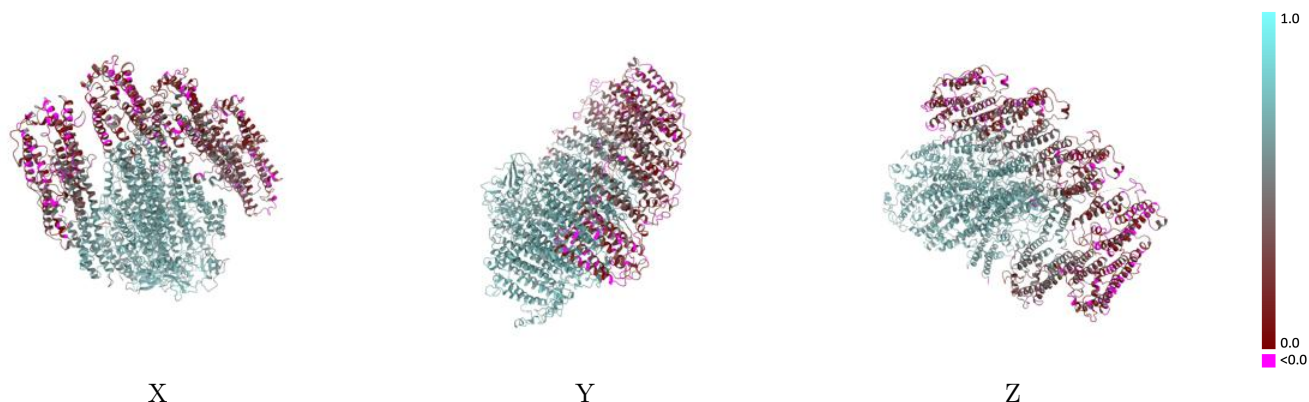
This section contains information regarding the fit between EMDB map EMD-33593 and PDB model 7Y3F. Per-residue inclusion information can be found in section 3 on page 24.

9.1 Map-model overlay [i](#)



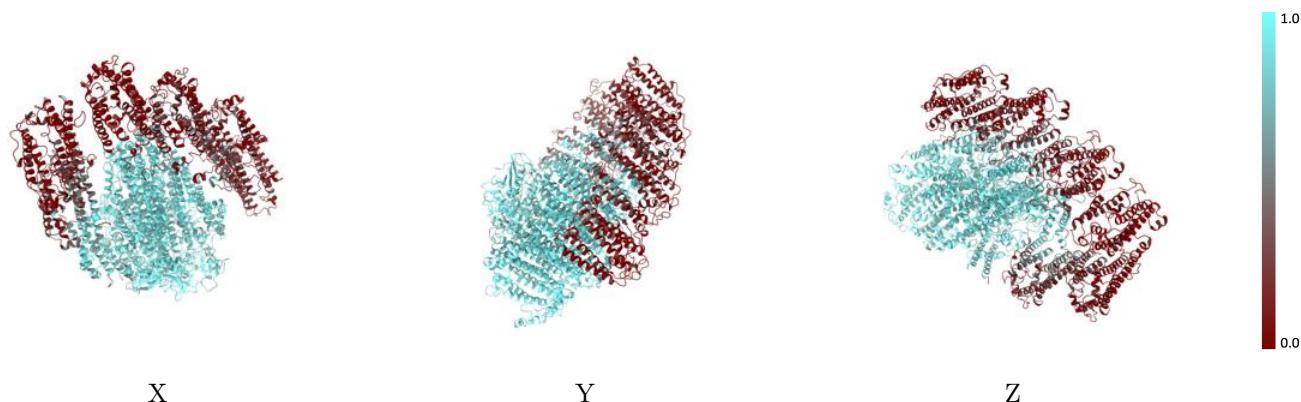
The images above show the 3D surface view of the map at the recommended contour level 0.016 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



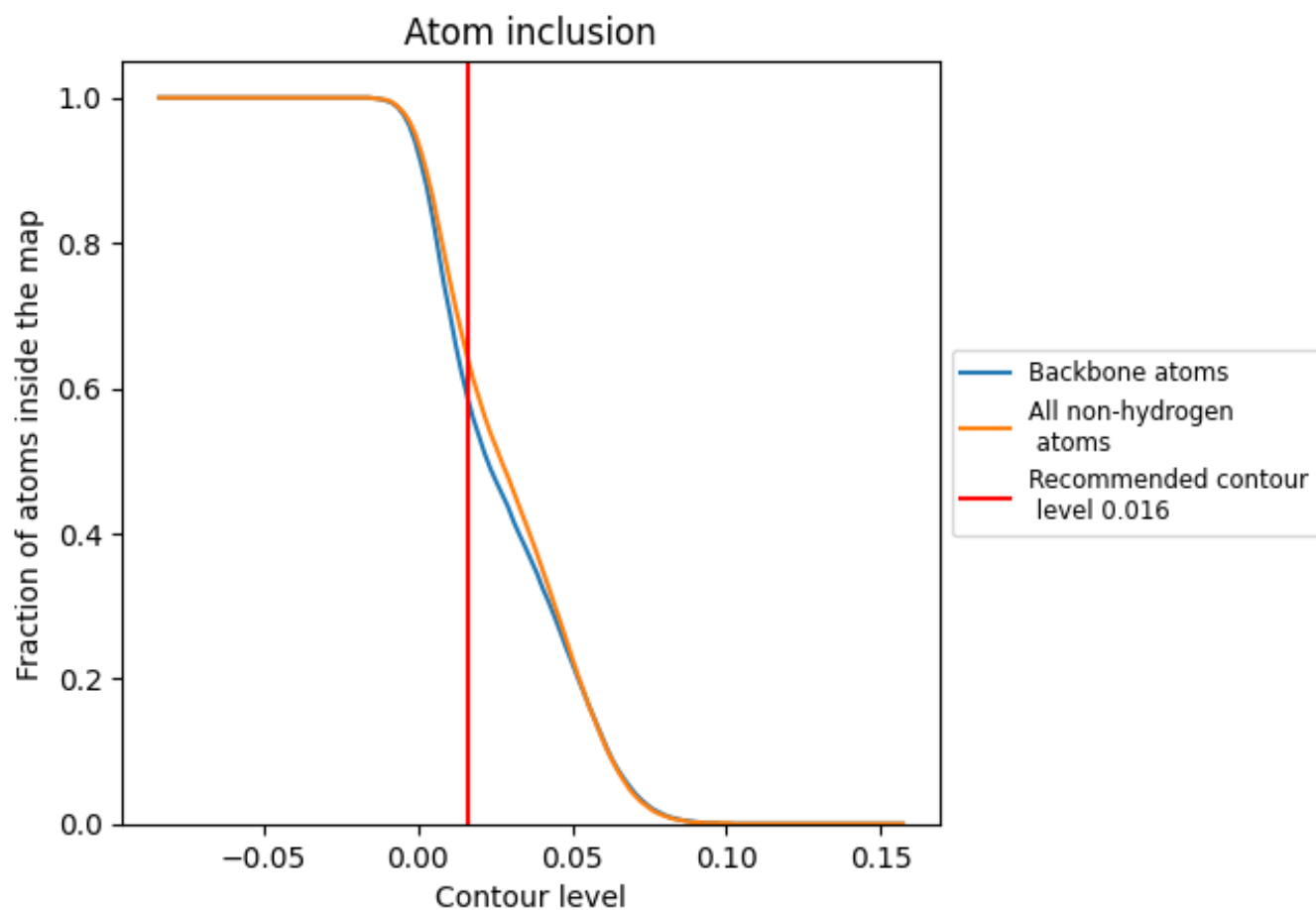
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.016).





































9.4 Atom inclusion [i](#)



At the recommended contour level, 59% of all backbone atoms, 64% 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 (0.016) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6430	 0.5260
1	 0.5240	 0.4830
2	 0.1170	 0.1960
3	 0.0680	 0.1850
4	 0.1620	 0.2490
5	 0.2040	 0.2940
6	 0.0990	 0.2000
A	 0.9420	 0.6910
B	 0.9270	 0.6830
C	 0.9480	 0.6910
D	 0.8790	 0.6540
E	 0.8490	 0.6230
F	 0.8710	 0.6580
I	 0.8940	 0.6640
J	 0.9130	 0.6690
K	 0.8770	 0.6230
M	 0.8300	 0.6290
X	 0.8270	 0.6290

