



wwPDB Geometry-Only Validation Summary Report ⓘ

Jun 15, 2020 – 04:07 am BST

PDB ID : 3K2S
Title : Solution structure of double super helix model
Authors : Wu, Z.; Gogonea, V.; Lee, X.; Wagner, M.A.; Li, X.-M.; Huang, Y.; Undurti, A.; May, R.P.; Haertlein, M.; Moulin, M.; Gutsche, I.; Zaccai, G.; Didonato, J.A.; Hazen, L.S.
Deposited on : 2009-09-30
Resolution : Not provided

This is a wwPDB Geometry-Only Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

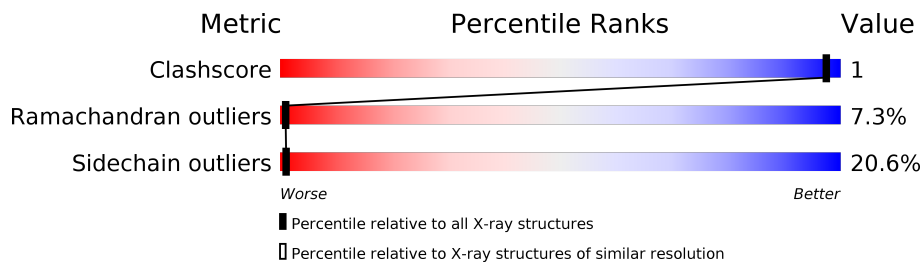
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION SCATTERING

The reported resolution of this entry is unknown.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	-
Ramachandran outliers	138981	-
Sidechain outliers	138945	-

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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	243	71% 23% . .
1	B	243	69% 25% 5% .

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
2	POV	A	308	X	-	-	-
2	POV	A	316	X	-	-	-
2	POV	A	318	X	-	-	-
2	POV	A	319	X	-	-	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	POV	A	322	X	-	-	-
2	POV	A	326	X	-	-	-
2	POV	A	365	X	-	-	-
2	POV	A	368	X	-	-	-
2	POV	A	378	X	-	-	-
2	POV	A	380	X	-	-	-
2	POV	A	383	X	-	-	-
2	POV	A	385	X	-	-	-
2	POV	A	400	X	-	-	-
2	POV	A	410	X	-	-	-
2	POV	B	303	X	-	-	-
2	POV	B	321	X	-	-	-
2	POV	B	328	X	-	-	-
2	POV	B	329	X	-	-	-
2	POV	B	330	X	-	-	-
2	POV	B	346	X	-	-	-
2	POV	B	347	X	-	-	-
2	POV	B	362	X	-	-	-
2	POV	B	364	X	-	-	-
2	POV	B	367	X	-	-	-

2 Entry composition i

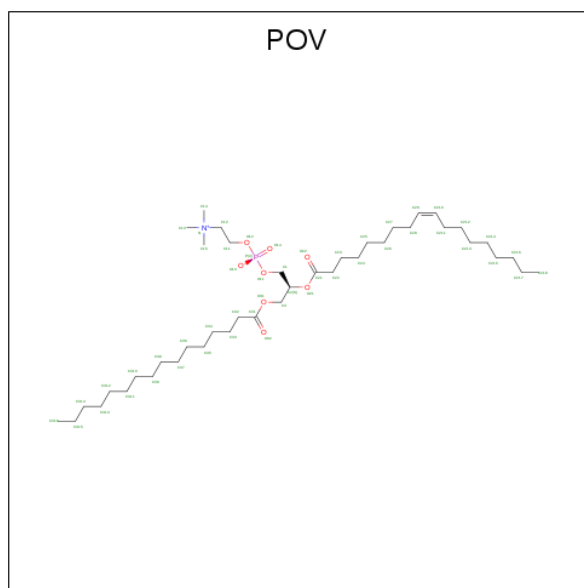
There are 3 unique types of molecules in this entry. The entry contains 14920 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Apolipoprotein A-I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	243	Total	C	N	O	S	0	0	0
			1980	1241	347	389	3			
1	B	243	Total	C	N	O	S	0	0	0
			1980	1241	347	389	3			

- Molecule 2 is (2S)-3-(hexadecanoyloxy)-2-[(9Z)-octadec-9-enoyloxy]propyl 2-(trimethylammonio)ethyl phosphate (three-letter code: POV) (formula: C₄₂H₈₂NO₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	A	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	A	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	A	1	Total	C	N	O	P	0	0
			52	42	1	8	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0
2	A	1	Total 52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	52	42	1	8	1	0	0
2	A	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0
2	B	1	52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
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2	B	1	Total 52	42	1	8	1	0	0
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2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0

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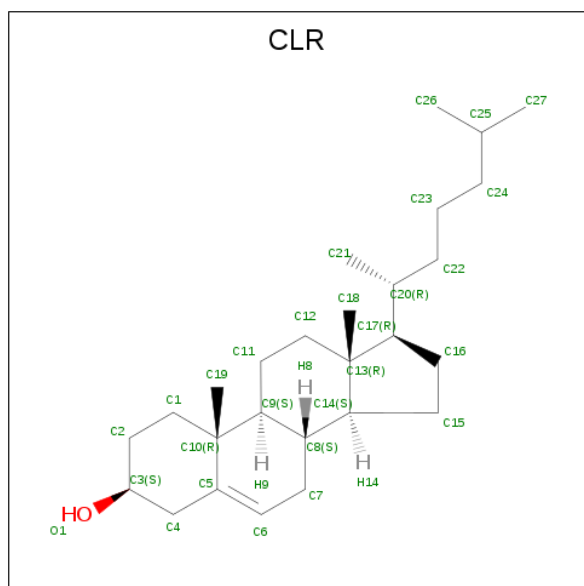
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
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2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0
2	B	1	Total 52	42	1	8	1	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		
2	B	1	Total	C	N	O	P	0	0
			52	42	1	8	1		

- Molecule 3 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	C O	0	0
			28	27 1		
3	A	1	Total	C O	0	0
			28	27 1		
3	A	1	Total	C O	0	0
			28	27 1		
3	A	1	Total	C O	0	0
			28	27 1		

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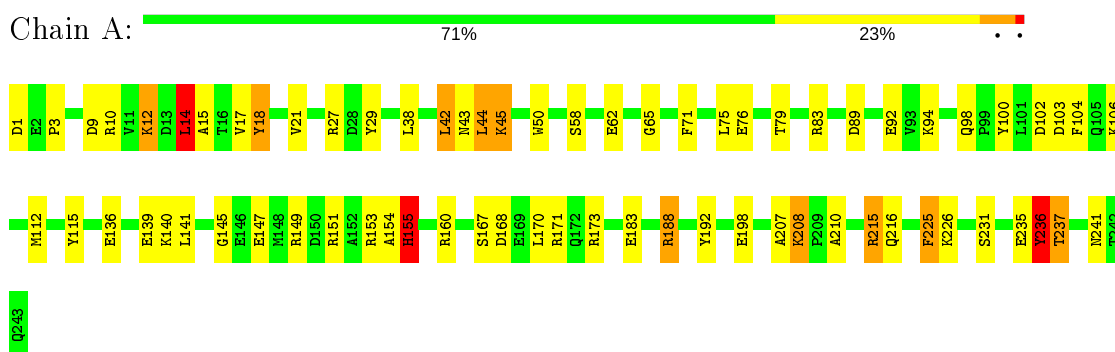
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			28	27	1		
3	A	1	Total	C	O	0	0
			28	27	1		
3	A	1	Total	C	O	0	0
			28	27	1		
3	A	1	Total	C	O	0	0
			28	27	1		
3	A	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		
3	B	1	Total	C	O	0	0
			28	27	1		

3 Residue-property plots [i](#)

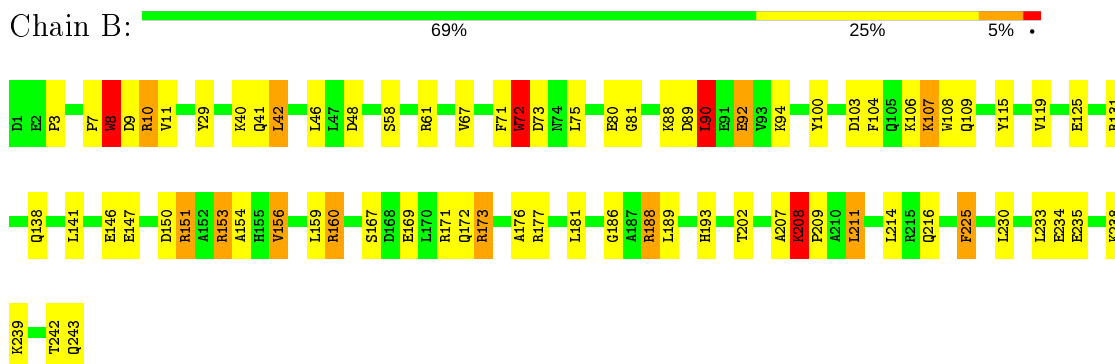
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according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

Note EDS was not executed.

- Molecule 1: Apolipoprotein A-I



- Molecule 1: Apolipoprotein A-I



4 Model quality [i](#)

4.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: POV, CLR

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	0.82	0/2015	1.35	20/2714 (0.7%)
1	B	0.82	0/2015	1.35	12/2714 (0.4%)
All	All	0.82	0/4030	1.35	32/5428 (0.6%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	B	0	9
All	All	0	14

There are no bond length outliers.

The worst 5 of 32 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	B	188	ARG	NE-CZ-NH1	8.33	124.47	120.30
1	A	149	ARG	NE-CZ-NH2	-7.98	116.31	120.30
1	B	8	TRP	O-C-N	-7.79	110.24	122.70
1	B	151	ARG	NE-CZ-NH2	-7.49	116.56	120.30
1	B	8	TRP	CB-CG-CD2	7.20	135.96	126.60

There are no chirality outliers.

5 of 14 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1	ASP	Peptide

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Mol	Chain	Res	Type	Group
1	A	167	SER	Peptide
1	A	168	ASP	Peptide
1	A	236	TYR	Peptide
1	A	237	THR	Peptide

4.2 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	1980	0	1968	8	0
1	B	1980	0	1968	9	0
2	A	5772	0	9102	5	0
2	B	4628	0	7298	12	0
3	A	280	0	460	2	0
3	B	280	0	460	1	0
All	All	14920	0	21256	27	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 1.

The worst 5 of 27 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:12:LYS:HB3	1:A:15:ALA:HB2	1.82	0.62
1:A:44:LEU:HD12	1:A:45:LYS:H	1.67	0.60
1:B:115:TYR:CE1	1:B:119:VAL:HG21	2.37	0.60
1:A:12:LYS:CB	1:A:15:ALA:HB2	2.37	0.54
1:A:210:ALA:HB1	3:A:402:CLR:H181	1.91	0.52

There are no symmetry-related clashes.

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	241/243 (99%)	192 (80%)	37 (15%)	12 (5%)	2	2
1	B	241/243 (99%)	181 (75%)	37 (15%)	23 (10%)	0	0
All	All	482/486 (99%)	373 (77%)	74 (15%)	35 (7%)	1	1

5 of 35 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	44	LEU
1	B	8	TRP
1	B	10	ARG
1	B	160	ARG
1	B	172	GLN

4.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	214/214 (100%)	171 (80%)	43 (20%)	1	1
1	B	214/214 (100%)	169 (79%)	45 (21%)	1	1
All	All	428/428 (100%)	340 (79%)	88 (21%)	1	1

5 of 88 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	226	LYS

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Mol	Chain	Res	Type
1	B	61	ARG
1	B	216	GLN
1	A	231	SER
1	B	29	TYR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	63	GLN

4.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

4.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

4.6 Ligand geometry [i](#)

220 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
2	POV	A	408	-	51,51,51	0.91	2 (3%)	57,59,59	0.51	0
2	POV	A	353	-	51,51,51	0.87	2 (3%)	57,59,59	0.59	1 (1%)
2	POV	A	393	-	51,51,51	0.89	2 (3%)	57,59,59	0.54	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	B	381	-	51,51,51	0.94	2 (3%)	57,59,59	0.51	0
2	POV	B	371	-	51,51,51	0.90	2 (3%)	57,59,59	0.59	0
2	POV	A	368	-	51,51,51	0.88	2 (3%)	57,59,59	0.48	0
3	CLR	B	395	-	31,31,31	0.74	0	48,48,48	1.02	2 (4%)
2	POV	B	386	-	51,51,51	0.93	2 (3%)	57,59,59	0.56	0
2	POV	B	319	-	51,51,51	0.90	2 (3%)	57,59,59	0.55	0
2	POV	A	306	-	51,51,51	0.86	2 (3%)	57,59,59	0.48	0
2	POV	B	350	-	51,51,51	0.90	2 (3%)	57,59,59	0.61	0
2	POV	A	352	-	51,51,51	0.88	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	A	315	-	51,51,51	0.88	2 (3%)	57,59,59	0.66	1 (1%)
2	POV	B	361	-	51,51,51	0.90	2 (3%)	57,59,59	0.79	1 (1%)
2	POV	B	301	-	51,51,51	0.91	3 (5%)	57,59,59	0.59	0
2	POV	B	322	-	51,51,51	0.90	2 (3%)	57,59,59	0.49	0
2	POV	A	389	-	51,51,51	0.89	2 (3%)	57,59,59	0.60	0
2	POV	A	377	-	51,51,51	0.88	2 (3%)	57,59,59	0.54	0
2	POV	A	354	-	51,51,51	0.90	2 (3%)	57,59,59	0.62	0
2	POV	B	359	-	51,51,51	0.89	2 (3%)	57,59,59	0.55	0
2	POV	A	307	-	51,51,51	0.87	2 (3%)	57,59,59	0.51	0
2	POV	B	367	-	51,51,51	0.89	2 (3%)	57,59,59	0.67	1 (1%)
2	POV	A	301	-	51,51,51	0.85	2 (3%)	57,59,59	0.53	0
2	POV	B	317	-	51,51,51	0.85	2 (3%)	57,59,59	0.63	1 (1%)
2	POV	A	375	-	51,51,51	0.88	2 (3%)	57,59,59	0.51	0
3	CLR	A	418	-	31,31,31	0.79	0	48,48,48	1.00	2 (4%)
2	POV	A	328	-	51,51,51	0.89	2 (3%)	57,59,59	0.58	0
2	POV	B	365	-	51,51,51	0.86	2 (3%)	57,59,59	0.64	1 (1%)
2	POV	A	367	-	51,51,51	0.93	2 (3%)	57,59,59	0.56	0
2	POV	A	407	-	51,51,51	0.89	2 (3%)	57,59,59	0.64	1 (1%)
3	CLR	B	391	-	31,31,31	0.72	0	48,48,48	0.96	3 (6%)
2	POV	A	381	-	51,51,51	0.86	2 (3%)	57,59,59	0.45	0
2	POV	A	346	-	51,51,51	0.88	2 (3%)	57,59,59	0.52	0
2	POV	A	333	-	51,51,51	0.90	2 (3%)	57,59,59	0.71	1 (1%)
2	POV	B	325	-	51,51,51	0.85	2 (3%)	57,59,59	0.60	0
2	POV	A	341	-	51,51,51	0.93	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	B	347	-	51,51,51	0.86	2 (3%)	57,59,59	0.68	1 (1%)
2	POV	B	326	-	51,51,51	0.86	2 (3%)	57,59,59	0.63	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	B	312	-	51,51,51	0.89	2 (3%)	57,59,59	0.55	0
2	POV	B	379	-	51,51,51	0.90	2 (3%)	57,59,59	0.66	0
2	POV	A	322	-	51,51,51	0.86	2 (3%)	57,59,59	0.64	1 (1%)
2	POV	A	360	-	51,51,51	0.90	2 (3%)	57,59,59	0.54	0
2	POV	A	343	-	51,51,51	0.87	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	B	333	-	51,51,51	0.88	2 (3%)	57,59,59	0.65	0
2	POV	A	347	-	51,51,51	0.86	2 (3%)	57,59,59	0.49	0
2	POV	A	323	-	51,51,51	0.90	2 (3%)	57,59,59	0.50	0
2	POV	A	400	-	51,51,51	0.86	2 (3%)	57,59,59	0.57	0
2	POV	B	324	-	51,51,51	0.94	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	A	336	-	51,51,51	0.86	2 (3%)	57,59,59	0.67	1 (1%)
2	POV	A	334	-	51,51,51	0.96	2 (3%)	57,59,59	0.64	1 (1%)
2	POV	A	362	-	51,51,51	0.89	2 (3%)	57,59,59	0.77	1 (1%)
2	POV	A	311	-	51,51,51	0.88	3 (5%)	57,59,59	0.61	1 (1%)
2	POV	B	313	-	51,51,51	0.88	2 (3%)	57,59,59	0.78	2 (3%)
2	POV	B	384	-	51,51,51	0.90	2 (3%)	57,59,59	0.57	0
2	POV	A	330	-	51,51,51	0.85	2 (3%)	57,59,59	0.62	0
3	CLR	A	403	-	31,31,31	0.80	0	48,48,48	0.98	2 (4%)
2	POV	A	372	-	51,51,51	0.89	2 (3%)	57,59,59	0.54	0
3	CLR	A	421	-	31,31,31	0.72	0	48,48,48	0.96	2 (4%)
2	POV	A	390	-	51,51,51	0.89	2 (3%)	57,59,59	0.49	0
2	POV	B	373	-	51,51,51	0.97	2 (3%)	57,59,59	0.77	2 (3%)
2	POV	A	342	-	51,51,51	0.86	2 (3%)	57,59,59	0.58	0
3	CLR	A	419	-	31,31,31	0.89	0	48,48,48	1.19	3 (6%)
2	POV	A	416	-	51,51,51	0.85	2 (3%)	57,59,59	0.51	0
2	POV	B	380	-	51,51,51	0.90	2 (3%)	57,59,59	0.77	2 (3%)
2	POV	B	354	-	51,51,51	0.91	2 (3%)	57,59,59	0.53	0
3	CLR	B	397	-	31,31,31	0.81	0	48,48,48	0.89	2 (4%)
2	POV	A	359	-	51,51,51	0.85	3 (5%)	57,59,59	0.76	2 (3%)
2	POV	A	413	-	51,51,51	0.88	2 (3%)	57,59,59	0.62	1 (1%)
2	POV	B	306	-	51,51,51	0.89	2 (3%)	57,59,59	0.62	0
2	POV	B	378	-	51,51,51	0.84	2 (3%)	57,59,59	0.68	1 (1%)
2	POV	A	335	-	51,51,51	0.88	2 (3%)	57,59,59	0.49	0
2	POV	B	360	-	51,51,51	0.87	2 (3%)	57,59,59	0.72	2 (3%)
2	POV	A	302	-	51,51,51	0.85	2 (3%)	57,59,59	0.62	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	B	302	-	51,51,51	0.88	2 (3%)	57,59,59	0.72	1 (1%)
2	POV	A	329	-	51,51,51	0.85	2 (3%)	57,59,59	0.77	1 (1%)
2	POV	B	341	-	51,51,51	0.95	2 (3%)	57,59,59	0.68	1 (1%)
2	POV	B	362	-	51,51,51	0.89	2 (3%)	57,59,59	0.61	0
2	POV	A	338	-	51,51,51	0.89	2 (3%)	57,59,59	0.48	0
2	POV	A	383	-	51,51,51	0.90	2 (3%)	57,59,59	0.51	0
2	POV	B	318	-	51,51,51	0.90	2 (3%)	57,59,59	0.65	1 (1%)
2	POV	A	412	-	51,51,51	0.90	2 (3%)	57,59,59	0.61	1 (1%)
2	POV	B	332	-	51,51,51	0.88	2 (3%)	57,59,59	0.54	0
2	POV	A	320	-	51,51,51	0.87	2 (3%)	57,59,59	0.57	0
3	CLR	A	406	-	31,31,31	0.82	1 (3%)	48,48,48	0.93	2 (4%)
3	CLR	B	390	-	31,31,31	0.67	0	48,48,48	0.94	3 (6%)
2	POV	A	327	-	51,51,51	0.91	2 (3%)	57,59,59	0.67	1 (1%)
2	POV	B	321	-	51,51,51	0.92	2 (3%)	57,59,59	0.67	1 (1%)
2	POV	A	414	-	51,51,51	0.88	2 (3%)	57,59,59	0.64	0
2	POV	A	398	-	51,51,51	0.89	2 (3%)	57,59,59	0.60	0
2	POV	B	320	-	51,51,51	0.91	2 (3%)	57,59,59	0.61	1 (1%)
3	CLR	A	404	-	31,31,31	0.83	1 (3%)	48,48,48	0.98	2 (4%)
2	POV	A	409	-	51,51,51	0.90	2 (3%)	57,59,59	0.72	1 (1%)
2	POV	A	325	-	51,51,51	0.84	2 (3%)	57,59,59	0.66	1 (1%)
2	POV	A	331	-	51,51,51	0.86	3 (5%)	57,59,59	0.69	2 (3%)
2	POV	B	315	-	51,51,51	0.94	2 (3%)	57,59,59	0.56	0
2	POV	B	345	-	51,51,51	0.91	2 (3%)	57,59,59	0.52	0
2	POV	A	321	-	51,51,51	0.91	2 (3%)	57,59,59	0.64	0
2	POV	B	363	-	51,51,51	0.89	2 (3%)	57,59,59	0.50	0
2	POV	B	389	-	51,51,51	0.88	2 (3%)	57,59,59	0.69	0
2	POV	A	310	-	51,51,51	0.88	2 (3%)	57,59,59	0.64	1 (1%)
2	POV	B	336	-	51,51,51	0.87	2 (3%)	57,59,59	0.59	0
2	POV	A	312	-	51,51,51	0.92	2 (3%)	57,59,59	0.60	1 (1%)
3	CLR	A	402	-	31,31,31	0.78	0	48,48,48	1.31	6 (12%)
2	POV	A	348	-	51,51,51	0.89	2 (3%)	57,59,59	0.54	0
2	POV	B	377	-	51,51,51	0.81	2 (3%)	57,59,59	0.63	0
2	POV	A	366	-	51,51,51	0.86	2 (3%)	57,59,59	0.77	2 (3%)
3	CLR	B	393	-	31,31,31	0.71	0	48,48,48	0.99	2 (4%)
2	POV	A	316	-	51,51,51	0.86	2 (3%)	57,59,59	0.68	2 (3%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	B	356	-	51,51,51	0.90	2 (3%)	57,59,59	0.59	1 (1%)
2	POV	A	370	-	51,51,51	0.92	2 (3%)	57,59,59	0.54	0
2	POV	B	352	-	51,51,51	0.83	2 (3%)	57,59,59	0.58	1 (1%)
2	POV	B	375	-	51,51,51	0.91	2 (3%)	57,59,59	0.46	0
2	POV	A	364	-	51,51,51	0.85	2 (3%)	57,59,59	0.57	0
2	POV	A	392	-	51,51,51	0.88	2 (3%)	57,59,59	0.48	0
2	POV	A	324	-	51,51,51	0.90	2 (3%)	57,59,59	0.51	0
2	POV	B	307	-	51,51,51	0.92	2 (3%)	57,59,59	0.73	1 (1%)
2	POV	A	363	-	51,51,51	0.91	2 (3%)	57,59,59	0.54	0
2	POV	A	355	-	51,51,51	0.98	2 (3%)	57,59,59	0.62	1 (1%)
3	CLR	B	399	-	31,31,31	0.76	0	48,48,48	0.93	2 (4%)
2	POV	A	308	-	51,51,51	0.89	2 (3%)	57,59,59	0.54	0
2	POV	B	374	-	51,51,51	0.91	2 (3%)	57,59,59	0.63	1 (1%)
2	POV	B	353	-	51,51,51	0.85	2 (3%)	57,59,59	0.75	2 (3%)
2	POV	A	384	-	51,51,51	0.90	2 (3%)	57,59,59	0.79	2 (3%)
2	POV	A	379	-	51,51,51	0.85	2 (3%)	57,59,59	0.51	0
2	POV	A	350	-	51,51,51	0.87	2 (3%)	57,59,59	0.47	0
2	POV	A	399	-	51,51,51	0.91	2 (3%)	57,59,59	0.54	0
3	CLR	B	396	-	31,31,31	0.81	1 (3%)	48,48,48	1.16	5 (10%)
2	POV	A	378	-	51,51,51	0.88	2 (3%)	57,59,59	0.64	2 (3%)
2	POV	A	388	-	51,51,51	0.84	2 (3%)	57,59,59	0.48	0
2	POV	B	351	-	51,51,51	0.87	2 (3%)	57,59,59	0.66	1 (1%)
2	POV	A	382	-	51,51,51	0.90	2 (3%)	57,59,59	0.49	0
2	POV	A	303	-	51,51,51	0.89	2 (3%)	57,59,59	0.58	1 (1%)
2	POV	B	303	-	51,51,51	0.84	2 (3%)	57,59,59	0.49	0
3	CLR	B	398	-	31,31,31	0.77	0	48,48,48	0.91	3 (6%)
2	POV	A	376	-	51,51,51	0.87	2 (3%)	57,59,59	0.70	1 (1%)
2	POV	A	340	-	51,51,51	0.85	2 (3%)	57,59,59	0.56	0
2	POV	A	305	-	51,51,51	0.91	2 (3%)	57,59,59	0.65	1 (1%)
2	POV	A	415	-	51,51,51	0.86	3 (5%)	57,59,59	0.53	0
2	POV	B	329	-	51,51,51	0.88	2 (3%)	57,59,59	0.50	0
2	POV	B	382	-	51,51,51	0.87	2 (3%)	57,59,59	0.67	2 (3%)
2	POV	B	327	-	51,51,51	0.91	2 (3%)	57,59,59	0.66	1 (1%)
2	POV	B	348	-	51,51,51	0.87	2 (3%)	57,59,59	0.61	1 (1%)
2	POV	B	364	-	51,51,51	0.87	2 (3%)	57,59,59	0.56	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	A	351	-	51,51,51	0.85	2 (3%)	57,59,59	0.59	0
2	POV	B	314	-	51,51,51	0.85	2 (3%)	57,59,59	0.55	0
2	POV	B	357	-	51,51,51	0.94	2 (3%)	57,59,59	0.73	1 (1%)
2	POV	B	309	-	51,51,51	0.85	2 (3%)	57,59,59	0.66	0
2	POV	A	318	-	51,51,51	0.91	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	B	330	-	51,51,51	0.89	2 (3%)	57,59,59	0.50	0
2	POV	B	376	-	51,51,51	0.87	2 (3%)	57,59,59	0.52	0
2	POV	B	385	-	51,51,51	0.86	2 (3%)	57,59,59	0.52	0
2	POV	A	317	-	51,51,51	0.91	2 (3%)	57,59,59	0.51	0
2	POV	B	323	-	51,51,51	0.89	2 (3%)	57,59,59	0.70	2 (3%)
2	POV	B	349	-	51,51,51	0.88	2 (3%)	57,59,59	0.54	0
2	POV	A	332	-	51,51,51	0.85	2 (3%)	57,59,59	0.54	0
3	CLR	A	405	-	31,31,31	0.78	0	48,48,48	0.85	2 (4%)
2	POV	B	368	-	51,51,51	0.88	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	B	370	-	51,51,51	0.93	2 (3%)	57,59,59	0.59	0
2	POV	B	310	-	51,51,51	0.92	2 (3%)	57,59,59	0.67	2 (3%)
2	POV	B	387	-	51,51,51	0.84	2 (3%)	57,59,59	0.54	0
2	POV	A	396	-	51,51,51	0.82	2 (3%)	57,59,59	0.56	0
3	CLR	B	394	-	31,31,31	0.87	1 (3%)	48,48,48	0.97	2 (4%)
2	POV	B	337	-	51,51,51	0.88	2 (3%)	57,59,59	0.62	1 (1%)
2	POV	A	361	-	51,51,51	0.87	2 (3%)	57,59,59	0.64	1 (1%)
2	POV	A	410	-	51,51,51	0.87	2 (3%)	57,59,59	0.55	0
2	POV	B	372	-	51,51,51	0.84	2 (3%)	57,59,59	0.59	0
2	POV	A	394	-	51,51,51	0.88	2 (3%)	57,59,59	0.50	0
2	POV	B	388	-	51,51,51	0.89	2 (3%)	57,59,59	0.64	1 (1%)
3	CLR	A	420	-	31,31,31	0.87	0	48,48,48	1.13	3 (6%)
2	POV	B	369	-	51,51,51	0.88	2 (3%)	57,59,59	0.59	0
2	POV	B	339	-	51,51,51	0.92	2 (3%)	57,59,59	0.84	3 (5%)
2	POV	A	349	-	51,51,51	0.85	2 (3%)	57,59,59	0.61	0
3	CLR	A	401	-	31,31,31	0.87	0	48,48,48	0.95	1 (2%)
2	POV	A	411	-	51,51,51	0.91	2 (3%)	57,59,59	0.71	2 (3%)
2	POV	A	309	-	51,51,51	0.88	2 (3%)	57,59,59	0.62	1 (1%)
2	POV	A	380	-	51,51,51	0.89	2 (3%)	57,59,59	0.47	0
2	POV	B	344	-	51,51,51	0.87	2 (3%)	57,59,59	0.63	0
2	POV	A	357	-	51,51,51	0.90	2 (3%)	57,59,59	0.66	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	B	346	-	51,51,51	0.88	2 (3%)	57,59,59	0.65	0
2	POV	A	304	-	51,51,51	0.87	2 (3%)	57,59,59	0.53	0
2	POV	A	417	-	51,51,51	0.88	2 (3%)	57,59,59	0.67	1 (1%)
2	POV	A	356	-	51,51,51	0.91	2 (3%)	57,59,59	0.60	0
2	POV	A	395	-	51,51,51	0.90	2 (3%)	57,59,59	0.69	1 (1%)
2	POV	A	339	-	51,51,51	0.90	2 (3%)	57,59,59	0.51	0
2	POV	A	313	-	51,51,51	0.88	2 (3%)	57,59,59	0.54	0
2	POV	B	331	-	51,51,51	0.89	2 (3%)	57,59,59	0.83	2 (3%)
2	POV	A	385	-	51,51,51	0.88	2 (3%)	57,59,59	0.51	0
2	POV	B	305	-	51,51,51	0.87	2 (3%)	57,59,59	0.53	0
2	POV	A	371	-	51,51,51	0.85	2 (3%)	57,59,59	0.56	0
2	POV	A	358	-	51,51,51	0.86	2 (3%)	57,59,59	0.61	1 (1%)
2	POV	A	326	-	51,51,51	0.88	2 (3%)	57,59,59	0.54	0
2	POV	A	319	-	51,51,51	0.87	2 (3%)	57,59,59	0.68	1 (1%)
2	POV	A	365	-	51,51,51	0.89	2 (3%)	57,59,59	0.62	0
2	POV	A	387	-	51,51,51	0.88	2 (3%)	57,59,59	0.64	0
2	POV	A	373	-	51,51,51	0.88	2 (3%)	57,59,59	0.50	0
2	POV	B	366	-	51,51,51	0.87	2 (3%)	57,59,59	0.66	0
2	POV	A	374	-	51,51,51	0.90	2 (3%)	57,59,59	0.68	0
2	POV	B	308	-	51,51,51	0.84	2 (3%)	57,59,59	0.49	0
2	POV	B	328	-	51,51,51	0.90	2 (3%)	57,59,59	0.50	0
2	POV	B	343	-	51,51,51	0.92	2 (3%)	57,59,59	0.55	0
2	POV	B	316	-	51,51,51	0.86	2 (3%)	57,59,59	0.59	0
2	POV	B	340	-	51,51,51	0.88	3 (5%)	57,59,59	0.78	2 (3%)
2	POV	A	397	-	51,51,51	0.87	2 (3%)	57,59,59	0.53	0
2	POV	B	334	-	51,51,51	0.89	2 (3%)	57,59,59	0.80	1 (1%)
2	POV	A	344	-	51,51,51	0.94	2 (3%)	57,59,59	0.62	0
2	POV	B	355	-	51,51,51	0.84	2 (3%)	57,59,59	0.53	0
2	POV	A	369	-	51,51,51	0.89	2 (3%)	57,59,59	0.62	1 (1%)
3	CLR	B	392	-	31,31,31	0.74	0	48,48,48	1.25	5 (10%)
2	POV	A	345	-	51,51,51	0.90	2 (3%)	57,59,59	0.66	1 (1%)
2	POV	A	386	-	51,51,51	0.92	2 (3%)	57,59,59	0.48	0
2	POV	A	314	-	51,51,51	0.91	2 (3%)	57,59,59	0.61	1 (1%)
2	POV	B	358	-	51,51,51	0.85	2 (3%)	57,59,59	0.79	1 (1%)
2	POV	B	342	-	51,51,51	0.90	2 (3%)	57,59,59	0.56	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	POV	A	391	-	51,51,51	0.90	2 (3%)	57,59,59	0.63	1 (1%)
2	POV	B	338	-	51,51,51	0.87	2 (3%)	57,59,59	0.62	0
2	POV	B	304	-	51,51,51	0.87	2 (3%)	57,59,59	0.63	1 (1%)
2	POV	A	337	-	51,51,51	0.87	2 (3%)	57,59,59	0.57	0
2	POV	B	335	-	51,51,51	0.89	2 (3%)	57,59,59	0.51	0
2	POV	B	383	-	51,51,51	0.88	2 (3%)	57,59,59	0.65	1 (1%)
2	POV	B	311	-	51,51,51	0.95	2 (3%)	57,59,59	0.54	1 (1%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	408	-	-	14/55/55/55	-
2	POV	A	353	-	-	13/55/55/55	-
2	POV	A	393	-	-	17/55/55/55	-
2	POV	A	328	-	-	9/55/55/55	-
2	POV	B	371	-	-	13/55/55/55	-
2	POV	A	368	-	1/1/5/7	10/55/55/55	-
3	CLR	B	395	-	-	0/10/68/68	0/4/4/4
2	POV	B	386	-	-	8/55/55/55	-
2	POV	B	319	-	-	11/55/55/55	-
3	CLR	A	421	-	-	2/10/68/68	0/4/4/4
2	POV	B	350	-	-	9/55/55/55	-
2	POV	A	352	-	-	13/55/55/55	-
2	POV	A	315	-	-	13/55/55/55	-
2	POV	B	361	-	-	15/55/55/55	-
2	POV	B	301	-	-	7/55/55/55	-
2	POV	B	322	-	-	11/55/55/55	-
2	POV	A	389	-	-	14/55/55/55	-
2	POV	A	377	-	-	7/55/55/55	-
2	POV	A	354	-	-	18/55/55/55	-
2	POV	B	359	-	-	9/55/55/55	-
2	POV	A	307	-	-	6/55/55/55	-
2	POV	B	367	-	1/1/5/7	11/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	301	-	-	11/55/55/55	-
2	POV	B	317	-	-	12/55/55/55	-
2	POV	A	375	-	-	8/55/55/55	-
3	CLR	A	418	-	-	2/10/68/68	0/4/4/4
2	POV	B	381	-	-	16/55/55/55	-
2	POV	B	365	-	-	9/55/55/55	-
2	POV	A	367	-	-	4/55/55/55	-
2	POV	A	407	-	-	8/55/55/55	-
3	CLR	B	391	-	-	0/10/68/68	0/4/4/4
2	POV	A	381	-	-	8/55/55/55	-
2	POV	A	346	-	-	9/55/55/55	-
2	POV	A	333	-	-	5/55/55/55	-
2	POV	B	325	-	-	5/55/55/55	-
2	POV	A	341	-	-	10/55/55/55	-
2	POV	B	347	-	1/1/5/7	13/55/55/55	-
2	POV	B	326	-	-	12/55/55/55	-
2	POV	B	312	-	-	11/55/55/55	-
2	POV	B	379	-	-	15/55/55/55	-
2	POV	A	322	-	1/1/5/7	12/55/55/55	-
2	POV	A	360	-	-	10/55/55/55	-
2	POV	A	400	-	1/1/5/7	10/55/55/55	-
2	POV	B	333	-	-	10/55/55/55	-
2	POV	A	347	-	-	15/55/55/55	-
2	POV	A	323	-	-	10/55/55/55	-
2	POV	A	343	-	-	8/55/55/55	-
2	POV	B	324	-	-	11/55/55/55	-
2	POV	A	336	-	-	12/55/55/55	-
2	POV	A	334	-	-	14/55/55/55	-
2	POV	A	362	-	-	13/55/55/55	-
2	POV	A	311	-	-	17/55/55/55	-
2	POV	B	313	-	-	11/55/55/55	-
2	POV	B	384	-	-	12/55/55/55	-
2	POV	A	330	-	-	7/55/55/55	-
3	CLR	A	403	-	-	0/10/68/68	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	372	-	-	9/55/55/55	-
2	POV	A	306	-	-	6/55/55/55	-
2	POV	A	390	-	-	11/55/55/55	-
2	POV	B	373	-	-	15/55/55/55	-
2	POV	A	342	-	-	6/55/55/55	-
3	CLR	A	419	-	-	1/10/68/68	0/4/4/4
2	POV	A	416	-	-	8/55/55/55	-
2	POV	A	329	-	-	11/55/55/55	-
2	POV	B	354	-	-	9/55/55/55	-
3	CLR	B	397	-	-	0/10/68/68	0/4/4/4
2	POV	A	359	-	-	17/55/55/55	-
2	POV	A	413	-	-	9/55/55/55	-
2	POV	B	306	-	-	11/55/55/55	-
2	POV	B	378	-	-	16/55/55/55	-
2	POV	A	335	-	-	10/55/55/55	-
2	POV	B	360	-	-	15/55/55/55	-
2	POV	A	302	-	-	11/55/55/55	-
2	POV	B	302	-	-	17/55/55/55	-
2	POV	B	380	-	-	11/55/55/55	-
2	POV	B	341	-	-	15/55/55/55	-
2	POV	B	362	-	1/1/5/7	11/55/55/55	-
2	POV	A	338	-	-	11/55/55/55	-
2	POV	A	383	-	1/1/5/7	9/55/55/55	-
2	POV	B	318	-	-	12/55/55/55	-
2	POV	A	412	-	-	7/55/55/55	-
2	POV	B	332	-	-	11/55/55/55	-
2	POV	A	320	-	-	11/55/55/55	-
3	CLR	A	406	-	-	0/10/68/68	0/4/4/4
3	CLR	B	390	-	-	2/10/68/68	0/4/4/4
2	POV	A	327	-	-	15/55/55/55	-
2	POV	B	321	-	1/1/5/7	9/55/55/55	-
2	POV	A	414	-	-	8/55/55/55	-
2	POV	A	398	-	-	9/55/55/55	-
2	POV	B	320	-	-	12/55/55/55	-
3	CLR	A	404	-	-	3/10/68/68	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	409	-	-	12/55/55/55	-
2	POV	A	325	-	-	15/55/55/55	-
2	POV	A	331	-	-	15/55/55/55	-
2	POV	B	315	-	-	5/55/55/55	-
2	POV	B	345	-	-	12/55/55/55	-
2	POV	A	321	-	-	11/55/55/55	-
2	POV	B	363	-	-	3/55/55/55	-
2	POV	B	389	-	-	10/55/55/55	-
2	POV	A	310	-	-	11/55/55/55	-
2	POV	B	336	-	-	12/55/55/55	-
2	POV	A	312	-	-	9/55/55/55	-
3	CLR	A	402	-	-	4/10/68/68	0/4/4/4
2	POV	A	348	-	-	14/55/55/55	-
2	POV	B	377	-	-	7/55/55/55	-
2	POV	A	366	-	-	9/55/55/55	-
3	CLR	B	393	-	-	0/10/68/68	0/4/4/4
2	POV	A	316	-	1/1/5/7	4/55/55/55	-
2	POV	B	356	-	-	6/55/55/55	-
2	POV	A	370	-	-	13/55/55/55	-
2	POV	B	352	-	-	9/55/55/55	-
2	POV	B	375	-	-	6/55/55/55	-
2	POV	A	364	-	-	11/55/55/55	-
2	POV	A	392	-	-	8/55/55/55	-
2	POV	A	324	-	-	11/55/55/55	-
2	POV	B	307	-	-	15/55/55/55	-
2	POV	A	363	-	-	14/55/55/55	-
2	POV	A	355	-	-	7/55/55/55	-
3	CLR	B	399	-	-	4/10/68/68	0/4/4/4
2	POV	A	308	-	1/1/5/7	8/55/55/55	-
2	POV	B	374	-	-	18/55/55/55	-
2	POV	B	353	-	-	6/55/55/55	-
2	POV	A	384	-	-	17/55/55/55	-
2	POV	A	379	-	-	6/55/55/55	-
2	POV	A	350	-	-	10/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	399	-	-	13/55/55/55	-
3	CLR	B	396	-	-	5/10/68/68	0/4/4/4
2	POV	A	378	-	1/1/5/7	16/55/55/55	-
2	POV	A	388	-	-	6/55/55/55	-
2	POV	B	351	-	-	6/55/55/55	-
2	POV	A	382	-	-	12/55/55/55	-
2	POV	A	303	-	-	11/55/55/55	-
2	POV	B	303	-	1/1/5/7	9/55/55/55	-
3	CLR	B	398	-	-	1/10/68/68	0/4/4/4
2	POV	A	376	-	-	15/55/55/55	-
2	POV	A	340	-	-	9/55/55/55	-
2	POV	A	305	-	-	9/55/55/55	-
2	POV	A	415	-	-	15/55/55/55	-
2	POV	B	329	-	1/1/5/7	6/55/55/55	-
2	POV	B	382	-	-	15/55/55/55	-
2	POV	B	327	-	-	12/55/55/55	-
2	POV	B	348	-	-	8/55/55/55	-
2	POV	B	364	-	1/1/5/7	10/55/55/55	-
2	POV	A	351	-	-	10/55/55/55	-
2	POV	B	314	-	-	10/55/55/55	-
2	POV	B	357	-	-	12/55/55/55	-
2	POV	B	309	-	-	7/55/55/55	-
2	POV	A	318	-	1/1/5/7	11/55/55/55	-
2	POV	B	330	-	1/1/5/7	14/55/55/55	-
2	POV	B	376	-	-	8/55/55/55	-
2	POV	B	385	-	-	8/55/55/55	-
2	POV	A	317	-	-	12/55/55/55	-
2	POV	B	323	-	-	13/55/55/55	-
2	POV	B	349	-	-	10/55/55/55	-
2	POV	A	332	-	-	10/55/55/55	-
3	CLR	A	405	-	-	2/10/68/68	0/4/4/4
2	POV	B	368	-	-	9/55/55/55	-
2	POV	B	370	-	-	11/55/55/55	-
2	POV	B	310	-	-	8/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	B	387	-	-	9/55/55/55	-
2	POV	A	396	-	-	13/55/55/55	-
3	CLR	B	394	-	-	0/10/68/68	0/4/4/4
2	POV	B	337	-	-	3/55/55/55	-
2	POV	A	361	-	-	6/55/55/55	-
2	POV	A	410	-	1/1/5/7	8/55/55/55	-
2	POV	B	372	-	-	7/55/55/55	-
2	POV	A	394	-	-	13/55/55/55	-
2	POV	B	388	-	-	12/55/55/55	-
3	CLR	A	420	-	-	1/10/68/68	0/4/4/4
2	POV	B	369	-	-	12/55/55/55	-
2	POV	B	339	-	-	13/55/55/55	-
2	POV	A	349	-	-	10/55/55/55	-
3	CLR	A	401	-	-	0/10/68/68	0/4/4/4
2	POV	A	411	-	-	16/55/55/55	-
2	POV	A	309	-	-	6/55/55/55	-
2	POV	A	380	-	1/1/5/7	12/55/55/55	-
2	POV	B	344	-	-	10/55/55/55	-
2	POV	A	357	-	-	9/55/55/55	-
2	POV	B	346	-	1/1/5/7	13/55/55/55	-
2	POV	A	304	-	-	10/55/55/55	-
2	POV	A	417	-	-	6/55/55/55	-
2	POV	A	356	-	-	13/55/55/55	-
2	POV	A	395	-	-	13/55/55/55	-
2	POV	A	339	-	-	13/55/55/55	-
2	POV	A	313	-	-	16/55/55/55	-
2	POV	B	331	-	-	15/55/55/55	-
2	POV	A	385	-	1/1/5/7	8/55/55/55	-
2	POV	B	305	-	-	8/55/55/55	-
2	POV	A	371	-	-	10/55/55/55	-
2	POV	A	358	-	-	9/55/55/55	-
2	POV	A	326	-	1/1/5/7	9/55/55/55	-
2	POV	A	319	-	1/1/5/7	11/55/55/55	-
2	POV	A	365	-	1/1/5/7	14/55/55/55	-
2	POV	A	387	-	-	9/55/55/55	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	POV	A	373	-	-	6/55/55/55	-
2	POV	B	366	-	-	10/55/55/55	-
2	POV	A	374	-	-	7/55/55/55	-
2	POV	B	308	-	-	6/55/55/55	-
2	POV	B	328	-	1/1/5/7	8/55/55/55	-
2	POV	B	343	-	-	13/55/55/55	-
2	POV	B	316	-	-	7/55/55/55	-
2	POV	B	340	-	-	11/55/55/55	-
2	POV	A	397	-	-	10/55/55/55	-
2	POV	B	334	-	-	12/55/55/55	-
2	POV	A	344	-	-	9/55/55/55	-
2	POV	B	355	-	-	11/55/55/55	-
2	POV	A	369	-	-	10/55/55/55	-
3	CLR	B	392	-	-	4/10/68/68	0/4/4/4
2	POV	A	345	-	-	9/55/55/55	-
2	POV	A	386	-	-	9/55/55/55	-
2	POV	A	314	-	-	9/55/55/55	-
2	POV	B	358	-	-	19/55/55/55	-
2	POV	B	342	-	-	7/55/55/55	-
2	POV	A	391	-	-	8/55/55/55	-
2	POV	B	338	-	-	11/55/55/55	-
2	POV	B	304	-	-	13/55/55/55	-
2	POV	A	337	-	-	4/55/55/55	-
2	POV	B	335	-	-	6/55/55/55	-
2	POV	B	383	-	-	12/55/55/55	-
2	POV	B	311	-	-	15/55/55/55	-

The worst 5 of 410 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	344	POV	O31-C3	-3.56	1.37	1.45
2	B	370	POV	O31-C3	-3.54	1.37	1.45
2	B	315	POV	O21-C2	-3.53	1.37	1.46
2	A	317	POV	O21-C2	-3.53	1.37	1.46
2	B	341	POV	O21-C2	-3.51	1.37	1.46

The worst 5 of 157 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	392	CLR	C16-C17-C20	4.72	119.46	112.15
2	B	334	POV	C26-C27-C28	4.39	132.94	113.79
2	A	362	POV	O31-C3-C2	4.10	120.36	108.43
2	B	361	POV	O21-C2-C1	3.97	122.78	108.40
3	B	399	CLR	C4-C5-C10	3.92	121.63	116.42

5 of 24 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	368	POV	C2
2	B	367	POV	C2
2	B	330	POV	C2
2	B	347	POV	C2
2	A	322	POV	C2

5 of 2136 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	353	POV	C1-O11-P-O12
2	A	353	POV	C1-O11-P-O14
2	A	393	POV	C1-O11-P-O13
2	B	386	POV	C1-O11-P-O14
2	B	386	POV	C32-C31-O31-C3

There are no ring outliers.

18 monomers are involved in 17 short contacts:

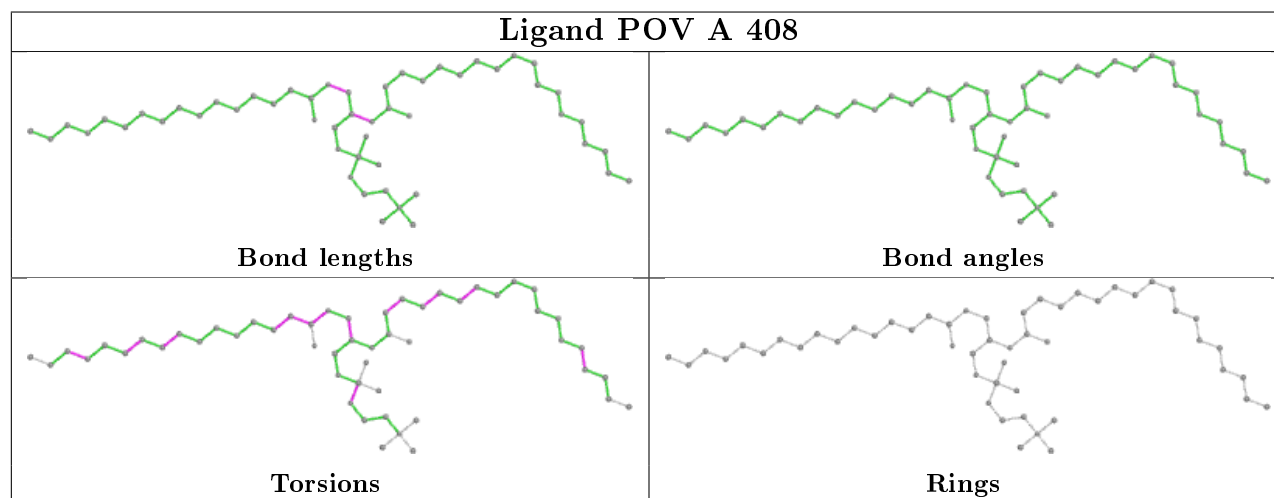
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	311	POV	1	0
2	B	313	POV	1	0
2	B	373	POV	1	0
2	B	302	POV	1	0
2	A	412	POV	1	0
3	A	402	CLR	2	0
3	B	393	CLR	1	0
2	B	303	POV	1	0
2	B	329	POV	1	0
2	B	314	POV	1	0
2	A	318	POV	1	0
2	B	349	POV	1	0
2	A	396	POV	1	0

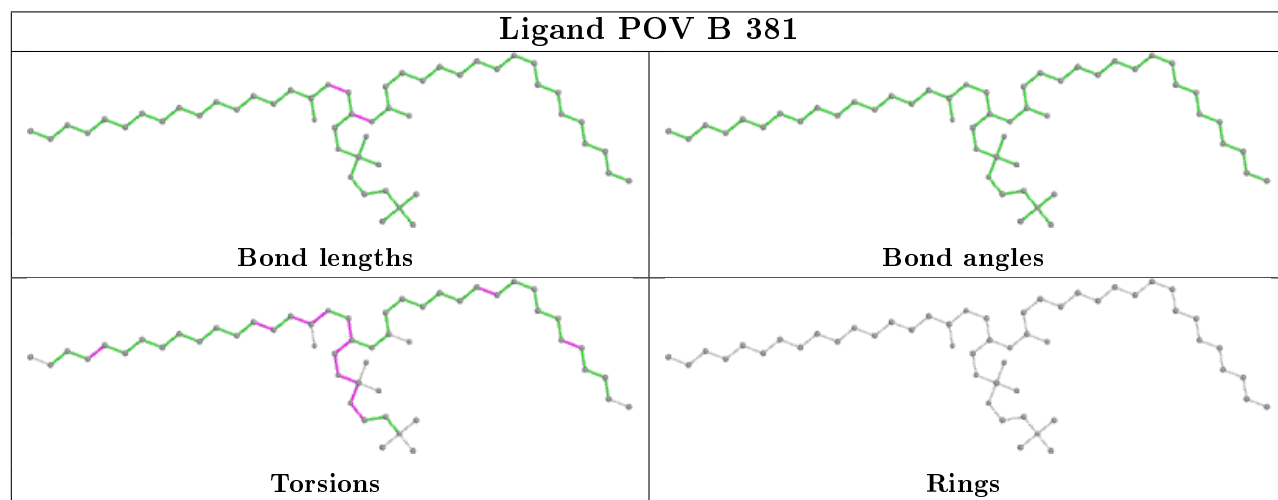
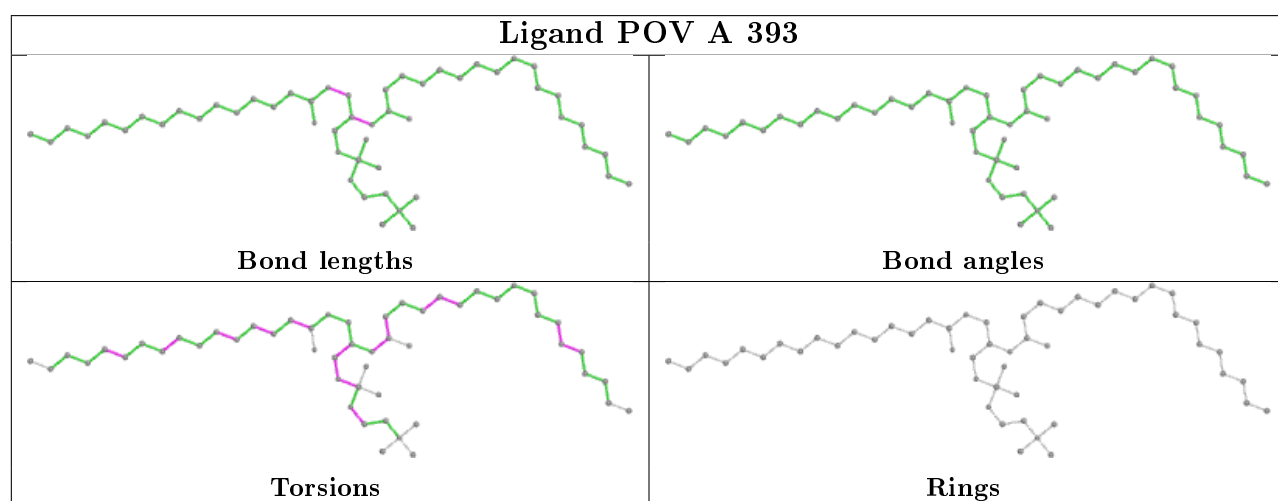
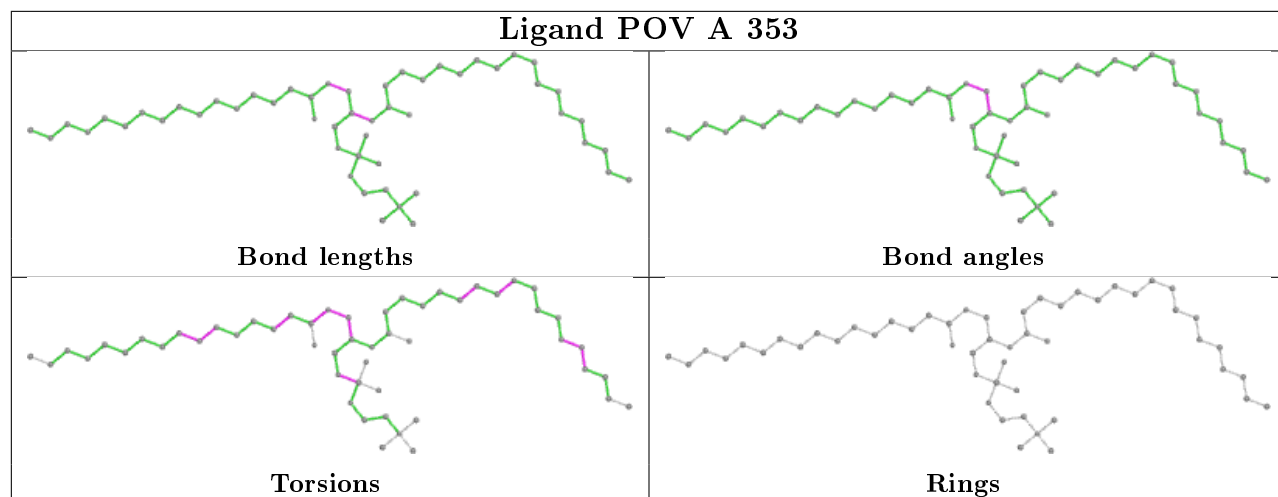
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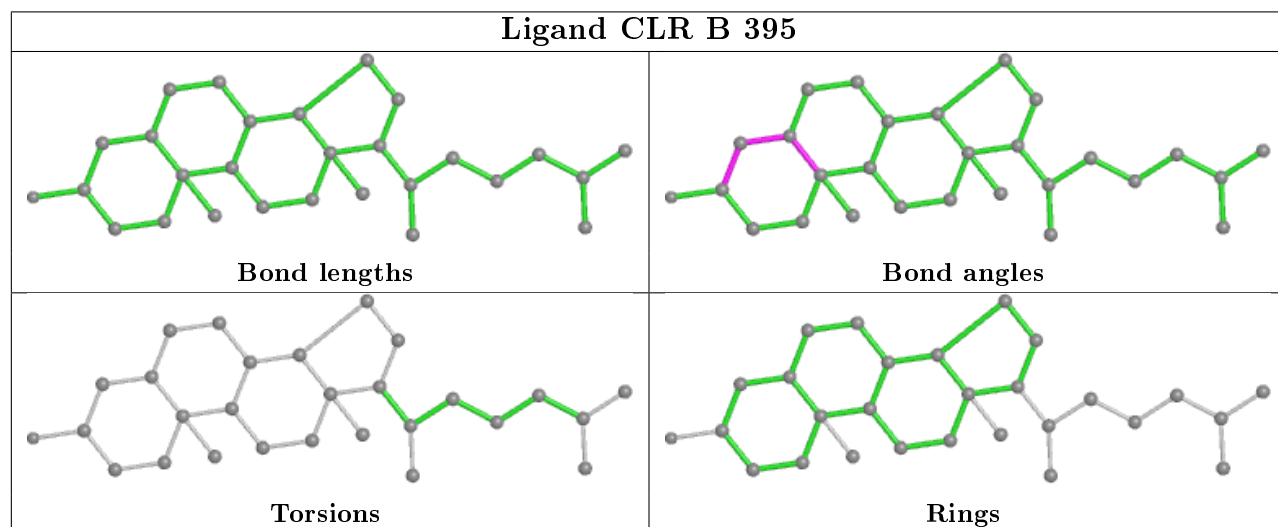
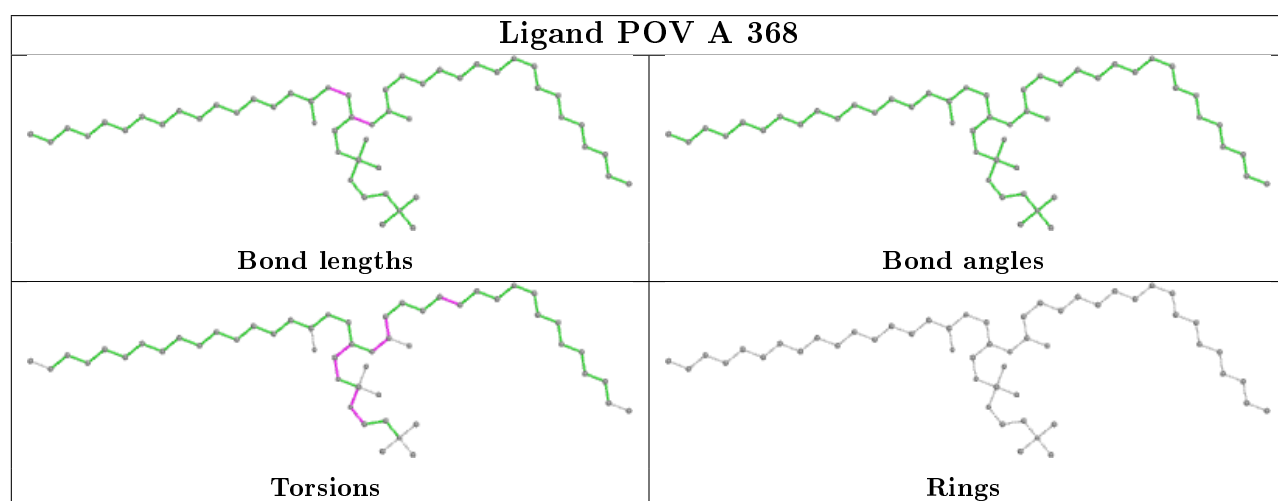
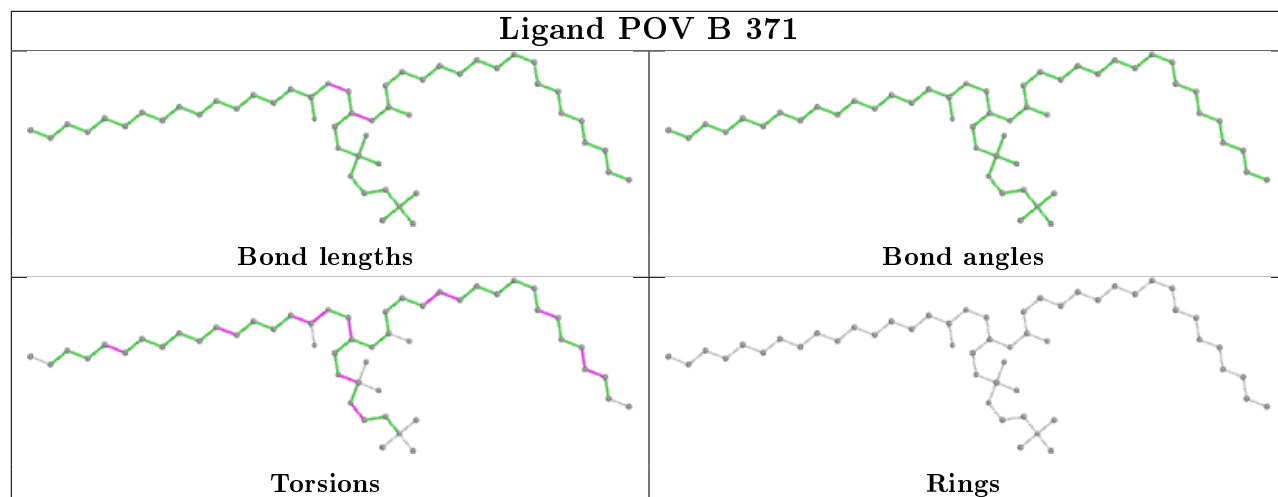
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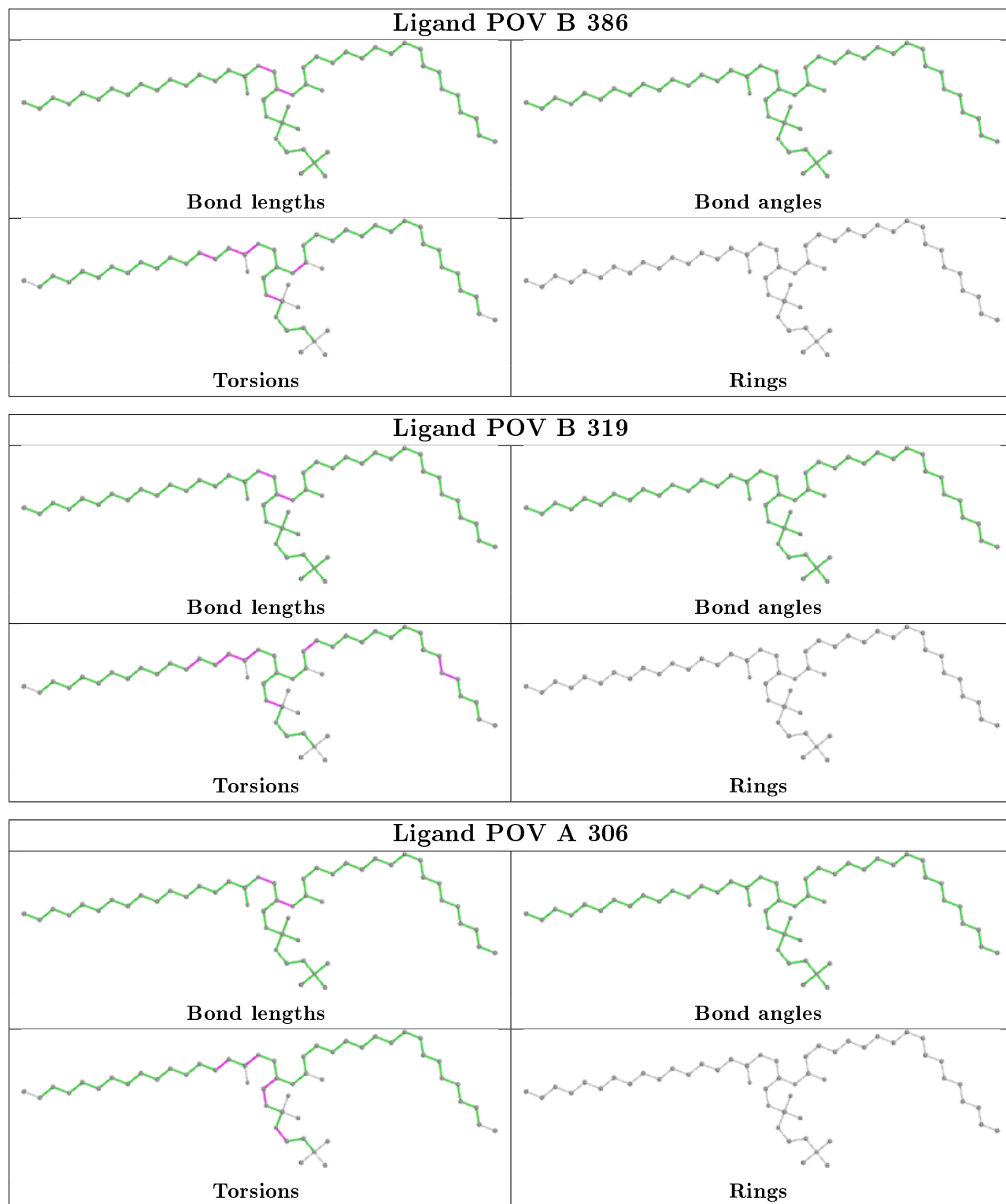
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	388	POV	1	0
2	B	339	POV	1	0
2	A	357	POV	1	0
2	B	331	POV	2	0
2	B	334	POV	1	0

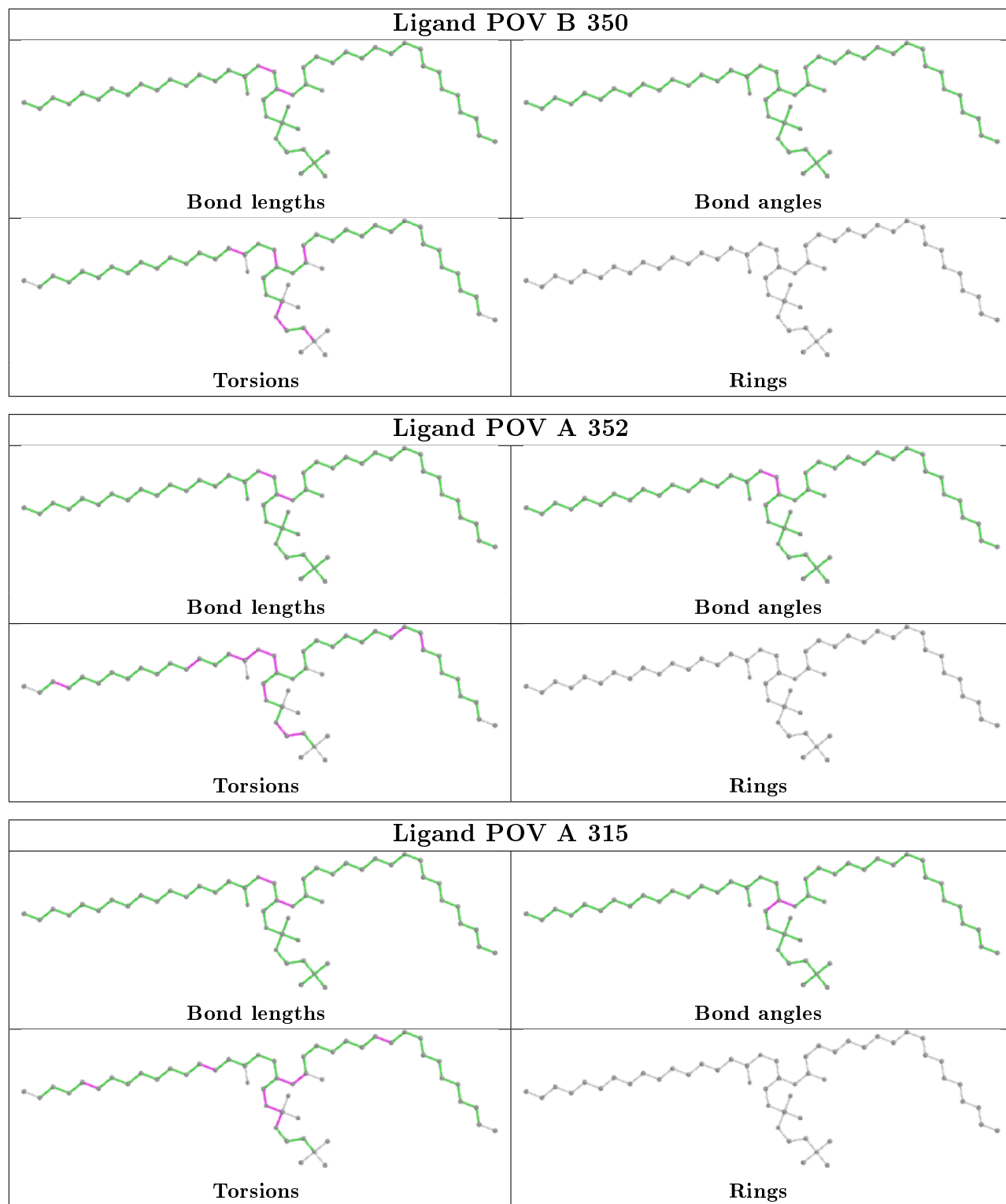
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

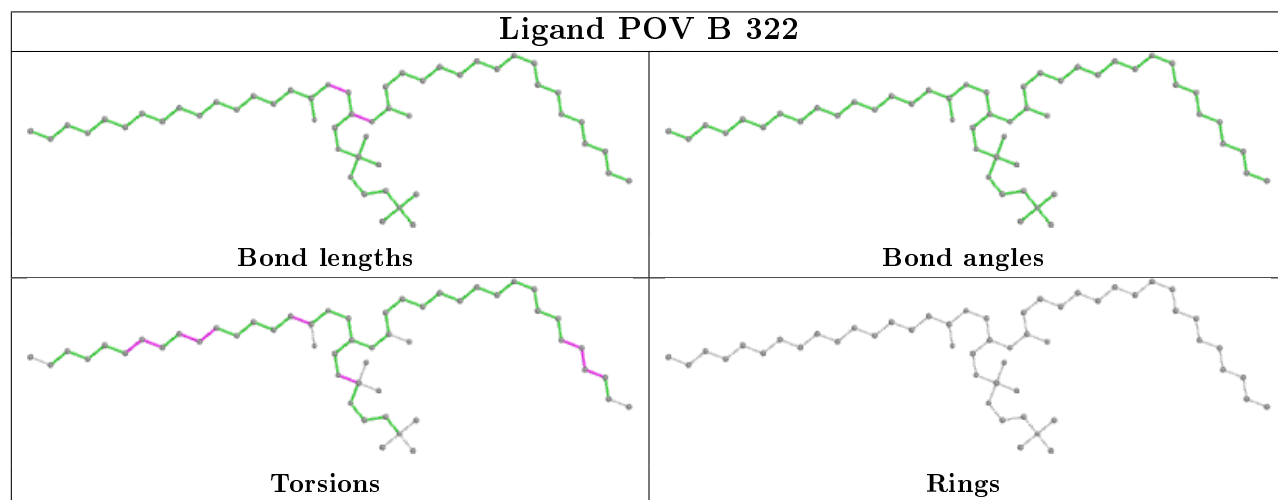
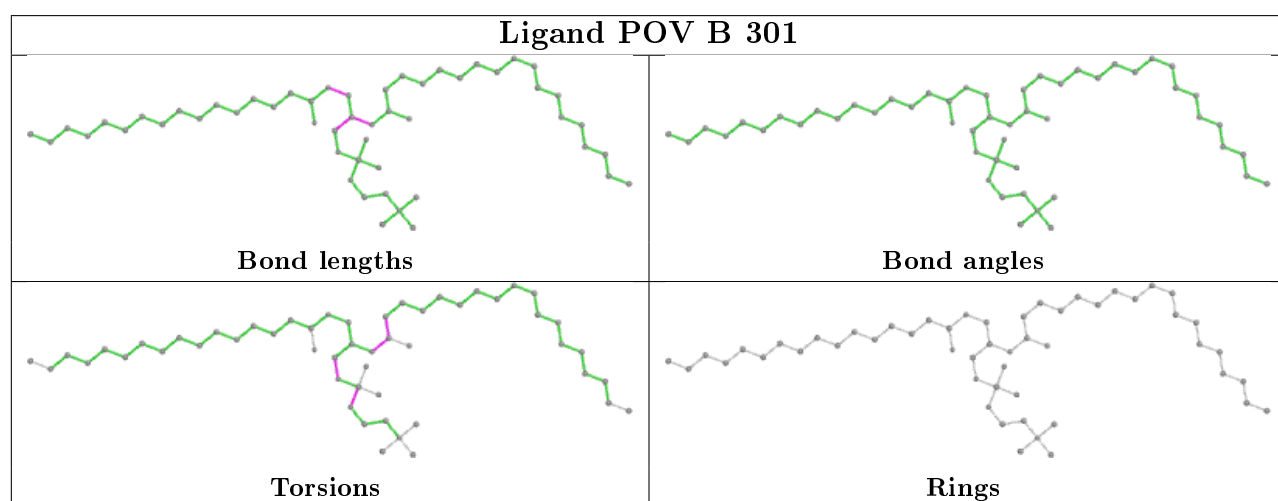
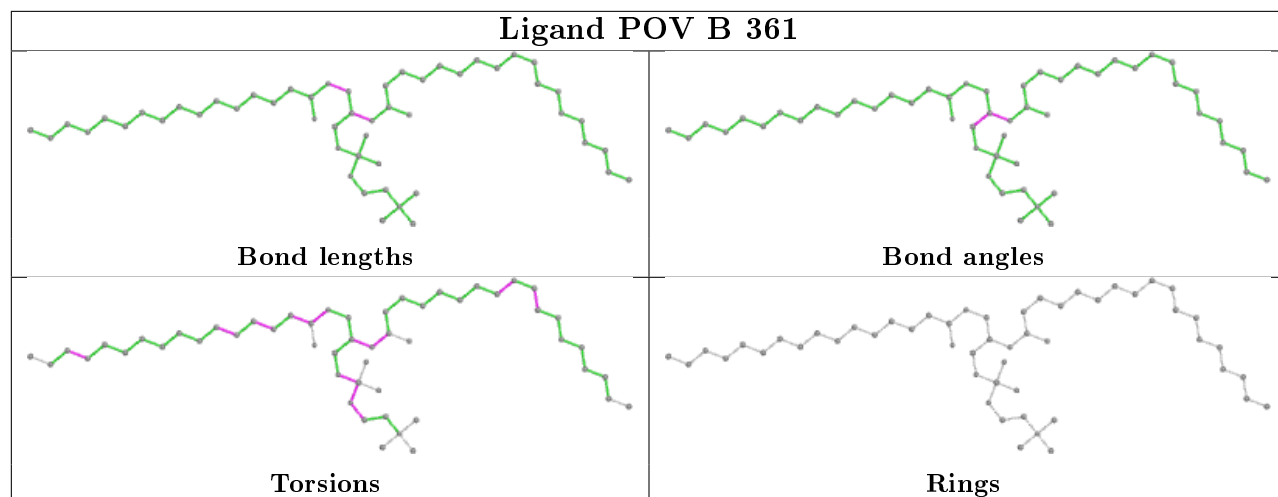


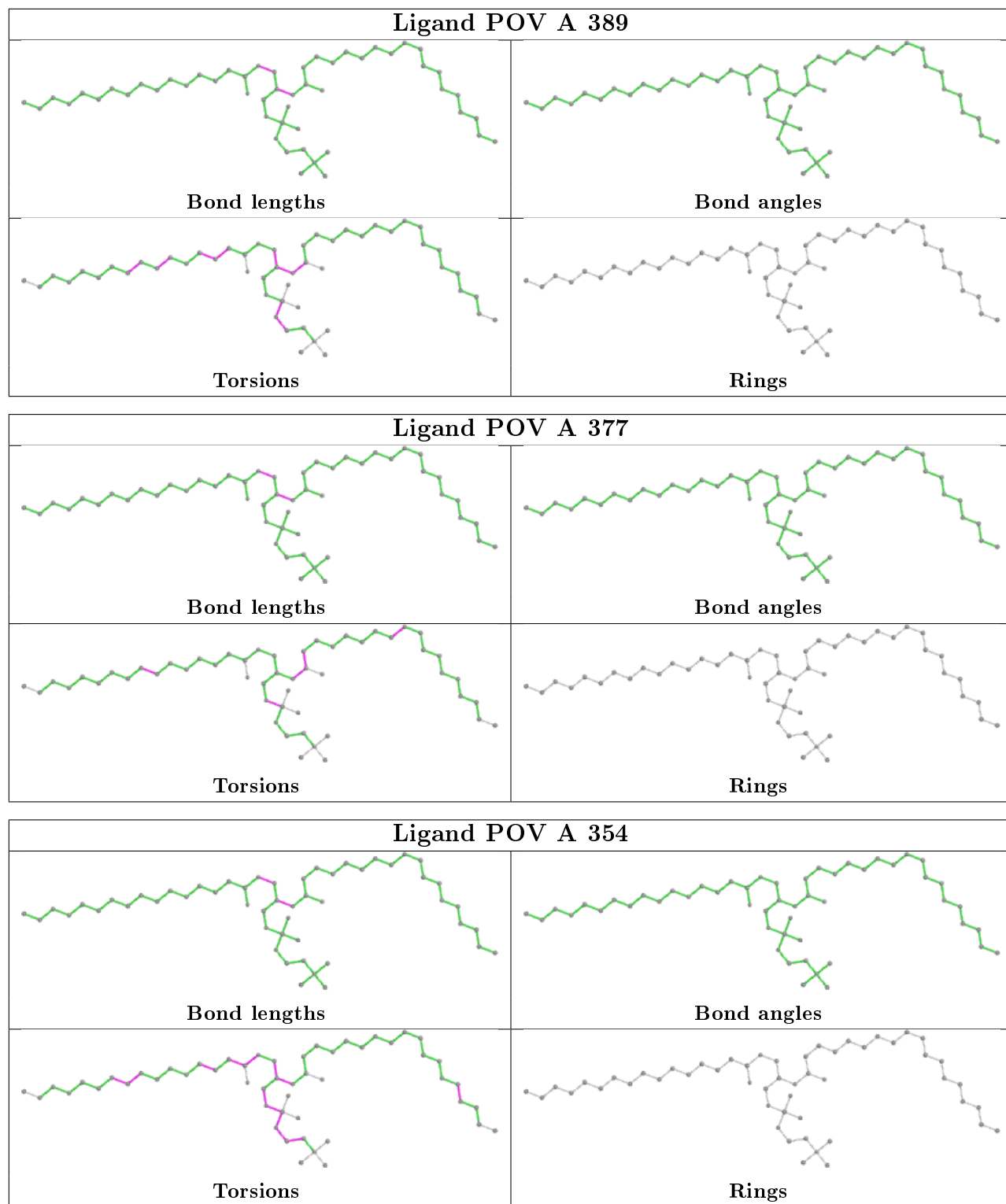


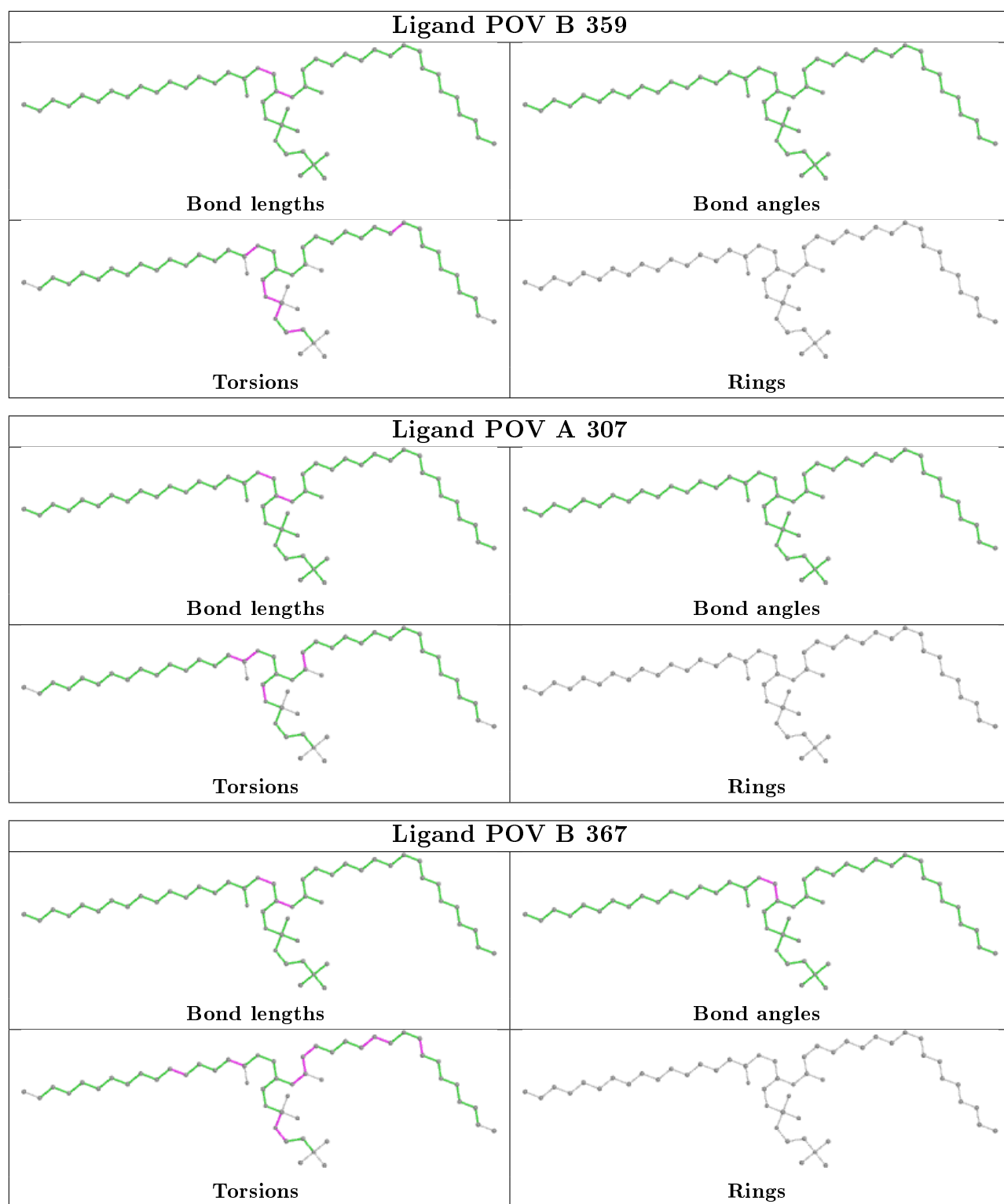


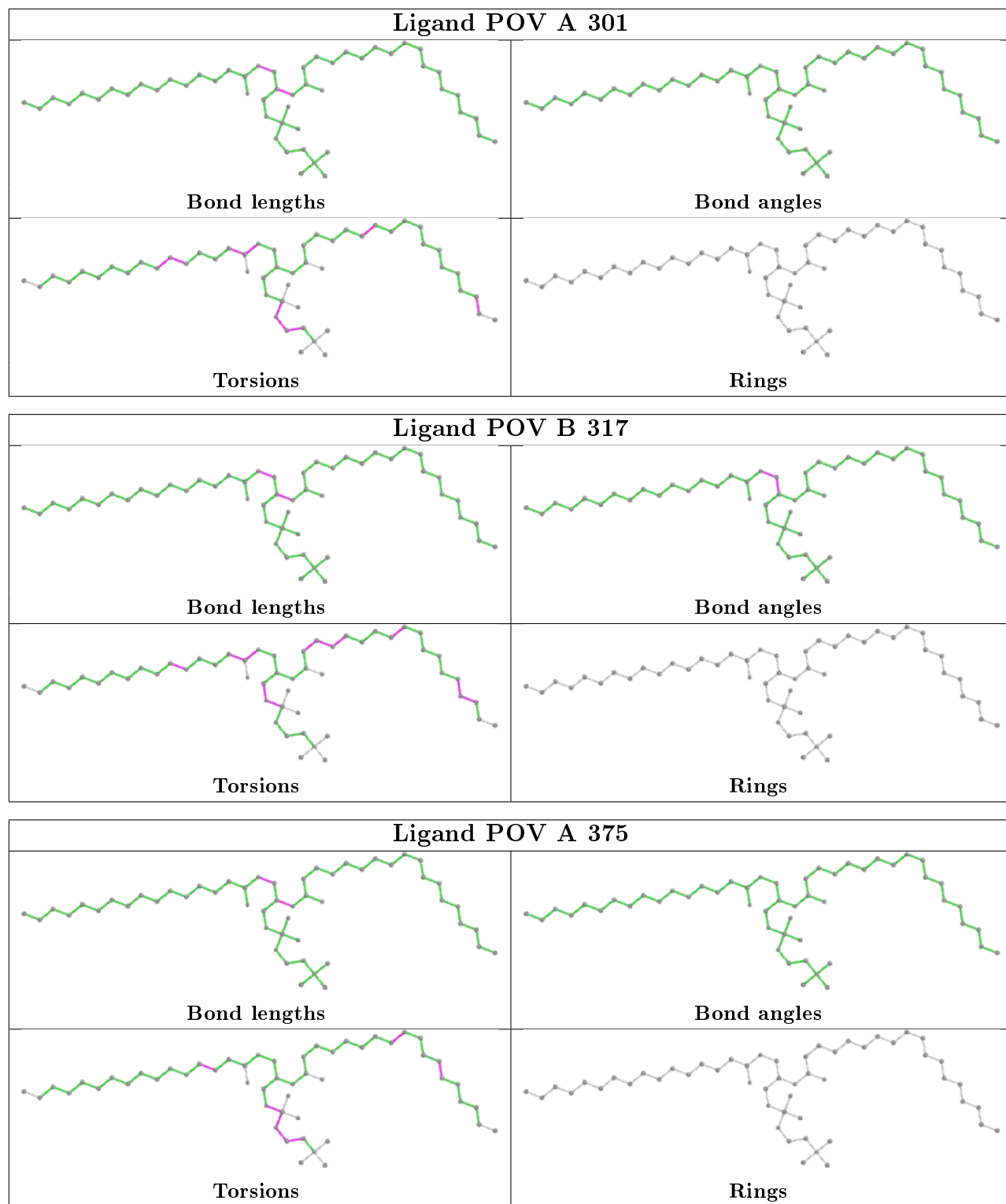


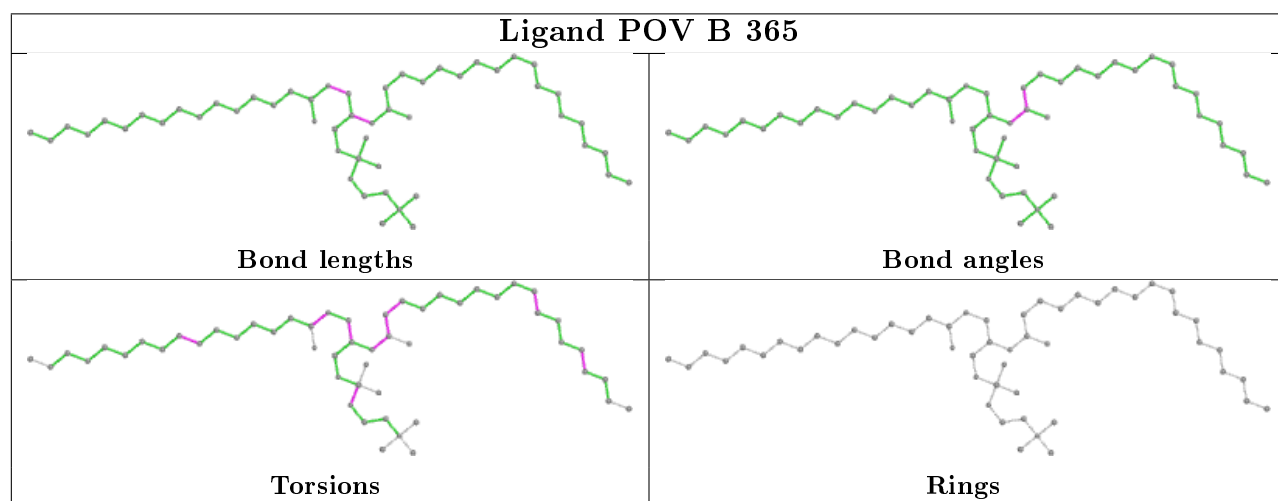
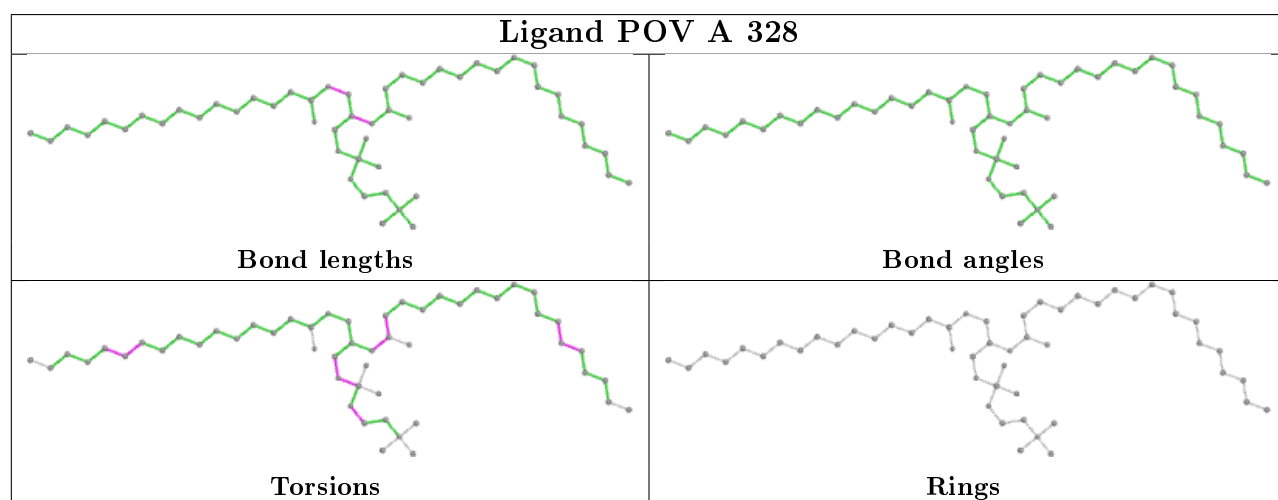
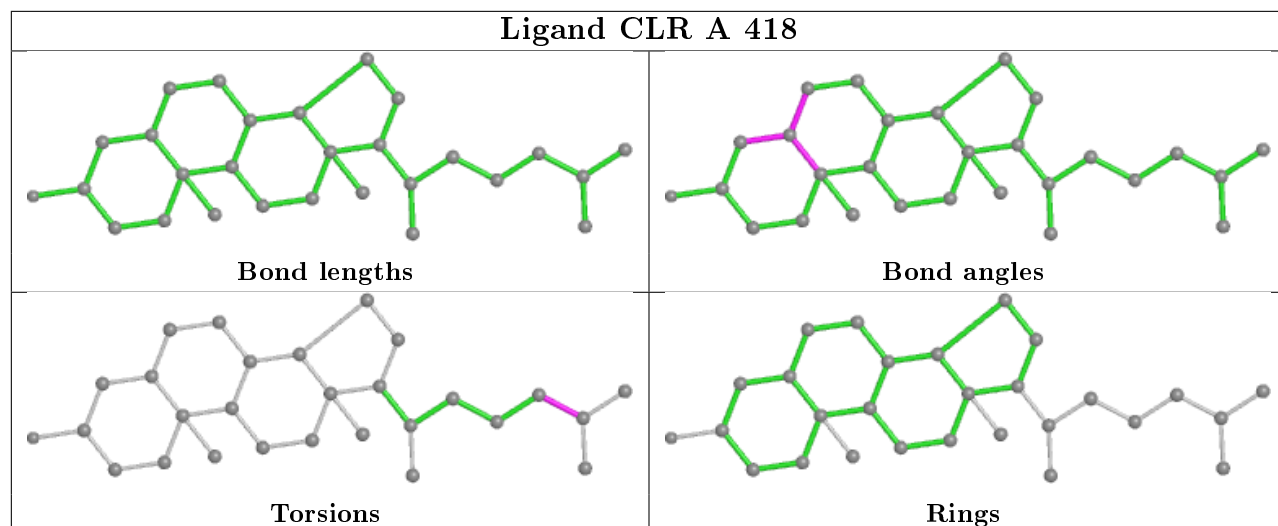


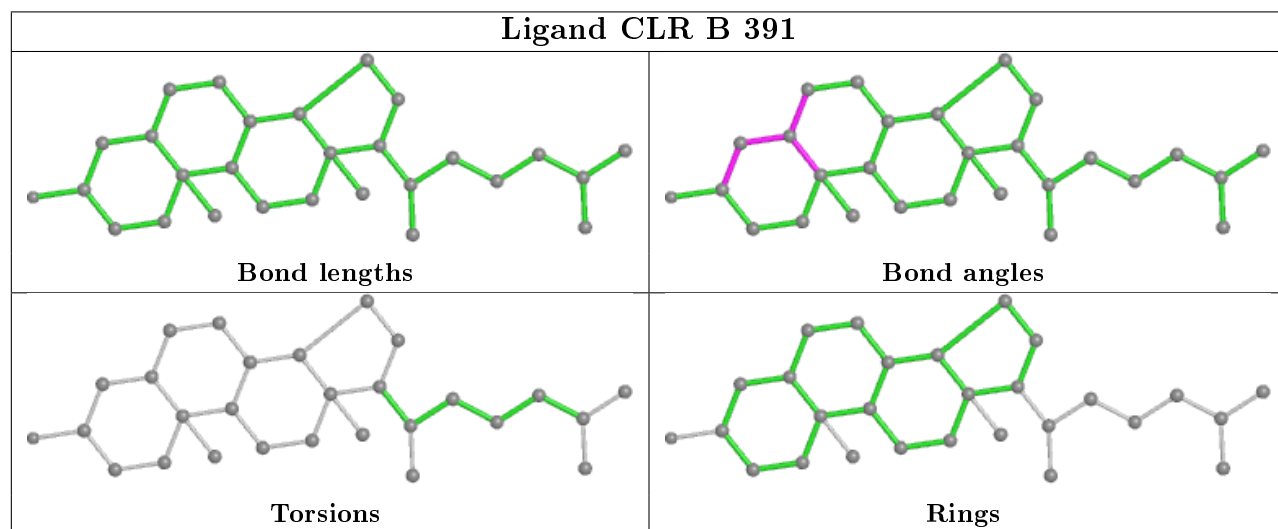
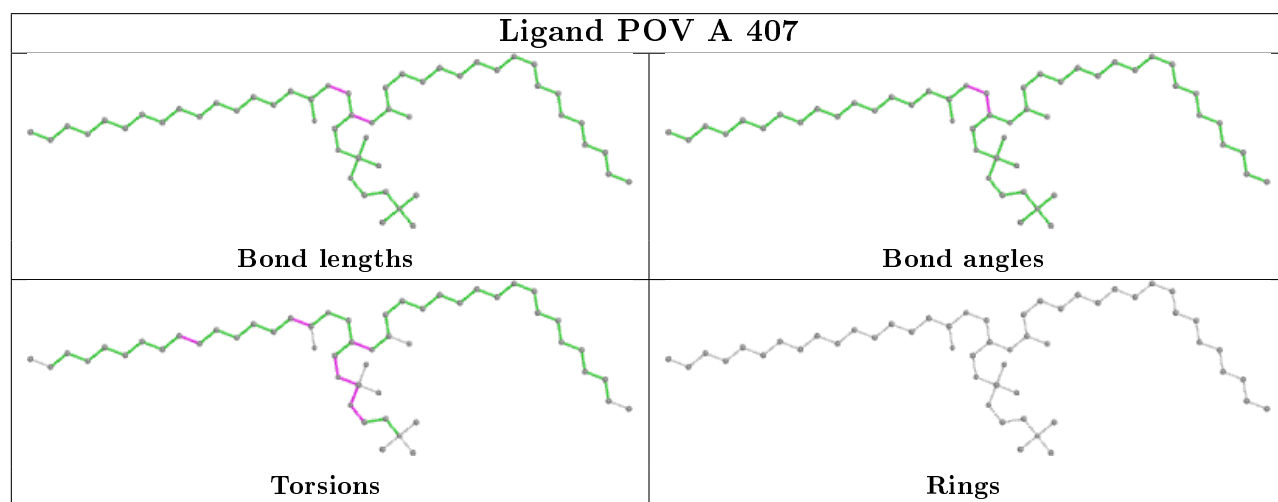
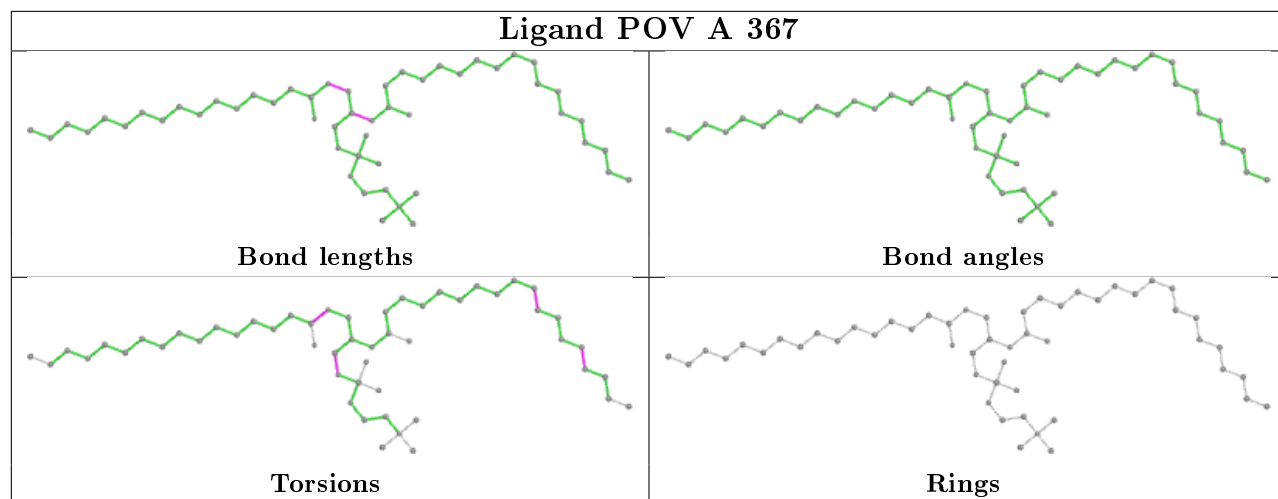


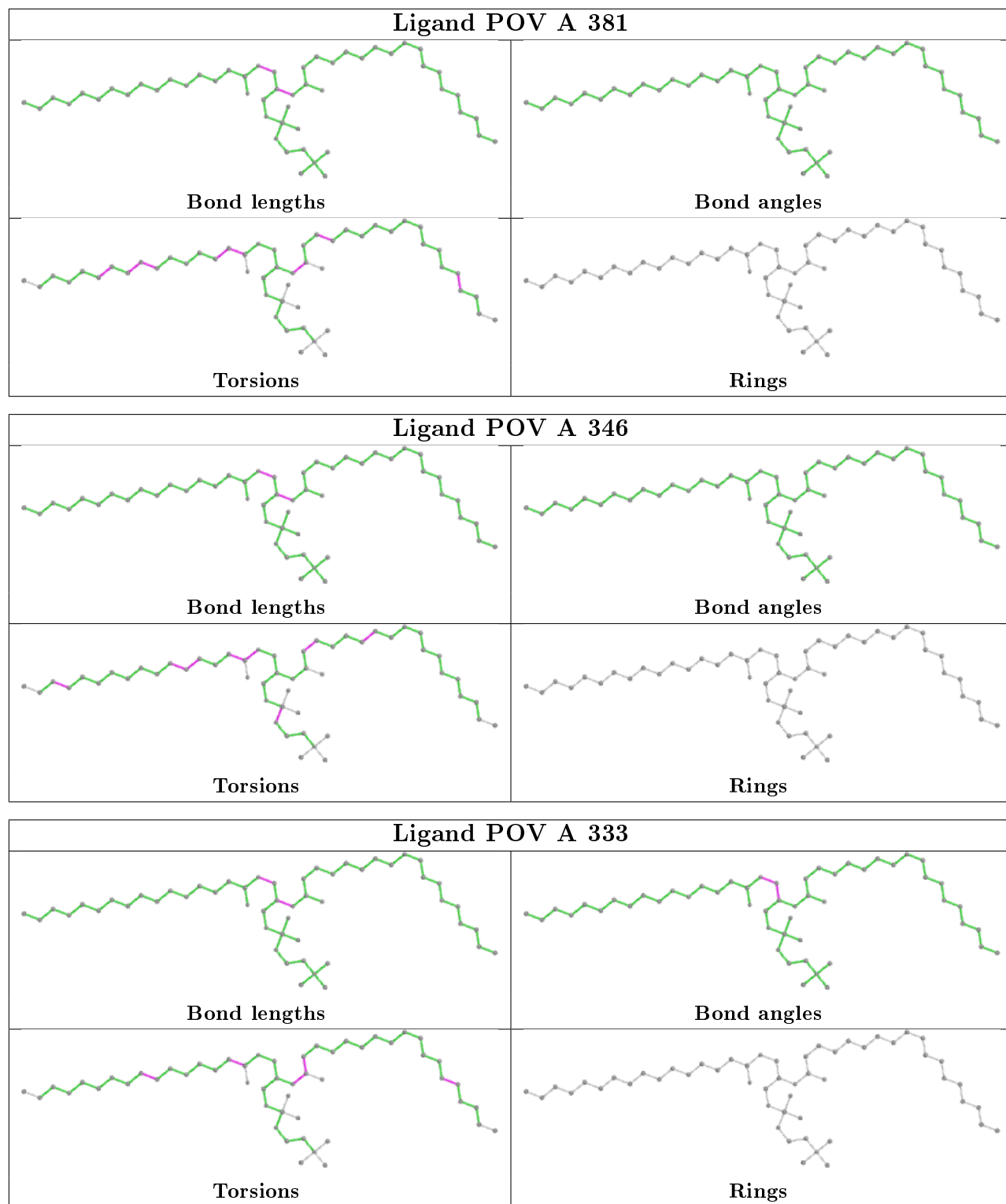


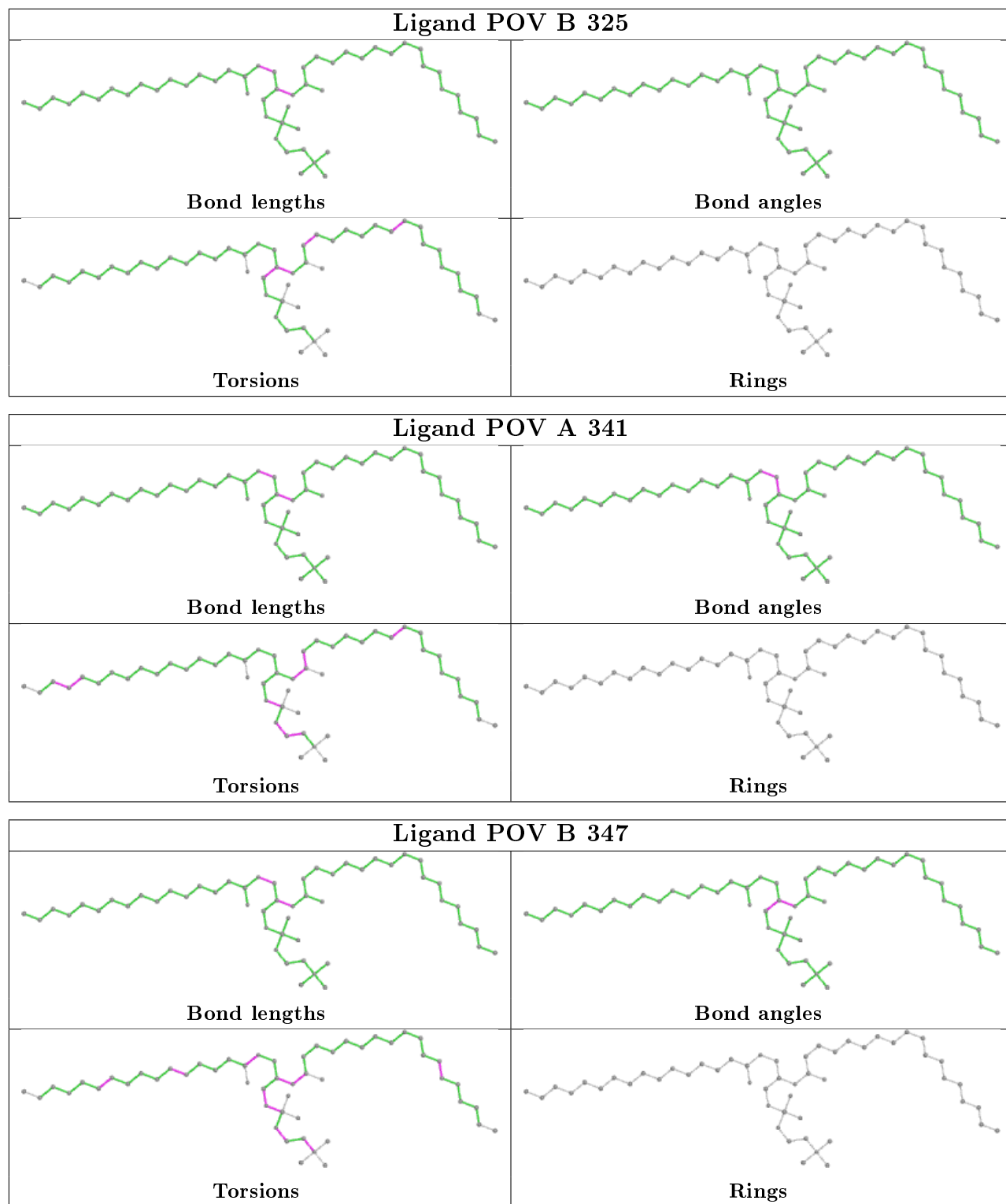


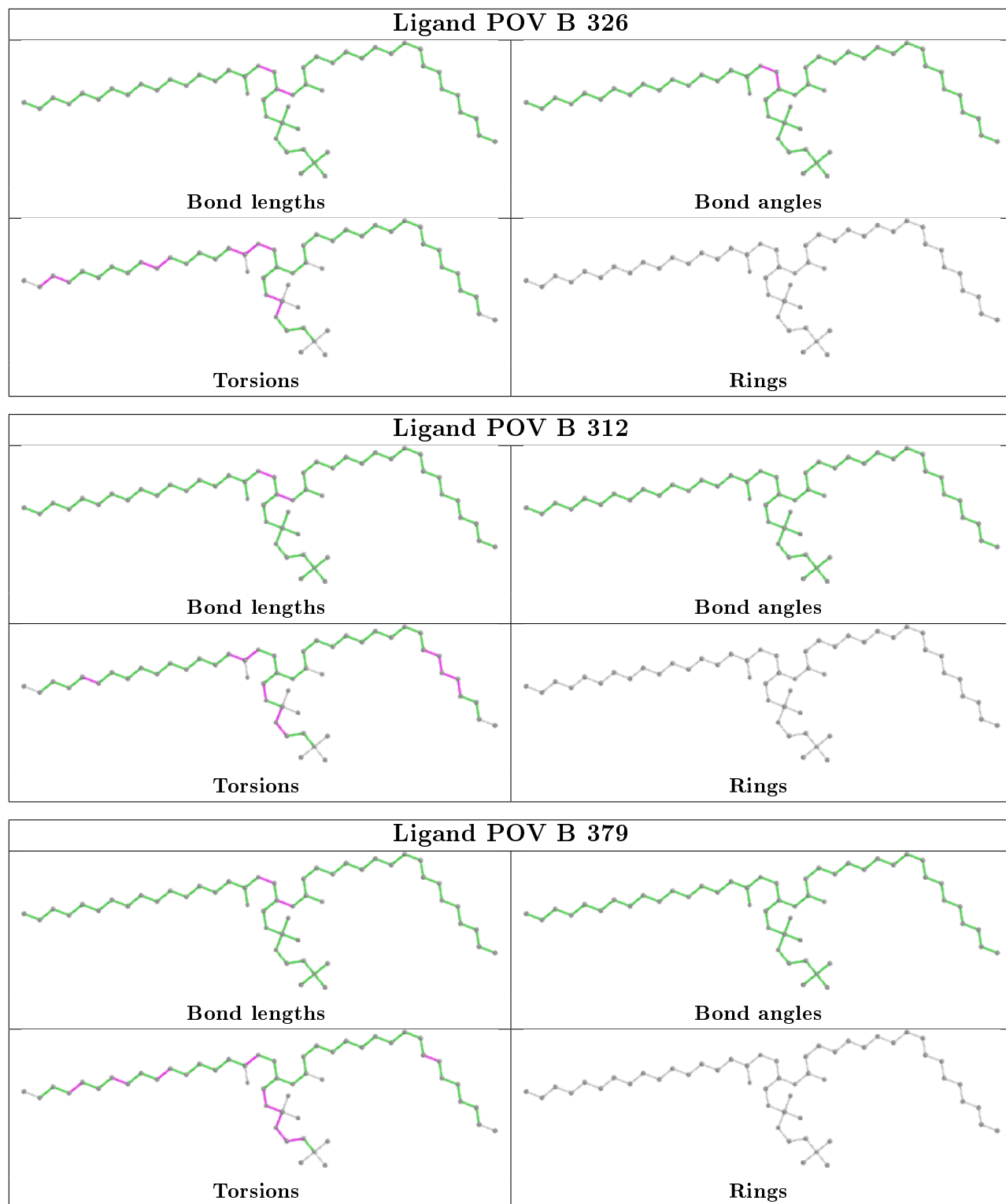


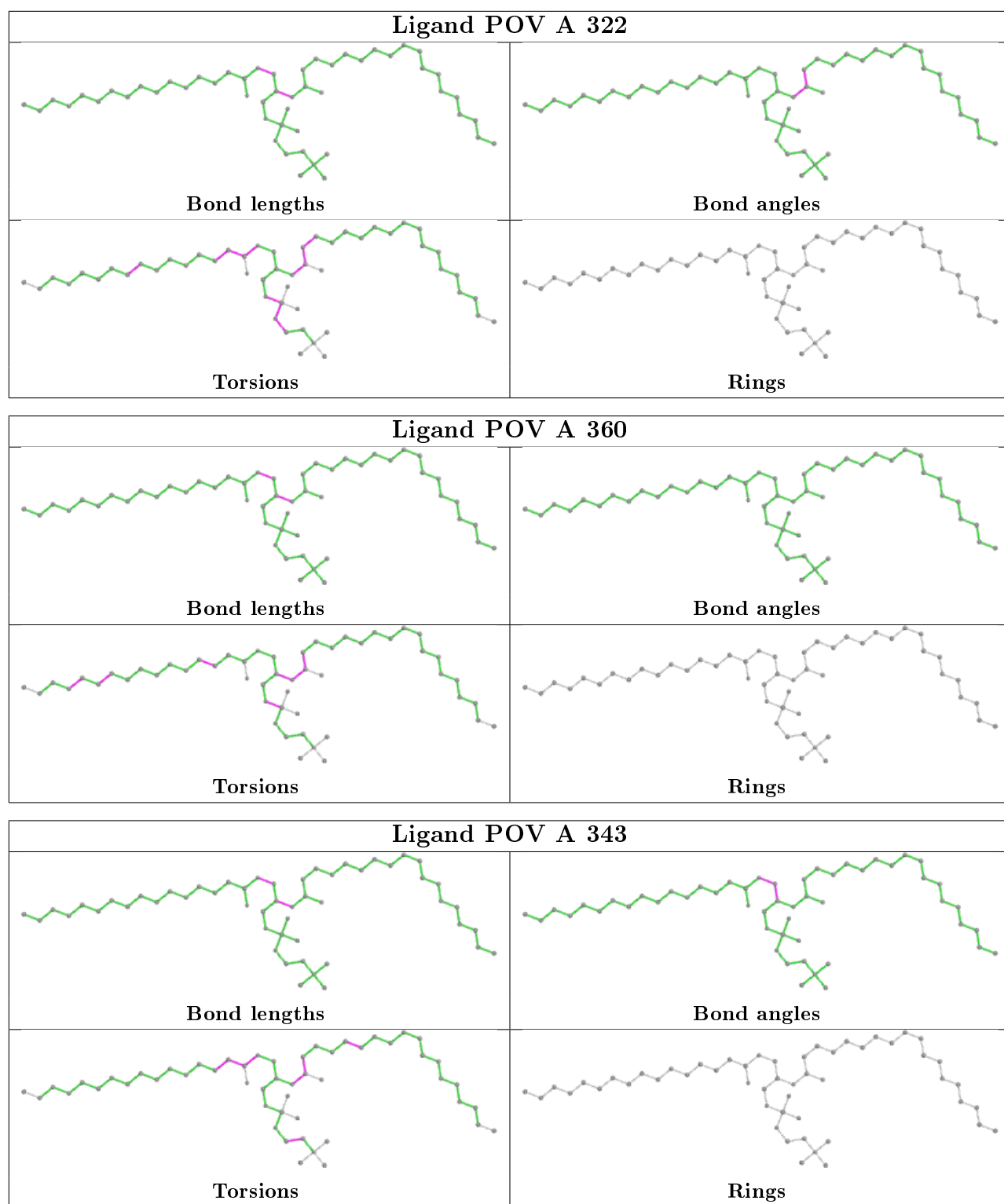


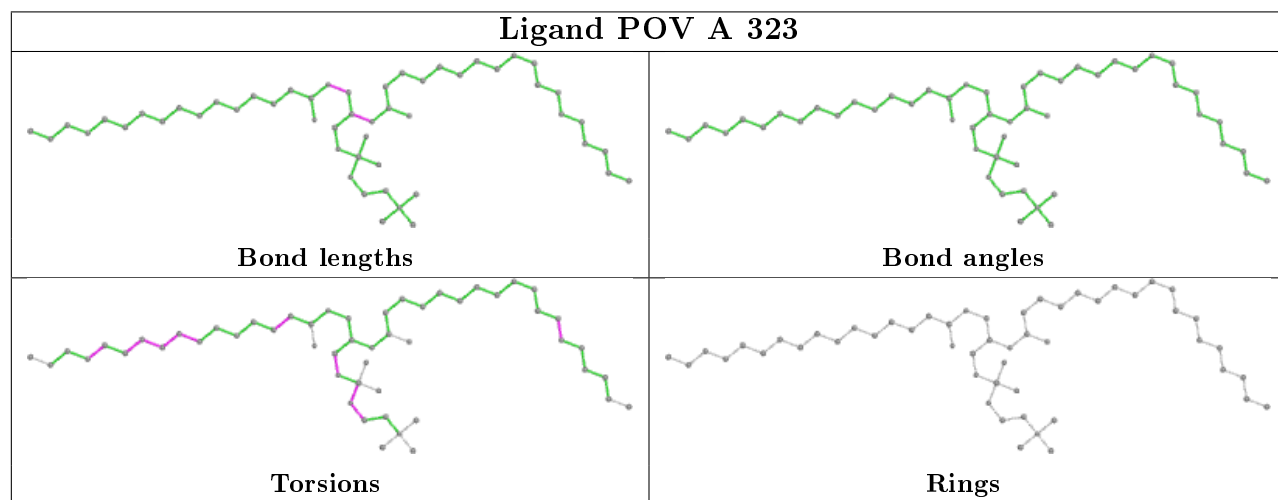
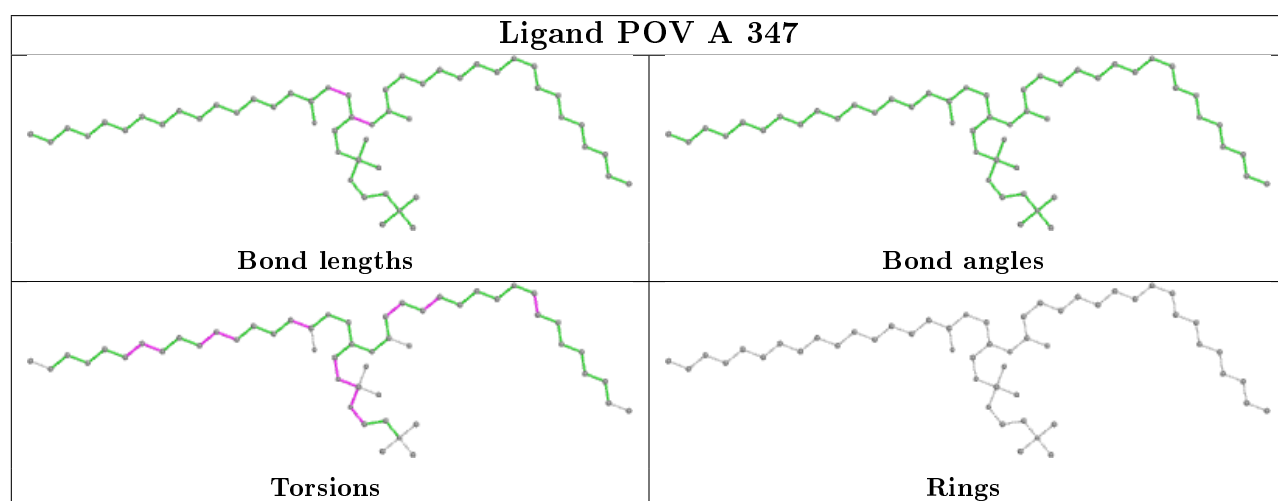
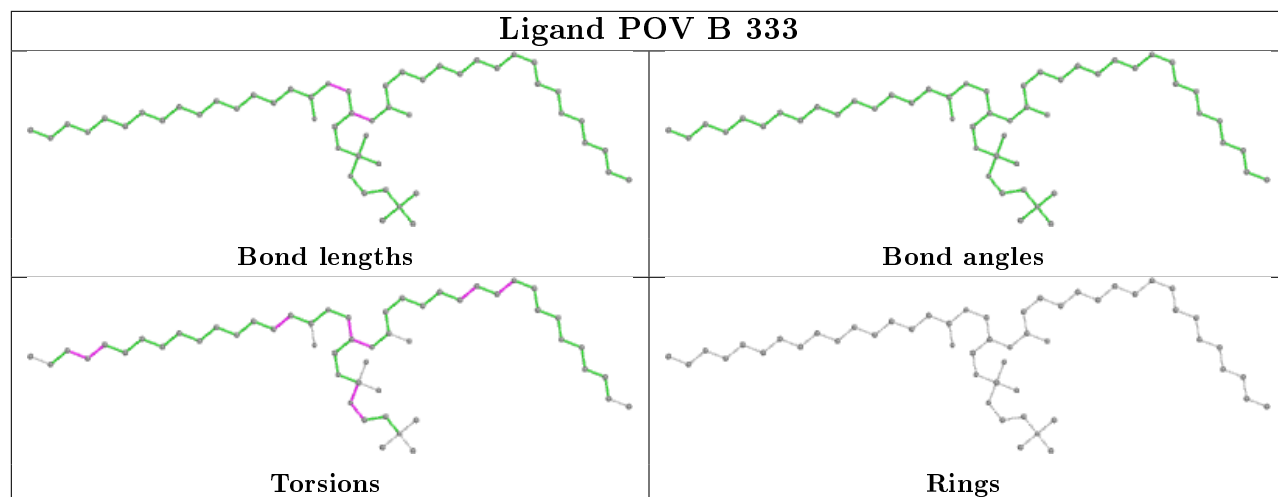


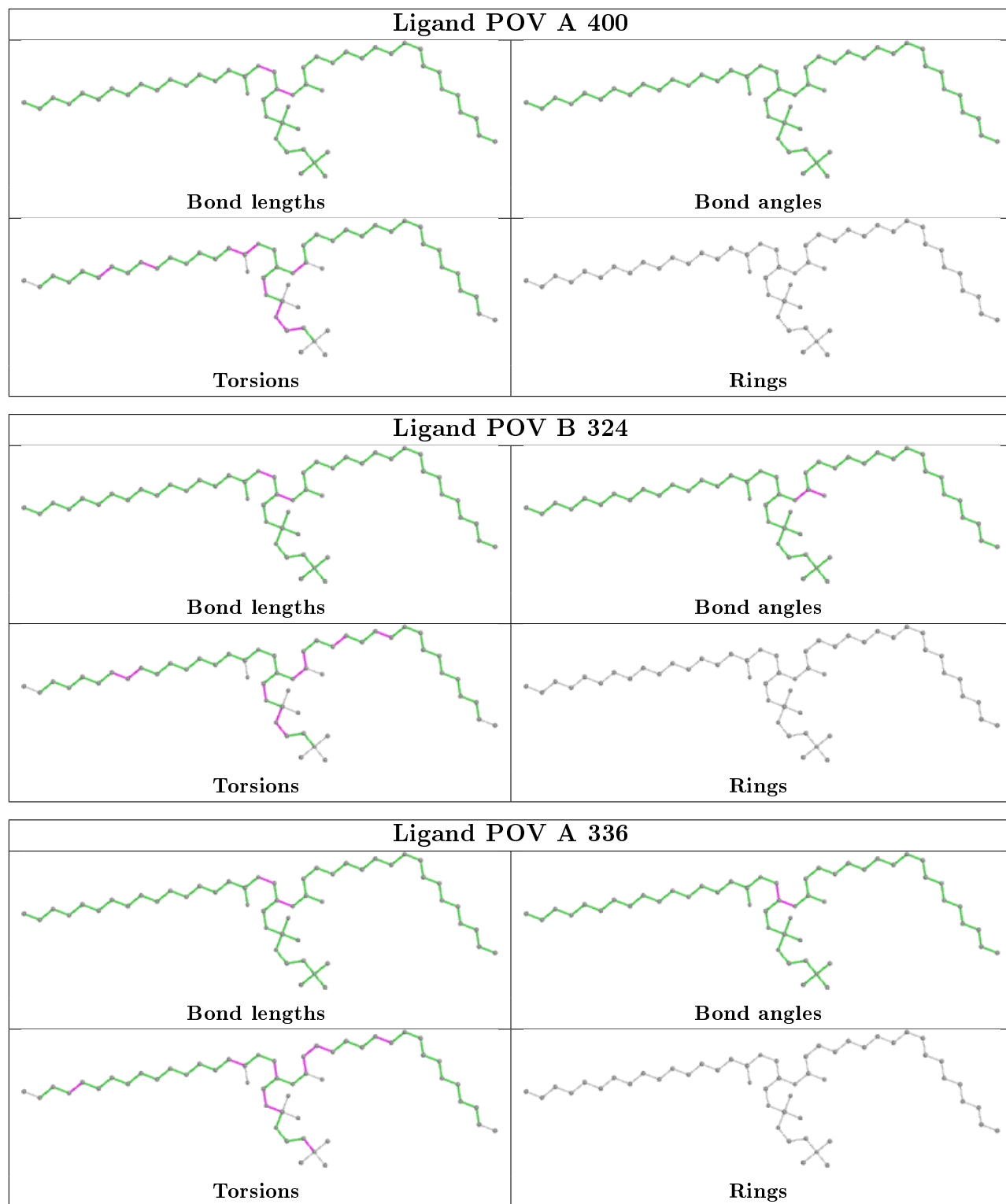


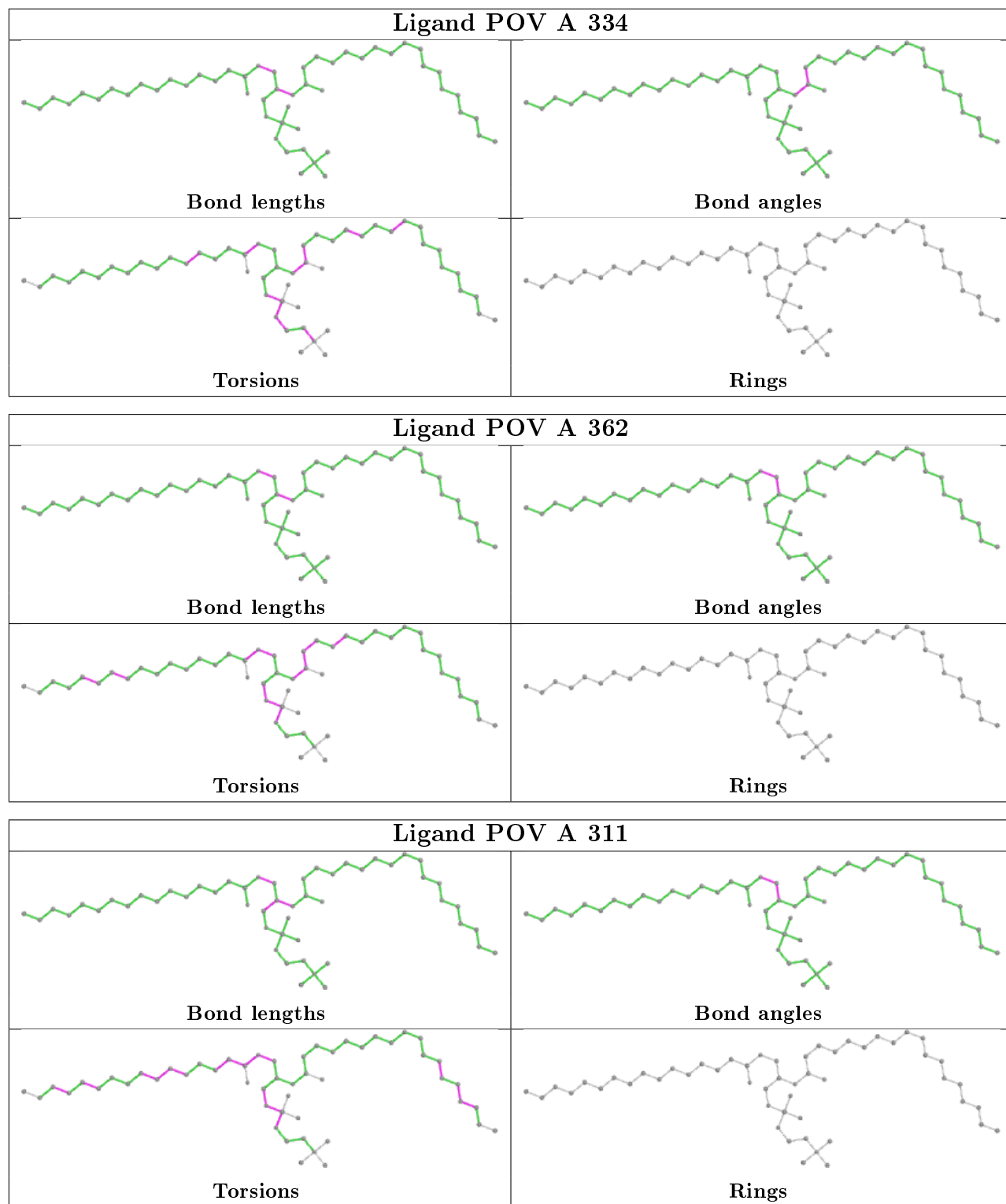


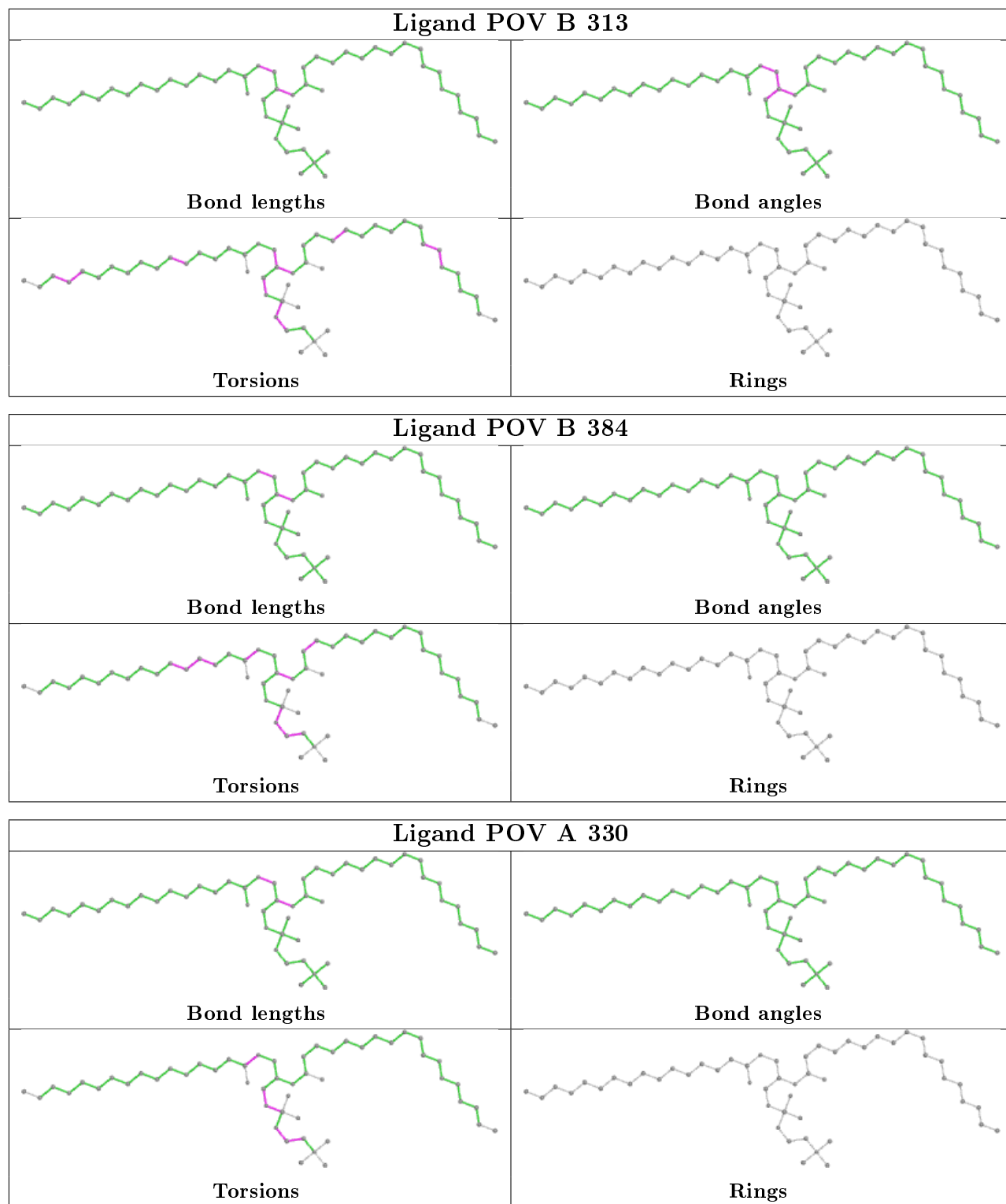


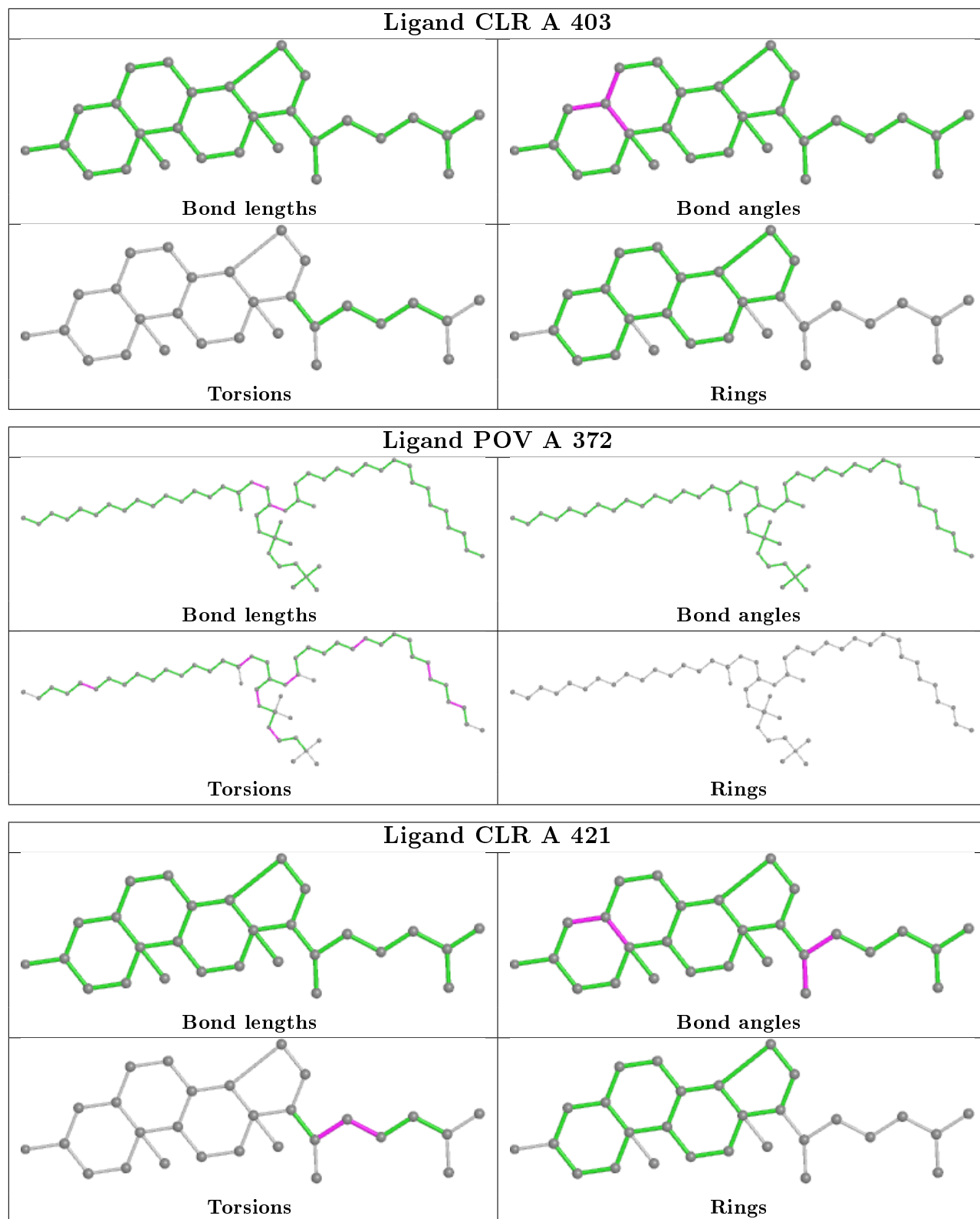


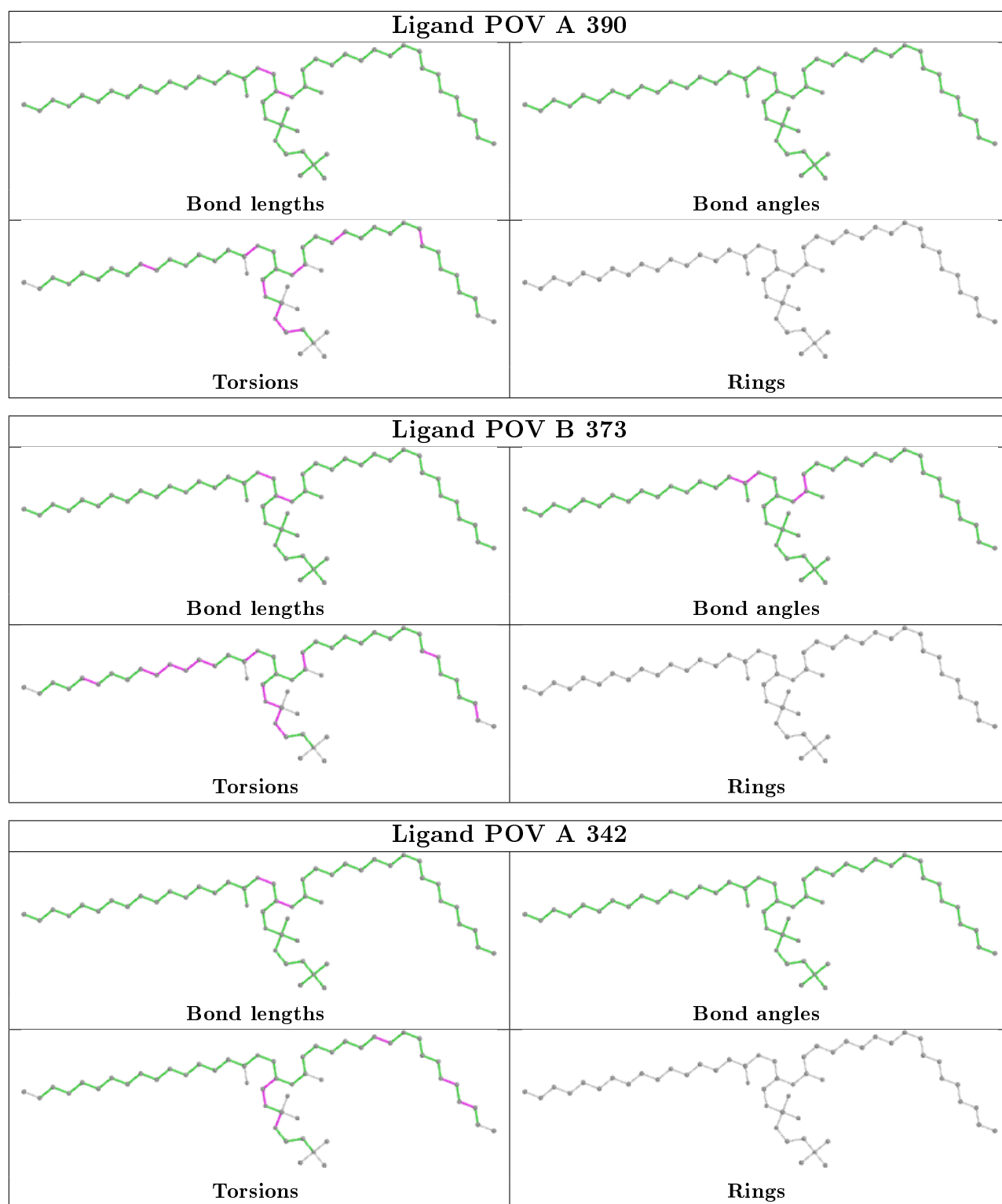


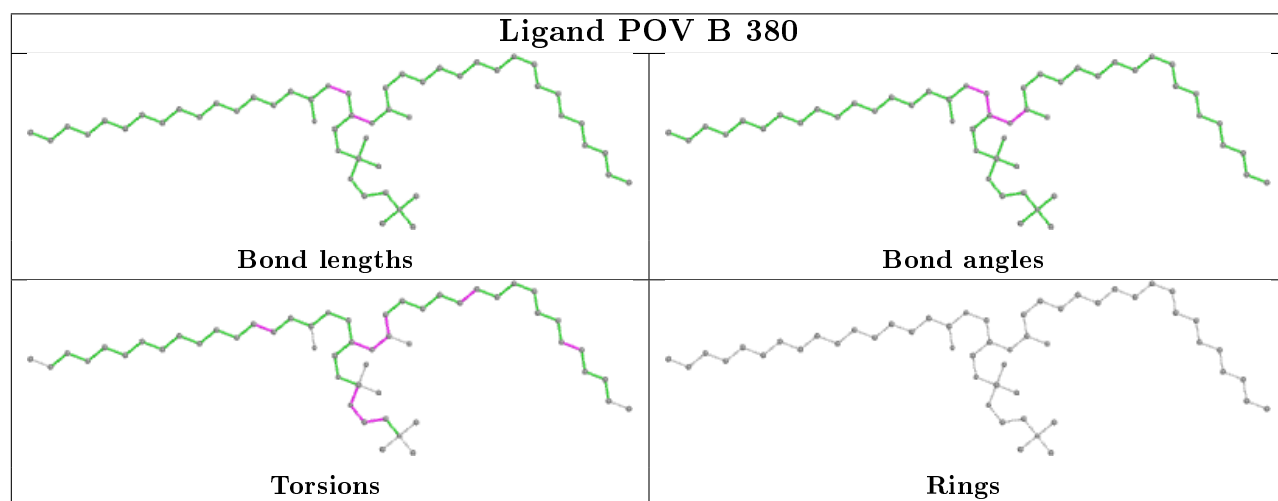
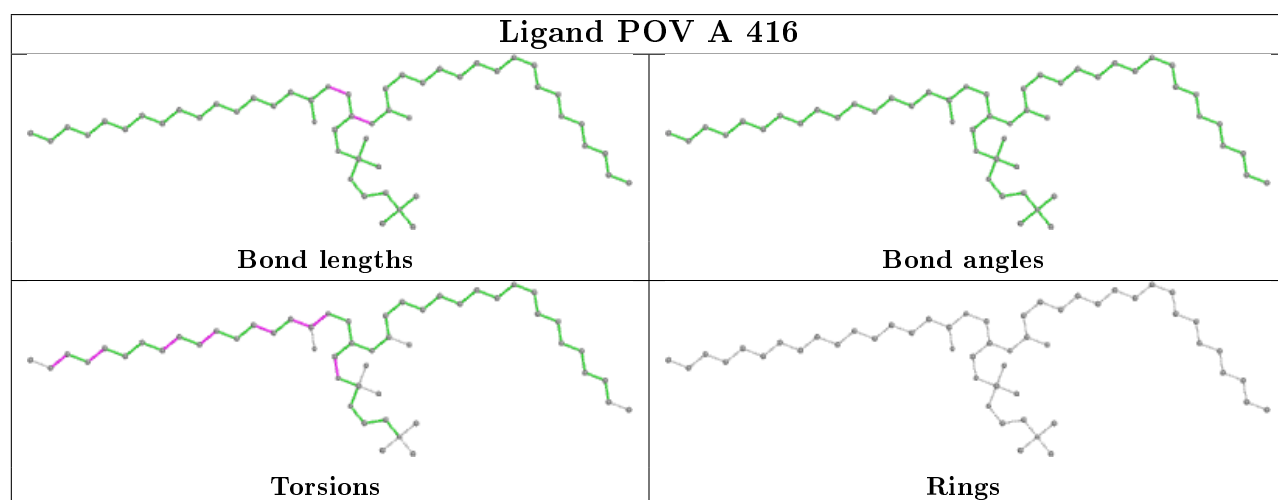
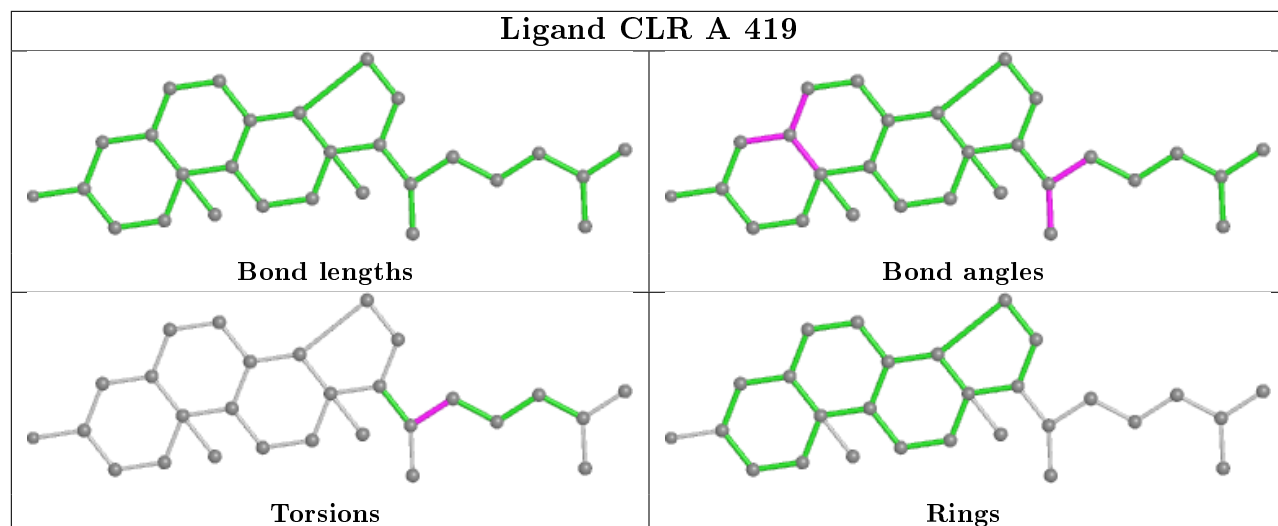


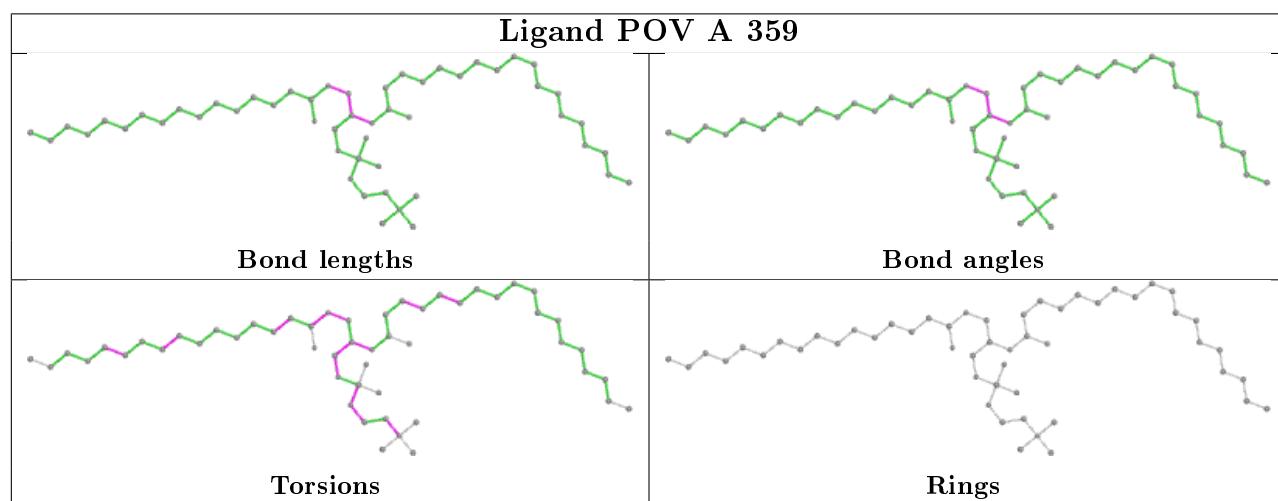
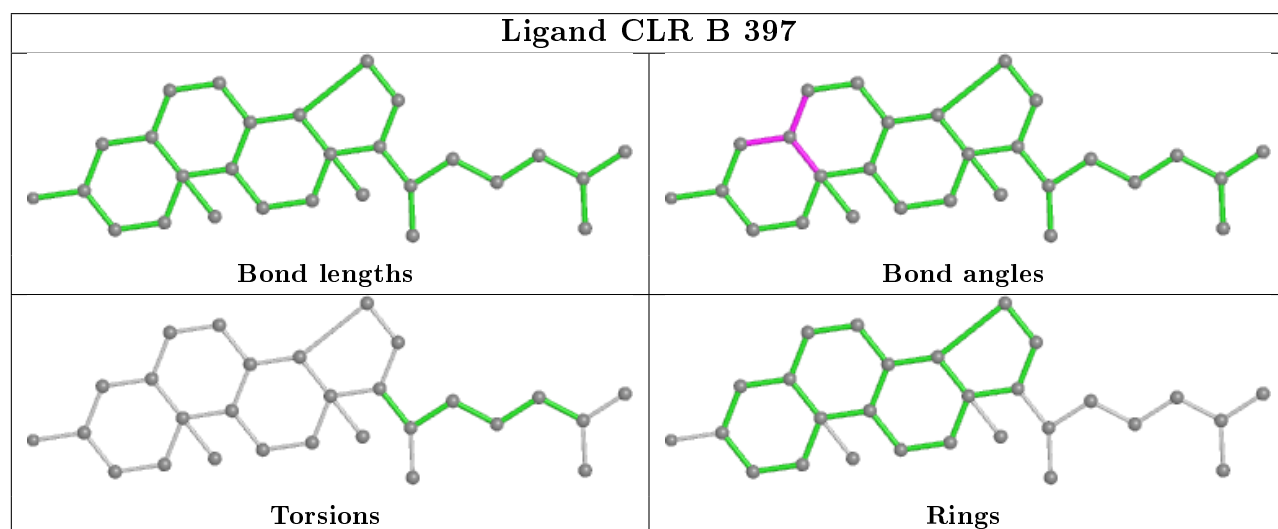
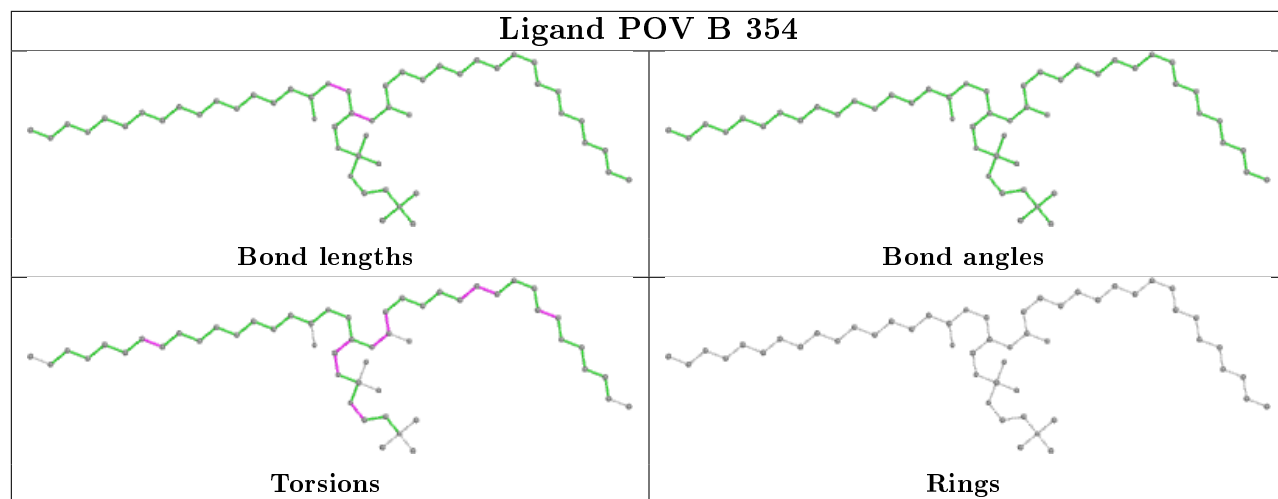


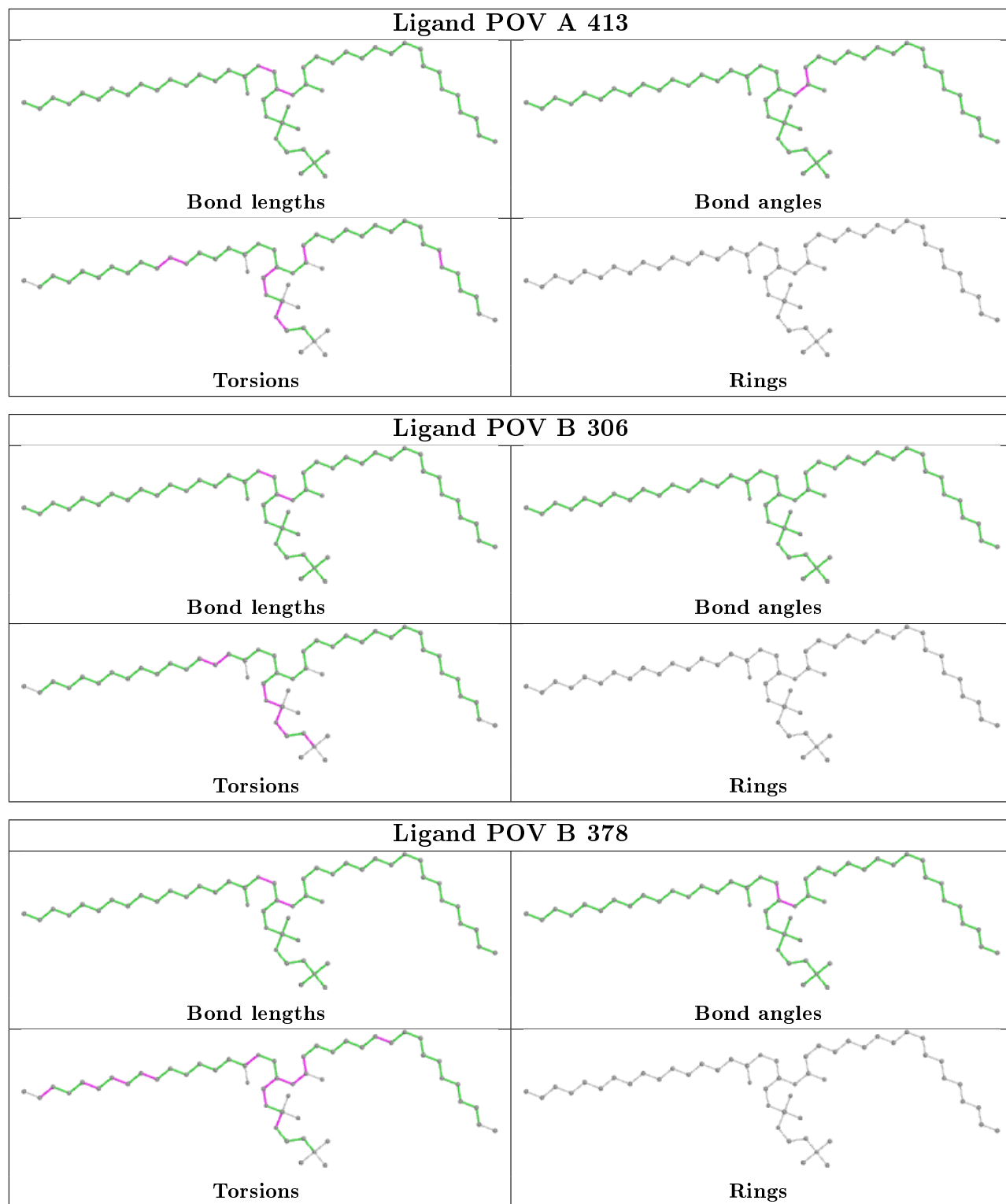


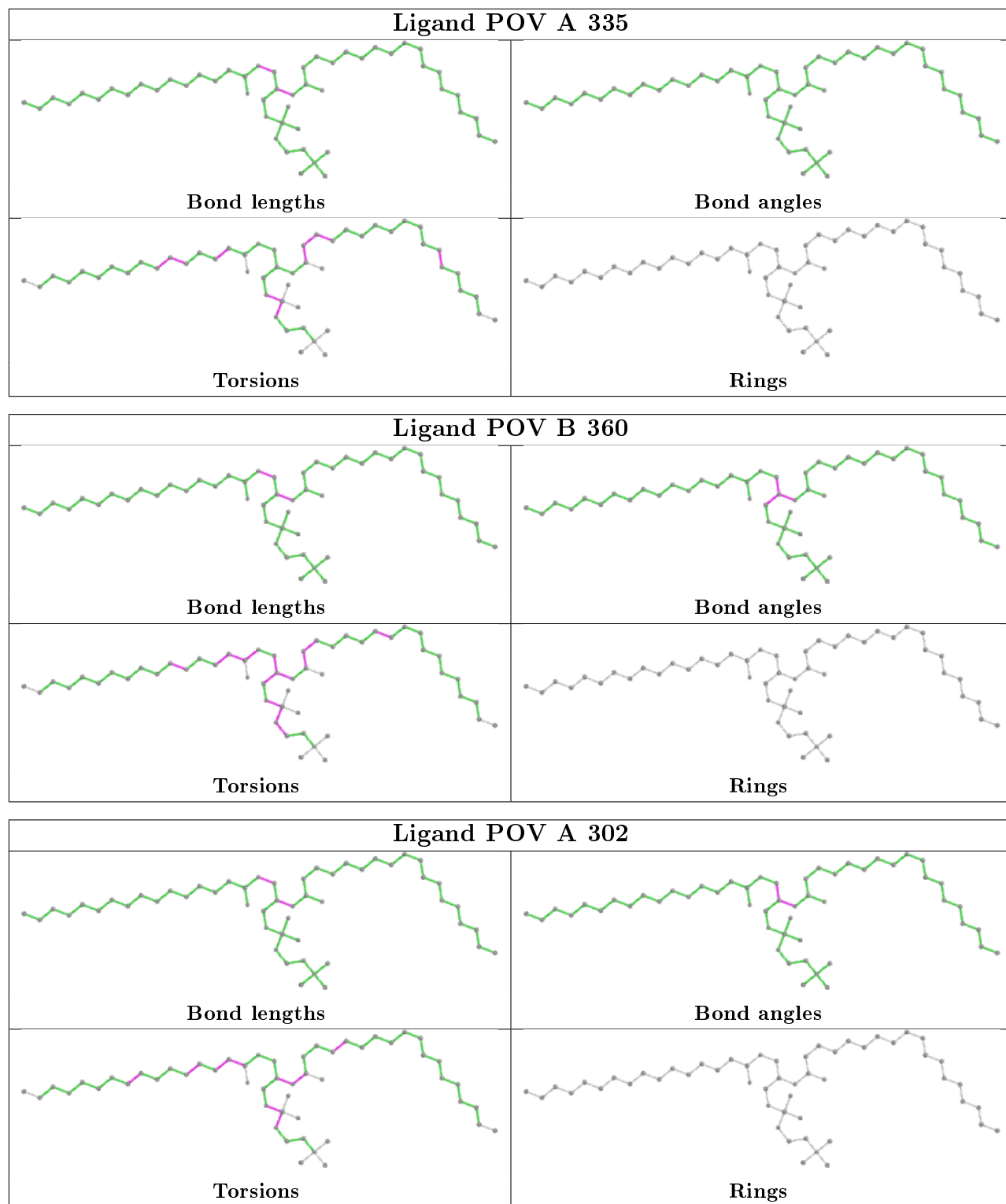


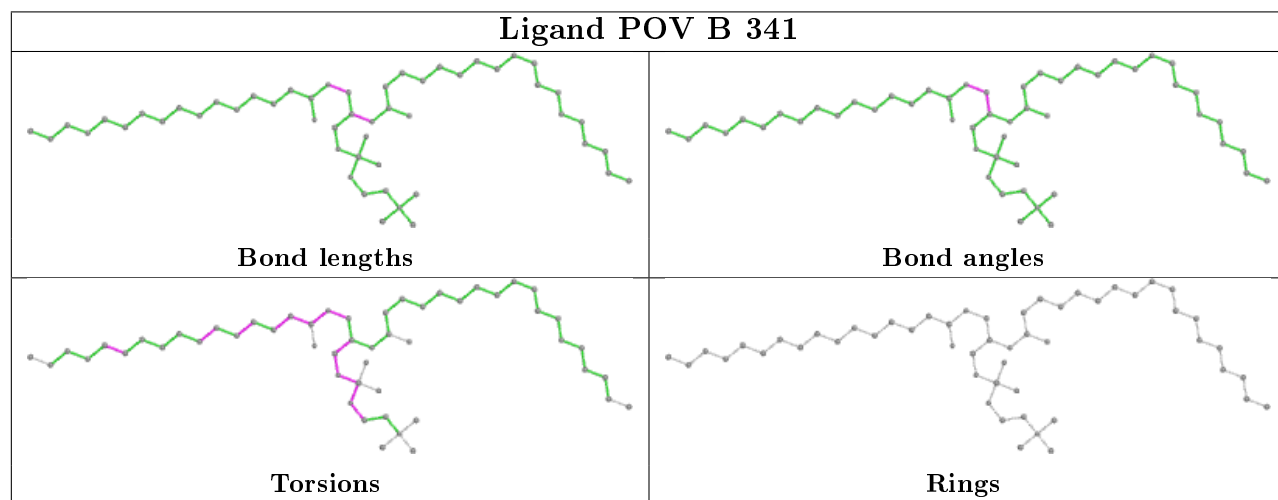
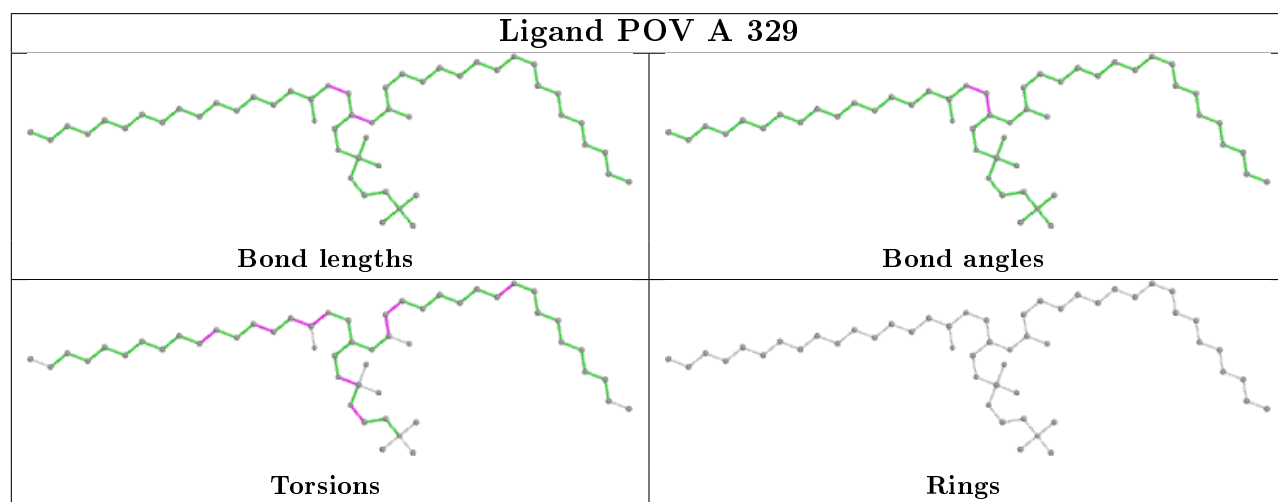
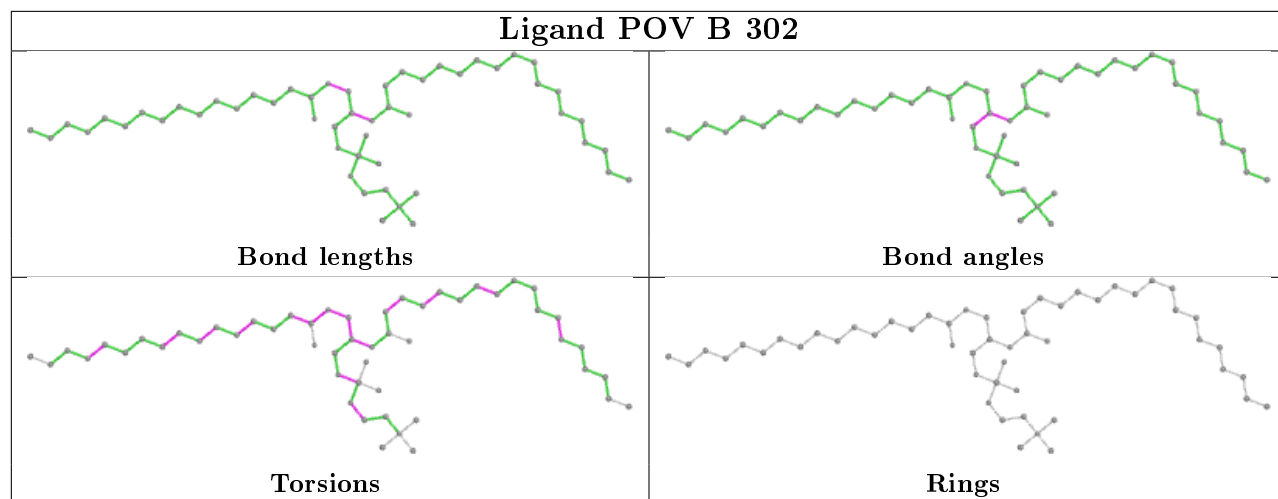


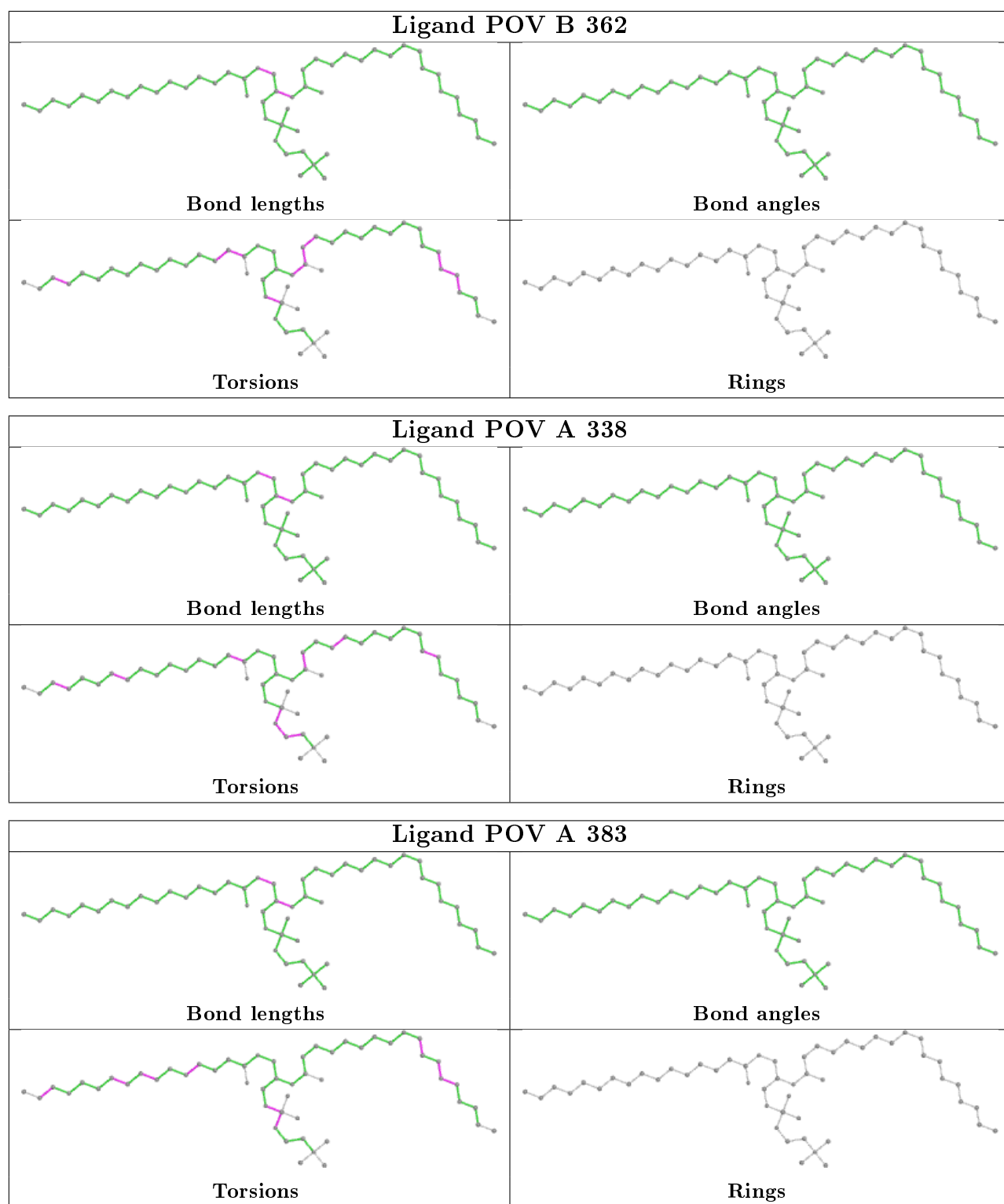


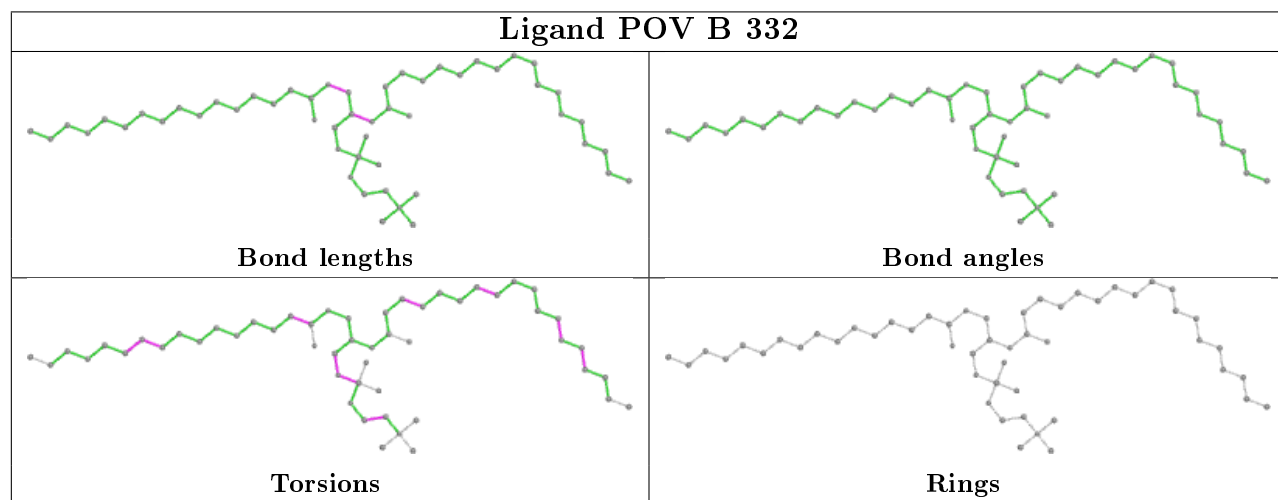
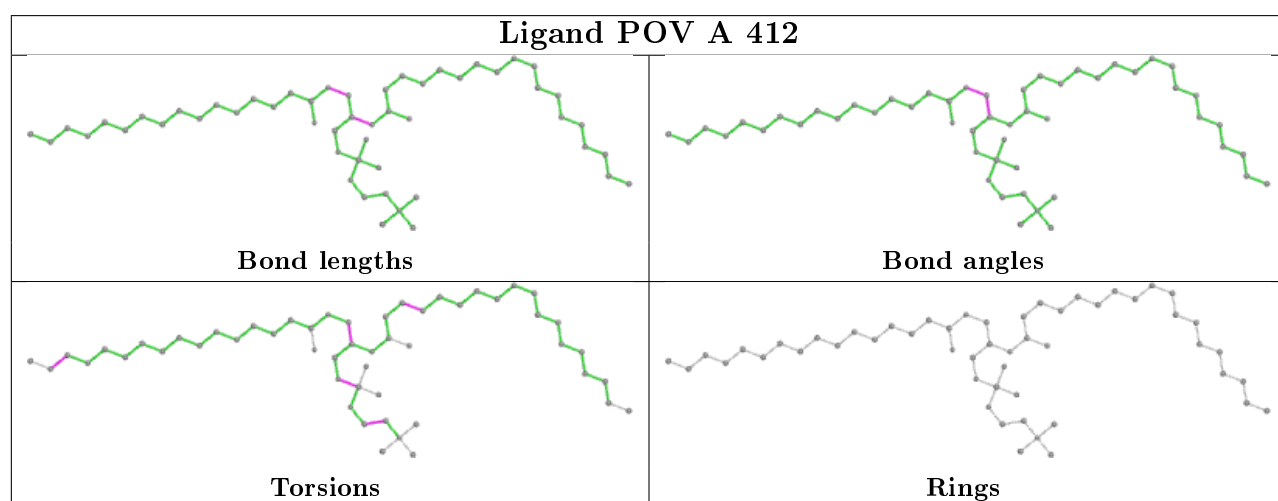
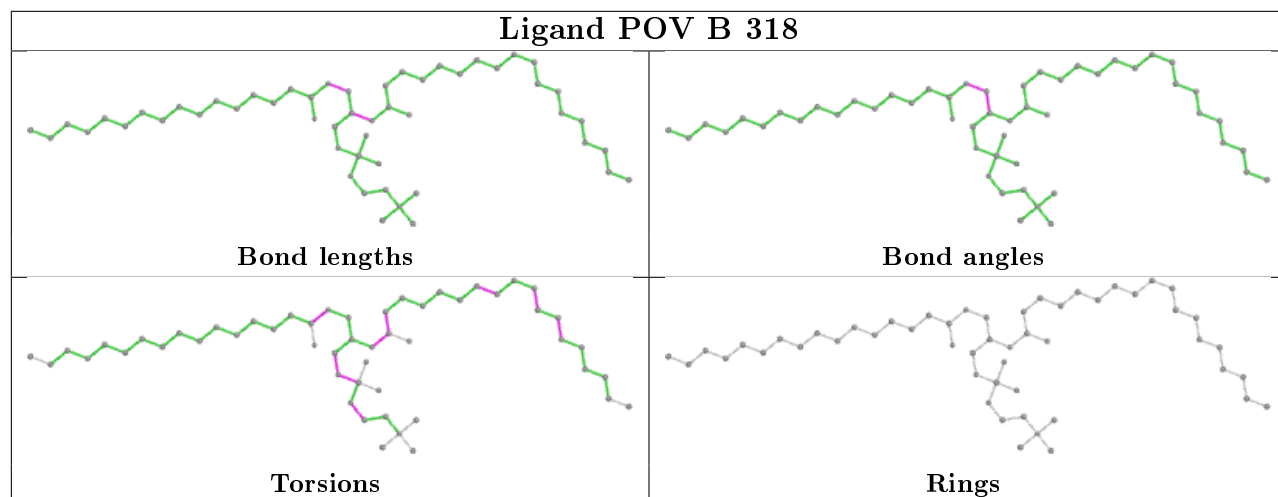


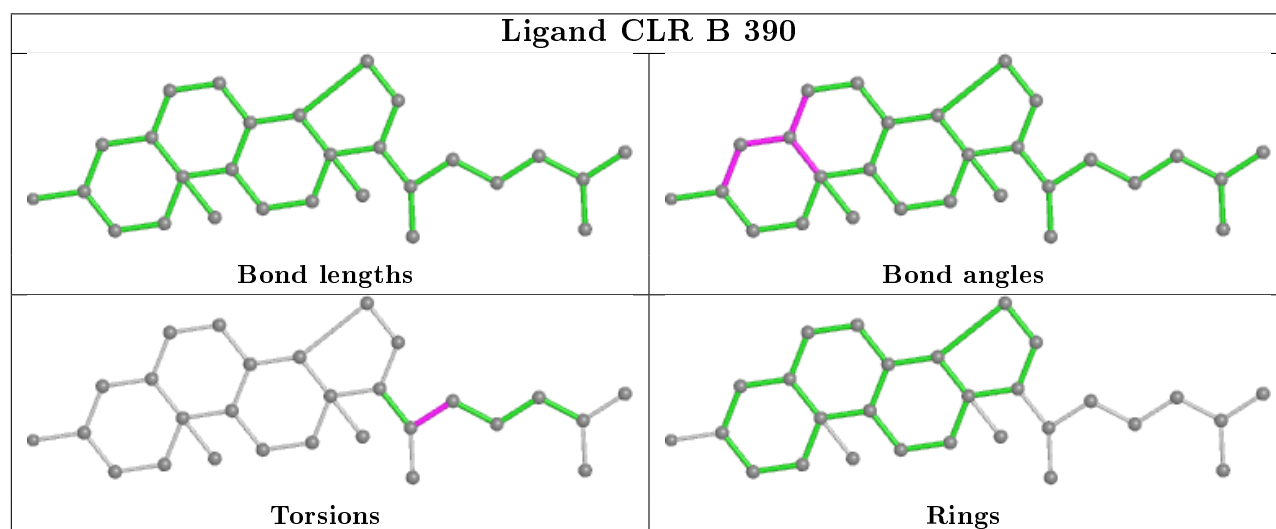
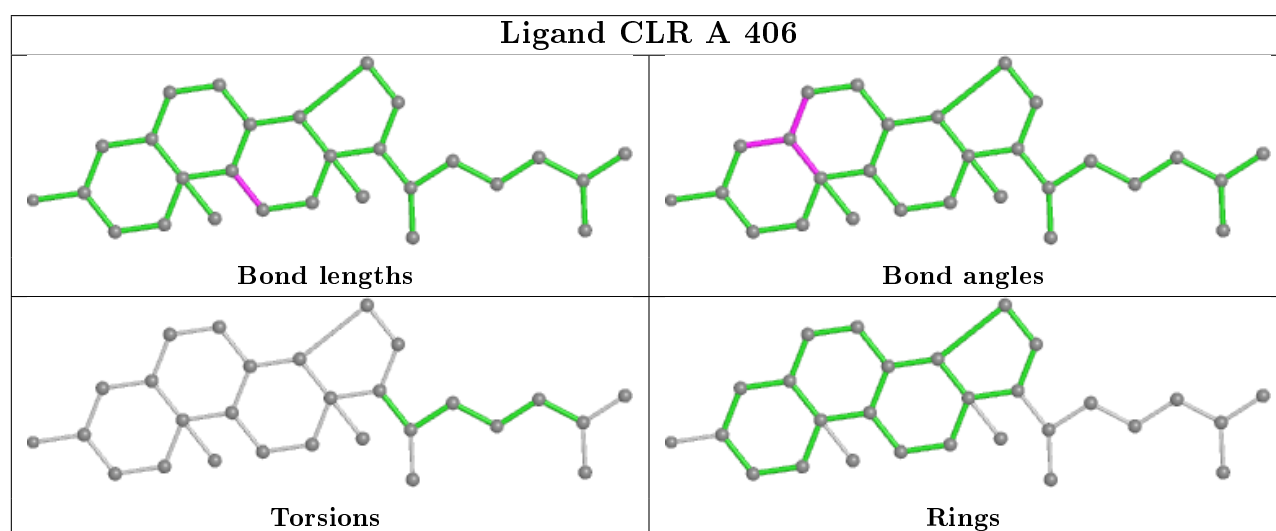
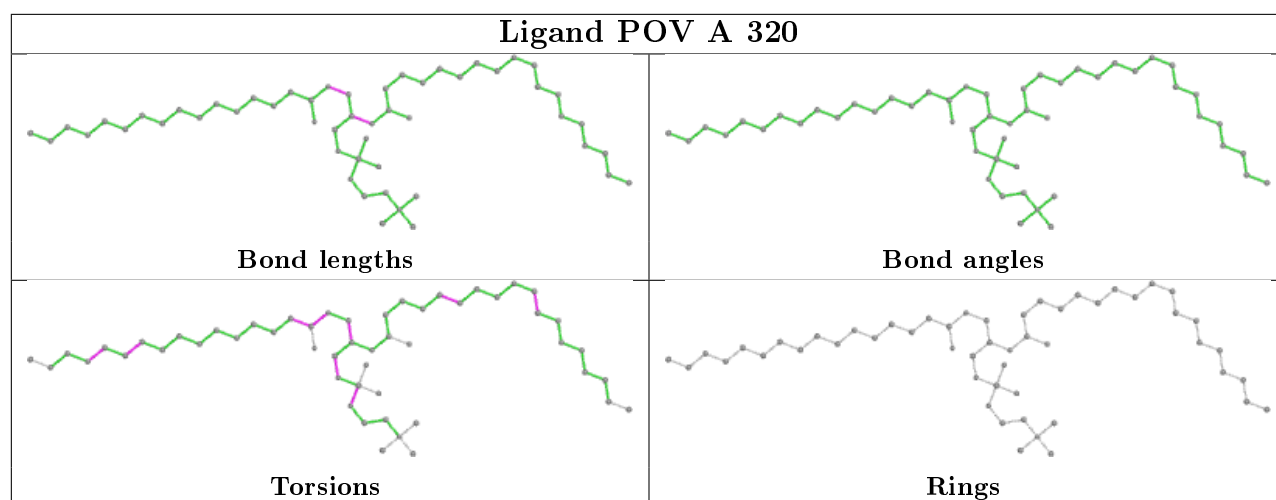


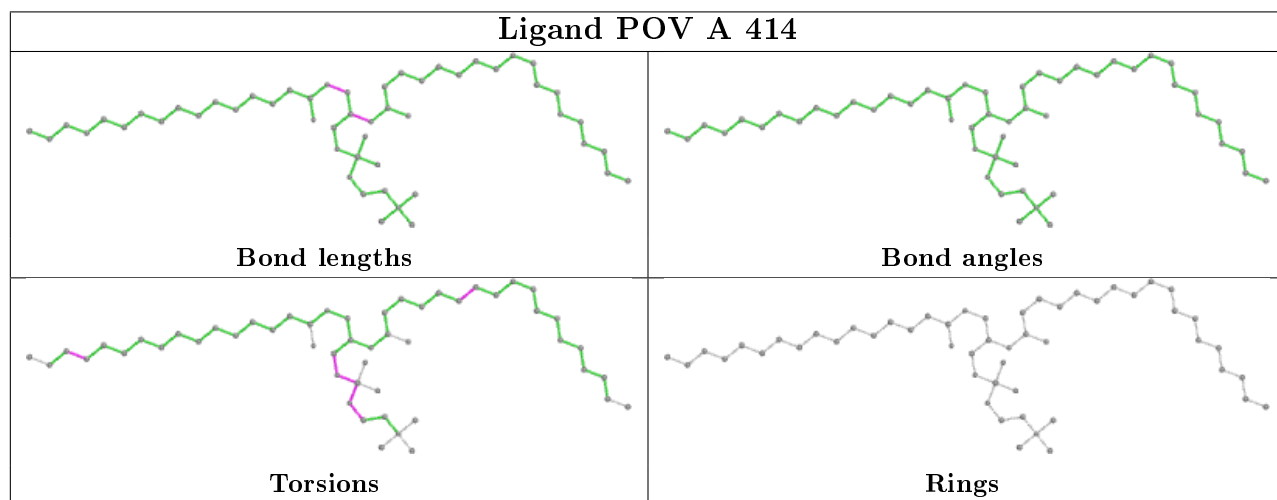
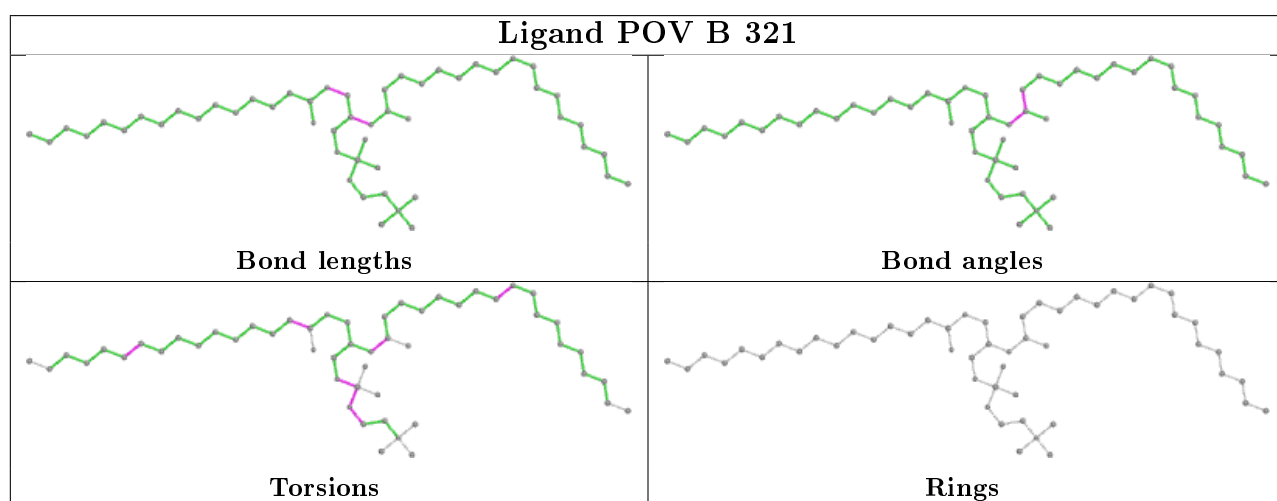
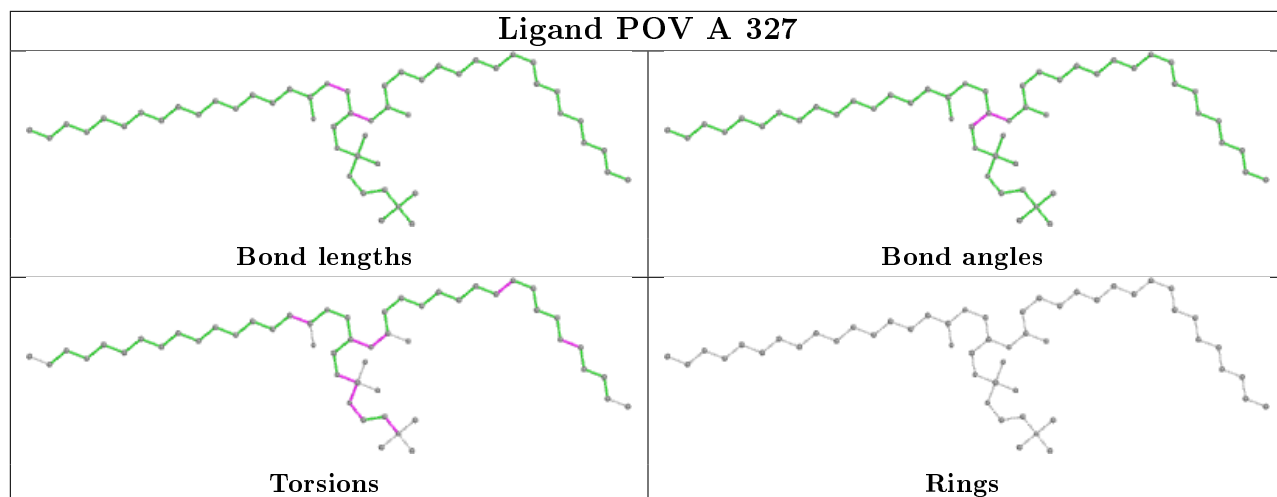


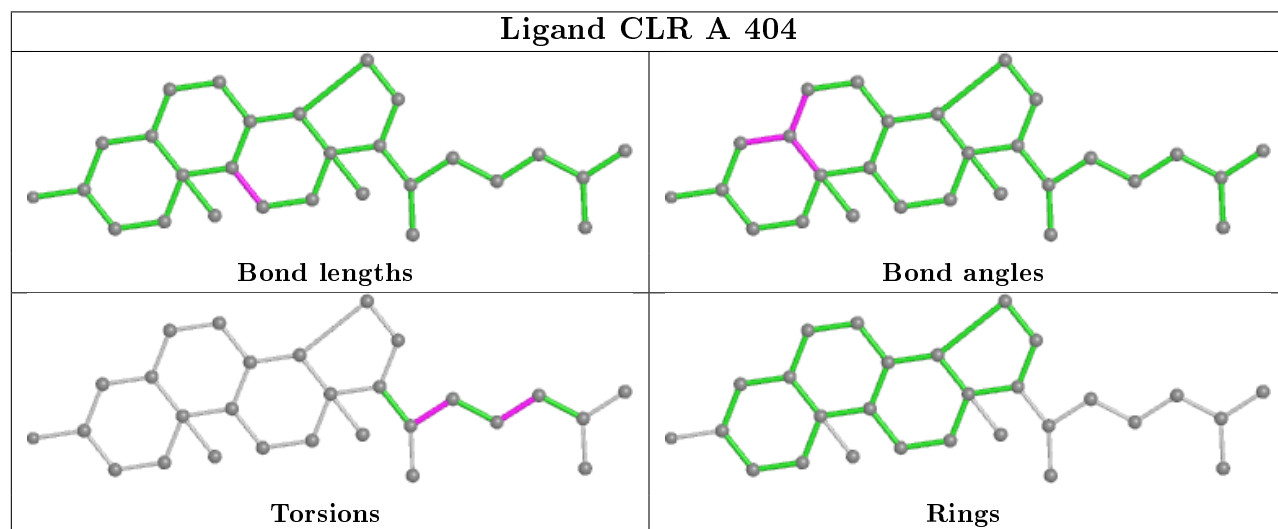
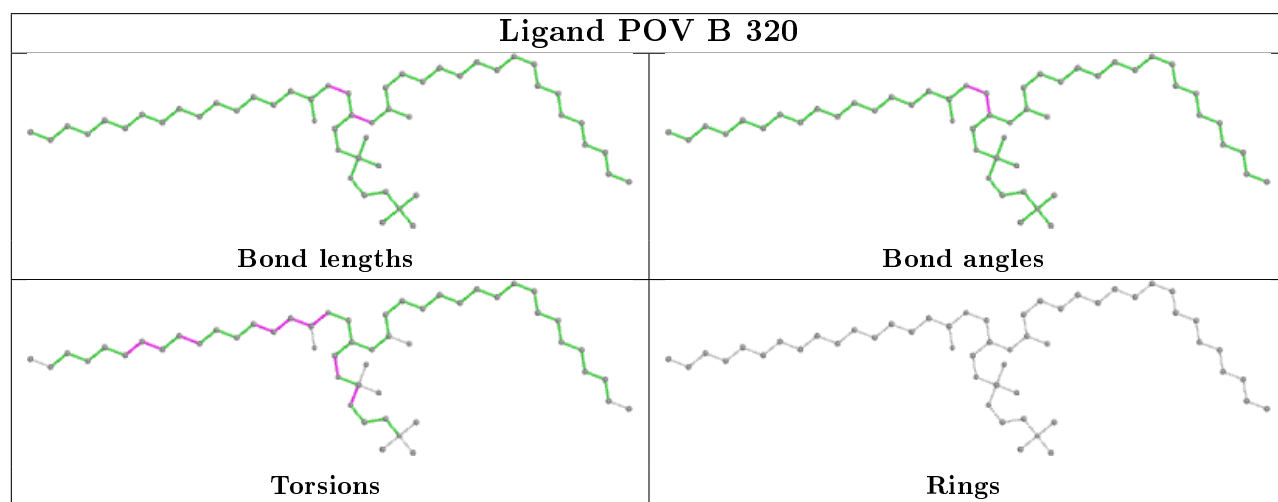
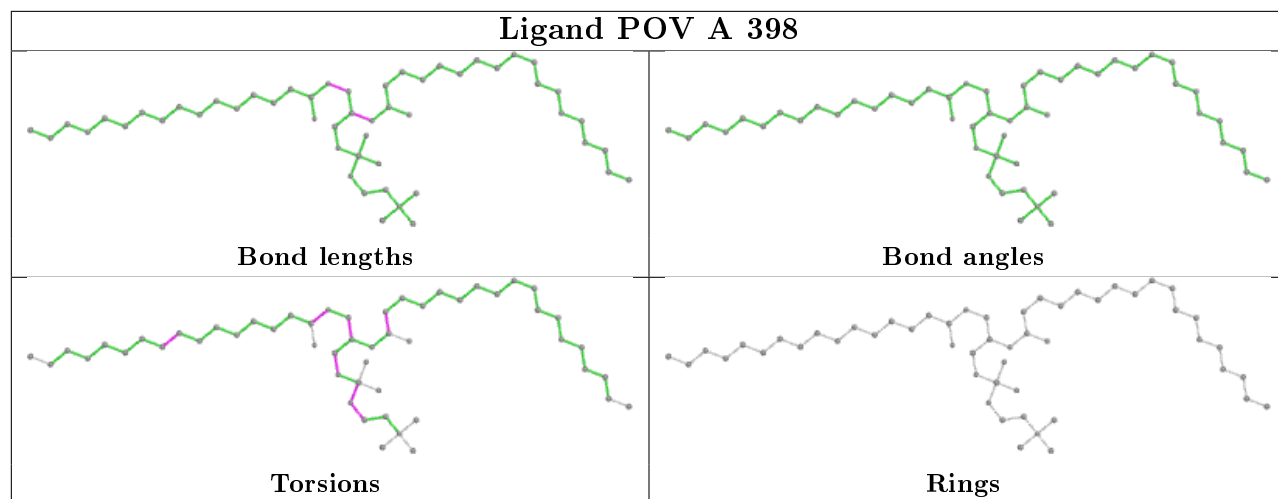


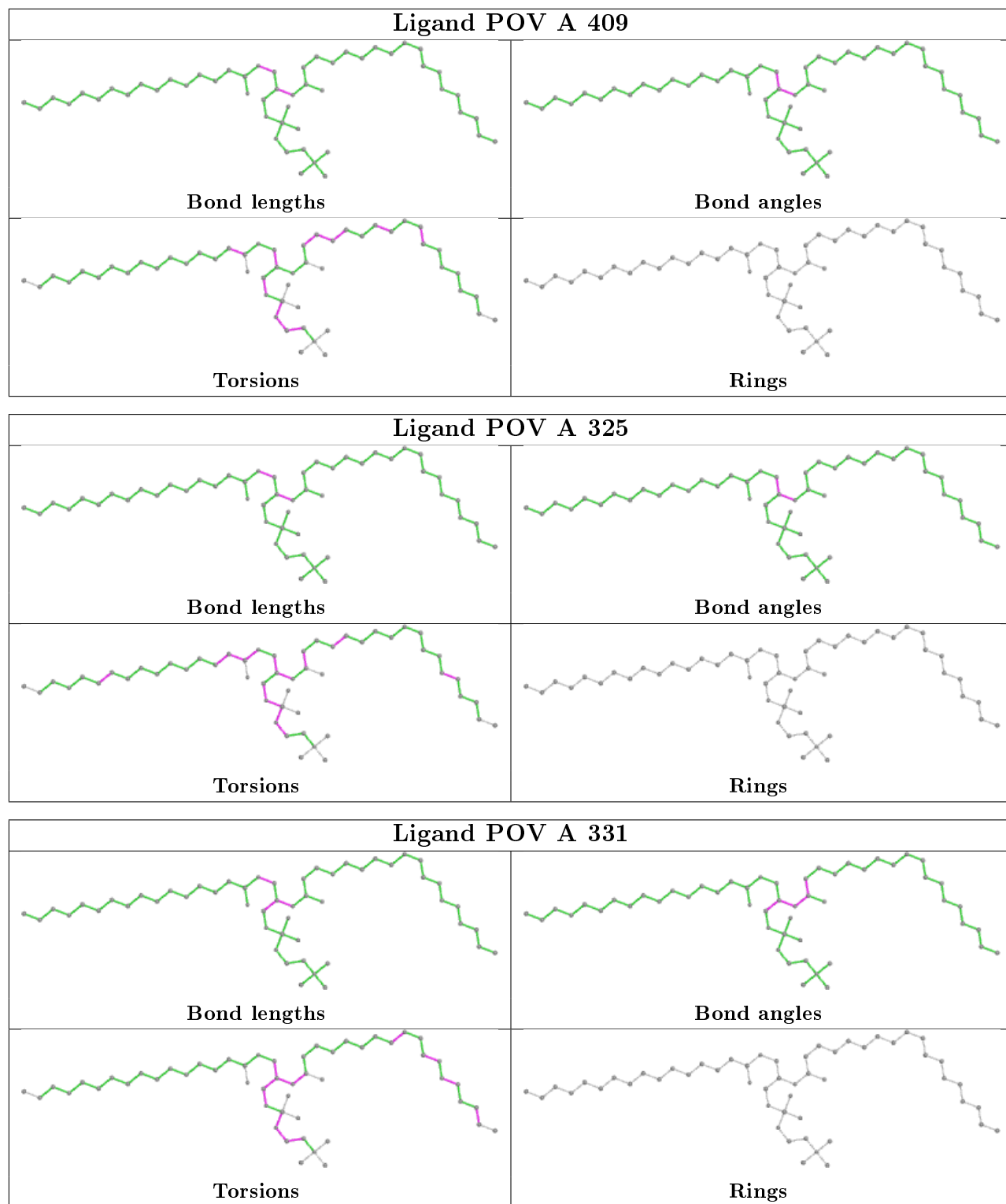


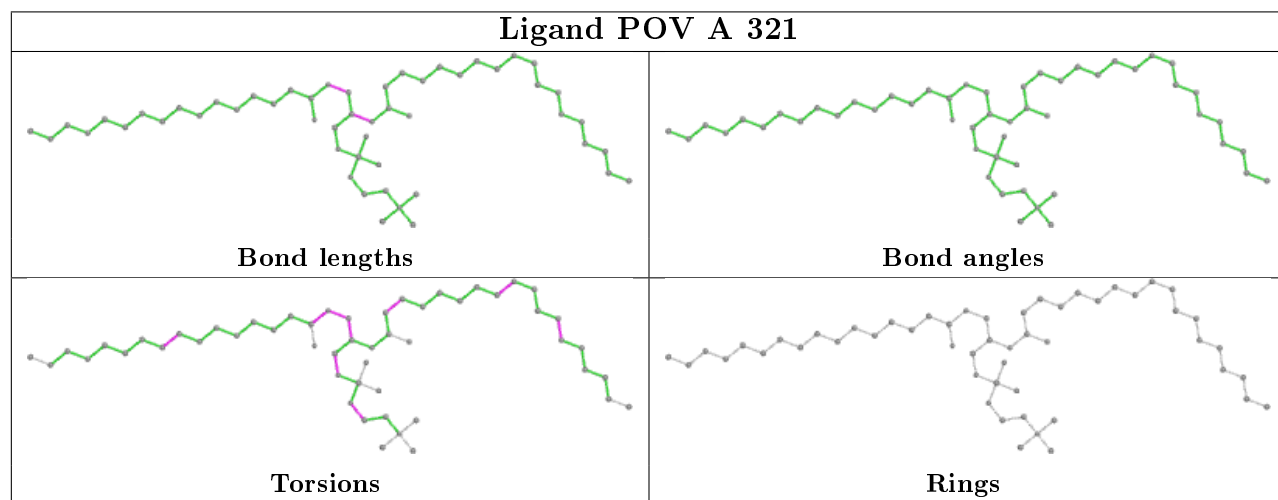
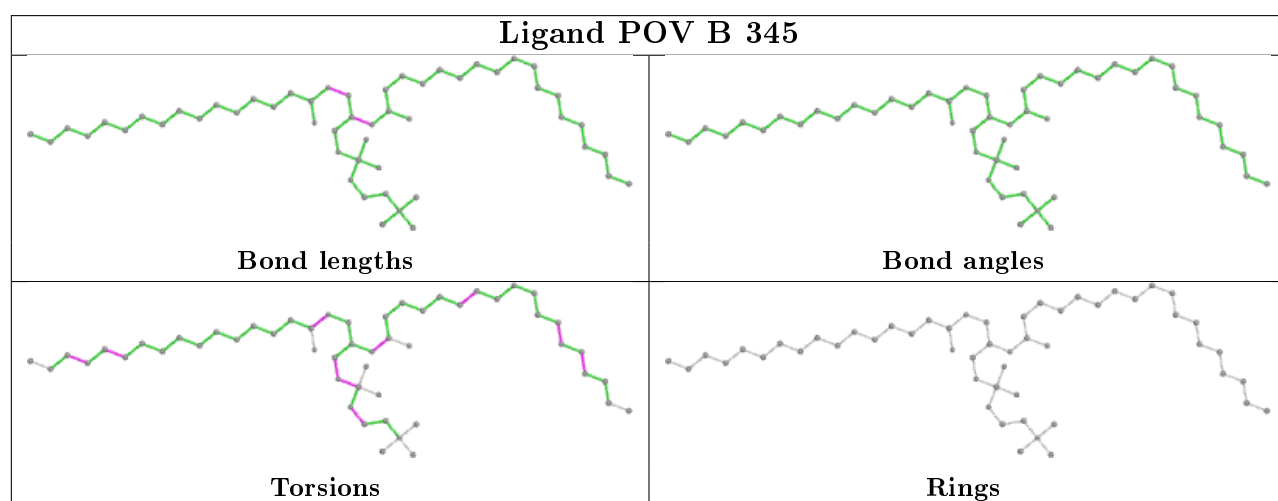
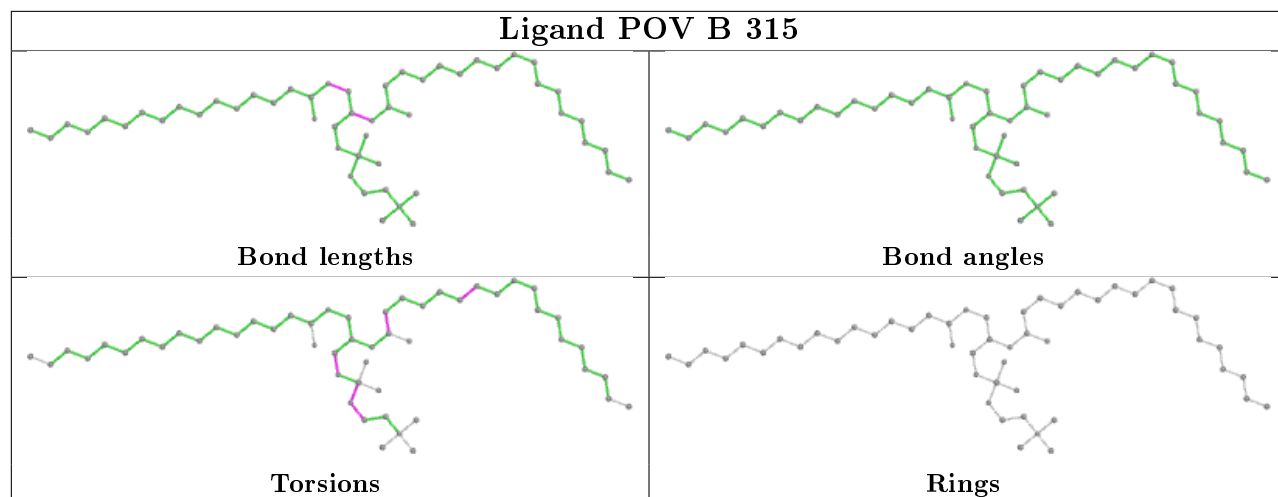


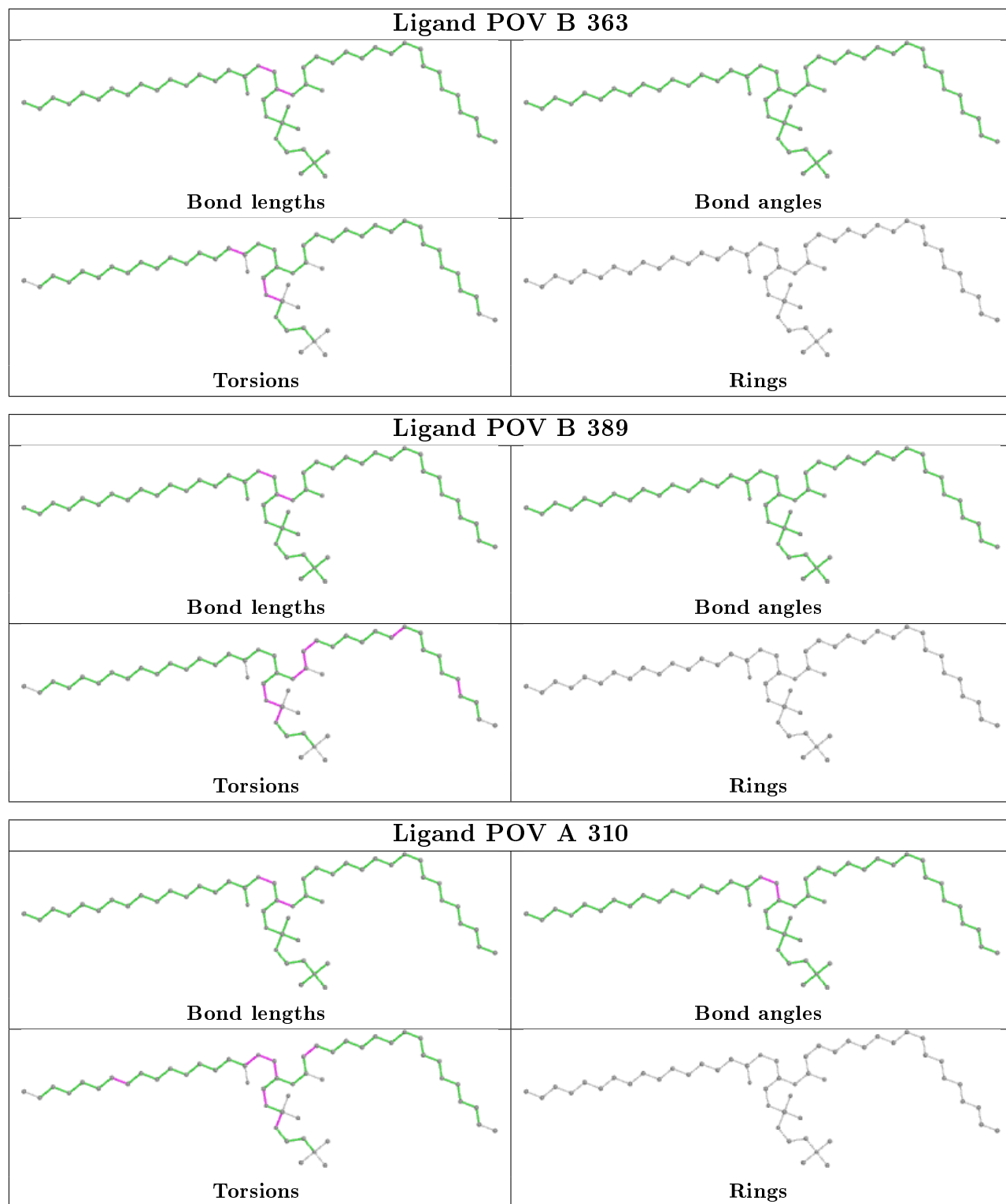


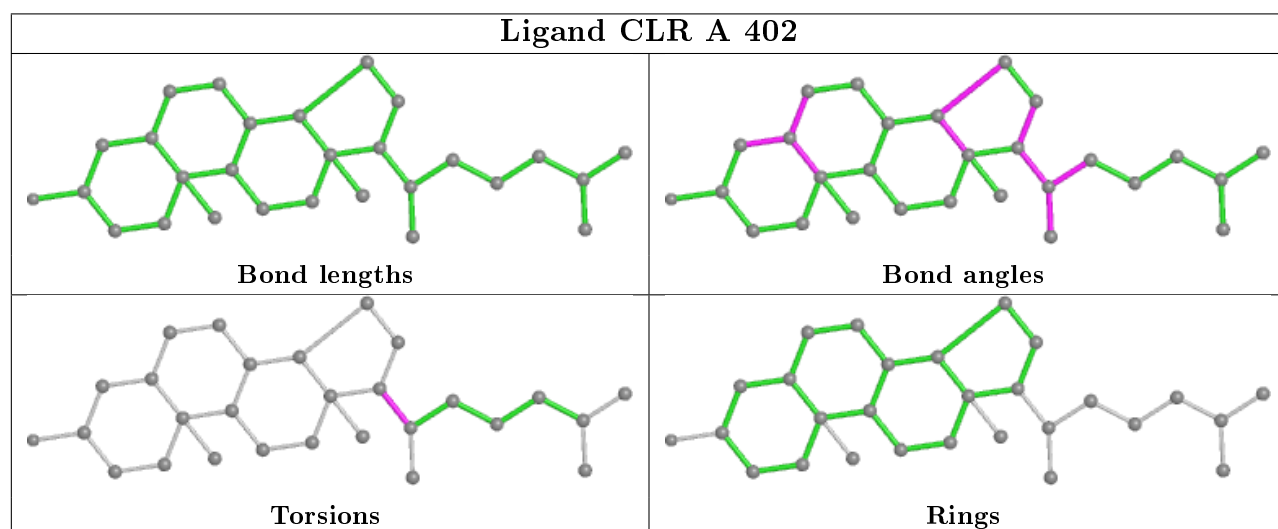
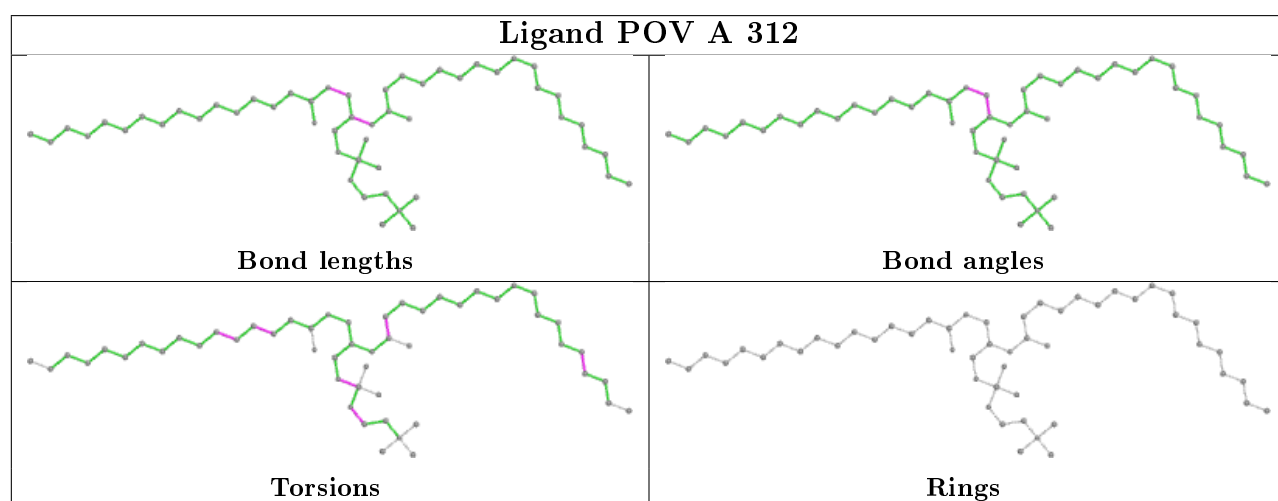
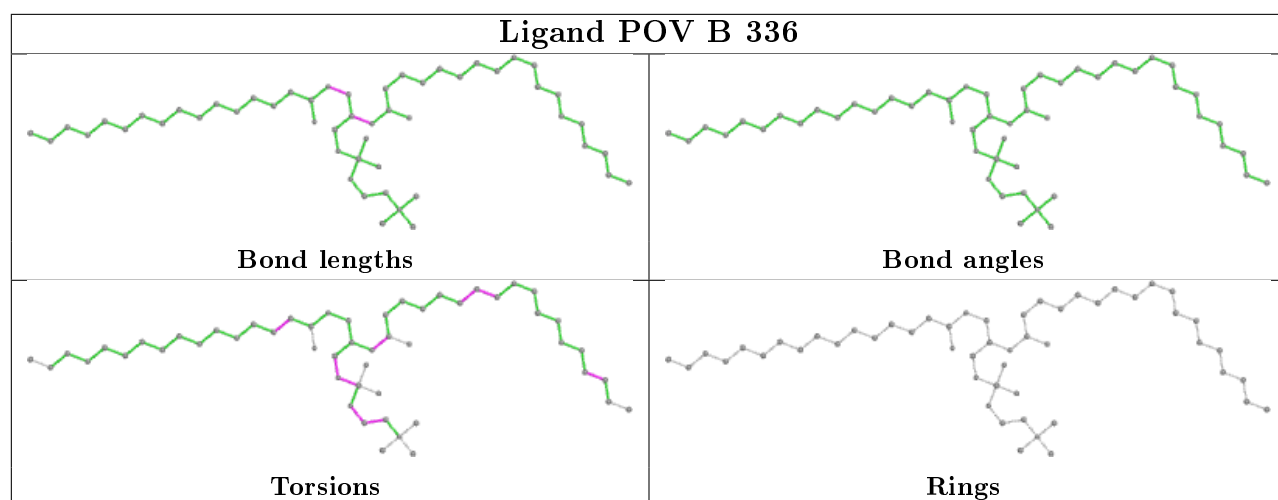


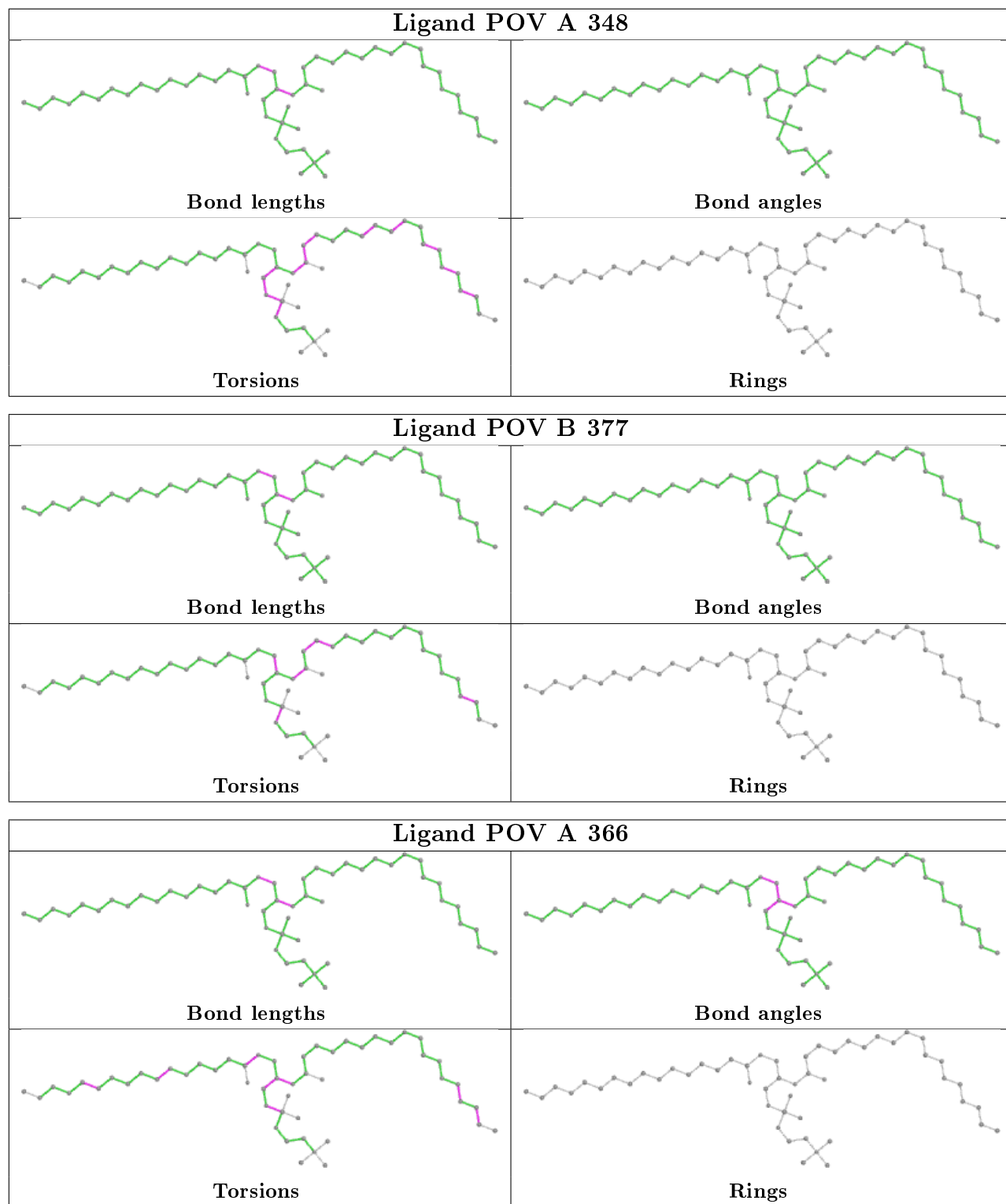


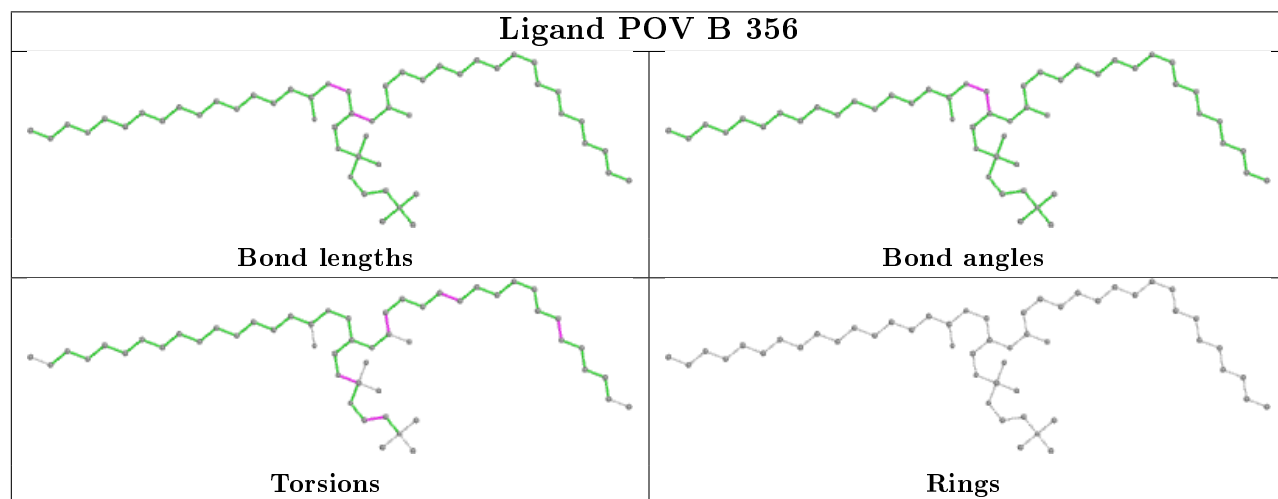
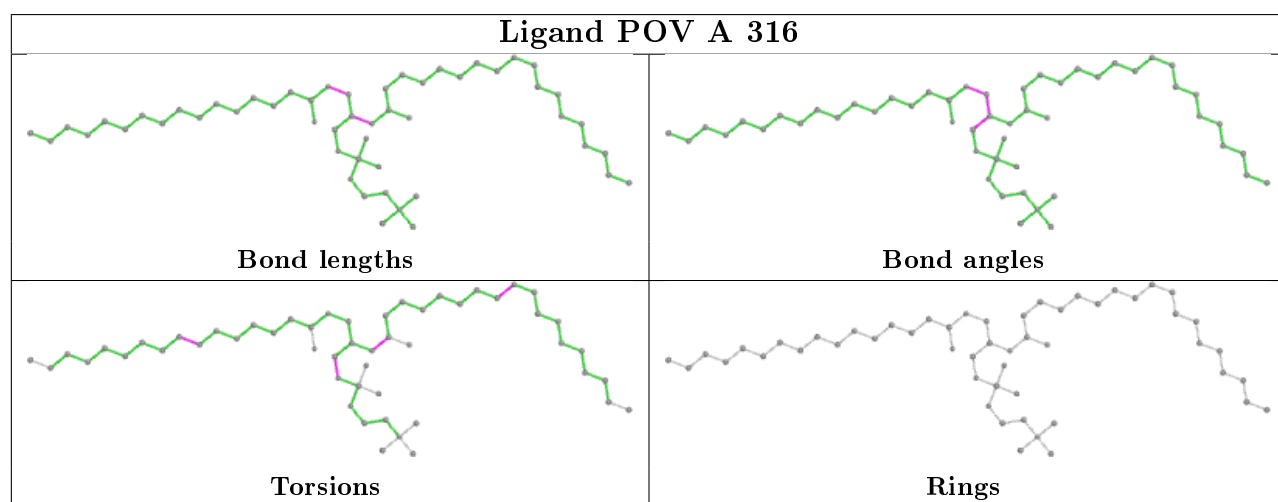
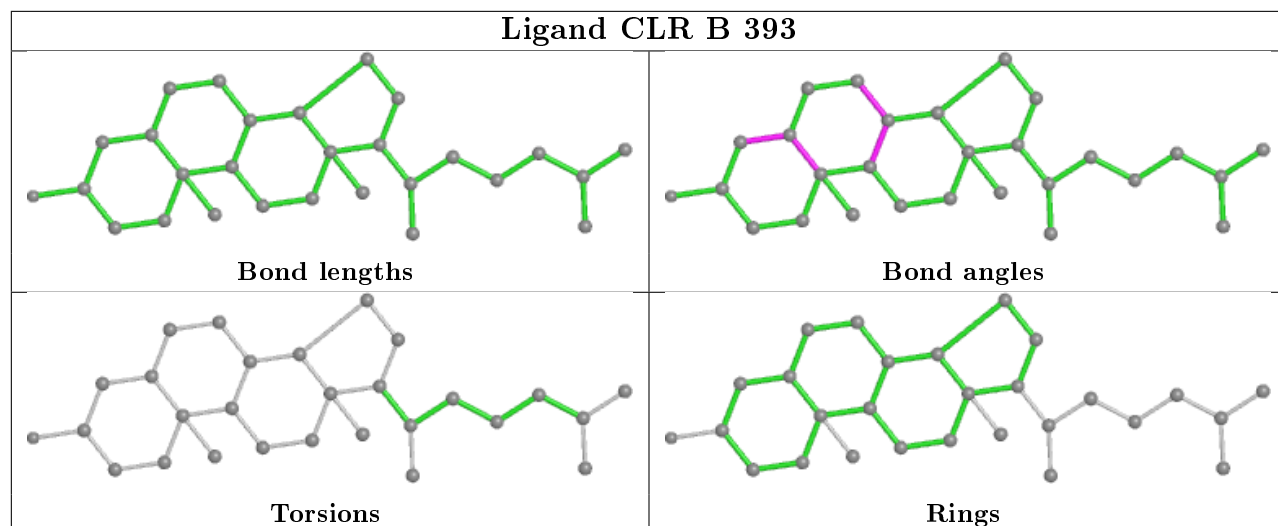


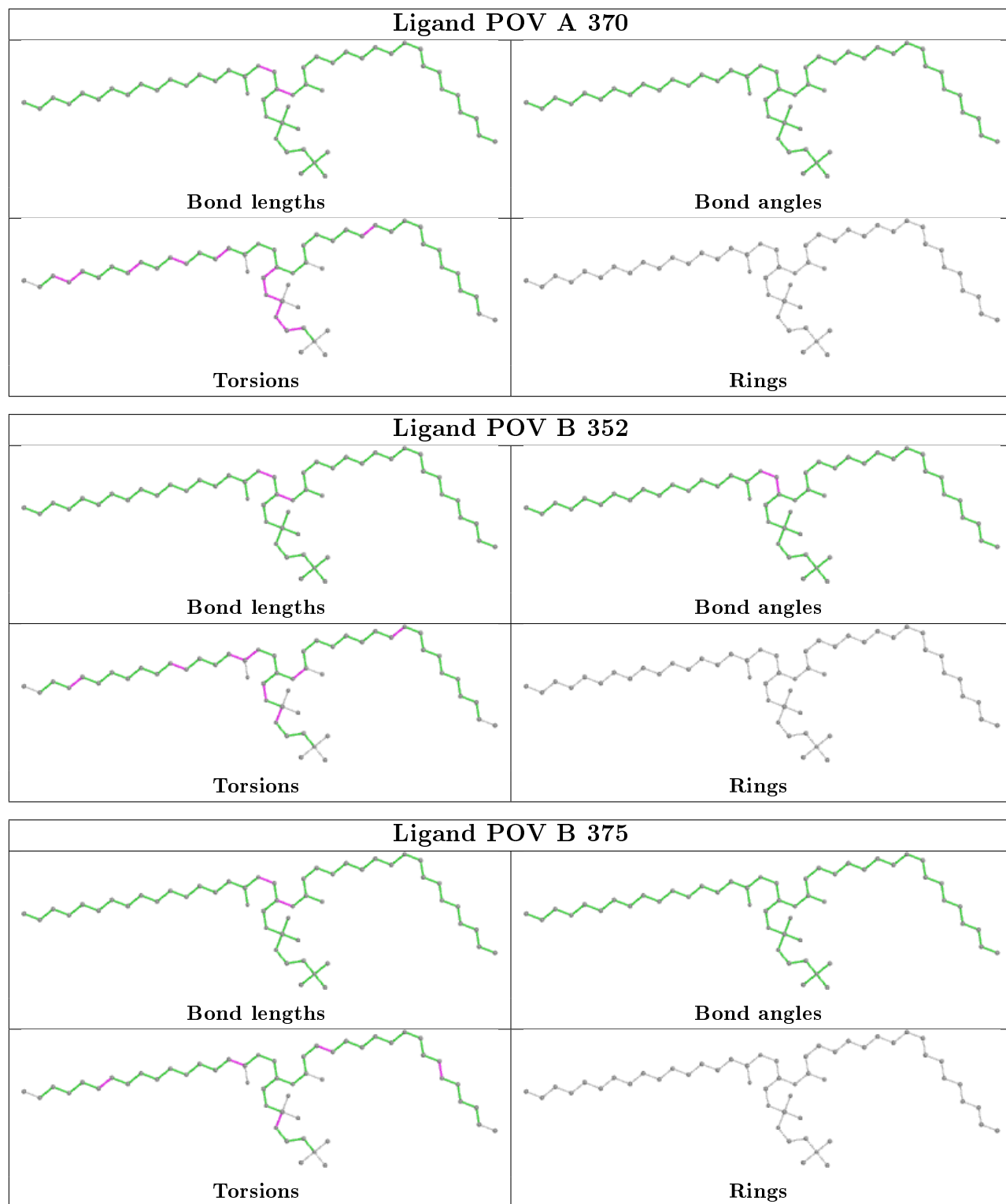


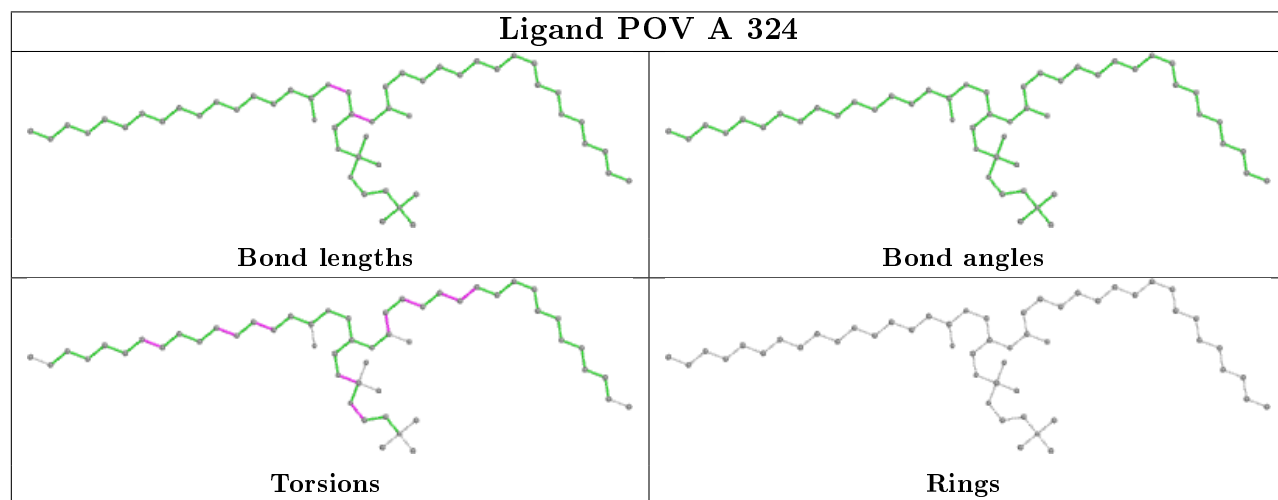
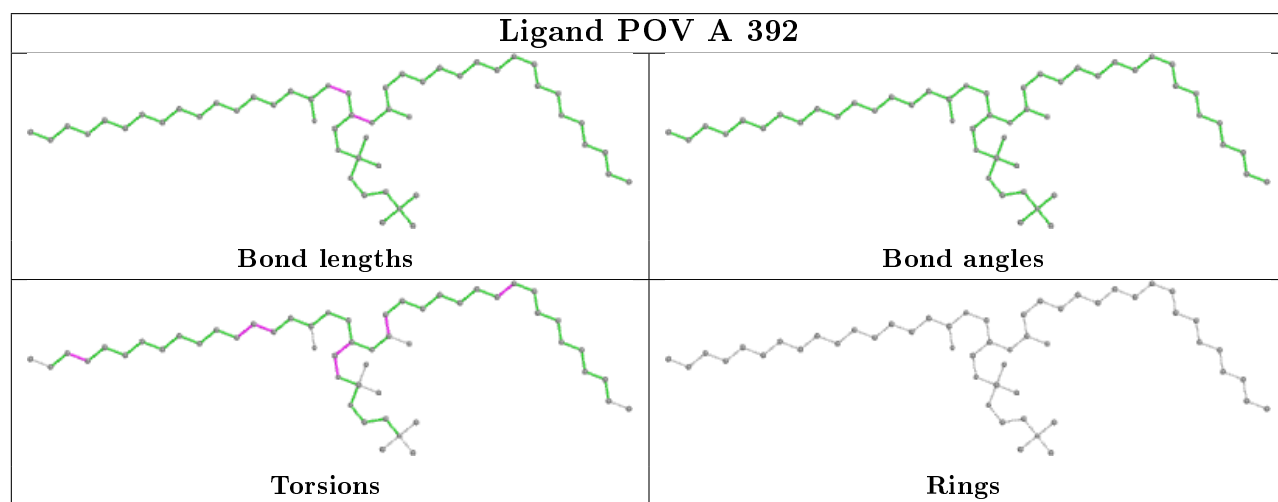
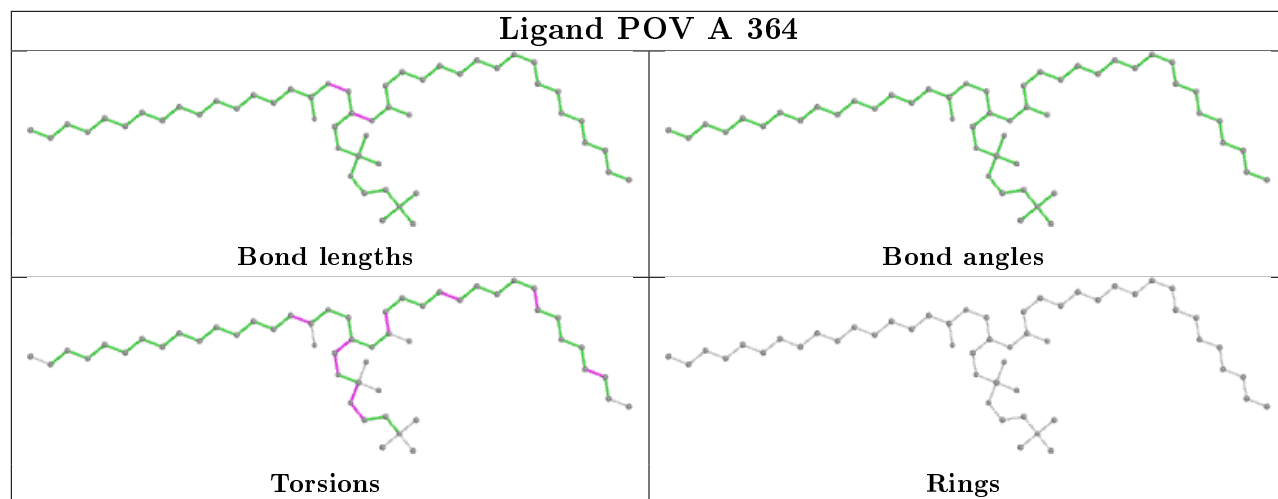


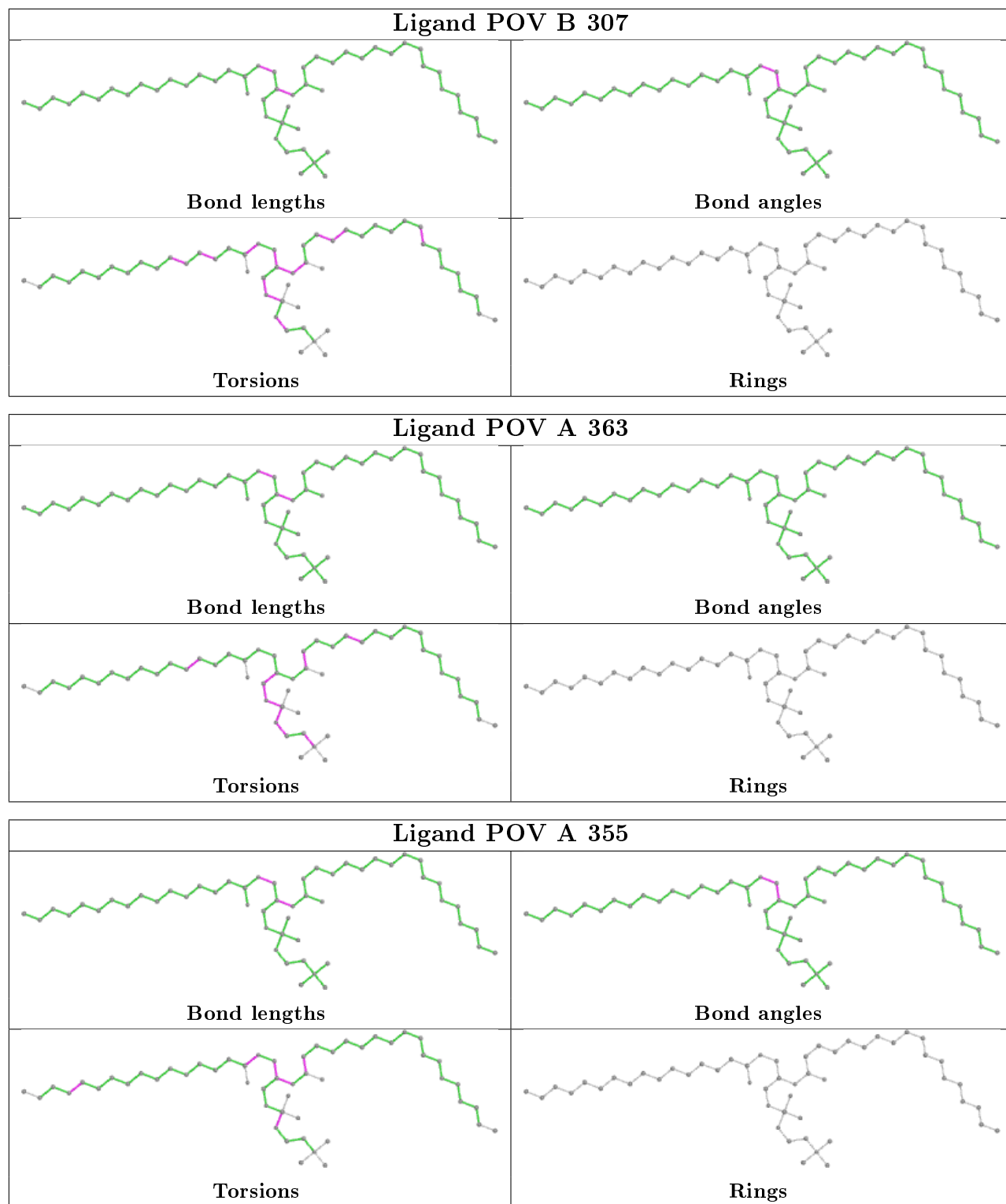


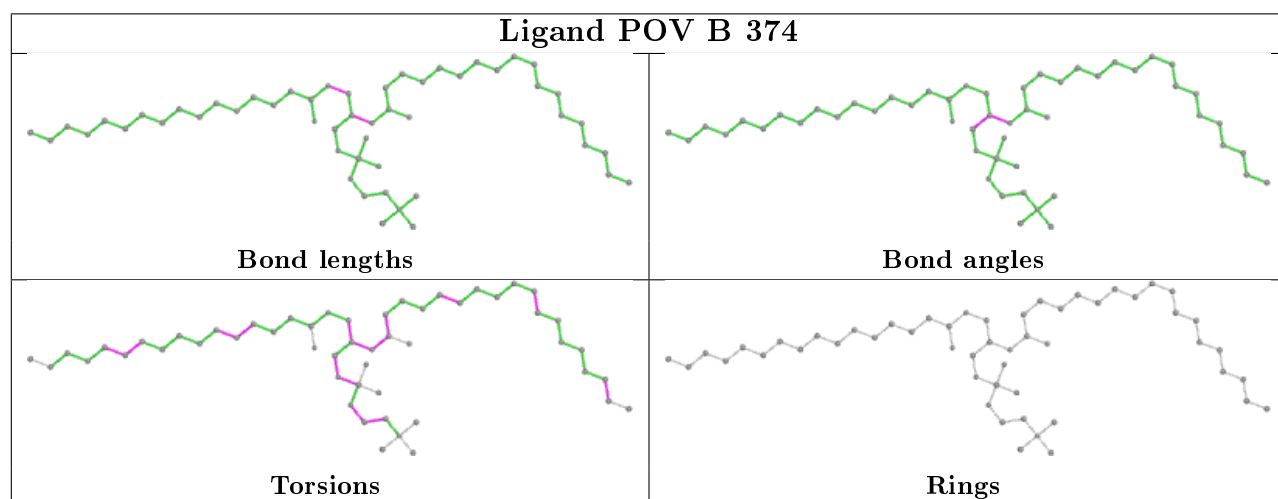
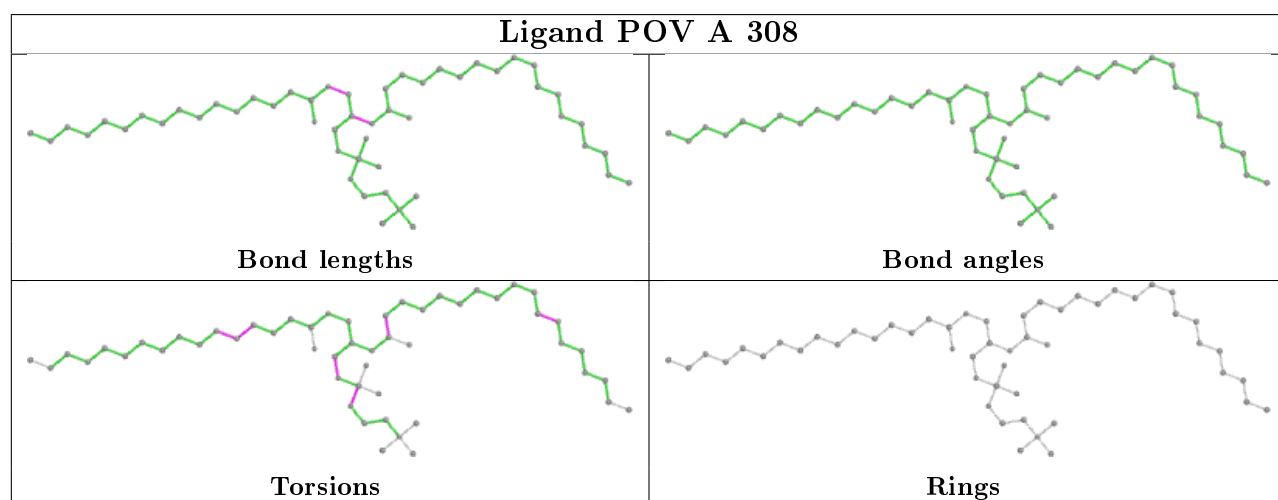
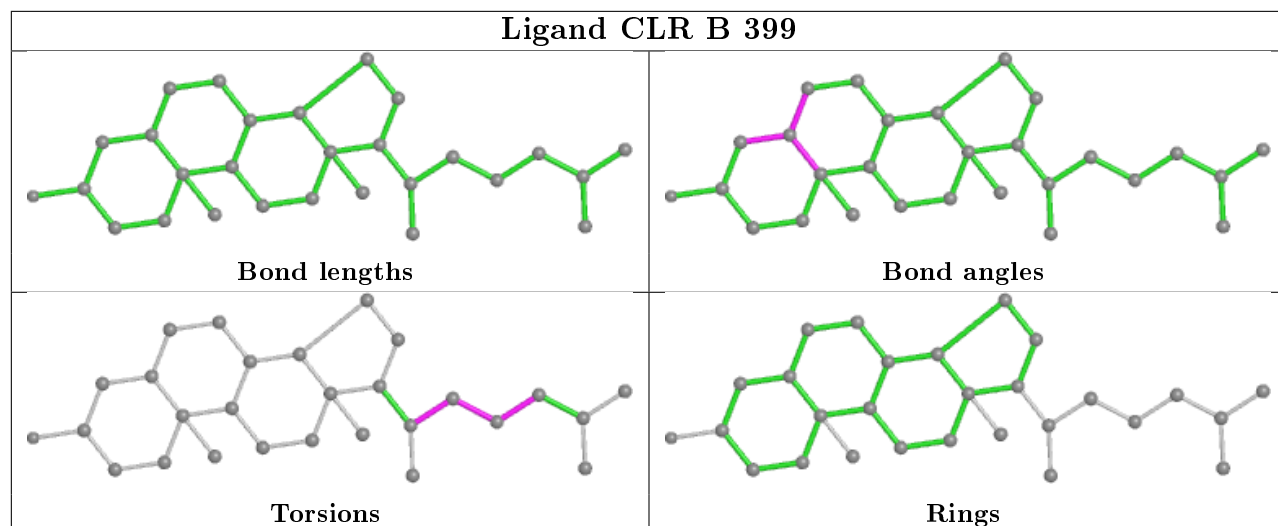


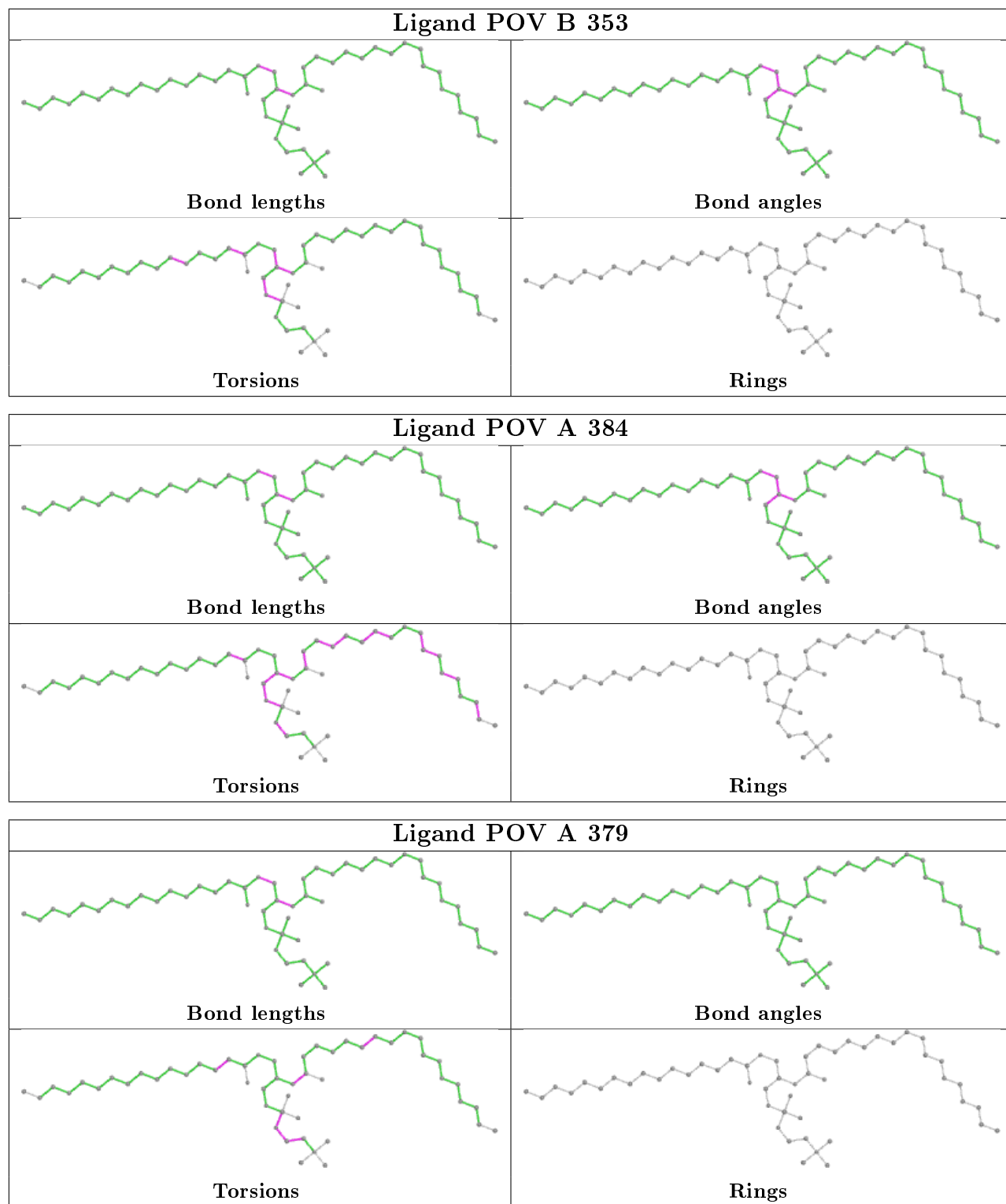


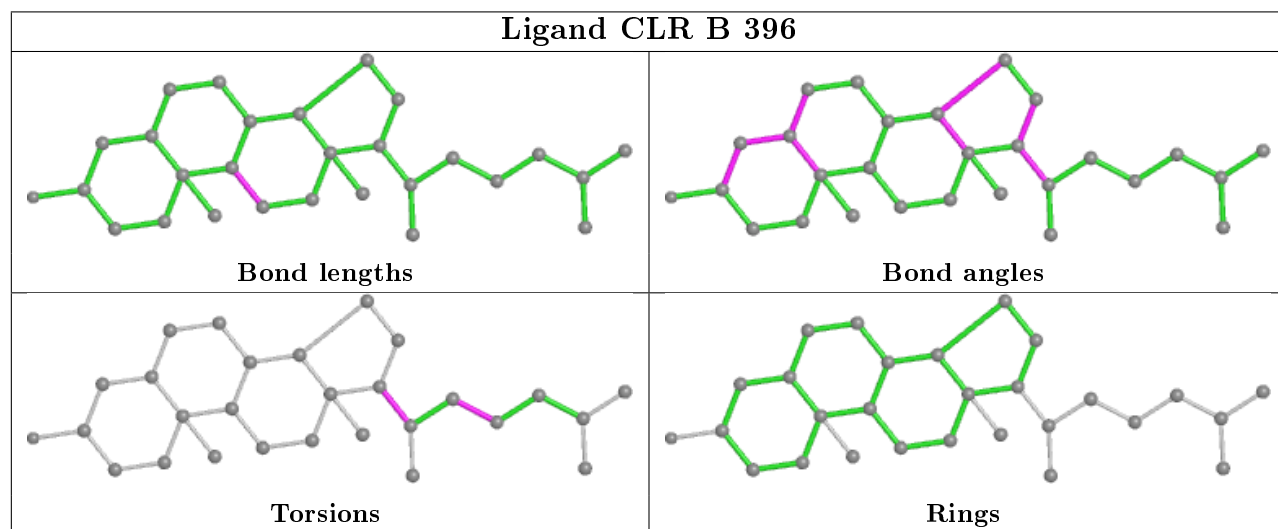
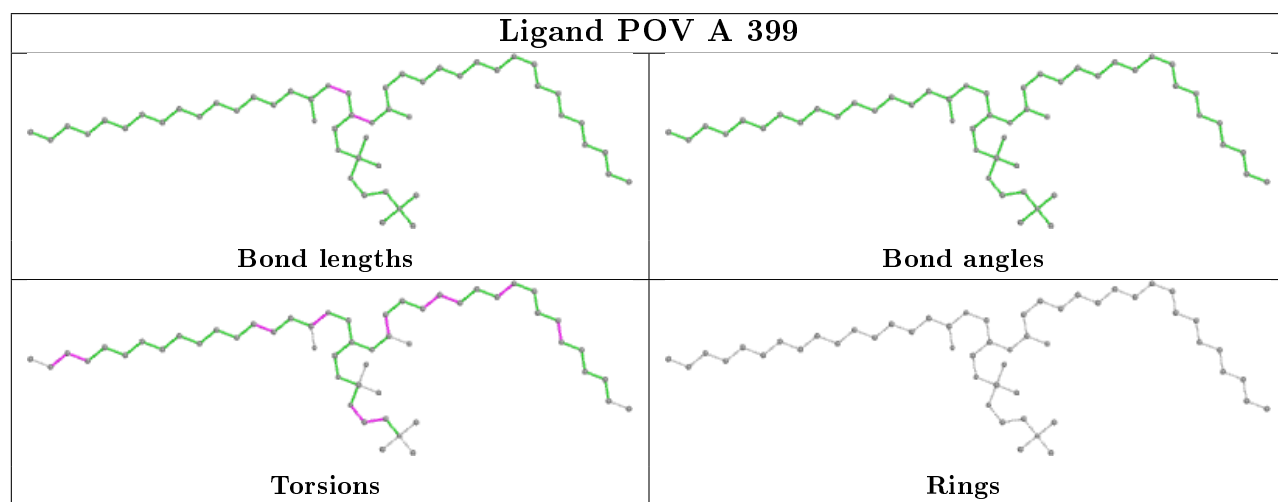
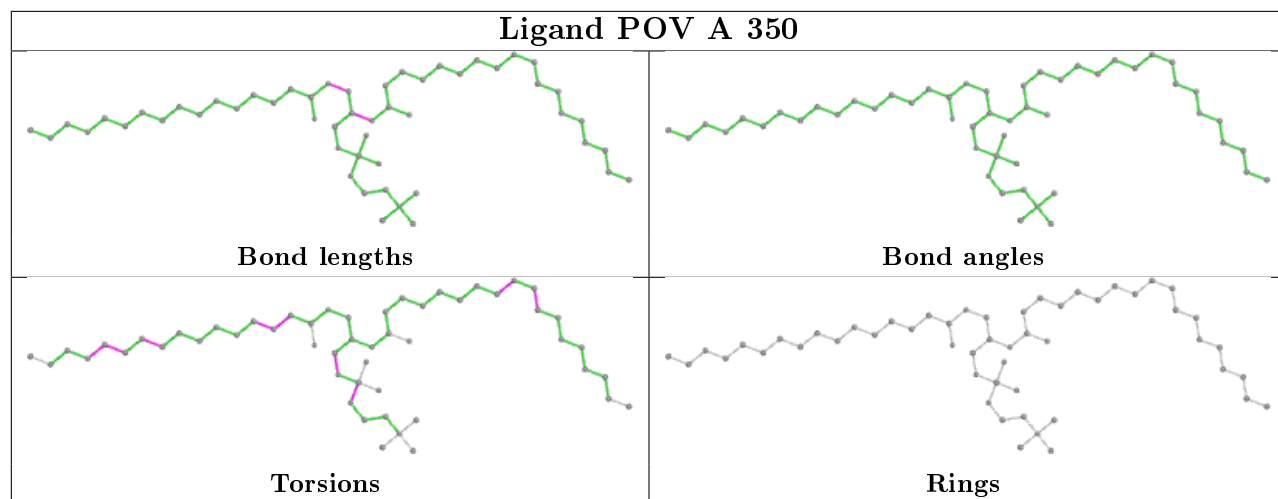


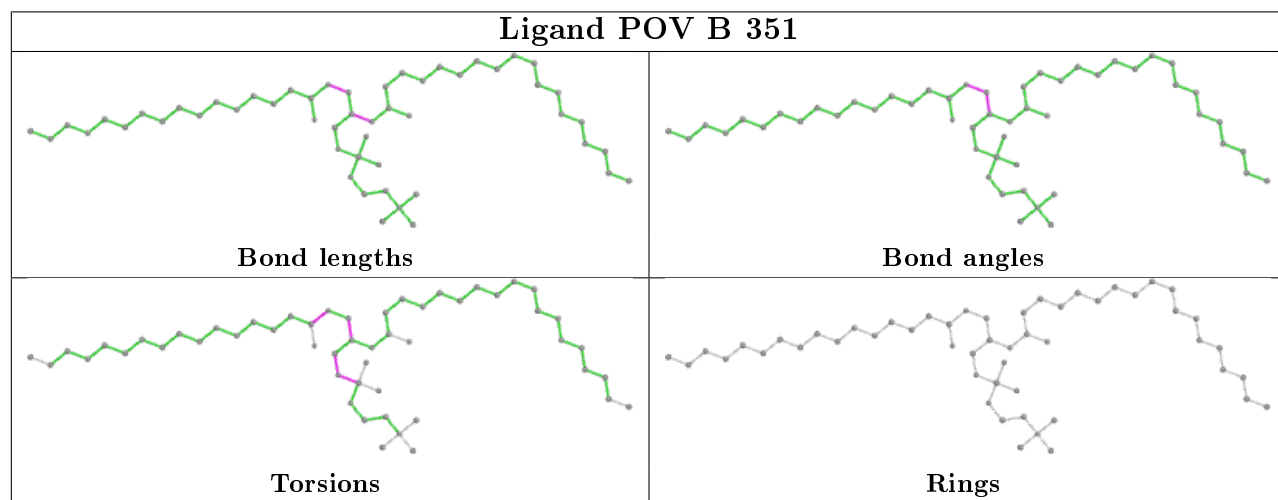
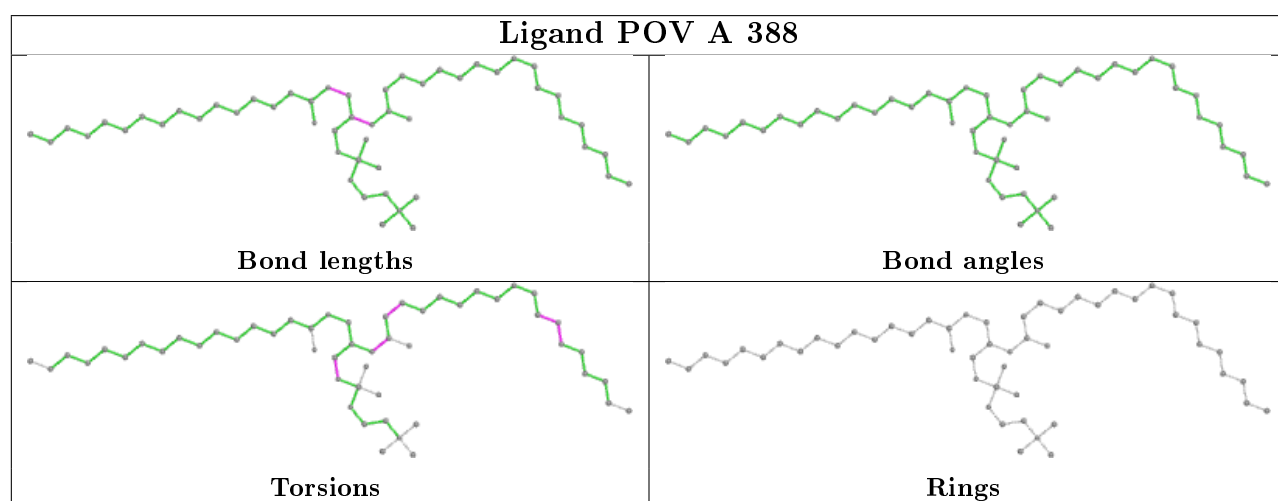
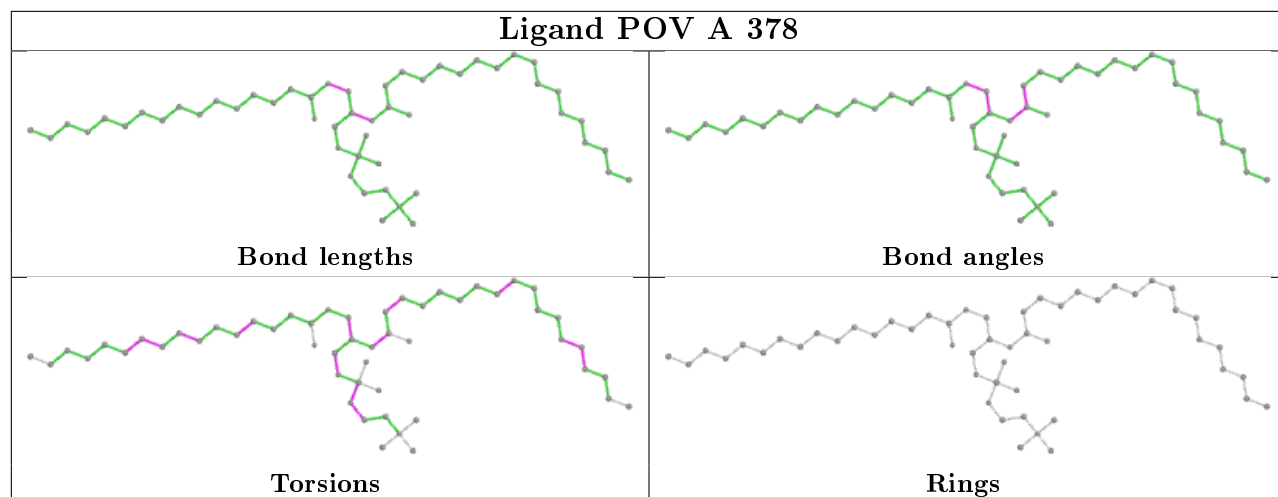


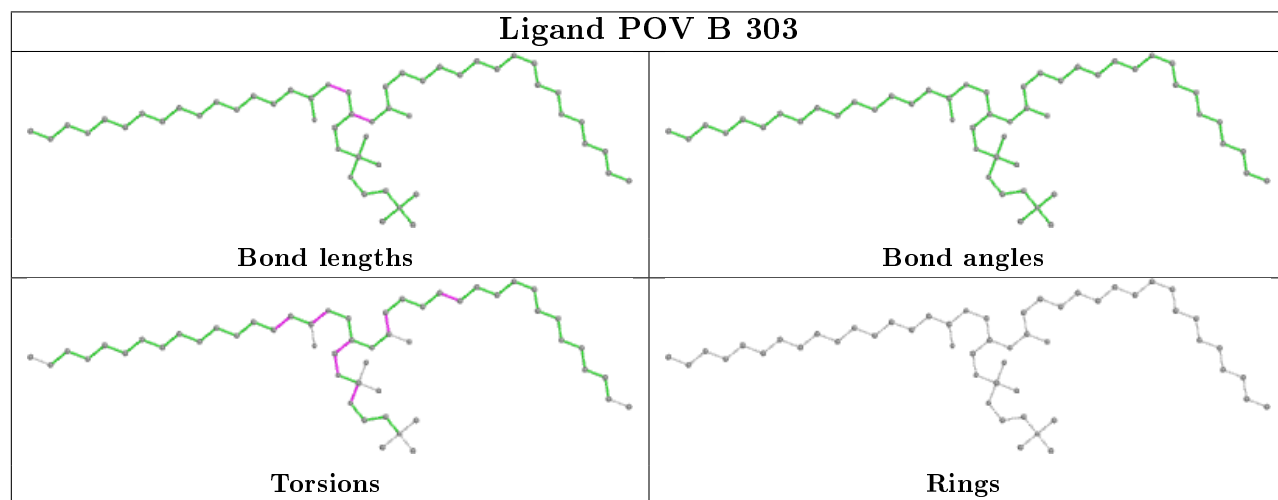
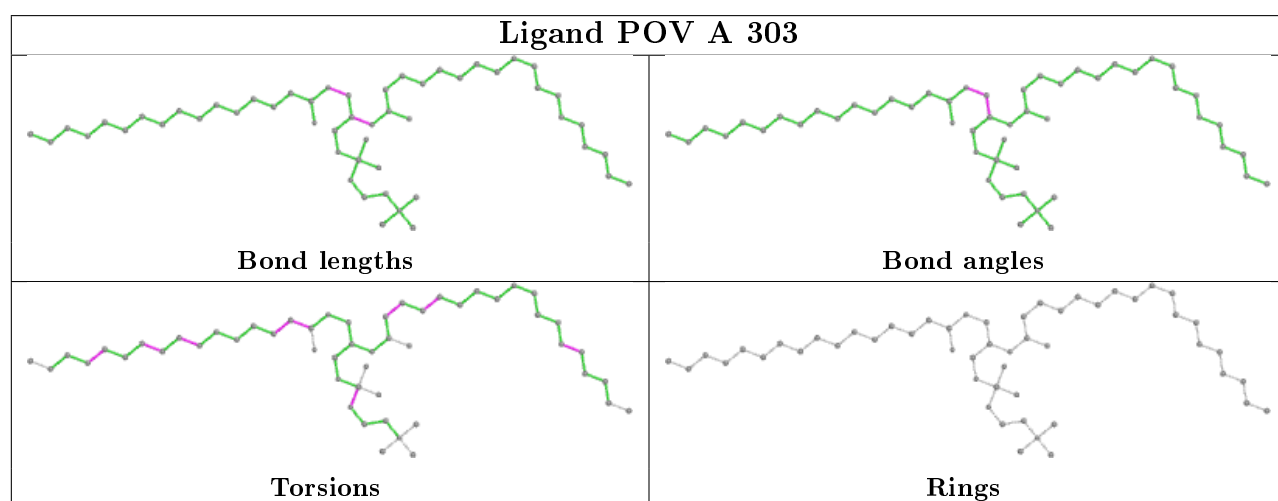
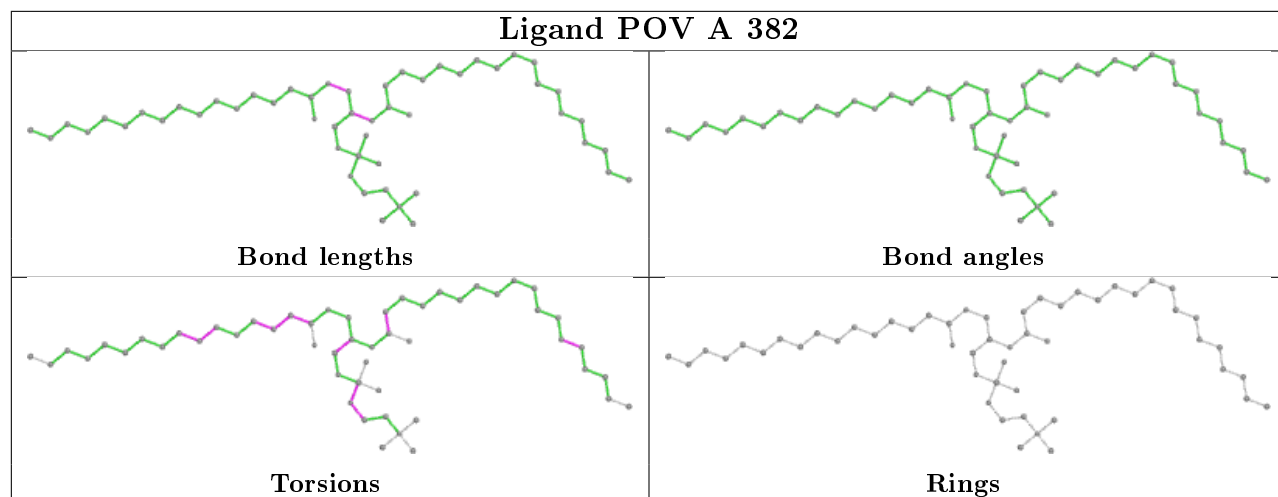


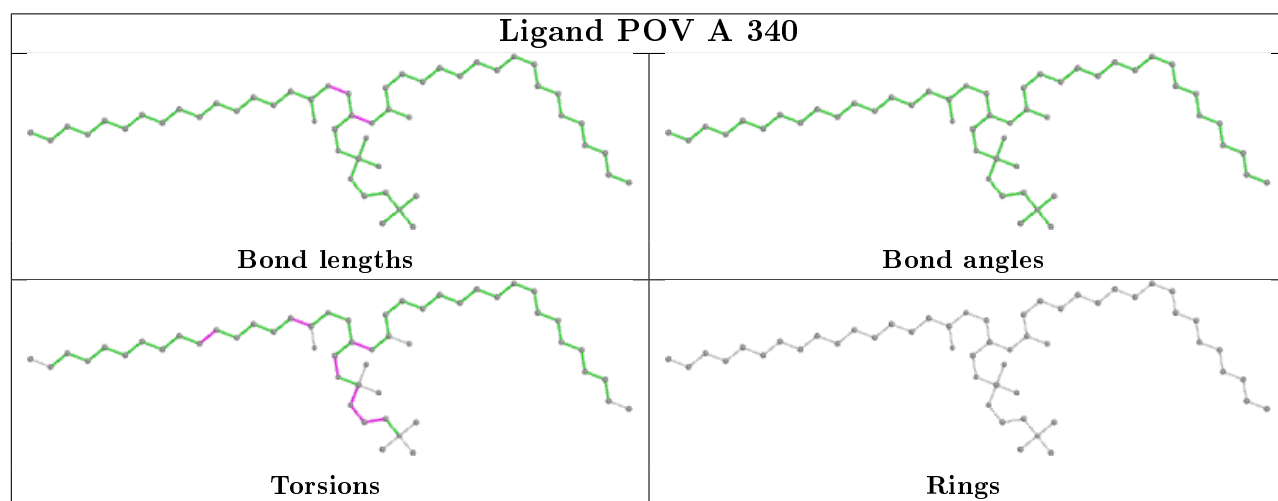
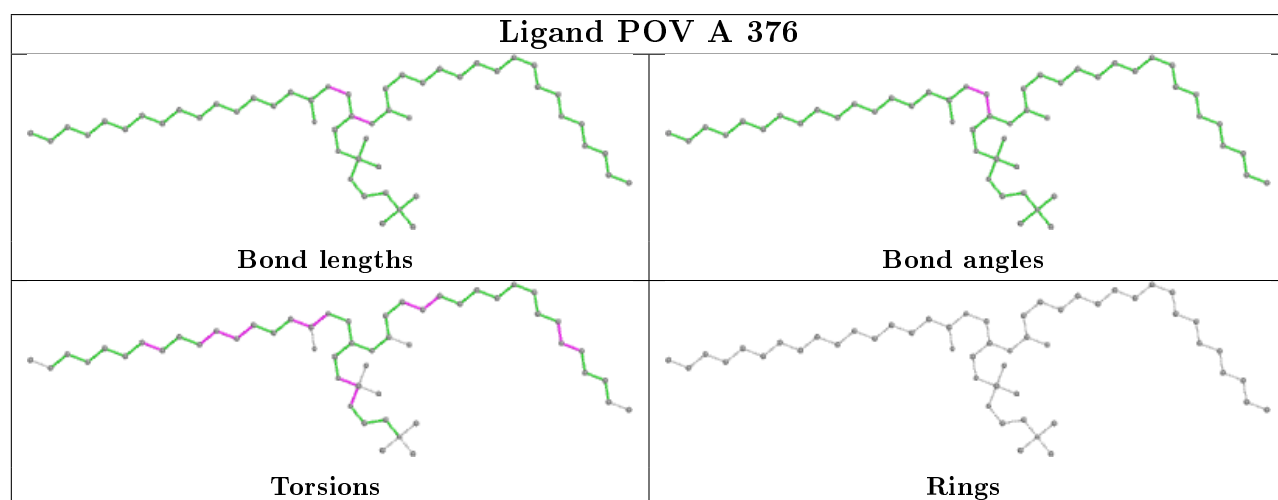
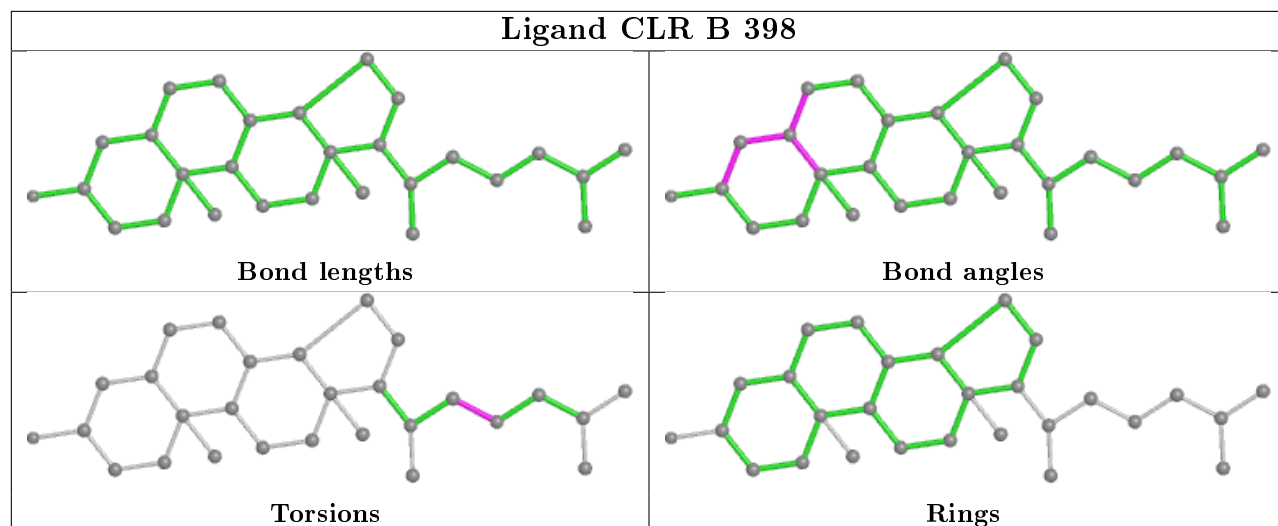


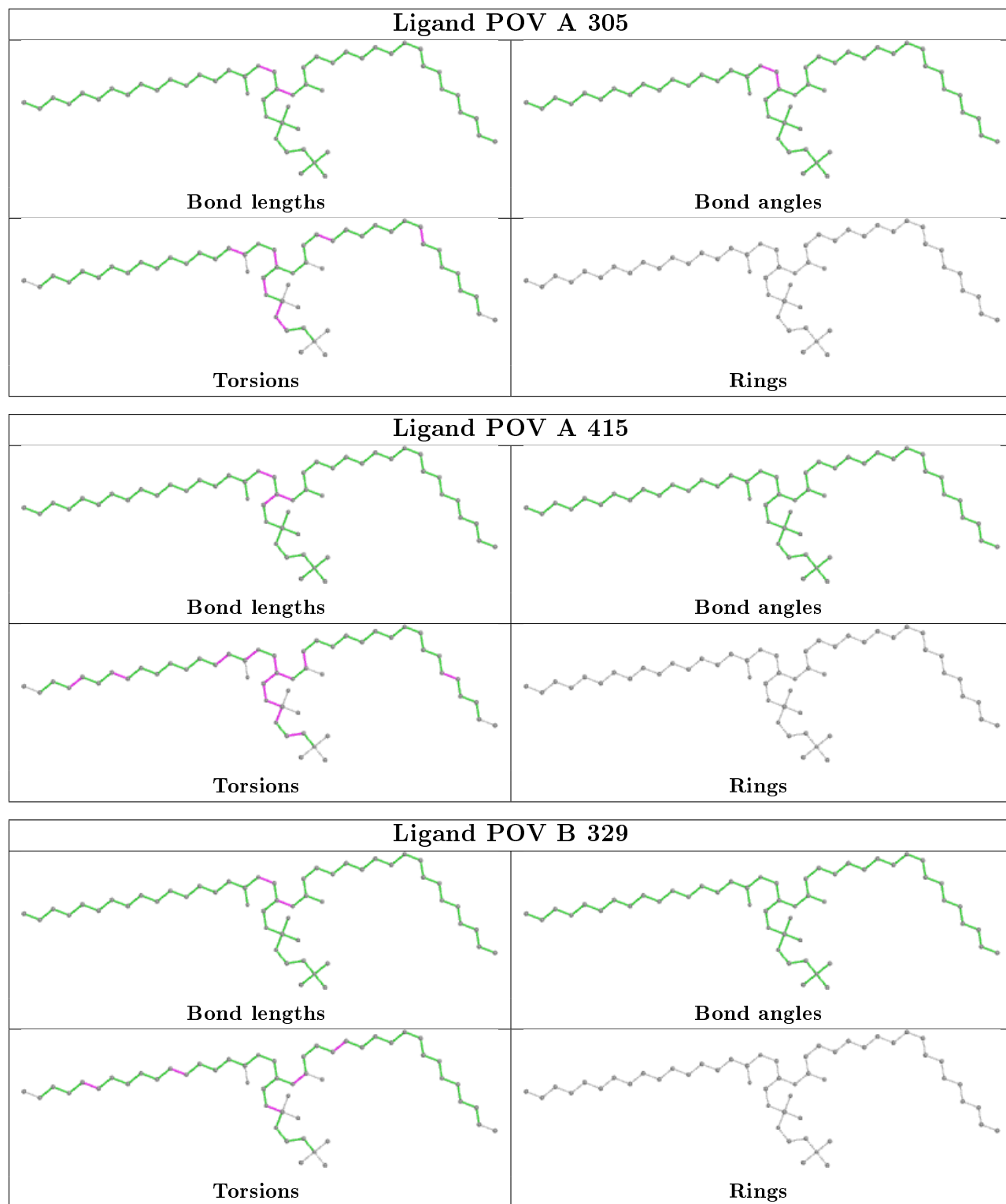


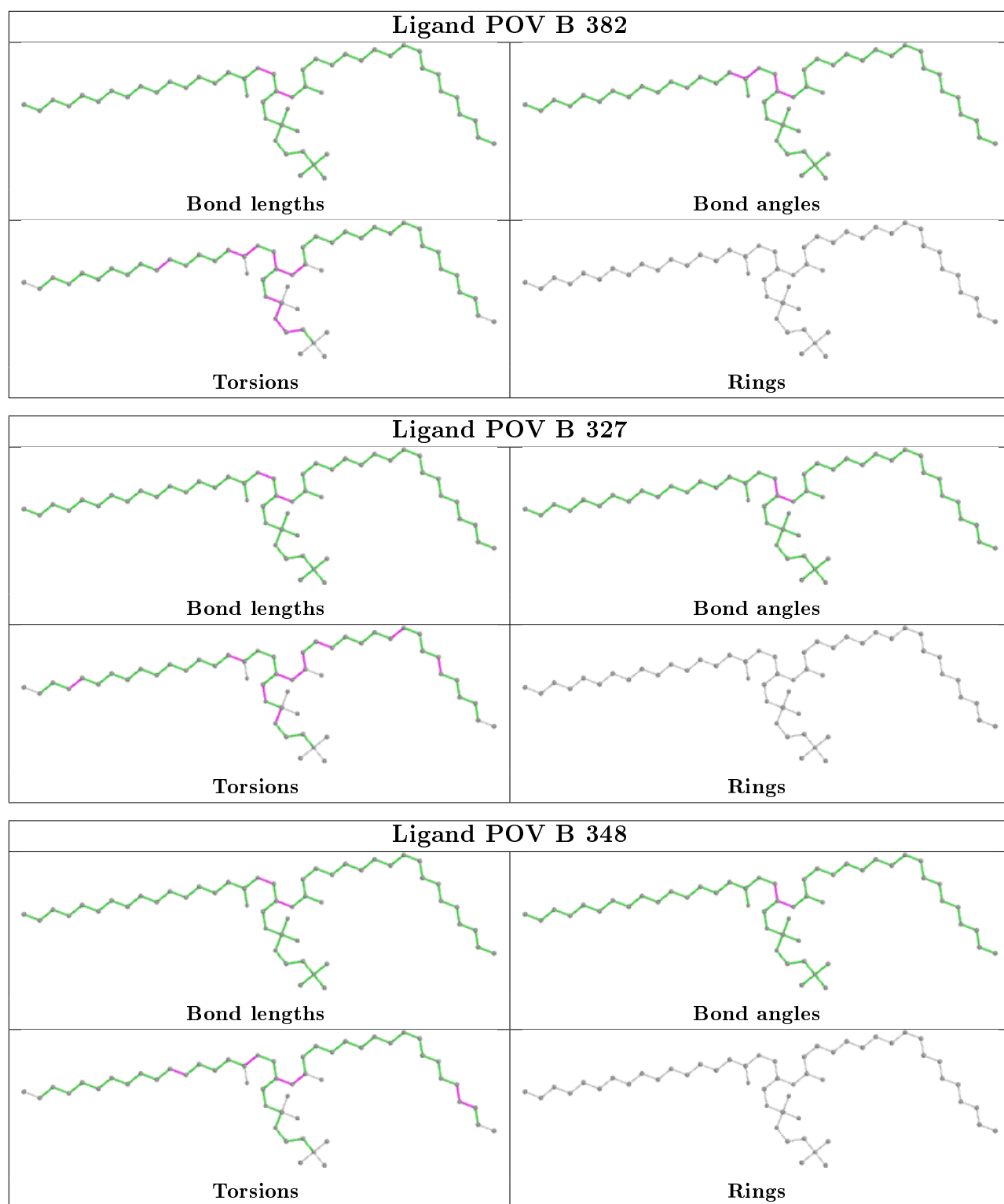


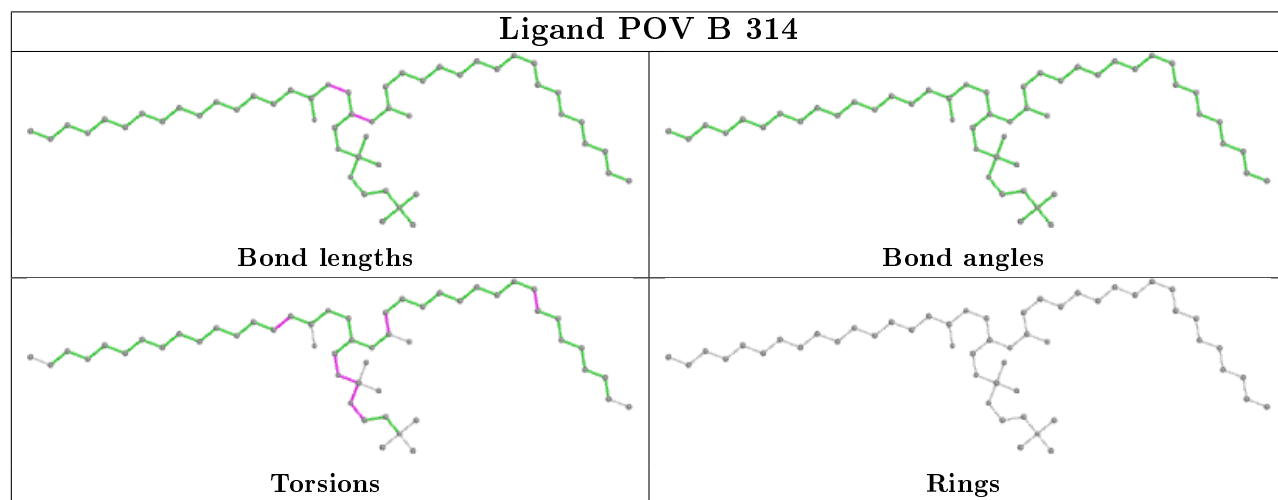
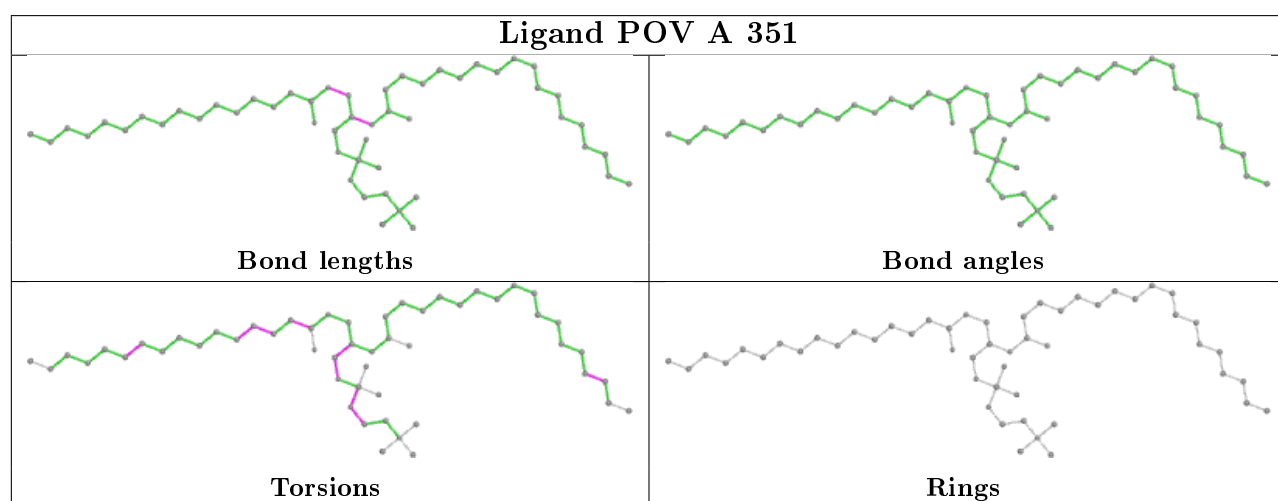
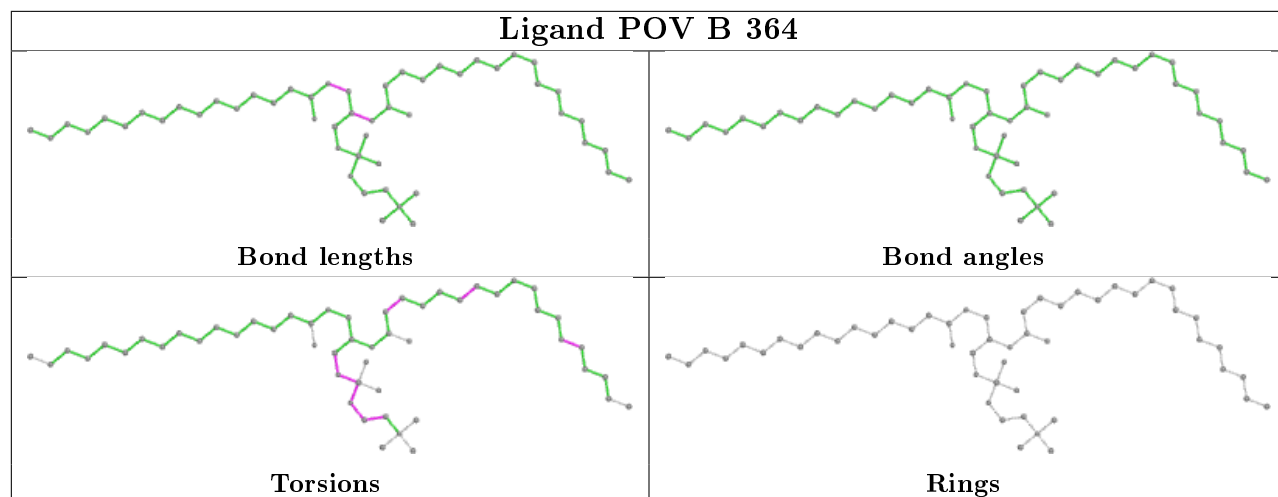


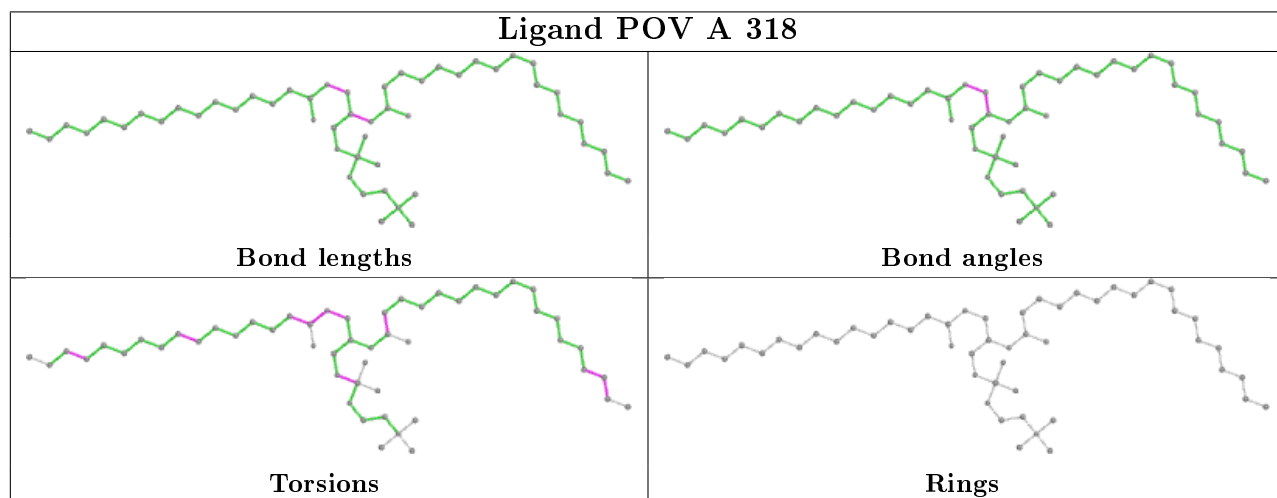
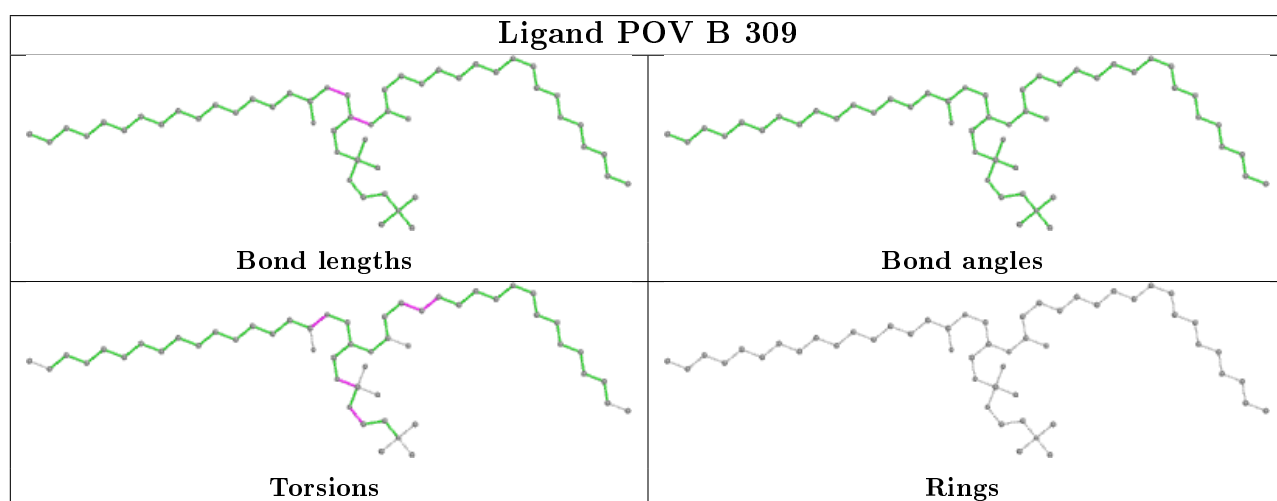
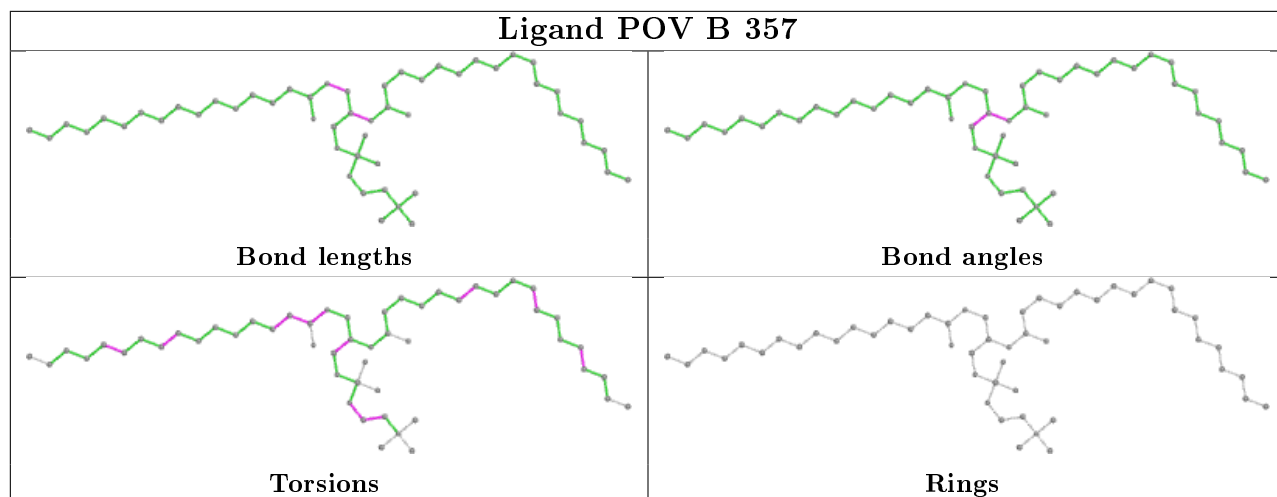


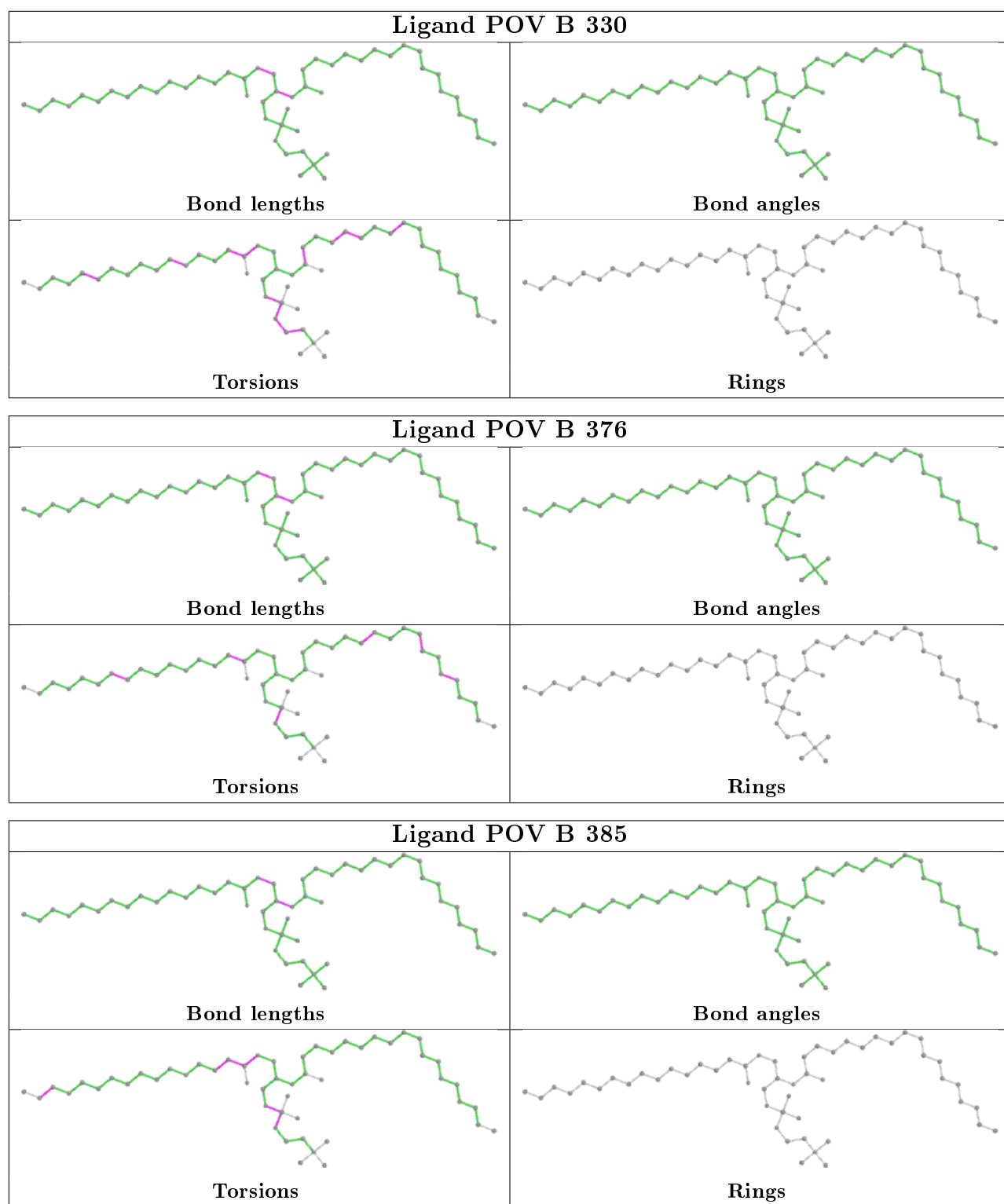


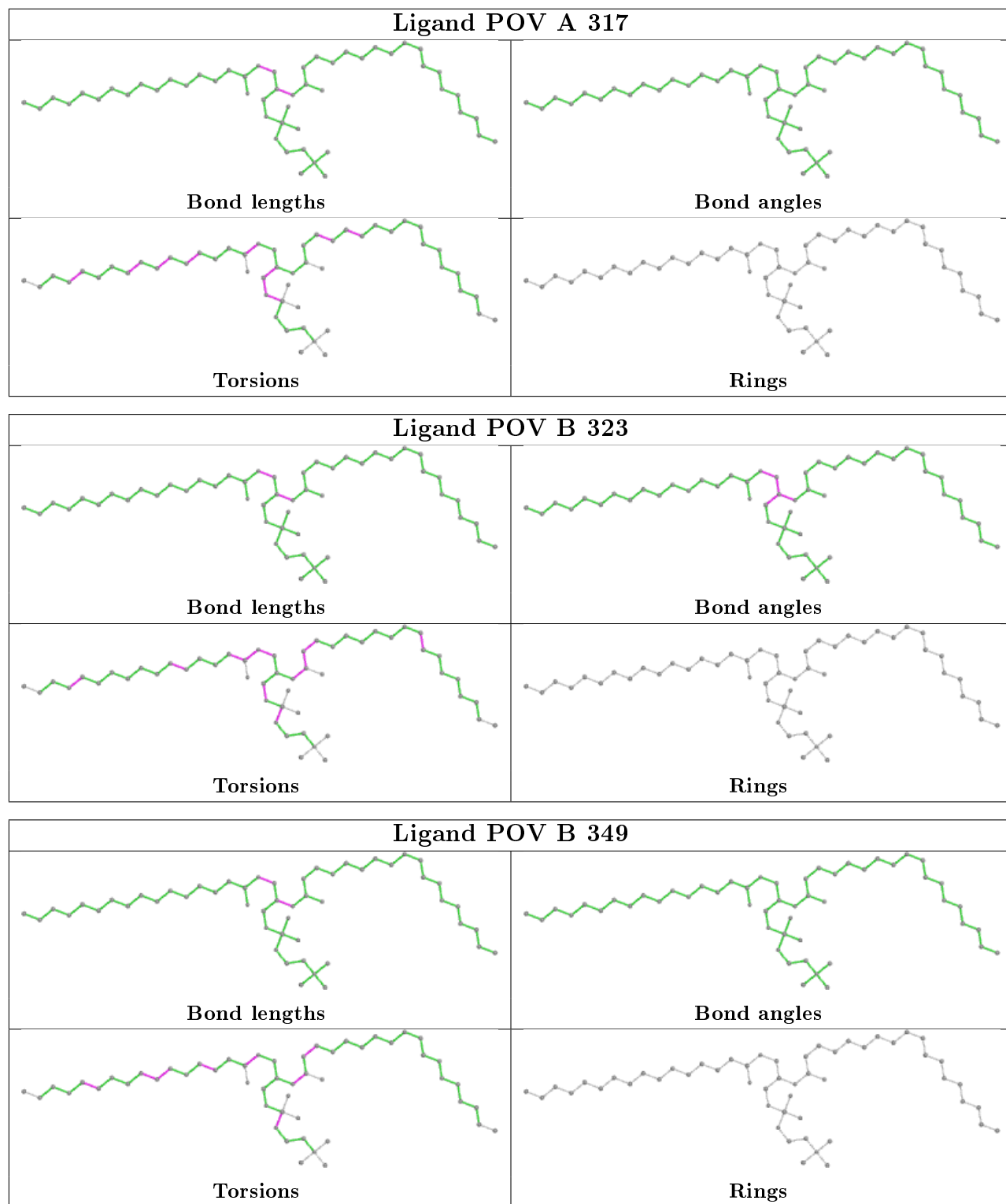


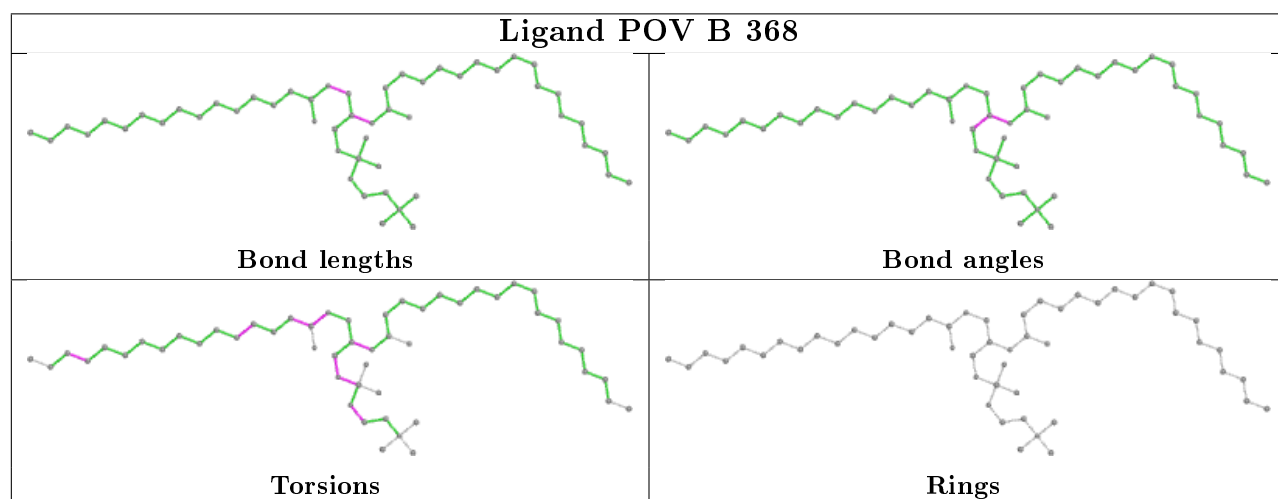
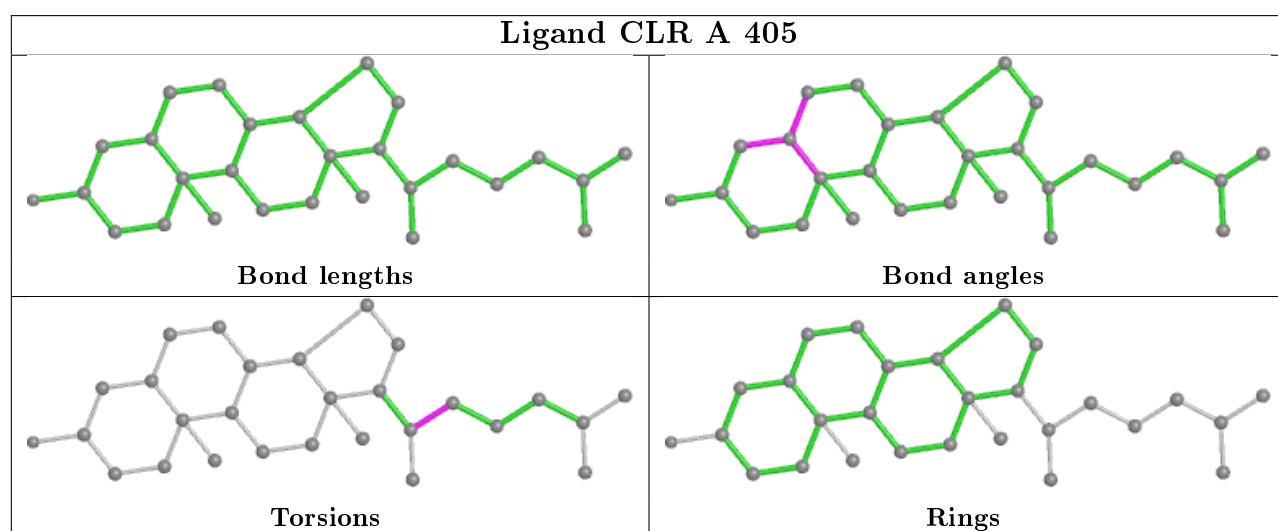
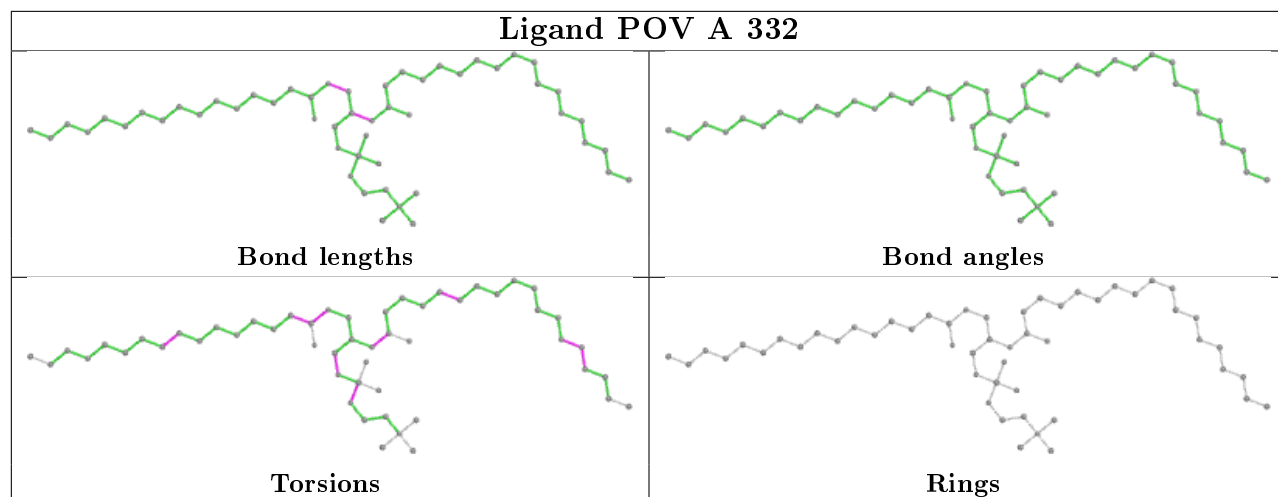


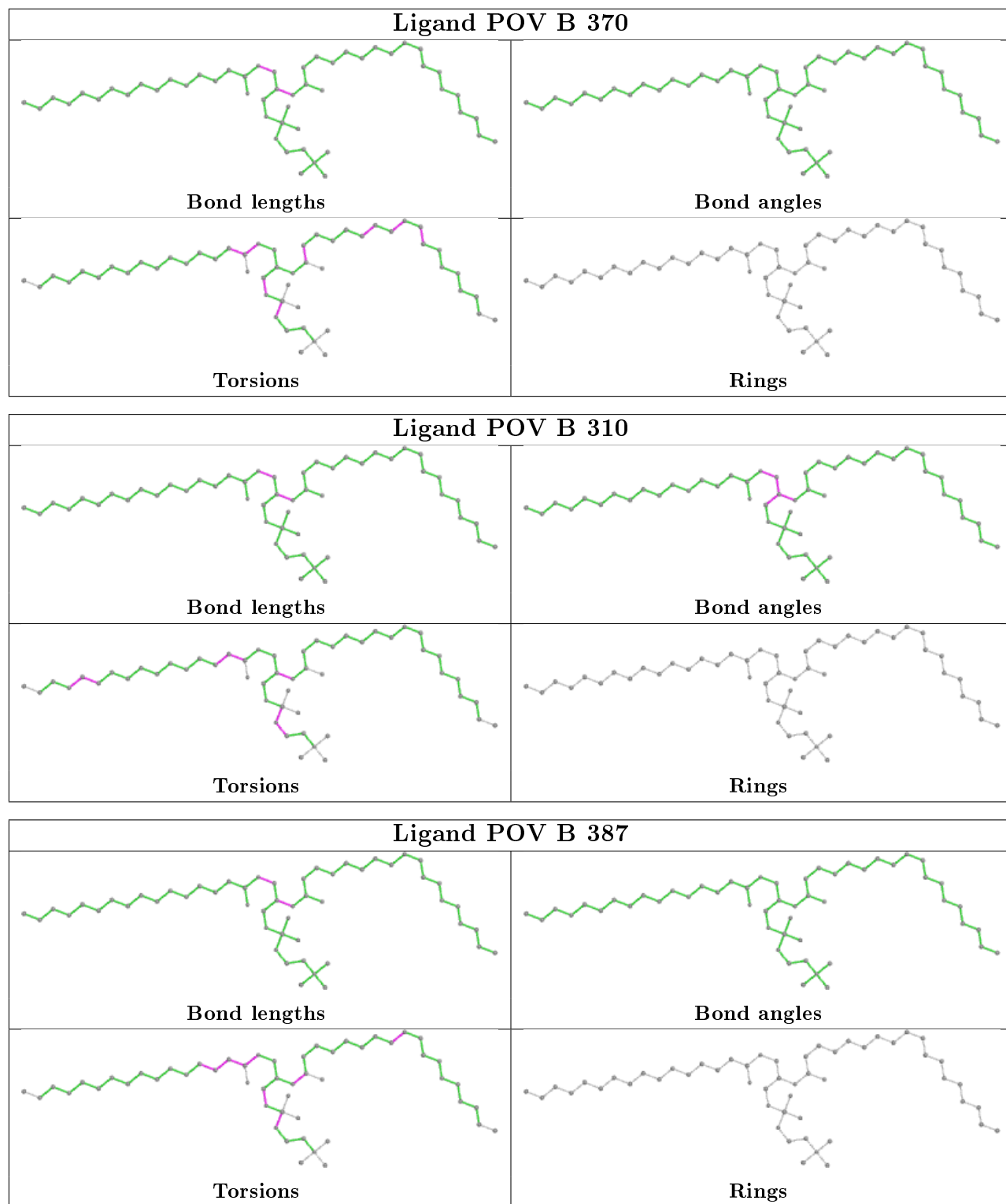


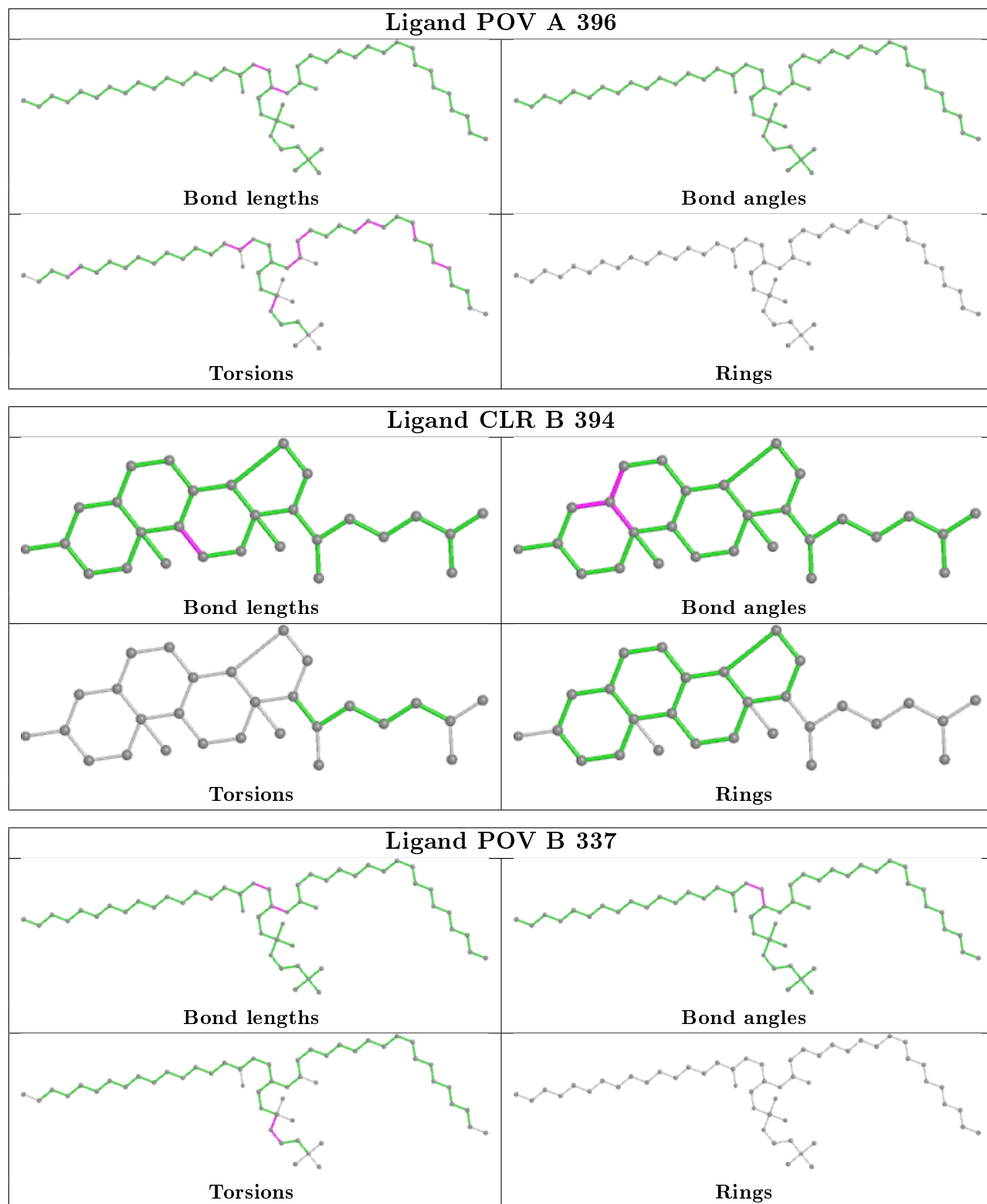


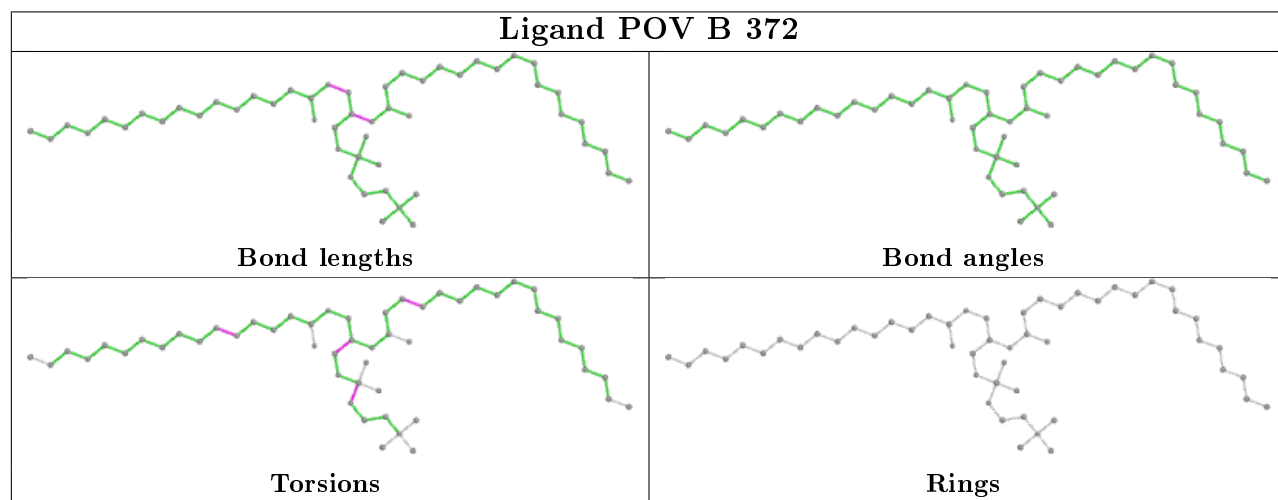
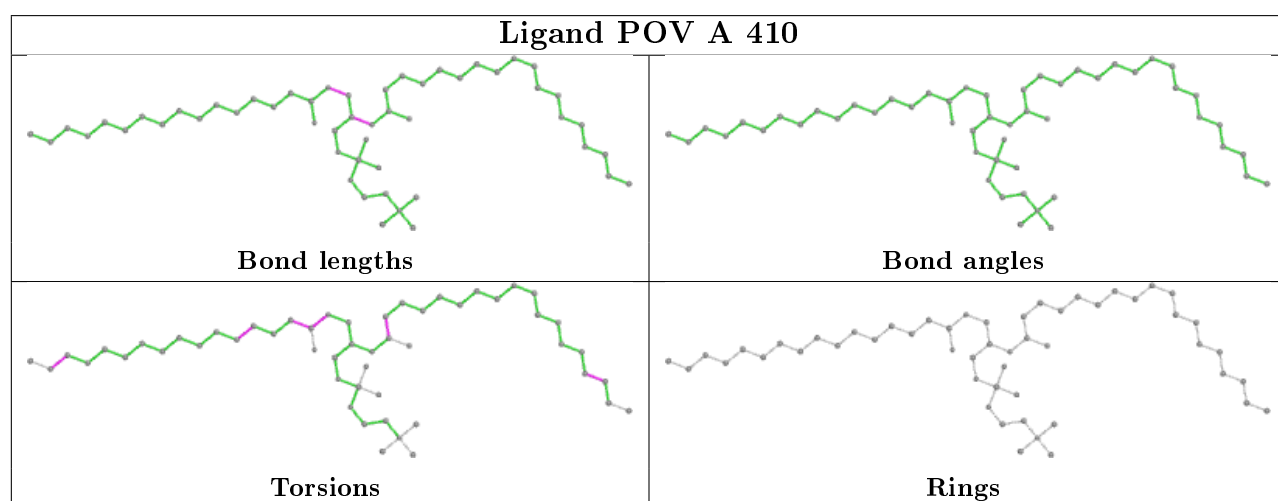
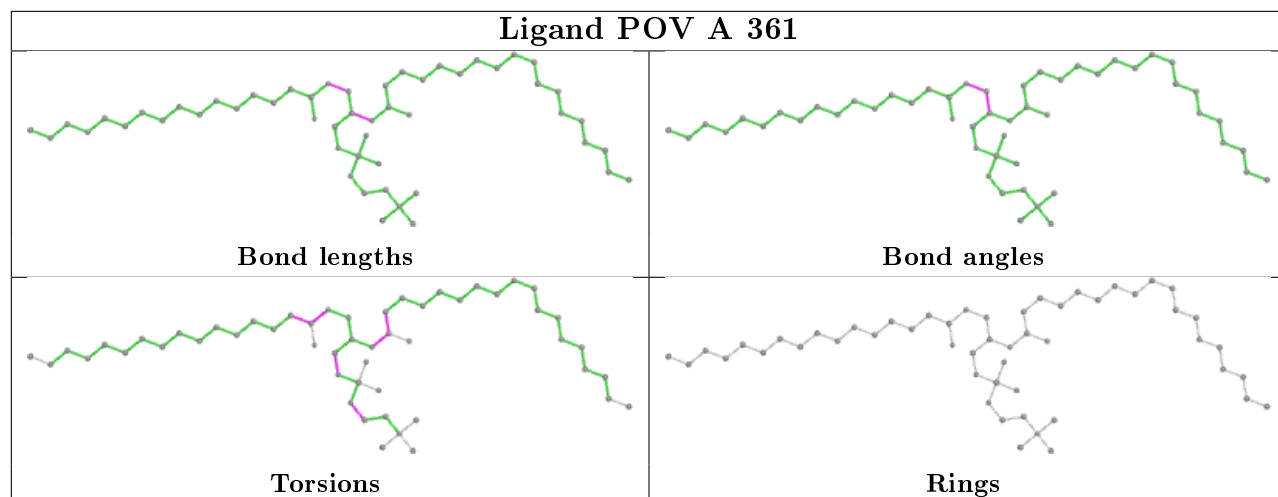


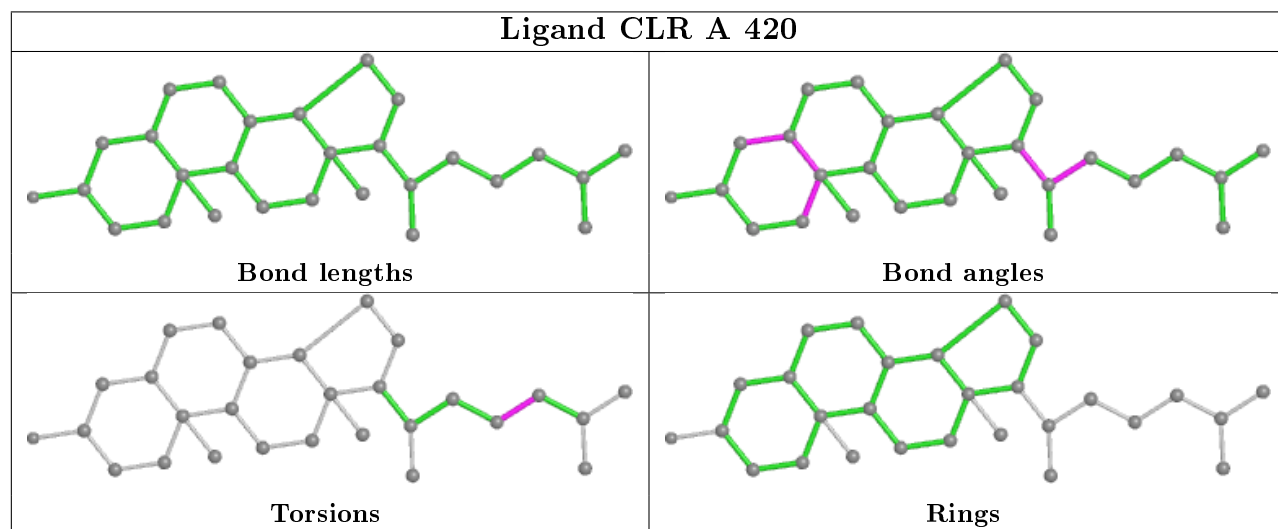
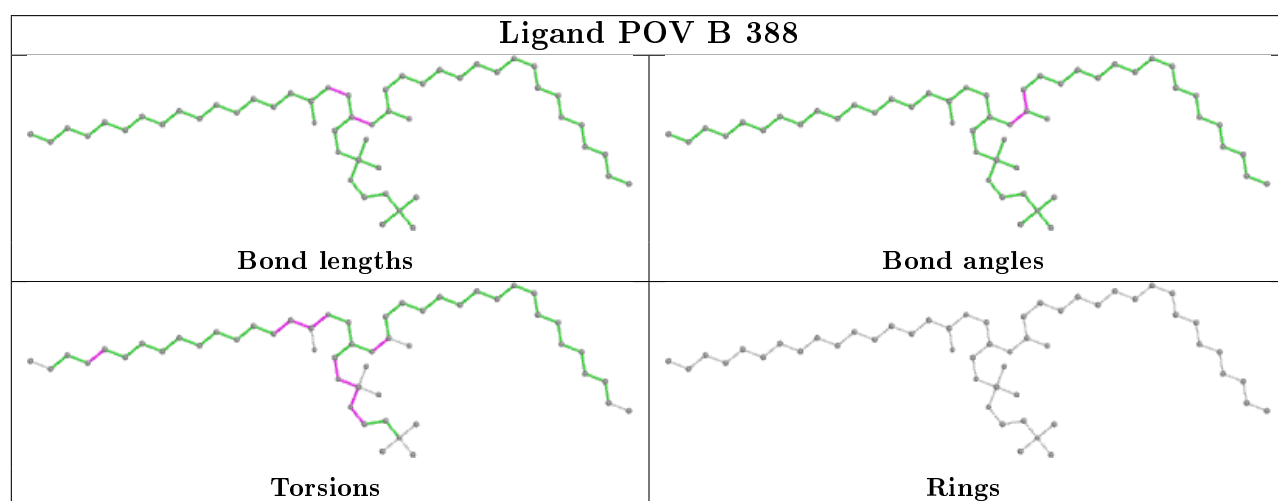
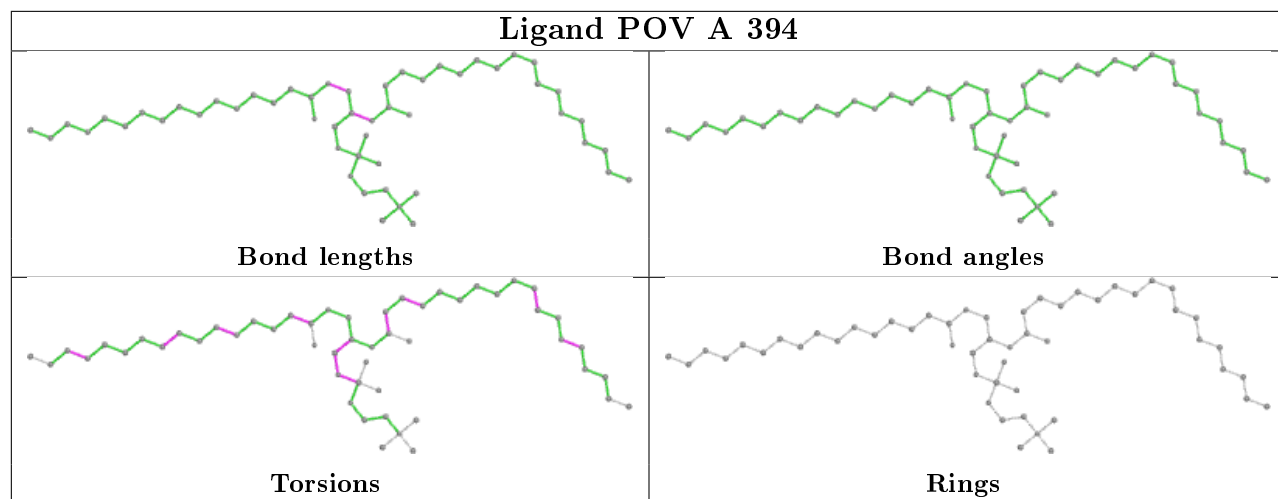


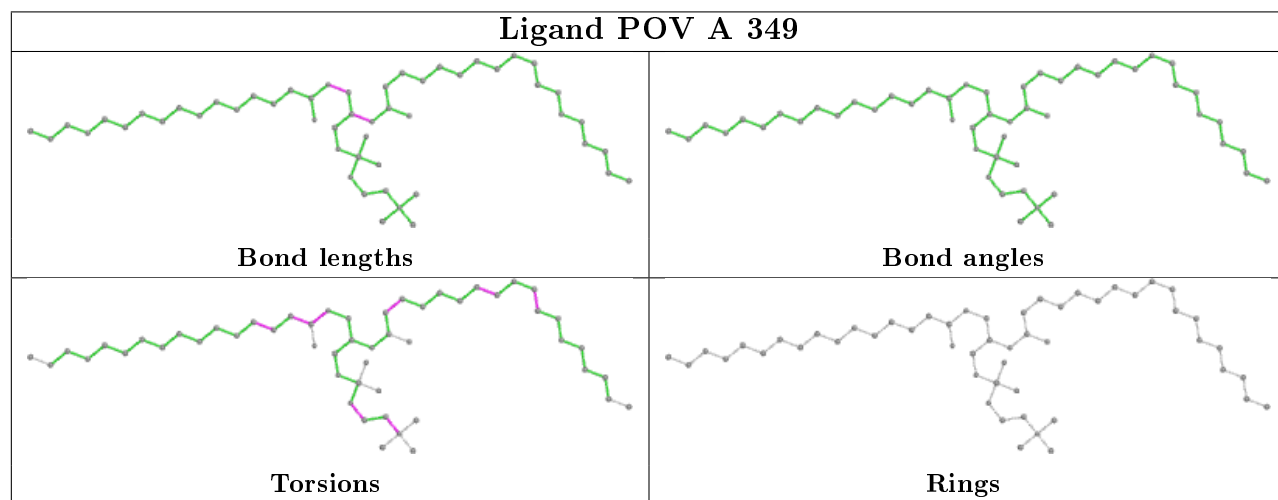
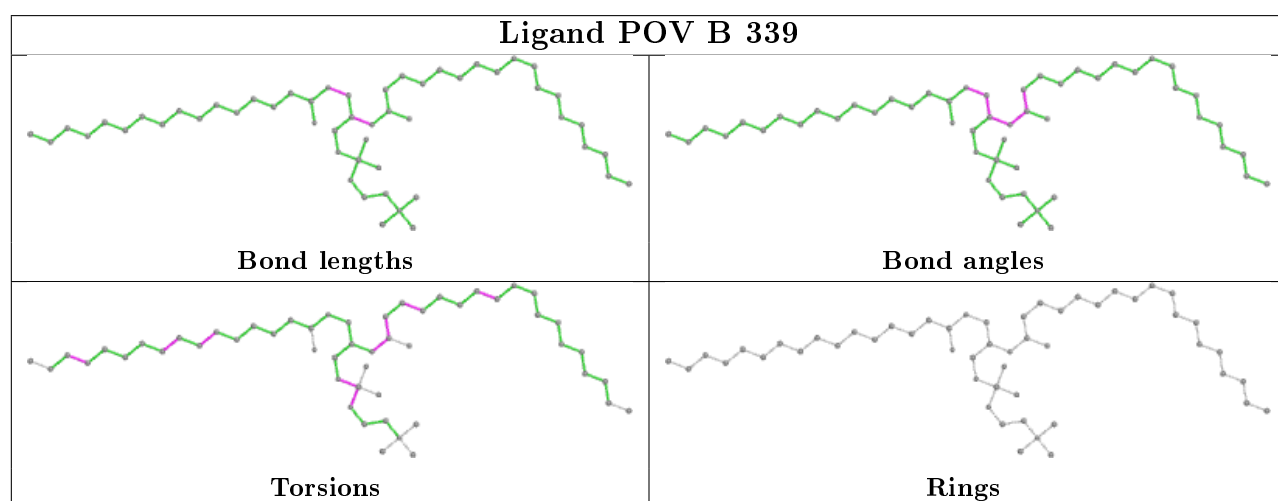
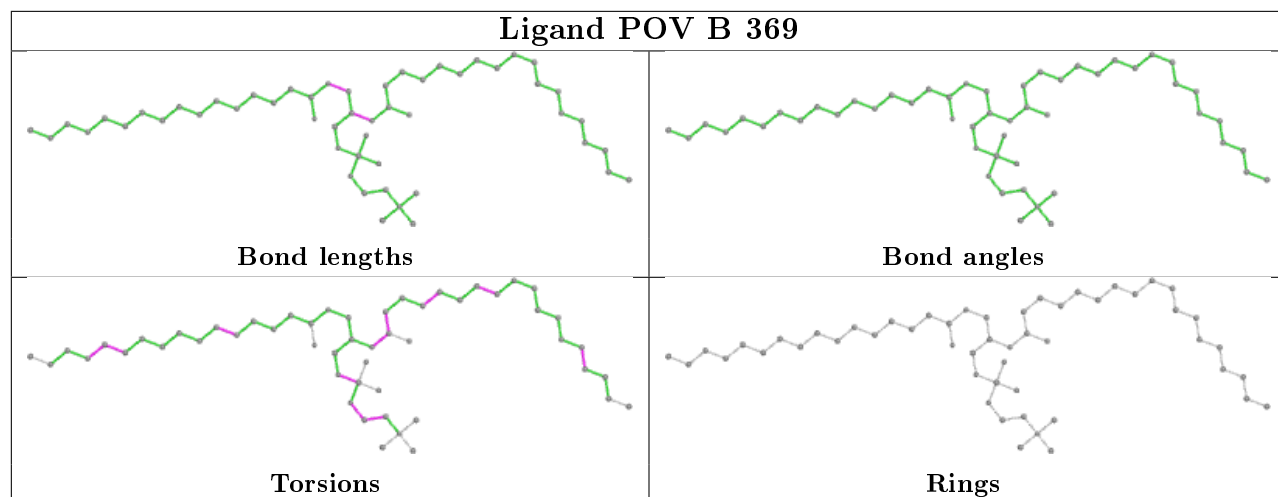


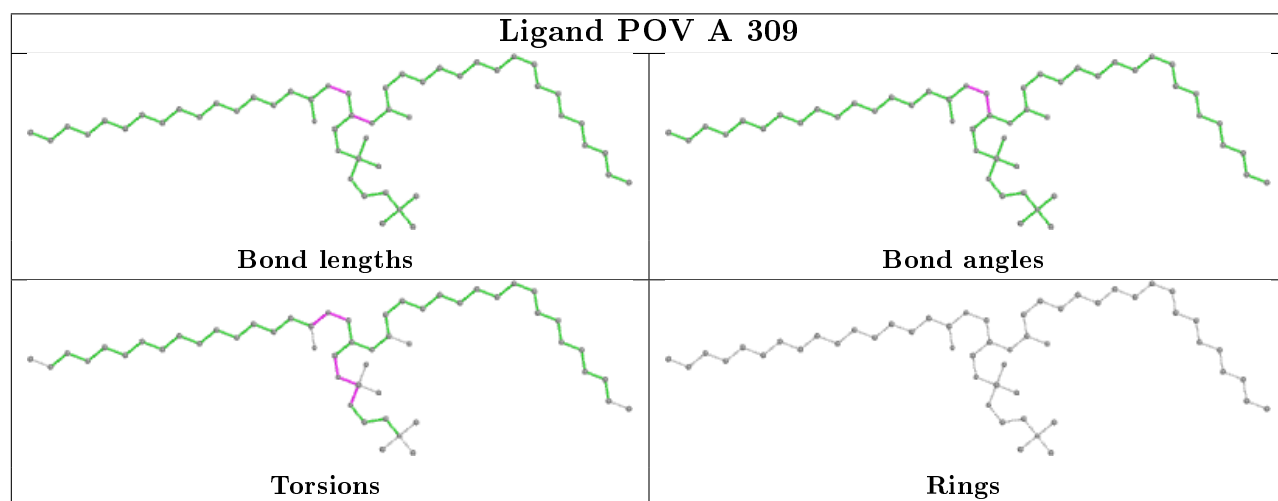
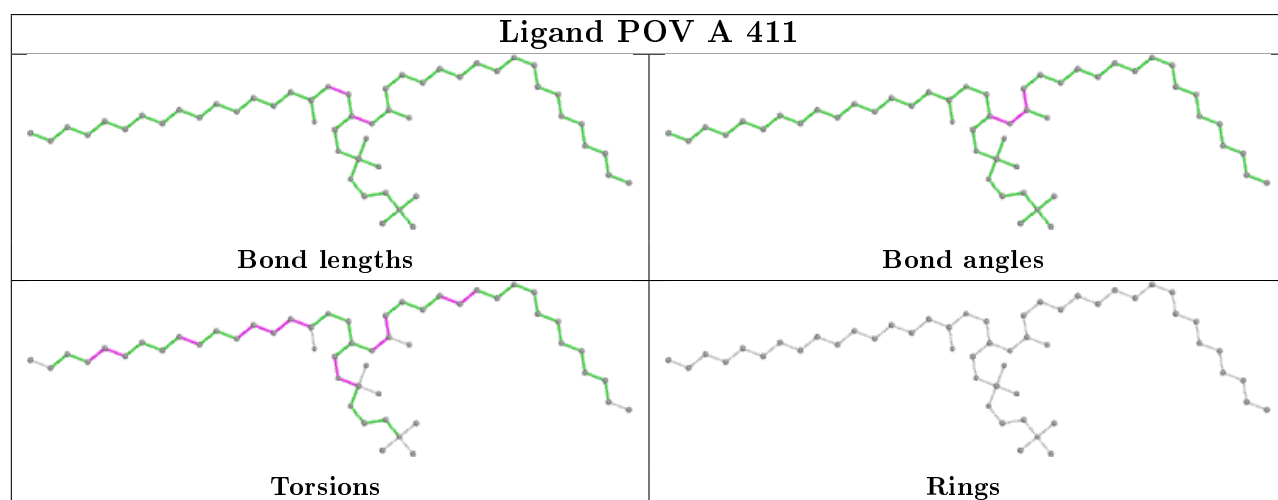
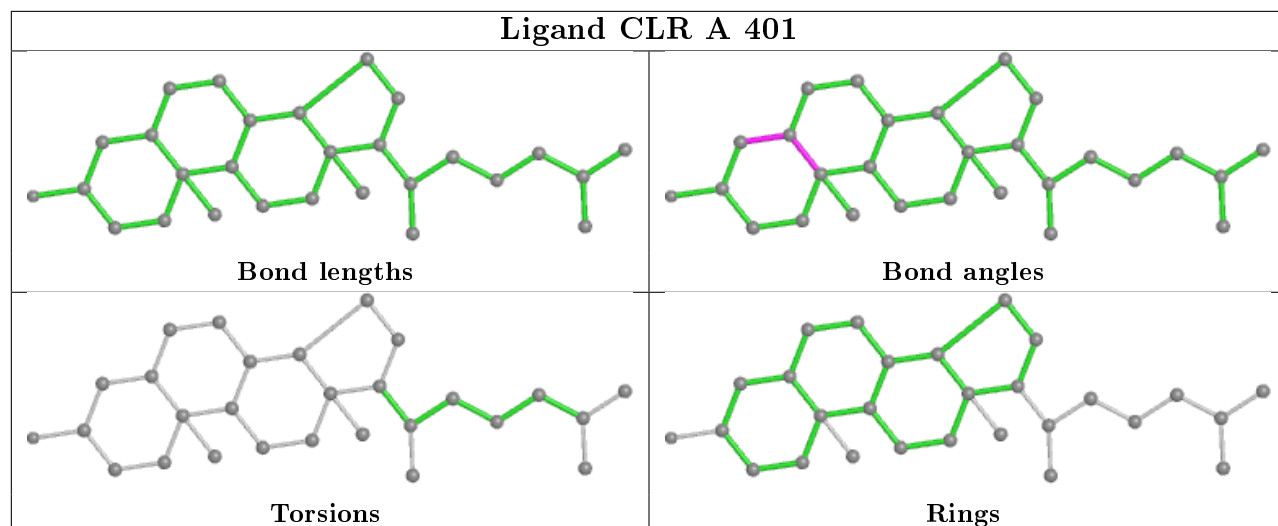


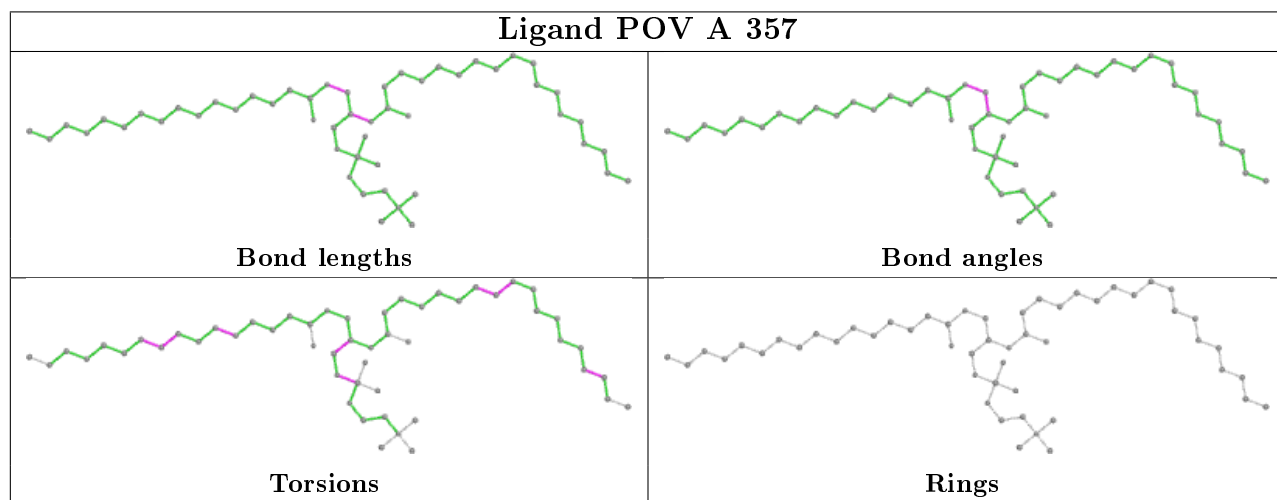
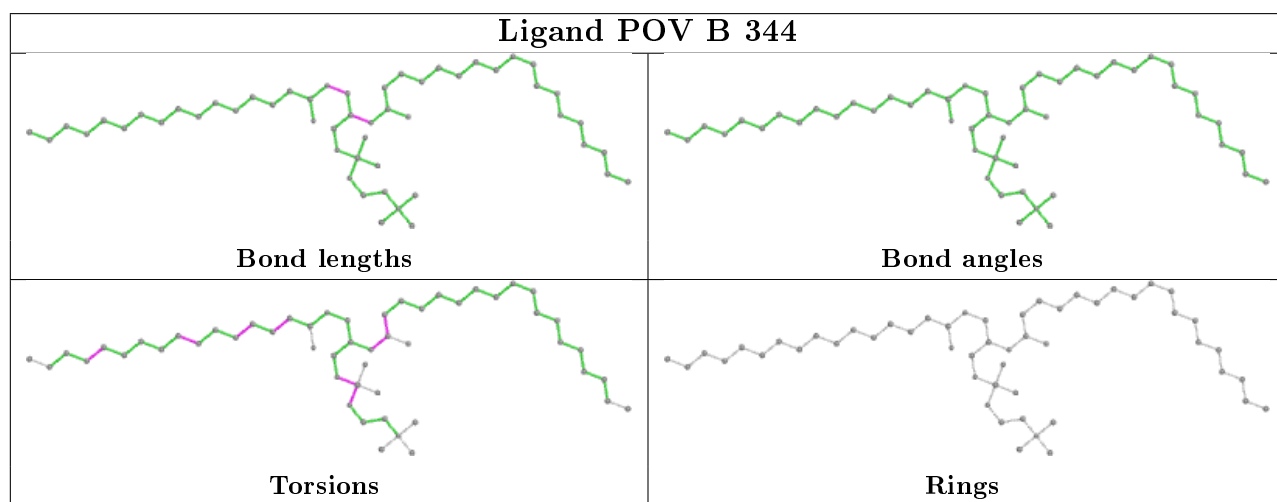
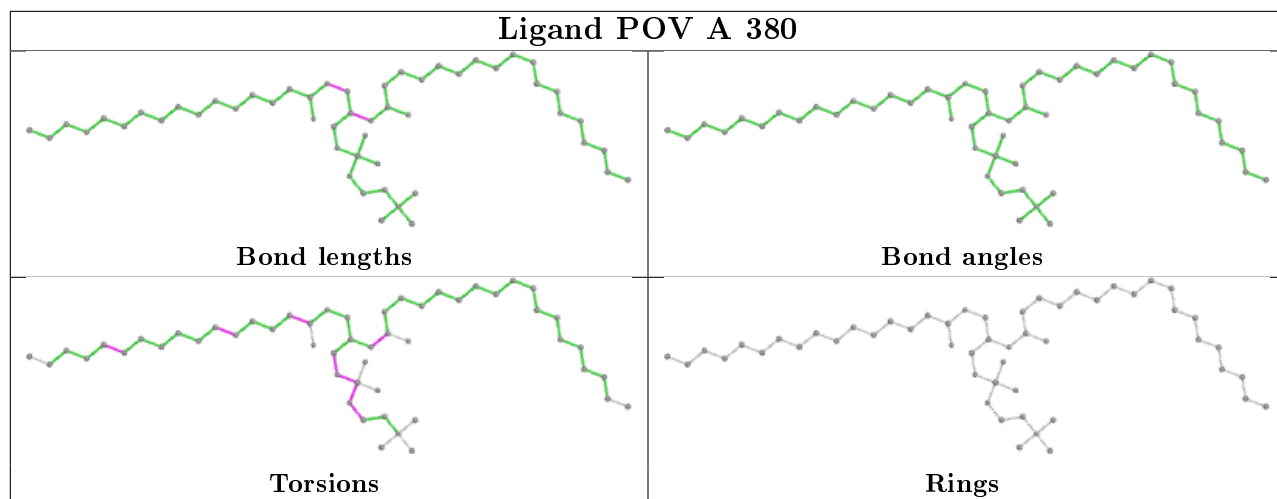


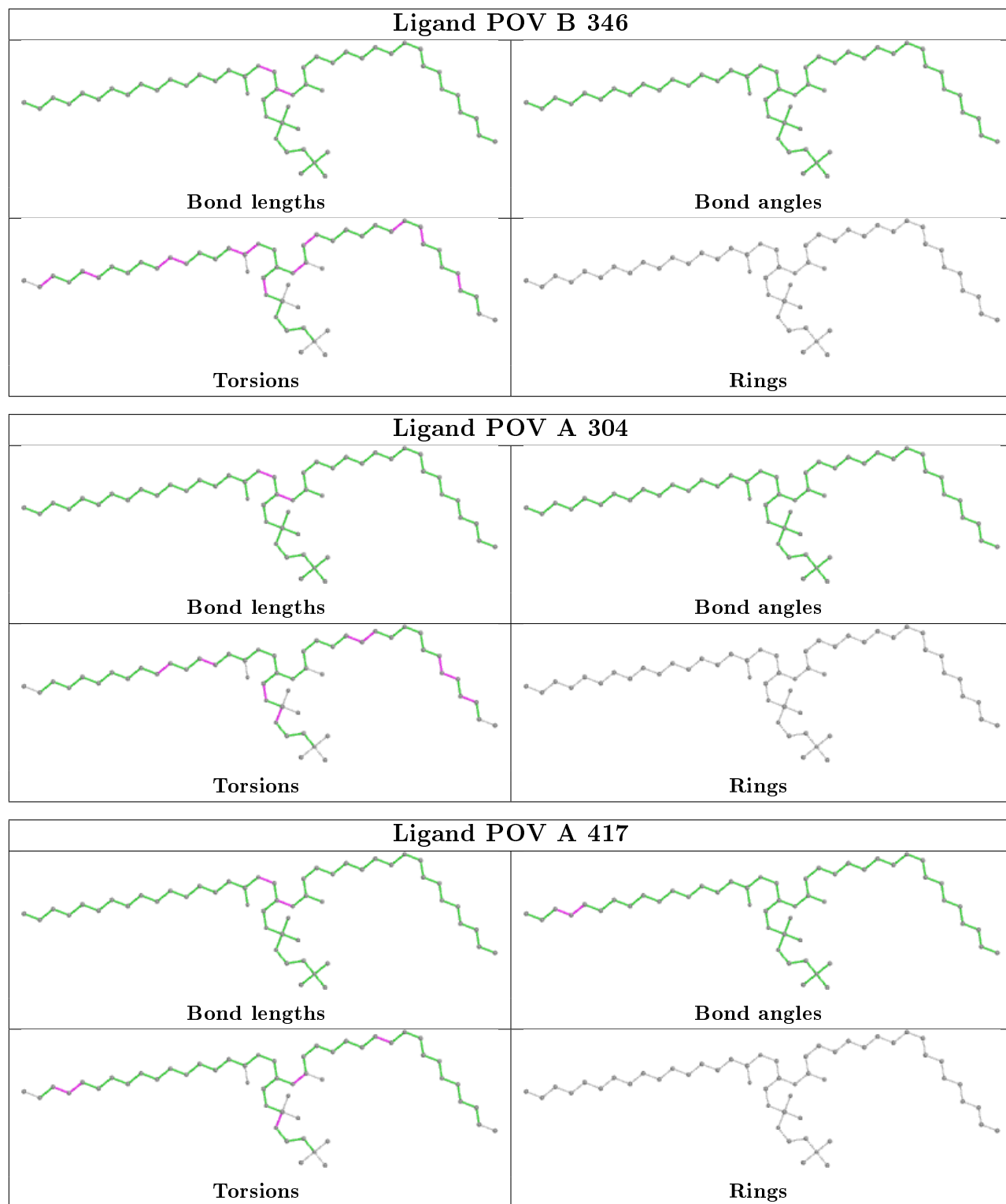


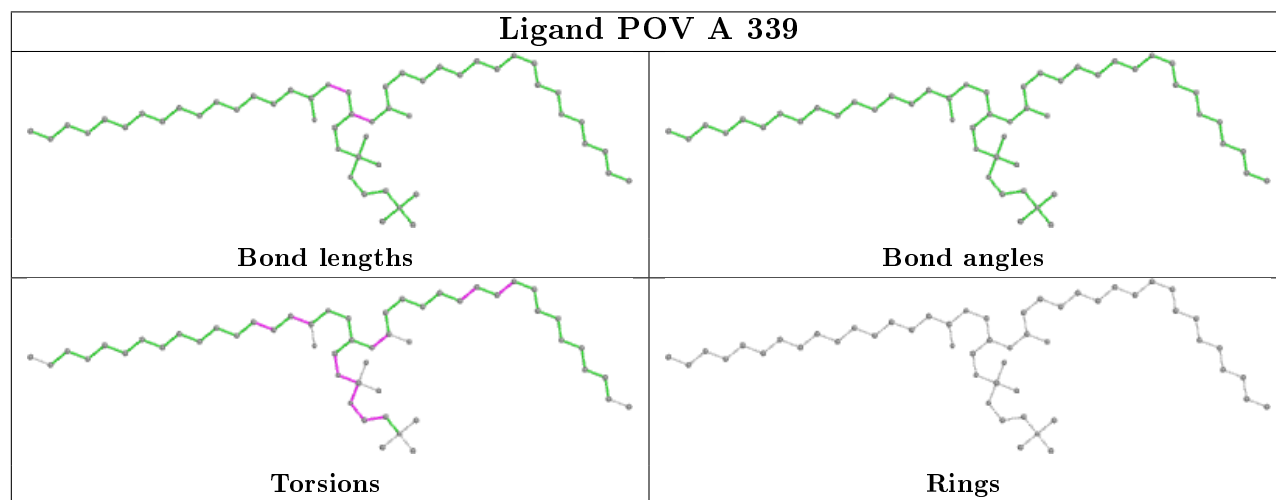
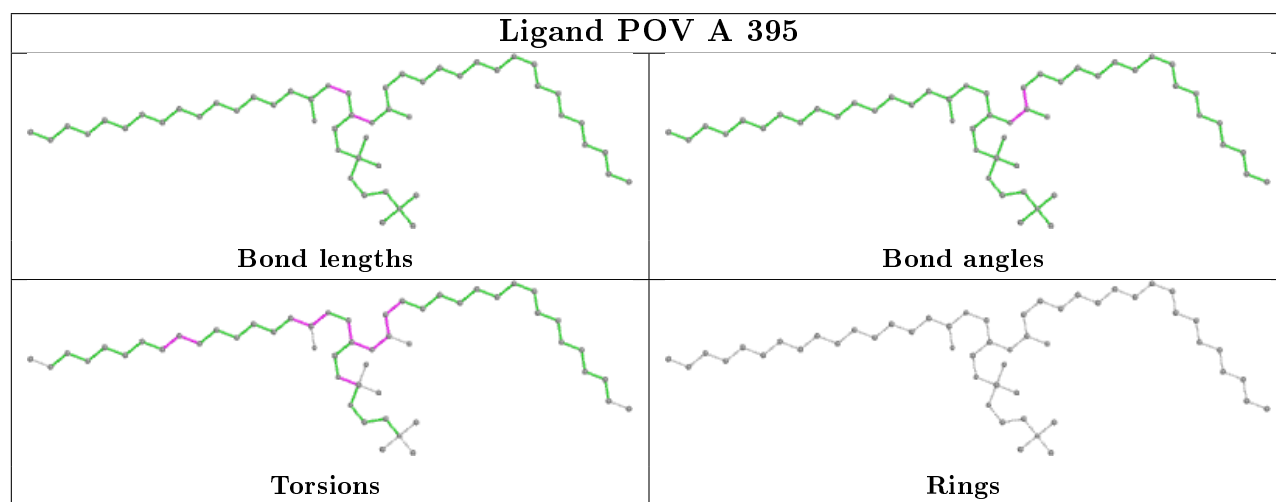
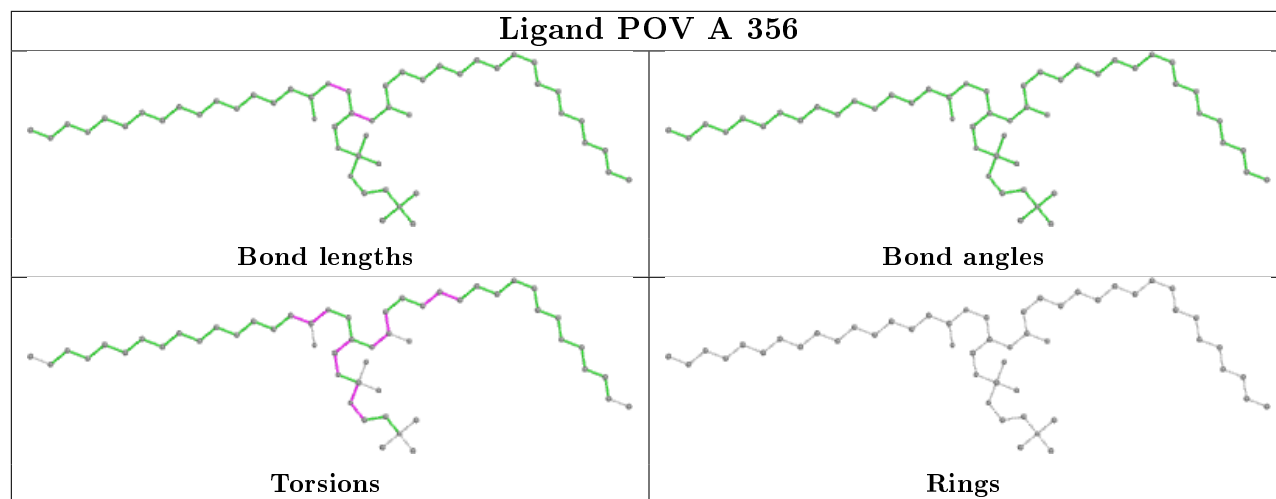


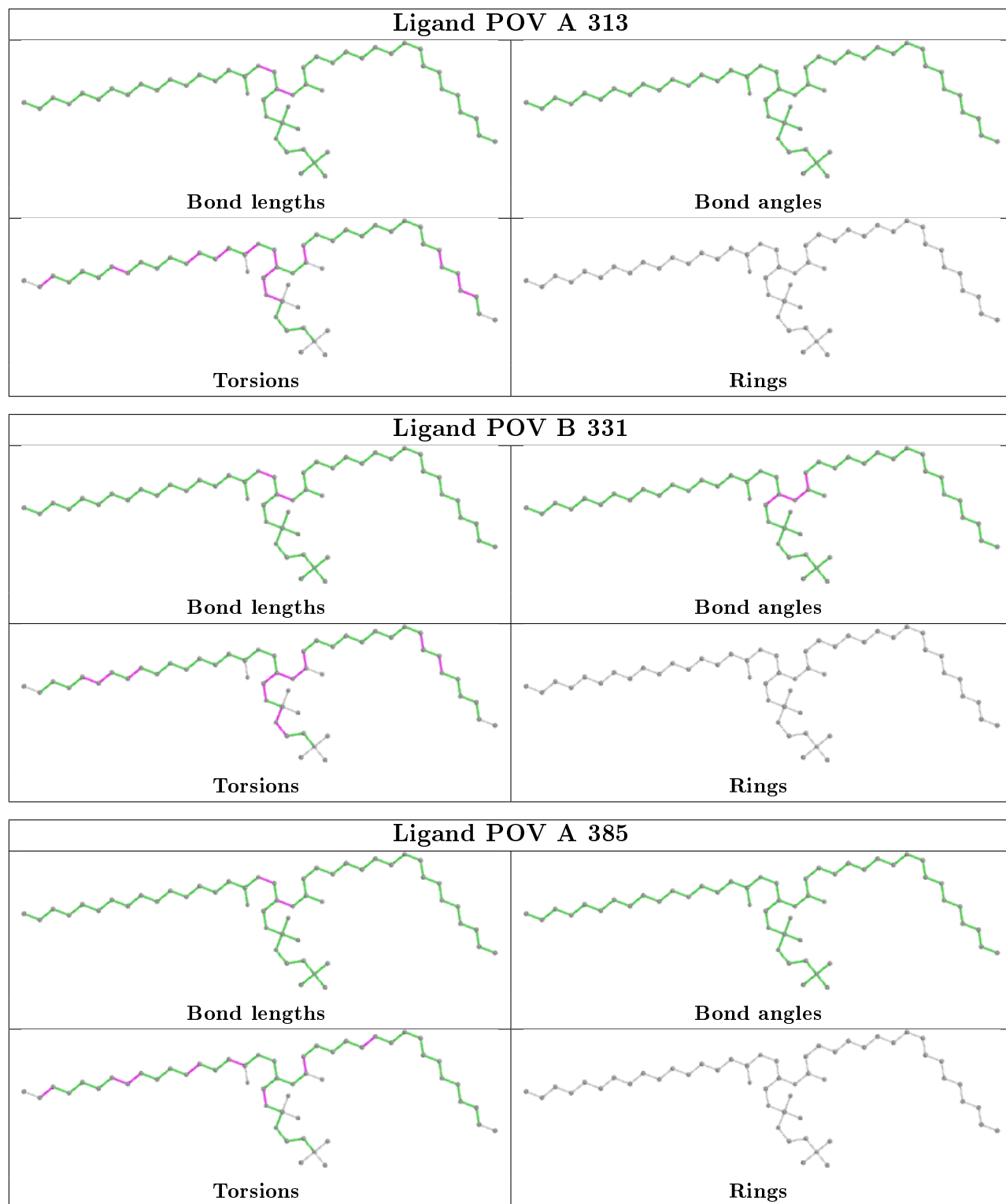


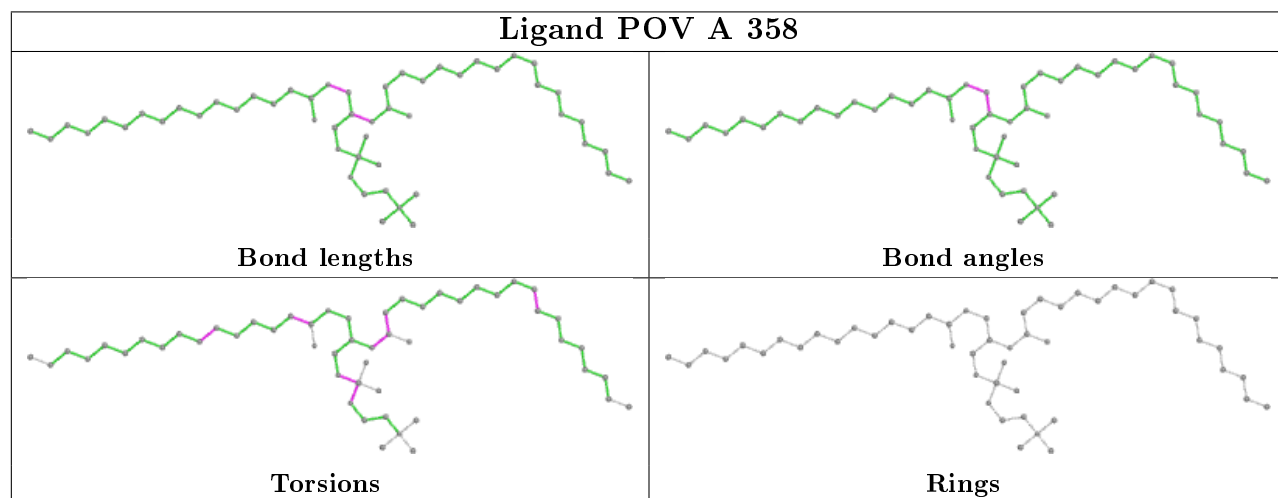
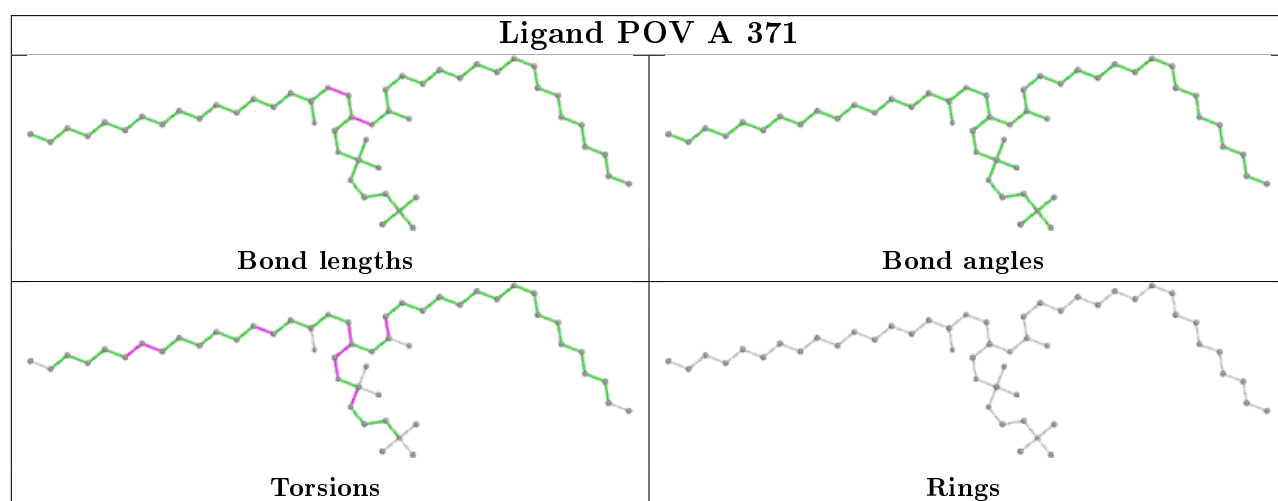
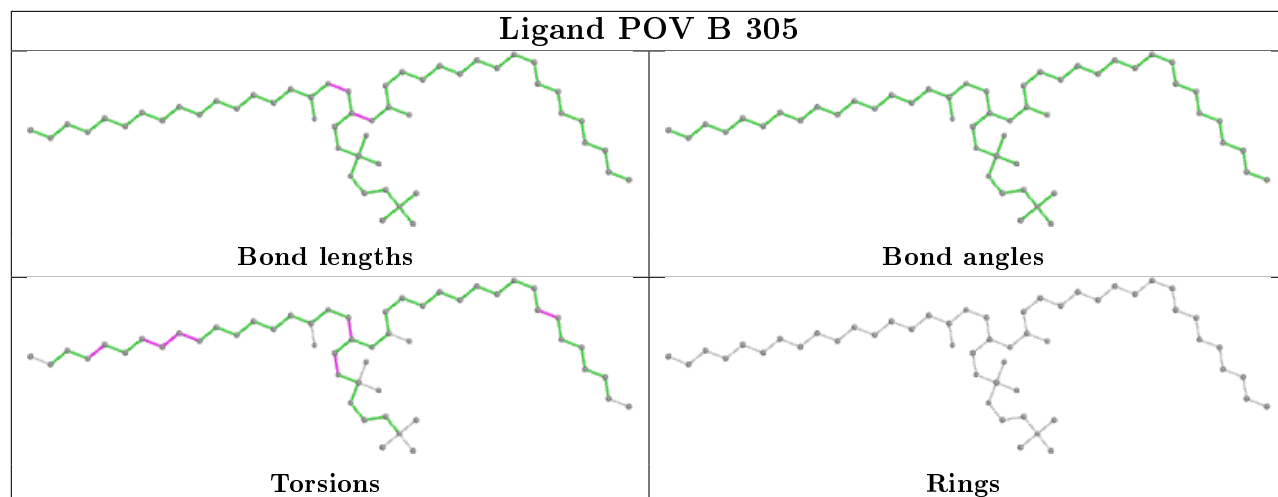


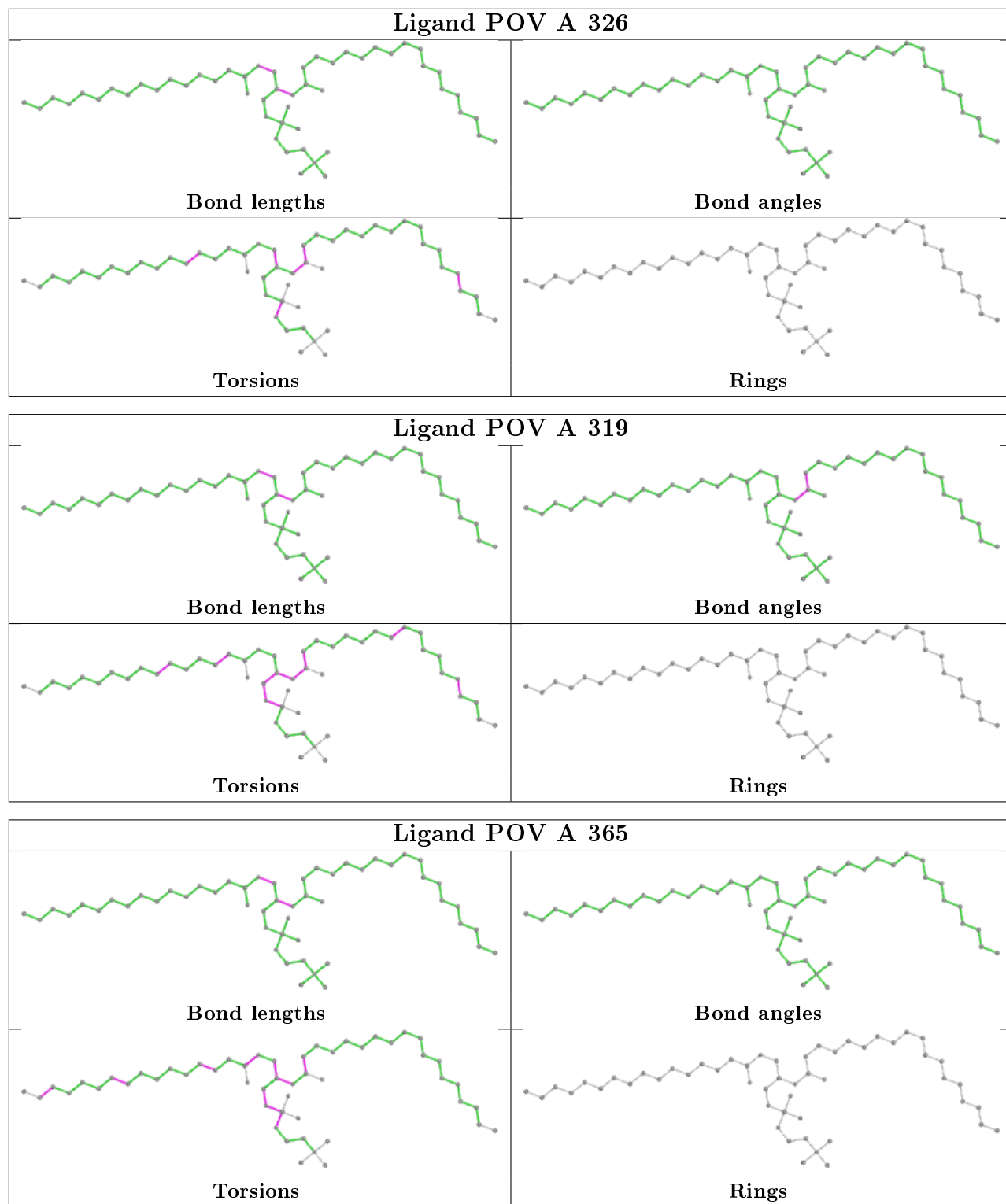


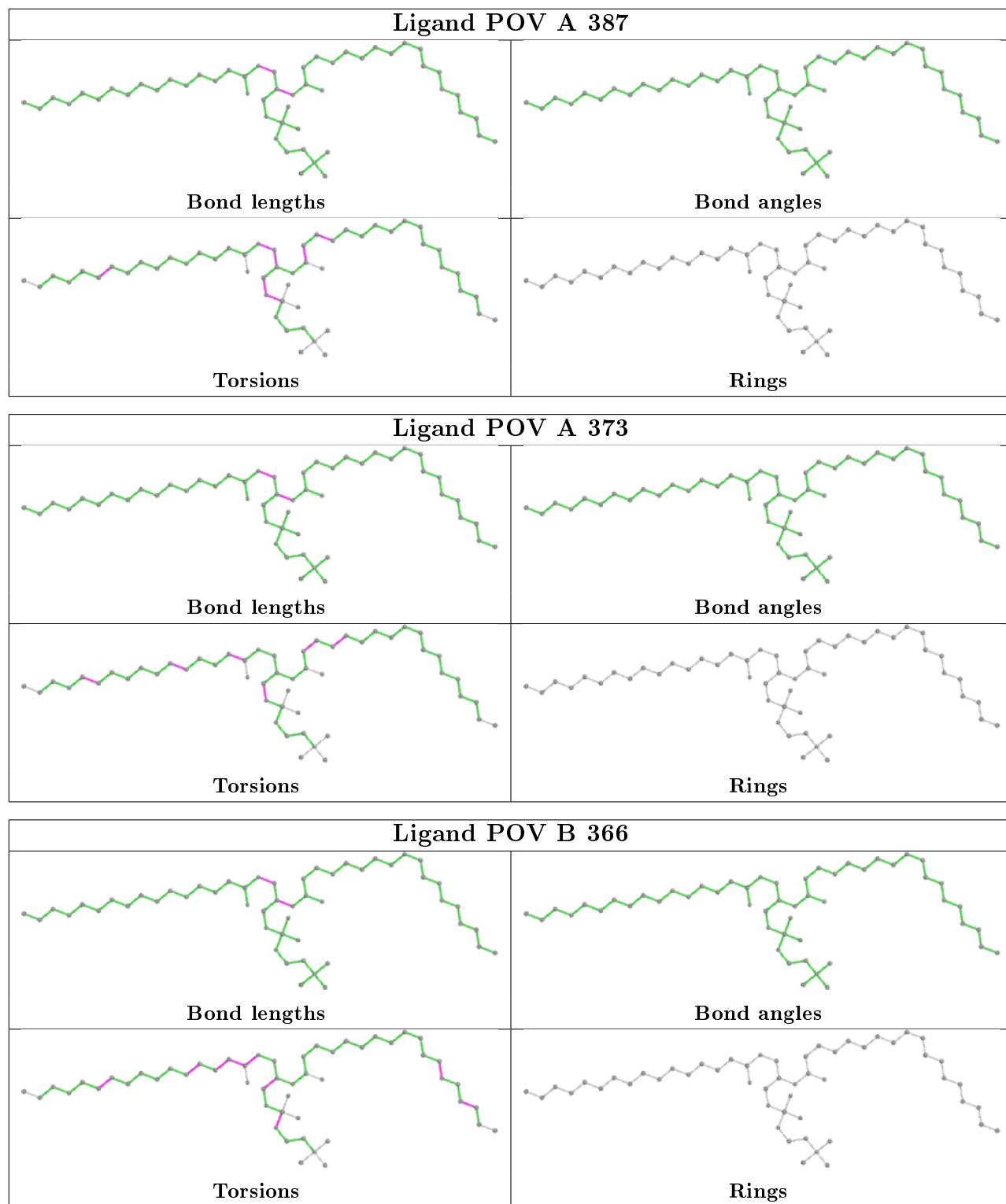


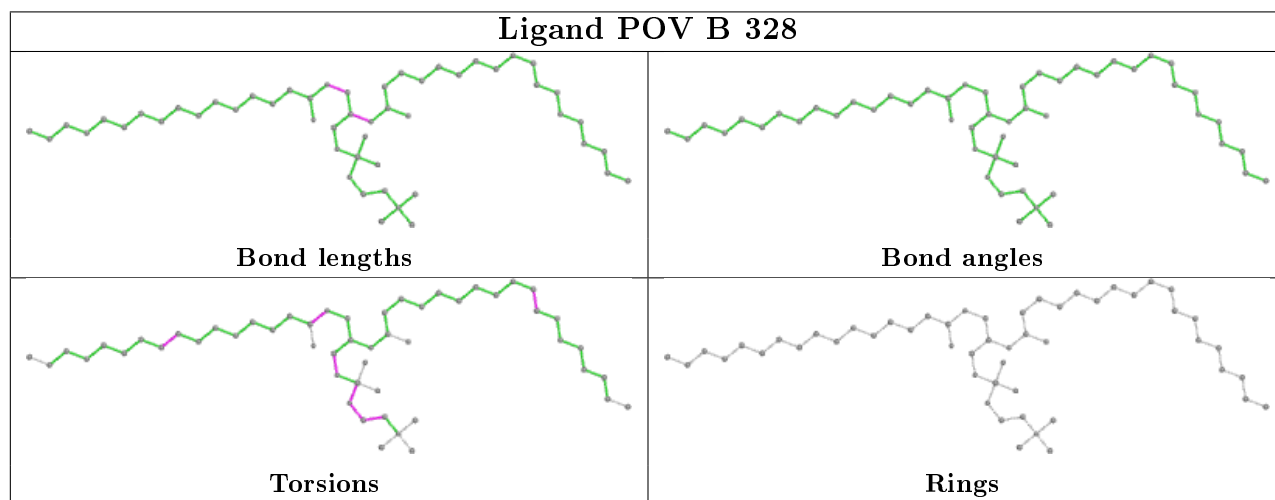
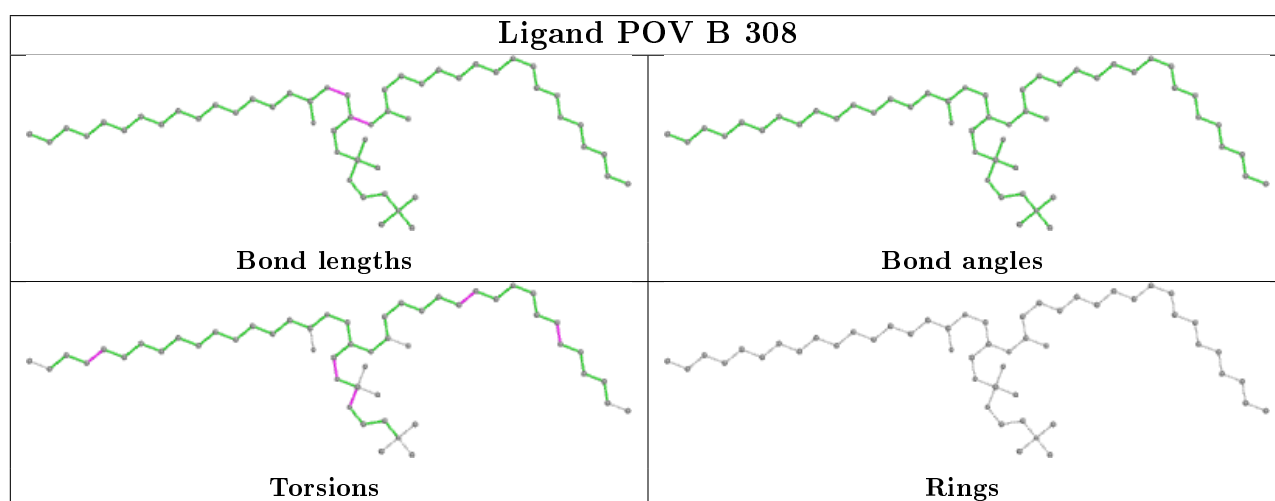
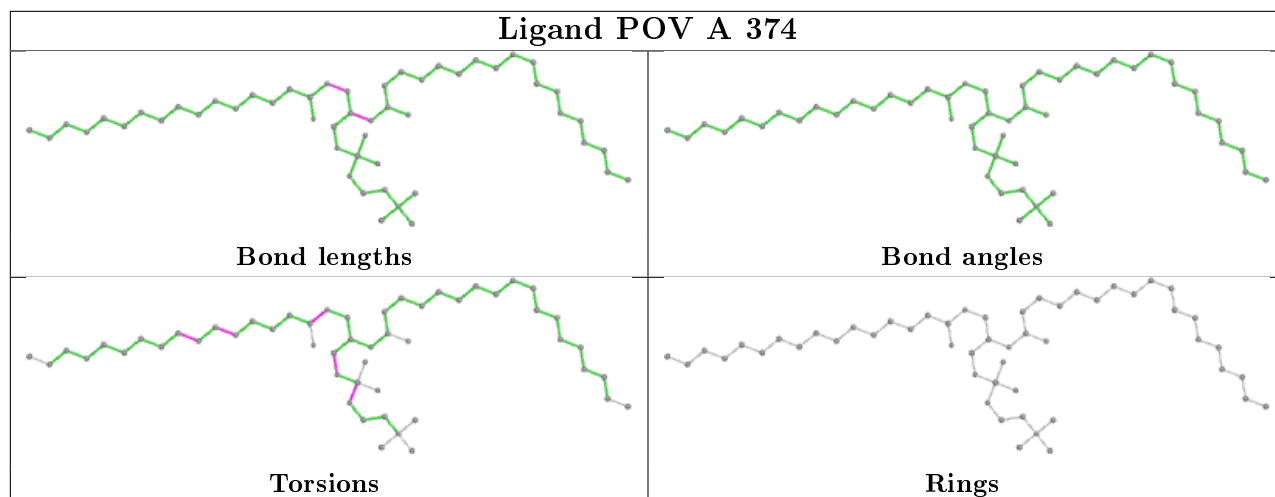


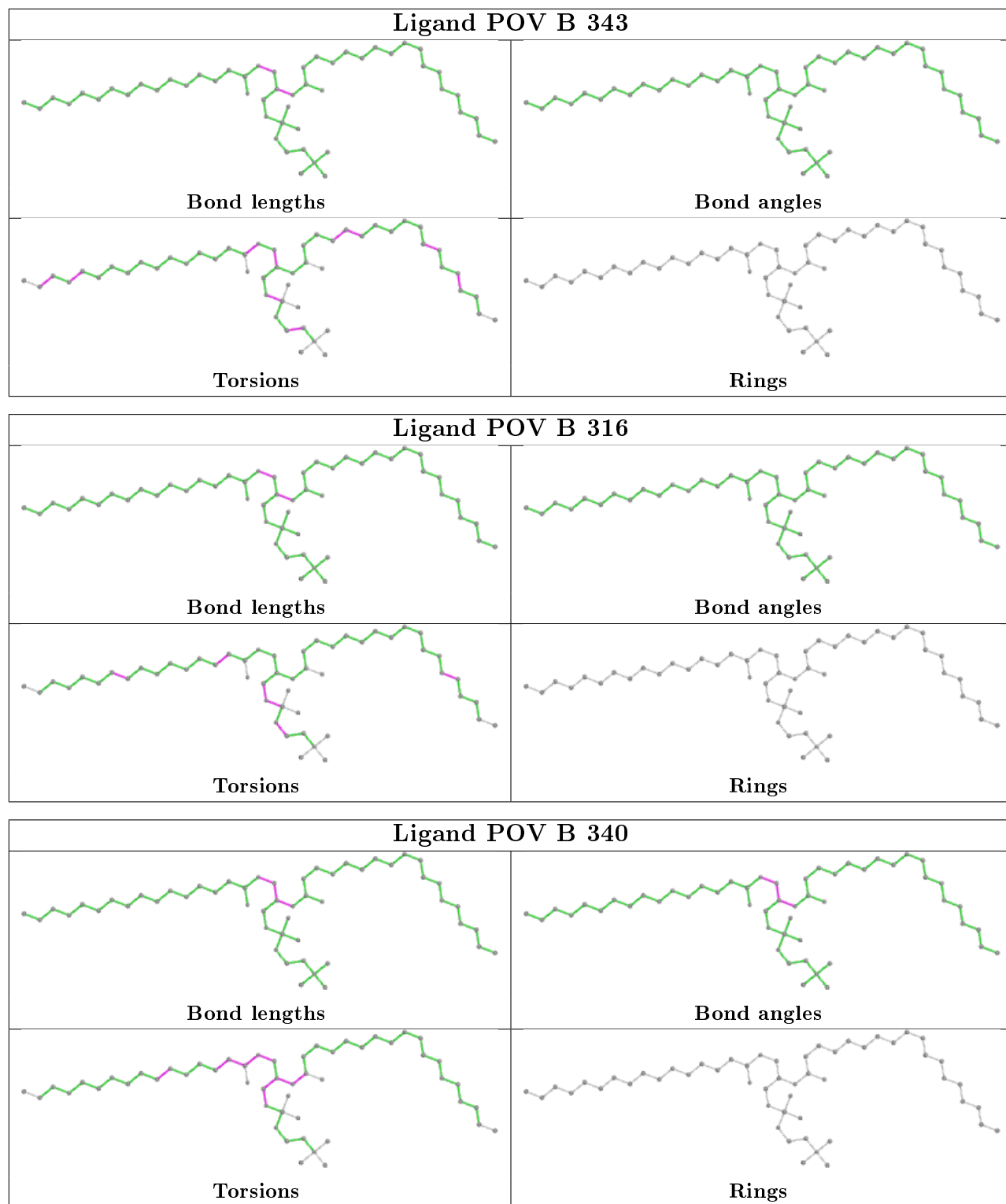


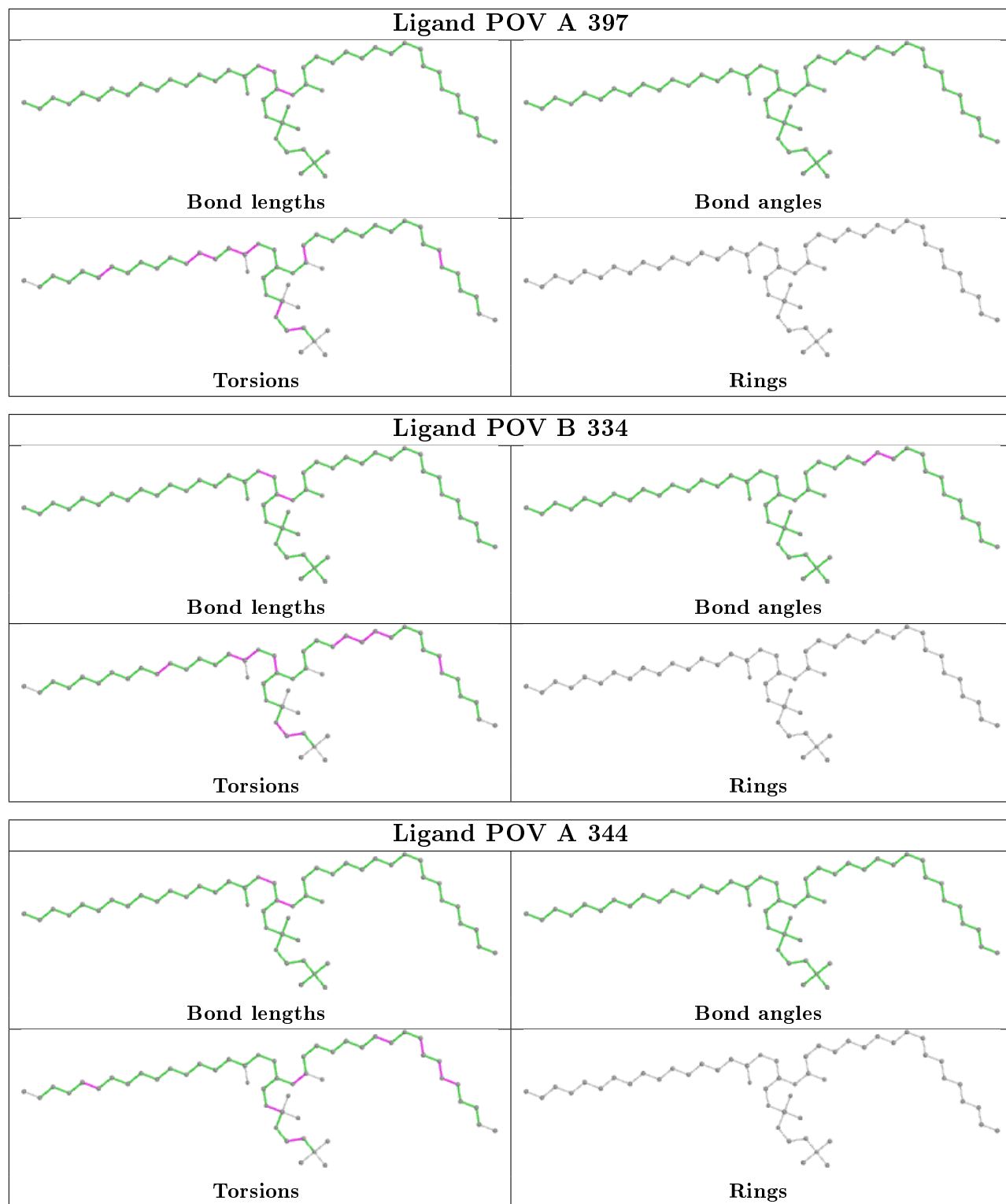


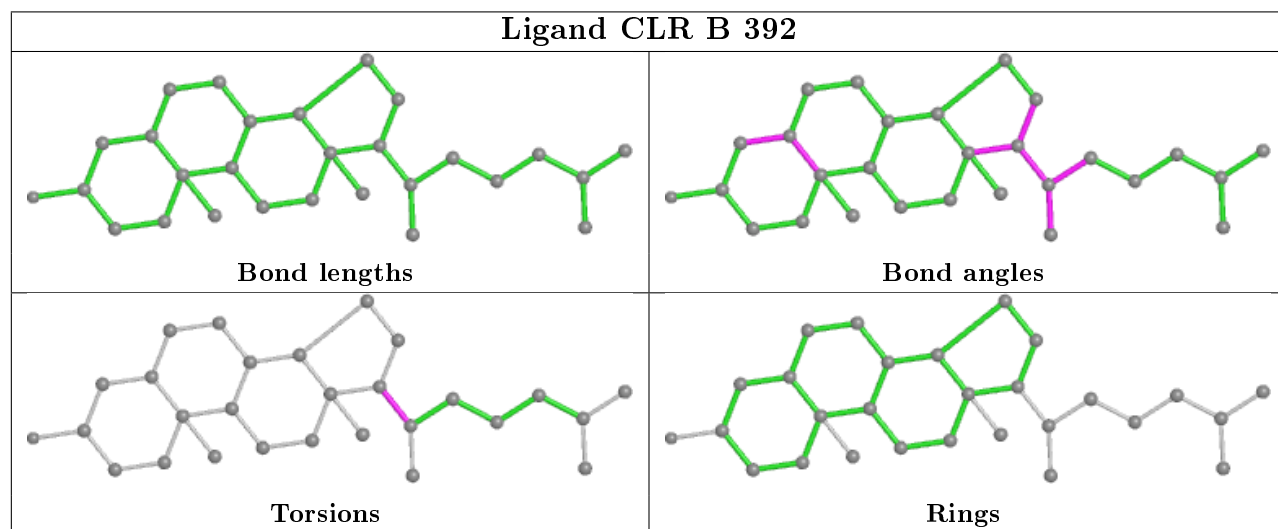
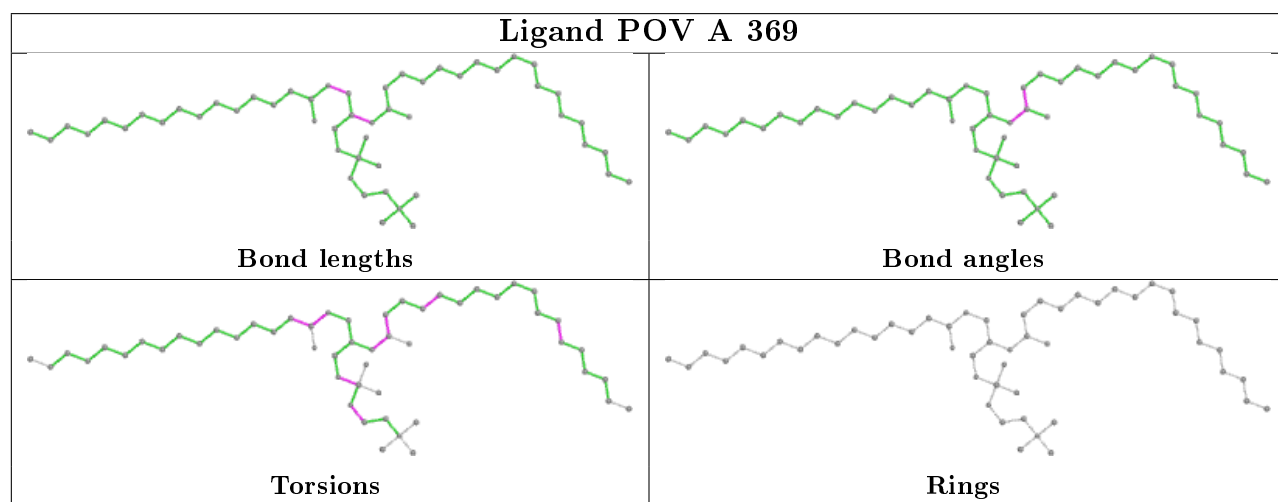
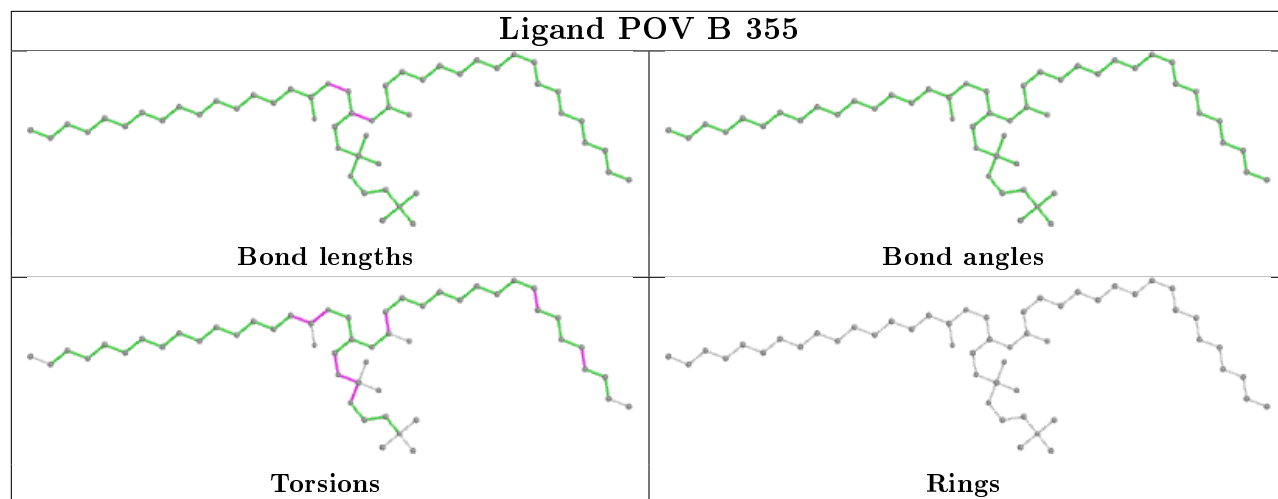


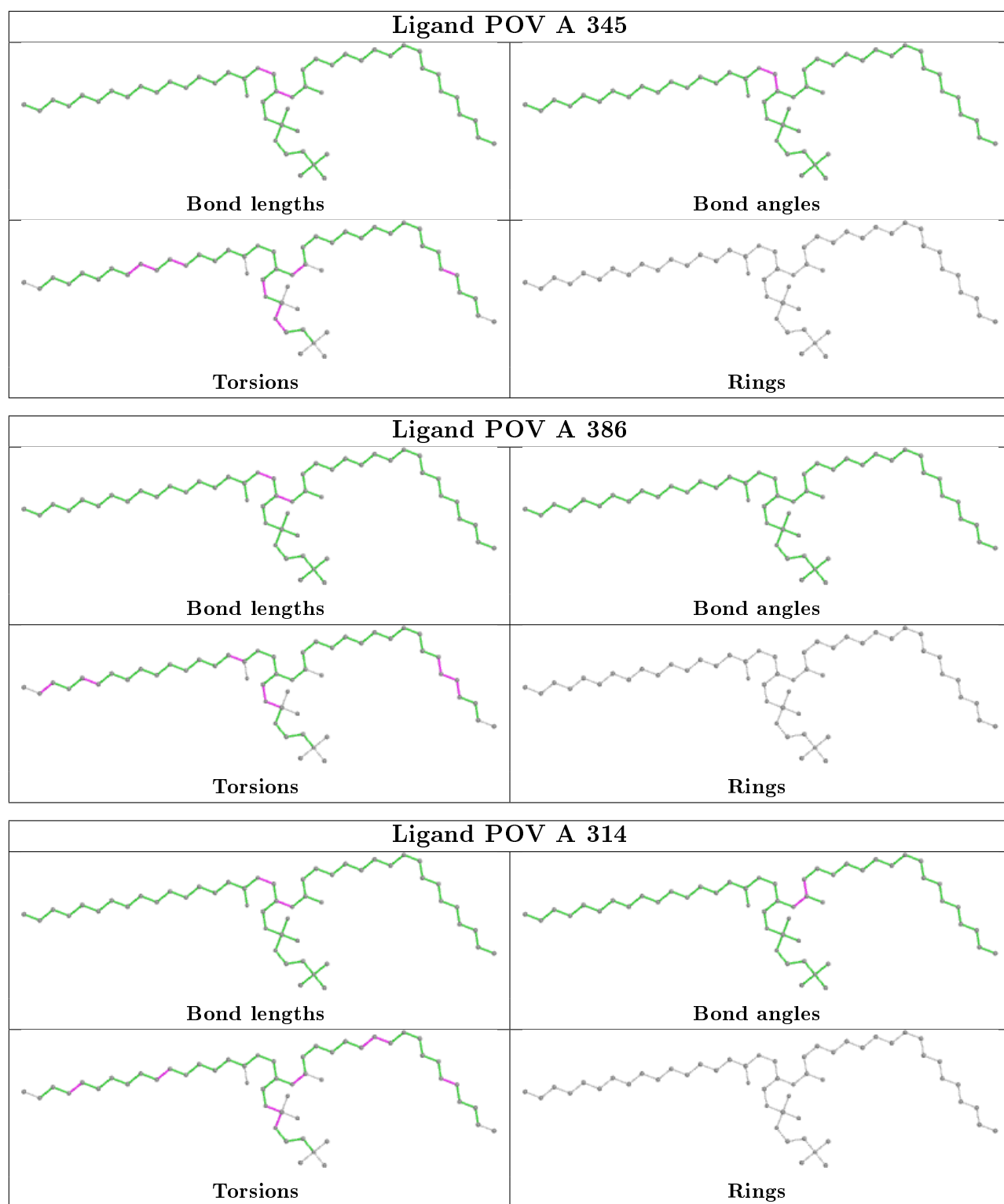


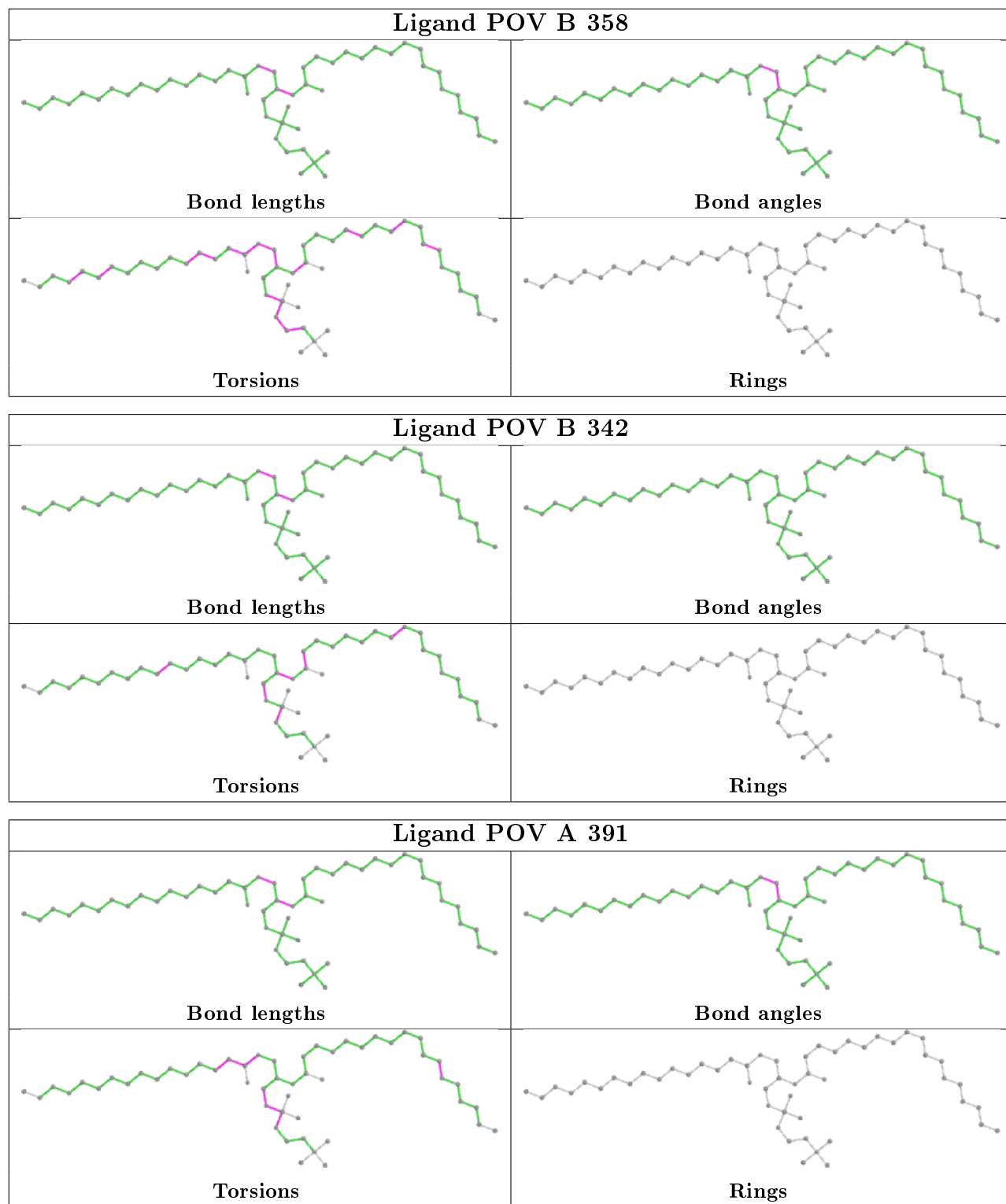


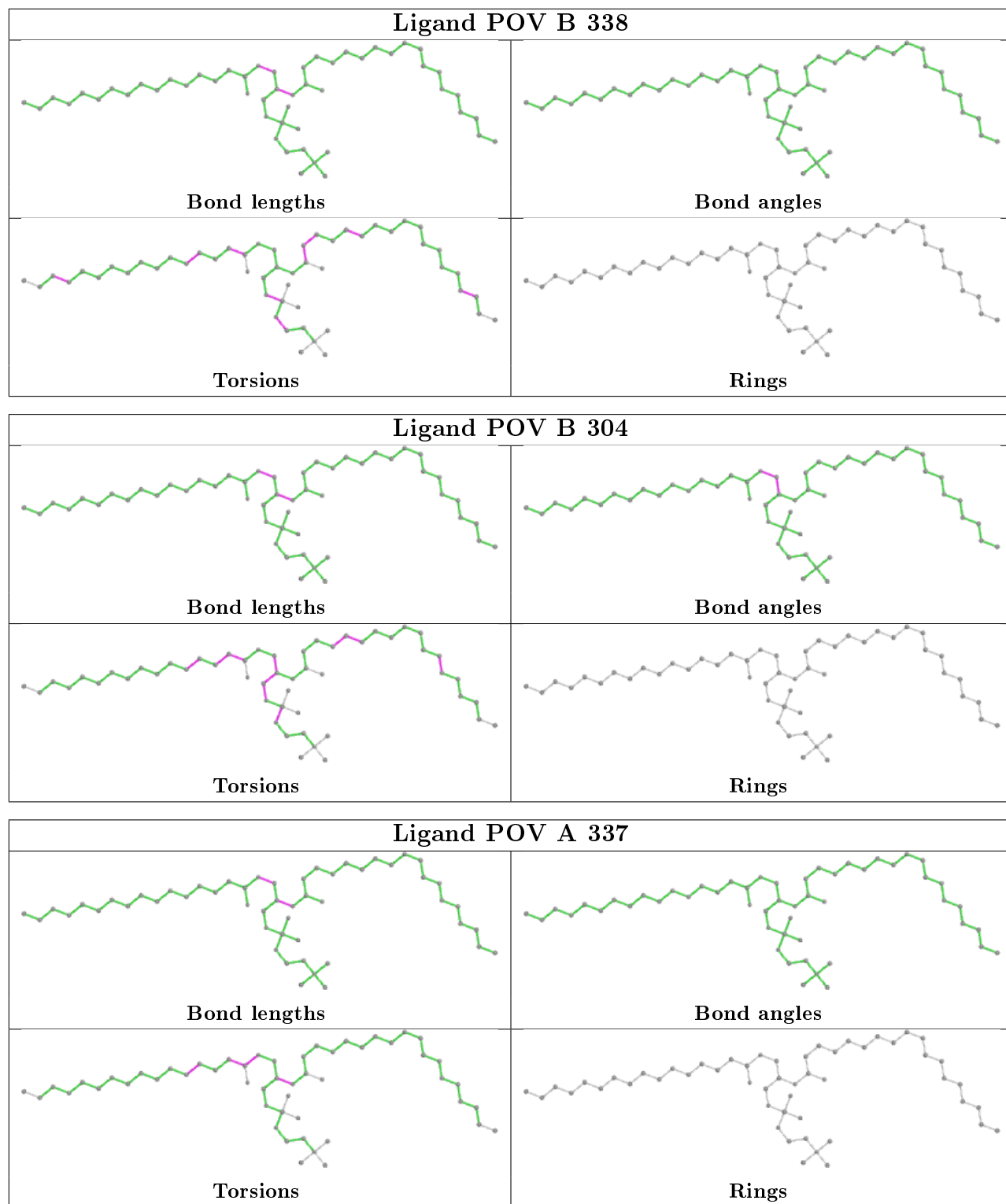


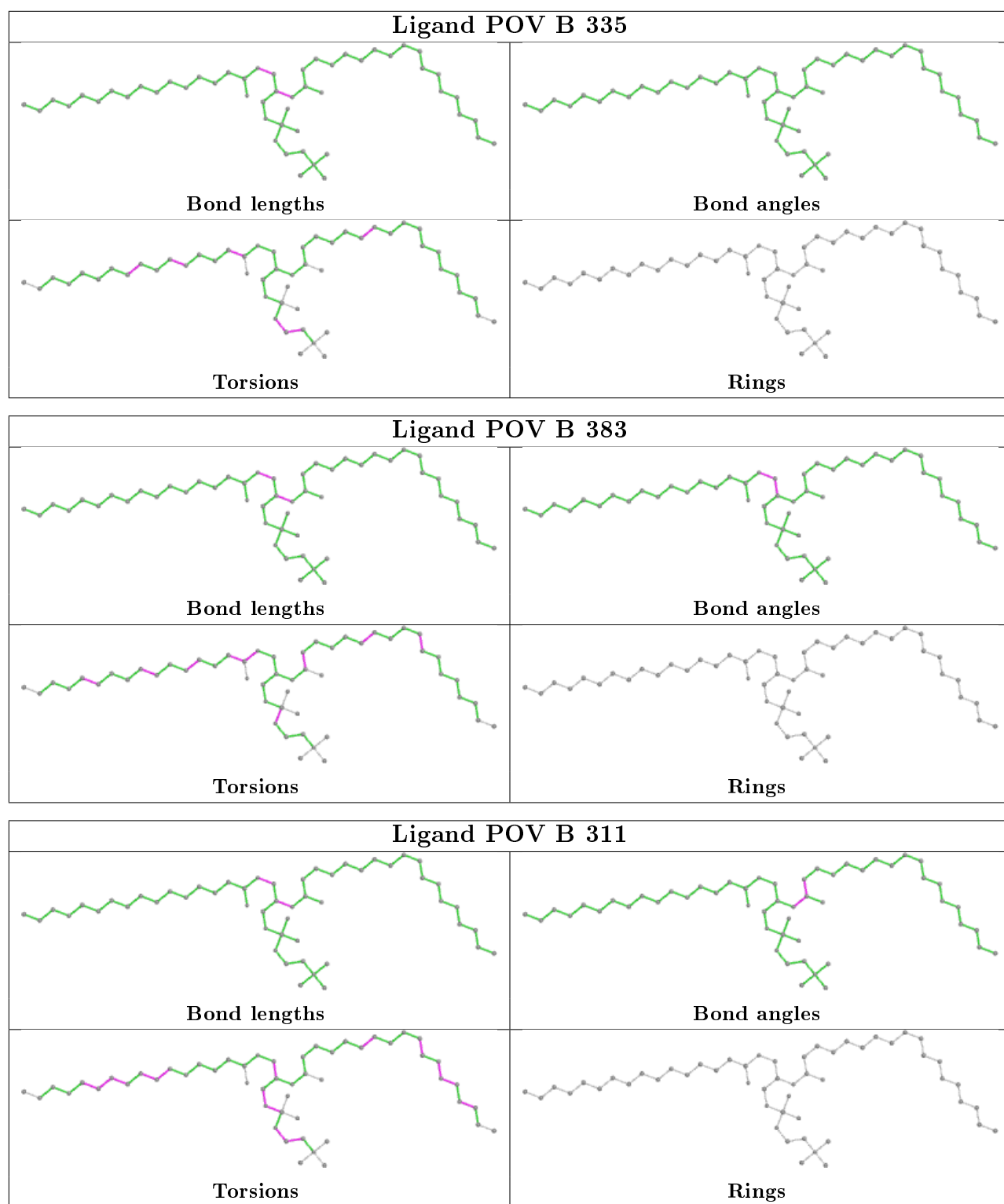












4.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

4.8 Polymer linkage issues

There are no chain breaks in this entry.