



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 2, 2023 – 05:06 PM EDT

PDB ID : 6NIN
Title : Rhodobacter sphaeroides bc1 with STIGMATELLIN A
Authors : Xia, D.; Zhou, F.; Esser, L.
Deposited on : 2018-12-31
Resolution : 3.60 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
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) : 2.35.1

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.60 Å.

There are no overall percentile quality scores available for this entry.

MolProbity and EDS failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 81894 atoms, of which 40305 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Cytochrome b.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	428	6841	2319	3405	545	556	16	0	0	0
1	E	428	6841	2319	3405	545	556	16	0	0	0
1	K	428	6841	2319	3405	545	556	16	0	0	0
1	O	428	6841	2319	3405	545	556	16	0	0	0
1	S	428	6841	2319	3405	545	556	16	0	0	0
1	W	428	6841	2319	3405	545	556	16	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3
E	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3
K	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3
O	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3
S	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3
W	185	CYS	ALA	engineered mutation	UNP A0A344Q9J3

- Molecule 2 is a protein called Cytochrome c1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
2	B	256	3792	1240	1839	326	374	13	0	0	0
2	F	256	3792	1240	1839	326	374	13	0	0	0
2	L	256	3792	1240	1839	326	374	13	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
2	P	256	Total	C	H	N	O	S	0	0	0
			3792	1240	1839	326	374	13			
2	T	256	Total	C	H	N	O	S	0	0	0
			3792	1240	1839	326	374	13			
2	X	256	Total	C	H	N	O	S	0	0	0
			3792	1240	1839	326	374	13			

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	264	GLY	-	expression tag	UNP A0A344Q9J2
B	265	THR	-	expression tag	UNP A0A344Q9J2
B	266	GLY	-	expression tag	UNP A0A344Q9J2
B	267	HIS	-	expression tag	UNP A0A344Q9J2
B	268	HIS	-	expression tag	UNP A0A344Q9J2
B	269	HIS	-	expression tag	UNP A0A344Q9J2
B	270	HIS	-	expression tag	UNP A0A344Q9J2
B	271	HIS	-	expression tag	UNP A0A344Q9J2
B	272	HIS	-	expression tag	UNP A0A344Q9J2
F	264	GLY	-	expression tag	UNP A0A344Q9J2
F	265	THR	-	expression tag	UNP A0A344Q9J2
F	266	GLY	-	expression tag	UNP A0A344Q9J2
F	267	HIS	-	expression tag	UNP A0A344Q9J2
F	268	HIS	-	expression tag	UNP A0A344Q9J2
F	269	HIS	-	expression tag	UNP A0A344Q9J2
F	270	HIS	-	expression tag	UNP A0A344Q9J2
F	271	HIS	-	expression tag	UNP A0A344Q9J2
F	272	HIS	-	expression tag	UNP A0A344Q9J2
L	264	GLY	-	expression tag	UNP A0A344Q9J2
L	265	THR	-	expression tag	UNP A0A344Q9J2
L	266	GLY	-	expression tag	UNP A0A344Q9J2
L	267	HIS	-	expression tag	UNP A0A344Q9J2
L	268	HIS	-	expression tag	UNP A0A344Q9J2
L	269	HIS	-	expression tag	UNP A0A344Q9J2
L	270	HIS	-	expression tag	UNP A0A344Q9J2
L	271	HIS	-	expression tag	UNP A0A344Q9J2
L	272	HIS	-	expression tag	UNP A0A344Q9J2
P	264	GLY	-	expression tag	UNP A0A344Q9J2
P	265	THR	-	expression tag	UNP A0A344Q9J2
P	266	GLY	-	expression tag	UNP A0A344Q9J2
P	267	HIS	-	expression tag	UNP A0A344Q9J2
P	268	HIS	-	expression tag	UNP A0A344Q9J2

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Chain	Residue	Modelled	Actual	Comment	Reference
P	269	HIS	-	expression tag	UNP A0A344Q9J2
P	270	HIS	-	expression tag	UNP A0A344Q9J2
P	271	HIS	-	expression tag	UNP A0A344Q9J2
P	272	HIS	-	expression tag	UNP A0A344Q9J2
T	264	GLY	-	expression tag	UNP A0A344Q9J2
T	265	THR	-	expression tag	UNP A0A344Q9J2
T	266	GLY	-	expression tag	UNP A0A344Q9J2
T	267	HIS	-	expression tag	UNP A0A344Q9J2
T	268	HIS	-	expression tag	UNP A0A344Q9J2
T	269	HIS	-	expression tag	UNP A0A344Q9J2
T	270	HIS	-	expression tag	UNP A0A344Q9J2
T	271	HIS	-	expression tag	UNP A0A344Q9J2
T	272	HIS	-	expression tag	UNP A0A344Q9J2
X	264	GLY	-	expression tag	UNP A0A344Q9J2
X	265	THR	-	expression tag	UNP A0A344Q9J2
X	266	GLY	-	expression tag	UNP A0A344Q9J2
X	267	HIS	-	expression tag	UNP A0A344Q9J2
X	268	HIS	-	expression tag	UNP A0A344Q9J2
X	269	HIS	-	expression tag	UNP A0A344Q9J2
X	270	HIS	-	expression tag	UNP A0A344Q9J2
X	271	HIS	-	expression tag	UNP A0A344Q9J2
X	272	HIS	-	expression tag	UNP A0A344Q9J2

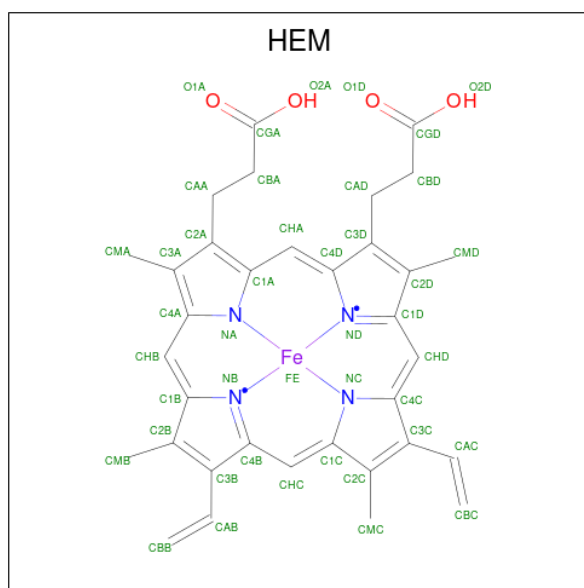
- Molecule 3 is a protein called Ubiquinol-cytochrome c reductase iron-sulfur subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
3	C	179	2633	842	1295	236	253	7	0	0	0
3	G	179	2633	842	1295	236	253	7	0	0	0
3	M	179	2633	842	1295	236	253	7	0	0	0
3	Q	179	2633	842	1295	236	253	7	0	0	0
3	U	179	2633	842	1295	236	253	7	0	0	0
3	Y	179	2633	842	1295	236	253	7	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4
G	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4
M	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4
Q	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4
U	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4
Y	70	CYS	LYS	engineered mutation	UNP A0A344Q9J4

- Molecule 4 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



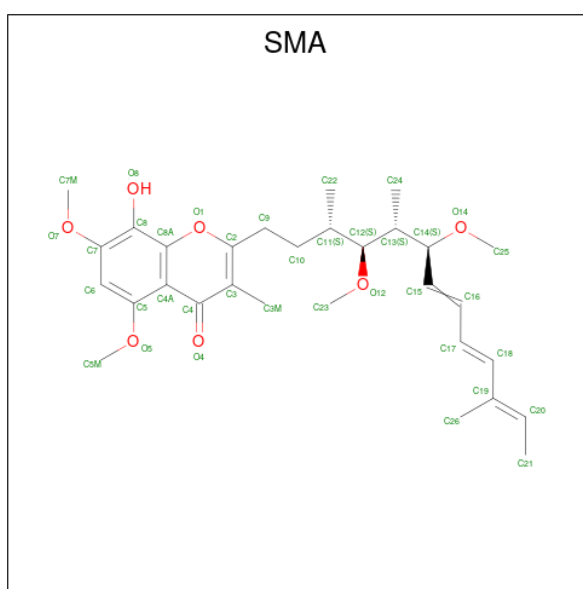
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Fe	H	N			O
4	A	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	A	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	E	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	E	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	K	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	K	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	O	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	O	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		

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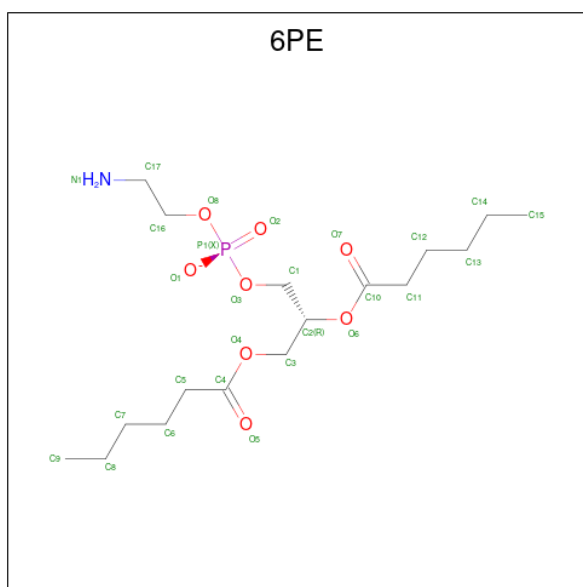
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
4	S	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	S	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	W	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		
4	W	1	Total	C	Fe	H	N	O	0	0
			73	34	1	30	4	4		

- Molecule 5 is STIGMATELLIN A (three-letter code: SMA) (formula: C₃₀H₄₂O₇).



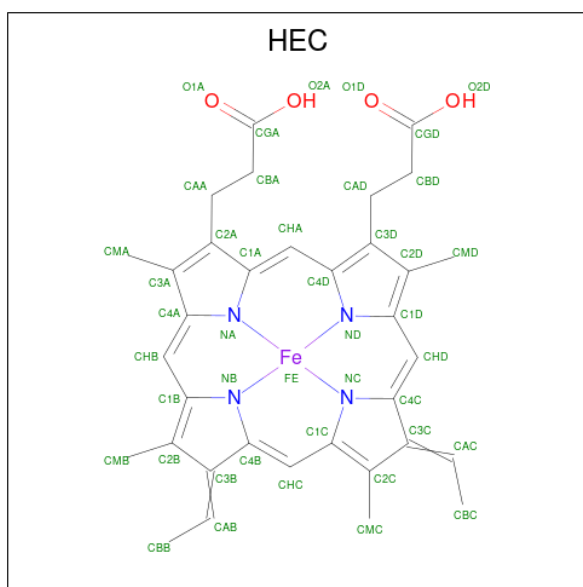
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
5	A	1	Total	C	H	O	0	0
			79	30	42	7		
5	E	1	Total	C	H	O	0	0
			79	30	42	7		
5	K	1	Total	C	H	O	0	0
			79	30	42	7		
5	O	1	Total	C	H	O	0	0
			79	30	42	7		
5	S	1	Total	C	H	O	0	0
			79	30	42	7		
5	W	1	Total	C	H	O	0	0
			79	30	42	7		

- Molecule 6 is 1,2-DIHEXANOYL-SN-GLYCERO-3-PHOSPHOETHANOLAMINE (three-letter code: 6PE) (formula: C₁₇H₃₃NO₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	H	N	O			P
6	A	1	Total	C	H	N	O	P	0	0
			60	17	33	1	8	1		
6	E	1	Total	C	H	N	O	P	0	0
			60	17	33	1	8	1		
6	W	1	Total	C	H	N	O	P	0	0
			60	17	33	1	8	1		

- Molecule 7 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Fe	H	N			O
7	B	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		

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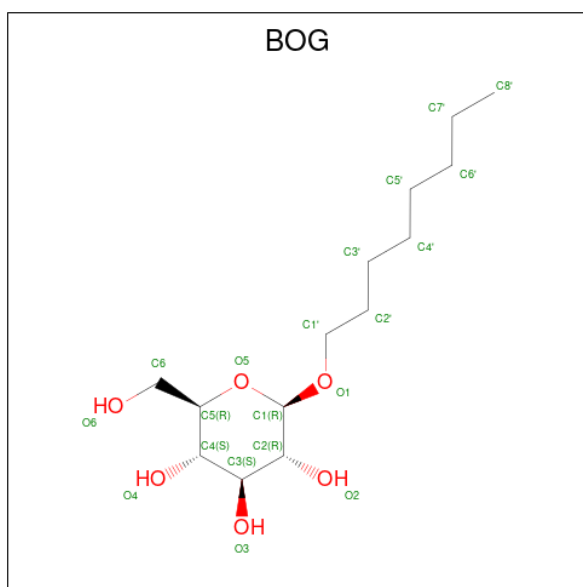
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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
7	F	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		
7	L	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		
7	P	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		
7	T	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		
7	X	1	Total	C	Fe	H	N	O	0	0
			75	34	1	32	4	4		

- Molecule 8 is STRONTIUM ION (three-letter code: SR) (formula: Sr).

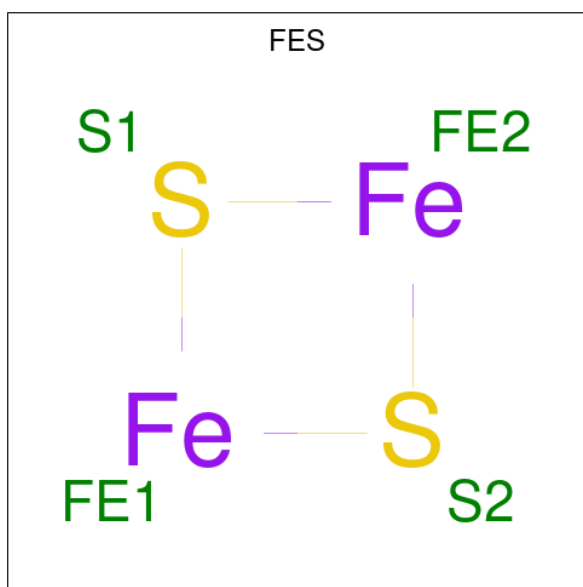
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	1	Total	Sr	0	0
			1	1		
8	F	1	Total	Sr	0	0
			1	1		
8	L	1	Total	Sr	0	0
			1	1		
8	P	1	Total	Sr	0	0
			1	1		
8	T	1	Total	Sr	0	0
			1	1		
8	X	1	Total	Sr	0	0
			1	1		

- Molecule 9 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: C₁₄H₂₈O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	H			O
9	B	1	48	14	28	6	0	0
9	F	1	48	14	28	6	0	0
9	L	1	48	14	28	6	0	0
9	P	1	48	14	28	6	0	0
9	T	1	48	14	28	6	0	0
9	X	1	48	14	28	6	0	0

- Molecule 10 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	C	1	Total	Fe	S	0	0
			4	2	2		
10	G	1	Total	Fe	S	0	0
			4	2	2		
10	M	1	Total	Fe	S	0	0
			4	2	2		
10	Q	1	Total	Fe	S	0	0
			4	2	2		
10	U	1	Total	Fe	S	0	0
			4	2	2		
10	Y	1	Total	Fe	S	0	0
			4	2	2		

MolProbity and EDS failed to run properly - this section is therefore empty.

3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	356.66Å 145.75Å 162.22Å 90.00° 104.97° 90.00°	Depositor
Resolution (Å)	28.91 – 3.60	Depositor
% Data completeness (in resolution range)	97.2 (28.91-3.60)	Depositor
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.02 (at 3.48Å)	Xtrriage
Refinement program	PHENIX dev_3339	Depositor
R, R_{free}	0.249 , 0.280	Depositor
Wilson B-factor (Å ²)	85.9	Xtrriage
Anisotropy	0.369	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.28$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	81894	wwPDB-VP
Average B, all atoms (Å ²)	147.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 30.61 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.2696e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

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

4 Model quality [i](#)

4.1 Standard geometry [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

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 monosaccharides in this entry.

4.6 Ligand geometry [i](#)

Of 45 ligands modelled in this entry, 6 are monoatomic - leaving 39 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond

length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	HEM	K	1001	1	41,50,50	1.46	5 (12%)	45,82,82	1.47	8 (17%)
6	6PE	A	1004	-	26,26,26	0.54	0	29,31,31	0.67	1 (3%)
4	HEM	S	1002	1	41,50,50	1.46	6 (14%)	45,82,82	1.25	5 (11%)
9	BOG	B	1003	-	20,20,20	0.90	0	25,25,25	0.93	0
5	SMA	O	1003	-	38,38,38	1.79	4 (10%)	48,52,52	1.56	9 (18%)
4	HEM	O	1001	1	41,50,50	1.47	6 (14%)	45,82,82	1.47	7 (15%)
9	BOG	L	1003	-	20,20,20	0.89	0	25,25,25	0.99	0
4	HEM	A	1002	1	41,50,50	1.50	6 (14%)	45,82,82	1.47	6 (13%)
4	HEM	W	1001	1	41,50,50	1.45	5 (12%)	45,82,82	1.39	8 (17%)
7	HEC	X	1001	2	32,50,50	2.11	3 (9%)	24,82,82	1.52	4 (16%)
9	BOG	F	1002	-	20,20,20	0.90	0	25,25,25	0.92	0
9	BOG	X	1003	-	20,20,20	0.92	0	25,25,25	0.93	0
6	6PE	E	1004	-	26,26,26	0.55	0	29,31,31	0.78	1 (3%)
5	SMA	A	1003	-	38,38,38	1.75	2 (5%)	48,52,52	1.48	9 (18%)
4	HEM	A	1001	1	41,50,50	1.47	5 (12%)	45,82,82	1.42	7 (15%)
4	HEM	E	1001	1	41,50,50	1.46	7 (17%)	45,82,82	1.36	5 (11%)
10	FES	C	1001	3	0,4,4	-	-	-	-	-
4	HEM	W	1002	1	41,50,50	1.55	5 (12%)	45,82,82	1.33	6 (13%)
5	SMA	W	1003	-	38,38,38	1.72	4 (10%)	48,52,52	1.54	9 (18%)
9	BOG	T	1003	-	20,20,20	0.88	0	25,25,25	0.99	0
10	FES	M	1001	3	0,4,4	-	-	-	-	-
5	SMA	E	1003	-	38,38,38	1.64	3 (7%)	48,52,52	1.62	10 (20%)
6	6PE	W	1004	-	26,26,26	0.55	0	29,31,31	0.70	0
7	HEC	B	1001	2	32,50,50	2.10	4 (12%)	24,82,82	1.44	1 (4%)
4	HEM	E	1002	1	41,50,50	1.49	5 (12%)	45,82,82	1.48	7 (15%)
5	SMA	S	1003	-	38,38,38	1.75	3 (7%)	48,52,52	1.56	9 (18%)
10	FES	U	1001	3	0,4,4	-	-	-	-	-
10	FES	G	1001	3	0,4,4	-	-	-	-	-
7	HEC	F	1001	2	32,50,50	2.08	3 (9%)	24,82,82	1.56	3 (12%)
4	HEM	S	1001	1	41,50,50	1.48	7 (17%)	45,82,82	1.48	7 (15%)
9	BOG	P	1002	-	20,20,20	0.92	0	25,25,25	0.90	0
4	HEM	O	1002	1	41,50,50	1.47	5 (12%)	45,82,82	1.36	4 (8%)
7	HEC	P	1001	2	32,50,50	2.08	3 (9%)	24,82,82	1.55	6 (25%)
5	SMA	K	1003	-	38,38,38	1.72	3 (7%)	48,52,52	1.50	7 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
7	HEC	T	1001	2	32,50,50	2.09	3 (9%)	24,82,82	1.51	3 (12%)
10	FES	Y	1001	3	0,4,4	-	-	-		
10	FES	Q	1001	3	0,4,4	-	-	-		
4	HEM	K	1002	1	41,50,50	1.53	4 (9%)	45,82,82	1.37	6 (13%)
7	HEC	L	1001	2	32,50,50	2.16	4 (12%)	24,82,82	1.43	2 (8%)

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
4	HEM	K	1001	1	-	2/12/54/54	-
6	6PE	A	1004	-	-	19/30/30/30	-
4	HEM	S	1002	1	-	2/12/54/54	-
9	BOG	B	1003	-	-	2/11/31/31	0/1/1/1
5	SMA	O	1003	-	-	5/34/34/34	0/2/2/2
4	HEM	O	1001	1	-	2/12/54/54	-
9	BOG	L	1003	-	-	2/11/31/31	0/1/1/1
4	HEM	A	1002	1	-	2/12/54/54	-
4	HEM	W	1001	1	-	2/12/54/54	-
7	HEC	X	1001	2	-	2/10/54/54	-
9	BOG	F	1002	-	-	2/11/31/31	0/1/1/1
9	BOG	X	1003	-	-	4/11/31/31	0/1/1/1
6	6PE	E	1004	-	-	12/30/30/30	-
5	SMA	A	1003	-	-	5/34/34/34	0/2/2/2
4	HEM	A	1001	1	-	2/12/54/54	-
4	HEM	E	1001	1	-	2/12/54/54	-
10	FES	C	1001	3	-	-	0/1/1/1
4	HEM	W	1002	1	-	2/12/54/54	-
5	SMA	W	1003	-	-	5/34/34/34	0/2/2/2
9	BOG	T	1003	-	-	0/11/31/31	0/1/1/1
10	FES	M	1001	3	-	-	0/1/1/1
5	SMA	E	1003	-	-	5/34/34/34	0/2/2/2
6	6PE	W	1004	-	-	12/30/30/30	-
7	HEC	B	1001	2	-	2/10/54/54	-
4	HEM	E	1002	1	-	3/12/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	SMA	S	1003	-	-	5/34/34/34	0/2/2/2
10	FES	U	1001	3	-	-	0/1/1/1
10	FES	G	1001	3	-	-	0/1/1/1
7	HEC	F	1001	2	-	4/10/54/54	-
4	HEM	S	1001	1	-	2/12/54/54	-
9	BOG	P	1002	-	-	3/11/31/31	0/1/1/1
4	HEM	O	1002	1	-	2/12/54/54	-
7	HEC	P	1001	2	-	2/10/54/54	-
5	SMA	K	1003	-	-	5/34/34/34	0/2/2/2
7	HEC	T	1001	2	-	4/10/54/54	-
10	FES	Y	1001	3	-	-	0/1/1/1
10	FES	Q	1001	3	-	-	0/1/1/1
4	HEM	K	1002	1	-	4/12/54/54	-
7	HEC	L	1001	2	-	4/10/54/54	-

All (105) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	O	1003	SMA	C20-C19	8.64	1.40	1.33
5	S	1003	SMA	C20-C19	8.19	1.40	1.33
5	A	1003	SMA	C20-C19	8.11	1.40	1.33
5	K	1003	SMA	C20-C19	7.94	1.39	1.33
5	W	1003	SMA	C20-C19	7.89	1.39	1.33
5	E	1003	SMA	C20-C19	7.46	1.39	1.33
7	L	1001	HEC	C2B-C3B	-6.45	1.34	1.40
7	P	1001	HEC	C2B-C3B	-6.23	1.34	1.40
7	X	1001	HEC	C2B-C3B	-6.12	1.34	1.40
7	T	1001	HEC	C2B-C3B	-5.97	1.34	1.40
7	B	1001	HEC	C2B-C3B	-5.97	1.34	1.40
7	F	1001	HEC	C2B-C3B	-5.94	1.34	1.40
7	L	1001	HEC	C3C-C2C	-5.56	1.34	1.40
7	T	1001	HEC	C3D-C2D	5.50	1.54	1.37
7	X	1001	HEC	C3C-C2C	-5.43	1.35	1.40
7	X	1001	HEC	C3D-C2D	5.39	1.53	1.37
7	P	1001	HEC	C3D-C2D	5.39	1.53	1.37
7	L	1001	HEC	C3D-C2D	5.38	1.53	1.37
7	B	1001	HEC	C3D-C2D	5.38	1.53	1.37
7	F	1001	HEC	C3D-C2D	5.35	1.53	1.37
7	B	1001	HEC	C3C-C2C	-5.22	1.35	1.40
7	F	1001	HEC	C3C-C2C	-5.22	1.35	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	P	1001	HEC	C3C-C2C	-5.16	1.35	1.40
7	T	1001	HEC	C3C-C2C	-5.08	1.35	1.40
4	W	1002	HEM	C3C-C2C	-4.75	1.33	1.40
4	K	1002	HEM	C3C-C2C	-4.65	1.33	1.40
4	A	1002	HEM	C3C-C2C	-4.54	1.34	1.40
4	K	1002	HEM	C3C-CAC	4.07	1.56	1.47
4	O	1002	HEM	C3C-C2C	-3.90	1.35	1.40
4	W	1001	HEM	C3C-C2C	-3.89	1.35	1.40
4	S	1002	HEM	C3C-C2C	-3.88	1.35	1.40
4	O	1001	HEM	C3C-CAC	3.87	1.55	1.47
4	A	1001	HEM	C3C-CAC	3.87	1.55	1.47
4	S	1001	HEM	C3C-CAC	3.82	1.55	1.47
4	W	1002	HEM	C3C-CAC	3.82	1.55	1.47
4	K	1001	HEM	C3C-C2C	-3.79	1.35	1.40
4	E	1001	HEM	C3C-CAC	3.78	1.55	1.47
4	E	1002	HEM	C3C-C2C	-3.76	1.35	1.40
4	O	1001	HEM	C3C-C2C	-3.74	1.35	1.40
5	A	1003	SMA	C3-C2	3.66	1.41	1.34
4	A	1002	HEM	C3C-CAC	3.65	1.55	1.47
4	A	1001	HEM	C3C-C2C	-3.65	1.35	1.40
4	O	1002	HEM	C3C-CAC	3.63	1.55	1.47
4	E	1001	HEM	C3C-C2C	-3.59	1.35	1.40
4	S	1001	HEM	C3C-C2C	-3.58	1.35	1.40
4	E	1002	HEM	C3C-CAC	3.49	1.55	1.47
4	S	1002	HEM	C3C-CAC	3.48	1.54	1.47
4	K	1001	HEM	C3C-CAC	3.46	1.54	1.47
4	W	1001	HEM	C3C-CAC	3.36	1.54	1.47
5	K	1003	SMA	C3-C2	3.28	1.41	1.34
5	O	1003	SMA	C3-C2	3.25	1.41	1.34
5	S	1003	SMA	C3-C2	3.24	1.41	1.34
5	W	1003	SMA	C3-C2	3.19	1.40	1.34
4	S	1001	HEM	CAB-C3B	3.18	1.56	1.47
4	K	1001	HEM	CAB-C3B	3.12	1.55	1.47
4	W	1001	HEM	CAB-C3B	3.08	1.55	1.47
4	O	1001	HEM	CAB-C3B	3.03	1.55	1.47
5	E	1003	SMA	C3-C2	3.02	1.40	1.34
4	W	1002	HEM	CAB-C3B	3.01	1.55	1.47
4	E	1001	HEM	CAB-C3B	2.94	1.55	1.47
4	E	1002	HEM	CAB-C3B	2.91	1.55	1.47
4	A	1001	HEM	CAB-C3B	2.91	1.55	1.47
4	O	1002	HEM	CAB-C3B	2.89	1.55	1.47
4	A	1002	HEM	CAB-C3B	2.88	1.55	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	S	1002	HEM	CAB-C3B	2.86	1.55	1.47
4	E	1002	HEM	FE-ND	2.80	2.10	1.96
4	K	1002	HEM	CAB-C3B	2.69	1.54	1.47
4	W	1001	HEM	CMB-C2B	2.45	1.56	1.50
4	K	1001	HEM	CMB-C2B	2.44	1.56	1.50
4	A	1001	HEM	CMB-C2B	2.32	1.55	1.50
4	O	1001	HEM	CMB-C2B	2.32	1.55	1.50
5	S	1003	SMA	C3-C4	-2.30	1.43	1.48
4	E	1001	HEM	FE-NB	2.26	2.08	1.96
5	O	1003	SMA	C3-C4	-2.24	1.43	1.48
4	A	1001	HEM	FE-NB	2.23	2.07	1.96
4	E	1001	HEM	CMB-C2B	2.22	1.55	1.50
4	S	1001	HEM	FE-NB	2.18	2.07	1.96
4	K	1001	HEM	FE-NB	2.16	2.07	1.96
4	E	1002	HEM	CMB-C2B	2.16	1.55	1.50
5	W	1003	SMA	C3-C4	-2.14	1.43	1.48
4	W	1002	HEM	CMB-C2B	2.13	1.55	1.50
4	K	1002	HEM	CMD-C2D	2.13	1.55	1.50
4	S	1001	HEM	CMB-C2B	2.13	1.55	1.50
5	E	1003	SMA	C3-C4	-2.13	1.43	1.48
4	S	1002	HEM	CMD-C2D	2.12	1.55	1.50
5	O	1003	SMA	C17-C18	2.11	1.40	1.34
7	L	1001	HEC	CAD-C3D	2.11	1.55	1.52
4	A	1002	HEM	CMB-C2B	2.10	1.55	1.50
4	O	1001	HEM	FE-NB	2.10	2.07	1.96
4	W	1002	HEM	CMD-C2D	2.09	1.55	1.50
4	E	1001	HEM	CAA-C2A	2.09	1.55	1.52
4	S	1002	HEM	CMB-C2B	2.08	1.55	1.50
4	A	1002	HEM	CMD-C2D	2.08	1.55	1.50
4	E	1001	HEM	CMD-C2D	2.08	1.55	1.50
4	S	1001	HEM	CMD-C2D	2.08	1.55	1.50
4	A	1002	HEM	CAA-C2A	2.07	1.55	1.52
5	K	1003	SMA	C3-C4	-2.07	1.43	1.48
4	S	1001	HEM	CAA-C2A	2.06	1.55	1.52
4	O	1002	HEM	CMB-C2B	2.06	1.55	1.50
7	B	1001	HEC	CAD-C3D	2.06	1.55	1.52
4	S	1002	HEM	FE-NB	2.06	2.07	1.96
4	O	1002	HEM	CMD-C2D	2.04	1.55	1.50
4	O	1001	HEM	CMD-C2D	2.03	1.55	1.50
5	W	1003	SMA	C7-C8	-2.03	1.37	1.40
4	W	1001	HEM	FE-NB	2.01	2.06	1.96

All (150) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	1003	SMA	O5-C5-C4A	4.52	122.14	115.85
5	W	1003	SMA	C5M-O5-C5	-4.29	111.06	117.53
5	W	1003	SMA	O5-C5-C4A	4.21	121.71	115.85
5	S	1003	SMA	O5-C5-C4A	4.18	121.68	115.85
5	S	1003	SMA	O7-C7-C8	4.10	118.67	114.54
5	K	1003	SMA	C5M-O5-C5	-4.07	111.38	117.53
5	A	1003	SMA	O5-C5-C4A	4.06	121.50	115.85
5	E	1003	SMA	C5M-O5-C5	-4.01	111.47	117.53
5	O	1003	SMA	O7-C7-C8	3.96	118.54	114.54
5	A	1003	SMA	C5M-O5-C5	-3.96	111.56	117.53
5	K	1003	SMA	O5-C5-C4A	3.92	121.31	115.85
5	O	1003	SMA	O5-C5-C4A	3.91	121.30	115.85
5	O	1003	SMA	C5M-O5-C5	-3.77	111.83	117.53
7	F	1001	HEC	CMC-C2C-C1C	-3.74	122.71	128.46
7	B	1001	HEC	CMC-C2C-C1C	-3.66	122.85	128.46
5	E	1003	SMA	O5-C5-C6	-3.62	117.89	124.12
5	S	1003	SMA	C5M-O5-C5	-3.56	112.15	117.53
5	W	1003	SMA	O5-C5-C6	-3.51	118.08	124.12
4	O	1001	HEM	C4D-ND-C1D	3.46	108.64	105.07
5	S	1003	SMA	O5-C5-C6	-3.40	118.27	124.12
5	O	1003	SMA	O5-C5-C6	-3.40	118.28	124.12
4	A	1001	HEM	C4D-ND-C1D	3.39	108.57	105.07
4	K	1002	HEM	C4C-CHD-C1D	3.38	127.02	122.56
7	X	1001	HEC	CMC-C2C-C1C	-3.34	123.34	128.46
5	K	1003	SMA	O7-C7-C8	3.34	117.91	114.54
4	S	1001	HEM	C4D-ND-C1D	3.33	108.51	105.07
4	E	1001	HEM	CMC-C2C-C3C	3.32	130.88	124.68
4	E	1002	HEM	C4C-CHD-C1D	3.31	126.93	122.56
4	O	1002	HEM	C4C-CHD-C1D	3.28	126.88	122.56
5	A	1003	SMA	O5-C5-C6	-3.26	118.51	124.12
5	K	1003	SMA	O5-C5-C6	-3.22	118.57	124.12
5	E	1003	SMA	O7-C7-C8	3.21	117.78	114.54
7	L	1001	HEC	CMC-C2C-C1C	-3.20	123.54	128.46
4	S	1001	HEM	CMC-C2C-C3C	3.18	130.62	124.68
4	K	1001	HEM	C4D-ND-C1D	3.17	108.35	105.07
7	T	1001	HEC	CMC-C2C-C1C	-3.17	123.60	128.46
4	S	1001	HEM	C4B-CHC-C1C	3.15	126.72	122.56
4	W	1002	HEM	C4C-CHD-C1D	3.14	126.71	122.56
4	E	1002	HEM	C1B-NB-C4B	3.14	108.32	105.07
4	K	1001	HEM	C4B-CHC-C1C	3.13	126.69	122.56
5	O	1003	SMA	C22-C11-C10	3.12	115.26	110.36
5	W	1003	SMA	O7-C7-C8	3.12	117.69	114.54
4	A	1002	HEM	C4C-CHD-C1D	3.11	126.67	122.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	W	1001	HEM	C4D-ND-C1D	3.10	108.28	105.07
4	W	1002	HEM	C4B-CHC-C1C	3.05	126.59	122.56
5	A	1003	SMA	O7-C7-C8	3.04	117.61	114.54
4	O	1001	HEM	C4B-CHC-C1C	3.04	126.57	122.56
4	O	1001	HEM	CBA-CAA-C2A	-3.03	107.45	112.62
4	E	1001	HEM	C4D-ND-C1D	3.00	108.17	105.07
4	S	1001	HEM	C4C-CHD-C1D	3.00	126.51	122.56
7	P	1001	HEC	CMC-C2C-C1C	-2.96	123.91	128.46
4	S	1002	HEM	C4C-CHD-C1D	2.94	126.44	122.56
4	W	1001	HEM	CMC-C2C-C3C	2.93	130.16	124.68
4	A	1002	HEM	C4D-ND-C1D	2.88	108.05	105.07
5	E	1003	SMA	O1-C2-C9	2.88	116.70	110.58
4	A	1002	HEM	C1B-NB-C4B	2.86	108.03	105.07
4	A	1002	HEM	CHD-C1D-ND	2.84	127.51	124.43
4	O	1002	HEM	C1B-NB-C4B	2.83	108.00	105.07
5	S	1003	SMA	O1-C2-C9	2.81	116.55	110.58
4	A	1002	HEM	C4B-CHC-C1C	2.81	126.27	122.56
4	A	1001	HEM	C4B-CHC-C1C	2.80	126.26	122.56
4	E	1002	HEM	C4D-ND-C1D	2.78	107.94	105.07
4	E	1002	HEM	C4B-CHC-C1C	2.76	126.21	122.56
5	K	1003	SMA	O1-C2-C9	2.76	116.44	110.58
5	W	1003	SMA	O1-C2-C9	2.73	116.38	110.58
4	K	1002	HEM	C4B-CHC-C1C	2.71	126.13	122.56
4	W	1001	HEM	C4B-CHC-C1C	2.70	126.12	122.56
4	K	1002	HEM	C4D-ND-C1D	2.70	107.86	105.07
4	E	1001	HEM	C4B-CHC-C1C	2.67	126.08	122.56
4	K	1001	HEM	CBA-CAA-C2A	-2.62	108.14	112.62
4	K	1002	HEM	CBA-CAA-C2A	-2.62	108.14	112.62
5	E	1003	SMA	C22-C11-C10	2.62	114.47	110.36
4	W	1001	HEM	CBA-CAA-C2A	-2.61	108.17	112.62
4	A	1001	HEM	C4C-CHD-C1D	2.59	125.98	122.56
4	W	1002	HEM	C4D-ND-C1D	2.56	107.71	105.07
4	S	1001	HEM	C1B-NB-C4B	2.55	107.71	105.07
5	A	1003	SMA	O1-C2-C9	2.52	115.92	110.58
7	X	1001	HEC	C1D-C2D-C3D	-2.51	105.25	107.00
4	A	1001	HEM	CMC-C2C-C3C	2.51	129.37	124.68
4	O	1001	HEM	C1B-NB-C4B	2.51	107.66	105.07
5	W	1003	SMA	C22-C11-C12	-2.51	107.05	111.15
4	E	1002	HEM	CBA-CAA-C2A	-2.50	108.35	112.62
5	E	1003	SMA	C8A-O1-C2	2.49	123.19	119.35
4	O	1001	HEM	C4C-CHD-C1D	2.43	125.77	122.56
4	O	1002	HEM	C4D-ND-C1D	2.43	107.58	105.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	W	1002	HEM	C1B-NB-C4B	2.43	107.58	105.07
7	F	1001	HEC	C1D-C2D-C3D	-2.42	105.31	107.00
4	K	1001	HEM	C1B-NB-C4B	2.40	107.56	105.07
5	A	1003	SMA	C8A-O1-C2	2.38	123.02	119.35
5	S	1003	SMA	C8A-O1-C2	2.37	123.01	119.35
4	K	1001	HEM	CHA-C4D-ND	2.36	127.29	124.38
5	W	1003	SMA	C22-C11-C10	2.36	114.06	110.36
4	A	1001	HEM	CBA-CAA-C2A	-2.36	108.60	112.62
7	X	1001	HEC	CBD-CAD-C3D	-2.34	108.62	112.62
5	O	1003	SMA	O1-C2-C9	2.33	115.53	110.58
5	E	1003	SMA	C14-C15-C16	-2.33	121.06	125.61
4	S	1002	HEM	C4D-ND-C1D	2.32	107.47	105.07
5	W	1003	SMA	C8A-O1-C2	2.30	122.90	119.35
5	S	1003	SMA	C22-C11-C10	2.30	113.97	110.36
4	W	1001	HEM	C4C-CHD-C1D	2.30	125.59	122.56
7	T	1001	HEC	CBD-CAD-C3D	-2.29	108.71	112.62
4	K	1002	HEM	C1B-NB-C4B	2.29	107.44	105.07
5	K	1003	SMA	C8A-O1-C2	2.29	122.87	119.35
4	W	1001	HEM	C1B-NB-C4B	2.28	107.42	105.07
5	O	1003	SMA	C8A-O1-C2	2.28	122.86	119.35
4	E	1001	HEM	C4C-CHD-C1D	2.27	125.55	122.56
4	W	1001	HEM	C3D-C4D-ND	-2.27	107.64	110.17
5	W	1003	SMA	C14-C15-C16	-2.26	121.18	125.61
4	O	1002	HEM	C3B-C2B-C1B	2.26	108.16	106.49
5	E	1003	SMA	C22-C11-C12	-2.25	107.47	111.15
4	W	1002	HEM	CBA-CAA-C2A	-2.24	108.79	112.62
7	P	1001	HEC	CAA-CBA-CGA	-2.23	107.51	113.76
5	A	1003	SMA	C22-C11-C10	2.23	113.85	110.36
4	A	1001	HEM	C1B-NB-C4B	2.21	107.36	105.07
4	O	1001	HEM	C3D-C4D-ND	-2.21	107.71	110.17
4	O	1001	HEM	CMC-C2C-C3C	2.21	128.80	124.68
4	S	1002	HEM	C1B-NB-C4B	2.20	107.35	105.07
5	O	1003	SMA	C14-C15-C16	-2.20	121.30	125.61
4	S	1001	HEM	C3D-C4D-ND	-2.19	107.72	110.17
7	F	1001	HEC	CBD-CAD-C3D	-2.19	108.88	112.62
5	E	1003	SMA	C16-C17-C18	-2.19	119.20	124.67
4	E	1001	HEM	C1B-NB-C4B	2.19	107.33	105.07
4	W	1002	HEM	CHD-C1D-ND	2.19	126.81	124.43
5	S	1003	SMA	C14-C15-C16	-2.19	121.33	125.61
7	P	1001	HEC	CBA-CAA-C2A	-2.18	108.92	112.60
5	A	1003	SMA	C16-C17-C18	-2.18	119.22	124.67
7	P	1001	HEC	C1D-C2D-C3D	-2.18	105.48	107.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	O	1003	SMA	C22-C11-C12	-2.18	107.58	111.15
5	A	1003	SMA	C14-C15-C16	-2.17	121.35	125.61
4	S	1002	HEM	CMC-C2C-C3C	2.16	128.72	124.68
4	S	1002	HEM	CBA-CAA-C2A	-2.14	108.97	112.62
6	A	1004	6PE	O1-P1-O2	2.13	122.75	112.24
4	W	1001	HEM	CAD-CBD-CGD	-2.13	109.03	113.60
7	X	1001	HEC	CAA-CBA-CGA	-2.12	107.83	113.76
7	L	1001	HEC	C1D-C2D-C3D	-2.12	105.52	107.00
4	A	1001	HEM	C3D-C4D-ND	-2.11	107.82	110.17
5	K	1003	SMA	C16-C17-C18	-2.11	119.41	124.67
4	S	1001	HEM	C3B-C2B-C1B	2.10	108.05	106.49
5	S	1003	SMA	C16-C17-C18	-2.10	119.43	124.67
7	P	1001	HEC	CBD-CAD-C3D	-2.10	109.04	112.62
4	A	1002	HEM	C3D-C4D-ND	-2.08	107.85	110.17
4	K	1001	HEM	CMC-C2C-C3C	2.07	128.55	124.68
4	K	1001	HEM	C3D-C4D-ND	-2.03	107.91	110.17
4	K	1002	HEM	CHD-C1D-ND	2.03	126.63	124.43
6	E	1004	6PE	C2-O6-C10	2.03	122.78	117.79
4	K	1001	HEM	CAD-CBD-CGD	-2.02	109.25	113.60
7	P	1001	HEC	CMB-C2B-C1B	-2.02	125.36	128.46
4	E	1002	HEM	CMC-C2C-C3C	2.01	128.45	124.68
4	E	1002	HEM	C2C-C3C-C4C	2.01	108.30	106.90
7	T	1001	HEC	CBA-CAA-C2A	-2.01	109.22	112.60

There are no chirality outliers.

All (131) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	1004	6PE	C16-O8-P1-O1
6	A	1004	6PE	C16-O8-P1-O2
6	A	1004	6PE	O8-C16-C17-N1
6	E	1004	6PE	C1-O3-P1-O2
6	E	1004	6PE	C1-O3-P1-O8
6	E	1004	6PE	O6-C2-C3-O4
6	W	1004	6PE	C1-O3-P1-O1
6	W	1004	6PE	C1-O3-P1-O2
6	W	1004	6PE	C1-O3-P1-O8
6	W	1004	6PE	O6-C2-C3-O4
9	L	1003	BOG	C4-C5-C6-O6
9	F	1002	BOG	C4-C5-C6-O6
9	L	1003	BOG	O5-C5-C6-O6
6	W	1004	6PE	C5-C4-O4-C3

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Mol	Chain	Res	Type	Atoms
9	F	1002	BOG	O5-C5-C6-O6
9	P	1002	BOG	C4-C5-C6-O6
5	E	1003	SMA	C6-C5-O5-C5M
5	A	1003	SMA	C6-C5-O5-C5M
5	K	1003	SMA	C6-C5-O5-C5M
5	O	1003	SMA	C6-C5-O5-C5M
5	S	1003	SMA	C6-C5-O5-C5M
5	W	1003	SMA	C6-C5-O5-C5M
9	P	1002	BOG	O5-C5-C6-O6
6	W	1004	6PE	O5-C4-O4-C3
6	A	1004	6PE	C5-C4-O4-C3
6	E	1004	6PE	C5-C4-O4-C3
5	E	1003	SMA	C4A-C5-O5-C5M
5	K	1003	SMA	C4A-C5-O5-C5M
5	O	1003	SMA	C4A-C5-O5-C5M
5	W	1003	SMA	C4A-C5-O5-C5M
5	A	1003	SMA	C4A-C5-O5-C5M
5	S	1003	SMA	C4A-C5-O5-C5M
6	A	1004	6PE	O5-C4-O4-C3
6	E	1004	6PE	O5-C4-O4-C3
6	A	1004	6PE	C16-O8-P1-O3
9	X	1003	BOG	C2'-C3'-C4'-C5'
5	K	1003	SMA	C8-C7-O7-C7M
5	A	1003	SMA	C8-C7-O7-C7M
5	W	1003	SMA	C8-C7-O7-C7M
5	S	1003	SMA	C8-C7-O7-C7M
5	O	1003	SMA	C8-C7-O7-C7M
9	X	1003	BOG	C4'-C5'-C6'-C7'
5	E	1003	SMA	C8-C7-O7-C7M
9	X	1003	BOG	O5-C1-O1-C1'
5	E	1003	SMA	C9-C10-C11-C22
5	W	1003	SMA	C9-C10-C11-C22
6	E	1004	6PE	O3-C1-C2-C3
5	K	1003	SMA	C6-C7-O7-C7M
5	W	1003	SMA	C6-C7-O7-C7M
6	A	1004	6PE	C1-C2-C3-O4
6	E	1004	6PE	C1-C2-C3-O4
6	W	1004	6PE	C1-C2-C3-O4
5	A	1003	SMA	C6-C7-O7-C7M
5	O	1003	SMA	C6-C7-O7-C7M
5	S	1003	SMA	C6-C7-O7-C7M
6	W	1004	6PE	C11-C10-O6-C2

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Mol	Chain	Res	Type	Atoms
5	A	1003	SMA	C9-C10-C11-C22
5	E	1003	SMA	C6-C7-O7-C7M
6	A	1004	6PE	O6-C2-C3-O4
6	A	1004	6PE	C4-C5-C6-C7
6	W	1004	6PE	C10-C11-C12-C13
5	K	1003	SMA	C9-C10-C11-C22
6	A	1004	6PE	C10-C11-C12-C13
6	E	1004	6PE	C10-C11-C12-C13
9	P	1002	BOG	C4'-C5'-C6'-C7'
5	O	1003	SMA	C9-C10-C11-C22
5	S	1003	SMA	C9-C10-C11-C22
6	E	1004	6PE	O3-C1-C2-O6
6	W	1004	6PE	O7-C10-O6-C2
6	A	1004	6PE	C11-C10-O6-C2
9	X	1003	BOG	C2-C1-O1-C1'
6	A	1004	6PE	O7-C10-O6-C2
6	E	1004	6PE	O4-C4-C5-C6
6	E	1004	6PE	O8-C16-C17-N1
4	S	1001	HEM	CAA-CBA-CGA-O1A
4	A	1001	HEM	CAA-CBA-CGA-O1A
4	E	1001	HEM	CAA-CBA-CGA-O1A
4	O	1001	HEM	CAA-CBA-CGA-O1A
4	W	1001	HEM	CAA-CBA-CGA-O1A
4	K	1001	HEM	CAA-CBA-CGA-O1A
4	K	1002	HEM	CAD-CBD-CGD-O1D
4	S	1002	HEM	CAD-CBD-CGD-O1D
4	W	1002	HEM	CAD-CBD-CGD-O1D
9	B	1003	BOG	O5-C5-C6-O6
4	A	1002	HEM	CAD-CBD-CGD-O1D
4	K	1002	HEM	CAA-CBA-CGA-O1A
4	K	1002	HEM	CAA-CBA-CGA-O2A
4	A	1001	HEM	CAA-CBA-CGA-O2A
4	E	1001	HEM	CAA-CBA-CGA-O2A
4	W	1001	HEM	CAA-CBA-CGA-O2A
4	K	1001	HEM	CAA-CBA-CGA-O2A
4	O	1001	HEM	CAA-CBA-CGA-O2A
4	S	1001	HEM	CAA-CBA-CGA-O2A
4	O	1002	HEM	CAD-CBD-CGD-O1D
4	E	1002	HEM	CAD-CBD-CGD-O1D
7	T	1001	HEC	CAD-CBD-CGD-O2D
6	A	1004	6PE	O3-C1-C2-O6
7	L	1001	HEC	CAD-CBD-CGD-O2D

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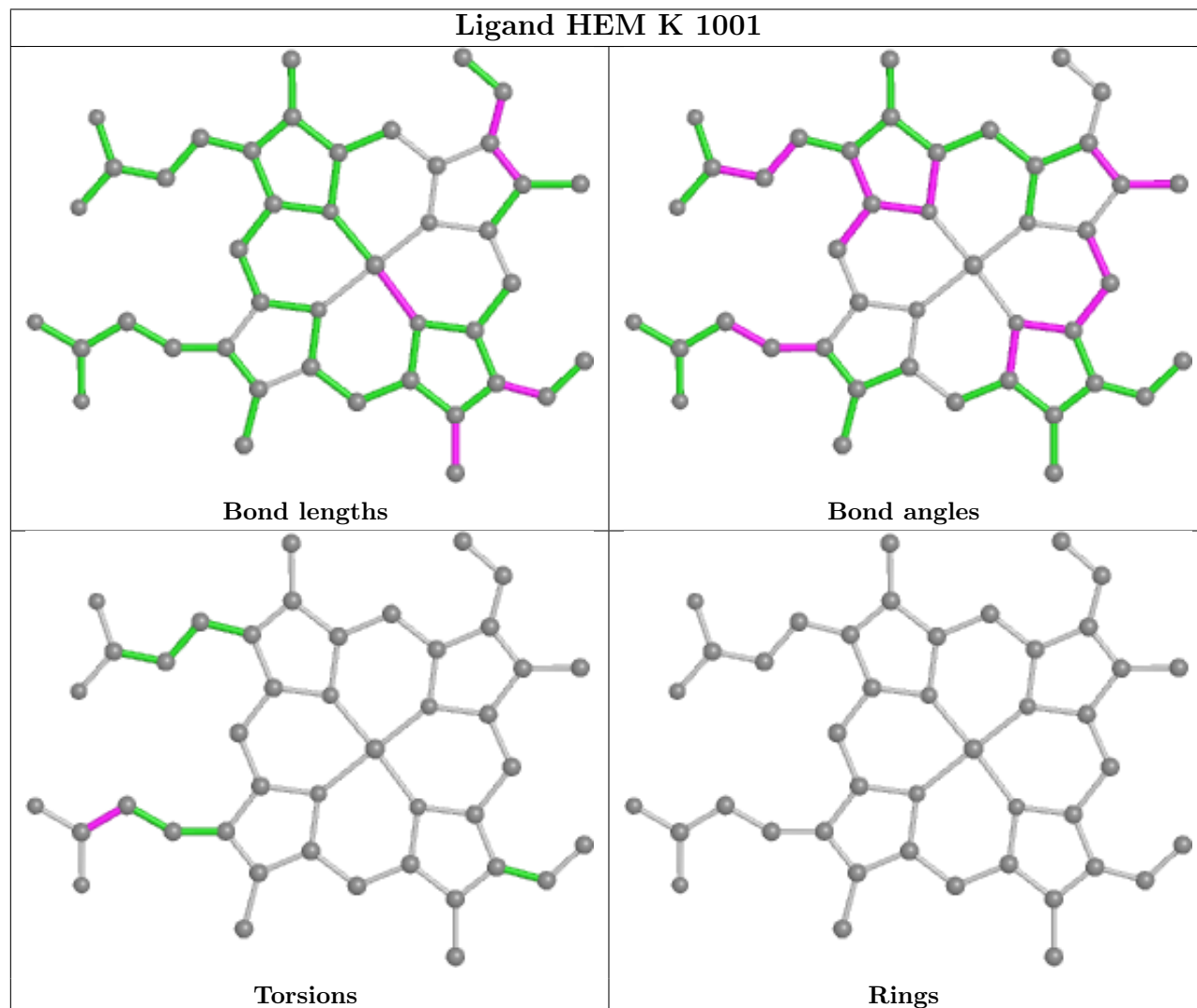
Mol	Chain	Res	Type	Atoms
6	E	1004	6PE	C12-C13-C14-C15
7	F	1001	HEC	CAD-CBD-CGD-O2D
4	K	1002	HEM	CAD-CBD-CGD-O2D
4	O	1002	HEM	CAD-CBD-CGD-O2D
4	S	1002	HEM	CAD-CBD-CGD-O2D
4	W	1002	HEM	CAD-CBD-CGD-O2D
4	A	1002	HEM	CAD-CBD-CGD-O2D
4	E	1002	HEM	CAD-CBD-CGD-O2D
7	L	1001	HEC	CAA-CBA-CGA-O2A
7	P	1001	HEC	CAA-CBA-CGA-O2A
7	T	1001	HEC	CAA-CBA-CGA-O2A
7	B	1001	HEC	CAA-CBA-CGA-O2A
7	T	1001	HEC	CAD-CBD-CGD-O1D
7	X	1001	HEC	CAA-CBA-CGA-O2A
7	F	1001	HEC	CAA-CBA-CGA-O2A
6	W	1004	6PE	O6-C10-C11-C12
7	L	1001	HEC	CAD-CBD-CGD-O1D
7	T	1001	HEC	CAA-CBA-CGA-O1A
7	F	1001	HEC	CAD-CBD-CGD-O1D
6	A	1004	6PE	C5-C6-C7-C8
7	B	1001	HEC	CAA-CBA-CGA-O1A
7	L	1001	HEC	CAA-CBA-CGA-O1A
7	X	1001	HEC	CAA-CBA-CGA-O1A
7	F	1001	HEC	CAA-CBA-CGA-O1A
7	P	1001	HEC	CAA-CBA-CGA-O1A
6	A	1004	6PE	O6-C10-C11-C12
6	A	1004	6PE	O4-C4-C5-C6
6	A	1004	6PE	O5-C4-C5-C6
6	W	1004	6PE	O7-C10-C11-C12
6	A	1004	6PE	O3-C1-C2-C3
6	A	1004	6PE	O7-C10-C11-C12
9	B	1003	BOG	C4-C5-C6-O6
4	E	1002	HEM	C3D-CAD-CBD-CGD

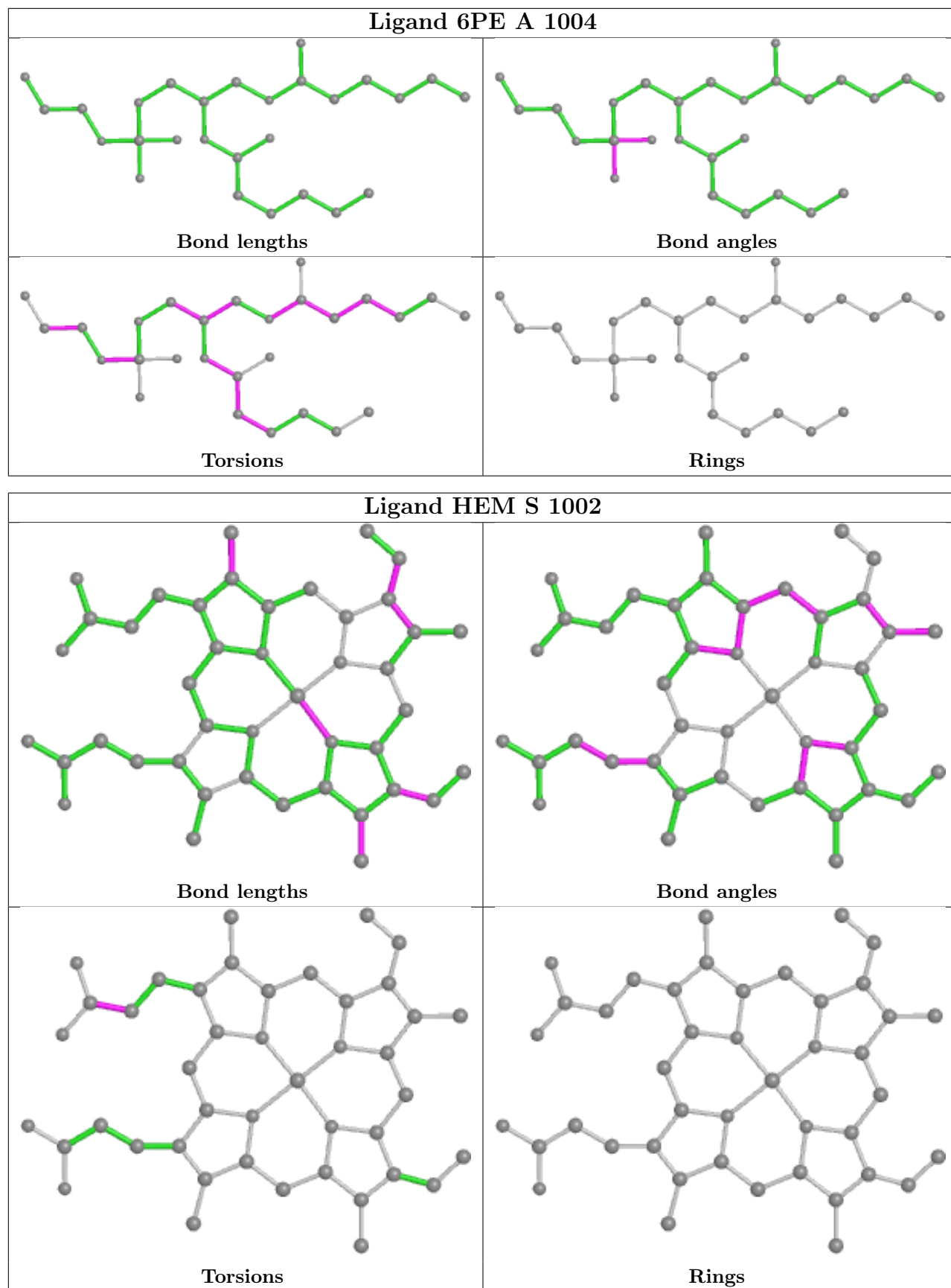
There are no ring outliers.

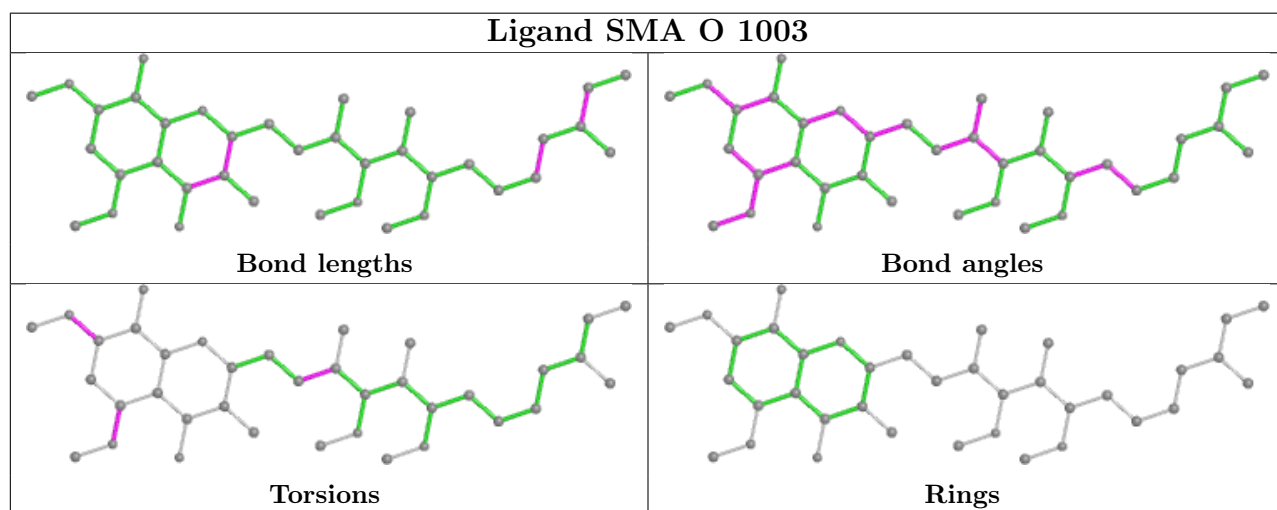
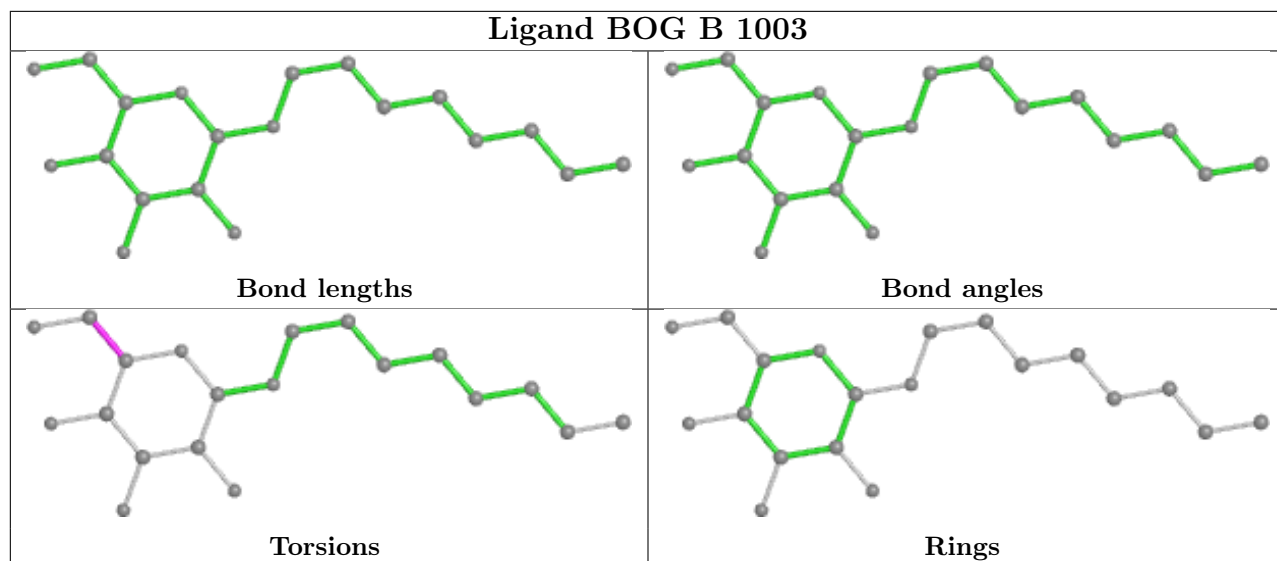
No monomer is involved in short contacts.

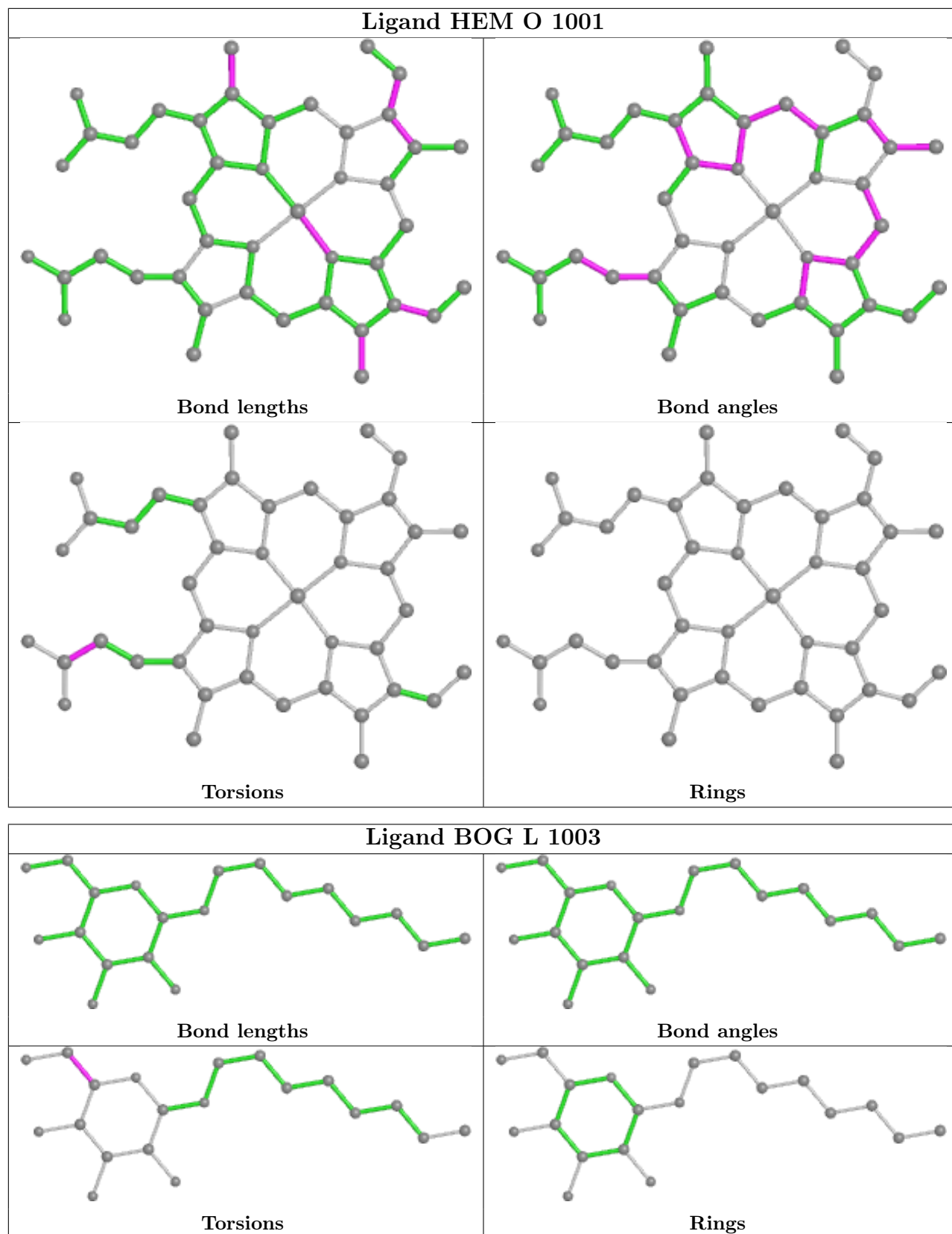
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

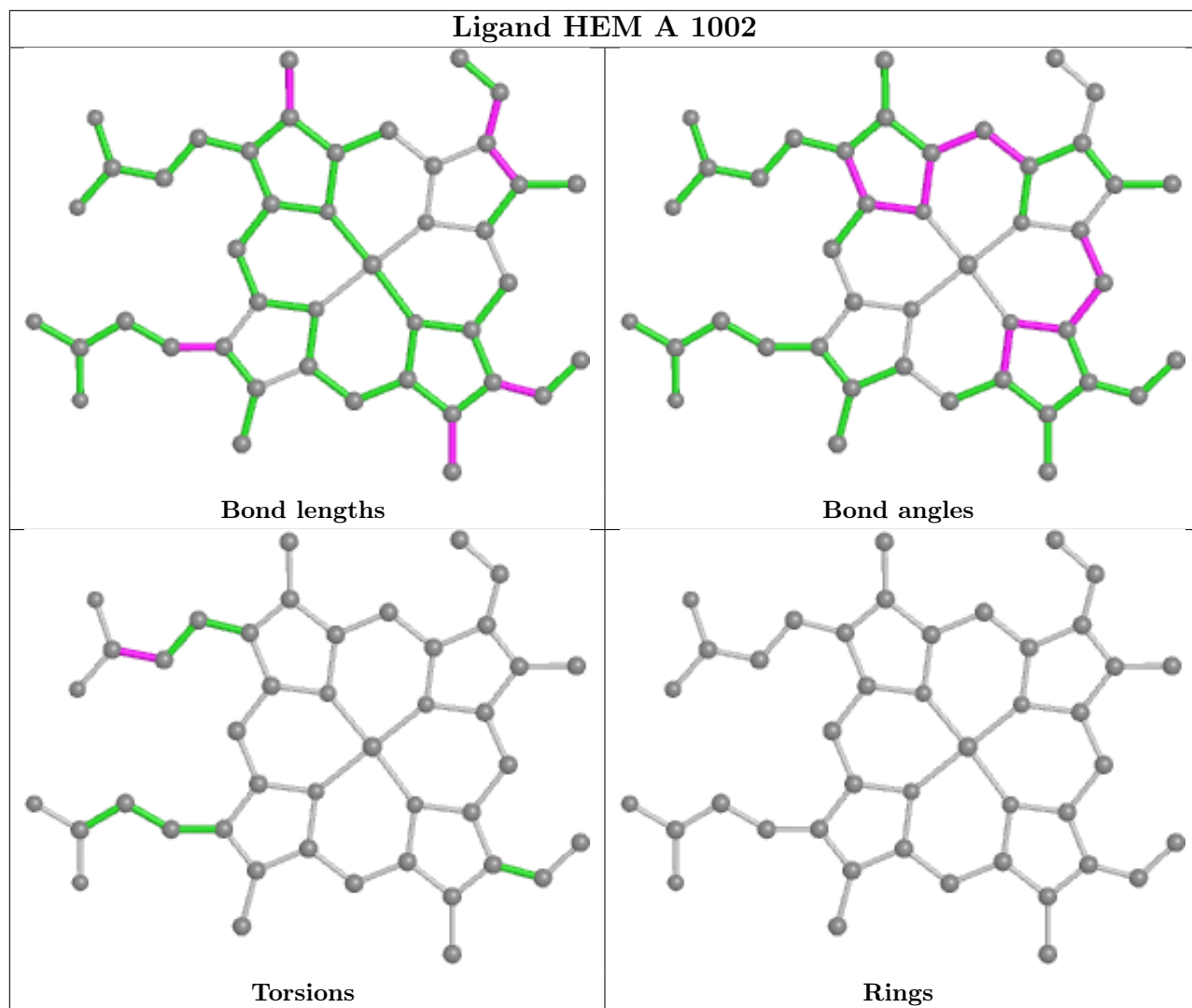
highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified 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.

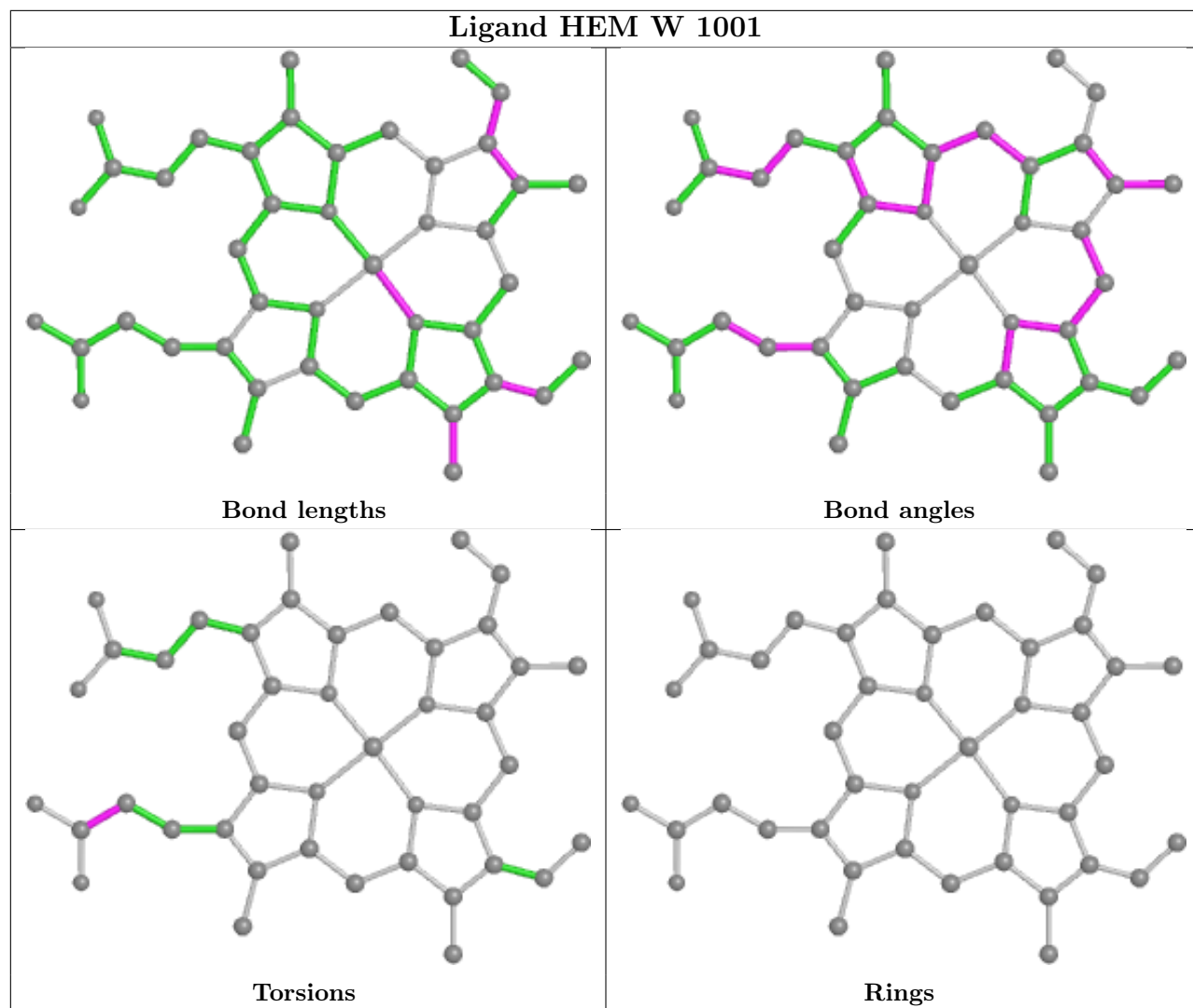


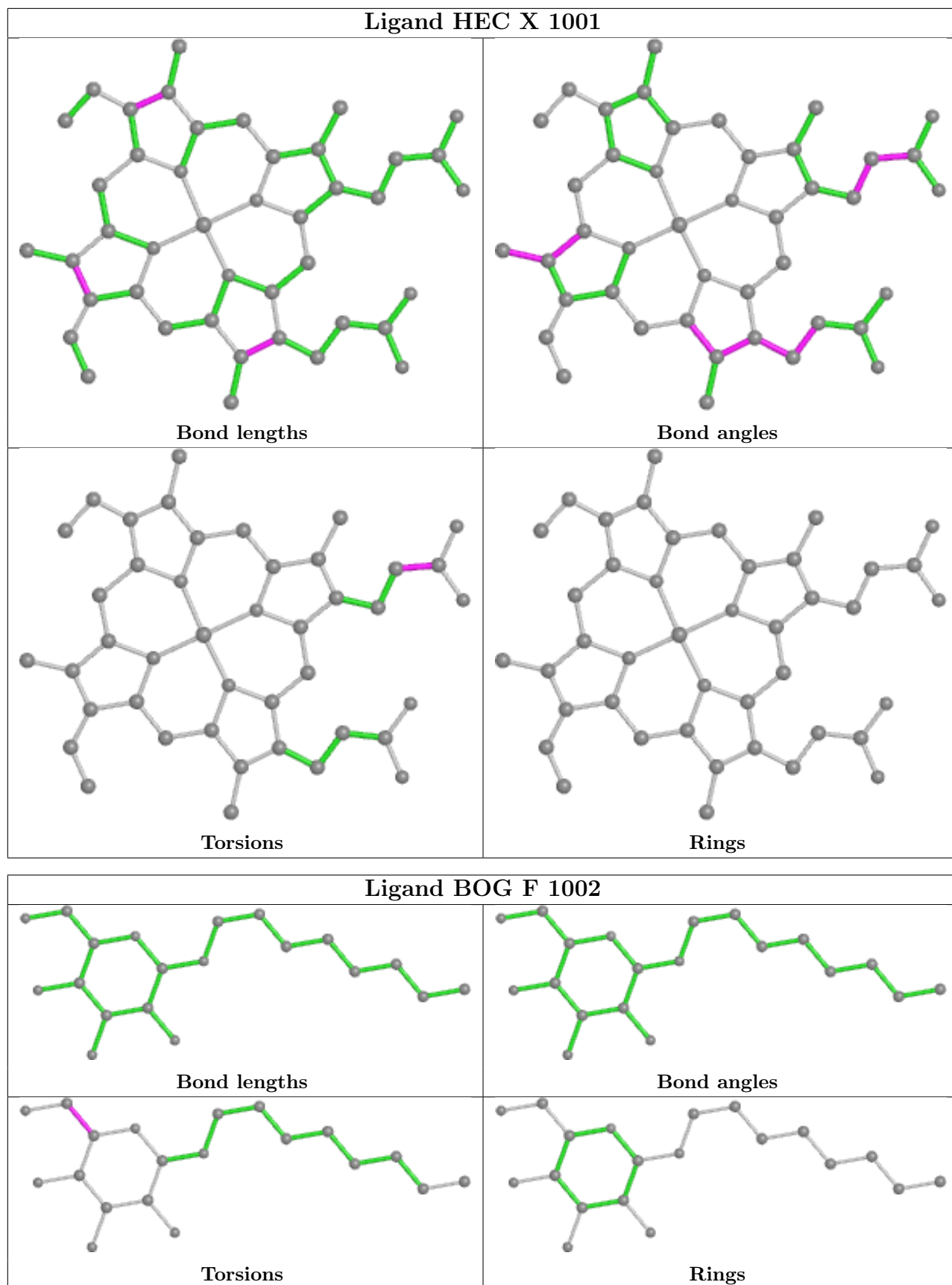


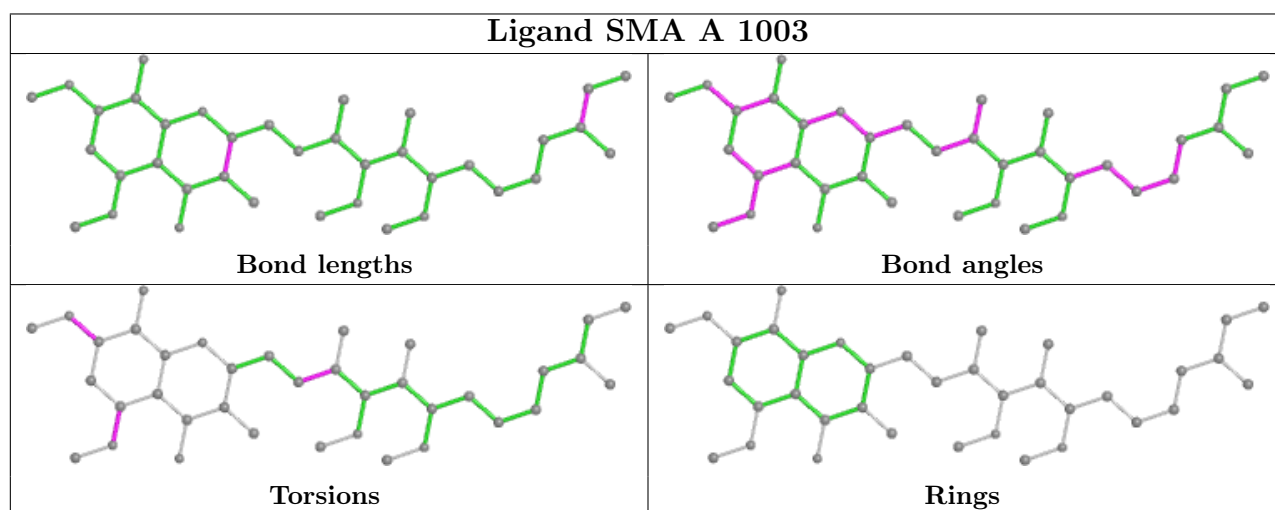
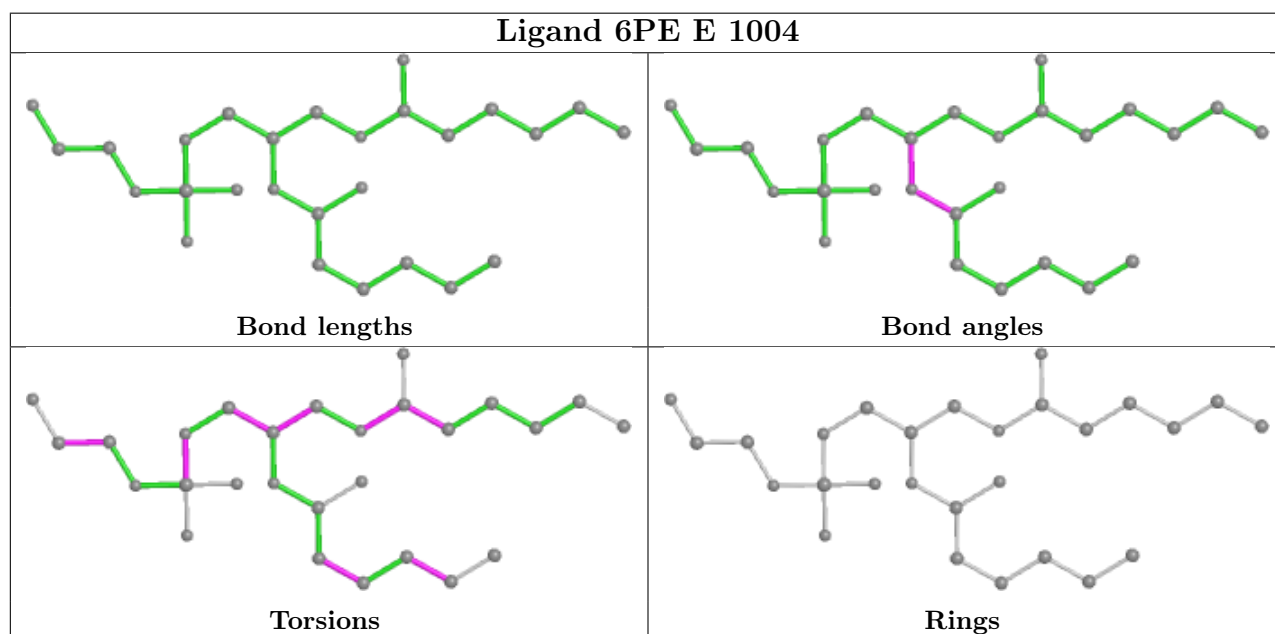
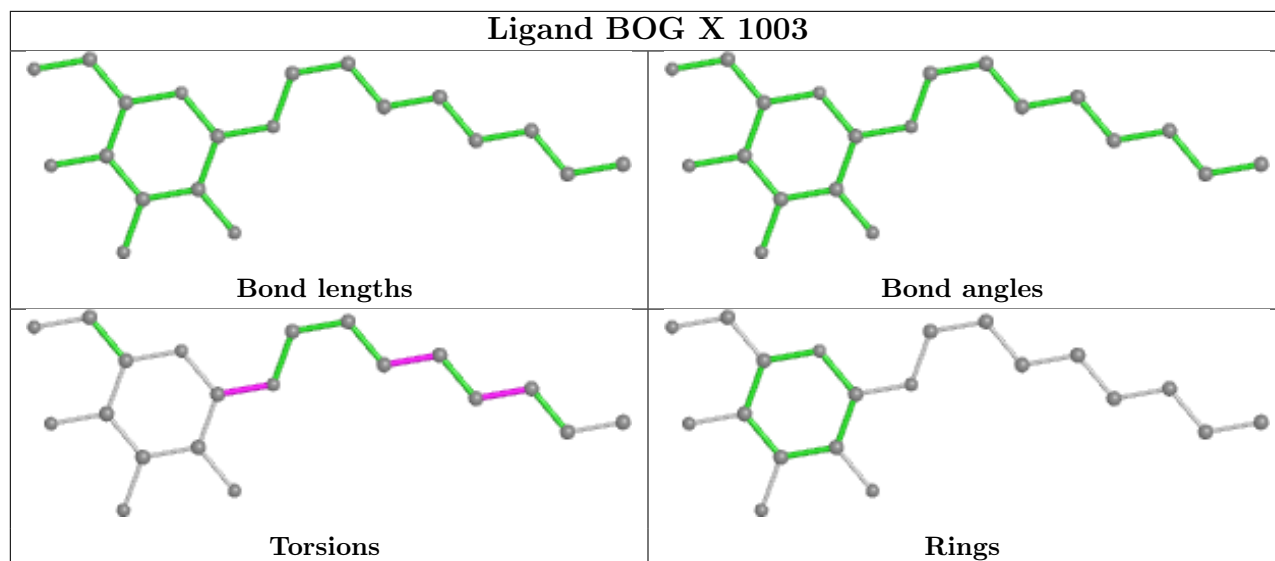


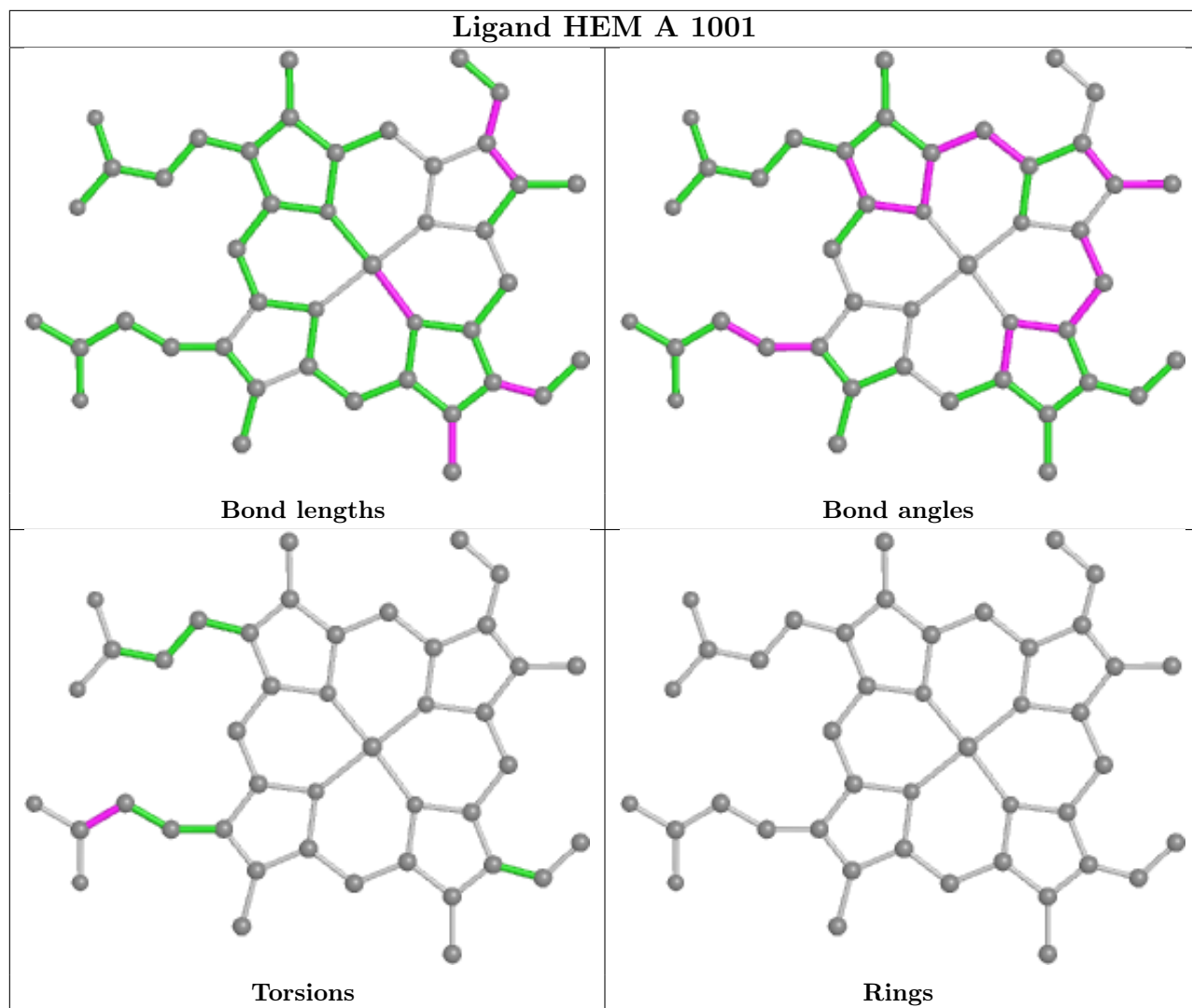


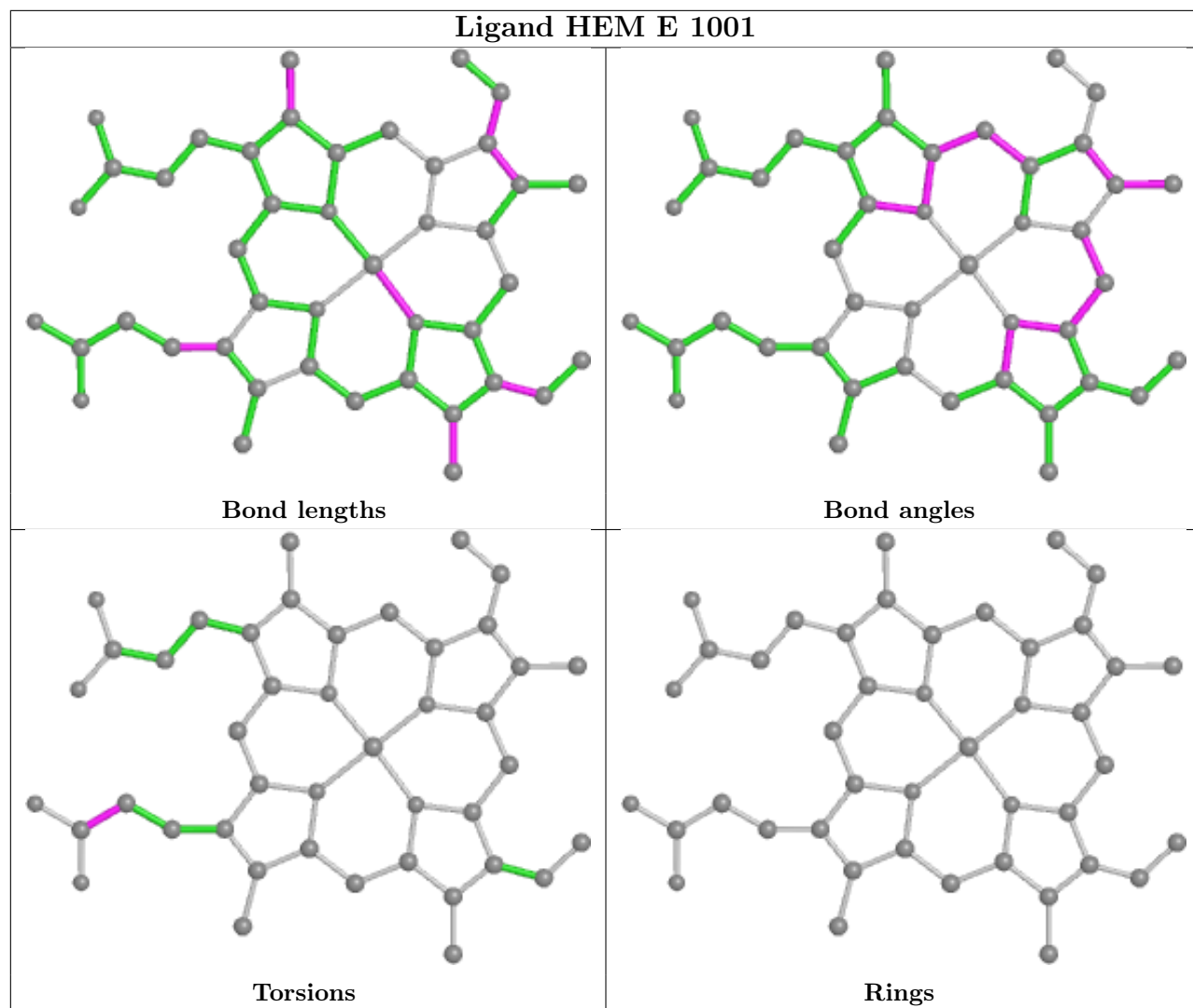


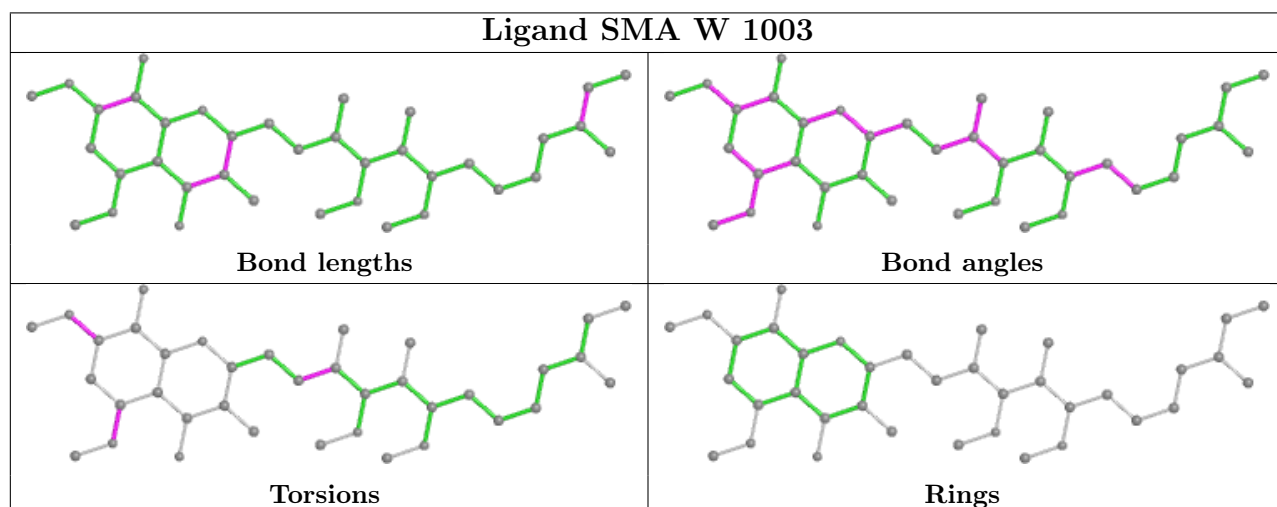
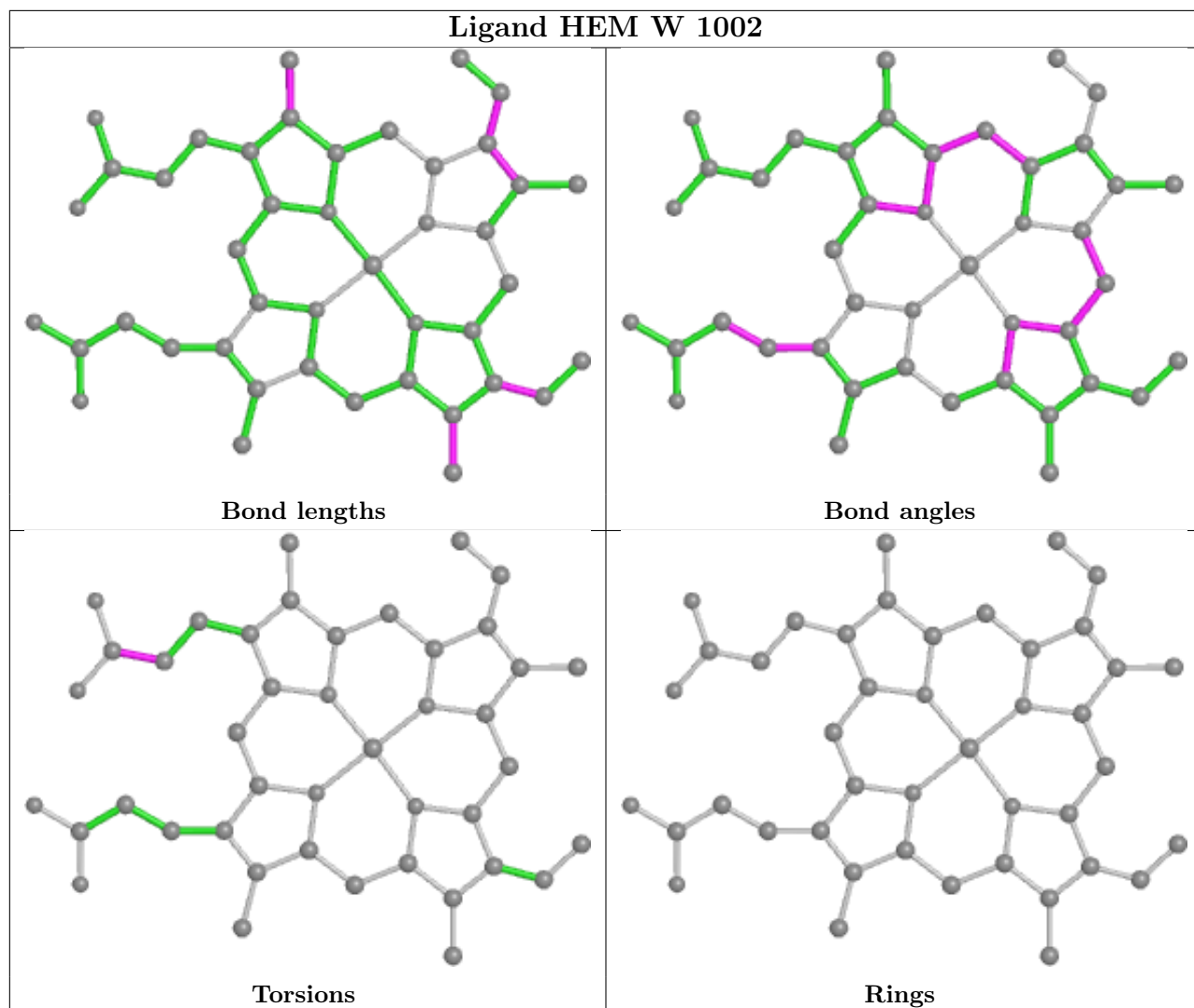


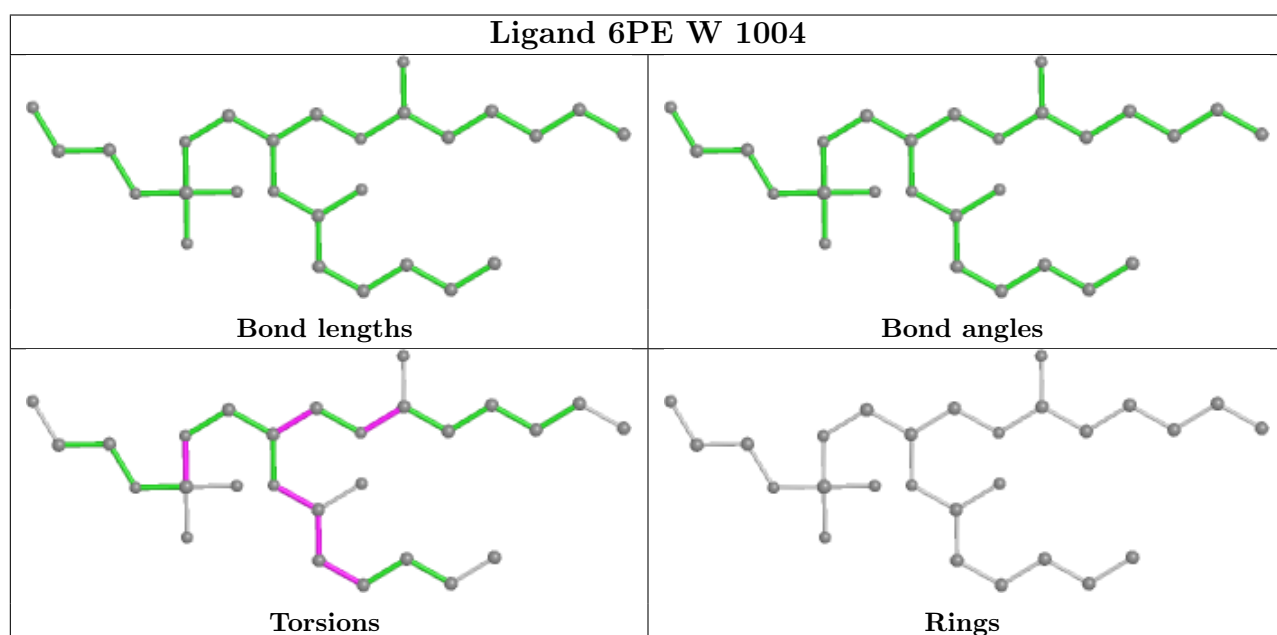
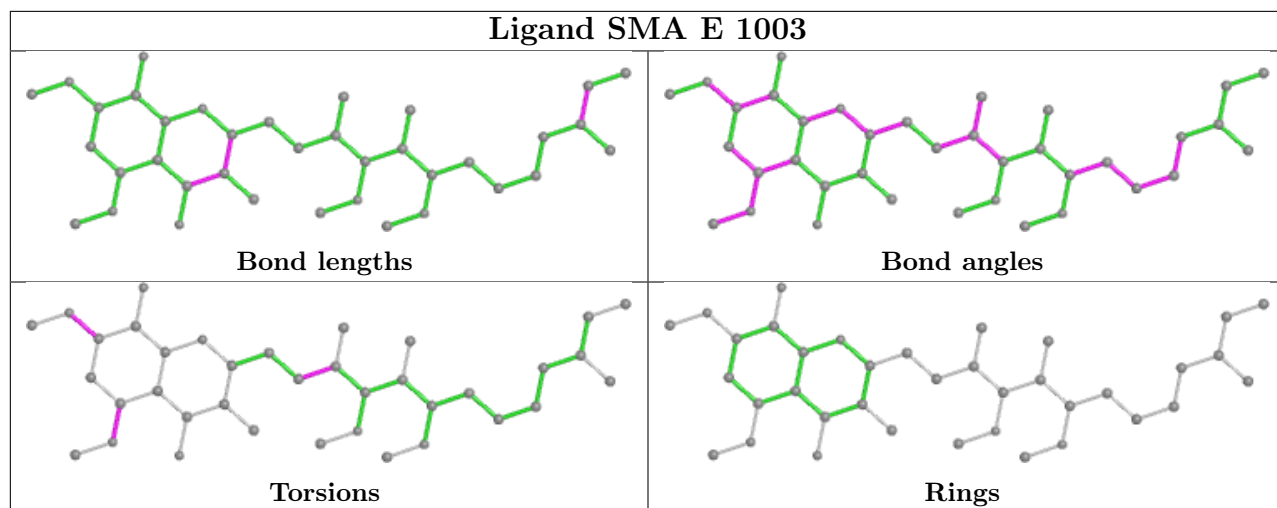


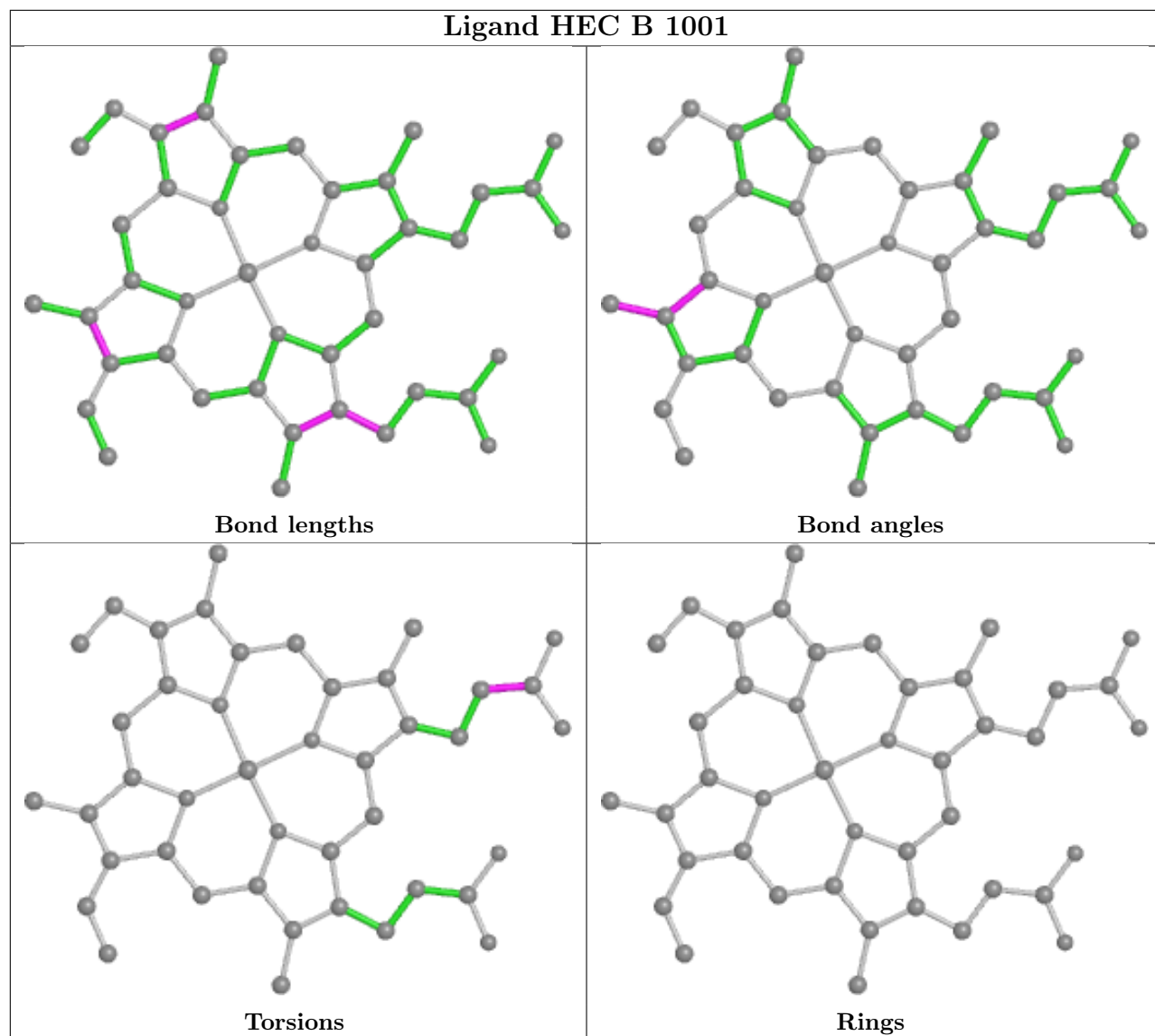


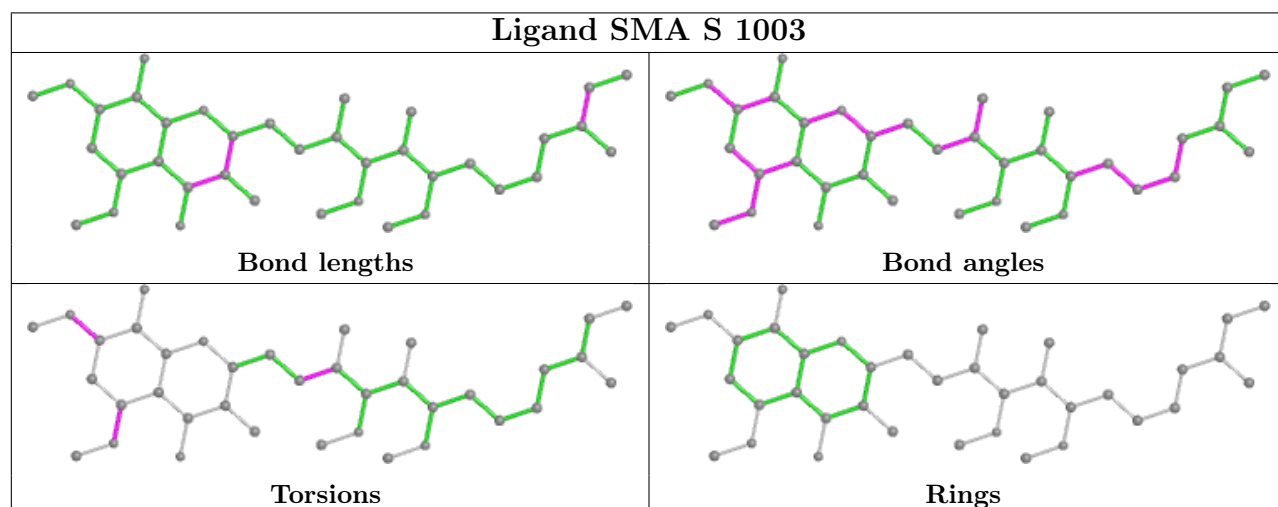
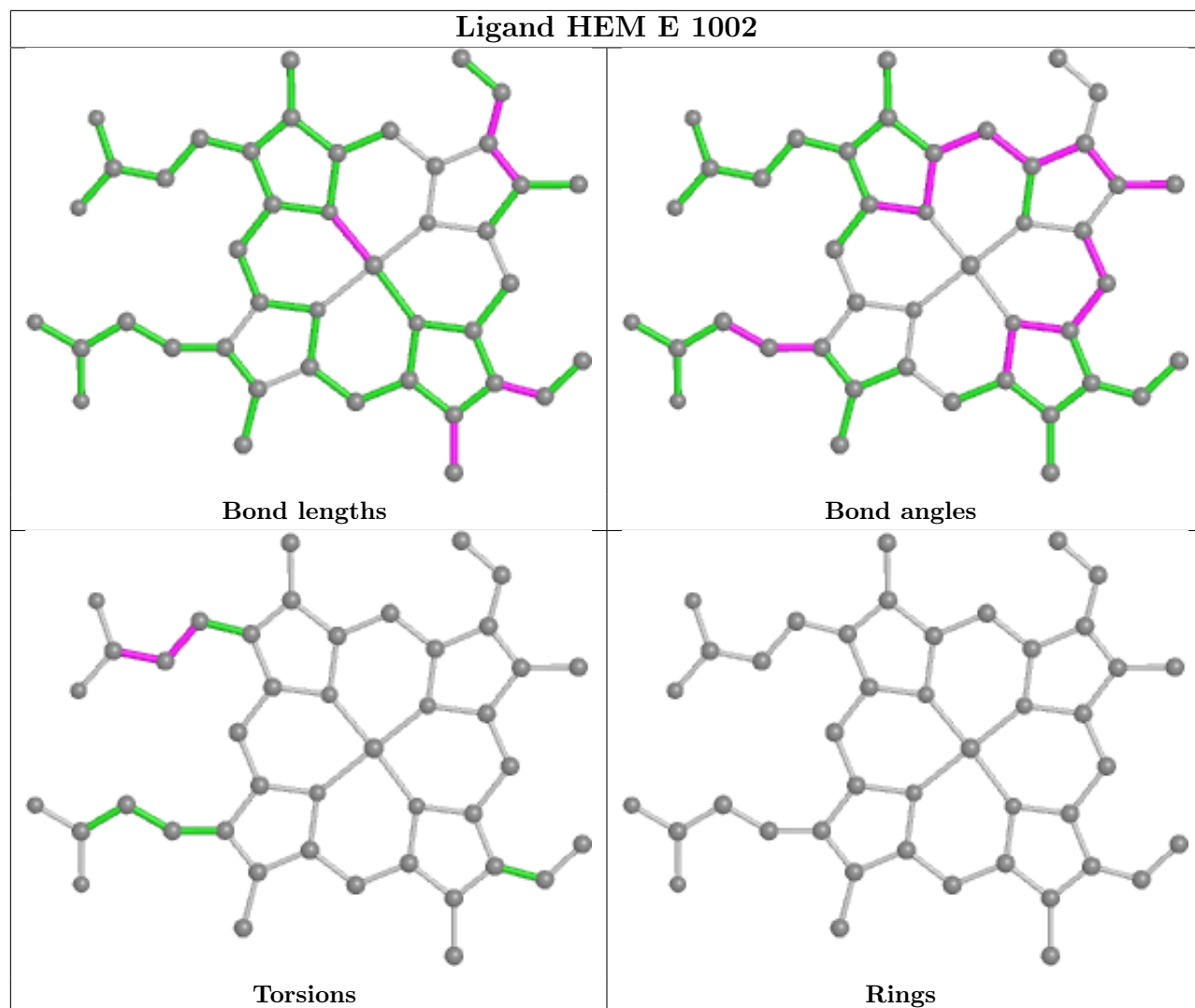


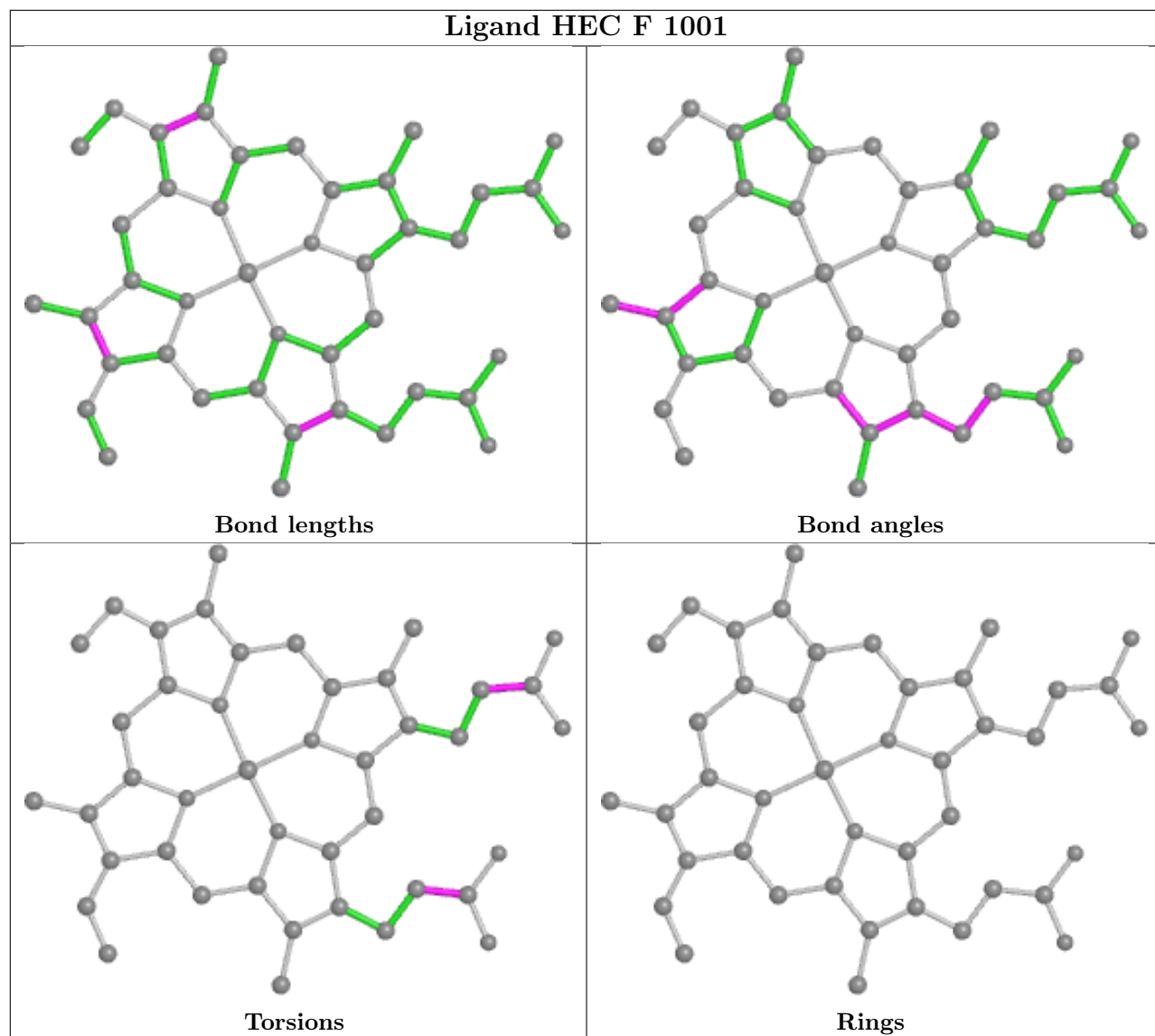


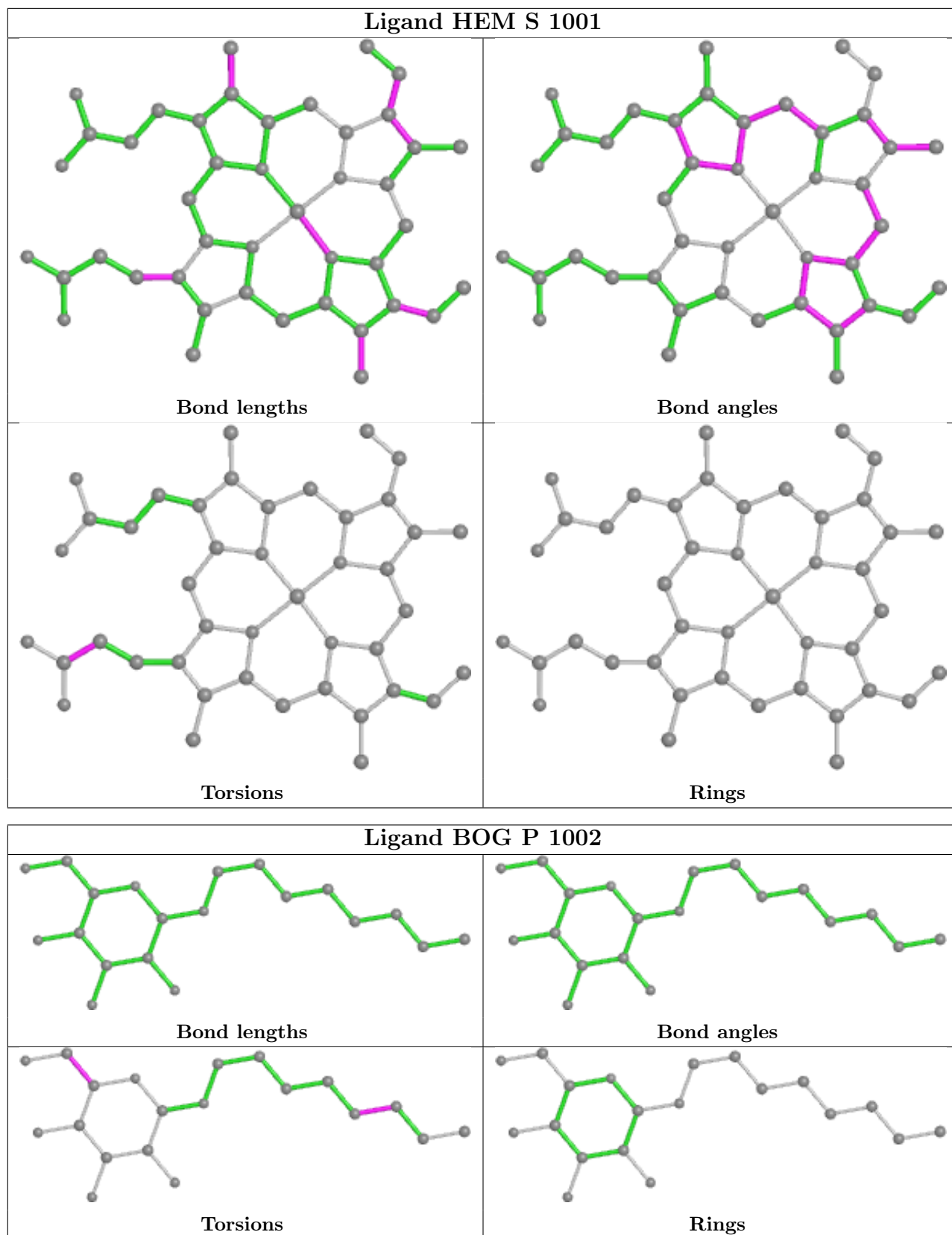


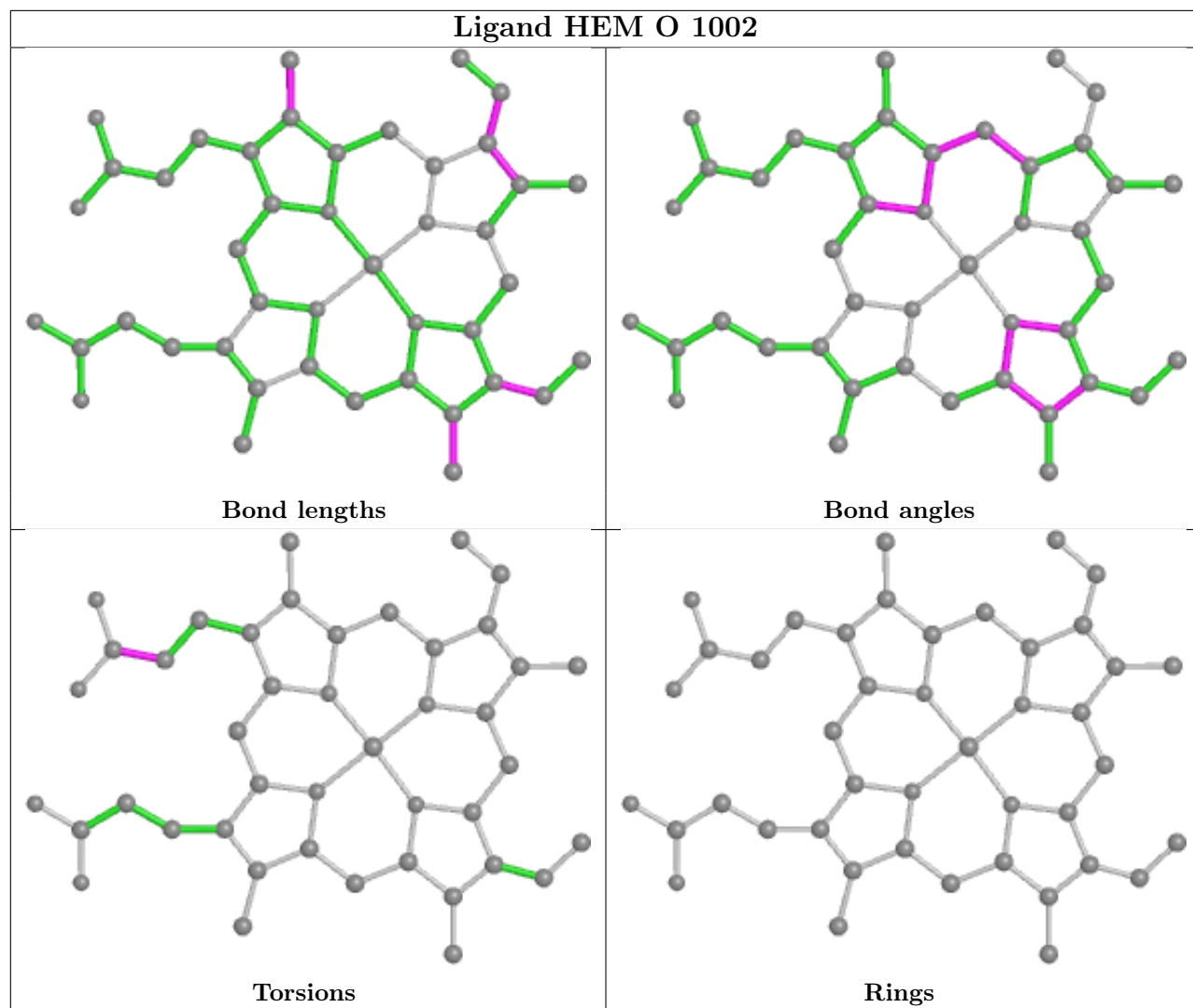


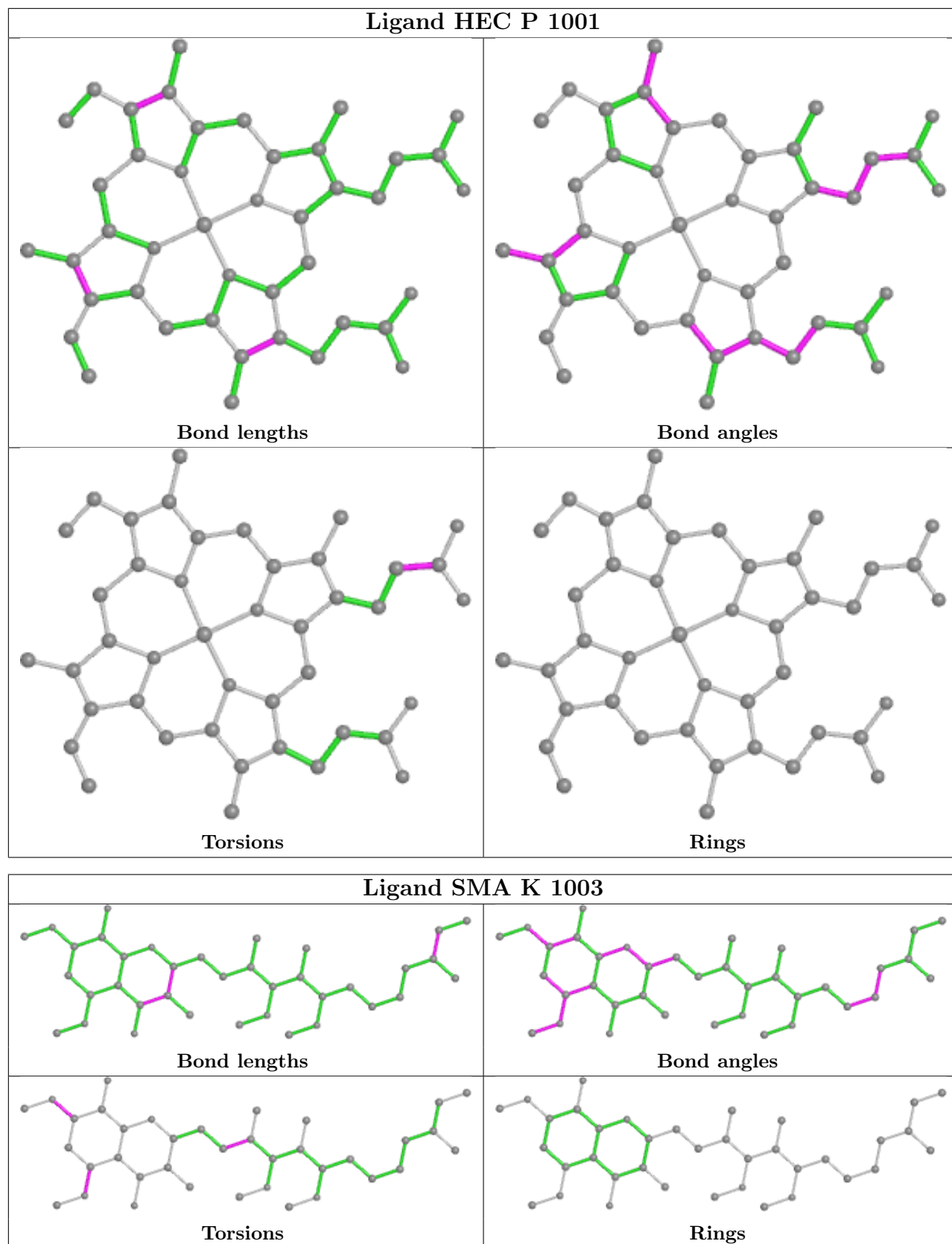


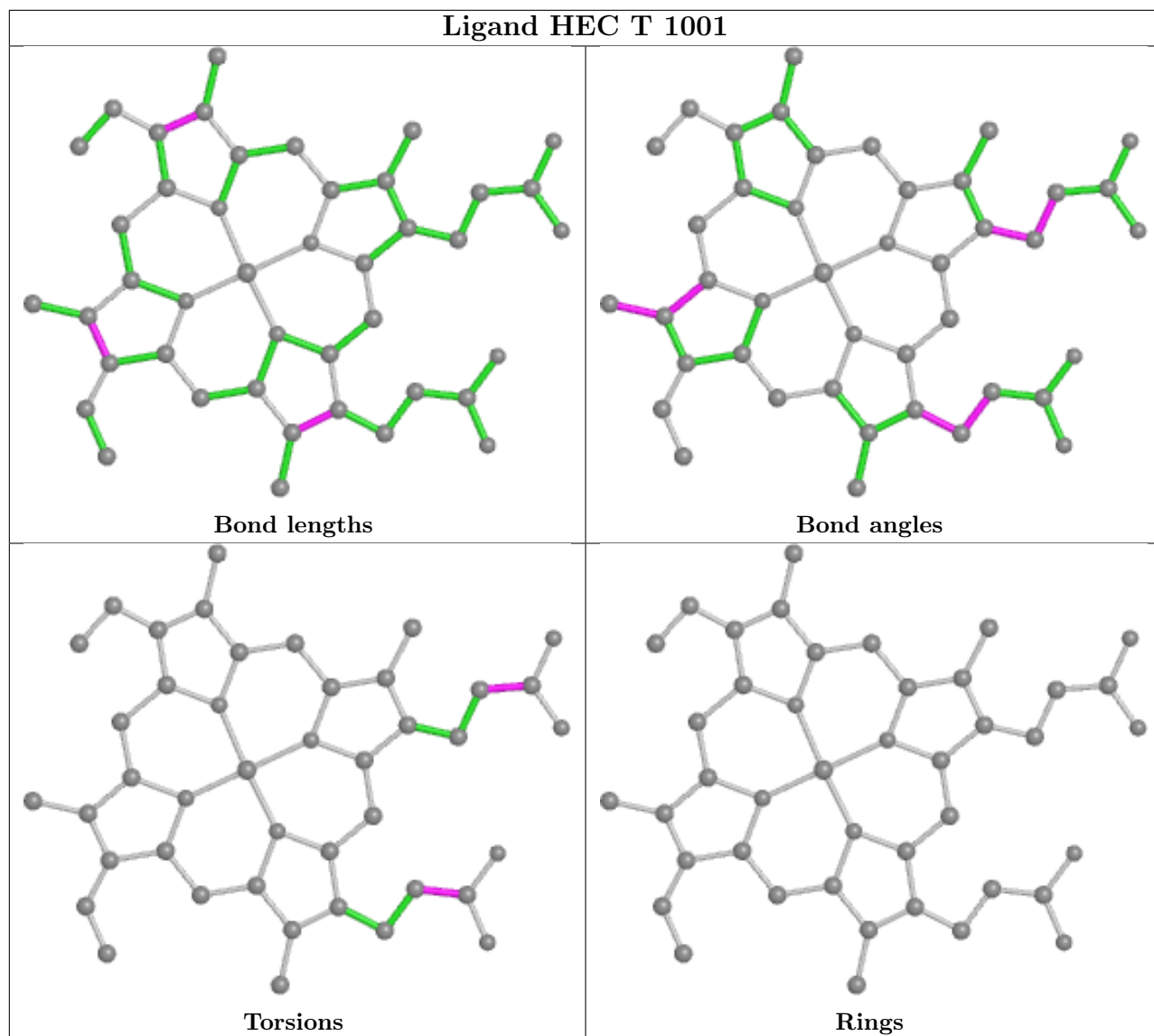


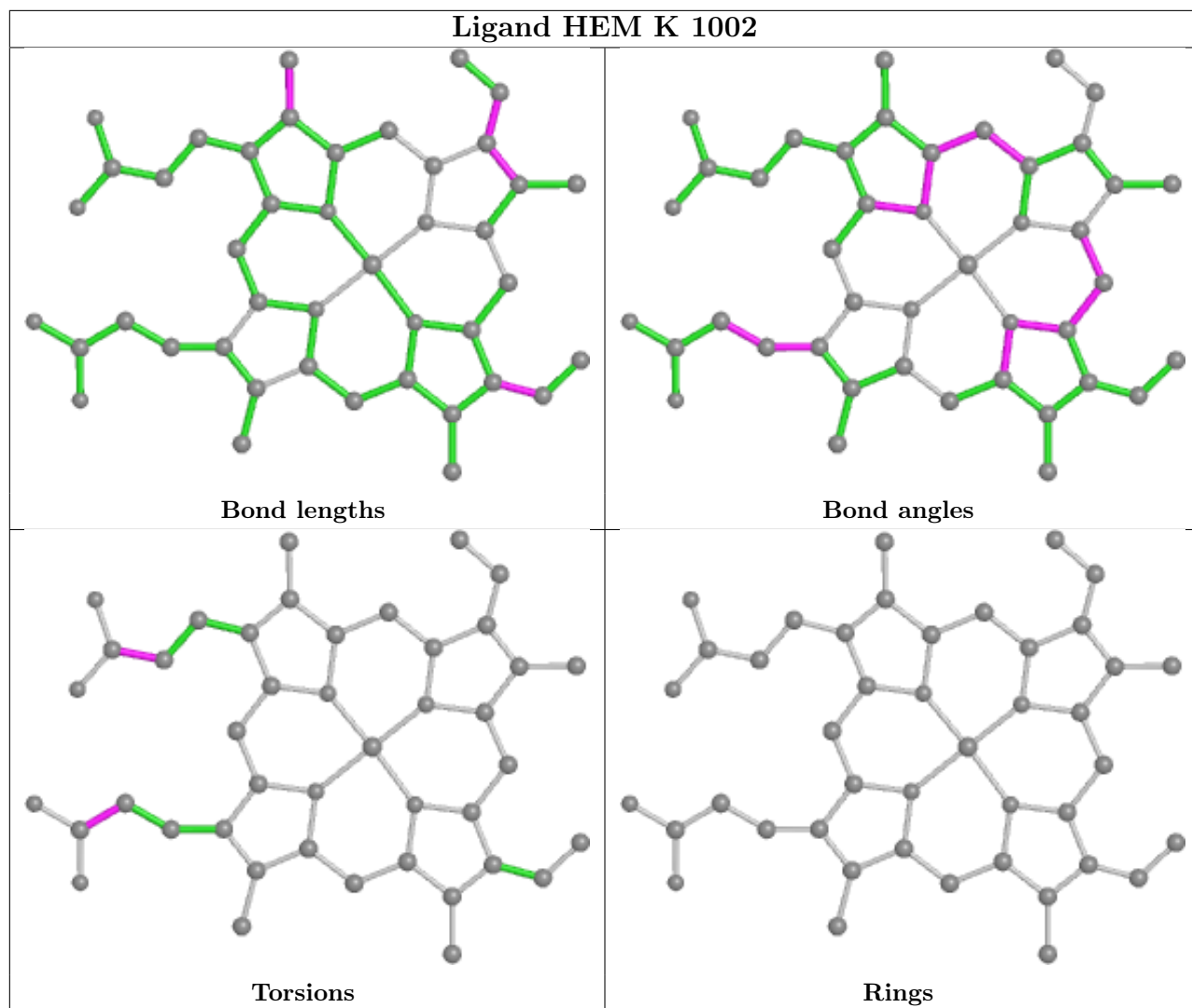


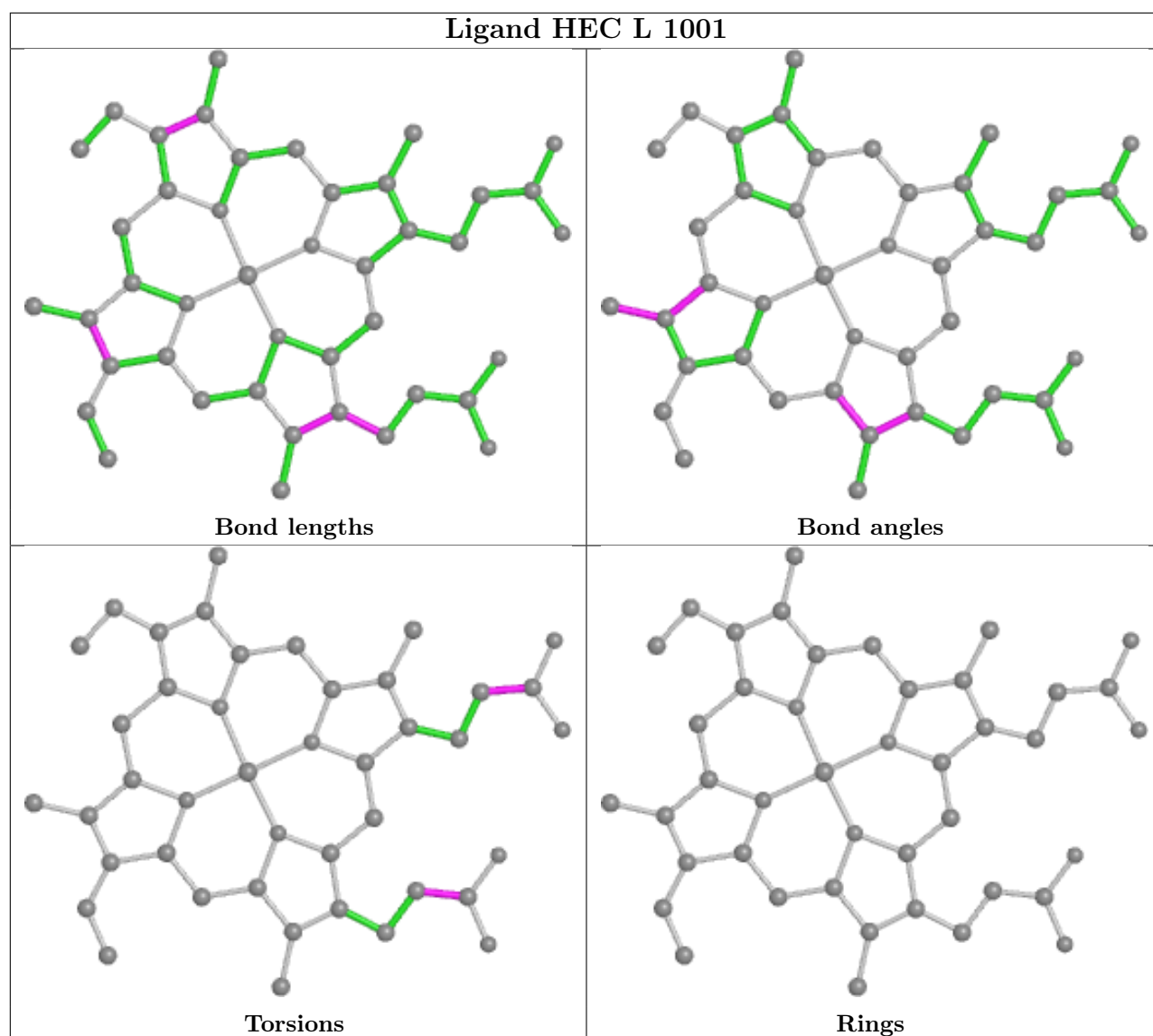












4.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

4.8 Polymer linkage issues [\(i\)](#)

There are no chain breaks in this entry.

5 Fit of model and data

5.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

5.2 Non-standard residues in protein, DNA, RNA chains

EDS failed to run properly - this section is therefore empty.

5.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

5.4 Ligands

EDS failed to run properly - this section is therefore empty.

5.5 Other polymers

EDS failed to run properly - this section is therefore empty.