



wwPDB EM Validation Summary Report ⓘ

Feb 28, 2024 – 05:15 PM JST

PDB ID : 8IUF
EMDB ID : EMD-35720
Title : Cryo-EM structure of Euglena gracilis super-complex I+III2+IV, composite
Authors : Wu, M.C.; Tian, H.T.; He, Z.X.; Hu, Y.Q.; Zhou, L.
Deposited on : 2023-03-24
Resolution : 2.81 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

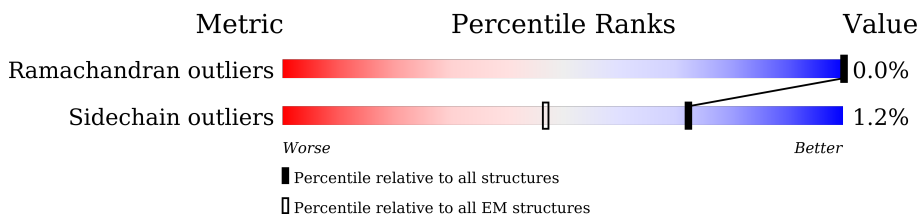
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.81 Å.

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



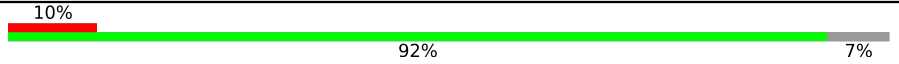
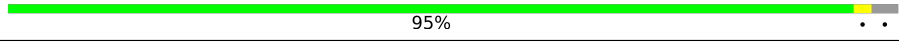
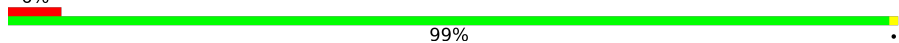


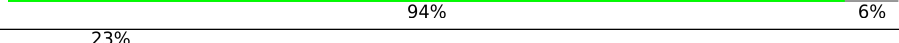
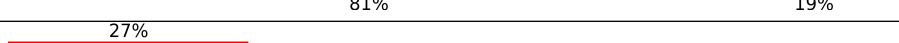
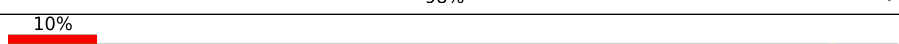


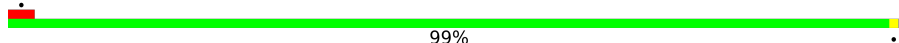
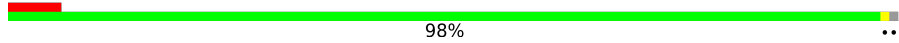

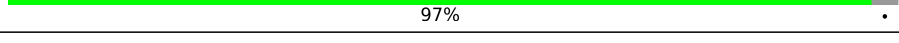
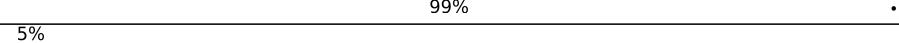
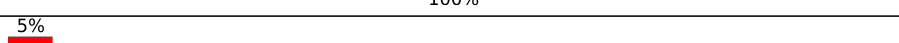


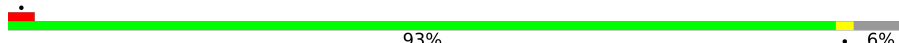
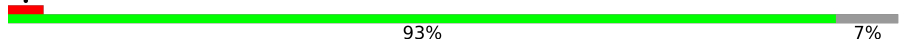
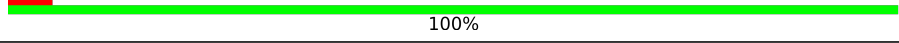

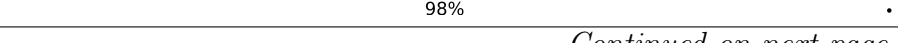


Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	1A	385	
2	1B	527	
3	2B	142	
4	4A	246	
5	4C	139	
6	4D	174	
7	4E	165	
8	4F	75	
9	4G	315	

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Mol	Chain	Length	Quality of chain
10	4H	221	
11	4I	274	
12	4J	88	
13	4L	171	
14	5B	174	
15	5C	208	
16	6A	112	
17	6B	287	
18	7A	178	
19	7C	171	
20	A1	141	
21	A2	193	
22	A3	125	
23	A5	184	
24	A6	437	
25	A7	136	
26	A8	223	
27	A9	489	
28	AB	134	
29	AC	134	
30	AL	281	
31	AM	198	
32	AN	287	
33	B2	145	
34	B3	62	

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Mol	Chain	Length	Quality of chain
35	B4	171	5% 100%
36	B5	140	100%
37	B6	91	99%
38	B7	97	6% 99%
39	B8	176	83% 16%
40	B9	158	94%
41	BL	144	6% 99%
42	BM	112	8% 99%
43	C1	495	99%
44	C2	196	98%
45	C3	161	7% 98%
46	C4	185	7% 97%
47	DC	179	93% 7%
48	E1	483	10% 92% 7%
49	E2	472	18% 99%
50	E3	594	12% 72% 27%
51	E4	368	95% 5%
52	E5	290	76% 93% 5%
53	E6	371	8% 91% 8%
54	E7	246	11% 98%
55	E8	205	6% 99%
56	E9	178	66% 92% 7%
57	EA	126	6% 98%
58	EB	101	99%
59	EC	101	8% 84% 16%

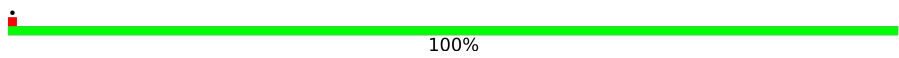
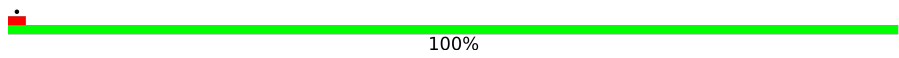
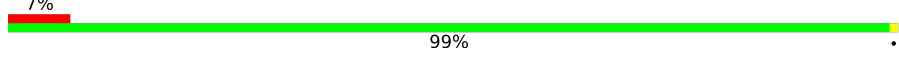
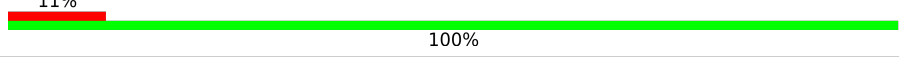
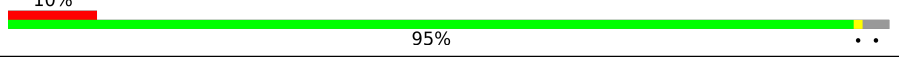
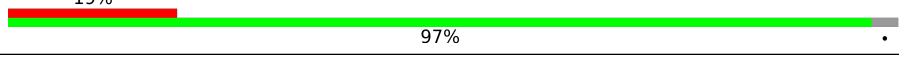

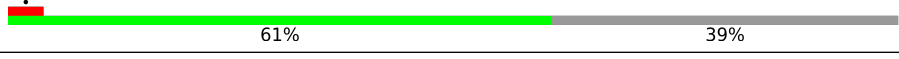
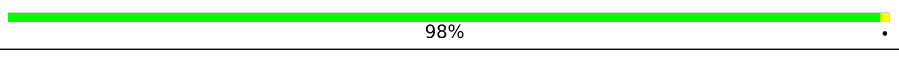
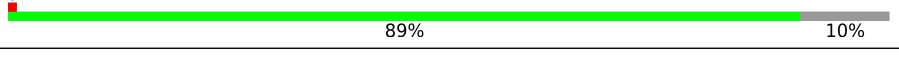
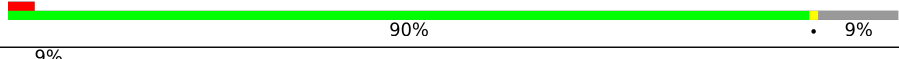
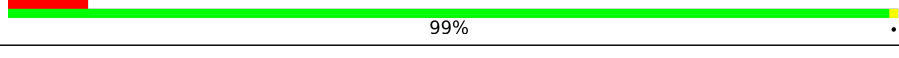
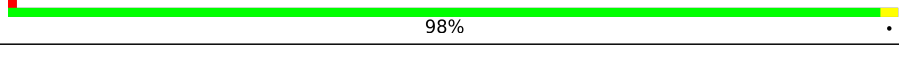
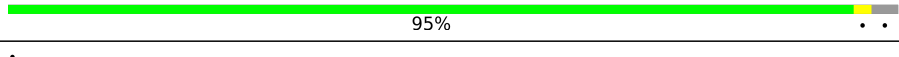

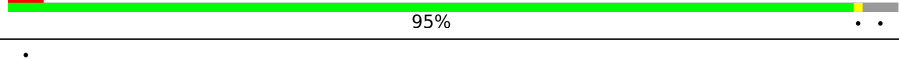
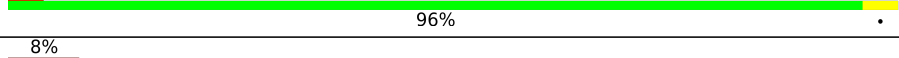

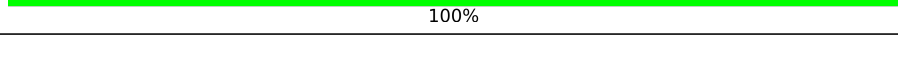
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Mol	Chain	Length	Quality of chain
60	ED	151	89% 9%
61	FX	325	72% 27%
62	G1	436	96%
63	G2	267	87% 12%
64	G3	261	99%
65	N1	670	45% 54%
66	N2	300	98%
67	N3	293	40% 59%
67	N6	293	52% 47%
68	N4	478	99%
69	N5	584	99%
70	QA	479	98%
70	Qa	479	99%
71	QB	474	95%
71	Qb	474	88% 11%
72	QC	368	98%
72	Qc	368	98%
73	QD	243	98%
73	Qd	243	5% 97%
74	QE	252	48% 90% 8%
74	Qe	252	52% 92% 8%
75	QF	72	29% 86% 11%
75	Qf	72	29% 83% 6% 11%
76	QG	228	99%
76	Qg	228	99%

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Mol	Chain	Length	Quality of chain
77	QH	85	 100%
77	Qh	85	 100%
78	QI	70	 99%
78	Qi	70	 100%
79	QJ	154	 95%
79	Qj	154	 97%
80	QK	100	 61% 39%
80	Qk	100	 61% 39%
81	S2	395	 98%
82	S3	277	 89% 10%
83	S4	208	 90% 9%
84	S5	122	 99%
85	S6	147	 98%
86	S7	207	 95%
87	S8	212	 85% 14%
88	V1	526	 95%
89	V2	225	 96%
90	A	12	 100%
90	B	12	 58% 100%

2 Entry composition [i](#)

There are 108 unique types of molecules in this entry. The entry contains 368218 atoms, of which 183093 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called NDUFS1a.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	1A	352	Total	C	H	N	O	S	0	0
			5501	1753	2700	488	537	23		

- Molecule 2 is a protein called NDUFS1b.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	1B	525	Total	C	H	N	O	S	1	0
			8357	2679	4159	743	765	11		

- Molecule 3 is a protein called ND2b.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
3	2B	140	Total	C	H	N	O	S	0	0
			2059	712	989	172	183	3		

- Molecule 4 is a protein called COXEG1.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
4	4A	204	Total	C	H	N	O	S	0	0
			3220	1054	1608	267	285	6		

- Molecule 5 is a protein called COXEG3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
5	4C	123	Total	C	H	N	O	S	0	0
			2049	670	1027	168	183	1		

- Molecule 6 is a protein called COXEG4.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
6	4D	173	Total	C	H	N	O	S	0	0
			2708	863	1359	237	240	9		

- Molecule 7 is a protein called COXEG5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
7	4E	160	Total	C	H	N	O	S	0	0
			2612	859	1279	220	247	7		

- Molecule 8 is a protein called COXEG6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
8	4F	75	Total	C	H	N	O	S	0	0
			1246	418	626	98	103	1		

- Molecule 9 is a protein called COXEG7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
9	4G	297	Total	C	H	N	O	S	0	0
			4691	1478	2340	408	457	8		

- Molecule 10 is a protein called COXEG8.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	4H	205	Total	C	H	N	O	0	0
			3250	1040	1644	260	306		

- Molecule 11 is a protein called COXEG9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
11	4I	265	Total	C	H	N	O	S	0	0
			4224	1411	2046	374	388	5		

- Molecule 12 is a protein called COXEG10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
12	4J	88	Total	C	H	N	O	S	0	0
			1399	459	688	126	124	2		

- Molecule 13 is a protein called ND4L.

Mol	Chain	Residues	Atoms					AltConf	Trace	
13	4L	108	Total	C	H	N	O	S	0	0
			1768	606	878	133	145	6		

- Molecule 14 is a protein called COX5b-2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
14	5B	157	Total	C	H	N	O	S	0	0
			2442	807	1184	208	237	6		

- Molecule 15 is a protein called COX5c.

Mol	Chain	Residues	Atoms					AltConf	Trace	
15	5C	196	Total	C	H	N	O	S	0	0
			3117	1026	1546	253	283	9		

- Molecule 16 is a protein called COX6a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
16	6A	91	Total	C	H	N	O	S	0	0
			1497	498	747	128	120	4		

- Molecule 17 is a protein called COX6b-1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
17	6B	282	Total	C	H	N	O	S	0	0
			4514	1455	2229	396	427	7		

- Molecule 18 is a protein called COX7a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
18	7A	165	Total	C	H	N	O	S	0	0
			2603	838	1284	248	226	7		

- Molecule 19 is a protein called COX7c.

Mol	Chain	Residues	Atoms					AltConf	Trace	
19	7C	151	Total	C	H	N	O	S	0	0
			2437	821	1183	204	226	3		

- Molecule 20 is a protein called NDUFA1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
20	A1	137	Total	C	H	N	O	S	0	0
			2097	684	1026	192	192	3		

- Molecule 21 is a protein called NDUFA2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
21	A2	192	2967	942	1474	267	280	4	0	0

- Molecule 22 is a protein called NDUFA3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
22	A3	124	2089	678	1039	191	175	6	0	0

- Molecule 23 is a protein called NDUFA5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
23	A5	154	2509	794	1248	221	244	2	0	0

- Molecule 24 is a protein called NDUFA6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
24	A6	423	6608	2091	3280	601	632	4	0	0

- Molecule 25 is a protein called NDUFA7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
25	A7	136	2272	735	1118	219	194	6	0	0

- Molecule 26 is a protein called NDUFA8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
26	A8	223	3548	1160	1726	315	334	13	0	0

- Molecule 27 is a protein called NDUFA9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
27	A9	484	7679	2449	3850	662	700	18	0	0

- Molecule 28 is a protein called NDUFAB1-alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
28	AB	88	1367	437	673	114	139	4	0	0

- Molecule 29 is a protein called NDUFAB1-beta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
29	AC	92	1418	461	697	116	140	4	0	0

- Molecule 30 is a protein called NDUFA12.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
30	AL	265	4409	1439	2172	414	379	5	0	0

- Molecule 31 is a protein called NDUFA13.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
31	AM	184	2935	953	1448	264	263	7	0	0

- Molecule 32 is a protein called NDUFA11.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
32	AN	287	4573	1501	2267	396	399	10	0	0

- Molecule 33 is a protein called NDUFB2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
33	B2	105	1770	604	857	142	166	1	0	0

- Molecule 34 is a protein called NDUFB3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
34	B3	61	758	292	309	88	68	1	0	0

- Molecule 35 is a protein called NDUFB4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
35	B4	171	2735	885	1358	250	236	6	0	0

- Molecule 36 is a protein called NDUFB5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
36	B5	140	2181	708	1069	207	195	2	0	0

- Molecule 37 is a protein called NDUFB6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
37	B6	91	1520	509	747	132	128	4	0	0

- Molecule 38 is a protein called NDUFB7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
38	B7	97	1692	536	835	165	149	7	0	0

- Molecule 39 is a protein called NDUFB8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
39	B8	147	2351	804	1127	199	213	8	0	0

- Molecule 40 is a protein called NDUFB9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
40	B9	151	2443	795	1207	216	222	3	0	0

- Molecule 41 is a protein called NDUFB10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
41	BL	144	2406	786	1179	215	216	10	0	0

- Molecule 42 is a protein called NDUFB11.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
42	BM	112	1737	577	827	164	167	2	0	0

- Molecule 43 is a protein called Cytochrome c oxidase subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
43	C1	495	7918	2635	3980	614	664	25	0	0

- Molecule 44 is a protein called Cytochrome c oxidase subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
44	C2	196	3232	1046	1647	262	272	5	0	0

- Molecule 45 is a protein called Putative NADH dehydrogenase subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
45	C3	161	2791	935	1413	213	226	4	0	0

- Molecule 46 is a protein called NDUFC2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
46	C4	183	3062	1000	1517	268	271	6	0	0

- Molecule 47 is a protein called COX4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
47	DC	167	2728	887	1362	239	235	5	0	0

- Molecule 48 is a protein called NDUEG1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
48	E1	450	7008	2244	3496	601	654	13	0	0

- Molecule 49 is a protein called NDUEG2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
49	E2	466	7103	2286	3540	618	655	4	0	0

- Molecule 50 is a protein called NDUEG3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
50	E3	432	6518	2071	3263	565	612	7	0	0

- Molecule 51 is a protein called NDUEG4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
51	E4	351	5502	1774	2732	477	504	15	0	0

- Molecule 52 is a protein called NDUEG5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
52	E5	276	4046	1265	2069	341	369	2	0	0

- Molecule 53 is a protein called NDUEG6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
53	E6	342	5629	1839	2758	507	513	12	0	0

- Molecule 54 is a protein called NDUEG7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
54	E7	246	3780	1205	1892	332	344	7	0	0

- Molecule 55 is a protein called NDUEG8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
55	E8	205	3354	1100	1663	288	292	11	0	0

- Molecule 56 is a protein called NDUEG9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
56	E9	165	2436	779	1224	213	217	3	0	0

- Molecule 57 is a protein called NDUEG10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
57	EA	124	1793	630	832	172	156	3	0	0

- Molecule 58 is a protein called NDUEG11.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
58	EB	101	1405	473	631	150	144	7	0	0

- Molecule 59 is a protein called NDUEG11.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
59	EC	85	1323	424	663	116	118	2	0	0

- Molecule 60 is a protein called NDUEG13.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
60	ED	138	2273	736	1131	205	196	5	0	0

- Molecule 61 is a protein called NDUFX.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
61	FX	237	3816	1263	1849	338	359	7	0	0

- Molecule 62 is a protein called NDUCA1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
62	G1	426	6552	2115	3205	593	623	16	0	0

- Molecule 63 is a protein called NDUCA2.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
63	G2	236	3650	1138	1846	323	338	5	0	0

- Molecule 64 is a protein called NDUCA3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
64	G3	261	3905	1226	1944	356	373	6	0	0

- Molecule 65 is a protein called ND1.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
65	N1	310	5331	1783	2726	380	435	7	0	0

- Molecule 66 is a protein called ND2a.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
66	N2	296	5101	1725	2589	362	418	7	0	0

- Molecule 67 is a protein called ND3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
67	N3	121	2094	720	1057	143	172	2	0	0
67	N6	154	2642	857	1385	187	210	3	0	0

- Molecule 68 is a protein called NADH-ubiquinone oxidoreductase chain 4.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
68	N4	478	8215	2743	4214	582	663	13	0	0

- Molecule 69 is a protein called ND5.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
69	N5	584	9869	3293	5032	711	808	25	0	0

- Molecule 70 is a protein called MPP-beta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
70	QA	476	7408	2367	3658	655	713	15	2	0
70	Qa	476	7408	2367	3658	655	713	15	2	0

- Molecule 71 is a protein called Ubiquinol-cytochrome-c reductase complex core protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
71	QB	455	6889	2205	3431	585	665	3	0	0
71	Qb	423	6408	2057	3192	540	616	3	0	0

- Molecule 72 is a protein called Cytochrome b.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
72	QC	364	6039	2005	3064	463	494	13	0	0
72	Qc	364	6039	2005	3064	463	494	13	0	0

- Molecule 73 is a protein called Cytochrome c1, heme protein.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
73	QD	241	3817	1261	1858	337	353	8	0	0
73	Qd	241	3817	1261	1858	337	353	8	0	0

- Molecule 74 is a protein called UQCRFS1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
74	QE	231	3571	1143	1776	310	330	12	0	0
74	Qe	231	3571	1143	1776	310	330	12	0	0

- Molecule 75 is a protein called UQCRH.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
75	QF	64	1014	325	499	91	93	6	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
75	Qf	64	1018	325	503	91	93	6	0	0

- Molecule 76 is a protein called UQCRB.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
76	QG	228	3802	1232	1870	341	351	8	0	0
76	Qg	228	3802	1232	1870	341	351	8	0	0

- Molecule 77 is a protein called UQCRQ.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
77	QH	85	1393	447	692	131	120	3	0	0
77	Qh	85	1393	447	692	131	120	3	0	0

- Molecule 78 is a protein called UQCR9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
78	QI	70	742	290	293	77	81	1	0	0
78	Qi	70	742	290	293	77	81	1	0	0

- Molecule 79 is a protein called UQCR10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
79	QJ	149	2418	781	1212	220	204	1	0	0
79	Qj	149	2418	781	1212	220	204	1	0	0

- Molecule 80 is a protein called Ubiquinol-cytochrome-C reductase complex subunit IX, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
80	QK	61	984	325	499	79	78	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
80	Qk	61	984	325	499	79	78	3	0	0

- Molecule 81 is a protein called NDUFS2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
81	S2	394	6274	2041	3101	541	569	22	0	0

- Molecule 82 is a protein called NDUFS3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
82	S3	248	3978	1307	1928	346	384	13	0	0

- Molecule 83 is a protein called NDUFS4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
83	S4	190	3038	956	1502	300	273	7	0	0

- Molecule 84 is a protein called NDUFS5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
84	S5	122	1886	625	895	173	188	5	0	0

- Molecule 85 is a protein called NDUFS6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
85	S6	147	2392	759	1192	225	208	8	0	0

- Molecule 86 is a protein called NDUFS7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
86	S7	201	3045	975	1500	272	284	14	0	0

- Molecule 87 is a protein called NDUFS8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
87	S8	182	2843	915	1392	245	275	16	0	0

- Molecule 88 is a protein called NDUFV1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
88	V1	504	7724	2463	3827	680	727	27	0	0

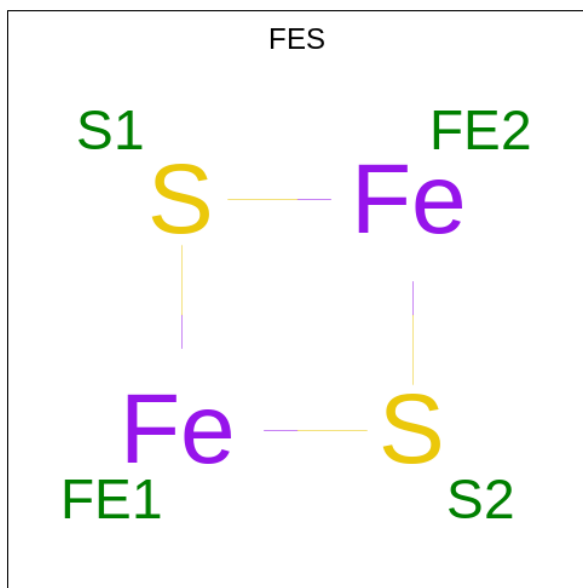
- Molecule 89 is a protein called NDUFV2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
89	V2	225	3460	1124	1701	299	319	17	0	0

- Molecule 90 is a protein called poly(UNK).

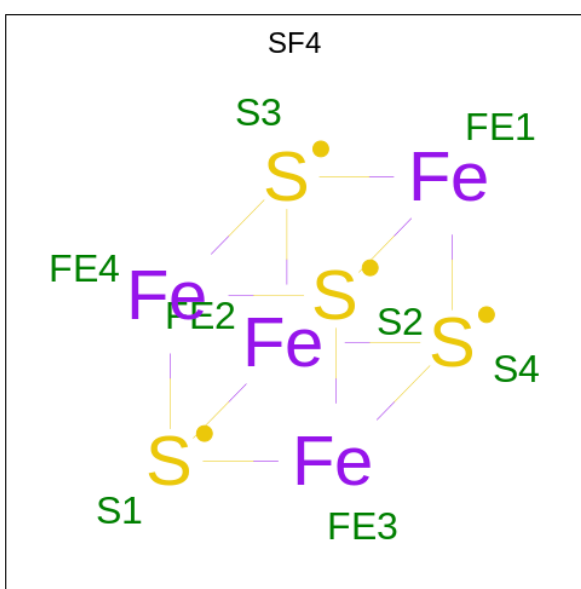
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
90	A	12	76	36	16	12	12	0	0
90	B	12	76	36	16	12	12	0	0

- Molecule 91 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
91	1A	1	Total	Fe	S	0
			4	2	2	
91	QE	1	Total	Fe	S	0
			4	2	2	
91	Qe	1	Total	Fe	S	0
			4	2	2	
91	V2	1	Total	Fe	S	0
			4	2	2	

- Molecule 92 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄) (labeled as "Ligand of Interest" by depositor).

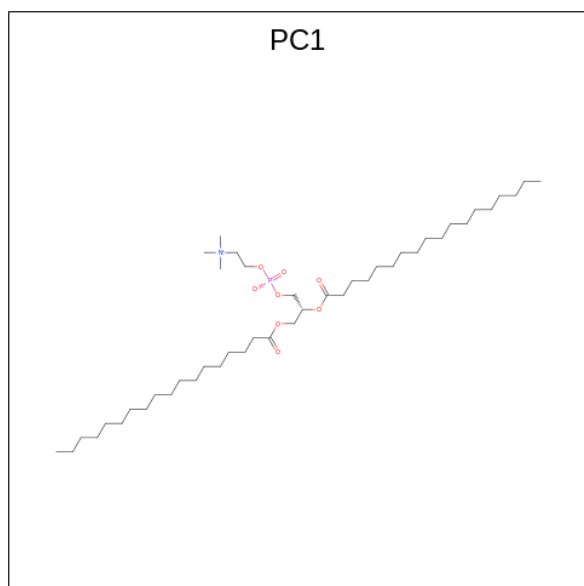


Mol	Chain	Residues	Atoms			AltConf
92	1A	1	Total	Fe	S	0
			8	4	4	
92	1A	1	Total	Fe	S	0
			8	4	4	
92	S7	1	Total	Fe	S	0
			8	4	4	
92	S8	1	Total	Fe	S	0
			8	4	4	
92	S8	1	Total	Fe	S	0
			8	4	4	
92	V1	1	Total	Fe	S	0
			8	4	4	

- Molecule 93 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
93	1A	1	Total K 1 1	0

- Molecule 94 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: $C_{44}H_{88}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
94	4A	1	Total	C	H	N	O	P	0
			118	37	71	1	8	1	
94	4A	1	Total	C	H	N	O	P	0
			112	36	66	1	8	1	
94	4E	1	Total	C	H	N	O	P	0
			79	25	44	1	8	1	
94	7A	1	Total	C	H	N	O	P	0
			82	26	46	1	8	1	
94	A1	1	Total	C	H	N	O	P	0
			124	39	75	1	8	1	
94	A1	1	Total	C	H	N	O	P	0
			67	21	36	1	8	1	
94	A9	1	Total	C	H	N	O	P	0
			73	23	40	1	8	1	
94	A9	1	Total	C	H	N	O	P	0
			73	23	40	1	8	1	
94	AL	1	Total	C	H	N	O	P	0
			127	40	77	1	8	1	
94	AM	1	Total	C	H	N	O	P	0
			124	39	75	1	8	1	

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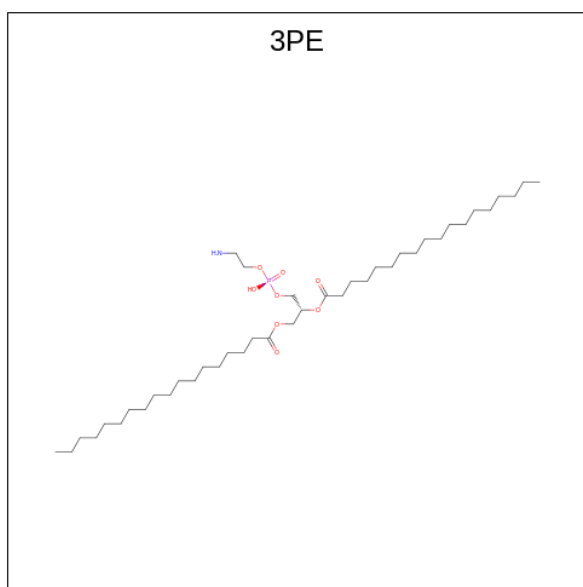
Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
94	AM	1	Total 121	C 38	H 73	N 1	O 8	P 1	0
94	AN	1	Total 121	C 38	H 73	N 1	O 8	P 1	0
94	B5	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	B5	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	B8	1	Total 85	C 27	H 48	N 1	O 8	P 1	0
94	C1	1	Total 127	C 40	H 77	N 1	O 8	P 1	0
94	C3	1	Total 130	C 41	H 79	N 1	O 8	P 1	0
94	E4	1	Total 130	C 41	H 79	N 1	O 8	P 1	0
94	E8	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	E8	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	E8	1	Total 73	C 23	H 40	N 1	O 8	P 1	0
94	E8	1	Total 64	C 20	H 34	N 1	O 8	P 1	0
94	E9	1	Total 79	C 25	H 44	N 1	O 8	P 1	0
94	ED	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	ED	1	Total 97	C 31	H 56	N 1	O 8	P 1	0
94	G2	1	Total 88	C 28	H 50	N 1	O 8	P 1	0
94	N1	1	Total 124	C 39	H 75	N 1	O 8	P 1	0
94	N1	1	Total 94	C 30	H 54	N 1	O 8	P 1	0
94	N3	1	Total 103	C 32	H 61	N 1	O 8	P 1	0
94	N4	1	Total 91	C 29	H 52	N 1	O 8	P 1	0
94	N4	1	Total 73	C 23	H 40	N 1	O 8	P 1	0

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Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
94	N4	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	N5	1	Total 82	C 26	H 46	N 1	O 8	P 1	0
94	QC	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	QD	1	Total 67	C 21	H 36	N 1	O 8	P 1	0
94	QI	1	Total 82	C 26	H 46	N 1	O 8	P 1	0
94	Qc	1	Total 142	C 44	H 88	N 1	O 8	P 1	0
94	Qc	1	Total 67	C 21	H 36	N 1	O 8	P 1	0
94	Qe	1	Total 82	C 26	H 46	N 1	O 8	P 1	0
94	Qg	1	Total 58	C 18	H 30	N 1	O 8	P 1	0
94	Qj	1	Total 142	C 44	H 88	N 1	O 8	P 1	0

- Molecule 95 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: $C_{41}H_{82}NO_8P$).



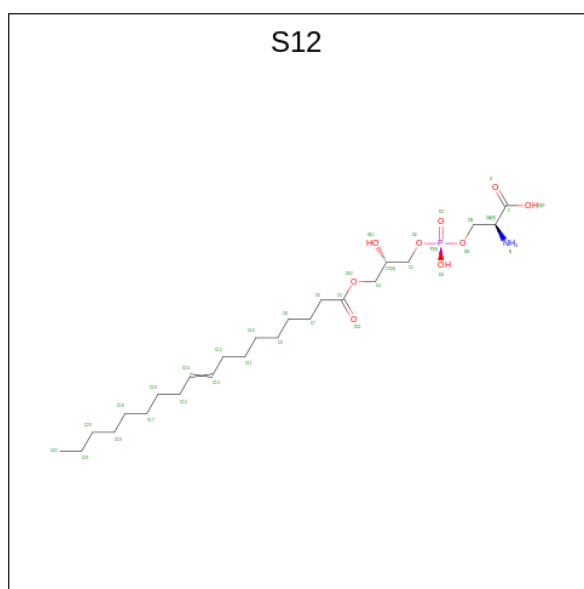
Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
95	4D	1	Total 79	C 25	H 44	N 1	O 8	P 1	0

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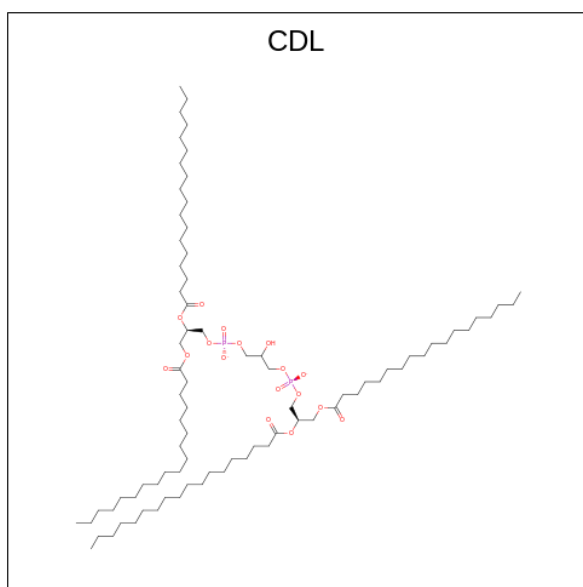
Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
95	4D	1	Total 133	C 41	H 82	N 1	O 8	P 1	0
95	7A	1	Total 100	C 31	H 59	N 1	O 8	P 1	0
95	B4	1	Total 97	C 30	H 57	N 1	O 8	P 1	0
95	C1	1	Total 94	C 30	H 54	N 1	O 8	P 1	0
95	C1	1	Total 94	C 30	H 54	N 1	O 8	P 1	0
95	E9	1	Total 133	C 41	H 82	N 1	O 8	P 1	0
95	N4	1	Total 97	C 31	H 56	N 1	O 8	P 1	0
95	N5	1	Total 133	C 41	H 82	N 1	O 8	P 1	0

- Molecule 96 is O-[(S)-hydroxy{[(2S)-2-hydroxy-3-(octadec-9-enoyloxy)propyl]oxy}phosphoryl]-L-serine (three-letter code: S12) (formula: C₂₄H₄₆NO₉P).



Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
96	4D	1	Total 79	C 24	H 44	N 1	O 9	P 1	0

- Molecule 97 is CARDIOLIPIN (three-letter code: CDL) (formula: C₈₁H₁₅₆O₁₇P₂).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	H	O	P	
97	4E	1	Total 163	C 53	H 91	O 17	P 2	0
97	7C	1	Total 220	C 71	H 130	O 17	P 2	0
97	A3	1	Total 118	C 39	H 60	O 17	P 2	0
97	A9	1	Total 136	C 45	H 72	O 17	P 2	0
97	AL	1	Total 148	C 49	H 80	O 17	P 2	0
97	AL	1	Total 136	C 45	H 72	O 17	P 2	0
97	AM	1	Total 163	C 53	H 91	O 17	P 2	0
97	AM	1	Total 163	C 53	H 91	O 17	P 2	0
97	B3	1	Total 139	C 46	H 74	O 17	P 2	0
97	B8	1	Total 157	C 51	H 87	O 17	P 2	0
97	BM	1	Total 118	C 39	H 60	O 17	P 2	0
97	C4	1	Total 235	C 75	H 141	O 17	P 2	0
97	C4	1	Total 151	C 50	H 82	O 17	P 2	0
97	C4	1	Total 247	C 79	H 149	O 17	P 2	0

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Mol	Chain	Residues	Atoms					AltConf
			Total	C	H	O	P	
97	E4	1	Total 163	C 53	H 91	O 17	P 2	0
97	E6	1	Total 118	C 39	H 60	O 17	P 2	0
97	E7	1	Total 148	C 49	H 80	O 17	P 2	0
97	EA	1	Total 121	C 40	H 62	O 17	P 2	0
97	EA	1	Total 109	C 36	H 54	O 17	P 2	0
97	N1	1	Total 154	C 51	H 84	O 17	P 2	0
97	N5	1	Total 229	C 74	H 136	O 17	P 2	0
97	QC	1	Total 112	C 37	H 56	O 17	P 2	0
97	QD	1	Total 151	C 50	H 82	O 17	P 2	0
97	QH	1	Total 175	C 57	H 99	O 17	P 2	0
97	QH	1	Total 124	C 41	H 64	O 17	P 2	0
97	QJ	1	Total 118	C 39	H 60	O 17	P 2	0
97	Qc	1	Total 106	C 35	H 52	O 17	P 2	0
97	Qd	1	Total 256	C 81	H 156	O 17	P 2	0
97	Qe	1	Total 124	C 41	H 64	O 17	P 2	0
97	Qh	1	Total 139	C 46	H 74	O 17	P 2	0
97	Qj	1	Total 88	C 29	H 40	O 17	P 2	0

- Molecule 98 is ZINC ION (three-letter code: ZN) (formula: Zn).

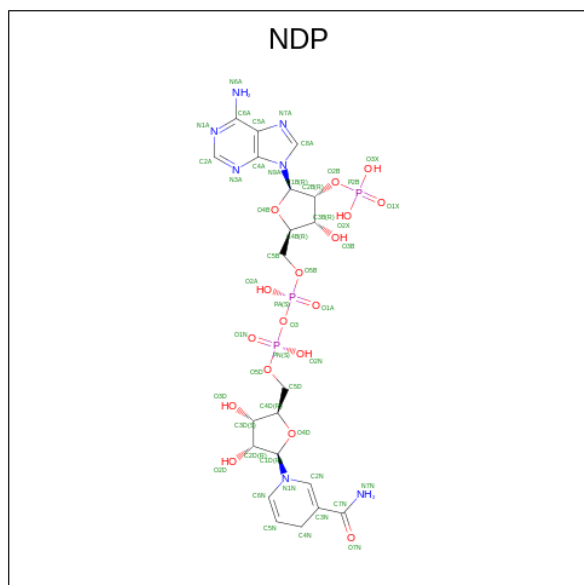
Mol	Chain	Residues	Atoms		AltConf
98	5B	1	Total 1	Zn 1	0
98	E7	1	Total 1	Zn 1	0

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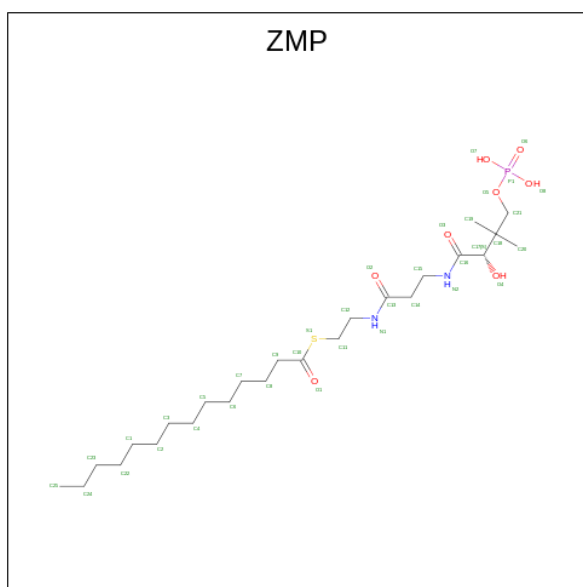
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
98	S6	1	1	1	0

- Molecule 99 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).



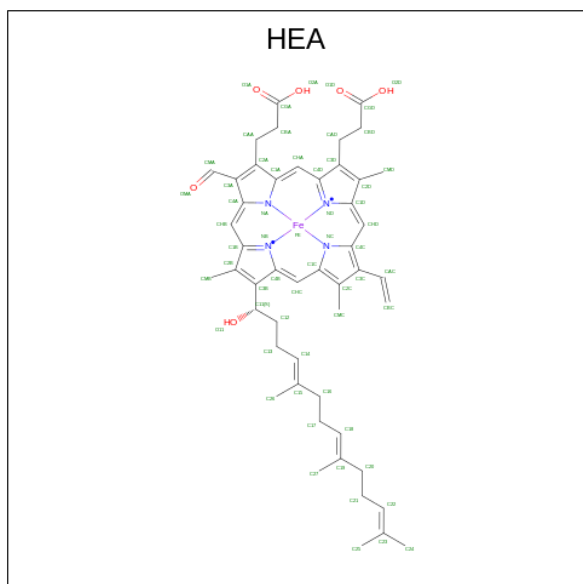
Mol	Chain	Residues	Atoms					AltConf	
			Total	C	H	N	O		P
99	A9	1	74	21	26	7	17	3	0

- Molecule 100 is S-[2-({N-[(2S)-2-hydroxy-3,3-dimethyl-4-(phosphonoxy)butanoyl]-beta-alanyl}amino)ethyl] tetradecanethioate (three-letter code: ZMP) (formula: $C_{25}H_{49}N_2O_8PS$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf	
			Total	C	N	O	P		S
100	AB	1	36	25	2	7	1	1	0
100	AC	1	36	25	2	7	1	1	0

- Molecule 101 is HEME-A (three-letter code: HEA) (formula: C₄₉H₅₆FeN₄O₆) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf	
			Total	C	Fe	N		O
101	C1	1	60	49	1	4	6	0

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Mol	Chain	Residues	Atoms				AltConf	
			Total	C	Fe	N		O
101	C1	1	60	49	1	4	6	0

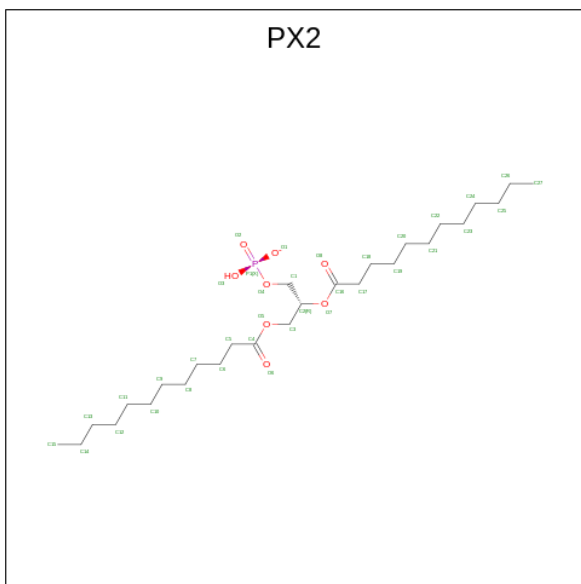
- Molecule 102 is COPPER (II) ION (three-letter code: CU) (formula: Cu) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Cu	
102	C1	1	1	1	0
102	C2	2	2	2	0

- Molecule 103 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
103	C1	1	1	1	0

- Molecule 104 is 1,2-DILAUROYL-SN-GLYCERO-3-PHOSPHATE (three-letter code: PX2) (formula: C₂₇H₅₂O₈P).



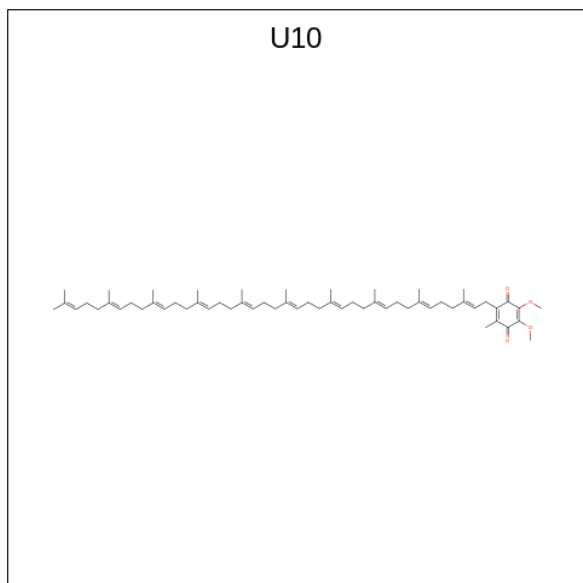
Mol	Chain	Residues	Atoms				AltConf
			Total	C	O	P	
104	C2	1	36	27	8	1	0

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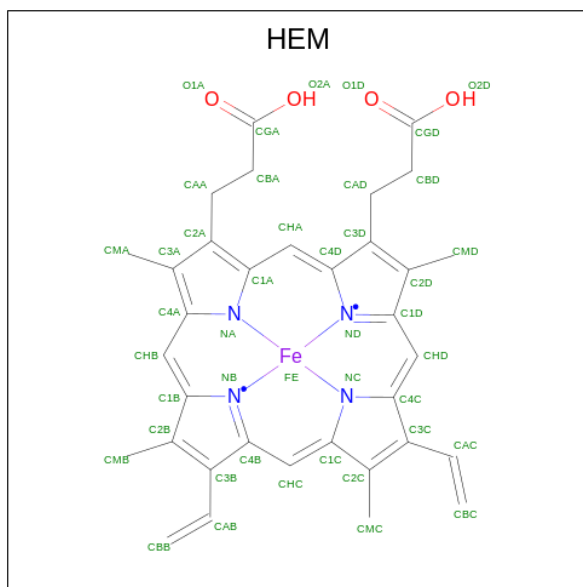
Mol	Chain	Residues	Atoms				AltConf
			Total	C	O	P	
104	QJ	1	36	27	8	1	0
104	QJ	1	36	27	8	1	0

- Molecule 105 is UBIQUINONE-10 (three-letter code: U10) (formula: $C_{59}H_{90}O_4$) (labeled as "Ligand of Interest" by depositor).



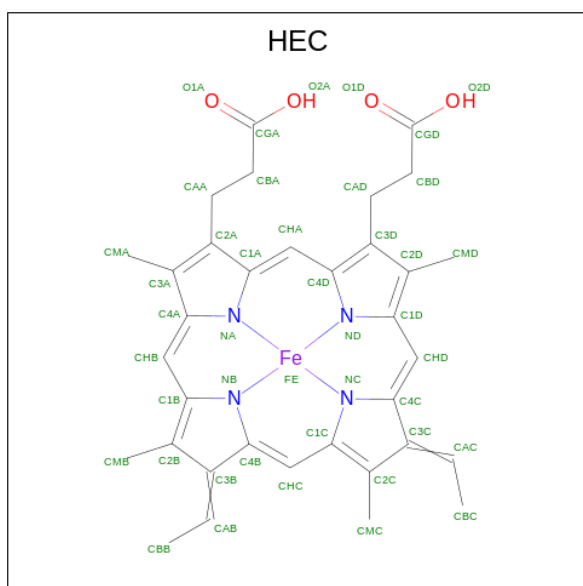
Mol	Chain	Residues	Atoms				AltConf
			Total	C	H	O	
105	N4	1	98	39	55	4	0

- Molecule 106 is PROTOPORPHYRIN IX CONTAINING FE (three-letter code: HEM) (formula: $C_{34}H_{32}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



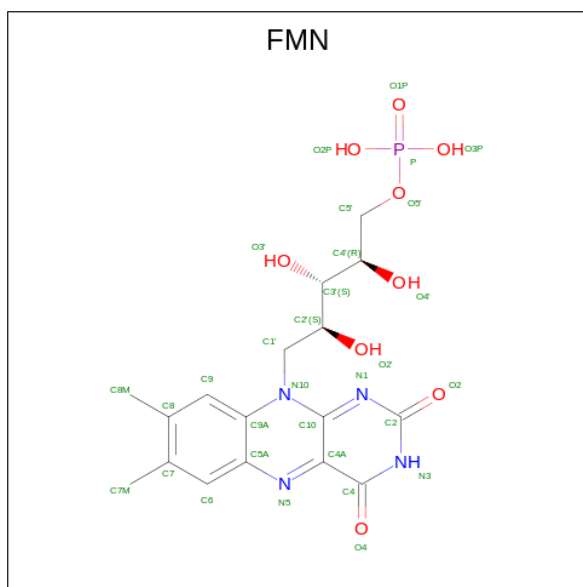
Mol	Chain	Residues	Atoms				AltConf	
			Total	C	Fe	N		O
106	QC	1	43	34	1	4	4	0
106	QC	1	43	34	1	4	4	0
106	Qc	1	43	34	1	4	4	0
106	Qc	1	43	34	1	4	4	0

- Molecule 107 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf	
107	QD	1	Total	C	Fe	N	O	0
			43	34	1	4	4	
107	Qd	1	Total	C	Fe	N	O	0
			43	34	1	4	4	

- Molecule 108 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C₁₇H₂₁N₄O₉P) (labeled as "Ligand of Interest" by depositor).

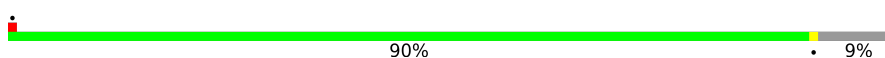


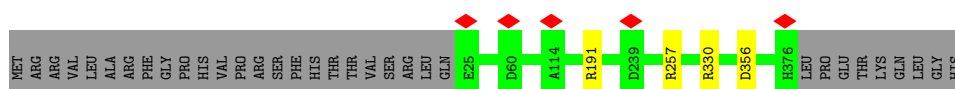
Mol	Chain	Residues	Atoms					AltConf	
108	V1	1	Total	C	H	N	O	P	0
			50	17	19	4	9	1	

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

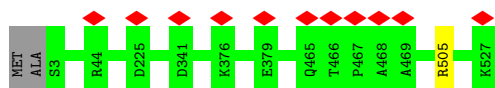
- Molecule 1: NDUFS1a

Chain 1A:  90% 9%



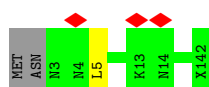
- Molecule 2: NDUFS1b

Chain 1B:  99%




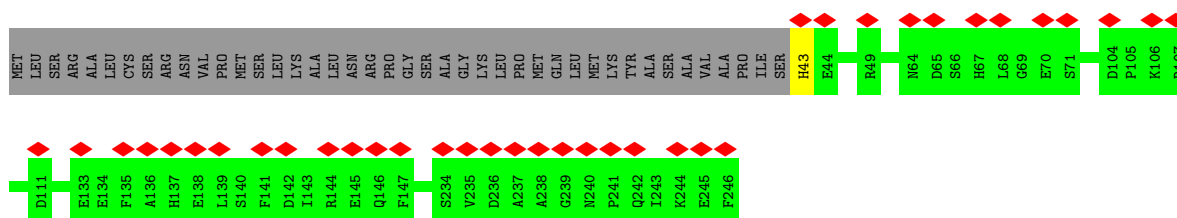
- Molecule 3: ND2b

Chain 2B:  98%



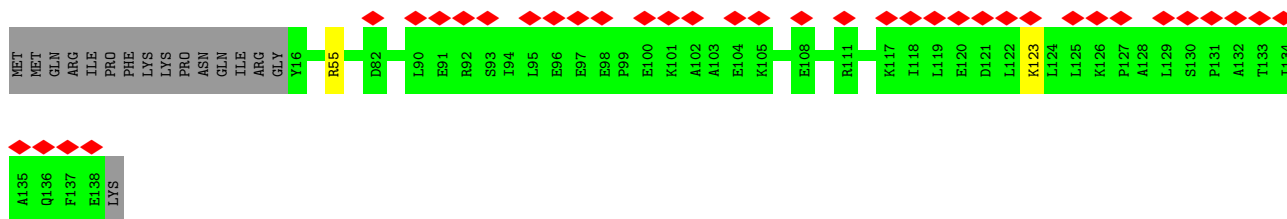
- Molecule 4: COXEG1

Chain 4A:  15% 83% 17%

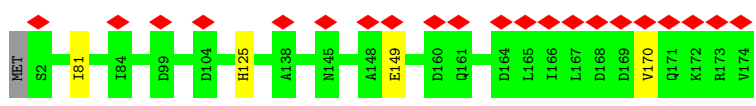


- Molecule 5: COXEG3

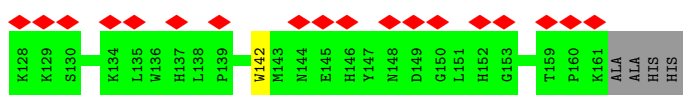
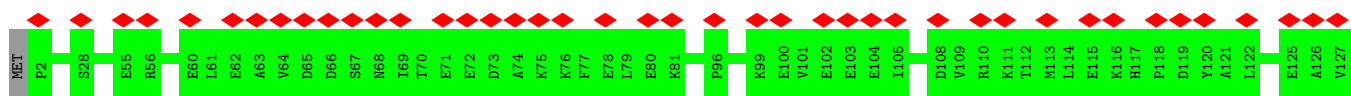
Chain 4C:  26% 87% 12%



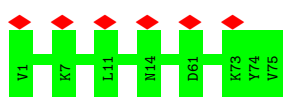
• Molecule 6: COXEG4



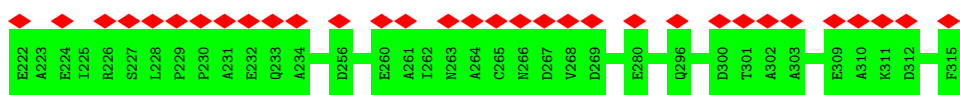
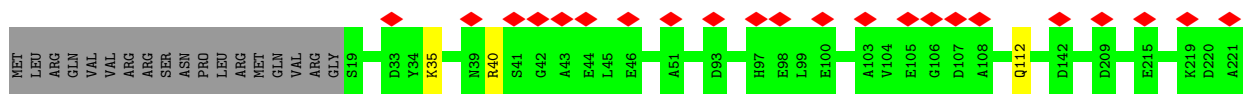
• Molecule 7: COXEG5



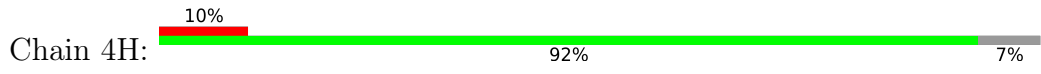
• Molecule 8: COXEG6

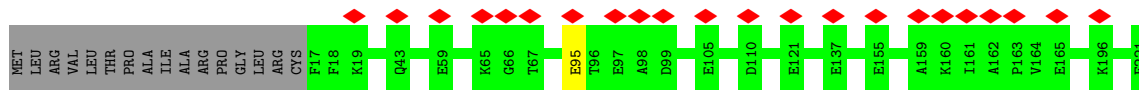


• Molecule 9: COXEG7



• Molecule 10: COXEG8

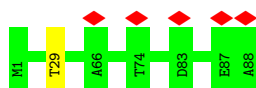




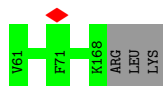
• Molecule 11: COXEG9



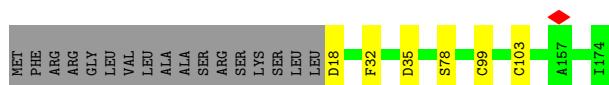
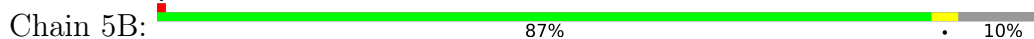
• Molecule 12: COXEG10



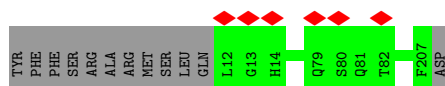
• Molecule 13: ND4L



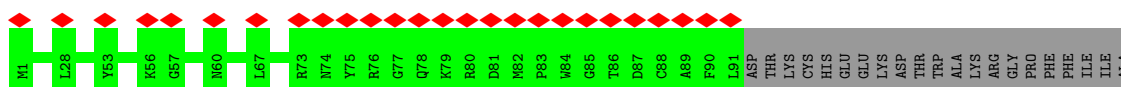
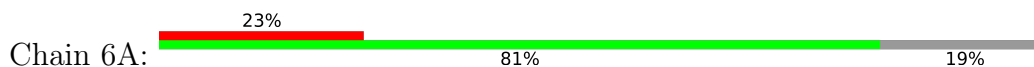
• Molecule 14: COX5b-2



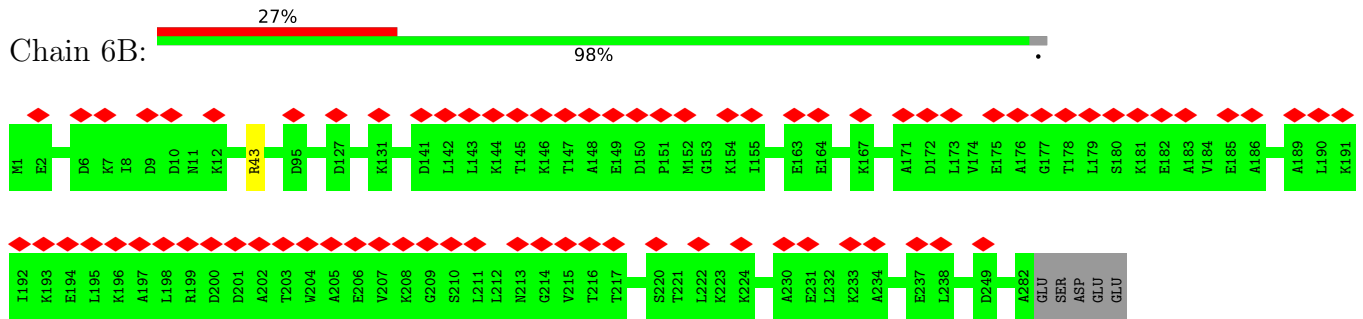
• Molecule 15: COX5c



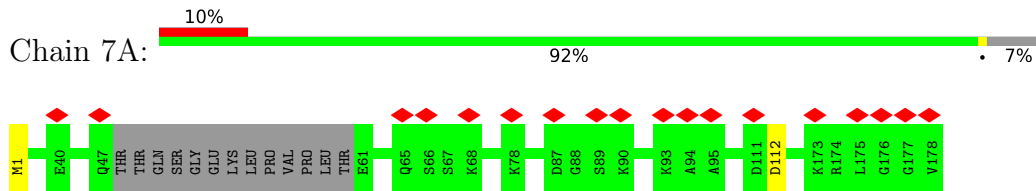
• Molecule 16: COX6a



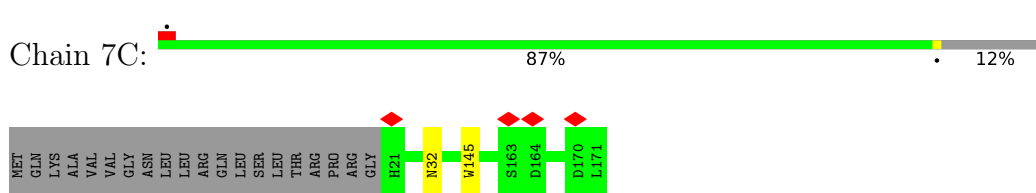
- Molecule 17: COX6b-1



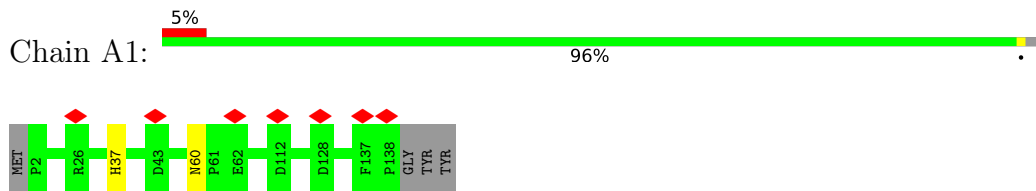
- Molecule 18: COX7a



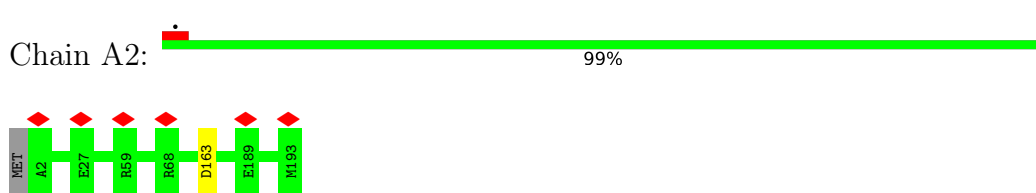
- Molecule 19: COX7c



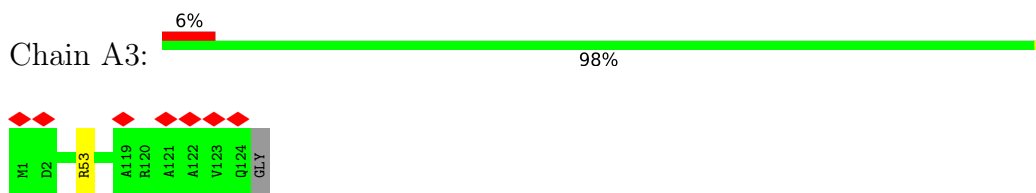
- Molecule 20: NDUFA1



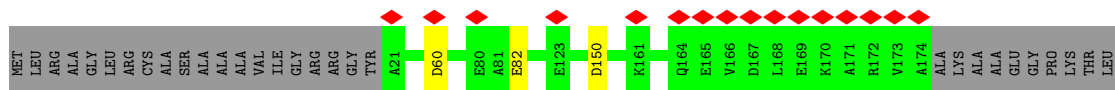
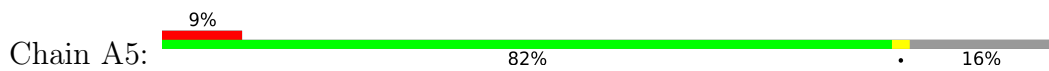
- Molecule 21: NDUFA2



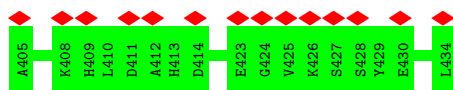
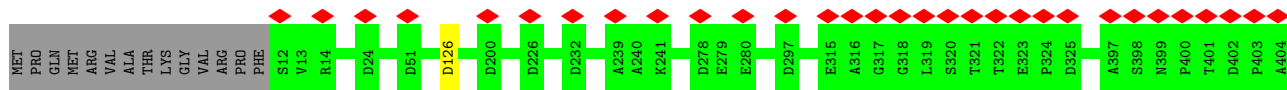
- Molecule 22: NDUFA3



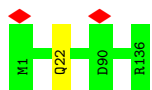
- Molecule 23: NDUFA5



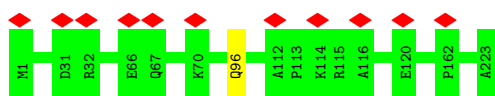
• Molecule 24: NDUFA6



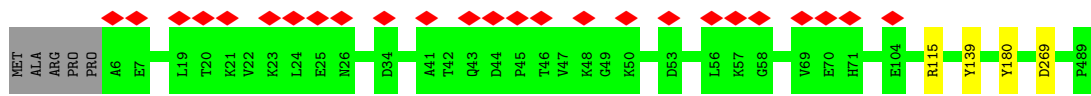
• Molecule 25: NDUFA7



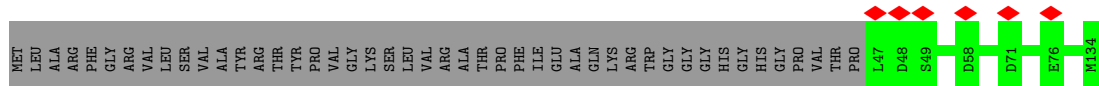
• Molecule 26: NDUFA8



• Molecule 27: NDUFA9

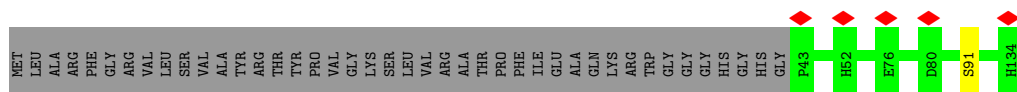


• Molecule 28: NDUFAB1-alpha

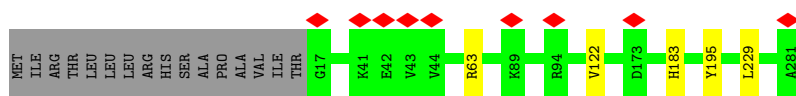


• Molecule 29: NDUFAB1-beta

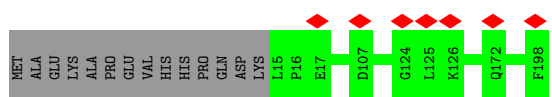




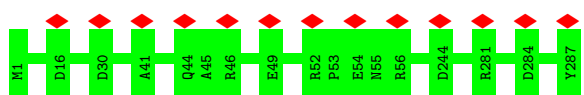
• Molecule 30: NDUFA12



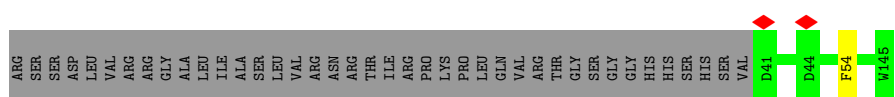
• Molecule 31: NDUFA13



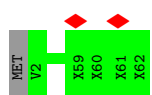
• Molecule 32: NDUFA11



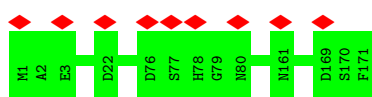
• Molecule 33: NDUFB2



• Molecule 34: NDUFB3



• Molecule 35: NDUFB4



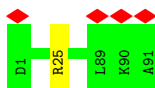
• Molecule 36: NDUFB5

Chain B5:  100%



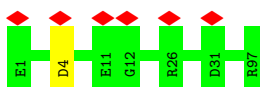
- Molecule 37: NDUFB6

Chain B6:  99%




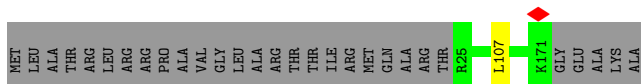
- Molecule 38: NDUFB7

Chain B7:  99%



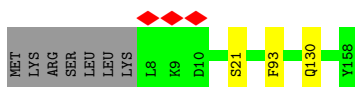
- Molecule 39: NDUFB8

Chain B8:  83% 16%



- Molecule 40: NDUFB9

Chain B9:  94%



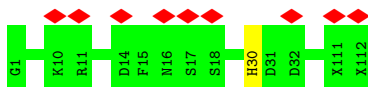
- Molecule 41: NDUFB10

Chain BL:  99%

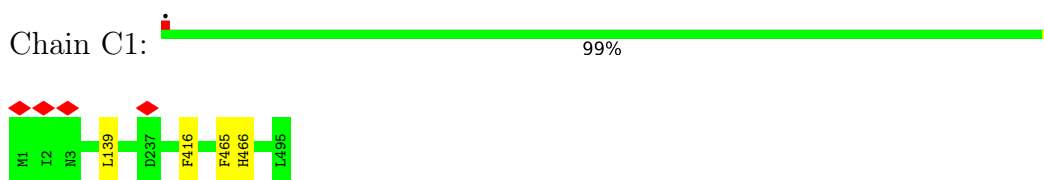


- Molecule 42: NDUFB11

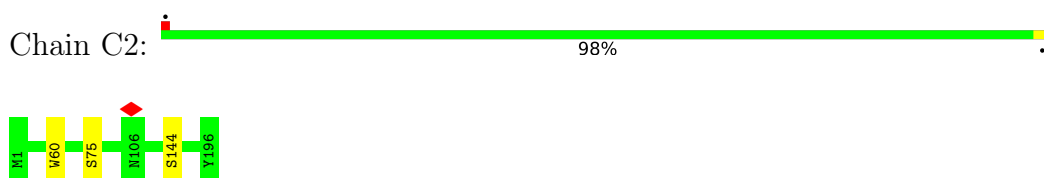
Chain BM:  99%



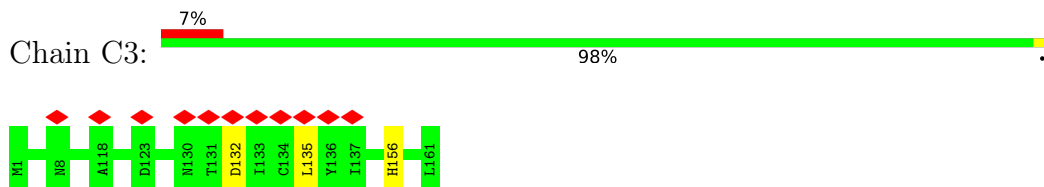
- Molecule 43: Cytochrome c oxidase subunit 1



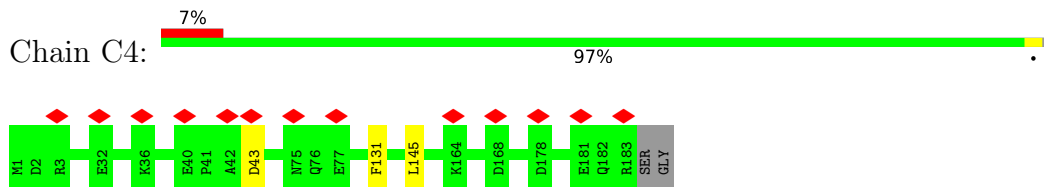
- Molecule 44: Cytochrome c oxidase subunit 2



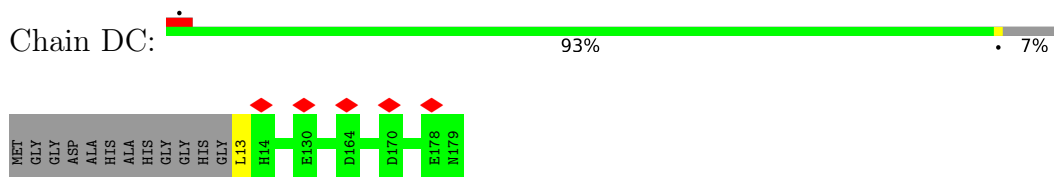
- Molecule 45: Putative NADH dehydrogenase subunit 6



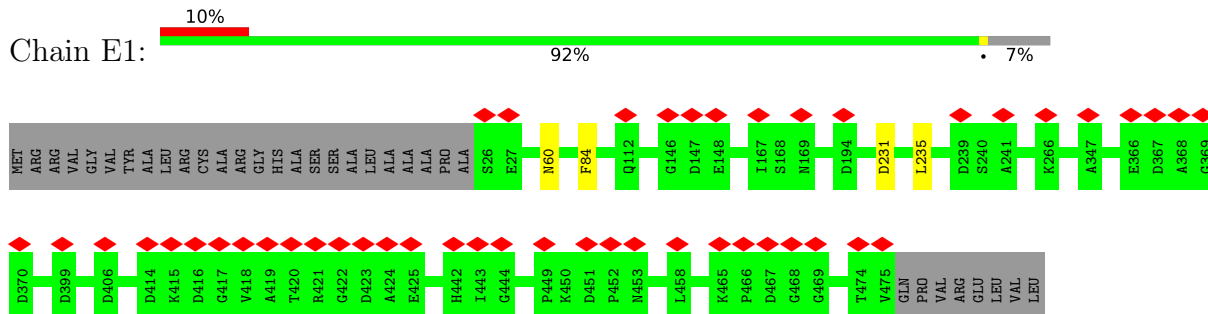
- Molecule 46: NDUFC2



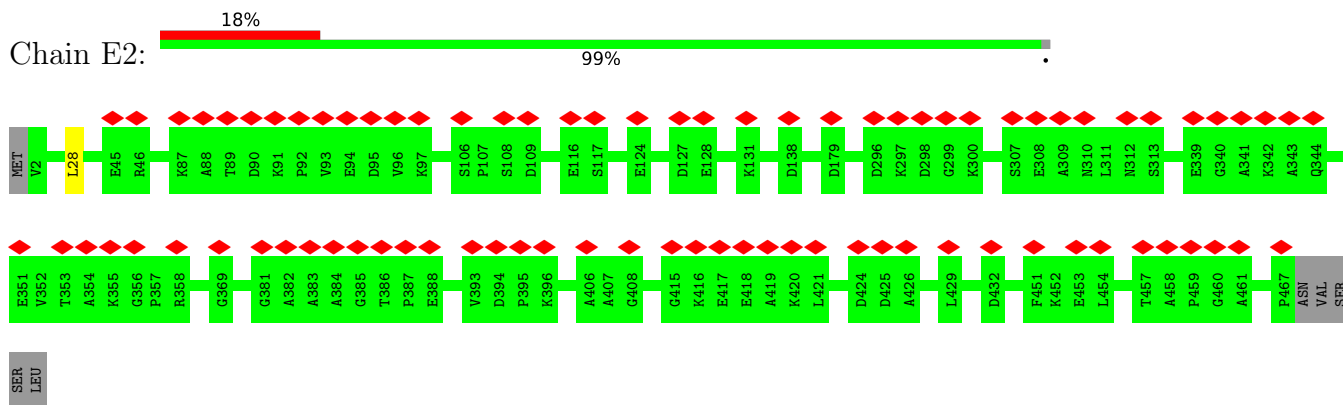
- Molecule 47: COX4



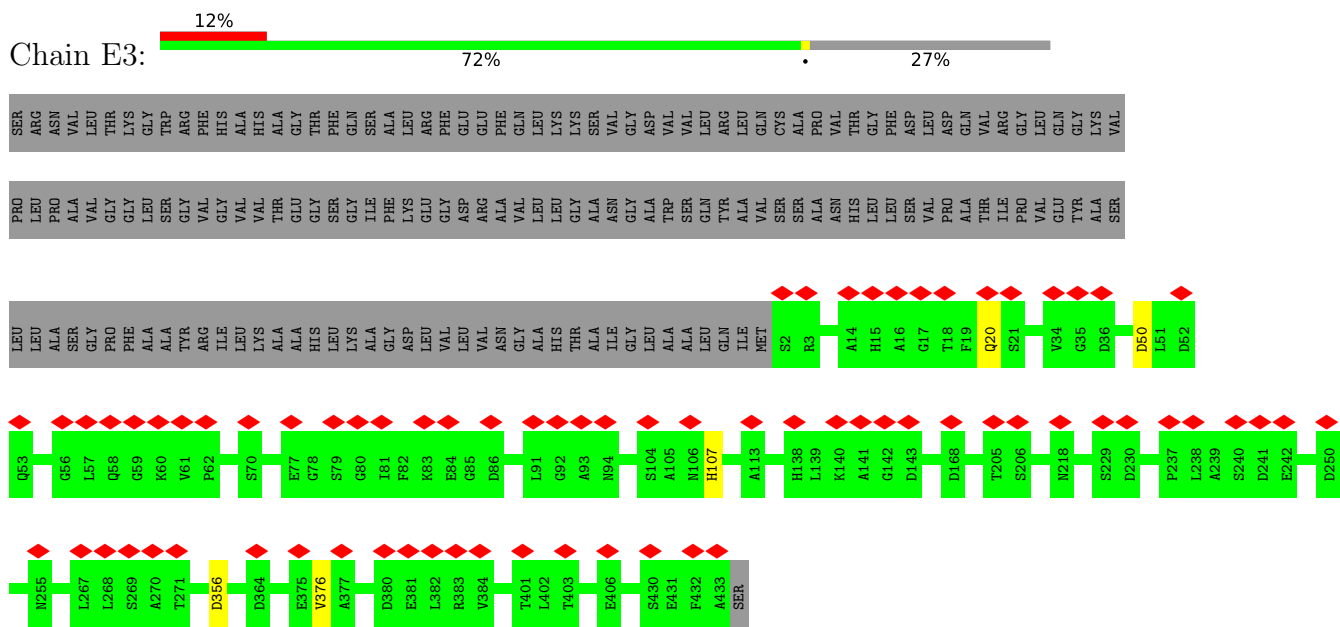
- Molecule 48: NDUEG1



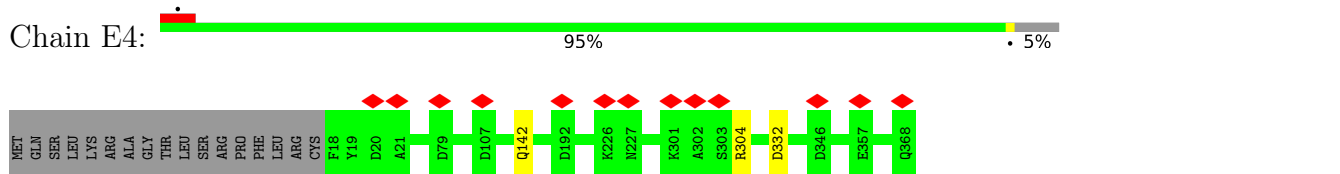
- Molecule 49: NDUEG2



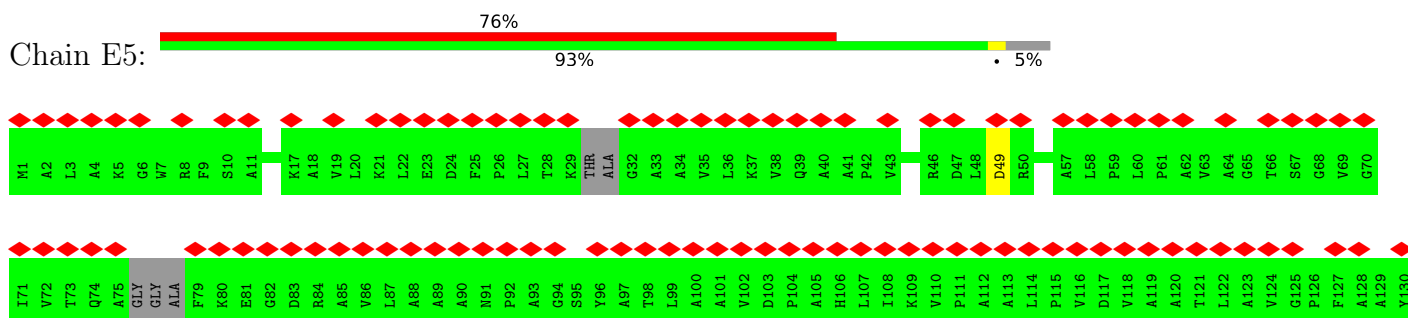
• Molecule 50: NDUEG3

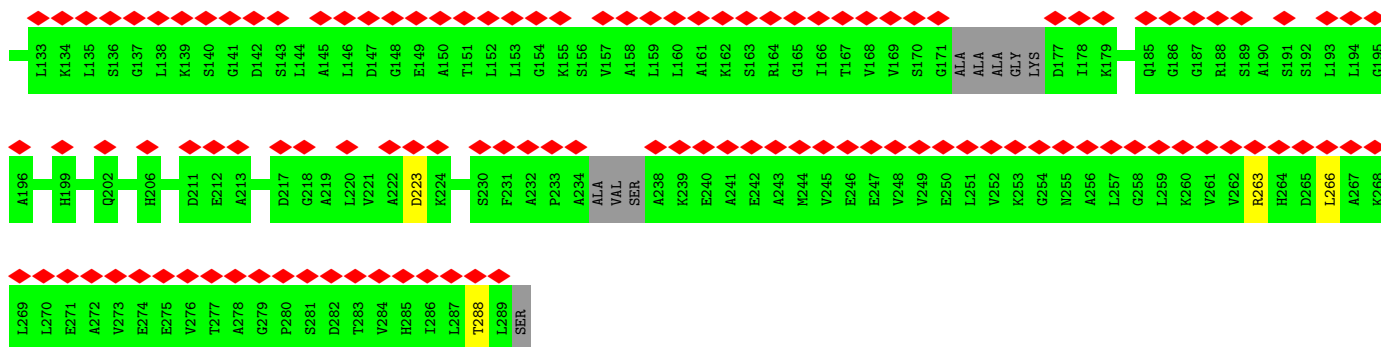


• Molecule 51: NDUEG4

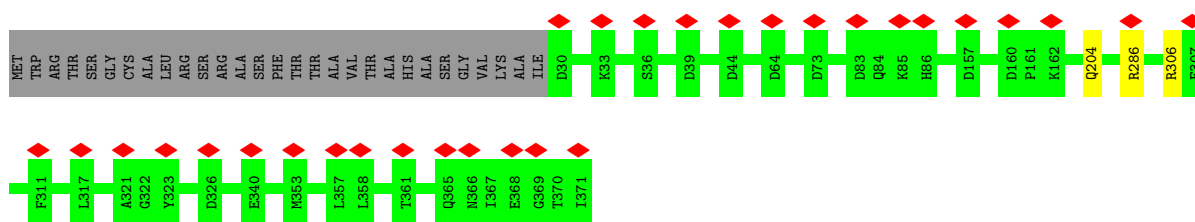
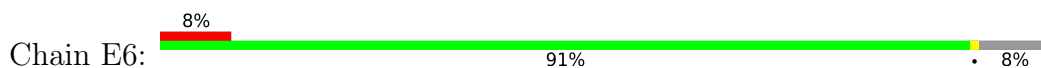


• Molecule 52: NDUEG5

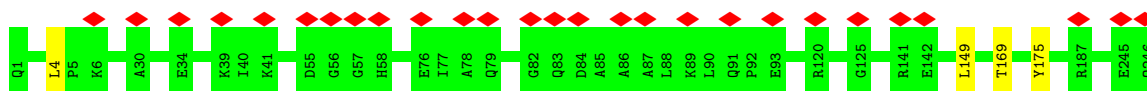




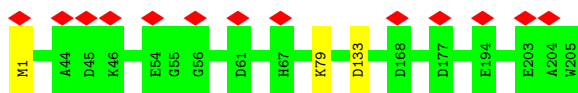
• Molecule 53: NDUEG6



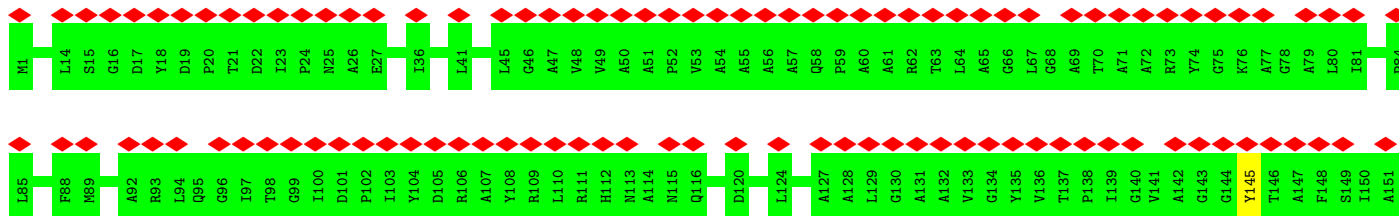
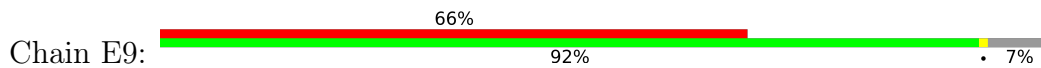
• Molecule 54: NDUEG7

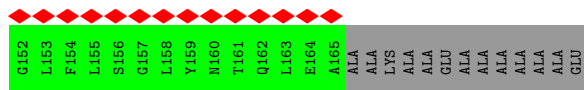


• Molecule 55: NDUEG8

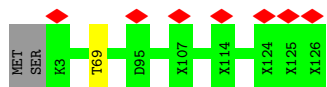


• Molecule 56: NDUEG9





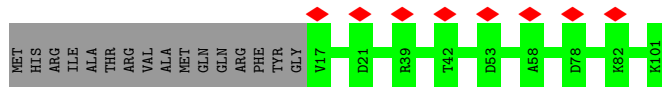
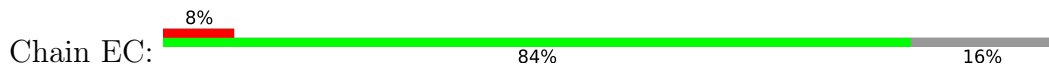
• Molecule 57: NDUEG10



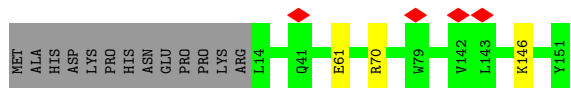
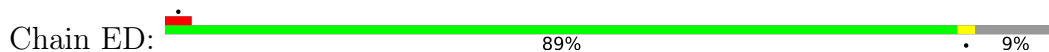
• Molecule 58: NDUEG11



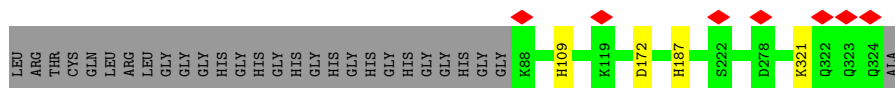
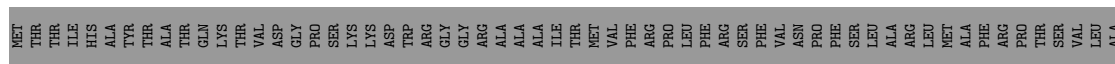
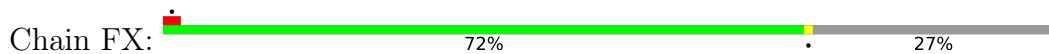
• Molecule 59: NDUEG11



• Molecule 60: NDUEG13



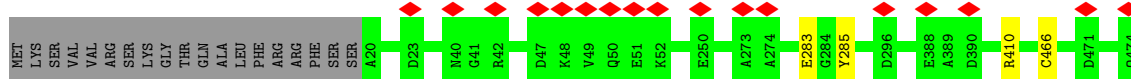
• Molecule 61: NDUFX




• Molecule 62: NDUCA1

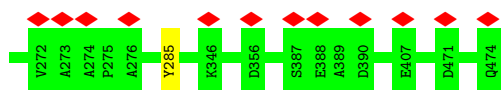
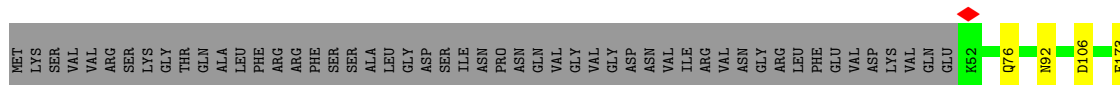


Chain QB:  95%



- Molecule 71: Ubiquinol-cytochrome-c reductase complex core protein 2, mitochondrial

Chain Qb:  88%



- Molecule 72: Cytochrome b

Chain QC:  98%



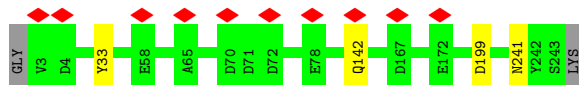
- Molecule 72: Cytochrome b

Chain Qc:  98%



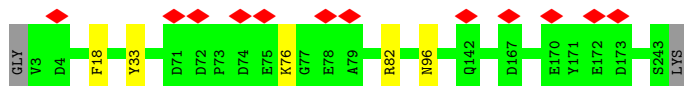
- Molecule 73: Cytochrome c1, heme protein

Chain QD:  98%

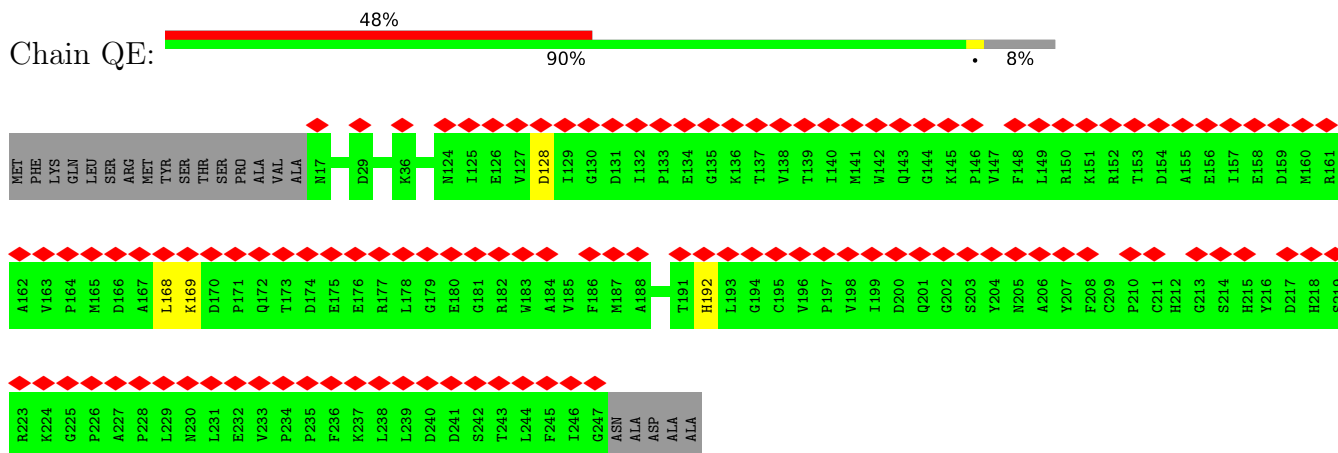


- Molecule 73: Cytochrome c1, heme protein

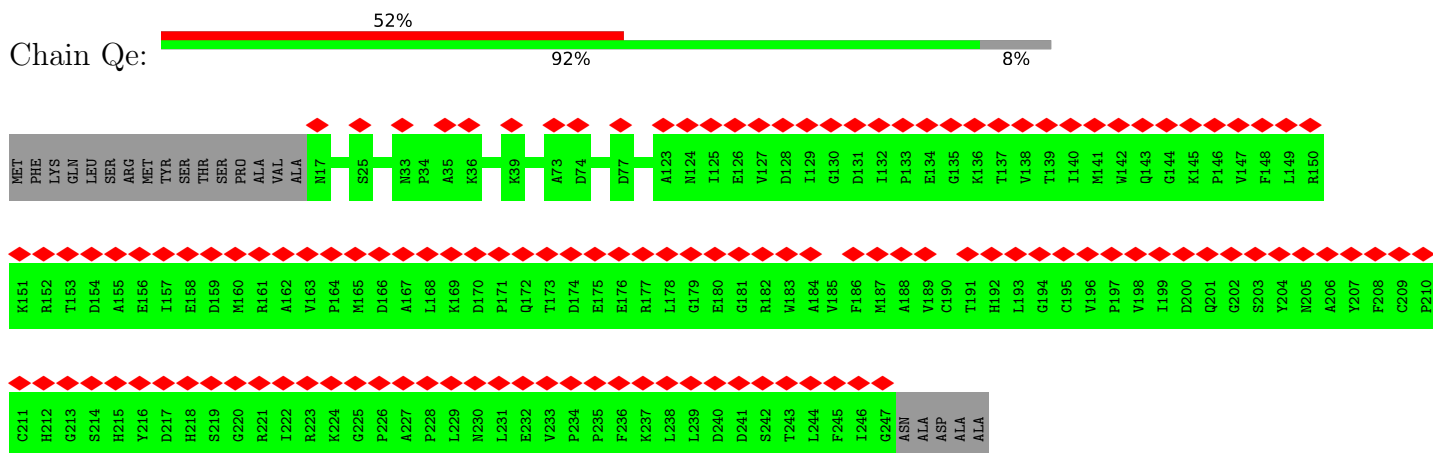
Chain Qd:  97%



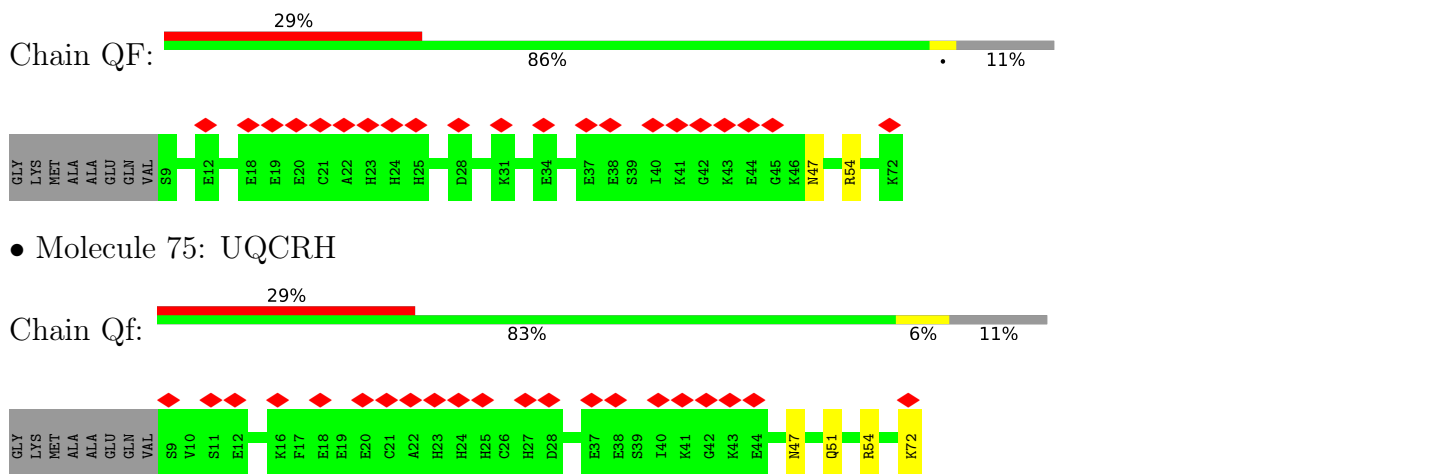
- Molecule 74: UQCRFS1



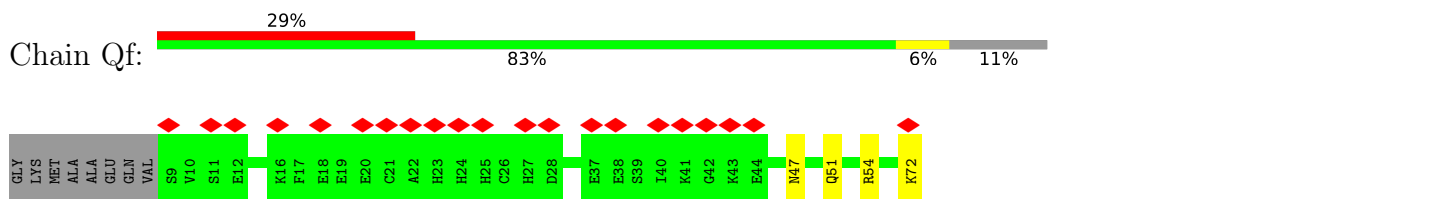
• Molecule 74: UQCRFS1



• Molecule 75: UQCRH

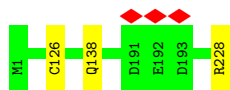


• Molecule 75: UQCRH



• Molecule 76: UQCRB





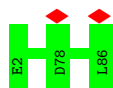
• Molecule 76: UQCRB



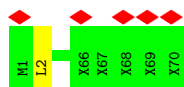
• Molecule 77: UQCRQ



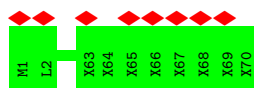
• Molecule 77: UQCRQ



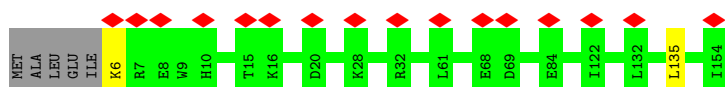
• Molecule 78: UQCR9



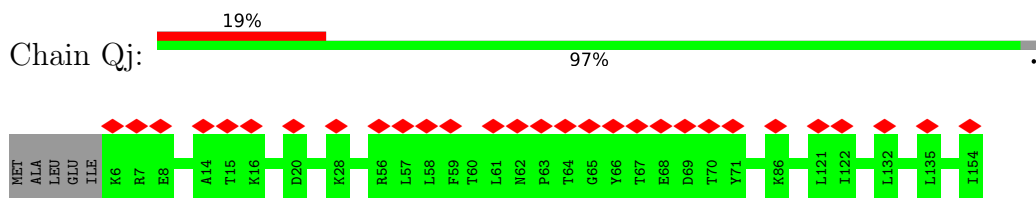
• Molecule 78: UQCR9



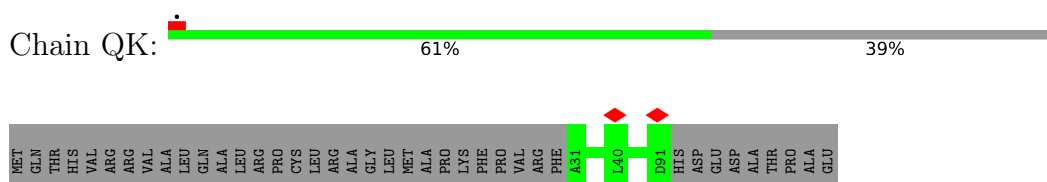
• Molecule 79: UQCR10



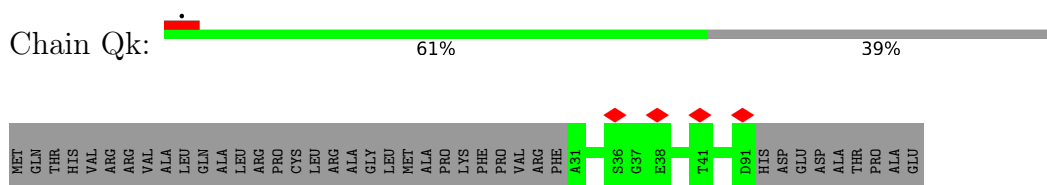
- Molecule 79: UQCR10



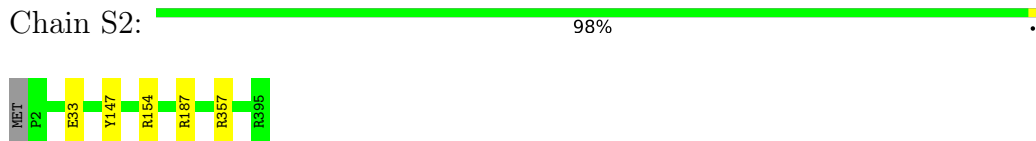
- Molecule 80: Ubiquinol-cytochrome-C reductase complex subunit IX, mitochondrial



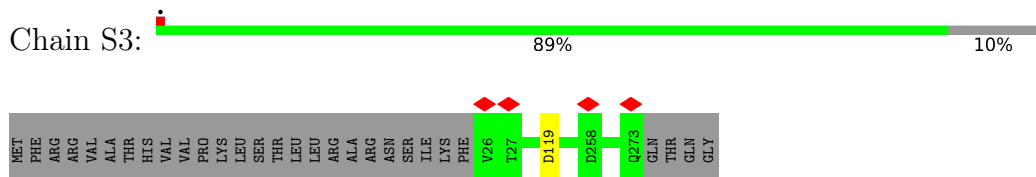
- Molecule 80: Ubiquinol-cytochrome-C reductase complex subunit IX, mitochondrial



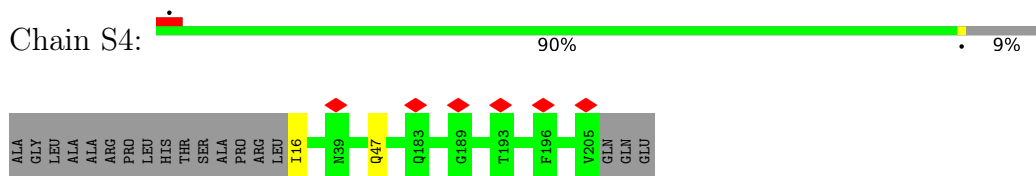
- Molecule 81: NDUFS2



- Molecule 82: NDUFS3

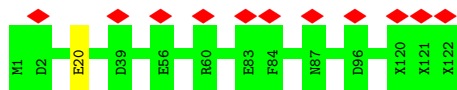


- Molecule 83: NDUFS4



- Molecule 84: NDUFS5

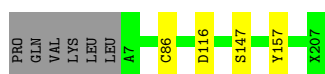




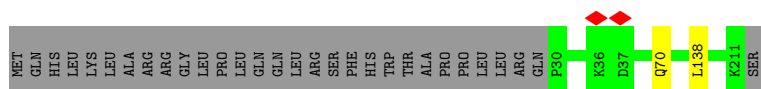
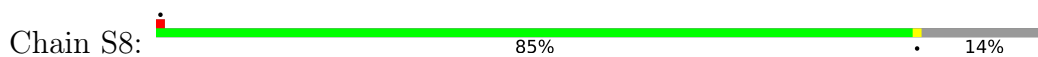
• Molecule 85: NDUFS6



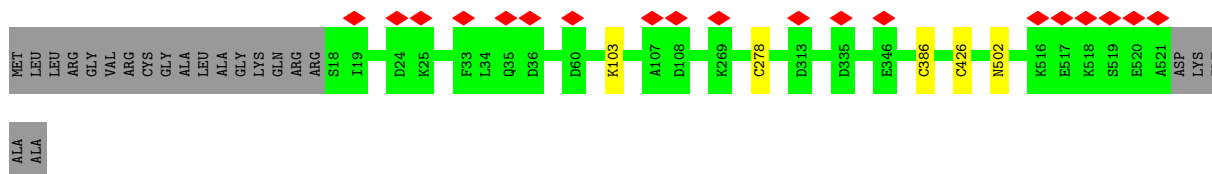
• Molecule 86: NDUFS7



• Molecule 87: NDUFS8



• Molecule 88: NDUFV1



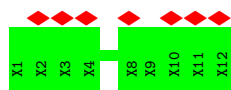
• Molecule 89: NDUFV2



• Molecule 90: poly(UNK)



- Molecule 90: poly(UNK)



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	345048	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	51.5	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	105000	Depositor
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	37.689	Depositor
Minimum map value	-25.803	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	1.049	Depositor
Recommended contour level	5.0	Depositor
Map size (\AA)	537.60004, 537.60004, 537.60004	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.2, 1.2, 1.2	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: U10, 2MR, NDP, 3PE, S12, CDL, K, HEC, SF4, PC1, CU, FMN, ZN, PX2, HEM, MG, HEA, ZMP, FES

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	1A	0.37	0/2858	0.54	0/3878
2	1B	0.35	0/4306	0.51	0/5854
3	2B	0.37	0/958	0.47	0/1306
4	4A	0.29	0/1650	0.44	0/2235
5	4C	0.33	0/1051	0.46	0/1432
6	4D	0.30	0/1379	0.50	0/1867
7	4E	0.28	0/1376	0.45	0/1864
8	4F	0.35	0/641	0.43	0/867
9	4G	0.31	0/2391	0.50	0/3240
10	4H	0.31	0/1640	0.44	0/2224
11	4I	0.36	0/2255	0.50	0/3059
12	4J	0.34	0/736	0.50	0/1008
13	4L	0.37	0/924	0.46	0/1261
14	5B	0.42	1/1294 (0.1%)	0.51	0/1759
15	5C	0.39	0/1616	0.47	0/2192
16	6A	0.30	0/777	0.45	0/1055
17	6B	0.31	0/2343	0.45	0/3174
18	7A	0.31	0/1359	0.51	0/1835
19	7C	0.38	0/1299	0.47	0/1777
20	A1	0.31	0/1108	0.48	0/1511
21	A2	0.31	0/1530	0.51	0/2089
22	A3	0.35	0/1079	0.54	0/1453
23	A5	0.34	0/1282	0.51	0/1737
24	A6	0.32	0/3395	0.51	0/4608
25	A7	0.35	0/1194	0.56	0/1619
26	A8	0.32	0/1879	0.47	0/2543
27	A9	0.35	0/3920	0.52	0/5335
28	AB	0.32	0/704	0.44	0/951
29	AC	0.35	0/736	0.45	0/1000
30	AL	0.36	0/2317	0.55	0/3136
31	AM	0.34	0/1533	0.49	0/2079

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	AN	0.34	0/2382	0.49	0/3249
33	B2	0.36	0/947	0.44	0/1291
34	B3	0.37	0/326	0.52	0/441
35	B4	0.36	0/1419	0.50	0/1922
36	B5	0.35	0/1111	0.52	0/1505
37	B6	0.38	0/803	0.48	0/1087
38	B7	0.35	0/877	0.54	0/1172
39	B8	0.37	0/1273	0.46	0/1733
40	B9	0.36	0/1274	0.49	0/1728
41	BL	0.36	0/1266	0.51	0/1710
42	BM	0.34	0/876	0.55	0/1192
43	C1	0.38	0/4054	0.50	0/5516
44	C2	0.36	0/1620	0.51	0/2207
45	C3	0.35	0/1416	0.45	0/1945
46	C4	0.34	0/1592	0.49	0/2158
47	DC	0.36	0/1410	0.51	0/1914
48	E1	0.32	0/3596	0.49	0/4879
49	E2	0.30	0/3658	0.49	0/4983
50	E3	0.29	0/3320	0.47	0/4520
51	E4	0.32	0/2850	0.49	0/3884
52	E5	0.26	0/2004	0.50	0/2721
53	E6	0.33	0/2954	0.49	0/4004
54	E7	0.31	0/1931	0.50	0/2618
55	E8	0.36	0/1747	0.51	0/2367
56	E9	0.27	0/1239	0.47	0/1690
57	EA	0.35	0/858	0.46	0/1163
58	EB	0.31	0/650	0.52	0/863
59	EC	0.31	0/676	0.46	0/925
60	ED	0.32	0/1176	0.51	0/1590
61	FX	0.37	0/2035	0.49	0/2763
62	G1	0.35	0/3443	0.52	0/4686
63	G2	0.33	0/1832	0.54	0/2476
64	G3	0.32	0/1957	0.54	0/2646
65	N1	0.36	0/2672	0.47	0/3639
66	N2	0.42	0/2582	0.45	0/3530
67	N3	0.40	0/1068	0.45	0/1456
67	N6	0.33	0/1275	0.46	0/1730
68	N4	0.38	0/4105	0.46	0/5594
69	N5	0.38	0/4963	0.48	0/6758
70	QA	0.34	0/3838	0.52	0/5193
70	Qa	0.32	0/3838	0.51	0/5193
71	QB	0.33	0/3532	0.48	0/4805
71	Qb	0.34	0/3288	0.48	0/4474

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
72	QC	0.37	0/3058	0.48	0/4178
72	Qc	0.37	0/3058	0.47	0/4178
73	QD	0.37	0/2027	0.49	0/2760
73	Qd	0.36	0/2027	0.51	0/2760
74	QE	0.31	0/1842	0.51	0/2502
74	Qe	0.30	0/1842	0.51	0/2502
75	QF	0.28	0/526	0.41	0/702
75	Qf	0.27	0/526	0.40	0/702
76	QG	0.39	0/1987	0.54	0/2696
76	Qg	0.38	0/1987	0.54	0/2696
77	QH	0.34	0/717	0.55	0/966
77	Qh	0.33	0/717	0.56	0/966
78	QI	0.38	0/251	0.44	0/340
78	Qi	0.35	0/251	0.43	0/340
79	QJ	0.31	0/1243	0.52	0/1693
79	Qj	0.30	0/1243	0.51	0/1693
80	QK	0.34	0/498	0.48	0/677
80	Qk	0.34	0/498	0.47	0/677
81	S2	0.40	0/3244	0.54	0/4403
82	S3	0.39	0/2112	0.54	0/2874
83	S4	0.34	0/1573	0.59	0/2107
84	S5	0.31	0/960	0.47	0/1291
85	S6	0.35	0/1232	0.53	0/1659
86	S7	0.40	0/1558	0.53	0/2120
87	S8	0.40	0/1485	0.53	0/2010
88	V1	0.32	0/3990	0.51	0/5394
89	V2	0.33	0/1787	0.49	0/2428
All	All	0.35	1/183502 (0.0%)	0.50	0/249182

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
14	5B	99	CYS	CB-SG	5.40	1.91	1.82

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	1A	350/385 (91%)	333 (95%)	17 (5%)	0	100	100
2	1B	523/527 (99%)	509 (97%)	14 (3%)	0	100	100
3	2B	112/142 (79%)	102 (91%)	10 (9%)	0	100	100
4	4A	202/246 (82%)	197 (98%)	5 (2%)	0	100	100
5	4C	121/139 (87%)	119 (98%)	2 (2%)	0	100	100
6	4D	171/174 (98%)	165 (96%)	6 (4%)	0	100	100
7	4E	158/165 (96%)	155 (98%)	3 (2%)	0	100	100
8	4F	73/75 (97%)	70 (96%)	3 (4%)	0	100	100
9	4G	295/315 (94%)	288 (98%)	7 (2%)	0	100	100
10	4H	203/221 (92%)	195 (96%)	8 (4%)	0	100	100
11	4I	263/274 (96%)	256 (97%)	7 (3%)	0	100	100
12	4J	86/88 (98%)	85 (99%)	1 (1%)	0	100	100
13	4L	106/171 (62%)	105 (99%)	1 (1%)	0	100	100
14	5B	155/174 (89%)	152 (98%)	3 (2%)	0	100	100
15	5C	194/208 (93%)	187 (96%)	7 (4%)	0	100	100
16	6A	89/112 (80%)	82 (92%)	7 (8%)	0	100	100
17	6B	280/287 (98%)	276 (99%)	4 (1%)	0	100	100
18	7A	161/178 (90%)	158 (98%)	3 (2%)	0	100	100
19	7C	149/171 (87%)	146 (98%)	3 (2%)	0	100	100
20	A1	135/141 (96%)	126 (93%)	9 (7%)	0	100	100
21	A2	190/193 (98%)	187 (98%)	3 (2%)	0	100	100
22	A3	122/125 (98%)	120 (98%)	2 (2%)	0	100	100
23	A5	152/184 (83%)	147 (97%)	5 (3%)	0	100	100
24	A6	421/437 (96%)	396 (94%)	25 (6%)	0	100	100
25	A7	134/136 (98%)	128 (96%)	6 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	A8	221/223 (99%)	213 (96%)	8 (4%)	0	100	100
27	A9	482/489 (99%)	462 (96%)	20 (4%)	0	100	100
28	AB	86/134 (64%)	86 (100%)	0	0	100	100
29	AC	90/134 (67%)	90 (100%)	0	0	100	100
30	AL	263/281 (94%)	249 (95%)	14 (5%)	0	100	100
31	AM	182/198 (92%)	178 (98%)	4 (2%)	0	100	100
32	AN	285/287 (99%)	279 (98%)	6 (2%)	0	100	100
33	B2	103/145 (71%)	103 (100%)	0	0	100	100
34	B3	32/62 (52%)	30 (94%)	2 (6%)	0	100	100
35	B4	169/171 (99%)	156 (92%)	13 (8%)	0	100	100
36	B5	132/140 (94%)	130 (98%)	2 (2%)	0	100	100
37	B6	89/91 (98%)	87 (98%)	2 (2%)	0	100	100
38	B7	95/97 (98%)	93 (98%)	2 (2%)	0	100	100
39	B8	145/176 (82%)	142 (98%)	3 (2%)	0	100	100
40	B9	149/158 (94%)	143 (96%)	6 (4%)	0	100	100
41	BL	142/144 (99%)	140 (99%)	2 (1%)	0	100	100
42	BM	99/112 (88%)	96 (97%)	3 (3%)	0	100	100
43	C1	493/495 (100%)	474 (96%)	19 (4%)	0	100	100
44	C2	194/196 (99%)	185 (95%)	9 (5%)	0	100	100
45	C3	159/161 (99%)	152 (96%)	7 (4%)	0	100	100
46	C4	181/185 (98%)	175 (97%)	6 (3%)	0	100	100
47	DC	165/179 (92%)	156 (94%)	9 (6%)	0	100	100
48	E1	448/483 (93%)	431 (96%)	17 (4%)	0	100	100
49	E2	464/472 (98%)	447 (96%)	17 (4%)	0	100	100
50	E3	430/594 (72%)	419 (97%)	11 (3%)	0	100	100
51	E4	349/368 (95%)	339 (97%)	10 (3%)	0	100	100
52	E5	266/290 (92%)	246 (92%)	19 (7%)	1 (0%)	34	64
53	E6	340/371 (92%)	336 (99%)	4 (1%)	0	100	100
54	E7	244/246 (99%)	238 (98%)	6 (2%)	0	100	100
55	E8	203/205 (99%)	190 (94%)	13 (6%)	0	100	100
56	E9	163/178 (92%)	149 (91%)	14 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
57	EA	96/126 (76%)	91 (95%)	5 (5%)	0	100	100
58	EB	73/101 (72%)	73 (100%)	0	0	100	100
59	EC	83/101 (82%)	77 (93%)	6 (7%)	0	100	100
60	ED	136/151 (90%)	132 (97%)	4 (3%)	0	100	100
61	FX	235/325 (72%)	224 (95%)	11 (5%)	0	100	100
62	G1	424/436 (97%)	408 (96%)	16 (4%)	0	100	100
63	G2	234/267 (88%)	221 (94%)	13 (6%)	0	100	100
64	G3	253/261 (97%)	238 (94%)	15 (6%)	0	100	100
65	N1	308/670 (46%)	292 (95%)	16 (5%)	0	100	100
66	N2	294/300 (98%)	274 (93%)	20 (7%)	0	100	100
67	N3	119/293 (41%)	116 (98%)	2 (2%)	1 (1%)	19	47
67	N6	152/293 (52%)	145 (95%)	7 (5%)	0	100	100
68	N4	476/478 (100%)	462 (97%)	14 (3%)	0	100	100
69	N5	582/584 (100%)	560 (96%)	22 (4%)	0	100	100
70	QA	476/479 (99%)	462 (97%)	14 (3%)	0	100	100
70	Qa	476/479 (99%)	462 (97%)	14 (3%)	0	100	100
71	QB	453/474 (96%)	443 (98%)	10 (2%)	0	100	100
71	Qb	421/474 (89%)	410 (97%)	11 (3%)	0	100	100
72	QC	362/368 (98%)	350 (97%)	12 (3%)	0	100	100
72	Qc	362/368 (98%)	353 (98%)	9 (2%)	0	100	100
73	QD	239/243 (98%)	224 (94%)	15 (6%)	0	100	100
73	Qd	239/243 (98%)	215 (90%)	24 (10%)	0	100	100
74	QE	229/252 (91%)	218 (95%)	11 (5%)	0	100	100
74	Qe	229/252 (91%)	215 (94%)	14 (6%)	0	100	100
75	QF	62/72 (86%)	61 (98%)	1 (2%)	0	100	100
75	Qf	62/72 (86%)	61 (98%)	1 (2%)	0	100	100
76	QG	226/228 (99%)	219 (97%)	7 (3%)	0	100	100
76	Qg	226/228 (99%)	220 (97%)	6 (3%)	0	100	100
77	QH	83/85 (98%)	81 (98%)	2 (2%)	0	100	100
77	Qh	83/85 (98%)	78 (94%)	5 (6%)	0	100	100
78	QI	28/70 (40%)	28 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
78	Qi	28/70 (40%)	28 (100%)	0	0	100	100
79	QJ	147/154 (96%)	143 (97%)	4 (3%)	0	100	100
79	Qj	147/154 (96%)	138 (94%)	9 (6%)	0	100	100
80	QK	59/100 (59%)	58 (98%)	1 (2%)	0	100	100
80	Qk	59/100 (59%)	58 (98%)	1 (2%)	0	100	100
81	S2	391/395 (99%)	373 (95%)	18 (5%)	0	100	100
82	S3	246/277 (89%)	235 (96%)	11 (4%)	0	100	100
83	S4	188/208 (90%)	179 (95%)	9 (5%)	0	100	100
84	S5	110/122 (90%)	105 (96%)	5 (4%)	0	100	100
85	S6	145/147 (99%)	139 (96%)	6 (4%)	0	100	100
86	S7	195/207 (94%)	187 (96%)	8 (4%)	0	100	100
87	S8	180/212 (85%)	174 (97%)	6 (3%)	0	100	100
88	V1	502/526 (95%)	477 (95%)	25 (5%)	0	100	100
89	V2	220/225 (98%)	212 (96%)	8 (4%)	0	100	100
All	All	22046/24488 (90%)	21217 (96%)	827 (4%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
52	E5	288	THR
67	N3	214	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	1A	310/340 (91%)	306 (99%)	4 (1%)	69	90
2	1B	453/454 (100%)	452 (100%)	1 (0%)	93	98
3	2B	109/111 (98%)	108 (99%)	1 (1%)	78	93
4	4A	173/207 (84%)	172 (99%)	1 (1%)	86	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	4C	112/127 (88%)	110 (98%)	2 (2%)	59	85
6	4D	146/147 (99%)	142 (97%)	4 (3%)	44	77
7	4E	142/145 (98%)	141 (99%)	1 (1%)	84	95
8	4F	62/62 (100%)	62 (100%)	0	100	100
9	4G	247/264 (94%)	244 (99%)	3 (1%)	71	91
10	4H	176/189 (93%)	175 (99%)	1 (1%)	86	95
11	4I	230/238 (97%)	225 (98%)	5 (2%)	52	81
12	4J	75/75 (100%)	74 (99%)	1 (1%)	69	90
13	4L	96/151 (64%)	96 (100%)	0	100	100
14	5B	134/148 (90%)	129 (96%)	5 (4%)	34	66
15	5C	167/178 (94%)	167 (100%)	0	100	100
16	6A	79/97 (81%)	79 (100%)	0	100	100
17	6B	238/243 (98%)	237 (100%)	1 (0%)	91	97
18	7A	138/150 (92%)	136 (99%)	2 (1%)	67	89
19	7C	135/152 (89%)	133 (98%)	2 (2%)	65	88
20	A1	115/118 (98%)	113 (98%)	2 (2%)	60	86
21	A2	159/160 (99%)	158 (99%)	1 (1%)	86	95
22	A3	104/104 (100%)	103 (99%)	1 (1%)	76	92
23	A5	134/152 (88%)	131 (98%)	3 (2%)	52	81
24	A6	346/358 (97%)	345 (100%)	1 (0%)	92	97
25	A7	119/119 (100%)	118 (99%)	1 (1%)	81	94
26	A8	196/196 (100%)	195 (100%)	1 (0%)	88	96
27	A9	420/424 (99%)	416 (99%)	4 (1%)	76	92
28	AB	79/114 (69%)	79 (100%)	0	100	100
29	AC	80/111 (72%)	79 (99%)	1 (1%)	69	90
30	AL	228/242 (94%)	223 (98%)	5 (2%)	52	81
31	AM	156/168 (93%)	156 (100%)	0	100	100
32	AN	241/241 (100%)	241 (100%)	0	100	100
33	B2	97/131 (74%)	96 (99%)	1 (1%)	76	92
34	B3	30/31 (97%)	30 (100%)	0	100	100
35	B4	144/144 (100%)	144 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
36	B5	108/108 (100%)	108 (100%)	0	100	100
37	B6	82/82 (100%)	81 (99%)	1 (1%)	71	91
38	B7	93/93 (100%)	92 (99%)	1 (1%)	73	91
39	B8	127/148 (86%)	126 (99%)	1 (1%)	81	94
40	B9	132/139 (95%)	129 (98%)	3 (2%)	50	80
41	BL	132/132 (100%)	130 (98%)	2 (2%)	65	88
42	BM	93/93 (100%)	92 (99%)	1 (1%)	73	91
43	C1	438/438 (100%)	434 (99%)	4 (1%)	78	93
44	C2	178/178 (100%)	175 (98%)	3 (2%)	60	86
45	C3	155/155 (100%)	152 (98%)	3 (2%)	57	84
46	C4	166/167 (99%)	163 (98%)	3 (2%)	59	85
47	DC	148/153 (97%)	147 (99%)	1 (1%)	84	95
48	E1	381/404 (94%)	377 (99%)	4 (1%)	76	92
49	E2	379/385 (98%)	378 (100%)	1 (0%)	92	97
50	E3	339/460 (74%)	334 (98%)	5 (2%)	65	88
51	E4	302/317 (95%)	299 (99%)	3 (1%)	76	92
52	E5	200/205 (98%)	196 (98%)	4 (2%)	55	83
53	E6	293/314 (93%)	290 (99%)	3 (1%)	76	92
54	E7	192/192 (100%)	188 (98%)	4 (2%)	53	82
55	E8	179/179 (100%)	176 (98%)	3 (2%)	60	86
56	E9	115/118 (98%)	114 (99%)	1 (1%)	78	93
57	EA	84/86 (98%)	83 (99%)	1 (1%)	71	91
58	EB	70/70 (100%)	69 (99%)	1 (1%)	67	89
59	EC	73/86 (85%)	73 (100%)	0	100	100
60	ED	121/133 (91%)	118 (98%)	3 (2%)	47	78
61	FX	212/276 (77%)	208 (98%)	4 (2%)	57	84
62	G1	356/365 (98%)	348 (98%)	8 (2%)	52	81
63	G2	192/214 (90%)	189 (98%)	3 (2%)	62	87
64	G3	202/202 (100%)	199 (98%)	3 (2%)	65	88
65	N1	295/639 (46%)	289 (98%)	6 (2%)	55	83
66	N2	285/289 (99%)	283 (99%)	2 (1%)	84	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
67	N3	116/281 (41%)	114 (98%)	2 (2%)	60	86
67	N6	147/281 (52%)	145 (99%)	2 (1%)	67	89
68	N4	455/455 (100%)	448 (98%)	7 (2%)	65	88
69	N5	546/546 (100%)	538 (98%)	8 (2%)	65	88
70	QA	400/401 (100%)	394 (98%)	6 (2%)	65	88
70	Qa	400/401 (100%)	397 (99%)	3 (1%)	81	94
71	QB	369/386 (96%)	365 (99%)	4 (1%)	73	91
71	Qb	342/386 (89%)	337 (98%)	5 (2%)	65	88
72	QC	337/341 (99%)	334 (99%)	3 (1%)	78	93
72	Qc	337/341 (99%)	334 (99%)	3 (1%)	78	93
73	QD	206/207 (100%)	202 (98%)	4 (2%)	57	84
73	Qd	206/207 (100%)	201 (98%)	5 (2%)	49	80
74	QE	193/209 (92%)	189 (98%)	4 (2%)	53	82
74	Qe	193/209 (92%)	193 (100%)	0	100	100
75	QF	58/63 (92%)	56 (97%)	2 (3%)	37	69
75	Qf	58/63 (92%)	54 (93%)	4 (7%)	15	40
76	QG	207/207 (100%)	204 (99%)	3 (1%)	67	89
76	Qg	207/207 (100%)	205 (99%)	2 (1%)	76	92
77	QH	71/71 (100%)	71 (100%)	0	100	100
77	Qh	71/71 (100%)	71 (100%)	0	100	100
78	QI	27/27 (100%)	26 (96%)	1 (4%)	34	66
78	Qi	27/27 (100%)	27 (100%)	0	100	100
79	QJ	124/128 (97%)	122 (98%)	2 (2%)	62	87
79	Qj	124/128 (97%)	124 (100%)	0	100	100
80	QK	50/82 (61%)	50 (100%)	0	100	100
80	Qk	50/82 (61%)	50 (100%)	0	100	100
81	S2	335/336 (100%)	331 (99%)	4 (1%)	71	91
82	S3	224/250 (90%)	223 (100%)	1 (0%)	91	97
83	S4	159/172 (92%)	157 (99%)	2 (1%)	69	90
84	S5	102/102 (100%)	101 (99%)	1 (1%)	76	92
85	S6	130/130 (100%)	127 (98%)	3 (2%)	50	80

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
86	S7	165/171 (96%)	161 (98%)	4 (2%)	49	80
87	S8	160/187 (86%)	158 (99%)	2 (1%)	69	90
88	V1	412/427 (96%)	407 (99%)	5 (1%)	71	91
89	V2	190/190 (100%)	182 (96%)	8 (4%)	30	62
All	All	19190/20883 (92%)	18953 (99%)	237 (1%)	72	91

5 of 237 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
62	G1	28	ARG
86	S7	157	TYR
68	N4	123	ILE
86	S7	116	ASP
89	V2	215	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 340 such sidechains are listed below:

Mol	Chain	Res	Type
68	N4	157	ASN
70	Qa	398	GLN
68	N4	321	ASN
71	QB	133	ASN
72	Qc	231	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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
81	2MR	S2	154	81	10,12,13	2.39	2 (20%)	5,13,15	0.98	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
81	2MR	S2	154	81	-	2/10/13/15	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	S2	154	2MR	CZ-NH2	5.07	1.44	1.33
81	S2	154	2MR	CZ-NE	4.97	1.44	1.34

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
81	S2	154	2MR	CG-CD-NE-CZ
81	S2	154	2MR	N-CA-CB-CG

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 116 ligands modelled in this entry, 8 are monoatomic - leaving 108 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
92	SF4	S7	301	86	0,12,12	-	-	-		
94	PC1	Qc	401	-	53,53,53	0.30	0	59,61,61	0.32	0
91	FES	QE	301	74	0,4,4	-	-	-		
97	CDL	QH	102	-	59,59,99	0.38	0	65,71,111	0.35	0
94	PC1	Qg	301	-	27,27,53	0.40	0	33,35,61	0.34	0
94	PC1	AM	203	-	48,48,53	0.31	0	54,56,61	0.32	0
94	PC1	N4	501	-	38,38,53	0.33	0	44,46,61	0.29	0
97	CDL	QC	403	-	55,55,99	0.41	0	61,67,111	0.33	0
97	CDL	QH	101	-	75,75,99	0.36	0	81,87,111	0.32	0
94	PC1	A9	502	-	32,32,53	0.39	0	38,40,61	0.34	0
97	CDL	BM	201	-	57,57,99	0.39	0	63,69,111	0.36	0
97	CDL	EA	201	-	58,58,99	0.40	0	64,70,111	0.39	0
94	PC1	N1	703	-	39,39,53	0.34	0	45,47,61	0.29	0
92	SF4	V1	602	88	0,12,12	-	-	-		
94	PC1	E8	302	-	53,53,53	0.30	0	59,61,61	0.30	0
94	PC1	C3	201	-	50,50,53	0.31	0	56,58,61	0.30	0
94	PC1	B5	202	-	53,53,53	0.30	0	59,61,61	0.28	0
94	PC1	4E	201	-	34,34,53	0.37	0	40,42,61	0.34	0
94	PC1	ED	201	-	53,53,53	0.30	0	59,61,61	0.31	0
101	HEA	C1	501	43	57,67,67	2.00	18 (31%)	61,103,103	2.59	27 (44%)
107	HEC	Qd	301	73	32,50,50	2.03	4 (12%)	24,82,82	2.22	13 (54%)
95	3PE	4D	201	-	34,34,50	0.37	0	37,39,55	0.34	0
107	HEC	QD	301	73	32,50,50	2.07	4 (12%)	24,82,82	2.32	15 (62%)
94	PC1	A9	503	-	32,32,53	0.38	0	38,40,61	0.36	0
94	PC1	B8	301	-	36,36,53	0.35	0	42,44,61	0.47	0
92	SF4	1A	403	1	0,12,12	-	-	-		
95	3PE	4D	202	-	50,50,50	0.31	0	53,55,55	0.36	0
94	PC1	N4	502	-	32,32,53	0.37	0	38,40,61	0.38	0
95	3PE	7A	202	-	40,40,50	0.35	0	43,45,55	0.31	0
106	HEM	QC	402	72	41,50,50	1.29	4 (9%)	45,82,82	1.76	10 (22%)
97	CDL	QJ	203	-	57,57,99	0.40	0	63,69,111	0.32	0
94	PC1	Qe	303	-	35,35,53	0.36	0	41,43,61	0.34	0
94	PC1	Qc	404	-	30,30,53	0.40	0	36,38,61	0.44	0
97	CDL	A3	201	-	57,57,99	0.39	0	63,69,111	0.37	0
100	ZMP	AC	201	29	29,35,36	0.83	1 (3%)	34,42,45	1.09	3 (8%)
97	CDL	QD	302	-	68,68,99	0.37	0	74,80,111	0.36	0
108	FMN	V1	601	-	33,33,33	0.36	0	48,50,50	0.43	0
94	PC1	N3	301	-	41,41,53	0.34	0	47,49,61	0.34	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
97	CDL	C4	203	-	97,97,99	0.32	0	103,109,111	0.34	0
94	PC1	AM	204	-	47,47,53	0.32	0	53,55,61	0.26	0
104	PX2	QJ	202	-	35,35,35	0.98	3 (8%)	39,40,40	1.08	2 (5%)
101	HEA	C1	502	43	57,67,67	2.04	15 (26%)	61,103,103	2.62	23 (37%)
94	PC1	4A	301	-	46,46,53	0.32	0	52,54,61	0.31	0
91	FES	1A	401	1	0,4,4	-	-	-	-	-
97	CDL	B3	101	-	64,64,99	0.38	0	70,76,111	0.33	0
97	CDL	EA	202	-	54,54,99	0.40	0	60,66,111	0.37	0
97	CDL	Qd	302	-	99,99,99	0.31	0	105,111,111	0.27	0
94	PC1	E9	202	-	34,34,53	0.36	0	40,42,61	0.42	0
97	CDL	AL	302	-	67,67,99	0.37	0	73,79,111	0.33	0
95	3PE	C1	507	-	39,39,50	0.35	0	42,44,55	0.38	0
97	CDL	C4	201	-	93,93,99	0.32	0	99,105,111	0.36	0
100	ZMP	AB	201	28	29,35,36	0.77	1 (3%)	34,42,45	1.21	5 (14%)
94	PC1	C1	505	-	49,49,53	0.32	0	55,57,61	0.32	0
97	CDL	AM	201	-	71,71,99	0.36	0	77,83,111	0.32	0
91	FES	Qe	301	74	0,4,4	-	-	-	-	-
91	FES	V2	301	89	0,4,4	-	-	-	-	-
104	PX2	C2	201	-	35,35,35	0.98	4 (11%)	39,40,40	1.07	2 (5%)
94	PC1	E4	402	-	50,50,53	0.30	0	56,58,61	0.29	0
94	PC1	4A	302	-	45,45,53	0.32	0	51,53,61	0.33	0
95	3PE	B4	201	-	39,39,50	0.34	0	42,44,55	0.36	0
94	PC1	G2	301	-	37,37,53	0.35	0	43,45,61	0.31	0
97	CDL	C4	202	-	68,68,99	0.36	0	74,80,111	0.37	0
95	3PE	E9	201	-	50,50,50	0.30	0	53,55,55	0.28	0
97	CDL	4E	202	-	71,71,99	0.36	0	77,83,111	0.34	0
106	HEM	Qc	403	72	41,50,50	1.28	5 (12%)	45,82,82	1.73	10 (22%)
94	PC1	AN	301	-	47,47,53	0.31	0	53,55,61	0.30	0
92	SF4	S8	302	87	0,12,12	-	-	-	-	-
94	PC1	AL	301	-	49,49,53	0.32	0	55,57,61	0.29	0
94	PC1	A1	202	-	30,30,53	0.38	0	36,38,61	0.34	0
97	CDL	N1	701	-	69,69,99	0.37	0	75,81,111	0.32	0
97	CDL	7C	201	-	89,89,99	0.32	0	95,101,111	0.30	0
106	HEM	Qc	402	72	41,50,50	1.23	5 (12%)	45,82,82	1.75	8 (17%)
97	CDL	Qh	101	-	64,64,99	0.38	0	70,76,111	0.33	0
95	3PE	N5	602	-	50,50,50	0.32	0	53,55,55	0.35	0
94	PC1	QI	101	-	35,35,53	0.36	0	41,43,61	0.40	0
94	PC1	N4	505	-	53,53,53	0.30	0	59,61,61	0.29	0
94	PC1	QC	404	-	53,53,53	0.30	0	59,61,61	0.33	0
92	SF4	S8	301	87	0,12,12	-	-	-	-	-
94	PC1	E8	301	-	53,53,53	0.30	0	59,61,61	0.28	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
105	U10	N4	504	-	43,43,63	2.39	15 (34%)	52,55,79	1.84	14 (26%)
104	PX2	QJ	201	-	35,35,35	0.99	3 (8%)	39,40,40	1.05	2 (5%)
94	PC1	E8	303	-	32,32,53	0.37	0	38,40,61	0.35	0
97	CDL	AL	303	-	63,63,99	0.38	0	69,75,111	0.33	0
94	PC1	B5	201	-	53,53,53	0.29	0	59,61,61	0.33	0
95	3PE	N4	503	-	40,40,50	0.35	0	43,45,55	0.32	0
97	CDL	A9	504	-	63,63,99	0.39	0	69,75,111	0.35	0
97	CDL	AM	202	-	71,71,99	0.36	0	77,83,111	0.32	0
94	PC1	Qj	201	-	53,53,53	0.31	0	59,61,61	0.30	0
97	CDL	B8	302	-	69,69,99	0.36	0	75,81,111	0.31	0
94	PC1	7A	201	-	35,35,53	0.37	0	41,43,61	0.35	0
97	CDL	E7	301	-	67,67,99	0.37	0	73,79,111	0.33	0
94	PC1	ED	202	-	40,40,53	0.33	0	46,48,61	0.33	0
94	PC1	A1	201	-	48,48,53	0.32	0	54,56,61	0.35	0
97	CDL	N5	603	-	92,92,99	0.31	0	98,104,111	0.31	0
94	PC1	N5	601	-	35,35,53	0.35	0	41,43,61	0.30	0
97	CDL	E4	401	-	71,71,99	0.36	0	77,83,111	0.38	0
97	CDL	Qc	405	-	53,53,99	0.41	0	59,65,111	0.35	0
97	CDL	Qe	302	-	59,59,99	0.38	0	65,71,111	0.34	0
96	S12	4D	203	-	33,34,34	0.78	0	36,40,40	0.97	3 (8%)
95	3PE	C1	506	-	39,39,50	0.36	0	42,44,55	0.35	0
92	SF4	1A	402	1	0,12,12	-	-	-	-	-
94	PC1	E8	304	-	29,29,53	0.38	0	35,37,61	0.32	0
94	PC1	N1	702	-	48,48,53	0.31	0	54,56,61	0.28	0
97	CDL	E6	401	-	57,57,99	0.39	0	63,69,111	0.45	0
99	NDP	A9	501	-	45,52,52	0.63	0	53,80,80	0.63	1 (1%)
97	CDL	Qj	202	-	47,47,99	0.43	0	53,59,111	0.36	0
94	PC1	QD	303	-	30,30,53	0.39	0	36,38,61	0.38	0
106	HEM	QC	401	72	41,50,50	1.24	5 (12%)	45,82,82	1.70	7 (15%)

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
92	SF4	S7	301	86	-	-	0/6/5/5
94	PC1	Qc	401	-	-	17/57/57/57	-
97	CDL	QH	102	-	-	19/70/70/110	-
91	FES	QE	301	74	-	-	0/1/1/1
94	PC1	Qg	301	-	-	3/31/31/57	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
94	PC1	AM	203	-	-	18/52/52/57	-
94	PC1	N4	501	-	-	13/42/42/57	-
97	CDL	QC	403	-	-	17/66/66/110	-
97	CDL	QH	101	-	-	20/86/86/110	-
94	PC1	A9	502	-	-	13/36/36/57	-
97	CDL	BM	201	-	-	7/68/68/110	-
97	CDL	EA	201	-	-	14/69/69/110	-
94	PC1	N1	703	-	-	17/43/43/57	-
92	SF4	V1	602	88	-	-	0/6/5/5
94	PC1	E8	302	-	-	13/57/57/57	-
94	PC1	C3	201	-	-	9/54/54/57	-
94	PC1	B5	202	-	-	19/57/57/57	-
94	PC1	4E	201	-	-	13/38/38/57	-
94	PC1	ED	201	-	-	11/57/57/57	-
101	HEA	C1	501	43	-	15/32/76/76	-
107	HEC	Qd	301	73	-	5/10/54/54	-
95	3PE	4D	201	-	-	11/38/38/54	-
107	HEC	QD	301	73	-	2/10/54/54	-
94	PC1	A9	503	-	-	6/36/36/57	-
94	PC1	B8	301	-	-	8/40/40/57	-
95	3PE	4D	202	-	-	21/54/54/54	-
92	SF4	1A	403	1	-	-	0/6/5/5
94	PC1	N4	502	-	-	10/36/36/57	-
95	3PE	7A	202	-	-	7/44/44/54	-
106	HEM	QC	402	72	-	4/12/54/54	-
97	CDL	QJ	203	-	-	19/68/68/110	-
94	PC1	Qe	303	-	-	6/39/39/57	-
94	PC1	Qc	404	-	-	12/34/34/57	-
97	CDL	A3	201	-	-	7/68/68/110	-
100	ZMP	AC	201	29	-	18/40/42/43	-
97	CDL	QD	302	-	-	15/79/79/110	-
108	FMN	V1	601	-	-	3/18/18/18	0/3/3/3
94	PC1	N3	301	-	-	8/45/45/57	-
97	CDL	C4	203	-	-	25/108/108/110	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
94	PC1	AM	204	-	-	10/51/51/57	-
104	PX2	QJ	202	-	-	24/37/37/37	-
101	HEA	C1	502	43	-	16/32/76/76	-
94	PC1	4A	301	-	-	8/50/50/57	-
91	FES	1A	401	1	-	-	0/1/1/1
97	CDL	B3	101	-	-	10/75/75/110	-
97	CDL	EA	202	-	-	17/65/65/110	-
97	CDL	Qd	302	-	-	27/110/110/110	-
94	PC1	E9	202	-	-	8/38/38/57	-
97	CDL	AL	302	-	-	10/78/78/110	-
95	3PE	C1	507	-	-	11/43/43/54	-
97	CDL	C4	201	-	-	23/104/104/110	-
100	ZMP	AB	201	28	-	20/40/42/43	-
94	PC1	C1	505	-	-	10/53/53/57	-
97	CDL	AM	201	-	-	14/82/82/110	-
91	FES	Qe	301	74	-	-	0/1/1/1
91	FES	V2	301	89	-	-	0/1/1/1
104	PX2	C2	201	-	-	20/37/37/37	-
94	PC1	E4	402	-	-	9/54/54/57	-
94	PC1	4A	302	-	-	21/49/49/57	-
95	3PE	B4	201	-	-	16/43/43/54	-
94	PC1	G2	301	-	-	9/41/41/57	-
97	CDL	C4	202	-	-	10/79/79/110	-
95	3PE	E9	201	-	-	8/54/54/54	-
97	CDL	4E	202	-	-	20/82/82/110	-
106	HEM	Qc	403	72	-	4/12/54/54	-
94	PC1	AN	301	-	-	9/51/51/57	-
92	SF4	S8	302	87	-	-	0/6/5/5
94	PC1	AL	301	-	-	12/53/53/57	-
94	PC1	A1	202	-	-	7/34/34/57	-
97	CDL	N1	701	-	-	24/80/80/110	-
97	CDL	7C	201	-	-	25/100/100/110	-
106	HEM	Qc	402	72	-	5/12/54/54	-
97	CDL	Qh	101	-	-	18/75/75/110	-
95	3PE	N5	602	-	-	11/54/54/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
94	PC1	QI	101	-	-	3/39/39/57	-
94	PC1	N4	505	-	-	13/57/57/57	-
94	PC1	QC	404	-	-	8/57/57/57	-
92	SF4	S8	301	87	-	-	0/6/5/5
94	PC1	E8	301	-	-	13/57/57/57	-
105	U10	N4	504	-	-	10/39/63/87	0/1/1/1
104	PX2	QJ	201	-	-	19/37/37/37	-
94	PC1	E8	303	-	-	6/36/36/57	-
97	CDL	AL	303	-	-	15/74/74/110	-
94	PC1	B5	201	-	-	15/57/57/57	-
95	3PE	N4	503	-	-	8/44/44/54	-
97	CDL	A9	504	-	-	25/74/74/110	-
97	CDL	AM	202	-	-	20/82/82/110	-
94	PC1	Qj	201	-	-	16/57/57/57	-
97	CDL	B8	302	-	-	13/80/80/110	-
94	PC1	7A	201	-	-	14/39/39/57	-
97	CDL	E7	301	-	-	18/78/78/110	-
94	PC1	ED	202	-	-	16/44/44/57	-
94	PC1	A1	201	-	-	15/52/52/57	-
97	CDL	N5	603	-	-	30/103/103/110	-
94	PC1	N5	601	-	-	9/39/39/57	-
97	CDL	E4	401	-	-	14/82/82/110	-
97	CDL	Qc	405	-	-	15/64/64/110	-
97	CDL	Qe	302	-	-	12/70/70/110	-
96	S12	4D	203	-	-	14/38/38/38	-
95	3PE	C1	506	-	-	16/43/43/54	-
92	SF4	1A	402	1	-	-	0/6/5/5
94	PC1	E8	304	-	-	11/33/33/57	-
94	PC1	N1	702	-	-	14/52/52/57	-
97	CDL	E6	401	-	-	23/68/68/110	-
99	NDP	A9	501	-	-	10/30/77/77	0/5/5/5
97	CDL	Qj	202	-	-	19/58/58/110	-
94	PC1	QD	303	-	-	11/34/34/57	-
106	HEM	QC	401	72	-	6/12/54/54	-

The worst 5 of 87 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
105	N4	504	U10	C6-C1	10.22	1.53	1.35
107	QD	301	HEC	C3C-C2C	-6.60	1.33	1.40
107	QD	301	HEC	C2B-C3B	-6.60	1.33	1.40
107	Qd	301	HEC	C3C-C2C	-6.57	1.33	1.40
107	Qd	301	HEC	C2B-C3B	-6.28	1.34	1.40

The worst 5 of 145 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
101	C1	502	HEA	CAD-CBD-CGD	-8.14	96.09	113.60
101	C1	501	HEA	CAD-CBD-CGD	-6.75	99.07	113.60
101	C1	501	HEA	C2B-C1B-NB	5.67	116.68	109.88
101	C1	501	HEA	C3D-C4D-ND	5.42	115.60	110.36
101	C1	502	HEA	C13-C12-C11	-5.29	106.40	114.35

There are no chirality outliers.

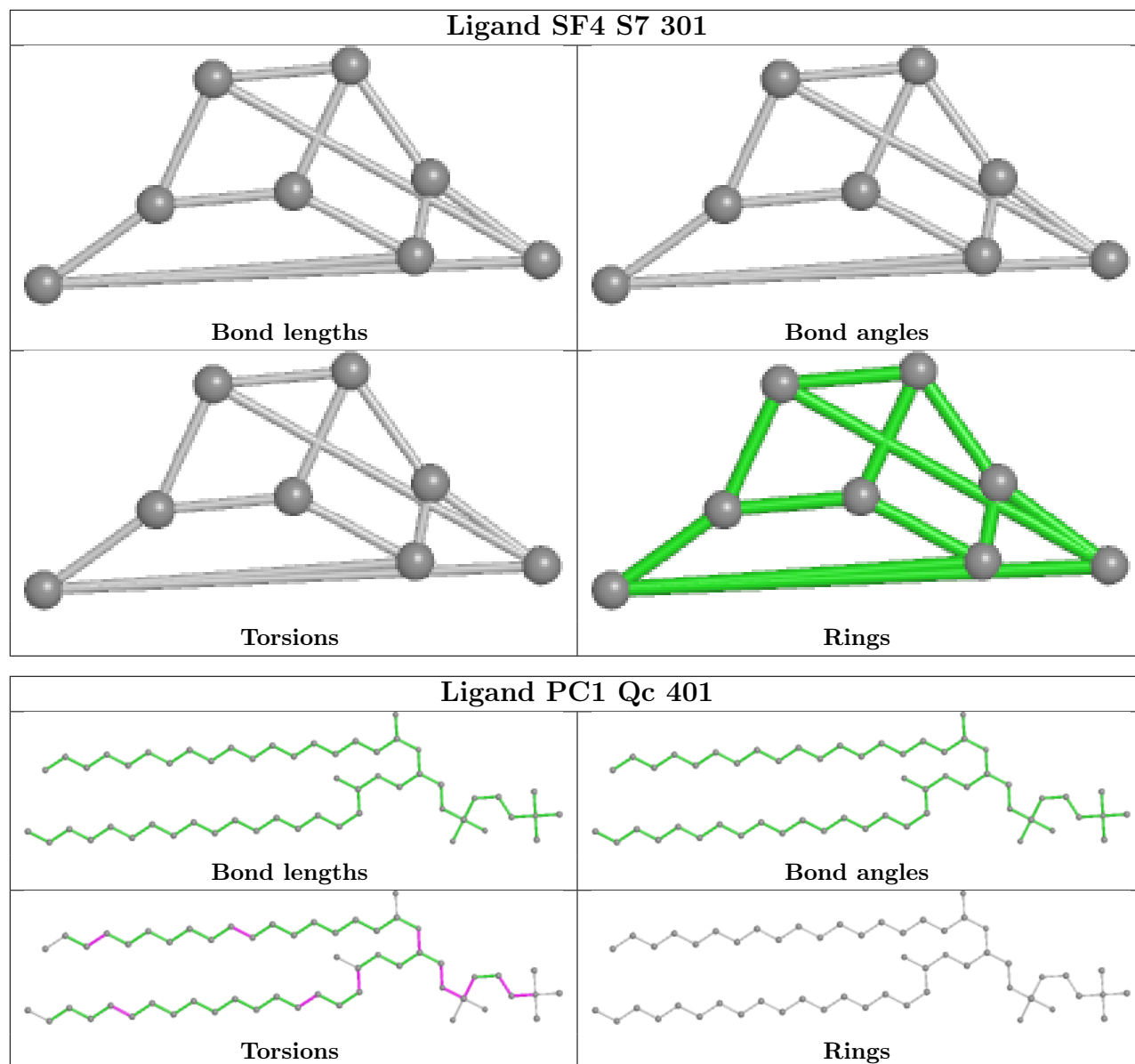
5 of 1312 torsion outliers are listed below:

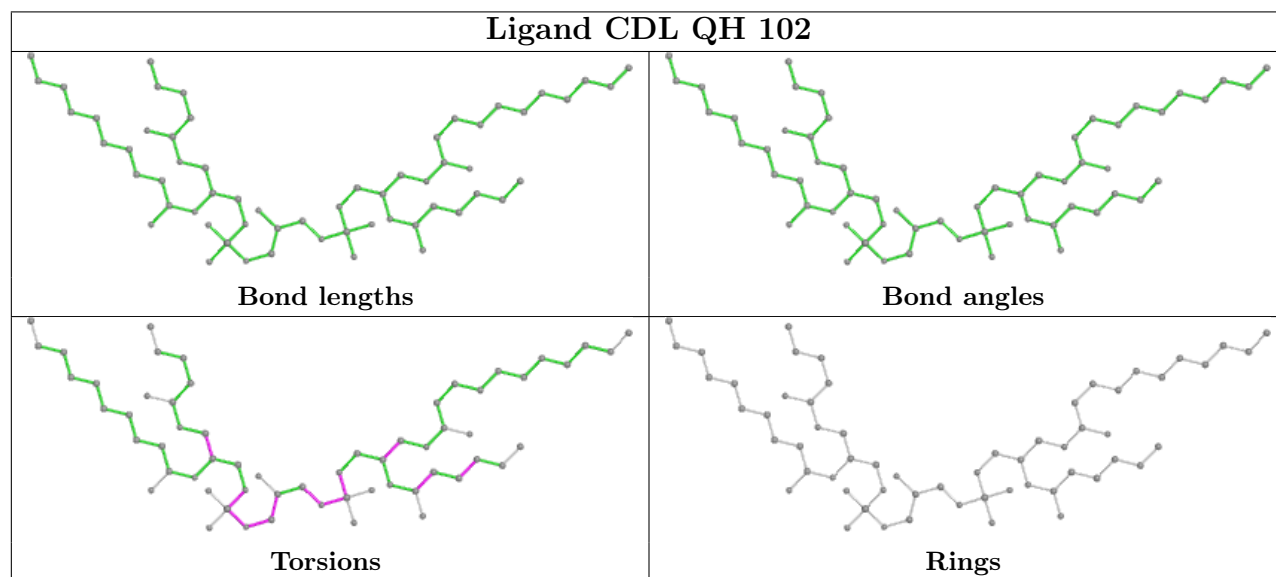
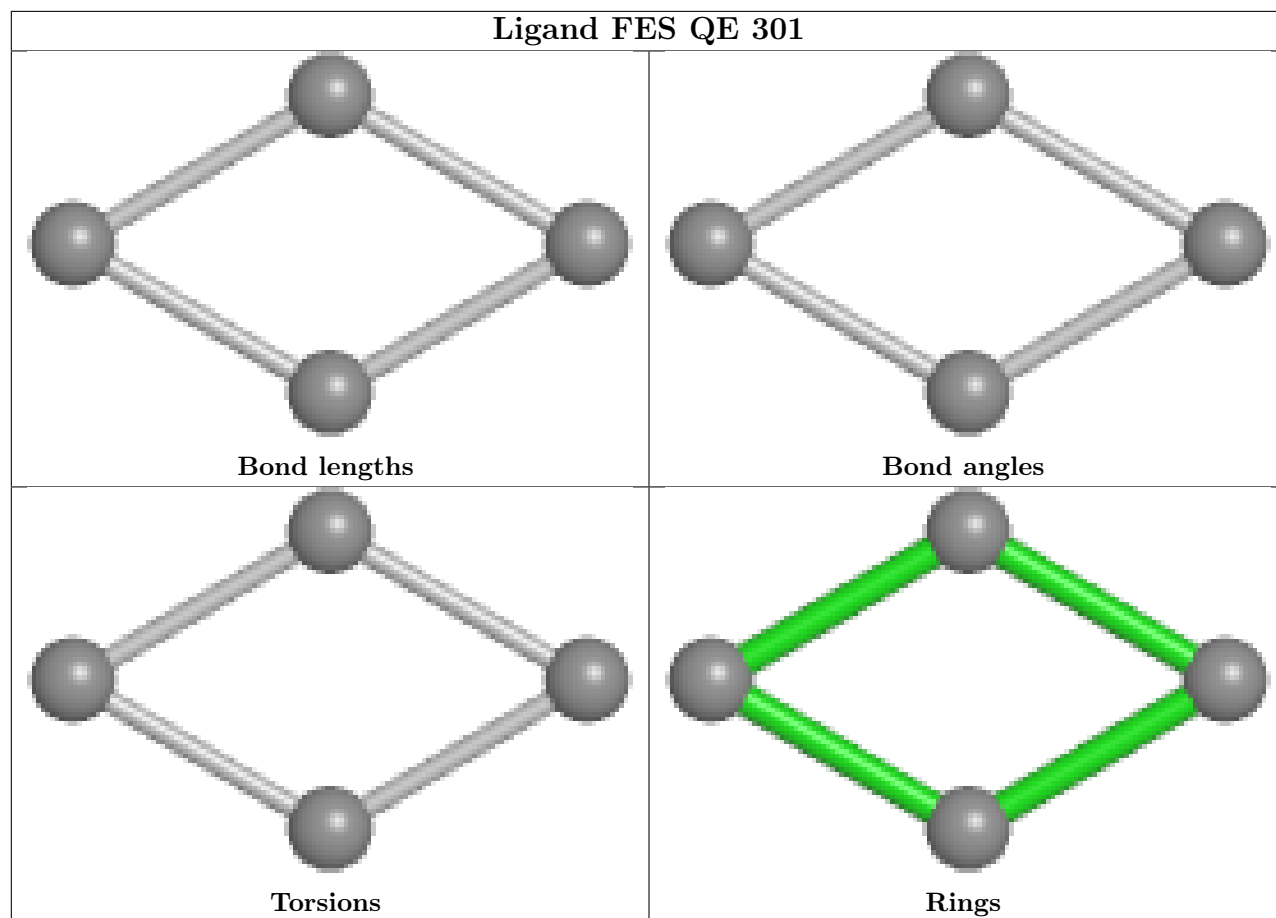
Mol	Chain	Res	Type	Atoms
94	4A	301	PC1	C11-O13-P-O12
94	4A	301	PC1	C1-O11-P-O14
94	4A	302	PC1	C11-O13-P-O14
94	4A	302	PC1	C1-O11-P-O12
94	4A	302	PC1	O21-C2-C3-O31

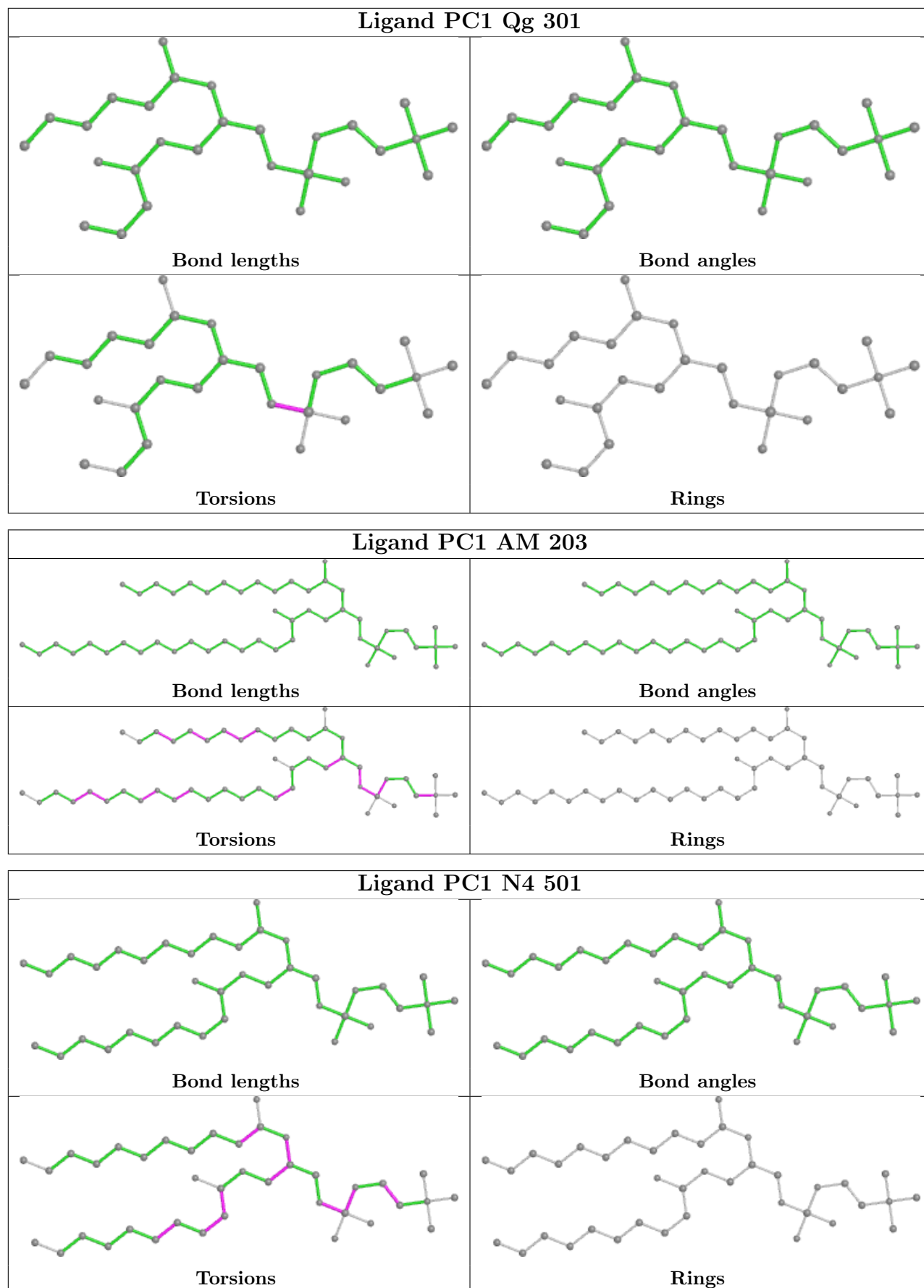
There are no ring outliers.

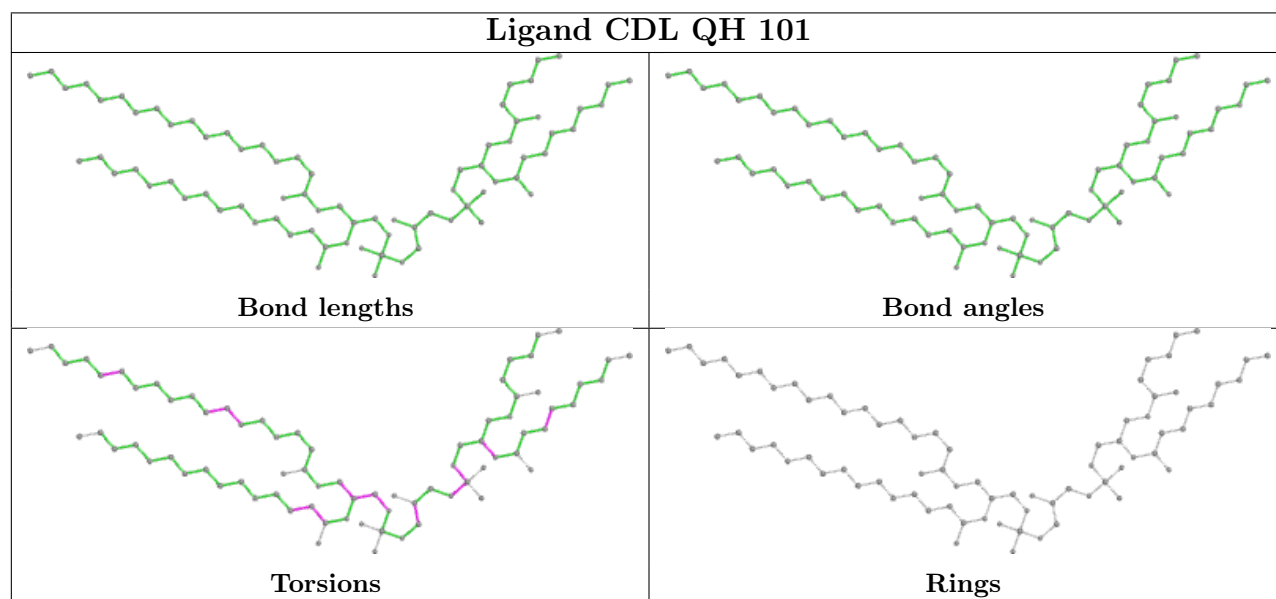
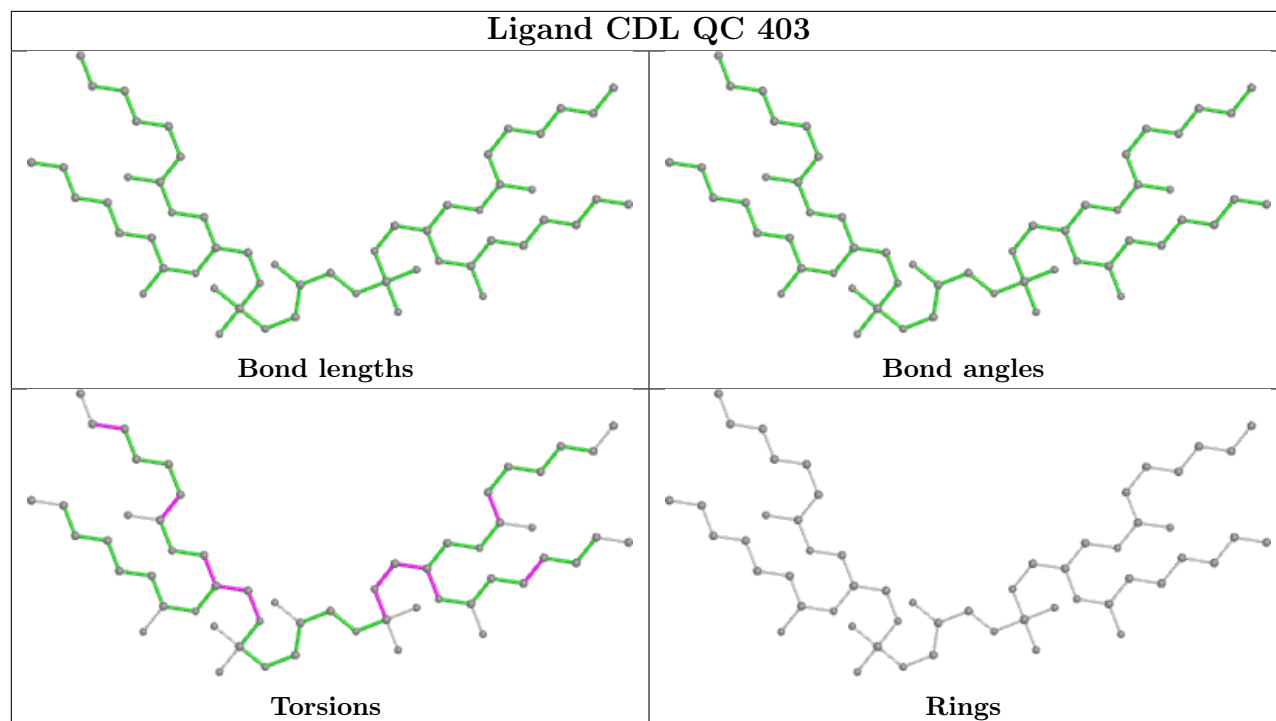
No monomer is involved in short contacts.

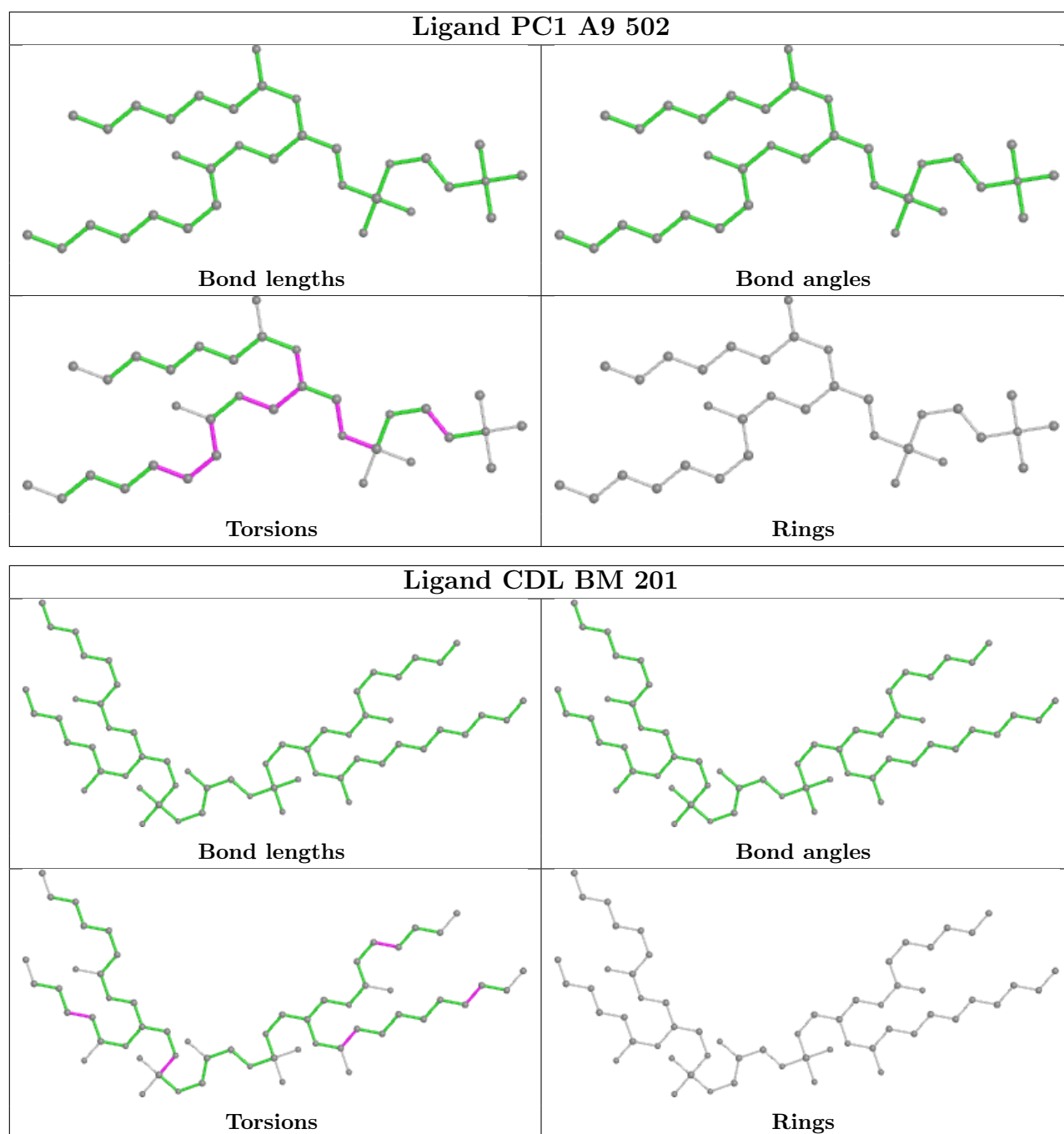
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

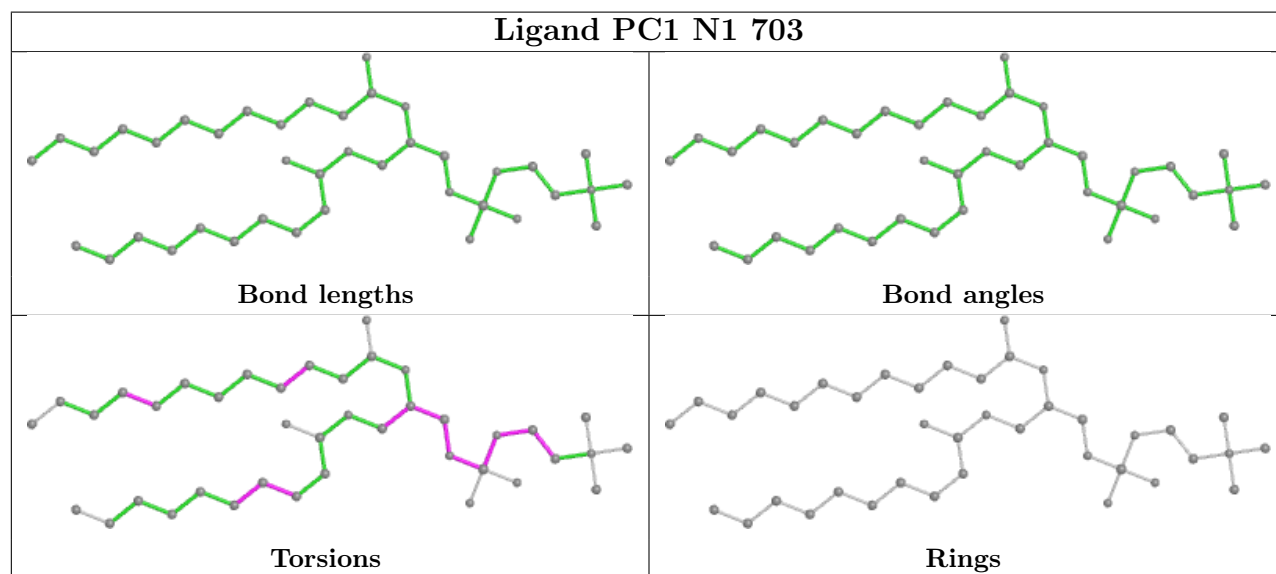
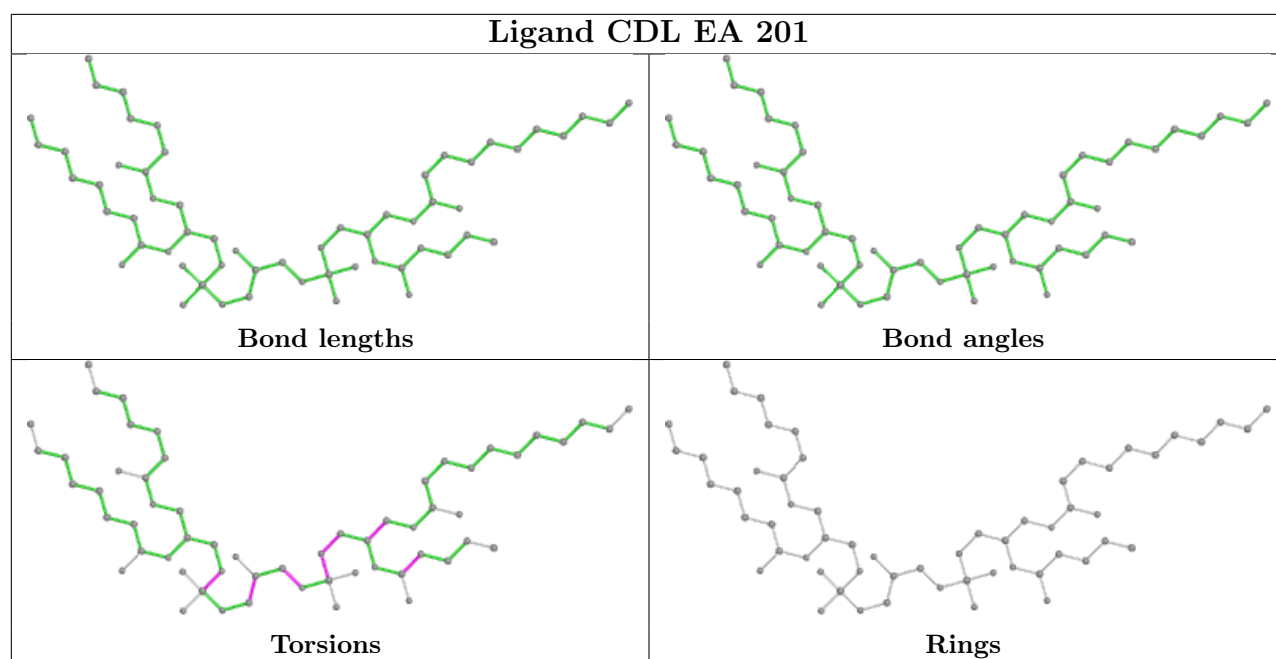


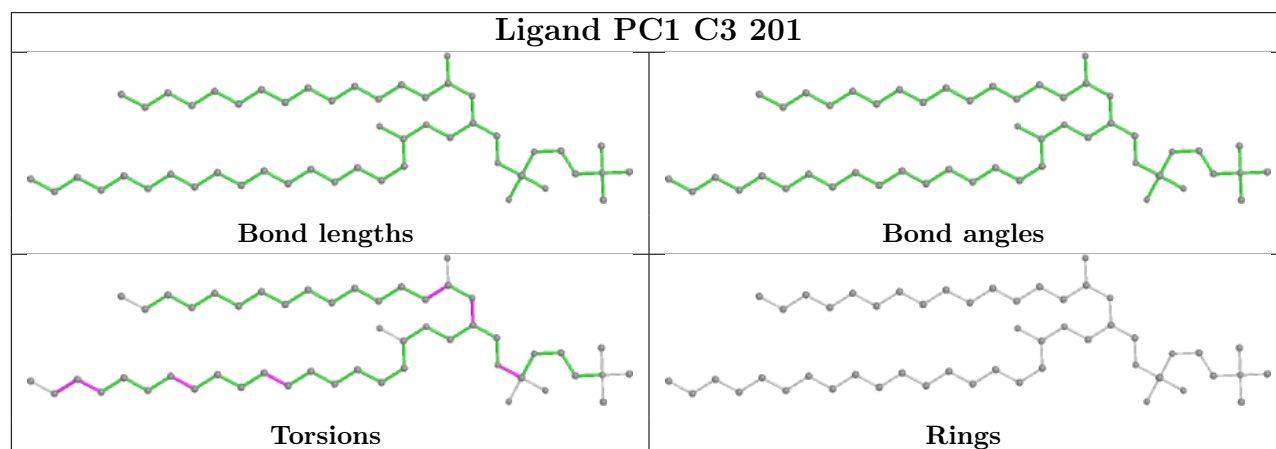
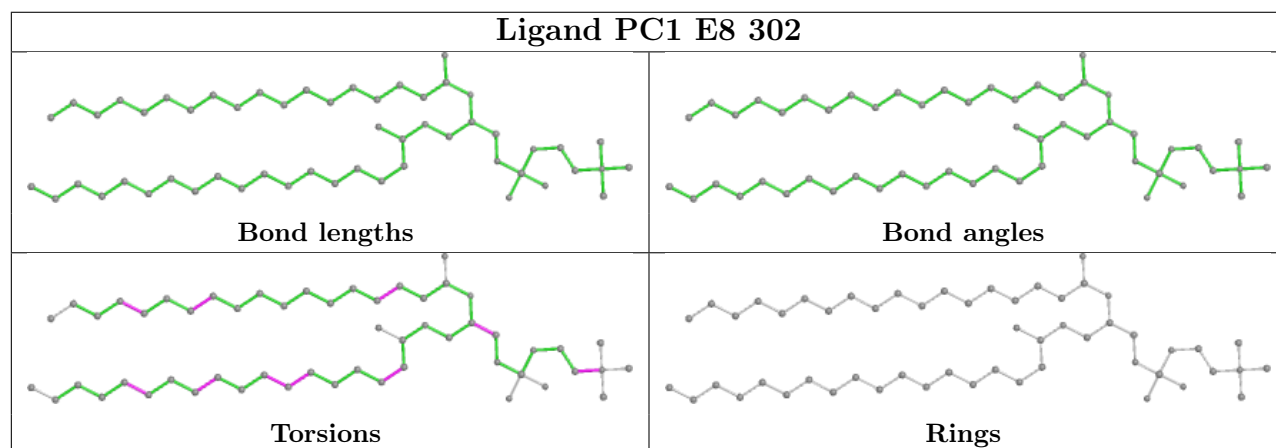
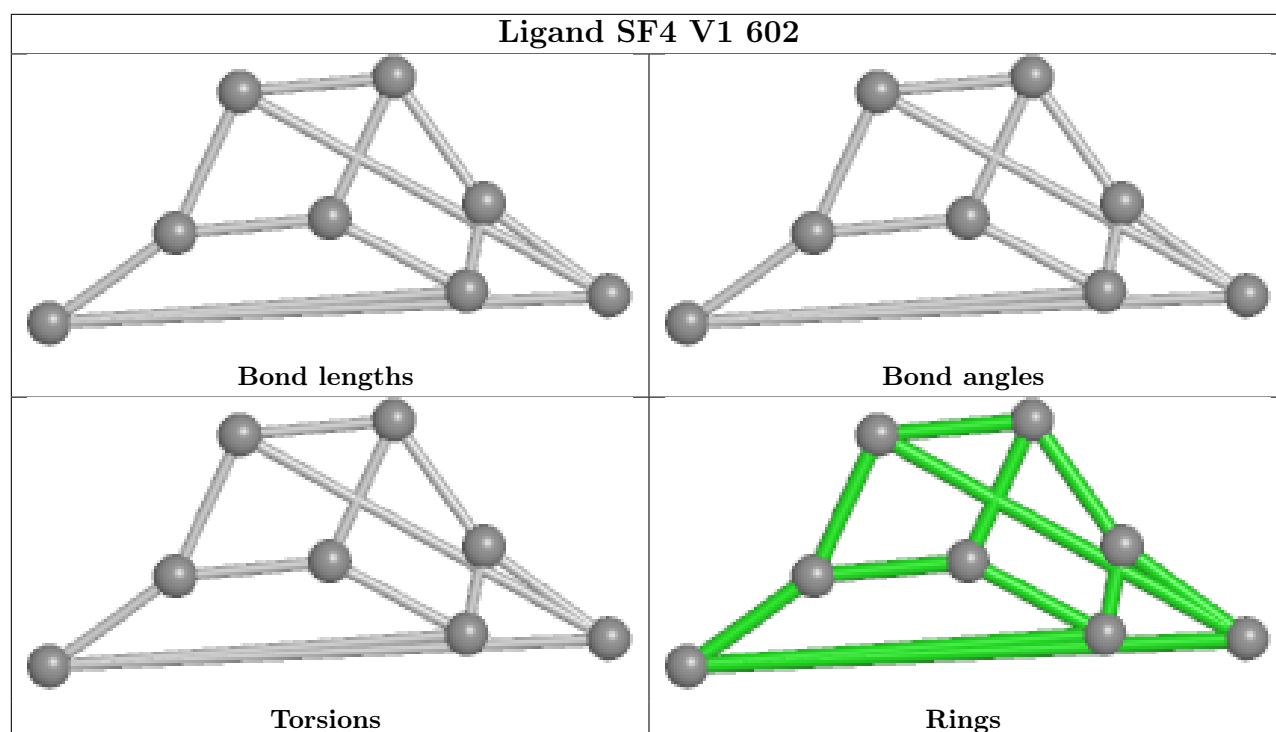


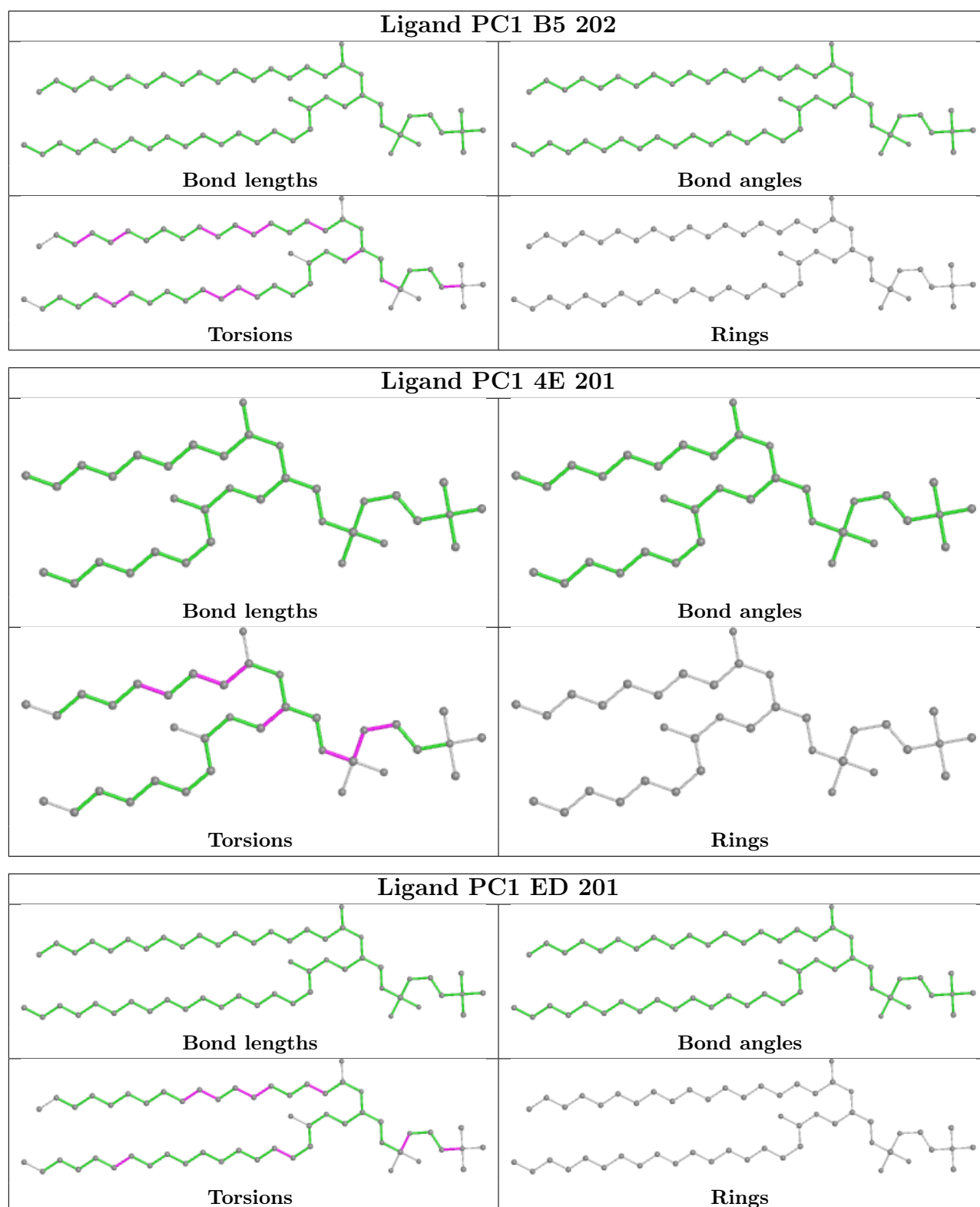


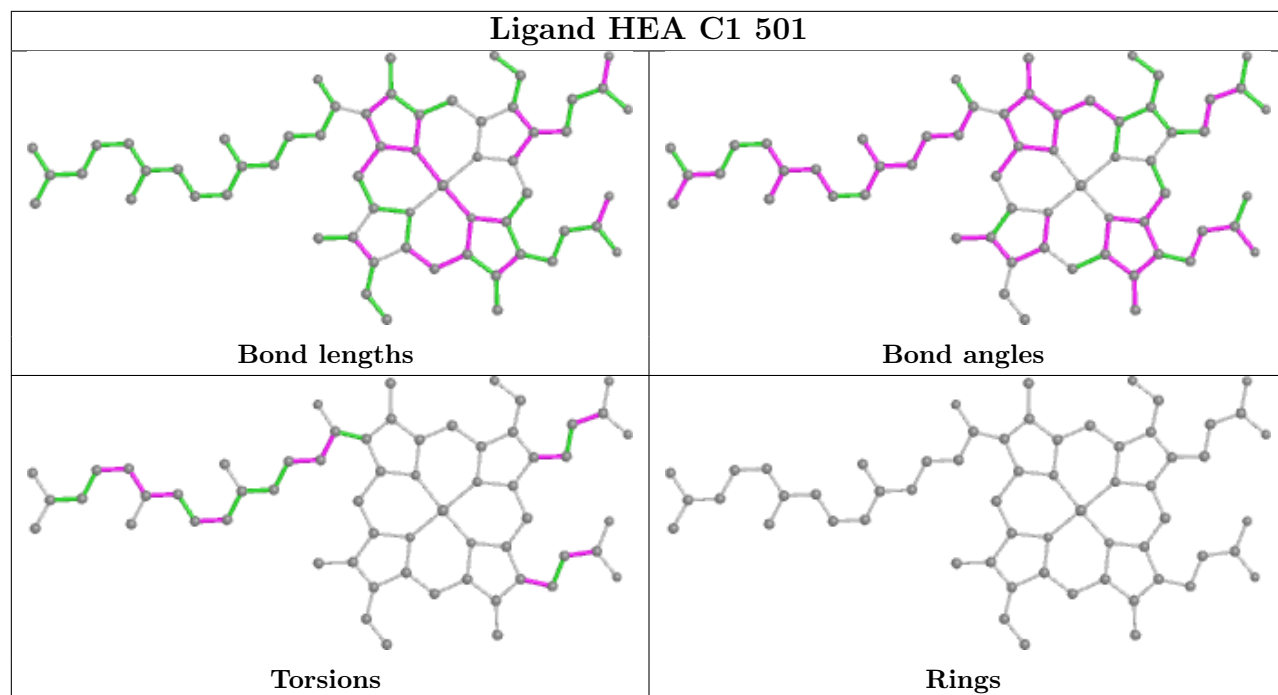


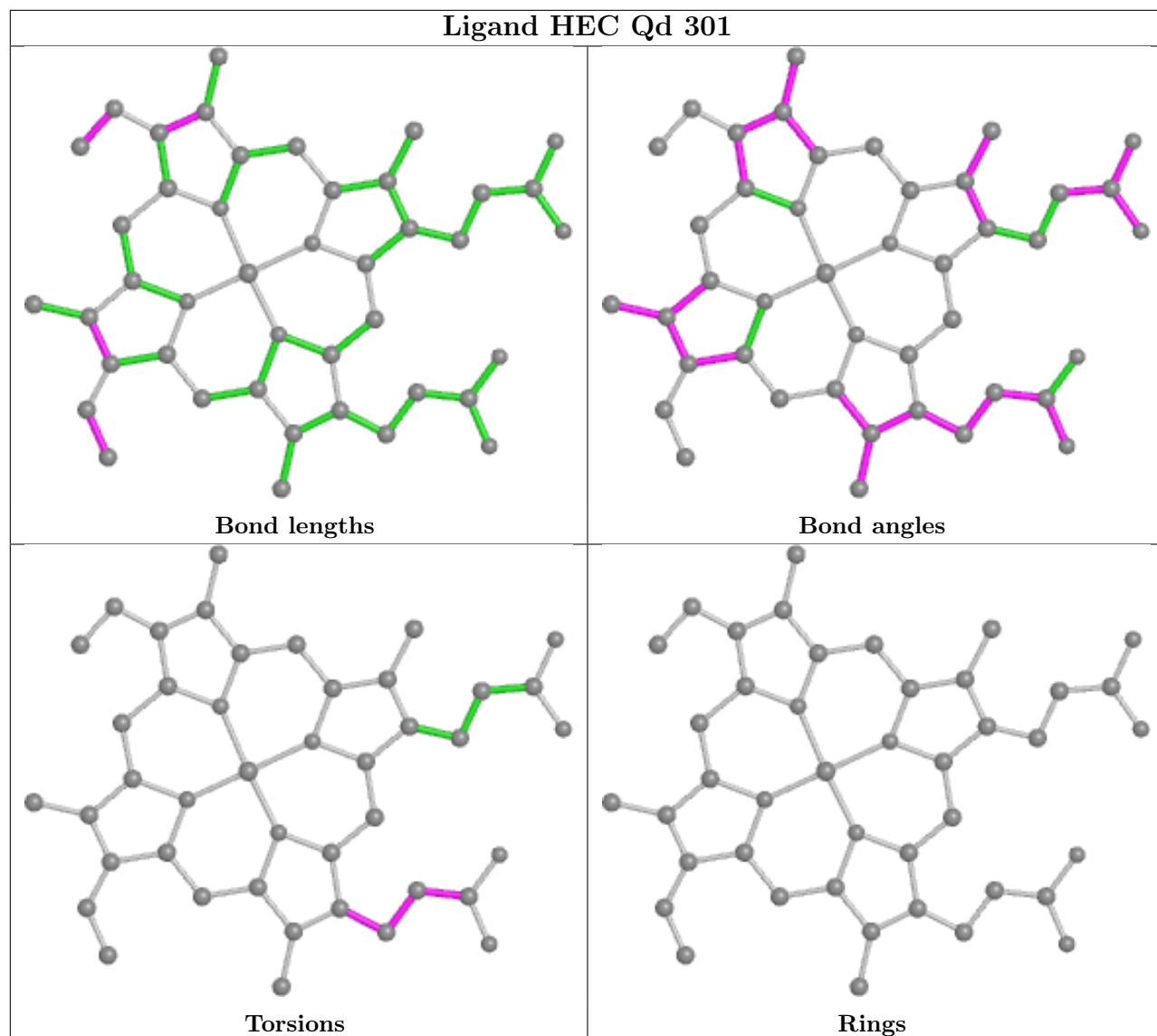


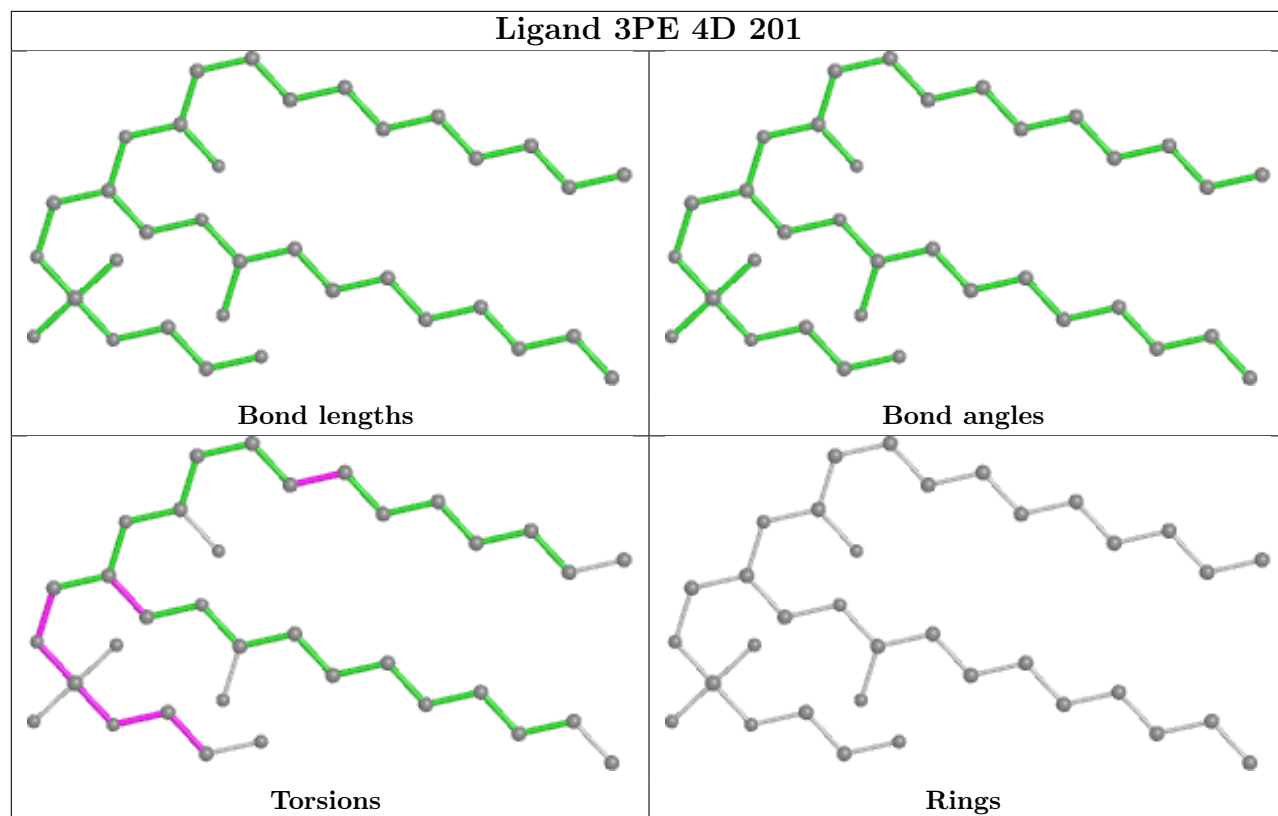


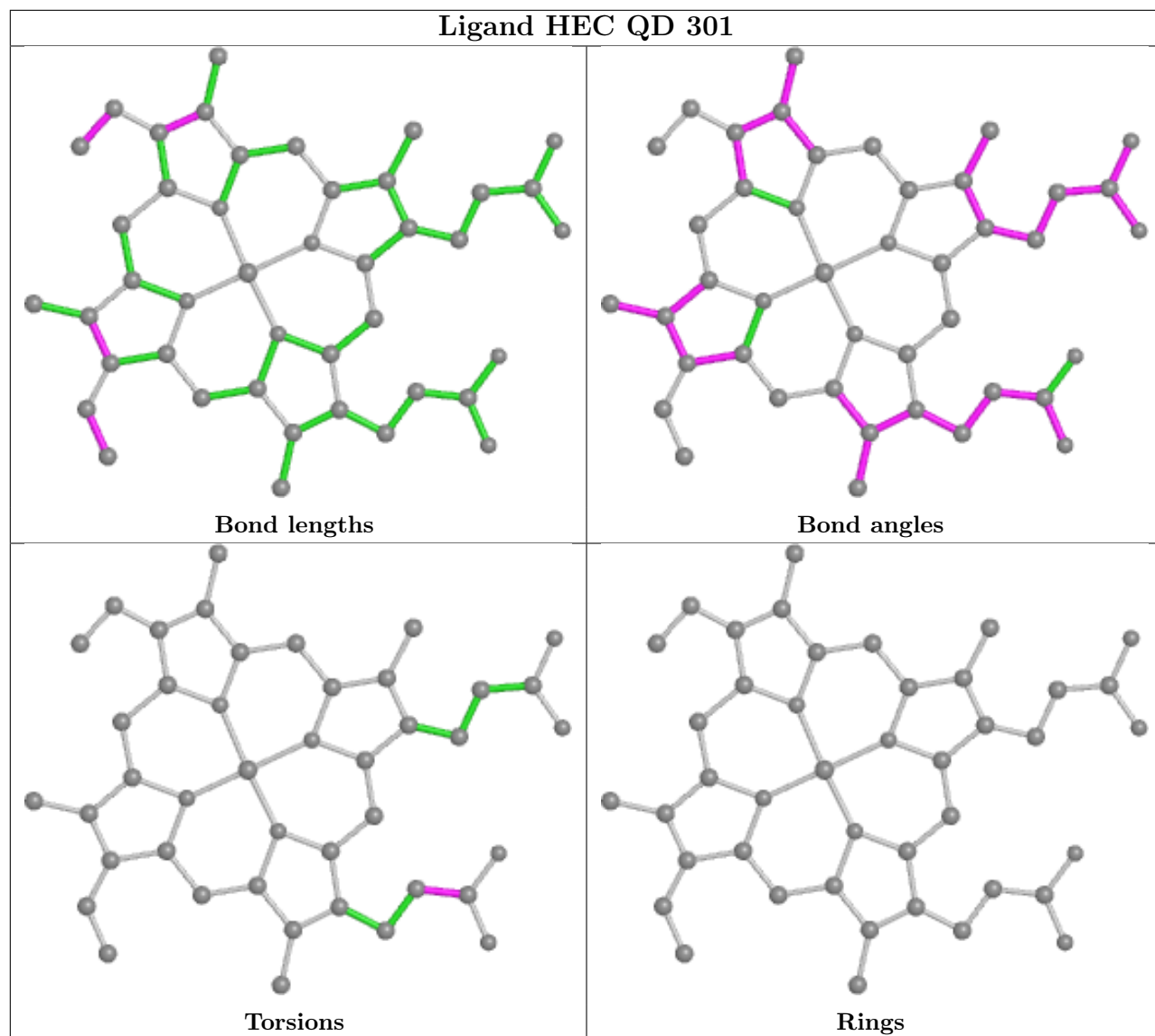


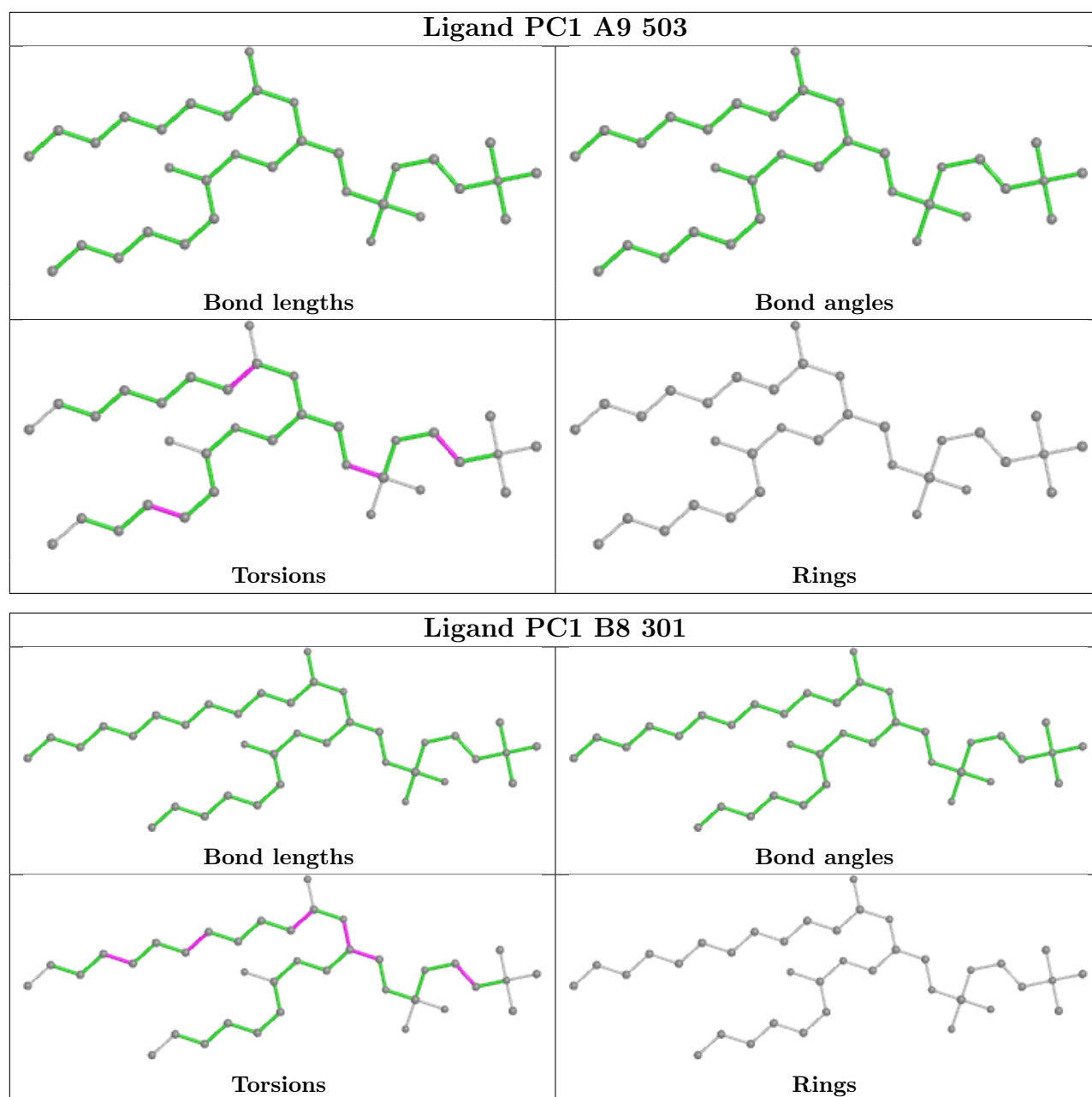


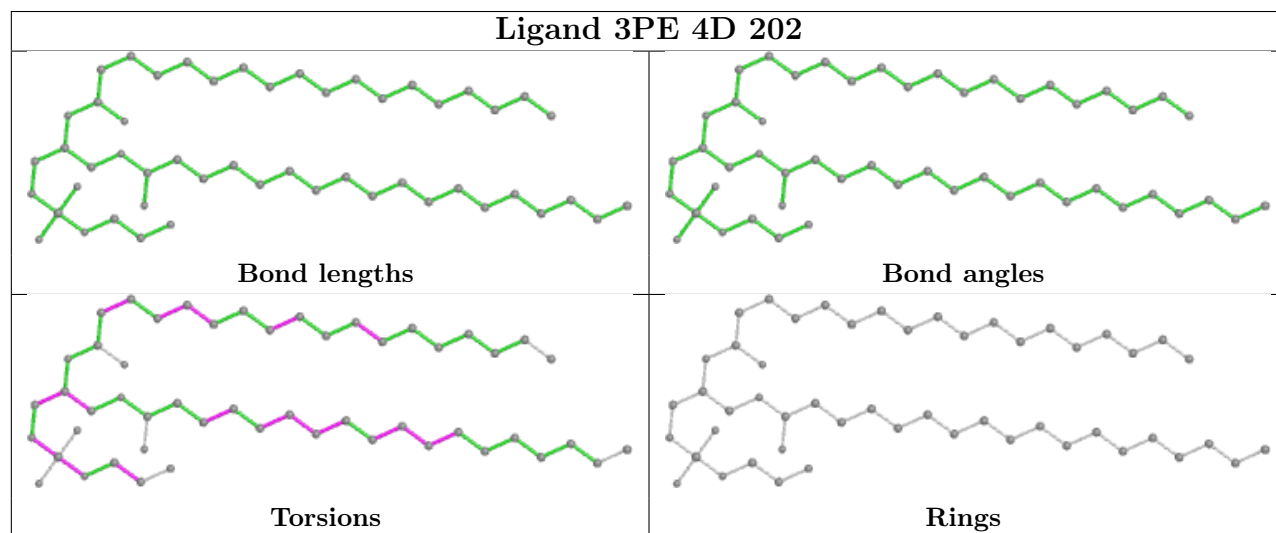
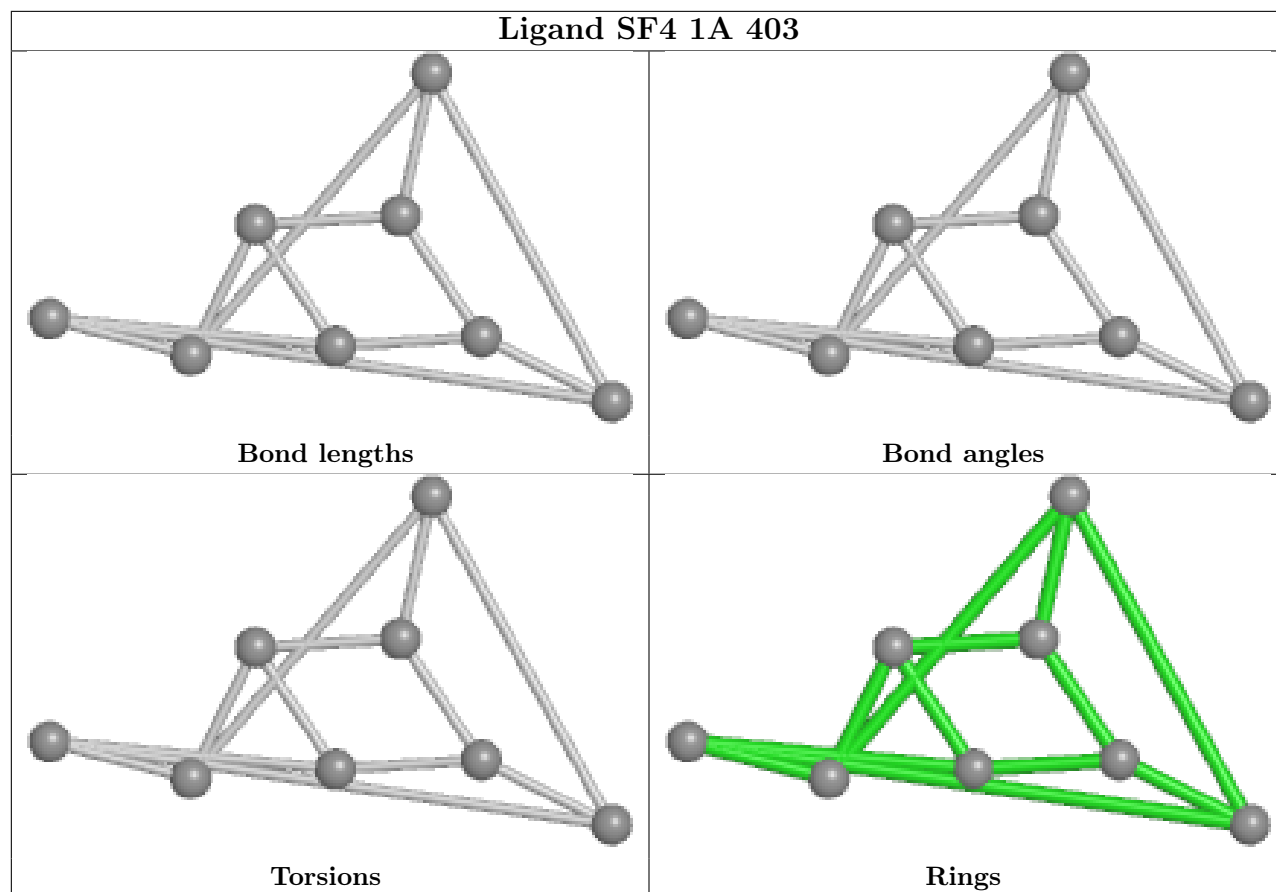


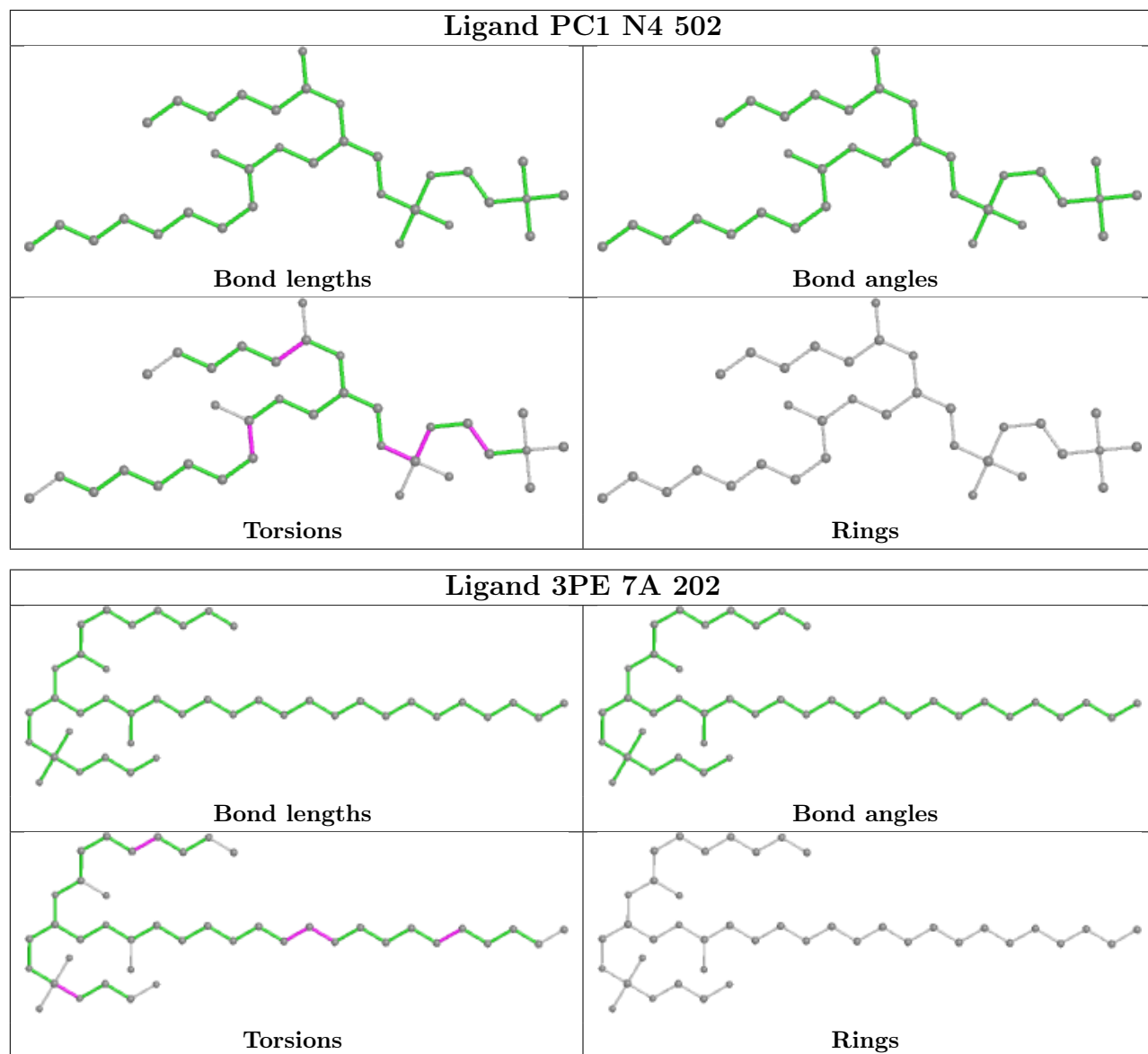


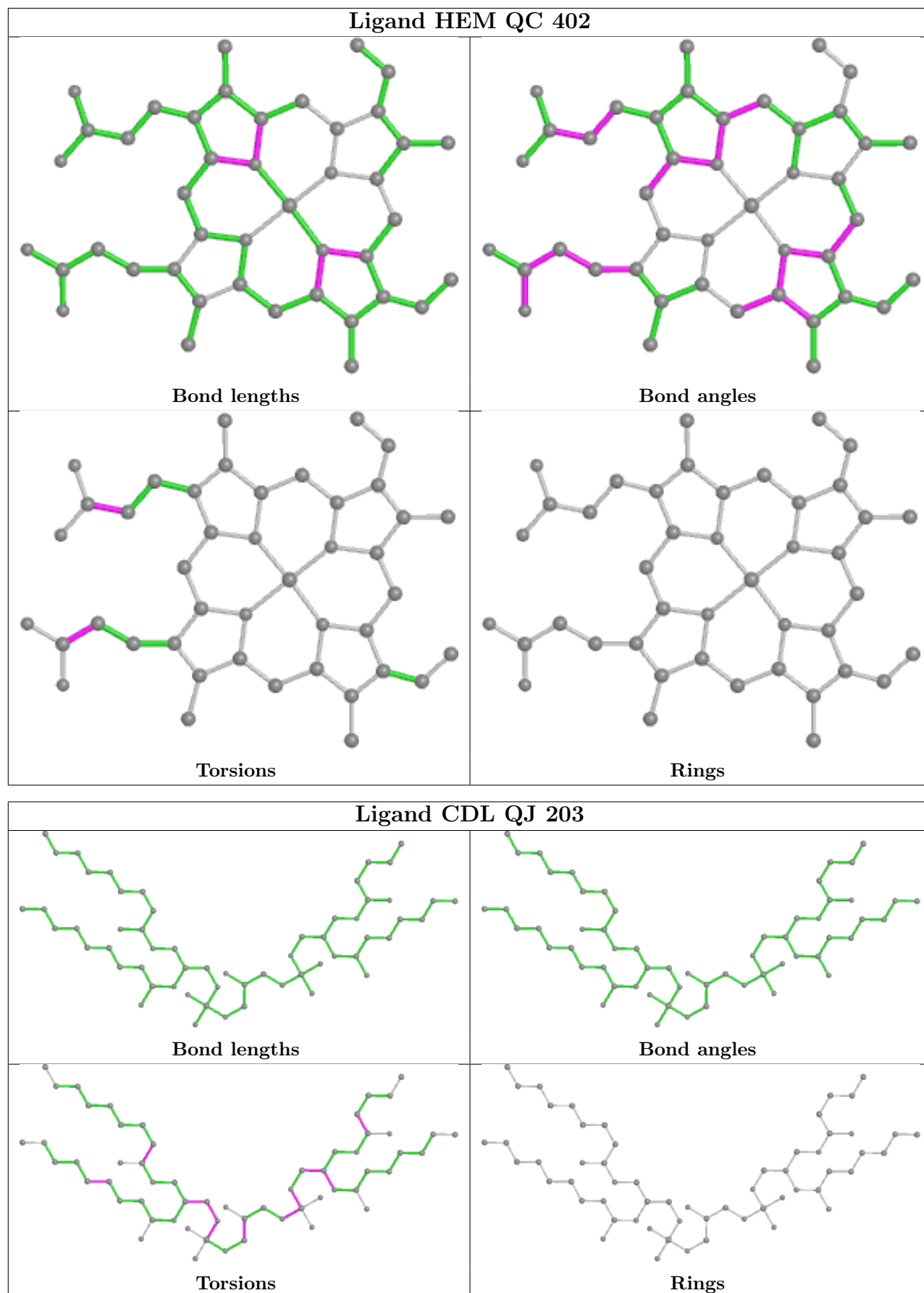


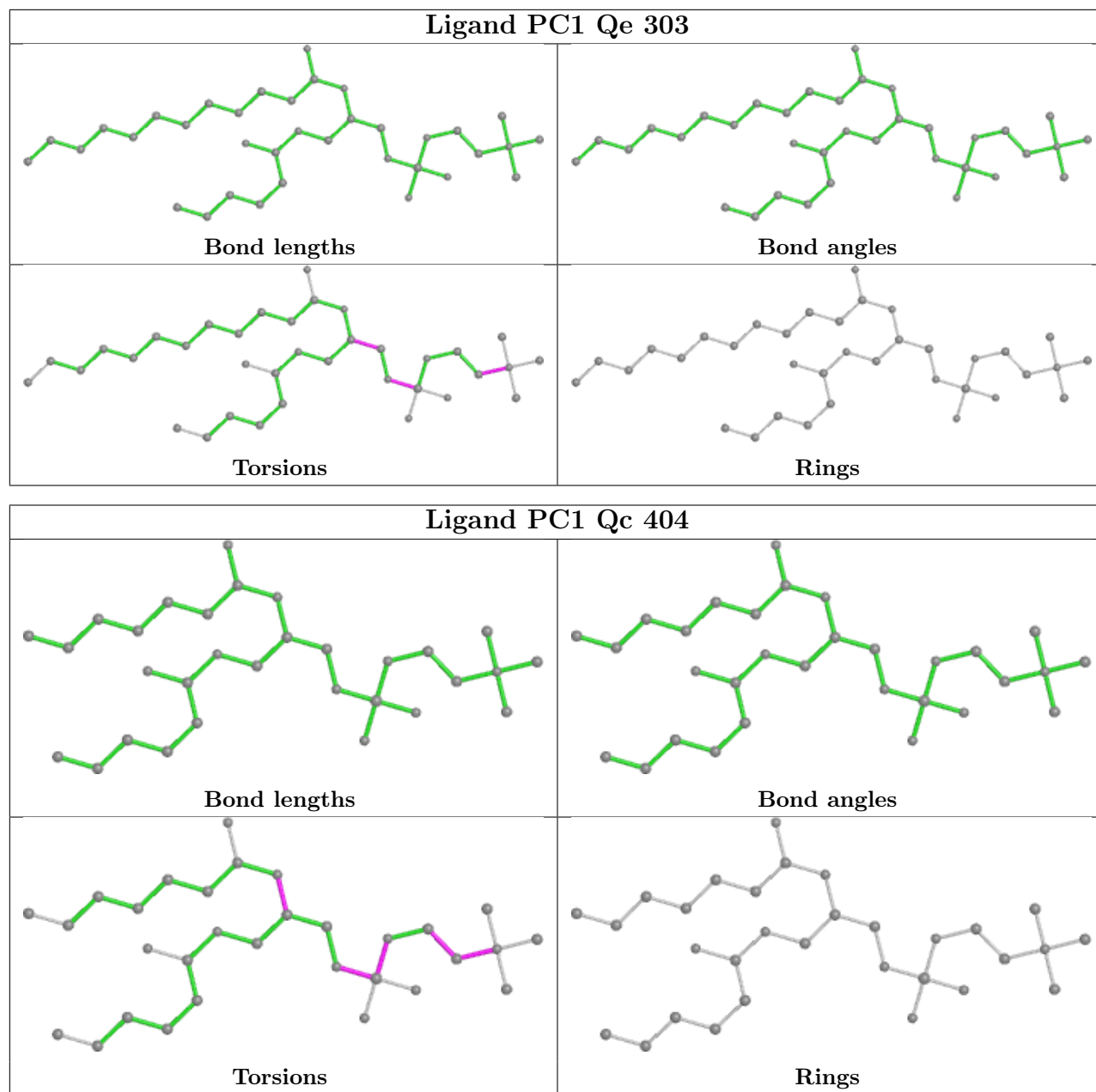


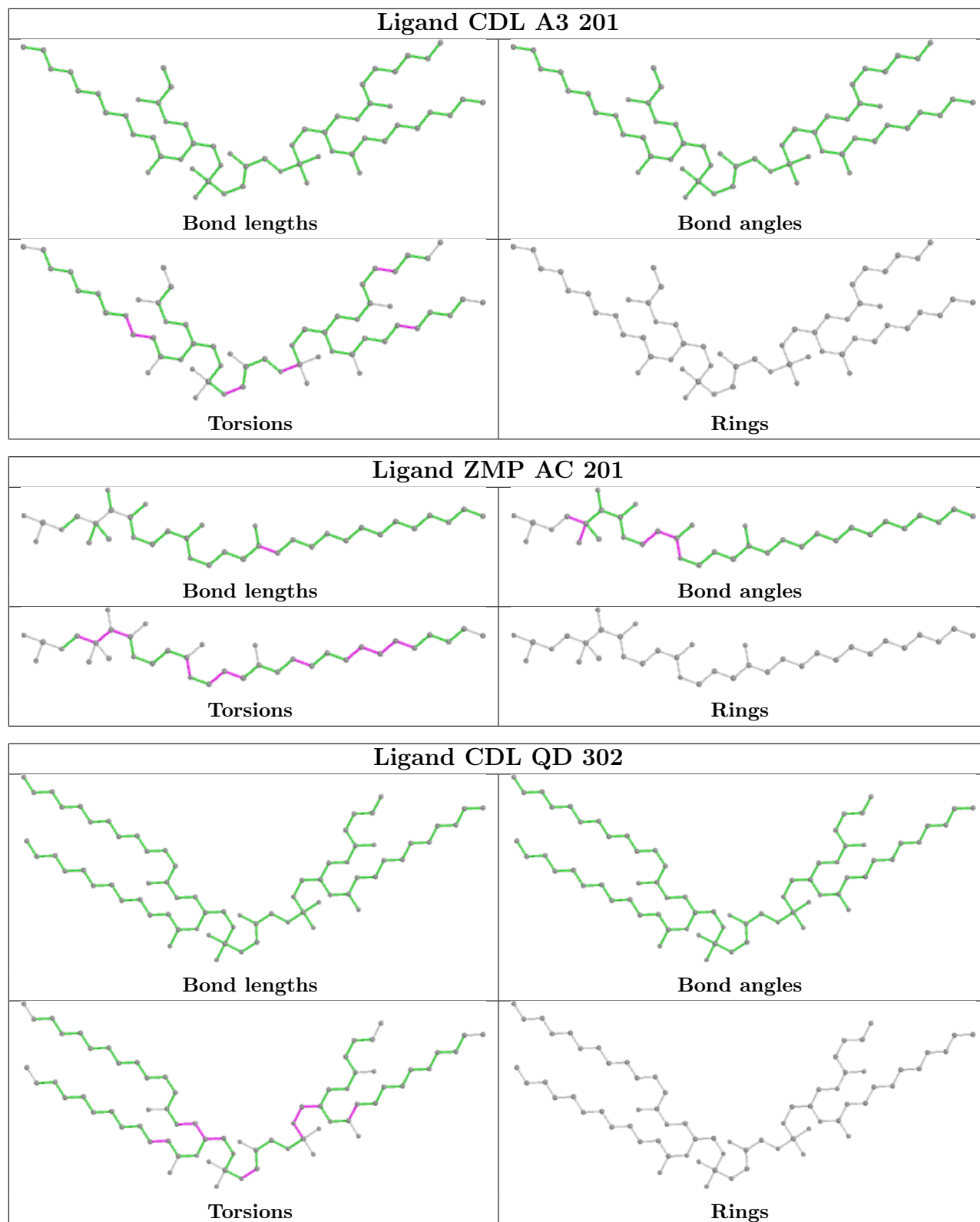


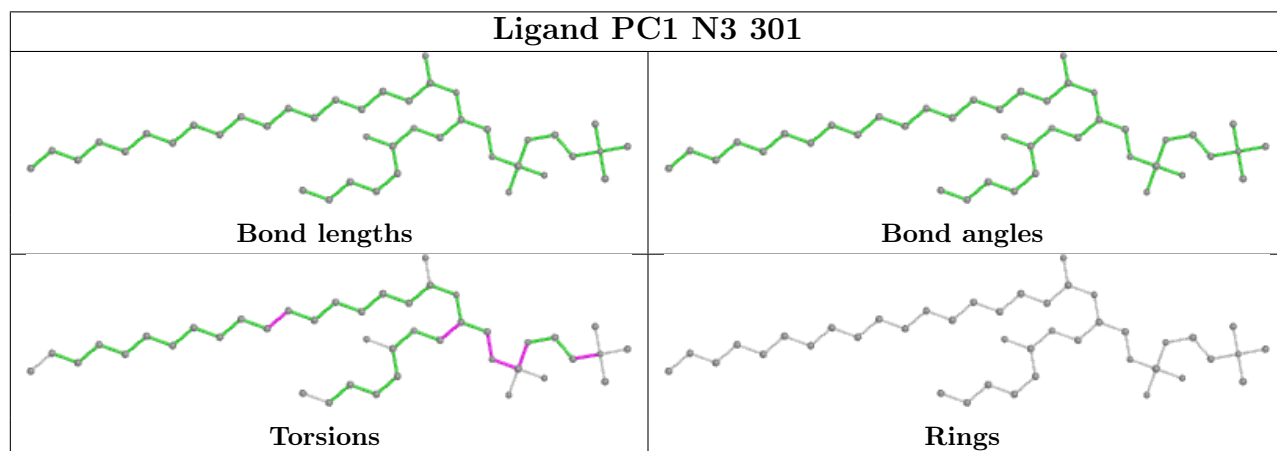
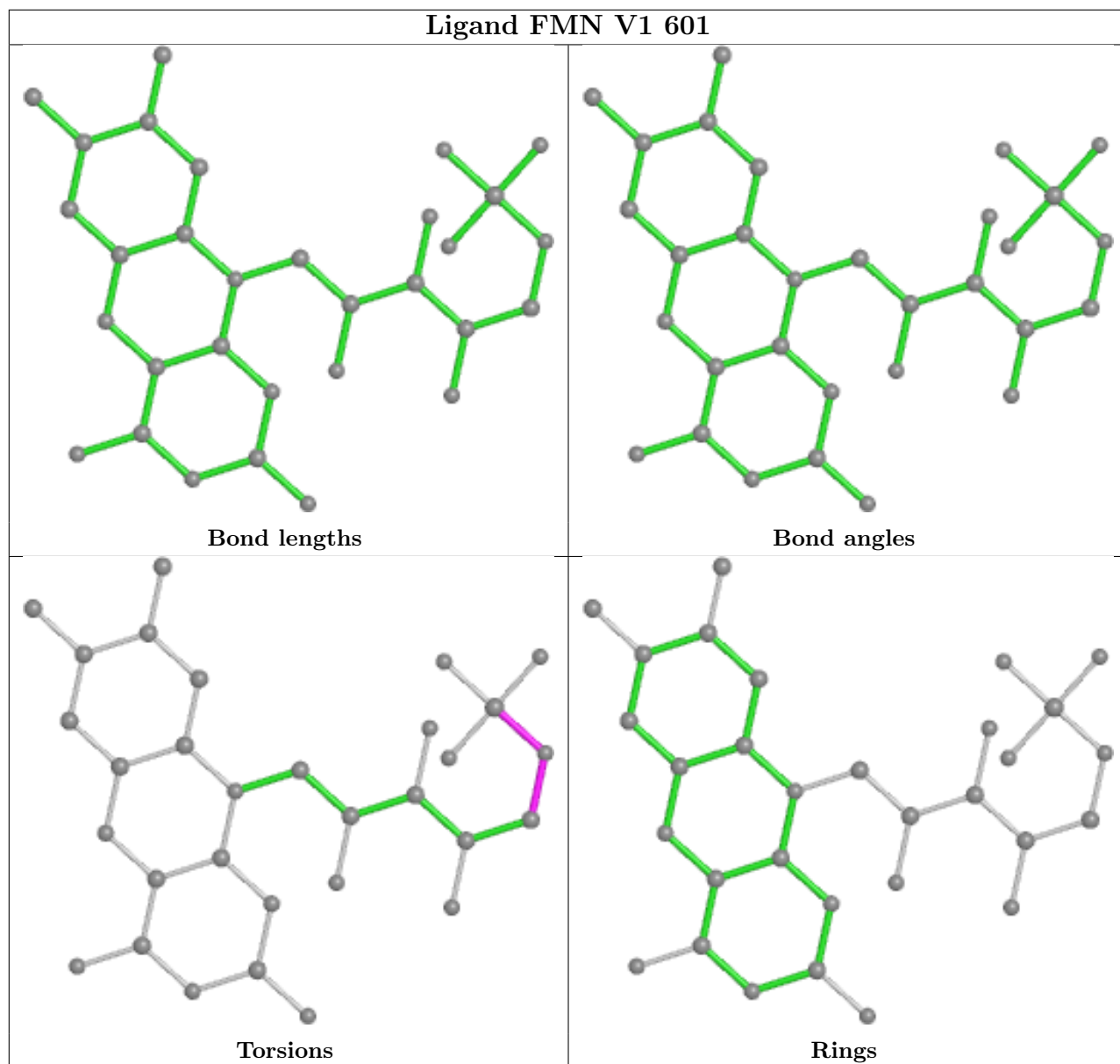


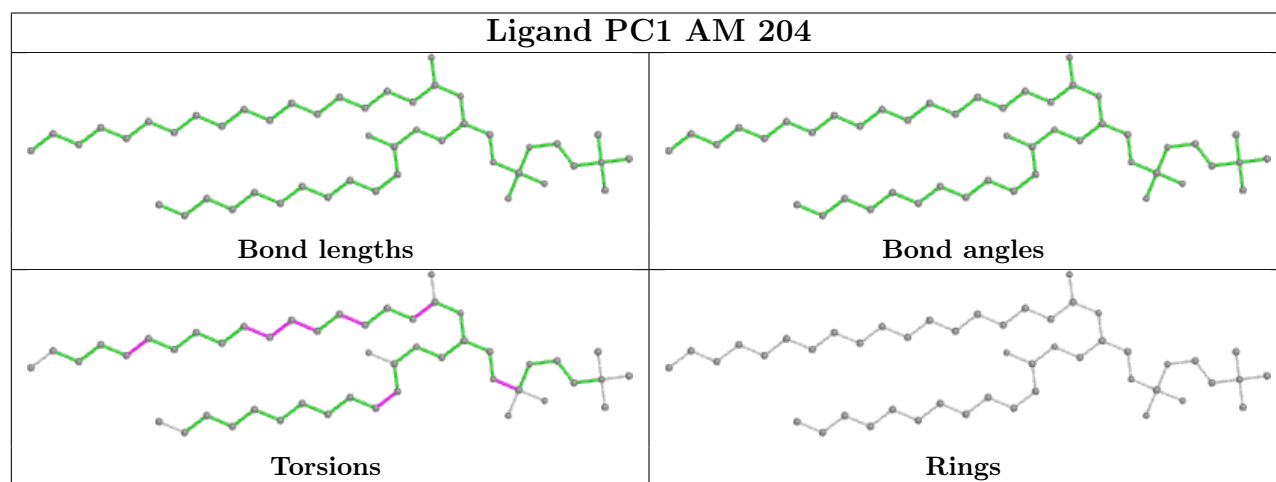
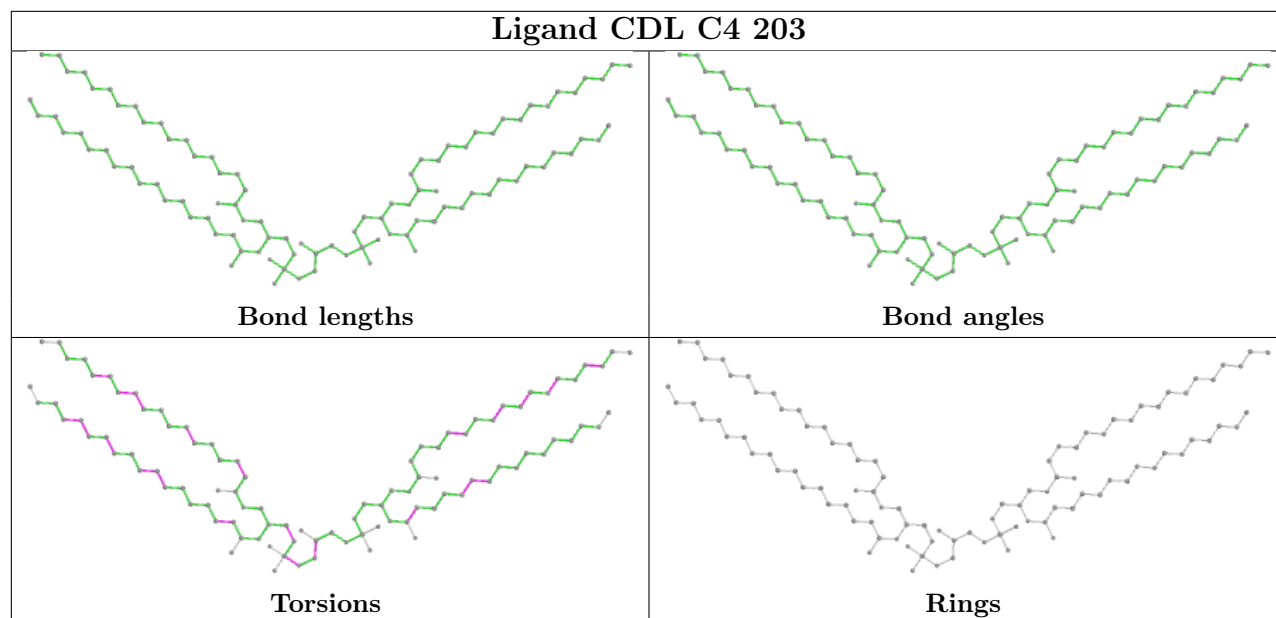


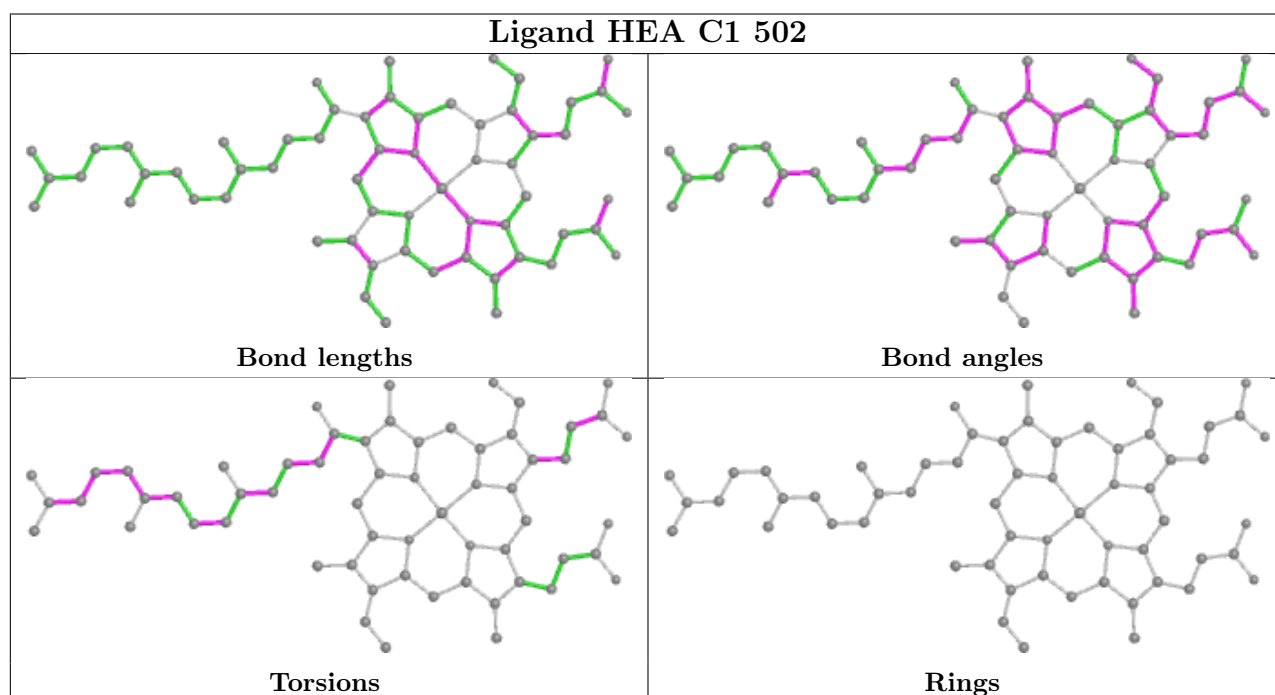
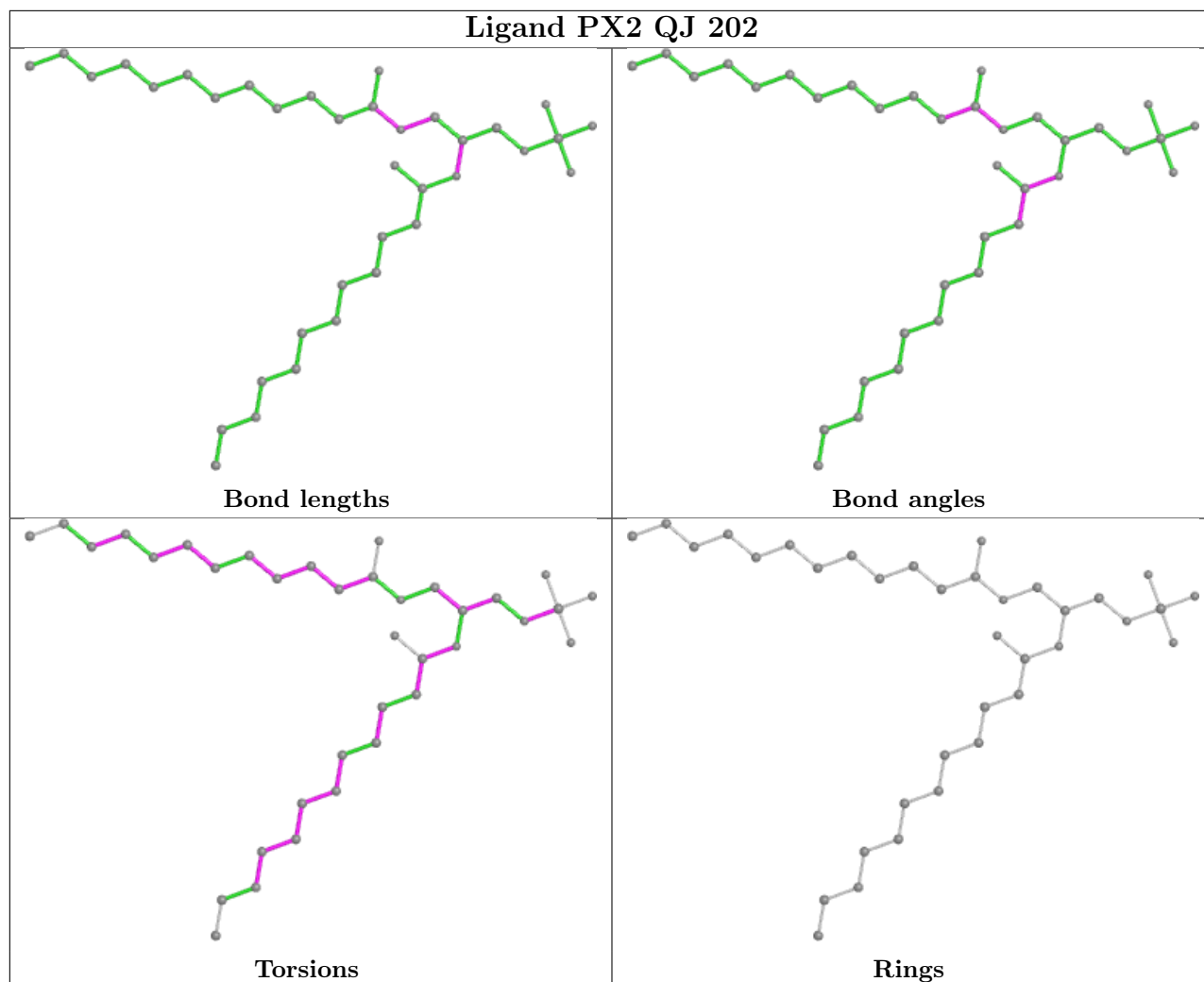


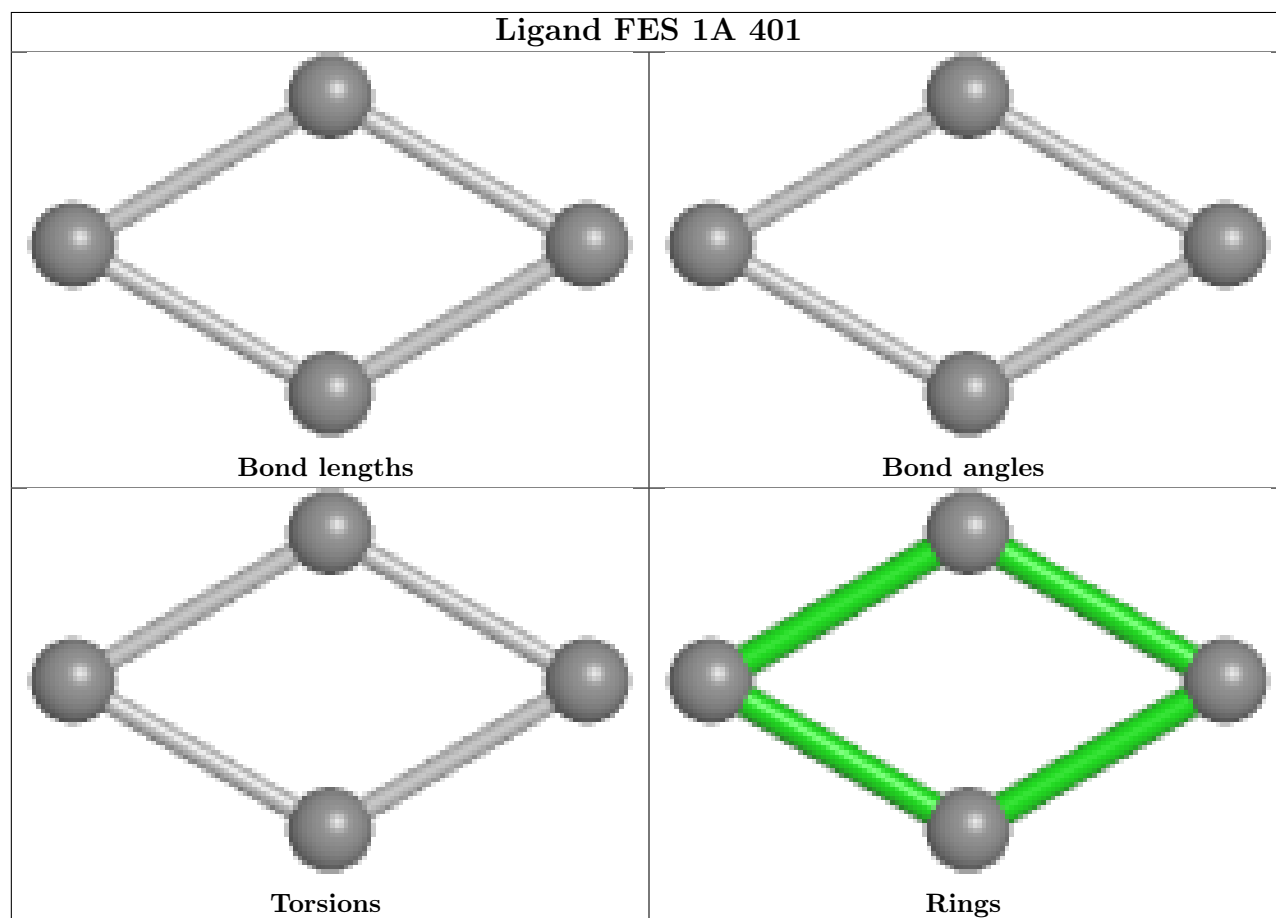
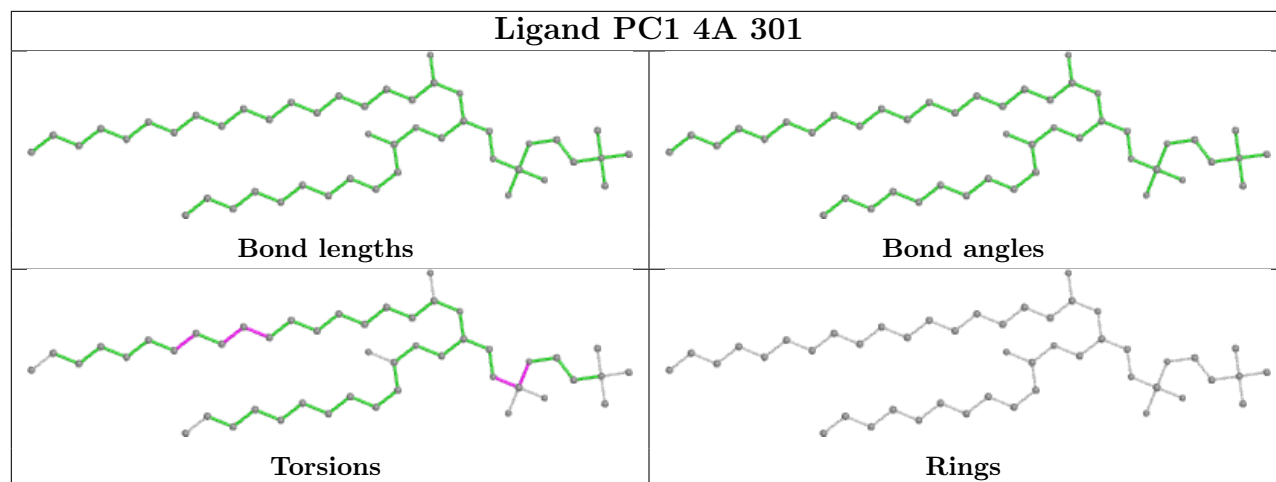


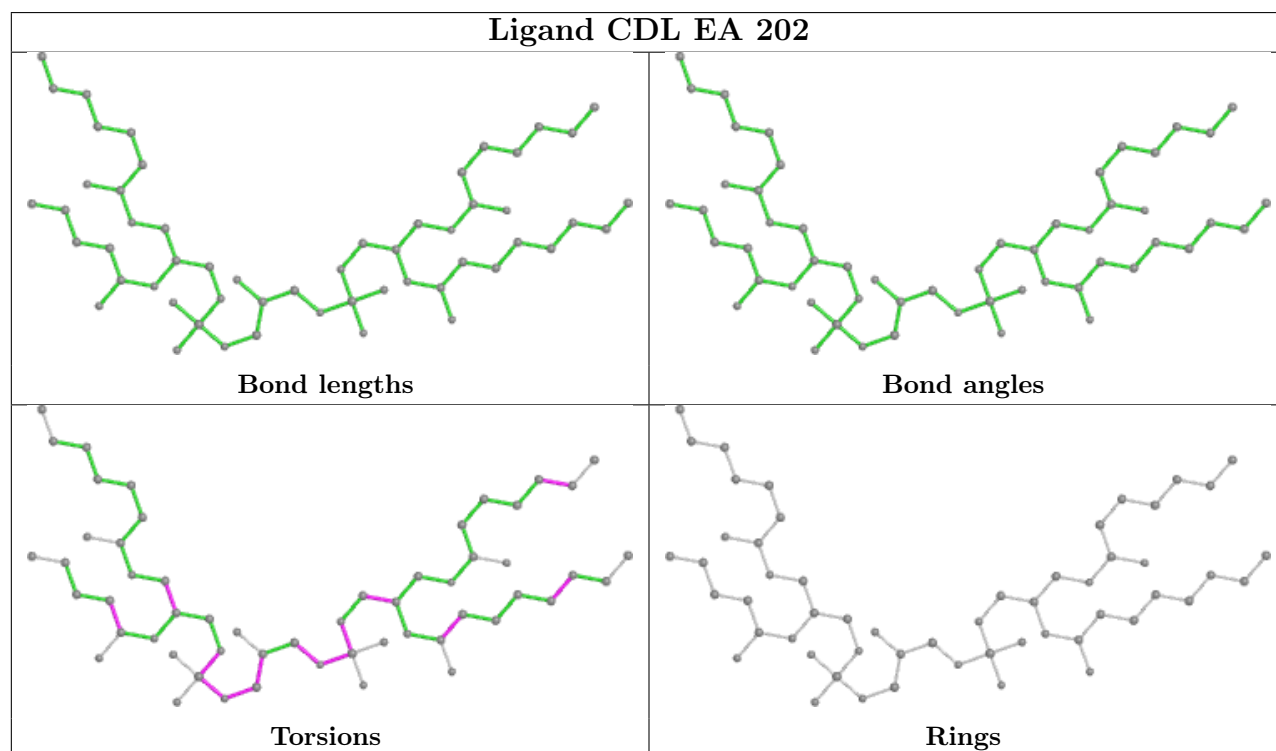
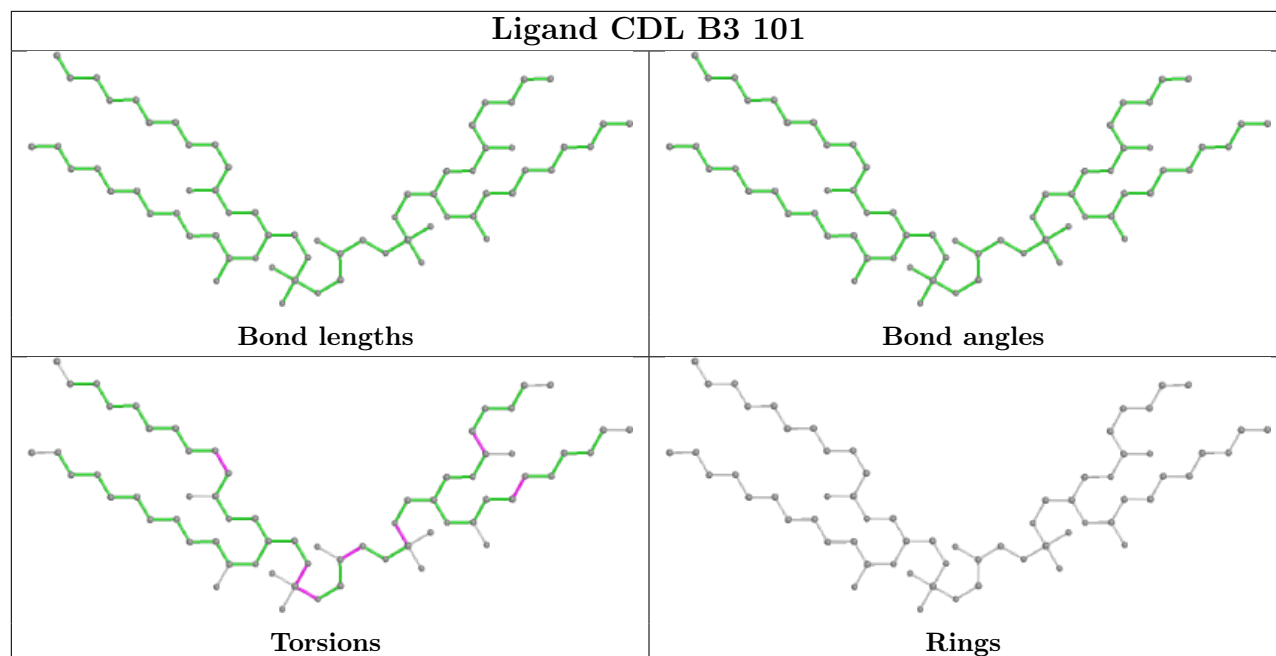


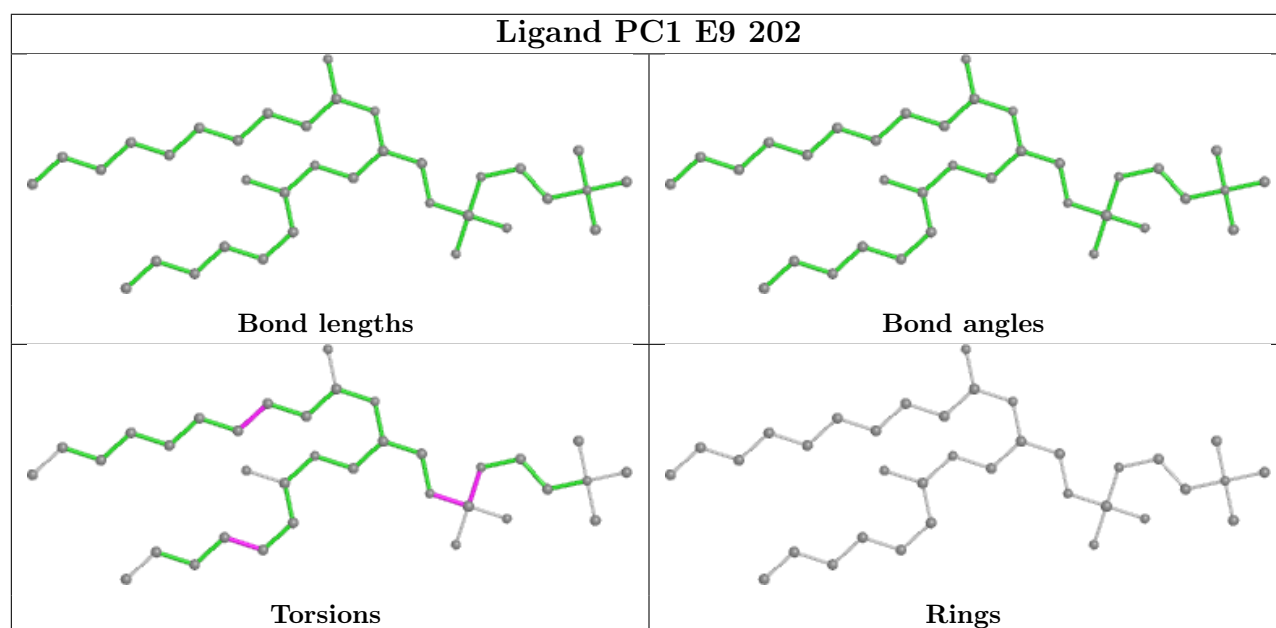
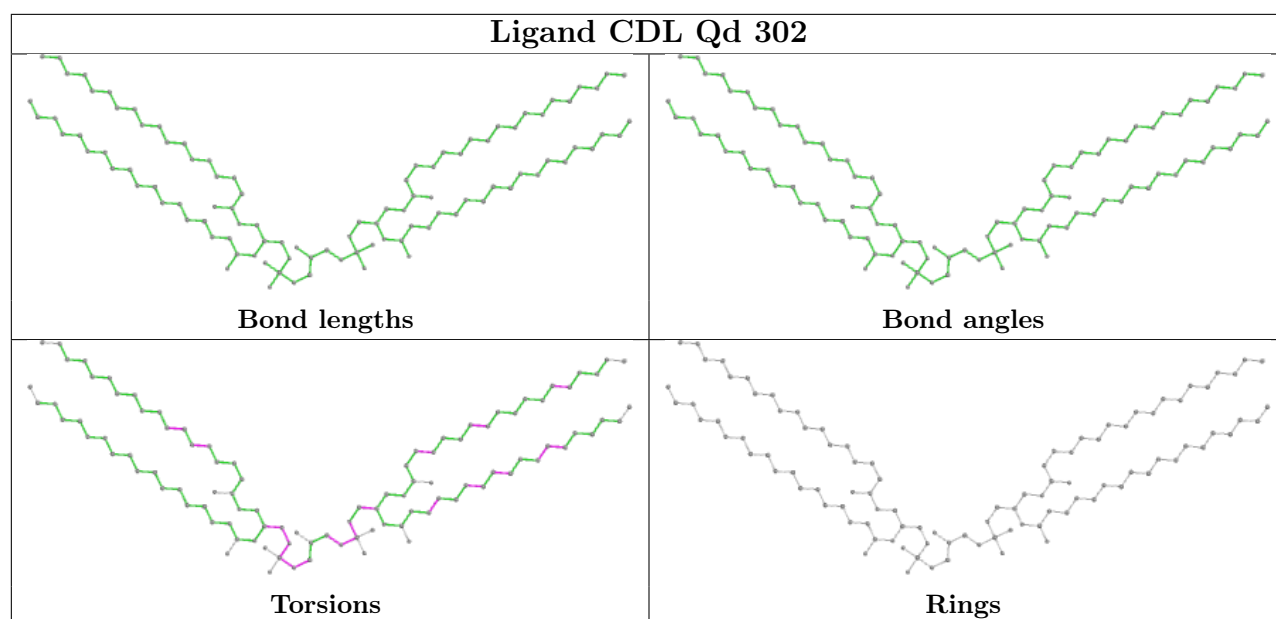


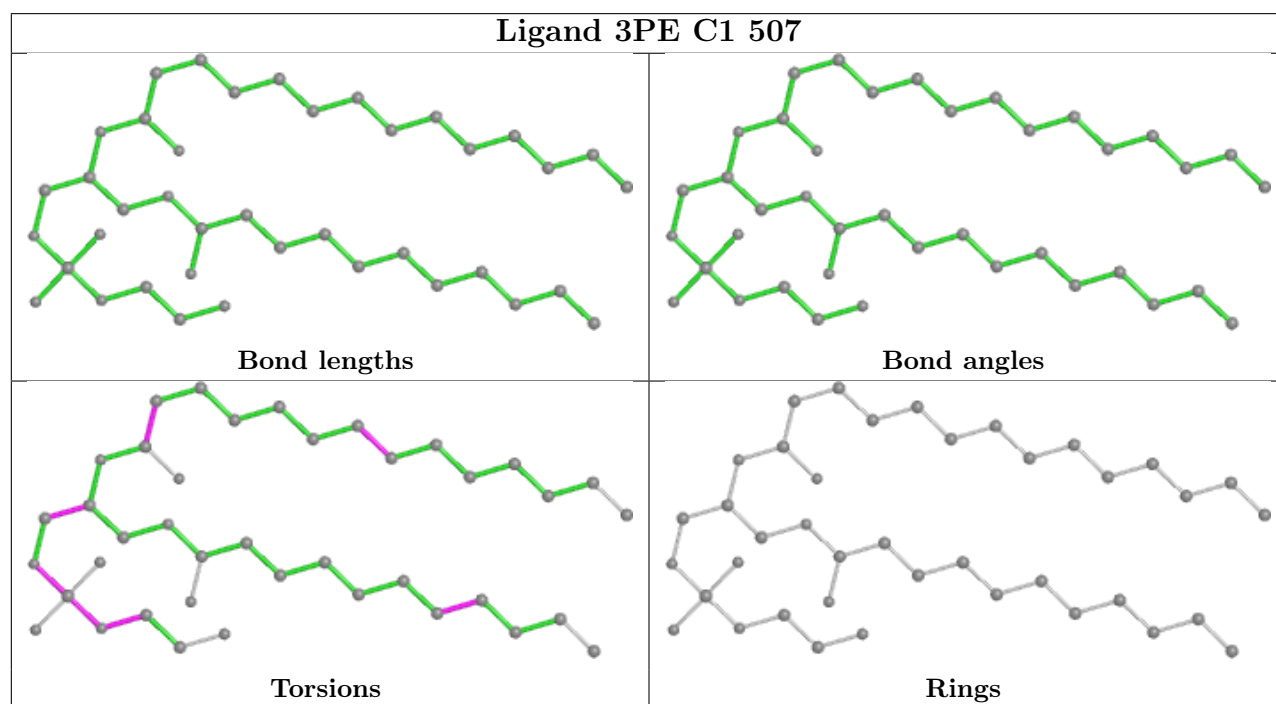
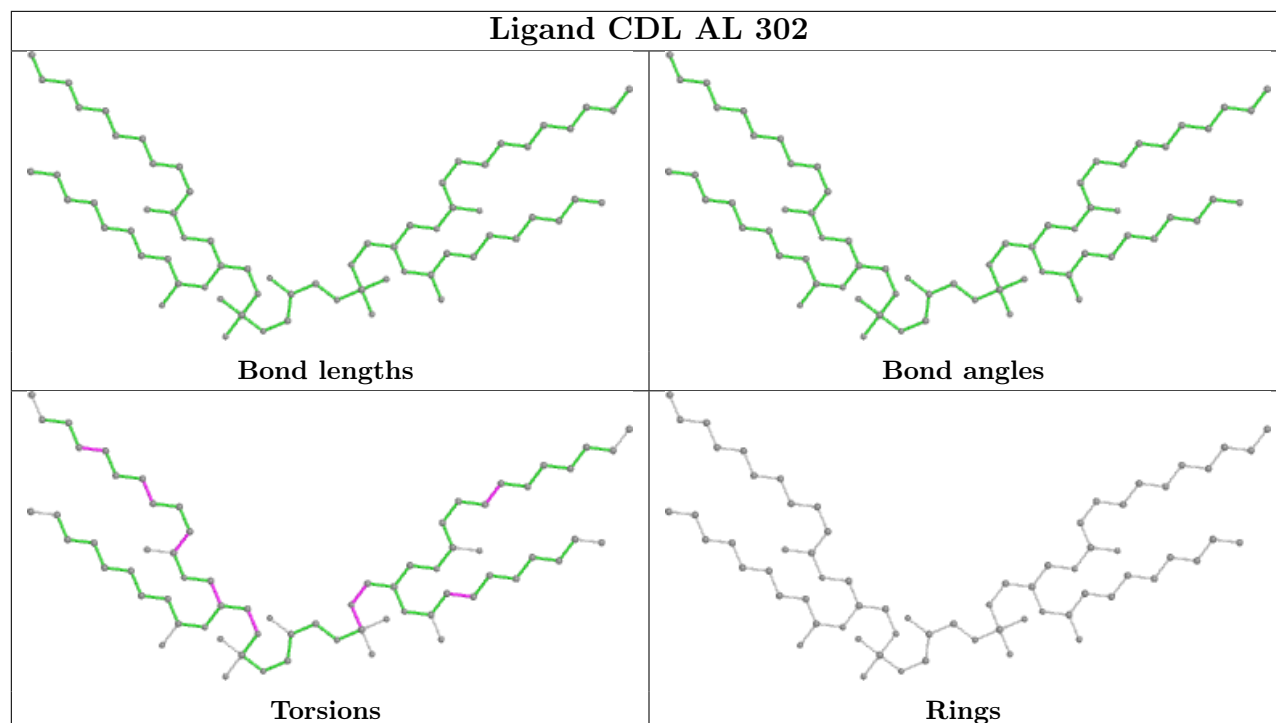


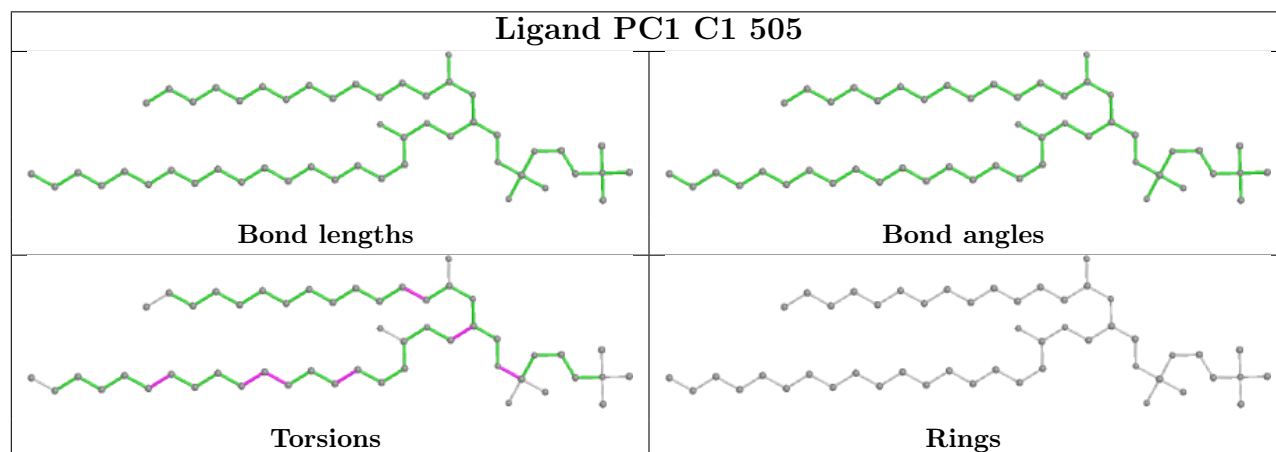
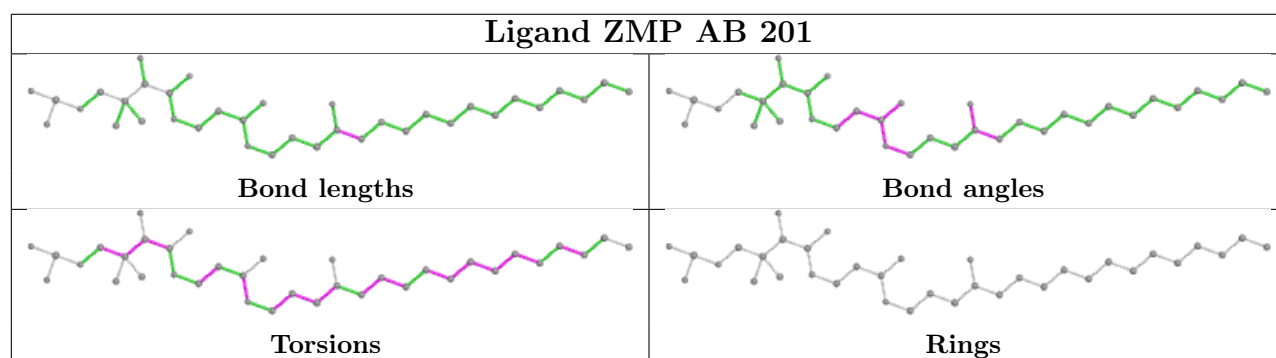
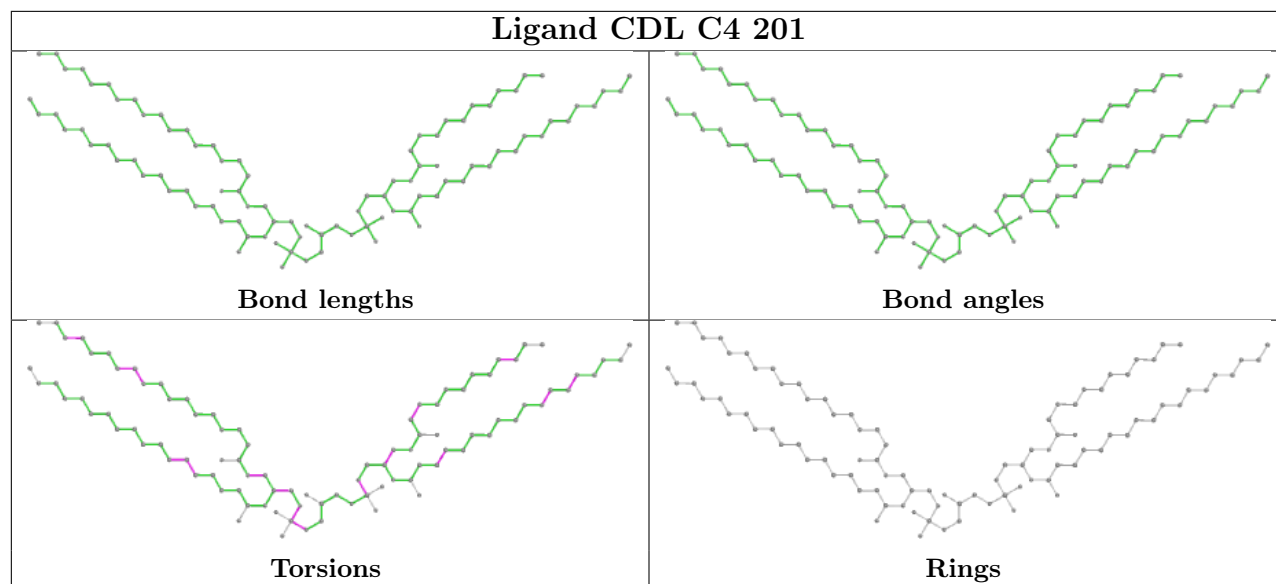


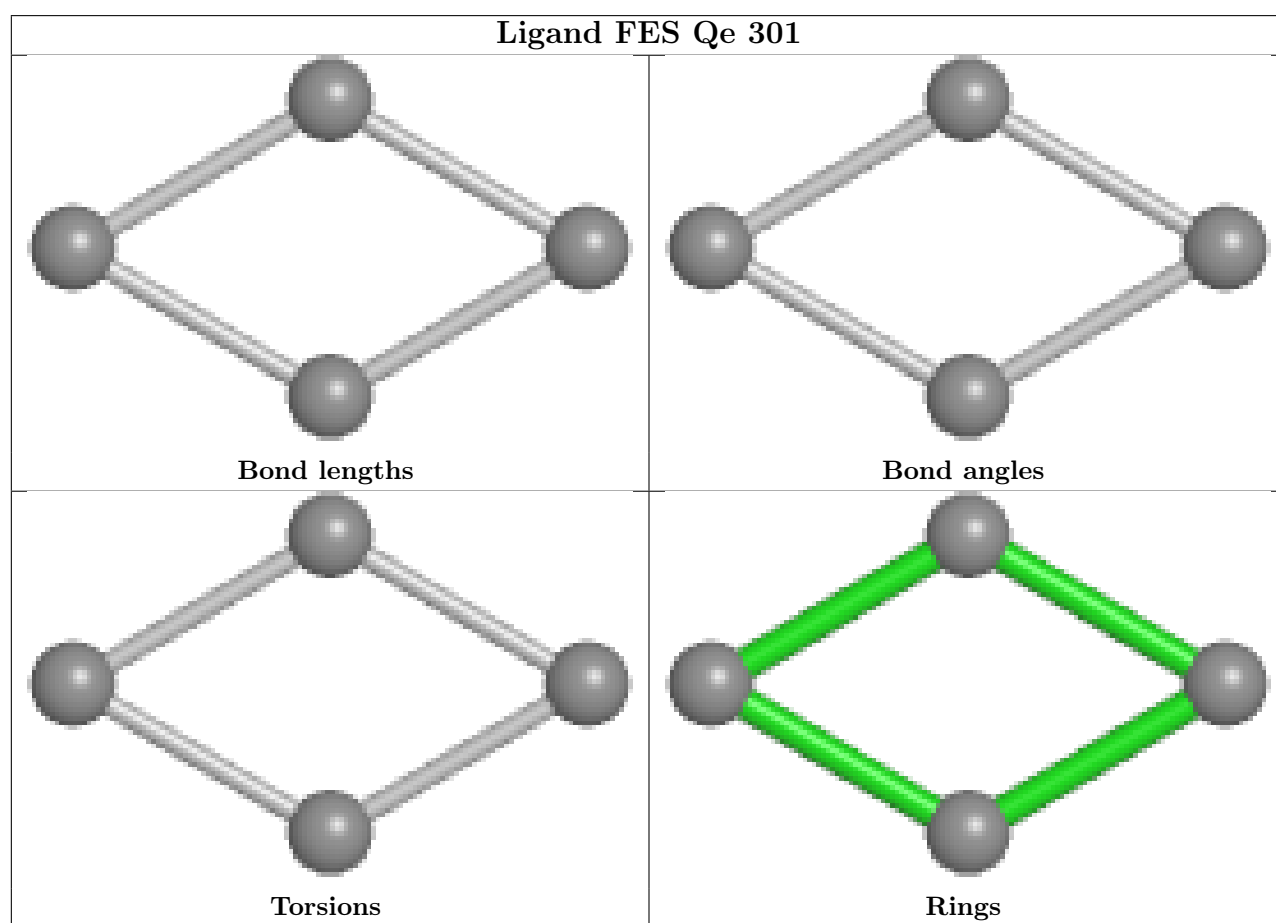
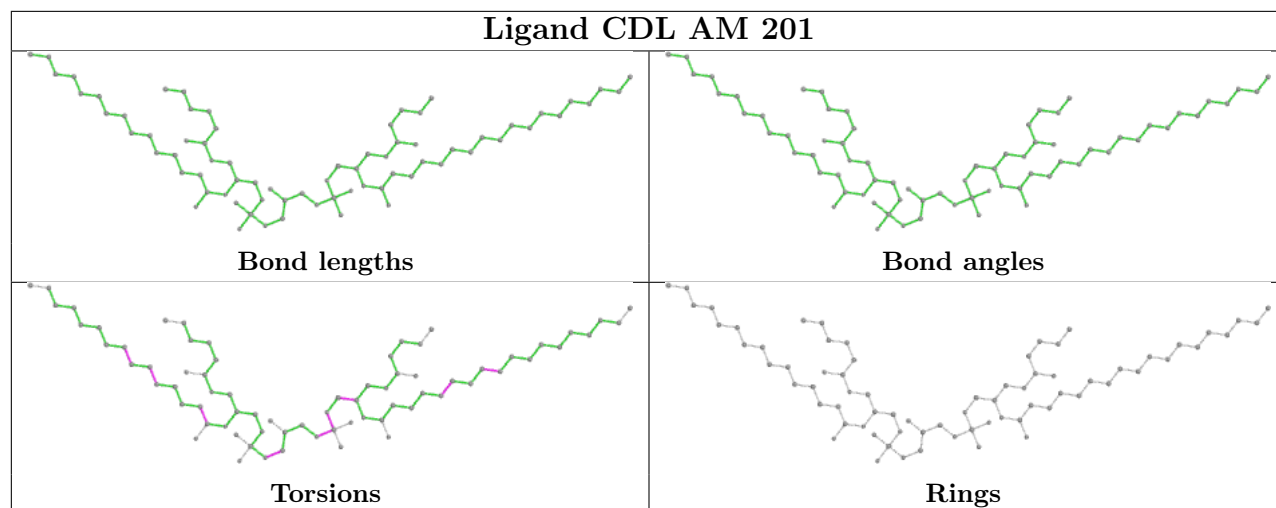


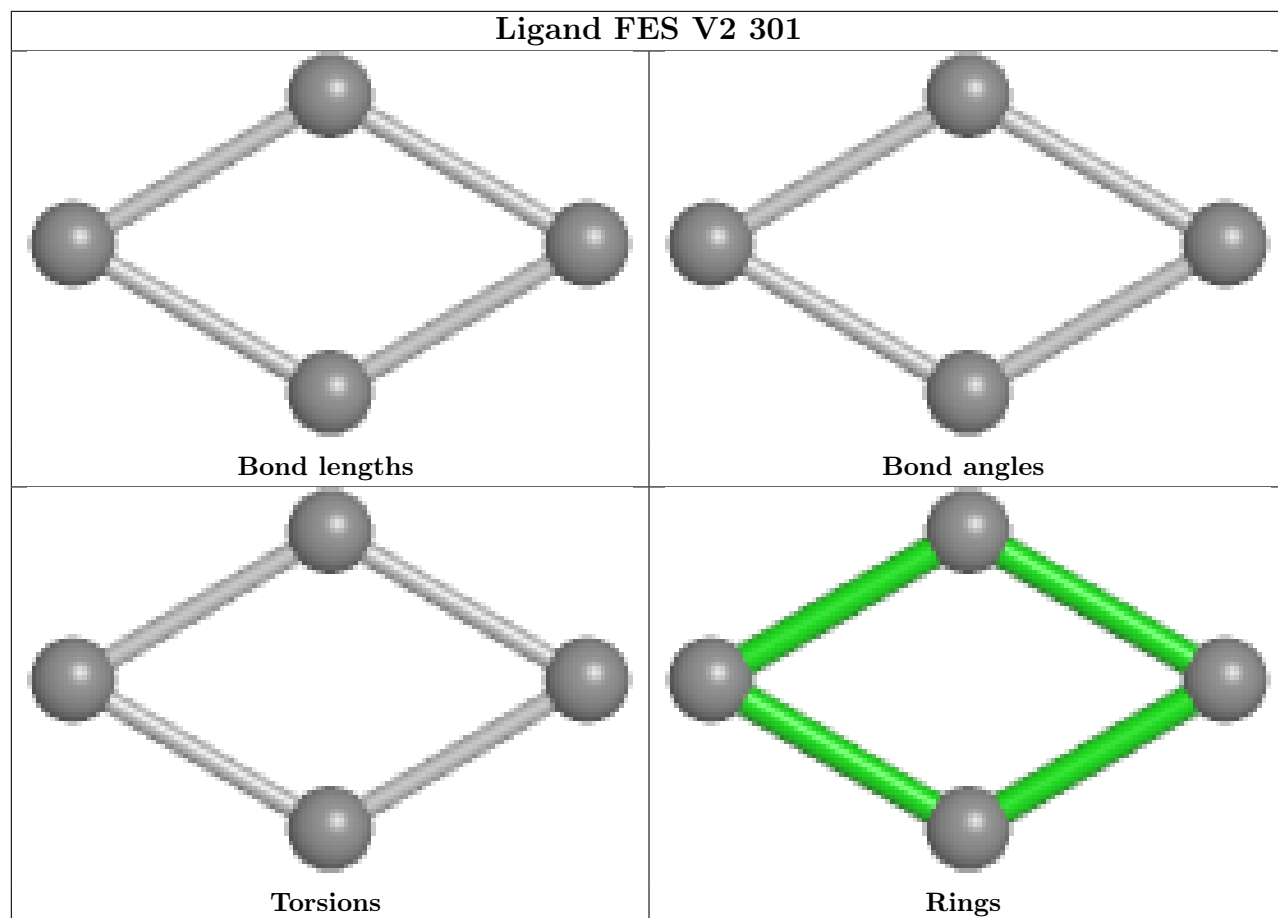


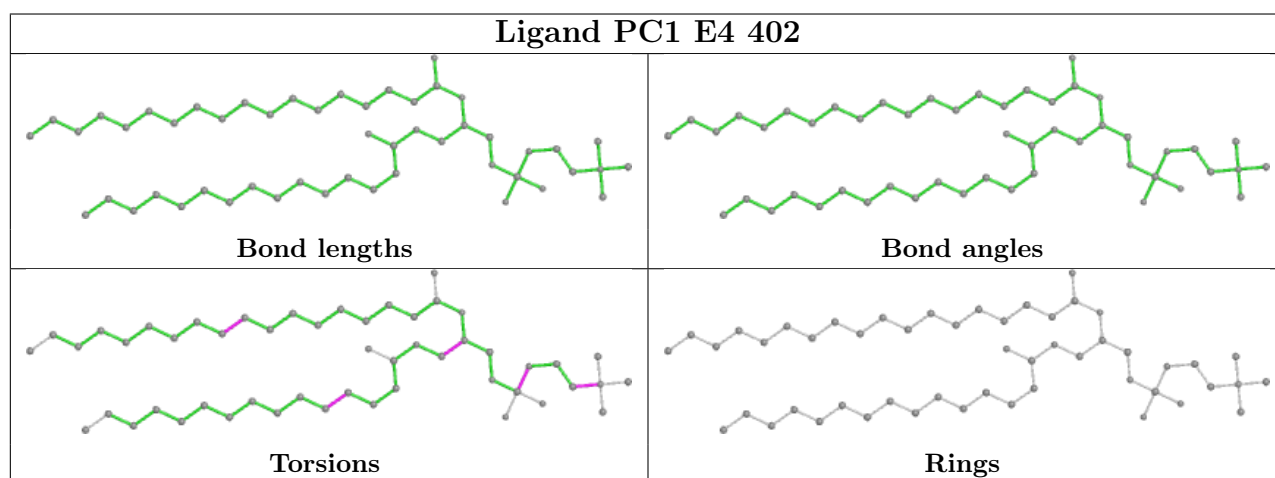
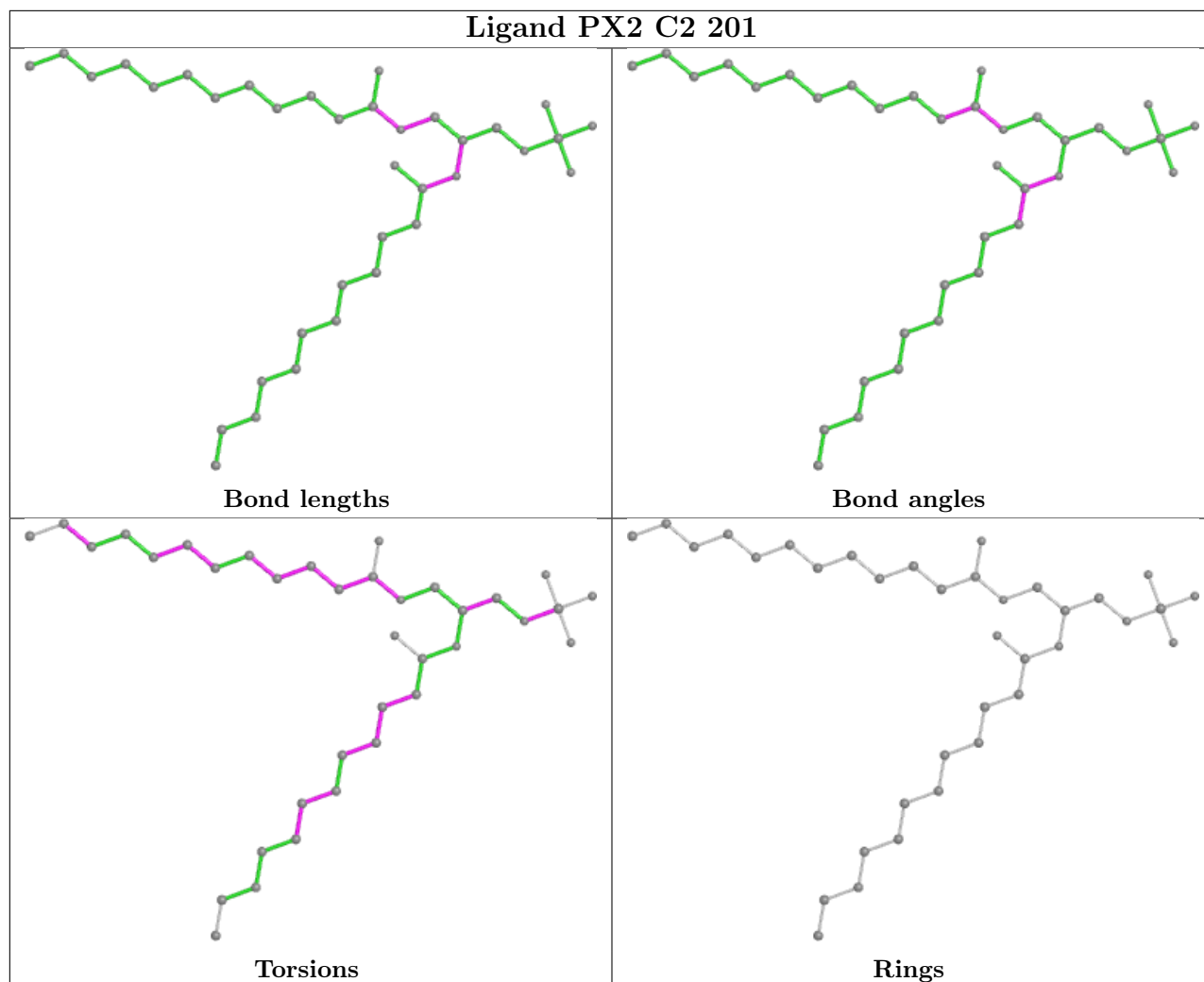


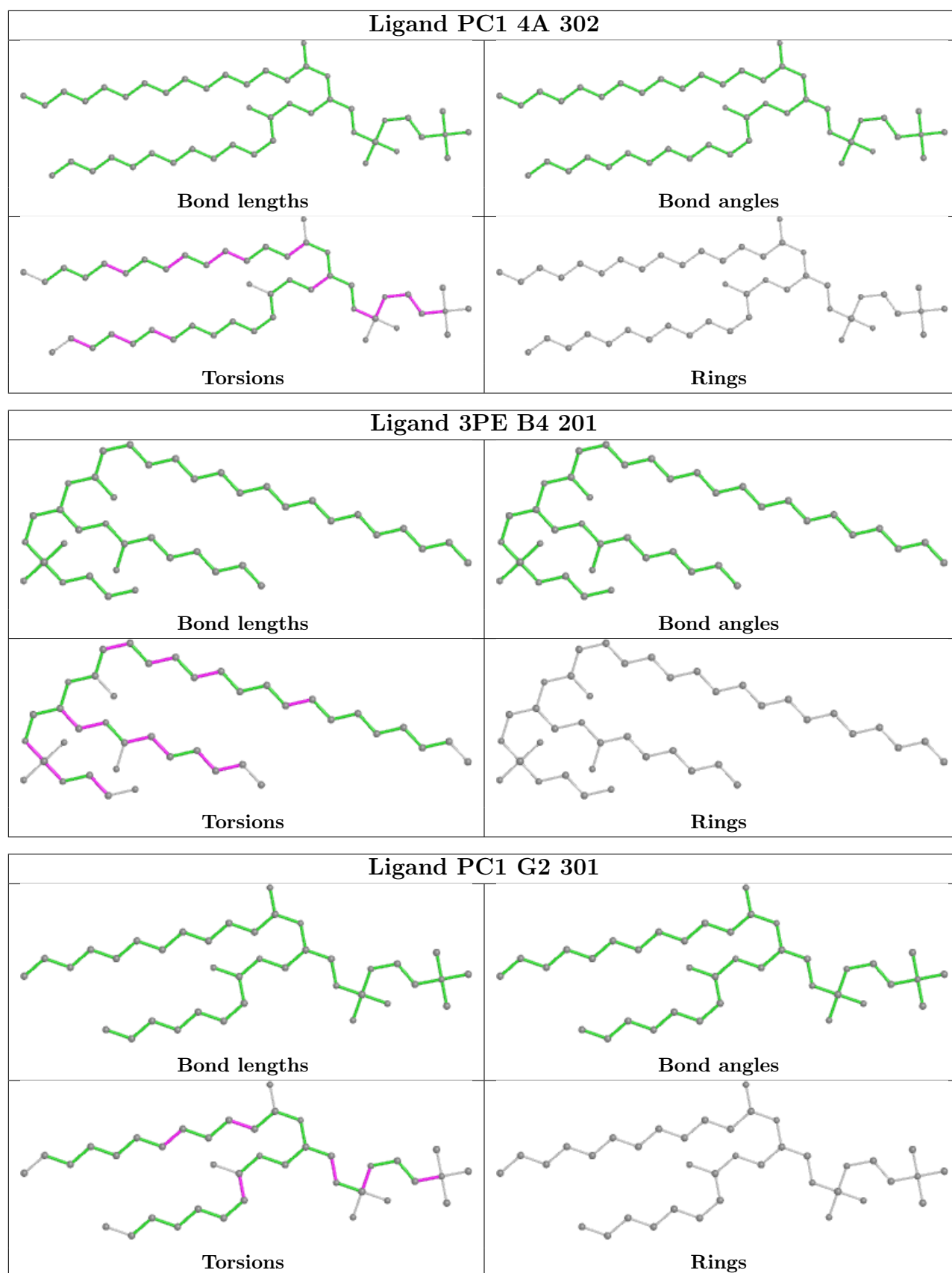


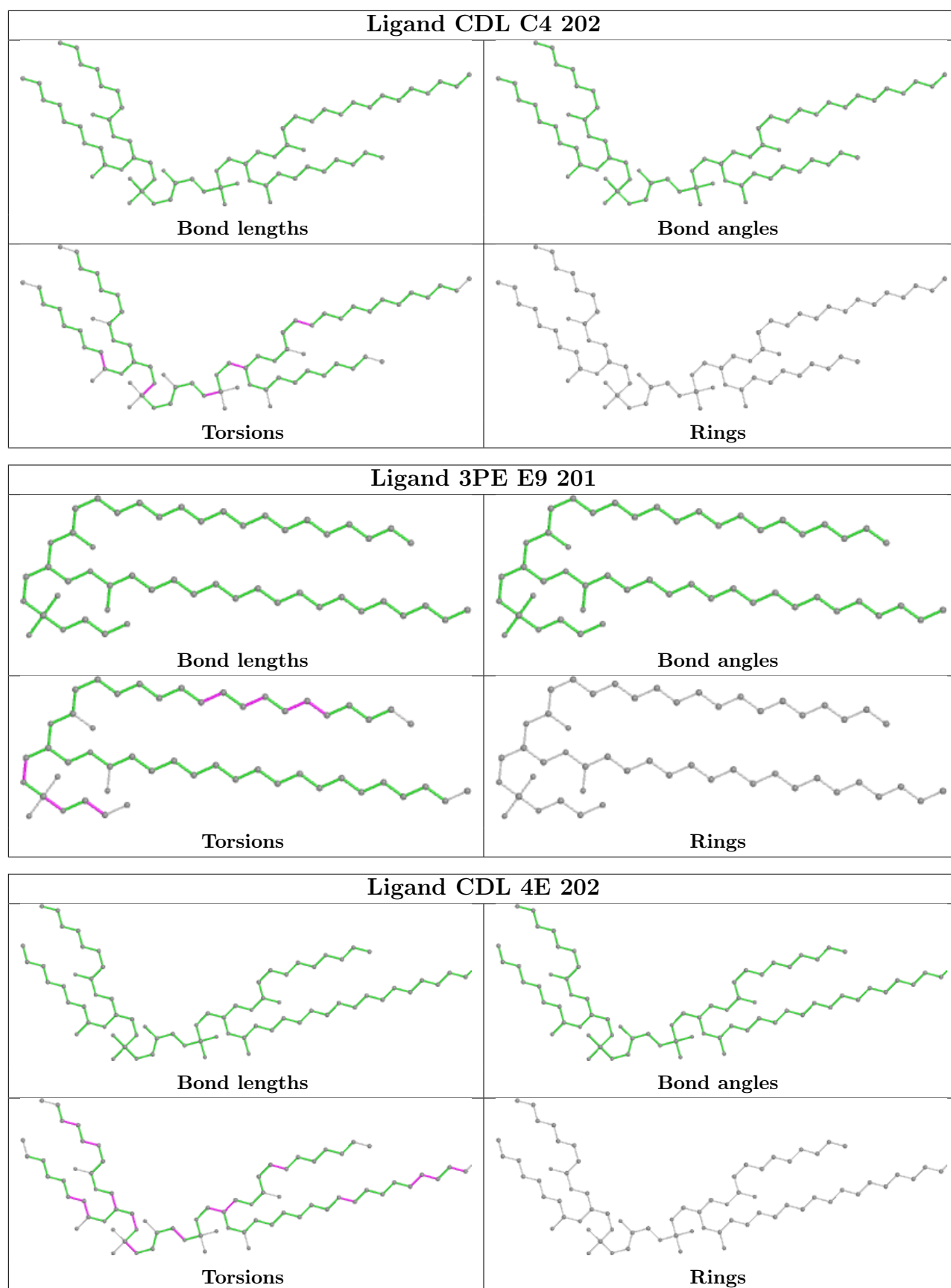


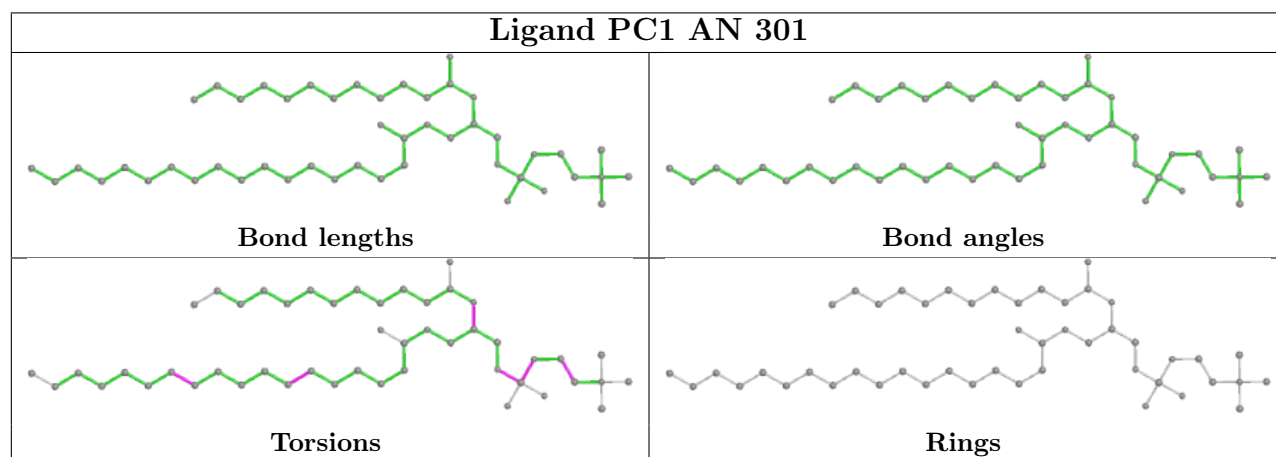
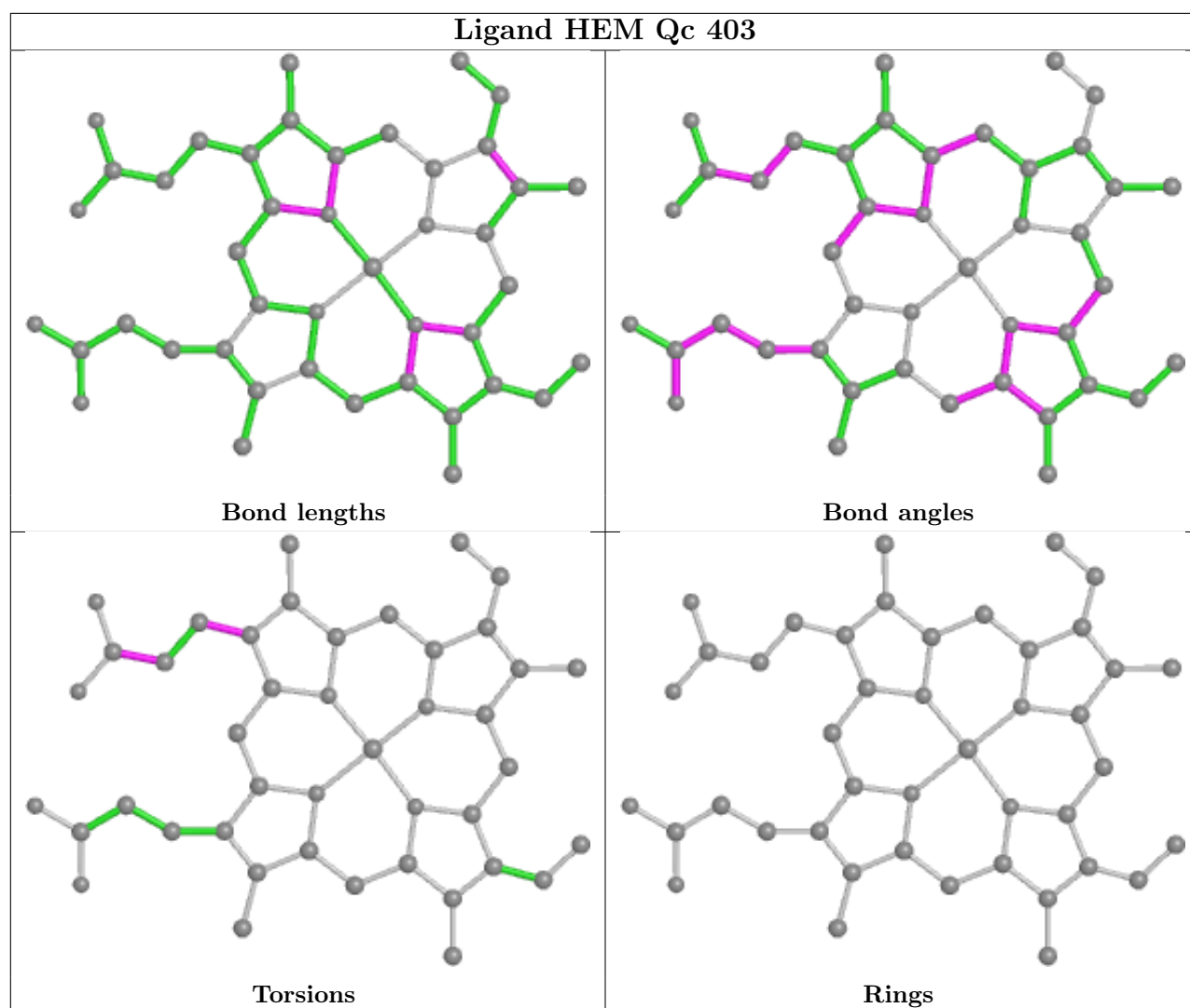


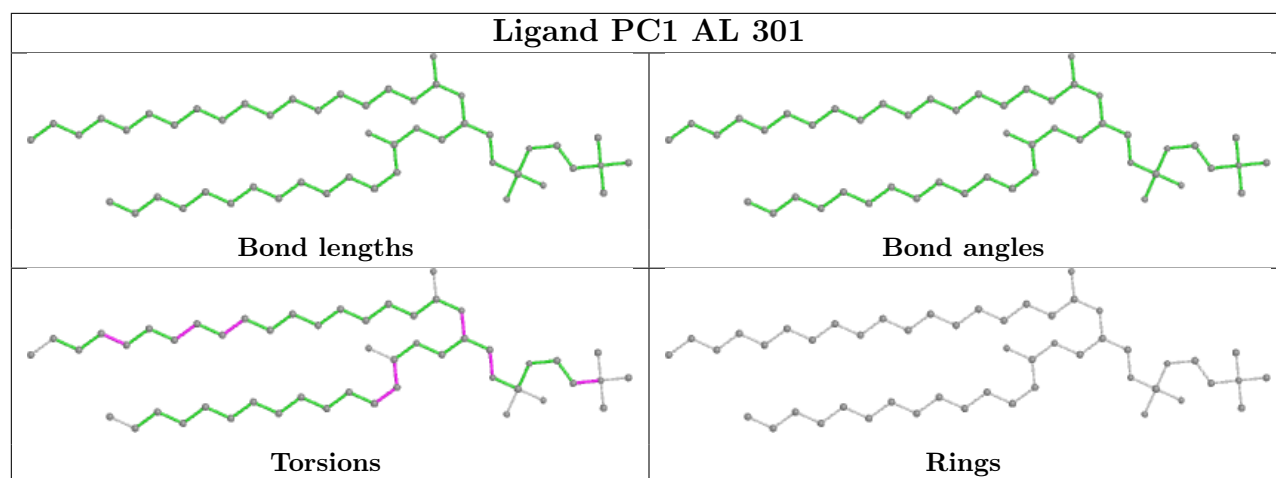
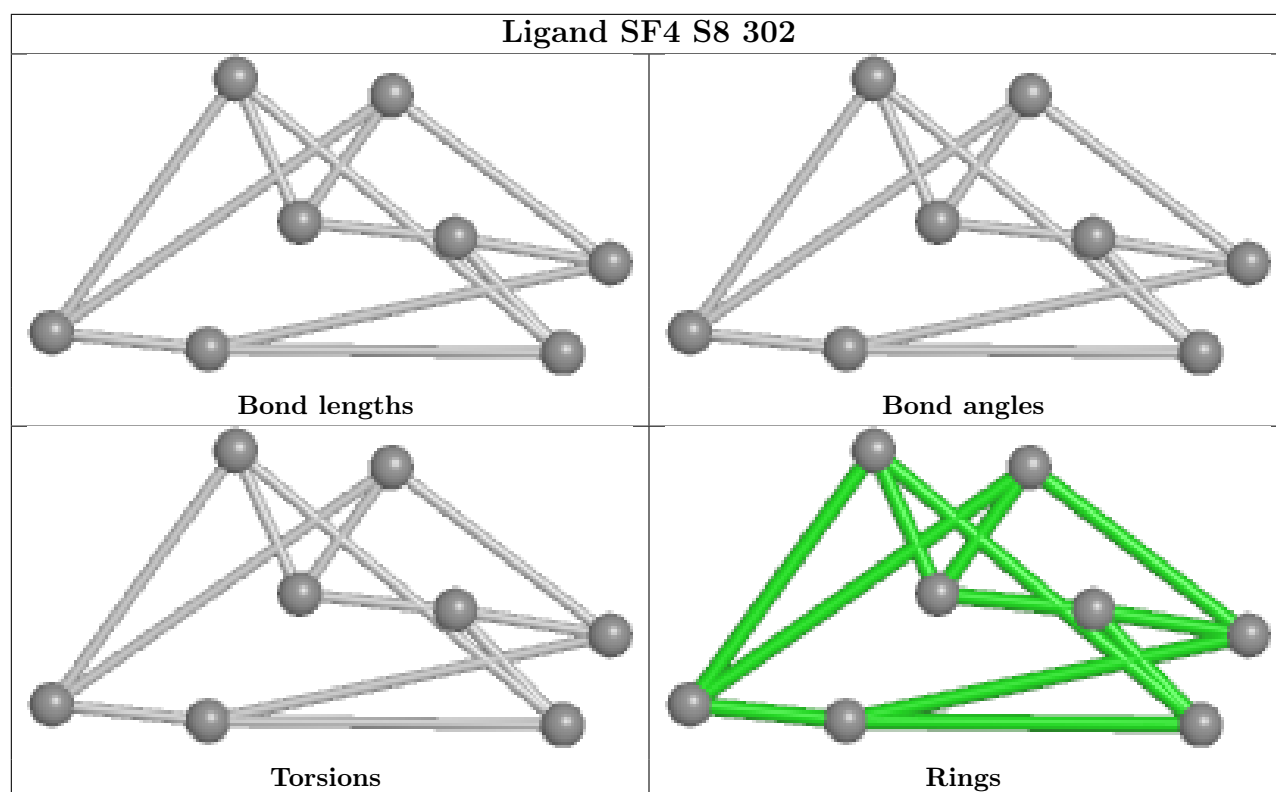


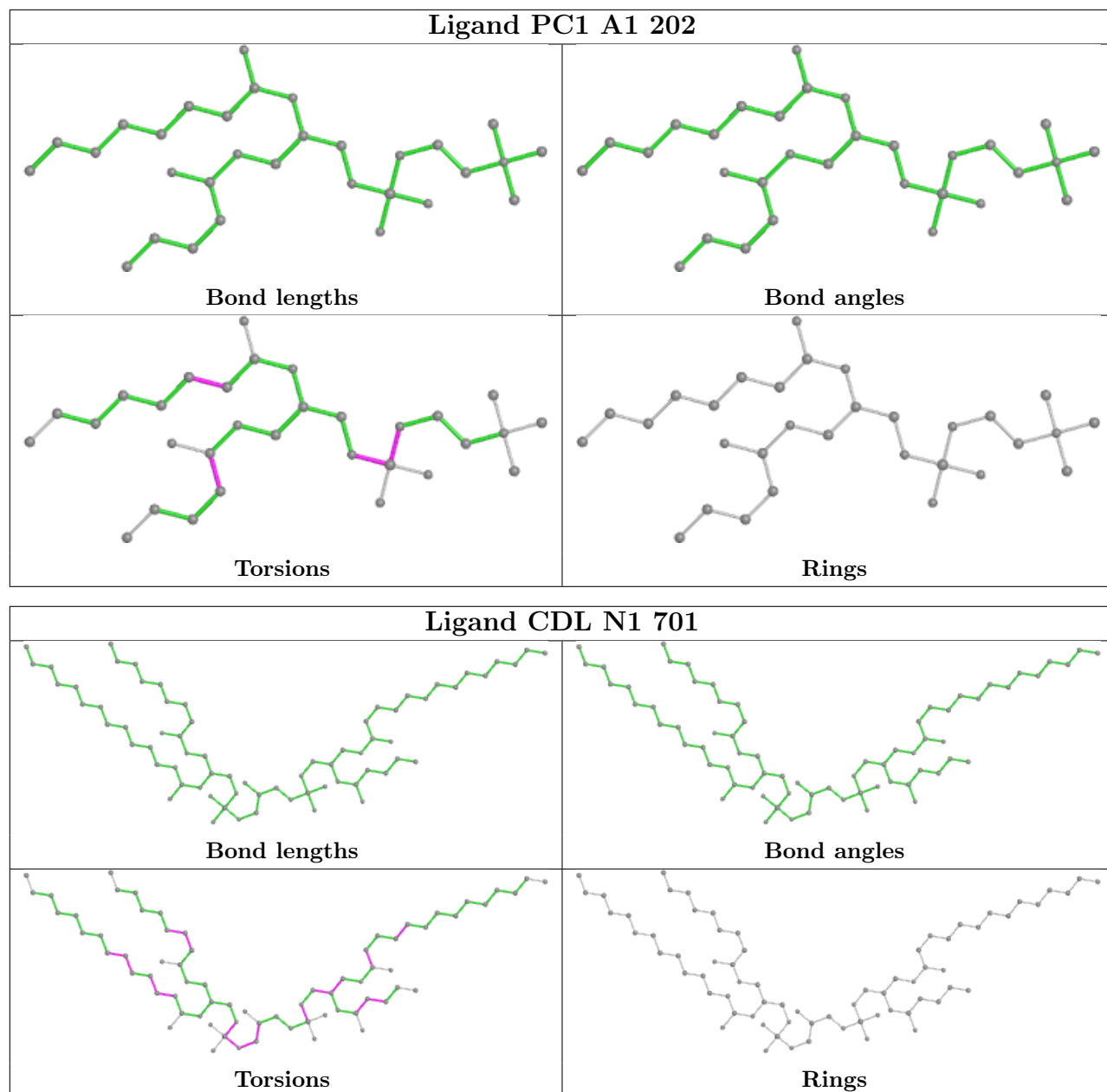


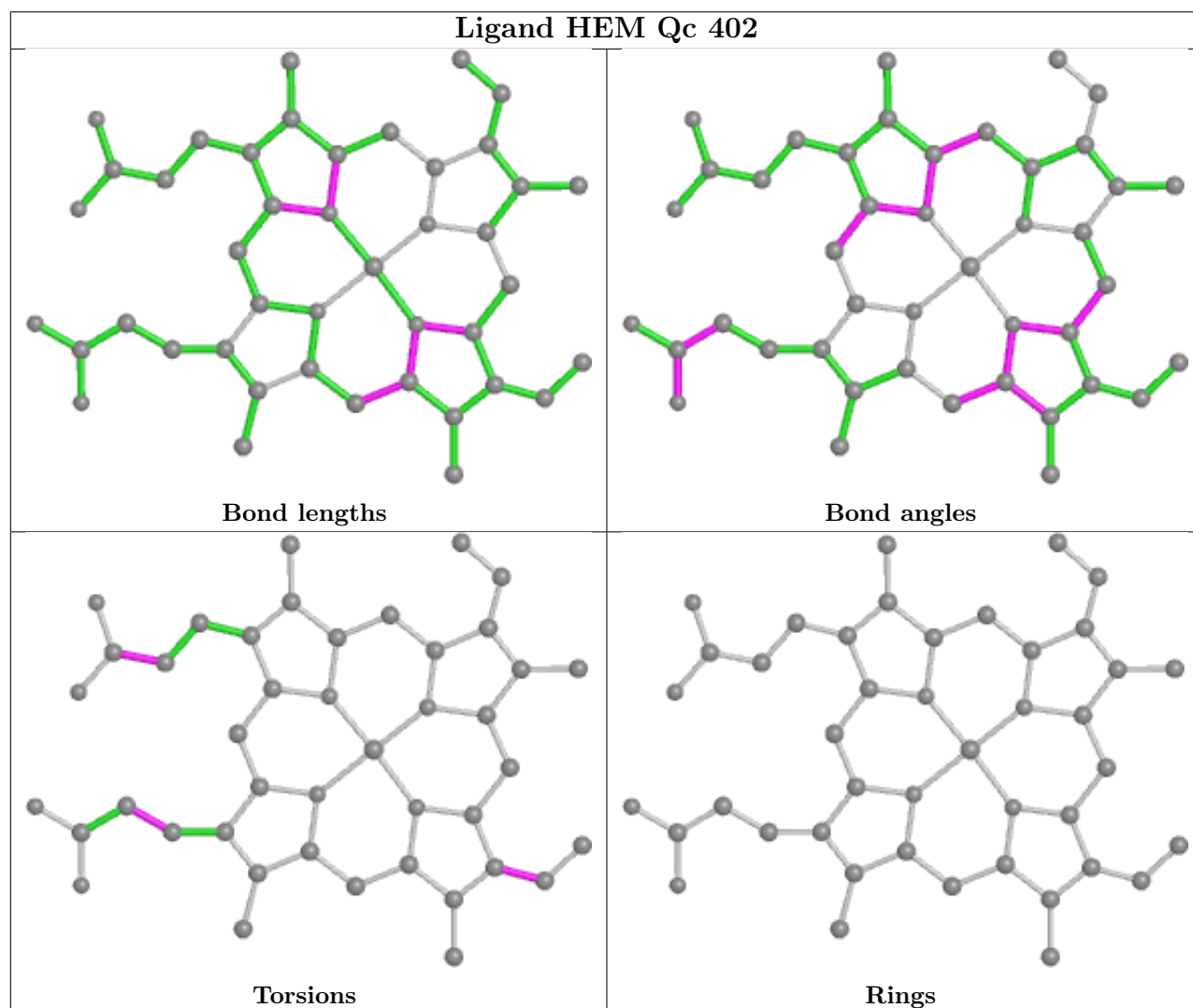
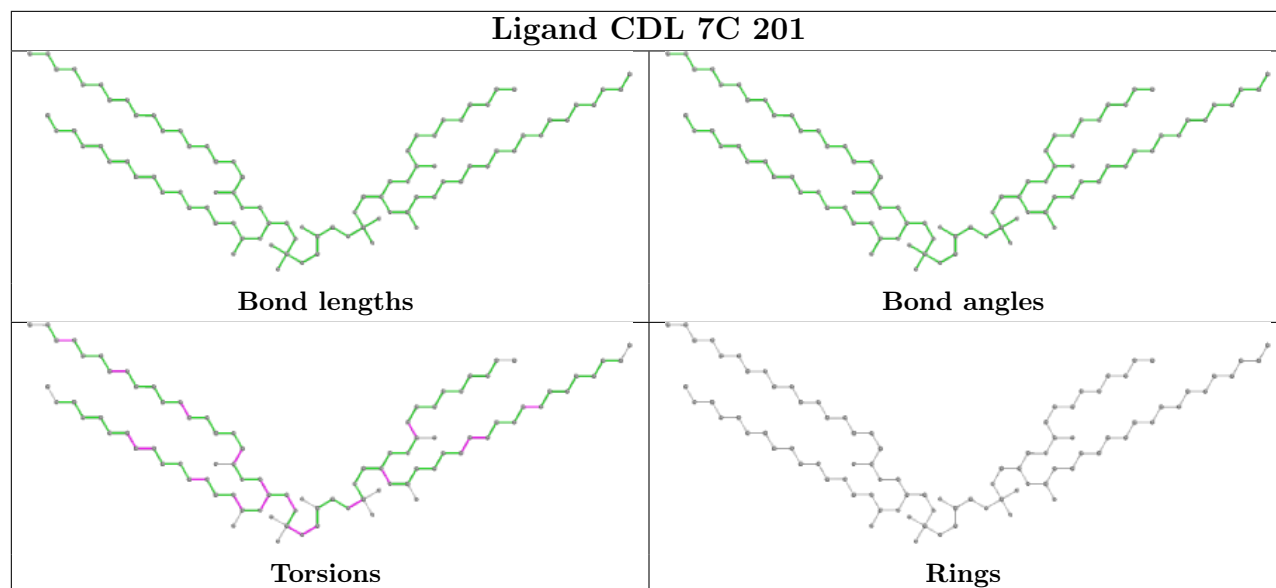


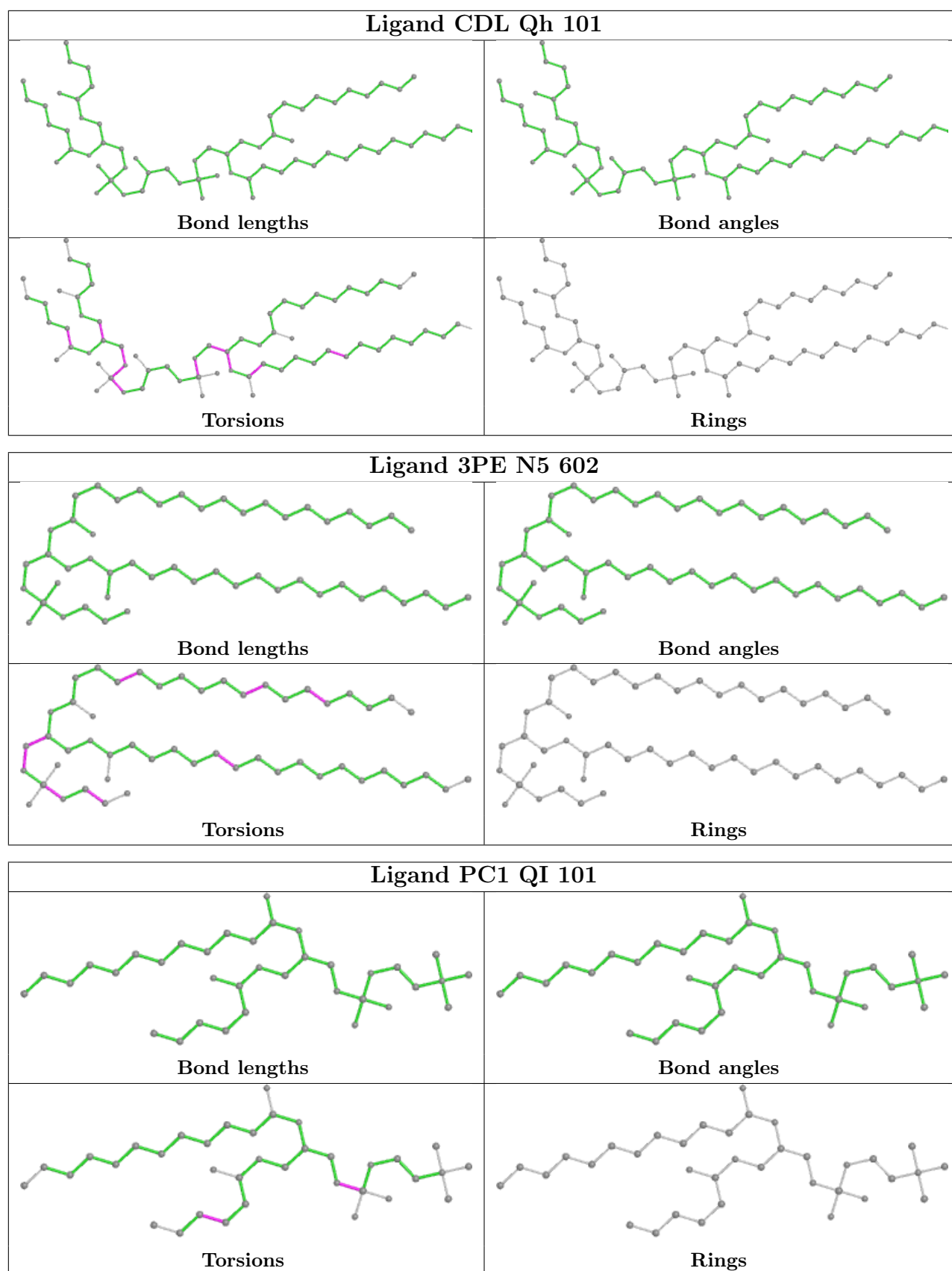


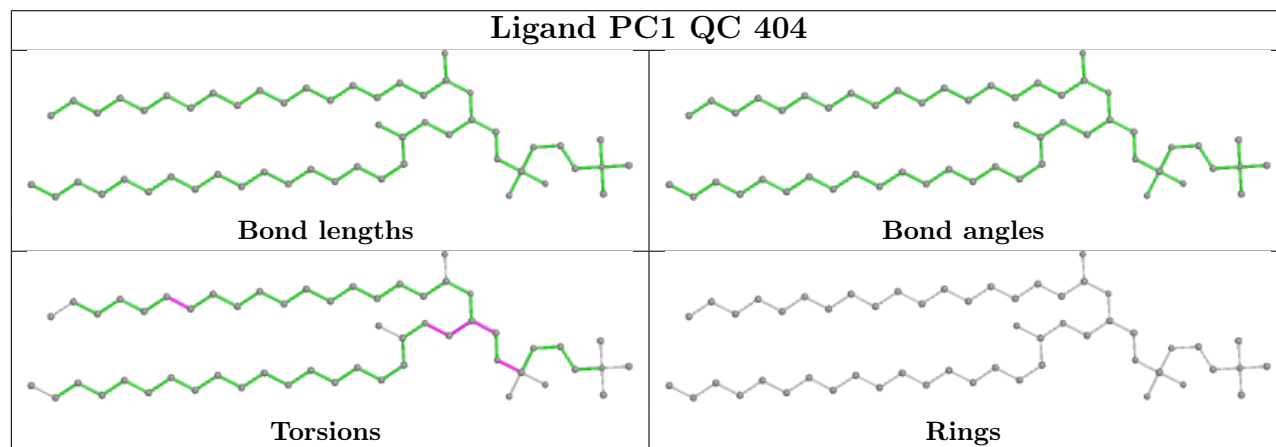
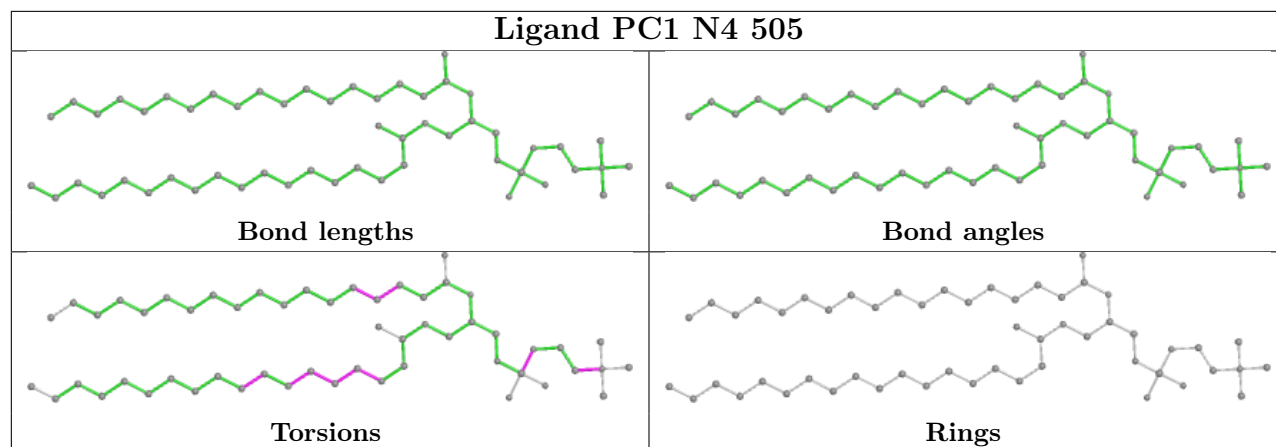


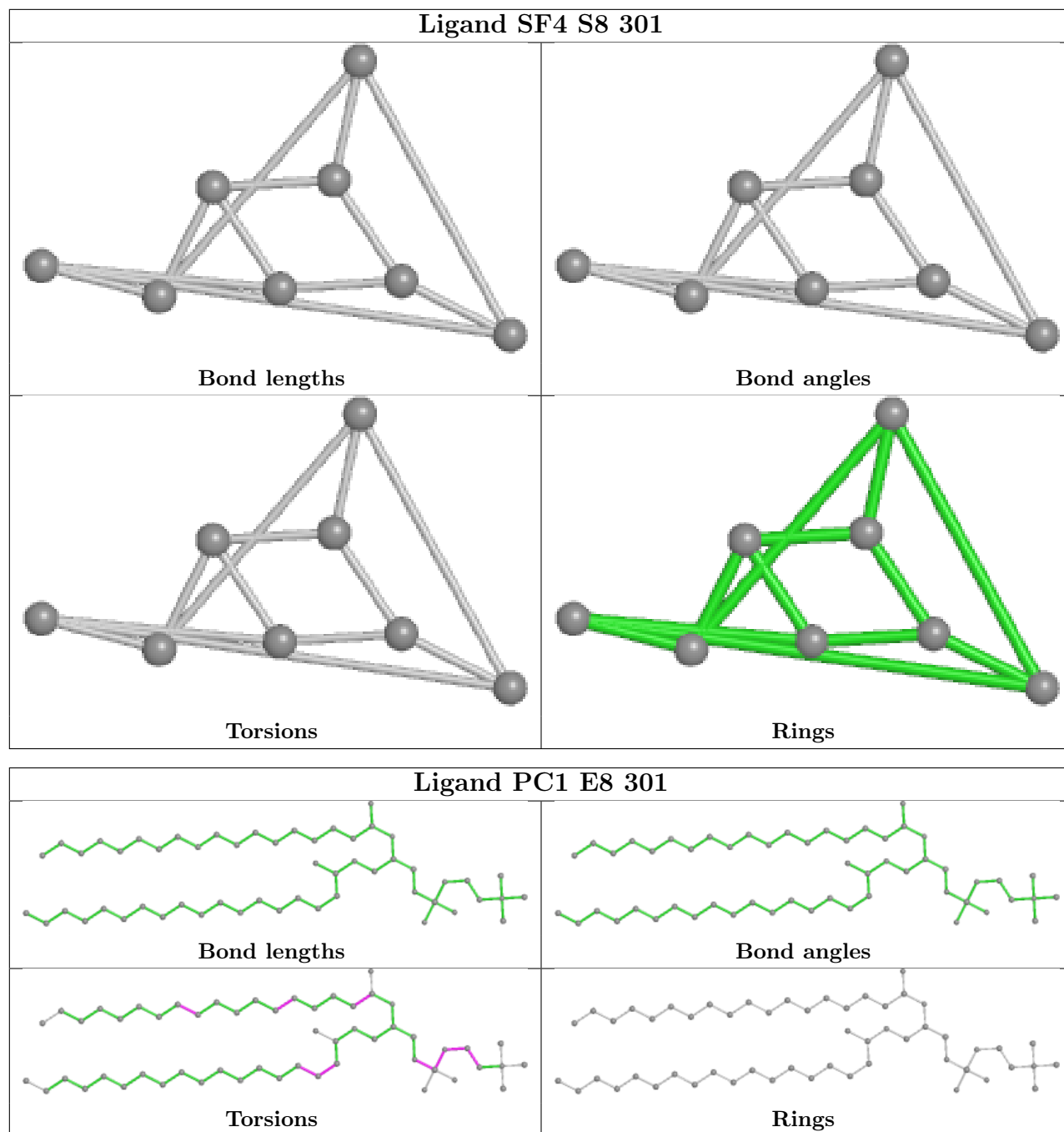


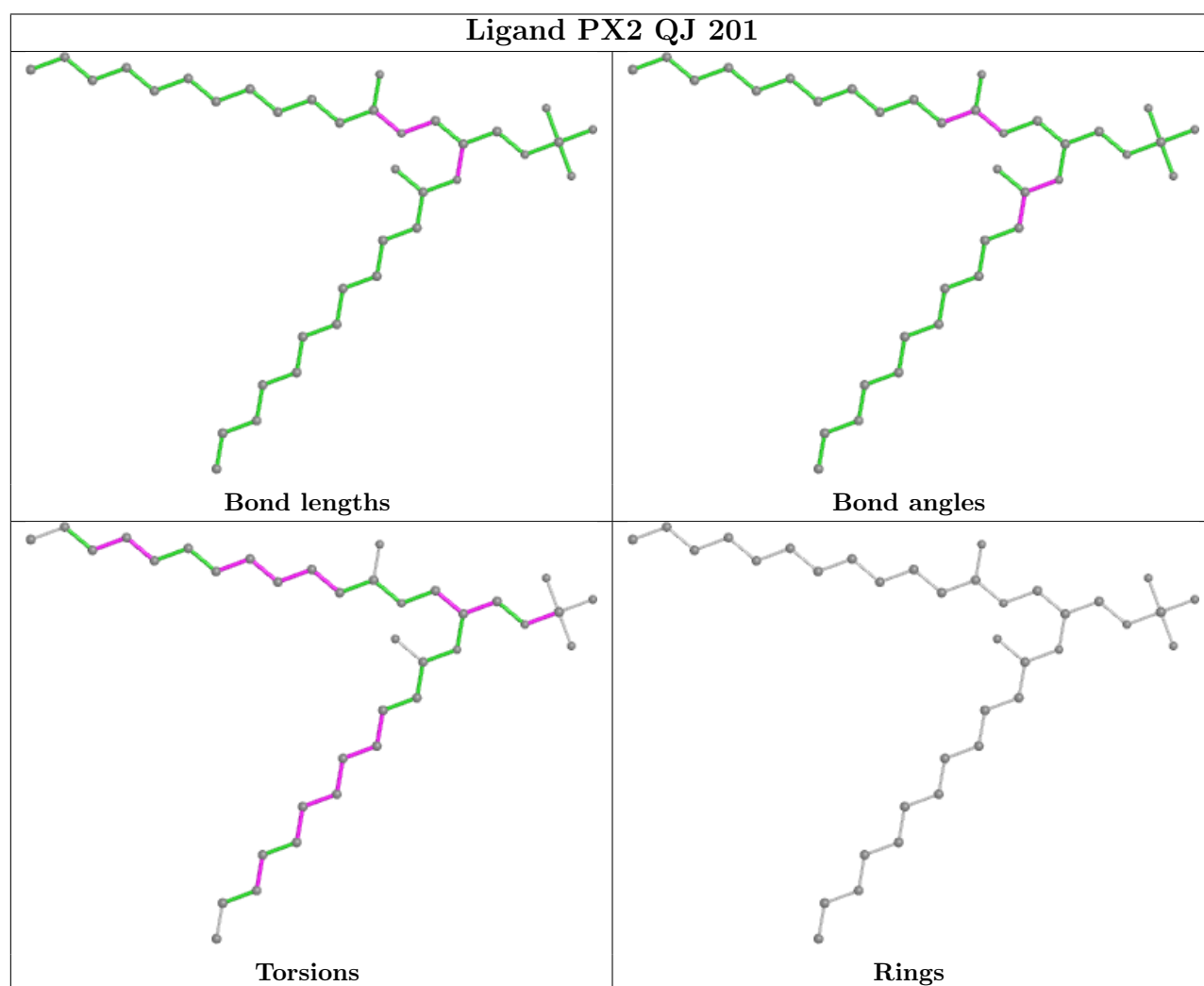
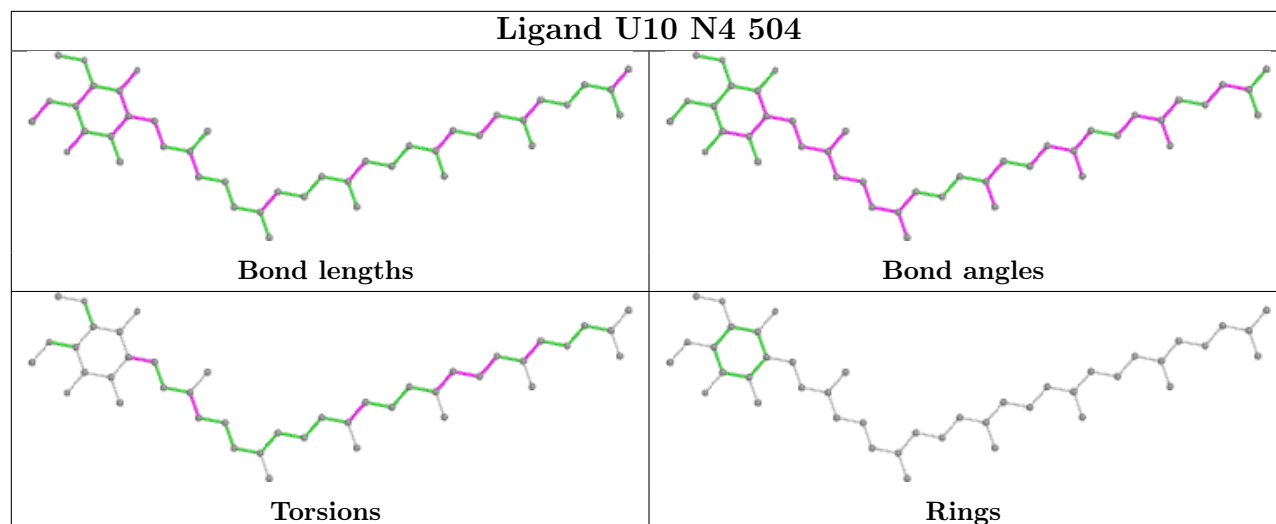


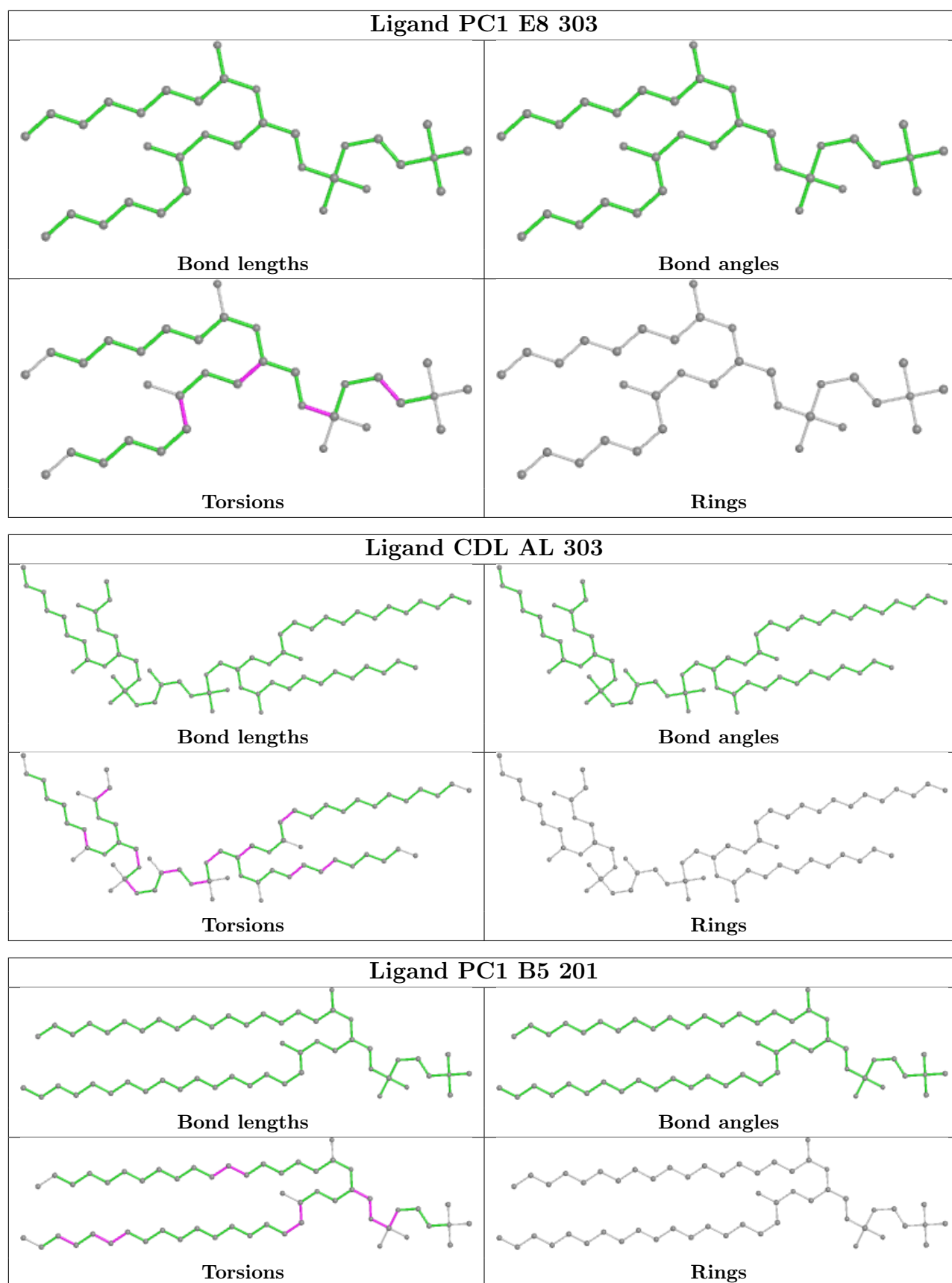


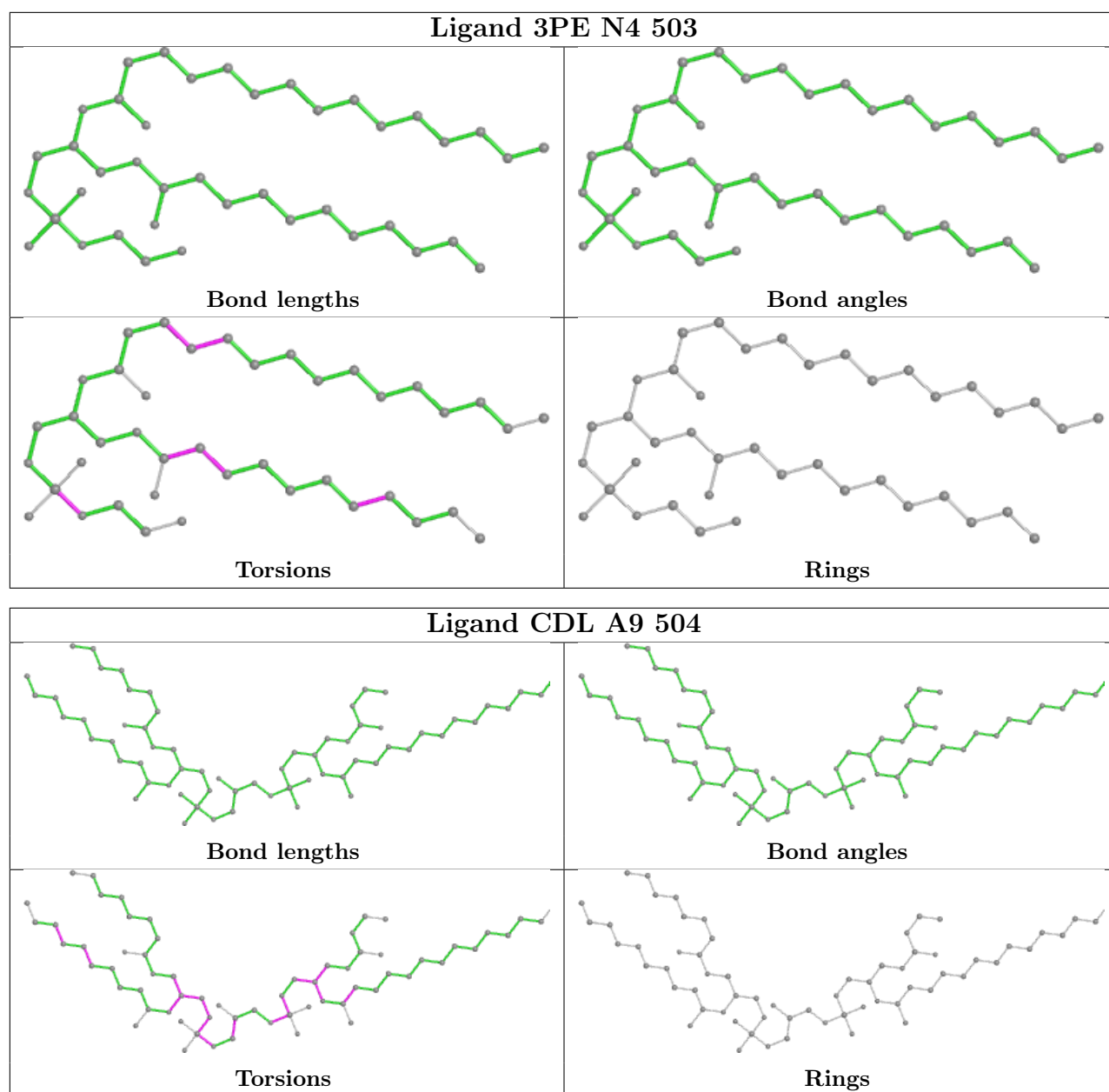


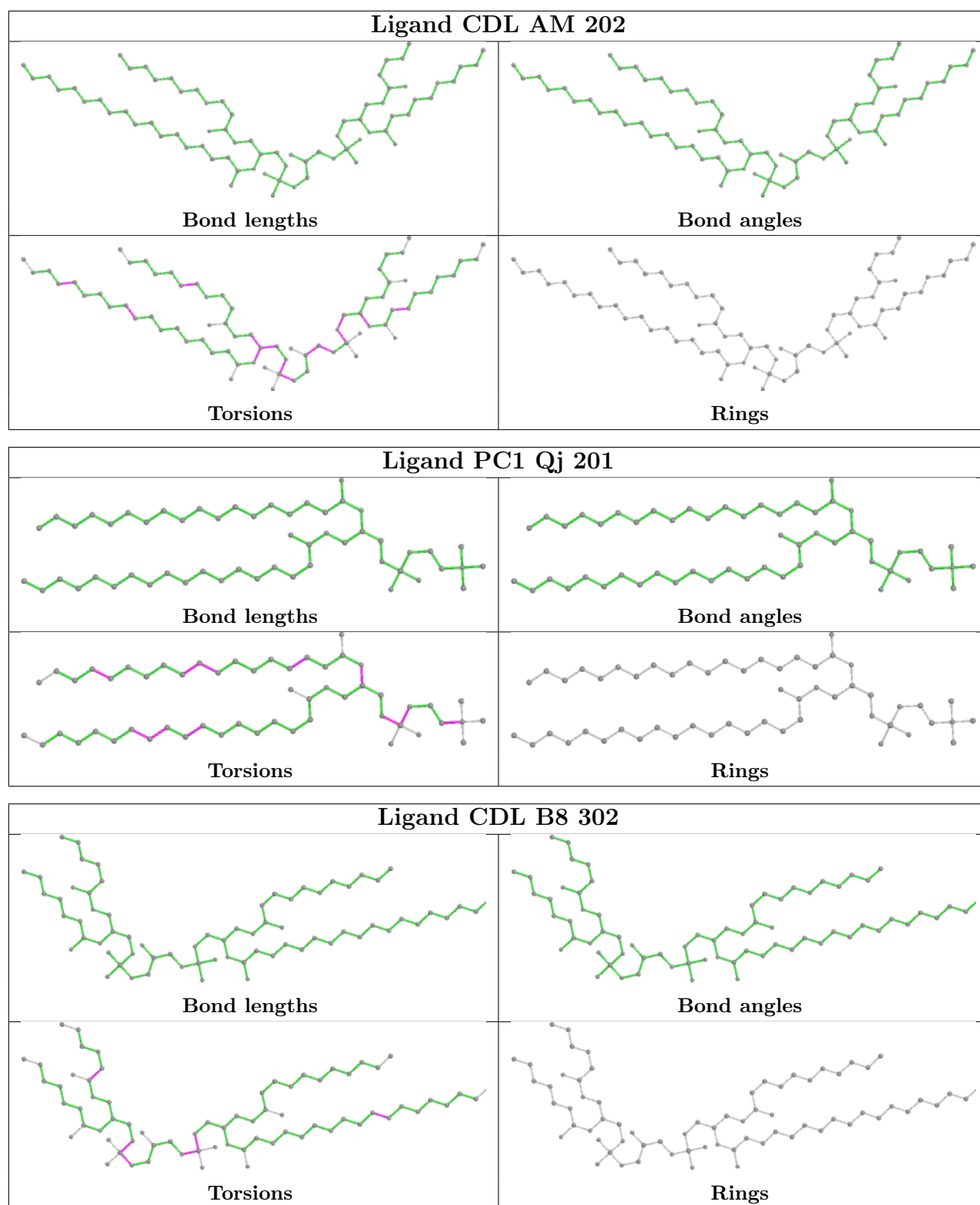


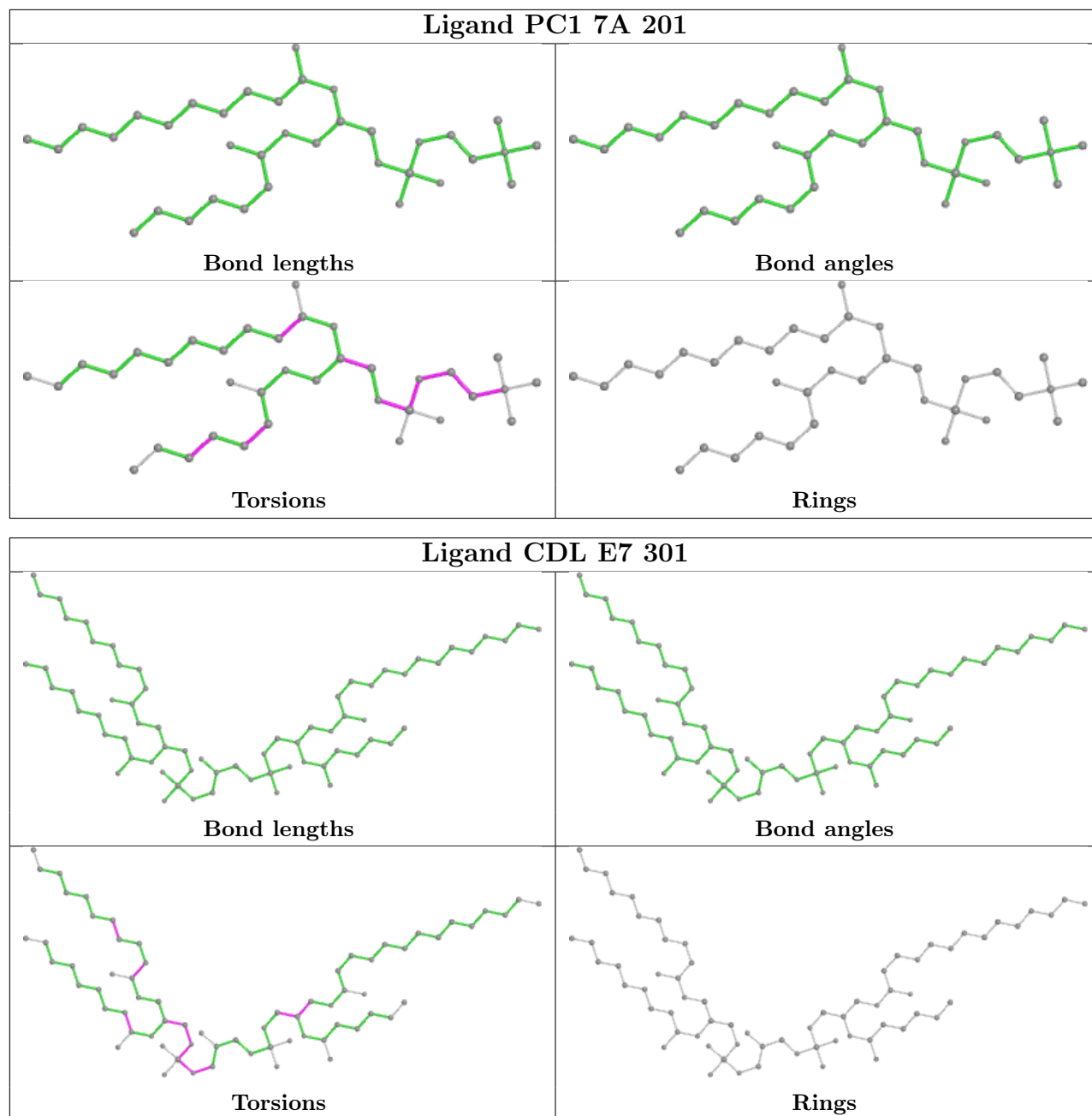


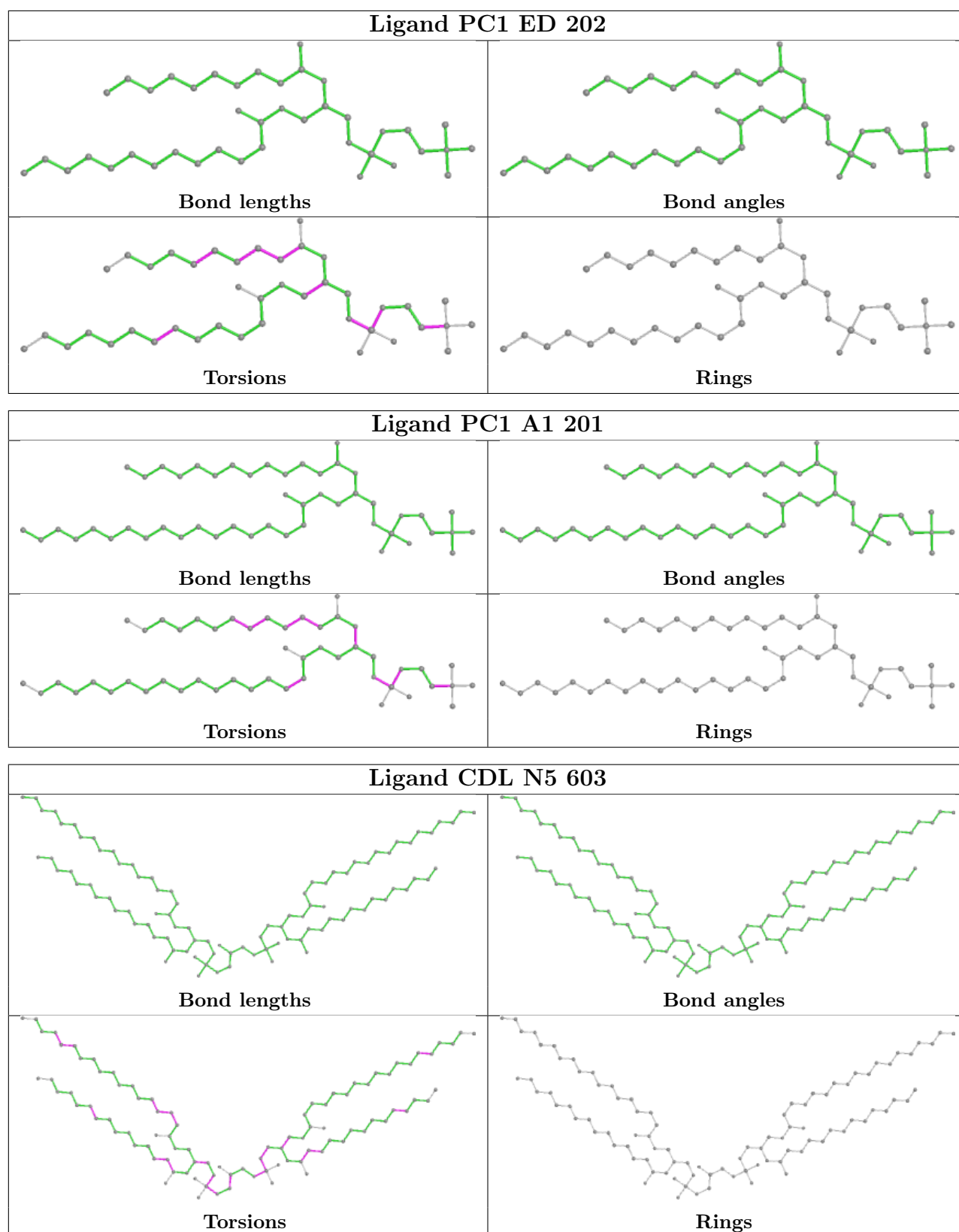


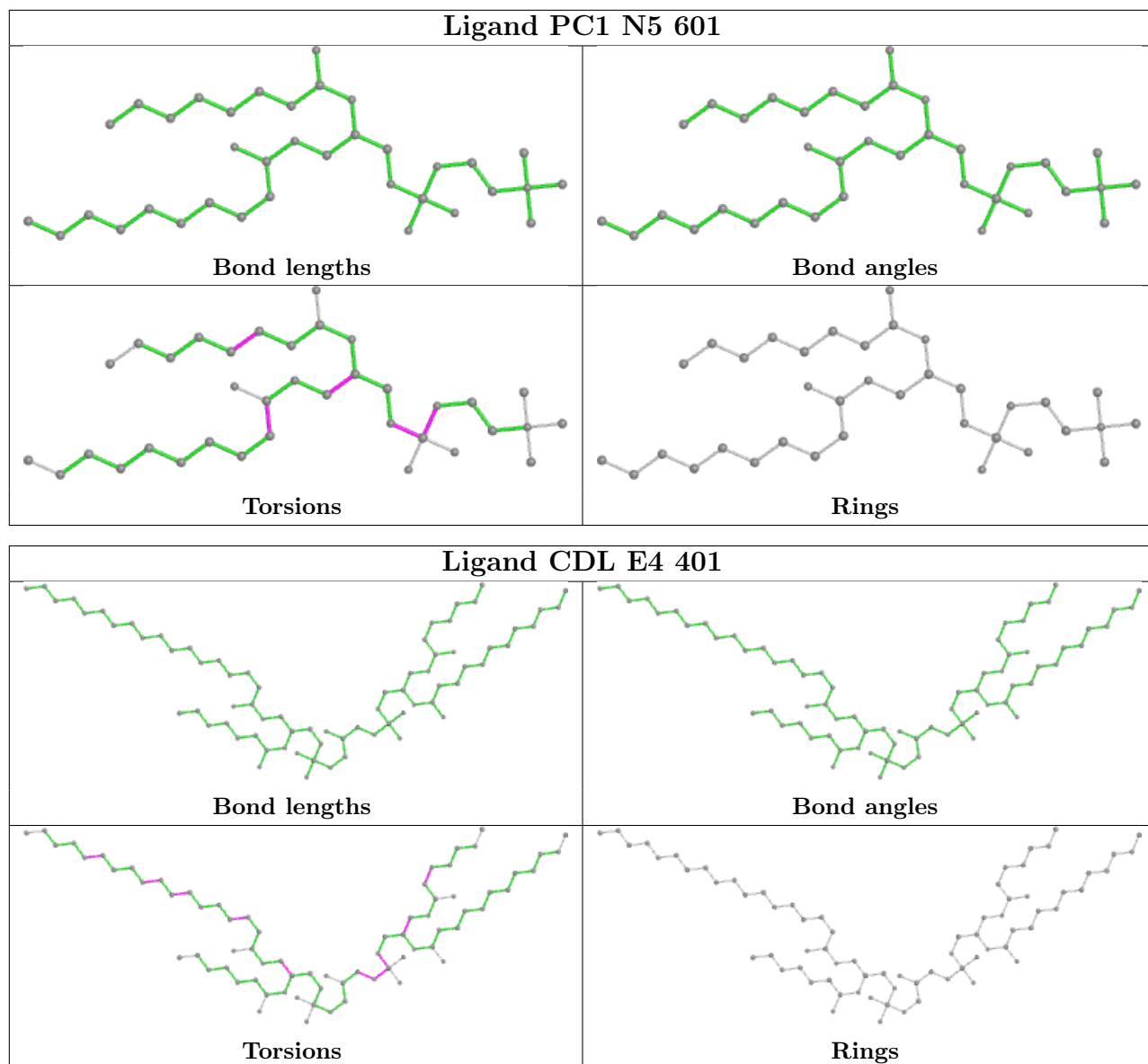


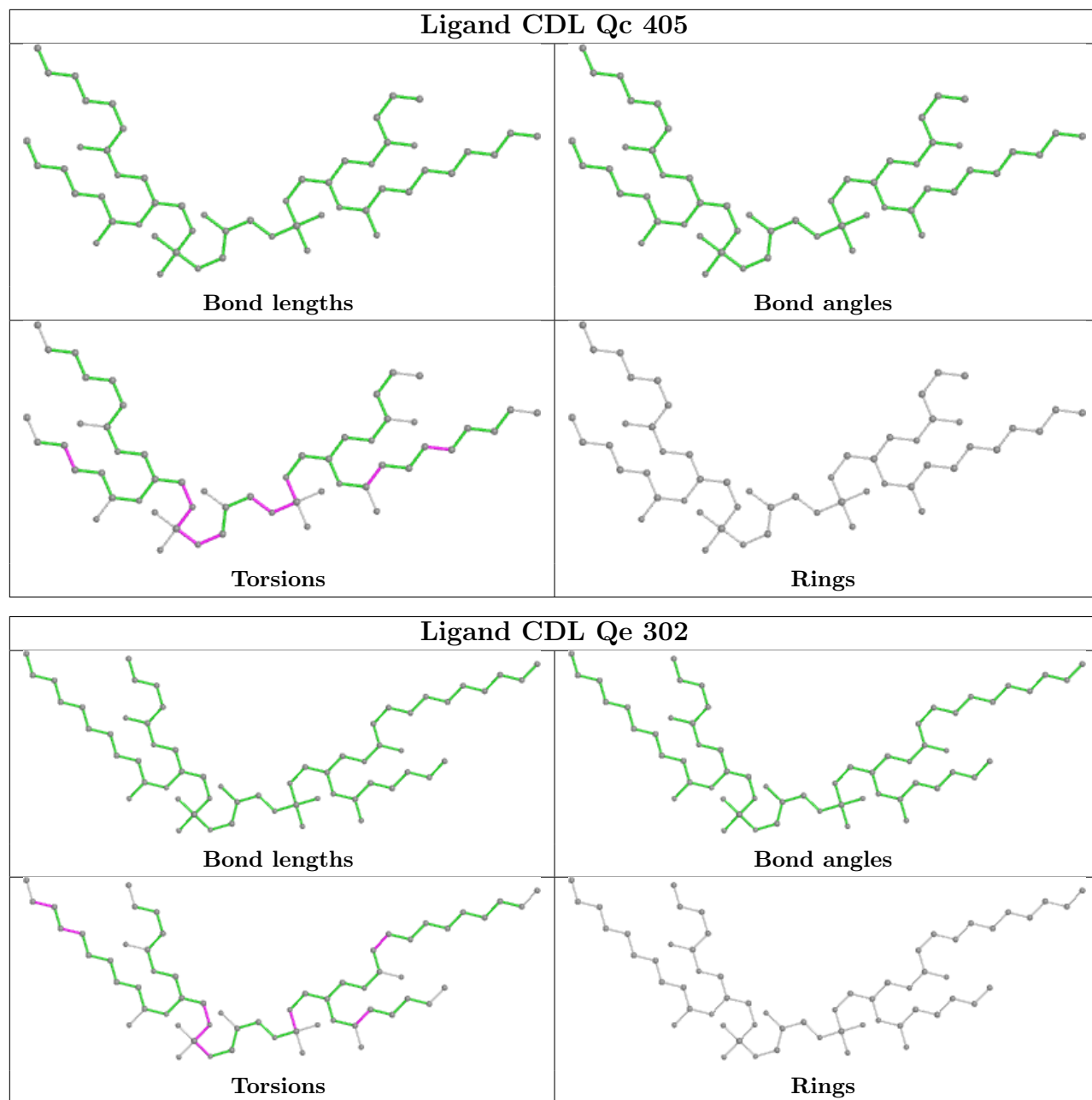


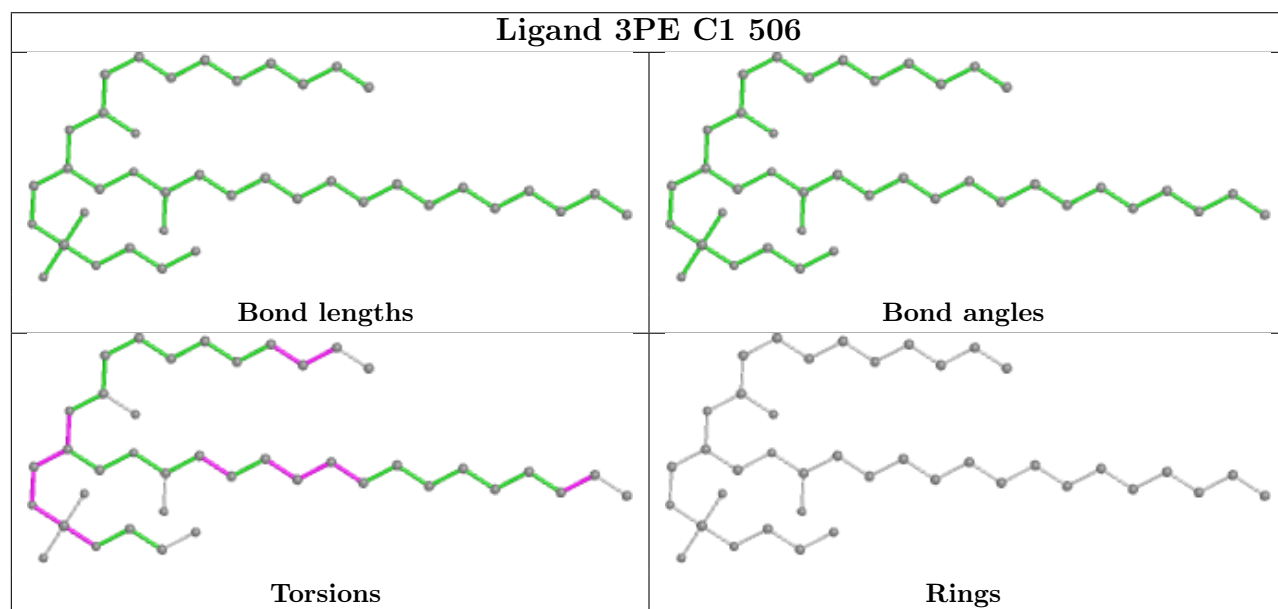
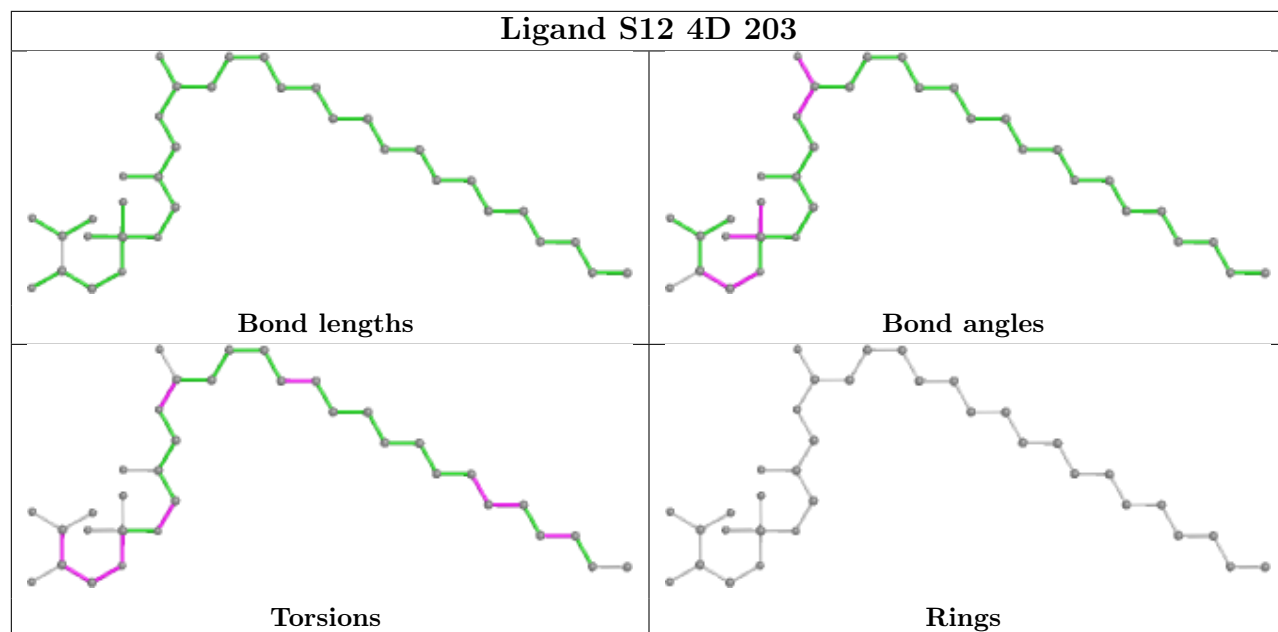


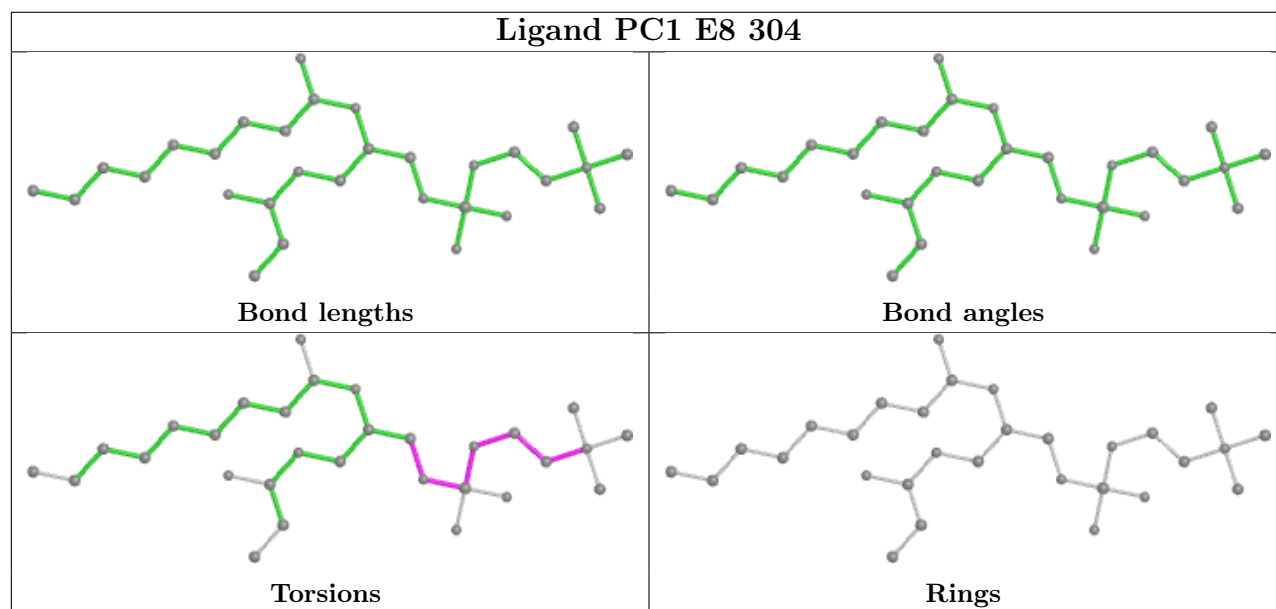
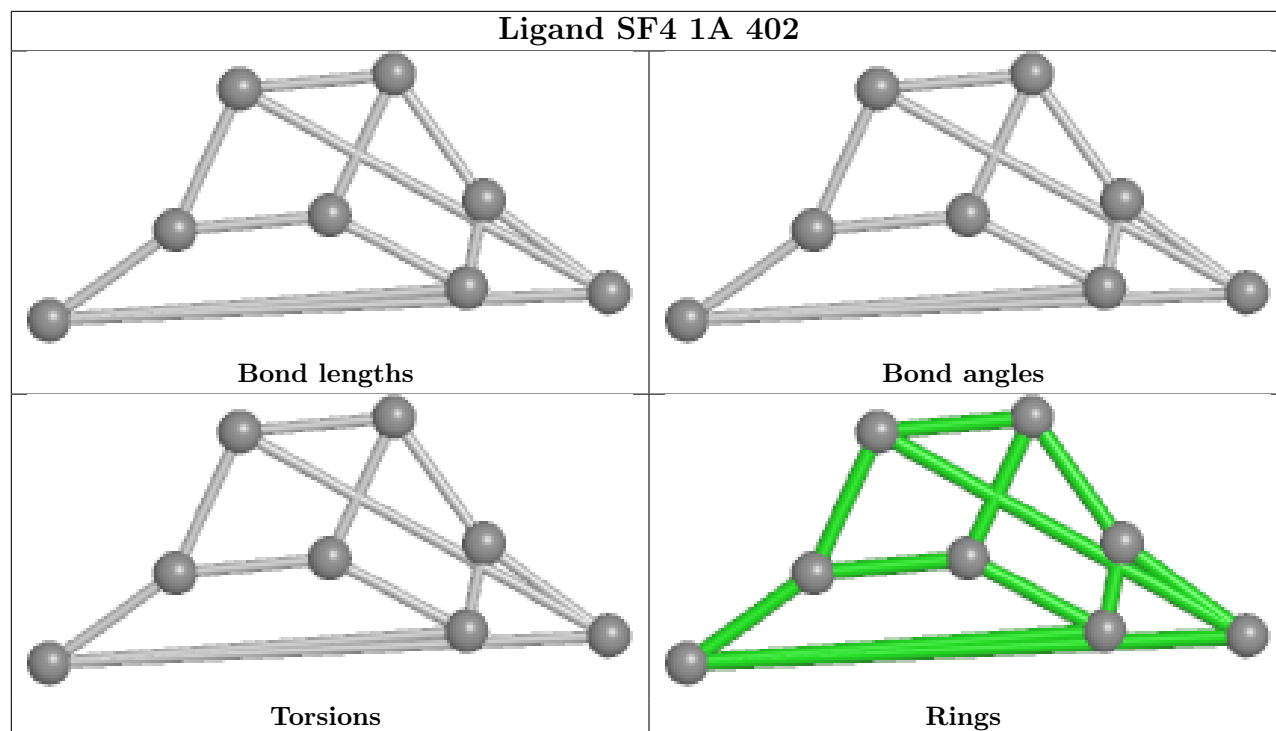


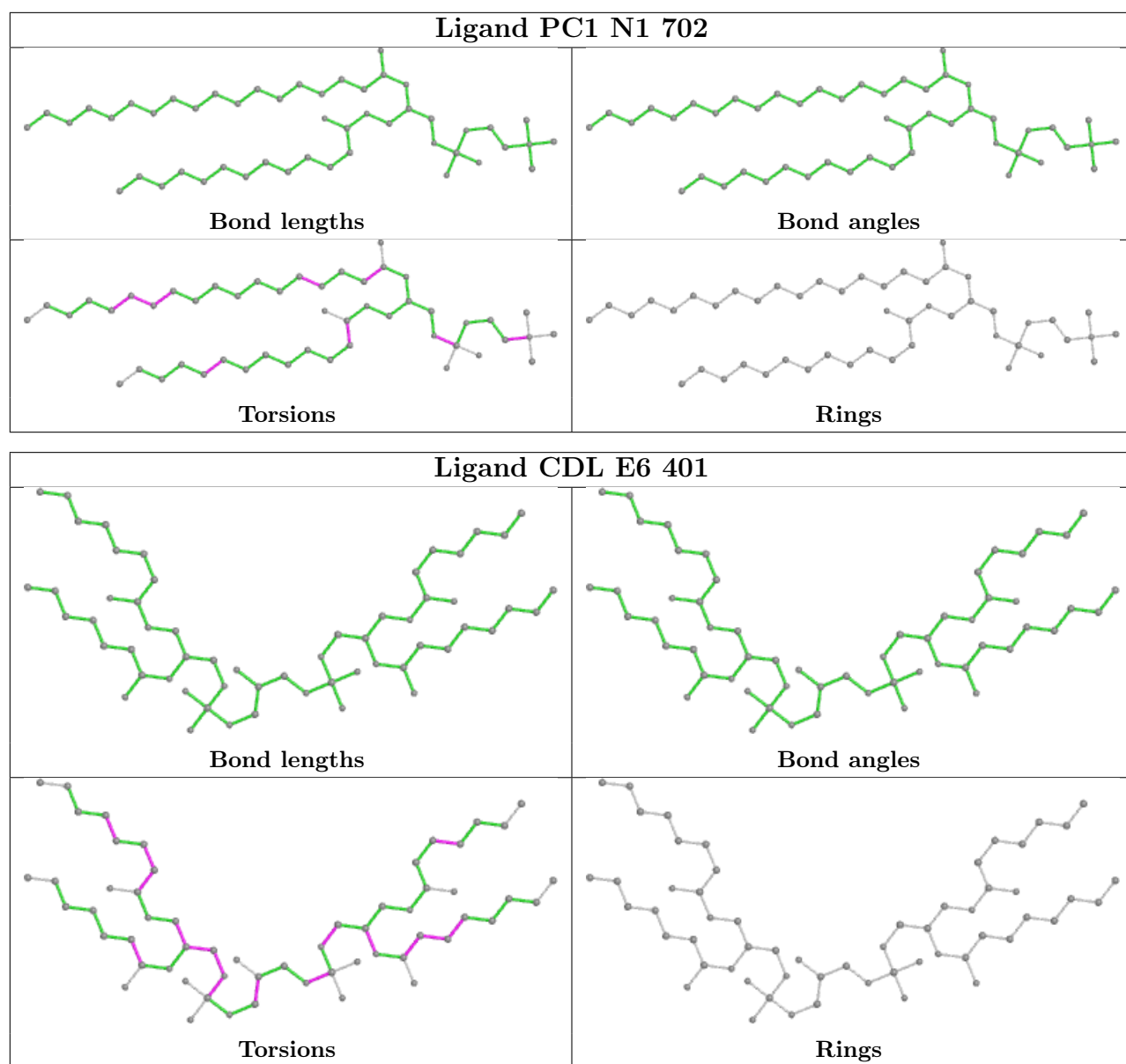


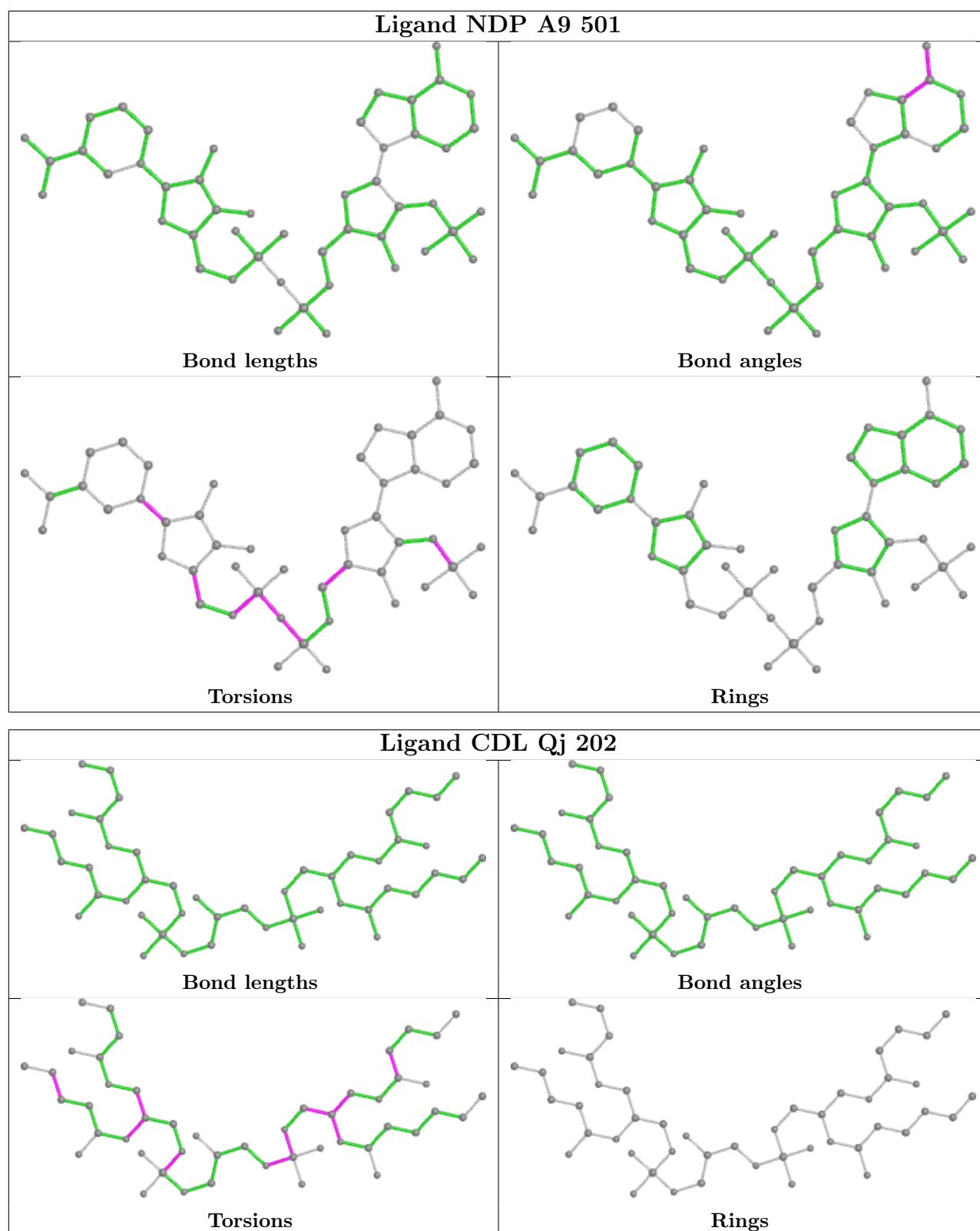


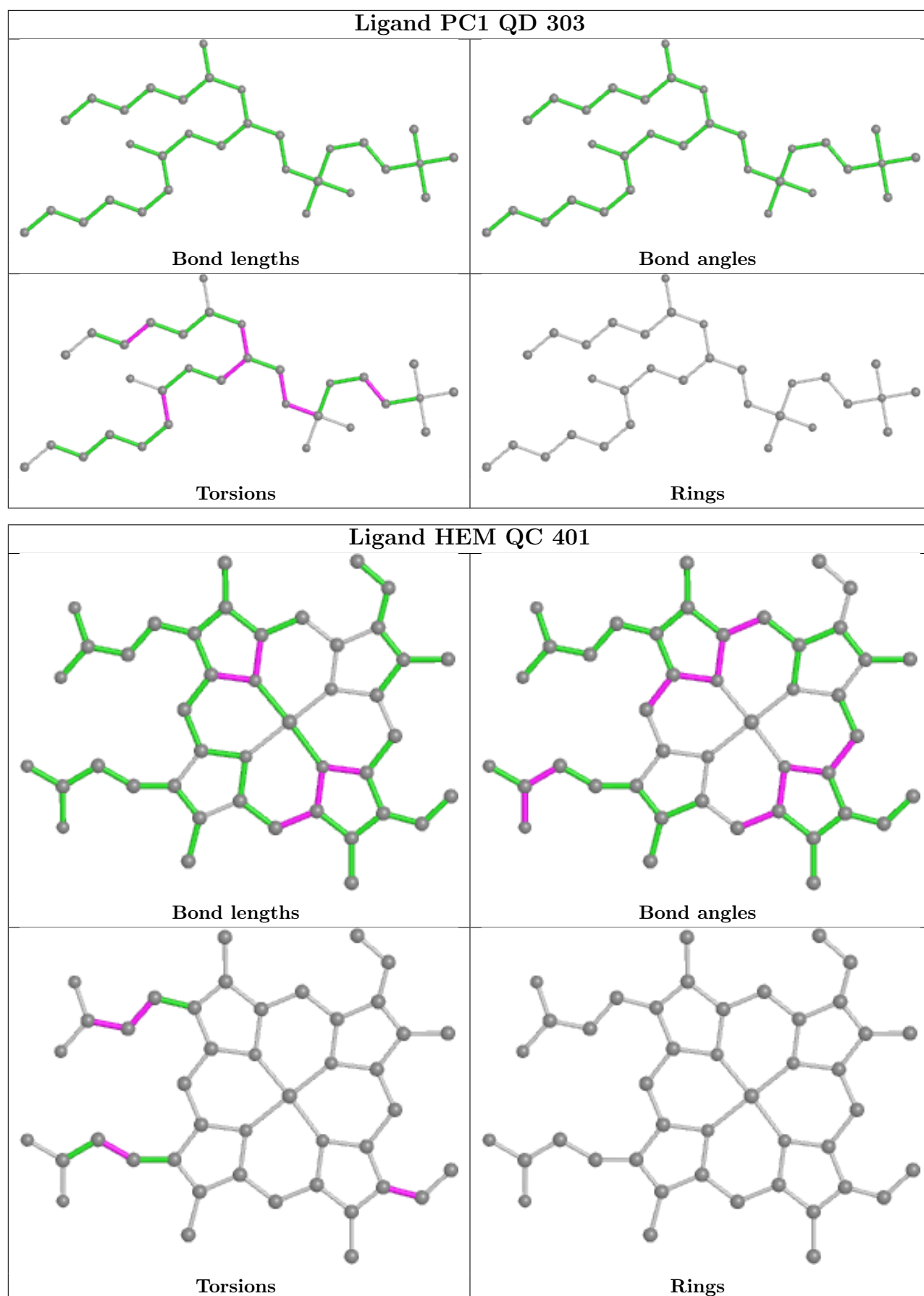












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

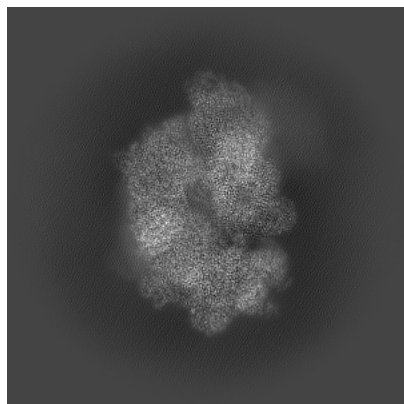
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35720. These allow visual inspection of the internal detail of the map and identification of artifacts.

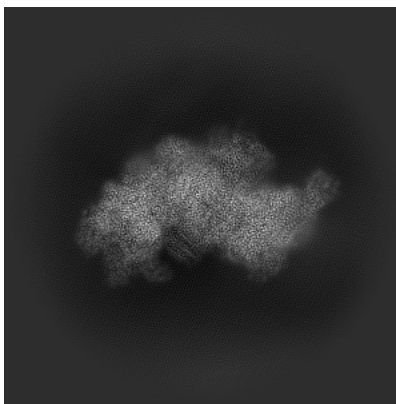
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

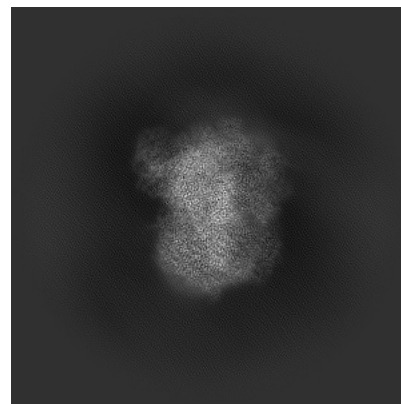
6.1.1 Primary map



X

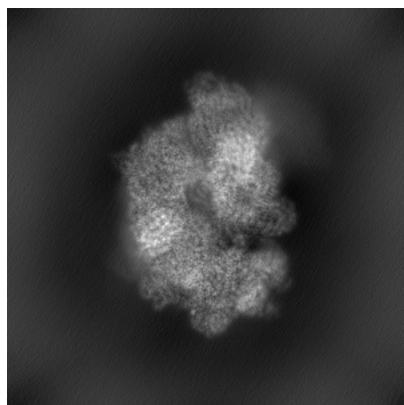


Y

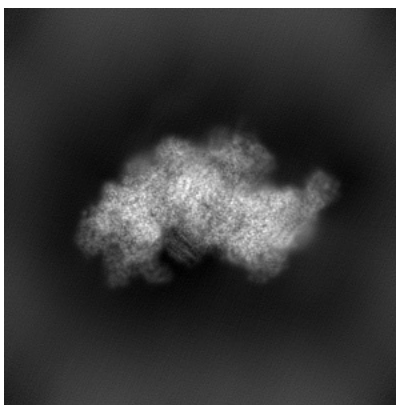


Z

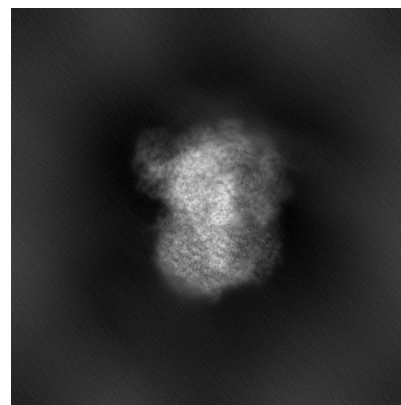
6.1.2 Raw map



X



Y

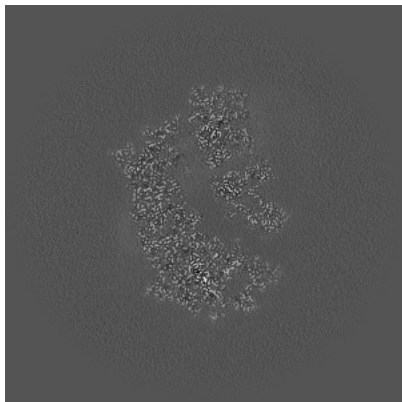


Z

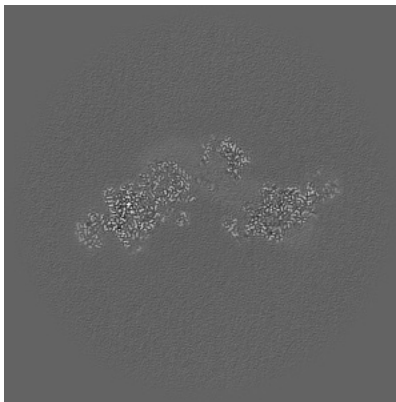
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

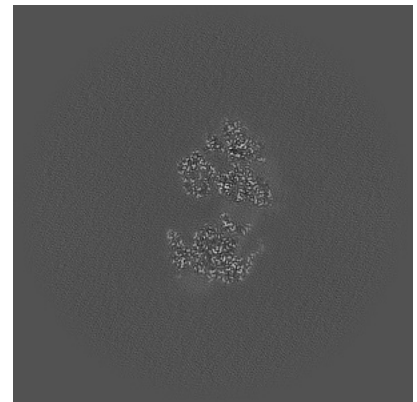
6.2.1 Primary map



X Index: 224

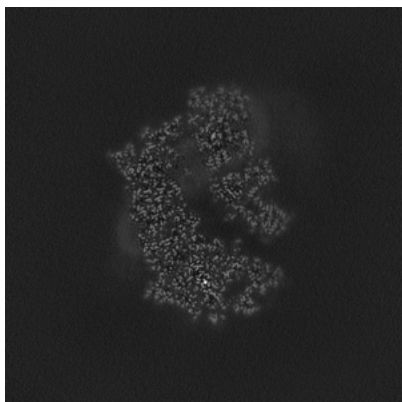


Y Index: 224

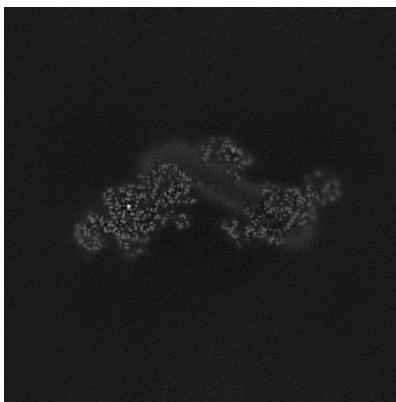


Z Index: 224

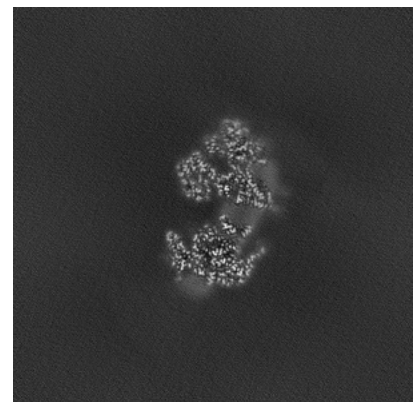
6.2.2 Raw map



X Index: 224



Y Index: 224

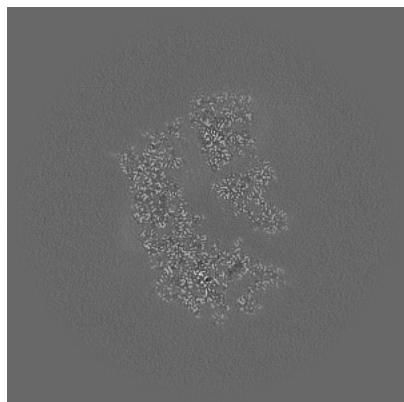


Z Index: 224

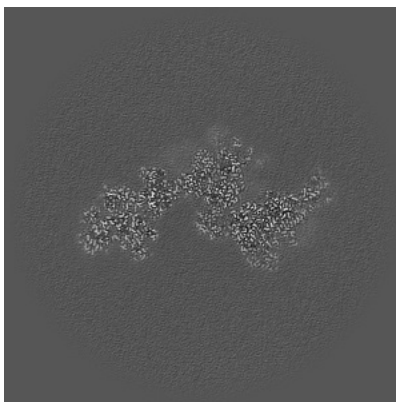
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

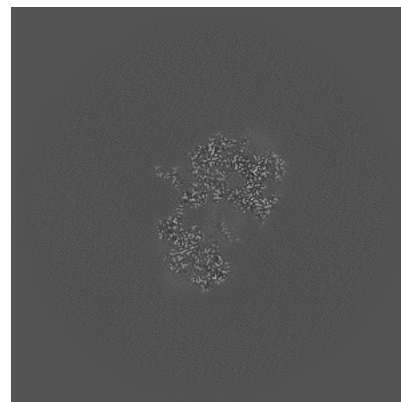
6.3.1 Primary map



X Index: 222

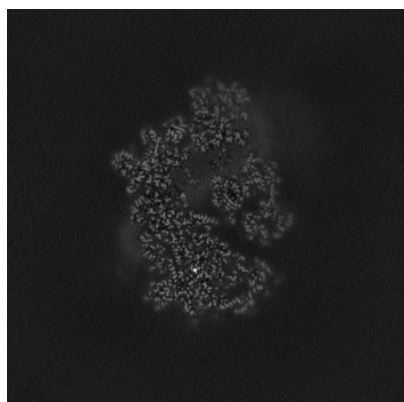


Y Index: 237

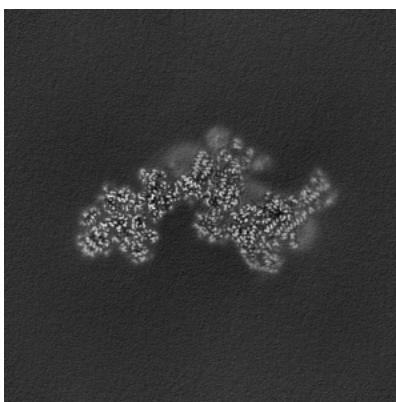


Z Index: 257

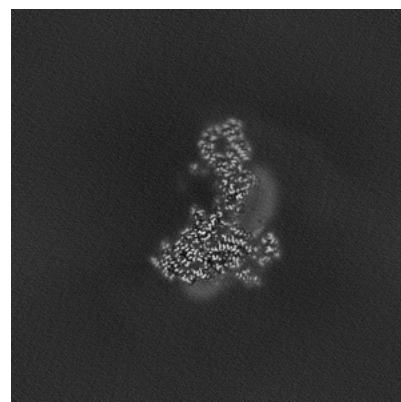
6.3.2 Raw map



X Index: 229



Y Index: 237

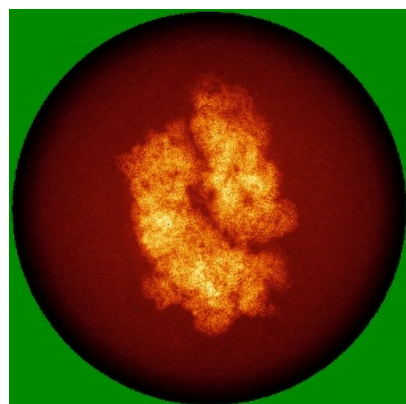


Z Index: 206

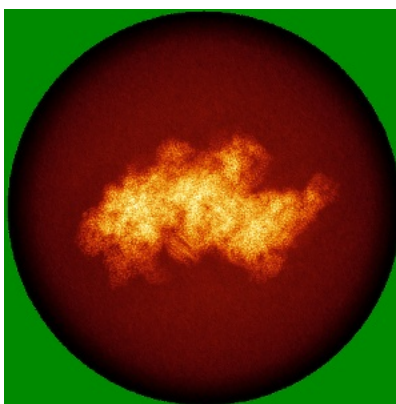
The images above show the largest variance slices of the map in three orthogonal directions.

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

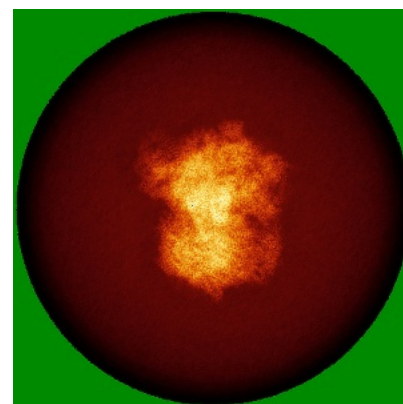
6.4.1 Primary map



X

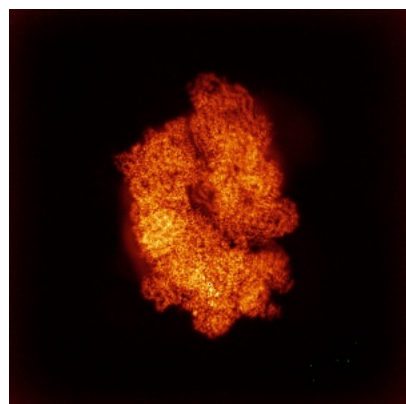


Y

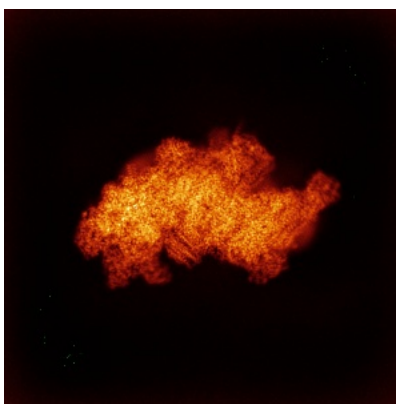


Z

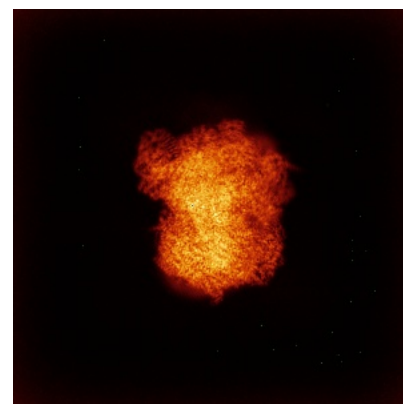
6.4.2 Raw map



X



Y

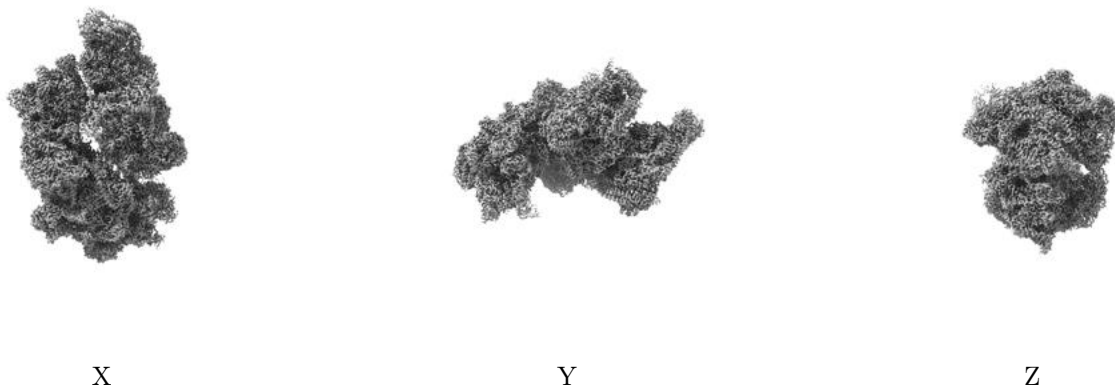


Z

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

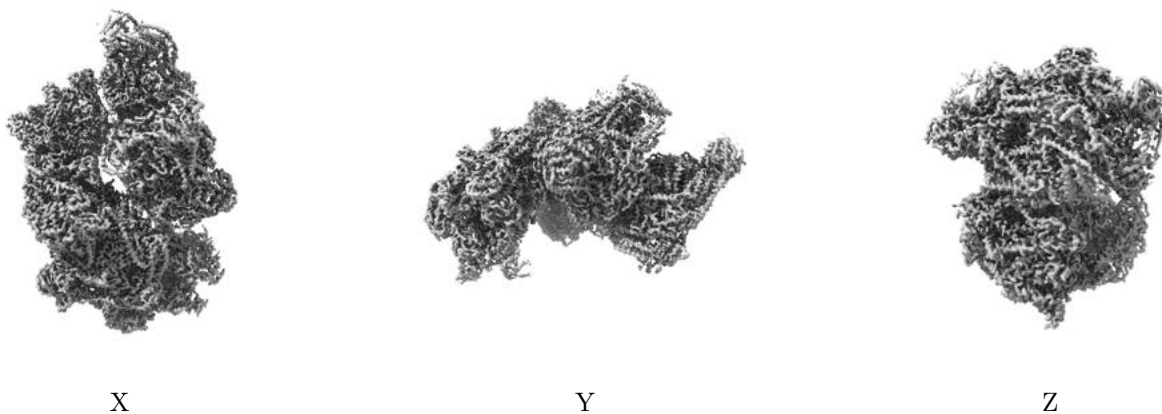
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 5.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

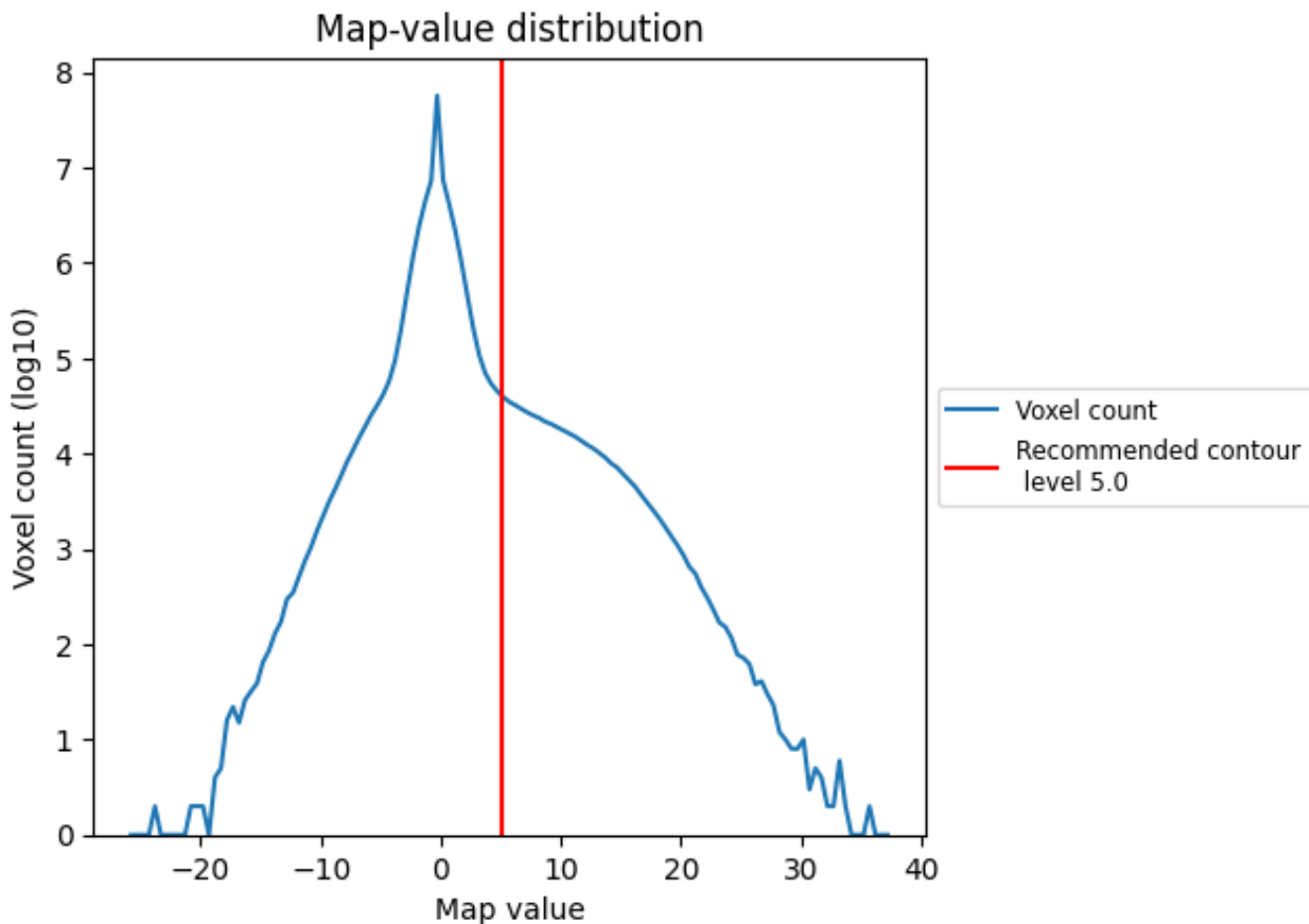
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

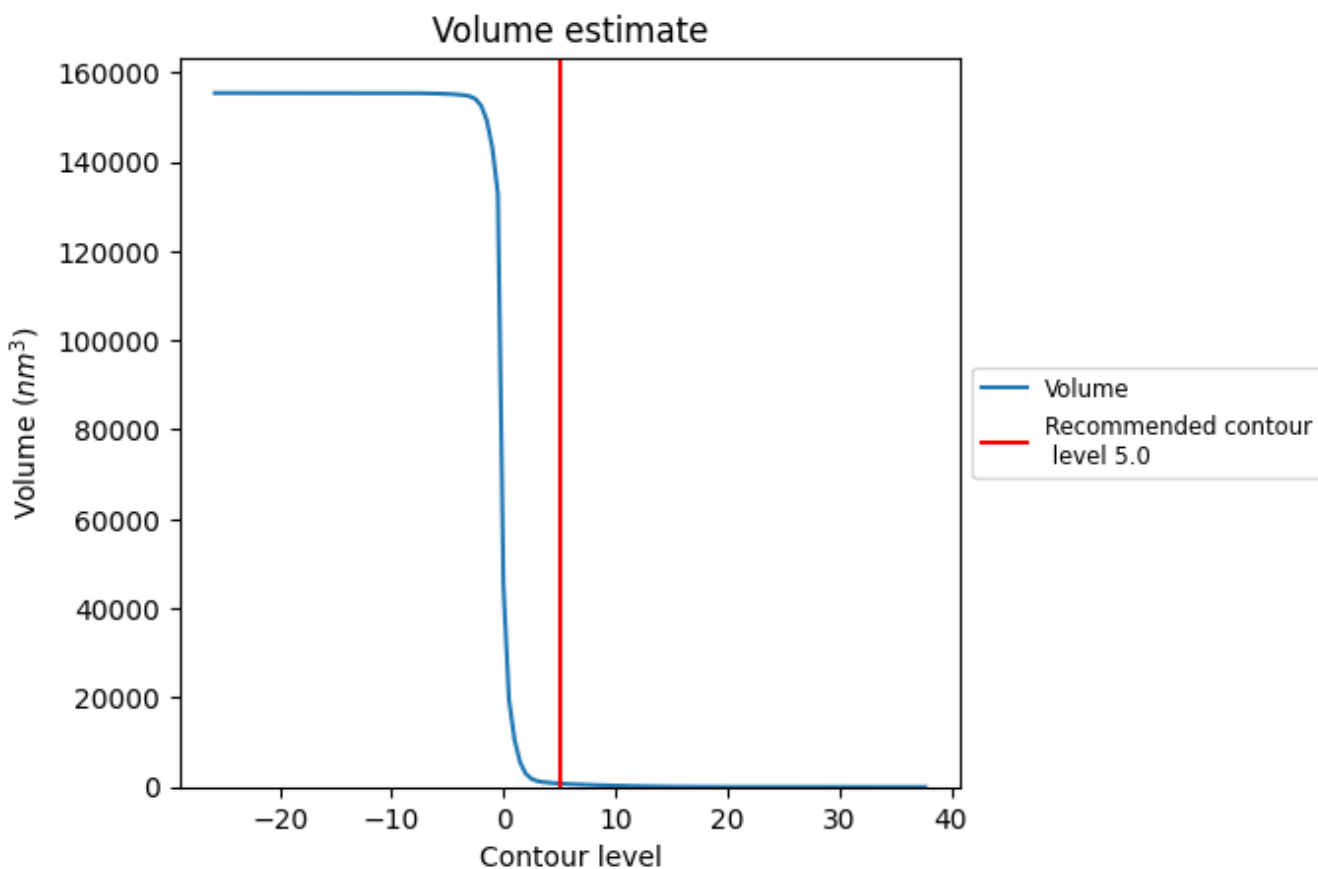
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

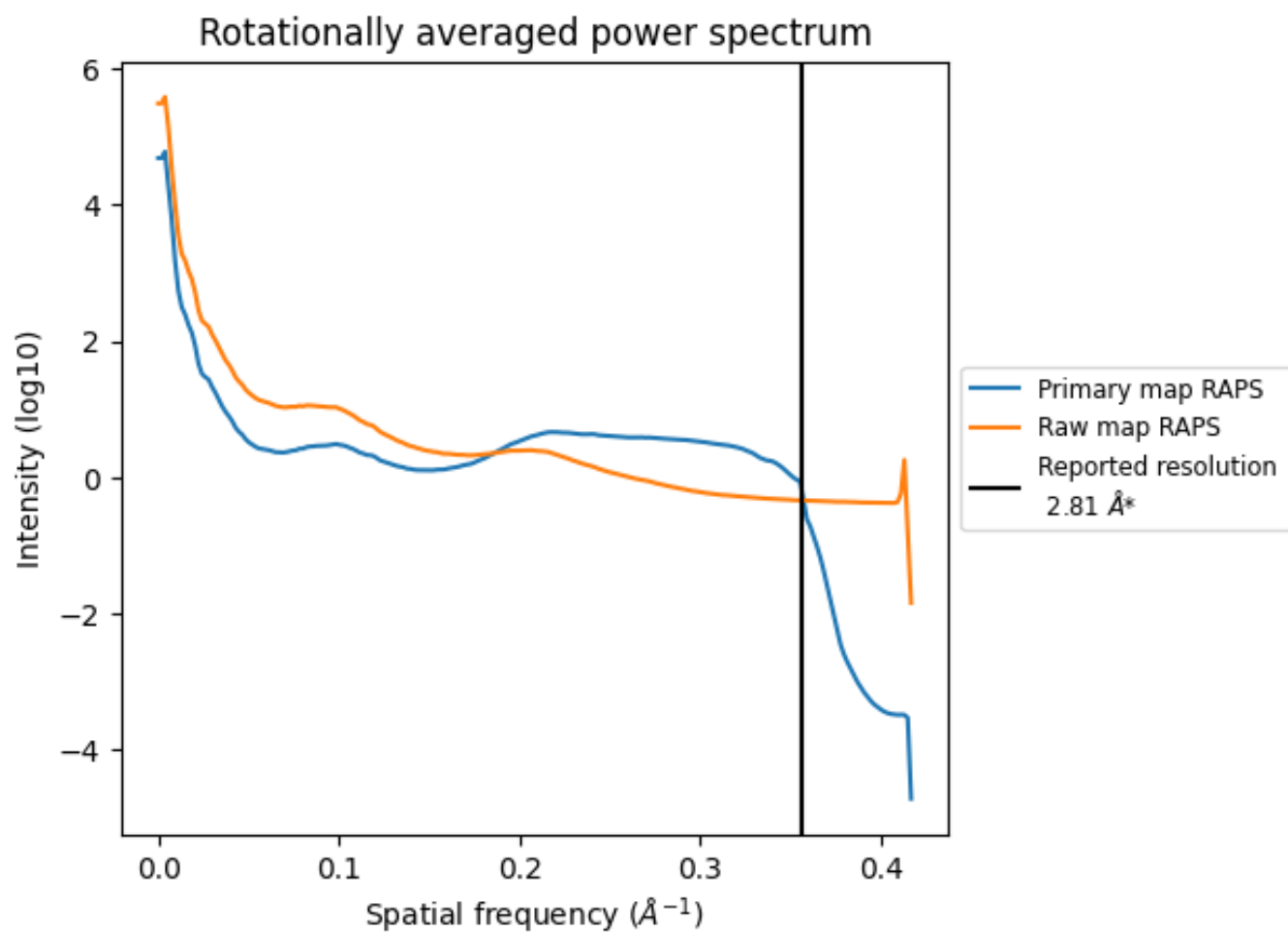
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 771 nm^3 ; this corresponds to an approximate mass of 696 kDa.

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

7.3 Rotationally averaged power spectrum i

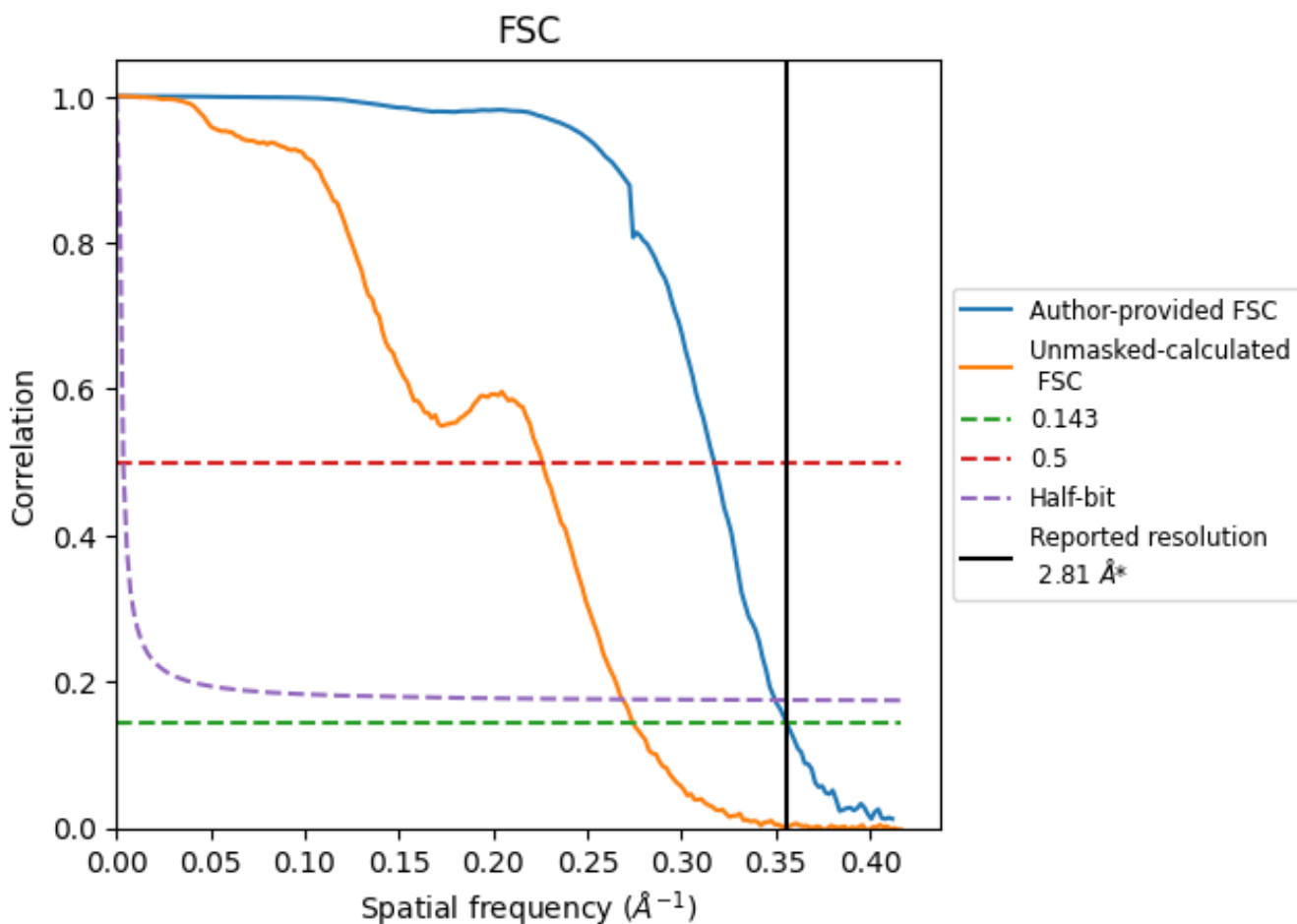


*Reported resolution corresponds to spatial frequency of 0.356 \AA^{-1}

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.356 Å⁻¹

8.2 Resolution estimates [i](#)

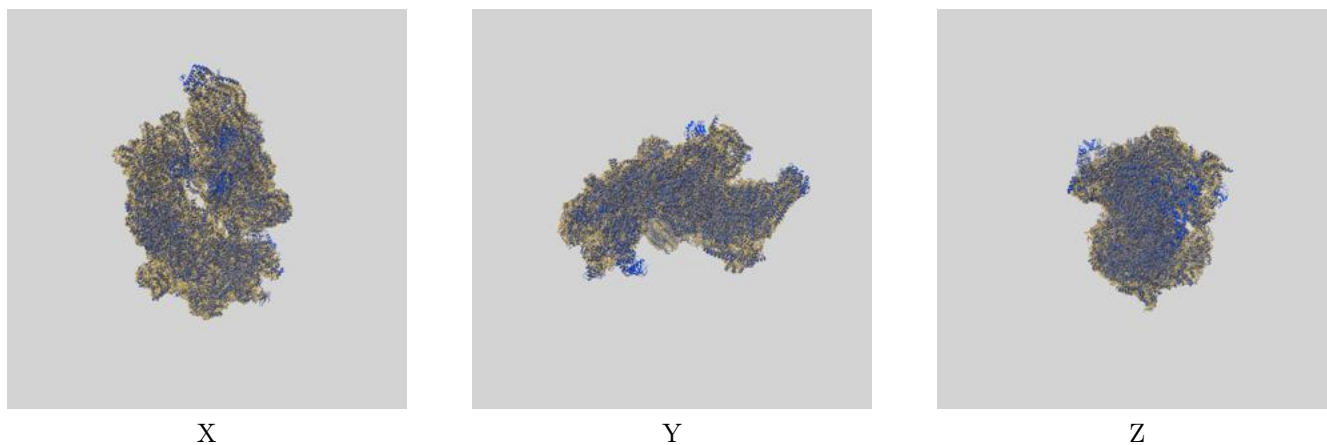
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.81	-	-
Author-provided FSC curve	2.81	3.15	2.86
Unmasked-calculated*	3.64	4.42	3.72

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.64 differs from the reported value 2.81 by more than 10 %

9 Map-model fit [i](#)

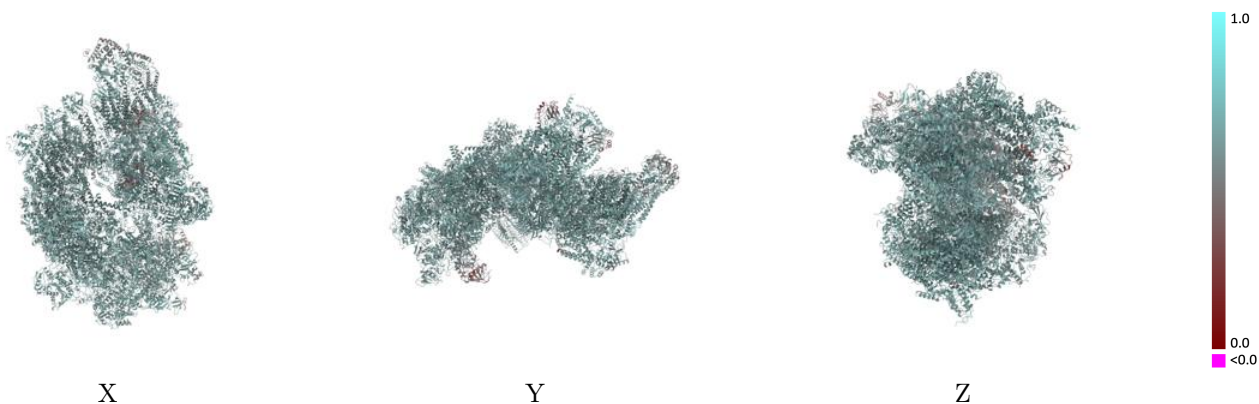
This section contains information regarding the fit between EMDB map EMD-35720 and PDB model 8IUF. Per-residue inclusion information can be found in section 3 on page 34.

9.1 Map-model overlay [i](#)



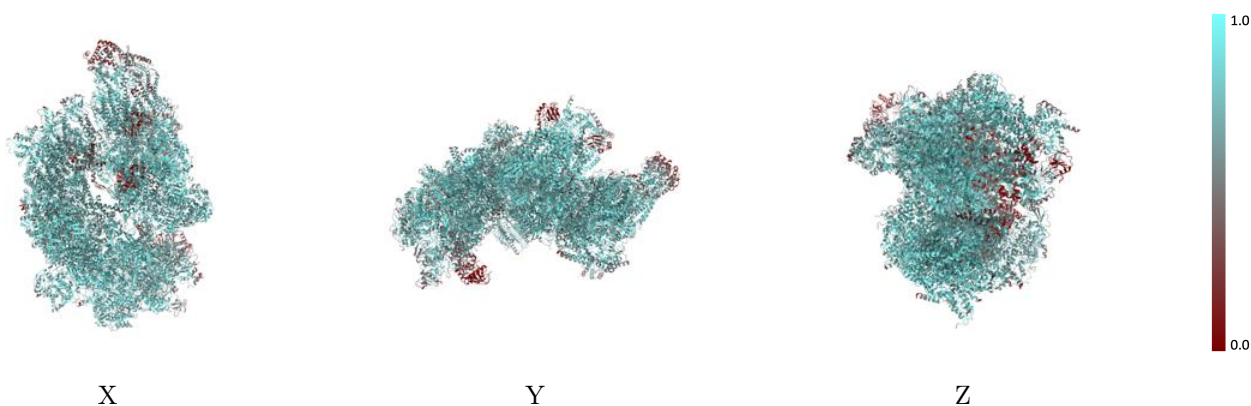
The images above show the 3D surface view of the map at the recommended contour level 5.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



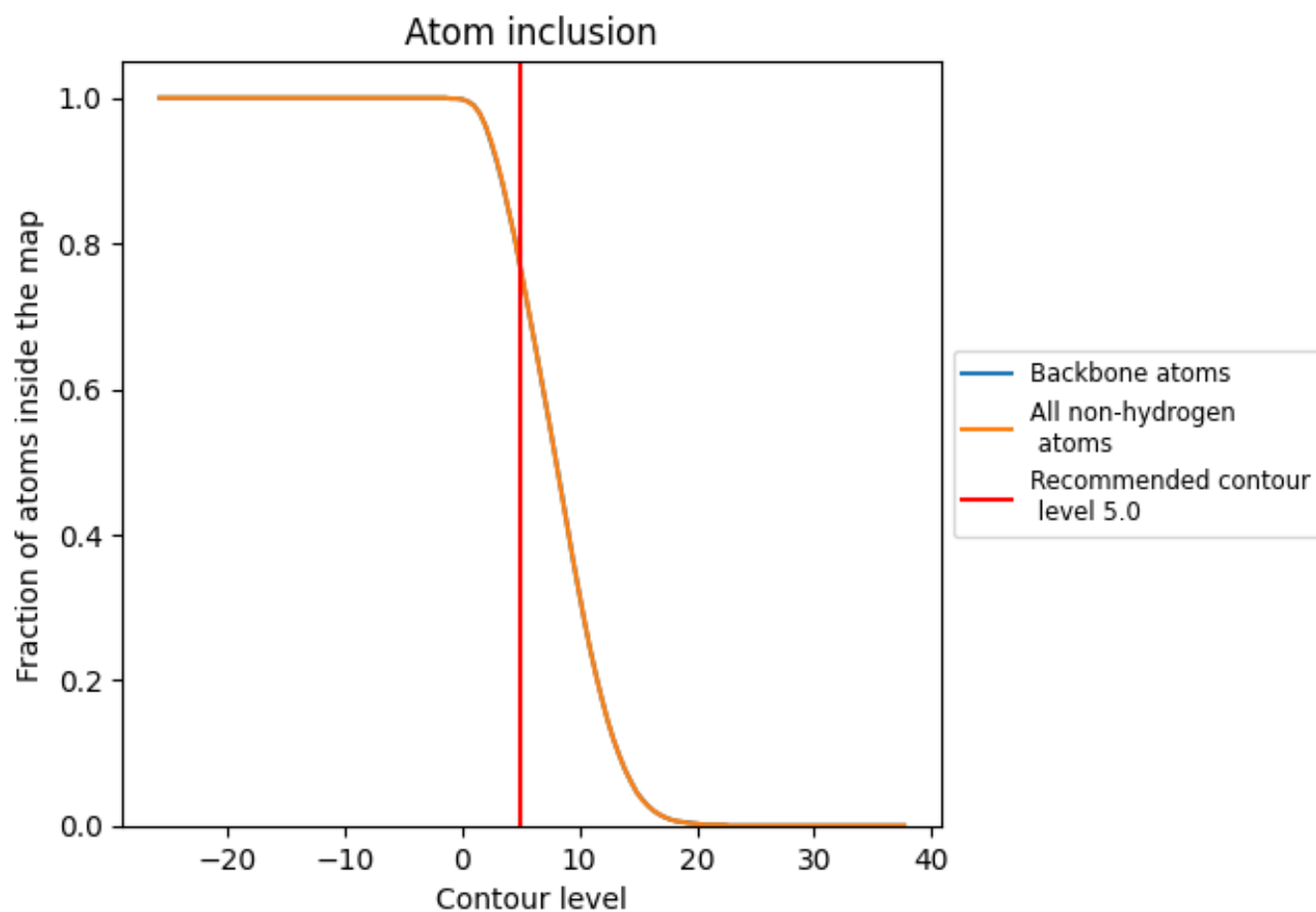
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (5.0).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 76% of all backbone atoms, 76% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary





















































































The table lists the average atom inclusion at the recommended contour level (5.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7640	 0.6150
1A	 0.8550	 0.6330
1B	 0.8450	 0.6320
2B	 0.8700	 0.6340
4A	 0.5880	 0.5830
4C	 0.6060	 0.5810
4D	 0.7000	 0.6030
4E	 0.4990	 0.5490
4F	 0.7000	 0.6000
4G	 0.6870	 0.5950
4H	 0.6790	 0.5990
4I	 0.8560	 0.6340
4J	 0.8180	 0.6340
4L	 0.8470	 0.6390
5B	 0.8410	 0.6250
5C	 0.8040	 0.6290
6A	 0.5940	 0.5900
6B	 0.6180	 0.5810
7A	 0.7190	 0.6040
7C	 0.8060	 0.6320
A	 0.7830	 0.5880
A1	 0.7270	 0.6080
A2	 0.7790	 0.6190
A3	 0.7690	 0.6180
A5	 0.7290	 0.6020
A6	 0.7320	 0.6040
A7	 0.8480	 0.6340
A8	 0.7610	 0.6100
A9	 0.8050	 0.6270
AB	 0.7370	 0.6110
AC	 0.7760	 0.6180
AL	 0.8060	 0.6260
AM	 0.7200	 0.6070
AN	 0.7820	 0.6210
B	 0.4830	 0.5890

























































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Chain	Atom inclusion	Q-score
B2	 0.8220	 0.6330
B3	 0.8270	 0.6210
B4	 0.8160	 0.6230
B5	 0.7880	 0.6140
B6	 0.8060	 0.6260
B7	 0.8000	 0.6190
B8	 0.8520	 0.6370
B9	 0.8490	 0.6380
BL	 0.8130	 0.6240
BM	 0.7830	 0.6260
C1	 0.8750	 0.6310
C2	 0.8730	 0.6370
C3	 0.7520	 0.6070
C4	 0.7590	 0.6160
DC	 0.8190	 0.6340
E1	 0.7540	 0.6050
E2	 0.6510	 0.5910
E3	 0.6600	 0.5970
E4	 0.7730	 0.6130
E5	 0.2040	 0.4480
E6	 0.7370	 0.6030
E7	 0.6880	 0.5990
E8	 0.7530	 0.6190
E9	 0.2920	 0.5490
EA	 0.8140	 0.6240
EB	 0.7810	 0.6150
EC	 0.6560	 0.5810
ED	 0.7470	 0.6080
FX	 0.8370	 0.6340
G1	 0.8310	 0.6310
G2	 0.7730	 0.6120
G3	 0.7790	 0.6130
N1	 0.8130	 0.6220
N2	 0.8780	 0.6340
N3	 0.8190	 0.6330
N4	 0.8440	 0.6260
N5	 0.8410	 0.6260
N6	 0.7910	 0.6220
QA	 0.8070	 0.6340
QB	 0.8080	 0.6280
QC	 0.8330	 0.6320
QD	 0.8120	 0.6290

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Chain	Atom inclusion	Q-score
QE	 0.4290	 0.5270
QF	 0.5600	 0.5730
QG	 0.8650	 0.6400
QH	 0.7660	 0.6270
QI	 0.7880	 0.6240
QJ	 0.6980	 0.6130
QK	 0.7810	 0.6290
Qa	 0.7860	 0.6220
Qb	 0.8110	 0.6290
Qc	 0.8130	 0.6280
Qd	 0.7880	 0.6210
Qe	 0.3790	 0.5130
Qf	 0.5530	 0.5610
Qg	 0.8430	 0.6350
Qh	 0.7750	 0.6260
Qi	 0.7550	 0.6070
Qj	 0.6260	 0.5940
Qk	 0.7470	 0.6280
S2	 0.8960	 0.6420
S3	 0.8590	 0.6340
S4	 0.8190	 0.6330
S5	 0.7280	 0.6060
S6	 0.8710	 0.6290
S7	 0.9050	 0.6400
S8	 0.8840	 0.6400
V1	 0.7860	 0.6110
V2	 0.7950	 0.6140