



## wwPDB EM Validation Summary Report ⓘ

Jan 20, 2026 – 08:07 pm GMT

PDB ID : 9IFM / pdb\_00009ifm  
EMDB ID : EMD-52846  
Title : STRUCTURE OF UNSTACKED C2S2-TYPE PSII-LHCII SUPERCOMPLEX FROM PISUM SATIVUM  
Authors : Klaiman, D.; Fadeeva, M.; Kandiah, E.; Nelson, N.  
Deposited on : 2025-02-18  
Resolution : 2.20 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev129  
Mogul : 1.8.4, CSD as541be (2020)  
MolProbity : 4-5-2 with Phenix2.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.47

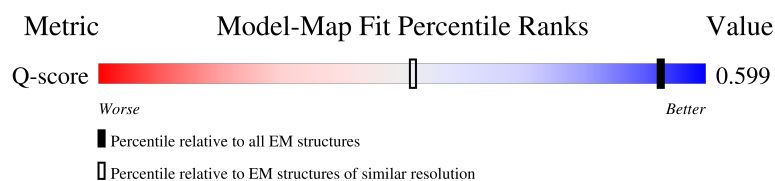
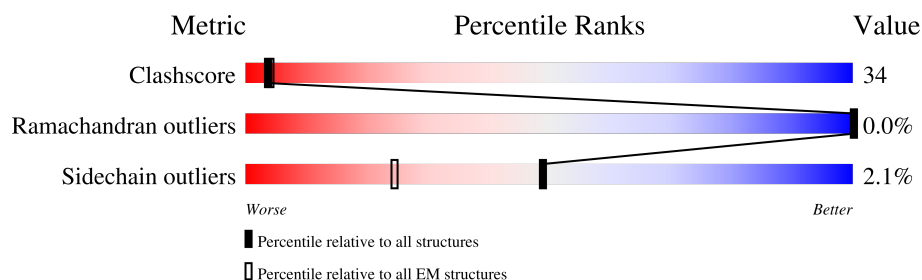
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.20 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.



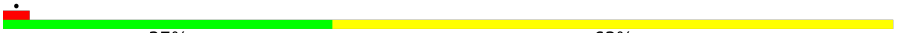
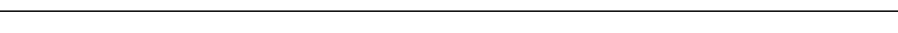
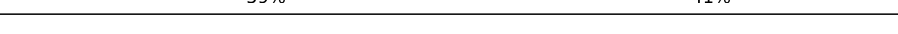
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 3184 ( 1.71 - 2.70 )                                     |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 334    |                  |
| 1   | a     | 334    |                  |
| 2   | B     | 503    |                  |
| 2   | b     | 503    |                  |

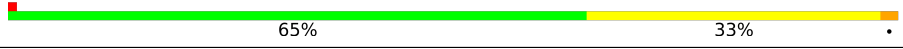
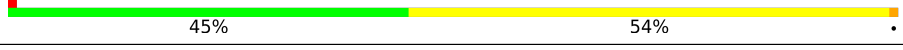
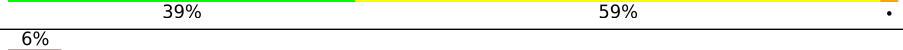
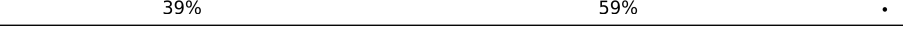
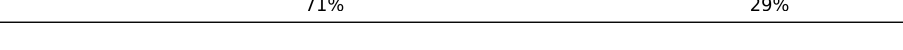
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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 3   | C     | 450    |    |
| 3   | c     | 450    |    |
| 4   | D     | 352    |    |
| 4   | d     | 352    |    |
| 5   | E     | 75     |    |
| 5   | e     | 75     |    |
| 6   | F     | 30     |    |
| 6   | f     | 30     |    |
| 7   | G     | 216    |    |
| 7   | N     | 216    |    |
| 7   | g     | 216    |    |
| 7   | n     | 216    |    |
| 8   | H     | 60     |  |
| 8   | h     | 60     |  |
| 9   | I     | 34     |  |
| 9   | i     | 34     |  |
| 10  | J     | 35     |  |
| 10  | j     | 35     |  |
| 11  | K     | 37     |  |
| 11  | k     | 37     |  |
| 12  | L     | 36     |  |
| 12  | l     | 36     |  |
| 13  | M     | 33     |  |
| 13  | m     | 33     |  |
| 14  | O     | 248    |  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 14  | o     | 248    |    |
| 15  | P     | 186    |    |
| 15  | p     | 186    |    |
| 16  | Q     | 148    |    |
| 16  | q     | 148    |    |
| 17  | R     | 224    |    |
| 17  | r     | 224    |    |
| 18  | S     | 218    |    |
| 18  | s     | 218    |    |
| 19  | T     | 31     |    |
| 19  | t     | 31     |    |
| 20  | W     | 54     |  |
| 20  | w     | 54     |  |
| 21  | X     | 39     |  |
| 21  | x     | 39     |  |
| 22  | Y     | 219    |  |
| 22  | y     | 219    |  |
| 23  | Z     | 61     |  |
| 23  | z     | 61     |  |
| 24  | U     | 28     |  |
| 24  | u     | 28     |  |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 28  | CLA  | A     | 405 | X         | -        | -       | -                |
| 28  | CLA  | A     | 406 | X         | -        | -       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 28  | CLA  | A     | 408 | X         | -        | -       | -                |
| 28  | CLA  | B     | 601 | X         | -        | -       | -                |
| 28  | CLA  | B     | 602 | X         | -        | -       | -                |
| 28  | CLA  | B     | 603 | X         | -        | X       | -                |
| 28  | CLA  | B     | 604 | X         | -        | -       | -                |
| 28  | CLA  | B     | 605 | X         | -        | -       | -                |
| 28  | CLA  | B     | 606 | X         | -        | -       | -                |
| 28  | CLA  | B     | 607 | X         | -        | -       | -                |
| 28  | CLA  | B     | 608 | X         | -        | -       | -                |
| 28  | CLA  | B     | 609 | X         | -        | -       | -                |
| 28  | CLA  | B     | 610 | X         | -        | -       | -                |
| 28  | CLA  | B     | 611 | X         | -        | -       | -                |
| 28  | CLA  | B     | 612 | X         | -        | -       | -                |
| 28  | CLA  | B     | 613 | X         | -        | -       | -                |
| 28  | CLA  | B     | 614 | X         | -        | -       | -                |
| 28  | CLA  | B     | 615 | X         | -        | -       | -                |
| 28  | CLA  | B     | 616 | X         | -        | -       | -                |
| 28  | CLA  | C     | 501 | X         | -        | -       | -                |
| 28  | CLA  | C     | 502 | X         | -        | -       | -                |
| 28  | CLA  | C     | 503 | X         | -        | -       | -                |
| 28  | CLA  | C     | 504 | X         | -        | -       | -                |
| 28  | CLA  | C     | 505 | X         | -        | -       | -                |
| 28  | CLA  | C     | 506 | X         | -        | X       | -                |
| 28  | CLA  | C     | 507 | X         | -        | X       | -                |
| 28  | CLA  | C     | 508 | X         | -        | -       | -                |
| 28  | CLA  | C     | 509 | X         | -        | -       | -                |
| 28  | CLA  | C     | 510 | X         | -        | -       | -                |
| 28  | CLA  | C     | 511 | X         | -        | -       | -                |
| 28  | CLA  | C     | 512 | X         | -        | -       | -                |
| 28  | CLA  | C     | 513 | X         | -        | -       | -                |
| 28  | CLA  | D     | 401 | X         | -        | -       | -                |
| 28  | CLA  | D     | 403 | X         | -        | -       | -                |
| 28  | CLA  | D     | 404 | X         | -        | -       | -                |
| 28  | CLA  | G     | 602 | X         | -        | -       | -                |
| 28  | CLA  | G     | 603 | X         | -        | -       | -                |
| 28  | CLA  | G     | 604 | X         | -        | -       | -                |
| 28  | CLA  | G     | 610 | X         | -        | X       | -                |
| 28  | CLA  | G     | 611 | X         | -        | -       | -                |
| 28  | CLA  | G     | 612 | X         | -        | -       | -                |
| 28  | CLA  | G     | 613 | X         | -        | X       | -                |
| 28  | CLA  | G     | 614 | X         | -        | -       | -                |
| 28  | CLA  | N     | 602 | X         | -        | X       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 28  | CLA  | N     | 603 | X         | -        | -       | -                |
| 28  | CLA  | N     | 604 | X         | -        | -       | -                |
| 28  | CLA  | N     | 610 | X         | -        | -       | -                |
| 28  | CLA  | N     | 611 | X         | -        | -       | -                |
| 28  | CLA  | N     | 612 | X         | -        | -       | -                |
| 28  | CLA  | N     | 613 | X         | -        | -       | -                |
| 28  | CLA  | N     | 614 | X         | -        | -       | -                |
| 28  | CLA  | R     | 601 | X         | -        | -       | -                |
| 28  | CLA  | R     | 602 | X         | -        | -       | -                |
| 28  | CLA  | R     | 603 | X         | -        | -       | -                |
| 28  | CLA  | R     | 604 | X         | -        | -       | -                |
| 28  | CLA  | R     | 608 | X         | -        | -       | -                |
| 28  | CLA  | R     | 609 | X         | -        | -       | -                |
| 28  | CLA  | R     | 610 | X         | -        | -       | -                |
| 28  | CLA  | R     | 611 | X         | -        | -       | -                |
| 28  | CLA  | R     | 612 | X         | -        | -       | -                |
| 28  | CLA  | R     | 613 | X         | -        | -       | -                |
| 28  | CLA  | S     | 303 | X         | -        | X       | -                |
| 28  | CLA  | S     | 304 | X         | -        | -       | -                |
| 28  | CLA  | S     | 305 | X         | -        | -       | -                |
| 28  | CLA  | S     | 309 | X         | -        | -       | -                |
| 28  | CLA  | S     | 310 | X         | -        | X       | -                |
| 28  | CLA  | S     | 311 | X         | -        | -       | -                |
| 28  | CLA  | S     | 312 | X         | -        | -       | -                |
| 28  | CLA  | S     | 313 | X         | -        | -       | -                |
| 28  | CLA  | S     | 314 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 602 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 603 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 604 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 610 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 611 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 612 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 613 | X         | -        | -       | -                |
| 28  | CLA  | Y     | 614 | X         | -        | -       | -                |
| 28  | CLA  | a     | 406 | X         | -        | -       | -                |
| 28  | CLA  | a     | 407 | X         | -        | -       | -                |
| 28  | CLA  | a     | 409 | X         | -        | -       | -                |
| 28  | CLA  | b     | 601 | X         | -        | -       | -                |
| 28  | CLA  | b     | 602 | X         | -        | -       | -                |
| 28  | CLA  | b     | 603 | X         | -        | -       | -                |
| 28  | CLA  | b     | 604 | X         | -        | -       | -                |
| 28  | CLA  | b     | 605 | X         | -        | -       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 28  | CLA  | b     | 606 | X         | -        | -       | -                |
| 28  | CLA  | b     | 607 | X         | -        | -       | -                |
| 28  | CLA  | b     | 608 | X         | -        | -       | -                |
| 28  | CLA  | b     | 609 | X         | -        | -       | -                |
| 28  | CLA  | b     | 610 | X         | -        | -       | -                |
| 28  | CLA  | b     | 611 | X         | -        | -       | -                |
| 28  | CLA  | b     | 612 | X         | -        | -       | -                |
| 28  | CLA  | b     | 613 | X         | -        | -       | -                |
| 28  | CLA  | b     | 614 | X         | -        | -       | -                |
| 28  | CLA  | b     | 615 | X         | -        | -       | -                |
| 28  | CLA  | b     | 616 | X         | -        | -       | -                |
| 28  | CLA  | c     | 501 | X         | -        | -       | -                |
| 28  | CLA  | c     | 502 | X         | -        | -       | -                |
| 28  | CLA  | c     | 503 | X         | -        | -       | -                |
| 28  | CLA  | c     | 504 | X         | -        | -       | -                |
| 28  | CLA  | c     | 505 | X         | -        | -       | -                |
| 28  | CLA  | c     | 506 | X         | -        | -       | -                |
| 28  | CLA  | c     | 507 | X         | -        | -       | -                |
| 28  | CLA  | c     | 508 | X         | -        | -       | -                |
| 28  | CLA  | c     | 509 | X         | -        | -       | -                |
| 28  | CLA  | c     | 510 | X         | -        | -       | -                |
| 28  | CLA  | c     | 511 | X         | -        | -       | -                |
| 28  | CLA  | c     | 512 | X         | -        | -       | -                |
| 28  | CLA  | c     | 513 | X         | -        | -       | -                |
| 28  | CLA  | d     | 401 | X         | -        | -       | -                |
| 28  | CLA  | d     | 404 | X         | -        | -       | -                |
| 28  | CLA  | d     | 405 | X         | -        | -       | -                |
| 28  | CLA  | g     | 602 | X         | -        | -       | -                |
| 28  | CLA  | g     | 603 | X         | -        | -       | -                |
| 28  | CLA  | g     | 604 | X         | -        | -       | -                |
| 28  | CLA  | g     | 610 | X         | -        | -       | -                |
| 28  | CLA  | g     | 611 | X         | -        | -       | -                |
| 28  | CLA  | g     | 612 | X         | -        | -       | -                |
| 28  | CLA  | g     | 613 | X         | -        | -       | -                |
| 28  | CLA  | g     | 614 | X         | -        | -       | -                |
| 28  | CLA  | n     | 602 | X         | -        | -       | -                |
| 28  | CLA  | n     | 603 | X         | -        | X       | -                |
| 28  | CLA  | n     | 604 | X         | -        | -       | -                |
| 28  | CLA  | n     | 610 | X         | -        | X       | -                |
| 28  | CLA  | n     | 611 | X         | -        | -       | -                |
| 28  | CLA  | n     | 612 | X         | -        | -       | -                |
| 28  | CLA  | n     | 613 | X         | -        | -       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 28  | CLA  | n     | 614 | X         | -        | -       | -                |
| 28  | CLA  | r     | 601 | X         | -        | -       | -                |
| 28  | CLA  | r     | 602 | X         | -        | -       | -                |
| 28  | CLA  | r     | 603 | X         | -        | -       | -                |
| 28  | CLA  | r     | 604 | X         | -        | -       | -                |
| 28  | CLA  | r     | 608 | X         | -        | -       | -                |
| 28  | CLA  | r     | 609 | X         | -        | -       | -                |
| 28  | CLA  | r     | 610 | X         | -        | -       | -                |
| 28  | CLA  | r     | 611 | X         | -        | -       | -                |
| 28  | CLA  | r     | 612 | X         | -        | -       | -                |
| 28  | CLA  | r     | 613 | X         | -        | -       | -                |
| 28  | CLA  | s     | 602 | X         | -        | -       | -                |
| 28  | CLA  | s     | 603 | X         | -        | -       | -                |
| 28  | CLA  | s     | 604 | X         | -        | -       | -                |
| 28  | CLA  | s     | 608 | X         | -        | -       | -                |
| 28  | CLA  | s     | 609 | X         | -        | -       | -                |
| 28  | CLA  | s     | 610 | X         | -        | -       | -                |
| 28  | CLA  | s     | 611 | X         | -        | -       | -                |
| 28  | CLA  | s     | 612 | X         | -        | -       | -                |
| 28  | CLA  | s     | 613 | X         | -        | -       | -                |
| 28  | CLA  | y     | 303 | X         | -        | -       | -                |
| 28  | CLA  | y     | 304 | X         | -        | X       | -                |
| 28  | CLA  | y     | 305 | X         | -        | -       | -                |
| 28  | CLA  | y     | 310 | X         | -        | -       | -                |
| 28  | CLA  | y     | 311 | X         | -        | -       | -                |
| 28  | CLA  | y     | 312 | X         | -        | -       | -                |
| 28  | CLA  | y     | 313 | X         | -        | -       | -                |
| 28  | CLA  | y     | 314 | X         | -        | -       | -                |
| 30  | BCR  | B     | 619 | -         | -        | X       | -                |
| 30  | BCR  | C     | 514 | -         | X        | -       | -                |
| 30  | BCR  | C     | 516 | -         | -        | X       | -                |
| 30  | BCR  | a     | 410 | -         | -        | X       | -                |
| 30  | BCR  | t     | 101 | -         | X        | -       | -                |
| 35  | LHG  | S     | 317 | -         | -        | X       | -                |
| 36  | DGD  | C     | 518 | -         | -        | X       | -                |
| 38  | CHL  | G     | 601 | X         | -        | -       | -                |
| 38  | CHL  | G     | 605 | X         | -        | -       | -                |
| 38  | CHL  | G     | 606 | X         | -        | -       | -                |
| 38  | CHL  | G     | 607 | X         | -        | -       | -                |
| 38  | CHL  | G     | 608 | X         | -        | -       | -                |
| 38  | CHL  | G     | 609 | X         | -        | -       | -                |
| 38  | CHL  | N     | 601 | X         | -        | -       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 38  | CHL  | N     | 605 | X         | -        | -       | -                |
| 38  | CHL  | N     | 606 | X         | -        | -       | -                |
| 38  | CHL  | N     | 607 | X         | -        | -       | -                |
| 38  | CHL  | N     | 608 | X         | -        | -       | -                |
| 38  | CHL  | N     | 609 | X         | -        | -       | -                |
| 38  | CHL  | R     | 605 | X         | -        | -       | -                |
| 38  | CHL  | R     | 606 | X         | -        | -       | -                |
| 38  | CHL  | R     | 607 | X         | -        | -       | -                |
| 38  | CHL  | S     | 302 | X         | -        | -       | -                |
| 38  | CHL  | S     | 306 | X         | -        | -       | -                |
| 38  | CHL  | S     | 307 | X         | -        | -       | -                |
| 38  | CHL  | S     | 308 | X         | -        | -       | -                |
| 38  | CHL  | Y     | 601 | X         | -        | -       | -                |
| 38  | CHL  | Y     | 605 | X         | -        | -       | -                |
| 38  | CHL  | Y     | 606 | X         | -        | -       | -                |
| 38  | CHL  | Y     | 607 | X         | -        | X       | -                |
| 38  | CHL  | Y     | 608 | X         | -        | -       | -                |
| 38  | CHL  | Y     | 609 | X         | -        | -       | -                |
| 38  | CHL  | g     | 601 | X         | -        | X       | -                |
| 38  | CHL  | g     | 605 | X         | -        | -       | -                |
| 38  | CHL  | g     | 606 | X         | -        | -       | -                |
| 38  | CHL  | g     | 607 | X         | -        | -       | -                |
| 38  | CHL  | g     | 608 | X         | -        | -       | -                |
| 38  | CHL  | g     | 609 | X         | -        | -       | -                |
| 38  | CHL  | g     | 619 | X         | -        | -       | -                |
| 38  | CHL  | n     | 601 | X         | -        | -       | -                |
| 38  | CHL  | n     | 605 | X         | -        | -       | -                |
| 38  | CHL  | n     | 606 | X         | -        | -       | -                |
| 38  | CHL  | n     | 607 | X         | -        | X       | -                |
| 38  | CHL  | n     | 608 | X         | -        | -       | -                |
| 38  | CHL  | n     | 609 | X         | -        | X       | -                |
| 38  | CHL  | r     | 605 | X         | -        | -       | -                |
| 38  | CHL  | r     | 606 | X         | -        | -       | -                |
| 38  | CHL  | r     | 607 | X         | -        | -       | -                |
| 38  | CHL  | s     | 601 | X         | -        | -       | -                |
| 38  | CHL  | s     | 605 | X         | -        | -       | -                |
| 38  | CHL  | s     | 606 | X         | -        | -       | -                |
| 38  | CHL  | s     | 607 | X         | -        | -       | -                |
| 38  | CHL  | y     | 302 | X         | -        | -       | -                |
| 38  | CHL  | y     | 306 | X         | -        | -       | -                |
| 38  | CHL  | y     | 307 | X         | -        | -       | -                |
| 38  | CHL  | y     | 308 | X         | -        | -       | -                |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 38  | CHL  | y     | 309 | X         | -        | X       | -                |
| 39  | LUT  | G     | 615 | -         | -        | X       | -                |
| 39  | LUT  | S     | 315 | -         | -        | X       | -                |

## 2 Entry composition

There are 42 unique types of molecules in this entry. The entry contains 79416 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Photosystem II protein D1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | A     | 334      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2616  | 1708 | 431 | 464 | 13 |         |       |
| 1   | a     | 334      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2616  | 1708 | 431 | 464 | 13 |         |       |

- Molecule 2 is a protein called Photosystem II CP47 reaction center protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | B     | 503      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3939  | 2577 | 665 | 685 | 12 |         |       |
| 2   | b     | 503      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3939  | 2577 | 665 | 685 | 12 |         |       |

- Molecule 3 is a protein called Photosystem II CP43 reaction center protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | C     | 450      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3497  | 2300 | 583 | 604 | 10 |         |       |
| 3   | c     | 450      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3496  | 2300 | 583 | 603 | 10 |         |       |

- Molecule 4 is a protein called Photosystem II D2 protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | D     | 352      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2797  | 1845 | 458 | 482 | 12 |         |       |
| 4   | d     | 352      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2797  | 1845 | 458 | 482 | 12 |         |       |

- Molecule 5 is a protein called Cytochrome b559 subunit alpha.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 5   | E     | 75       | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 612   | 400 | 100 | 112 |         |       |
| 5   | e     | 75       | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 612   | 400 | 100 | 112 |         |       |

- Molecule 6 is a protein called Cytochrome b559 subunit beta.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 6   | F     | 30       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 241   | 162 | 41 | 37 | 1 |         |       |
| 6   | f     | 30       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 241   | 162 | 41 | 37 | 1 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| F     | 26      | PHE      | SER    | conflict | UNP P62096 |
| f     | 26      | PHE      | SER    | conflict | UNP P62096 |

- Molecule 7 is a protein called Chlorophyll a-b binding protein 8, chloroplastic.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 7   | G     | 216      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1650  | 1069 | 267 | 309 | 5 |         |       |
| 7   | N     | 216      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1649  | 1068 | 267 | 309 | 5 |         |       |
| 7   | g     | 216      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1650  | 1069 | 267 | 309 | 5 |         |       |
| 7   | n     | 216      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1650  | 1069 | 267 | 309 | 5 |         |       |

- Molecule 8 is a protein called Photosystem II reaction center protein H.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 8   | H     | 60       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 452   | 296 | 72 | 81 | 3 |         |       |
| 8   | h     | 60       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 452   | 296 | 72 | 81 | 3 |         |       |

- Molecule 9 is a protein called Photosystem II reaction center protein I.



| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 9   | I     | 34       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 278   | 191 | 43 | 43 | 1 |         |       |
| 9   | i     | 34       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 278   | 191 | 43 | 43 | 1 |         |       |

- Molecule 10 is a protein called Photosystem II reaction center protein J.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 10  | J     | 35       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 256   | 174 | 39 | 43 |   |         |       |
| 10  | j     | 35       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 256   | 174 | 39 | 43 |   |         |       |

- Molecule 11 is a protein called Photosystem II reaction center protein K.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 11  | K     | 37       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 306   | 215 | 44 | 46 | 1 |         |       |
| 11  | k     | 37       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 306   | 215 | 44 | 46 | 1 |         |       |

- Molecule 12 is a protein called Photosystem II reaction center protein L.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 12  | L     | 36       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 304   | 201 | 48 | 55 |   |         |       |
| 12  | l     | 36       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 304   | 201 | 48 | 55 |   |         |       |

- Molecule 13 is a protein called Photosystem II reaction center protein M.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 13  | M     | 33       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 256   | 176 | 36 | 43 | 1 |         |       |
| 13  | m     | 33       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 256   | 176 | 36 | 43 | 1 |         |       |

- Molecule 14 is a protein called Oxygen-evolving enhancer protein 1, chloroplastic.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 14  | O     | 248      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1870  | 1179 | 306 | 382 | 3 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 14  | o     | 248      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1870  | 1179 | 306 | 382 | 3 |         |       |

- Molecule 15 is a protein called Oxygen-evolving enhancer protein 2, chloroplastic.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | P     | 186      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1434  | 909 | 238 | 286 | 1 |         |       |
| 15  | p     | 186      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1434  | 909 | 238 | 286 | 1 |         |       |

- Molecule 16 is a protein called Oxygen-evolving enhancer protein 3.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | Q     | 148      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1157  | 742 | 197 | 218 |   |         |       |
| 16  | q     | 148      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1157  | 742 | 197 | 218 |   |         |       |

- Molecule 17 is a protein called Chlorophyll a-b binding protein, chloroplastic.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 17  | R     | 224      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1755  | 1142 | 285 | 325 | 3 |         |       |
| 17  | r     | 224      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1755  | 1142 | 285 | 325 | 3 |         |       |

- Molecule 18 is a protein called Chlorophyll a-b binding protein, chloroplastic.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 18  | S     | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1688  | 1105 | 271 | 308 | 4 |         |       |
| 18  | s     | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1688  | 1105 | 271 | 308 | 4 |         |       |

- Molecule 19 is a protein called Photosystem II reaction center protein T.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 19  | T     | 31       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 252   | 176 | 35 | 40 | 1 |         |       |
| 19  | t     | 31       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 252   | 176 | 35 | 40 | 1 |         |       |

- Molecule 20 is a protein called Photosystem II reaction center protein W.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 20  | W     | 54       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 419   | 275 | 61 | 82 | 1 |         |       |
| 20  | w     | 54       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 419   | 275 | 61 | 82 | 1 |         |       |

- Molecule 21 is a protein called Ultraviolet-B-repressible protein.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 21  | X     | 39       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 276   | 180 | 46 | 50 |         |       |
| 21  | x     | 39       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 276   | 180 | 46 | 50 |         |       |

- Molecule 22 is a protein called Chlorophyll a-b binding protein AB80, chloroplastic.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 22  | Y     | 219      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1667  | 1081 | 270 | 311 | 5 |         |       |
| 22  | y     | 219      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1667  | 1081 | 270 | 311 | 5 |         |       |

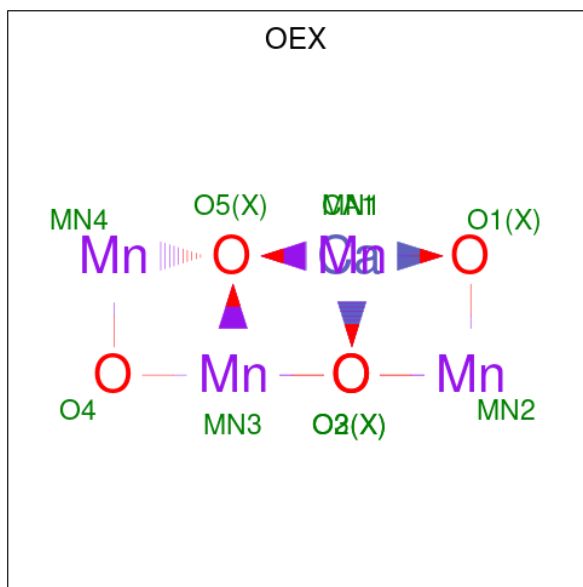
- Molecule 23 is a protein called Photosystem II reaction center protein Z.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 23  | Z     | 61       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 457   | 309 | 68 | 79 | 1 |         |       |
| 23  | z     | 61       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 457   | 309 | 68 | 79 | 1 |         |       |

- Molecule 24 is a protein called Photosystem II 5 kDa protein, chloroplastic.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 24  | U     | 28       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 212   | 131 | 41 | 37 | 3 |         |       |
| 24  | u     | 28       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 212   | 131 | 41 | 37 | 3 |         |       |

- Molecule 25 is CA-MN4-O5 CLUSTER (CCD ID: OEX) (formula:  $\text{CaMn}_4\text{O}_5$ ).



| Mol | Chain | Residues | Atoms |    |    |   | AltConf |
|-----|-------|----------|-------|----|----|---|---------|
| 25  | A     | 1        | Total | Ca | Mn | O | 0       |
|     |       |          | 10    | 1  | 4  | 5 |         |
| 25  | a     | 1        | Total | Ca | Mn | O | 0       |
|     |       |          | 10    | 1  | 4  | 5 |         |

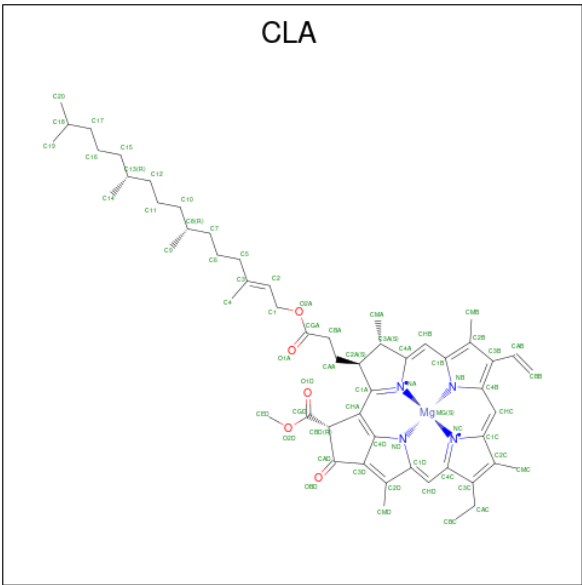
- Molecule 26 is FE (II) ION (CCD ID: FE2) (formula: Fe).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 26  | A     | 1        | Total | Fe | 0       |
|     |       |          | 1     | 1  |         |
| 26  | a     | 1        | Total | Fe | 0       |
|     |       |          | 1     | 1  |         |

- Molecule 27 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 27  | A     | 2        | Total | Cl | 0       |
|     |       |          | 2     | 2  |         |
| 27  | a     | 2        | Total | Cl | 0       |
|     |       |          | 2     | 2  |         |

- Molecule 28 is CHLOROPHYLL A (CCD ID: CLA) (formula: C<sub>55</sub>H<sub>72</sub>MgN<sub>4</sub>O<sub>5</sub>).



| Mol | Chain | Residues | Atoms |    |    |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---------|
| 28  | A     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | A     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 50    | 40 | 1  | 4 | 5 |         |
| 28  | A     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | B     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | B     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | B     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | B     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | B     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | B     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>57 | C<br>47 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | C     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | D     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | D     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | D     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | G     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>53 | C<br>43 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>64 | C<br>54 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | G     | 1        | Total<br>48 | C<br>38 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>53 | C<br>43 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | N     | 1        | Total<br>48 | C<br>38 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>48 | C<br>38 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>58 | C<br>48 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | R     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | R     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>61 | C<br>51 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>56 | C<br>46 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | S     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | Y     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | Y     | 1        | Total<br>48 | C<br>38 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | a     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | a     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | a     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | b     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>57 | C<br>47 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>57 | C<br>47 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>57 | C<br>47 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | c     | 1        | Total<br>57 | C<br>47 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | d     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | d     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | d     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>58 | C<br>48 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | g     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

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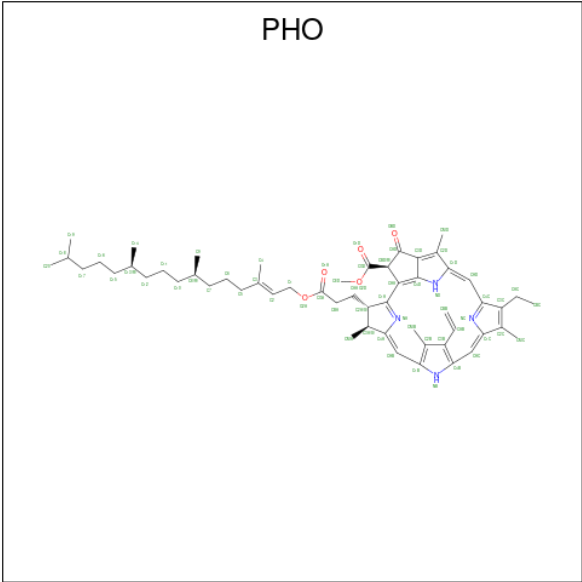
| Mol | Chain | Residues | Atoms |    |    |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---------|
| 28  | g     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 52    | 42 | 1  | 4 | 5 |         |
| 28  | g     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 45    | 35 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 50    | 40 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 55    | 45 | 1  | 4 | 5 |         |
| 28  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 45    | 35 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 49    | 39 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 48    | 38 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 58    | 48 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 49    | 39 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 49    | 39 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 60    | 50 | 1  | 4 | 5 |         |
| 28  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 65    | 55 | 1  | 4 | 5 |         |
| 28  | s     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 61    | 51 | 1  | 4 | 5 |         |

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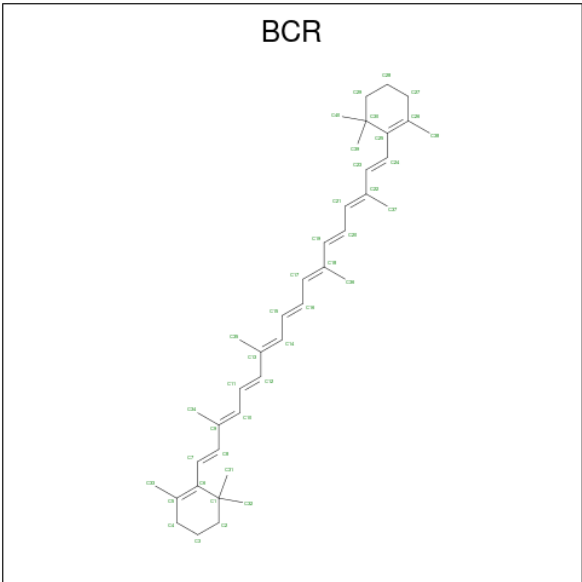
| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 28  | s     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>45 | C<br>35 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>56 | C<br>46 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>55 | C<br>45 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | s     | 1        | Total<br>49 | C<br>39 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>50 | C<br>40 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>60 | C<br>50 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>65 | C<br>55 | Mg<br>1 | N<br>4 | O<br>5 | 0       |
| 28  | y     | 1        | Total<br>48 | C<br>38 | Mg<br>1 | N<br>4 | O<br>5 | 0       |

- Molecule 29 is PHEOPHYTIN A (CCD ID: PHO) (formula: C<sub>55</sub>H<sub>74</sub>N<sub>4</sub>O<sub>5</sub>).



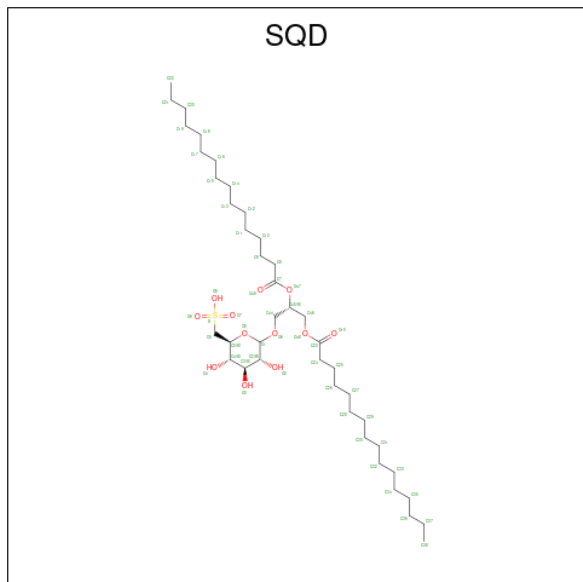
| Mol | Chain | Residues | Atoms |    |   |   | AltConf |
|-----|-------|----------|-------|----|---|---|---------|
| 29  | A     | 1        | Total | C  | N | O | 0       |
|     |       |          | 64    | 55 | 4 | 5 |         |
| 29  | D     | 1        | Total | C  | N | O | 0       |
|     |       |          | 64    | 55 | 4 | 5 |         |
| 29  | a     | 1        | Total | C  | N | O | 0       |
|     |       |          | 64    | 55 | 4 | 5 |         |
| 29  | d     | 1        | Total | C  | N | O | 0       |
|     |       |          | 64    | 55 | 4 | 5 |         |

- Molecule 30 is BETA-CAROTENE (CCD ID: BCR) (formula: C<sub>40</sub>H<sub>56</sub>).



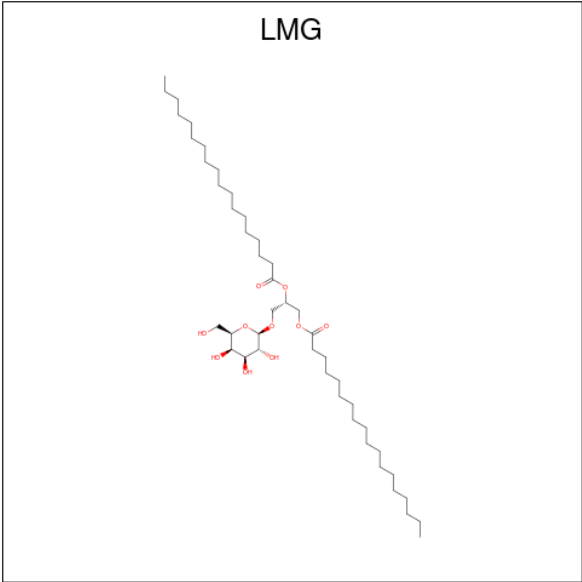
| Mol | Chain | Residues | Atoms            | AltConf |
|-----|-------|----------|------------------|---------|
| 30  | A     | 1        | Total C<br>40 40 | 0       |
| 30  | B     | 1        | Total C<br>40 40 | 0       |
| 30  | B     | 1        | Total C<br>40 40 | 0       |
| 30  | B     | 1        | Total C<br>40 40 | 0       |
| 30  | C     | 1        | Total C<br>40 40 | 0       |
| 30  | C     | 1        | Total C<br>40 40 | 0       |
| 30  | C     | 1        | Total C<br>40 40 | 0       |
| 30  | D     | 1        | Total C<br>40 40 | 0       |
| 30  | H     | 1        | Total C<br>40 40 | 0       |
| 30  | K     | 1        | Total C<br>40 40 | 0       |
| 30  | T     | 1        | Total C<br>40 40 | 0       |
| 30  | a     | 1        | Total C<br>40 40 | 0       |
| 30  | b     | 1        | Total C<br>40 40 | 0       |
| 30  | b     | 1        | Total C<br>40 40 | 0       |
| 30  | b     | 1        | Total C<br>40 40 | 0       |
| 30  | c     | 1        | Total C<br>40 40 | 0       |
| 30  | c     | 1        | Total C<br>40 40 | 0       |
| 30  | d     | 1        | Total C<br>40 40 | 0       |
| 30  | h     | 1        | Total C<br>40 40 | 0       |
| 30  | i     | 1        | Total C<br>40 40 | 0       |
| 30  | k     | 1        | Total C<br>40 40 | 0       |
| 30  | t     | 1        | Total C<br>40 40 | 0       |

- Molecule 31 is 1,2-DI-O-ACYL-3-O-[6-DEOXY-6-SULFO-ALPHA-D-GLUCOPYRANOSYL]-SN-GLYCEROL (CCD ID: SQD) (formula:  $C_{41}H_{78}O_{12}S$ ).



| Mol | Chain | Residues | Atoms |    |    |   | AltConf |
|-----|-------|----------|-------|----|----|---|---------|
| 31  | A     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 50    | 37 | 12 | 1 |         |
| 31  | A     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 54    | 41 | 12 | 1 |         |
| 31  | B     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 54    | 41 | 12 | 1 |         |
| 31  | L     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 42    | 29 | 12 | 1 |         |
| 31  | L     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 54    | 41 | 12 | 1 |         |
| 31  | M     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 42    | 29 | 12 | 1 |         |
| 31  | a     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 50    | 37 | 12 | 1 |         |
| 31  | a     | 1        | Total | C  | O  | S | 0       |
|     |       |          | 54    | 41 | 12 | 1 |         |

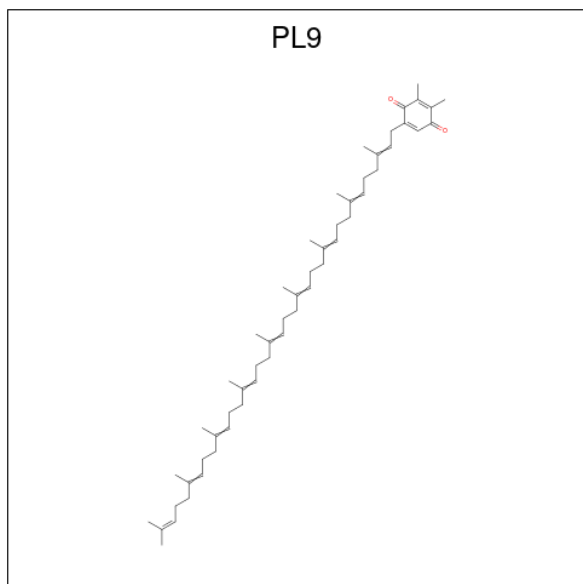
- Molecule 32 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (CCD ID: LMG) (formula:  $C_{45}H_{86}O_{10}$ ).



| Mol | Chain | Residues | Atoms |    |    | AltConf |
|-----|-------|----------|-------|----|----|---------|
| 32  | A     | 1        | Total | C  | O  | 0       |
|     |       |          | 48    | 38 | 10 |         |
| 32  | A     | 1        | Total | C  | O  | 0       |
|     |       |          | 40    | 30 | 10 |         |
| 32  | B     | 1        | Total | C  | O  | 0       |
|     |       |          | 51    | 41 | 10 |         |
| 32  | B     | 1        | Total | C  | O  | 0       |
|     |       |          | 31    | 21 | 10 |         |
| 32  | C     | 1        | Total | C  | O  | 0       |
|     |       |          | 51    | 41 | 10 |         |
| 32  | C     | 1        | Total | C  | O  | 0       |
|     |       |          | 44    | 34 | 10 |         |
| 32  | D     | 1        | Total | C  | O  | 0       |
|     |       |          | 46    | 36 | 10 |         |
| 32  | a     | 1        | Total | C  | O  | 0       |
|     |       |          | 40    | 30 | 10 |         |
| 32  | b     | 1        | Total | C  | O  | 0       |
|     |       |          | 51    | 41 | 10 |         |
| 32  | b     | 1        | Total | C  | O  | 0       |
|     |       |          | 50    | 40 | 10 |         |
| 32  | c     | 1        | Total | C  | O  | 0       |
|     |       |          | 51    | 41 | 10 |         |
| 32  | d     | 1        | Total | C  | O  | 0       |
|     |       |          | 46    | 36 | 10 |         |
| 32  | k     | 1        | Total | C  | O  | 0       |
|     |       |          | 51    | 41 | 10 |         |
| 32  | w     | 1        | Total | C  | O  | 0       |
|     |       |          | 48    | 38 | 10 |         |

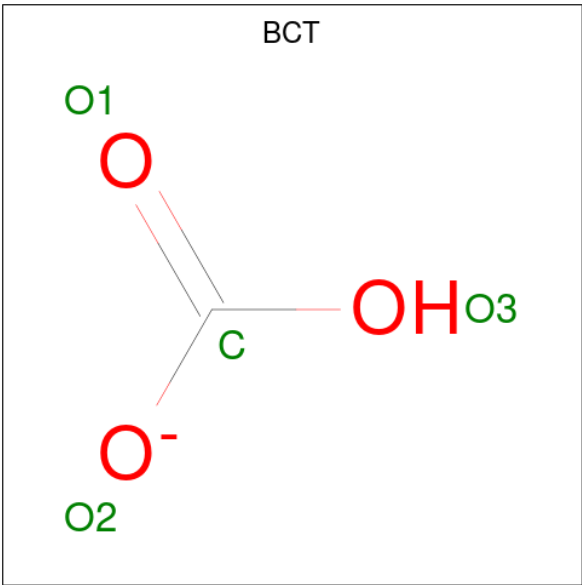


- Molecule 33 is 2,3-DIMETHYL-5-(3,7,11,15,19,23,27,31,35-NONAMETHYL-2,6,10,14,18,22,26,30,34-HEXATRIACONTANONAENYL-2,5-CYCLOHEXADIENE-1,4-DIONE-2,3-DIMETHYL-5-SOLANESYL-1,4-BENZOQUINONE (CCD ID: PL9) (formula:  $C_{53}H_{80}O_2$ ).



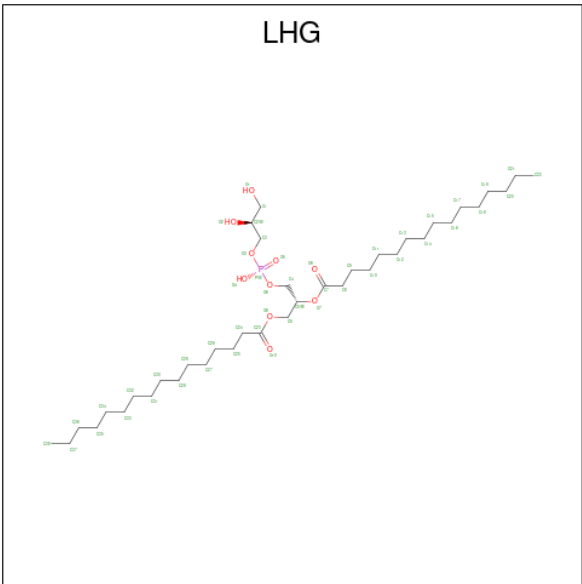
| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 33  | A     | 1        | Total | C  | O | 0       |
|     |       |          | 13    | 11 | 2 |         |
| 33  | D     | 1        | Total | C  | O | 0       |
|     |       |          | 55    | 53 | 2 |         |
| 33  | a     | 1        | Total | C  | O | 0       |
|     |       |          | 13    | 11 | 2 |         |
| 33  | d     | 1        | Total | C  | O | 0       |
|     |       |          | 55    | 53 | 2 |         |

- Molecule 34 is BICARBONATE ION (CCD ID: BCT) (formula:  $CHO_3$ ).



| Mol | Chain | Residues | Atoms |   |   | AltConf |
|-----|-------|----------|-------|---|---|---------|
| 34  | A     | 1        | Total | C | O | 0       |
|     |       |          | 4     | 1 | 3 |         |
| 34  | d     | 1        | Total | C | O | 0       |
|     |       |          | 4     | 1 | 3 |         |

- Molecule 35 is 1,2-DIPALMITOYL-PHOSPHATIDYL-GLYCEROLE (CCD ID: LHG) (formula: C<sub>38</sub>H<sub>75</sub>O<sub>10</sub>P).



| Mol | Chain | Residues | Atoms |    |    |   | AltConf |
|-----|-------|----------|-------|----|----|---|---------|
| 35  | A     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 43    | 32 | 10 | 1 |         |

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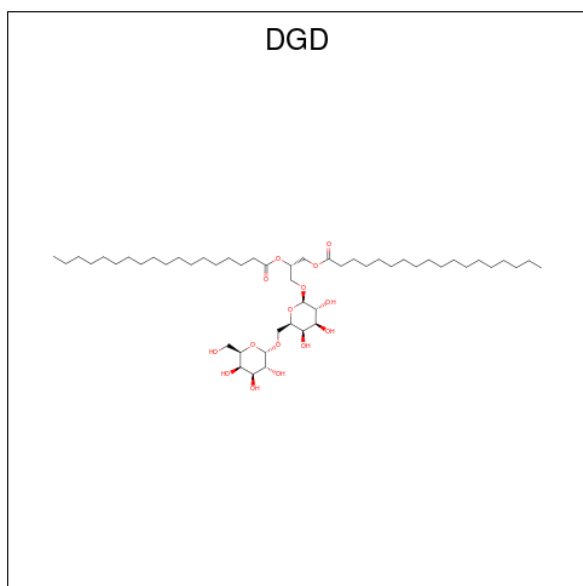
| Mol | Chain | Residues | Atoms       |         |         |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|---------|
| 35  | B     | 1        | Total<br>30 | C<br>19 | O<br>10 | P<br>1 | 0       |
| 35  | B     | 1        | Total<br>41 | C<br>30 | O<br>10 | P<br>1 | 0       |
| 35  | B     | 1        | Total<br>46 | C<br>35 | O<br>10 | P<br>1 | 0       |
| 35  | C     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | D     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | G     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | L     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | N     | 1        | Total<br>31 | C<br>20 | O<br>10 | P<br>1 | 0       |
| 35  | R     | 1        | Total<br>25 | C<br>14 | O<br>10 | P<br>1 | 0       |
| 35  | S     | 1        | Total<br>34 | C<br>23 | O<br>10 | P<br>1 | 0       |
| 35  | S     | 1        | Total<br>43 | C<br>32 | O<br>10 | P<br>1 | 0       |
| 35  | W     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | Y     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | a     | 1        | Total<br>43 | C<br>32 | O<br>10 | P<br>1 | 0       |
| 35  | b     | 1        | Total<br>34 | C<br>23 | O<br>10 | P<br>1 | 0       |
| 35  | b     | 1        | Total<br>41 | C<br>30 | O<br>10 | P<br>1 | 0       |
| 35  | b     | 1        | Total<br>46 | C<br>35 | O<br>10 | P<br>1 | 0       |
| 35  | c     | 1        | Total<br>32 | C<br>21 | O<br>10 | P<br>1 | 0       |
| 35  | c     | 1        | Total<br>40 | C<br>29 | O<br>10 | P<br>1 | 0       |
| 35  | d     | 1        | Total<br>49 | C<br>38 | O<br>10 | P<br>1 | 0       |
| 35  | g     | 1        | Total<br>41 | C<br>30 | O<br>10 | P<br>1 | 0       |

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| Mol | Chain | Residues | Atoms |    |    |   | AltConf |
|-----|-------|----------|-------|----|----|---|---------|
| 35  | l     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 49    | 38 | 10 | 1 |         |
| 35  | n     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 32    | 21 | 10 | 1 |         |
| 35  | r     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 30    | 19 | 10 | 1 |         |
| 35  | s     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 49    | 38 | 10 | 1 |         |
| 35  | w     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 39    | 28 | 10 | 1 |         |
| 35  | y     | 1        | Total | C  | O  | P | 0       |
|     |       |          | 49    | 38 | 10 | 1 |         |

- Molecule 36 is DIGALACTOSYL DIACYL GLYCEROL (DGDG) (CCD ID: DGD) (formula:  $C_{51}H_{96}O_{15}$ ).



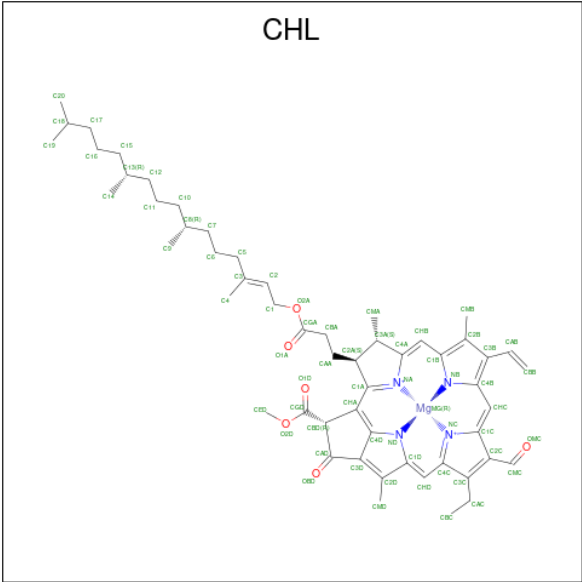
| Mol | Chain | Residues | Atoms |    |    | AltConf |
|-----|-------|----------|-------|----|----|---------|
| 36  | A     | 1        | Total | C  | O  | 0       |
|     |       |          | 59    | 44 | 15 |         |
| 36  | B     | 1        | Total | C  | O  | 0       |
|     |       |          | 62    | 47 | 15 |         |
| 36  | C     | 1        | Total | C  | O  | 0       |
|     |       |          | 55    | 40 | 15 |         |
| 36  | C     | 1        | Total | C  | O  | 0       |
|     |       |          | 62    | 47 | 15 |         |
| 36  | C     | 1        | Total | C  | O  | 0       |
|     |       |          | 60    | 45 | 15 |         |

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| Mol | Chain | Residues | Atoms       |         |         | AltConf |
|-----|-------|----------|-------------|---------|---------|---------|
| 36  | a     | 1        | Total<br>59 | C<br>44 | O<br>15 | 0       |
| 36  | b     | 1        | Total<br>62 | C<br>47 | O<br>15 | 0       |
| 36  | c     | 1        | Total<br>55 | C<br>40 | O<br>15 | 0       |
| 36  | c     | 1        | Total<br>54 | C<br>39 | O<br>15 | 0       |
| 36  | c     | 1        | Total<br>59 | C<br>44 | O<br>15 | 0       |

- # HEM

- Molecule 38 is CHLOROPHYLL B (CCD ID: CHL) (formula:  $\text{C}_{55}\text{H}_{70}\text{MgN}_4\text{O}_6$ ).



| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 38  | G     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | G     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | G     | 1        | Total<br>50 | C<br>39 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | G     | 1        | Total<br>56 | C<br>45 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | G     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | G     | 1        | Total<br>55 | C<br>44 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>52 | C<br>41 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>48 | C<br>37 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>50 | C<br>39 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | N     | 1        | Total<br>65 | C<br>54 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | R     | 1        | Total<br>47 | C<br>36 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | R     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |

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| Mol | Chain | Residues | Atoms       |         |         |        |        | AltConf |
|-----|-------|----------|-------------|---------|---------|--------|--------|---------|
| 38  | R     | 1        | Total<br>61 | C<br>50 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | S     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | S     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | S     | 1        | Total<br>58 | C<br>47 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | S     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>48 | C<br>37 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>50 | C<br>39 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | Y     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>46 | C<br>35 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>50 | C<br>39 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>57 | C<br>46 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>61 | C<br>50 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | g     | 1        | Total<br>66 | C<br>55 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | n     | 1        | Total<br>54 | C<br>43 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | n     | 1        | Total<br>48 | C<br>37 | Mg<br>1 | N<br>4 | O<br>6 | 0       |
| 38  | n     | 1        | Total<br>50 | C<br>39 | Mg<br>1 | N<br>4 | O<br>6 | 0       |

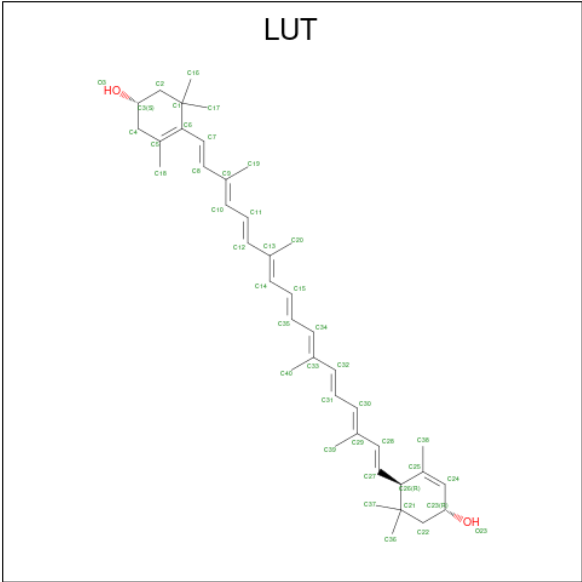
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| Mol | Chain | Residues | Atoms |    |    |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---------|
| 38  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | n     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 56    | 45 | 1  | 4 | 6 |         |
| 38  | r     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 61    | 50 | 1  | 4 | 6 |         |
| 38  | s     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 46    | 35 | 1  | 4 | 6 |         |
| 38  | s     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 46    | 35 | 1  | 4 | 6 |         |
| 38  | s     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 58    | 47 | 1  | 4 | 6 |         |
| 38  | s     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 46    | 35 | 1  | 4 | 6 |         |
| 38  | y     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | y     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 48    | 37 | 1  | 4 | 6 |         |
| 38  | y     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 50    | 39 | 1  | 4 | 6 |         |
| 38  | y     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |
| 38  | y     | 1        | Total | C  | Mg | N | O | 0       |
|     |       |          | 66    | 55 | 1  | 4 | 6 |         |

- Molecule 39 is (3R,3'R,6S)-4,5-DIDEHYDRO-5,6-DIHYDRO-BETA,BETA-CAROTENE-3,3'-DIOL (CCD ID: LUT) (formula: C<sub>40</sub>H<sub>56</sub>O<sub>2</sub>).





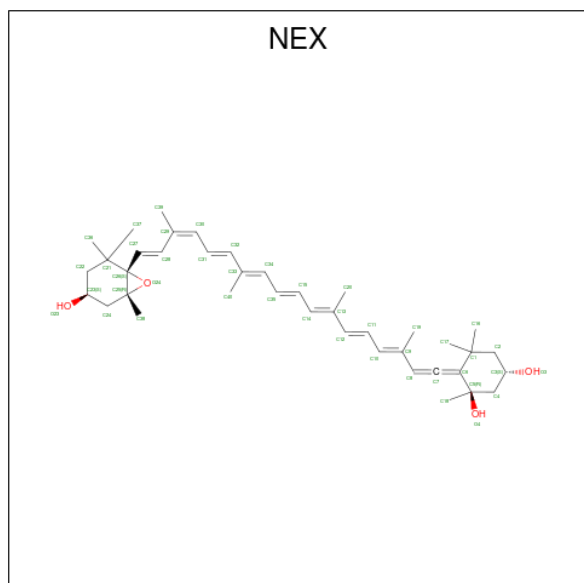
| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 39  | G     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | G     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | N     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | N     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | R     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | S     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | S     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | Y     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | Y     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | g     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | g     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | n     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | n     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | r     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |

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| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 39  | s     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | s     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | y     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |
| 39  | y     | 1        | Total | C  | O | 0       |
|     |       |          | 42    | 40 | 2 |         |

- Molecule 40 is (1R,3R)-6-[(3E,5E,7E,9E,11E,13E,15E,17E)-18-[(1S,4R,6R)-4-HYDROXY-2,6-TRIMETHYL-7-OXABICYCLO[4.1.0]HEPT-1-YL]-3,7,12,16-TETRAMETHYLOCTA DECA-1,3,5,7,9,11,13,15,17-NONAENYLIDENE}-1,5,5-TRIMETHYLCYCLOHEXANE-1,3-DIOL (CCD ID: NEX) (formula: C<sub>40</sub>H<sub>56</sub>O<sub>4</sub>).



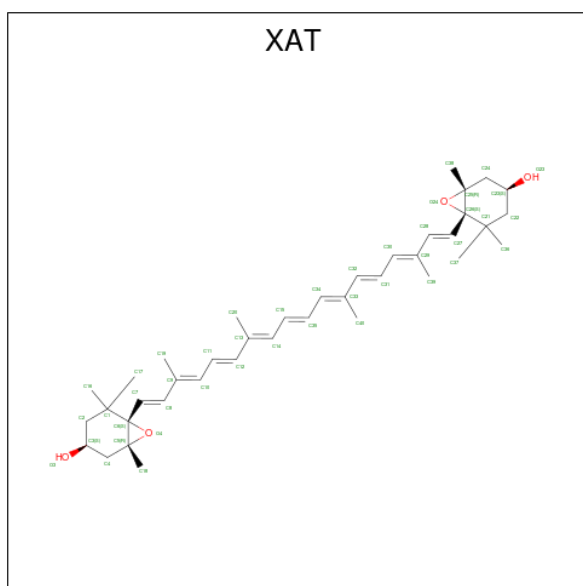
| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 40  | G     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | N     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | Y     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | g     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | n     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | r     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |

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| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 40  | s     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | y     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 40  | y     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |

- Molecule 41 is (3S,5R,6S,3'S,5'R,6'S)-5,6,5',6'-DIEPOXY-5,6,5',6'- TETRAHYDRO-BETA ,BETA-CAROTENE-3,3'-DIOL (CCD ID: XAT) (formula: C<sub>40</sub>H<sub>56</sub>O<sub>4</sub>).



| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 41  | R     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 41  | Y     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 41  | r     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |
| 41  | y     | 1        | Total | C  | O | 0       |
|     |       |          | 44    | 40 | 4 |         |

- Molecule 42 is water.

| Mol | Chain | Residues | Atoms |     | AltConf |
|-----|-------|----------|-------|-----|---------|
| 42  | A     | 92       | Total | O   | 0       |
|     |       |          | 92    | 92  |         |
| 42  | B     | 151      | Total | O   | 0       |
|     |       |          | 151   | 151 |         |

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| Mol | Chain | Residues | Atoms        |          | AltConf |
|-----|-------|----------|--------------|----------|---------|
| 42  | C     | 134      | Total<br>134 | O<br>134 | 0       |
| 42  | D     | 101      | Total<br>101 | O<br>101 | 0       |
| 42  | E     | 14       | Total<br>14  | O<br>14  | 0       |
| 42  | F     | 6        | Total<br>6   | O<br>6   | 0       |
| 42  | G     | 26       | Total<br>26  | O<br>26  | 0       |
| 42  | H     | 16       | Total<br>16  | O<br>16  | 0       |
| 42  | I     | 3        | Total<br>3   | O<br>3   | 0       |
| 42  | J     | 5        | Total<br>5   | O<br>5   | 0       |
| 42  | K     | 6        | Total<br>6   | O<br>6   | 0       |
| 42  | L     | 8        | Total<br>8   | O<br>8   | 0       |
| 42  | M     | 6        | Total<br>6   | O<br>6   | 0       |
| 42  | N     | 28       | Total<br>28  | O<br>28  | 0       |
| 42  | O     | 69       | Total<br>69  | O<br>69  | 0       |
| 42  | P     | 52       | Total<br>52  | O<br>52  | 0       |
| 42  | Q     | 28       | Total<br>28  | O<br>28  | 0       |
| 42  | R     | 40       | Total<br>40  | O<br>40  | 0       |
| 42  | S     | 24       | Total<br>24  | O<br>24  | 0       |
| 42  | T     | 7        | Total<br>7   | O<br>7   | 0       |
| 42  | W     | 11       | Total<br>11  | O<br>11  | 0       |
| 42  | X     | 10       | Total<br>10  | O<br>10  | 0       |
| 42  | Y     | 45       | Total<br>45  | O<br>45  | 0       |

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| Mol | Chain | Residues | Atoms        |          | AltConf |
|-----|-------|----------|--------------|----------|---------|
| 42  | Z     | 6        | Total<br>6   | O<br>6   | 0       |
| 42  | U     | 1        | Total<br>1   | O<br>1   | 0       |
| 42  | a     | 100      | Total<br>100 | O<br>100 | 0       |
| 42  | b     | 167      | Total<br>167 | O<br>167 | 0       |
| 42  | c     | 128      | Total<br>128 | O<br>128 | 0       |
| 42  | d     | 85       | Total<br>85  | O<br>85  | 0       |
| 42  | e     | 21       | Total<br>21  | O<br>21  | 0       |
| 42  | f     | 3        | Total<br>3   | O<br>3   | 0       |
| 42  | g     | 23       | Total<br>23  | O<br>23  | 0       |
| 42  | h     | 14       | Total<br>14  | O<br>14  | 0       |
| 42  | i     | 2        | Total<br>2   | O<br>2   | 0       |
| 42  | j     | 4        | Total<br>4   | O<br>4   | 0       |
| 42  | k     | 4        | Total<br>4   | O<br>4   | 0       |
| 42  | l     | 8        | Total<br>8   | O<br>8   | 0       |
| 42  | m     | 2        | Total<br>2   | O<br>2   | 0       |
| 42  | n     | 23       | Total<br>23  | O<br>23  | 0       |
| 42  | o     | 67       | Total<br>67  | O<br>67  | 0       |
| 42  | p     | 43       | Total<br>43  | O<br>43  | 0       |
| 42  | q     | 18       | Total<br>18  | O<br>18  | 0       |
| 42  | r     | 33       | Total<br>33  | O<br>33  | 0       |
| 42  | s     | 19       | Total<br>19  | O<br>19  | 0       |

*Continued on next page...*

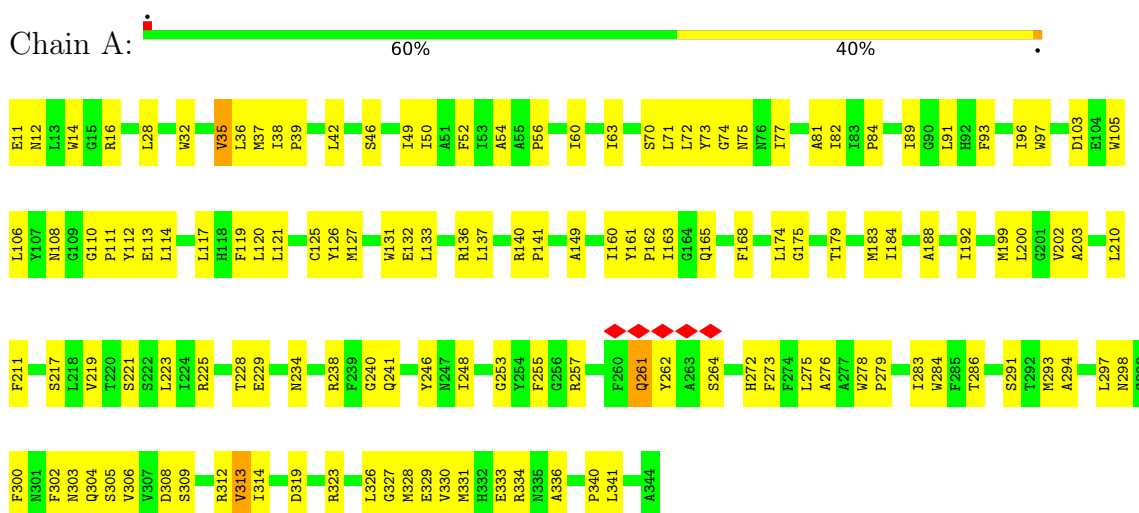
*Continued from previous page...*

| Mol | Chain | Residues | Atoms       |         | AltConf |
|-----|-------|----------|-------------|---------|---------|
| 42  | t     | 3        | Total<br>3  | O<br>3  | 0       |
| 42  | w     | 11       | Total<br>11 | O<br>11 | 0       |
| 42  | x     | 7        | Total<br>7  | O<br>7  | 0       |
| 42  | y     | 31       | Total<br>31 | O<br>31 | 0       |
| 42  | z     | 2        | Total<br>2  | O<br>2  | 0       |
| 42  | u     | 4        | Total<br>4  | O<br>4  | 0       |

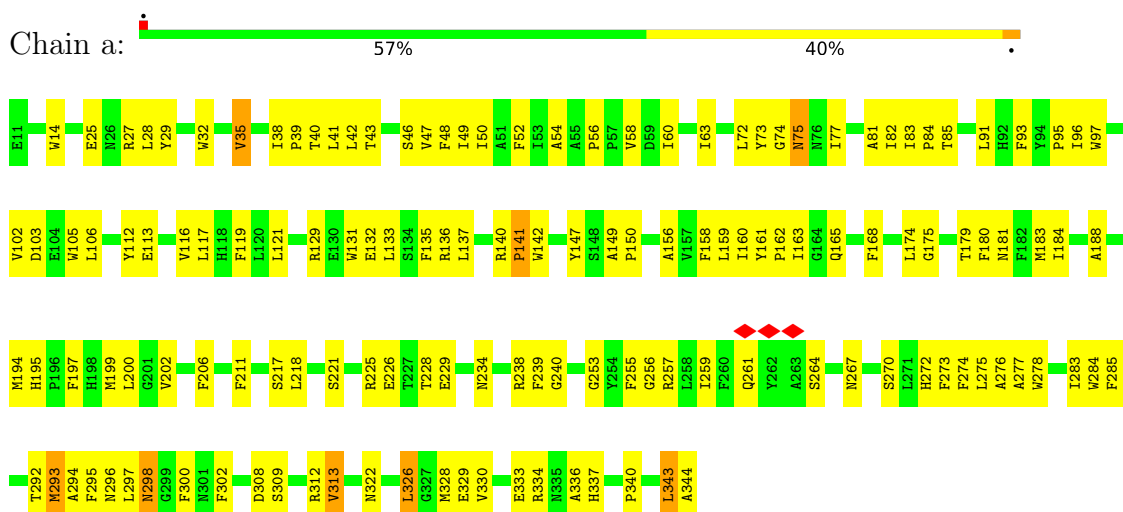
### 3 Residue-property plots

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

#### • Molecule 1: Photosystem II protein D1

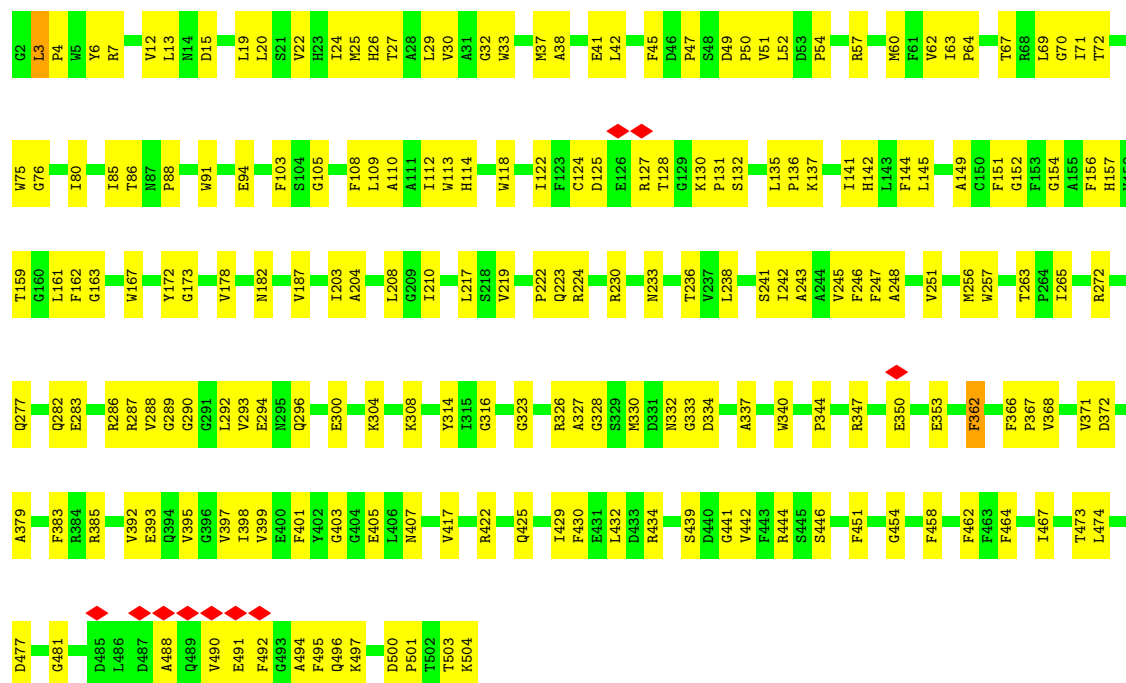


#### • Molecule 1: Photosystem II protein D1



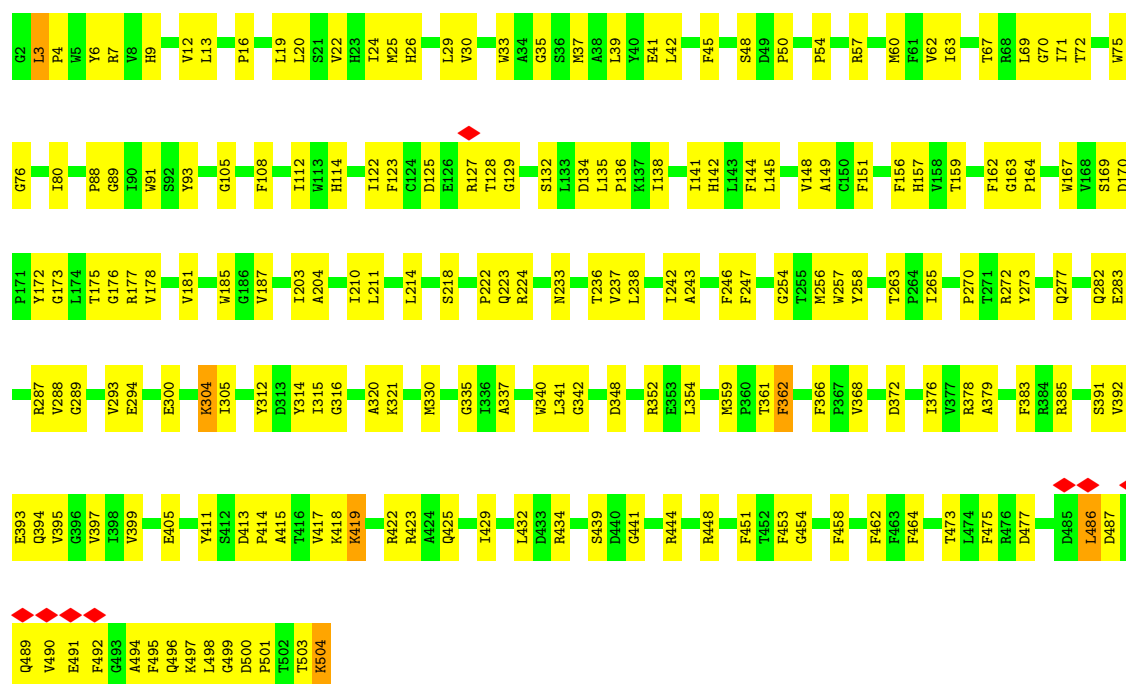
#### • Molecule 2: Photosystem II CP47 reaction center protein





• Molecule 2: Photosystem II CP47 reaction center protein

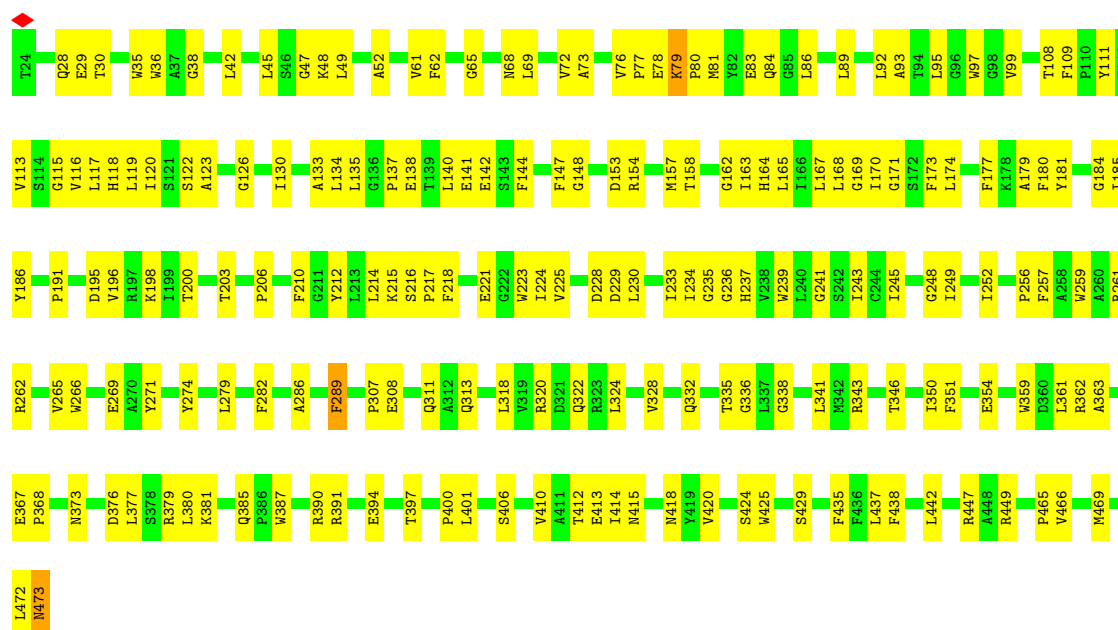
Chain b: 61% 38%



• Molecule 3: Photosystem II CP43 reaction center protein

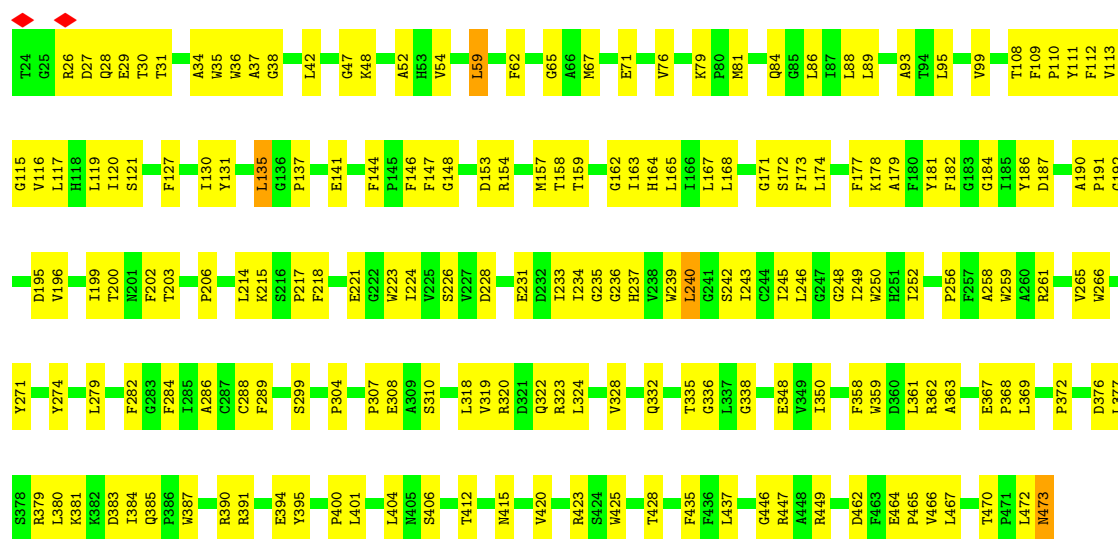
Chain C: 58% 41%





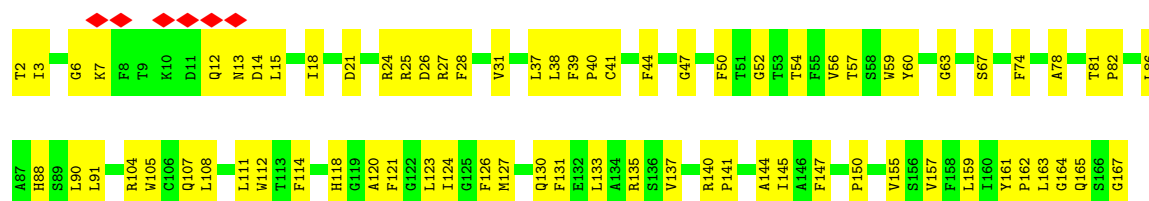
• Molecule 3: Photosystem II CP43 reaction center protein

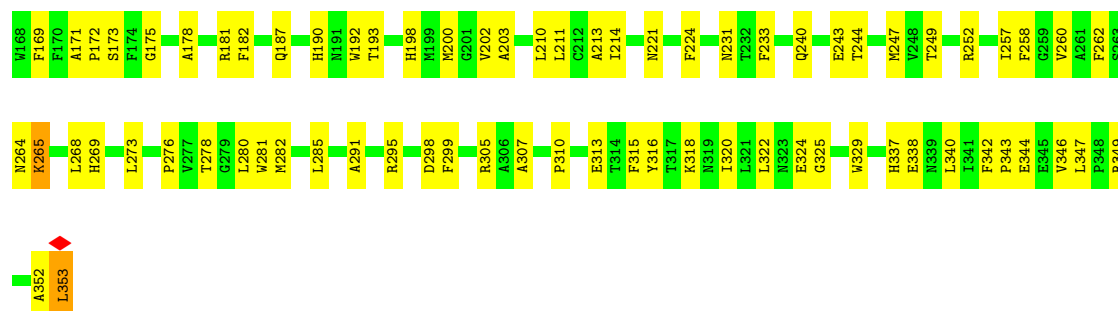
Chain c: 58% 41% .



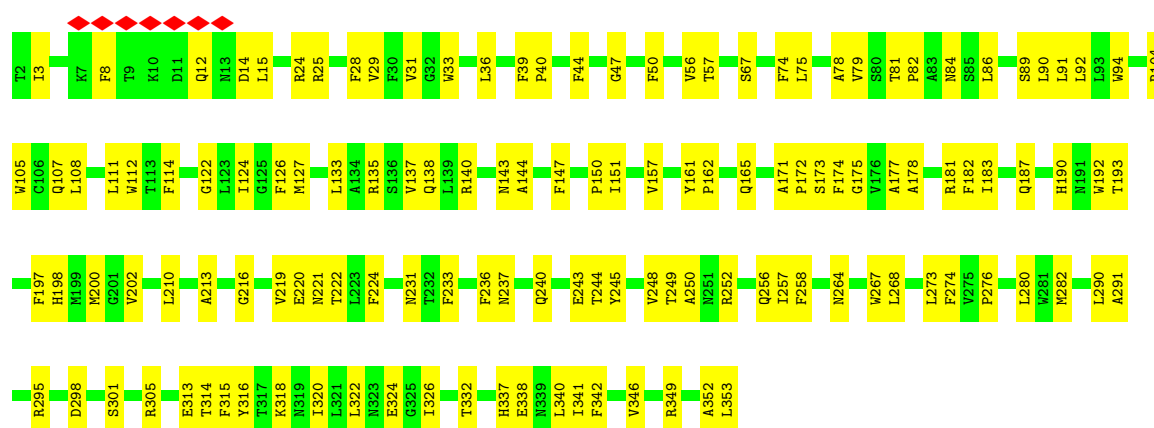
• Molecule 4: Photosystem II D2 protein

Chain D: 59% 41% .





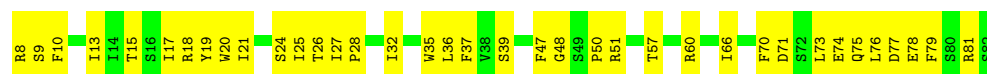
• Molecule 4: Photosystem II D2 protein



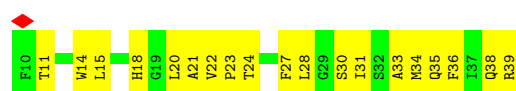
• Molecule 5: Cytochrome b559 subunit alpha



• Molecule 5: Cytochrome b559 subunit alpha

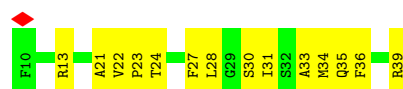


• Molecule 6: Cytochrome b559 subunit beta



• Molecule 6: Cytochrome b559 subunit beta

Chain f: 



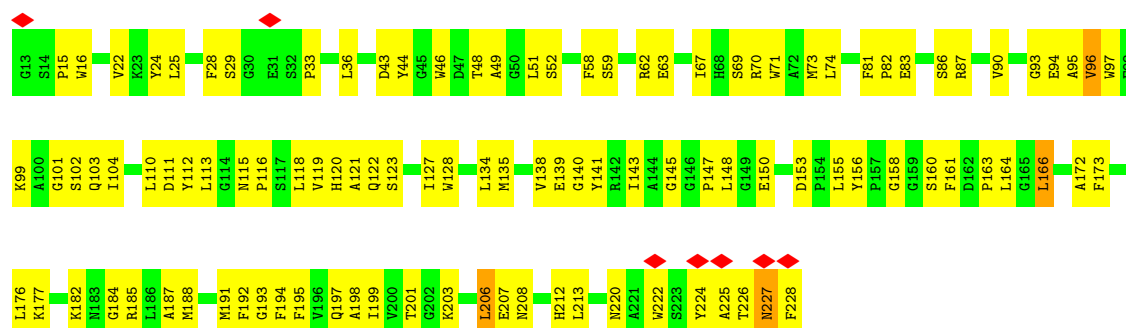
• Molecule 7: Chlorophyll a-b binding protein 8, chloroplastic

Chain G: 



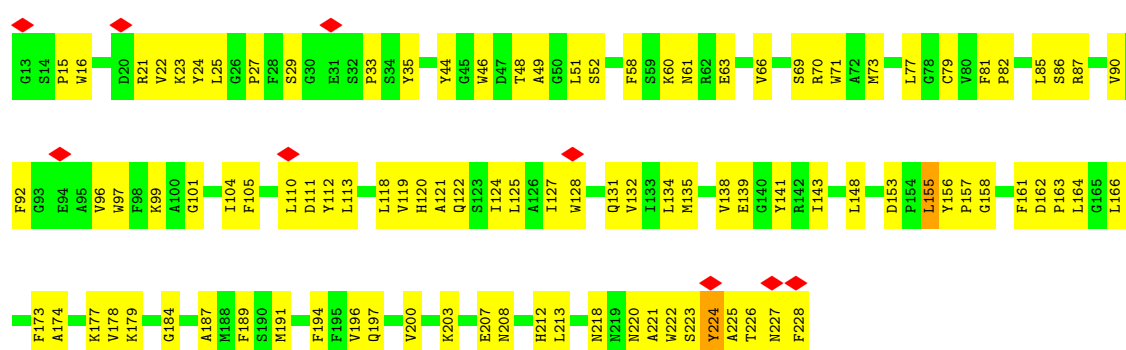
• Molecule 7: Chlorophyll a-b binding protein 8, chloroplastic

Chain N: 



• Molecule 7: Chlorophyll a-b binding protein 8, chloroplastic

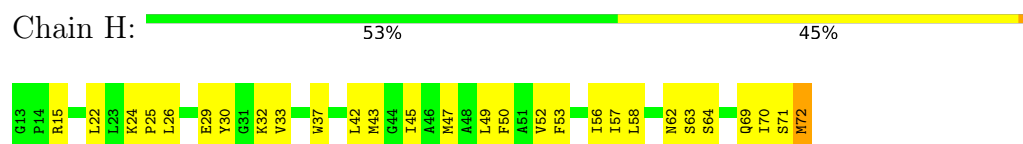
Chain g: 



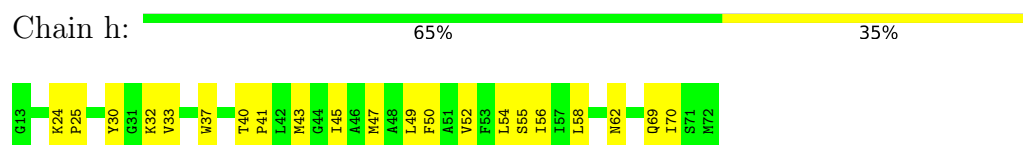
- Molecule 7: Chlorophyll a-b binding protein 8, chloroplastic



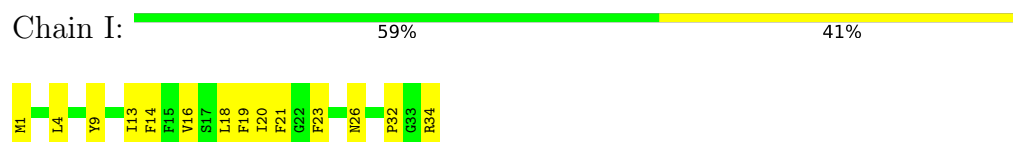
- Molecule 8: Photosystem II reaction center protein H



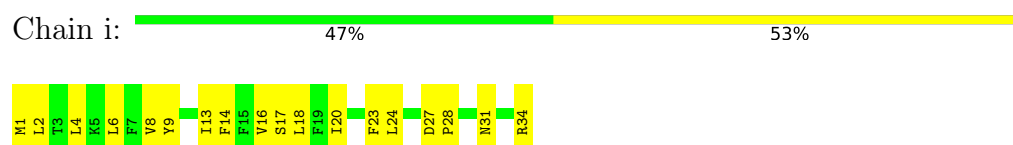
- Molecule 8: Photosystem II reaction center protein H



- Molecule 9: Photosystem II reaction center protein I



- Molecule 9: Photosystem II reaction center protein I



- Molecule 10: Photosystem II reaction center protein J



- Molecule 10: Photosystem II reaction center protein J

Chain j:  54% 40% 6%



- Molecule 11: Photosystem II reaction center protein K

Chain K:  35% 65%



- Molecule 11: Photosystem II reaction center protein K

Chain k:  32% 68%



- Molecule 12: Photosystem II reaction center protein L

Chain L:  50% 47% .



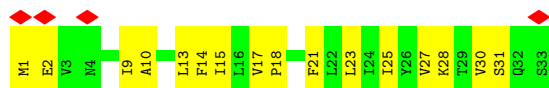
- Molecule 12: Photosystem II reaction center protein L

Chain l:  64% 33% .



- Molecule 13: Photosystem II reaction center protein M

Chain M:  12% 52% 48%



- Molecule 13: Photosystem II reaction center protein M

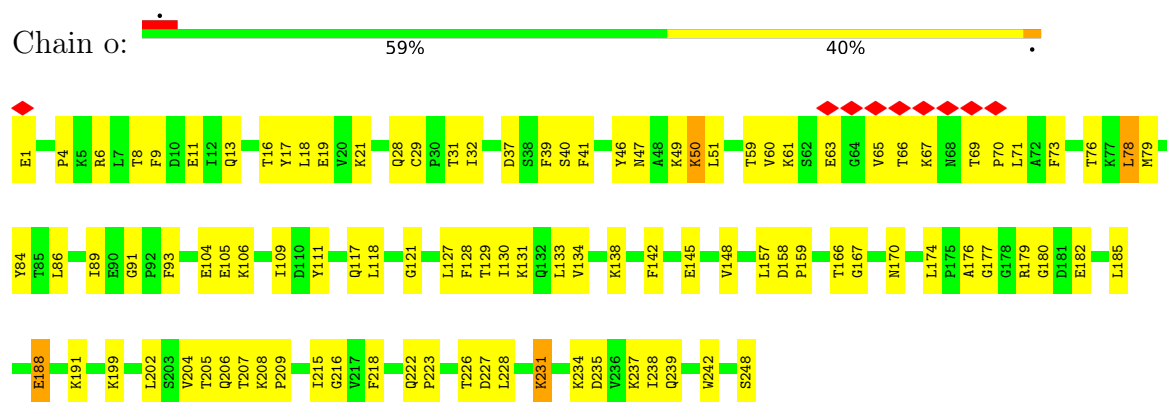
Chain m:  12% 55% 45%



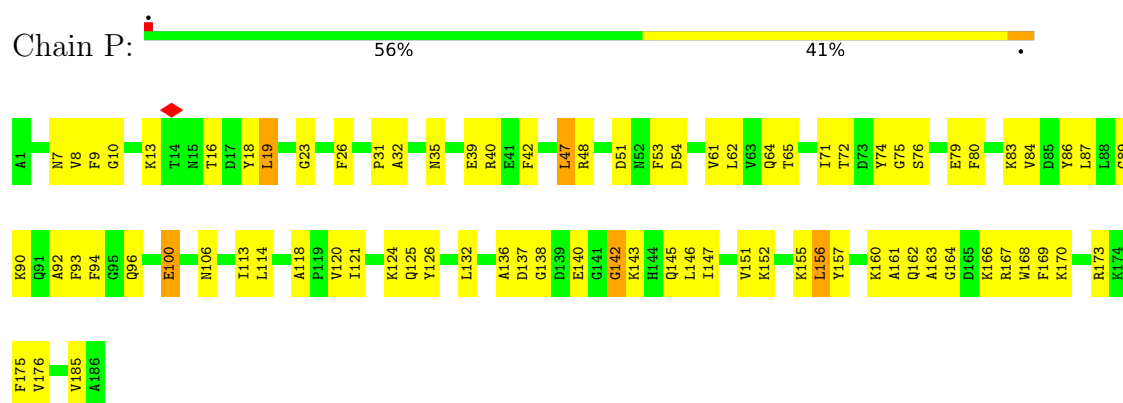
- Molecule 14: Oxygen-evolving enhancer protein 1, chloroplastic



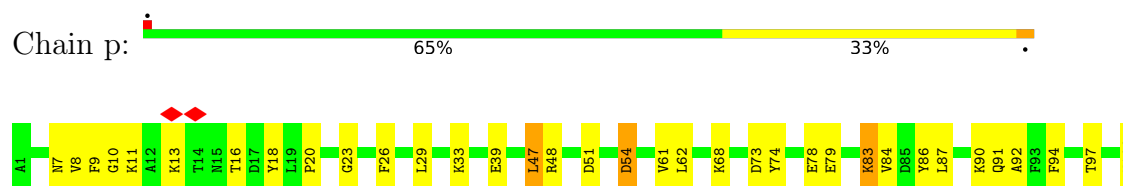
- Molecule 14: Oxygen-evolving enhancer protein 1, chloroplastic



- Molecule 15: Oxygen-evolving enhancer protein 2, chloroplastic



- Molecule 15: Oxygen-evolving enhancer protein 2, chloroplastic





• Molecule 16: Oxygen-evolving enhancer protein 3



• Molecule 16: Oxygen-evolving enhancer protein 3

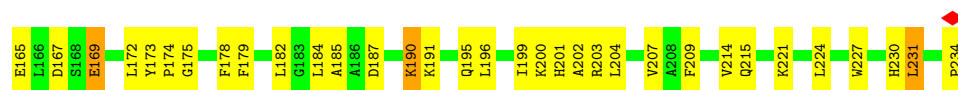


• Molecule 17: Chlorophyll a-b binding protein, chloroplastic



• Molecule 17: Chlorophyll a-b binding protein, chloroplastic

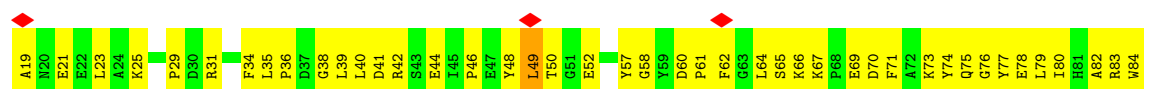




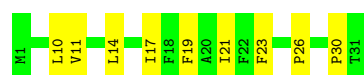
- Molecule 18: Chlorophyll a-b binding protein, chloroplastic



- Molecule 18: Chlorophyll a-b binding protein, chloroplastic



- Molecule 19: Photosystem II reaction center protein T



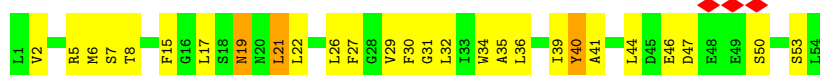
- Molecule 19: Photosystem II reaction center protein T



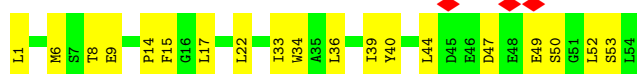




- Molecule 20: Photosystem II reaction center protein W



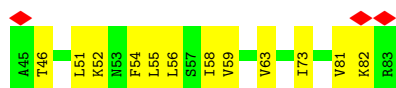
- Molecule 20: Photosystem II reaction center protein W



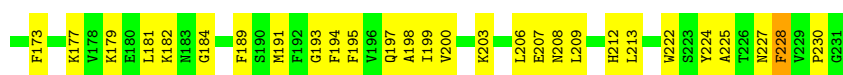
- Molecule 21: Ultraviolet-B-repressible protein



- Molecule 21: Ultraviolet-B-repressible protein

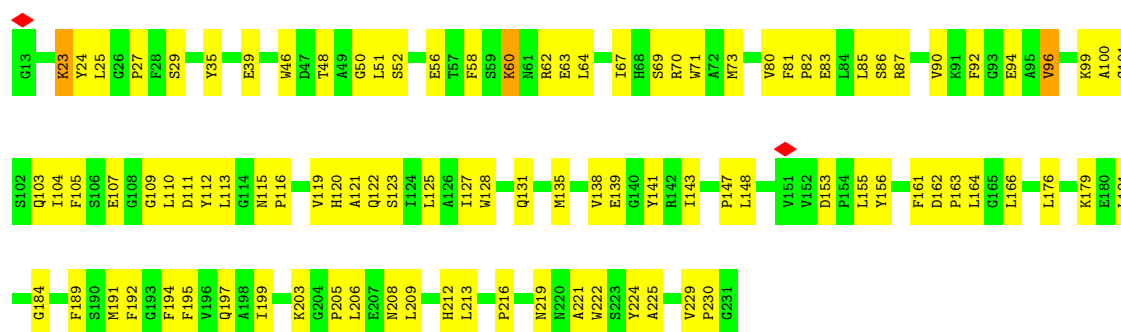


- Molecule 22: Chlorophyll a-b binding protein AB80, chloroplastic

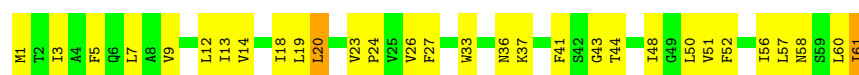


- Molecule 22: Chlorophyll a-b binding protein AB80, chloroplastic





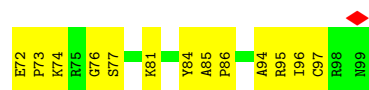
• Molecule 23: Photosystem II reaction center protein Z



• Molecule 23: Photosystem II reaction center protein Z



• Molecule 24: Photosystem II 5 kDa protein, chloroplastic



• Molecule 24: Photosystem II 5 kDa protein, chloroplastic



## 4 Experimental information

| Property                             | Value               | Source    |
|--------------------------------------|---------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE     | Depositor |
| Imposed symmetry                     | POINT, C1           | Depositor |
| Number of particles used             | 200827              | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF   | Depositor |
| CTF correction method                | PHASE FLIPPING ONLY | Depositor |
| Microscope                           | TFS KRIOS           | Depositor |
| Voltage (kV)                         | 300                 | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 49                  | Depositor |
| Minimum defocus (nm)                 | 900                 | Depositor |
| Maximum defocus (nm)                 | 2300                | Depositor |
| Magnification                        | 105000              | Depositor |
| Image detector                       | GATAN K3 (6k x 4k)  | Depositor |
| Maximum map value                    | 0.060               | Depositor |
| Minimum map value                    | -0.027              | Depositor |
| Average map value                    | 0.000               | Depositor |
| Map value standard deviation         | 0.003               | Depositor |
| Recommended contour level            | 0.007               | Depositor |
| Map size ( $\text{\AA}$ )            | 420.0, 420.0, 420.0 | wwPDB     |
| Map dimensions                       | 500, 500, 500       | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0    | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 0.84, 0.84, 0.84    | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LHG, NEX, CHL, SQD, BCR, DGD, CLA, XAT, BCT, CL, PHO, FE2, PL9, OEX, LMG, HEM, LUT

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

| Mol | Chain | Bond lengths |               | Bond angles |               |
|-----|-------|--------------|---------------|-------------|---------------|
|     |       | RMSZ         | # Z  >5       | RMSZ        | # Z  >5       |
| 1   | A     | 0.95         | 0/2697        | 1.13        | 0/3677        |
| 1   | a     | 0.95         | 0/2697        | 1.12        | 1/3677 (0.0%) |
| 2   | B     | 0.95         | 0/4071        | 1.13        | 0/5542        |
| 2   | b     | 0.95         | 0/4071        | 1.13        | 2/5542 (0.0%) |
| 3   | C     | 0.94         | 1/3614 (0.0%) | 1.13        | 0/4922        |
| 3   | c     | 0.94         | 0/3613        | 1.12        | 0/4920        |
| 4   | D     | 0.92         | 0/2890        | 1.12        | 0/3938        |
| 4   | d     | 0.92         | 0/2890        | 1.12        | 0/3938        |
| 5   | E     | 0.93         | 0/630         | 1.13        | 0/857         |
| 5   | e     | 0.92         | 0/630         | 1.14        | 0/857         |
| 6   | F     | 0.92         | 0/248         | 1.14        | 0/335         |
| 6   | f     | 0.92         | 0/248         | 1.14        | 0/335         |
| 7   | G     | 0.93         | 0/1701        | 1.17        | 0/2315        |
| 7   | N     | 0.93         | 0/1700        | 1.16        | 2/2313 (0.1%) |
| 7   | g     | 0.93         | 0/1701        | 1.16        | 0/2315        |
| 7   | n     | 0.93         | 0/1701        | 1.18        | 1/2315 (0.0%) |
| 8   | H     | 0.97         | 0/461         | 1.18        | 0/626         |
| 8   | h     | 0.96         | 0/461         | 1.15        | 0/626         |
| 9   | I     | 0.91         | 0/286         | 1.13        | 0/386         |
| 9   | i     | 0.91         | 0/286         | 1.14        | 0/386         |
| 10  | J     | 0.95         | 0/262         | 1.19        | 0/354         |
| 10  | j     | 0.94         | 0/262         | 1.20        | 0/354         |
| 11  | K     | 0.90         | 0/318         | 1.05        | 0/434         |
| 11  | k     | 0.90         | 0/318         | 1.06        | 0/434         |
| 12  | L     | 0.89         | 0/312         | 1.06        | 0/424         |
| 12  | l     | 0.90         | 0/312         | 1.05        | 0/424         |
| 13  | M     | 0.94         | 0/260         | 1.18        | 0/355         |
| 13  | m     | 0.94         | 0/260         | 1.14        | 0/355         |
| 14  | O     | 0.99         | 0/1906        | 1.09        | 0/2575        |
| 14  | o     | 0.99         | 0/1906        | 1.10        | 0/2575        |
| 15  | P     | 0.97         | 0/1464        | 1.08        | 2/1978 (0.1%) |

| Mol | Chain | Bond lengths |                | Bond angles |                 |
|-----|-------|--------------|----------------|-------------|-----------------|
|     |       | RMSZ         | # Z  >5        | RMSZ        | # Z  >5         |
| 15  | p     | 0.98         | 0/1464         | 1.08        | 1/1978 (0.1%)   |
| 16  | Q     | 0.95         | 0/1179         | 1.17        | 0/1591          |
| 16  | q     | 0.96         | 0/1179         | 1.18        | 0/1591          |
| 17  | R     | 0.93         | 0/1804         | 1.14        | 1/2456 (0.0%)   |
| 17  | r     | 0.92         | 0/1804         | 1.15        | 0/2456          |
| 18  | S     | 0.93         | 0/1737         | 1.14        | 0/2361          |
| 18  | s     | 0.91         | 0/1737         | 1.15        | 0/2361          |
| 19  | T     | 0.90         | 0/260          | 1.10        | 0/354           |
| 19  | t     | 0.89         | 0/260          | 1.12        | 0/354           |
| 20  | W     | 0.92         | 0/429          | 1.11        | 0/581           |
| 20  | w     | 0.92         | 0/429          | 1.13        | 0/581           |
| 21  | X     | 0.97         | 0/279          | 1.28        | 0/380           |
| 21  | x     | 0.98         | 0/279          | 1.27        | 0/380           |
| 22  | Y     | 0.93         | 0/1719         | 1.17        | 0/2341          |
| 22  | y     | 0.94         | 0/1719         | 1.16        | 0/2341          |
| 23  | Z     | 0.97         | 0/467          | 1.23        | 0/640           |
| 23  | z     | 0.96         | 0/467          | 1.22        | 0/640           |
| 24  | U     | 0.94         | 0/216          | 1.21        | 0/291           |
| 24  | u     | 0.94         | 0/216          | 1.17        | 0/291           |
| All | All   | 0.94         | 1/61820 (0.0%) | 1.14        | 10/84052 (0.0%) |

All (1) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 3   | C     | 76  | VAL  | N-CA  | 5.10 | 1.49        | 1.45     |

The worst 5 of 10 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 7   | N     | 145 | GLY  | CA-C-O | -6.09 | 118.03      | 122.23   |
| 15  | P     | 89  | GLY  | CA-C-O | -5.92 | 118.05      | 122.37   |
| 2   | b     | 89  | GLY  | CA-C-O | -5.92 | 118.15      | 122.23   |
| 17  | R     | 132 | GLY  | CA-C-O | -5.89 | 118.17      | 122.23   |
| 15  | p     | 142 | GLY  | CA-C-O | -5.85 | 118.19      | 122.23   |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 2616  | 0        | 2522     | 138     | 0            |
| 1   | a     | 2616  | 0        | 2522     | 178     | 0            |
| 2   | B     | 3939  | 0        | 3814     | 208     | 0            |
| 2   | b     | 3939  | 0        | 3814     | 180     | 0            |
| 3   | C     | 3497  | 0        | 3422     | 198     | 0            |
| 3   | c     | 3496  | 0        | 3422     | 208     | 0            |
| 4   | D     | 2797  | 0        | 2695     | 152     | 0            |
| 4   | d     | 2797  | 0        | 2695     | 134     | 0            |
| 5   | E     | 612   | 0        | 595      | 33      | 0            |
| 5   | e     | 612   | 0        | 595      | 38      | 0            |
| 6   | F     | 241   | 0        | 246      | 22      | 0            |
| 6   | f     | 241   | 0        | 246      | 18      | 0            |
| 7   | G     | 1650  | 0        | 1577     | 168     | 0            |
| 7   | N     | 1649  | 0        | 1573     | 135     | 0            |
| 7   | g     | 1650  | 0        | 1577     | 137     | 0            |
| 7   | n     | 1650  | 0        | 1577     | 136     | 0            |
| 8   | H     | 452   | 0        | 473      | 34      | 0            |
| 8   | h     | 452   | 0        | 473      | 31      | 0            |
| 9   | I     | 278   | 0        | 291      | 16      | 0            |
| 9   | i     | 278   | 0        | 291      | 17      | 0            |
| 10  | J     | 256   | 0        | 269      | 11      | 0            |
| 10  | j     | 256   | 0        | 269      | 15      | 0            |
| 11  | K     | 306   | 0        | 313      | 41      | 0            |
| 11  | k     | 306   | 0        | 313      | 32      | 0            |
| 12  | L     | 304   | 0        | 292      | 24      | 0            |
| 12  | l     | 304   | 0        | 292      | 12      | 0            |
| 13  | M     | 256   | 0        | 284      | 23      | 0            |
| 13  | m     | 256   | 0        | 284      | 22      | 0            |
| 14  | O     | 1870  | 0        | 1849     | 86      | 0            |
| 14  | o     | 1870  | 0        | 1851     | 92      | 0            |
| 15  | P     | 1434  | 0        | 1392     | 80      | 0            |
| 15  | p     | 1434  | 0        | 1392     | 51      | 0            |
| 16  | Q     | 1157  | 0        | 1210     | 77      | 0            |
| 16  | q     | 1157  | 0        | 1210     | 63      | 0            |
| 17  | R     | 1755  | 0        | 1722     | 110     | 0            |
| 17  | r     | 1755  | 0        | 1722     | 121     | 0            |
| 18  | S     | 1688  | 0        | 1652     | 188     | 0            |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 18  | s     | 1688  | 0        | 1652     | 148     | 0            |
| 19  | T     | 252   | 0        | 267      | 13      | 0            |
| 19  | t     | 252   | 0        | 267      | 24      | 0            |
| 20  | W     | 419   | 0        | 402      | 34      | 0            |
| 20  | w     | 419   | 0        | 402      | 28      | 0            |
| 21  | X     | 276   | 0        | 301      | 23      | 0            |
| 21  | x     | 276   | 0        | 301      | 17      | 0            |
| 22  | Y     | 1667  | 0        | 1596     | 120     | 0            |
| 22  | y     | 1667  | 0        | 1596     | 110     | 0            |
| 23  | Z     | 457   | 0        | 488      | 31      | 0            |
| 23  | z     | 457   | 0        | 488      | 40      | 0            |
| 24  | U     | 212   | 0        | 220      | 8       | 0            |
| 24  | u     | 212   | 0        | 223      | 16      | 0            |
| 25  | A     | 10    | 0        | 0        | 0       | 0            |
| 25  | a     | 10    | 0        | 0        | 0       | 0            |
| 26  | A     | 1     | 0        | 0        | 0       | 0            |
| 26  | a     | 1     | 0        | 0        | 0       | 0            |
| 27  | A     | 2     | 0        | 0        | 0       | 0            |
| 27  | a     | 2     | 0        | 0        | 1       | 0            |
| 28  | A     | 175   | 0        | 168      | 31      | 0            |
| 28  | B     | 1040  | 0        | 1142     | 177     | 0            |
| 28  | C     | 837   | 0        | 908      | 164     | 0            |
| 28  | D     | 195   | 0        | 214      | 23      | 0            |
| 28  | G     | 465   | 0        | 443      | 105     | 0            |
| 28  | N     | 456   | 0        | 426      | 88      | 0            |
| 28  | R     | 554   | 0        | 507      | 99      | 0            |
| 28  | S     | 465   | 0        | 387      | 113     | 0            |
| 28  | Y     | 463   | 0        | 440      | 79      | 0            |
| 28  | a     | 175   | 0        | 169      | 32      | 0            |
| 28  | b     | 1040  | 0        | 1144     | 176     | 0            |
| 28  | c     | 808   | 0        | 837      | 127     | 0            |
| 28  | d     | 195   | 0        | 214      | 34      | 0            |
| 28  | g     | 440   | 0        | 402      | 81      | 0            |
| 28  | n     | 465   | 0        | 450      | 97      | 0            |
| 28  | r     | 563   | 0        | 524      | 107     | 0            |
| 28  | s     | 465   | 0        | 387      | 84      | 0            |
| 28  | y     | 473   | 0        | 463      | 88      | 0            |
| 29  | A     | 64    | 0        | 74       | 9       | 0            |
| 29  | D     | 64    | 0        | 74       | 9       | 0            |
| 29  | a     | 64    | 0        | 74       | 12      | 0            |
| 29  | d     | 64    | 0        | 74       | 12      | 0            |
| 30  | A     | 40    | 0        | 56       | 12      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 30  | B     | 120   | 0        | 168      | 51      | 0            |
| 30  | C     | 120   | 0        | 168      | 50      | 0            |
| 30  | D     | 40    | 0        | 56       | 11      | 0            |
| 30  | H     | 40    | 0        | 56       | 14      | 0            |
| 30  | K     | 40    | 0        | 56       | 13      | 0            |
| 30  | T     | 40    | 0        | 56       | 13      | 0            |
| 30  | a     | 40    | 0        | 56       | 22      | 0            |
| 30  | b     | 120   | 0        | 168      | 34      | 0            |
| 30  | c     | 80    | 0        | 112      | 30      | 0            |
| 30  | d     | 40    | 0        | 56       | 20      | 0            |
| 30  | h     | 40    | 0        | 56       | 19      | 0            |
| 30  | i     | 40    | 0        | 56       | 8       | 0            |
| 30  | k     | 40    | 0        | 56       | 16      | 0            |
| 30  | t     | 40    | 0        | 56       | 10      | 0            |
| 31  | A     | 104   | 0        | 143      | 23      | 0            |
| 31  | B     | 54    | 0        | 77       | 12      | 0            |
| 31  | L     | 96    | 0        | 124      | 21      | 0            |
| 31  | M     | 42    | 0        | 47       | 5       | 0            |
| 31  | a     | 104   | 0        | 143      | 30      | 0            |
| 32  | A     | 88    | 0        | 116      | 31      | 0            |
| 32  | B     | 82    | 0        | 104      | 23      | 0            |
| 32  | C     | 95    | 0        | 130      | 24      | 0            |
| 32  | D     | 46    | 0        | 62       | 15      | 0            |
| 32  | a     | 40    | 0        | 50       | 14      | 0            |
| 32  | b     | 101   | 0        | 145      | 22      | 0            |
| 32  | c     | 51    | 0        | 72       | 15      | 0            |
| 32  | d     | 46    | 0        | 62       | 20      | 0            |
| 32  | k     | 51    | 0        | 72       | 15      | 0            |
| 32  | w     | 48    | 0        | 66       | 13      | 0            |
| 33  | A     | 13    | 0        | 7        | 0       | 0            |
| 33  | D     | 55    | 0        | 80       | 8       | 0            |
| 33  | a     | 13    | 0        | 7        | 0       | 0            |
| 33  | d     | 55    | 0        | 80       | 6       | 0            |
| 34  | A     | 4     | 0        | 0        | 0       | 0            |
| 34  | d     | 4     | 0        | 0        | 0       | 0            |
| 35  | A     | 43    | 0        | 56       | 4       | 0            |
| 35  | B     | 117   | 0        | 150      | 30      | 0            |
| 35  | C     | 49    | 0        | 74       | 11      | 0            |
| 35  | D     | 49    | 0        | 74       | 13      | 0            |
| 35  | G     | 49    | 0        | 74       | 7       | 0            |
| 35  | L     | 49    | 0        | 74       | 6       | 0            |
| 35  | N     | 31    | 0        | 32       | 8       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 35  | R     | 25    | 0        | 20       | 5       | 0            |
| 35  | S     | 77    | 0        | 97       | 26      | 0            |
| 35  | W     | 49    | 0        | 74       | 20      | 0            |
| 35  | Y     | 49    | 0        | 74       | 5       | 0            |
| 35  | a     | 43    | 0        | 56       | 10      | 0            |
| 35  | b     | 121   | 0        | 158      | 23      | 0            |
| 35  | c     | 72    | 0        | 83       | 14      | 0            |
| 35  | d     | 49    | 0        | 74       | 12      | 0            |
| 35  | g     | 41    | 0        | 55       | 9       | 0            |
| 35  | l     | 49    | 0        | 74       | 5       | 0            |
| 35  | n     | 32    | 0        | 34       | 6       | 0            |
| 35  | r     | 30    | 0        | 30       | 5       | 0            |
| 35  | s     | 49    | 0        | 74       | 16      | 0            |
| 35  | w     | 39    | 0        | 51       | 8       | 0            |
| 35  | y     | 49    | 0        | 74       | 6       | 0            |
| 36  | A     | 59    | 0        | 76       | 10      | 0            |
| 36  | B     | 62    | 0        | 82       | 11      | 0            |
| 36  | C     | 177   | 0        | 228      | 48      | 0            |
| 36  | a     | 59    | 0        | 76       | 17      | 0            |
| 36  | b     | 62    | 0        | 82       | 11      | 0            |
| 36  | c     | 168   | 0        | 210      | 45      | 0            |
| 37  | E     | 43    | 0        | 30       | 7       | 0            |
| 37  | f     | 43    | 0        | 30       | 6       | 0            |
| 38  | G     | 339   | 0        | 295      | 75      | 0            |
| 38  | N     | 347   | 0        | 310      | 78      | 0            |
| 38  | R     | 154   | 0        | 116      | 25      | 0            |
| 38  | S     | 196   | 0        | 140      | 47      | 0            |
| 38  | Y     | 362   | 0        | 345      | 93      | 0            |
| 38  | g     | 412   | 0        | 378      | 99      | 0            |
| 38  | n     | 350   | 0        | 317      | 86      | 0            |
| 38  | r     | 183   | 0        | 171      | 37      | 0            |
| 38  | s     | 196   | 0        | 140      | 36      | 0            |
| 38  | y     | 296   | 0        | 276      | 67      | 0            |
| 39  | G     | 84    | 0        | 112      | 39      | 0            |
| 39  | N     | 84    | 0        | 112      | 27      | 0            |
| 39  | R     | 42    | 0        | 56       | 14      | 0            |
| 39  | S     | 84    | 0        | 112      | 43      | 0            |
| 39  | Y     | 84    | 0        | 112      | 15      | 0            |
| 39  | g     | 84    | 0        | 112      | 36      | 0            |
| 39  | n     | 84    | 0        | 112      | 21      | 0            |
| 39  | r     | 42    | 0        | 56       | 15      | 0            |
| 39  | s     | 84    | 0        | 112      | 33      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 39  | y     | 84    | 0        | 112      | 17      | 0            |
| 40  | G     | 44    | 0        | 54       | 11      | 0            |
| 40  | N     | 44    | 0        | 54       | 9       | 0            |
| 40  | Y     | 44    | 0        | 54       | 9       | 0            |
| 40  | g     | 44    | 0        | 55       | 9       | 0            |
| 40  | n     | 44    | 0        | 54       | 8       | 0            |
| 40  | r     | 44    | 0        | 54       | 13      | 0            |
| 40  | s     | 44    | 0        | 54       | 7       | 0            |
| 40  | y     | 88    | 0        | 108      | 10      | 0            |
| 41  | R     | 44    | 0        | 56       | 13      | 0            |
| 41  | Y     | 44    | 0        | 56       | 17      | 0            |
| 41  | r     | 44    | 0        | 56       | 9       | 0            |
| 41  | y     | 44    | 0        | 56       | 11      | 0            |
| 42  | A     | 92    | 0        | 0        | 4       | 0            |
| 42  | B     | 151   | 0        | 0        | 2       | 0            |
| 42  | C     | 134   | 0        | 0        | 0       | 0            |
| 42  | D     | 101   | 0        | 0        | 2       | 0            |
| 42  | E     | 14    | 0        | 0        | 0       | 0            |
| 42  | F     | 6     | 0        | 0        | 0       | 0            |
| 42  | G     | 26    | 0        | 0        | 2       | 0            |
| 42  | H     | 16    | 0        | 0        | 2       | 0            |
| 42  | I     | 3     | 0        | 0        | 0       | 0            |
| 42  | J     | 5     | 0        | 0        | 0       | 0            |
| 42  | K     | 6     | 0        | 0        | 0       | 0            |
| 42  | L     | 8     | 0        | 0        | 0       | 0            |
| 42  | M     | 6     | 0        | 0        | 0       | 0            |
| 42  | N     | 28    | 0        | 0        | 1       | 0            |
| 42  | O     | 69    | 0        | 0        | 1       | 0            |
| 42  | P     | 52    | 0        | 0        | 2       | 0            |
| 42  | Q     | 28    | 0        | 0        | 2       | 0            |
| 42  | R     | 40    | 0        | 0        | 3       | 0            |
| 42  | S     | 24    | 0        | 0        | 3       | 0            |
| 42  | T     | 7     | 0        | 0        | 2       | 0            |
| 42  | U     | 1     | 0        | 0        | 0       | 0            |
| 42  | W     | 11    | 0        | 0        | 0       | 0            |
| 42  | X     | 10    | 0        | 0        | 0       | 0            |
| 42  | Y     | 45    | 0        | 0        | 1       | 0            |
| 42  | Z     | 6     | 0        | 0        | 0       | 0            |
| 42  | a     | 100   | 0        | 0        | 5       | 0            |
| 42  | b     | 167   | 0        | 0        | 1       | 0            |
| 42  | c     | 128   | 0        | 0        | 2       | 0            |
| 42  | d     | 85    | 0        | 0        | 2       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 42  | e     | 21    | 0        | 0        | 1       | 0            |
| 42  | f     | 3     | 0        | 0        | 0       | 0            |
| 42  | g     | 23    | 0        | 0        | 0       | 0            |
| 42  | h     | 14    | 0        | 0        | 0       | 0            |
| 42  | i     | 2     | 0        | 0        | 0       | 0            |
| 42  | j     | 4     | 0        | 0        | 0       | 0            |
| 42  | k     | 4     | 0        | 0        | 1       | 0            |
| 42  | l     | 8     | 0        | 0        | 0       | 0            |
| 42  | m     | 2     | 0        | 0        | 0       | 0            |
| 42  | n     | 23    | 0        | 0        | 2       | 0            |
| 42  | o     | 67    | 0        | 0        | 0       | 0            |
| 42  | p     | 43    | 0        | 0        | 1       | 0            |
| 42  | q     | 18    | 0        | 0        | 0       | 0            |
| 42  | r     | 33    | 0        | 0        | 1       | 0            |
| 42  | s     | 19    | 0        | 0        | 1       | 0            |
| 42  | t     | 3     | 0        | 0        | 0       | 0            |
| 42  | u     | 4     | 0        | 0        | 0       | 0            |
| 42  | w     | 11    | 0        | 0        | 0       | 0            |
| 42  | x     | 7     | 0        | 0        | 0       | 0            |
| 42  | y     | 31    | 0        | 0        | 1       | 0            |
| 42  | z     | 2     | 0        | 0        | 0       | 0            |
| All | All   | 79416 | 0        | 77862    | 5285    | 0            |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 34.

The worst 5 of 5285 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 28:B:601:CLA:H152 | 30:H:101:BCR:H17C | 1.34                     | 1.09              |
| 16:Q:13:LEU:HD22  | 16:Q:18:PRO:HA    | 1.40                     | 1.04              |
| 1:a:42:LEU:HB3    | 30:a:410:BCR:H353 | 1.38                     | 1.04              |
| 36:a:401:DGD:HA92 | 32:a:413:LMG:H352 | 1.39                     | 1.04              |
| 14:O:65:VAL:HA    | 14:O:71:LEU:HD21  | 1.39                     | 1.03              |

There are no symmetry-related clashes.

## 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   | A     | 332/334 (99%)  | 321 (97%) | 10 (3%) | 1 (0%)   | 37          | 42  |
| 1   | a     | 332/334 (99%)  | 317 (96%) | 14 (4%) | 1 (0%)   | 37          | 42  |
| 2   | B     | 501/503 (100%) | 489 (98%) | 12 (2%) | 0        | 100         | 100 |
| 2   | b     | 501/503 (100%) | 486 (97%) | 15 (3%) | 0        | 100         | 100 |
| 3   | C     | 448/450 (100%) | 432 (96%) | 16 (4%) | 0        | 100         | 100 |
| 3   | c     | 448/450 (100%) | 429 (96%) | 19 (4%) | 0        | 100         | 100 |
| 4   | D     | 350/352 (99%)  | 334 (95%) | 16 (5%) | 0        | 100         | 100 |
| 4   | d     | 350/352 (99%)  | 336 (96%) | 14 (4%) | 0        | 100         | 100 |
| 5   | E     | 73/75 (97%)    | 72 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 5   | e     | 73/75 (97%)    | 71 (97%)  | 2 (3%)  | 0        | 100         | 100 |
| 6   | F     | 28/30 (93%)    | 27 (96%)  | 1 (4%)  | 0        | 100         | 100 |
| 6   | f     | 28/30 (93%)    | 28 (100%) | 0       | 0        | 100         | 100 |
| 7   | G     | 214/216 (99%)  | 205 (96%) | 9 (4%)  | 0        | 100         | 100 |
| 7   | N     | 214/216 (99%)  | 202 (94%) | 12 (6%) | 0        | 100         | 100 |
| 7   | g     | 214/216 (99%)  | 202 (94%) | 12 (6%) | 0        | 100         | 100 |
| 7   | n     | 214/216 (99%)  | 202 (94%) | 12 (6%) | 0        | 100         | 100 |
| 8   | H     | 58/60 (97%)    | 55 (95%)  | 3 (5%)  | 0        | 100         | 100 |
| 8   | h     | 58/60 (97%)    | 56 (97%)  | 2 (3%)  | 0        | 100         | 100 |
| 9   | I     | 32/34 (94%)    | 32 (100%) | 0       | 0        | 100         | 100 |
| 9   | i     | 32/34 (94%)    | 31 (97%)  | 1 (3%)  | 0        | 100         | 100 |
| 10  | J     | 33/35 (94%)    | 33 (100%) | 0       | 0        | 100         | 100 |
| 10  | j     | 33/35 (94%)    | 33 (100%) | 0       | 0        | 100         | 100 |
| 11  | K     | 35/37 (95%)    | 35 (100%) | 0       | 0        | 100         | 100 |
| 11  | k     | 35/37 (95%)    | 35 (100%) | 0       | 0        | 100         | 100 |
| 12  | L     | 34/36 (94%)    | 34 (100%) | 0       | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 12  | l     | 34/36 (94%)     | 34 (100%)  | 0        | 0        | 100         | 100 |
| 13  | M     | 31/33 (94%)     | 30 (97%)   | 1 (3%)   | 0        | 100         | 100 |
| 13  | m     | 31/33 (94%)     | 30 (97%)   | 1 (3%)   | 0        | 100         | 100 |
| 14  | O     | 246/248 (99%)   | 230 (94%)  | 16 (6%)  | 0        | 100         | 100 |
| 14  | o     | 246/248 (99%)   | 234 (95%)  | 12 (5%)  | 0        | 100         | 100 |
| 15  | P     | 184/186 (99%)   | 179 (97%)  | 5 (3%)   | 0        | 100         | 100 |
| 15  | p     | 184/186 (99%)   | 180 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 16  | Q     | 146/148 (99%)   | 142 (97%)  | 4 (3%)   | 0        | 100         | 100 |
| 16  | q     | 146/148 (99%)   | 142 (97%)  | 4 (3%)   | 0        | 100         | 100 |
| 17  | R     | 222/224 (99%)   | 215 (97%)  | 7 (3%)   | 0        | 100         | 100 |
| 17  | r     | 222/224 (99%)   | 216 (97%)  | 6 (3%)   | 0        | 100         | 100 |
| 18  | S     | 216/218 (99%)   | 204 (94%)  | 11 (5%)  | 1 (0%)   | 25          | 28  |
| 18  | s     | 216/218 (99%)   | 202 (94%)  | 14 (6%)  | 0        | 100         | 100 |
| 19  | T     | 29/31 (94%)     | 29 (100%)  | 0        | 0        | 100         | 100 |
| 19  | t     | 29/31 (94%)     | 29 (100%)  | 0        | 0        | 100         | 100 |
| 20  | W     | 52/54 (96%)     | 50 (96%)   | 2 (4%)   | 0        | 100         | 100 |
| 20  | w     | 52/54 (96%)     | 52 (100%)  | 0        | 0        | 100         | 100 |
| 21  | X     | 37/39 (95%)     | 35 (95%)   | 2 (5%)   | 0        | 100         | 100 |
| 21  | x     | 37/39 (95%)     | 37 (100%)  | 0        | 0        | 100         | 100 |
| 22  | Y     | 217/219 (99%)   | 211 (97%)  | 6 (3%)   | 0        | 100         | 100 |
| 22  | y     | 217/219 (99%)   | 208 (96%)  | 9 (4%)   | 0        | 100         | 100 |
| 23  | Z     | 59/61 (97%)     | 59 (100%)  | 0        | 0        | 100         | 100 |
| 23  | z     | 59/61 (97%)     | 56 (95%)   | 3 (5%)   | 0        | 100         | 100 |
| 24  | U     | 26/28 (93%)     | 26 (100%)  | 0        | 0        | 100         | 100 |
| 24  | u     | 26/28 (93%)     | 26 (100%)  | 0        | 0        | 100         | 100 |
| All | All   | 7634/7734 (99%) | 7353 (96%) | 278 (4%) | 3 (0%)   | 100         | 100 |

All (3) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 18  | S     | 161 | GLU  |
| 1   | a     | 141 | PRO  |
| 1   | A     | 141 | PRO  |

### 5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |     |
|-----|-------|----------------|-----------|----------|-------------|-----|
| 1   | A     | 270/270 (100%) | 265 (98%) | 5 (2%)   | 52          | 67  |
| 1   | a     | 270/270 (100%) | 262 (97%) | 8 (3%)   | 36          | 48  |
| 2   | B     | 399/399 (100%) | 396 (99%) | 3 (1%)   | 79          | 88  |
| 2   | b     | 399/399 (100%) | 391 (98%) | 8 (2%)   | 50          | 65  |
| 3   | C     | 352/352 (100%) | 348 (99%) | 4 (1%)   | 70          | 82  |
| 3   | c     | 352/352 (100%) | 345 (98%) | 7 (2%)   | 50          | 65  |
| 4   | D     | 284/284 (100%) | 281 (99%) | 3 (1%)   | 70          | 82  |
| 4   | d     | 284/284 (100%) | 281 (99%) | 3 (1%)   | 70          | 82  |
| 5   | E     | 67/67 (100%)   | 67 (100%) | 0        | 100         | 100 |
| 5   | e     | 67/67 (100%)   | 67 (100%) | 0        | 100         | 100 |
| 6   | F     | 25/25 (100%)   | 25 (100%) | 0        | 100         | 100 |
| 6   | f     | 25/25 (100%)   | 25 (100%) | 0        | 100         | 100 |
| 7   | G     | 169/169 (100%) | 166 (98%) | 3 (2%)   | 54          | 69  |
| 7   | N     | 168/169 (99%)  | 162 (96%) | 6 (4%)   | 30          | 40  |
| 7   | g     | 169/169 (100%) | 166 (98%) | 3 (2%)   | 54          | 69  |
| 7   | n     | 169/169 (100%) | 161 (95%) | 8 (5%)   | 22          | 29  |
| 8   | H     | 49/49 (100%)   | 46 (94%)  | 3 (6%)   | 15          | 18  |
| 8   | h     | 49/49 (100%)   | 49 (100%) | 0        | 100         | 100 |
| 9   | I     | 31/31 (100%)   | 31 (100%) | 0        | 100         | 100 |
| 9   | i     | 31/31 (100%)   | 30 (97%)  | 1 (3%)   | 34          | 45  |
| 10  | J     | 26/26 (100%)   | 25 (96%)  | 1 (4%)   | 28          | 37  |
| 10  | j     | 26/26 (100%)   | 24 (92%)  | 2 (8%)   | 10          | 11  |
| 11  | K     | 32/32 (100%)   | 31 (97%)  | 1 (3%)   | 35          | 47  |
| 11  | k     | 32/32 (100%)   | 32 (100%) | 0        | 100         | 100 |
| 12  | L     | 34/34 (100%)   | 33 (97%)  | 1 (3%)   | 37          | 50  |
| 12  | l     | 34/34 (100%)   | 33 (97%)  | 1 (3%)   | 37          | 50  |

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| Mol | Chain | Analysed         | Rotameric  | Outliers | Percentiles |     |
|-----|-------|------------------|------------|----------|-------------|-----|
| 13  | M     | 29/29 (100%)     | 29 (100%)  | 0        | 100         | 100 |
| 13  | m     | 29/29 (100%)     | 29 (100%)  | 0        | 100         | 100 |
| 14  | O     | 204/204 (100%)   | 201 (98%)  | 3 (2%)   | 60          | 75  |
| 14  | o     | 204/204 (100%)   | 200 (98%)  | 4 (2%)   | 50          | 65  |
| 15  | P     | 150/150 (100%)   | 145 (97%)  | 5 (3%)   | 33          | 44  |
| 15  | p     | 150/150 (100%)   | 147 (98%)  | 3 (2%)   | 50          | 65  |
| 16  | Q     | 125/125 (100%)   | 122 (98%)  | 3 (2%)   | 44          | 57  |
| 16  | q     | 125/125 (100%)   | 124 (99%)  | 1 (1%)   | 79          | 88  |
| 17  | R     | 181/181 (100%)   | 178 (98%)  | 3 (2%)   | 56          | 71  |
| 17  | r     | 181/181 (100%)   | 174 (96%)  | 7 (4%)   | 27          | 37  |
| 18  | S     | 169/169 (100%)   | 165 (98%)  | 4 (2%)   | 44          | 57  |
| 18  | s     | 169/169 (100%)   | 164 (97%)  | 5 (3%)   | 36          | 48  |
| 19  | T     | 28/28 (100%)     | 28 (100%)  | 0        | 100         | 100 |
| 19  | t     | 28/28 (100%)     | 28 (100%)  | 0        | 100         | 100 |
| 20  | W     | 44/44 (100%)     | 41 (93%)   | 3 (7%)   | 13          | 15  |
| 20  | w     | 44/44 (100%)     | 43 (98%)   | 1 (2%)   | 45          | 59  |
| 21  | X     | 32/32 (100%)     | 32 (100%)  | 0        | 100         | 100 |
| 21  | x     | 32/32 (100%)     | 32 (100%)  | 0        | 100         | 100 |
| 22  | Y     | 170/170 (100%)   | 166 (98%)  | 4 (2%)   | 44          | 57  |
| 22  | y     | 170/170 (100%)   | 165 (97%)  | 5 (3%)   | 37          | 50  |
| 23  | Z     | 53/53 (100%)     | 51 (96%)   | 2 (4%)   | 28          | 37  |
| 23  | z     | 53/53 (100%)     | 50 (94%)   | 3 (6%)   | 17          | 21  |
| 24  | U     | 23/23 (100%)     | 23 (100%)  | 0        | 100         | 100 |
| 24  | u     | 23/23 (100%)     | 21 (91%)   | 2 (9%)   | 8           | 8   |
| All | All   | 6229/6230 (100%) | 6100 (98%) | 129 (2%) | 49          | 63  |

5 of 129 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 18  | s     | 124 | LEU  |
| 22  | y     | 23  | LYS  |
| 20  | W     | 19  | ASN  |
| 18  | S     | 185 | LEU  |
| 22  | y     | 60  | LYS  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 149 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 13  | m     | 32  | GLN  |
| 22  | y     | 88  | ASN  |
| 7   | n     | 208 | ASN  |
| 16  | q     | 112 | GLN  |
| 7   | N     | 220 | ASN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 339 ligands modelled in this entry, 6 are monoatomic - leaving 333 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 | $\# Z  > 2$ |
| 28  | CLA  | R     | 604 | 42   | 48,56,73     | 1.58 | 9 (18%)     | 55,92,113   | 2.25 | 16 (29%)    |
| 35  | LHG  | b     | 621 | -    | 33,33,48     | 0.45 | 0           | 36,39,54    | 1.13 | 3 (8%)      |
| 30  | BCR  | b     | 618 | -    | 41,41,41     | 4.81 | 27 (65%)    | 56,56,56    | 2.22 | 19 (33%)    |
| 38  | CHL  | S     | 307 | 42   | 58,66,74     | 0.88 | 3 (5%)      | 63,104,114  | 1.37 | 13 (20%)    |
| 28  | CLA  | R     | 611 | 17   | 49,57,73     | 1.54 | 7 (14%)     | 55,93,113   | 2.26 | 16 (29%)    |
| 38  | CHL  | n     | 601 | 7    | 54,62,74     | 0.91 | 3 (5%)      | 58,99,114   | 1.50 | 13 (22%)    |



| Mol | Type | Chain | Res | Link  | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|-------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |       | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | s     | 613 | 18    | 49,57,73     | 1.53 | 7 (14%)  | 55,93,113   | 2.24 | 17 (30%) |
| 40  | NEX  | Y     | 618 | 28    | 38,46,46     | 3.33 | 11 (28%) | 50,70,70    | 1.53 | 9 (18%)  |
| 32  | LMG  | A     | 413 | -     | 40,40,55     | 0.92 | 3 (7%)   | 48,48,63    | 1.11 | 3 (6%)   |
| 28  | CLA  | n     | 604 | 42,40 | 50,58,73     | 1.53 | 8 (16%)  | 58,95,113   | 2.25 | 16 (27%) |
| 39  | LUT  | S     | 315 | -     | 42,43,43     | 6.07 | 27 (64%) | 51,60,60    | 1.87 | 13 (25%) |
| 36  | DGD  | C     | 519 | -     | 61,61,67     | 1.08 | 6 (9%)   | 75,75,81    | 0.93 | 3 (4%)   |
| 28  | CLA  | N     | 603 | 7     | 55,63,73     | 1.44 | 8 (14%)  | 64,101,113  | 2.14 | 16 (25%) |
| 28  | CLA  | s     | 608 | -     | 45,53,73     | 1.59 | 7 (15%)  | 52,89,113   | 2.16 | 14 (26%) |
| 28  | CLA  | C     | 506 | 3     | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.99 | 17 (22%) |
| 36  | DGD  | c     | 516 | -     | 56,56,67     | 0.99 | 4 (7%)   | 70,70,81    | 0.97 | 3 (4%)   |
| 28  | CLA  | r     | 613 | 17    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.96 | 17 (22%) |
| 28  | CLA  | D     | 403 | 4     | 65,73,73     | 1.32 | 6 (9%)   | 76,113,113  | 1.97 | 17 (22%) |
| 38  | CHL  | s     | 606 | 42    | 58,66,74     | 0.88 | 3 (5%)   | 63,104,114  | 1.42 | 13 (20%) |
| 28  | CLA  | A     | 408 | 1     | 60,68,73     | 1.38 | 6 (10%)  | 70,107,113  | 2.02 | 14 (20%) |
| 35  | LHG  | d     | 408 | -     | 48,48,48     | 0.39 | 0        | 51,54,54    | 1.08 | 3 (5%)   |
| 34  | BCT  | d     | 403 | 26    | 2,3,3        | 0.98 | 0        | 2,3,3       | 1.67 | 1 (50%)  |
| 28  | CLA  | Y     | 613 | 22    | 65,73,73     | 1.34 | 8 (12%)  | 76,113,113  | 1.92 | 17 (22%) |
| 38  | CHL  | r     | 607 | 42    | 61,69,74     | 0.86 | 3 (4%)   | 67,108,114  | 1.30 | 12 (17%) |
| 35  | LHG  | w     | 102 | -     | 38,38,48     | 0.43 | 0        | 41,44,54    | 1.04 | 3 (7%)   |
| 28  | CLA  | C     | 504 | 42    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.00 | 16 (21%) |
| 28  | CLA  | c     | 502 | 3     | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.98 | 17 (22%) |
| 28  | CLA  | y     | 314 | 22    | 48,56,73     | 1.54 | 8 (16%)  | 55,92,113   | 2.16 | 15 (27%) |
| 30  | BCR  | B     | 619 | -     | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.43 | 19 (33%) |
| 28  | CLA  | B     | 607 | 42    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.99 | 15 (19%) |
| 28  | CLA  | b     | 606 | 2     | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.94 | 19 (25%) |
| 28  | CLA  | b     | 609 | -     | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.02 | 16 (21%) |
| 39  | LUT  | r     | 614 | -     | 42,43,43     | 6.08 | 28 (66%) | 51,60,60    | 3.37 | 21 (41%) |
| 30  | BCR  | C     | 514 | -     | 41,41,41     | 4.78 | 27 (65%) | 56,56,56    | 3.63 | 27 (48%) |
| 28  | CLA  | B     | 615 | 2     | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.96 | 17 (22%) |
| 28  | CLA  | G     | 612 | -     | 60,68,73     | 1.39 | 7 (11%)  | 70,107,113  | 2.09 | 17 (24%) |
| 28  | CLA  | Y     | 612 | 22    | 60,68,73     | 1.38 | 8 (13%)  | 70,107,113  | 2.04 | 17 (24%) |
| 37  | HEM  | E     | 101 | 6,5   | 41,50,50     | 1.32 | 5 (12%)  | 45,82,82    | 1.89 | 9 (20%)  |
| 28  | CLA  | g     | 603 | 7     | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.95 | 16 (21%) |
| 28  | CLA  | c     | 511 | 3     | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 2.00 | 18 (23%) |
| 28  | CLA  | r     | 604 | 42,40 | 48,56,73     | 1.54 | 8 (16%)  | 55,92,113   | 2.19 | 15 (27%) |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 38  | CHL  | S     | 308 | -    | 46,54,74     | 0.99 | 3 (6%)   | 49,90,114   | 1.56 | 11 (22%) |
| 32  | LMG  | C     | 522 | -    | 44,44,55     | 0.86 | 3 (6%)   | 52,52,63    | 1.10 | 2 (3%)   |
| 35  | LHG  | s     | 617 | 28   | 48,48,48     | 0.39 | 0        | 51,54,54    | 1.03 | 3 (5%)   |
| 28  | CLA  | B     | 610 | 42   | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.95 | 17 (22%) |
| 28  | CLA  | r     | 603 | 17   | 60,68,73     | 1.39 | 7 (11%)  | 70,107,113  | 2.03 | 17 (24%) |
| 28  | CLA  | y     | 313 | 22   | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.99 | 16 (21%) |
| 38  | CHL  | n     | 609 | 7    | 66,74,74     | 0.85 | 3 (4%)   | 73,114,114  | 1.33 | 13 (17%) |
| 28  | CLA  | R     | 612 | 17   | 55,63,73     | 1.46 | 8 (14%)  | 64,101,113  | 2.15 | 17 (26%) |
| 28  | CLA  | B     | 616 | 2    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.97 | 18 (23%) |
| 38  | CHL  | G     | 607 | 42   | 56,64,74     | 0.90 | 3 (5%)   | 61,102,114  | 1.36 | 13 (21%) |
| 38  | CHL  | Y     | 607 | 42   | 66,74,74     | 0.86 | 4 (6%)   | 73,114,114  | 1.22 | 11 (15%) |
| 28  | CLA  | a     | 409 | 1    | 60,68,73     | 1.38 | 7 (11%)  | 70,107,113  | 2.10 | 16 (22%) |
| 28  | CLA  | n     | 602 | 7    | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.99 | 18 (23%) |
| 40  | NEX  | s     | 616 | -    | 38,46,46     | 3.38 | 11 (28%) | 50,70,70    | 1.58 | 9 (18%)  |
| 28  | CLA  | d     | 404 | 4    | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.99 | 18 (23%) |
| 38  | CHL  | N     | 606 | 42   | 50,58,74     | 1.00 | 4 (8%)   | 52,94,114   | 1.48 | 10 (19%) |
| 38  | CHL  | g     | 608 | 42   | 66,74,74     | 0.84 | 2 (3%)   | 73,114,114  | 1.37 | 13 (17%) |
| 28  | CLA  | c     | 507 | 42   | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 2.01 | 16 (21%) |
| 33  | PL9  | A     | 412 | -    | 13,13,55     | 1.49 | 1 (7%)   | 17,17,69    | 1.02 | 0        |
| 32  | LMG  | A     | 411 | -    | 48,48,55     | 0.99 | 5 (10%)  | 56,56,63    | 1.16 | 4 (7%)   |
| 28  | CLA  | C     | 511 | 3    | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 2.04 | 19 (25%) |
| 28  | CLA  | G     | 611 | 35   | 60,68,73     | 1.39 | 7 (11%)  | 70,107,113  | 1.99 | 15 (21%) |
| 30  | BCR  | t     | 101 | -    | 41,41,41     | 4.78 | 27 (65%) | 56,56,56    | 2.56 | 23 (41%) |
| 31  | SQD  | a     | 411 | -    | 49,50,54     | 0.81 | 0        | 58,61,65    | 0.96 | 2 (3%)   |
| 41  | XAT  | Y     | 617 | -    | 39,47,47     | 0.66 | 0        | 54,74,74    | 1.99 | 13 (24%) |
| 28  | CLA  | d     | 401 | 42   | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.94 | 17 (22%) |
| 30  | BCR  | B     | 618 | -    | 41,41,41     | 4.81 | 27 (65%) | 56,56,56    | 2.25 | 21 (37%) |
| 28  | CLA  | C     | 502 | -    | 65,73,73     | 1.32 | 7 (10%)  | 76,113,113  | 2.02 | 19 (25%) |
| 28  | CLA  | b     | 602 | 2    | 65,73,73     | 1.33 | 9 (13%)  | 76,113,113  | 1.96 | 16 (21%) |
| 38  | CHL  | y     | 309 | 22   | 66,74,74     | 0.87 | 4 (6%)   | 73,114,114  | 1.35 | 12 (16%) |
| 38  | CHL  | n     | 607 | 42   | 66,74,74     | 0.81 | 2 (3%)   | 73,114,114  | 1.21 | 13 (17%) |
| 35  | LHG  | D     | 407 | -    | 48,48,48     | 0.40 | 0        | 51,54,54    | 1.03 | 3 (5%)   |
| 32  | LMG  | B     | 621 | -    | 51,51,55     | 1.07 | 6 (11%)  | 59,59,63    | 1.23 | 4 (6%)   |
| 38  | CHL  | g     | 605 | 7    | 46,54,74     | 0.97 | 2 (4%)   | 49,90,114   | 1.46 | 11 (22%) |
| 31  | SQD  | A     | 410 | -    | 49,50,54     | 0.81 | 0        | 58,61,65    | 0.94 | 2 (3%)   |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | b     | 604 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.05 | 17 (22%) |
| 28  | CLA  | B     | 602 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.01 | 16 (21%) |
| 38  | CHL  | r     | 606 | 42   | 56,64,74     | 0.94 | 3 (5%)   | 61,102,114  | 1.41 | 12 (19%) |
| 38  | CHL  | g     | 601 | 7    | 66,74,74     | 0.82 | 3 (4%)   | 73,114,114  | 1.33 | 13 (17%) |
| 28  | CLA  | b     | 603 | -    | 65,73,73     | 1.32 | 6 (9%)   | 76,113,113  | 2.00 | 17 (22%) |
| 28  | CLA  | r     | 612 | 17   | 60,68,73     | 1.39 | 8 (13%)  | 70,107,113  | 2.06 | 16 (22%) |
| 30  | BCR  | c     | 514 | -    | 41,41,41     | 4.77 | 27 (65%) | 56,56,56    | 2.54 | 21 (37%) |
| 28  | CLA  | C     | 512 | 3    | 57,65,73     | 1.41 | 6 (10%)  | 66,103,113  | 2.08 | 19 (28%) |
| 28  | CLA  | r     | 610 | 35   | 49,57,73     | 1.54 | 7 (14%)  | 55,93,113   | 2.22 | 15 (27%) |
| 41  | XAT  | r     | 615 | -    | 39,47,47     | 0.64 | 0        | 54,74,74    | 1.90 | 15 (27%) |
| 28  | CLA  | B     | 604 | 2    | 65,73,73     | 1.34 | 8 (12%)  | 76,113,113  | 2.01 | 17 (22%) |
| 28  | CLA  | r     | 601 | 17   | 49,57,73     | 1.54 | 8 (16%)  | 55,93,113   | 2.20 | 15 (27%) |
| 39  | LUT  | s     | 615 | -    | 42,43,43     | 6.04 | 27 (64%) | 51,60,60    | 2.18 | 15 (29%) |
| 35  | LHG  | B     | 622 | -    | 29,29,48     | 0.48 | 0        | 32,35,54    | 1.20 | 3 (9%)   |
| 28  | CLA  | s     | 611 | -    | 49,57,73     | 1.54 | 8 (16%)  | 55,93,113   | 2.17 | 15 (27%) |
| 28  | CLA  | B     | 608 | 2    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.94 | 17 (22%) |
| 28  | CLA  | D     | 401 | 42   | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.94 | 18 (23%) |
| 32  | LMG  | d     | 409 | -    | 46,46,55     | 0.92 | 3 (6%)   | 54,54,63    | 1.03 | 3 (5%)   |
| 35  | LHG  | N     | 618 | 28   | 30,30,48     | 0.48 | 0        | 33,36,54    | 1.38 | 4 (12%)  |
| 38  | CHL  | S     | 302 | 18   | 46,54,74     | 1.03 | 3 (6%)   | 49,90,114   | 1.49 | 11 (22%) |
| 28  | CLA  | B     | 614 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.97 | 17 (22%) |
| 32  | LMG  | w     | 101 | -    | 48,48,55     | 0.99 | 5 (10%)  | 56,56,63    | 1.17 | 3 (5%)   |
| 28  | CLA  | b     | 613 | 2    | 65,73,73     | 1.34 | 6 (9%)   | 76,113,113  | 1.94 | 16 (21%) |
| 35  | LHG  | b     | 622 | -    | 40,40,48     | 0.41 | 0        | 43,46,54    | 1.11 | 3 (6%)   |
| 28  | CLA  | C     | 510 | 3    | 65,73,73     | 1.32 | 7 (10%)  | 76,113,113  | 1.96 | 17 (22%) |
| 38  | CHL  | Y     | 609 | 22   | 66,74,74     | 0.88 | 4 (6%)   | 73,114,114  | 1.37 | 13 (17%) |
| 38  | CHL  | g     | 607 | 42   | 57,65,74     | 0.91 | 3 (5%)   | 62,103,114  | 1.36 | 13 (20%) |
| 28  | CLA  | C     | 505 | 3    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.95 | 17 (22%) |
| 31  | SQD  | B     | 620 | -    | 53,54,54     | 0.79 | 0        | 62,65,65    | 0.91 | 2 (3%)   |
| 39  | LUT  | S     | 316 | -    | 42,43,43     | 6.11 | 28 (66%) | 51,60,60    | 2.07 | 13 (25%) |
| 28  | CLA  | b     | 612 | 2    | 65,73,73     | 1.31 | 6 (9%)   | 76,113,113  | 2.04 | 17 (22%) |
| 39  | LUT  | R     | 614 | -    | 42,43,43     | 6.05 | 28 (66%) | 51,60,60    | 2.26 | 19 (37%) |
| 28  | CLA  | n     | 603 | 7    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.04 | 17 (22%) |
| 40  | NEX  | g     | 617 | -    | 38,46,46     | 3.42 | 11 (28%) | 50,70,70    | 1.57 | 8 (16%)  |
| 30  | BCR  | i     | 101 | -    | 41,41,41     | 4.81 | 27 (65%) | 56,56,56    | 2.43 | 22 (39%) |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | C     | 501 | 3    | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.93 | 17 (22%) |
| 28  | CLA  | S     | 311 | 35   | 56,64,73     | 1.43 | 7 (12%)  | 65,102,113  | 2.14 | 18 (27%) |
| 28  | CLA  | g     | 612 | 7    | 45,53,73     | 1.59 | 8 (17%)  | 52,89,113   | 2.17 | 16 (30%) |
| 31  | SQD  | L     | 101 | -    | 41,42,54     | 0.88 | 0        | 50,53,65    | 0.98 | 2 (4%)   |
| 28  | CLA  | y     | 311 | 35   | 60,68,73     | 1.39 | 7 (11%)  | 70,107,113  | 2.02 | 16 (22%) |
| 28  | CLA  | c     | 512 | 3    | 57,65,73     | 1.42 | 7 (12%)  | 66,103,113  | 2.15 | 18 (27%) |
| 36  | DGD  | a     | 401 | -    | 60,60,67     | 1.06 | 6 (10%)  | 74,74,81    | 0.92 | 2 (2%)   |
| 38  | CHL  | G     | 609 | 7    | 55,63,74     | 0.94 | 4 (7%)   | 59,100,114  | 1.51 | 12 (20%) |
| 28  | CLA  | D     | 404 | 4    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.04 | 17 (22%) |
| 31  | SQD  | M     | 101 | -    | 41,42,54     | 0.86 | 0        | 50,53,65    | 0.97 | 2 (4%)   |
| 39  | LUT  | N     | 615 | -    | 42,43,43     | 6.06 | 28 (66%) | 51,60,60    | 1.92 | 15 (29%) |
| 38  | CHL  | g     | 619 | 42   | 66,74,74     | 0.85 | 3 (4%)   | 73,114,114  | 1.29 | 13 (17%) |
| 28  | CLA  | N     | 614 | 7    | 48,56,73     | 1.54 | 7 (14%)  | 55,92,113   | 2.17 | 16 (29%) |
| 28  | CLA  | R     | 603 | 17   | 60,68,73     | 1.42 | 6 (10%)  | 70,107,113  | 2.03 | 17 (24%) |
| 35  | LHG  | r     | 617 | 28   | 29,29,48     | 0.48 | 0        | 32,35,54    | 1.35 | 4 (12%)  |
| 35  | LHG  | c     | 519 | -    | 30,30,48     | 0.47 | 0        | 32,35,54    | 1.26 | 3 (9%)   |
| 29  | PHO  | D     | 402 | -    | 51,69,69     | 0.54 | 0        | 47,99,99    | 0.59 | 0        |
| 30  | BCR  | K     | 101 | -    | 41,41,41     | 4.77 | 27 (65%) | 56,56,56    | 2.41 | 21 (37%) |
| 28  | CLA  | d     | 405 | 4    | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 2.01 | 16 (21%) |
| 28  | CLA  | b     | 601 | 42   | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 2.00 | 18 (23%) |
| 38  | CHL  | N     | 605 | 7    | 48,56,74     | 0.97 | 2 (4%)   | 51,92,114   | 1.45 | 12 (23%) |
| 28  | CLA  | S     | 305 | 42   | 50,58,73     | 1.54 | 7 (14%)  | 58,95,113   | 2.27 | 21 (36%) |
| 28  | CLA  | b     | 615 | 2    | 65,73,73     | 1.34 | 8 (12%)  | 76,113,113  | 1.96 | 16 (21%) |
| 30  | BCR  | b     | 617 | -    | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.25 | 19 (33%) |
| 30  | BCR  | a     | 410 | -    | 41,41,41     | 4.79 | 27 (65%) | 56,56,56    | 2.31 | 21 (37%) |
| 30  | BCR  | h     | 101 | -    | 41,41,41     | 4.83 | 27 (65%) | 56,56,56    | 2.25 | 19 (33%) |
| 28  | CLA  | Y     | 611 | 35   | 60,68,73     | 1.38 | 7 (11%)  | 70,107,113  | 2.05 | 16 (22%) |
| 28  | CLA  | R     | 613 | 17   | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.94 | 17 (22%) |
| 39  | LUT  | s     | 614 | -    | 42,43,43     | 6.07 | 27 (64%) | 51,60,60    | 2.08 | 15 (29%) |
| 28  | CLA  | s     | 612 | 18   | 55,63,73     | 1.44 | 7 (12%)  | 64,101,113  | 2.05 | 16 (25%) |
| 38  | CHL  | y     | 302 | 22   | 66,74,74     | 0.82 | 3 (4%)   | 73,114,114  | 1.30 | 13 (17%) |
| 38  | CHL  | r     | 605 | 42   | 66,74,74     | 0.88 | 4 (6%)   | 73,114,114  | 1.33 | 11 (15%) |
| 28  | CLA  | b     | 608 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.98 | 17 (22%) |
| 28  | CLA  | B     | 606 | 2    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.94 | 16 (21%) |
| 28  | CLA  | n     | 613 | 7    | 55,63,73     | 1.46 | 8 (14%)  | 64,101,113  | 2.20 | 15 (23%) |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | c     | 506 | 3    | 56,64,73     | 1.43 | 7 (12%)  | 65,102,113  | 2.10 | 18 (27%) |
| 28  | CLA  | G     | 613 | -    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.04 | 16 (21%) |
| 29  | PHO  | A     | 407 | -    | 51,69,69     | 0.55 | 0        | 47,99,99    | 0.55 | 0        |
| 28  | CLA  | Y     | 610 | 22   | 60,68,73     | 1.42 | 8 (13%)  | 70,107,113  | 2.02 | 19 (27%) |
| 41  | XAT  | R     | 615 | -    | 39,47,47     | 0.65 | 0        | 54,74,74    | 1.89 | 15 (27%) |
| 28  | CLA  | B     | 609 | 2    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.01 | 17 (22%) |
| 28  | CLA  | Y     | 614 | 22   | 48,56,73     | 1.54 | 6 (12%)  | 55,92,113   | 2.18 | 15 (27%) |
| 28  | CLA  | b     | 616 | 2    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.97 | 17 (22%) |
| 38  | CHL  | n     | 606 | 42   | 50,58,74     | 0.95 | 2 (4%)   | 52,94,114   | 1.48 | 12 (23%) |
| 31  | SQD  | a     | 414 | -    | 53,54,54     | 0.78 | 0        | 62,65,65    | 0.91 | 2 (3%)   |
| 28  | CLA  | N     | 612 | 7    | 60,68,73     | 1.39 | 8 (13%)  | 70,107,113  | 2.03 | 17 (24%) |
| 28  | CLA  | b     | 614 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.01 | 16 (21%) |
| 28  | CLA  | g     | 602 | 7    | 65,73,73     | 1.32 | 6 (9%)   | 76,113,113  | 1.99 | 18 (23%) |
| 32  | LMG  | C     | 520 | -    | 51,51,55     | 1.07 | 6 (11%)  | 59,59,63    | 1.11 | 3 (5%)   |
| 32  | LMG  | b     | 620 | -    | 51,51,55     | 1.07 | 6 (11%)  | 59,59,63    | 1.04 | 3 (5%)   |
| 38  | CHL  | s     | 605 | 42   | 46,54,74     | 1.04 | 3 (6%)   | 49,90,114   | 1.51 | 11 (22%) |
| 30  | BCR  | k     | 101 | -    | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.31 | 19 (33%) |
| 40  | NEX  | y     | 301 | -    | 38,46,46     | 3.46 | 11 (28%) | 50,70,70    | 1.48 | 8 (16%)  |
| 39  | LUT  | g     | 616 | -    | 42,43,43     | 6.04 | 28 (66%) | 51,60,60    | 2.02 | 14 (27%) |
| 35  | LHG  | B     | 625 | -    | 45,45,48     | 0.41 | 0        | 48,51,54    | 1.01 | 3 (6%)   |
| 28  | CLA  | Y     | 603 | 22   | 55,63,73     | 1.45 | 8 (14%)  | 64,101,113  | 2.16 | 18 (28%) |
| 28  | CLA  | c     | 508 | 3    | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 2.00 | 19 (25%) |
| 35  | LHG  | L     | 102 | -    | 48,48,48     | 0.38 | 0        | 51,54,54    | 0.98 | 2 (3%)   |
| 38  | CHL  | Y     | 605 | 22   | 48,56,74     | 0.98 | 2 (4%)   | 51,92,114   | 1.44 | 12 (23%) |
| 36  | DGD  | C     | 517 | -    | 56,56,67     | 1.00 | 4 (7%)   | 70,70,81    | 1.00 | 3 (4%)   |
| 38  | CHL  | R     | 606 | 42   | 46,54,74     | 1.01 | 3 (6%)   | 49,90,114   | 1.54 | 10 (20%) |
| 35  | LHG  | Y     | 619 | 28   | 48,48,48     | 0.47 | 1 (2%)   | 51,54,54    | 1.07 | 2 (3%)   |
| 28  | CLA  | B     | 605 | 2    | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.98 | 16 (21%) |
| 28  | CLA  | C     | 513 | 3    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.02 | 17 (22%) |
| 35  | LHG  | B     | 623 | -    | 40,40,48     | 0.42 | 0        | 43,46,54    | 1.09 | 3 (6%)   |
| 38  | CHL  | y     | 307 | 42   | 50,58,74     | 0.98 | 3 (6%)   | 52,94,114   | 1.46 | 10 (19%) |
| 38  | CHL  | Y     | 601 | 22   | 66,74,74     | 0.84 | 3 (4%)   | 73,114,114  | 1.34 | 12 (16%) |
| 30  | BCR  | C     | 516 | -    | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.44 | 19 (33%) |
| 30  | BCR  | d     | 406 | -    | 41,41,41     | 4.77 | 27 (65%) | 56,56,56    | 2.52 | 20 (35%) |
| 28  | CLA  | b     | 610 | 42   | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.96 | 17 (22%) |

| Mol | Type | Chain | Res | Link   | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|--------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |        | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | G     | 603 | 7      | 53,61,73     | 1.48 | 8 (15%)  | 61,98,113   | 2.19 | 17 (27%) |
| 35  | LHG  | g     | 618 | 28     | 40,40,48     | 0.41 | 0        | 43,46,54    | 1.14 | 3 (6%)   |
| 28  | CLA  | N     | 610 | 7      | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.95 | 16 (21%) |
| 38  | CHL  | G     | 605 | 7      | 46,54,74     | 0.97 | 2 (4%)   | 49,90,114   | 1.49 | 12 (24%) |
| 39  | LUT  | y     | 315 | -      | 42,43,43     | 6.09 | 28 (66%) | 51,60,60    | 1.79 | 15 (29%) |
| 25  | OEX  | A     | 401 | 42,3,1 | 0,15,15      | -    | -        | -           | -    | -        |
| 38  | CHL  | S     | 306 | 42     | 46,54,74     | 1.03 | 3 (6%)   | 49,90,114   | 1.51 | 11 (22%) |
| 38  | CHL  | Y     | 608 | 42     | 66,74,74     | 0.83 | 2 (3%)   | 73,114,114  | 1.30 | 12 (16%) |
| 30  | BCR  | B     | 617 | -      | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.20 | 19 (33%) |
| 39  | LUT  | Y     | 616 | -      | 42,43,43     | 6.09 | 28 (66%) | 51,60,60    | 1.82 | 12 (23%) |
| 39  | LUT  | n     | 615 | -      | 42,43,43     | 6.08 | 28 (66%) | 51,60,60    | 2.00 | 17 (33%) |
| 29  | PHO  | d     | 402 | -      | 51,69,69     | 0.55 | 0        | 47,99,99    | 0.61 | 0        |
| 40  | NEX  | y     | 318 | -      | 38,46,46     | 3.29 | 11 (28%) | 50,70,70    | 1.73 | 11 (22%) |
| 28  | CLA  | r     | 602 | 17     | 60,68,73     | 1.38 | 6 (10%)  | 70,107,113  | 2.04 | 18 (25%) |
| 28  | CLA  | g     | 604 | 42     | 50,58,73     | 1.56 | 8 (16%)  | 58,95,113   | 2.28 | 18 (31%) |
| 30  | BCR  | D     | 405 | -      | 41,41,41     | 4.76 | 27 (65%) | 56,56,56    | 2.51 | 20 (35%) |
| 39  | LUT  | G     | 615 | -      | 42,43,43     | 6.09 | 27 (64%) | 51,60,60    | 2.68 | 16 (31%) |
| 35  | LHG  | S     | 301 | -      | 33,33,48     | 0.46 | 0        | 36,39,54    | 1.13 | 3 (8%)   |
| 39  | LUT  | Y     | 615 | -      | 42,43,43     | 5.92 | 29 (69%) | 51,60,60    | 2.13 | 21 (41%) |
| 38  | CHL  | y     | 308 | 42     | 66,74,74     | 0.85 | 3 (4%)   | 73,114,114  | 1.32 | 13 (17%) |
| 37  | HEM  | f     | 101 | 6,5    | 41,50,50     | 1.32 | 5 (12%)  | 45,82,82    | 1.80 | 8 (17%)  |
| 28  | CLA  | B     | 612 | 2      | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.99 | 17 (22%) |
| 32  | LMG  | D     | 408 | -      | 46,46,55     | 0.93 | 4 (8%)   | 54,54,63    | 1.02 | 2 (3%)   |
| 35  | LHG  | A     | 416 | -      | 42,42,48     | 0.41 | 0        | 45,48,54    | 1.09 | 3 (6%)   |
| 28  | CLA  | s     | 610 | 35     | 56,64,73     | 1.44 | 7 (12%)  | 65,102,113  | 2.07 | 16 (24%) |
| 28  | CLA  | c     | 505 | 3      | 57,65,73     | 1.42 | 8 (14%)  | 66,103,113  | 2.06 | 16 (24%) |
| 28  | CLA  | n     | 614 | 7      | 45,53,73     | 1.59 | 6 (13%)  | 52,89,113   | 2.13 | 14 (26%) |
| 36  | DGD  | c     | 517 | -      | 55,55,67     | 1.00 | 3 (5%)   | 69,69,81    | 1.00 | 4 (5%)   |
| 28  | CLA  | A     | 406 | 42     | 50,58,73     | 1.52 | 7 (14%)  | 58,95,113   | 2.22 | 17 (29%) |
| 28  | CLA  | c     | 513 | 3      | 57,65,73     | 1.42 | 7 (12%)  | 66,103,113  | 2.12 | 18 (27%) |
| 38  | CHL  | G     | 606 | 42     | 50,58,74     | 1.01 | 4 (8%)   | 52,94,114   | 1.45 | 9 (17%)  |
| 38  | CHL  | Y     | 606 | 42     | 50,58,74     | 0.99 | 3 (6%)   | 52,94,114   | 1.45 | 11 (21%) |
| 28  | CLA  | s     | 602 | 18     | 61,69,73     | 1.37 | 8 (13%)  | 71,108,113  | 2.06 | 18 (25%) |
| 38  | CHL  | G     | 608 | 42     | 66,74,74     | 0.86 | 3 (4%)   | 73,114,114  | 1.32 | 13 (17%) |
| 28  | CLA  | B     | 611 | 2      | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.99 | 18 (23%) |



| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 38  | CHL  | s     | 601 | 18   | 46,54,74     | 1.03 | 3 (6%)   | 49,90,114   | 1.46 | 11 (22%) |
| 28  | CLA  | G     | 610 | 7    | 64,72,73     | 1.34 | 8 (12%)  | 74,111,113  | 2.02 | 17 (22%) |
| 28  | CLA  | R     | 609 | 17   | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 1.97 | 16 (21%) |
| 28  | CLA  | C     | 509 | 3    | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.97 | 17 (22%) |
| 40  | NEX  | n     | 617 | 28   | 38,46,46     | 3.44 | 11 (28%) | 50,70,70    | 1.74 | 9 (18%)  |
| 38  | CHL  | n     | 605 | 7    | 48,56,74     | 0.95 | 2 (4%)   | 51,92,114   | 1.44 | 12 (23%) |
| 32  | LMG  | a     | 413 | -    | 40,40,55     | 0.91 | 3 (7%)   | 48,48,63    | 1.09 | 4 (8%)   |
| 28  | CLA  | s     | 604 | 42   | 50,58,73     | 1.51 | 7 (14%)  | 58,95,113   | 2.23 | 15 (25%) |
| 28  | CLA  | R     | 610 | 35   | 49,57,73     | 1.53 | 7 (14%)  | 55,93,113   | 2.23 | 14 (25%) |
| 28  | CLA  | A     | 405 | 1    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.93 | 16 (21%) |
| 35  | LHG  | n     | 618 | 28   | 31,31,48     | 0.50 | 0        | 34,37,54    | 1.18 | 2 (5%)   |
| 31  | SQD  | L     | 103 | -    | 53,54,54     | 0.79 | 0        | 62,65,65    | 0.92 | 3 (4%)   |
| 33  | PL9  | D     | 406 | -    | 55,55,55     | 0.69 | 1 (1%)   | 68,69,69    | 0.60 | 1 (1%)   |
| 38  | CHL  | y     | 306 | 22   | 48,56,74     | 0.96 | 2 (4%)   | 51,92,114   | 1.42 | 11 (21%) |
| 28  | CLA  | S     | 309 | 18   | 45,53,73     | 1.60 | 6 (13%)  | 52,89,113   | 2.20 | 14 (26%) |
| 28  | CLA  | S     | 310 | 18   | 55,63,73     | 1.45 | 8 (14%)  | 64,101,113  | 2.16 | 19 (29%) |
| 28  | CLA  | n     | 610 | 7    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.97 | 16 (21%) |
| 28  | CLA  | S     | 304 | 18   | 45,53,73     | 1.60 | 7 (15%)  | 52,89,113   | 2.18 | 15 (28%) |
| 38  | CHL  | R     | 605 | 42   | 47,55,74     | 1.03 | 3 (6%)   | 50,91,114   | 1.47 | 11 (22%) |
| 30  | BCR  | c     | 515 | -    | 41,41,41     | 4.81 | 27 (65%) | 56,56,56    | 2.26 | 20 (35%) |
| 28  | CLA  | c     | 509 | 3    | 65,73,73     | 1.36 | 8 (12%)  | 76,113,113  | 2.04 | 17 (22%) |
| 30  | BCR  | C     | 515 | -    | 41,41,41     | 4.81 | 27 (65%) | 56,56,56    | 2.30 | 20 (35%) |
| 28  | CLA  | S     | 312 | 18   | 49,57,73     | 1.55 | 8 (16%)  | 55,93,113   | 2.20 | 14 (25%) |
| 33  | PL9  | a     | 412 | -    | 13,13,55     | 1.47 | 1 (7%)   | 17,17,69    | 1.04 | 0        |
| 28  | CLA  | y     | 305 | 42   | 50,58,73     | 1.52 | 8 (16%)  | 58,95,113   | 2.21 | 15 (25%) |
| 40  | NEX  | N     | 617 | 28   | 38,46,46     | 3.37 | 11 (28%) | 50,70,70    | 1.54 | 10 (20%) |
| 28  | CLA  | c     | 504 | 42   | 59,67,73     | 1.40 | 6 (10%)  | 68,105,113  | 2.02 | 19 (27%) |
| 28  | CLA  | c     | 510 | 3    | 65,73,73     | 1.32 | 7 (10%)  | 76,113,113  | 2.00 | 16 (21%) |
| 35  | LHG  | C     | 521 | -    | 48,48,48     | 0.38 | 0        | 51,54,54    | 1.09 | 3 (5%)   |
| 28  | CLA  | r     | 611 | 17   | 49,57,73     | 1.59 | 6 (12%)  | 55,93,113   | 2.35 | 17 (30%) |
| 35  | LHG  | G     | 618 | 28   | 48,48,48     | 0.39 | 0        | 51,54,54    | 1.06 | 3 (5%)   |
| 34  | BCT  | A     | 415 | 26   | 2,3,3        | 0.98 | 0        | 2,3,3       | 1.65 | 1 (50%)  |
| 30  | BCR  | b     | 619 | -    | 41,41,41     | 4.72 | 26 (63%) | 56,56,56    | 2.42 | 24 (42%) |
| 39  | LUT  | g     | 615 | -    | 42,43,43     | 6.08 | 28 (66%) | 51,60,60    | 1.94 | 12 (23%) |
| 28  | CLA  | N     | 602 | 7    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.02 | 17 (22%) |

| Mol | Type | Chain | Res | Link   | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|--------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |        | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | n     | 612 | 7      | 60,68,73     | 1.39 | 7 (11%)  | 70,107,113  | 2.02 | 16 (22%) |
| 38  | CHL  | N     | 601 | 7      | 52,60,74     | 0.93 | 3 (5%)   | 56,97,114   | 1.52 | 13 (23%) |
| 28  | CLA  | N     | 604 | 42,40  | 50,58,73     | 1.51 | 6 (12%)  | 58,95,113   | 2.27 | 17 (29%) |
| 28  | CLA  | C     | 507 | 42     | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.98 | 18 (23%) |
| 38  | CHL  | R     | 607 | 42     | 61,69,74     | 0.86 | 3 (4%)   | 67,108,114  | 1.33 | 13 (19%) |
| 28  | CLA  | B     | 613 | 2      | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 1.96 | 15 (19%) |
| 35  | LHG  | c     | 520 | -      | 39,39,48     | 0.42 | 0        | 42,45,54    | 1.19 | 3 (7%)   |
| 32  | LMG  | c     | 521 | -      | 51,51,55     | 1.07 | 6 (11%)  | 59,59,63    | 1.04 | 3 (5%)   |
| 35  | LHG  | W     | 101 | -      | 48,48,48     | 0.39 | 0        | 51,54,54    | 1.04 | 3 (5%)   |
| 28  | CLA  | R     | 608 | 17     | 58,66,73     | 1.41 | 6 (10%)  | 67,104,113  | 2.09 | 16 (23%) |
| 36  | DGD  | c     | 518 | -      | 60,60,67     | 4.56 | 7 (11%)  | 74,74,81    | 1.17 | 4 (5%)   |
| 38  | CHL  | g     | 606 | 42     | 50,58,74     | 1.04 | 4 (8%)   | 52,94,114   | 1.41 | 8 (15%)  |
| 36  | DGD  | C     | 518 | -      | 63,63,67     | 1.12 | 7 (11%)  | 77,77,81    | 0.91 | 3 (3%)   |
| 38  | CHL  | s     | 607 | -      | 46,54,74     | 1.00 | 3 (6%)   | 49,90,114   | 1.52 | 10 (20%) |
| 28  | CLA  | s     | 609 | 18     | 55,63,73     | 1.45 | 7 (12%)  | 64,101,113  | 2.09 | 16 (25%) |
| 28  | CLA  | R     | 602 | 17     | 60,68,73     | 1.44 | 8 (13%)  | 70,107,113  | 2.03 | 19 (27%) |
| 39  | LUT  | n     | 616 | -      | 42,43,43     | 5.99 | 28 (66%) | 51,60,60    | 2.12 | 17 (33%) |
| 28  | CLA  | y     | 312 | 22     | 60,68,73     | 1.39 | 8 (13%)  | 70,107,113  | 2.04 | 15 (21%) |
| 35  | LHG  | b     | 624 | -      | 45,45,48     | 0.40 | 0        | 48,51,54    | 1.12 | 4 (8%)   |
| 28  | CLA  | a     | 407 | 42     | 50,58,73     | 1.51 | 7 (14%)  | 58,95,113   | 2.22 | 17 (29%) |
| 36  | DGD  | B     | 626 | -      | 63,63,67     | 1.13 | 6 (9%)   | 77,77,81    | 0.94 | 2 (2%)   |
| 28  | CLA  | C     | 503 | -      | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.01 | 18 (23%) |
| 25  | OEX  | a     | 402 | 42,3,1 | 0,15,15      | -    | -        | -           | -    | -        |
| 28  | CLA  | b     | 611 | 2      | 65,73,73     | 1.33 | 6 (9%)   | 76,113,113  | 2.00 | 19 (25%) |
| 28  | CLA  | C     | 508 | 3      | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.98 | 18 (23%) |
| 28  | CLA  | G     | 614 | 7      | 48,56,73     | 1.55 | 7 (14%)  | 55,92,113   | 2.13 | 16 (29%) |
| 32  | LMG  | b     | 623 | -      | 50,50,55     | 1.03 | 5 (10%)  | 58,58,63    | 0.96 | 2 (3%)   |
| 28  | CLA  | y     | 304 | 22     | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.02 | 18 (23%) |
| 28  | CLA  | B     | 603 | 2      | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.93 | 16 (21%) |
| 36  | DGD  | A     | 417 | -      | 60,60,67     | 1.07 | 6 (10%)  | 74,74,81    | 1.03 | 5 (6%)   |
| 28  | CLA  | g     | 611 | 35     | 60,68,73     | 1.43 | 7 (11%)  | 70,107,113  | 2.03 | 14 (20%) |
| 35  | LHG  | a     | 415 | -      | 42,42,48     | 0.40 | 0        | 45,48,54    | 1.09 | 3 (6%)   |
| 30  | BCR  | H     | 101 | -      | 41,41,41     | 4.80 | 27 (65%) | 56,56,56    | 2.42 | 21 (37%) |
| 38  | CHL  | N     | 609 | 7      | 64,72,74     | 0.87 | 3 (4%)   | 70,111,114  | 1.31 | 10 (14%) |
| 32  | LMG  | B     | 624 | -      | 31,31,55     | 0.53 | 0        | 39,39,63    | 1.29 | 3 (7%)   |



| Mol | Type | Chain | Res | Link  | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|-------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |       | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | CLA  | y     | 303 | 22    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.00 | 20 (26%) |
| 28  | CLA  | g     | 610 | 7     | 58,66,73     | 1.41 | 7 (12%)  | 67,104,113  | 2.34 | 21 (31%) |
| 35  | LHG  | y     | 319 | 28    | 48,48,48     | 0.48 | 1 (2%)   | 51,54,54    | 1.12 | 3 (5%)   |
| 28  | CLA  | Y     | 604 | 42,40 | 50,58,73     | 1.51 | 7 (14%)  | 58,95,113   | 2.24 | 16 (27%) |
| 28  | CLA  | a     | 406 | 1     | 65,73,73     | 1.32 | 6 (9%)   | 76,113,113  | 1.94 | 16 (21%) |
| 41  | XAT  | y     | 317 | -     | 39,47,47     | 0.67 | 0        | 54,74,74    | 1.87 | 12 (22%) |
| 38  | CHL  | N     | 608 | 42    | 66,74,74     | 0.85 | 3 (4%)   | 73,114,114  | 1.33 | 13 (17%) |
| 33  | PL9  | d     | 407 | -     | 55,55,55     | 0.69 | 1 (1%)   | 68,69,69    | 0.61 | 1 (1%)   |
| 28  | CLA  | b     | 607 | 42    | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.00 | 19 (25%) |
| 39  | LUT  | N     | 616 | -     | 42,43,43     | 6.01 | 29 (69%) | 51,60,60    | 2.12 | 17 (33%) |
| 40  | NEX  | G     | 617 | 28    | 38,46,46     | 3.50 | 11 (28%) | 50,70,70    | 1.99 | 10 (20%) |
| 38  | CHL  | N     | 607 | 42    | 66,74,74     | 0.84 | 3 (4%)   | 73,114,114  | 1.27 | 12 (16%) |
| 39  | LUT  | G     | 616 | -     | 42,43,43     | 6.01 | 27 (64%) | 51,60,60    | 2.15 | 13 (25%) |
| 35  | LHG  | l     | 101 | -     | 48,48,48     | 0.42 | 0        | 51,54,54    | 1.09 | 2 (3%)   |
| 28  | CLA  | n     | 611 | 35    | 60,68,73     | 1.42 | 7 (11%)  | 70,107,113  | 2.06 | 20 (28%) |
| 28  | CLA  | S     | 313 | 18    | 55,63,73     | 1.46 | 8 (14%)  | 64,101,113  | 2.04 | 16 (25%) |
| 28  | CLA  | y     | 310 | 22    | 60,68,73     | 1.38 | 7 (11%)  | 70,107,113  | 2.07 | 18 (25%) |
| 28  | CLA  | g     | 613 | 7     | 52,60,73     | 1.48 | 6 (11%)  | 60,97,113   | 2.28 | 17 (28%) |
| 28  | CLA  | S     | 314 | 18    | 49,57,73     | 1.53 | 8 (16%)  | 55,93,113   | 2.24 | 16 (29%) |
| 38  | CHL  | g     | 609 | -     | 61,69,74     | 0.89 | 4 (6%)   | 67,108,114  | 1.44 | 13 (19%) |
| 35  | LHG  | S     | 317 | 28    | 42,42,48     | 0.41 | 0        | 45,48,54    | 1.09 | 3 (6%)   |
| 36  | DGD  | b     | 625 | -     | 63,63,67     | 1.12 | 6 (9%)   | 77,77,81    | 0.96 | 2 (2%)   |
| 30  | BCR  | T     | 101 | -     | 41,41,41     | 4.76 | 26 (63%) | 56,56,56    | 2.58 | 20 (35%) |
| 39  | LUT  | y     | 316 | -     | 42,43,43     | 6.09 | 28 (66%) | 51,60,60    | 1.94 | 14 (27%) |
| 38  | CHL  | n     | 608 | 42    | 66,74,74     | 0.84 | 3 (4%)   | 73,114,114  | 1.34 | 13 (17%) |
| 28  | CLA  | c     | 503 | 3     | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 1.96 | 17 (22%) |
| 28  | CLA  | g     | 614 | 7     | 45,53,73     | 1.58 | 7 (15%)  | 52,89,113   | 2.22 | 15 (28%) |
| 28  | CLA  | r     | 608 | 17    | 58,66,73     | 1.41 | 7 (12%)  | 67,104,113  | 2.11 | 15 (22%) |
| 28  | CLA  | N     | 613 | 7     | 53,61,73     | 1.48 | 8 (15%)  | 61,98,113   | 2.13 | 16 (26%) |
| 35  | LHG  | R     | 616 | 28    | 24,24,48     | 0.51 | 0        | 27,30,54    | 1.21 | 2 (7%)   |
| 28  | CLA  | b     | 605 | 2     | 65,73,73     | 1.36 | 8 (12%)  | 76,113,113  | 2.03 | 15 (19%) |
| 28  | CLA  | c     | 501 | 3     | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.93 | 17 (22%) |
| 28  | CLA  | G     | 602 | 7     | 65,73,73     | 1.33 | 7 (10%)  | 76,113,113  | 2.01 | 19 (25%) |
| 28  | CLA  | s     | 603 | 18    | 45,53,73     | 1.60 | 8 (17%)  | 52,89,113   | 2.15 | 15 (28%) |
| 38  | CHL  | G     | 601 | 7     | 66,74,74     | 0.82 | 3 (4%)   | 73,114,114  | 1.28 | 14 (19%) |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 31  | SQD  | A     | 414 | -    | 53,54,54     | 0.79 | 0        | 62,65,65    | 0.91 | 2 (3%)   |
| 28  | CLA  | N     | 611 | 35   | 60,68,73     | 1.39 | 8 (13%)  | 70,107,113  | 1.98 | 16 (22%) |
| 28  | CLA  | S     | 303 | 18   | 61,69,73     | 1.37 | 8 (13%)  | 71,108,113  | 2.06 | 17 (23%) |
| 28  | CLA  | Y     | 602 | 22   | 65,73,73     | 1.41 | 8 (12%)  | 76,113,113  | 1.92 | 21 (27%) |
| 28  | CLA  | G     | 604 | 40   | 50,58,73     | 1.51 | 7 (14%)  | 58,95,113   | 2.22 | 17 (29%) |
| 32  | LMG  | k     | 102 | -    | 51,51,55     | 1.07 | 5 (9%)   | 59,59,63    | 1.08 | 3 (5%)   |
| 28  | CLA  | R     | 601 | 17   | 45,53,73     | 1.61 | 7 (15%)  | 52,89,113   | 2.18 | 13 (25%) |
| 28  | CLA  | r     | 609 | 17   | 65,73,73     | 1.33 | 8 (12%)  | 76,113,113  | 2.01 | 18 (23%) |
| 29  | PHO  | a     | 408 | -    | 51,69,69     | 0.55 | 0        | 47,99,99    | 0.59 | 0        |
| 28  | CLA  | B     | 601 | 42   | 65,73,73     | 1.34 | 7 (10%)  | 76,113,113  | 1.96 | 16 (21%) |
| 30  | BCR  | A     | 409 | -    | 41,41,41     | 4.79 | 27 (65%) | 56,56,56    | 2.23 | 18 (32%) |
| 40  | NEX  | r     | 616 | 28   | 38,46,46     | 3.35 | 11 (28%) | 50,70,70    | 1.58 | 9 (18%)  |

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   |
|-----|------|-------|-----|-------|-----------|---------------|---------|
| 28  | CLA  | R     | 604 | 42    | 1/1/11/20 | 8/17/95/115   | -       |
| 35  | LHG  | b     | 621 | -     | -         | 23/38/38/53   | -       |
| 30  | BCR  | b     | 618 | -     | -         | 15/29/63/63   | 0/2/2/2 |
| 38  | CHL  | S     | 307 | 42    | 3/3/18/26 | 13/30/128/137 | -       |
| 28  | CLA  | R     | 611 | 17    | 1/1/11/20 | 8/18/96/115   | -       |
| 38  | CHL  | n     | 601 | 7     | 3/3/17/26 | 4/25/123/137  | -       |
| 28  | CLA  | s     | 613 | 18    | 1/1/11/20 | 8/18/96/115   | -       |
| 40  | NEX  | Y     | 618 | 28    | -         | 4/27/83/83    | 0/3/3/3 |
| 32  | LMG  | A     | 413 | -     | -         | 7/35/55/70    | 0/1/1/1 |
| 28  | CLA  | n     | 604 | 42,40 | 1/1/12/20 | 11/19/97/115  | -       |
| 39  | LUT  | S     | 315 | -     | -         | 7/29/67/67    | 0/2/2/2 |
| 36  | DGD  | C     | 519 | -     | -         | 11/49/89/95   | 0/2/2/2 |
| 28  | CLA  | N     | 603 | 7     | 1/1/13/20 | 11/25/103/115 | -       |
| 28  | CLA  | s     | 608 | -     | 1/1/11/20 | 6/13/91/115   | -       |
| 28  | CLA  | C     | 506 | 3     | 1/1/15/20 | 16/37/115/115 | -       |
| 36  | DGD  | c     | 516 | -     | -         | 6/44/84/95    | 0/2/2/2 |
| 28  | CLA  | r     | 613 | 17    | 1/1/15/20 | 14/37/115/115 | -       |

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| Mol | Type | Chain | Res | Link  | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|-------|-----------|---------------|---------|
| 28  | CLA  | D     | 403 | 4     | 1/1/15/20 | 13/37/115/115 | -       |
| 38  | CHL  | s     | 606 | 42    | 3/3/18/26 | 6/30/128/137  | -       |
| 28  | CLA  | A     | 408 | 1     | 1/1/14/20 | 18/31/109/115 | -       |
| 35  | LHG  | d     | 408 | -     | -         | 30/53/53/53   | -       |
| 28  | CLA  | Y     | 613 | 22    | 1/1/15/20 | 11/37/115/115 | -       |
| 38  | CHL  | r     | 607 | 42    | 3/3/19/26 | 14/33/131/137 | -       |
| 35  | LHG  | w     | 102 | -     | -         | 28/43/43/53   | -       |
| 28  | CLA  | C     | 504 | 42    | 1/1/15/20 | 16/37/115/115 | -       |
| 28  | CLA  | c     | 502 | 3     | 1/1/15/20 | 18/37/115/115 | -       |
| 28  | CLA  | y     | 314 | 22    | 1/1/11/20 | 9/17/95/115   | -       |
| 30  | BCR  | B     | 619 | -     | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | B     | 607 | 42    | 1/1/15/20 | 20/37/115/115 | -       |
| 28  | CLA  | b     | 606 | 2     | 1/1/15/20 | 15/37/115/115 | -       |
| 28  | CLA  | b     | 609 | -     | 1/1/15/20 | 14/37/115/115 | -       |
| 39  | LUT  | r     | 614 | -     | -         | 8/29/67/67    | 0/2/2/2 |
| 30  | BCR  | C     | 514 | -     | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | B     | 615 | 2     | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | G     | 612 | -     | 1/1/14/20 | 12/31/109/115 | -       |
| 28  | CLA  | Y     | 612 | 22    | 1/1/14/20 | 11/31/109/115 | -       |
| 37  | HEM  | E     | 101 | 6,5   | -         | 5/12/54/54    | -       |
| 28  | CLA  | g     | 603 | 7     | 1/1/15/20 | 11/37/115/115 | -       |
| 28  | CLA  | c     | 511 | 3     | 1/1/15/20 | 16/37/115/115 | -       |
| 28  | CLA  | r     | 604 | 42,40 | 1/1/11/20 | 10/17/95/115  | -       |
| 38  | CHL  | S     | 308 | -     | 3/3/16/26 | 5/15/113/137  | -       |
| 32  | LMG  | C     | 522 | -     | -         | 14/39/59/70   | 0/1/1/1 |
| 35  | LHG  | s     | 617 | 28    | -         | 35/53/53/53   | -       |
| 28  | CLA  | B     | 610 | 42    | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | r     | 603 | 17    | 1/1/14/20 | 18/31/109/115 | -       |
| 28  | CLA  | y     | 313 | 22    | 1/1/15/20 | 11/37/115/115 | -       |
| 38  | CHL  | n     | 609 | 7     | 3/3/20/26 | 10/39/137/137 | -       |
| 28  | CLA  | R     | 612 | 17    | 1/1/13/20 | 10/25/103/115 | -       |
| 28  | CLA  | B     | 616 | 2     | 1/1/15/20 | 14/37/115/115 | -       |
| 38  | CHL  | G     | 607 | 42    | 3/3/18/26 | 8/27/125/137  | -       |
| 38  | CHL  | Y     | 607 | 42    | 3/3/20/26 | 17/39/137/137 | -       |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 28  | CLA  | a     | 409 | 1    | 1/1/14/20 | 13/31/109/115 | -       |
| 28  | CLA  | n     | 602 | 7    | 1/1/15/20 | 20/37/115/115 | -       |
| 40  | NEX  | s     | 616 | -    | -         | 8/27/83/83    | 0/3/3/3 |
| 28  | CLA  | d     | 404 | 4    | 1/1/15/20 | 12/37/115/115 | -       |
| 38  | CHL  | N     | 606 | 42   | 3/3/16/26 | 2/20/118/137  | -       |
| 38  | CHL  | g     | 608 | 42   | 3/3/20/26 | 13/39/137/137 | -       |
| 28  | CLA  | c     | 507 | 42   | 1/1/15/20 | 9/37/115/115  | -       |
| 33  | PL9  | A     | 412 | -    | -         | 0/5/18/73     | 0/1/1/1 |
| 32  | LMG  | A     | 411 | -    | -         | 6/43/63/70    | 0/1/1/1 |
| 28  | CLA  | C     | 511 | 3    | 1/1/15/20 | 15/37/115/115 | -       |
| 28  | CLA  | G     | 611 | 35   | 1/1/14/20 | 15/31/109/115 | -       |
| 30  | BCR  | t     | 101 | -    | -         | 15/29/63/63   | 0/2/2/2 |
| 31  | SQD  | a     | 411 | -    | -         | 12/45/65/69   | 0/1/1/1 |
| 41  | XAT  | Y     | 617 | -    | -         | 4/31/93/93    | 0/4/4/4 |
| 28  | CLA  | d     | 401 | 42   | 1/1/15/20 | 15/37/115/115 | -       |
| 30  | BCR  | B     | 618 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | C     | 502 | -    | 1/1/15/20 | 18/37/115/115 | -       |
| 28  | CLA  | b     | 602 | 2    | 1/1/15/20 | 20/37/115/115 | -       |
| 38  | CHL  | y     | 309 | 22   | 3/3/20/26 | 7/39/137/137  | -       |
| 38  | CHL  | n     | 607 | 42   | 3/3/20/26 | 10/39/137/137 | -       |
| 35  | LHG  | D     | 407 | -    | -         | 37/53/53/53   | -       |
| 32  | LMG  | B     | 621 | -    | -         | 10/46/66/70   | 0/1/1/1 |
| 38  | CHL  | g     | 605 | 7    | 3/3/16/26 | 6/15/113/137  | -       |
| 31  | SQD  | A     | 410 | -    | -         | 9/45/65/69    | 0/1/1/1 |
| 28  | CLA  | b     | 604 | 2    | 1/1/15/20 | 14/37/115/115 | -       |
| 28  | CLA  | B     | 602 | 2    | 1/1/15/20 | 16/37/115/115 | -       |
| 38  | CHL  | r     | 606 | 42   | 3/3/18/26 | 7/27/125/137  | -       |
| 38  | CHL  | g     | 601 | 7    | 3/3/20/26 | 9/39/137/137  | -       |
| 28  | CLA  | b     | 603 | -    | 1/1/15/20 | 13/37/115/115 | -       |
| 28  | CLA  | r     | 612 | 17   | 1/1/14/20 | 19/31/109/115 | -       |
| 30  | BCR  | c     | 514 | -    | -         | 12/29/63/63   | 0/2/2/2 |
| 28  | CLA  | C     | 512 | 3    | 1/1/13/20 | 19/28/106/115 | -       |
| 28  | CLA  | r     | 610 | 35   | 1/1/11/20 | 13/18/96/115  | -       |
| 41  | XAT  | r     | 615 | -    | -         | 7/31/93/93    | 0/4/4/4 |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 28  | CLA  | B     | 604 | 2    | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | r     | 601 | 17   | 1/1/11/20 | 8/18/96/115   | -       |
| 39  | LUT  | s     | 615 | -    | -         | 6/29/67/67    | 0/2/2/2 |
| 35  | LHG  | B     | 622 | -    | -         | 28/34/34/53   | -       |
| 28  | CLA  | s     | 611 | -    | 1/1/11/20 | 7/18/96/115   | -       |
| 28  | CLA  | B     | 608 | 2    | 1/1/15/20 | 13/37/115/115 | -       |
| 28  | CLA  | D     | 401 | 42   | 1/1/15/20 | 16/37/115/115 | -       |
| 32  | LMG  | d     | 409 | -    | -         | 4/41/61/70    | 0/1/1/1 |
| 35  | LHG  | N     | 618 | 28   | -         | 23/35/35/53   | -       |
| 38  | CHL  | S     | 302 | 18   | 3/3/16/26 | 2/15/113/137  | -       |
| 28  | CLA  | B     | 614 | 2    | 1/1/15/20 | 16/37/115/115 | -       |
| 32  | LMG  | w     | 101 | -    | -         | 7/43/63/70    | 0/1/1/1 |
| 28  | CLA  | b     | 613 | 2    | 1/1/15/20 | 9/37/115/115  | -       |
| 35  | LHG  | b     | 622 | -    | -         | 28/45/45/53   | -       |
| 28  | CLA  | C     | 510 | 3    | 1/1/15/20 | 17/37/115/115 | -       |
| 38  | CHL  | Y     | 609 | 22   | 3/3/20/26 | 7/39/137/137  | -       |
| 38  | CHL  | g     | 607 | 42   | 3/3/18/26 | 10/29/127/137 | -       |
| 28  | CLA  | C     | 505 | 3    | 1/1/15/20 | 11/37/115/115 | -       |
| 31  | SQD  | B     | 620 | -    | -         | 8/49/69/69    | 0/1/1/1 |
| 39  | LUT  | S     | 316 | -    | -         | 6/29/67/67    | 0/2/2/2 |
| 28  | CLA  | b     | 612 | 2    | 1/1/15/20 | 20/37/115/115 | -       |
| 39  | LUT  | R     | 614 | -    | -         | 5/29/67/67    | 0/2/2/2 |
| 28  | CLA  | n     | 603 | 7    | 1/1/15/20 | 18/37/115/115 | -       |
| 40  | NEX  | g     | 617 | -    | -         | 18/27/83/83   | 0/3/3/3 |
| 30  | BCR  | i     | 101 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | C     | 501 | 3    | 1/1/15/20 | 10/37/115/115 | -       |
| 28  | CLA  | S     | 311 | 35   | 1/1/13/20 | 15/27/105/115 | -       |
| 28  | CLA  | g     | 612 | 7    | 1/1/11/20 | 6/13/91/115   | -       |
| 31  | SQD  | L     | 101 | -    | -         | 5/37/57/69    | 0/1/1/1 |
| 28  | CLA  | y     | 311 | 35   | 1/1/14/20 | 12/31/109/115 | -       |
| 28  | CLA  | c     | 512 | 3    | 1/1/13/20 | 19/28/106/115 | -       |
| 36  | DGD  | a     | 401 | -    | -         | 10/48/88/95   | 0/2/2/2 |
| 38  | CHL  | G     | 609 | 7    | 3/3/17/26 | 5/26/124/137  | -       |
| 28  | CLA  | D     | 404 | 4    | 1/1/15/20 | 12/37/115/115 | -       |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 31  | SQD  | M     | 101 | -    | -         | 12/37/57/69   | 0/1/1/1 |
| 39  | LUT  | N     | 615 | -    | -         | 5/29/67/67    | 0/2/2/2 |
| 38  | CHL  | g     | 619 | 42   | 3/3/20/26 | 16/39/137/137 | -       |
| 28  | CLA  | N     | 614 | 7    | 1/1/11/20 | 10/17/95/115  | -       |
| 28  | CLA  | R     | 603 | 17   | 1/1/14/20 | 14/31/109/115 | -       |
| 35  | LHG  | r     | 617 | 28   | -         | 23/34/34/53   | -       |
| 35  | LHG  | c     | 519 | -    | -         | 24/34/34/53   | -       |
| 29  | PHO  | D     | 402 | -    | -         | 4/37/103/103  | 0/5/6/6 |
| 30  | BCR  | K     | 101 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | d     | 405 | 4    | 1/1/15/20 | 16/37/115/115 | -       |
| 28  | CLA  | b     | 601 | 42   | 1/1/15/20 | 14/37/115/115 | -       |
| 38  | CHL  | N     | 605 | 7    | 3/3/16/26 | 6/18/116/137  | -       |
| 28  | CLA  | S     | 305 | 42   | 1/1/12/20 | 11/19/97/115  | -       |
| 28  | CLA  | b     | 615 | 2    | 1/1/15/20 | 11/37/115/115 | -       |
| 30  | BCR  | b     | 617 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 30  | BCR  | a     | 410 | -    | -         | 15/29/63/63   | 0/2/2/2 |
| 30  | BCR  | h     | 101 | -    | -         | 13/29/63/63   | 0/2/2/2 |
| 28  | CLA  | Y     | 611 | 35   | 1/1/14/20 | 12/31/109/115 | -       |
| 28  | CLA  | R     | 613 | 17   | 1/1/15/20 | 13/37/115/115 | -       |
| 39  | LUT  | s     | 614 | -    | -         | 9/29/67/67    | 0/2/2/2 |
| 28  | CLA  | s     | 612 | 18   | 1/1/13/20 | 10/25/103/115 | -       |
| 38  | CHL  | y     | 302 | 22   | 3/3/20/26 | 17/39/137/137 | -       |
| 38  | CHL  | r     | 605 | 42   | 3/3/20/26 | 7/39/137/137  | -       |
| 28  | CLA  | b     | 608 | 2    | 1/1/15/20 | 9/37/115/115  | -       |
| 28  | CLA  | B     | 606 | 2    | 1/1/15/20 | 13/37/115/115 | -       |
| 28  | CLA  | n     | 613 | 7    | 1/1/13/20 | 5/25/103/115  | -       |
| 28  | CLA  | c     | 506 | 3    | 1/1/13/20 | 11/27/105/115 | -       |
| 28  | CLA  | G     | 613 | -    | 1/1/15/20 | 20/37/115/115 | -       |
| 29  | PHO  | A     | 407 | -    | -         | 6/37/103/103  | 0/5/6/6 |
| 28  | CLA  | Y     | 610 | 22   | 1/1/14/20 | 13/31/109/115 | -       |
| 41  | XAT  | R     | 615 | -    | -         | 7/31/93/93    | 0/4/4/4 |
| 28  | CLA  | B     | 609 | 2    | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | Y     | 614 | 22   | 1/1/11/20 | 8/17/95/115   | -       |
| 28  | CLA  | b     | 616 | 2    | 1/1/15/20 | 17/37/115/115 | -       |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 38  | CHL  | n     | 606 | 42   | 3/3/16/26 | 6/20/118/137  | -       |
| 31  | SQD  | a     | 414 | -    | -         | 10/49/69/69   | 0/1/1/1 |
| 28  | CLA  | N     | 612 | 7    | 1/1/14/20 | 13/31/109/115 | -       |
| 28  | CLA  | b     | 614 | 2    | 1/1/15/20 | 13/37/115/115 | -       |
| 28  | CLA  | g     | 602 | 7    | 1/1/15/20 | 18/37/115/115 | -       |
| 32  | LMG  | C     | 520 | -    | -         | 13/46/66/70   | 0/1/1/1 |
| 38  | CHL  | s     | 605 | 42   | 3/3/16/26 | 7/15/113/137  | -       |
| 32  | LMG  | b     | 620 | -    | -         | 12/46/66/70   | 0/1/1/1 |
| 30  | BCR  | k     | 101 | -    | -         | 13/29/63/63   | 0/2/2/2 |
| 40  | NEX  | y     | 301 | -    | -         | 13/27/83/83   | 0/3/3/3 |
| 39  | LUT  | g     | 616 | -    | -         | 7/29/67/67    | 0/2/2/2 |
| 35  | LHG  | B     | 625 | -    | -         | 33/50/50/53   | -       |
| 28  | CLA  | Y     | 603 | 22   | 1/1/13/20 | 12/25/103/115 | -       |
| 28  | CLA  | c     | 508 | 3    | 1/1/15/20 | 16/37/115/115 | -       |
| 35  | LHG  | L     | 102 | -    | -         | 30/53/53/53   | -       |
| 38  | CHL  | Y     | 605 | 22   | 3/3/16/26 | 2/18/116/137  | -       |
| 36  | DGD  | C     | 517 | -    | -         | 4/44/84/95    | 0/2/2/2 |
| 38  | CHL  | R     | 606 | 42   | 3/3/16/26 | 4/15/113/137  | -       |
| 35  | LHG  | Y     | 619 | 28   | -         | 33/53/53/53   | -       |
| 28  | CLA  | B     | 605 | 2    | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | C     | 513 | 3    | 1/1/15/20 | 11/37/115/115 | -       |
| 35  | LHG  | B     | 623 | -    | -         | 25/45/45/53   | -       |
| 38  | CHL  | y     | 307 | 42   | 3/3/16/26 | 3/20/118/137  | -       |
| 38  | CHL  | Y     | 601 | 22   | 3/3/20/26 | 11/39/137/137 | -       |
| 30  | BCR  | C     | 516 | -    | -         | 16/29/63/63   | 0/2/2/2 |
| 30  | BCR  | d     | 406 | -    | -         | 10/29/63/63   | 0/2/2/2 |
| 28  | CLA  | b     | 610 | 42   | 1/1/15/20 | 4/37/115/115  | -       |
| 28  | CLA  | G     | 603 | 7    | 1/1/12/20 | 10/23/101/115 | -       |
| 35  | LHG  | g     | 618 | 28   | -         | 29/45/45/53   | -       |
| 28  | CLA  | N     | 610 | 7    | 1/1/15/20 | 20/37/115/115 | -       |
| 38  | CHL  | G     | 605 | 7    | 3/3/16/26 | 8/15/113/137  | -       |
| 39  | LUT  | y     | 315 | -    | -         | 5/29/67/67    | 0/2/2/2 |
| 38  | CHL  | S     | 306 | 42   | 3/3/16/26 | 3/15/113/137  | -       |
| 38  | CHL  | Y     | 608 | 42   | 3/3/20/26 | 12/39/137/137 | -       |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 30  | BCR  | B     | 617 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 39  | LUT  | Y     | 616 | -    | -         | 2/29/67/67    | 0/2/2/2 |
| 39  | LUT  | n     | 615 | -    | -         | 7/29/67/67    | 0/2/2/2 |
| 29  | PHO  | d     | 402 | -    | -         | 2/37/103/103  | 0/5/6/6 |
| 40  | NEX  | y     | 318 | -    | -         | 8/27/83/83    | 0/3/3/3 |
| 28  | CLA  | r     | 602 | 17   | 1/1/14/20 | 12/31/109/115 | -       |
| 28  | CLA  | g     | 604 | 42   | 1/1/12/20 | 6/19/97/115   | -       |
| 30  | BCR  | D     | 405 | -    | -         | 15/29/63/63   | 0/2/2/2 |
| 39  | LUT  | G     | 615 | -    | -         | 10/29/67/67   | 0/2/2/2 |
| 35  | LHG  | S     | 301 | -    | -         | 27/38/38/53   | -       |
| 39  | LUT  | Y     | 615 | -    | -         | 3/29/67/67    | 0/2/2/2 |
| 38  | CHL  | y     | 308 | 42   | 3/3/20/26 | 14/39/137/137 | -       |
| 37  | HEM  | f     | 101 | 6,5  | -         | 4/12/54/54    | -       |
| 28  | CLA  | B     | 612 | 2    | 1/1/15/20 | 15/37/115/115 | -       |
| 32  | LMG  | D     | 408 | -    | -         | 8/41/61/70    | 0/1/1/1 |
| 35  | LHG  | A     | 416 | -    | -         | 31/47/47/53   | -       |
| 28  | CLA  | s     | 610 | 35   | 1/1/13/20 | 11/27/105/115 | -       |
| 28  | CLA  | c     | 505 | 3    | 1/1/13/20 | 14/28/106/115 | -       |
| 28  | CLA  | n     | 614 | 7    | 1/1/11/20 | 5/13/91/115   | -       |
| 36  | DGD  | c     | 517 | -    | -         | 13/43/83/95   | 0/2/2/2 |
| 28  | CLA  | A     | 406 | 42   | 1/1/12/20 | 11/19/97/115  | -       |
| 28  | CLA  | c     | 513 | 3    | 1/1/13/20 | 8/28/106/115  | -       |
| 38  | CHL  | G     | 606 | 42   | 3/3/16/26 | 5/20/118/137  | -       |
| 38  | CHL  | Y     | 606 | 42   | 3/3/16/26 | 2/20/118/137  | -       |
| 28  | CLA  | s     | 602 | 18   | 1/1/14/20 | 15/33/111/115 | -       |
| 38  | CHL  | G     | 608 | 42   | 3/3/20/26 | 7/39/137/137  | -       |
| 28  | CLA  | B     | 611 | 2    | 1/1/15/20 | 16/37/115/115 | -       |
| 38  | CHL  | s     | 601 | 18   | 3/3/16/26 | 5/15/113/137  | -       |
| 28  | CLA  | G     | 610 | 7    | 1/1/14/20 | 13/36/114/115 | -       |
| 28  | CLA  | R     | 609 | 17   | 1/1/15/20 | 12/37/115/115 | -       |
| 28  | CLA  | C     | 509 | 3    | 1/1/15/20 | 15/37/115/115 | -       |
| 40  | NEX  | n     | 617 | 28   | -         | 12/27/83/83   | 0/3/3/3 |
| 38  | CHL  | n     | 605 | 7    | 3/3/16/26 | 8/18/116/137  | -       |
| 32  | LMG  | a     | 413 | -    | -         | 5/35/55/70    | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link  | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|-------|-----------|---------------|---------|
| 28  | CLA  | s     | 604 | 42    | 1/1/12/20 | 8/19/97/115   | -       |
| 28  | CLA  | R     | 610 | 35    | 1/1/11/20 | 12/18/96/115  | -       |
| 28  | CLA  | A     | 405 | 1     | 1/1/15/20 | 13/37/115/115 | -       |
| 35  | LHG  | n     | 618 | 28    | -         | 22/36/36/53   | -       |
| 31  | SQD  | L     | 103 | -     | -         | 8/49/69/69    | 0/1/1/1 |
| 33  | PL9  | D     | 406 | -     | -         | 8/53/73/73    | 0/1/1/1 |
| 38  | CHL  | y     | 306 | 22    | 3/3/16/26 | 2/18/116/137  | -       |
| 28  | CLA  | S     | 309 | 18    | 1/1/11/20 | 8/13/91/115   | -       |
| 28  | CLA  | S     | 310 | 18    | 1/1/13/20 | 12/25/103/115 | -       |
| 28  | CLA  | n     | 610 | 7     | 1/1/15/20 | 22/37/115/115 | -       |
| 28  | CLA  | S     | 304 | 18    | 1/1/11/20 | 8/13/91/115   | -       |
| 38  | CHL  | R     | 605 | 42    | 3/3/16/26 | 2/17/115/137  | -       |
| 30  | BCR  | c     | 515 | -     | -         | 13/29/63/63   | 0/2/2/2 |
| 28  | CLA  | c     | 509 | 3     | 1/1/15/20 | 11/37/115/115 | -       |
| 30  | BCR  | C     | 515 | -     | -         | 14/29/63/63   | 0/2/2/2 |
| 28  | CLA  | S     | 312 | 18    | 1/1/11/20 | 9/18/96/115   | -       |
| 33  | PL9  | a     | 412 | -     | -         | 0/5/18/73     | 0/1/1/1 |
| 28  | CLA  | y     | 305 | 42    | 1/1/12/20 | 10/19/97/115  | -       |
| 40  | NEX  | N     | 617 | 28    | -         | 5/27/83/83    | 0/3/3/3 |
| 28  | CLA  | c     | 504 | 42    | 1/1/14/20 | 15/27/105/115 | -       |
| 28  | CLA  | c     | 510 | 3     | 1/1/15/20 | 16/37/115/115 | -       |
| 35  | LHG  | C     | 521 | -     | -         | 35/53/53/53   | -       |
| 28  | CLA  | r     | 611 | 17    | 1/1/11/20 | 9/18/96/115   | -       |
| 35  | LHG  | G     | 618 | 28    | -         | 31/53/53/53   | -       |
| 30  | BCR  | b     | 619 | -     | -         | 5/29/63/63    | 0/2/2/2 |
| 39  | LUT  | g     | 615 | -     | -         | 5/29/67/67    | 0/2/2/2 |
| 28  | CLA  | N     | 602 | 7     | 1/1/15/20 | 16/37/115/115 | -       |
| 28  | CLA  | n     | 612 | 7     | 1/1/14/20 | 12/31/109/115 | -       |
| 38  | CHL  | N     | 601 | 7     | 3/3/17/26 | 4/23/121/137  | -       |
| 28  | CLA  | N     | 604 | 42,40 | 1/1/12/20 | 9/19/97/115   | -       |
| 28  | CLA  | C     | 507 | 42    | 1/1/15/20 | 15/37/115/115 | -       |
| 38  | CHL  | R     | 607 | 42    | 3/3/19/26 | 11/33/131/137 | -       |
| 28  | CLA  | B     | 613 | 2     | 1/1/15/20 | 13/37/115/115 | -       |
| 35  | LHG  | c     | 520 | -     | -         | 27/44/44/53   | -       |

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| Mol | Type | Chain | Res | Link  | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|-------|-----------|---------------|---------|
| 32  | LMG  | c     | 521 | -     | -         | 13/46/66/70   | 0/1/1/1 |
| 35  | LHG  | W     | 101 | -     | -         | 35/53/53/53   | -       |
| 28  | CLA  | R     | 608 | 17    | 1/1/13/20 | 13/29/107/115 | -       |
| 36  | DGD  | c     | 518 | -     | -         | 13/48/88/95   | 0/2/2/2 |
| 38  | CHL  | g     | 606 | 42    | 3/3/16/26 | 7/20/118/137  | -       |
| 36  | DGD  | C     | 518 | -     | -         | 13/51/91/95   | 0/2/2/2 |
| 38  | CHL  | s     | 607 | -     | 3/3/16/26 | 4/15/113/137  | -       |
| 28  | CLA  | s     | 609 | 18    | 1/1/13/20 | 11/25/103/115 | -       |
| 28  | CLA  | R     | 602 | 17    | 1/1/14/20 | 11/31/109/115 | -       |
| 39  | LUT  | n     | 616 | -     | -         | 4/29/67/67    | 0/2/2/2 |
| 28  | CLA  | y     | 312 | 22    | 1/1/14/20 | 14/31/109/115 | -       |
| 35  | LHG  | b     | 624 | -     | -         | 31/50/50/53   | -       |
| 28  | CLA  | a     | 407 | 42    | 1/1/12/20 | 5/19/97/115   | -       |
| 36  | DGD  | B     | 626 | -     | -         | 9/51/91/95    | 0/2/2/2 |
| 28  | CLA  | C     | 503 | -     | 1/1/15/20 | 18/37/115/115 | -       |
| 28  | CLA  | b     | 611 | 2     | 1/1/15/20 | 17/37/115/115 | -       |
| 28  | CLA  | C     | 508 | 3     | 1/1/15/20 | 12/37/115/115 | -       |
| 28  | CLA  | G     | 614 | 7     | 1/1/11/20 | 7/17/95/115   | -       |
| 32  | LMG  | b     | 623 | -     | -         | 13/45/65/70   | 0/1/1/1 |
| 28  | CLA  | y     | 304 | 22    | 1/1/15/20 | 11/37/115/115 | -       |
| 28  | CLA  | B     | 603 | 2     | 1/1/15/20 | 13/37/115/115 | -       |
| 36  | DGD  | A     | 417 | -     | -         | 14/48/88/95   | 0/2/2/2 |
| 28  | CLA  | g     | 611 | 35    | 1/1/14/20 | 14/31/109/115 | -       |
| 35  | LHG  | a     | 415 | -     | -         | 30/47/47/53   | -       |
| 30  | BCR  | H     | 101 | -     | -         | 13/29/63/63   | 0/2/2/2 |
| 38  | CHL  | N     | 609 | 7     | 3/3/20/26 | 14/33/131/137 | -       |
| 32  | LMG  | B     | 624 | -     | -         | 14/26/46/70   | 0/1/1/1 |
| 28  | CLA  | y     | 303 | 22    | 1/1/15/20 | 13/37/115/115 | -       |
| 28  | CLA  | g     | 610 | 7     | 1/1/13/20 | 11/29/107/115 | -       |
| 35  | LHG  | y     | 319 | 28    | -         | 34/53/53/53   | -       |
| 28  | CLA  | Y     | 604 | 42,40 | 1/1/12/20 | 8/19/97/115   | -       |
| 28  | CLA  | a     | 406 | 1     | 1/1/15/20 | 13/37/115/115 | -       |
| 41  | XAT  | y     | 317 | -     | -         | 2/31/93/93    | 0/4/4/4 |
| 38  | CHL  | N     | 608 | 42    | 3/3/20/26 | 11/39/137/137 | -       |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 33  | PL9  | d     | 407 | -    | -         | 7/53/73/73    | 0/1/1/1 |
| 28  | CLA  | b     | 607 | 42   | 1/1/15/20 | 20/37/115/115 | -       |
| 39  | LUT  | N     | 616 | -    | -         | 4/29/67/67    | 0/2/2/2 |
| 40  | NEX  | G     | 617 | 28   | -         | 8/27/83/83    | 0/3/3/3 |
| 38  | CHL  | N     | 607 | 42   | 3/3/20/26 | 10/39/137/137 | -       |
| 39  | LUT  | G     | 616 | -    | -         | 5/29/67/67    | 0/2/2/2 |
| 35  | LHG  | l     | 101 | -    | -         | 25/53/53/53   | -       |
| 28  | CLA  | n     | 611 | 35   | 1/1/14/20 | 16/31/109/115 | -       |
| 28  | CLA  | S     | 313 | 18   | 1/1/13/20 | 9/25/103/115  | -       |
| 28  | CLA  | y     | 310 | 22   | 1/1/14/20 | 14/31/109/115 | -       |
| 28  | CLA  | g     | 613 | 7    | 1/1/12/20 | 10/22/100/115 | -       |
| 28  | CLA  | S     | 314 | 18   | 1/1/11/20 | 4/18/96/115   | -       |
| 38  | CHL  | g     | 609 | -    | 3/3/19/26 | 15/33/131/137 | -       |
| 35  | LHG  | S     | 317 | 28   | -         | 29/47/47/53   | -       |
| 36  | DGD  | b     | 625 | -    | -         | 6/51/91/95    | 0/2/2/2 |
| 30  | BCR  | T     | 101 | -    | -         | 9/29/63/63    | 0/2/2/2 |
| 39  | LUT  | y     | 316 | -    | -         | 7/29/67/67    | 0/2/2/2 |
| 38  | CHL  | n     | 608 | 42   | 3/3/20/26 | 15/39/137/137 | -       |
| 28  | CLA  | c     | 503 | 3    | 1/1/15/20 | 18/37/115/115 | -       |
| 28  | CLA  | g     | 614 | 7    | 1/1/11/20 | 6/13/91/115   | -       |
| 28  | CLA  | r     | 608 | 17   | 1/1/13/20 | 14/29/107/115 | -       |
| 28  | CLA  | N     | 613 | 7    | 1/1/12/20 | 8/23/101/115  | -       |
| 35  | LHG  | R     | 616 | 28   | -         | 18/29/29/53   | -       |
| 28  | CLA  | b     | 605 | 2    | 1/1/15/20 | 10/37/115/115 | -       |
| 28  | CLA  | c     | 501 | 3    | 1/1/15/20 | 12/37/115/115 | -       |
| 28  | CLA  | G     | 602 | 7    | 1/1/15/20 | 16/37/115/115 | -       |
| 28  | CLA  | s     | 603 | 18   | 1/1/11/20 | 7/13/91/115   | -       |
| 38  | CHL  | G     | 601 | 7    | 3/3/20/26 | 11/39/137/137 | -       |
| 31  | SQD  | A     | 414 | -    | -         | 12/49/69/69   | 0/1/1/1 |
| 28  | CLA  | N     | 611 | 35   | 1/1/14/20 | 17/31/109/115 | -       |
| 28  | CLA  | S     | 303 | 18   | 1/1/14/20 | 16/33/111/115 | -       |
| 28  | CLA  | Y     | 602 | 22   | 1/1/15/20 | 12/37/115/115 | -       |
| 28  | CLA  | G     | 604 | 40   | 1/1/12/20 | 11/19/97/115  | -       |
| 32  | LMG  | k     | 102 | -    | -         | 9/46/66/70    | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|-----|------|-----------|---------------|---------|
| 28  | CLA  | R     | 601 | 17   | 1/1/11/20 | 8/13/91/115   | -       |
| 28  | CLA  | r     | 609 | 17   | 1/1/15/20 | 15/37/115/115 | -       |
| 29  | PHO  | a     | 408 | -    | -         | 5/37/103/103  | 0/5/6/6 |
| 28  | CLA  | B     | 601 | 42   | 1/1/15/20 | 12/37/115/115 | -       |
| 30  | BCR  | A     | 409 | -    | -         | 14/29/63/63   | 0/2/2/2 |
| 40  | NEX  | r     | 616 | 28   | -         | 6/27/83/83    | 0/3/3/3 |

The worst 5 of 2591 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 36  | c     | 518 | DGD  | C6B-C5B | 34.31 | 3.44        | 1.51     |
| 39  | S     | 316 | LUT  | C24-C25 | 23.38 | 1.62        | 1.33     |
| 39  | n     | 615 | LUT  | C24-C25 | 23.19 | 1.62        | 1.33     |
| 39  | y     | 315 | LUT  | C24-C25 | 23.19 | 1.62        | 1.33     |
| 39  | g     | 615 | LUT  | C24-C25 | 23.18 | 1.62        | 1.33     |

The worst 5 of 4266 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|--------|-------------|----------|
| 39  | r     | 614 | LUT  | C15-C14-C13 | -13.17 | 108.51      | 127.31   |
| 28  | r     | 611 | CLA  | C4A-NA-C1A  | 10.37  | 111.37      | 106.71   |
| 30  | C     | 514 | BCR  | C16-C17-C18 | -9.95  | 113.12      | 127.31   |
| 30  | C     | 514 | BCR  | C15-C14-C13 | -9.81  | 113.30      | 127.31   |
| 39  | G     | 615 | LUT  | C31-C30-C29 | -9.61  | 113.59      | 127.31   |

5 of 306 chirality outliers are listed below:

| Mol | Chain | Res | Type | Atom |
|-----|-------|-----|------|------|
| 28  | A     | 405 | CLA  | ND   |
| 28  | A     | 406 | CLA  | ND   |
| 28  | A     | 408 | CLA  | ND   |
| 28  | B     | 601 | CLA  | ND   |
| 28  | B     | 602 | CLA  | ND   |

5 of 4051 torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 28  | A     | 405 | CLA  | CBD-CGD-O2D-CED |
| 28  | A     | 405 | CLA  | C6-C7-C8-C9     |
| 28  | A     | 406 | CLA  | C1A-C2A-CAA-CBA |

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| Mol | Chain | Res | Type | Atoms          |
|-----|-------|-----|------|----------------|
| 28  | A     | 408 | CLA  | O2A-C1-C2-C3   |
| 28  | B     | 601 | CLA  | O1A-CGA-O2A-C1 |

There are no ring outliers.

327 monomers are involved in 3043 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 28  | R     | 604 | CLA  | 11      | 0            |
| 35  | b     | 621 | LHG  | 3       | 0            |
| 30  | b     | 618 | BCR  | 15      | 0            |
| 38  | S     | 307 | CHL  | 14      | 0            |
| 28  | R     | 611 | CLA  | 5       | 0            |
| 38  | n     | 601 | CHL  | 11      | 0            |
| 28  | s     | 613 | CLA  | 5       | 0            |
| 40  | Y     | 618 | NEX  | 9       | 0            |
| 32  | A     | 413 | LMG  | 11      | 0            |
| 28  | n     | 604 | CLA  | 6       | 0            |
| 39  | S     | 315 | LUT  | 24      | 0            |
| 36  | C     | 519 | DGD  | 20      | 0            |
| 28  | N     | 603 | CLA  | 10      | 0            |
| 28  | s     | 608 | CLA  | 8       | 0            |
| 28  | C     | 506 | CLA  | 23      | 0            |
| 36  | c     | 516 | DGD  | 12      | 0            |
| 28  | r     | 613 | CLA  | 19      | 0            |
| 28  | D     | 403 | CLA  | 7       | 0            |
| 38  | s     | 606 | CHL  | 10      | 0            |
| 28  | A     | 408 | CLA  | 16      | 0            |
| 35  | d     | 408 | LHG  | 12      | 0            |
| 28  | Y     | 613 | CLA  | 13      | 0            |
| 38  | r     | 607 | CHL  | 13      | 0            |
| 35  | w     | 102 | LHG  | 8       | 0            |
| 28  | C     | 504 | CLA  | 10      | 0            |
| 28  | c     | 502 | CLA  | 6       | 0            |
| 28  | y     | 314 | CLA  | 6       | 0            |
| 30  | B     | 619 | BCR  | 21      | 0            |
| 28  | B     | 607 | CLA  | 8       | 0            |
| 28  | b     | 606 | CLA  | 17      | 0            |
| 28  | b     | 609 | CLA  | 12      | 0            |
| 39  | r     | 614 | LUT  | 15      | 0            |
| 30  | C     | 514 | BCR  | 18      | 0            |
| 28  | B     | 615 | CLA  | 12      | 0            |
| 28  | G     | 612 | CLA  | 19      | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 28  | Y     | 612 | CLA  | 13      | 0            |
| 37  | E     | 101 | HEM  | 7       | 0            |
| 28  | g     | 603 | CLA  | 9       | 0            |
| 28  | c     | 511 | CLA  | 17      | 0            |
| 28  | r     | 604 | CLA  | 11      | 0            |
| 38  | S     | 308 | CHL  | 9       | 0            |
| 32  | C     | 522 | LMG  | 7       | 0            |
| 35  | s     | 617 | LHG  | 16      | 0            |
| 28  | B     | 610 | CLA  | 5       | 0            |
| 28  | r     | 603 | CLA  | 18      | 0            |
| 28  | y     | 313 | CLA  | 10      | 0            |
| 38  | n     | 609 | CHL  | 21      | 0            |
| 28  | R     | 612 | CLA  | 12      | 0            |
| 28  | B     | 616 | CLA  | 16      | 0            |
| 38  | G     | 607 | CHL  | 11      | 0            |
| 38  | Y     | 607 | CHL  | 31      | 0            |
| 28  | a     | 409 | CLA  | 11      | 0            |
| 28  | n     | 602 | CLA  | 15      | 0            |
| 40  | s     | 616 | NEX  | 7       | 0            |
| 28  | d     | 404 | CLA  | 9       | 0            |
| 38  | N     | 606 | CHL  | 11      | 0            |
| 38  | g     | 608 | CHL  | 14      | 0            |
| 28  | c     | 507 | CLA  | 15      | 0            |
| 32  | A     | 411 | LMG  | 20      | 0            |
| 28  | C     | 511 | CLA  | 16      | 0            |
| 28  | G     | 611 | CLA  | 13      | 0            |
| 30  | t     | 101 | BCR  | 10      | 0            |
| 31  | a     | 411 | SQD  | 20      | 0            |
| 41  | Y     | 617 | XAT  | 17      | 0            |
| 28  | d     | 401 | CLA  | 16      | 0            |
| 30  | B     | 618 | BCR  | 14      | 0            |
| 28  | C     | 502 | CLA  | 11      | 0            |
| 28  | b     | 602 | CLA  | 8       | 0            |
| 38  | y     | 309 | CHL  | 24      | 0            |
| 38  | n     | 607 | CHL  | 21      | 0            |
| 35  | D     | 407 | LHG  | 13      | 0            |
| 32  | B     | 621 | LMG  | 18      | 0            |
| 38  | g     | 605 | CHL  | 11      | 0            |
| 31  | A     | 410 | SQD  | 9       | 0            |
| 28  | b     | 604 | CLA  | 15      | 0            |
| 28  | B     | 602 | CLA  | 12      | 0            |
| 38  | r     | 606 | CHL  | 11      | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 38  | g     | 601 | CHL  | 23      | 0            |
| 28  | b     | 603 | CLA  | 14      | 0            |
| 28  | r     | 612 | CLA  | 11      | 0            |
| 30  | c     | 514 | BCR  | 19      | 0            |
| 28  | C     | 512 | CLA  | 17      | 0            |
| 28  | r     | 610 | CLA  | 8       | 0            |
| 41  | r     | 615 | XAT  | 9       | 0            |
| 28  | B     | 604 | CLA  | 7       | 0            |
| 28  | r     | 601 | CLA  | 9       | 0            |
| 39  | s     | 615 | LUT  | 17      | 0            |
| 35  | B     | 622 | LHG  | 8       | 0            |
| 28  | s     | 611 | CLA  | 8       | 0            |
| 28  | B     | 608 | CLA  | 11      | 0            |
| 28  | D     | 401 | CLA  | 7       | 0            |
| 32  | d     | 409 | LMG  | 20      | 0            |
| 35  | N     | 618 | LHG  | 8       | 0            |
| 38  | S     | 302 | CHL  | 15      | 0            |
| 28  | B     | 614 | CLA  | 15      | 0            |
| 32  | w     | 101 | LMG  | 13      | 0            |
| 28  | b     | 613 | CLA  | 12      | 0            |
| 35  | b     | 622 | LHG  | 10      | 0            |
| 28  | C     | 510 | CLA  | 16      | 0            |
| 38  | Y     | 609 | CHL  | 15      | 0            |
| 38  | g     | 607 | CHL  | 5       | 0            |
| 28  | C     | 505 | CLA  | 15      | 0            |
| 31  | B     | 620 | SQD  | 12      | 0            |
| 39  | S     | 316 | LUT  | 19      | 0            |
| 28  | b     | 612 | CLA  | 15      | 0            |
| 39  | R     | 614 | LUT  | 14      | 0            |
| 28  | n     | 603 | CLA  | 23      | 0            |
| 40  | g     | 617 | NEX  | 9       | 0            |
| 30  | i     | 101 | BCR  | 8       | 0            |
| 28  | C     | 501 | CLA  | 13      | 0            |
| 28  | S     | 311 | CLA  | 16      | 0            |
| 28  | g     | 612 | CLA  | 10      | 0            |
| 31  | L     | 101 | SQD  | 11      | 0            |
| 28  | y     | 311 | CLA  | 12      | 0            |
| 28  | c     | 512 | CLA  | 10      | 0            |
| 36  | a     | 401 | DGD  | 17      | 0            |
| 38  | G     | 609 | CHL  | 15      | 0            |
| 28  | D     | 404 | CLA  | 9       | 0            |
| 31  | M     | 101 | SQD  | 5       | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 39  | N     | 615 | LUT  | 10      | 0            |
| 38  | g     | 619 | CHL  | 20      | 0            |
| 28  | N     | 614 | CLA  | 6       | 0            |
| 28  | R     | 603 | CLA  | 9       | 0            |
| 35  | r     | 617 | LHG  | 5       | 0            |
| 35  | c     | 519 | LHG  | 5       | 0            |
| 29  | D     | 402 | PHO  | 9       | 0            |
| 30  | K     | 101 | BCR  | 13      | 0            |
| 28  | d     | 405 | CLA  | 9       | 0            |
| 28  | b     | 601 | CLA  | 16      | 0            |
| 38  | N     | 605 | CHL  | 10      | 0            |
| 28  | S     | 305 | CLA  | 8       | 0            |
| 28  | b     | 615 | CLA  | 17      | 0            |
| 30  | b     | 617 | BCR  | 9       | 0            |
| 30  | a     | 410 | BCR  | 22      | 0            |
| 30  | h     | 101 | BCR  | 19      | 0            |
| 28  | Y     | 611 | CLA  | 12      | 0            |
| 28  | R     | 613 | CLA  | 15      | 0            |
| 39  | s     | 614 | LUT  | 16      | 0            |
| 28  | s     | 612 | CLA  | 10      | 0            |
| 38  | y     | 302 | CHL  | 13      | 0            |
| 38  | r     | 605 | CHL  | 17      | 0            |
| 28  | b     | 608 | CLA  | 18      | 0            |
| 28  | B     | 606 | CLA  | 16      | 0            |
| 28  | n     | 613 | CLA  | 12      | 0            |
| 28  | c     | 506 | CLA  | 12      | 0            |
| 28  | G     | 613 | CLA  | 23      | 0            |
| 29  | A     | 407 | PHO  | 9       | 0            |
| 28  | Y     | 610 | CLA  | 6       | 0            |
| 41  | R     | 615 | XAT  | 13      | 0            |
| 28  | B     | 609 | CLA  | 13      | 0            |
| 28  | Y     | 614 | CLA  | 7       | 0            |
| 28  | b     | 616 | CLA  | 16      | 0            |
| 38  | n     | 606 | CHL  | 12      | 0            |
| 31  | a     | 414 | SQD  | 10      | 0            |
| 28  | N     | 612 | CLA  | 17      | 0            |
| 28  | b     | 614 | CLA  | 12      | 0            |
| 28  | g     | 602 | CLA  | 18      | 0            |
| 32  | C     | 520 | LMG  | 17      | 0            |
| 32  | b     | 620 | LMG  | 14      | 0            |
| 38  | s     | 605 | CHL  | 9       | 0            |
| 30  | k     | 101 | BCR  | 16      | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 40  | y     | 301 | NEX  | 4       | 0            |
| 39  | g     | 616 | LUT  | 18      | 0            |
| 35  | B     | 625 | LHG  | 8       | 0            |
| 28  | Y     | 603 | CLA  | 16      | 0            |
| 28  | c     | 508 | CLA  | 11      | 0            |
| 35  | L     | 102 | LHG  | 6       | 0            |
| 38  | Y     | 605 | CHL  | 11      | 0            |
| 36  | C     | 517 | DGD  | 7       | 0            |
| 38  | R     | 606 | CHL  | 12      | 0            |
| 35  | Y     | 619 | LHG  | 5       | 0            |
| 28  | B     | 605 | CLA  | 19      | 0            |
| 28  | C     | 513 | CLA  | 13      | 0            |
| 35  | B     | 623 | LHG  | 14      | 0            |
| 38  | y     | 307 | CHL  | 10      | 0            |
| 38  | Y     | 601 | CHL  | 16      | 0            |
| 30  | C     | 516 | BCR  | 22      | 0            |
| 30  | d     | 406 | BCR  | 20      | 0            |
| 28  | b     | 610 | CLA  | 13      | 0            |
| 28  | G     | 603 | CLA  | 10      | 0            |
| 35  | g     | 618 | LHG  | 9       | 0            |
| 28  | N     | 610 | CLA  | 15      | 0            |
| 38  | G     | 605 | CHL  | 10      | 0            |
| 39  | y     | 315 | LUT  | 11      | 0            |
| 38  | S     | 306 | CHL  | 11      | 0            |
| 38  | Y     | 608 | CHL  | 12      | 0            |
| 30  | B     | 617 | BCR  | 16      | 0            |
| 39  | Y     | 616 | LUT  | 7       | 0            |
| 39  | n     | 615 | LUT  | 14      | 0            |
| 29  | d     | 402 | PHO  | 12      | 0            |
| 40  | y     | 318 | NEX  | 6       | 0            |
| 28  | r     | 602 | CLA  | 7       | 0            |
| 28  | g     | 604 | CLA  | 14      | 0            |
| 30  | D     | 405 | BCR  | 11      | 0            |
| 39  | G     | 615 | LUT  | 28      | 0            |
| 35  | S     | 301 | LHG  | 5       | 0            |
| 39  | Y     | 615 | LUT  | 8       | 0            |
| 38  | y     | 308 | CHL  | 13      | 0            |
| 37  | f     | 101 | HEM  | 6       | 0            |
| 28  | B     | 612 | CLA  | 10      | 0            |
| 32  | D     | 408 | LMG  | 15      | 0            |
| 35  | A     | 416 | LHG  | 4       | 0            |
| 28  | s     | 610 | CLA  | 7       | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 28  | c     | 505 | CLA  | 10      | 0            |
| 28  | n     | 614 | CLA  | 3       | 0            |
| 36  | c     | 517 | DGD  | 18      | 0            |
| 28  | A     | 406 | CLA  | 9       | 0            |
| 28  | c     | 513 | CLA  | 12      | 0            |
| 38  | G     | 606 | CHL  | 11      | 0            |
| 38  | Y     | 606 | CHL  | 10      | 0            |
| 28  | s     | 602 | CLA  | 16      | 0            |
| 38  | G     | 608 | CHL  | 19      | 0            |
| 28  | B     | 611 | CLA  | 15      | 0            |
| 38  | s     | 601 | CHL  | 14      | 0            |
| 28  | G     | 610 | CLA  | 30      | 0            |
| 28  | R     | 609 | CLA  | 14      | 0            |
| 28  | C     | 509 | CLA  | 13      | 0            |
| 40  | n     | 617 | NEX  | 8       | 0            |
| 38  | n     | 605 | CHL  | 12      | 0            |
| 32  | a     | 413 | LMG  | 14      | 0            |
| 28  | s     | 604 | CLA  | 11      | 0            |
| 28  | R     | 610 | CLA  | 9       | 0            |
| 28  | A     | 405 | CLA  | 6       | 0            |
| 35  | n     | 618 | LHG  | 6       | 0            |
| 31  | L     | 103 | SQD  | 10      | 0            |
| 33  | D     | 406 | PL9  | 8       | 0            |
| 38  | y     | 306 | CHL  | 8       | 0            |
| 28  | S     | 309 | CLA  | 13      | 0            |
| 28  | S     | 310 | CLA  | 26      | 0            |
| 28  | n     | 610 | CLA  | 24      | 0            |
| 28  | S     | 304 | CLA  | 11      | 0            |
| 38  | R     | 605 | CHL  | 11      | 0            |
| 30  | c     | 515 | BCR  | 11      | 0            |
| 28  | c     | 509 | CLA  | 7       | 0            |
| 30  | C     | 515 | BCR  | 10      | 0            |
| 28  | S     | 312 | CLA  | 12      | 0            |
| 28  | y     | 305 | CLA  | 6       | 0            |
| 40  | N     | 617 | NEX  | 9       | 0            |
| 28  | c     | 504 | CLA  | 16      | 0            |
| 28  | c     | 510 | CLA  | 11      | 0            |
| 35  | C     | 521 | LHG  | 11      | 0            |
| 28  | r     | 611 | CLA  | 5       | 0            |
| 35  | G     | 618 | LHG  | 7       | 0            |
| 30  | b     | 619 | BCR  | 10      | 0            |
| 39  | g     | 615 | LUT  | 18      | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 28  | N     | 602 | CLA  | 21      | 0            |
| 28  | n     | 612 | CLA  | 15      | 0            |
| 38  | N     | 601 | CHL  | 13      | 0            |
| 28  | N     | 604 | CLA  | 10      | 0            |
| 28  | C     | 507 | CLA  | 21      | 0            |
| 38  | R     | 607 | CHL  | 4       | 0            |
| 28  | B     | 613 | CLA  | 16      | 0            |
| 35  | c     | 520 | LHG  | 9       | 0            |
| 32  | c     | 521 | LMG  | 15      | 0            |
| 35  | W     | 101 | LHG  | 20      | 0            |
| 28  | R     | 608 | CLA  | 20      | 0            |
| 36  | c     | 518 | DGD  | 15      | 0            |
| 38  | g     | 606 | CHL  | 18      | 0            |
| 36  | C     | 518 | DGD  | 28      | 0            |
| 38  | s     | 607 | CHL  | 5       | 0            |
| 28  | s     | 609 | CLA  | 18      | 0            |
| 28  | R     | 602 | CLA  | 9       | 0            |
| 39  | n     | 616 | LUT  | 7       | 0            |
| 28  | y     | 312 | CLA  | 16      | 0            |
| 35  | b     | 624 | LHG  | 10      | 0            |
| 28  | a     | 407 | CLA  | 8       | 0            |
| 36  | B     | 626 | DGD  | 11      | 0            |
| 28  | C     | 503 | CLA  | 9       | 0            |
| 28  | b     | 611 | CLA  | 15      | 0            |
| 28  | C     | 508 | CLA  | 18      | 0            |
| 28  | G     | 614 | CLA  | 9       | 0            |
| 32  | b     | 623 | LMG  | 8       | 0            |
| 28  | y     | 304 | CLA  | 28      | 0            |
| 28  | B     | 603 | CLA  | 21      | 0            |
| 36  | A     | 417 | DGD  | 10      | 0            |
| 28  | g     | 611 | CLA  | 5       | 0            |
| 35  | a     | 415 | LHG  | 10      | 0            |
| 30  | H     | 101 | BCR  | 14      | 0            |
| 38  | N     | 609 | CHL  | 19      | 0            |
| 32  | B     | 624 | LMG  | 5       | 0            |
| 28  | y     | 303 | CLA  | 7       | 0            |
| 28  | g     | 610 | CLA  | 15      | 0            |
| 35  | y     | 319 | LHG  | 6       | 0            |
| 28  | Y     | 604 | CLA  | 14      | 0            |
| 28  | a     | 406 | CLA  | 13      | 0            |
| 41  | y     | 317 | XAT  | 11      | 0            |
| 38  | N     | 608 | CHL  | 16      | 0            |

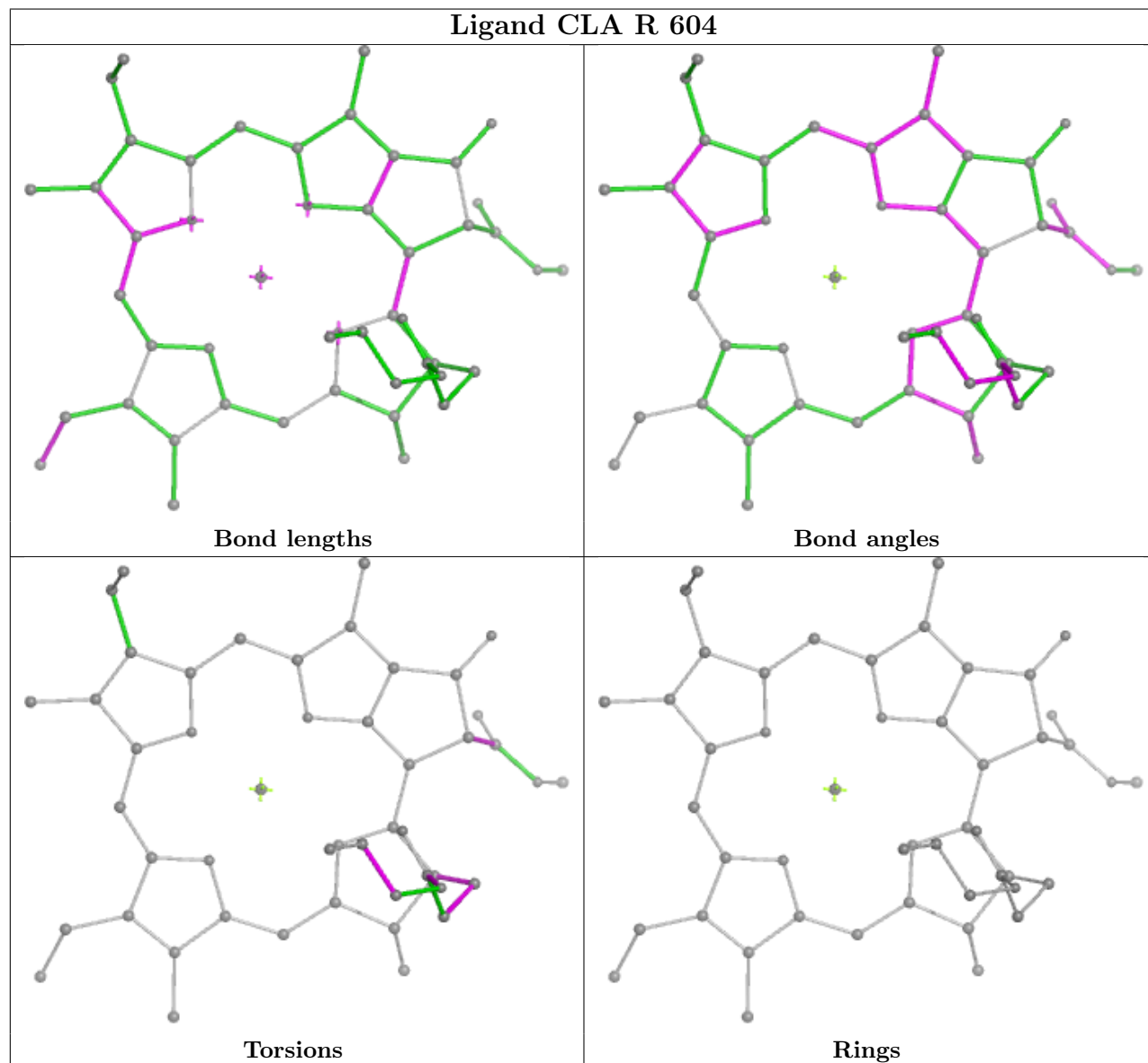
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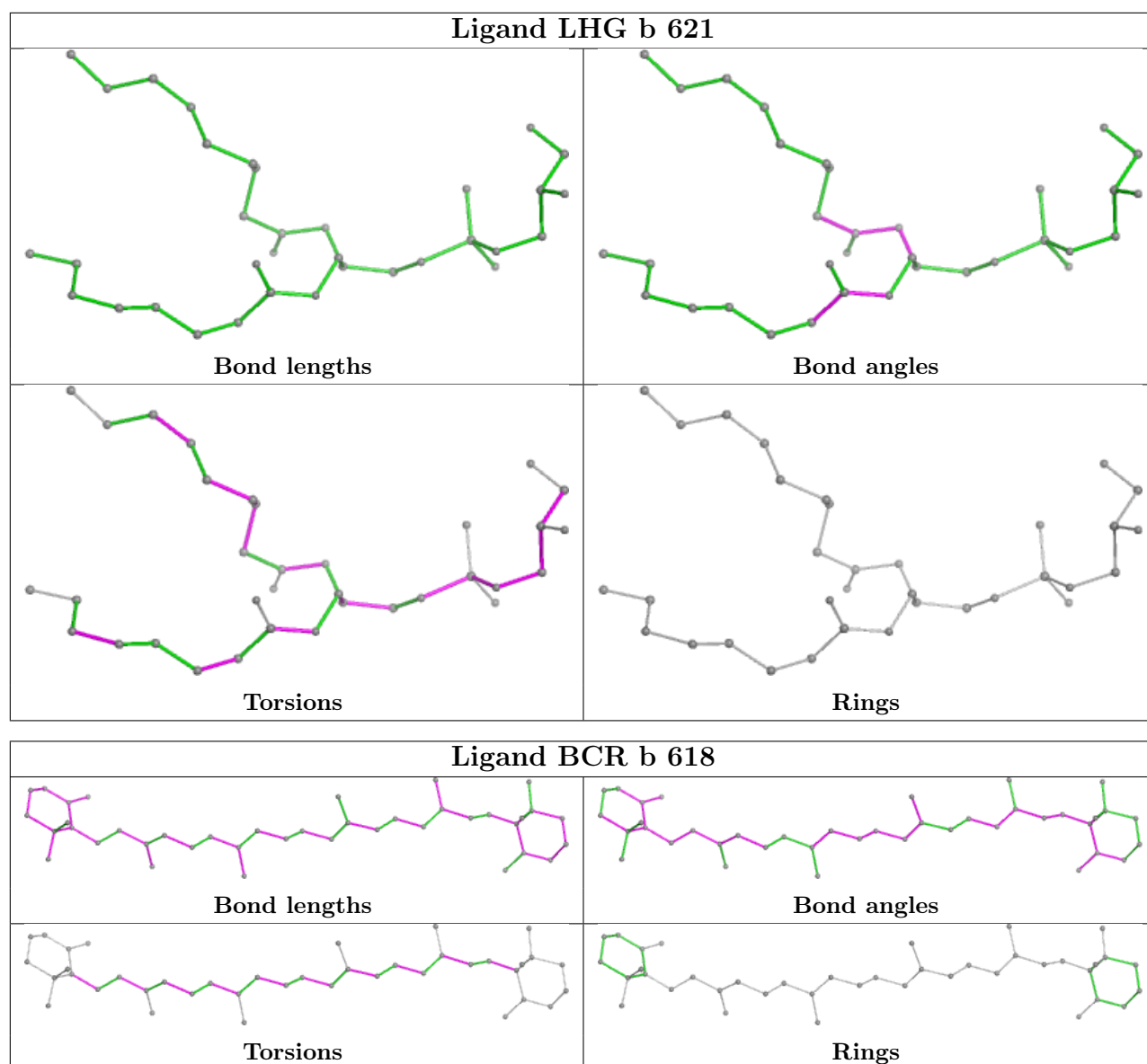
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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 33  | d     | 407 | PL9  | 6       | 0            |
| 28  | b     | 607 | CLA  | 8       | 0            |
| 39  | N     | 616 | LUT  | 17      | 0            |
| 40  | G     | 617 | NEX  | 11      | 0            |
| 38  | N     | 607 | CHL  | 13      | 0            |
| 39  | G     | 616 | LUT  | 11      | 0            |
| 35  | l     | 101 | LHG  | 5       | 0            |
| 28  | n     | 611 | CLA  | 13      | 0            |
| 28  | S     | 313 | CLA  | 9       | 0            |
| 28  | y     | 310 | CLA  | 11      | 0            |
| 28  | g     | 613 | CLA  | 8       | 0            |
| 28  | S     | 314 | CLA  | 6       | 0            |
| 38  | g     | 609 | CHL  | 14      | 0            |
| 35  | S     | 317 | LHG  | 21      | 0            |
| 36  | b     | 625 | DGD  | 11      | 0            |
| 30  | T     | 101 | BCR  | 13      | 0            |
| 39  | y     | 316 | LUT  | 6       | 0            |
| 38  | n     | 608 | CHL  | 13      | 0            |
| 28  | c     | 503 | CLA  | 9       | 0            |
| 28  | g     | 614 | CLA  | 7       | 0            |
| 28  | r     | 608 | CLA  | 19      | 0            |
| 28  | N     | 613 | CLA  | 7       | 0            |
| 35  | R     | 616 | LHG  | 5       | 0            |
| 28  | b     | 605 | CLA  | 14      | 0            |
| 28  | c     | 501 | CLA  | 15      | 0            |
| 28  | G     | 602 | CLA  | 10      | 0            |
| 28  | s     | 603 | CLA  | 7       | 0            |
| 38  | G     | 601 | CHL  | 12      | 0            |
| 31  | A     | 414 | SQD  | 14      | 0            |
| 28  | N     | 611 | CLA  | 13      | 0            |
| 28  | S     | 303 | CLA  | 23      | 0            |
| 28  | Y     | 602 | CLA  | 11      | 0            |
| 28  | G     | 604 | CLA  | 7       | 0            |
| 32  | k     | 102 | LMG  | 15      | 0            |
| 28  | R     | 601 | CLA  | 12      | 0            |
| 28  | r     | 609 | CLA  | 19      | 0            |
| 29  | a     | 408 | PHO  | 12      | 0            |
| 28  | B     | 601 | CLA  | 14      | 0            |
| 30  | A     | 409 | BCR  | 12      | 0            |
| 40  | r     | 616 | NEX  | 13      | 0            |

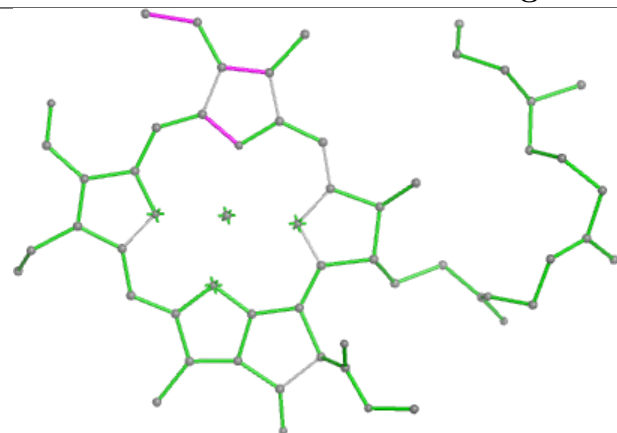
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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

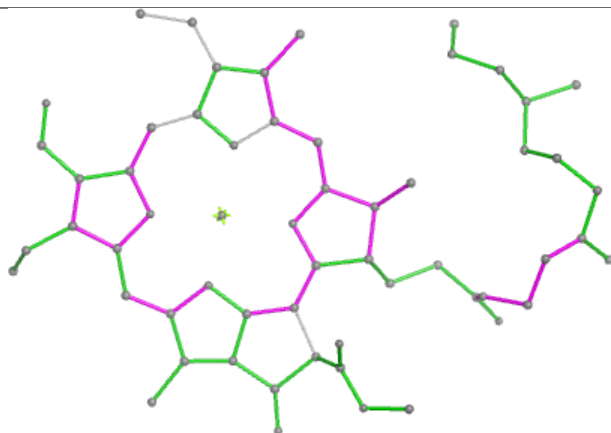




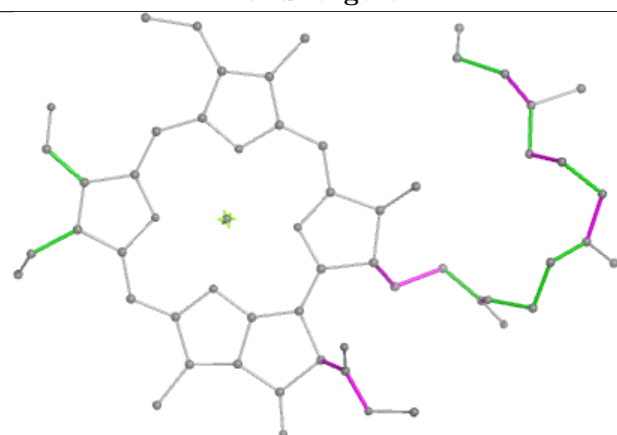
## Ligand CHL S 307



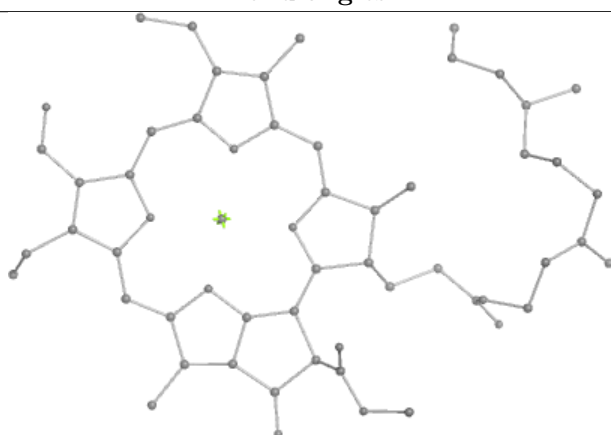
Bond lengths



Bond angles

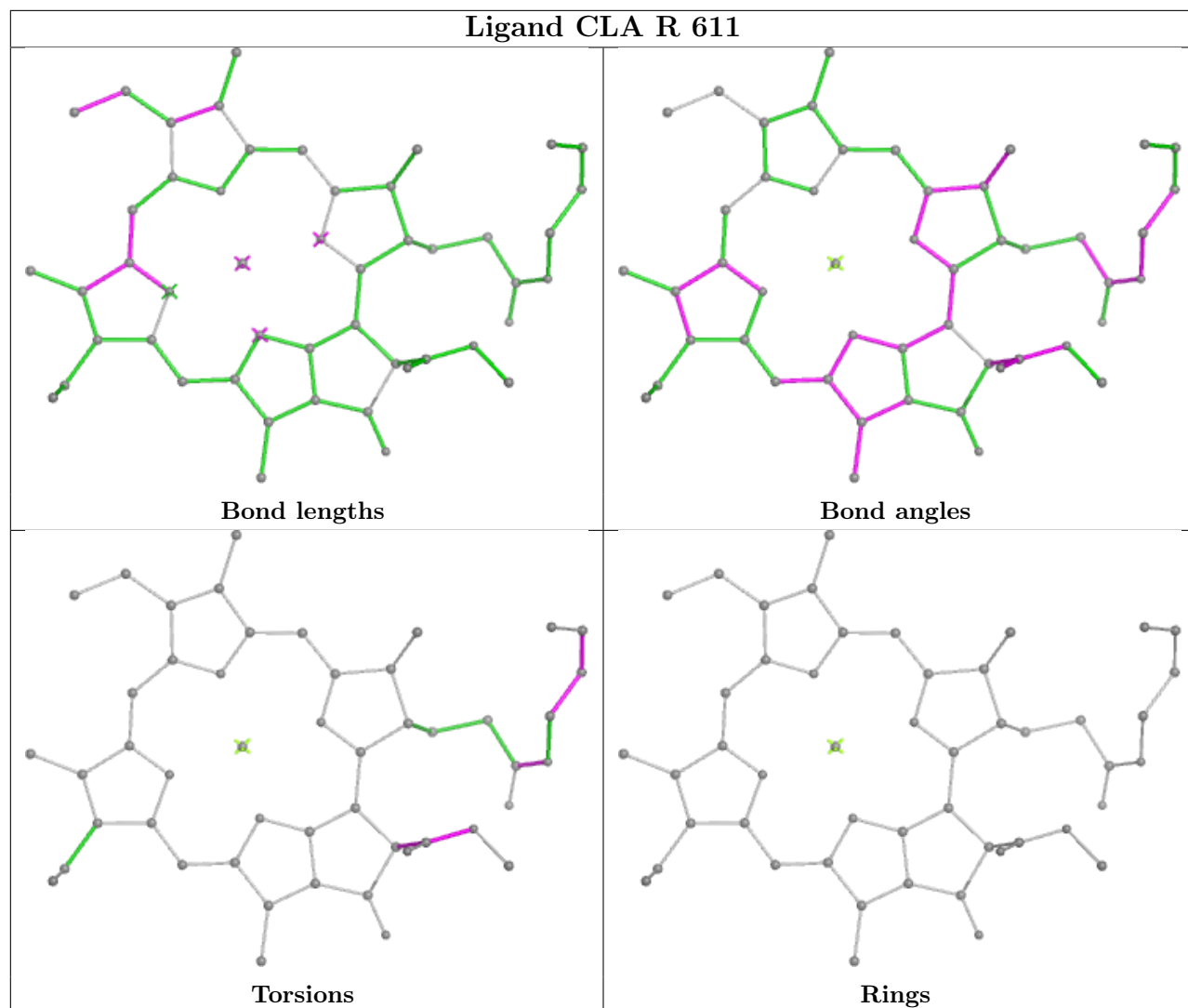


Torsions

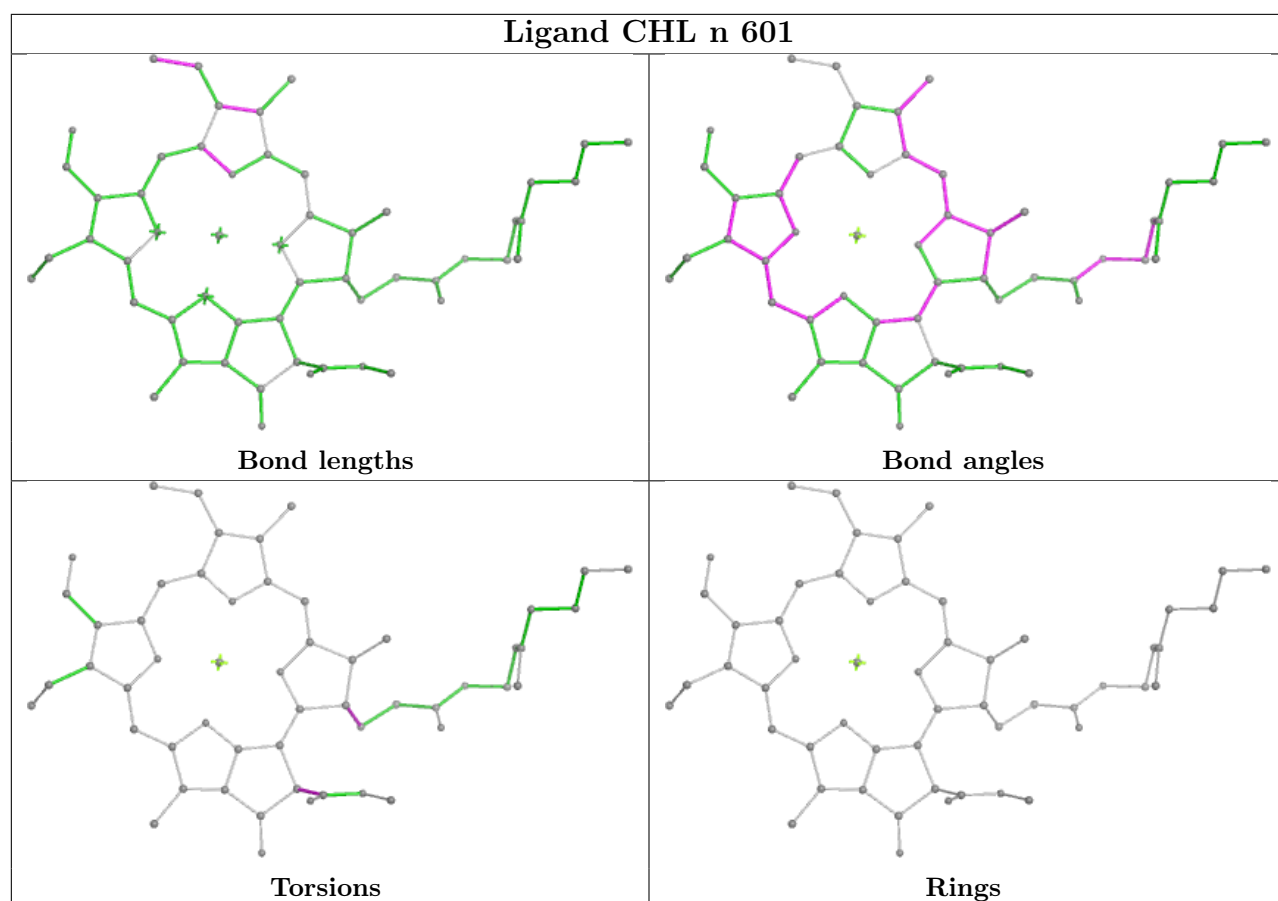


Rings

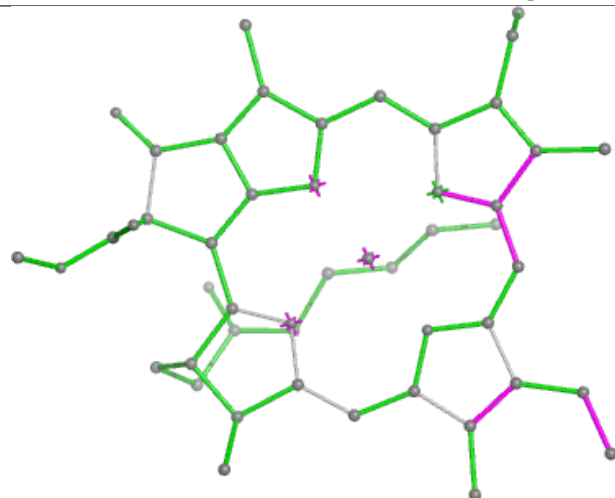
## Ligand CLA R 611



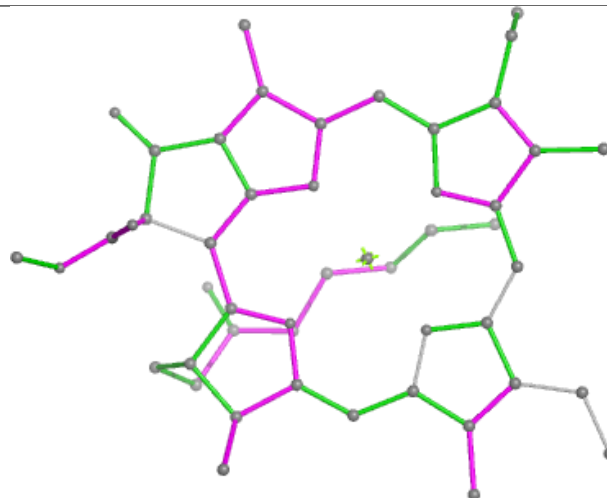




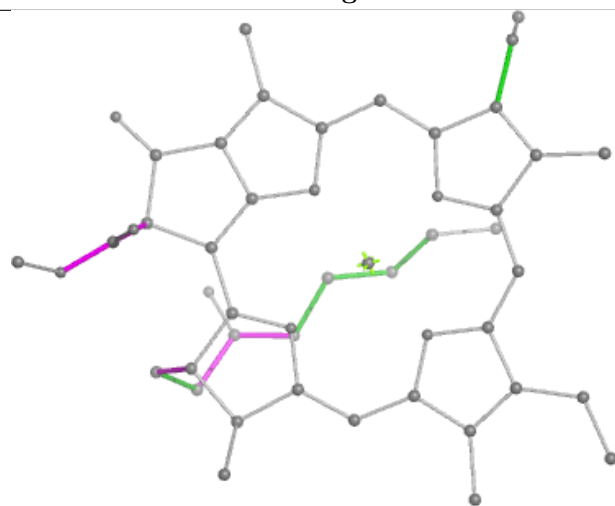
## Ligand CLA s 613



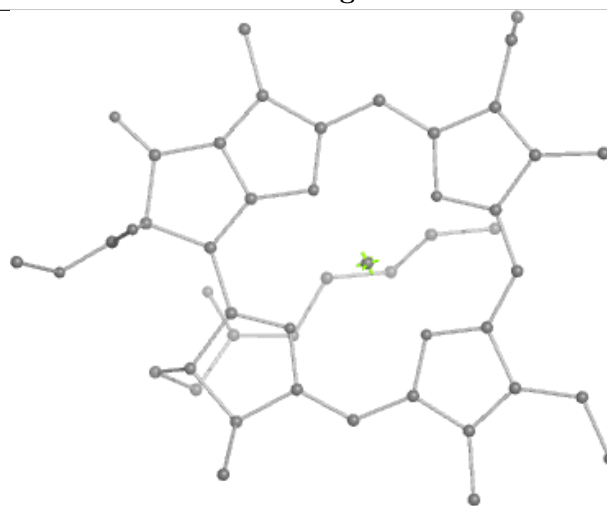
Bond lengths



Bond angles

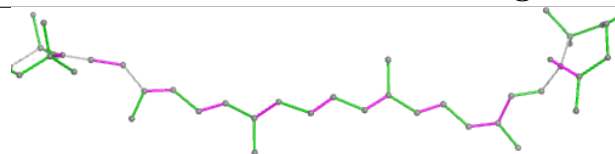


Torsions

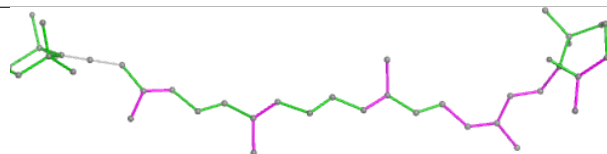


Rings

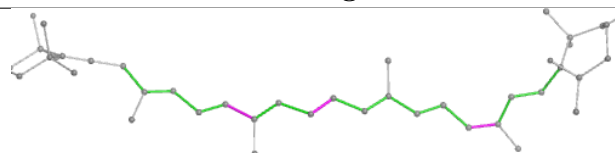
## Ligand NEX Y 618



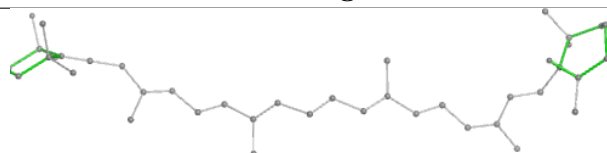
Bond lengths



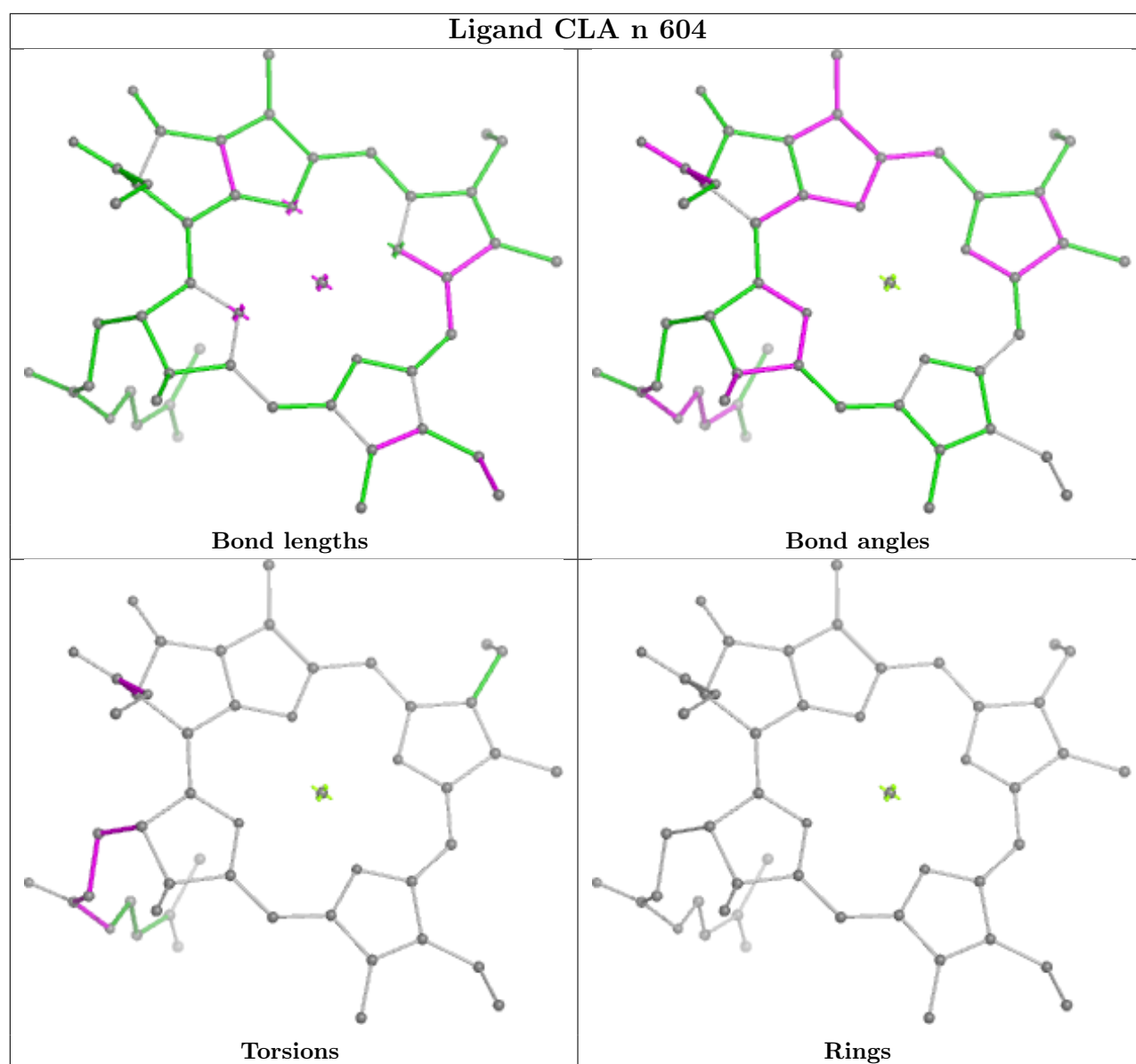
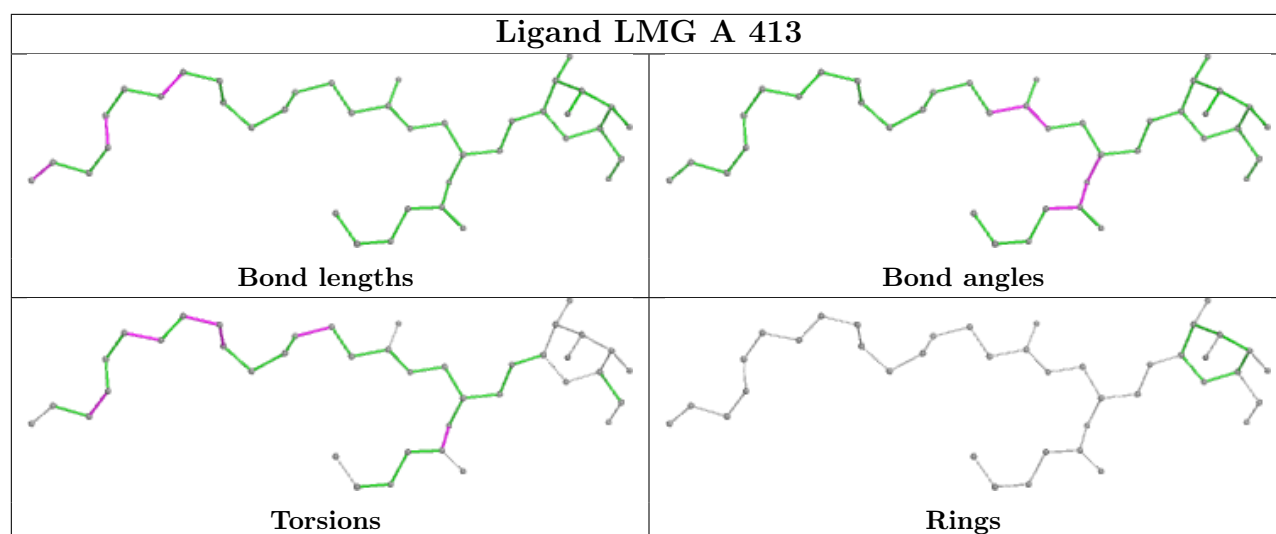
Bond angles

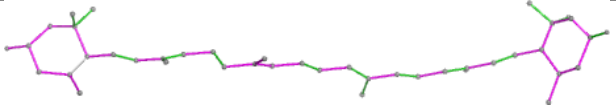
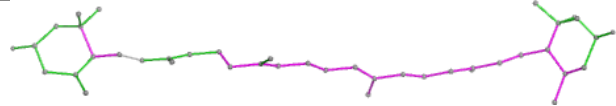
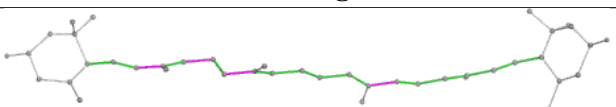
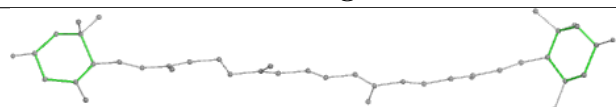


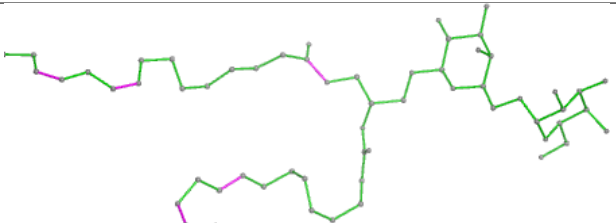
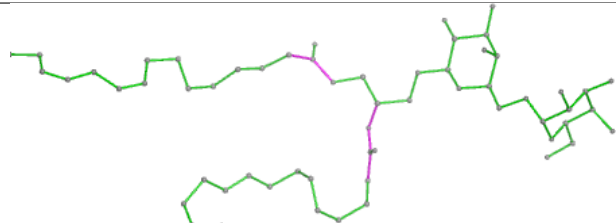
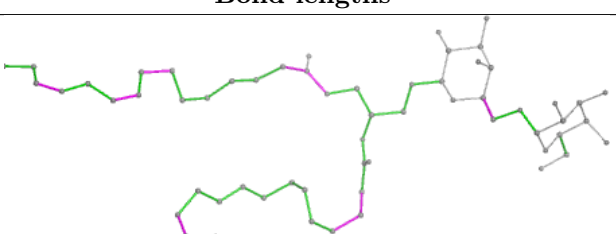
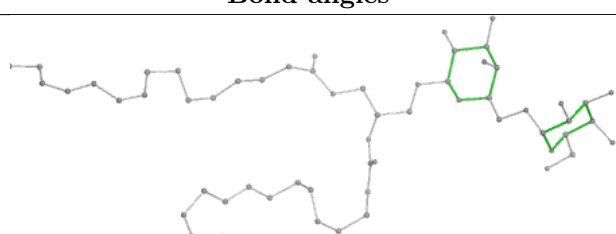
Torsions

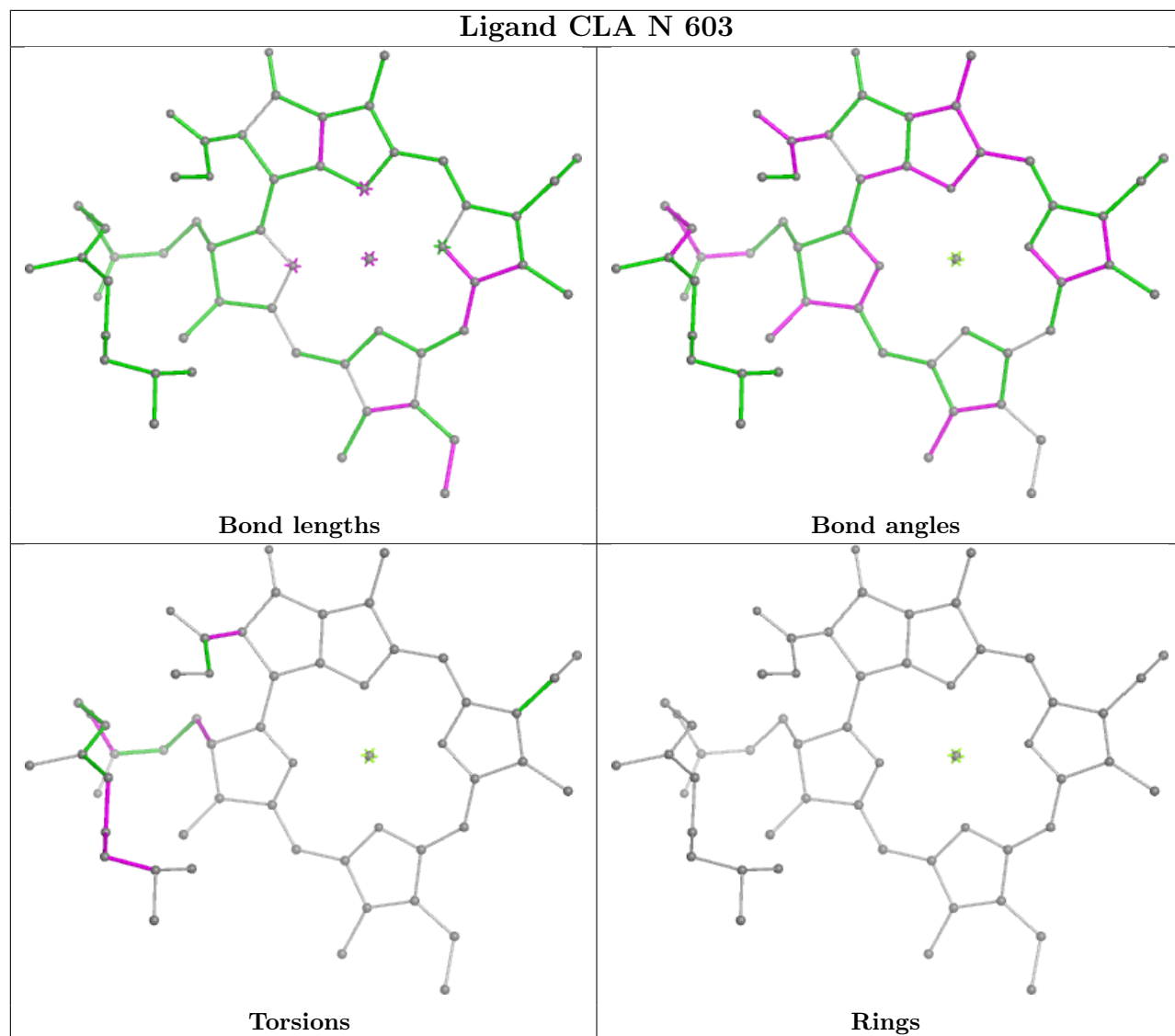


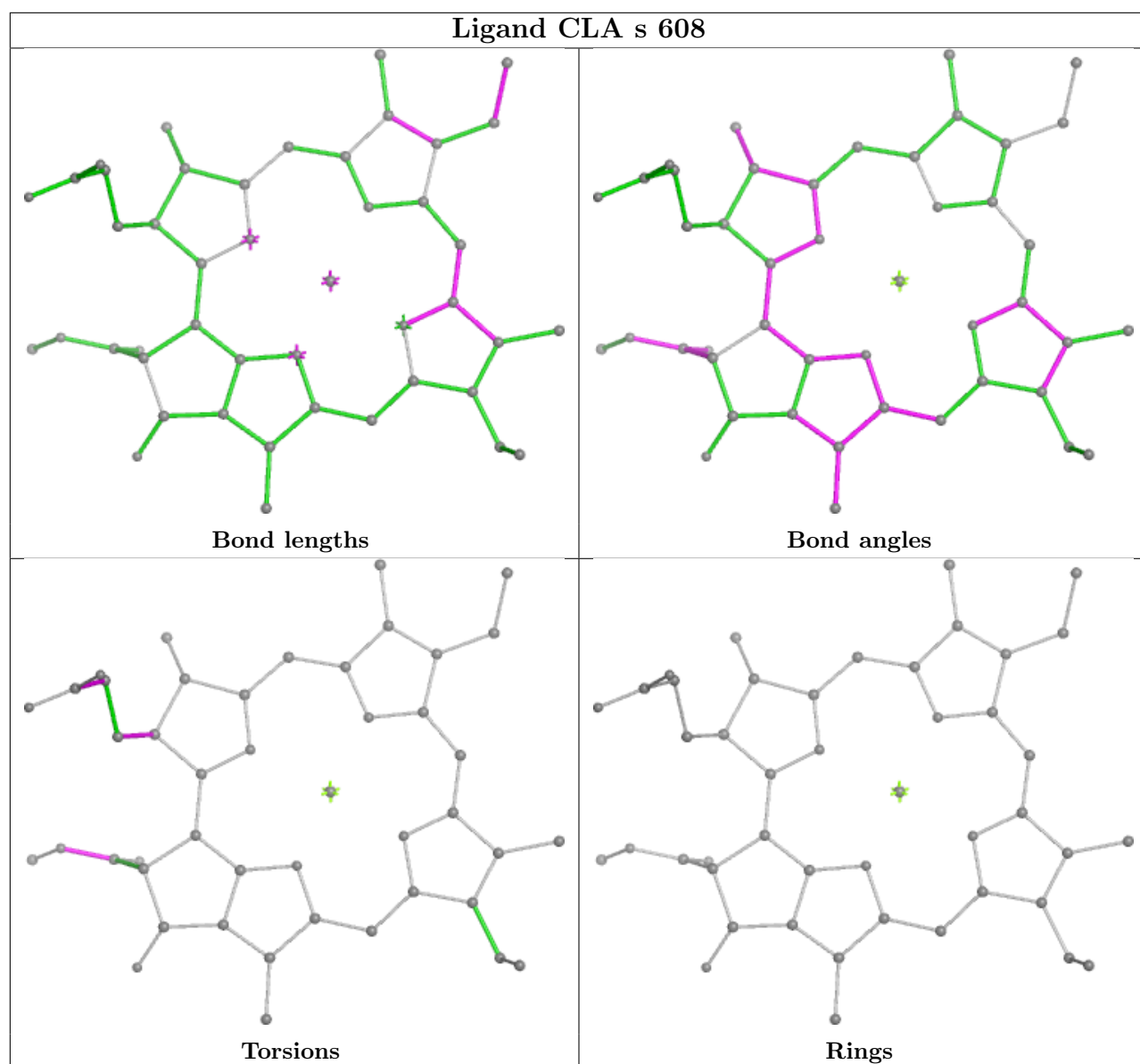
Rings

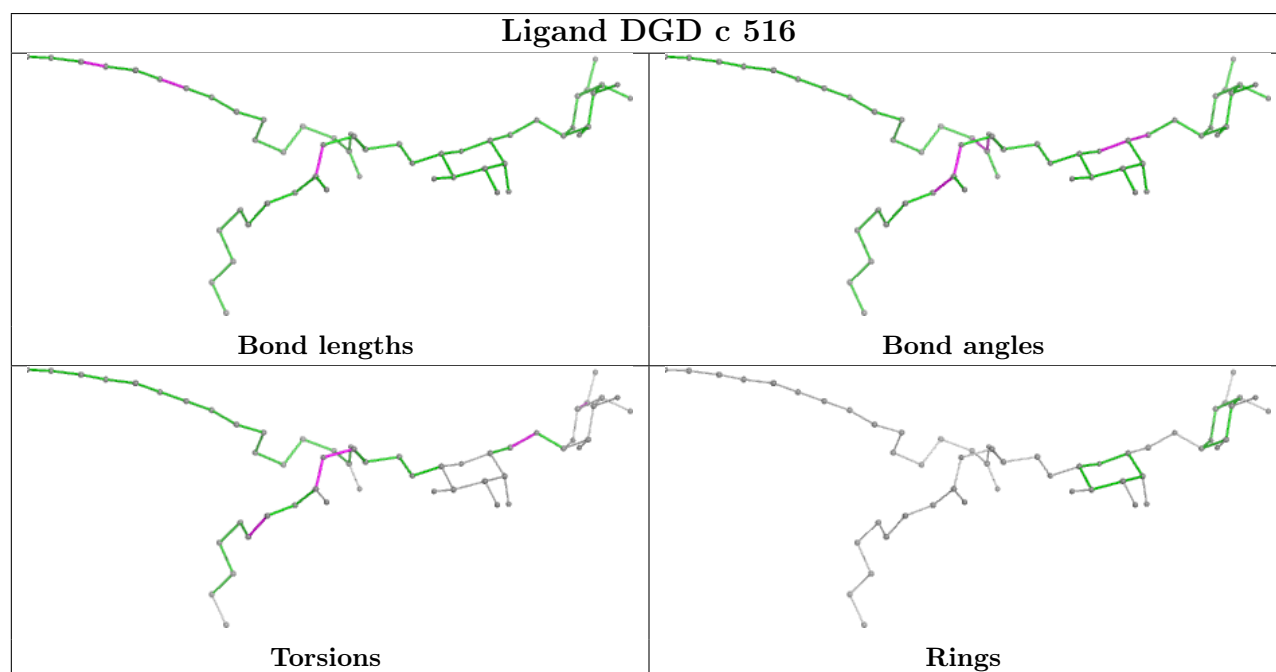
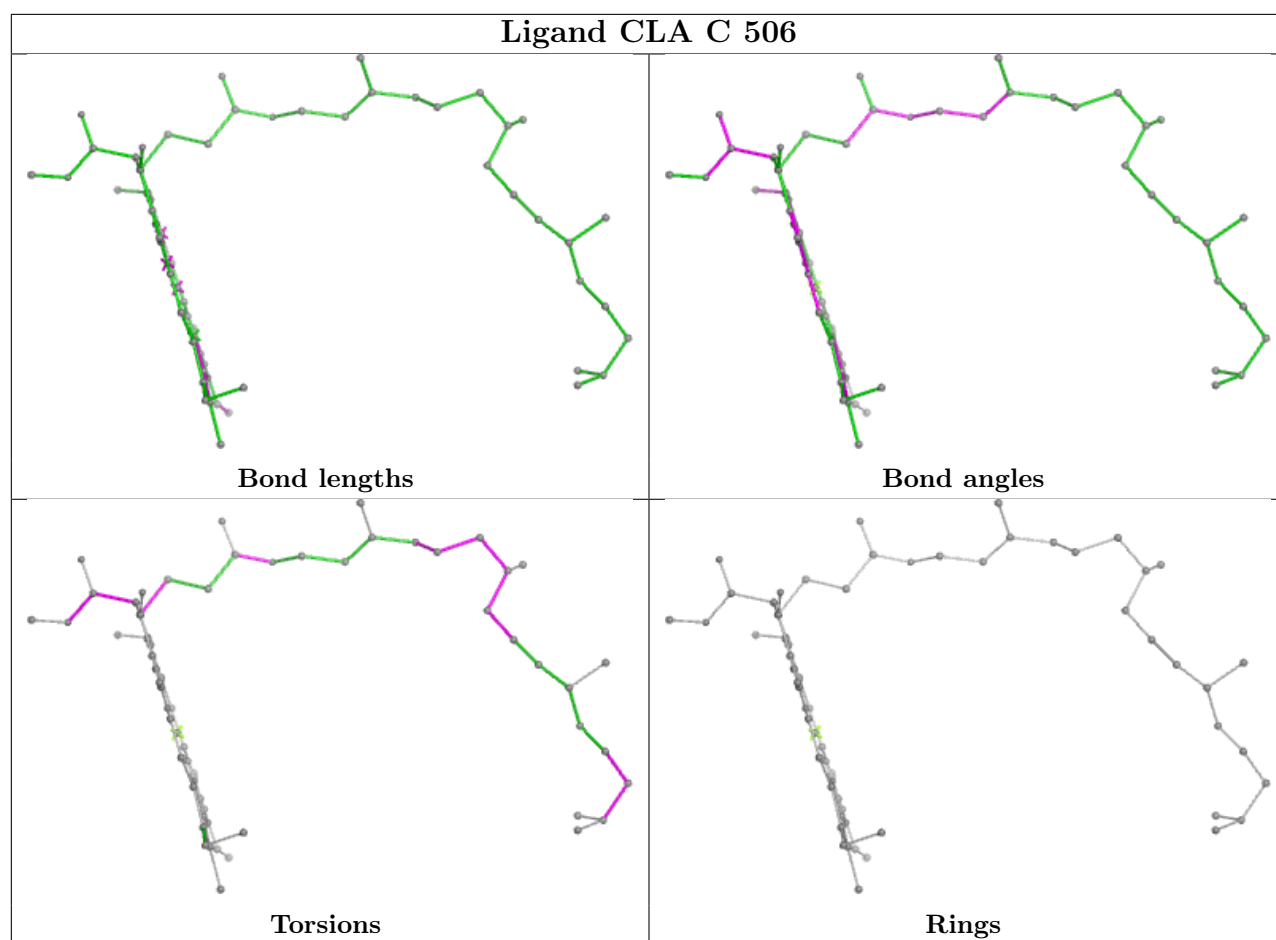


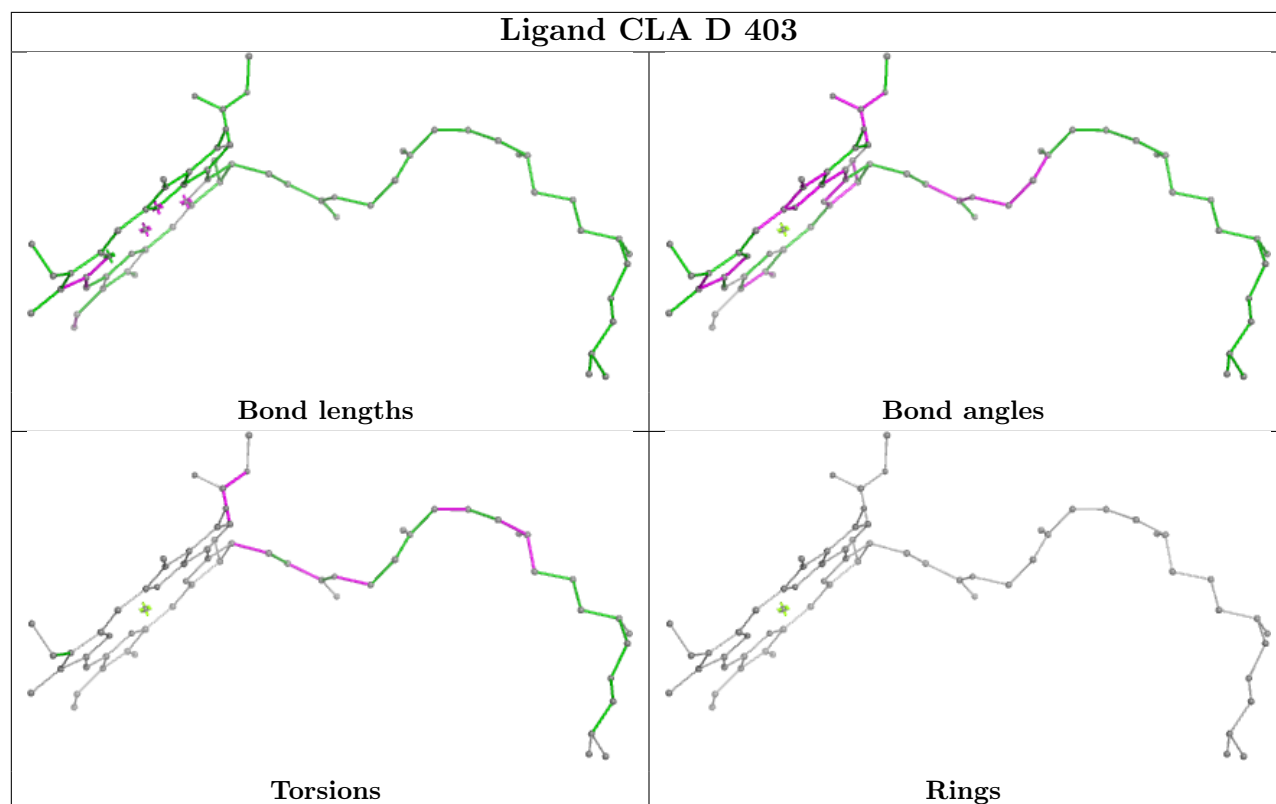
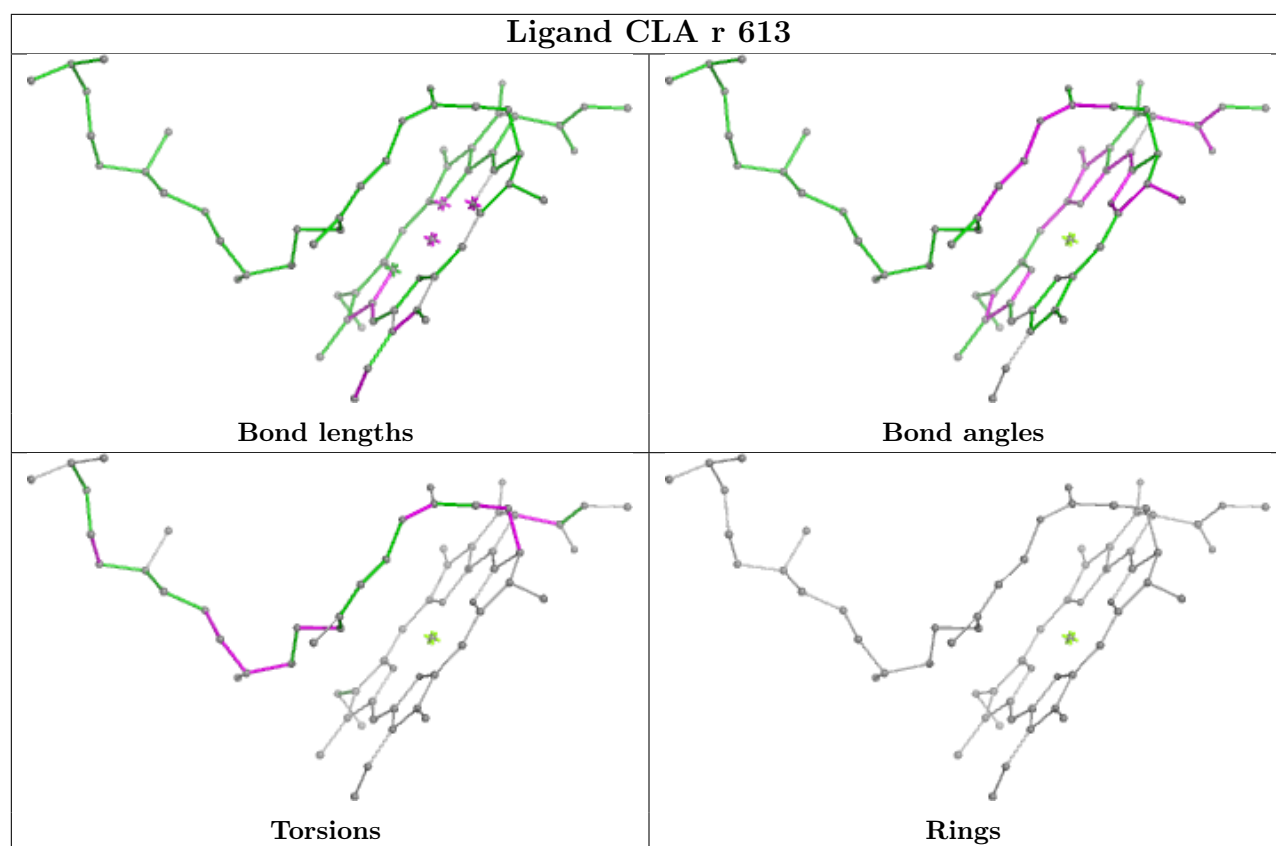
| Ligand LUT S 315                                                                  |                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |
| Bond lengths                                                                      | Bond angles                                                                        |
|  |  |
| Torsions                                                                          | Rings                                                                              |

| Ligand DGD C 519                                                                   |                                                                                     |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   |   |
| Bond lengths                                                                       | Bond angles                                                                         |
|  |  |
| Torsions                                                                           | Rings                                                                               |

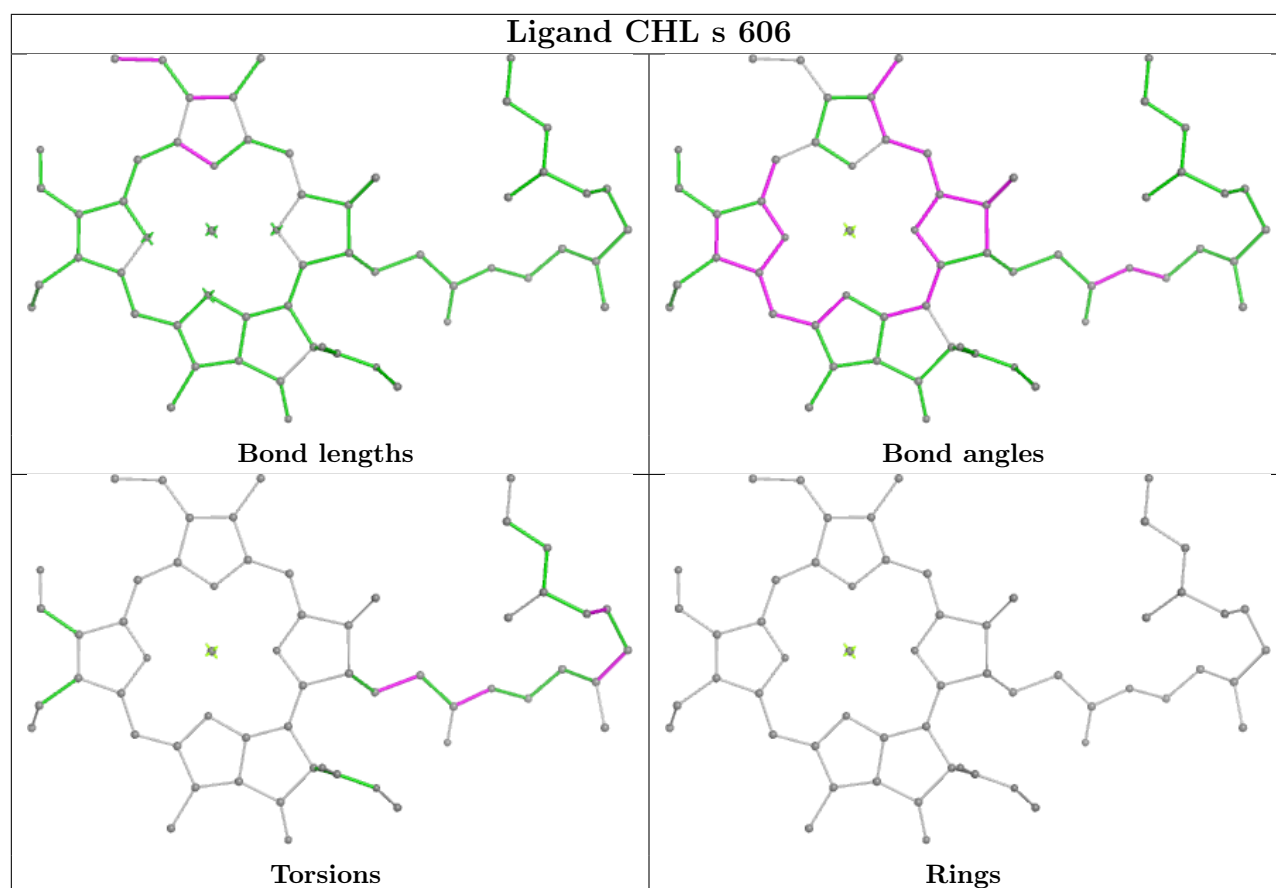




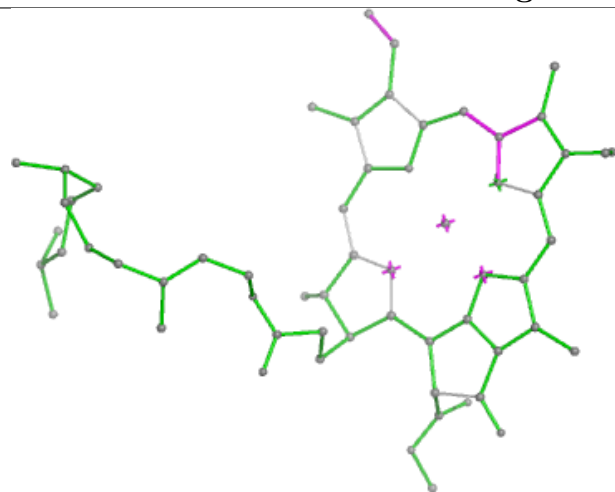




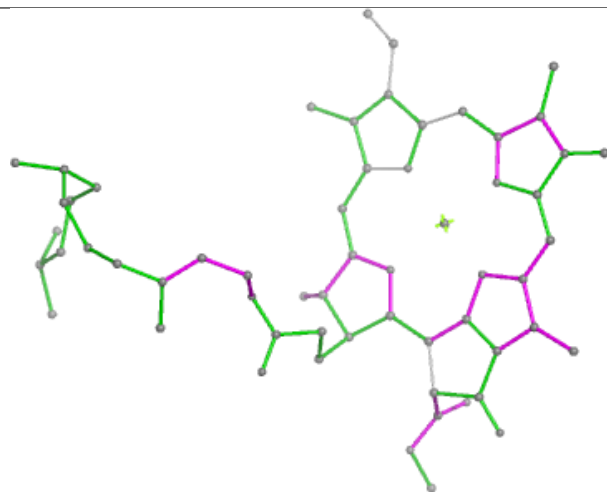




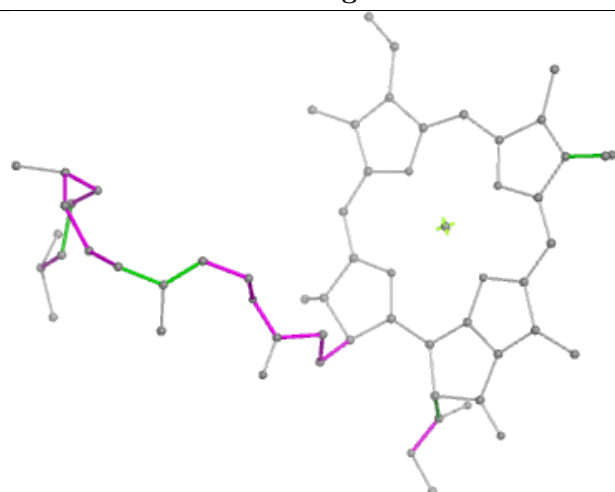
## Ligand CLA A 408



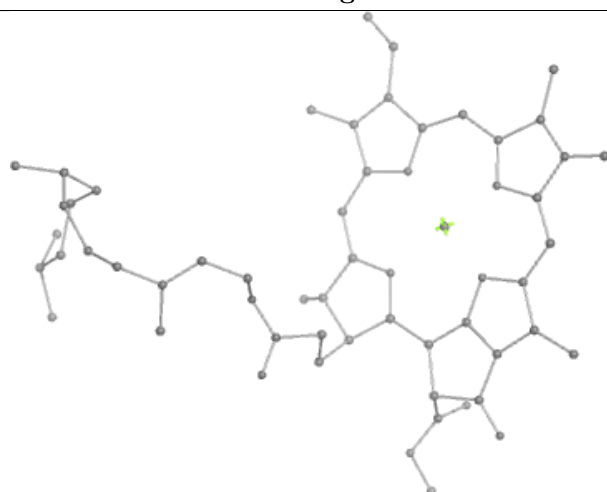
Bond lengths



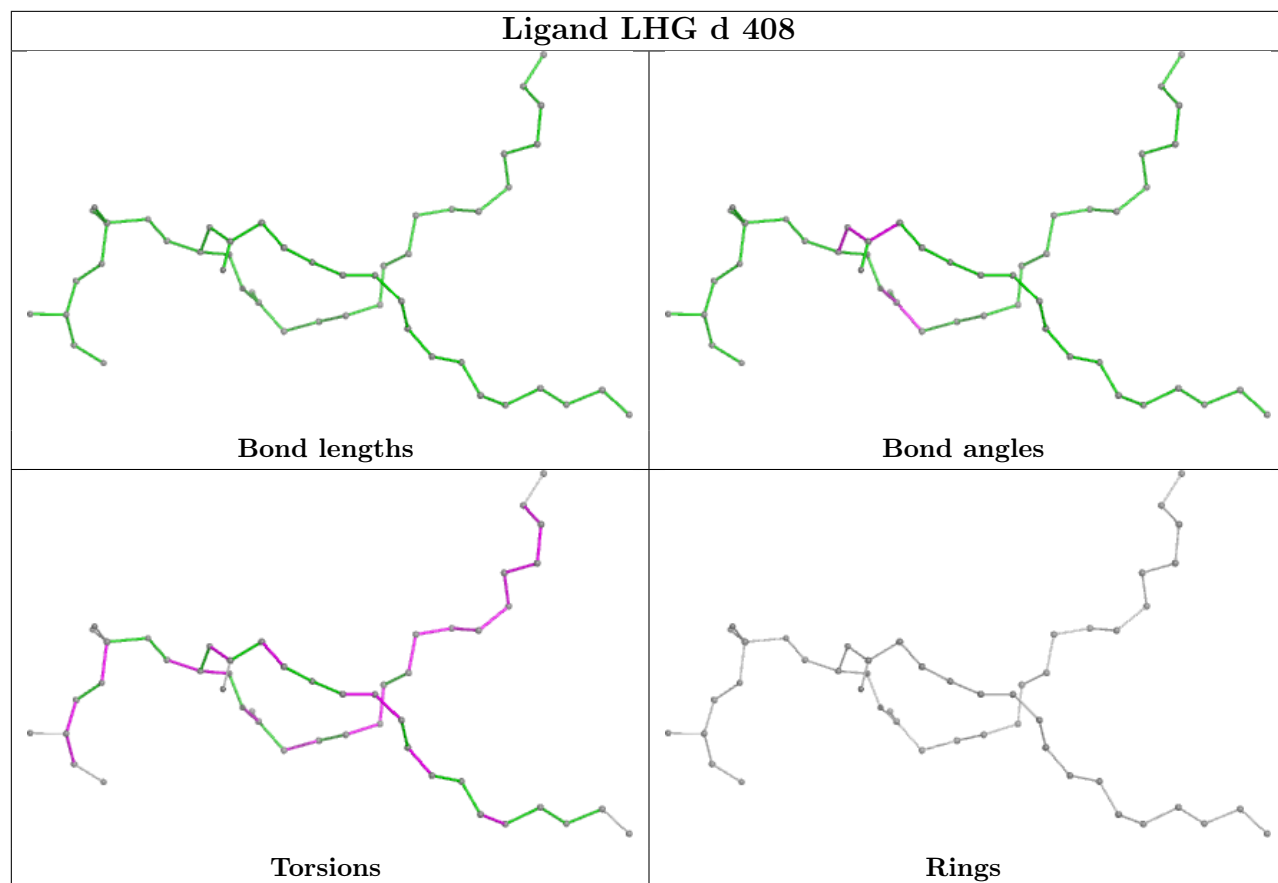
Bond angles

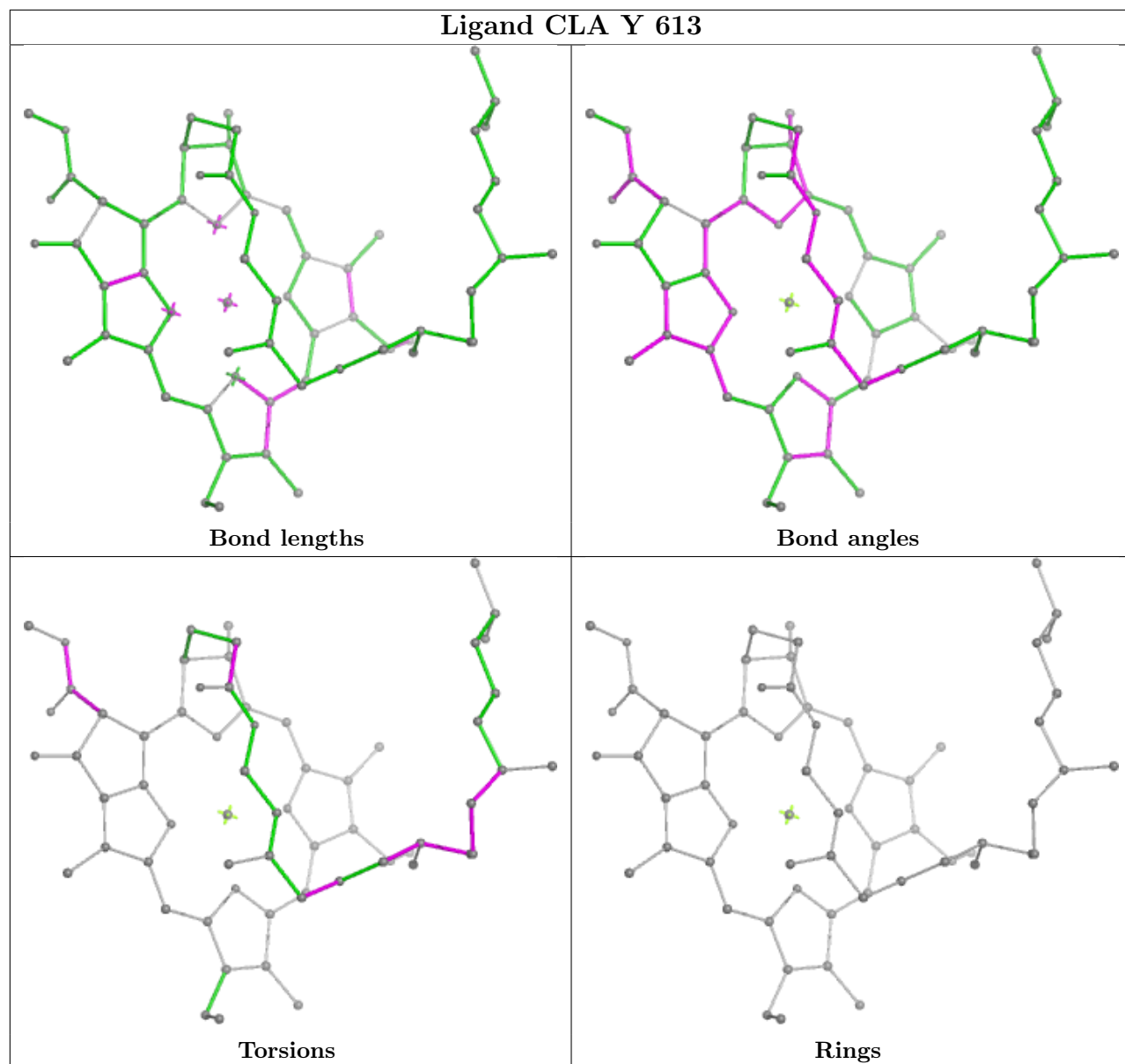


Torsions

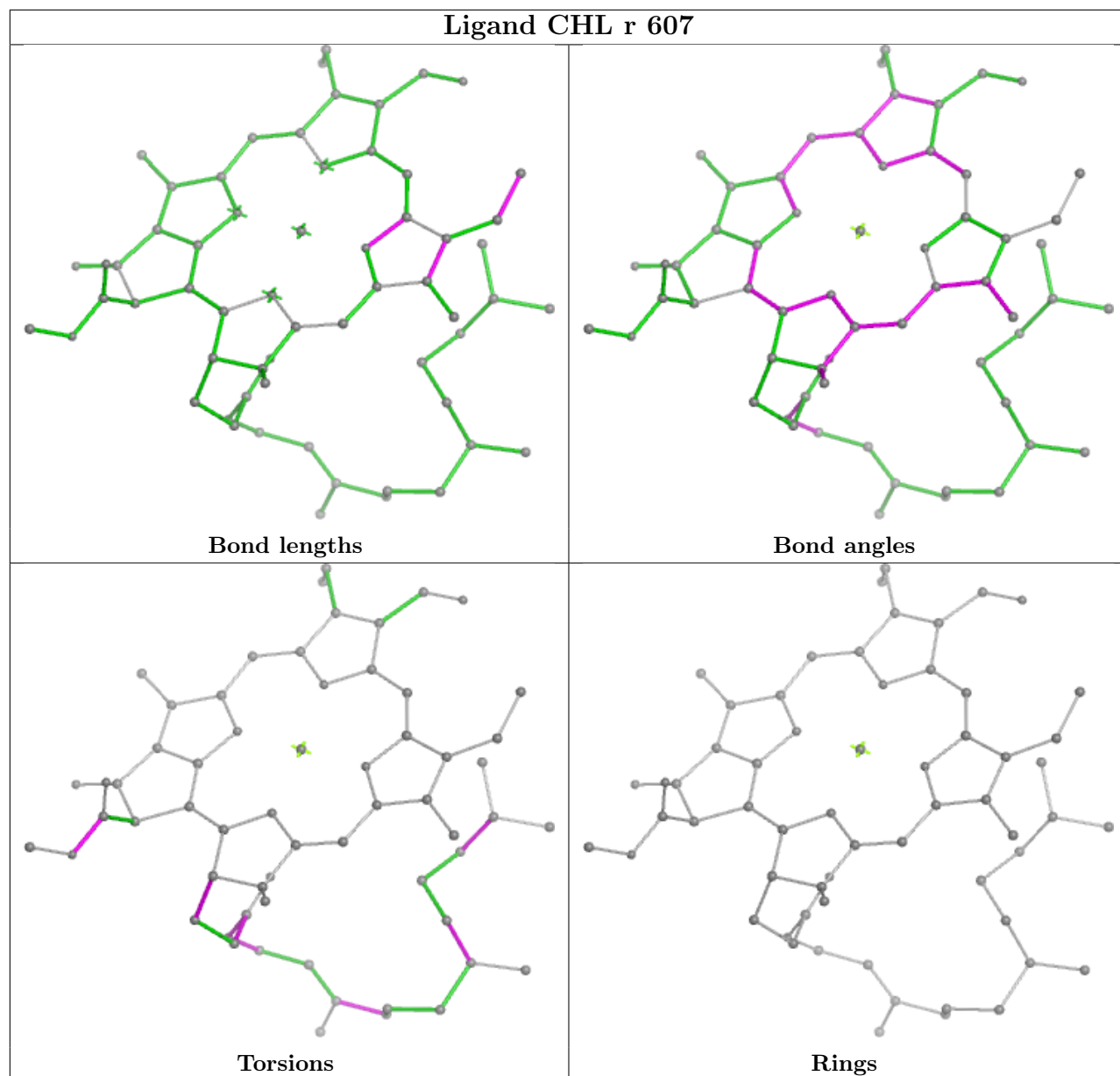


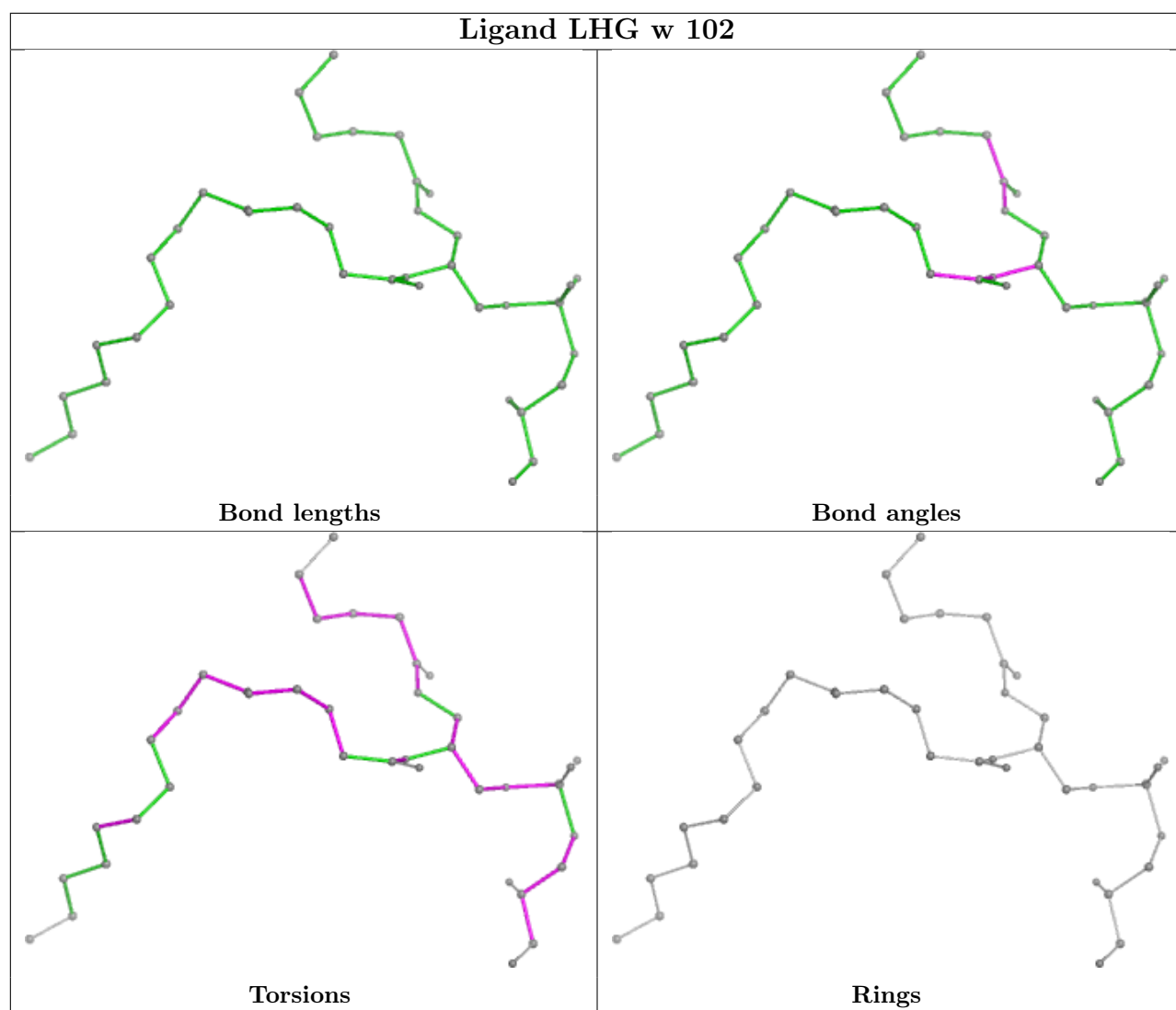
Rings

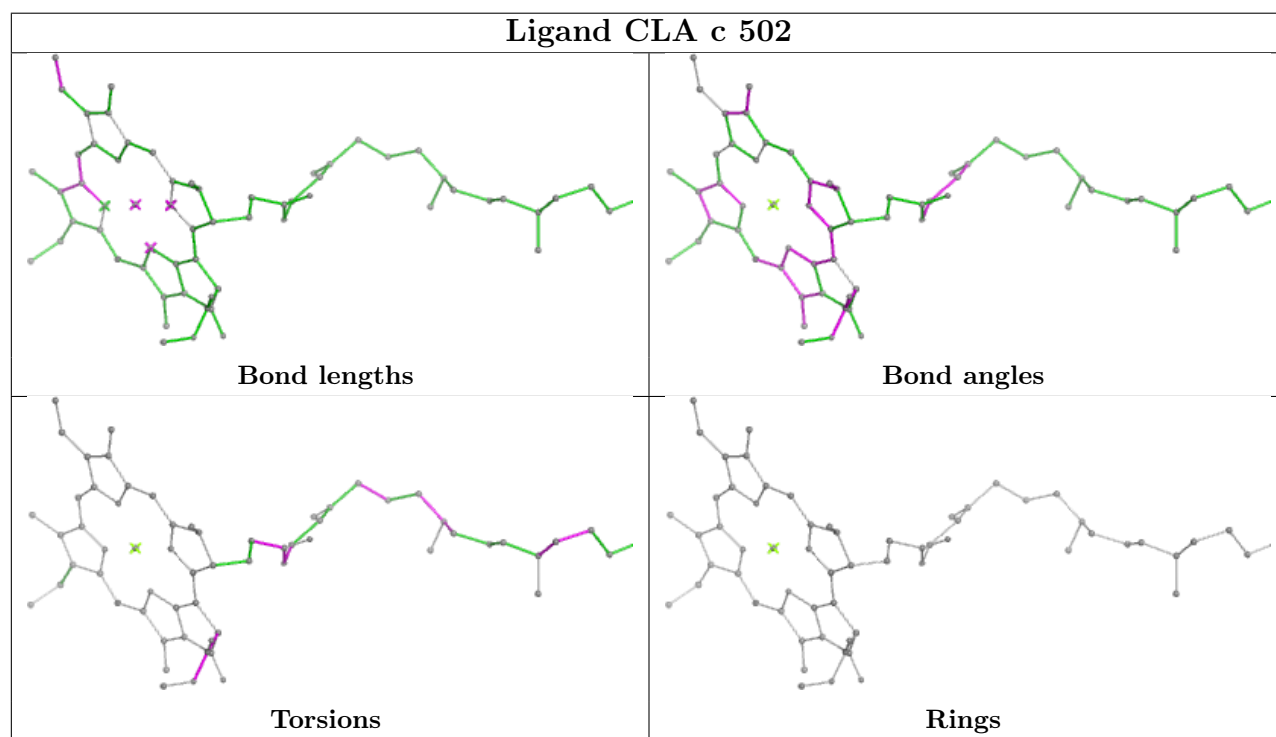
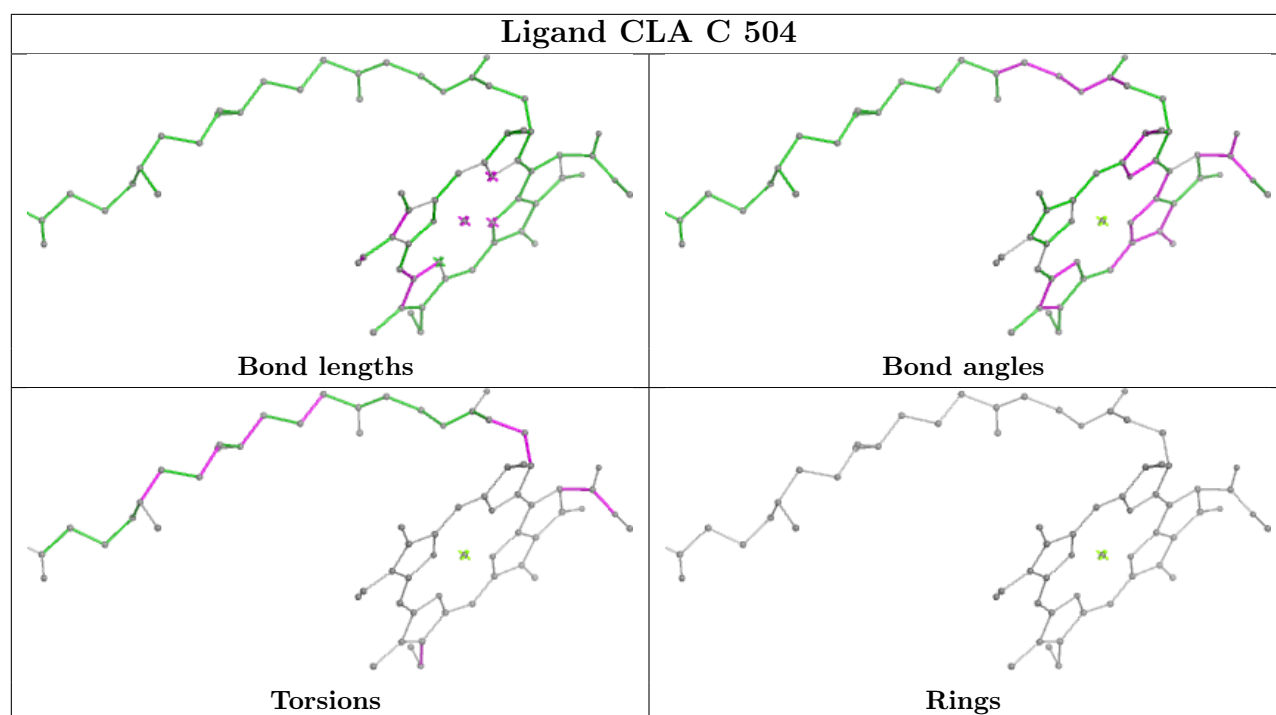




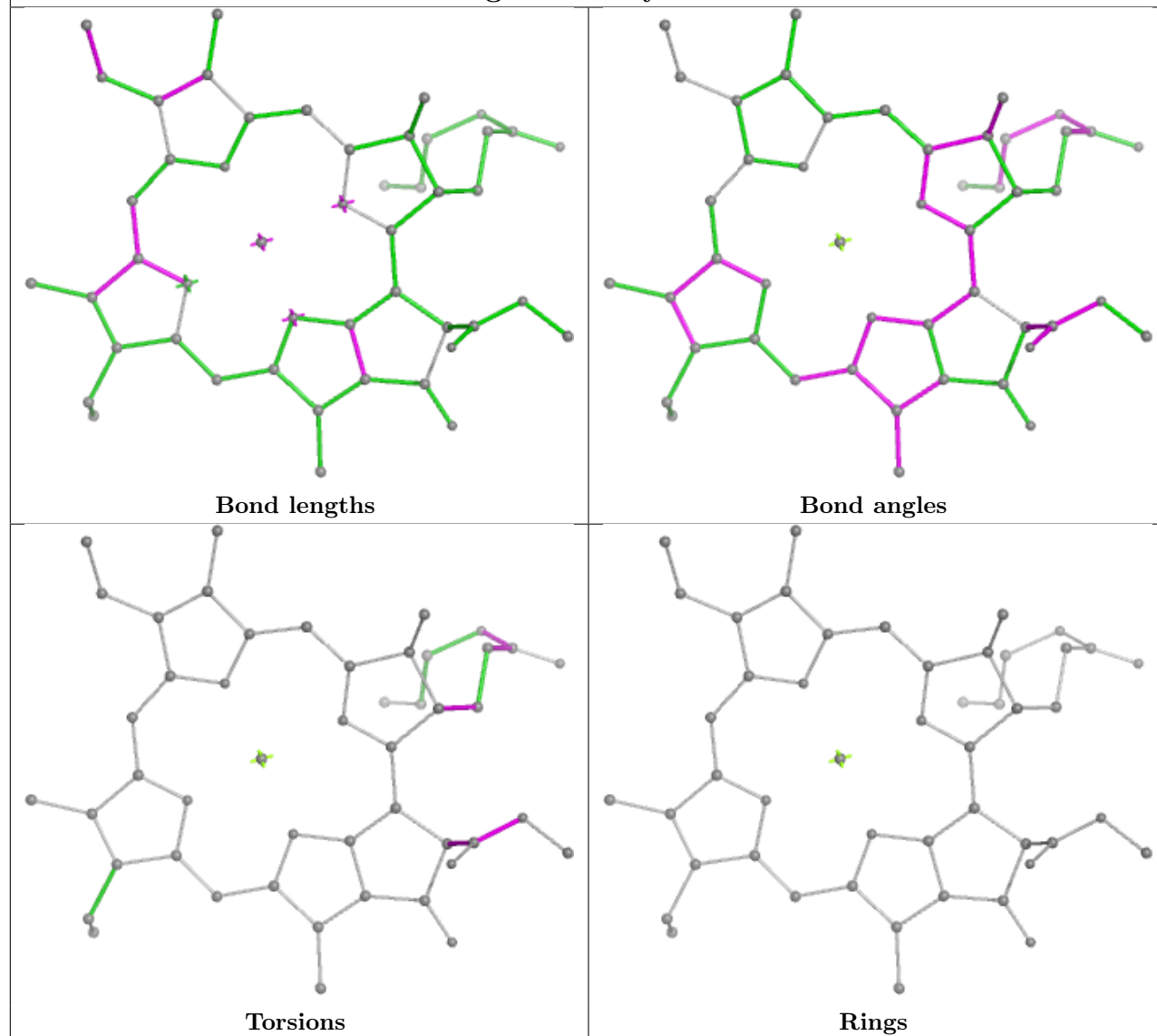
## Ligand CHL r 607



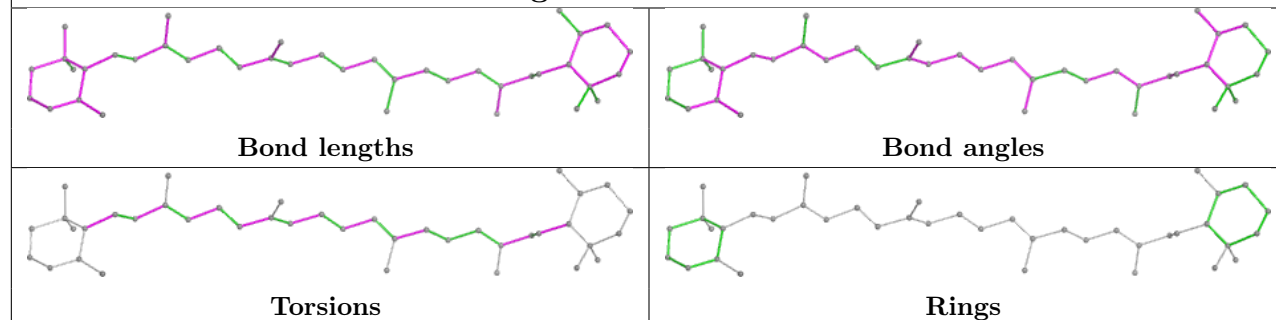




## Ligand CLA y 314

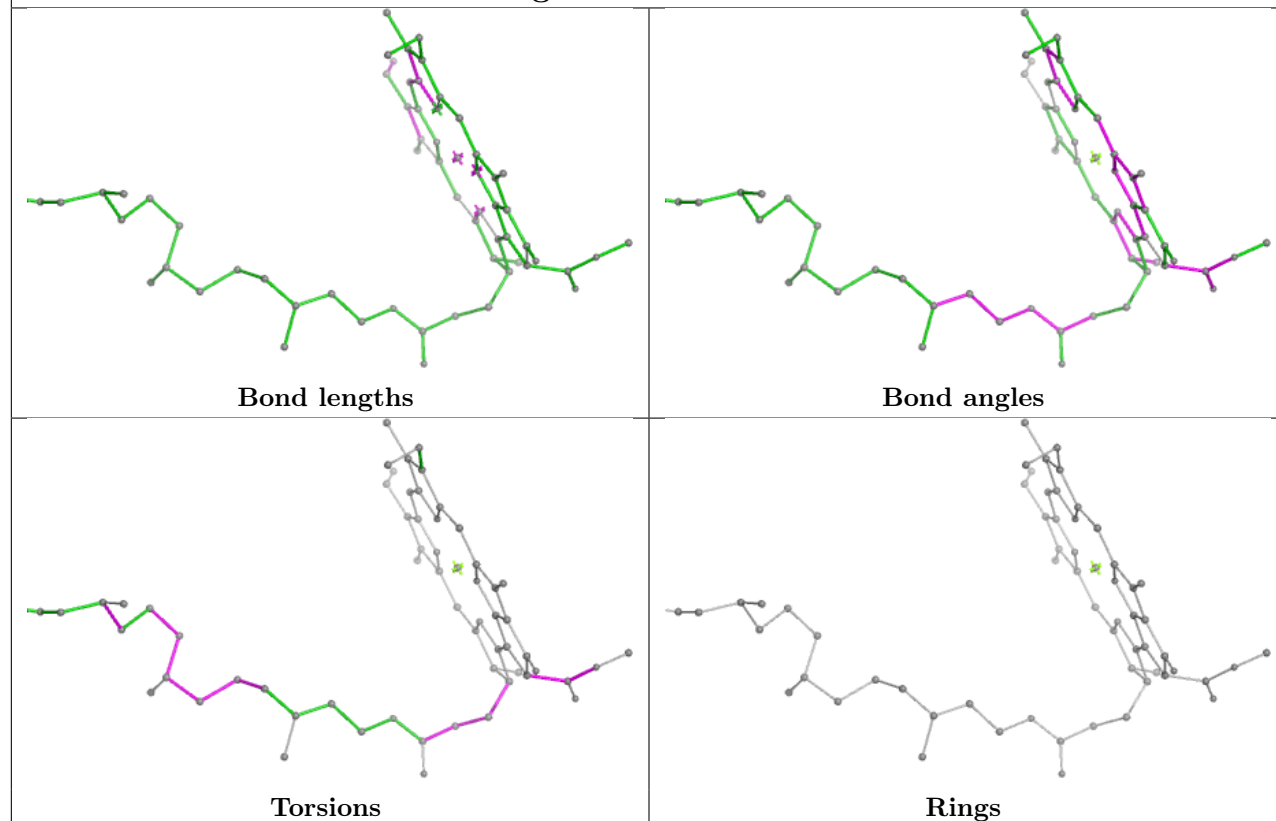


## Ligand BCR B 619

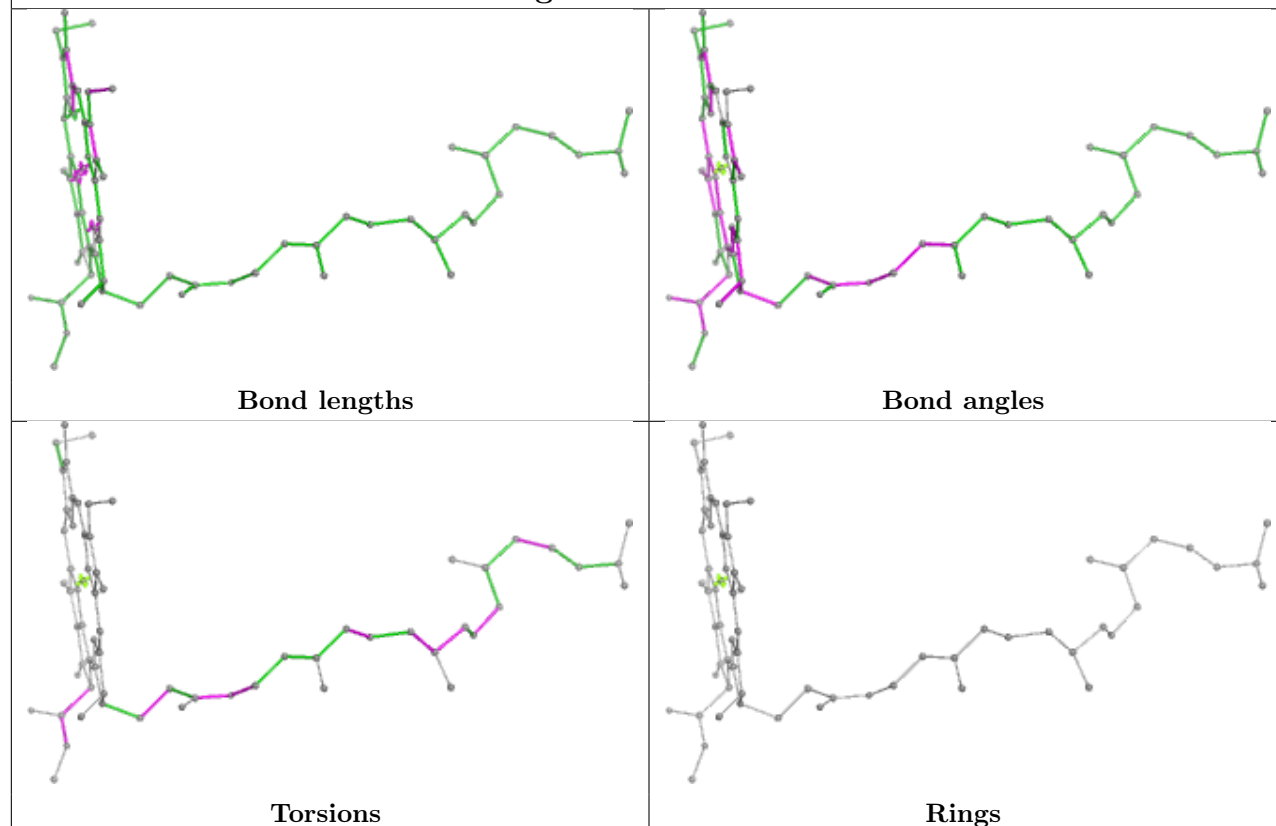


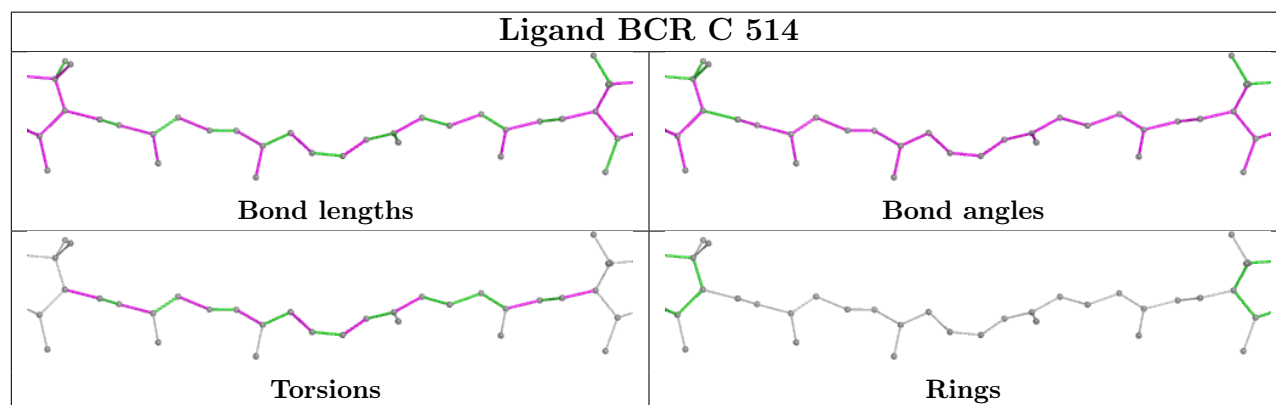
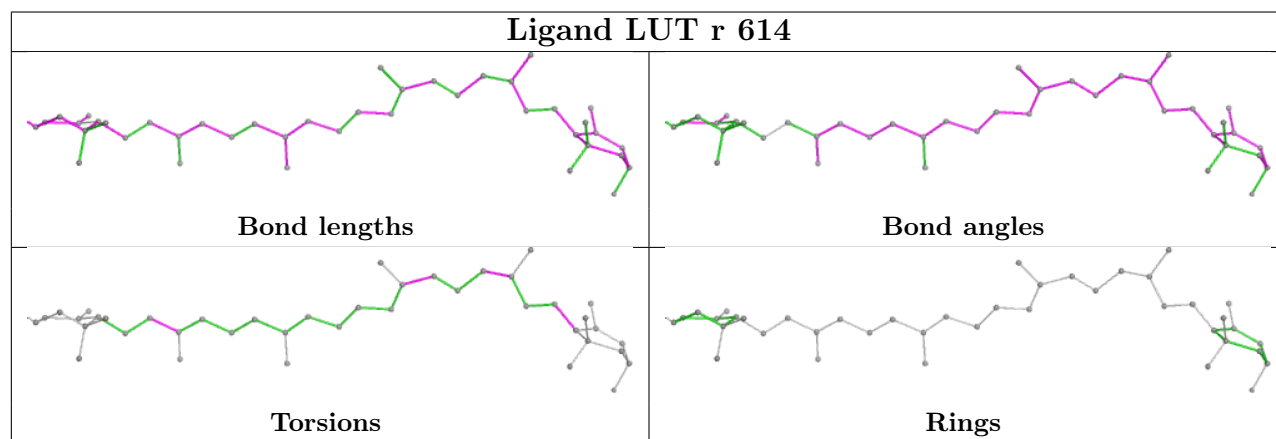
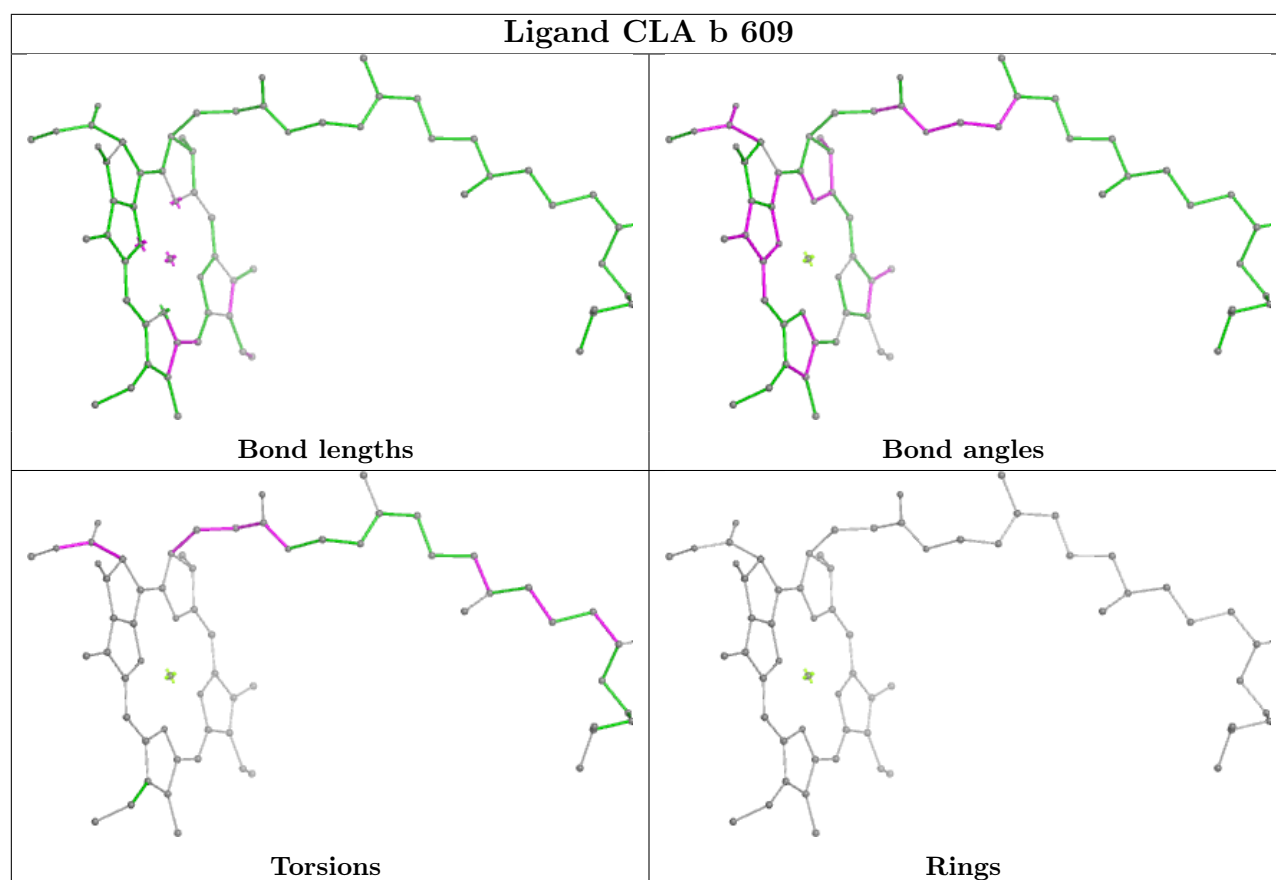


## Ligand CLA B 607

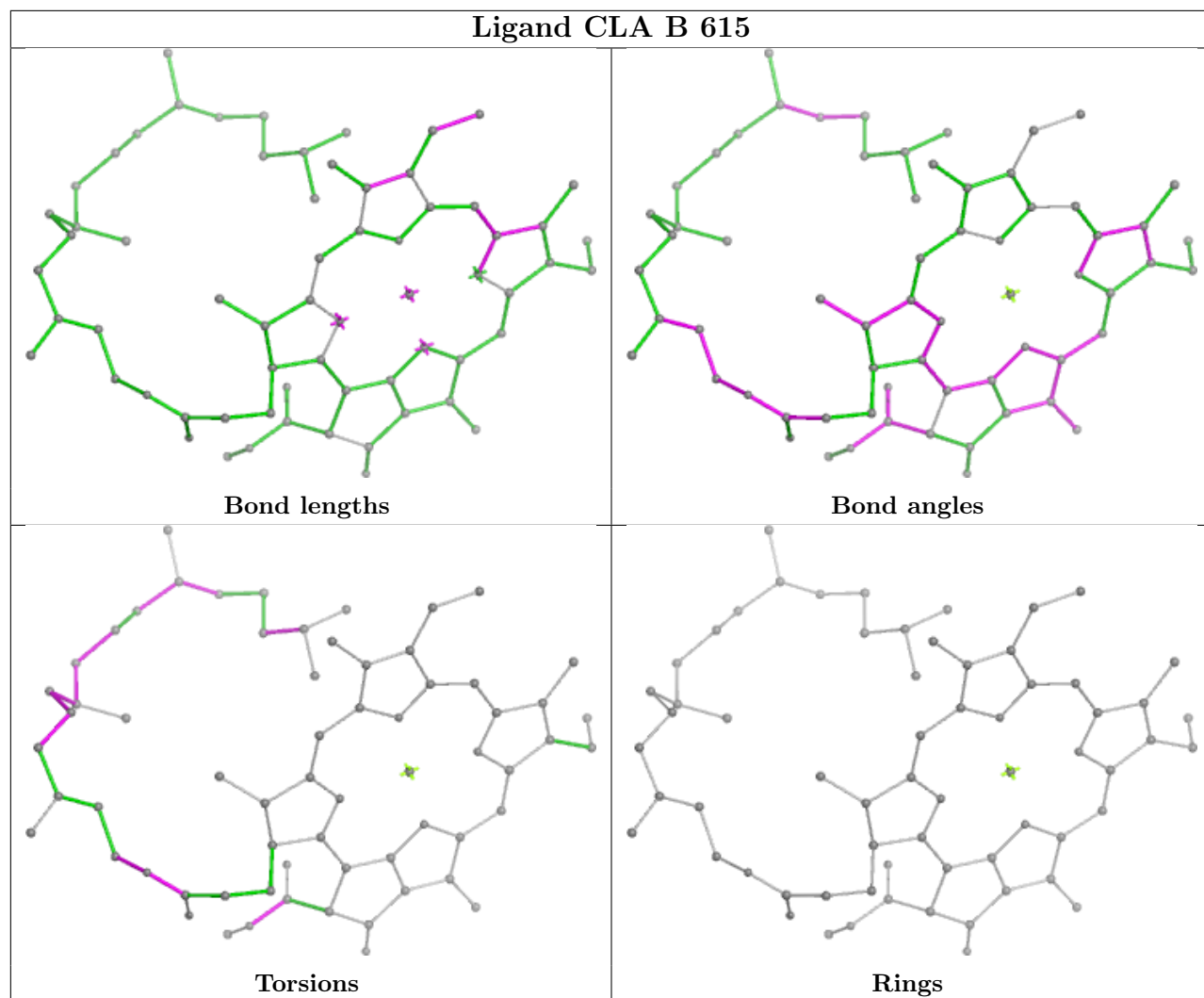


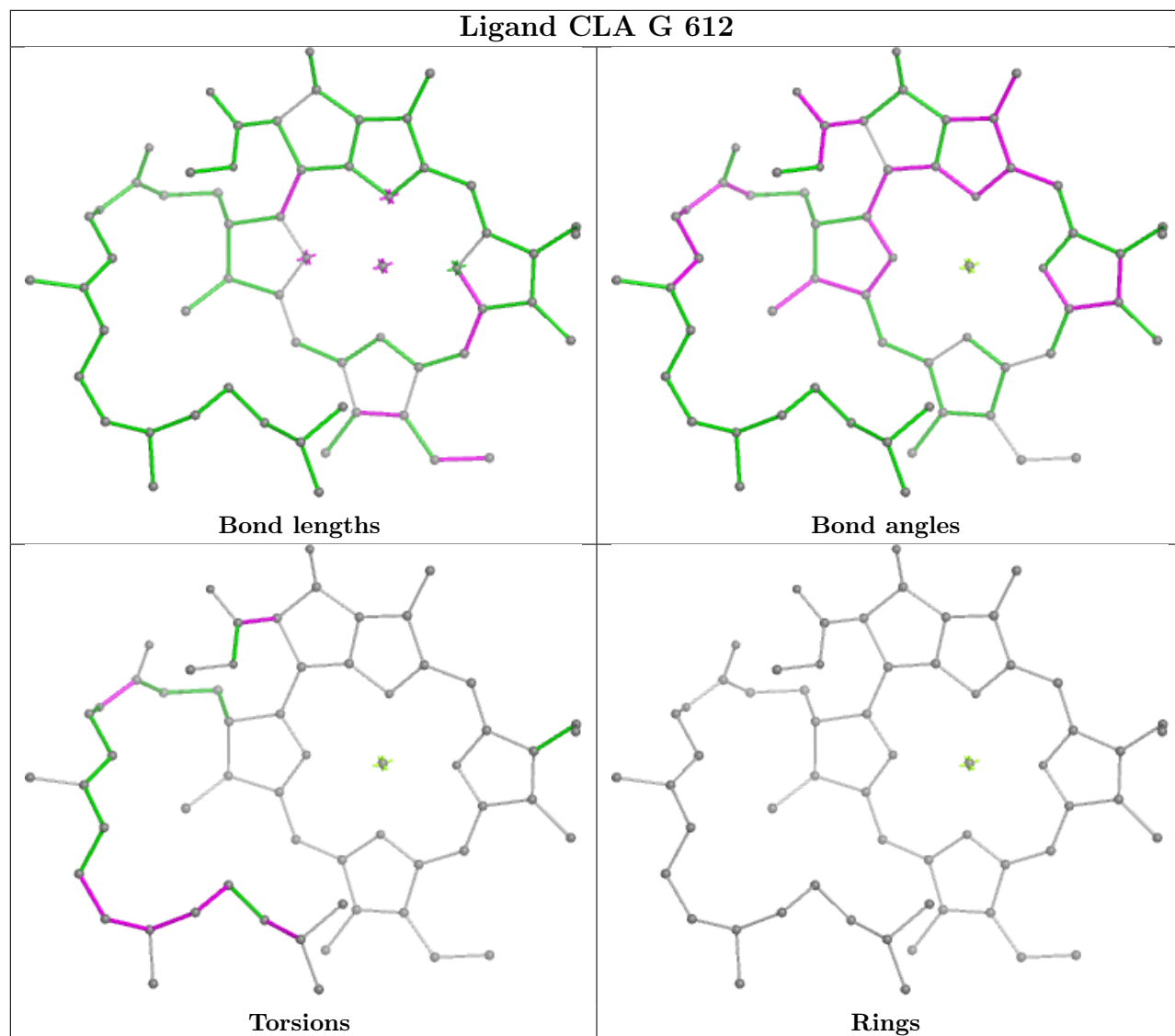
## Ligand CLA b 606



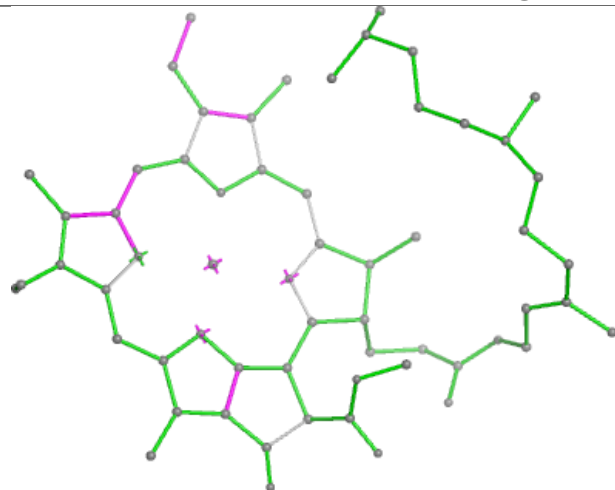


## Ligand CLA B 615

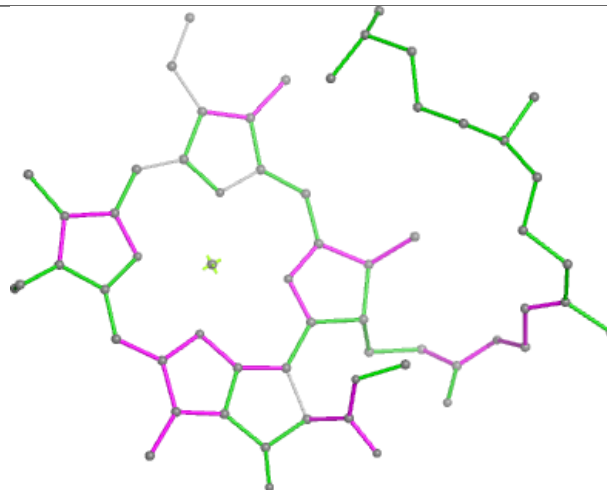




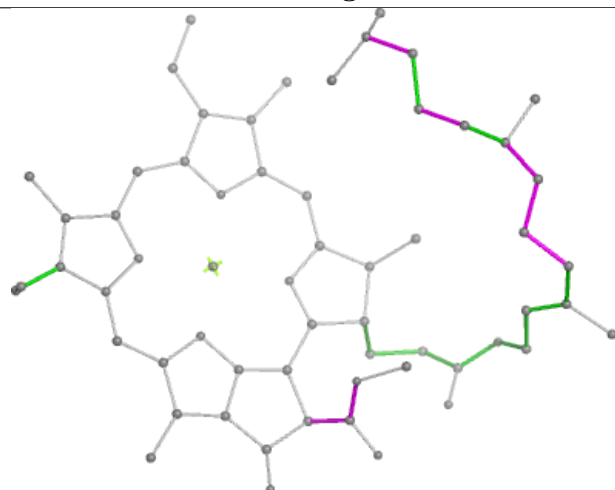
## Ligand CLA Y 612



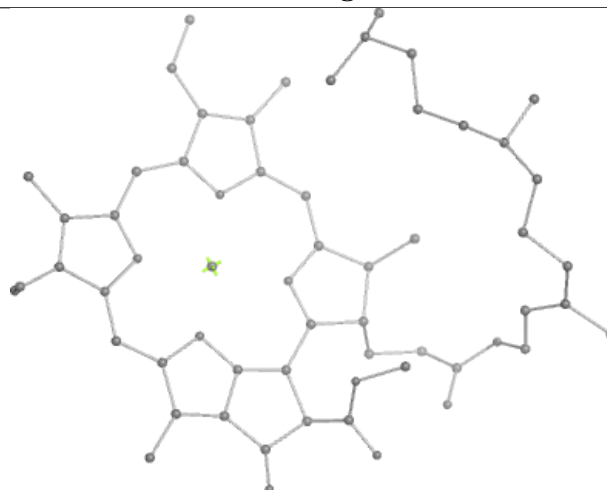
Bond lengths



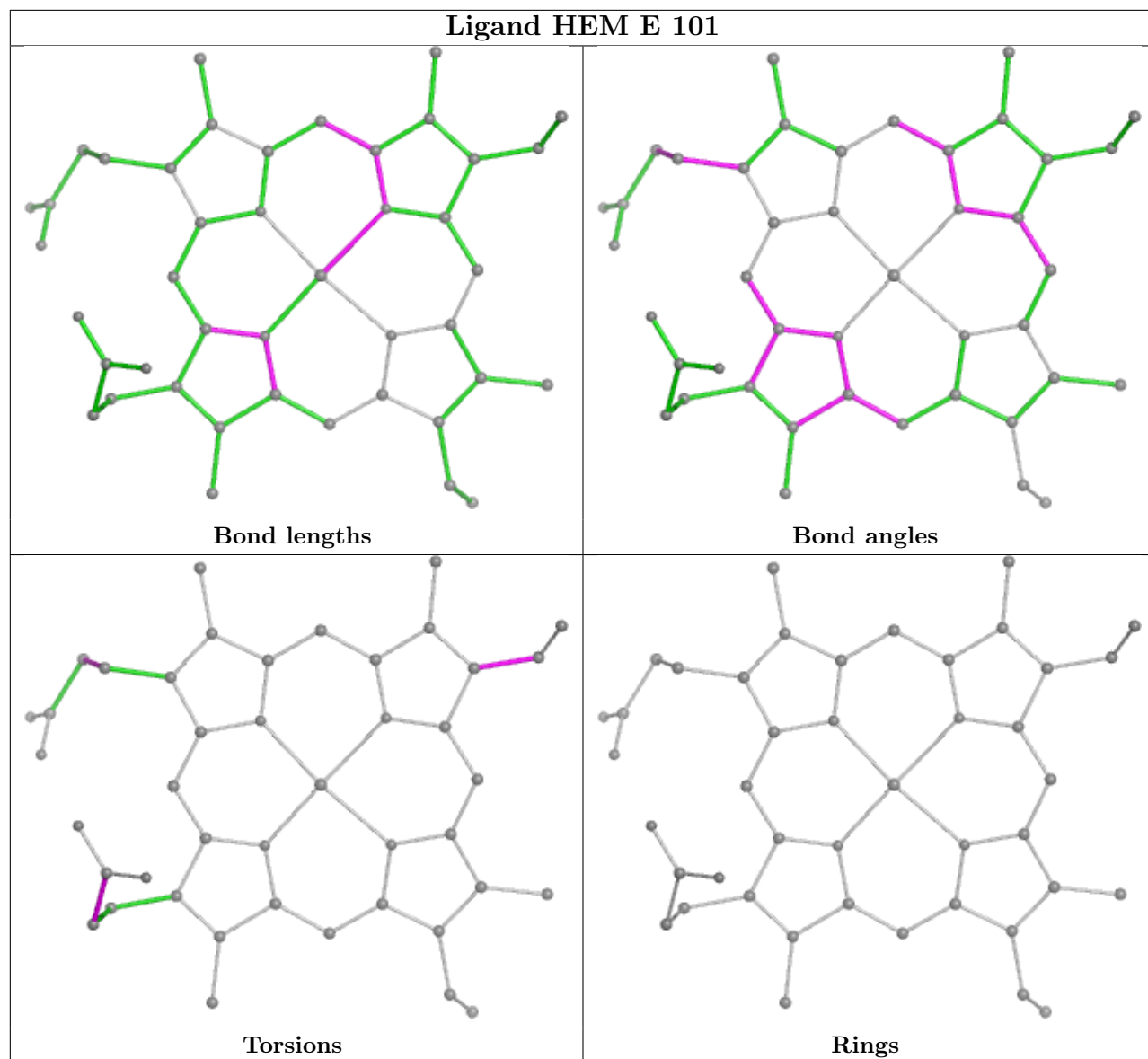
Bond angles

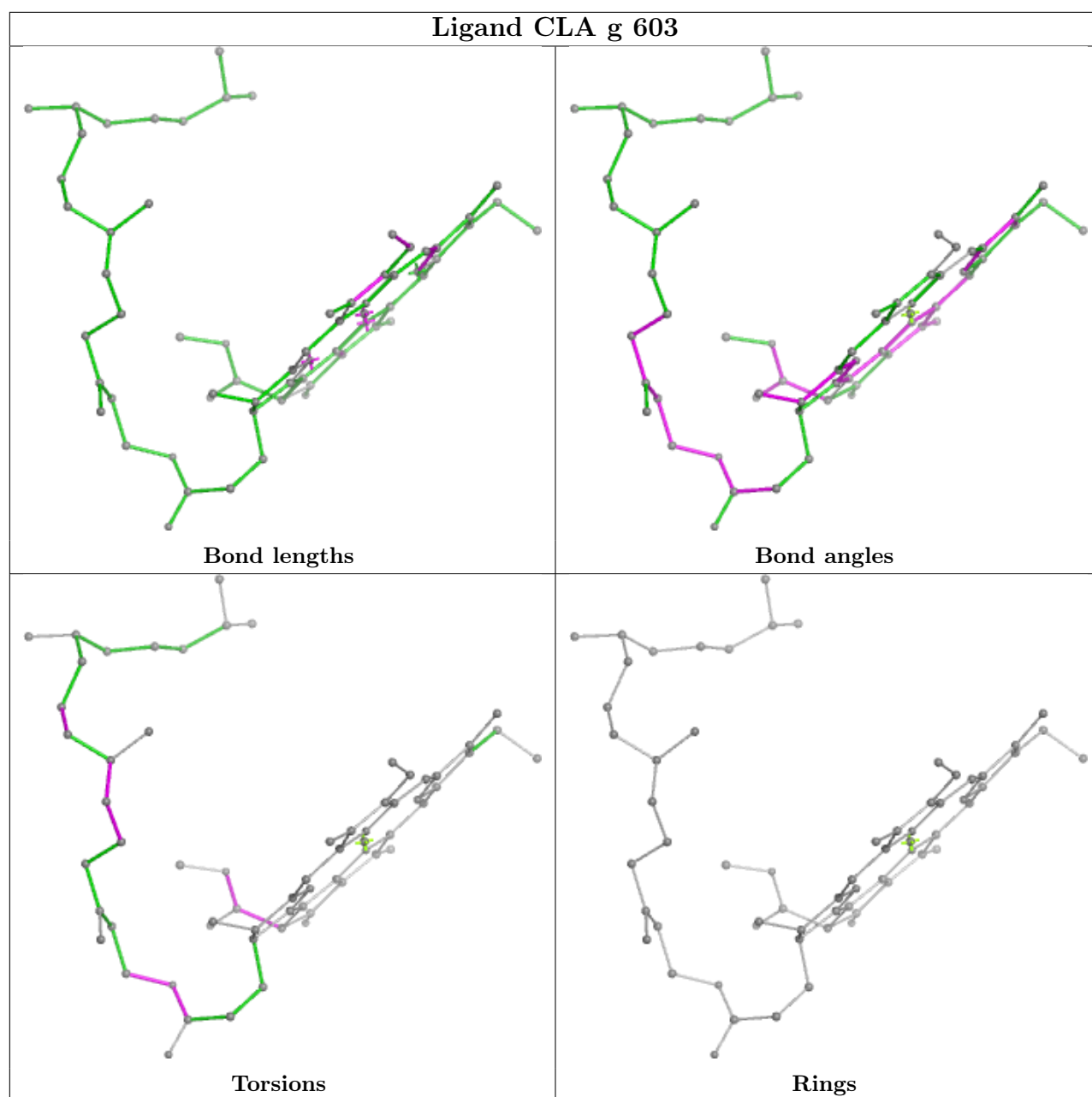


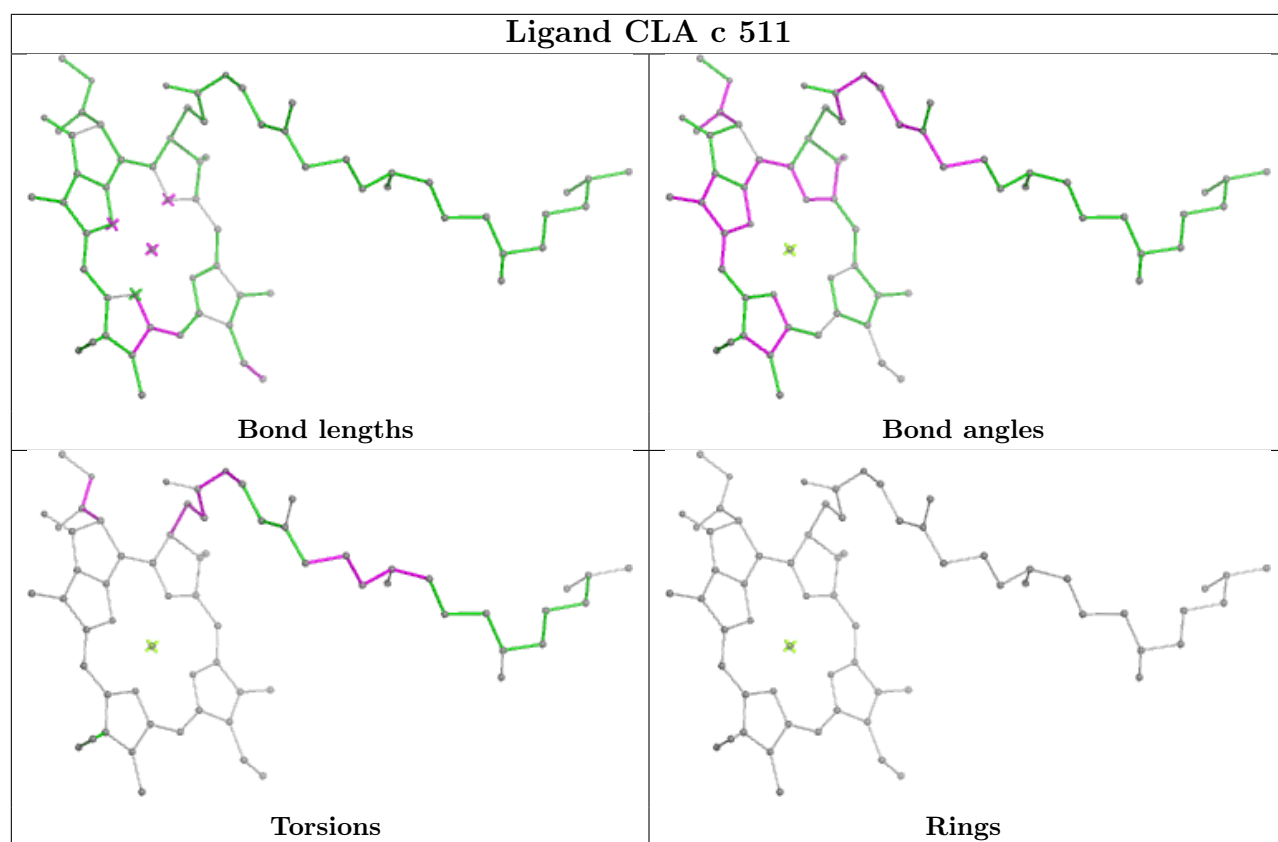
Torsions



Rings

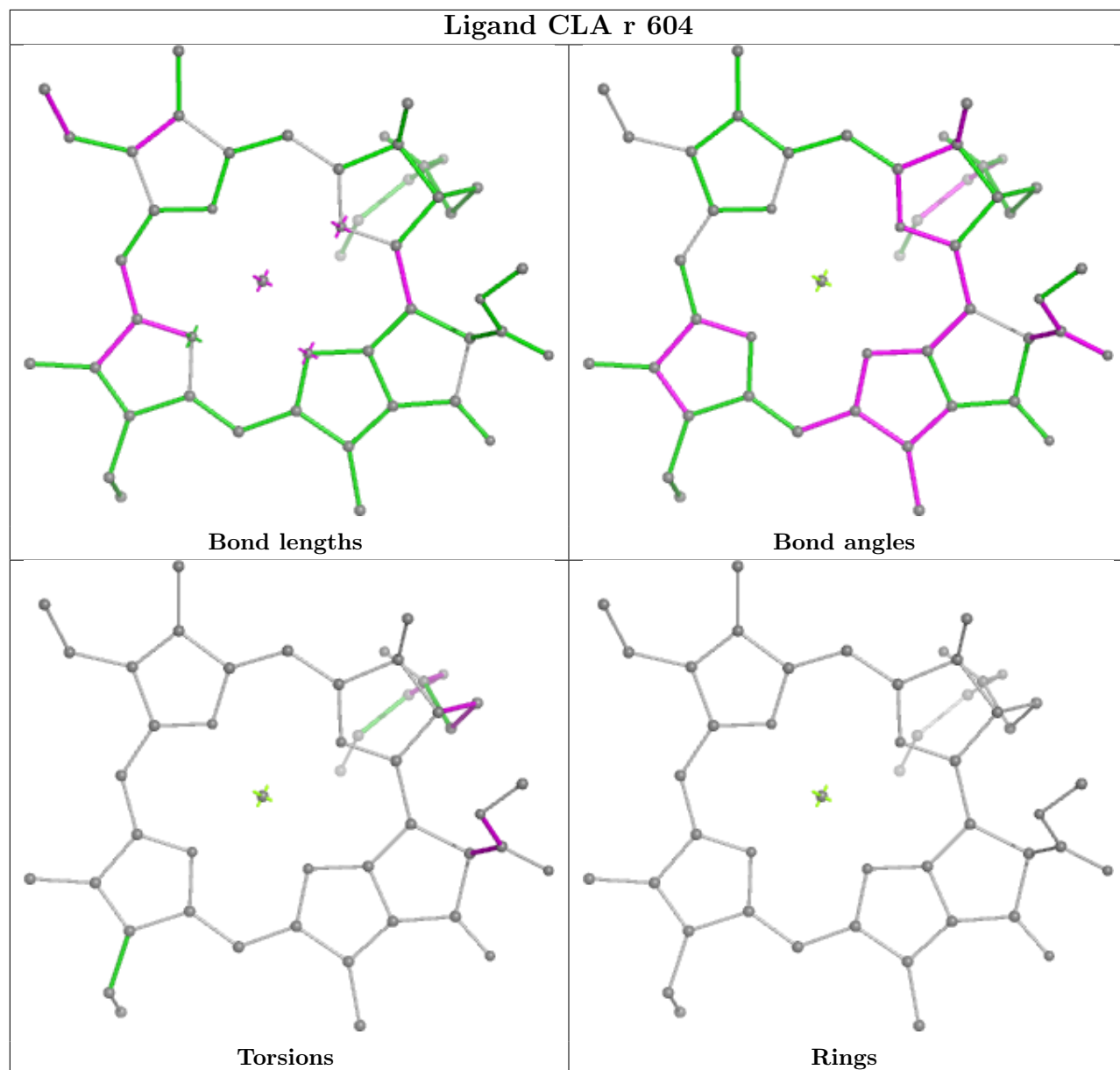




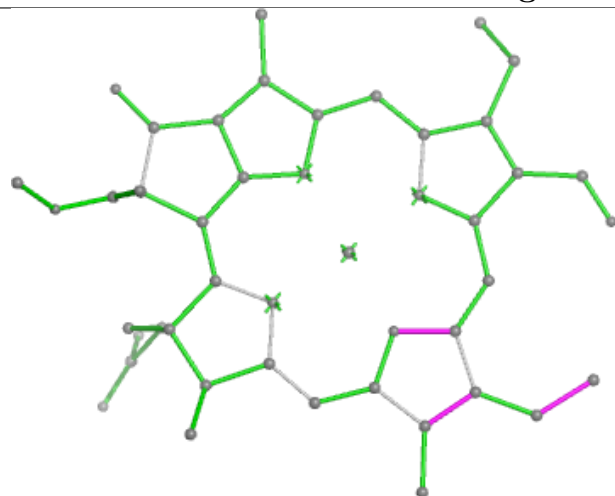




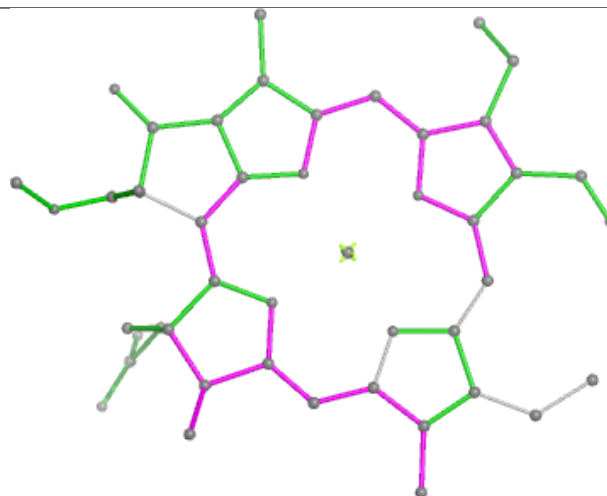
## Ligand CLA r 604



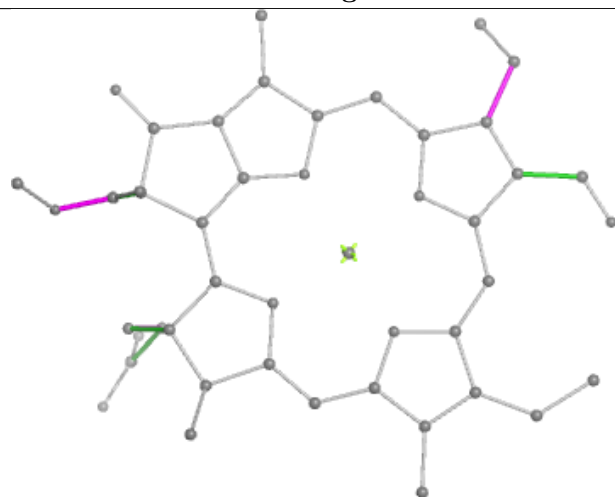
## Ligand CHL S 308



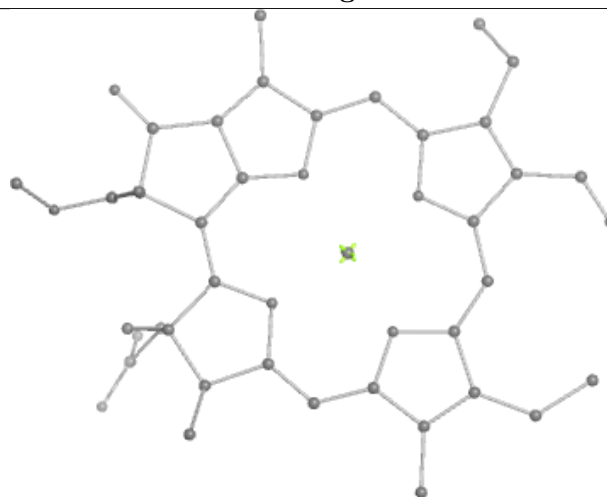
Bond lengths



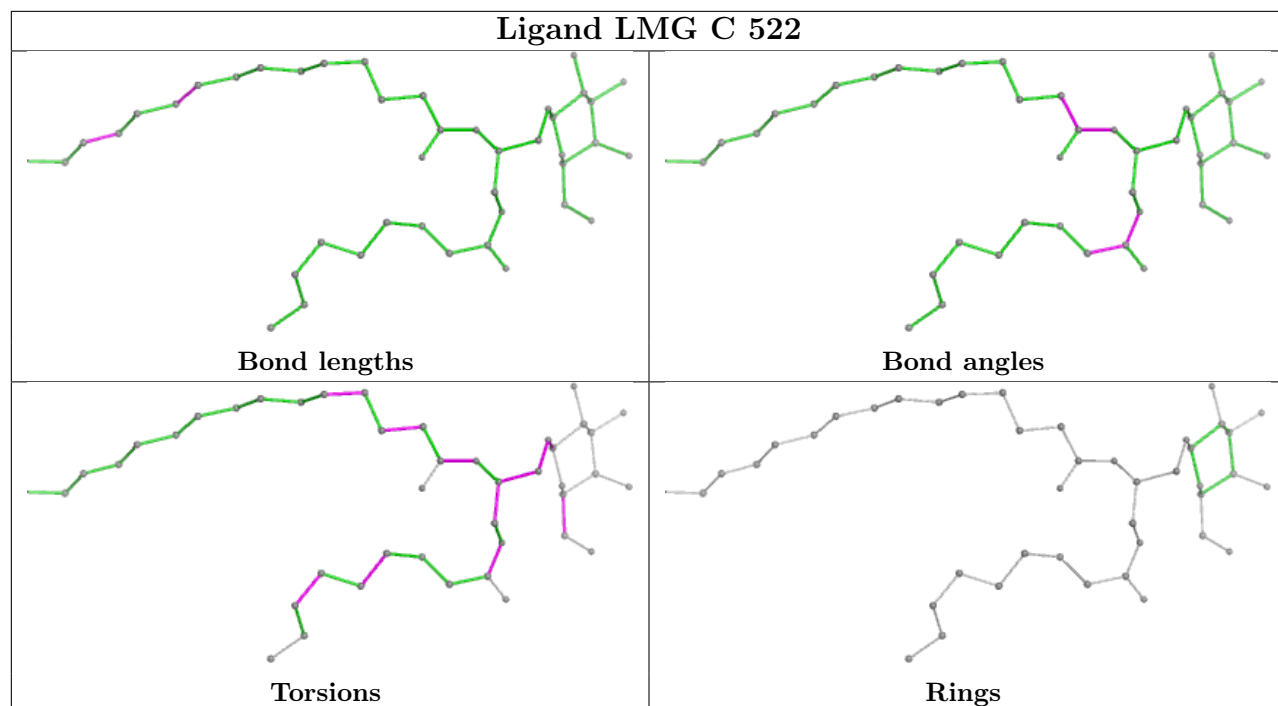
Bond angles

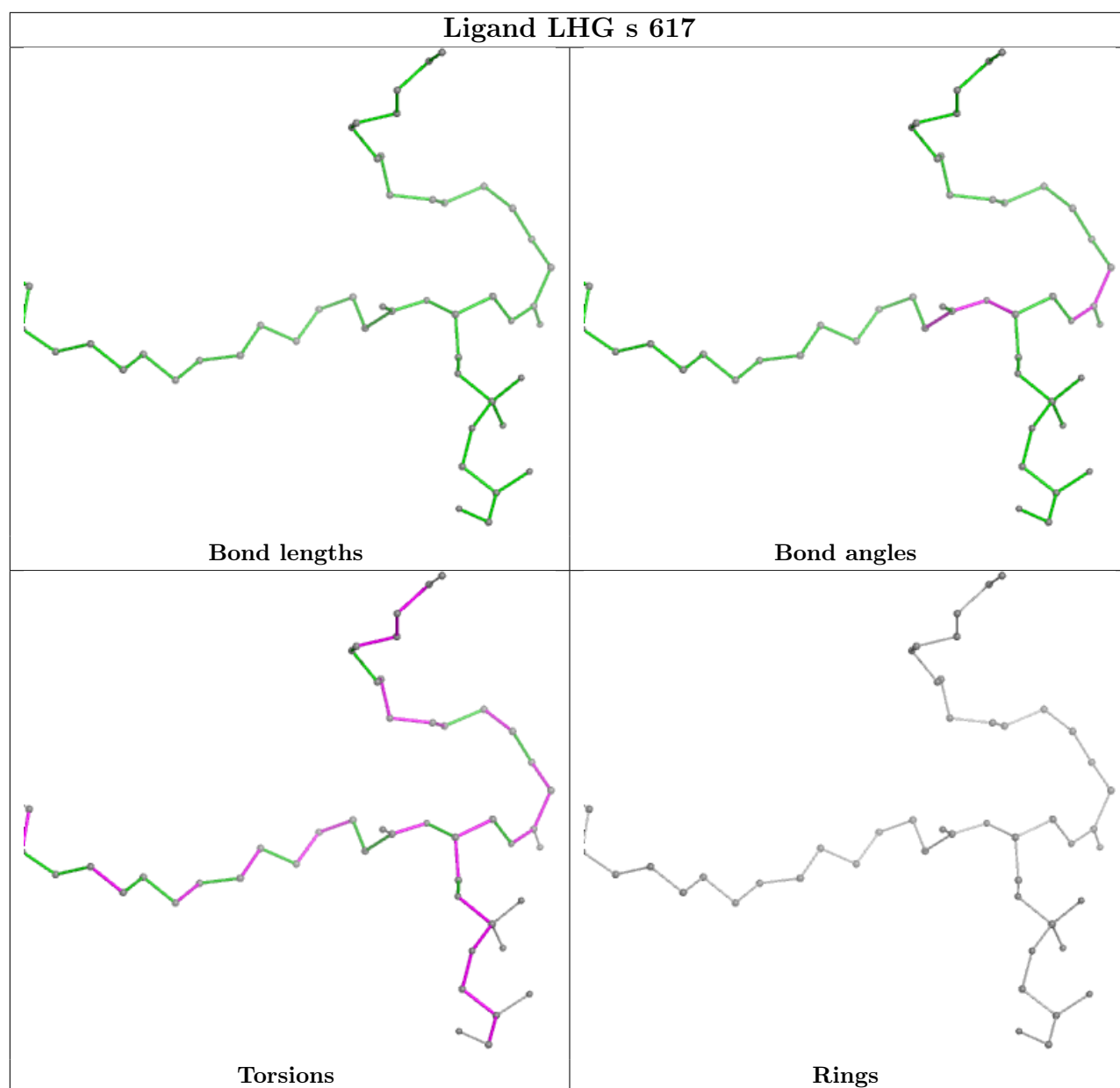


Torsions

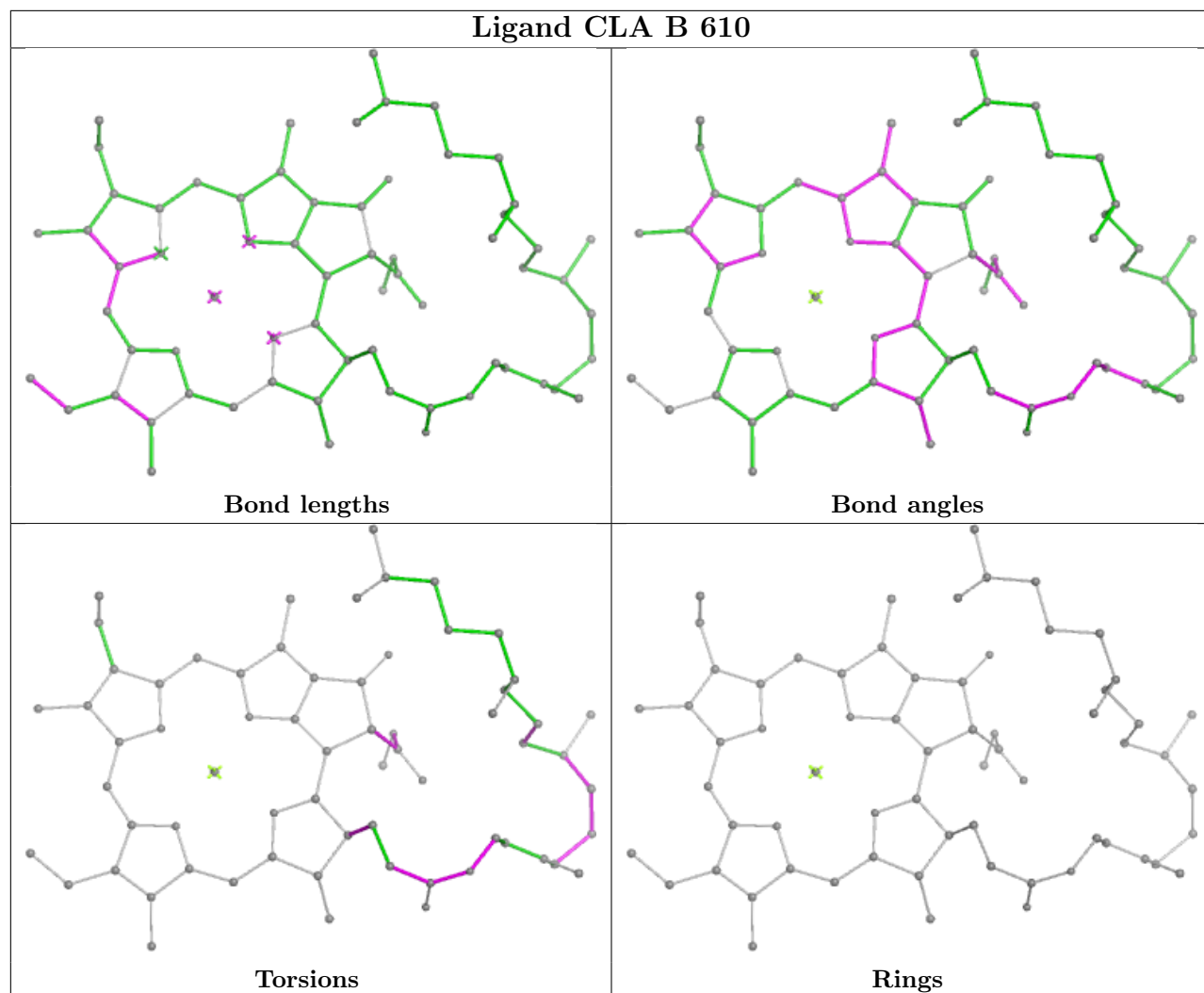


Rings

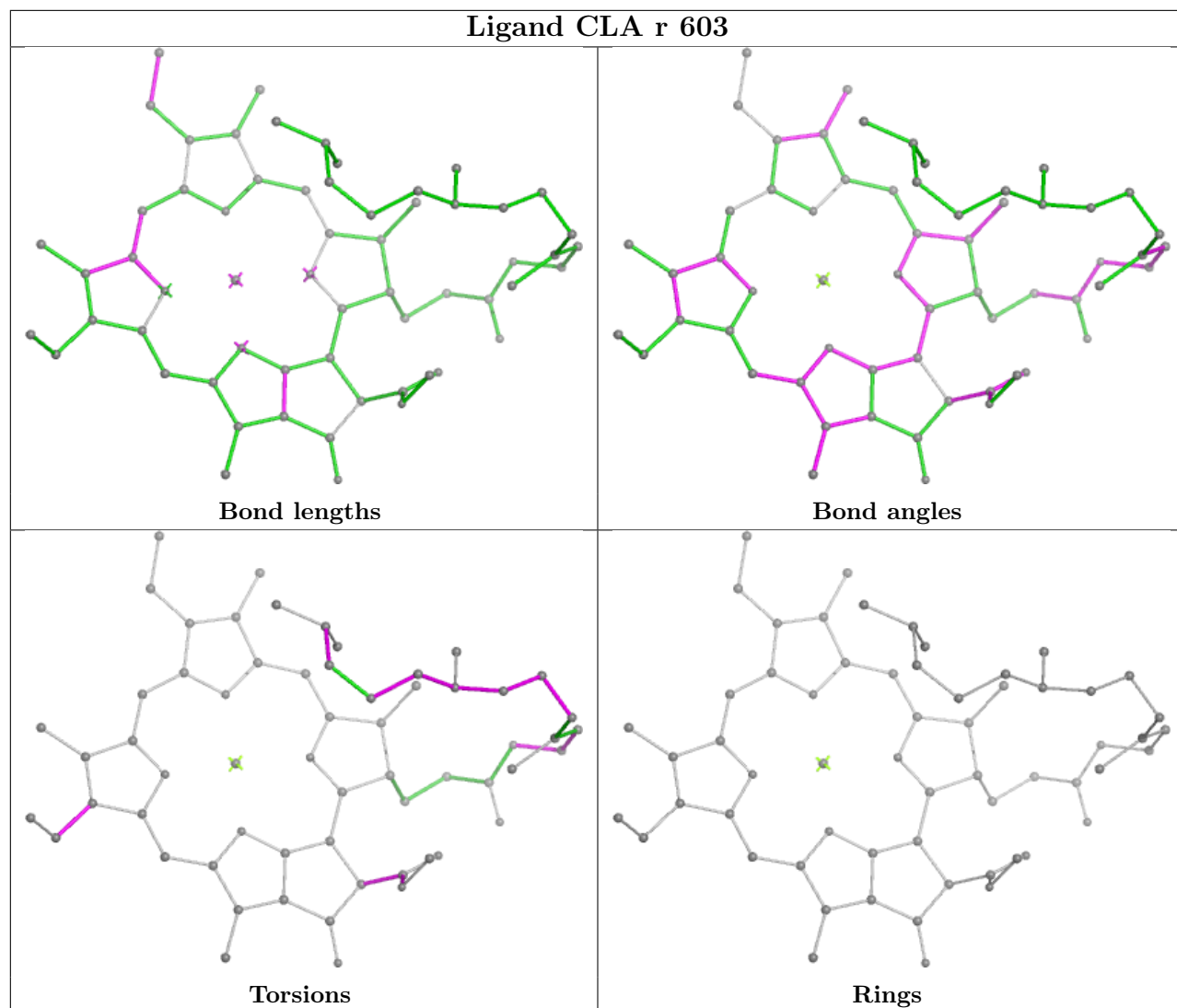




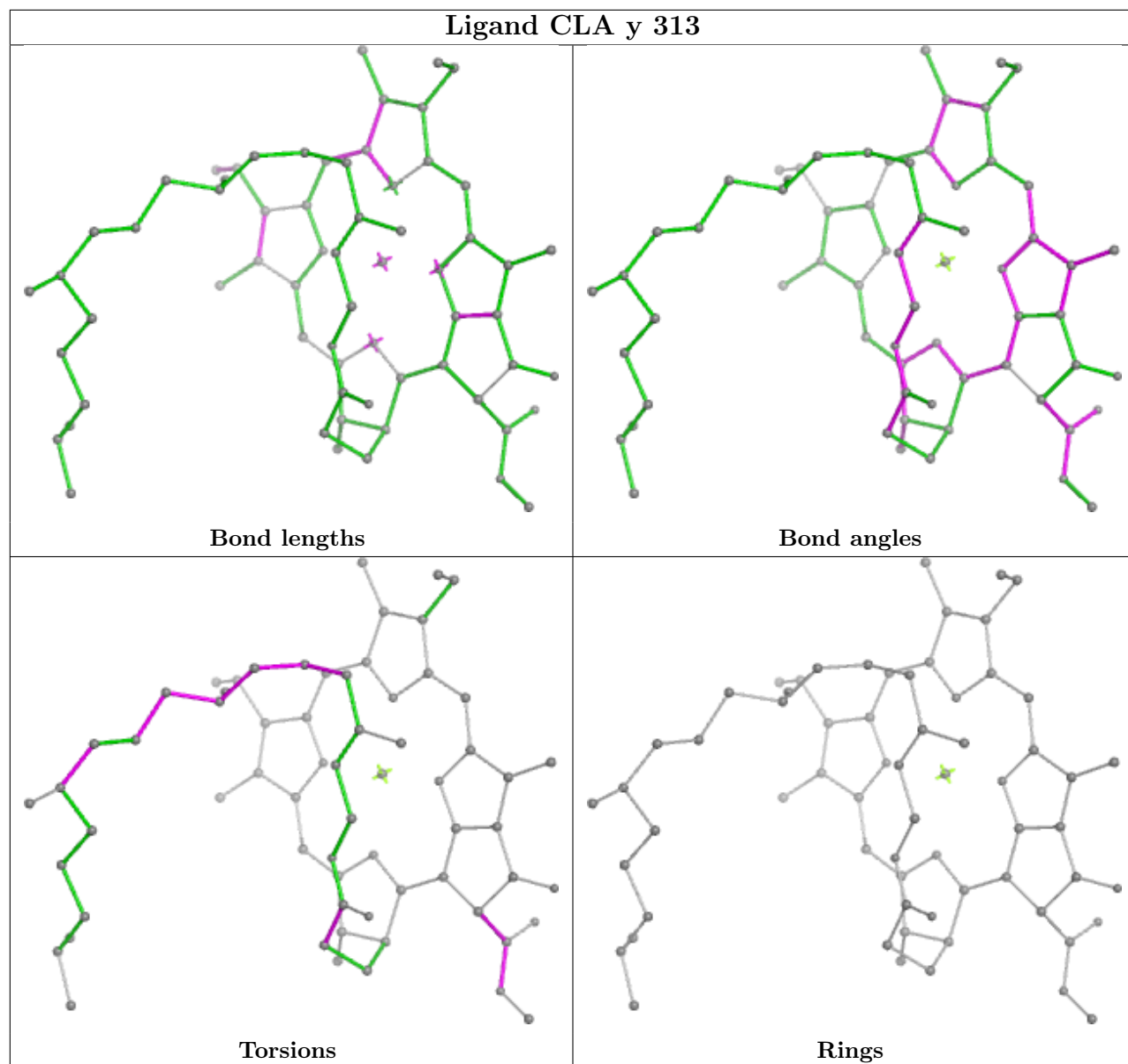
## Ligand CLA B 610



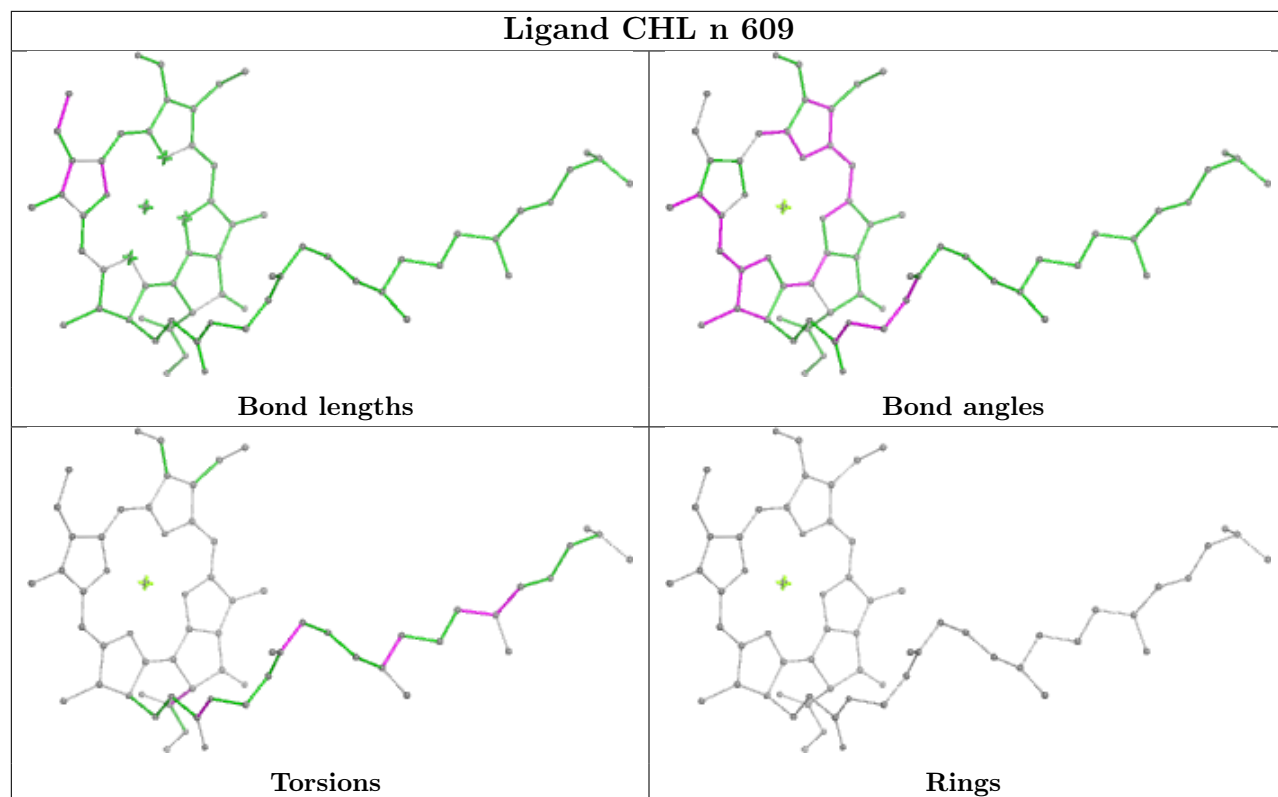
## Ligand CLA r 603



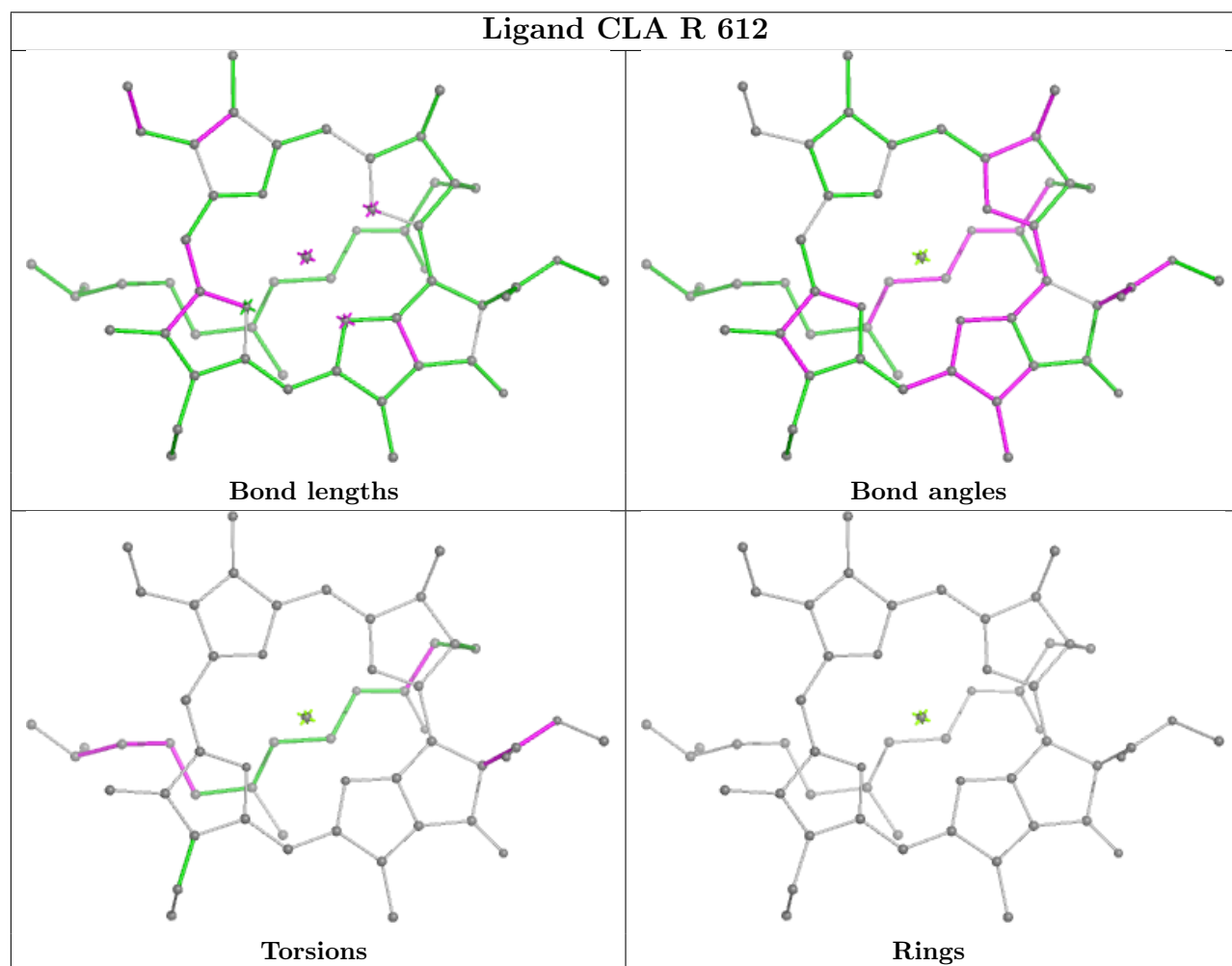
## Ligand CLA y 313



## Ligand CHL n 609

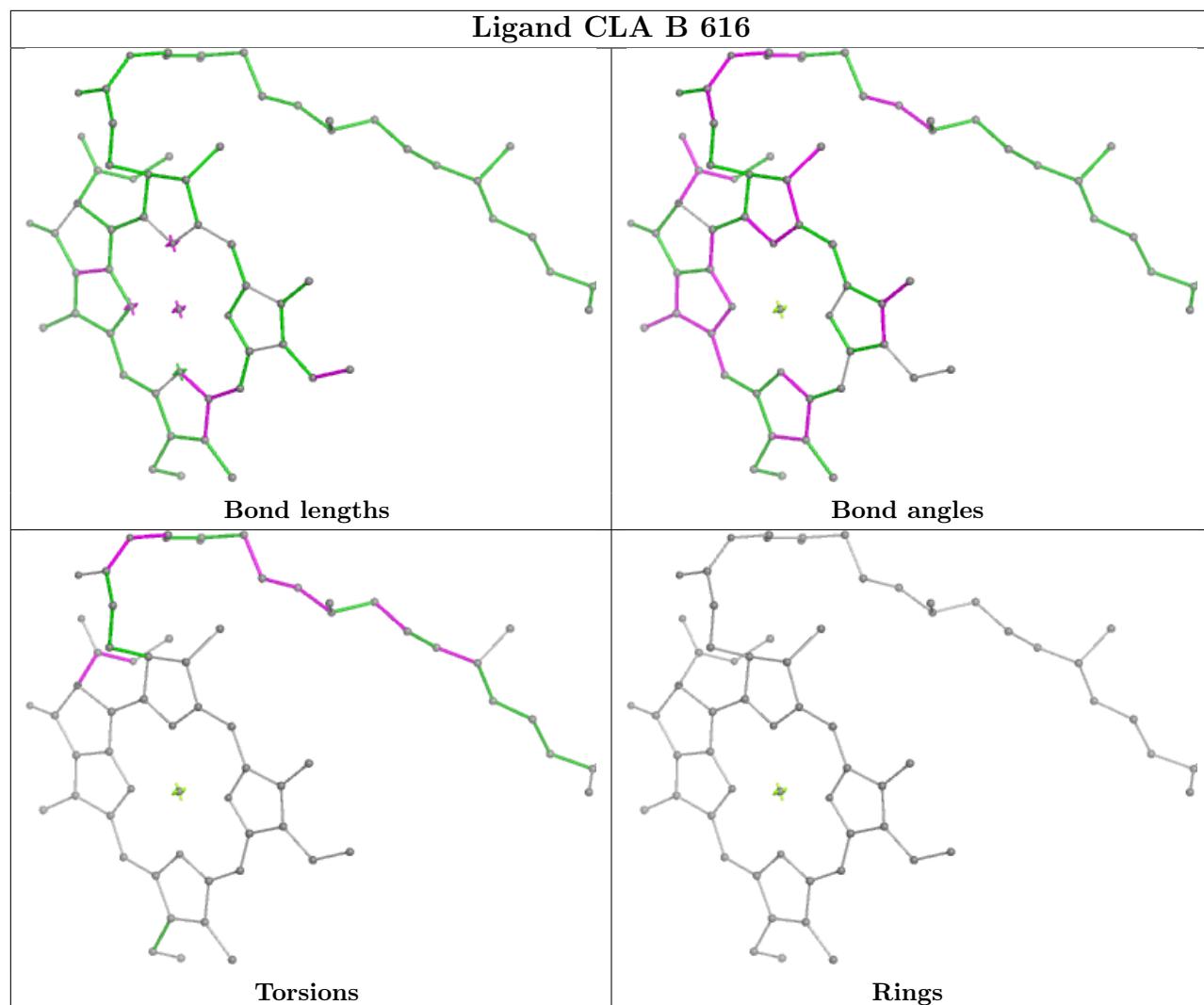


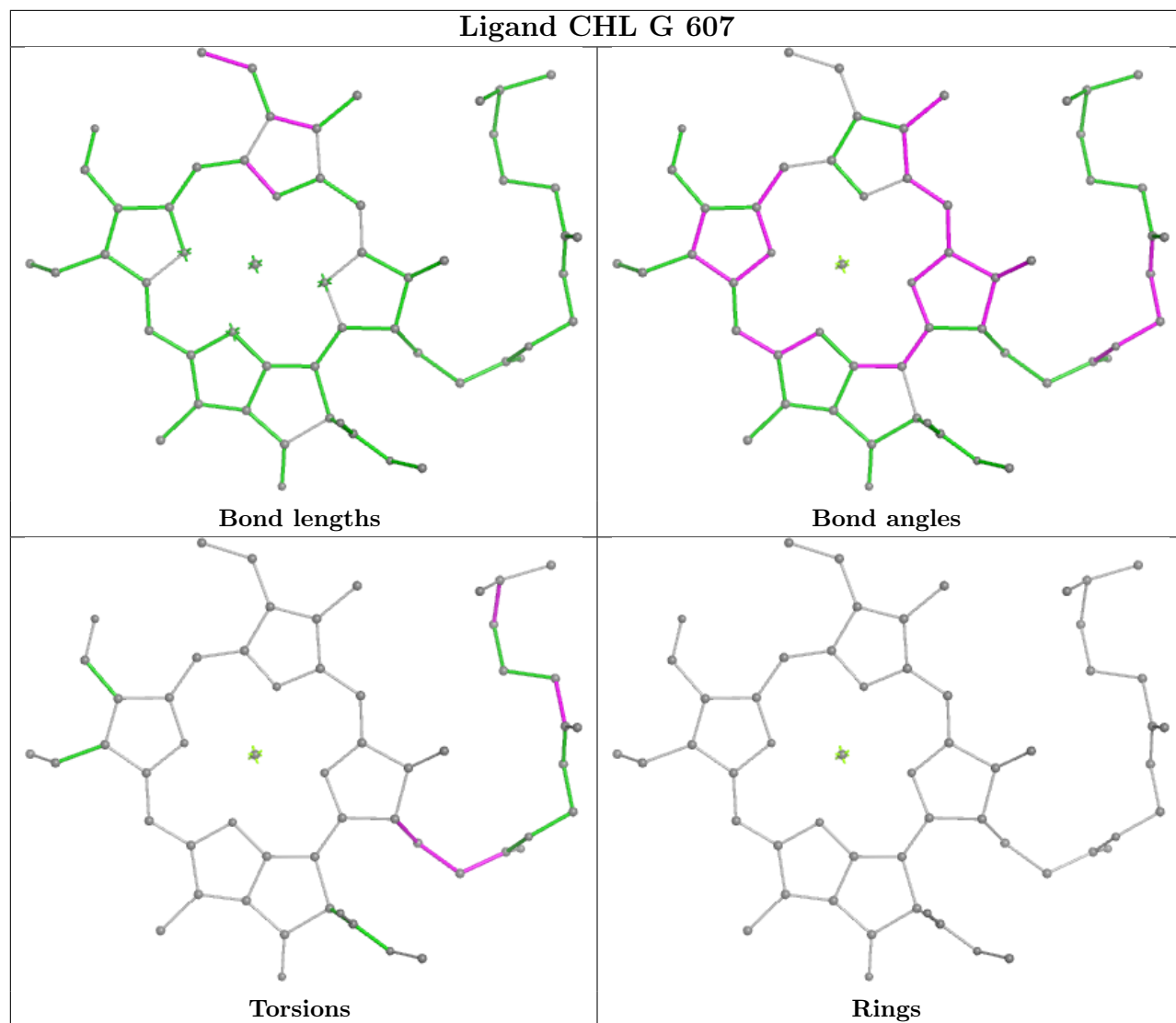
## Ligand CLA R 612

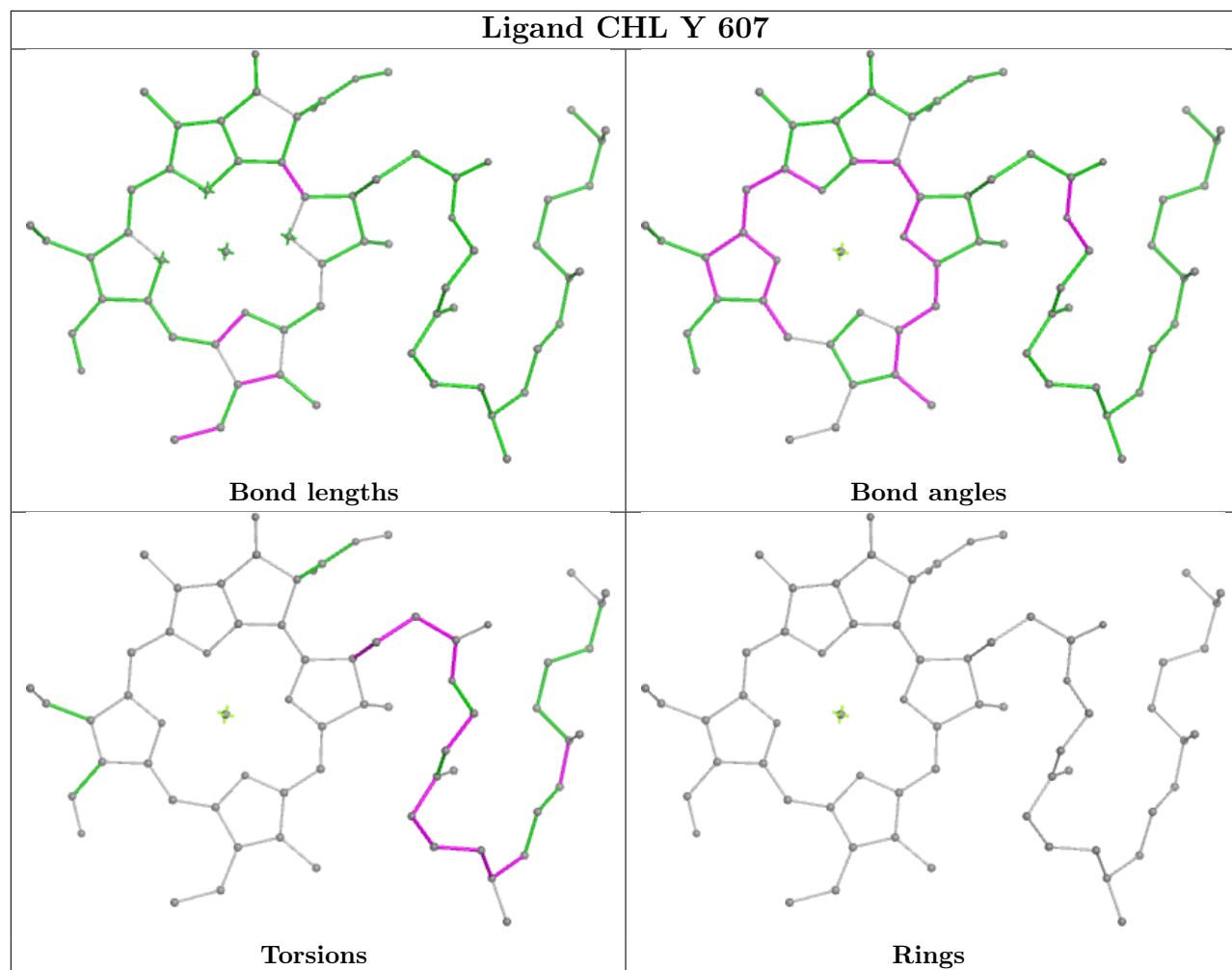




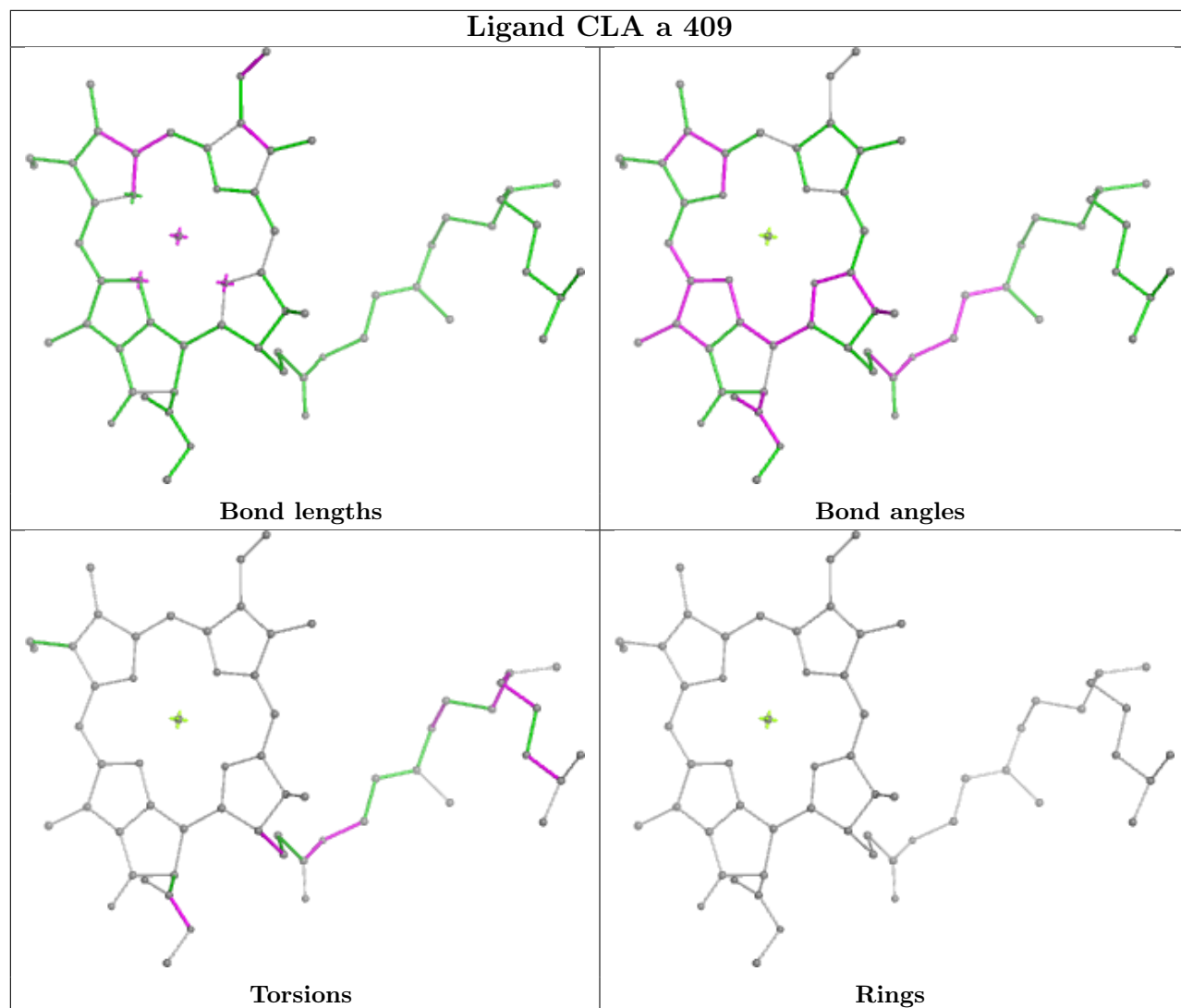
## Ligand CLA B 616



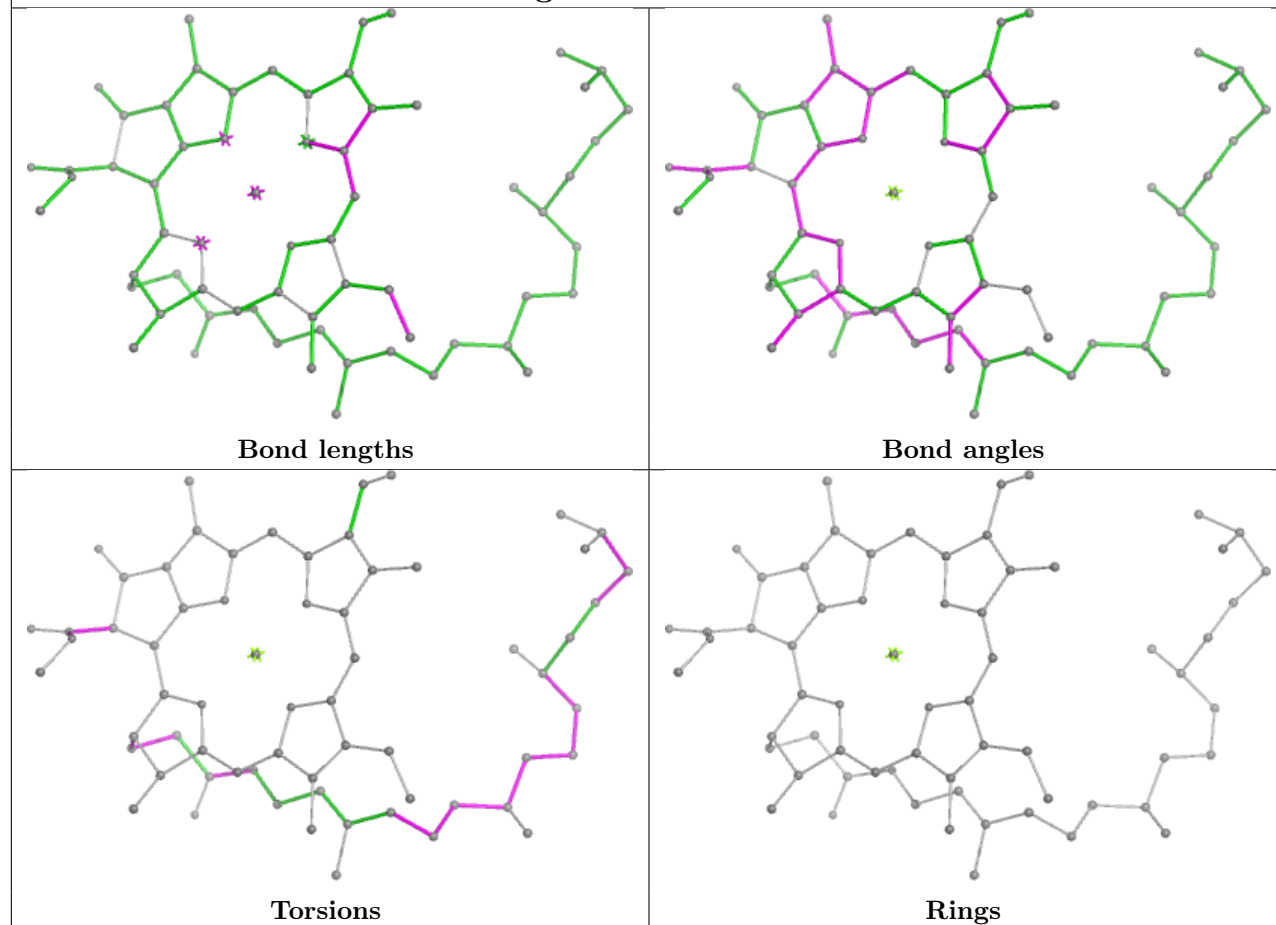




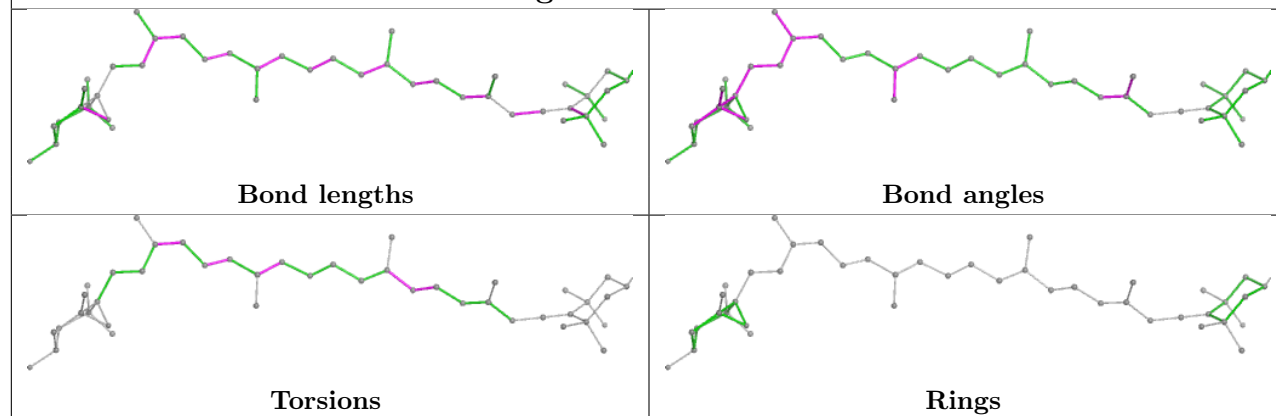
## Ligand CLA a 409

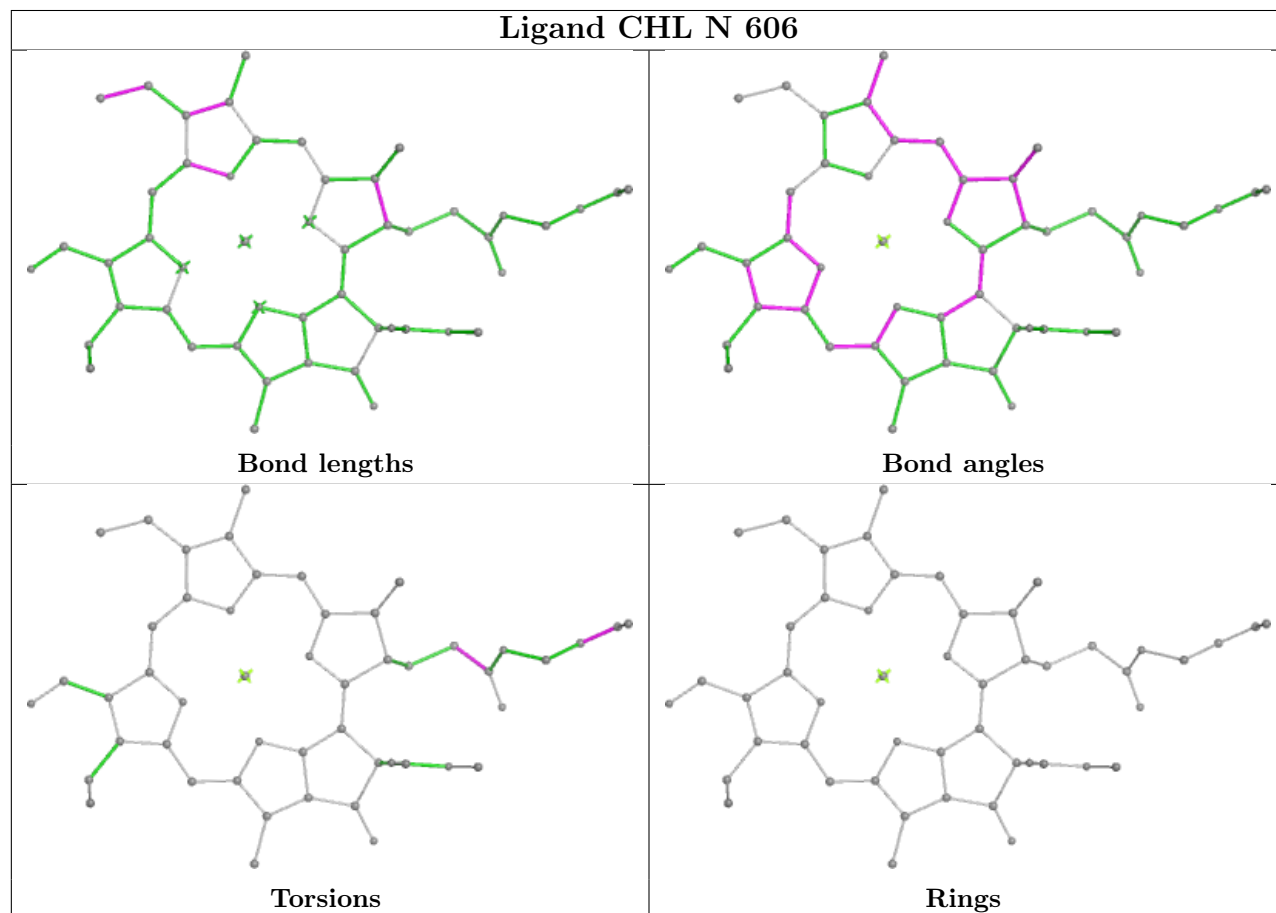
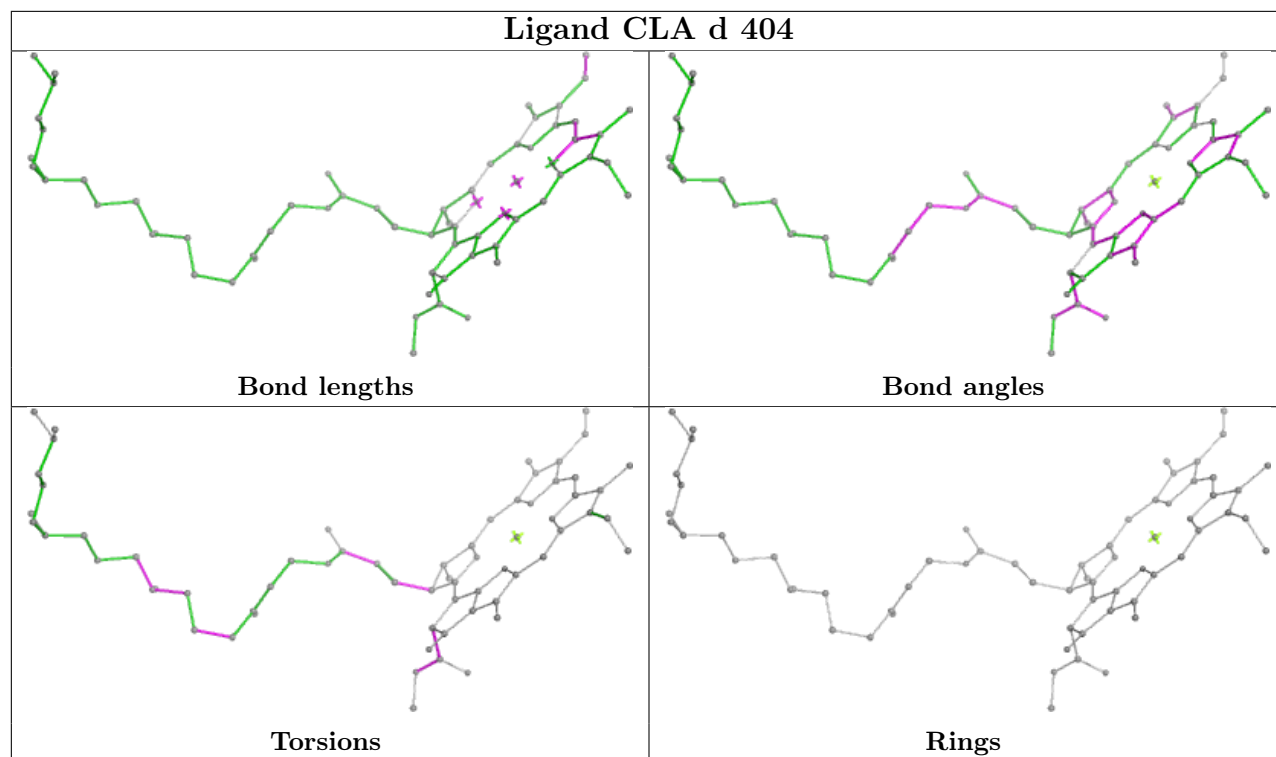


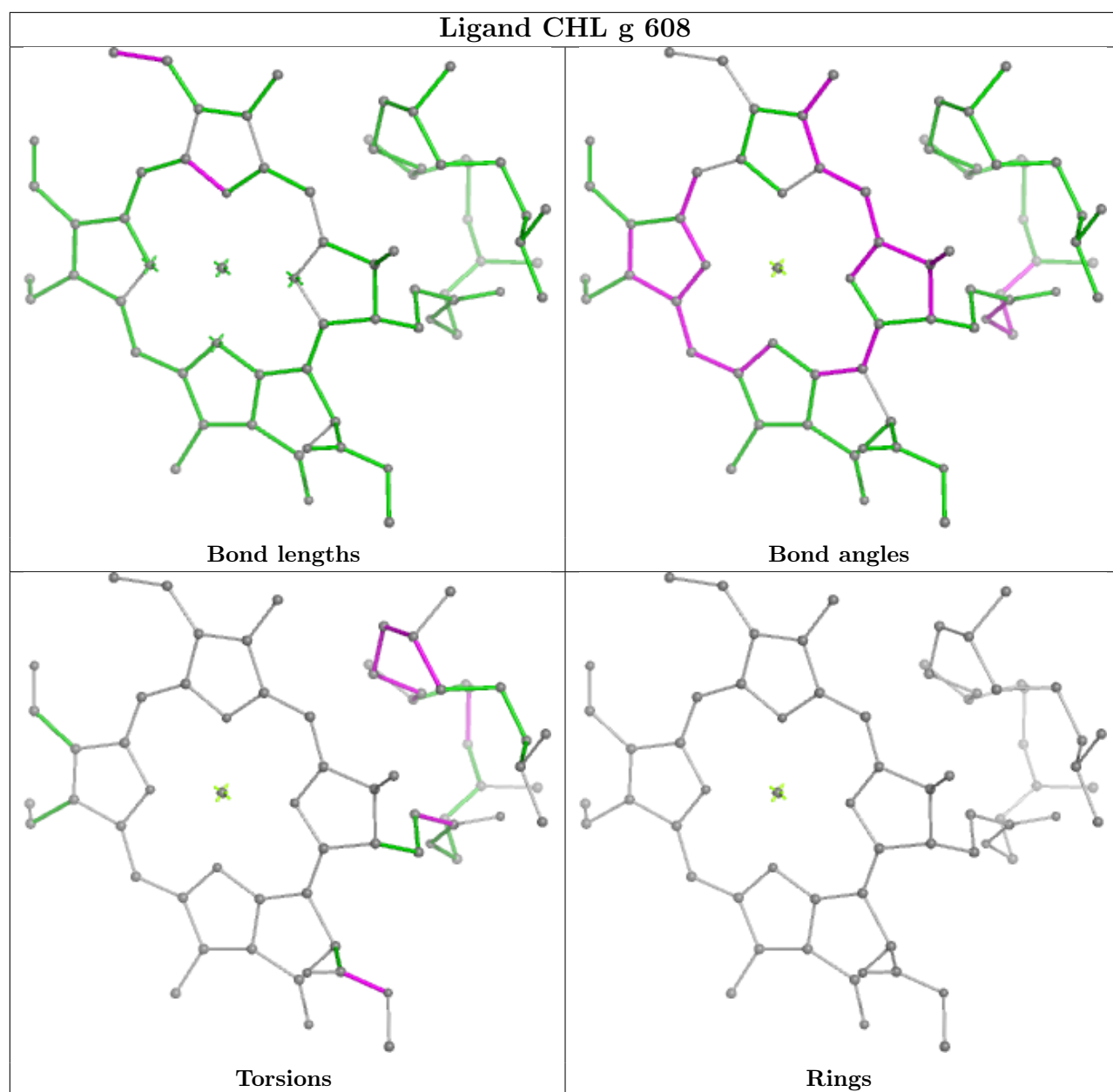
## Ligand CLA n 602

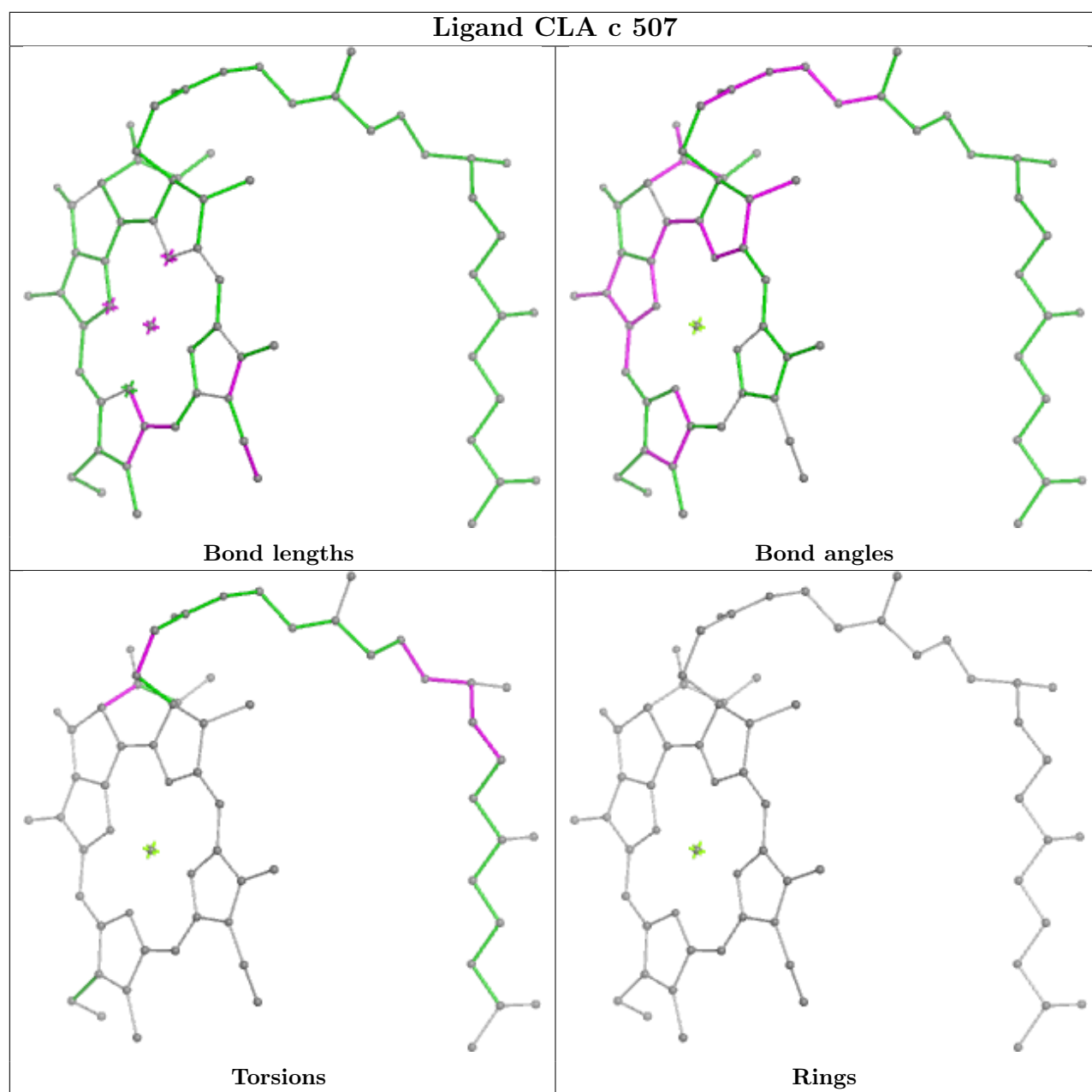


## Ligand NEX s 616

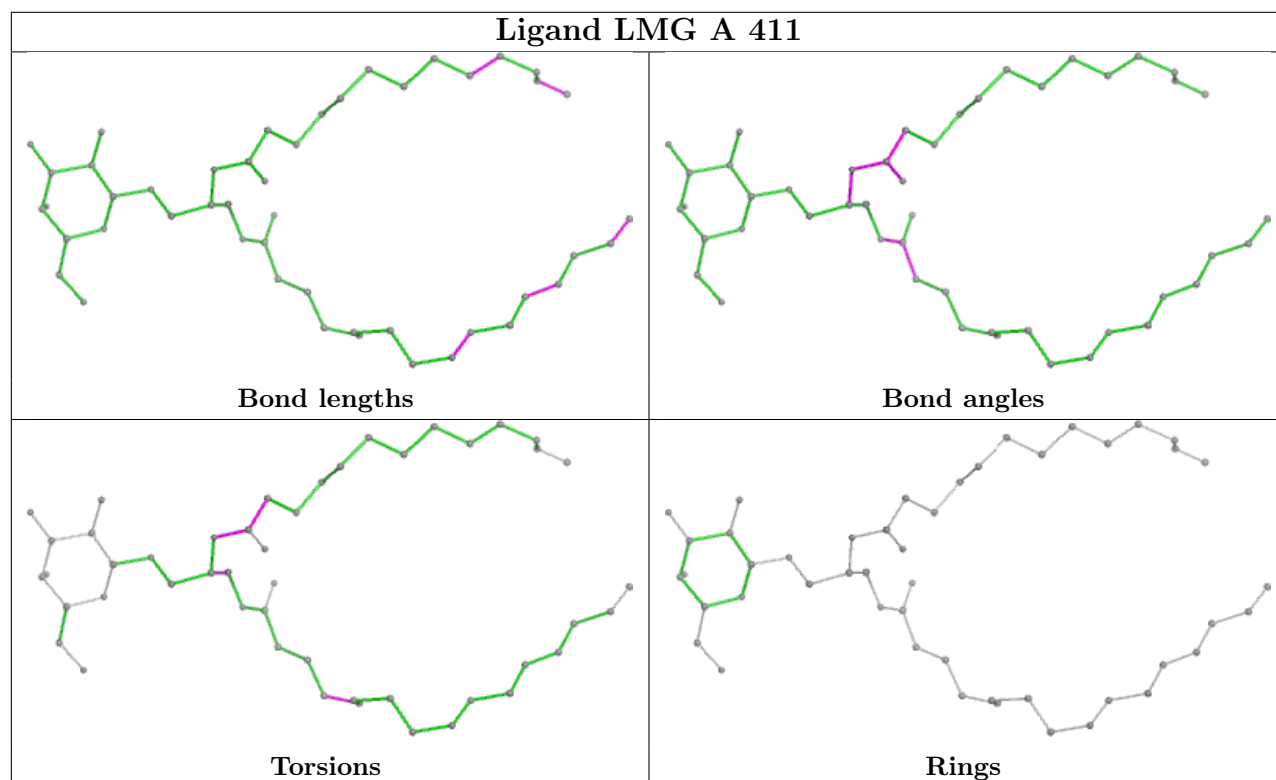
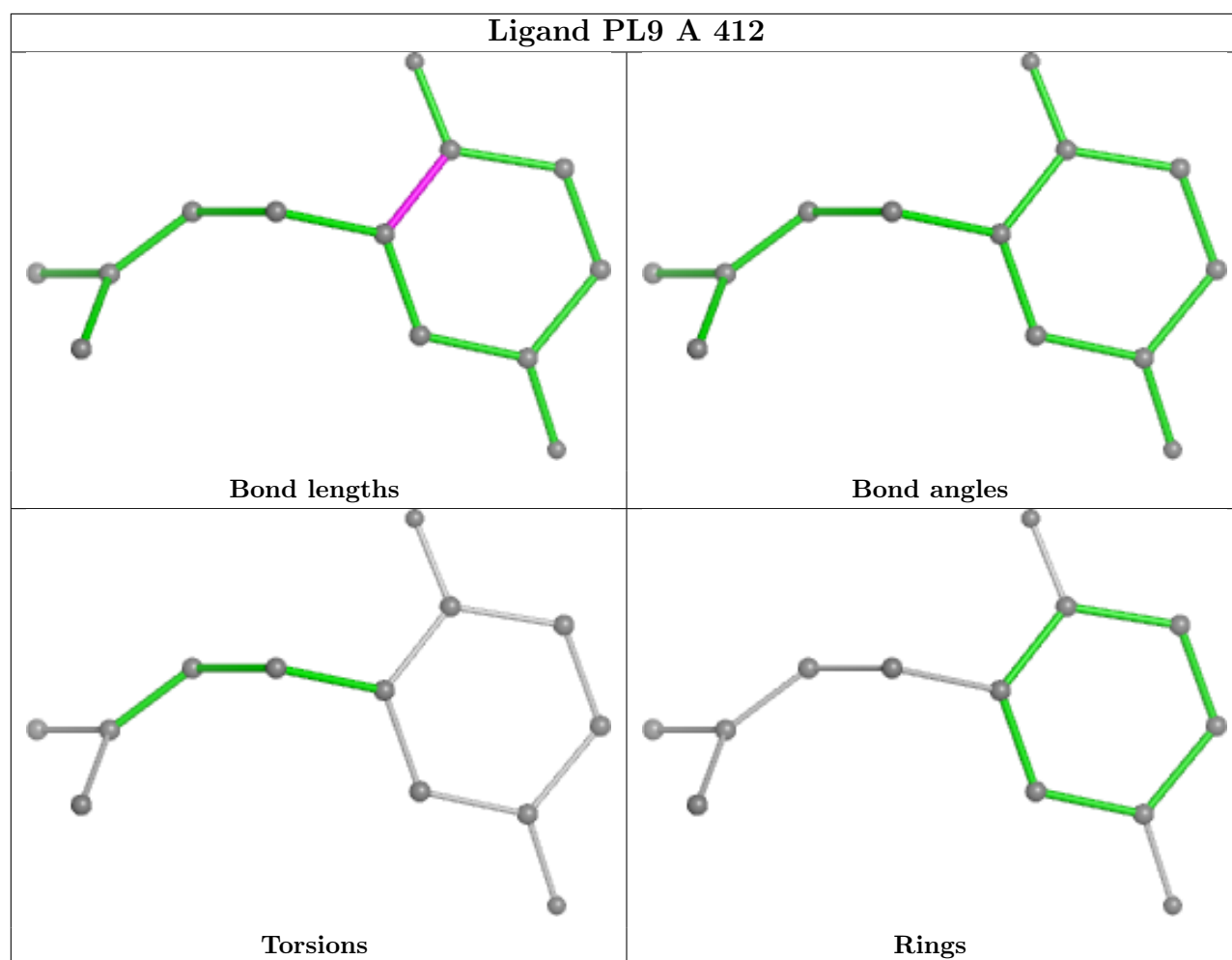


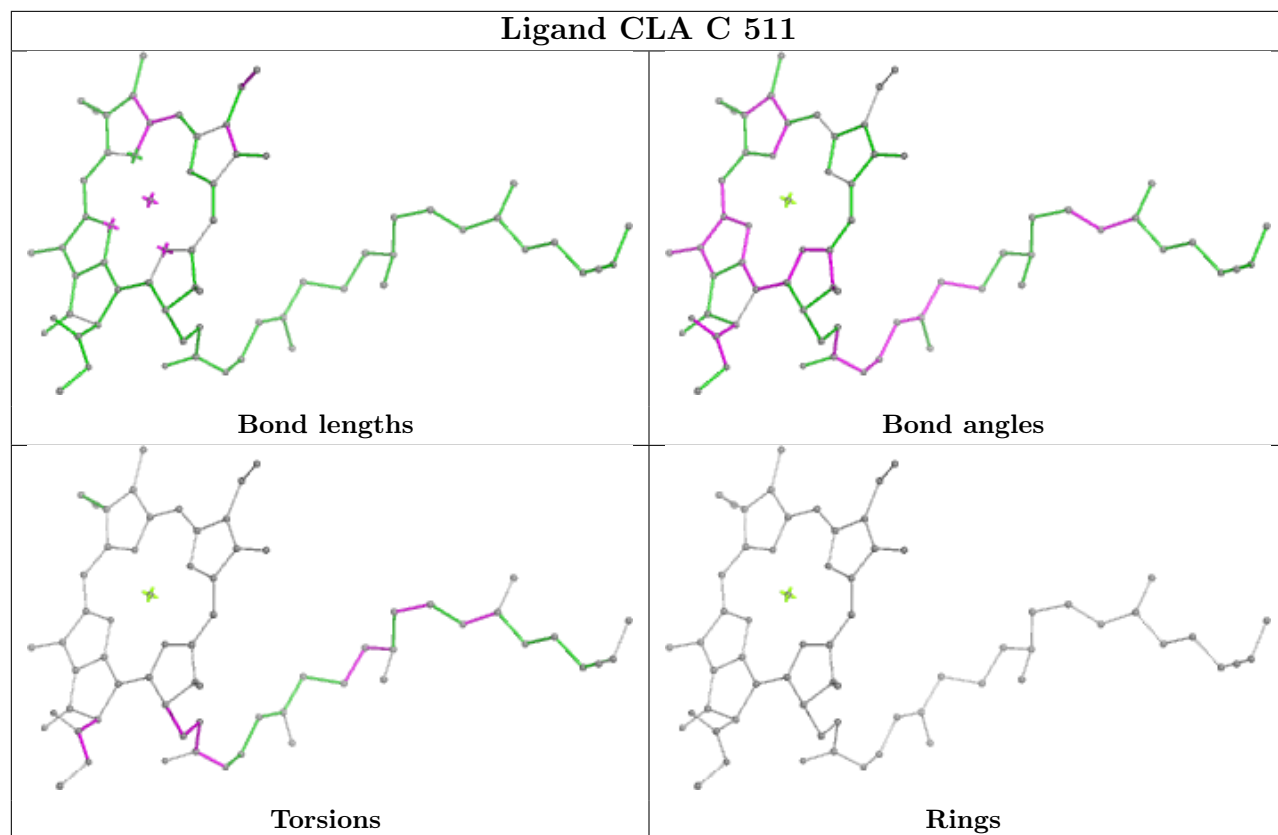


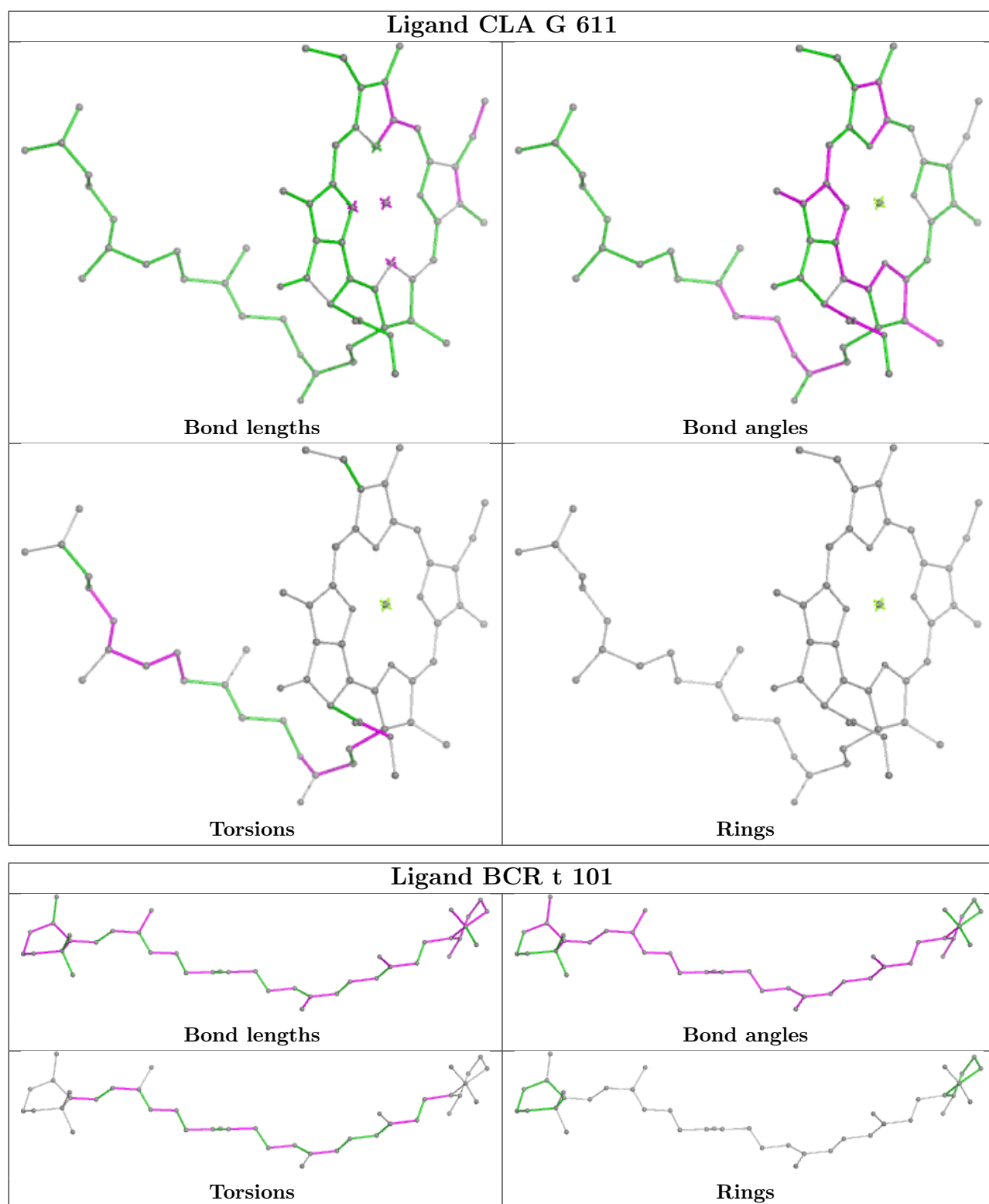


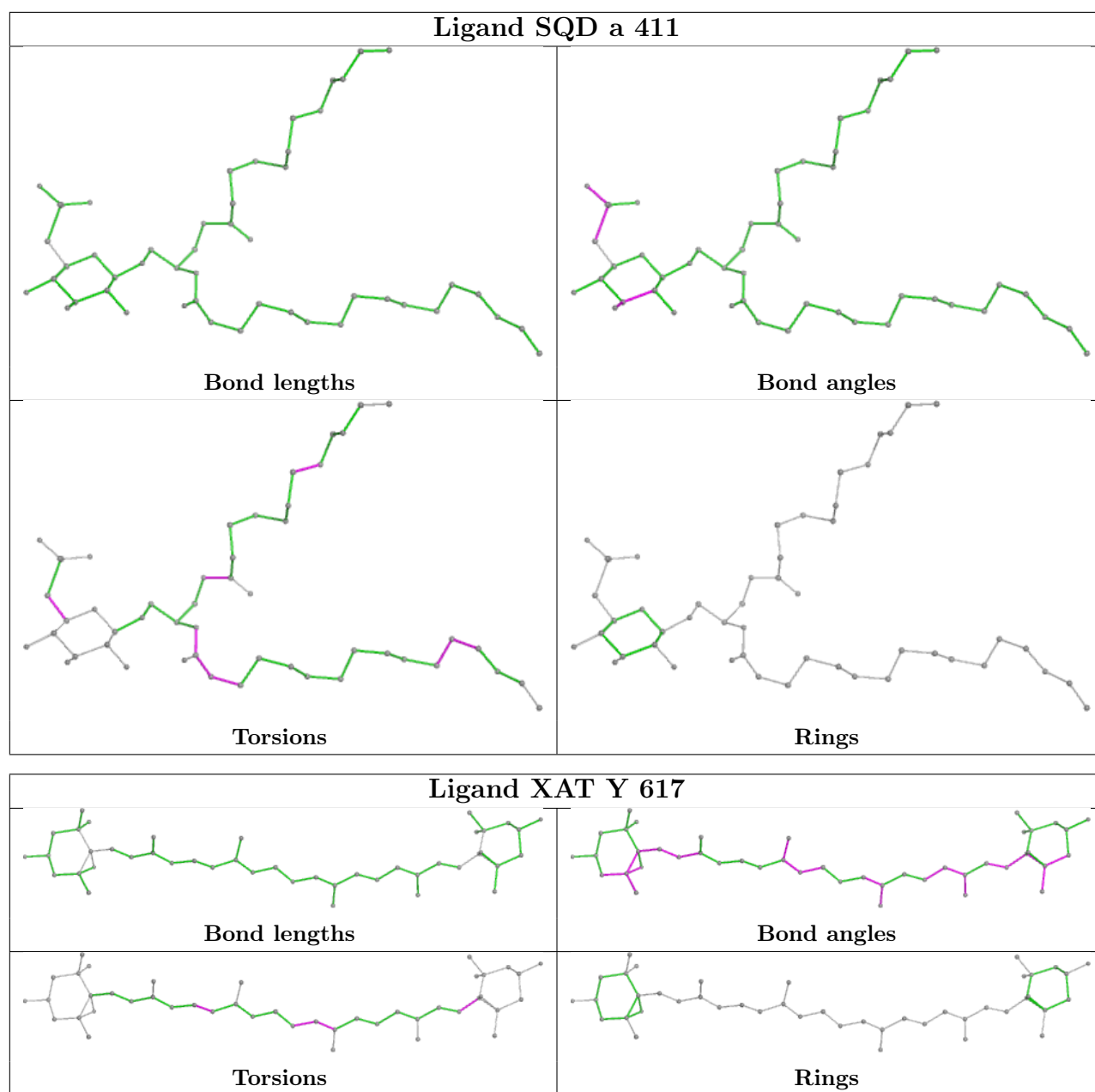




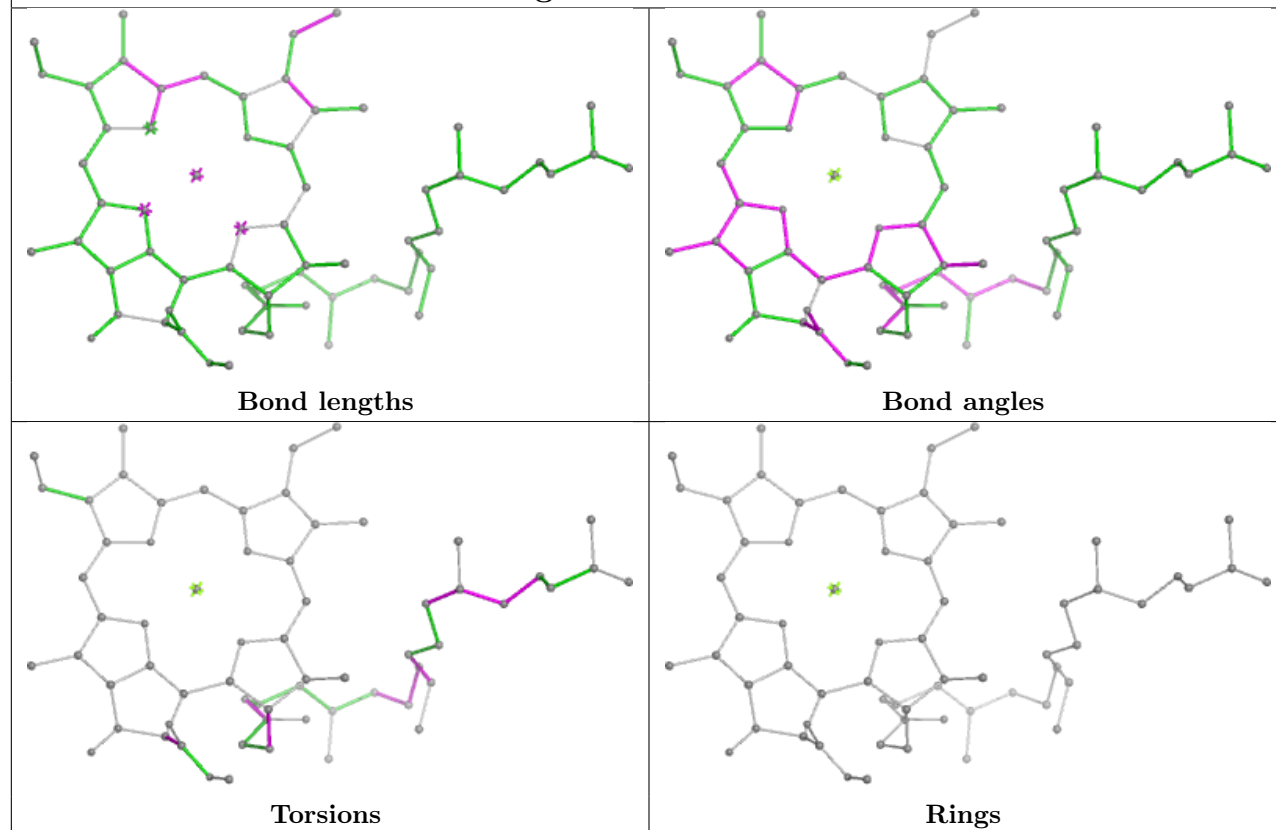




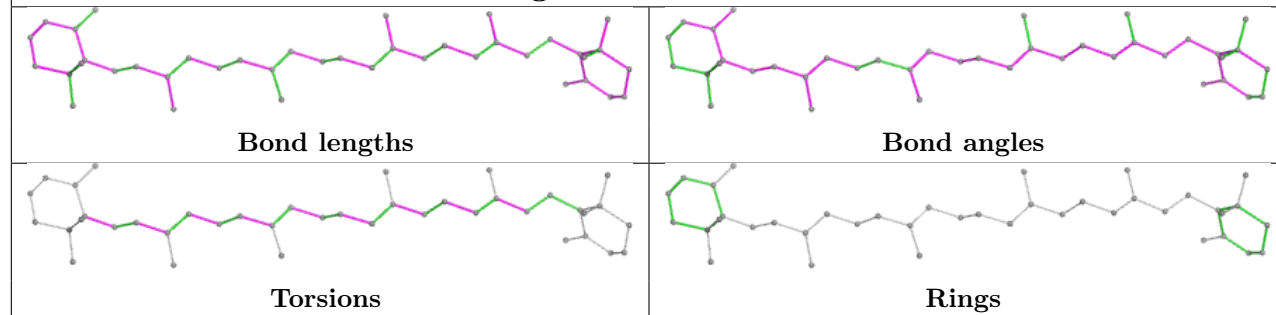


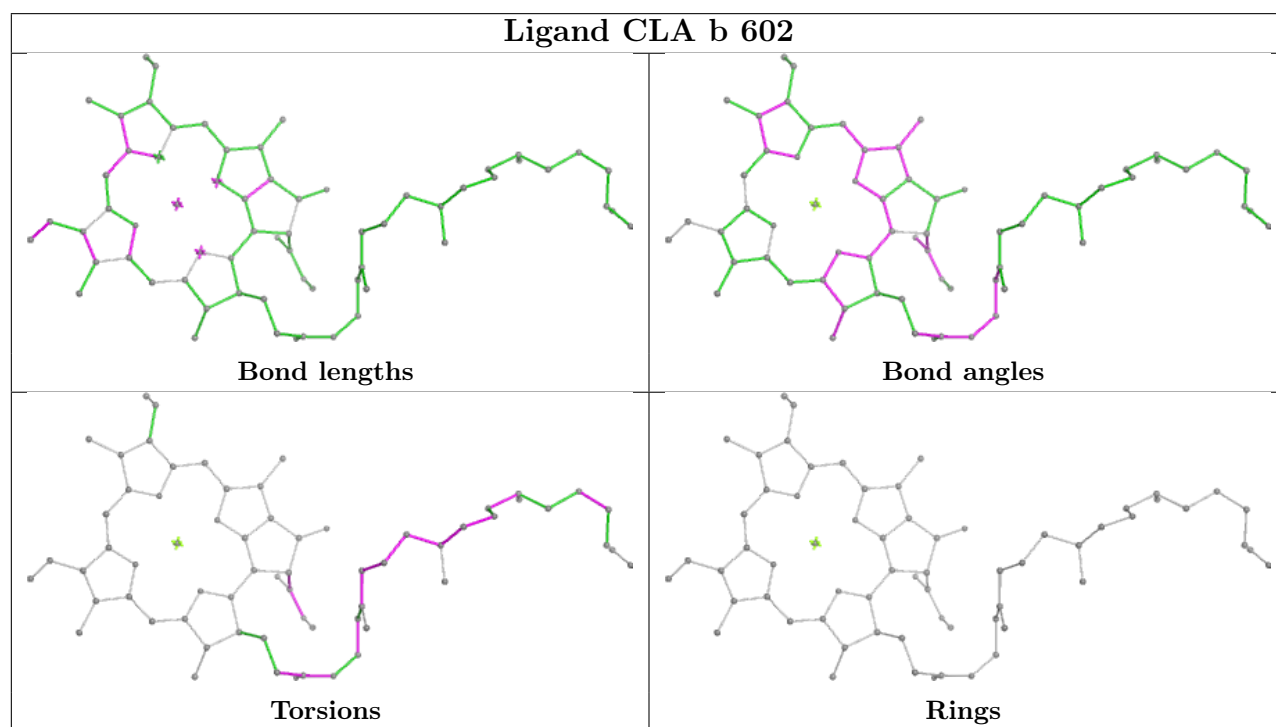
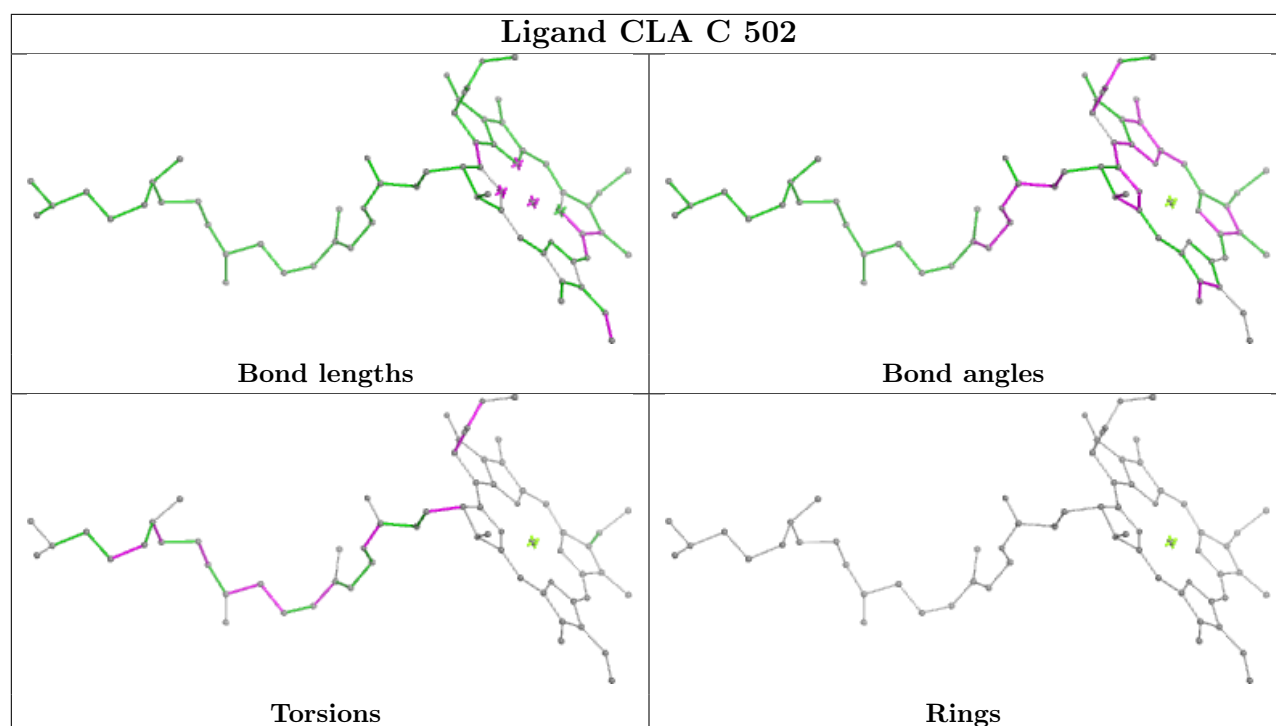


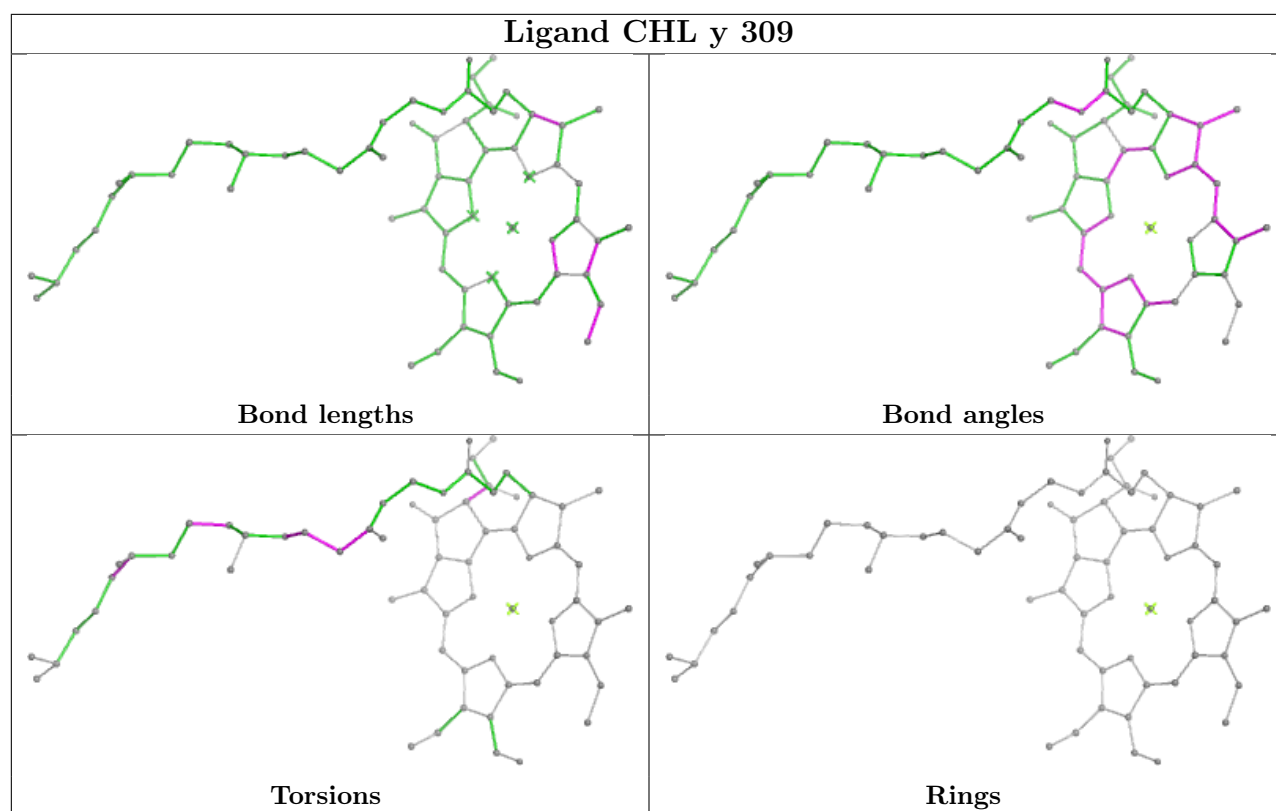
## Ligand CLA d 401



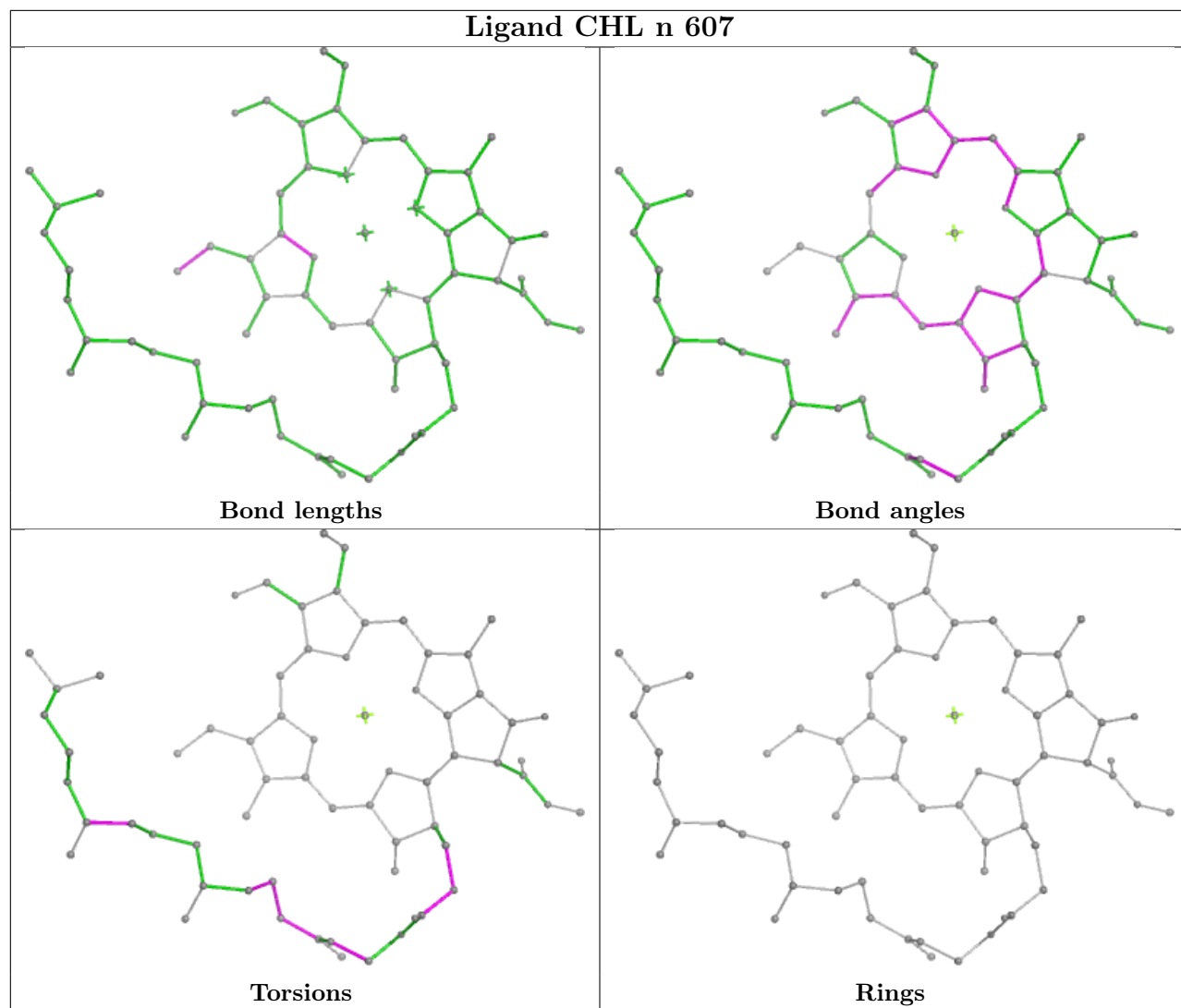
## Ligand BCR B 618



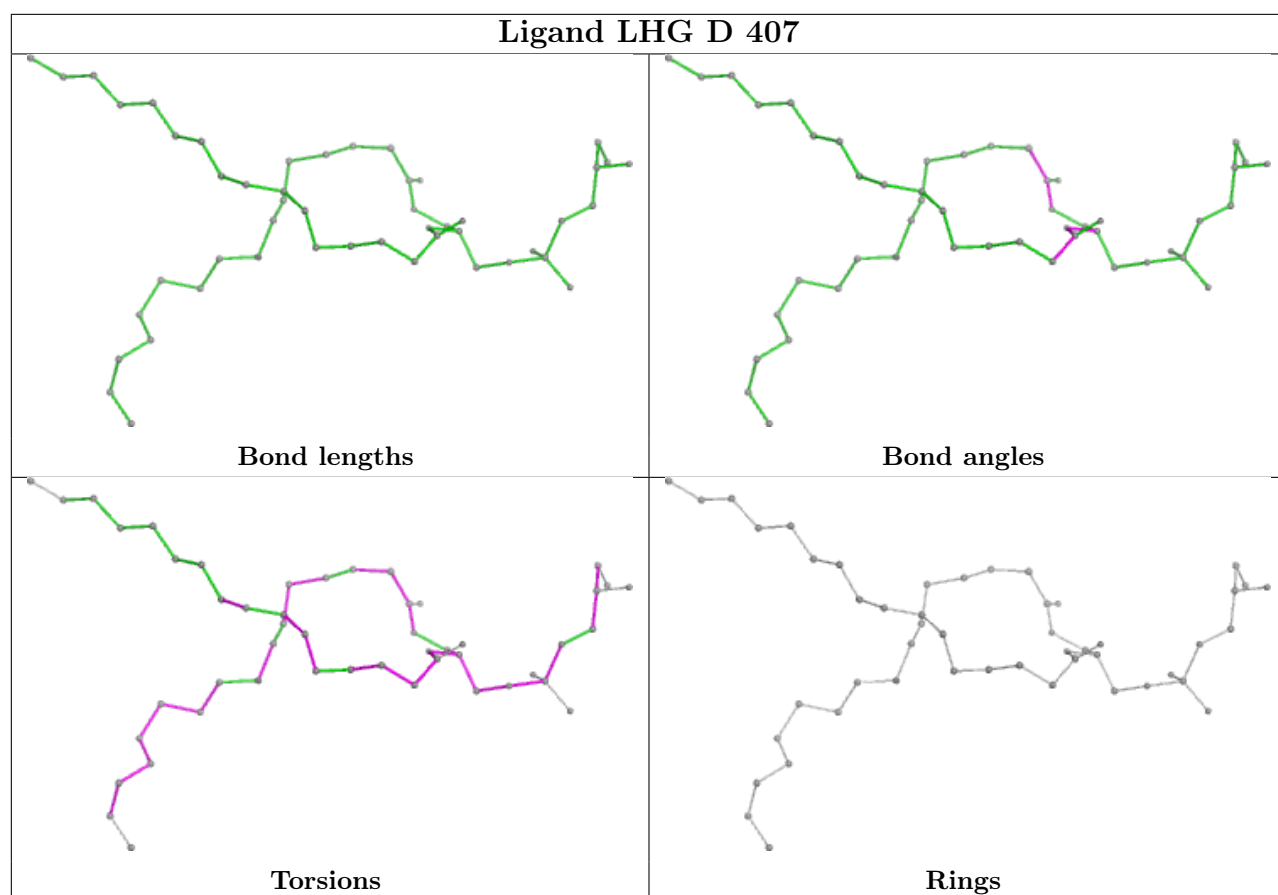


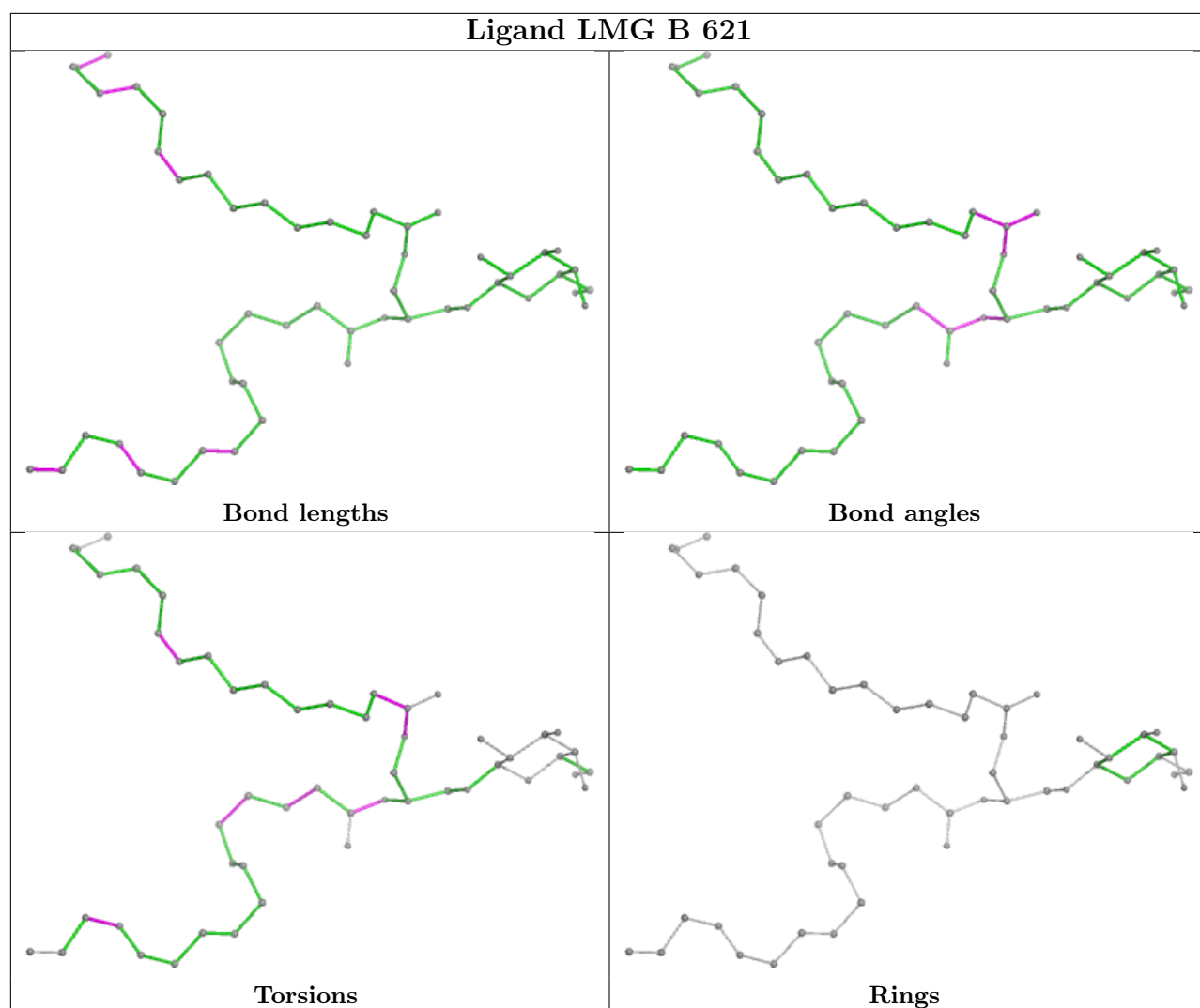


## Ligand CHL n 607

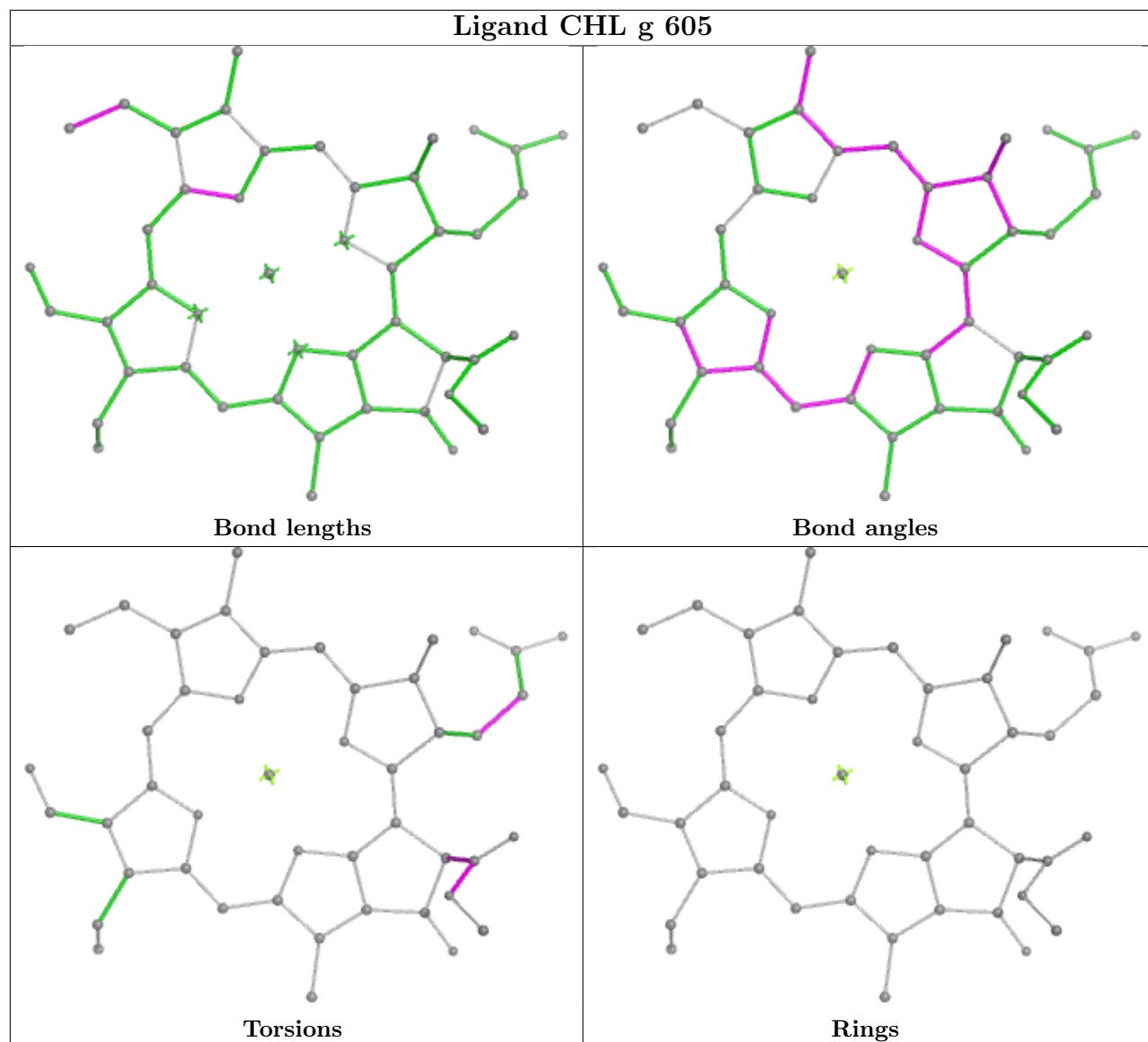


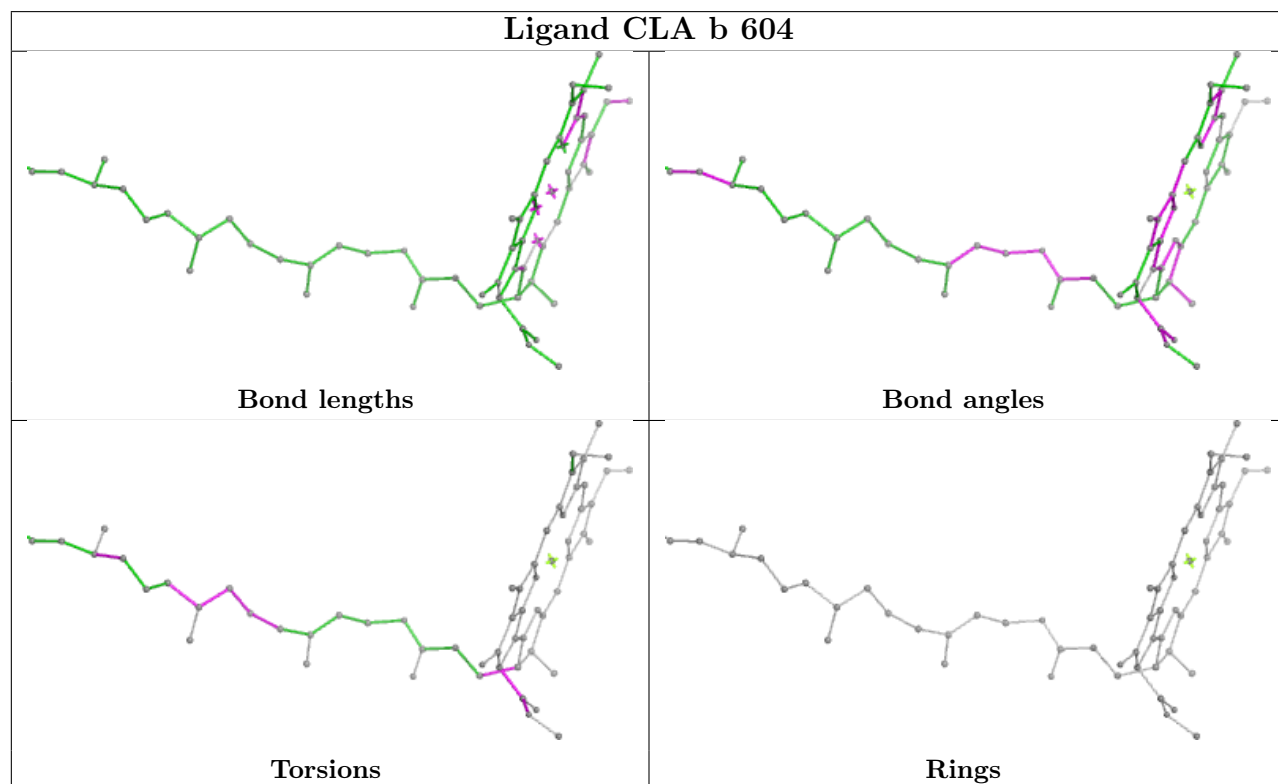
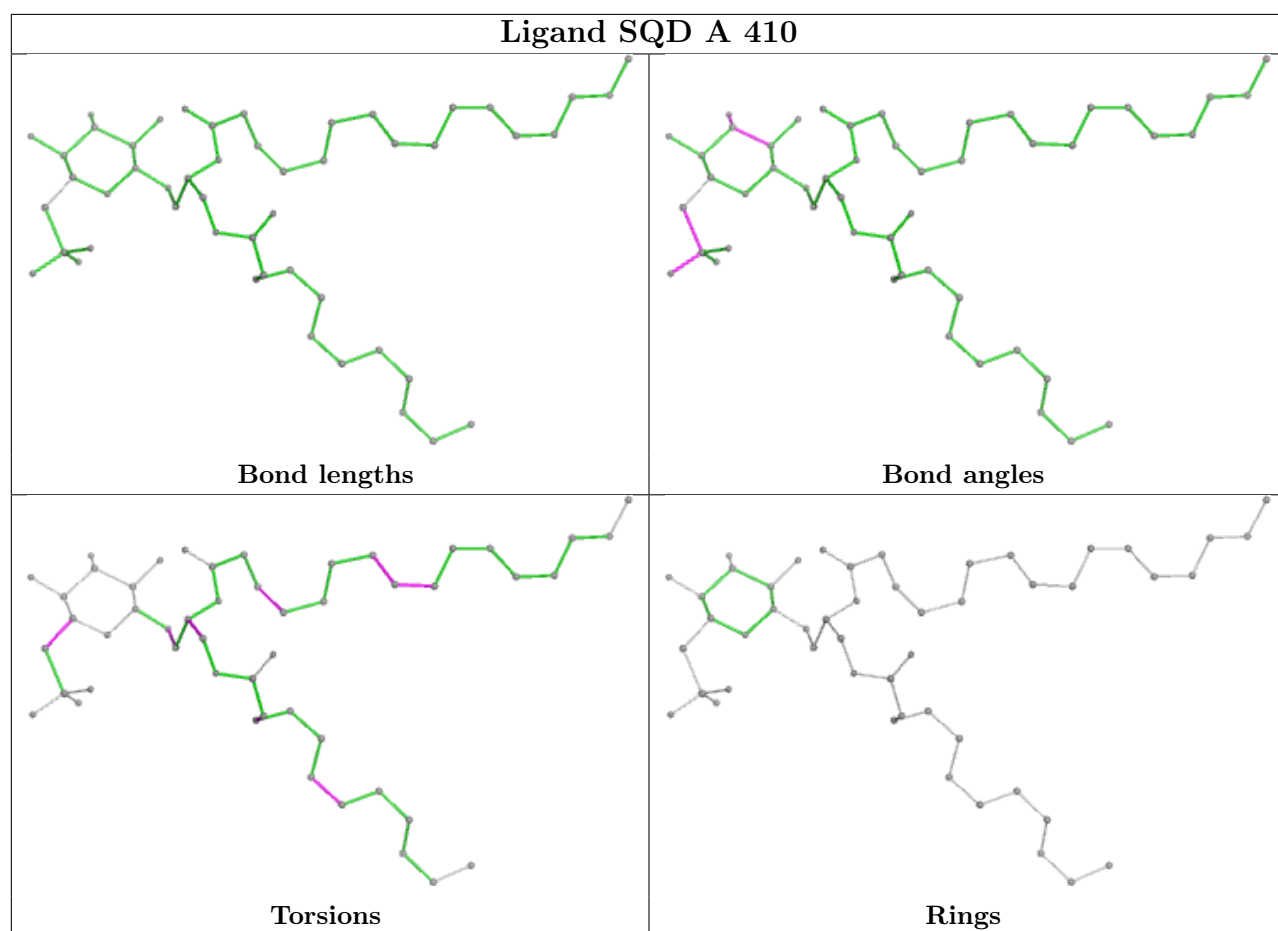


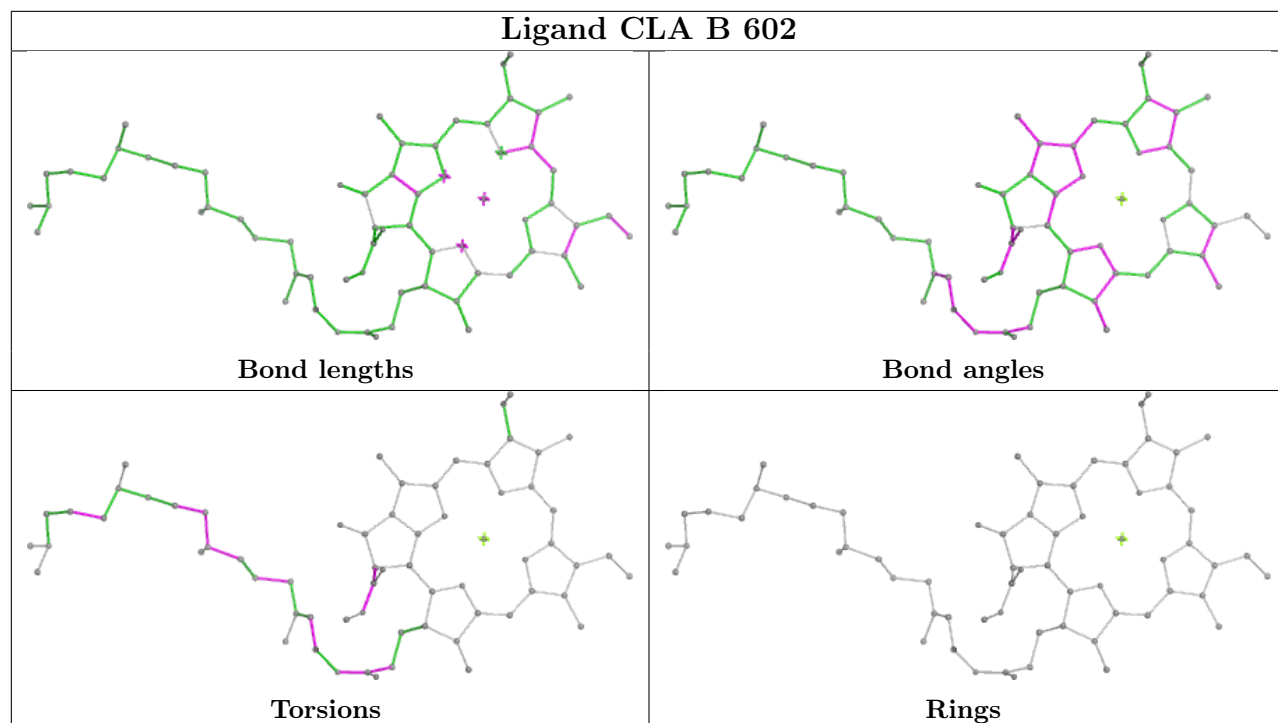
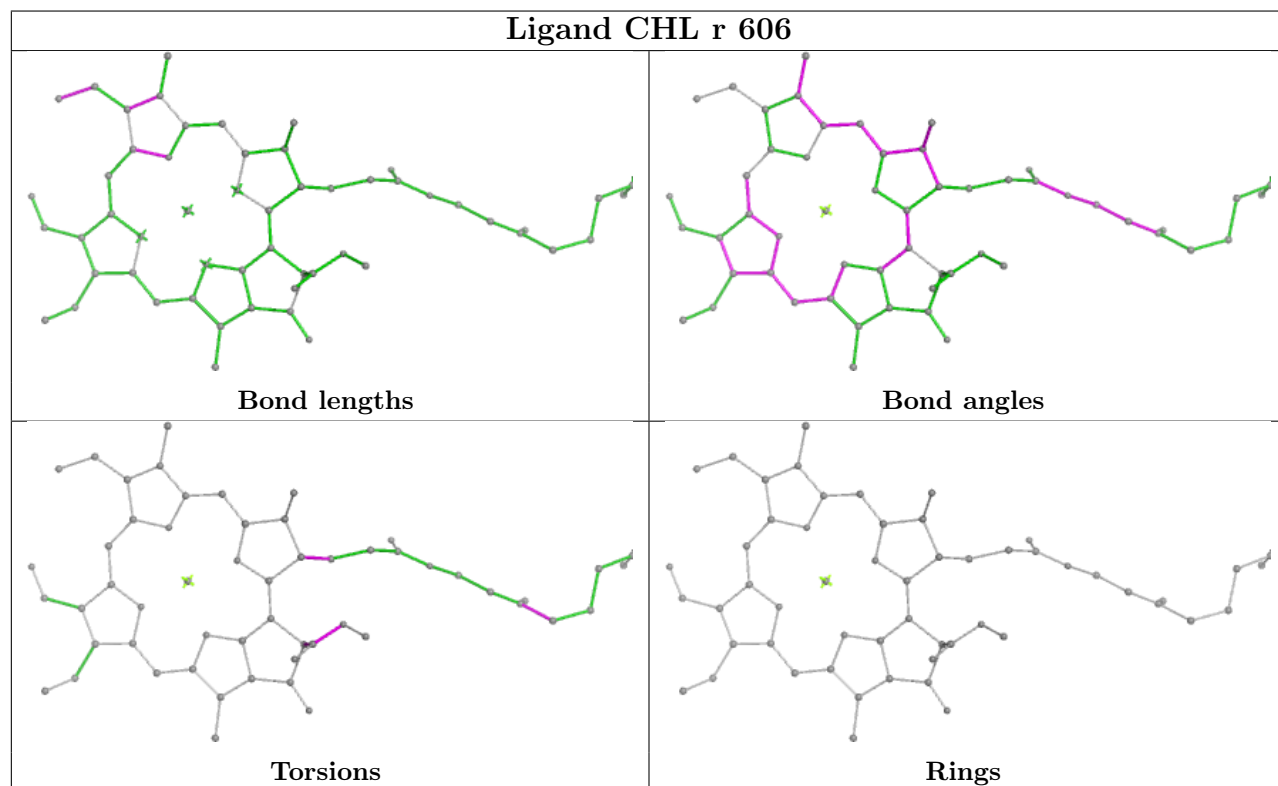


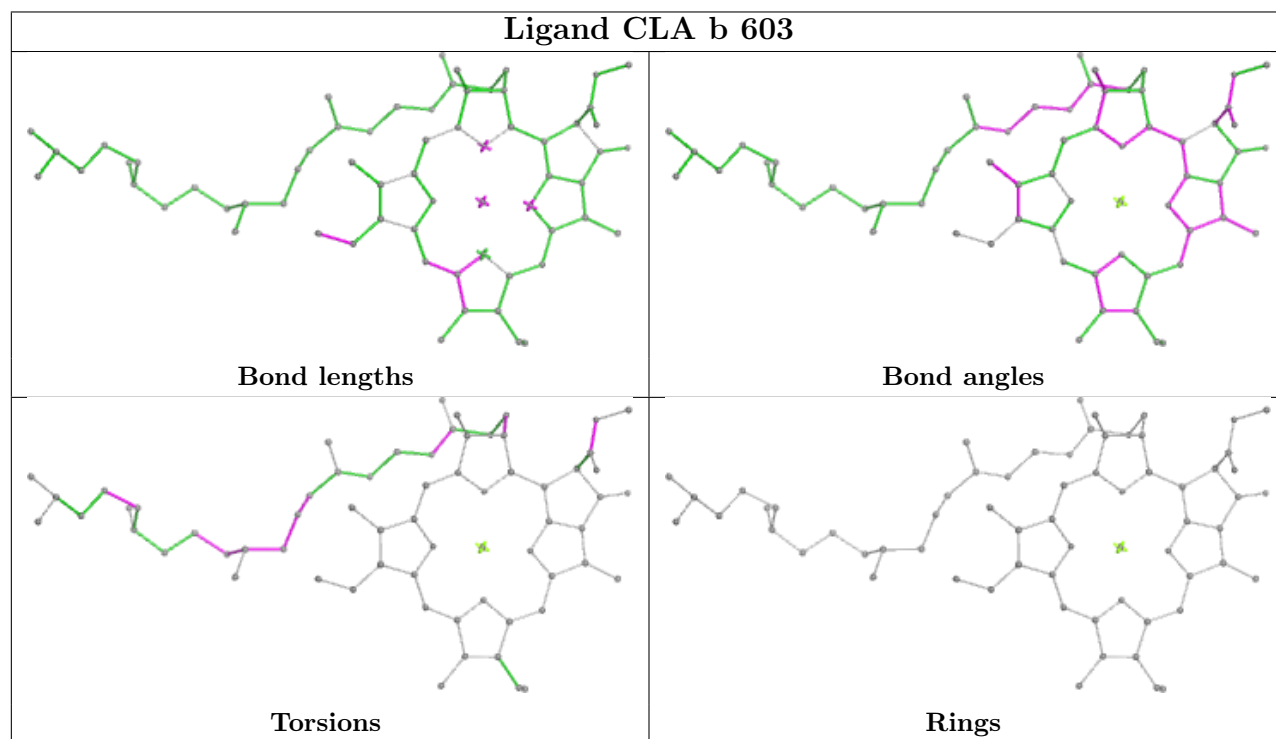
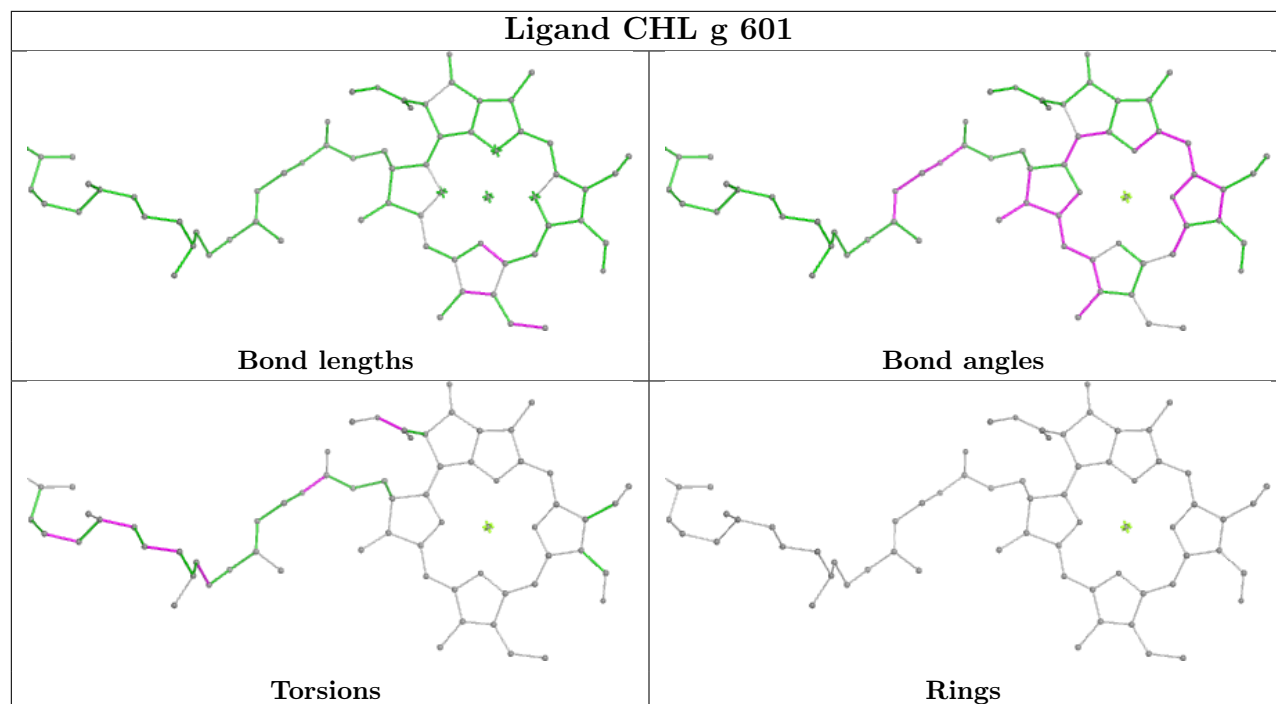


## Ligand CHL g 605

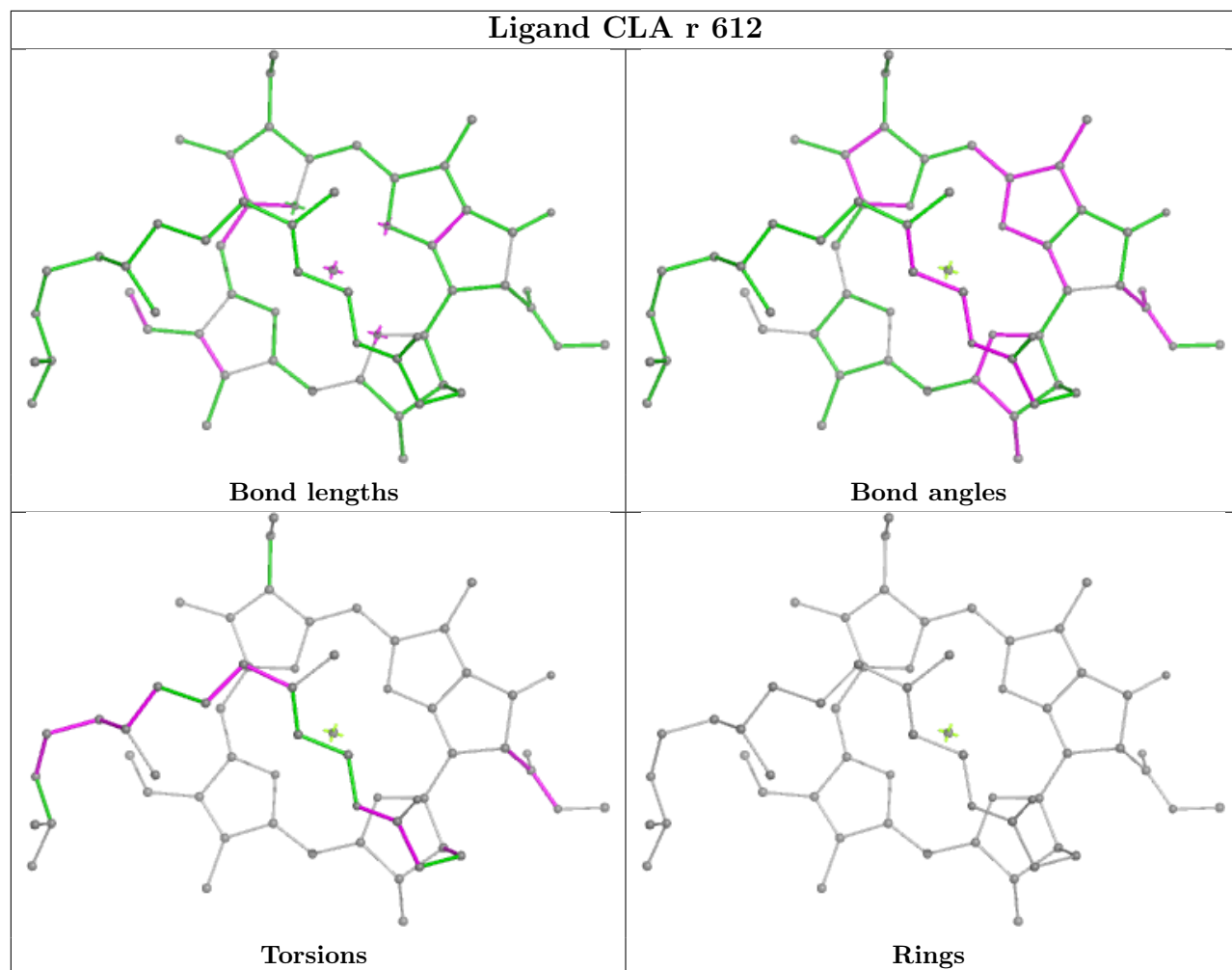




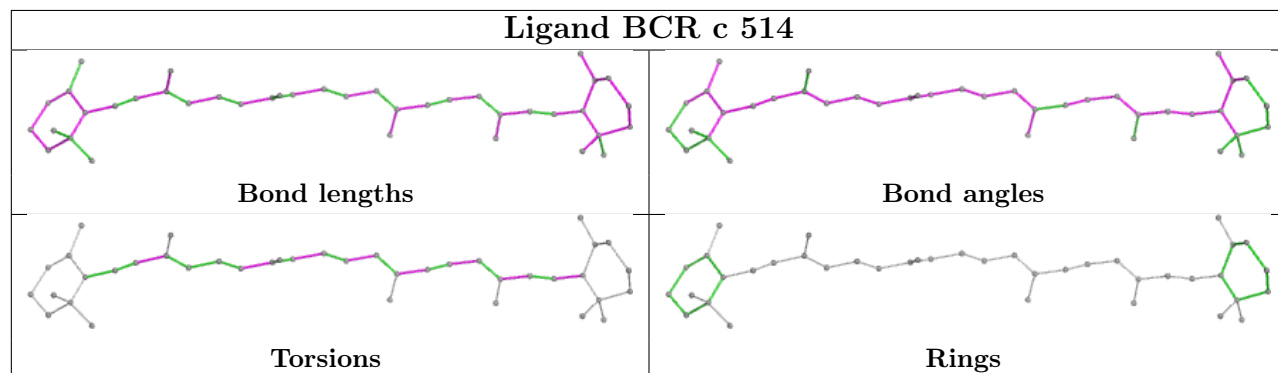
**Ligand CLA B 602****Ligand CHL r 606**



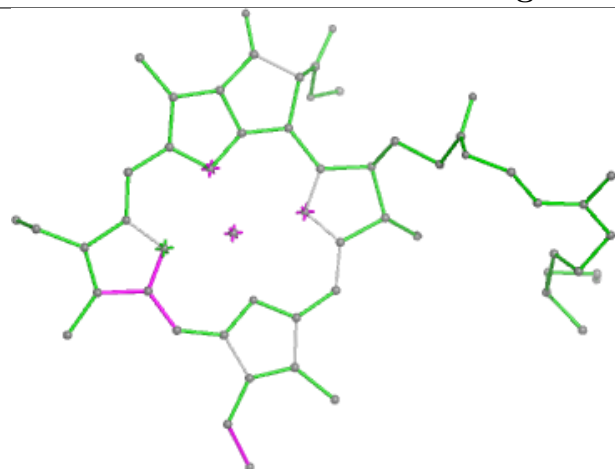
## Ligand CLA r 612



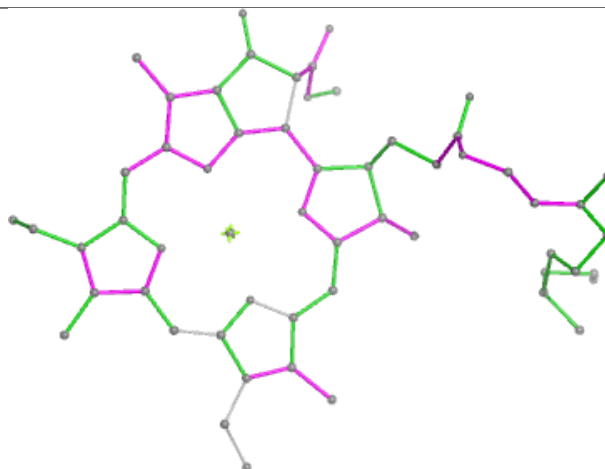
## Ligand BCR c 514



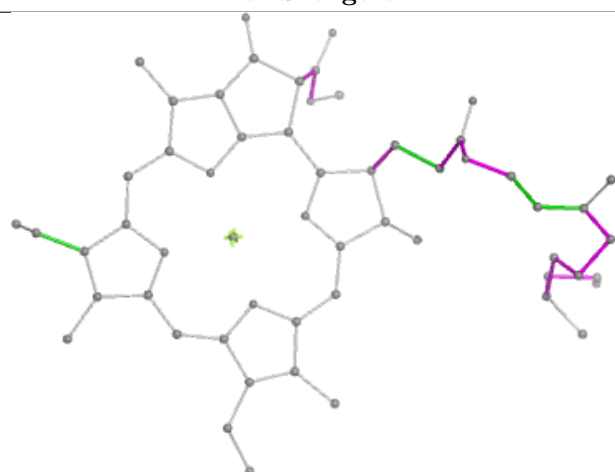
## Ligand CLA C 512



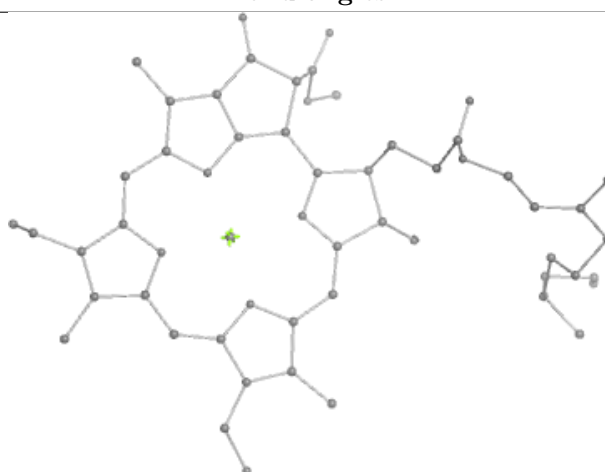
Bond lengths



Bond angles



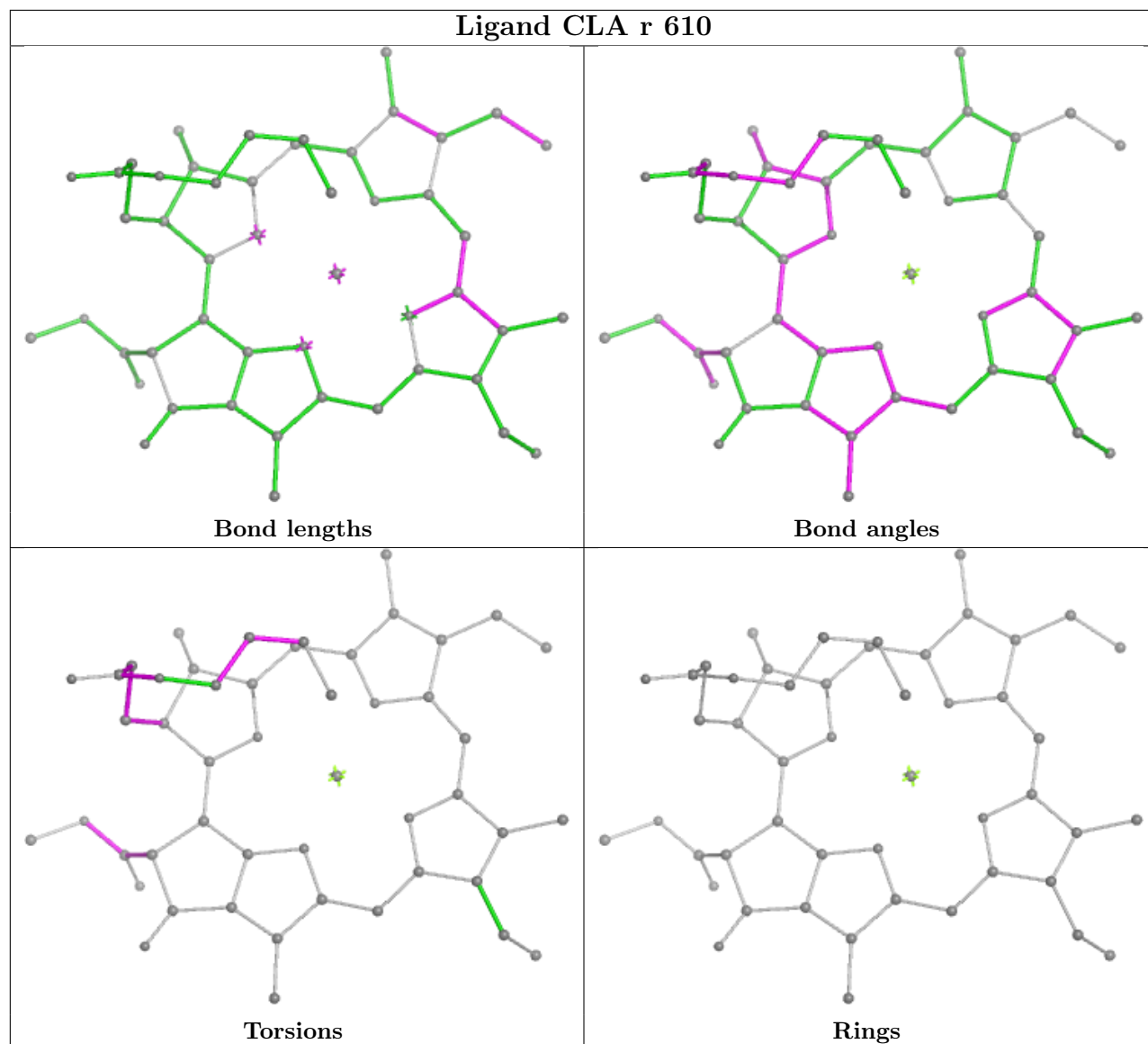
Torsions



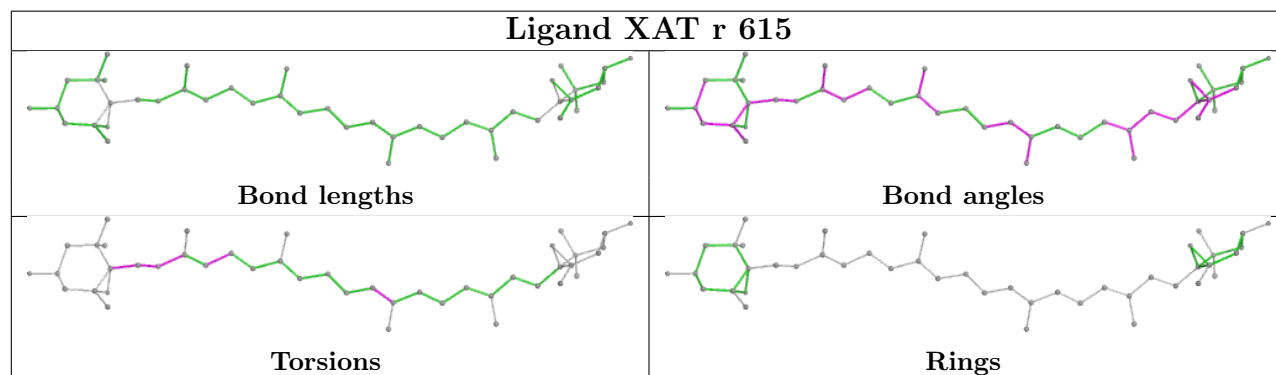
Rings

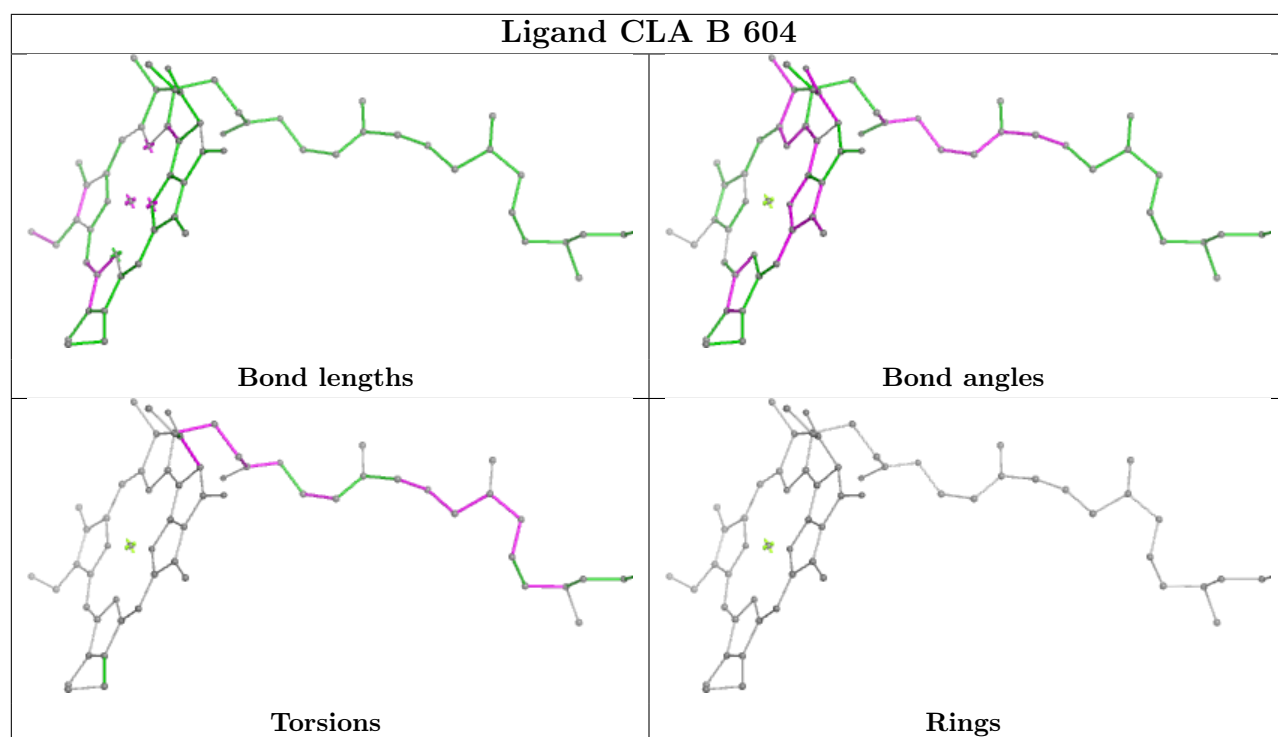


## Ligand CLA r 610

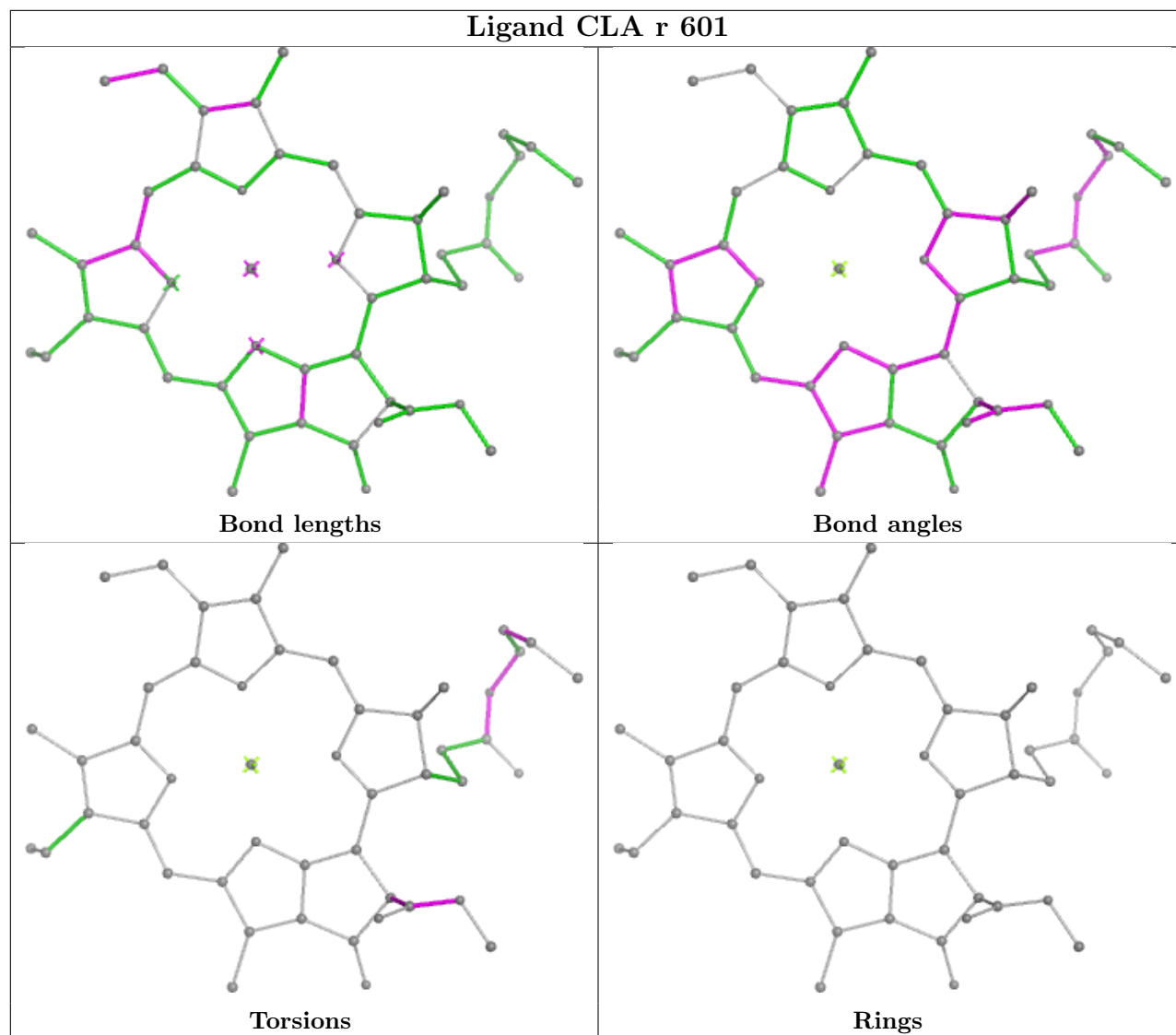


## Ligand XAT r 615

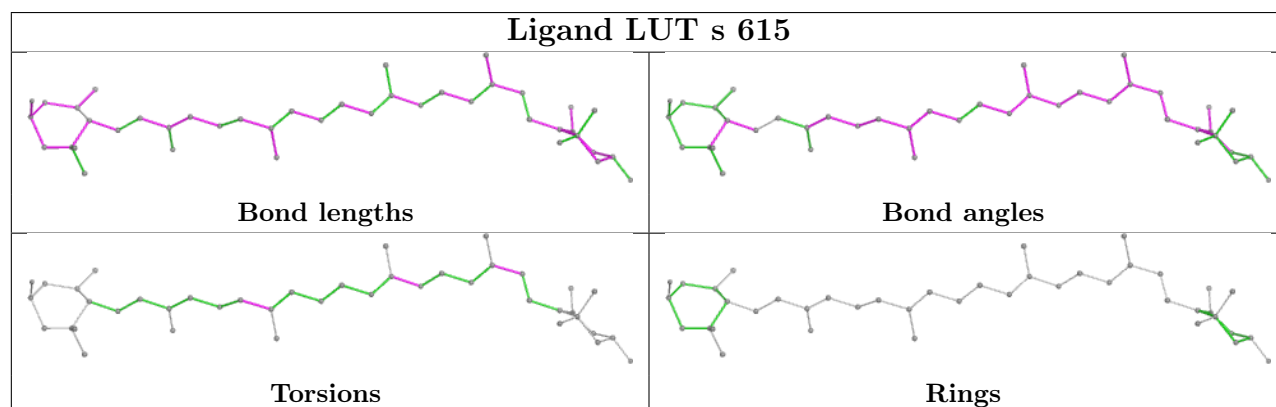


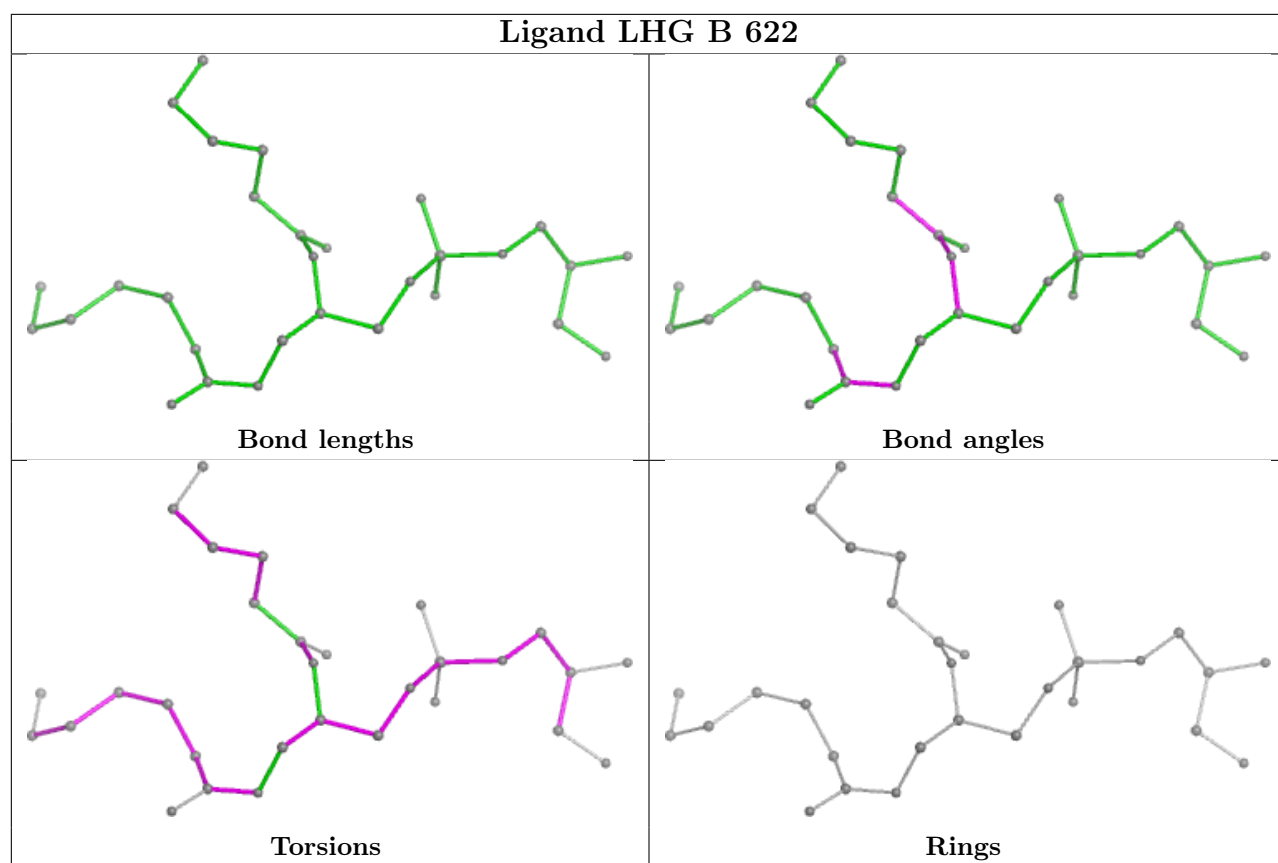


## Ligand CLA r 601

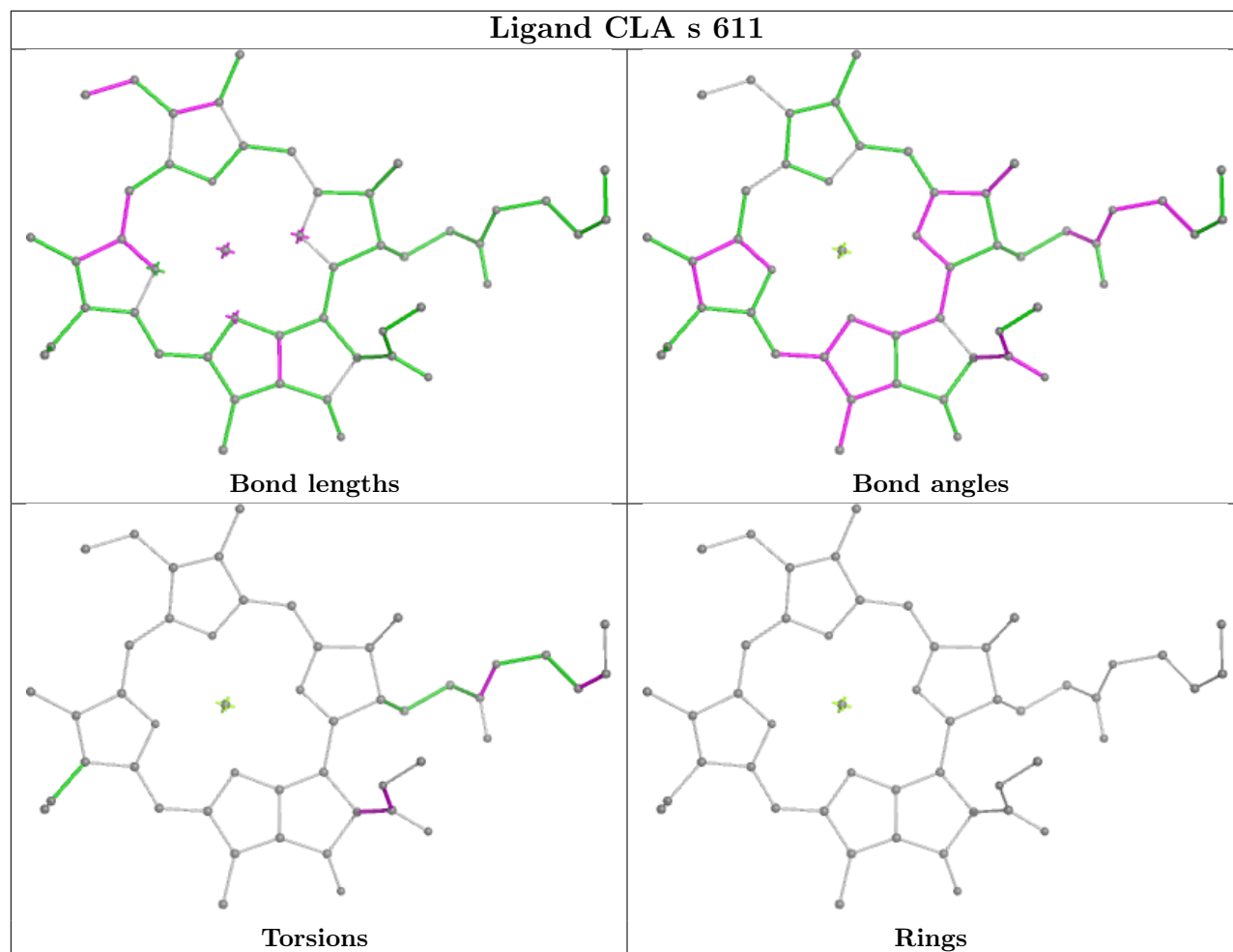


## Ligand LUT s 615

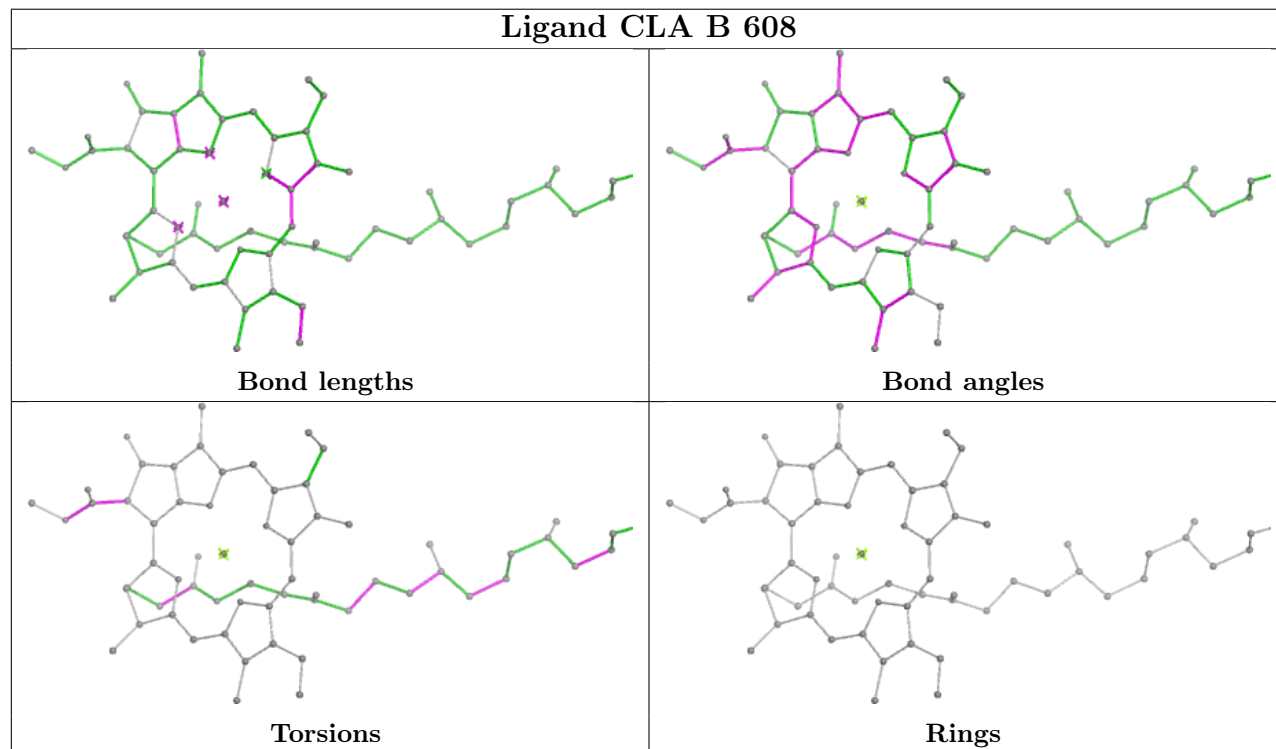


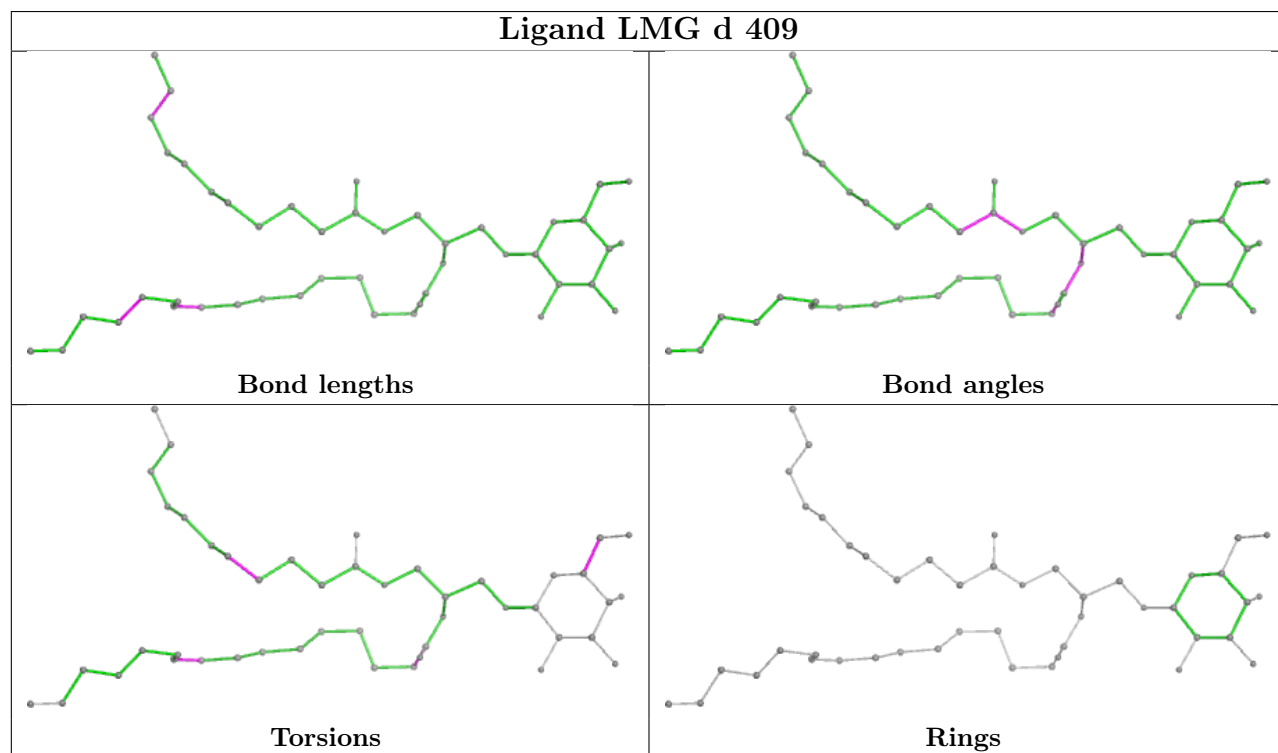
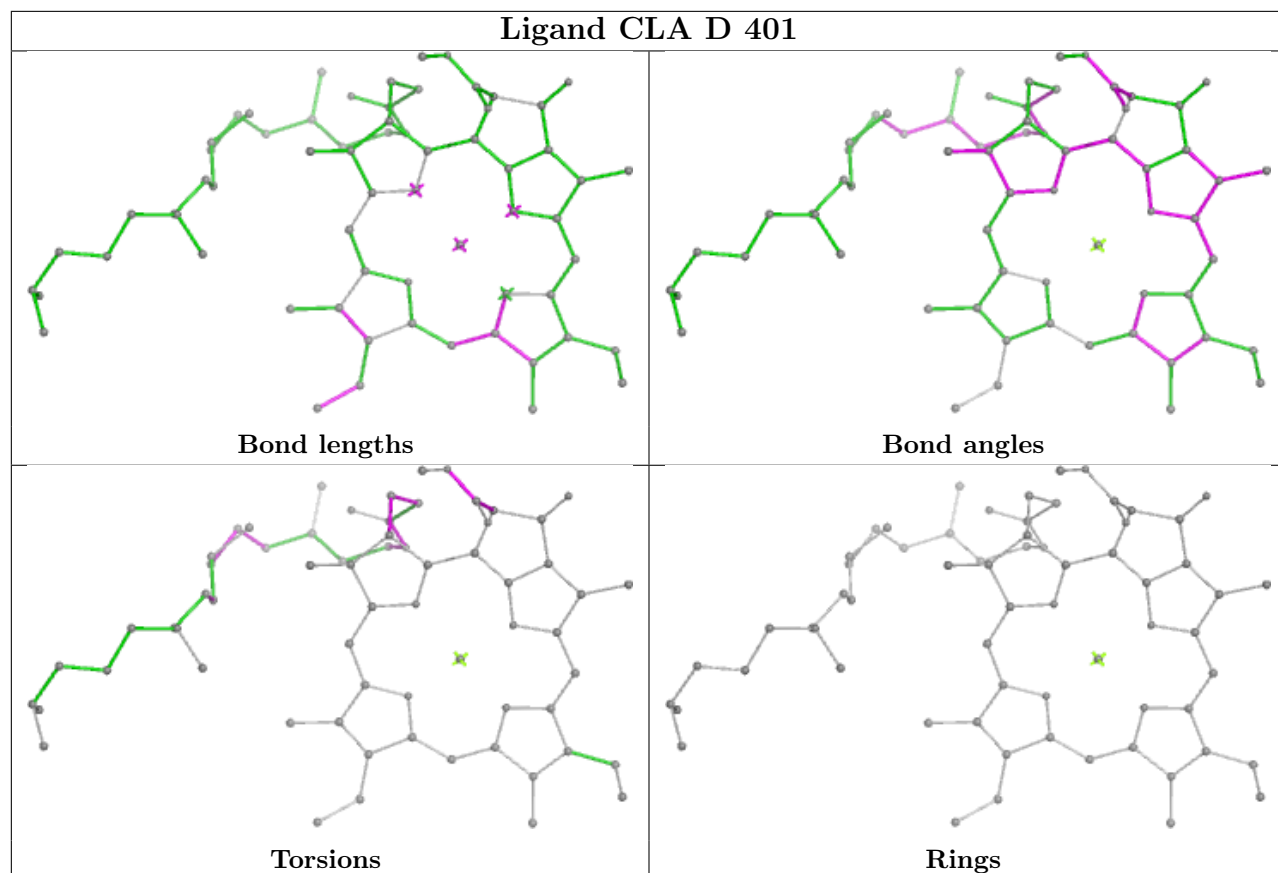


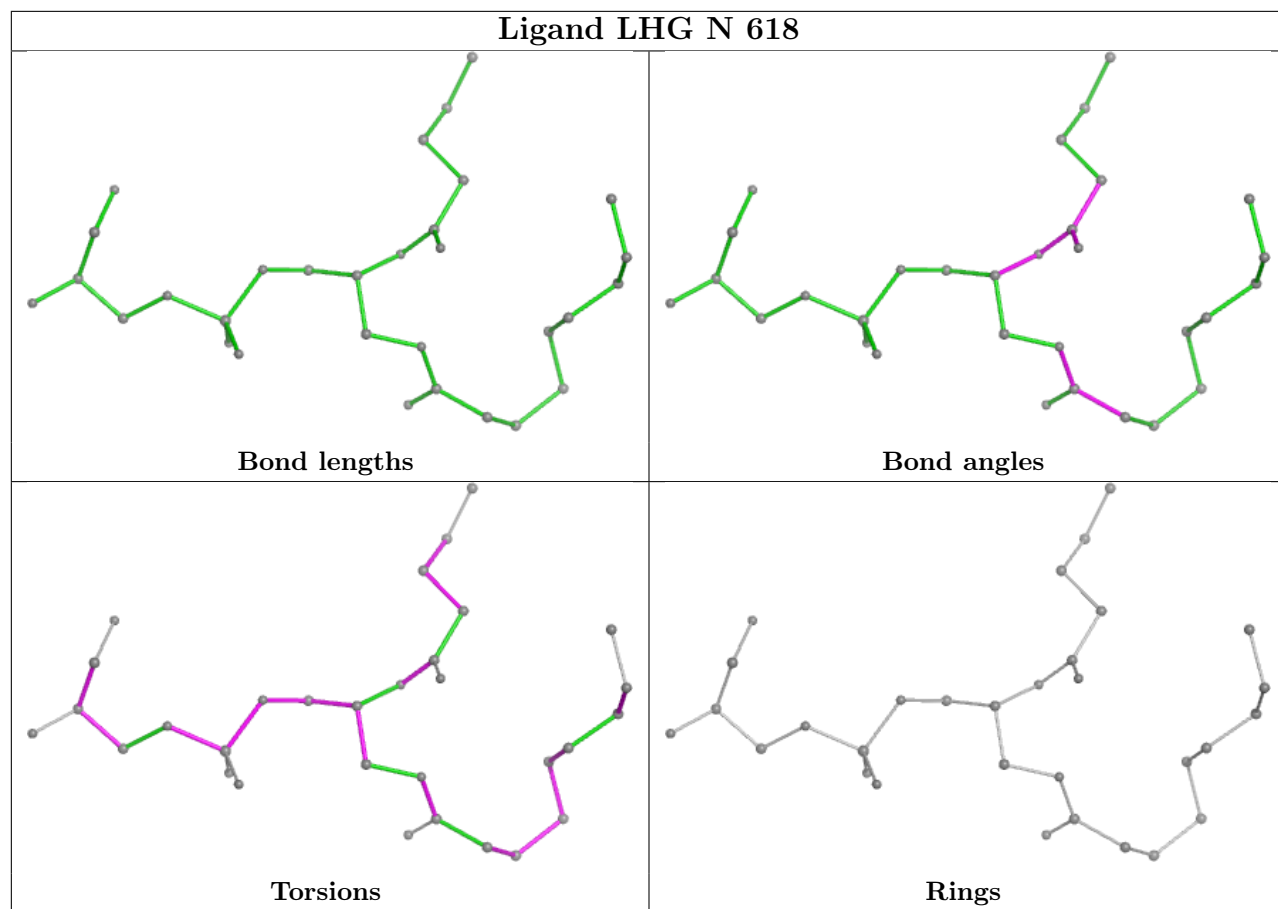
## Ligand CLA s 611



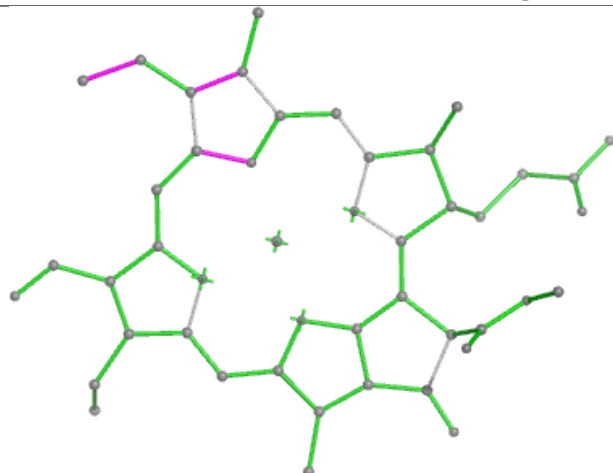
## Ligand CLA B 608



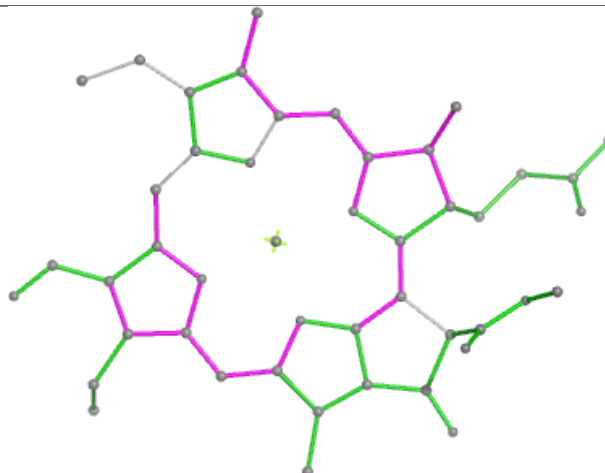




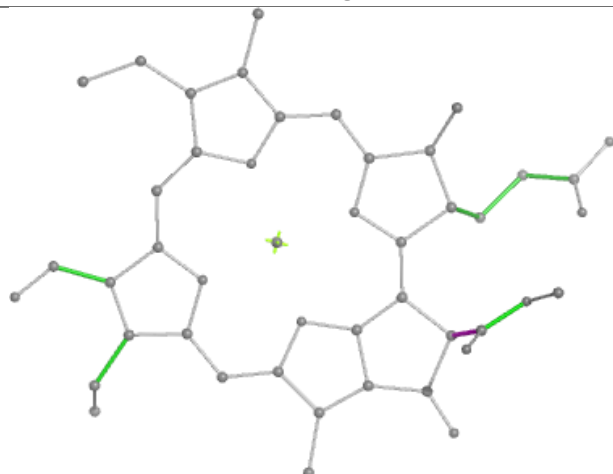
## Ligand CHL S 302



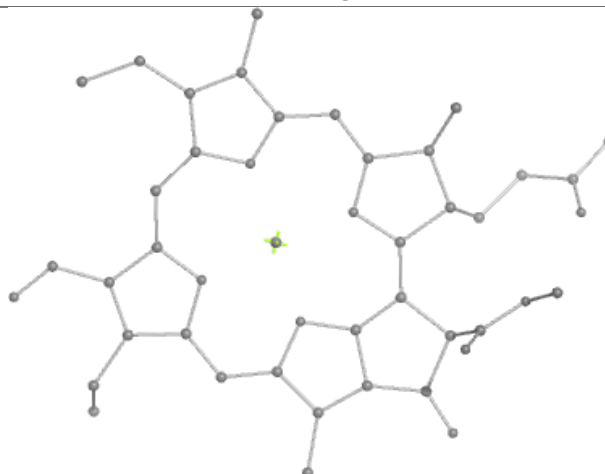
Bond lengths



Bond angles

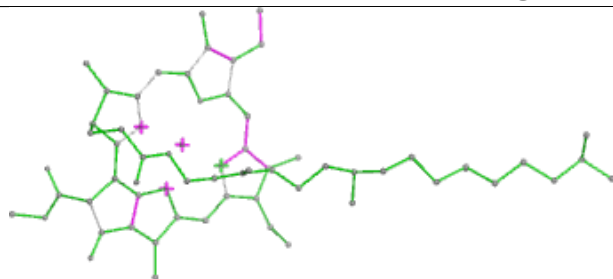


Torsions

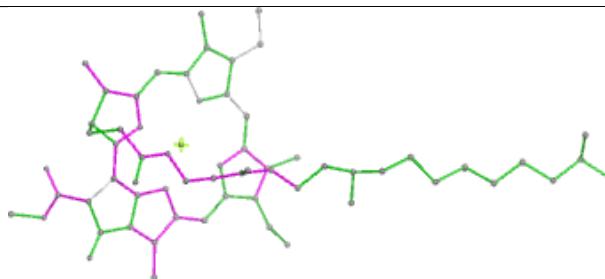


Rings

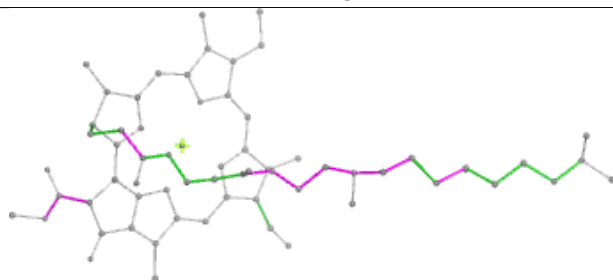
## Ligand CLA B 614



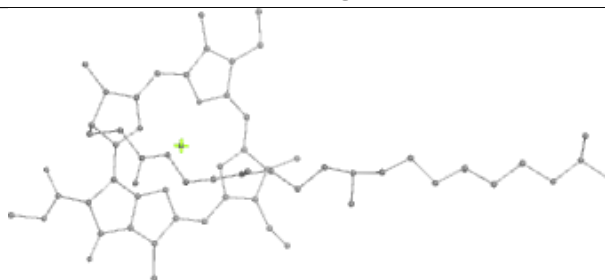
Bond lengths



Bond angles

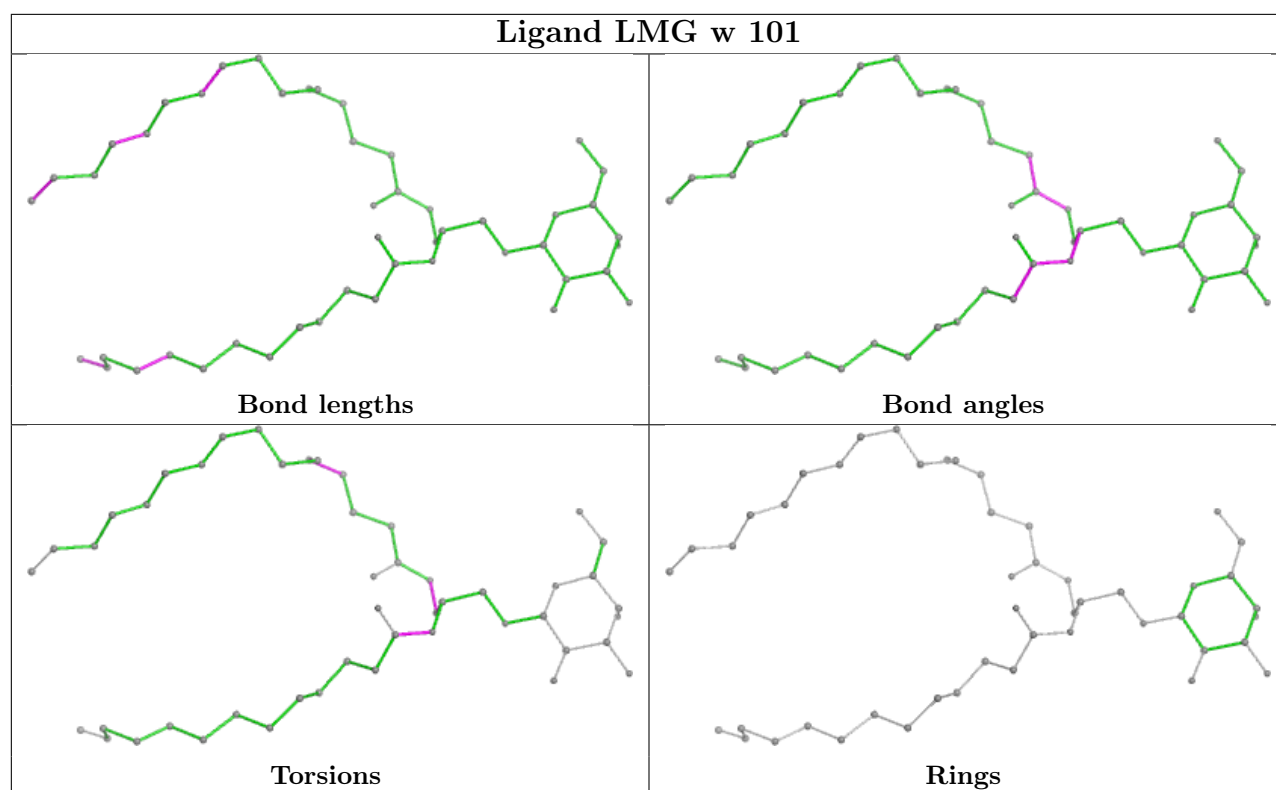


Torsions

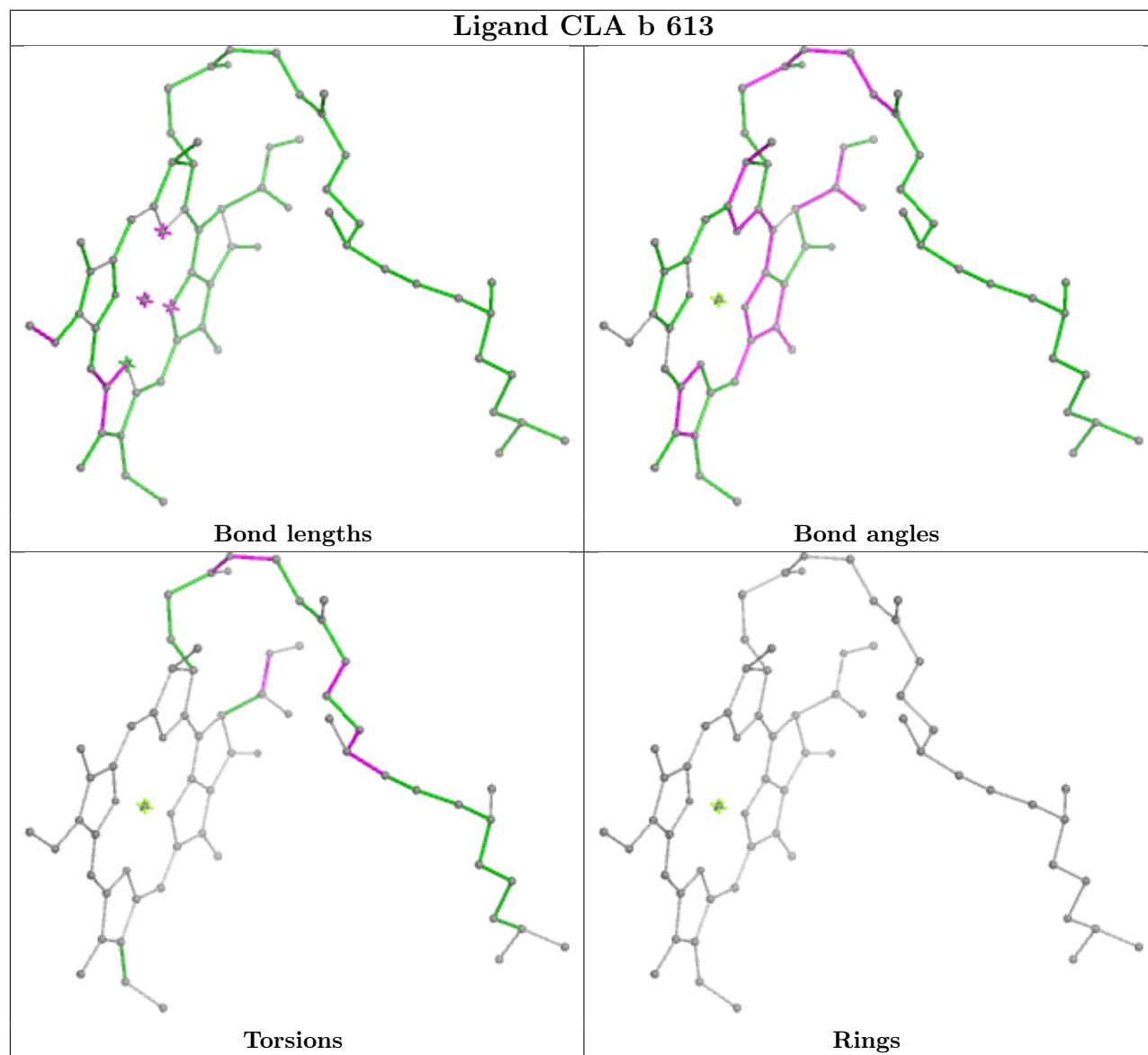


Rings

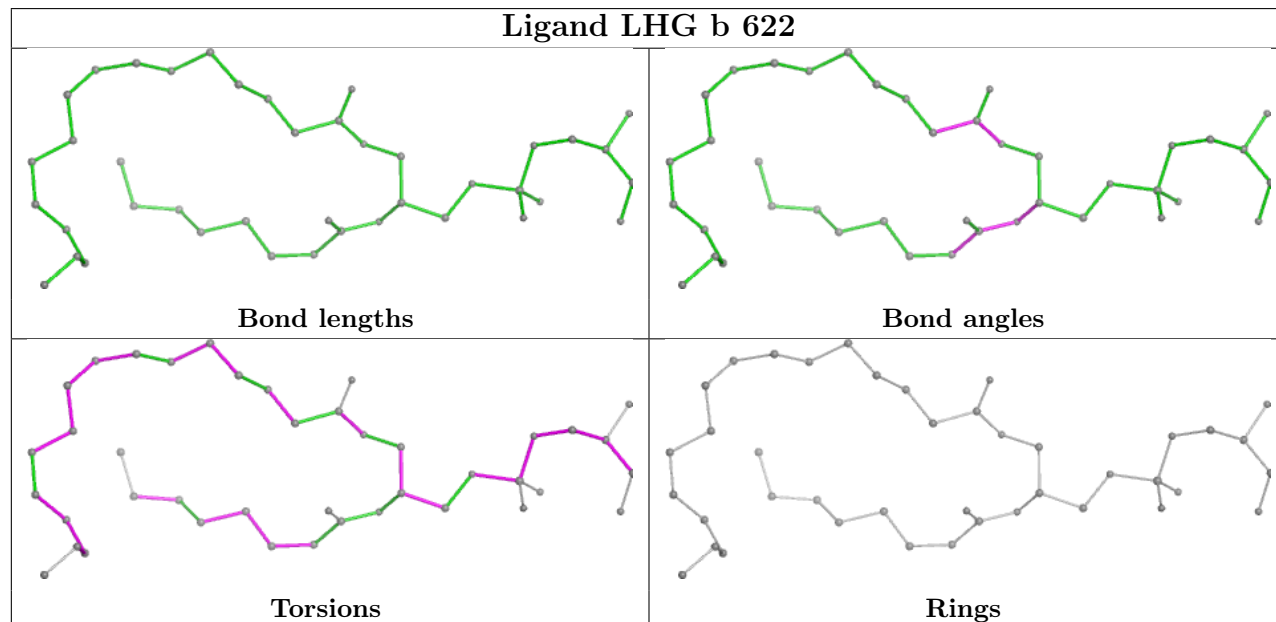




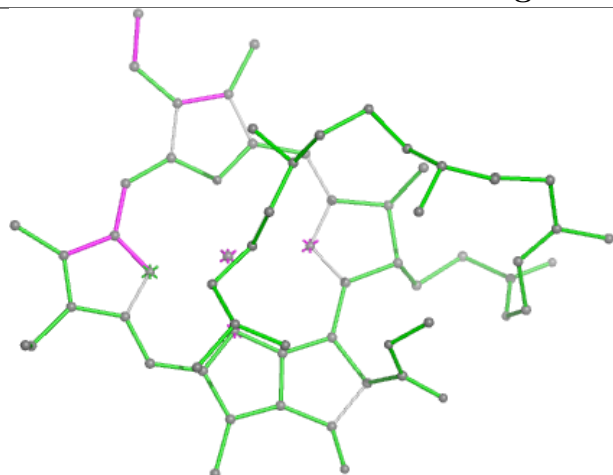
## Ligand CLA b 613



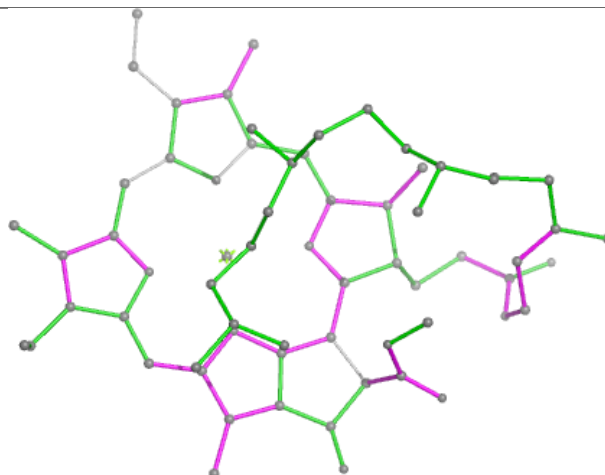
## Ligand LHG b 622



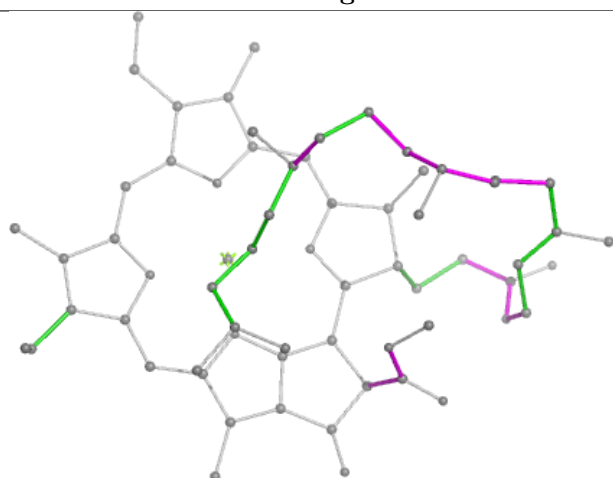
## Ligand CLA C 510



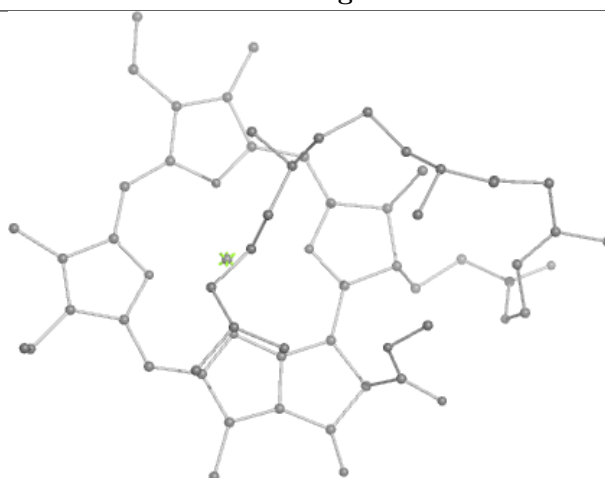
Bond lengths



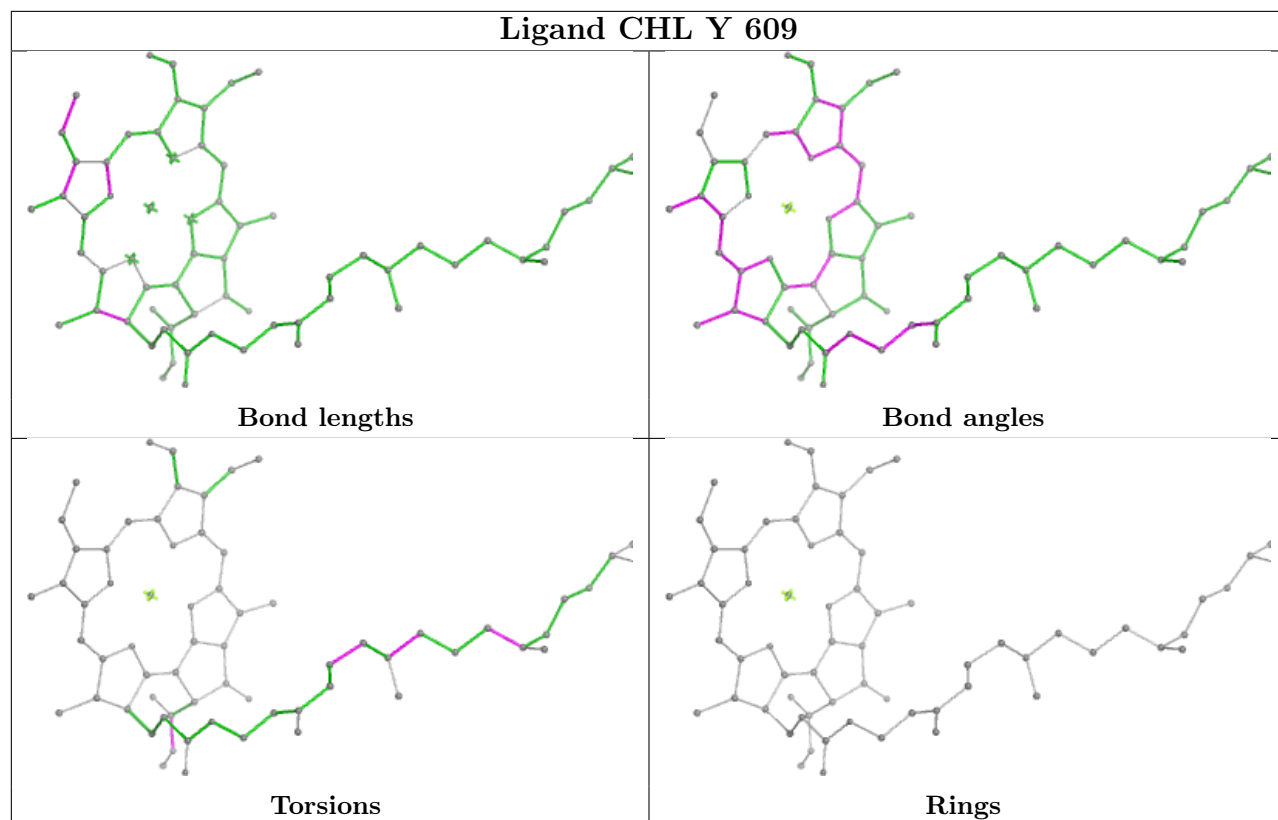
Bond angles



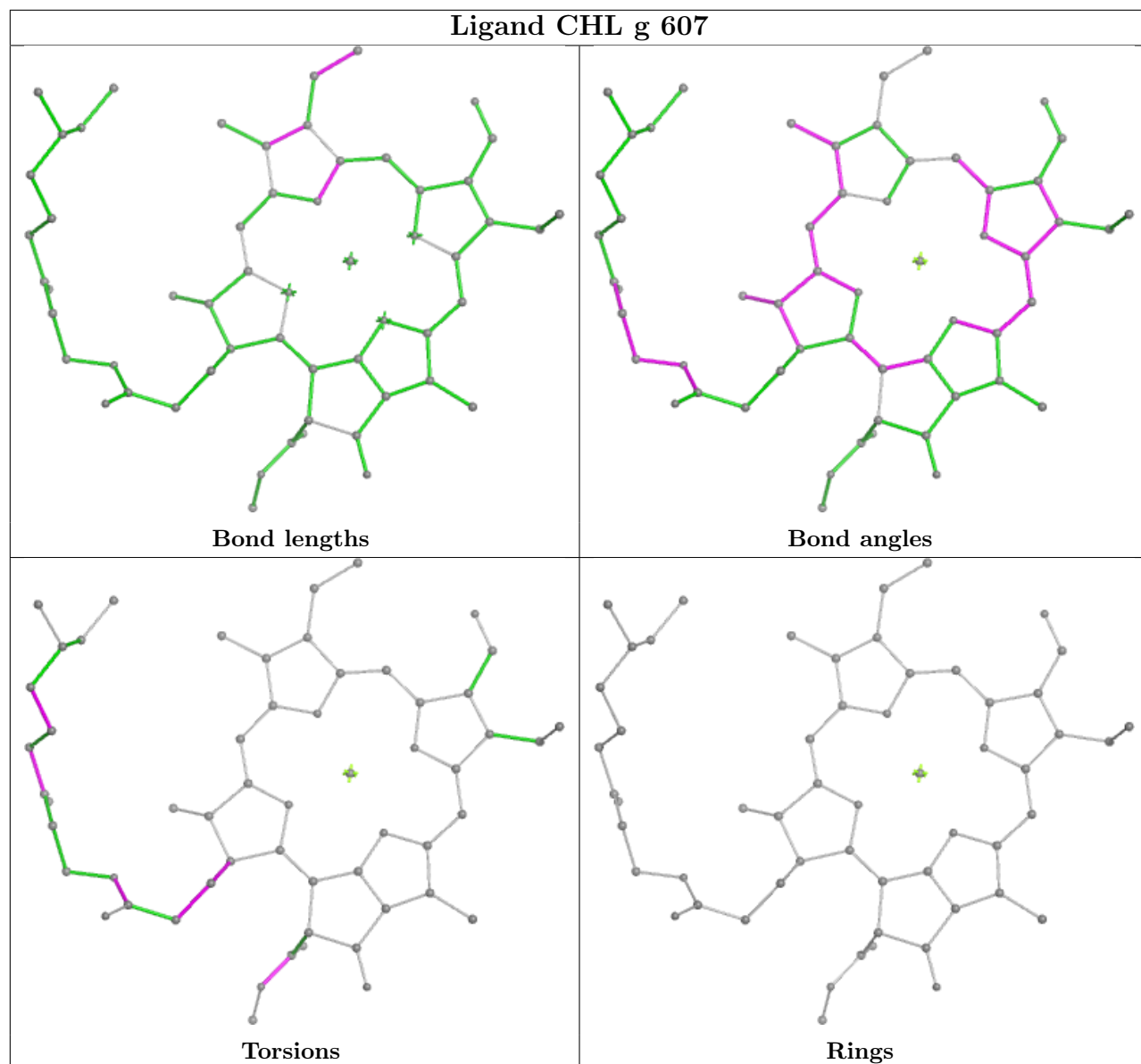
Torsions

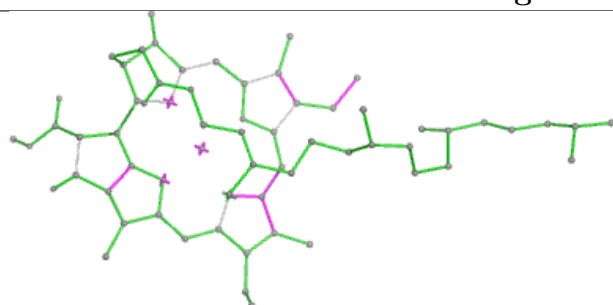
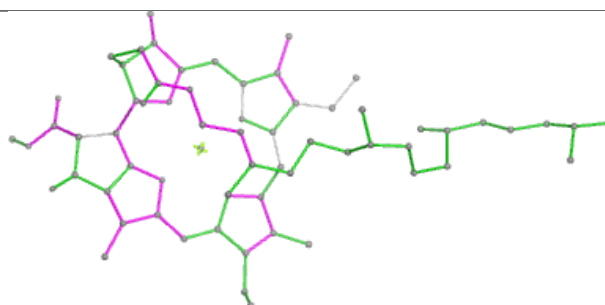
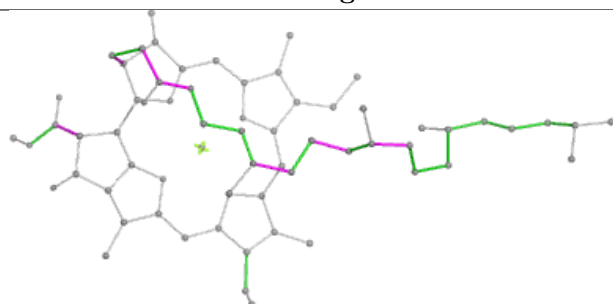
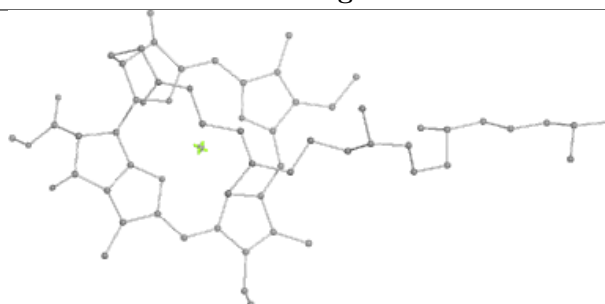
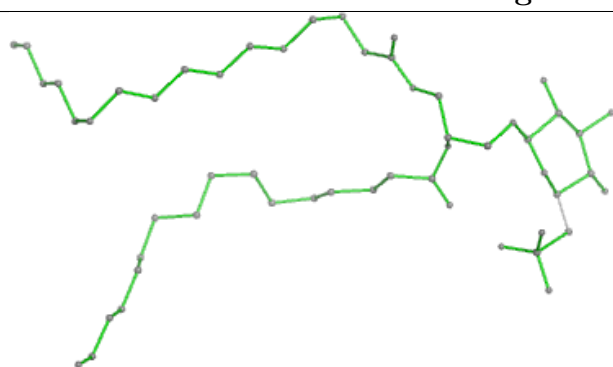
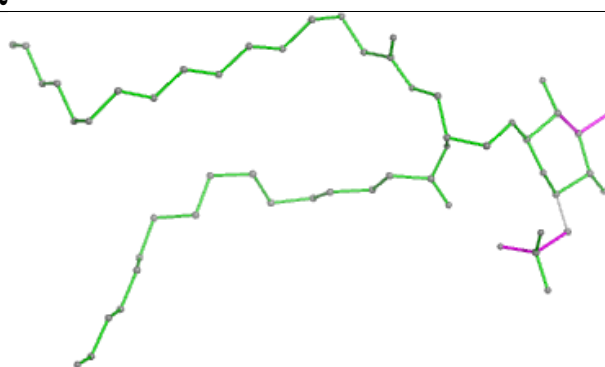
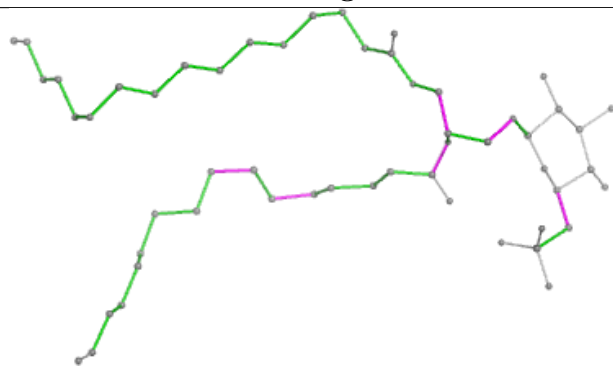
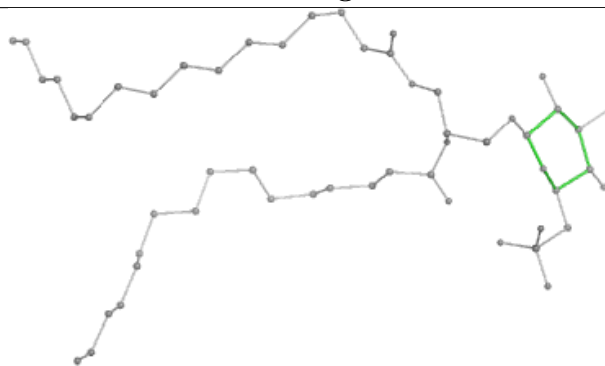


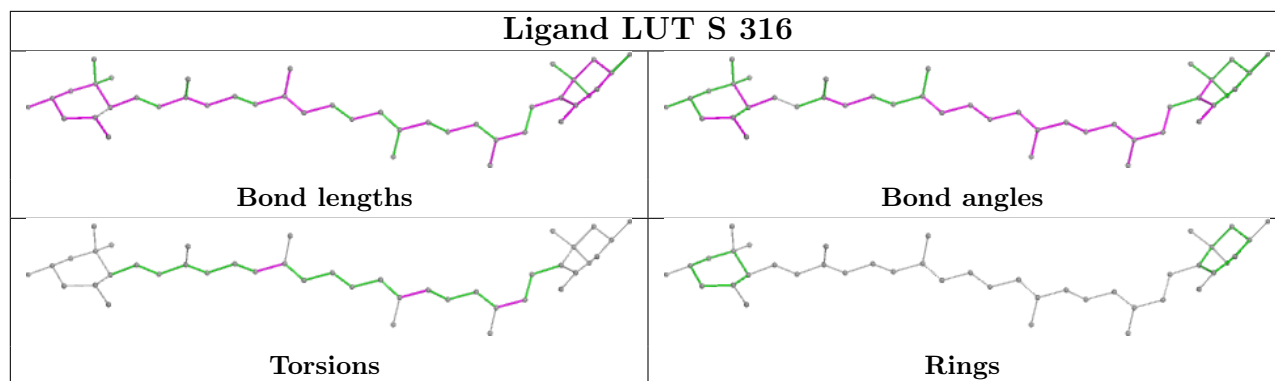
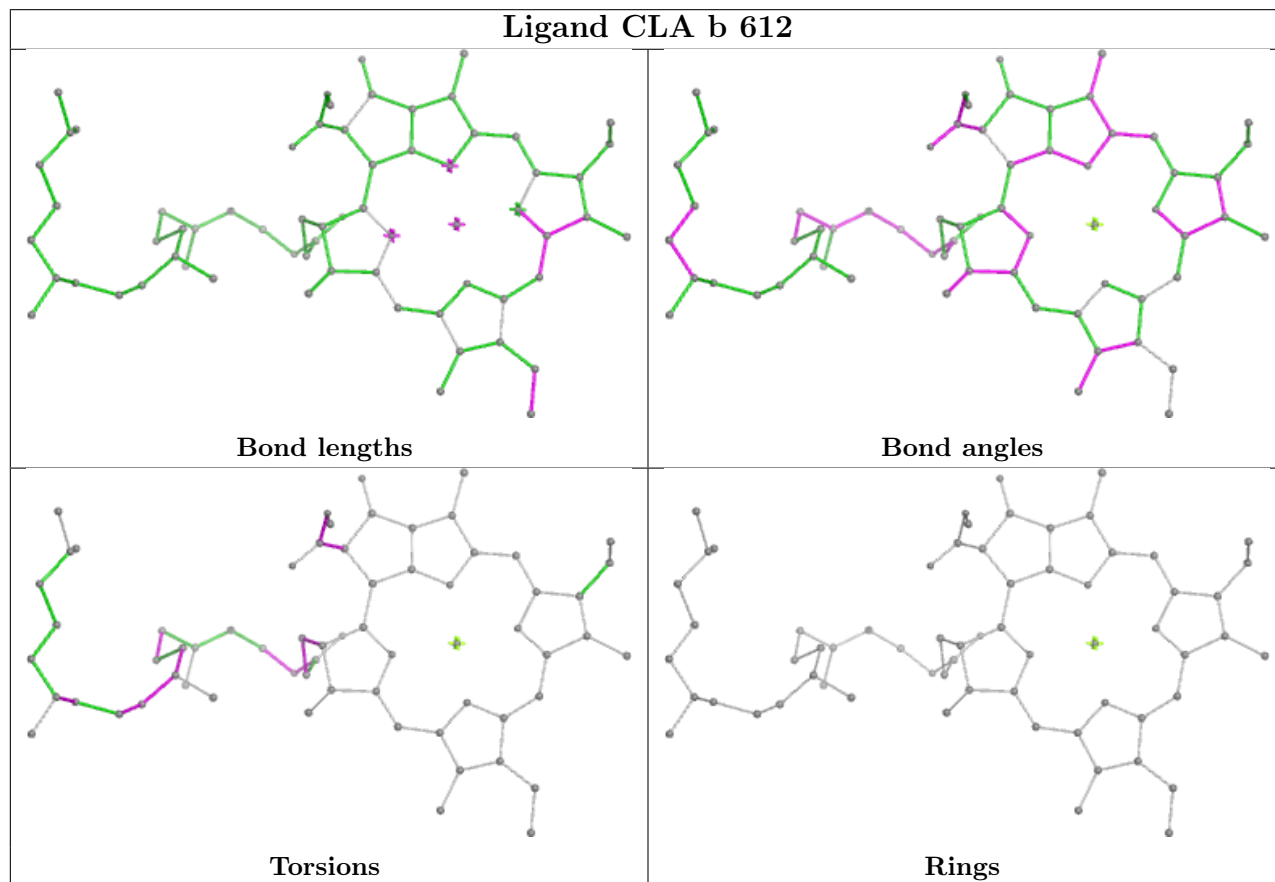
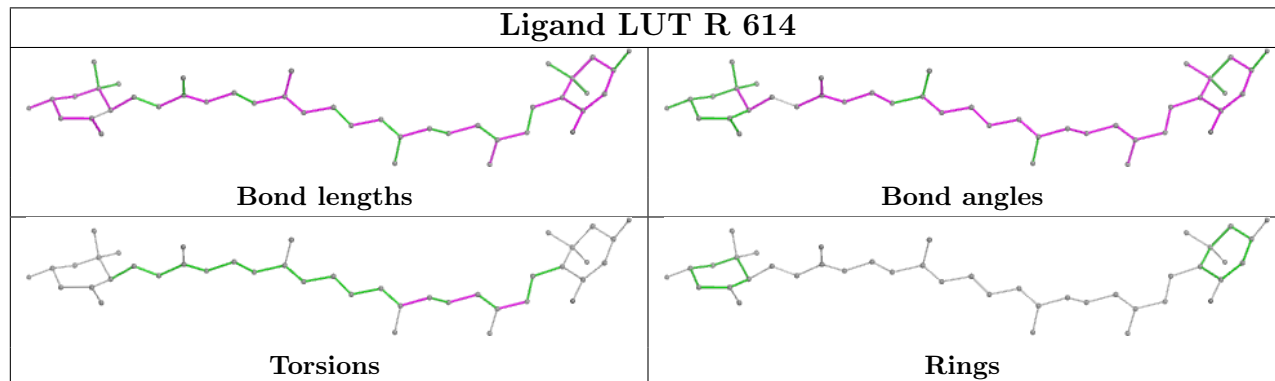
Rings

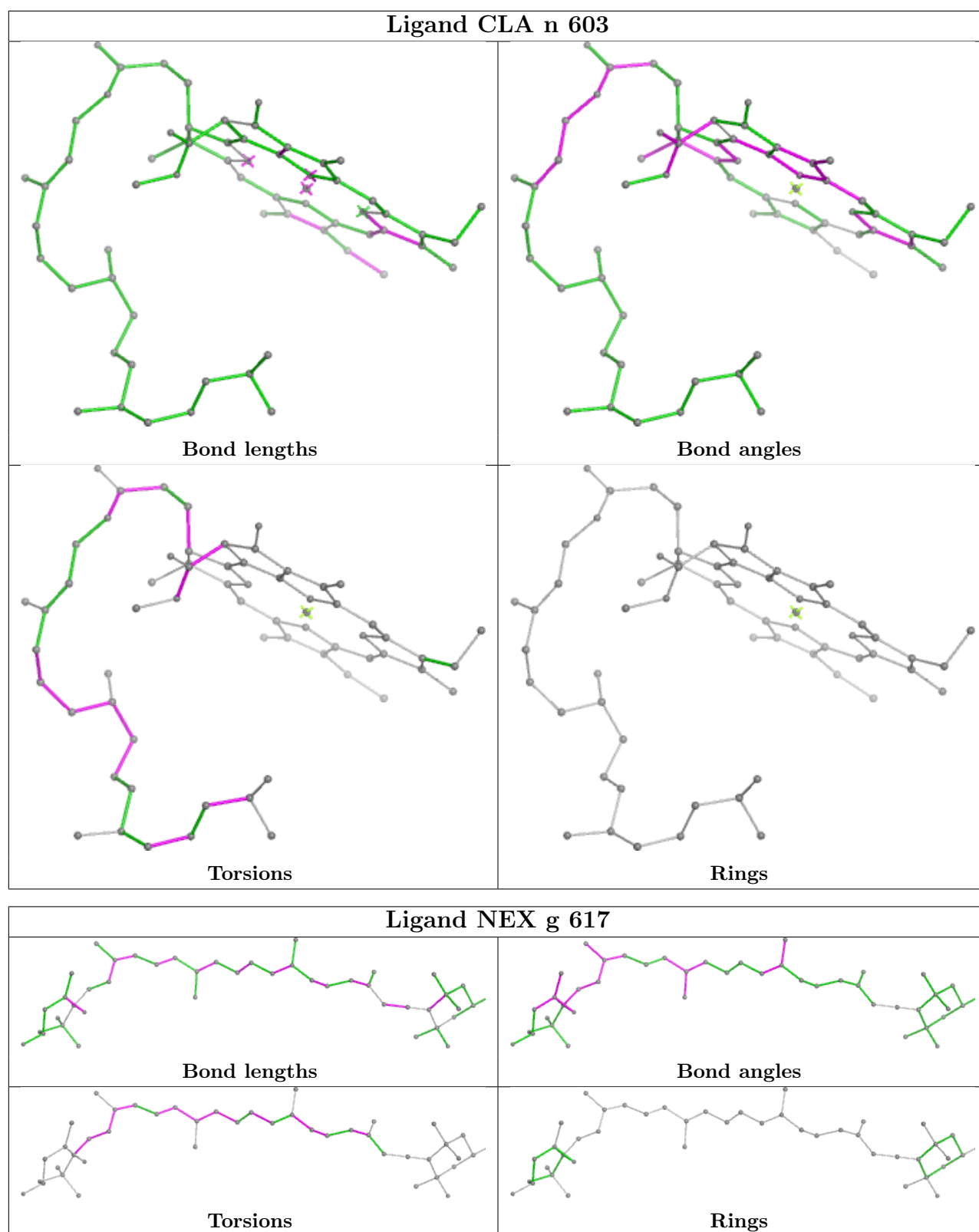


## Ligand CHL g 607

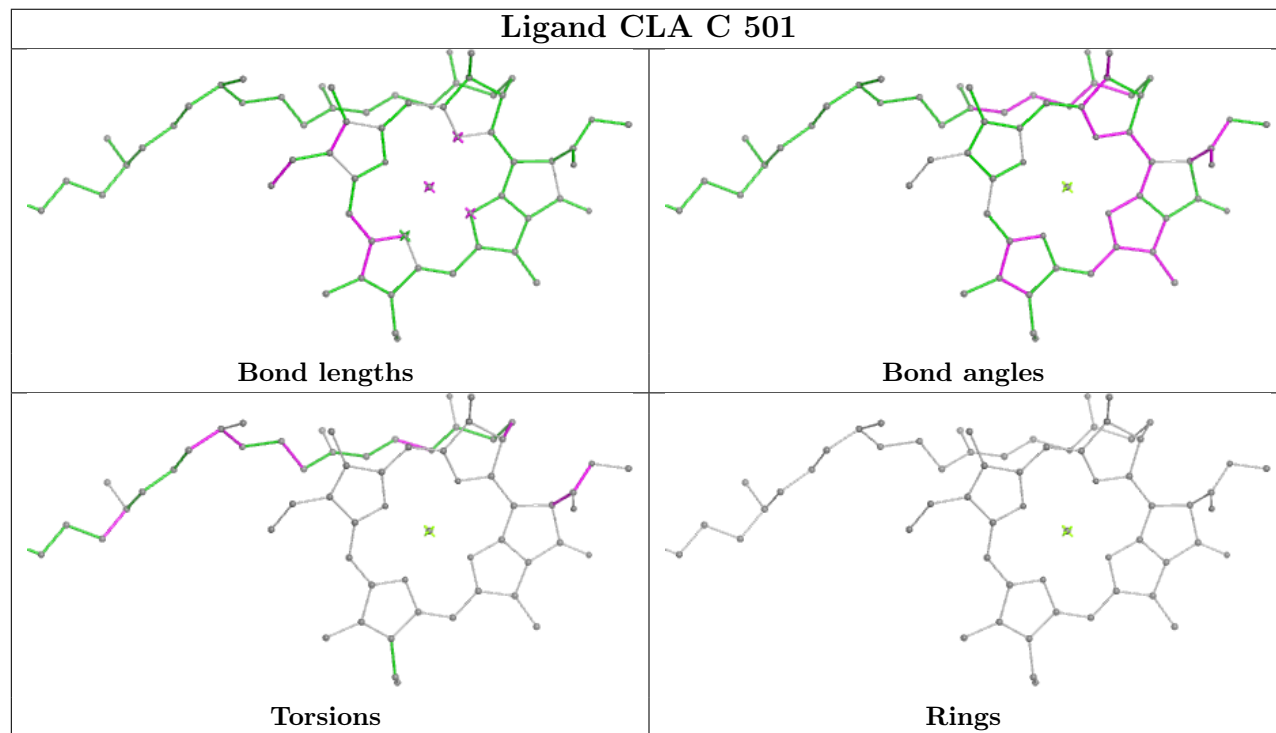
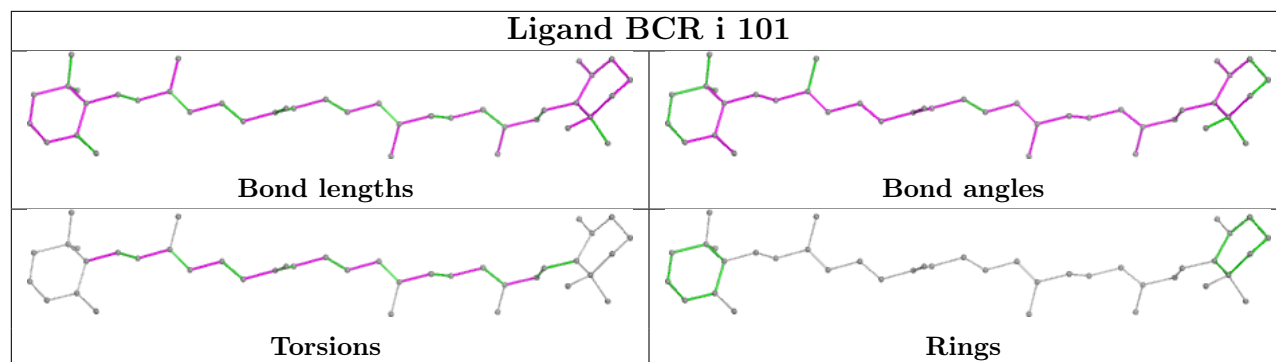


**Ligand CLA C 505****Bond lengths****Bond angles****Torsions****Rings****Ligand SQD B 620****Bond lengths****Bond angles****Torsions****Rings**

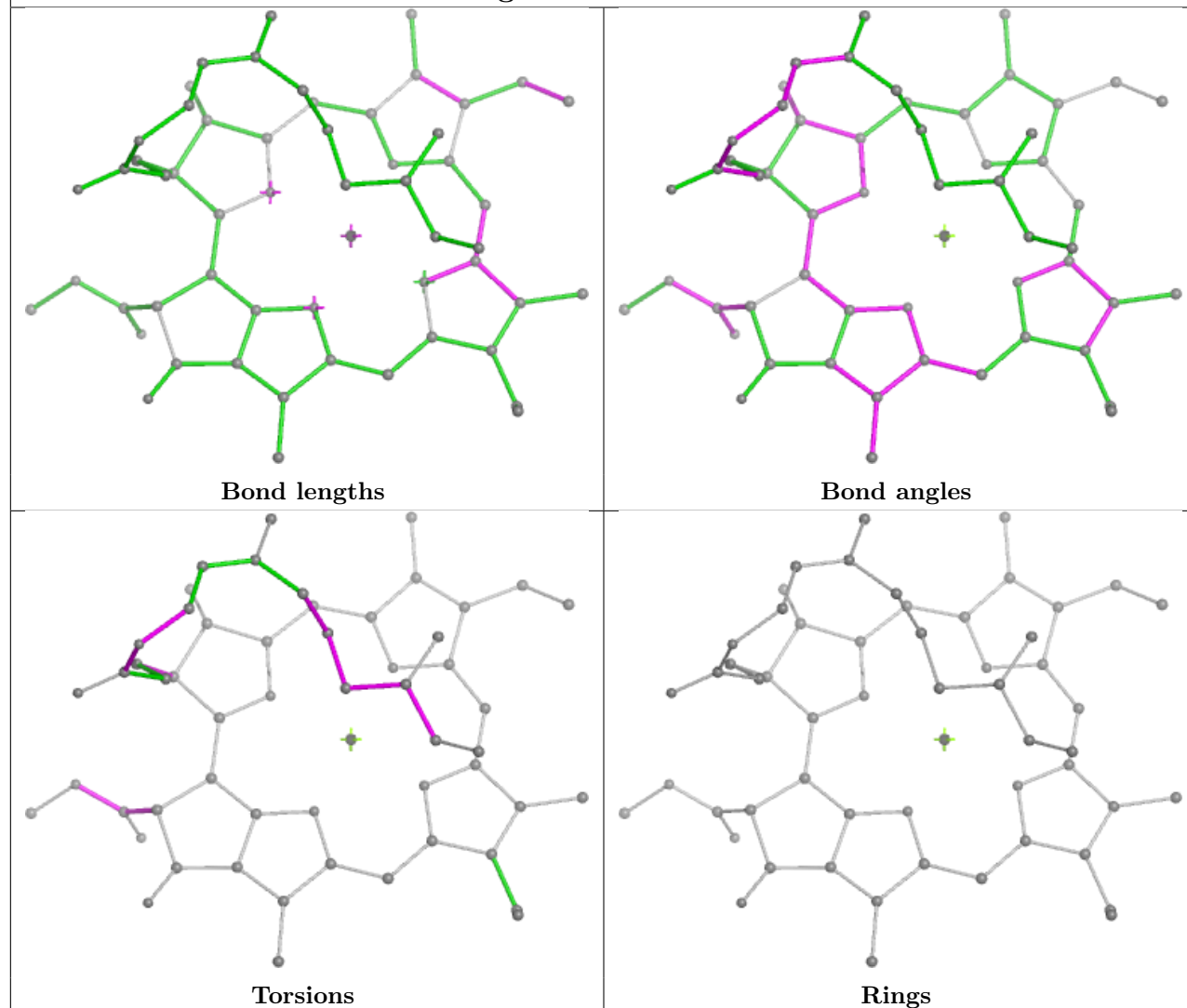
**Ligand LUT S 316****Ligand CLA b 612****Ligand LUT R 614**



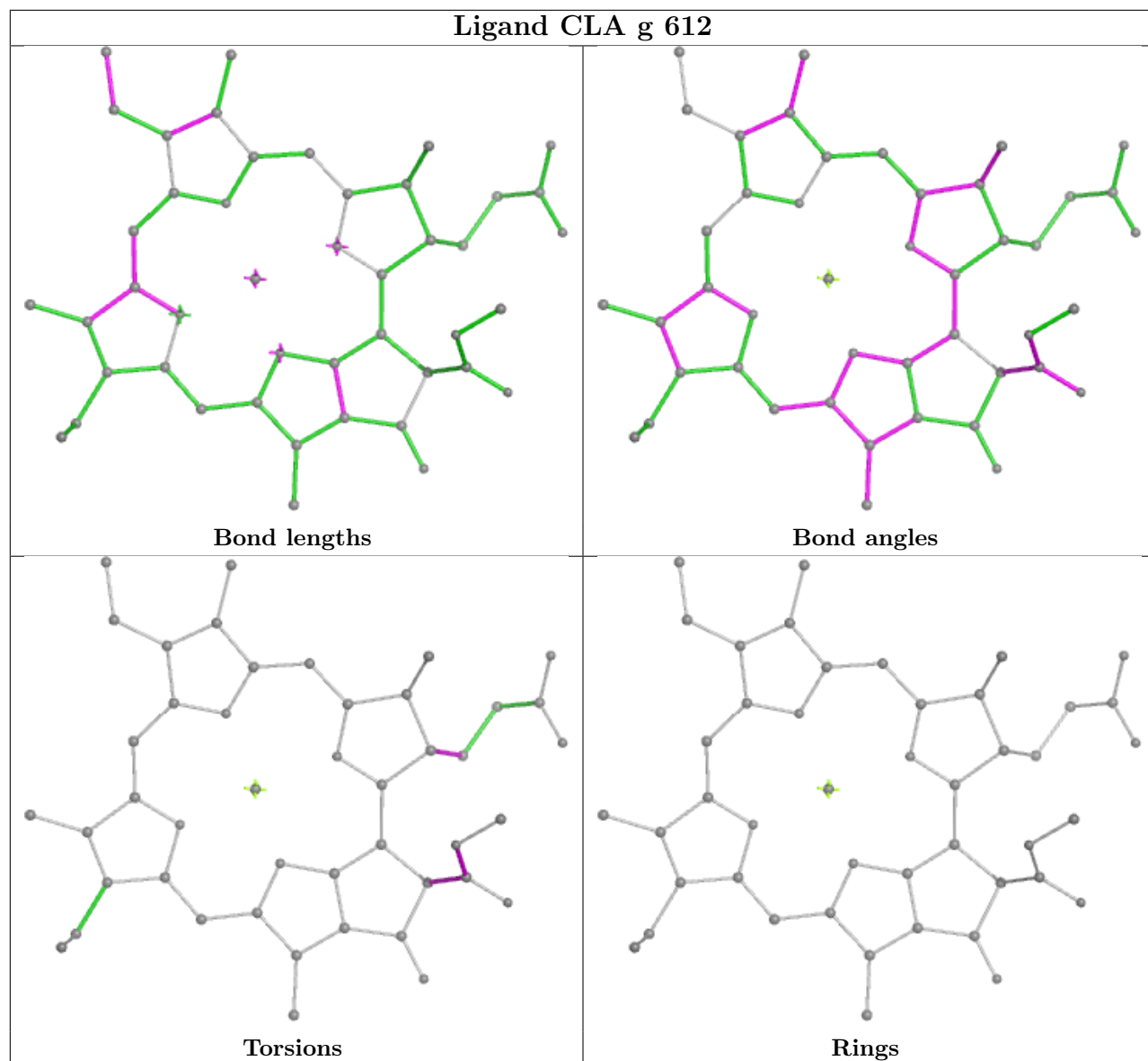




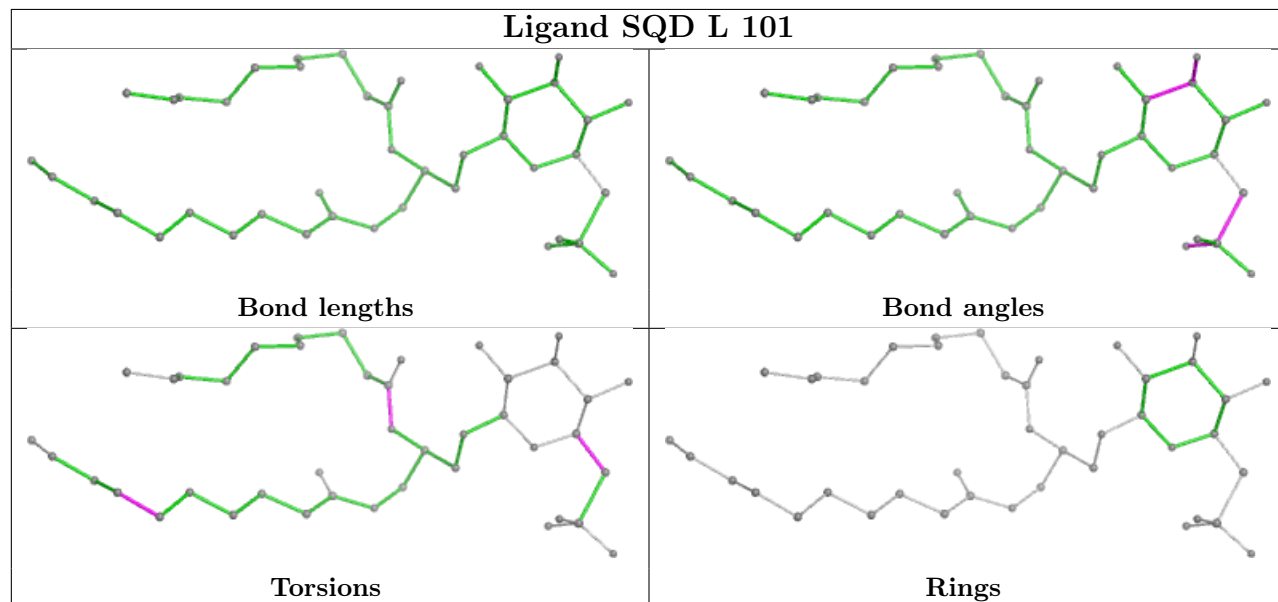
## Ligand CLA S 311



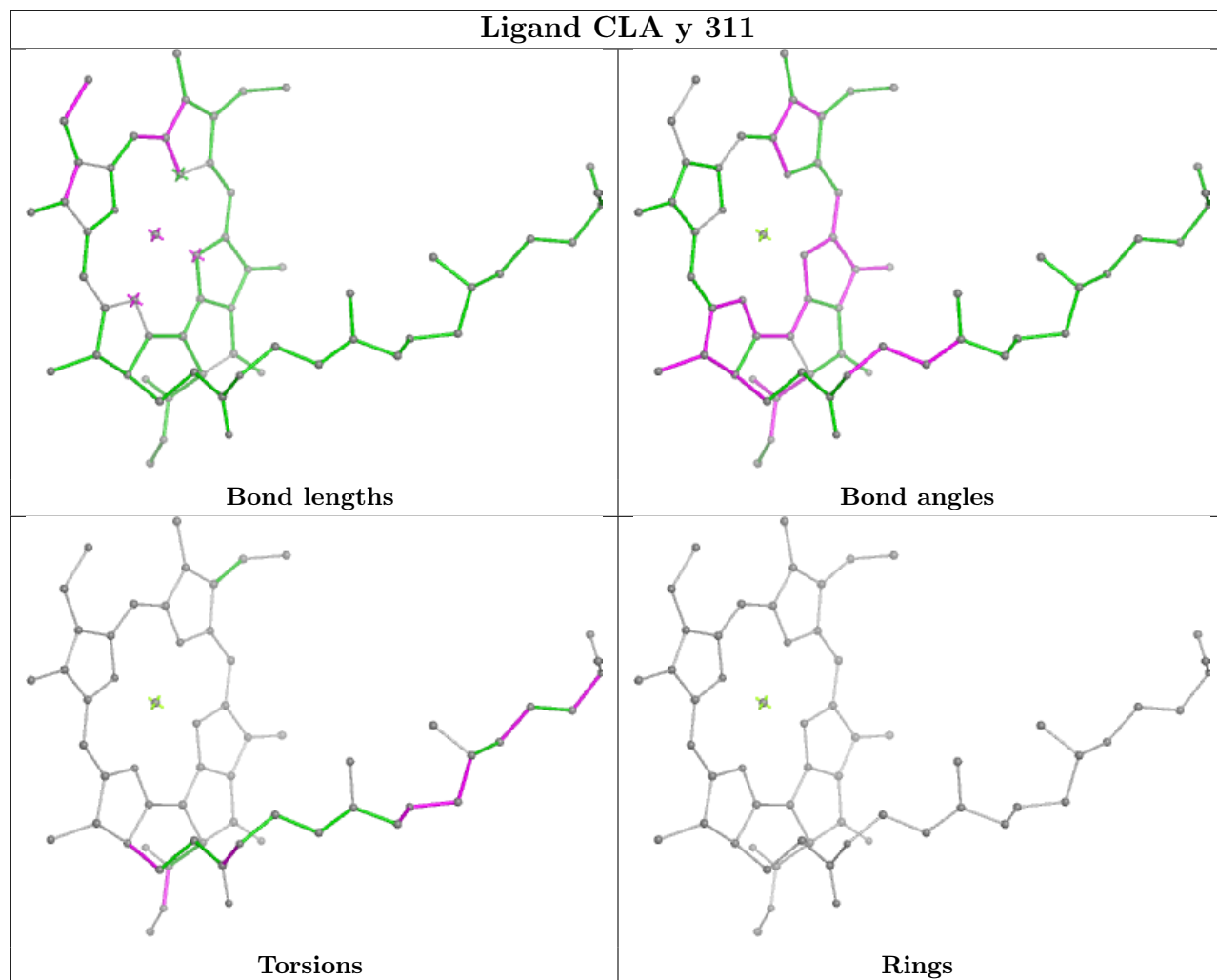
## Ligand CLA g 612



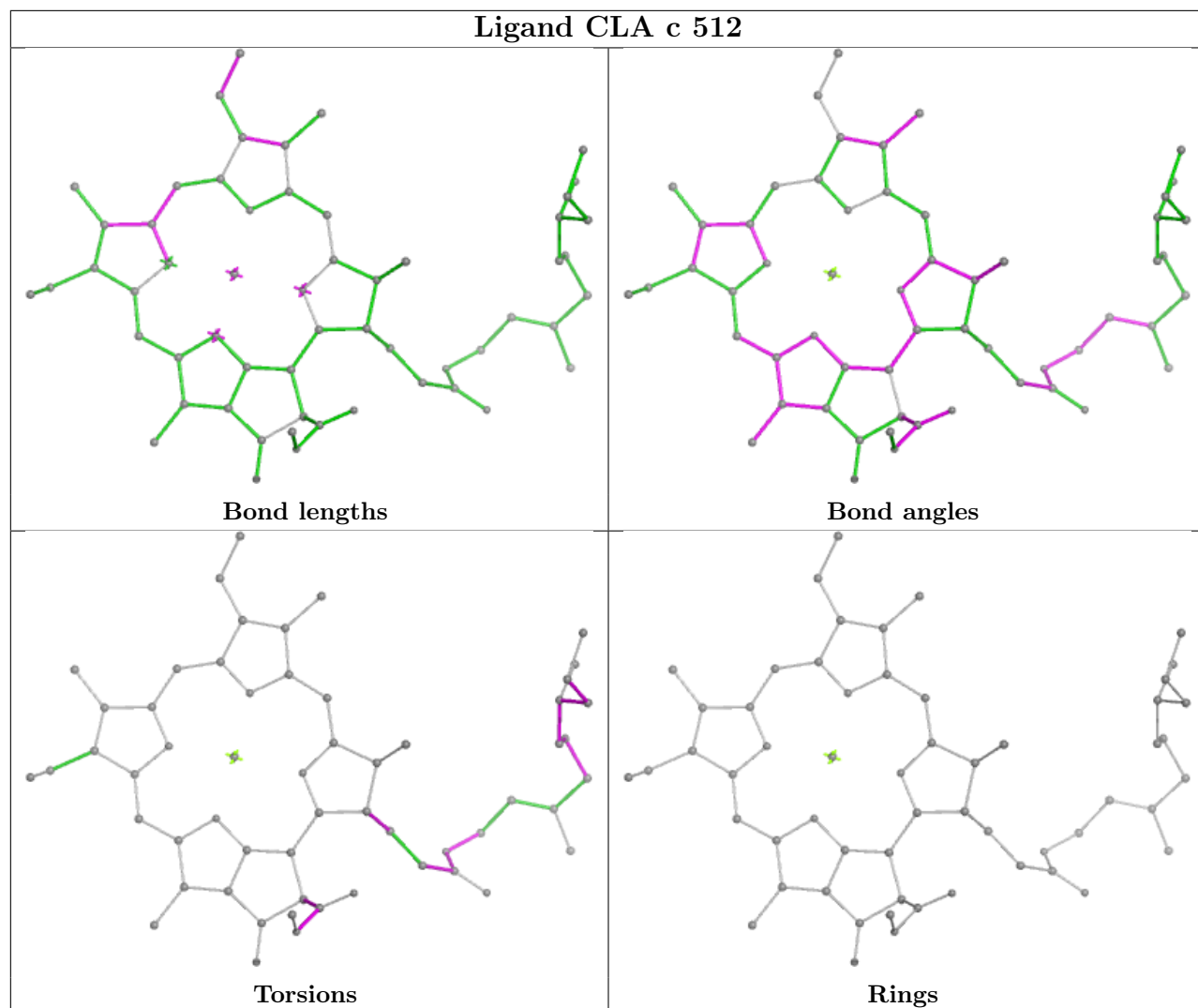
## Ligand SQD L 101

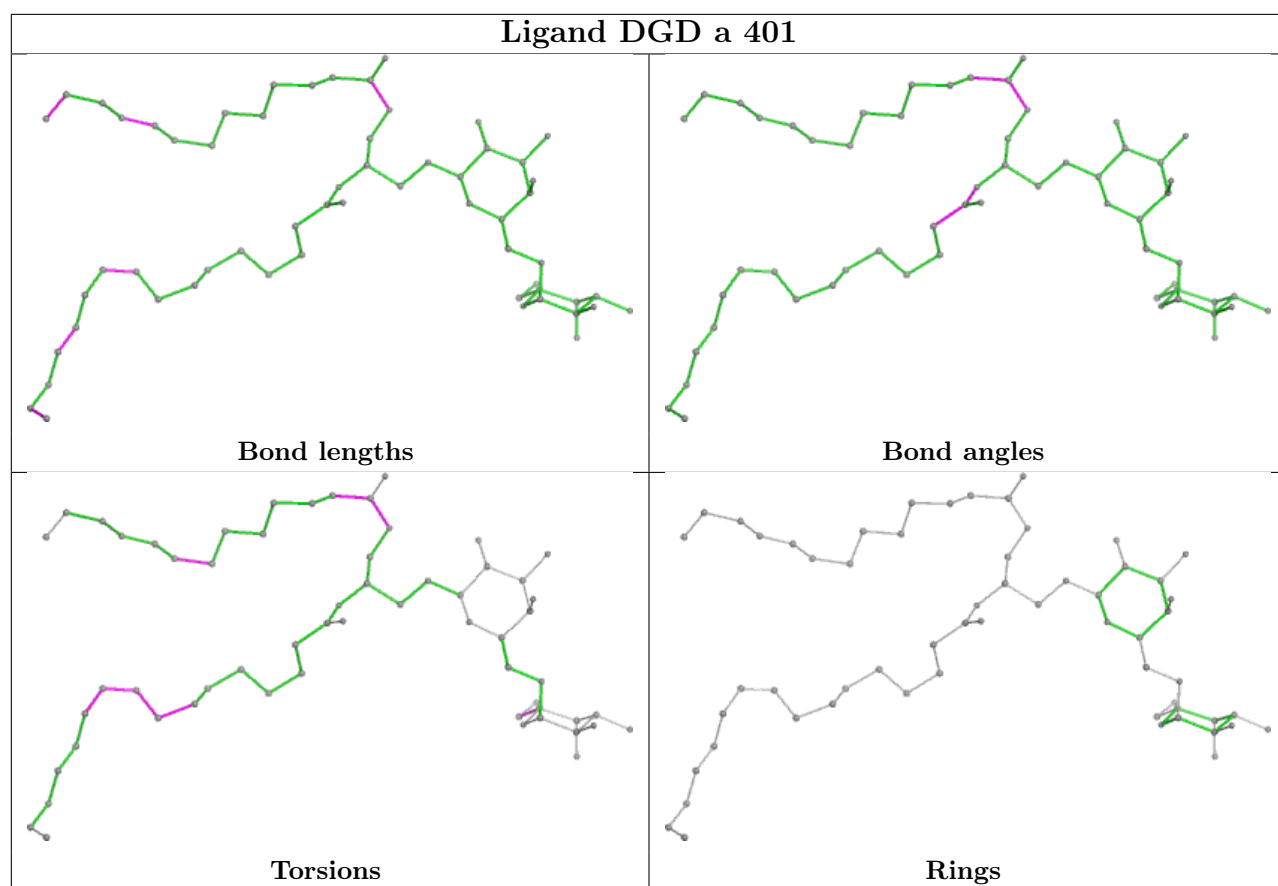


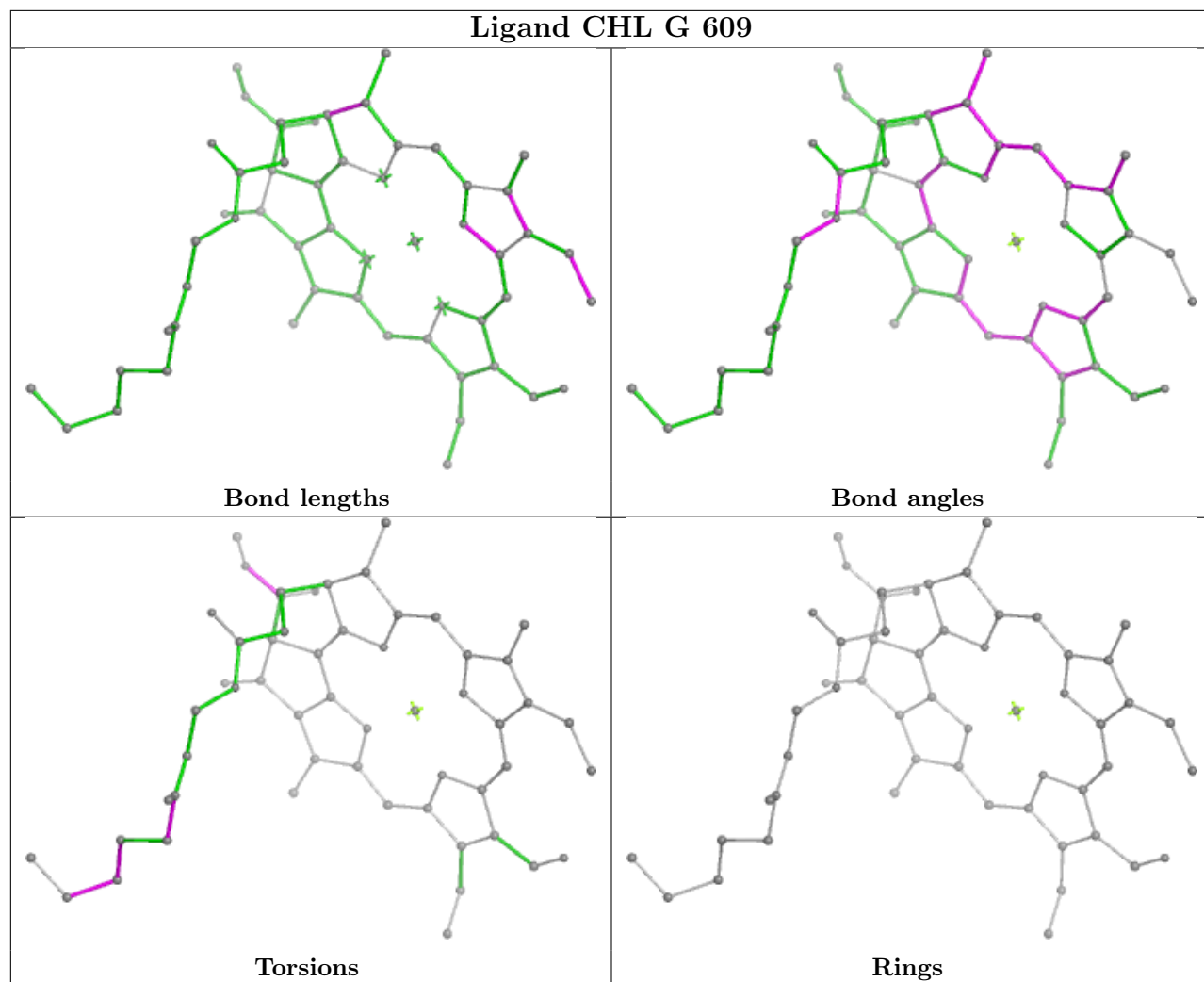
## Ligand CLA y 311

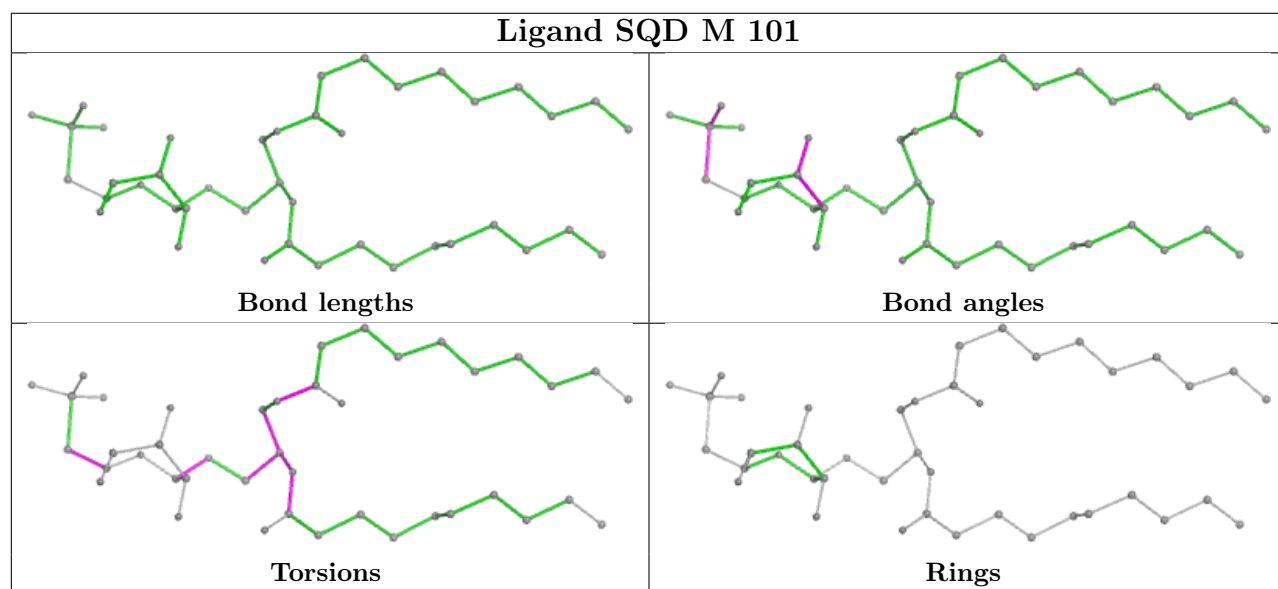
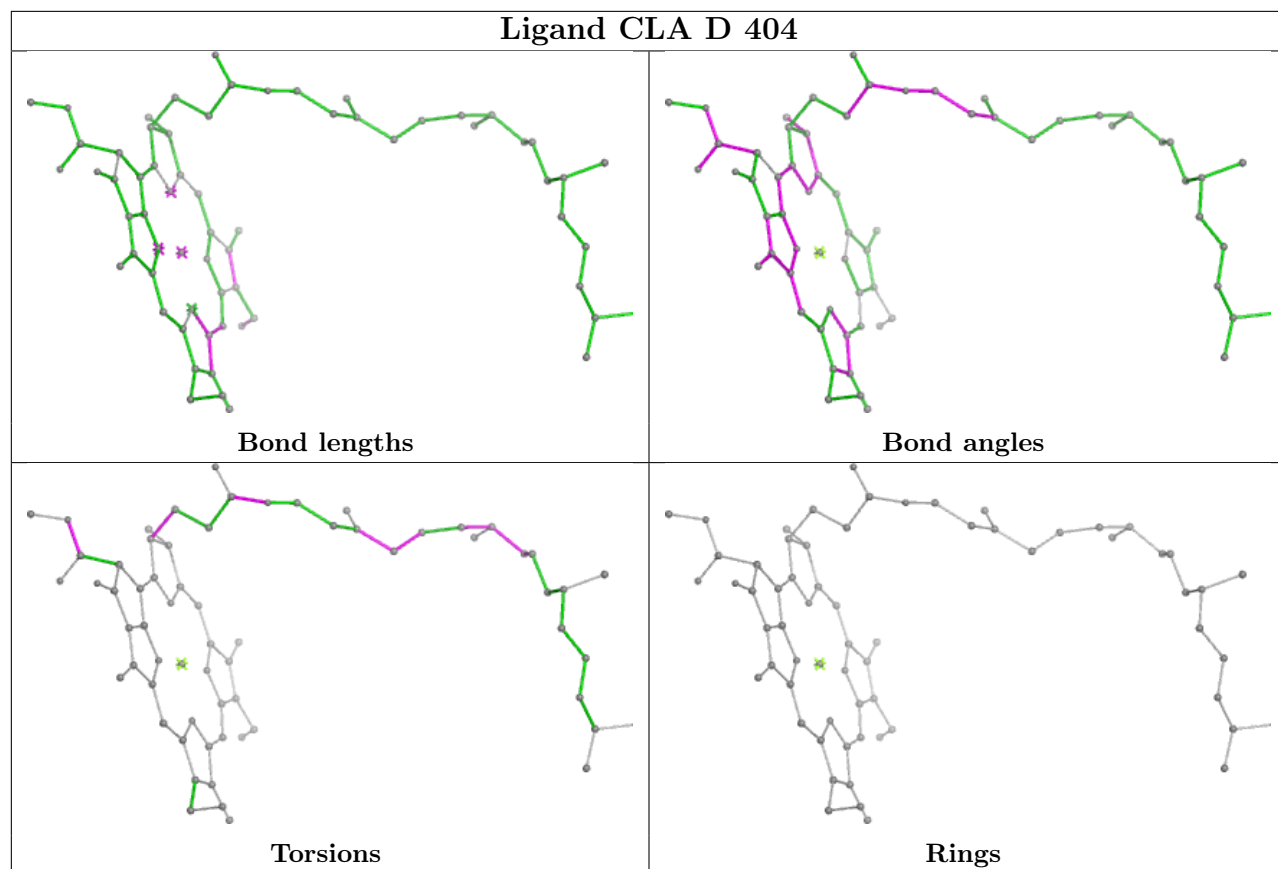


## Ligand CLA c 512

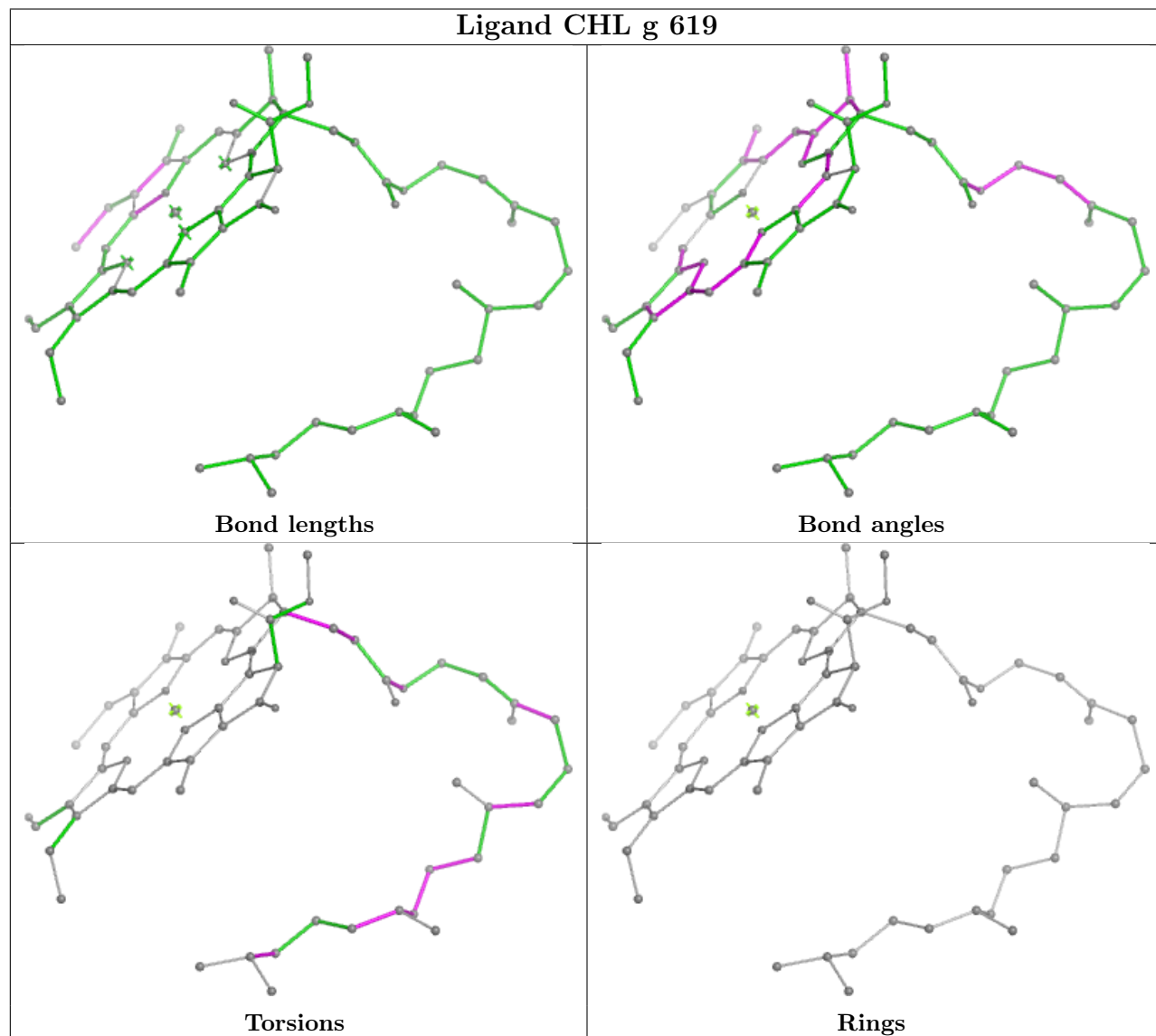
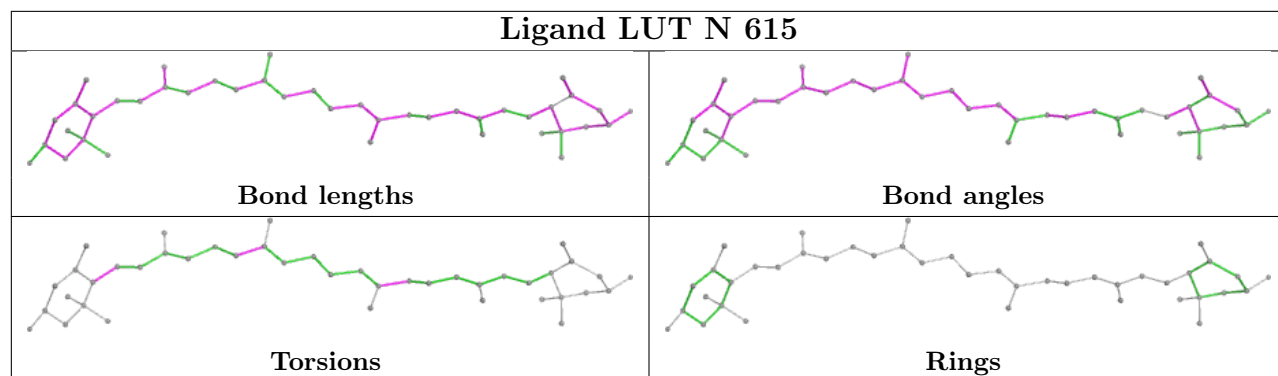




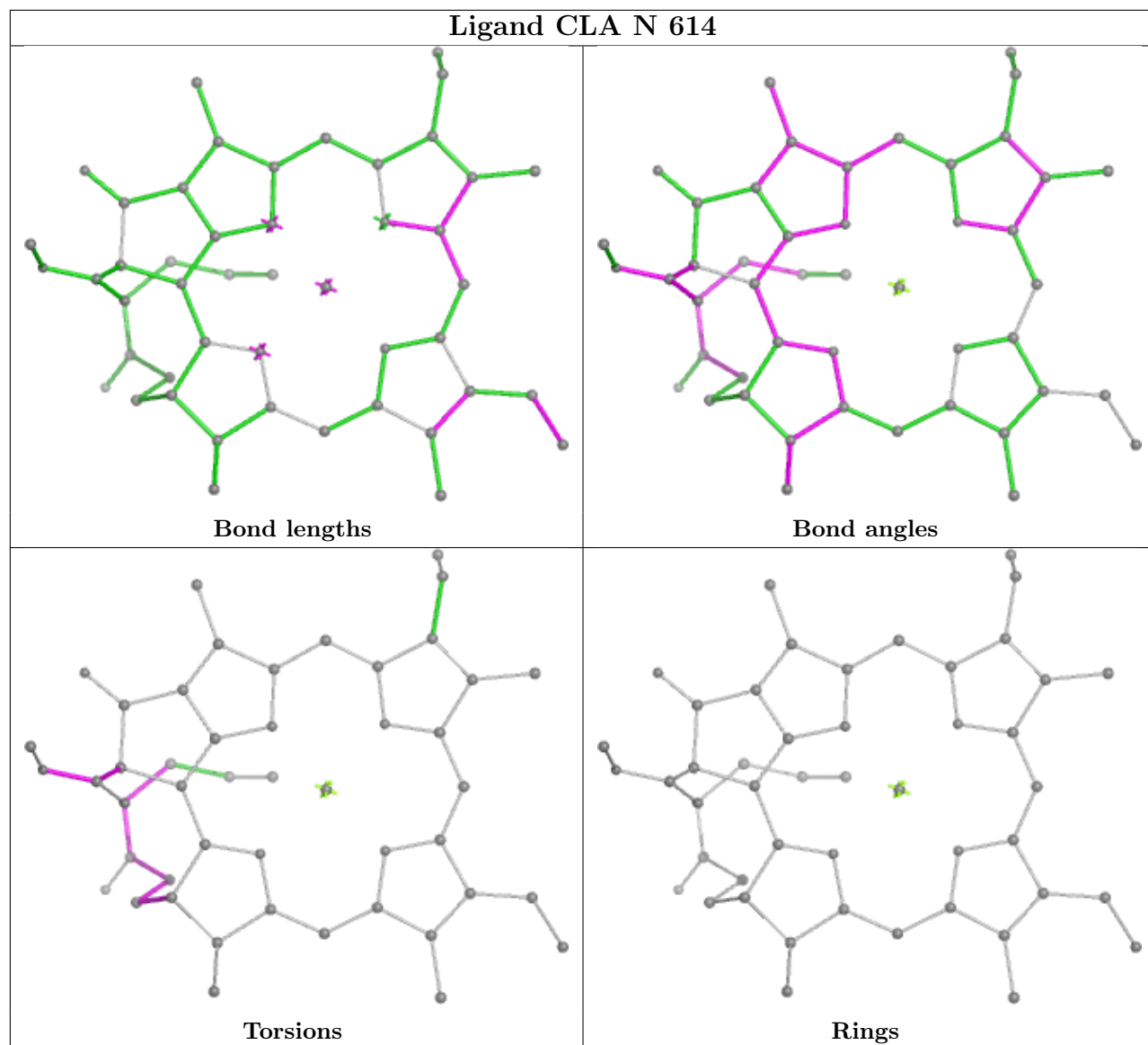




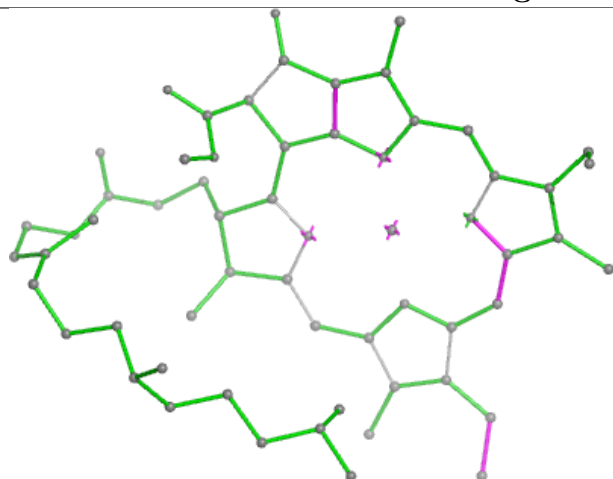




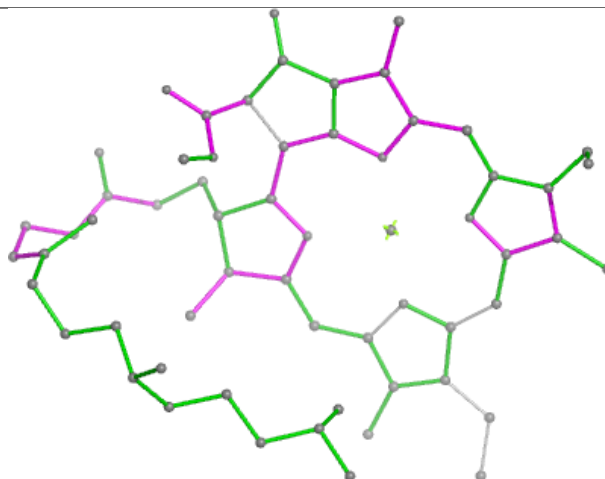
## Ligand CLA N 614



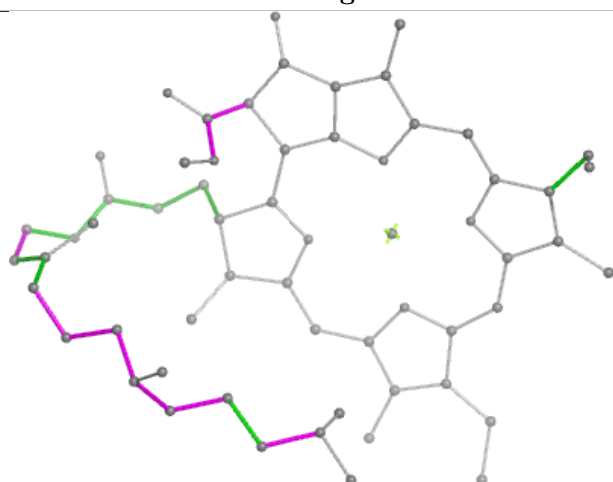
## Ligand CLA R 603



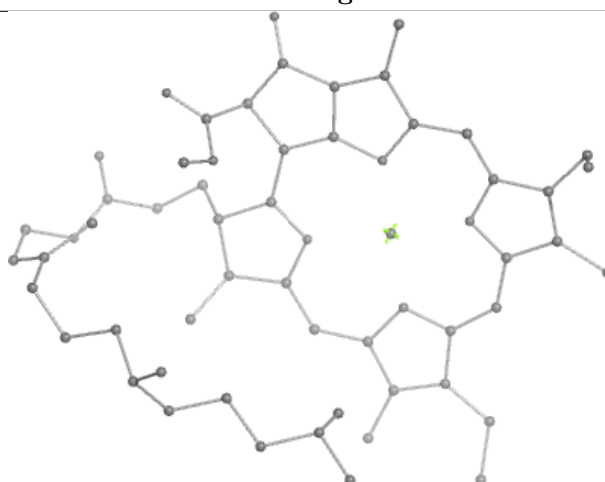
Bond lengths



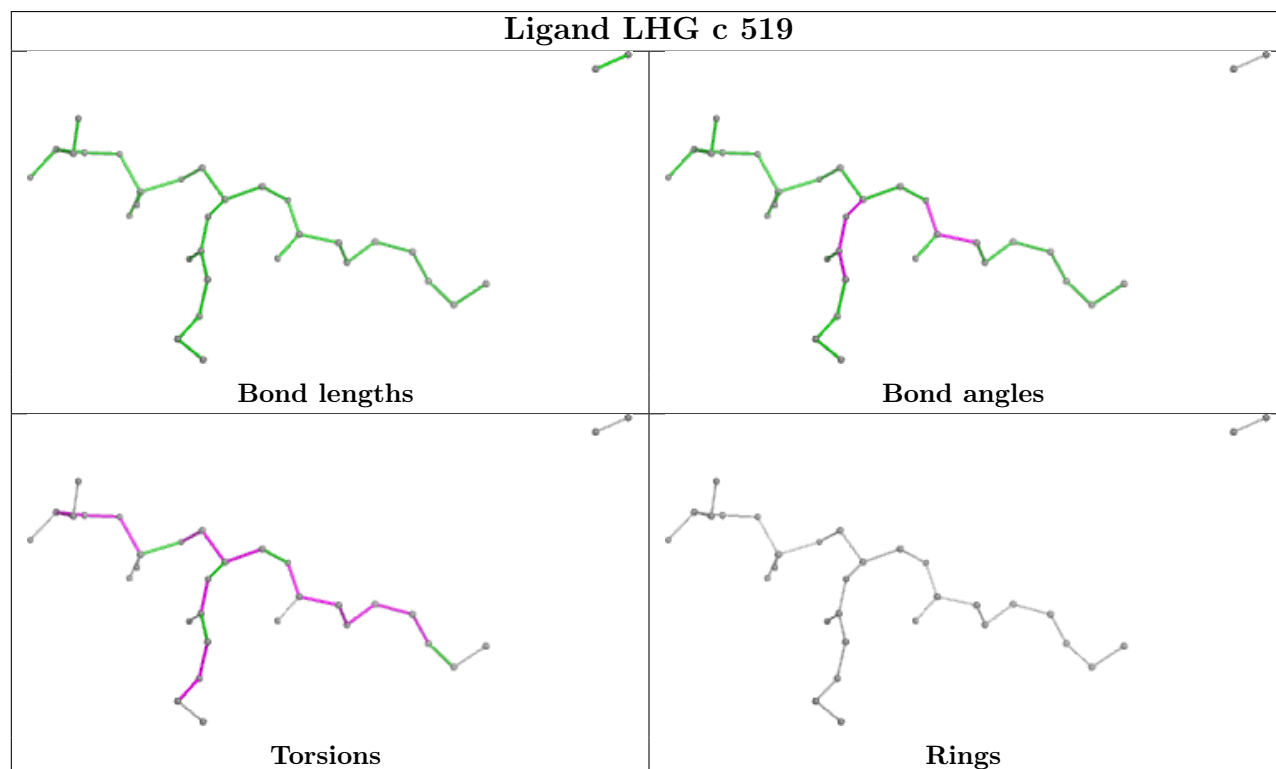
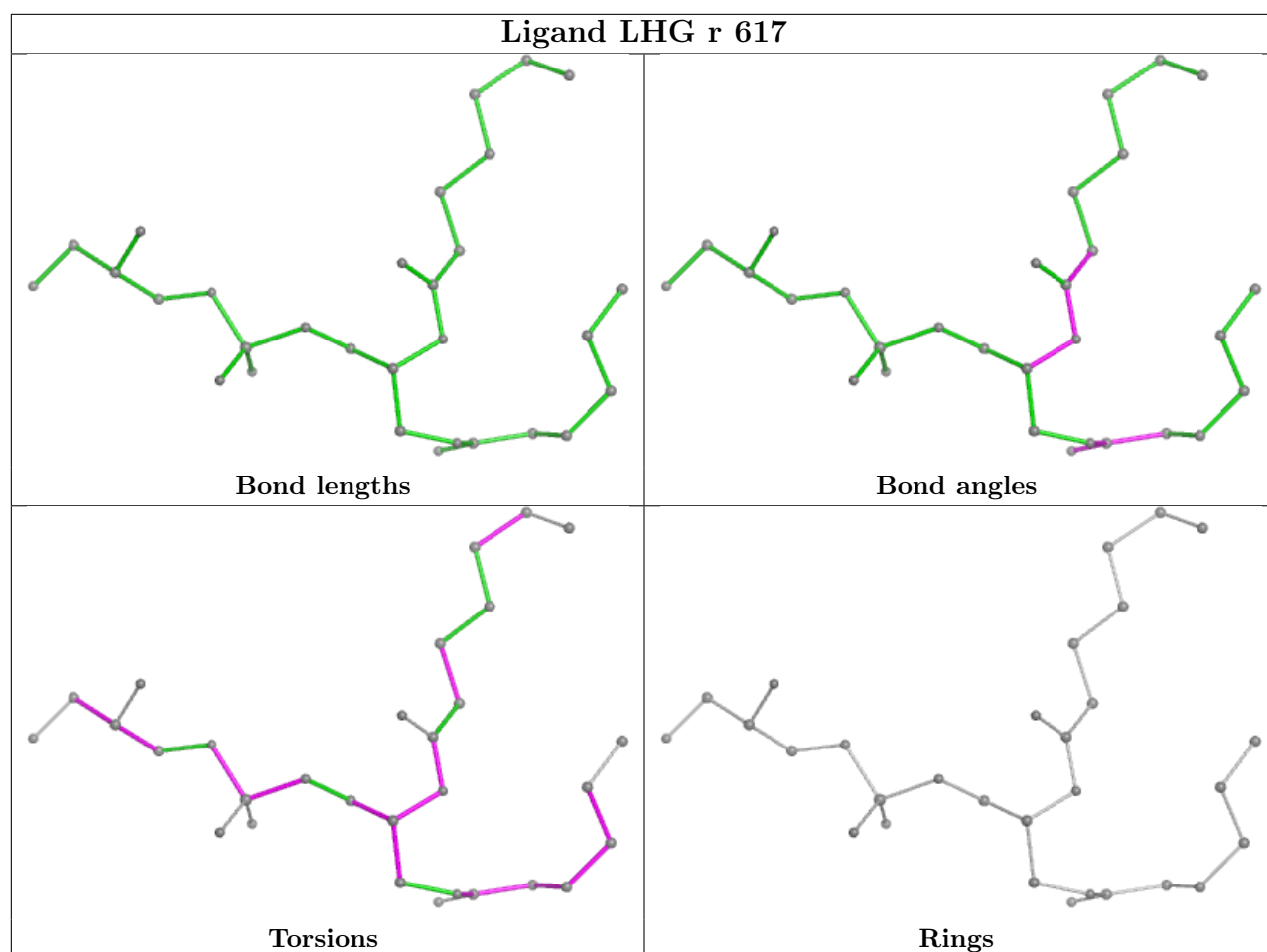
Bond angles

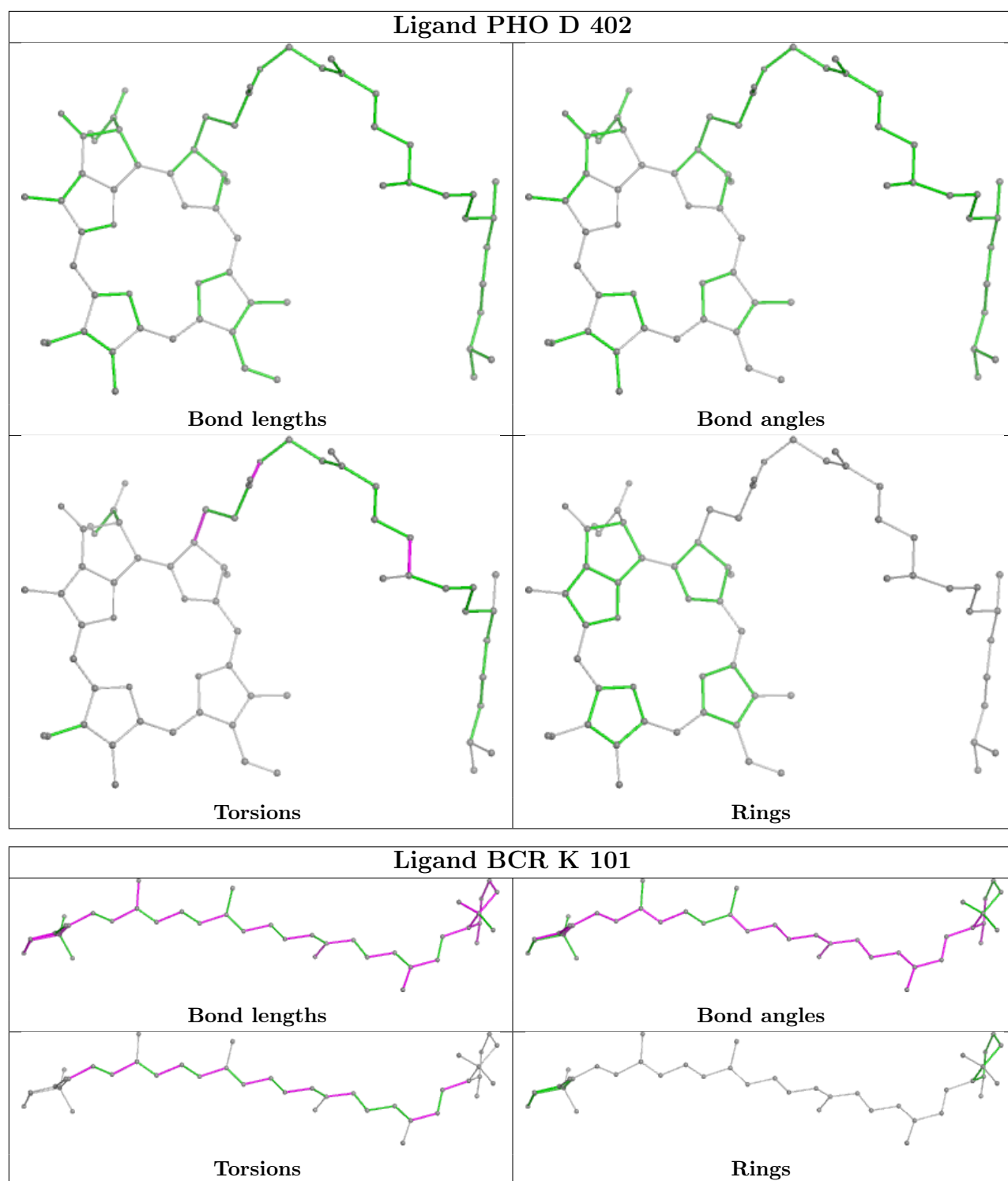


Torsions

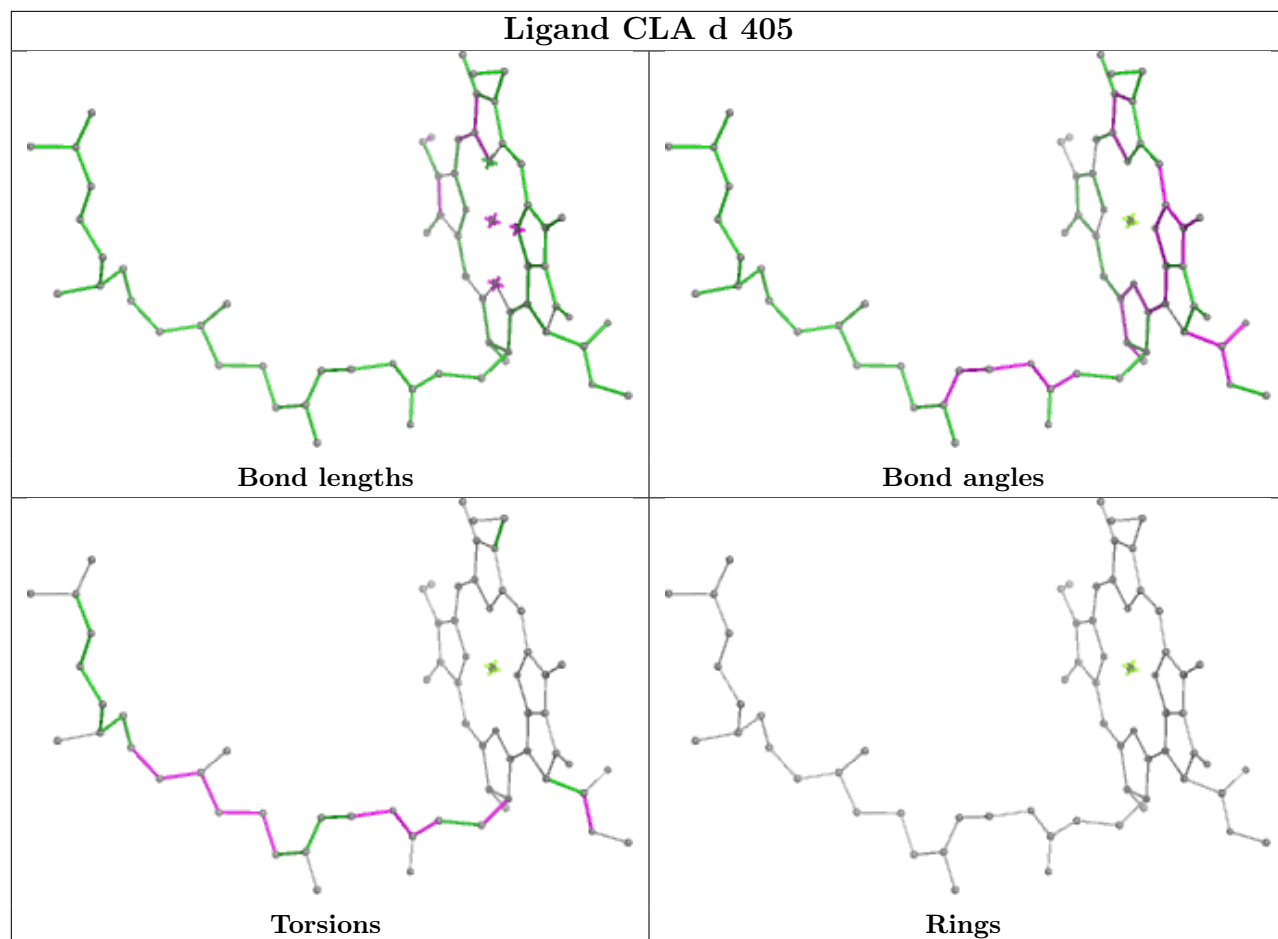


Rings

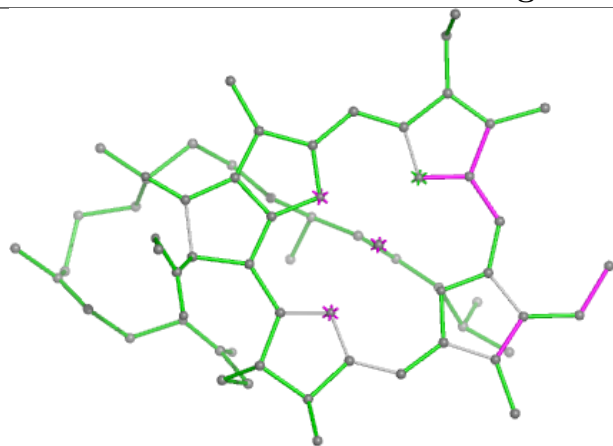




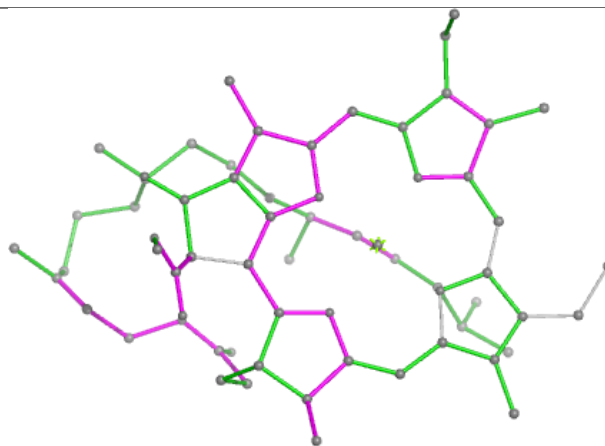
## Ligand CLA d 405



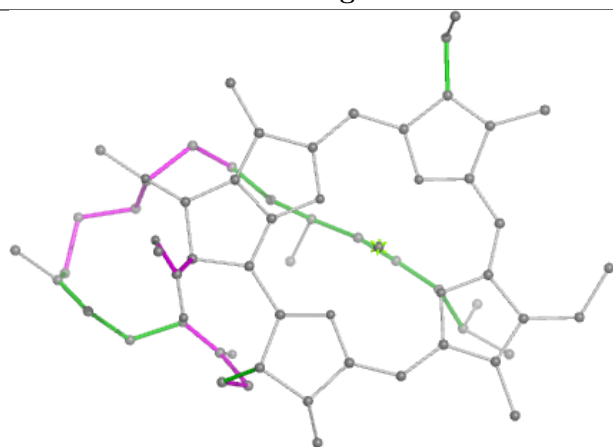
## Ligand CLA b 601



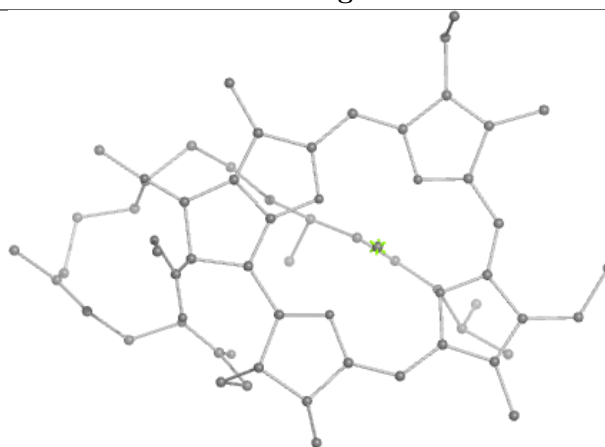
Bond lengths



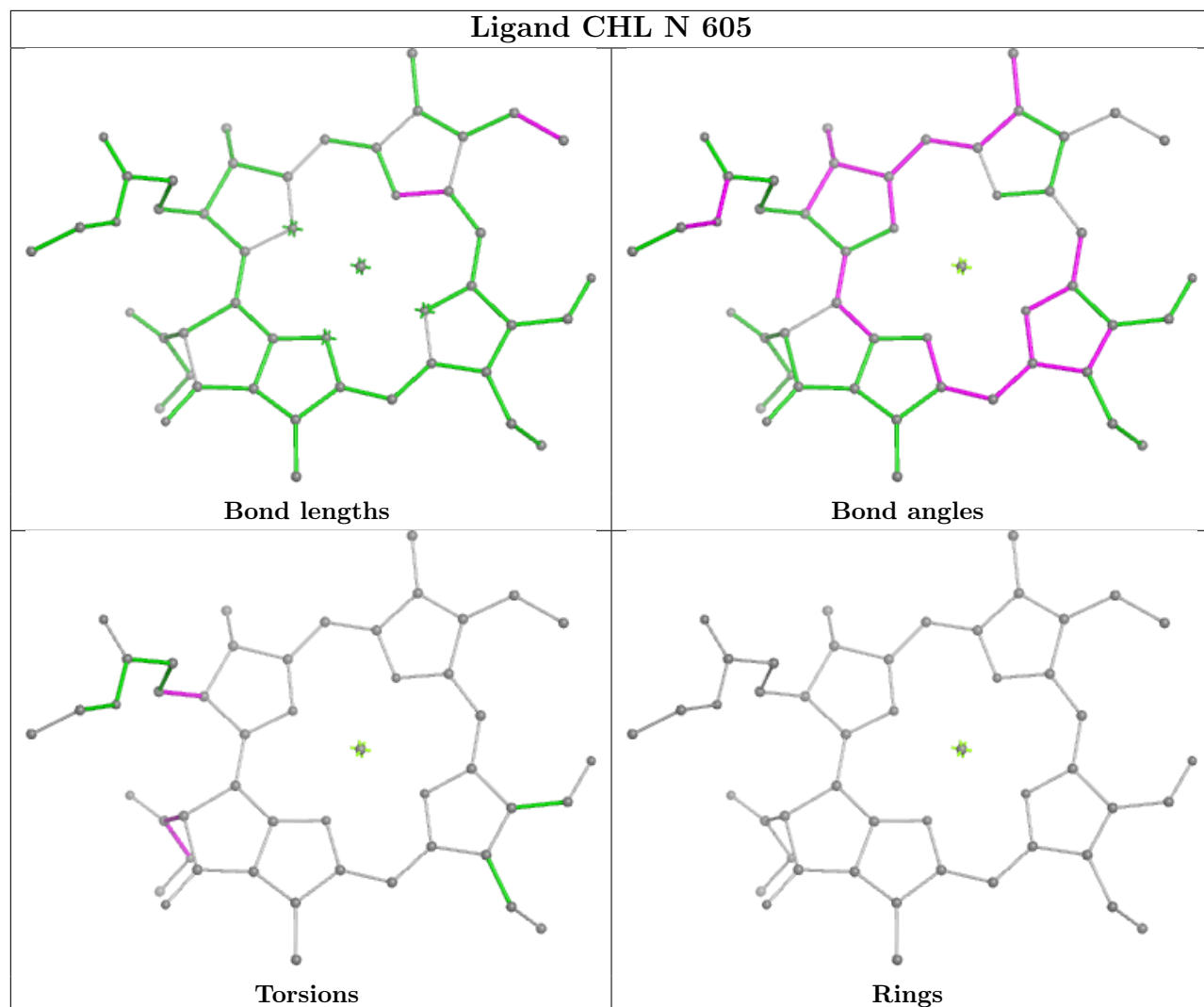
Bond angles



Torsions

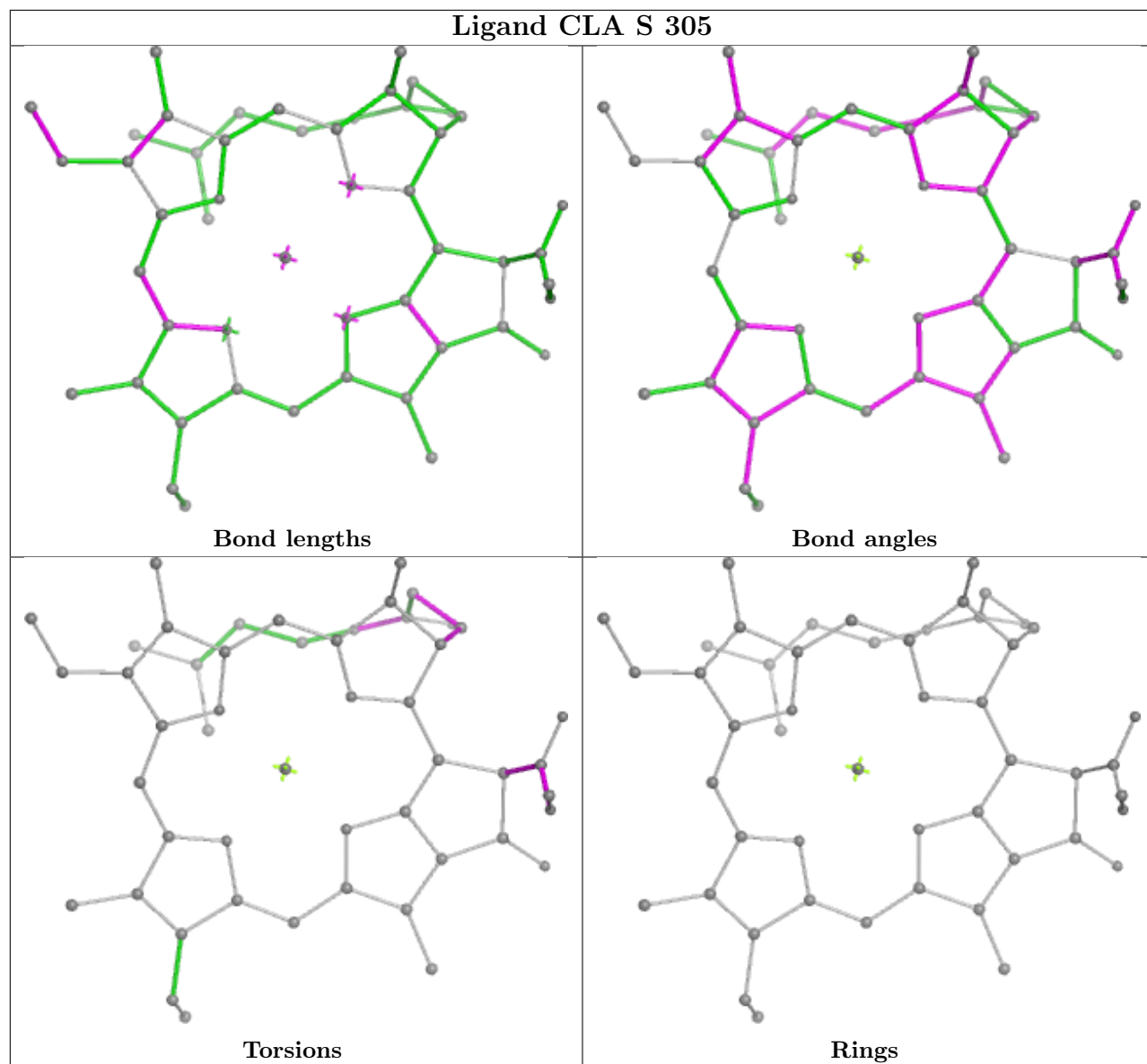


Rings

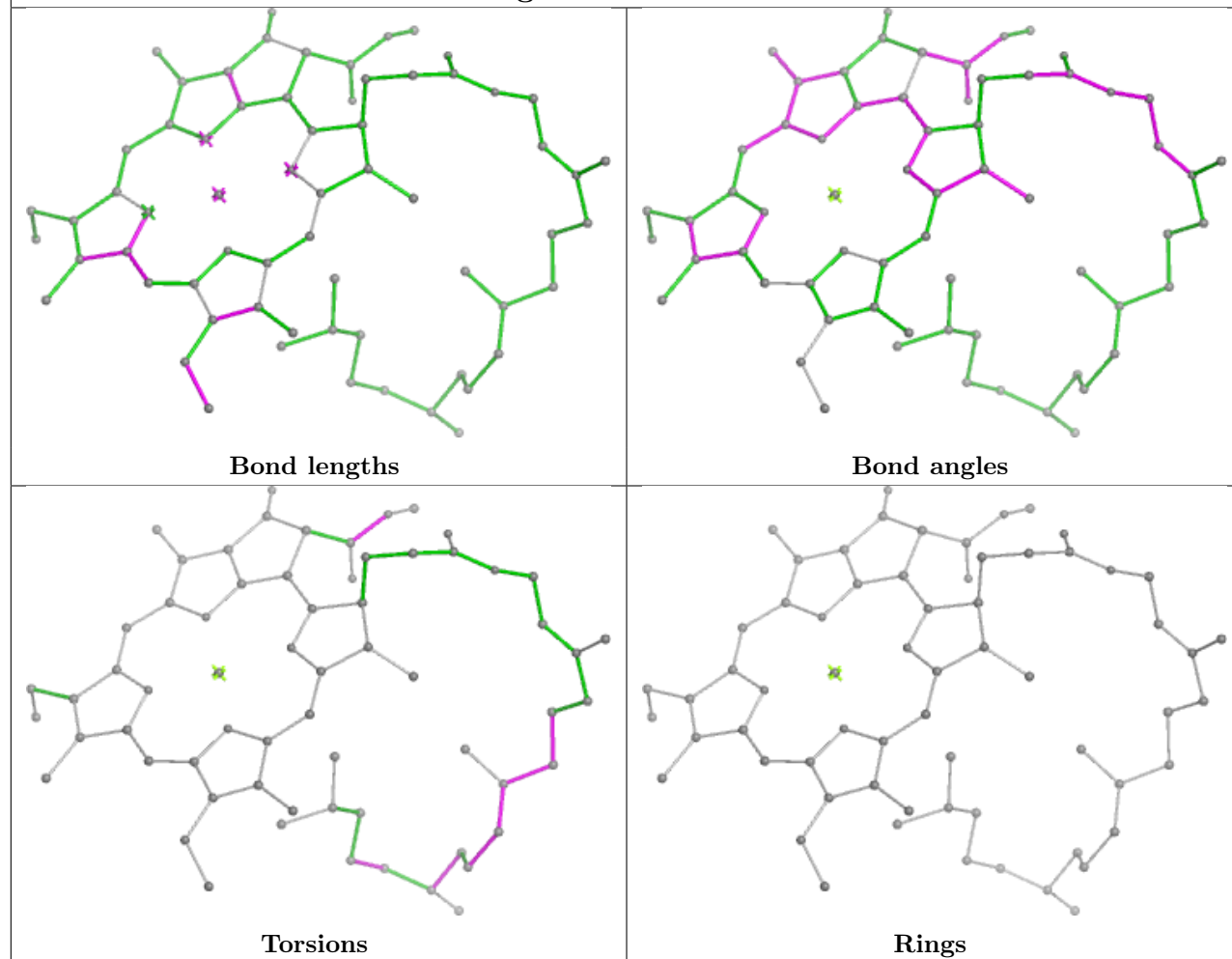




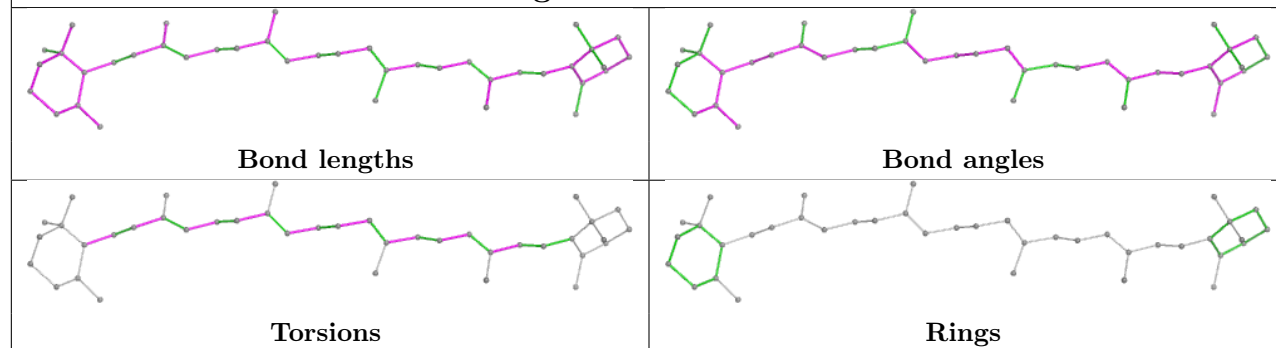
## Ligand CLA S 305

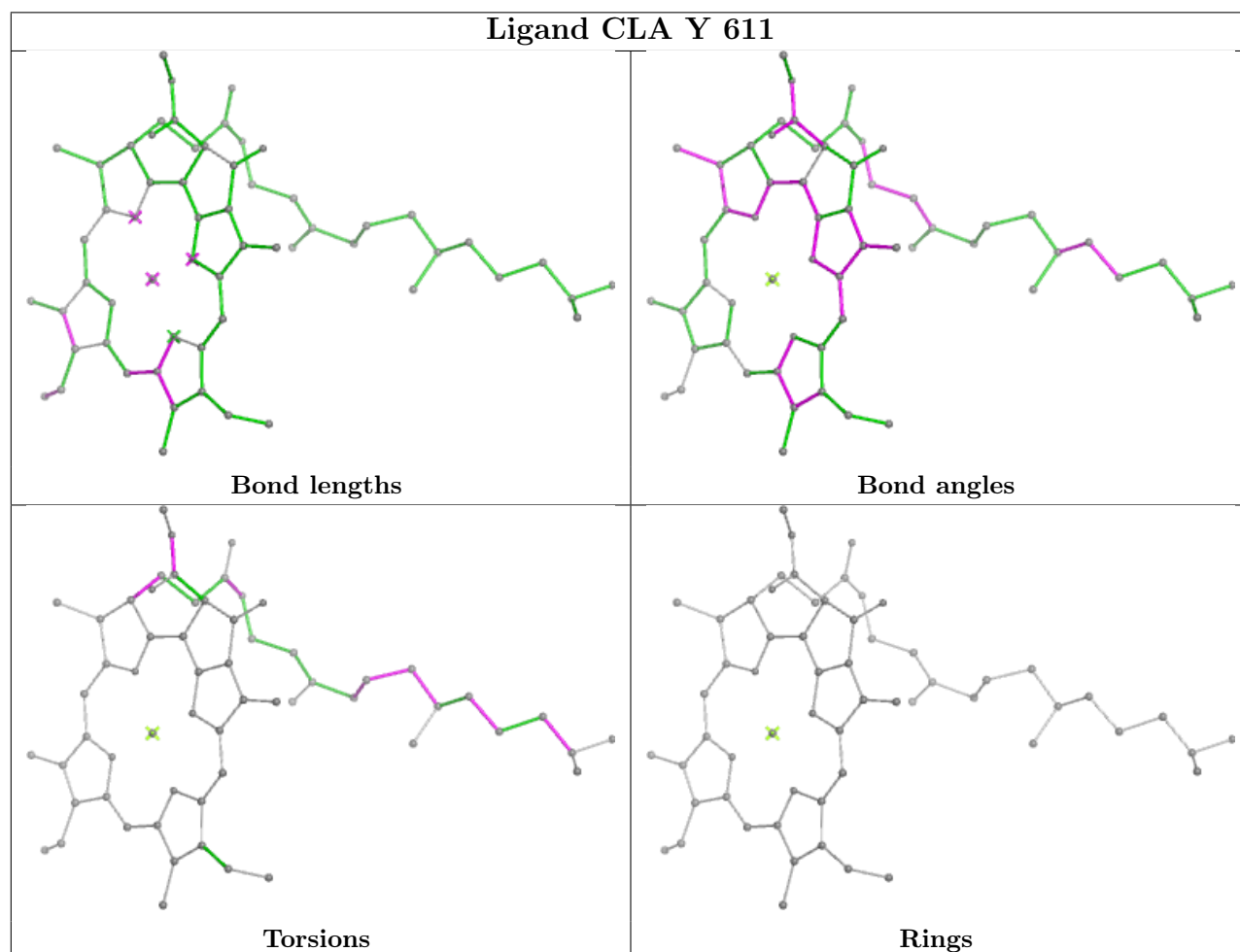
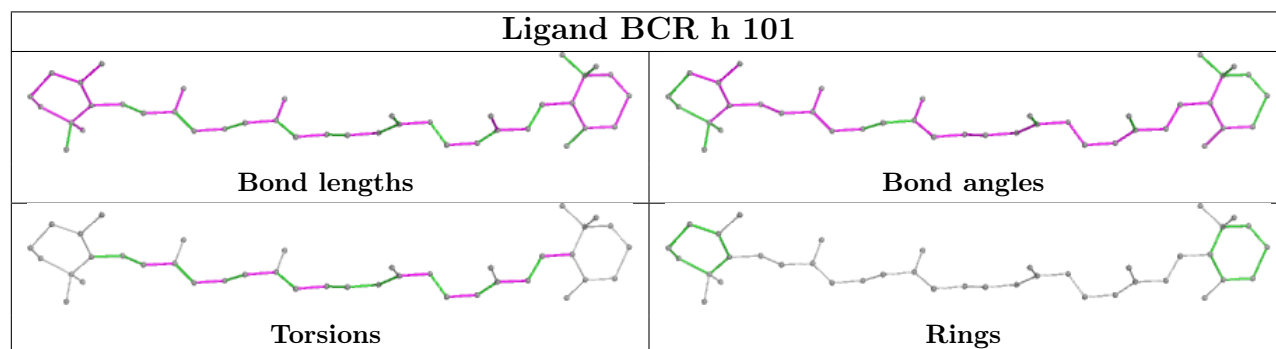
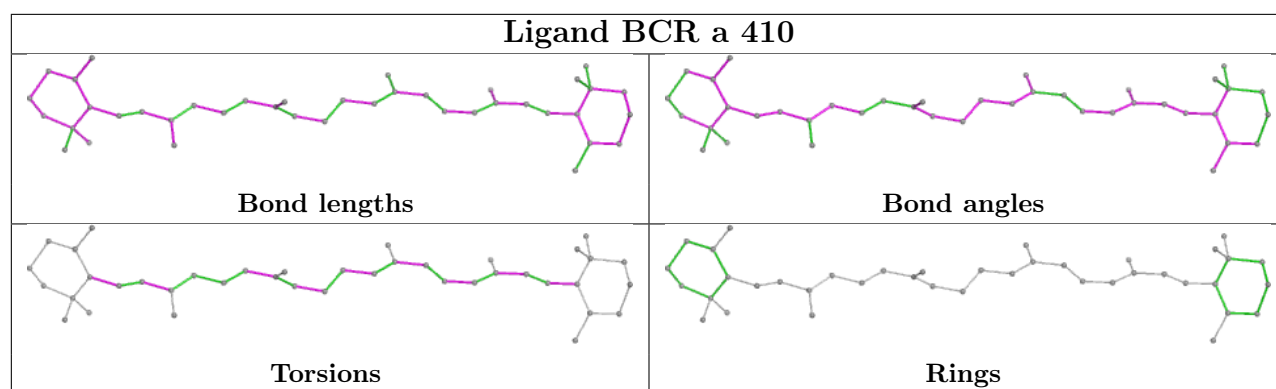


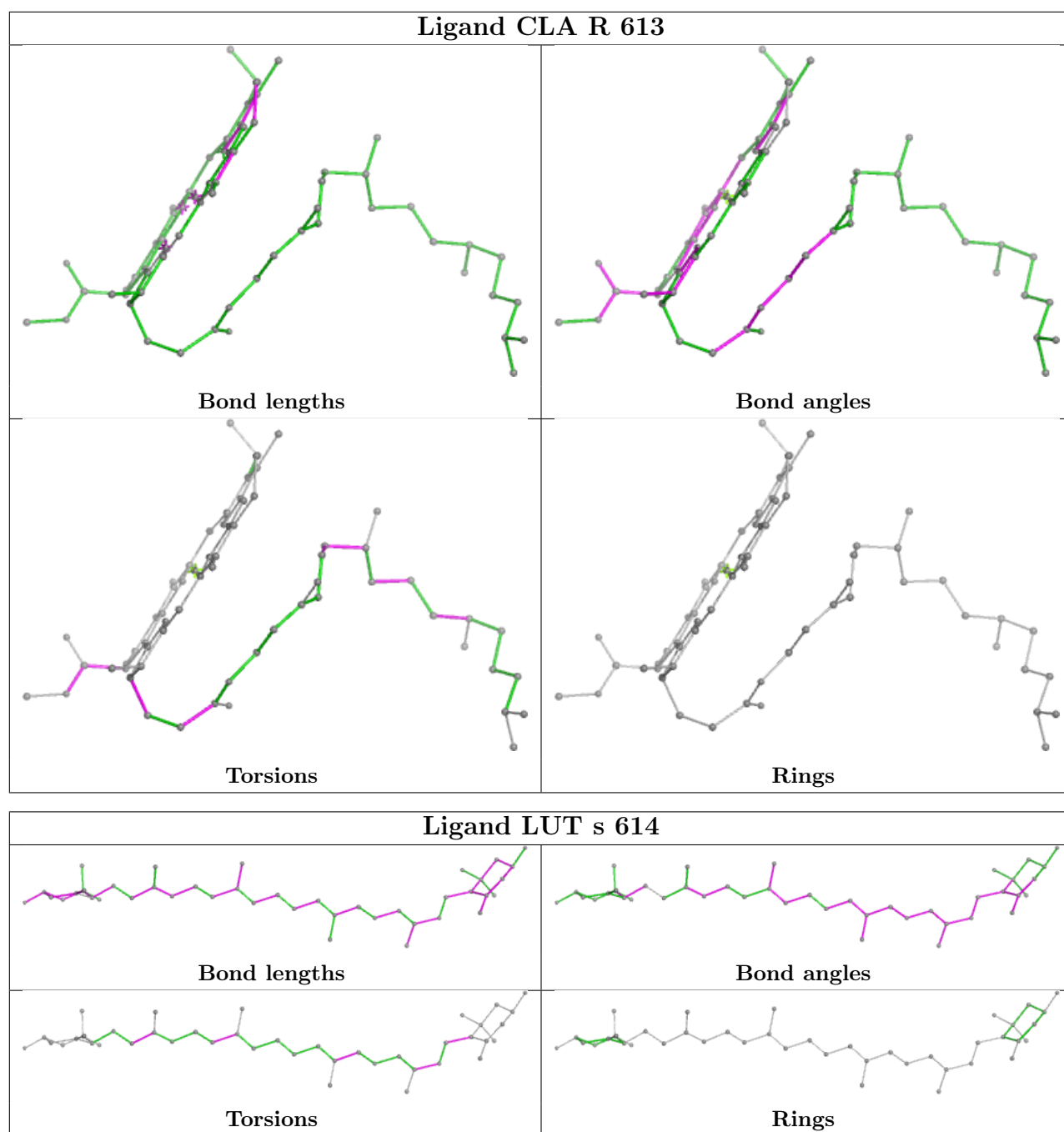
## Ligand CLA b 615



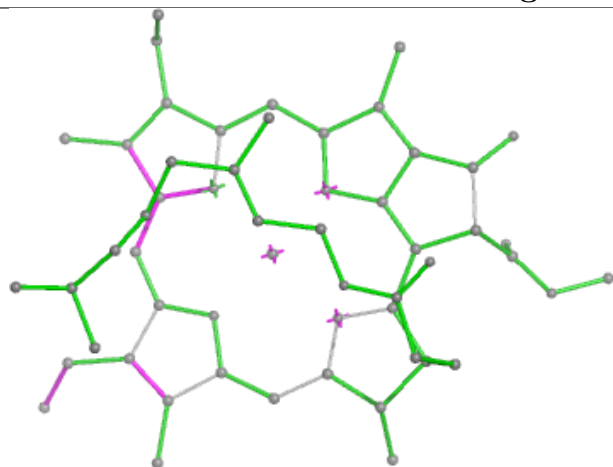
## Ligand BCR b 617



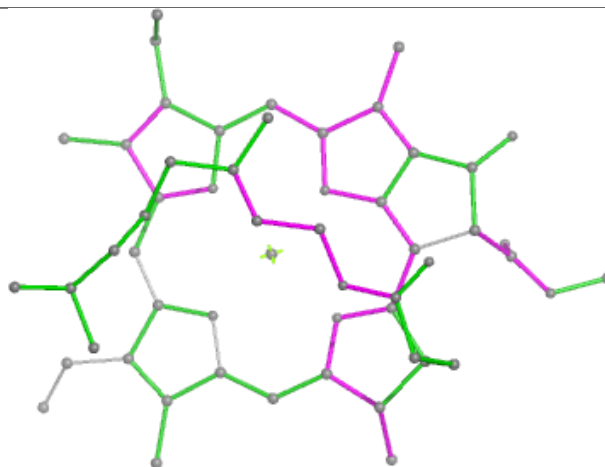




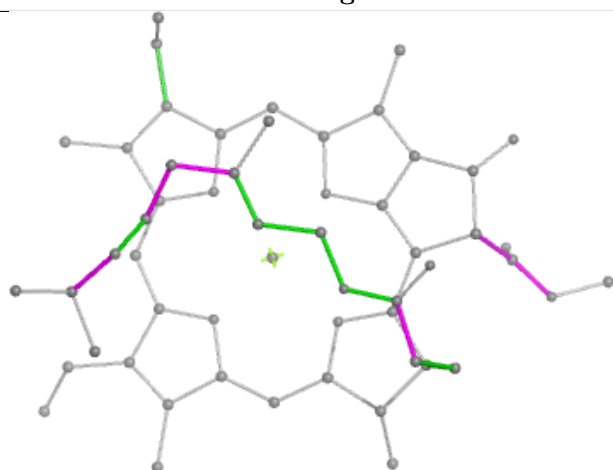
## Ligand CLA s 612



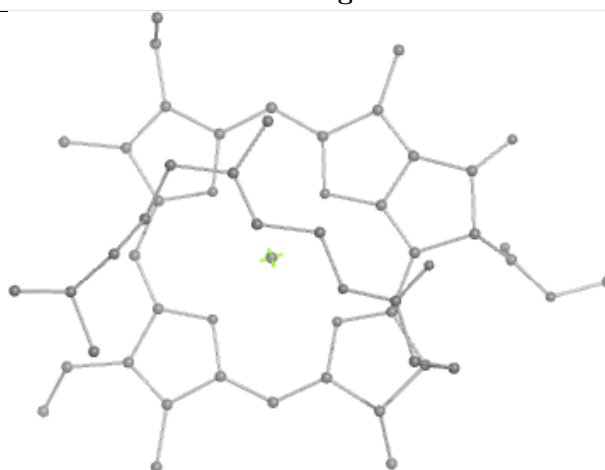
Bond lengths



Bond angles

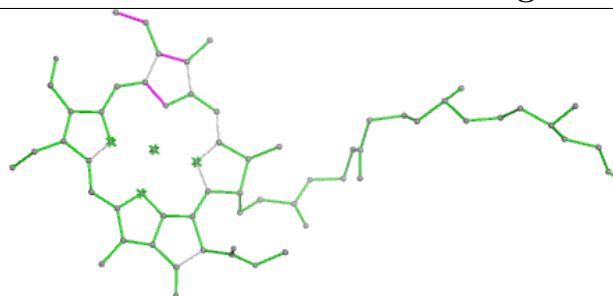


Torsions

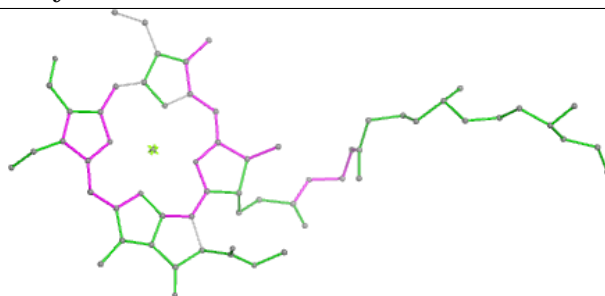


Rings

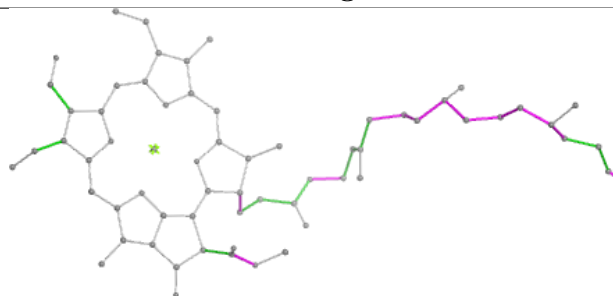
## Ligand CHL y 302



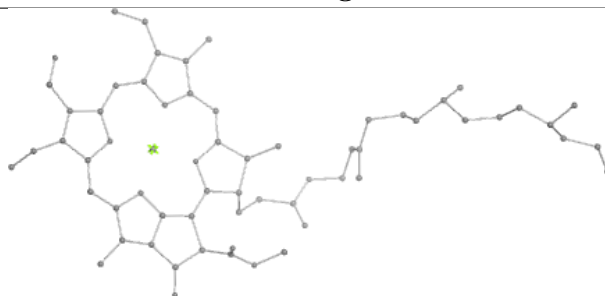
Bond lengths



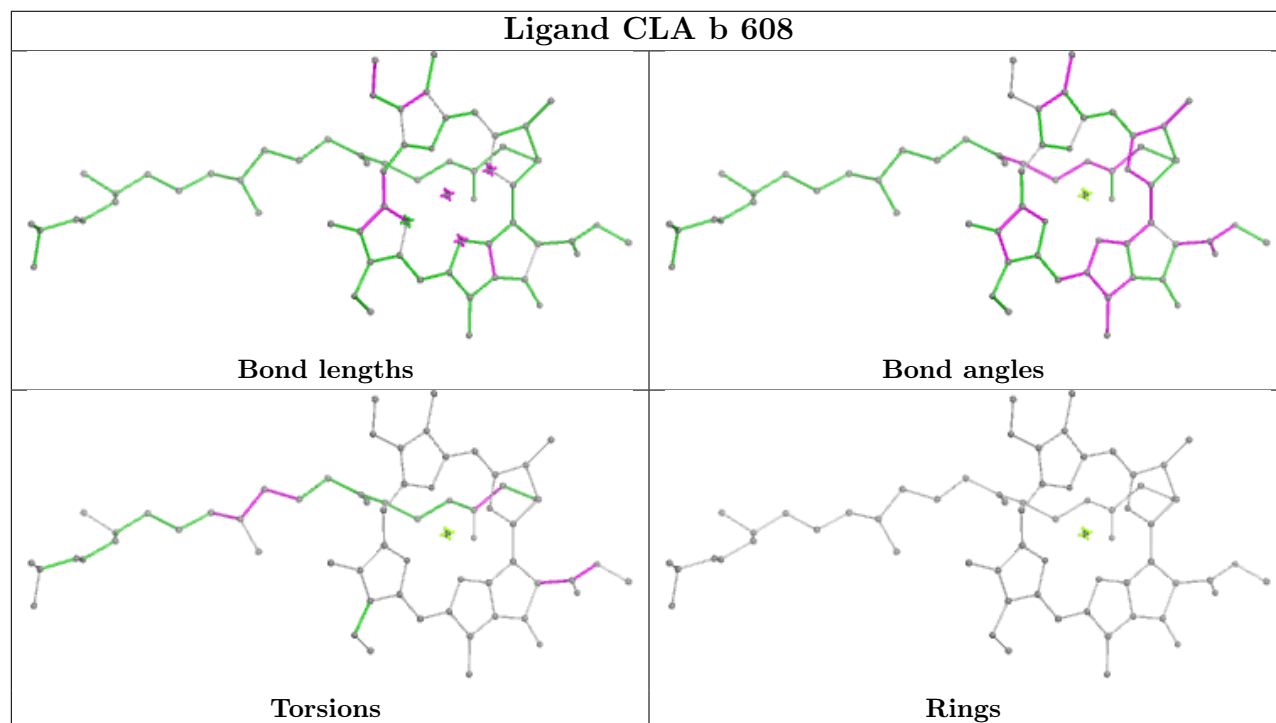
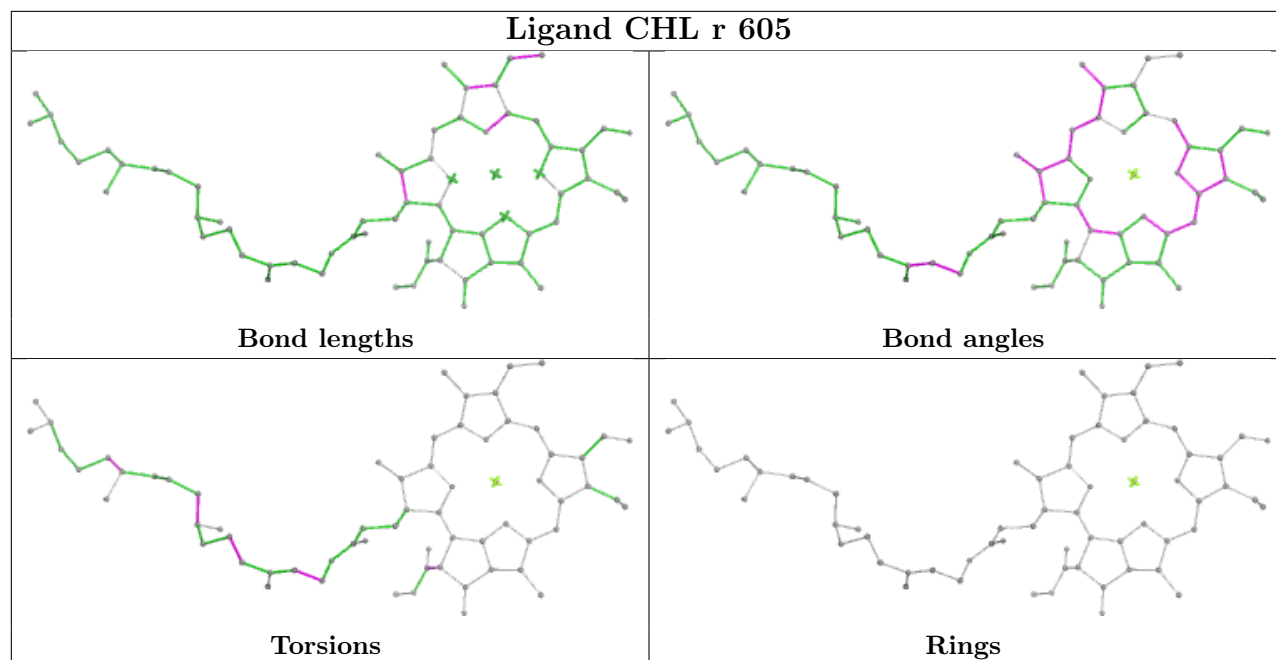
Bond angles

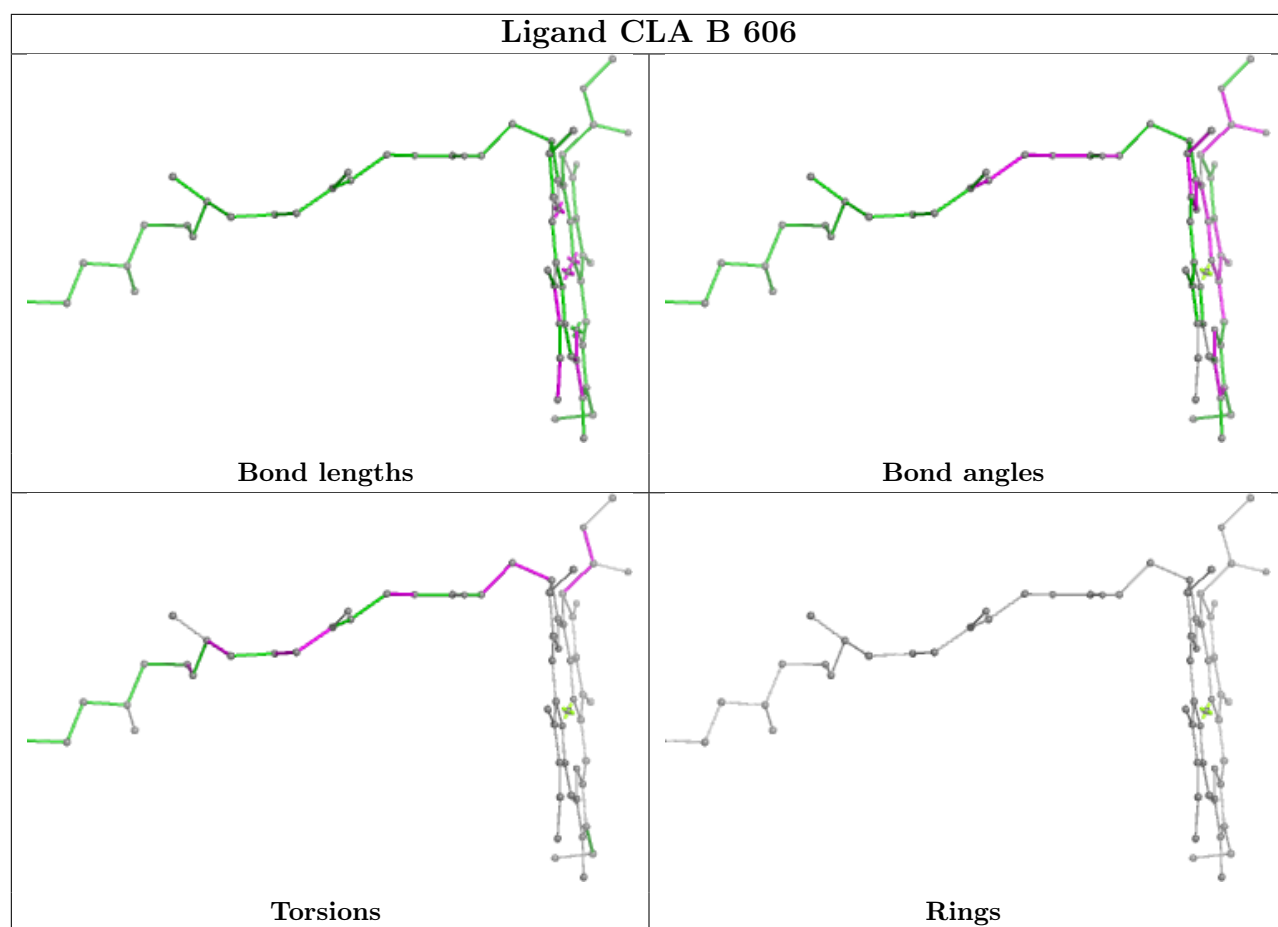


Torsions

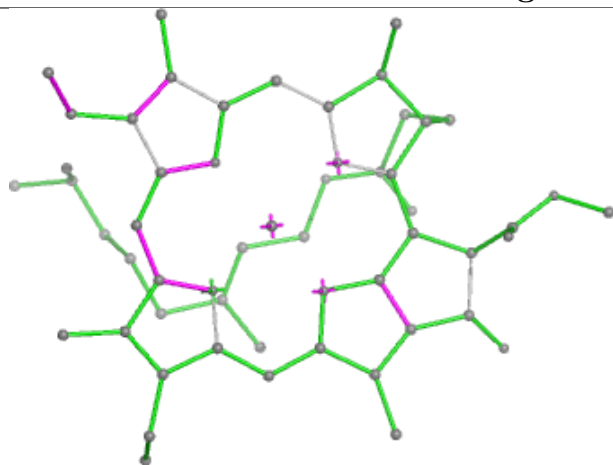


Rings

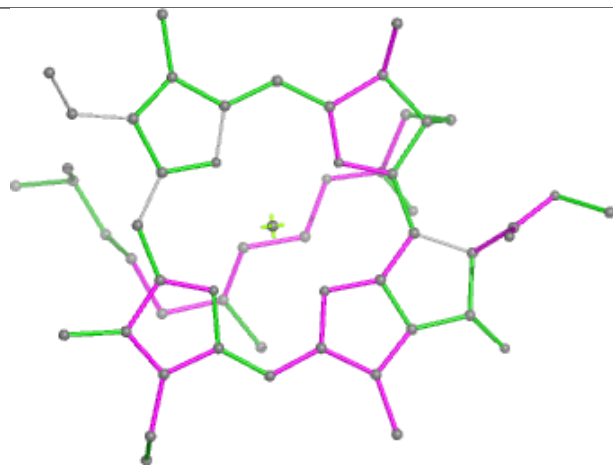




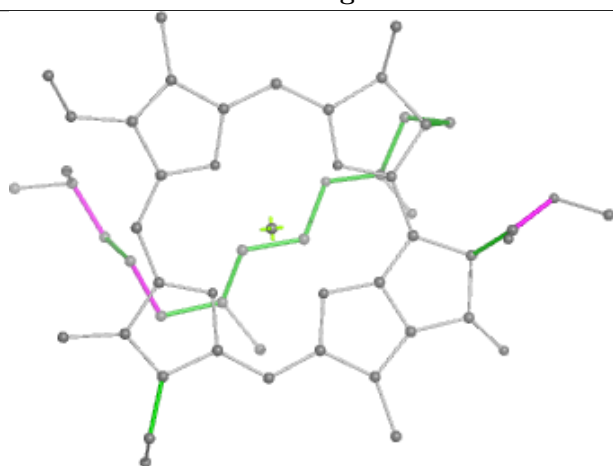
## Ligand CLA n 613



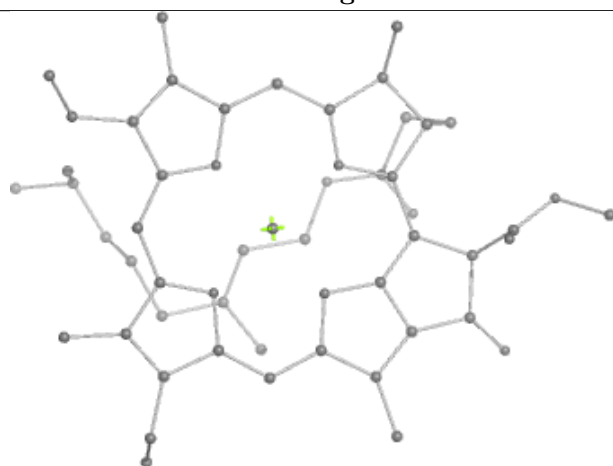
Bond lengths



Bond angles

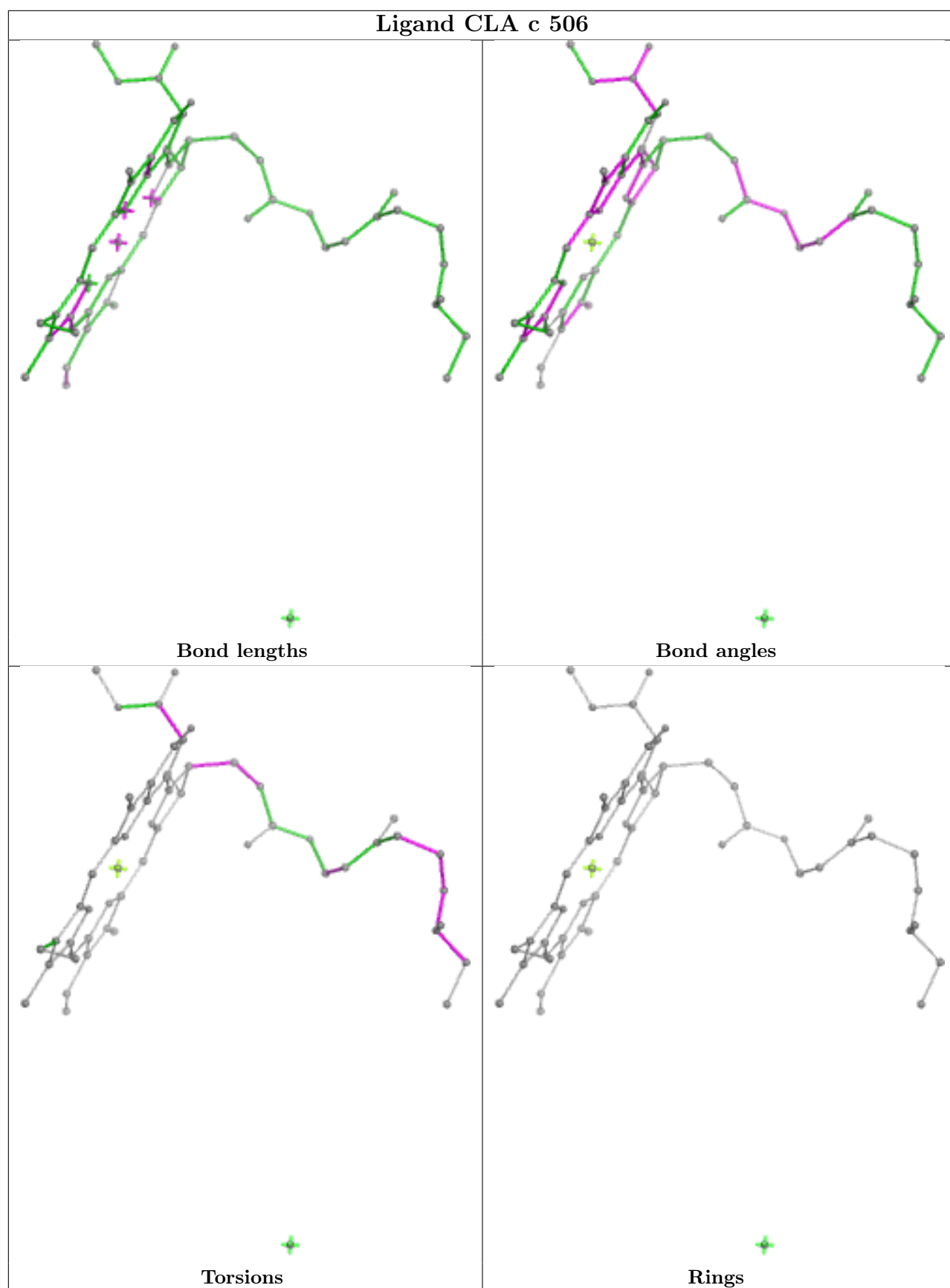


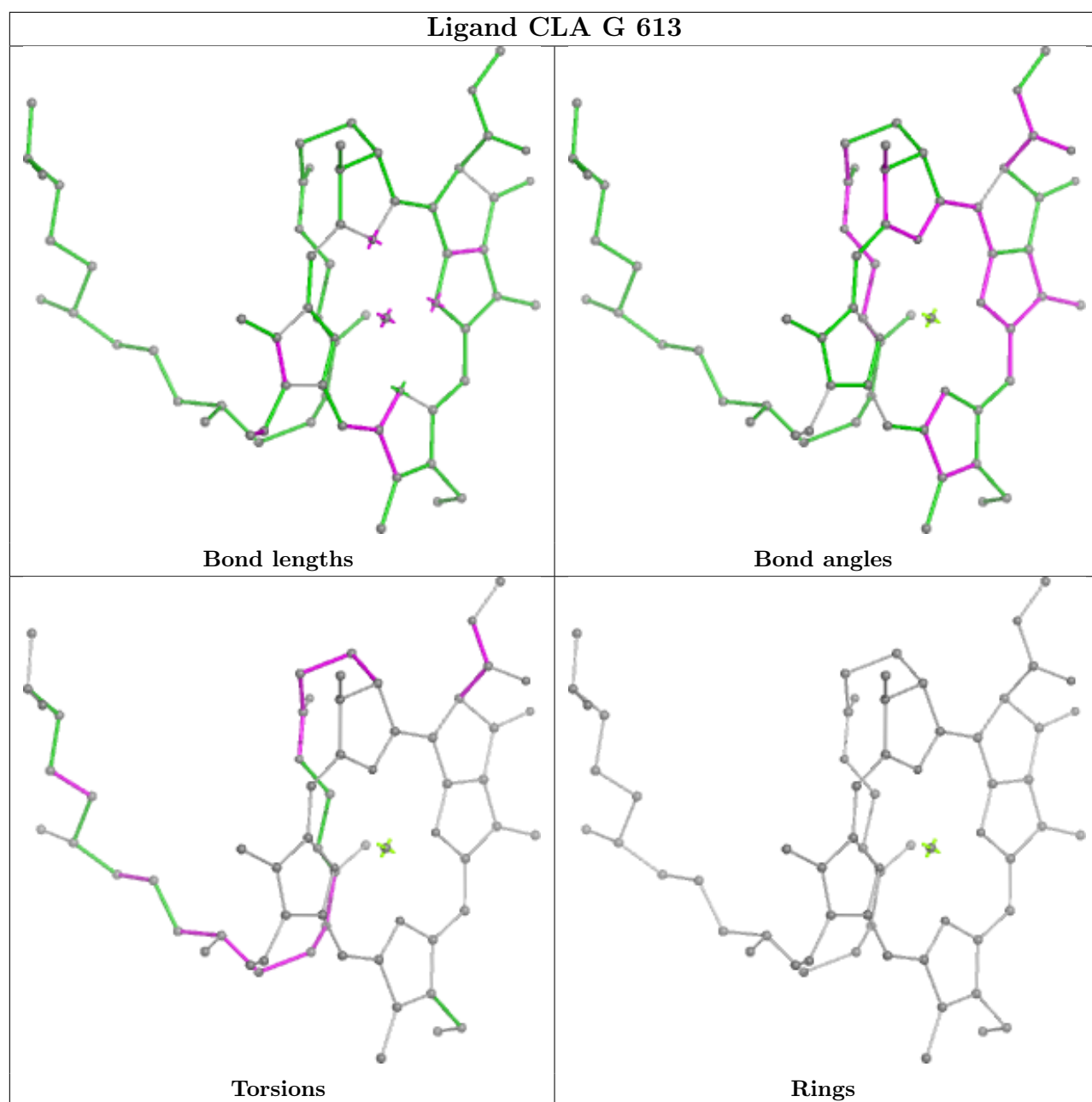
Torsions

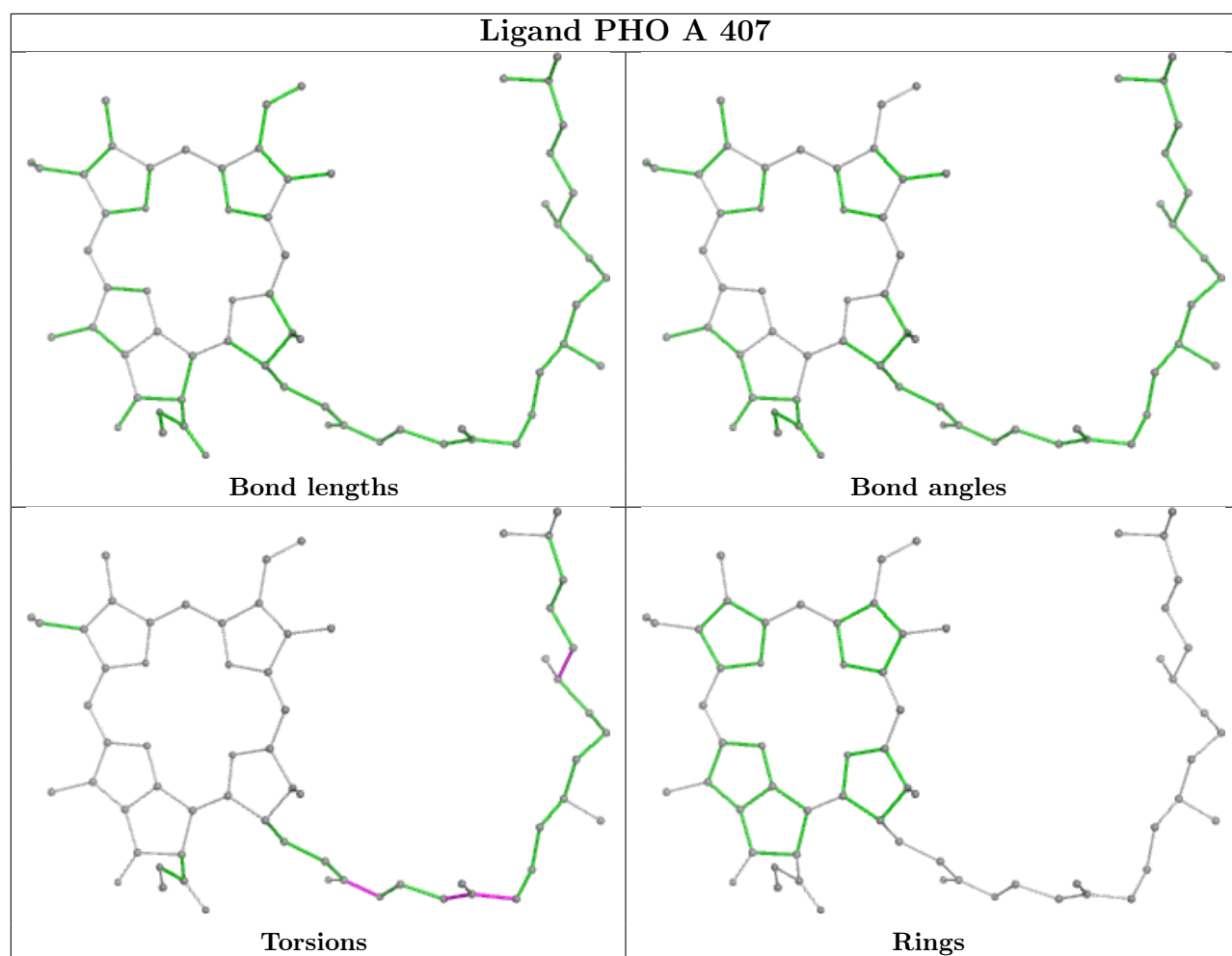


Rings

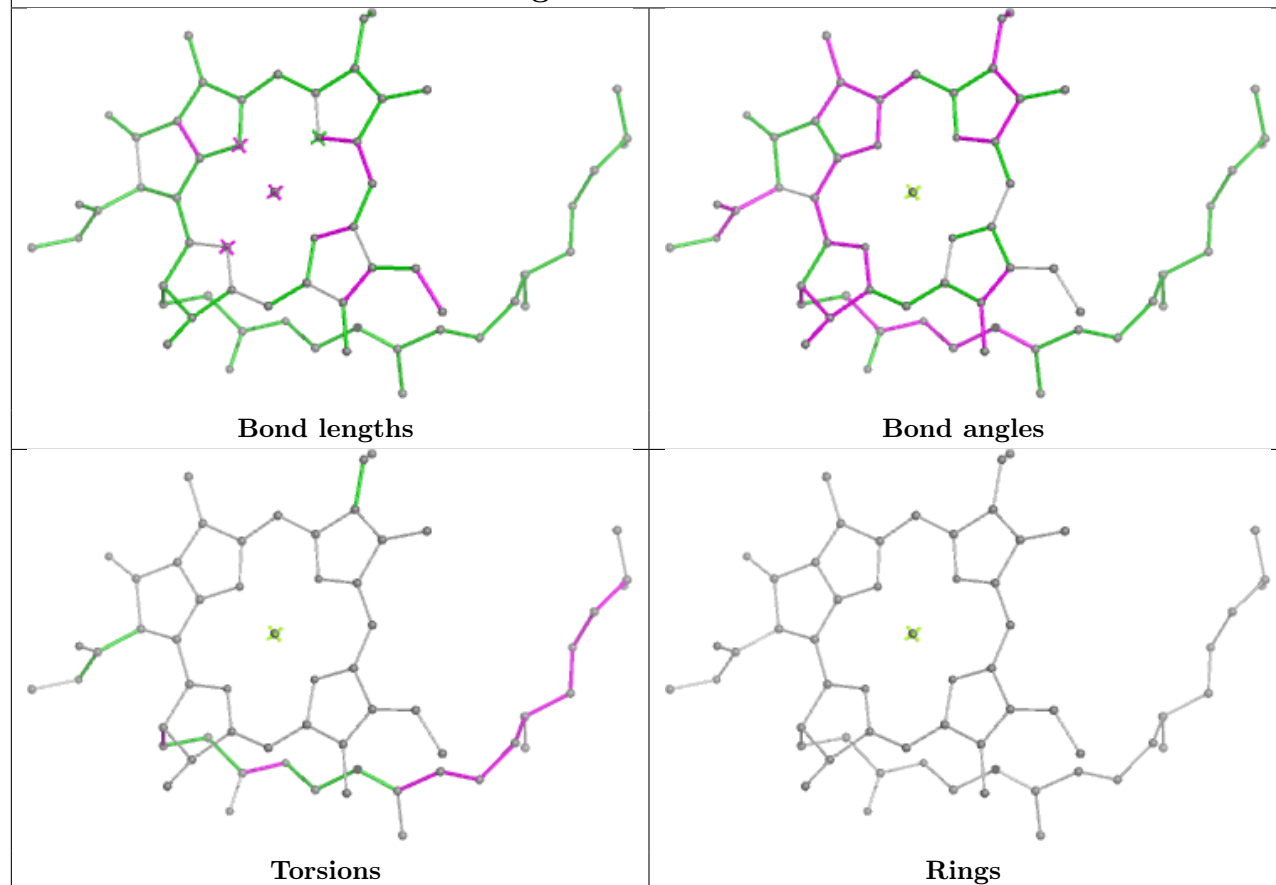




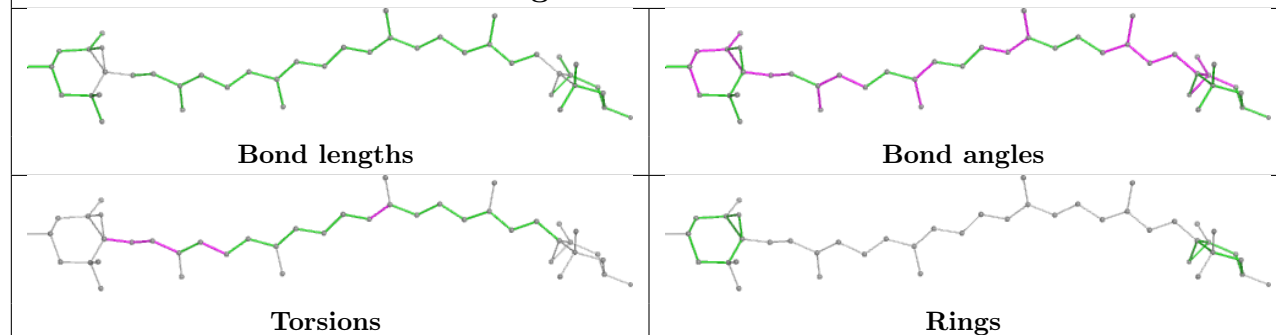


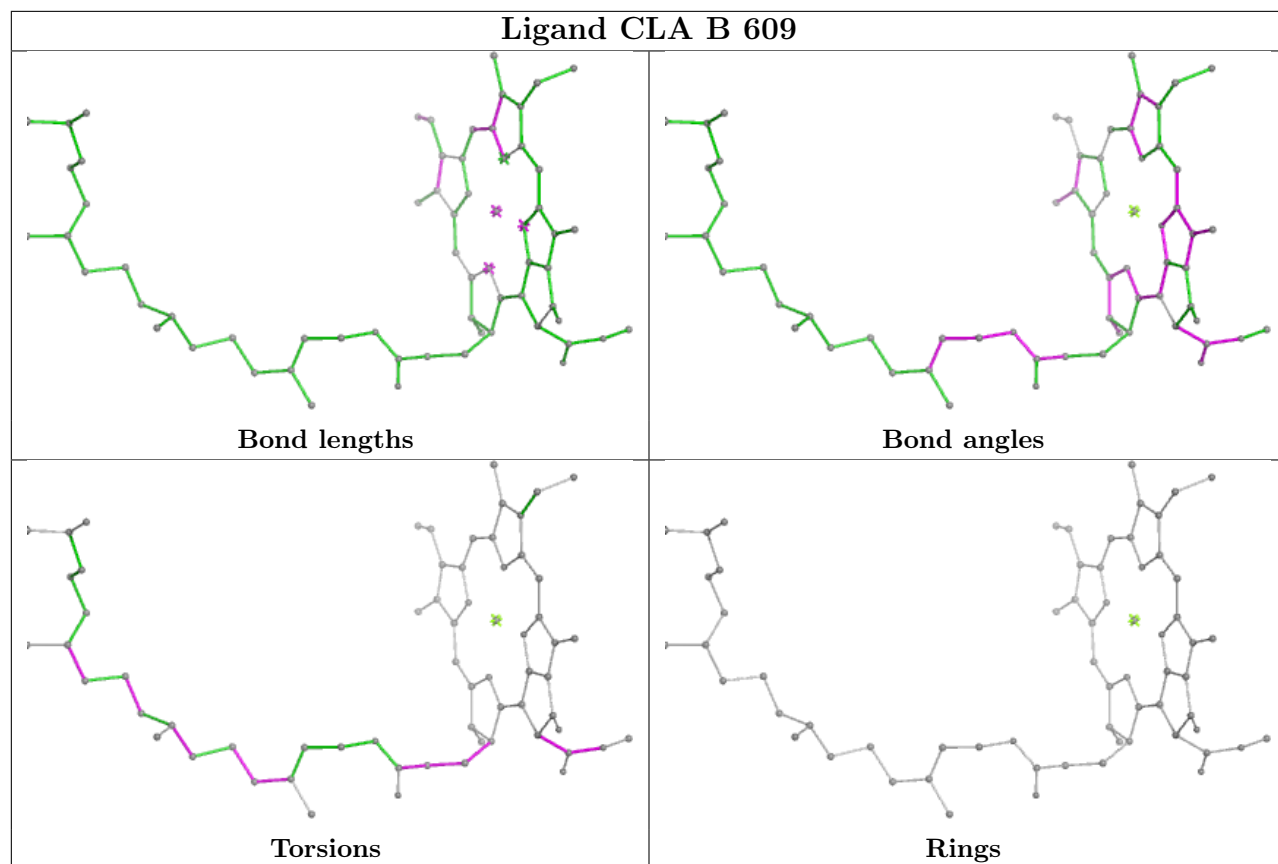


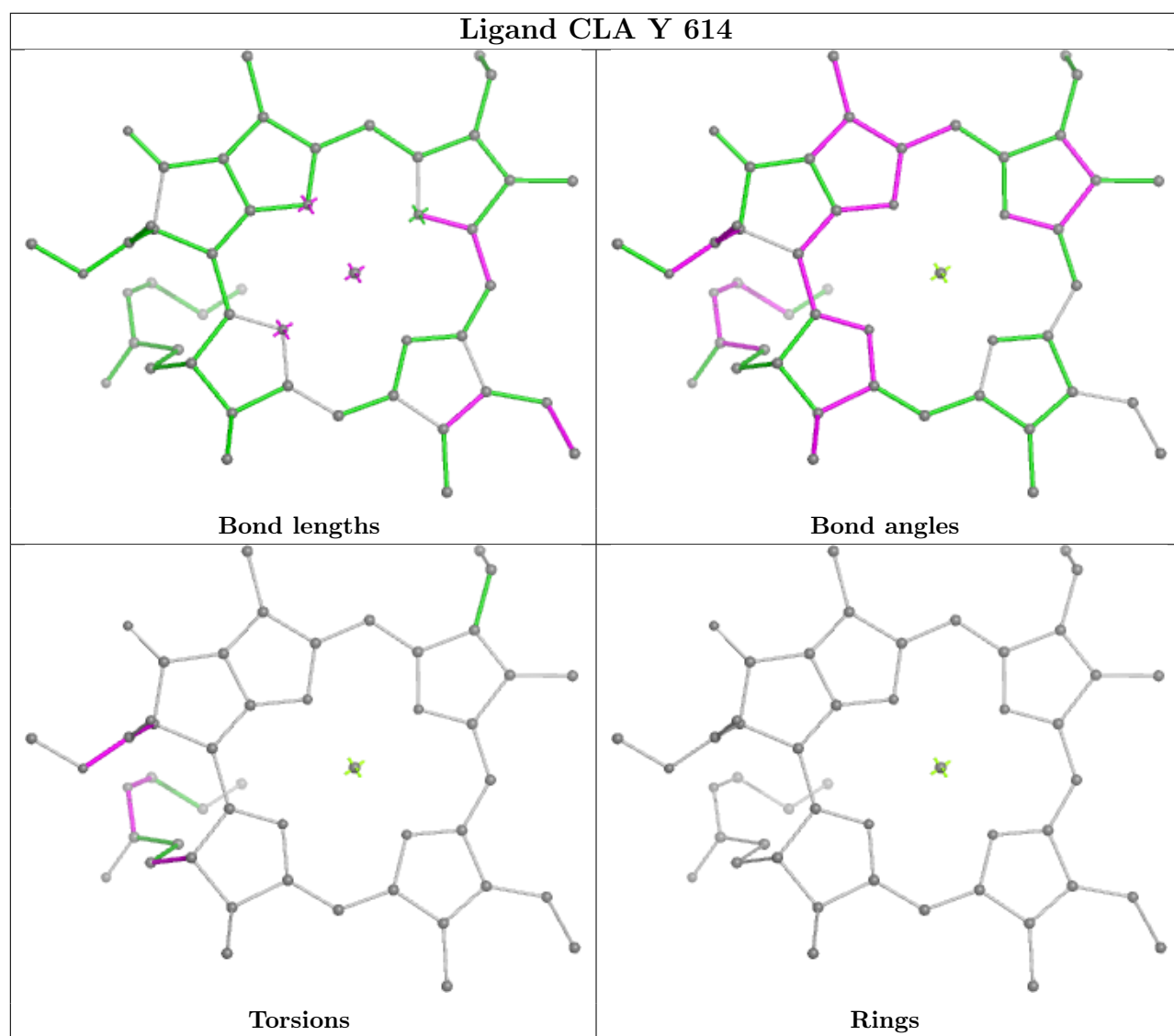
## Ligand CLA Y 610



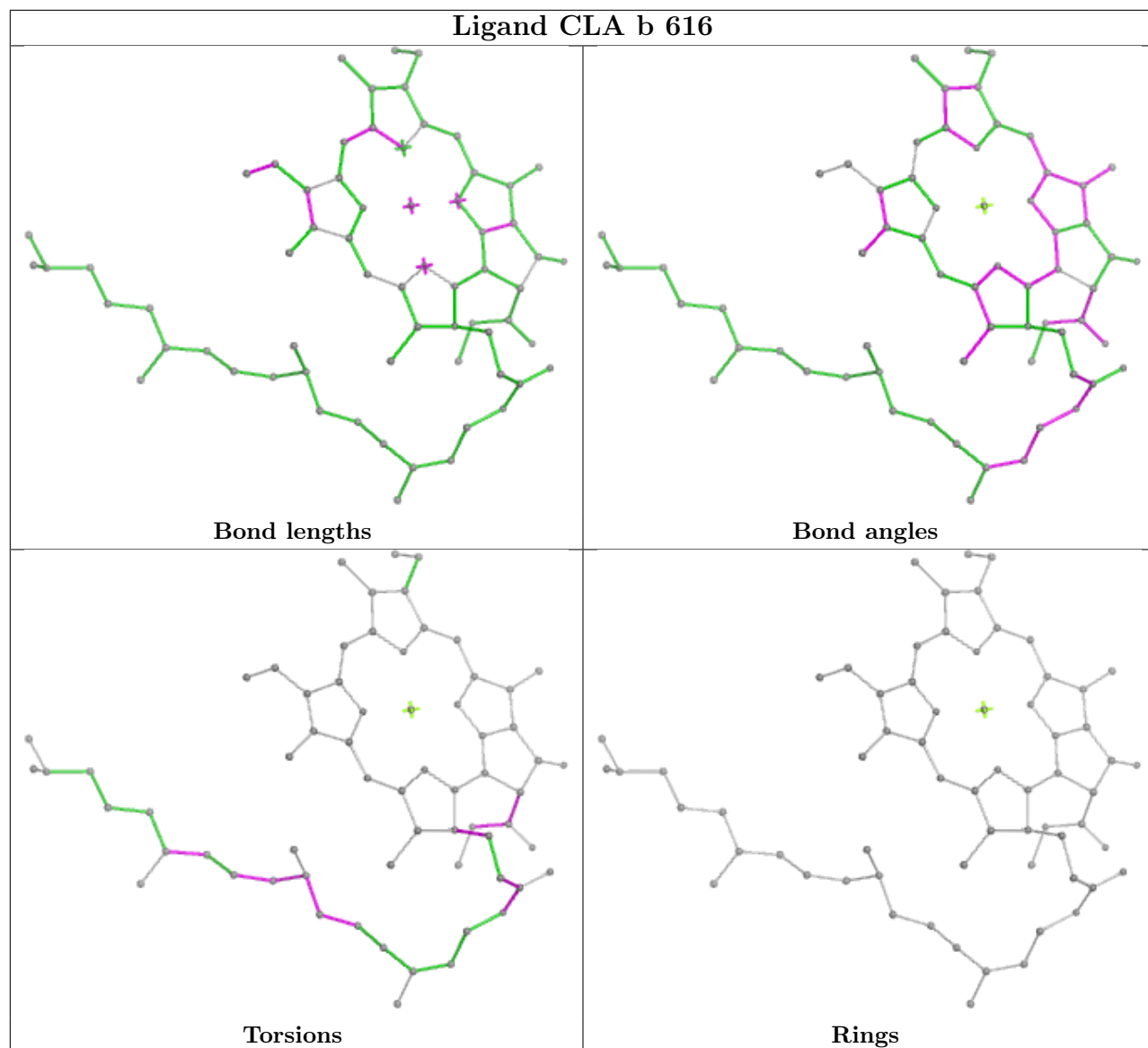
## Ligand XAT R 615

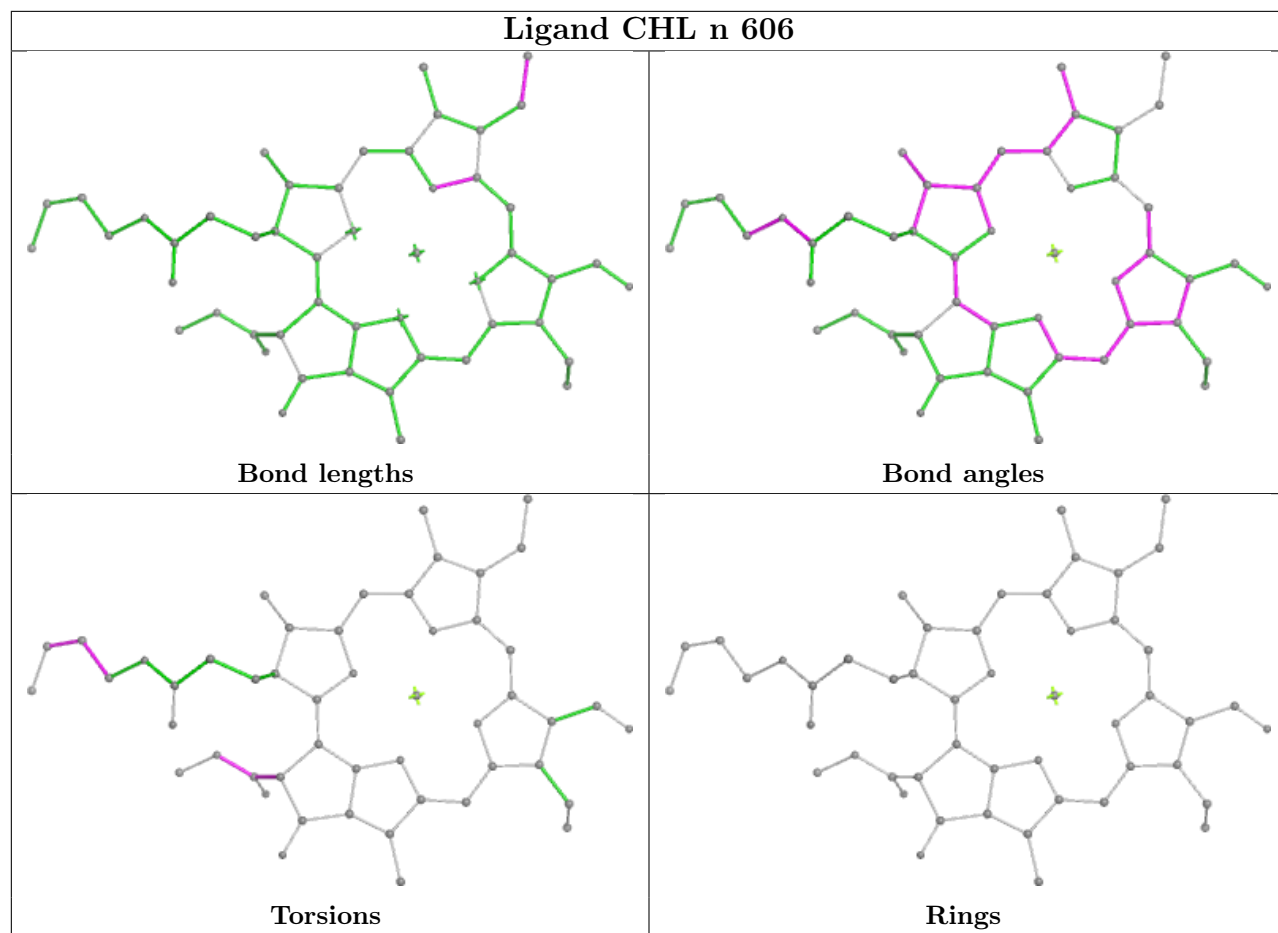




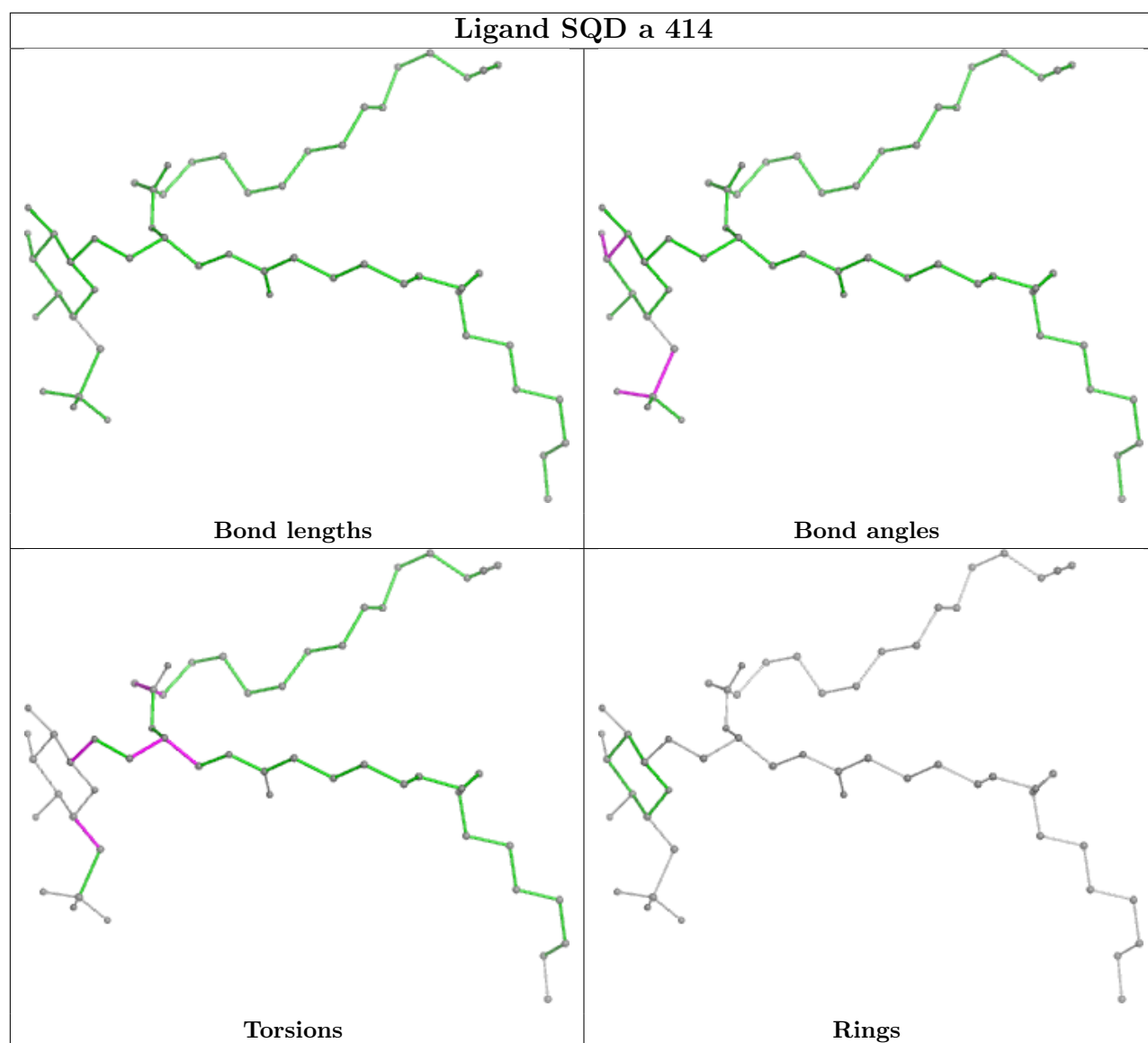


## Ligand CLA b 616

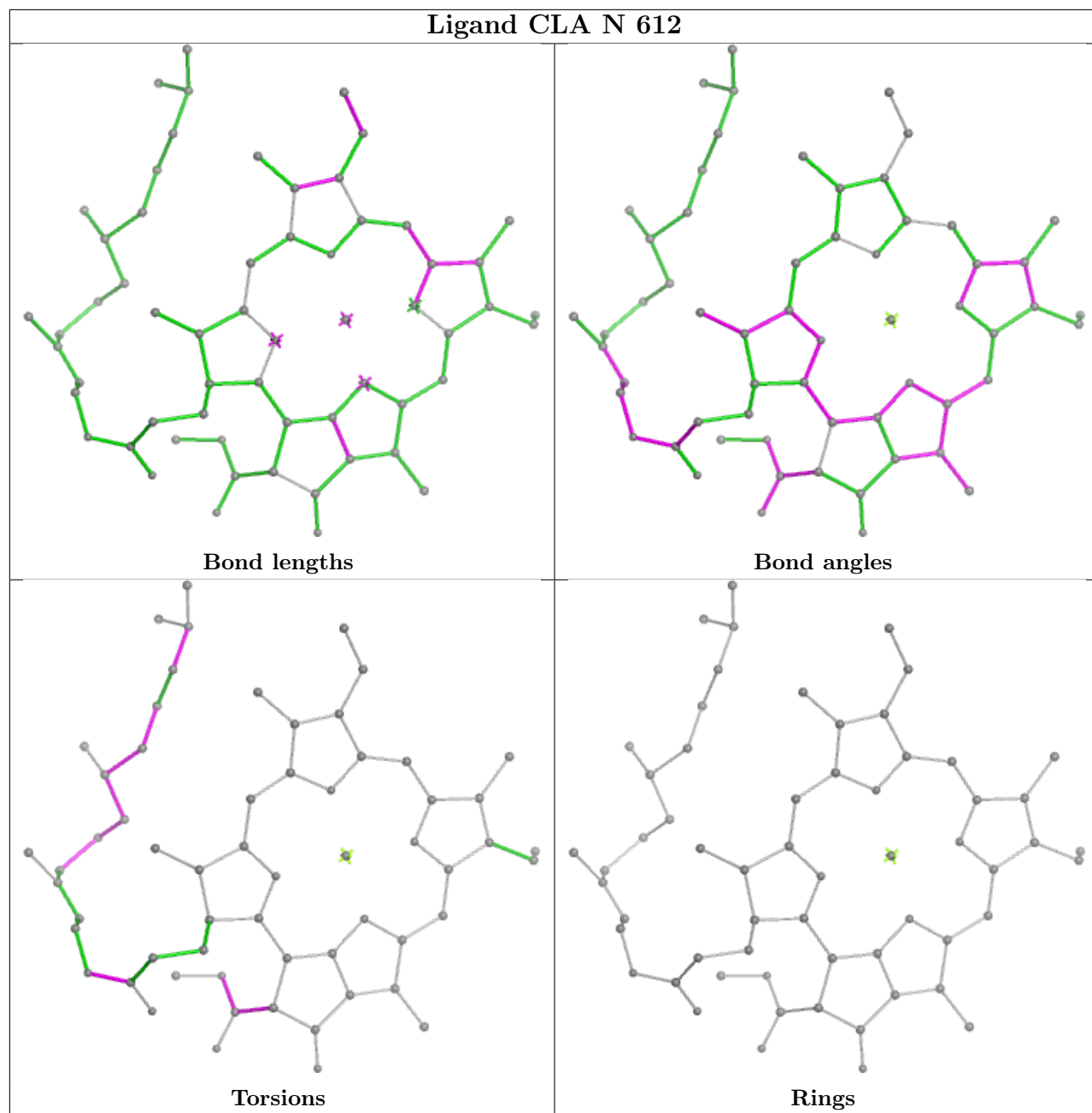


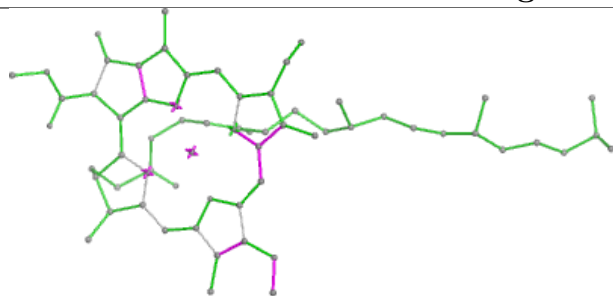
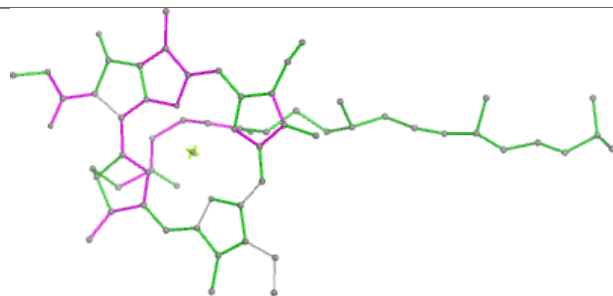
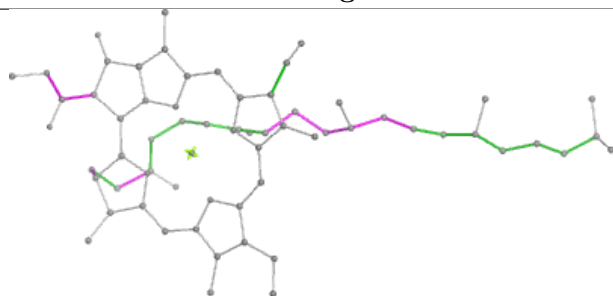
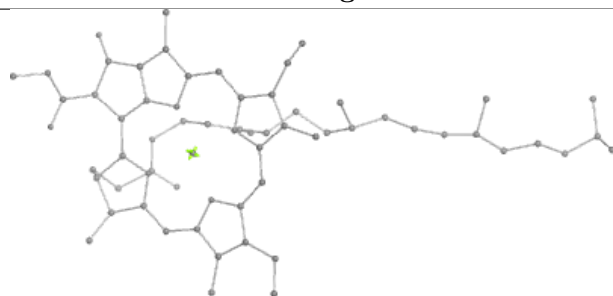
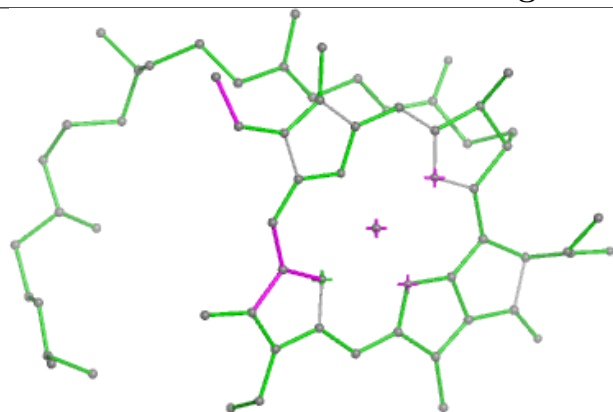
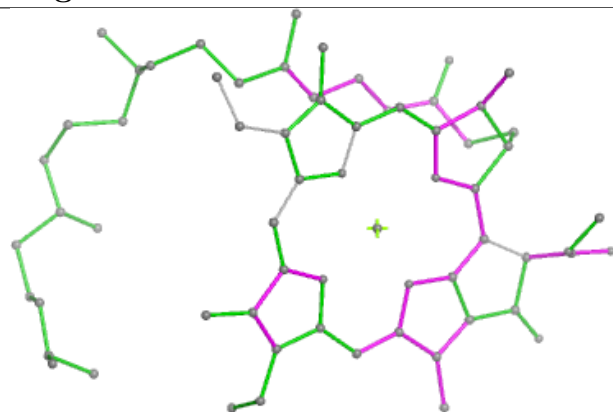
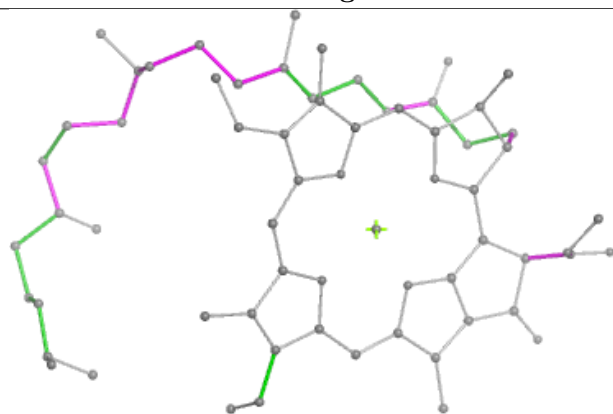
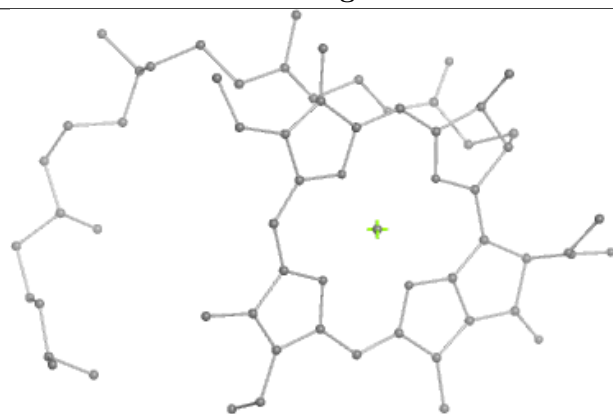


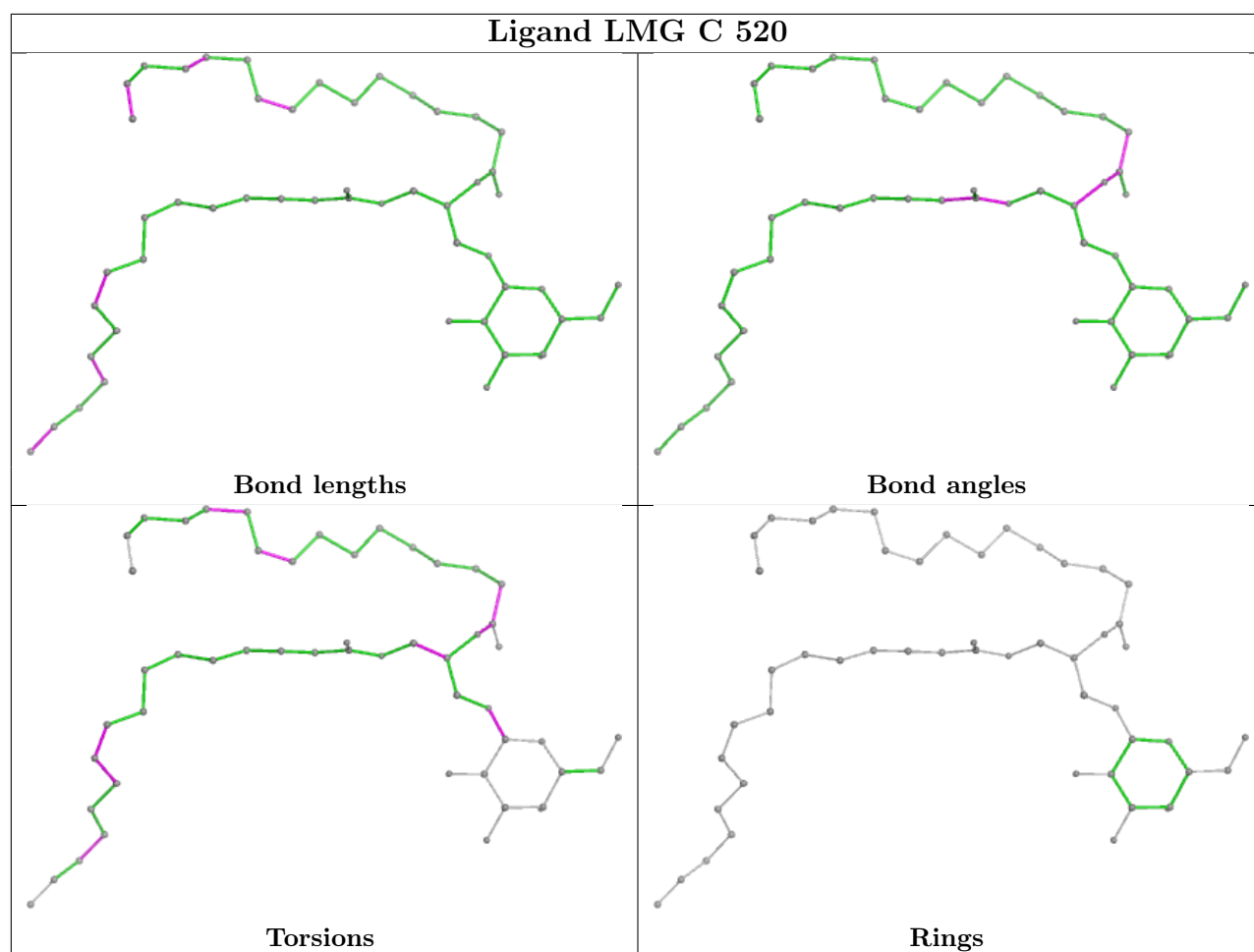


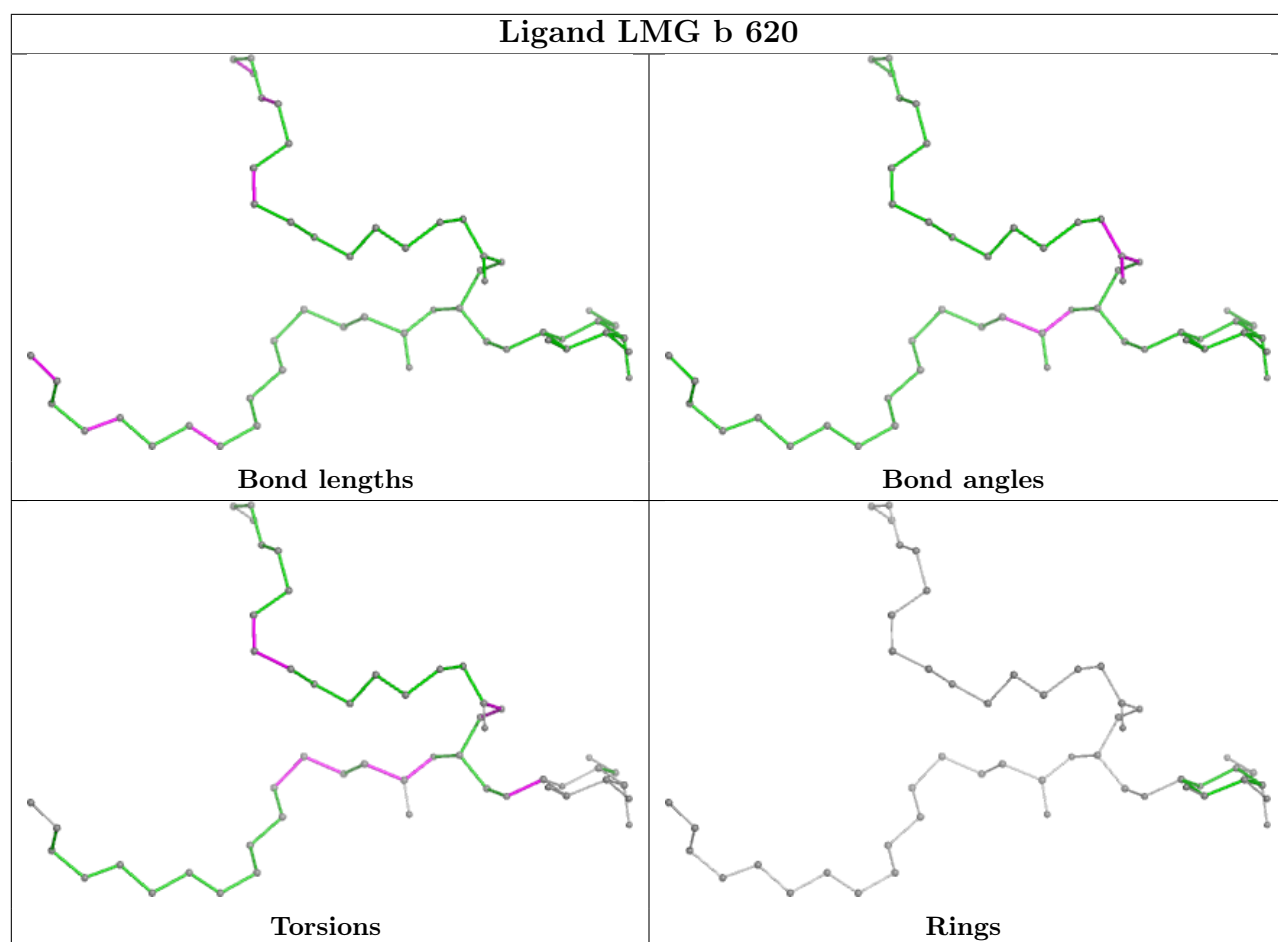


## Ligand CLA N 612

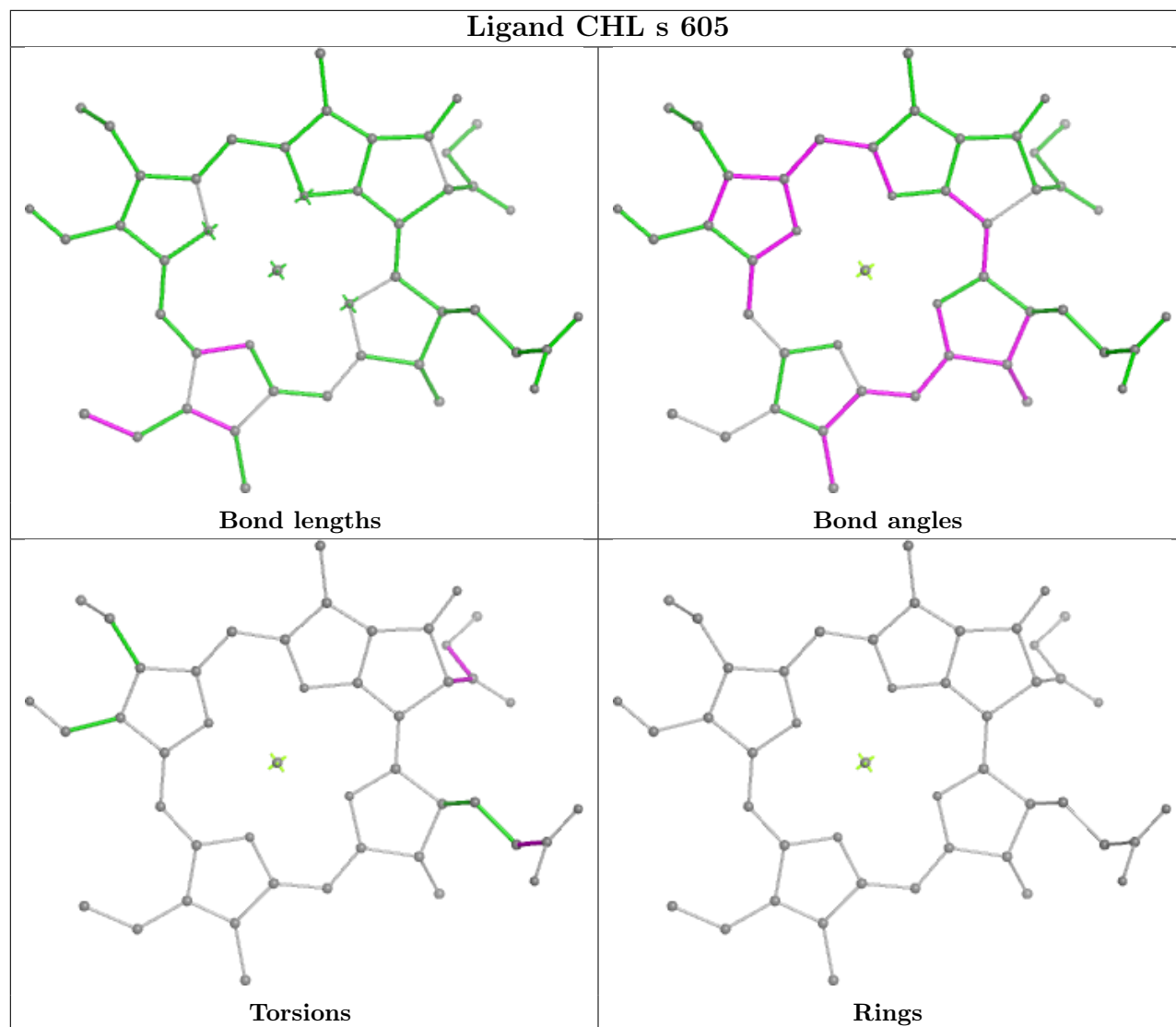


**Ligand CLA b 614****Bond lengths****Bond angles****Torsions****Rings****Ligand CLA g 602****Bond lengths****Bond angles****Torsions****Rings**

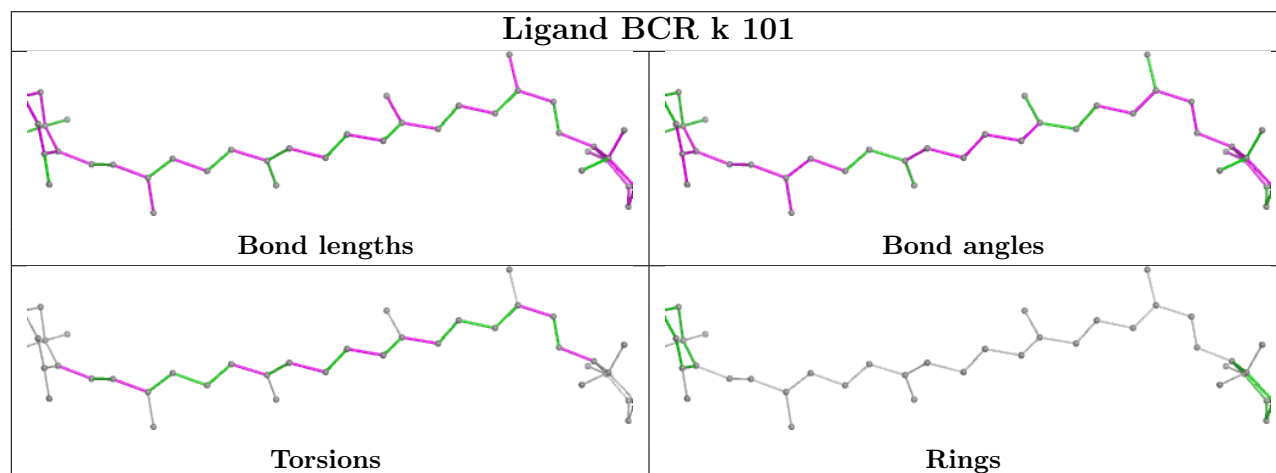


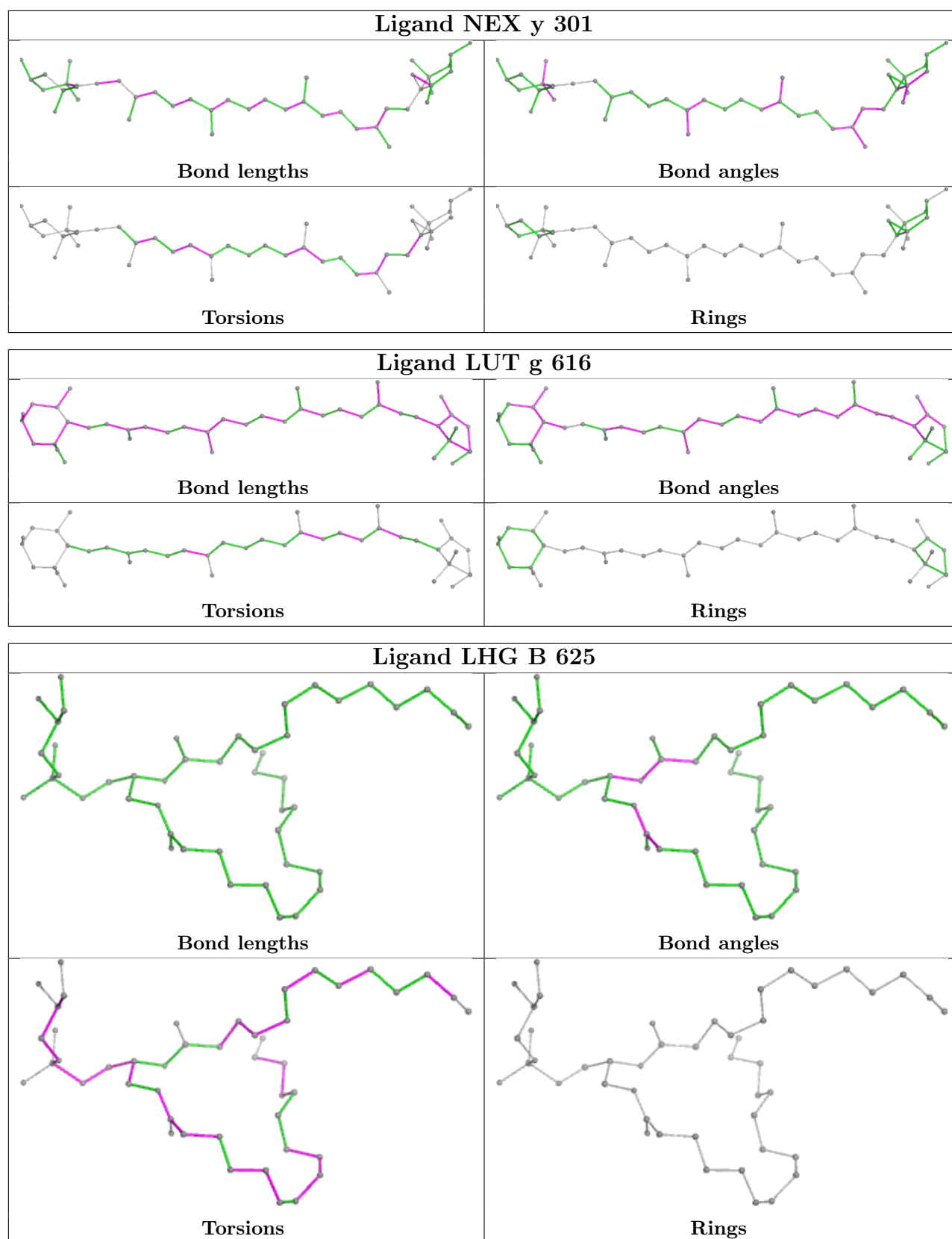


## Ligand CHL s 605

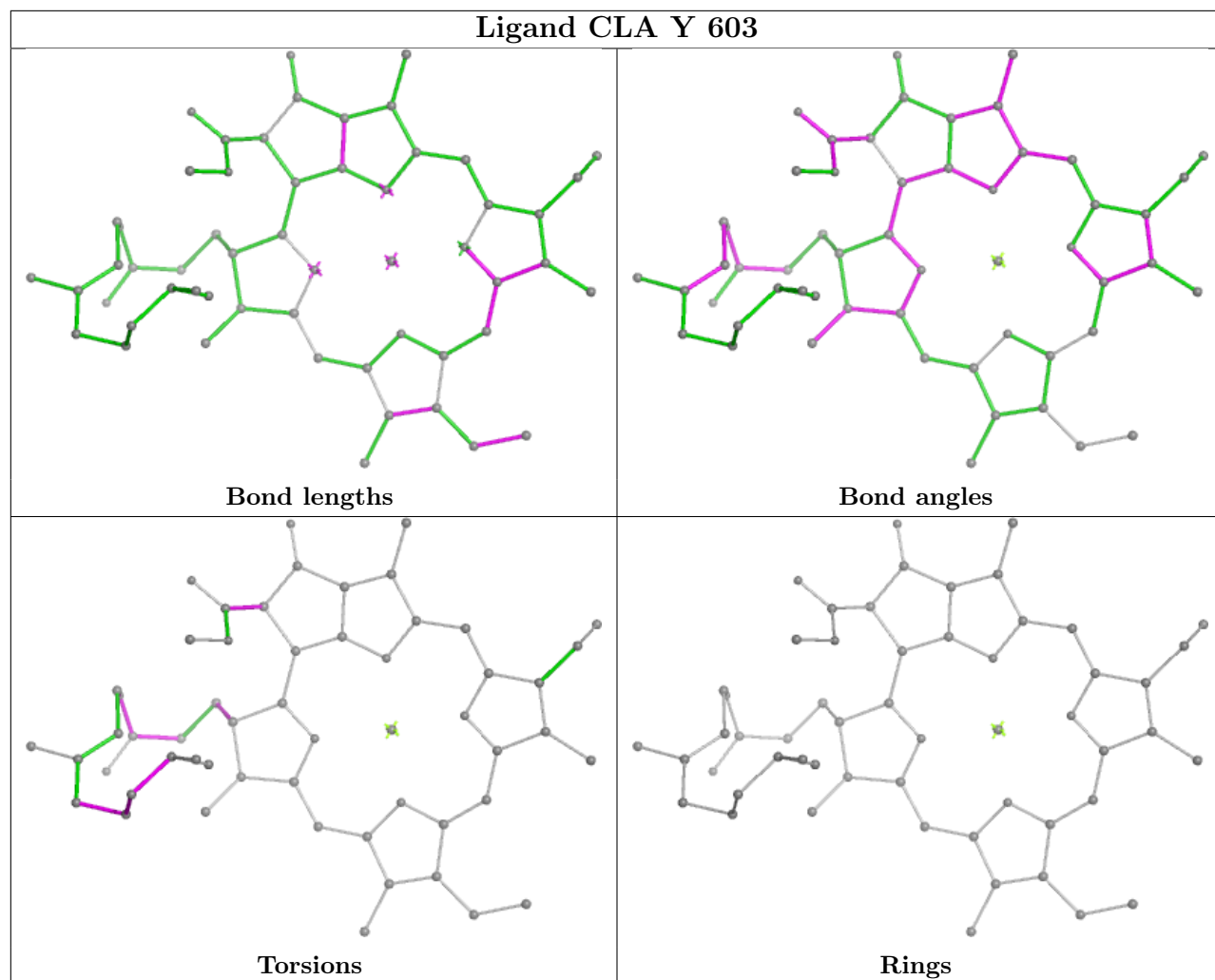


## Ligand BCR k 101

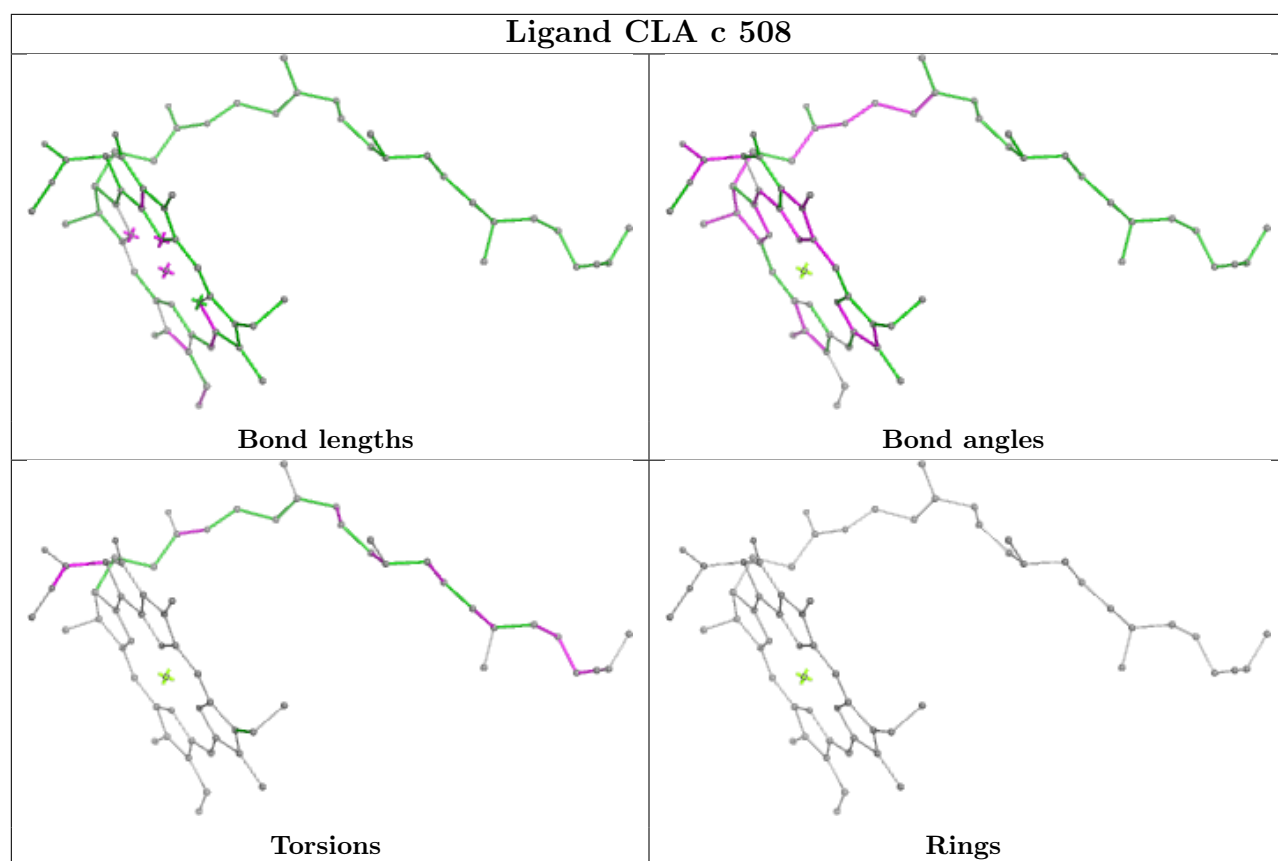


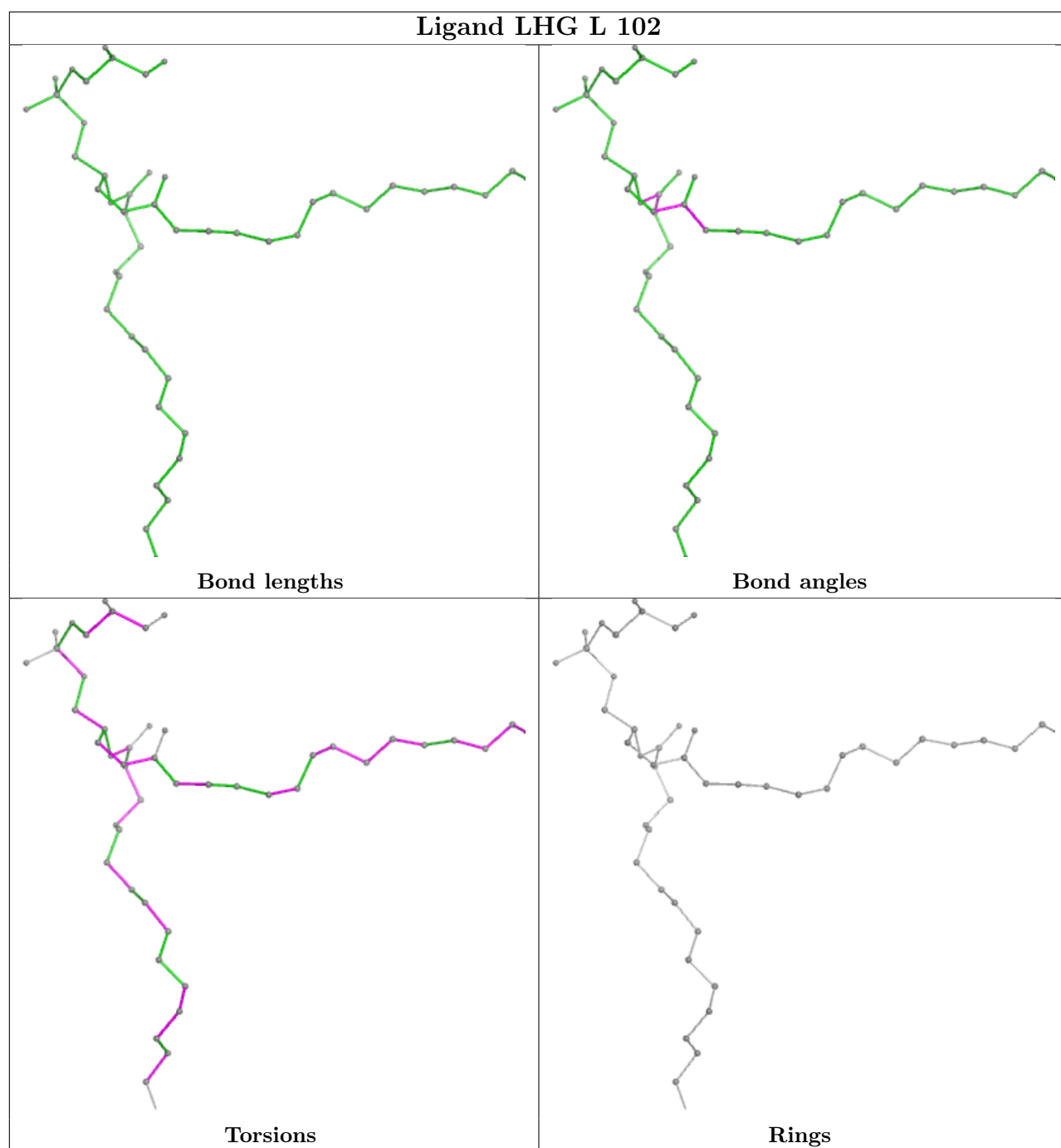


## Ligand CLA Y 603

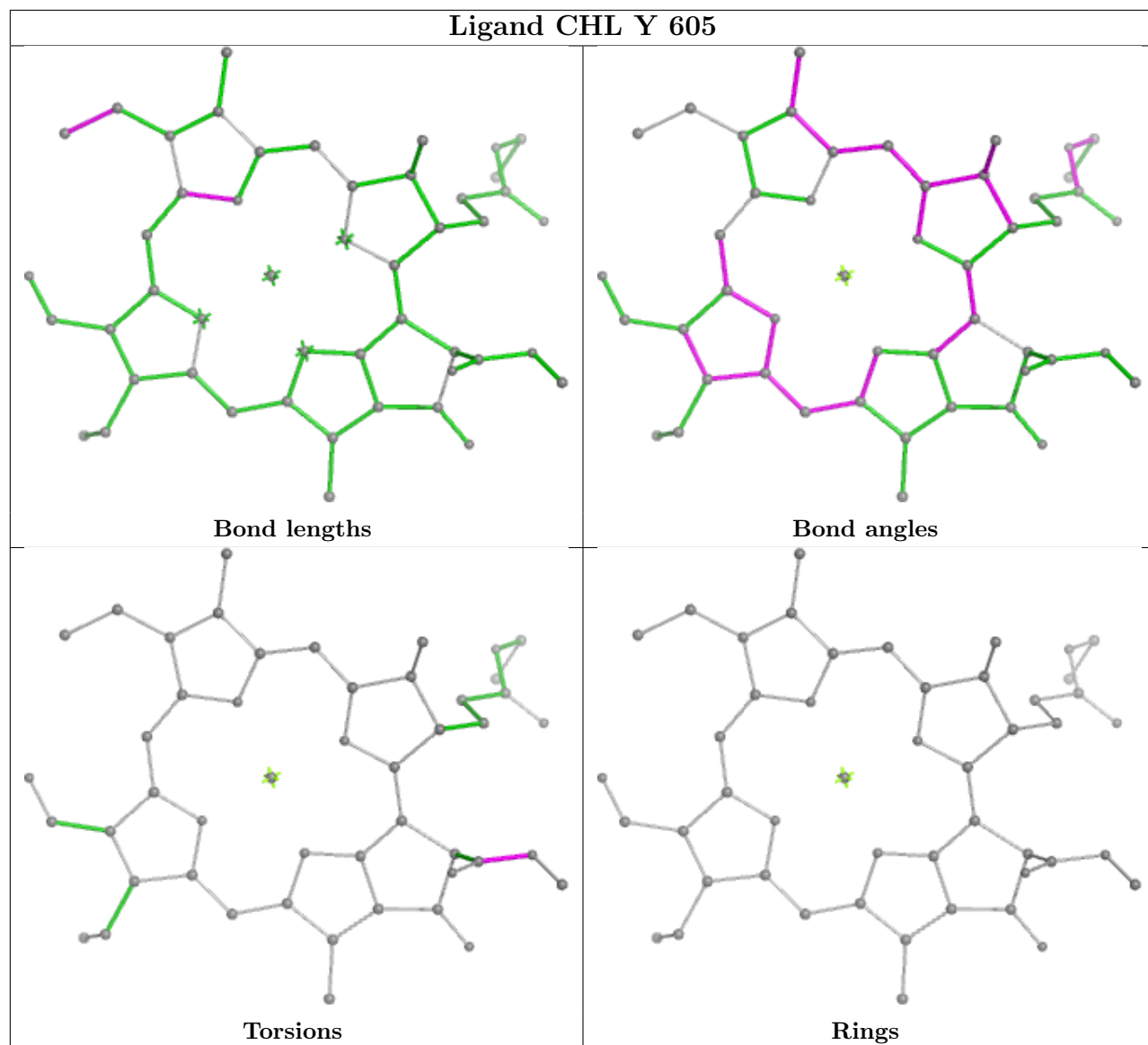


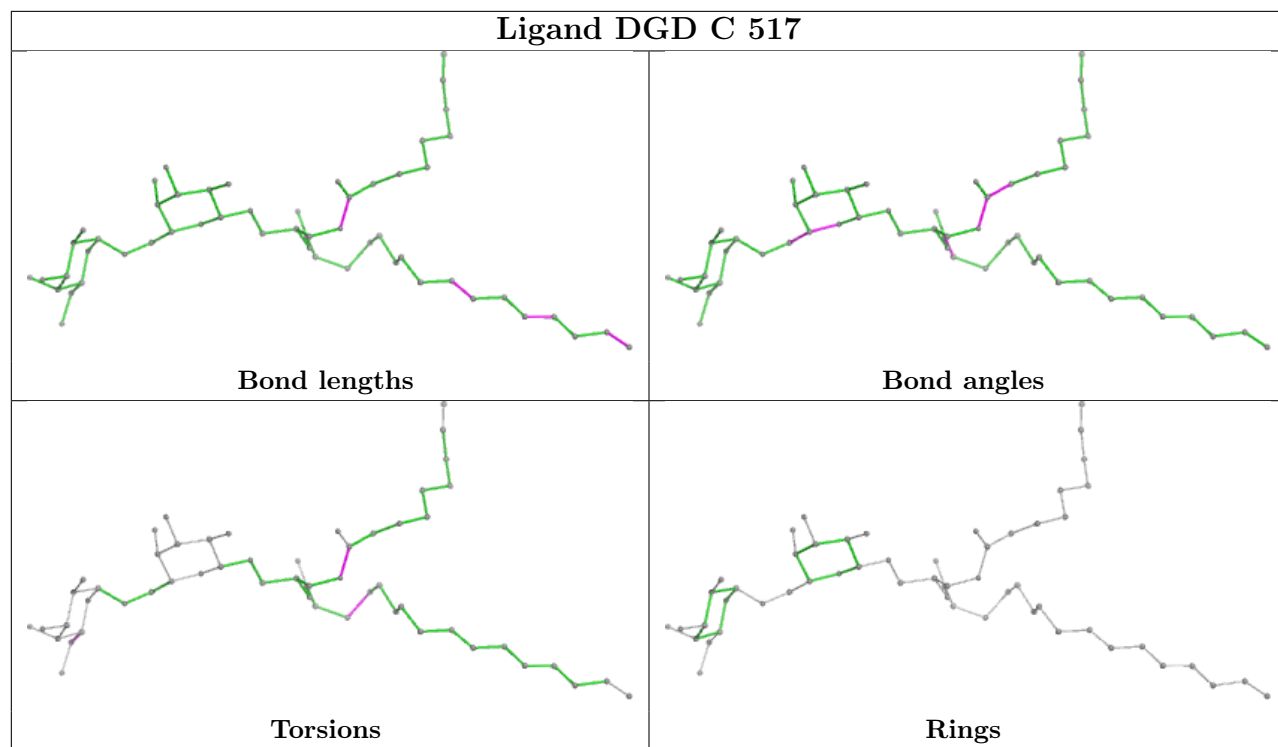




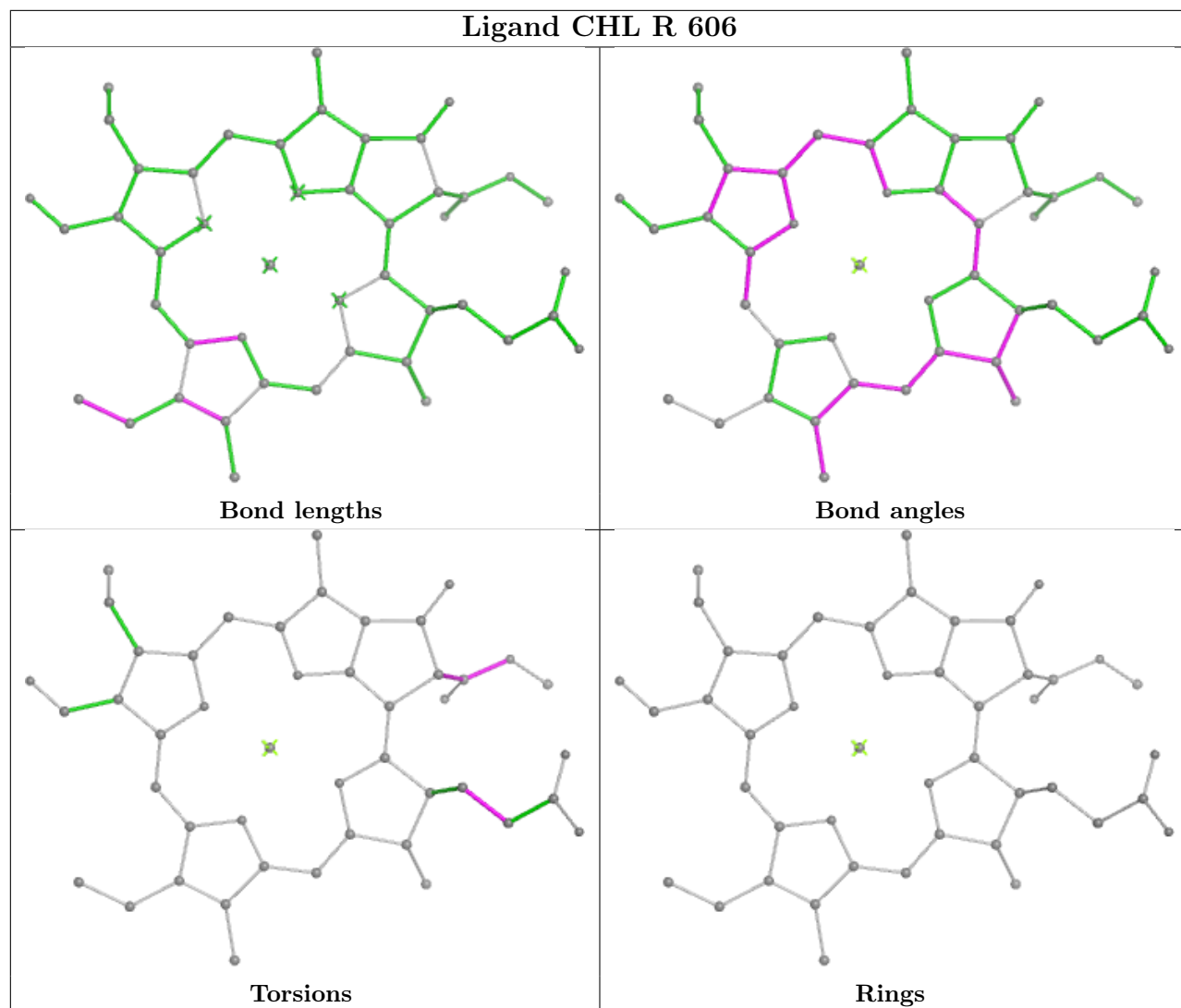


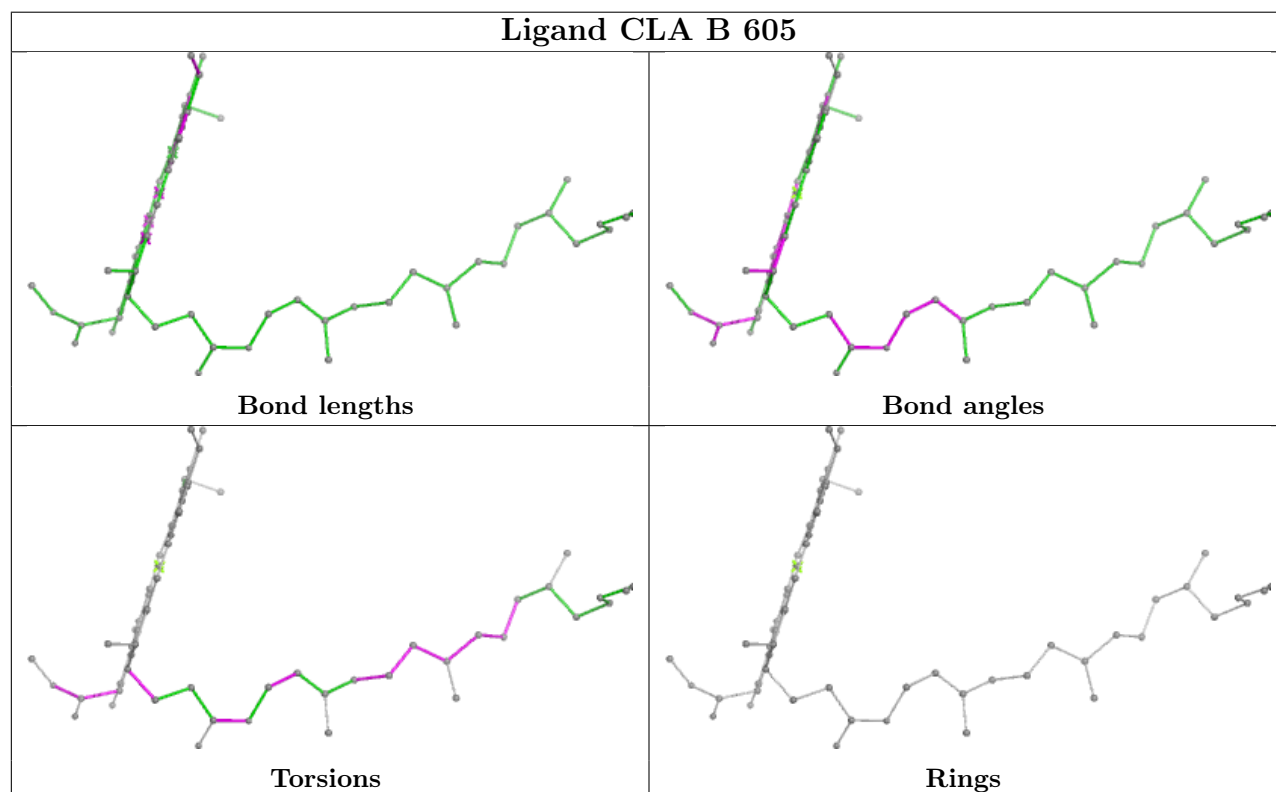
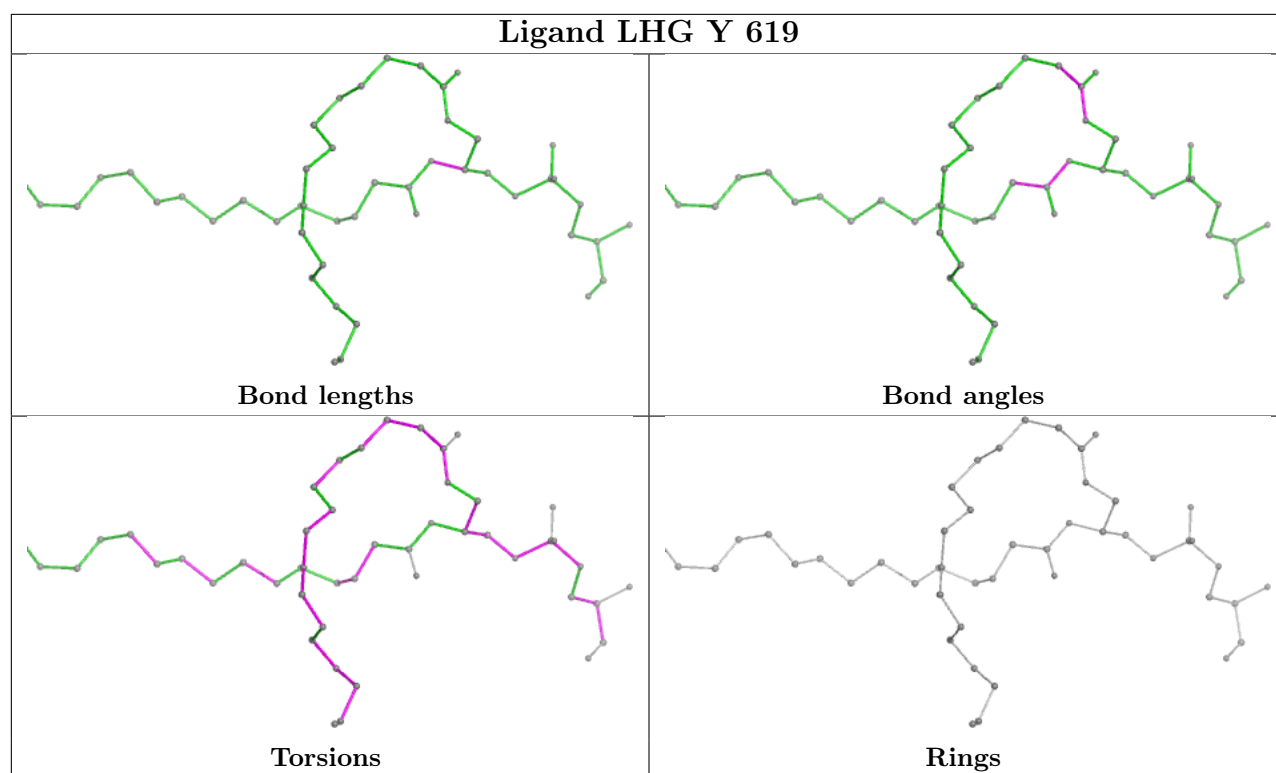
## Ligand CHL Y 605

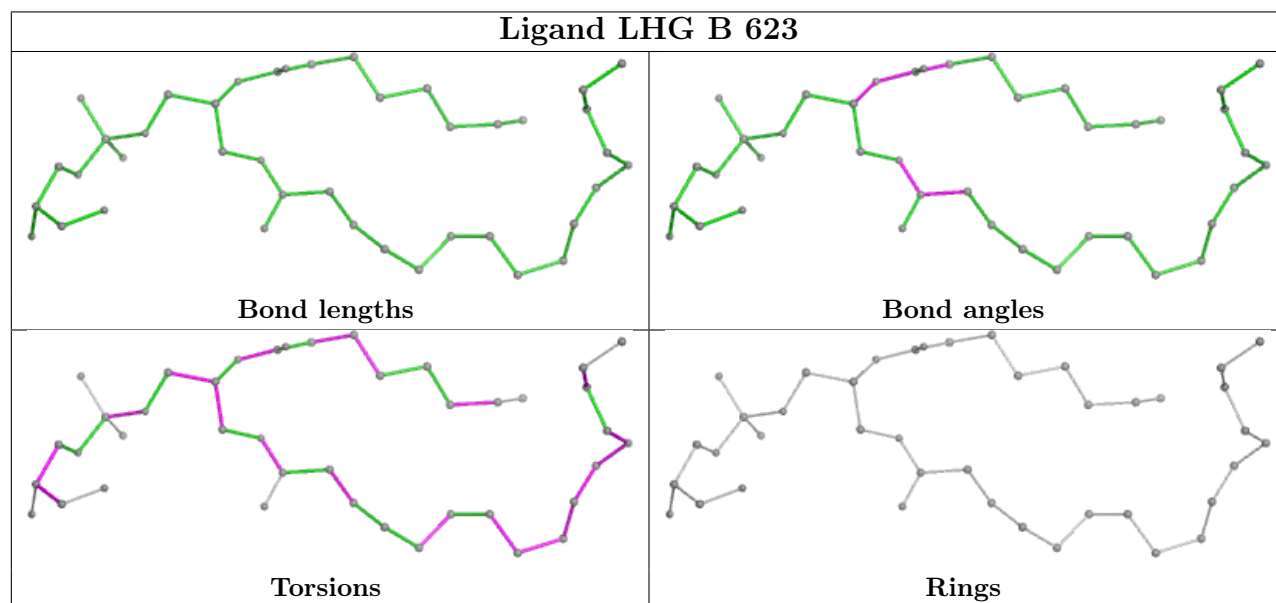
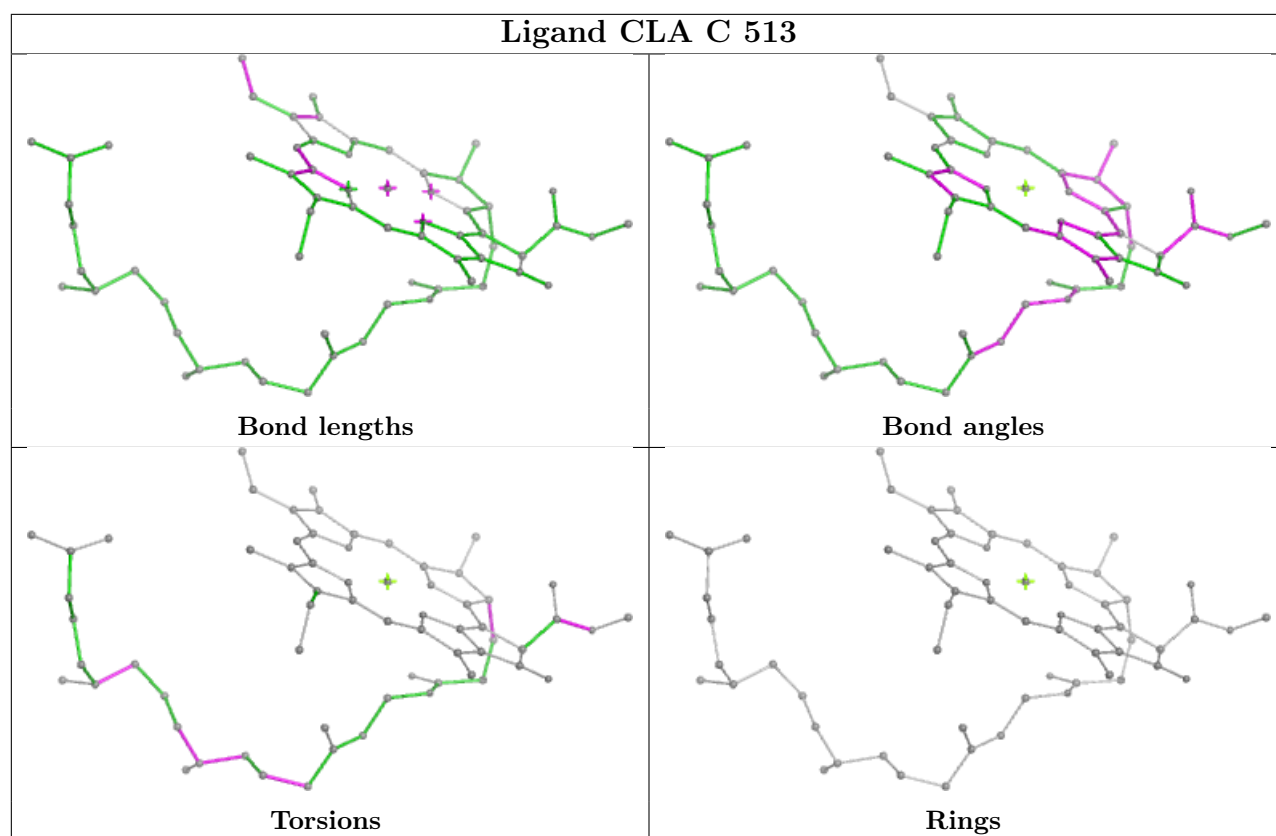




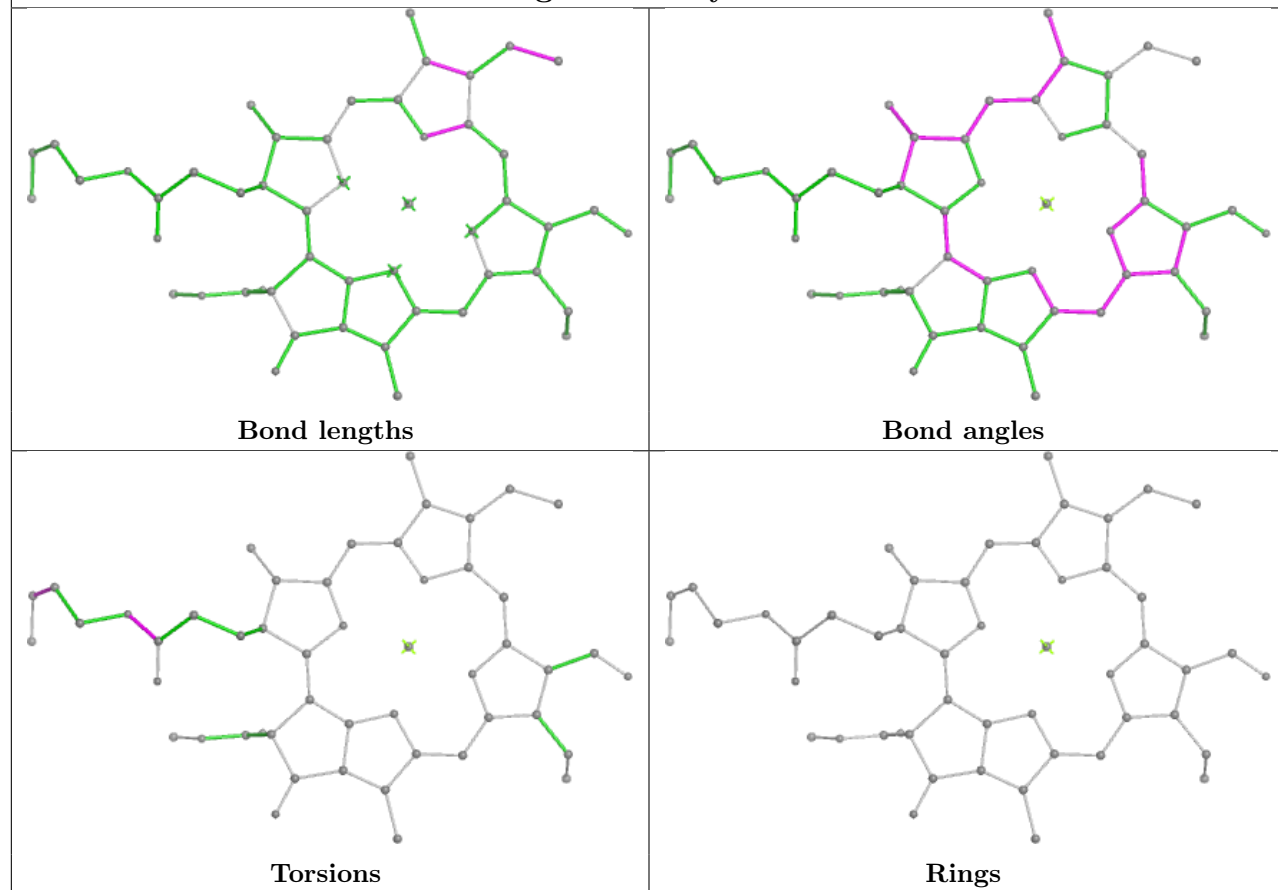
## Ligand CHL R 606



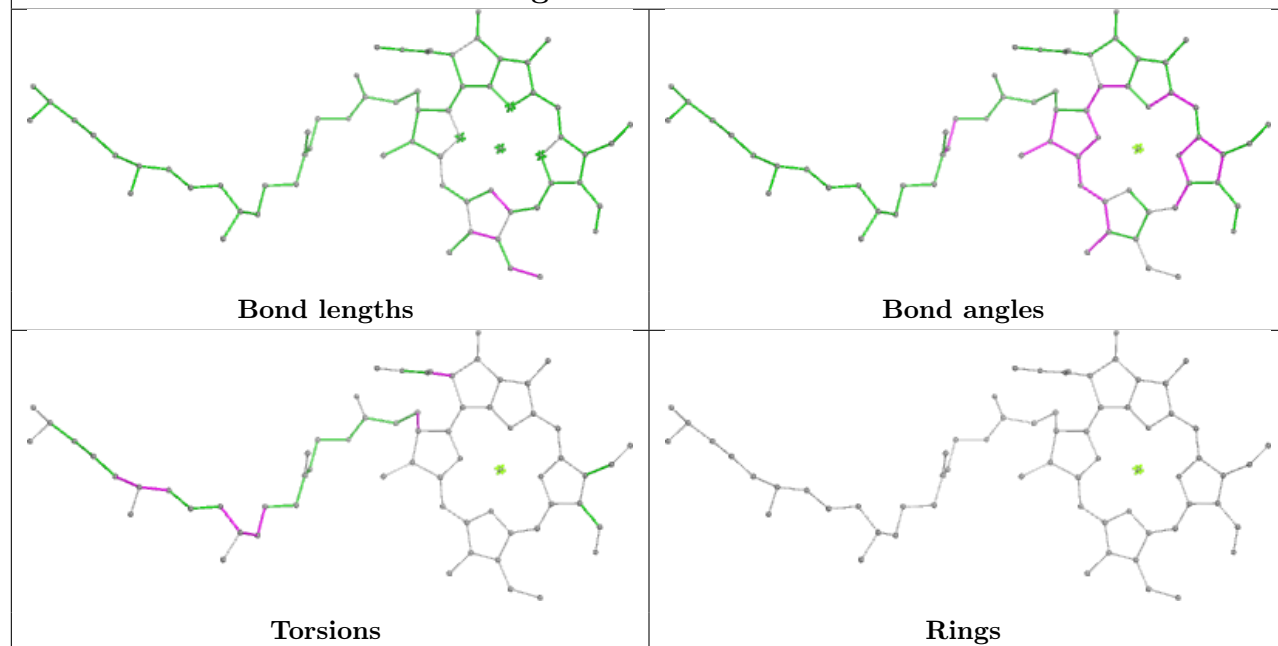




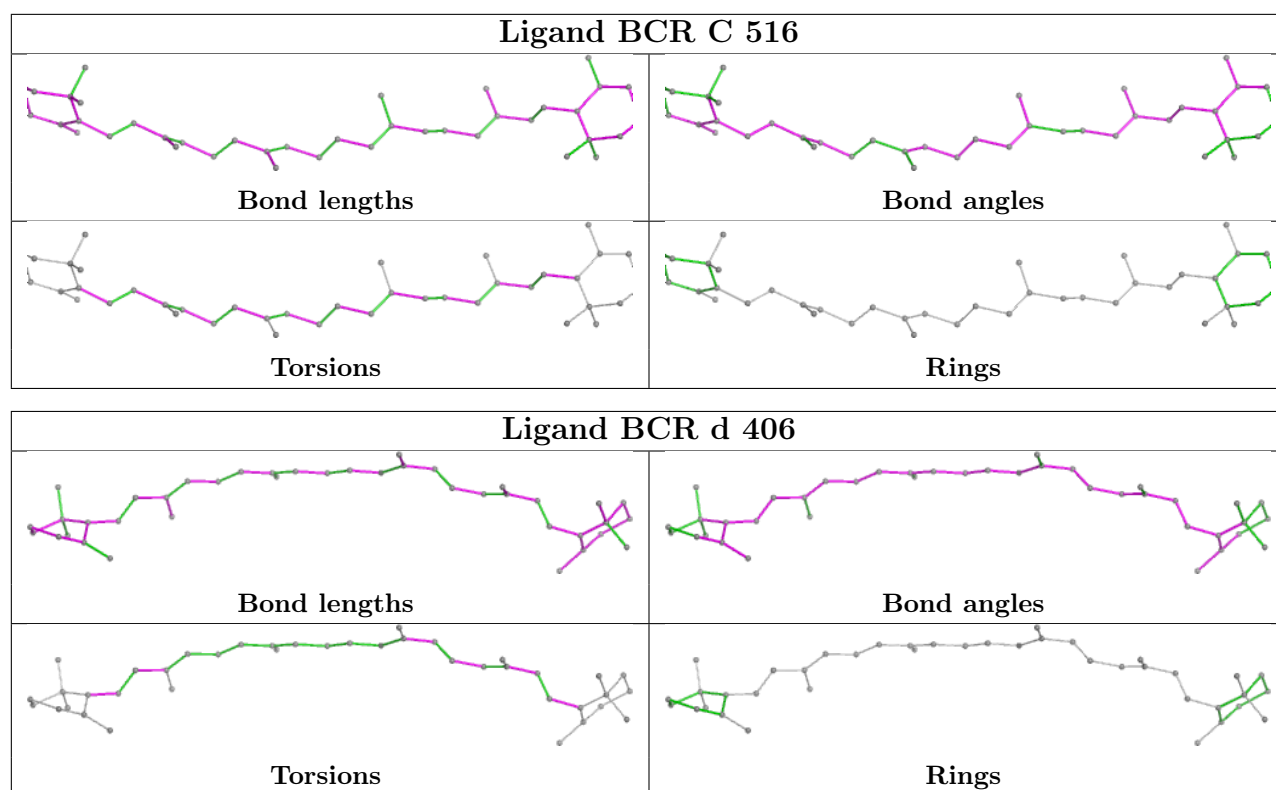
## Ligand CHL y 307

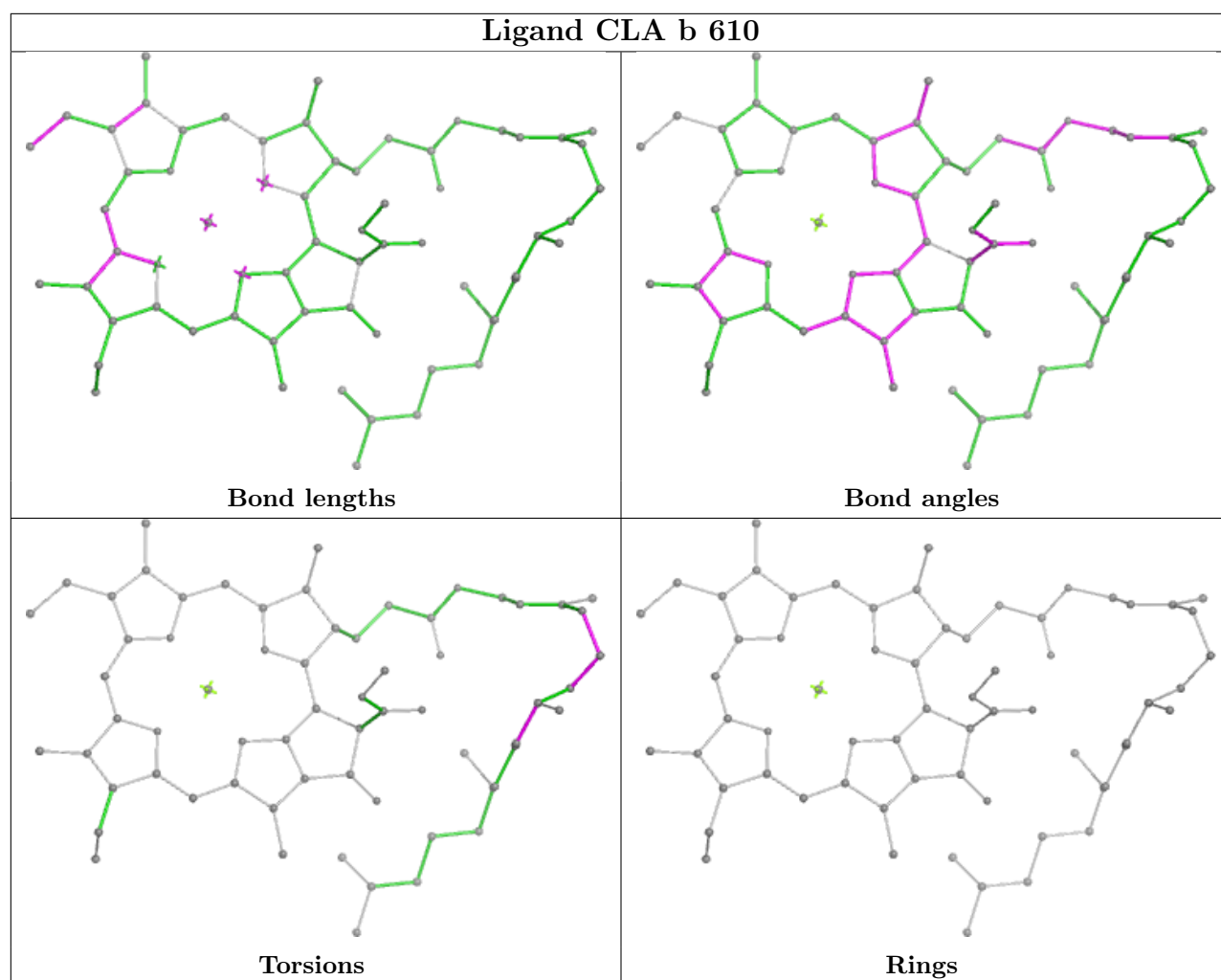


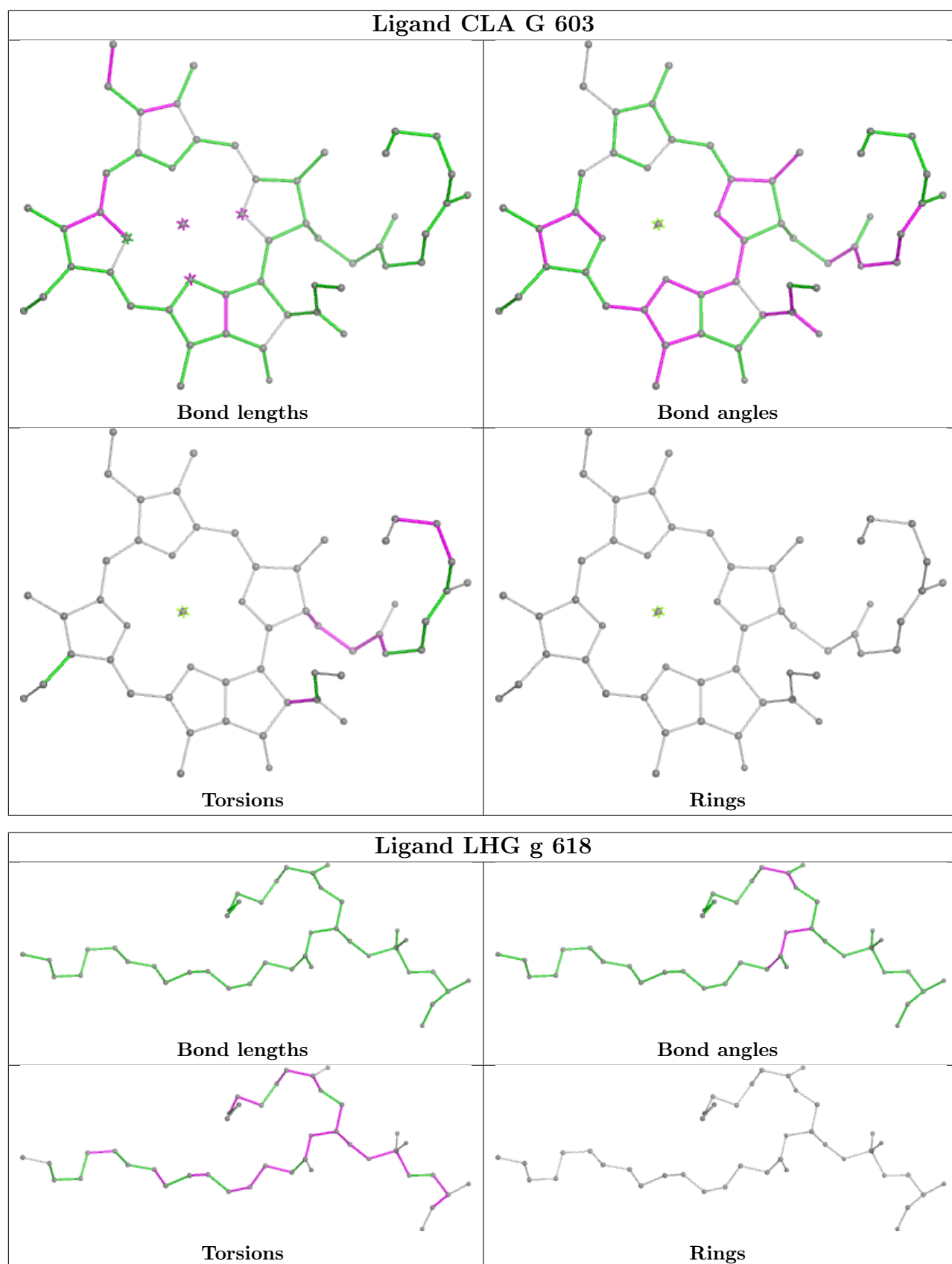
## Ligand CHL Y 601

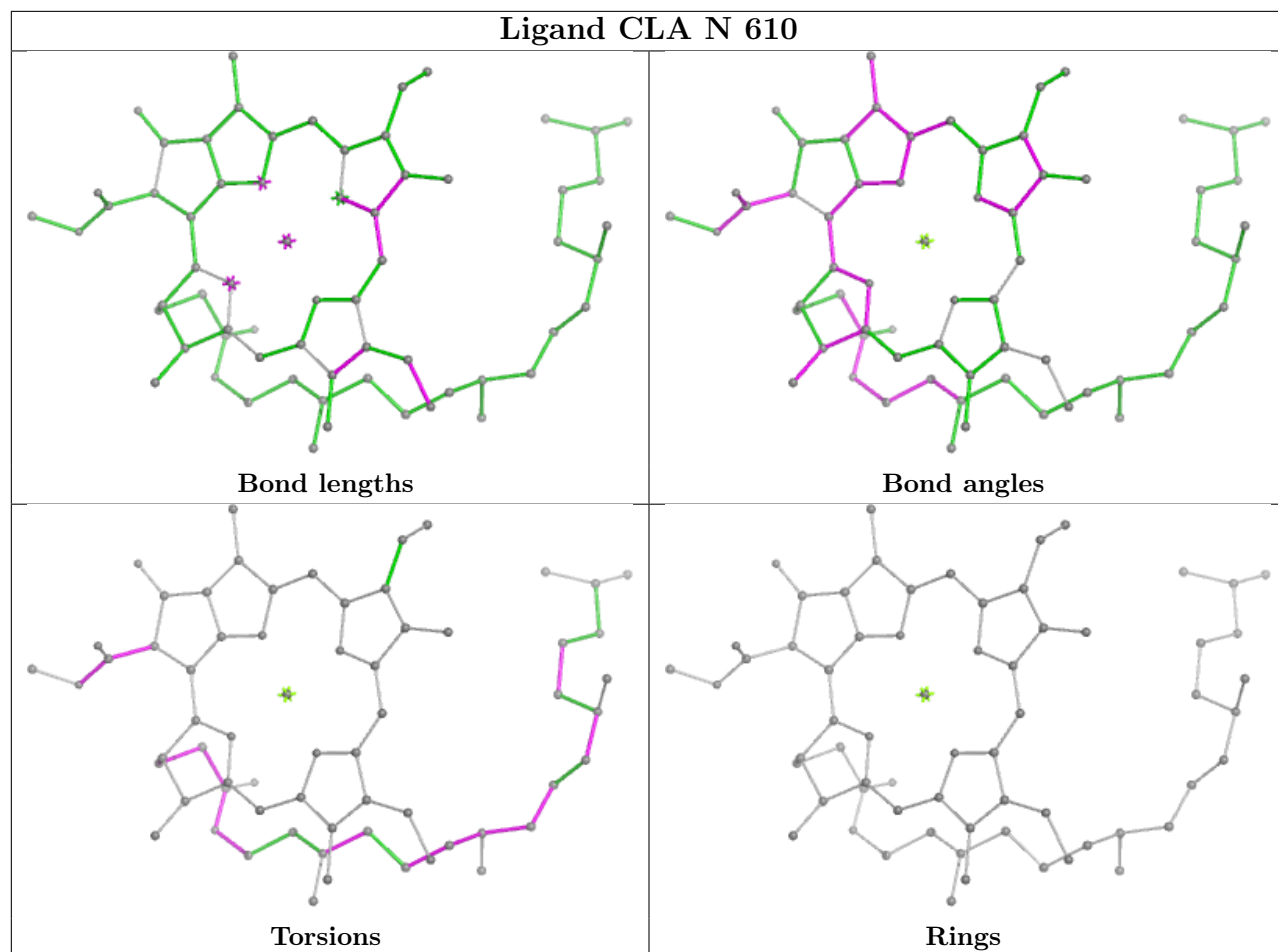


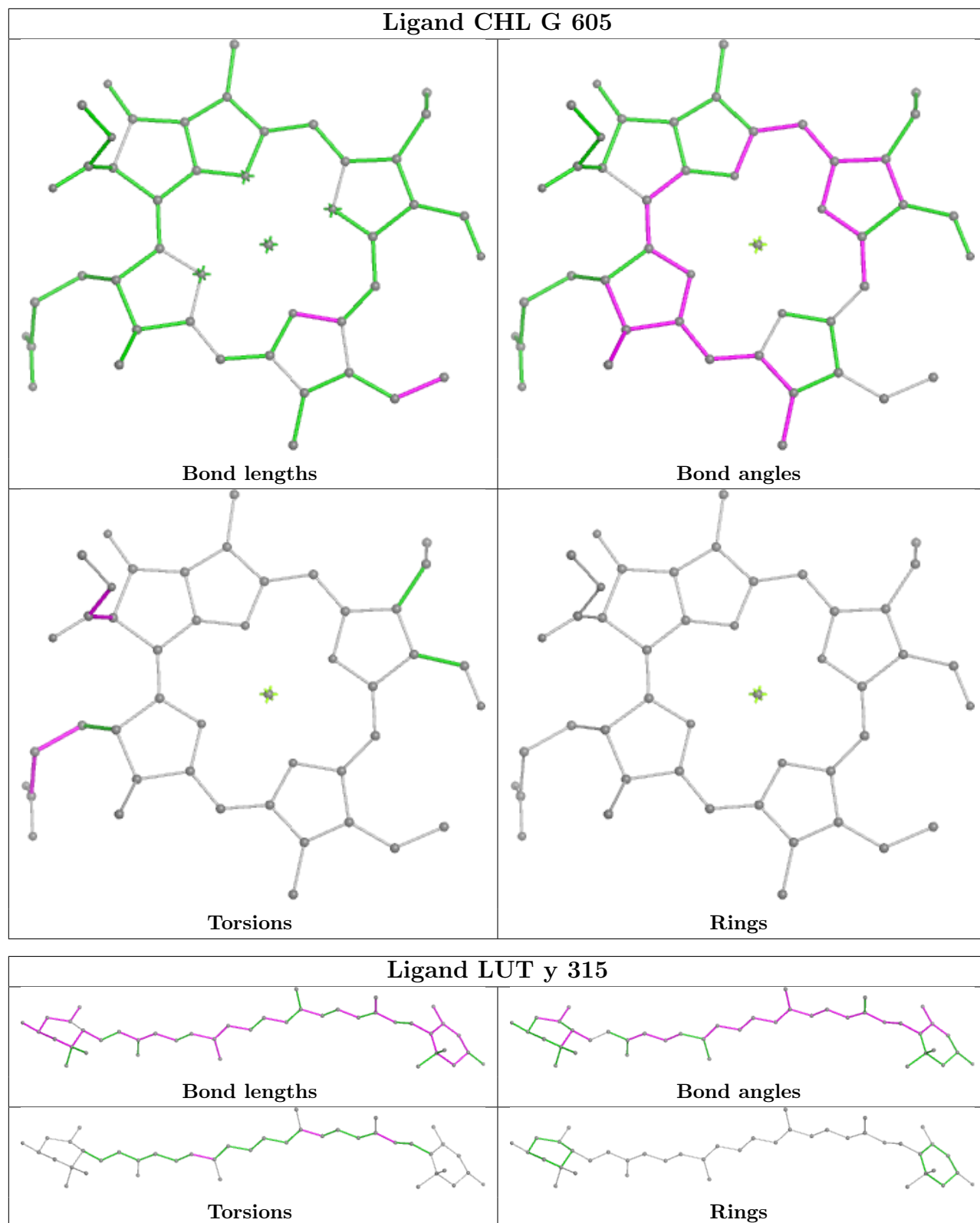




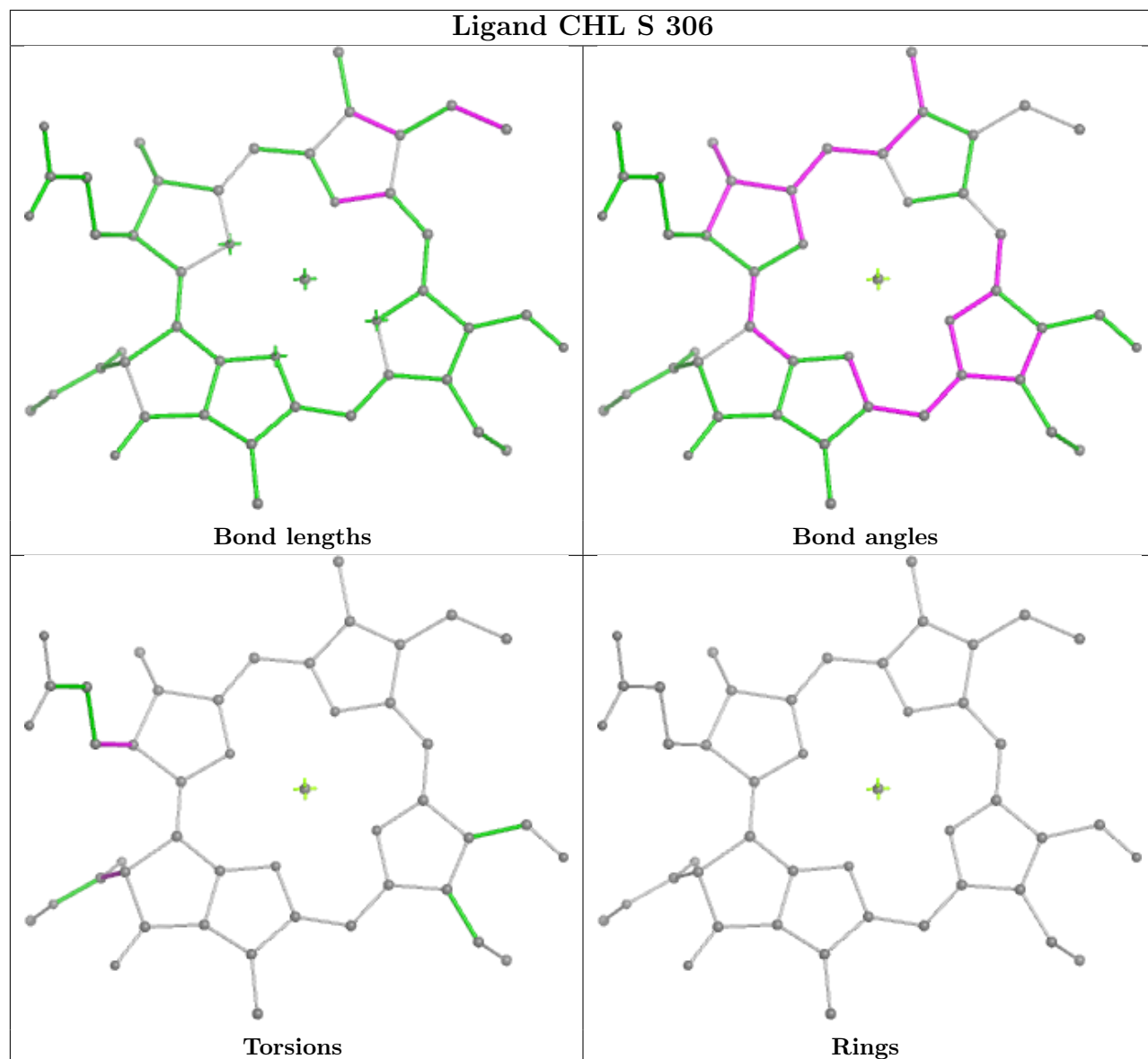




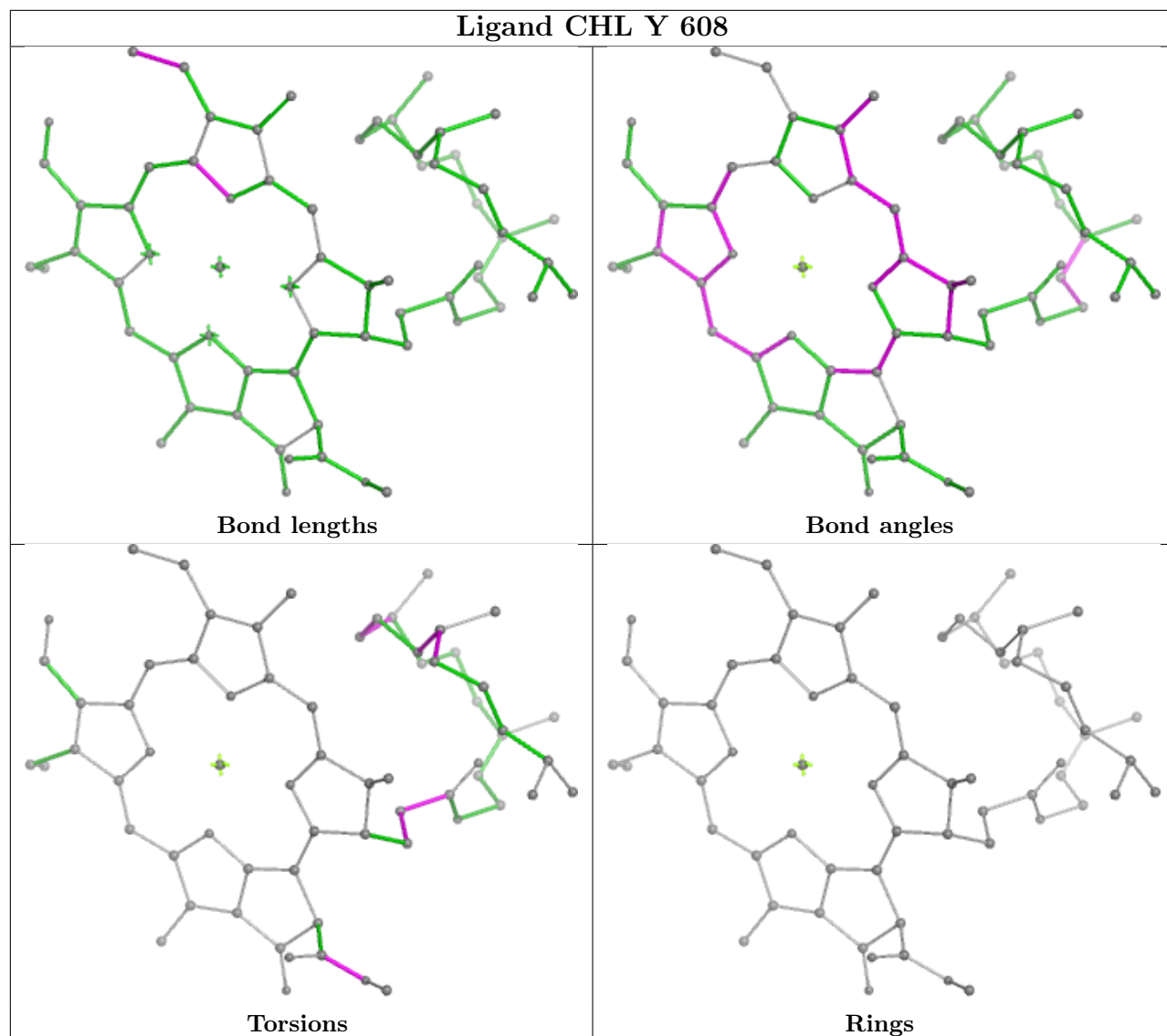




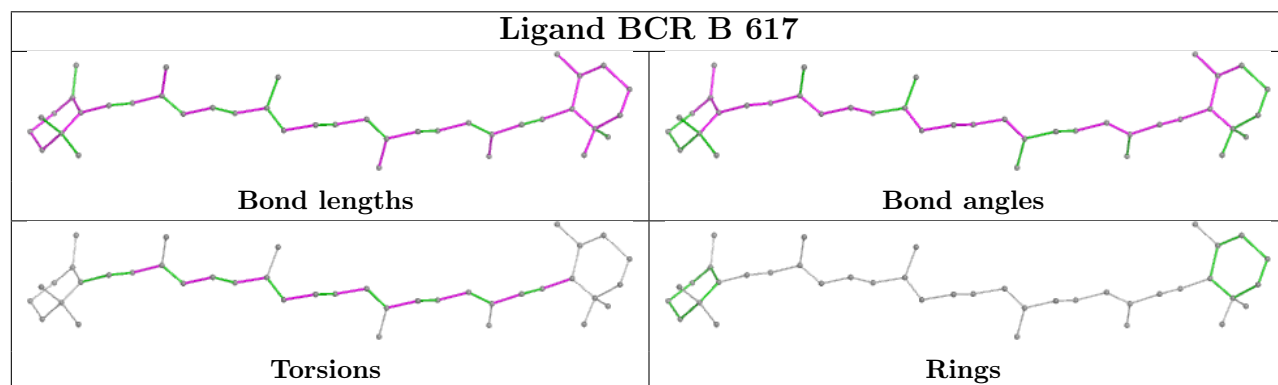
## Ligand CHL S 306

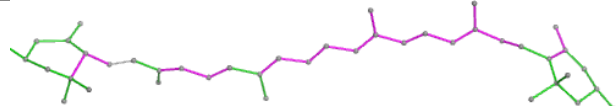
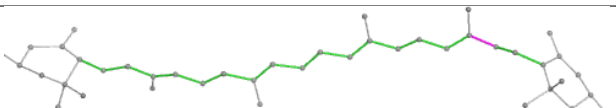
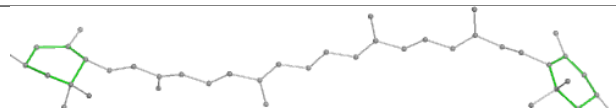


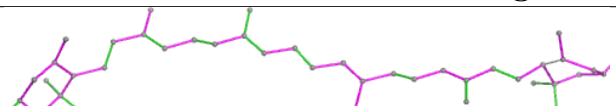
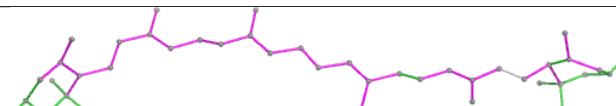
## Ligand CHL Y 608

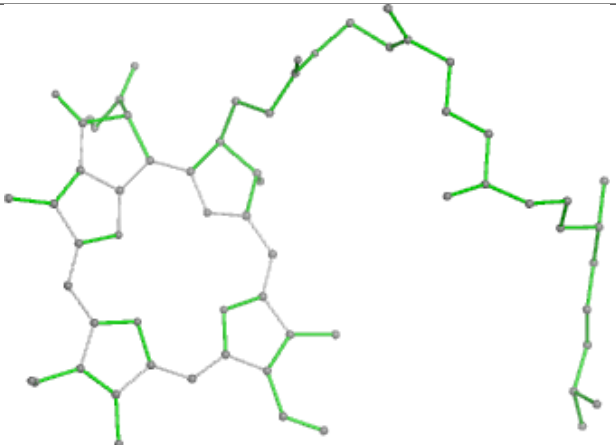
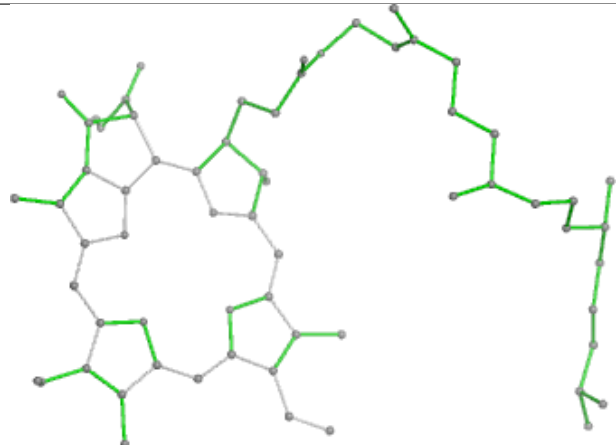
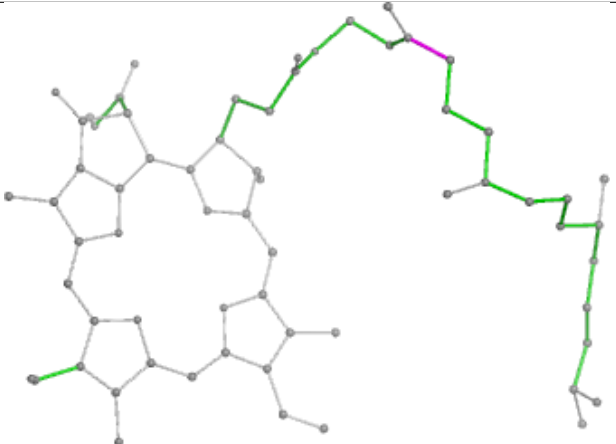
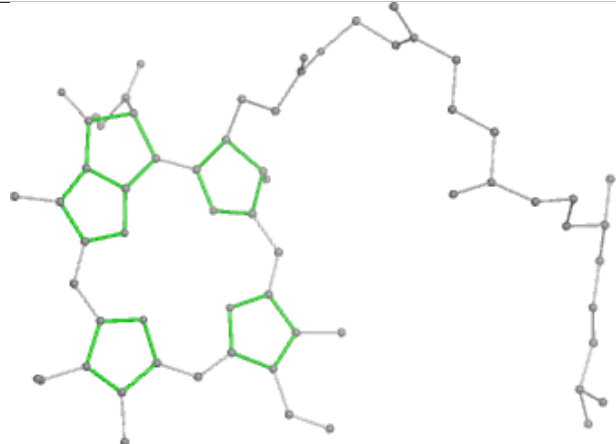


## Ligand BCR B 617

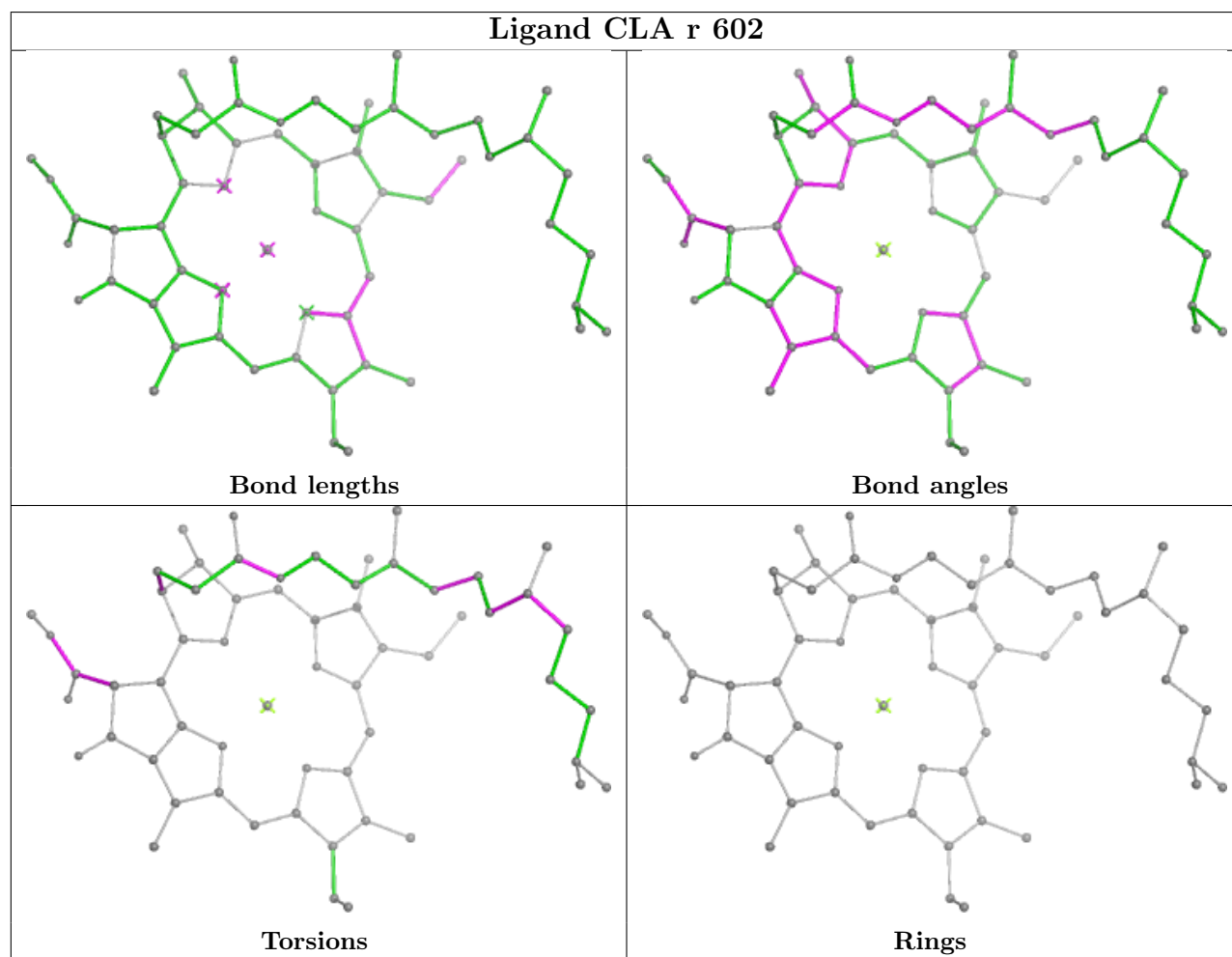
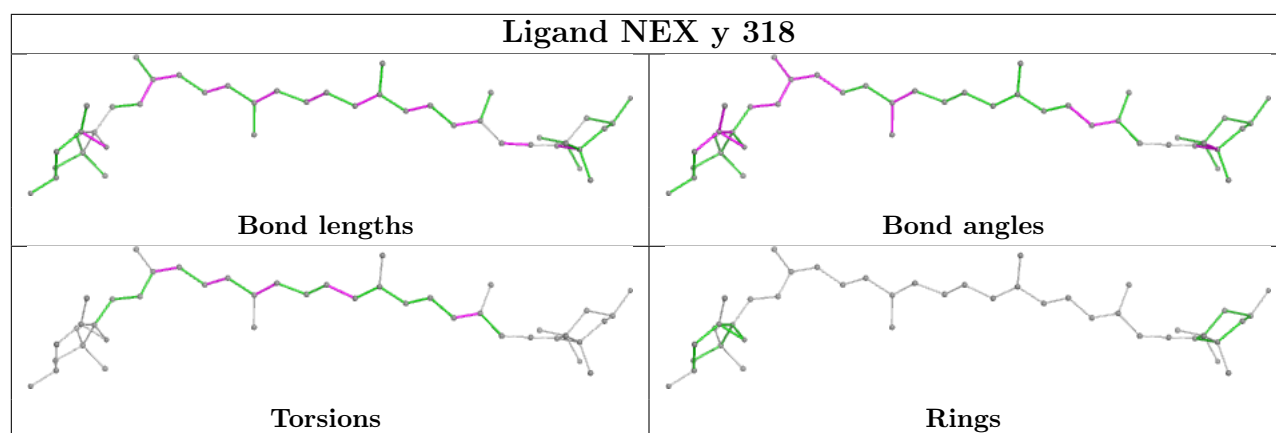


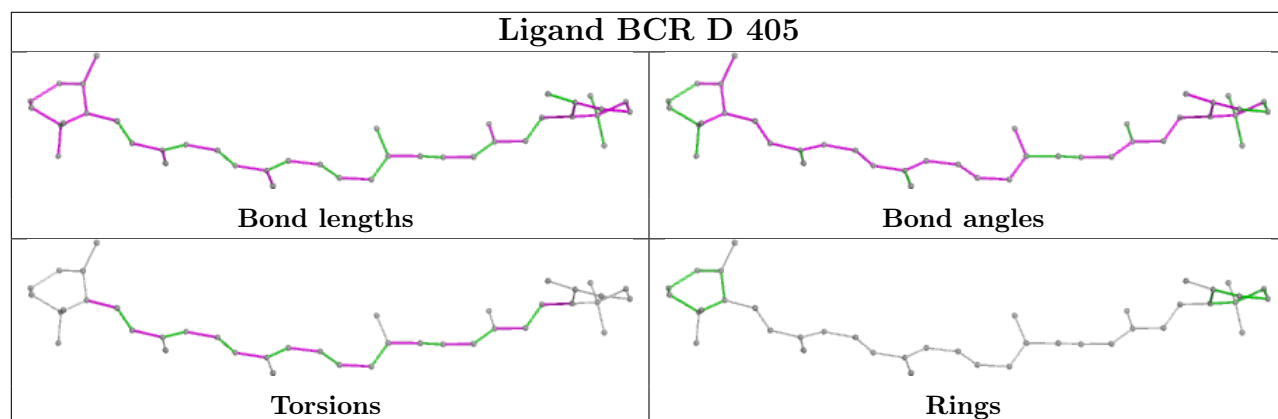
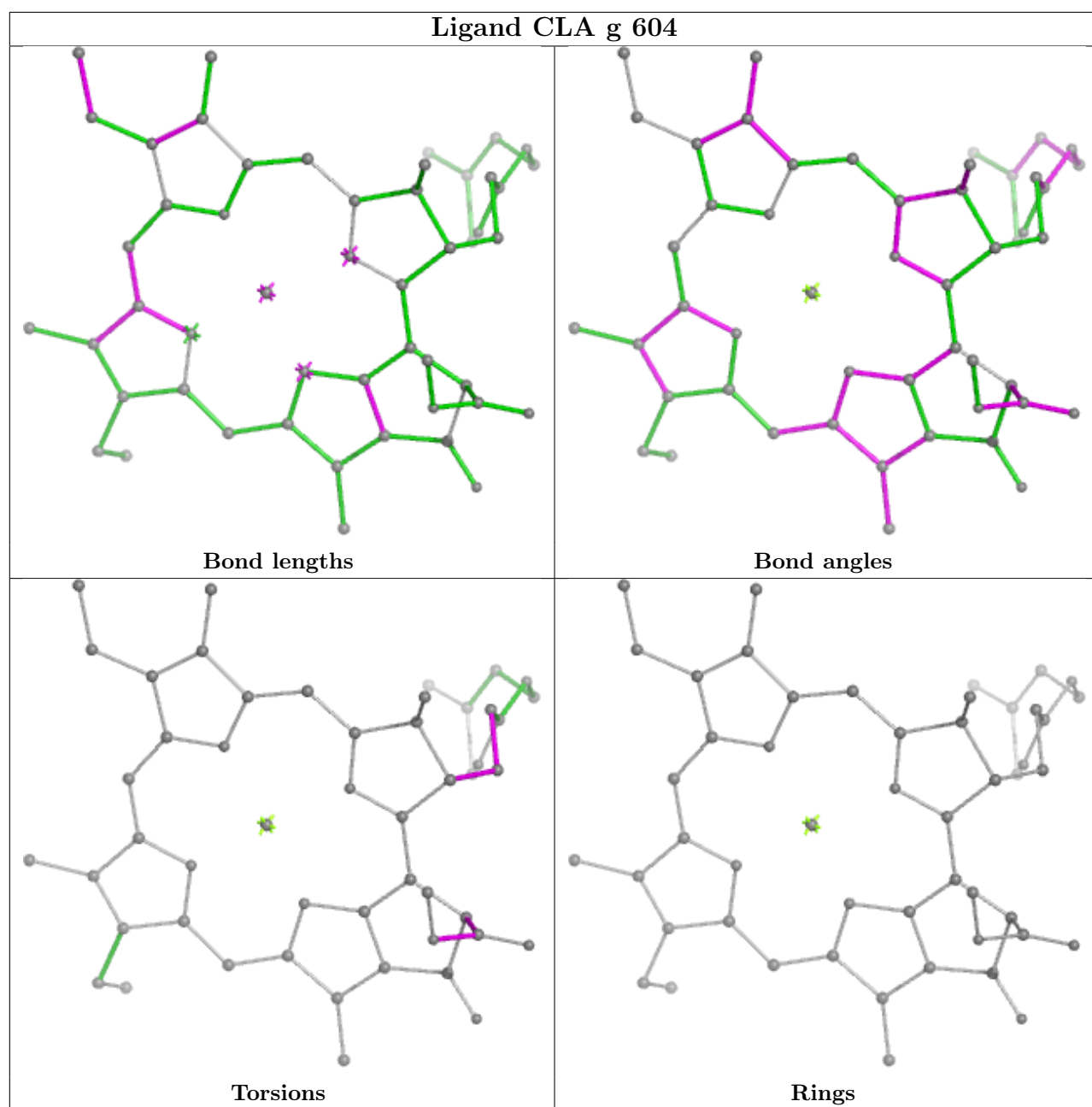
| Ligand LUT Y 616                                                                  |                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |
| Bond lengths                                                                      | Bond angles                                                                        |
|  |  |
| Torsions                                                                          | Rings                                                                              |

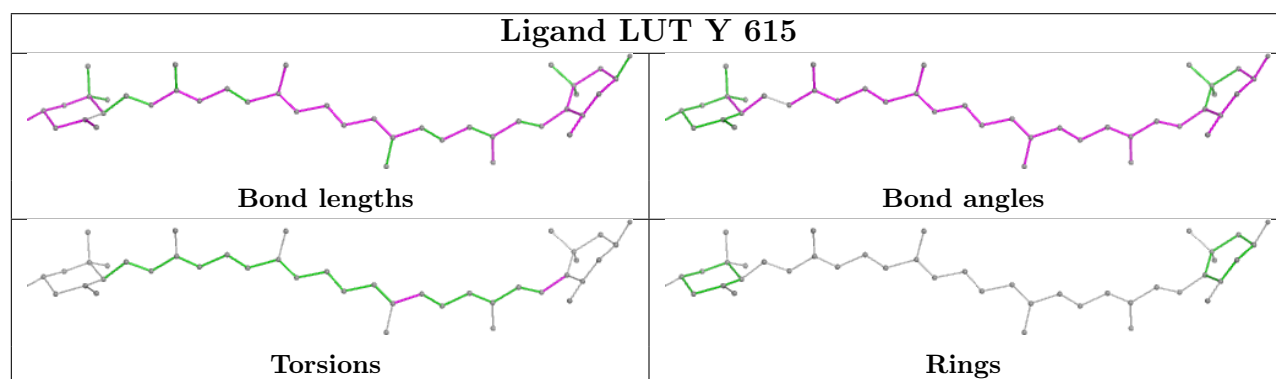
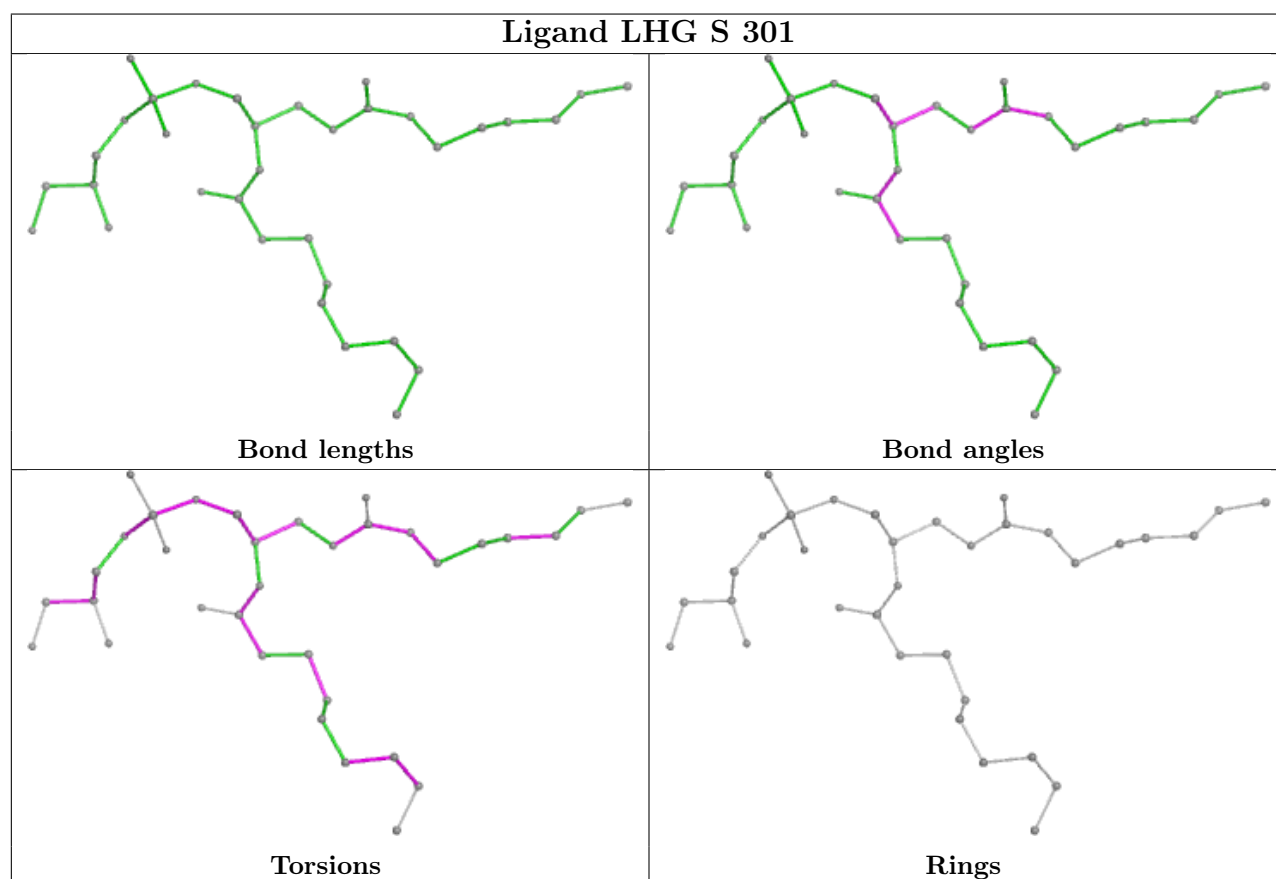
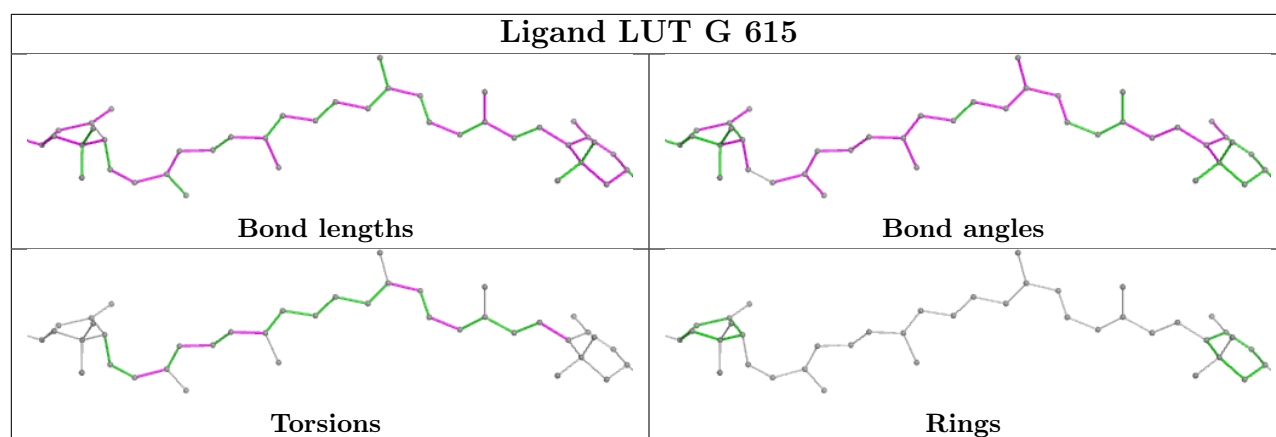
| Ligand LUT n 615                                                                  |                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |
| Bond lengths                                                                      | Bond angles                                                                        |
|  |  |
| Torsions                                                                          | Rings                                                                              |

| Ligand PHO d 402                                                                    |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|   |   |
| Bond lengths                                                                        | Bond angles                                                                          |
|  |  |
| Torsions                                                                            | Rings                                                                                |

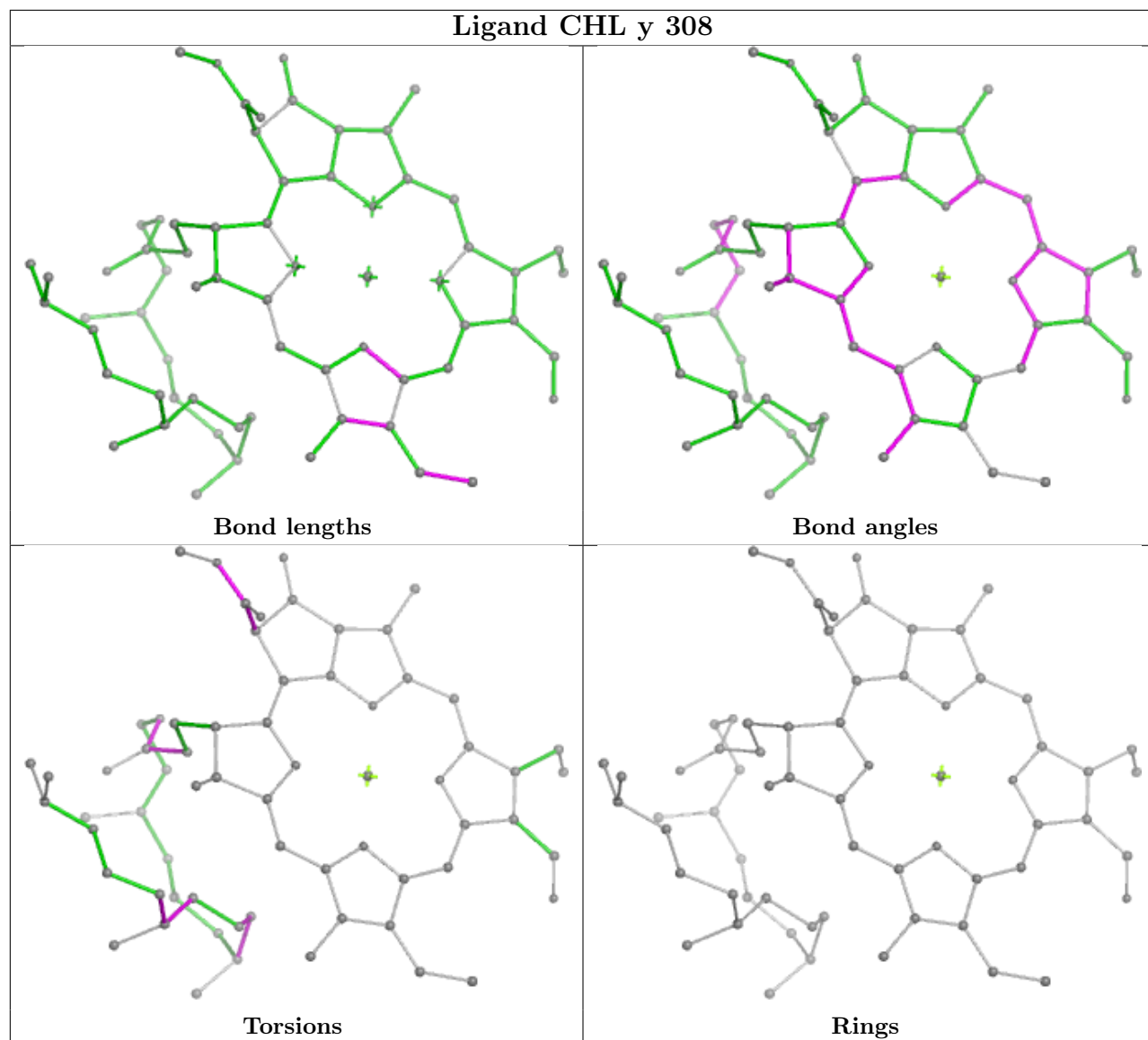


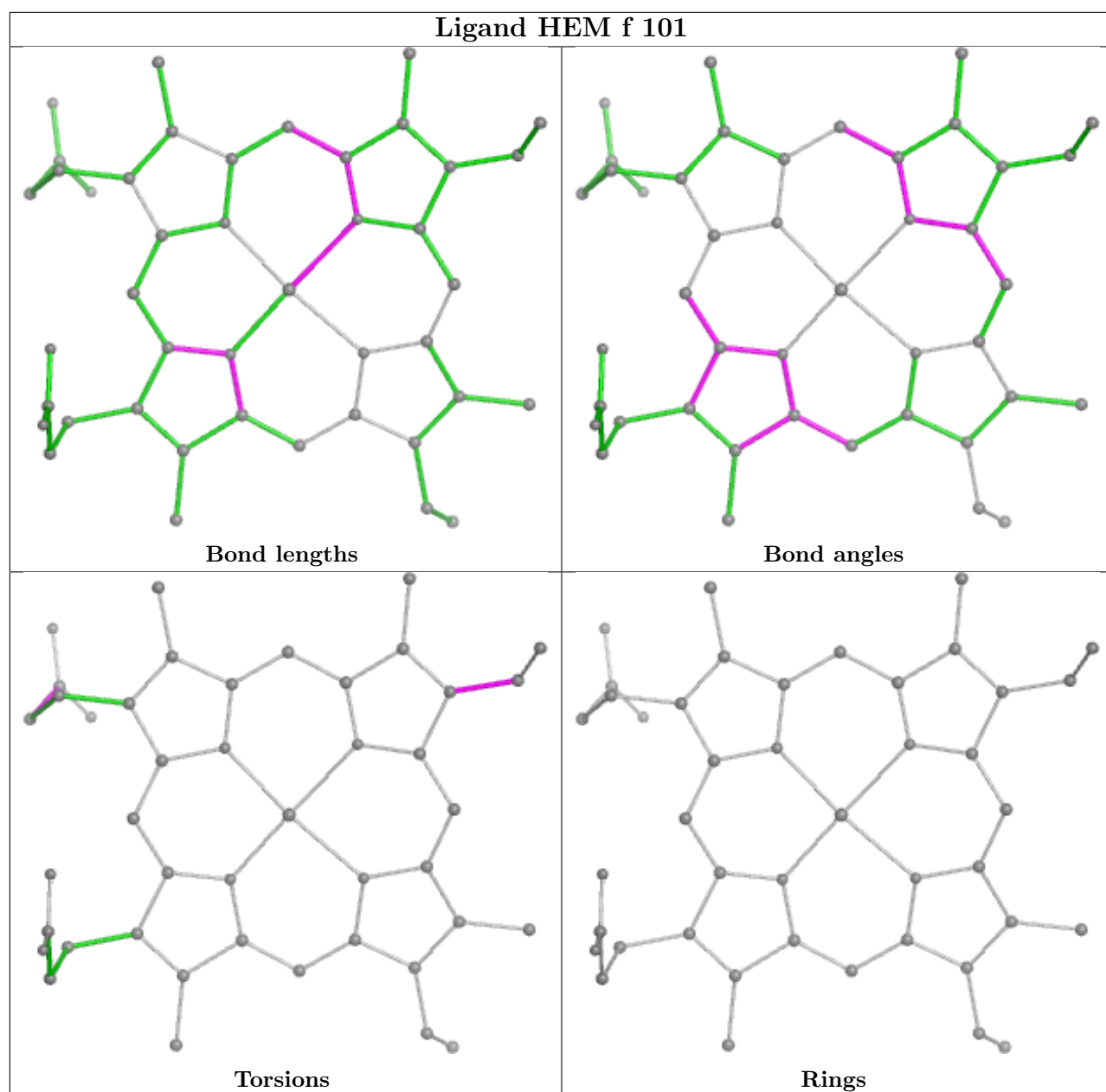


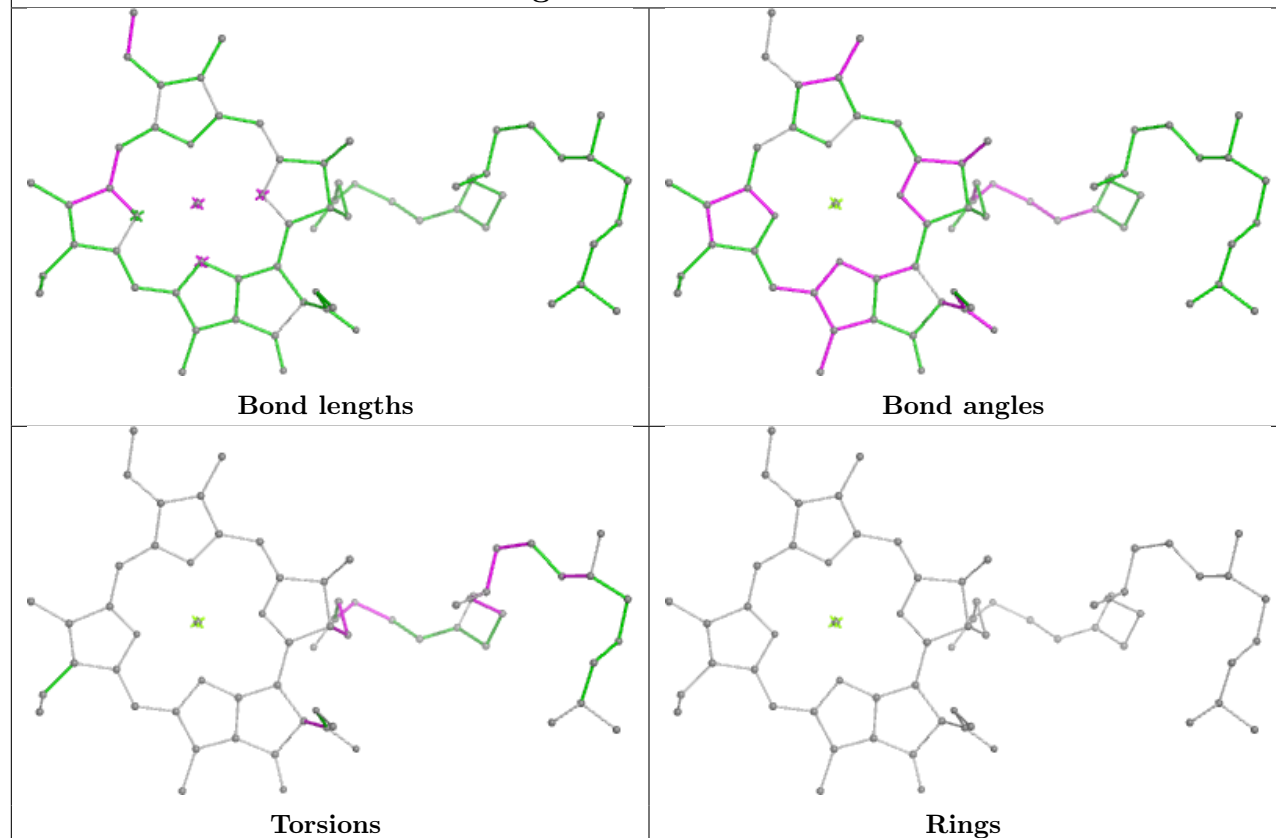
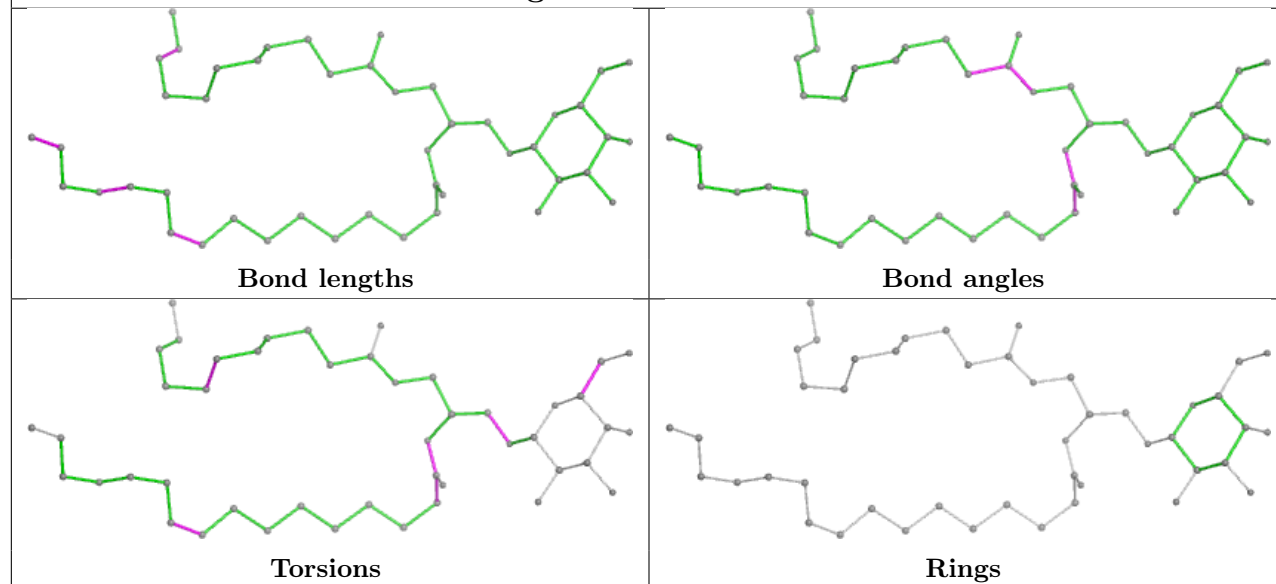


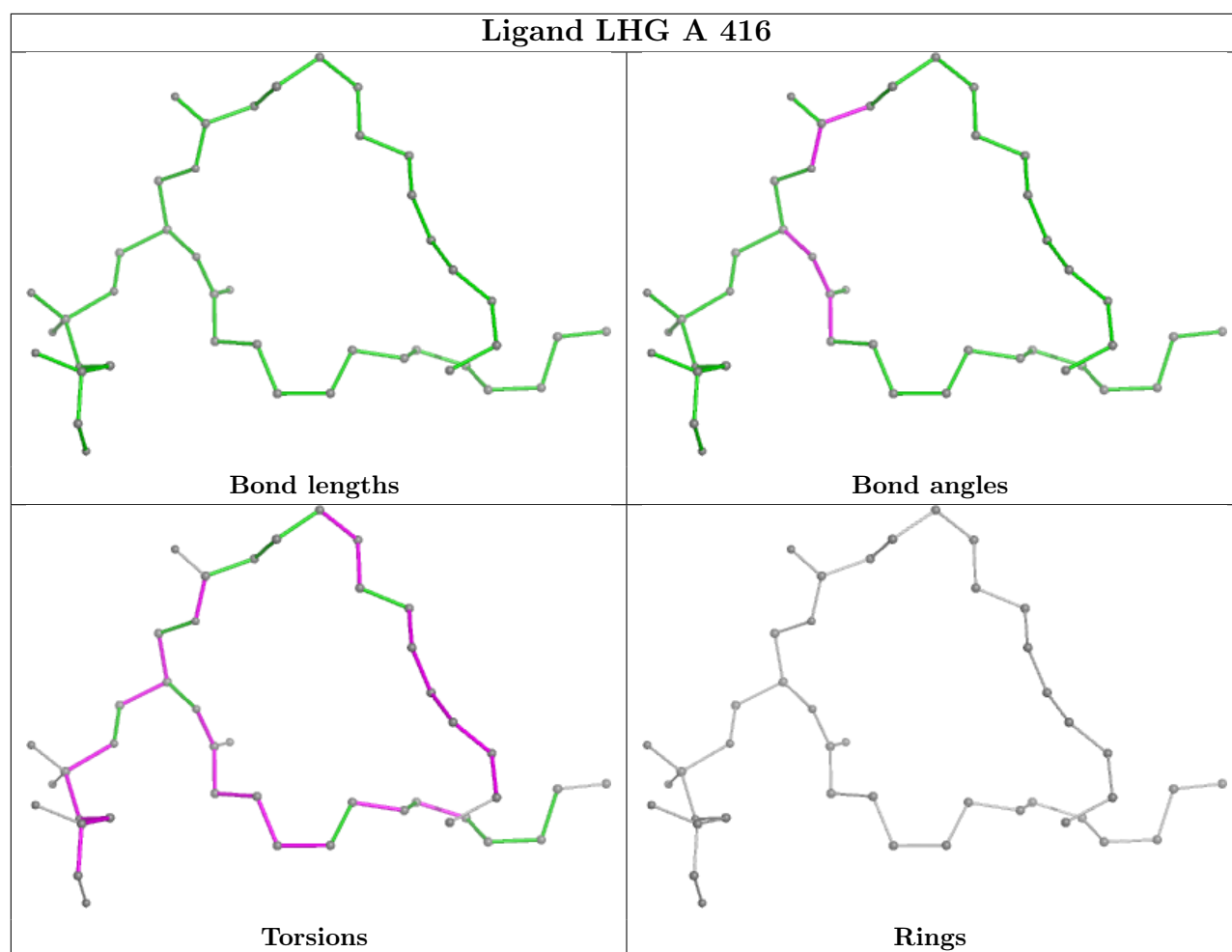


## Ligand CHL y 308

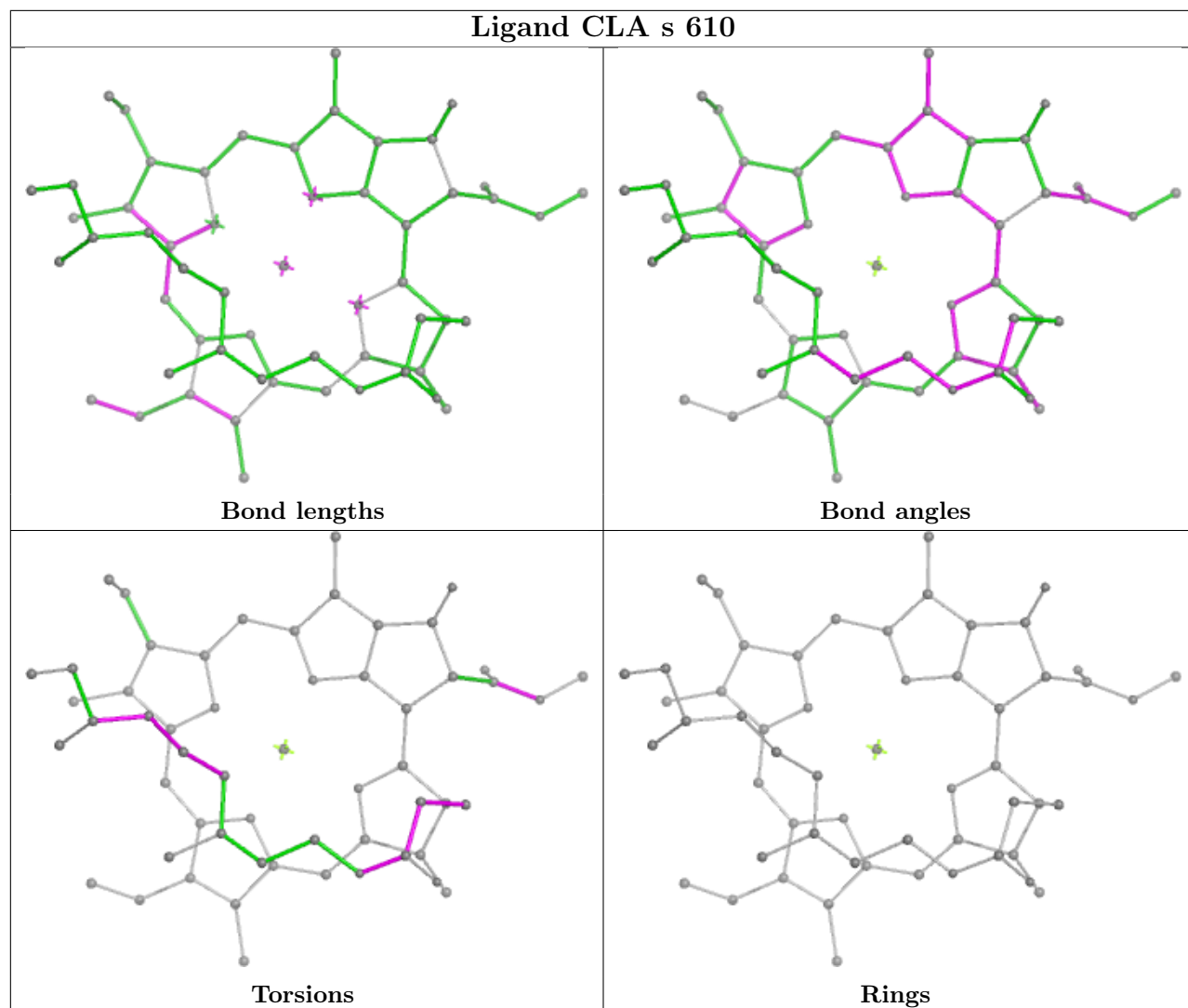




**Ligand CLA B 612****Ligand LMG D 408**

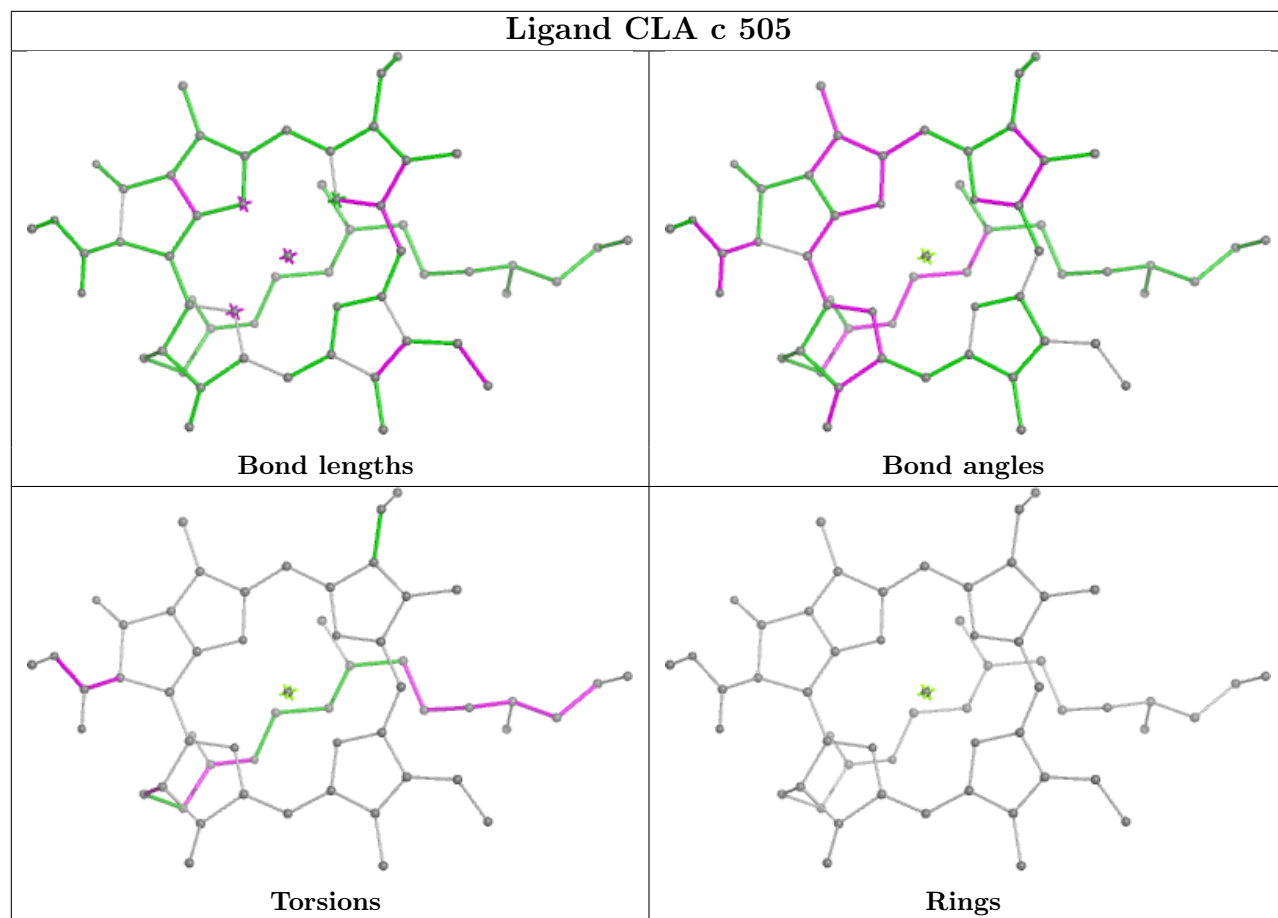


## Ligand CLA s 610

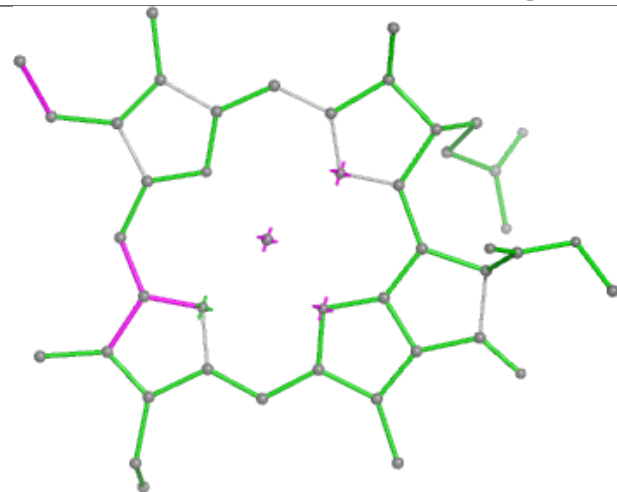




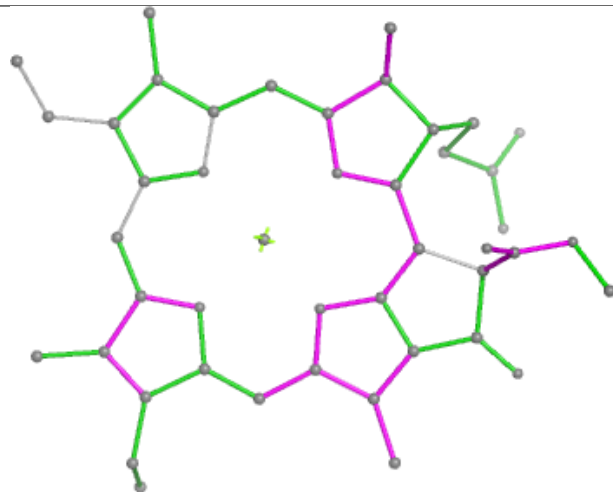
## Ligand CLA c 505



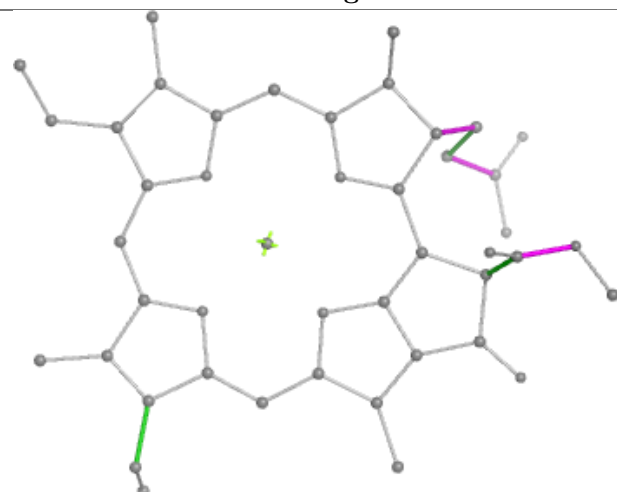
## Ligand CLA n 614



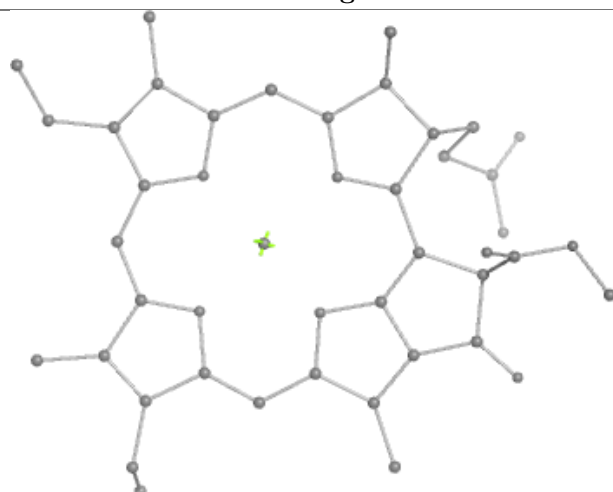
Bond lengths



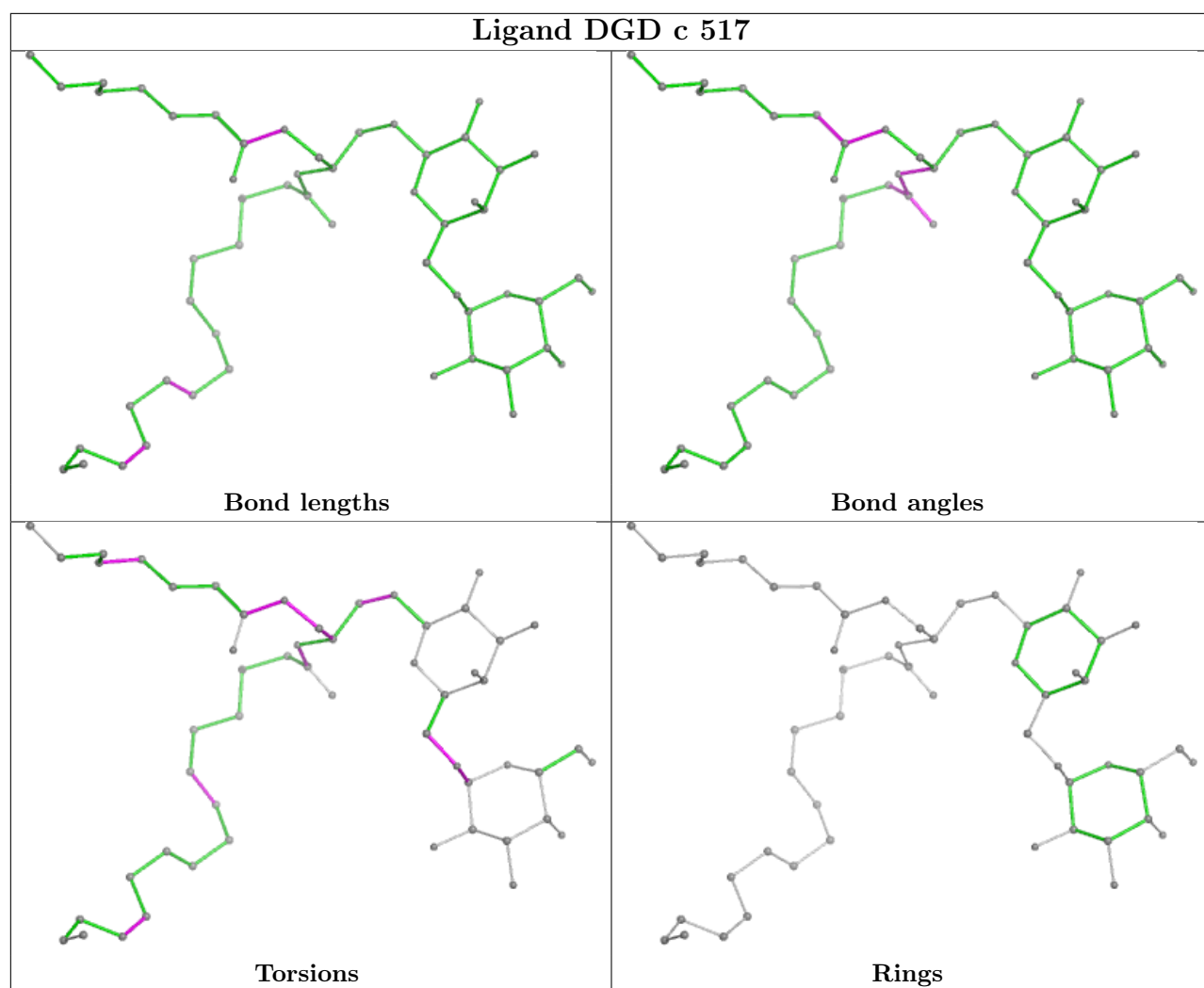
Bond angles



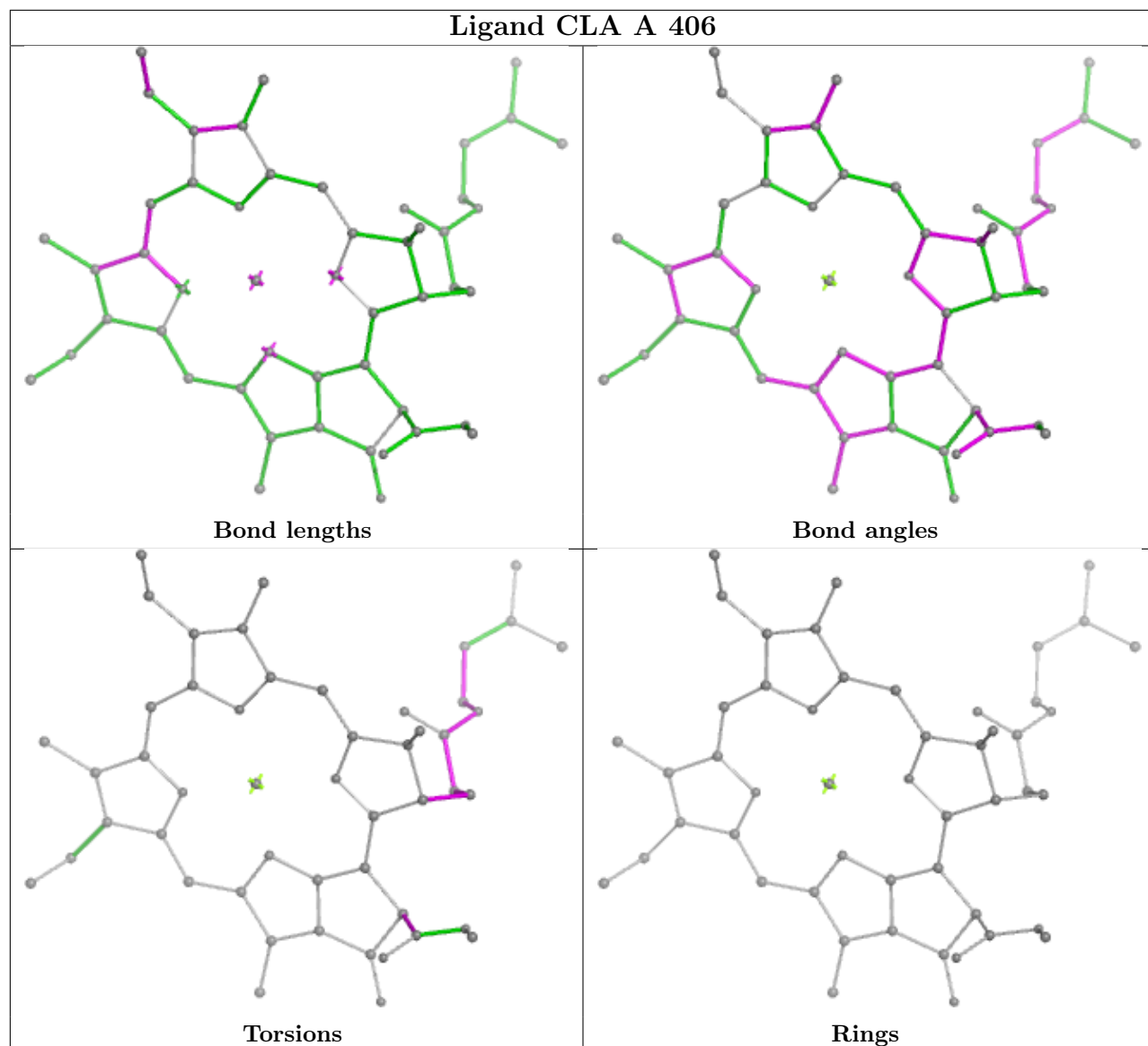
Torsions



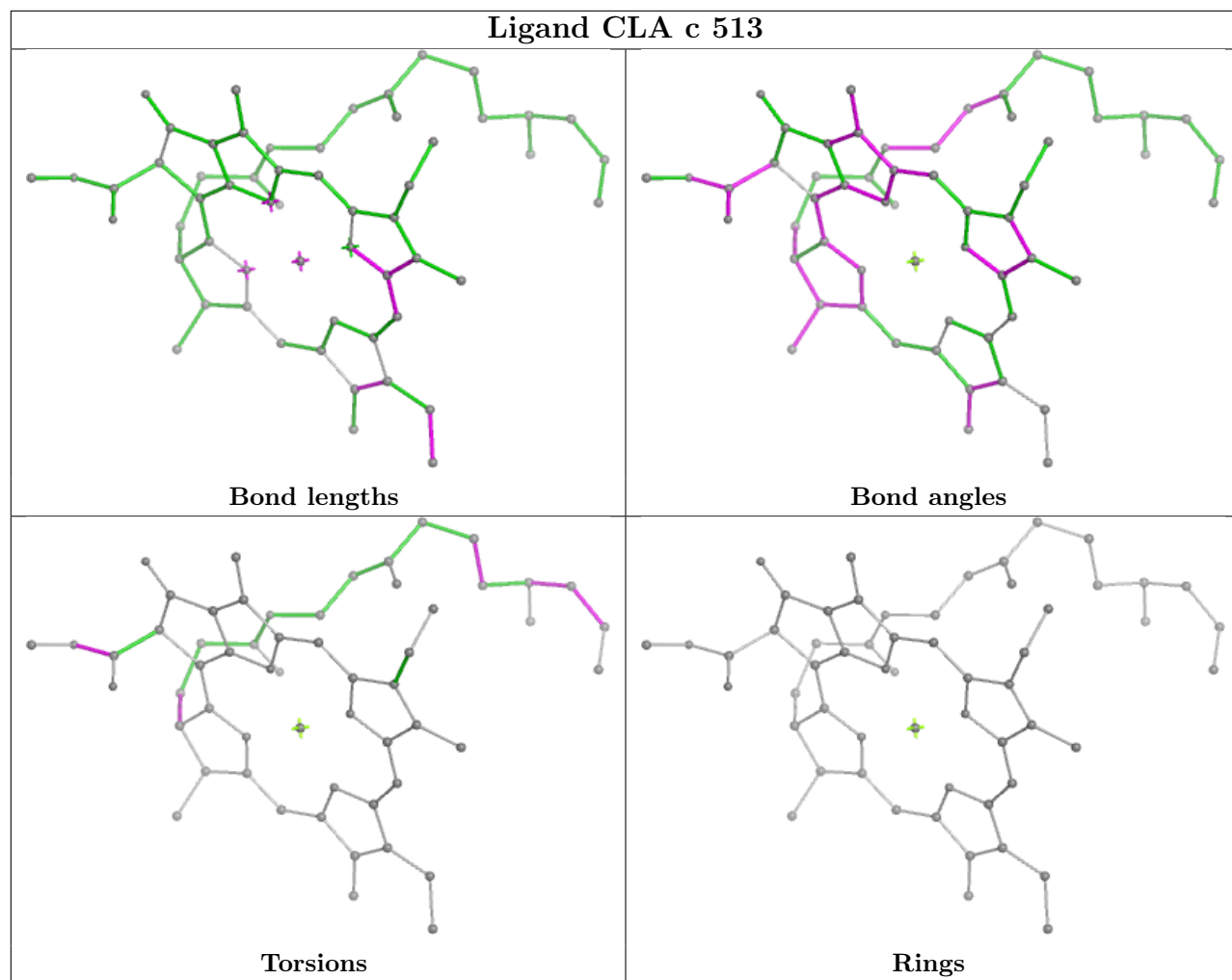
Rings

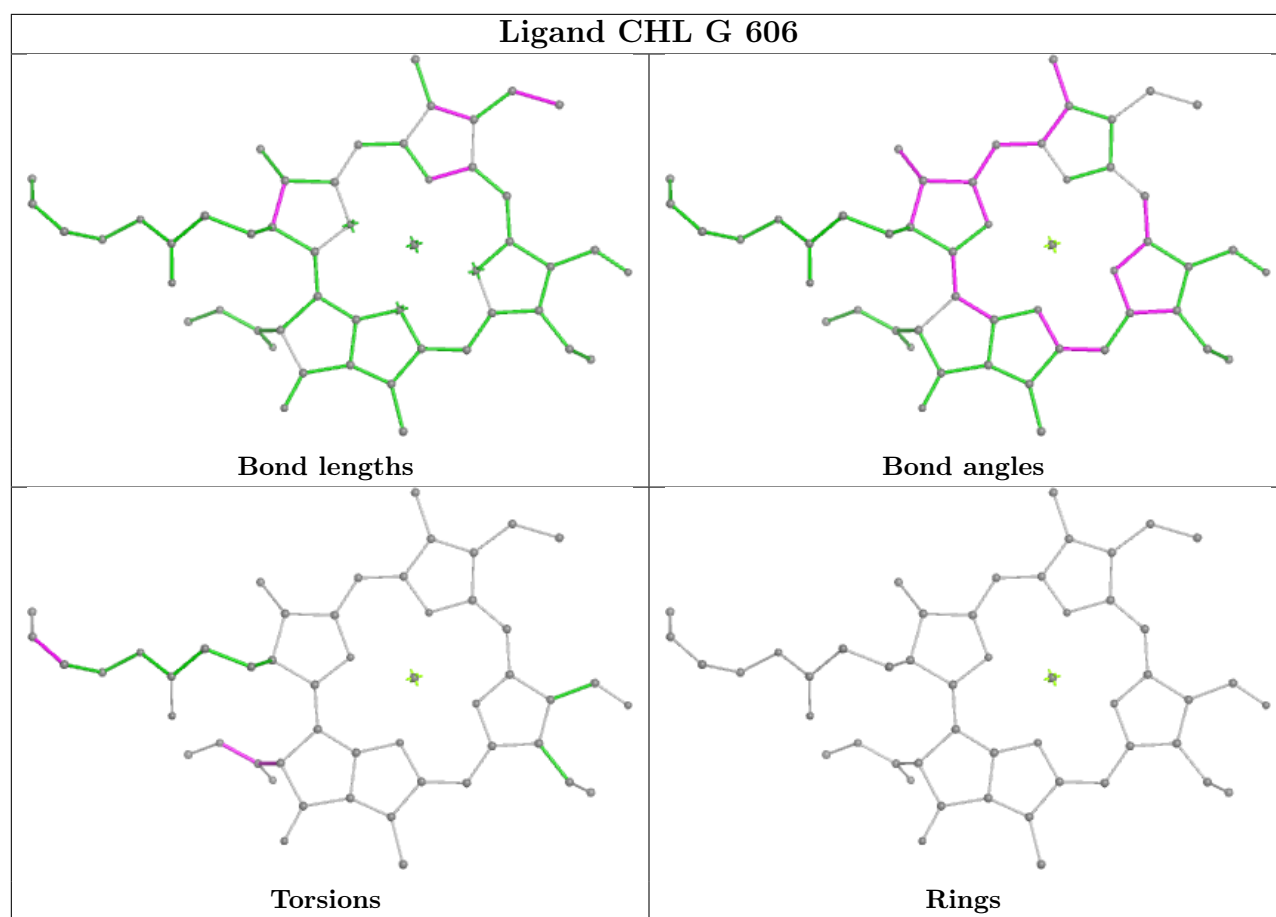


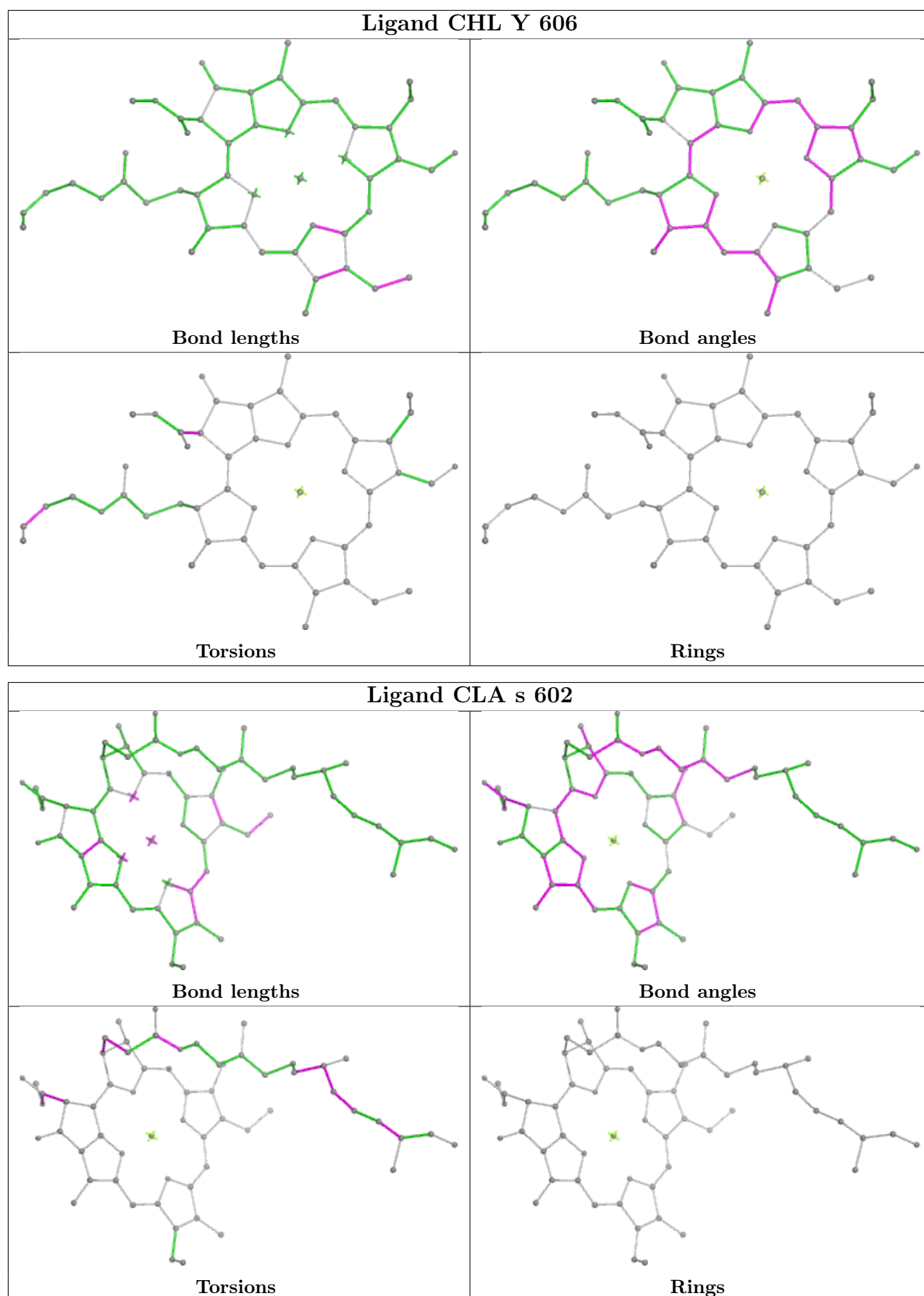
## Ligand CLA A 406

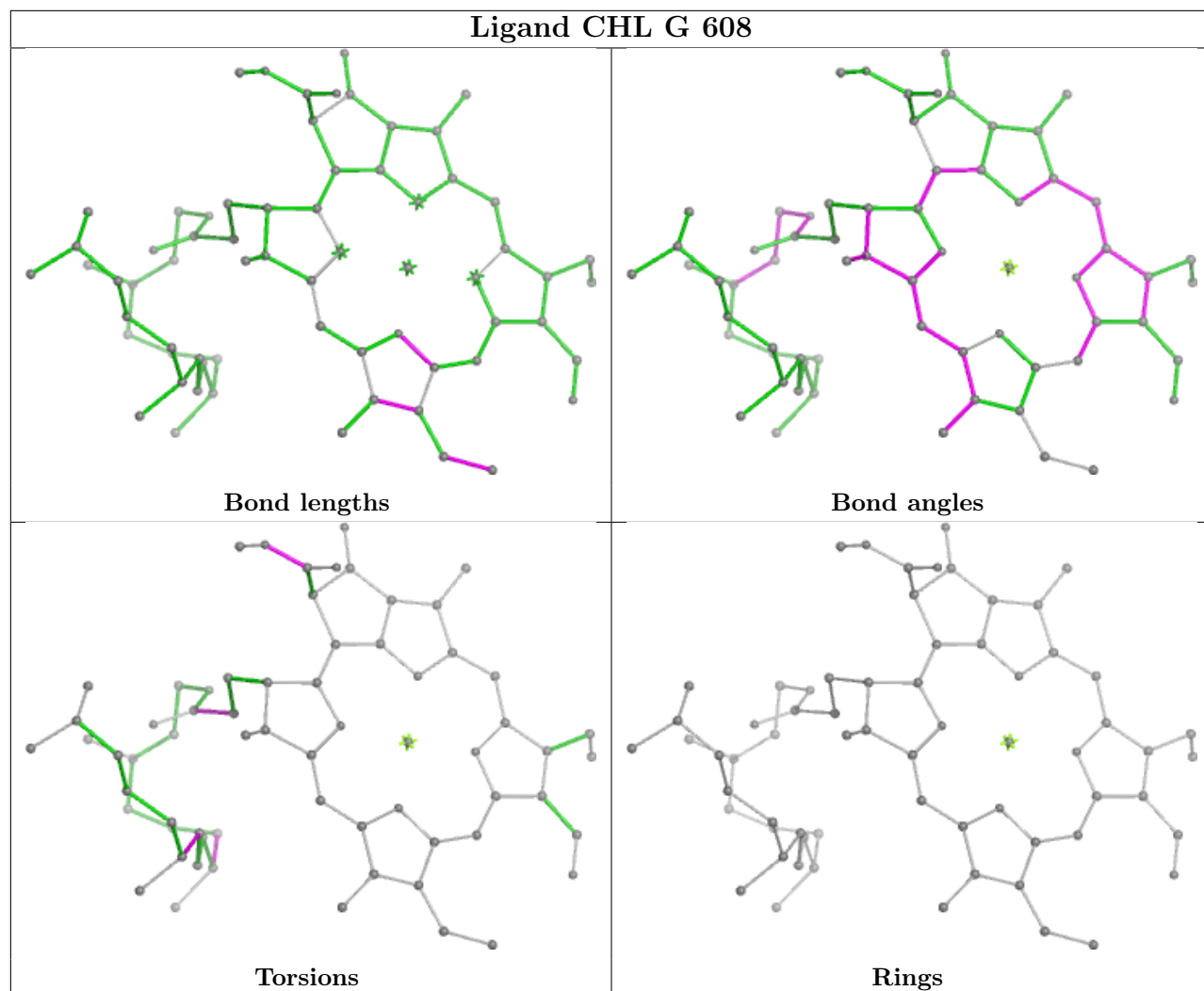


## Ligand CLA c 513

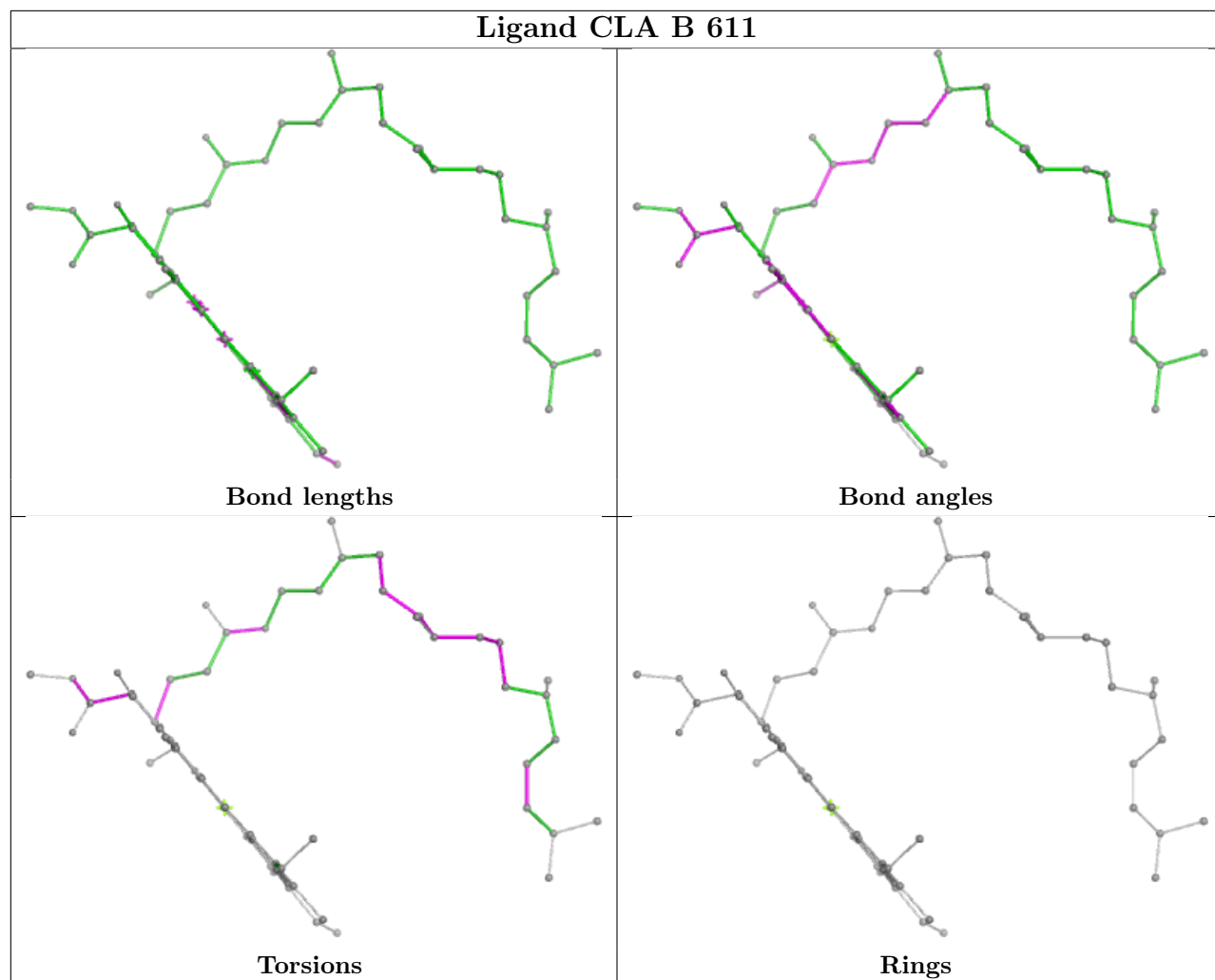




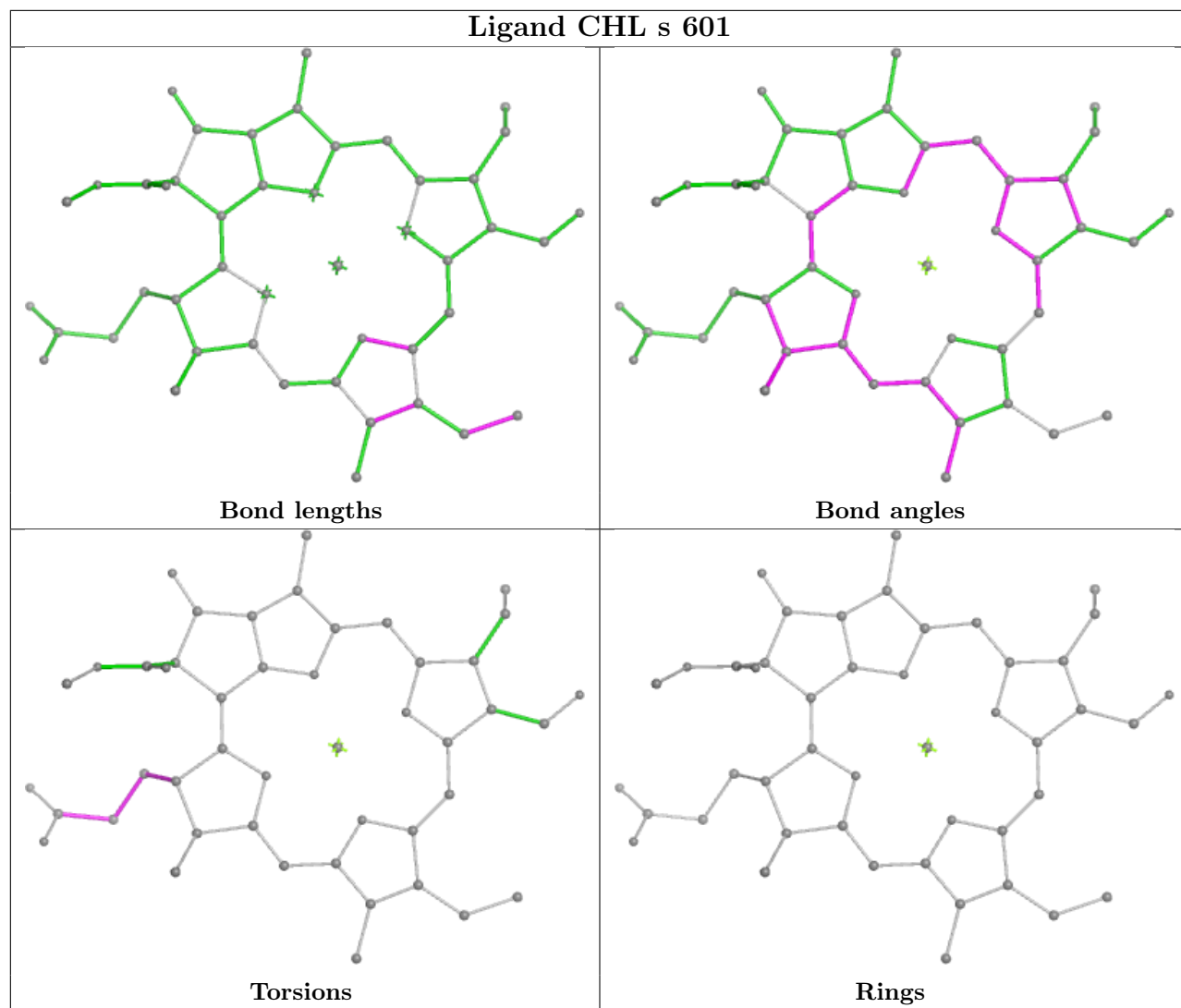


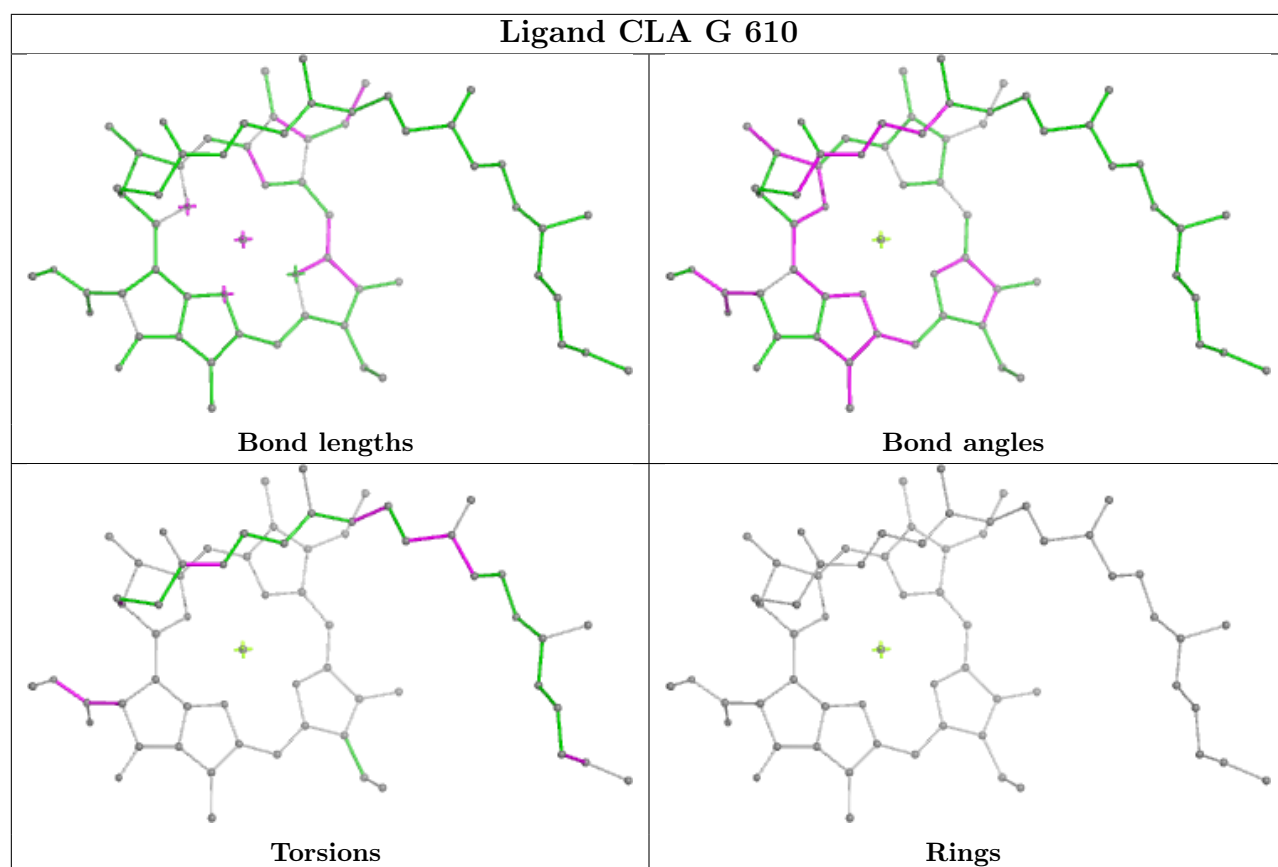


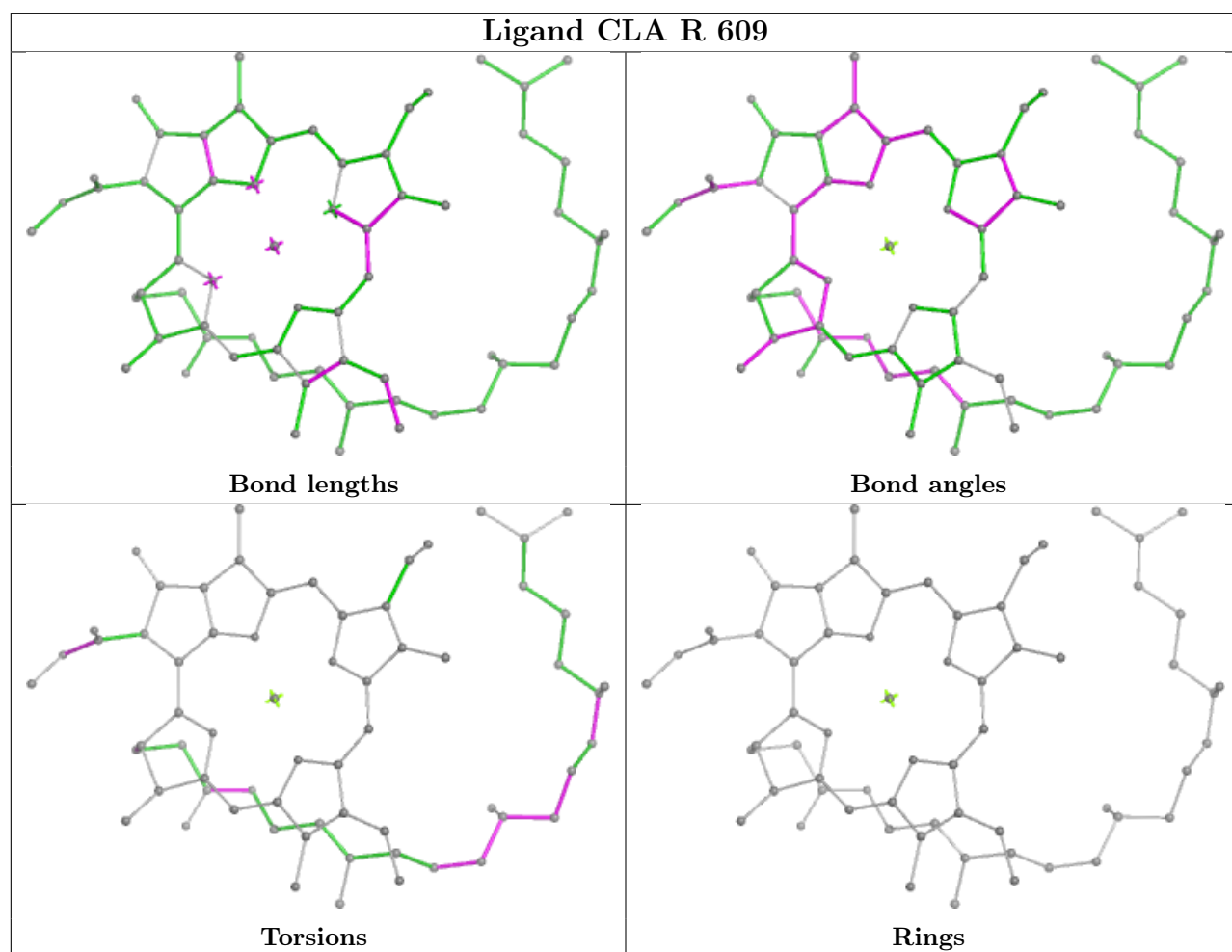




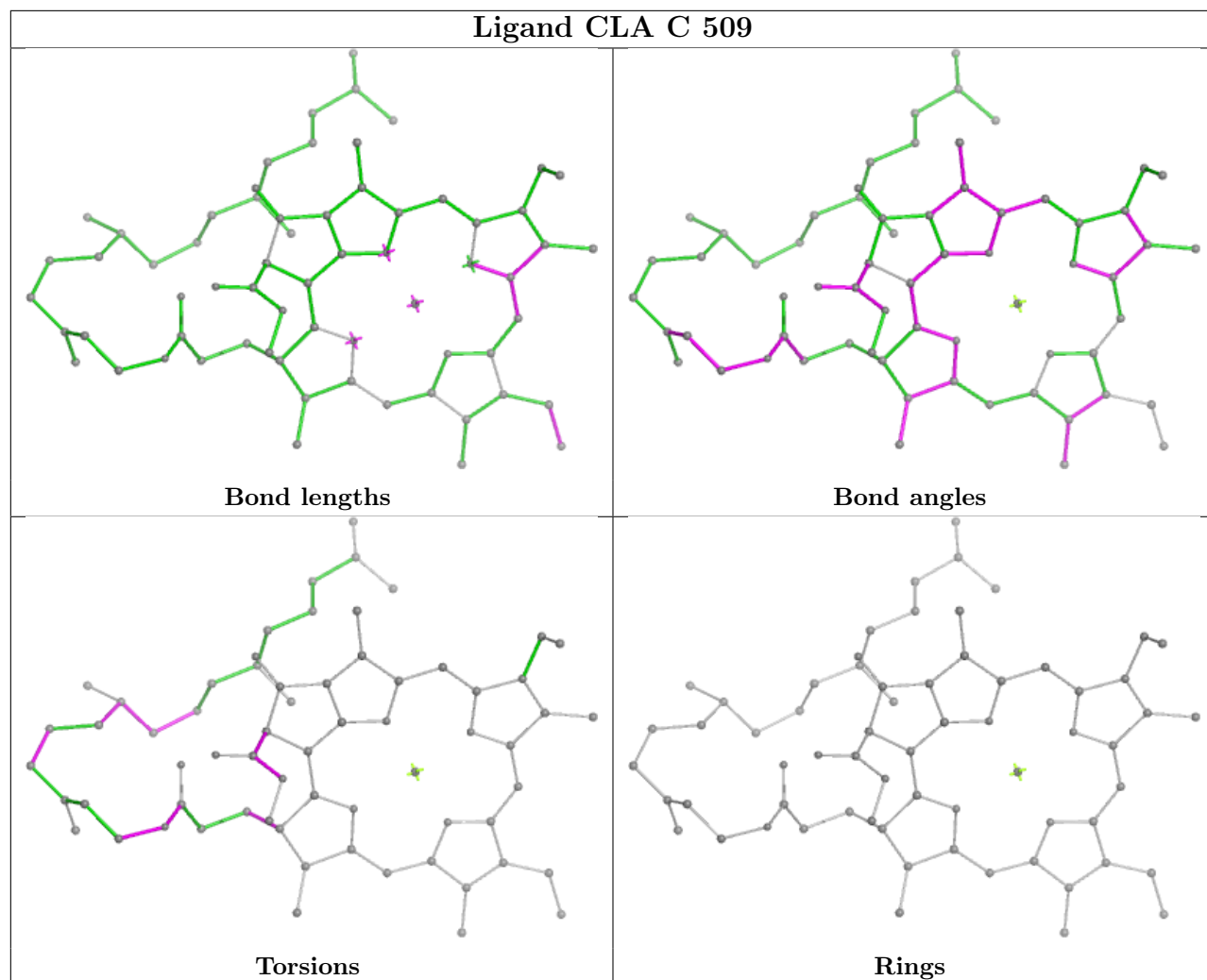
## Ligand CHL s 601



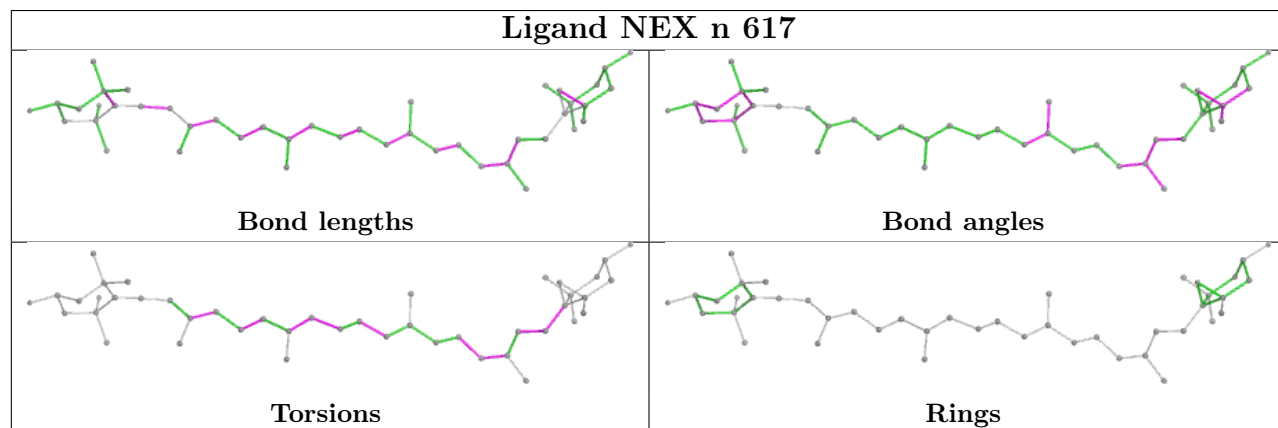




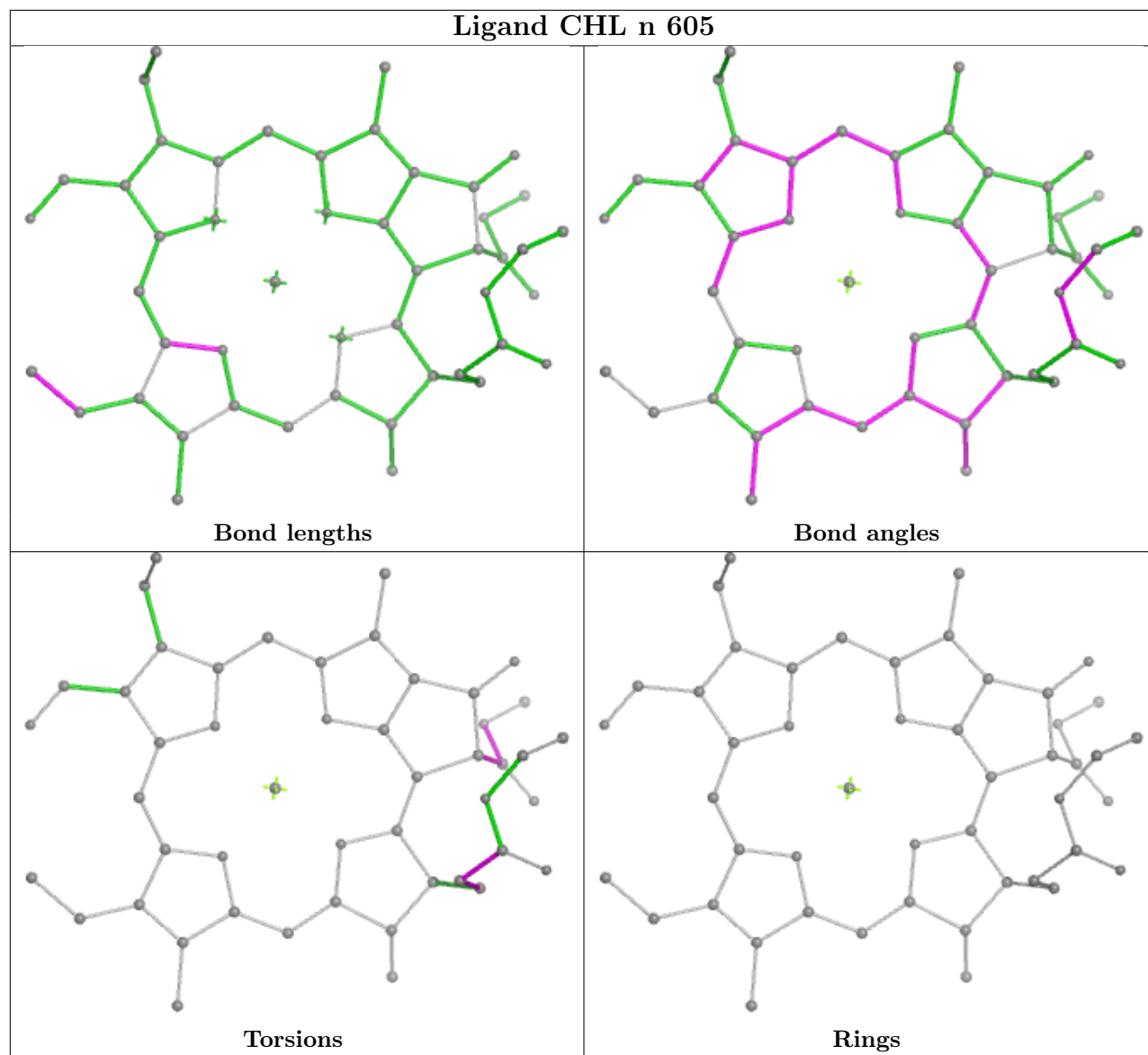
## Ligand CLA C 509



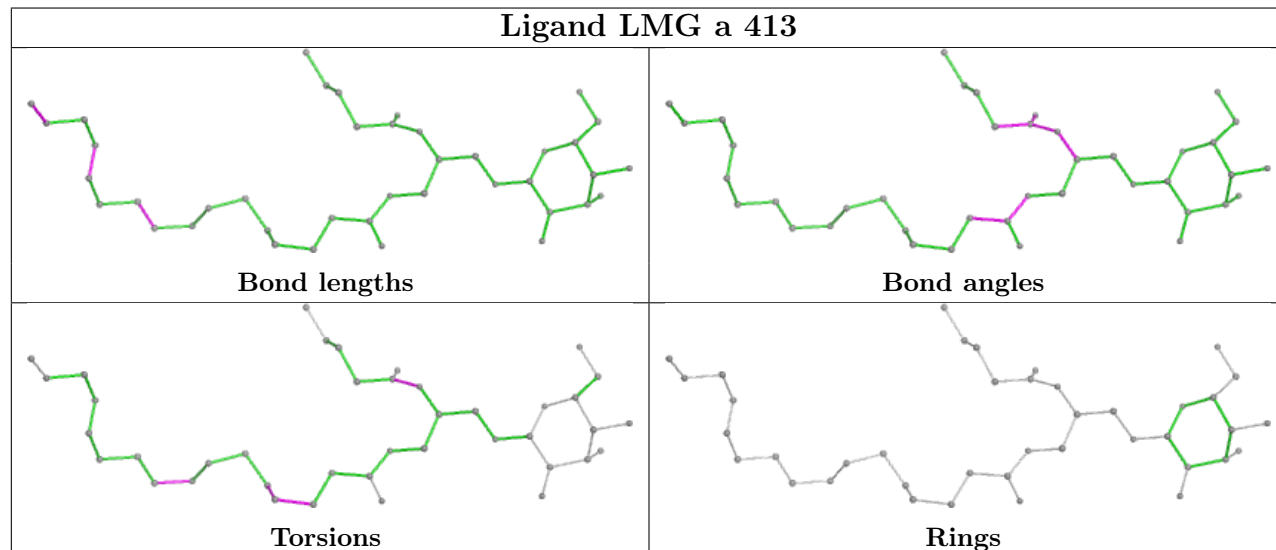
## Ligand NEX n 617



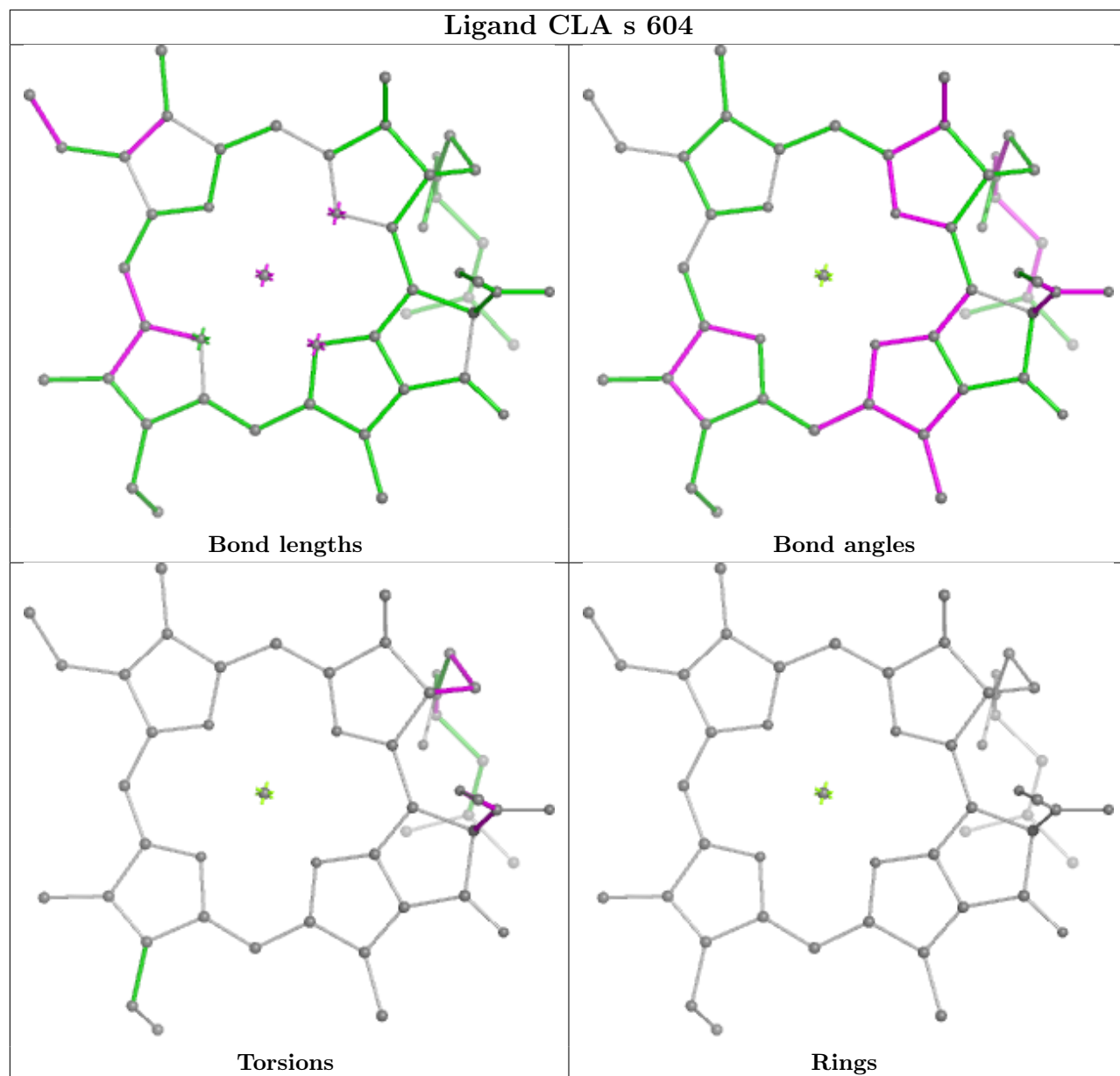
## Ligand CHL n 605



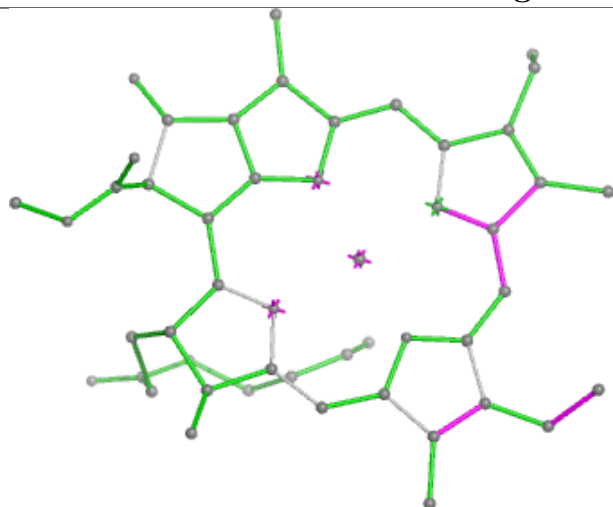
## Ligand LMG a 413



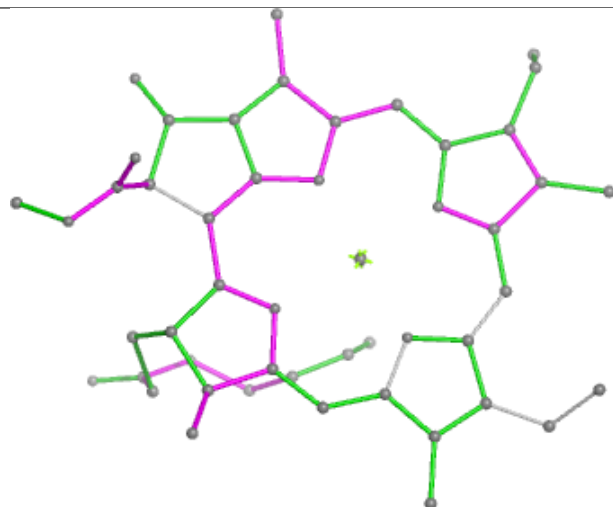
## Ligand CLA s 604



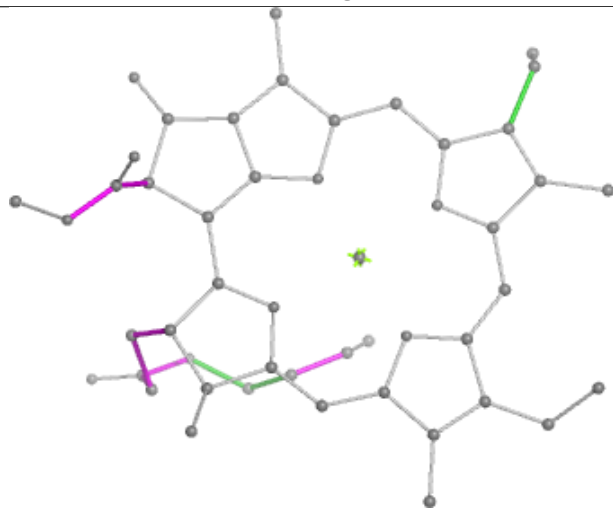
## Ligand CLA R 610



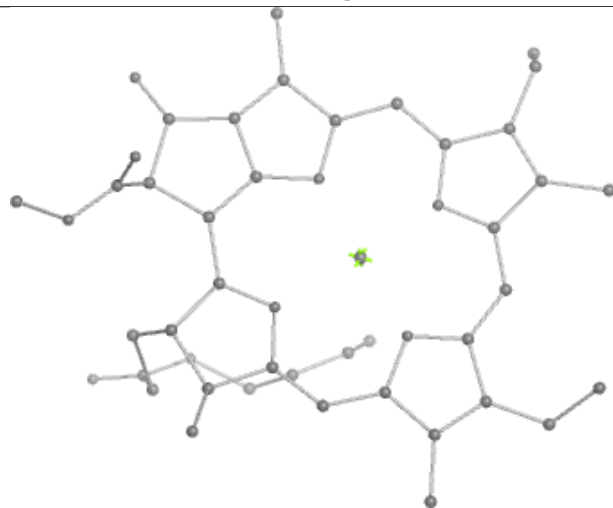
Bond lengths



Bond angles

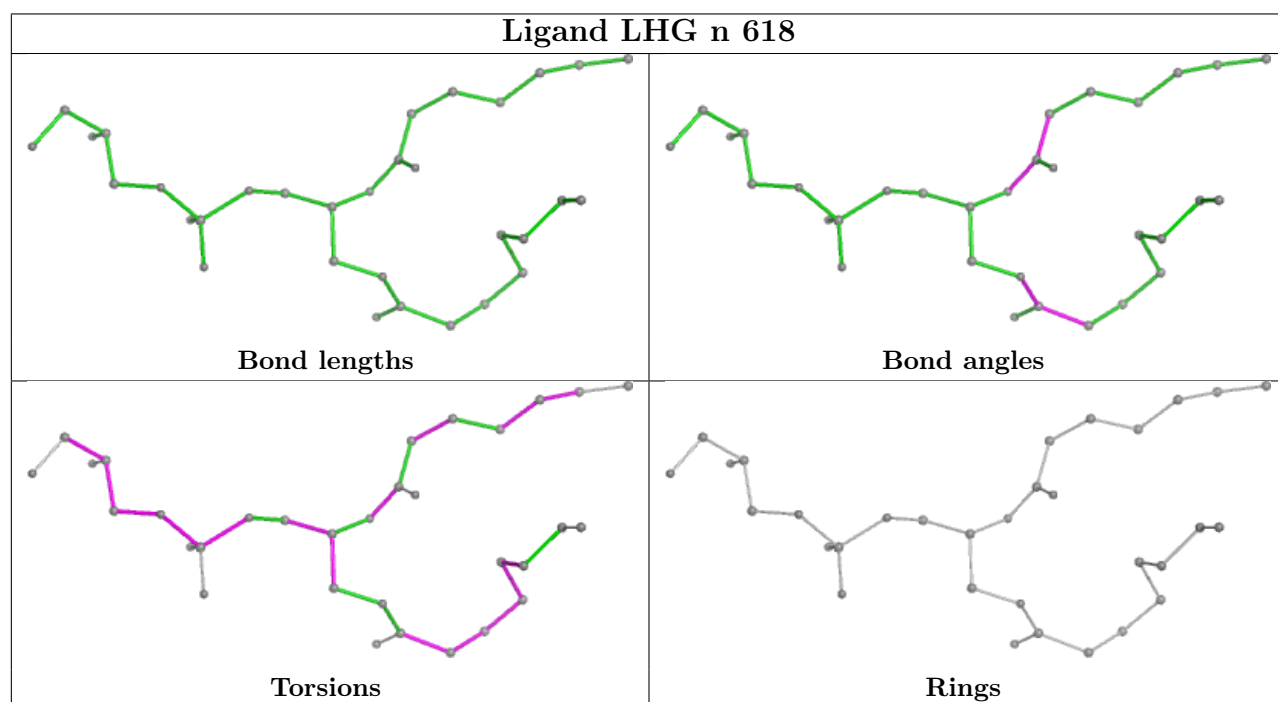
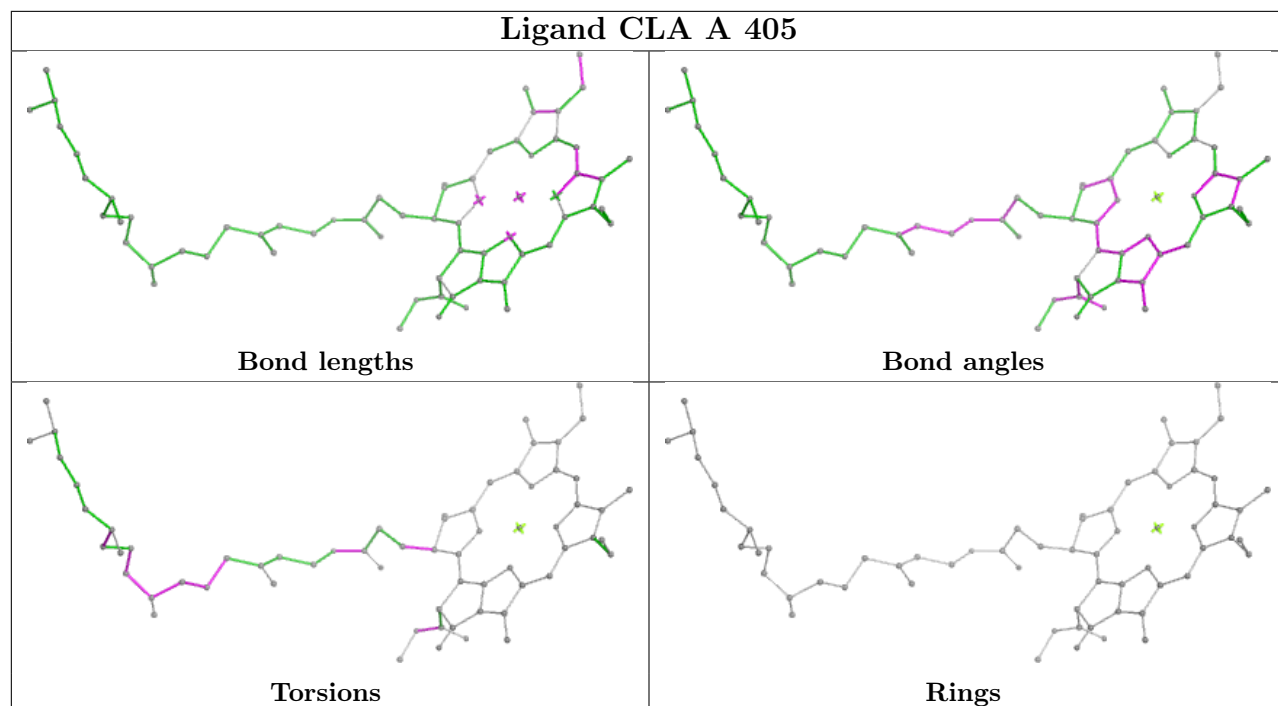


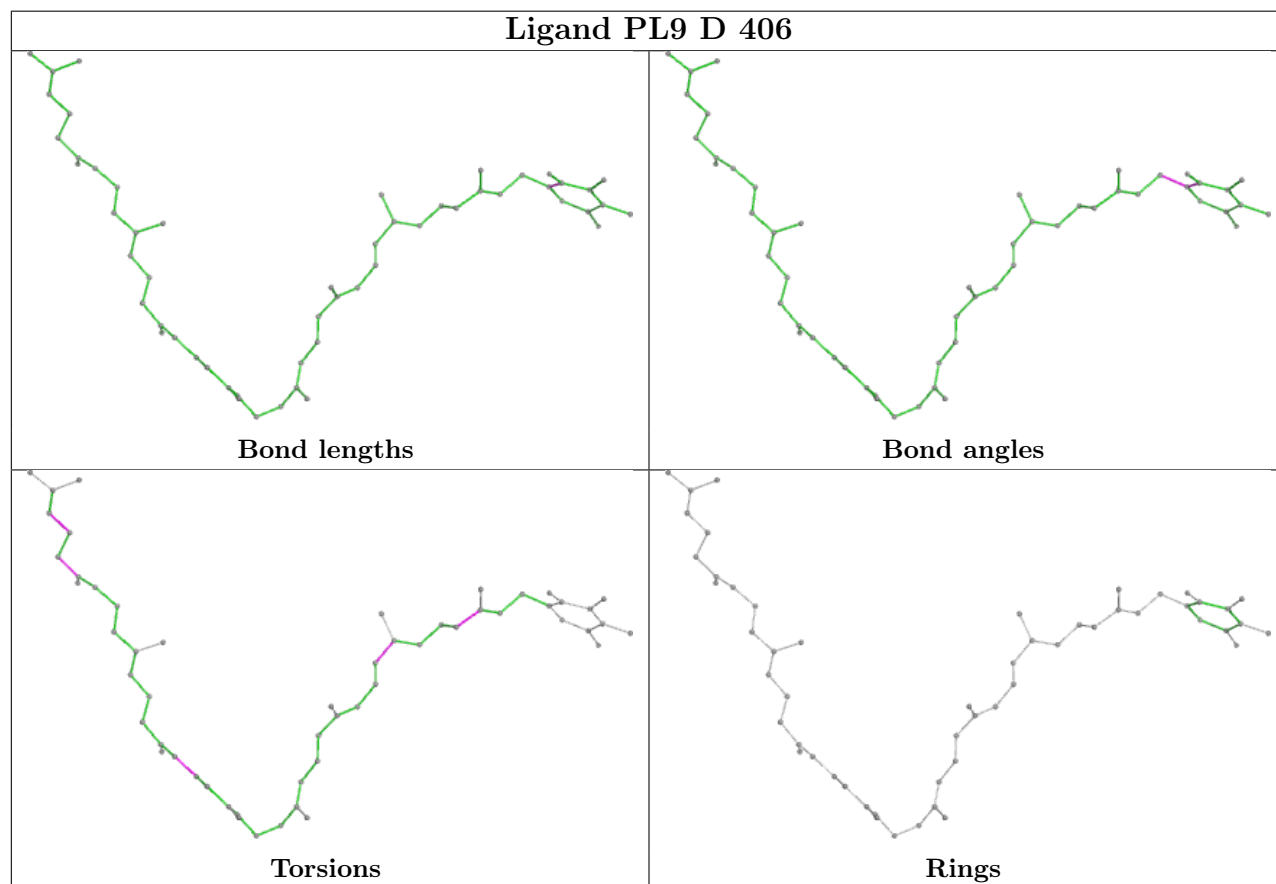
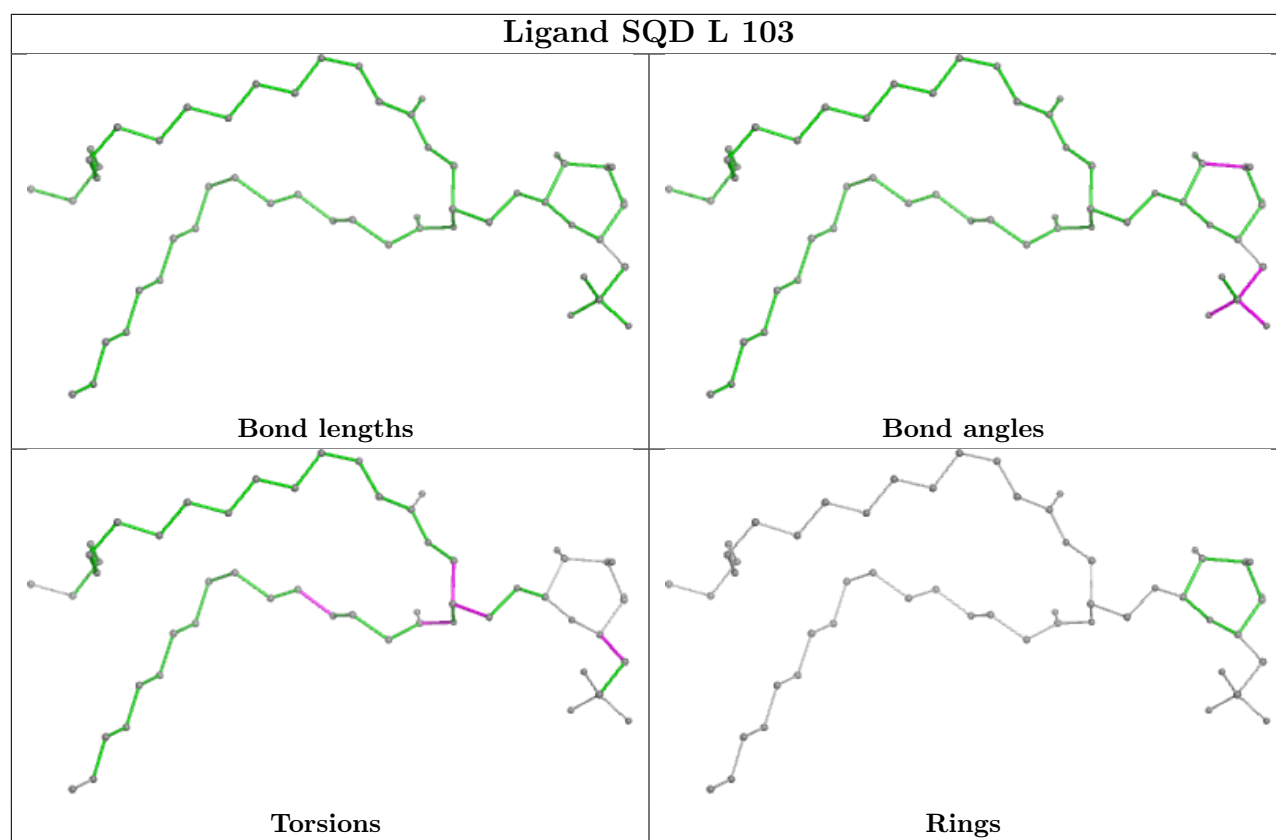
Torsions



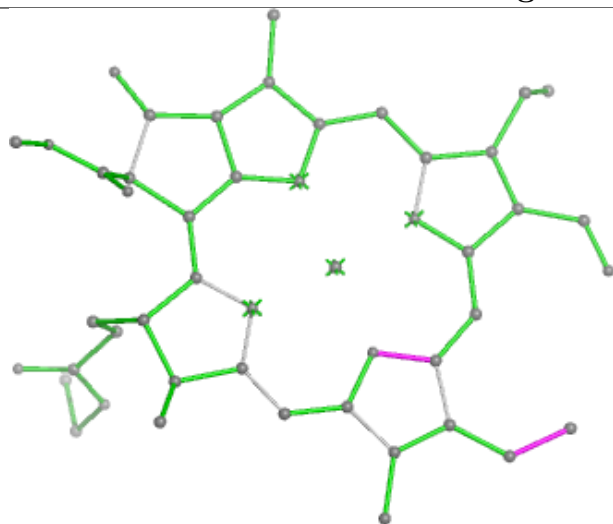
Rings



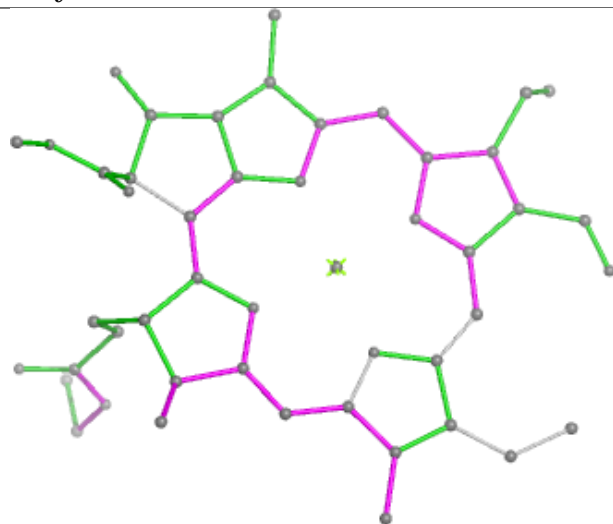




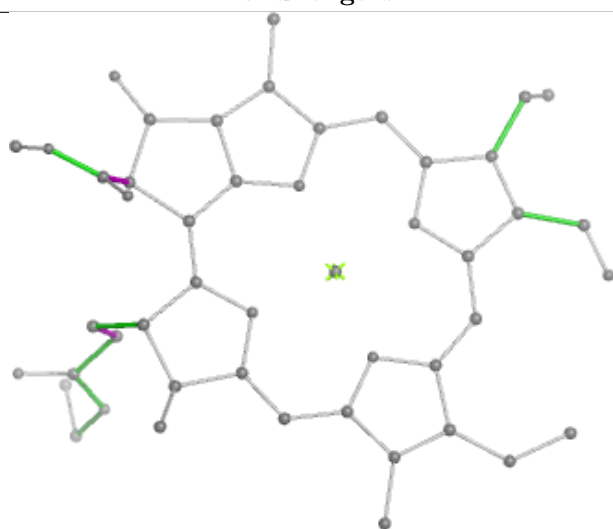
## Ligand CHL y 306



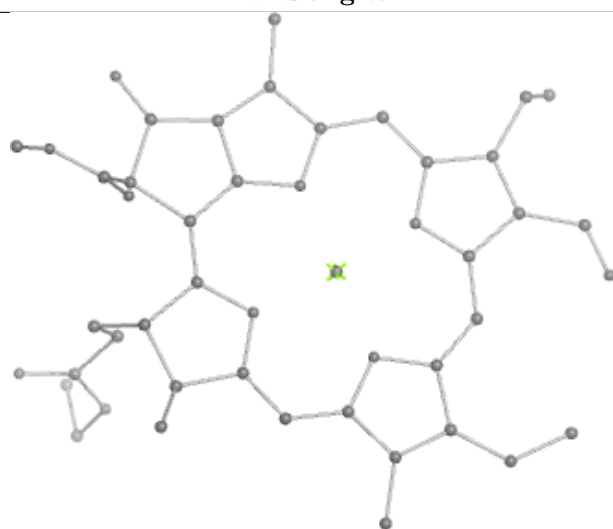
Bond lengths



Bond angles

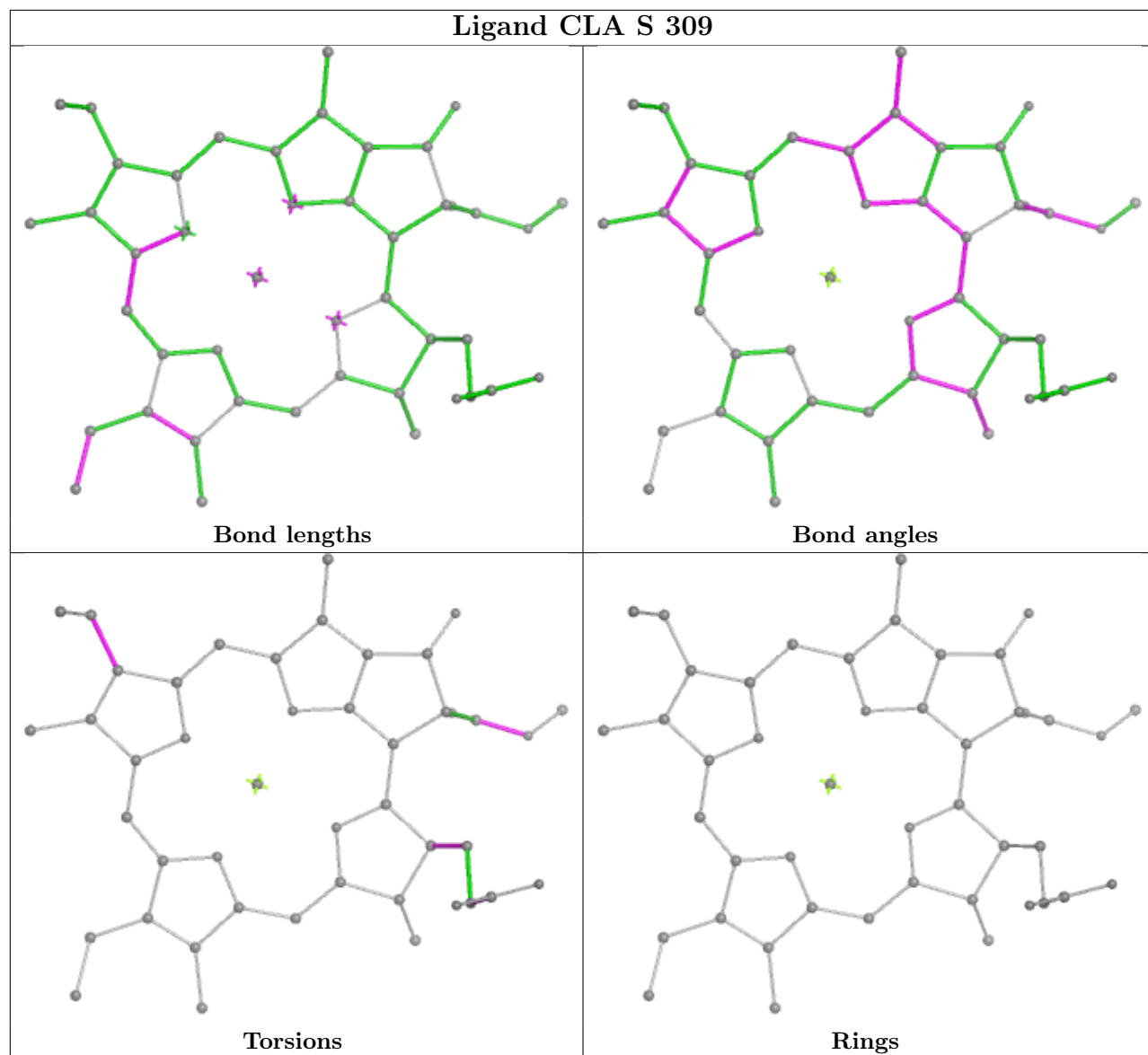


Torsions

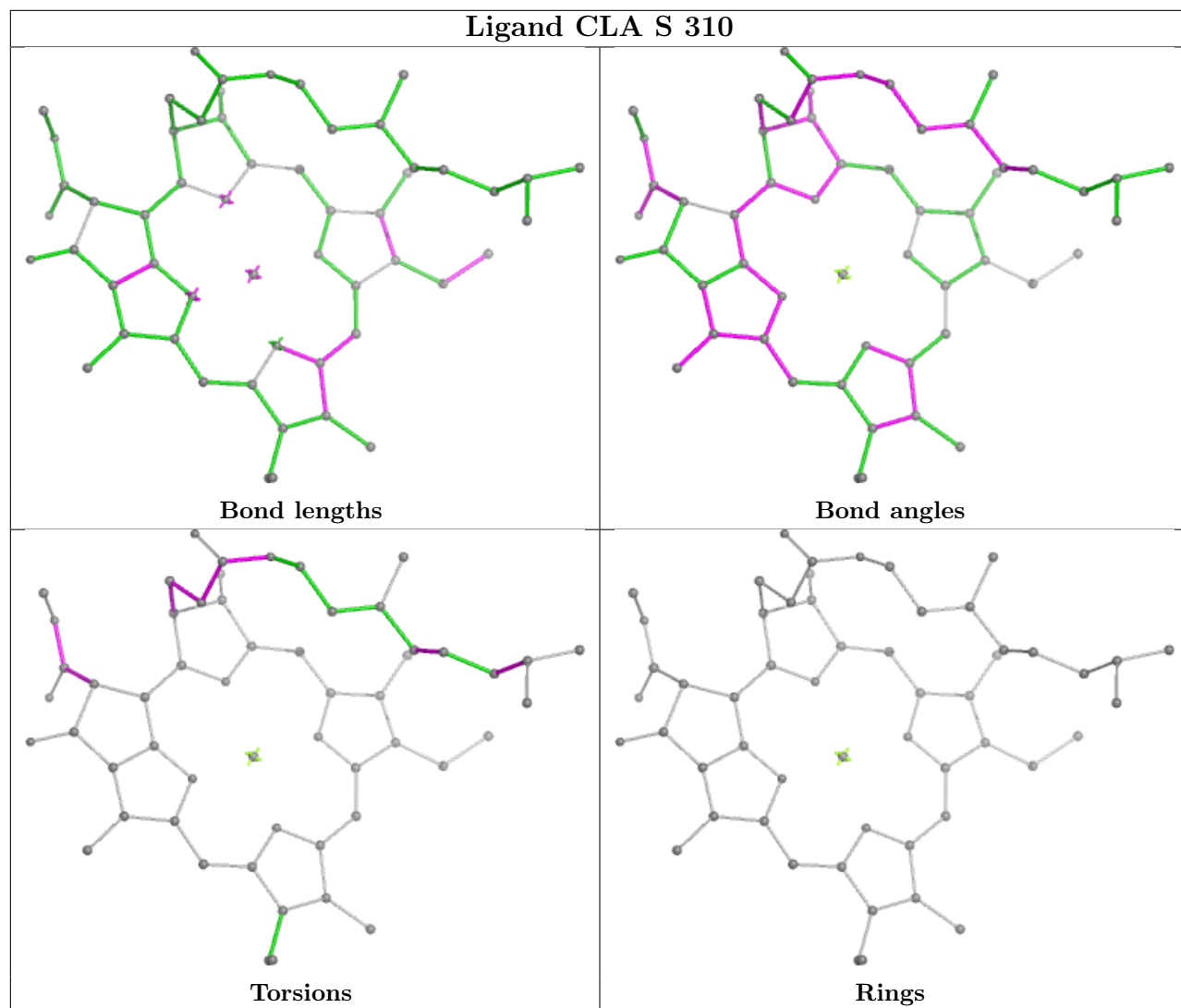


Rings

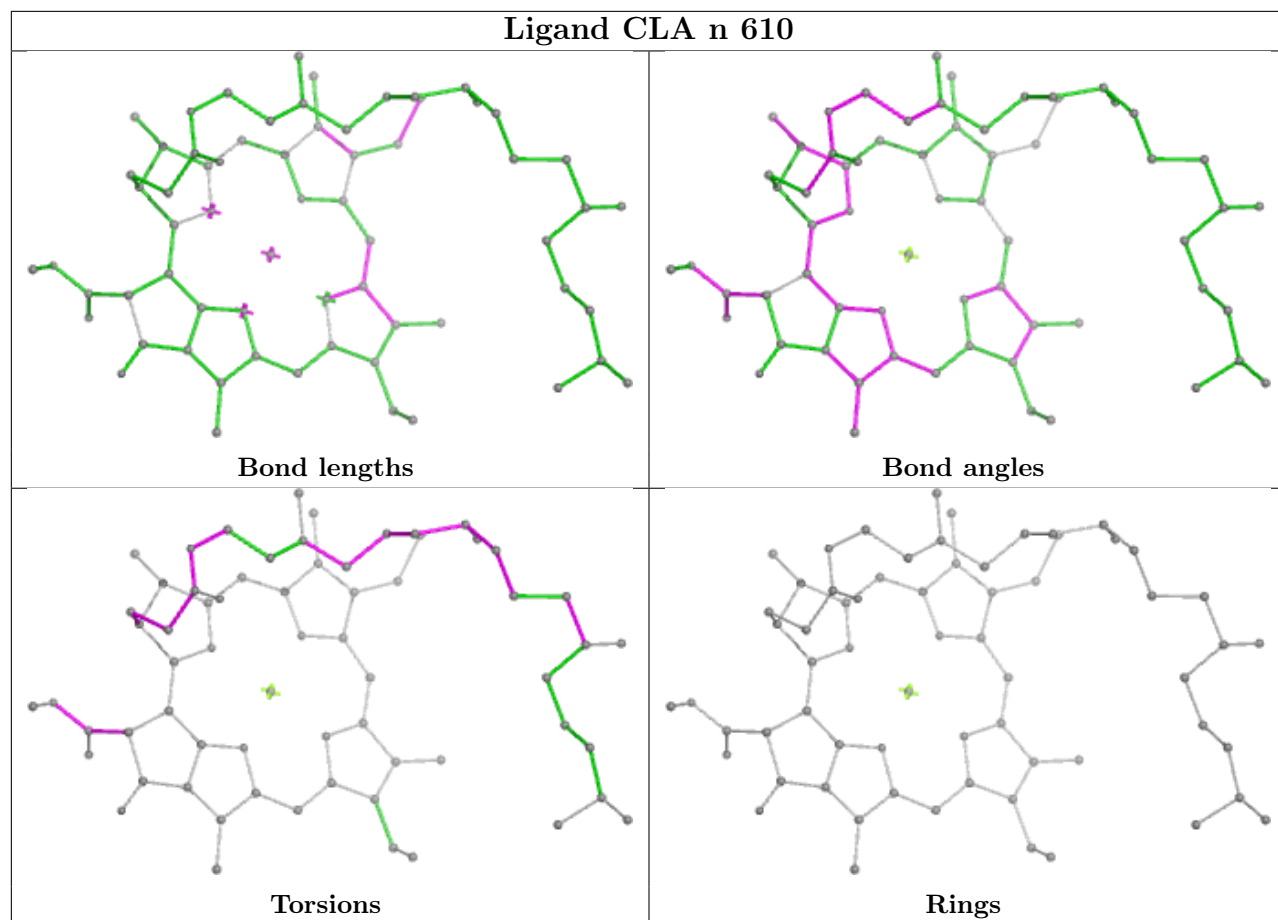
## Ligand CLA S 309



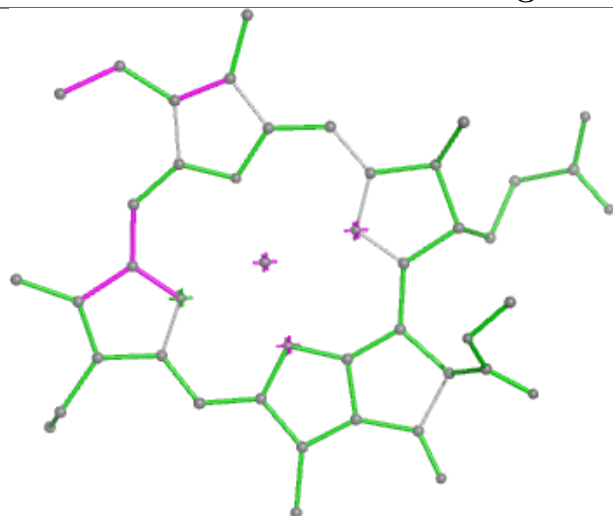
## Ligand CLA S 310



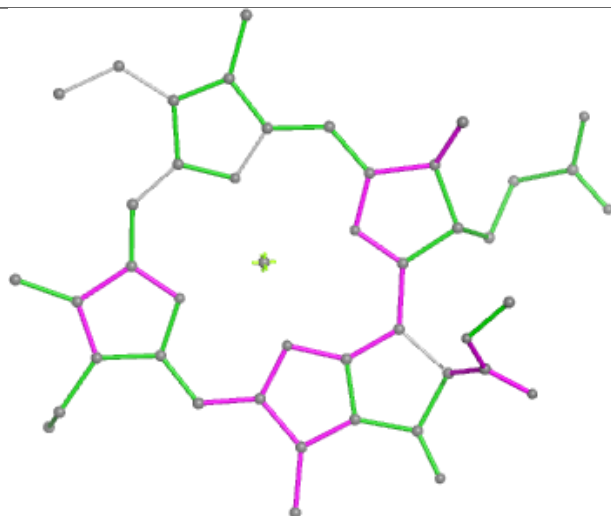
## Ligand CLA n 610



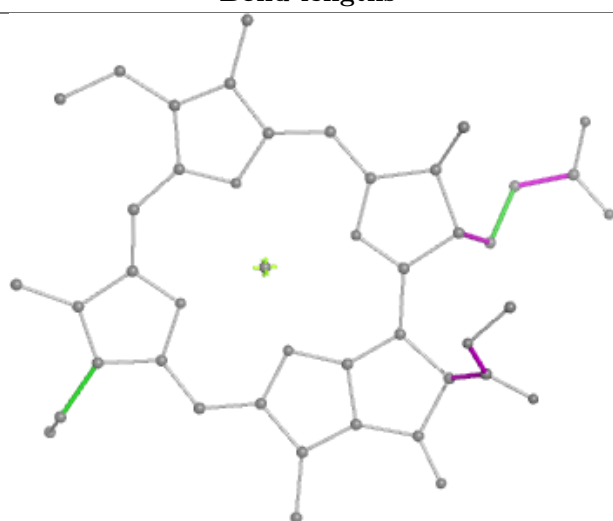
## Ligand CLA S 304



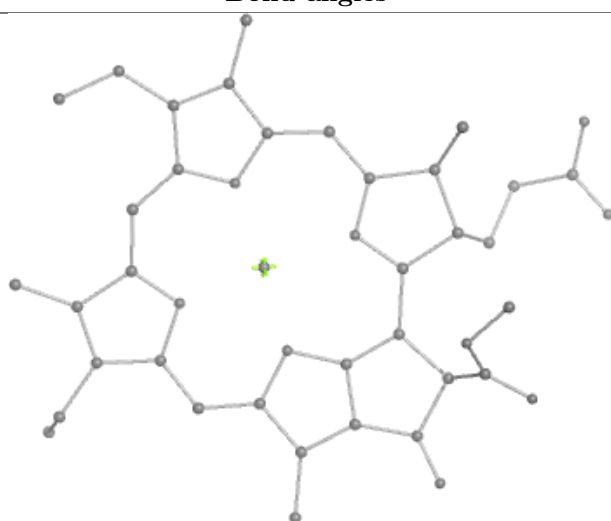
Bond lengths



Bond angles

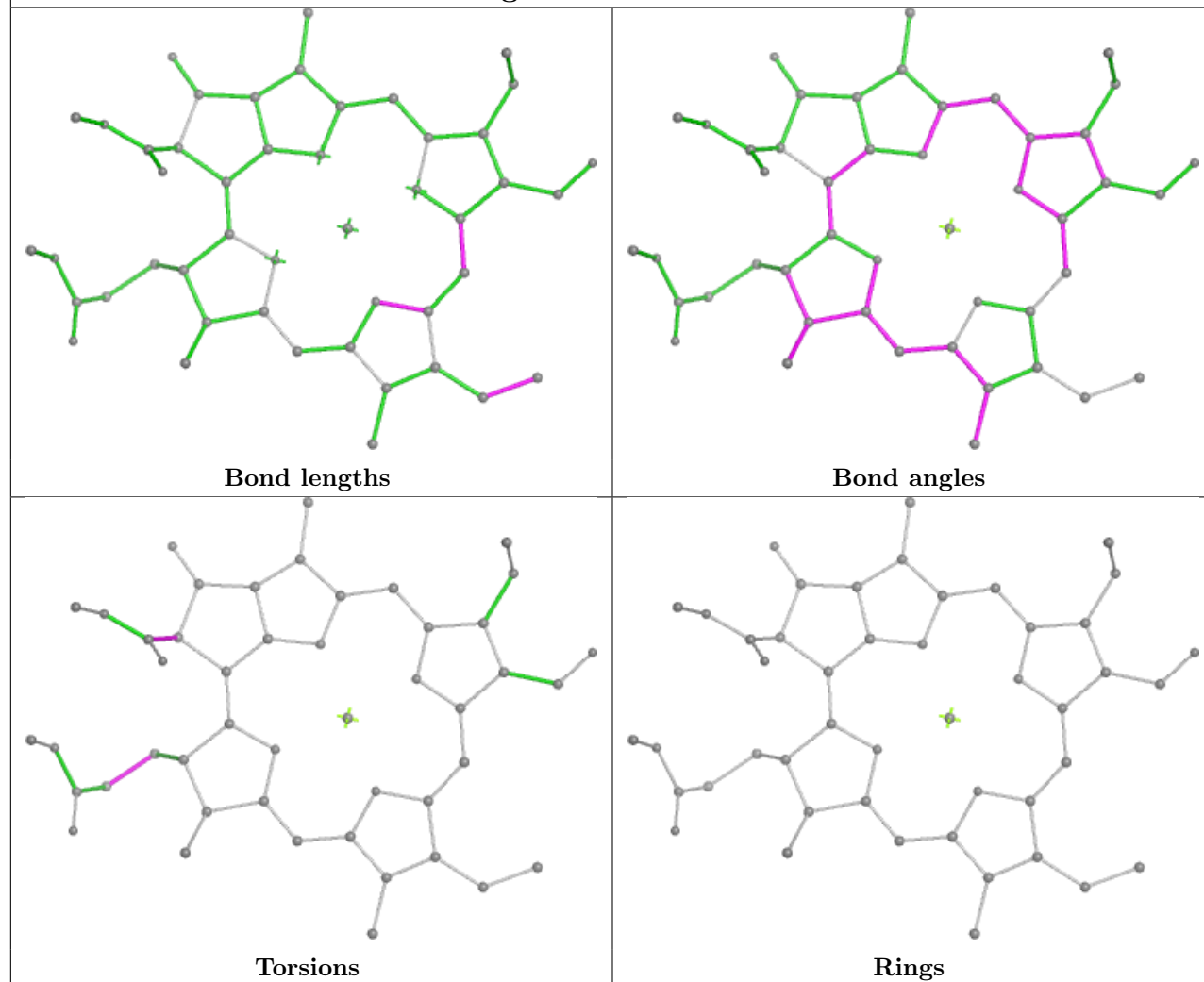


Torsions

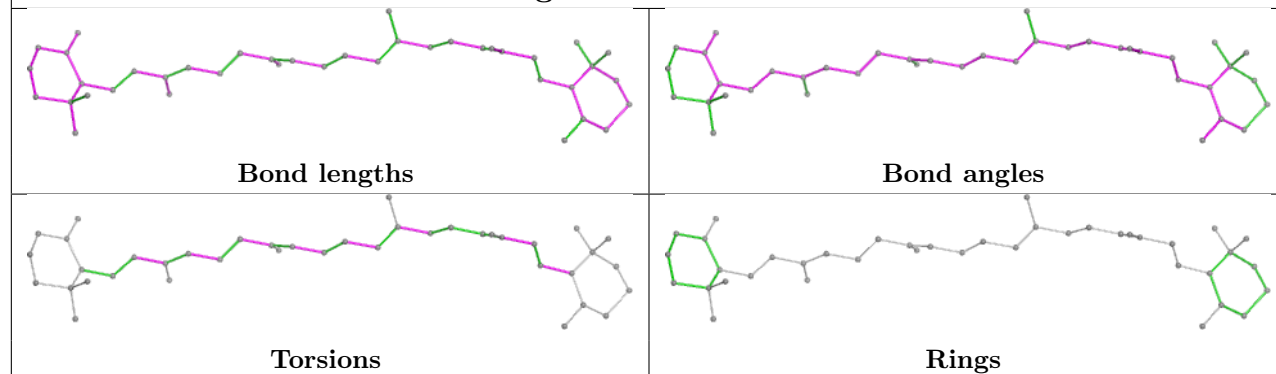


Rings

## Ligand CHL R 605

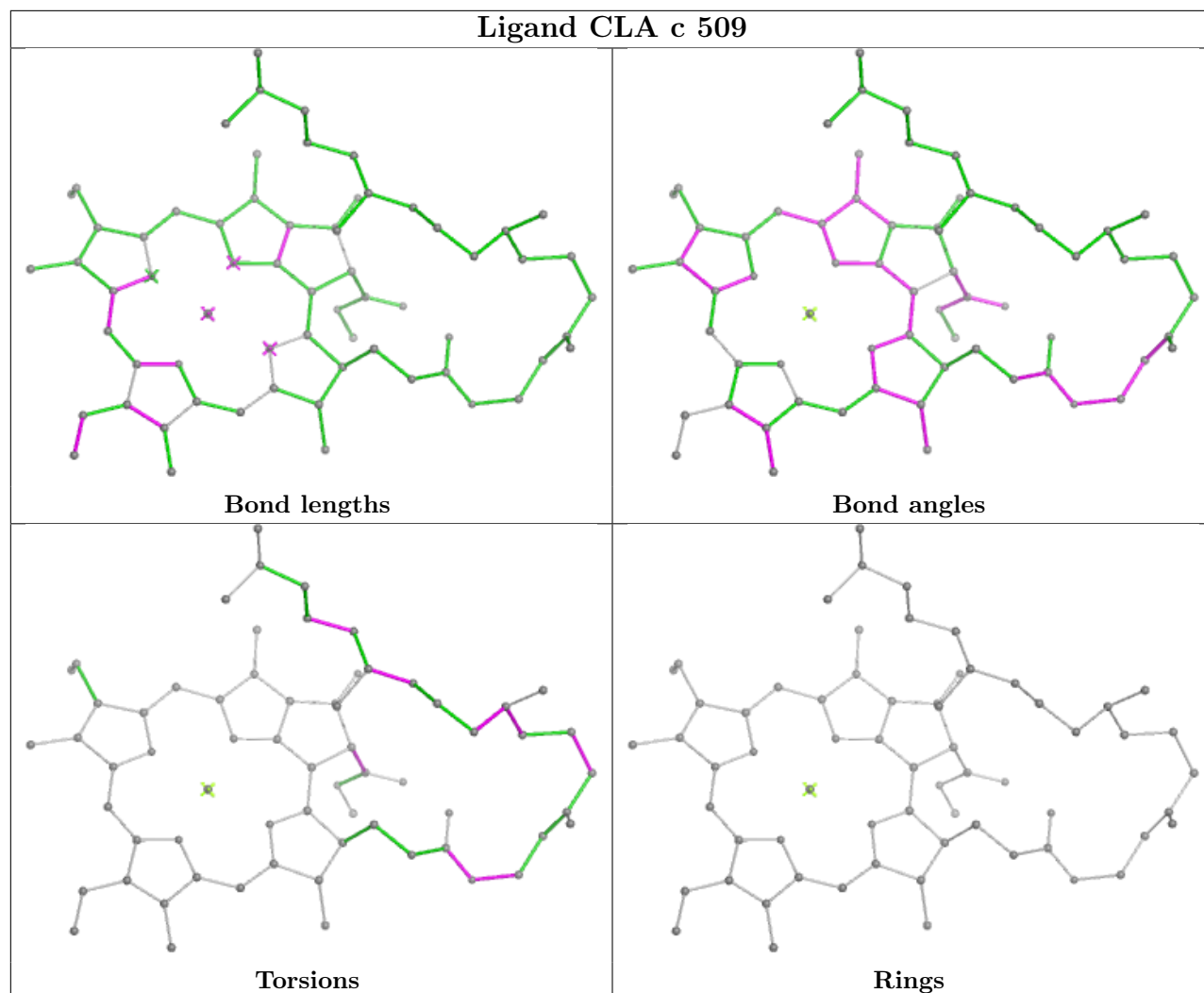


## Ligand BCR c 515

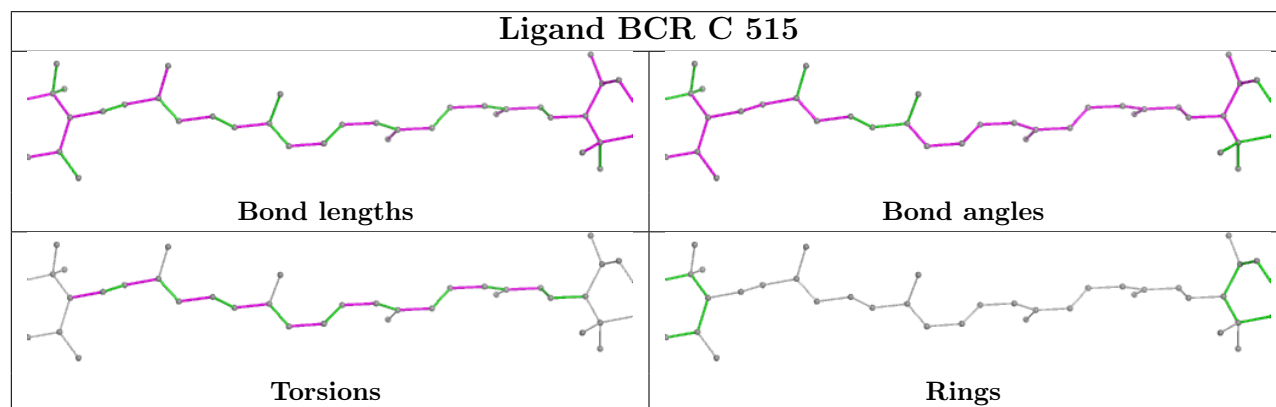




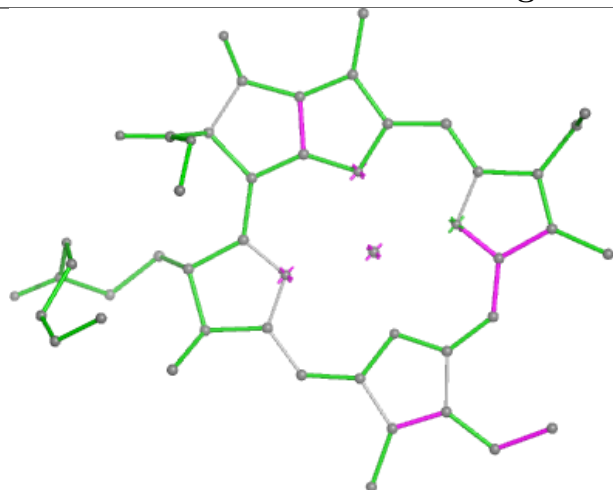
## Ligand CLA c 509



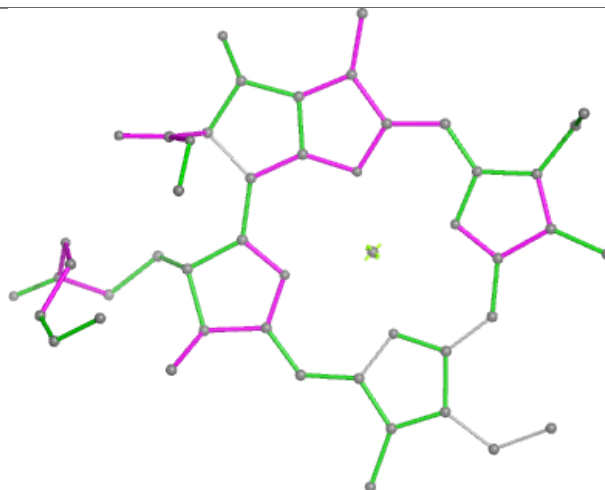
## Ligand BCR C 515



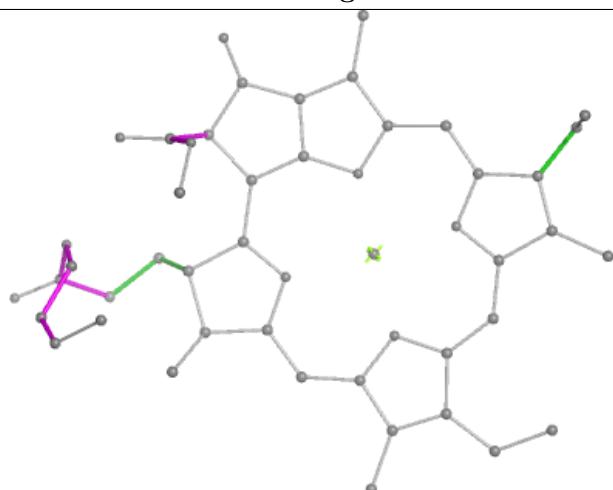
## Ligand CLA S 312



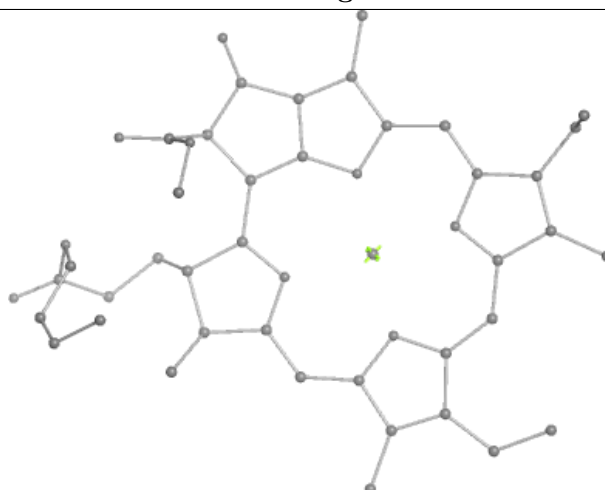
Bond lengths



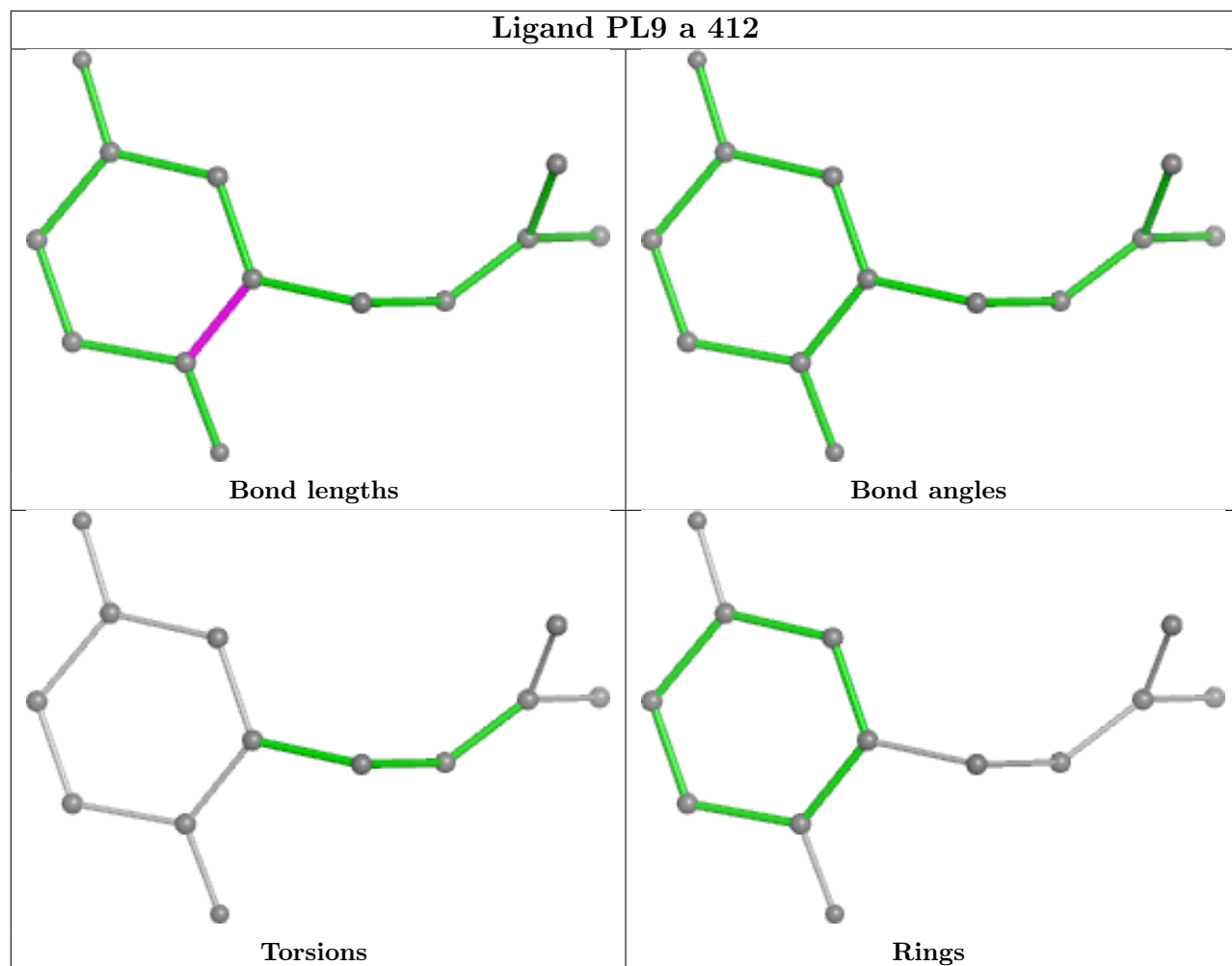
Bond angles



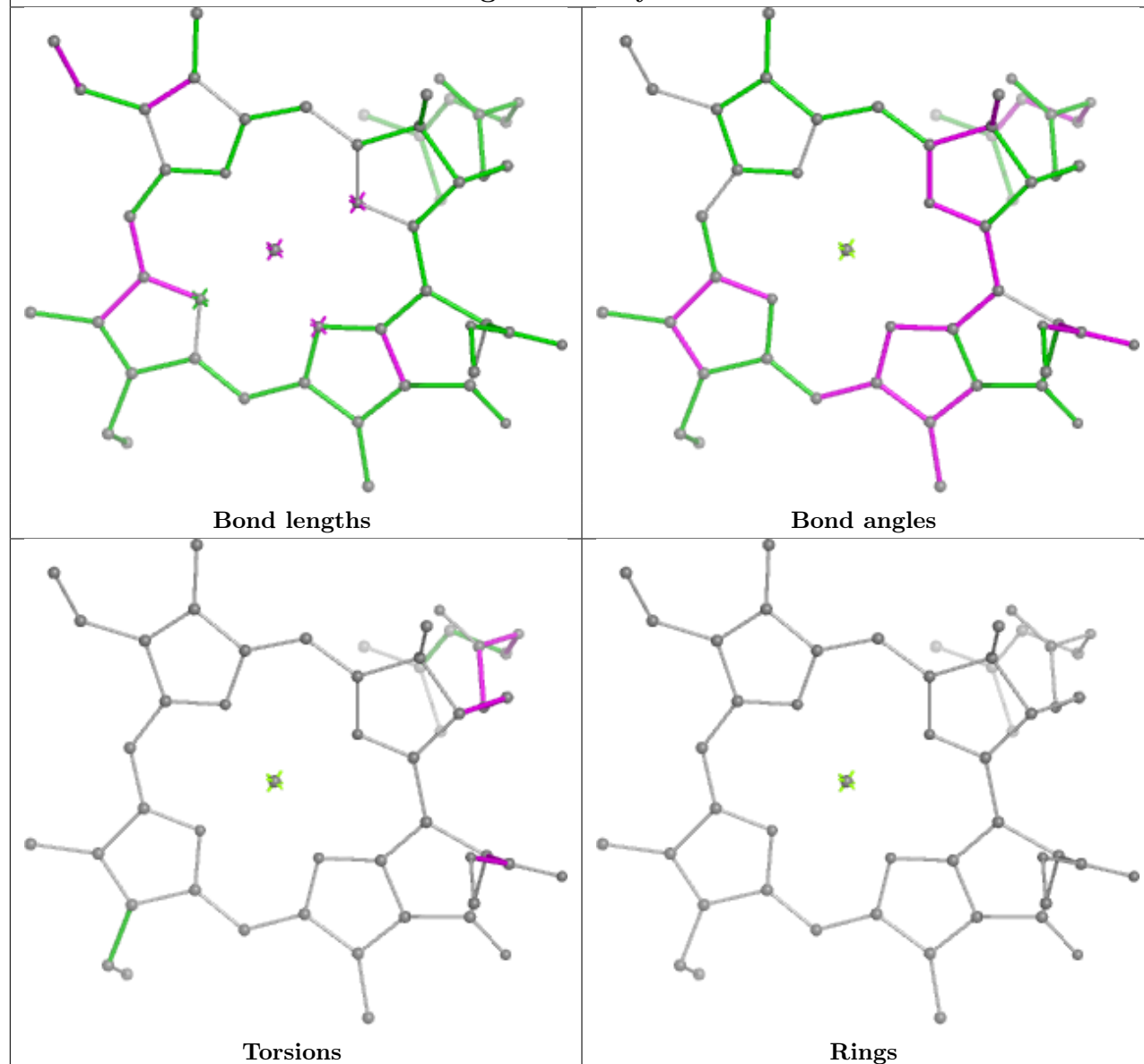
Torsions



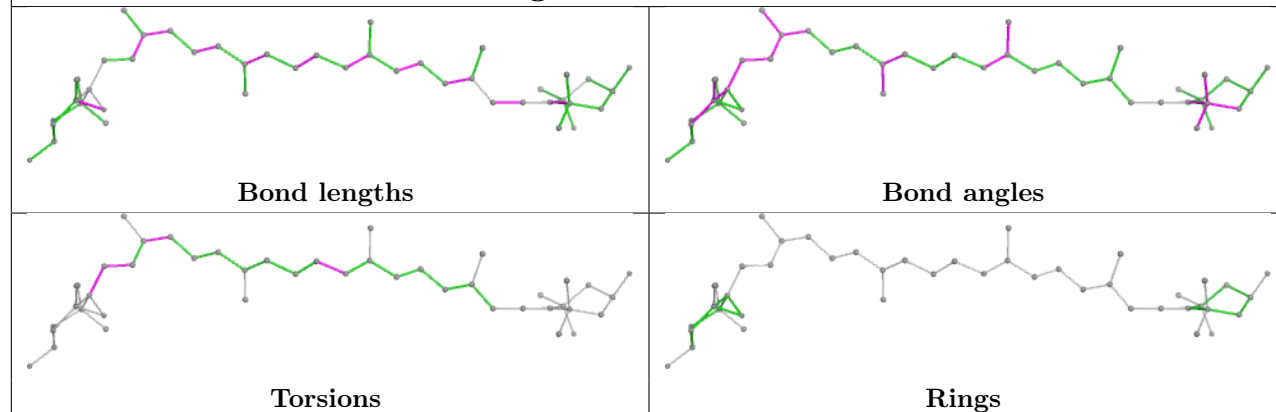
Rings

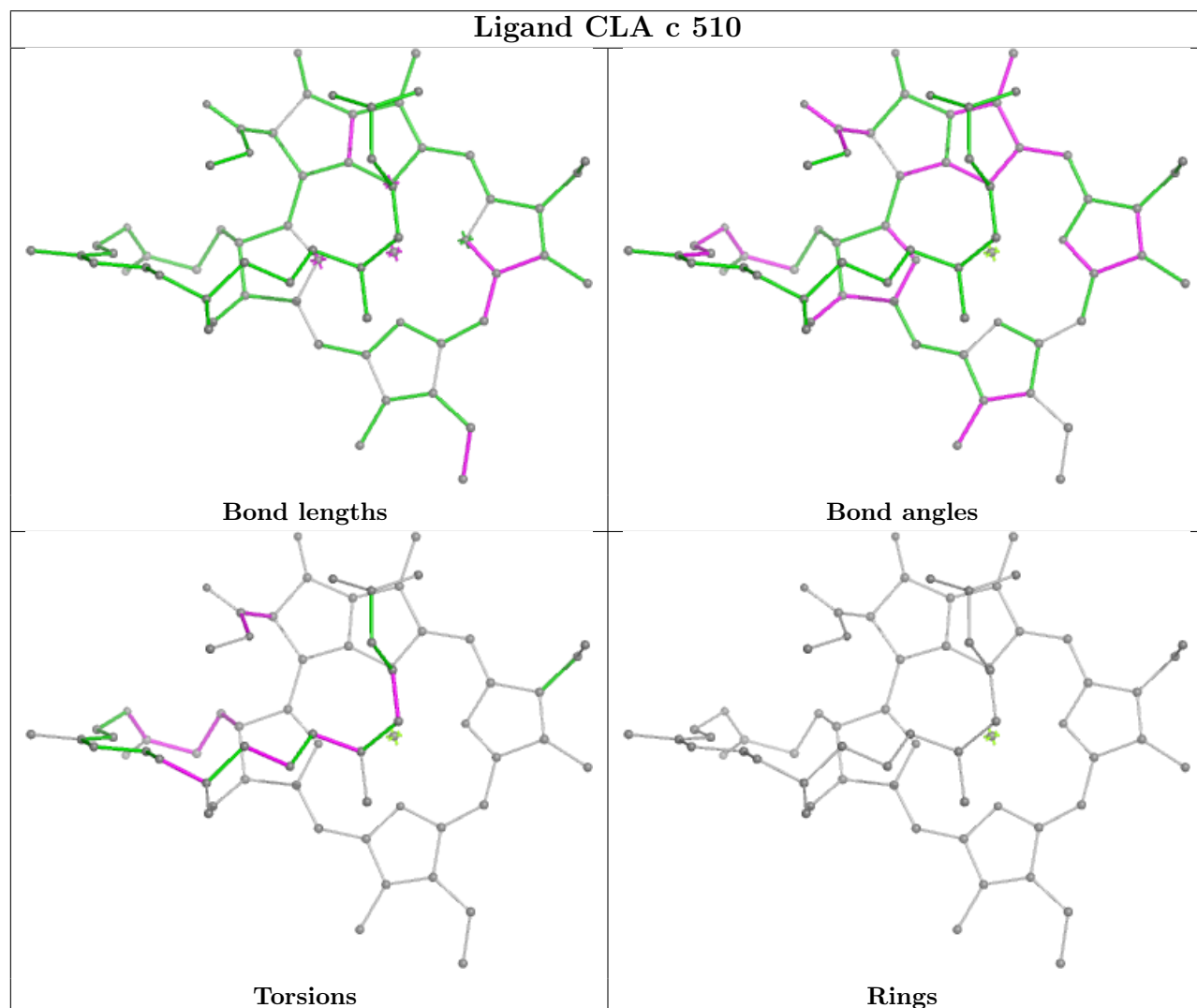
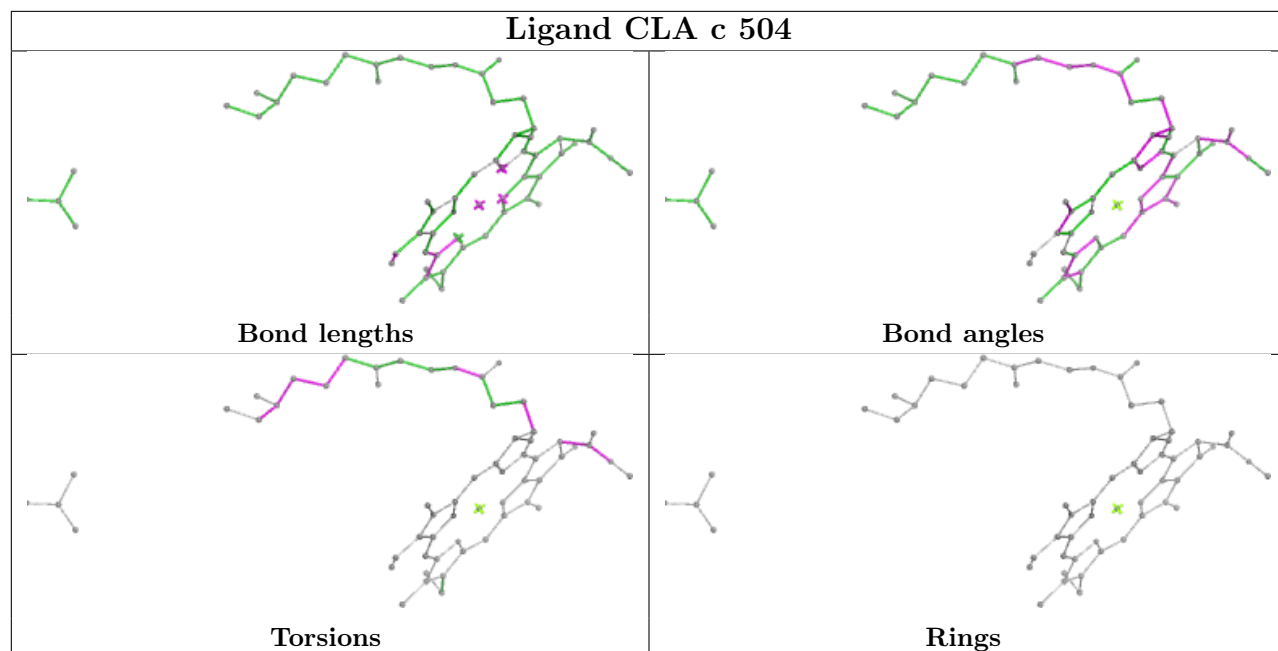


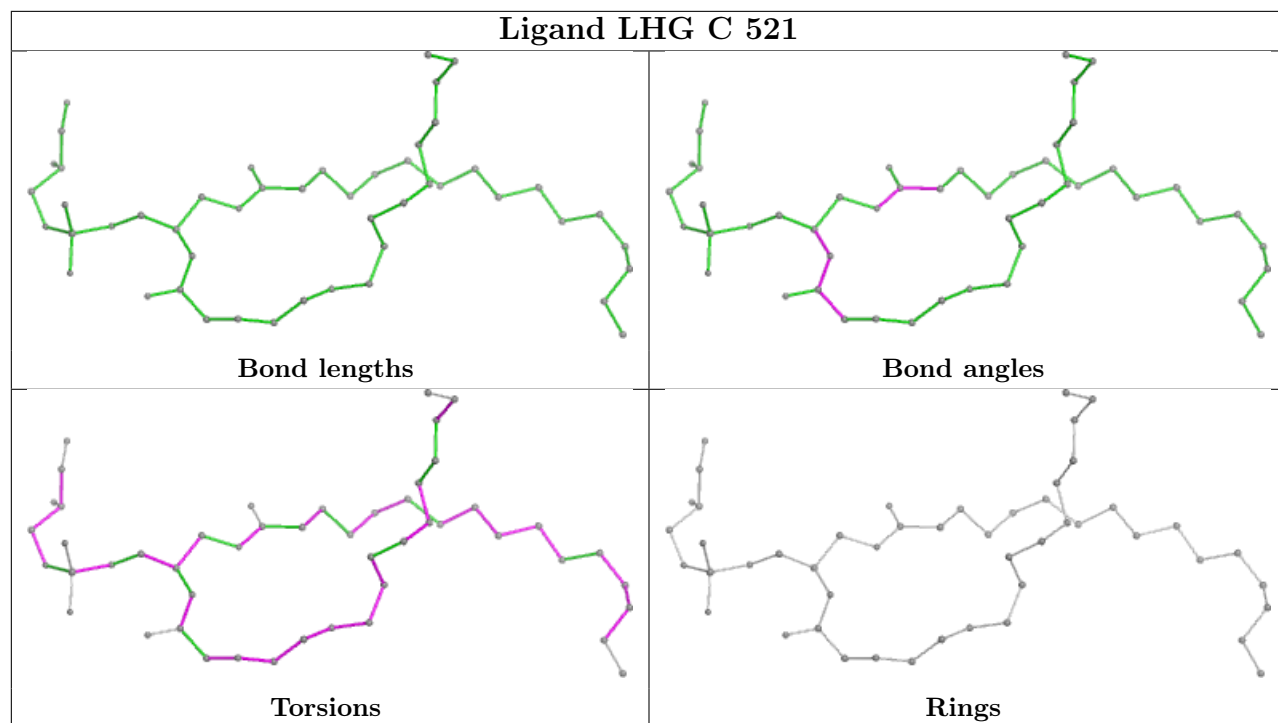
## Ligand CLA y 305



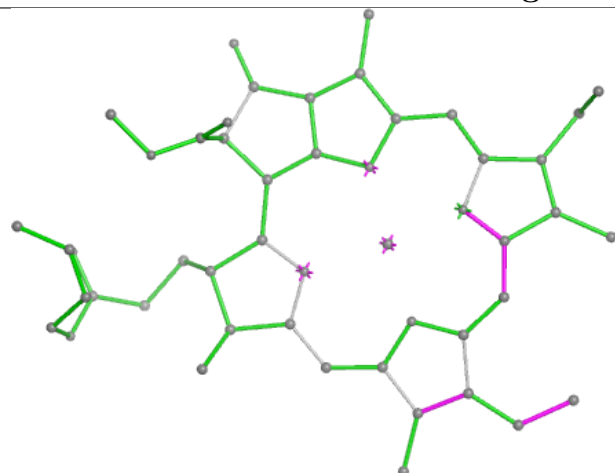
## Ligand NEX N 617



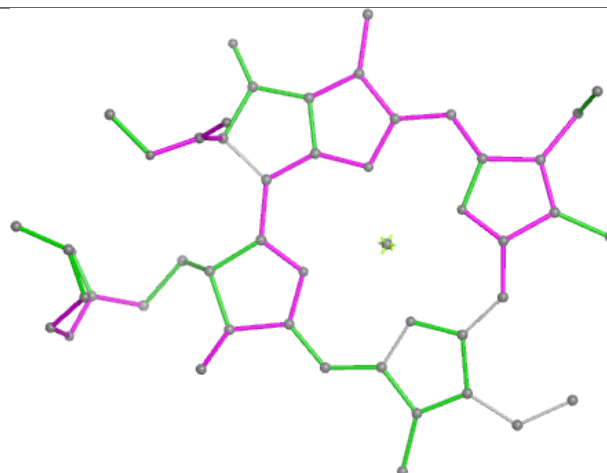




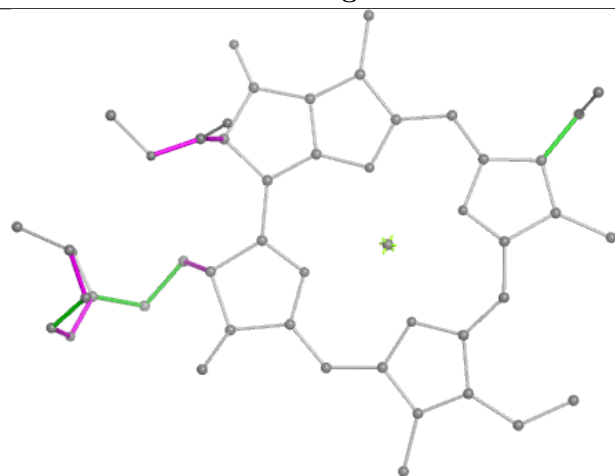
## Ligand CLA r 611



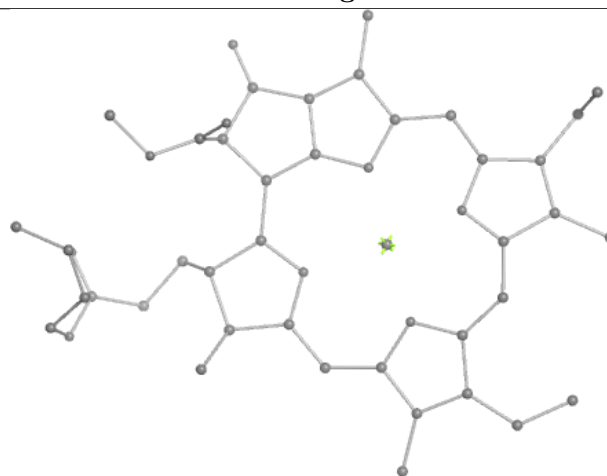
Bond lengths



Bond angles

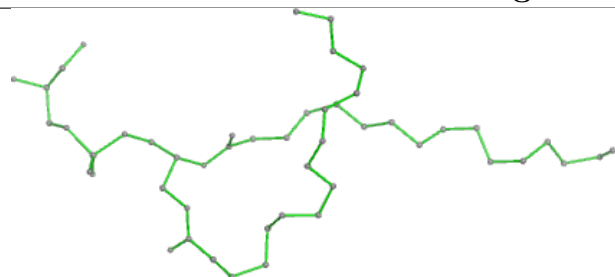


Torsions

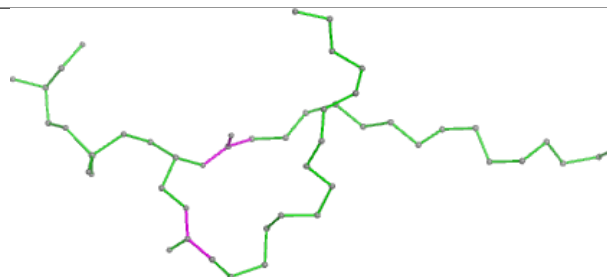


Rings

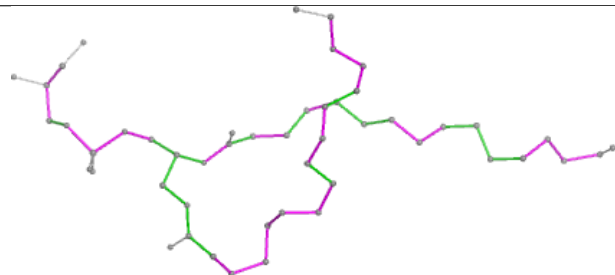
## Ligand LHG G 618



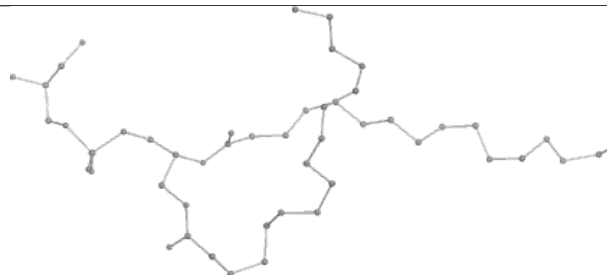
Bond lengths



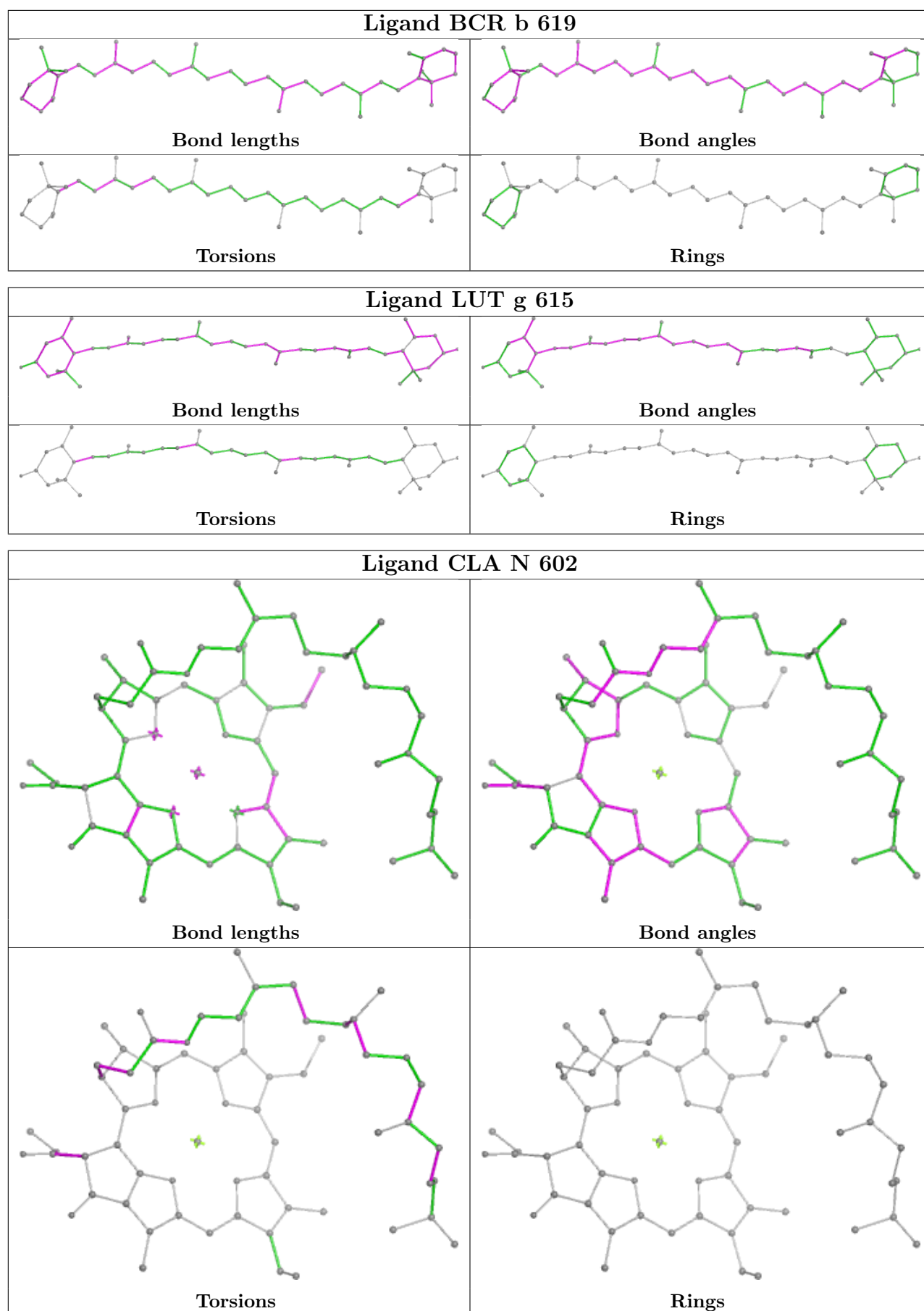
Bond angles



Torsions

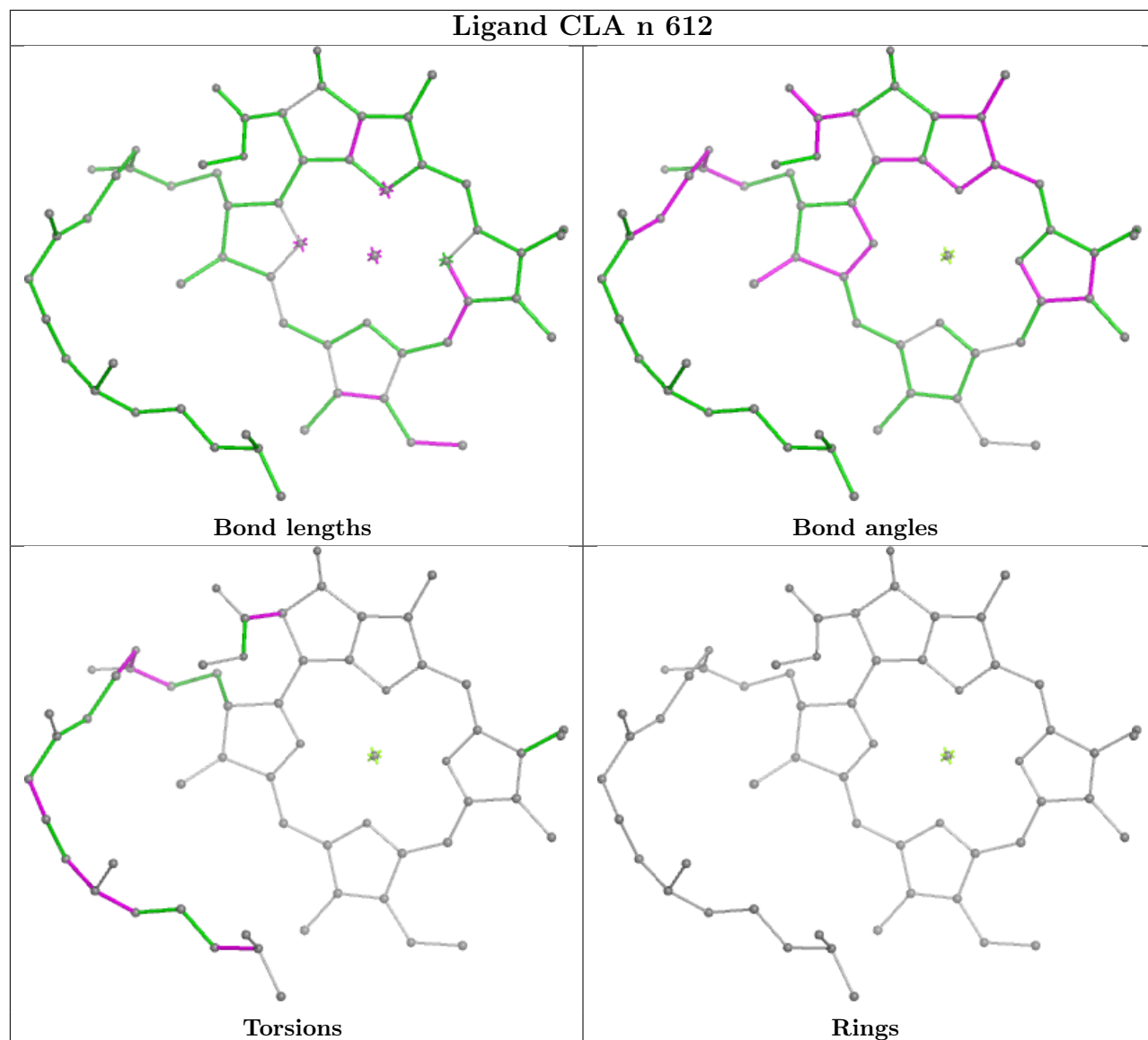


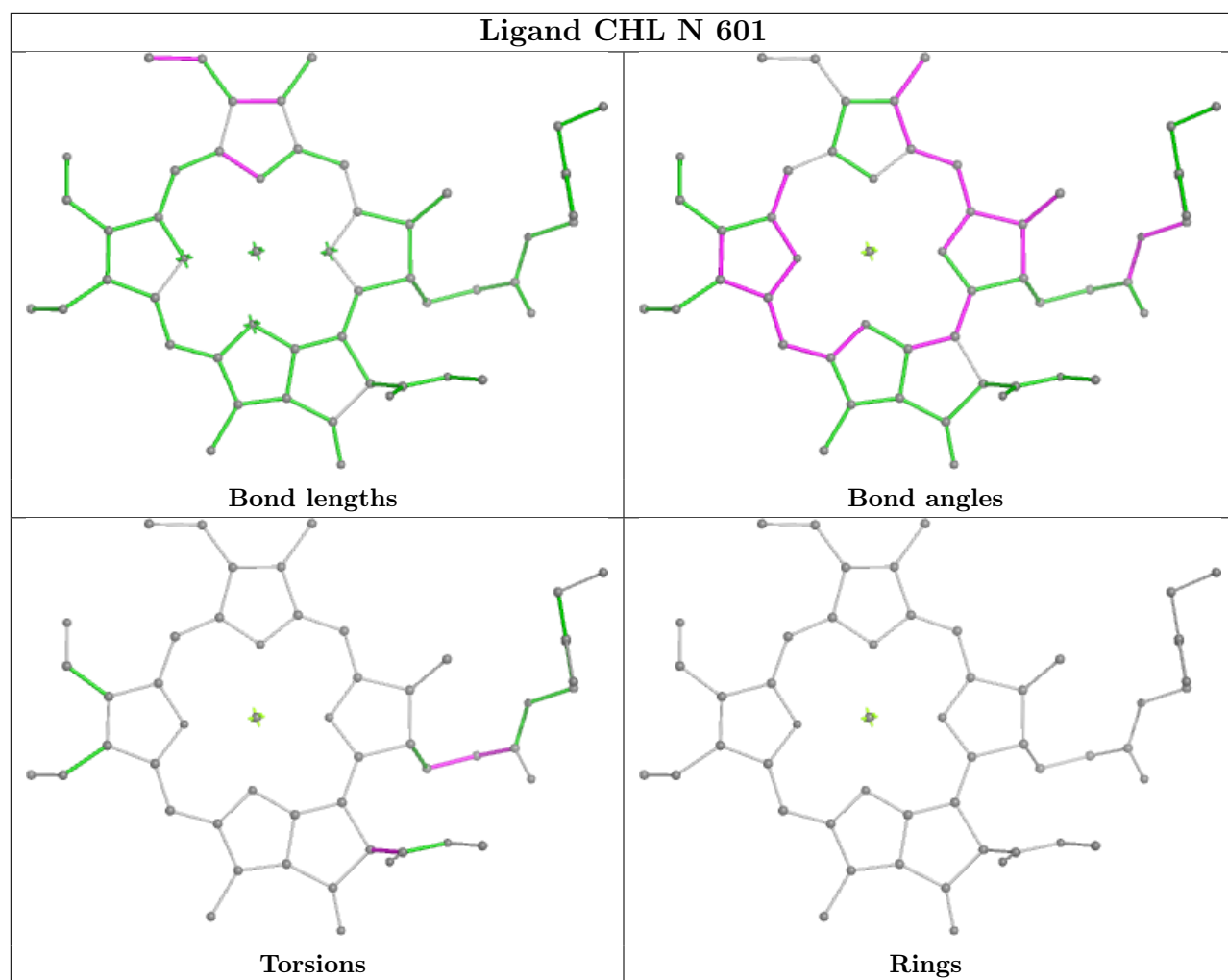
Rings

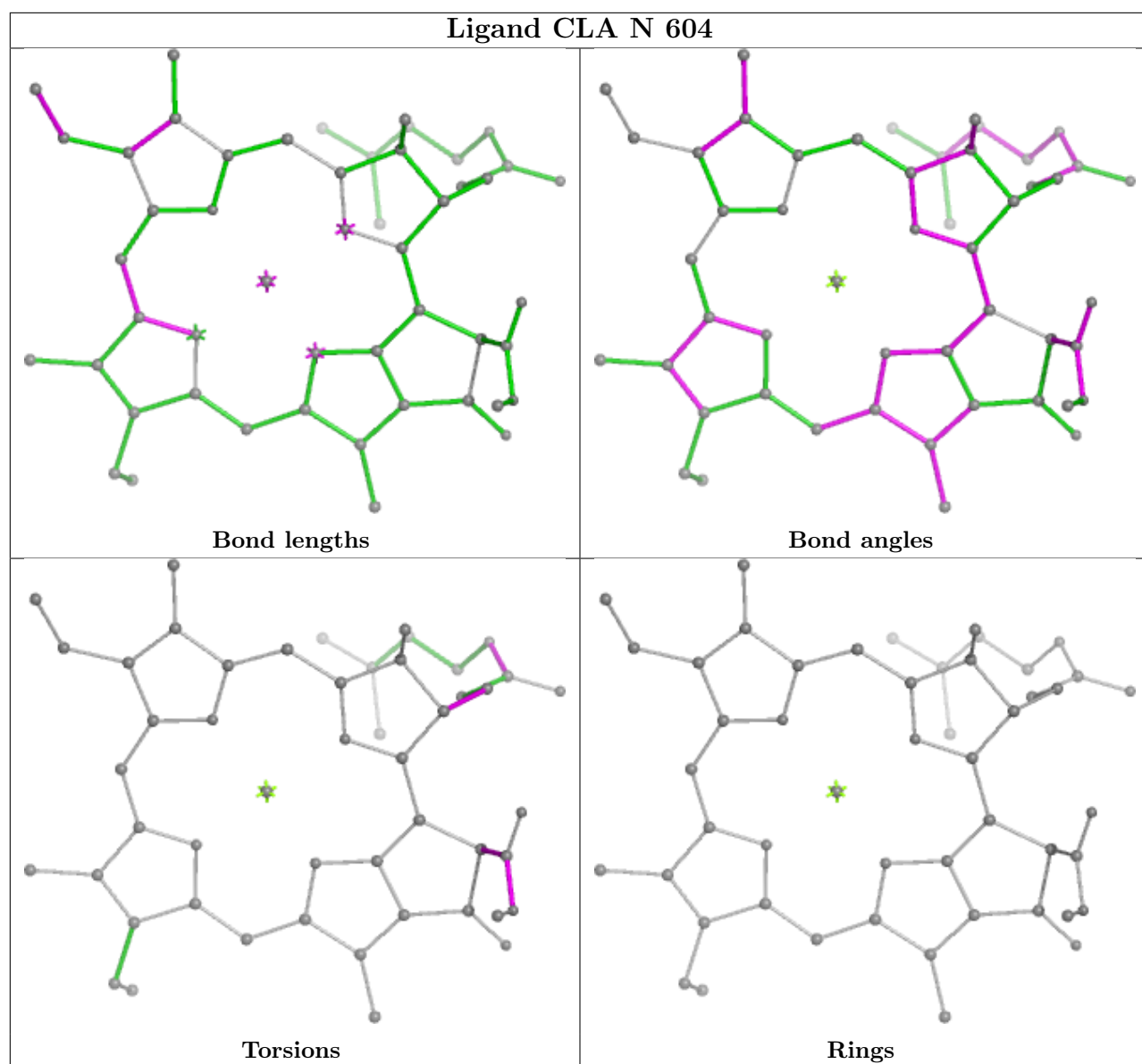




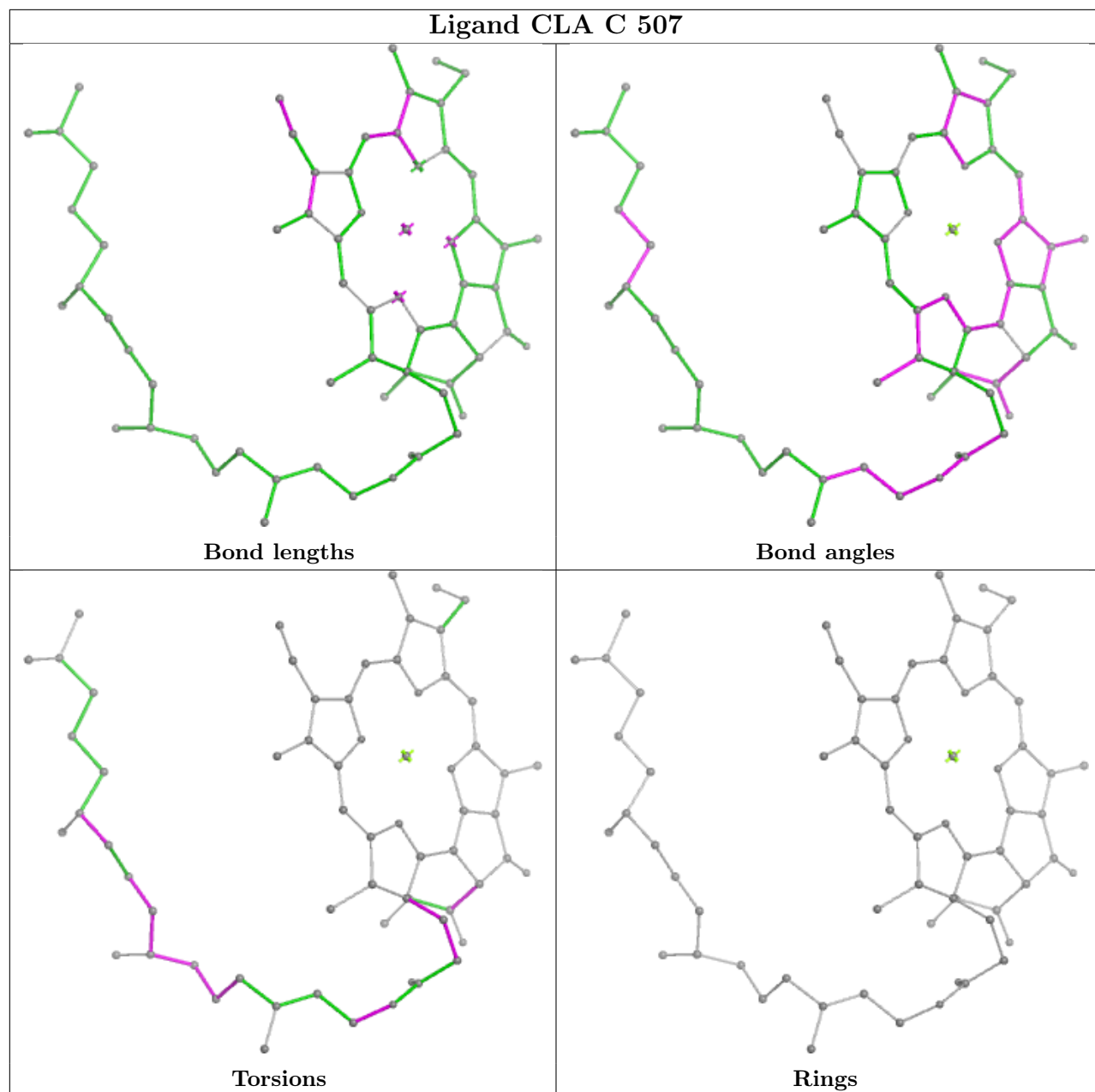
## Ligand CLA n 612



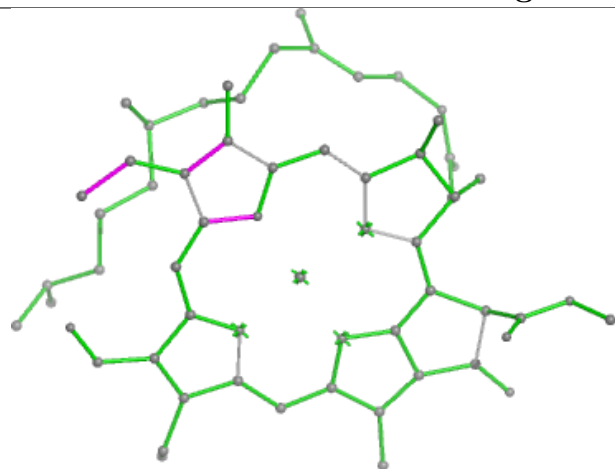




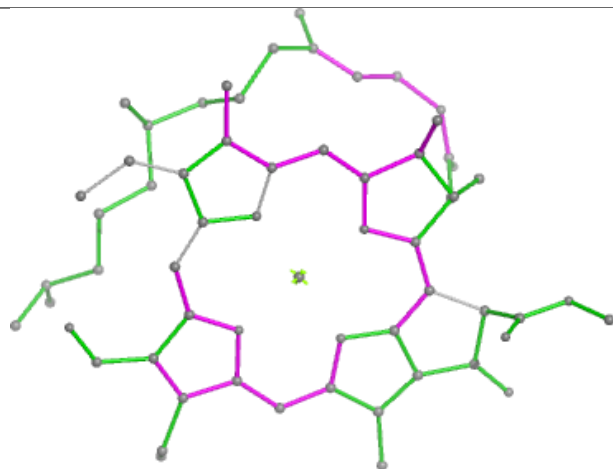
## Ligand CLA C 507



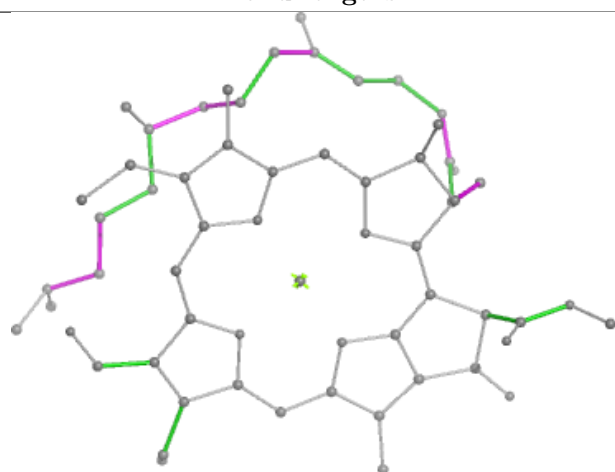
## Ligand CHL R 607



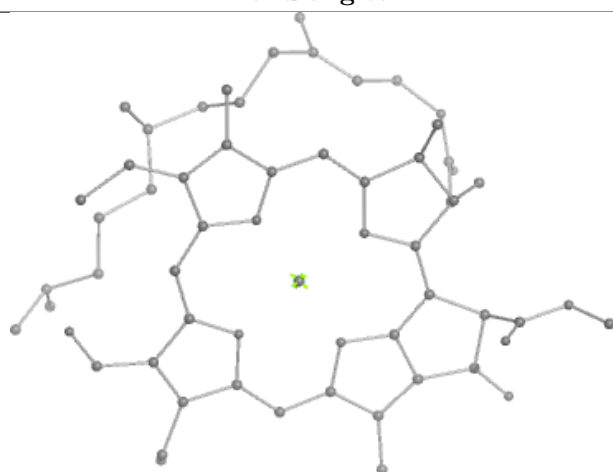
Bond lengths



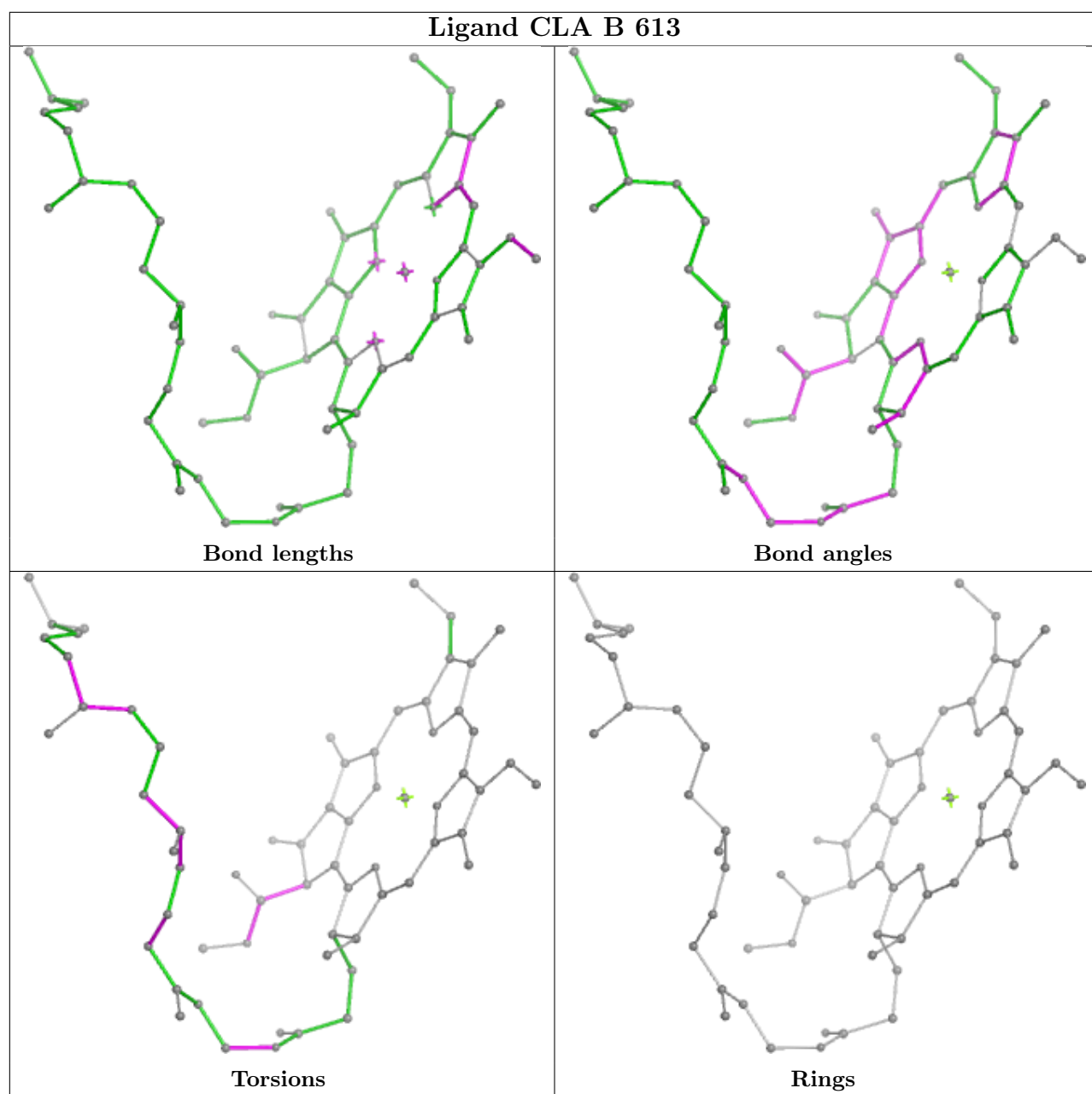
Bond angles

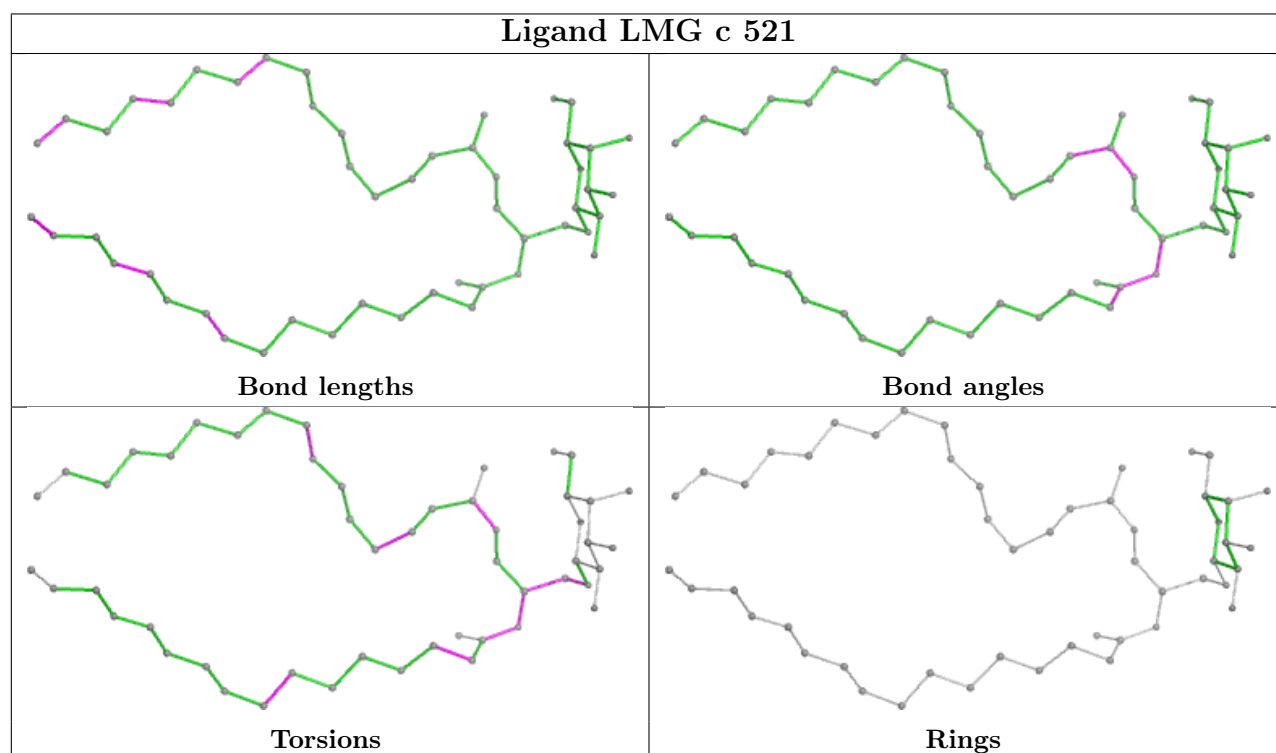
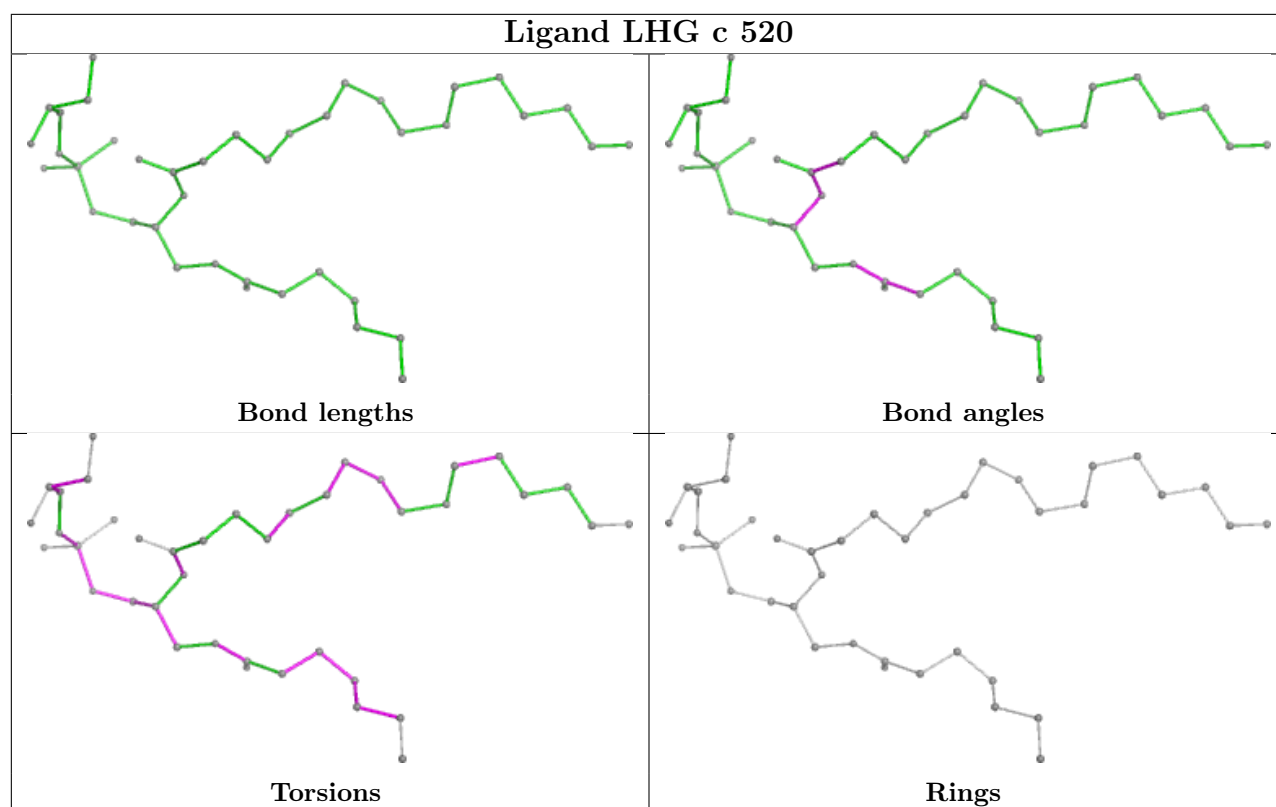


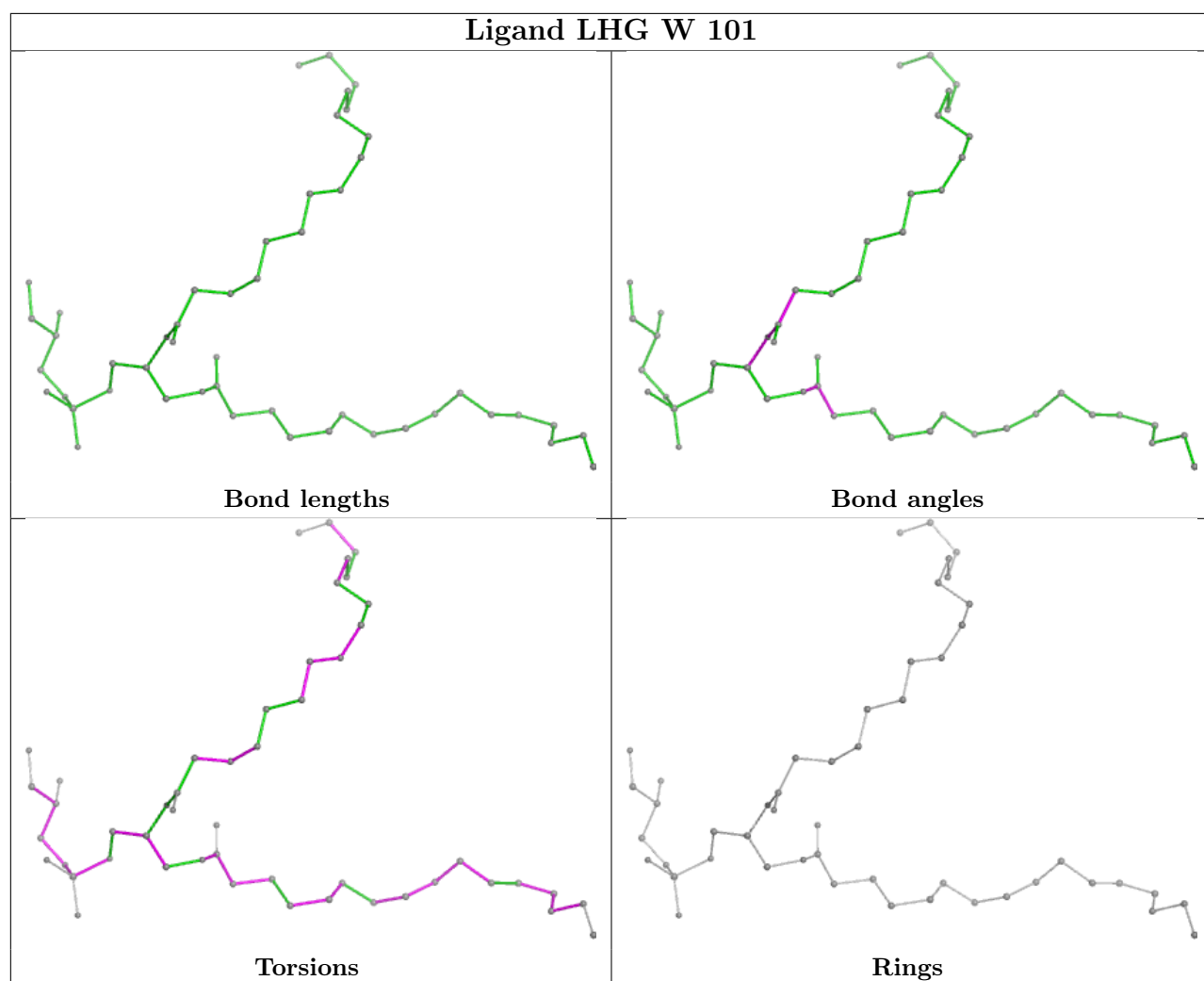
Torsions



Rings

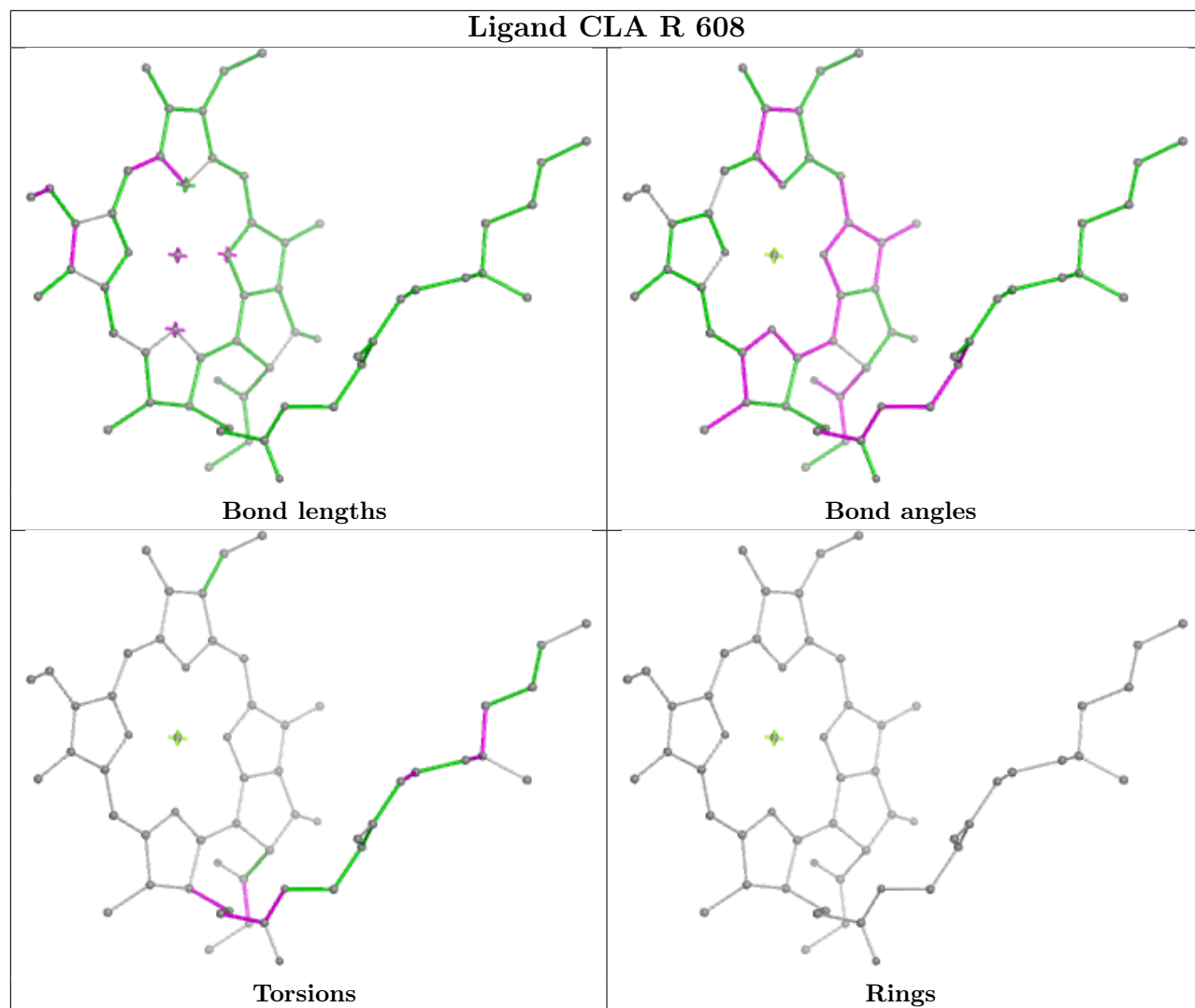




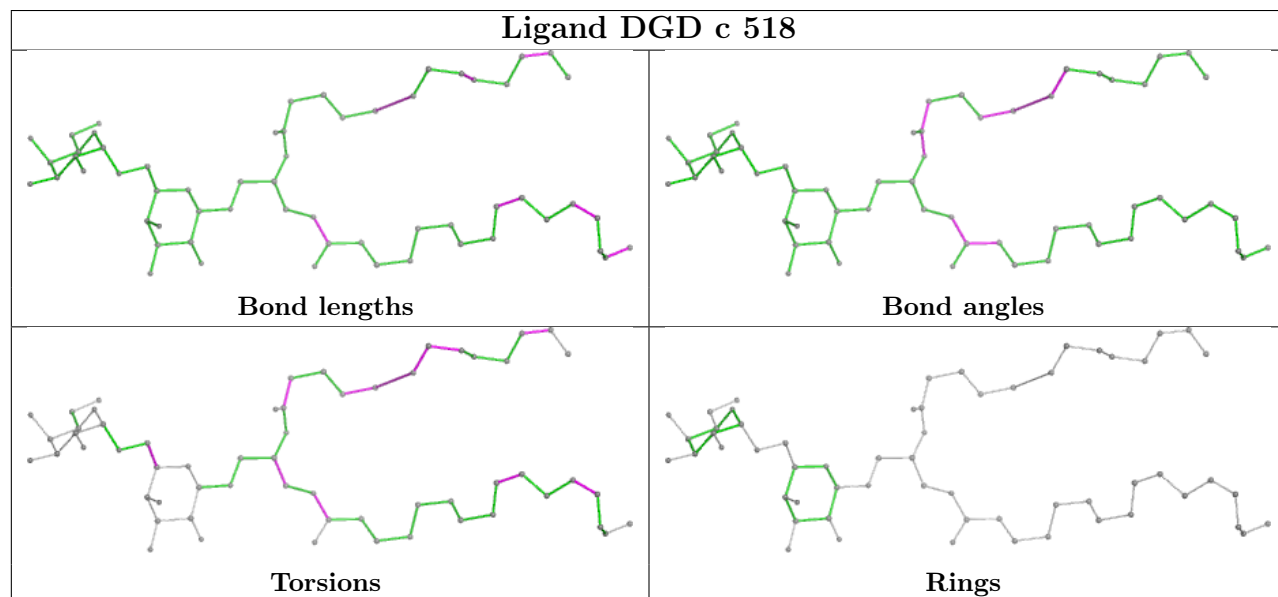


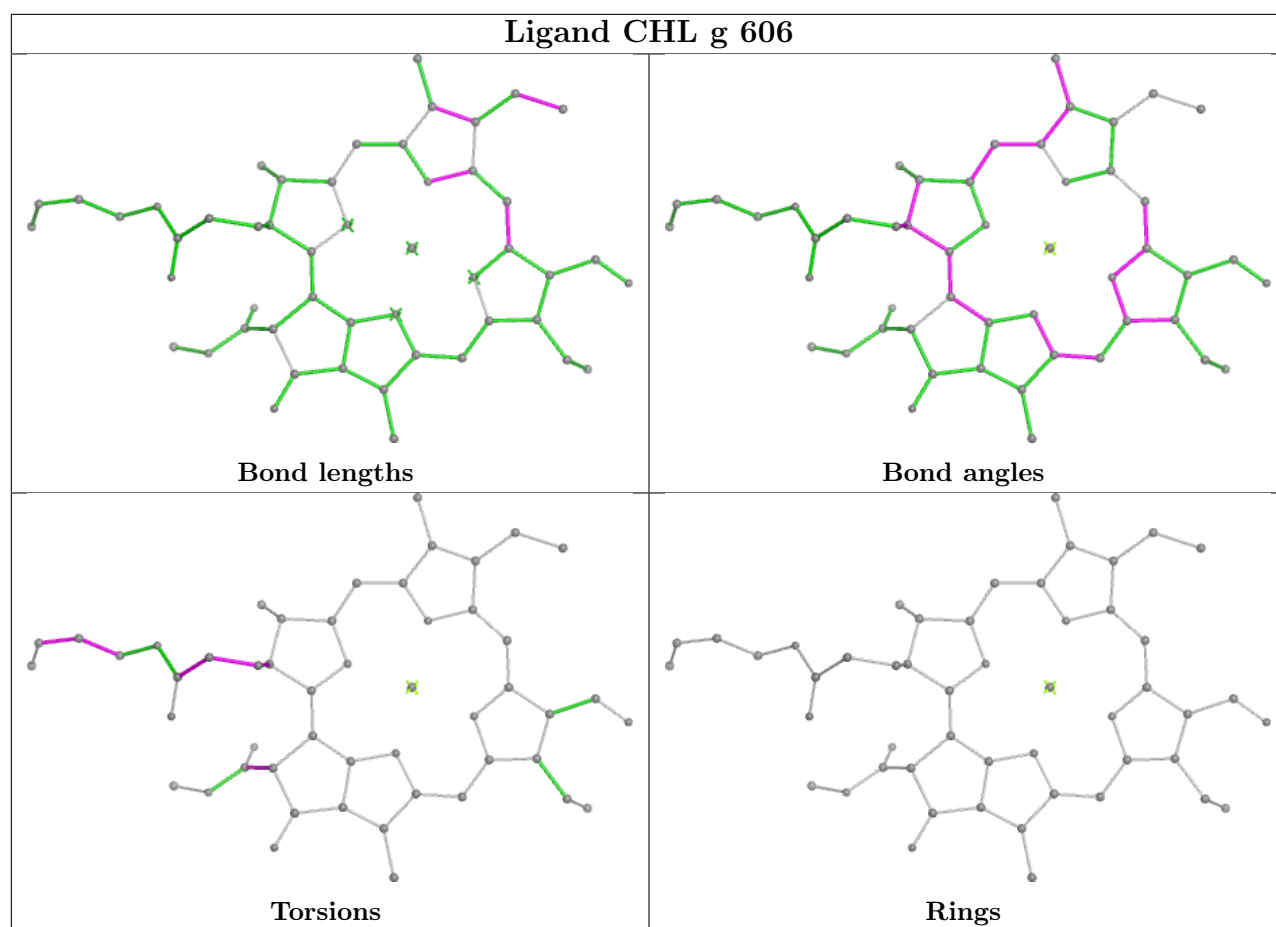


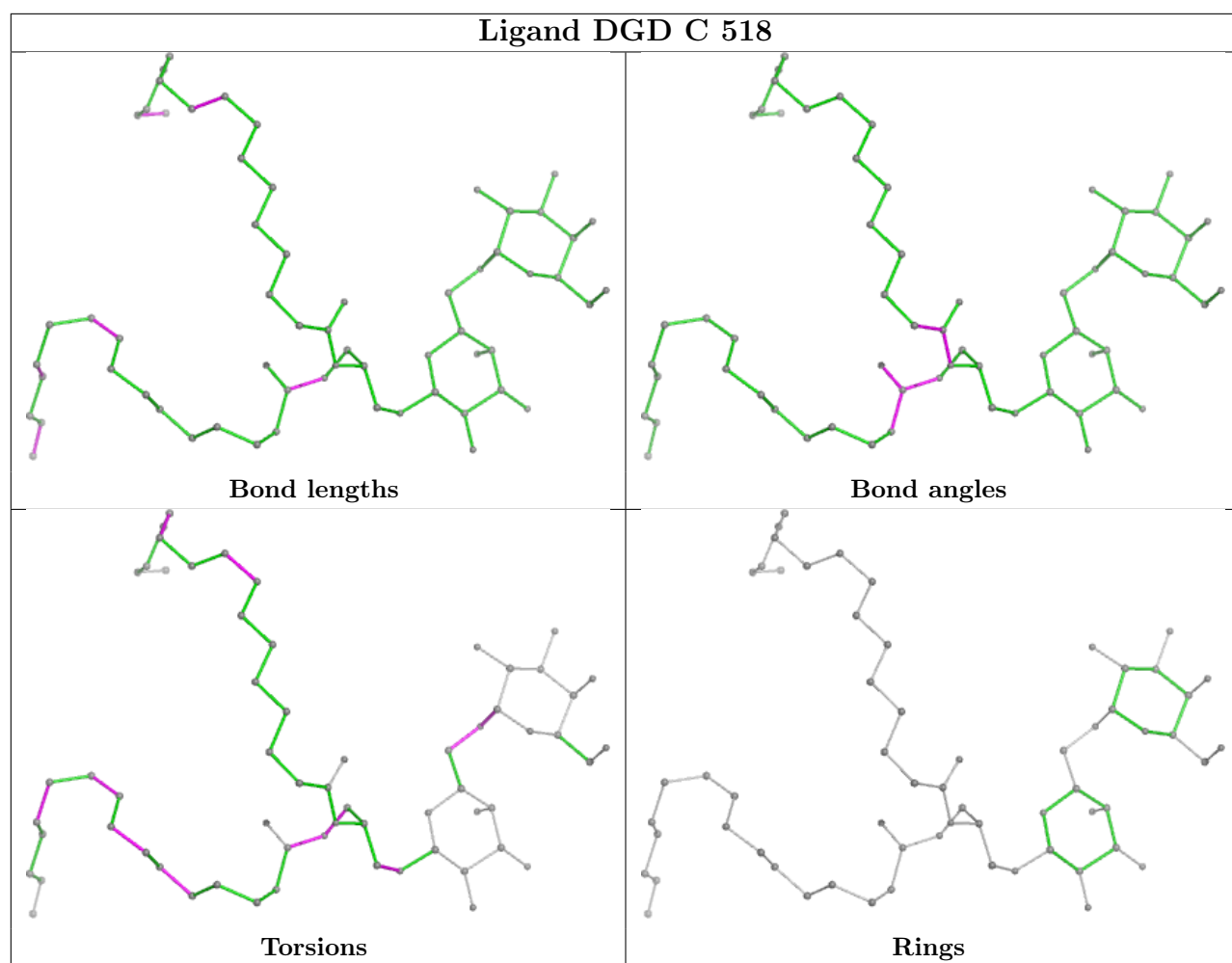
## Ligand CLA R 608



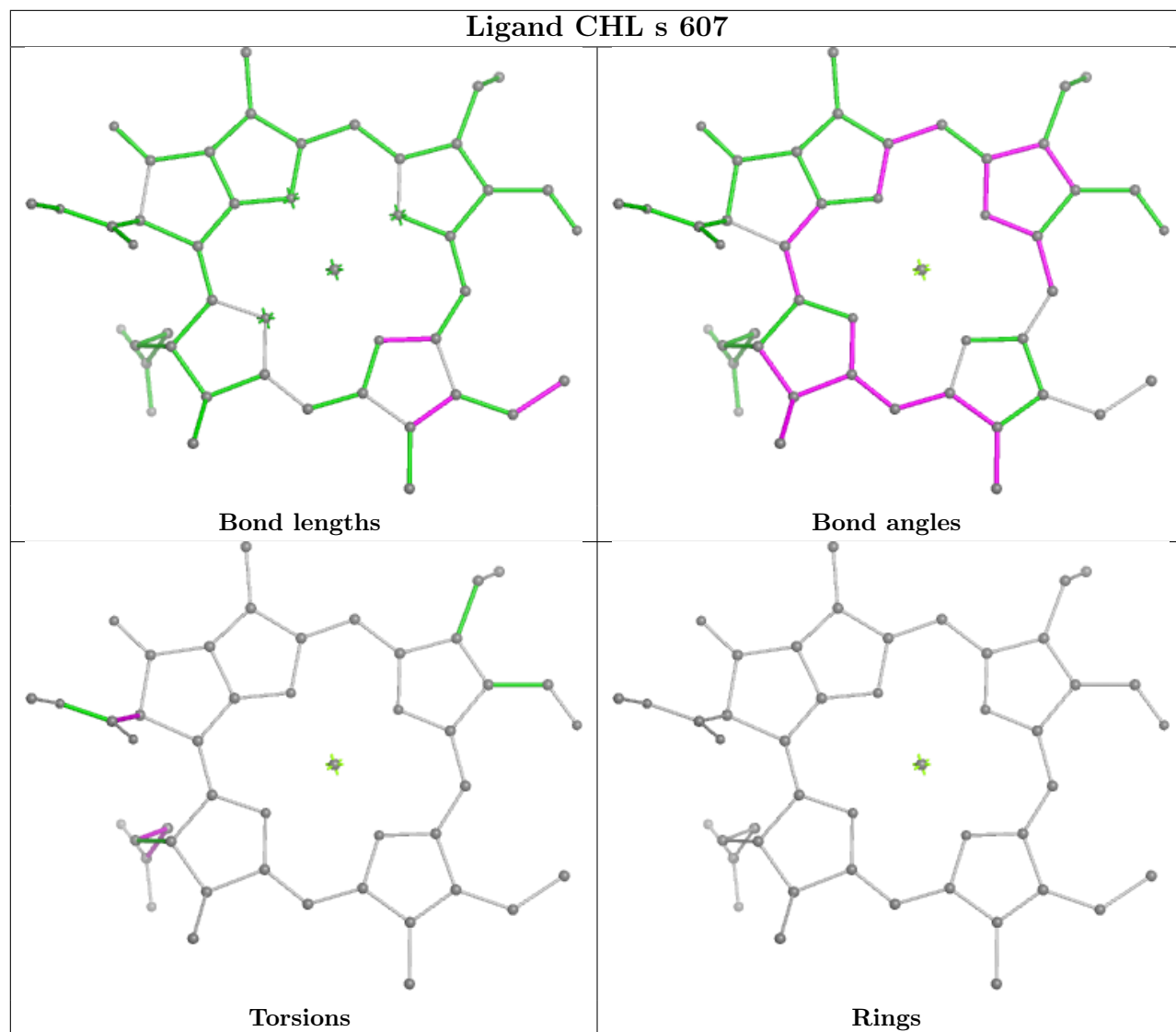
## Ligand DGD c 518



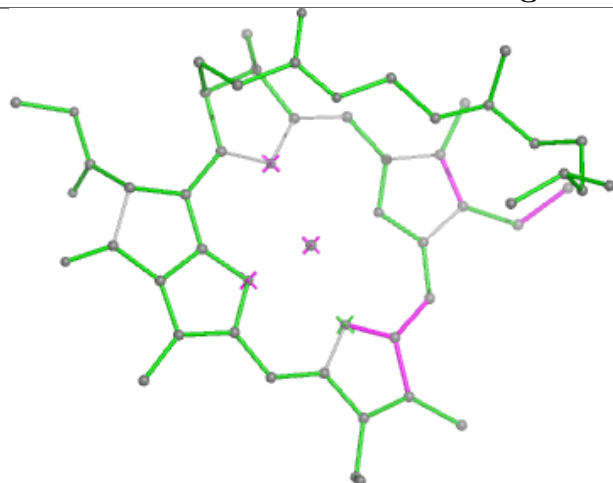




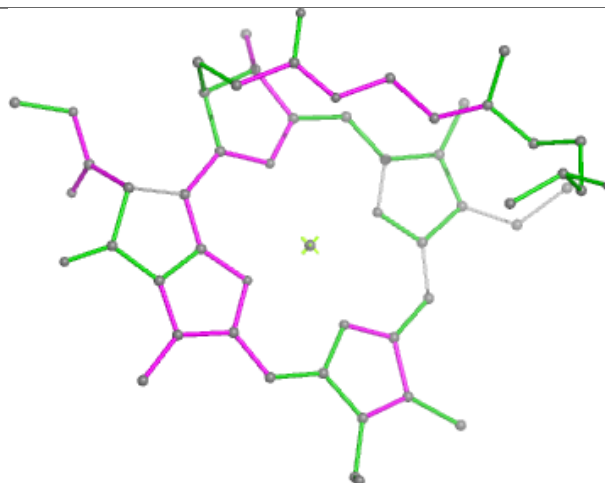
## Ligand CHL s 607



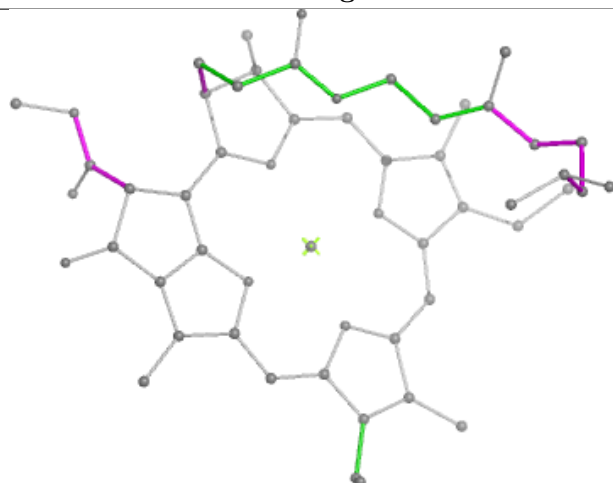
## Ligand CLA s 609



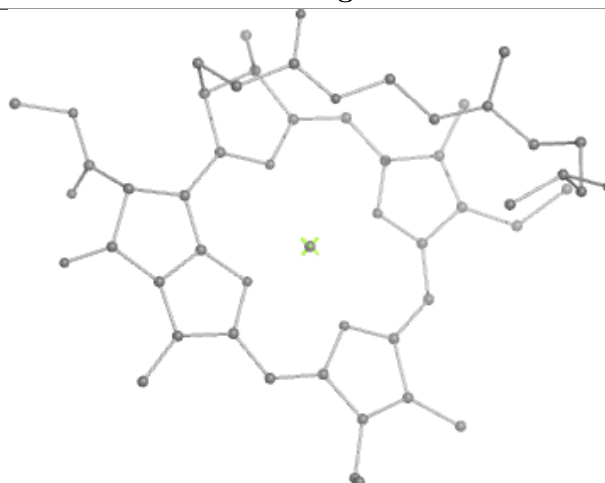
Bond lengths



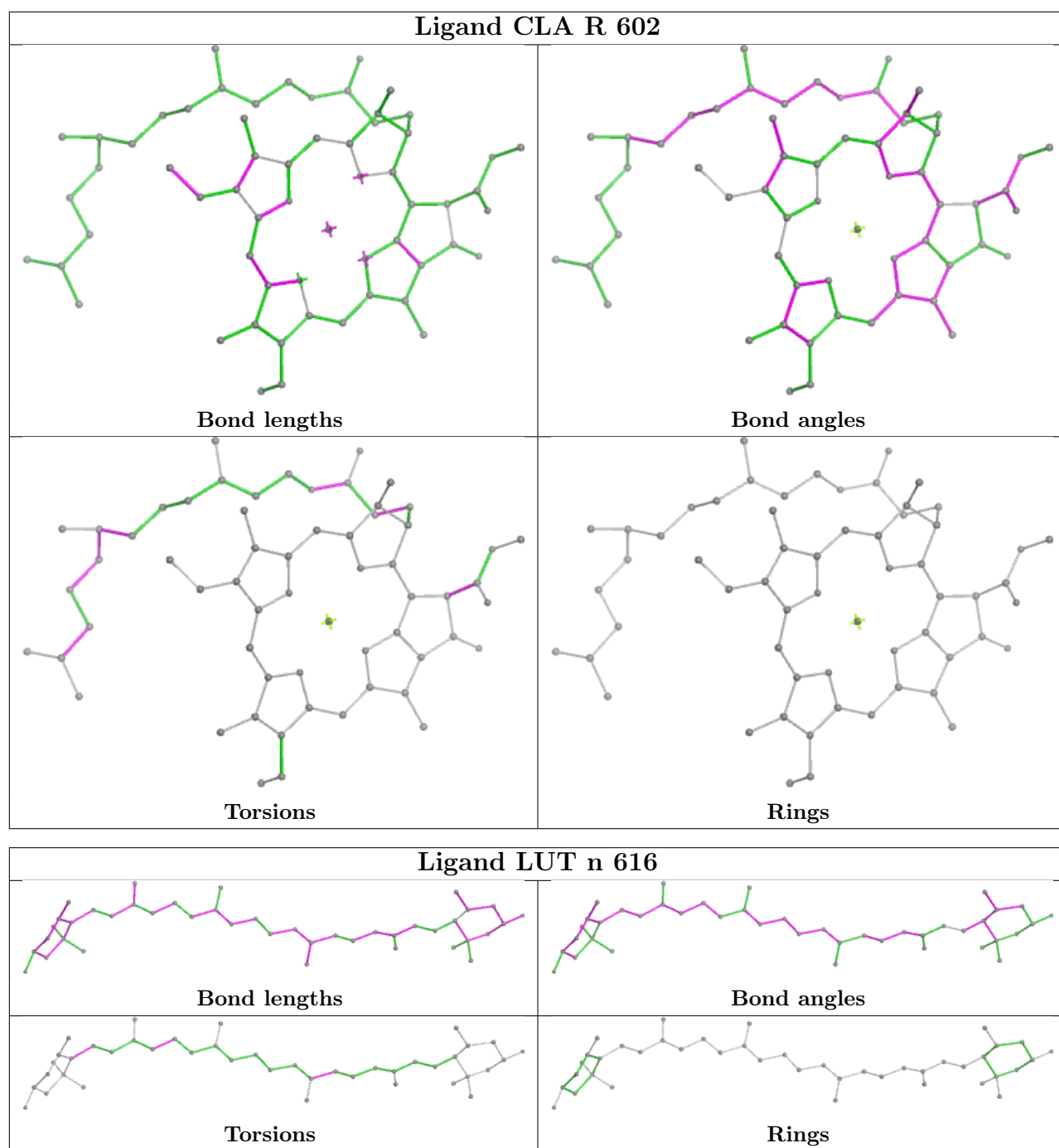
Bond angles



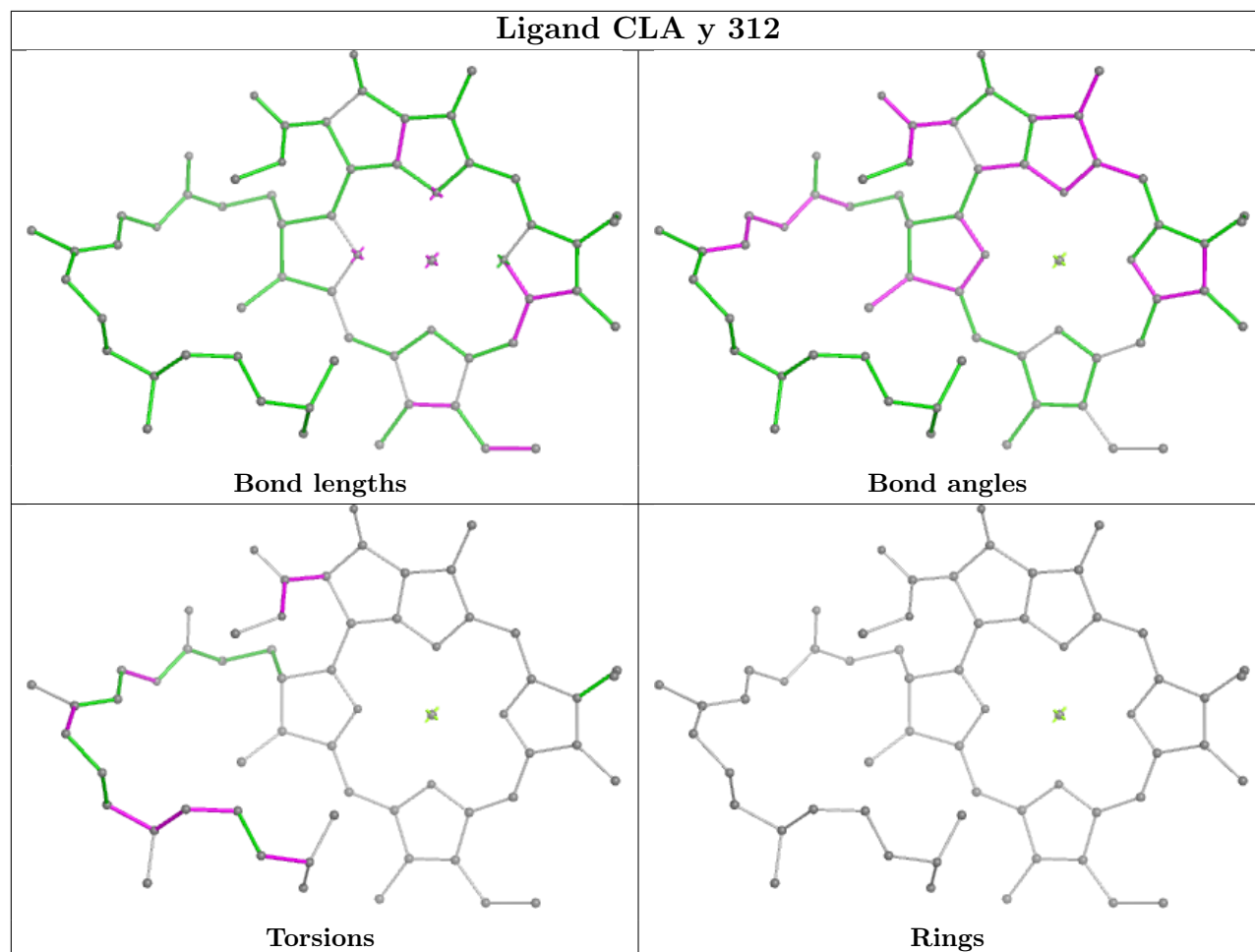
Torsions



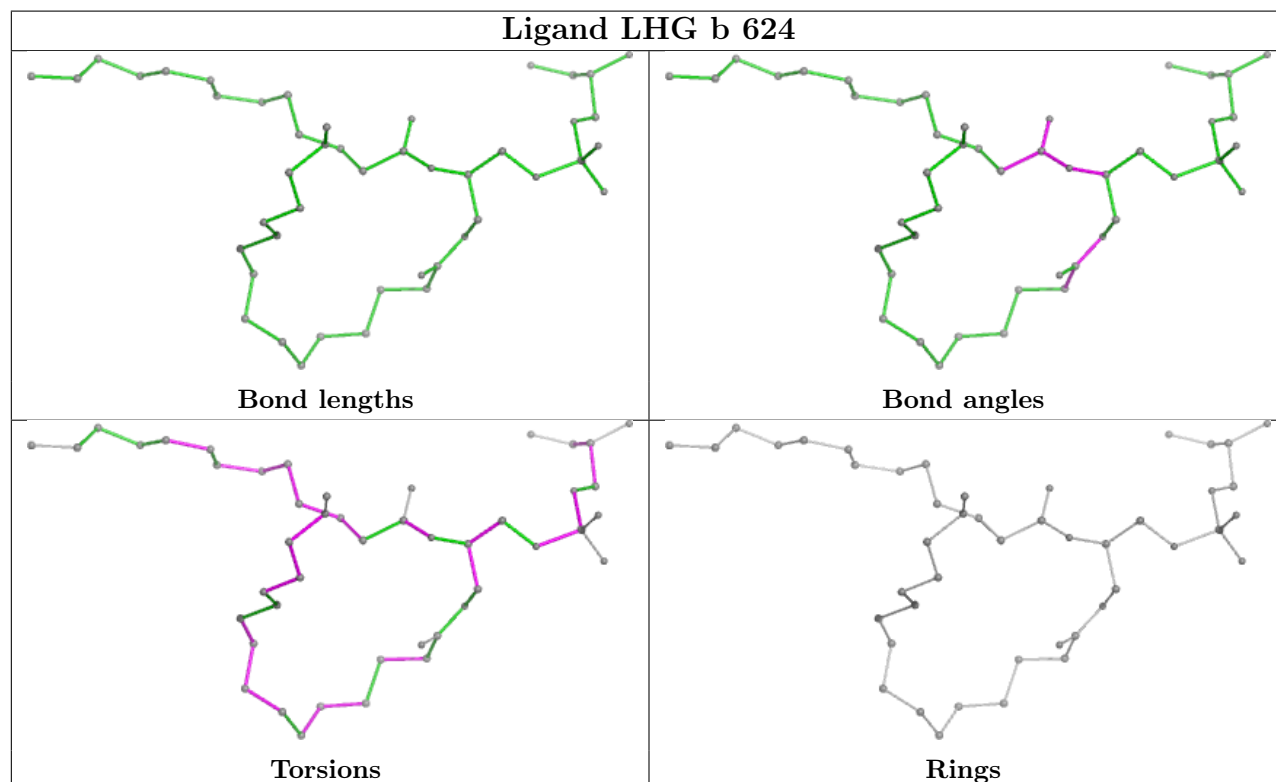
Rings



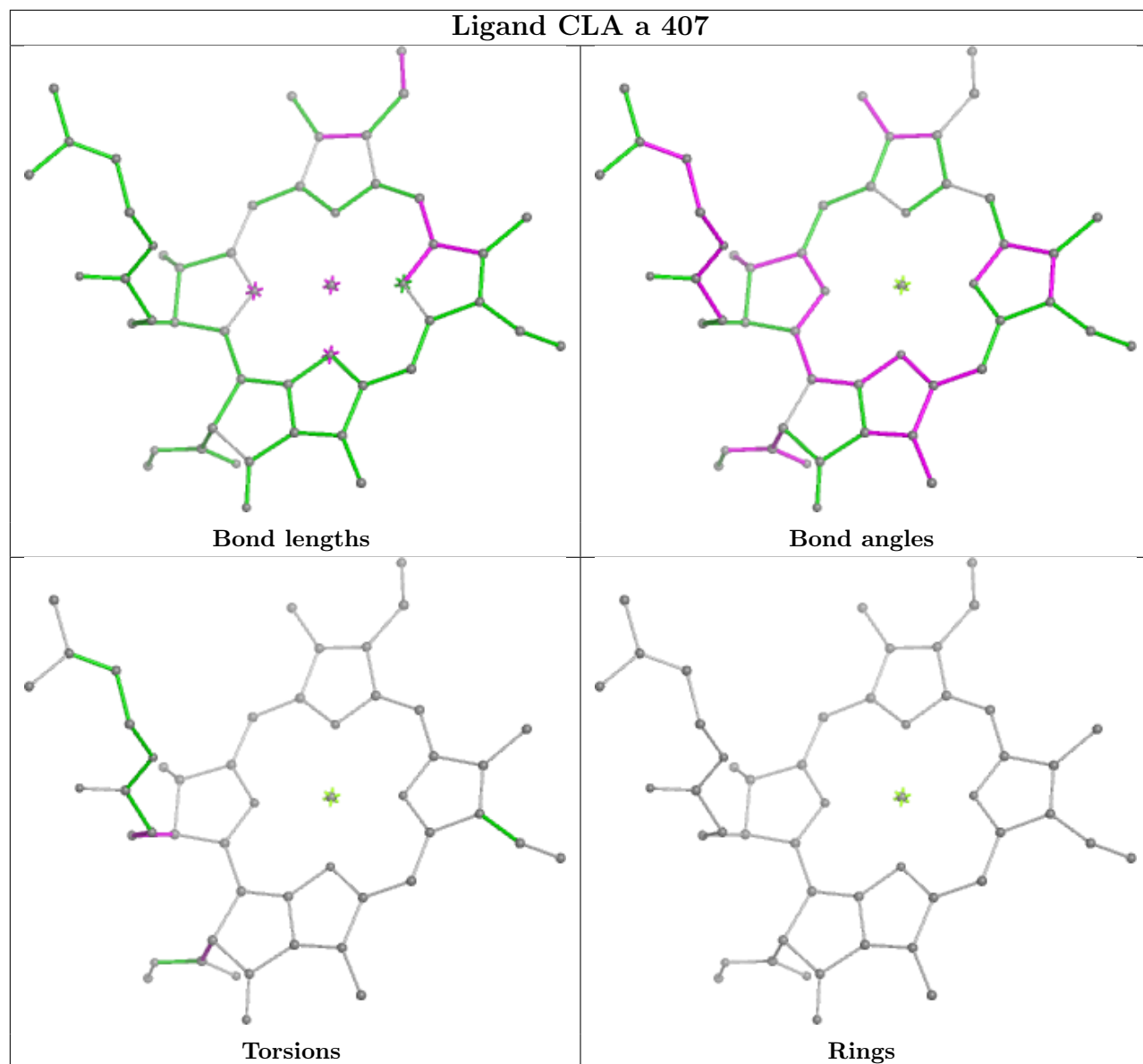
## Ligand CLA y 312



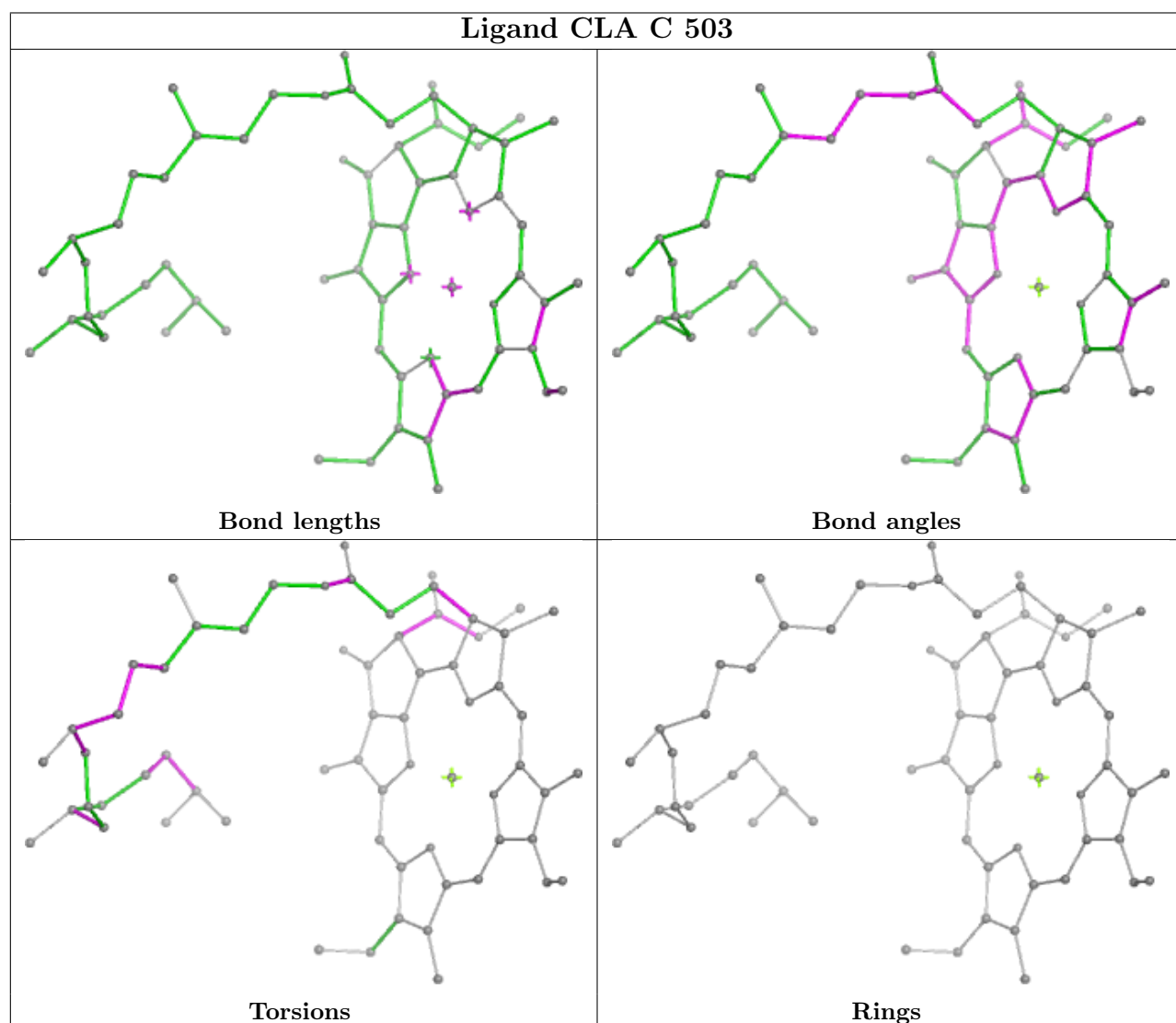
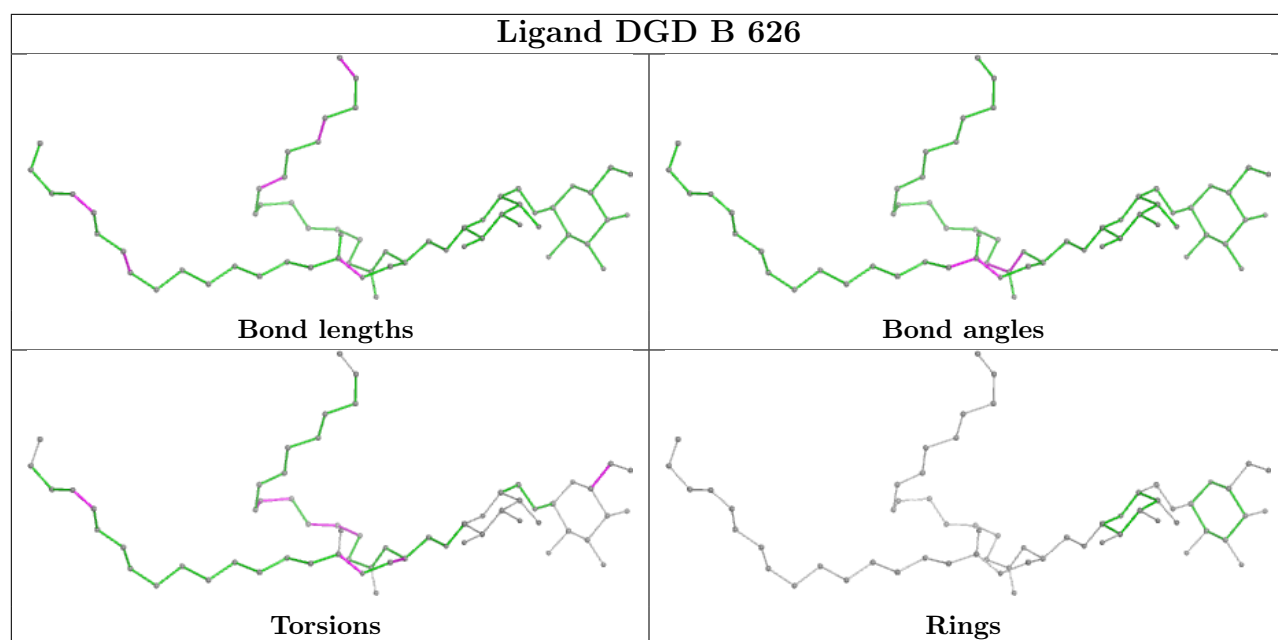
## Ligand LHG b 624

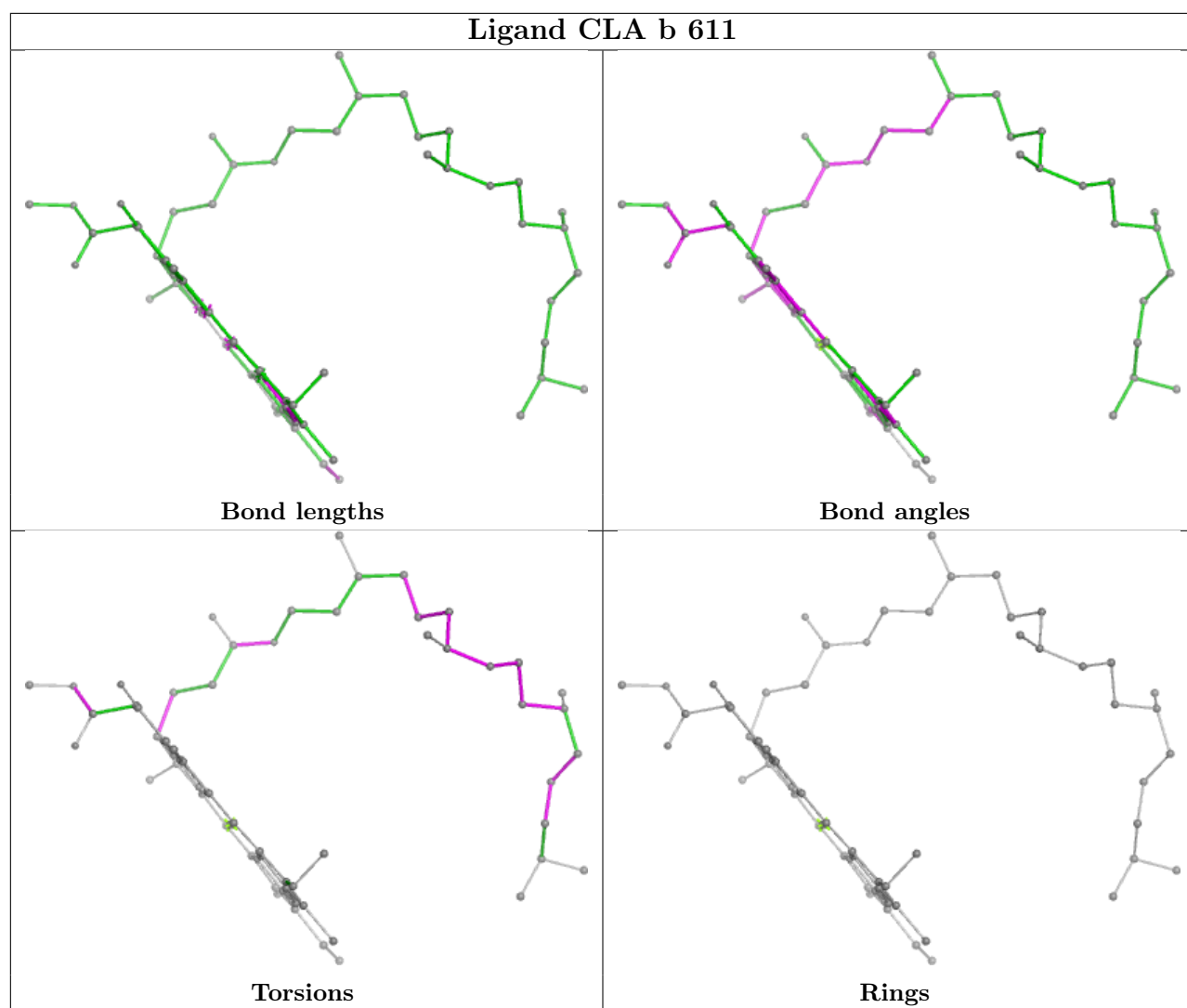


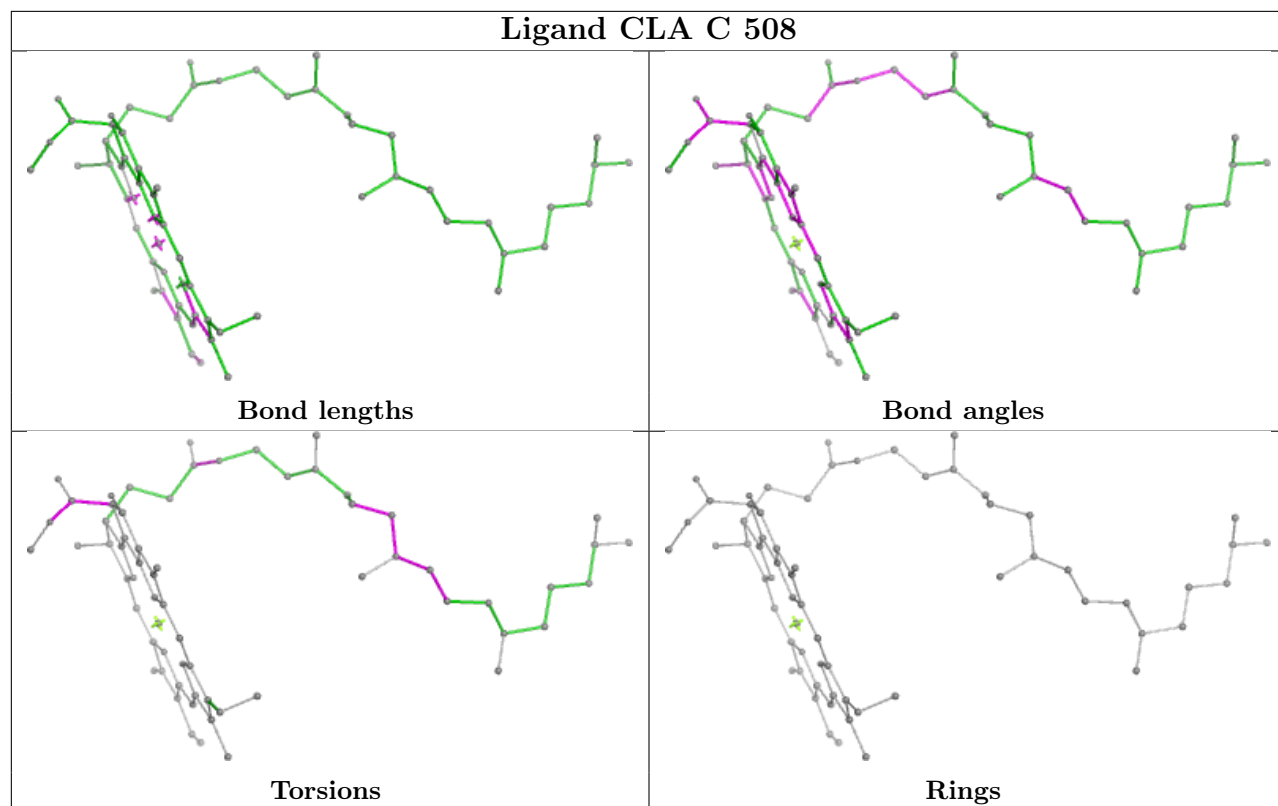
## Ligand CLA a 407



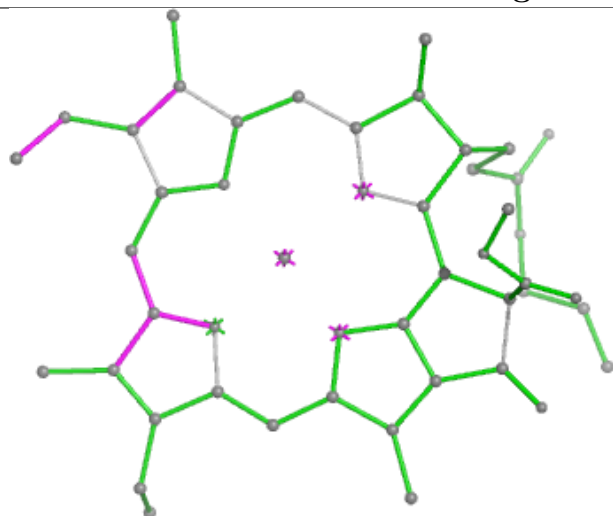




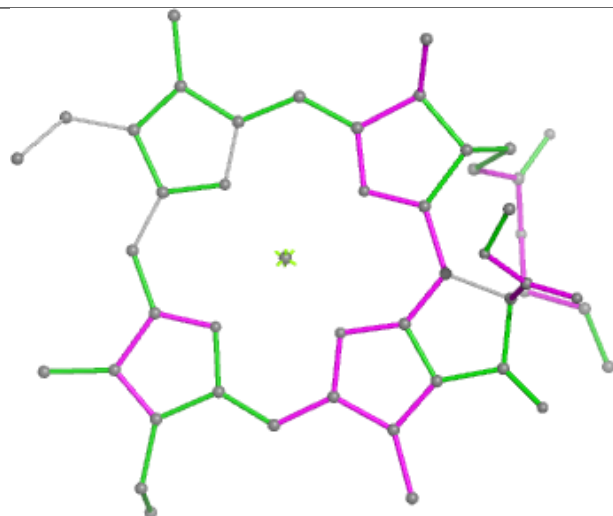




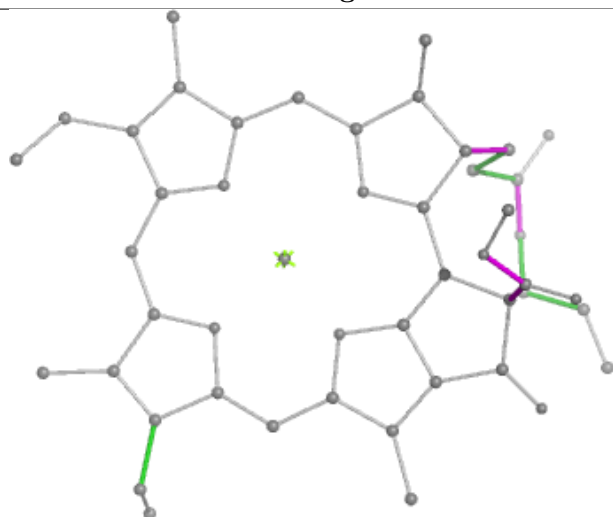
## Ligand CLA G 614



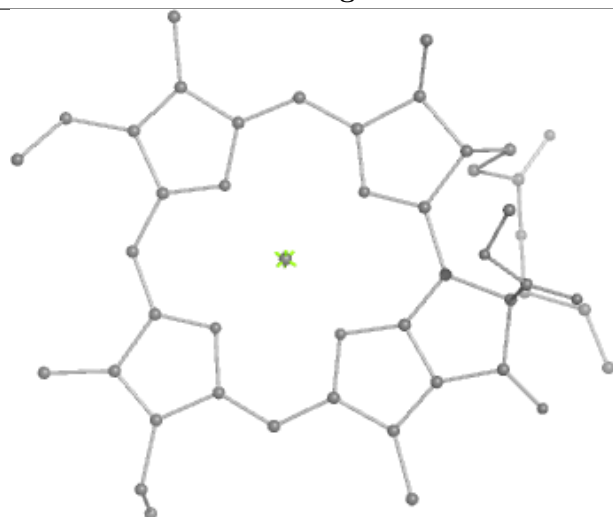
Bond lengths



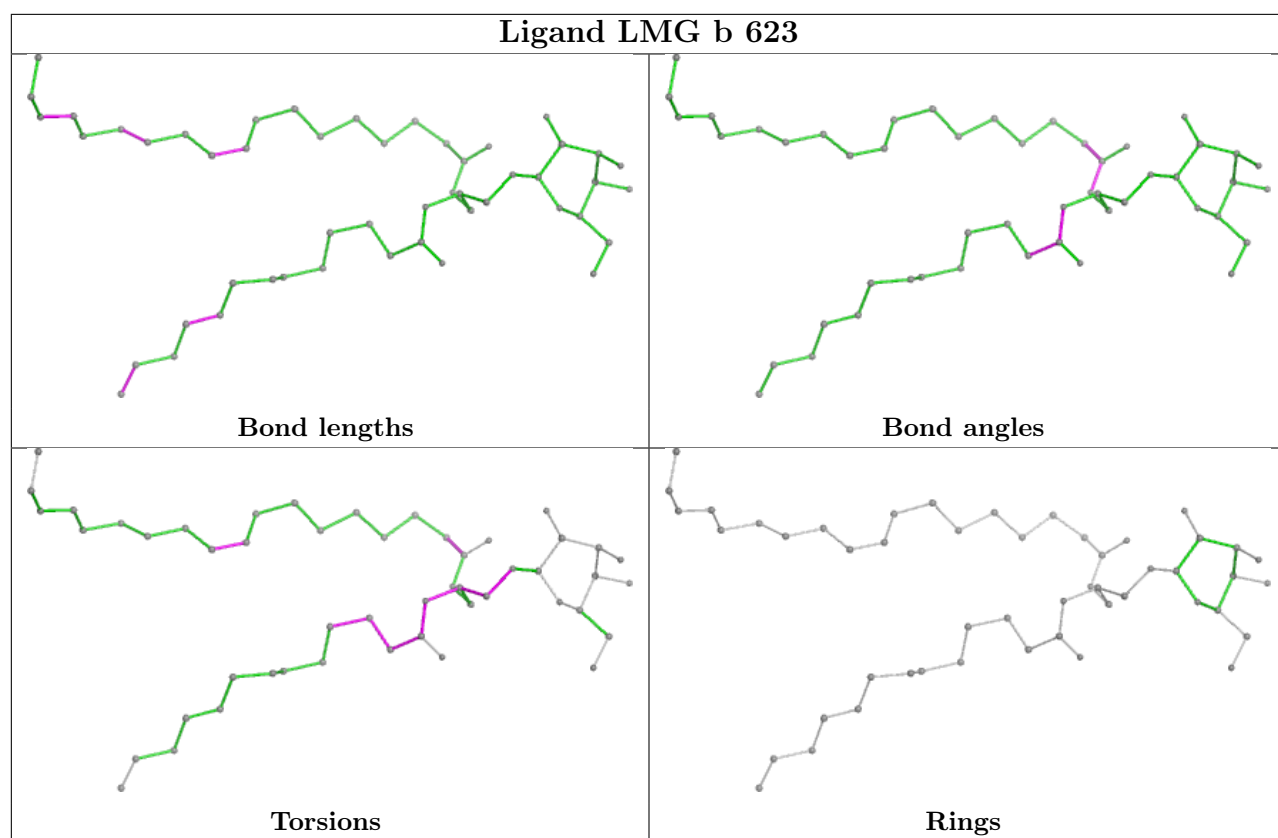
Bond angles

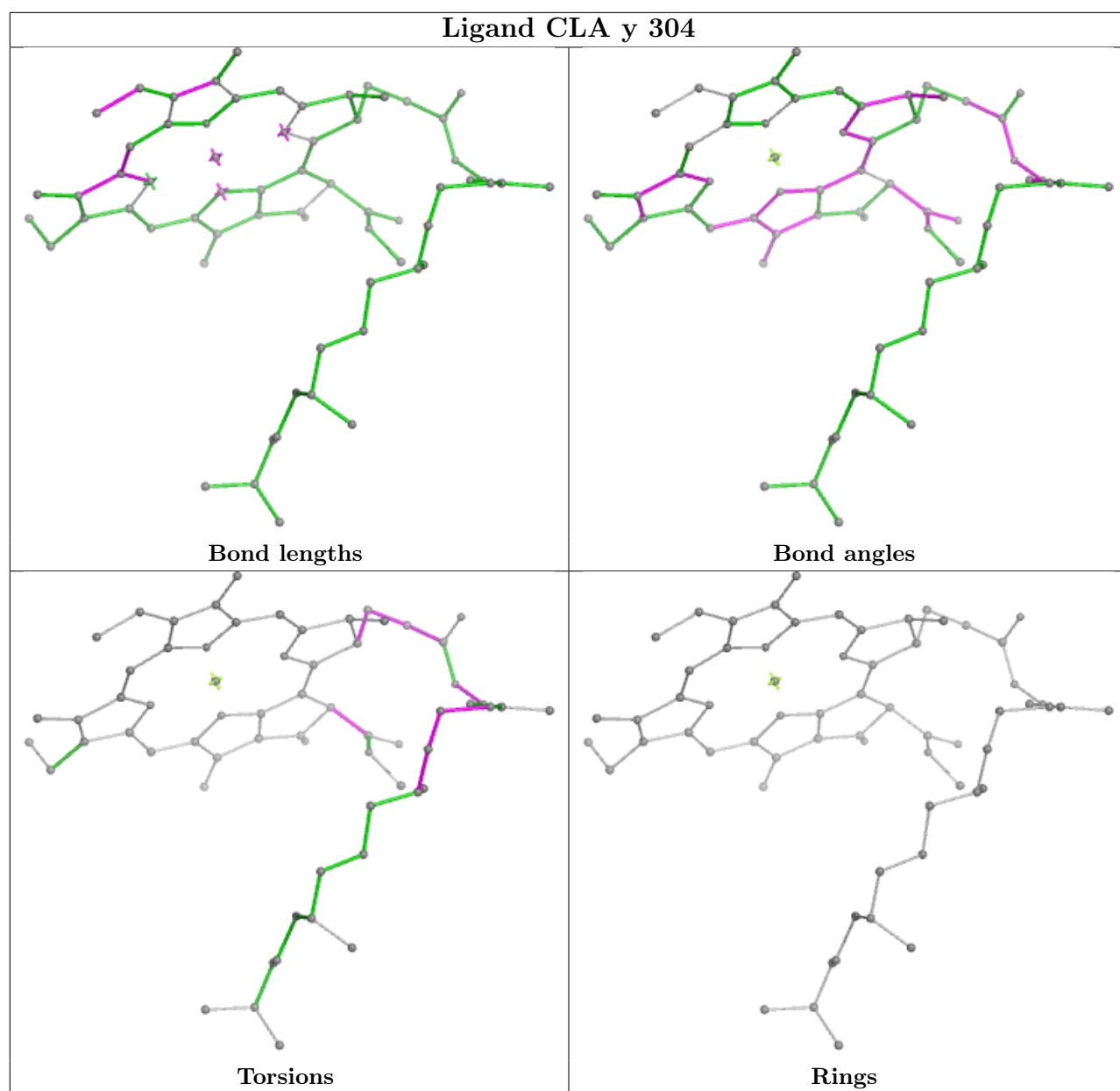


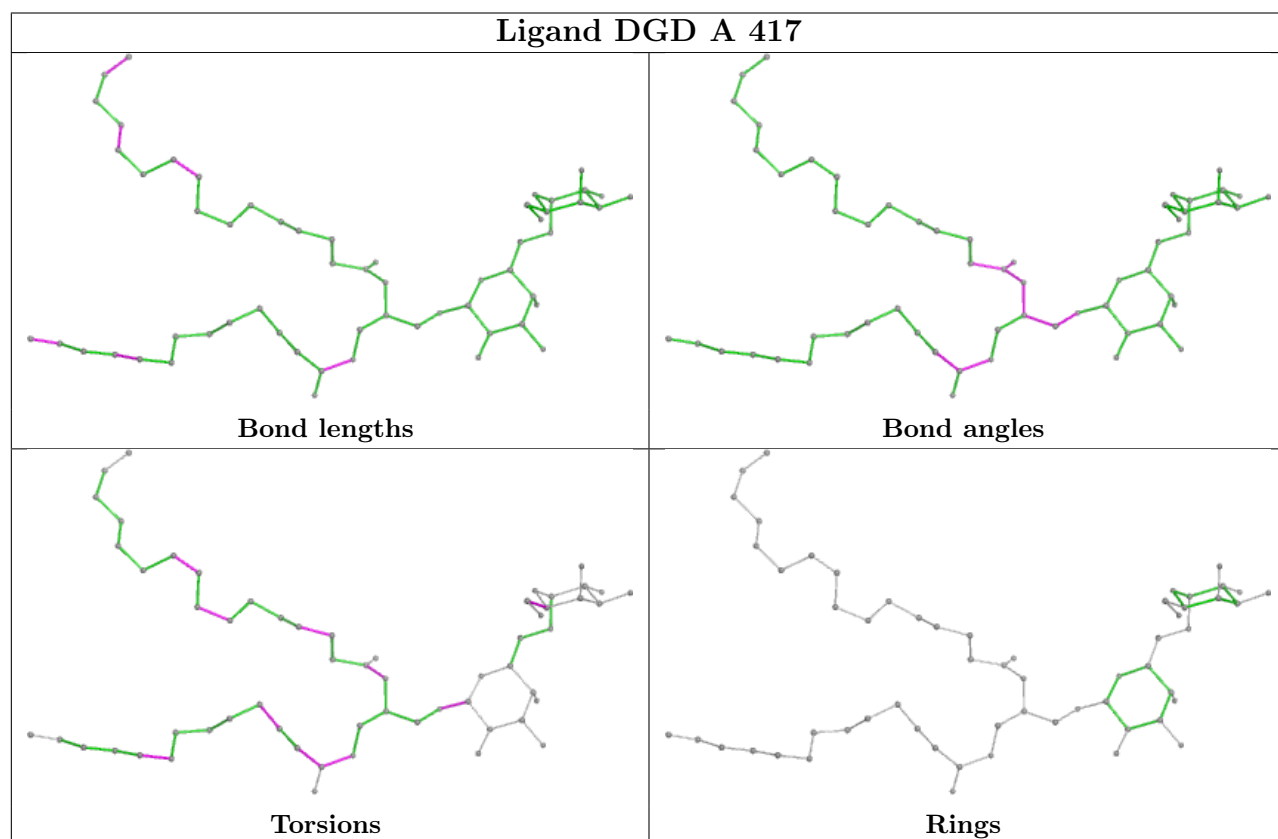
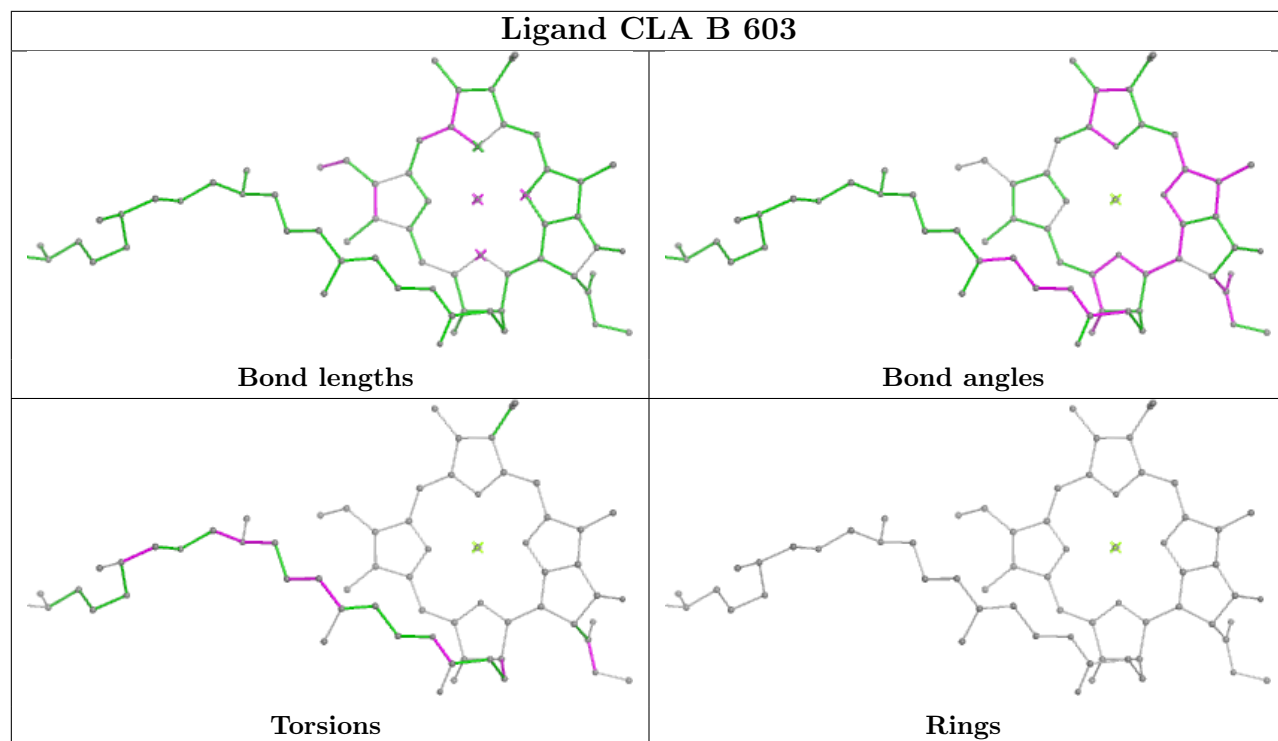
Torsions

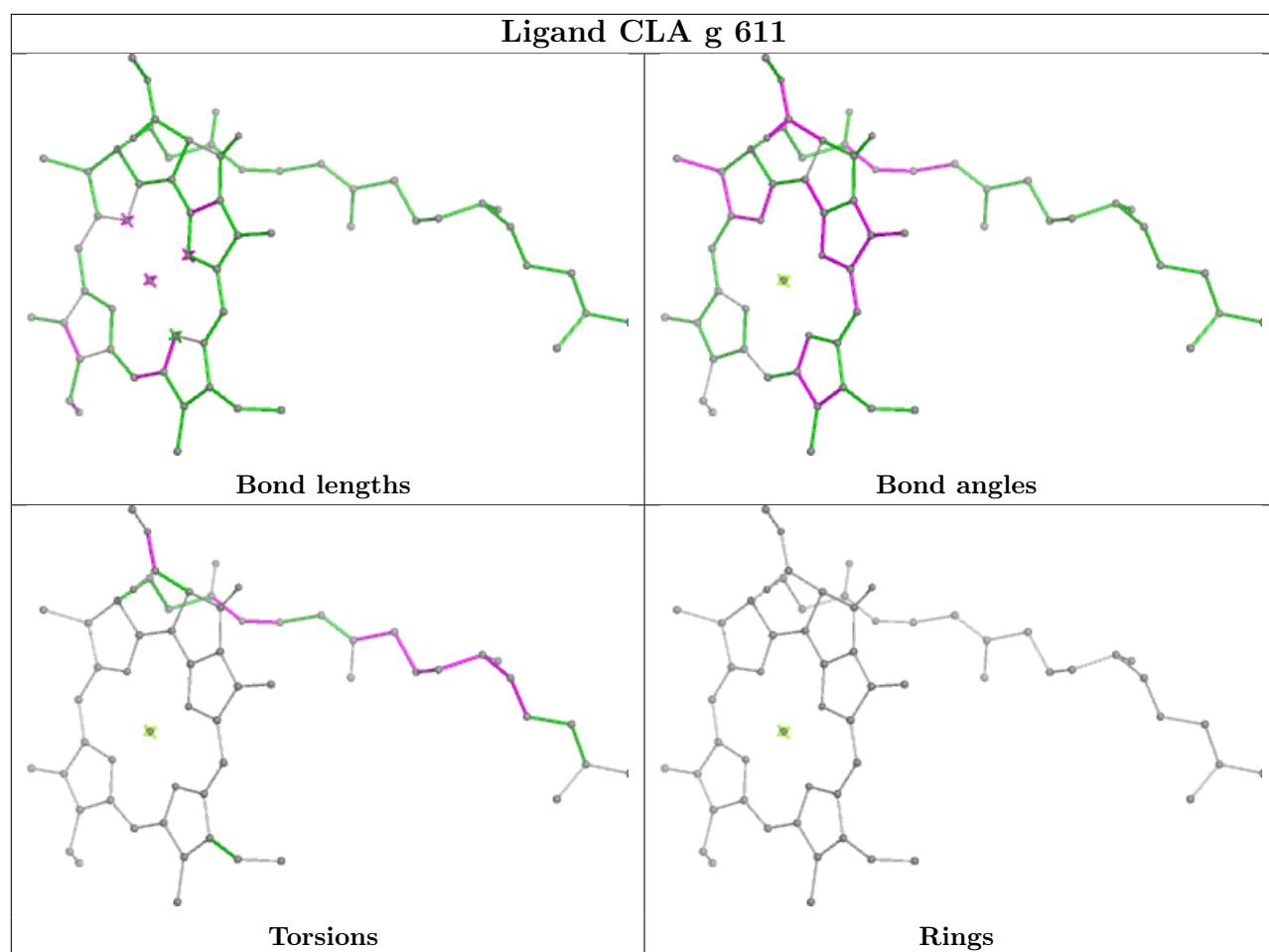


Rings



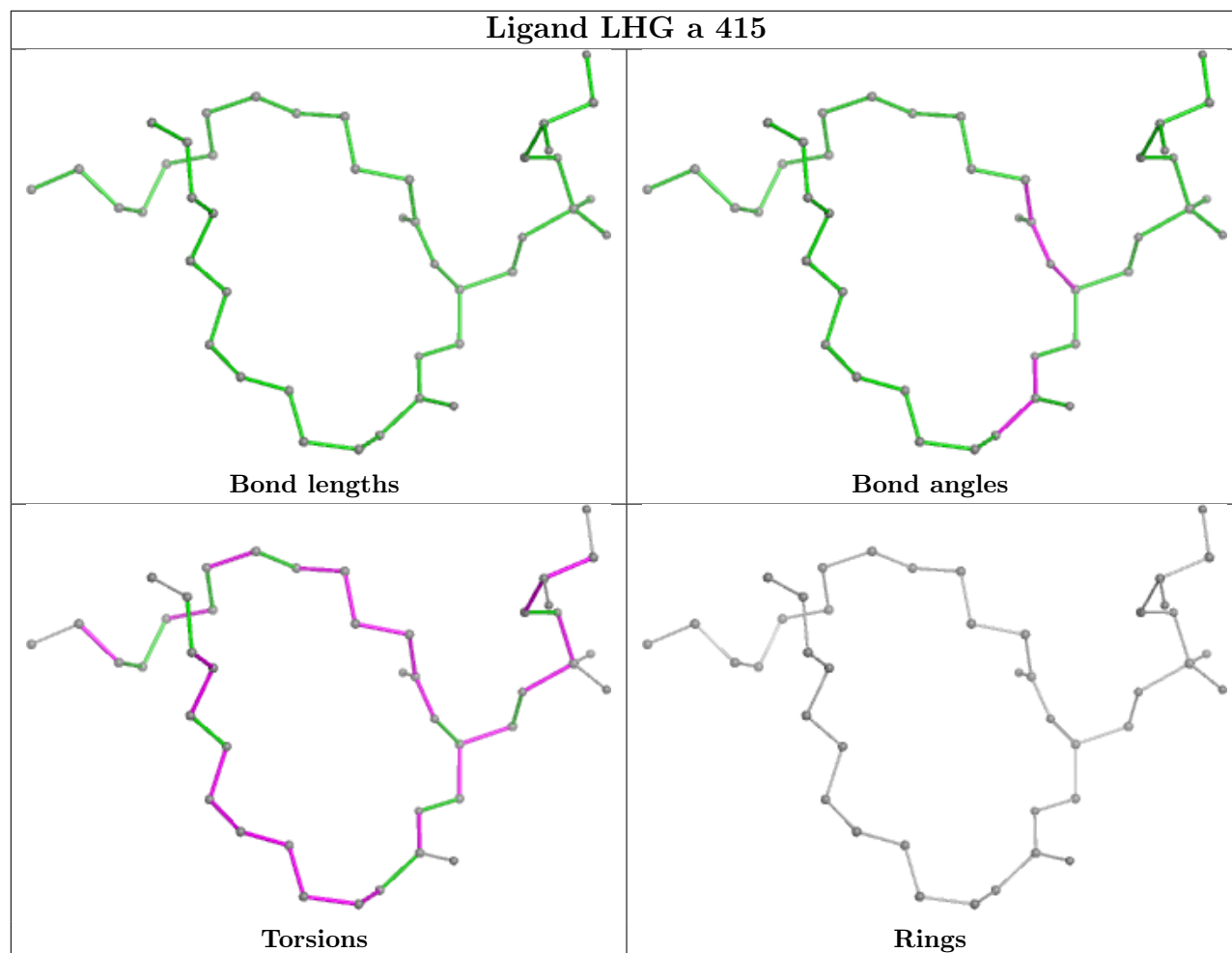




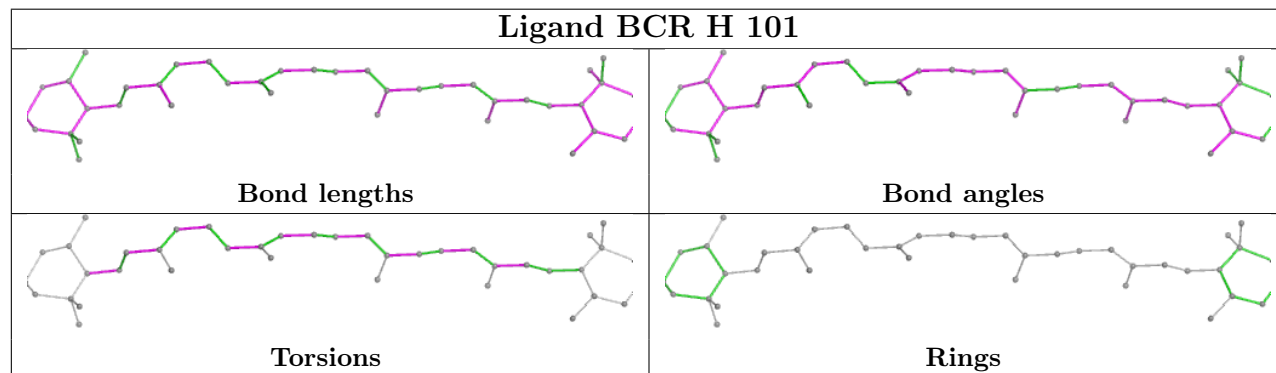


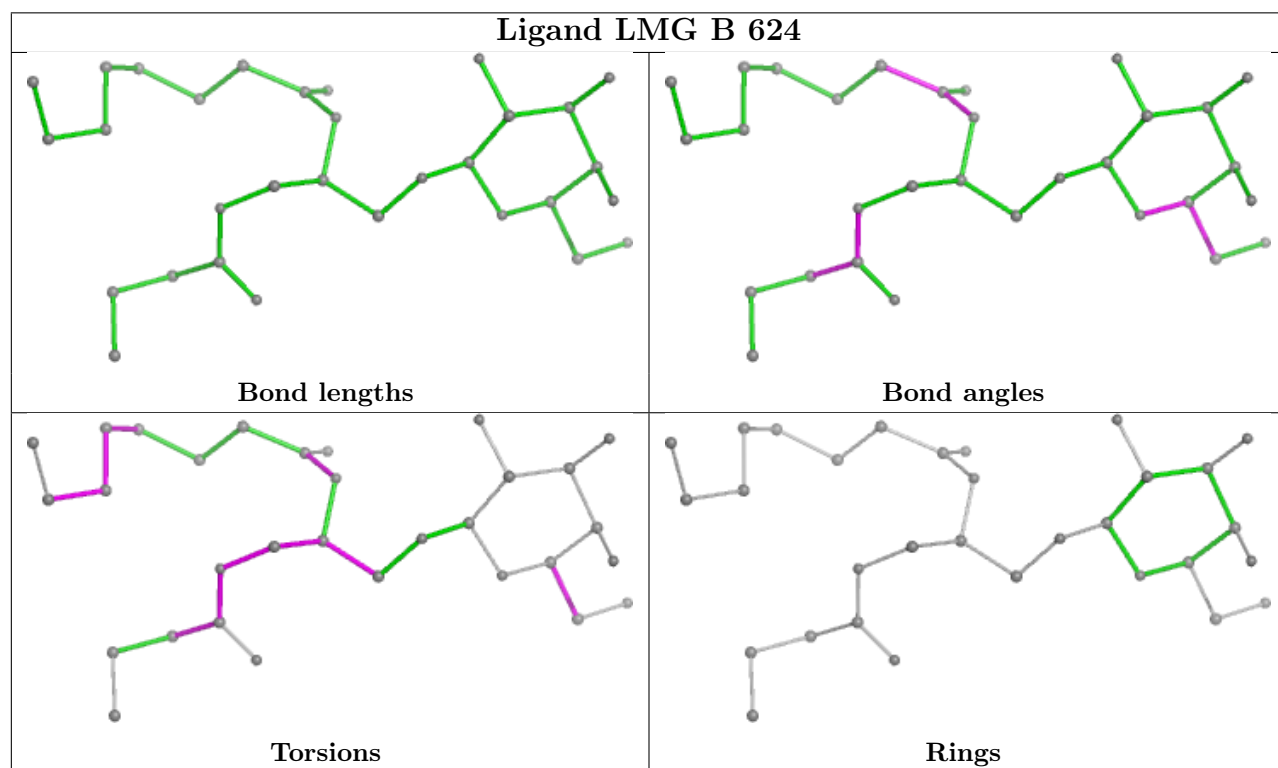
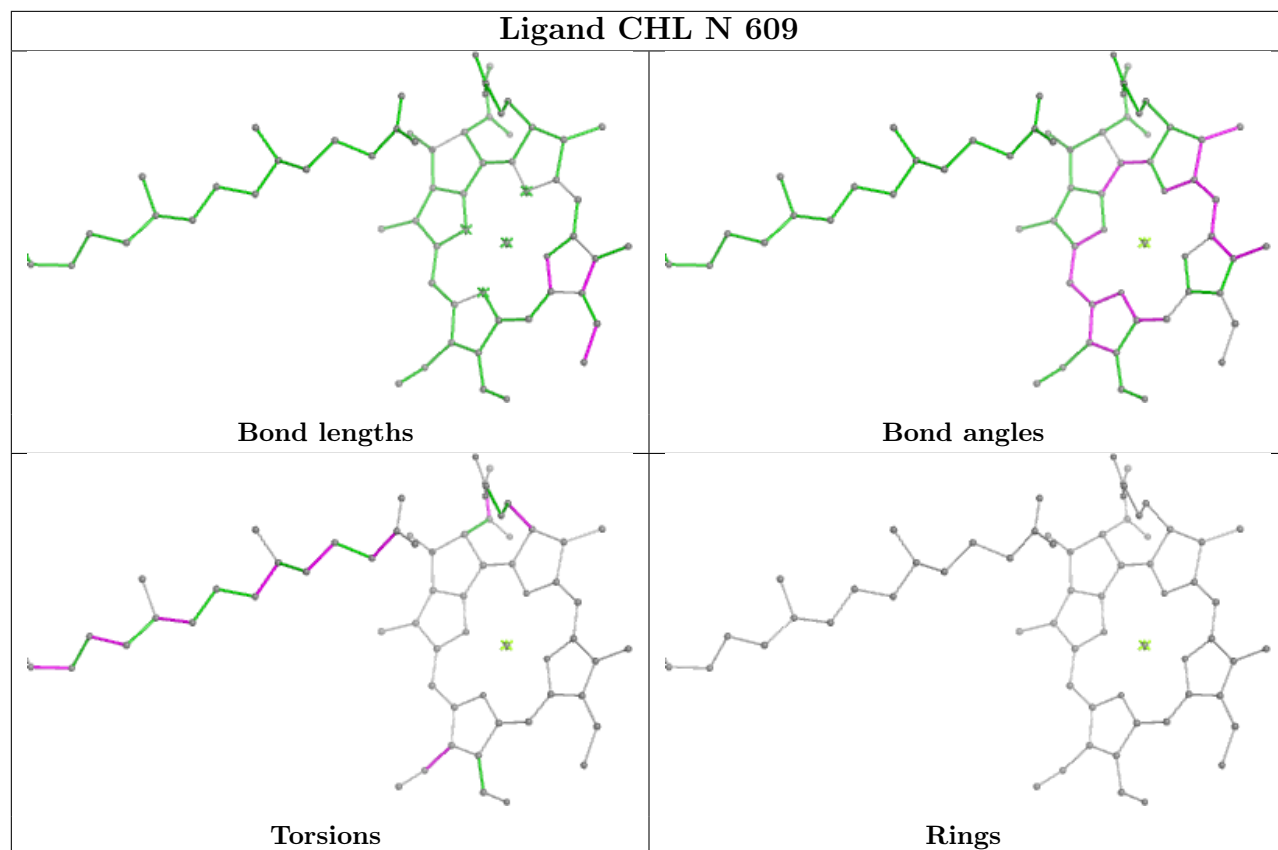


## Ligand LHG a 415

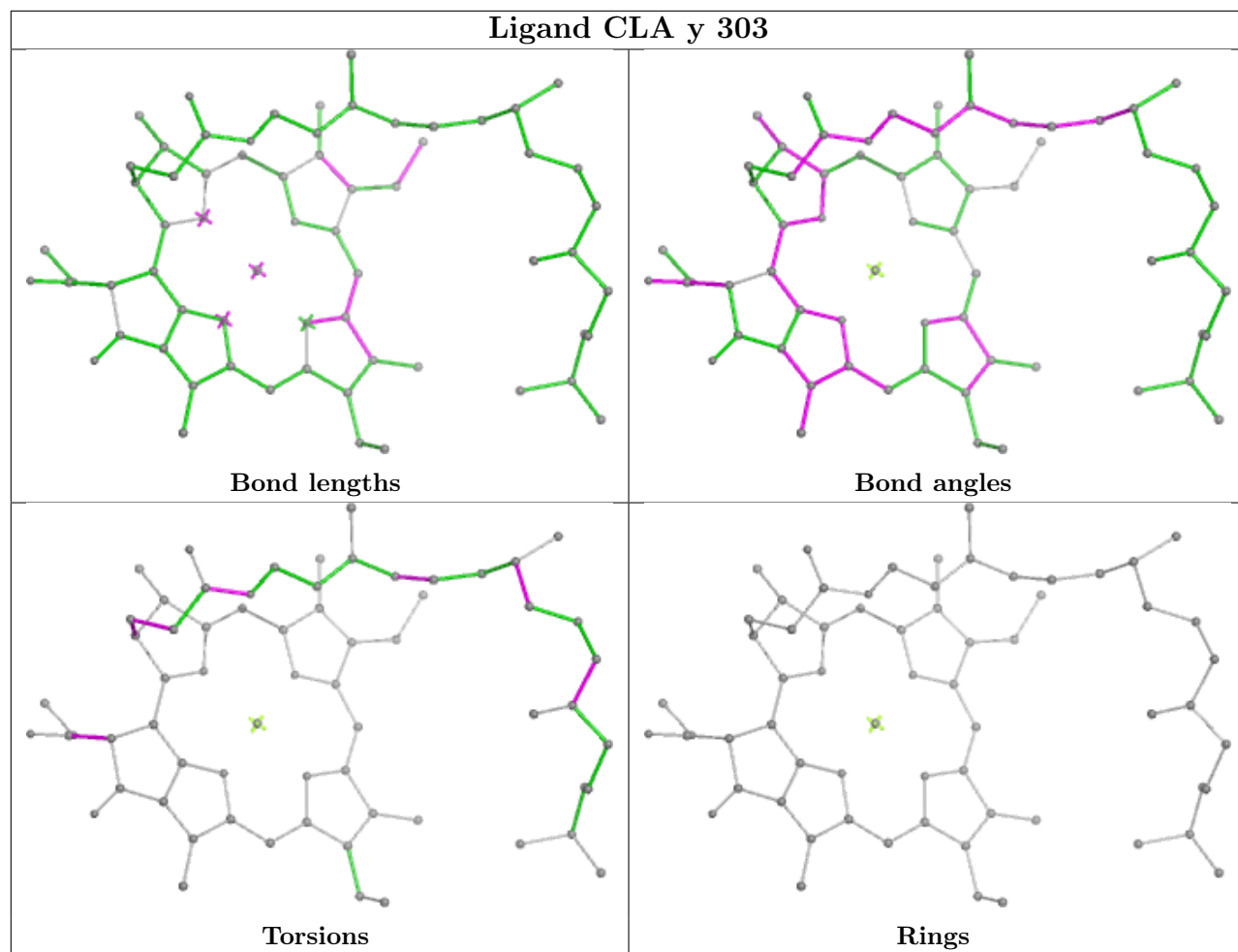


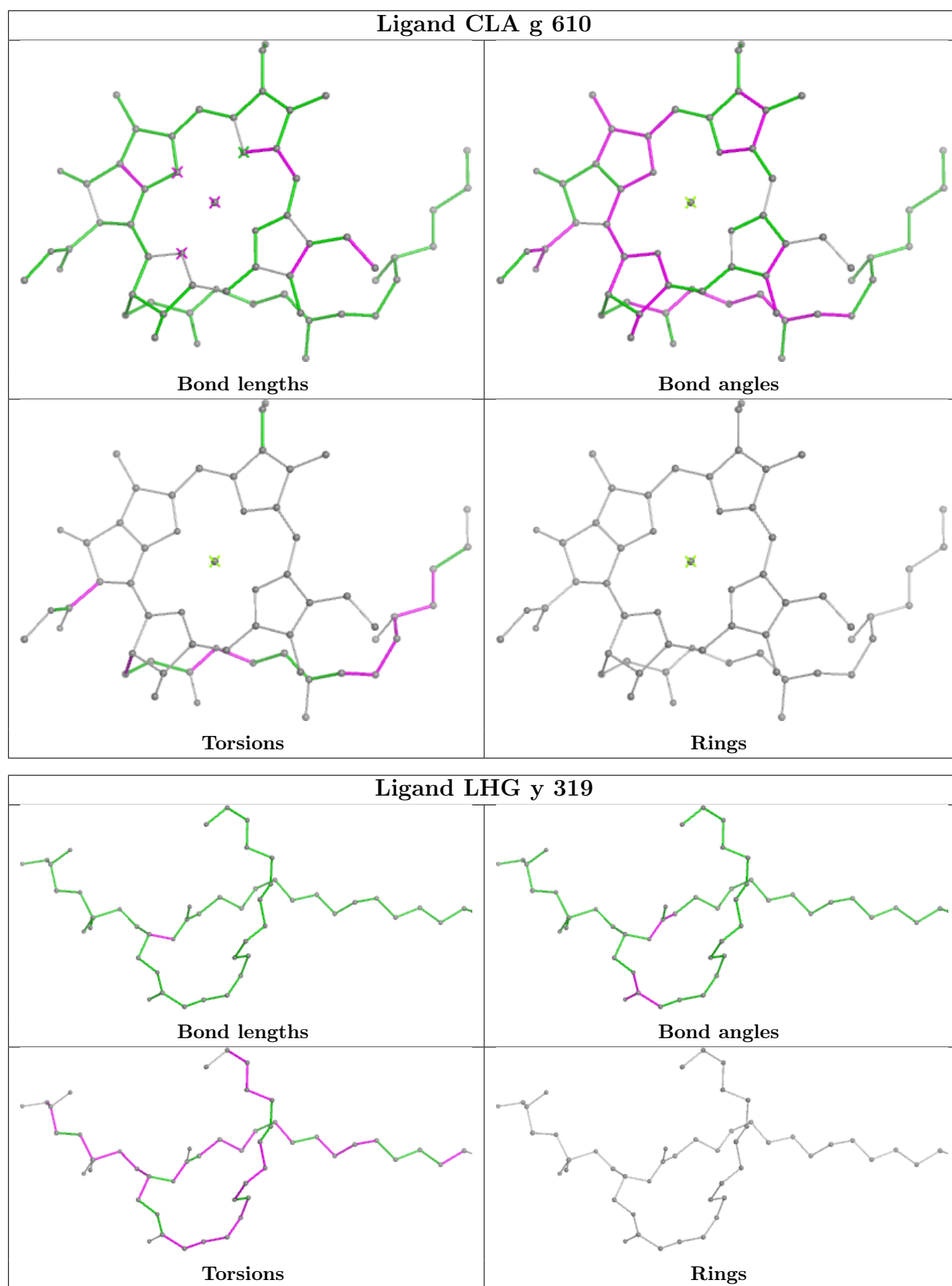
## Ligand BCR H 101



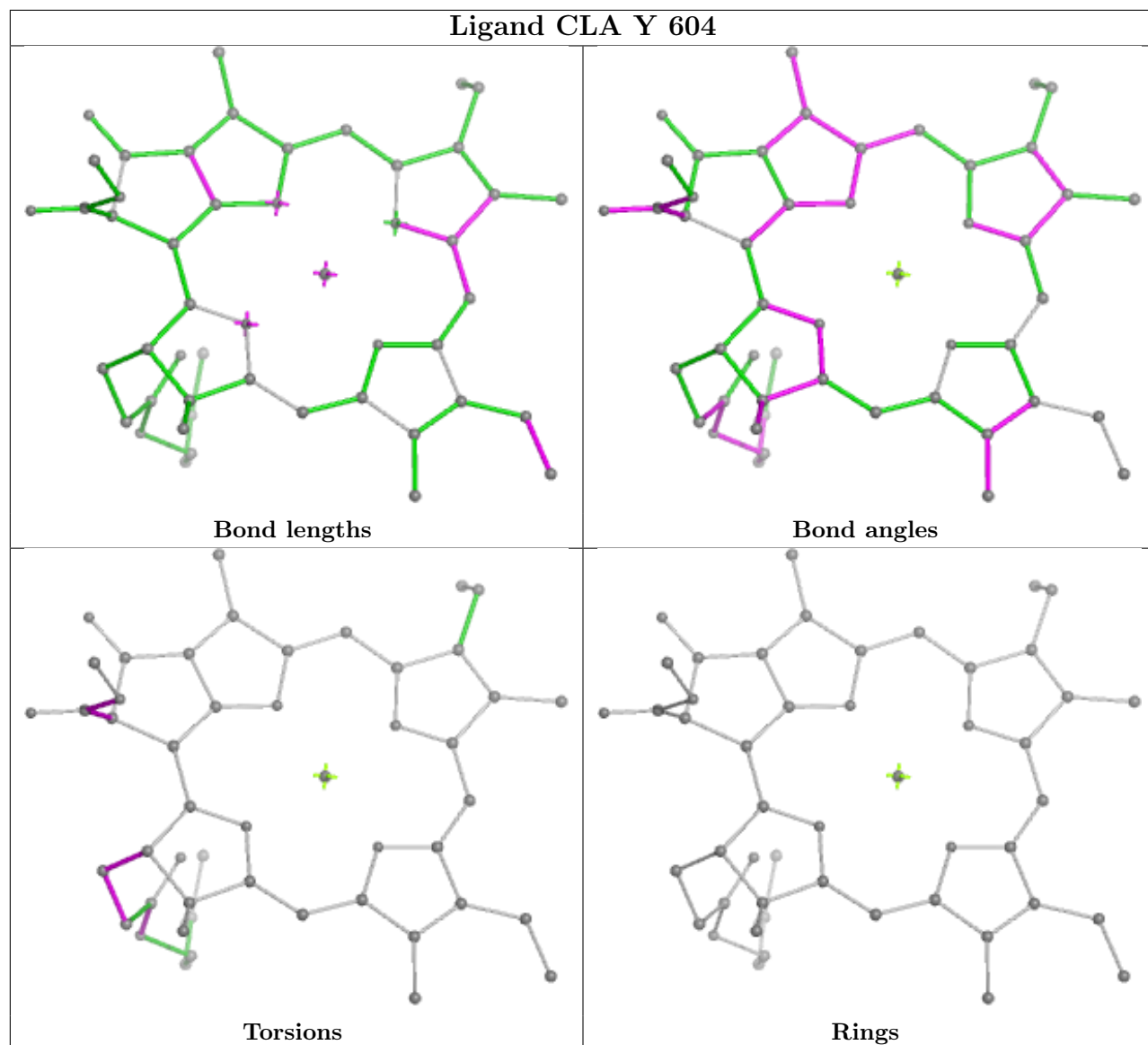


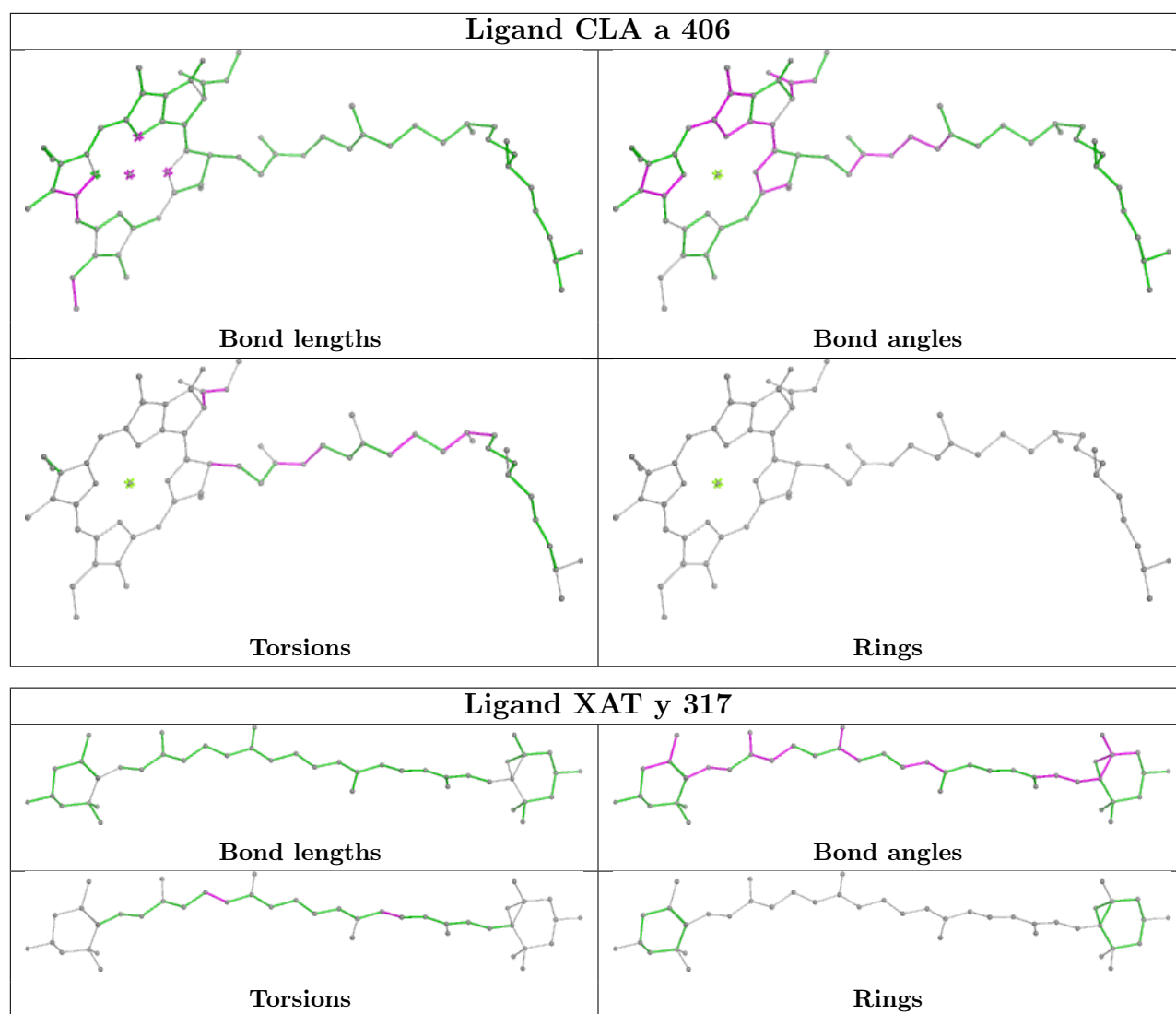
## Ligand CLA y 303



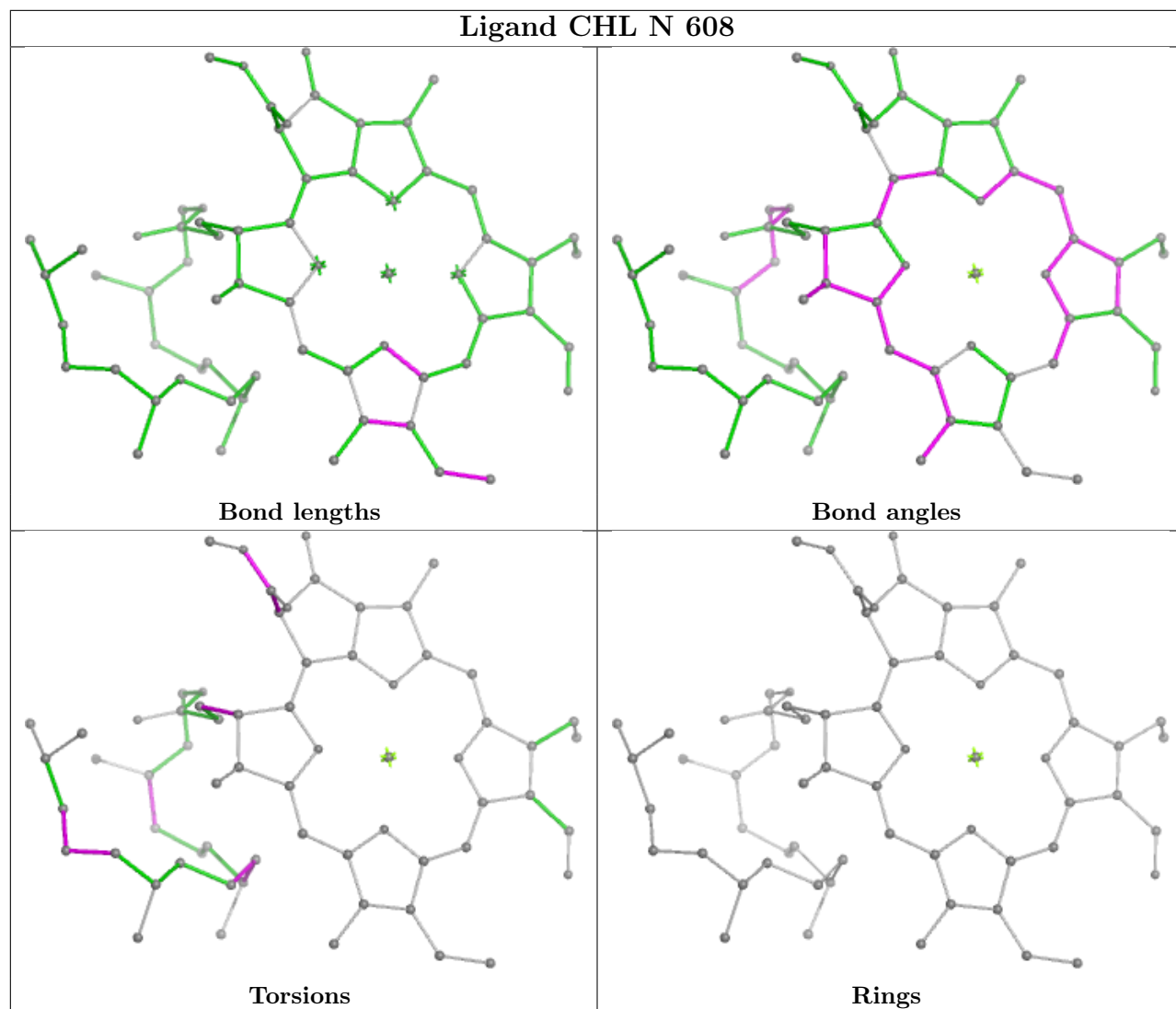


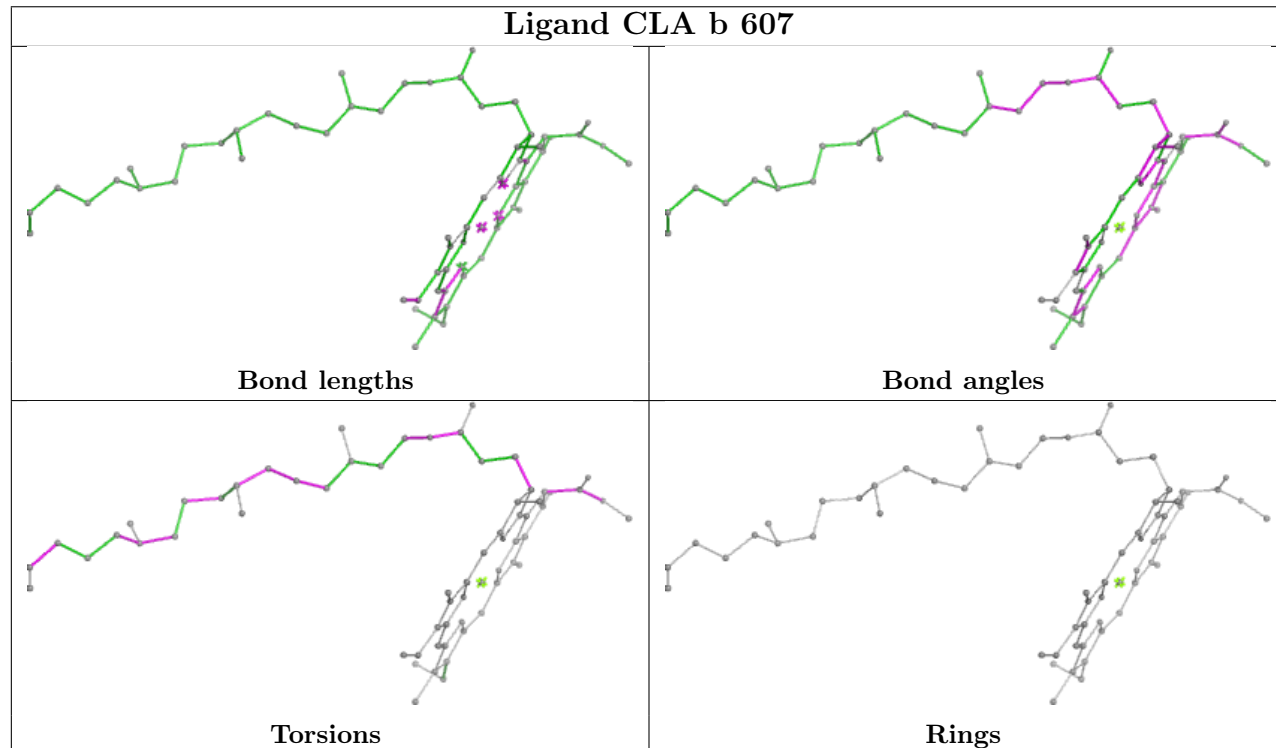
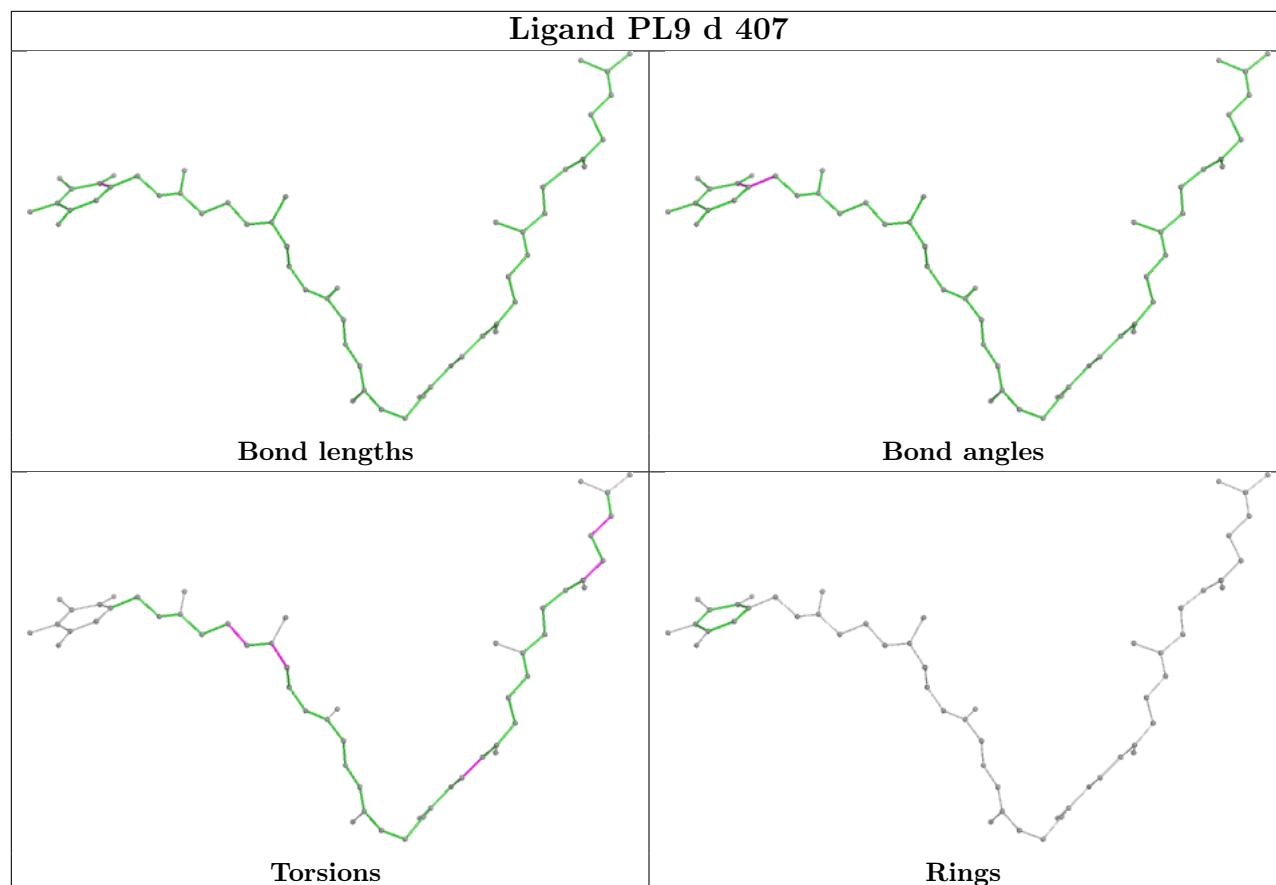
## Ligand CLA Y 604



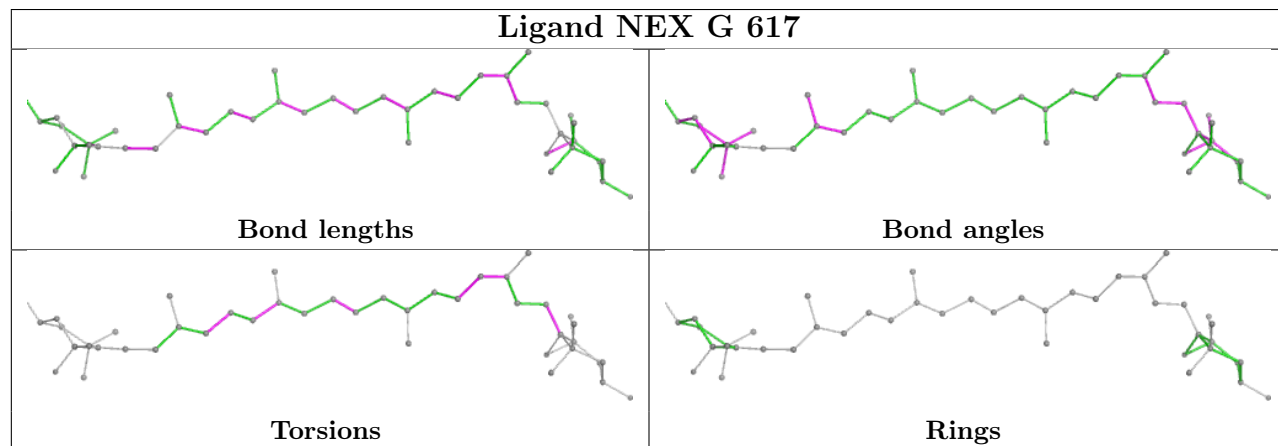
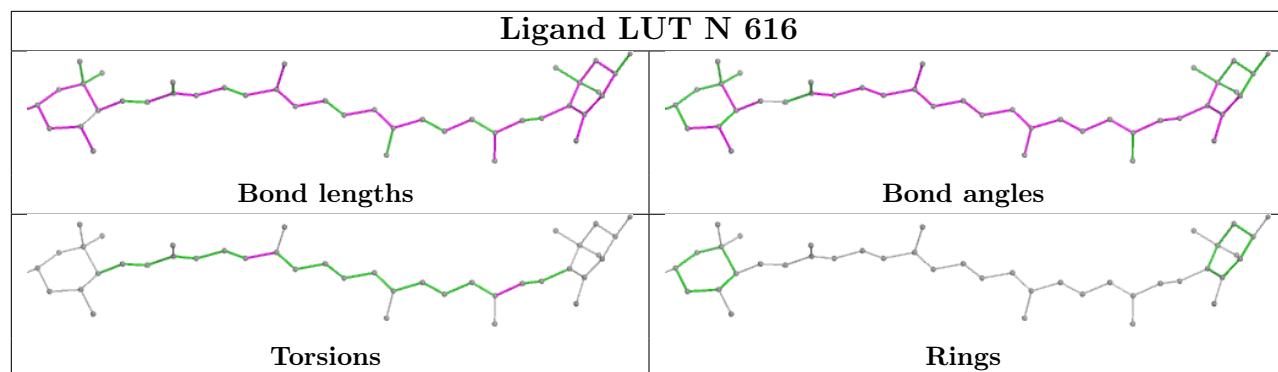


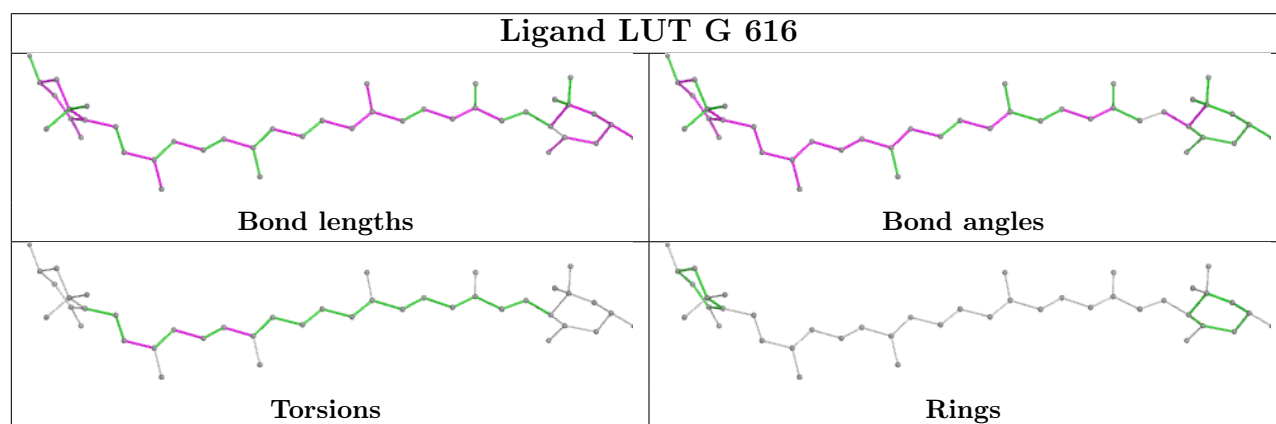
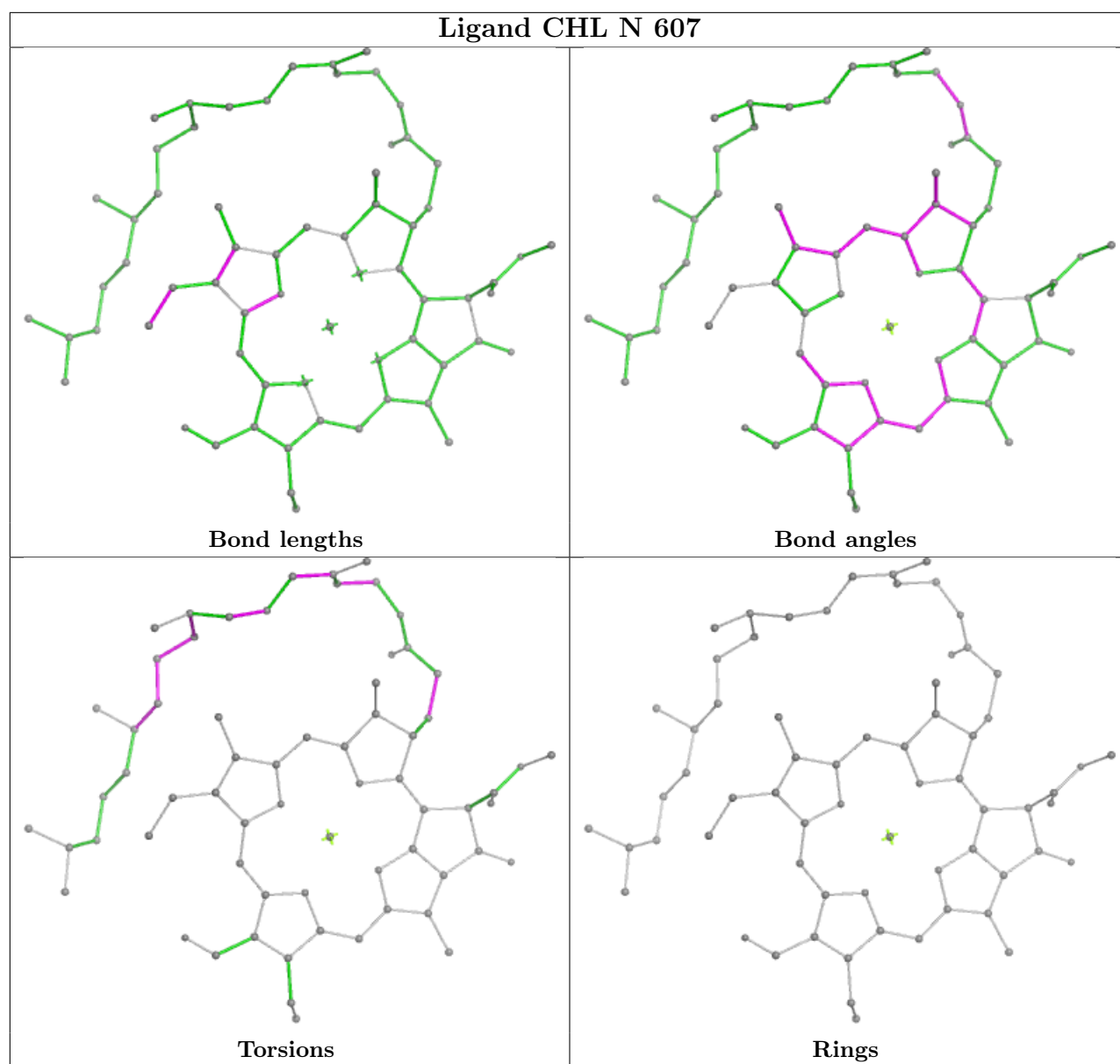
## Ligand CHL N 608

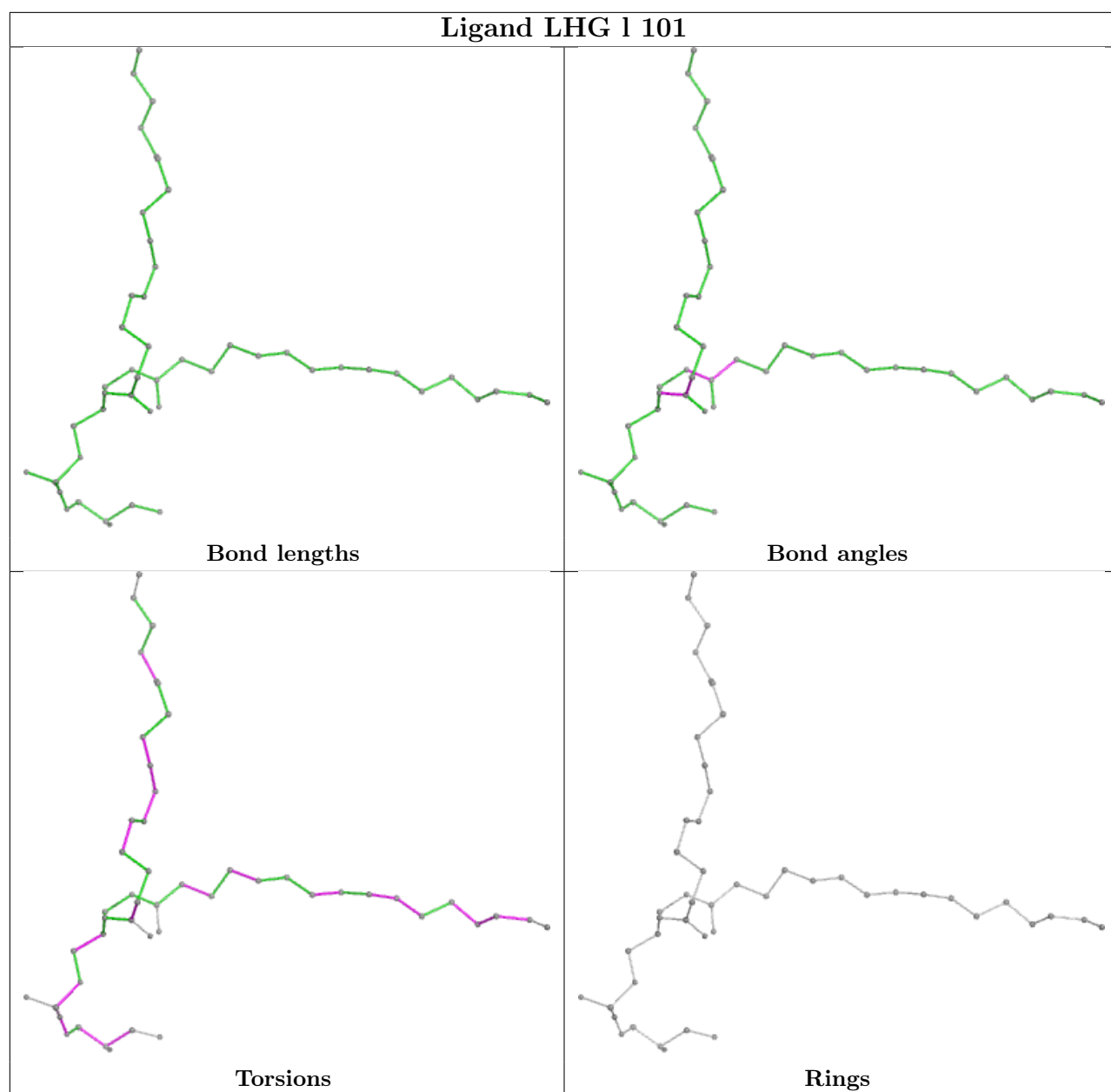


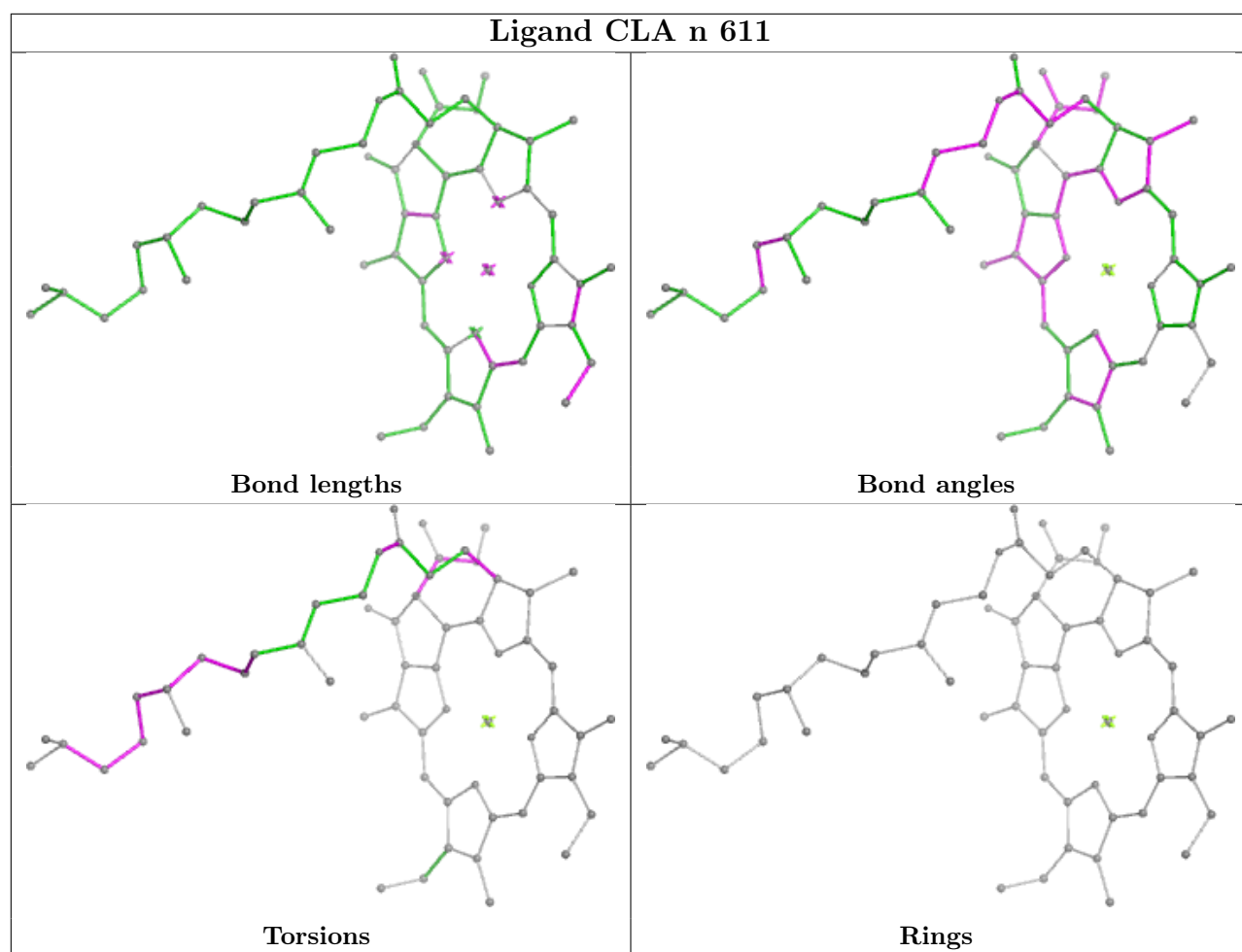




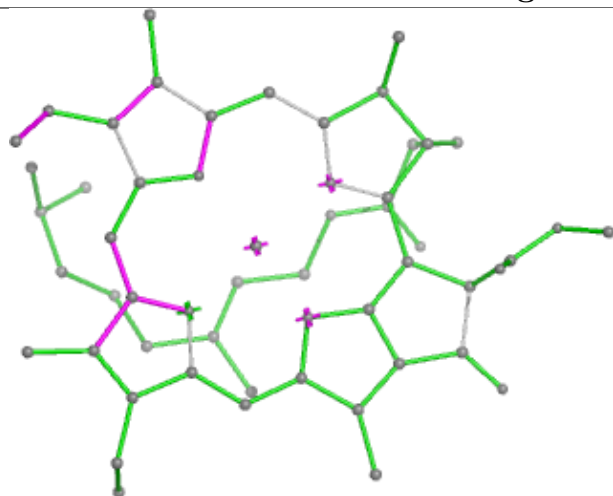




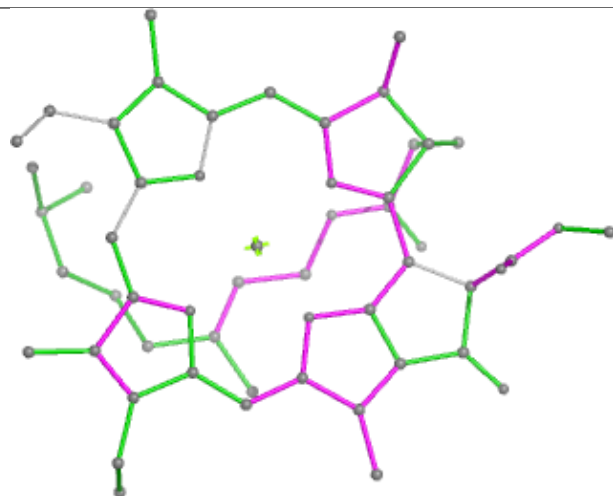




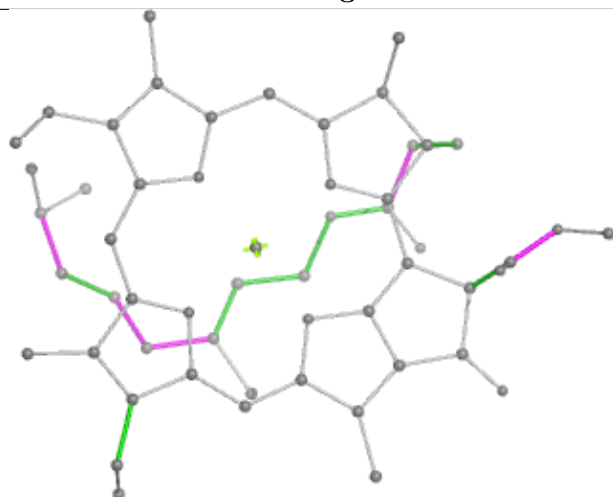
## Ligand CLA S 313



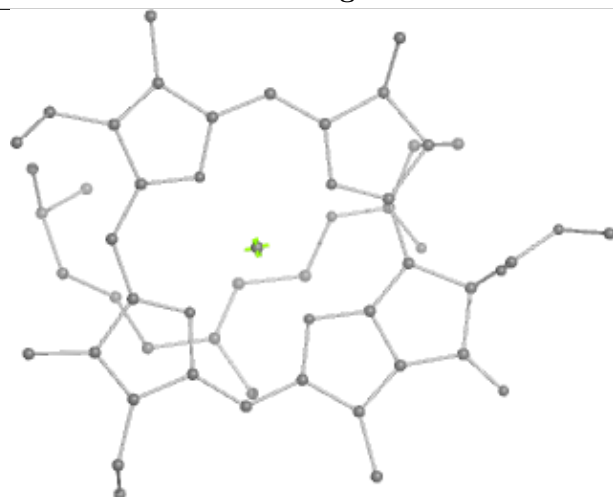
Bond lengths



Bond angles

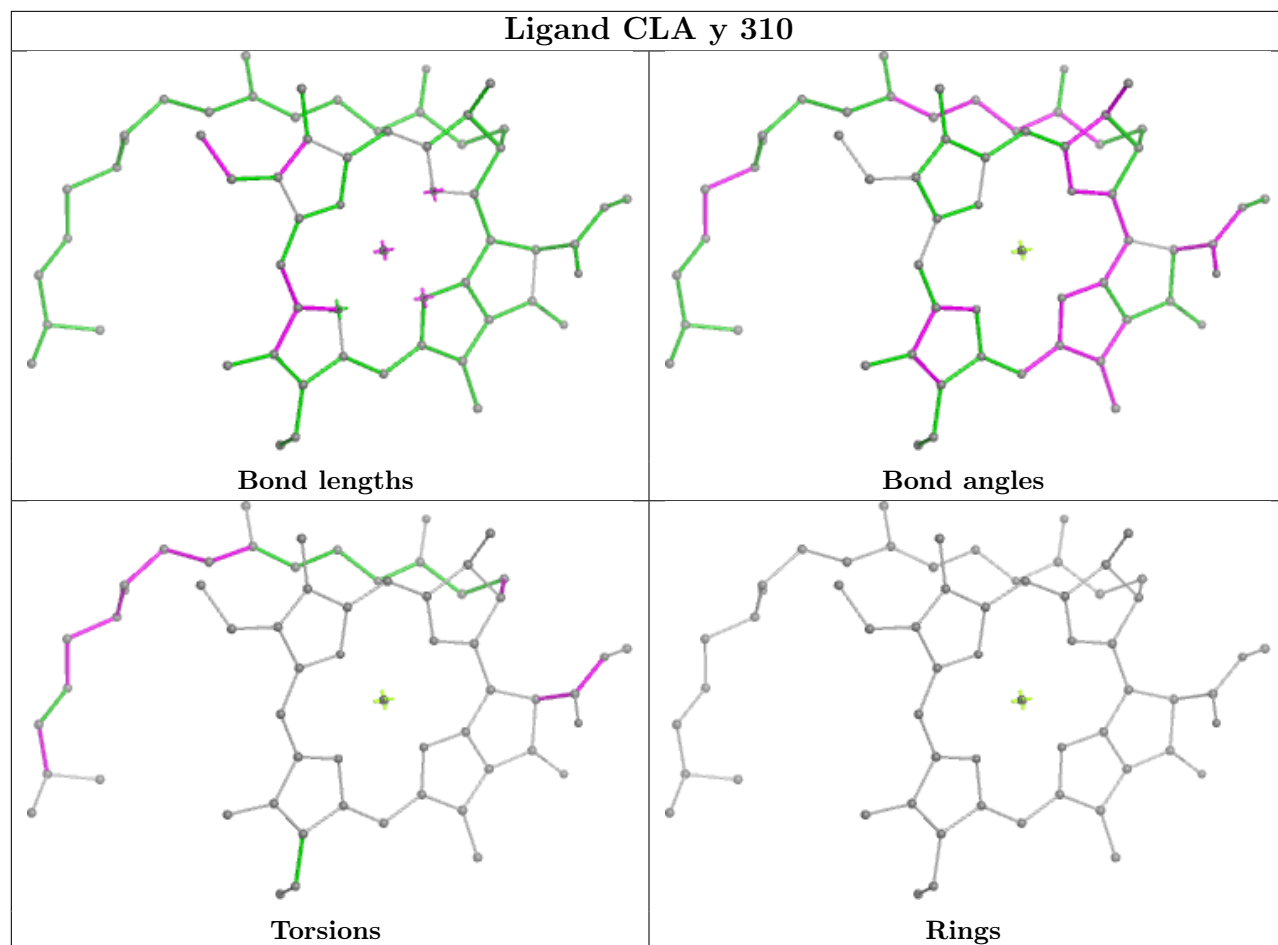


Torsions

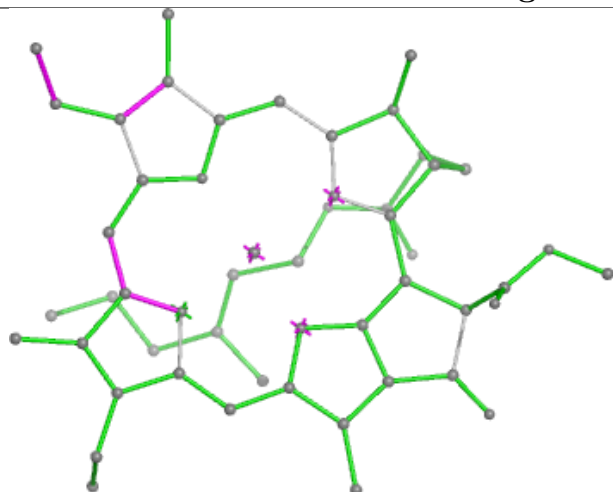


Rings

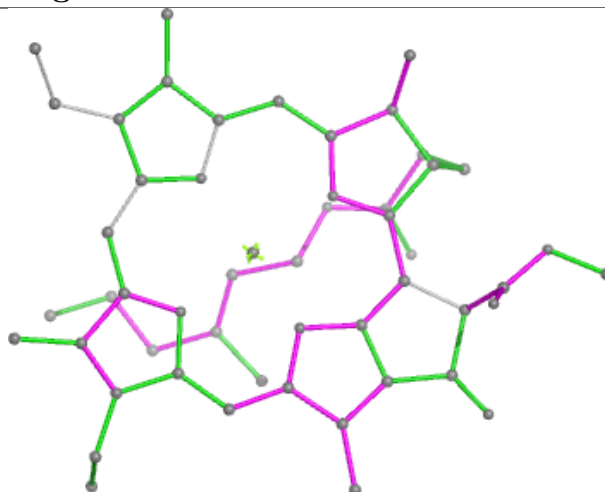
## Ligand CLA y 310



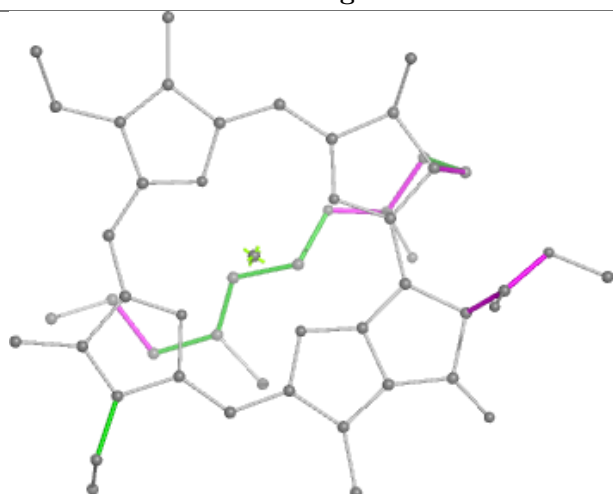
## Ligand CLA g 613



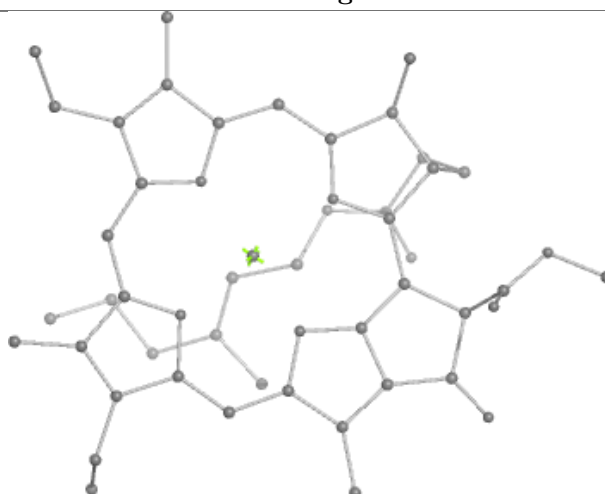
Bond lengths



Bond angles

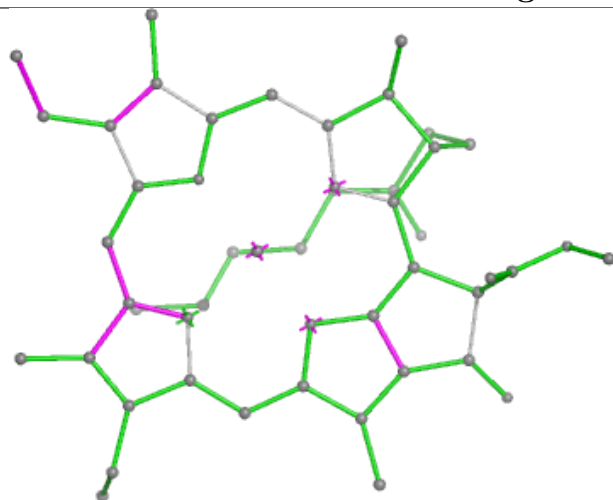


Torsions

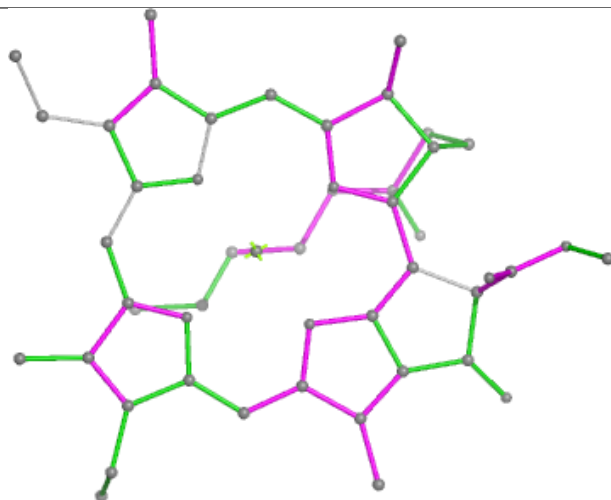


Rings

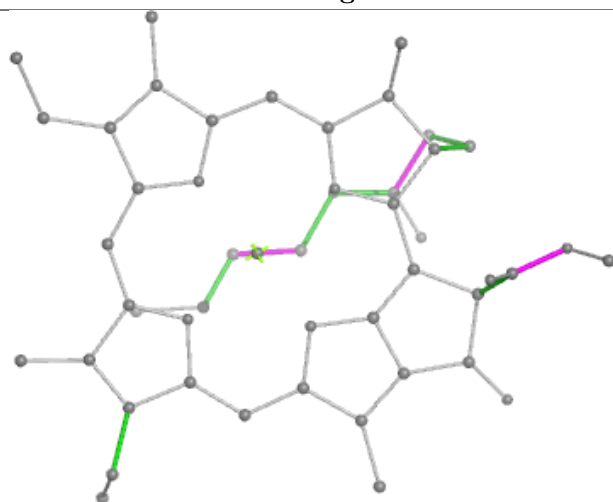
## Ligand CLA S 314



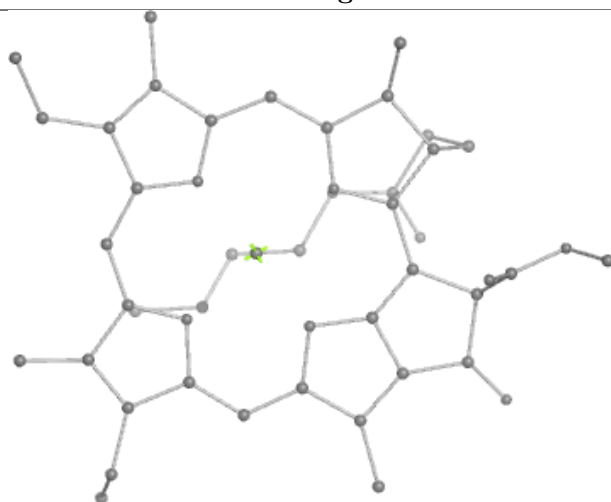
Bond lengths



Bond angles



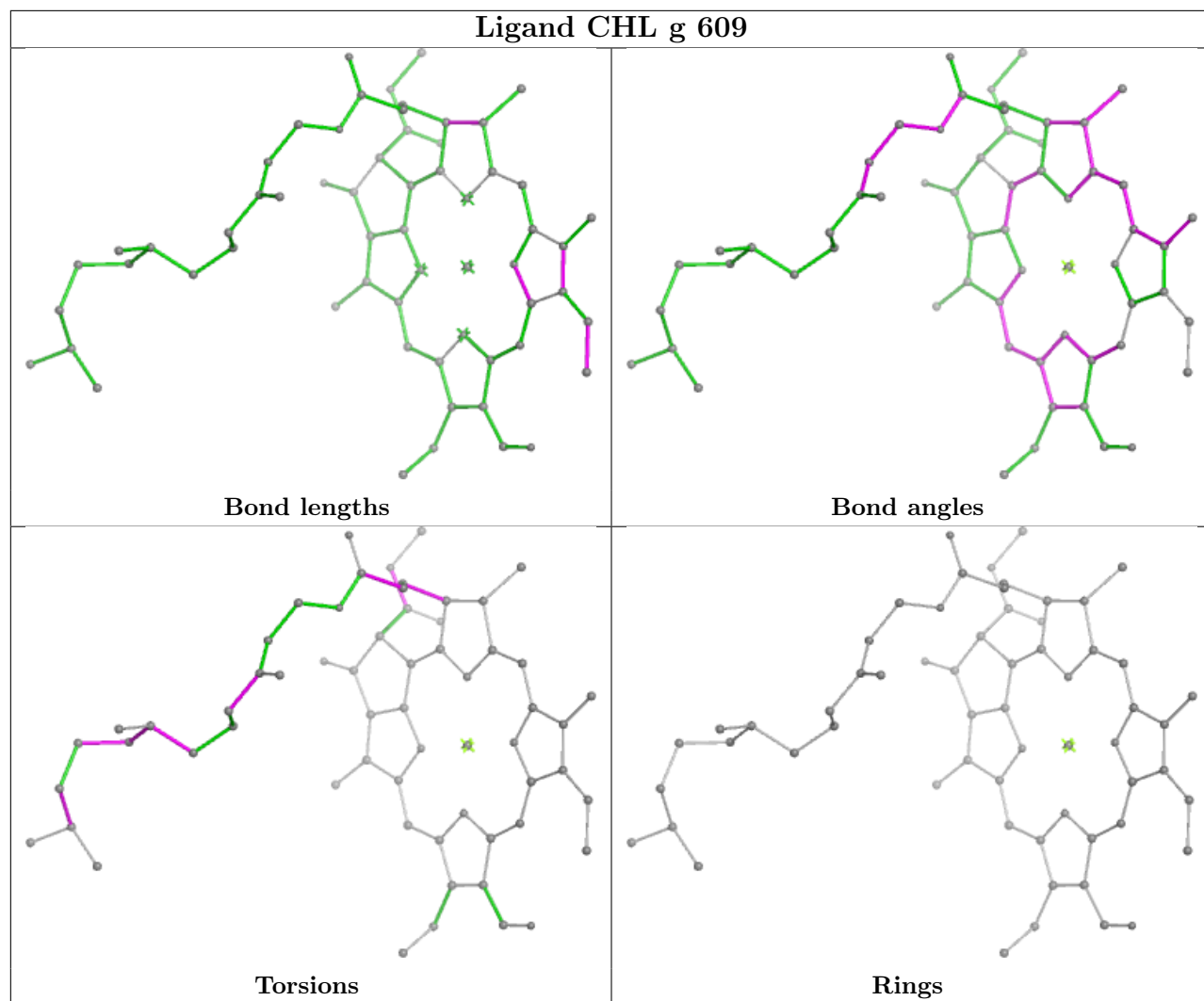
Torsions

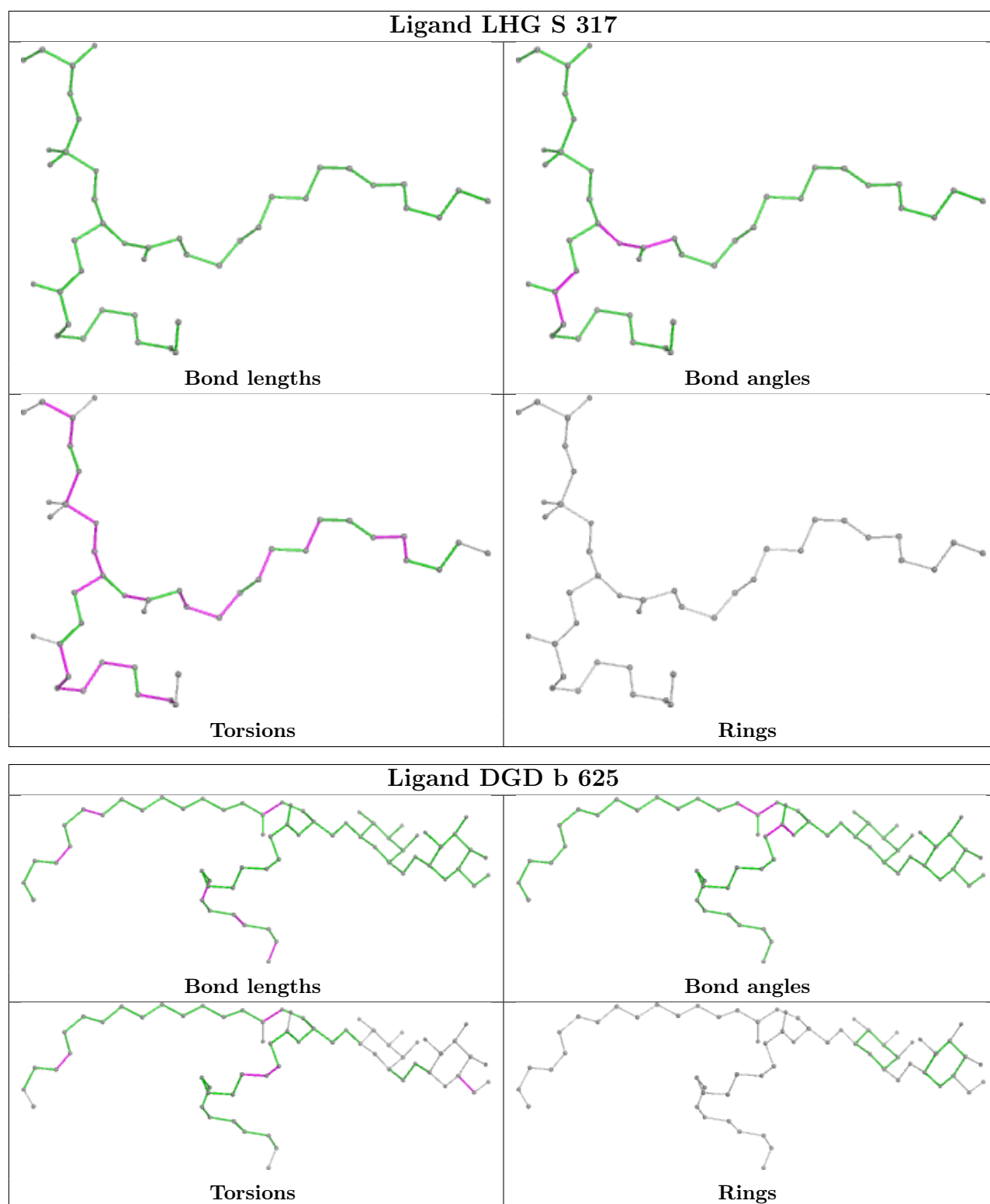


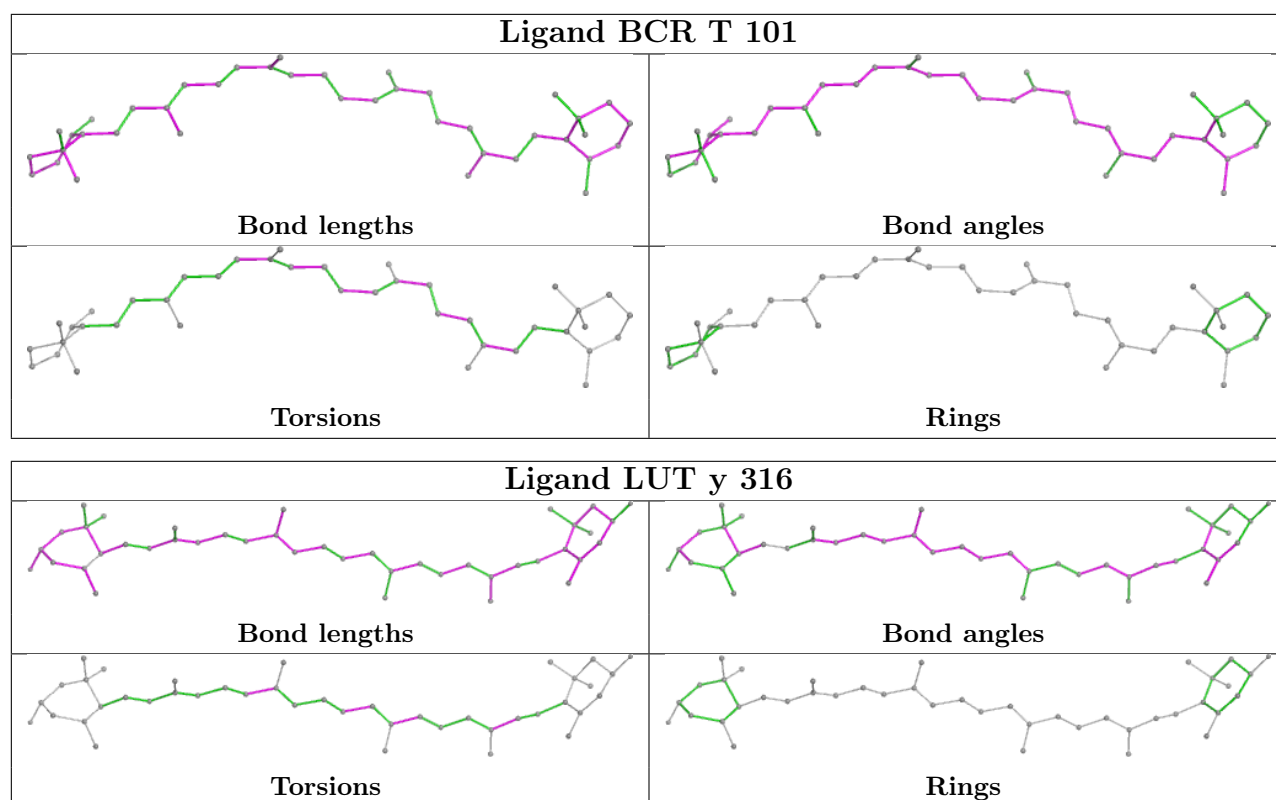
Rings



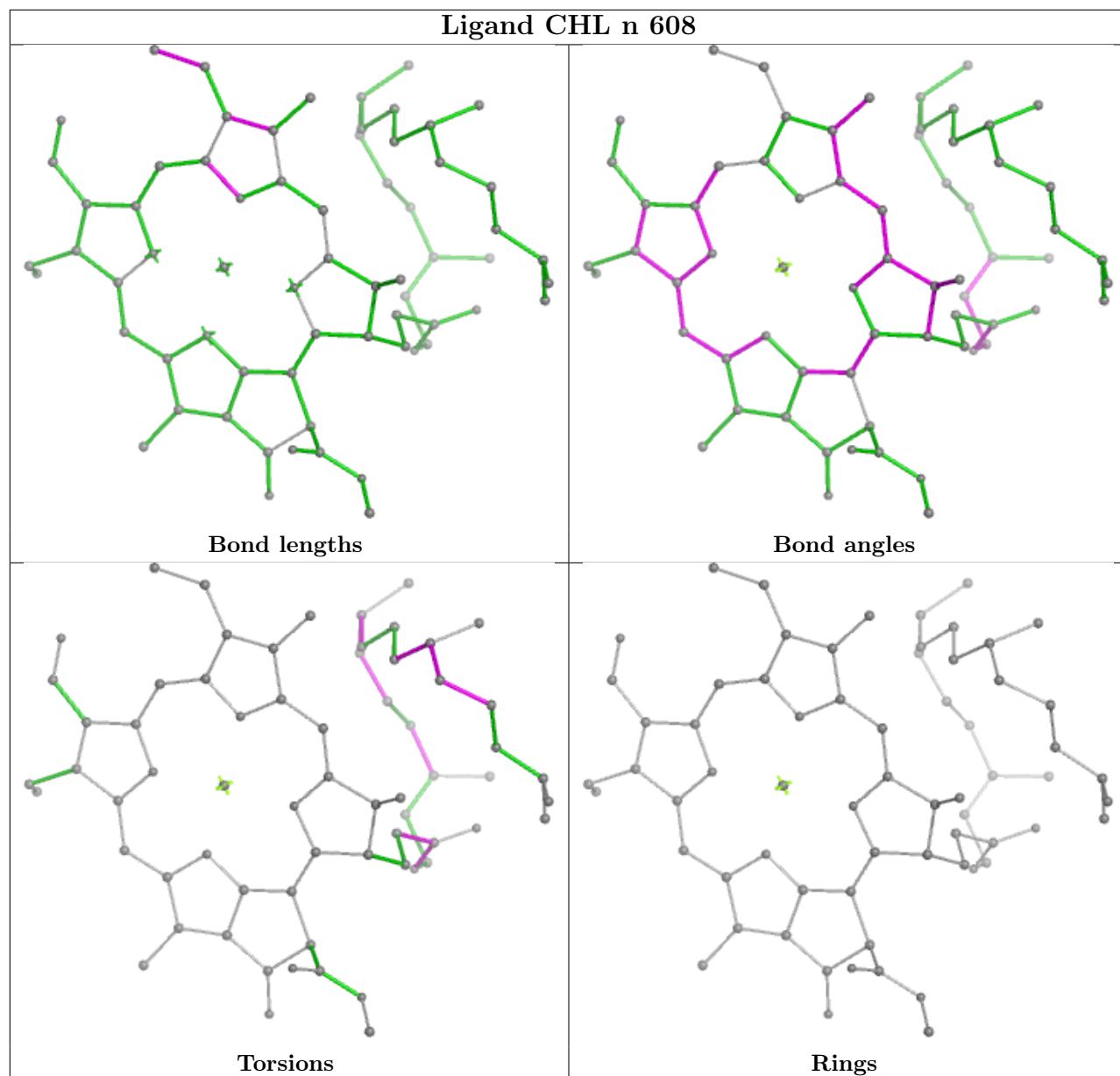
## Ligand CHL g 609



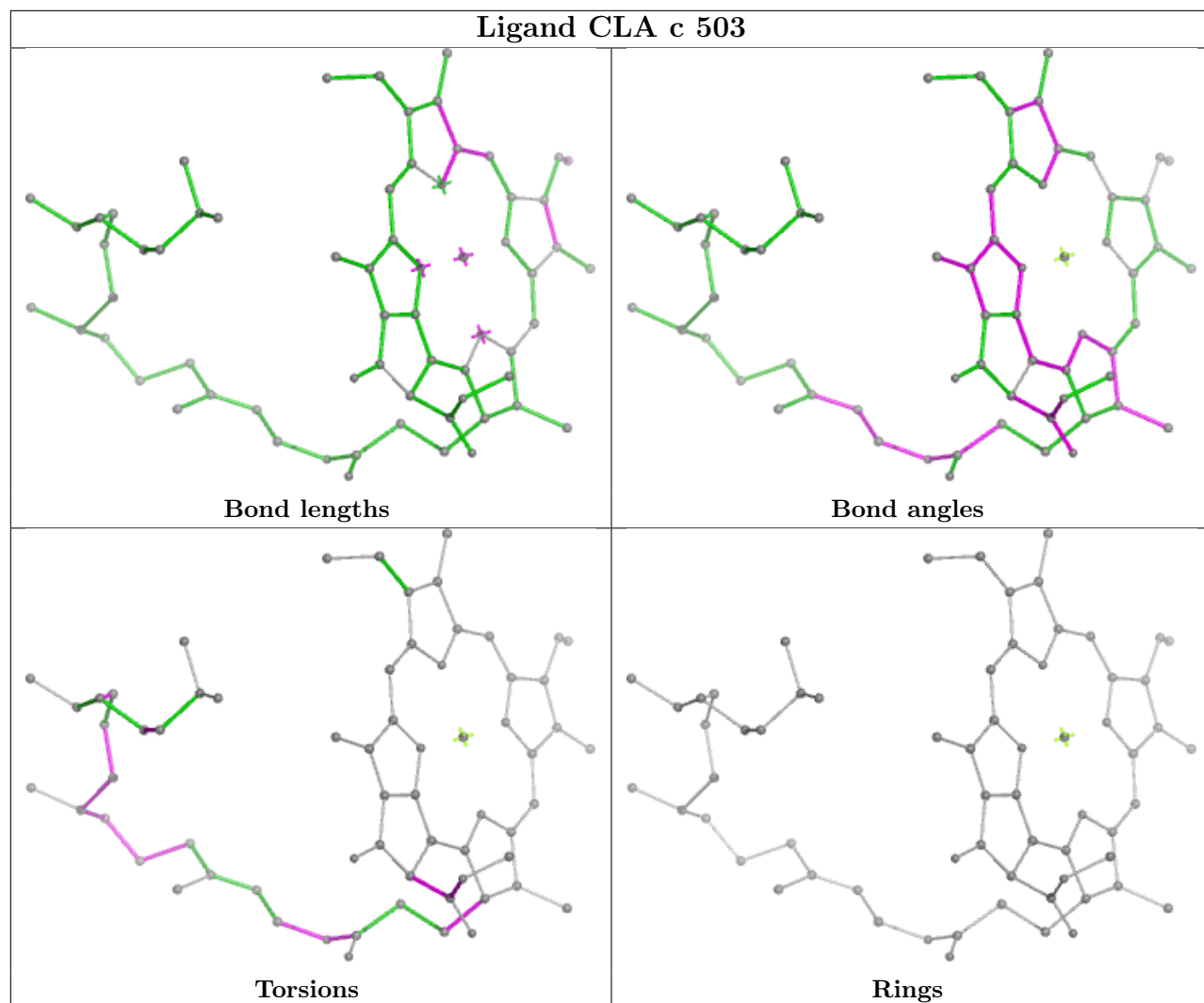




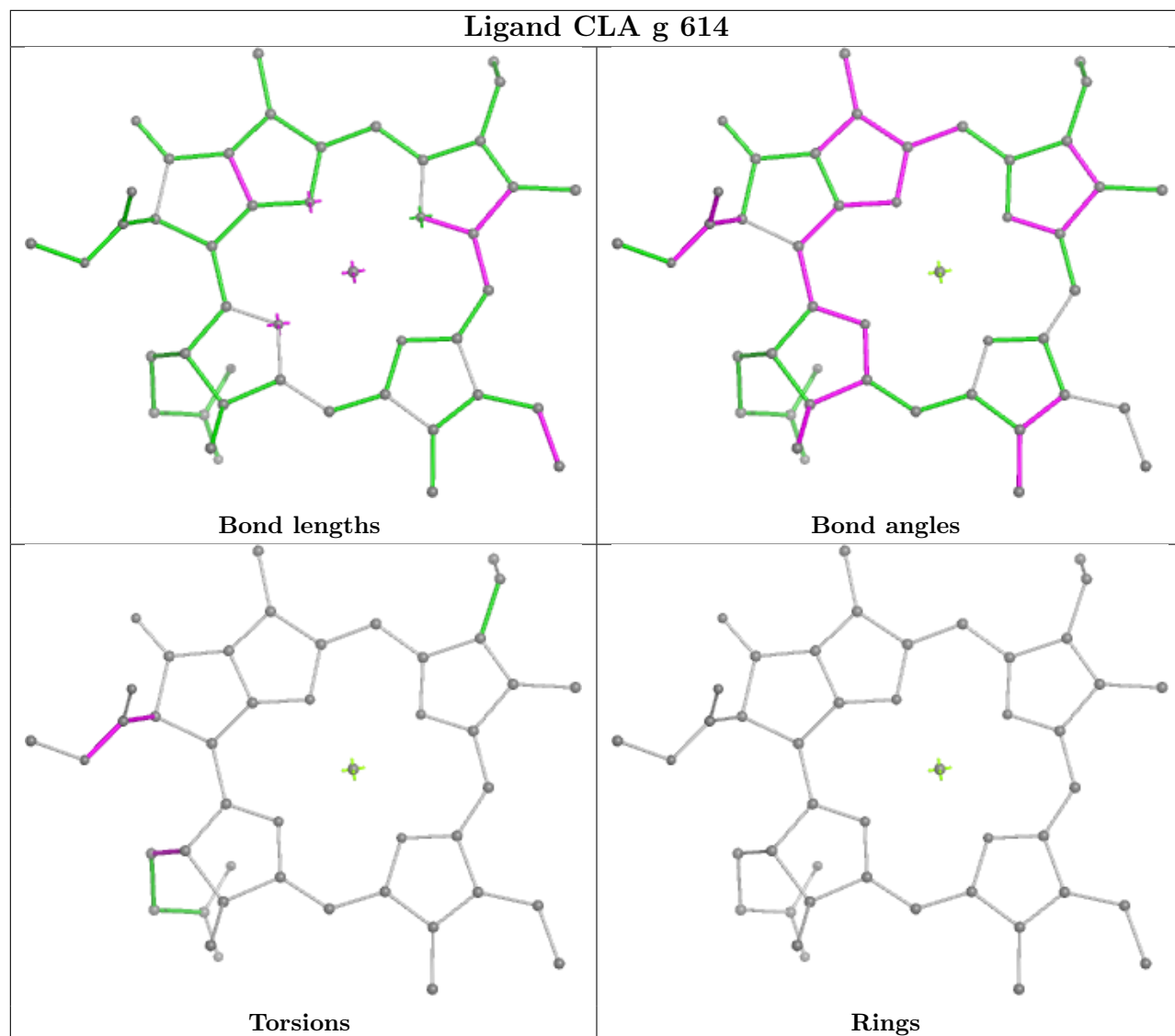
## Ligand CHL n 608



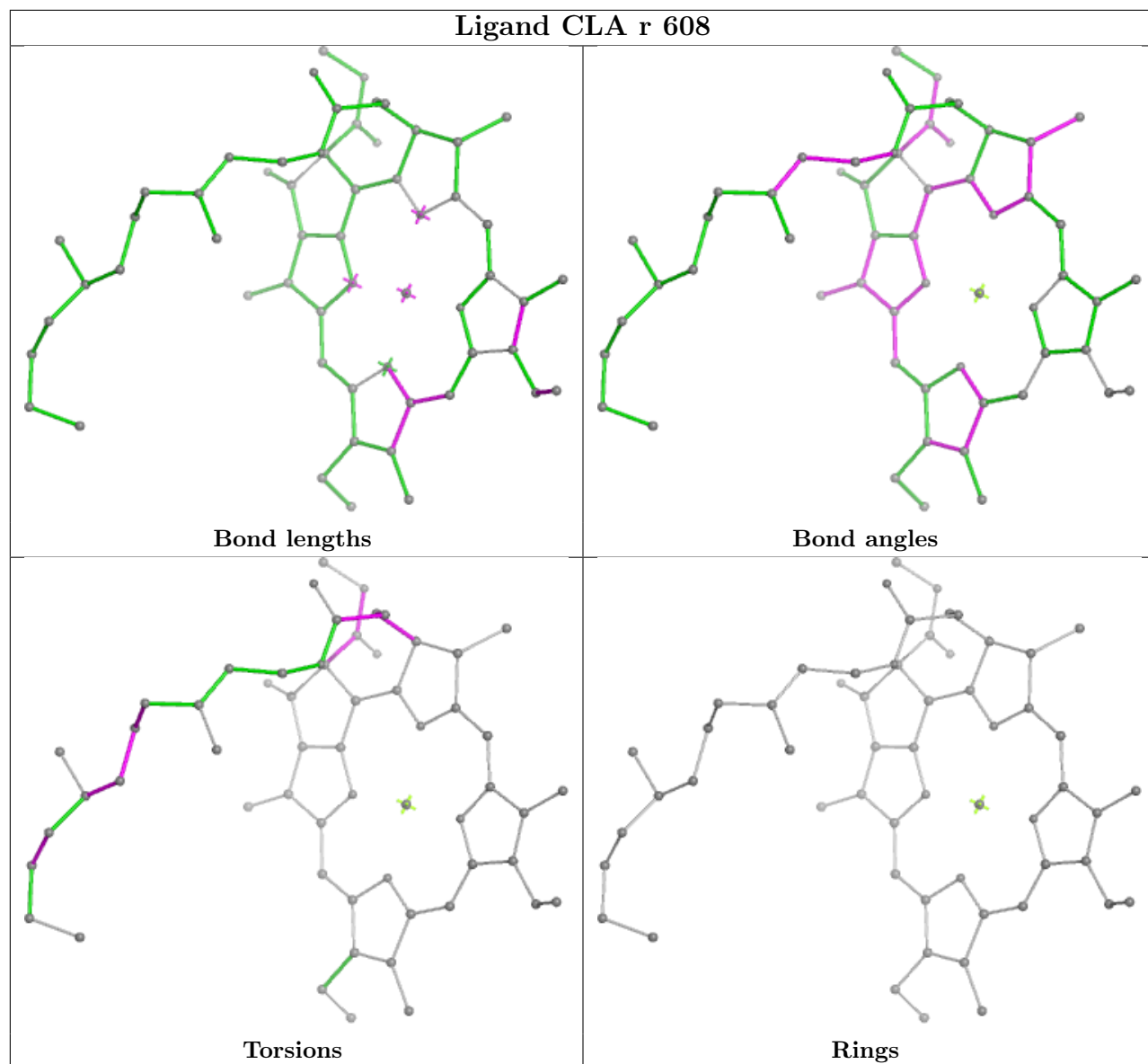
## Ligand CLA c 503



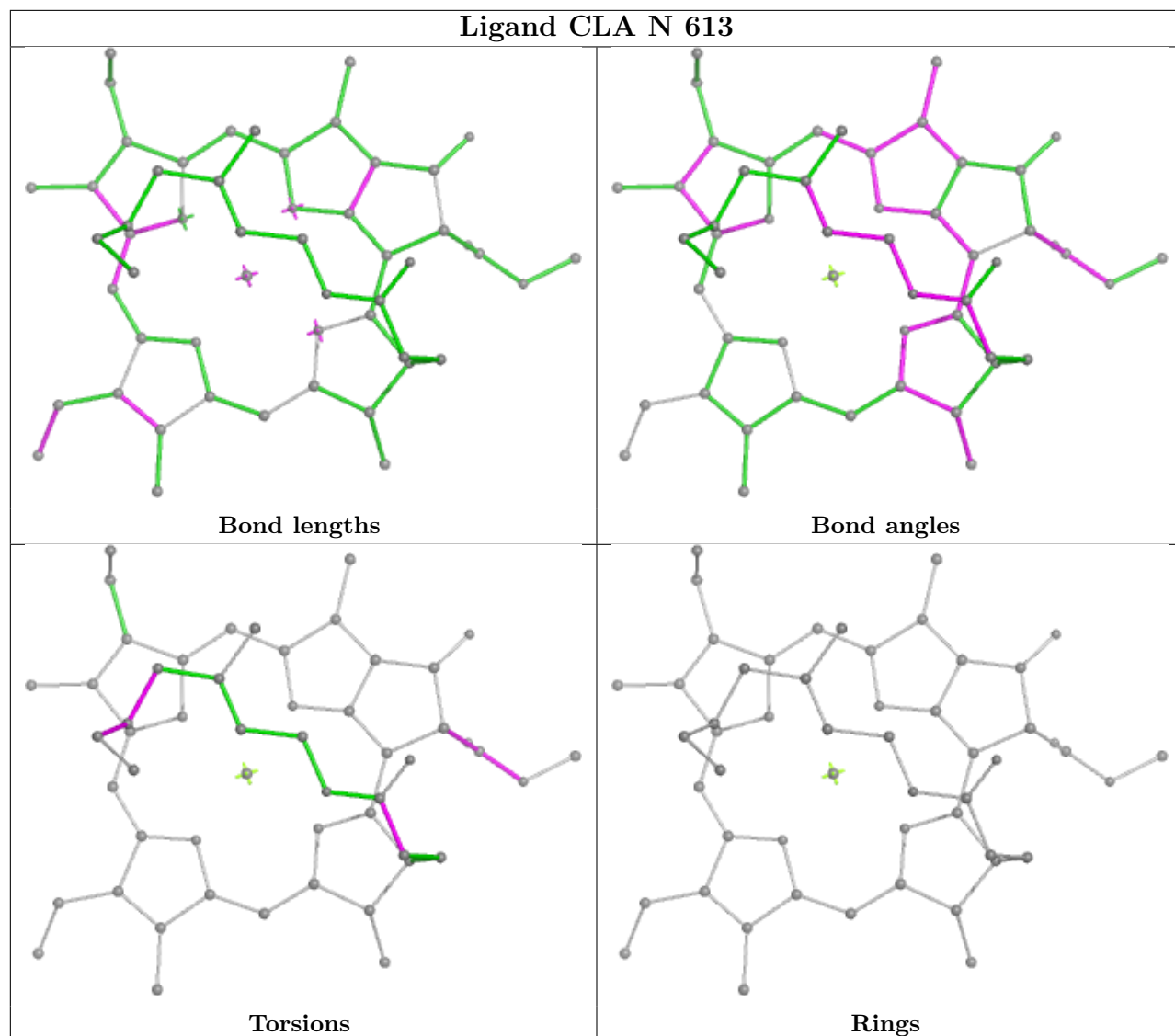
## Ligand CLA g 614



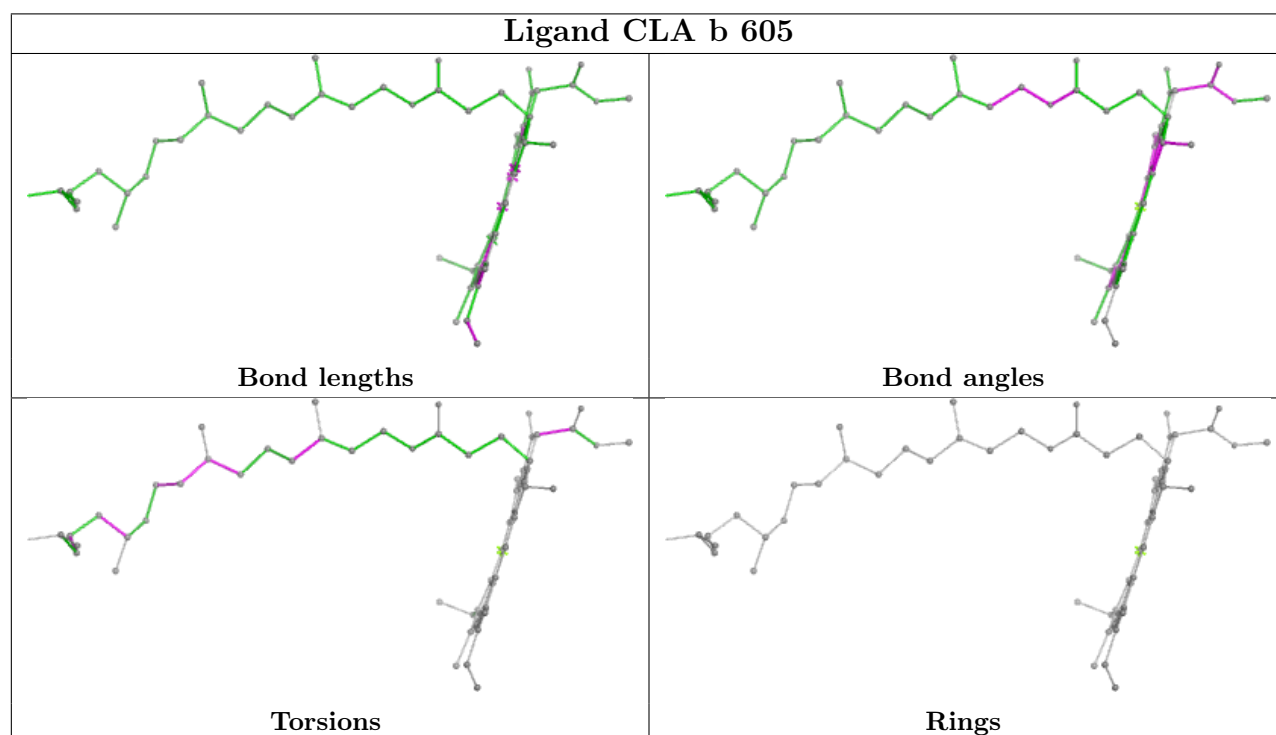
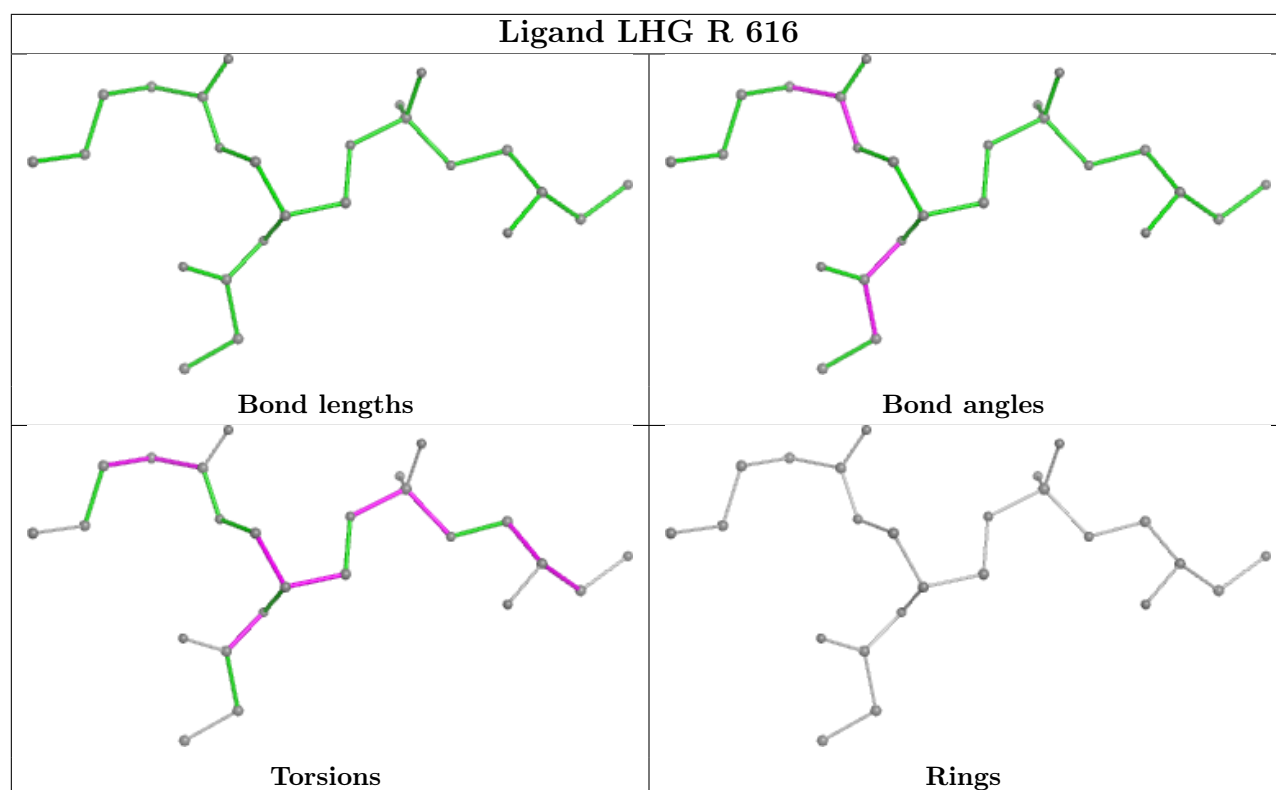
## Ligand CLA r 608

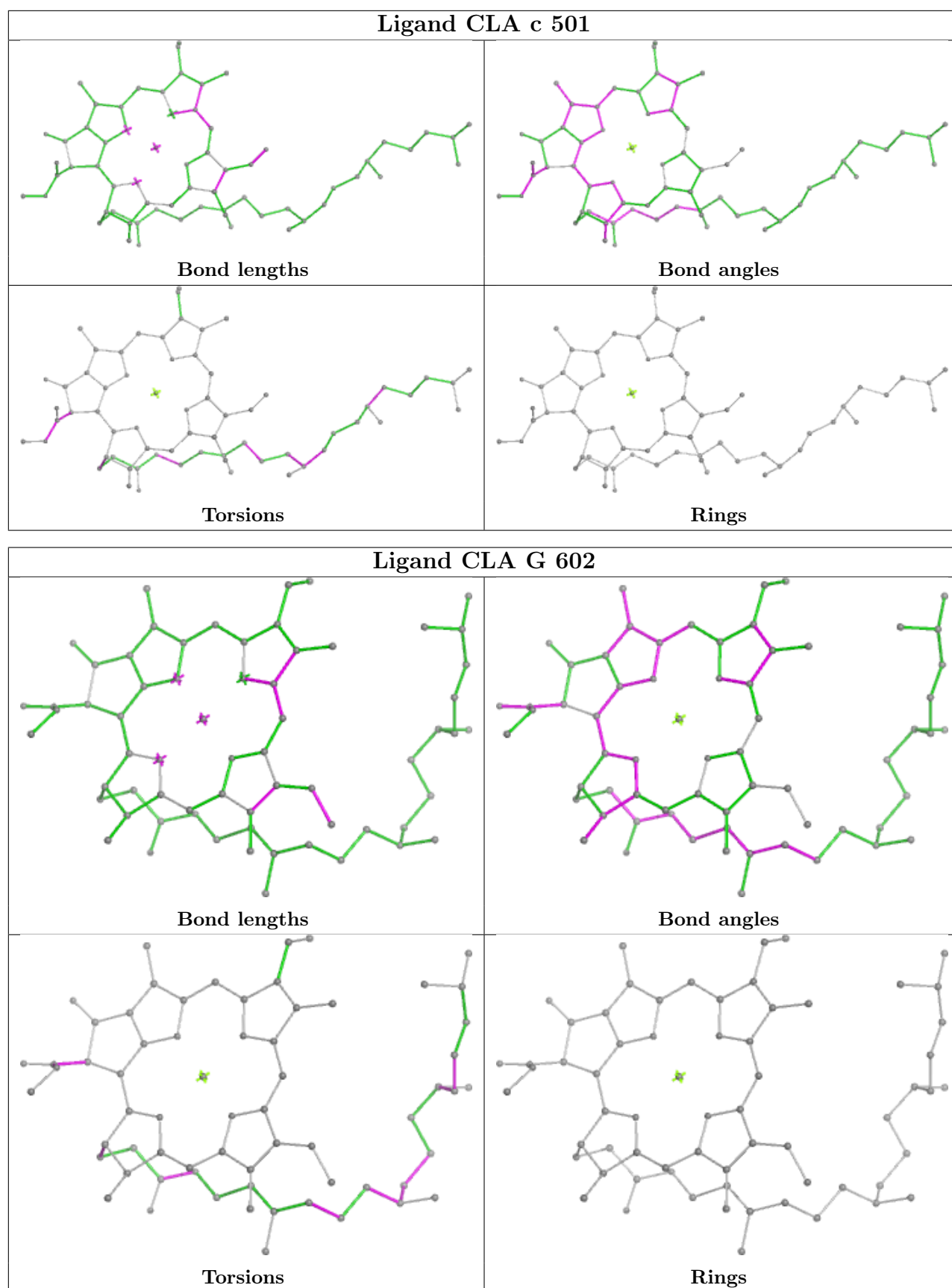


## Ligand CLA N 613

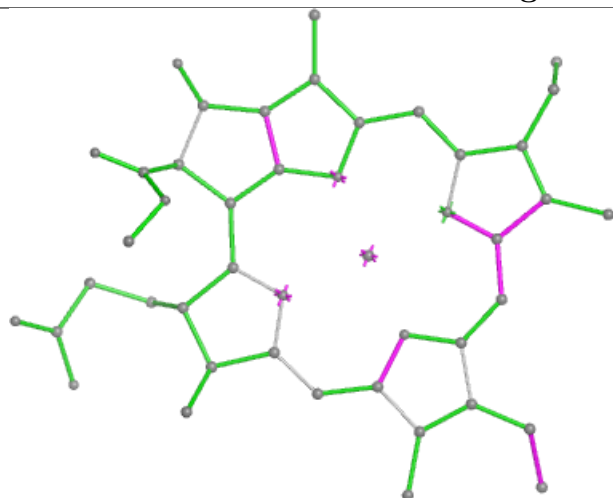




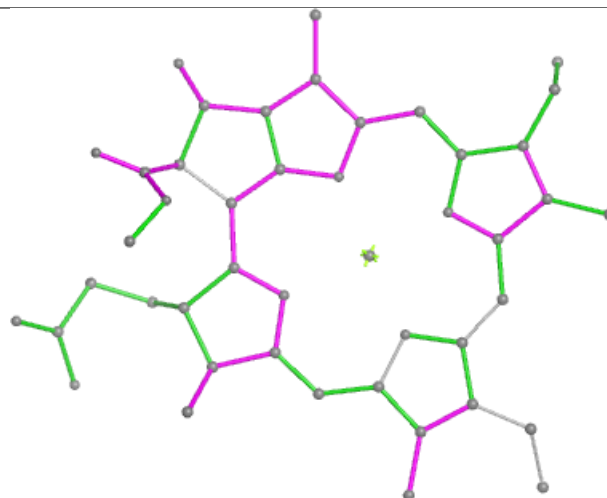




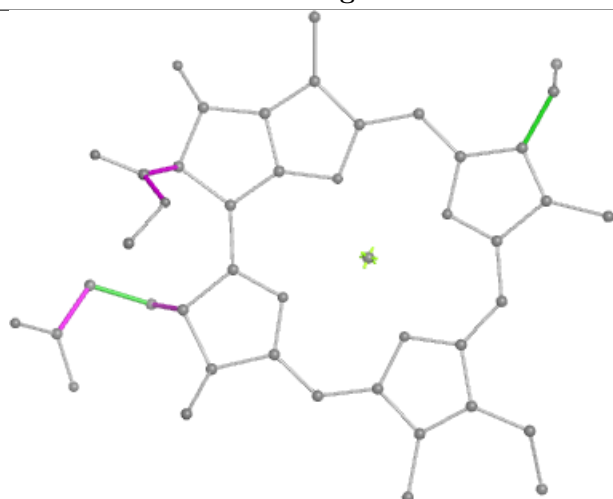
## Ligand CLA s 603



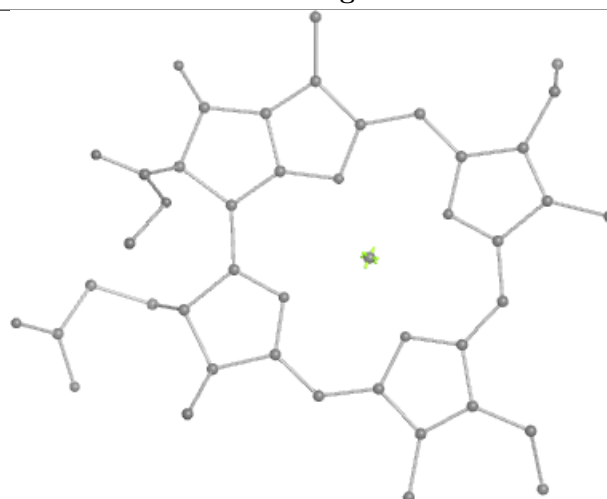
Bond lengths



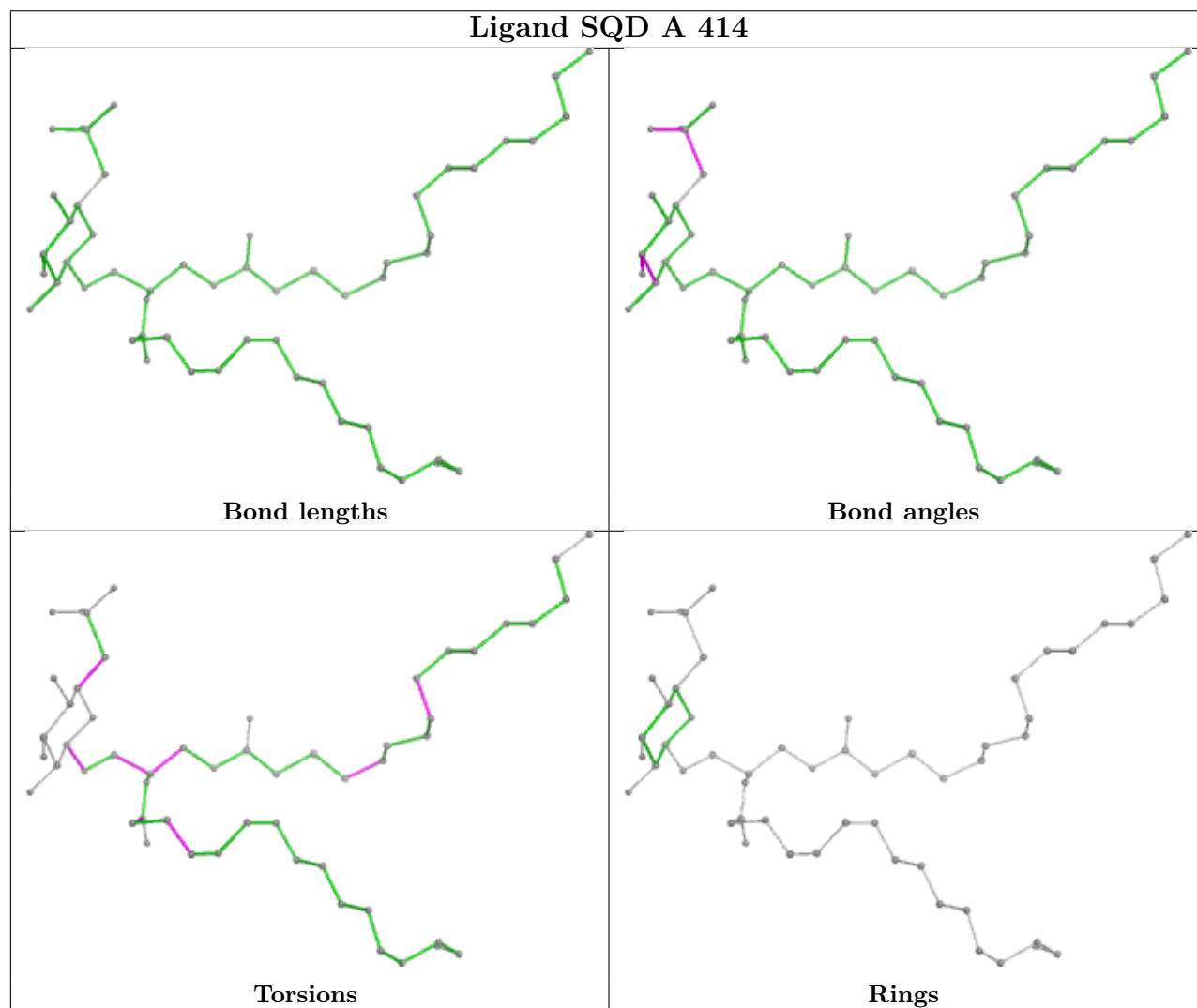
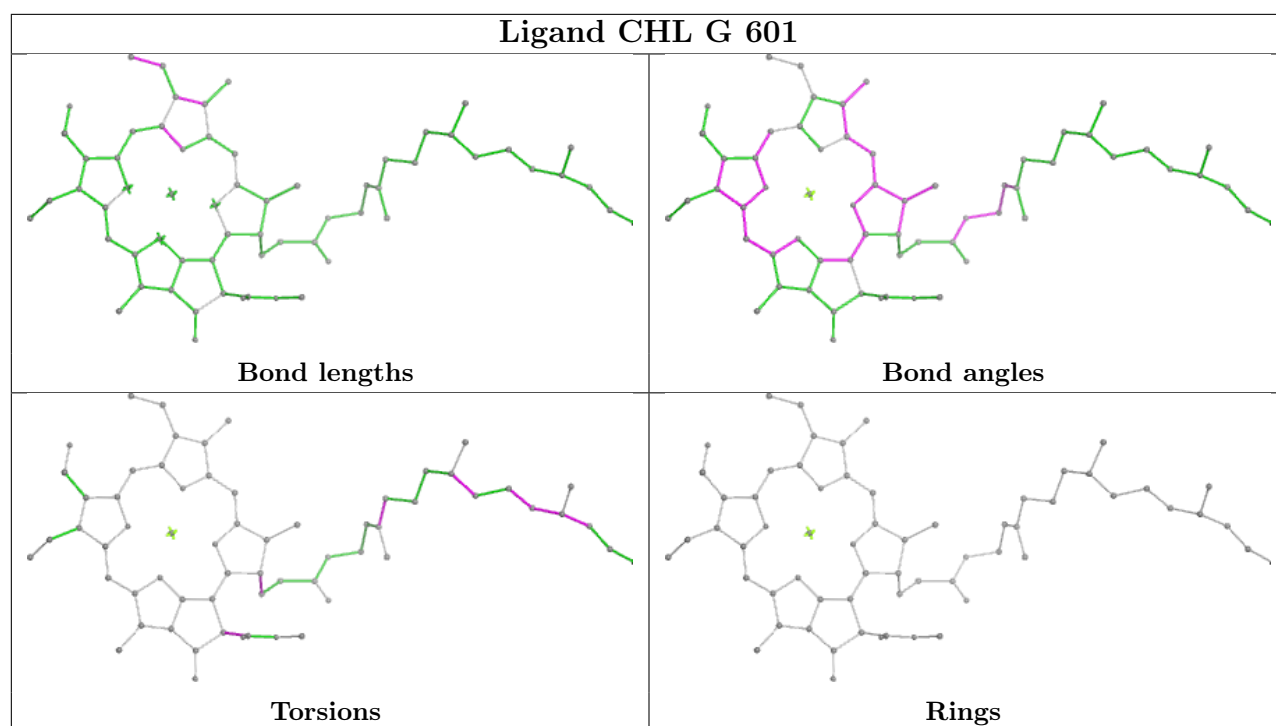
Bond angles

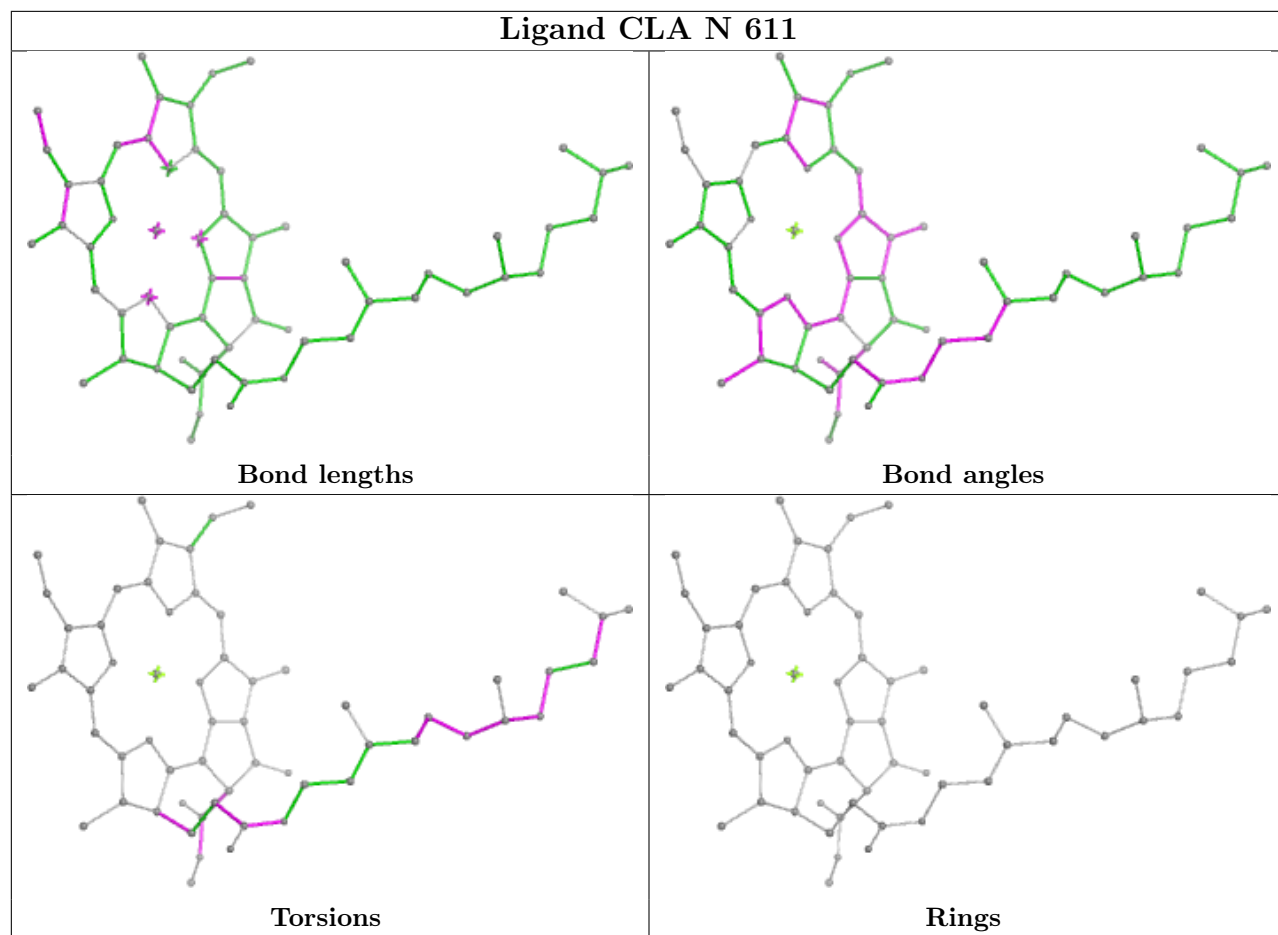


Torsions

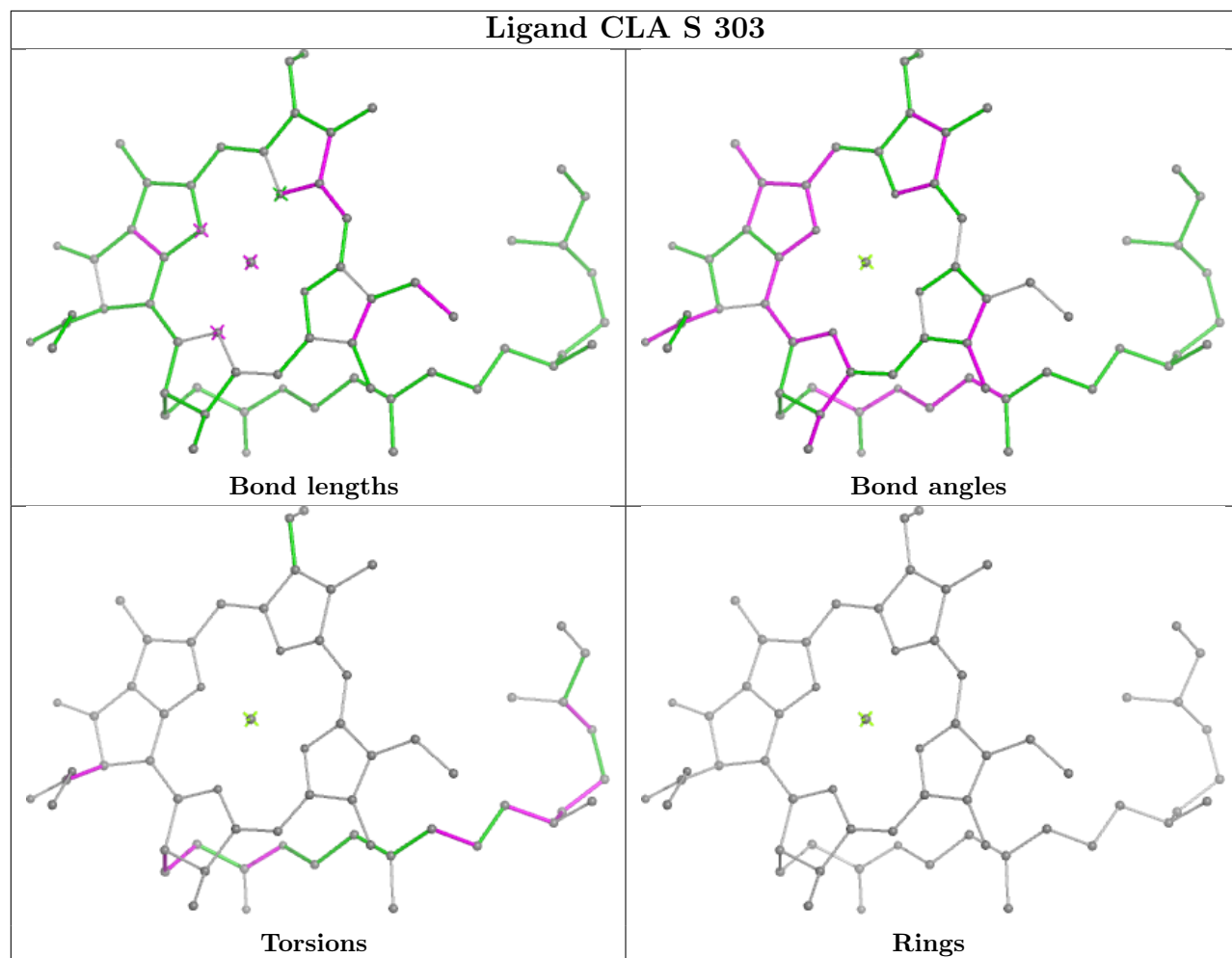


Rings

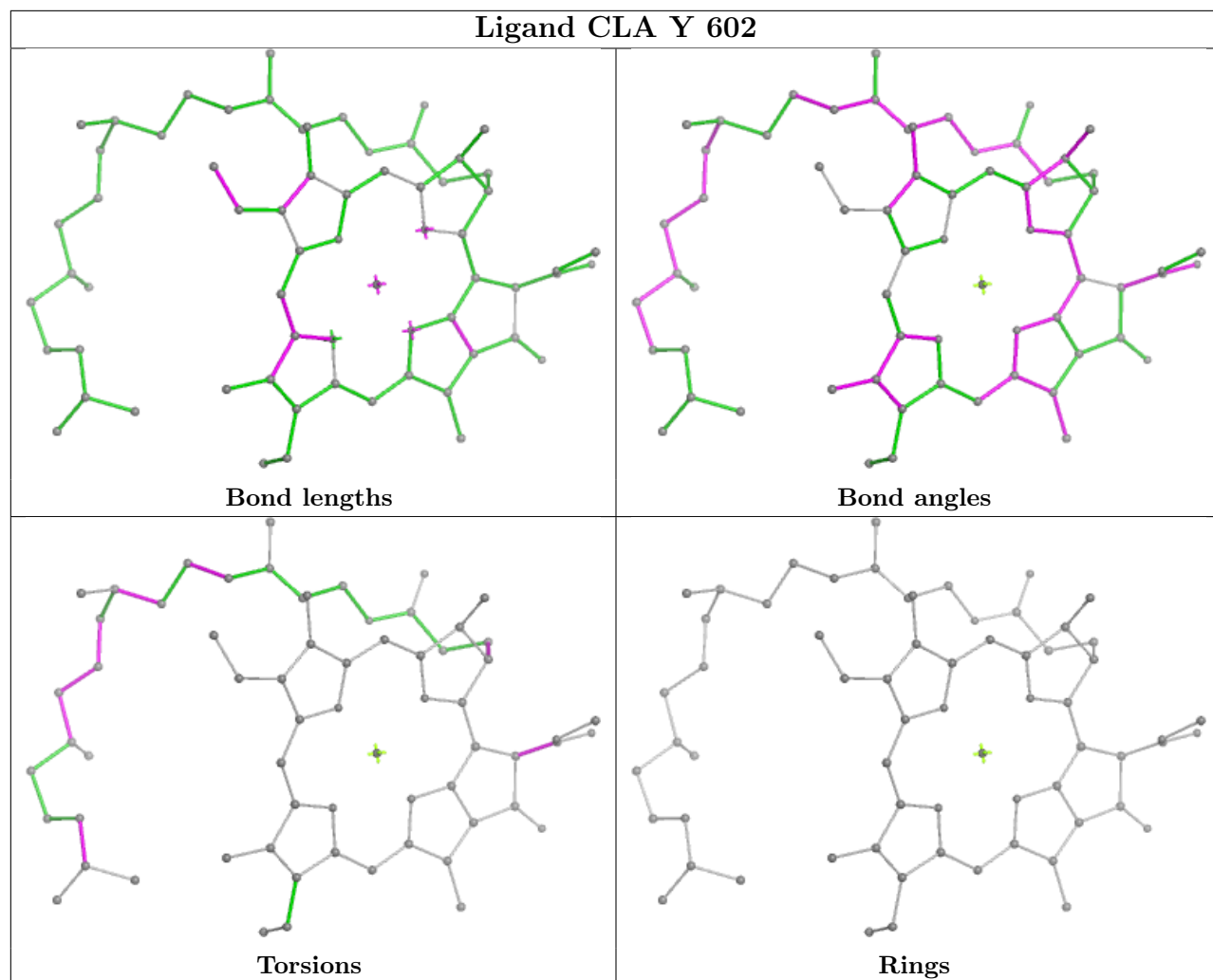




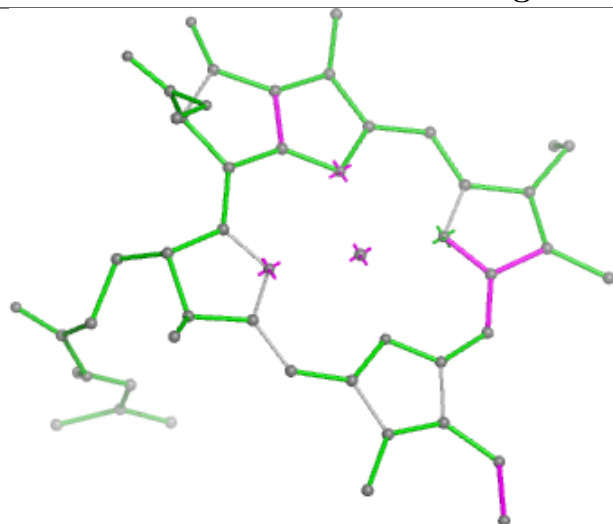
## Ligand CLA S 303



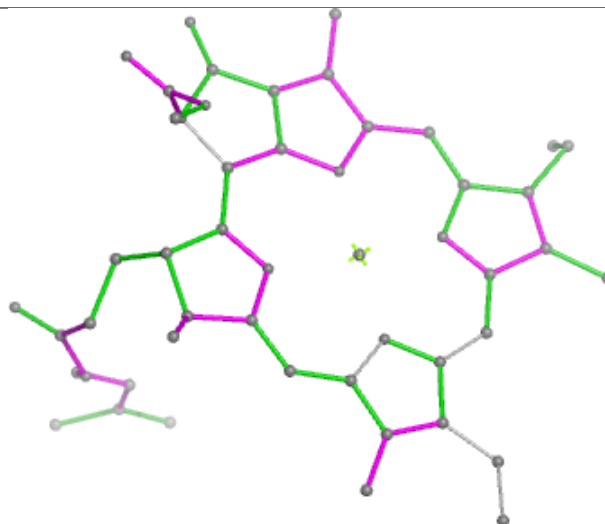
## Ligand CLA Y 602



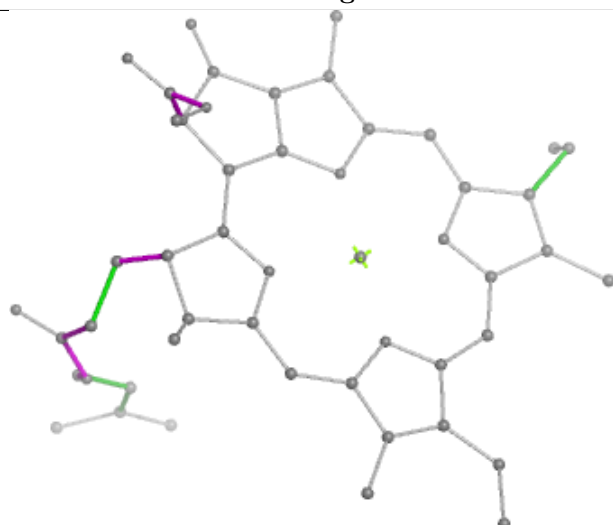
## Ligand CLA G 604



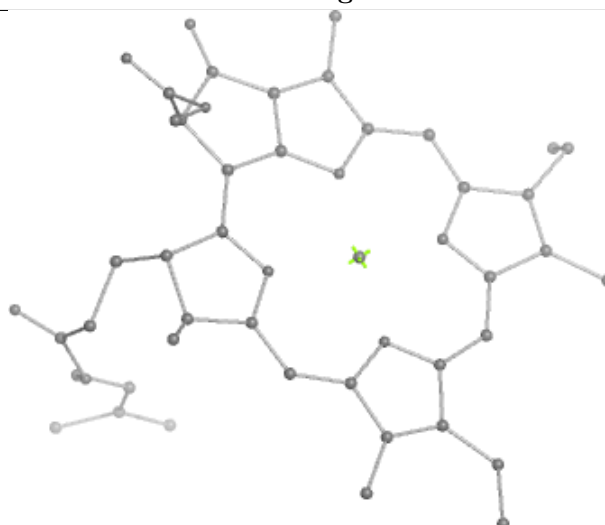
Bond lengths



Bond angles

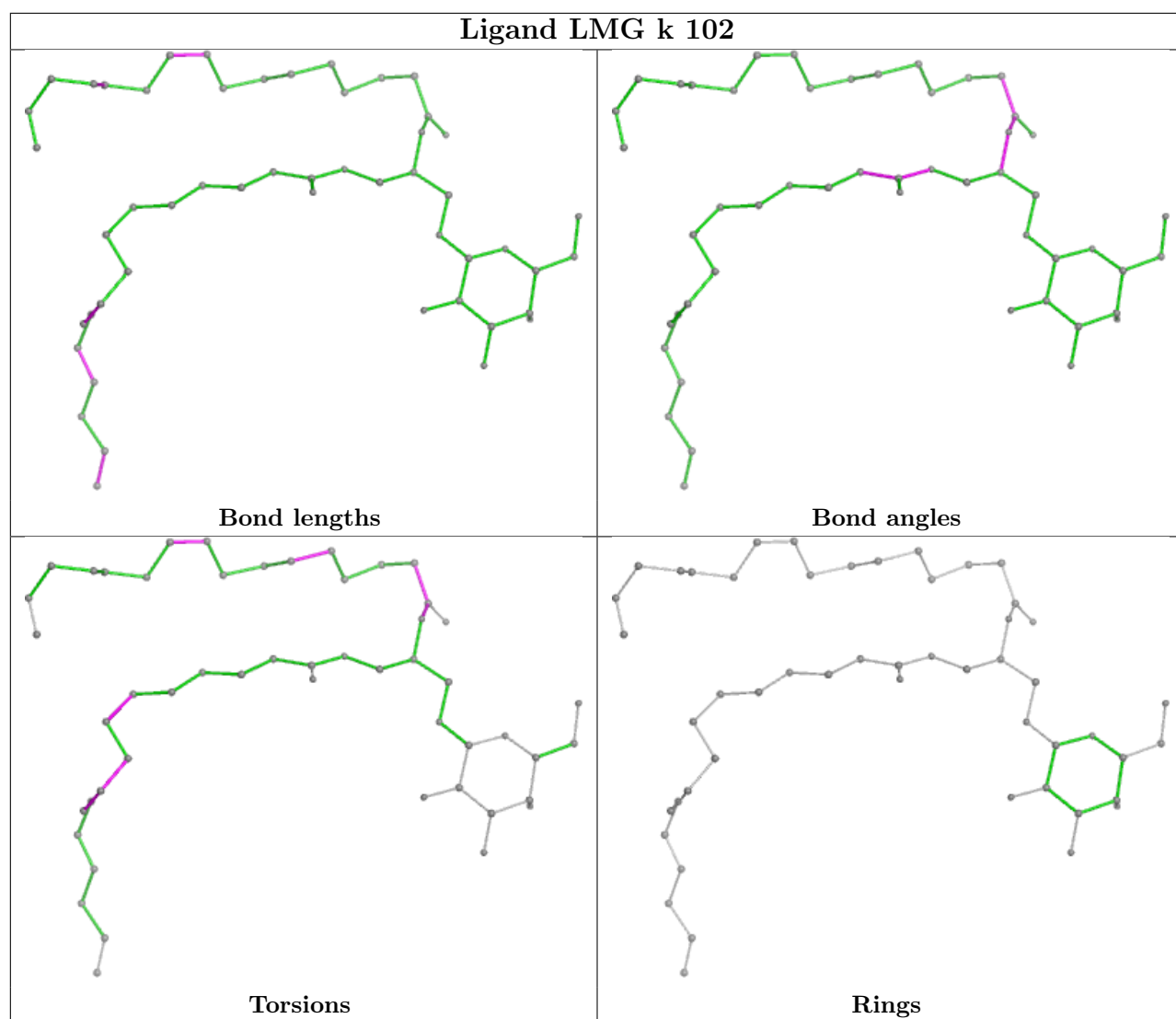


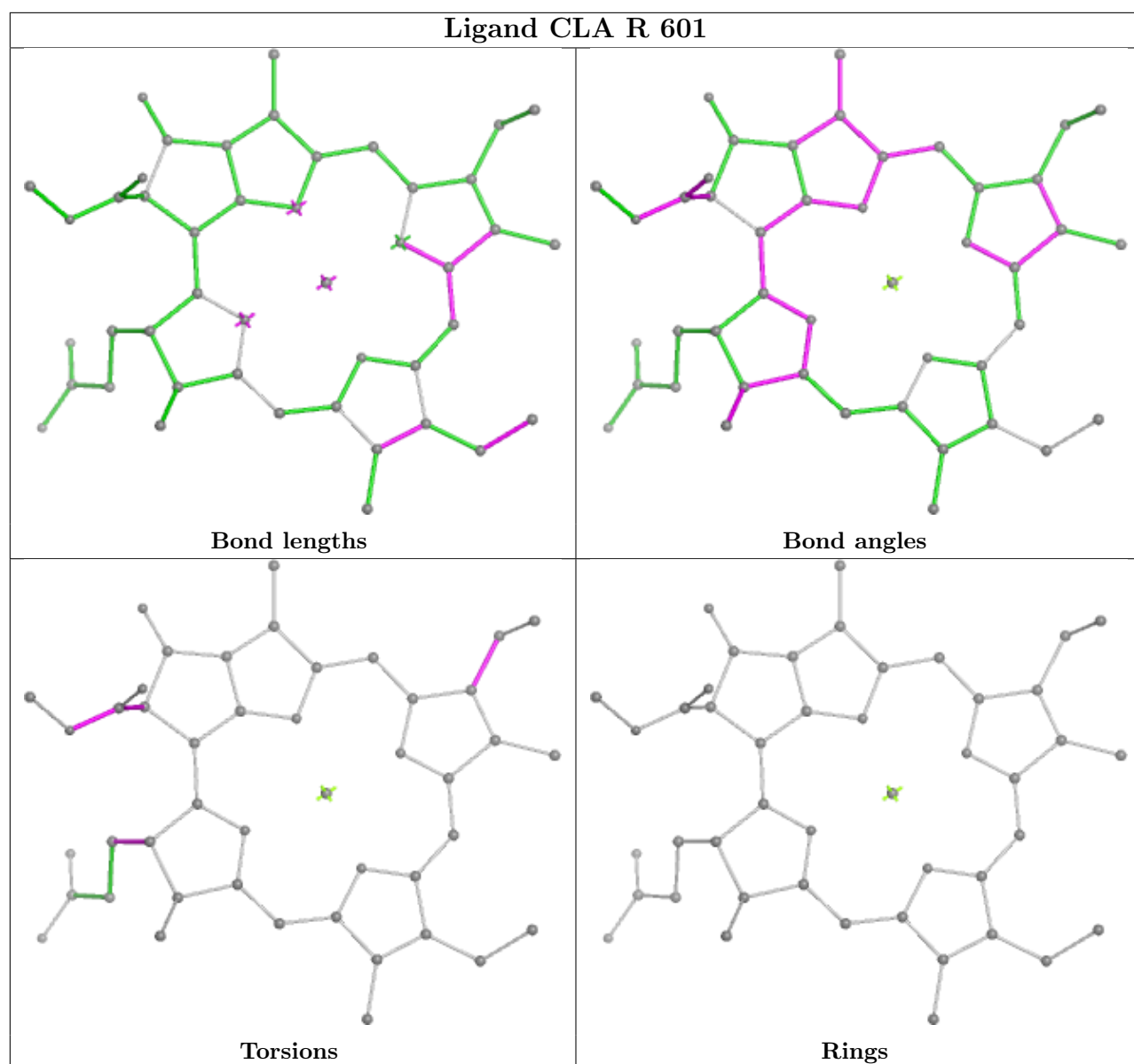
Torsions

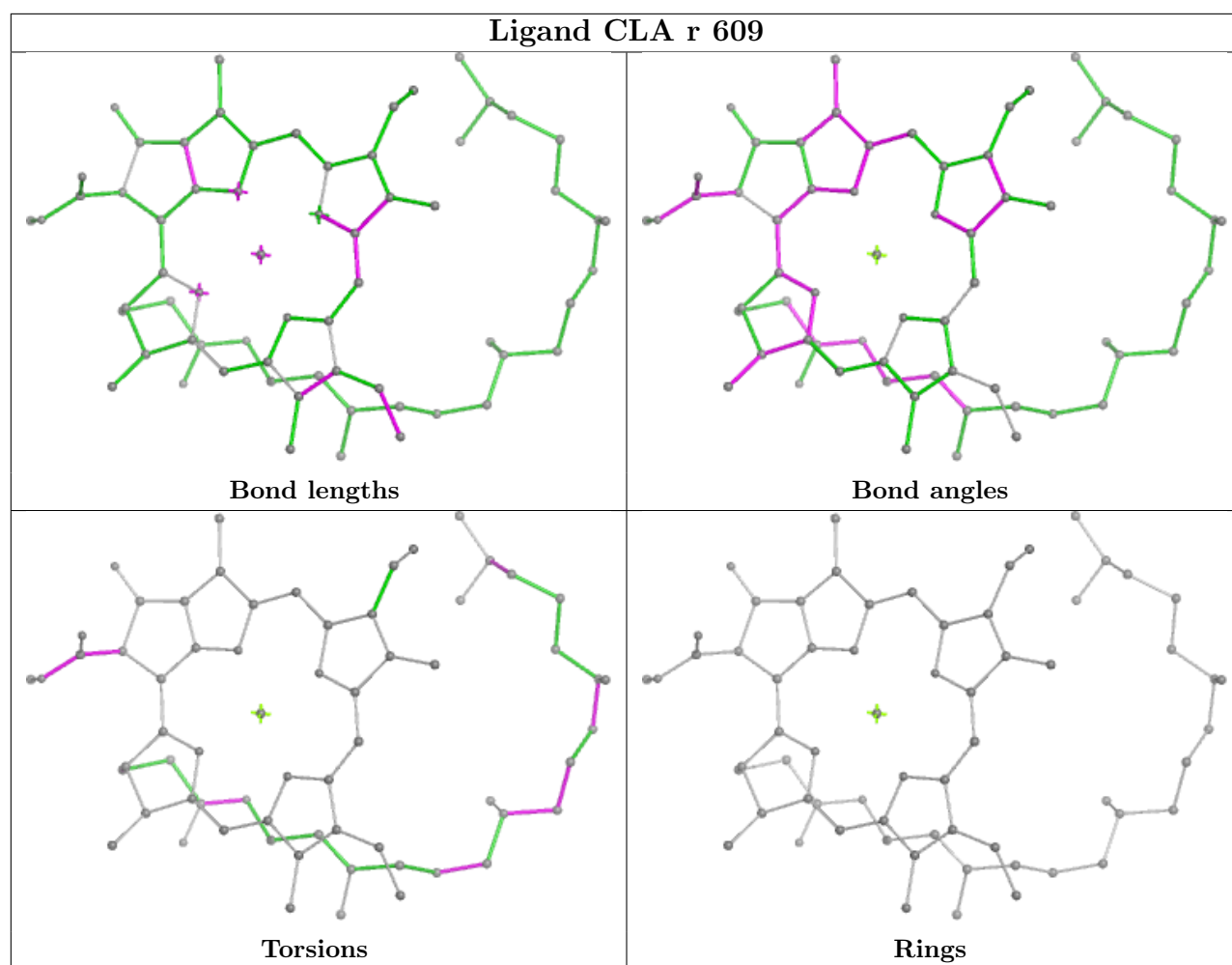


Rings

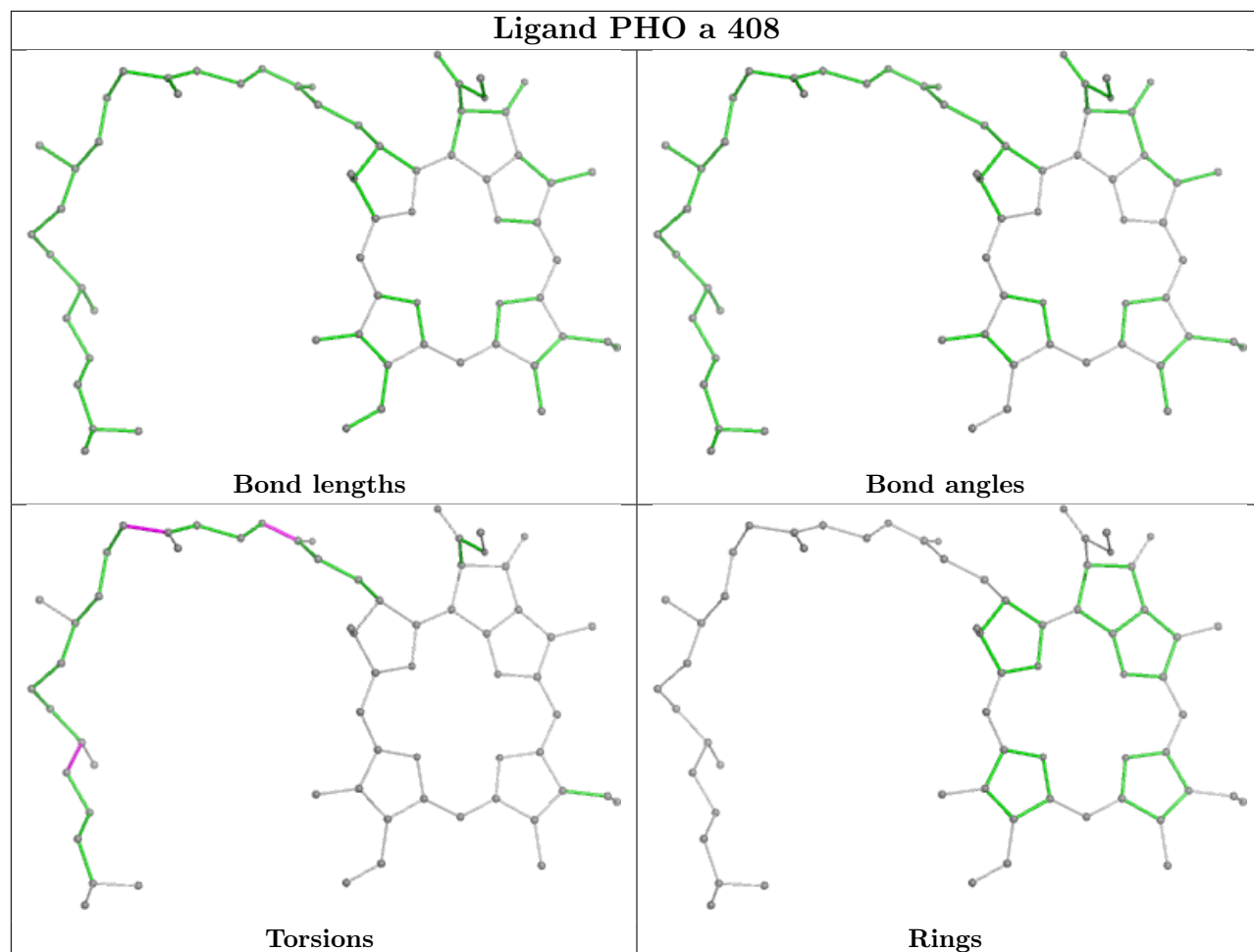




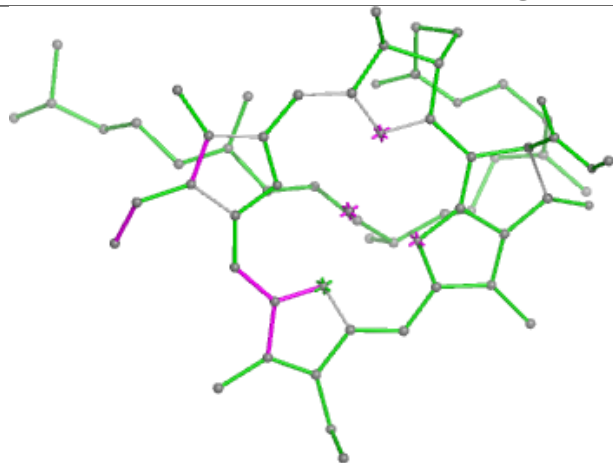




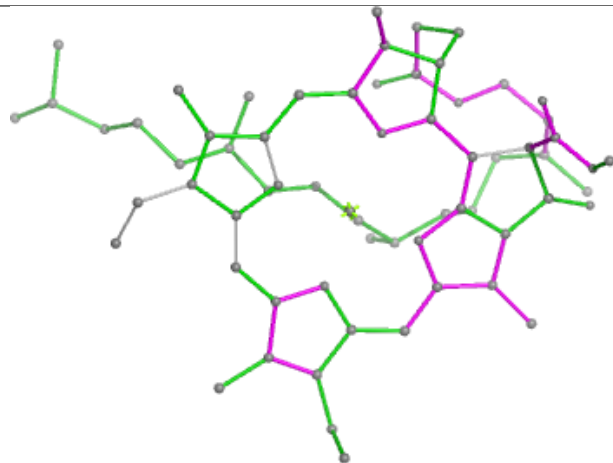
## Ligand PHO a 408



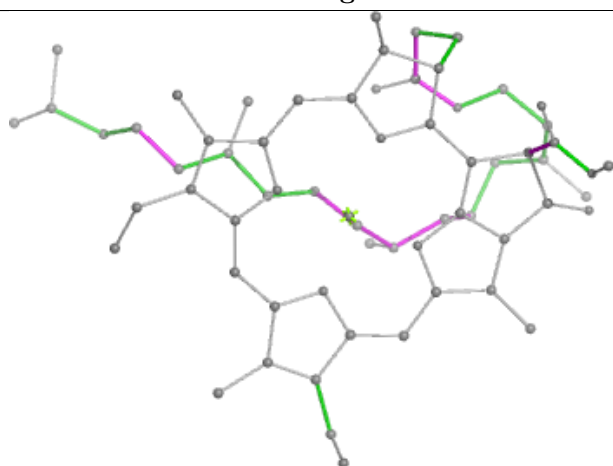
## Ligand CLA B 601



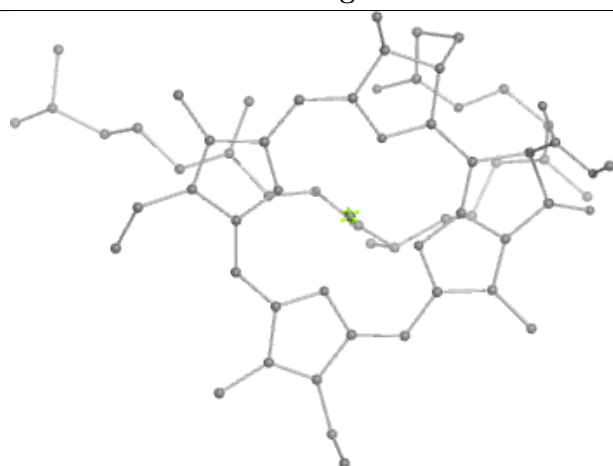
Bond lengths



Bond angles

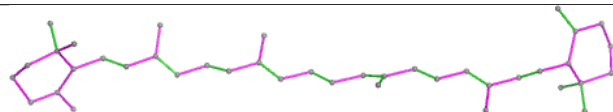


Torsions

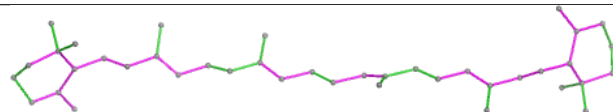


Rings

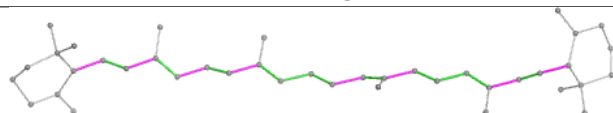
## Ligand BCR A 409



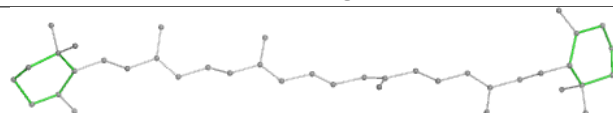
Bond lengths



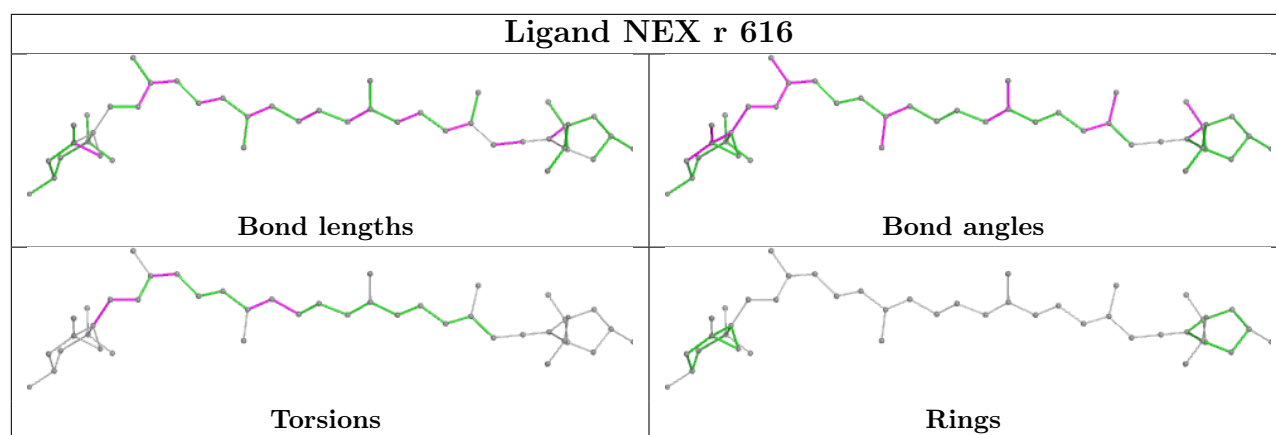
Bond angles



Torsions



Rings



## 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.

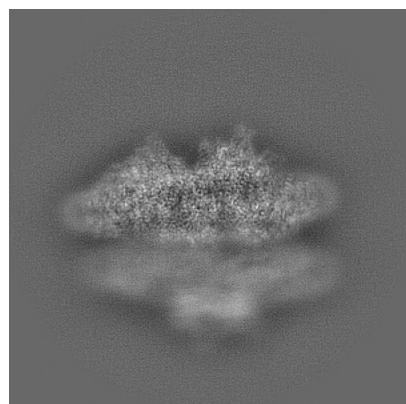
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-52846. These allow visual inspection of the internal detail of the map and identification of artifacts.

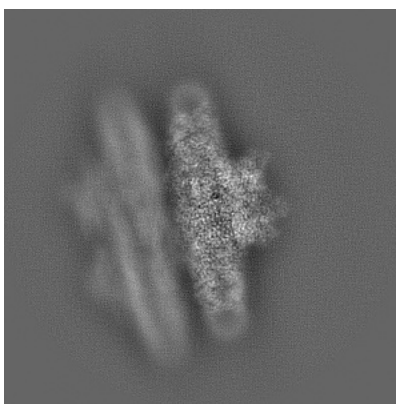
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

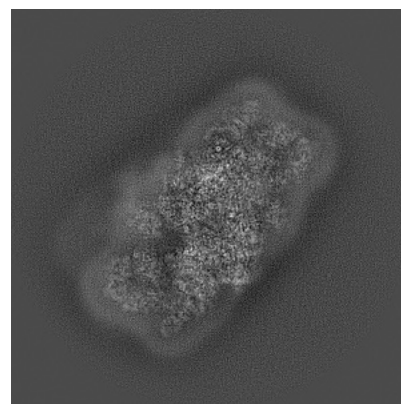
#### 6.1.1 Primary map



X

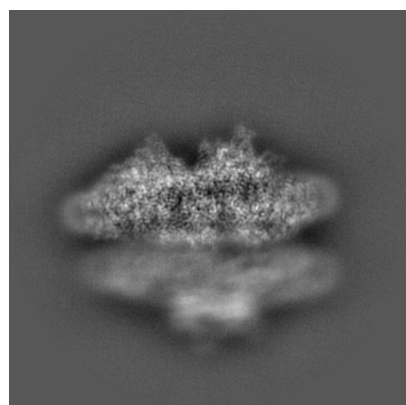


Y

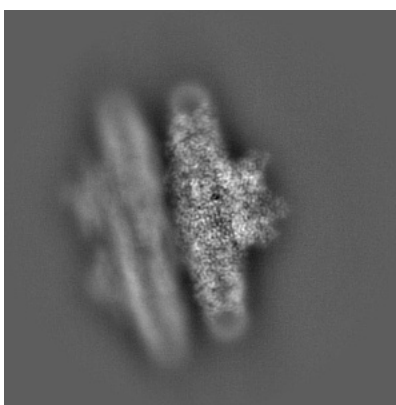


Z

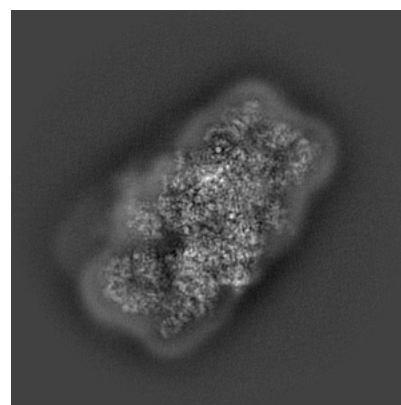
#### 6.1.2 Raw map



X



Y

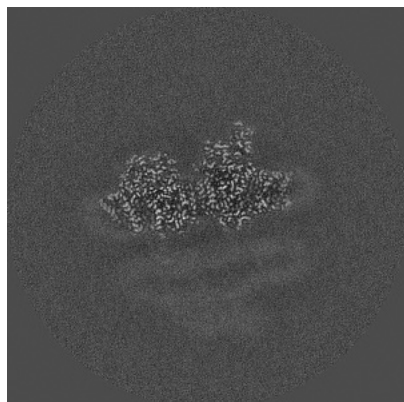


Z

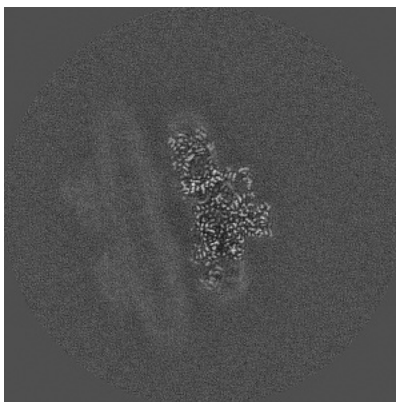
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

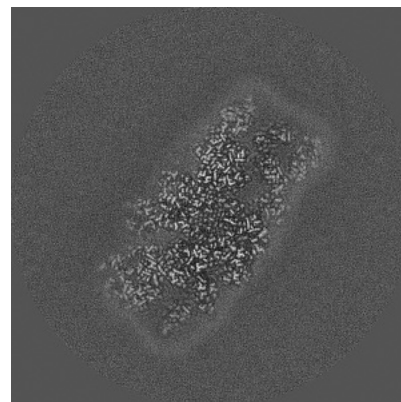
### 6.2.1 Primary map



X Index: 250

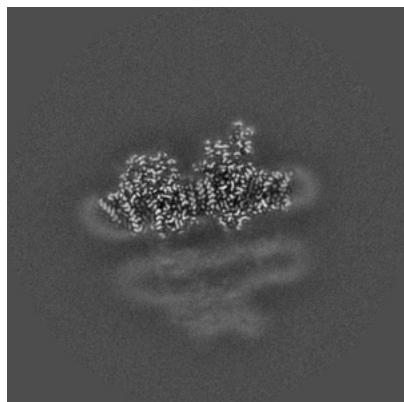


Y Index: 250

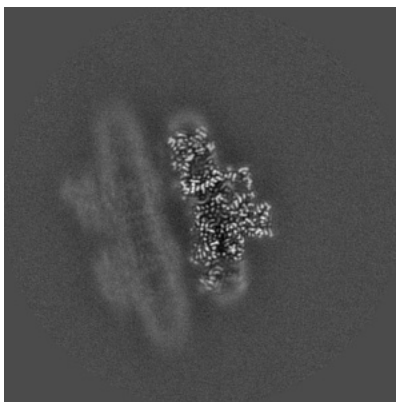


Z Index: 250

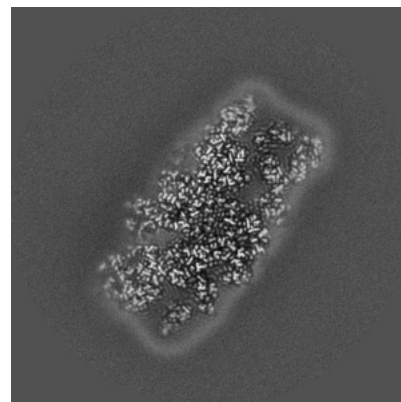
### 6.2.2 Raw map



X Index: 250



Y Index: 250



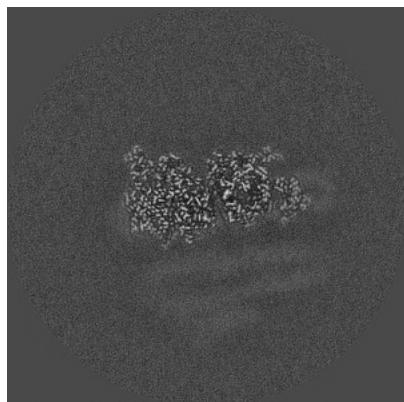
Z Index: 250

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

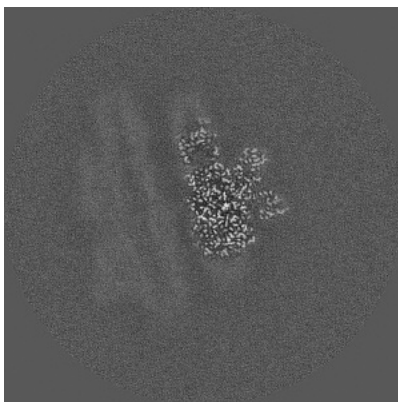


## 6.3 Largest variance slices [i](#)

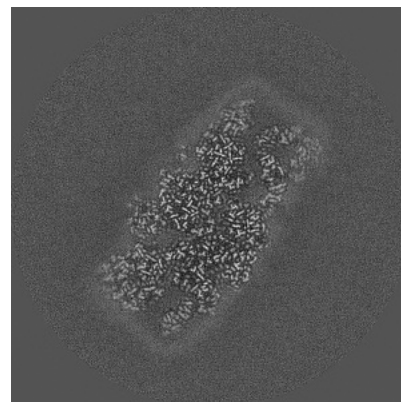
### 6.3.1 Primary map



X Index: 283

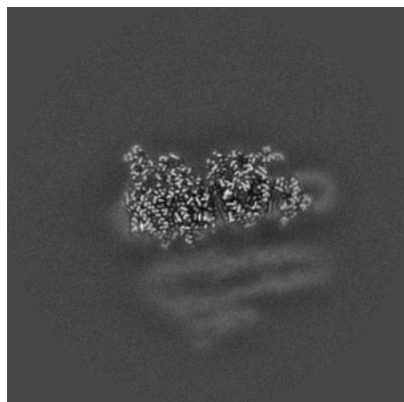


Y Index: 282

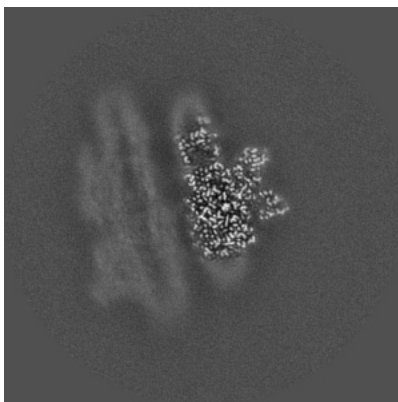


Z Index: 254

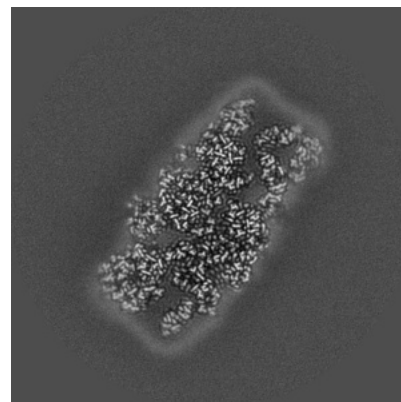
### 6.3.2 Raw map



X Index: 283



Y Index: 282

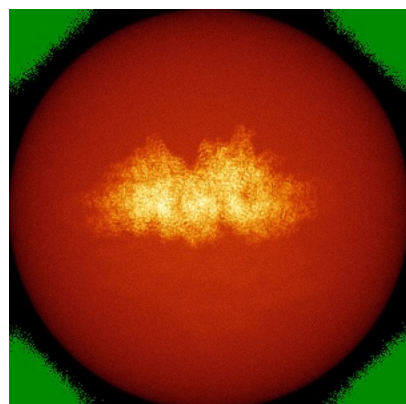


Z Index: 254

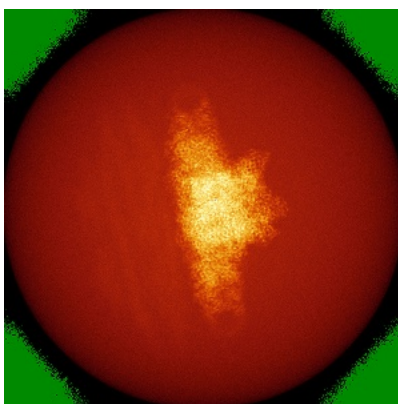
The images above show the largest variance slices of the map in three orthogonal directions.

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

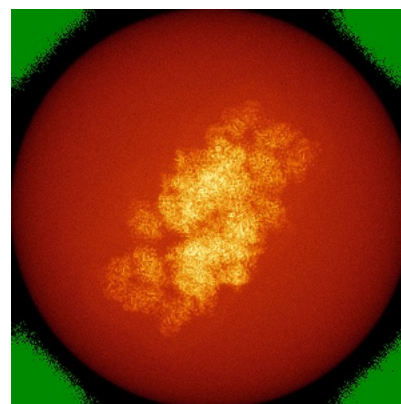
### 6.4.1 Primary map



X

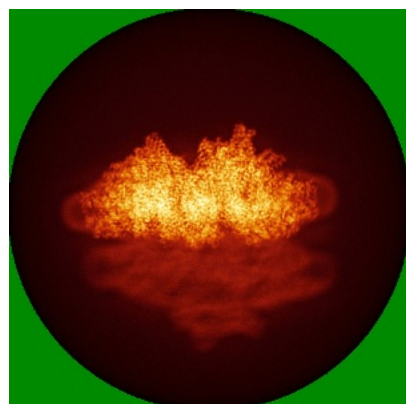


Y

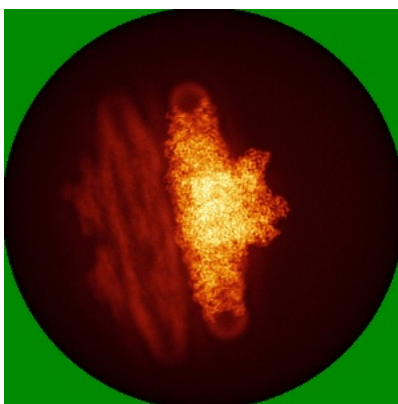


Z

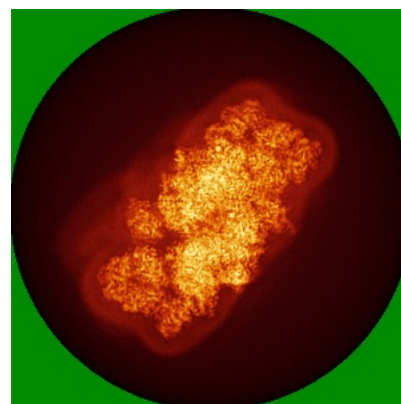
### 6.4.2 Raw map



X



Y

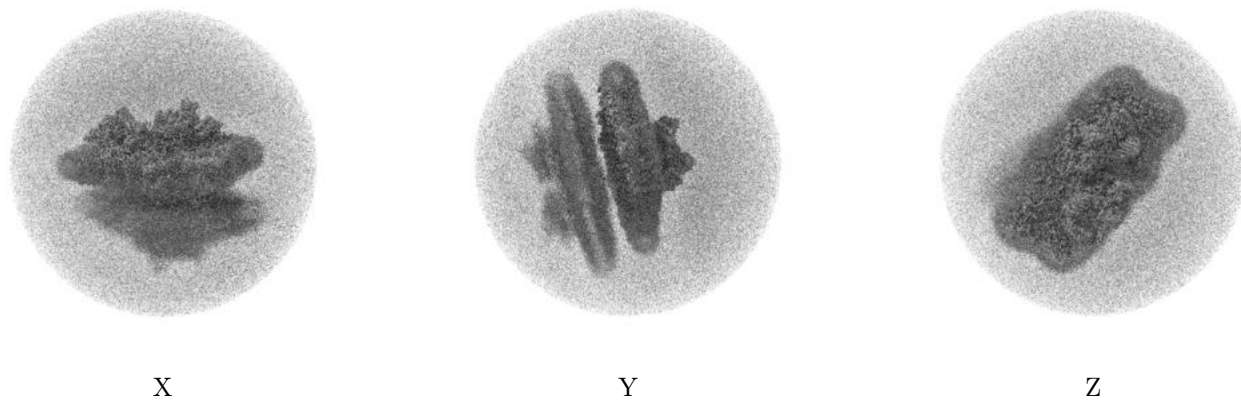


Z

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

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

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.007. 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.

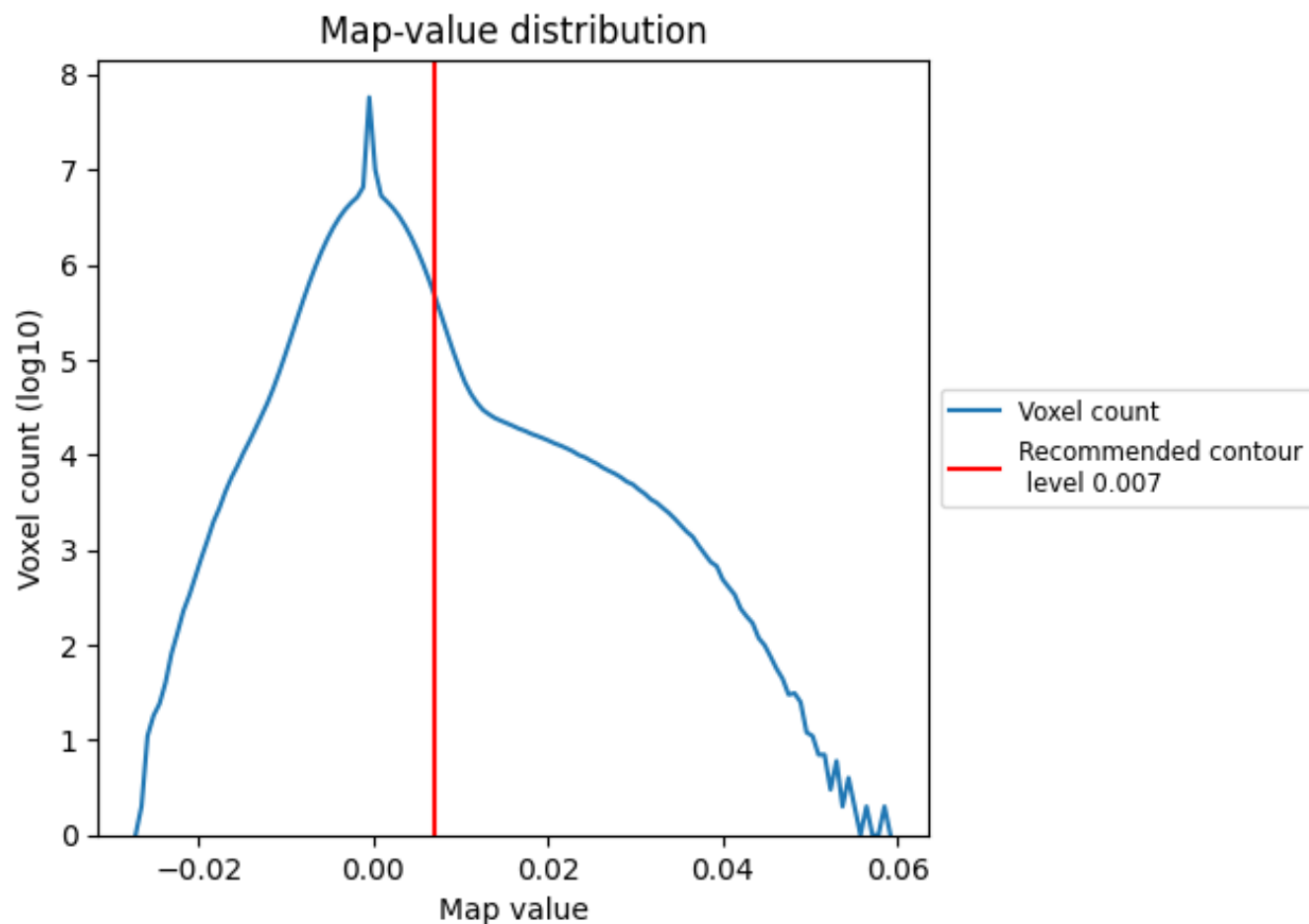
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

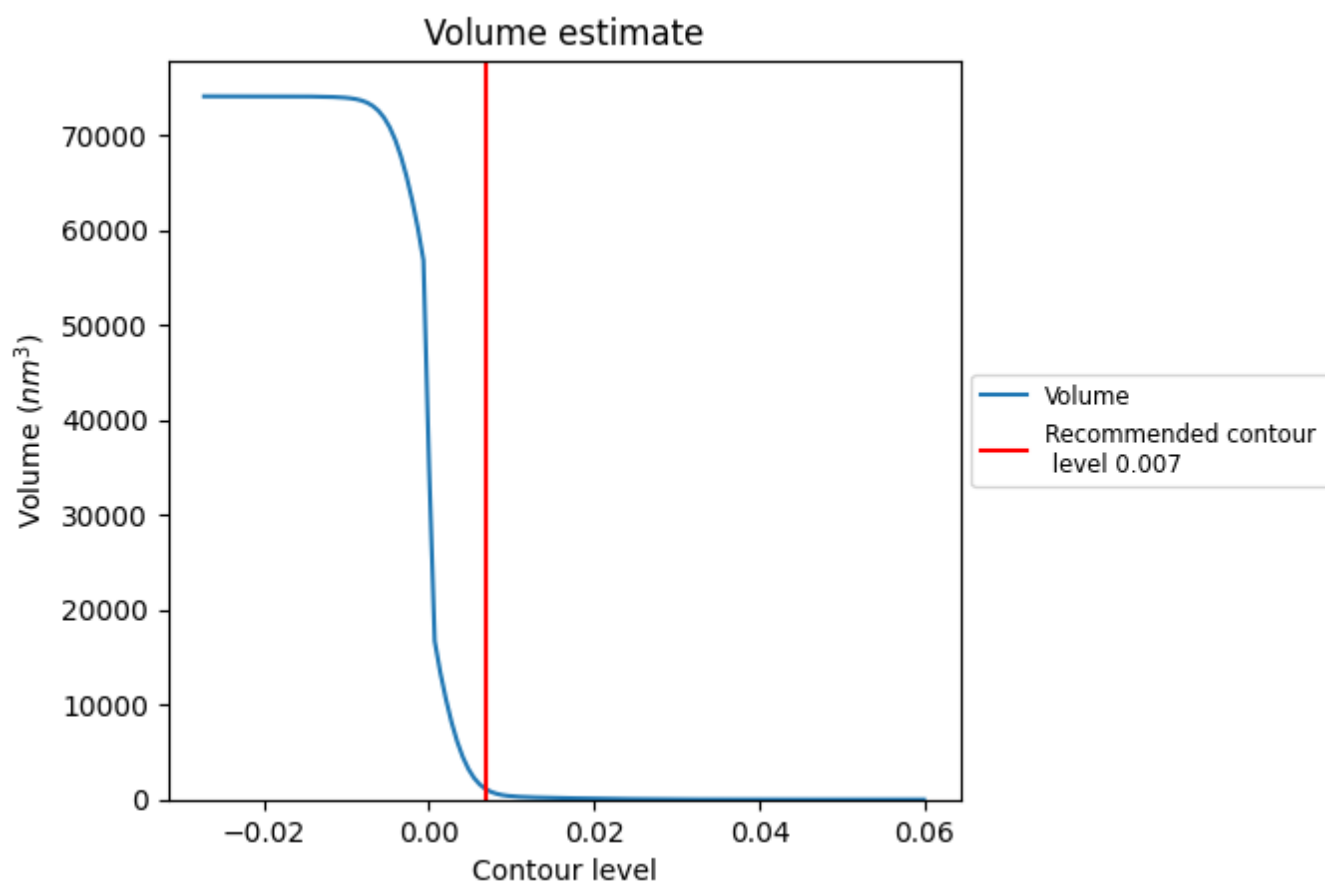
This section contains the results of statistical analysis of the map.

### 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.

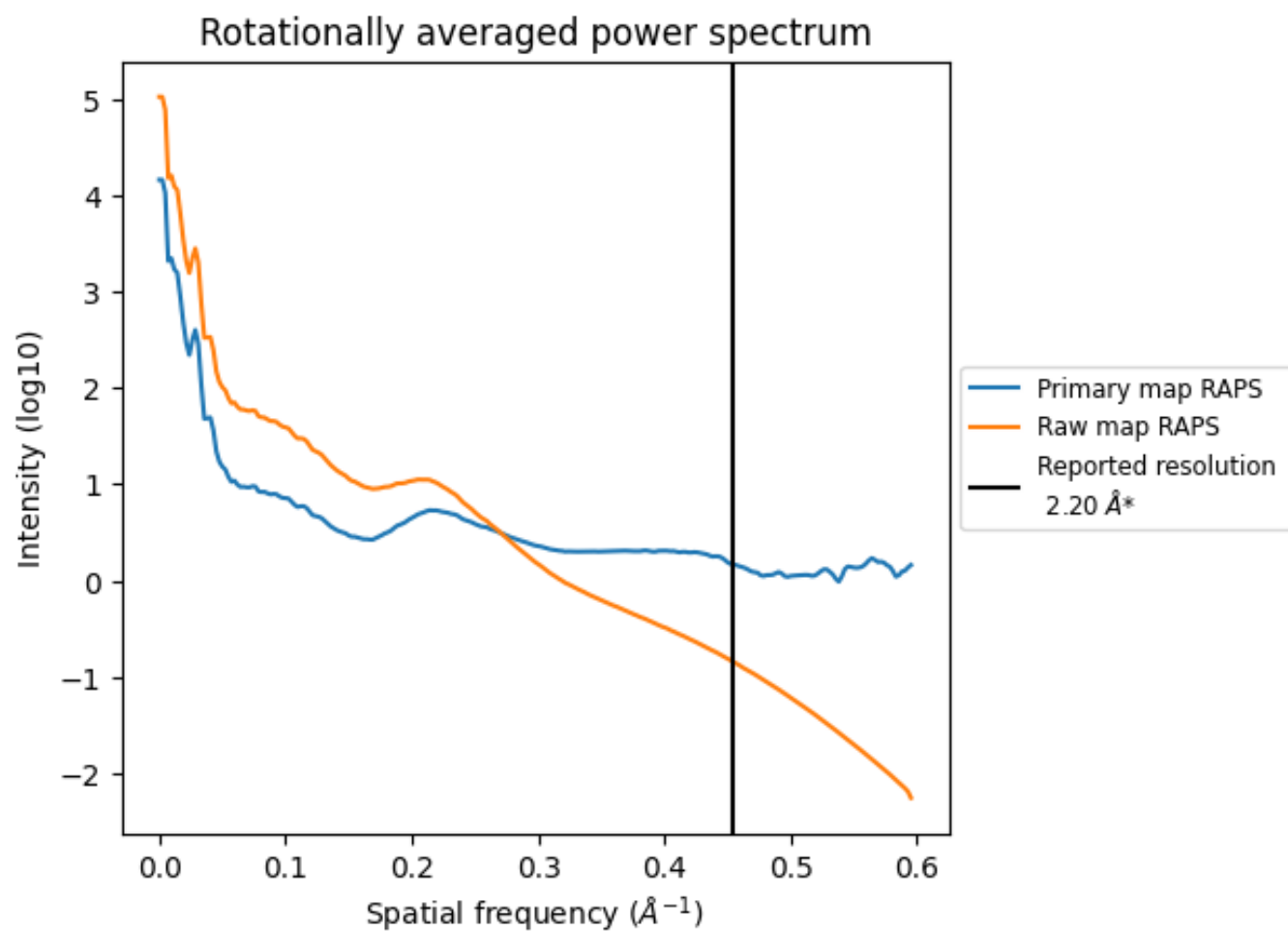
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 10520 nm<sup>3</sup>; this corresponds to an approximate mass of 950 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 ⓘ

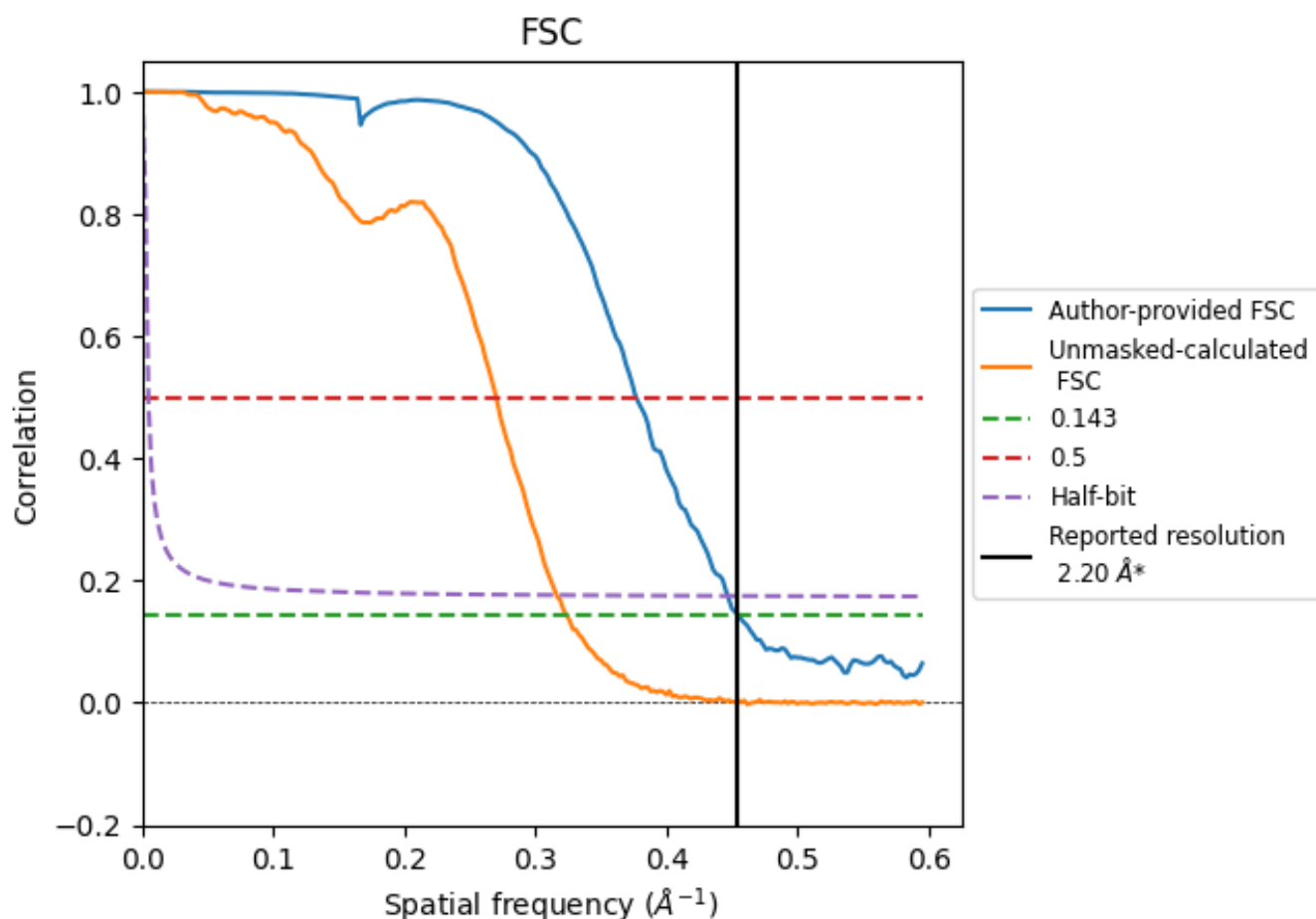


\*Reported resolution corresponds to spatial frequency of 0.455 Å<sup>-1</sup>

## 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 0.455 Å<sup>-1</sup>

## 8.2 Resolution estimates

| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 2.20                               | -    | -        |
| Author-provided FSC curve | 2.20                               | 2.65 | 2.24     |
| Unmasked-calculated*      | 3.09                               | 3.70 | 3.16     |

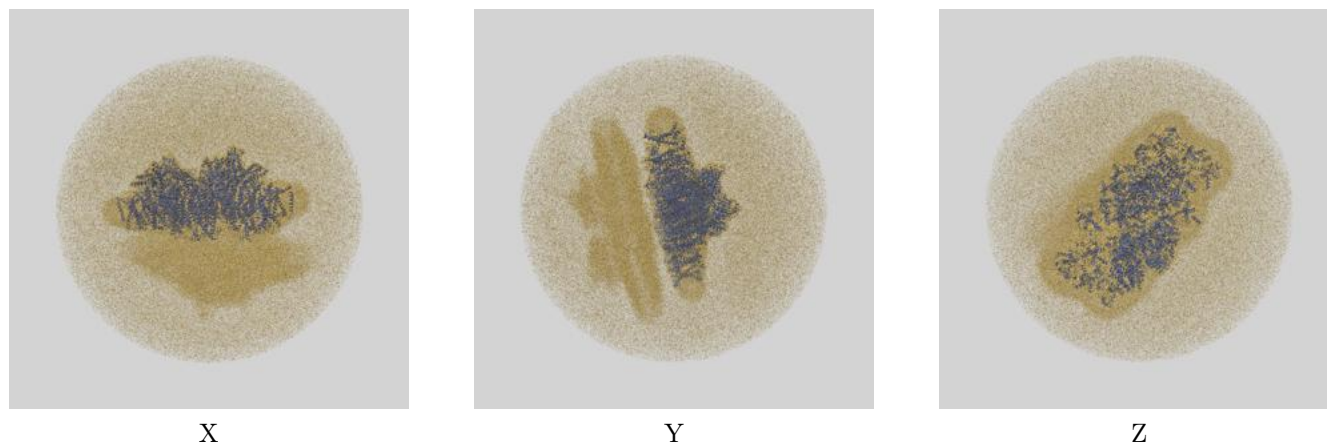
\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.09 differs from the reported value 2.2 by more than 10 %



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

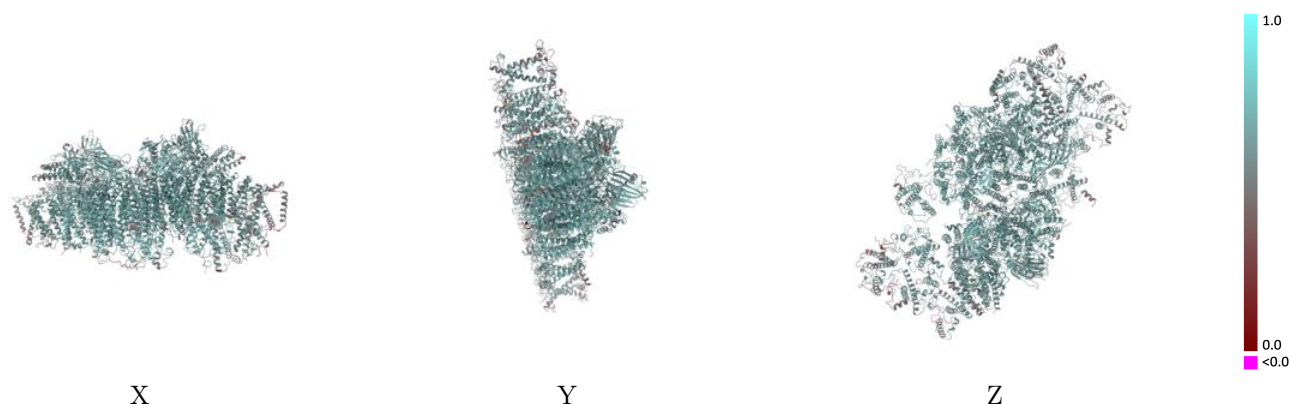
This section contains information regarding the fit between EMDB map EMD-52846 and PDB model 9IFM. Per-residue inclusion information can be found in [section 3](#) on [page 43](#).

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



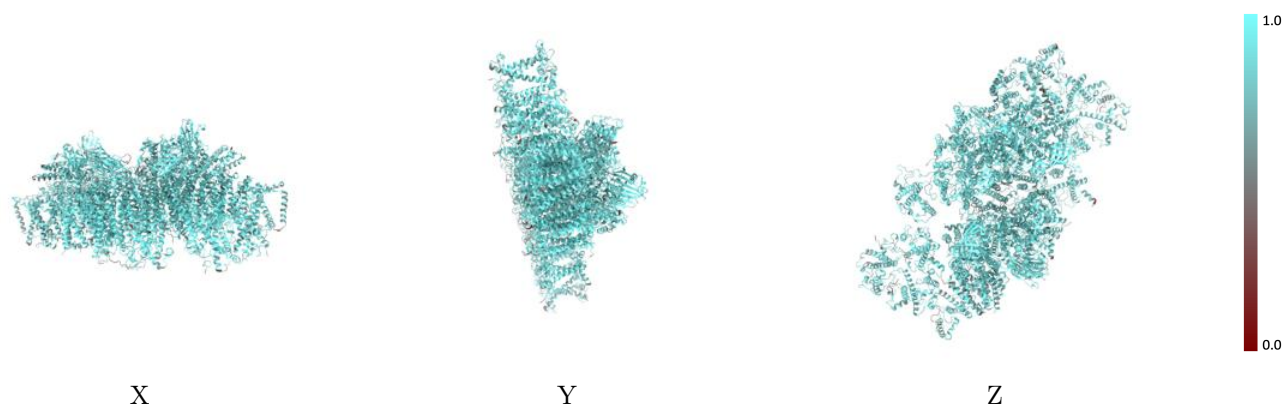
The images above show the 3D surface view of the map at the recommended contour level 0.007 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



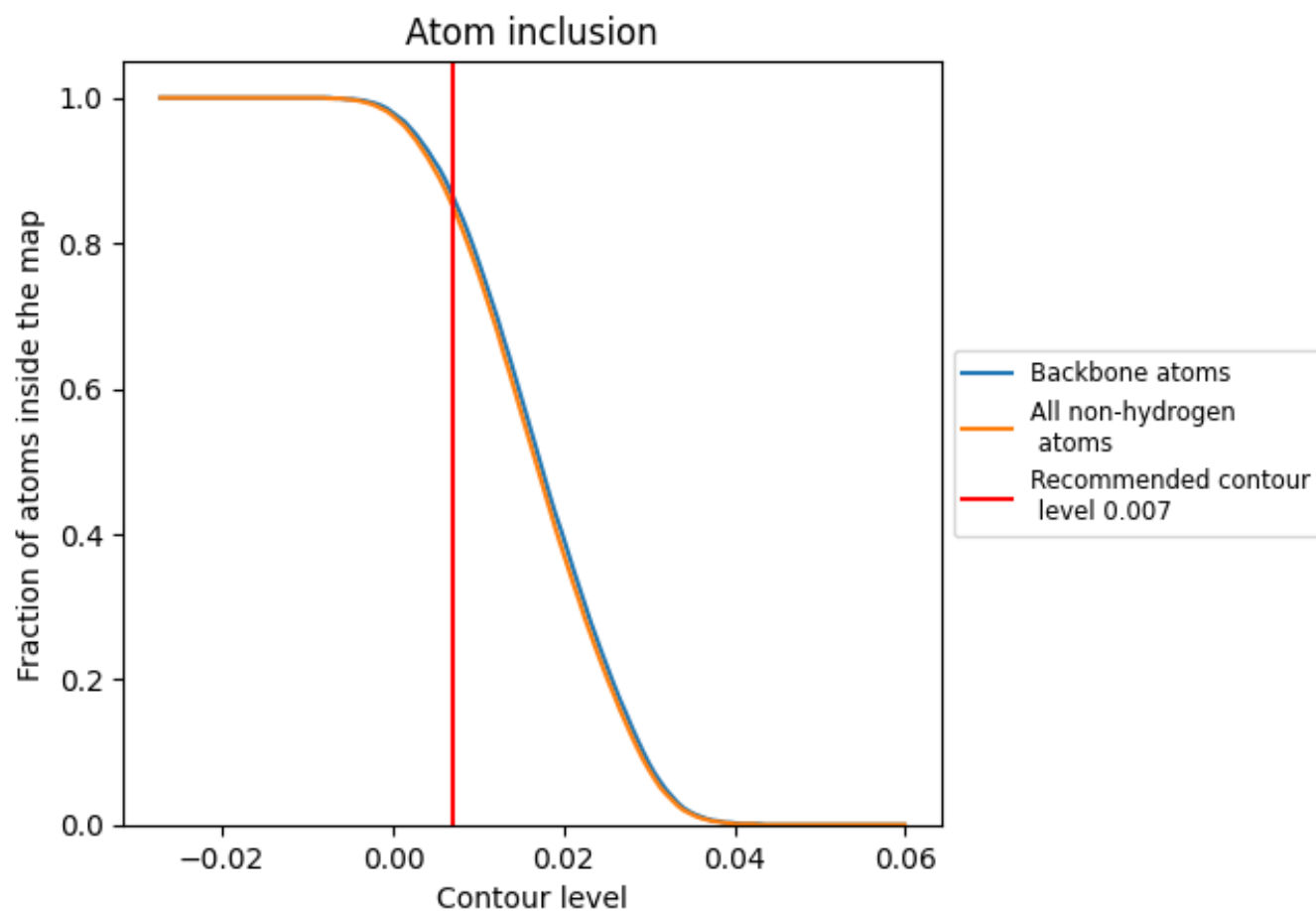
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.007).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 85% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.007) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.8510   |  0.5990   |
| A     |  0.9000   |  0.6540   |
| B     |  0.8850   |  0.6340   |
| C     |  0.8900   |  0.6310   |
| D     |  0.9200   |  0.6580   |
| E     |  0.8960   |  0.6110   |
| F     |  0.9150   |  0.6340   |
| G     |  0.7160   |  0.4780   |
| H     |  0.9220   |  0.6500   |
| I     |  0.9340   |  0.6660   |
| J     |  0.8370   |  0.6090   |
| K     |  0.8300   |  0.6090   |
| L     |  0.7790   |  0.6010   |
| M     |  0.7140   |  0.5630   |
| N     |  0.7700  |  0.5190  |
| O     |  0.8690 |  0.6070 |
| P     |  0.8720 |  0.6040 |
| Q     |  0.8090 |  0.5690 |
| R     |  0.8240 |  0.5660 |
| S     |  0.7490 |  0.4950 |
| T     |  0.8480 |  0.6410 |
| U     |  0.7800 |  0.5290 |
| W     |  0.7900 |  0.5670 |
| X     |  0.8390 |  0.5890 |
| Y     |  0.8580 |  0.5970 |
| Z     |  0.7800 |  0.5590 |
| a     |  0.9030 |  0.6500 |
| b     |  0.9000 |  0.6400 |
| c     |  0.9070 |  0.6470 |
| d     |  0.9200 |  0.6610 |
| e     |  0.9090 |  0.6080 |
| f     |  0.8980 |  0.6340 |
| g     |  0.7540 |  0.5090 |
| h     |  0.9260 |  0.6400 |
| i     |  0.9390 |  0.6610 |



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| Chain | Atom inclusion                                                                           | Q-score                                                                                  |
|-------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| j     |  0.8490 |  0.6150 |
| k     |  0.7760 |  0.5710 |
| l     |  0.9170 |  0.6630 |
| m     |  0.7800 |  0.6070 |
| n     |  0.7870 |  0.5420 |
| o     |  0.8690 |  0.6110 |
| p     |  0.8870 |  0.6100 |
| q     |  0.8160 |  0.5660 |
| r     |  0.8070 |  0.5620 |
| s     |  0.7410 |  0.4970 |
| t     |  0.8300 |  0.6340 |
| u     |  0.7710 |  0.5200 |
| w     |  0.8060 |  0.5830 |
| x     |  0.8290 |  0.5910 |
| y     |  0.8670 |  0.6060 |
| z     |  0.7520 |  0.5530 |