# wwPDB EM Validation Summary Report (i)

Mar 24, 2026 – 10:54 AM JST

| | | |
|---|---|---|
| PDB ID | : | 9UH3 / pdb_00009uh3 |
| EMDB ID | : | EMD-64153 |
| Title | : | PSI-9 FCPI supercomplex from haptophyte Chrysotila roscoffensis |
| Authors | : | La Rocca, R.; Tsai, P.-C.; Kato, K.; Nakajima, Y.; Akita, F.; Shen, J.-R. |
| Deposited on | : | 2025-04-14 |
| Resolution | : | 1.74 Å(reported) |

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

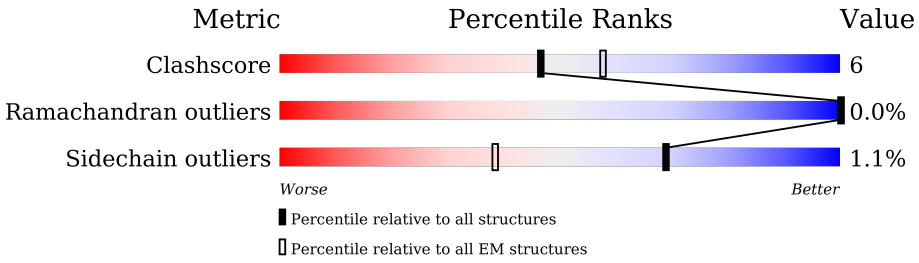
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev132 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| MolProbity | : | 4-5-2 with Phenix2.0 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| 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) | : | 2.48.1 |

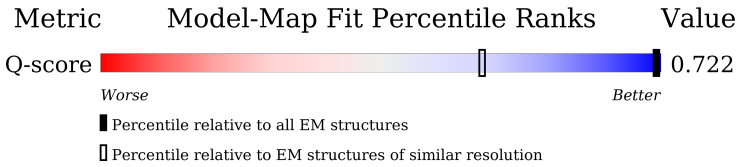
# 1 Overall quality at a glance (i)

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

The reported resolution of this entry is 1.74 Å.

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




| Metric | Whole archive (#Entries) | EM structures (#Entries) | Similar EM resolution (#Entries, resolution range(Å)) |
|---|---|---|---|
| Clashscore | 210492 | 15764 | - |
| Ramachandran outliers | 207382 | 16835 | - |
| Sidechain outliers | 206894 | 16415 | - |
| Q-score | - | 25397 | 645 ( 1.25 - 2.24 ) |

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

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 752 | 90% 9% |
| 2 | B | 734 | 92% 7% |
| 3 | C | 81 | 94% 5% |
| 4 | D | 142 | 92% 5% |

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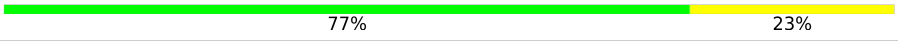
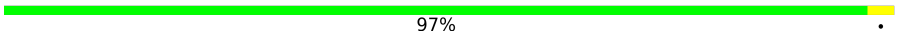
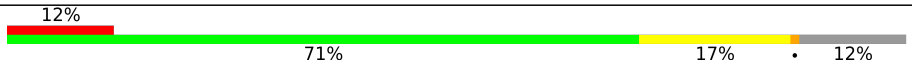
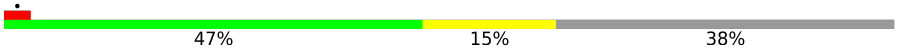
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 5 | E | 67 | |
| 6 | F | 184 | |
| 7 | I | 35 | |
| 8 | J | 39 |   |
| 9 | L | 141 | |
| 10 | M | 29 |   |
| 11 | O | 201 | |
| 12 | P | 231 | |
| 13 | Q | 197 | |
| 14 | R | 90 | |
| 15 | S | 215 | |
| 16 | U | 191 | |
| 17 | G | 209 | |
| 18 | H | 169 |   |
| 19 | K | 200 | |
| 20 | T | 202 | |
| 21 | k | 89 |   |

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 |
|---|---|---|---|---|---|---|---|
| 22 | CLA | A | 802 | X | - | - | - |
| 22 | CLA | A | 803 | X | - | - | - |
| 22 | CLA | A | 804 | X | - | - | - |
| 22 | CLA | A | 805 | X | - | - | - |
| 22 | CLA | A | 806 | X | - | - | - |
| 22 | CLA | A | 809 | X | - | - | - |
| 22 | CLA | A | 810 | X | - | - | - |
| 22 | CLA | A | 811 | X | - | - | - |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 22 | CLA | A | 812 | X | - | - | - |
| 22 | CLA | A | 815 | X | - | - | - |
| 22 | CLA | A | 816 | X | - | - | - |
| 22 | CLA | A | 817 | X | - | - | - |
| 22 | CLA | A | 818 | X | - | - | - |
| 22 | CLA | A | 820 | X | - | - | - |
| 22 | CLA | A | 821 | X | - | - | - |
| 22 | CLA | A | 822 | X | - | - | - |
| 22 | CLA | A | 823 | X | - | - | - |
| 22 | CLA | A | 824 | X | - | - | - |
| 22 | CLA | A | 825 | X | - | - | - |
| 22 | CLA | A | 828 | X | - | - | - |
| 22 | CLA | A | 829 | X | - | - | - |
| 22 | CLA | A | 831 | X | - | - | - |
| 22 | CLA | A | 832 | X | - | - | - |
| 22 | CLA | A | 833 | X | - | - | - |
| 22 | CLA | A | 835 | X | - | - | - |
| 22 | CLA | A | 836 | X | - | - | - |
| 22 | CLA | A | 838 | X | - | - | - |
| 22 | CLA | A | 845 | X | - | - | - |
| 22 | CLA | A | 850 | X | - | - | - |
| 22 | CLA | A | 853 | X | - | - | - |
| 22 | CLA | A | 854 | X | - | - | - |
| 22 | CLA | A | 855 | X | - | - | - |
| 22 | CLA | A | 856 | X | - | - | - |
| 22 | CLA | B | 801 | X | - | - | - |
| 22 | CLA | B | 802 | X | - | - | - |
| 22 | CLA | B | 803 | X | - | - | - |
| 22 | CLA | B | 804 | X | - | - | - |
| 22 | CLA | B | 805 | X | - | - | - |
| 22 | CLA | B | 807 | X | - | - | - |
| 22 | CLA | B | 808 | X | - | - | - |
| 22 | CLA | B | 811 | X | - | - | - |
| 22 | CLA | B | 815 | X | - | - | - |
| 22 | CLA | B | 816 | X | - | - | - |
| 22 | CLA | B | 819 | X | - | - | - |
| 22 | CLA | B | 820 | X | - | - | - |
| 22 | CLA | B | 821 | X | - | - | - |
| 22 | CLA | B | 822 | X | - | - | - |
| 22 | CLA | B | 826 | X | - | - | - |
| 22 | CLA | B | 828 | X | - | - | - |
| 22 | CLA | B | 829 | X | - | - | - |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 22 | CLA | B | 830 | X | - | - | - |
| 22 | CLA | B | 831 | X | - | - | - |
| 22 | CLA | B | 832 | X | - | - | - |
| 22 | CLA | B | 834 | X | - | - | - |
| 22 | CLA | B | 842 | X | - | - | - |
| 22 | CLA | B | 843 | X | - | - | - |
| 22 | CLA | B | 844 | X | - | - | - |
| 22 | CLA | B | 845 | X | - | - | - |
| 22 | CLA | B | 847 | X | - | - | - |
| 22 | CLA | F | 802 | X | - | - | - |
| 22 | CLA | F | 803 | X | - | - | - |
| 22 | CLA | F | 804 | X | - | - | - |
| 22 | CLA | G | 202 | X | - | - | - |
| 22 | CLA | G | 203 | X | - | - | - |
| 22 | CLA | G | 206 | X | - | - | - |
| 22 | CLA | G | 208 | X | - | - | - |
| 22 | CLA | G | 209 | X | - | - | - |
| 22 | CLA | G | 210 | X | - | - | - |
| 22 | CLA | G | 215 | X | - | - | - |
| 22 | CLA | H | 202 | X | - | - | - |
| 22 | CLA | H | 203 | X | - | - | - |
| 22 | CLA | H | 204 | X | - | - | - |
| 22 | CLA | H | 205 | X | - | - | - |
| 22 | CLA | H | 206 | X | - | - | - |
| 22 | CLA | H | 208 | X | - | - | - |
| 22 | CLA | H | 209 | X | - | - | - |
| 22 | CLA | H | 213 | X | - | - | - |
| 22 | CLA | J | 103 | X | - | - | - |
| 22 | CLA | K | 203 | X | - | - | - |
| 22 | CLA | K | 205 | X | - | - | - |
| 22 | CLA | K | 206 | X | - | - | - |
| 22 | CLA | L | 204 | X | - | - | - |
| 22 | CLA | O | 205 | X | - | - | - |
| 22 | CLA | O | 206 | X | - | - | - |
| 22 | CLA | O | 207 | X | - | - | - |
| 22 | CLA | O | 208 | X | - | - | - |
| 22 | CLA | P | 207 | X | - | - | - |
| 22 | CLA | P | 208 | X | - | - | - |
| 22 | CLA | P | 209 | X | - | - | - |
| 22 | CLA | P | 213 | X | - | - | - |
| 22 | CLA | P | 214 | X | - | - | - |
| 22 | CLA | P | 216 | X | - | - | - |

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| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 22 | CLA | Q | 204 | X | - | - | - |
| 22 | CLA | Q | 205 | X | - | - | - |
| 22 | CLA | Q | 206 | X | - | - | - |
| 22 | CLA | Q | 207 | X | - | - | - |
| 22 | CLA | Q | 208 | X | - | - | - |
| 22 | CLA | Q | 211 | X | - | - | - |
| 22 | CLA | Q | 213 | X | - | - | - |
| 22 | CLA | R | 101 | X | - | - | - |
| 22 | CLA | S | 202 | X | - | - | - |
| 22 | CLA | S | 206 | X | - | - | - |
| 22 | CLA | S | 207 | X | - | - | - |
| 22 | CLA | S | 208 | X | - | - | - |
| 22 | CLA | S | 216 | X | - | - | - |
| 22 | CLA | S | 217 | X | - | - | - |
| 22 | CLA | T | 201 | X | - | - | - |
| 22 | CLA | T | 202 | X | - | - | - |
| 22 | CLA | T | 203 | X | - | - | - |
| 22 | CLA | T | 204 | X | - | - | - |
| 22 | CLA | T | 205 | X | - | - | - |
| 22 | CLA | T | 211 | X | - | - | - |
| 22 | CLA | U | 204 | X | - | - | - |
| 22 | CLA | U | 206 | X | - | - | - |
| 22 | CLA | U | 207 | X | - | - | - |
| 22 | CLA | U | 208 | X | - | - | - |
| 22 | CLA | U | 211 | X | - | - | - |
| 22 | CLA | k | 102 | X | - | - | - |
| 22 | CLA | k | 103 | X | - | - | - |

# 2 Entry composition (i)

There are 35 unique types of molecules in this entry. The entry contains 42258 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Photosystem I P700 chlorophyll a apoprotein A1 (psaA).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 1 | A | 741 | 5813 | 3807 | 984 | 994 | 28 | 0 | 0 |

- Molecule 2 is a protein called Photosystem I P700 chlorophyll a apoprotein A2 (psaB).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 2 | B | 732 | 5805 | 3823 | 977 | 984 | 21 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 3 | C | 80 | 599 | 366 | 106 | 116 | 11 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 4 | D | 138 | 1092 | 697 | 188 | 204 | 3 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 5 | E | 64 | 494 | 314 | 86 | 93 | 1 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 6 | F | 161 | 1246 | 802 | 209 | 229 | 6 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | I | 34 | Total | C | N | O | S | 0 | 0 |
| | | | 266 | 183 | 35 | 46 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | J | 39 | Total | C | N | O | S | 0 | 0 |
| | | | 305 | 204 | 45 | 54 | 2 | | |

- Molecule 9 is a protein called Photosystem I reaction center subunit XI (psaL).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | L | 140 | Total | C | N | O | S | 0 | 0 |
| | | | 1056 | 693 | 168 | 194 | 1 | | |

- Molecule 10 is a protein called Photosystem I reaction center subunit XII (psaM).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | M | 29 | Total | C | N | O | S | 0 | 0 |
| | | | 216 | 144 | 34 | 37 | 1 | | |

- Molecule 11 is a protein called Fucoxanthin chlorophyll a/c binding protein III (FCPI-3).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | O | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1341 | 872 | 217 | 244 | 8 | | |

- Molecule 12 is a protein called Fucoxanthin chlorophyll a/c binding protein VI (FCPI-6).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | P | 193 | Total | C | N | O | S | 0 | 0 |
| | | | 1441 | 927 | 239 | 264 | 11 | | |

- Molecule 13 is a protein called Fucoxanthin chlorophyll a/c binding protein IV (FCPI-4).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | Q | 167 | Total | C | N | O | S | 0 | 0 |
| | | | 1257 | 809 | 202 | 234 | 12 | | |

- Molecule 14 is a protein called Photosystem I reaction center subunit psaR.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | R | 88 | Total | C | N | O | S | 0 | 0 |
| | | | 664 | 434 | 106 | 123 | 1 | | |

- Molecule 15 is a protein called Fucoxanthin chlorophyll a/c binding protein II (FCPI-2).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | S | 165 | Total | C | N | O | S | 0 | 0 |
| | | | 1238 | 802 | 204 | 226 | 6 | | |

- Molecule 16 is a protein called Fucoxanthin chlorophyll a/c binding protein I (FCPI-1).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | U | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1082 | 692 | 183 | 198 | 9 | | |

- Molecule 17 is a protein called Fucoxanthin chlorophyll a/c binding protein VII (FCPI-7).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | G | 155 | Total | C | N | O | S | 0 | 0 |
| | | | 1179 | 756 | 190 | 224 | 9 | | |

- Molecule 18 is a protein called Fucoxanthin chlorophyll a/c binding protein VIII (FCPI-8).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | H | 149 | Total | C | N | O | S | 0 | 0 |
| | | | 1128 | 725 | 185 | 206 | 12 | | |

- Molecule 19 is a protein called Fucoxanthin chlorophyll a/c binding protein IX (FCPI-9).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | K | 97 | Total | C | N | O | S | 0 | 0 |
| | | | 748 | 495 | 121 | 125 | 7 | | |

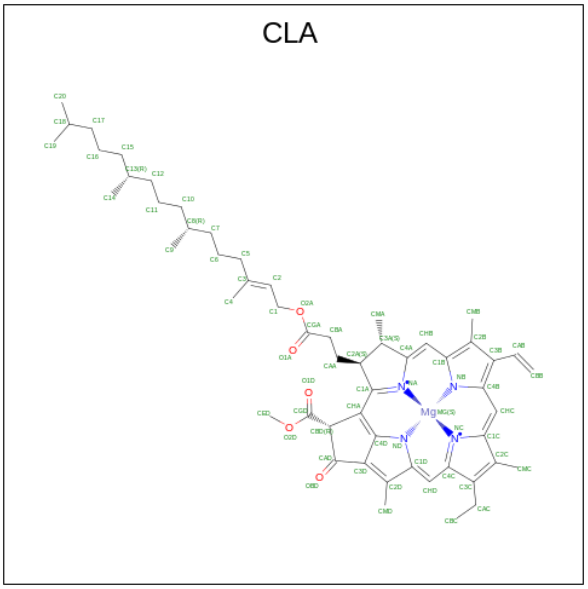
- Molecule 20 is a protein called Fucoxanthin chlorophyll a/c binding protein V (FCPI-5).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | T | 99 | Total | C | N | O | S | 0 | 0 |
| | | | 731 | 471 | 122 | 130 | 8 | | |

- Molecule 21 is a protein called Photosystem I reaction center subunit psaK.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | k | 55 | Total | C | N | O | S | 0 | 0 |
| | | | 379 | 247 | 62 | 67 | 3 | | |

- Molecule 22 is CHLOROPHYLL A (CCD ID: CLA) (formula: $C_{55}H_{72}MgN_4O_5$).




| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 55 | 45 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 49 | 39 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 56 | 46 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 62 | 52 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 54 | 44 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 43 | 35 | 1 | 4 | 3 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 51 | 41 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 62 | 52 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 51 | 41 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 52 | 42 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 40 | 32 | 1 | 4 | 3 | |
| 22 | A | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 54 | 44 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 55 | 45 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 54 | 44 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 59 | 49 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 55 | 45 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 59 | 49 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 53 | 43 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 63 | 53 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 64 | 54 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 49 | 39 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 58 | 48 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 58 | 48 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 47 | 37 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | B | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | F | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | F | 1 | Total | C | Mg | N | O | 0 |
| | | | 48 | 38 | 1 | 4 | 5 | |
| 22 | F | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | J | 1 | Total | C | Mg | N | O | 0 |
| | | | 42 | 34 | 1 | 4 | 3 | |
| 22 | L | 1 | Total | C | Mg | N | O | 0 |
| | | | 49 | 39 | 1 | 4 | 5 | |
| 22 | L | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | L | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 43 | 35 | 1 | 4 | 3 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 41 | 33 | 1 | 4 | 3 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 56 | 46 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 52 | 42 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 47 | 37 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 41 | 33 | 1 | 4 | 3 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 47 | 37 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 48 | 38 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 61 | 51 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 51 | 41 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 50 | 40 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 41 | 33 | 1 | 4 | 3 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 57 | 47 | 1 | 4 | 5 | |
| 22 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | R | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | R | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 52 | 42 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 61 | 51 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 46 | 36 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 42 | 34 | 1 | 4 | 3 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 52 | 42 | 1 | 4 | 5 | |

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| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 41 | 33 | 1 | 4 | 3 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 43 | 35 | 1 | 4 | 3 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 61 | 51 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 55 | 45 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 56 | 46 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | G | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 40 | 32 | 1 | 4 | 3 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 60 | 50 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 61 | 51 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 44 | 35 | 1 | 4 | 4 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 58 | 48 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 41 | 33 | 1 | 4 | 3 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 22 | H | 1 | Total | C | Mg | N | O | 0 |
| | | | 65 | 55 | 1 | 4 | 5 | |

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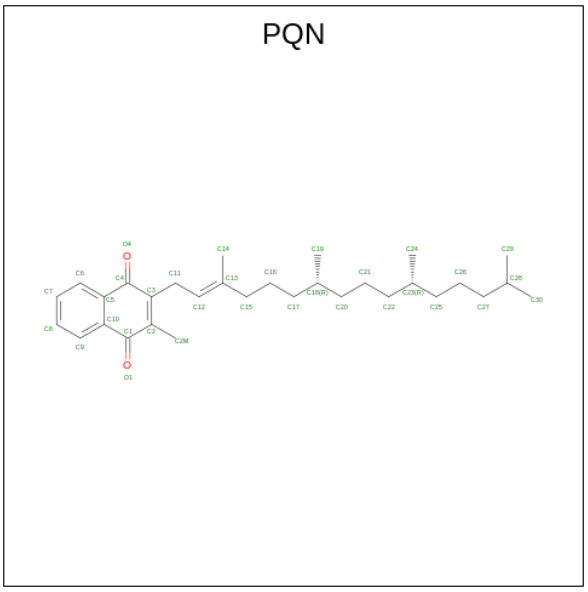
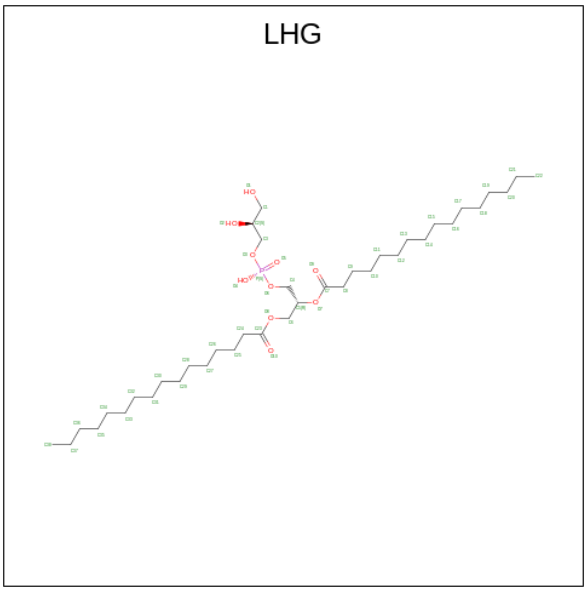
| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 22 | K | 1 | Total 45 | C 35 | Mg 1 | N 4 | O 5 | 0 |
| 22 | K | 1 | Total 42 | C 34 | Mg 1 | N 4 | O 3 | 0 |
| 22 | K | 1 | Total 55 | C 45 | Mg 1 | N 4 | O 5 | 0 |
| 22 | K | 1 | Total 45 | C 35 | Mg 1 | N 4 | O 5 | 0 |
| 22 | K | 1 | Total 58 | C 48 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 42 | C 34 | Mg 1 | N 4 | O 3 | 0 |
| 22 | T | 1 | Total 41 | C 33 | Mg 1 | N 4 | O 3 | 0 |
| 22 | T | 1 | Total 46 | C 36 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 57 | C 47 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 46 | C 36 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 42 | C 34 | Mg 1 | N 4 | O 3 | 0 |
| 22 | T | 1 | Total 65 | C 55 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 41 | C 33 | Mg 1 | N 4 | O 3 | 0 |
| 22 | T | 1 | Total 46 | C 36 | Mg 1 | N 4 | O 5 | 0 |
| 22 | T | 1 | Total 47 | C 37 | Mg 1 | N 4 | O 5 | 0 |
| 22 | k | 1 | Total 42 | C 34 | Mg 1 | N 4 | O 3 | 0 |
| 22 | k | 1 | Total 55 | C 45 | Mg 1 | N 4 | O 5 | 0 |

- Molecule 23 is PHYLLOQUINONE (CCD ID: PQN) (formula: $C_{31}H_{46}O_2$) (labeled as "Ligand of Interest" by depositor).




| Mol | Chain | Residues | Atoms | | | AltConf |
|---|---|---|---|---|---|---|
| 23 | A | 1 | Total | C | O | 0 |
| | | | 33 | 31 | 2 | |
| 23 | B | 1 | Total | C | O | 0 |
| | | | 33 | 31 | 2 | |

- Molecule 24 is 1,2-DIPALMITOYL-PHOSPHATIDYL-GLYCEROLE (CCD ID: LHG) (formula: $C_{38}H_{75}O_{10}P$).




| Mol | Chain | Residues | Atoms | | | | AltConf |
|---|---|---|---|---|---|---|---|
| 24 | A | 1 | Total | C | O | P | 0 |
| | | | 48 | 37 | 10 | 1 | |

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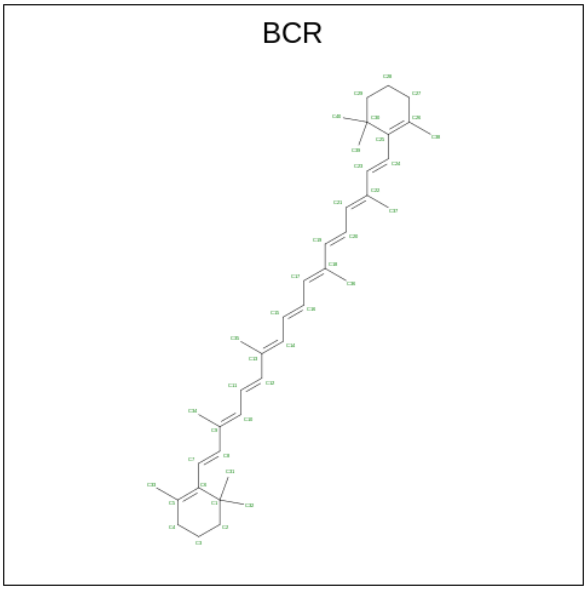
| Mol | Chain | Residues | Atoms | | | | AltConf |
|---|---|---|---|---|---|---|---|
| 24 | A | 1 | Total | C | O | P | 0 |
| | | | 27 | 16 | 10 | 1 | |
| 24 | P | 1 | Total | C | O | P | 0 |
| | | | 49 | 38 | 10 | 1 | |
| 24 | G | 1 | Total | C | O | P | 0 |
| | | | 27 | 16 | 10 | 1 | |

- Molecule 25 is BETA-CAROTENE (CCD ID: BCR) (formula: $C_{40}H_{56}$).




| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 25 | A | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | A | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | A | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | A | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | B | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | B | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | B | 1 | Total | C | 0 |
| | | | 40 | 40 | |
| 25 | B | 1 | Total | C | 0 |
| | | | 40 | 40 | |

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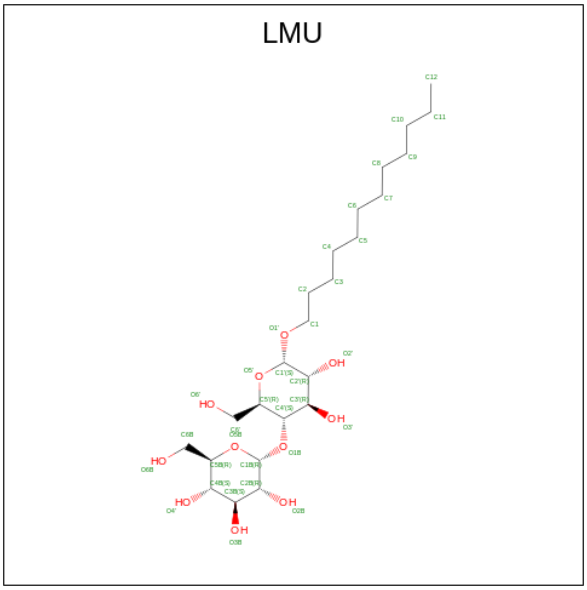
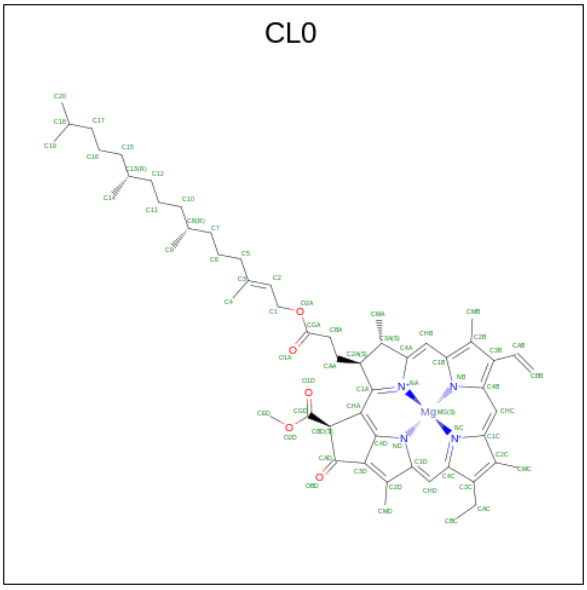
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 25 | B | 1 | Total C<br>40 40 | 0 |
| 25 | F | 1 | Total C<br>40 40 | 0 |
| 25 | F | 1 | Total C<br>40 40 | 0 |
| 25 | I | 1 | Total C<br>40 40 | 0 |
| 25 | I | 1 | Total C<br>40 40 | 0 |
| 25 | J | 1 | Total C<br>40 40 | 0 |
| 25 | L | 1 | Total C<br>40 40 | 0 |
| 25 | L | 1 | Total C<br>40 40 | 0 |
| 25 | M | 1 | Total C<br>40 40 | 0 |
| 25 | R | 1 | Total C<br>39 39 | 0 |
| 25 | k | 1 | Total C<br>40 40 | 0 |

- Molecule 26 is DODECYL-ALPHA-D-MALTOSIDE (CCD ID: LMU) (formula: $C_{24}H_{46}O_{11}$).



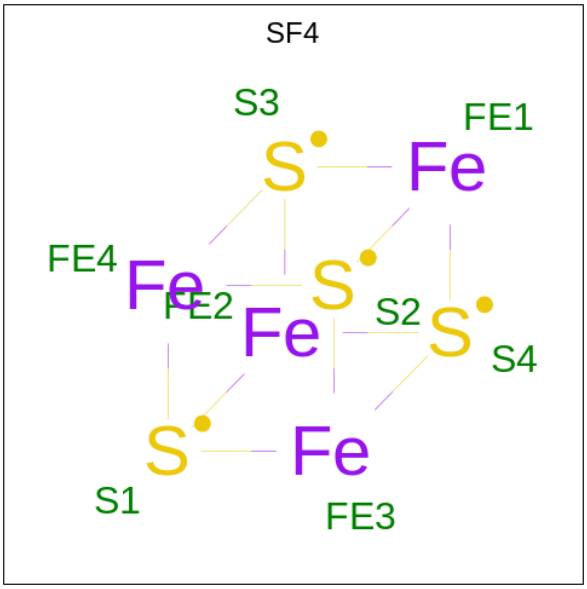
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 26 | A | 1 | Total C O<br>35 24 11 | 0 |
| 26 | A | 1 | Total C O<br>35 24 11 | 0 |
| 26 | F | 1 | Total C O<br>35 24 11 | 0 |
| 26 | F | 1 | Total C O<br>35 24 11 | 0 |
| 26 | L | 1 | Total C O<br>35 24 11 | 0 |
| 26 | M | 1 | Total C O<br>35 24 11 | 0 |
| 26 | O | 1 | Total C O<br>35 24 11 | 0 |
| 26 | P | 1 | Total C O<br>25 14 11 | 0 |
| 26 | S | 1 | Total C O<br>31 20 11 | 0 |
| 26 | K | 1 | Total C O<br>35 24 11 | 0 |
| 26 | K | 1 | Total C O<br>24 13 11 | 0 |

- Molecule 27 is CHLOROPHYLL A ISOMER (CCD ID: CL0) (formula: $C_{55}H_{72}MgN_4O_5$).



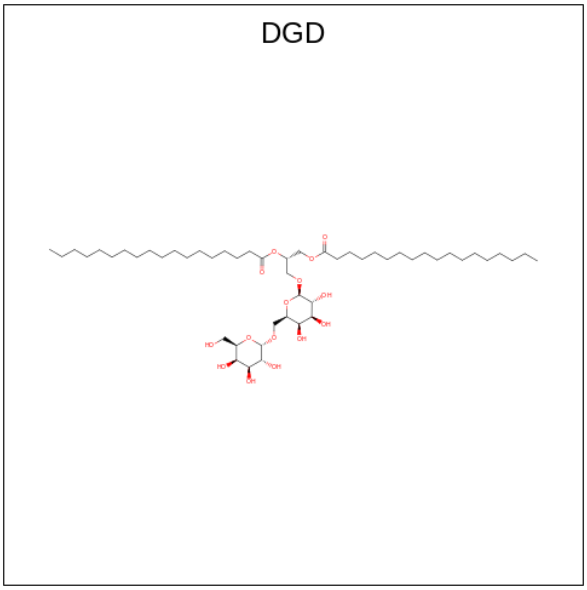

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 27 | A | 1 | Total C Mg N O<br>65 55 1 4 5 | 0 |

- Molecule 28 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: $Fe_4S_4$) (labeled as "Ligand of Interest" by depositor).



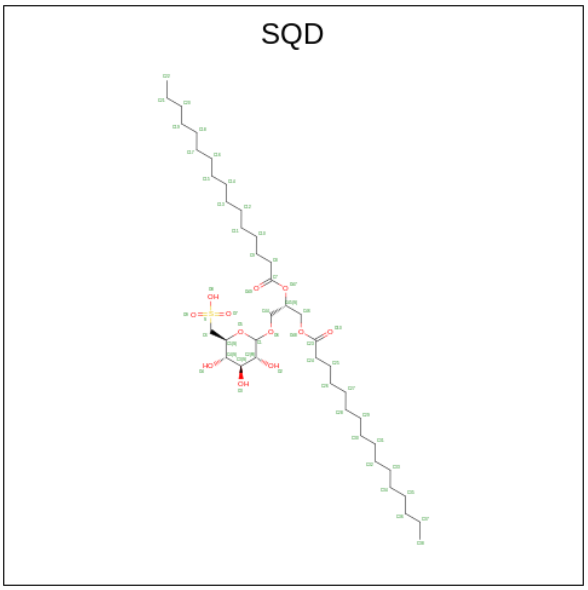

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 28 | A | 1 | Total Fe S<br>8 4 4 | 0 |
| 28 | C | 1 | Total Fe S<br>8 4 4 | 0 |
| 28 | C | 1 | Total Fe S<br>8 4 4 | 0 |

- Molecule 29 is DIGALACTOSYL DIACYL GLYCEROL (DGDG) (CCD ID: DGD) (formula: $C_{51}H_{96}O_{15}$).



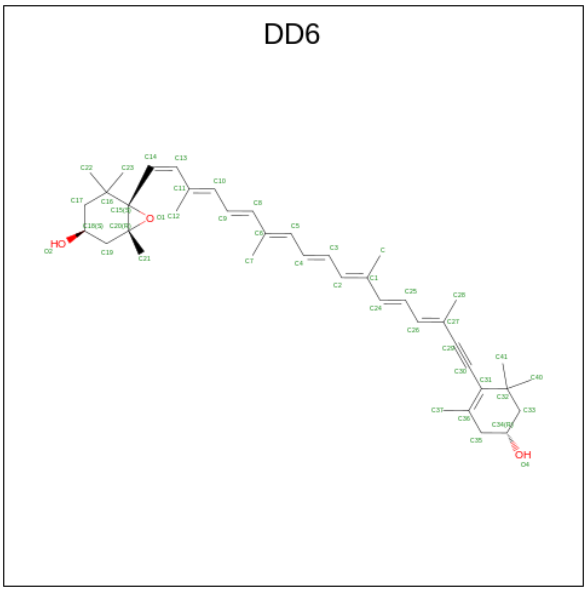
| Mol | Chain | Residues | Atoms | | | AltConf |
|---|---|---|---|---|---|---|
| 29 | B | 1 | Total | C | O | 0 |
| | | | 60 | 45 | 15 | |

- Molecule 30 is 1,2-DI-O-ACYL-3-O-[6-DEOXY-6-SULFO-ALPHA-D-GLUCOPYRANOSYL]-SN-GLYCEROL (CCD ID: SQD) (formula: $C_{41}H_{78}O_{12}S$) (labeled as "Ligand of Interest" by depositor).




| Mol | Chain | Residues | Atoms | | | | AltConf |
|---|---|---|---|---|---|---|---|
| 30 | B | 1 | Total | C | O | S | 0 |
| | | | 50 | 37 | 12 | 1 | |
| 30 | S | 1 | Total | C | O | S | 0 |
| | | | 46 | 33 | 12 | 1 | |

- Molecule 31 is (3S,3'R,5R,6S,7cis)-7',8'-didehydro-5,6-dihydro-5,6-epoxy-beta,beta-carotene-3,3'-diol (CCD ID: DD6) (formula: $C_{40}H_{54}O_3$).




| Mol | Chain | Residues | Atoms | | | AltConf |
|---|---|---|---|---|---|---|
| 31 | J | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | O | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | O | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | O | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | O | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | O | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | P | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | P | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | P | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | P | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | Q | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | Q | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | S | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | S | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |

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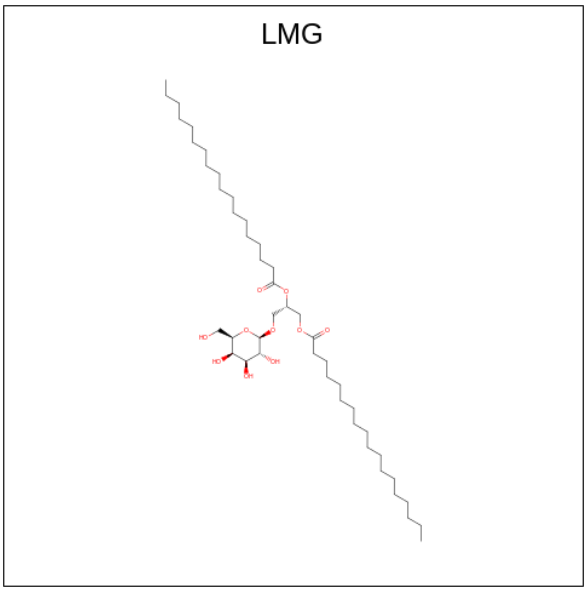
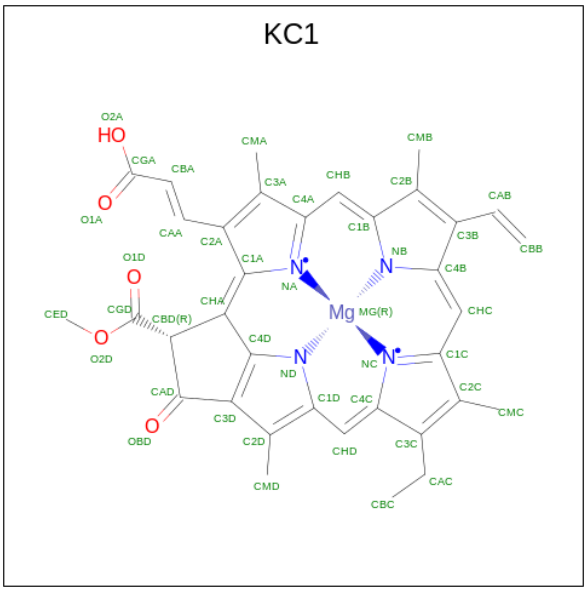
| Mol | Chain | Residues | Atoms | | | AltConf |
|---|---|---|---|---|---|---|
| 31 | S | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | S | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | S | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | U | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | U | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | U | 1 | Total | C | O | 0 |
| | | | 26 | 25 | 1 | |
| 31 | G | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | G | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | G | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | G | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | H | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | H | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | H | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | K | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | T | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | T | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |
| 31 | k | 1 | Total | C | O | 0 |
| | | | 43 | 40 | 3 | |

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



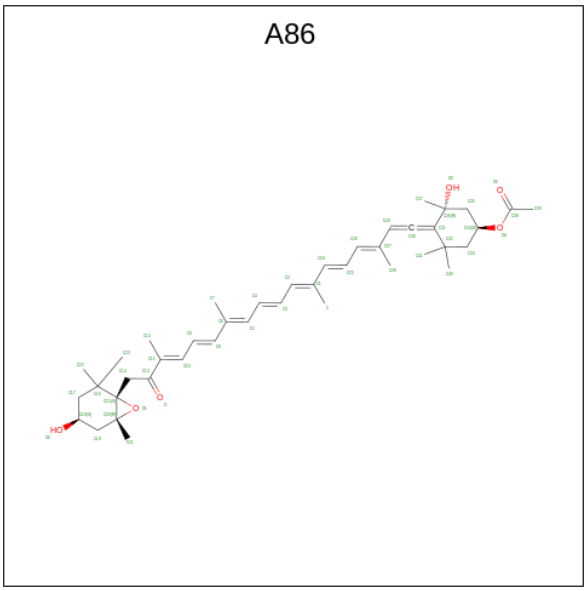

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 32 | J | 1 | Total C O<br>39 29 10 | 0 |
| 32 | P | 1 | Total C O<br>34 24 10 | 0 |
| 32 | P | 1 | Total C O<br>25 15 10 | 0 |
| 32 | Q | 1 | Total C O<br>55 45 10 | 0 |
| 32 | S | 1 | Total C O<br>49 39 10 | 0 |
| 32 | U | 1 | Total C O<br>32 22 10 | 0 |

- Molecule 33 is Chlorophyll c1 (CCD ID: KC1) (formula: $C_{35}H_{30}MgN_4O_5$).




| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 33 | O | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 44 | 35 | 1 | 4 | 4 | |
| 33 | P | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | Q | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | S | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | U | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |
| 33 | T | 1 | Total | C | Mg | N | O | 0 |
| | | | 45 | 35 | 1 | 4 | 5 | |

- Molecule 34 is (3S,3'S,5R,5'R,6S,6'R,8'R)-3,5'-dihydroxy-8-oxo-6',7'-didehydro-5,5',6,6',7,8-hexahydro-5,6-epoxy-beta,beta-caroten-3'- yl acetate (CCD ID: A86) (formula: $C_{42}H_{58}O_6$).




| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 34 | P | 1 | Total C O<br>48 42 6 | 0 |
| 34 | Q | 1 | Total C O<br>48 42 6 | 0 |
| 34 | Q | 1 | Total C O<br>48 42 6 | 0 |
| 34 | Q | 1 | Total C O<br>48 42 6 | 0 |
| 34 | R | 1 | Total C O<br>44 40 4 | 0 |
| 34 | R | 1 | Total C O<br>48 42 6 | 0 |
| 34 | U | 1 | Total C O<br>48 42 6 | 0 |

- Molecule 35 is water.

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 35 | A | 117 | Total O<br>117 117 | 0 |
| 35 | B | 211 | Total O<br>211 211 | 0 |
| 35 | C | 46 | Total O<br>46 46 | 0 |
| 35 | D | 21 | Total O<br>21 21 | 0 |
| 35 | E | 14 | Total O<br>14 14 | 0 |

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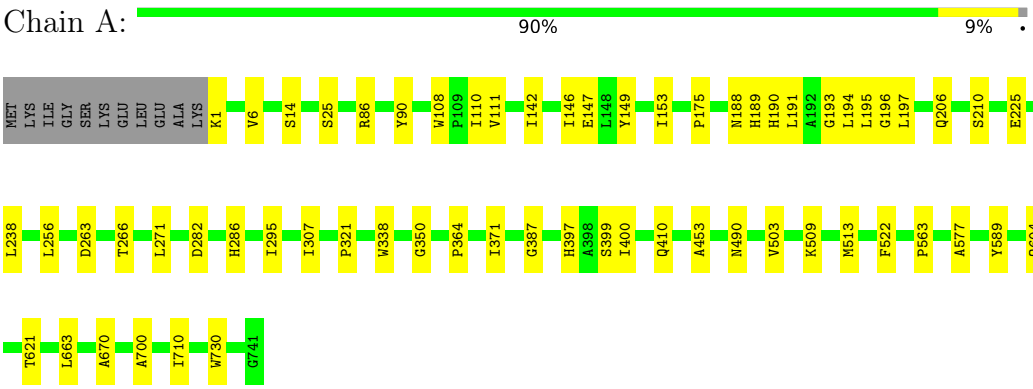
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 35 | F | 21 | Total O<br>21 21 | 0 |
| 35 | I | 2 | Total O<br>2 2 | 0 |
| 35 | J | 3 | Total O<br>3 3 | 0 |
| 35 | L | 18 | Total O<br>18 18 | 0 |
| 35 | M | 2 | Total O<br>2 2 | 0 |
| 35 | O | 11 | Total O<br>11 11 | 0 |
| 35 | P | 18 | Total O<br>18 18 | 0 |
| 35 | Q | 9 | Total O<br>9 9 | 0 |
| 35 | R | 4 | Total O<br>4 4 | 0 |
| 35 | S | 11 | Total O<br>11 11 | 0 |
| 35 | U | 5 | Total O<br>5 5 | 0 |
| 35 | k | 1 | Total O<br>1 1 | 0 |

# 3 Residue-property plots (i)

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

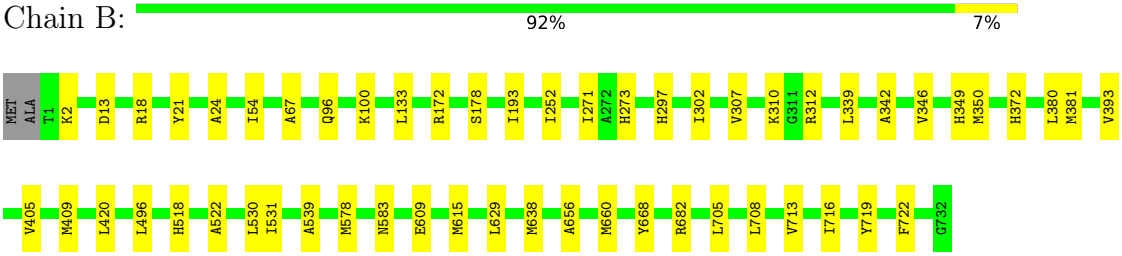
• Molecule 1: Photosystem I P700 chlorophyll a apoprotein A1 (psaA)

Chain A:



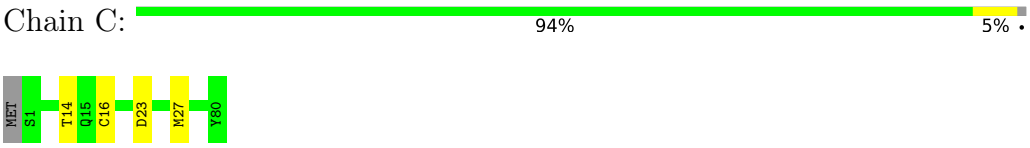

• Molecule 2: Photosystem I P700 chlorophyll a apoprotein A2 (psaB)

Chain B:



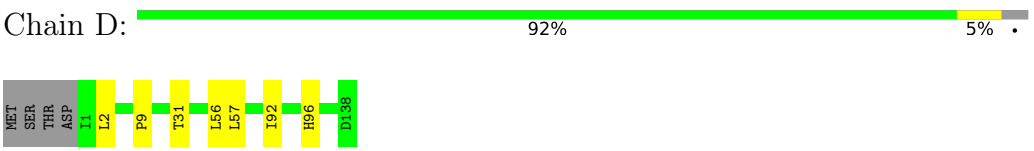

• Molecule 3: Photosystem I iron-sulfur center (psaC)

Chain C:




• Molecule 4: Photosystem I reaction center subunit II (psaD)

Chain D:



• Molecule 5: Photosystem I reaction center subunit IV (psaE)

Chain E:

• Molecule 6: Photosystem I reaction center subunit III (psaF)

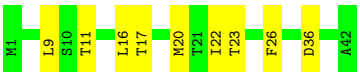
Chain F:

• Molecule 7: Photosystem I reaction center subunit VIII (psaI)

Chain I:

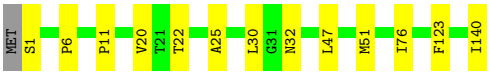
• Molecule 8: Photosystem I reaction center subunit IX (psaJ)

Chain J:



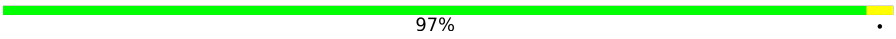

• Molecule 9: Photosystem I reaction center subunit XI (psaL)

Chain L:



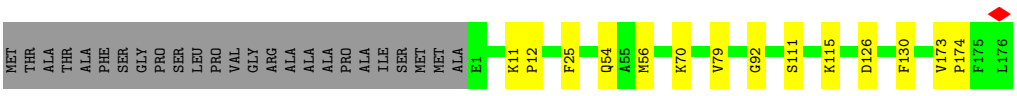

• Molecule 10: Photosystem I reaction center subunit XII (psaM)

Chain M:



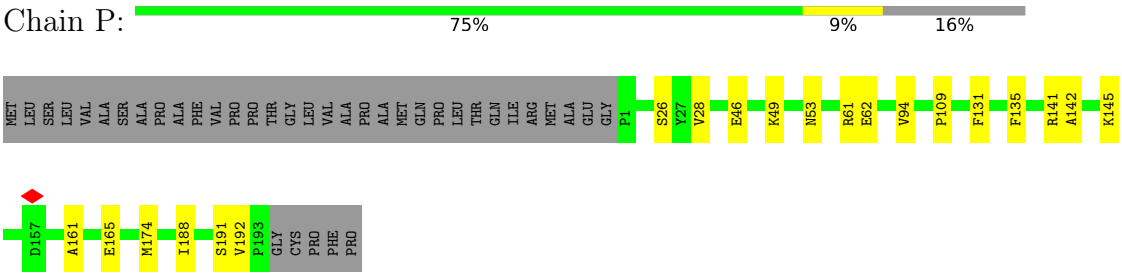
• Molecule 11: Fucoxanthin chlorophyll a/c binding protein III (FCPI-3)

Chain O:



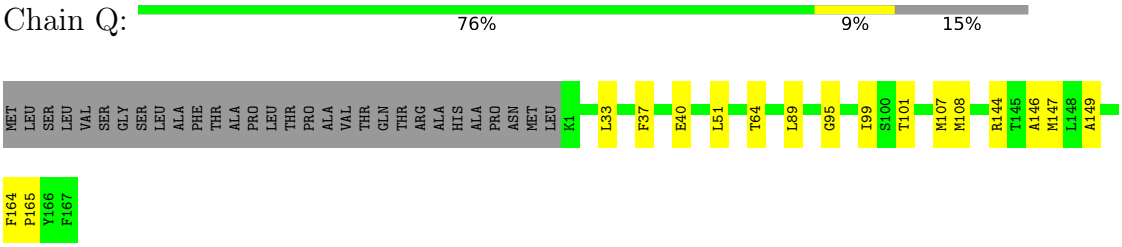
• Molecule 12: Fucoxanthin chlorophyll a/c binding protein VI (FCPI-6)

Chain P:



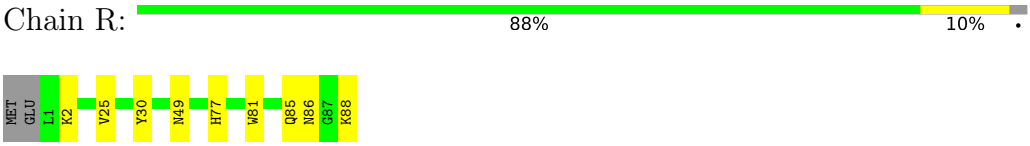

• Molecule 13: Fucoxanthin chlorophyll a/c binding protein IV (FCPI-4)

Chain Q:



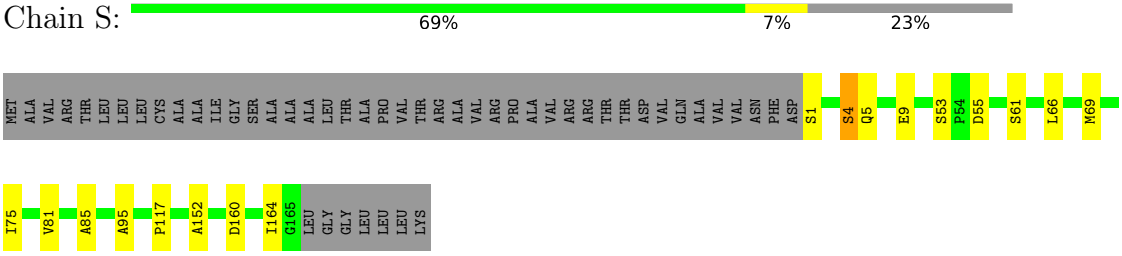

• Molecule 14: Photosystem I reaction center subunit psaR

Chain R:



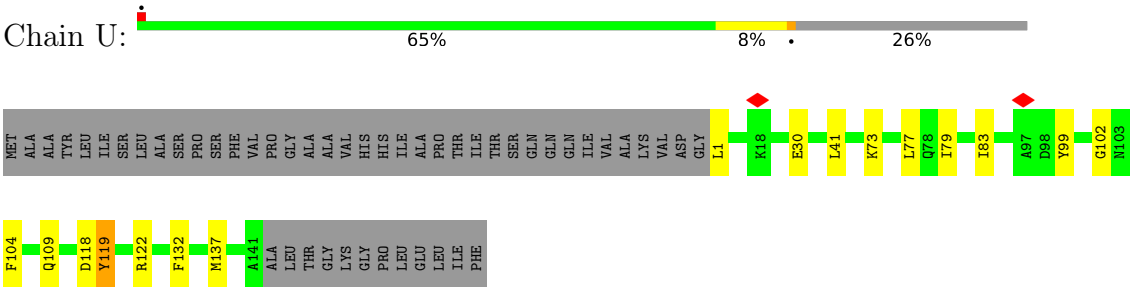

• Molecule 15: Fucoxanthin chlorophyll a/c binding protein II (FCPI-2)

Chain S:



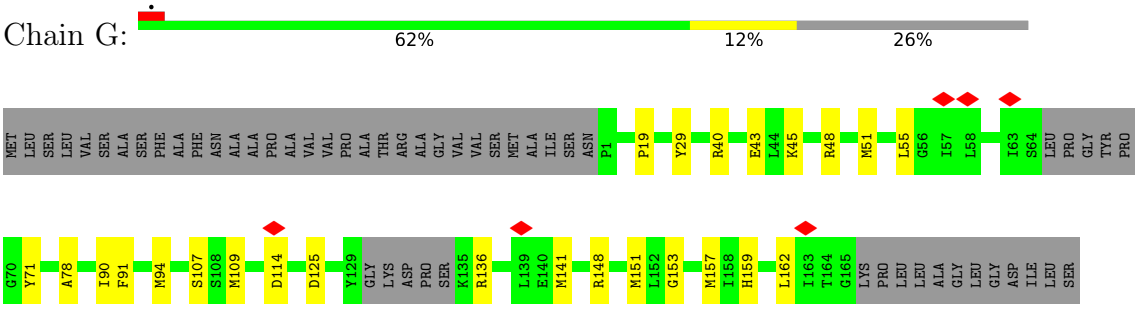

• Molecule 16: Fucoxanthin chlorophyll a/c binding protein I (FCPI-1)

Chain U:



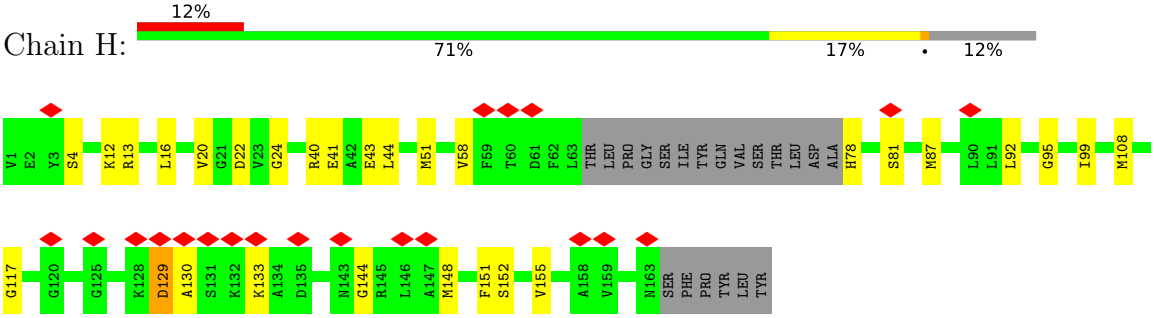

• Molecule 17: Fucoxanthin chlorophyll a/c binding protein VII (FCPI-7)

Chain G:



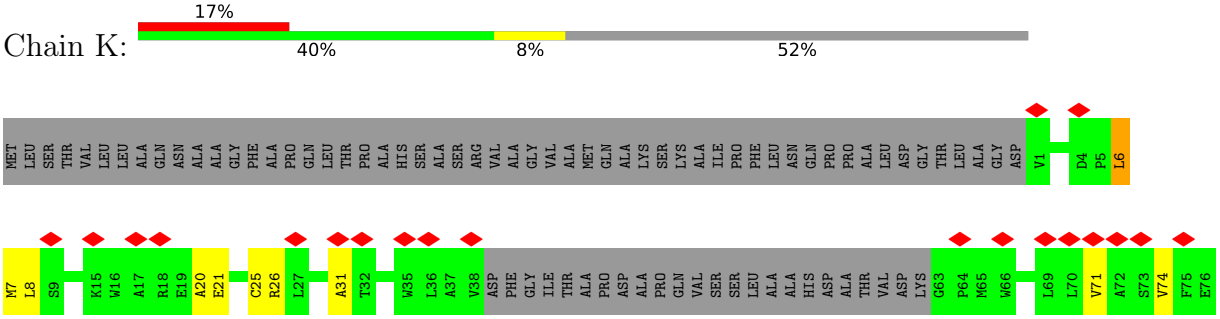

• Molecule 18: Fucoxanthin chlorophyll a/c binding protein VIII (FCPI-8)

Chain H:



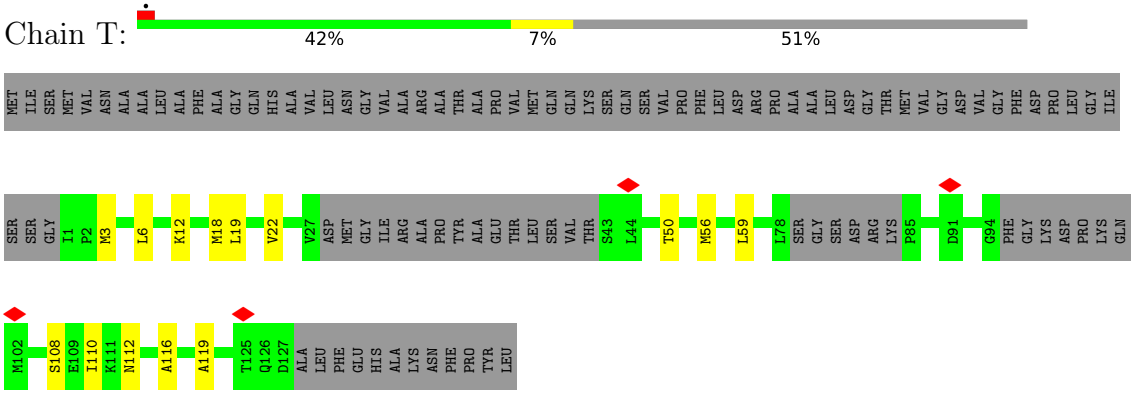

• Molecule 19: Fucoxanthin chlorophyll a/c binding protein IX (FCPI-9)

Chain K:



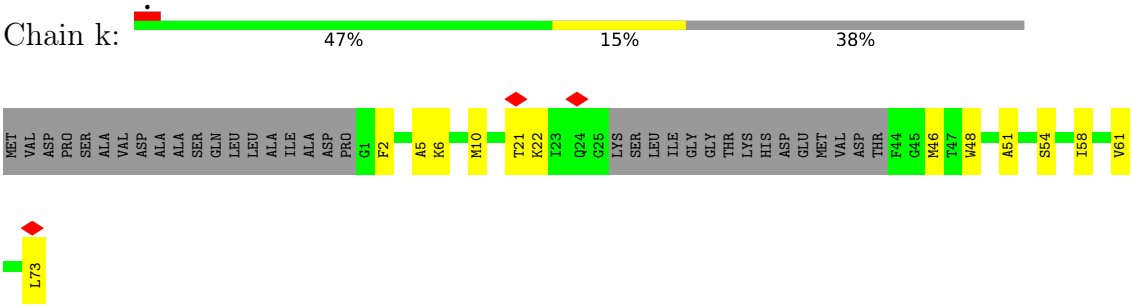

• Molecule 20: Fucoxanthin chlorophyll a/c binding protein V (FCPI-5)

Chain T:




• Molecule 21: Photosystem I reaction center subunit psaK

Chain k:


47%
15%
38%
MET VAL ASP PRO SER ALA VAL ASP ALA ALA SER GLN LEU LEU ALA ILE ALA ASP PRO G1 F2 A5 K6 M10 T21 K22 I23 Q24 G25 LYS SER LEU ILE GLY GLY THR LYS HIS ASP GLU MET VAL ASP THR F44 G45 M46 T47 W48 A51 S54 I58 V61
L73

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 191444 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | TFS KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 50 | Depositor |
| Minimum defocus (nm) | 800 | Depositor |
| Maximum defocus (nm) | 1800 | Depositor |
| Magnification | 165000 | Depositor |
| Image detector | FEI FALCON IV (4k x 4k) | Depositor |
| Maximum map value | 1.885 | Depositor |
| Minimum map value | -0.618 | Depositor |
| Average map value | -0.000 | Depositor |
| Map value standard deviation | 0.020 | Depositor |
| Recommended contour level | 0.065 | Depositor |
| Map size (Å) | 436.2, 436.2, 436.2 | wwPDB |
| Map dimensions | 600, 600, 600 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 0.727, 0.727, 0.727 | Depositor |

# 5 Model quality

## 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL0, LMG, CLA, LMU, A86, DD6, PQN, BCR, SQD, LHG, DGD, KC1, SF4

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

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #$\|Z\|>5$ | RMSZ | #$\|Z\|>5$ |
| 1 | A | 0.20 | 0/6007 | 0.40 | 0/8185 |
| 2 | B | 0.22 | 0/6015 | 0.41 | 0/8205 |
| 3 | C | 0.16 | 0/609 | 0.38 | 0/826 |
| 4 | D | 0.15 | 0/1116 | 0.38 | 0/1503 |
| 5 | E | 0.16 | 0/505 | 0.31 | 0/689 |
| 6 | F | 0.21 | 0/1275 | 0.42 | 0/1728 |
| 7 | I | 0.22 | 0/273 | 0.48 | 0/373 |
| 8 | J | 0.43 | 0/313 | 0.70 | 0/427 |
| 9 | L | 0.20 | 0/1081 | 0.43 | 0/1470 |
| 10 | M | 0.19 | 0/218 | 0.30 | 0/295 |
| 11 | O | 0.18 | 0/1376 | 0.39 | 0/1865 |
| 12 | P | 0.20 | 0/1480 | 0.37 | 0/2010 |
| 13 | Q | 0.16 | 0/1285 | 0.37 | 0/1736 |
| 14 | R | 0.19 | 0/681 | 0.35 | 0/930 |
| 15 | S | 0.14 | 0/1272 | 0.32 | 0/1732 |
| 16 | U | 0.24 | 0/1109 | 0.47 | 2/1499 (0.1%) |
| 17 | G | 0.17 | 0/1204 | 0.39 | 0/1624 |
| 18 | H | 0.20 | 0/1149 | 0.41 | 0/1546 |
| 19 | K | 0.25 | 0/764 | 0.52 | 0/1029 |
| 20 | T | 0.24 | 0/741 | 0.44 | 0/999 |
| 21 | k | 0.14 | 0/383 | 0.30 | 0/519 |
| All | All | 0.20 | 0/28856 | 0.41 | 2/39190 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 11 | O | 0 | 1 |
| 13 | Q | 0 | 2 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 19 | K | 0 | 1 |
| All | All | 0 | 4 |

There are no bond length outliers.

All (2) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 16 | U | 119 | TYR | CA-C-N | 5.81 | 128.54 | 120.29 |
| 16 | U | 119 | TYR | C-N-CA | 5.81 | 128.54 | 120.29 |

There are no chirality outliers.

All (4) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 19 | K | 20 | ALA | Peptide |
| 11 | O | 173 | VAL | Peptide |
| 13 | Q | 164 | PHE | Peptide |
| 13 | Q | 165 | PRO | Peptide |

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 5813 | 0 | 5698 | 49 | 0 |
| 2 | B | 5805 | 0 | 5635 | 49 | 0 |
| 3 | C | 599 | 0 | 577 | 3 | 0 |
| 4 | D | 1092 | 0 | 1096 | 4 | 0 |
| 5 | E | 494 | 0 | 488 | 2 | 0 |
| 6 | F | 1246 | 0 | 1256 | 12 | 0 |
| 7 | I | 266 | 0 | 278 | 4 | 0 |
| 8 | J | 305 | 0 | 310 | 8 | 0 |
| 9 | L | 1056 | 0 | 1068 | 10 | 0 |
| 10 | M | 216 | 0 | 234 | 1 | 0 |
| 11 | O | 1341 | 0 | 1347 | 14 | 0 |
| 12 | P | 1441 | 0 | 1421 | 16 | 0 |
| 13 | Q | 1257 | 0 | 1260 | 9 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 14 | R | 664 | 0 | 668 | 5 | 0 |
| 15 | S | 1238 | 0 | 1217 | 13 | 0 |
| 16 | U | 1082 | 0 | 1058 | 12 | 0 |
| 17 | G | 1179 | 0 | 1166 | 22 | 0 |
| 18 | H | 1128 | 0 | 1134 | 18 | 0 |
| 19 | K | 748 | 0 | 777 | 12 | 0 |
| 20 | T | 731 | 0 | 749 | 23 | 0 |
| 21 | k | 379 | 0 | 409 | 10 | 0 |
| 22 | A | 2701 | 0 | 2712 | 65 | 0 |
| 22 | B | 2344 | 0 | 2385 | 79 | 0 |
| 22 | F | 159 | 0 | 141 | 4 | 0 |
| 22 | G | 561 | 0 | 486 | 20 | 0 |
| 22 | H | 524 | 0 | 475 | 14 | 0 |
| 22 | J | 42 | 0 | 31 | 1 | 0 |
| 22 | K | 245 | 0 | 201 | 7 | 0 |
| 22 | L | 164 | 0 | 150 | 4 | 0 |
| 22 | O | 495 | 0 | 475 | 13 | 0 |
| 22 | P | 403 | 0 | 337 | 8 | 0 |
| 22 | Q | 609 | 0 | 566 | 8 | 0 |
| 22 | R | 110 | 0 | 105 | 5 | 0 |
| 22 | S | 384 | 0 | 358 | 9 | 0 |
| 22 | T | 473 | 0 | 379 | 22 | 0 |
| 22 | U | 441 | 0 | 417 | 14 | 0 |
| 22 | k | 97 | 0 | 80 | 4 | 0 |
| 23 | A | 33 | 0 | 46 | 2 | 0 |
| 23 | B | 33 | 0 | 46 | 1 | 0 |
| 24 | A | 75 | 0 | 93 | 3 | 0 |
| 24 | G | 27 | 0 | 24 | 1 | 0 |
| 24 | P | 49 | 0 | 74 | 4 | 0 |
| 25 | A | 160 | 0 | 224 | 5 | 0 |
| 25 | B | 200 | 0 | 280 | 14 | 0 |
| 25 | F | 80 | 0 | 112 | 4 | 0 |
| 25 | I | 80 | 0 | 112 | 5 | 0 |
| 25 | J | 40 | 0 | 56 | 1 | 0 |
| 25 | L | 80 | 0 | 112 | 2 | 0 |
| 25 | M | 40 | 0 | 56 | 1 | 0 |
| 25 | R | 39 | 0 | 53 | 3 | 0 |
| 25 | k | 40 | 0 | 56 | 2 | 0 |
| 26 | A | 70 | 0 | 92 | 1 | 0 |
| 26 | F | 70 | 0 | 92 | 1 | 0 |
| 26 | K | 59 | 0 | 67 | 2 | 0 |
| 26 | L | 35 | 0 | 46 | 2 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 26 | M | 35 | 0 | 46 | 1 | 0 |
| 26 | O | 35 | 0 | 46 | 0 | 0 |
| 26 | P | 25 | 0 | 23 | 0 | 0 |
| 26 | S | 31 | 0 | 35 | 1 | 0 |
| 27 | A | 65 | 0 | 72 | 3 | 0 |
| 28 | A | 8 | 0 | 0 | 0 | 0 |
| 28 | C | 16 | 0 | 0 | 1 | 0 |
| 29 | B | 60 | 0 | 81 | 9 | 0 |
| 30 | B | 50 | 0 | 67 | 1 | 0 |
| 30 | S | 46 | 0 | 56 | 1 | 0 |
| 31 | G | 172 | 0 | 0 | 3 | 0 |
| 31 | H | 129 | 0 | 0 | 0 | 0 |
| 31 | J | 43 | 0 | 0 | 0 | 0 |
| 31 | K | 43 | 0 | 0 | 0 | 0 |
| 31 | O | 215 | 0 | 0 | 2 | 0 |
| 31 | P | 172 | 0 | 0 | 0 | 0 |
| 31 | Q | 86 | 0 | 0 | 0 | 0 |
| 31 | S | 215 | 0 | 0 | 0 | 0 |
| 31 | T | 86 | 0 | 0 | 0 | 0 |
| 31 | U | 112 | 0 | 0 | 1 | 0 |
| 31 | k | 43 | 0 | 0 | 0 | 0 |
| 32 | J | 39 | 0 | 48 | 3 | 0 |
| 32 | P | 59 | 0 | 58 | 4 | 0 |
| 32 | Q | 55 | 0 | 86 | 3 | 0 |
| 32 | S | 49 | 0 | 68 | 2 | 0 |
| 32 | U | 32 | 0 | 34 | 1 | 0 |
| 33 | O | 45 | 0 | 0 | 0 | 0 |
| 33 | P | 179 | 0 | 0 | 0 | 0 |
| 33 | Q | 45 | 0 | 0 | 0 | 0 |
| 33 | S | 90 | 0 | 0 | 0 | 0 |
| 33 | T | 45 | 0 | 0 | 1 | 0 |
| 33 | U | 45 | 0 | 0 | 0 | 0 |
| 34 | P | 48 | 0 | 0 | 0 | 0 |
| 34 | Q | 144 | 0 | 0 | 0 | 0 |
| 34 | R | 92 | 0 | 0 | 1 | 0 |
| 34 | U | 48 | 0 | 0 | 0 | 0 |
| 35 | A | 117 | 0 | 0 | 1 | 0 |
| 35 | B | 211 | 0 | 0 | 0 | 0 |
| 35 | C | 46 | 0 | 0 | 0 | 0 |
| 35 | D | 21 | 0 | 0 | 0 | 0 |
| 35 | E | 14 | 0 | 0 | 0 | 0 |
| 35 | F | 21 | 0 | 0 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 35 | I | 2 | 0 | 0 | 0 | 0 |
| 35 | J | 3 | 0 | 0 | 0 | 0 |
| 35 | L | 18 | 0 | 0 | 0 | 0 |
| 35 | M | 2 | 0 | 0 | 0 | 0 |
| 35 | O | 11 | 0 | 0 | 0 | 0 |
| 35 | P | 18 | 0 | 0 | 0 | 0 |
| 35 | Q | 9 | 0 | 0 | 0 | 0 |
| 35 | R | 4 | 0 | 0 | 0 | 0 |
| 35 | S | 11 | 0 | 0 | 0 | 0 |
| 35 | U | 5 | 0 | 0 | 0 | 0 |
| 35 | k | 1 | 0 | 0 | 0 | 0 |
| All | All | 42258 | 0 | 39505 | 480 | 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 6.

The worst 5 of 480 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) |
|---|---|---|---|
| 19:K:8:LEU:HD21 | 21:k:46:MET:SD | 2.05 | 0.96 |
| 17:G:90:ILE:HG22 | 17:G:94:MET:HE2 | 1.50 | 0.94 |
| 12:P:46:GLU:OE2 | 12:P:49:LYS:HE3 | 1.68 | 0.93 |
| 20:T:56:MET:HE2 | 20:T:56:MET:HA | 1.56 | 0.87 |
| 22:B:830:CLA:H152 | 25:F:805:BCR:H23C | 1.65 | 0.78 |

There are no symmetry-related clashes.

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 1 | A | 739/752 (98%) | 719 (97%) | 20 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 2 | B | 730/734 (100%) | 712 (98%) | 18 (2%) | 0 | 100 | 100 |
| 3 | C | 78/81 (96%) | 77 (99%) | 1 (1%) | 0 | 100 | 100 |
| 4 | D | 136/142 (96%) | 132 (97%) | 4 (3%) | 0 | 100 | 100 |
| 5 | E | 62/67 (92%) | 61 (98%) | 1 (2%) | 0 | 100 | 100 |
| 6 | F | 159/184 (86%) | 155 (98%) | 4 (2%) | 0 | 100 | 100 |
| 7 | I | 32/35 (91%) | 32 (100%) | 0 | 0 | 100 | 100 |
| 8 | J | 37/39 (95%) | 37 (100%) | 0 | 0 | 100 | 100 |
| 9 | L | 138/141 (98%) | 137 (99%) | 1 (1%) | 0 | 100 | 100 |
| 10 | M | 27/29 (93%) | 27 (100%) | 0 | 0 | 100 | 100 |
| 11 | O | 174/201 (87%) | 170 (98%) | 3 (2%) | 1 (1%) | 22 | 8 |
| 12 | P | 191/231 (83%) | 188 (98%) | 3 (2%) | 0 | 100 | 100 |
| 13 | Q | 165/197 (84%) | 157 (95%) | 8 (5%) | 0 | 100 | 100 |
| 14 | R | 86/90 (96%) | 84 (98%) | 2 (2%) | 0 | 100 | 100 |
| 15 | S | 163/215 (76%) | 160 (98%) | 3 (2%) | 0 | 100 | 100 |
| 16 | U | 139/191 (73%) | 138 (99%) | 1 (1%) | 0 | 100 | 100 |
| 17 | G | 149/209 (71%) | 146 (98%) | 3 (2%) | 0 | 100 | 100 |
| 18 | H | 145/169 (86%) | 140 (97%) | 5 (3%) | 0 | 100 | 100 |
| 19 | K | 89/200 (44%) | 87 (98%) | 2 (2%) | 0 | 100 | 100 |
| 20 | T | 91/202 (45%) | 89 (98%) | 2 (2%) | 0 | 100 | 100 |
| 21 | k | 51/89 (57%) | 50 (98%) | 1 (2%) | 0 | 100 | 100 |
| All | All | 3581/4198 (85%) | 3498 (98%) | 82 (2%) | 1 (0%) | 100 | 100 |

All (1) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 11 | O | 174 | PRO |

### 5.3.2 Protein sidechains (i)

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 1 | A | 603/612 (98%) | 598 (99%) | 5 (1%) | 79 70 |
| 2 | B | 590/591 (100%) | 589 (100%) | 1 (0%) | 92 89 |
| 3 | C | 68/69 (99%) | 68 (100%) | 0 | 100 100 |
| 4 | D | 118/122 (97%) | 118 (100%) | 0 | 100 100 |
| 5 | E | 53/55 (96%) | 52 (98%) | 1 (2%) | 52 30 |
| 6 | F | 133/152 (88%) | 132 (99%) | 1 (1%) | 79 70 |
| 7 | I | 31/32 (97%) | 31 (100%) | 0 | 100 100 |
| 8 | J | 32/32 (100%) | 32 (100%) | 0 | 100 100 |
| 9 | L | 111/112 (99%) | 110 (99%) | 1 (1%) | 75 66 |
| 10 | M | 21/21 (100%) | 21 (100%) | 0 | 100 100 |
| 11 | O | 145/161 (90%) | 145 (100%) | 0 | 100 100 |
| 12 | P | 144/173 (83%) | 141 (98%) | 3 (2%) | 48 25 |
| 13 | Q | 133/157 (85%) | 132 (99%) | 1 (1%) | 79 70 |
| 14 | R | 71/73 (97%) | 70 (99%) | 1 (1%) | 62 45 |
| 15 | S | 125/162 (77%) | 121 (97%) | 4 (3%) | 34 11 |
| 16 | U | 110/148 (74%) | 108 (98%) | 2 (2%) | 54 32 |
| 17 | G | 127/167 (76%) | 127 (100%) | 0 | 100 100 |
| 18 | H | 119/137 (87%) | 115 (97%) | 4 (3%) | 32 9 |
| 19 | K | 78/153 (51%) | 75 (96%) | 3 (4%) | 28 7 |
| 20 | T | 73/153 (48%) | 70 (96%) | 3 (4%) | 26 6 |
| 21 | k | 38/65 (58%) | 36 (95%) | 2 (5%) | 19 3 |
| All | All | 2923/3347 (87%) | 2891 (99%) | 32 (1%) | 69 55 |

5 of 32 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 20 | T | 22 | VAL |
| 20 | T | 110 | ILE |
| 13 | Q | 64 | THR |
| 12 | P | 192 | VAL |
| 21 | k | 2 | PHE |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 14 such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | F | 44 | GLN |
| 9 | L | 32 | ASN |
| 18 | H | 157 | GLN |
| 17 | G | 3 | ASN |
| 17 | G | 102 | 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)

272 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 22 | CLA | B | 834 | 35 | 65,73,73 | 1.28 | 7 (10%) | 76,113,113 | 1.08 | 7 (9%) |
| 22 | CLA | B | 843 | 2 | 65,73,73 | 1.34 | 7 (10%) | 76,113,113 | 0.95 | 4 (5%) |
| 22 | CLA | B | 826 | 2 | 49,57,73 | 1.52 | 7 (14%) | 55,93,113 | 1.01 | 3 (5%) |
| 26 | LMU | P | 221 | - | 26,26,36 | 1.30 | 2 (7%) | 37,37,47 | 1.34 | 4 (10%) |
| 22 | CLA | K | 204 | 19 | 42,50,73 | 1.59 | 8 (19%) | 48,85,113 | 1.19 | 4 (8%) |
| 22 | CLA | L | 203 | 9 | 65,73,73 | 1.22 | 7 (10%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | B | 816 | 35 | 65,73,73 | 1.28 | 6 (9%) | 76,113,113 | 0.88 | 3 (3%) |
| 22 | CLA | T | 207 | 20 | 65,73,73 | 1.20 | 6 (9%) | 76,113,113 | 1.06 | 4 (5%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 28 | SF4 | C | 102 | 3 | 0,12,12 | - | - | - | | |
| 22 | CLA | T | 202 | 20 | 41,49,73 | 1.55 | 7 (17%) | 47,84,113 | 1.28 | 4 (8%) |
| 24 | LHG | P | 201 | - | 48,48,48 | 0.60 | 2 (4%) | 51,54,54 | 1.24 | 5 (9%) |
| 29 | DGD | B | 841 | - | 61,61,67 | 0.96 | 2 (3%) | 75,75,81 | 1.35 | 8 (10%) |
| 22 | CLA | U | 204 | 35 | 61,69,73 | 1.28 | 7 (11%) | 71,108,113 | 1.09 | 4 (5%) |
| 22 | CLA | A | 834 | 1 | 65,73,73 | 1.36 | 7 (10%) | 76,113,113 | 0.97 | 5 (6%) |
| 24 | LHG | A | 839 | - | 47,47,48 | 0.64 | 0 | 50,53,54 | 1.20 | 5 (10%) |
| 22 | CLA | A | 826 | 1 | 65,73,73 | 1.35 | 7 (10%) | 76,113,113 | 0.89 | 4 (5%) |
| 22 | CLA | B | 824 | 2 | 65,73,73 | 1.33 | 7 (10%) | 76,113,113 | 0.92 | 4 (5%) |
| 25 | BCR | A | 842 | - | 41,41,41 | 1.07 | 2 (4%) | 56,56,56 | 1.12 | 4 (7%) |
| 31 | DD6 | H | 212 | - | 39,45,45 | 1.61 | 8 (20%) | 52,67,67 | 1.59 | 10 (19%) |
| 22 | CLA | A | 845 | 35 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.95 | 4 (5%) |
| 22 | CLA | Q | 216 | 35 | 65,73,73 | 1.20 | 6 (9%) | 76,113,113 | 0.98 | 5 (6%) |
| 22 | CLA | F | 802 | 35 | 65,73,73 | 1.30 | 7 (10%) | 76,113,113 | 0.98 | 4 (5%) |
| 22 | CLA | A | 803 | 1 | 65,73,73 | 1.21 | 6 (9%) | 76,113,113 | 1.04 | 5 (6%) |
| 22 | CLA | B | 819 | 35 | 63,71,73 | 1.30 | 7 (11%) | 73,110,113 | 1.09 | 6 (8%) |
| 22 | CLA | B | 832 | 35 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.96 | 4 (5%) |
| 22 | CLA | F | 804 | 6 | 46,54,73 | 1.50 | 7 (15%) | 53,90,113 | 1.10 | 4 (7%) |
| 25 | BCR | B | 837 | - | 41,41,41 | 1.03 | 2 (4%) | 56,56,56 | 1.19 | 4 (7%) |
| 22 | CLA | Q | 208 | 13 | 50,58,73 | 1.44 | 7 (14%) | 58,95,113 | 1.56 | 8 (13%) |
| 22 | CLA | A | 809 | 1 | 62,70,73 | 1.28 | 7 (11%) | 72,109,113 | 1.01 | 4 (5%) |
| 22 | CLA | H | 207 | 18 | 65,73,73 | 1.24 | 8 (12%) | 76,113,113 | 1.29 | 7 (9%) |
| 22 | CLA | A | 835 | 1 | 65,73,73 | 1.32 | 7 (10%) | 76,113,113 | 0.93 | 3 (3%) |
| 33 | KC1 | O | 210 | 11 | 48,53,53 | 1.85 | 12 (25%) | 55,89,89 | 1.30 | 6 (10%) |
| 31 | DD6 | G | 211 | - | 39,45,45 | 1.59 | 8 (20%) | 52,67,67 | 1.53 | 8 (15%) |
| 22 | CLA | B | 812 | 2 | 59,67,73 | 1.33 | 7 (11%) | 68,105,113 | 1.04 | 5 (7%) |
| 22 | CLA | G | 201 | 17 | 45,53,73 | 1.51 | 6 (13%) | 52,89,113 | 1.12 | 4 (7%) |
| 22 | CLA | U | 205 | 16 | 65,73,73 | 1.26 | 8 (12%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | A | 808 | 1 | 56,64,73 | 1.33 | 7 (12%) | 65,102,113 | 1.04 | 4 (6%) |
| 22 | CLA | P | 209 | - | 52,60,73 | 1.40 | 7 (13%) | 60,97,113 | 1.09 | 4 (6%) |
| 24 | LHG | G | 216 | - | 26,26,48 | 0.85 | 1 (3%) | 29,32,54 | 1.17 | 2 (6%) |
| 31 | DD6 | G | 214 | - | 39,45,45 | 1.63 | 7 (17%) | 52,67,67 | 1.67 | 12 (23%) |
| 22 | CLA | A | 853 | 1 | 65,73,73 | 1.25 | 7 (10%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | L | 202 | 9 | 49,57,73 | 1.46 | 7 (14%) | 55,93,113 | 1.25 | 7 (12%) |
| 31 | DD6 | O | 201 | - | 39,45,45 | 1.56 | 8 (20%) | 52,67,67 | 1.51 | 10 (19%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | A | 817 | 1 | 45,53,73 | 1.54 | 7 (15%) | 52,89,113 | 1.16 | 4 (7%) |
| 31 | DD6 | S | 205 | - | 39,45,45 | 1.54 | 7 (17%) | 52,67,67 | 1.56 | 10 (19%) |
| 22 | CLA | H | 206 | 18 | 45,53,73 | 1.60 | 7 (15%) | 52,89,113 | 1.08 | 4 (7%) |
| 31 | DD6 | T | 213 | - | 39,45,45 | 1.51 | 9 (23%) | 52,67,67 | 2.12 | 15 (28%) |
| 22 | CLA | B | 807 | 2 | 65,73,73 | 1.32 | 7 (10%) | 76,113,113 | 0.90 | 3 (3%) |
| 28 | SF4 | C | 101 | 3 | 0,12,12 | - | - | - | | |
| 22 | CLA | A | 855 | - | 39,48,73 | 1.65 | 7 (17%) | 45,82,113 | 1.27 | 6 (13%) |
| 32 | LMG | U | 201 | - | 32,32,55 | 0.99 | 0 | 40,40,63 | 1.12 | 2 (5%) |
| 22 | CLA | A | 801 | - | 65,73,73 | 1.24 | 7 (10%) | 76,113,113 | 0.96 | 5 (6%) |
| 26 | LMU | A | 857 | - | 36,36,36 | 0.41 | 0 | 47,47,47 | 0.73 | 1 (2%) |
| 31 | DD6 | G | 212 | - | 39,45,45 | 1.63 | 7 (17%) | 52,67,67 | 1.58 | 10 (19%) |
| 34 | A86 | P | 204 | - | 44,50,50 | 1.62 | 6 (13%) | 51,76,76 | 1.70 | 11 (21%) |
| 34 | A86 | R | 105 | - | 44,50,50 | 1.62 | 6 (13%) | 51,76,76 | 1.55 | 9 (17%) |
| 22 | CLA | G | 210 | 17 | 45,53,73 | 1.59 | 7 (15%) | 52,89,113 | 1.15 | 3 (5%) |
| 34 | A86 | Q | 201 | - | 44,50,50 | 1.58 | 6 (13%) | 51,76,76 | 1.59 | 8 (15%) |
| 22 | CLA | A | 831 | 1 | 45,53,73 | 1.52 | 7 (15%) | 52,89,113 | 1.20 | 4 (7%) |
| 22 | CLA | O | 209 | 11 | 65,73,73 | 1.28 | 7 (10%) | 76,113,113 | 1.09 | 6 (7%) |
| 31 | DD6 | O | 212 | - | 39,45,45 | 1.63 | 8 (20%) | 52,67,67 | 1.73 | 9 (17%) |
| 22 | CLA | A | 850 | 35 | 65,73,73 | 1.22 | 6 (9%) | 76,113,113 | 1.03 | 5 (6%) |
| 22 | CLA | O | 202 | 11 | 43,51,73 | 1.53 | 6 (13%) | 49,86,113 | 1.21 | 5 (10%) |
| 26 | LMU | M | 102 | - | 36,36,36 | 1.18 | 2 (5%) | 47,47,47 | 1.02 | 2 (4%) |
| 22 | CLA | Q | 212 | 13 | 65,73,73 | 1.31 | 7 (10%) | 76,113,113 | 1.08 | 7 (9%) |
| 31 | DD6 | O | 215 | - | 39,45,45 | 1.53 | 7 (17%) | 52,67,67 | 1.68 | 11 (21%) |
| 25 | BCR | I | 101 | - | 41,41,41 | 1.09 | 2 (4%) | 56,56,56 | 1.26 | 5 (8%) |
| 31 | DD6 | U | 203 | - | 39,45,45 | 1.62 | 7 (17%) | 52,67,67 | 1.75 | 11 (21%) |
| 22 | CLA | A | 854 | 1 | 65,73,73 | 1.23 | 7 (10%) | 76,113,113 | 1.04 | 7 (9%) |
| 22 | CLA | O | 208 | 11 | 60,68,73 | 1.24 | 6 (10%) | 70,107,113 | 1.06 | 5 (7%) |
| 33 | KC1 | S | 210 | 15 | 48,53,53 | 1.86 | 11 (22%) | 55,89,89 | 1.22 | 4 (7%) |
| 32 | LMG | P | 217 | - | 25,25,55 | 1.39 | 4 (16%) | 33,33,63 | 1.47 | 7 (21%) |
| 31 | DD6 | P | 220 | - | 39,45,45 | 1.60 | 7 (17%) | 52,67,67 | 1.76 | 11 (21%) |
| 22 | CLA | B | 827 | 2 | 58,66,73 | 1.37 | 7 (12%) | 67,104,113 | 1.10 | 6 (8%) |
| 28 | SF4 | A | 852 | 2,1 | 0,12,12 | - | - | - | | |
| 22 | CLA | B | 804 | 2 | 65,73,73 | 1.22 | 6 (9%) | 76,113,113 | 1.03 | 5 (6%) |
| 22 | CLA | R | 101 | 35 | 45,53,73 | 1.59 | 7 (15%) | 52,89,113 | 1.10 | 4 (7%) |
| 31 | DD6 | S | 204 | - | 39,45,45 | 1.53 | 8 (20%) | 52,67,67 | 1.54 | 8 (15%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | B | 803 | 2 | 45,53,73 | 1.58 | 7 (15%) | 52,89,113 | 1.13 | 4 (7%) |
| 22 | CLA | A | 846 | 1 | 60,68,73 | 1.38 | 7 (11%) | 70,107,113 | 1.00 | 4 (5%) |
| 31 | DD6 | U | 214 | - | 24,26,45 | 1.66 | 5 (20%) | 30,35,67 | 1.64 | 6 (20%) |
| 22 | CLA | B | 817 | 2 | 46,54,73 | 1.49 | 7 (15%) | 53,90,113 | 1.14 | 4 (7%) |
| 24 | LHG | A | 840 | 22 | 26,26,48 | 0.86 | 1 (3%) | 29,32,54 | 1.33 | 3 (10%) |
| 22 | CLA | B | 830 | 2 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.98 | 4 (5%) |
| 22 | CLA | T | 210 | 20 | 46,54,73 | 1.55 | 7 (15%) | 53,90,113 | 1.16 | 5 (9%) |
| 25 | BCR | L | 205 | - | 41,41,41 | 1.03 | 2 (4%) | 56,56,56 | 1.29 | 5 (8%) |
| 22 | CLA | U | 206 | 16 | 45,53,73 | 1.51 | 7 (15%) | 52,89,113 | 1.12 | 4 (7%) |
| 22 | CLA | S | 202 | 35 | 65,73,73 | 1.20 | 6 (9%) | 76,113,113 | 1.20 | 6 (7%) |
| 22 | CLA | O | 207 | 11 | 46,54,73 | 1.52 | 8 (17%) | 53,90,113 | 1.16 | 5 (9%) |
| 22 | CLA | B | 829 | 2 | 58,66,73 | 1.36 | 7 (12%) | 67,104,113 | 1.13 | 6 (8%) |
| 22 | CLA | T | 204 | - | 57,65,73 | 1.29 | 6 (10%) | 66,103,113 | 1.11 | 5 (7%) |
| 22 | CLA | K | 206 | 19 | 45,53,73 | 1.65 | 7 (15%) | 52,89,113 | 1.07 | 3 (5%) |
| 22 | CLA | O | 206 | 35 | 65,73,73 | 1.25 | 7 (10%) | 76,113,113 | 1.01 | 5 (6%) |
| 22 | CLA | K | 207 | 19 | 58,66,73 | 1.33 | 7 (12%) | 67,104,113 | 1.32 | 5 (7%) |
| 22 | CLA | J | 103 | 8 | 42,50,73 | 1.53 | 7 (16%) | 48,85,113 | 1.18 | 5 (10%) |
| 22 | CLA | B | 823 | 2 | 65,73,73 | 1.30 | 7 (10%) | 76,113,113 | 1.07 | 5 (6%) |
| 25 | BCR | F | 801 | - | 41,41,41 | 1.01 | 2 (4%) | 56,56,56 | 1.19 | 4 (7%) |
| 22 | CLA | L | 204 | 35 | 50,58,73 | 1.42 | 8 (16%) | 58,95,113 | 1.23 | 5 (8%) |
| 22 | CLA | Q | 203 | 13 | 48,56,73 | 1.46 | 7 (14%) | 55,92,113 | 1.09 | 4 (7%) |
| 22 | CLA | T | 211 | - | 47,55,73 | 1.50 | 6 (12%) | 54,91,113 | 1.22 | 5 (9%) |
| 22 | CLA | U | 210 | 16 | 65,73,73 | 1.23 | 6 (9%) | 76,113,113 | 1.03 | 5 (6%) |
| 22 | CLA | T | 201 | - | 42,50,73 | 1.63 | 7 (16%) | 48,85,113 | 1.01 | 3 (6%) |
| 25 | BCR | A | 841 | - | 41,41,41 | 1.02 | 2 (4%) | 56,56,56 | 1.23 | 2 (3%) |
| 26 | LMU | F | 806 | - | 36,36,36 | 1.28 | 3 (8%) | 47,47,47 | 1.54 | 8 (17%) |
| 22 | CLA | A | 811 | 1 | 65,73,73 | 1.26 | 7 (10%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | P | 216 | 12 | 47,55,73 | 1.50 | 7 (14%) | 54,91,113 | 1.24 | 5 (9%) |
| 22 | CLA | A | 851 | 1 | 65,73,73 | 1.26 | 7 (10%) | 76,113,113 | 1.00 | 3 (3%) |
| 33 | KC1 | P | 212 | 12 | 46,52,53 | 1.95 | 11 (23%) | 49,87,89 | 1.34 | 6 (12%) |
| 33 | KC1 | T | 208 | 20 | 48,53,53 | 2.00 | 12 (25%) | 55,89,89 | 1.20 | 4 (7%) |
| 32 | LMG | S | 213 | - | 49,49,55 | 0.73 | 1 (2%) | 57,57,63 | 1.29 | 6 (10%) |
| 25 | BCR | F | 805 | - | 41,41,41 | 1.04 | 2 (4%) | 56,56,56 | 1.18 | 5 (8%) |
| 31 | DD6 | k | 101 | - | 39,45,45 | 1.54 | 8 (20%) | 52,67,67 | 1.50 | 8 (15%) |
| 22 | CLA | A | 823 | 1 | 65,73,73 | 1.29 | 6 (9%) | 76,113,113 | 0.95 | 4 (5%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | P | 210 | 35 | 47,55,73 | 1.48 | 6 (12%) | 54,91,113 | 1.10 | 4 (7%) |
| 25 | BCR | B | 839 | - | 41,41,41 | 1.05 | 2 (4%) | 56,56,56 | 1.18 | 5 (8%) |
| 33 | KC1 | S | 212 | 15 | 48,53,53 | 1.83 | 10 (20%) | 55,89,89 | 1.33 | 7 (12%) |
| 22 | CLA | A | 824 | 1 | 62,70,73 | 1.30 | 7 (11%) | 72,109,113 | 1.09 | 5 (6%) |
| 22 | CLA | B | 806 | 2 | 65,73,73 | 1.24 | 7 (10%) | 76,113,113 | 1.01 | 4 (5%) |
| 22 | CLA | B | 813 | 2 | 55,63,73 | 1.49 | 7 (12%) | 64,101,113 | 1.07 | 4 (6%) |
| 25 | BCR | B | 838 | - | 41,41,41 | 1.08 | 2 (4%) | 56,56,56 | 1.25 | 4 (7%) |
| 22 | CLA | O | 204 | 11 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.99 | 5 (6%) |
| 22 | CLA | A | 819 | 1 | 43,51,73 | 1.54 | 7 (16%) | 49,86,113 | 1.17 | 4 (8%) |
| 22 | CLA | k | 103 | 35 | 55,63,73 | 1.41 | 7 (12%) | 64,101,113 | 1.07 | 4 (6%) |
| 22 | CLA | A | 827 | 1 | 50,58,73 | 1.51 | 7 (14%) | 58,95,113 | 1.07 | 4 (6%) |
| 22 | CLA | G | 205 | 17 | 61,69,73 | 1.25 | 7 (11%) | 71,108,113 | 1.17 | 8 (11%) |
| 22 | CLA | O | 211 | 11 | 41,49,73 | 1.58 | 7 (17%) | 47,84,113 | 1.32 | 6 (12%) |
| 31 | DD6 | H | 211 | - | 39,45,45 | 1.61 | 6 (15%) | 52,67,67 | 1.76 | 9 (17%) |
| 22 | CLA | A | 816 | 1 | 65,73,73 | 1.24 | 7 (10%) | 76,113,113 | 1.05 | 5 (6%) |
| 26 | LMU | A | 847 | - | 36,36,36 | 1.21 | 2 (5%) | 47,47,47 | 0.88 | 1 (2%) |
| 31 | DD6 | Q | 202 | - | 39,45,45 | 1.60 | 7 (17%) | 52,67,67 | 1.71 | 12 (23%) |
| 26 | LMU | S | 203 | - | 32,32,36 | 1.35 | 4 (12%) | 43,43,47 | 1.60 | 6 (13%) |
| 26 | LMU | F | 807 | - | 36,36,36 | 1.21 | 2 (5%) | 47,47,47 | 0.95 | 2 (4%) |
| 31 | DD6 | P | 218 | - | 39,45,45 | 1.74 | 8 (20%) | 52,67,67 | 1.92 | 10 (19%) |
| 31 | DD6 | K | 208 | - | 39,45,45 | 1.67 | 8 (20%) | 52,67,67 | 1.69 | 10 (19%) |
| 30 | SQD | S | 201 | - | 45,46,54 | 1.03 | 5 (11%) | 54,57,65 | 1.58 | 9 (16%) |
| 22 | CLA | H | 210 | 18 | 45,53,73 | 1.61 | 6 (13%) | 52,89,113 | 1.17 | 5 (9%) |
| 33 | KC1 | P | 203 | - | 48,53,53 | 1.94 | 12 (25%) | 55,89,89 | 0.99 | 2 (3%) |
| 22 | CLA | Q | 204 | - | 61,69,73 | 1.29 | 6 (9%) | 71,108,113 | 1.04 | 4 (5%) |
| 22 | CLA | P | 214 | 12 | 45,53,73 | 1.58 | 6 (13%) | 52,89,113 | 1.19 | 4 (7%) |
| 22 | CLA | U | 207 | 35 | 65,73,73 | 1.19 | 6 (9%) | 76,113,113 | 1.20 | 10 (13%) |
| 22 | CLA | A | 818 | 35 | 65,73,73 | 1.18 | 6 (9%) | 76,113,113 | 1.07 | 7 (9%) |
| 22 | CLA | B | 814 | 2 | 59,67,73 | 1.31 | 6 (10%) | 68,105,113 | 1.06 | 4 (5%) |
| 22 | CLA | B | 818 | 2 | 53,61,73 | 1.36 | 7 (13%) | 61,98,113 | 1.10 | 6 (9%) |
| 22 | CLA | B | 847 | 2 | 50,58,73 | 1.45 | 7 (14%) | 58,95,113 | 1.05 | 3 (5%) |
| 22 | CLA | B | 811 | 2 | 54,62,73 | 1.40 | 7 (12%) | 62,99,113 | 1.09 | 5 (8%) |
| 25 | BCR | A | 844 | - | 41,41,41 | 1.09 | 2 (4%) | 56,56,56 | 1.19 | 6 (10%) |
| 22 | CLA | Q | 211 | 13 | 41,49,73 | 1.61 | 7 (17%) | 47,84,113 | 1.35 | 6 (12%) |
| 31 | DD6 | S | 211 | - | 39,45,45 | 1.55 | 8 (20%) | 52,67,67 | 1.52 | 8 (15%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | H | 204 | 18 | 61,69,73 | 1.26 | 7 (11%) | 71,108,113 | 1.10 | 5 (7%) |
| 31 | DD6 | O | 214 | - | 39,45,45 | 1.55 | 7 (17%) | 52,67,67 | 1.62 | 9 (17%) |
| 22 | CLA | S | 209 | 15 | 52,60,73 | 1.36 | 5 (9%) | 60,97,113 | 1.15 | 4 (6%) |
| 22 | CLA | B | 815 | 2 | 60,68,73 | 1.31 | 7 (11%) | 70,107,113 | 1.06 | 5 (7%) |
| 22 | CLA | A | 833 | 1 | 65,73,73 | 1.28 | 6 (9%) | 76,113,113 | 1.05 | 6 (7%) |
| 22 | CLA | A | 848 | 1 | 65,73,73 | 1.28 | 6 (9%) | 76,113,113 | 1.07 | 6 (7%) |
| 33 | KC1 | Q | 210 | 13 | 48,53,53 | 1.87 | 11 (22%) | 55,89,89 | 1.21 | 6 (10%) |
| 22 | CLA | A | 806 | 1 | 65,73,73 | 1.22 | 7 (10%) | 76,113,113 | 1.11 | 6 (7%) |
| 22 | CLA | Q | 205 | 13 | 60,68,73 | 1.31 | 7 (11%) | 70,107,113 | 1.01 | 4 (5%) |
| 22 | CLA | P | 208 | 12 | 56,64,73 | 1.36 | 7 (12%) | 65,102,113 | 1.10 | 6 (9%) |
| 22 | CLA | R | 104 | 14 | 65,73,73 | 1.37 | 7 (10%) | 76,113,113 | 1.01 | 5 (6%) |
| 22 | CLA | B | 828 | 35 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | A | 807 | 1 | 65,73,73 | 1.25 | 7 (10%) | 76,113,113 | 1.02 | 5 (6%) |
| 22 | CLA | T | 205 | - | 46,54,73 | 1.47 | 6 (13%) | 53,90,113 | 1.20 | 4 (7%) |
| 25 | BCR | B | 836 | - | 41,41,41 | 1.08 | 2 (4%) | 56,56,56 | 1.16 | 4 (7%) |
| 25 | BCR | B | 840 | - | 41,41,41 | 1.08 | 2 (4%) | 56,56,56 | 1.15 | 5 (8%) |
| 26 | LMU | K | 202 | - | 25,25,36 | 1.26 | 3 (12%) | 36,36,47 | 1.80 | 11 (30%) |
| 33 | KC1 | U | 213 | 16 | 48,53,53 | 1.87 | 13 (27%) | 55,89,89 | 1.03 | 3 (5%) |
| 25 | BCR | J | 104 | - | 41,41,41 | 1.08 | 2 (4%) | 56,56,56 | 1.19 | 4 (7%) |
| 22 | CLA | B | 821 | 2 | 65,73,73 | 1.33 | 7 (10%) | 76,113,113 | 0.90 | 4 (5%) |
| 31 | DD6 | S | 215 | - | 39,45,45 | 1.60 | 7 (17%) | 52,67,67 | 1.71 | 10 (19%) |
| 22 | CLA | B | 809 | 2 | 54,62,73 | 1.48 | 8 (14%) | 67,100,113 | 1.01 | 4 (5%) |
| 22 | CLA | U | 209 | 16 | 42,50,73 | 1.77 | 7 (16%) | 48,85,113 | 1.10 | 3 (6%) |
| 25 | BCR | M | 101 | - | 41,41,41 | 1.06 | 2 (4%) | 56,56,56 | 1.27 | 7 (12%) |
| 25 | BCR | I | 102 | - | 41,41,41 | 1.06 | 2 (4%) | 56,56,56 | 1.24 | 4 (7%) |
| 34 | A86 | U | 202 | - | 44,50,50 | 1.65 | 6 (13%) | 51,76,76 | 1.48 | 7 (13%) |
| 22 | CLA | T | 209 | 20 | 41,49,73 | 1.63 | 8 (19%) | 47,84,113 | 1.23 | 5 (10%) |
| 22 | CLA | Q | 209 | 13 | 65,73,73 | 1.29 | 7 (10%) | 76,113,113 | 0.95 | 4 (5%) |
| 31 | DD6 | O | 213 | - | 39,45,45 | 1.54 | 8 (20%) | 52,67,67 | 1.50 | 10 (19%) |
| 32 | LMG | P | 202 | - | 34,34,55 | 1.03 | 2 (5%) | 42,42,63 | 1.28 | 4 (9%) |
| 22 | CLA | S | 208 | 15 | 45,53,73 | 1.42 | 5 (11%) | 52,89,113 | 1.27 | 6 (11%) |
| 22 | CLA | H | 202 | - | 39,48,73 | 1.60 | 6 (15%) | 45,82,113 | 1.37 | 7 (15%) |
| 22 | CLA | A | 838 | 24 | 52,60,73 | 1.44 | 7 (13%) | 60,97,113 | 1.16 | 5 (8%) |
| 22 | CLA | H | 203 | 18 | 60,68,73 | 1.33 | 7 (11%) | 70,107,113 | 1.01 | 5 (7%) |
| 22 | CLA | T | 203 | 20 | 46,54,73 | 1.52 | 8 (17%) | 53,90,113 | 1.13 | 4 (7%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | Q | 213 | 35 | 57,65,73 | 1.35 | 7 (12%) | 66,103,113 | 1.17 | 8 (12%) |
| 31 | DD6 | H | 201 | - | 39,45,45 | 1.72 | 9 (23%) | 52,67,67 | 1.91 | 13 (25%) |
| 22 | CLA | B | 833 | 2 | 65,73,73 | 1.31 | 7 (10%) | 76,113,113 | 0.92 | 4 (5%) |
| 22 | CLA | O | 203 | - | 45,53,73 | 1.54 | 7 (15%) | 52,89,113 | 1.14 | 4 (7%) |
| 22 | CLA | G | 206 | 17 | 65,73,73 | 1.39 | 7 (10%) | 76,113,113 | 1.01 | 6 (7%) |
| 31 | DD6 | P | 215 | - | 39,45,45 | 1.67 | 6 (15%) | 52,67,67 | 1.90 | 11 (21%) |
| 22 | CLA | P | 211 | 12 | 50,58,73 | 1.36 | 6 (12%) | 58,95,113 | 1.11 | 3 (5%) |
| 22 | CLA | A | 830 | 1 | 50,58,73 | 1.42 | 7 (14%) | 58,95,113 | 1.06 | 3 (5%) |
| 22 | CLA | F | 803 | 35 | 48,56,73 | 1.50 | 7 (14%) | 55,92,113 | 1.30 | 6 (10%) |
| 26 | LMU | K | 201 | - | 36,36,36 | 1.18 | 3 (8%) | 47,47,47 | 1.59 | 9 (19%) |
| 31 | DD6 | P | 205 | - | 39,45,45 | 1.56 | 7 (17%) | 52,67,67 | 1.65 | 10 (19%) |
| 34 | A86 | Q | 218 | - | 44,50,50 | 1.65 | 6 (13%) | 51,76,76 | 1.48 | 9 (17%) |
| 22 | CLA | H | 208 | - | 58,66,73 | 1.29 | 6 (10%) | 67,104,113 | 1.08 | 5 (7%) |
| 22 | CLA | A | 820 | 1 | 51,59,73 | 1.46 | 7 (13%) | 59,96,113 | 1.16 | 5 (8%) |
| 33 | KC1 | P | 206 | 12 | 48,53,53 | 1.86 | 13 (27%) | 55,89,89 | 0.97 | 2 (3%) |
| 22 | CLA | B | 831 | 2 | 47,55,73 | 1.51 | 7 (14%) | 54,91,113 | 1.14 | 4 (7%) |
| 30 | SQD | B | 846 | - | 49,50,54 | 1.00 | 5 (10%) | 58,61,65 | 1.62 | 9 (15%) |
| 31 | DD6 | J | 101 | - | 39,45,45 | 1.55 | 8 (20%) | 52,67,67 | 1.63 | 10 (19%) |
| 22 | CLA | G | 215 | 17 | 45,53,73 | 1.49 | 5 (11%) | 52,89,113 | 1.24 | 4 (7%) |
| 22 | CLA | A | 804 | 1 | 65,73,73 | 1.23 | 7 (10%) | 76,113,113 | 1.02 | 6 (7%) |
| 22 | CLA | S | 206 | 15 | 46,54,73 | 1.46 | 6 (13%) | 53,90,113 | 1.12 | 4 (7%) |
| 22 | CLA | k | 102 | 21 | 42,50,73 | 1.58 | 7 (16%) | 48,85,113 | 1.11 | 3 (6%) |
| 22 | CLA | B | 844 | 2 | 65,73,73 | 1.33 | 7 (10%) | 76,113,113 | 1.01 | 4 (5%) |
| 22 | CLA | A | 836 | 35 | 65,73,73 | 1.25 | 7 (10%) | 76,113,113 | 1.06 | 6 (7%) |
| 23 | PQN | A | 837 | - | 34,34,34 | 0.38 | 0 | 42,45,45 | 0.44 | 0 |
| 22 | CLA | A | 828 | 1 | 65,73,73 | 1.33 | 7 (10%) | 76,113,113 | 0.92 | 3 (3%) |
| 22 | CLA | A | 815 | 1 | 65,73,73 | 1.31 | 7 (10%) | 76,113,113 | 1.00 | 4 (5%) |
| 22 | CLA | B | 822 | 2 | 65,73,73 | 1.29 | 7 (10%) | 76,113,113 | 1.01 | 3 (3%) |
| 22 | CLA | Q | 206 | 13 | 50,59,73 | 1.52 | 7 (14%) | 57,96,113 | 1.08 | 4 (7%) |
| 25 | BCR | A | 843 | - | 41,41,41 | 1.05 | 2 (4%) | 56,56,56 | 1.21 | 4 (7%) |
| 33 | KC1 | P | 219 | 12 | 48,53,53 | 1.83 | 11 (22%) | 55,89,89 | 0.87 | 1 (1%) |
| 22 | CLA | B | 802 | - | 65,73,73 | 1.25 | 8 (12%) | 76,113,113 | 1.07 | 9 (11%) |
| 22 | CLA | A | 829 | 1 | 65,73,73 | 1.25 | 6 (9%) | 76,113,113 | 1.04 | 5 (6%) |
| 22 | CLA | P | 213 | 12 | 41,49,73 | 1.64 | 7 (17%) | 47,84,113 | 1.25 | 4 (8%) |
| 22 | CLA | Q | 207 | 13 | 46,54,73 | 1.49 | 7 (15%) | 53,90,113 | 1.32 | 8 (15%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | T | 206 | 20 | 42,50,73 | 1.92 | 7 (16%) | 48,85,113 | 1.07 | 3 (6%) |
| 22 | CLA | A | 810 | 1 | 54,62,73 | 1.39 | 6 (11%) | 62,99,113 | 1.08 | 4 (6%) |
| 22 | CLA | S | 207 | 15 | 46,54,73 | 1.59 | 7 (15%) | 53,90,113 | 1.20 | 5 (9%) |
| 22 | CLA | A | 821 | 35 | 65,73,73 | 1.30 | 7 (10%) | 76,113,113 | 1.02 | 5 (6%) |
| 22 | CLA | S | 217 | 15 | 65,73,73 | 1.25 | 8 (12%) | 76,113,113 | 1.13 | 7 (9%) |
| 31 | DD6 | S | 214 | - | 39,45,45 | 1.55 | 7 (17%) | 52,67,67 | 1.78 | 11 (21%) |
| 22 | CLA | A | 825 | 1 | 65,73,73 | 1.28 | 7 (10%) | 76,113,113 | 0.97 | 4 (5%) |
| 32 | LMG | Q | 217 | - | 55,55,55 | 0.71 | 0 | 63,63,63 | 1.32 | 6 (9%) |
| 27 | CL0 | A | 849 | 1 | 65,73,73 | 1.53 | 8 (12%) | 76,113,113 | 0.99 | 5 (6%) |
| 22 | CLA | A | 856 | - | 46,54,73 | 1.46 | 7 (15%) | 53,90,113 | 1.17 | 5 (9%) |
| 22 | CLA | B | 801 | 2 | 65,73,73 | 1.32 | 7 (10%) | 76,113,113 | 0.83 | 3 (3%) |
| 22 | CLA | A | 822 | 35 | 65,73,73 | 1.19 | 5 (7%) | 76,113,113 | 1.03 | 5 (6%) |
| 22 | CLA | H | 209 | 18 | 41,49,73 | 1.59 | 6 (14%) | 47,84,113 | 1.28 | 4 (8%) |
| 31 | DD6 | U | 212 | - | 39,45,45 | 1.59 | 6 (15%) | 52,67,67 | 1.77 | 11 (21%) |
| 22 | CLA | B | 842 | 2 | 65,73,73 | 1.29 | 7 (10%) | 76,113,113 | 0.99 | 4 (5%) |
| 22 | CLA | U | 211 | 16 | 52,60,73 | 1.45 | 7 (13%) | 60,97,113 | 1.10 | 5 (8%) |
| 25 | BCR | L | 201 | - | 41,41,41 | 1.08 | 2 (4%) | 56,56,56 | 1.17 | 4 (7%) |
| 22 | CLA | B | 805 | 2 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.94 | 5 (6%) |
| 25 | BCR | R | 102 | - | 40,40,41 | 1.15 | 2 (5%) | 54,54,56 | 1.41 | 10 (18%) |
| 22 | CLA | G | 204 | 17 | 43,51,73 | 1.53 | 8 (18%) | 49,86,113 | 1.22 | 4 (8%) |
| 22 | CLA | G | 207 | 17 | 60,68,73 | 1.25 | 6 (10%) | 70,107,113 | 1.15 | 4 (5%) |
| 22 | CLA | G | 209 | 17 | 56,64,73 | 1.29 | 6 (10%) | 65,102,113 | 1.17 | 6 (9%) |
| 22 | CLA | U | 208 | 16 | 46,54,73 | 1.51 | 7 (15%) | 53,90,113 | 1.19 | 5 (9%) |
| 31 | DD6 | G | 213 | - | 39,45,45 | 1.56 | 8 (20%) | 52,67,67 | 1.50 | 7 (13%) |
| 32 | LMG | J | 102 | - | 39,39,55 | 0.88 | 1 (2%) | 47,47,63 | 1.23 | 4 (8%) |
| 22 | CLA | B | 810 | 2 | 55,63,73 | 1.31 | 6 (10%) | 64,101,113 | 1.08 | 5 (7%) |
| 22 | CLA | A | 813 | 1 | 50,58,73 | 1.52 | 6 (12%) | 58,95,113 | 1.14 | 4 (6%) |
| 22 | CLA | B | 845 | 2 | 65,73,73 | 1.26 | 7 (10%) | 76,113,113 | 1.29 | 8 (10%) |
| 22 | CLA | S | 216 | 35 | 65,73,73 | 1.21 | 7 (10%) | 76,113,113 | 1.02 | 5 (6%) |
| 22 | CLA | G | 202 | - | 41,49,73 | 1.56 | 7 (17%) | 47,84,113 | 1.26 | 5 (10%) |
| 22 | CLA | A | 812 | 1 | 45,53,73 | 1.53 | 7 (15%) | 52,89,113 | 1.16 | 5 (9%) |
| 22 | CLA | G | 203 | 17 | 45,53,73 | 1.60 | 7 (15%) | 52,89,113 | 1.14 | 4 (7%) |
| 22 | CLA | B | 825 | 2 | 50,58,73 | 1.50 | 7 (14%) | 58,95,113 | 1.09 | 4 (6%) |
| 22 | CLA | O | 205 | 11 | 65,73,73 | 1.32 | 7 (10%) | 76,113,113 | 1.03 | 5 (6%) |
| 22 | CLA | A | 832 | 1 | 51,59,73 | 1.44 | 7 (13%) | 59,96,113 | 1.18 | 6 (10%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 22 | CLA | A | 805 | 1 | 49,57,73 | 1.49 | 7 (14%) | 55,93,113 | 1.12 | 5 (9%) |
| 23 | PQN | B | 835 | - | 34,34,34 | 0.40 | 0 | 42,45,45 | 0.41 | 0 |
| 22 | CLA | P | 207 | 12 | 65,73,73 | 1.22 | 7 (10%) | 76,113,113 | 1.08 | 5 (6%) |
| 22 | CLA | B | 808 | 2 | 65,73,73 | 1.27 | 7 (10%) | 76,113,113 | 0.97 | 6 (7%) |
| 26 | LMU | O | 216 | - | 36,36,36 | 1.22 | 2 (5%) | 47,47,47 | 1.06 | 1 (2%) |
| 22 | CLA | A | 814 | 35 | 45,53,73 | 1.53 | 8 (17%) | 52,89,113 | 1.15 | 5 (9%) |
| 31 | DD6 | T | 212 | - | 39,45,45 | 1.65 | 7 (17%) | 52,67,67 | 1.78 | 10 (19%) |
| 22 | CLA | H | 205 | 18 | 44,52,73 | 1.55 | 7 (15%) | 49,87,113 | 1.09 | 3 (6%) |
| 22 | CLA | K | 205 | 19 | 55,63,73 | 1.36 | 8 (14%) | 64,101,113 | 1.09 | 5 (7%) |
| 34 | A86 | Q | 214 | - | 44,50,50 | 1.59 | 6 (13%) | 51,76,76 | 1.62 | 9 (17%) |
| 22 | CLA | B | 820 | 35 | 64,72,73 | 1.22 | 6 (9%) | 74,111,113 | 1.02 | 5 (6%) |
| 26 | LMU | L | 206 | - | 36,36,36 | 1.18 | 2 (5%) | 47,47,47 | 1.20 | 3 (6%) |
| 22 | CLA | K | 203 | 19 | 45,53,73 | 1.80 | 7 (15%) | 52,89,113 | 1.91 | 11 (21%) |
| 22 | CLA | G | 208 | - | 55,63,73 | 1.36 | 7 (12%) | 64,101,113 | 1.12 | 5 (7%) |
| 31 | DD6 | Q | 215 | - | 39,45,45 | 1.60 | 8 (20%) | 52,67,67 | 1.58 | 10 (19%) |
| 34 | A86 | R | 103 | - | 40,46,50 | 1.68 | 7 (17%) | 45,70,76 | 1.77 | 13 (28%) |
| 22 | CLA | A | 802 | 1 | 55,63,73 | 1.34 | 8 (14%) | 64,101,113 | 1.07 | 5 (7%) |
| 25 | BCR | k | 104 | - | 41,41,41 | 1.05 | 2 (4%) | 56,56,56 | 1.26 | 5 (8%) |
| 22 | CLA | H | 213 | - | 65,73,73 | 1.24 | 6 (9%) | 76,113,113 | 1.20 | 7 (9%) |

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 |
|---|---|---|---|---|---|---|---|
| 22 | CLA | B | 834 | 35 | 1/1/15/20 | 0/37/115/115 | - |
| 22 | CLA | B | 843 | 2 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | B | 826 | 2 | 1/1/11/20 | 2/18/96/115 | - |
| 26 | LMU | P | 221 | - | - | 6/11/51/61 | 0/2/2/2 |
| 22 | CLA | K | 204 | 19 | - | 0/10/88/115 | - |
| 22 | CLA | L | 203 | 9 | - | 0/37/115/115 | - |
| 22 | CLA | B | 816 | 35 | 1/1/15/20 | 7/37/115/115 | - |
| 22 | CLA | T | 207 | 20 | - | 5/37/115/115 | - |
| 28 | SF4 | C | 102 | 3 | - | - | 0/6/5/5 |
| 22 | CLA | T | 202 | 20 | 1/1/10/20 | 2/8/86/115 | - |
| 24 | LHG | P | 201 | - | - | 38/53/53/53 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 29 | DGD | B | 841 | - | - | 19/49/89/95 | 0/2/2/2 |
| 22 | CLA | U | 204 | 35 | 1/1/14/20 | 9/33/111/115 | - |
| 22 | CLA | A | 834 | 1 | - | 8/37/115/115 | - |
| 24 | LHG | A | 839 | - | - | 17/52/52/53 | - |
| 22 | CLA | A | 826 | 1 | - | 2/37/115/115 | - |
| 22 | CLA | B | 824 | 2 | - | 3/37/115/115 | - |
| 25 | BCR | A | 842 | - | - | 10/29/63/63 | 0/2/2/2 |
| 31 | DD6 | H | 212 | - | - | 10/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 845 | 35 | 1/1/15/20 | 9/37/115/115 | - |
| 22 | CLA | Q | 216 | 35 | - | 8/37/115/115 | - |
| 22 | CLA | F | 802 | 35 | 1/1/15/20 | 0/37/115/115 | - |
| 22 | CLA | A | 803 | 1 | 1/1/15/20 | 6/37/115/115 | - |
| 22 | CLA | B | 819 | 35 | 1/1/14/20 | 4/35/113/115 | - |
| 22 | CLA | B | 832 | 35 | 1/1/15/20 | 4/37/115/115 | - |
| 22 | CLA | F | 804 | 6 | 1/1/11/20 | 5/15/93/115 | - |
| 25 | BCR | B | 837 | - | - | 7/29/63/63 | 0/2/2/2 |
| 22 | CLA | Q | 208 | 13 | 1/1/12/20 | 1/19/97/115 | - |
| 22 | CLA | A | 809 | 1 | 1/1/14/20 | 3/34/112/115 | - |
| 22 | CLA | H | 207 | 18 | - | 13/37/115/115 | - |
| 22 | CLA | A | 835 | 1 | 1/1/15/20 | 1/37/115/115 | - |
| 33 | KC1 | O | 210 | 11 | - | 0/15/71/71 | - |
| 31 | DD6 | G | 211 | - | - | 8/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 812 | 2 | - | 2/30/108/115 | - |
| 22 | CLA | G | 201 | 17 | - | 3/13/91/115 | - |
| 22 | CLA | U | 205 | 16 | - | 4/37/115/115 | - |
| 22 | CLA | A | 808 | 1 | - | 2/27/105/115 | - |
| 22 | CLA | P | 209 | - | 1/1/12/20 | 3/22/100/115 | - |
| 24 | LHG | G | 216 | - | - | 14/31/31/53 | - |
| 31 | DD6 | G | 214 | - | - | 10/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 853 | 1 | 1/1/15/20 | 9/37/115/115 | - |
| 22 | CLA | L | 202 | 9 | - | 6/18/96/115 | - |
| 31 | DD6 | O | 201 | - | - | 6/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 817 | 1 | 1/1/11/20 | 1/13/91/115 | - |
| 31 | DD6 | S | 205 | - | - | 11/26/80/80 | 0/3/3/3 |
| 22 | CLA | H | 206 | 18 | 1/1/11/20 | 2/13/91/115 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 31 | DD6 | T | 213 | - | - | 12/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 807 | 2 | 1/1/15/20 | 5/37/115/115 | - |
| 28 | SF4 | C | 101 | 3 | - | - | 0/6/5/5 |
| 22 | CLA | A | 855 | - | 1/1/9/20 | 1/8/82/115 | - |
| 32 | LMG | U | 201 | - | - | 13/27/47/70 | 0/1/1/1 |
| 22 | CLA | A | 801 | - | - | 6/37/115/115 | - |
| 26 | LMU | A | 857 | - | - | 12/21/61/61 | 0/2/2/2 |
| 31 | DD6 | G | 212 | - | - | 6/26/80/80 | 0/3/3/3 |
| 34 | A86 | P | 204 | - | - | 9/34/90/90 | 0/3/3/3 |
| 34 | A86 | R | 105 | - | - | 11/34/90/90 | 0/3/3/3 |
| 22 | CLA | G | 210 | 17 | 1/1/11/20 | 4/13/91/115 | - |
| 34 | A86 | Q | 201 | - | - | 14/34/90/90 | 0/3/3/3 |
| 22 | CLA | A | 831 | 1 | 1/1/11/20 | 4/13/91/115 | - |
| 22 | CLA | O | 209 | 11 | - | 9/37/115/115 | - |
| 31 | DD6 | O | 212 | - | - | 10/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 850 | 35 | 1/1/15/20 | 2/37/115/115 | - |
| 22 | CLA | O | 202 | 11 | - | 0/11/89/115 | - |
| 26 | LMU | M | 102 | - | - | 9/21/61/61 | 0/2/2/2 |
| 22 | CLA | Q | 212 | 13 | - | 8/37/115/115 | - |
| 31 | DD6 | O | 215 | - | - | 15/26/80/80 | 0/3/3/3 |
| 25 | BCR | I | 101 | - | - | 5/29/63/63 | 0/2/2/2 |
| 31 | DD6 | U | 203 | - | - | 12/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 854 | 1 | 1/1/15/20 | 7/37/115/115 | - |
| 22 | CLA | O | 208 | 11 | 1/1/14/20 | 2/31/109/115 | - |
| 33 | KC1 | S | 210 | 15 | - | 1/15/71/71 | - |
| 32 | LMG | P | 217 | - | - | 12/19/39/70 | 0/1/1/1 |
| 31 | DD6 | P | 220 | - | - | 11/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 827 | 2 | - | 2/29/107/115 | - |
| 28 | SF4 | A | 852 | 2,1 | - | - | 0/6/5/5 |
| 22 | CLA | B | 804 | 2 | 1/1/15/20 | 8/37/115/115 | - |
| 22 | CLA | R | 101 | 35 | 1/1/11/20 | 0/13/91/115 | - |
| 31 | DD6 | S | 204 | - | - | 7/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 803 | 2 | 1/1/11/20 | 3/13/91/115 | - |
| 22 | CLA | A | 846 | 1 | - | 4/31/109/115 | - |
| 31 | DD6 | U | 214 | - | - | 8/14/37/80 | 0/1/1/3 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 22 | CLA | B | 817 | 2 | - | 2/15/93/115 | - |
| 24 | LHG | A | 840 | 22 | - | 13/31/31/53 | - |
| 22 | CLA | B | 830 | 2 | 1/1/15/20 | 1/37/115/115 | - |
| 22 | CLA | T | 210 | 20 | - | 4/15/93/115 | - |
| 25 | BCR | L | 205 | - | - | 8/29/63/63 | 0/2/2/2 |
| 22 | CLA | U | 206 | 16 | 1/1/11/20 | 2/13/91/115 | - |
| 22 | CLA | S | 202 | 35 | 1/1/15/20 | 5/37/115/115 | - |
| 22 | CLA | O | 207 | 11 | 1/1/11/20 | 5/15/93/115 | - |
| 22 | CLA | B | 829 | 2 | 1/1/13/20 | 3/29/107/115 | - |
| 22 | CLA | T | 204 | - | 1/1/13/20 | 13/28/106/115 | - |
| 22 | CLA | K | 206 | 19 | 1/1/11/20 | 4/13/91/115 | - |
| 22 | CLA | O | 206 | 35 | 1/1/15/20 | 6/37/115/115 | - |
| 22 | CLA | K | 207 | 19 | - | 9/29/107/115 | - |
| 22 | CLA | J | 103 | 8 | 1/1/10/20 | 4/10/88/115 | - |
| 22 | CLA | B | 823 | 2 | - | 2/37/115/115 | - |
| 25 | BCR | F | 801 | - | - | 6/29/63/63 | 0/2/2/2 |
| 22 | CLA | L | 204 | 35 | 1/1/12/20 | 6/19/97/115 | - |
| 22 | CLA | Q | 203 | 13 | - | 2/17/95/115 | - |
| 22 | CLA | T | 211 | - | 1/1/11/20 | 3/16/94/115 | - |
| 22 | CLA | T | 201 | - | 1/1/10/20 | 0/10/88/115 | - |
| 22 | CLA | U | 210 | 16 | - | 2/37/115/115 | - |
| 25 | BCR | A | 841 | - | - | 7/29/63/63 | 0/2/2/2 |
| 26 | LMU | F | 806 | - | - | 16/21/61/61 | 0/2/2/2 |
| 22 | CLA | A | 811 | 1 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | P | 216 | 12 | 1/1/11/20 | 0/16/94/115 | - |
| 22 | CLA | A | 851 | 1 | - | 6/37/115/115 | - |
| 33 | KC1 | P | 212 | 12 | - | 4/12/68/71 | - |
| 33 | KC1 | T | 208 | 20 | - | 1/15/71/71 | - |
| 32 | LMG | S | 213 | - | - | 24/44/64/70 | 0/1/1/1 |
| 25 | BCR | F | 805 | - | - | 8/29/63/63 | 0/2/2/2 |
| 31 | DD6 | k | 101 | - | - | 9/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 823 | 1 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | P | 210 | 35 | - | 4/16/94/115 | - |
| 25 | BCR | B | 839 | - | - | 4/29/63/63 | 0/2/2/2 |
| 33 | KC1 | S | 212 | 15 | - | 5/15/71/71 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 22 | CLA | A | 824 | 1 | 1/1/14/20 | 5/34/112/115 | - |
| 22 | CLA | B | 806 | 2 | - | 3/37/115/115 | - |
| 22 | CLA | B | 813 | 2 | - | 3/25/103/115 | - |
| 25 | BCR | B | 838 | - | - | 5/29/63/63 | 0/2/2/2 |
| 22 | CLA | O | 204 | 11 | - | 3/37/115/115 | - |
| 22 | CLA | A | 819 | 1 | - | 1/11/89/115 | - |
| 22 | CLA | k | 103 | 35 | 1/1/13/20 | 4/25/103/115 | - |
| 22 | CLA | A | 827 | 1 | - | 2/19/97/115 | - |
| 22 | CLA | G | 205 | 17 | - | 10/33/111/115 | - |
| 22 | CLA | O | 211 | 11 | - | 0/8/86/115 | - |
| 31 | DD6 | H | 211 | - | - | 13/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 816 | 1 | 1/1/15/20 | 2/37/115/115 | - |
| 26 | LMU | A | 847 | - | - | 10/21/61/61 | 0/2/2/2 |
| 31 | DD6 | Q | 202 | - | - | 5/26/80/80 | 0/3/3/3 |
| 26 | LMU | S | 203 | - | - | 10/17/57/61 | 0/2/2/2 |
| 26 | LMU | F | 807 | - | - | 7/21/61/61 | 0/2/2/2 |
| 31 | DD6 | P | 218 | - | - | 10/26/80/80 | 0/3/3/3 |
| 31 | DD6 | K | 208 | - | - | 10/26/80/80 | 0/3/3/3 |
| 30 | SQD | S | 201 | - | - | 21/41/61/69 | 0/1/1/1 |
| 22 | CLA | H | 210 | 18 | - | 4/13/91/115 | - |
| 33 | KC1 | P | 203 | - | - | 0/15/71/71 | - |
| 22 | CLA | Q | 204 | - | 1/1/14/20 | 8/33/111/115 | - |
| 22 | CLA | P | 214 | 12 | 1/1/11/20 | 4/13/91/115 | - |
| 22 | CLA | U | 207 | 35 | 1/1/15/20 | 4/37/115/115 | - |
| 22 | CLA | A | 818 | 35 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | B | 847 | 2 | 1/1/12/20 | 5/19/97/115 | - |
| 22 | CLA | B | 814 | 2 | - | 7/30/108/115 | - |
| 22 | CLA | B | 818 | 2 | - | 4/23/101/115 | - |
| 22 | CLA | B | 811 | 2 | 1/1/12/20 | 3/24/102/115 | - |
| 25 | BCR | A | 844 | - | - | 8/29/63/63 | 0/2/2/2 |
| 22 | CLA | Q | 211 | 13 | 1/1/10/20 | 2/8/86/115 | - |
| 31 | DD6 | S | 211 | - | - | 13/26/80/80 | 0/3/3/3 |
| 22 | CLA | H | 204 | 18 | 1/1/14/20 | 4/33/111/115 | - |
| 31 | DD6 | O | 214 | - | - | 8/26/80/80 | 0/3/3/3 |
| 22 | CLA | S | 209 | 15 | - | 3/22/100/115 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 22 | CLA | B | 815 | 2 | 1/1/14/20 | 2/31/109/115 | - |
| 22 | CLA | A | 833 | 1 | 1/1/15/20 | 2/37/115/115 | - |
| 22 | CLA | A | 848 | 1 | - | 6/37/115/115 | - |
| 33 | KC1 | Q | 210 | 13 | - | 2/15/71/71 | - |
| 22 | CLA | A | 806 | 1 | 1/1/15/20 | 8/37/115/115 | - |
| 22 | CLA | Q | 205 | 13 | 1/1/14/20 | 6/31/109/115 | - |
| 22 | CLA | P | 208 | 12 | 1/1/13/20 | 6/27/105/115 | - |
| 22 | CLA | T | 205 | - | 1/1/11/20 | 2/15/93/115 | - |
| 22 | CLA | B | 828 | 35 | 1/1/15/20 | 1/37/115/115 | - |
| 22 | CLA | A | 807 | 1 | - | 3/37/115/115 | - |
| 22 | CLA | R | 104 | 14 | - | 7/37/115/115 | - |
| 25 | BCR | B | 836 | - | - | 8/29/63/63 | 0/2/2/2 |
| 25 | BCR | B | 840 | - | - | 8/29/63/63 | 0/2/2/2 |
| 26 | LMU | K | 202 | - | - | 4/10/50/61 | 0/2/2/2 |
| 33 | KC1 | U | 213 | 16 | - | 1/15/71/71 | - |
| 25 | BCR | J | 104 | - | - | 8/29/63/63 | 0/2/2/2 |
| 22 | CLA | B | 821 | 2 | 1/1/15/20 | 0/37/115/115 | - |
| 31 | DD6 | S | 215 | - | - | 14/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 809 | 2 | - | 2/25/101/115 | - |
| 22 | CLA | U | 209 | 16 | - | 2/10/88/115 | - |
| 25 | BCR | M | 101 | - | - | 8/29/63/63 | 0/2/2/2 |
| 25 | BCR | I | 102 | - | - | 10/29/63/63 | 0/2/2/2 |
| 34 | A86 | U | 202 | - | - | 18/34/90/90 | 0/3/3/3 |
| 22 | CLA | T | 209 | 20 | - | 2/8/86/115 | - |
| 22 | CLA | Q | 209 | 13 | - | 9/37/115/115 | - |
| 31 | DD6 | O | 213 | - | - | 11/26/80/80 | 0/3/3/3 |
| 32 | LMG | P | 202 | - | - | 12/29/49/70 | 0/1/1/1 |
| 22 | CLA | S | 208 | 15 | 1/1/11/20 | 0/13/91/115 | - |
| 22 | CLA | H | 202 | - | 1/1/9/20 | 0/8/82/115 | - |
| 22 | CLA | A | 838 | 24 | 1/1/12/20 | 2/22/100/115 | - |
| 22 | CLA | H | 203 | 18 | 1/1/14/20 | 9/31/109/115 | - |
| 22 | CLA | T | 203 | 20 | 1/1/11/20 | 6/15/93/115 | - |
| 22 | CLA | Q | 213 | 35 | 1/1/13/20 | 7/28/106/115 | - |
| 31 | DD6 | H | 201 | - | - | 11/26/80/80 | 0/3/3/3 |
| 22 | CLA | G | 206 | 17 | 1/1/15/20 | 16/37/115/115 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 22 | CLA | B | 833 | 2 | - | 4/37/115/115 | - |
| 22 | CLA | O | 203 | - | - | 2/13/91/115 | - |
| 31 | DD6 | P | 215 | - | - | 12/26/80/80 | 0/3/3/3 |
| 22 | CLA | P | 211 | 12 | - | 2/19/97/115 | - |
| 22 | CLA | F | 803 | 35 | 1/1/11/20 | 3/17/95/115 | - |
| 22 | CLA | A | 830 | 1 | - | 1/19/97/115 | - |
| 26 | LMU | K | 201 | - | - | 10/21/61/61 | 0/2/2/2 |
| 31 | DD6 | P | 205 | - | - | 5/26/80/80 | 0/3/3/3 |
| 34 | A86 | Q | 218 | - | - | 13/34/90/90 | 0/3/3/3 |
| 22 | CLA | H | 208 | - | 1/1/13/20 | 6/29/107/115 | - |
| 22 | CLA | A | 820 | 1 | 1/1/12/20 | 4/21/99/115 | - |
| 33 | KC1 | P | 206 | 12 | - | 2/15/71/71 | - |
| 22 | CLA | B | 831 | 2 | 1/1/11/20 | 0/16/94/115 | - |
| 30 | SQD | B | 846 | - | - | 18/45/65/69 | 0/1/1/1 |
| 31 | DD6 | J | 101 | - | - | 5/26/80/80 | 0/3/3/3 |
| 22 | CLA | G | 215 | 17 | 1/1/11/20 | 5/13/91/115 | - |
| 22 | CLA | A | 804 | 1 | 1/1/15/20 | 12/37/115/115 | - |
| 22 | CLA | S | 206 | 15 | 1/1/11/20 | 0/15/93/115 | - |
| 22 | CLA | k | 102 | 21 | 1/1/10/20 | 1/10/88/115 | - |
| 22 | CLA | B | 844 | 2 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | A | 836 | 35 | 1/1/15/20 | 6/37/115/115 | - |
| 23 | PQN | A | 837 | - | - | 3/23/43/43 | 0/2/2/2 |
| 22 | CLA | A | 828 | 1 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | A | 815 | 1 | 1/1/15/20 | 7/37/115/115 | - |
| 22 | CLA | B | 822 | 2 | 1/1/15/20 | 5/37/115/115 | - |
| 22 | CLA | Q | 206 | 13 | 1/1/12/20 | 4/20/98/115 | - |
| 25 | BCR | A | 843 | - | - | 4/29/63/63 | 0/2/2/2 |
| 33 | KC1 | P | 219 | 12 | - | 3/15/71/71 | - |
| 22 | CLA | B | 802 | - | 1/1/15/20 | 5/37/115/115 | - |
| 22 | CLA | A | 829 | 1 | 1/1/15/20 | 3/37/115/115 | - |
| 22 | CLA | P | 213 | 12 | 1/1/10/20 | 2/8/86/115 | - |
| 22 | CLA | Q | 207 | 13 | 1/1/11/20 | 7/15/93/115 | - |
| 22 | CLA | T | 206 | 20 | - | 1/10/88/115 | - |
| 22 | CLA | A | 810 | 1 | 1/1/12/20 | 2/24/102/115 | - |
| 22 | CLA | S | 207 | 15 | 1/1/11/20 | 2/15/93/115 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 22 | CLA | A | 821 | 35 | 1/1/15/20 | 9/37/115/115 | - |
| 22 | CLA | S | 217 | 15 | 1/1/15/20 | 2/37/115/115 | - |
| 31 | DD6 | S | 214 | - | - | 16/26/80/80 | 0/3/3/3 |
| 22 | CLA | A | 825 | 1 | 1/1/15/20 | 5/37/115/115 | - |
| 32 | LMG | Q | 217 | - | - | 24/50/70/70 | 0/1/1/1 |
| 27 | CL0 | A | 849 | 1 | - | 5/37/135/135 | - |
| 22 | CLA | A | 856 | - | 1/1/11/20 | 3/15/93/115 | - |
| 22 | CLA | B | 801 | 2 | 1/1/15/20 | 5/37/115/115 | - |
| 22 | CLA | A | 822 | 35 | 1/1/15/20 | 5/37/115/115 | - |
| 22 | CLA | H | 209 | 18 | 1/1/10/20 | 3/8/86/115 | - |
| 31 | DD6 | U | 212 | - | - | 14/26/80/80 | 0/3/3/3 |
| 22 | CLA | B | 842 | 2 | 1/1/15/20 | 4/37/115/115 | - |
| 22 | CLA | U | 211 | 16 | 1/1/12/20 | 6/22/100/115 | - |
| 25 | BCR | L | 201 | - | - | 10/29/63/63 | 0/2/2/2 |
| 22 | CLA | B | 805 | 2 | 1/1/15/20 | 5/37/115/115 | - |
| 25 | BCR | R | 102 | - | - | 10/27/61/63 | 0/2/2/2 |
| 22 | CLA | G | 204 | 17 | - | 2/11/89/115 | - |
| 22 | CLA | G | 209 | 17 | 1/1/13/20 | 6/27/105/115 | - |
| 22 | CLA | G | 207 | 17 | - | 7/31/109/115 | - |
| 22 | CLA | U | 208 | 16 | 1/1/11/20 | 4/15/93/115 | - |
| 31 | DD6 | G | 213 | - | - | 11/26/80/80 | 0/3/3/3 |
| 32 | LMG | J | 102 | - | - | 26/34/54/70 | 0/1/1/1 |
| 22 | CLA | G | 202 | - | 1/1/10/20 | 0/8/86/115 | - |
| 22 | CLA | B | 845 | 2 | 1/1/15/20 | 8/37/115/115 | - |
| 22 | CLA | S | 216 | 35 | 1/1/15/20 | 1/37/115/115 | - |
| 22 | CLA | A | 813 | 1 | - | 1/19/97/115 | - |
| 22 | CLA | G | 203 | 17 | 1/1/11/20 | 6/13/91/115 | - |
| 22 | CLA | A | 812 | 1 | 1/1/11/20 | 1/13/91/115 | - |
| 22 | CLA | B | 810 | 2 | - | 0/25/103/115 | - |
| 22 | CLA | B | 825 | 2 | - | 1/19/97/115 | - |
| 22 | CLA | O | 205 | 11 | 1/1/15/20 | 8/37/115/115 | - |
| 22 | CLA | A | 832 | 1 | 1/1/12/20 | 1/21/99/115 | - |
| 22 | CLA | A | 805 | 1 | 1/1/11/20 | 2/18/96/115 | - |
| 23 | PQN | B | 835 | - | - | 1/23/43/43 | 0/2/2/2 |
| 22 | CLA | P | 207 | 12 | 1/1/15/20 | 8/37/115/115 | - |
| 22 | CLA | B | 808 | 2 | 1/1/15/20 | 6/37/115/115 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 26 | LMU | O | 216 | - | - | 14/21/61/61 | 0/2/2/2 |
| 22 | CLA | A | 814 | 35 | - | 5/13/91/115 | - |
| 31 | DD6 | T | 212 | - | - | 9/26/80/80 | 0/3/3/3 |
| 22 | CLA | H | 205 | 18 | 1/1/10/20 | 3/11/90/115 | - |
| 22 | CLA | K | 205 | 19 | 1/1/13/20 | 4/25/103/115 | - |
| 34 | A86 | Q | 214 | - | - | 11/34/90/90 | 0/3/3/3 |
| 22 | CLA | B | 820 | 35 | 1/1/14/20 | 2/36/114/115 | - |
| 26 | LMU | L | 206 | - | - | 7/21/61/61 | 0/2/2/2 |
| 22 | CLA | K | 203 | 19 | 1/1/11/20 | 2/13/91/115 | - |
| 22 | CLA | G | 208 | - | 1/1/13/20 | 4/25/103/115 | - |
| 31 | DD6 | Q | 215 | - | - | 9/26/80/80 | 0/3/3/3 |
| 34 | A86 | R | 103 | - | - | 8/30/84/90 | 0/3/3/3 |
| 22 | CLA | A | 802 | 1 | 1/1/13/20 | 2/25/103/115 | - |
| 25 | BCR | k | 104 | - | - | 8/29/63/63 | 0/2/2/2 |
| 22 | CLA | H | 213 | - | 1/1/15/20 | 13/37/115/115 | - |

The worst 5 of 1677 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 34 | R | 103 | A86 | C13-C11 | -6.66 | 1.36 | 1.49 |
| 34 | R | 105 | A86 | C13-C11 | -6.57 | 1.36 | 1.49 |
| 34 | Q | 218 | A86 | C13-C11 | -6.52 | 1.37 | 1.49 |
| 22 | K | 203 | CLA | MG-NA | 6.36 | 2.21 | 2.06 |
| 34 | Q | 214 | A86 | C13-C11 | -6.35 | 1.37 | 1.49 |

The worst 5 of 1474 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 31 | T | 213 | DD6 | C10-C9-C8 | 6.24 | 142.68 | 123.22 |
| 22 | Q | 208 | CLA | C1-O2A-CGA | 6.05 | 132.31 | 116.44 |
| 22 | K | 203 | CLA | CAA-C2A-C3A | -5.98 | 96.40 | 112.78 |
| 31 | H | 201 | DD6 | C28-C27-C29 | 5.69 | 128.11 | 116.84 |
| 22 | H | 207 | CLA | O2A-C1-C2 | 5.48 | 123.04 | 108.64 |

5 of 119 chirality outliers are listed below:

| Mol | Chain | Res | Type | Atom |
|---|---|---|---|---|
| 22 | A | 802 | CLA | ND |

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| Mol | Chain | Res | Type | Atom |
|---|---|---|---|---|
| 22 | A | 803 | CLA | ND |
| 22 | A | 804 | CLA | ND |
| 22 | A | 805 | CLA | ND |
| 22 | A | 806 | CLA | ND |

5 of 1618 torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 22 | A | 804 | CLA | C1A-C2A-CAA-CBA |
| 22 | A | 804 | CLA | C3A-C2A-CAA-CBA |
| 22 | A | 806 | CLA | CBA-CGA-O2A-C1 |
| 22 | A | 806 | CLA | O1A-CGA-O2A-C1 |
| 22 | A | 806 | CLA | CHA-CBD-CGD-O2D |

There are no ring outliers.

190 monomers are involved in 325 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 22 | B | 834 | CLA | 7 | 0 |
| 22 | B | 826 | CLA | 5 | 0 |
| 22 | K | 204 | CLA | 2 | 0 |
| 22 | L | 203 | CLA | 1 | 0 |
| 22 | B | 816 | CLA | 3 | 0 |
| 22 | T | 207 | CLA | 2 | 0 |
| 28 | C | 102 | SF4 | 1 | 0 |
| 24 | P | 201 | LHG | 4 | 0 |
| 29 | B | 841 | DGD | 9 | 0 |
| 22 | U | 204 | CLA | 1 | 0 |
| 24 | A | 839 | LHG | 2 | 0 |
| 22 | A | 826 | CLA | 3 | 0 |
| 22 | B | 824 | CLA | 3 | 0 |
| 25 | A | 842 | BCR | 1 | 0 |
| 22 | A | 845 | CLA | 3 | 0 |
| 22 | Q | 216 | CLA | 1 | 0 |
| 22 | F | 802 | CLA | 2 | 0 |
| 22 | A | 803 | CLA | 2 | 0 |
| 22 | B | 819 | CLA | 2 | 0 |
| 22 | B | 832 | CLA | 2 | 0 |
| 22 | F | 804 | CLA | 2 | 0 |
| 25 | B | 837 | BCR | 4 | 0 |
| 22 | Q | 208 | CLA | 2 | 0 |
| 22 | H | 207 | CLA | 2 | 0 |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 22 | A | 835 | CLA | 4 | 0 |
| 31 | G | 211 | DD6 | 1 | 0 |
| 22 | B | 812 | CLA | 2 | 0 |
| 22 | G | 201 | CLA | 1 | 0 |
| 22 | U | 205 | CLA | 2 | 0 |
| 22 | A | 808 | CLA | 2 | 0 |
| 24 | G | 216 | LHG | 1 | 0 |
| 31 | G | 214 | DD6 | 2 | 0 |
| 22 | A | 853 | CLA | 3 | 0 |
| 22 | L | 202 | CLA | 2 | 0 |
| 22 | A | 817 | CLA | 2 | 0 |
| 22 | H | 206 | CLA | 1 | 0 |
| 22 | B | 807 | CLA | 2 | 0 |
| 22 | A | 855 | CLA | 1 | 0 |
| 32 | U | 201 | LMG | 1 | 0 |
| 22 | A | 801 | CLA | 4 | 0 |
| 22 | A | 831 | CLA | 3 | 0 |
| 22 | O | 209 | CLA | 4 | 0 |
| 31 | O | 212 | DD6 | 2 | 0 |
| 22 | A | 850 | CLA | 2 | 0 |
| 22 | O | 202 | CLA | 2 | 0 |
| 26 | M | 102 | LMU | 1 | 0 |
| 22 | Q | 212 | CLA | 1 | 0 |
| 25 | I | 101 | BCR | 3 | 0 |
| 22 | A | 854 | CLA | 3 | 0 |
| 22 | O | 208 | CLA | 1 | 0 |
| 32 | P | 217 | LMG | 3 | 0 |
| 22 | B | 827 | CLA | 1 | 0 |
| 22 | B | 804 | CLA | 2 | 0 |
| 22 | R | 101 | CLA | 1 | 0 |
| 22 | B | 803 | CLA | 1 | 0 |
| 22 | A | 846 | CLA | 2 | 0 |
| 22 | B | 817 | CLA | 2 | 0 |
| 24 | A | 840 | LHG | 1 | 0 |
| 22 | B | 830 | CLA | 4 | 0 |
| 22 | T | 210 | CLA | 7 | 0 |
| 25 | L | 205 | BCR | 1 | 0 |
| 22 | U | 206 | CLA | 1 | 0 |
| 22 | S | 202 | CLA | 2 | 0 |
| 22 | O | 207 | CLA | 1 | 0 |
| 22 | B | 829 | CLA | 2 | 0 |
| 22 | T | 204 | CLA | 7 | 0 |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 22 | K | 206 | CLA | 1 | 0 |
| 22 | K | 207 | CLA | 3 | 0 |
| 22 | J | 103 | CLA | 1 | 0 |
| 22 | B | 823 | CLA | 3 | 0 |
| 25 | F | 801 | BCR | 1 | 0 |
| 22 | L | 204 | CLA | 1 | 0 |
| 22 | Q | 203 | CLA | 1 | 0 |
| 22 | T | 211 | CLA | 1 | 0 |
| 22 | U | 210 | CLA | 3 | 0 |
| 22 | T | 201 | CLA | 1 | 0 |
| 25 | A | 841 | BCR | 1 | 0 |
| 26 | F | 806 | LMU | 1 | 0 |
| 22 | A | 811 | CLA | 2 | 0 |
| 22 | A | 851 | CLA | 2 | 0 |
| 33 | T | 208 | KC1 | 1 | 0 |
| 32 | S | 213 | LMG | 2 | 0 |
| 25 | F | 805 | BCR | 3 | 0 |
| 22 | A | 823 | CLA | 1 | 0 |
| 22 | P | 210 | CLA | 2 | 0 |
| 25 | B | 839 | BCR | 4 | 0 |
| 22 | A | 824 | CLA | 4 | 0 |
| 22 | B | 806 | CLA | 4 | 0 |
| 25 | B | 838 | BCR | 2 | 0 |
| 22 | k | 103 | CLA | 2 | 0 |
| 22 | G | 205 | CLA | 4 | 0 |
| 22 | A | 816 | CLA | 6 | 0 |
| 26 | A | 847 | LMU | 1 | 0 |
| 26 | S | 203 | LMU | 1 | 0 |
| 30 | S | 201 | SQD | 1 | 0 |
| 22 | H | 210 | CLA | 1 | 0 |
| 22 | Q | 204 | CLA | 2 | 0 |
| 22 | P | 214 | CLA | 1 | 0 |
| 22 | U | 207 | CLA | 2 | 0 |
| 22 | B | 814 | CLA | 3 | 0 |
| 22 | B | 818 | CLA | 4 | 0 |
| 22 | B | 847 | CLA | 3 | 0 |
| 25 | A | 844 | BCR | 1 | 0 |
| 22 | S | 209 | CLA | 1 | 0 |
| 22 | B | 815 | CLA | 2 | 0 |
| 22 | A | 833 | CLA | 2 | 0 |
| 22 | A | 848 | CLA | 3 | 0 |
| 22 | P | 208 | CLA | 1 | 0 |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 22 | R | 104 | CLA | 4 | 0 |
| 22 | B | 828 | CLA | 4 | 0 |
| 22 | A | 807 | CLA | 2 | 0 |
| 22 | T | 205 | CLA | 1 | 0 |
| 25 | B | 836 | BCR | 2 | 0 |
| 25 | B | 840 | BCR | 2 | 0 |
| 25 | J | 104 | BCR | 1 | 0 |
| 22 | B | 821 | CLA | 2 | 0 |
| 22 | B | 809 | CLA | 2 | 0 |
| 22 | U | 209 | CLA | 2 | 0 |
| 25 | M | 101 | BCR | 1 | 0 |
| 25 | I | 102 | BCR | 2 | 0 |
| 22 | T | 209 | CLA | 1 | 0 |
| 32 | P | 202 | LMG | 1 | 0 |
| 22 | S | 208 | CLA | 2 | 0 |
| 22 | H | 202 | CLA | 1 | 0 |
| 22 | A | 838 | CLA | 1 | 0 |
| 22 | H | 203 | CLA | 1 | 0 |
| 22 | Q | 213 | CLA | 1 | 0 |
| 22 | B | 833 | CLA | 2 | 0 |
| 22 | O | 203 | CLA | 1 | 0 |
| 22 | G | 206 | CLA | 5 | 0 |
| 22 | P | 211 | CLA | 1 | 0 |
| 26 | K | 201 | LMU | 2 | 0 |
| 22 | A | 820 | CLA | 1 | 0 |
| 22 | B | 831 | CLA | 1 | 0 |
| 30 | B | 846 | SQD | 1 | 0 |
| 22 | G | 215 | CLA | 1 | 0 |
| 22 | S | 206 | CLA | 3 | 0 |
| 22 | k | 102 | CLA | 2 | 0 |
| 22 | B | 844 | CLA | 2 | 0 |
| 22 | A | 836 | CLA | 4 | 0 |
| 23 | A | 837 | PQN | 2 | 0 |
| 22 | A | 828 | CLA | 1 | 0 |
| 22 | A | 815 | CLA | 1 | 0 |
| 22 | B | 822 | CLA | 1 | 0 |
| 25 | A | 843 | BCR | 2 | 0 |
| 22 | B | 802 | CLA | 4 | 0 |
| 22 | A | 829 | CLA | 1 | 0 |
| 22 | P | 213 | CLA | 1 | 0 |
| 22 | T | 206 | CLA | 2 | 0 |
| 22 | A | 810 | CLA | 3 | 0 |

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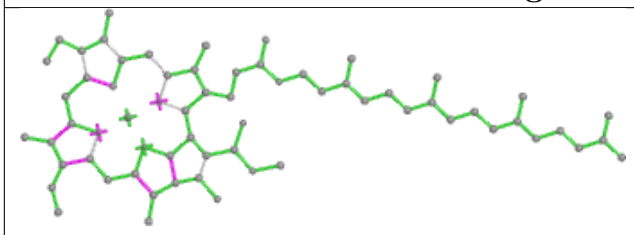
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 22 | S | 217 | CLA | 2 | 0 |
| 22 | A | 825 | CLA | 2 | 0 |
| 32 | Q | 217 | LMG | 3 | 0 |
| 27 | A | 849 | CL0 | 3 | 0 |
| 22 | B | 801 | CLA | 2 | 0 |
| 22 | A | 822 | CLA | 1 | 0 |
| 22 | H | 209 | CLA | 1 | 0 |
| 31 | U | 212 | DD6 | 1 | 0 |
| 22 | B | 842 | CLA | 2 | 0 |
| 22 | U | 211 | CLA | 4 | 0 |
| 25 | L | 201 | BCR | 1 | 0 |
| 22 | B | 805 | CLA | 3 | 0 |
| 25 | R | 102 | BCR | 3 | 0 |
| 22 | G | 204 | CLA | 1 | 0 |
| 22 | G | 207 | CLA | 1 | 0 |
| 22 | G | 209 | CLA | 6 | 0 |
| 22 | U | 208 | CLA | 2 | 0 |
| 32 | J | 102 | LMG | 3 | 0 |
| 22 | B | 810 | CLA | 1 | 0 |
| 22 | A | 813 | CLA | 1 | 0 |
| 22 | B | 845 | CLA | 6 | 0 |
| 22 | S | 216 | CLA | 3 | 0 |
| 22 | G | 202 | CLA | 1 | 0 |
| 22 | G | 203 | CLA | 1 | 0 |
| 22 | O | 205 | CLA | 4 | 0 |
| 22 | A | 805 | CLA | 1 | 0 |
| 23 | B | 835 | PQN | 1 | 0 |
| 22 | P | 207 | CLA | 2 | 0 |
| 22 | B | 808 | CLA | 1 | 0 |
| 22 | A | 814 | CLA | 2 | 0 |
| 22 | H | 205 | CLA | 1 | 0 |
| 22 | K | 205 | CLA | 1 | 0 |
| 22 | B | 820 | CLA | 3 | 0 |
| 26 | L | 206 | LMU | 2 | 0 |
| 22 | K | 203 | CLA | 1 | 0 |
| 22 | G | 208 | CLA | 1 | 0 |
| 34 | R | 103 | A86 | 1 | 0 |
| 22 | A | 802 | CLA | 1 | 0 |
| 25 | k | 104 | BCR | 2 | 0 |
| 22 | H | 213 | CLA | 7 | 0 |

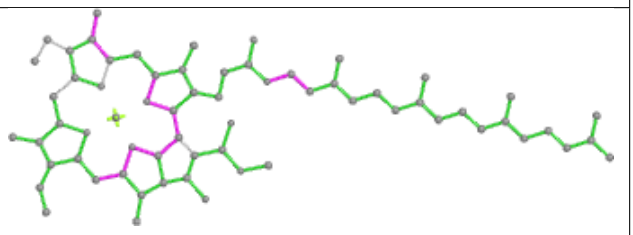
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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

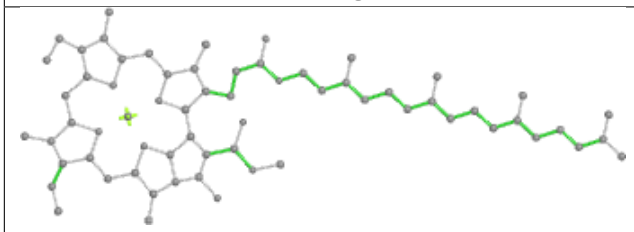
**Ligand CLA B 834**



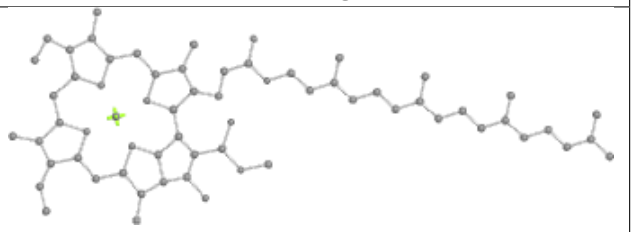
**Bond lengths**



**Bond angles**

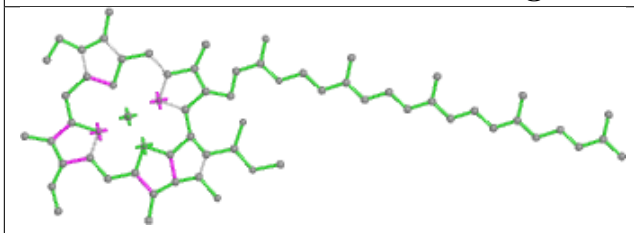


**Torsions**

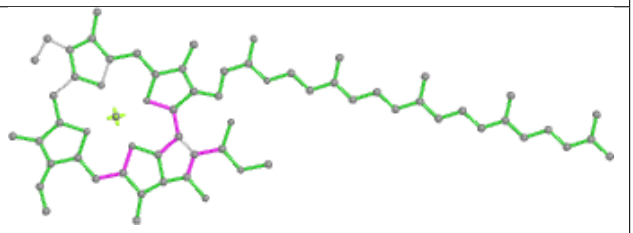


**Rings**

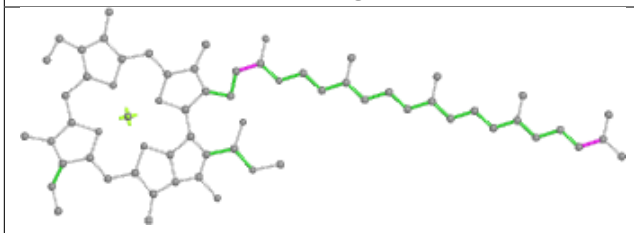
**Ligand CLA B 843**



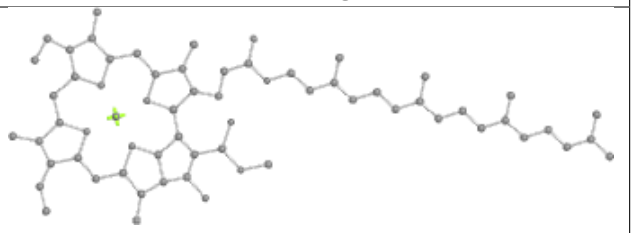
**Bond lengths**



**Bond angles**

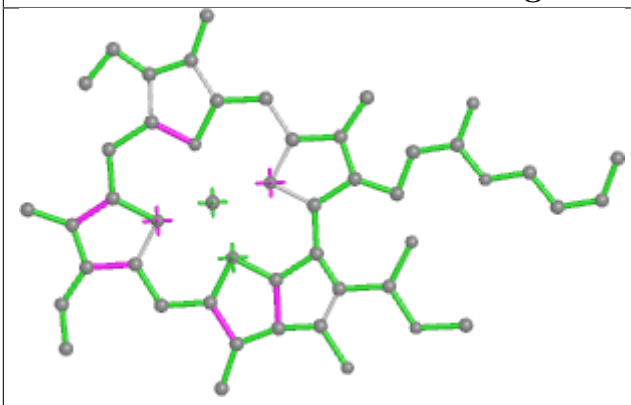


**Torsions**

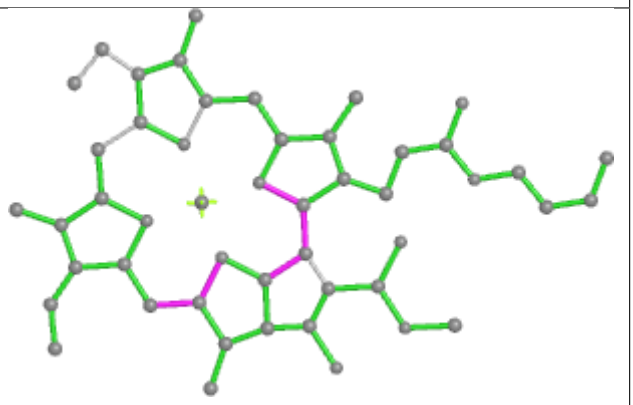


**Rings**

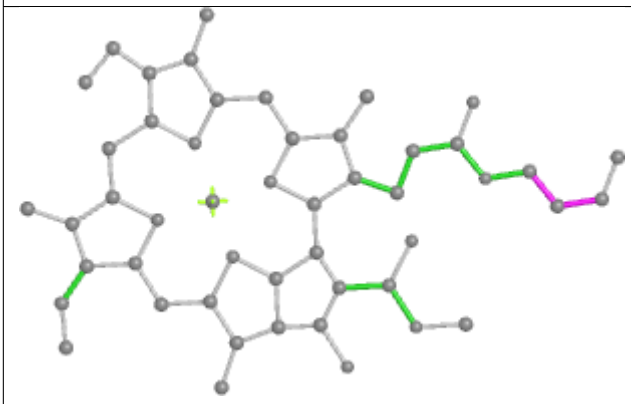
## Ligand CLA B 826



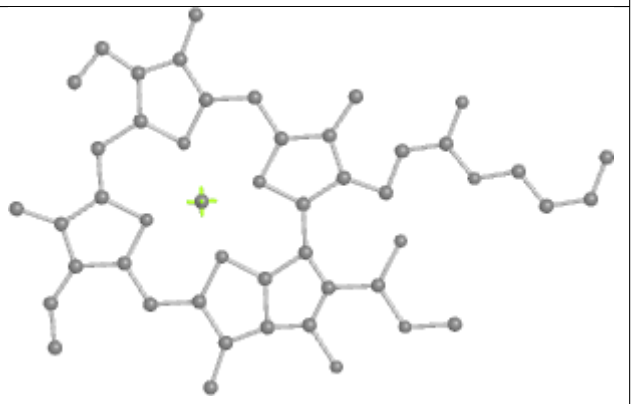
Bond lengths



Bond angles

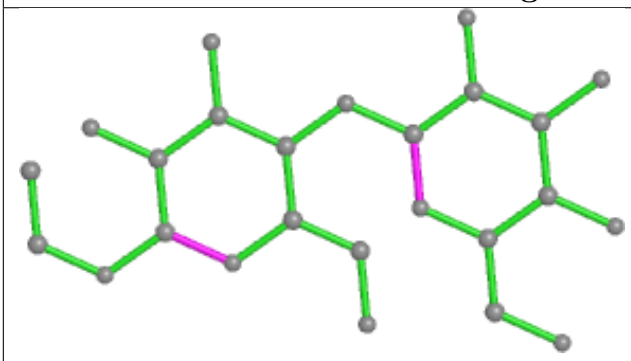


Torsions

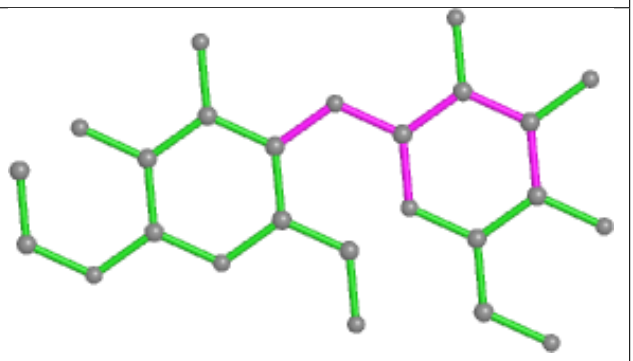


Rings

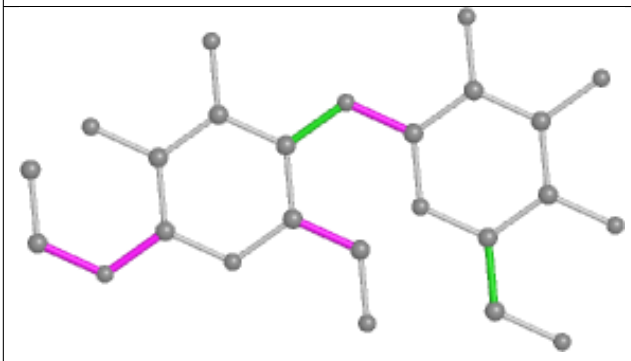
## Ligand LMU P 221



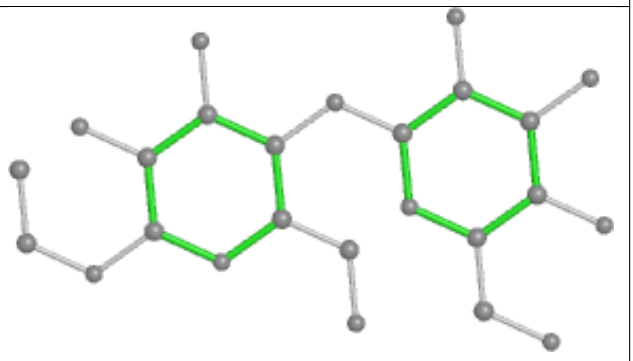
Bond lengths



Bond angles

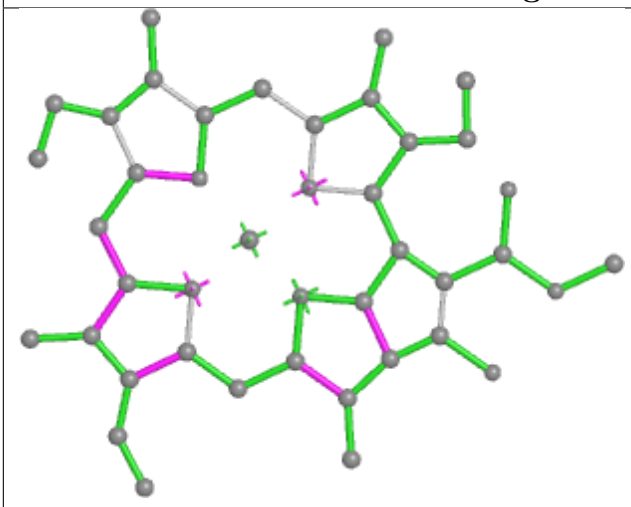


Torsions

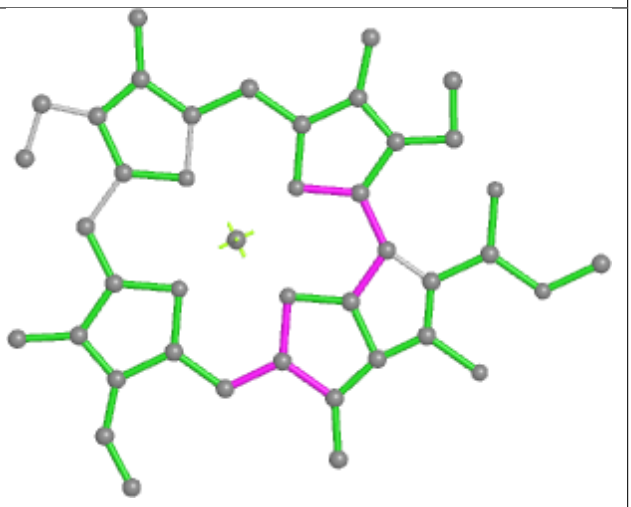


Rings

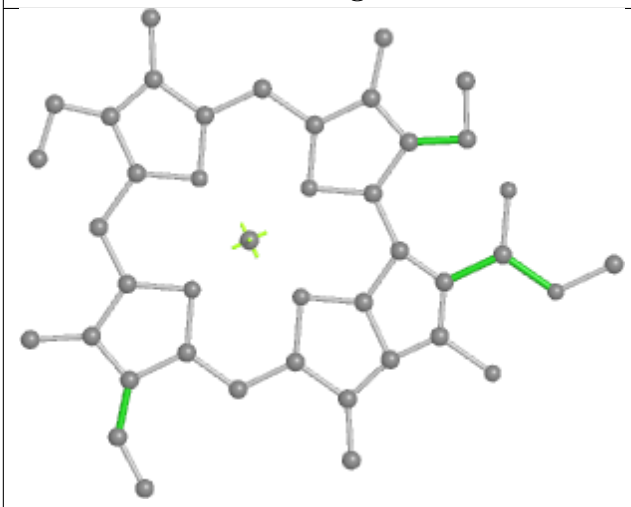
## Ligand CLA K 204



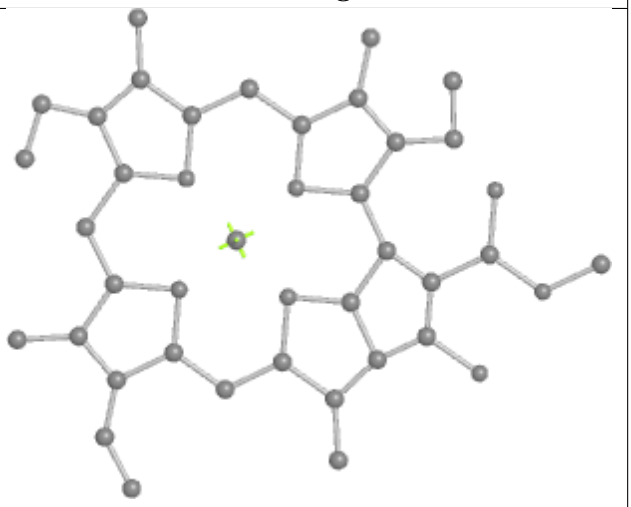
Bond lengths



Bond angles

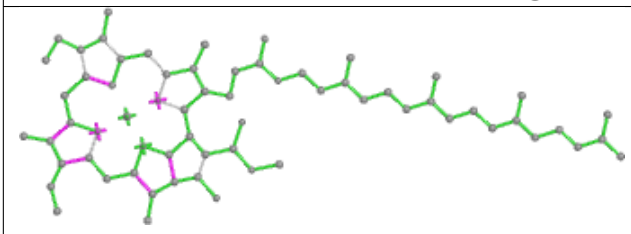


Torsions



Rings

## Ligand CLA L 203



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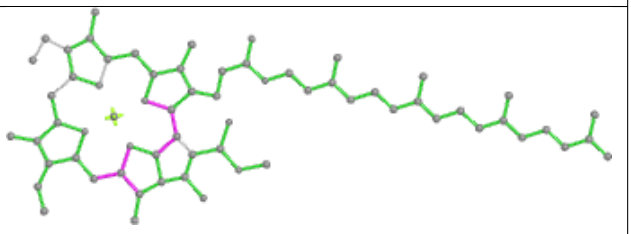
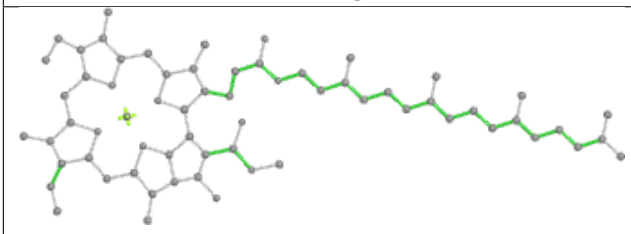
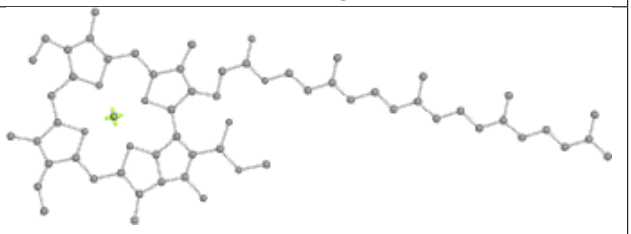


Bond angles

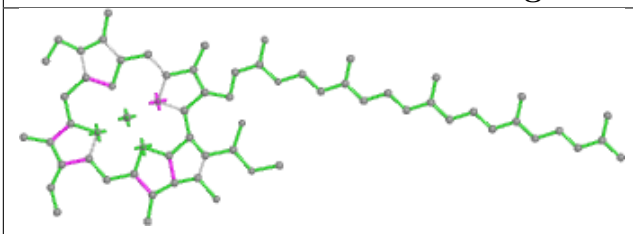


Torsions

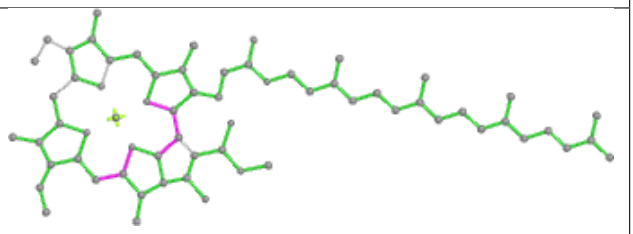


Rings

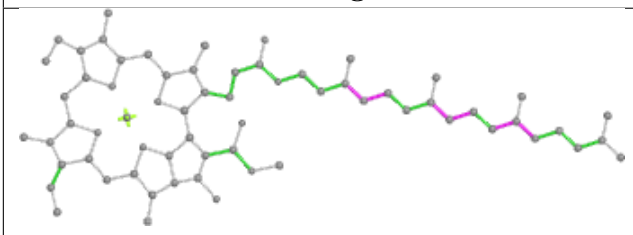
**Ligand CLA B 816**



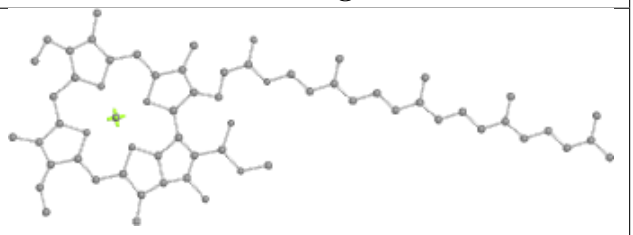
Bond lengths



Bond angles

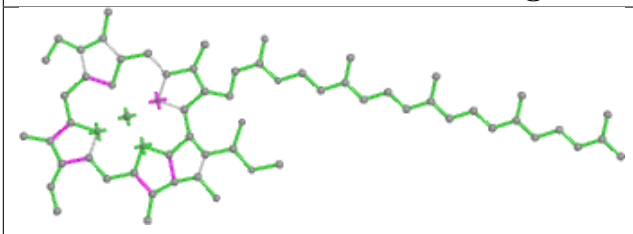


Torsions



Rings

**Ligand CLA T 207**



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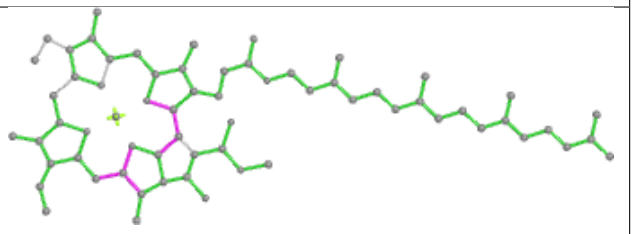
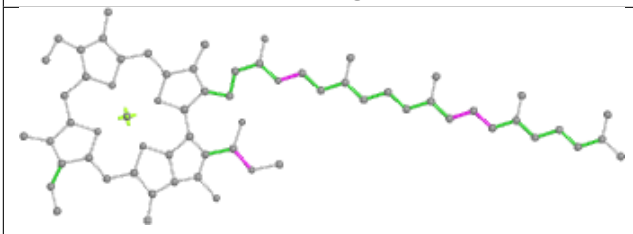
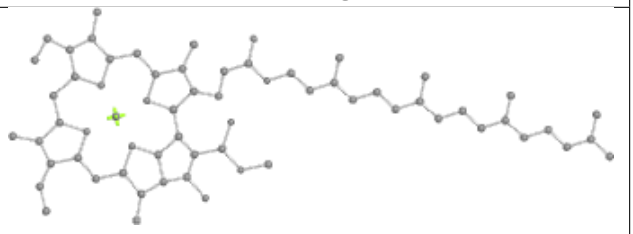


Bond angles

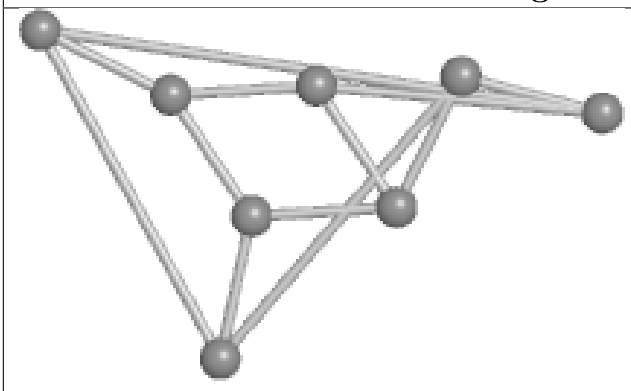


Torsions

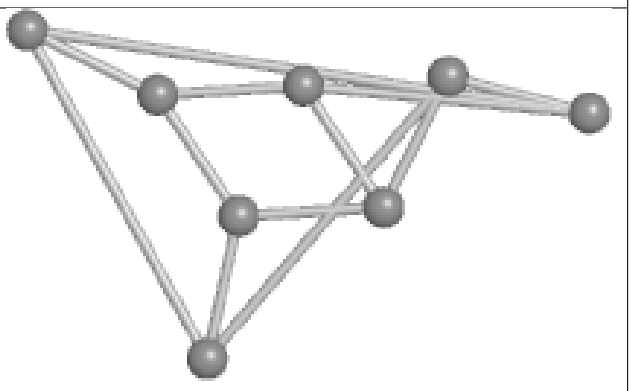


Rings

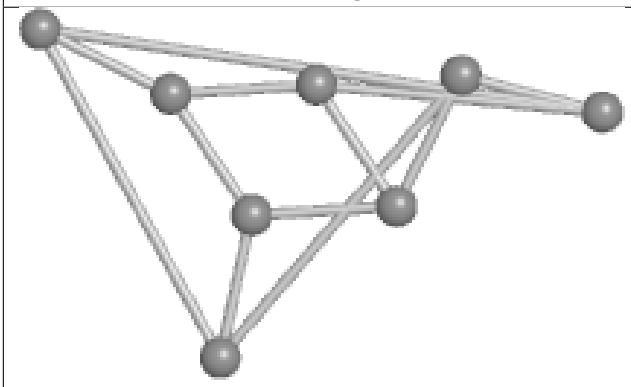
**Ligand SF4 C 102**



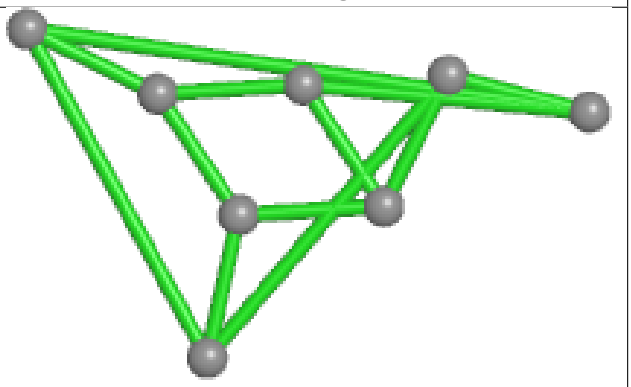
**Bond lengths**



**Bond angles**

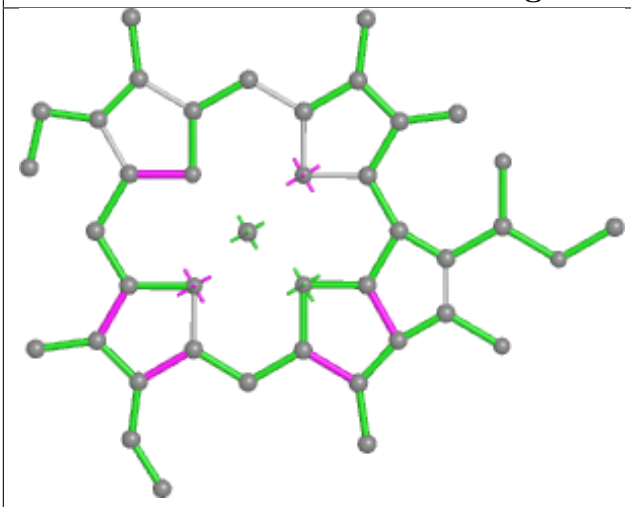


**Torsions**

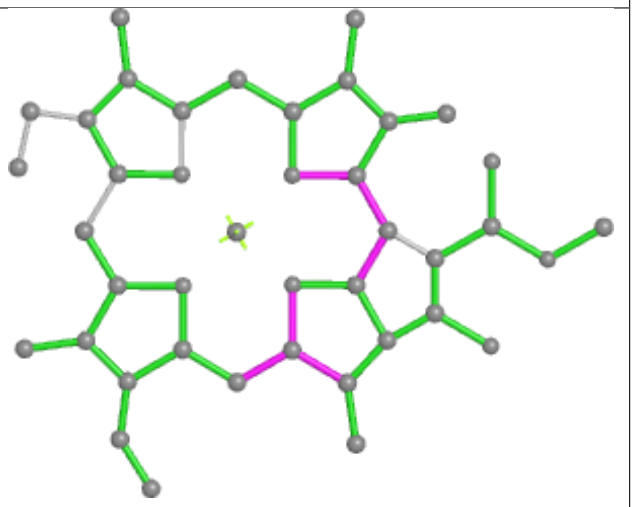


**Rings**

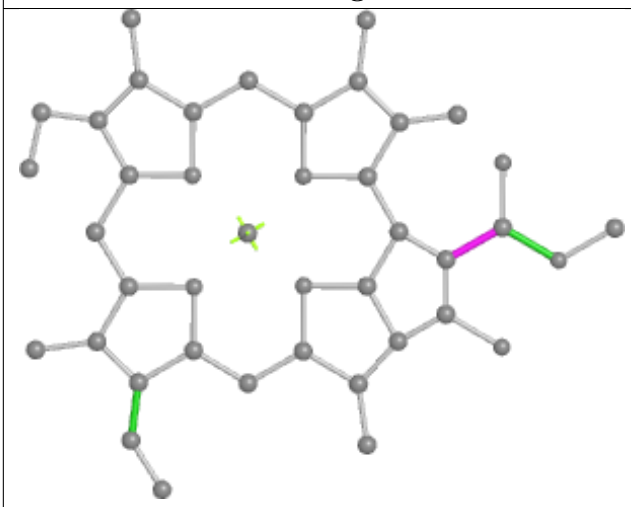
**Ligand CLA T 202**



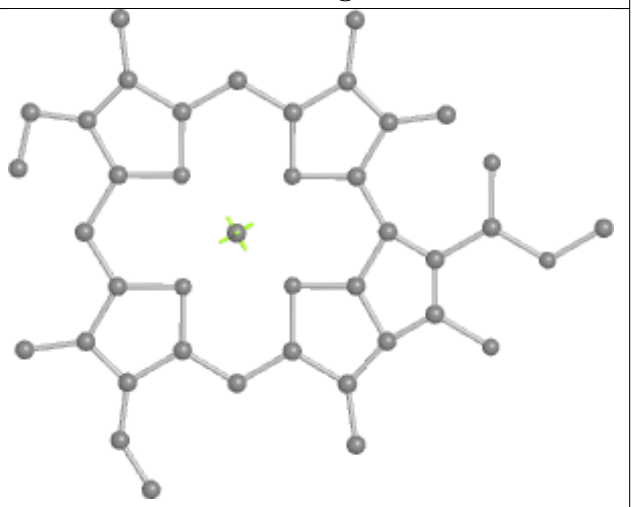
**Bond lengths**



**Bond angles**

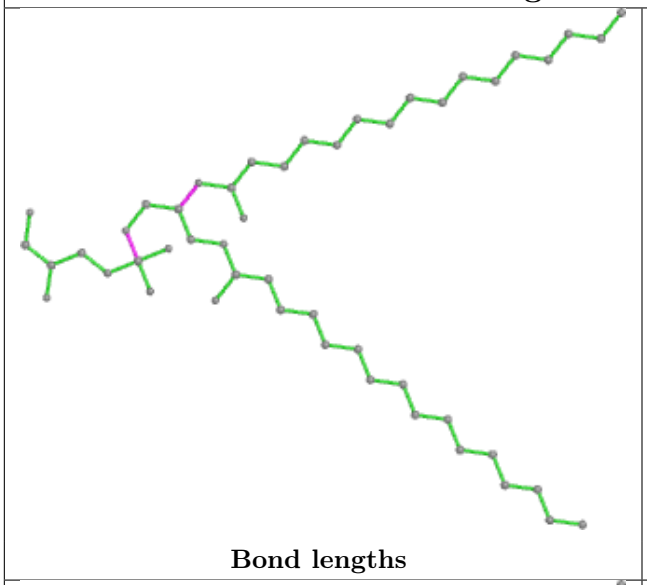


**Torsions**

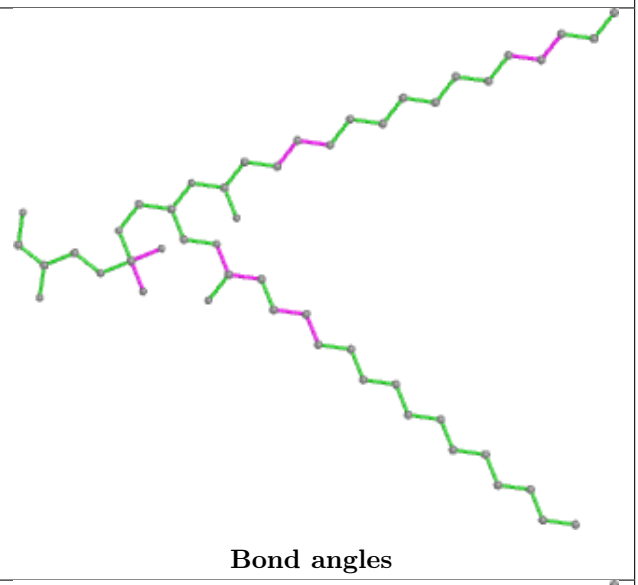


**Rings**

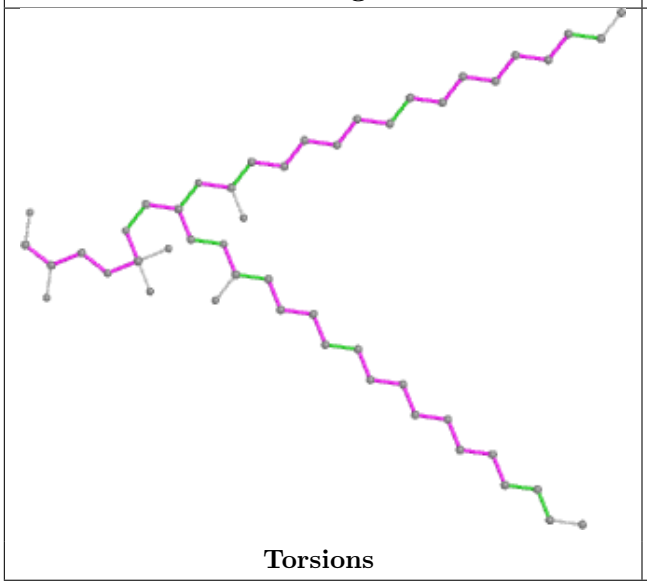
## Ligand LHG P 201



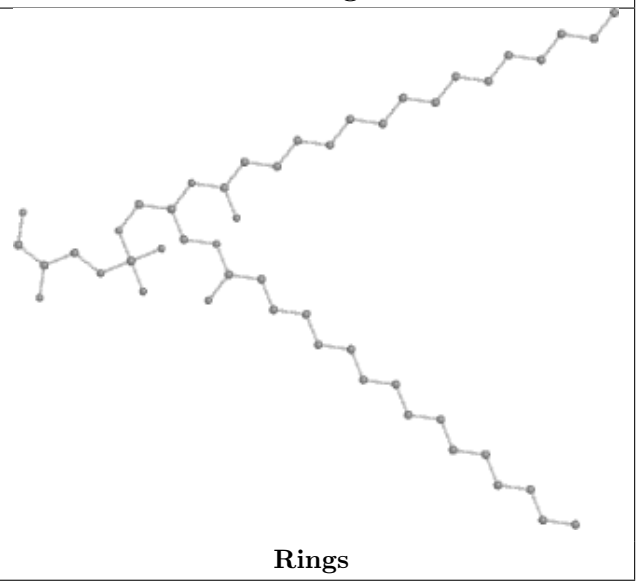
Bond lengths



Bond angles

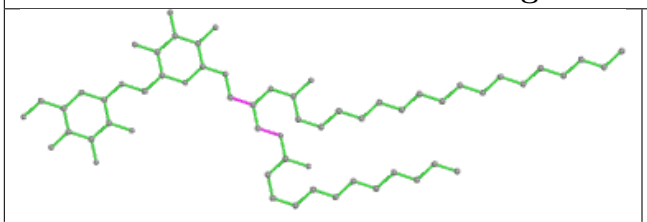


Torsions

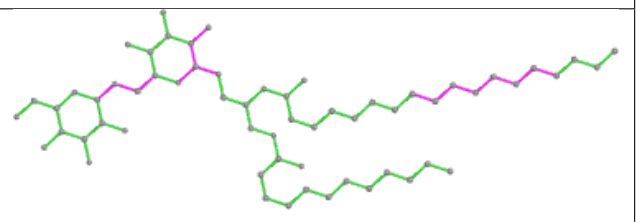


Rings

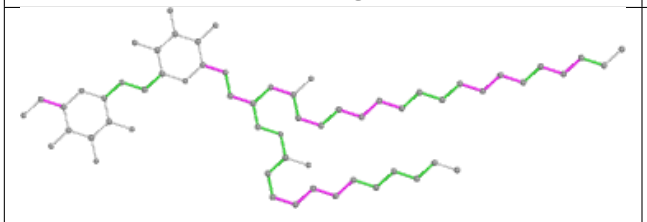
## Ligand DGD B 841



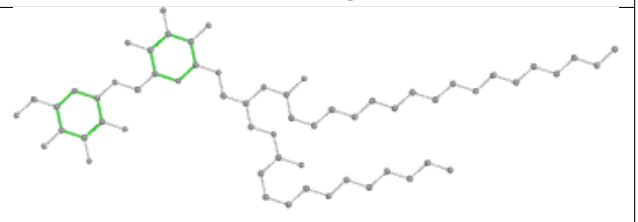
Bond lengths



Bond angles

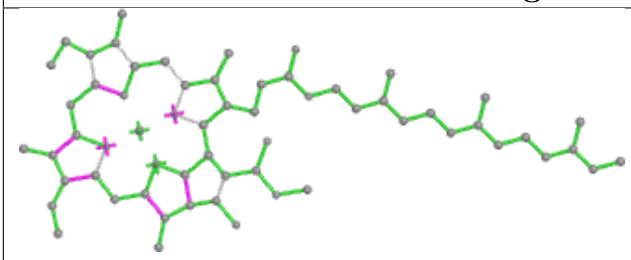


Torsions



Rings

## Ligand CLA U 204



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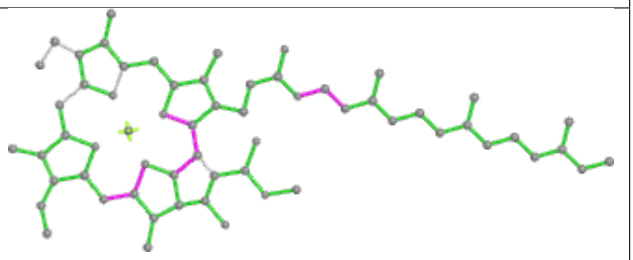
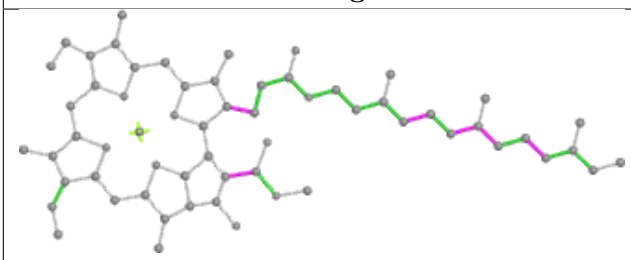


Bond angles



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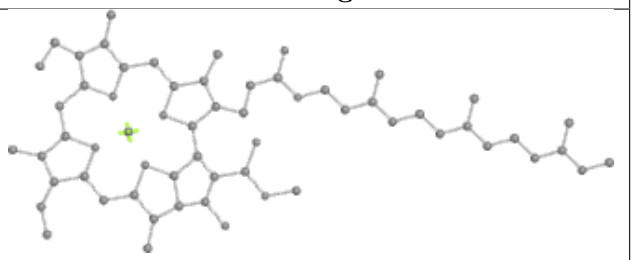
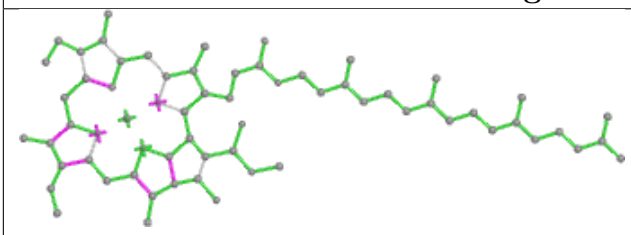
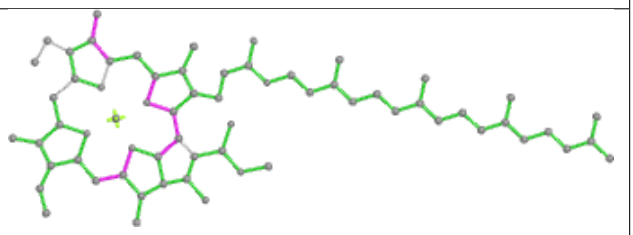


Rings

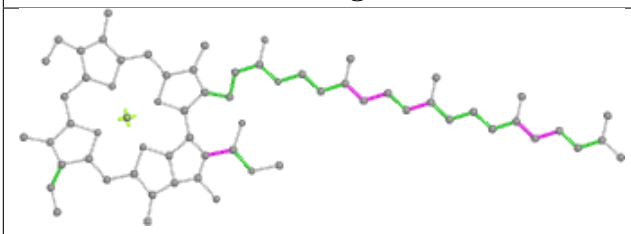
## Ligand CLA A 834



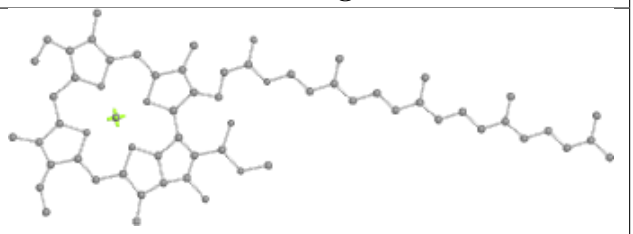
Bond lengths



Bond angles

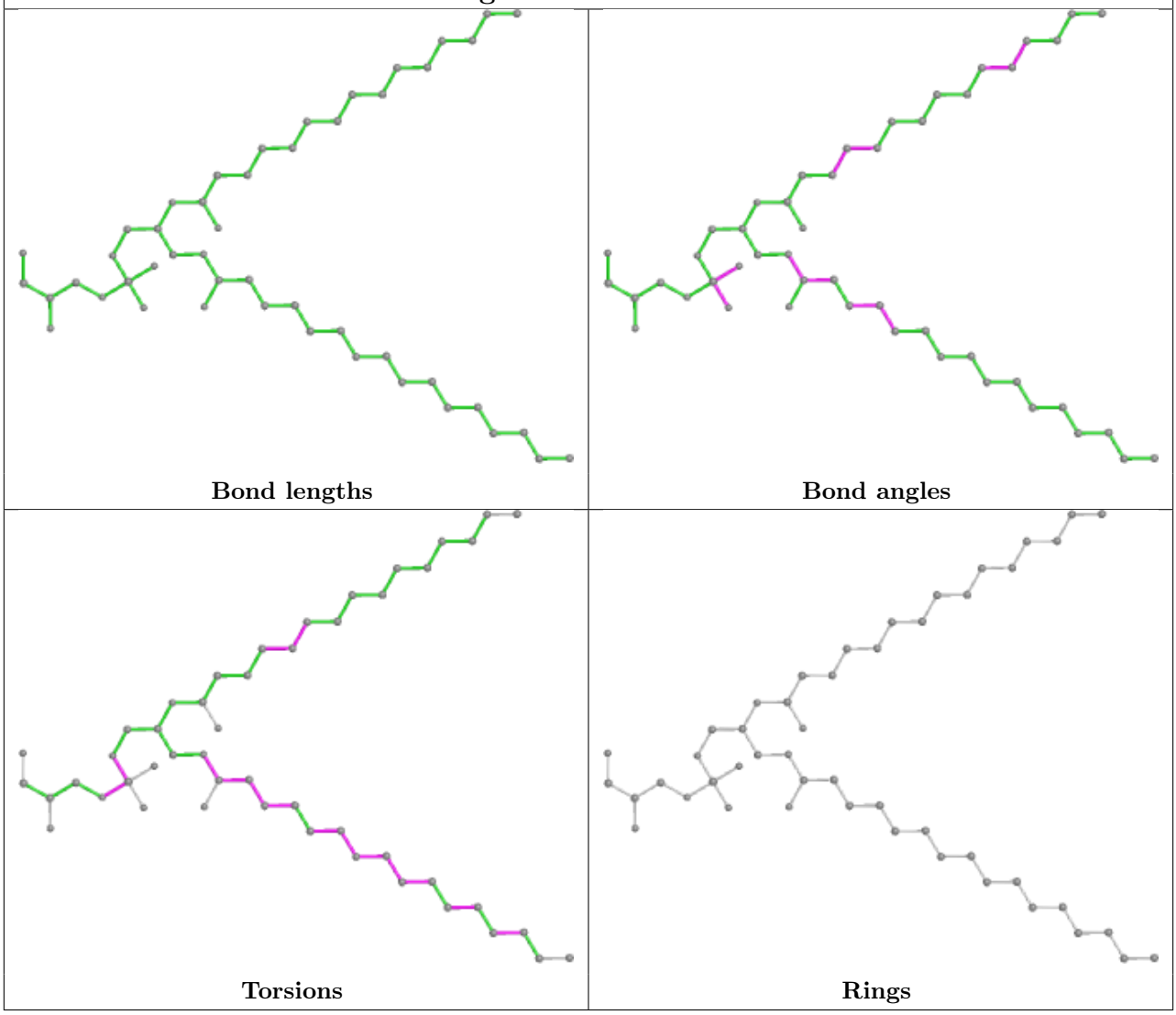


Torsions

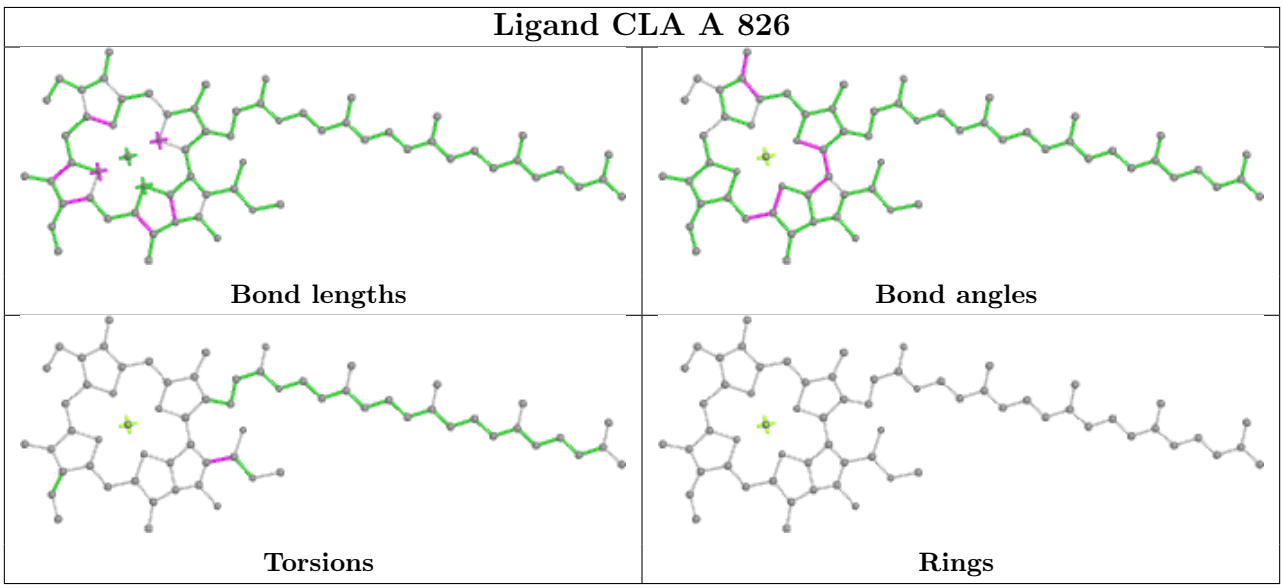


Rings

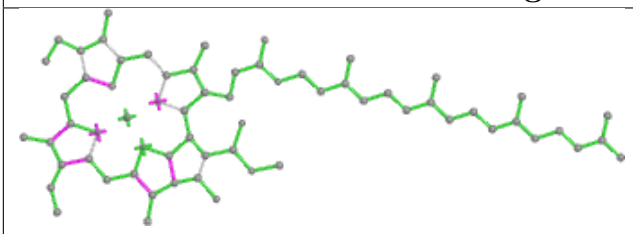
## Ligand LHG A 839



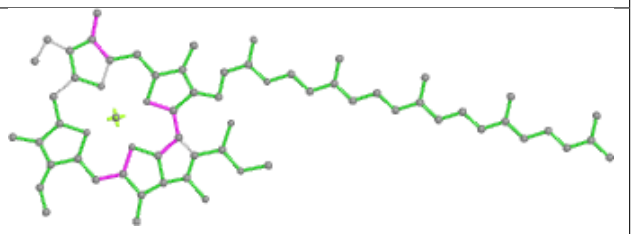

## Ligand CLA A 826



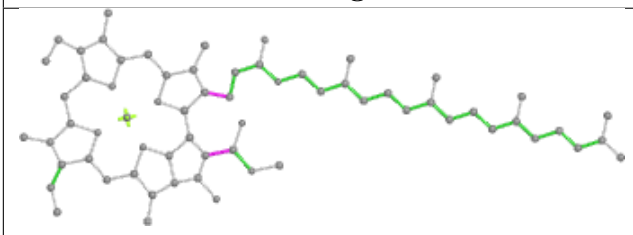
## Ligand CLA B 824



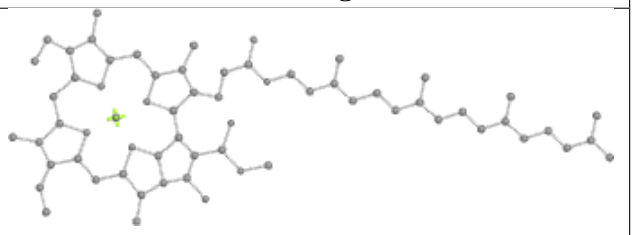
Bond lengths



Bond angles

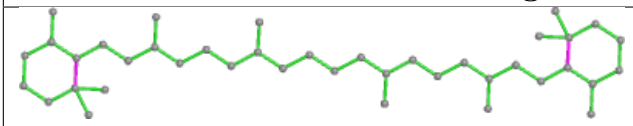


Torsions

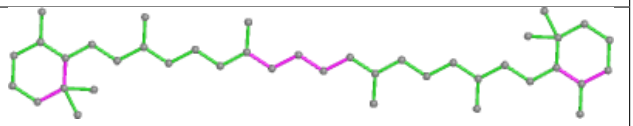


Rings

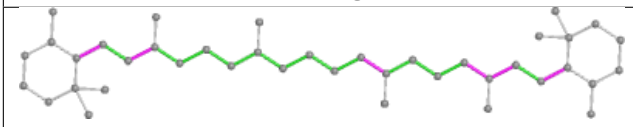
## Ligand BCR A 842



Bond lengths



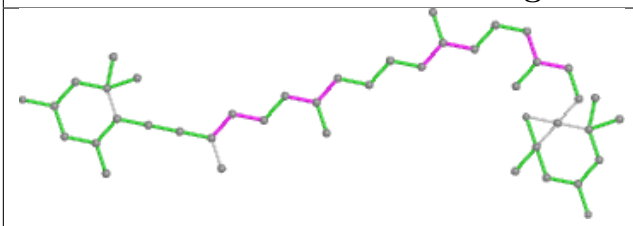
Bond angles



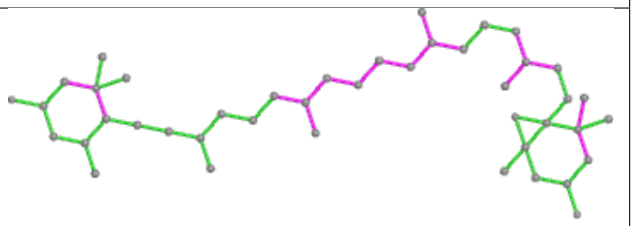
Torsions

Rings

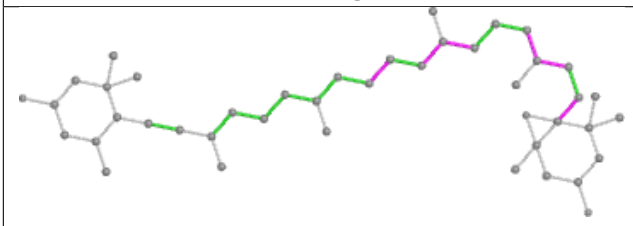
## Ligand DD6 H 212



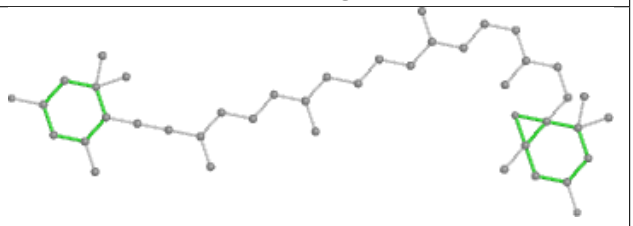
Bond lengths



Bond angles

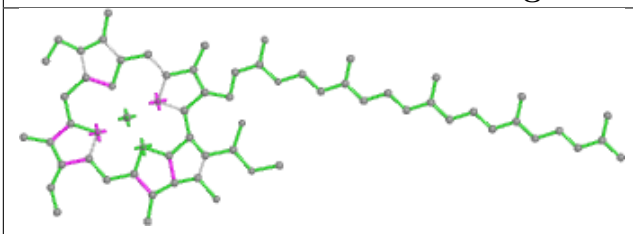


Torsions

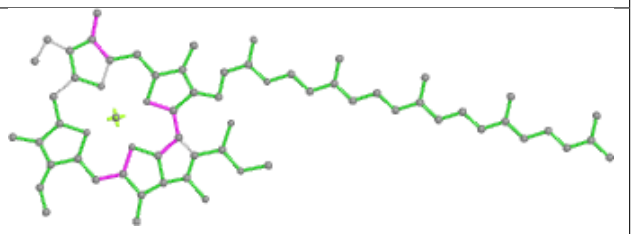


Rings

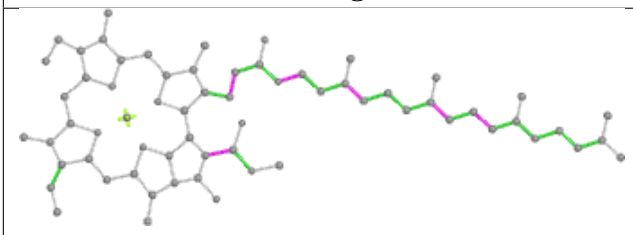
## Ligand CLA A 845



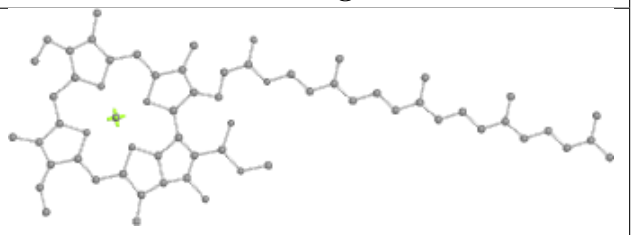
Bond lengths



Bond angles

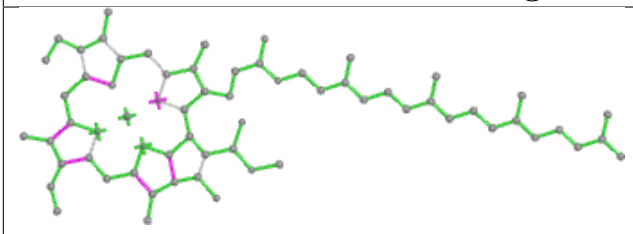


Torsions

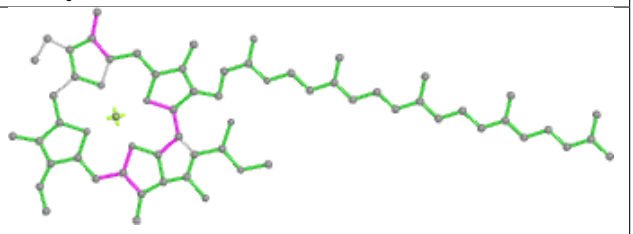


Rings

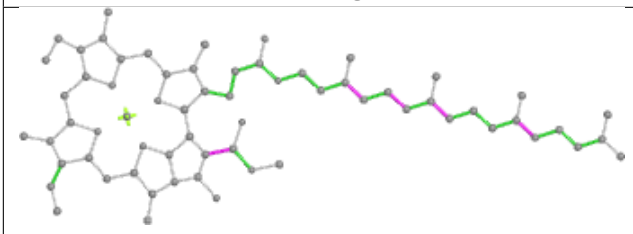
## Ligand CLA Q 216



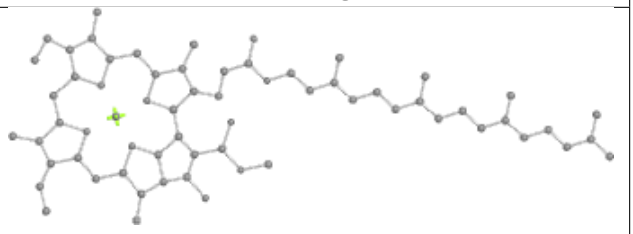
Bond lengths



Bond angles

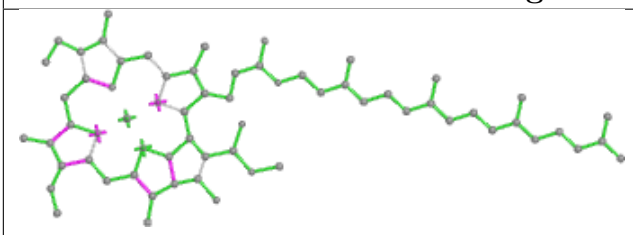


Torsions

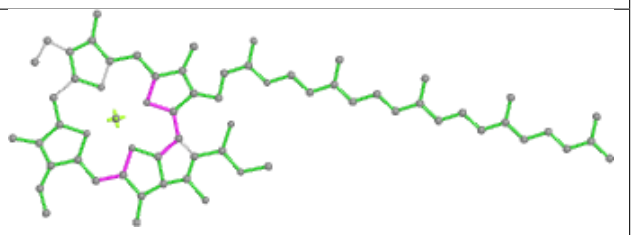


Rings

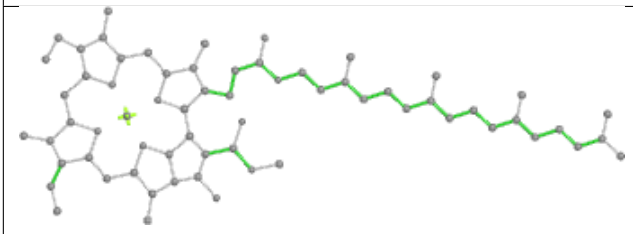
## Ligand CLA F 802



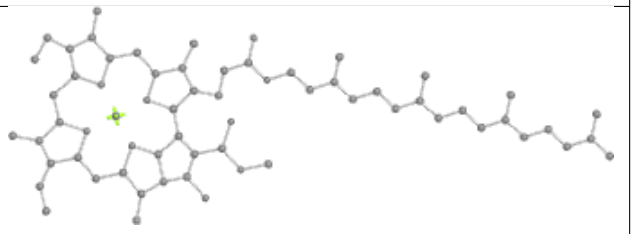
Bond lengths



Bond angles

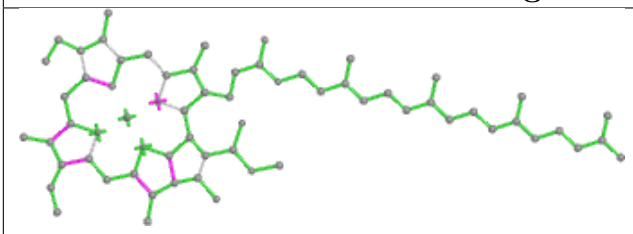


Torsions

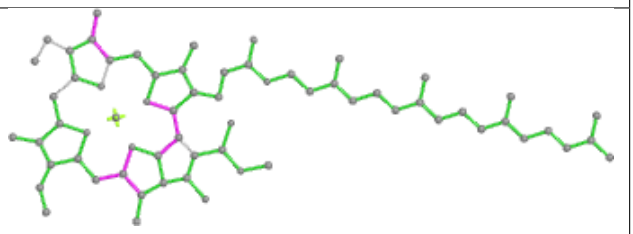


Rings

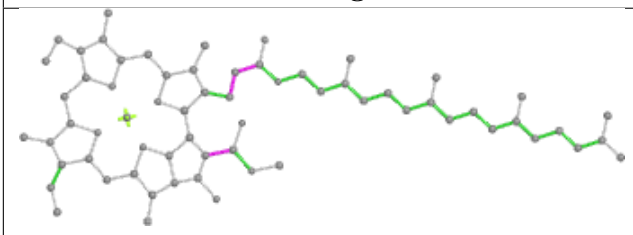
## Ligand CLA A 803



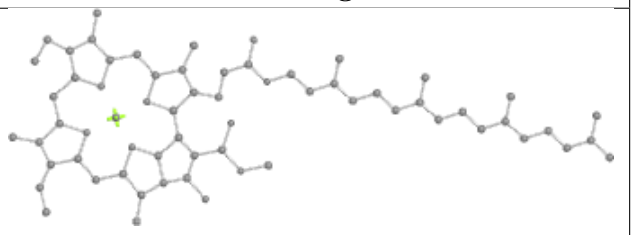
Bond lengths



Bond angles

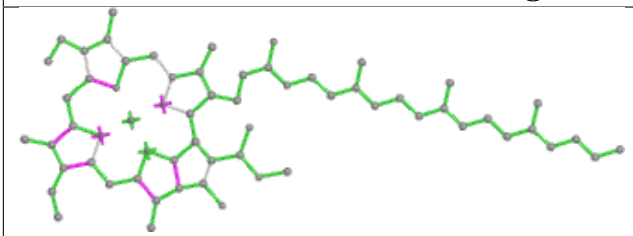


Torsions

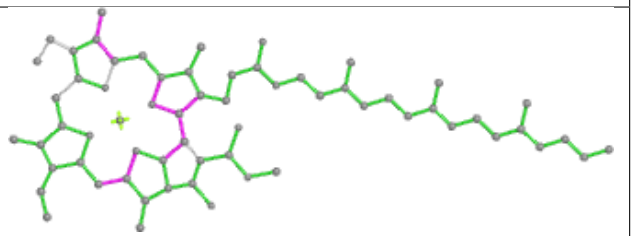


Rings

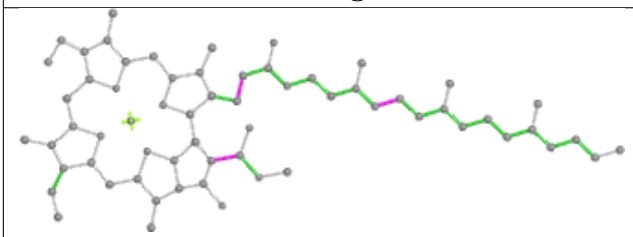
## Ligand CLA B 819



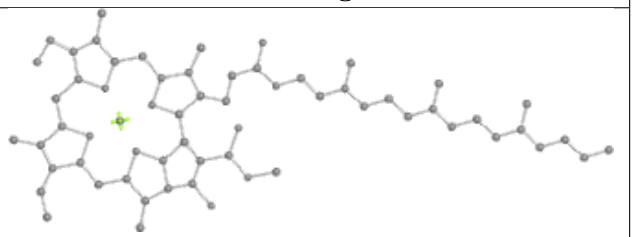
Bond lengths



Bond angles

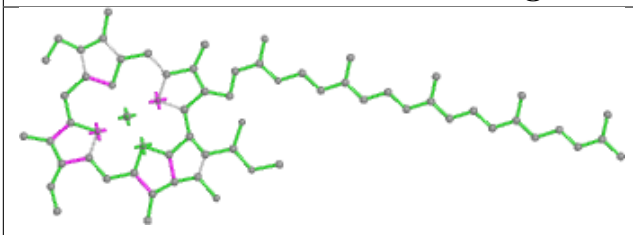


Torsions

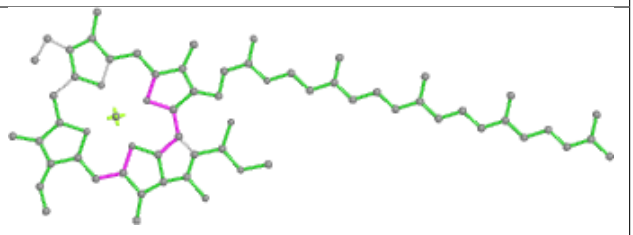


Rings

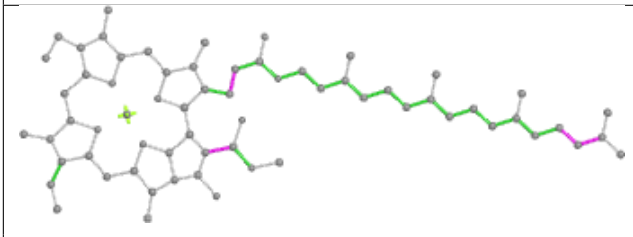
## Ligand CLA B 832



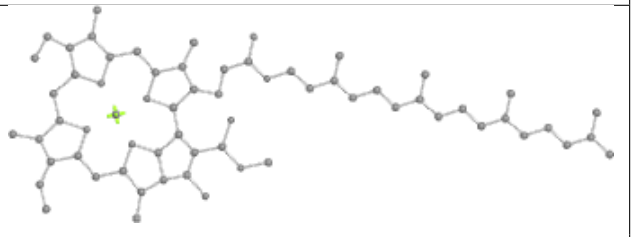
Bond lengths



Bond angles

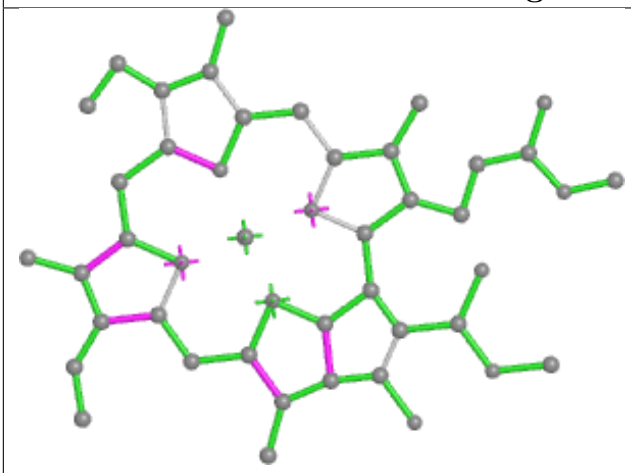


Torsions

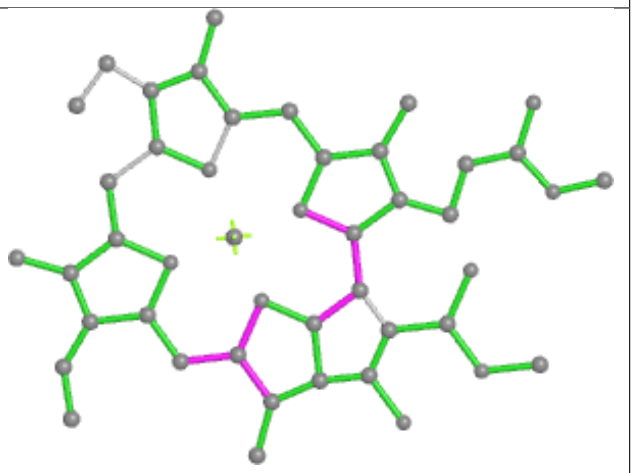


Rings

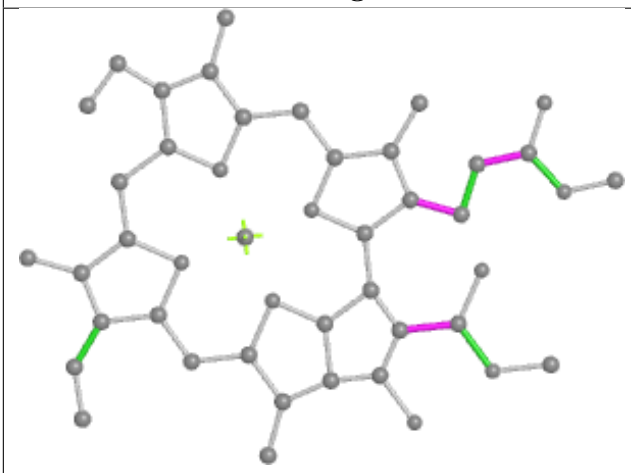
## Ligand CLA F 804



Bond lengths



Bond angles



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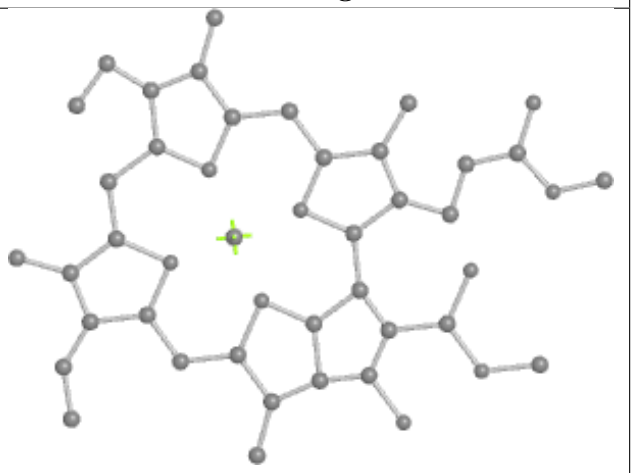
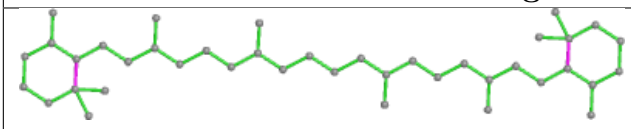
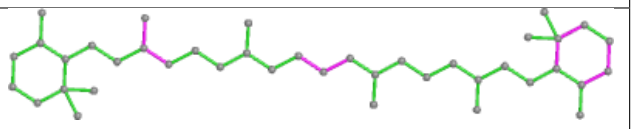


Rings

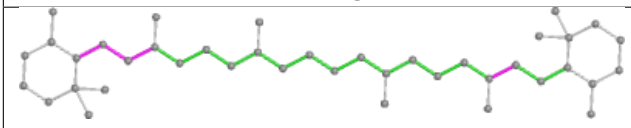
## Ligand BCR B 837



Bond lengths



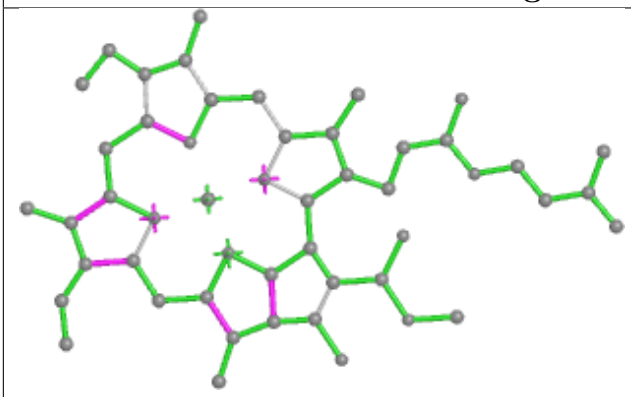
Bond angles



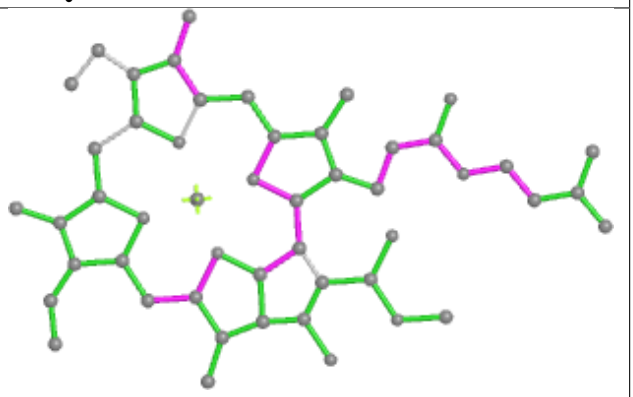
Torsions

Rings

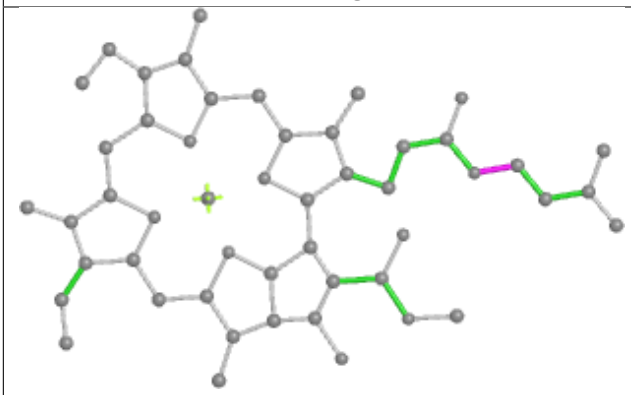
**Ligand CLA Q 208**



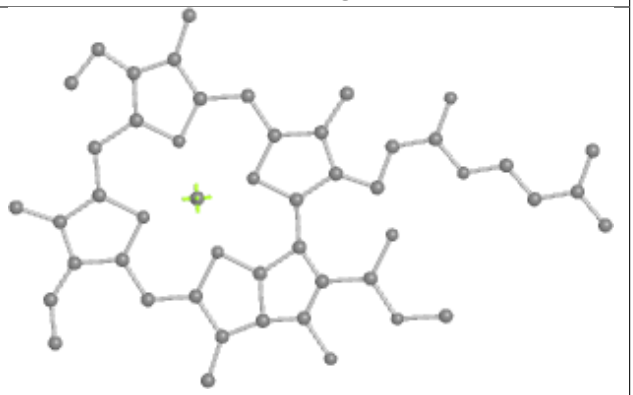
Bond lengths



Bond angles

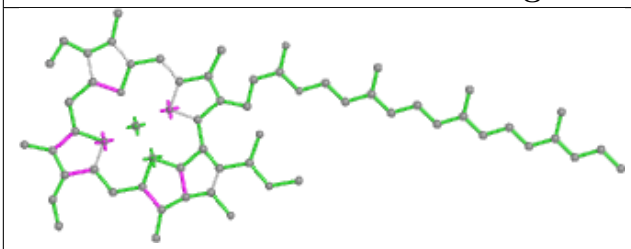


Torsions



Rings

**Ligand CLA A 809**



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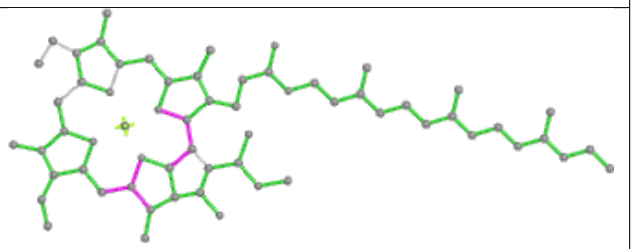
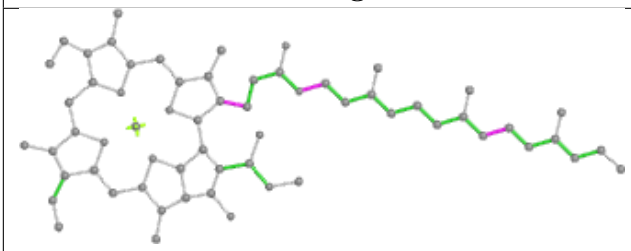
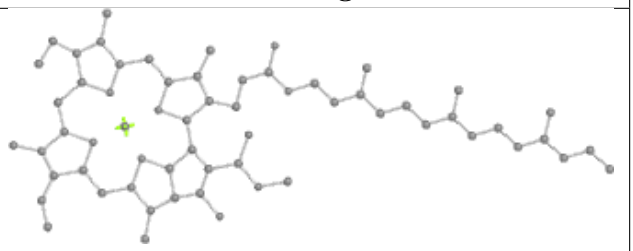


Bond angles

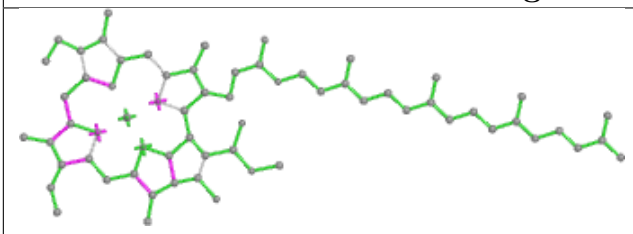


Torsions

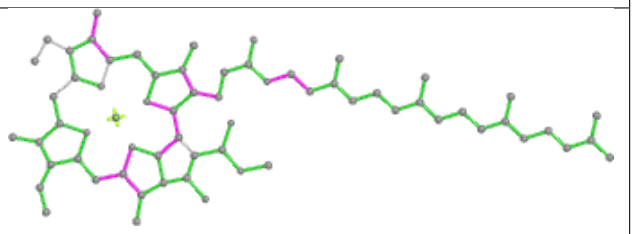


Rings

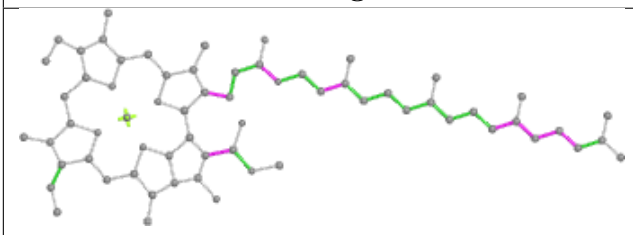
**Ligand CLA H 207**



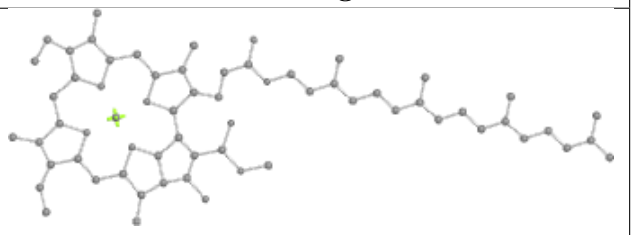
Bond lengths



Bond angles

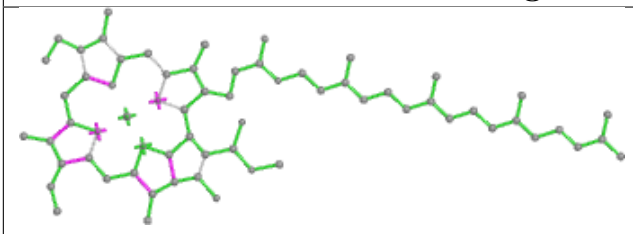


Torsions

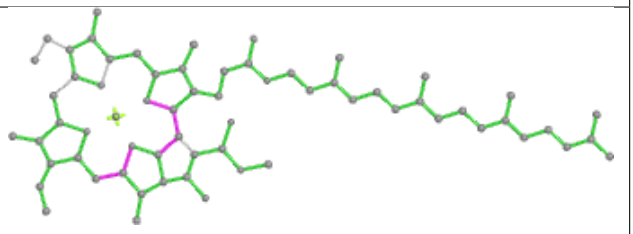


Rings

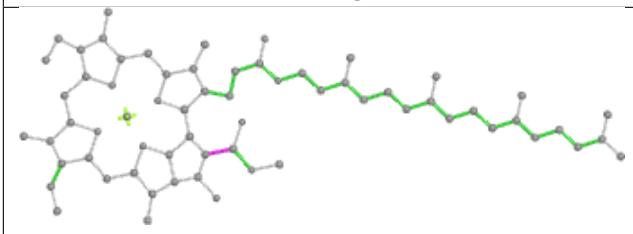
**Ligand CLA A 835**



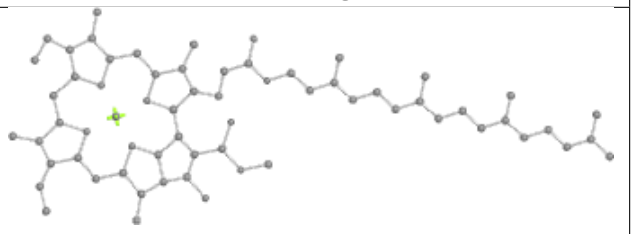
Bond lengths



Bond angles

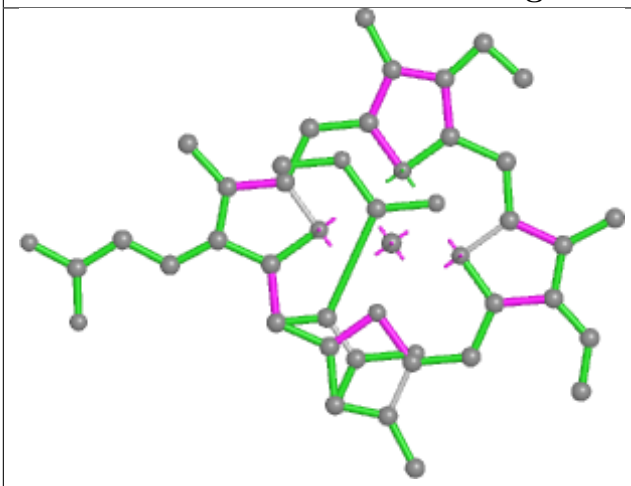


Torsions

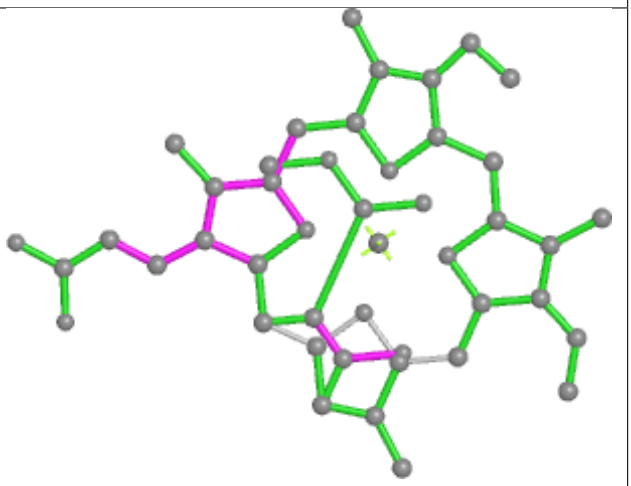


Rings

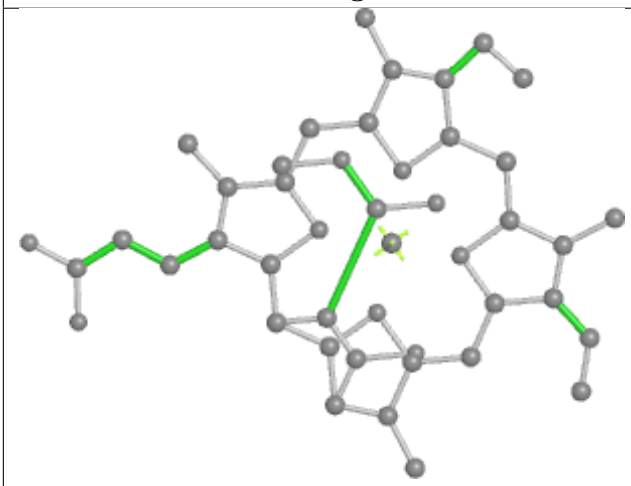
**Ligand KC1 O 210**



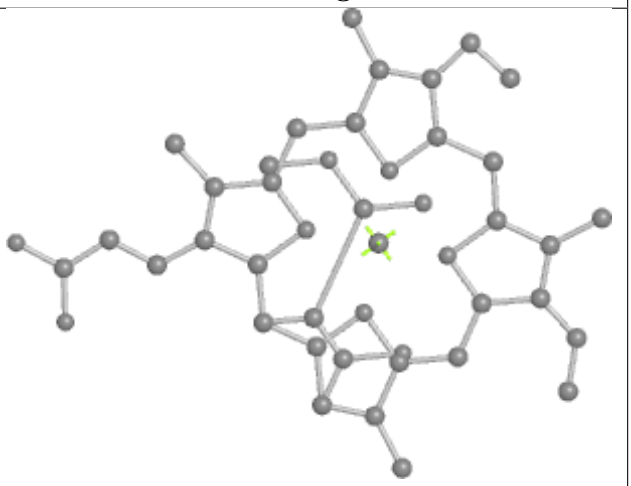
Bond lengths



Bond angles

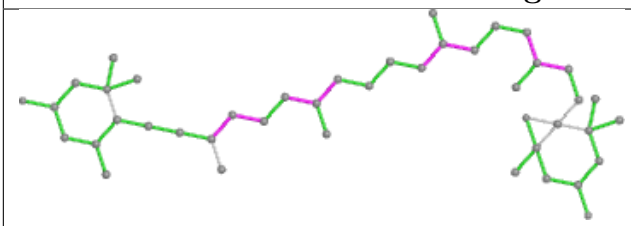


Torsions

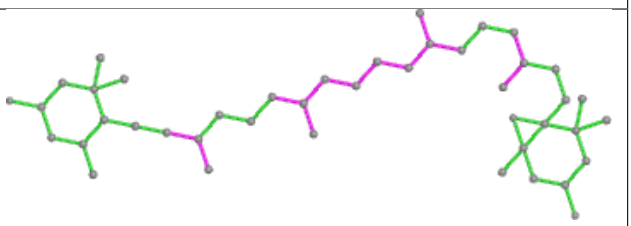


Rings

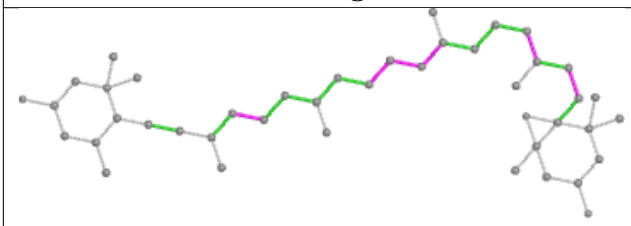
**Ligand DD6 G 211**



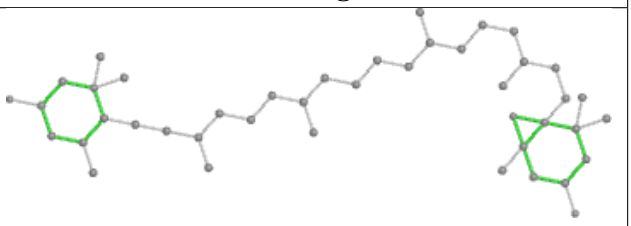
Bond lengths



Bond angles

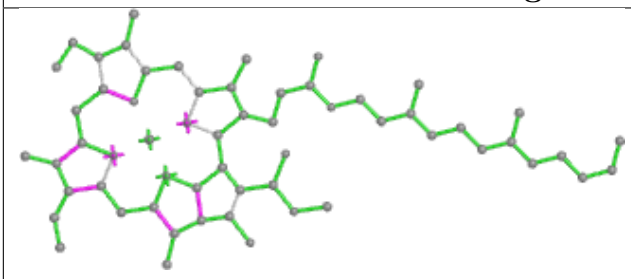


Torsions

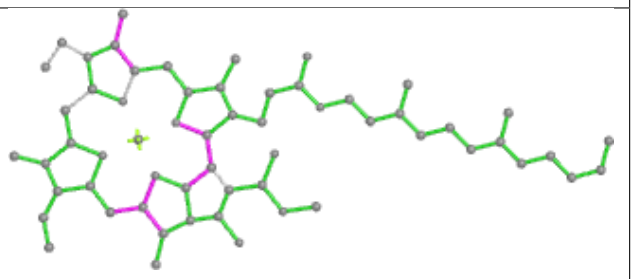


Rings

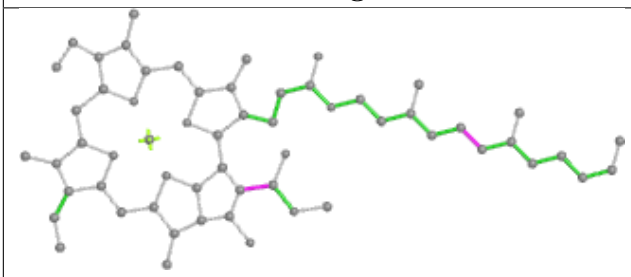
**Ligand CLA B 812**



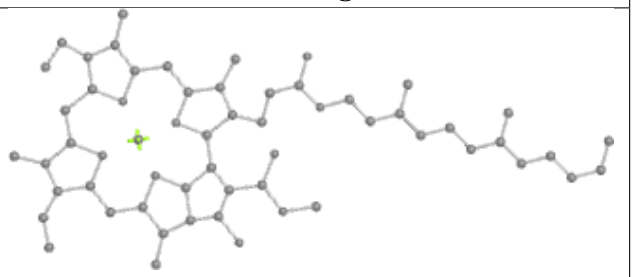
**Bond lengths**



**Bond angles**

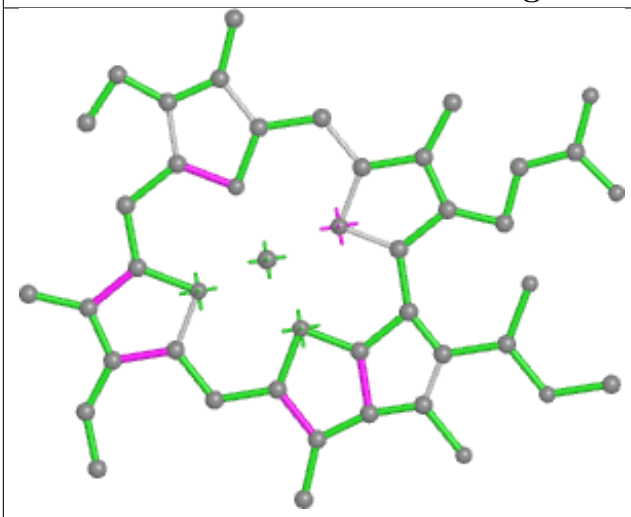


**Torsions**

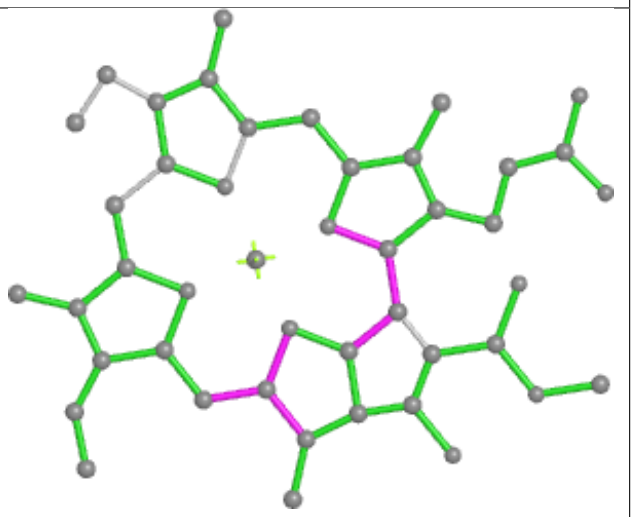


**Rings**

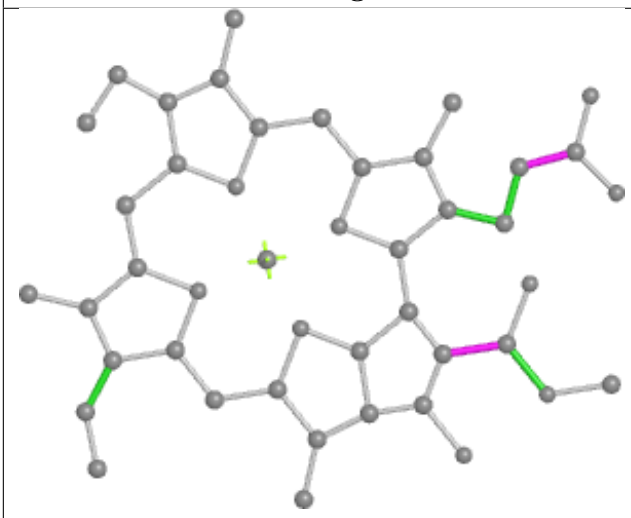
## Ligand CLA G 201



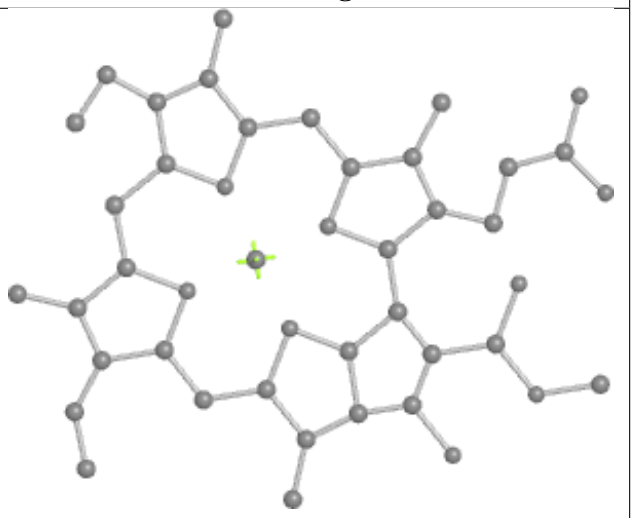
Bond lengths



Bond angles

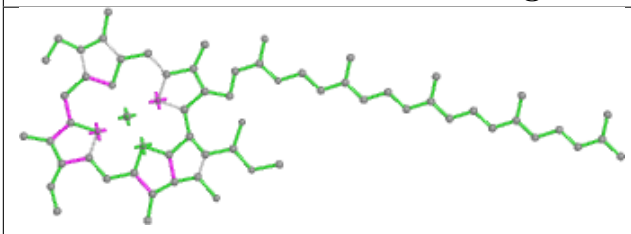


Torsions



Rings

## Ligand CLA U 205



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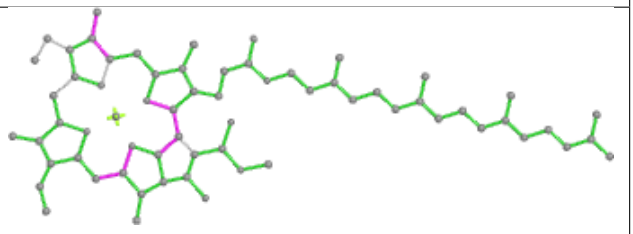
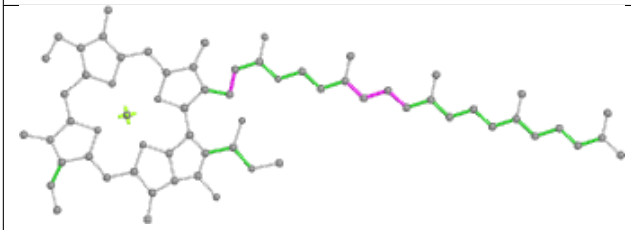
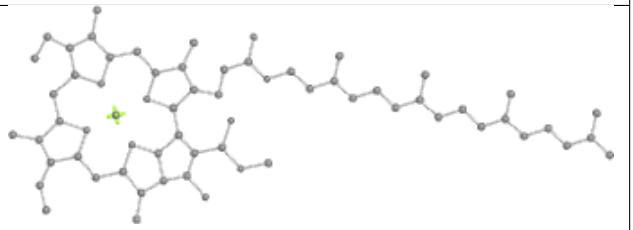


Bond angles

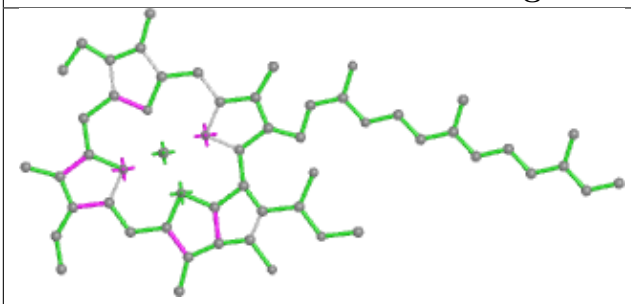


Torsions

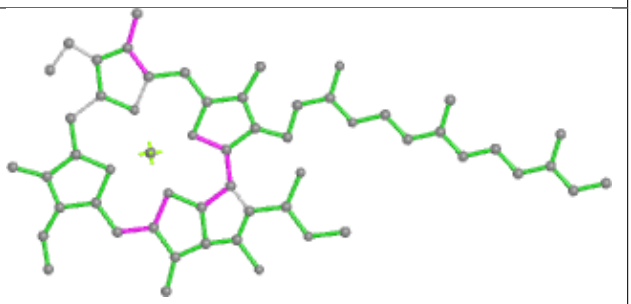


Rings

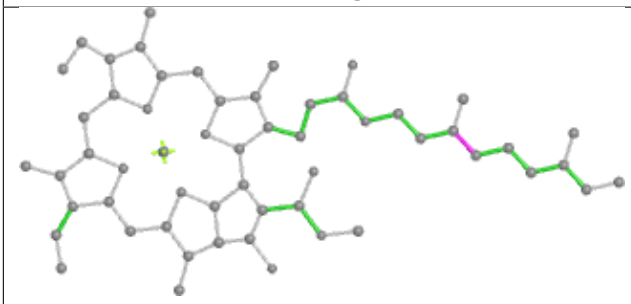
## Ligand CLA A 808



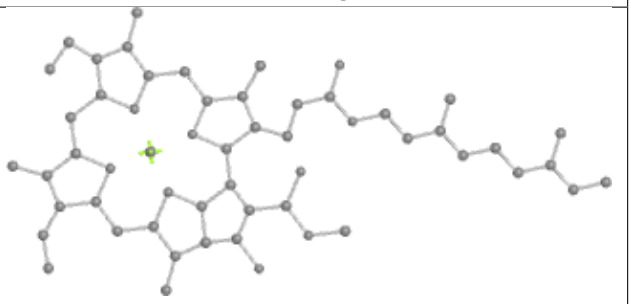
Bond lengths



Bond angles

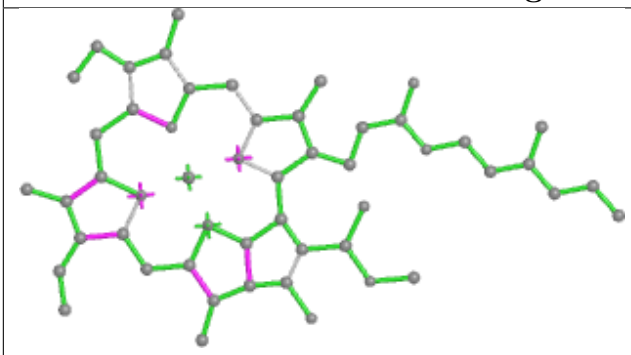


Torsions

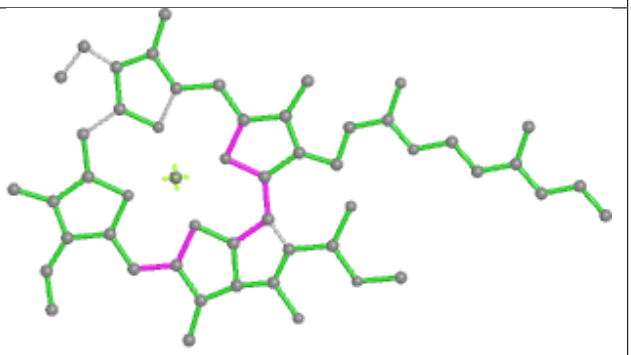


Rings

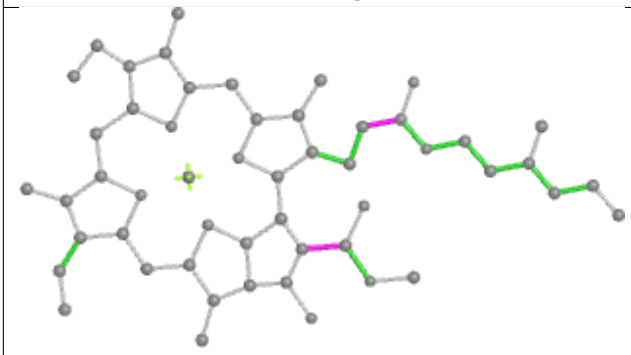
## Ligand CLA P 209



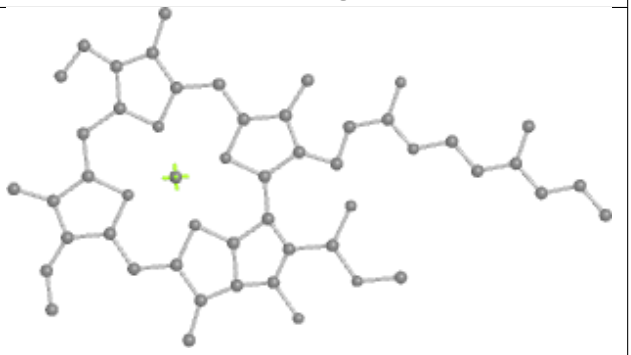
Bond lengths



Bond angles

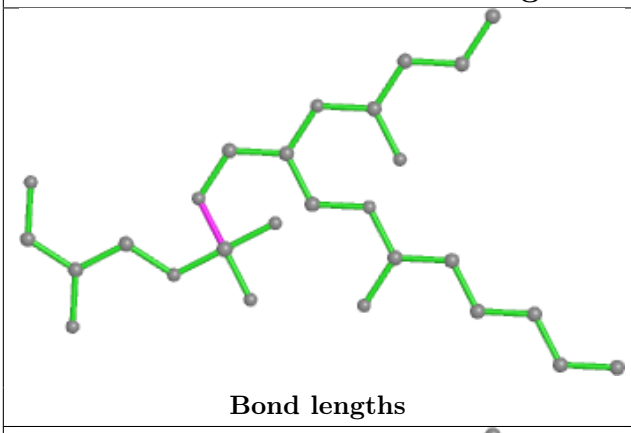


Torsions

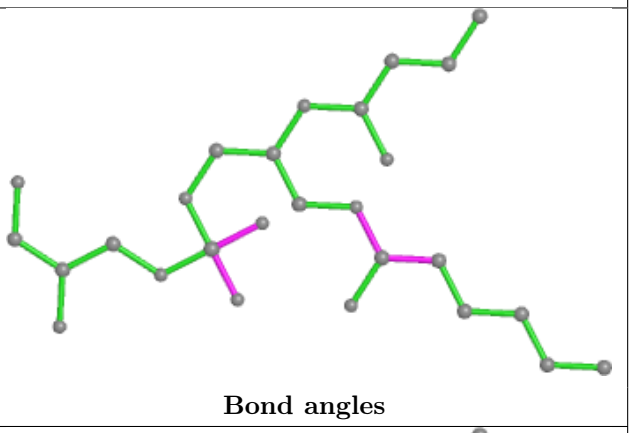


Rings

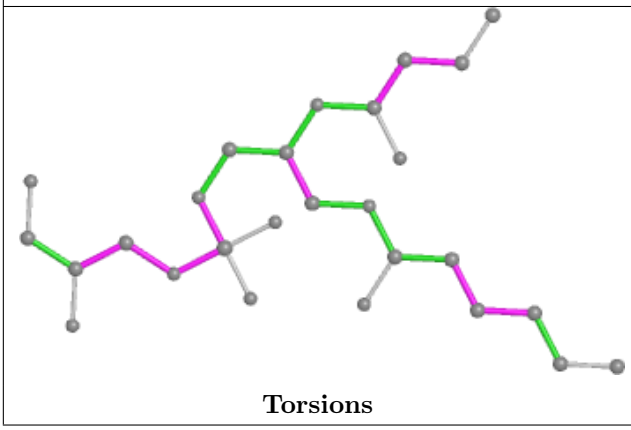
## Ligand LHG G 216



Bond lengths



Bond angles



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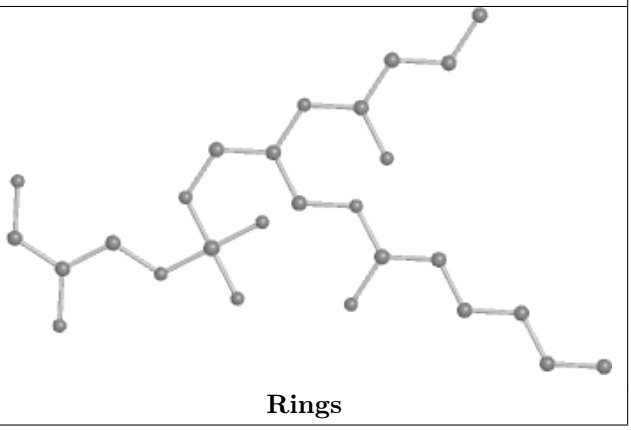
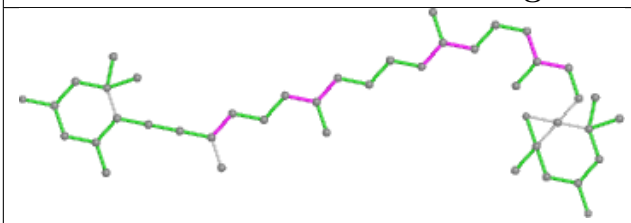
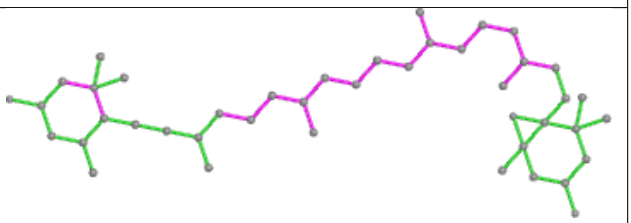


Rings

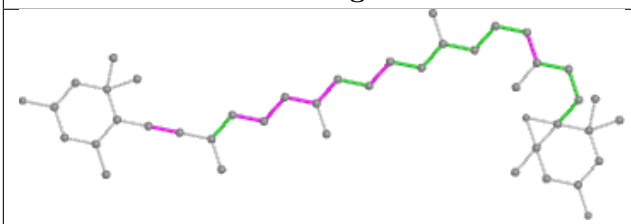
## Ligand DD6 G 214



Bond lengths



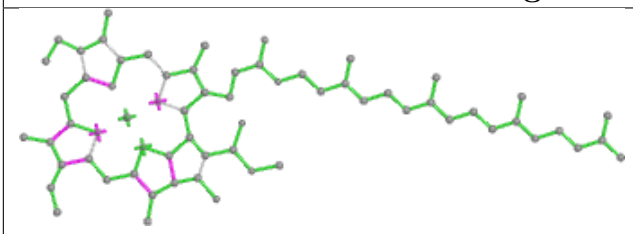
Bond angles



Torsions

Rings

## Ligand CLA A 853



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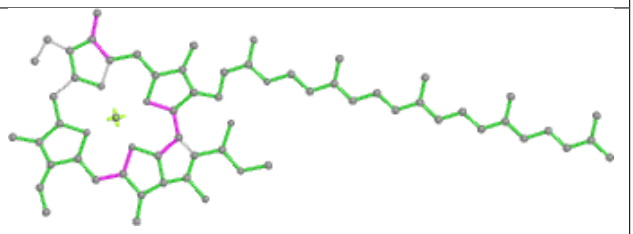
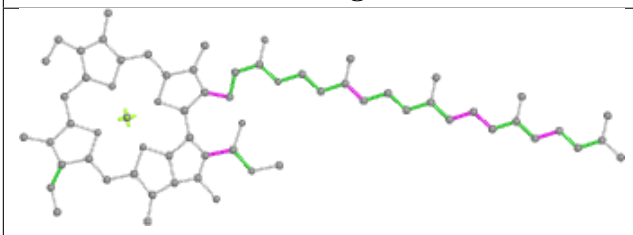
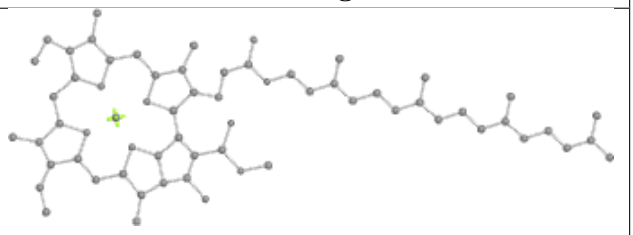


Bond angles

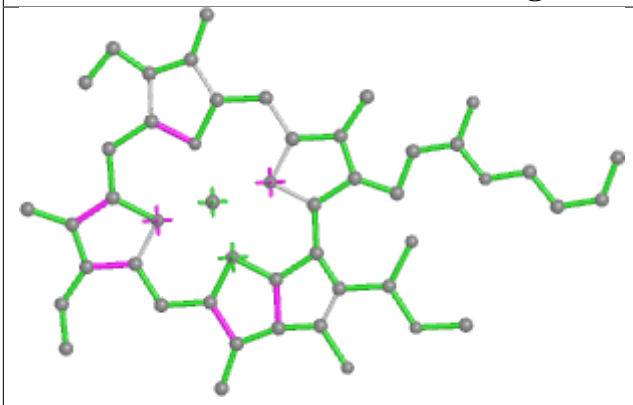


Torsions

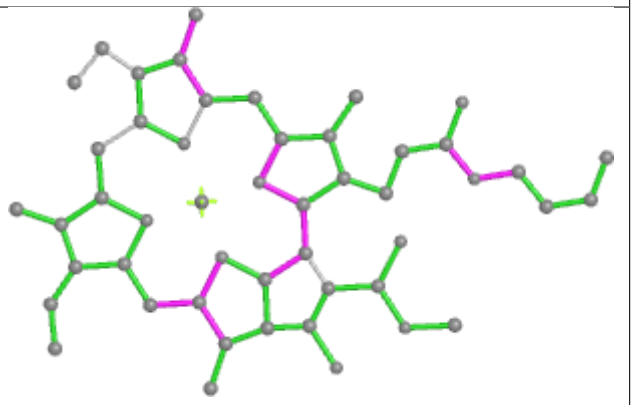


Rings

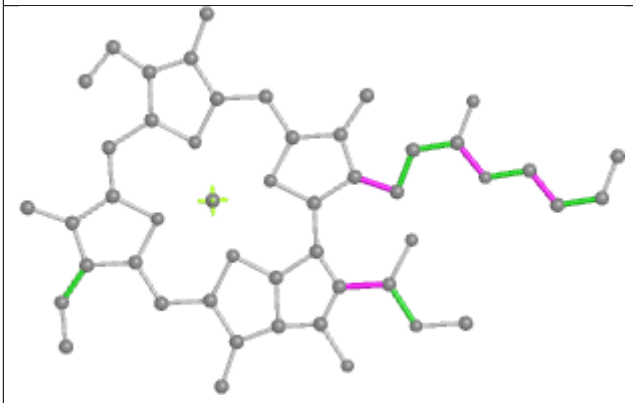
## Ligand CLA L 202



Bond lengths



Bond angles



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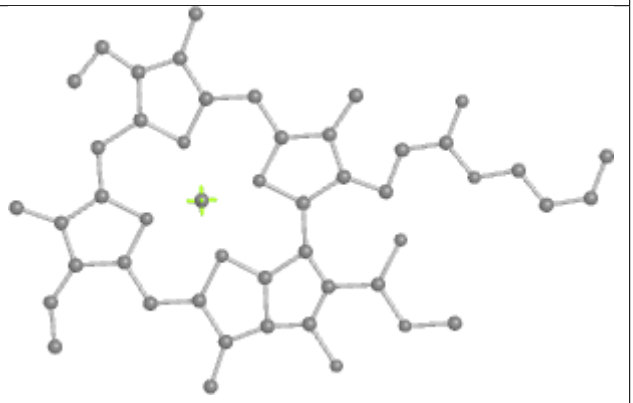
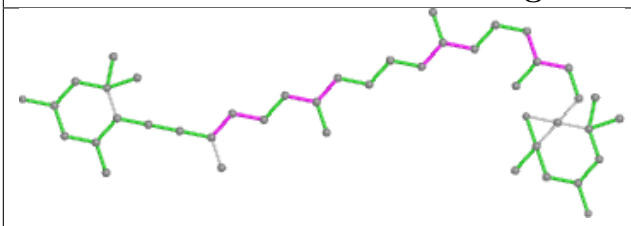


Rings

## Ligand DD6 O 201



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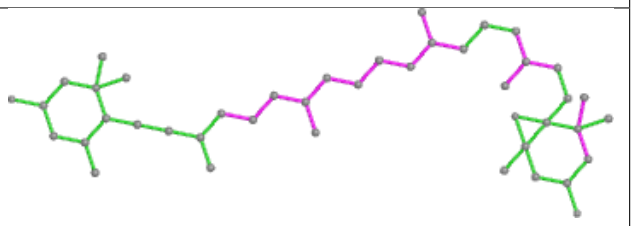
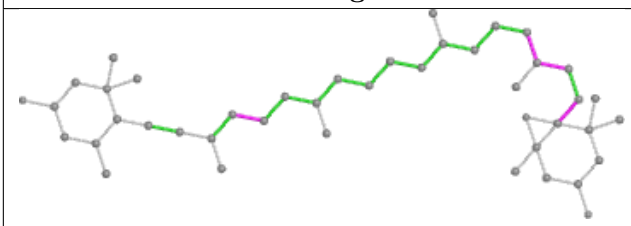
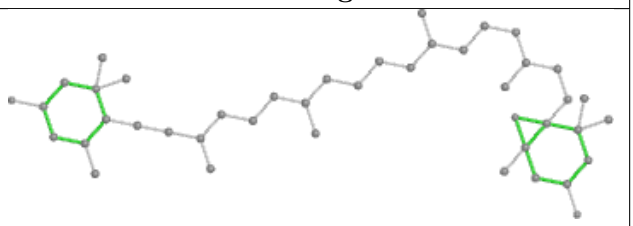


Bond angles

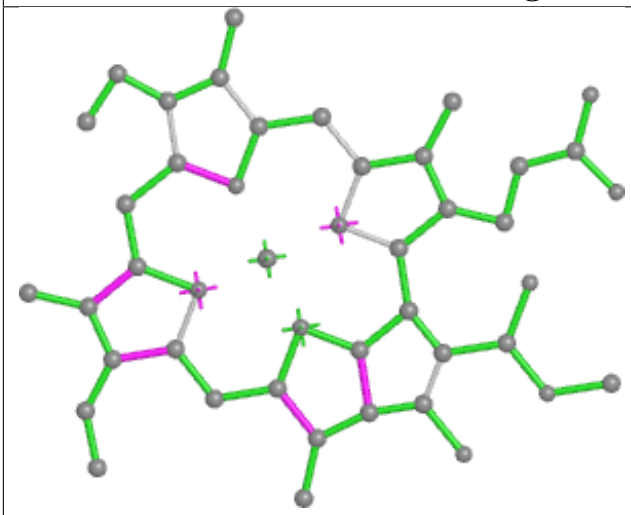


Torsions

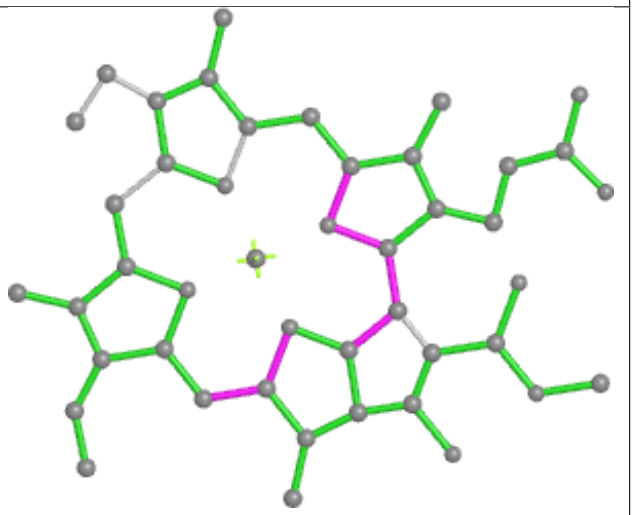


Rings

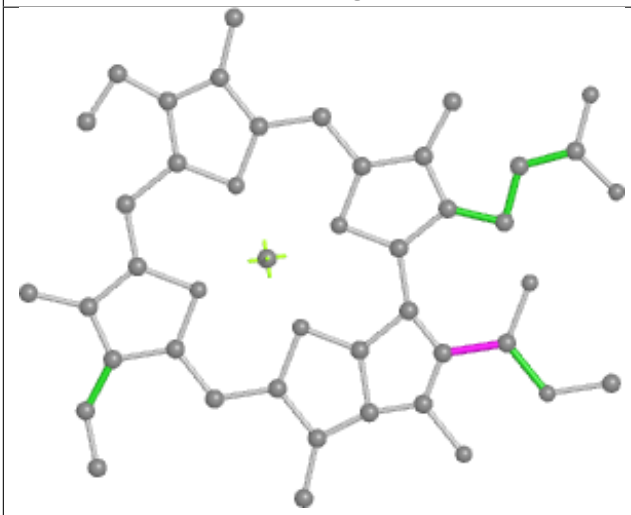
## Ligand CLA A 817



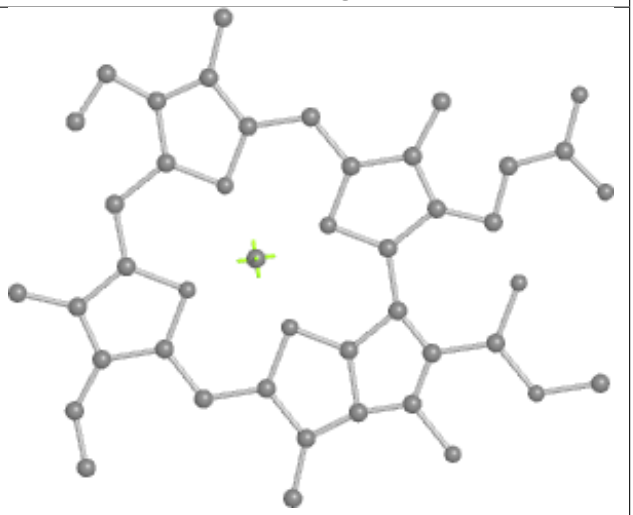
Bond lengths



Bond angles

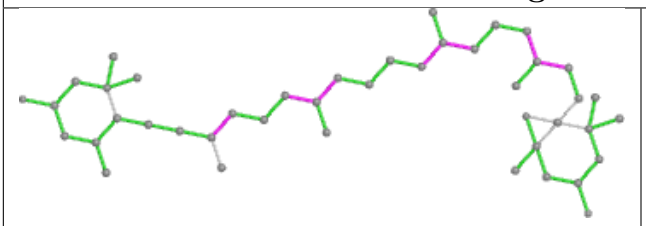


Torsions

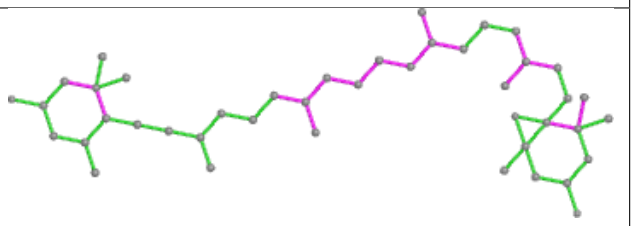


Rings

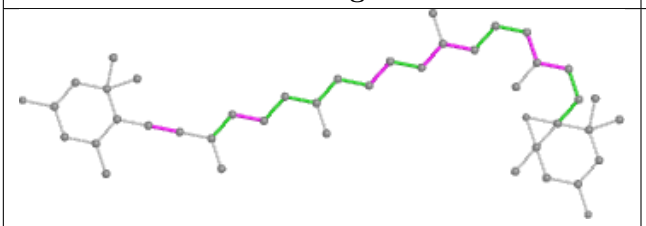
## Ligand DD6 S 205



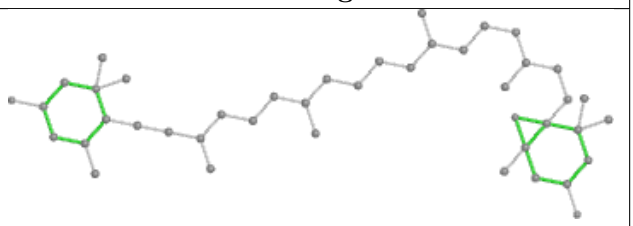
Bond lengths



Bond angles

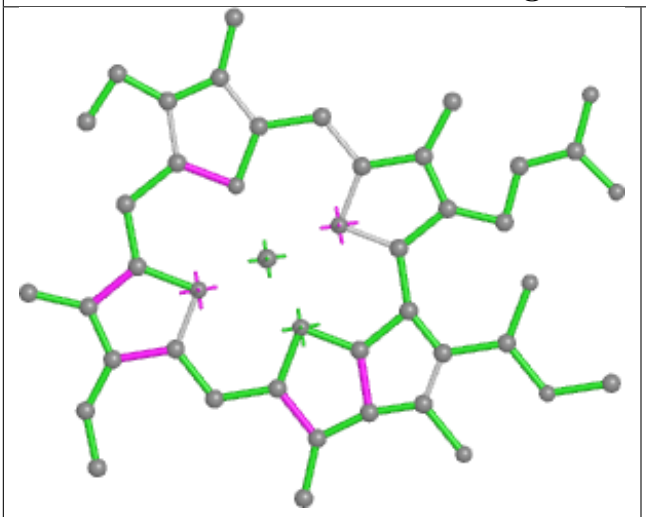


Torsions

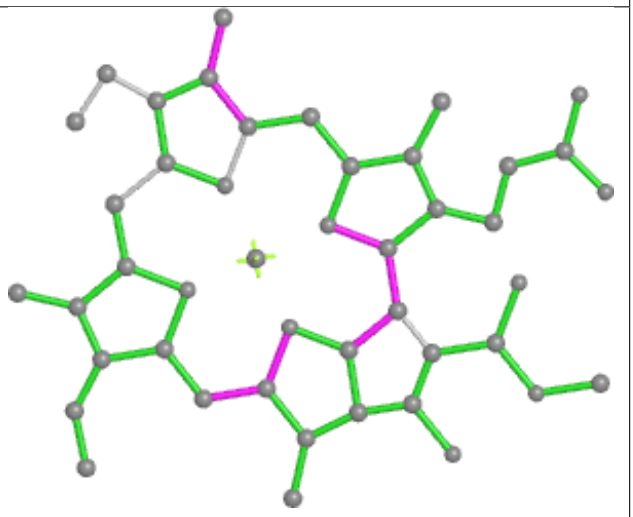


Rings

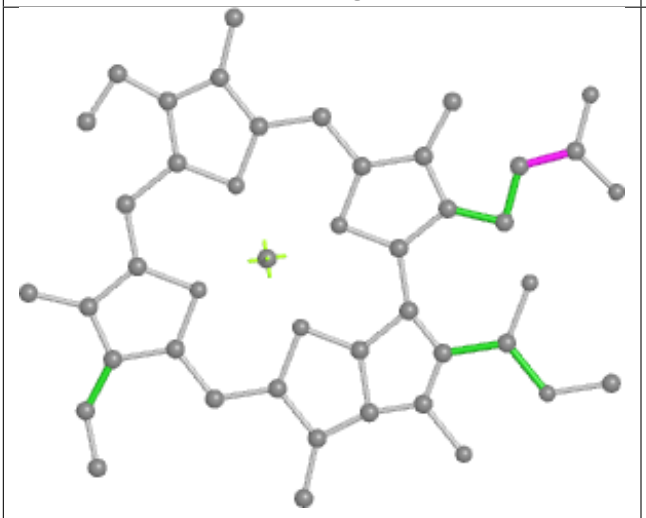
## Ligand CLA H 206



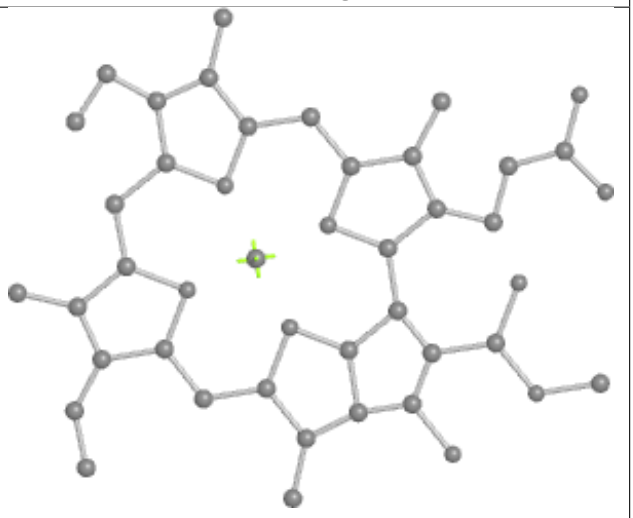
Bond lengths



Bond angles

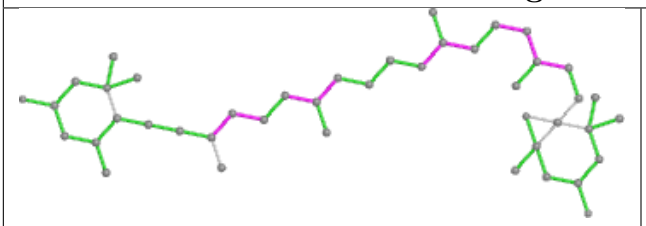


Torsions

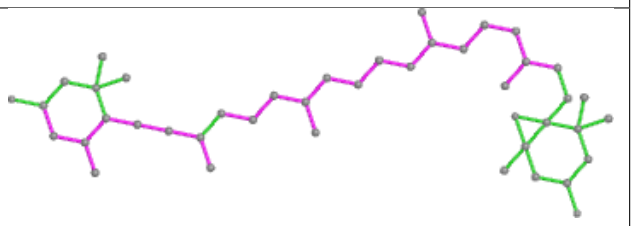


Rings

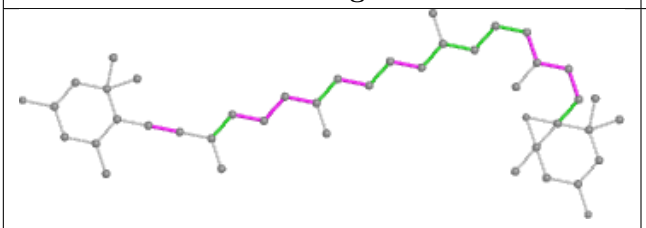
## Ligand DD6 T 213



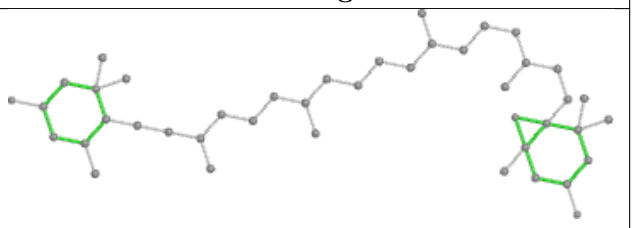
Bond lengths



Bond angles

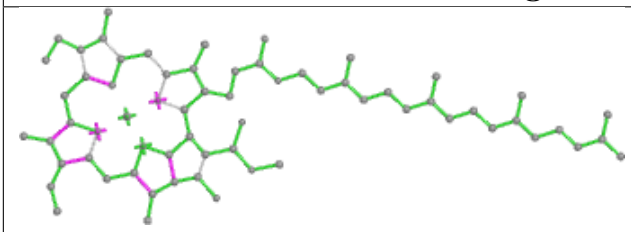


Torsions

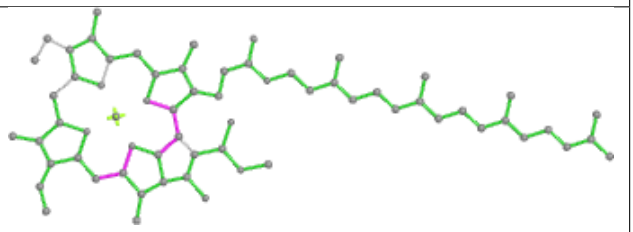


Rings

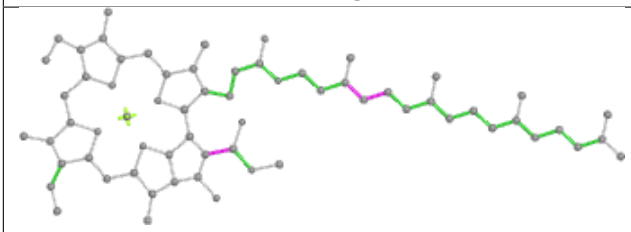
## Ligand CLA B 807



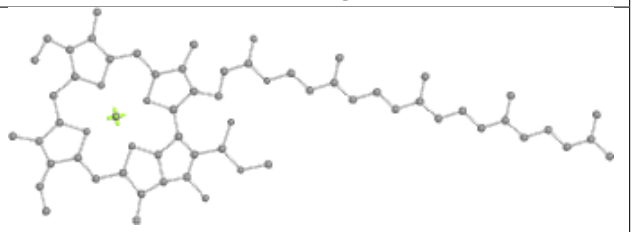
Bond lengths



Bond angles

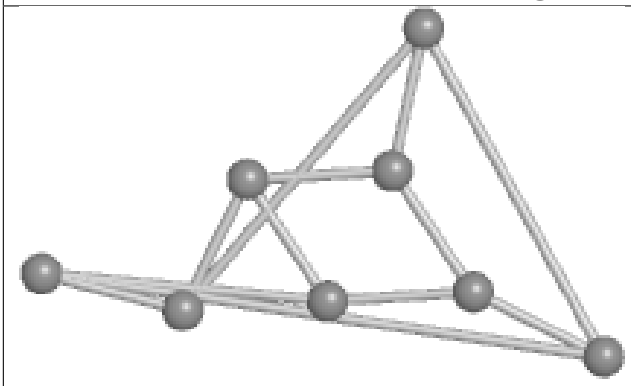


Torsions

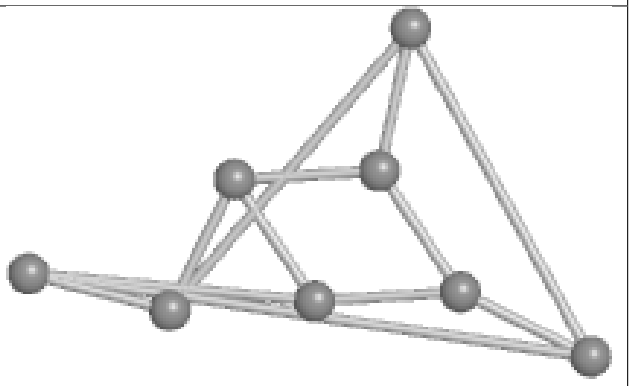


Rings

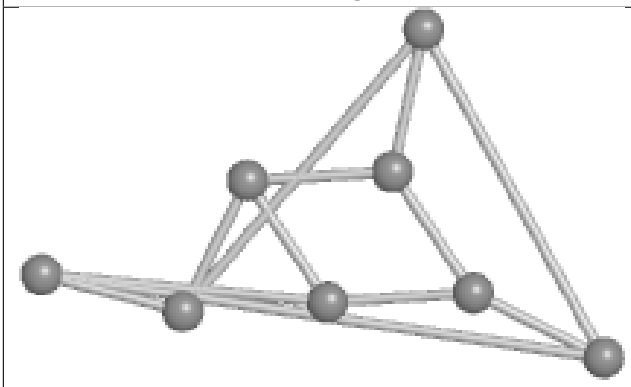
**Ligand SF4 C 101**



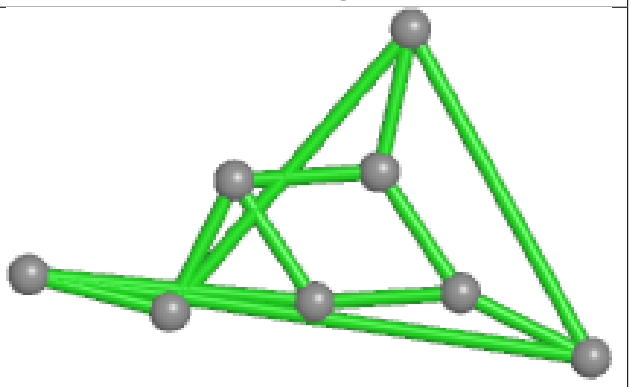
**Bond lengths**



**Bond angles**

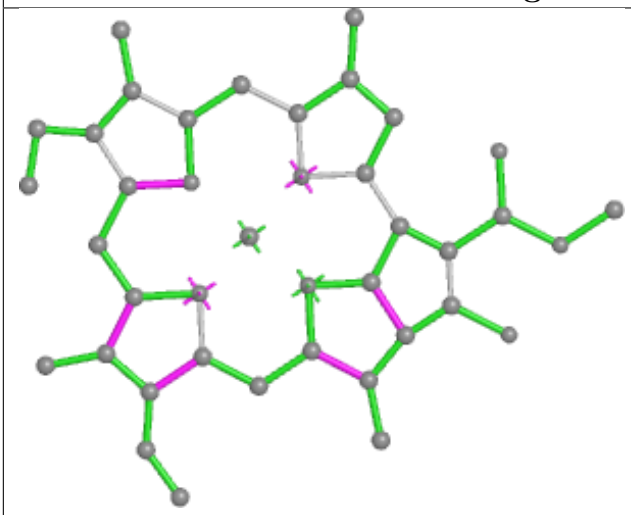


**Torsions**

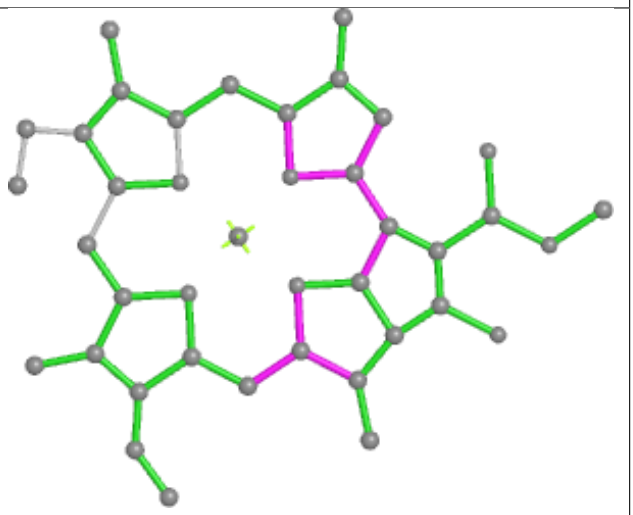


**Rings**

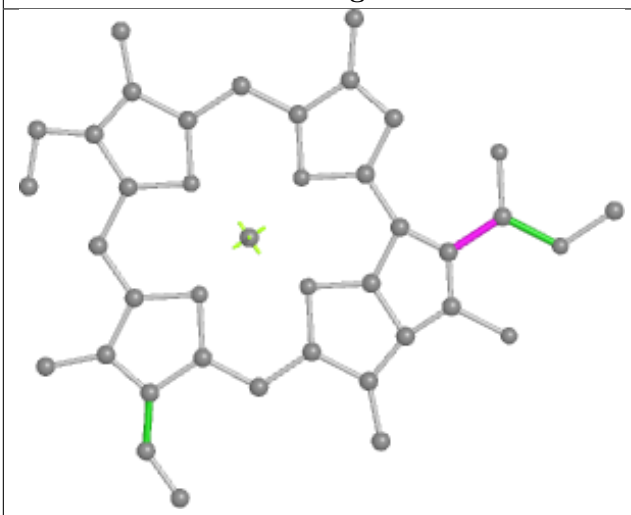
## Ligand CLA A 855



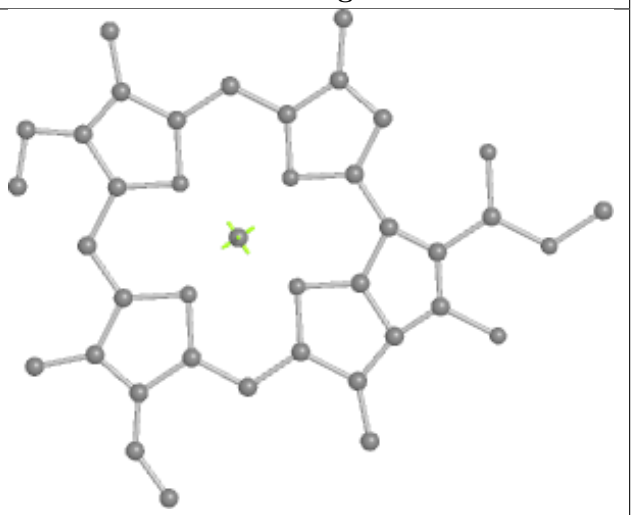
Bond lengths



Bond angles

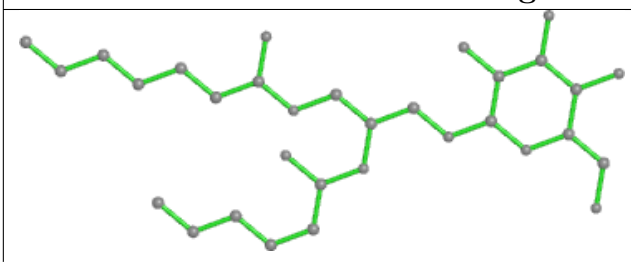


Torsions

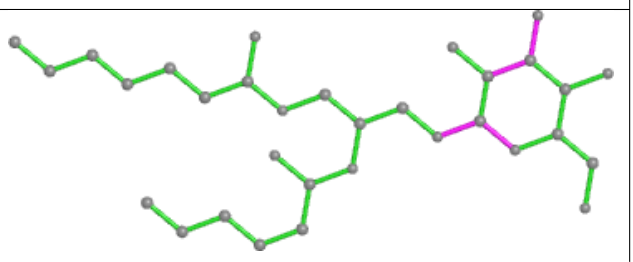


Rings

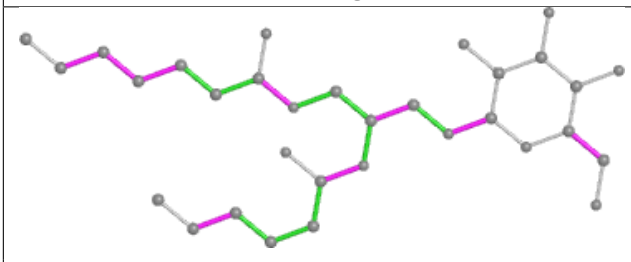
## Ligand LMG U 201



Bond lengths



Bond angles



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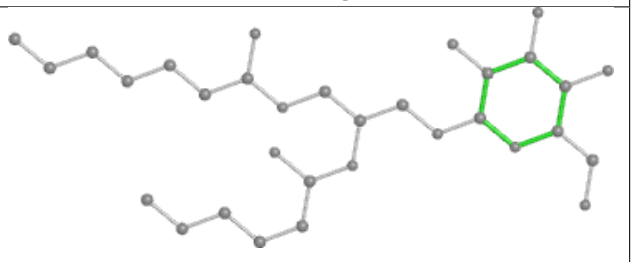
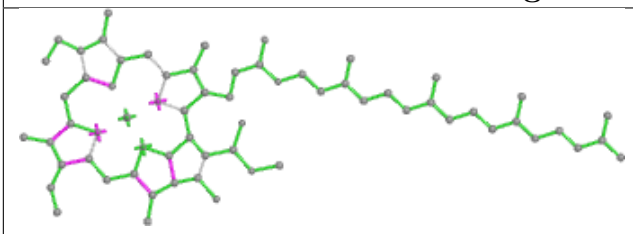
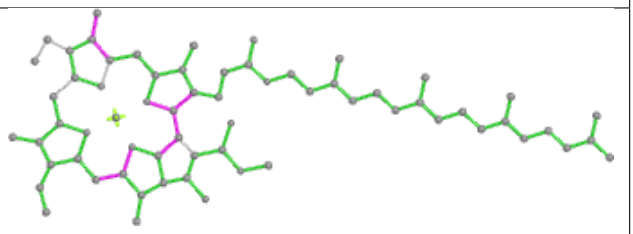


Rings

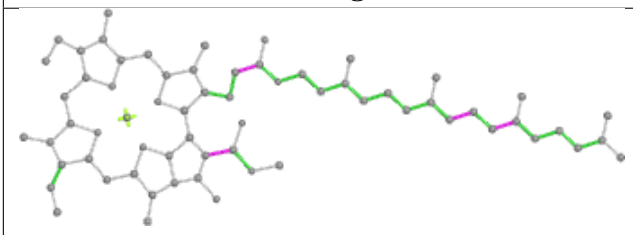
## Ligand CLA A 801



Bond lengths



Bond angles



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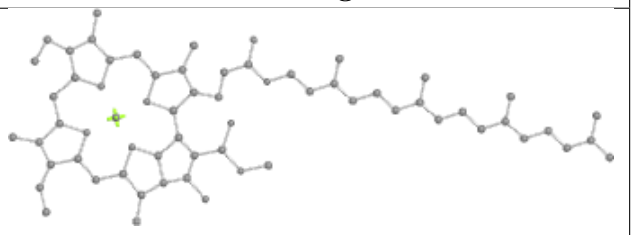
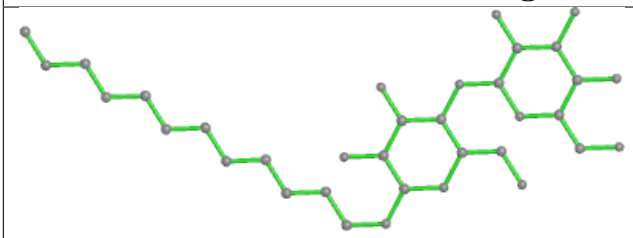
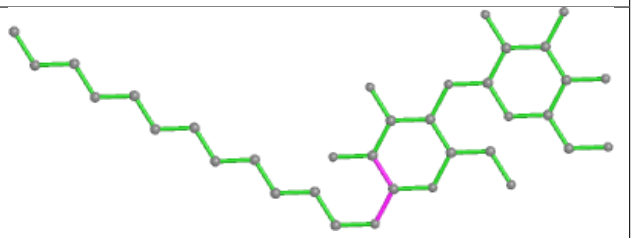


Rings

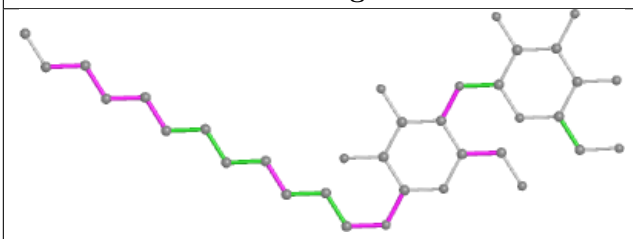
## Ligand LMU A 857



Bond lengths



Bond angles



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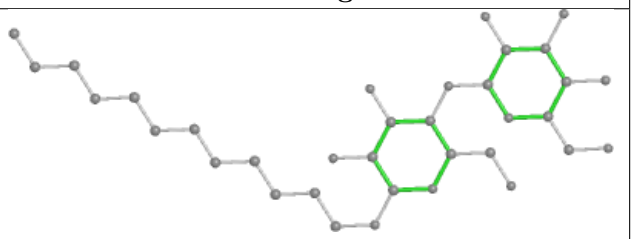
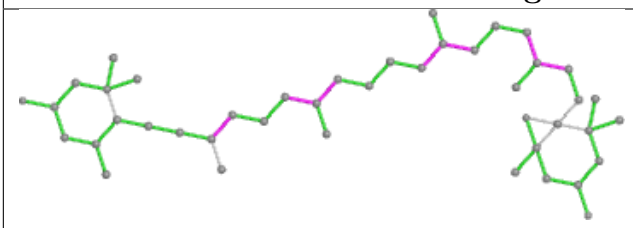
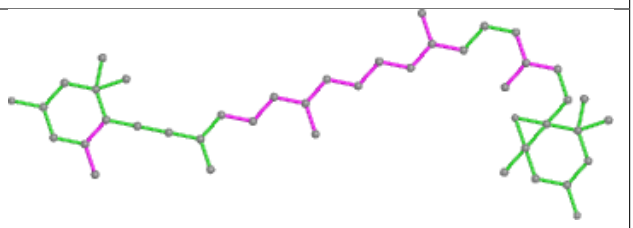


Rings

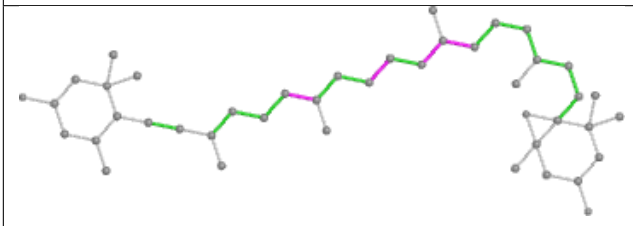
## Ligand DD6 G 212



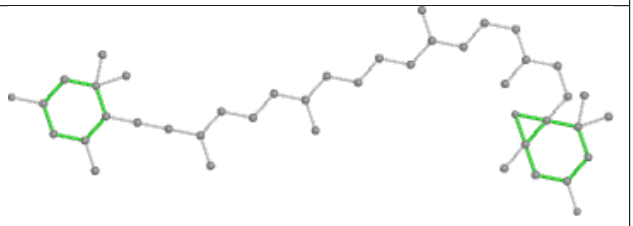
Bond lengths



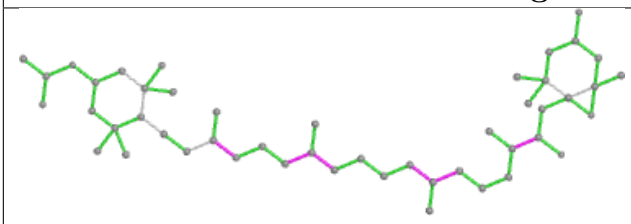
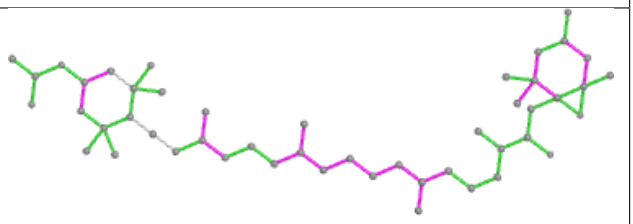
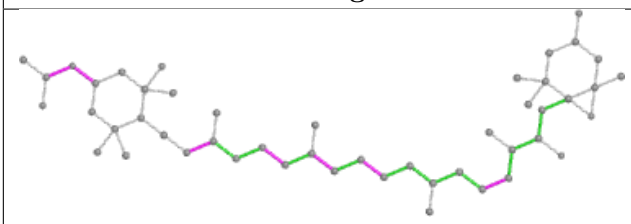
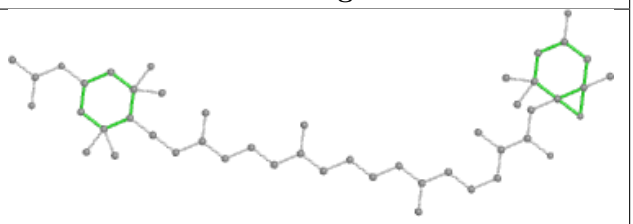
Bond angles

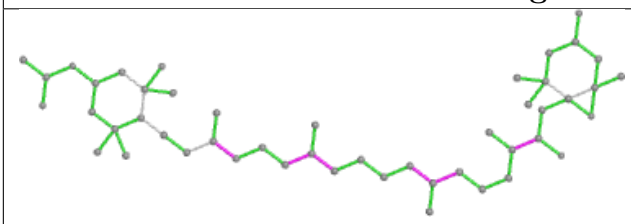
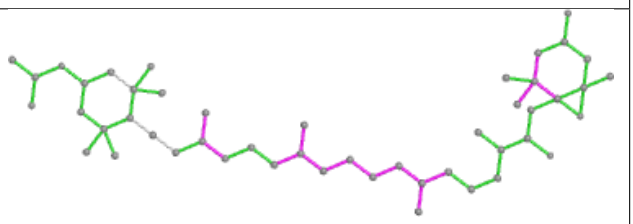
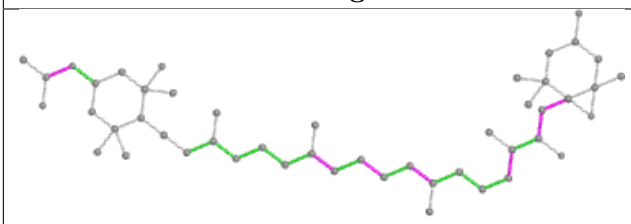
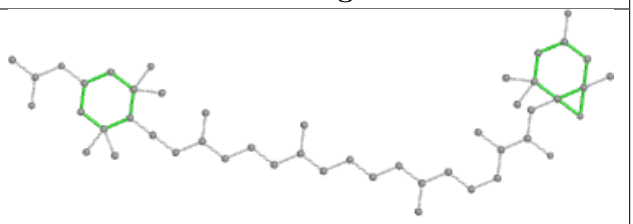


Torsions

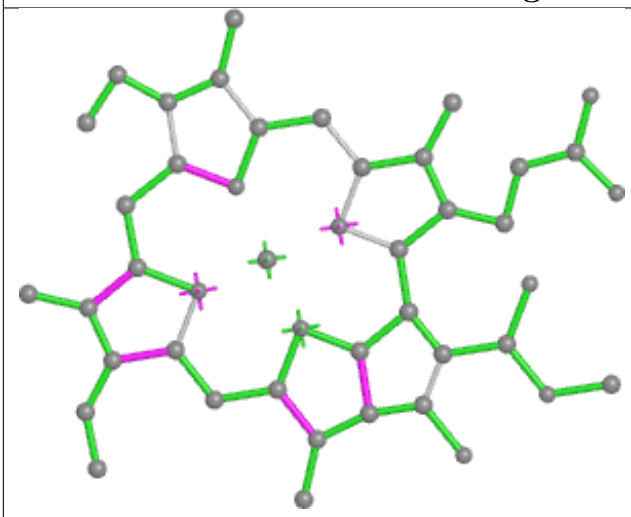


Rings

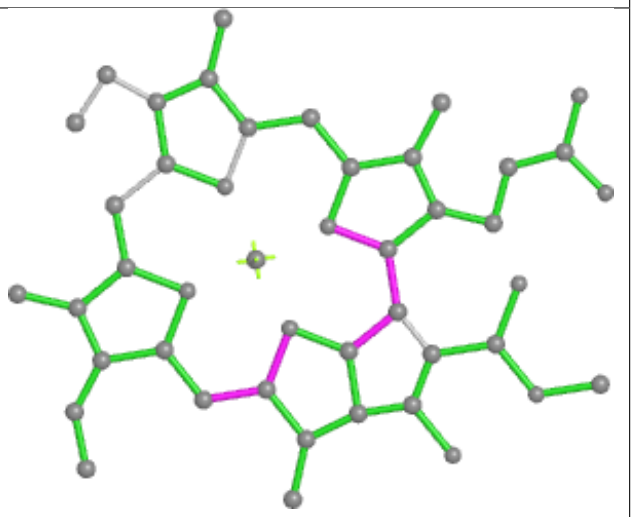
| Ligand A86 P 204 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand A86 R 105 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

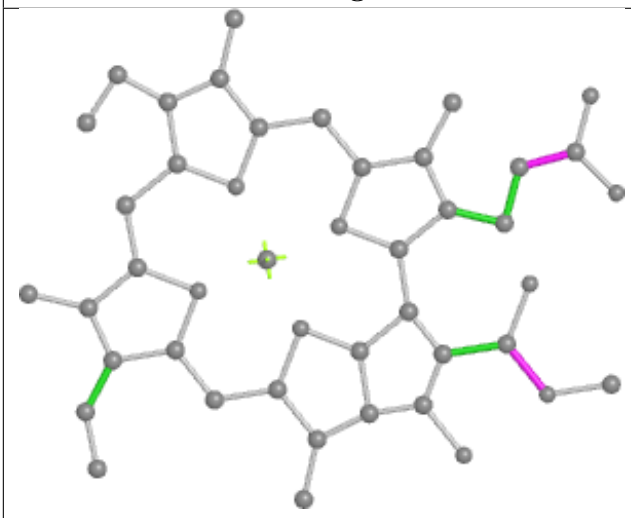
## Ligand CLA G 210



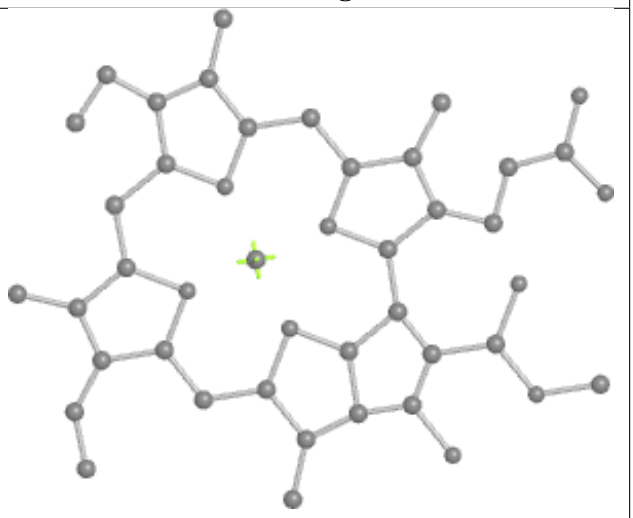
Bond lengths



Bond angles

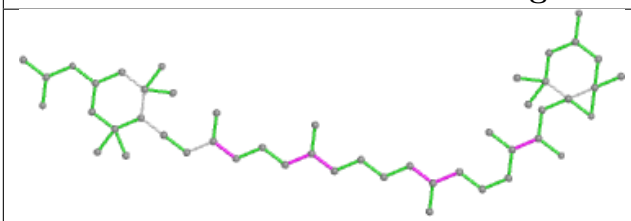


Torsions

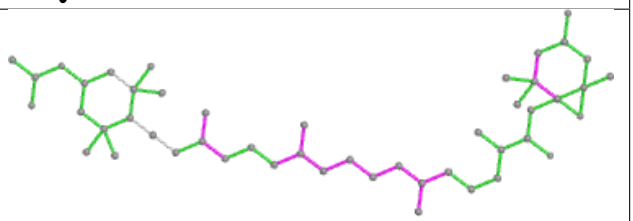


Rings

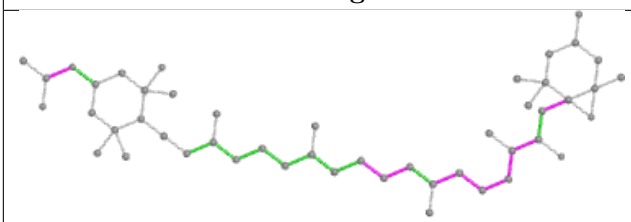
## Ligand A86 Q 201



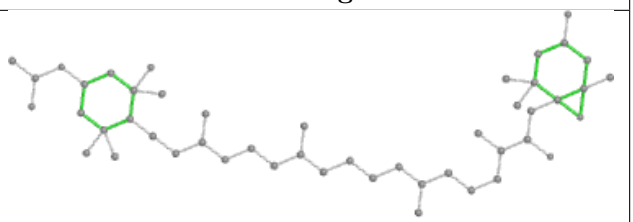
Bond lengths



Bond angles

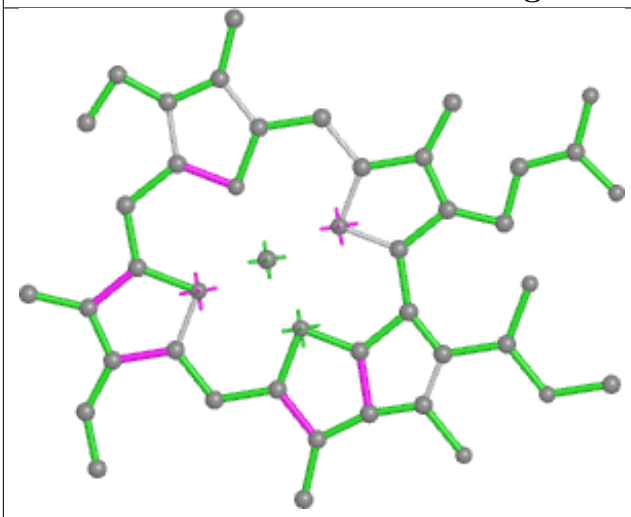


Torsions

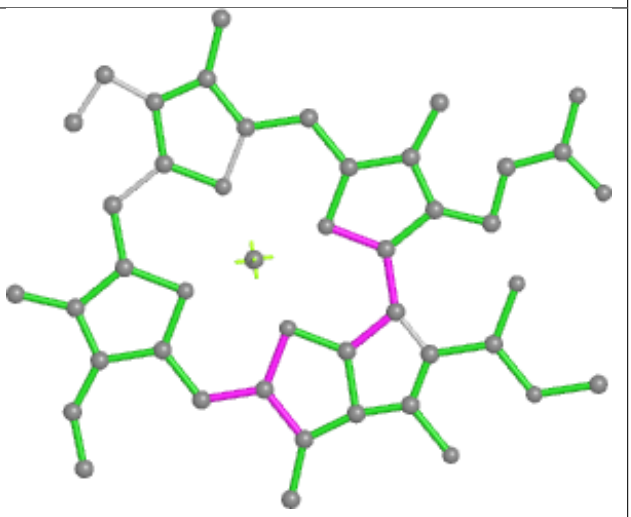


Rings

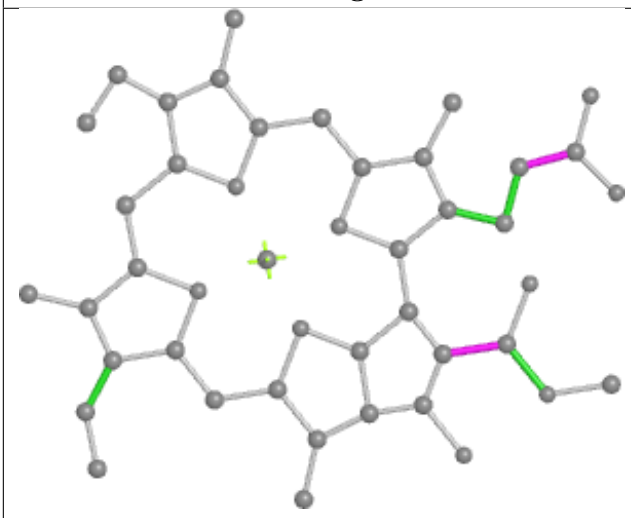
## Ligand CLA A 831



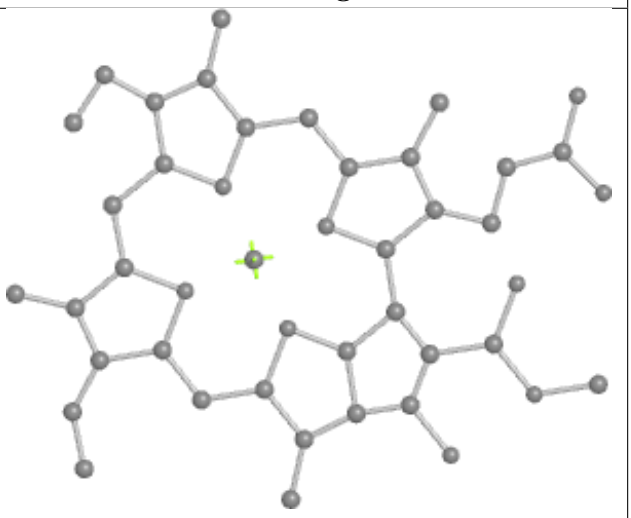
Bond lengths



Bond angles

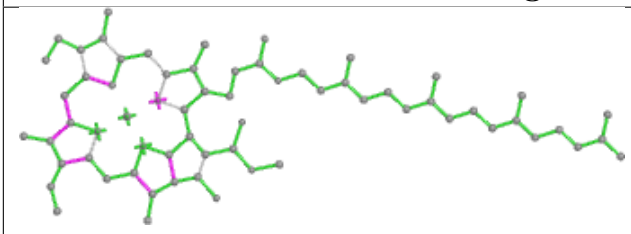


Torsions

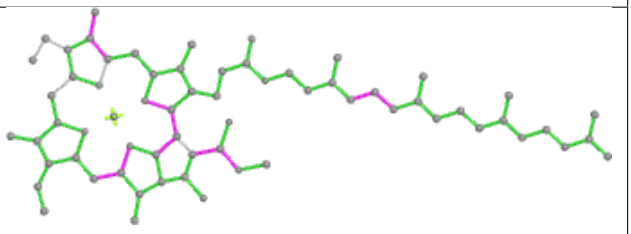


Rings

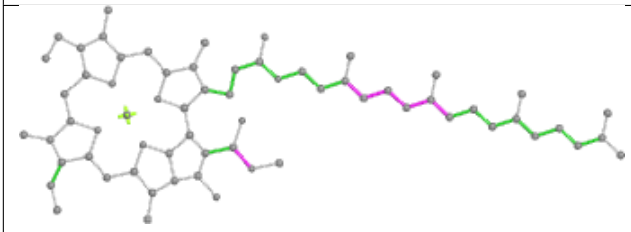
## Ligand CLA O 209



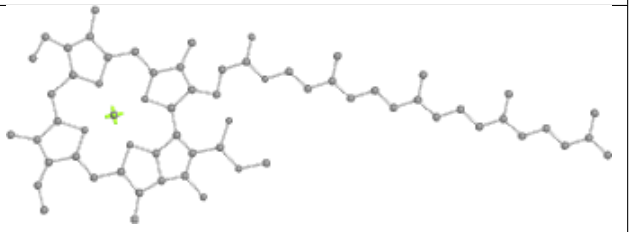
Bond lengths



Bond angles

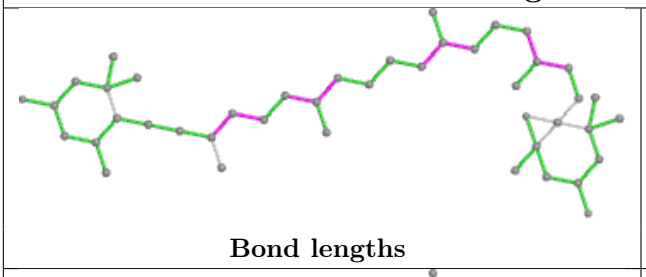


Torsions

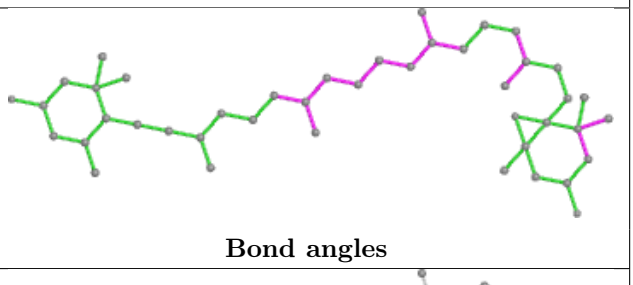


Rings

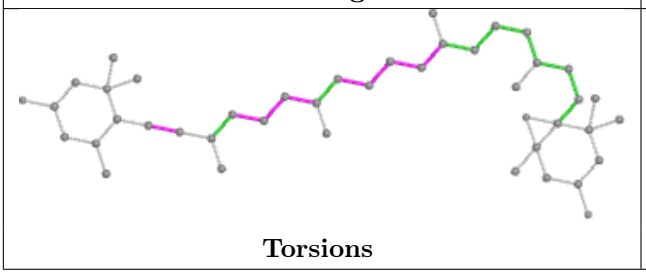
## Ligand DD6 O 212



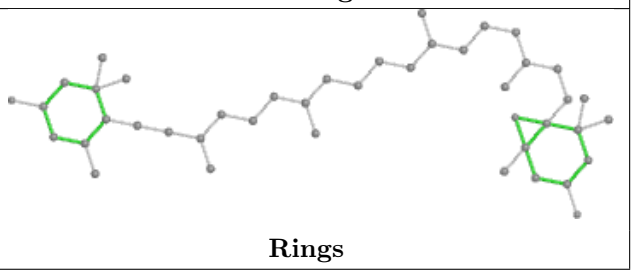
Bond lengths



Bond angles

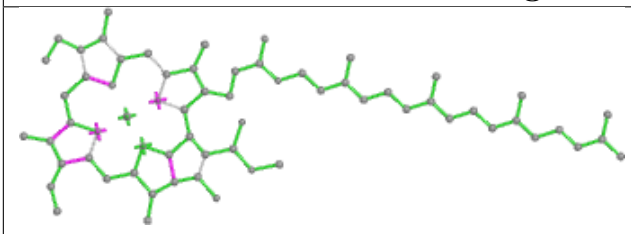


Torsions

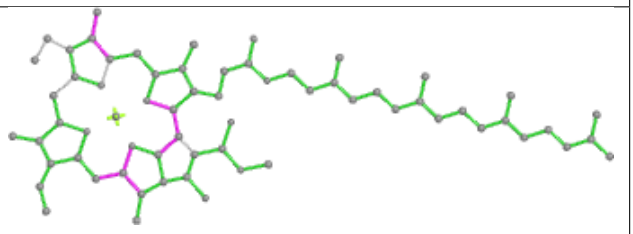


Rings

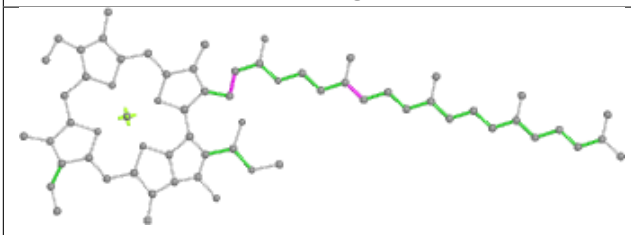
## Ligand CLA A 850



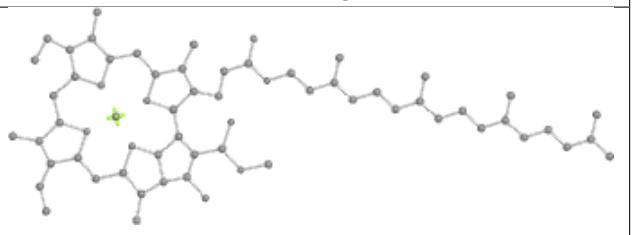
Bond lengths



Bond angles

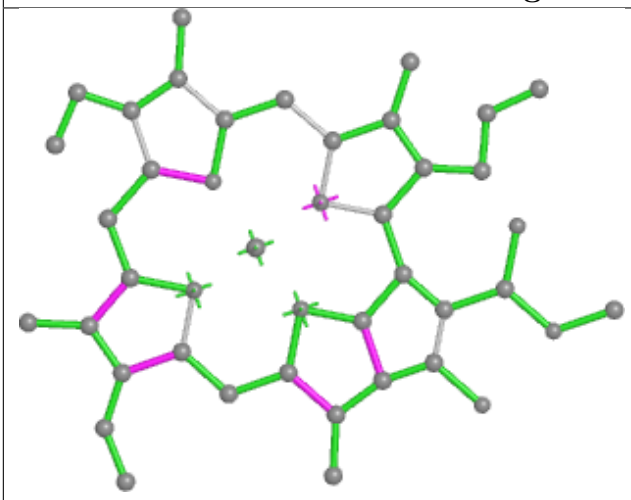


Torsions

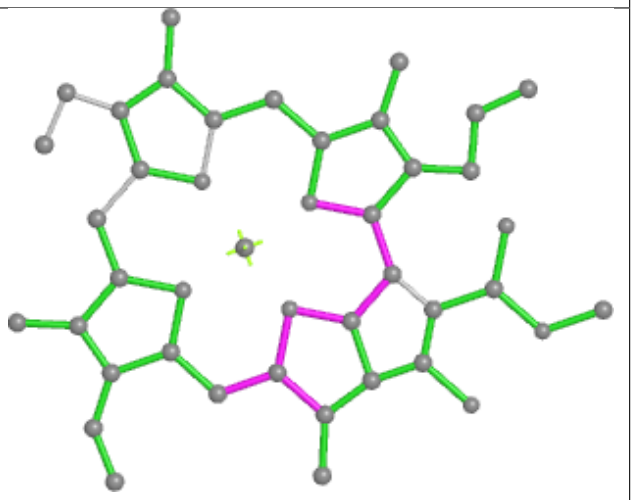


Rings

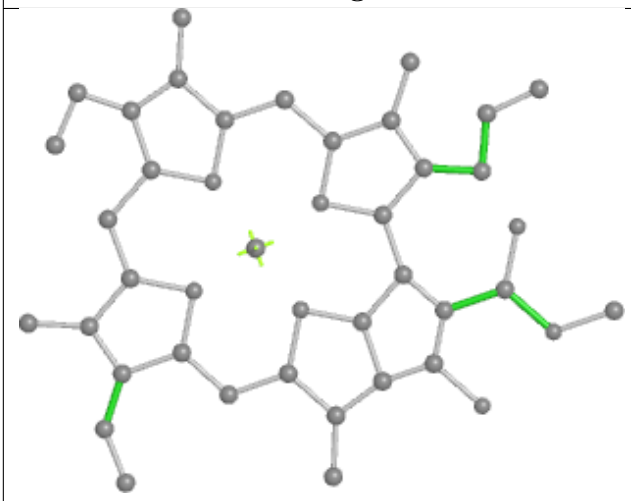
## Ligand CLA O 202



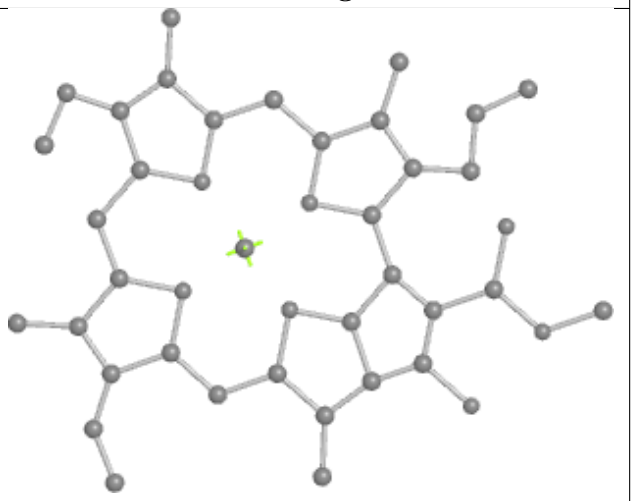
Bond lengths



Bond angles

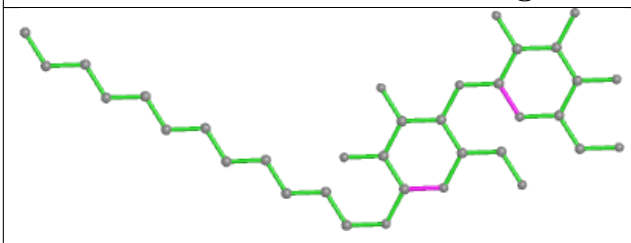


Torsions

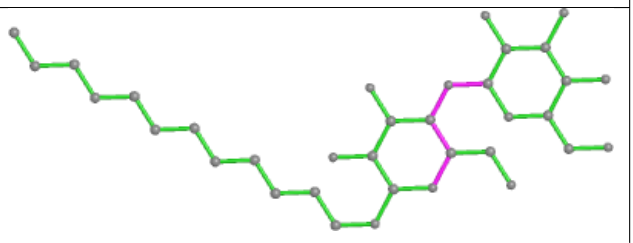


Rings

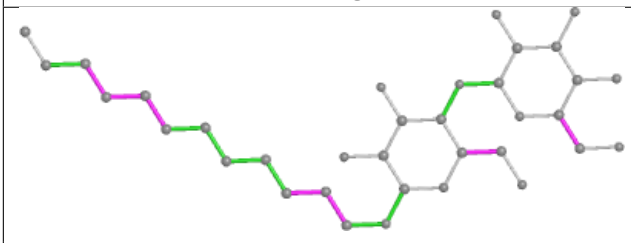
## Ligand LMU M 102



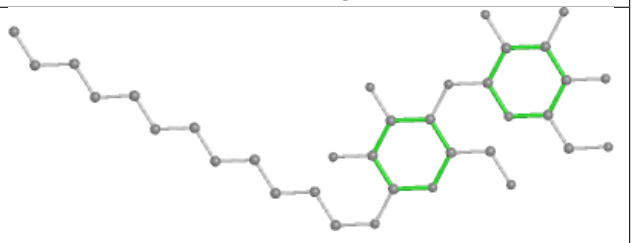
Bond lengths



Bond angles

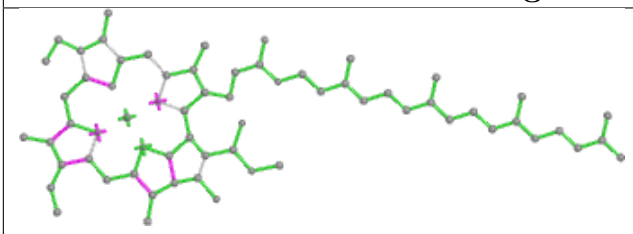


Torsions

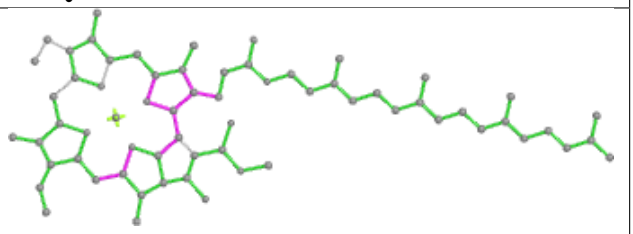


Rings

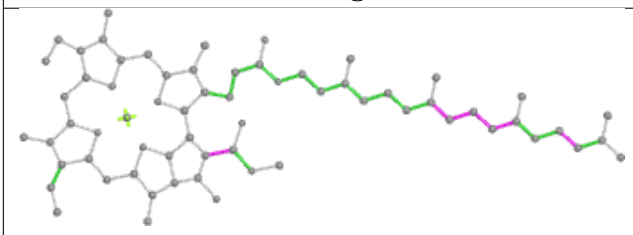
## Ligand CLA Q 212



Bond lengths



Bond angles



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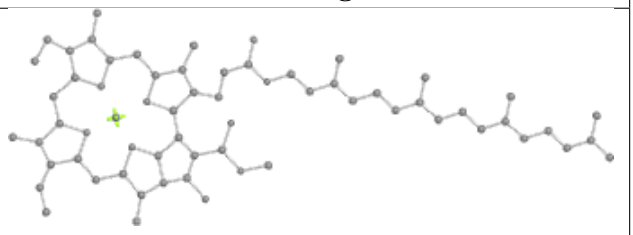
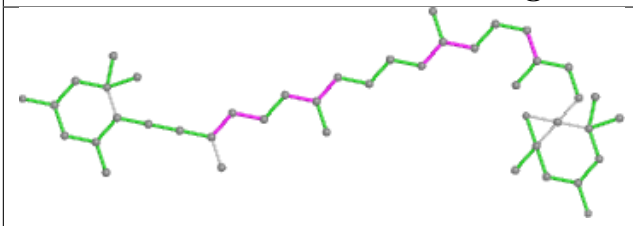
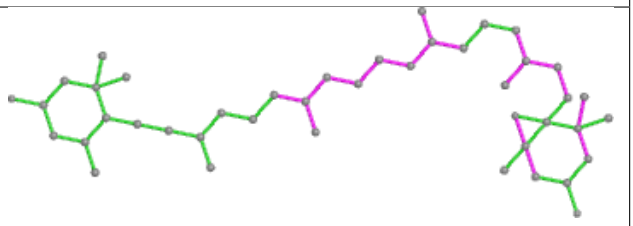


Rings

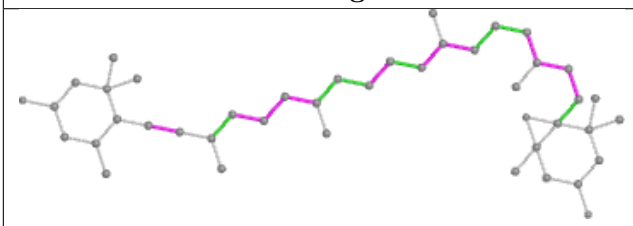
## Ligand DD6 O 215



Bond lengths



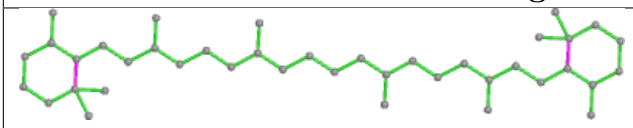
Bond angles



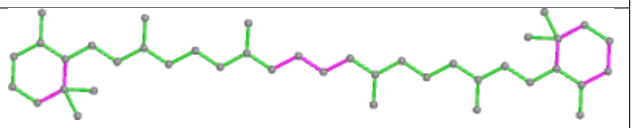
Torsions

Rings

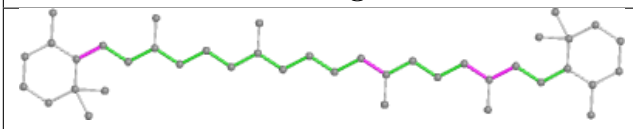
## Ligand BCR I 101



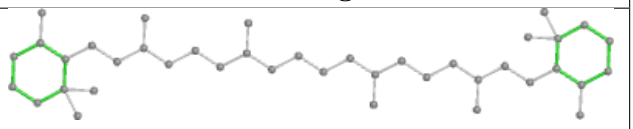
Bond lengths



Bond angles

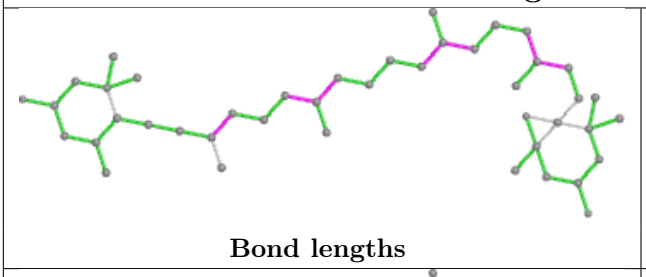


Torsions

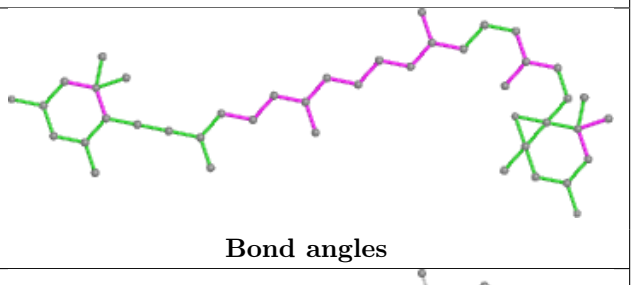


Rings

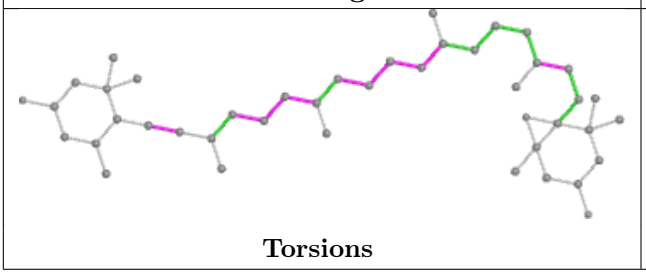
## Ligand DD6 U 203



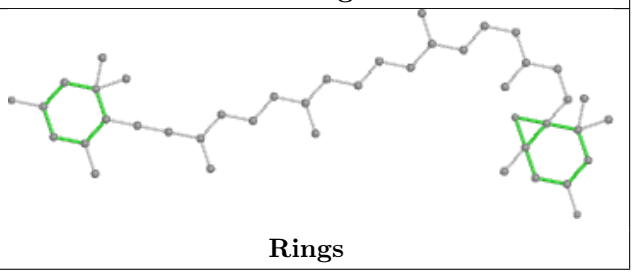
Bond lengths



Bond angles

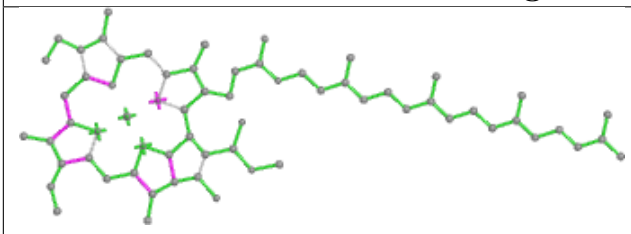


Torsions



Rings

## Ligand CLA A 854



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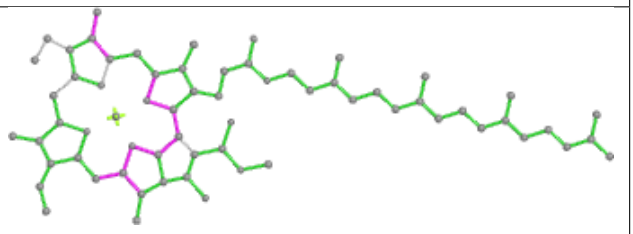
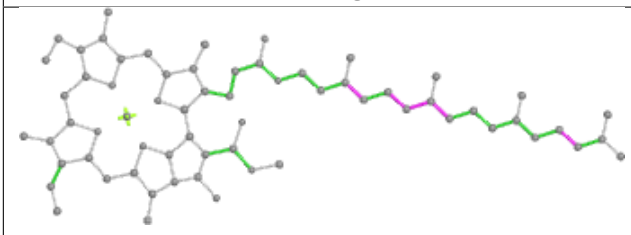
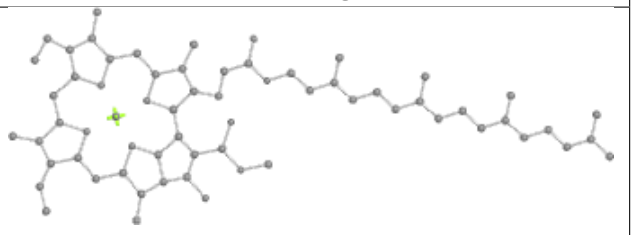


Bond angles

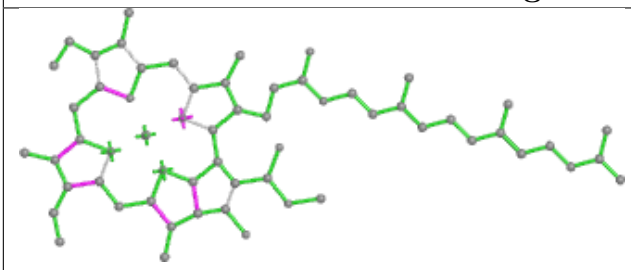


Torsions

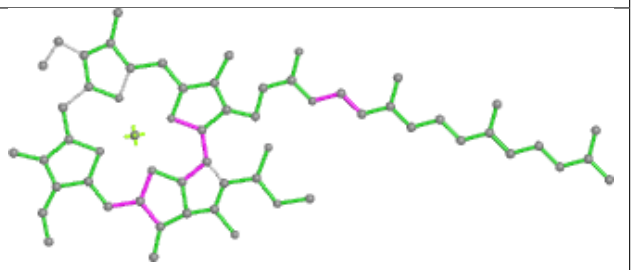


Rings

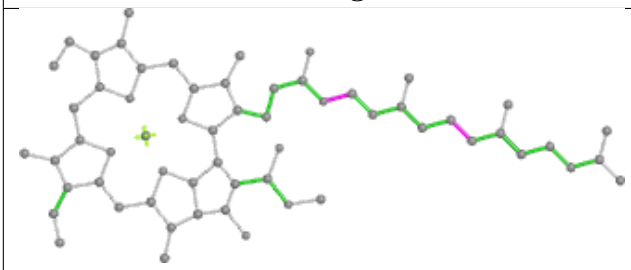
## Ligand CLA O 208



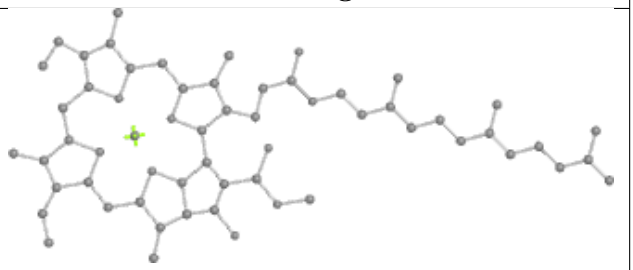
Bond lengths



Bond angles

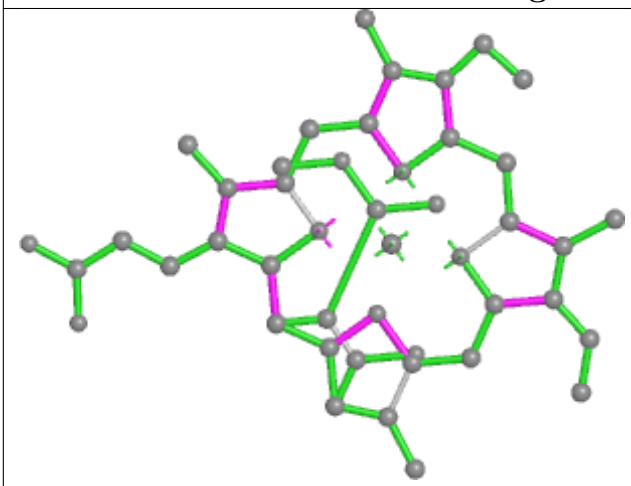


Torsions

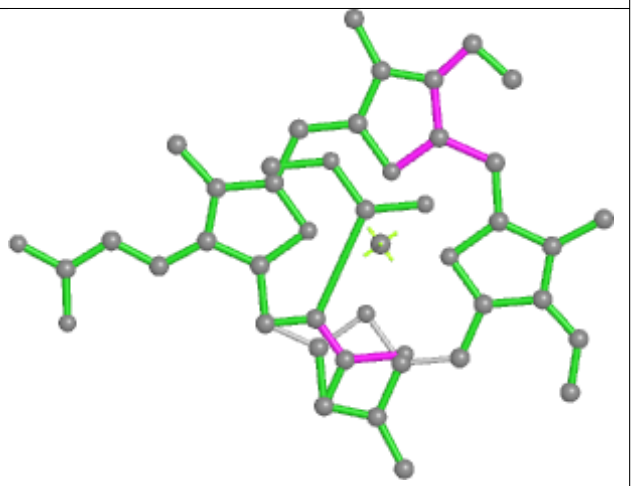


Rings

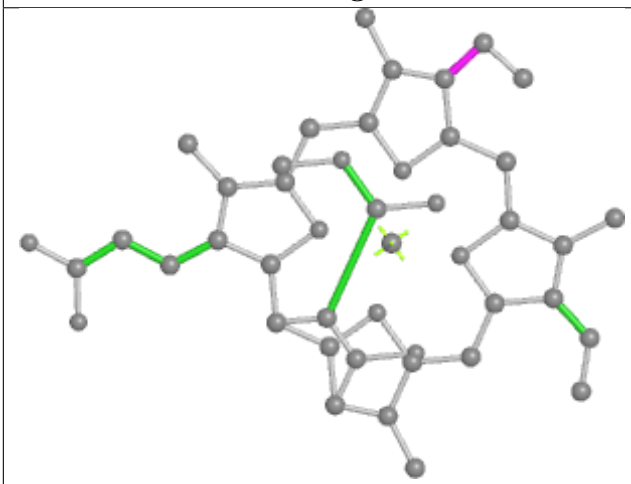
## Ligand KC1 S 210



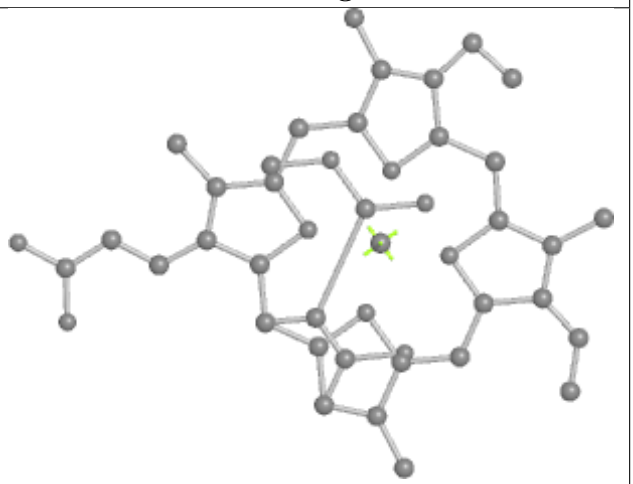
Bond lengths



Bond angles

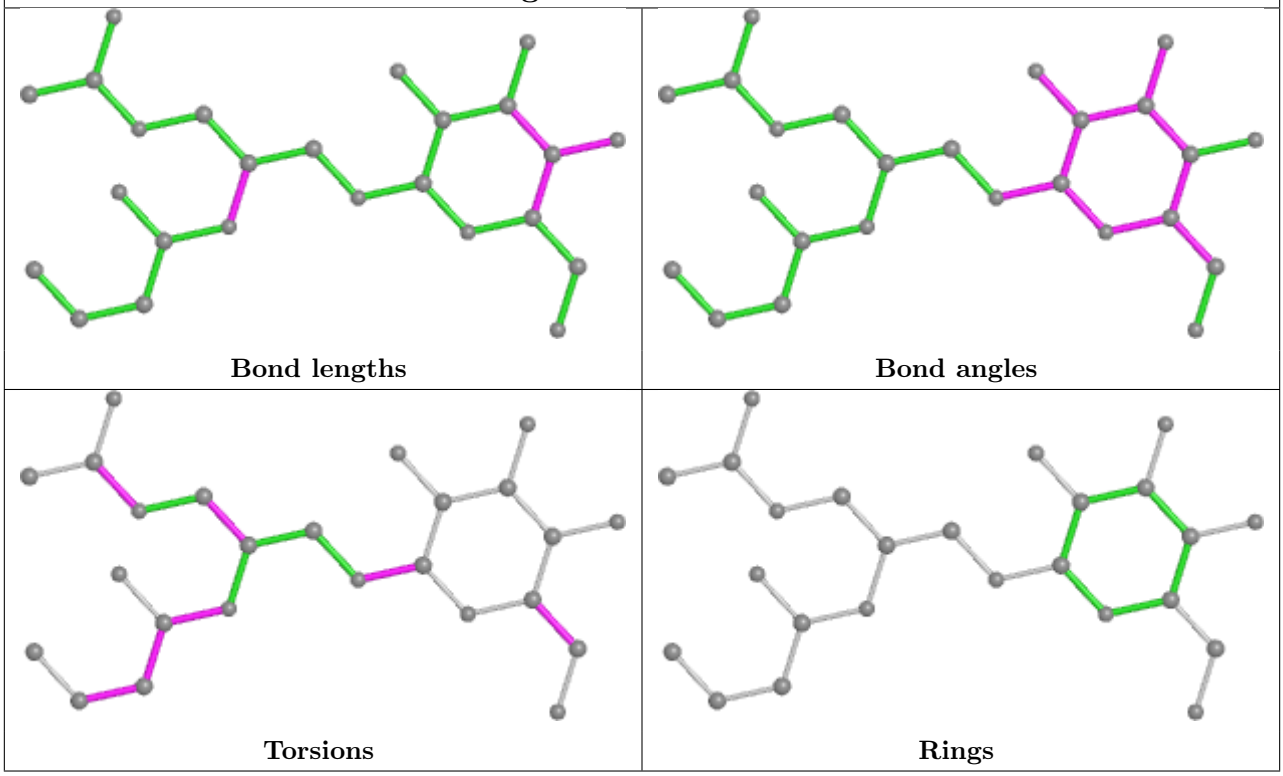


Torsions

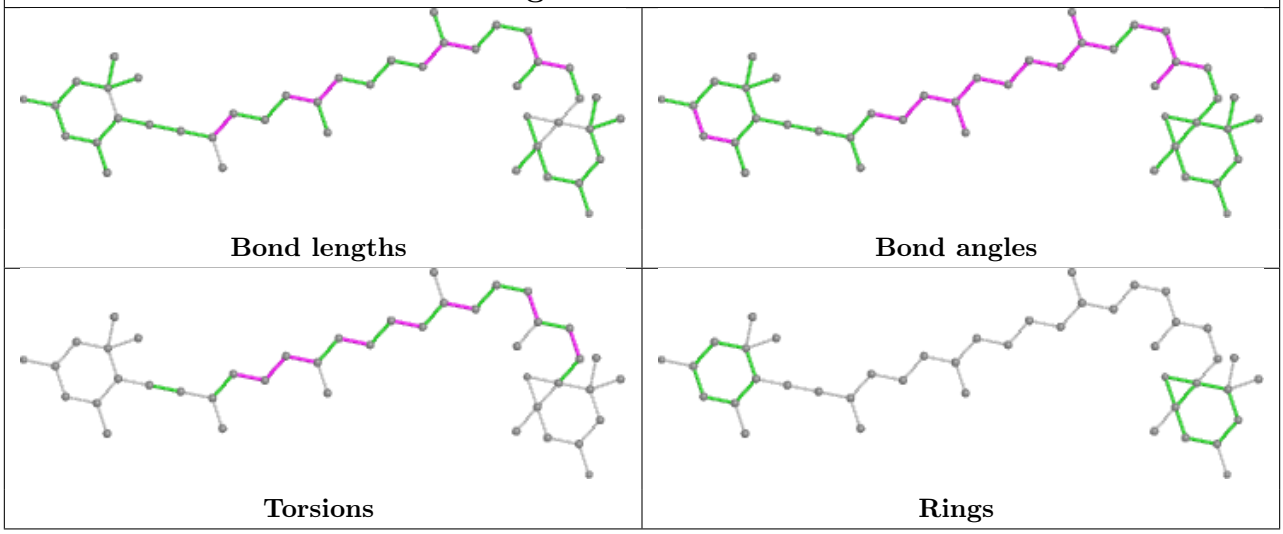


Rings

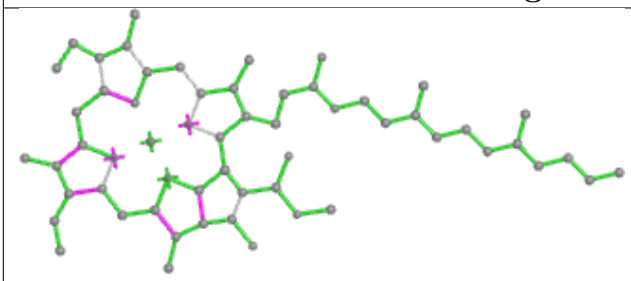
## Ligand LMG P 217



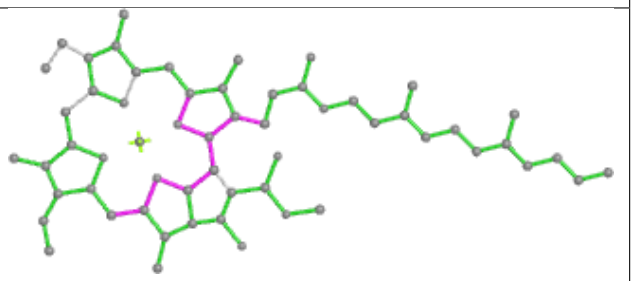

## Ligand DD6 P 220



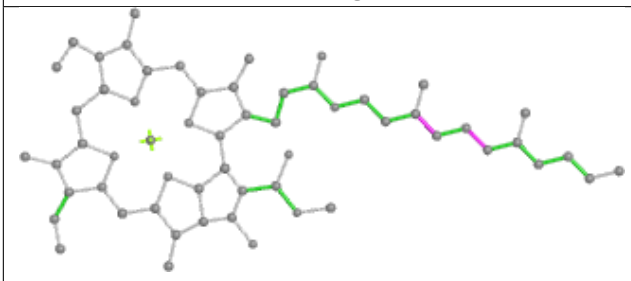
## Ligand CLA B 827



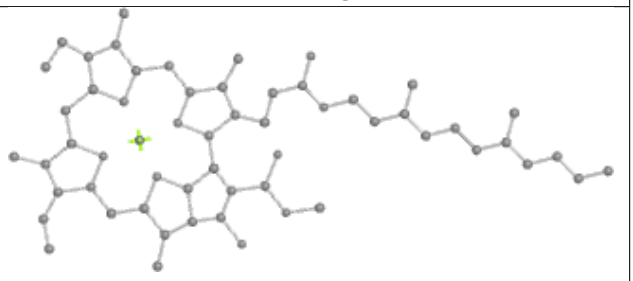
Bond lengths



Bond angles

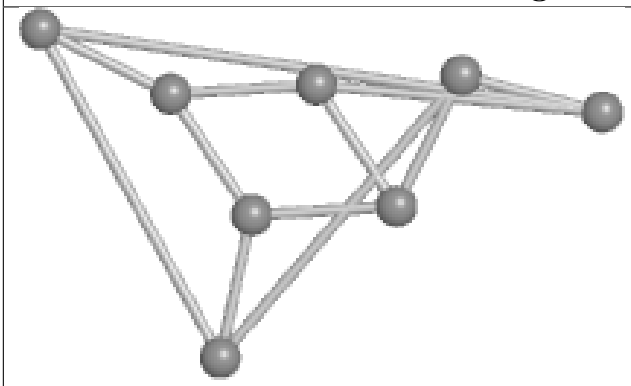


Torsions

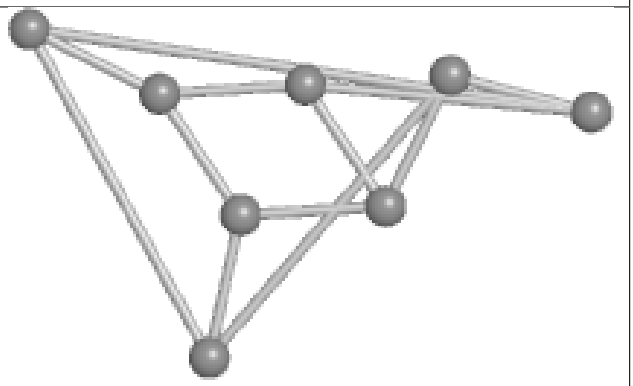


Rings

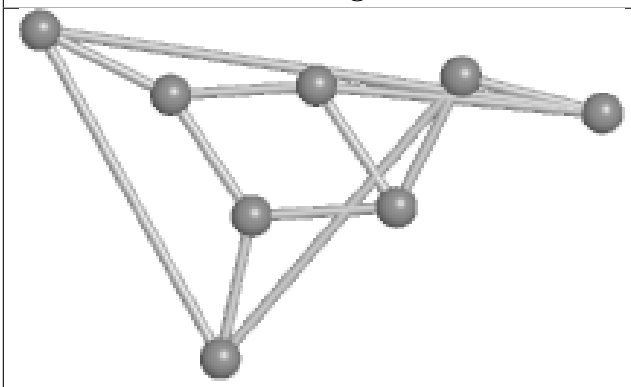
## Ligand SF4 A 852



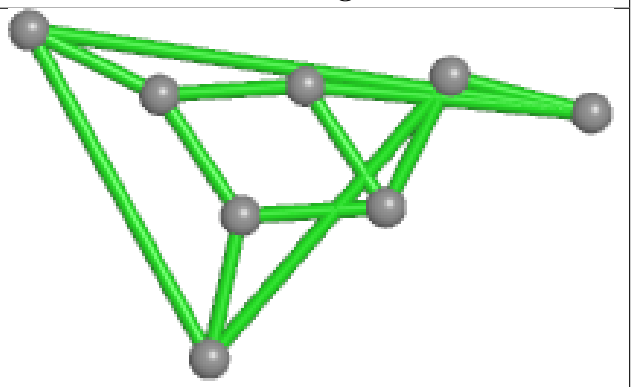
Bond lengths



Bond angles

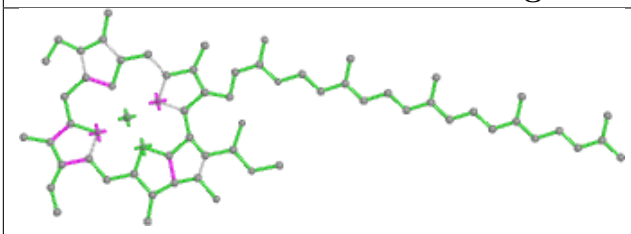


Torsions

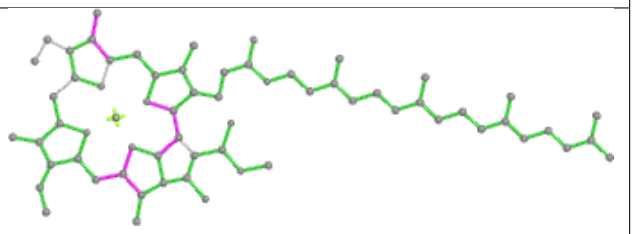


Rings

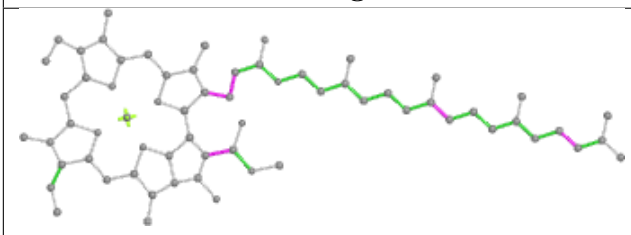
## Ligand CLA B 804



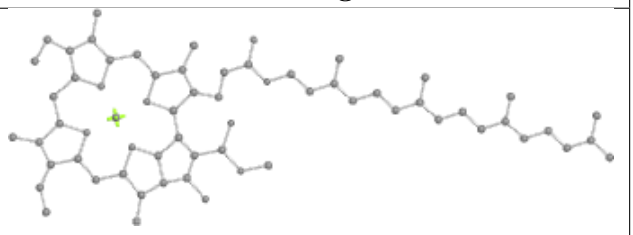
Bond lengths



Bond angles

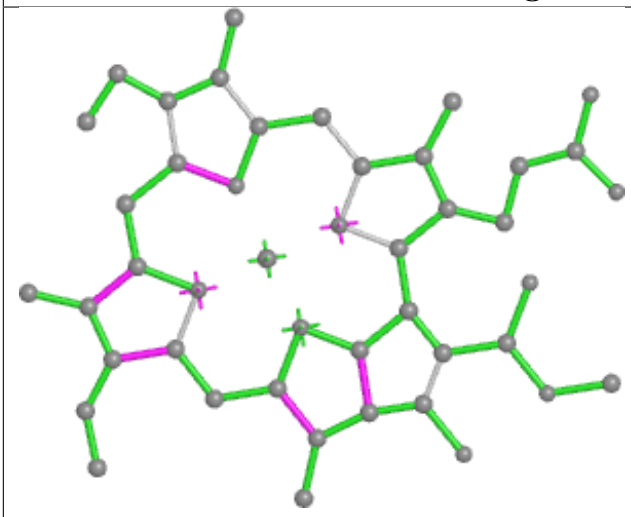


Torsions

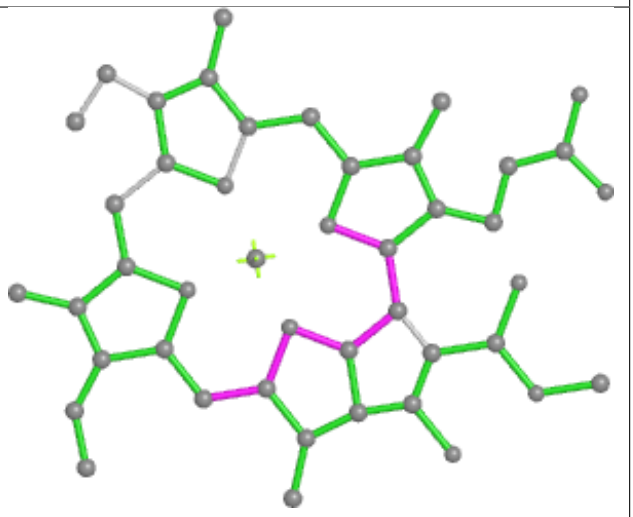


Rings

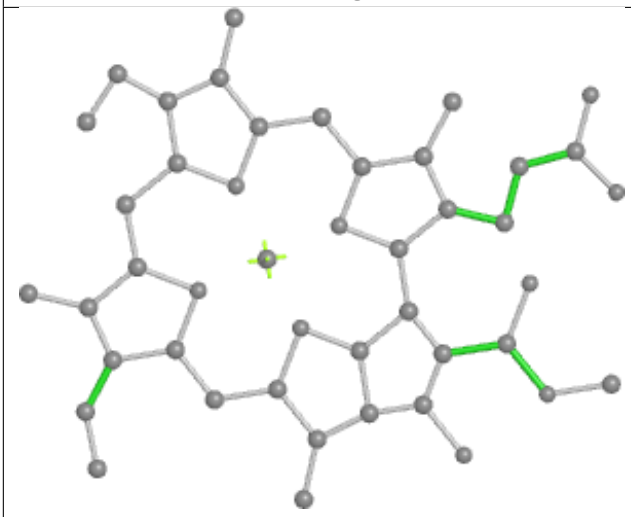
## Ligand CLA R 101



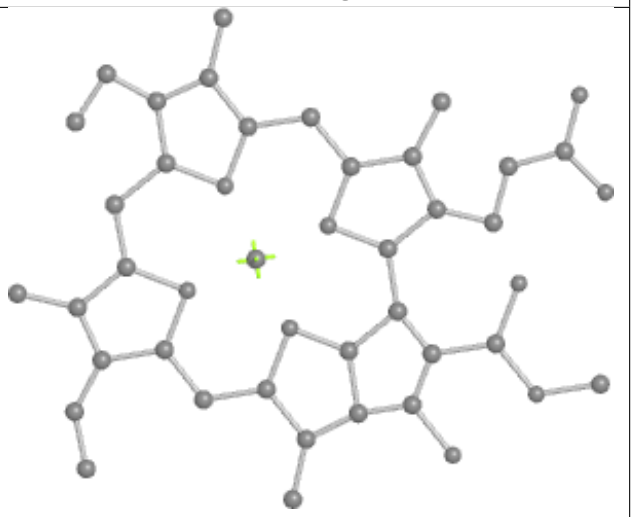
Bond lengths



Bond angles

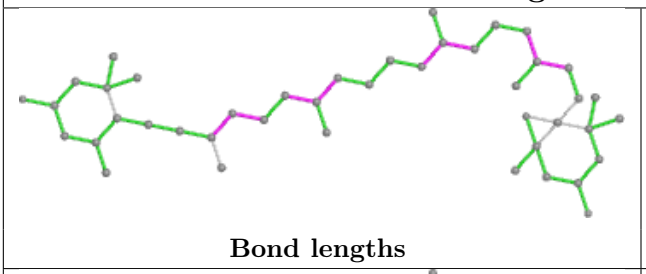


Torsions

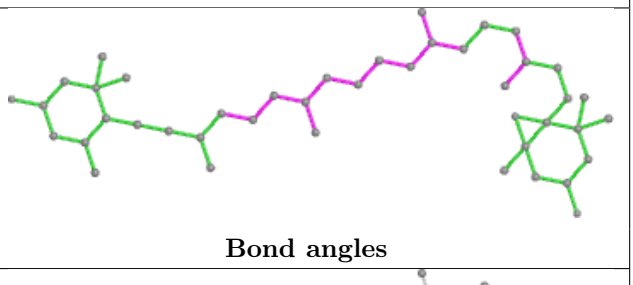


Rings

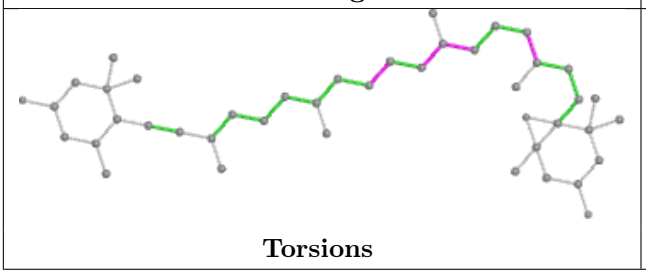
## Ligand DD6 S 204



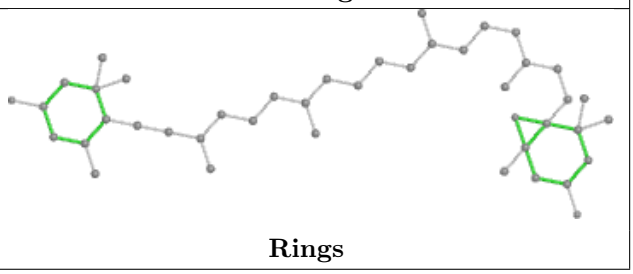
Bond lengths



Bond angles

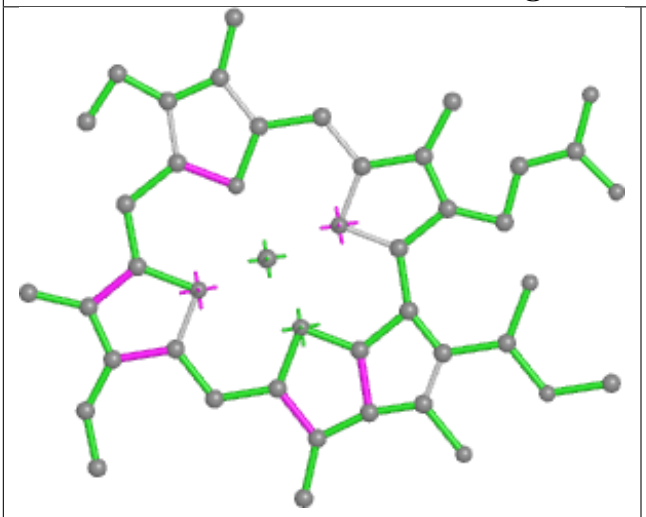


Torsions

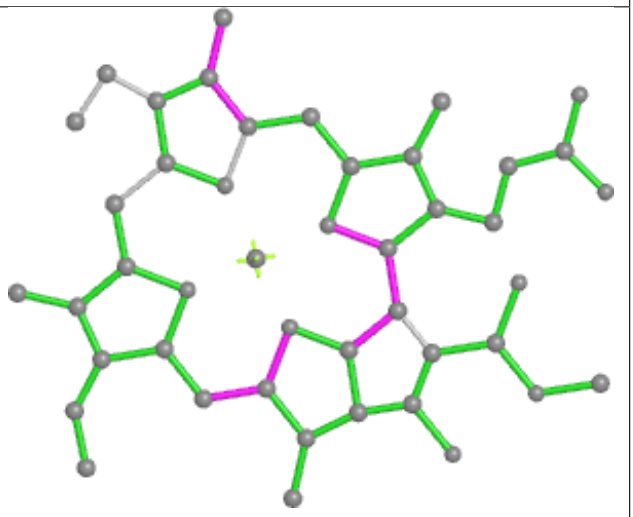


Rings

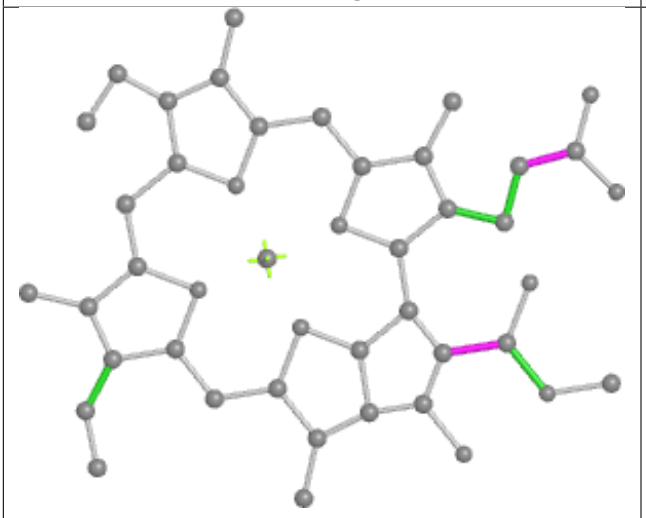
## Ligand CLA B 803



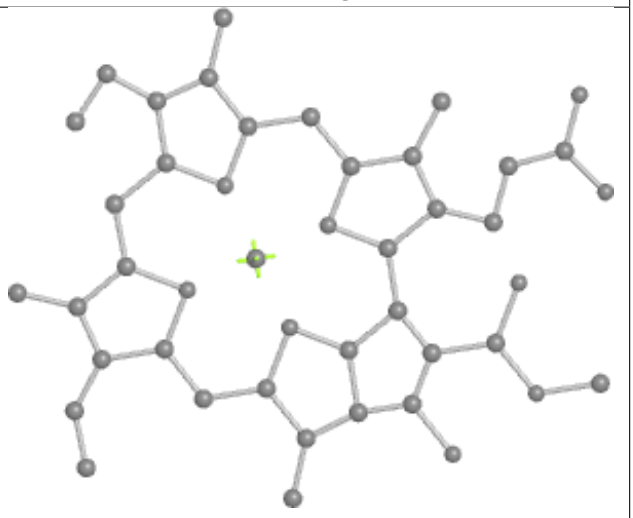
Bond lengths



Bond angles

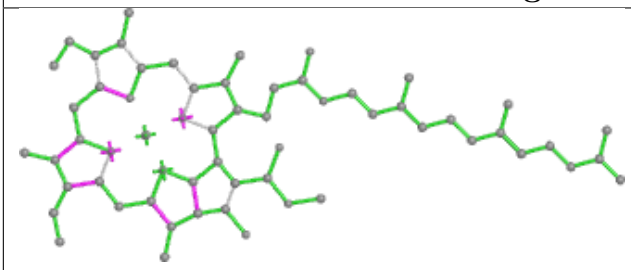


Torsions

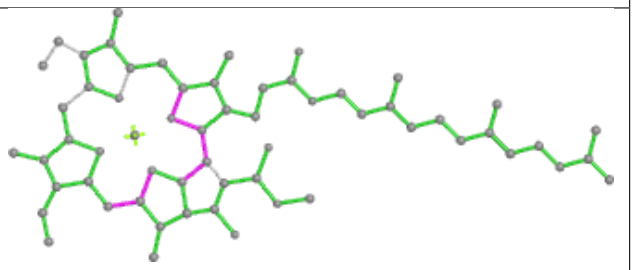


Rings

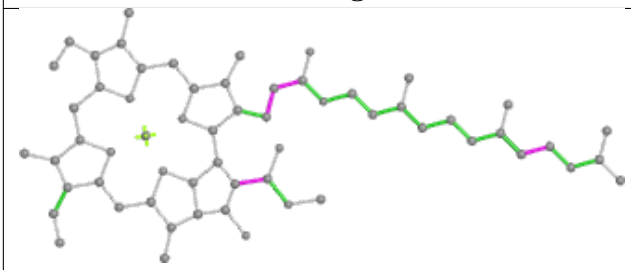
## Ligand CLA A 846



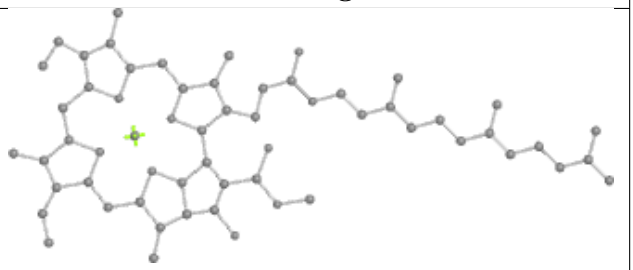
Bond lengths



Bond angles

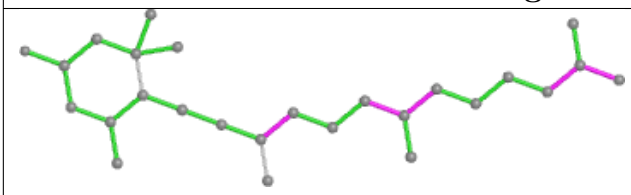


Torsions

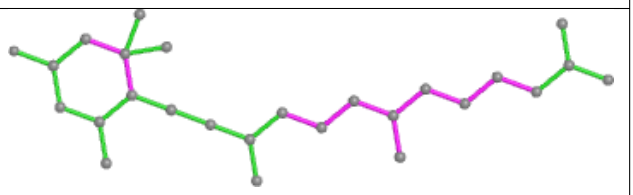


Rings

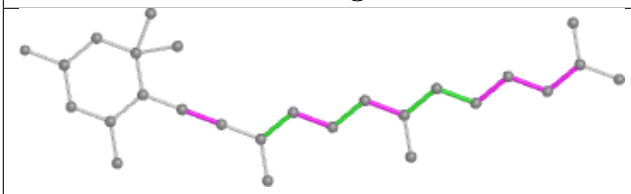
## Ligand DD6 U 214



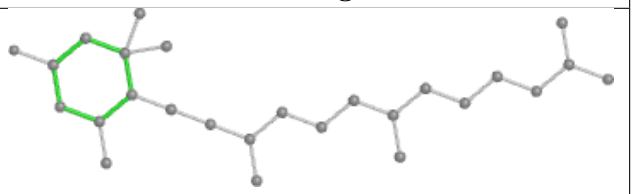
Bond lengths



Bond angles

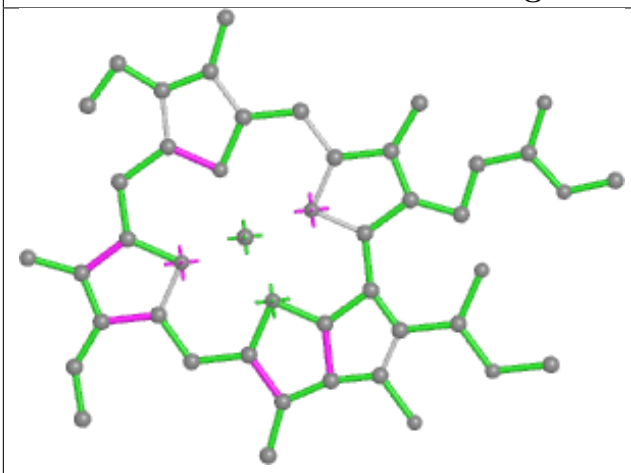


Torsions

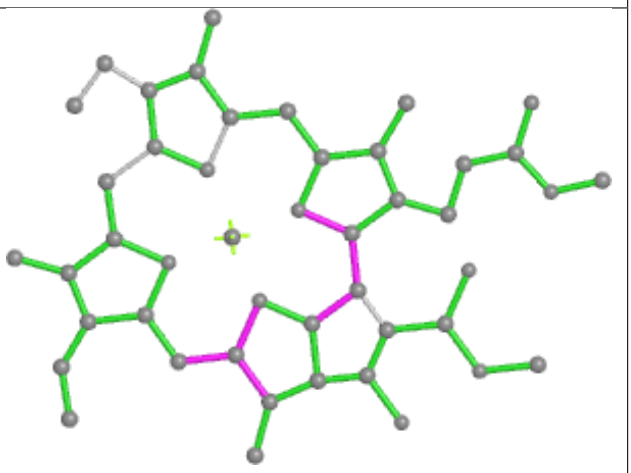


Rings

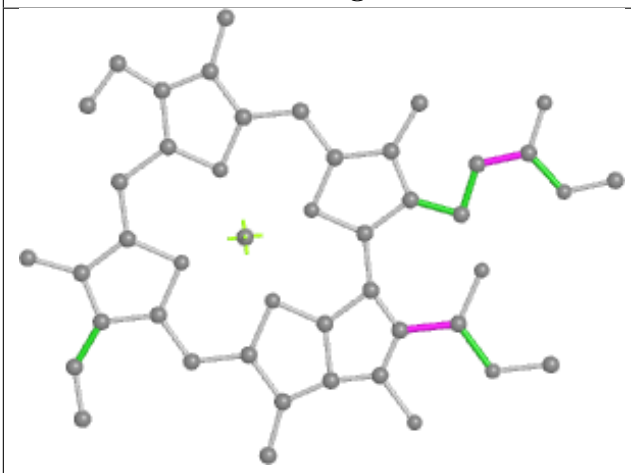
## Ligand CLA B 817



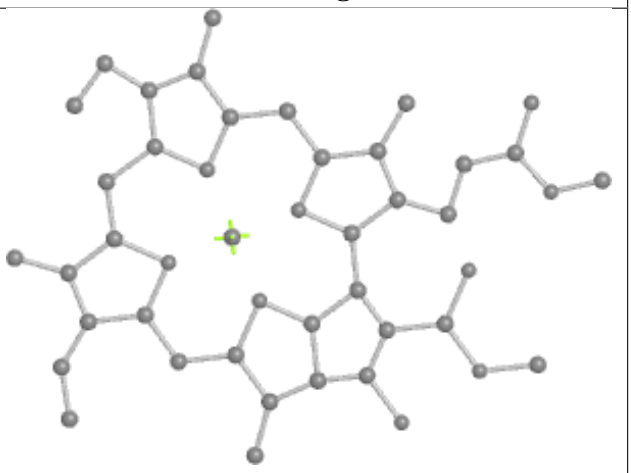
Bond lengths



Bond angles

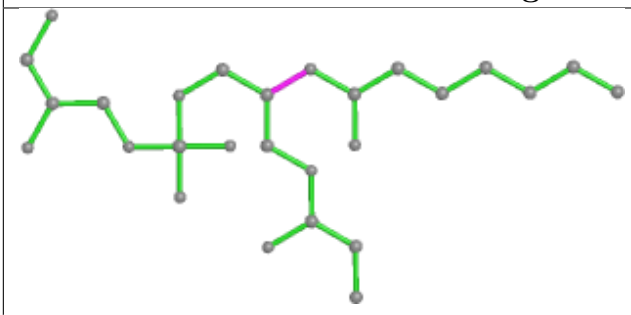


Torsions

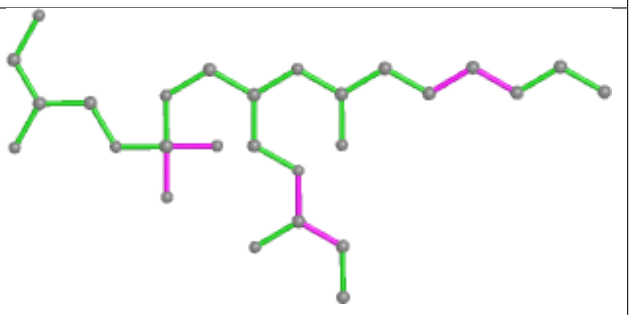


Rings

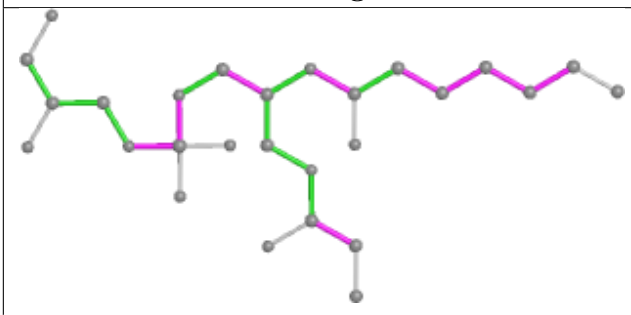
## Ligand LHG A 840



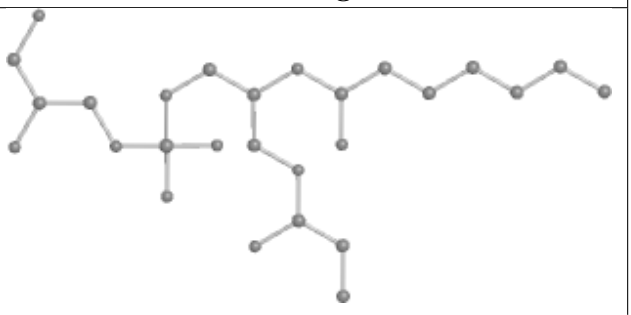
Bond lengths



Bond angles

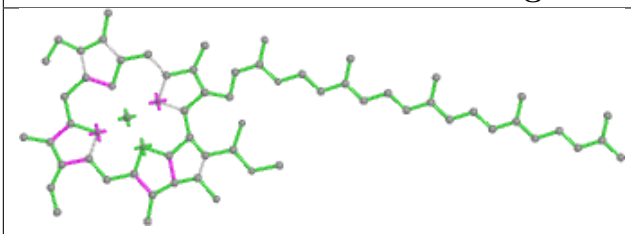


Torsions

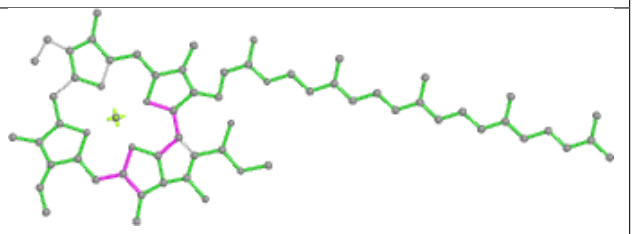


Rings

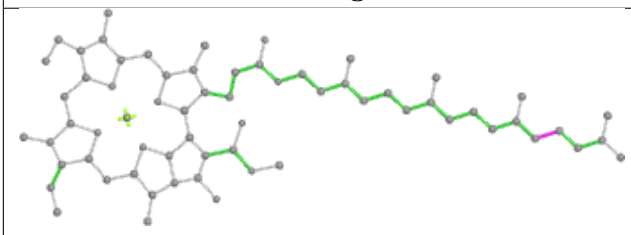
## Ligand CLA B 830



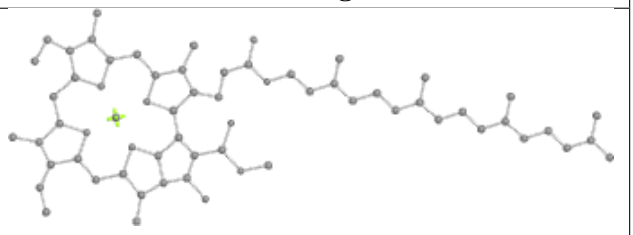
Bond lengths



Bond angles

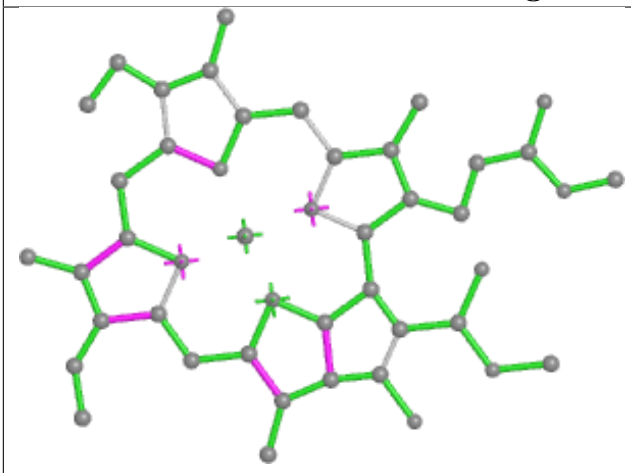


Torsions

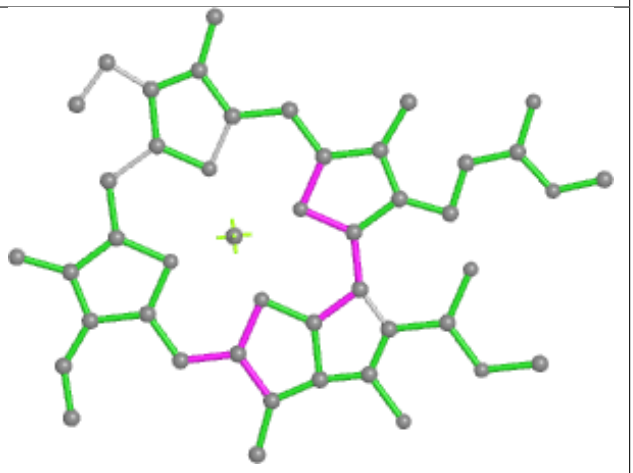


Rings

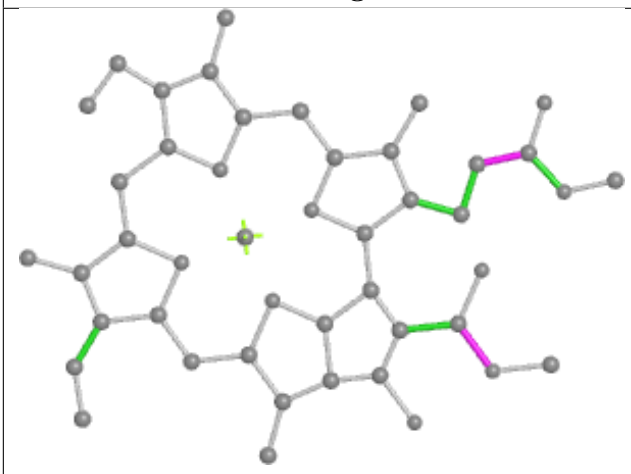
## Ligand CLA T 210



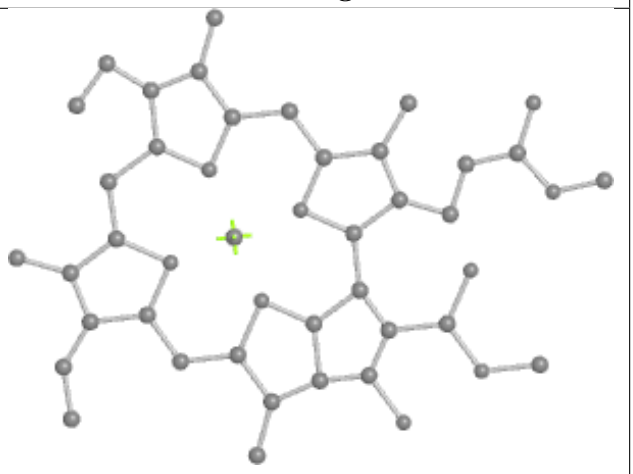
Bond lengths



Bond angles

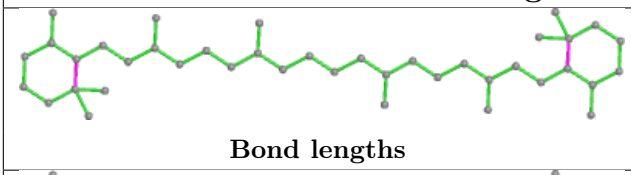


Torsions

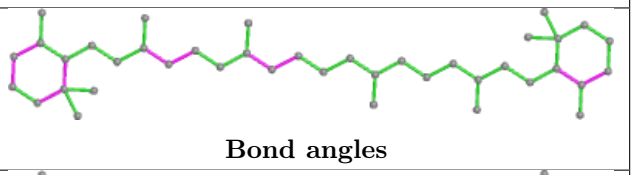


Rings

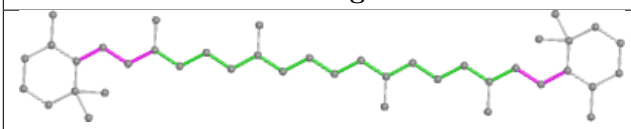
## Ligand BCR L 205



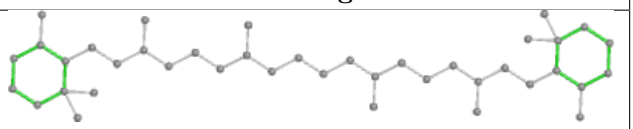
Bond lengths



Bond angles

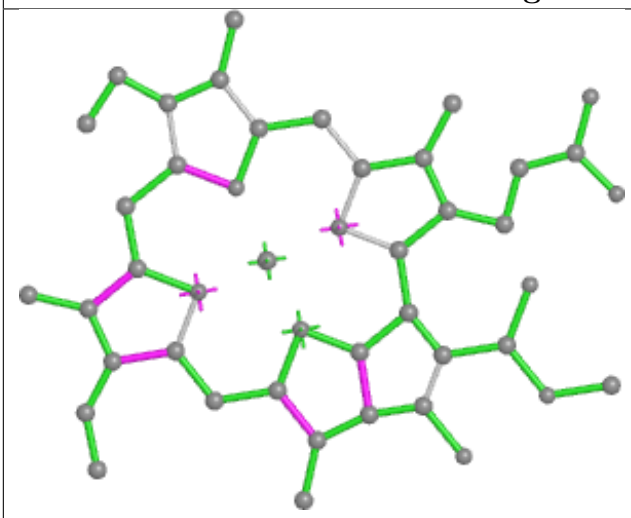


Torsions

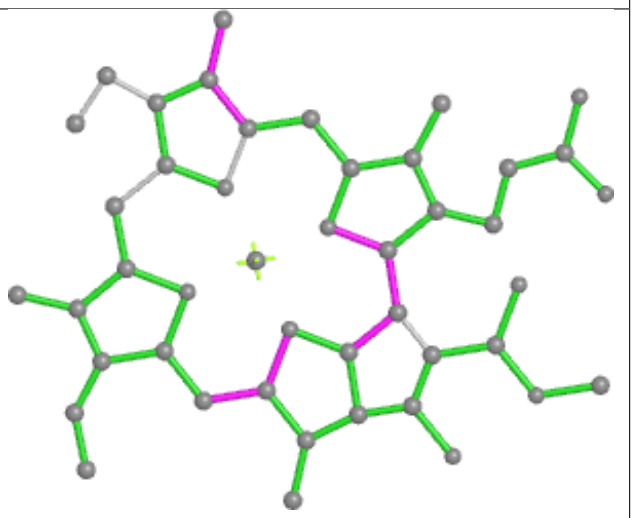


Rings

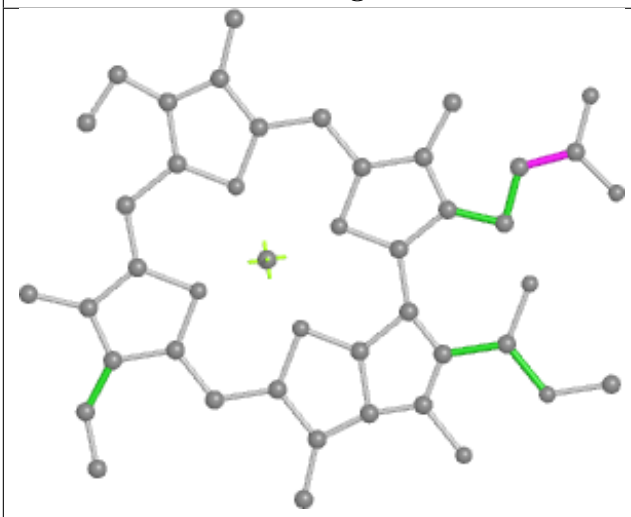
## Ligand CLA U 206



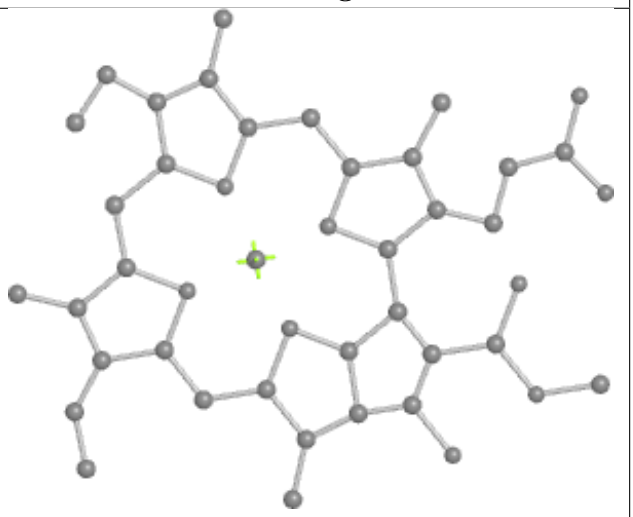
Bond lengths



Bond angles

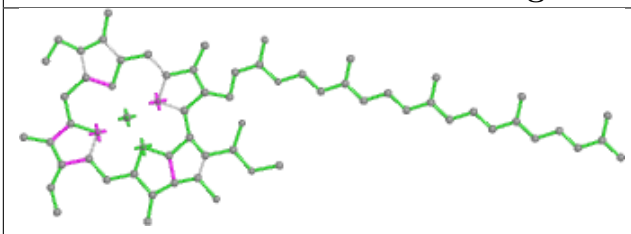


Torsions

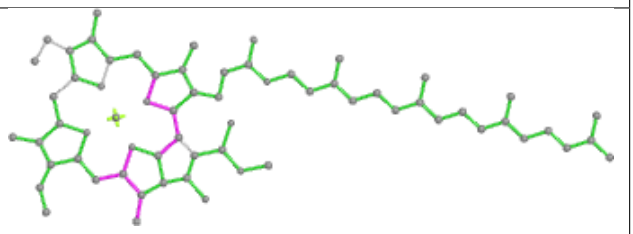


Rings

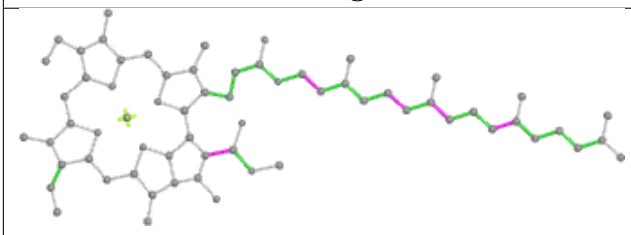
## Ligand CLA S 202



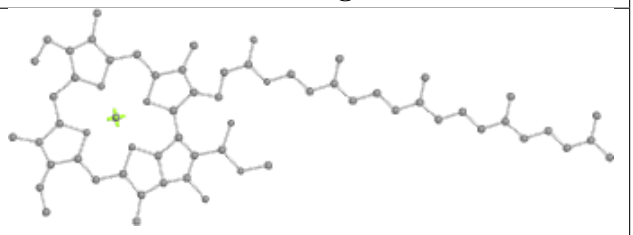
Bond lengths



Bond angles

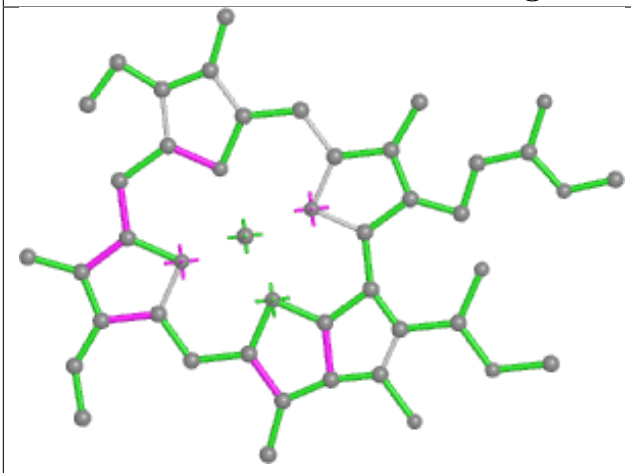


Torsions

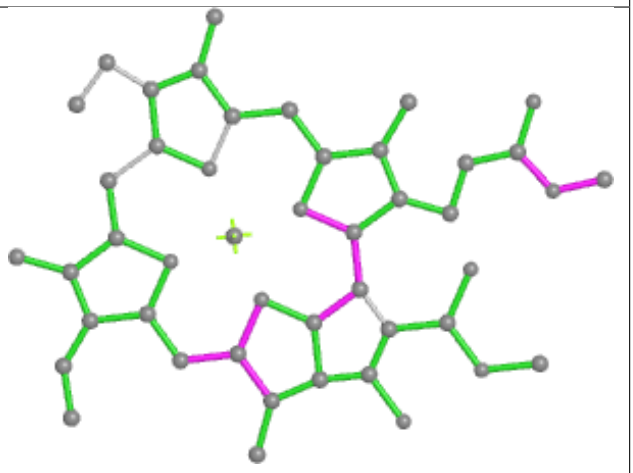


Rings

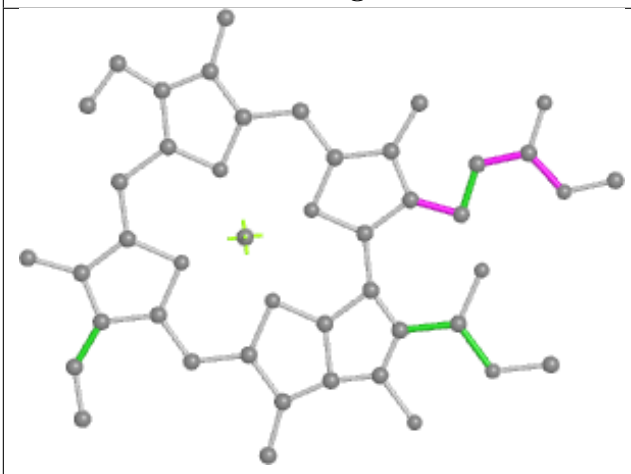
## Ligand CLA O 207



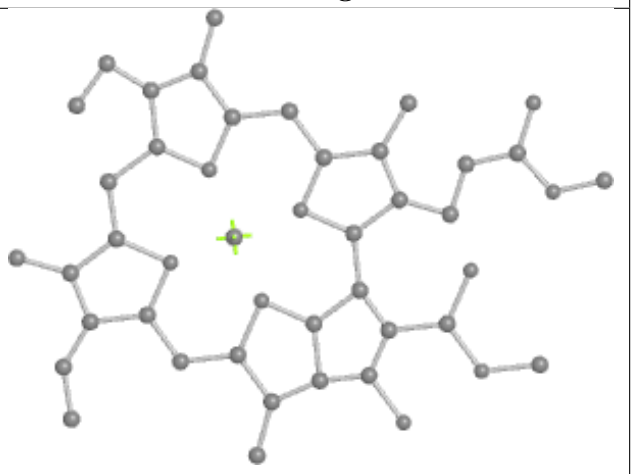
Bond lengths



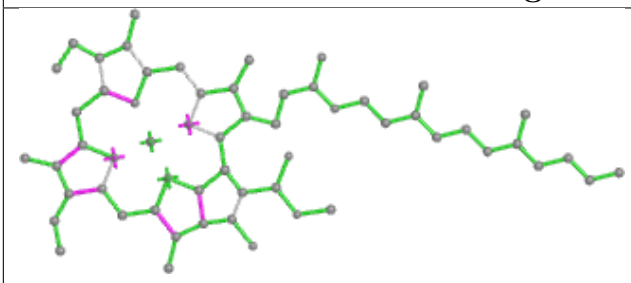
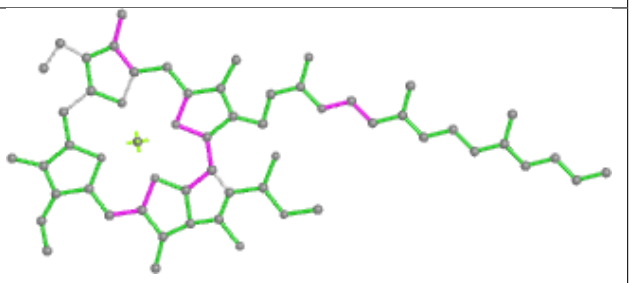
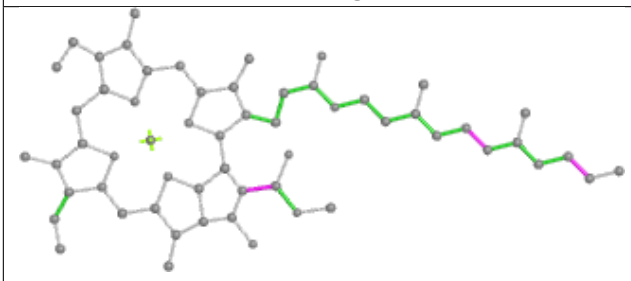
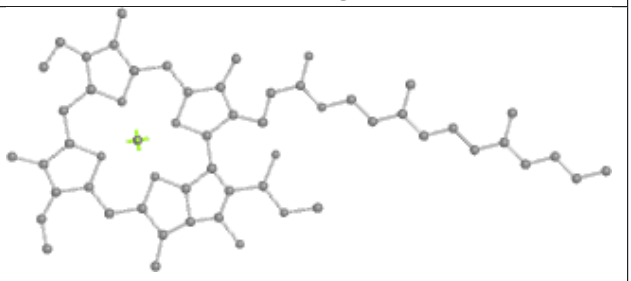
Bond angles

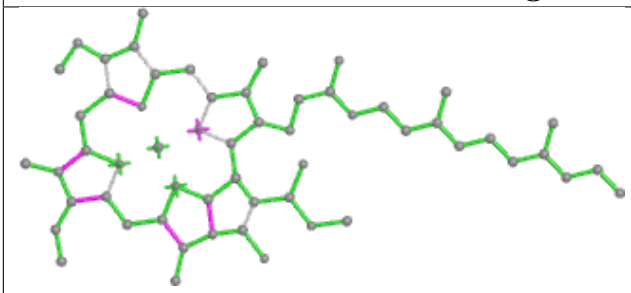
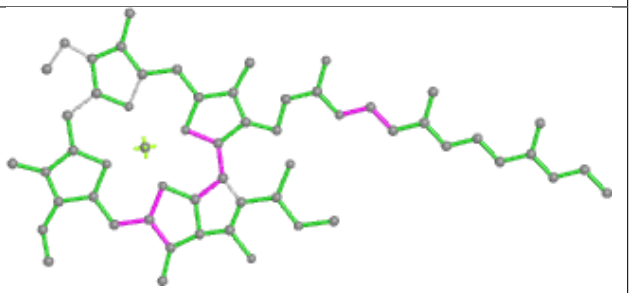
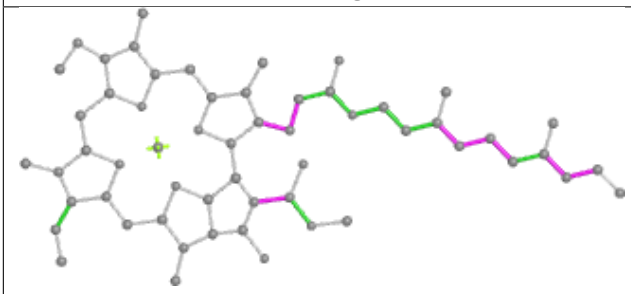
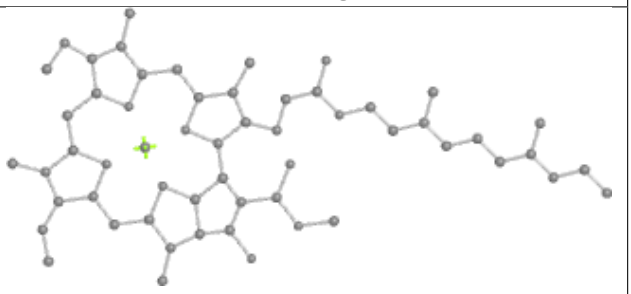


Torsions

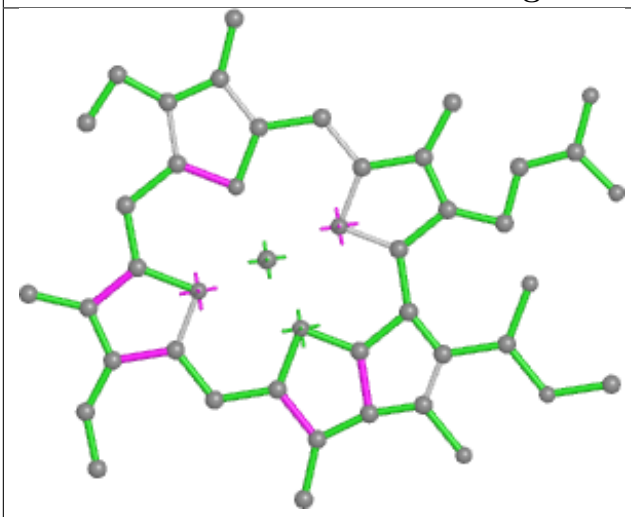


Rings

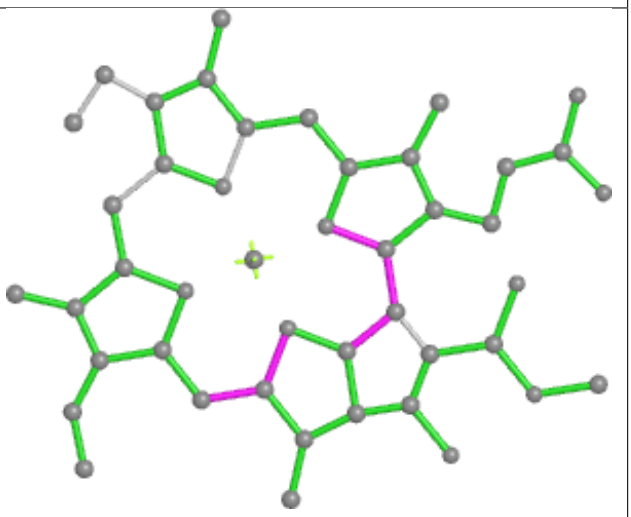
| Ligand CLA B 829 | |
|---|---|
|  |  |
| Bond lengths | Bond angles |
|  |  |
| Torsions | Rings |

| Ligand CLA T 204 | |
|---|---|
|  |  |
| Bond lengths | Bond angles |
|  |  |
| Torsions | Rings |

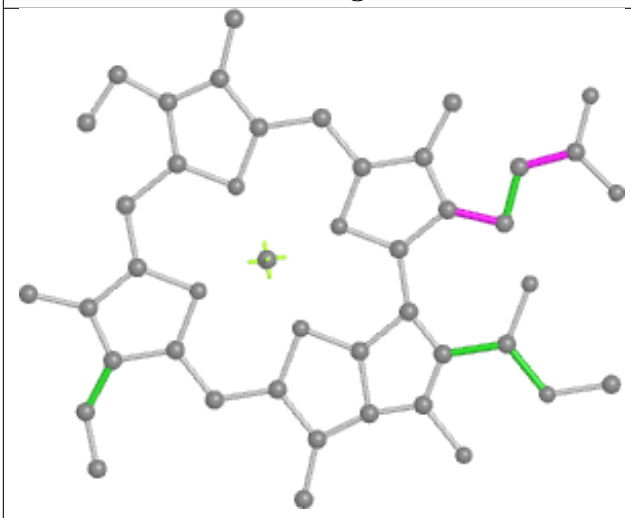
## Ligand CLA K 206



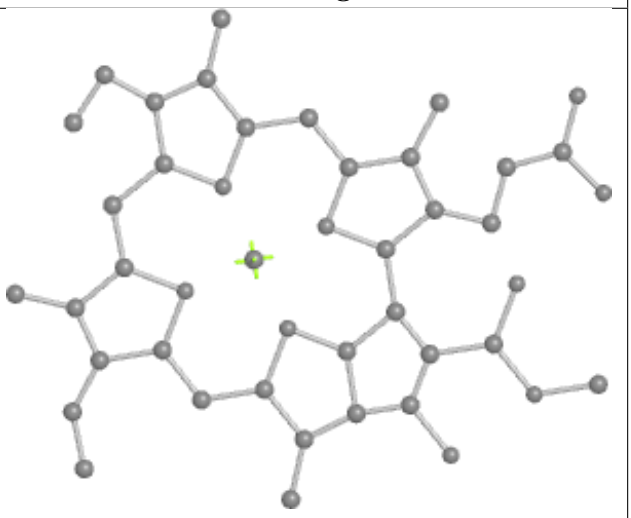
Bond lengths



Bond angles

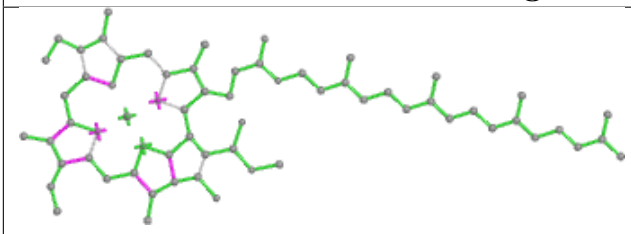


Torsions

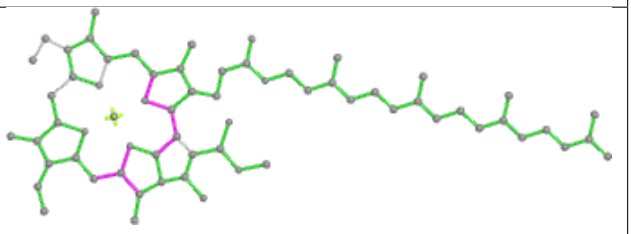


Rings

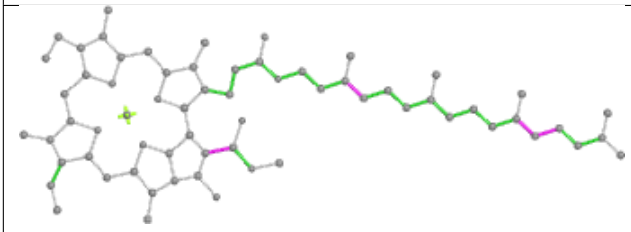
## Ligand CLA O 206



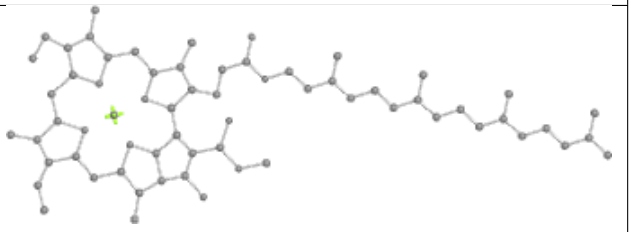
Bond lengths



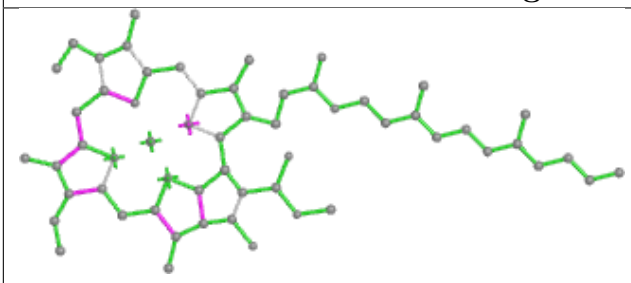
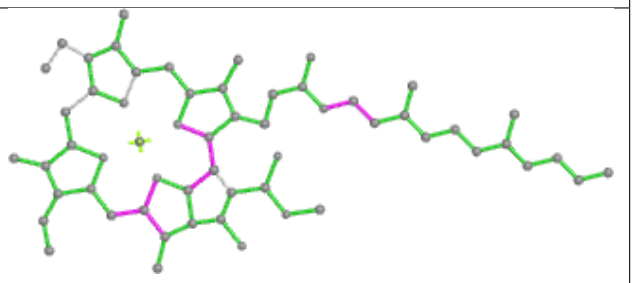
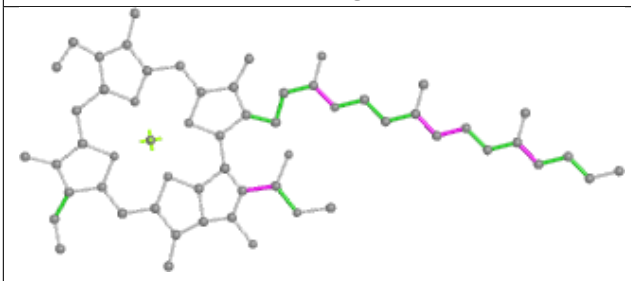
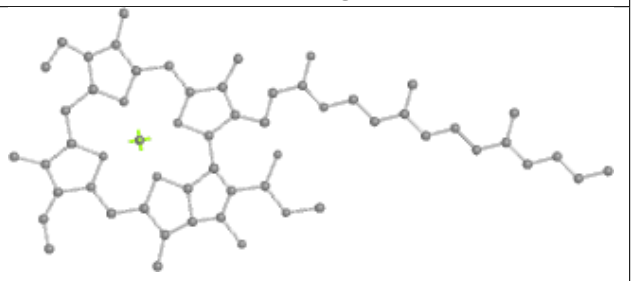
Bond angles



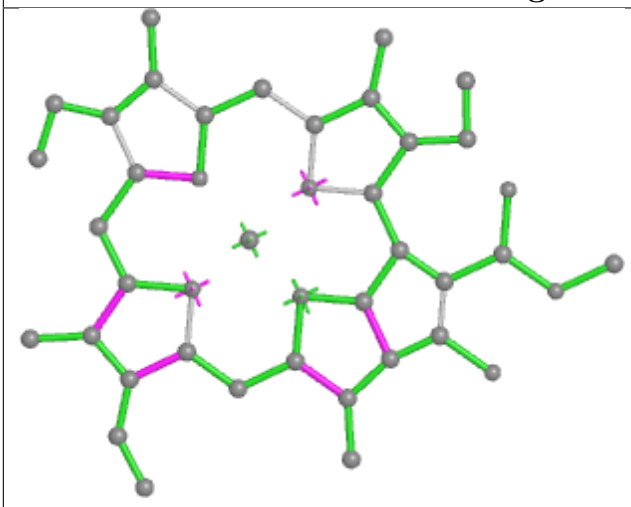
Torsions



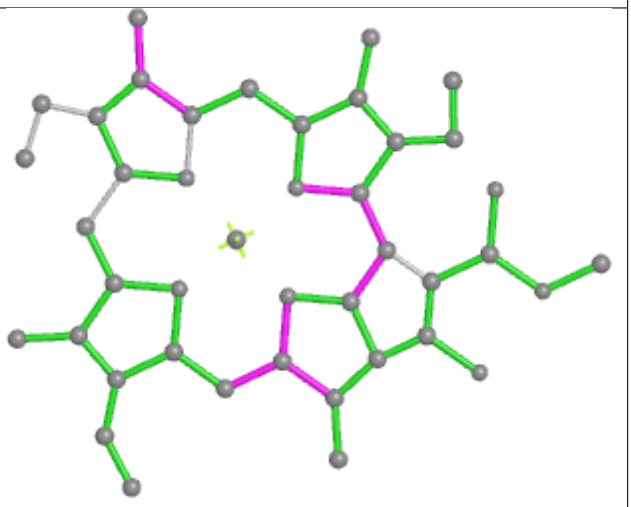
Rings

| Ligand CLA K 207 | |
|---|---|
|  |  |
| **Bond lengths** | **Bond angles** |
|  |  |
| **Torsions** | **Rings** |

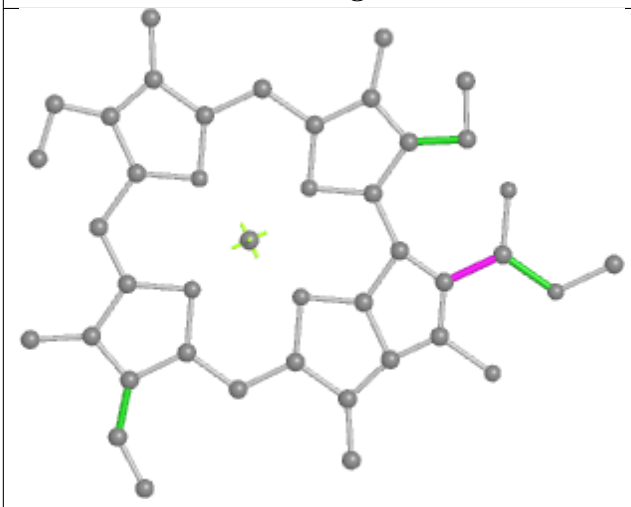
## Ligand CLA J 103



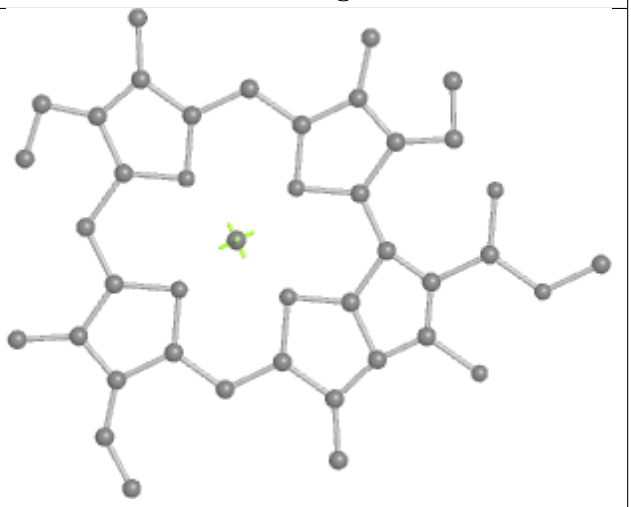
Bond lengths



Bond angles

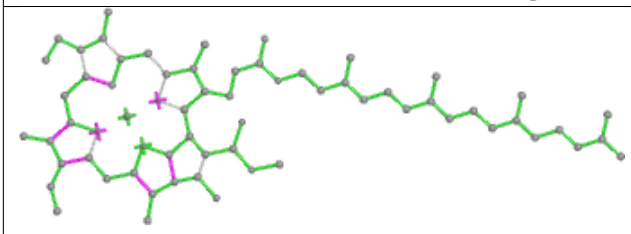


Torsions

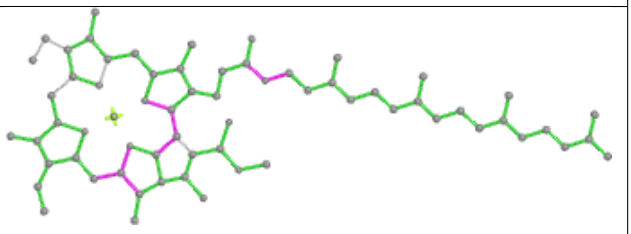


Rings

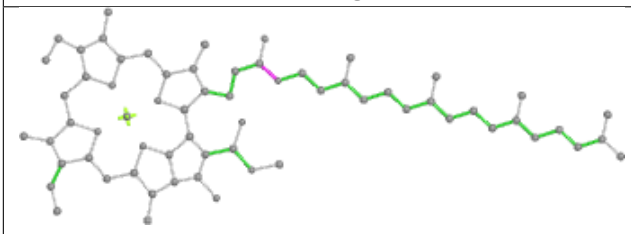
## Ligand CLA B 823



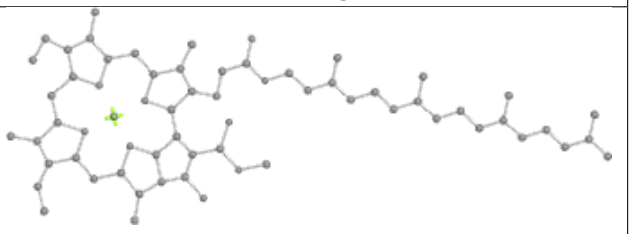
Bond lengths



Bond angles

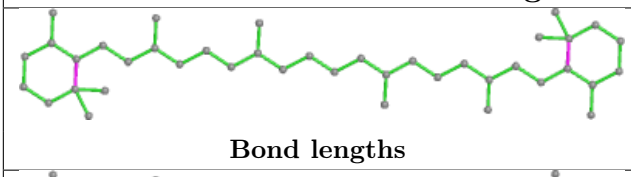


Torsions

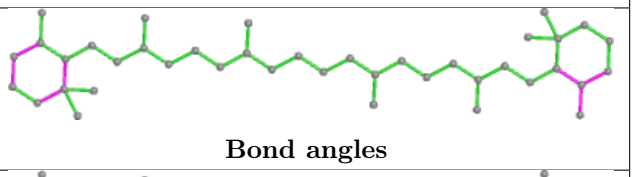


Rings

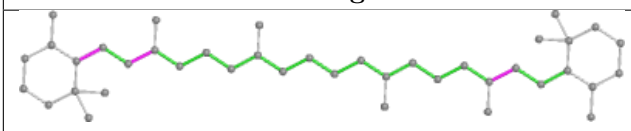
## Ligand BCR F 801



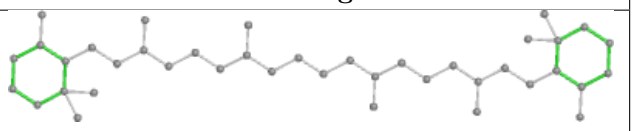
Bond lengths



Bond angles

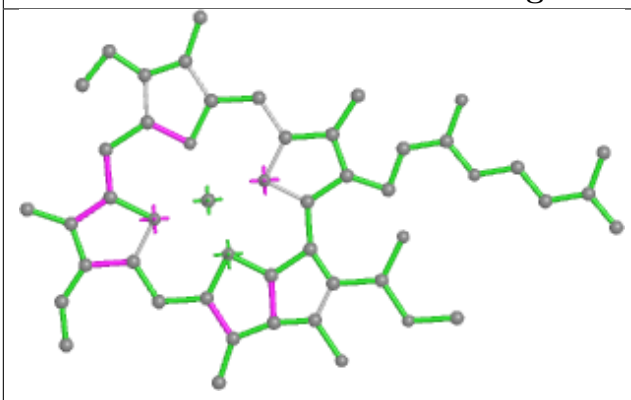


Torsions

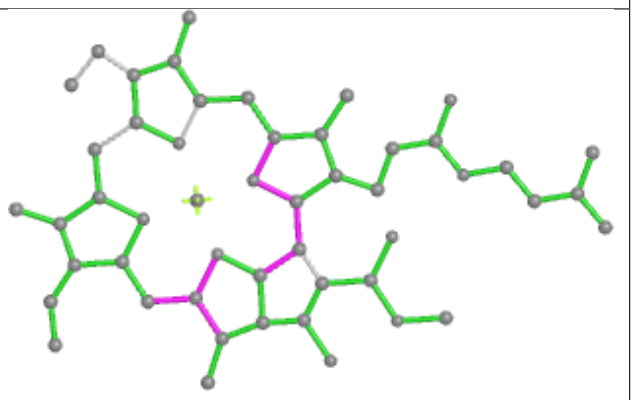


Rings

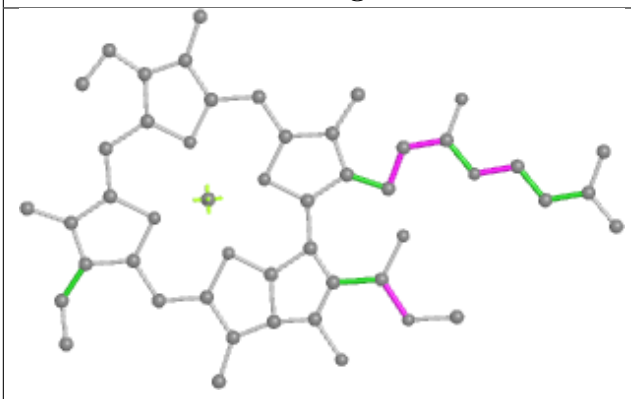
## Ligand CLA L 204



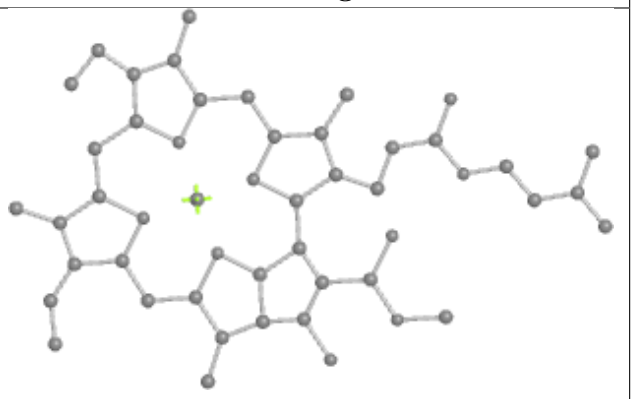
Bond lengths



Bond angles

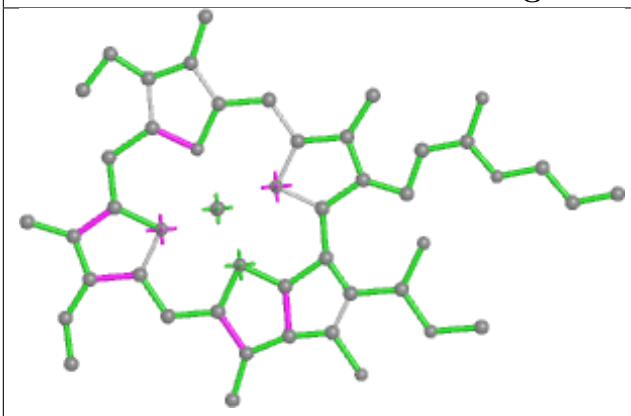


Torsions

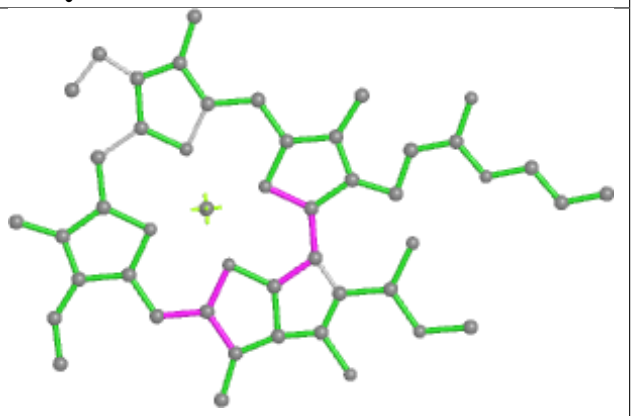


Rings

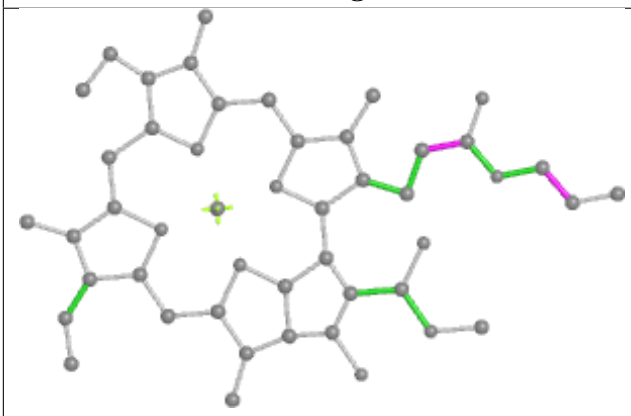
**Ligand CLA Q 203**



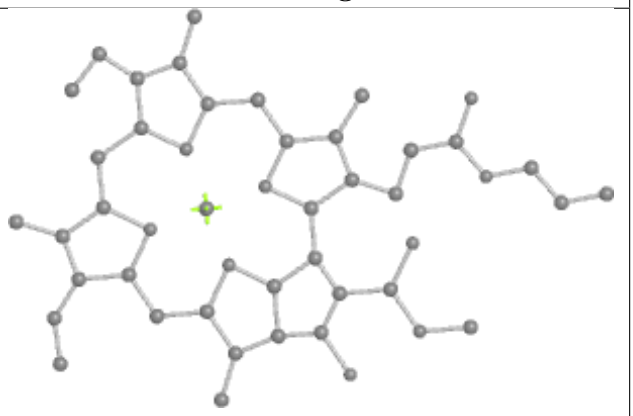
**Bond lengths**



**Bond angles**

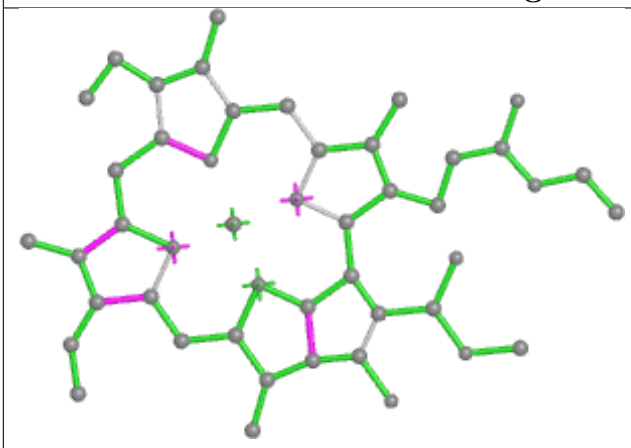


**Torsions**

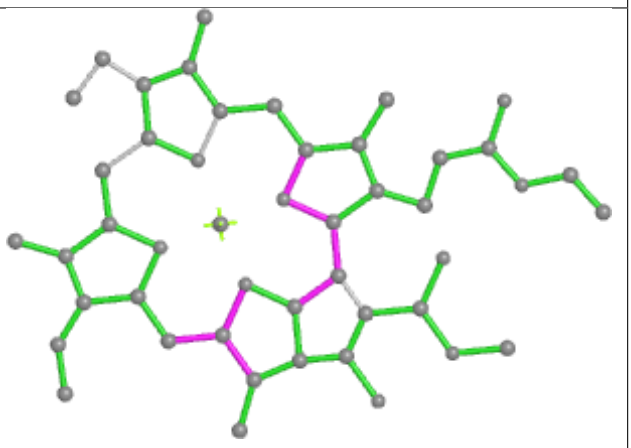


**Rings**

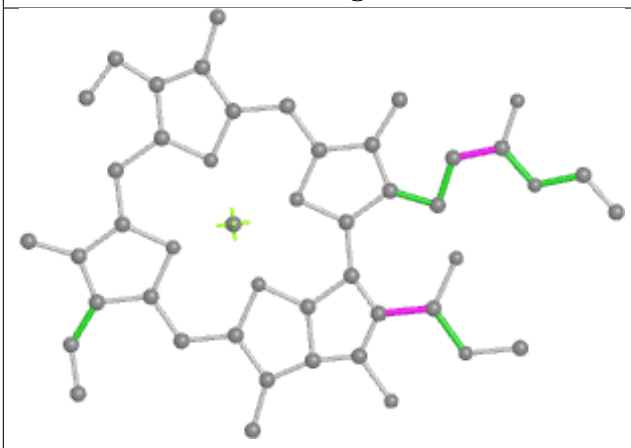
**Ligand CLA T 211**



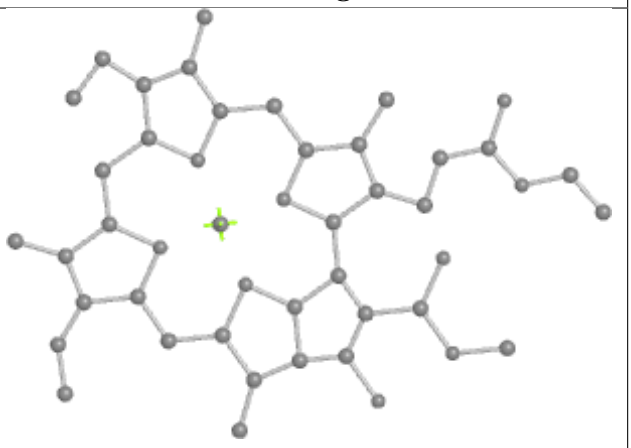
Bond lengths



Bond angles

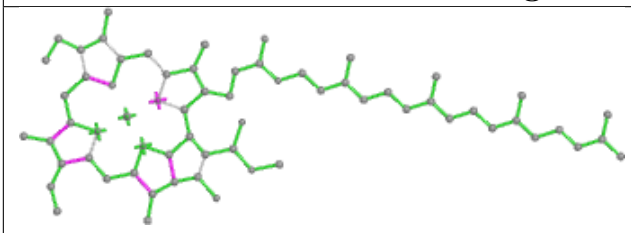


Torsions

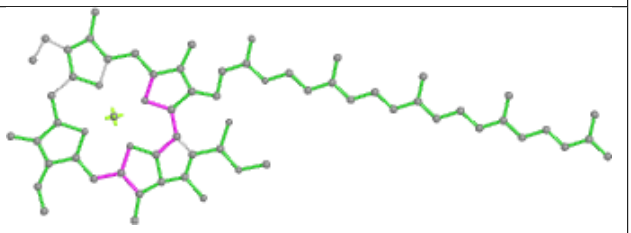


Rings

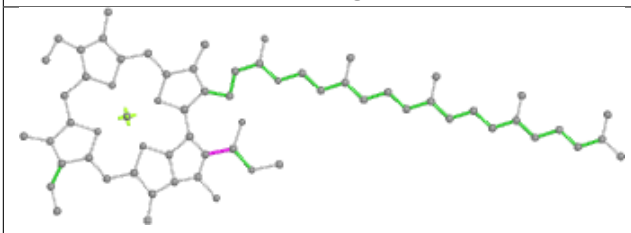
**Ligand CLA U 210**



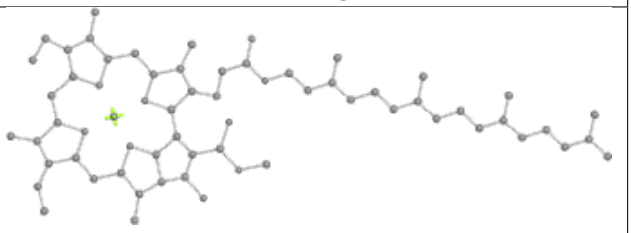
Bond lengths



Bond angles

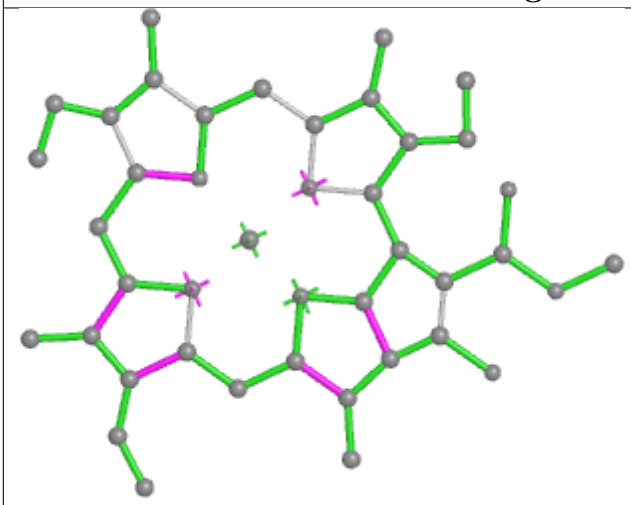


Torsions

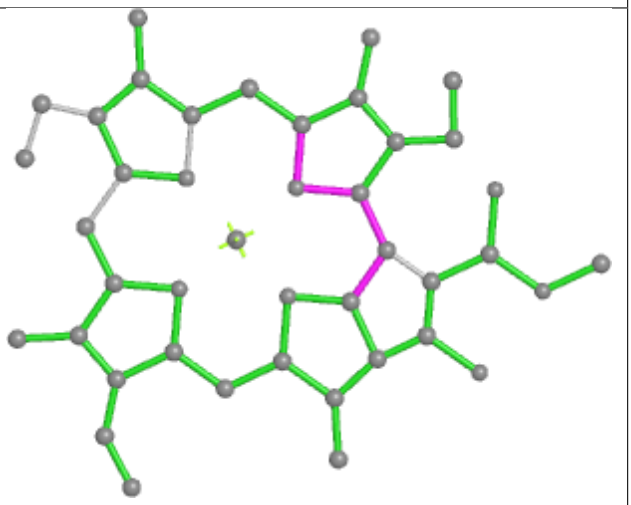


Rings

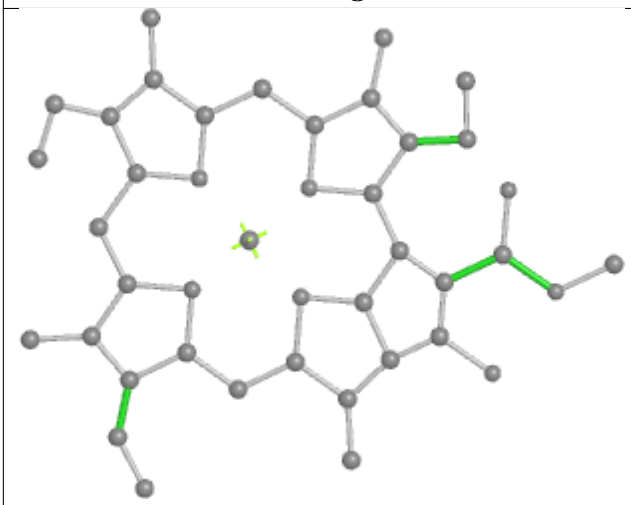
## Ligand CLA T 201



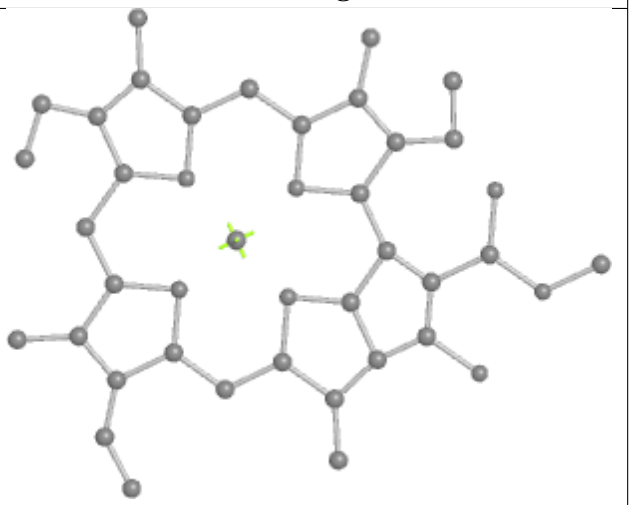
Bond lengths



Bond angles

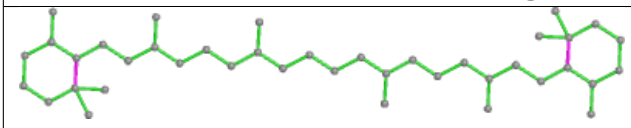


Torsions

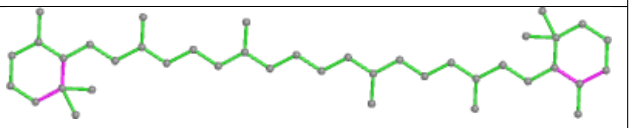


Rings

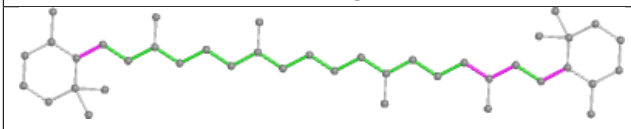
## Ligand BCR A 841



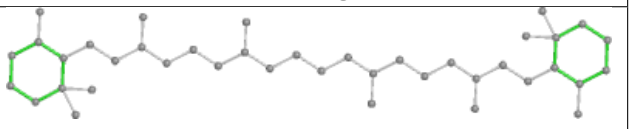
Bond lengths



Bond angles

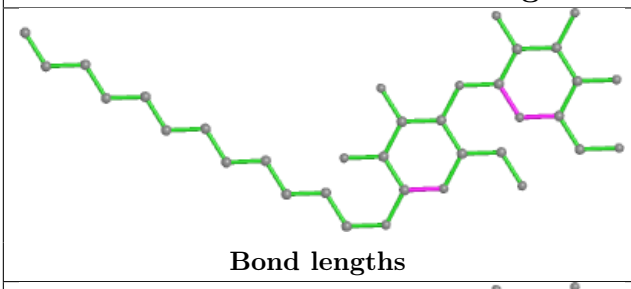


Torsions

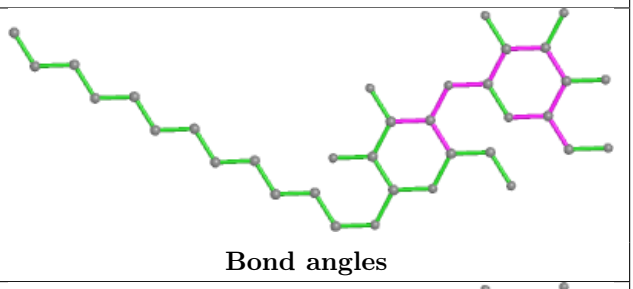


Rings

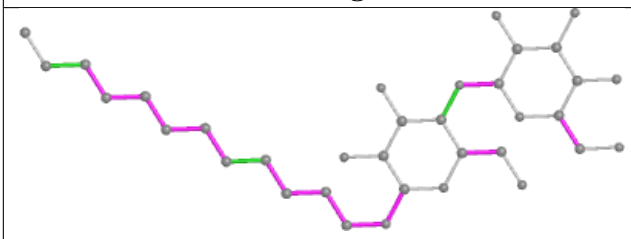
## Ligand LMU F 806



Bond lengths



Bond angles



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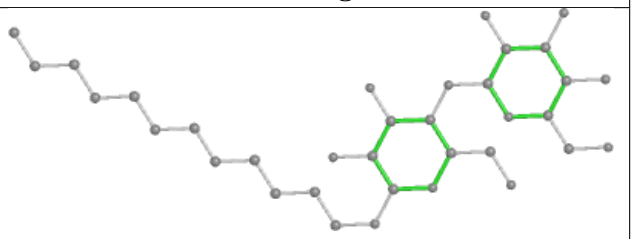
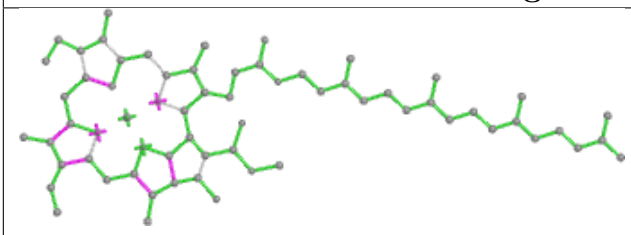


Rings

## Ligand CLA A 811



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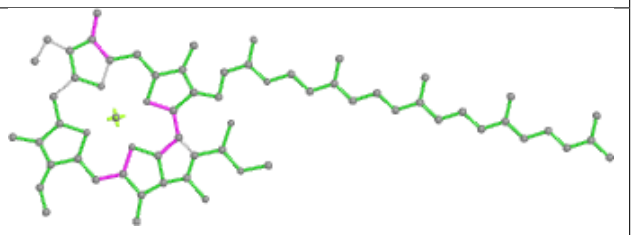
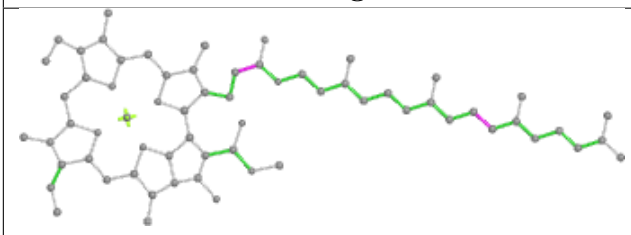


Bond angles



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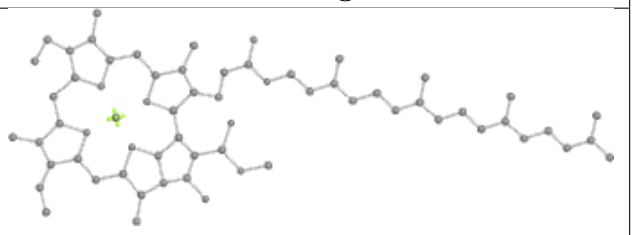
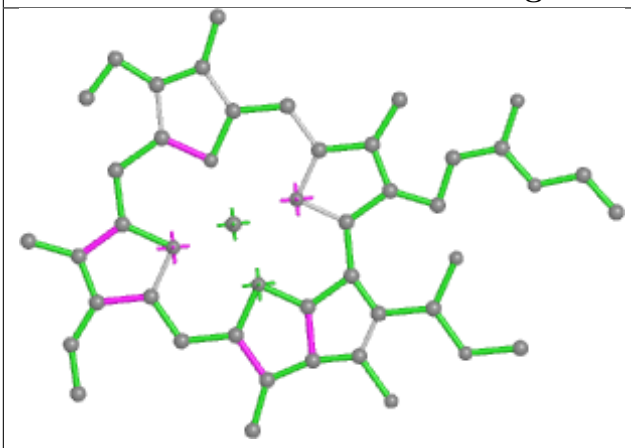
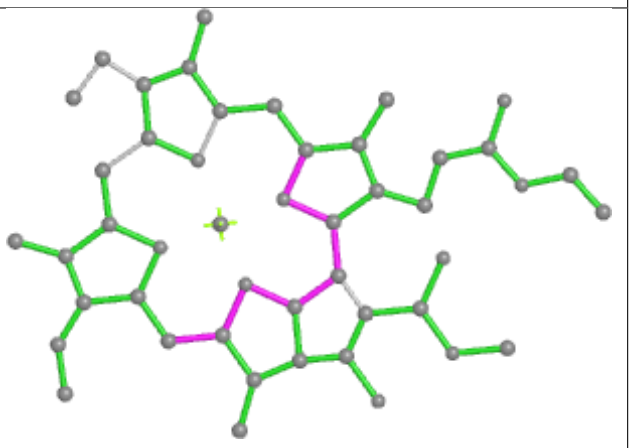


Rings

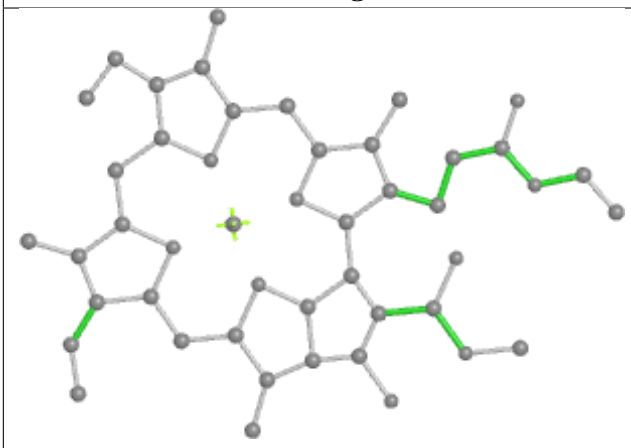
## Ligand CLA P 216



Bond lengths



Bond angles



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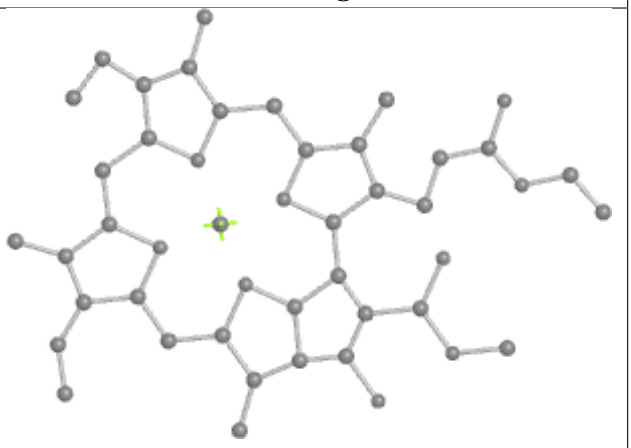
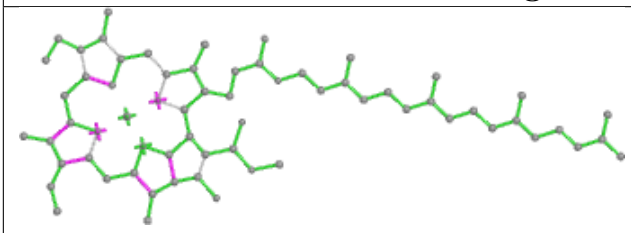


Rings

## Ligand CLA A 851



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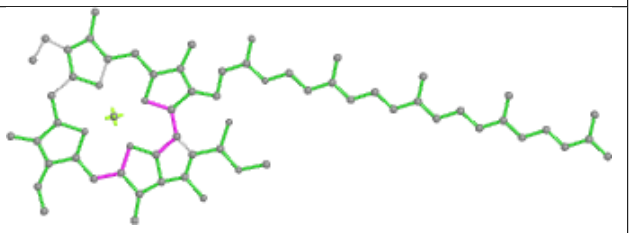
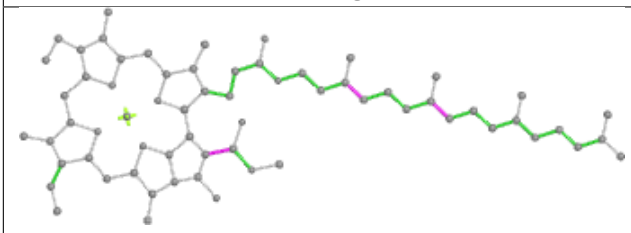
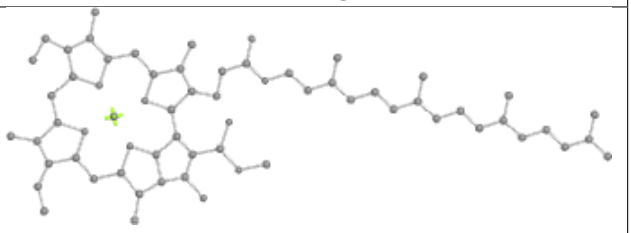


Bond angles

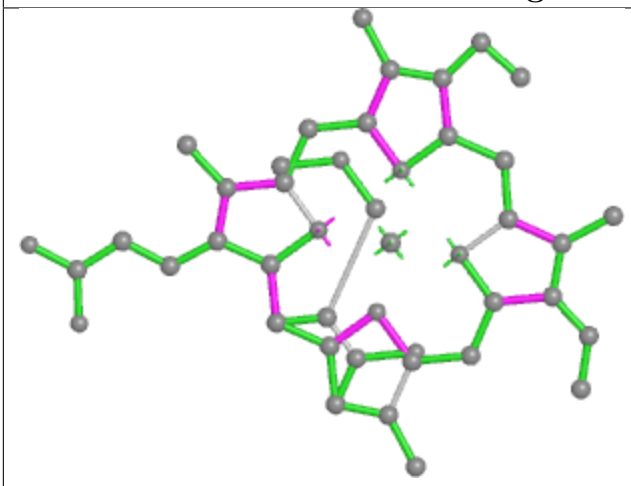


Torsions

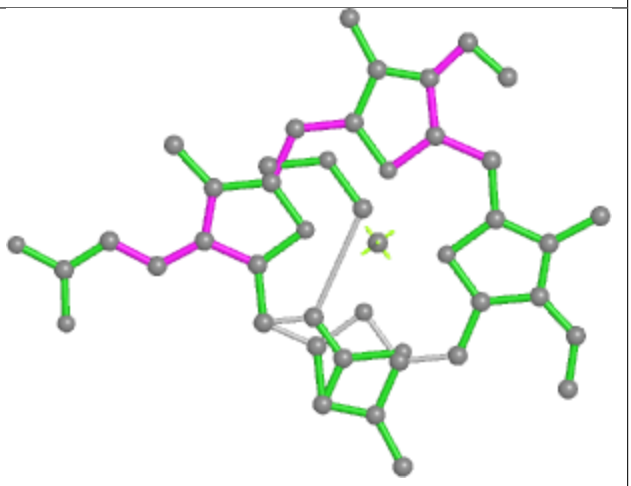


Rings

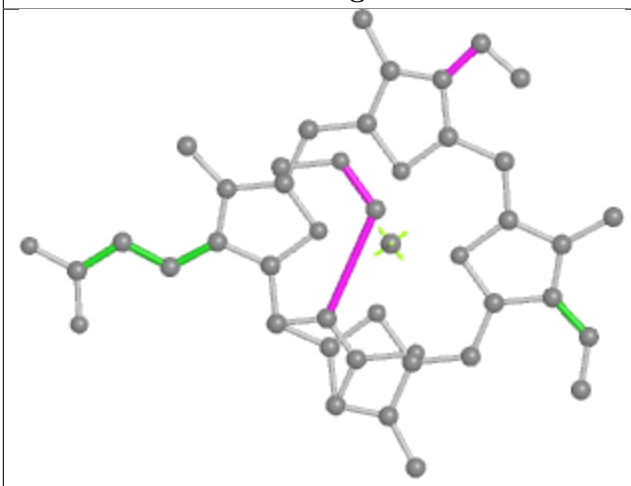
**Ligand KC1 P 212**



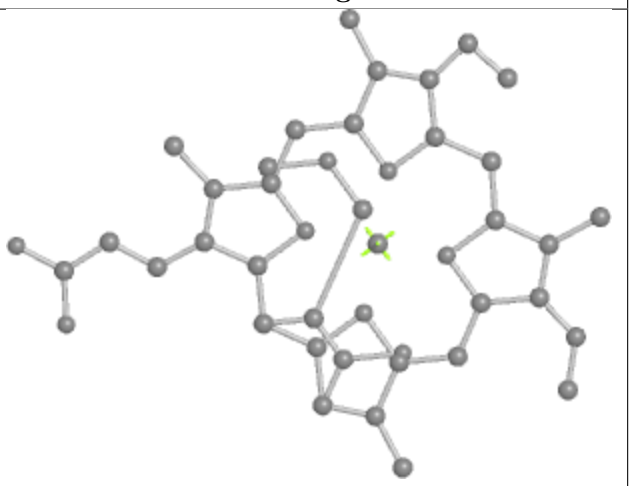
**Bond lengths**



**Bond angles**

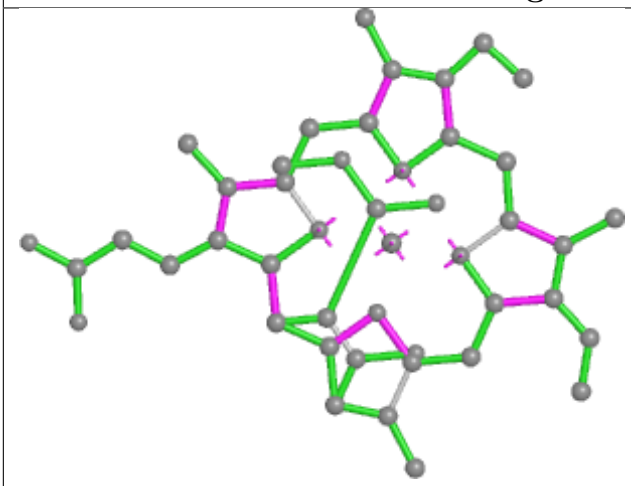


**Torsions**

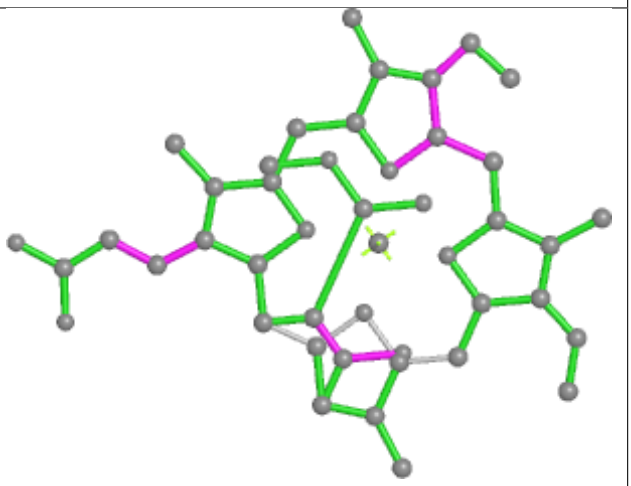


**Rings**

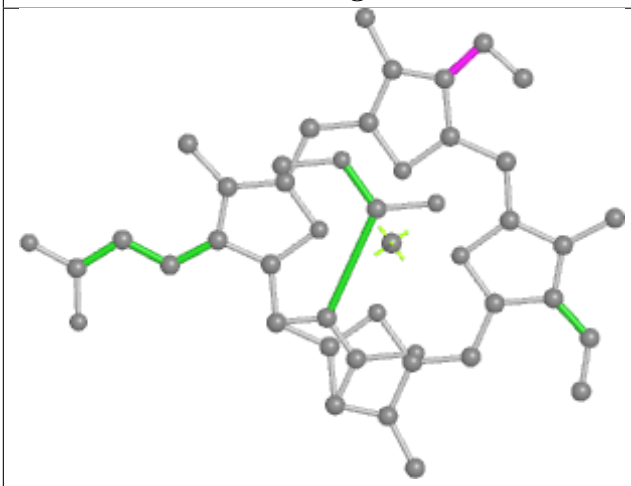
**Ligand KC1 T 208**



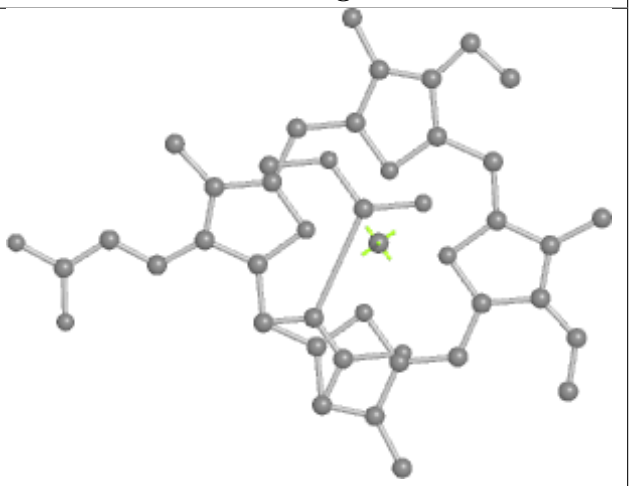
Bond lengths



Bond angles

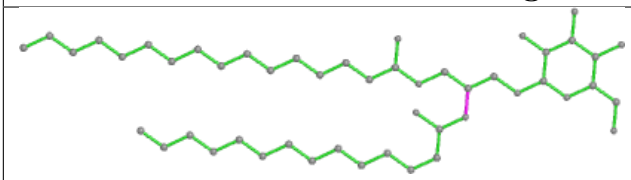


Torsions



Rings

**Ligand LMG S 213**



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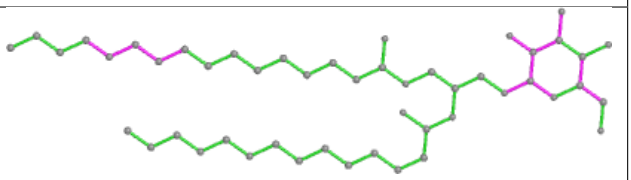
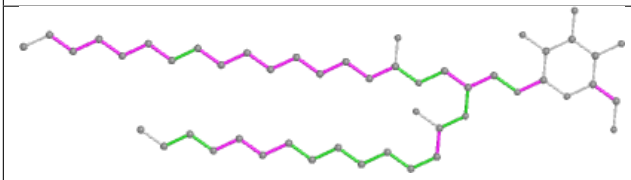
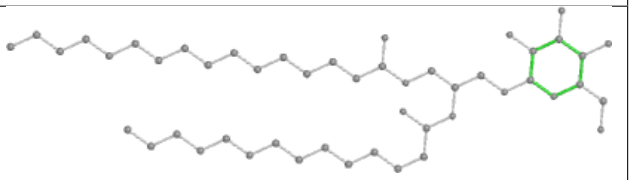


Bond angles

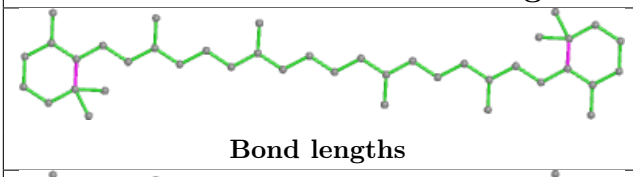


Torsions

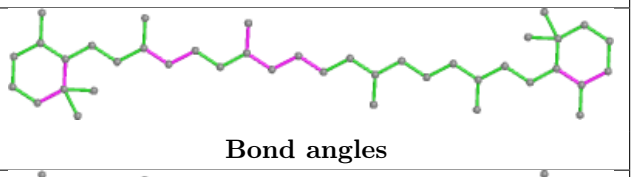


Rings

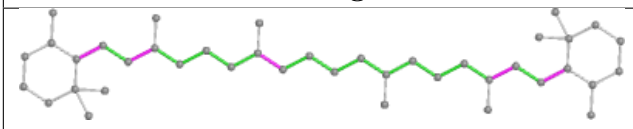
## Ligand BCR F 805



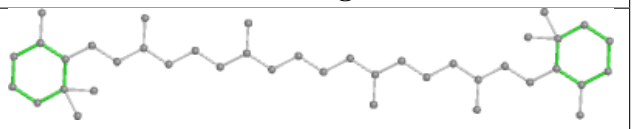
Bond lengths



Bond angles

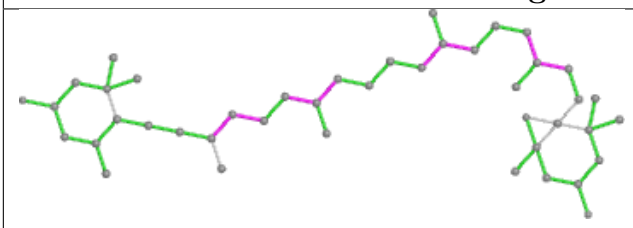


Torsions



Rings

## Ligand DD6 k 101



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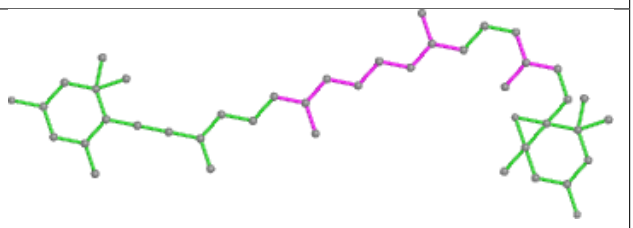
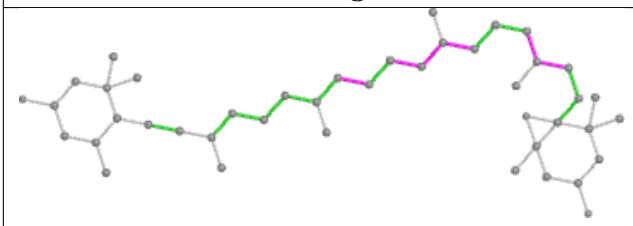


Bond angles



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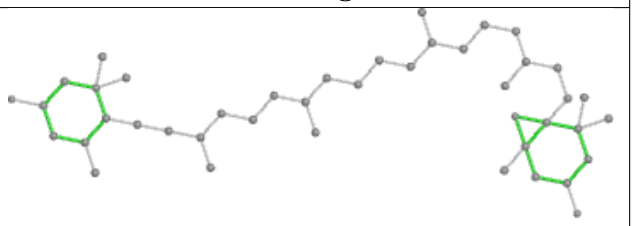
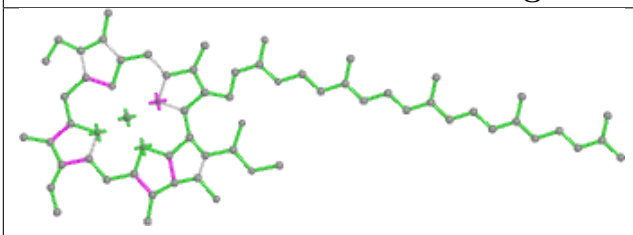


Rings

## Ligand CLA A 823



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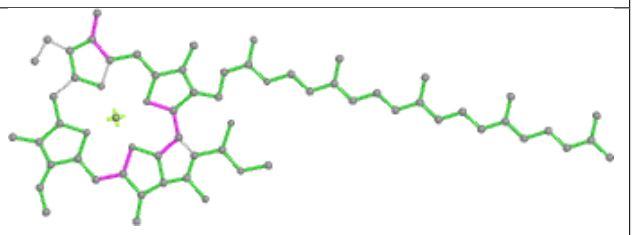
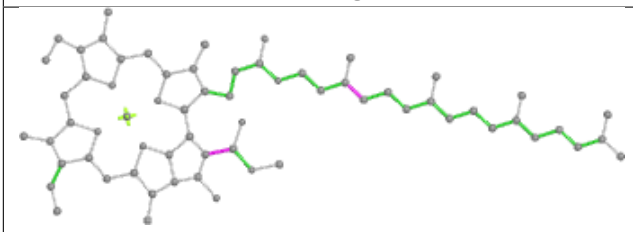
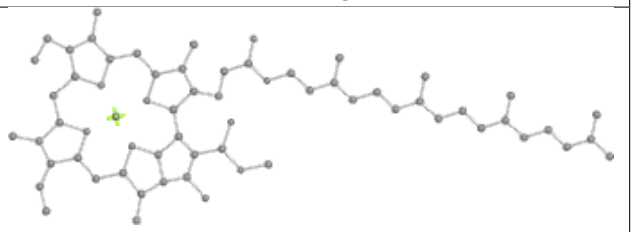


Bond angles

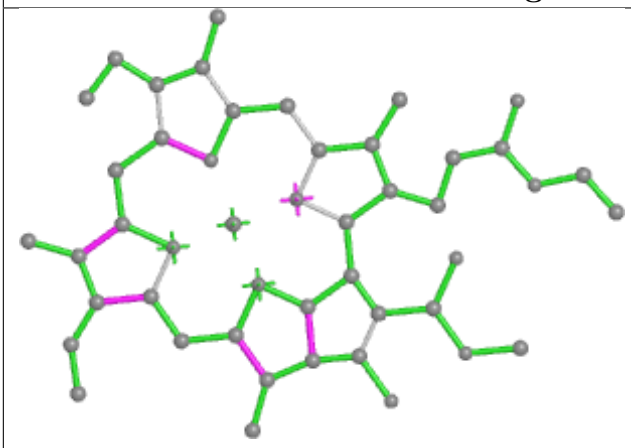


Torsions

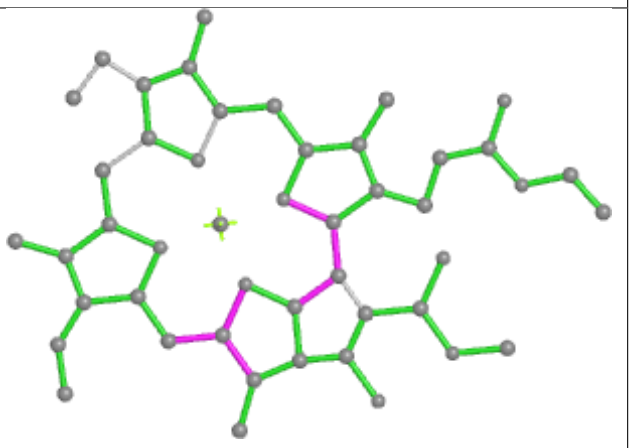


Rings

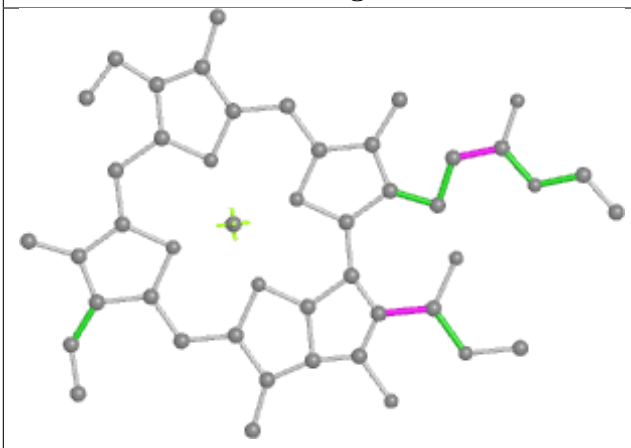
## Ligand CLA P 210



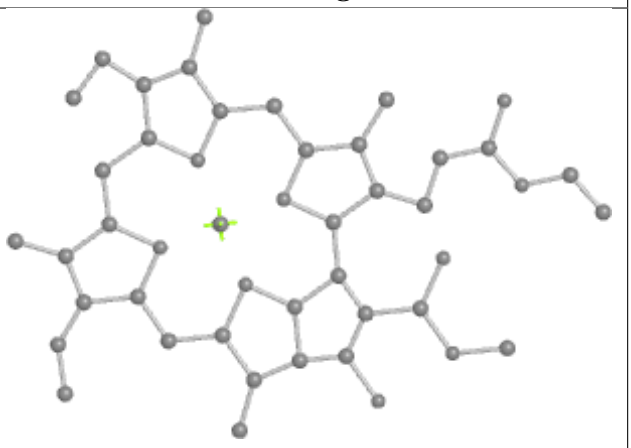
Bond lengths



Bond angles

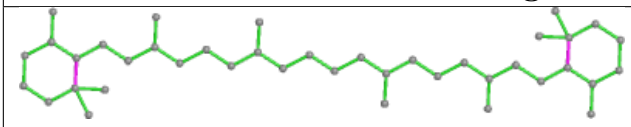


Torsions

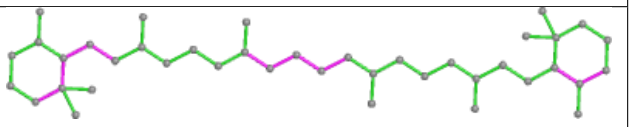


Rings

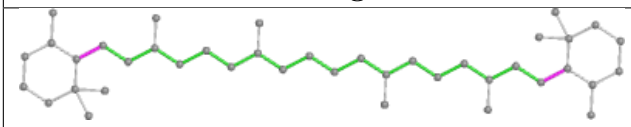
## Ligand BCR B 839



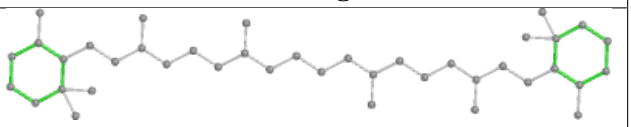
Bond lengths



Bond angles

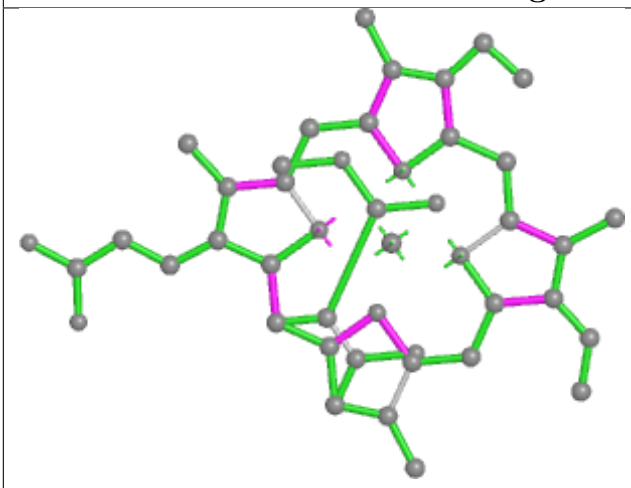


Torsions

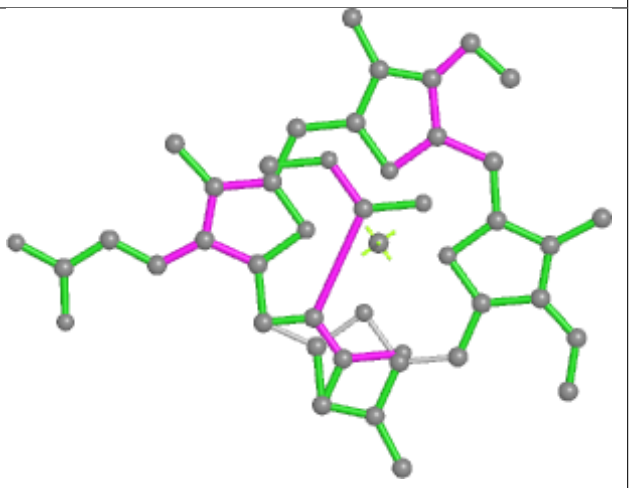


Rings

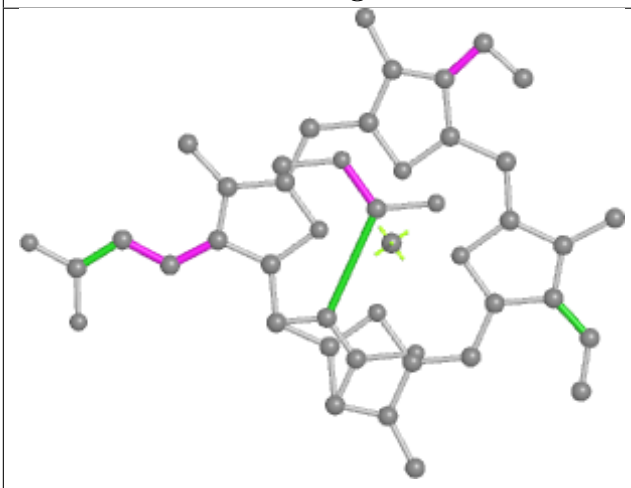
## Ligand KC1 S 212



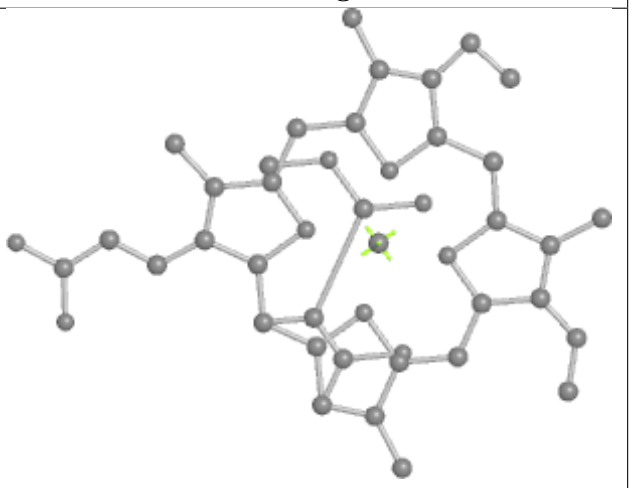
Bond lengths



Bond angles

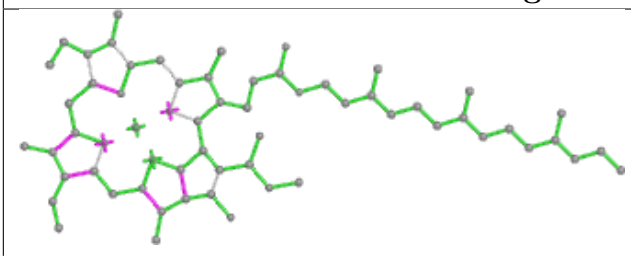


Torsions

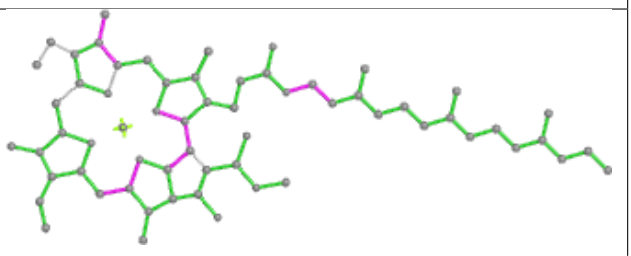


Rings

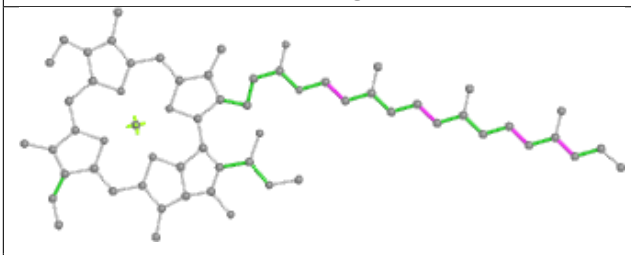
## Ligand CLA A 824



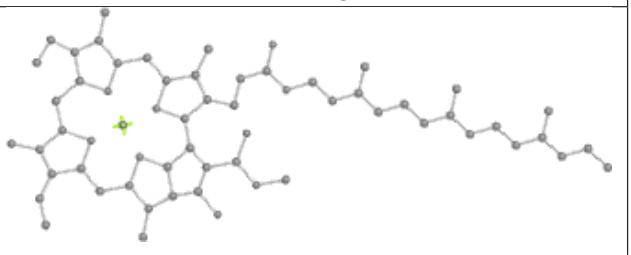
Bond lengths



Bond angles

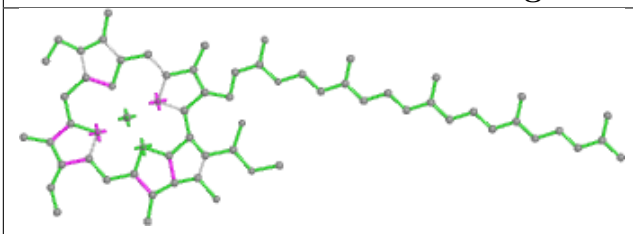


Torsions

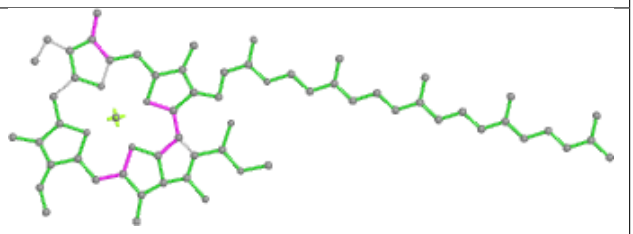


Rings

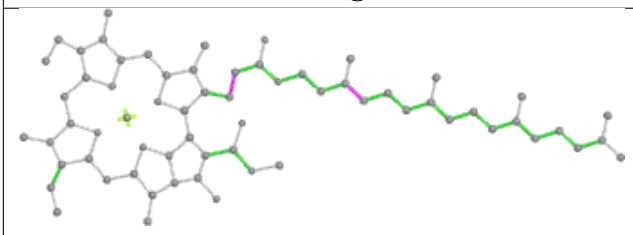
## Ligand CLA B 806



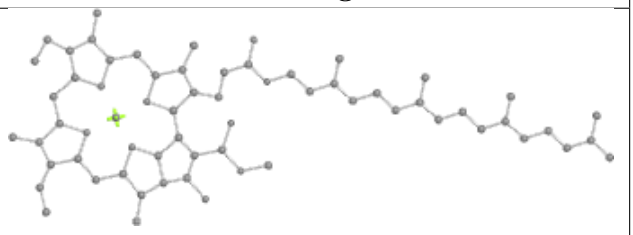
Bond lengths



Bond angles

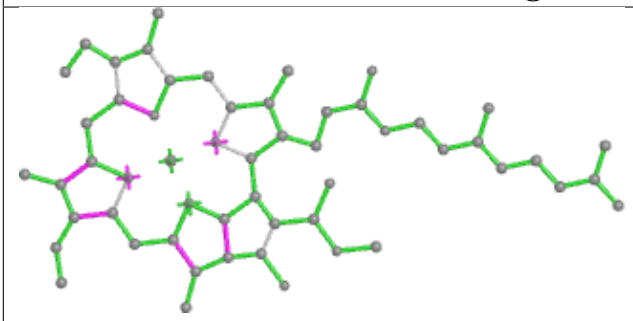


Torsions

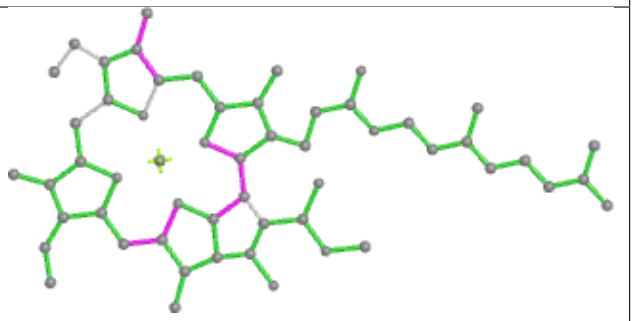


Rings

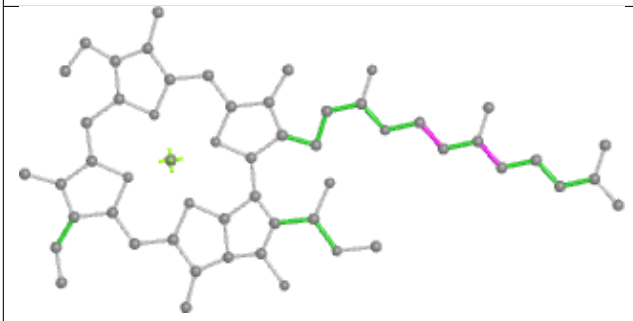
## Ligand CLA B 813



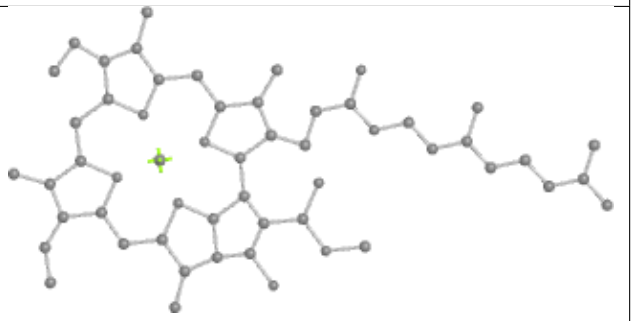
Bond lengths



Bond angles

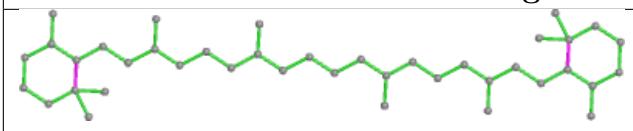


Torsions

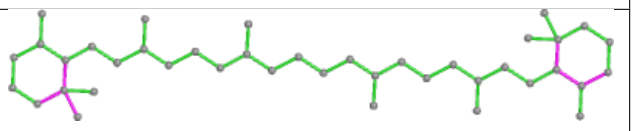


Rings

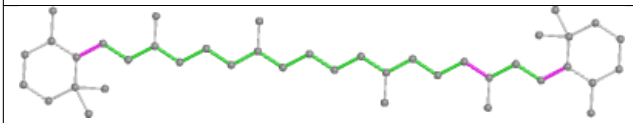
## Ligand BCR B 838



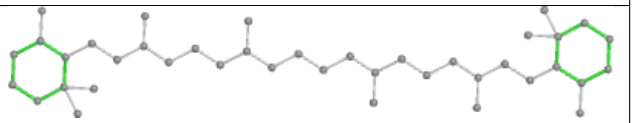
Bond lengths



Bond angles

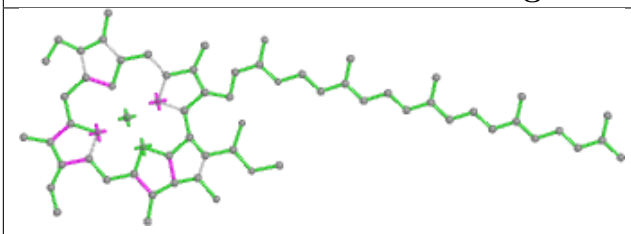


Torsions

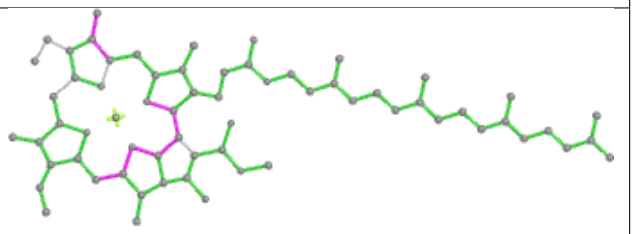


Rings

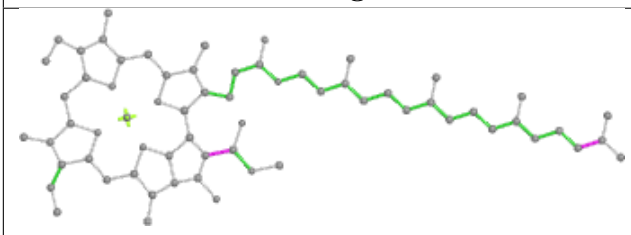
## Ligand CLA O 204



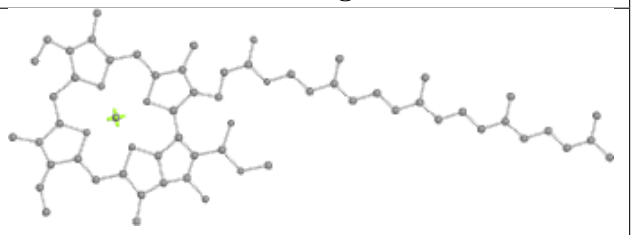
Bond lengths



Bond angles

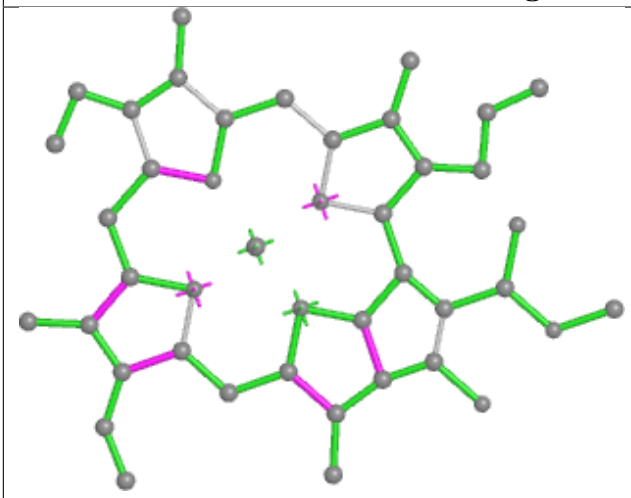


Torsions

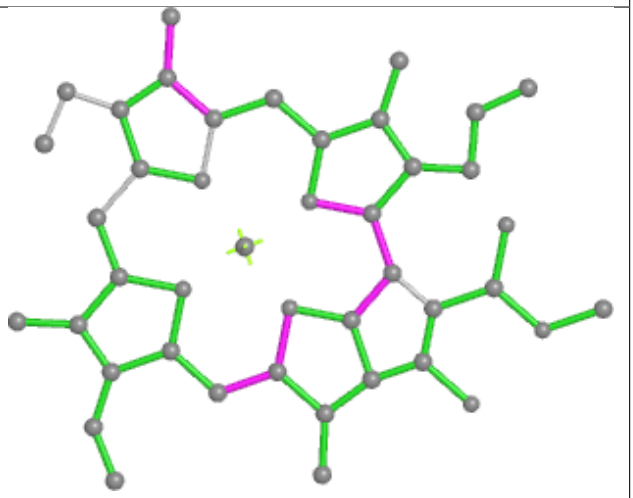


Rings

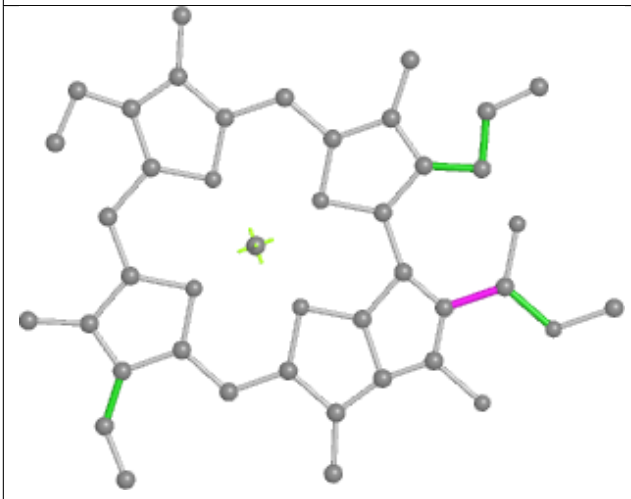
## Ligand CLA A 819



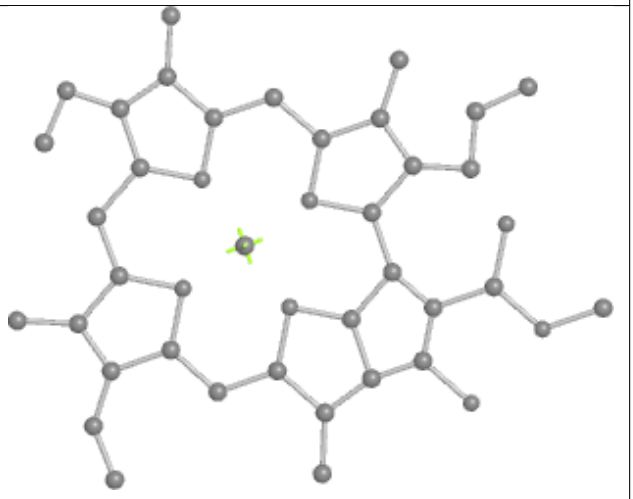
Bond lengths



Bond angles

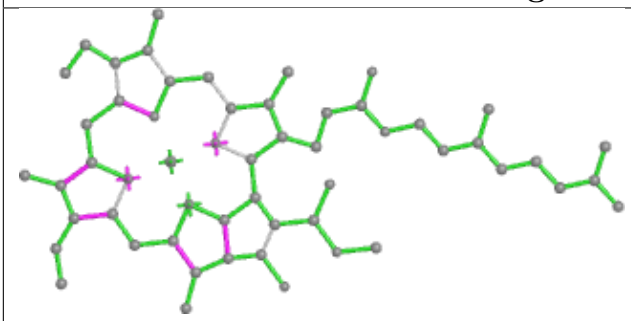


Torsions

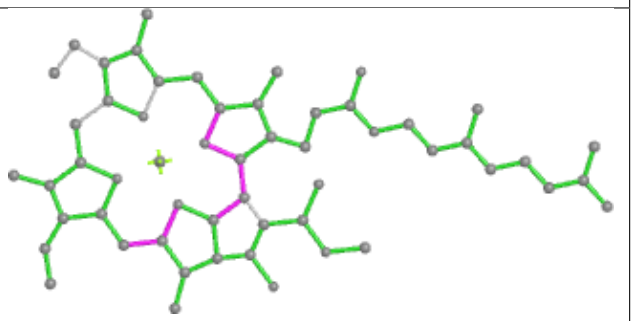


Rings

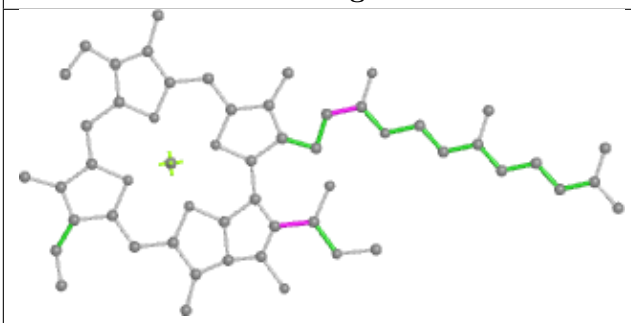
## Ligand CLA k 103



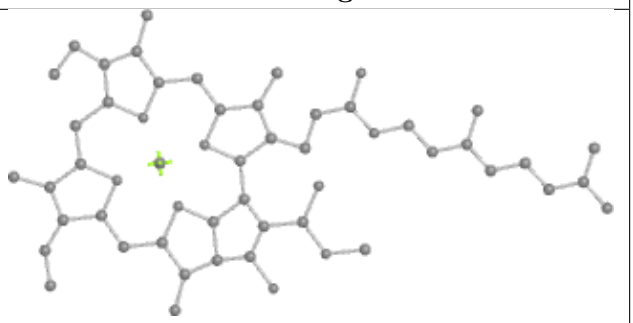
Bond lengths



Bond angles

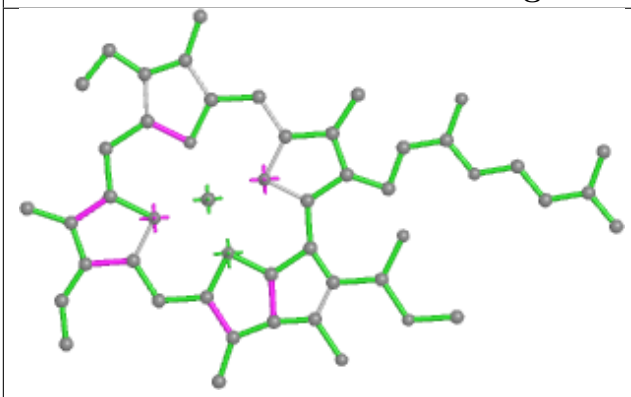


Torsions

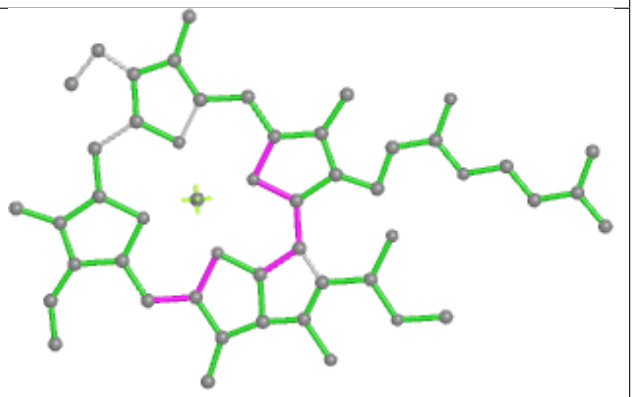


Rings

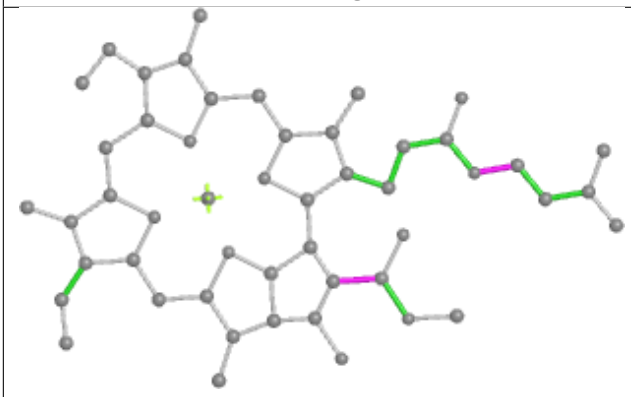
## Ligand CLA A 827



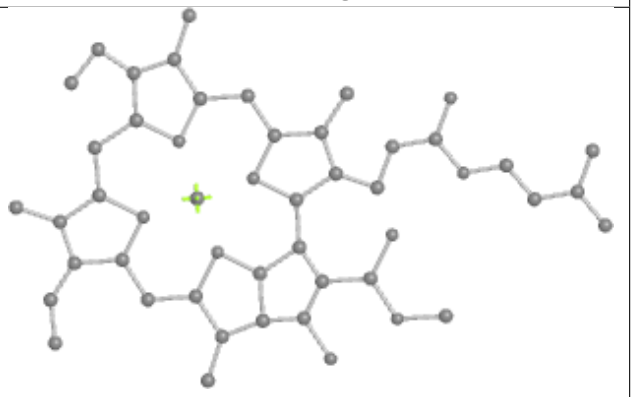
Bond lengths



Bond angles

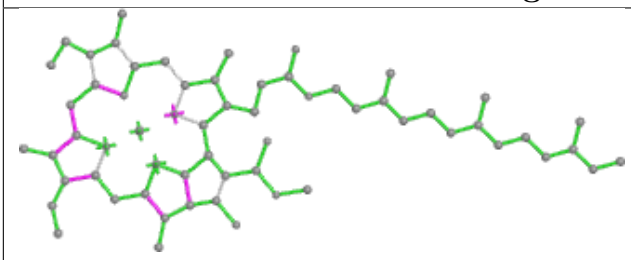


Torsions

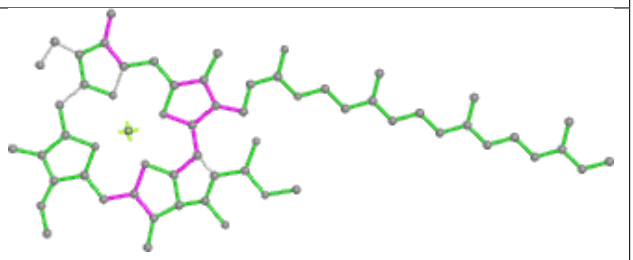


Rings

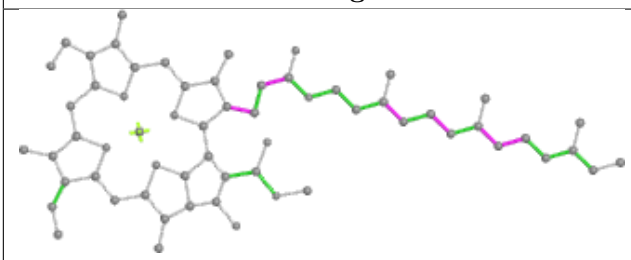
## Ligand CLA G 205



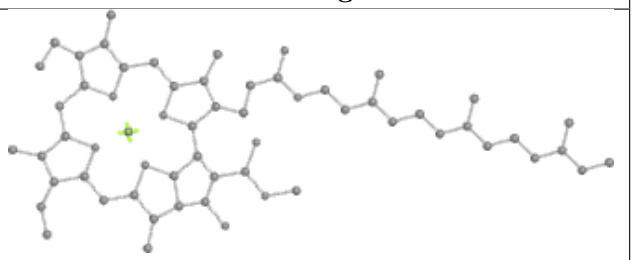
Bond lengths



Bond angles

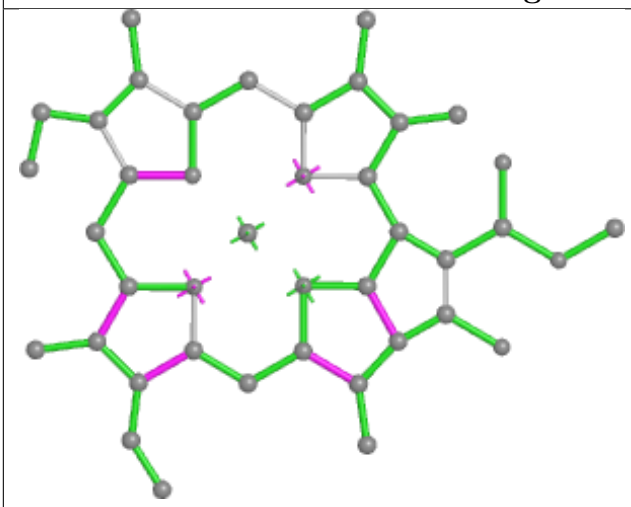


Torsions

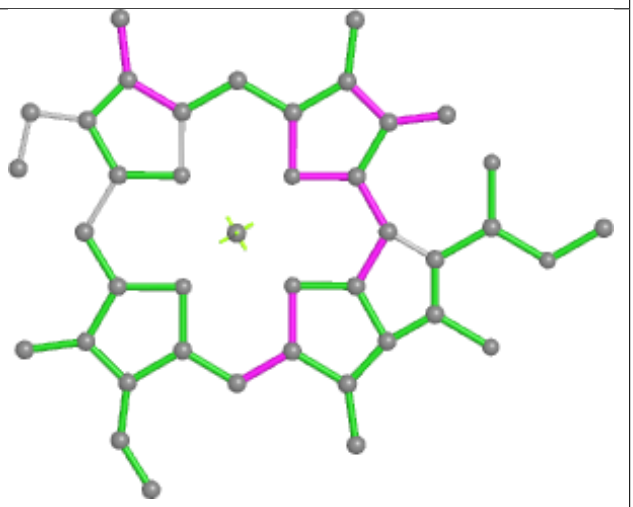


Rings

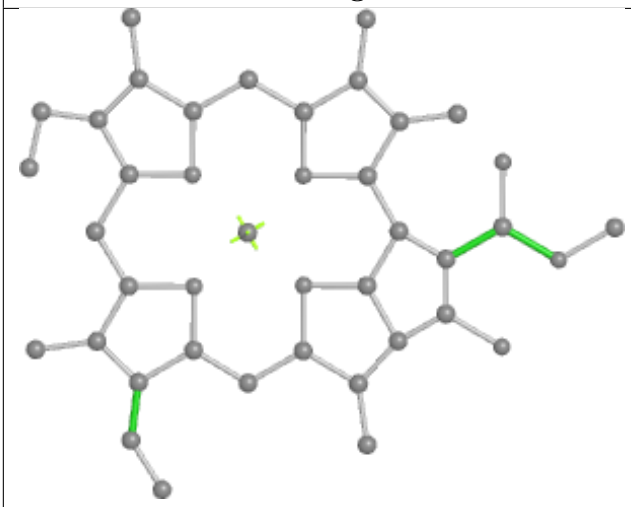
## Ligand CLA O 211



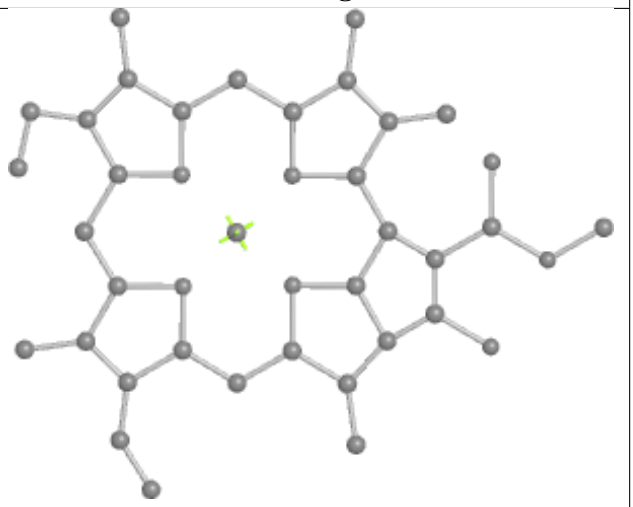
Bond lengths



Bond angles

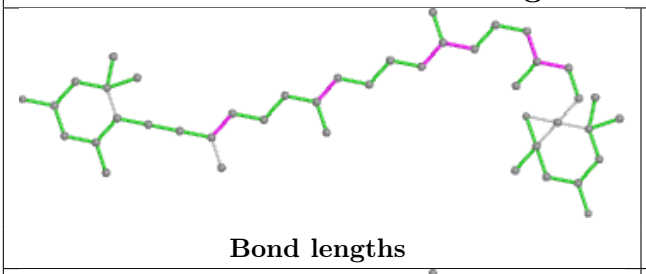


Torsions

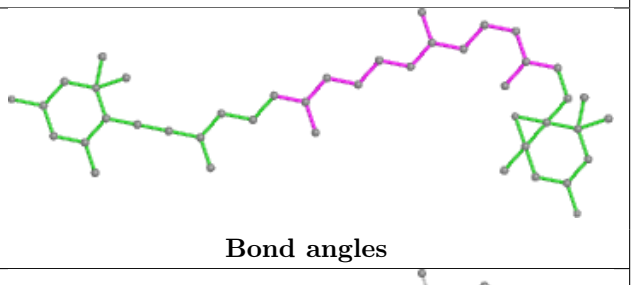


Rings

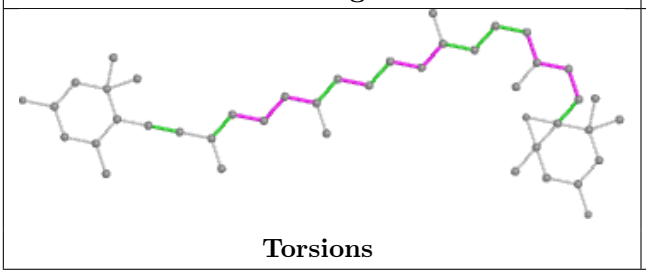
## Ligand DD6 H 211



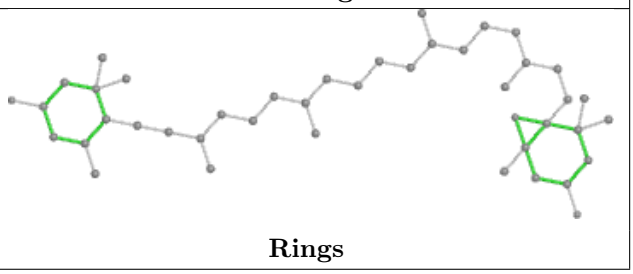
Bond lengths



Bond angles

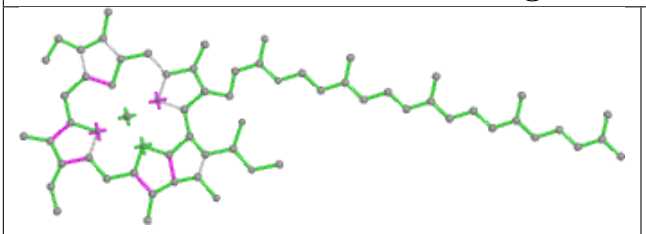


Torsions

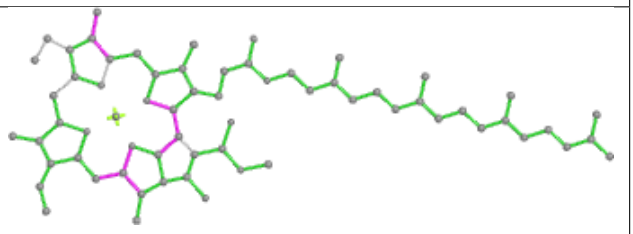


Rings

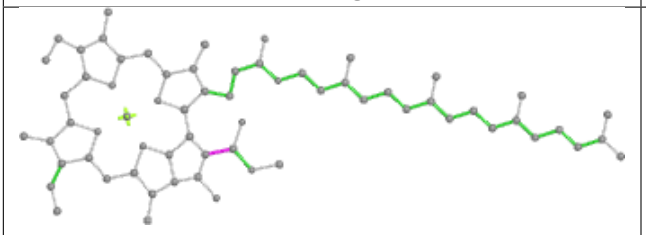
## Ligand CLA A 816



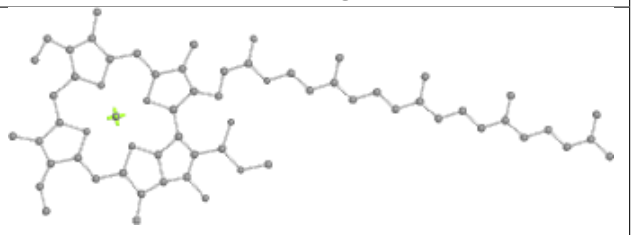
Bond lengths



Bond angles

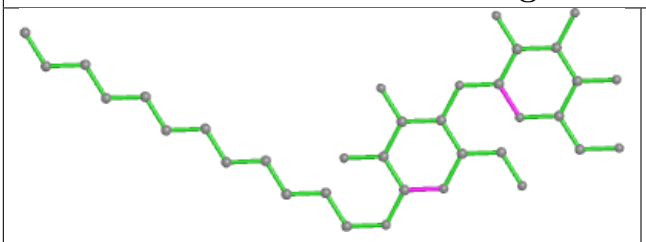


Torsions

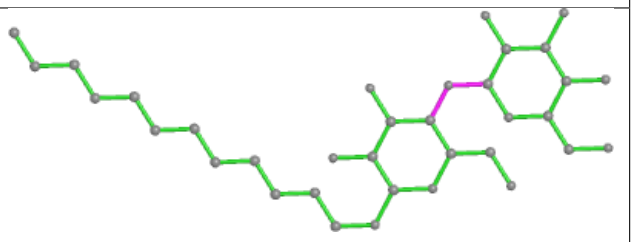


Rings

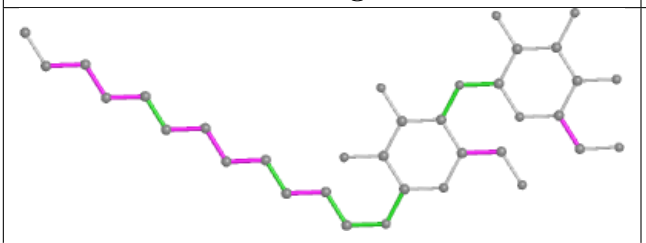
## Ligand LMU A 847



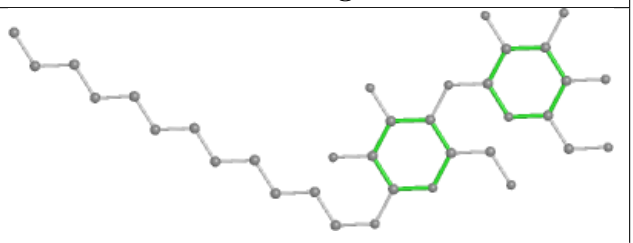
Bond lengths



Bond angles

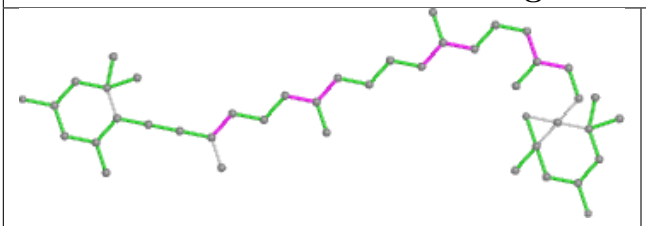


Torsions

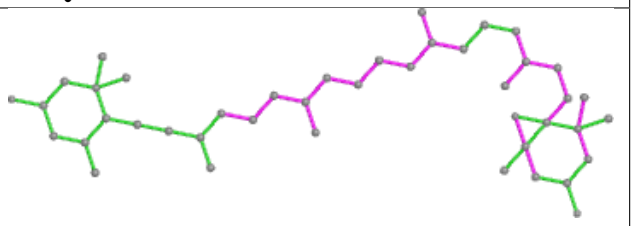


Rings

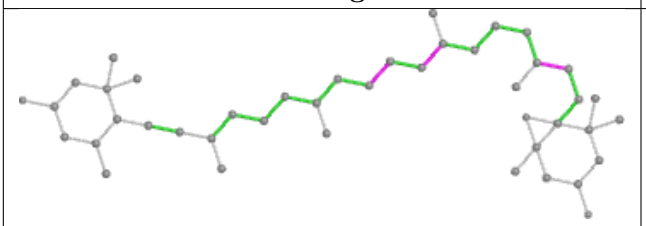
## Ligand DD6 Q 202



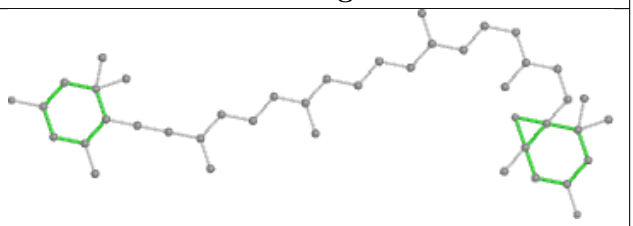
Bond lengths



Bond angles

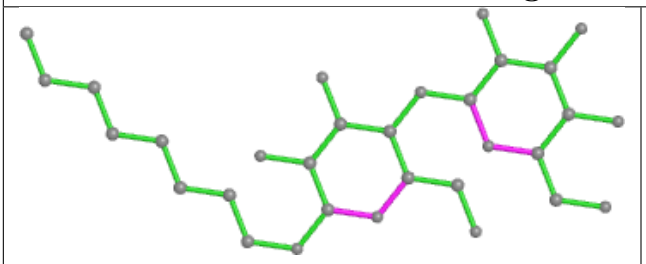


Torsions

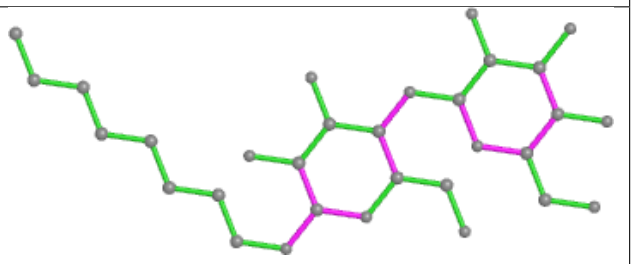


Rings

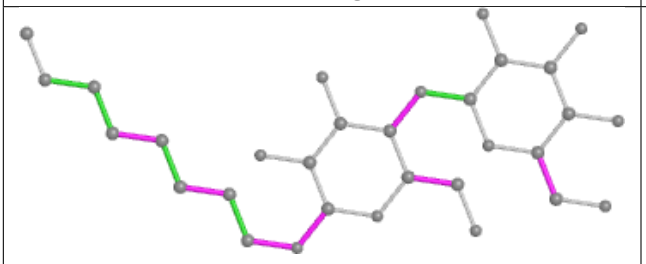
## Ligand LMU S 203



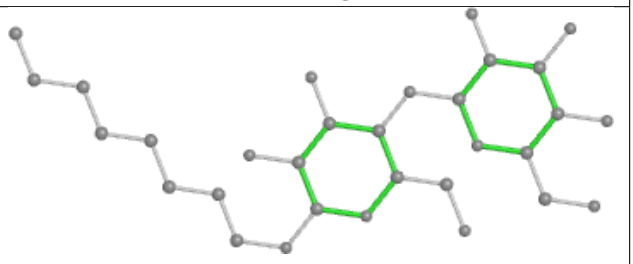
Bond lengths



Bond angles

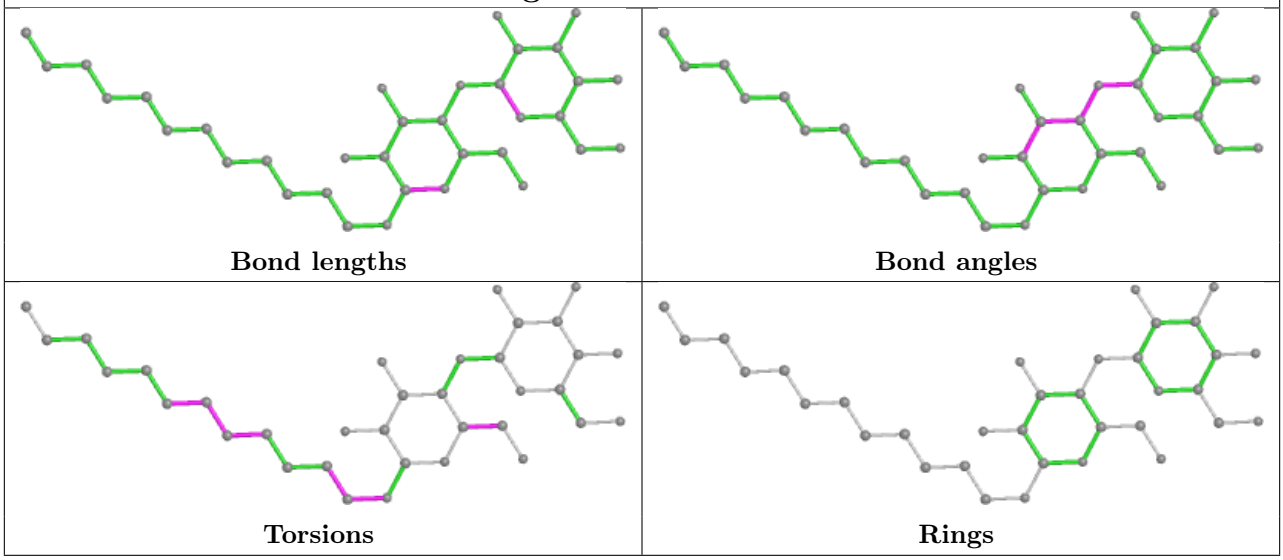


Torsions

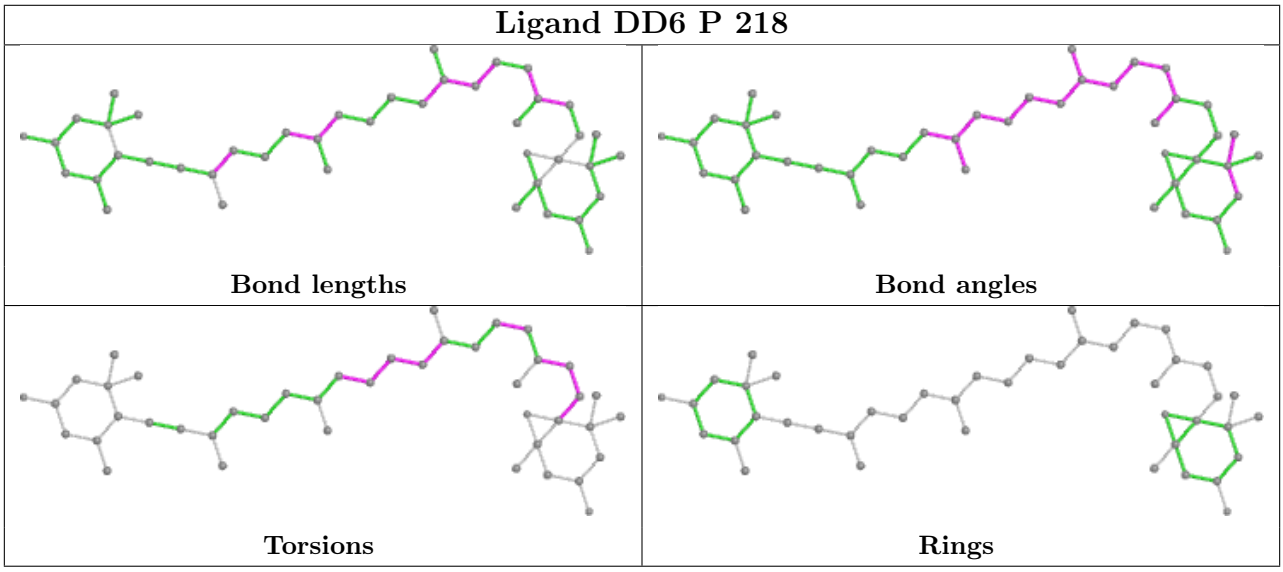


Rings

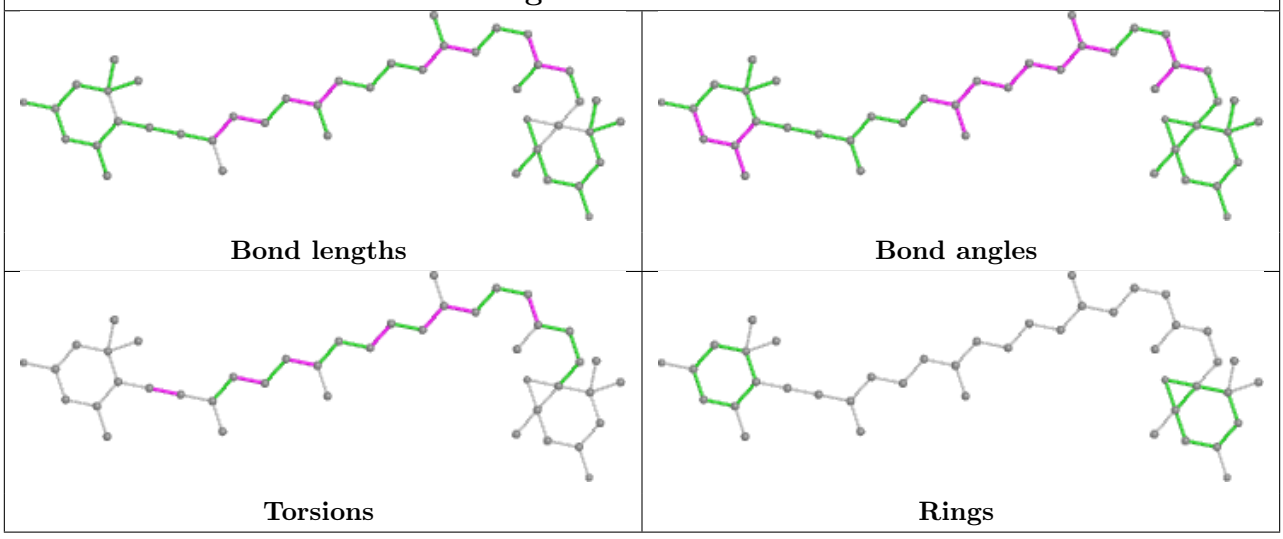
## Ligand LMU F 807



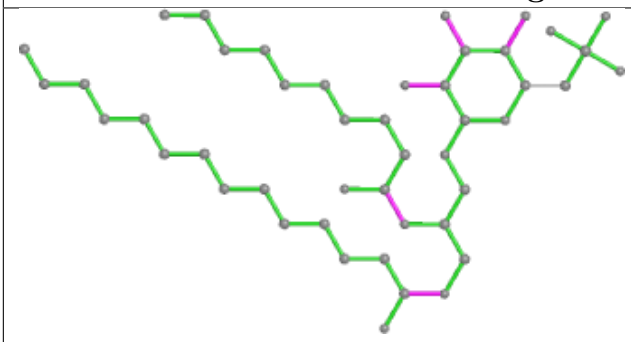

## Ligand DD6 P 218



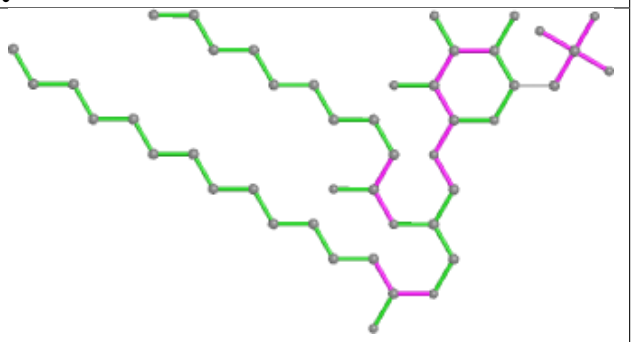

## Ligand DD6 K 208



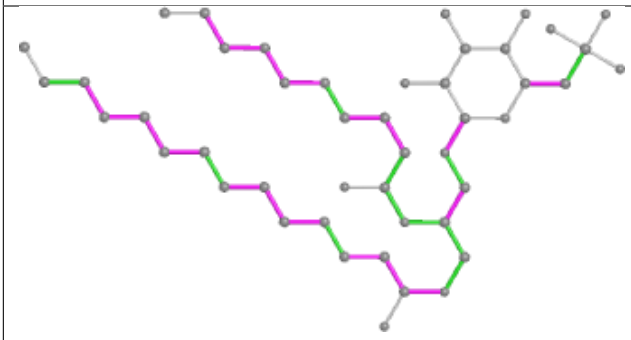
**Ligand SQD S 201**



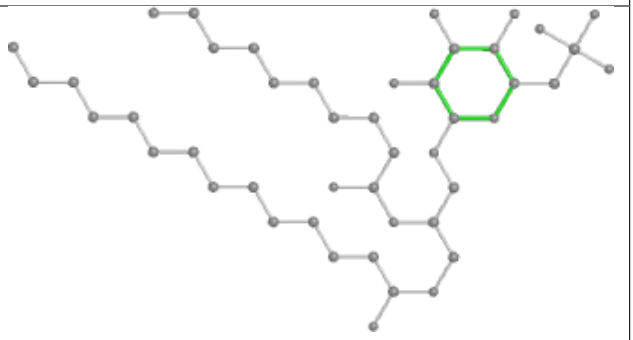
**Bond lengths**



**Bond angles**

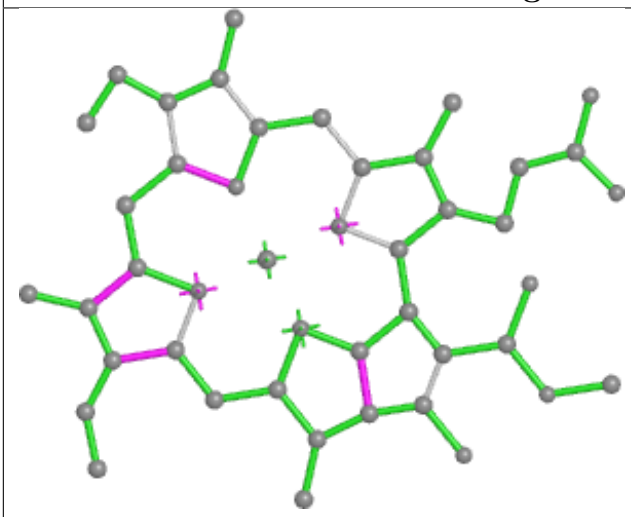


**Torsions**

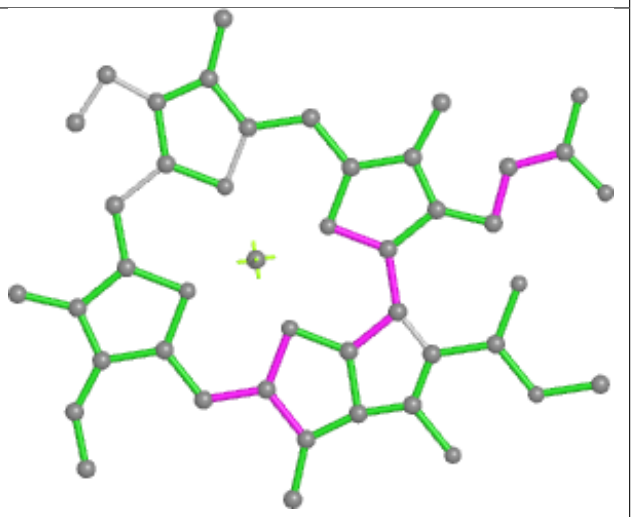


**Rings**

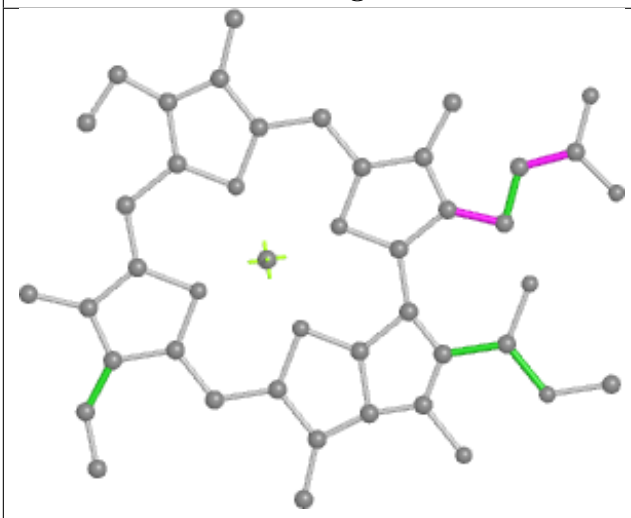
**Ligand CLA H 210**



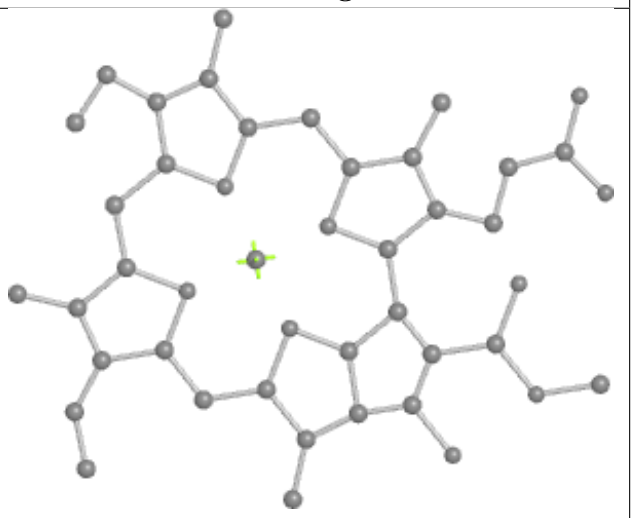
**Bond lengths**



**Bond angles**

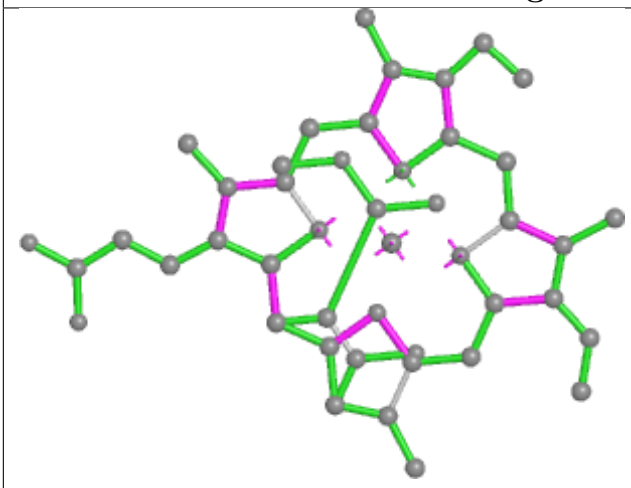


**Torsions**

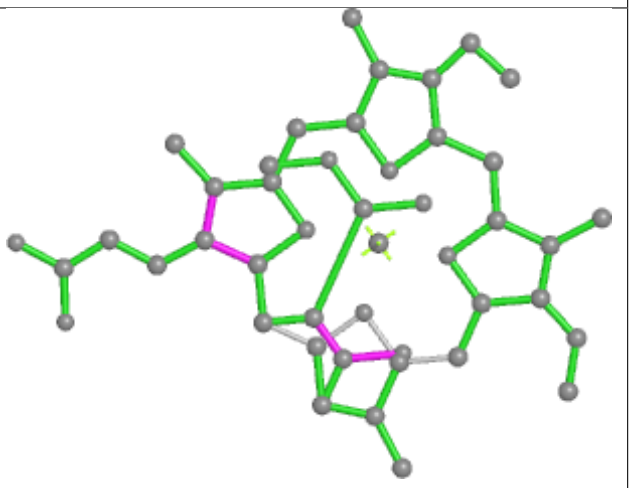


**Rings**

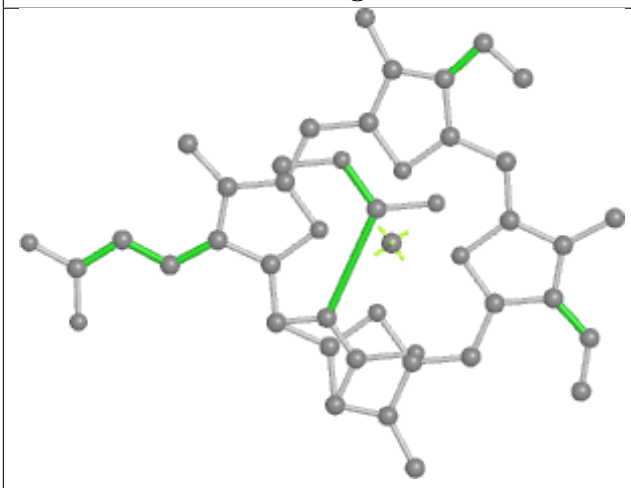
## Ligand KC1 P 203



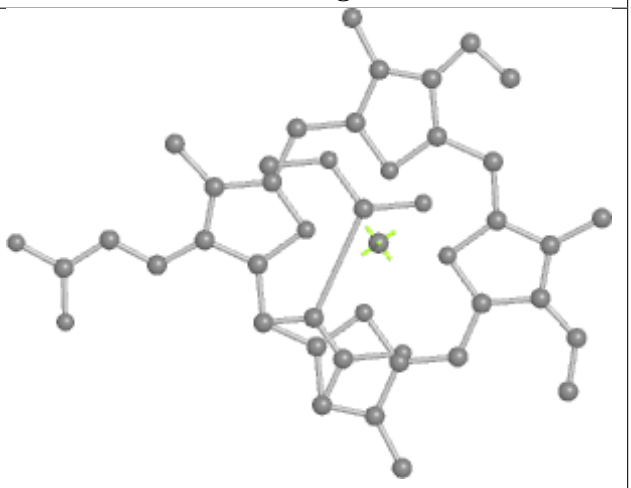
Bond lengths



Bond angles

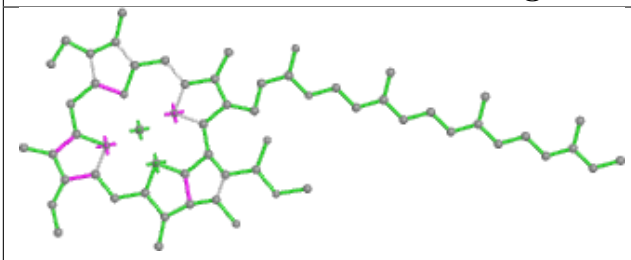


Torsions

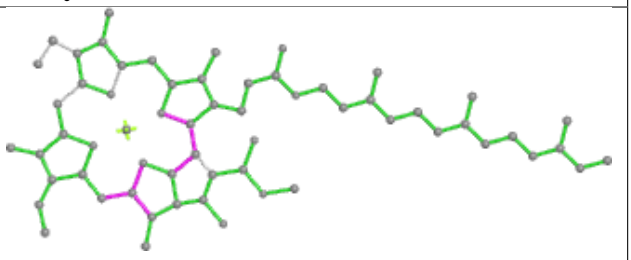


Rings

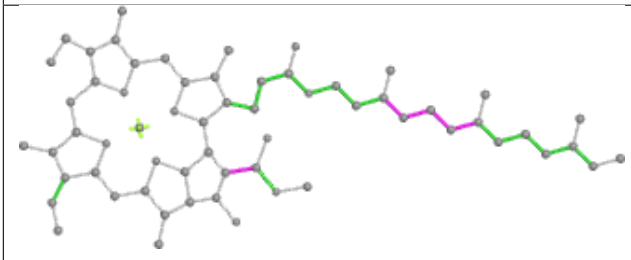
## Ligand CLA Q 204



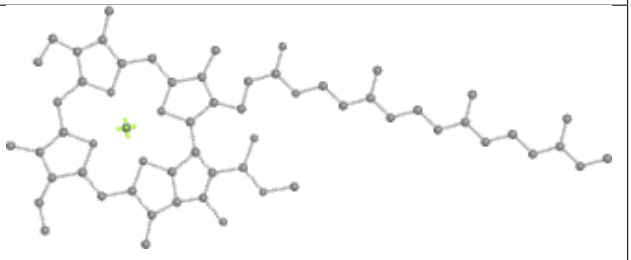
Bond lengths



Bond angles

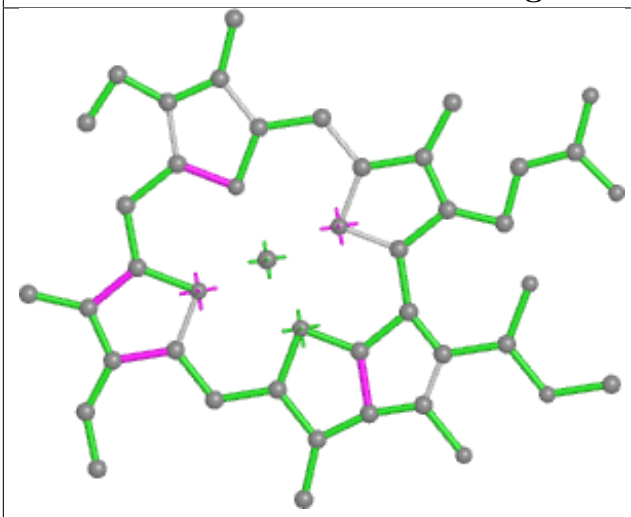


Torsions

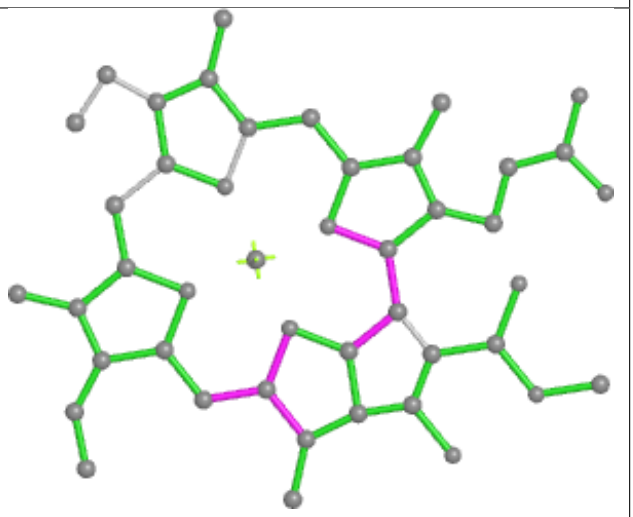


Rings

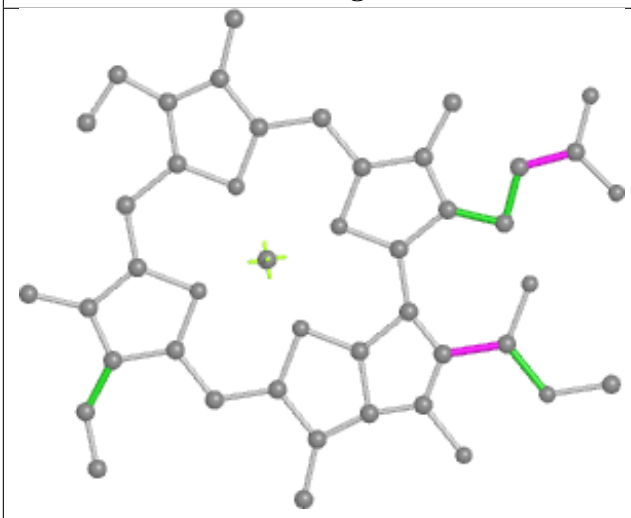
## Ligand CLA P 214



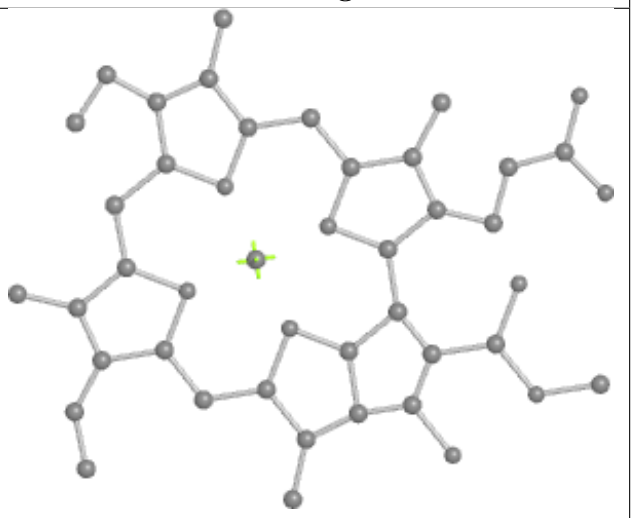
Bond lengths



Bond angles

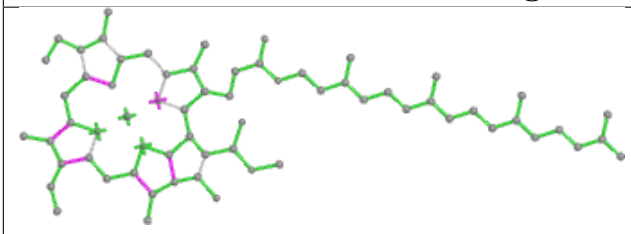


Torsions

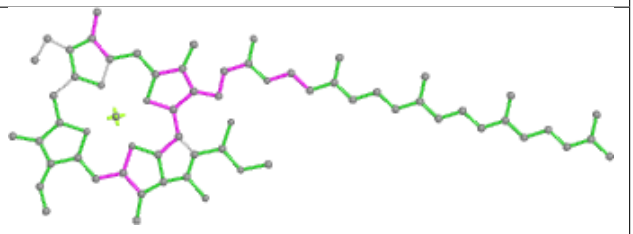


Rings

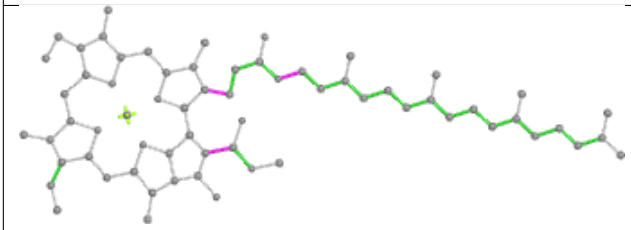
## Ligand CLA U 207



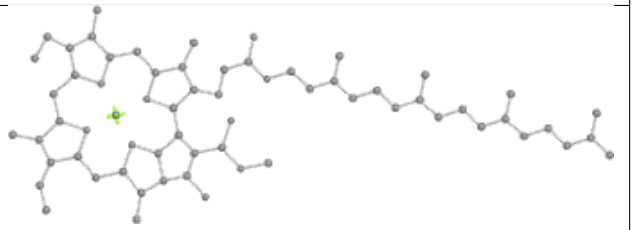
Bond lengths



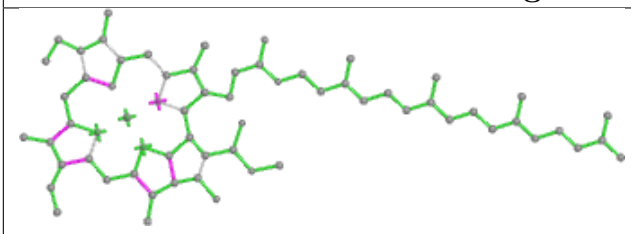
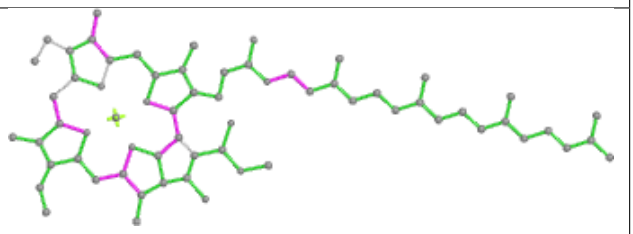
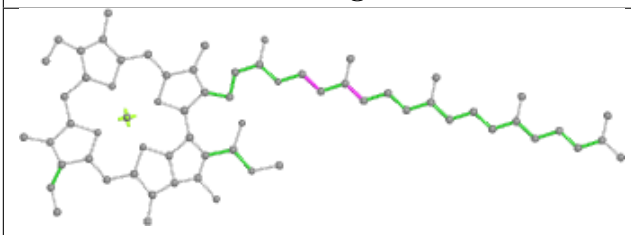
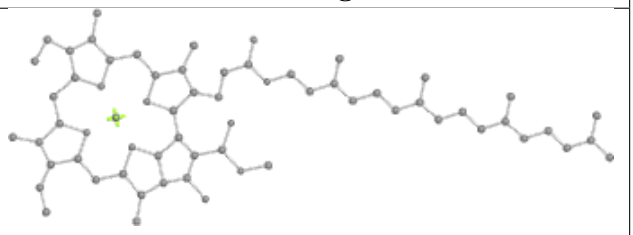
Bond angles

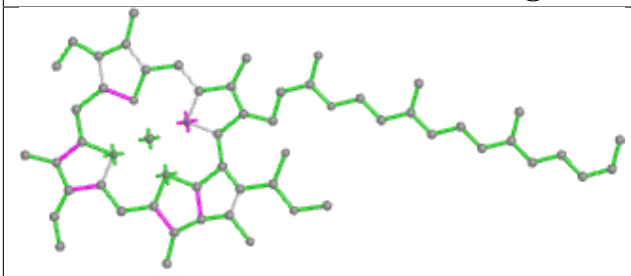
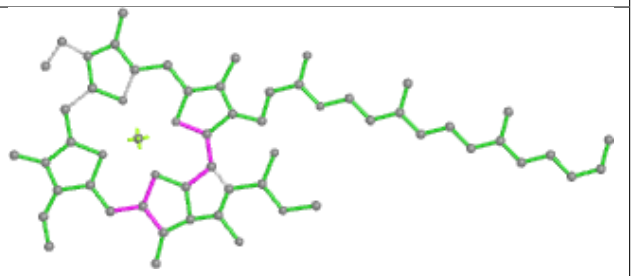
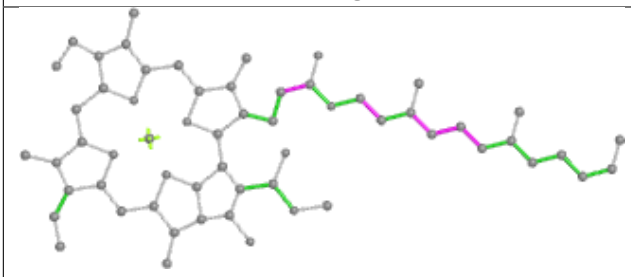
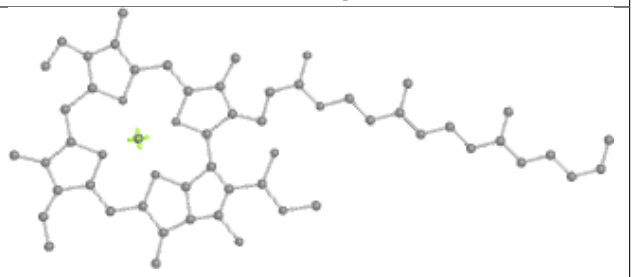


Torsions

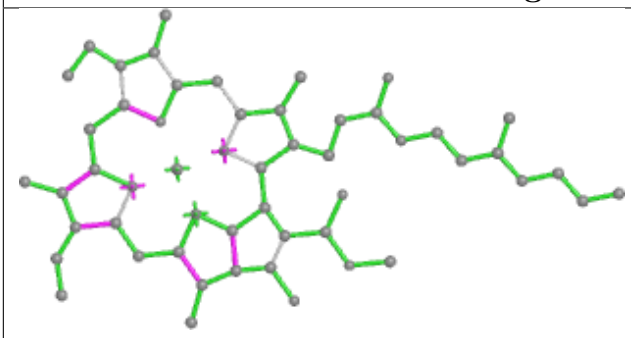


Rings

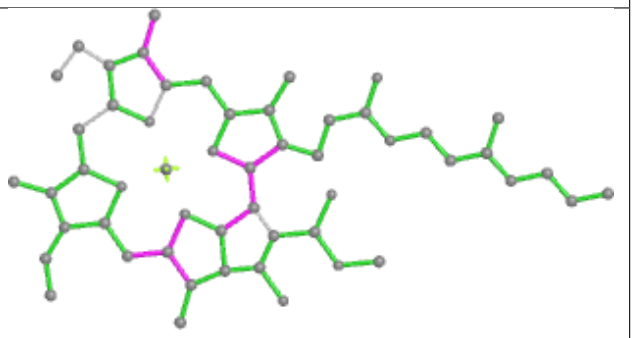
| Ligand CLA A 818 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand CLA B 814 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

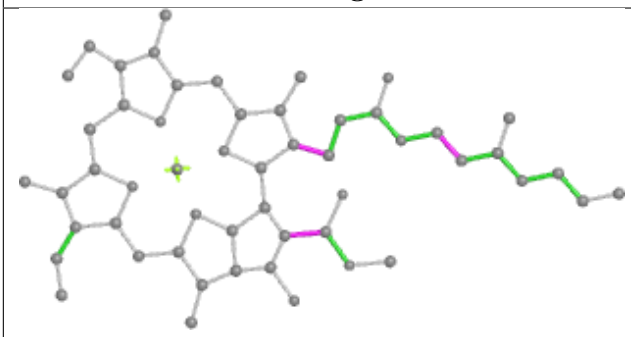
## Ligand CLA B 818



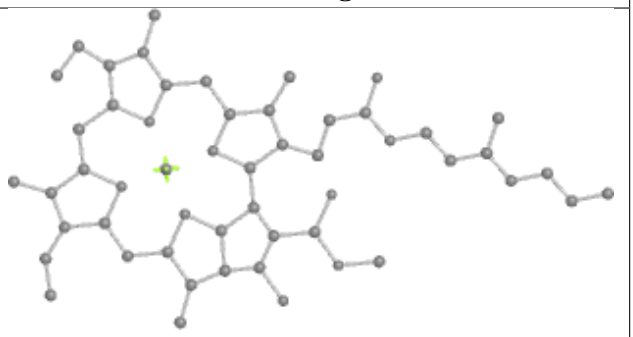
Bond lengths



Bond angles

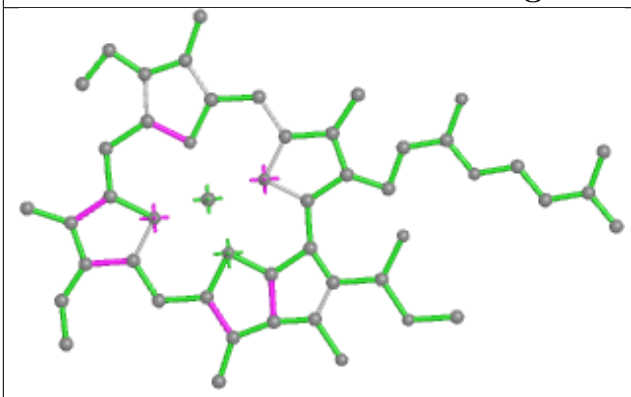


Torsions

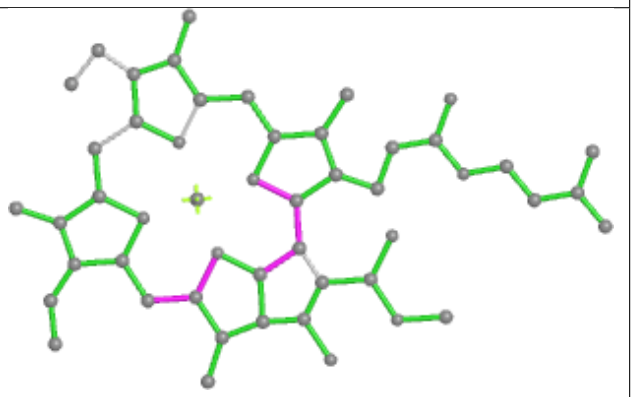


Rings

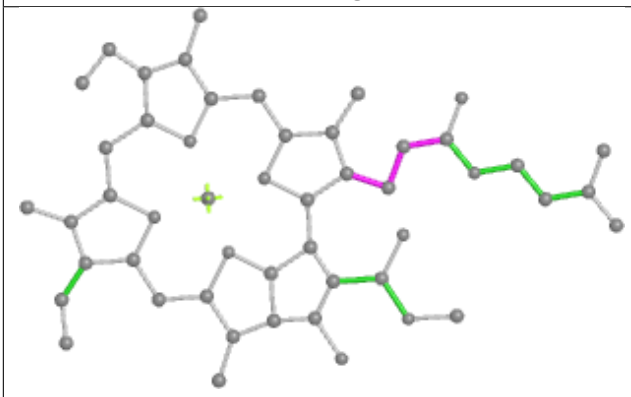
## Ligand CLA B 847



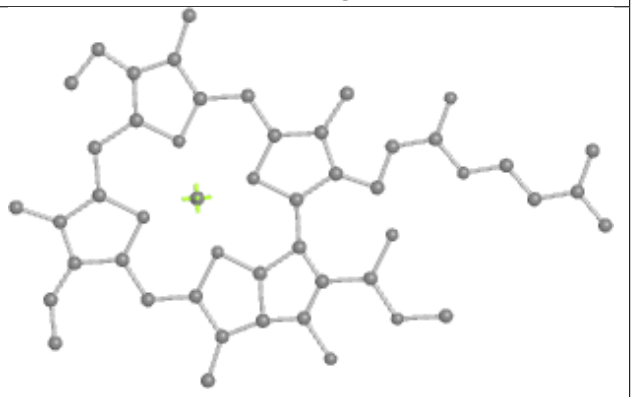
Bond lengths



Bond angles

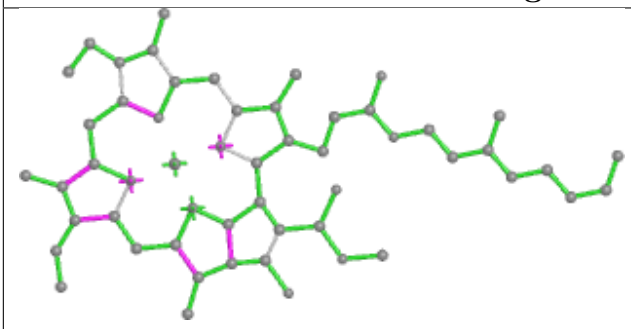


Torsions

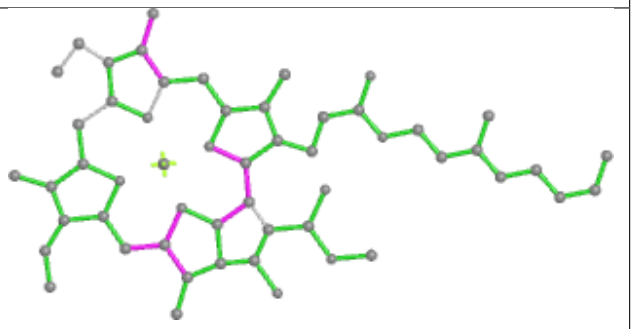


Rings

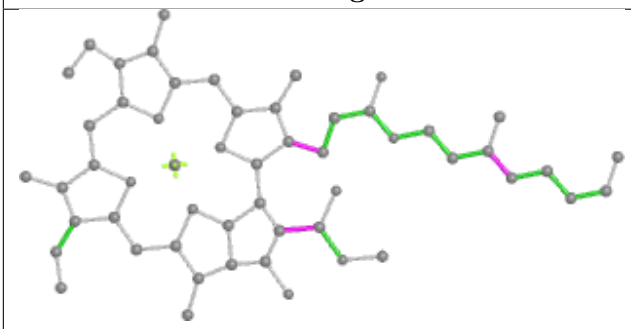
## Ligand CLA B 811



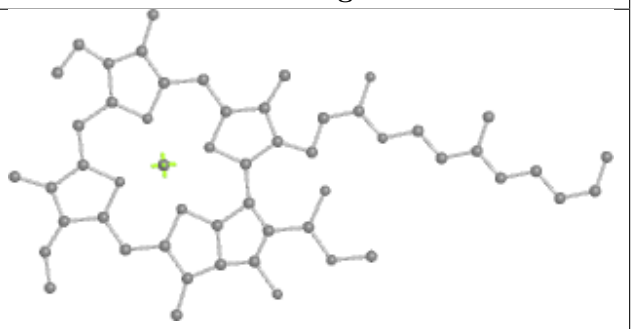
Bond lengths



Bond angles

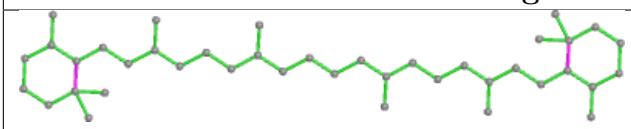


Torsions

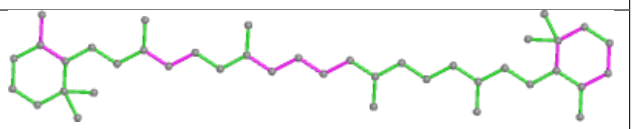


Rings

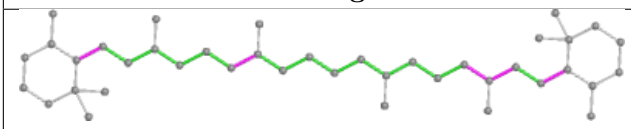
## Ligand BCR A 844



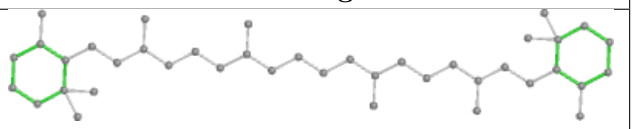
Bond lengths



Bond angles

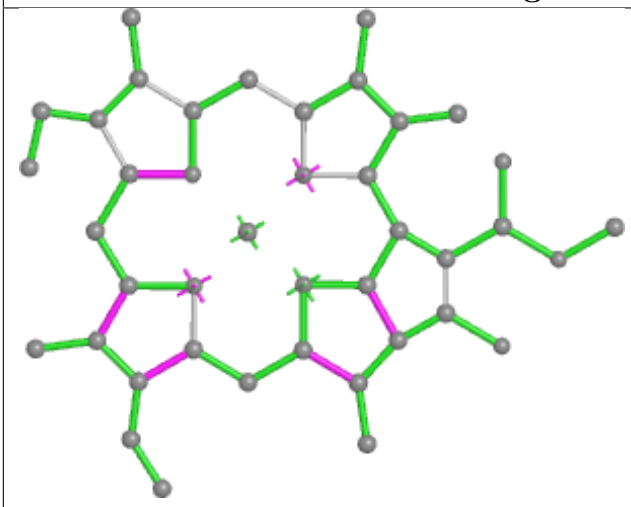


Torsions

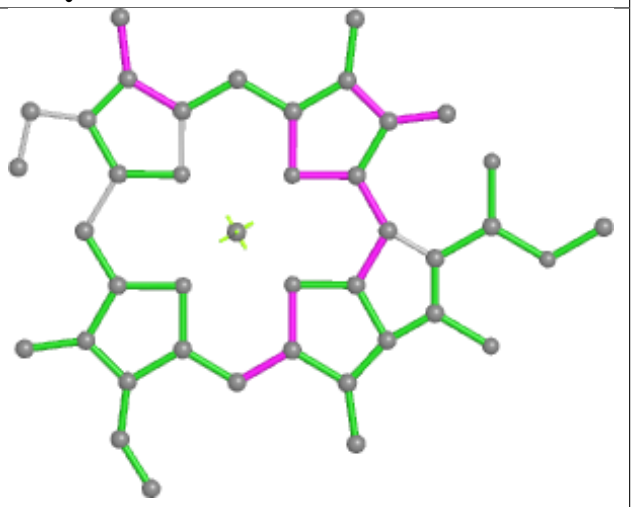


Rings

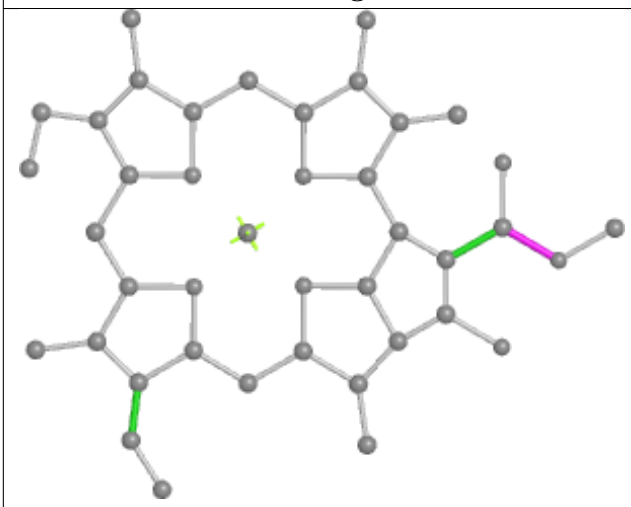
## Ligand CLA Q 211



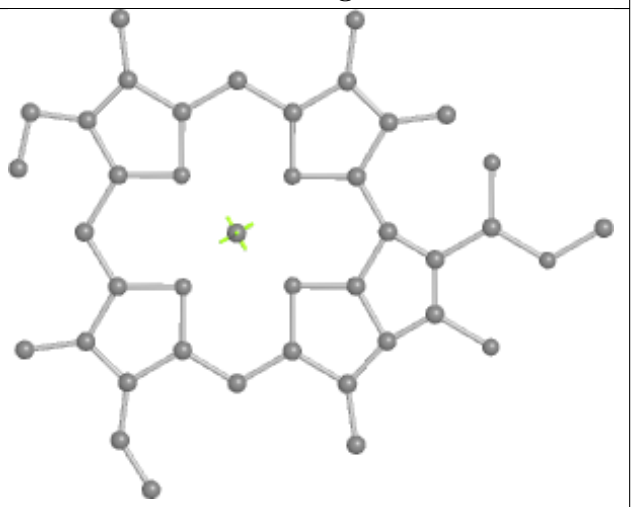
Bond lengths



Bond angles

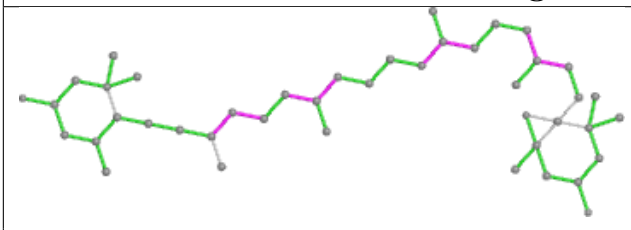


Torsions

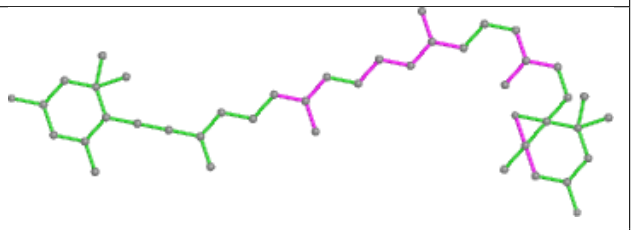


Rings

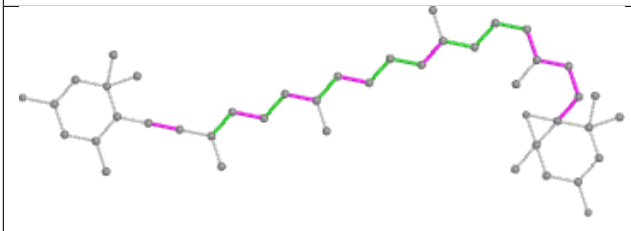
## Ligand DD6 S 211



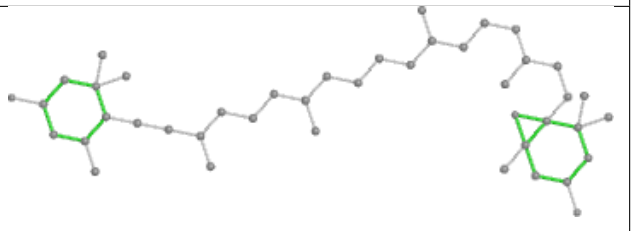
Bond lengths



Bond angles

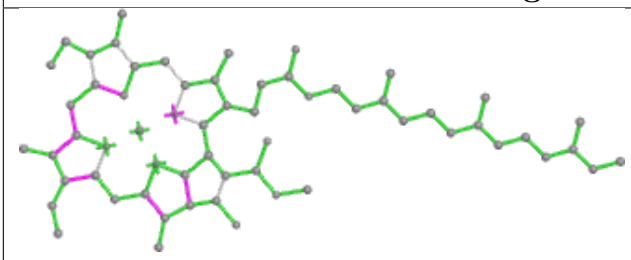


Torsions

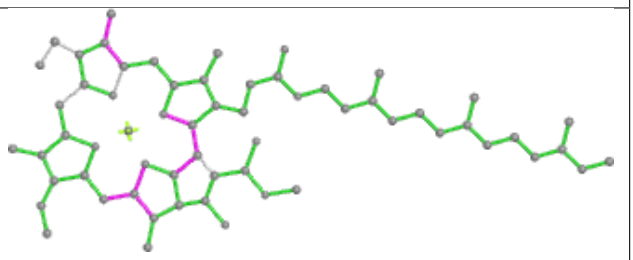


Rings

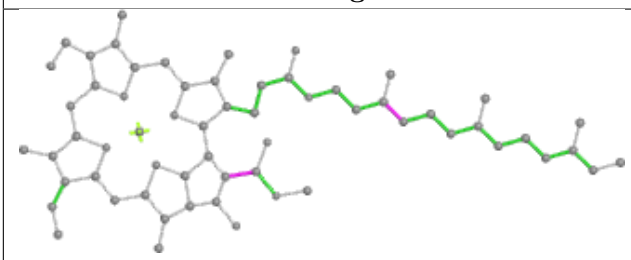
## Ligand CLA H 204



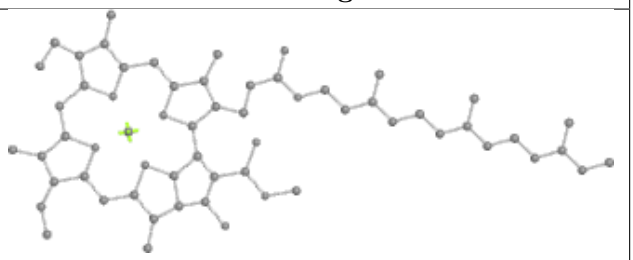
Bond lengths



Bond angles

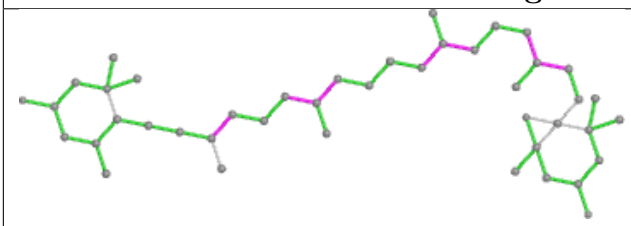


Torsions

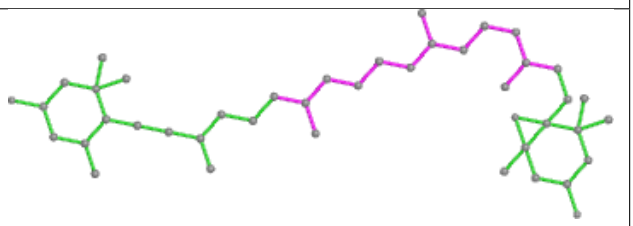


Rings

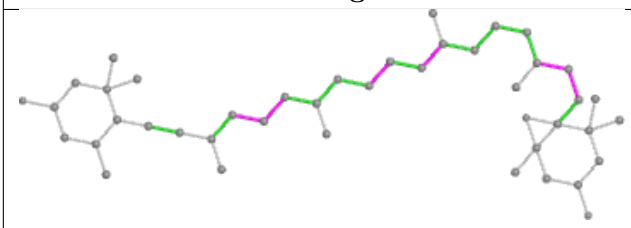
## Ligand DD6 O 214



Bond lengths

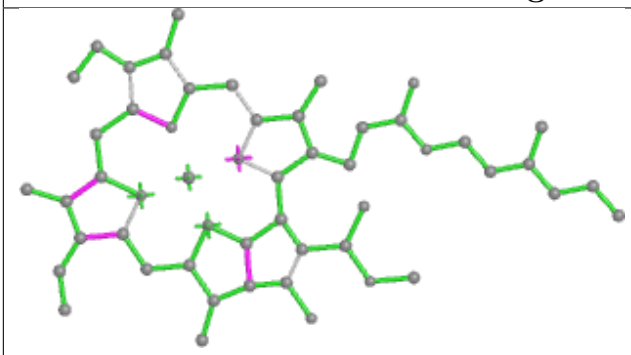
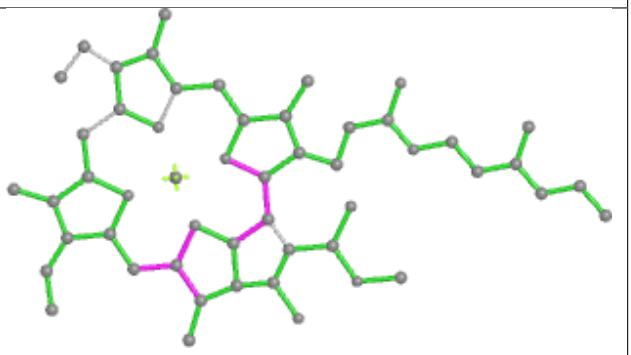
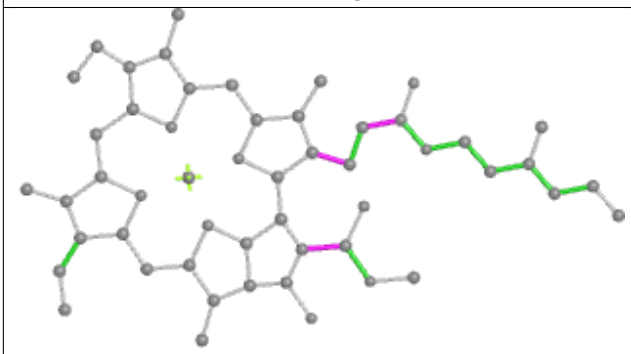
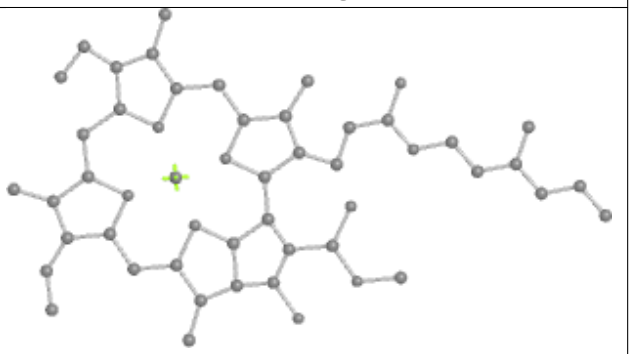


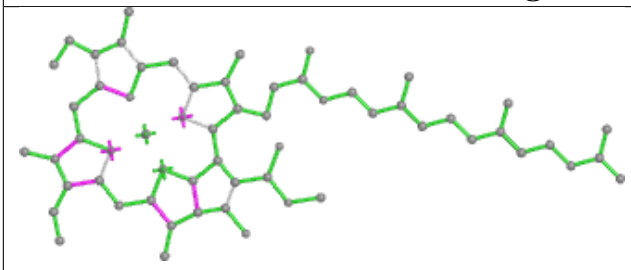
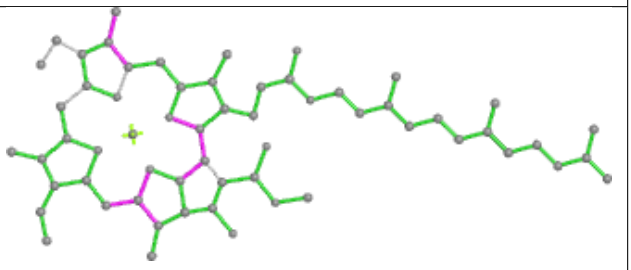
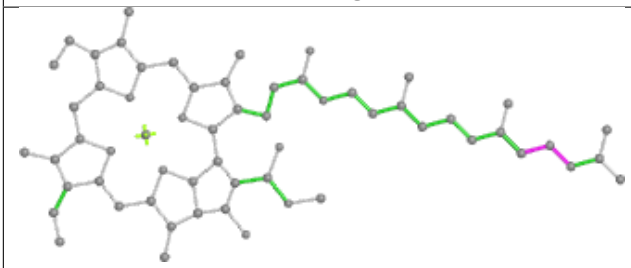
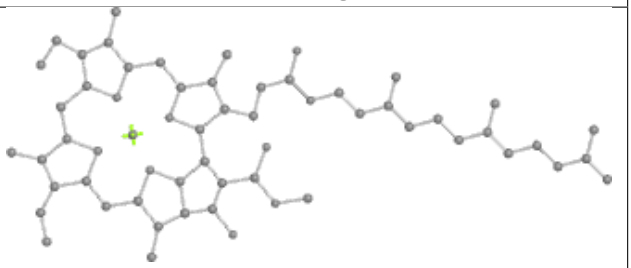
Bond angles



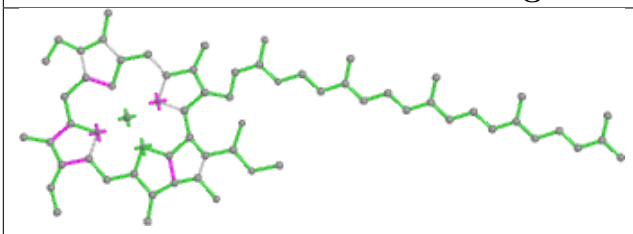
Torsions

Rings

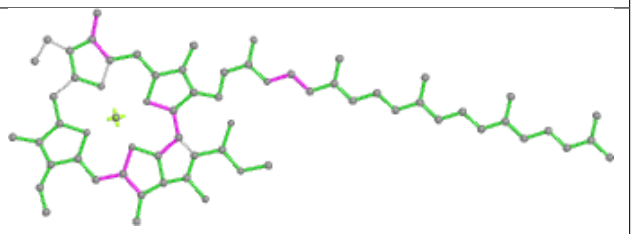
| Ligand CLA S 209 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand CLA B 815 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

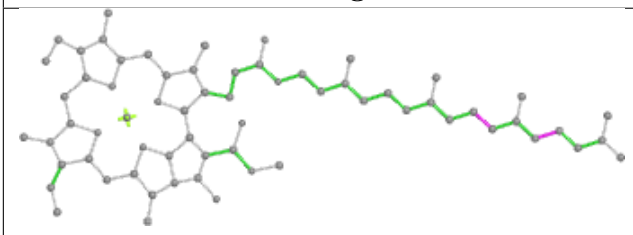
## Ligand CLA A 833



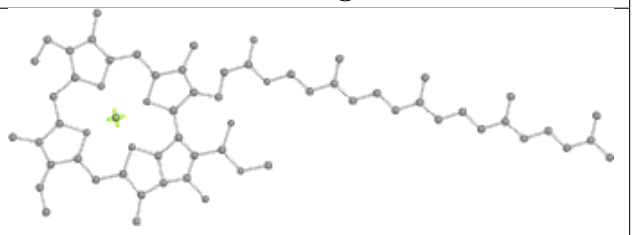
Bond lengths



Bond angles

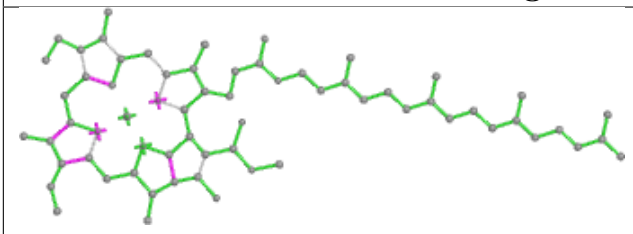


Torsions

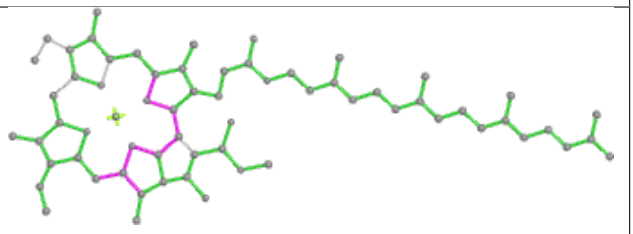


Rings

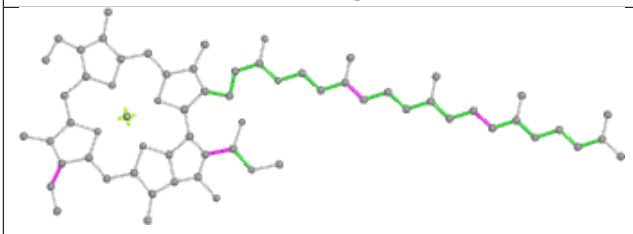
## Ligand CLA A 848



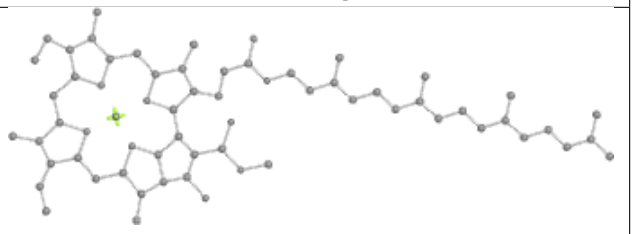
Bond lengths



Bond angles

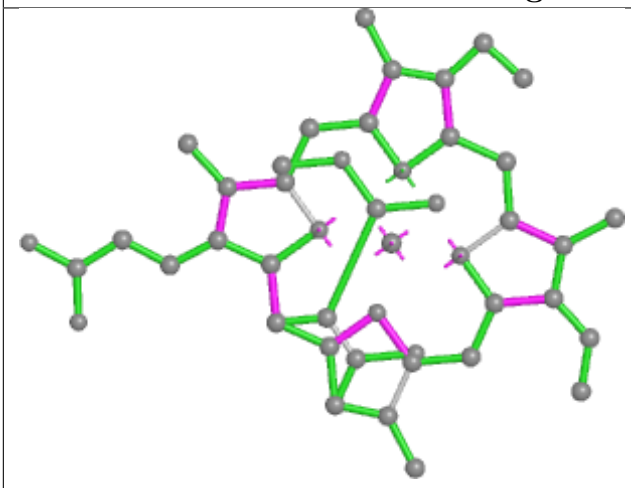


Torsions

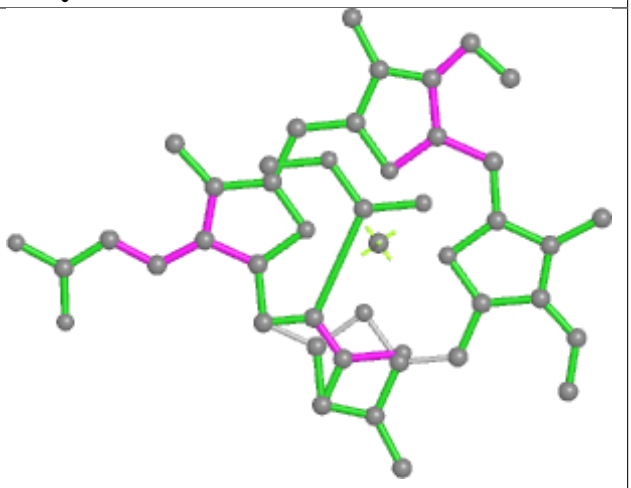


Rings

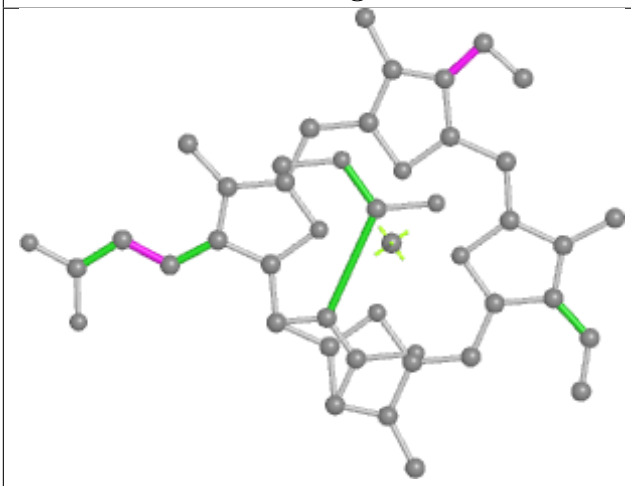
## Ligand KC1 Q 210



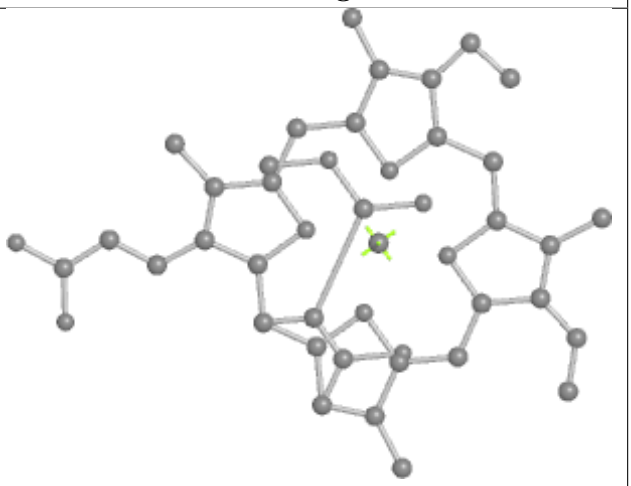
Bond lengths



Bond angles

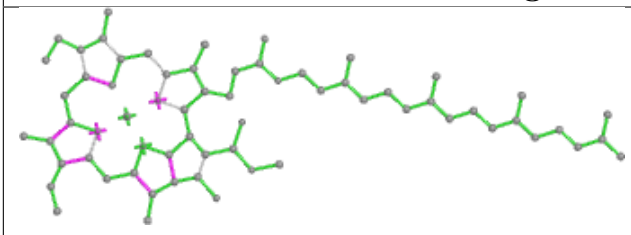


Torsions

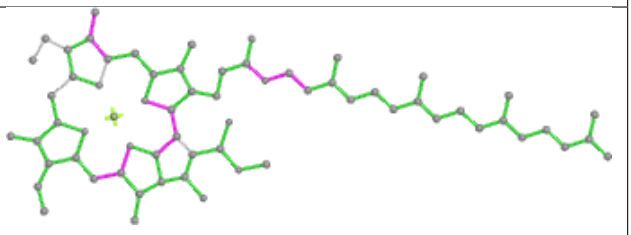


Rings

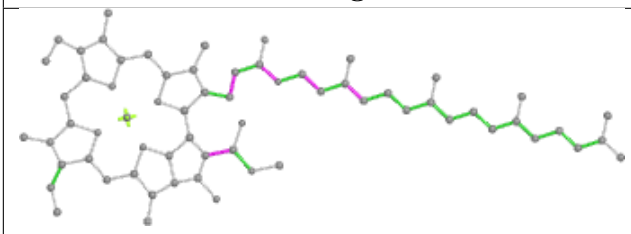
## Ligand CLA A 806



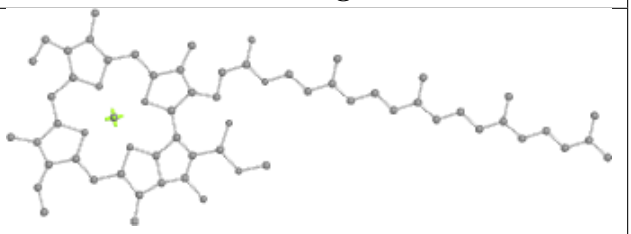
Bond lengths



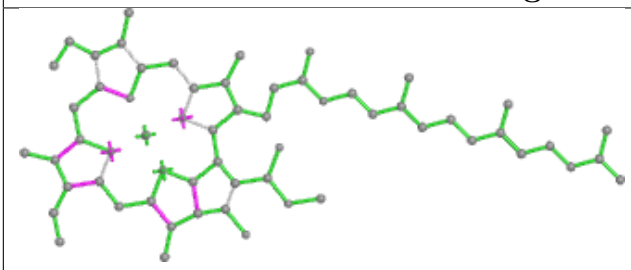
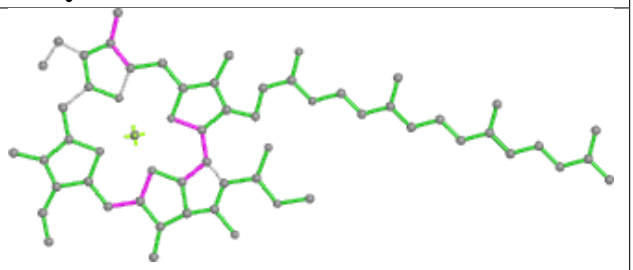
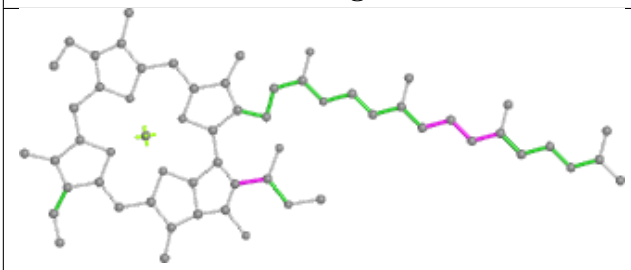
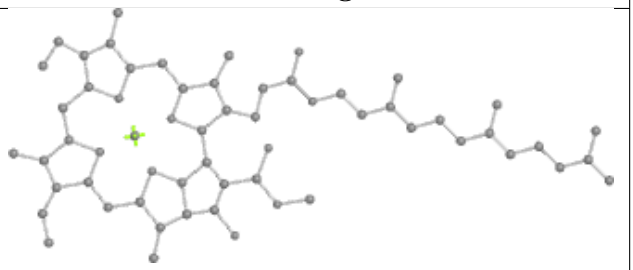
Bond angles

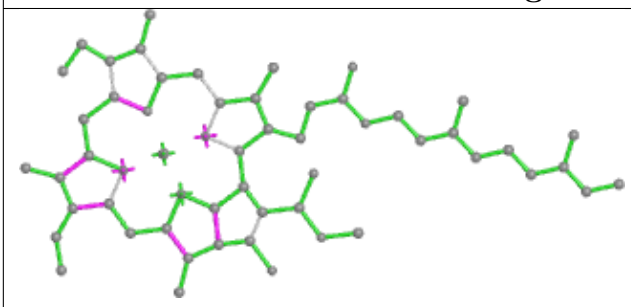
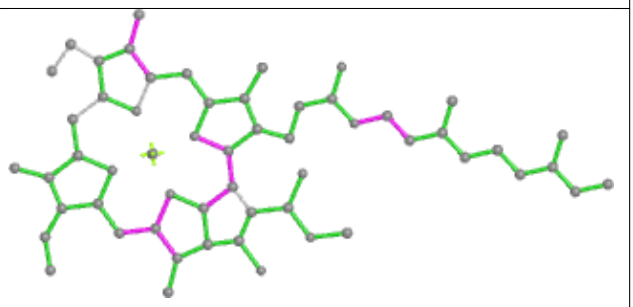
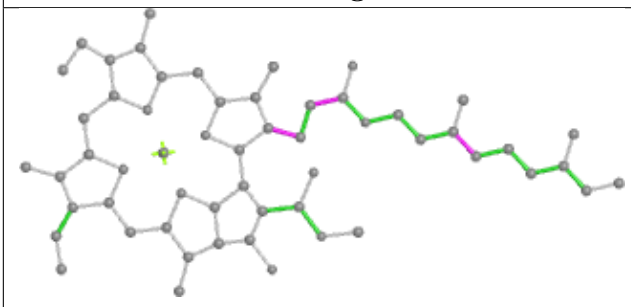
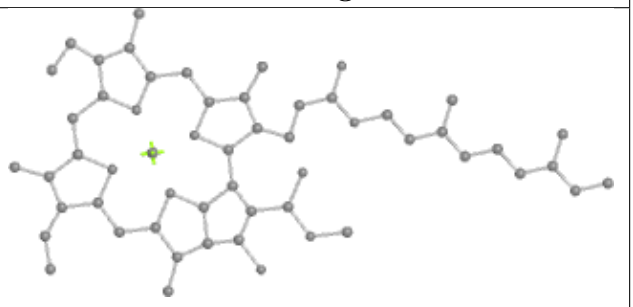


Torsions

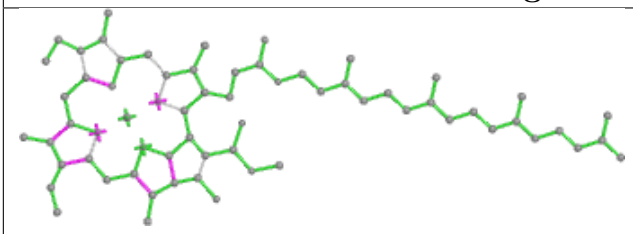


Rings

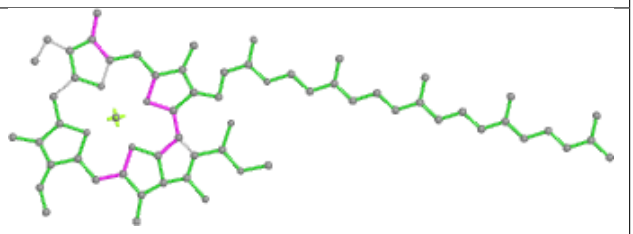
| Ligand CLA Q 205 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand CLA P 208 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

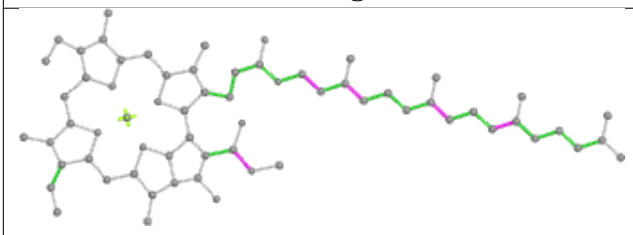
## Ligand CLA R 104



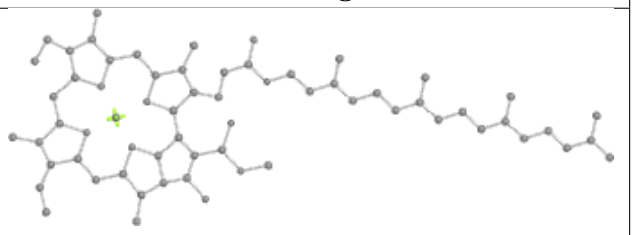
Bond lengths



Bond angles

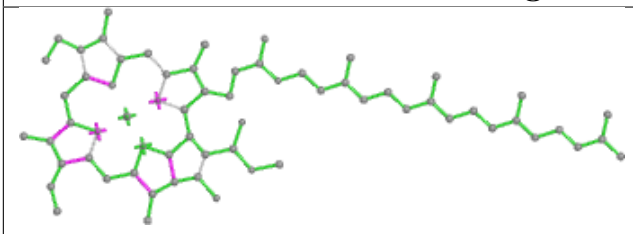


Torsions

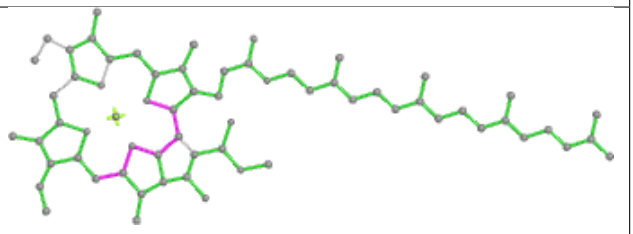


Rings

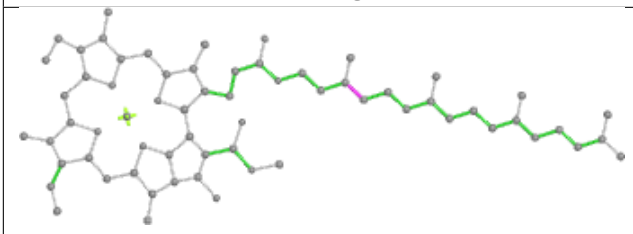
## Ligand CLA B 828



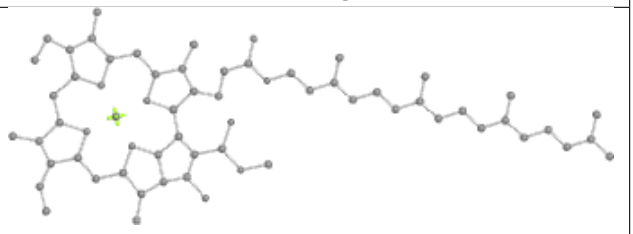
Bond lengths



Bond angles

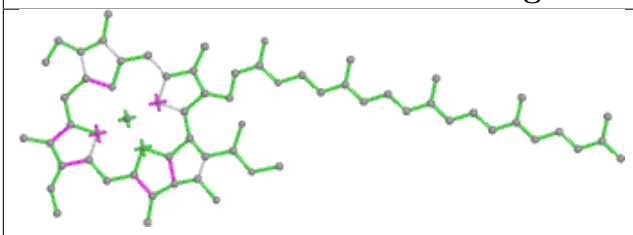


Torsions

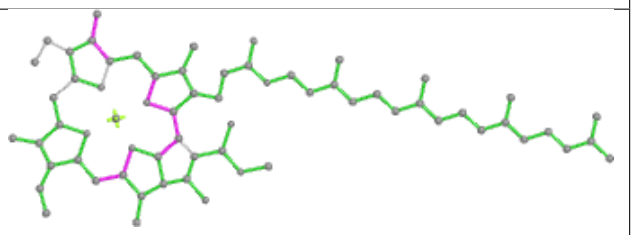


Rings

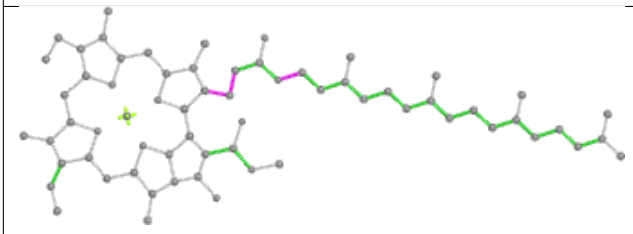
## Ligand CLA A 807



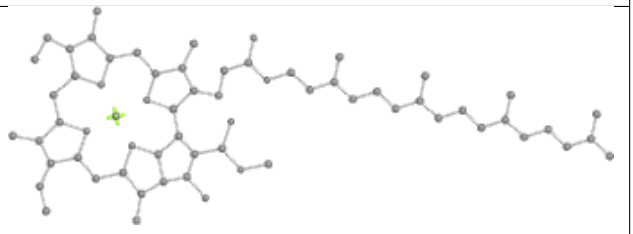
Bond lengths



Bond angles

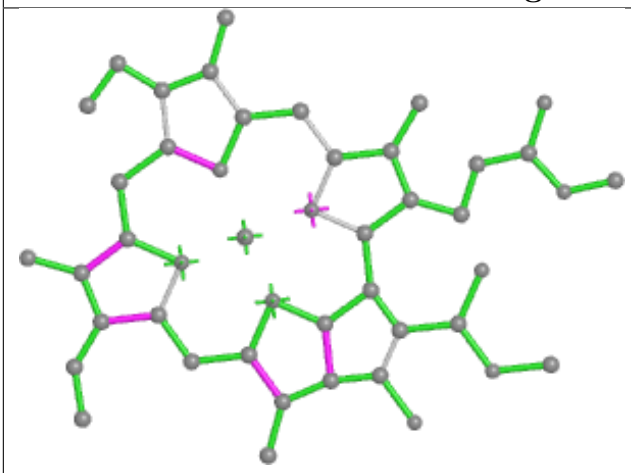


Torsions

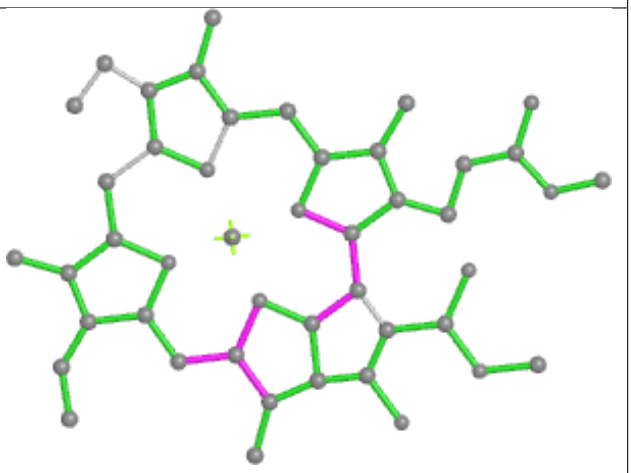


Rings

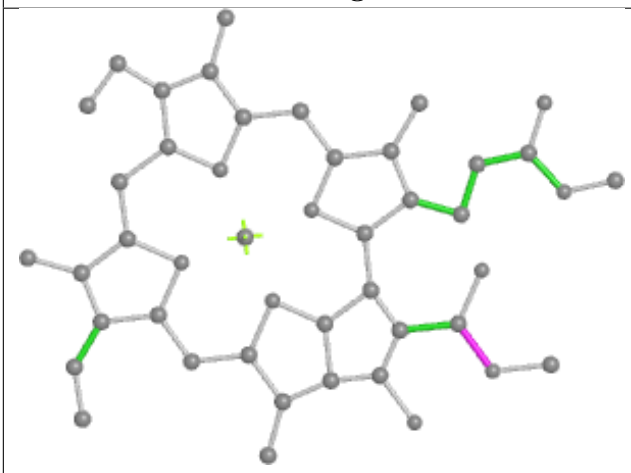
## Ligand CLA T 205



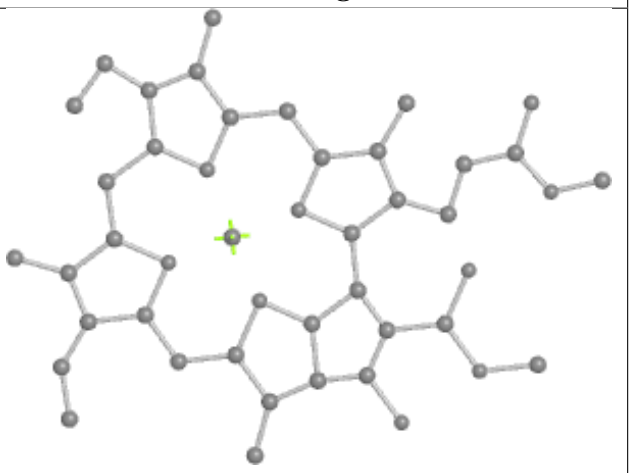
Bond lengths



Bond angles

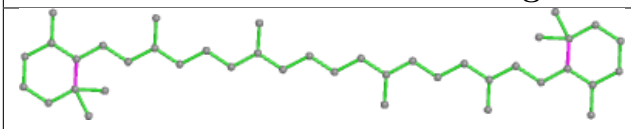


Torsions

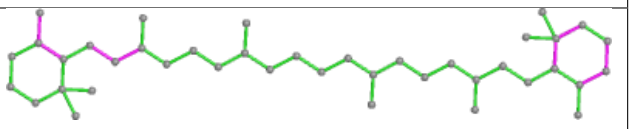


Rings

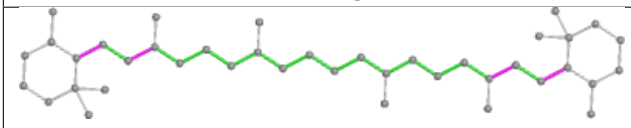
## Ligand BCR B 836



Bond lengths



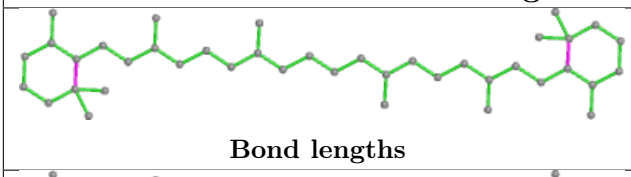
Bond angles



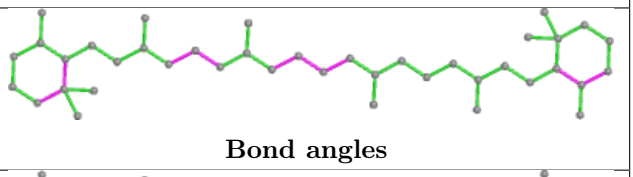
Torsions

Rings

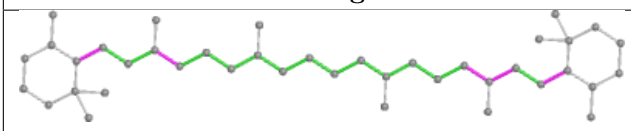
**Ligand BCR B 840**



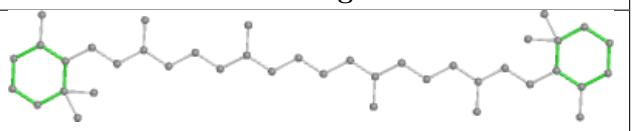
Bond lengths



Bond angles

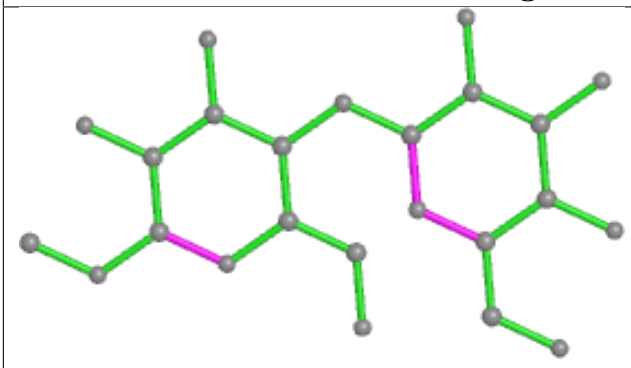


Torsions



Rings

**Ligand LMU K 202**



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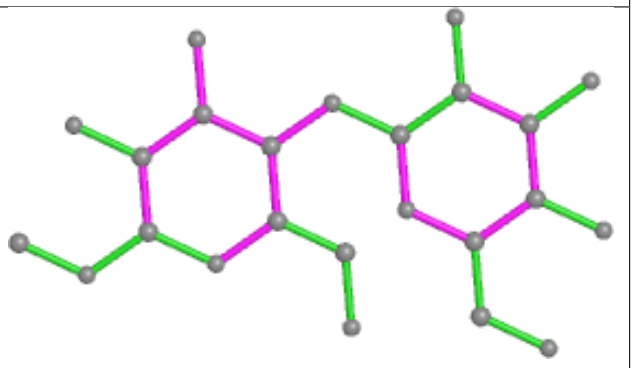
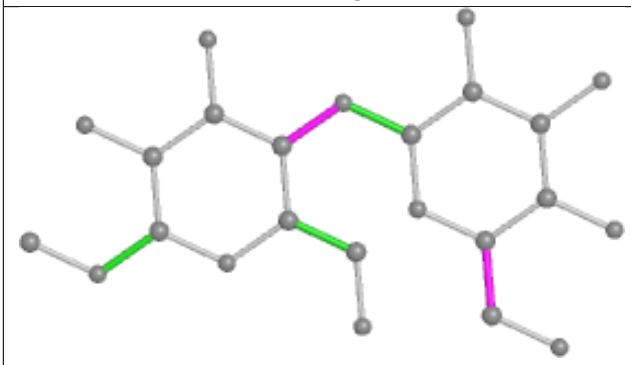
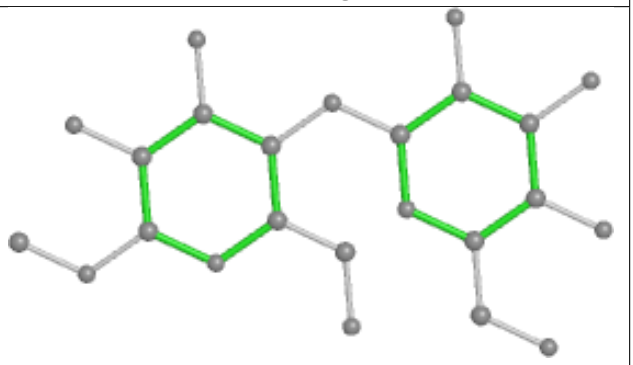


Bond angles

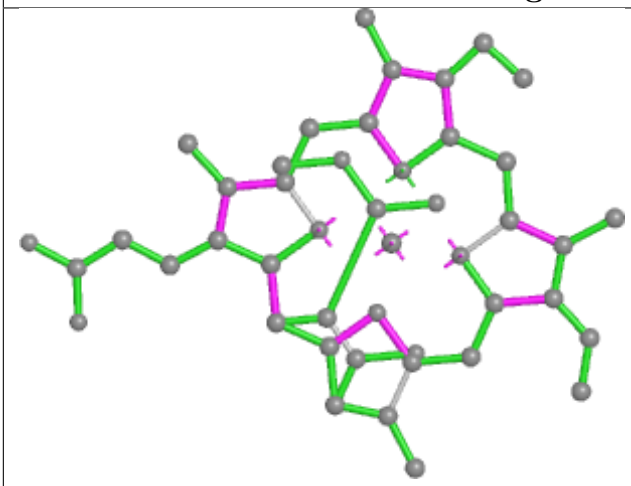


Torsions

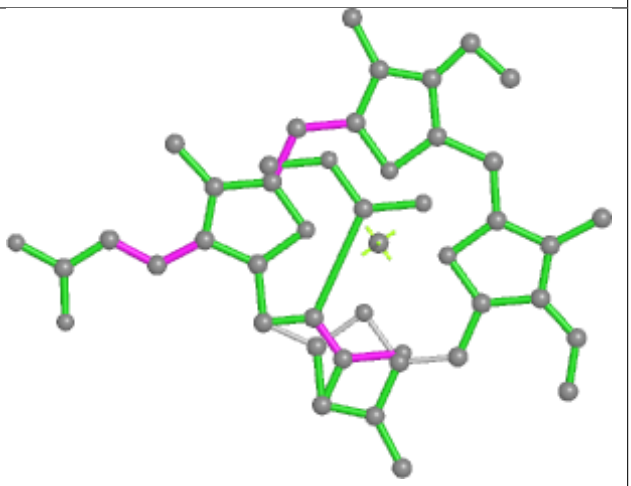


Rings

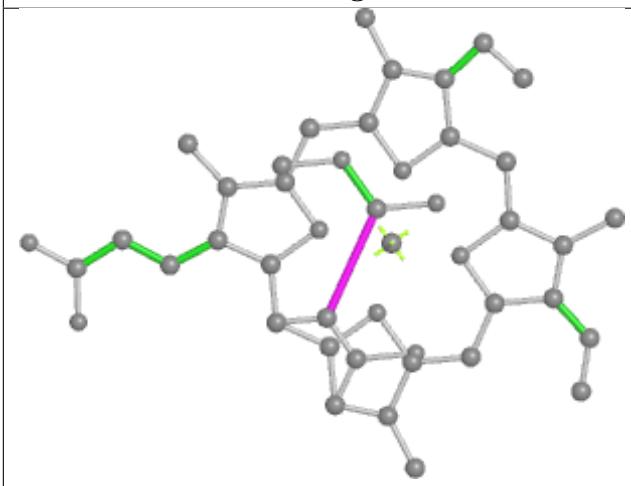
**Ligand KC1 U 213**



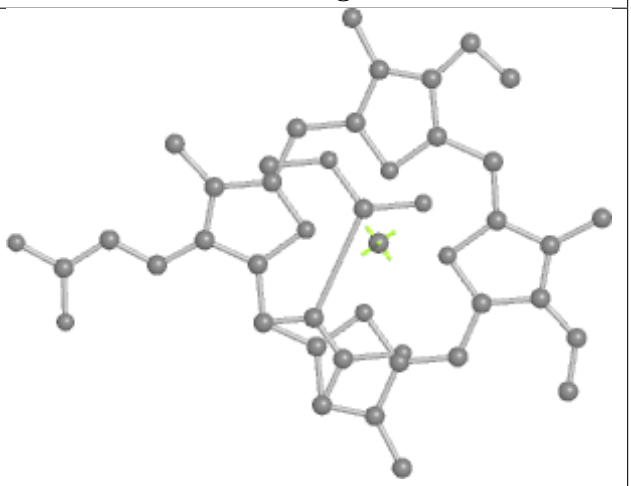
Bond lengths



Bond angles

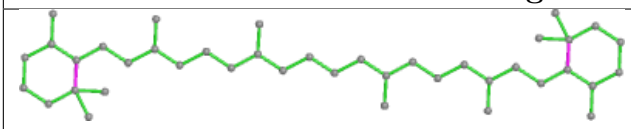


Torsions

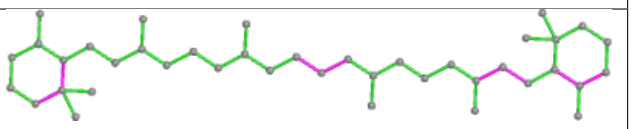


Rings

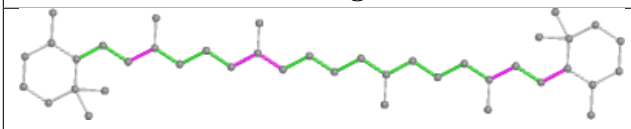
**Ligand BCR J 104**



Bond lengths



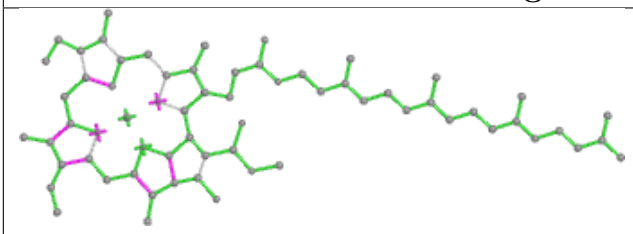
Bond angles



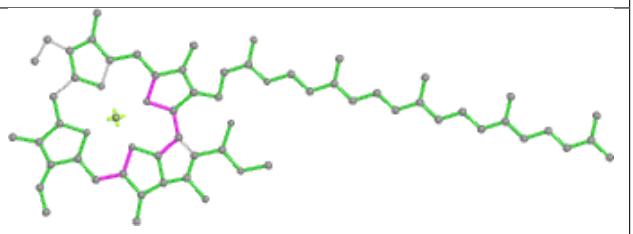
Torsions

Rings

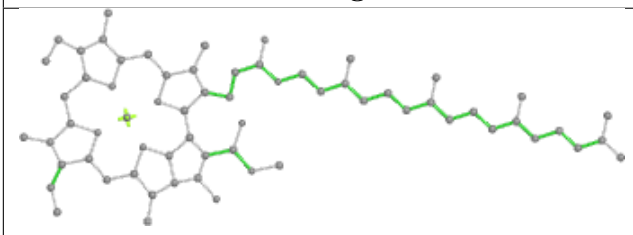
## Ligand CLA B 821



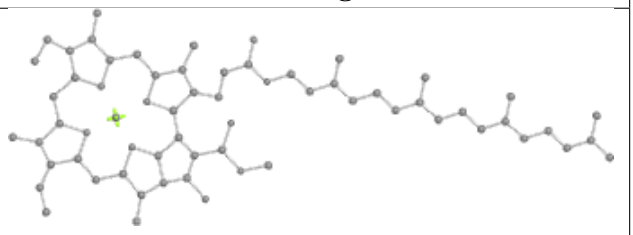
Bond lengths



Bond angles

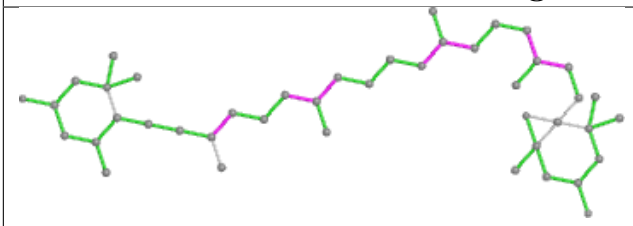


Torsions

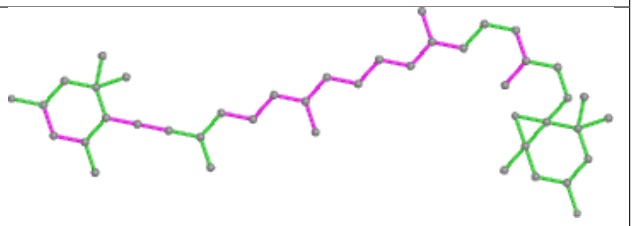


Rings

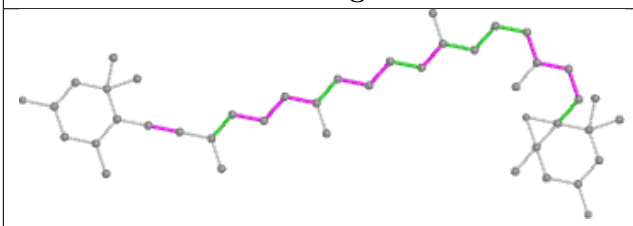
## Ligand DD6 S 215



Bond lengths



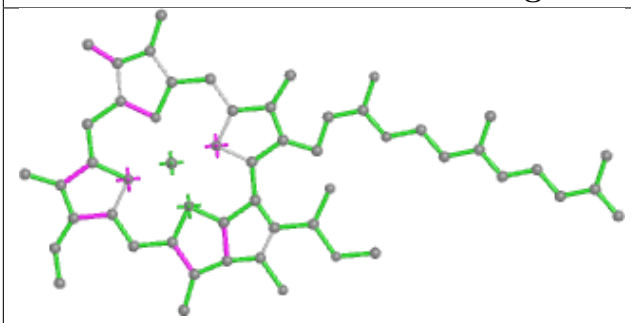
Bond angles



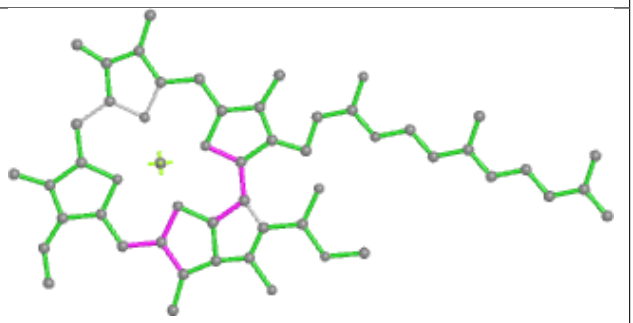
Torsions

Rings

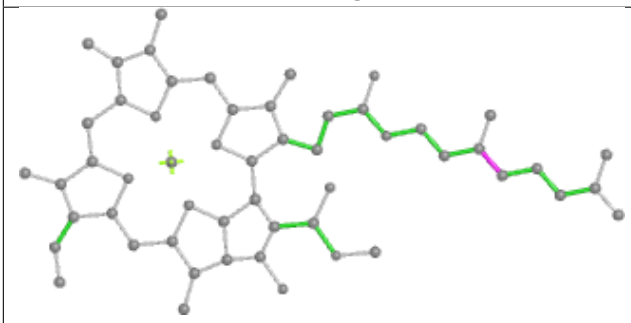
**Ligand CLA B 809**



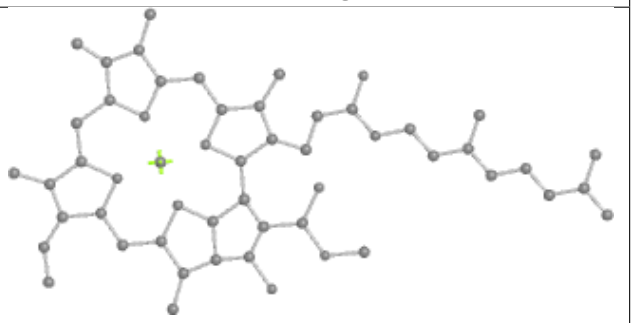
**Bond lengths**



**Bond angles**

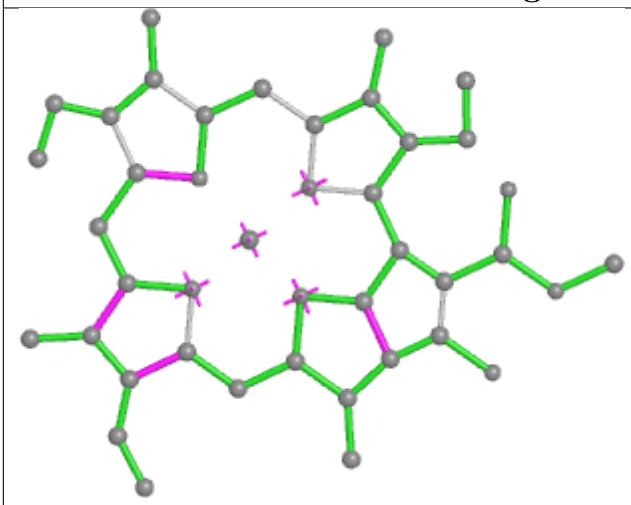


**Torsions**

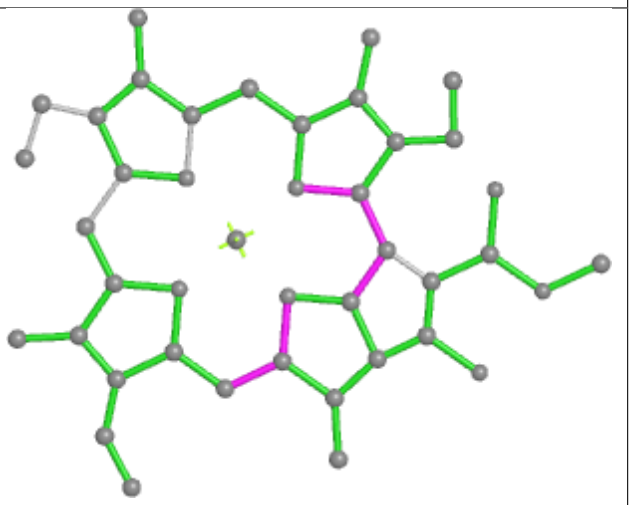


**Rings**

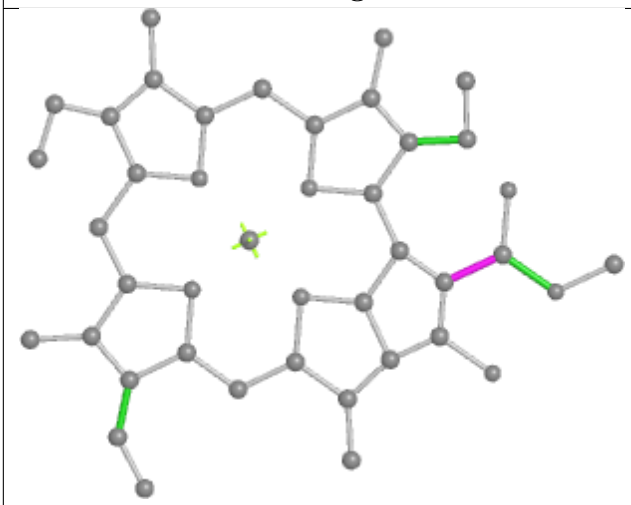
## Ligand CLA U 209



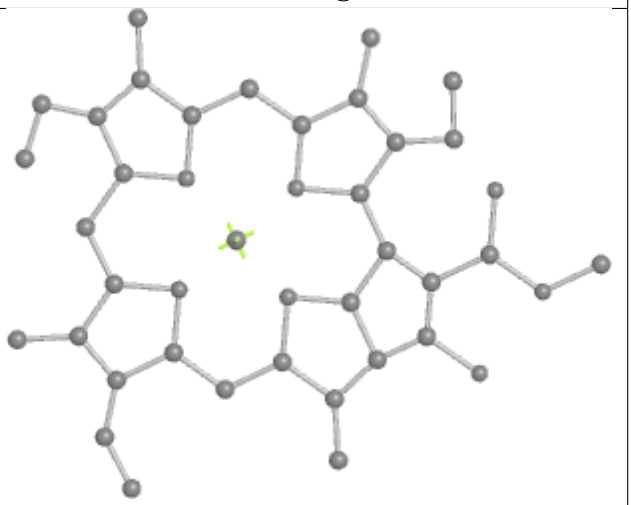
Bond lengths



Bond angles

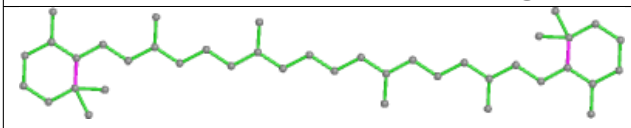


Torsions

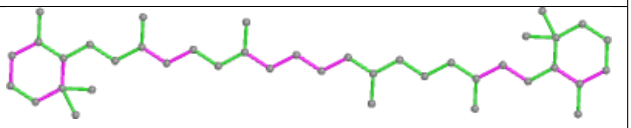


Rings

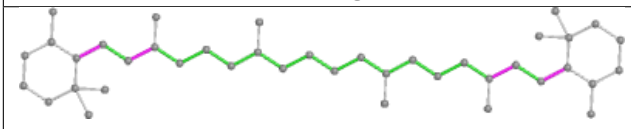
## Ligand BCR M 101



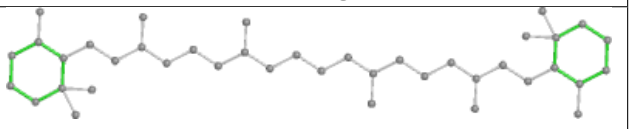
Bond lengths



Bond angles

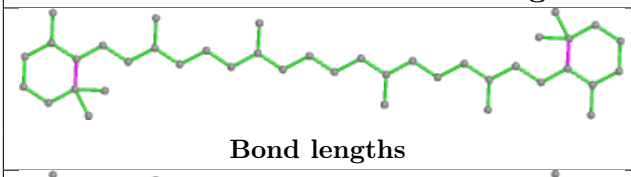


Torsions

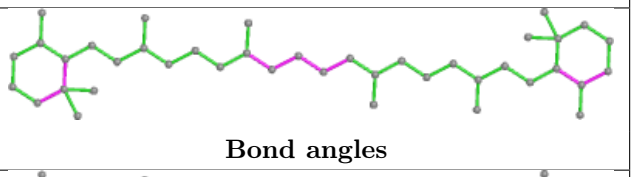


Rings

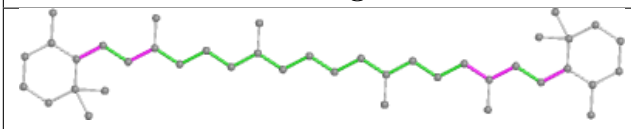
**Ligand BCR I 102**



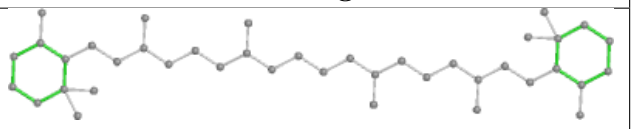
Bond lengths



Bond angles

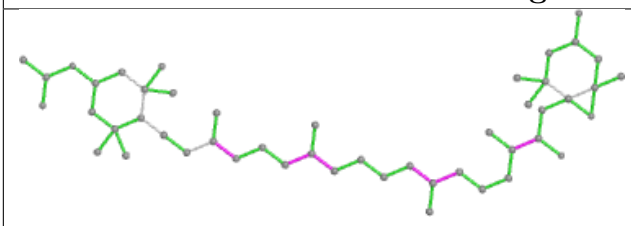


Torsions

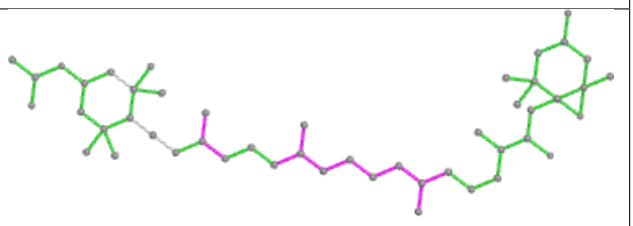


Rings

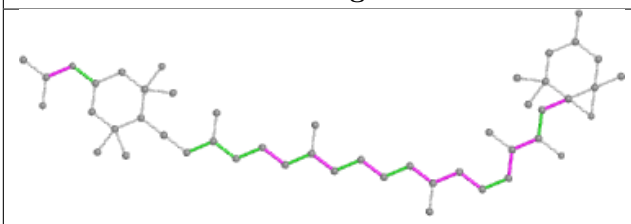
**Ligand A86 U 202**



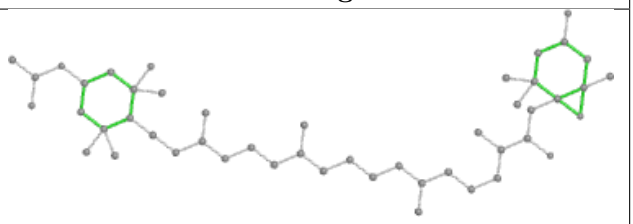
Bond lengths



Bond angles

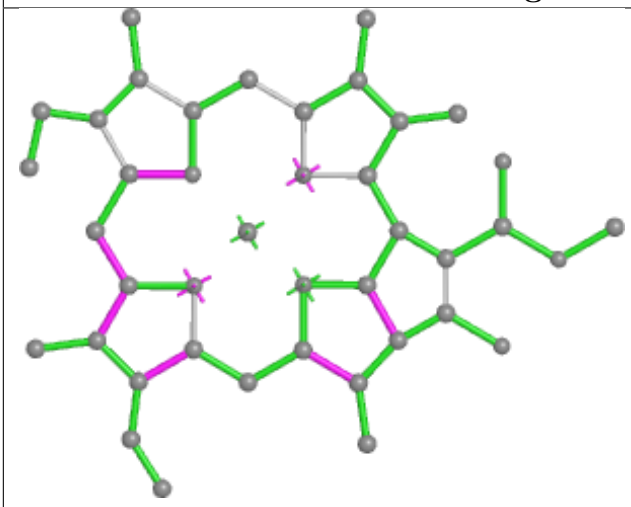


Torsions

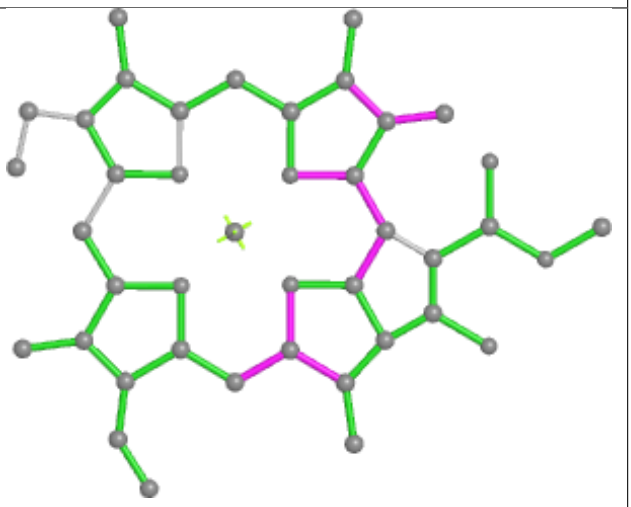


Rings

## Ligand CLA T 209



Bond lengths



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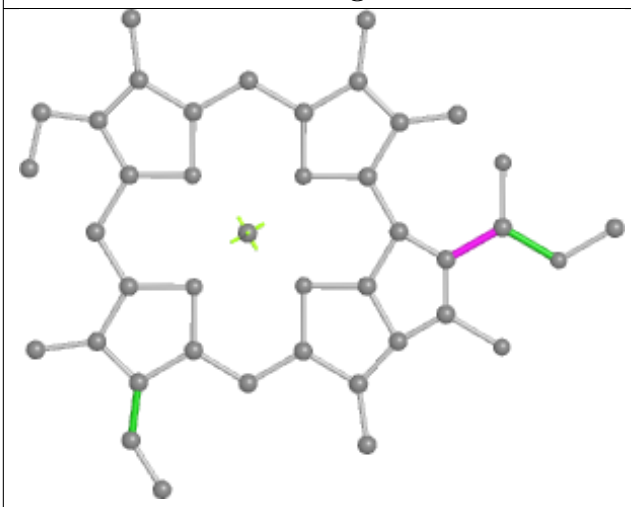

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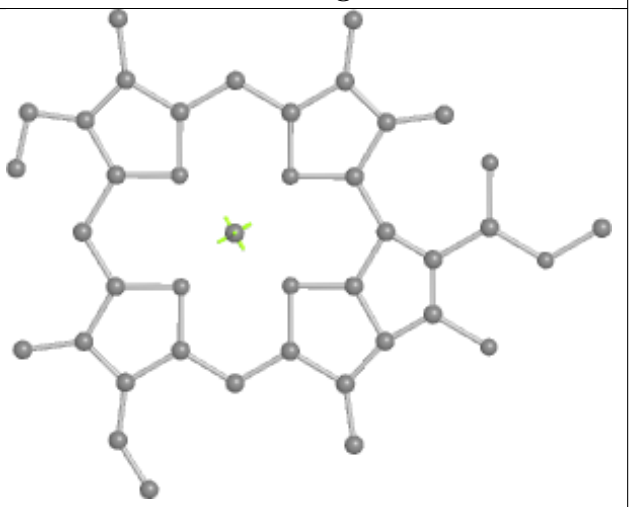
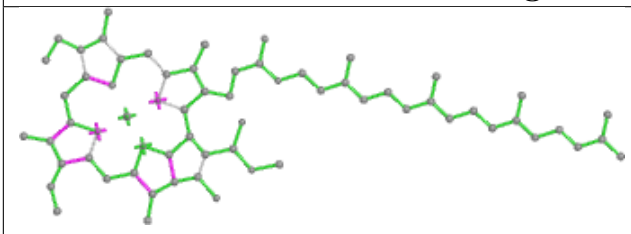


Rings

## Ligand CLA Q 209



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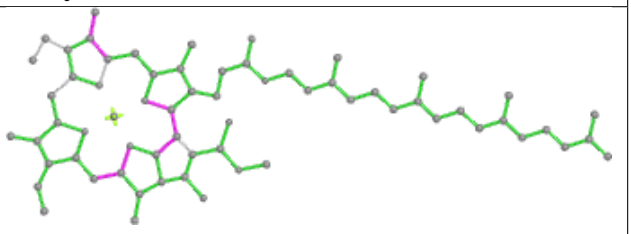
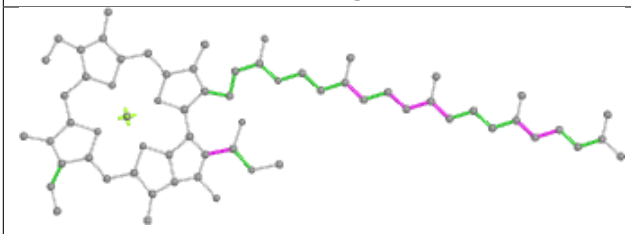


Bond angles



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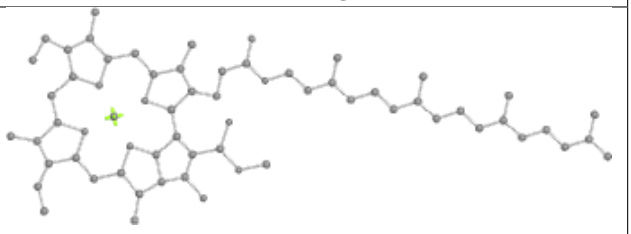
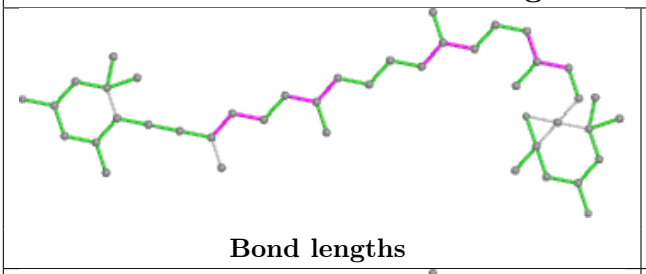


Rings

## Ligand DD6 O 213



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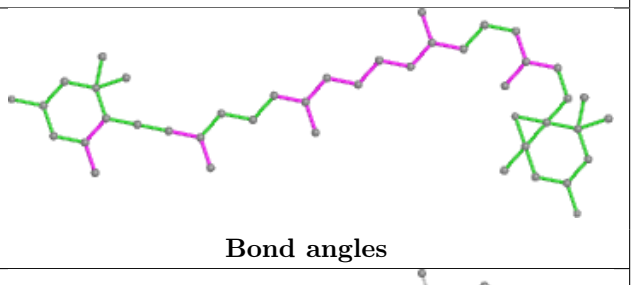
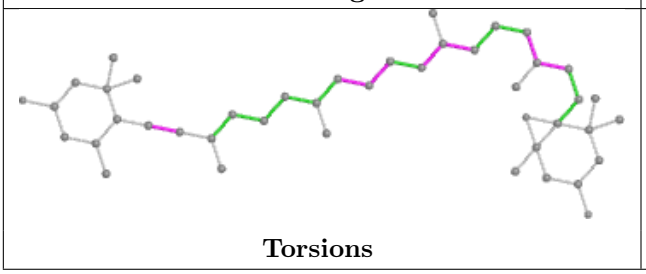


Bond angles



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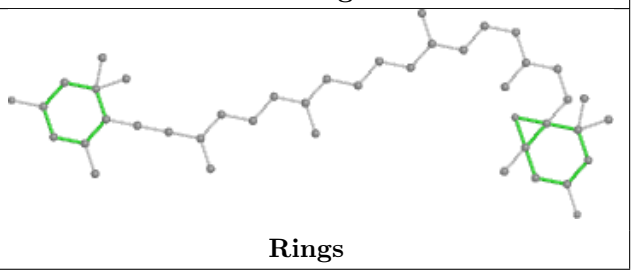
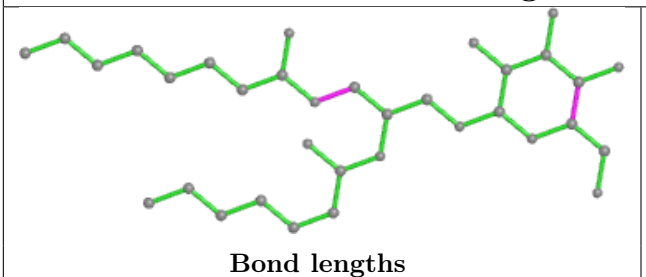


Rings

## Ligand LMG P 202



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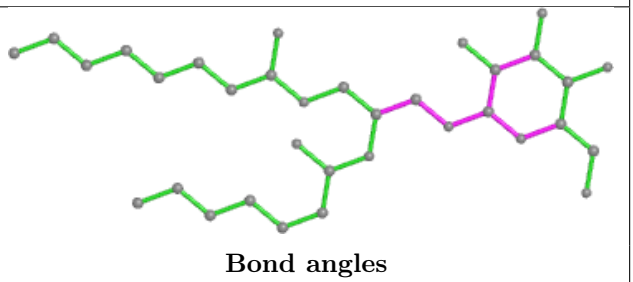
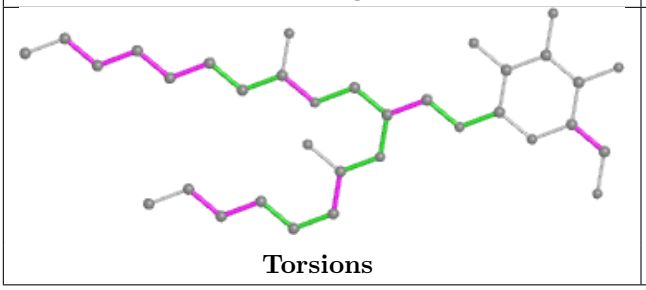


Bond angles



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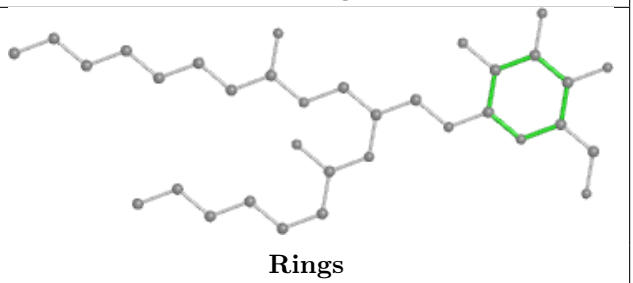
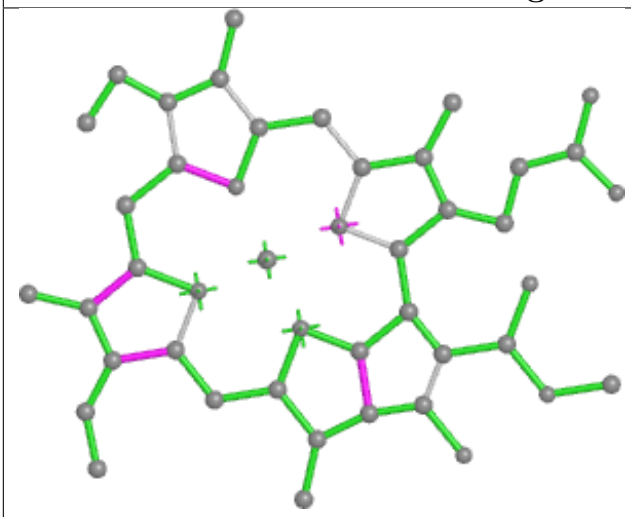
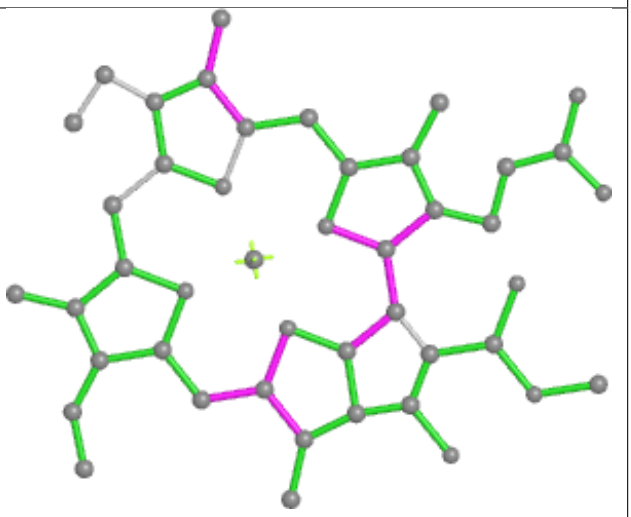


Rings

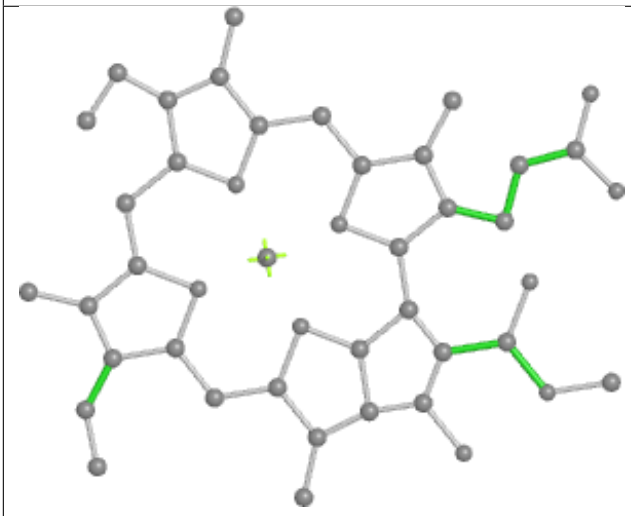
**Ligand CLA S 208**



**Bond lengths**



**Bond angles**



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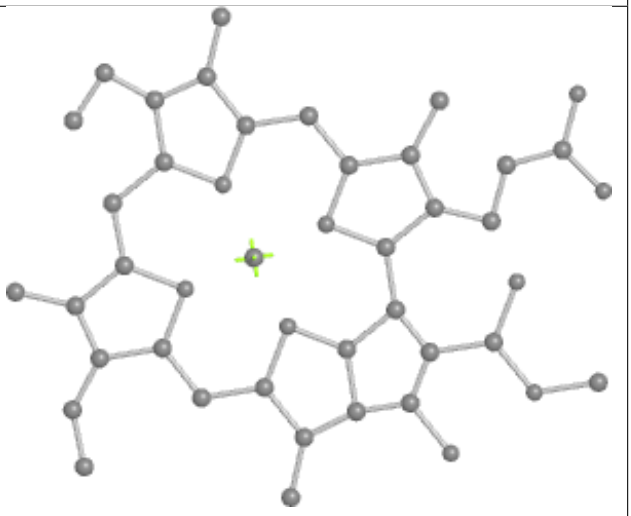
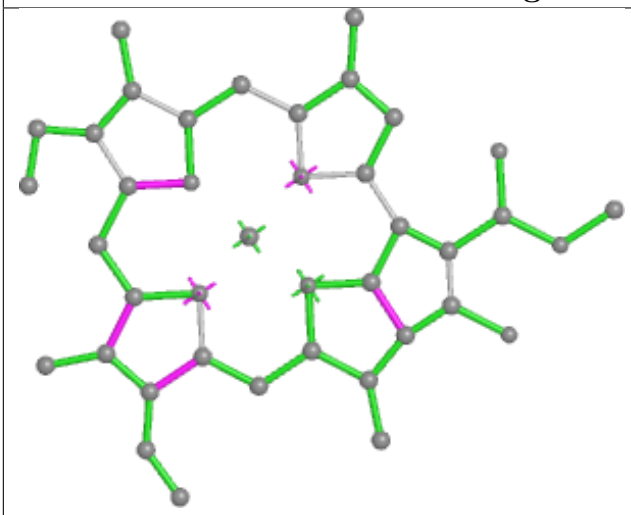
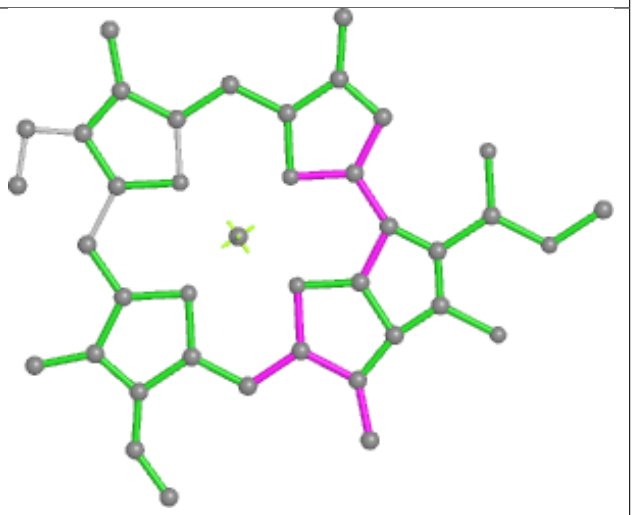


**Rings**

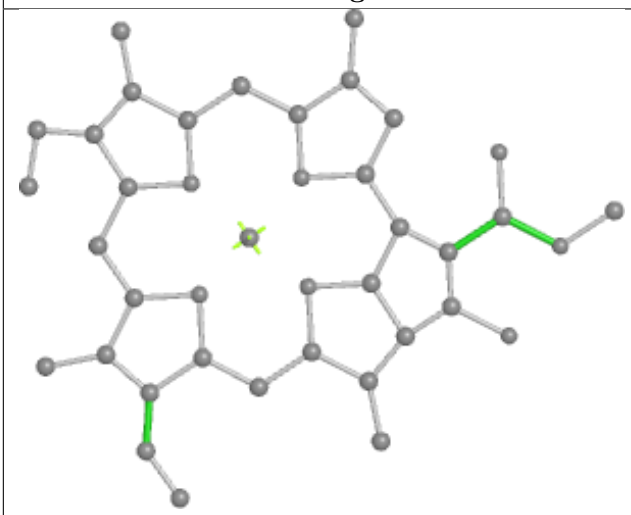
**Ligand CLA H 202**



**Bond lengths**



**Bond angles**



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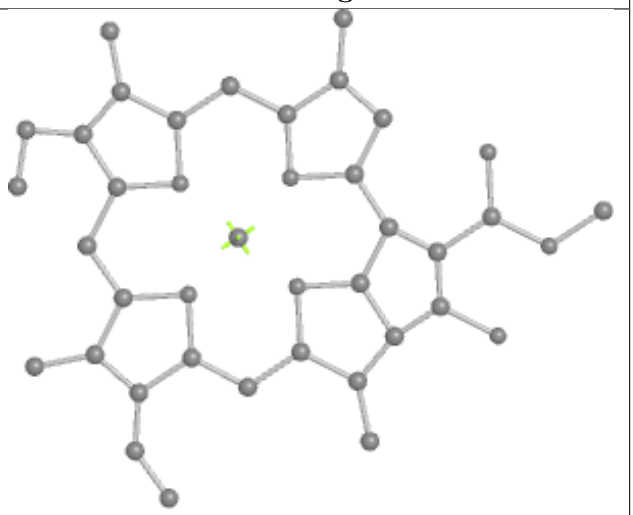
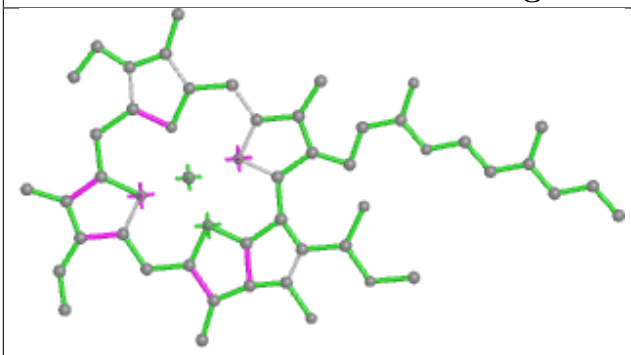


**Rings**

## Ligand CLA A 838



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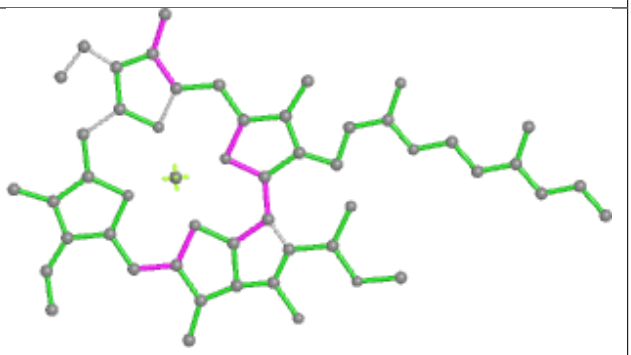
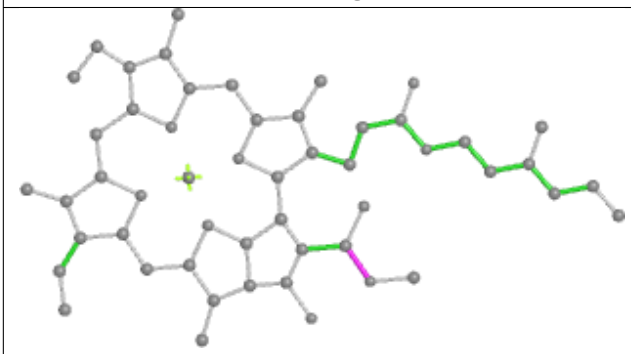


Bond angles



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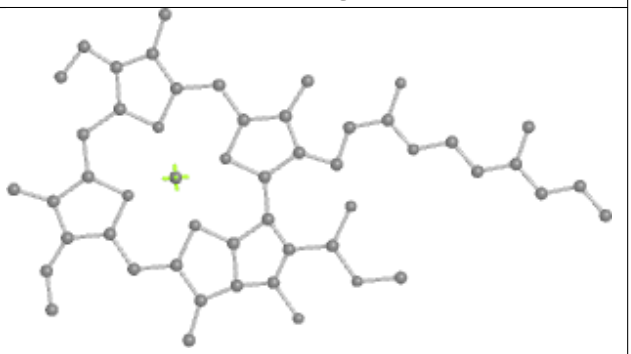
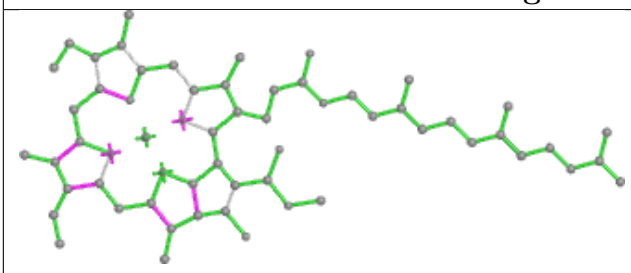


Rings

## Ligand CLA H 203



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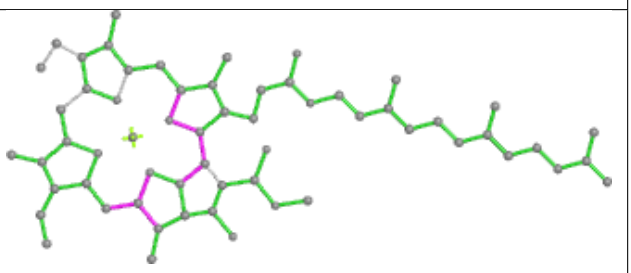
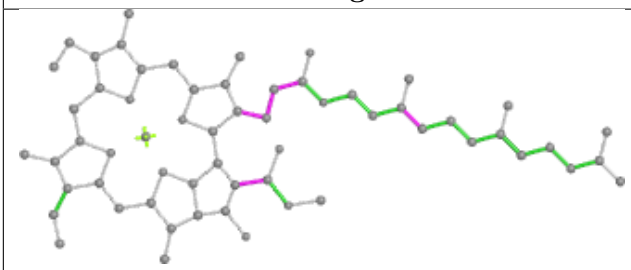
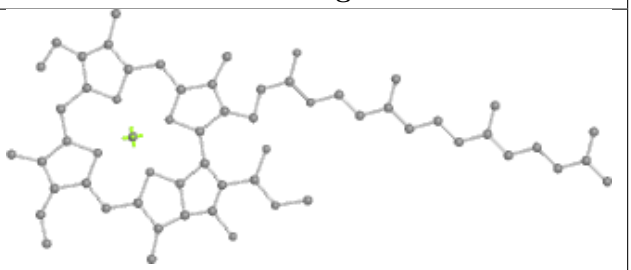


Bond angles

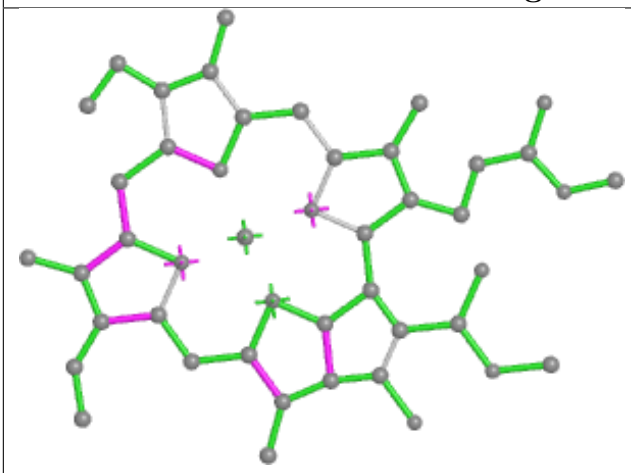


Torsions



Rings

## Ligand CLA T 203



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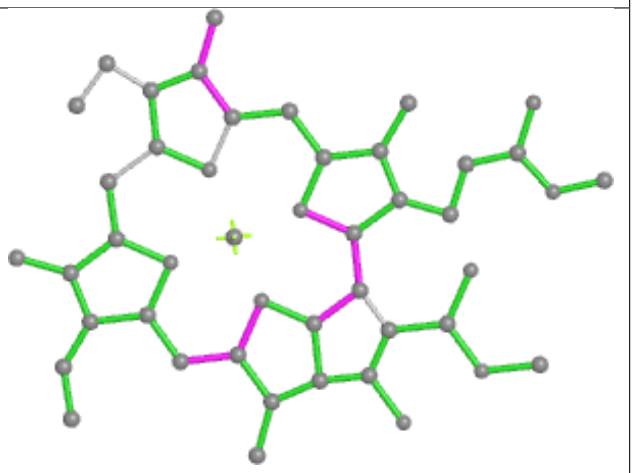
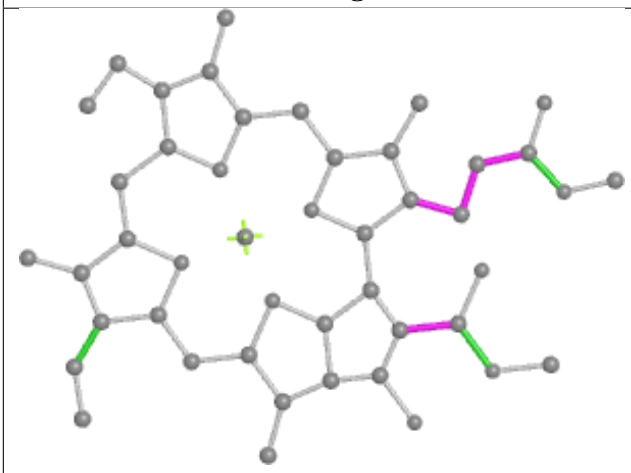


Bond angles



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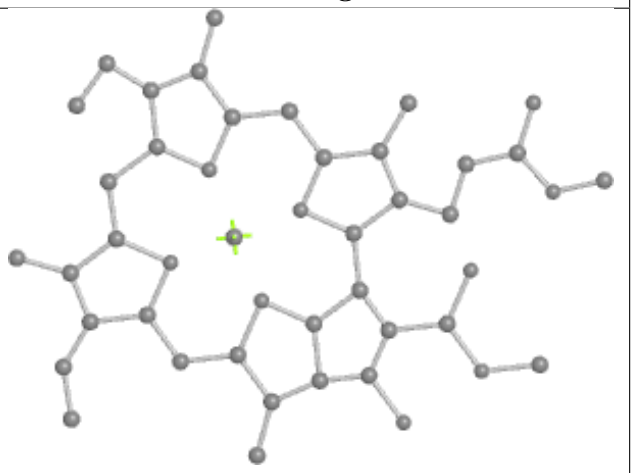
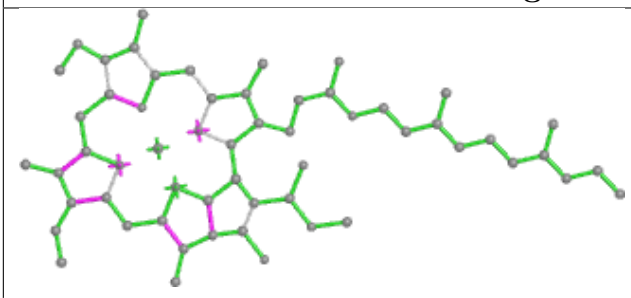


Rings

## Ligand CLA Q 213



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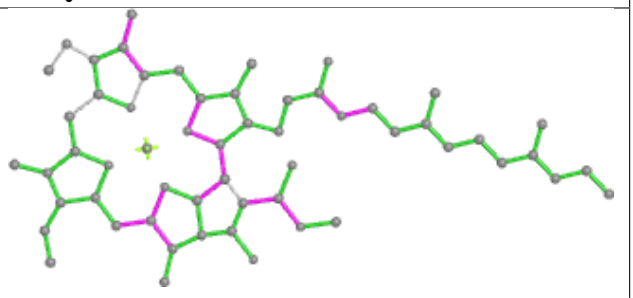
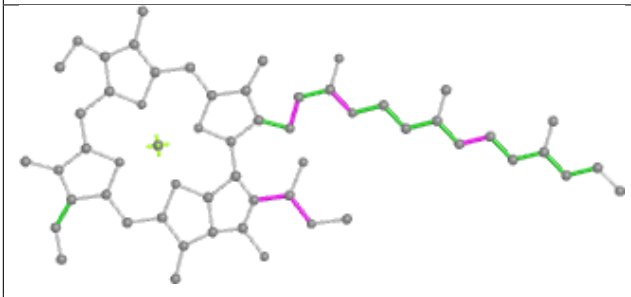


Bond angles



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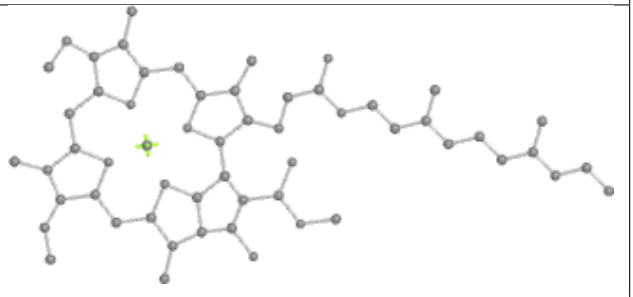
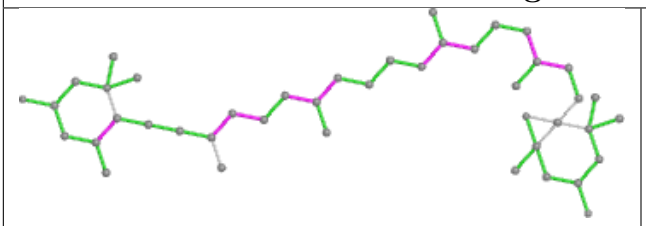


Rings

## Ligand DD6 H 201



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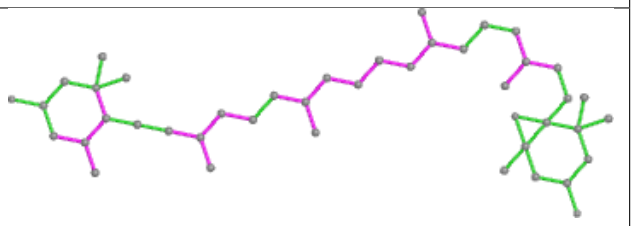
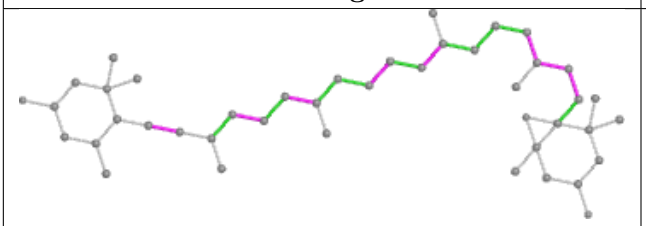


Bond angles



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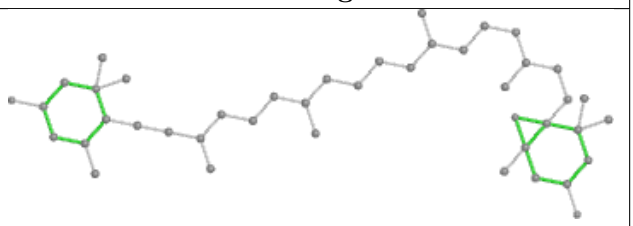
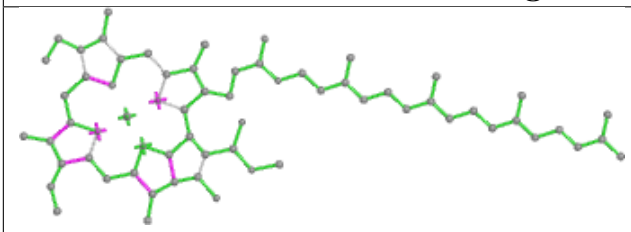


Rings

## Ligand CLA B 833



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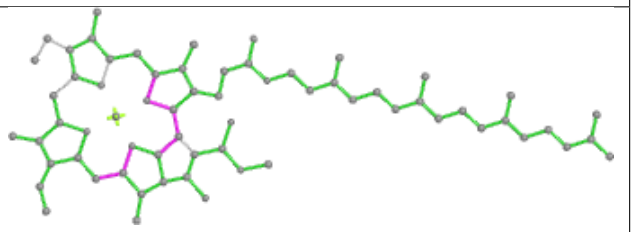
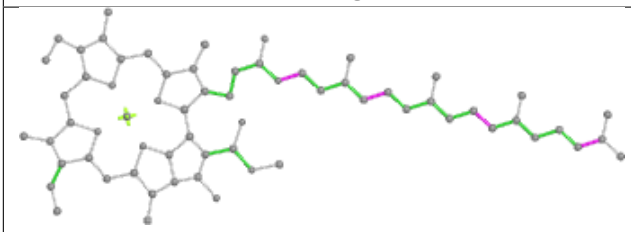


Bond angles



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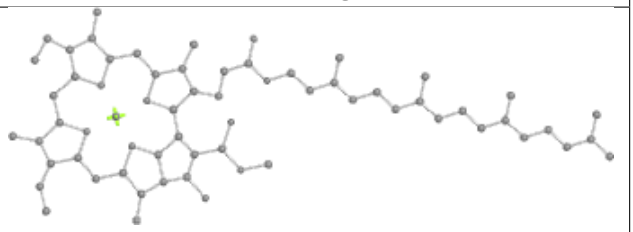
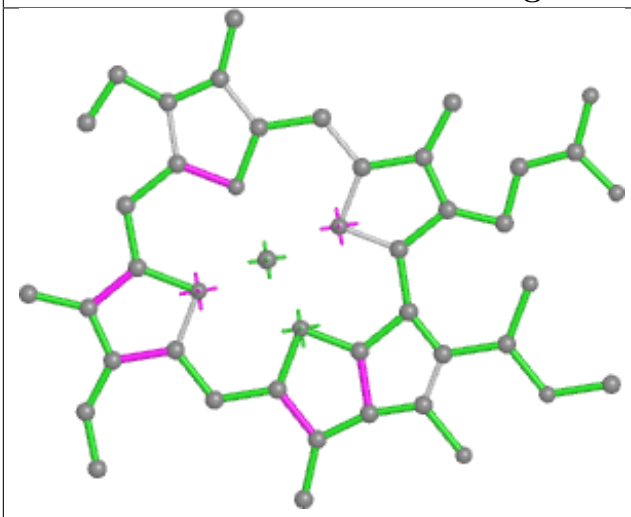
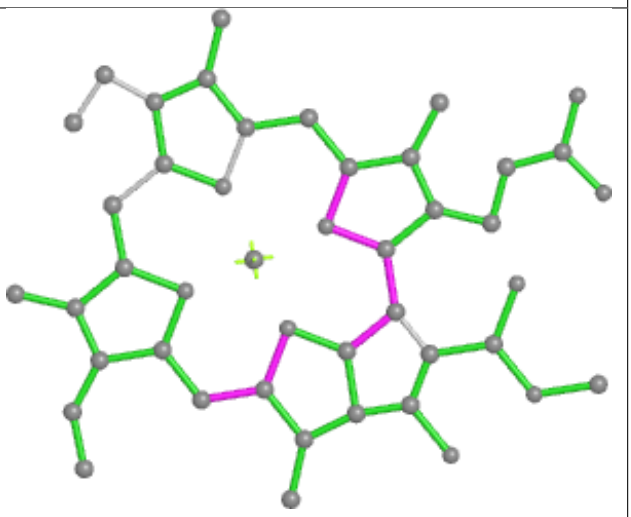


Rings

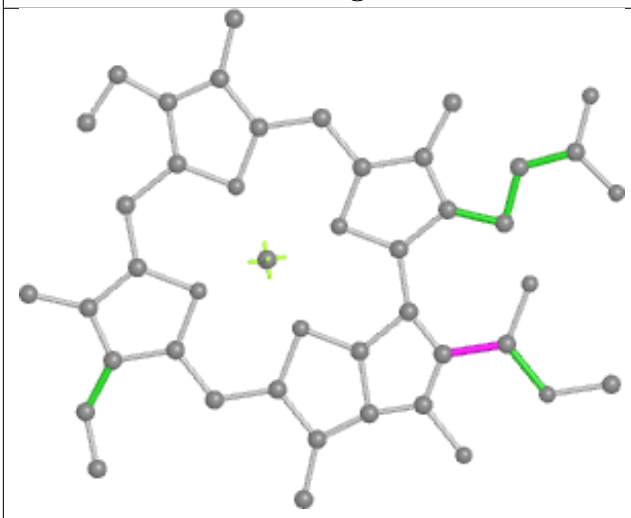
## Ligand CLA O 203



Bond lengths



Bond angles



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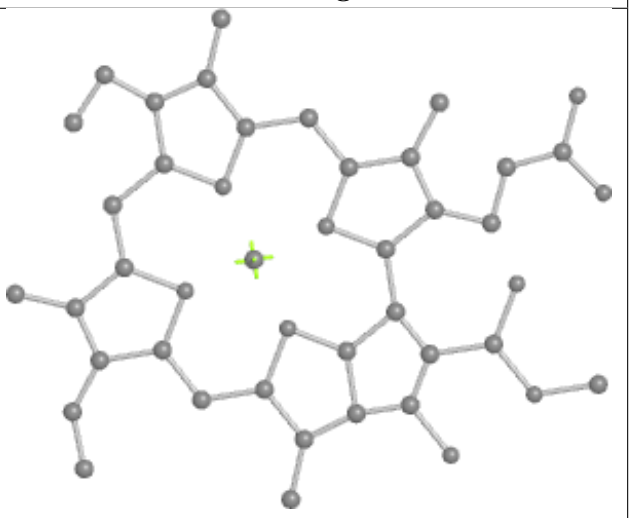
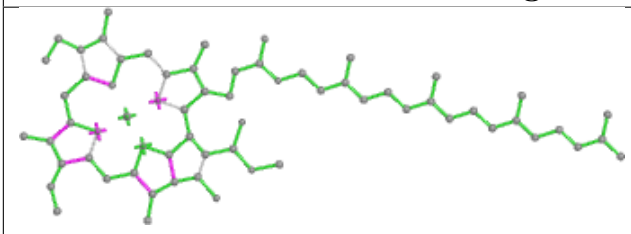
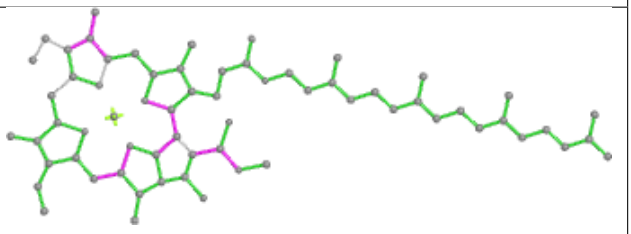


Rings

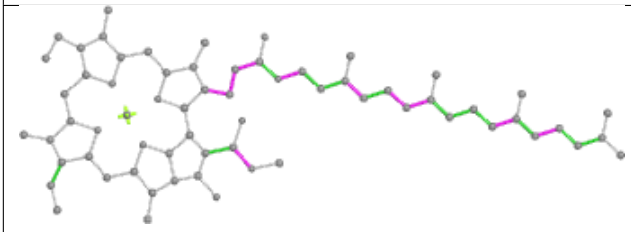
## Ligand CLA G 206



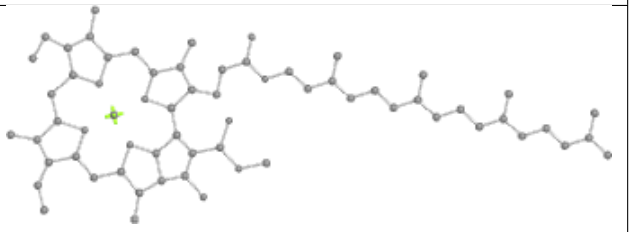
Bond lengths



Bond angles

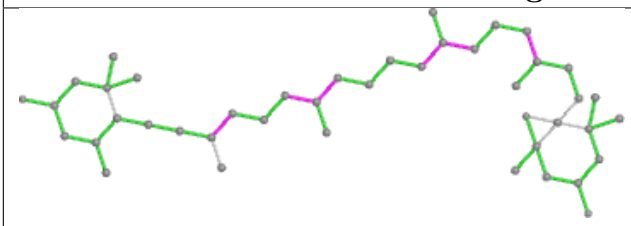


Torsions

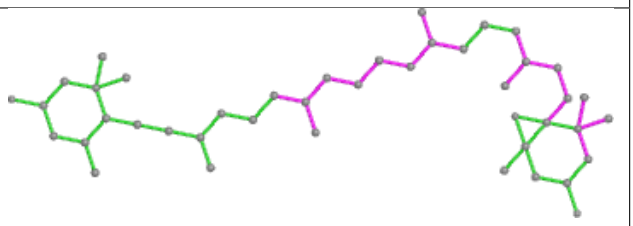


Rings

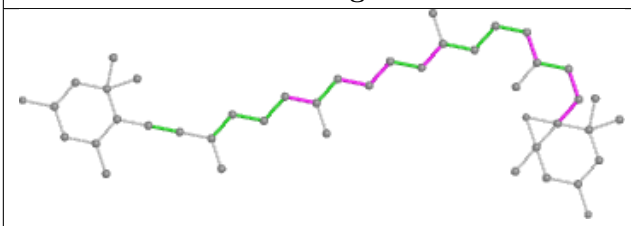
## Ligand DD6 P 215



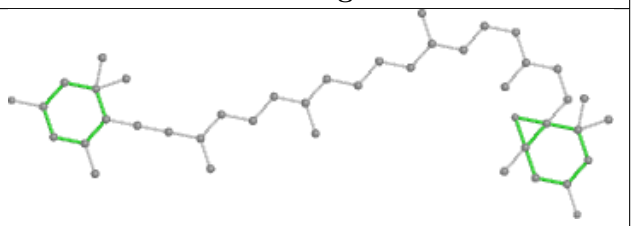
Bond lengths



Bond angles

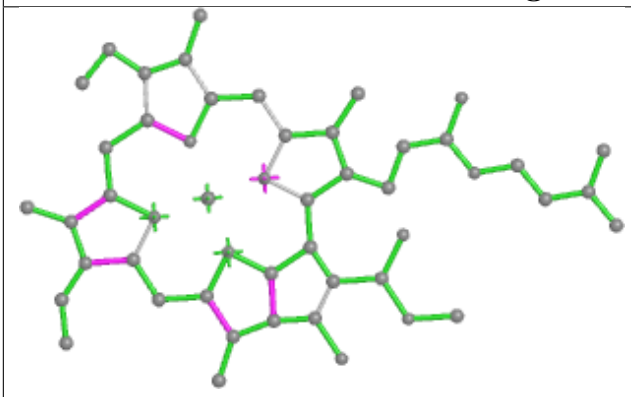


Torsions

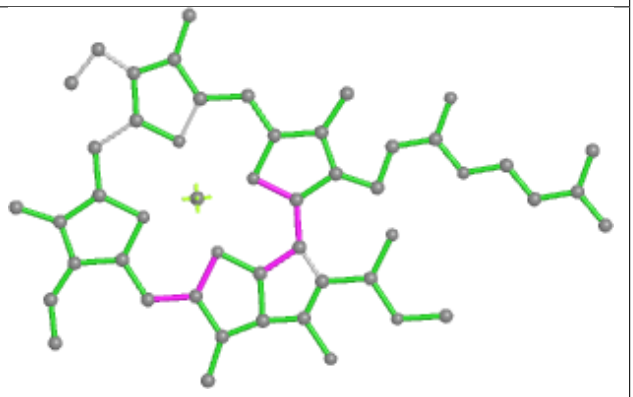


Rings

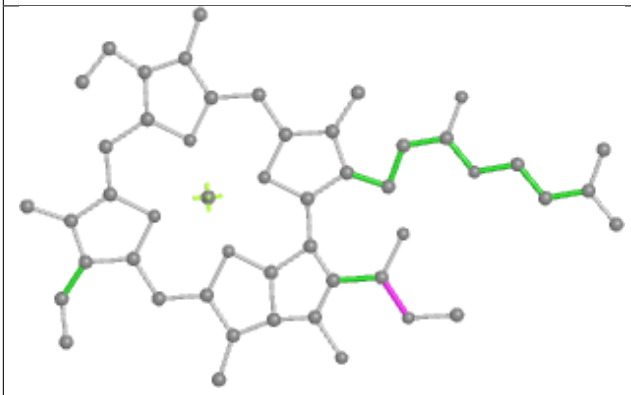
## Ligand CLA P 211



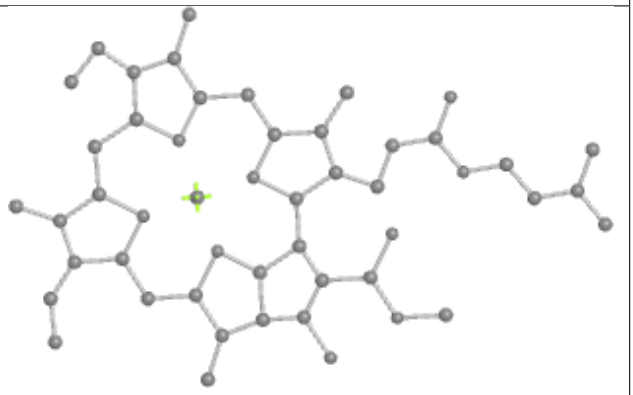
Bond lengths



Bond angles

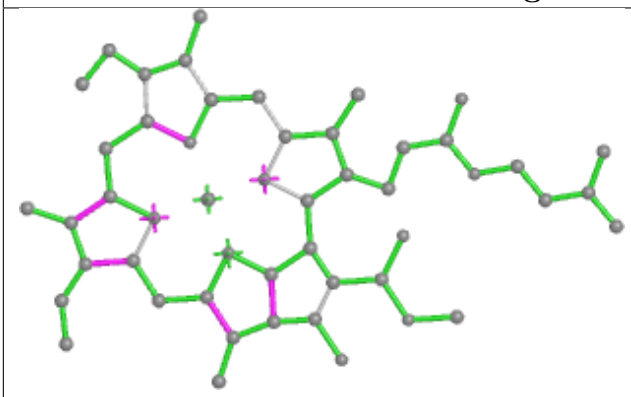


Torsions

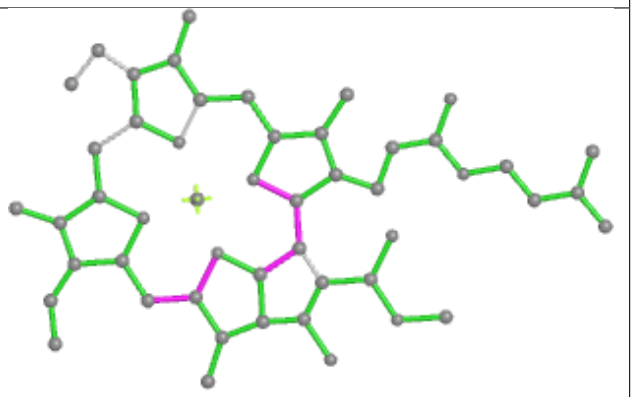


Rings

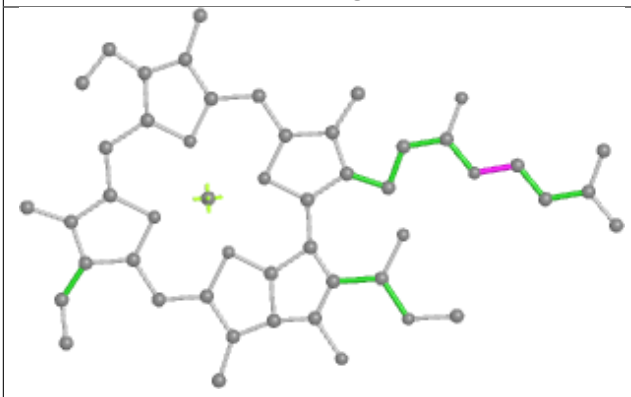
**Ligand CLA A 830**



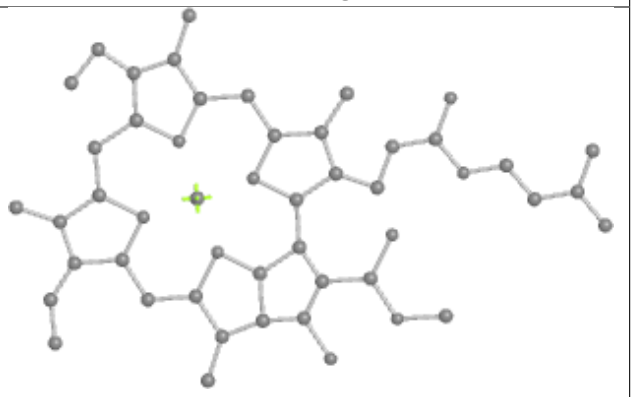
**Bond lengths**



**Bond angles**

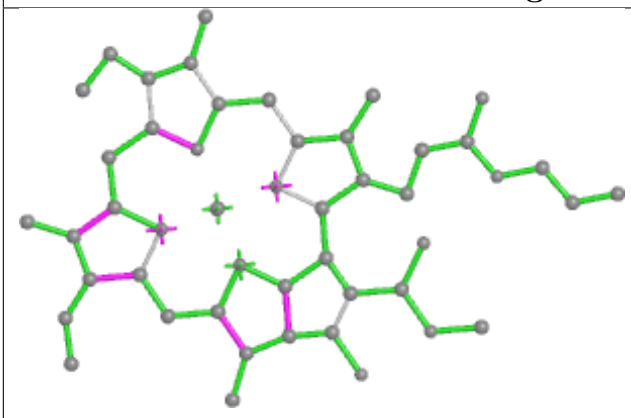


**Torsions**

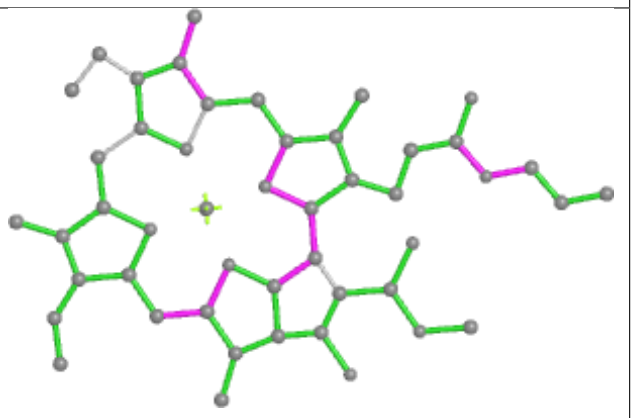


**Rings**

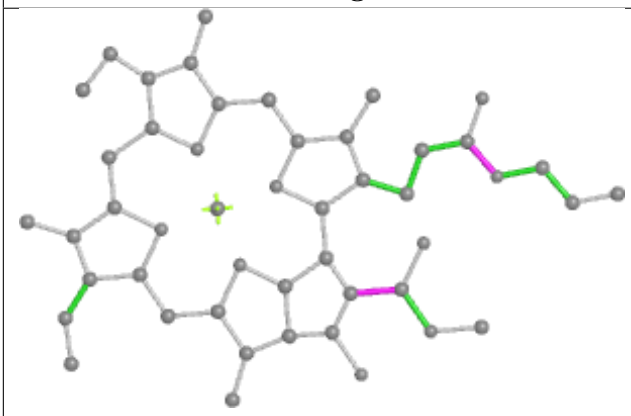
## Ligand CLA F 803



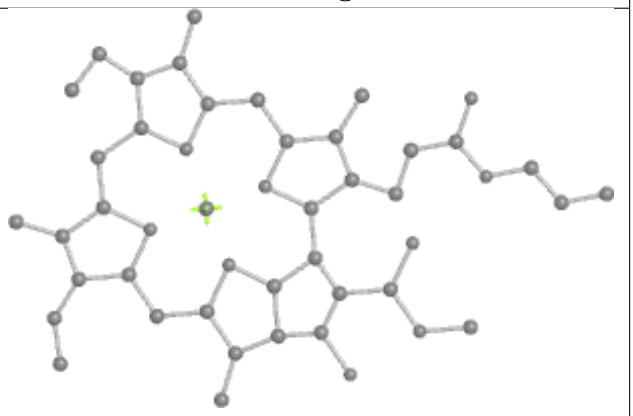
Bond lengths



Bond angles

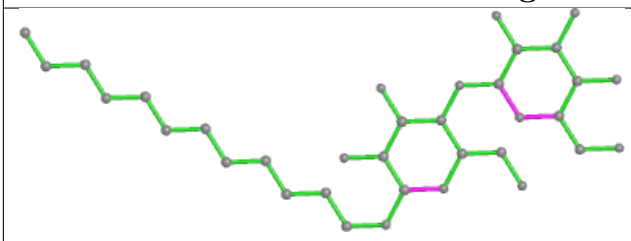


Torsions

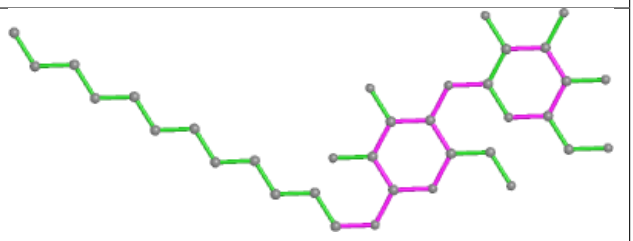


Rings

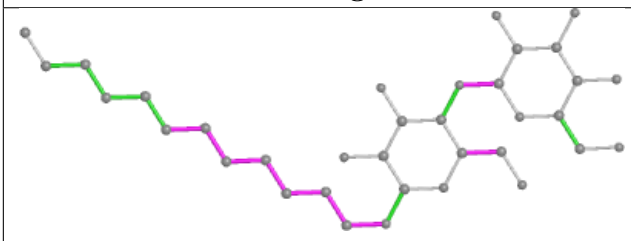
## Ligand LMU K 201



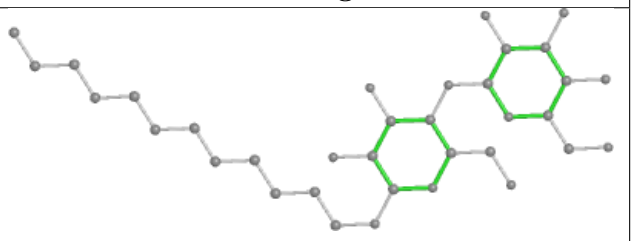
Bond lengths



Bond angles

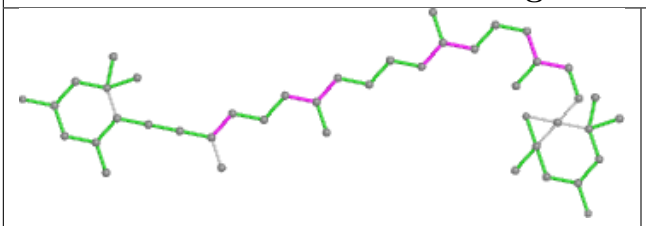


Torsions

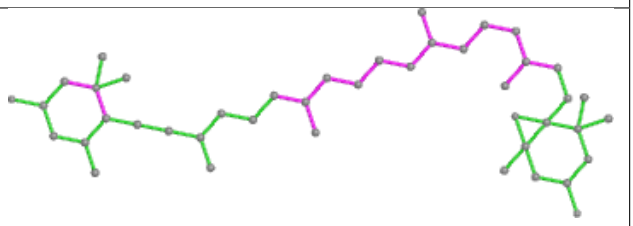


Rings

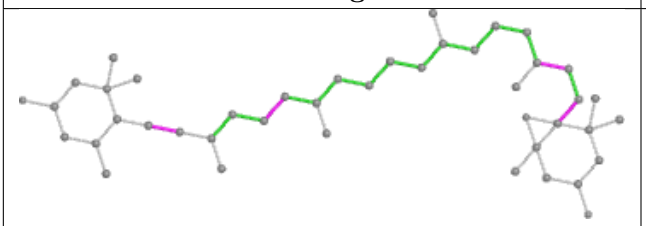
## Ligand DD6 P 205



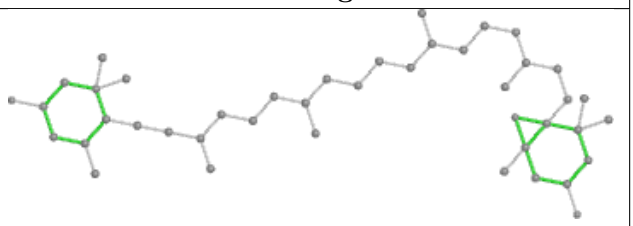
Bond lengths



Bond angles

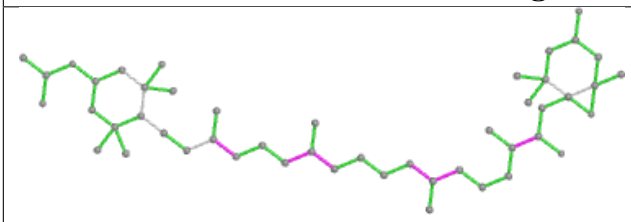


Torsions

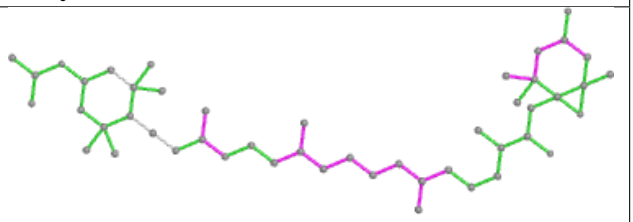


Rings

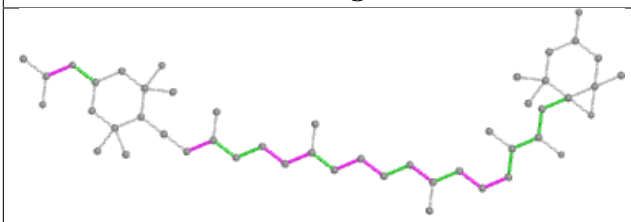
## Ligand A86 Q 218



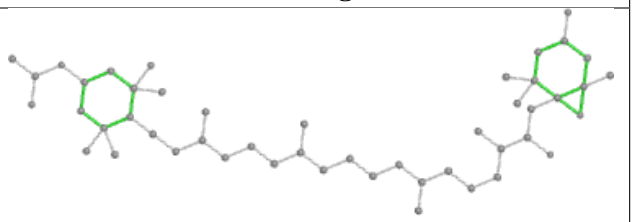
Bond lengths



Bond angles

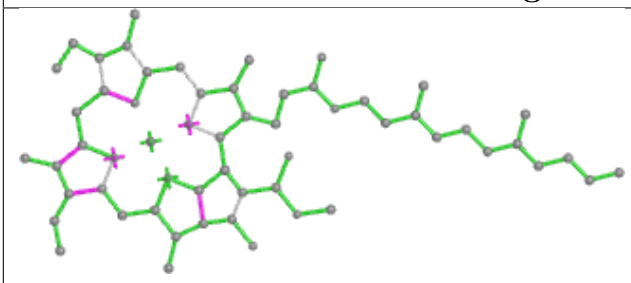


Torsions

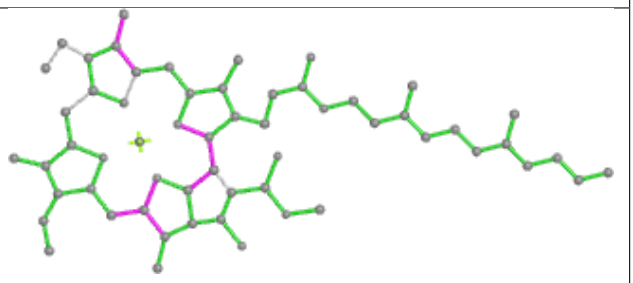


Rings

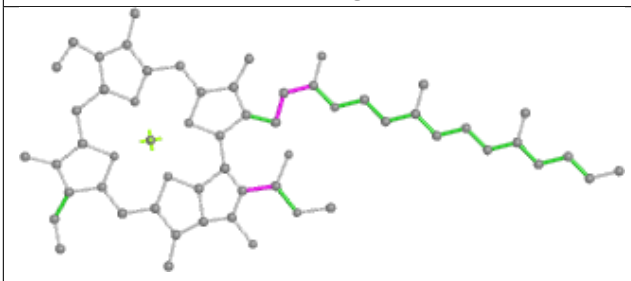
## Ligand CLA H 208



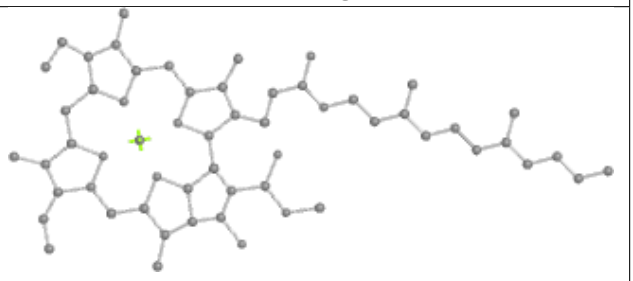
Bond lengths



Bond angles

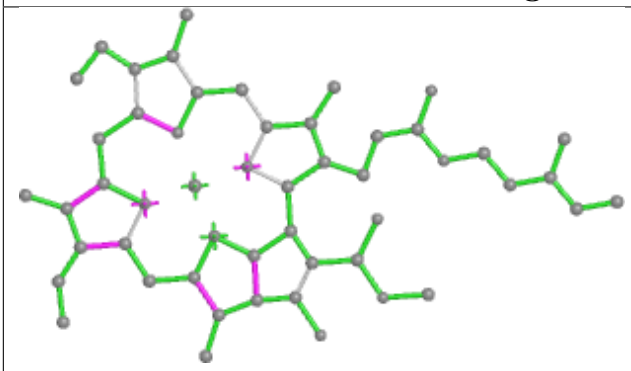


Torsions

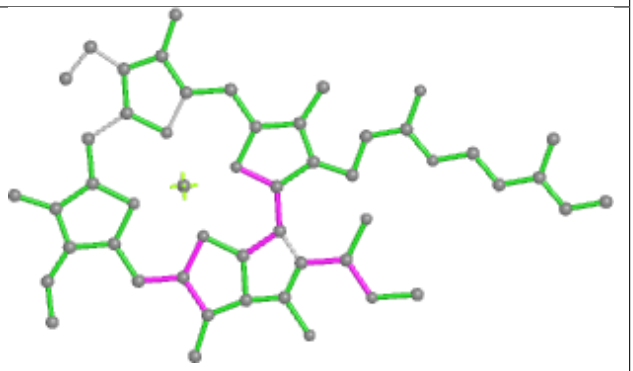


Rings

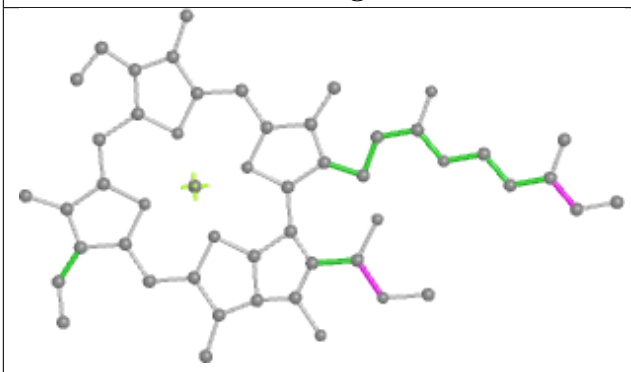
## Ligand CLA A 820



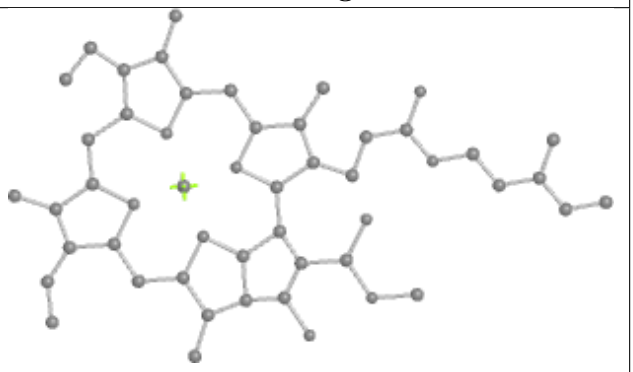
Bond lengths



Bond angles

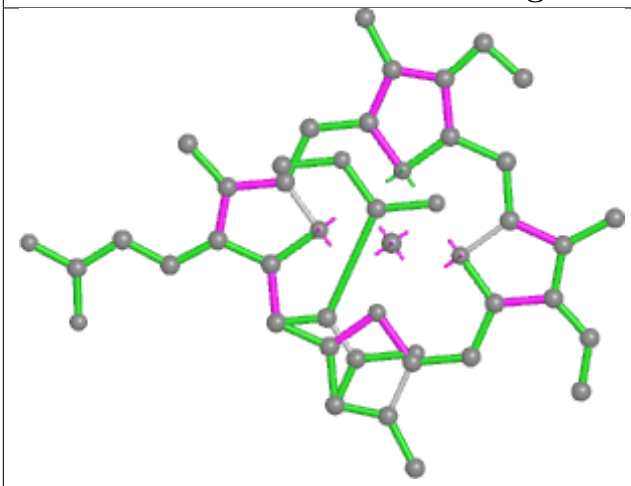


Torsions

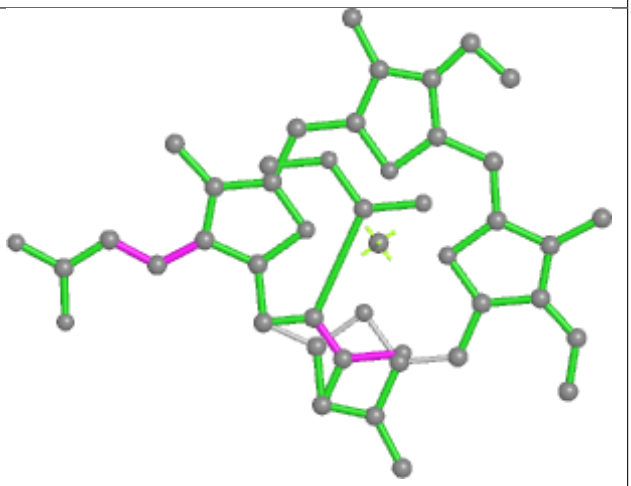


Rings

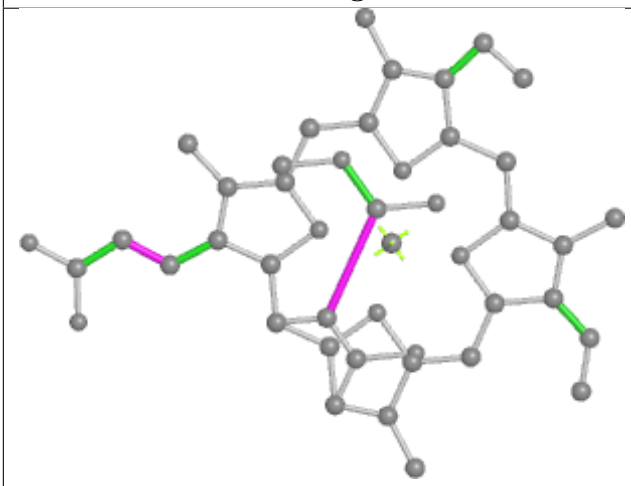
**Ligand KC1 P 206**



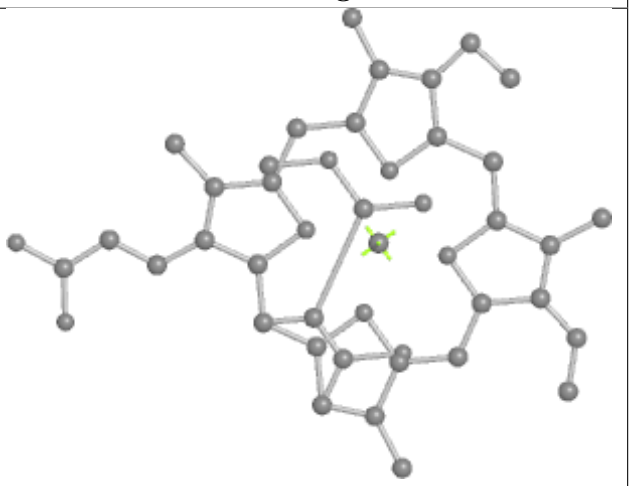
**Bond lengths**



**Bond angles**

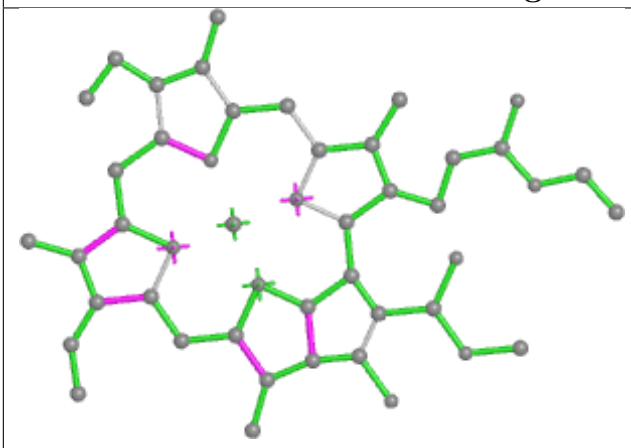


**Torsions**

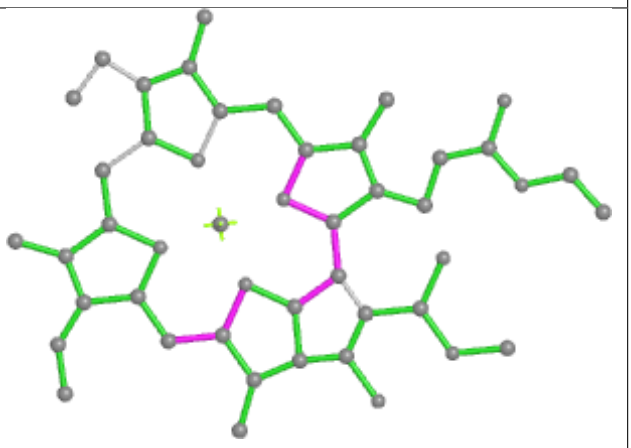


**Rings**

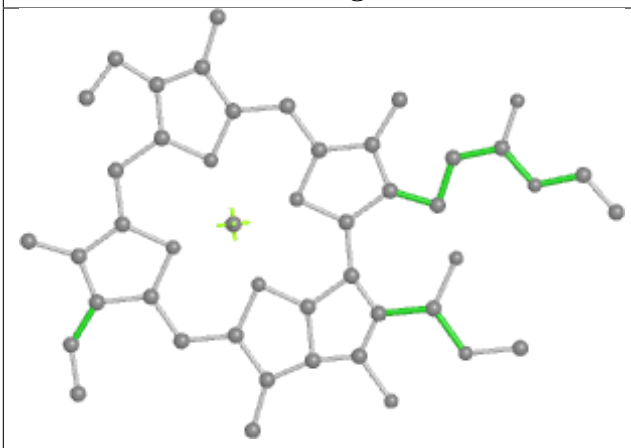
## Ligand CLA B 831



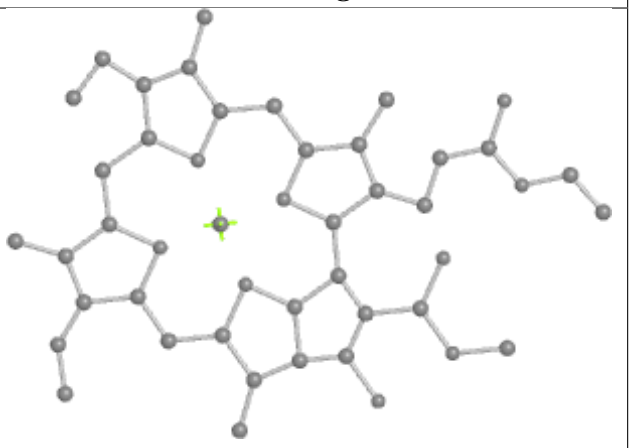
Bond lengths



Bond angles

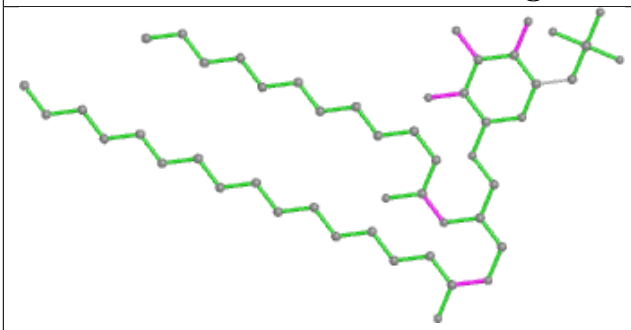


Torsions

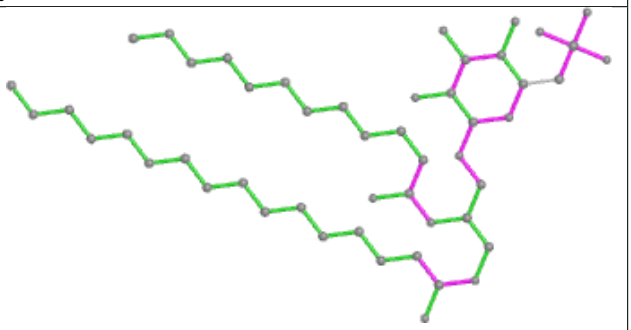


Rings

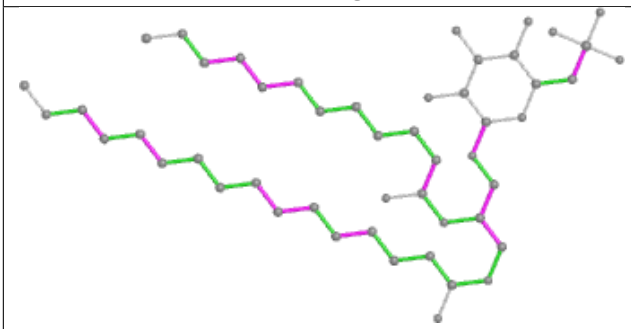
## Ligand SQD B 846



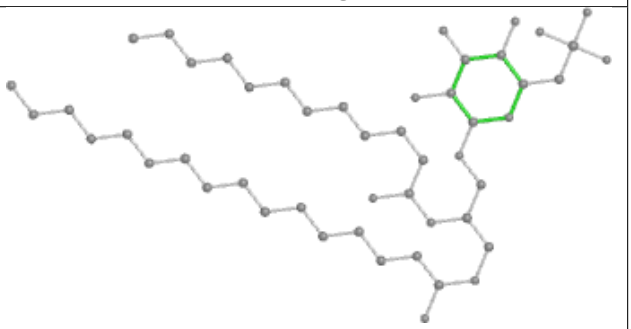
Bond lengths



Bond angles

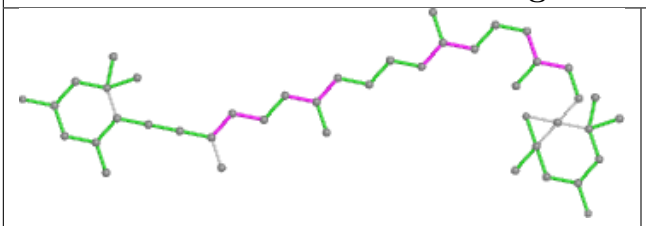


Torsions

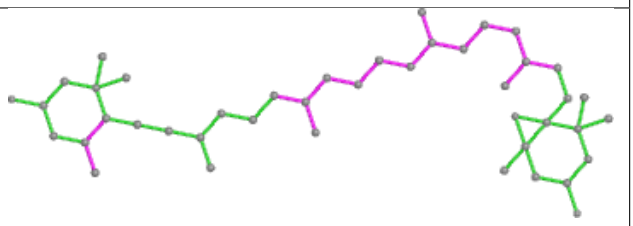


Rings

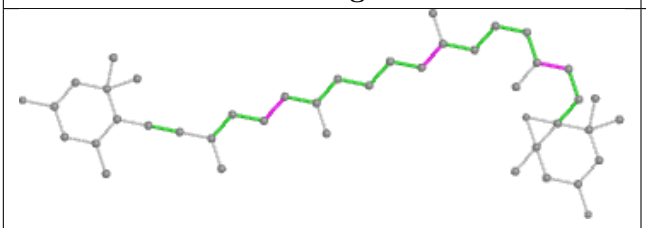
## Ligand DD6 J 101



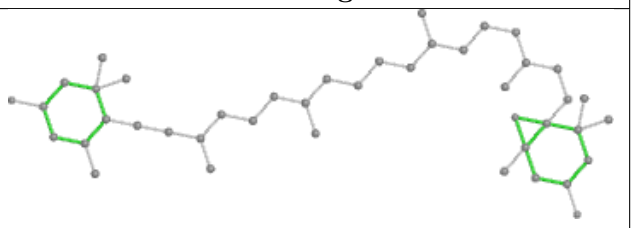
Bond lengths



Bond angles

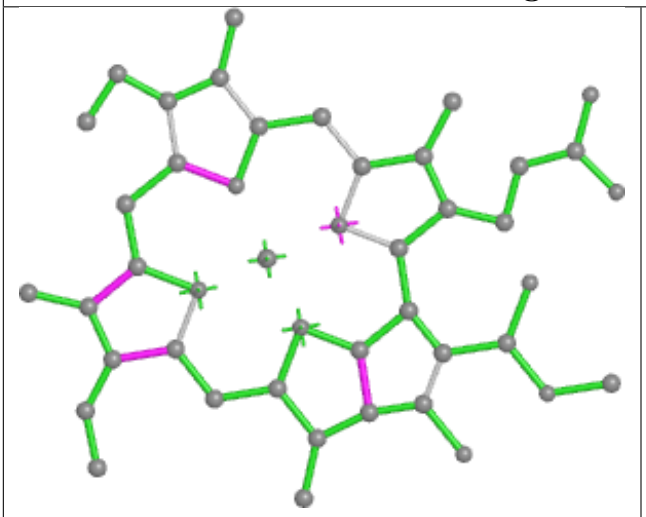


Torsions

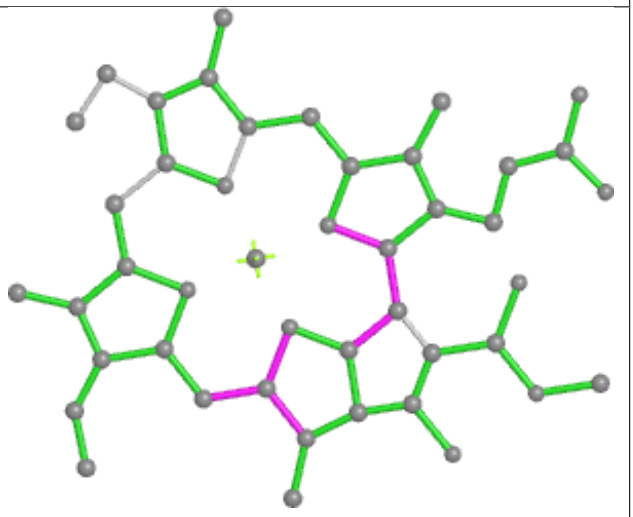


Rings

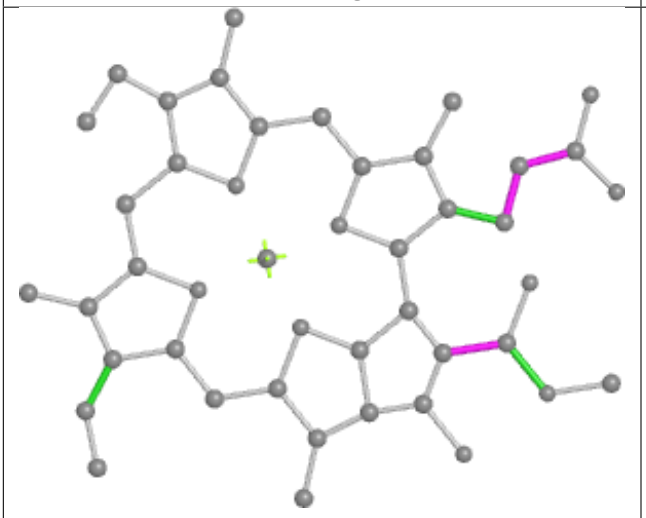
## Ligand CLA G 215



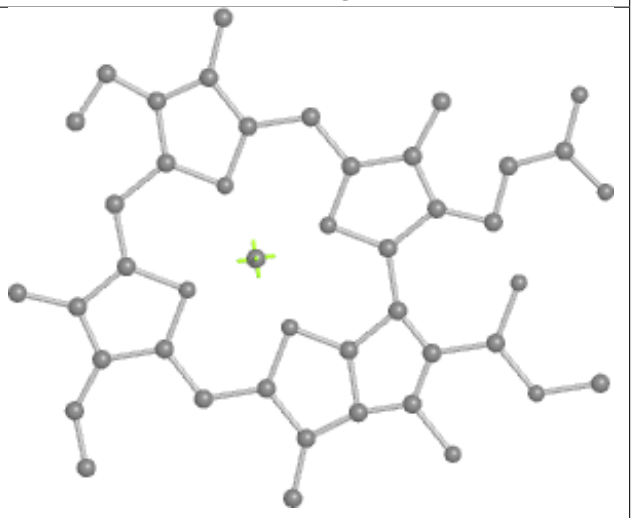
Bond lengths



Bond angles

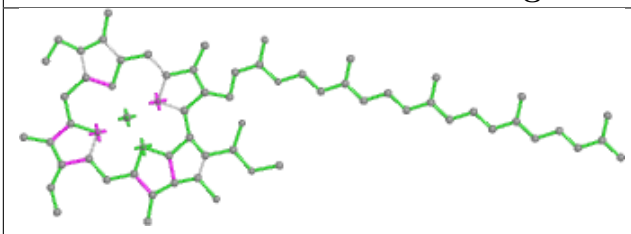


Torsions

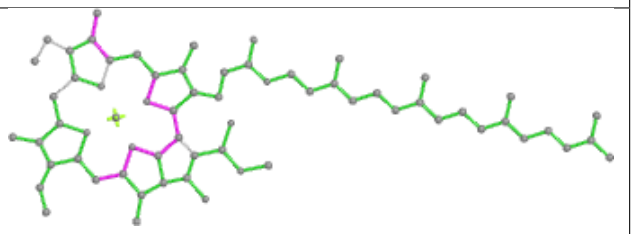


Rings

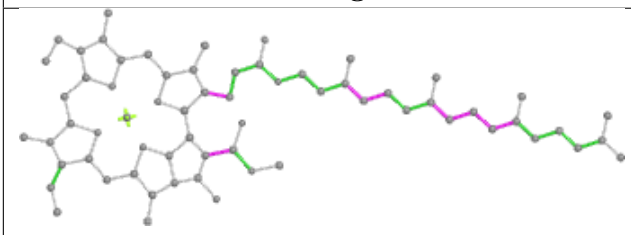
## Ligand CLA A 804



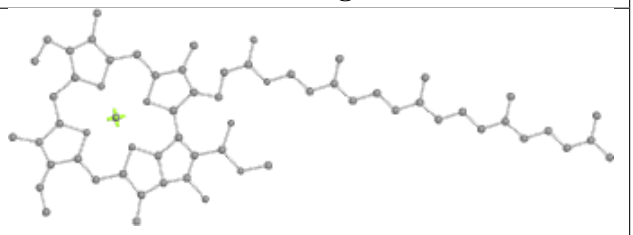
Bond lengths



Bond angles

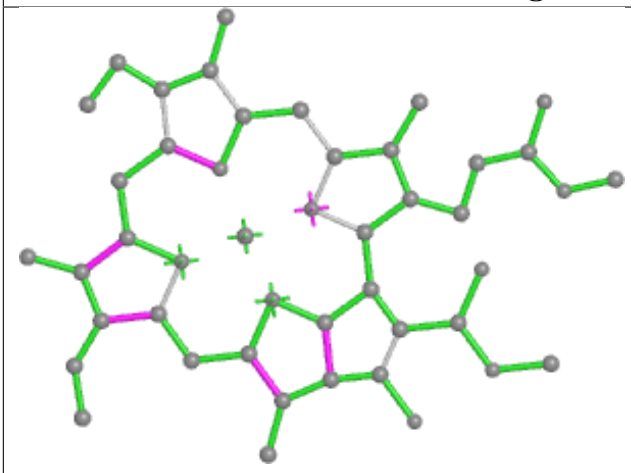


Torsions

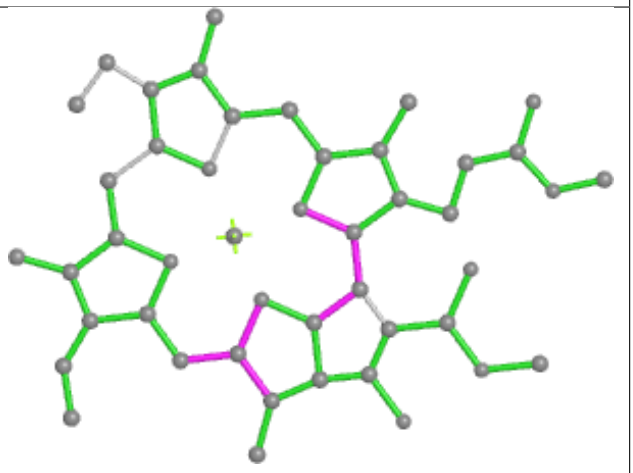


Rings

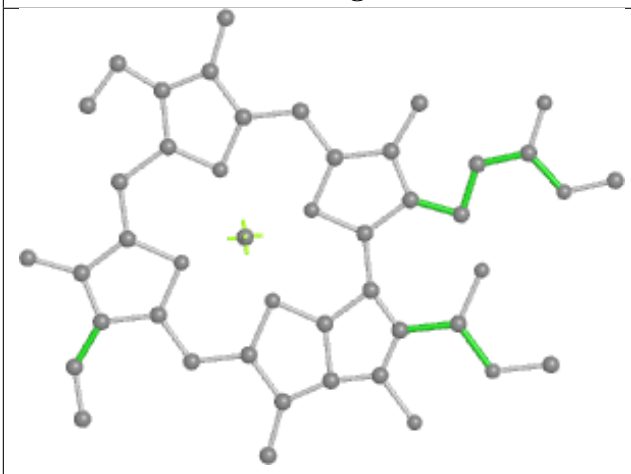
## Ligand CLA S 206



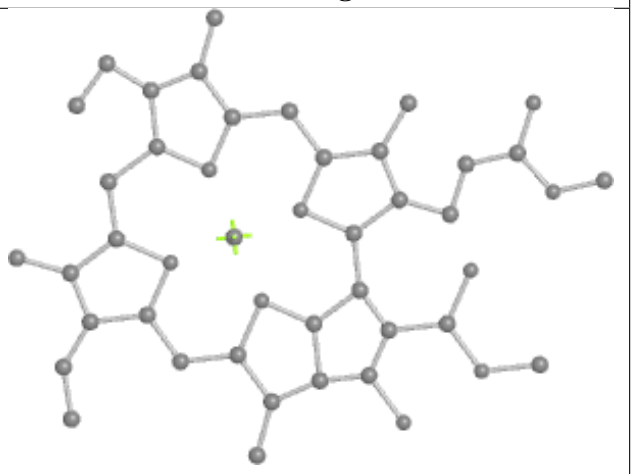
Bond lengths



Bond angles

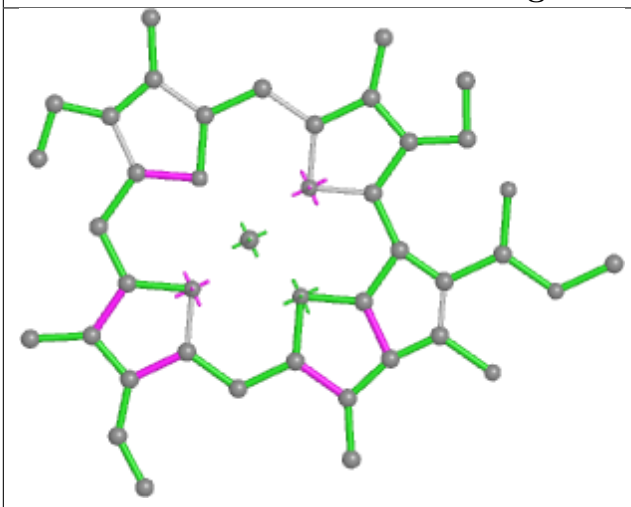


Torsions

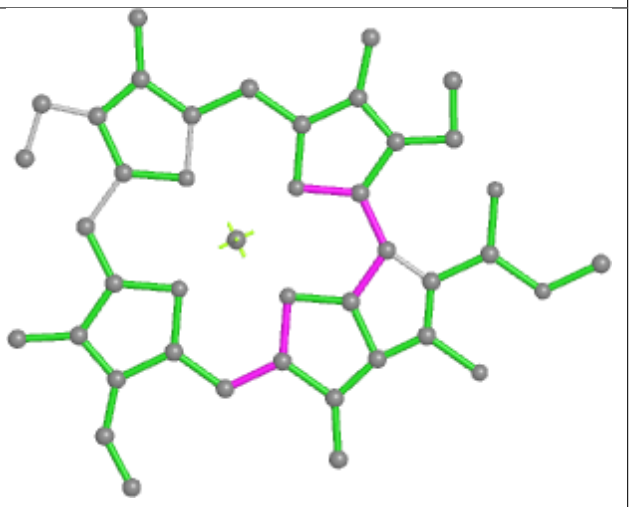


Rings

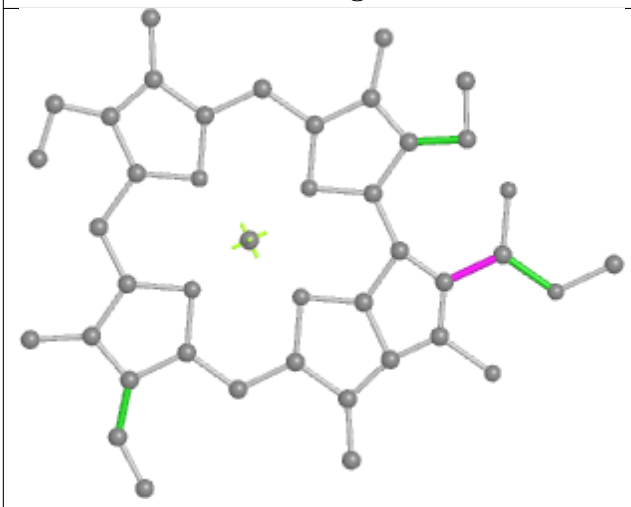
## Ligand CLA k 102



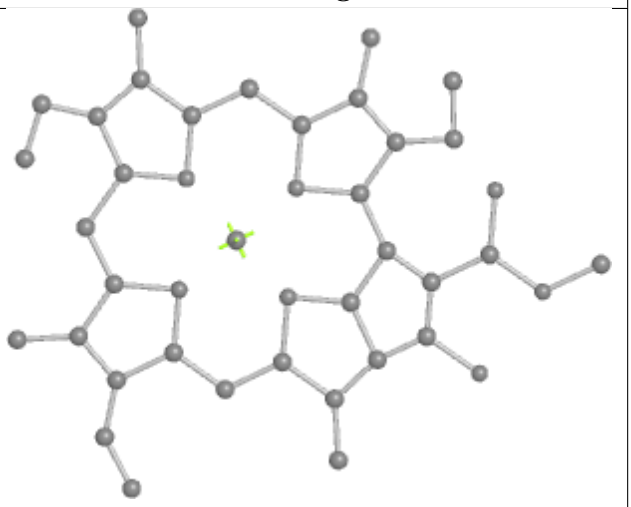
Bond lengths



Bond angles

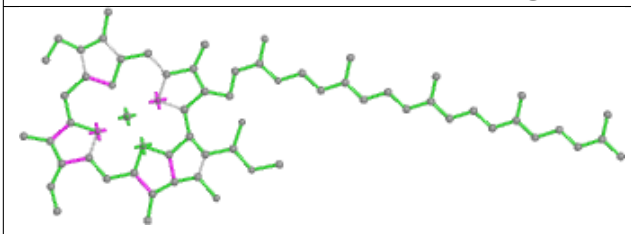


Torsions

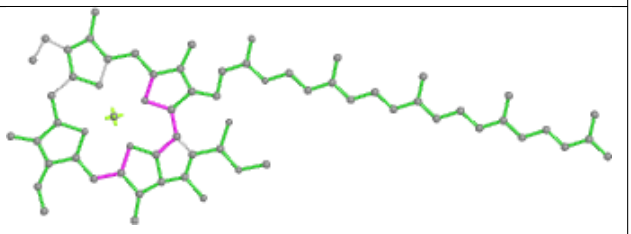


Rings

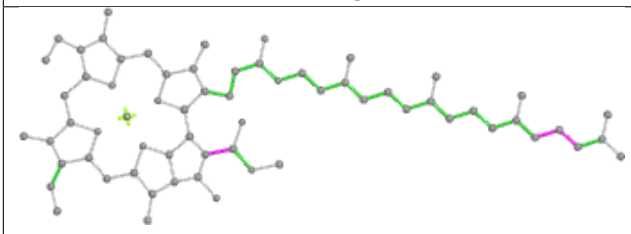
## Ligand CLA B 844



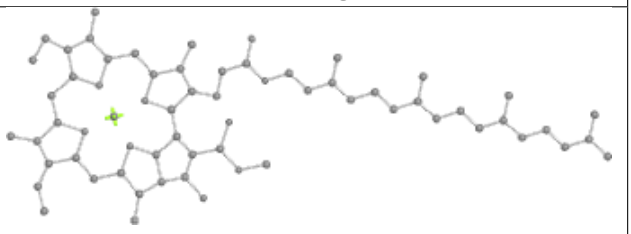
Bond lengths



Bond angles

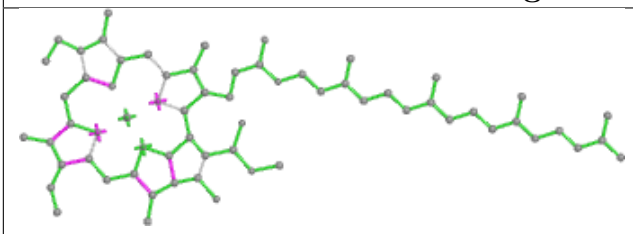


Torsions

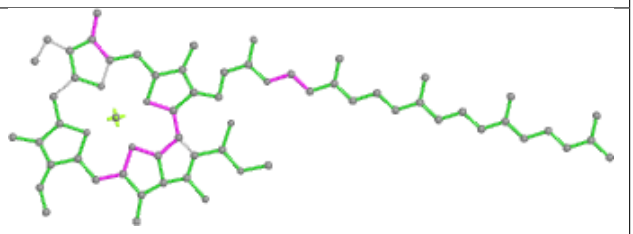


Rings

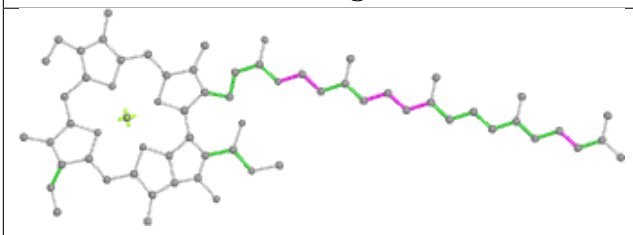
## Ligand CLA A 836



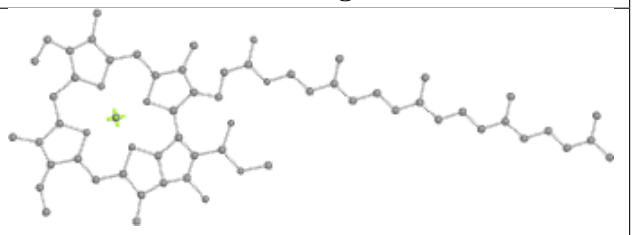
Bond lengths



Bond angles

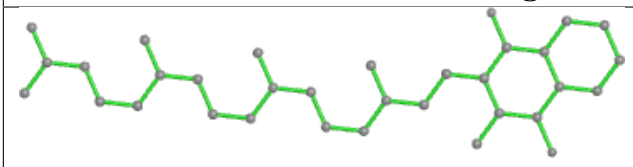


Torsions

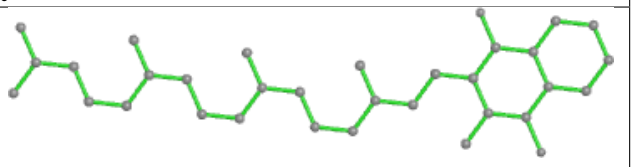


Rings

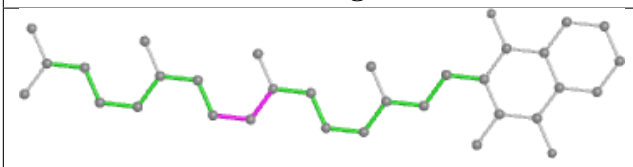
## Ligand PQN A 837



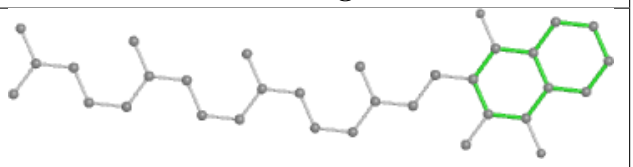
Bond lengths



Bond angles

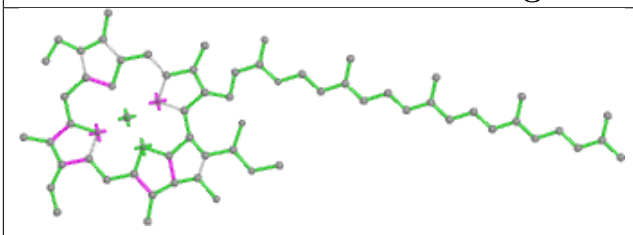


Torsions

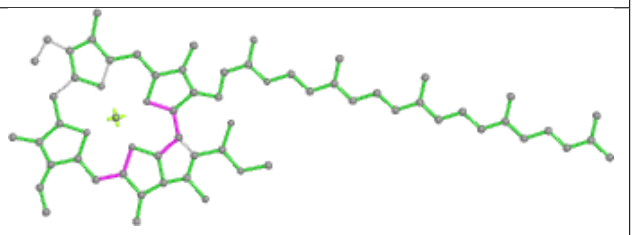


Rings

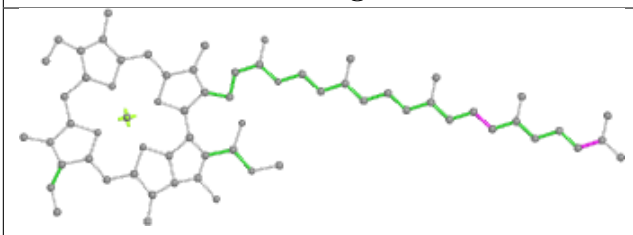
## Ligand CLA A 828



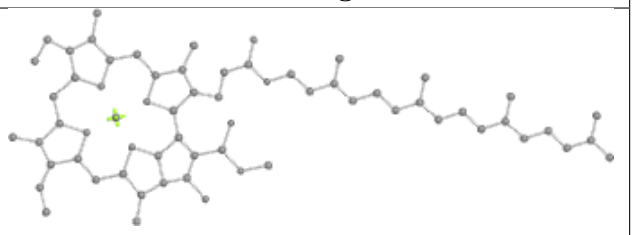
Bond lengths



Bond angles

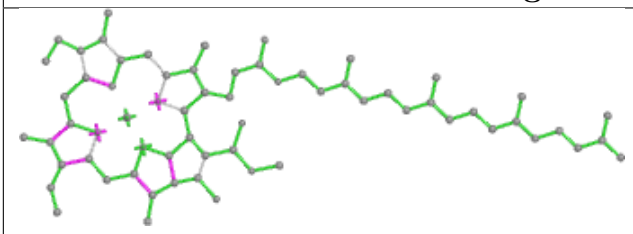


Torsions

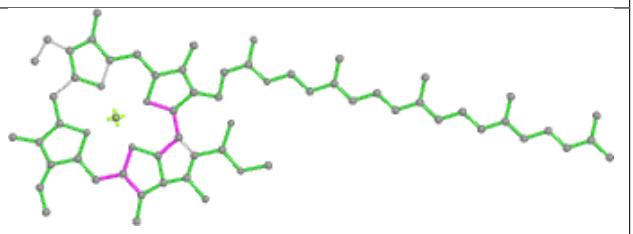


Rings

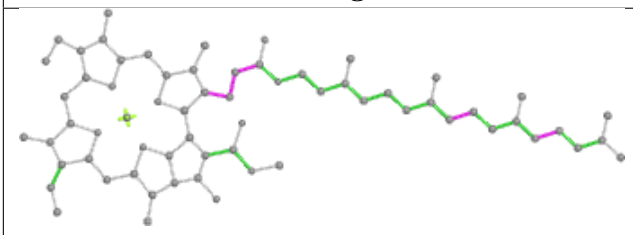
## Ligand CLA A 815



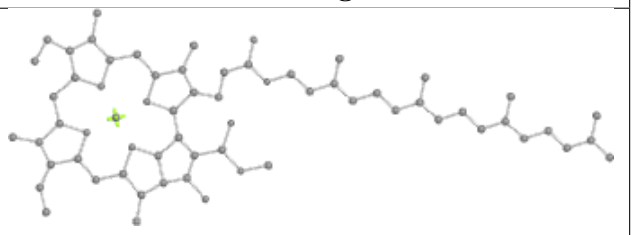
Bond lengths



Bond angles

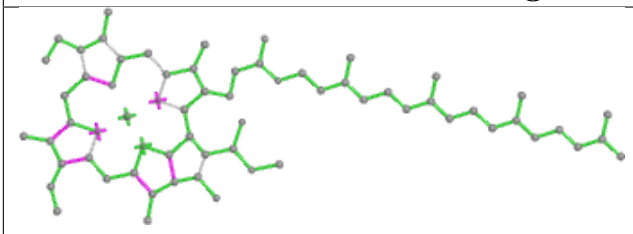


Torsions

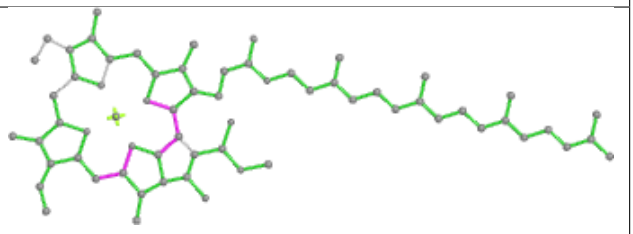


Rings

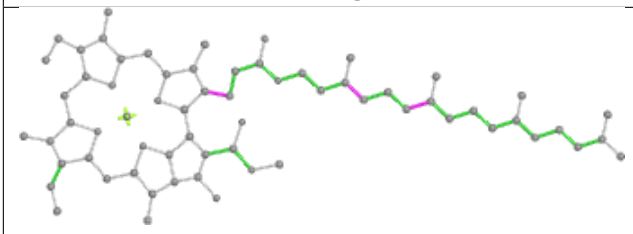
## Ligand CLA B 822



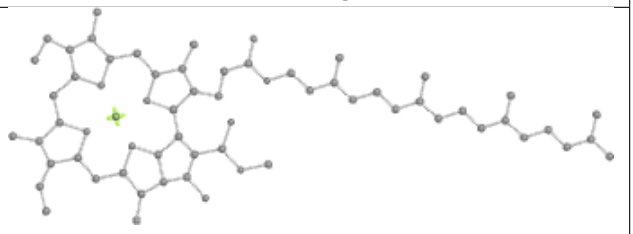
Bond lengths



Bond angles

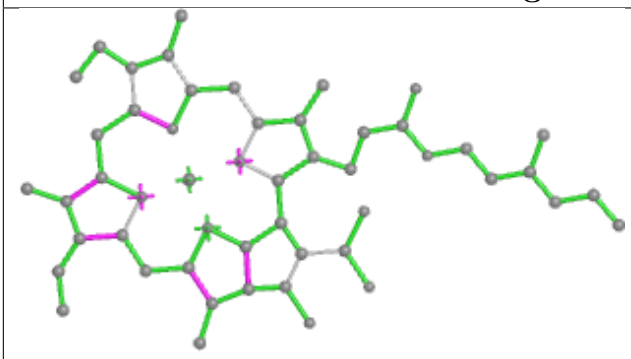


Torsions

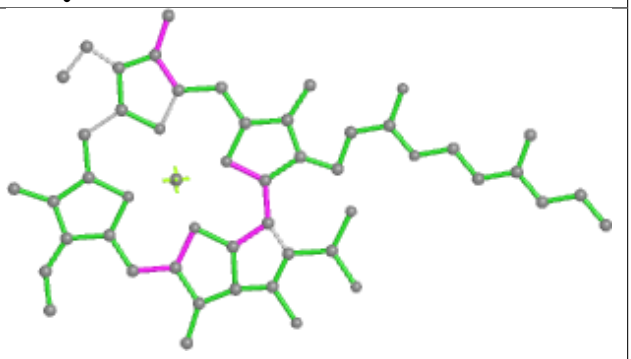


Rings

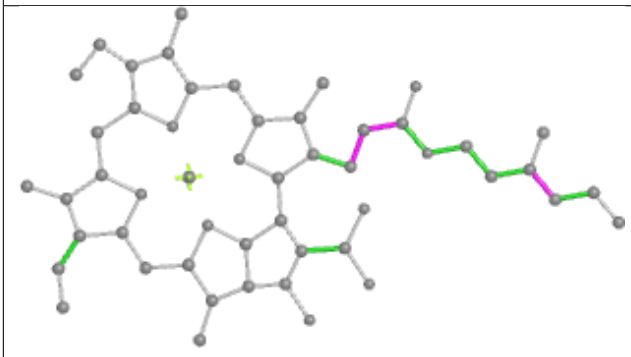
## Ligand CLA Q 206



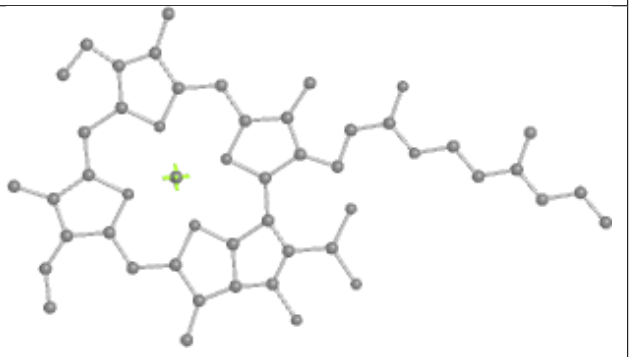
Bond lengths



Bond angles

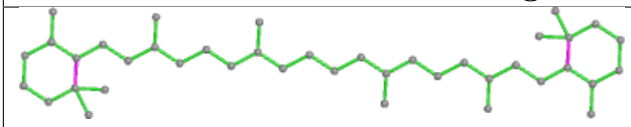


Torsions

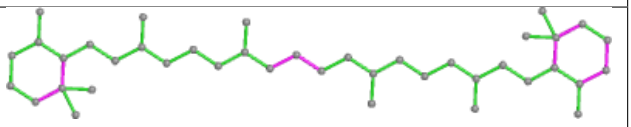


Rings

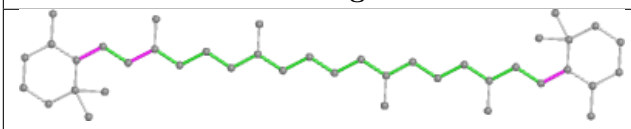
## Ligand BCR A 843



Bond lengths



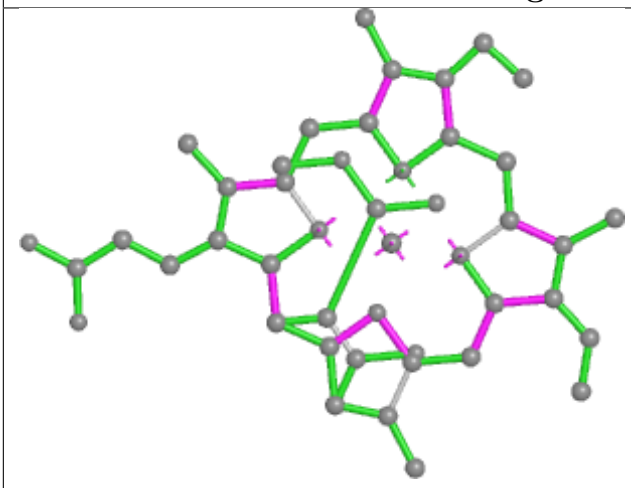
Bond angles



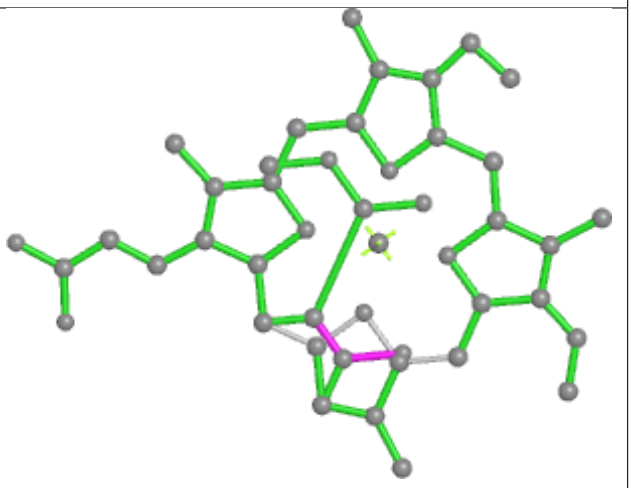
Torsions

Rings

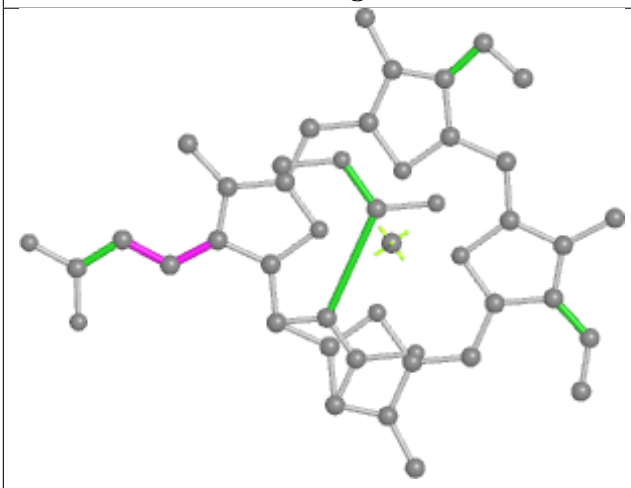
## Ligand KC1 P 219



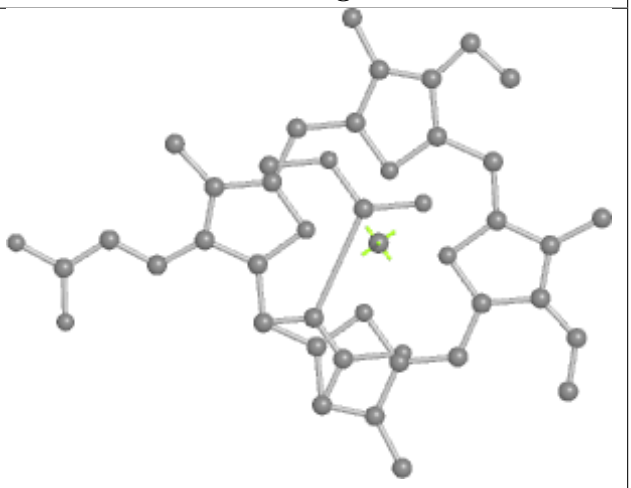
Bond lengths



Bond angles

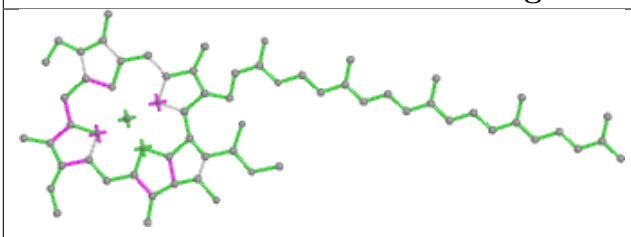


Torsions

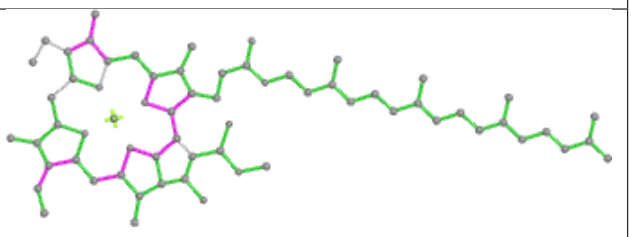


Rings

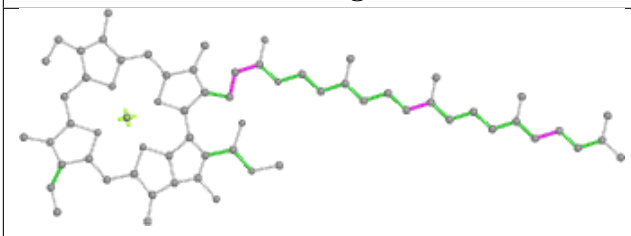
## Ligand CLA B 802



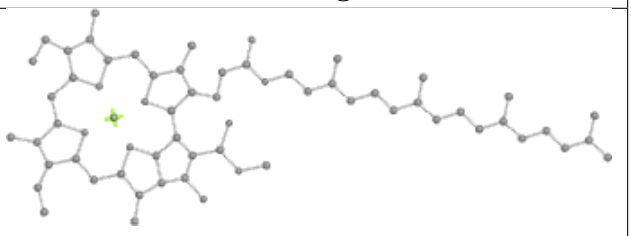
Bond lengths



Bond angles

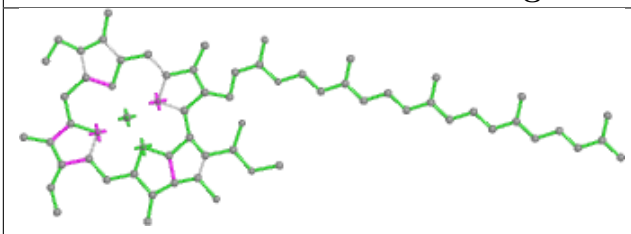


Torsions

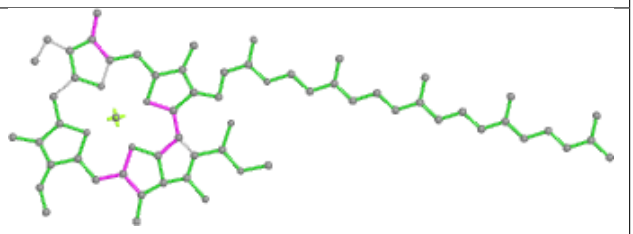


Rings

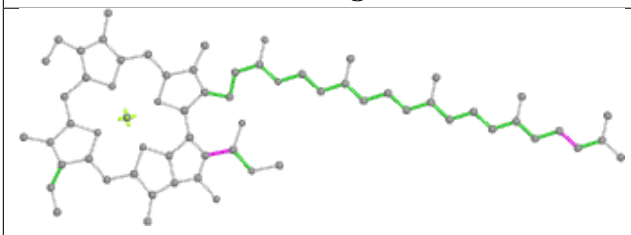
## Ligand CLA A 829



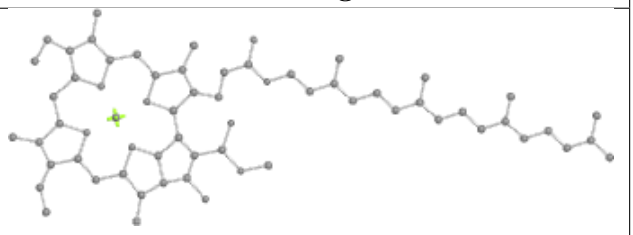
Bond lengths



Bond angles

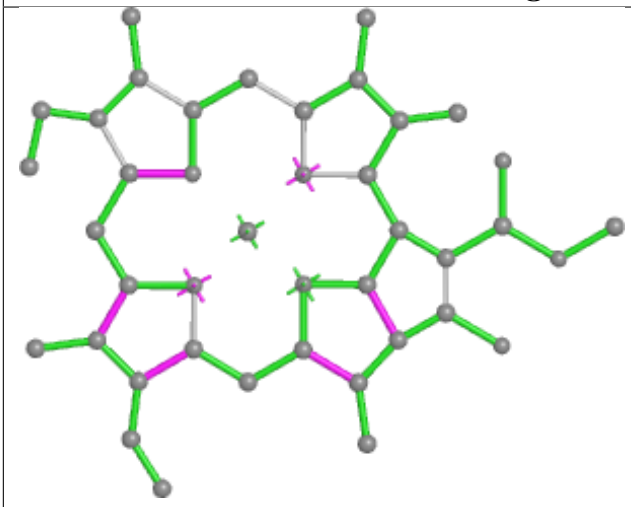


Torsions

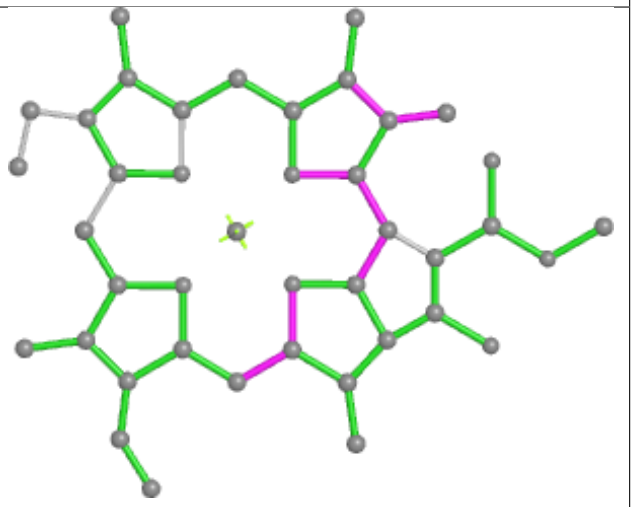


Rings

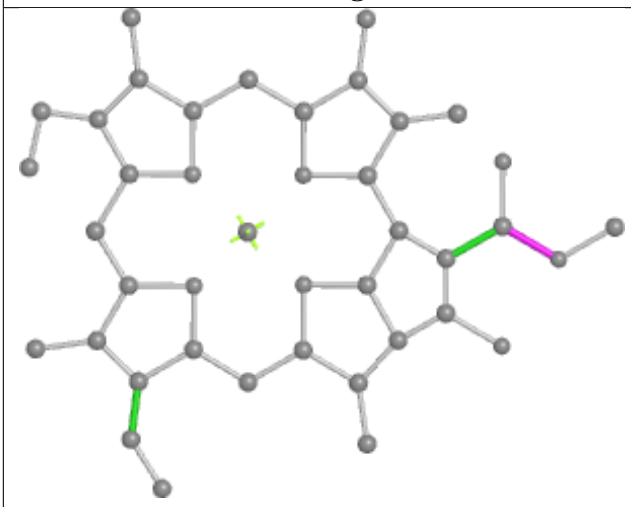
## Ligand CLA P 213



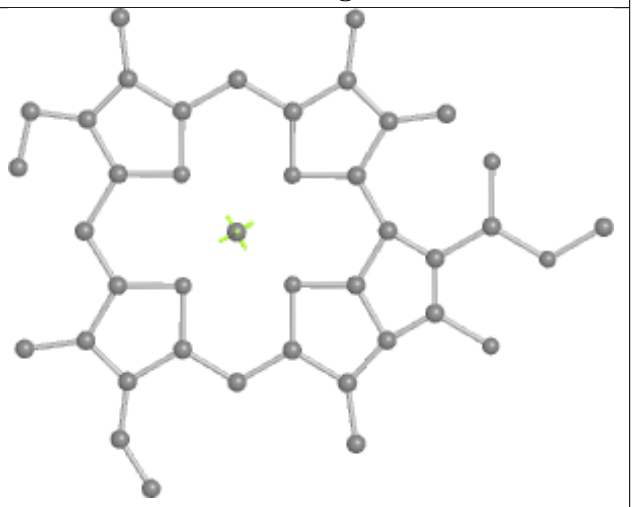
Bond lengths



Bond angles

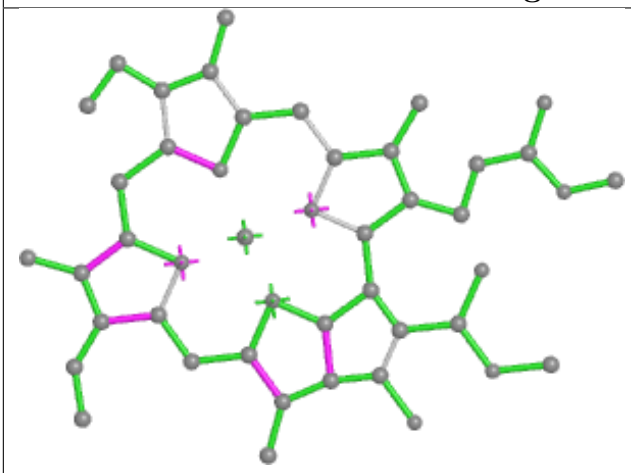


Torsions

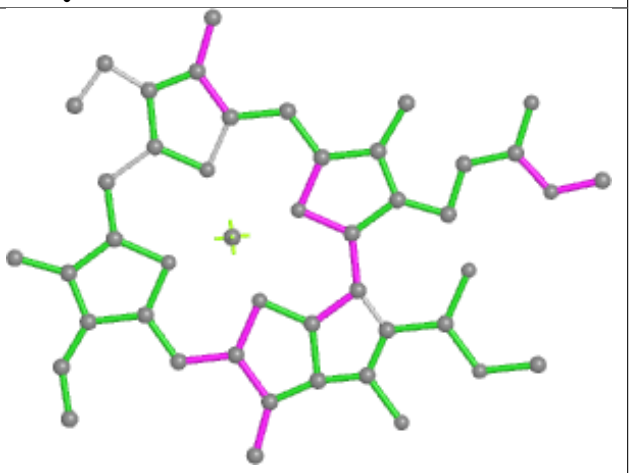


Rings

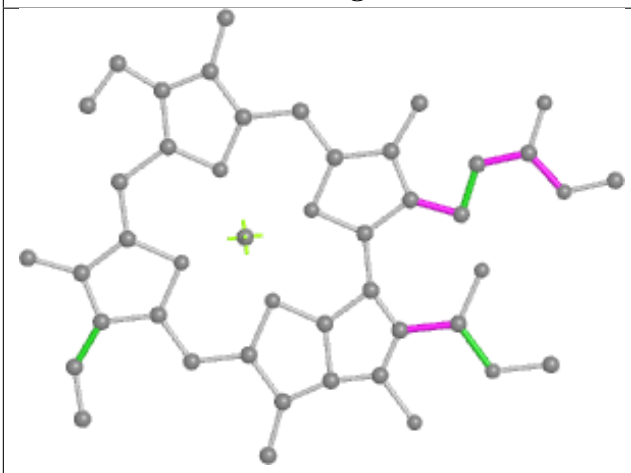
**Ligand CLA Q 207**



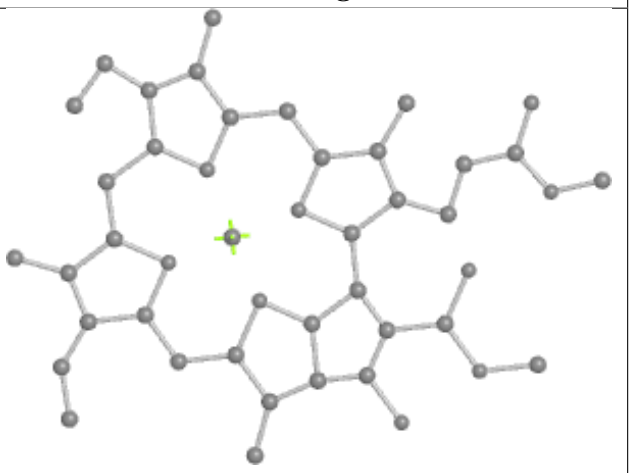
**Bond lengths**



**Bond angles**

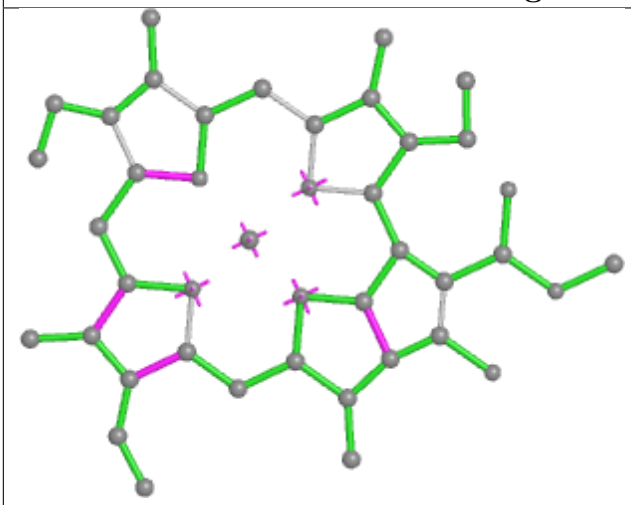


**Torsions**

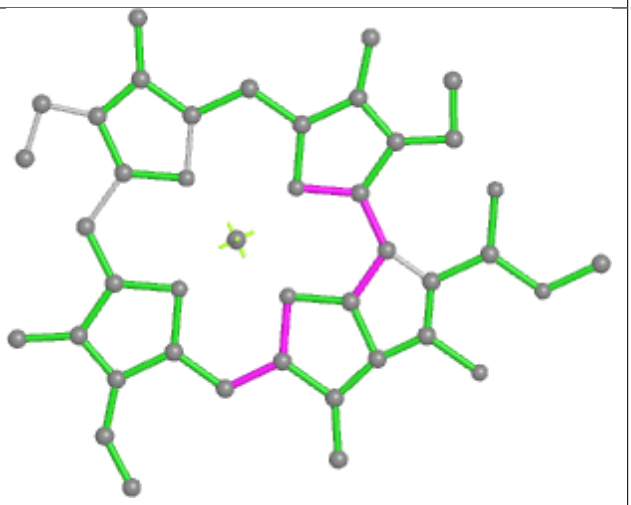


**Rings**

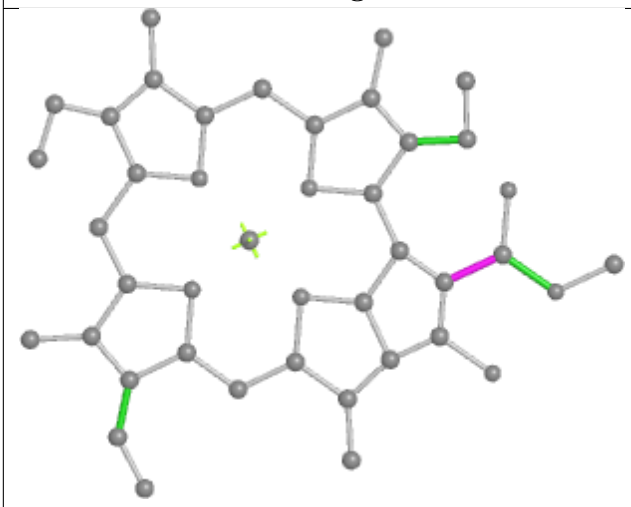
**Ligand CLA T 206**



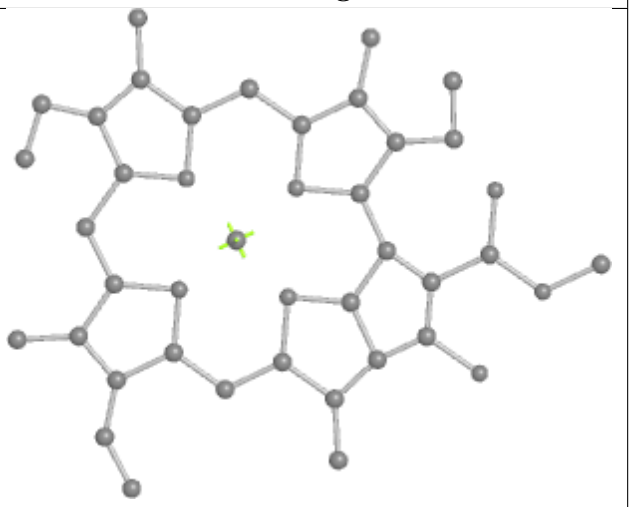
**Bond lengths**



**Bond angles**

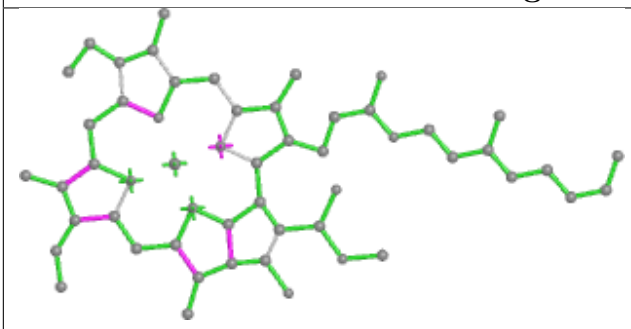


**Torsions**

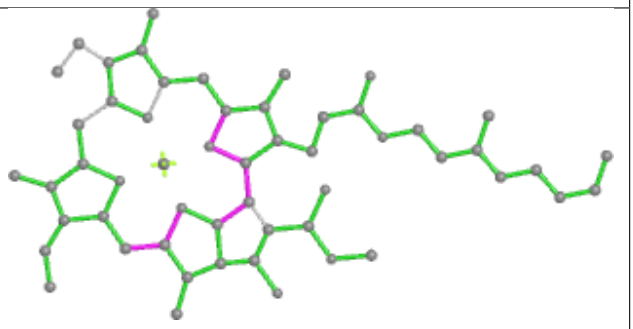


**Rings**

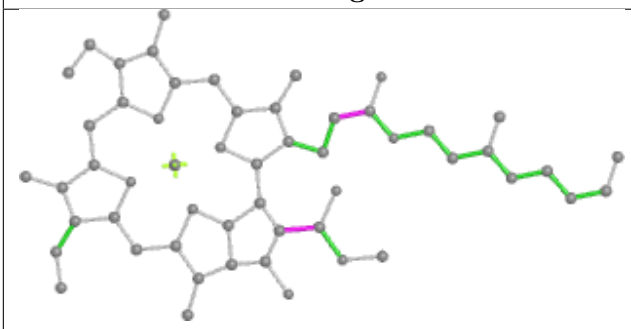
**Ligand CLA A 810**



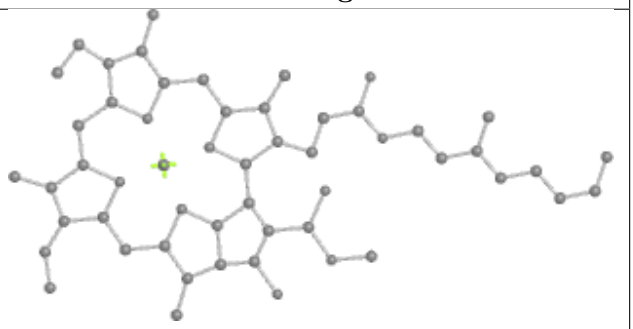
**Bond lengths**



**Bond angles**

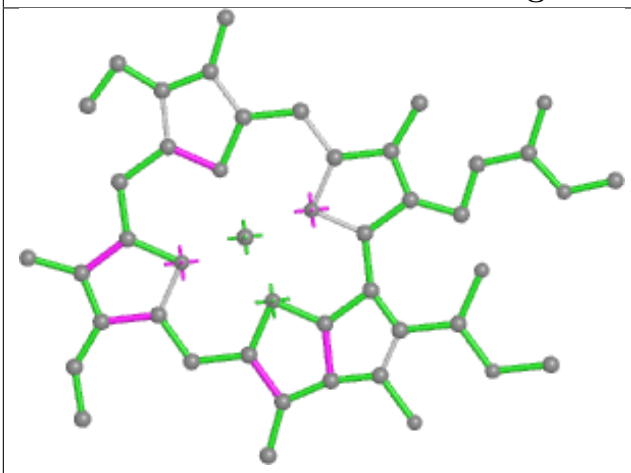


**Torsions**

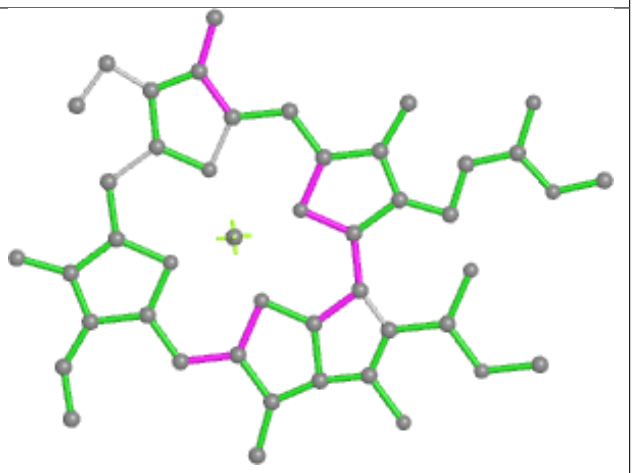


**Rings**

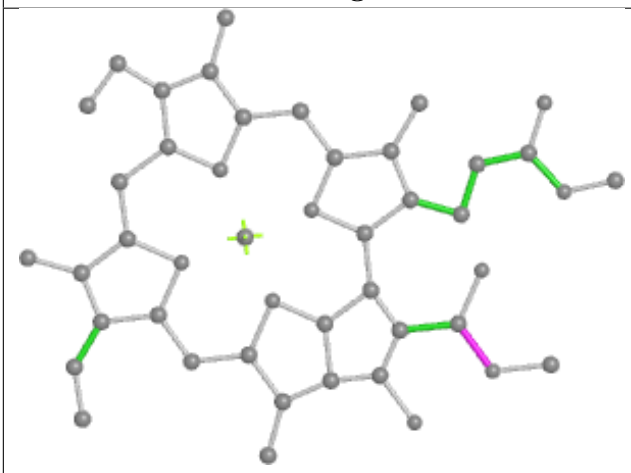
## Ligand CLA S 207



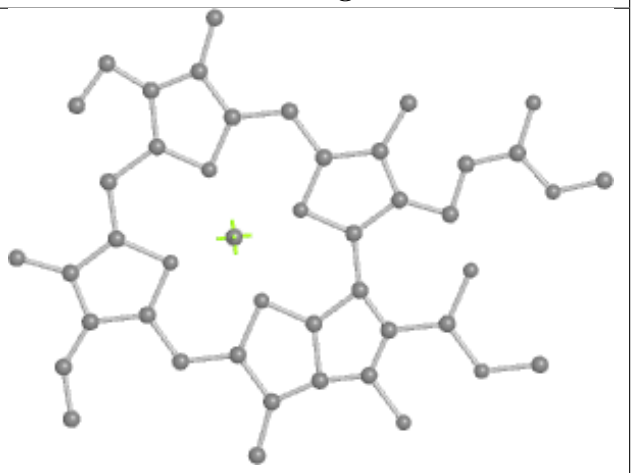
Bond lengths



Bond angles

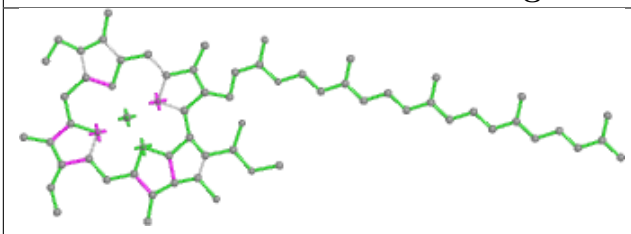


Torsions

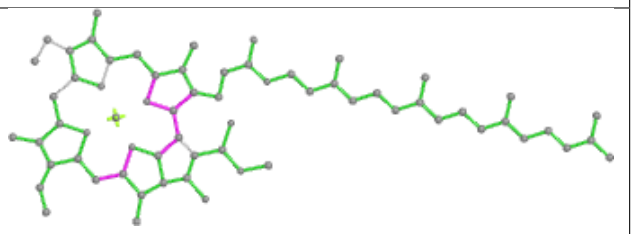


Rings

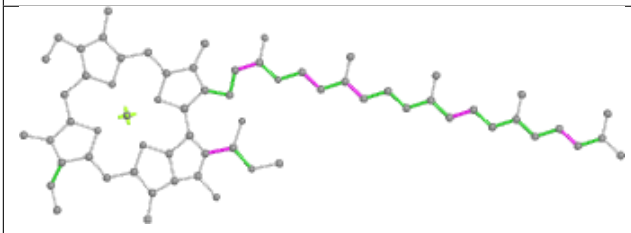
## Ligand CLA A 821



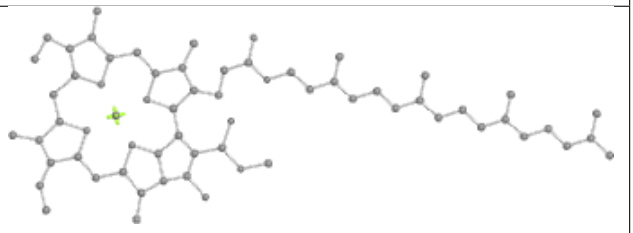
Bond lengths



Bond angles

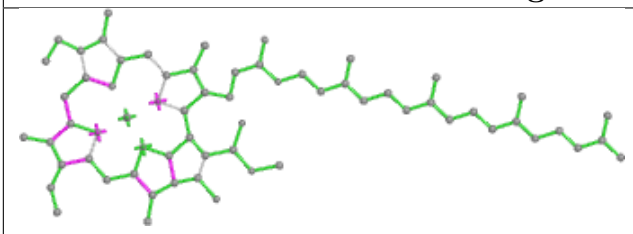


Torsions

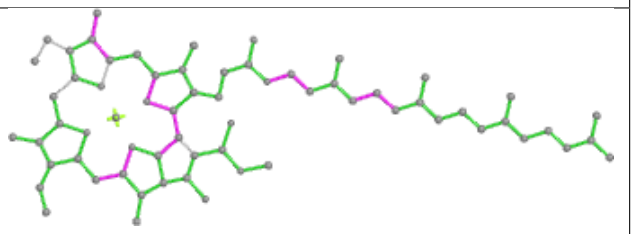


Rings

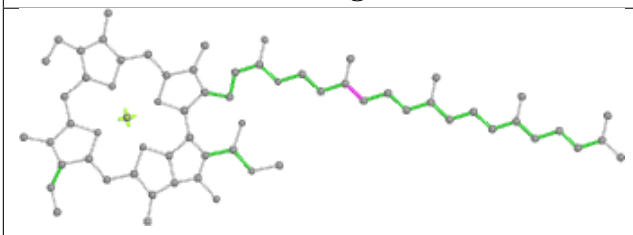
## Ligand CLA S 217



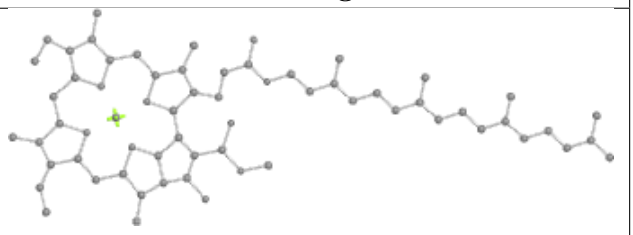
Bond lengths



Bond angles

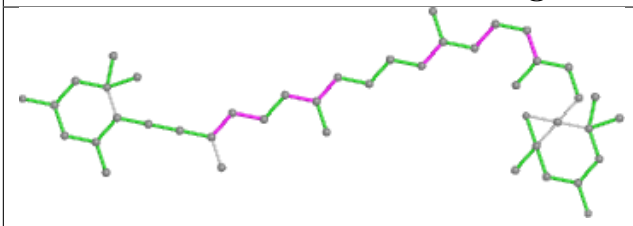


Torsions

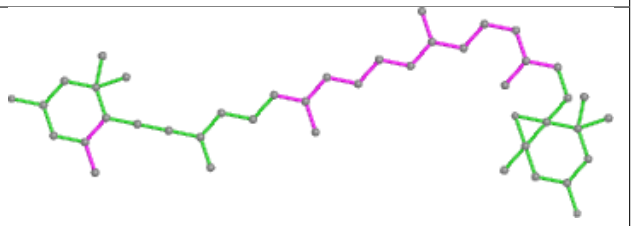


Rings

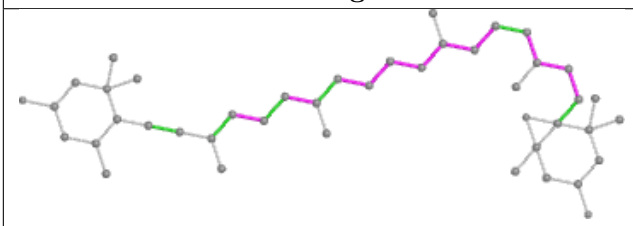
## Ligand DD6 S 214



Bond lengths



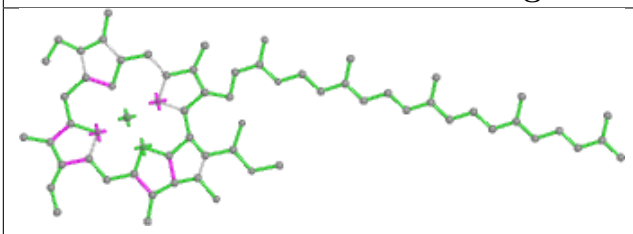
Bond angles



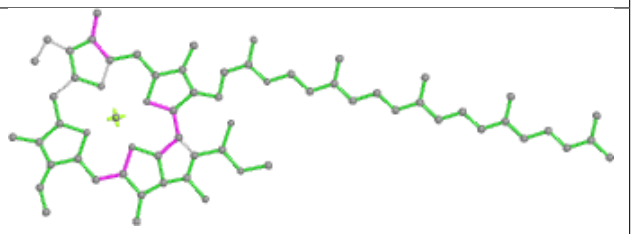
Torsions

Rings

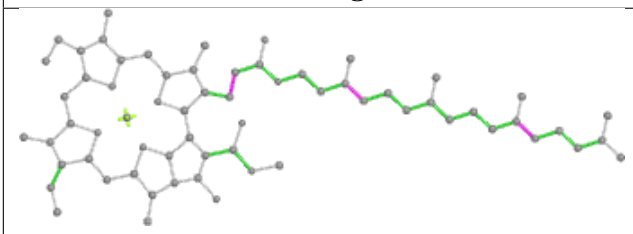
## Ligand CLA A 825



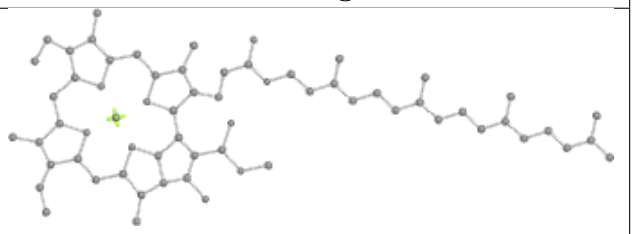
Bond lengths



Bond angles

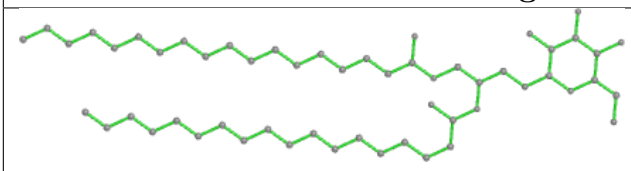


Torsions

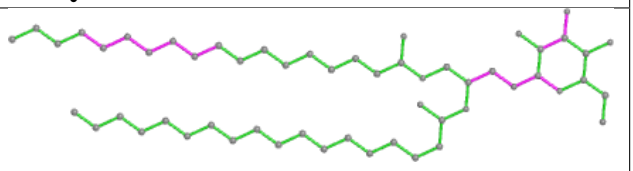


Rings

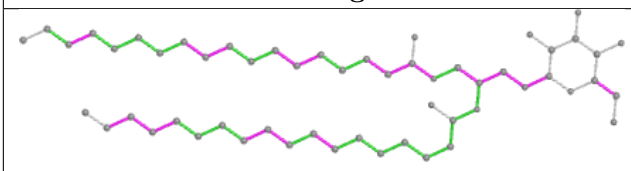
## Ligand LMG Q 217



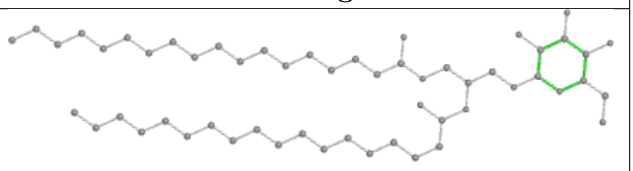
Bond lengths



Bond angles

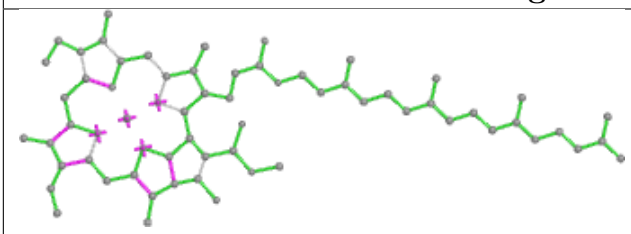


Torsions

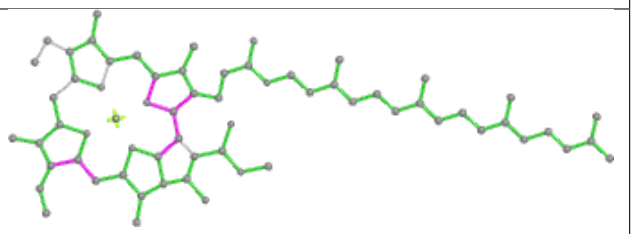


Rings

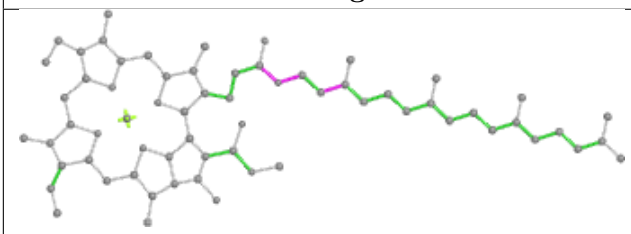
## Ligand CL0 A 849



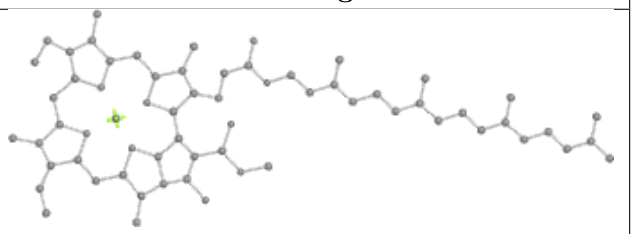
Bond lengths



Bond angles

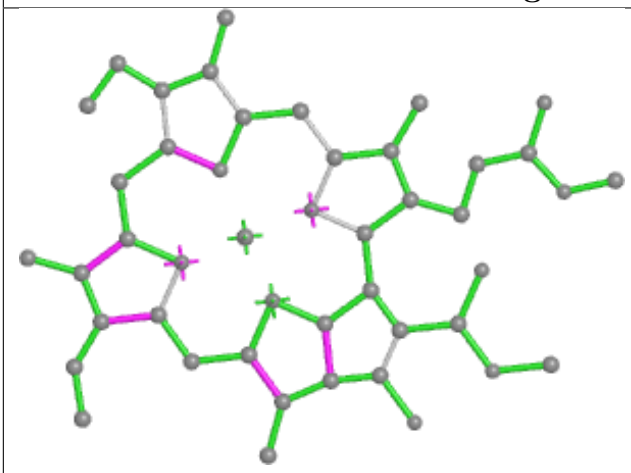


Torsions

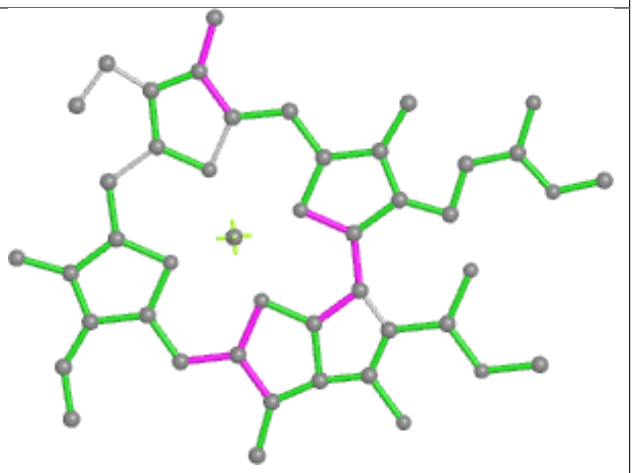


Rings

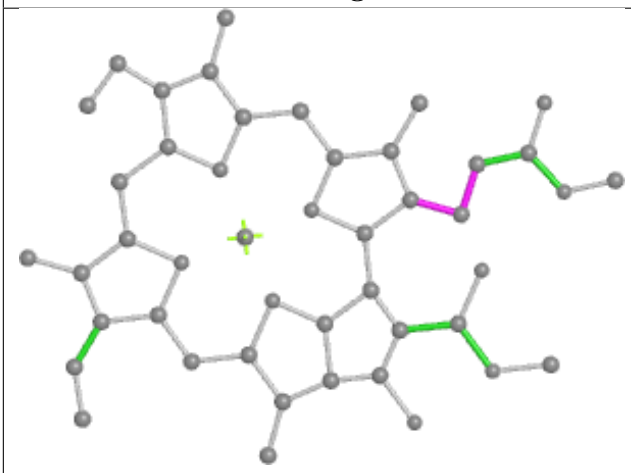
## Ligand CLA A 856



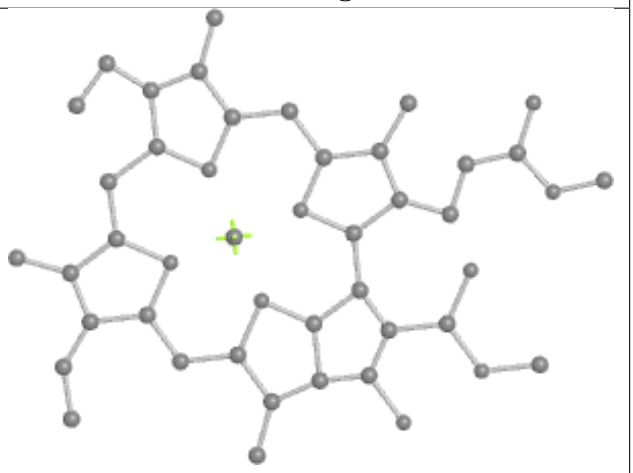
Bond lengths



Bond angles

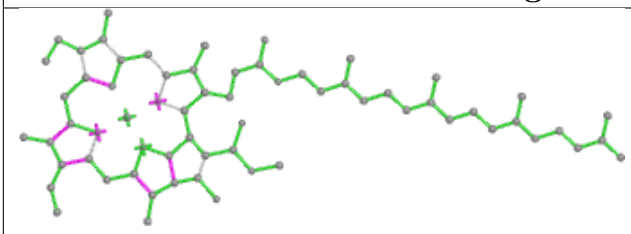


Torsions

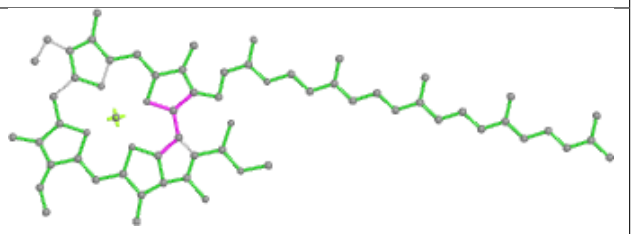


Rings

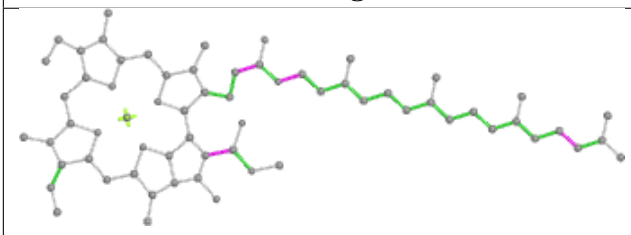
## Ligand CLA B 801



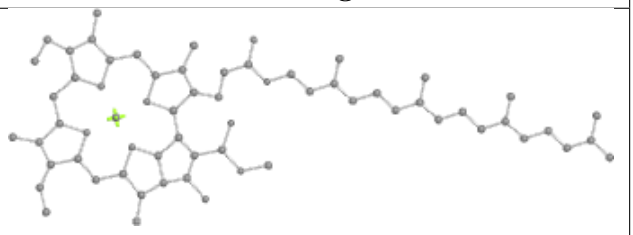
Bond lengths



Bond angles

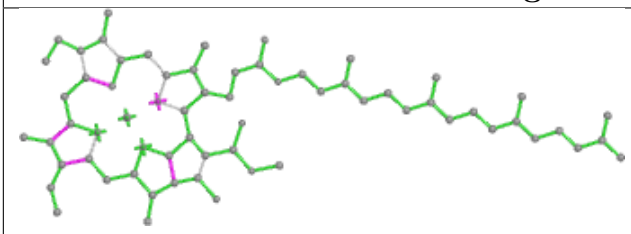


Torsions

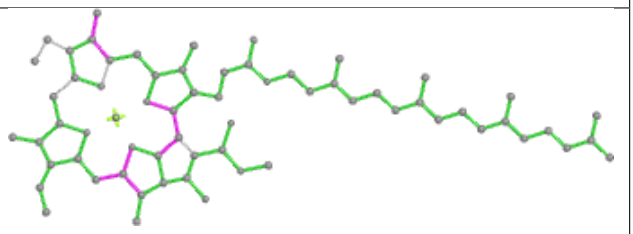


Rings

## Ligand CLA A 822



Bond lengths



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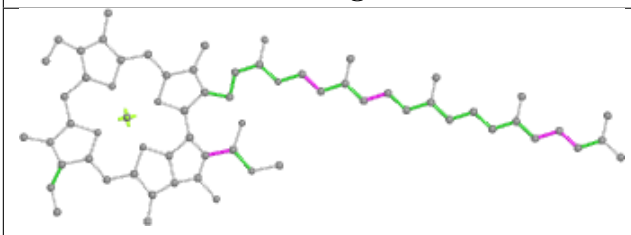

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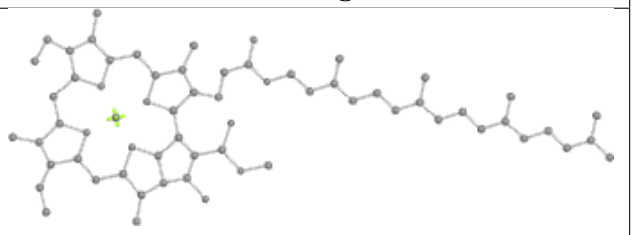
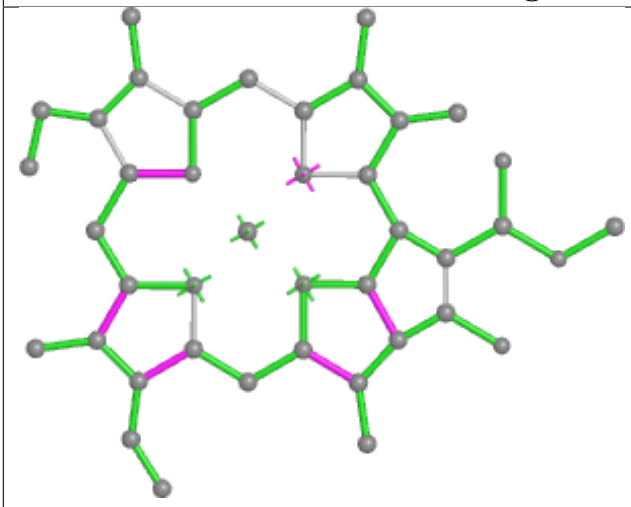


Rings

## Ligand CLA H 209



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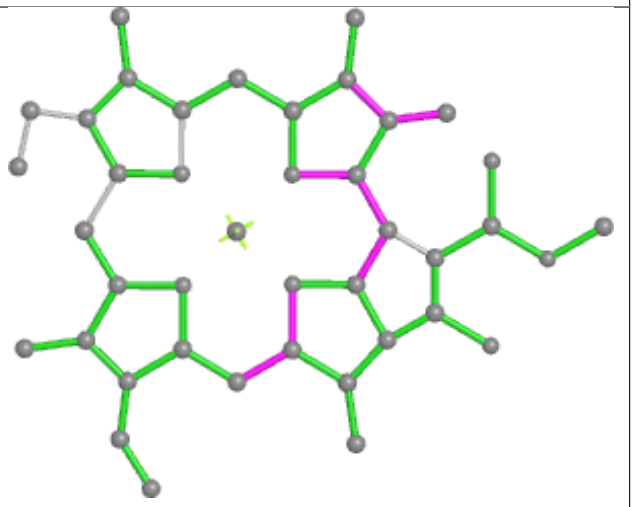
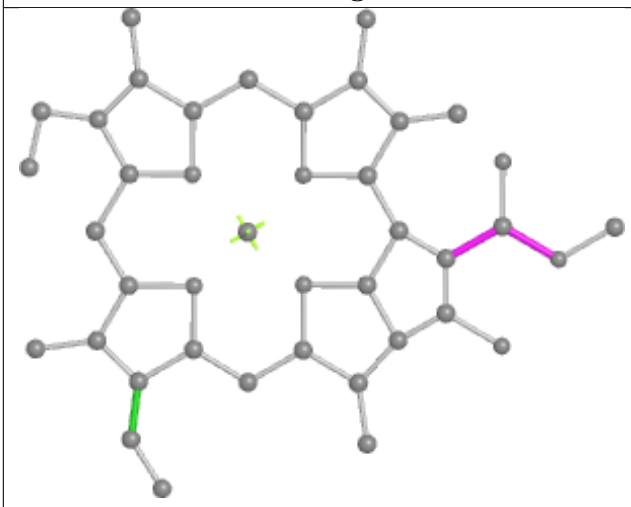


Bond angles



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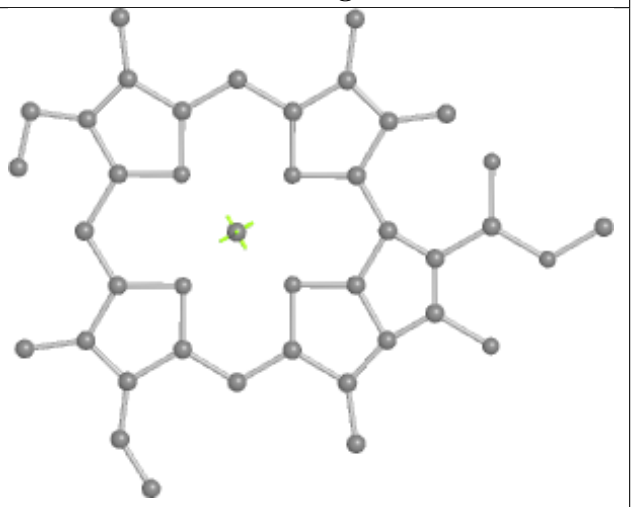
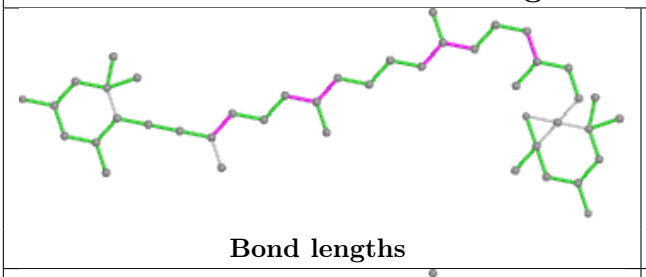
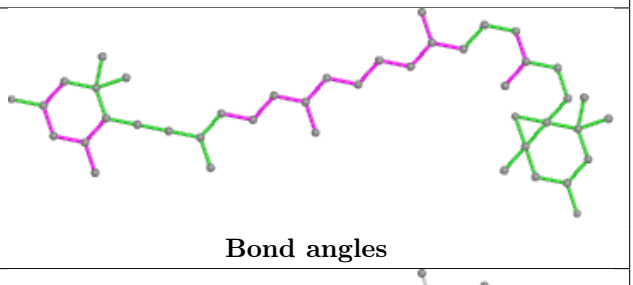


Rings

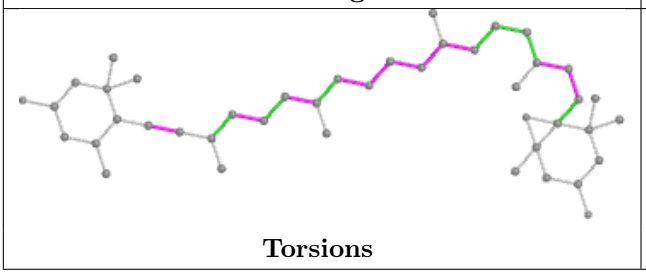
## Ligand DD6 U 212



Bond lengths



Bond angles



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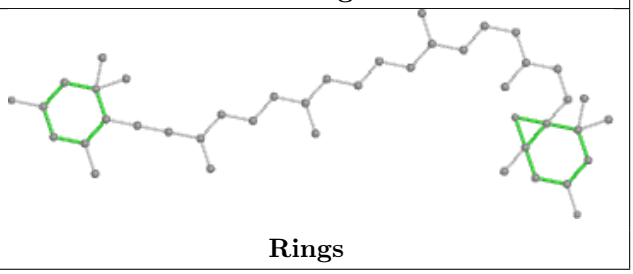
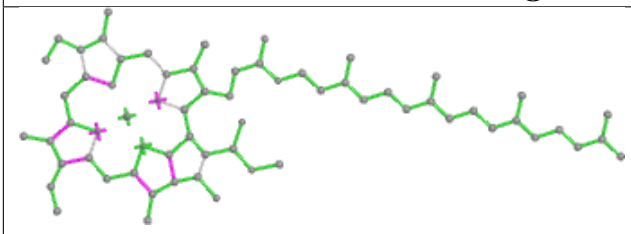
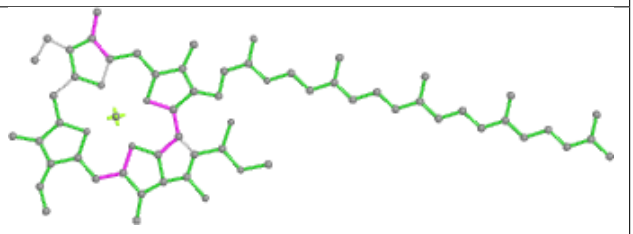


Rings

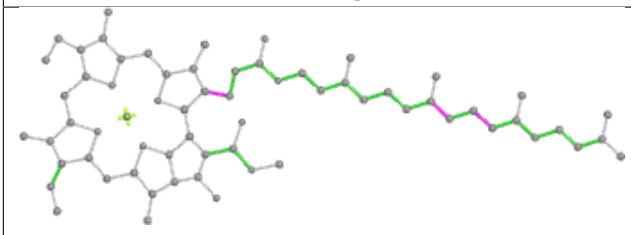
## Ligand CLA B 842



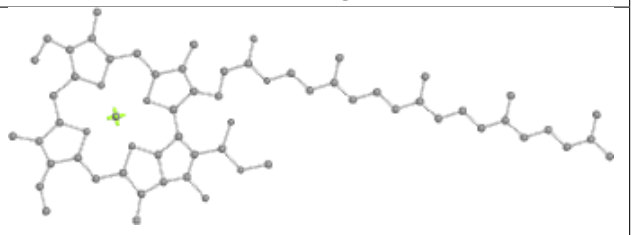
Bond lengths



Bond angles

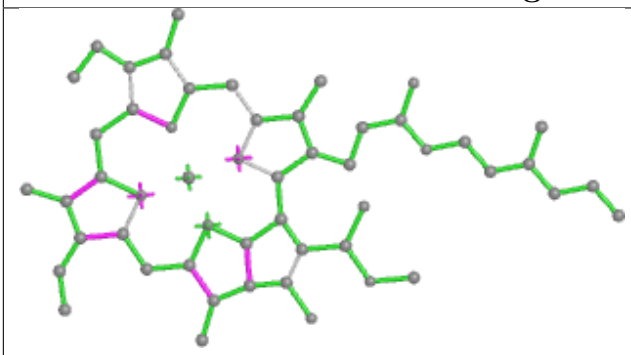


Torsions

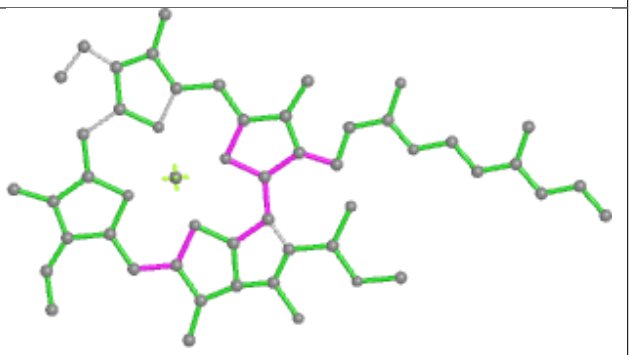


Rings

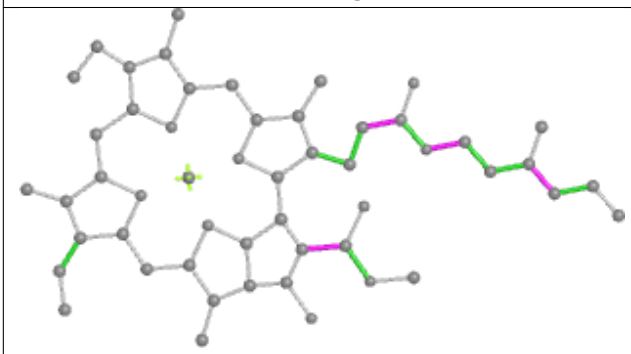
## Ligand CLA U 211



Bond lengths



Bond angles



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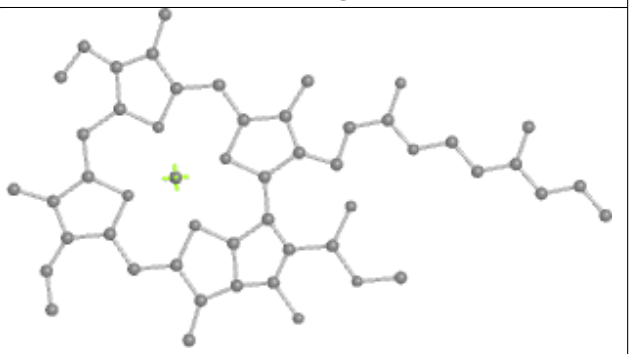
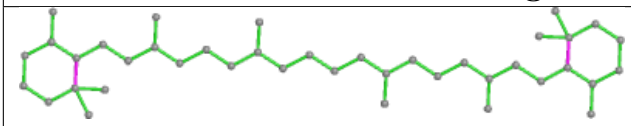
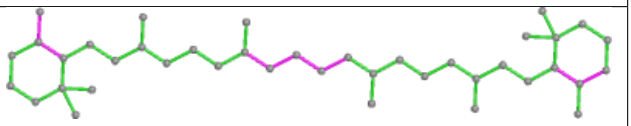


Rings

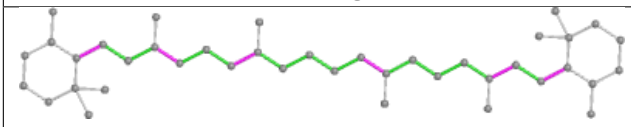
## Ligand BCR L 201



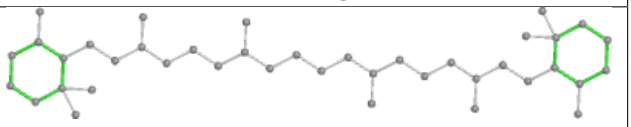
Bond lengths



Bond angles

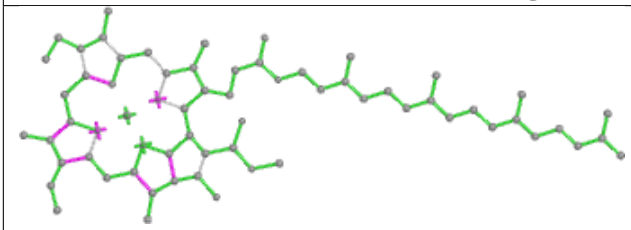


Torsions

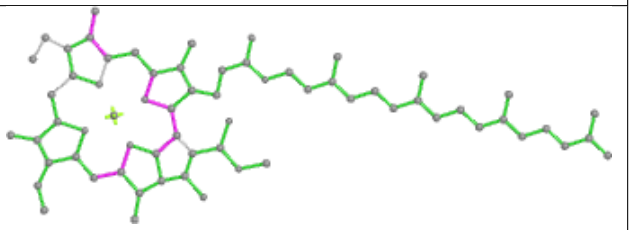


Rings

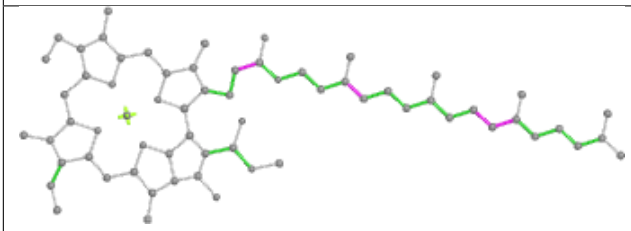
## Ligand CLA B 805



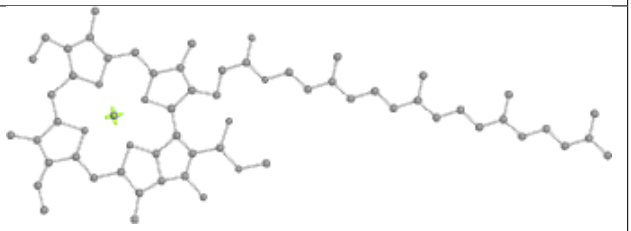
Bond lengths



Bond angles

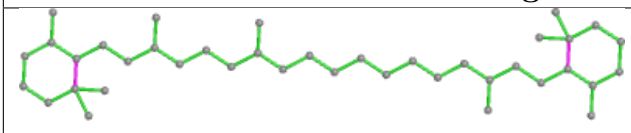


Torsions

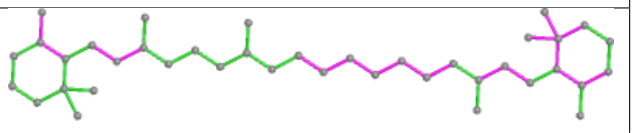


Rings

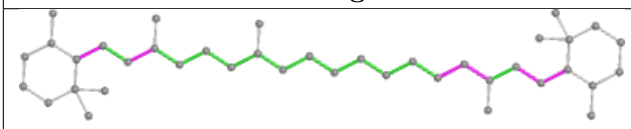
## Ligand BCR R 102



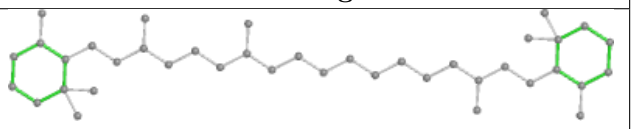
Bond lengths



Bond angles

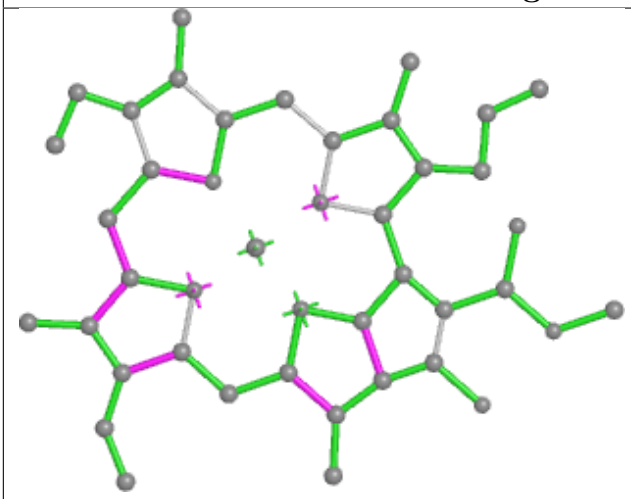


Torsions

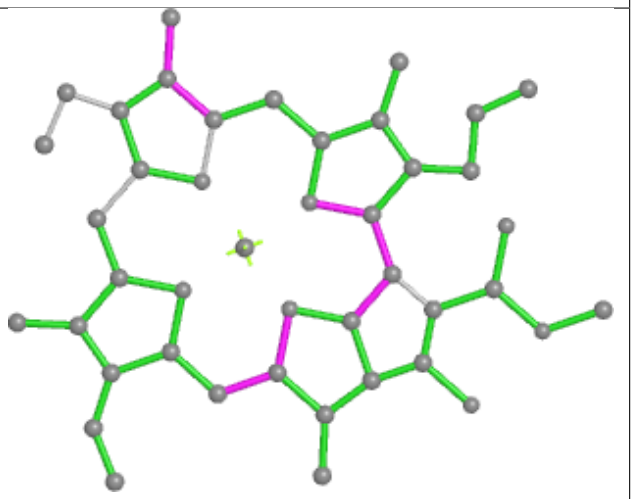


Rings

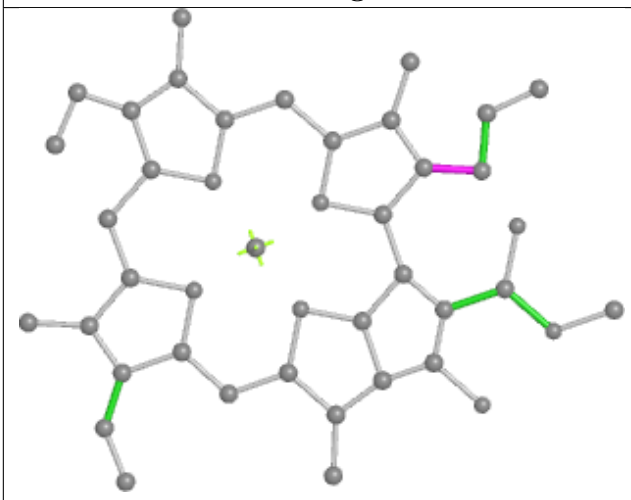
## Ligand CLA G 204



Bond lengths



Bond angles



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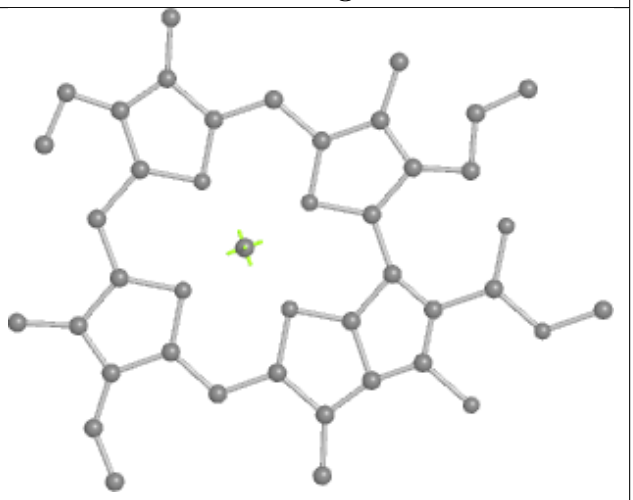
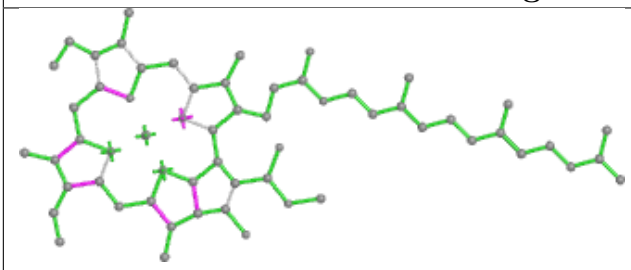
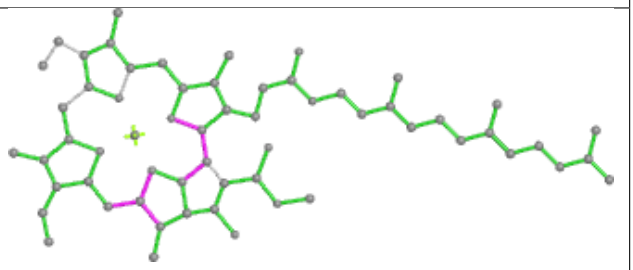
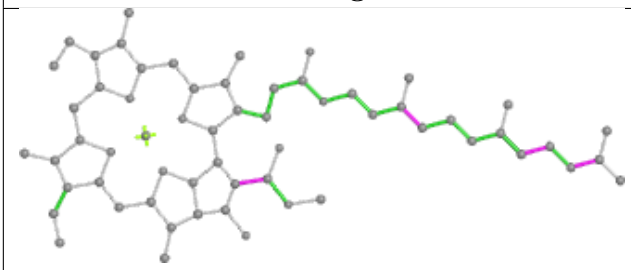
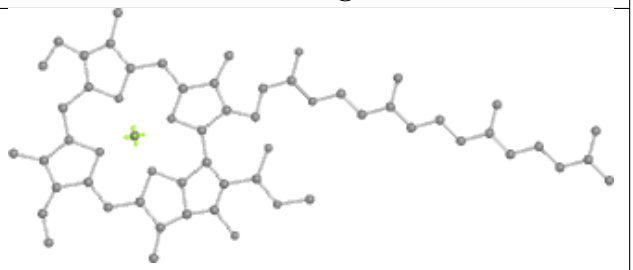
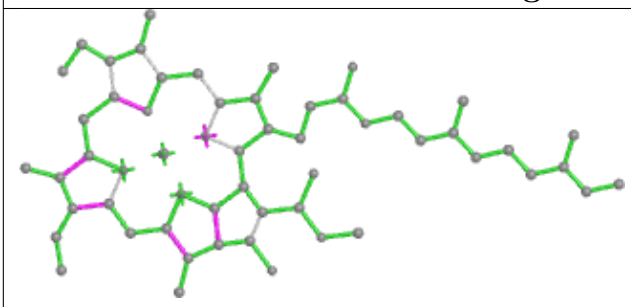
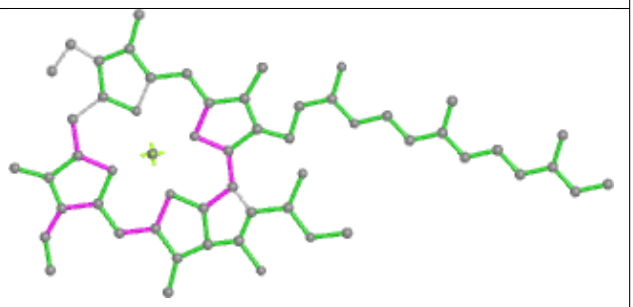
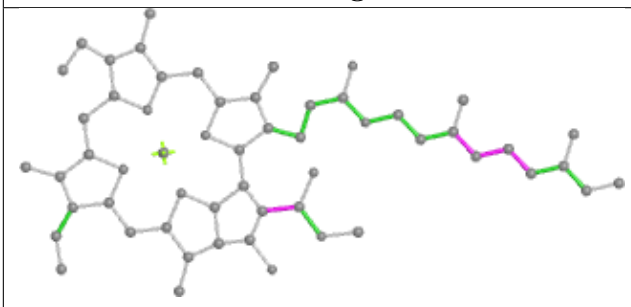
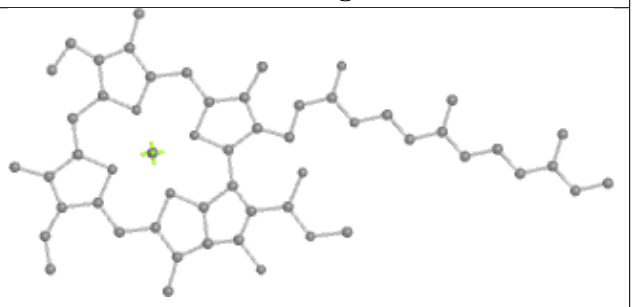
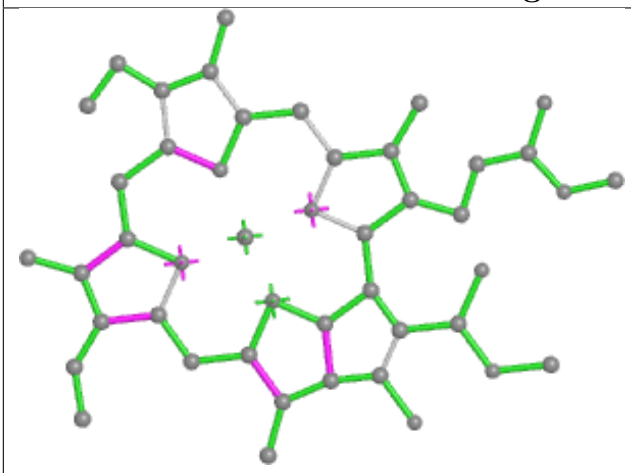


Rings

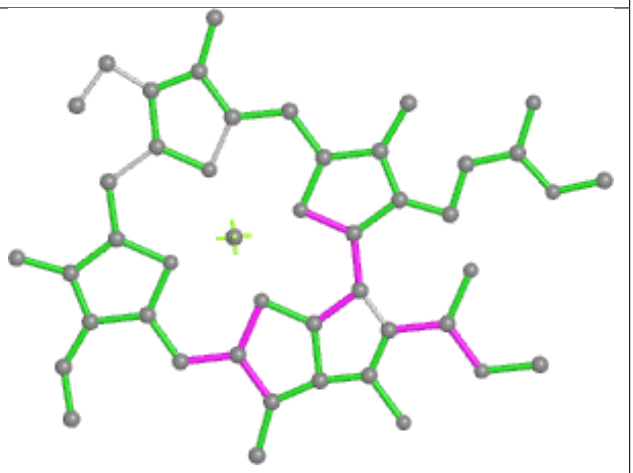
| Ligand CLA G 207 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand CLA G 209 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

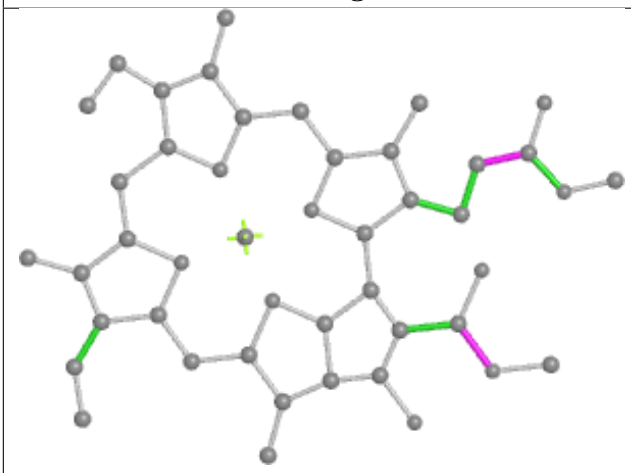
## Ligand CLA U 208



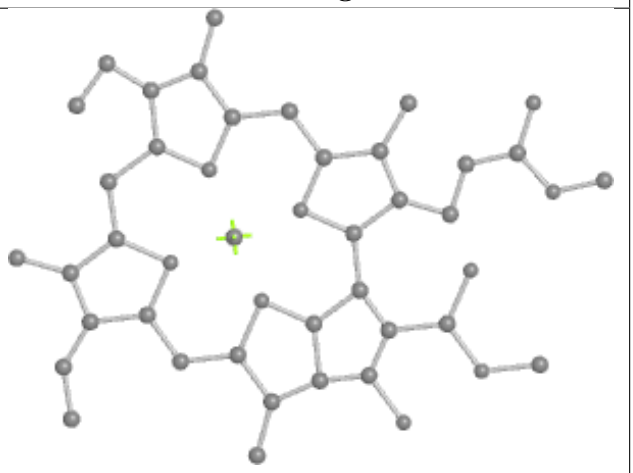
Bond lengths



Bond angles

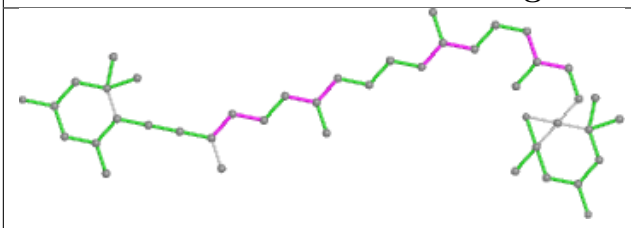


Torsions

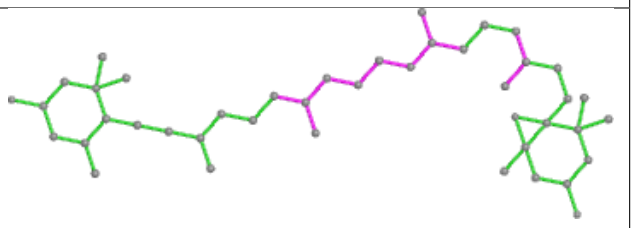


Rings

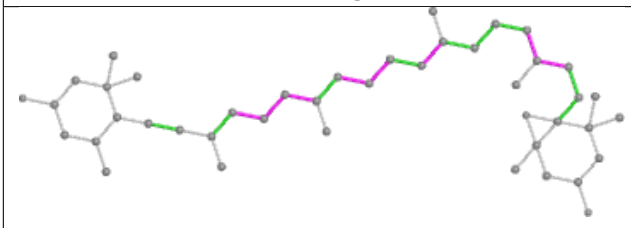
## Ligand DD6 G 213



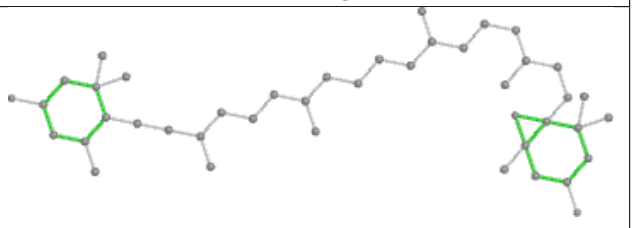
Bond lengths



Bond angles

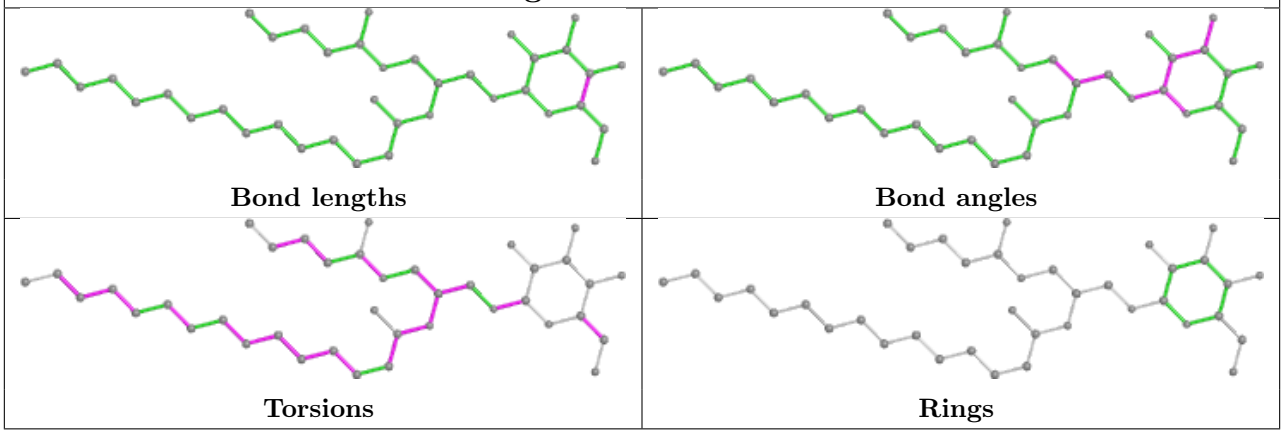


Torsions

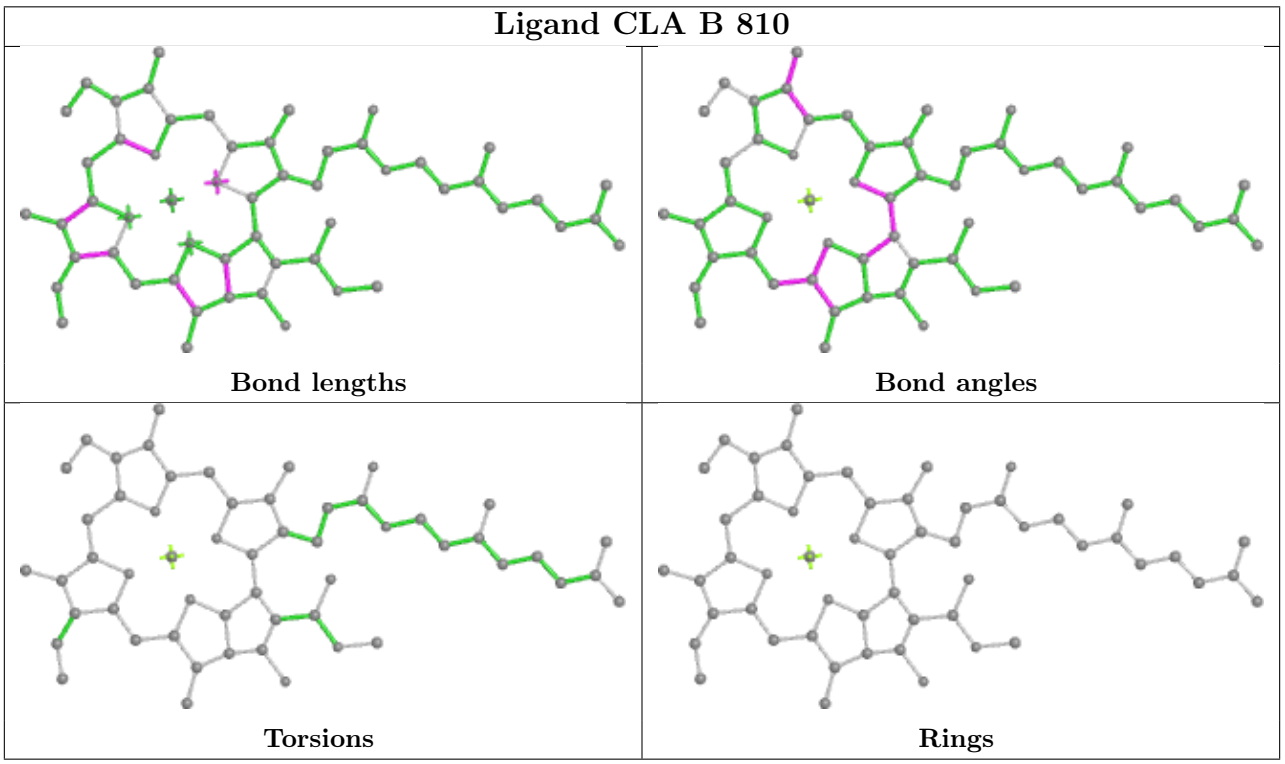


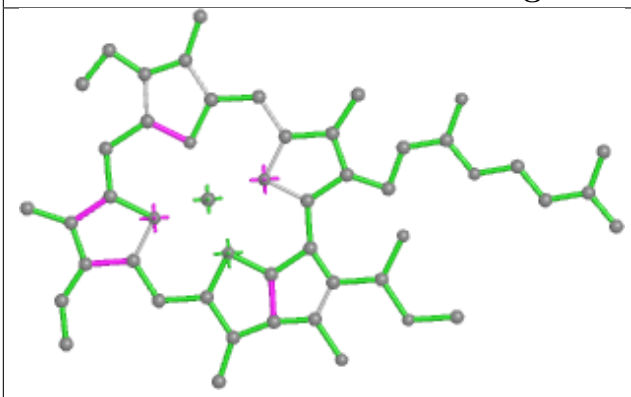
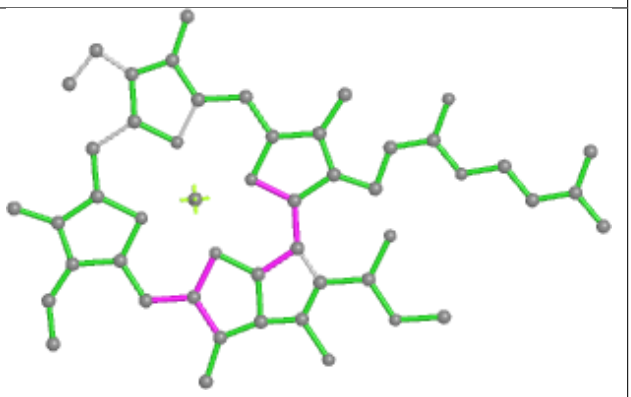
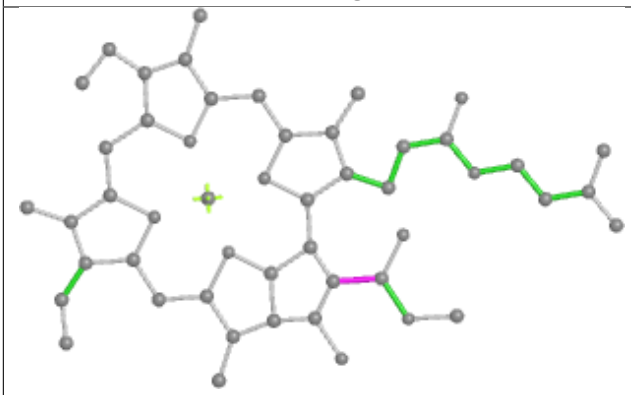
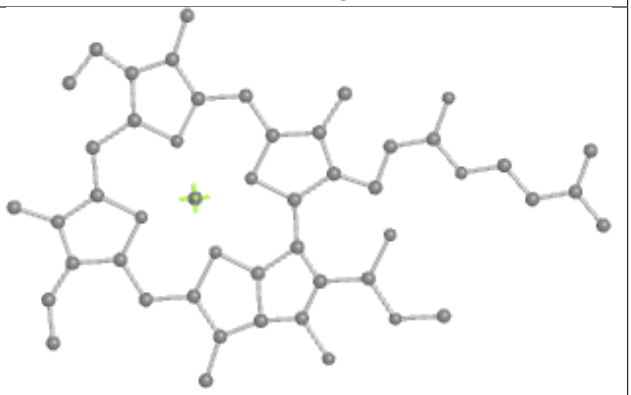
Rings

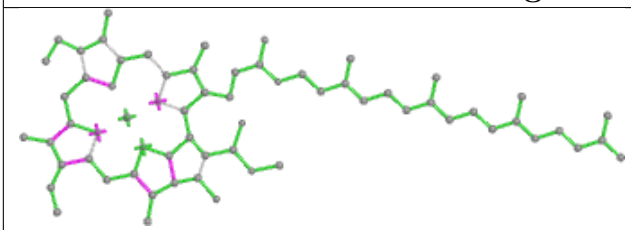
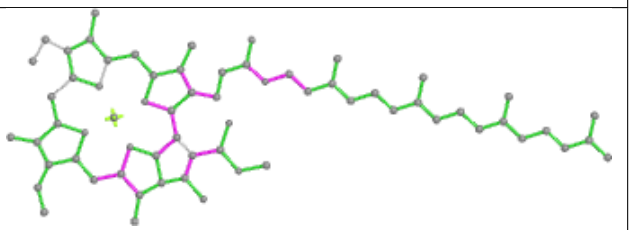
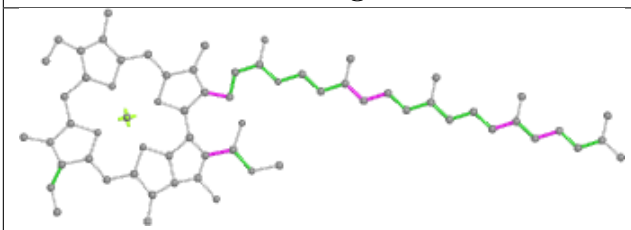
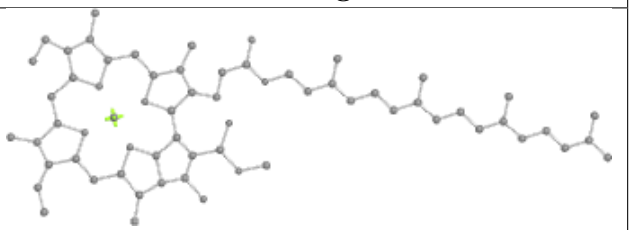
## Ligand LMG J 102



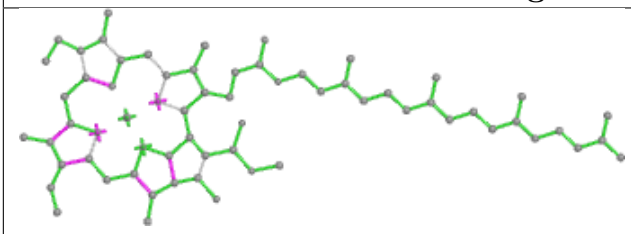

## Ligand CLA B 810



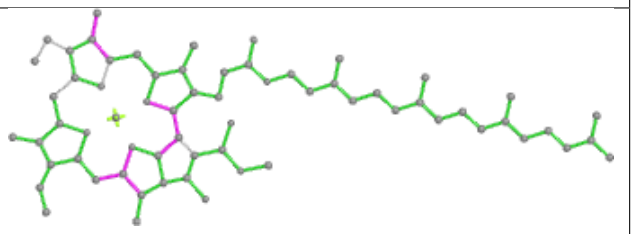
| Ligand CLA A 813 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

| Ligand CLA B 845 | |
|---|---|
|  Bond lengths |  Bond angles |
|  Torsions |  Rings |

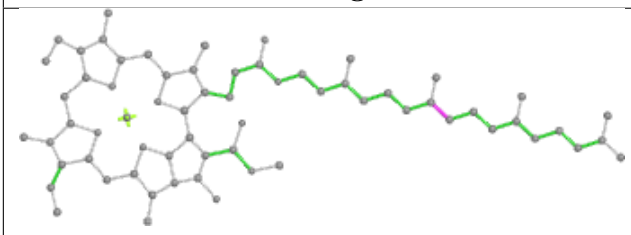
## Ligand CLA S 216



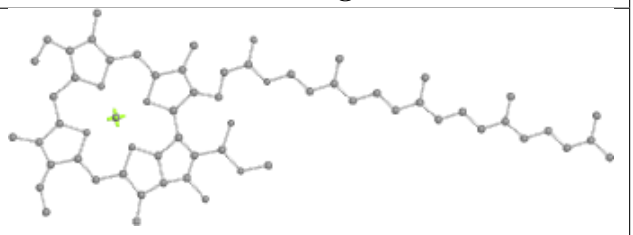
Bond lengths



Bond angles

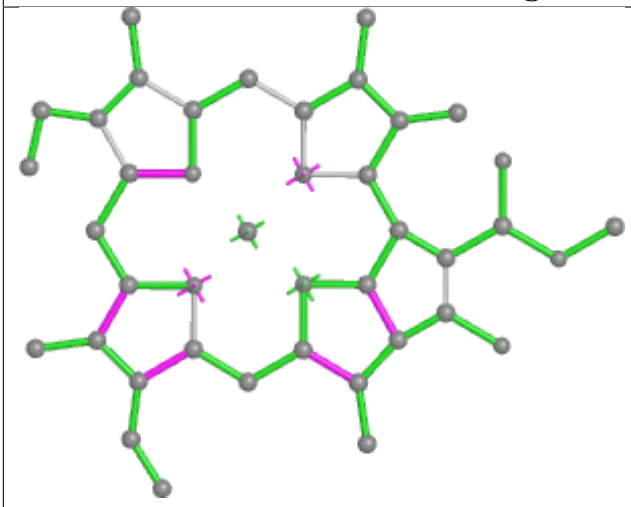


Torsions

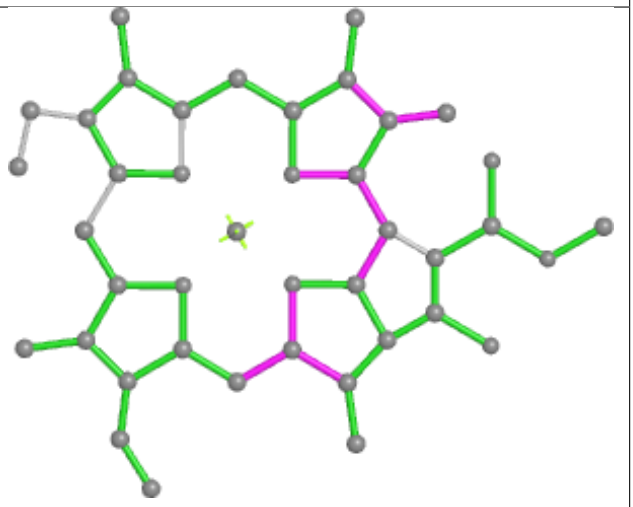


Rings

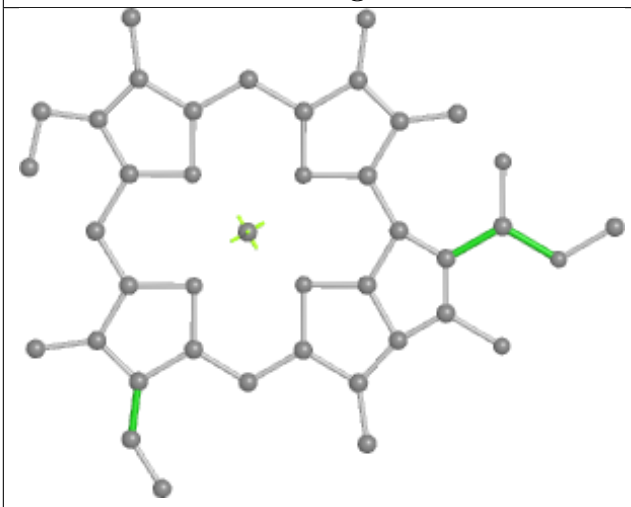
## Ligand CLA G 202



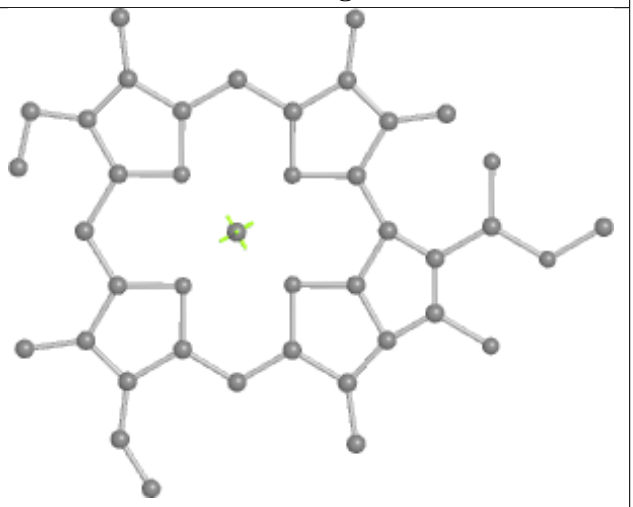
Bond lengths



Bond angles

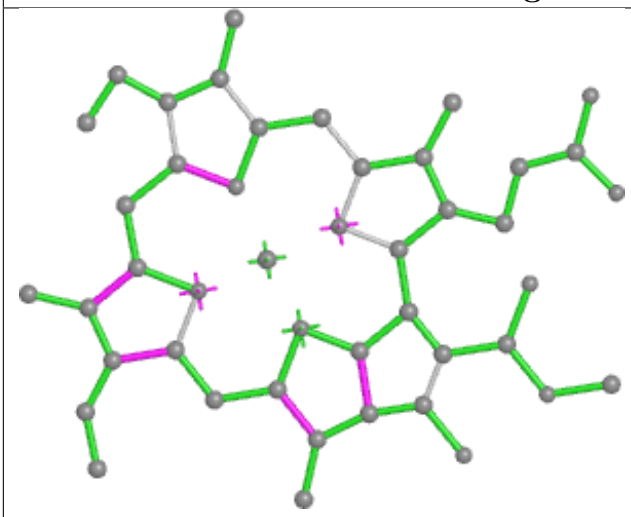


Torsions

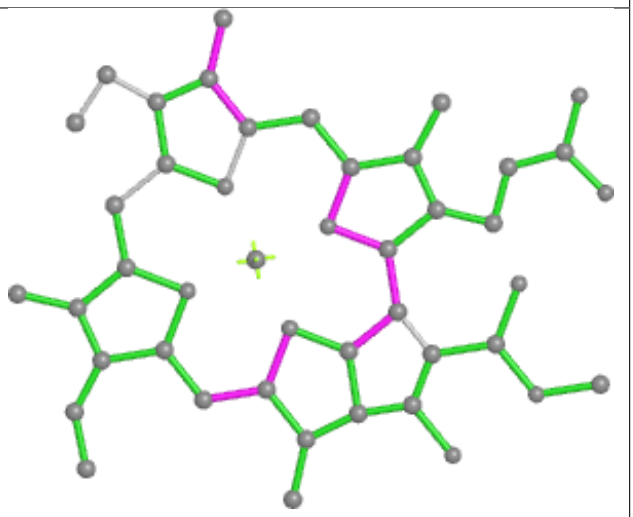


Rings

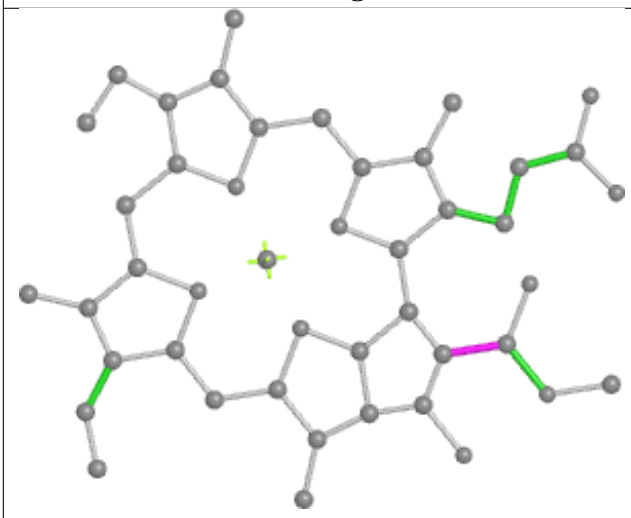
**Ligand CLA A 812**



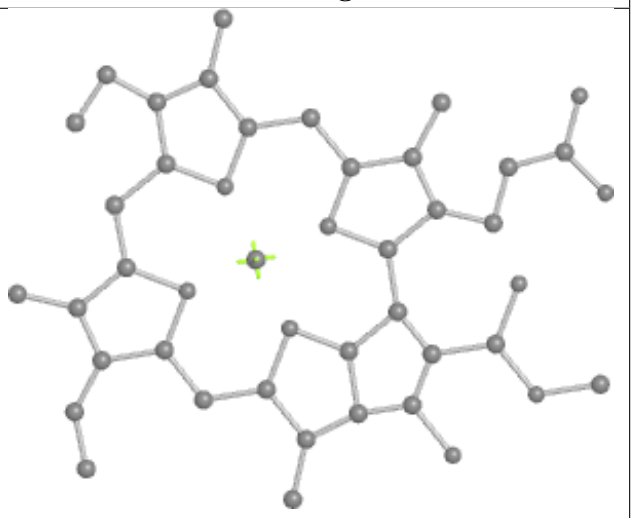
**Bond lengths**



**Bond angles**

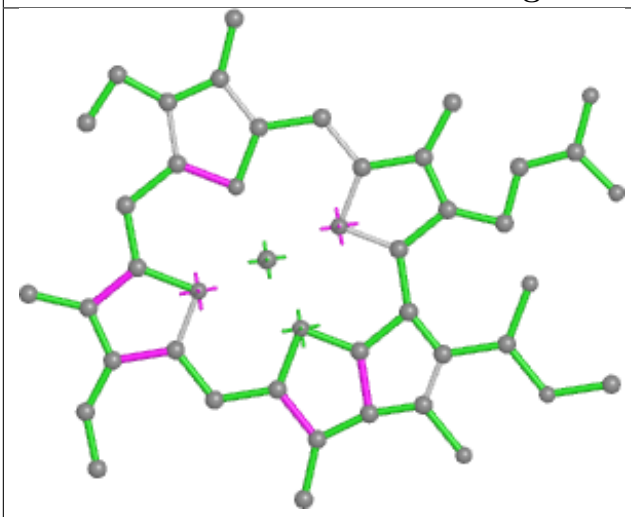


**Torsions**

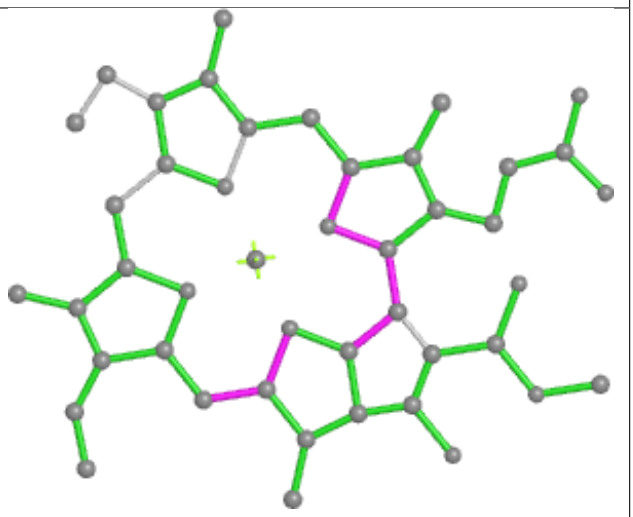


**Rings**

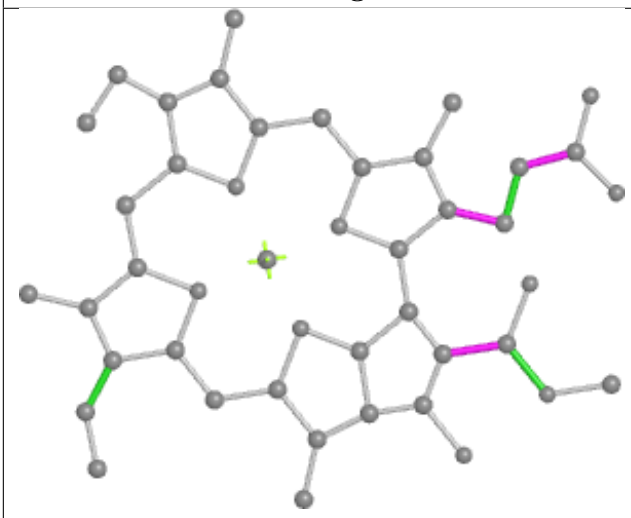
**Ligand CLA G 203**



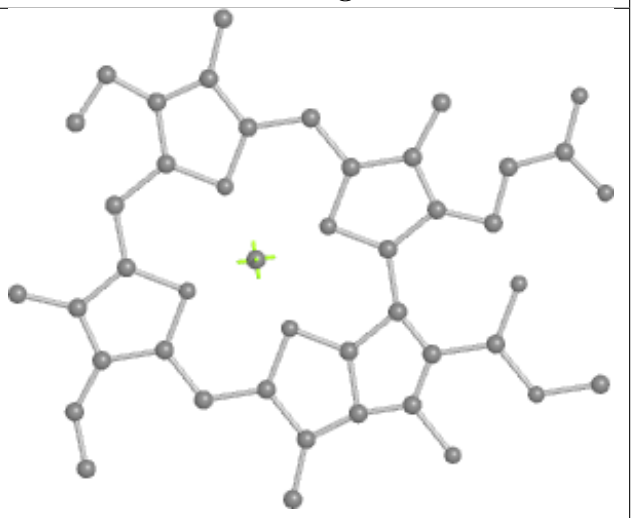
**Bond lengths**



**Bond angles**

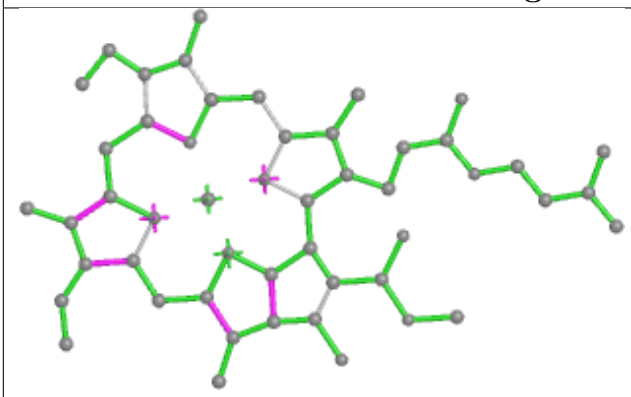


**Torsions**

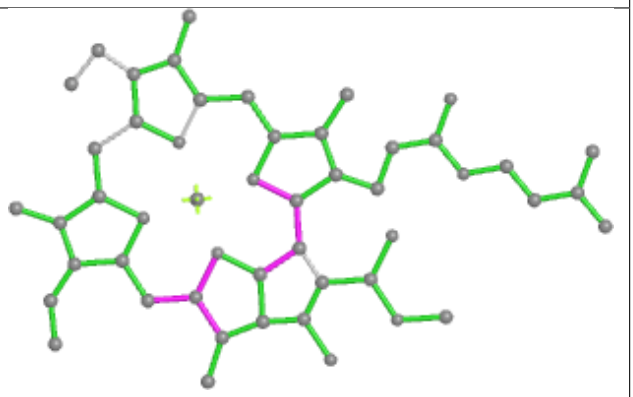


**Rings**

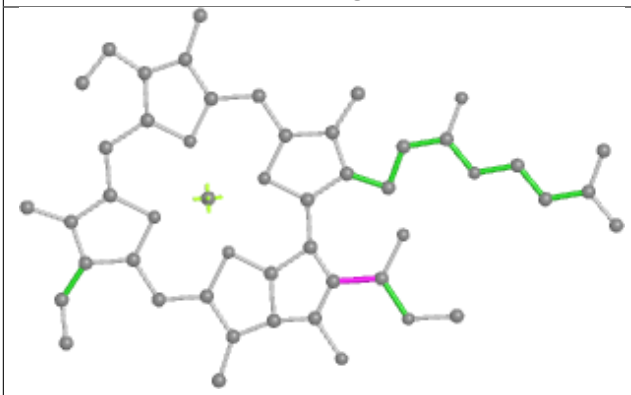
## Ligand CLA B 825



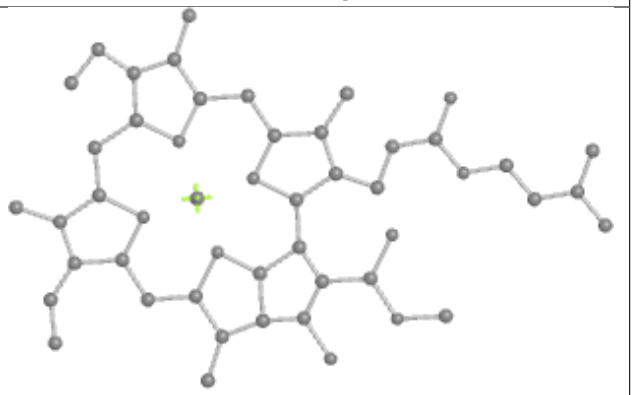
Bond lengths



Bond angles

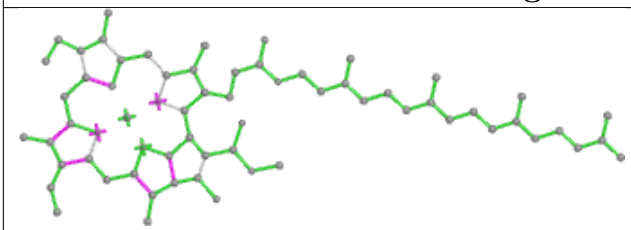


Torsions

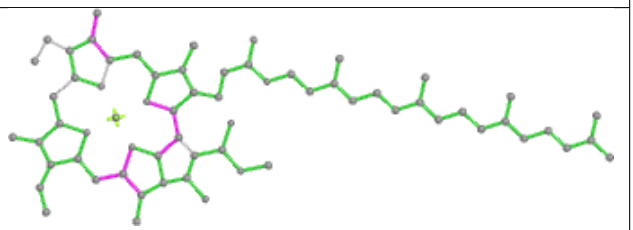


Rings

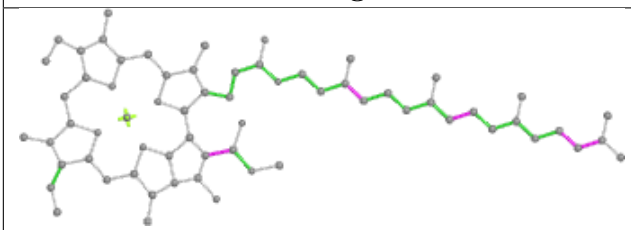
## Ligand CLA O 205



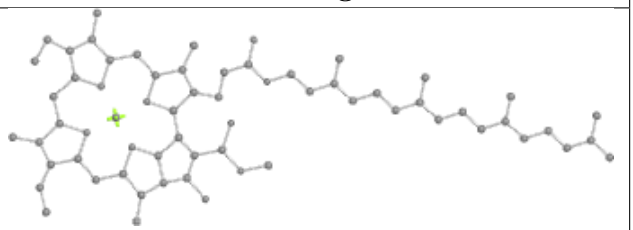
Bond lengths



Bond angles

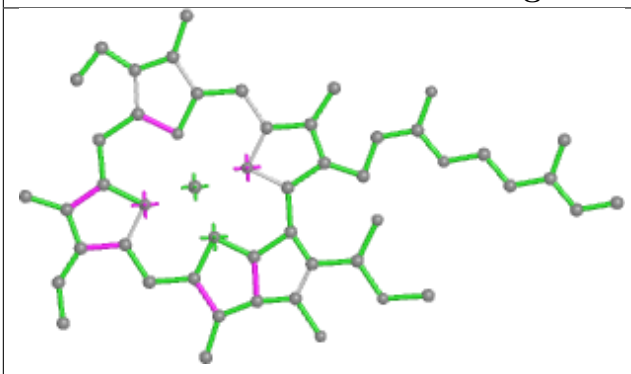


Torsions

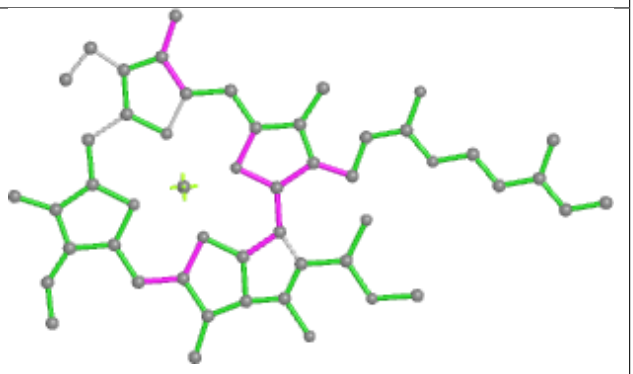


Rings

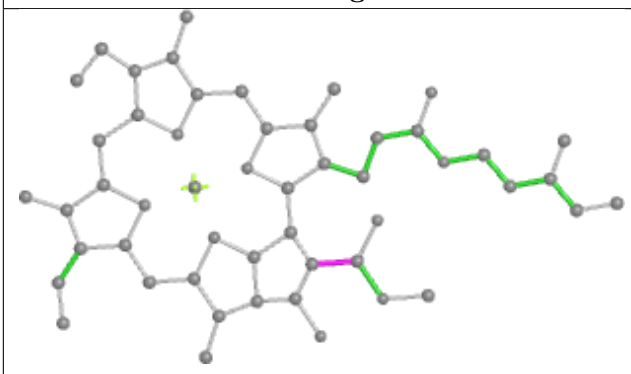
## Ligand CLA A 832



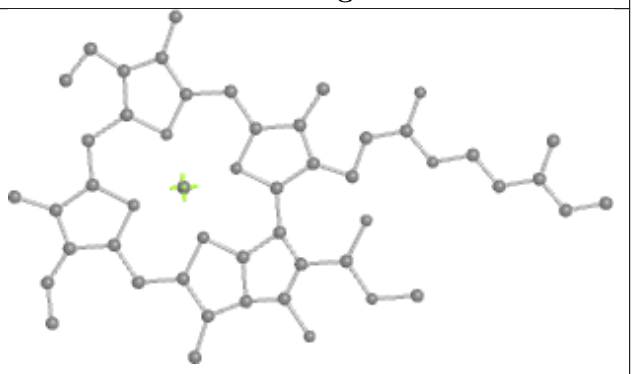
Bond lengths



Bond angles

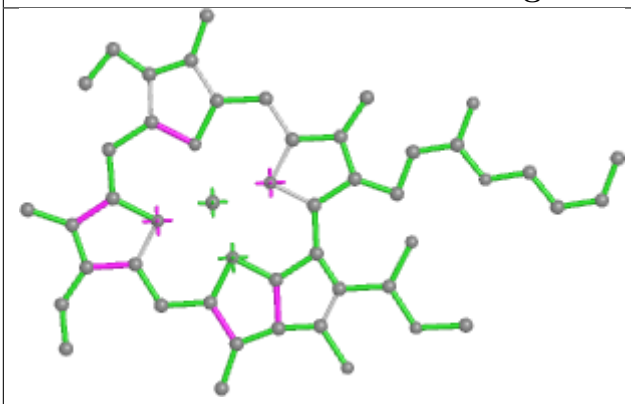


Torsions

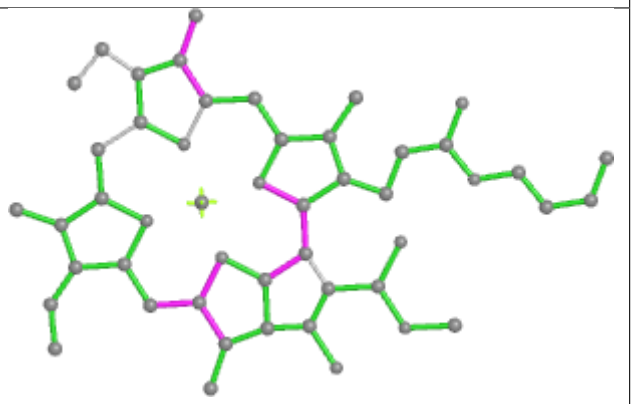


Rings

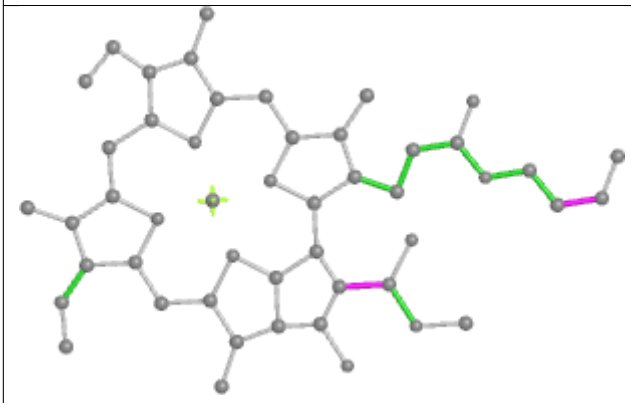
## Ligand CLA A 805



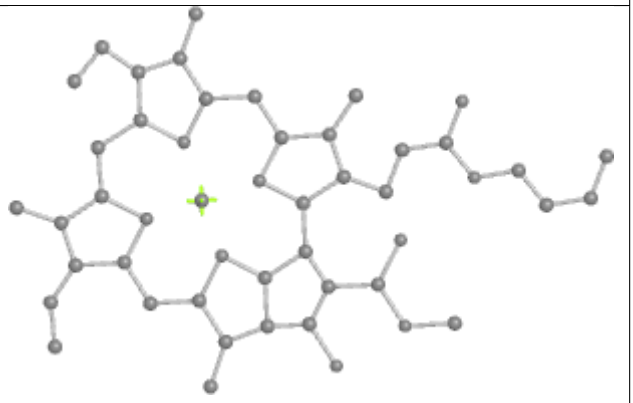
Bond lengths



Bond angles

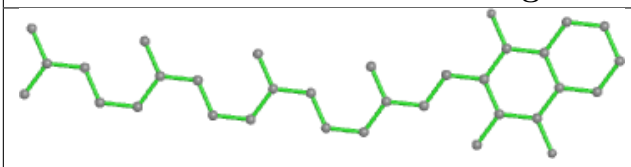


Torsions

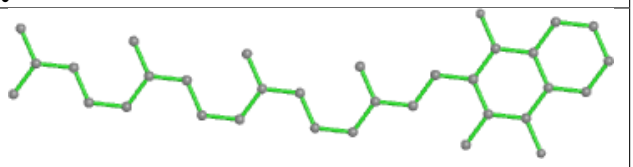


Rings

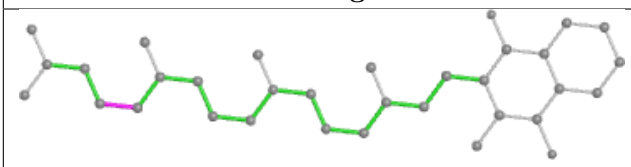
## Ligand PQN B 835



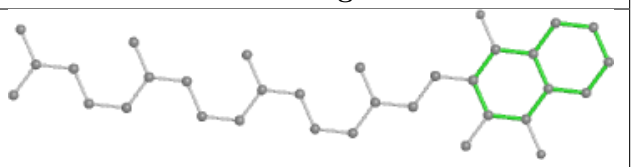
Bond lengths



Bond angles

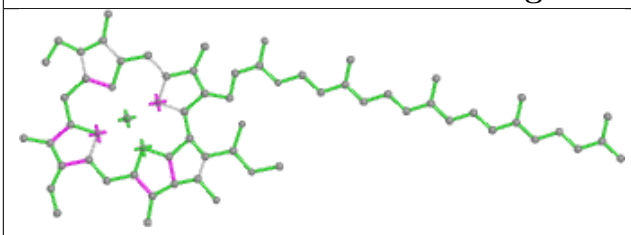


Torsions

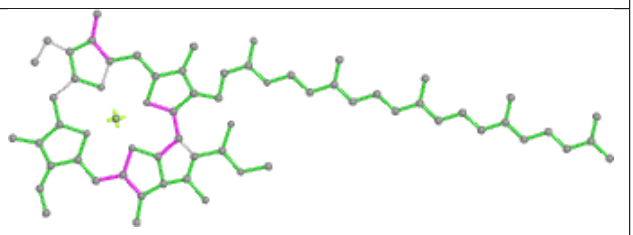


Rings

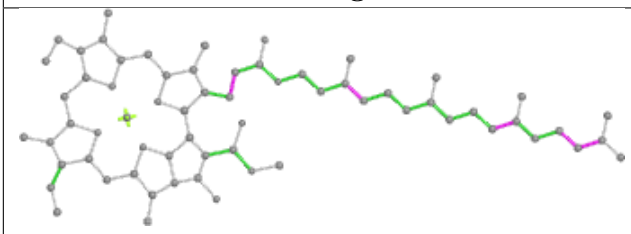
## Ligand CLA P 207



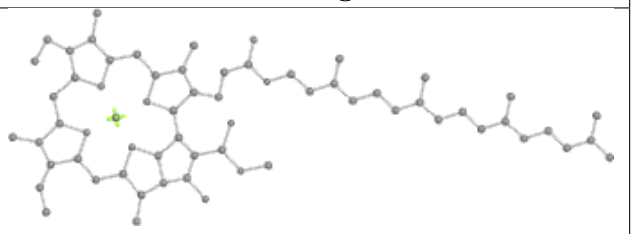
Bond lengths



Bond angles

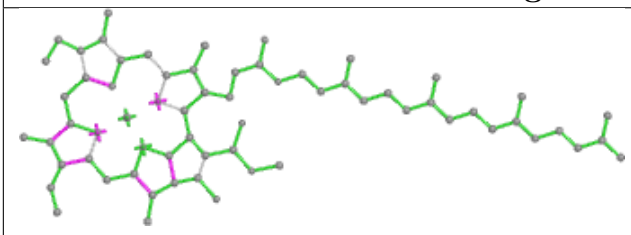


Torsions

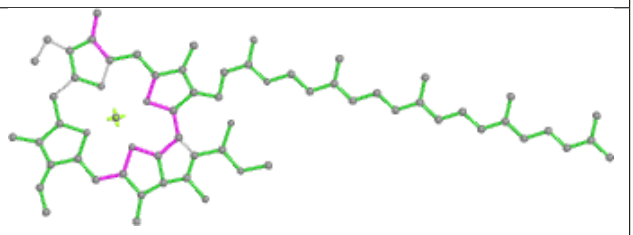


Rings

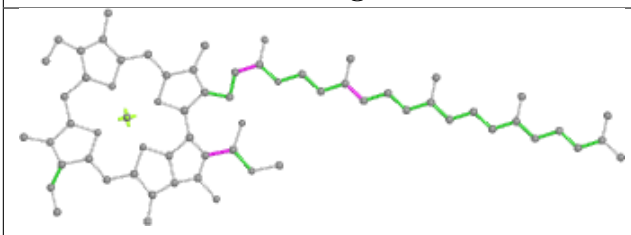
## Ligand CLA B 808



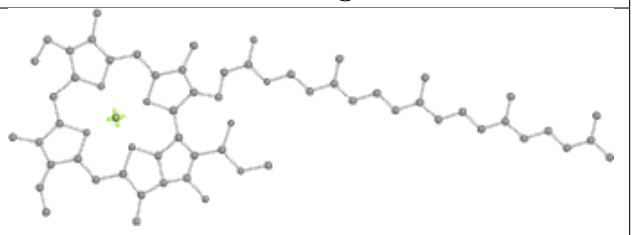
Bond lengths



Bond angles

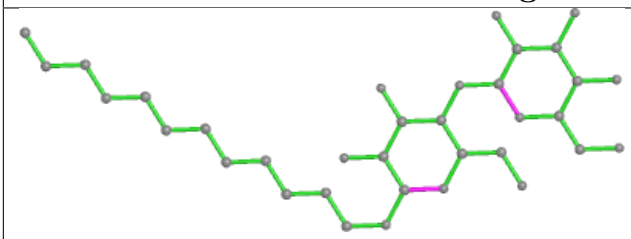


Torsions

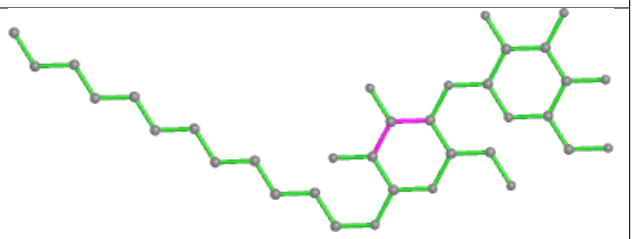


Rings

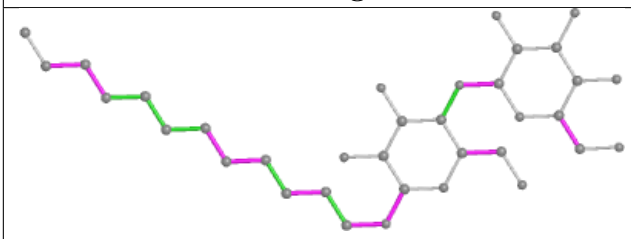
## Ligand LMU O 216



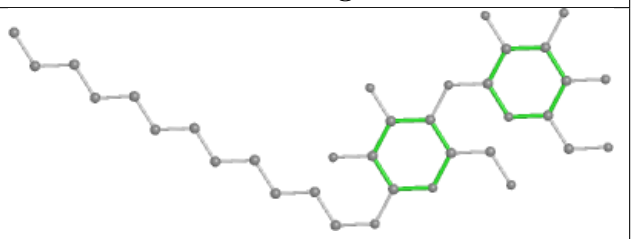
Bond lengths



Bond angles

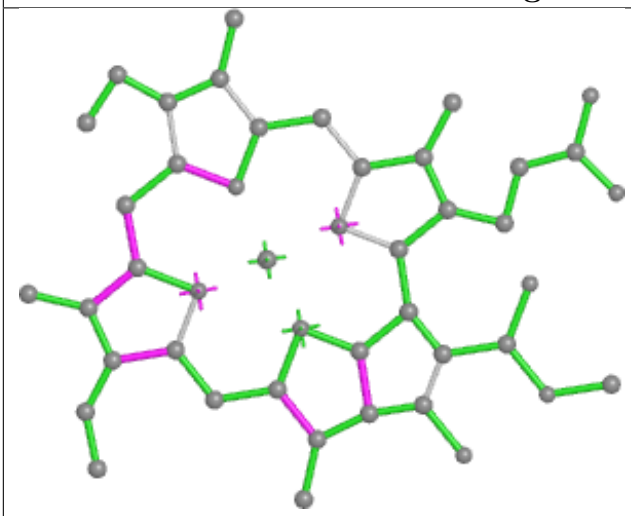


Torsions

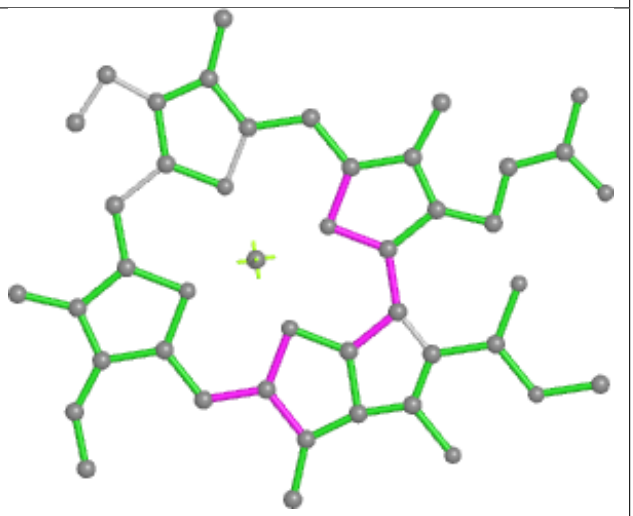


Rings

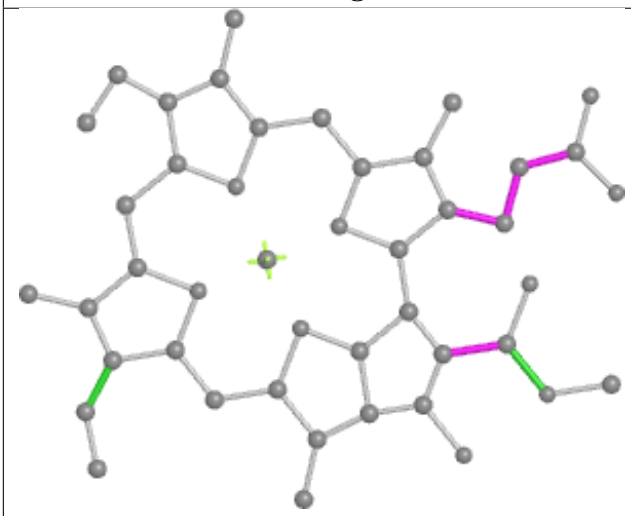
## Ligand CLA A 814



Bond lengths



Bond angles



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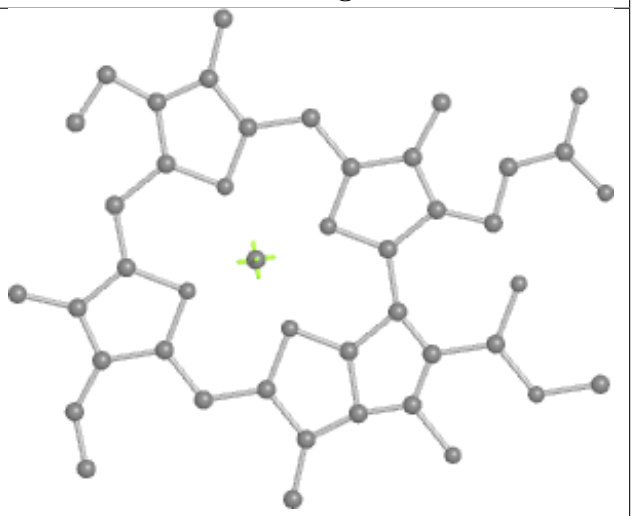
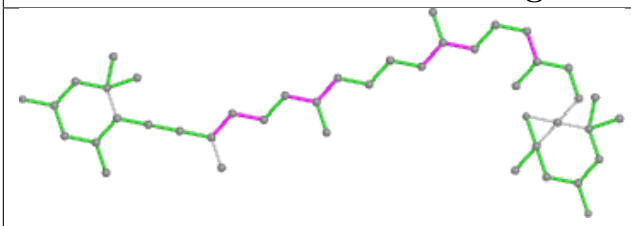
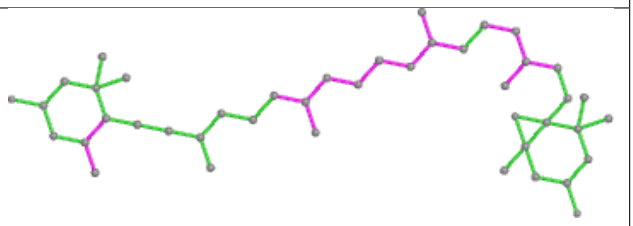


Rings

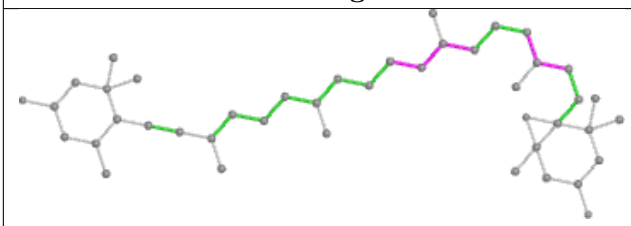
## Ligand DD6 T 212



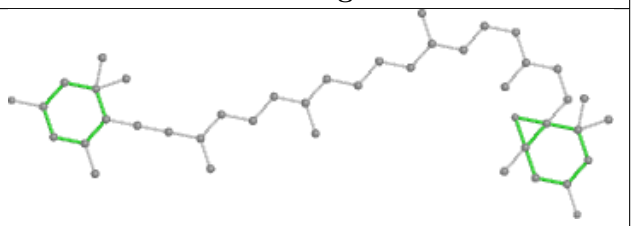
Bond lengths



Bond angles

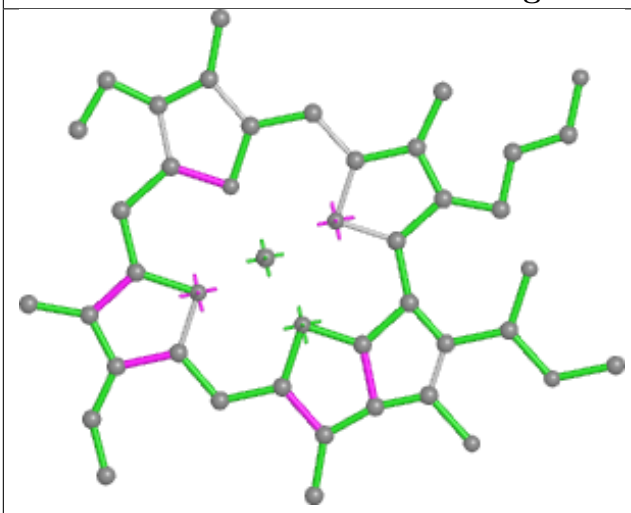


Torsions

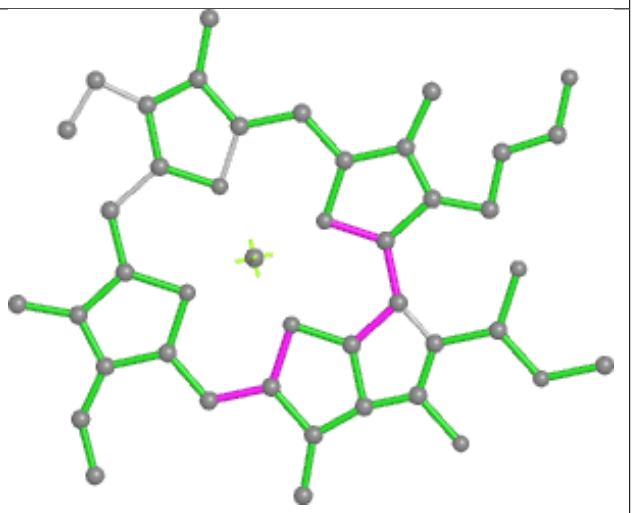


Rings

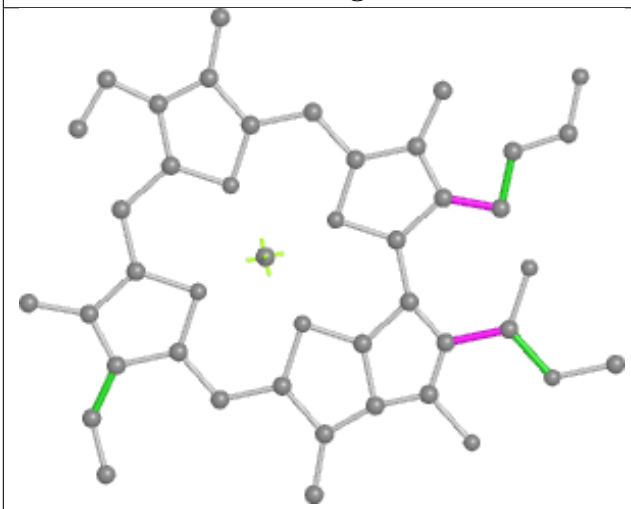
## Ligand CLA H 205



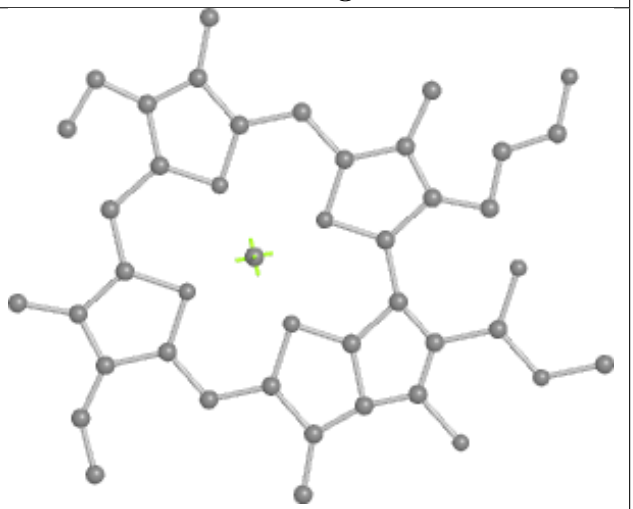
Bond lengths



Bond angles

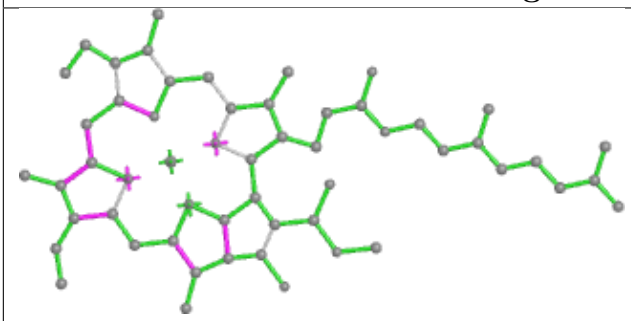


Torsions

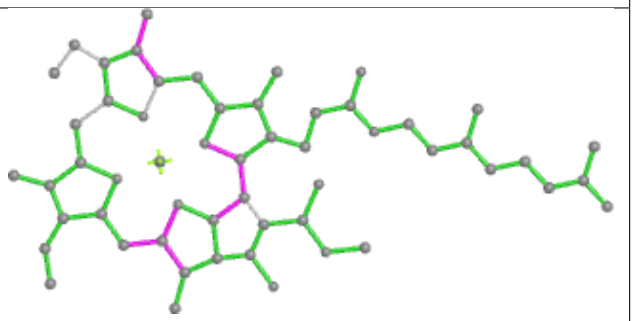


Rings

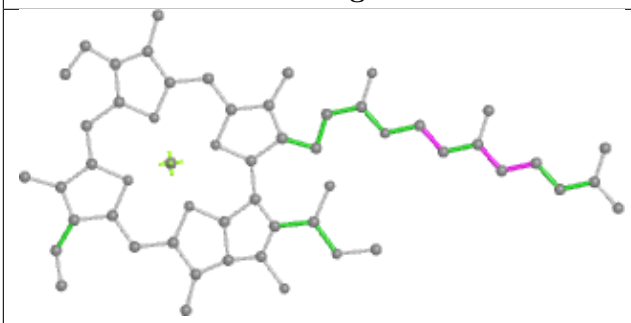
## Ligand CLA K 205



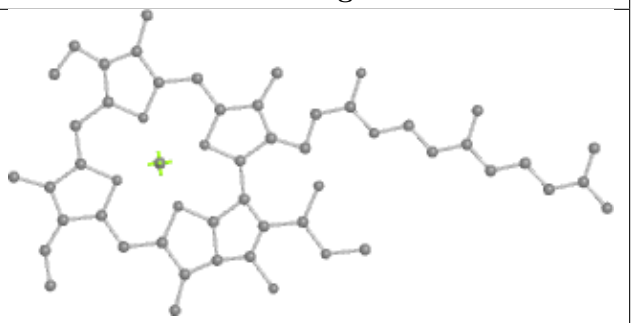
Bond lengths



Bond angles

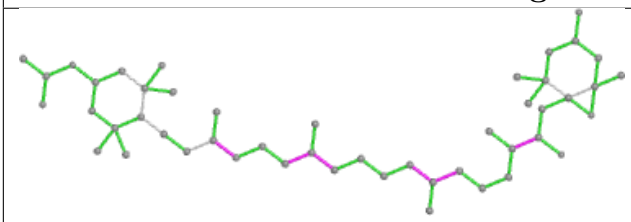


Torsions

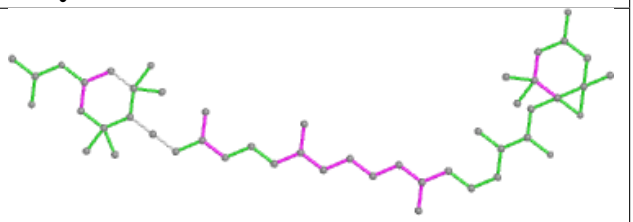


Rings

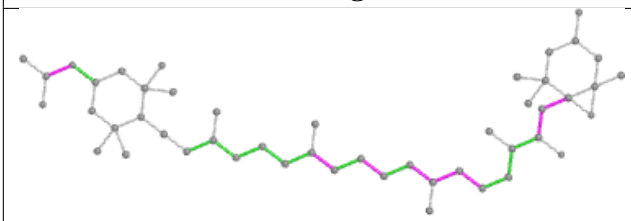
## Ligand A86 Q 214



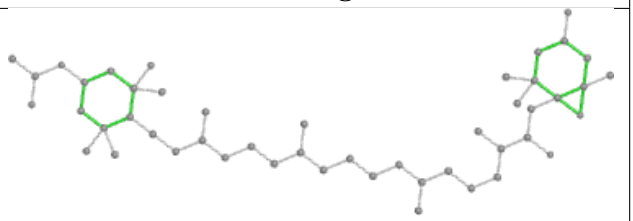
Bond lengths



Bond angles

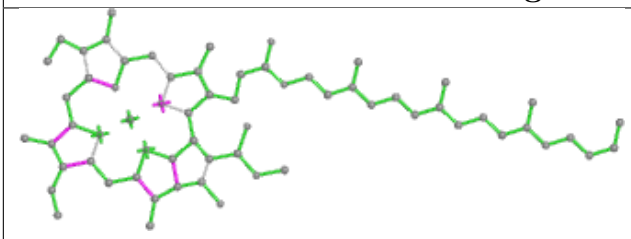


Torsions

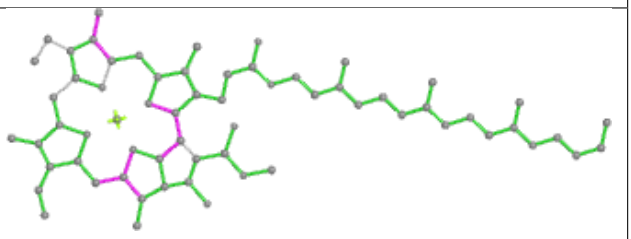


Rings

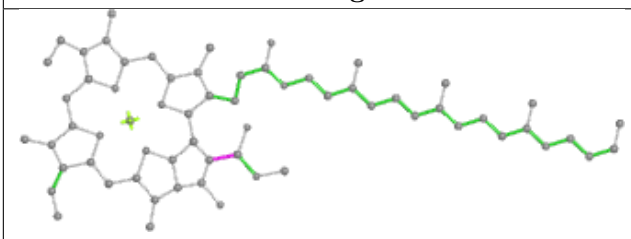
## Ligand CLA B 820



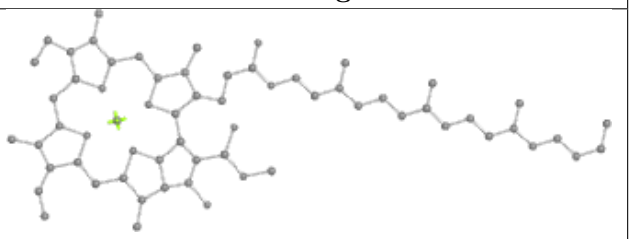
Bond lengths



Bond angles

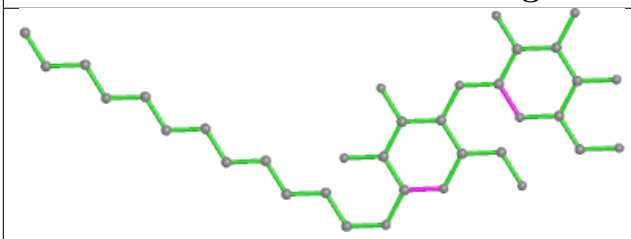


Torsions

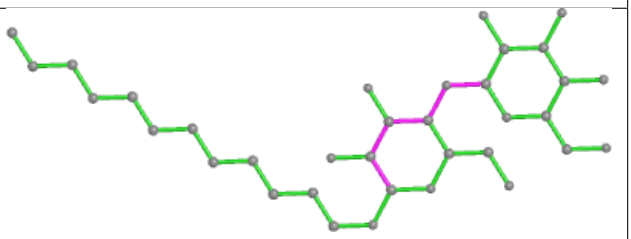


Rings

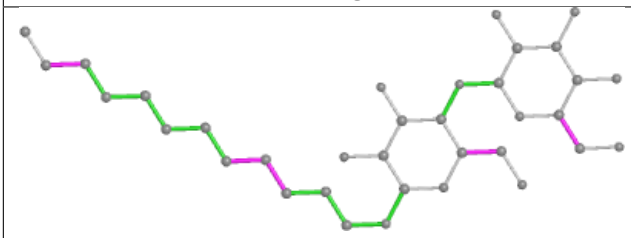
## Ligand LMU L 206



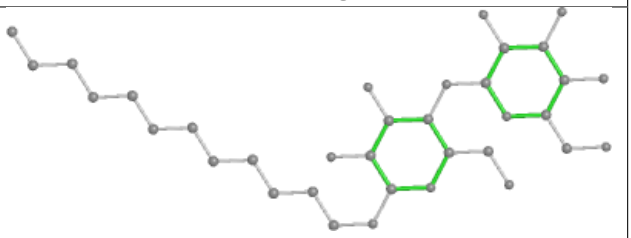
Bond lengths



Bond angles

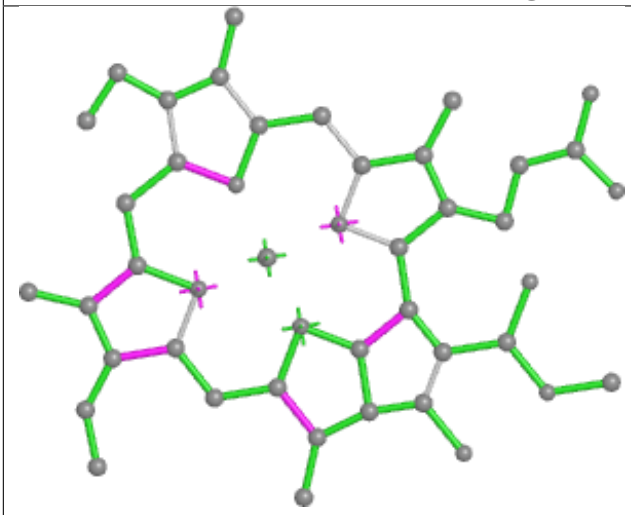


Torsions

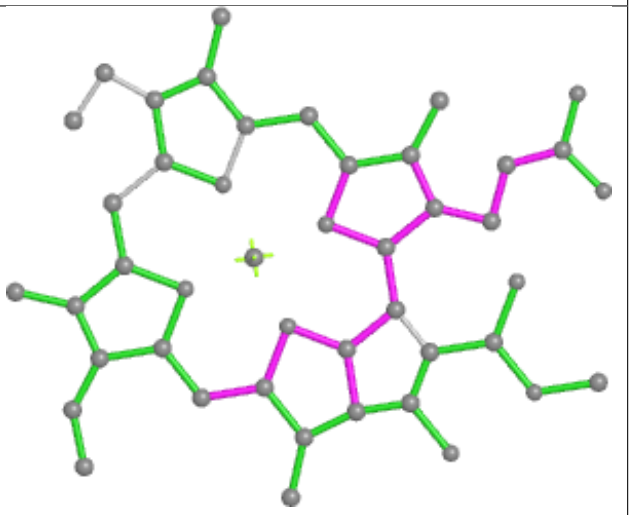


Rings

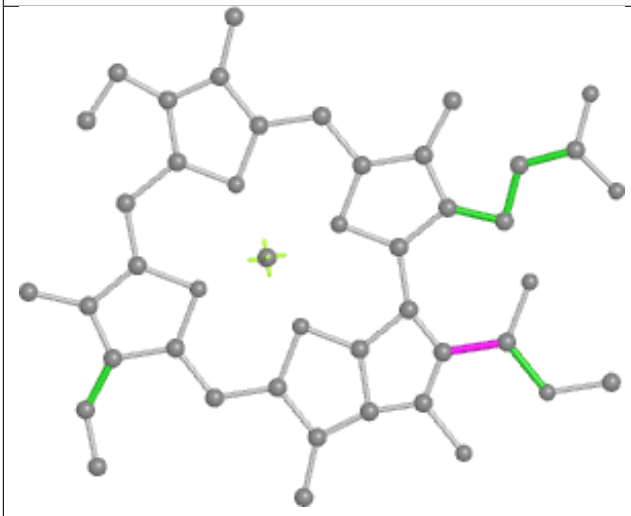
**Ligand CLA K 203**



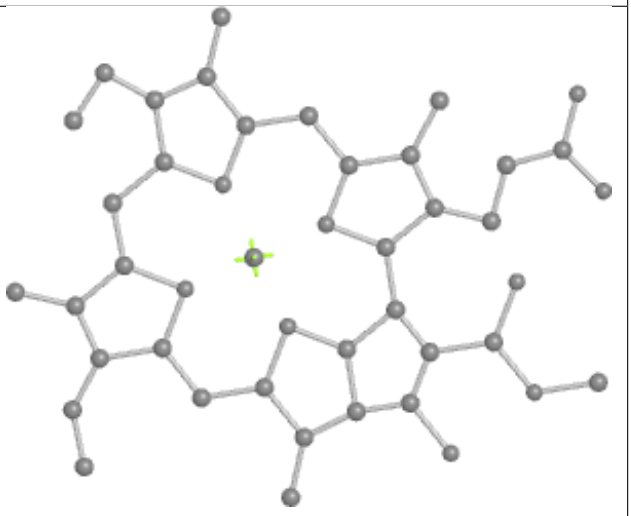
**Bond lengths**



**Bond angles**

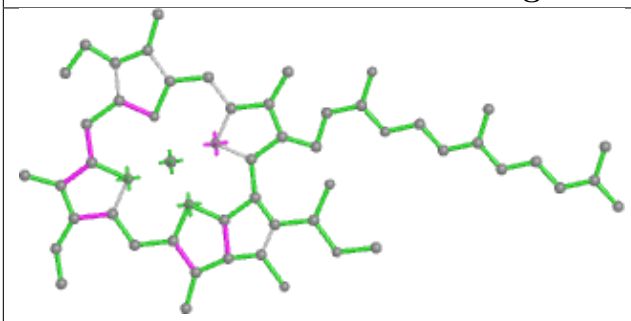


**Torsions**

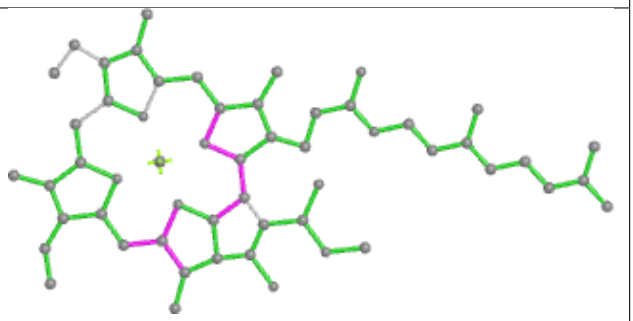


**Rings**

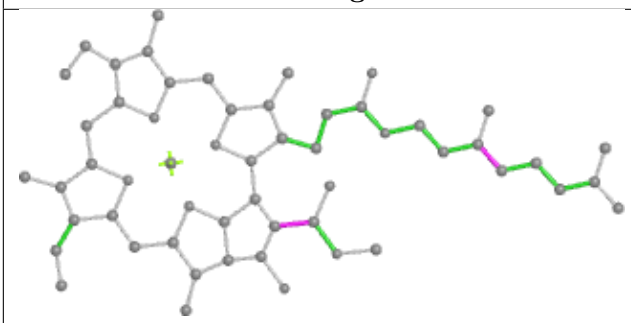
## Ligand CLA G 208



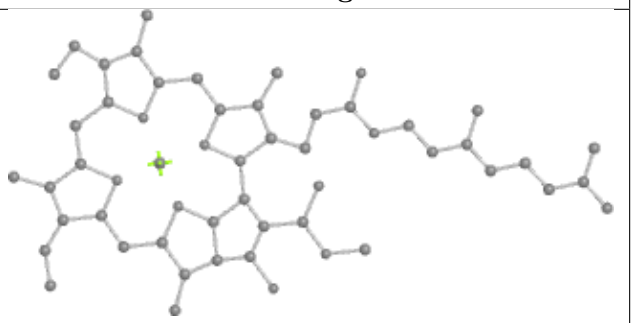
Bond lengths



Bond angles

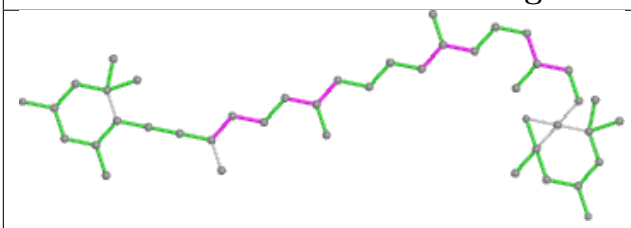


Torsions

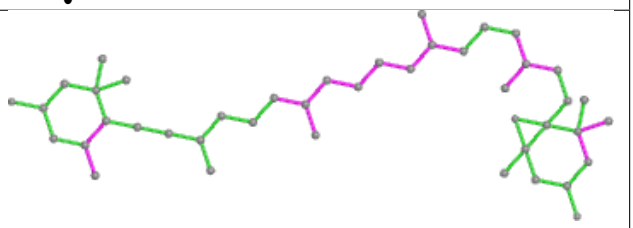


Rings

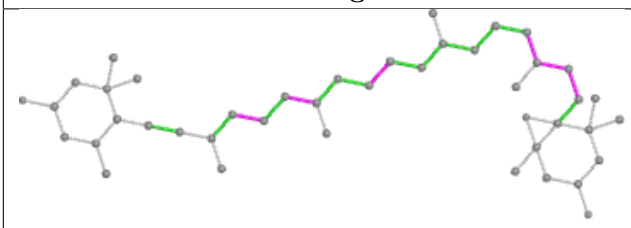
## Ligand DD6 Q 215



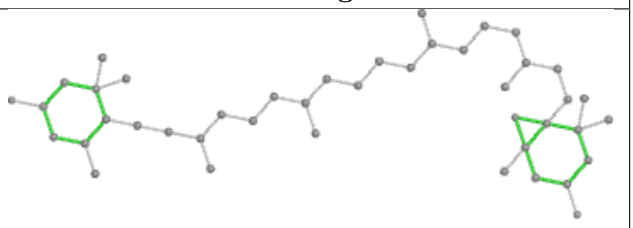
Bond lengths



Bond angles

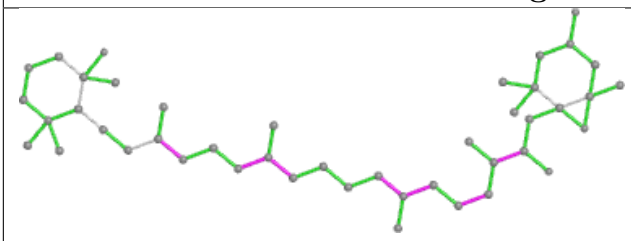


Torsions

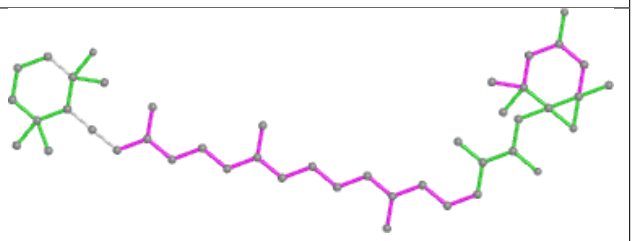


Rings

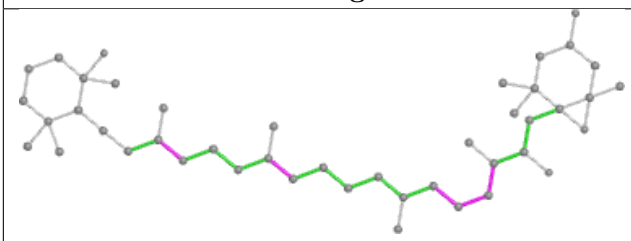
## Ligand A86 R 103



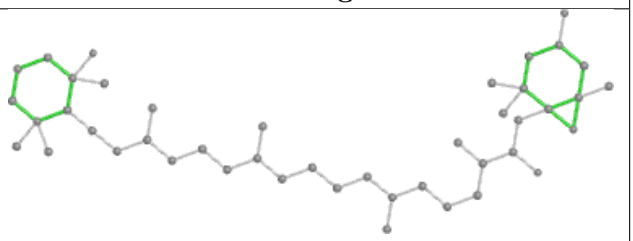
Bond lengths



Bond angles

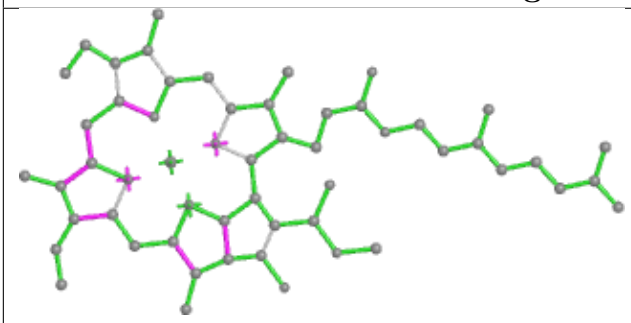


Torsions

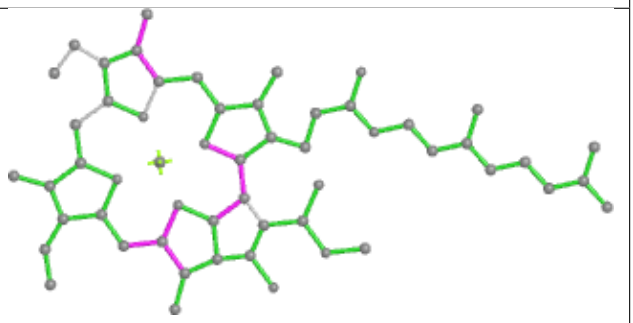


Rings

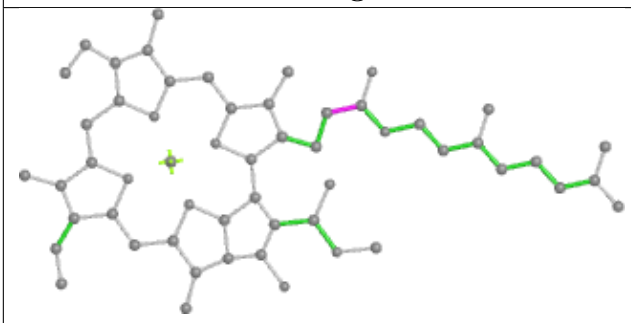
## Ligand CLA A 802



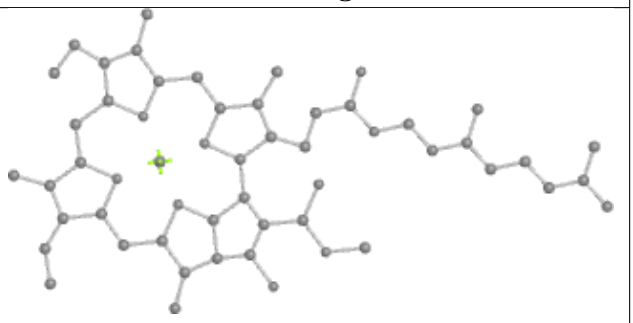
Bond lengths



Bond angles

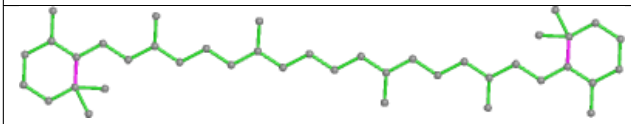


Torsions

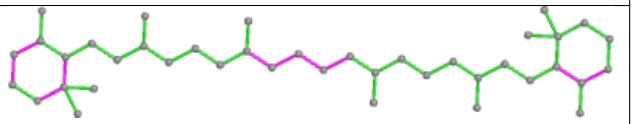


Rings

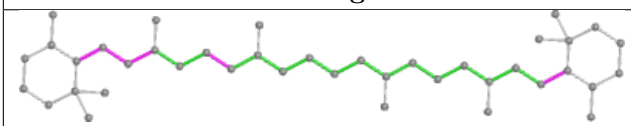
## Ligand BCR k 104



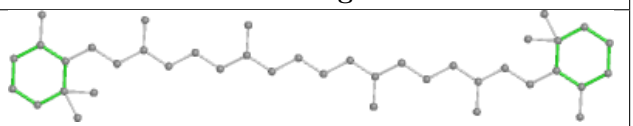
Bond lengths



Bond angles

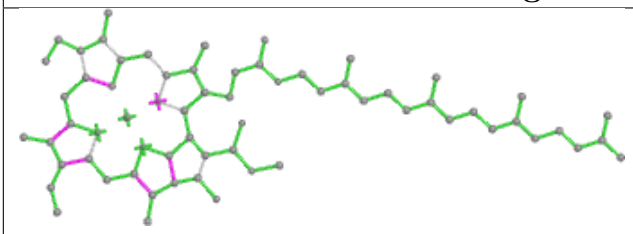


Torsions

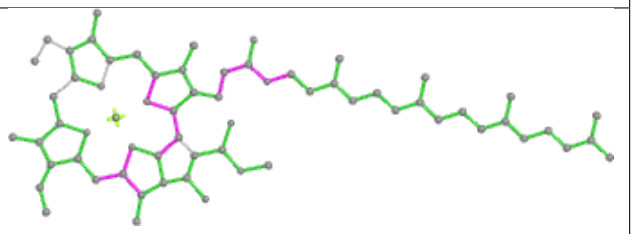


Rings

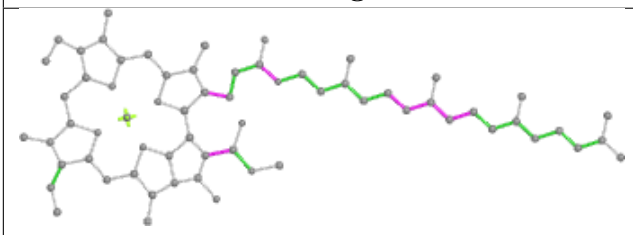
**Ligand CLA H 213**



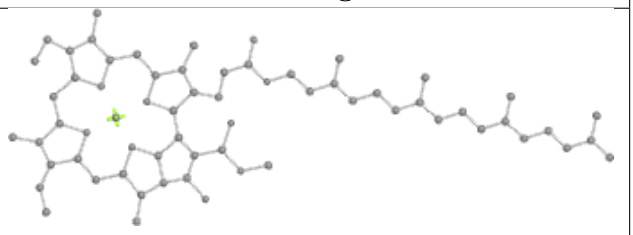
**Bond lengths**



**Bond angles**



**Torsions**



**Rings**

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

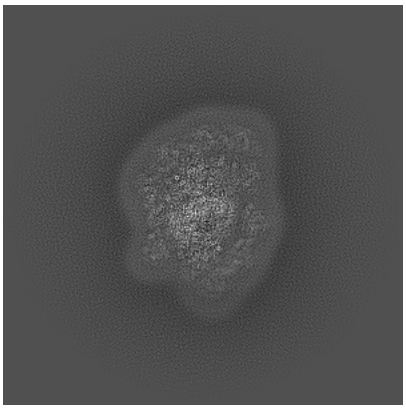
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-64153. These allow visual inspection of the internal detail of the map and identification of artifacts.

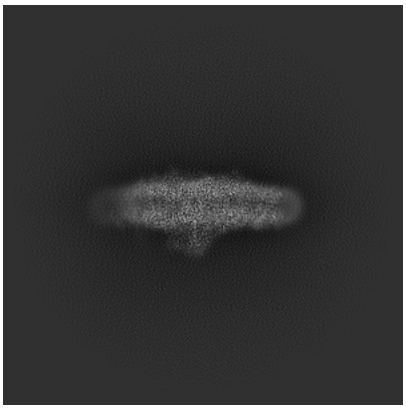
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections

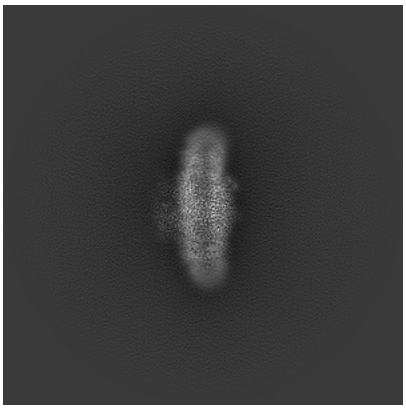
### 6.1.1 Primary map



X

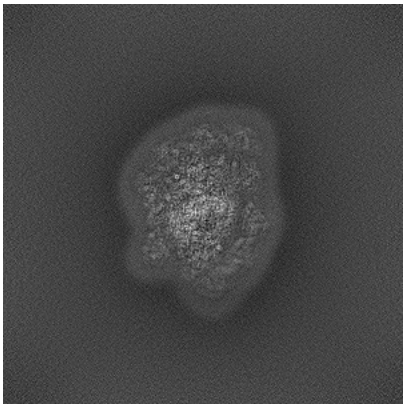


Y

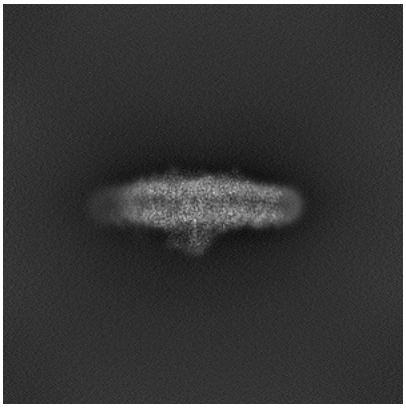


Z

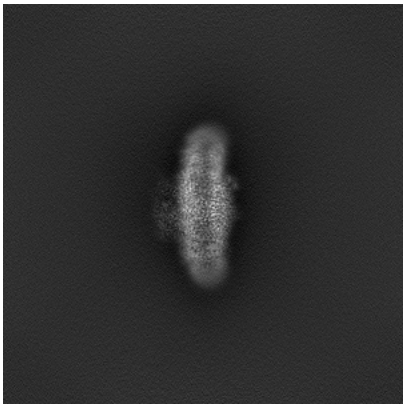
### 6.1.2 Raw map



X



Y

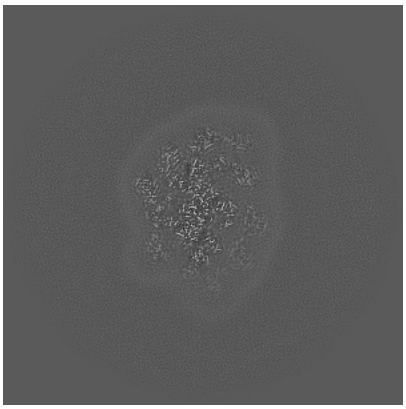


Z

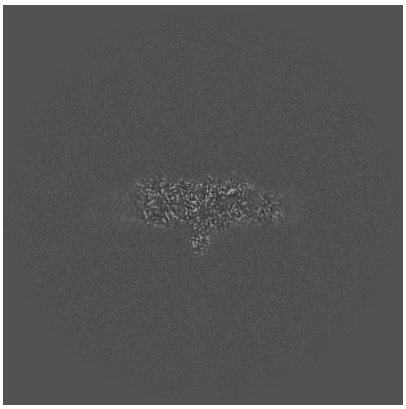
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

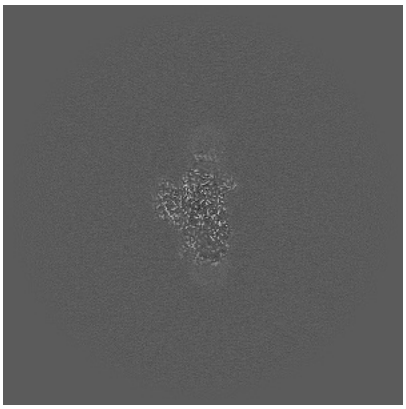
### 6.2.1 Primary map



X Index: 300

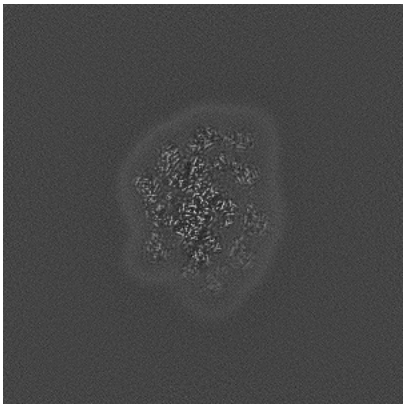


Y Index: 300

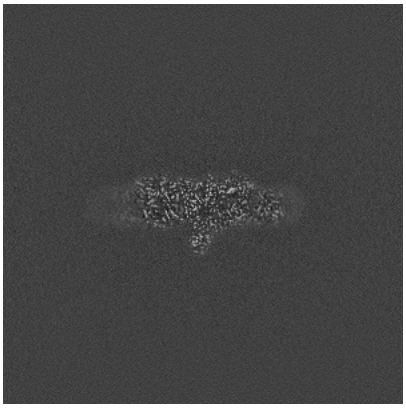


Z Index: 300

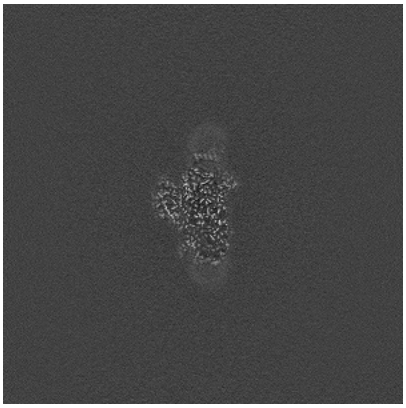
### 6.2.2 Raw map



X Index: 300



Y Index: 300

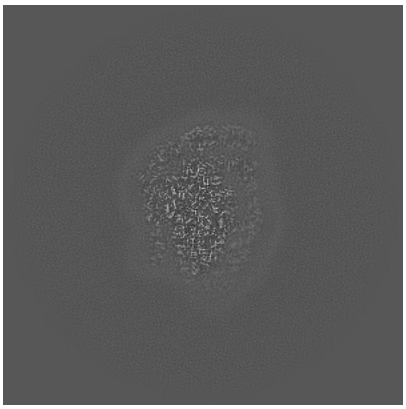


Z Index: 300

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

## 6.3 Largest variance slices (i)

### 6.3.1 Primary map

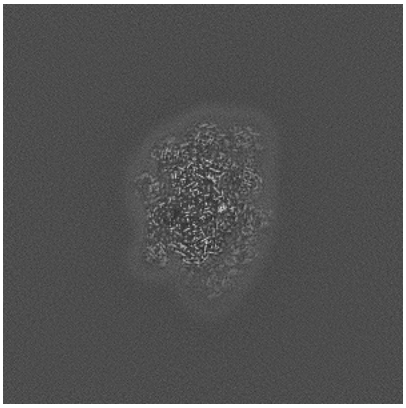


X Index: 316

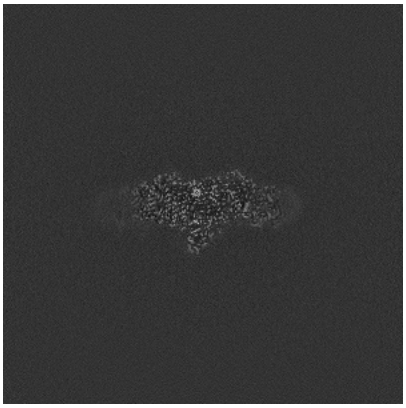
Y Index: 290

Z Index: 288

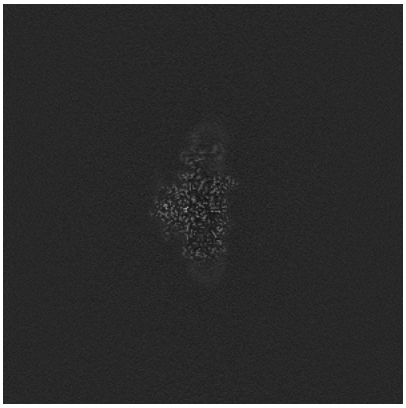
### 6.3.2 Raw map



X Index: 285



Y Index: 289

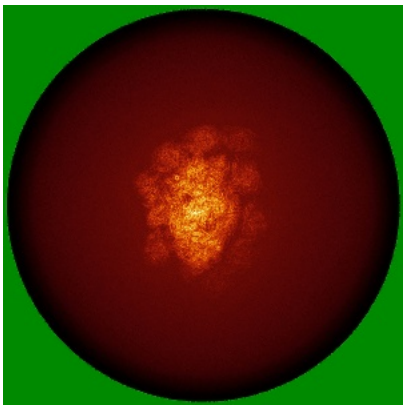


Z Index: 288

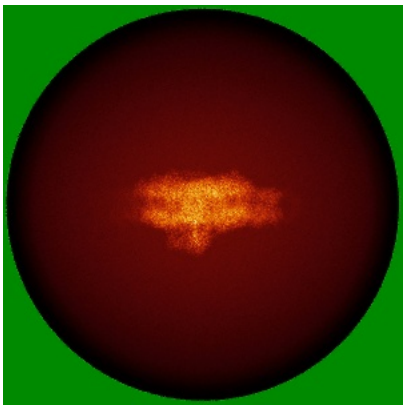
The images above show the largest variance slices of the map in three orthogonal directions.

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

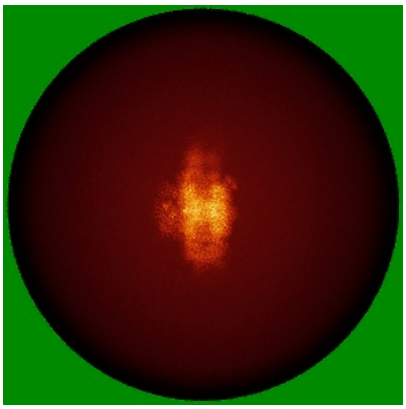
### 6.4.1 Primary map



X

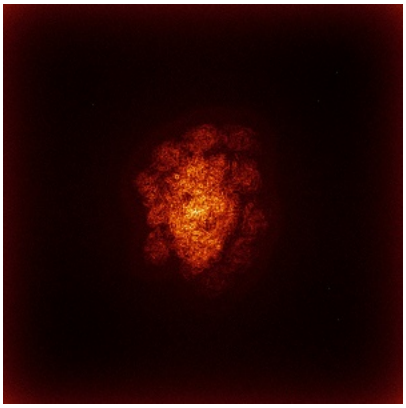


Y

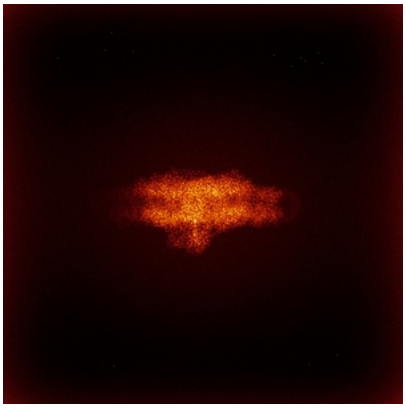


Z

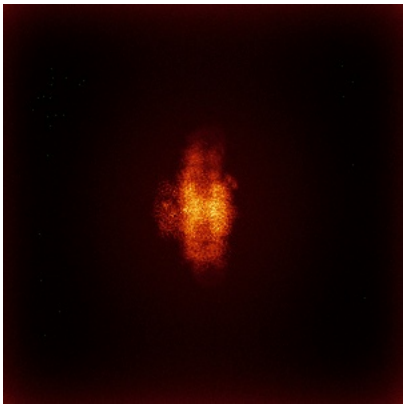
### 6.4.2 Raw map



X



Y

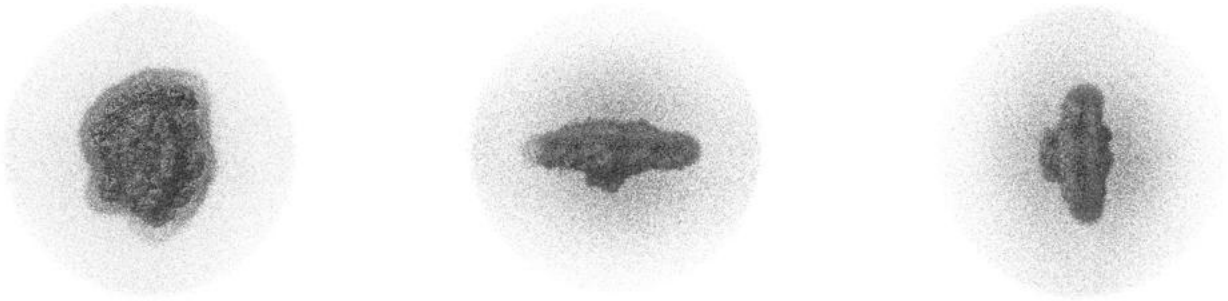


Z

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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.065. 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

X Y Z

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.

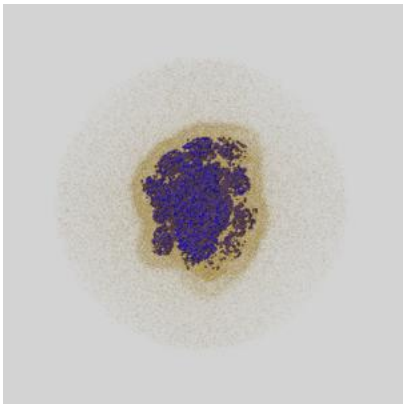
## 6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

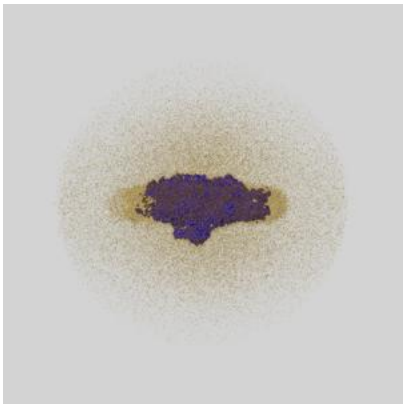
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

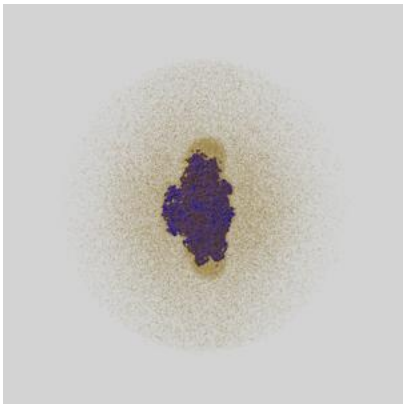
### 6.6.1 emd_64153_msk_1.map (i)



X



Y

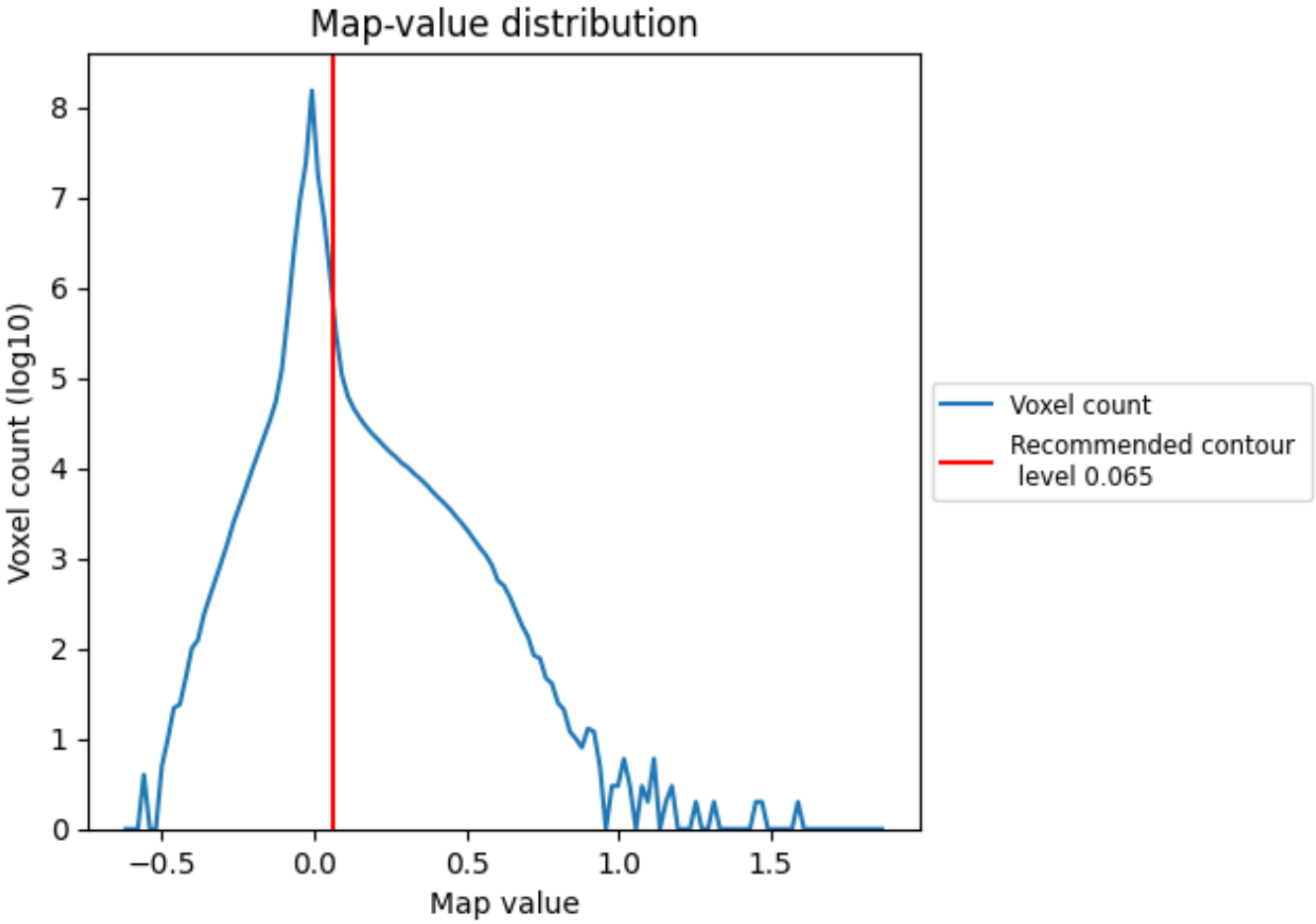


Z

# 7 Map analysis

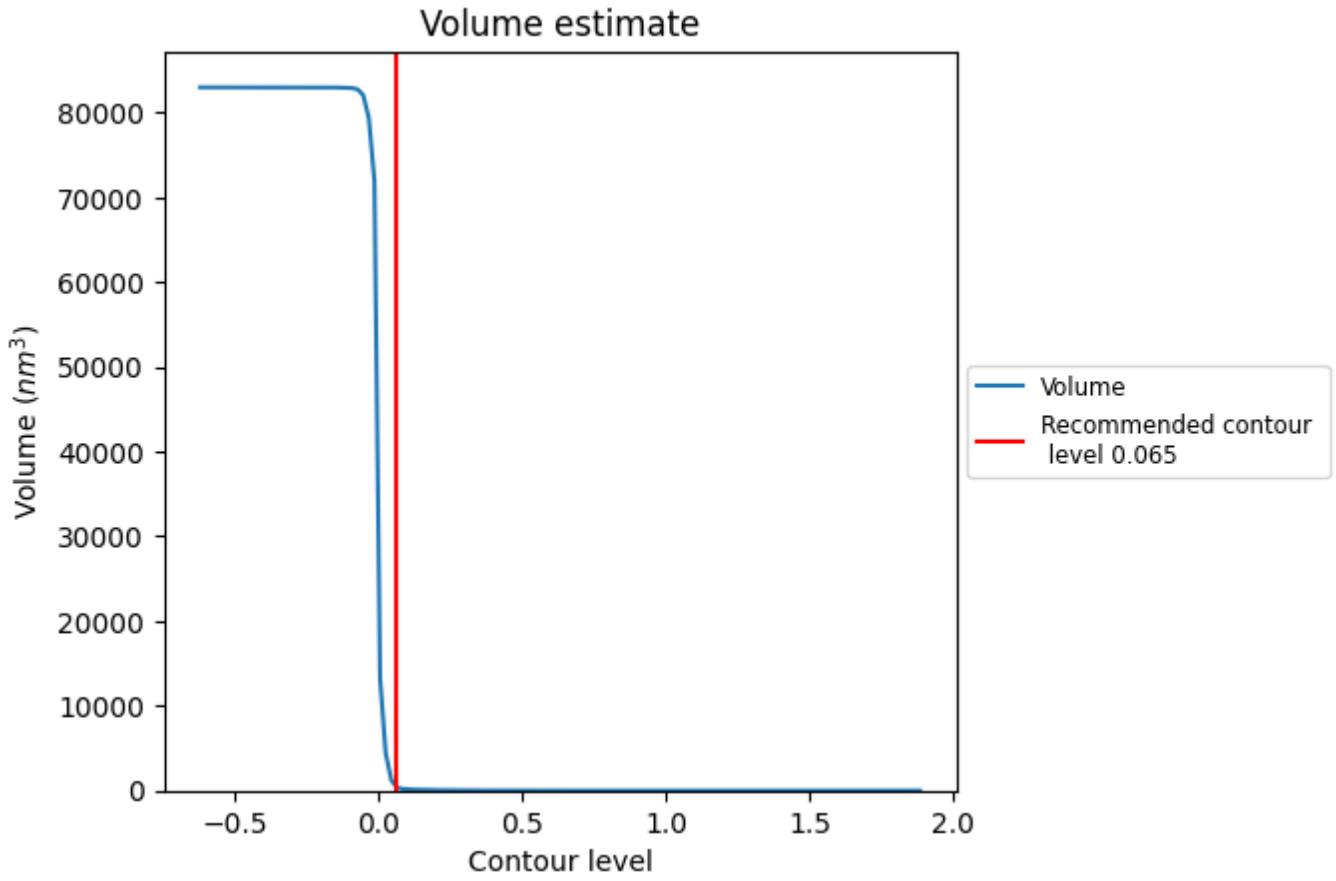
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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.

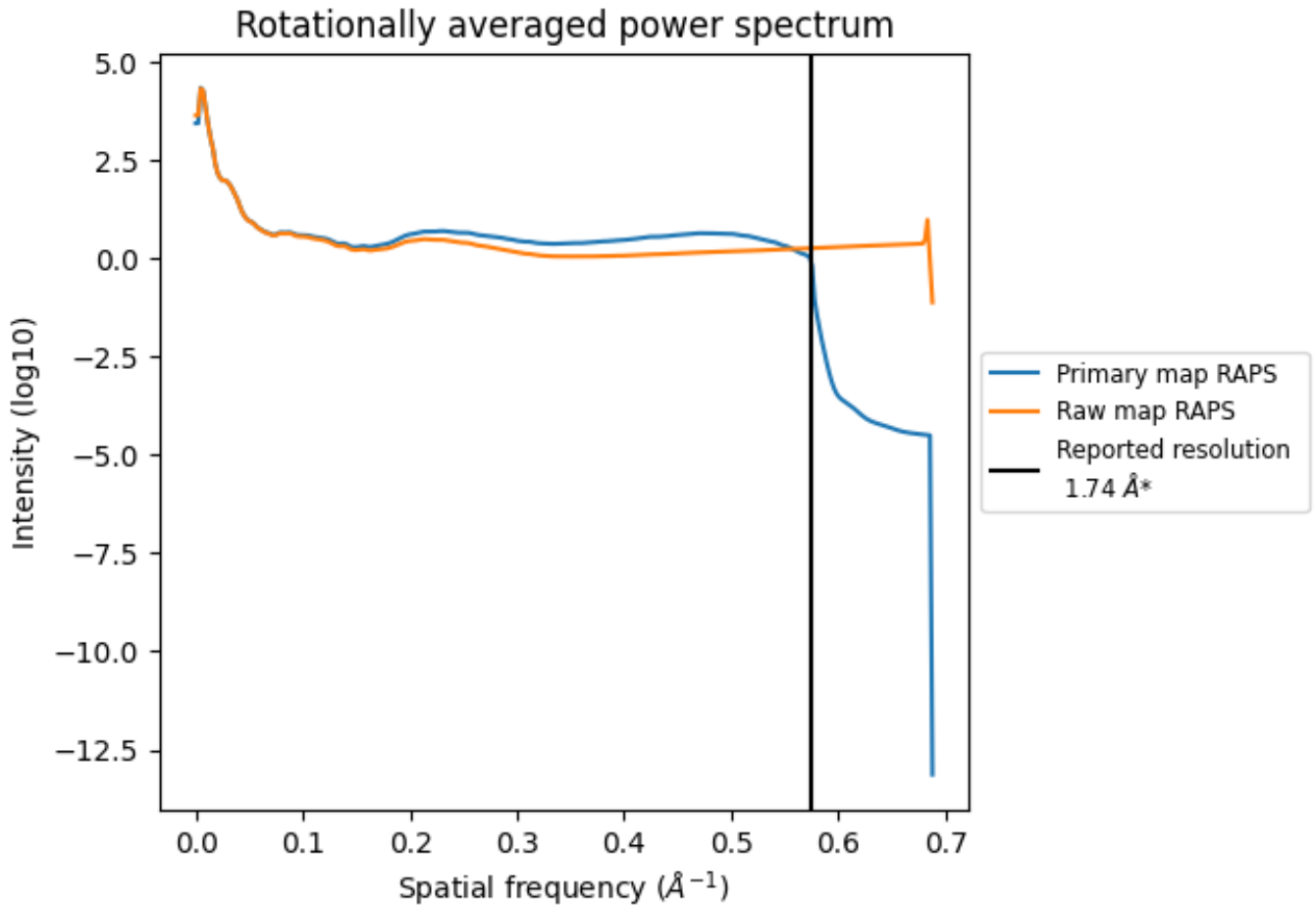
## 7.2 Volume estimate




The volume at the recommended contour level is 416 $nm^3$; this corresponds to an approximate mass of 375 kDa.

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

## 7.3 Rotationally averaged power spectrum (i)

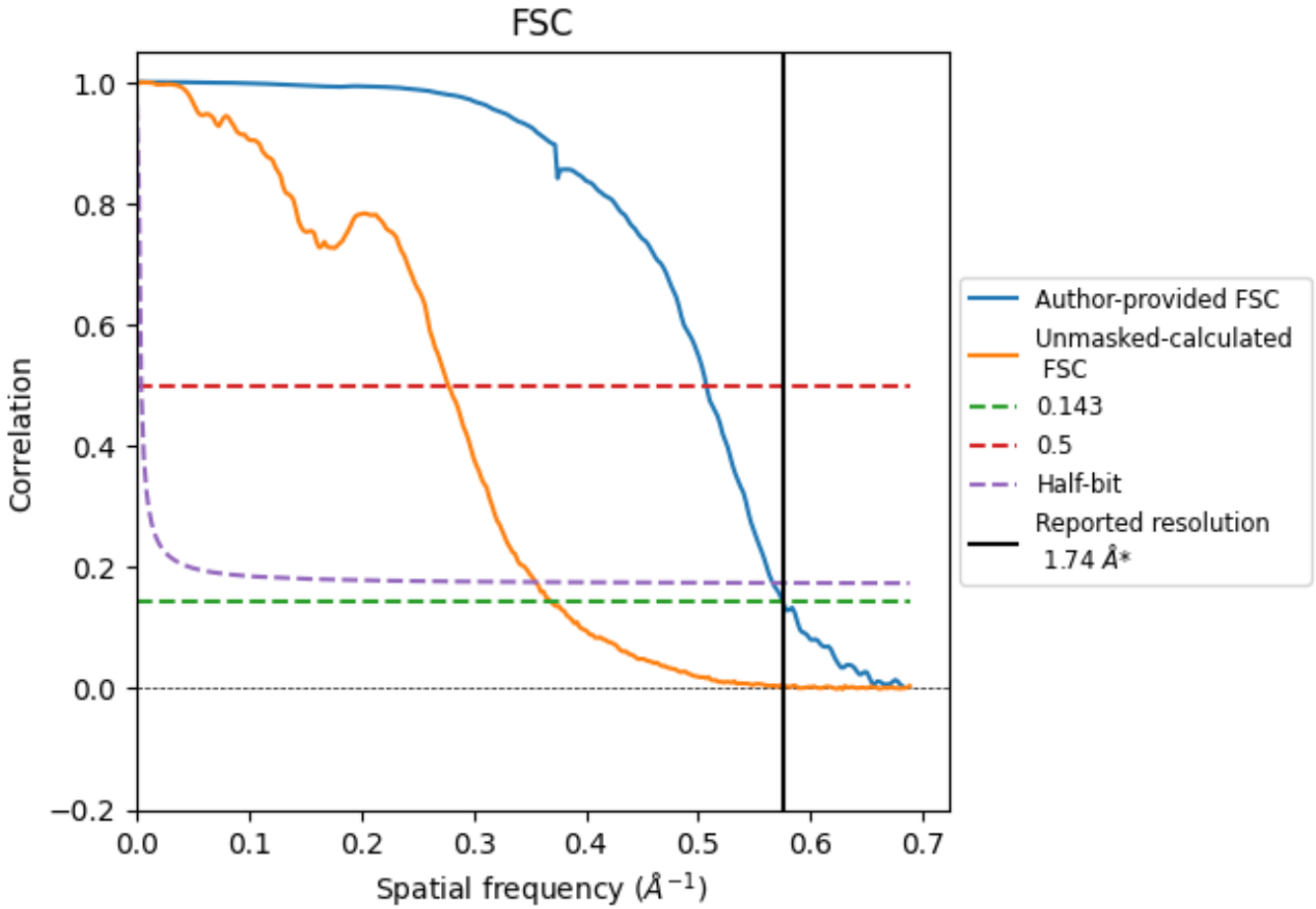



*Reported resolution corresponds to spatial frequency of 0.575 Å$^{-1}$

# 8 Fourier-Shell correlation

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




*Reported resolution corresponds to spatial frequency of 0.575 Å$^{-1}$

## 8.2 Resolution estimates (i)

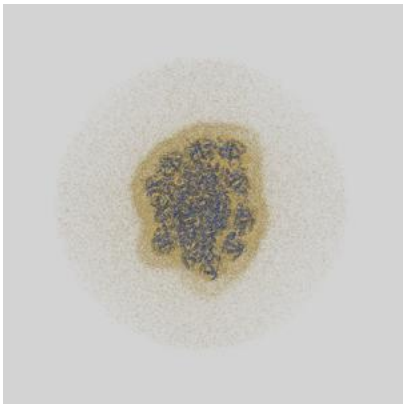
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 1.74 | - | - |
| Author-provided FSC curve | 1.74 | 1.97 | 1.77 |
| Unmasked-calculated* | 2.71 | 3.60 | 2.82 |

*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 2.71 differs from the reported value 1.74 by more than 10 %

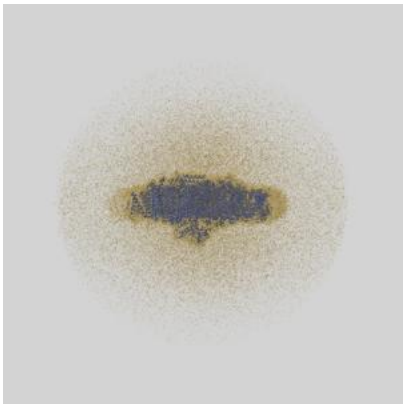
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-64153 and PDB model 9UH3. Per-residue inclusion information can be found in section 3 on page 31.

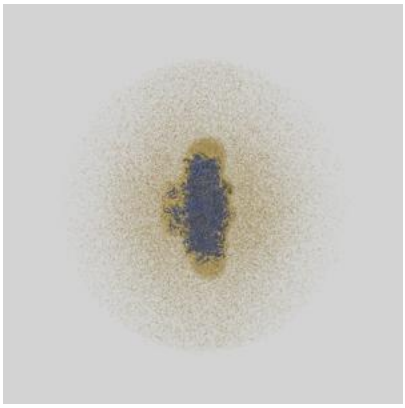
## 9.1 Map-model overlay



X



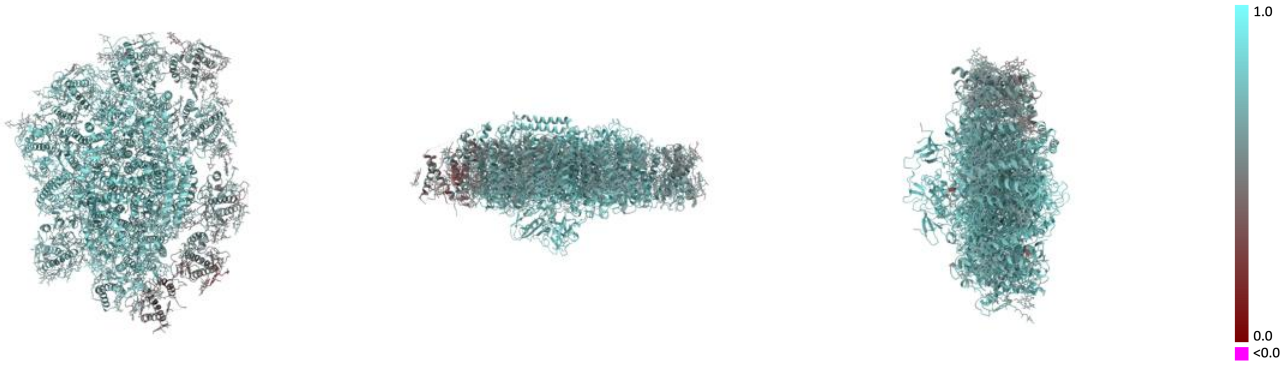
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.065 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.

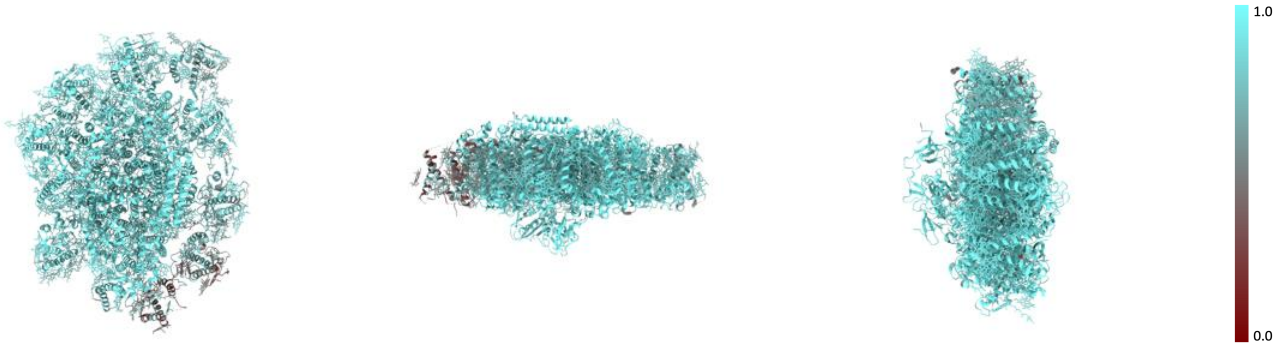
## 9.2 Q-score mapped to coordinate model (i)




X Y Z

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

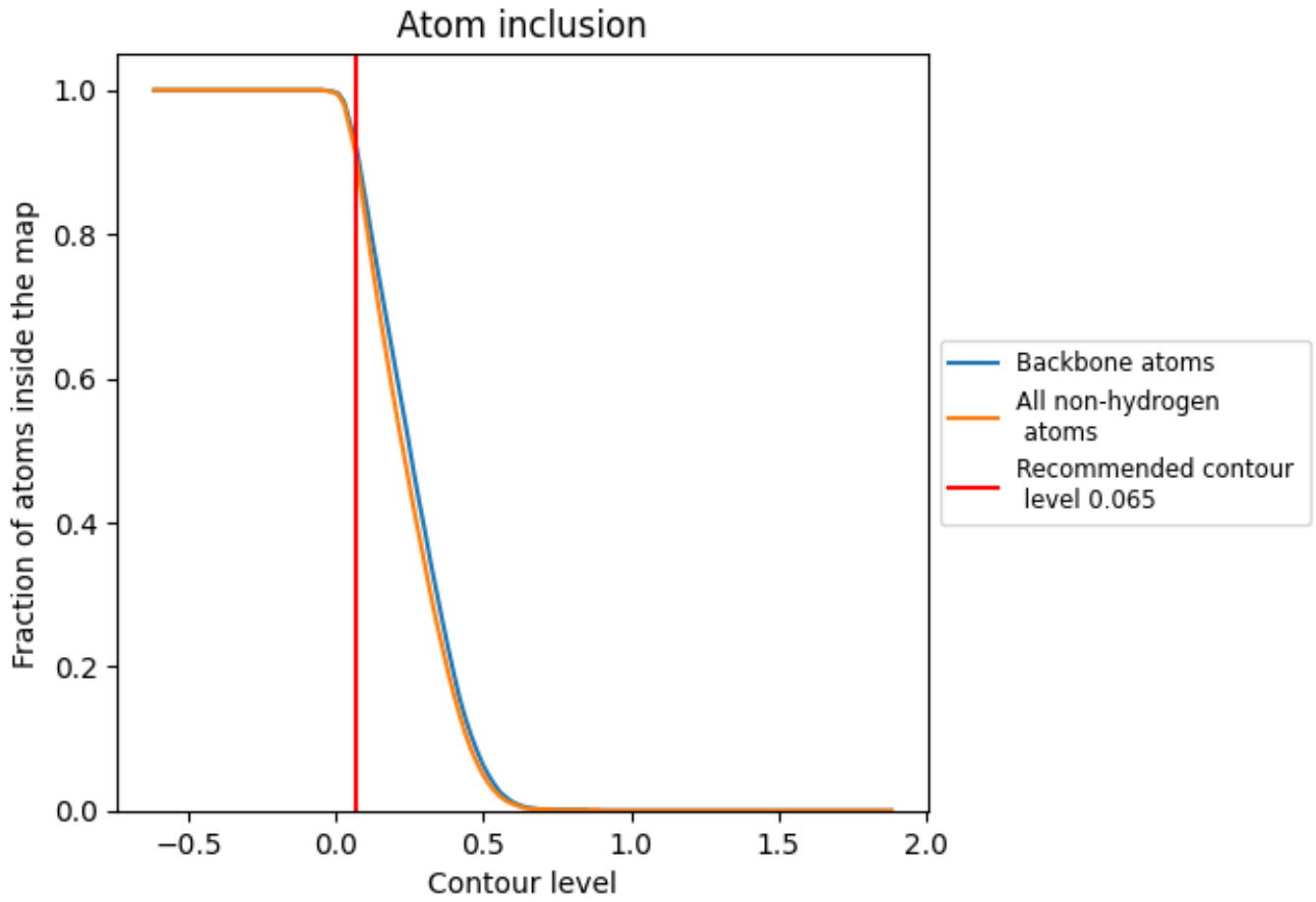
## 9.3 Atom inclusion mapped to coordinate model (i)




X Y Z

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 (0.065).

## 9.4 Atom inclusion (i)




At the recommended contour level, 93% of all backbone atoms, 91% 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 (0.065) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.9140 | 0.7220 |
| A | 0.9690 | 0.7790 |
| B | 0.9840 | 0.8090 |
| C | 0.9980 | 0.8330 |
| D | 0.9700 | 0.7820 |
| E | 0.9520 | 0.7730 |
| F | 0.9550 | 0.7550 |
| G | 0.7920 | 0.5830 |
| H | 0.6390 | 0.5150 |
| I | 0.9860 | 0.8110 |
| J | 0.9650 | 0.7480 |
| K | 0.4900 | 0.4410 |
| L | 0.9560 | 0.7740 |
| M | 0.9790 | 0.7990 |
| O | 0.9340 | 0.7160 |
| P | 0.8940 | 0.6600 |
| Q | 0.8910 | 0.6650 |
| R | 0.9550 | 0.7440 |
| S | 0.9440 | 0.7330 |
| T | 0.7520 | 0.5480 |
| U | 0.8730 | 0.6620 |
| k | 0.8200 | 0.6270 |