



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 8, 2025 – 11:32 PM JST

PDB ID : 6KHM / pdb\_00006khm  
Title : Lipase (Open form)  
Authors : Kim, H.J.; Kwon, A.R.  
Deposited on : 2019-07-16  
Resolution : 2.40 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0rc1  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 2.0rc1  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.006 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.45.1

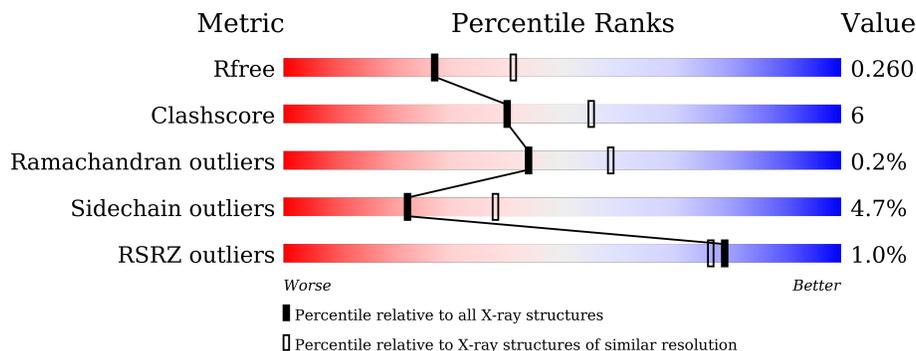
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.40 Å.

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



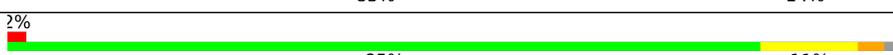
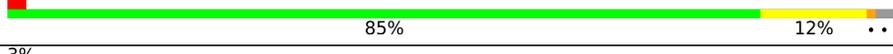
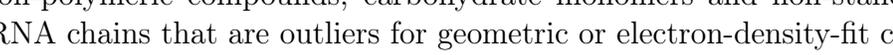
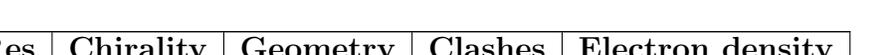
| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| $R_{free}$            | 164625                      | 4642 (2.40-2.40)                                      |
| Clashscore            | 180529                      | 5218 (2.40-2.40)                                      |
| Ramachandran outliers | 177936                      | 5158 (2.40-2.40)                                      |
| Sidechain outliers    | 177891                      | 5159 (2.40-2.40)                                      |
| RSRZ outliers         | 164620                      | 4642 (2.40-2.40)                                      |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 317    | <br>80% 15% ..   |
| 1   | B     | 317    | <br>81% 14% ..   |
| 1   | C     | 317    | <br>84% 13% ..   |
| 1   | D     | 317    | <br>85% 12% ..   |
| 1   | E     | 317    | <br>81% 16% ..   |
| 1   | F     | 317    | <br>85% 11% ..   |

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| Mol | Chain | Length | Quality of chain   |             |
|-----|-------|--------|--|-------------|
| 1   | G     | 317    |    | 81% 14% ..  |
| 1   | H     | 317    |    | 81% 15% ..  |
| 1   | I     | 317    |    | 80% 17% .   |
| 1   | J     | 317    |    | 82% 15% ..  |
| 1   | K     | 317    |    | 85% 11% ..  |
| 1   | L     | 317    |    | 85% 12% ..  |
| 1   | M     | 317    |    | 82% 15% ..  |
| 1   | N     | 317    |    | 85% 11% ..  |
| 1   | O     | 317    |    | 83% 14% ..  |
| 1   | P     | 317    |   | 85% 11% ..  |
| 1   | Q     | 317    |  | 81% 16% ..  |
| 1   | R     | 317    |  | 80% 16% ..  |
| 1   | S     | 317    |  | 83% 13% ... |
| 1   | T     | 317    |  | 80% 16% .   |
| 1   | U     | 317    |  | 82% 15% ..  |
| 1   | V     | 317    |  | 79% 17% ..  |
| 1   | W     | 317    |  | 85% 12% ..  |
| 1   | X     | 317    |  | 82% 13% ..  |
| 1   | Y     | 317    |  | 82% 14% ..  |
| 1   | Z     | 317    |  | 79% 16% ..  |

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

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 2   | DKL  | A     | 900 | -         | X        | -       | -                |
| 2   | DKL  | C     | 900 | -         | -        | X       | -                |
| 3   | DKO  | B     | 900 | -         | X        | -       | -                |

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| <b>Mol</b> | <b>Type</b> | <b>Chain</b> | <b>Res</b> | <b>Chirality</b> | <b>Geometry</b> | <b>Clashes</b> | <b>Electron density</b> |
|------------|-------------|--------------|------------|------------------|-----------------|----------------|-------------------------|
| 4          | DK6         | H            | 900        | -                | X               | X              | -                       |
| 4          | DK6         | S            | 900        | -                | X               | -              | -                       |
| 4          | DK6         | Z            | 900        | -                | X               | X              | -                       |
| 5          | DKF         | E            | 900        | -                | -               | X              | -                       |
| 5          | DKF         | U            | 900        | -                | X               | -              | -                       |
| 5          | DKF         | W            | 900        | -                | X               | -              | -                       |
| 6          | DK9         | O            | 900        | -                | -               | X              | -                       |

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 64002 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Hydrolase, alpha/beta domain protein.

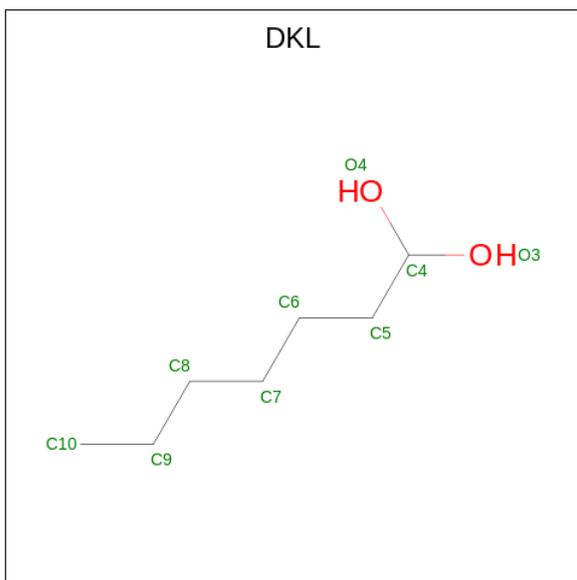
| Mol | Chain | Residues | Atoms         |           |          |          |         | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|-----------|----------|----------|---------|---------|---------|-------|
|     |       |          | Total         | C         | N        | O        | S       |         |         |       |
| 1   | A     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |
| 1   | B     | 309      | Total<br>2349 | C<br>1470 | N<br>417 | O<br>452 | S<br>10 | 0       | 0       | 0     |
| 1   | C     | 309      | Total<br>2349 | C<br>1470 | N<br>417 | O<br>452 | S<br>10 | 0       | 0       | 0     |
| 1   | D     | 308      | Total<br>2341 | C<br>1466 | N<br>415 | O<br>450 | S<br>10 | 0       | 0       | 0     |
| 1   | E     | 311      | Total<br>2371 | C<br>1482 | N<br>425 | O<br>454 | S<br>10 | 0       | 0       | 0     |
| 1   | F     | 308      | Total<br>2341 | C<br>1466 | N<br>415 | O<br>450 | S<br>10 | 0       | 0       | 0     |
| 1   | G     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |
| 1   | H     | 309      | Total<br>2349 | C<br>1470 | N<br>417 | O<br>452 | S<br>10 | 0       | 0       | 0     |
| 1   | I     | 311      | Total<br>2371 | C<br>1482 | N<br>425 | O<br>454 | S<br>10 | 0       | 0       | 0     |
| 1   | J     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |
| 1   | K     | 312      | Total<br>2379 | C<br>1488 | N<br>426 | O<br>455 | S<br>10 | 0       | 0       | 0     |
| 1   | L     | 312      | Total<br>2379 | C<br>1488 | N<br>426 | O<br>455 | S<br>10 | 0       | 0       | 0     |
| 1   | M     | 309      | Total<br>2349 | C<br>1470 | N<br>417 | O<br>452 | S<br>10 | 0       | 0       | 0     |
| 1   | N     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |
| 1   | O     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |
| 1   | P     | 310      | Total<br>2360 | C<br>1476 | N<br>421 | O<br>453 | S<br>10 | 0       | 0       | 0     |

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| Mol | Chain | Residues | Atoms |      |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
| 1   | Q     | 311      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2371  | 1482 | 425 | 454 | 10 |         |         |       |
| 1   | R     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |
| 1   | S     | 310      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2360  | 1476 | 421 | 453 | 10 |         |         |       |
| 1   | T     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |
| 1   | U     | 310      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2360  | 1476 | 421 | 453 | 10 |         |         |       |
| 1   | V     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |
| 1   | X     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |
| 1   | Y     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |
| 1   | W     | 310      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2360  | 1476 | 421 | 453 | 10 |         |         |       |
| 1   | Z     | 309      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2349  | 1470 | 417 | 452 | 10 |         |         |       |

- Molecule 2 is heptane-1,1-diol (CCD ID: DKL) (formula: C<sub>7</sub>H<sub>16</sub>O<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



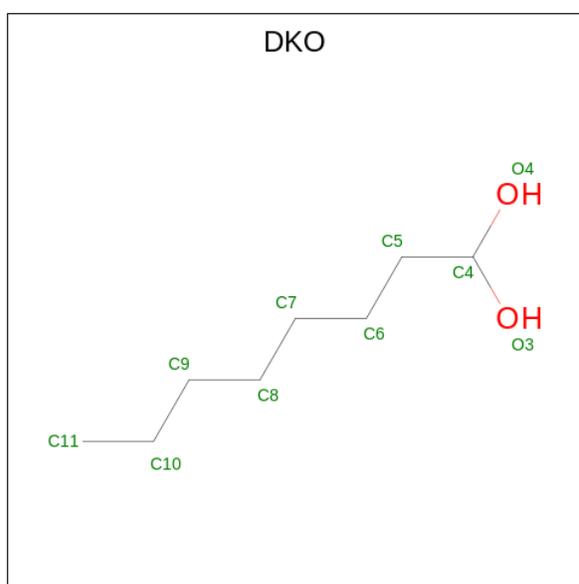
| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 2   | A     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 7 | 2 |         |         |

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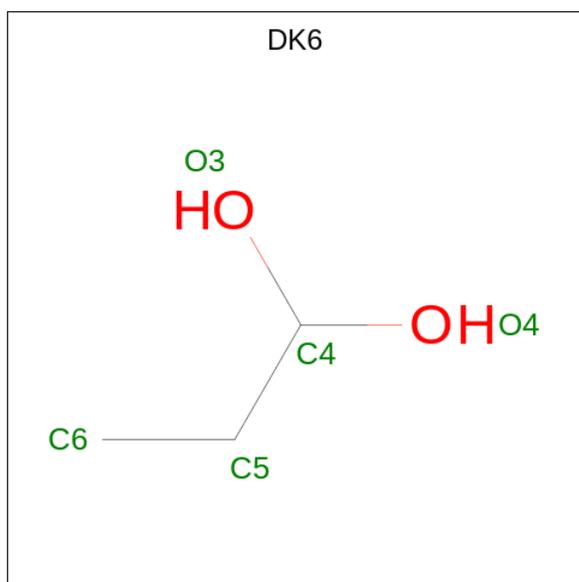
| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 2   | C     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 7 | 2 |         |         |
| 2   | Q     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 7 | 2 |         |         |
| 2   | T     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 7 | 2 |         |         |
| 2   | X     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 7 | 2 |         |         |

- Molecule 3 is octane-1,1-diol (CCD ID: DKO) (formula:  $C_8H_{18}O_2$ ) (labeled as "Ligand of Interest" by depositor).



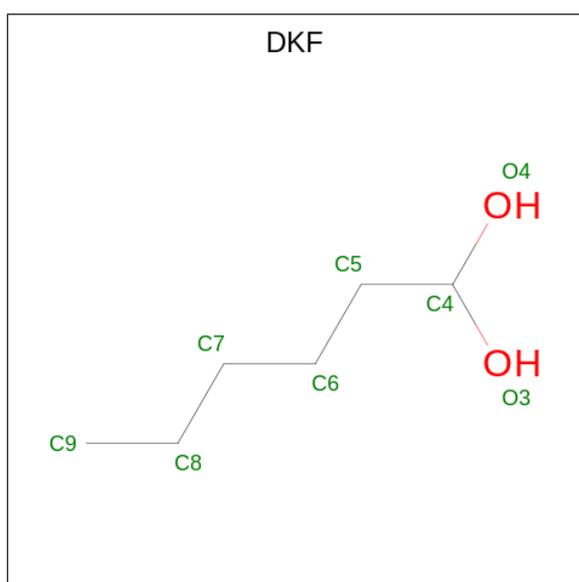
| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 3   | B     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 10    | 8 | 2 |         |         |
| 3   | N     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 10    | 8 | 2 |         |         |
| 3   | R     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 10    | 8 | 2 |         |         |

- Molecule 4 is propane-1,1-diol (CCD ID: DK6) (formula:  $C_3H_8O_2$ ) (labeled as "Ligand of Interest" by depositor).



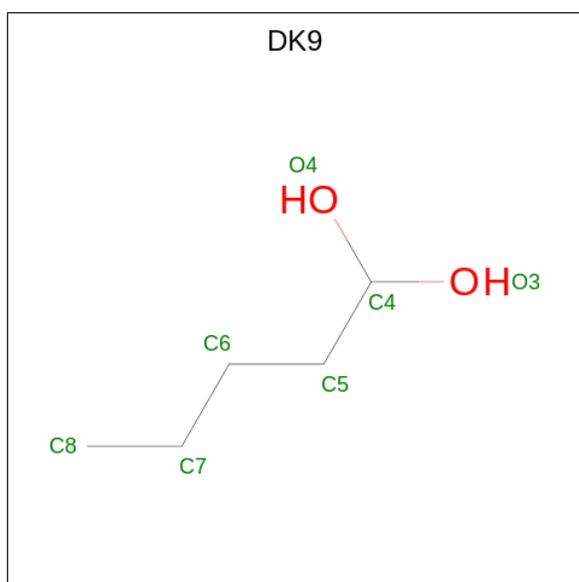
| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 4   | D     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 5     | 3 | 2 |         |         |
| 4   | H     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 5     | 3 | 2 |         |         |
| 4   | S     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 5     | 3 | 2 |         |         |
| 4   | Z     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 5     | 3 | 2 |         |         |

- Molecule 5 is hexane-1,1-diol (CCD ID: DKF) (formula:  $C_6H_{14}O_2$ ) (labeled as "Ligand of Interest" by depositor).



| Mol | Chain | Residues | Atoms              | ZeroOcc | AltConf |
|-----|-------|----------|--------------------|---------|---------|
| 5   | E     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | G     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | I     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | J     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | K     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | L     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | M     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | U     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | V     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | Y     | 1        | Total C O<br>8 6 2 | 0       | 0       |
| 5   | W     | 1        | Total C O<br>8 6 2 | 0       | 0       |

- Molecule 6 is pentane-1,1-diol (CCD ID: DK9) (formula: C<sub>5</sub>H<sub>12</sub>O<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 6   | F     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 7     | 5 | 2 |         |         |
| 6   | O     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 7     | 5 | 2 |         |         |
| 6   | P     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 7     | 5 | 2 |         |         |

- Molecule 7 is water.

| Mol | Chain | Residues | Atoms |     | ZeroOcc | AltConf |
|-----|-------|----------|-------|-----|---------|---------|
| 7   | A     | 103      | Total | O   | 0       | 0       |
|     |       |          | 103   | 103 |         |         |
| 7   | B     | 121      | Total | O   | 0       | 0       |
|     |       |          | 121   | 121 |         |         |
| 7   | C     | 108      | Total | O   | 0       | 0       |
|     |       |          | 108   | 108 |         |         |
| 7   | D     | 140      | Total | O   | 0       | 0       |
|     |       |          | 140   | 140 |         |         |
| 7   | E     | 126      | Total | O   | 0       | 0       |
|     |       |          | 126   | 126 |         |         |
| 7   | F     | 131      | Total | O   | 0       | 0       |
|     |       |          | 131   | 131 |         |         |
| 7   | G     | 130      | Total | O   | 0       | 0       |
|     |       |          | 130   | 130 |         |         |
| 7   | H     | 113      | Total | O   | 0       | 0       |
|     |       |          | 113   | 113 |         |         |
| 7   | I     | 82       | Total | O   | 0       | 0       |
|     |       |          | 82    | 82  |         |         |
| 7   | J     | 87       | Total | O   | 0       | 0       |
|     |       |          | 87    | 87  |         |         |
| 7   | K     | 116      | Total | O   | 0       | 0       |
|     |       |          | 116   | 116 |         |         |
| 7   | L     | 147      | Total | O   | 0       | 0       |
|     |       |          | 147   | 147 |         |         |
| 7   | M     | 69       | Total | O   | 0       | 0       |
|     |       |          | 69    | 69  |         |         |
| 7   | N     | 85       | Total | O   | 0       | 0       |
|     |       |          | 85    | 85  |         |         |
| 7   | O     | 108      | Total | O   | 0       | 0       |
|     |       |          | 108   | 108 |         |         |
| 7   | P     | 36       | Total | O   | 0       | 0       |
|     |       |          | 36    | 36  |         |         |
| 7   | Q     | 105      | Total | O   | 0       | 0       |
|     |       |          | 105   | 105 |         |         |

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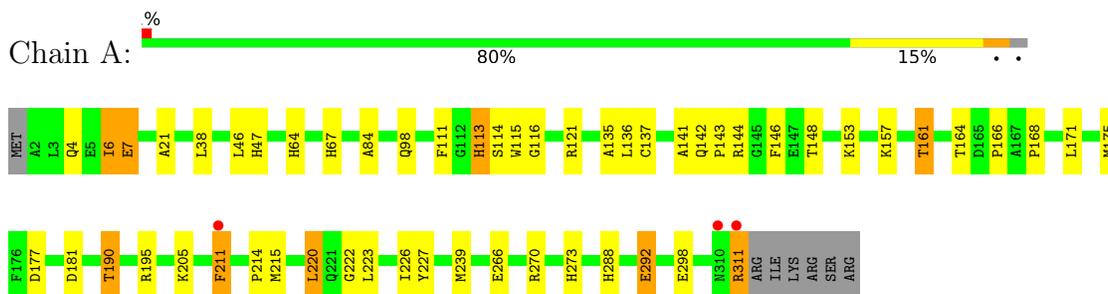
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| <b>Mol</b> | <b>Chain</b> | <b>Residues</b> | <b>Atoms</b> |          | <b>ZeroOcc</b> | <b>AltConf</b> |
|------------|--------------|-----------------|--------------|----------|----------------|----------------|
| 7          | R            | 75              | Total<br>75  | O<br>75  | 0              | 0              |
| 7          | S            | 128             | Total<br>128 | O<br>128 | 0              | 0              |
| 7          | T            | 79              | Total<br>79  | O<br>79  | 0              | 0              |
| 7          | U            | 80              | Total<br>80  | O<br>80  | 0              | 0              |
| 7          | V            | 83              | Total<br>83  | O<br>83  | 0              | 0              |
| 7          | X            | 63              | Total<br>63  | O<br>63  | 0              | 0              |
| 7          | Y            | 82              | Total<br>82  | O<br>82  | 0              | 0              |
| 7          | W            | 71              | Total<br>71  | O<br>71  | 0              | 0              |
| 7          | Z            | 47              | Total<br>47  | O<br>47  | 0              | 0              |

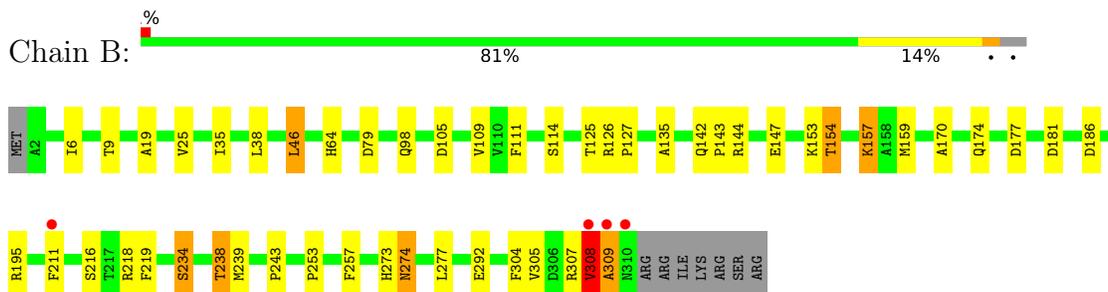
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron 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 dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). 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.

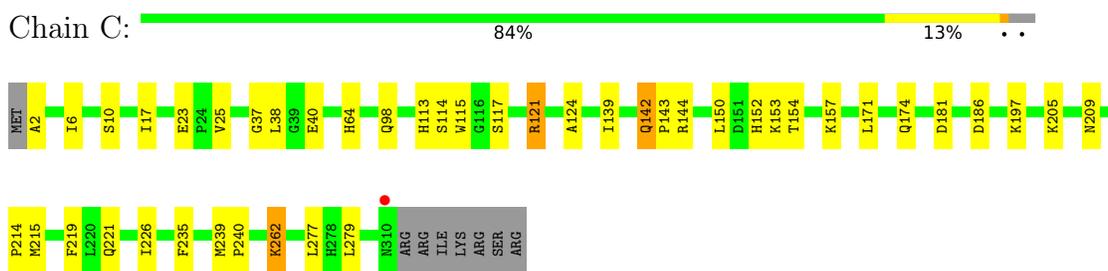
- Molecule 1: Hydrolase, alpha/beta domain protein



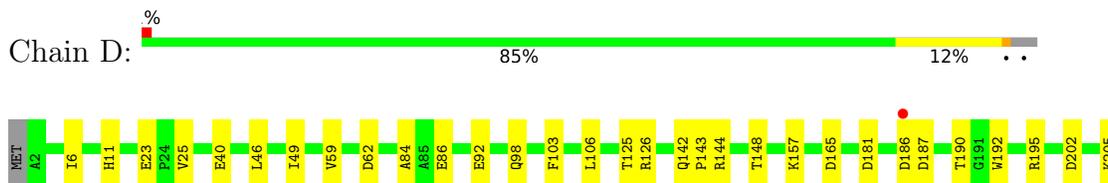
- Molecule 1: Hydrolase, alpha/beta domain protein



- Molecule 1: Hydrolase, alpha/beta domain protein

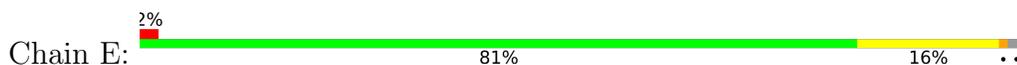


- Molecule 1: Hydrolase, alpha/beta domain protein

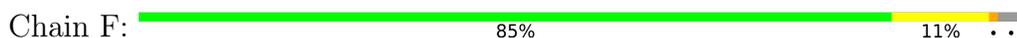




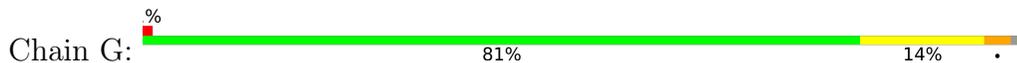
- Molecule 1: Hydrolase, alpha/beta domain protein



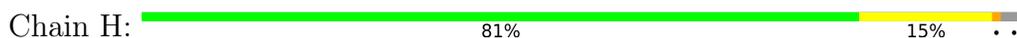
- Molecule 1: Hydrolase, alpha/beta domain protein



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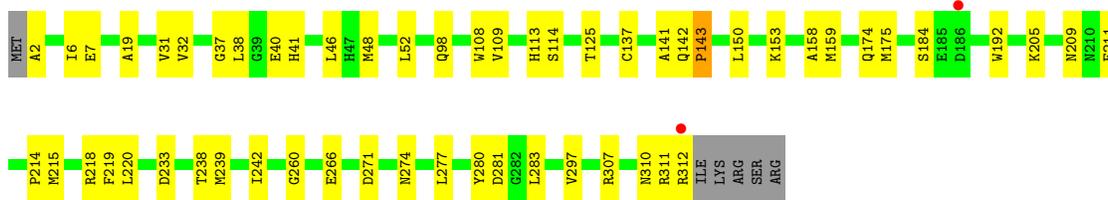


- Molecule 1: Hydrolase, alpha/beta domain protein

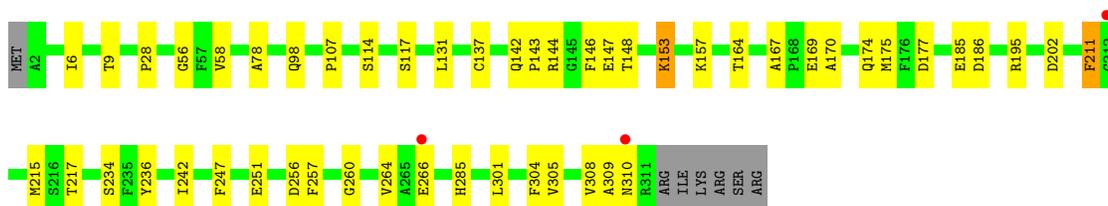
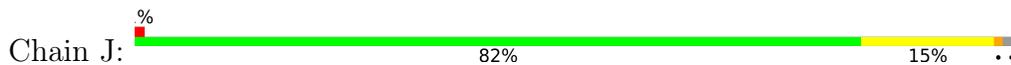


- Molecule 1: Hydrolase, alpha/beta domain protein

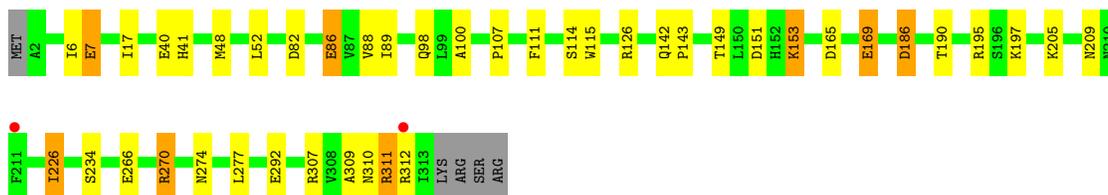
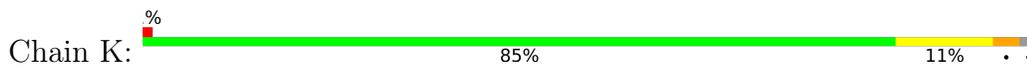




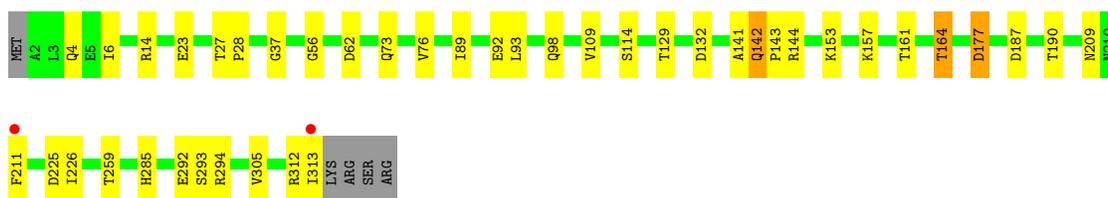
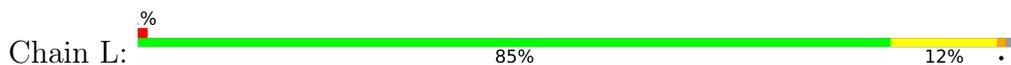
- Molecule 1: Hydrolase, alpha/beta domain protein



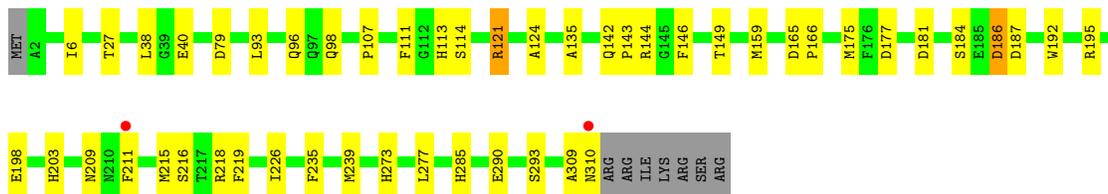
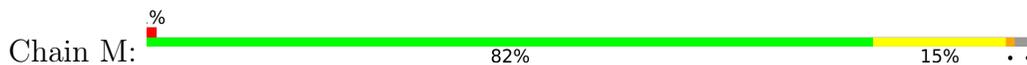
- Molecule 1: Hydrolase, alpha/beta domain protein



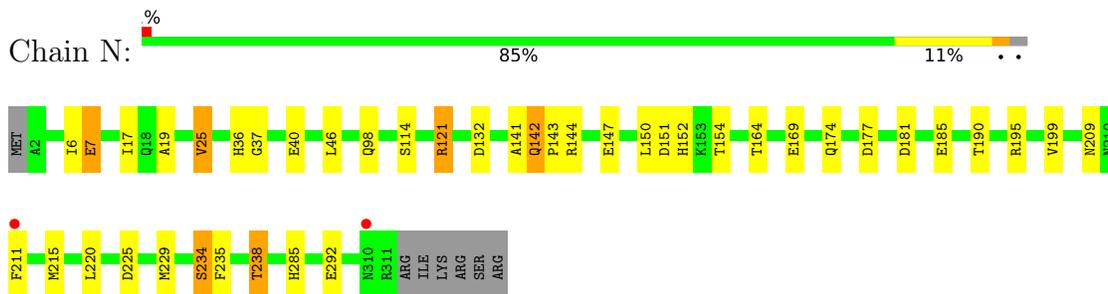
- Molecule 1: Hydrolase, alpha/beta domain protein



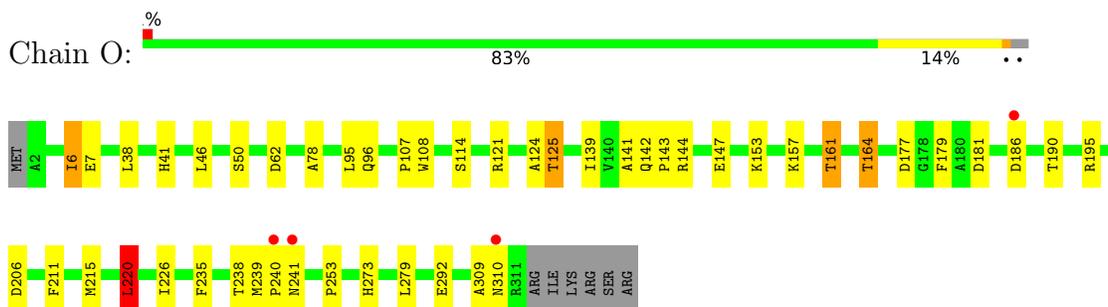
- Molecule 1: Hydrolase, alpha/beta domain protein



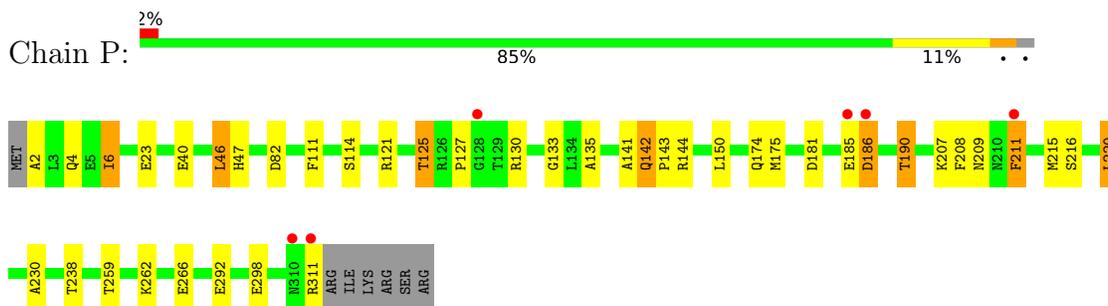
- Molecule 1: Hydrolase, alpha/beta domain protein



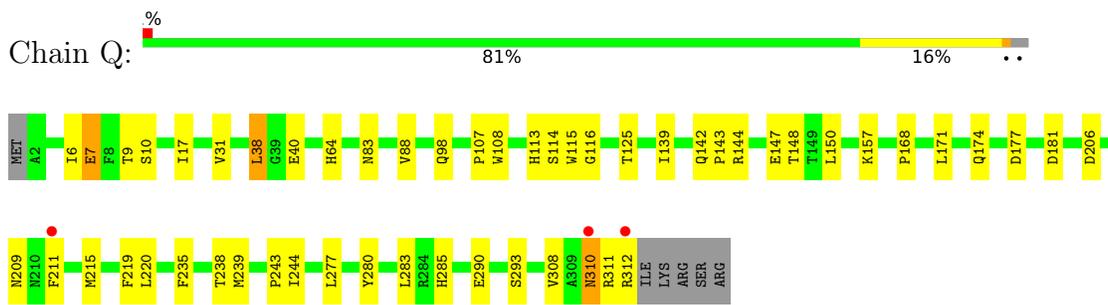
- Molecule 1: Hydrolase, alpha/beta domain protein



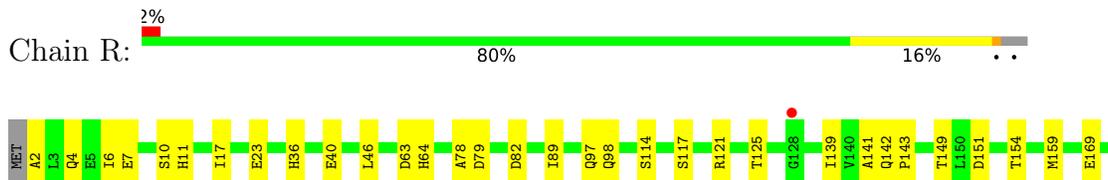
- Molecule 1: Hydrolase, alpha/beta domain protein



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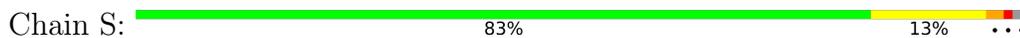


- Molecule 1: Hydrolase, alpha/beta domain protein





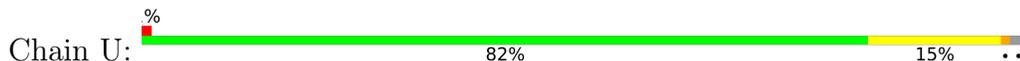
• Molecule 1: Hydrolase, alpha/beta domain protein



• Molecule 1: Hydrolase, alpha/beta domain protein



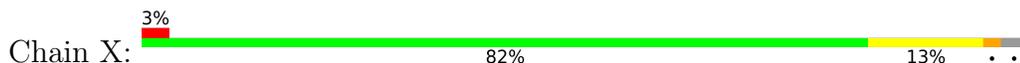
• Molecule 1: Hydrolase, alpha/beta domain protein



• Molecule 1: Hydrolase, alpha/beta domain protein



• Molecule 1: Hydrolase, alpha/beta domain protein





## 4 Data and refinement statistics i

| Property  | Value  | Source           |
|---|--|------------------|
| Space group   | P 31   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 185.86Å 185.86Å 205.10Å<br>90.00° 90.00° 120.00°               | Depositor        |
| Resolution (Å)  | 28.64 – 2.40<br>28.64 – 2.40                                   | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 99.5 (28.64-2.40)<br>99.5 (28.64-2.40)                         | Depositor<br>EDS |
| $R_{merge}$   | 0.11   | Depositor        |
| $R_{sym}$   | (Not available)  | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 6.43 (at 2.39Å)  | Xtriage          |
| Refinement program  | REFMAC 5.8.0238  | Depositor        |
| R, $R_{free}$   | 0.185 , 0.256<br>0.194 , 0.260                                 | Depositor<br>DCC |
| $R_{free}$ test set   | 15636 reflections (5.02%)                                      | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 30.0   | Xtriage          |
| Anisotropy  | 0.001  | Xtriage          |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.34 , 36.1  | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.53$ , $\langle L^2 \rangle = 0.37$    | Xtriage          |
| Estimated twinning fraction   | 0.000 for -h,-k,l<br>0.000 for h,-h-k,-l<br>0.000 for -k,-h,-l | Xtriage          |
| $F_o, F_c$ correlation  | 0.95   | EDS              |
| Total number of atoms   | 64002  | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 32.0   | wwPDB-VP         |

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 25.20 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.3158e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: DKO, DK6, DKF, DK9, DKL

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     | 1.21         | 4/2415 (0.2%)   | 1.50        | 4/3284 (0.1%)    |
| 1   | B     | 1.16         | 1/2404 (0.0%)   | 1.51        | 6/3270 (0.2%)    |
| 1   | C     | 1.16         | 3/2404 (0.1%)   | 1.49        | 4/3270 (0.1%)    |
| 1   | D     | 1.17         | 1/2396 (0.0%)   | 1.51        | 5/3259 (0.2%)    |
| 1   | E     | 1.14         | 1/2426 (0.0%)   | 1.48        | 8/3298 (0.2%)    |
| 1   | F     | 1.18         | 3/2396 (0.1%)   | 1.45        | 4/3259 (0.1%)    |
| 1   | G     | 1.18         | 3/2415 (0.1%)   | 1.50        | 8/3284 (0.2%)    |
| 1   | H     | 1.15         | 1/2404 (0.0%)   | 1.51        | 10/3270 (0.3%)   |
| 1   | I     | 1.12         | 4/2426 (0.2%)   | 1.51        | 4/3298 (0.1%)    |
| 1   | J     | 1.14         | 0/2415          | 1.50        | 3/3284 (0.1%)    |
| 1   | K     | 1.16         | 1/2434 (0.0%)   | 1.53        | 10/3309 (0.3%)   |
| 1   | L     | 1.14         | 1/2434 (0.0%)   | 1.49        | 6/3309 (0.2%)    |
| 1   | M     | 1.18         | 2/2404 (0.1%)   | 1.52        | 5/3270 (0.2%)    |
| 1   | N     | 1.16         | 0/2415          | 1.49        | 6/3284 (0.2%)    |
| 1   | O     | 1.18         | 1/2415 (0.0%)   | 1.46        | 3/3284 (0.1%)    |
| 1   | P     | 1.18         | 0/2415          | 1.51        | 9/3284 (0.3%)    |
| 1   | Q     | 1.15         | 2/2426 (0.1%)   | 1.52        | 5/3298 (0.2%)    |
| 1   | R     | 1.17         | 0/2404          | 1.51        | 7/3270 (0.2%)    |
| 1   | S     | 1.15         | 3/2415 (0.1%)   | 1.49        | 5/3284 (0.2%)    |
| 1   | T     | 1.17         | 1/2404 (0.0%)   | 1.47        | 6/3270 (0.2%)    |
| 1   | U     | 1.15         | 1/2415 (0.0%)   | 1.54        | 4/3284 (0.1%)    |
| 1   | V     | 1.16         | 2/2404 (0.1%)   | 1.53        | 9/3270 (0.3%)    |
| 1   | W     | 1.14         | 2/2415 (0.1%)   | 1.48        | 2/3284 (0.1%)    |
| 1   | X     | 1.14         | 0/2404          | 1.49        | 4/3270 (0.1%)    |
| 1   | Y     | 1.13         | 0/2404          | 1.52        | 7/3270 (0.2%)    |
| 1   | Z     | 1.15         | 0/2404          | 1.54        | 6/3270 (0.2%)    |
| All | All   | 1.16         | 37/62713 (0.1%) | 1.50        | 150/85286 (0.2%) |

All (37) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 1   | C     | 64  | HIS  | CE1-NE2 | 6.75  | 1.39        | 1.32     |
| 1   | A     | 113 | HIS  | CE1-NE2 | 6.59  | 1.39        | 1.32     |
| 1   | E     | 308 | VAL  | C-O     | -6.56 | 1.16        | 1.24     |
| 1   | F     | 143 | PRO  | C-O     | -6.55 | 1.16        | 1.23     |
| 1   | I     | 214 | PRO  | C-O     | -6.23 | 1.16        | 1.23     |
| 1   | A     | 166 | PRO  | C-O     | -6.13 | 1.16        | 1.23     |
| 1   | D     | 11  | HIS  | CE1-NE2 | 6.05  | 1.38        | 1.32     |
| 1   | A     | 214 | PRO  | C-O     | -5.76 | 1.17        | 1.23     |
| 1   | U     | 214 | PRO  | C-O     | -5.65 | 1.17        | 1.23     |
| 1   | L     | 37  | GLY  | C-O     | 5.57  | 1.28        | 1.23     |
| 1   | C     | 113 | HIS  | CE1-NE2 | 5.54  | 1.38        | 1.32     |
| 1   | F     | 163 | PRO  | C-O     | -5.50 | 1.17        | 1.24     |
| 1   | I     | 297 | VAL  | C-O     | 5.50  | 1.30        | 1.24     |
| 1   | M     | 192 | TRP  | C-O     | 5.49  | 1.31        | 1.24     |
| 1   | S     | 227 | TYR  | C-O     | 5.42  | 1.30        | 1.24     |
| 1   | B     | 127 | PRO  | C-O     | -5.40 | 1.17        | 1.23     |
| 1   | I     | 143 | PRO  | C-O     | -5.38 | 1.17        | 1.23     |
| 1   | G     | 17  | ILE  | C-O     | 5.38  | 1.29        | 1.24     |
| 1   | H     | 141 | ALA  | C-O     | 5.38  | 1.30        | 1.23     |
| 1   | C     | 152 | HIS  | CE1-NE2 | 5.35  | 1.38        | 1.32     |
| 1   | S     | 197 | LYS  | C-O     | 5.34  | 1.30        | 1.24     |
| 1   | K     | 100 | ALA  | C-O     | 5.28  | 1.30        | 1.23     |
| 1   | T     | 291 | PRO  | C-O     | -5.24 | 1.17        | 1.24     |
| 1   | V     | 116 | GLY  | C-O     | 5.24  | 1.30        | 1.23     |
| 1   | G     | 278 | HIS  | CE1-NE2 | 5.24  | 1.37        | 1.32     |
| 1   | S     | 113 | HIS  | CE1-NE2 | 5.24  | 1.37        | 1.32     |
| 1   | Q     | 64  | HIS  | CE1-NE2 | 5.24  | 1.37        | 1.32     |
| 1   | W     | 214 | PRO  | C-O     | -5.19 | 1.17        | 1.23     |
| 1   | Q     | 143 | PRO  | C-O     | -5.16 | 1.18        | 1.23     |
| 1   | A     | 288 | HIS  | CE1-NE2 | 5.13  | 1.37        | 1.32     |
| 1   | M     | 113 | HIS  | CE1-NE2 | 5.11  | 1.37        | 1.32     |
| 1   | W     | 41  | HIS  | CE1-NE2 | 5.07  | 1.37        | 1.32     |
| 1   | O     | 41  | HIS  | CE1-NE2 | 5.07  | 1.37        | 1.32     |
| 1   | V     | 260 | GLY  | C-O     | 5.03  | 1.29        | 1.23     |
| 1   | F     | 55  | ALA  | C-O     | -5.02 | 1.17        | 1.24     |
| 1   | G     | 19  | ALA  | C-O     | 5.01  | 1.29        | 1.23     |
| 1   | I     | 37  | GLY  | C-O     | 5.00  | 1.28        | 1.23     |

All (150) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|------|-------------|----------|
| 1   | D     | 187 | ASP  | CA-CB-CG | 8.79 | 121.39      | 112.60   |
| 1   | C     | 124 | ALA  | CA-C-N   | 7.38 | 130.17      | 120.28   |

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| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | C     | 124 | ALA  | C-N-CA    | 7.38  | 130.17      | 120.28   |
| 1   | X     | 208 | PHE  | CA-CB-CG  | -7.31 | 106.49      | 113.80   |
| 1   | L     | 27  | THR  | CA-CB-OG1 | -6.86 | 99.30       | 109.60   |
| 1   | Q     | 7   | GLU  | N-CA-C    | -6.82 | 98.67       | 109.23   |
| 1   | M     | 124 | ALA  | CA-C-N    | 6.70  | 129.58      | 120.54   |
| 1   | M     | 124 | ALA  | C-N-CA    | 6.70  | 129.58      | 120.54   |
| 1   | W     | 9   | THR  | CB-CA-C   | 6.67  | 120.56      | 109.89   |
| 1   | T     | 238 | THR  | CB-CA-C   | 6.67  | 121.43      | 109.29   |
| 1   | R     | 185 | GLU  | CB-CG-CD  | 6.49  | 123.63      | 112.60   |
| 1   | Q     | 9   | THR  | CA-CB-OG1 | -6.35 | 100.07      | 109.60   |
| 1   | I     | 271 | ASP  | CA-CB-CG  | 6.17  | 118.77      | 112.60   |
| 1   | G     | 266 | GLU  | N-CA-CB   | 6.14  | 119.25      | 110.16   |
| 1   | E     | 206 | ASP  | CA-CB-CG  | 6.08  | 118.68      | 112.60   |
| 1   | P     | 186 | ASP  | CB-CA-C   | 6.05  | 120.38      | 110.88   |
| 1   | B     | 154 | THR  | CA-CB-OG1 | -6.03 | 100.56      | 109.60   |
| 1   | U     | 163 | PRO  | CA-C-N    | 5.91  | 129.30      | 120.31   |
| 1   | U     | 163 | PRO  | C-N-CA    | 5.91  | 129.30      | 120.31   |
| 1   | G     | 276 | GLU  | CB-CA-C   | 5.91  | 119.50      | 109.75   |
| 1   | V     | 185 | GLU  | CA-C-N    | 5.83  | 128.36      | 120.38   |
| 1   | V     | 185 | GLU  | C-N-CA    | 5.83  | 128.36      | 120.38   |
| 1   | Y     | 15  | ASP  | CA-CB-CG  | 5.81  | 118.41      | 112.60   |
| 1   | Z     | 206 | ASP  | CA-CB-CG  | 5.80  | 118.40      | 112.60   |
| 1   | R     | 233 | ASP  | CA-CB-CG  | 5.78  | 118.38      | 112.60   |
| 1   | D     | 165 | ASP  | CB-CA-C   | 5.77  | 117.80      | 109.09   |
| 1   | J     | 9   | THR  | CA-CB-OG1 | -5.77 | 100.95      | 109.60   |
| 1   | P     | 133 | GLY  | CA-C-O    | -5.77 | 115.87      | 121.06   |
| 1   | T     | 309 | ALA  | CA-C-N    | 5.76  | 132.06      | 121.70   |
| 1   | T     | 309 | ALA  | C-N-CA    | 5.76  | 132.06      | 121.70   |
| 1   | E     | 308 | VAL  | N-CA-C    | -5.74 | 104.92      | 110.72   |
| 1   | L     | 259 | THR  | CA-C-N    | 5.72  | 126.29      | 119.94   |
| 1   | L     | 259 | THR  | C-N-CA    | 5.72  | 126.29      | 119.94   |
| 1   | R     | 82  | ASP  | CA-C-O    | -5.70 | 115.51      | 121.55   |
| 1   | H     | 127 | PRO  | N-CA-C    | 5.70  | 123.01      | 113.78   |
| 1   | H     | 82  | ASP  | CA-CB-CG  | 5.69  | 118.29      | 112.60   |
| 1   | K     | 41  | HIS  | CA-C-O    | -5.67 | 115.16      | 121.23   |
| 1   | G     | 164 | THR  | CA-CB-OG1 | -5.65 | 101.13      | 109.60   |
| 1   | M     | 203 | HIS  | CA-C-N    | 5.65  | 126.25      | 119.98   |
| 1   | M     | 203 | HIS  | C-N-CA    | 5.65  | 126.25      | 119.98   |
| 1   | P     | 259 | THR  | CA-C-N    | 5.64  | 126.21      | 119.94   |
| 1   | P     | 259 | THR  | C-N-CA    | 5.64  | 126.21      | 119.94   |
| 1   | V     | 7   | GLU  | N-CA-C    | -5.63 | 101.10      | 110.17   |
| 1   | L     | 225 | ASP  | CA-CB-CG  | 5.60  | 118.20      | 112.60   |

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| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | L     | 177 | ASP  | CA-CB-CG  | 5.54  | 118.14      | 112.60   |
| 1   | P     | 82  | ASP  | CA-CB-CG  | 5.53  | 118.13      | 112.60   |
| 1   | H     | 233 | ASP  | CA-CB-CG  | 5.52  | 118.12      | 112.60   |
| 1   | N     | 199 | VAL  | CA-C-N    | 5.51  | 127.50      | 120.56   |
| 1   | N     | 199 | VAL  | C-N-CA    | 5.51  | 127.50      | 120.56   |
| 1   | Q     | 238 | THR  | CB-CA-C   | 5.51  | 118.33      | 109.07   |
| 1   | M     | 27  | THR  | CB-CA-C   | 5.50  | 116.41      | 110.08   |
| 1   | N     | 185 | GLU  | CA-C-N    | 5.48  | 127.62      | 120.28   |
| 1   | N     | 185 | GLU  | C-N-CA    | 5.48  | 127.62      | 120.28   |
| 1   | F     | 164 | THR  | CA-CB-OG1 | -5.48 | 101.38      | 109.60   |
| 1   | S     | 238 | THR  | CB-CA-C   | 5.48  | 119.18      | 109.65   |
| 1   | B     | 9   | THR  | CB-CA-C   | 5.47  | 118.47      | 110.26   |
| 1   | K     | 165 | ASP  | CA-CB-CG  | 5.46  | 118.06      | 112.60   |
| 1   | C     | 221 | GLN  | O-C-N     | 5.42  | 127.73      | 122.09   |
| 1   | A     | 292 | GLU  | CB-CG-CD  | 5.42  | 121.82      | 112.60   |
| 1   | E     | 82  | ASP  | CA-CB-CG  | 5.41  | 118.01      | 112.60   |
| 1   | K     | 309 | ALA  | CA-C-N    | 5.41  | 127.48      | 120.44   |
| 1   | K     | 309 | ALA  | C-N-CA    | 5.41  | 127.48      | 120.44   |
| 1   | C     | 214 | PRO  | CB-CA-C   | 5.41  | 116.32      | 111.40   |
| 1   | V     | 161 | THR  | CB-CA-C   | 5.39  | 119.24      | 110.24   |
| 1   | G     | 148 | THR  | CB-CA-C   | 5.39  | 118.54      | 110.08   |
| 1   | O     | 310 | ASN  | CA-C-N    | 5.37  | 131.37      | 121.70   |
| 1   | O     | 310 | ASN  | C-N-CA    | 5.37  | 131.37      | 121.70   |
| 1   | H     | 203 | HIS  | CA-C-N    | 5.37  | 125.94      | 119.98   |
| 1   | H     | 203 | HIS  | C-N-CA    | 5.37  | 125.94      | 119.98   |
| 1   | B     | 309 | ALA  | CA-C-N    | 5.37  | 131.36      | 121.70   |
| 1   | B     | 309 | ALA  | C-N-CA    | 5.37  | 131.36      | 121.70   |
| 1   | K     | 86  | GLU  | CA-C-O    | -5.36 | 114.84      | 120.63   |
| 1   | H     | 54  | ASP  | CA-CB-CG  | 5.35  | 117.95      | 112.60   |
| 1   | I     | 233 | ASP  | CA-CB-CG  | 5.33  | 117.93      | 112.60   |
| 1   | S     | 303 | THR  | CA-CB-OG1 | -5.32 | 101.63      | 109.60   |
| 1   | Q     | 83  | ASN  | CA-C-N    | 5.31  | 127.71      | 120.54   |
| 1   | Q     | 83  | ASN  | C-N-CA    | 5.31  | 127.71      | 120.54   |
| 1   | N     | 132 | ASP  | N-CA-C    | -5.30 | 106.98      | 113.50   |
| 1   | H     | 204 | GLY  | CA-C-O    | -5.29 | 115.30      | 120.75   |
| 1   | R     | 63  | ASP  | CB-CA-C   | 5.29  | 118.97      | 110.29   |
| 1   | J     | 310 | ASN  | CA-CB-CG  | 5.29  | 117.89      | 112.60   |
| 1   | A     | 211 | PHE  | CA-CB-CG  | -5.29 | 108.51      | 113.80   |
| 1   | H     | 81  | GLY  | CA-C-O    | -5.28 | 116.44      | 122.78   |
| 1   | Z     | 309 | ALA  | CA-C-N    | 5.27  | 131.18      | 121.70   |
| 1   | Z     | 309 | ALA  | C-N-CA    | 5.27  | 131.18      | 121.70   |
| 1   | L     | 73  | GLN  | CA-C-O    | -5.26 | 114.92      | 120.55   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 1   | F     | 9   | THR  | CB-CA-C  | 5.25  | 118.14      | 110.26   |
| 1   | K     | 310 | ASN  | CA-CB-CG | 5.23  | 117.83      | 112.60   |
| 1   | J     | 58  | VAL  | CA-C-O   | -5.21 | 115.65      | 121.23   |
| 1   | R     | 185 | GLU  | N-CA-CB  | 5.21  | 118.41      | 110.44   |
| 1   | K     | 186 | ASP  | CA-C-N   | 5.21  | 127.51      | 120.38   |
| 1   | K     | 186 | ASP  | C-N-CA   | 5.21  | 127.51      | 120.38   |
| 1   | X     | 132 | ASP  | CB-CA-C  | 5.21  | 118.71      | 109.65   |
| 1   | H     | 310 | ASN  | CB-CA-C  | 5.20  | 119.98      | 110.10   |
| 1   | E     | 274 | ASN  | CB-CA-C  | 5.20  | 119.39      | 110.81   |
| 1   | P     | 238 | THR  | CB-CA-C  | 5.20  | 118.70      | 109.65   |
| 1   | T     | 211 | PHE  | CB-CA-C  | 5.19  | 118.31      | 109.53   |
| 1   | R     | 232 | GLY  | CA-C-N   | 5.18  | 127.74      | 120.28   |
| 1   | R     | 232 | GLY  | C-N-CA   | 5.18  | 127.74      | 120.28   |
| 1   | V     | 168 | PRO  | CA-C-N   | 5.18  | 127.48      | 120.38   |
| 1   | V     | 168 | PRO  | C-N-CA   | 5.18  | 127.48      | 120.38   |
| 1   | E     | 302 | VAL  | CA-C-N   | 5.18  | 127.17      | 120.44   |
| 1   | E     | 302 | VAL  | C-N-CA   | 5.18  | 127.17      | 120.44   |
| 1   | X     | 302 | VAL  | CA-C-O   | -5.18 | 115.89      | 121.27   |
| 1   | Z     | 49  | ILE  | CA-C-N   | 5.18  | 127.22      | 120.28   |
| 1   | Z     | 49  | ILE  | C-N-CA   | 5.18  | 127.22      | 120.28   |
| 1   | A     | 116 | GLY  | CA-C-N   | 5.17  | 127.17      | 120.44   |
| 1   | A     | 116 | GLY  | C-N-CA   | 5.17  | 127.17      | 120.44   |
| 1   | Z     | 159 | MET  | N-CA-C   | -5.15 | 106.51      | 112.89   |
| 1   | Y     | 226 | ILE  | N-CA-C   | -5.14 | 105.53      | 110.72   |
| 1   | K     | 7   | GLU  | N-CA-C   | -5.12 | 101.53      | 109.72   |
| 1   | O     | 220 | LEU  | N-CA-C   | -5.12 | 105.78      | 111.36   |
| 1   | K     | 82  | ASP  | CA-CB-CG | 5.11  | 117.71      | 112.60   |
| 1   | G     | 88  | VAL  | CA-C-O   | -5.11 | 115.44      | 120.85   |
| 1   | G     | 210 | ASN  | CA-C-N   | 5.11  | 131.29      | 121.54   |
| 1   | G     | 210 | ASN  | C-N-CA   | 5.11  | 131.29      | 121.54   |
| 1   | I     | 158 | ALA  | CA-C-N   | 5.10  | 127.53      | 120.29   |
| 1   | I     | 158 | ALA  | C-N-CA   | 5.10  | 127.53      | 120.29   |
| 1   | P     | 208 | PHE  | CB-CA-C  | 5.10  | 120.10      | 109.95   |
| 1   | W     | 176 | PHE  | CA-CB-CG | -5.10 | 108.70      | 113.80   |
| 1   | U     | 12  | ASN  | CA-CB-CG | 5.09  | 117.69      | 112.60   |
| 1   | Y     | 27  | THR  | CB-CA-C  | 5.09  | 115.94      | 110.08   |
| 1   | Y     | 309 | ALA  | CA-C-N   | 5.09  | 130.86      | 121.70   |
| 1   | Y     | 309 | ALA  | C-N-CA   | 5.09  | 130.86      | 121.70   |
| 1   | N     | 7   | GLU  | N-CA-C   | -5.08 | 102.26      | 110.14   |
| 1   | P     | 216 | SER  | CA-C-N   | 5.08  | 127.08      | 120.28   |
| 1   | P     | 216 | SER  | C-N-CA   | 5.08  | 127.08      | 120.28   |
| 1   | D     | 289 | ASN  | CB-CA-C  | 5.07  | 118.11      | 109.24   |

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| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | T     | 89  | ILE  | CA-C-N    | 5.06  | 127.02      | 120.44   |
| 1   | T     | 89  | ILE  | C-N-CA    | 5.06  | 127.02      | 120.44   |
| 1   | S     | 8   | PHE  | CA-C-O    | -5.05 | 115.69      | 121.40   |
| 1   | X     | 233 | ASP  | CA-CB-CG  | 5.05  | 117.65      | 112.60   |
| 1   | Y     | 158 | ALA  | CA-C-N    | 5.05  | 127.05      | 120.28   |
| 1   | Y     | 158 | ALA  | C-N-CA    | 5.05  | 127.05      | 120.28   |
| 1   | V     | 306 | ASP  | N-CA-C    | -5.04 | 105.86      | 111.36   |
| 1   | H     | 7   | GLU  | N-CA-C    | -5.04 | 101.07      | 108.99   |
| 1   | D     | 209 | ASN  | CA-C-N    | 5.04  | 129.52      | 122.36   |
| 1   | D     | 209 | ASN  | C-N-CA    | 5.04  | 129.52      | 122.36   |
| 1   | V     | 221 | GLN  | CA-C-N    | 5.04  | 125.67      | 120.03   |
| 1   | V     | 221 | GLN  | C-N-CA    | 5.04  | 125.67      | 120.03   |
| 1   | E     | 83  | ASN  | CA-C-N    | 5.04  | 127.34      | 120.54   |
| 1   | E     | 83  | ASN  | C-N-CA    | 5.04  | 127.34      | 120.54   |
| 1   | B     | 274 | ASN  | CB-CA-C   | 5.03  | 119.11      | 110.81   |
| 1   | U     | 164 | THR  | CA-CB-OG1 | -5.02 | 102.07      | 109.60   |
| 1   | B     | 105 | ASP  | CA-CB-CG  | 5.01  | 117.61      | 112.60   |
| 1   | F     | 305 | VAL  | CA-C-N    | 5.01  | 126.99      | 120.28   |
| 1   | F     | 305 | VAL  | C-N-CA    | 5.01  | 126.99      | 120.28   |
| 1   | G     | 89  | ILE  | N-CA-C    | -5.00 | 105.83      | 110.53   |
| 1   | S     | 163 | PRO  | CA-C-N    | 5.00  | 129.90      | 121.14   |
| 1   | S     | 163 | PRO  | C-N-CA    | 5.00  | 129.90      | 121.14   |

There are no chirality outliers.

There are no planarity outliers.

## 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     | 2360  | 0        | 2253     | 37      | 0            |
| 1   | B     | 2349  | 0        | 2240     | 39      | 0            |
| 1   | C     | 2349  | 0        | 2240     | 30      | 0            |
| 1   | D     | 2341  | 0        | 2233     | 18      | 0            |
| 1   | E     | 2371  | 0        | 2265     | 32      | 0            |
| 1   | F     | 2341  | 0        | 2234     | 21      | 0            |
| 1   | G     | 2360  | 0        | 2253     | 38      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | H     | 2349  | 0        | 2239     | 23      | 0            |
| 1   | I     | 2371  | 0        | 2266     | 34      | 0            |
| 1   | J     | 2360  | 0        | 2253     | 28      | 0            |
| 1   | K     | 2379  | 0        | 2277     | 31      | 0            |
| 1   | L     | 2379  | 0        | 2276     | 26      | 0            |
| 1   | M     | 2349  | 0        | 2240     | 28      | 0            |
| 1   | N     | 2360  | 0        | 2252     | 26      | 0            |
| 1   | O     | 2360  | 0        | 2253     | 45      | 0            |
| 1   | P     | 2360  | 0        | 2253     | 27      | 0            |
| 1   | Q     | 2371  | 0        | 2266     | 31      | 0            |
| 1   | R     | 2349  | 0        | 2240     | 30      | 0            |
| 1   | S     | 2360  | 0        | 2253     | 34      | 0            |
| 1   | T     | 2349  | 0        | 2240     | 33      | 0            |
| 1   | U     | 2360  | 0        | 2253     | 29      | 0            |
| 1   | V     | 2349  | 0        | 2240     | 30      | 0            |
| 1   | W     | 2360  | 0        | 2253     | 24      | 0            |
| 1   | X     | 2349  | 0        | 2240     | 35      | 0            |
| 1   | Y     | 2349  | 0        | 2240     | 24      | 0            |
| 1   | Z     | 2349  | 0        | 2240     | 32      | 0            |
| 2   | A     | 9     | 0        | 0        | 4       | 0            |
| 2   | C     | 9     | 0        | 0        | 8       | 0            |
| 2   | Q     | 9     | 0        | 0        | 4       | 0            |
| 2   | T     | 9     | 0        | 0        | 5       | 0            |
| 2   | X     | 9     | 0        | 0        | 3       | 0            |
| 3   | B     | 10    | 0        | 0        | 3       | 0            |
| 3   | N     | 10    | 0        | 0        | 0       | 0            |
| 3   | R     | 10    | 0        | 0        | 3       | 0            |
| 4   | D     | 5     | 0        | 0        | 2       | 0            |
| 4   | H     | 5     | 0        | 0        | 4       | 0            |
| 4   | S     | 5     | 0        | 0        | 3       | 0            |
| 4   | Z     | 5     | 0        | 0        | 5       | 0            |
| 5   | E     | 8     | 0        | 0        | 6       | 0            |
| 5   | G     | 8     | 0        | 0        | 5       | 0            |
| 5   | I     | 8     | 0        | 0        | 5       | 0            |
| 5   | J     | 8     | 0        | 0        | 4       | 0            |
| 5   | K     | 8     | 0        | 0        | 3       | 0            |
| 5   | L     | 8     | 0        | 0        | 0       | 0            |
| 5   | M     | 8     | 0        | 0        | 4       | 0            |
| 5   | U     | 8     | 0        | 0        | 3       | 0            |
| 5   | V     | 8     | 0        | 0        | 3       | 0            |
| 5   | W     | 8     | 0        | 0        | 4       | 0            |
| 5   | Y     | 8     | 0        | 0        | 5       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 6   | F     | 7     | 0        | 0        | 3       | 0            |
| 6   | O     | 7     | 0        | 0        | 4       | 0            |
| 6   | P     | 7     | 0        | 0        | 3       | 0            |
| 7   | A     | 103   | 0        | 0        | 3       | 0            |
| 7   | B     | 121   | 0        | 0        | 1       | 0            |
| 7   | C     | 108   | 0        | 0        | 0       | 0            |
| 7   | D     | 140   | 0        | 0        | 0       | 0            |
| 7   | E     | 126   | 0        | 0        | 0       | 0            |
| 7   | F     | 131   | 0        | 0        | 1       | 0            |
| 7   | G     | 130   | 0        | 0        | 1       | 0            |
| 7   | H     | 113   | 0        | 0        | 0       | 0            |
| 7   | I     | 82    | 0        | 0        | 1       | 0            |
| 7   | J     | 87    | 0        | 0        | 0       | 0            |
| 7   | K     | 116   | 0        | 0        | 1       | 0            |
| 7   | L     | 147   | 0        | 0        | 1       | 0            |
| 7   | M     | 69    | 0        | 0        | 0       | 0            |
| 7   | N     | 85    | 0        | 0        | 2       | 0            |
| 7   | O     | 108   | 0        | 0        | 3       | 0            |
| 7   | P     | 36    | 0        | 0        | 0       | 0            |
| 7   | Q     | 105   | 0        | 0        | 0       | 0            |
| 7   | R     | 75    | 0        | 0        | 0       | 0            |
| 7   | S     | 128   | 0        | 0        | 2       | 0            |
| 7   | T     | 79    | 0        | 0        | 0       | 0            |
| 7   | U     | 80    | 0        | 0        | 1       | 0            |
| 7   | V     | 83    | 0        | 0        | 0       | 0            |
| 7   | W     | 71    | 0        | 0        | 4       | 0            |
| 7   | X     | 63    | 0        | 0        | 1       | 0            |
| 7   | Y     | 82    | 0        | 0        | 1       | 0            |
| 7   | Z     | 47    | 0        | 0        | 1       | 0            |
| All | All   | 64002 | 0        | 58492    | 775     | 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.

All (775) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:B:114:SER:OG | 3:B:900:DKO:C4 | 1.69                     | 1.40              |
| 1:H:114:SER:OG | 4:H:900:DK6:C4 | 1.68                     | 1.40              |
| 1:E:114:SER:OG | 5:E:900:DKF:C4 | 1.67                     | 1.39              |
| 1:K:114:SER:OG | 5:K:900:DKF:C4 | 1.71                     | 1.37              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:114:SER:OG   | 2:C:900:DKL:C4   | 1.73                     | 1.36              |
| 1:F:114:SER:OG   | 6:F:900:DK9:C4   | 1.74                     | 1.35              |
| 1:A:114:SER:OG   | 2:A:900:DKL:C4   | 1.77                     | 1.32              |
| 1:R:114:SER:OG   | 3:R:900:DKO:C4   | 1.78                     | 1.31              |
| 1:M:114:SER:OG   | 5:M:900:DKF:C4   | 1.79                     | 1.29              |
| 1:G:114:SER:OG   | 5:G:900:DKF:C4   | 1.81                     | 1.29              |
| 1:W:114:SER:OG   | 5:W:900:DKF:C4   | 1.81                     | 1.28              |
| 1:P:114:SER:OG   | 6:P:900:DK9:C4   | 1.81                     | 1.27              |
| 1:Q:114:SER:OG   | 2:Q:900:DKL:C4   | 1.82                     | 1.27              |
| 1:X:114:SER:HG   | 2:X:900:DKL:C4   | 1.47                     | 1.27              |
| 1:O:114:SER:OG   | 6:O:900:DK9:C4   | 1.86                     | 1.22              |
| 1:V:114:SER:OG   | 5:V:900:DKF:C4   | 1.88                     | 1.21              |
| 1:I:114:SER:OG   | 5:I:900:DKF:C4   | 1.90                     | 1.19              |
| 1:T:114:SER:OG   | 2:T:900:DKL:C4   | 1.91                     | 1.19              |
| 1:F:114:SER:HG   | 6:F:900:DK9:C4   | 1.48                     | 1.18              |
| 1:X:114:SER:OG   | 2:X:900:DKL:C4   | 1.90                     | 1.16              |
| 1:U:114:SER:OG   | 5:U:900:DKF:C4   | 1.96                     | 1.14              |
| 1:W:114:SER:HG   | 5:W:900:DKF:C4   | 1.59                     | 1.11              |
| 1:O:114:SER:HG   | 6:O:900:DK9:C4   | 1.60                     | 1.11              |
| 1:Z:114:SER:OG   | 4:Z:900:DK6:C4   | 2.01                     | 1.09              |
| 1:O:235:PHE:CE1  | 1:O:239:MET:HE3  | 1.88                     | 1.07              |
| 1:I:114:SER:HG   | 5:I:900:DKF:C4   | 1.66                     | 1.06              |
| 1:J:114:SER:OG   | 5:J:900:DKF:C4   | 2.03                     | 1.06              |
| 1:Y:114:SER:OG   | 5:Y:900:DKF:C4   | 2.03                     | 1.05              |
| 1:X:234:SER:O    | 1:X:238:THR:HG23 | 1.56                     | 1.05              |
| 1:S:114:SER:OG   | 4:S:900:DK6:C4   | 2.05                     | 1.04              |
| 1:J:114:SER:HG   | 5:J:900:DKF:C4   | 1.74                     | 1.00              |
| 1:T:114:SER:HG   | 2:T:900:DKL:C4   | 1.68                     | 0.99              |
| 1:I:307:ARG:HH11 | 1:I:311:ARG:NH2  | 1.61                     | 0.98              |
| 1:K:107:PRO:HB3  | 1:K:312:ARG:HD3  | 1.49                     | 0.95              |
| 1:M:114:SER:HG   | 5:M:900:DKF:C4   | 1.66                     | 0.94              |
| 1:Z:114:SER:HG   | 4:Z:900:DK6:C4   | 1.76                     | 0.94              |
| 1:Y:114:SER:HG   | 5:Y:900:DKF:C4   | 1.80                     | 0.93              |
| 1:H:234:SER:O    | 1:H:238:THR:HG23 | 1.69                     | 0.92              |
| 1:C:114:SER:HG   | 2:C:900:DKL:C4   | 1.76                     | 0.92              |
| 1:G:114:SER:HG   | 5:G:900:DKF:C4   | 1.79                     | 0.91              |
| 1:X:107:PRO:HG2  | 1:X:309:ALA:CB   | 2.01                     | 0.90              |
| 1:C:38:LEU:HD23  | 2:C:900:DKL:C7   | 2.04                     | 0.87              |
| 1:K:312:ARG:NH1  | 1:K:312:ARG:HB3  | 1.88                     | 0.87              |
| 1:B:243:PRO:HB2  | 1:B:308:VAL:HG23 | 1.54                     | 0.87              |
| 1:V:234:SER:O    | 1:V:238:THR:HG23 | 1.75                     | 0.86              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:121:ARG:HG3  | 1:C:235:PHE:CE1  | 2.12                     | 0.85              |
| 1:G:234:SER:O    | 1:G:238:THR:HG23 | 1.76                     | 0.85              |
| 1:O:38:LEU:HD23  | 6:O:900:DK9:C8   | 2.05                     | 0.85              |
| 1:W:270:ARG:HD2  | 7:W:1003:HOH:O   | 1.75                     | 0.84              |
| 1:T:234:SER:O    | 1:T:238:THR:HG22 | 1.77                     | 0.84              |
| 1:Z:192:TRP:HH2  | 4:Z:900:DK6:C6   | 1.91                     | 0.83              |
| 1:O:239:MET:HE2  | 1:O:239:MET:HA   | 1.60                     | 0.83              |
| 1:G:6:ILE:O      | 1:G:6:ILE:HG22   | 1.80                     | 0.81              |
| 1:L:312:ARG:HB3  | 1:L:312:ARG:NH1  | 1.94                     | 0.81              |
| 1:C:38:LEU:HB3   | 2:C:900:DKL:C6   | 2.12                     | 0.80              |
| 1:O:235:PHE:HE1  | 1:O:239:MET:HE3  | 1.45                     | 0.80              |
| 1:O:6:ILE:CG2    | 1:O:6:ILE:O      | 2.29                     | 0.79              |
| 1:B:305:VAL:HA   | 1:B:308:VAL:HG12 | 1.63                     | 0.79              |
| 1:K:312:ARG:HB3  | 1:K:312:ARG:HH11 | 1.45                     | 0.79              |
| 1:X:107:PRO:HG2  | 1:X:309:ALA:HB2  | 1.63                     | 0.79              |
| 1:K:307:ARG:HH11 | 1:K:311:ARG:NH2  | 1.79                     | 0.79              |
| 1:L:312:ARG:HB3  | 1:L:312:ARG:CZ   | 2.11                     | 0.79              |
| 1:V:114:SER:HG   | 5:V:900:DKF:C4   | 1.96                     | 0.79              |
| 1:I:307:ARG:HH11 | 1:I:311:ARG:HH21 | 1.29                     | 0.79              |
| 1:O:239:MET:SD   | 1:O:240:PRO:HD2  | 2.24                     | 0.78              |
| 1:L:132:ASP:HB3  | 1:L:312:ARG:HD2  | 1.66                     | 0.77              |
| 1:B:114:SER:HG   | 3:B:900:DKO:C4   | 1.96                     | 0.76              |
| 1:R:310:ASN:HD22 | 1:R:310:ASN:H    | 1.31                     | 0.76              |
| 1:K:311:ARG:HG2  | 1:K:311:ARG:HH11 | 1.51                     | 0.76              |
| 1:G:6:ILE:O      | 1:G:6:ILE:CG2    | 2.33                     | 0.75              |
| 1:I:211:PHE:HA   | 7:I:1079:HOH:O   | 1.85                     | 0.75              |
| 1:R:114:SER:HG   | 3:R:900:DKO:C4   | 2.00                     | 0.74              |
| 1:H:144:ARG:HD2  | 1:H:177:ASP:OD2  | 1.87                     | 0.74              |
| 1:O:125:THR:HB   | 1:O:238:THR:CG2  | 2.18                     | 0.74              |
| 1:S:146:PHE:CE1  | 1:S:175:MET:HE2  | 2.22                     | 0.73              |
| 1:R:114:SER:CB   | 3:R:900:DKO:C4   | 2.67                     | 0.72              |
| 1:V:38:LEU:HD21  | 1:V:223:LEU:HD21 | 1.70                     | 0.72              |
| 1:B:234:SER:O    | 1:B:238:THR:HG23 | 1.89                     | 0.72              |
| 1:U:62:ASP:OD2   | 1:U:95:LEU:HD22  | 1.90                     | 0.72              |
| 1:S:280:TYR:HB3  | 1:S:283:LEU:HD12 | 1.72                     | 0.72              |
| 1:S:170:ALA:O    | 1:S:174:GLN:HG3  | 1.91                     | 0.71              |
| 1:D:144:ARG:NH2  | 1:D:181:ASP:OD2  | 2.24                     | 0.71              |
| 1:B:114:SER:CB   | 3:B:900:DKO:C4   | 2.69                     | 0.70              |
| 1:E:6:ILE:HG21   | 1:E:98:GLN:HG3   | 1.73                     | 0.70              |
| 1:Y:190:THR:HG21 | 1:Y:211:PHE:HZ   | 1.56                     | 0.70              |
| 1:X:6:ILE:HG21   | 1:X:98:GLN:HB3   | 1.74                     | 0.70              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:T:234:SER:O    | 1:T:238:THR:CG2  | 2.40                     | 0.69              |
| 1:A:114:SER:HG   | 2:A:900:DKL:C4   | 2.05                     | 0.69              |
| 1:X:7:GLU:CD     | 1:X:7:GLU:H      | 2.01                     | 0.69              |
| 1:Q:125:THR:HG21 | 1:Q:235:PHE:HA   | 1.75                     | 0.69              |
| 1:O:6:ILE:O      | 1:O:6:ILE:HG23   | 1.91                     | 0.69              |
| 1:A:146:PHE:CE1  | 1:A:175:MET:HE2  | 2.29                     | 0.68              |
| 1:Y:105:ASP:HB3  | 7:Y:1069:HOH:O   | 1.92                     | 0.68              |
| 1:P:215:MET:HE1  | 1:P:220:LEU:HD22 | 1.74                     | 0.68              |
| 1:X:144:ARG:NH2  | 1:X:181:ASP:OD2  | 2.26                     | 0.68              |
| 1:A:7:GLU:HG3    | 7:A:1049:HOH:O   | 1.94                     | 0.68              |
| 1:E:144:ARG:NH2  | 1:E:181:ASP:OD2  | 2.27                     | 0.68              |
| 1:W:38:LEU:HD23  | 5:W:900:DKF:C7   | 2.24                     | 0.67              |
| 1:N:234:SER:O    | 1:N:238:THR:HG23 | 1.93                     | 0.67              |
| 1:P:185:GLU:HG2  | 1:P:185:GLU:O    | 1.93                     | 0.67              |
| 1:U:311:ARG:HD3  | 1:U:311:ARG:N    | 2.10                     | 0.67              |
| 1:K:311:ARG:HH11 | 1:K:311:ARG:CG   | 2.07                     | 0.66              |
| 1:Y:144:ARG:NH2  | 1:Y:181:ASP:OD2  | 2.29                     | 0.66              |
| 1:A:157:LYS:O    | 1:A:161:THR:HG23 | 1.96                     | 0.66              |
| 1:A:211:PHE:HA   | 7:A:1070:HOH:O   | 1.95                     | 0.66              |
| 1:D:86:GLU:OE2   | 1:D:126:ARG:NH2  | 2.27                     | 0.66              |
| 1:O:125:THR:HB   | 1:O:238:THR:HG21 | 1.77                     | 0.66              |
| 1:K:312:ARG:HH11 | 1:K:312:ARG:CB   | 2.08                     | 0.66              |
| 1:E:185:GLU:OE2  | 1:E:185:GLU:HA   | 1.94                     | 0.65              |
| 1:H:6:ILE:HG21   | 1:H:98:GLN:HG3   | 1.79                     | 0.65              |
| 1:I:307:ARG:NH1  | 1:I:311:ARG:HH21 | 1.92                     | 0.65              |
| 1:L:6:ILE:HG21   | 1:L:98:GLN:HG3   | 1.79                     | 0.65              |
| 1:F:144:ARG:NH2  | 1:F:181:ASP:OD2  | 2.29                     | 0.65              |
| 1:T:157:LYS:O    | 1:T:161:THR:HG23 | 1.97                     | 0.65              |
| 1:F:198:GLU:HG3  | 7:F:1116:HOH:O   | 1.97                     | 0.65              |
| 1:H:274:ASN:HD21 | 1:H:307:ARG:HH12 | 1.45                     | 0.64              |
| 1:Y:142:GLN:HA   | 1:Y:147:GLU:HG2  | 1.78                     | 0.64              |
| 1:T:170:ALA:O    | 1:T:174:GLN:HG3  | 1.97                     | 0.64              |
| 1:W:270:ARG:CD   | 7:W:1003:HOH:O   | 2.41                     | 0.64              |
| 1:Z:180:ALA:HA   | 1:Z:183:LEU:HD12 | 1.79                     | 0.64              |
| 1:P:114:SER:HG   | 6:P:900:DK9:C4   | 2.08                     | 0.63              |
| 1:P:215:MET:CE   | 1:P:220:LEU:HD22 | 2.28                     | 0.63              |
| 1:Z:144:ARG:NH2  | 1:Z:181:ASP:OD2  | 2.31                     | 0.63              |
| 1:H:114:SER:CB   | 4:H:900:DK6:C4   | 2.77                     | 0.63              |
| 1:O:215:MET:HE1  | 1:O:220:LEU:HD22 | 1.79                     | 0.63              |
| 1:S:310:ASN:OD1  | 1:S:310:ASN:N    | 2.28                     | 0.63              |
| 1:V:38:LEU:HB2   | 5:V:900:DKF:O3   | 1.98                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:W:121:ARG:HD2  | 1:W:136:LEU:HD13 | 1.81                     | 0.63              |
| 1:P:6:ILE:O      | 1:P:6:ILE:CG2    | 2.46                     | 0.63              |
| 1:I:274:ASN:HD21 | 1:I:311:ARG:NH2  | 1.97                     | 0.62              |
| 1:V:234:SER:O    | 1:V:238:THR:CG2  | 2.46                     | 0.62              |
| 1:O:124:ALA:CB   | 1:O:239:MET:HE1  | 2.29                     | 0.62              |
| 1:V:190:THR:HG21 | 1:V:211:PHE:CE2  | 2.35                     | 0.62              |
| 1:A:190:THR:HG21 | 1:A:211:PHE:CZ   | 2.35                     | 0.62              |
| 1:G:144:ARG:NH2  | 1:G:181:ASP:OD2  | 2.32                     | 0.62              |
| 1:W:236:TYR:OH   | 1:W:264:VAL:HG22 | 2.00                     | 0.62              |
| 1:B:243:PRO:CB   | 1:B:308:VAL:HG23 | 2.29                     | 0.61              |
| 1:N:215:MET:HE1  | 1:N:220:LEU:HD13 | 1.82                     | 0.61              |
| 1:R:78:ALA:HB1   | 1:R:215:MET:HA   | 1.80                     | 0.61              |
| 1:Z:192:TRP:CH2  | 4:Z:900:DK6:C6   | 2.81                     | 0.61              |
| 1:M:6:ILE:HG21   | 1:M:98:GLN:HG3   | 1.80                     | 0.61              |
| 1:P:220:LEU:C    | 1:P:220:LEU:HD12 | 2.25                     | 0.61              |
| 1:Y:190:THR:HG21 | 1:Y:211:PHE:CZ   | 2.34                     | 0.61              |
| 1:B:308:VAL:O    | 1:B:308:VAL:HG13 | 1.99                     | 0.61              |
| 1:I:242:ILE:HG22 | 1:I:312:ARG:HH22 | 1.64                     | 0.61              |
| 1:A:6:ILE:HG22   | 1:A:6:ILE:O      | 2.00                     | 0.61              |
| 1:J:142:GLN:N    | 1:J:143:PRO:HD3  | 2.15                     | 0.61              |
| 1:X:6:ILE:HG21   | 1:X:98:GLN:CB    | 2.31                     | 0.61              |
| 1:I:6:ILE:HG21   | 1:I:98:GLN:HG3   | 1.82                     | 0.61              |
| 1:I:307:ARG:NH1  | 1:I:311:ARG:NH2  | 2.41                     | 0.61              |
| 1:X:6:ILE:O      | 1:X:6:ILE:HG22   | 2.00                     | 0.61              |
| 1:S:274:ASN:C    | 1:S:274:ASN:HD22 | 2.09                     | 0.60              |
| 1:A:157:LYS:O    | 1:A:161:THR:CG2  | 2.49                     | 0.60              |
| 1:Z:109:VAL:HG21 | 1:Z:305:VAL:HG22 | 1.82                     | 0.60              |
| 1:G:190:THR:HG21 | 1:G:211:PHE:CZ   | 2.36                     | 0.60              |
| 1:F:280:TYR:HB3  | 1:F:283:LEU:HD12 | 1.84                     | 0.60              |
| 1:S:234:SER:O    | 1:S:238:THR:HG23 | 2.00                     | 0.60              |
| 1:U:311:ARG:HG2  | 1:U:311:ARG:HH11 | 1.67                     | 0.60              |
| 1:W:38:LEU:HB3   | 5:W:900:DKF:O3   | 2.00                     | 0.60              |
| 1:M:144:ARG:HD2  | 1:M:177:ASP:OD2  | 2.02                     | 0.60              |
| 1:R:280:TYR:HB3  | 1:R:283:LEU:HD12 | 1.84                     | 0.60              |
| 1:F:142:GLN:HA   | 1:F:147:GLU:HG3  | 1.83                     | 0.60              |
| 1:F:6:ILE:HG21   | 1:F:98:GLN:HG3   | 1.84                     | 0.60              |
| 1:O:107:PRO:HG3  | 1:O:309:ALA:HA   | 1.84                     | 0.60              |
| 1:O:157:LYS:O    | 1:O:161:THR:HG23 | 2.02                     | 0.59              |
| 1:C:121:ARG:HG3  | 1:C:235:PHE:CZ   | 2.37                     | 0.59              |
| 1:W:23:GLU:OE2   | 1:Z:205:LYS:NZ   | 2.35                     | 0.59              |
| 1:W:234:SER:O    | 1:W:238:THR:HG23 | 2.03                     | 0.59              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Q:6:ILE:HG21   | 1:Q:98:GLN:HG3   | 1.85                     | 0.59              |
| 1:W:270:ARG:CG   | 7:W:1003:HOH:O   | 2.51                     | 0.59              |
| 1:M:114:SER:HB2  | 1:M:285:HIS:HE2  | 1.67                     | 0.59              |
| 1:E:274:ASN:HD21 | 1:E:307:ARG:HH12 | 1.51                     | 0.59              |
| 1:J:170:ALA:O    | 1:J:174:GLN:HG3  | 2.03                     | 0.59              |
| 1:K:114:SER:HG   | 5:K:900:DKF:C4   | 2.09                     | 0.59              |
| 1:R:186:ASP:O    | 1:R:197:LYS:NZ   | 2.36                     | 0.58              |
| 1:B:6:ILE:HG21   | 1:B:98:GLN:HG3   | 1.83                     | 0.58              |
| 1:I:40:GLU:HA    | 1:I:209:ASN:ND2  | 2.18                     | 0.58              |
| 1:S:215:MET:HE1  | 1:S:220:LEU:HD13 | 1.85                     | 0.58              |
| 1:L:144:ARG:HD2  | 1:L:177:ASP:OD2  | 2.03                     | 0.58              |
| 1:U:215:MET:HE1  | 1:U:220:LEU:HD22 | 1.83                     | 0.58              |
| 1:N:144:ARG:HD2  | 1:N:177:ASP:OD2  | 2.04                     | 0.58              |
| 1:Z:304:PHE:O    | 1:Z:308:VAL:HG13 | 2.03                     | 0.58              |
| 1:G:262:LYS:O    | 1:G:266:GLU:HG2  | 2.04                     | 0.57              |
| 1:R:10:SER:HB2   | 1:R:17:ILE:HD11  | 1.85                     | 0.57              |
| 1:J:114:SER:OG   | 5:J:900:DKF:O4   | 2.22                     | 0.57              |
| 1:B:234:SER:O    | 1:B:238:THR:CG2  | 2.52                     | 0.57              |
| 1:C:121:ARG:CG   | 1:C:235:PHE:CE1  | 2.87                     | 0.57              |
| 1:C:142:GLN:N    | 1:C:143:PRO:CD   | 2.68                     | 0.57              |
| 1:L:132:ASP:CB   | 1:L:312:ARG:HD2  | 2.35                     | 0.57              |
| 1:J:114:SER:HB2  | 1:J:285:HIS:NE2  | 2.20                     | 0.57              |
| 1:S:114:SER:HG   | 4:S:900:DK6:C4   | 2.16                     | 0.57              |
| 1:Z:290:GLU:HB2  | 1:Z:293:SER:OG   | 2.05                     | 0.57              |
| 1:Q:144:ARG:HD2  | 1:Q:177:ASP:OD2  | 2.04                     | 0.57              |
| 1:S:280:TYR:CB   | 1:S:283:LEU:HD12 | 2.35                     | 0.56              |
| 1:M:114:SER:OG   | 5:M:900:DKF:O3   | 2.22                     | 0.56              |
| 1:Z:6:ILE:HG21   | 1:Z:98:GLN:HG3   | 1.88                     | 0.56              |
| 1:B:154:THR:O    | 1:B:157:LYS:HE3  | 2.06                     | 0.56              |
| 1:J:142:GLN:HE21 | 1:J:260:GLY:HA2  | 1.70                     | 0.56              |
| 1:K:86:GLU:OE1   | 1:K:126:ARG:NH2  | 2.38                     | 0.56              |
| 1:L:142:GLN:N    | 1:L:143:PRO:CD   | 2.68                     | 0.56              |
| 1:L:164:THR:HB   | 7:L:1130:HOH:O   | 2.06                     | 0.56              |
| 1:M:40:GLU:HA    | 1:M:209:ASN:OD1  | 2.05                     | 0.56              |
| 1:Q:215:MET:CE   | 1:Q:220:LEU:HD13 | 2.35                     | 0.56              |
| 1:N:6:ILE:HG21   | 1:N:98:GLN:HG3   | 1.88                     | 0.56              |
| 1:A:175:MET:CE   | 1:A:220:LEU:CD1  | 2.84                     | 0.56              |
| 1:Y:234:SER:O    | 1:Y:238:THR:HG23 | 2.06                     | 0.56              |
| 1:E:114:SER:OG   | 5:E:900:DKF:O3   | 2.22                     | 0.56              |
| 1:P:142:GLN:N    | 1:P:143:PRO:CD   | 2.69                     | 0.56              |
| 1:T:114:SER:OG   | 2:T:900:DKL:O4   | 2.23                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:O:142:GLN:N    | 1:O:143:PRO:CD   | 2.69                     | 0.56              |
| 1:X:107:PRO:HG2  | 1:X:309:ALA:HB1  | 1.87                     | 0.56              |
| 1:E:142:GLN:HA   | 1:E:147:GLU:HG2  | 1.87                     | 0.56              |
| 1:J:146:PHE:CE1  | 1:J:175:MET:HE2  | 2.42                     | 0.56              |
| 1:K:40:GLU:HA    | 1:K:209:ASN:OD1  | 2.06                     | 0.55              |
| 1:K:270:ARG:HD2  | 1:K:270:ARG:C    | 2.31                     | 0.55              |
| 1:X:121:ARG:HD2  | 1:X:136:LEU:HD13 | 1.87                     | 0.55              |
| 2:A:900:DKL:C10  | 2:A:900:DKL:C6   | 2.83                     | 0.55              |
| 1:E:114:SER:CB   | 5:E:900:DKF:C4   | 2.81                     | 0.55              |
| 5:J:900:DKF:C9   | 5:J:900:DKF:C5   | 2.85                     | 0.55              |
| 1:O:144:ARG:NH2  | 1:O:181:ASP:OD2  | 2.39                     | 0.55              |
| 1:O:239:MET:SD   | 1:O:240:PRO:CD   | 2.95                     | 0.55              |
| 1:A:144:ARG:NH2  | 1:A:181:ASP:OD2  | 2.40                     | 0.55              |
| 1:E:146:PHE:CE1  | 1:E:175:MET:HE2  | 2.41                     | 0.55              |
| 1:A:121:ARG:HD2  | 1:A:136:LEU:HD13 | 1.88                     | 0.55              |
| 1:O:124:ALA:HB1  | 1:O:239:MET:HE1  | 1.87                     | 0.55              |
| 1:B:274:ASN:HB2  | 1:K:169:GLU:OE2  | 2.07                     | 0.55              |
| 1:G:38:LEU:HB3   | 5:G:900:DKF:O4   | 2.05                     | 0.55              |
| 1:R:4:GLN:NE2    | 1:R:23:GLU:OE1   | 2.32                     | 0.55              |
| 1:R:6:ILE:HG21   | 1:R:98:GLN:HG3   | 1.88                     | 0.55              |
| 1:R:239:MET:HE3  | 1:R:240:PRO:HD2  | 1.89                     | 0.55              |
| 1:V:142:GLN:HA   | 1:V:147:GLU:HG2  | 1.88                     | 0.55              |
| 1:Z:134:LEU:HD22 | 1:Z:239:MET:HE1  | 1.89                     | 0.55              |
| 1:W:62:ASP:OD2   | 1:W:92:GLU:OE2   | 2.24                     | 0.55              |
| 1:K:6:ILE:HG21   | 1:K:98:GLN:HG3   | 1.88                     | 0.55              |
| 1:N:142:GLN:N    | 1:N:143:PRO:CD   | 2.70                     | 0.55              |
| 1:E:151:ASP:OD1  | 1:E:154:THR:OG1  | 2.24                     | 0.55              |
| 5:G:900:DKF:C9   | 5:G:900:DKF:C5   | 2.85                     | 0.55              |
| 1:P:220:LEU:HD12 | 1:P:220:LEU:O    | 2.07                     | 0.54              |
| 1:H:154:THR:O    | 1:H:157:LYS:CE   | 2.55                     | 0.54              |
| 1:I:38:LEU:HD11  | 1:I:219:PHE:CE2  | 2.42                     | 0.54              |
| 1:C:10:SER:HB2   | 1:C:17:ILE:HD11  | 1.89                     | 0.54              |
| 1:F:38:LEU:HD11  | 1:F:219:PHE:CE1  | 2.42                     | 0.54              |
| 1:K:274:ASN:HD21 | 1:K:307:ARG:HH12 | 1.54                     | 0.54              |
| 2:Q:900:DKL:C10  | 2:Q:900:DKL:C5   | 2.85                     | 0.54              |
| 1:R:142:GLN:N    | 1:R:143:PRO:CD   | 2.71                     | 0.54              |
| 1:O:190:THR:HG21 | 1:O:211:PHE:CE2  | 2.42                     | 0.54              |
| 1:B:170:ALA:O    | 1:B:174:GLN:HG3  | 2.08                     | 0.54              |
| 1:A:190:THR:HG21 | 1:A:211:PHE:CE2  | 2.42                     | 0.54              |
| 1:F:144:ARG:HH22 | 1:F:181:ASP:CG   | 2.16                     | 0.54              |
| 1:N:144:ARG:HH11 | 1:N:177:ASP:CG   | 2.16                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Q:243:PRO:HG2  | 1:Q:308:VAL:HG22 | 1.88                     | 0.54              |
| 1:R:89:ILE:HD11  | 1:R:226:ILE:CD1  | 2.38                     | 0.54              |
| 1:T:176:PHE:CD1  | 2:T:900:DKL:C9   | 2.90                     | 0.54              |
| 1:B:142:GLN:N    | 1:B:143:PRO:CD   | 2.71                     | 0.54              |
| 1:J:78:ALA:HB1   | 1:J:215:MET:HA   | 1.90                     | 0.54              |
| 1:Q:142:GLN:HA   | 1:Q:147:GLU:HG2  | 1.90                     | 0.54              |
| 1:X:142:GLN:N    | 1:X:143:PRO:CD   | 2.70                     | 0.54              |
| 1:P:262:LYS:O    | 1:P:266:GLU:HG3  | 2.09                     | 0.53              |
| 1:C:150:LEU:HA   | 1:C:174:GLN:HB3  | 1.90                     | 0.53              |
| 1:D:62:ASP:OD2   | 1:D:92:GLU:OE2   | 2.26                     | 0.53              |
| 5:Y:900:DKF:C9   | 5:Y:900:DKF:C5   | 2.86                     | 0.53              |
| 1:B:38:LEU:HD11  | 1:B:219:PHE:HE2  | 1.73                     | 0.53              |
| 1:G:175:MET:CE   | 1:G:220:LEU:HD13 | 2.39                     | 0.53              |
| 1:O:7:GLU:CD     | 1:O:7:GLU:H      | 2.15                     | 0.53              |
| 1:P:114:SER:OG   | 6:P:900:DK9:O3   | 2.25                     | 0.53              |
| 1:S:175:MET:HE1  | 1:S:220:LEU:HD12 | 1.90                     | 0.53              |
| 1:X:211:PHE:C    | 1:X:211:PHE:CD2  | 2.85                     | 0.53              |
| 1:X:4:GLN:NE2    | 1:X:23:GLU:OE1   | 2.41                     | 0.53              |
| 1:E:114:SER:OG   | 5:E:900:DKF:O4   | 2.23                     | 0.53              |
| 1:J:142:GLN:O    | 1:J:256:ASP:HB2  | 2.09                     | 0.53              |
| 1:N:121:ARG:HG3  | 1:N:235:PHE:CE1  | 2.43                     | 0.53              |
| 1:R:252:ASP:CG   | 1:R:285:HIS:HA   | 2.34                     | 0.53              |
| 1:U:276:GLU:OE2  | 1:U:278:HIS:NE2  | 2.27                     | 0.53              |
| 1:H:40:GLU:HA    | 1:H:209:ASN:OD1  | 2.09                     | 0.53              |
| 1:Y:114:SER:OG   | 5:Y:900:DKF:O4   | 2.27                     | 0.53              |
| 1:B:46:LEU:C     | 1:B:46:LEU:HD12  | 2.34                     | 0.53              |
| 1:V:190:THR:HG21 | 1:V:211:PHE:HE2  | 1.74                     | 0.53              |
| 1:G:125:THR:HG22 | 1:G:235:PHE:HA   | 1.90                     | 0.52              |
| 1:U:311:ARG:HD3  | 1:U:311:ARG:H    | 1.73                     | 0.52              |
| 1:V:274:ASN:HD21 | 1:V:307:ARG:HH12 | 1.58                     | 0.52              |
| 1:Y:234:SER:O    | 1:Y:238:THR:CG2  | 2.57                     | 0.52              |
| 1:T:144:ARG:NH2  | 1:T:181:ASP:OD2  | 2.42                     | 0.52              |
| 1:Q:144:ARG:NH2  | 1:Q:181:ASP:OD2  | 2.41                     | 0.52              |
| 1:S:311:ARG:N    | 1:S:311:ARG:CD   | 2.72                     | 0.52              |
| 1:F:215:MET:HE2  | 1:F:220:LEU:HD12 | 1.91                     | 0.52              |
| 1:W:48:MET:O     | 1:W:52:LEU:HG    | 2.10                     | 0.52              |
| 1:U:180:ALA:HA   | 1:U:183:LEU:HD12 | 1.90                     | 0.52              |
| 1:J:211:PHE:C    | 1:J:211:PHE:CD2  | 2.87                     | 0.52              |
| 1:K:292:GLU:OE2  | 1:K:292:GLU:N    | 2.38                     | 0.52              |
| 1:S:152:HIS:HE1  | 7:S:1066:HOH:O   | 1.92                     | 0.52              |
| 1:H:304:PHE:O    | 1:H:308:VAL:HG13 | 2.09                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:38:LEU:HD11  | 1:C:219:PHE:HE2  | 1.73                     | 0.51              |
| 1:A:6:ILE:CG2    | 1:A:98:GLN:HB3   | 2.40                     | 0.51              |
| 1:A:142:GLN:N    | 1:A:143:PRO:CD   | 2.73                     | 0.51              |
| 1:G:220:LEU:HD12 | 1:G:220:LEU:C    | 2.35                     | 0.51              |
| 1:W:190:THR:HG21 | 1:W:211:PHE:HZ   | 1.75                     | 0.51              |
| 1:Z:159:MET:HE2  | 1:Z:221:GLN:HG2  | 1.91                     | 0.51              |
| 1:C:38:LEU:CB    | 2:C:900:DKL:C6   | 2.86                     | 0.51              |
| 1:M:144:ARG:NH2  | 1:M:181:ASP:OD2  | 2.43                     | 0.51              |
| 1:O:239:MET:O    | 1:O:273:HIS:HE1  | 1.93                     | 0.51              |
| 1:E:10:SER:HB2   | 1:E:17:ILE:HD11  | 1.93                     | 0.51              |
| 1:I:6:ILE:O      | 1:I:19:ALA:HB3   | 2.10                     | 0.51              |
| 1:P:190:THR:HG21 | 1:P:211:PHE:CE2  | 2.45                     | 0.51              |
| 1:R:310:ASN:HD22 | 1:R:310:ASN:N    | 1.94                     | 0.51              |
| 1:D:6:ILE:HG21   | 1:D:98:GLN:HG3   | 1.92                     | 0.51              |
| 1:K:311:ARG:CG   | 1:K:311:ARG:NH1  | 2.71                     | 0.51              |
| 1:S:142:GLN:N    | 1:S:143:PRO:CD   | 2.74                     | 0.51              |
| 1:N:164:THR:HB   | 7:N:1050:HOH:O   | 2.11                     | 0.51              |
| 1:P:6:ILE:O      | 1:P:6:ILE:HG22   | 2.10                     | 0.51              |
| 1:Z:274:ASN:C    | 1:Z:274:ASN:OD1  | 2.53                     | 0.51              |
| 1:A:113:HIS:HA   | 1:A:137:CYS:O    | 2.11                     | 0.51              |
| 1:G:134:LEU:HD11 | 1:G:136:LEU:HD21 | 1.93                     | 0.51              |
| 1:G:308:VAL:O    | 1:G:311:ARG:HD2  | 2.11                     | 0.51              |
| 1:O:142:GLN:HA   | 1:O:147:GLU:HG2  | 1.93                     | 0.51              |
| 1:Q:6:ILE:HG21   | 1:Q:98:GLN:CG    | 2.41                     | 0.51              |
| 1:W:190:THR:HG21 | 1:W:211:PHE:CZ   | 2.46                     | 0.51              |
| 1:D:234:SER:O    | 1:D:238:THR:HG23 | 2.11                     | 0.50              |
| 1:H:146:PHE:CE1  | 1:H:175:MET:HE2  | 2.46                     | 0.50              |
| 1:Y:89:ILE:HD11  | 1:Y:226:ILE:CD1  | 2.41                     | 0.50              |
| 1:W:311:ARG:HG3  | 1:W:311:ARG:HH11 | 1.76                     | 0.50              |
| 1:Z:241:ASN:C    | 1:Z:241:ASN:HD22 | 2.19                     | 0.50              |
| 1:G:190:THR:HG21 | 1:G:211:PHE:CE2  | 2.47                     | 0.50              |
| 1:E:159:MET:SD   | 1:E:218:ARG:HA   | 2.52                     | 0.50              |
| 1:L:4:GLN:NE2    | 1:L:23:GLU:OE1   | 2.41                     | 0.50              |
| 1:E:146:PHE:CZ   | 1:E:175:MET:HE2  | 2.47                     | 0.50              |
| 1:O:124:ALA:HB3  | 1:O:239:MET:HE1  | 1.94                     | 0.50              |
| 1:S:62:ASP:OD2   | 1:S:92:GLU:OE2   | 2.29                     | 0.50              |
| 1:D:40:GLU:HA    | 1:D:209:ASN:OD1  | 2.12                     | 0.50              |
| 1:F:215:MET:HE1  | 1:F:223:LEU:HD12 | 1.92                     | 0.50              |
| 1:H:192:TRP:CH2  | 4:H:900:DK6:C6   | 2.94                     | 0.50              |
| 1:L:28:PRO:HA    | 1:L:56:GLY:O     | 2.12                     | 0.50              |
| 1:T:6:ILE:HG21   | 1:T:98:GLN:HG3   | 1.93                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:T:114:SER:HB2  | 1:T:285:HIS:NE2  | 2.26                     | 0.50              |
| 1:G:40:GLU:HA    | 1:G:209:ASN:OD1  | 2.12                     | 0.50              |
| 1:Q:38:LEU:HD11  | 1:Q:219:PHE:HE2  | 1.76                     | 0.50              |
| 1:U:114:SER:HG   | 5:U:900:DKF:C4   | 2.17                     | 0.50              |
| 1:Y:118:MET:HE2  | 1:Y:140:VAL:HG21 | 1.94                     | 0.50              |
| 1:F:121:ARG:O    | 1:F:125:THR:HG23 | 2.12                     | 0.49              |
| 1:Q:38:LEU:HD11  | 1:Q:219:PHE:CE2  | 2.47                     | 0.49              |
| 1:V:144:ARG:NH2  | 1:V:181:ASP:OD2  | 2.45                     | 0.49              |
| 1:A:223:LEU:O    | 1:A:226:ILE:HG22 | 2.11                     | 0.49              |
| 1:B:38:LEU:HD11  | 1:B:219:PHE:CE2  | 2.47                     | 0.49              |
| 1:B:307:ARG:C    | 1:B:309:ALA:H    | 2.20                     | 0.49              |
| 1:F:40:GLU:HA    | 1:F:209:ASN:OD1  | 2.12                     | 0.49              |
| 1:G:38:LEU:CB    | 5:G:900:DKF:O4   | 2.60                     | 0.49              |
| 1:I:38:LEU:HD11  | 1:I:219:PHE:HE2  | 1.76                     | 0.49              |
| 1:O:50:SER:HB2   | 1:P:46:LEU:HD23  | 1.94                     | 0.49              |
| 1:E:121:ARG:HD3  | 1:E:230:ALA:HB1  | 1.94                     | 0.49              |
| 1:R:36:HIS:CE1   | 1:R:64:HIS:CD2   | 3.00                     | 0.49              |
| 1:V:4:GLN:HB2    | 1:V:21:ALA:HB3   | 1.94                     | 0.49              |
| 1:L:312:ARG:NH1  | 1:L:312:ARG:CB   | 2.72                     | 0.49              |
| 1:R:7:GLU:CD     | 1:R:7:GLU:N      | 2.70                     | 0.49              |
| 1:S:175:MET:CE   | 1:S:220:LEU:CD1  | 2.91                     | 0.49              |
| 1:Z:109:VAL:HA   | 1:Z:133:GLY:O    | 2.12                     | 0.49              |
| 1:A:168:PRO:HD2  | 1:A:171:LEU:HD12 | 1.94                     | 0.49              |
| 1:G:139:ILE:HD12 | 1:G:139:ILE:H    | 1.77                     | 0.49              |
| 1:Q:215:MET:HE1  | 1:Q:220:LEU:CD1  | 2.42                     | 0.49              |
| 1:S:38:LEU:HB3   | 4:S:900:DK6:O3   | 2.12                     | 0.49              |
| 1:U:190:THR:O    | 1:U:193:VAL:HG23 | 2.12                     | 0.49              |
| 1:X:215:MET:HE1  | 1:X:220:LEU:HD13 | 1.93                     | 0.49              |
| 1:W:179:PHE:HA   | 1:W:253:PRO:CB   | 2.42                     | 0.49              |
| 1:Z:40:GLU:HA    | 1:Z:209:ASN:OD1  | 2.13                     | 0.49              |
| 1:A:144:ARG:HD2  | 1:A:177:ASP:OD2  | 2.12                     | 0.49              |
| 1:F:142:GLN:HA   | 1:F:147:GLU:CG   | 2.42                     | 0.49              |
| 1:E:142:GLN:N    | 1:E:143:PRO:CD   | 2.75                     | 0.49              |
| 1:I:114:SER:OG   | 5:I:900:DKF:O4   | 2.30                     | 0.49              |
| 1:K:114:SER:OG   | 5:K:900:DKF:O4   | 2.29                     | 0.49              |
| 1:P:40:GLU:HA    | 1:P:209:ASN:OD1  | 2.12                     | 0.49              |
| 1:Q:107:PRO:HB3  | 1:Q:312:ARG:HG3  | 1.94                     | 0.49              |
| 1:I:41:HIS:HD2   | 1:I:209:ASN:ND2  | 2.11                     | 0.49              |
| 1:M:114:SER:HB2  | 1:M:285:HIS:NE2  | 2.28                     | 0.49              |
| 1:O:141:ALA:C    | 1:O:143:PRO:HD3  | 2.38                     | 0.49              |
| 1:T:28:PRO:HA    | 1:T:56:GLY:O     | 2.13                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:U:89:ILE:HD11  | 1:U:226:ILE:HD12 | 1.95                     | 0.49              |
| 1:N:141:ALA:C    | 1:N:143:PRO:HD3  | 2.38                     | 0.49              |
| 1:W:6:ILE:HG21   | 1:W:98:GLN:HG3   | 1.94                     | 0.49              |
| 1:C:38:LEU:HD23  | 2:C:900:DKL:C6   | 2.42                     | 0.48              |
| 1:P:47:HIS:CE1   | 1:P:298:GLU:OE1  | 2.66                     | 0.48              |
| 1:F:48:MET:O     | 1:F:52:LEU:HG    | 2.12                     | 0.48              |
| 1:G:157:LYS:O    | 1:G:161:THR:CG2  | 2.61                     | 0.48              |
| 1:R:40:GLU:HA    | 1:R:209:ASN:OD1  | 2.14                     | 0.48              |
| 1:U:311:ARG:HG2  | 1:U:311:ARG:NH1  | 2.28                     | 0.48              |
| 1:X:142:GLN:HA   | 1:X:147:GLU:HG2  | 1.96                     | 0.48              |
| 1:R:97:GLN:NE2   | 1:R:97:GLN:HA    | 2.28                     | 0.48              |
| 1:S:274:ASN:C    | 1:S:274:ASN:ND2  | 2.70                     | 0.48              |
| 1:X:175:MET:HE1  | 1:X:220:LEU:HD12 | 1.95                     | 0.48              |
| 1:D:238:THR:O    | 1:D:239:MET:C    | 2.55                     | 0.48              |
| 1:K:307:ARG:HH11 | 1:K:311:ARG:HH22 | 1.59                     | 0.48              |
| 1:N:6:ILE:O      | 1:N:19:ALA:HB3   | 2.14                     | 0.48              |
| 1:P:4:GLN:NE2    | 1:P:23:GLU:OE1   | 2.35                     | 0.48              |
| 1:G:6:ILE:HG23   | 1:G:98:GLN:HG3   | 1.94                     | 0.48              |
| 1:U:142:GLN:N    | 1:U:143:PRO:CD   | 2.77                     | 0.48              |
| 1:X:211:PHE:C    | 1:X:211:PHE:HD2  | 2.20                     | 0.48              |
| 1:C:37:GLY:HA2   | 1:C:115:TRP:HB3  | 1.94                     | 0.48              |
| 1:C:38:LEU:CD2   | 2:C:900:DKL:C6   | 2.92                     | 0.48              |
| 1:C:262:LYS:HE2  | 1:C:279:LEU:CD2  | 2.43                     | 0.48              |
| 1:J:142:GLN:NE2  | 1:J:260:GLY:HA2  | 2.29                     | 0.48              |
| 1:A:227:TYR:C    | 1:A:227:TYR:CD2  | 2.92                     | 0.48              |
| 1:G:4:GLN:NE2    | 1:G:23:GLU:OE1   | 2.45                     | 0.48              |
| 1:L:89:ILE:HD11  | 1:L:226:ILE:CD1  | 2.44                     | 0.48              |
| 1:O:211:PHE:HA   | 7:O:1033:HOH:O   | 2.14                     | 0.48              |
| 1:T:238:THR:O    | 1:T:239:MET:C    | 2.55                     | 0.48              |
| 1:A:7:GLU:CD     | 1:A:7:GLU:H      | 2.22                     | 0.48              |
| 1:O:125:THR:O    | 1:O:125:THR:OG1  | 2.24                     | 0.48              |
| 1:O:144:ARG:HH11 | 1:O:177:ASP:CG   | 2.22                     | 0.48              |
| 1:M:93:LEU:O     | 1:M:96:GLN:HB2   | 2.14                     | 0.48              |
| 1:M:142:GLN:N    | 1:M:143:PRO:CD   | 2.77                     | 0.48              |
| 1:O:6:ILE:O      | 1:O:6:ILE:HG22   | 2.12                     | 0.48              |
| 1:R:159:MET:SD   | 1:R:218:ARG:HA   | 2.54                     | 0.48              |
| 1:T:79:ASP:OD1   | 1:T:216:SER:OG   | 2.25                     | 0.48              |
| 1:X:114:SER:OG   | 2:X:900:DKL:O3   | 2.28                     | 0.48              |
| 1:I:113:HIS:HA   | 1:I:137:CYS:O    | 2.14                     | 0.48              |
| 1:X:144:ARG:HH22 | 1:X:181:ASP:CG   | 2.22                     | 0.48              |
| 1:B:144:ARG:HD2  | 1:B:177:ASP:OD2  | 2.14                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:L:109:VAL:HG21 | 1:L:305:VAL:HG22 | 1.95                     | 0.47              |
| 1:M:107:PRO:HG3  | 1:M:309:ALA:CB   | 2.44                     | 0.47              |
| 1:N:215:MET:HE1  | 1:N:220:LEU:CD1  | 2.44                     | 0.47              |
| 1:O:62:ASP:OD2   | 1:O:95:LEU:HD22  | 2.14                     | 0.47              |
| 1:S:175:MET:HE3  | 1:S:220:LEU:HD11 | 1.96                     | 0.47              |
| 1:U:38:LEU:HB3   | 5:U:900:DKF:O4   | 2.14                     | 0.47              |
| 1:C:142:GLN:N    | 1:C:143:PRO:HD2  | 2.30                     | 0.47              |
| 1:M:211:PHE:CZ   | 5:M:900:DKF:C9   | 2.97                     | 0.47              |
| 1:O:220:LEU:CD1  | 1:O:220:LEU:C    | 2.87                     | 0.47              |
| 1:O:241:ASN:HA   | 7:O:1061:HOH:O   | 2.14                     | 0.47              |
| 1:S:53:LEU:CD1   | 1:T:46:LEU:HD23  | 2.45                     | 0.47              |
| 1:T:119:ILE:O    | 1:T:123:MET:HG3  | 2.15                     | 0.47              |
| 1:T:142:GLN:HA   | 1:T:147:GLU:CG   | 2.45                     | 0.47              |
| 1:U:89:ILE:HD11  | 1:U:226:ILE:CD1  | 2.45                     | 0.47              |
| 1:P:141:ALA:C    | 1:P:143:PRO:HD3  | 2.40                     | 0.47              |
| 1:G:4:GLN:HA     | 7:G:1085:HOH:O   | 2.15                     | 0.47              |
| 1:G:7:GLU:HA     | 1:G:17:ILE:O     | 2.15                     | 0.47              |
| 1:U:28:PRO:HA    | 1:U:56:GLY:O     | 2.15                     | 0.47              |
| 1:U:175:MET:CE   | 1:U:220:LEU:HD13 | 2.45                     | 0.47              |
| 1:Y:7:GLU:HA     | 1:Y:17:ILE:O     | 2.15                     | 0.47              |
| 1:Z:142:GLN:N    | 1:Z:143:PRO:CD   | 2.78                     | 0.47              |
| 1:A:121:ARG:NH1  | 7:A:1002:HOH:O   | 2.33                     | 0.47              |
| 1:G:118:MET:HE2  | 1:G:140:VAL:HG21 | 1.97                     | 0.47              |
| 1:G:220:LEU:C    | 1:G:220:LEU:CD1  | 2.88                     | 0.47              |
| 1:K:107:PRO:HB3  | 1:K:312:ARG:CD   | 2.32                     | 0.47              |
| 1:K:151:ASP:OD1  | 1:K:153:LYS:HB2  | 2.14                     | 0.47              |
| 1:L:14:ARG:NH1   | 1:L:76:VAL:HG11  | 2.30                     | 0.47              |
| 1:P:150:LEU:HD22 | 1:P:175:MET:HE3  | 1.97                     | 0.47              |
| 1:S:46:LEU:HD13  | 1:T:53:LEU:CD1   | 2.45                     | 0.47              |
| 1:I:307:ARG:HH11 | 1:I:311:ARG:HH22 | 1.55                     | 0.47              |
| 1:Q:114:SER:HB2  | 1:Q:285:HIS:NE2  | 2.29                     | 0.47              |
| 1:R:151:ASP:OD2  | 1:R:154:THR:OG1  | 2.32                     | 0.47              |
| 1:U:47:HIS:HD2   | 1:V:54:ASP:OD1   | 1.98                     | 0.47              |
| 1:C:40:GLU:HA    | 1:C:209:ASN:OD1  | 2.15                     | 0.47              |
| 1:H:154:THR:O    | 1:H:157:LYS:HE3  | 2.15                     | 0.47              |
| 1:H:192:TRP:CZ3  | 4:H:900:DK6:C6   | 2.97                     | 0.47              |
| 1:N:142:GLN:HA   | 1:N:147:GLU:HG3  | 1.96                     | 0.47              |
| 1:N:152:HIS:HE1  | 7:N:1033:HOH:O   | 1.98                     | 0.47              |
| 1:D:192:TRP:HH2  | 4:D:900:DK6:C6   | 2.28                     | 0.47              |
| 1:I:31:VAL:HG11  | 1:I:108:TRP:CZ3  | 2.51                     | 0.46              |
| 1:S:215:MET:CE   | 1:S:220:LEU:HB2  | 2.45                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:V:293:SER:O    | 1:V:294:ARG:C    | 2.58                     | 0.46              |
| 1:Z:7:GLU:HA     | 1:Z:17:ILE:O     | 2.15                     | 0.46              |
| 1:B:243:PRO:HB2  | 1:B:308:VAL:CG2  | 2.36                     | 0.46              |
| 1:K:89:ILE:HD11  | 1:K:226:ILE:HD12 | 1.96                     | 0.46              |
| 1:Z:239:MET:SD   | 1:Z:240:PRO:HD2  | 2.55                     | 0.46              |
| 1:H:7:GLU:HA     | 1:H:17:ILE:O     | 2.15                     | 0.46              |
| 1:N:7:GLU:HA     | 1:N:17:ILE:O     | 2.15                     | 0.46              |
| 1:R:185:GLU:HG3  | 1:R:185:GLU:O    | 2.15                     | 0.46              |
| 1:A:141:ALA:C    | 1:A:143:PRO:HD3  | 2.41                     | 0.46              |
| 1:G:114:SER:HB2  | 1:G:285:HIS:HE2  | 1.81                     | 0.46              |
| 1:J:142:GLN:HA   | 1:J:147:GLU:HG2  | 1.97                     | 0.46              |
| 1:N:36:HIS:ND1   | 1:N:37:GLY:O     | 2.45                     | 0.46              |
| 1:N:114:SER:HB2  | 1:N:285:HIS:HE2  | 1.79                     | 0.46              |
| 1:Y:144:ARG:HH22 | 1:Y:181:ASP:CG   | 2.24                     | 0.46              |
| 1:Z:142:GLN:NE2  | 7:Z:1002:HOH:O   | 2.47                     | 0.46              |
| 1:F:42:SER:HB2   | 1:F:61:ALA:HB1   | 1.97                     | 0.46              |
| 1:G:46:LEU:C     | 1:G:46:LEU:HD23  | 2.40                     | 0.46              |
| 1:I:159:MET:SD   | 1:I:218:ARG:HA   | 2.56                     | 0.46              |
| 1:L:114:SER:HB2  | 1:L:285:HIS:NE2  | 2.30                     | 0.46              |
| 1:Q:215:MET:HE2  | 1:Q:215:MET:HB2  | 1.70                     | 0.46              |
| 1:T:2:ALA:HB3    | 1:T:23:GLU:HB2   | 1.98                     | 0.46              |
| 1:B:142:GLN:HA   | 1:B:147:GLU:HG2  | 1.97                     | 0.46              |
| 1:E:114:SER:HB2  | 1:E:285:HIS:HE2  | 1.80                     | 0.46              |
| 1:M:121:ARG:HG3  | 1:M:235:PHE:CE1  | 2.49                     | 0.46              |
| 1:N:142:GLN:HA   | 1:N:147:GLU:CG   | 2.46                     | 0.46              |
| 1:N:150:LEU:HA   | 1:N:174:GLN:HB3  | 1.97                     | 0.46              |
| 1:S:14:ARG:NH1   | 1:S:76:VAL:HG11  | 2.31                     | 0.46              |
| 1:W:311:ARG:HG3  | 1:W:311:ARG:NH1  | 2.31                     | 0.46              |
| 1:J:6:ILE:HG21   | 1:J:98:GLN:HG3   | 1.98                     | 0.46              |
| 1:K:142:GLN:N    | 1:K:143:PRO:CD   | 2.79                     | 0.46              |
| 1:F:38:LEU:HD11  | 1:F:219:PHE:HE1  | 1.81                     | 0.46              |
| 1:T:114:SER:HB2  | 1:T:285:HIS:CE1  | 2.50                     | 0.46              |
| 1:Y:176:PHE:O    | 1:Y:179:PHE:HB2  | 2.15                     | 0.46              |
| 1:C:6:ILE:HG21   | 1:C:98:GLN:HG3   | 1.98                     | 0.46              |
| 1:F:234:SER:O    | 1:F:238:THR:HG23 | 2.15                     | 0.46              |
| 1:K:205:LYS:NZ   | 1:L:23:GLU:OE2   | 2.40                     | 0.46              |
| 1:K:307:ARG:NH1  | 1:K:311:ARG:NH2  | 2.56                     | 0.46              |
| 1:H:67:HIS:CE1   | 1:H:115:TRP:CZ3  | 3.04                     | 0.45              |
| 1:I:280:TYR:HB3  | 1:I:283:LEU:HD12 | 1.97                     | 0.45              |
| 1:J:236:TYR:OH   | 1:J:264:VAL:HG22 | 2.16                     | 0.45              |
| 1:O:114:SER:OG   | 6:O:900:DK9:O3   | 2.32                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:R:179:PHE:HA   | 1:R:253:PRO:CB   | 2.46                     | 0.45              |
| 1:A:190:THR:CG2  | 1:A:211:PHE:HZ   | 2.30                     | 0.45              |
| 1:J:211:PHE:CD2  | 1:J:211:PHE:O    | 2.70                     | 0.45              |
| 1:J:137:CYS:HA   | 1:J:247:PHE:O    | 2.17                     | 0.45              |
| 1:P:121:ARG:HD3  | 1:P:230:ALA:HB1  | 1.99                     | 0.45              |
| 1:T:236:TYR:OH   | 1:T:264:VAL:HG22 | 2.16                     | 0.45              |
| 1:U:35:ILE:HD13  | 1:U:92:GLU:HG3   | 1.97                     | 0.45              |
| 1:Y:78:ALA:HB1   | 1:Y:215:MET:HA   | 1.97                     | 0.45              |
| 1:A:311:ARG:HD3  | 1:A:311:ARG:C    | 2.41                     | 0.45              |
| 1:B:46:LEU:HD12  | 1:B:46:LEU:O     | 2.16                     | 0.45              |
| 1:C:215:MET:HG3  | 1:C:219:PHE:CD2  | 2.51                     | 0.45              |
| 1:E:144:ARG:HD2  | 1:E:177:ASP:OD2  | 2.17                     | 0.45              |
| 1:I:150:LEU:HA   | 1:I:174:GLN:HB3  | 1.97                     | 0.45              |
| 1:K:312:ARG:HB3  | 1:K:312:ARG:CZ   | 2.38                     | 0.45              |
| 1:O:78:ALA:HB1   | 1:O:215:MET:HA   | 1.99                     | 0.45              |
| 1:V:142:GLN:N    | 1:V:143:PRO:CD   | 2.79                     | 0.45              |
| 1:X:270:ARG:NH2  | 7:X:1002:HOH:O   | 2.47                     | 0.45              |
| 1:Z:114:SER:HB2  | 1:Z:285:HIS:NE2  | 2.31                     | 0.45              |
| 1:A:111:PHE:HA   | 1:A:135:ALA:O    | 2.17                     | 0.45              |
| 1:G:234:SER:O    | 1:G:238:THR:CG2  | 2.57                     | 0.45              |
| 1:M:38:LEU:HD21  | 1:M:215:MET:HE2  | 1.98                     | 0.45              |
| 1:R:117:SER:O    | 1:R:121:ARG:HG3  | 2.17                     | 0.45              |
| 1:U:138:GLY:HA2  | 7:U:1008:HOH:O   | 2.15                     | 0.45              |
| 1:Y:79:ASP:OD1   | 1:Y:216:SER:OG   | 2.31                     | 0.45              |
| 1:R:79:ASP:OD1   | 1:R:216:SER:OG   | 2.33                     | 0.45              |
| 1:T:142:GLN:N    | 1:T:143:PRO:CD   | 2.79                     | 0.45              |
| 1:Z:179:PHE:HA   | 1:Z:253:PRO:CB   | 2.46                     | 0.45              |
| 1:A:6:ILE:O      | 1:A:6:ILE:CG2    | 2.65                     | 0.45              |
| 1:B:126:ARG:HD2  | 7:B:1093:HOH:O   | 2.16                     | 0.45              |
| 1:G:175:MET:HE1  | 1:G:220:LEU:HD13 | 1.98                     | 0.45              |
| 1:L:190:THR:HG21 | 1:L:211:PHE:CE2  | 2.51                     | 0.45              |
| 1:M:79:ASP:OD1   | 1:M:216:SER:OG   | 2.21                     | 0.45              |
| 1:V:179:PHE:HA   | 1:V:253:PRO:CB   | 2.47                     | 0.45              |
| 1:A:38:LEU:HB3   | 2:A:900:DKL:C6   | 2.47                     | 0.45              |
| 1:E:175:MET:HE1  | 1:E:223:LEU:HB2  | 1.99                     | 0.45              |
| 1:K:7:GLU:HA     | 1:K:17:ILE:O     | 2.16                     | 0.45              |
| 1:K:48:MET:O     | 1:K:52:LEU:HG    | 2.16                     | 0.45              |
| 1:N:225:ASP:O    | 1:N:229:MET:HG3  | 2.15                     | 0.45              |
| 1:P:121:ARG:O    | 1:P:125:THR:HG23 | 2.17                     | 0.45              |
| 1:P:150:LEU:HA   | 1:P:174:GLN:HB3  | 1.98                     | 0.45              |
| 1:V:111:PHE:HA   | 1:V:135:ALA:O    | 2.16                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:X:175:MET:CE   | 1:X:220:LEU:HD12 | 2.46                     | 0.45              |
| 1:C:121:ARG:CG   | 1:C:235:PHE:CZ   | 2.99                     | 0.45              |
| 1:E:179:PHE:HA   | 1:E:253:PRO:CB   | 2.47                     | 0.45              |
| 1:N:144:ARG:NH1  | 1:N:177:ASP:OD1  | 2.50                     | 0.45              |
| 1:V:84:ALA:HB3   | 1:V:222:GLY:HA3  | 1.99                     | 0.45              |
| 1:E:141:ALA:C    | 1:E:143:PRO:HD3  | 2.42                     | 0.45              |
| 1:S:144:ARG:HD2  | 1:S:177:ASP:OD2  | 2.17                     | 0.45              |
| 1:V:113:HIS:HA   | 1:V:137:CYS:O    | 2.17                     | 0.45              |
| 1:B:305:VAL:HA   | 1:B:308:VAL:CG1  | 2.40                     | 0.44              |
| 1:G:190:THR:HG21 | 1:G:211:PHE:HZ   | 1.81                     | 0.44              |
| 1:N:144:ARG:NH2  | 1:N:181:ASP:OD2  | 2.50                     | 0.44              |
| 1:O:179:PHE:HA   | 1:O:253:PRO:CB   | 2.46                     | 0.44              |
| 1:X:236:TYR:OH   | 1:X:264:VAL:HG22 | 2.17                     | 0.44              |
| 1:C:154:THR:HB   | 1:C:171:LEU:HD21 | 1.98                     | 0.44              |
| 1:F:114:SER:OG   | 6:F:900:DK9:O3   | 2.28                     | 0.44              |
| 1:B:239:MET:O    | 1:B:273:HIS:HE1  | 2.00                     | 0.44              |
| 1:Z:277:LEU:HD22 | 1:Z:278:HIS:N    | 2.33                     | 0.44              |
| 1:O:239:MET:HA   | 1:O:239:MET:CE   | 2.39                     | 0.44              |
| 1:X:190:THR:HG21 | 1:X:211:PHE:CZ   | 2.53                     | 0.44              |
| 1:Y:283:LEU:CD1  | 1:Y:293:SER:HB3  | 2.48                     | 0.44              |
| 1:H:107:PRO:HG3  | 1:H:309:ALA:HA   | 2.00                     | 0.44              |
| 1:J:301:LEU:O    | 1:J:305:VAL:HG23 | 2.18                     | 0.44              |
| 1:L:93:LEU:HD21  | 1:L:129:THR:OG1  | 2.17                     | 0.44              |
| 1:E:151:ASP:CG   | 1:E:154:THR:HG1  | 2.24                     | 0.44              |
| 1:O:121:ARG:O    | 1:O:125:THR:CG2  | 2.66                     | 0.44              |
| 1:W:136:LEU:HD12 | 1:W:246:LEU:CD2  | 2.47                     | 0.44              |
| 1:C:38:LEU:HB3   | 2:C:900:DKL:C7   | 2.47                     | 0.44              |
| 1:I:114:SER:CB   | 5:I:900:DKF:C4   | 2.89                     | 0.44              |
| 1:Q:215:MET:CE   | 1:Q:220:LEU:CD1  | 2.96                     | 0.44              |
| 1:S:311:ARG:CD   | 1:S:311:ARG:H    | 2.31                     | 0.44              |
| 1:D:142:GLN:N    | 1:D:143:PRO:CD   | 2.81                     | 0.44              |
| 1:E:28:PRO:HA    | 1:E:56:GLY:O     | 2.18                     | 0.44              |
| 1:E:236:TYR:OH   | 1:E:264:VAL:HG22 | 2.18                     | 0.44              |
| 1:M:186:ASP:OD2  | 1:M:186:ASP:N    | 2.42                     | 0.44              |
| 1:R:195:ARG:NH2  | 1:R:292:GLU:OE2  | 2.51                     | 0.44              |
| 1:S:175:MET:CE   | 1:S:220:LEU:HD12 | 2.48                     | 0.44              |
| 1:X:175:MET:CE   | 1:X:220:LEU:CD1  | 2.96                     | 0.44              |
| 1:X:215:MET:HB2  | 1:X:215:MET:HE2  | 1.78                     | 0.44              |
| 1:K:88:VAL:HG11  | 1:K:115:TRP:CZ2  | 2.53                     | 0.44              |
| 1:E:38:LEU:O     | 5:E:900:DKF:C9   | 2.66                     | 0.43              |
| 1:E:127:PRO:O    | 1:E:128:GLY:C    | 2.61                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:M:121:ARG:HG3  | 1:M:235:PHE:CZ   | 2.53                     | 0.43              |
| 1:Q:168:PRO:HG2  | 1:Q:171:LEU:HD12 | 2.00                     | 0.43              |
| 1:D:190:THR:HG21 | 1:D:211:PHE:CE1  | 2.53                     | 0.43              |
| 1:G:170:ALA:O    | 1:G:174:GLN:HG3  | 2.18                     | 0.43              |
| 1:J:153:LYS:HD3  | 1:J:153:LYS:HA   | 1.82                     | 0.43              |
| 1:R:226:ILE:HD12 | 1:R:226:ILE:HA   | 1.93                     | 0.43              |
| 1:U:298:GLU:O    | 1:U:302:VAL:HG23 | 2.19                     | 0.43              |
| 1:I:175:MET:SD   | 1:I:220:LEU:CD1  | 3.06                     | 0.43              |
| 1:O:206:ASP:CG   | 1:P:2:ALA:HA     | 2.44                     | 0.43              |
| 1:U:287:VAL:O    | 1:U:293:SER:OG   | 2.30                     | 0.43              |
| 1:Z:114:SER:OG   | 4:Z:900:DK6:O4   | 2.35                     | 0.43              |
| 1:O:121:ARG:O    | 1:O:125:THR:HG23 | 2.18                     | 0.43              |
| 1:R:141:ALA:C    | 1:R:143:PRO:HD3  | 2.43                     | 0.43              |
| 1:U:149:THR:HG21 | 1:U:177:ASP:OD2  | 2.18                     | 0.43              |
| 1:V:68:GLY:HA2   | 1:V:208:PHE:O    | 2.18                     | 0.43              |
| 1:A:84:ALA:HB3   | 1:A:222:GLY:HA3  | 2.01                     | 0.43              |
| 1:C:2:ALA:N      | 1:D:202:ASP:OD1  | 2.52                     | 0.43              |
| 1:J:131:LEU:HG   | 1:J:242:ILE:CD1  | 2.48                     | 0.43              |
| 1:L:142:GLN:N    | 1:L:143:PRO:HD2  | 2.33                     | 0.43              |
| 1:O:144:ARG:HD2  | 1:O:177:ASP:OD2  | 2.19                     | 0.43              |
| 1:T:103:PHE:HB3  | 1:T:106:LEU:HD12 | 2.01                     | 0.43              |
| 1:V:137:CYS:HA   | 1:V:247:PHE:O    | 2.19                     | 0.43              |
| 1:V:157:LYS:HE3  | 1:V:157:LYS:HB3  | 1.66                     | 0.43              |
| 1:E:280:TYR:HB3  | 1:E:283:LEU:HD12 | 2.00                     | 0.43              |
| 1:L:62:ASP:OD2   | 1:L:92:GLU:OE2   | 2.35                     | 0.43              |
| 1:O:239:MET:O    | 1:O:273:HIS:CE1  | 2.69                     | 0.43              |
| 1:Q:280:TYR:HB3  | 1:Q:283:LEU:HD12 | 2.01                     | 0.43              |
| 1:T:113:HIS:HA   | 1:T:137:CYS:O    | 2.18                     | 0.43              |
| 1:X:53:LEU:HD12  | 1:Y:46:LEU:HD23  | 1.99                     | 0.43              |
| 1:A:215:MET:CE   | 1:A:220:LEU:HD22 | 2.49                     | 0.43              |
| 1:C:205:LYS:NZ   | 1:D:23:GLU:OE2   | 2.43                     | 0.43              |
| 1:G:239:MET:HE1  | 1:G:242:ILE:HD11 | 2.01                     | 0.43              |
| 1:I:48:MET:O     | 1:I:52:LEU:HG    | 2.18                     | 0.43              |
| 1:J:215:MET:HE2  | 1:J:215:MET:HB2  | 1.71                     | 0.43              |
| 1:K:111:PHE:CD1  | 1:K:111:PHE:C    | 2.97                     | 0.43              |
| 1:T:250:SER:OG   | 1:T:281:ASP:HA   | 2.18                     | 0.43              |
| 1:X:142:GLN:HA   | 1:X:147:GLU:CG   | 2.49                     | 0.43              |
| 1:Y:27:THR:HA    | 1:Y:28:PRO:HD2   | 1.95                     | 0.43              |
| 1:A:190:THR:CG2  | 1:A:211:PHE:CZ   | 3.00                     | 0.43              |
| 1:A:239:MET:O    | 1:A:273:HIS:HE1  | 2.02                     | 0.43              |
| 1:E:2:ALA:HB3    | 1:E:23:GLU:HB2   | 2.00                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:L:209:ASN:C    | 1:L:211:PHE:N    | 2.77                     | 0.43              |
| 1:S:283:LEU:CD1  | 1:S:293:SER:HB3  | 2.49                     | 0.43              |
| 1:D:192:TRP:CH2  | 4:D:900:DK6:C6   | 3.02                     | 0.43              |
| 1:H:157:LYS:HE3  | 1:H:158:ALA:N    | 2.34                     | 0.43              |
| 1:V:40:GLU:HA    | 1:V:209:ASN:OD1  | 2.19                     | 0.43              |
| 1:B:304:PHE:O    | 1:B:308:VAL:HB   | 2.19                     | 0.42              |
| 1:D:206:ASP:HB3  | 1:D:209:ASN:ND2  | 2.34                     | 0.42              |
| 1:I:2:ALA:N      | 1:J:202:ASP:OD1  | 2.52                     | 0.42              |
| 1:Q:88:VAL:HG11  | 1:Q:115:TRP:CZ2  | 2.54                     | 0.42              |
| 1:Q:114:SER:OG   | 2:Q:900:DKL:O4   | 2.32                     | 0.42              |
| 1:Q:310:ASN:HD22 | 1:Q:310:ASN:HA   | 1.66                     | 0.42              |
| 1:V:19:ALA:HA    | 1:V:62:ASP:HA    | 2.00                     | 0.42              |
| 1:W:280:TYR:HB3  | 1:W:283:LEU:HD12 | 2.01                     | 0.42              |
| 1:I:175:MET:SD   | 1:I:220:LEU:HD12 | 2.59                     | 0.42              |
| 1:M:159:MET:SD   | 1:M:218:ARG:HA   | 2.58                     | 0.42              |
| 1:T:144:ARG:HH22 | 1:T:181:ASP:CG   | 2.27                     | 0.42              |
| 1:U:190:THR:HG21 | 1:U:211:PHE:CZ   | 2.54                     | 0.42              |
| 1:L:312:ARG:CB   | 1:L:312:ARG:HH11 | 2.32                     | 0.42              |
| 1:M:107:PRO:HG3  | 1:M:309:ALA:HB2  | 2.01                     | 0.42              |
| 1:B:159:MET:SD   | 1:B:218:ARG:HA   | 2.59                     | 0.42              |
| 1:H:77:TRP:CG    | 1:H:210:ASN:HD22 | 2.37                     | 0.42              |
| 1:H:159:MET:SD   | 1:H:218:ARG:HA   | 2.59                     | 0.42              |
| 1:L:157:LYS:O    | 1:L:161:THR:HG23 | 2.20                     | 0.42              |
| 1:M:198:GLU:HB3  | 1:N:25:VAL:HG13  | 2.01                     | 0.42              |
| 1:V:38:LEU:HD11  | 1:V:219:PHE:HE2  | 1.85                     | 0.42              |
| 1:X:145:GLY:HA3  | 1:X:175:MET:O    | 2.19                     | 0.42              |
| 1:Y:239:MET:O    | 1:Y:273:HIS:HE1  | 2.02                     | 0.42              |
| 1:Z:241:ASN:C    | 1:Z:241:ASN:ND2  | 2.78                     | 0.42              |
| 1:A:6:ILE:HG23   | 1:A:98:GLN:HB3   | 2.02                     | 0.42              |
| 1:M:146:PHE:CE1  | 1:M:175:MET:HE2  | 2.55                     | 0.42              |
| 1:O:164:THR:HB   | 7:O:1040:HOH:O   | 2.19                     | 0.42              |
| 1:S:292:GLU:CD   | 1:S:292:GLU:H    | 2.26                     | 0.42              |
| 1:T:47:HIS:CE1   | 1:T:298:GLU:OE1  | 2.72                     | 0.42              |
| 1:I:141:ALA:O    | 1:I:260:GLY:HA3  | 2.20                     | 0.42              |
| 1:J:304:PHE:O    | 1:J:308:VAL:HG23 | 2.19                     | 0.42              |
| 1:N:151:ASP:OD2  | 1:N:154:THR:OG1  | 2.34                     | 0.42              |
| 1:P:144:ARG:NH2  | 1:P:181:ASP:OD2  | 2.53                     | 0.42              |
| 1:V:18:GLN:HG3   | 1:V:69:ARG:HG2   | 2.01                     | 0.42              |
| 1:Z:134:LEU:CD2  | 1:Z:239:MET:HE1  | 2.49                     | 0.42              |
| 1:Q:206:ASP:CG   | 1:R:2:ALA:HA     | 2.45                     | 0.42              |
| 1:B:154:THR:O    | 1:B:157:LYS:CE   | 2.68                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:215:MET:CE   | 1:G:220:LEU:HB2  | 2.49                     | 0.42              |
| 1:Q:290:GLU:HB2  | 1:Q:293:SER:OG   | 2.19                     | 0.42              |
| 1:B:253:PRO:HB3  | 1:B:257:PHE:CZ   | 2.55                     | 0.42              |
| 1:F:7:GLU:CD     | 1:F:7:GLU:N      | 2.78                     | 0.42              |
| 1:Q:10:SER:HB2   | 1:Q:17:ILE:HD11  | 2.02                     | 0.42              |
| 1:Q:150:LEU:HA   | 1:Q:174:GLN:HB3  | 2.01                     | 0.42              |
| 1:R:139:ILE:HD12 | 1:R:139:ILE:H    | 1.84                     | 0.42              |
| 1:G:238:THR:O    | 1:G:239:MET:C    | 2.63                     | 0.42              |
| 1:J:251:GLU:HA   | 1:J:257:PHE:HD1  | 1.84                     | 0.42              |
| 1:W:270:ARG:HG3  | 7:W:1003:HOH:O   | 2.18                     | 0.42              |
| 1:A:67:HIS:CE1   | 1:A:115:TRP:CZ3  | 3.07                     | 0.41              |
| 1:B:6:ILE:O      | 1:B:19:ALA:HB3   | 2.20                     | 0.41              |
| 1:C:239:MET:HE3  | 1:C:240:PRO:HD2  | 2.01                     | 0.41              |
| 1:I:142:GLN:N    | 1:I:143:PRO:HD3  | 2.35                     | 0.41              |
| 1:L:293:SER:O    | 1:L:294:ARG:C    | 2.62                     | 0.41              |
| 1:Z:31:VAL:HG11  | 1:Z:108:TRP:CZ3  | 2.55                     | 0.41              |
| 1:B:111:PHE:HA   | 1:B:135:ALA:O    | 2.20                     | 0.41              |
| 1:B:305:VAL:CA   | 1:B:308:VAL:HG12 | 2.44                     | 0.41              |
| 1:C:215:MET:HG3  | 1:C:219:PHE:HD2  | 1.83                     | 0.41              |
| 1:D:103:PHE:HB3  | 1:D:106:LEU:HD12 | 2.01                     | 0.41              |
| 1:N:6:ILE:HG21   | 1:N:98:GLN:CG    | 2.50                     | 0.41              |
| 1:T:167:ALA:HA   | 1:T:217:THR:OG1  | 2.20                     | 0.41              |
| 1:J:28:PRO:HA    | 1:J:56:GLY:O     | 2.21                     | 0.41              |
| 1:V:150:LEU:HA   | 1:V:174:GLN:HB3  | 2.02                     | 0.41              |
| 1:V:252:ASP:CG   | 1:V:285:HIS:HA   | 2.46                     | 0.41              |
| 1:X:93:LEU:O     | 1:X:96:GLN:HB2   | 2.20                     | 0.41              |
| 1:W:215:MET:HB2  | 1:W:215:MET:HE2  | 1.76                     | 0.41              |
| 1:B:109:VAL:HG21 | 1:B:308:VAL:HG11 | 2.02                     | 0.41              |
| 1:B:109:VAL:HG21 | 1:B:308:VAL:CG1  | 2.51                     | 0.41              |
| 1:C:23:GLU:OE1   | 1:D:205:LYS:CE   | 2.68                     | 0.41              |
| 1:E:38:LEU:HB3   | 5:E:900:DKF:C9   | 2.50                     | 0.41              |
| 1:H:274:ASN:HD21 | 1:H:307:ARG:NH1  | 2.16                     | 0.41              |
| 1:A:4:GLN:HB2    | 1:A:21:ALA:HB3   | 2.02                     | 0.41              |
| 1:A:175:MET:HE1  | 1:A:220:LEU:CD1  | 2.51                     | 0.41              |
| 1:B:304:PHE:CZ   | 1:B:308:VAL:HG21 | 2.55                     | 0.41              |
| 1:C:262:LYS:HE2  | 1:C:279:LEU:HD22 | 2.02                     | 0.41              |
| 1:I:7:GLU:N      | 1:I:7:GLU:CD     | 2.79                     | 0.41              |
| 1:N:40:GLU:HA    | 1:N:209:ASN:OD1  | 2.21                     | 0.41              |
| 1:U:33:GLN:HA    | 1:U:60:ILE:O     | 2.20                     | 0.41              |
| 1:V:14:ARG:NH1   | 1:V:76:VAL:HG11  | 2.36                     | 0.41              |
| 1:V:142:GLN:HA   | 1:V:147:GLU:CG   | 2.48                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:109:VAL:CG2  | 1:B:308:VAL:CG1  | 2.98                     | 0.41              |
| 1:M:290:GLU:HB2  | 1:M:293:SER:OG   | 2.20                     | 0.41              |
| 1:Q:215:MET:HE1  | 1:Q:220:LEU:HD13 | 2.01                     | 0.41              |
| 1:T:176:PHE:CD2  | 2:T:900:DKL:C10  | 3.04                     | 0.41              |
| 1:Z:183:LEU:HA   | 1:Z:187:ASP:OD2  | 2.20                     | 0.41              |
| 1:K:274:ASN:ND2  | 7:K:1007:HOH:O   | 2.52                     | 0.41              |
| 1:L:132:ASP:CG   | 1:L:312:ARG:HD2  | 2.45                     | 0.41              |
| 1:M:38:LEU:HD11  | 1:M:219:PHE:CE2  | 2.55                     | 0.41              |
| 1:P:175:MET:CE   | 1:P:220:LEU:CD1  | 2.99                     | 0.41              |
| 1:S:152:HIS:CE1  | 7:S:1066:HOH:O   | 2.70                     | 0.41              |
| 1:S:311:ARG:N    | 1:S:311:ARG:HD2  | 2.36                     | 0.41              |
| 1:Y:28:PRO:HA    | 1:Y:56:GLY:O     | 2.21                     | 0.41              |
| 1:Y:252:ASP:CG   | 1:Y:285:HIS:HD1  | 2.29                     | 0.41              |
| 1:B:35:ILE:HG23  | 1:B:64:HIS:CE1   | 2.56                     | 0.41              |
| 1:G:42:SER:HB2   | 1:G:61:ALA:HB1   | 2.03                     | 0.41              |
| 1:I:215:MET:HE1  | 1:I:220:LEU:HD13 | 2.02                     | 0.41              |
| 1:Q:31:VAL:HG11  | 1:Q:108:TRP:CZ3  | 2.56                     | 0.41              |
| 1:X:7:GLU:CD     | 1:X:7:GLU:N      | 2.75                     | 0.41              |
| 1:B:79:ASP:OD1   | 1:B:216:SER:OG   | 2.33                     | 0.41              |
| 1:E:114:SER:HB2  | 1:E:285:HIS:NE2  | 2.36                     | 0.41              |
| 1:E:223:LEU:HA   | 1:E:226:ILE:HG22 | 2.03                     | 0.41              |
| 1:F:113:HIS:HA   | 1:F:137:CYS:O    | 2.21                     | 0.41              |
| 1:G:157:LYS:O    | 1:G:161:THR:HG23 | 2.21                     | 0.41              |
| 1:G:175:MET:CE   | 1:G:220:LEU:CD1  | 2.98                     | 0.41              |
| 1:H:126:ARG:HA   | 1:H:127:PRO:HD3  | 1.88                     | 0.41              |
| 1:L:141:ALA:C    | 1:L:143:PRO:HD3  | 2.46                     | 0.41              |
| 1:M:239:MET:O    | 1:M:273:HIS:CE1  | 2.74                     | 0.41              |
| 1:O:96:GLN:HG2   | 1:O:108:TRP:CZ2  | 2.56                     | 0.41              |
| 1:Q:113:HIS:O    | 1:Q:116:GLY:N    | 2.54                     | 0.41              |
| 1:S:113:HIS:HA   | 1:S:137:CYS:O    | 2.21                     | 0.41              |
| 1:T:4:GLN:NE2    | 1:T:23:GLU:OE2   | 2.44                     | 0.41              |
| 1:T:33:GLN:HA    | 1:T:60:ILE:O     | 2.21                     | 0.41              |
| 1:U:155:LEU:HD12 | 1:U:171:LEU:HD13 | 2.03                     | 0.41              |
| 1:C:144:ARG:NH2  | 1:C:181:ASP:OD2  | 2.54                     | 0.41              |
| 1:G:157:LYS:O    | 1:G:161:THR:HG22 | 2.20                     | 0.41              |
| 1:M:165:ASP:O    | 1:M:166:PRO:C    | 2.65                     | 0.41              |
| 1:Z:88:VAL:HG11  | 1:Z:115:TRP:CZ2  | 2.56                     | 0.41              |
| 1:A:47:HIS:CE1   | 1:A:298:GLU:OE1  | 2.74                     | 0.40              |
| 1:D:84:ALA:HB3   | 1:D:222:GLY:HA3  | 2.02                     | 0.40              |
| 1:M:111:PHE:HA   | 1:M:135:ALA:O    | 2.21                     | 0.40              |
| 1:N:7:GLU:N      | 1:N:7:GLU:CD     | 2.79                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:O:190:THR:HG21 | 1:O:211:PHE:HE2  | 1.85                     | 0.40              |
| 1:Q:239:MET:HE2  | 1:Q:244:ILE:HG12 | 2.03                     | 0.40              |
| 1:S:111:PHE:HA   | 1:S:135:ALA:O    | 2.21                     | 0.40              |
| 1:U:171:LEU:HD23 | 1:U:171:LEU:HA   | 1.92                     | 0.40              |
| 1:W:215:MET:HE1  | 1:W:220:LEU:HD22 | 2.03                     | 0.40              |
| 1:Z:239:MET:HA   | 1:Z:240:PRO:HD3  | 1.95                     | 0.40              |
| 1:H:290:GLU:HB2  | 1:H:293:SER:OG   | 2.22                     | 0.40              |
| 1:I:32:VAL:HA    | 1:I:109:VAL:O    | 2.20                     | 0.40              |
| 1:J:107:PRO:HG3  | 1:J:309:ALA:HA   | 2.03                     | 0.40              |
| 1:J:167:ALA:HA   | 1:J:217:THR:OG1  | 2.21                     | 0.40              |
| 1:Q:40:GLU:HA    | 1:Q:209:ASN:OD1  | 2.21                     | 0.40              |
| 1:S:239:MET:HE3  | 1:S:240:PRO:HD2  | 2.03                     | 0.40              |
| 1:S:274:ASN:HD22 | 1:S:275:VAL:N    | 2.19                     | 0.40              |
| 1:T:7:GLU:HA     | 1:T:17:ILE:O     | 2.21                     | 0.40              |
| 1:X:301:LEU:O    | 1:X:304:PHE:HB3  | 2.22                     | 0.40              |
| 1:Y:192:TRP:HH2  | 5:Y:900:DKF:C5   | 2.34                     | 0.40              |
| 1:Z:206:ASP:HB3  | 1:Z:209:ASN:ND2  | 2.36                     | 0.40              |
| 1:I:192:TRP:HH2  | 5:I:900:DKF:C6   | 2.34                     | 0.40              |
| 1:P:220:LEU:C    | 1:P:220:LEU:CD1  | 2.92                     | 0.40              |
| 1:X:280:TYR:HB3  | 1:X:283:LEU:HD12 | 2.04                     | 0.40              |
| 1:H:150:LEU:HA   | 1:H:174:GLN:HB3  | 2.03                     | 0.40              |
| 1:I:238:THR:O    | 1:I:239:MET:C    | 2.65                     | 0.40              |
| 1:P:111:PHE:HA   | 1:P:135:ALA:O    | 2.21                     | 0.40              |
| 1:T:40:GLU:OE1   | 1:T:44:ARG:HD3   | 2.21                     | 0.40              |
| 1:U:157:LYS:O    | 1:U:161:THR:HG23 | 2.21                     | 0.40              |
| 1:X:6:ILE:CG2    | 1:X:98:GLN:HB3   | 2.47                     | 0.40              |
| 1:B:144:ARG:NH2  | 1:B:181:ASP:OD2  | 2.54                     | 0.40              |
| 1:D:49:ILE:HG12  | 1:D:59:VAL:HG11  | 2.04                     | 0.40              |
| 1:E:89:ILE:HD11  | 1:E:226:ILE:CD1  | 2.52                     | 0.40              |
| 1:J:144:ARG:HH11 | 1:J:177:ASP:CG   | 2.29                     | 0.40              |
| 1:M:239:MET:O    | 1:M:273:HIS:HE1  | 2.04                     | 0.40              |
| 1:Q:114:SER:OG   | 2:Q:900:DKL:O3   | 2.32                     | 0.40              |
| 1:U:204:GLY:HA2  | 1:U:211:PHE:CD2  | 2.56                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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

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

| Mol | Chain | Analysed      | Favoured  | Allowed | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 1   | A     | 308/317 (97%) | 292 (95%) | 16 (5%) | 0        | 100         | 100 |
| 1   | B     | 307/317 (97%) | 292 (95%) | 14 (5%) | 1 (0%)   | 37          | 51  |
| 1   | C     | 307/317 (97%) | 295 (96%) | 11 (4%) | 1 (0%)   | 37          | 51  |
| 1   | D     | 306/317 (96%) | 296 (97%) | 10 (3%) | 0        | 100         | 100 |
| 1   | E     | 309/317 (98%) | 296 (96%) | 12 (4%) | 1 (0%)   | 37          | 51  |
| 1   | F     | 306/317 (96%) | 294 (96%) | 12 (4%) | 0        | 100         | 100 |
| 1   | G     | 308/317 (97%) | 289 (94%) | 18 (6%) | 1 (0%)   | 37          | 51  |
| 1   | H     | 307/317 (97%) | 297 (97%) | 10 (3%) | 0        | 100         | 100 |
| 1   | I     | 309/317 (98%) | 298 (96%) | 11 (4%) | 0        | 100         | 100 |
| 1   | J     | 308/317 (97%) | 296 (96%) | 12 (4%) | 0        | 100         | 100 |
| 1   | K     | 310/317 (98%) | 298 (96%) | 12 (4%) | 0        | 100         | 100 |
| 1   | L     | 310/317 (98%) | 301 (97%) | 8 (3%)  | 1 (0%)   | 37          | 51  |
| 1   | M     | 307/317 (97%) | 286 (93%) | 21 (7%) | 0        | 100         | 100 |
| 1   | N     | 308/317 (97%) | 302 (98%) | 5 (2%)  | 1 (0%)   | 37          | 51  |
| 1   | O     | 308/317 (97%) | 293 (95%) | 15 (5%) | 0        | 100         | 100 |
| 1   | P     | 308/317 (97%) | 290 (94%) | 16 (5%) | 2 (1%)   | 22          | 33  |
| 1   | Q     | 309/317 (98%) | 298 (96%) | 11 (4%) | 0        | 100         | 100 |
| 1   | R     | 307/317 (97%) | 295 (96%) | 11 (4%) | 1 (0%)   | 37          | 51  |
| 1   | S     | 308/317 (97%) | 300 (97%) | 7 (2%)  | 1 (0%)   | 37          | 51  |
| 1   | T     | 307/317 (97%) | 298 (97%) | 9 (3%)  | 0        | 100         | 100 |
| 1   | U     | 308/317 (97%) | 287 (93%) | 20 (6%) | 1 (0%)   | 37          | 51  |
| 1   | V     | 307/317 (97%) | 298 (97%) | 8 (3%)  | 1 (0%)   | 37          | 51  |
| 1   | W     | 308/317 (97%) | 296 (96%) | 11 (4%) | 1 (0%)   | 37          | 51  |
| 1   | X     | 307/317 (97%) | 290 (94%) | 15 (5%) | 2 (1%)   | 19          | 29  |
| 1   | Y     | 307/317 (97%) | 293 (95%) | 13 (4%) | 1 (0%)   | 37          | 51  |

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| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |    |
|-----|-------|-----------------|------------|----------|----------|-------------|----|
| 1   | Z     | 307/317 (97%)   | 290 (94%)  | 15 (5%)  | 2 (1%)   | 19          | 29 |
| All | All   | 8001/8242 (97%) | 7660 (96%) | 323 (4%) | 18 (0%)  | 44          | 59 |

All (18) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | G     | 211 | PHE  |
| 1   | P     | 211 | PHE  |
| 1   | C     | 142 | GLN  |
| 1   | N     | 142 | GLN  |
| 1   | U     | 211 | PHE  |
| 1   | X     | 211 | PHE  |
| 1   | Z     | 169 | GLU  |
| 1   | P     | 142 | GLN  |
| 1   | R     | 11  | HIS  |
| 1   | L     | 142 | GLN  |
| 1   | S     | 142 | GLN  |
| 1   | Y     | 186 | ASP  |
| 1   | Z     | 142 | GLN  |
| 1   | V     | 142 | GLN  |
| 1   | W     | 142 | GLN  |
| 1   | B     | 308 | VAL  |
| 1   | X     | 142 | GLN  |
| 1   | E     | 142 | GLN  |

### 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 X-ray entries followed by that with respect to entries of similar resolution.

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

| Mol | Chain | Analysed      | Rotameric | Outliers | Percentiles |    |
|-----|-------|---------------|-----------|----------|-------------|----|
| 1   | A     | 240/247 (97%) | 224 (93%) | 16 (7%)  | 13          | 23 |
| 1   | B     | 239/247 (97%) | 226 (95%) | 13 (5%)  | 18          | 32 |
| 1   | C     | 239/247 (97%) | 228 (95%) | 11 (5%)  | 23          | 39 |
| 1   | D     | 238/247 (96%) | 228 (96%) | 10 (4%)  | 25          | 43 |
| 1   | E     | 241/247 (98%) | 230 (95%) | 11 (5%)  | 23          | 39 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |    |
|-----|-------|-----------------|------------|----------|-------------|----|
| 1   | F     | 238/247 (96%)   | 233 (98%)  | 5 (2%)   | 48          | 69 |
| 1   | G     | 240/247 (97%)   | 226 (94%)  | 14 (6%)  | 17          | 29 |
| 1   | H     | 239/247 (97%)   | 227 (95%)  | 12 (5%)  | 20          | 36 |
| 1   | I     | 241/247 (98%)   | 232 (96%)  | 9 (4%)   | 29          | 48 |
| 1   | J     | 240/247 (97%)   | 228 (95%)  | 12 (5%)  | 20          | 36 |
| 1   | K     | 242/247 (98%)   | 229 (95%)  | 13 (5%)  | 18          | 32 |
| 1   | L     | 242/247 (98%)   | 237 (98%)  | 5 (2%)   | 48          | 69 |
| 1   | M     | 239/247 (97%)   | 230 (96%)  | 9 (4%)   | 28          | 47 |
| 1   | N     | 240/247 (97%)   | 230 (96%)  | 10 (4%)  | 25          | 43 |
| 1   | O     | 240/247 (97%)   | 227 (95%)  | 13 (5%)  | 18          | 32 |
| 1   | P     | 240/247 (97%)   | 229 (95%)  | 11 (5%)  | 23          | 39 |
| 1   | Q     | 241/247 (98%)   | 232 (96%)  | 9 (4%)   | 29          | 48 |
| 1   | R     | 239/247 (97%)   | 230 (96%)  | 9 (4%)   | 28          | 47 |
| 1   | S     | 240/247 (97%)   | 226 (94%)  | 14 (6%)  | 17          | 29 |
| 1   | T     | 239/247 (97%)   | 233 (98%)  | 6 (2%)   | 42          | 63 |
| 1   | U     | 240/247 (97%)   | 229 (95%)  | 11 (5%)  | 23          | 39 |
| 1   | V     | 239/247 (97%)   | 229 (96%)  | 10 (4%)  | 25          | 43 |
| 1   | W     | 240/247 (97%)   | 227 (95%)  | 13 (5%)  | 18          | 32 |
| 1   | X     | 239/247 (97%)   | 223 (93%)  | 16 (7%)  | 13          | 23 |
| 1   | Y     | 239/247 (97%)   | 226 (95%)  | 13 (5%)  | 18          | 32 |
| 1   | Z     | 239/247 (97%)   | 221 (92%)  | 18 (8%)  | 11          | 18 |
| All | All   | 6233/6422 (97%) | 5940 (95%) | 293 (5%) | 22          | 38 |

All (293) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 6   | ILE  |
| 1   | A     | 7   | GLU  |
| 1   | A     | 46  | LEU  |
| 1   | A     | 64  | HIS  |
| 1   | A     | 148 | THR  |
| 1   | A     | 153 | LYS  |
| 1   | A     | 161 | THR  |
| 1   | A     | 164 | THR  |
| 1   | A     | 190 | THR  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 195        | ARG         |
| 1          | A            | 205        | LYS         |
| 1          | A            | 220        | LEU         |
| 1          | A            | 266        | GLU         |
| 1          | A            | 270        | ARG         |
| 1          | A            | 292        | GLU         |
| 1          | A            | 311        | ARG         |
| 1          | B            | 25         | VAL         |
| 1          | B            | 46         | LEU         |
| 1          | B            | 125        | THR         |
| 1          | B            | 153        | LYS         |
| 1          | B            | 157        | LYS         |
| 1          | B            | 186        | ASP         |
| 1          | B            | 195        | ARG         |
| 1          | B            | 211        | PHE         |
| 1          | B            | 234        | SER         |
| 1          | B            | 238        | THR         |
| 1          | B            | 277        | LEU         |
| 1          | B            | 292        | GLU         |
| 1          | B            | 308        | VAL         |
| 1          | C            | 25         | VAL         |
| 1          | C            | 117        | SER         |
| 1          | C            | 121        | ARG         |
| 1          | C            | 139        | ILE         |
| 1          | C            | 153        | LYS         |
| 1          | C            | 157        | LYS         |
| 1          | C            | 186        | ASP         |
| 1          | C            | 197        | LYS         |
| 1          | C            | 226        | ILE         |
| 1          | C            | 262        | LYS         |
| 1          | C            | 277        | LEU         |
| 1          | D            | 25         | VAL         |
| 1          | D            | 46         | LEU         |
| 1          | D            | 125        | THR         |
| 1          | D            | 148        | THR         |
| 1          | D            | 157        | LYS         |
| 1          | D            | 186        | ASP         |
| 1          | D            | 195        | ARG         |
| 1          | D            | 234        | SER         |
| 1          | D            | 238        | THR         |
| 1          | D            | 274        | ASN         |
| 1          | E            | 46         | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | E            | 139        | ILE         |
| 1          | E            | 149        | THR         |
| 1          | E            | 157        | LYS         |
| 1          | E            | 161        | THR         |
| 1          | E            | 185        | GLU         |
| 1          | E            | 195        | ARG         |
| 1          | E            | 266        | GLU         |
| 1          | E            | 277        | LEU         |
| 1          | E            | 311        | ARG         |
| 1          | E            | 312        | ARG         |
| 1          | F            | 46         | LEU         |
| 1          | F            | 148        | THR         |
| 1          | F            | 164        | THR         |
| 1          | F            | 234        | SER         |
| 1          | F            | 266        | GLU         |
| 1          | G            | 148        | THR         |
| 1          | G            | 153        | LYS         |
| 1          | G            | 161        | THR         |
| 1          | G            | 164        | THR         |
| 1          | G            | 184        | SER         |
| 1          | G            | 185        | GLU         |
| 1          | G            | 190        | THR         |
| 1          | G            | 195        | ARG         |
| 1          | G            | 220        | LEU         |
| 1          | G            | 238        | THR         |
| 1          | G            | 266        | GLU         |
| 1          | G            | 274        | ASN         |
| 1          | G            | 292        | GLU         |
| 1          | G            | 311        | ARG         |
| 1          | H            | 25         | VAL         |
| 1          | H            | 125        | THR         |
| 1          | H            | 127        | PRO         |
| 1          | H            | 139        | ILE         |
| 1          | H            | 148        | THR         |
| 1          | H            | 153        | LYS         |
| 1          | H            | 157        | LYS         |
| 1          | H            | 211        | PHE         |
| 1          | H            | 238        | THR         |
| 1          | H            | 277        | LEU         |
| 1          | H            | 292        | GLU         |
| 1          | H            | 308        | VAL         |
| 1          | I            | 46         | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | I            | 125        | THR         |
| 1          | I            | 153        | LYS         |
| 1          | I            | 184        | SER         |
| 1          | I            | 205        | LYS         |
| 1          | I            | 266        | GLU         |
| 1          | I            | 277        | LEU         |
| 1          | I            | 281        | ASP         |
| 1          | I            | 310        | ASN         |
| 1          | J            | 117        | SER         |
| 1          | J            | 148        | THR         |
| 1          | J            | 153        | LYS         |
| 1          | J            | 157        | LYS         |
| 1          | J            | 164        | THR         |
| 1          | J            | 169        | GLU         |
| 1          | J            | 185        | GLU         |
| 1          | J            | 186        | ASP         |
| 1          | J            | 195        | ARG         |
| 1          | J            | 211        | PHE         |
| 1          | J            | 234        | SER         |
| 1          | J            | 266        | GLU         |
| 1          | K            | 149        | THR         |
| 1          | K            | 153        | LYS         |
| 1          | K            | 169        | GLU         |
| 1          | K            | 186        | ASP         |
| 1          | K            | 190        | THR         |
| 1          | K            | 195        | ARG         |
| 1          | K            | 197        | LYS         |
| 1          | K            | 226        | ILE         |
| 1          | K            | 234        | SER         |
| 1          | K            | 266        | GLU         |
| 1          | K            | 270        | ARG         |
| 1          | K            | 277        | LEU         |
| 1          | K            | 311        | ARG         |
| 1          | L            | 153        | LYS         |
| 1          | L            | 164        | THR         |
| 1          | L            | 187        | ASP         |
| 1          | L            | 292        | GLU         |
| 1          | L            | 313        | ILE         |
| 1          | M            | 121        | ARG         |
| 1          | M            | 149        | THR         |
| 1          | M            | 184        | SER         |
| 1          | M            | 186        | ASP         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | M            | 187        | ASP         |
| 1          | M            | 195        | ARG         |
| 1          | M            | 226        | ILE         |
| 1          | M            | 277        | LEU         |
| 1          | M            | 310        | ASN         |
| 1          | N            | 25         | VAL         |
| 1          | N            | 46         | LEU         |
| 1          | N            | 121        | ARG         |
| 1          | N            | 169        | GLU         |
| 1          | N            | 190        | THR         |
| 1          | N            | 195        | ARG         |
| 1          | N            | 211        | PHE         |
| 1          | N            | 234        | SER         |
| 1          | N            | 238        | THR         |
| 1          | N            | 292        | GLU         |
| 1          | O            | 6          | ILE         |
| 1          | O            | 46         | LEU         |
| 1          | O            | 125        | THR         |
| 1          | O            | 139        | ILE         |
| 1          | O            | 153        | LYS         |
| 1          | O            | 161        | THR         |
| 1          | O            | 164        | THR         |
| 1          | O            | 186        | ASP         |
| 1          | O            | 195        | ARG         |
| 1          | O            | 220        | LEU         |
| 1          | O            | 226        | ILE         |
| 1          | O            | 279        | LEU         |
| 1          | O            | 292        | GLU         |
| 1          | P            | 6          | ILE         |
| 1          | P            | 46         | LEU         |
| 1          | P            | 125        | THR         |
| 1          | P            | 127        | PRO         |
| 1          | P            | 130        | ARG         |
| 1          | P            | 186        | ASP         |
| 1          | P            | 190        | THR         |
| 1          | P            | 207        | LYS         |
| 1          | P            | 220        | LEU         |
| 1          | P            | 292        | GLU         |
| 1          | P            | 311        | ARG         |
| 1          | Q            | 7          | GLU         |
| 1          | Q            | 38         | LEU         |
| 1          | Q            | 139        | ILE         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | Q            | 148        | THR         |
| 1          | Q            | 157        | LYS         |
| 1          | Q            | 211        | PHE         |
| 1          | Q            | 277        | LEU         |
| 1          | Q            | 310        | ASN         |
| 1          | Q            | 311        | ARG         |
| 1          | R            | 46         | LEU         |
| 1          | R            | 125        | THR         |
| 1          | R            | 149        | THR         |
| 1          | R            | 169        | GLU         |
| 1          | R            | 186        | ASP         |
| 1          | R            | 190        | THR         |
| 1          | R            | 274        | ASN         |
| 1          | R            | 292        | GLU         |
| 1          | R            | 310        | ASN         |
| 1          | S            | 25         | VAL         |
| 1          | S            | 72         | MET         |
| 1          | S            | 86         | GLU         |
| 1          | S            | 125        | THR         |
| 1          | S            | 140        | VAL         |
| 1          | S            | 142        | GLN         |
| 1          | S            | 149        | THR         |
| 1          | S            | 164        | THR         |
| 1          | S            | 195        | ARG         |
| 1          | S            | 238        | THR         |
| 1          | S            | 274        | ASN         |
| 1          | S            | 292        | GLU         |
| 1          | S            | 310        | ASN         |
| 1          | S            | 311        | ARG         |
| 1          | T            | 195        | ARG         |
| 1          | T            | 226        | ILE         |
| 1          | T            | 234        | SER         |
| 1          | T            | 238        | THR         |
| 1          | T            | 277        | LEU         |
| 1          | T            | 292        | GLU         |
| 1          | U            | 125        | THR         |
| 1          | U            | 157        | LYS         |
| 1          | U            | 169        | GLU         |
| 1          | U            | 186        | ASP         |
| 1          | U            | 195        | ARG         |
| 1          | U            | 205        | LYS         |
| 1          | U            | 220        | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | U            | 266        | GLU         |
| 1          | U            | 270        | ARG         |
| 1          | U            | 292        | GLU         |
| 1          | U            | 311        | ARG         |
| 1          | V            | 25         | VAL         |
| 1          | V            | 38         | LEU         |
| 1          | V            | 125        | THR         |
| 1          | V            | 153        | LYS         |
| 1          | V            | 157        | LYS         |
| 1          | V            | 195        | ARG         |
| 1          | V            | 238        | THR         |
| 1          | V            | 277        | LEU         |
| 1          | V            | 292        | GLU         |
| 1          | V            | 310        | ASN         |
| 1          | X            | 4          | GLN         |
| 1          | X            | 6          | ILE         |
| 1          | X            | 7          | GLU         |
| 1          | X            | 25         | VAL         |
| 1          | X            | 46         | LEU         |
| 1          | X            | 121        | ARG         |
| 1          | X            | 148        | THR         |
| 1          | X            | 153        | LYS         |
| 1          | X            | 169        | GLU         |
| 1          | X            | 184        | SER         |
| 1          | X            | 195        | ARG         |
| 1          | X            | 205        | LYS         |
| 1          | X            | 238        | THR         |
| 1          | X            | 266        | GLU         |
| 1          | X            | 292        | GLU         |
| 1          | X            | 307        | ARG         |
| 1          | Y            | 25         | VAL         |
| 1          | Y            | 149        | THR         |
| 1          | Y            | 153        | LYS         |
| 1          | Y            | 157        | LYS         |
| 1          | Y            | 185        | GLU         |
| 1          | Y            | 186        | ASP         |
| 1          | Y            | 195        | ARG         |
| 1          | Y            | 238        | THR         |
| 1          | Y            | 241        | ASN         |
| 1          | Y            | 277        | LEU         |
| 1          | Y            | 292        | GLU         |
| 1          | Y            | 307        | ARG         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | Y     | 308 | VAL  |
| 1   | W     | 148 | THR  |
| 1   | W     | 153 | LYS  |
| 1   | W     | 164 | THR  |
| 1   | W     | 186 | ASP  |
| 1   | W     | 195 | ARG  |
| 1   | W     | 205 | LYS  |
| 1   | W     | 207 | LYS  |
| 1   | W     | 220 | LEU  |
| 1   | W     | 266 | GLU  |
| 1   | W     | 270 | ARG  |
| 1   | W     | 281 | ASP  |
| 1   | W     | 292 | GLU  |
| 1   | W     | 311 | ARG  |
| 1   | Z     | 46  | LEU  |
| 1   | Z     | 117 | SER  |
| 1   | Z     | 125 | THR  |
| 1   | Z     | 149 | THR  |
| 1   | Z     | 157 | LYS  |
| 1   | Z     | 164 | THR  |
| 1   | Z     | 190 | THR  |
| 1   | Z     | 195 | ARG  |
| 1   | Z     | 197 | LYS  |
| 1   | Z     | 226 | ILE  |
| 1   | Z     | 241 | ASN  |
| 1   | Z     | 242 | ILE  |
| 1   | Z     | 270 | ARG  |
| 1   | Z     | 274 | ASN  |
| 1   | Z     | 277 | LEU  |
| 1   | Z     | 292 | GLU  |
| 1   | Z     | 300 | SER  |
| 1   | Z     | 308 | VAL  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (93) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 73  | GLN  |
| 1   | A     | 113 | HIS  |
| 1   | A     | 152 | HIS  |
| 1   | A     | 273 | HIS  |
| 1   | A     | 274 | ASN  |
| 1   | B     | 97  | GLN  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | B            | 113        | HIS         |
| 1          | B            | 152        | HIS         |
| 1          | B            | 203        | HIS         |
| 1          | B            | 241        | ASN         |
| 1          | B            | 273        | HIS         |
| 1          | C            | 83         | ASN         |
| 1          | C            | 274        | ASN         |
| 1          | D            | 113        | HIS         |
| 1          | D            | 174        | GLN         |
| 1          | D            | 221        | GLN         |
| 1          | D            | 274        | ASN         |
| 1          | E            | 67         | HIS         |
| 1          | E            | 113        | HIS         |
| 1          | E            | 152        | HIS         |
| 1          | E            | 274        | ASN         |
| 1          | F            | 273        | HIS         |
| 1          | G            | 113        | HIS         |
| 1          | G            | 203        | HIS         |
| 1          | G            | 310        | ASN         |
| 1          | H            | 152        | HIS         |
| 1          | H            | 221        | GLN         |
| 1          | H            | 241        | ASN         |
| 1          | H            | 274        | ASN         |
| 1          | I            | 113        | HIS         |
| 1          | I            | 142        | GLN         |
| 1          | I            | 209        | ASN         |
| 1          | I            | 210        | ASN         |
| 1          | I            | 274        | ASN         |
| 1          | I            | 310        | ASN         |
| 1          | J            | 73         | GLN         |
| 1          | J            | 142        | GLN         |
| 1          | J            | 152        | HIS         |
| 1          | J            | 221        | GLN         |
| 1          | J            | 231        | ASN         |
| 1          | K            | 4          | GLN         |
| 1          | K            | 274        | ASN         |
| 1          | L            | 142        | GLN         |
| 1          | M            | 83         | ASN         |
| 1          | M            | 273        | HIS         |
| 1          | M            | 274        | ASN         |
| 1          | N            | 4          | GLN         |
| 1          | N            | 67         | HIS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | N            | 102        | GLN         |
| 1          | N            | 113        | HIS         |
| 1          | N            | 152        | HIS         |
| 1          | O            | 273        | HIS         |
| 1          | O            | 274        | ASN         |
| 1          | P            | 97         | GLN         |
| 1          | P            | 113        | HIS         |
| 1          | Q            | 67         | HIS         |
| 1          | Q            | 113        | HIS         |
| 1          | Q            | 221        | GLN         |
| 1          | Q            | 310        | ASN         |
| 1          | R            | 113        | HIS         |
| 1          | R            | 203        | HIS         |
| 1          | R            | 310        | ASN         |
| 1          | S            | 4          | GLN         |
| 1          | S            | 98         | GLN         |
| 1          | S            | 152        | HIS         |
| 1          | S            | 273        | HIS         |
| 1          | S            | 274        | ASN         |
| 1          | T            | 113        | HIS         |
| 1          | T            | 221        | GLN         |
| 1          | T            | 241        | ASN         |
| 1          | T            | 274        | ASN         |
| 1          | U            | 241        | ASN         |
| 1          | V            | 241        | ASN         |
| 1          | V            | 273        | HIS         |
| 1          | V            | 274        | ASN         |
| 1          | X            | 4          | GLN         |
| 1          | X            | 18         | GLN         |
| 1          | X            | 102        | GLN         |
| 1          | X            | 273        | HIS         |
| 1          | Y            | 83         | ASN         |
| 1          | Y            | 113        | HIS         |
| 1          | Y            | 203        | HIS         |
| 1          | Y            | 210        | ASN         |
| 1          | Y            | 241        | ASN         |
| 1          | Y            | 273        | HIS         |
| 1          | Y            | 274        | ASN         |
| 1          | W            | 113        | HIS         |
| 1          | W            | 152        | HIS         |
| 1          | W            | 210        | ASN         |
| 1          | W            | 274        | ASN         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | Z     | 113 | HIS  |
| 1   | Z     | 221 | GLN  |
| 1   | Z     | 241 | 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](#)

26 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 |
| 5   | DKF  | G     | 900 | -    | 7,7,7        | 0.92 | 1 (14%)  | 7,7,7       | 3.59 | 2 (28%)  |
| 4   | DK6  | D     | 900 | -    | 4,4,4        | 0.91 | 0        | 4,4,4       | 1.74 | 1 (25%)  |
| 6   | DK9  | P     | 900 | -    | 6,6,6        | 0.98 | 0        | 6,6,6       | 1.40 | 2 (33%)  |
| 5   | DKF  | E     | 900 | -    | 7,7,7        | 0.79 | 0        | 7,7,7       | 0.30 | 0        |
| 5   | DKF  | J     | 900 | -    | 7,7,7        | 0.67 | 0        | 7,7,7       | 1.98 | 3 (42%)  |
| 4   | DK6  | Z     | 900 | -    | 4,4,4        | 1.49 | 2 (50%)  | 4,4,4       | 3.14 | 3 (75%)  |
| 2   | DKL  | C     | 900 | -    | 8,8,8        | 1.94 | 2 (25%)  | 8,8,8       | 2.41 | 2 (25%)  |
| 5   | DKF  | W     | 900 | -    | 7,7,7        | 1.17 | 1 (14%)  | 7,7,7       | 4.96 | 5 (71%)  |
| 5   | DKF  | Y     | 900 | -    | 7,7,7        | 0.96 | 1 (14%)  | 7,7,7       | 0.94 | 0        |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 2   | DKL  | A     | 900 | -    | 8,8,8        | 3.48 | 2 (25%)  | 8,8,8       | 3.78 | 5 (62%)  |
| 5   | DKF  | K     | 900 | -    | 7,7,7        | 1.68 | 1 (14%)  | 7,7,7       | 1.45 | 1 (14%)  |
| 3   | DKO  | B     | 900 | -    | 9,9,9        | 1.66 | 1 (11%)  | 9,9,9       | 3.38 | 5 (55%)  |
| 3   | DKO  | R     | 900 | -    | 9,9,9        | 3.25 | 1 (11%)  | 9,9,9       | 2.20 | 4 (44%)  |
| 5   | DKF  | I     | 900 | -    | 7,7,7        | 0.16 | 0        | 7,7,7       | 1.95 | 1 (14%)  |
| 6   | DK9  | O     | 900 | -    | 6,6,6        | 0.81 | 0        | 6,6,6       | 1.40 | 1 (16%)  |
| 5   | DKF  | L     | 900 | -    | 7,7,7        | 0.79 | 0        | 7,7,7       | 4.05 | 3 (42%)  |
| 2   | DKL  | Q     | 900 | -    | 8,8,8        | 0.55 | 0        | 8,8,8       | 1.50 | 1 (12%)  |
| 4   | DK6  | S     | 900 | -    | 4,4,4        | 2.64 | 1 (25%)  | 4,4,4       | 4.88 | 2 (50%)  |
| 5   | DKF  | M     | 900 | -    | 7,7,7        | 0.82 | 0        | 7,7,7       | 1.08 | 1 (14%)  |
| 5   | DKF  | V     | 900 | -    | 7,7,7        | 1.26 | 1 (14%)  | 7,7,7       | 1.97 | 2 (28%)  |
| 2   | DKL  | T     | 900 | -    | 8,8,8        | 0.64 | 0        | 8,8,8       | 0.93 | 0        |
| 3   | DKO  | N     | 900 | -    | 9,9,9        | 0.79 | 0        | 9,9,9       | 0.99 | 1 (11%)  |
| 2   | DKL  | X     | 900 | -    | 8,8,8        | 0.64 | 0        | 8,8,8       | 1.85 | 2 (25%)  |
| 4   | DK6  | H     | 900 | -    | 4,4,4        | 1.08 | 1 (25%)  | 4,4,4       | 1.43 | 1 (25%)  |
| 6   | DK9  | F     | 900 | -    | 6,6,6        | 0.69 | 0        | 6,6,6       | 1.56 | 2 (33%)  |
| 5   | DKF  | U     | 900 | -    | 7,7,7        | 0.93 | 0        | 7,7,7       | 1.98 | 3 (42%)  |

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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 5   | DKF  | G     | 900 | -    | -       | 4/5/5/5  | -     |
| 4   | DK6  | D     | 900 | -    | -       | 2/2/2/2  | -     |
| 6   | DK9  | P     | 900 | -    | -       | 3/4/4/4  | -     |
| 5   | DKF  | E     | 900 | -    | -       | 3/5/5/5  | -     |
| 5   | DKF  | J     | 900 | -    | -       | 2/5/5/5  | -     |
| 4   | DK6  | Z     | 900 | -    | -       | 2/2/2/2  | -     |
| 2   | DKL  | C     | 900 | -    | -       | 2/6/6/6  | -     |
| 5   | DKF  | W     | 900 | -    | -       | 2/5/5/5  | -     |
| 5   | DKF  | Y     | 900 | -    | -       | 4/5/5/5  | -     |
| 2   | DKL  | A     | 900 | -    | -       | 4/6/6/6  | -     |
| 5   | DKF  | K     | 900 | -    | -       | 4/5/5/5  | -     |
| 3   | DKO  | B     | 900 | -    | -       | 5/7/7/7  | -     |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|----------|-------|
| 3   | DKO  | R     | 900 | -    | -       | 3/7/7/7  | -     |
| 5   | DKF  | I     | 900 | -    | -       | 4/5/5/5  | -     |
| 6   | DK9  | O     | 900 | -    | -       | 3/4/4/4  | -     |
| 5   | DKF  | L     | 900 | -    | -       | 4/5/5/5  | -     |
| 2   | DKL  | Q     | 900 | -    | -       | 6/6/6/6  | -     |
| 4   | DK6  | S     | 900 | -    | -       | 1/2/2/2  | -     |
| 5   | DKF  | M     | 900 | -    | -       | 4/5/5/5  | -     |
| 5   | DKF  | V     | 900 | -    | -       | 3/5/5/5  | -     |
| 2   | DKL  | T     | 900 | -    | -       | 2/6/6/6  | -     |
| 3   | DKO  | N     | 900 | -    | -       | 3/7/7/7  | -     |
| 2   | DKL  | X     | 900 | -    | -       | 5/6/6/6  | -     |
| 4   | DK6  | H     | 900 | -    | -       | 2/2/2/2  | -     |
| 6   | DK9  | F     | 900 | -    | -       | 0/4/4/4  | -     |
| 5   | DKF  | U     | 900 | -    | -       | 5/5/5/5  | -     |

All (15) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 3   | R     | 900 | DKO  | C5-C4 | 9.61 | 1.70        | 1.50     |
| 2   | A     | 900 | DKL  | C5-C4 | 9.37 | 1.69        | 1.50     |
| 2   | C     | 900 | DKL  | C5-C4 | 5.05 | 1.60        | 1.50     |
| 4   | S     | 900 | DK6  | C5-C4 | 5.01 | 1.60        | 1.50     |
| 3   | B     | 900 | DKO  | C5-C4 | 4.71 | 1.60        | 1.50     |
| 5   | K     | 900 | DKF  | C5-C4 | 4.13 | 1.59        | 1.50     |
| 5   | V     | 900 | DKF  | C5-C4 | 2.87 | 1.56        | 1.50     |
| 2   | A     | 900 | DKL  | O4-C4 | 2.80 | 1.46        | 1.40     |
| 5   | W     | 900 | DKF  | C5-C4 | 2.43 | 1.55        | 1.50     |
| 5   | Y     | 900 | DKF  | O4-C4 | 2.16 | 1.45        | 1.40     |
| 5   | G     | 900 | DKF  | C5-C4 | 2.15 | 1.55        | 1.50     |
| 4   | Z     | 900 | DK6  | O4-C4 | 2.14 | 1.45        | 1.40     |
| 4   | H     | 900 | DK6  | O3-C4 | 2.12 | 1.45        | 1.40     |
| 2   | C     | 900 | DKL  | O4-C4 | 2.04 | 1.45        | 1.40     |
| 4   | Z     | 900 | DK6  | C5-C4 | 2.02 | 1.54        | 1.50     |

All (53) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|--------|-------------|----------|
| 5   | W     | 900 | DKF  | O3-C4-O4 | -11.24 | 90.67       | 111.36   |
| 5   | G     | 900 | DKF  | O3-C4-O4 | -8.65  | 95.45       | 111.36   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 4   | S     | 900 | DK6  | O4-C4-O3 | -8.58 | 95.58       | 111.36   |
| 5   | L     | 900 | DKF  | O4-C4-C5 | 8.30  | 127.36      | 109.17   |
| 3   | B     | 900 | DKO  | O3-C4-C5 | -6.67 | 94.56       | 109.17   |
| 2   | A     | 900 | DKL  | C6-C5-C4 | 6.48  | 128.37      | 113.38   |
| 5   | L     | 900 | DKF  | O3-C4-C5 | -5.75 | 96.58       | 109.17   |
| 2   | A     | 900 | DKL  | O4-C4-C5 | -5.68 | 96.74       | 109.17   |
| 4   | Z     | 900 | DK6  | O4-C4-C5 | 5.21  | 119.24      | 109.43   |
| 5   | I     | 900 | DKF  | O3-C4-O4 | -4.91 | 102.33      | 111.36   |
| 2   | C     | 900 | DKL  | O4-C4-C5 | -4.85 | 98.55       | 109.17   |
| 3   | R     | 900 | DKO  | O3-C4-C5 | -4.78 | 98.70       | 109.17   |
| 5   | W     | 900 | DKF  | O4-C4-C5 | -4.50 | 99.32       | 109.17   |
| 3   | B     | 900 | DKO  | C6-C5-C4 | 4.32  | 123.36      | 113.38   |
| 2   | C     | 900 | DKL  | O3-C4-C5 | -4.29 | 99.78       | 109.17   |
| 5   | V     | 900 | DKF  | O3-C4-C5 | -4.27 | 99.83       | 109.17   |
| 2   | A     | 900 | DKL  | O3-C4-C5 | 4.18  | 118.33      | 109.17   |
| 4   | S     | 900 | DK6  | C6-C5-C4 | -4.16 | 106.10      | 113.57   |
| 3   | B     | 900 | DKO  | O3-C4-O4 | -4.11 | 103.80      | 111.36   |
| 2   | X     | 900 | DKL  | O3-C4-O4 | -3.93 | 104.12      | 111.36   |
| 2   | Q     | 900 | DKL  | O3-C4-O4 | -3.90 | 104.19      | 111.36   |
| 3   | B     | 900 | DKO  | O4-C4-C5 | -3.71 | 101.06      | 109.17   |
| 5   | G     | 900 | DKF  | O3-C4-C5 | -3.66 | 101.16      | 109.17   |
| 5   | W     | 900 | DKF  | O3-C4-C5 | -3.66 | 101.17      | 109.17   |
| 5   | U     | 900 | DKF  | O4-C4-C5 | -3.62 | 101.24      | 109.17   |
| 2   | A     | 900 | DKL  | O3-C4-O4 | 3.36  | 117.53      | 111.36   |
| 5   | L     | 900 | DKF  | O3-C4-O4 | -3.35 | 105.19      | 111.36   |
| 5   | J     | 900 | DKF  | O3-C4-C5 | 3.28  | 116.36      | 109.17   |
| 2   | A     | 900 | DKL  | C8-C7-C6 | -3.17 | 98.35       | 114.42   |
| 5   | U     | 900 | DKF  | C6-C5-C4 | 3.01  | 120.34      | 113.38   |
| 5   | J     | 900 | DKF  | O4-C4-C5 | 2.92  | 115.58      | 109.17   |
| 5   | K     | 900 | DKF  | O4-C4-C5 | -2.71 | 103.24      | 109.17   |
| 4   | Z     | 900 | DK6  | O3-C4-C5 | -2.70 | 104.33      | 109.43   |
| 6   | O     | 900 | DK9  | O4-C4-C5 | -2.66 | 103.34      | 109.17   |
| 5   | M     | 900 | DKF  | O3-C4-O4 | -2.60 | 106.57      | 111.36   |
| 3   | R     | 900 | DKO  | C8-C7-C6 | -2.48 | 101.86      | 114.42   |
| 5   | W     | 900 | DKF  | C7-C6-C5 | 2.36  | 121.99      | 113.62   |
| 5   | J     | 900 | DKF  | O3-C4-O4 | -2.35 | 107.03      | 111.36   |
| 3   | R     | 900 | DKO  | O3-C4-O4 | -2.34 | 107.05      | 111.36   |
| 3   | B     | 900 | DKO  | C7-C6-C5 | 2.33  | 121.88      | 113.62   |
| 4   | D     | 900 | DK6  | C6-C5-C4 | 2.29  | 117.68      | 113.57   |
| 2   | X     | 900 | DKL  | O3-C4-C5 | -2.27 | 104.20      | 109.17   |
| 5   | W     | 900 | DKF  | C6-C5-C4 | 2.27  | 118.62      | 113.38   |
| 6   | P     | 900 | DK9  | O3-C4-C5 | 2.18  | 113.96      | 109.17   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 4   | Z     | 900 | DK6  | O4-C4-O3 | -2.18 | 107.34      | 111.36   |
| 3   | R     | 900 | DKO  | C7-C6-C5 | -2.17 | 105.93      | 113.62   |
| 6   | F     | 900 | DK9  | O3-C4-O4 | -2.17 | 107.37      | 111.36   |
| 5   | V     | 900 | DKF  | C6-C5-C4 | -2.12 | 108.47      | 113.38   |
| 5   | U     | 900 | DKF  | O3-C4-C5 | -2.08 | 104.61      | 109.17   |
| 6   | F     | 900 | DK9  | O3-C4-C5 | 2.07  | 113.72      | 109.17   |
| 4   | H     | 900 | DK6  | O4-C4-C5 | -2.06 | 105.55      | 109.43   |
| 6   | P     | 900 | DK9  | O3-C4-O4 | -2.04 | 107.60      | 111.36   |
| 3   | N     | 900 | DKO  | O3-C4-C5 | 2.02  | 113.61      | 109.17   |

There are no chirality outliers.

All (82) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms        |
|-----|-------|-----|------|--------------|
| 2   | A     | 900 | DKL  | O3-C4-C5-C6  |
| 2   | Q     | 900 | DKL  | O4-C4-C5-C6  |
| 2   | X     | 900 | DKL  | O3-C4-C5-C6  |
| 3   | B     | 900 | DKO  | O3-C4-C5-C6  |
| 4   | H     | 900 | DK6  | O3-C4-C5-C6  |
| 4   | H     | 900 | DK6  | O4-C4-C5-C6  |
| 4   | S     | 900 | DK6  | O3-C4-C5-C6  |
| 4   | Z     | 900 | DK6  | O3-C4-C5-C6  |
| 4   | Z     | 900 | DK6  | O4-C4-C5-C6  |
| 5   | E     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | I     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | J     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | K     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | L     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | M     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | U     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | Y     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | W     | 900 | DKF  | O4-C4-C5-C6  |
| 6   | O     | 900 | DK9  | O3-C4-C5-C6  |
| 6   | P     | 900 | DK9  | O3-C4-C5-C6  |
| 5   | U     | 900 | DKF  | C5-C6-C7-C8  |
| 5   | G     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | L     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | U     | 900 | DKF  | O3-C4-C5-C6  |
| 2   | Q     | 900 | DKL  | C7-C8-C9-C10 |
| 5   | I     | 900 | DKF  | C6-C7-C8-C9  |
| 2   | Q     | 900 | DKL  | C5-C6-C7-C8  |
| 2   | X     | 900 | DKL  | C6-C7-C8-C9  |

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| Mol | Chain | Res | Type | Atoms        |
|-----|-------|-----|------|--------------|
| 5   | G     | 900 | DKF  | C5-C6-C7-C8  |
| 5   | L     | 900 | DKF  | C5-C6-C7-C8  |
| 2   | Q     | 900 | DKL  | O3-C4-C5-C6  |
| 3   | B     | 900 | DKO  | O4-C4-C5-C6  |
| 5   | J     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | K     | 900 | DKF  | O3-C4-C5-C6  |
| 5   | Y     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | M     | 900 | DKF  | C5-C6-C7-C8  |
| 3   | B     | 900 | DKO  | C7-C8-C9-C10 |
| 5   | V     | 900 | DKF  | C6-C7-C8-C9  |
| 5   | W     | 900 | DKF  | C5-C6-C7-C8  |
| 2   | A     | 900 | DKL  | O4-C4-C5-C6  |
| 3   | R     | 900 | DKO  | O3-C4-C5-C6  |
| 5   | E     | 900 | DKF  | O4-C4-C5-C6  |
| 5   | I     | 900 | DKF  | O3-C4-C5-C6  |
| 6   | O     | 900 | DK9  | O4-C4-C5-C6  |
| 2   | C     | 900 | DKL  | C5-C6-C7-C8  |
| 5   | U     | 900 | DKF  | C6-C7-C8-C9  |
| 5   | Y     | 900 | DKF  | C5-C6-C7-C8  |
| 5   | M     | 900 | DKF  | C6-C7-C8-C9  |
| 2   | C     | 900 | DKL  | C7-C8-C9-C10 |
| 4   | D     | 900 | DK6  | O4-C4-C5-C6  |
| 2   | T     | 900 | DKL  | C5-C6-C7-C8  |
| 2   | X     | 900 | DKL  | C7-C8-C9-C10 |
| 5   | I     | 900 | DKF  | C4-C5-C6-C7  |
| 5   | V     | 900 | DKF  | C5-C6-C7-C8  |
| 2   | A     | 900 | DKL  | C7-C8-C9-C10 |
| 5   | U     | 900 | DKF  | C4-C5-C6-C7  |
| 5   | V     | 900 | DKF  | C4-C5-C6-C7  |
| 5   | K     | 900 | DKF  | C5-C6-C7-C8  |
| 2   | T     | 900 | DKL  | C4-C5-C6-C7  |
| 6   | P     | 900 | DK9  | O4-C4-C5-C6  |
| 3   | B     | 900 | DKO  | C5-C6-C7-C8  |
| 5   | L     | 900 | DKF  | C4-C5-C6-C7  |
| 2   | X     | 900 | DKL  | C5-C6-C7-C8  |
| 3   | B     | 900 | DKO  | C4-C5-C6-C7  |
| 2   | X     | 900 | DKL  | C4-C5-C6-C7  |
| 5   | Y     | 900 | DKF  | C4-C5-C6-C7  |
| 6   | P     | 900 | DK9  | C4-C5-C6-C7  |
| 2   | Q     | 900 | DKL  | C6-C7-C8-C9  |
| 3   | N     | 900 | DKO  | C7-C8-C9-C10 |
| 5   | E     | 900 | DKF  | C5-C6-C7-C8  |

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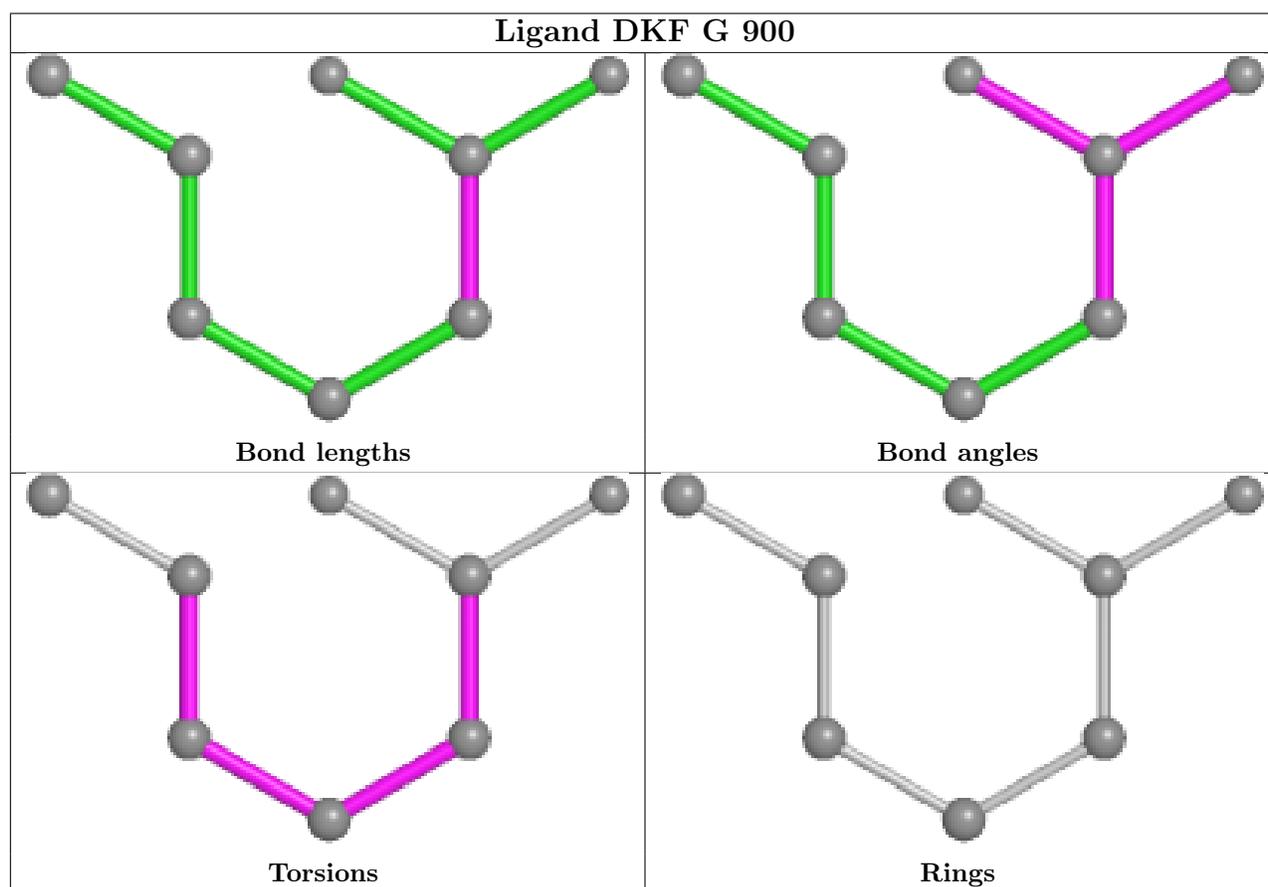
| Mol | Chain | Res | Type | Atoms         |
|-----|-------|-----|------|---------------|
| 5   | G     | 900 | DKF  | C4-C5-C6-C7   |
| 5   | M     | 900 | DKF  | C4-C5-C6-C7   |
| 3   | R     | 900 | DKO  | O4-C4-C5-C6   |
| 2   | Q     | 900 | DKL  | C4-C5-C6-C7   |
| 3   | R     | 900 | DKO  | C4-C5-C6-C7   |
| 5   | K     | 900 | DKF  | C4-C5-C6-C7   |
| 3   | N     | 900 | DKO  | C11-C10-C9-C8 |
| 2   | A     | 900 | DKL  | C4-C5-C6-C7   |
| 6   | O     | 900 | DK9  | C4-C5-C6-C7   |
| 3   | N     | 900 | DKO  | O4-C4-C5-C6   |
| 4   | D     | 900 | DK6  | O3-C4-C5-C6   |
| 5   | G     | 900 | DKF  | C6-C7-C8-C9   |

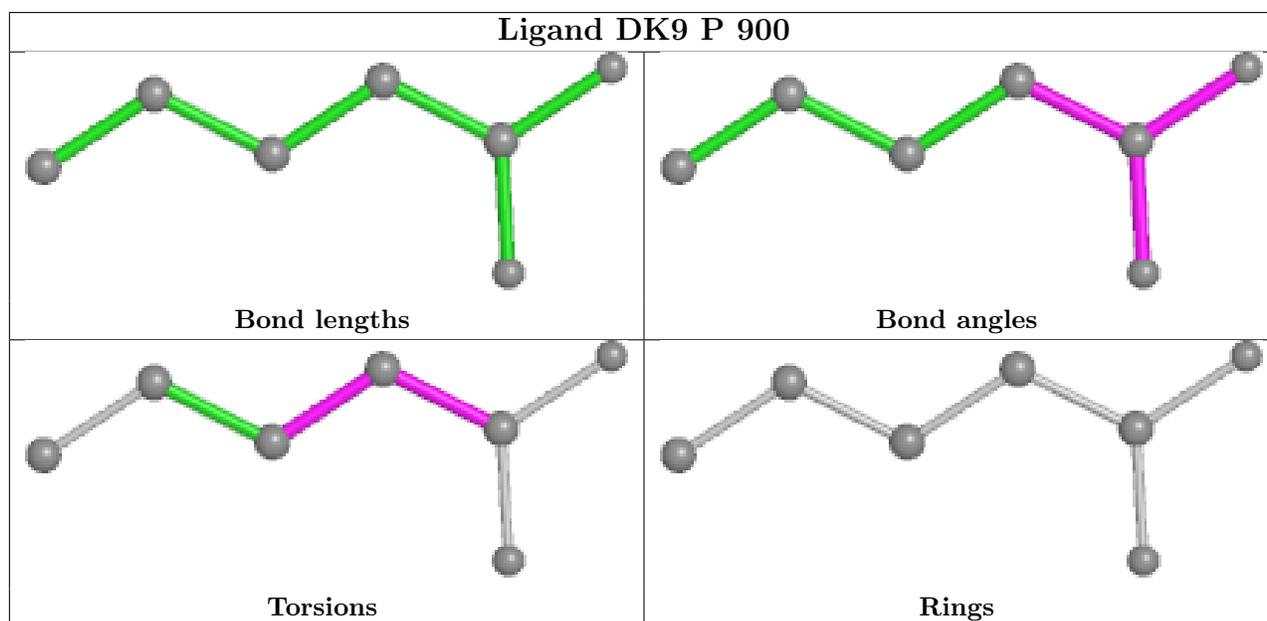
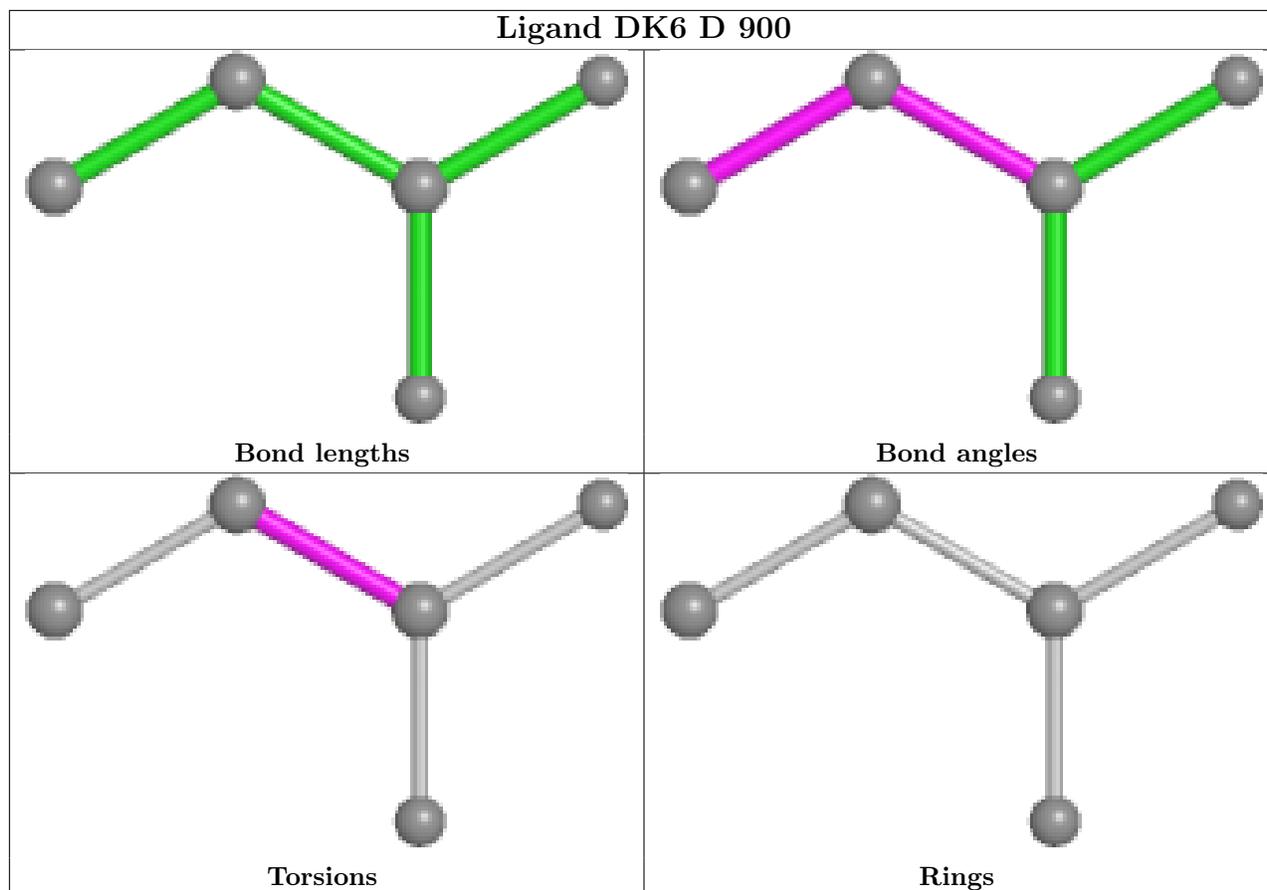
There are no ring outliers.

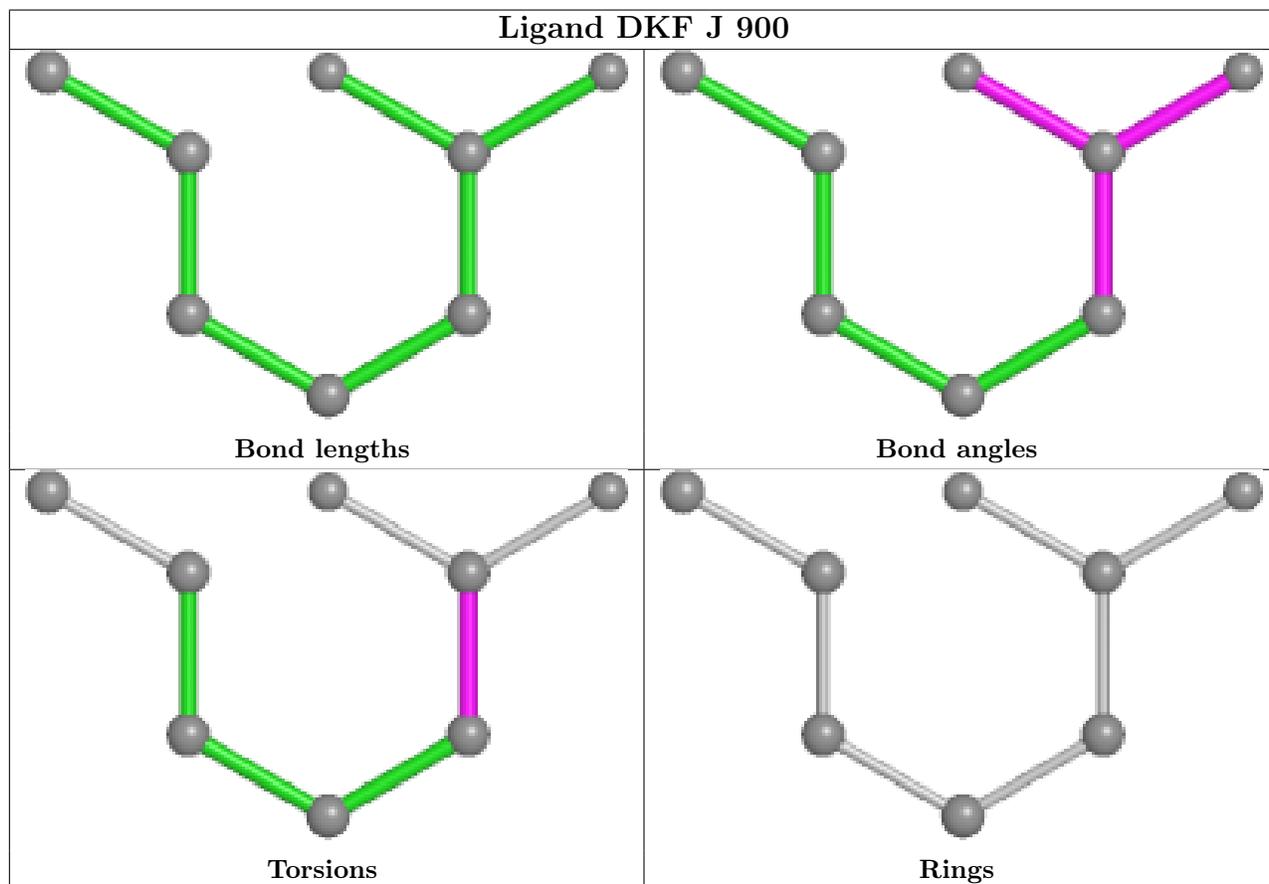
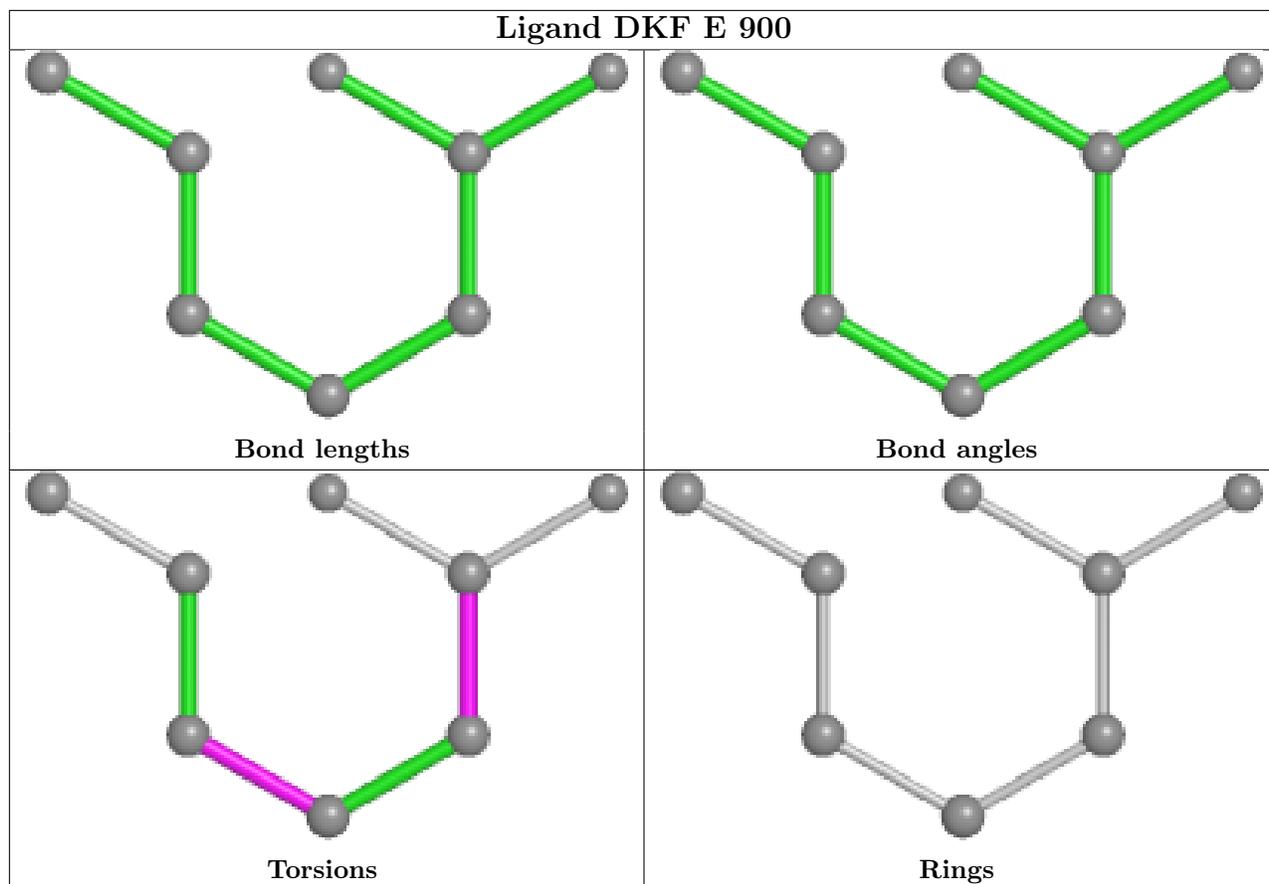
24 monomers are involved in 96 short contacts:

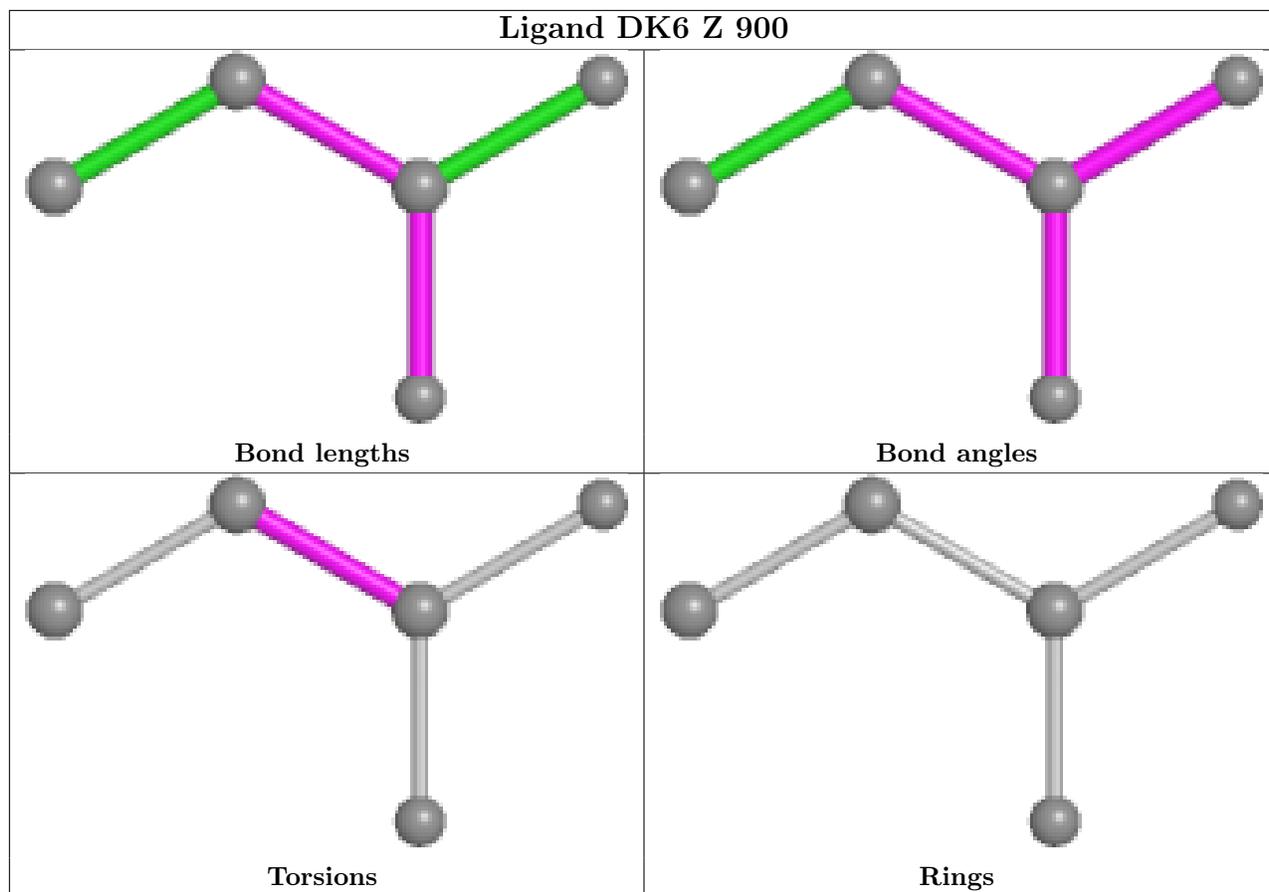
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 5   | G     | 900 | DKF  | 5       | 0            |
| 4   | D     | 900 | DK6  | 2       | 0            |
| 6   | P     | 900 | DK9  | 3       | 0            |
| 5   | E     | 900 | DKF  | 6       | 0            |
| 5   | J     | 900 | DKF  | 4       | 0            |
| 4   | Z     | 900 | DK6  | 5       | 0            |
| 2   | C     | 900 | DKL  | 8       | 0            |
| 5   | W     | 900 | DKF  | 4       | 0            |
| 5   | Y     | 900 | DKF  | 5       | 0            |
| 2   | A     | 900 | DKL  | 4       | 0            |
| 5   | K     | 900 | DKF  | 3       | 0            |
| 3   | B     | 900 | DKO  | 3       | 0            |
| 3   | R     | 900 | DKO  | 3       | 0            |
| 5   | I     | 900 | DKF  | 5       | 0            |
| 6   | O     | 900 | DK9  | 4       | 0            |
| 2   | Q     | 900 | DKL  | 4       | 0            |
| 4   | S     | 900 | DK6  | 3       | 0            |
| 5   | M     | 900 | DKF  | 4       | 0            |
| 5   | V     | 900 | DKF  | 3       | 0            |
| 2   | T     | 900 | DKL  | 5       | 0            |
| 2   | X     | 900 | DKL  | 3       | 0            |
| 4   | H     | 900 | DK6  | 4       | 0            |
| 6   | F     | 900 | DK9  | 3       | 0            |
| 5   | U     | 900 | DKF  | 3       | 0            |

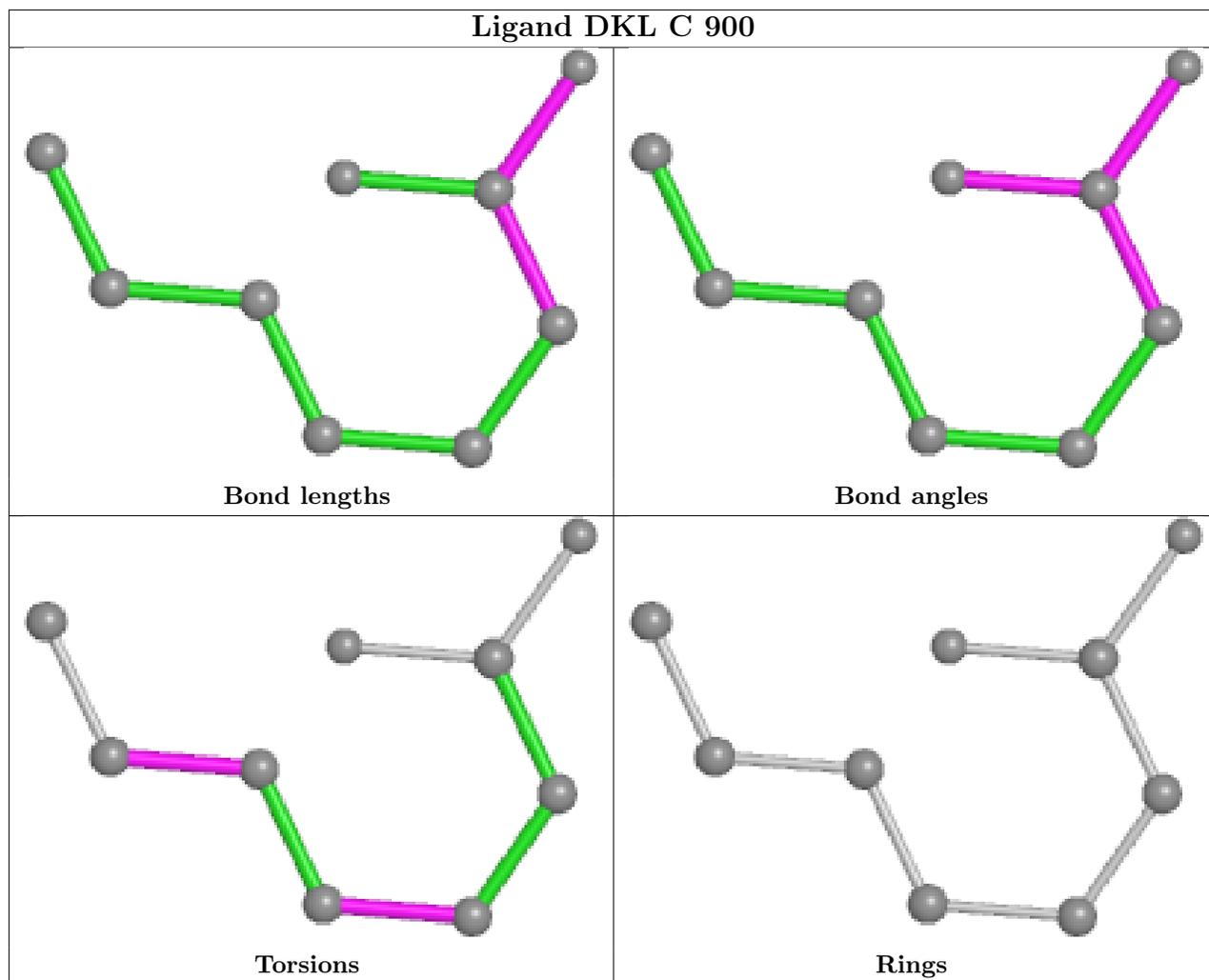
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

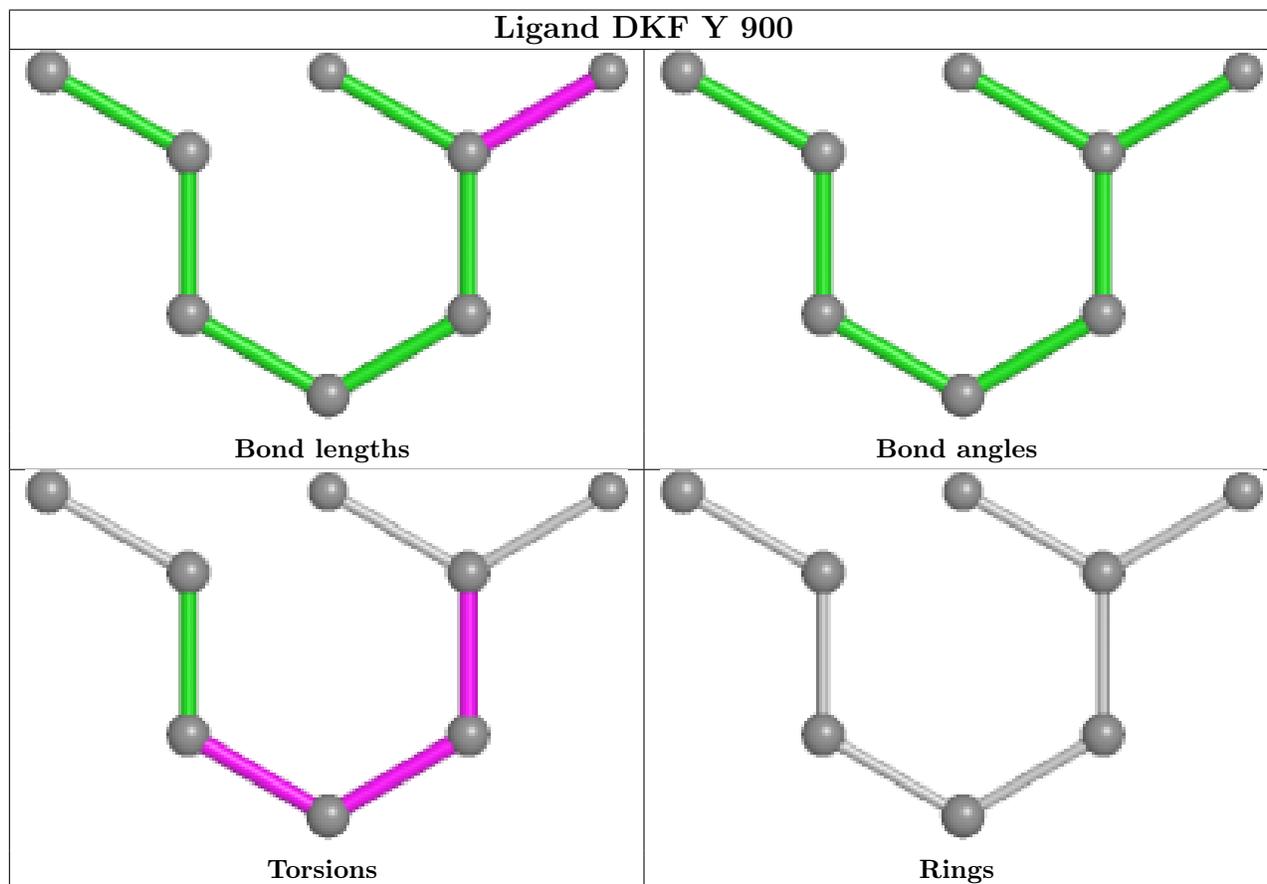
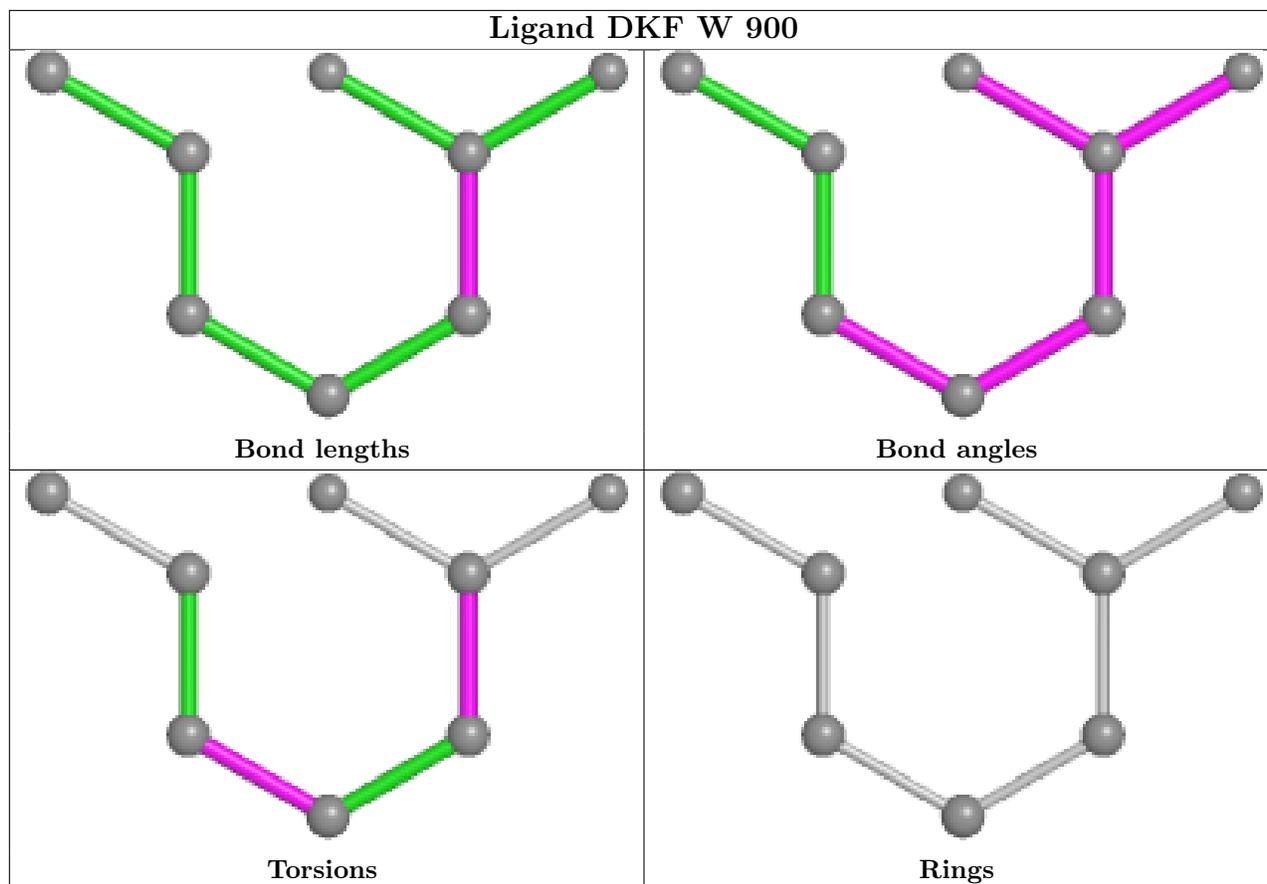


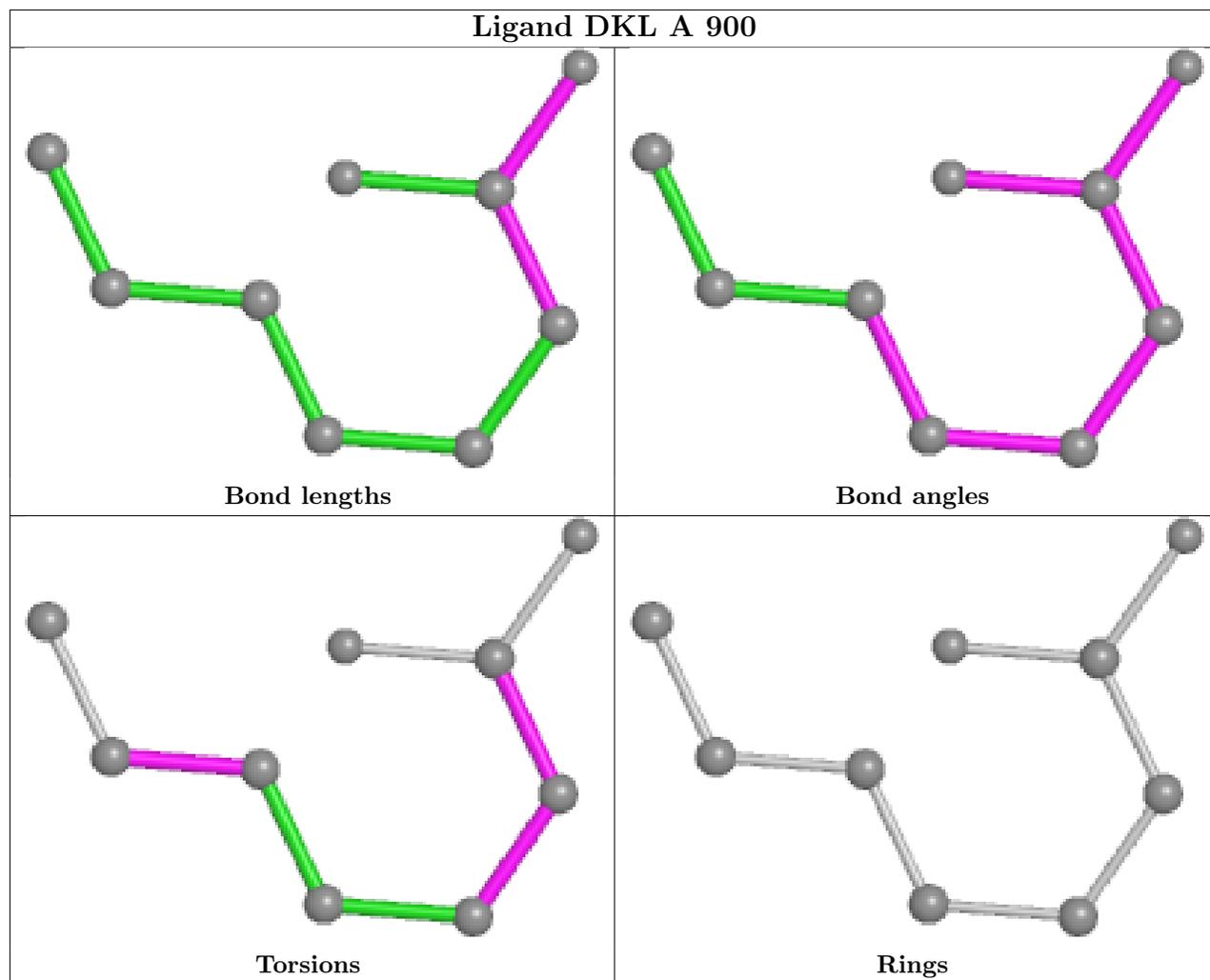


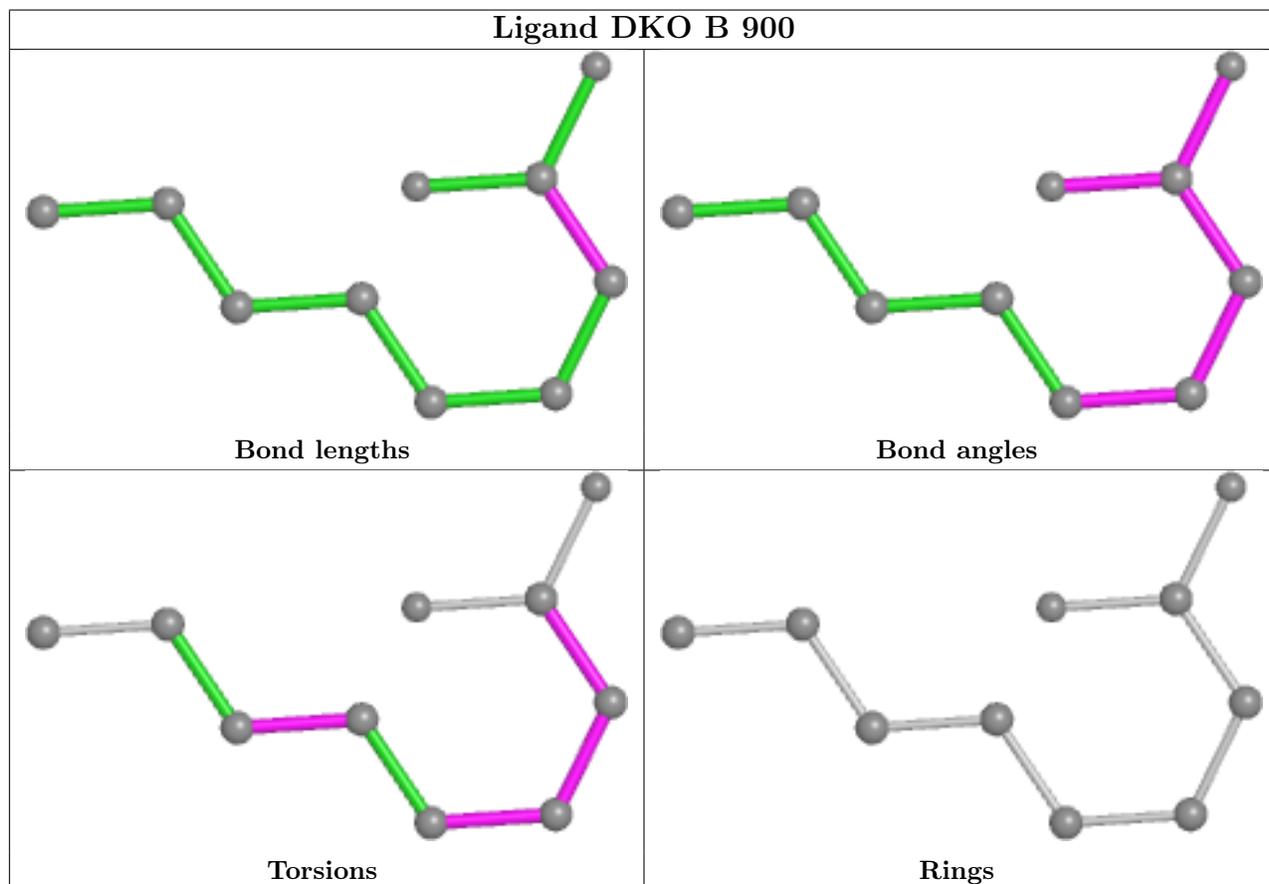
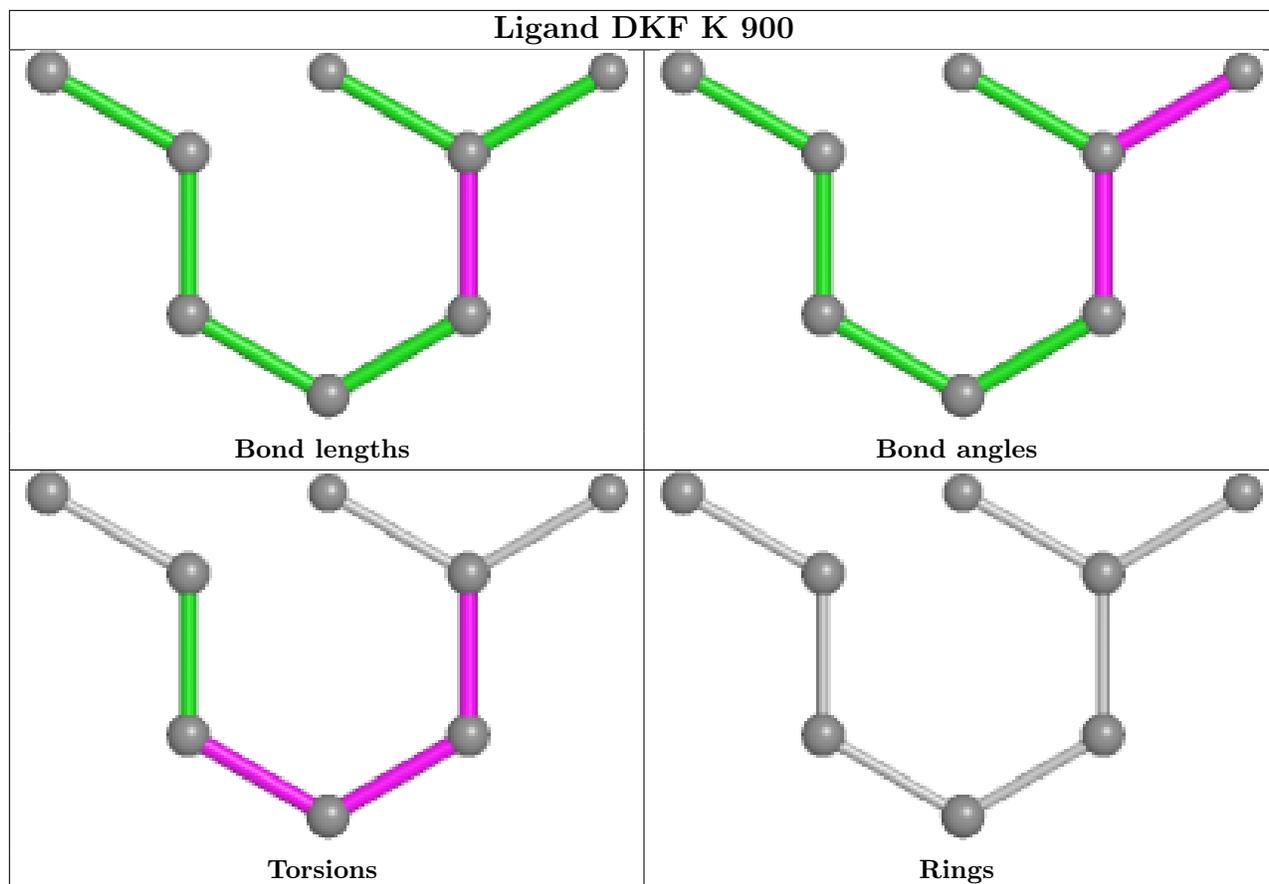


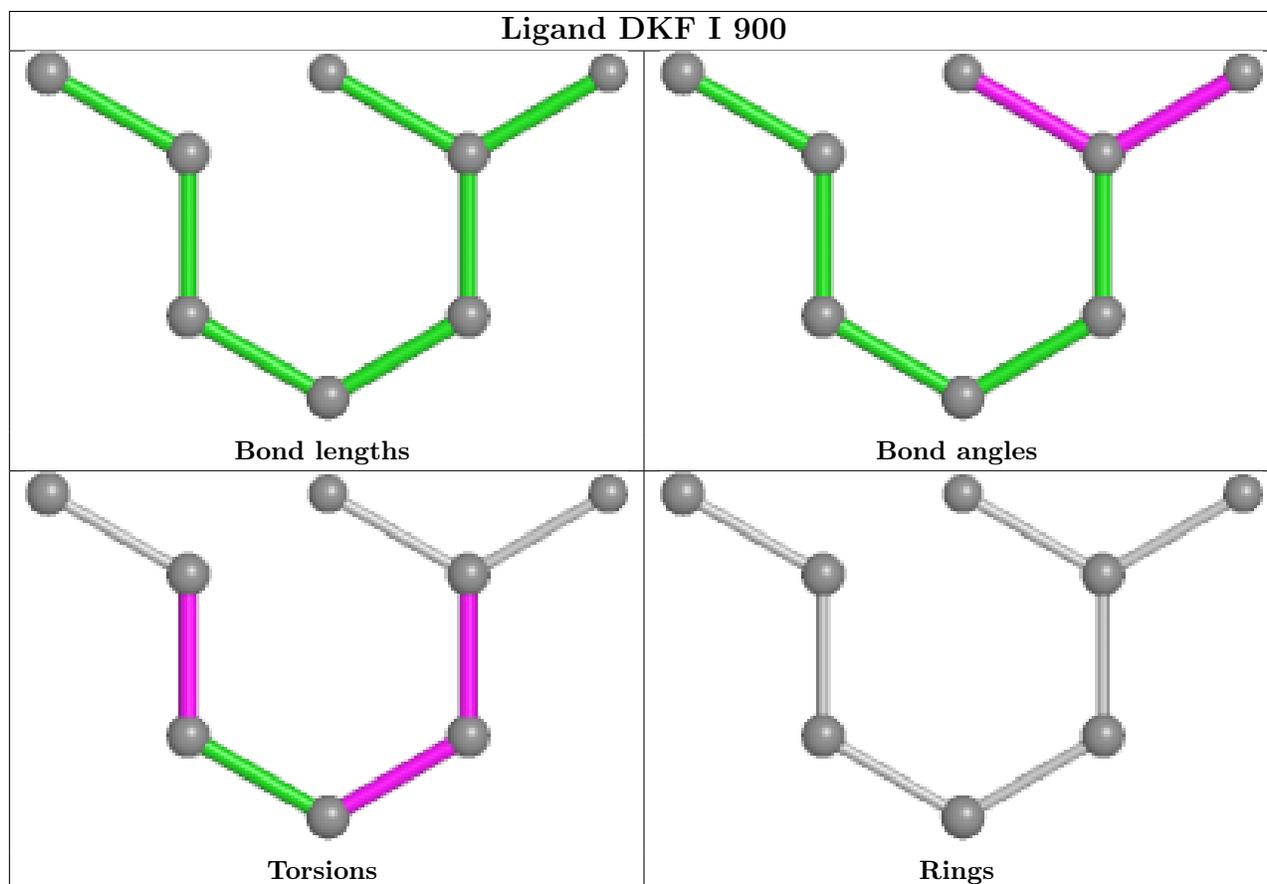
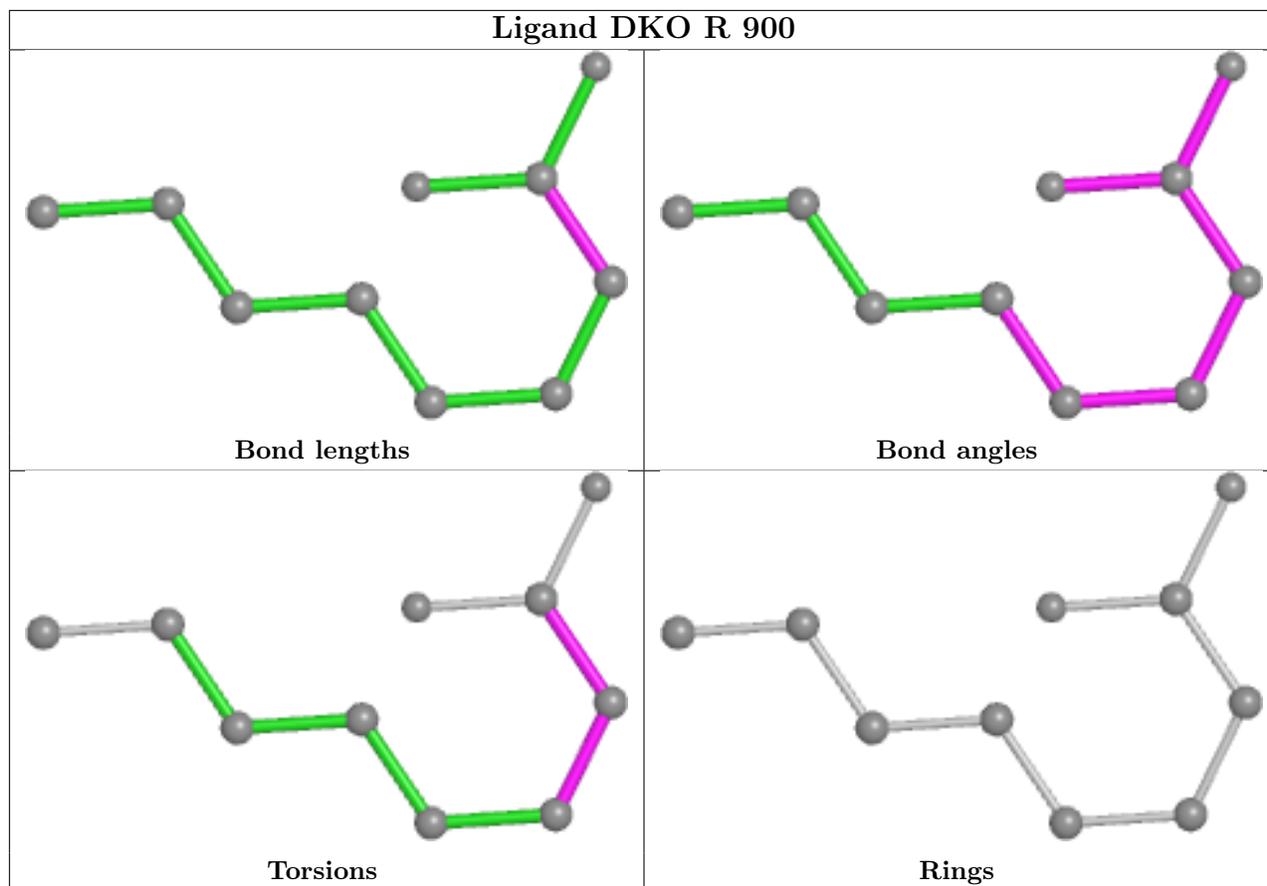


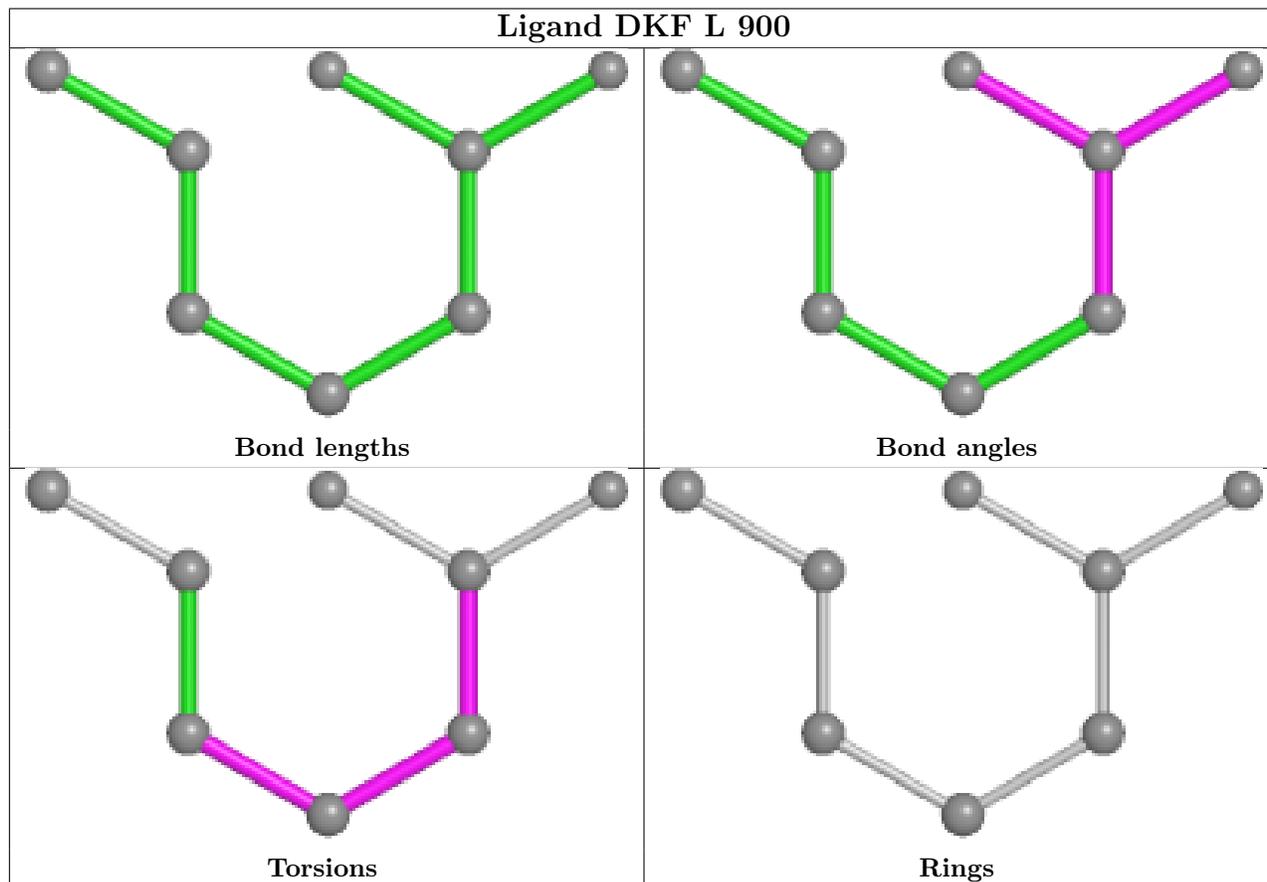
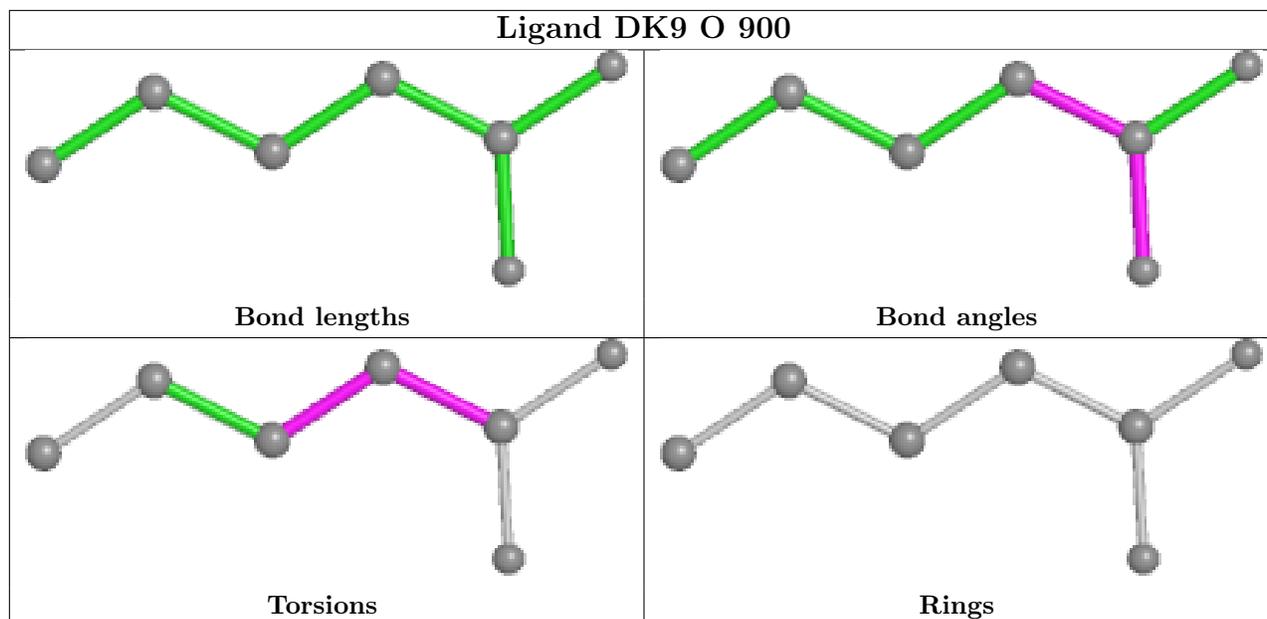


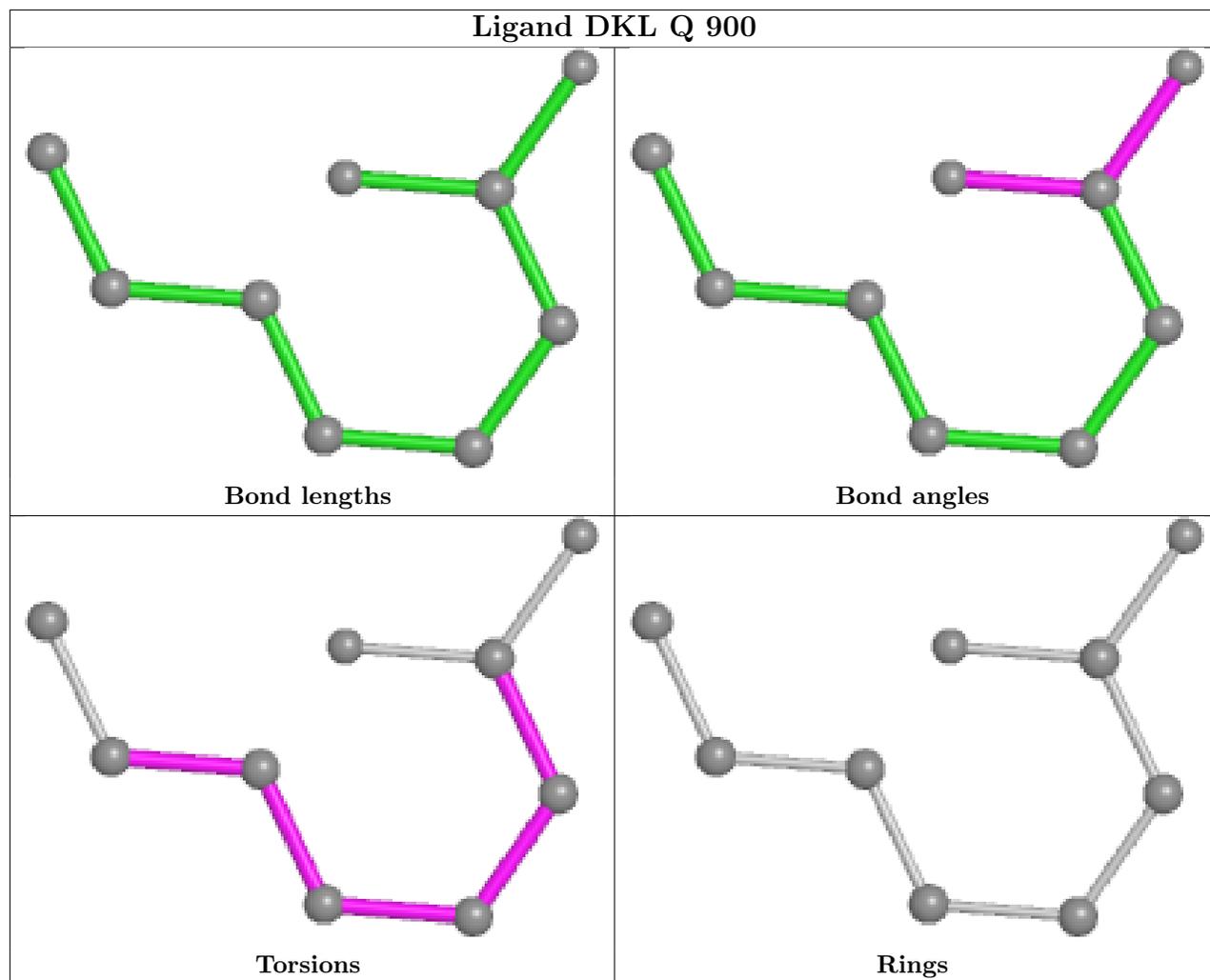


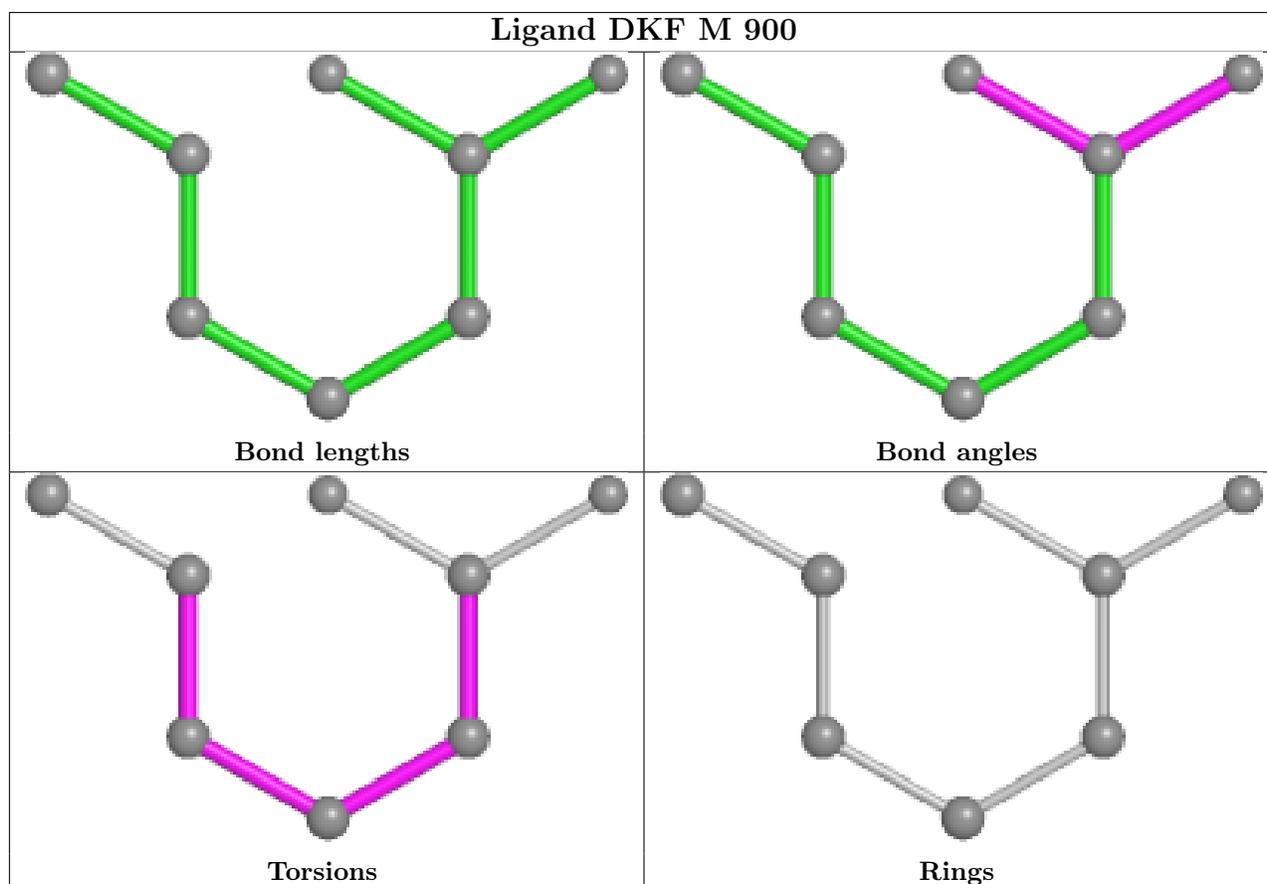
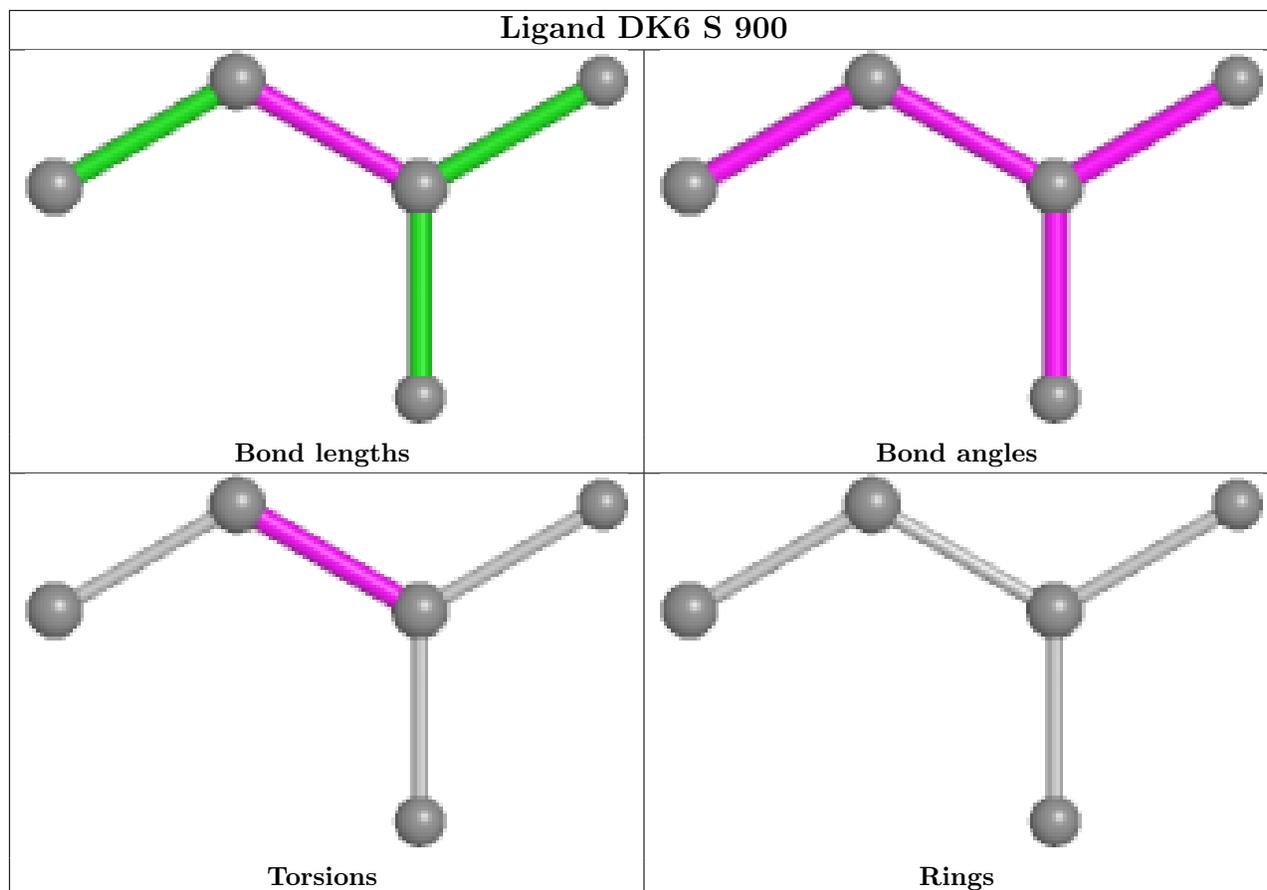


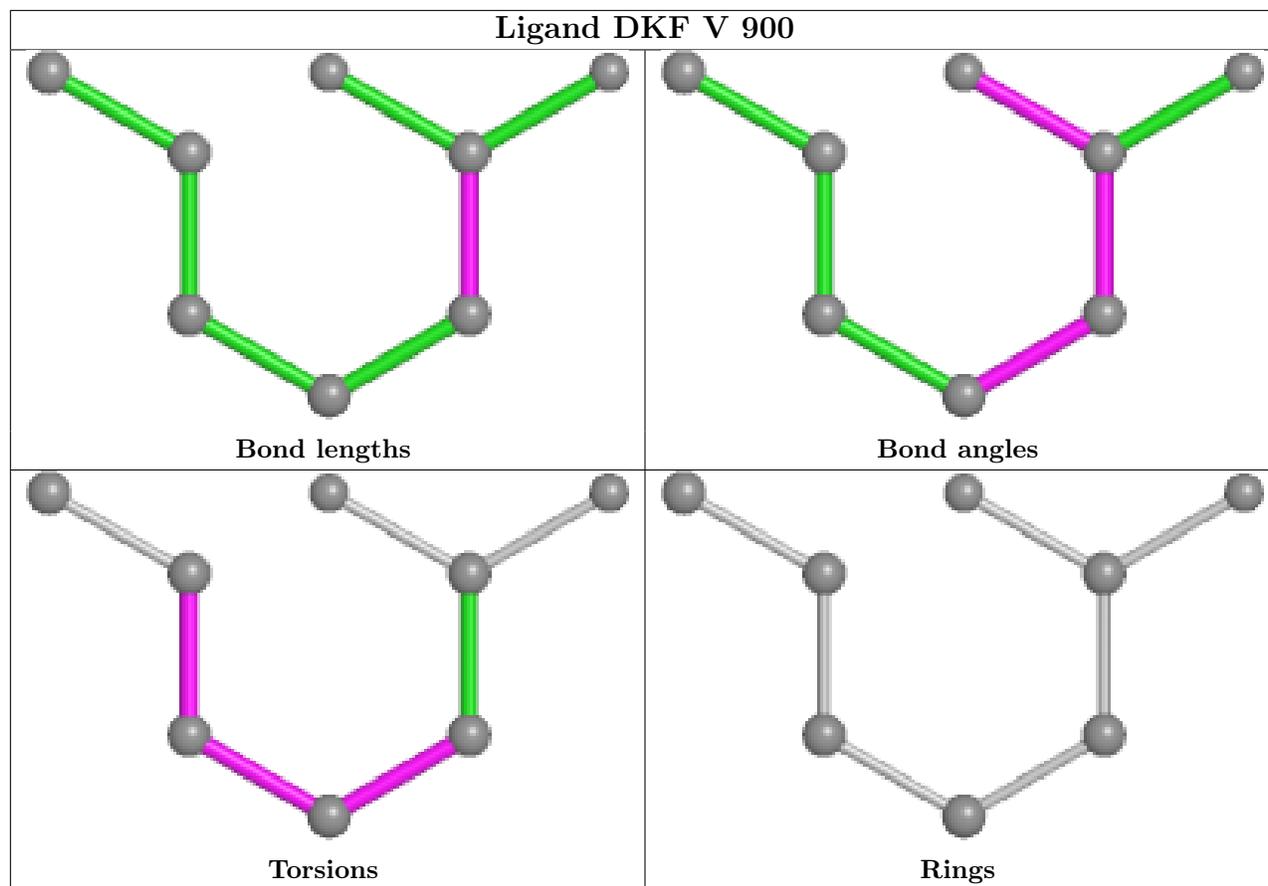


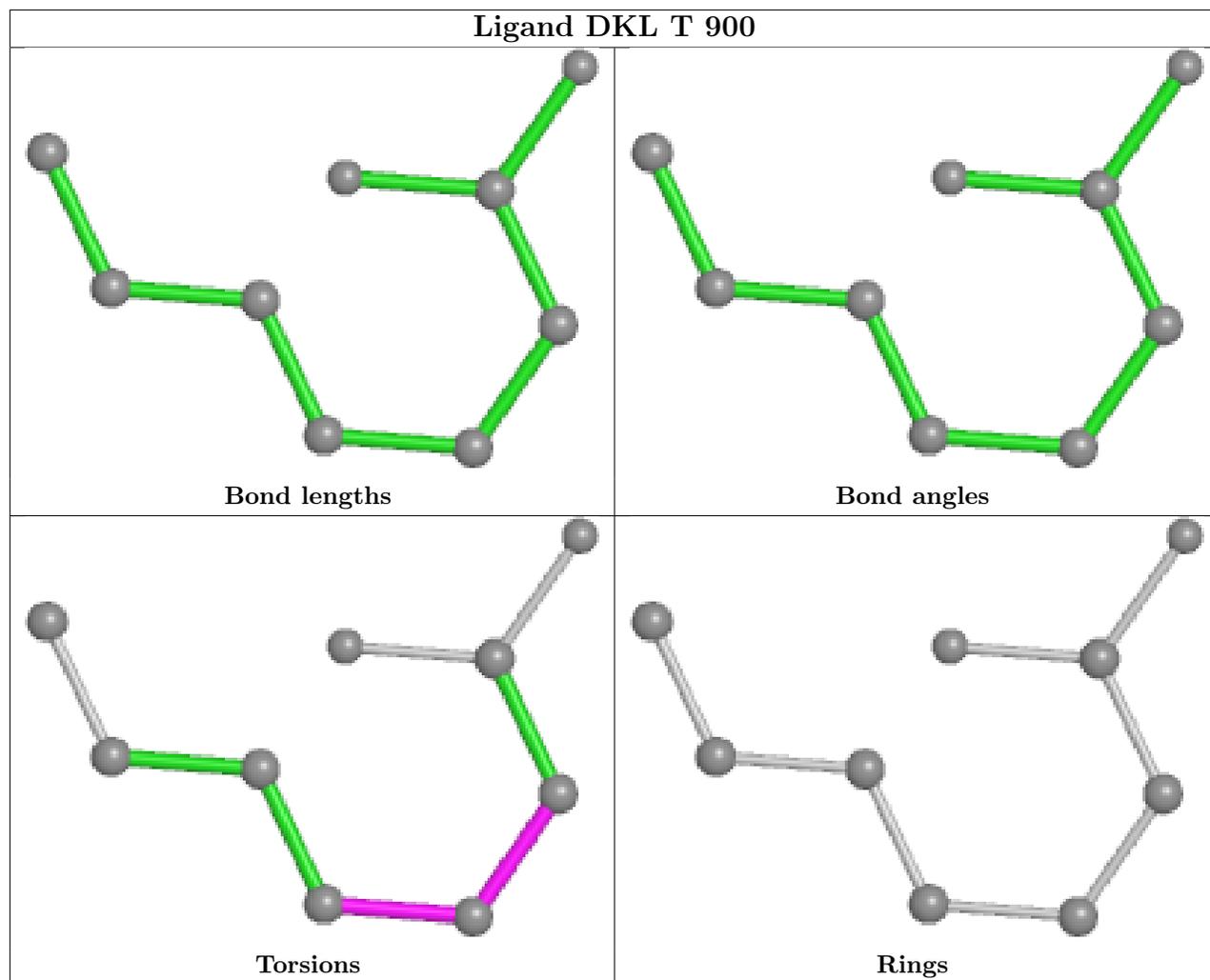


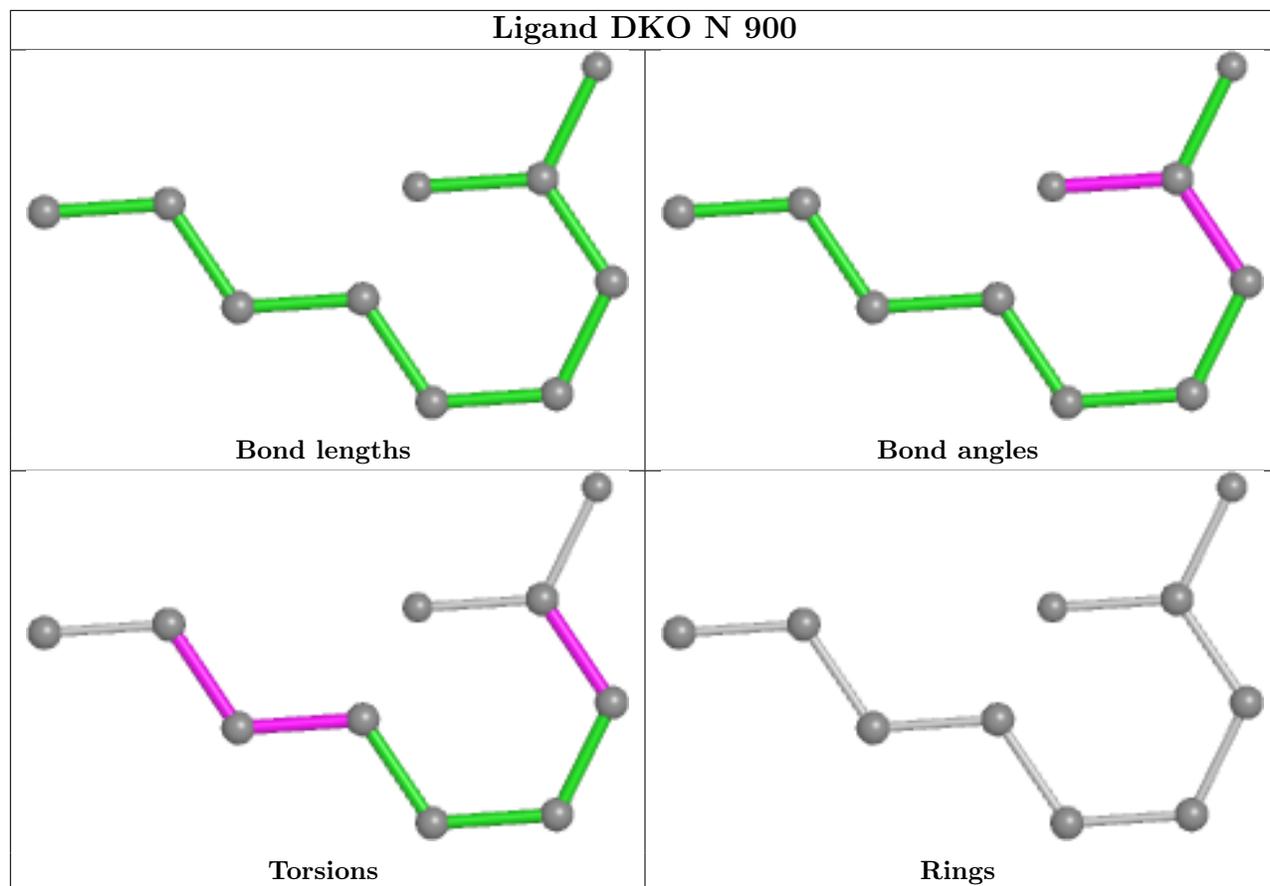


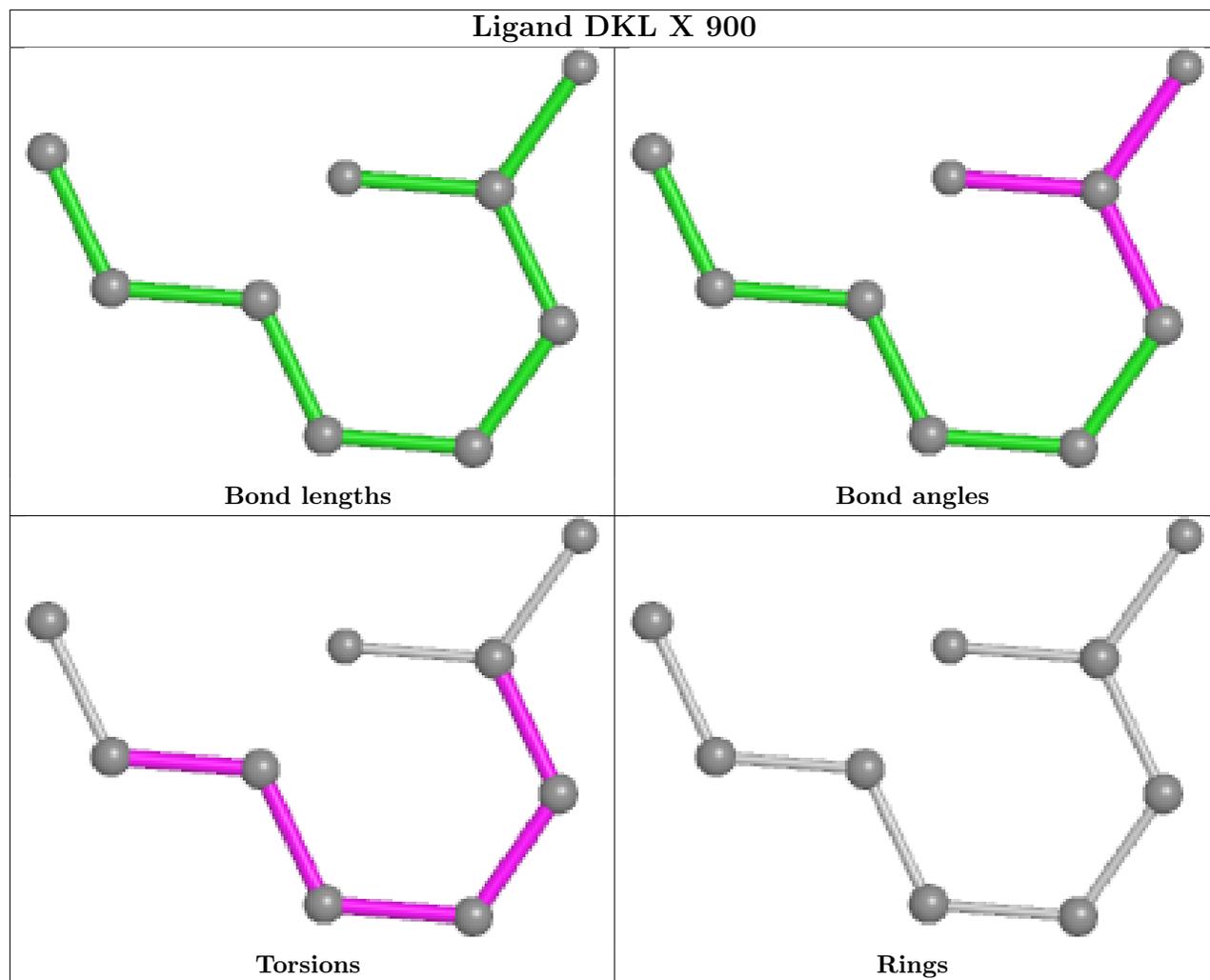


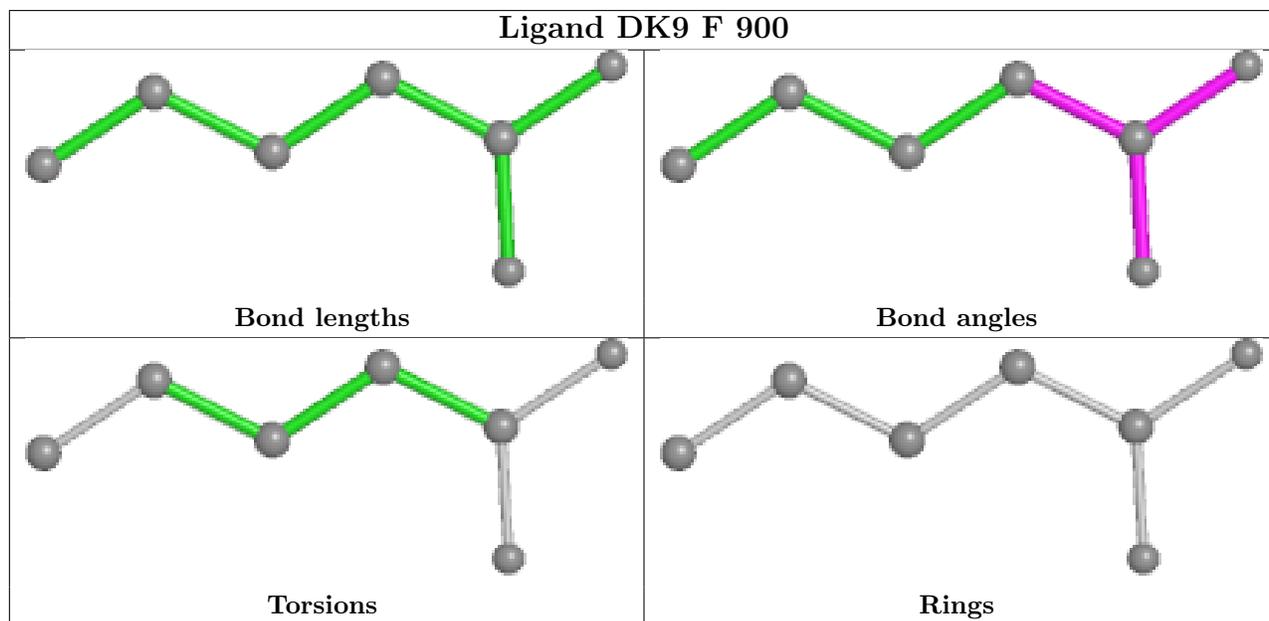
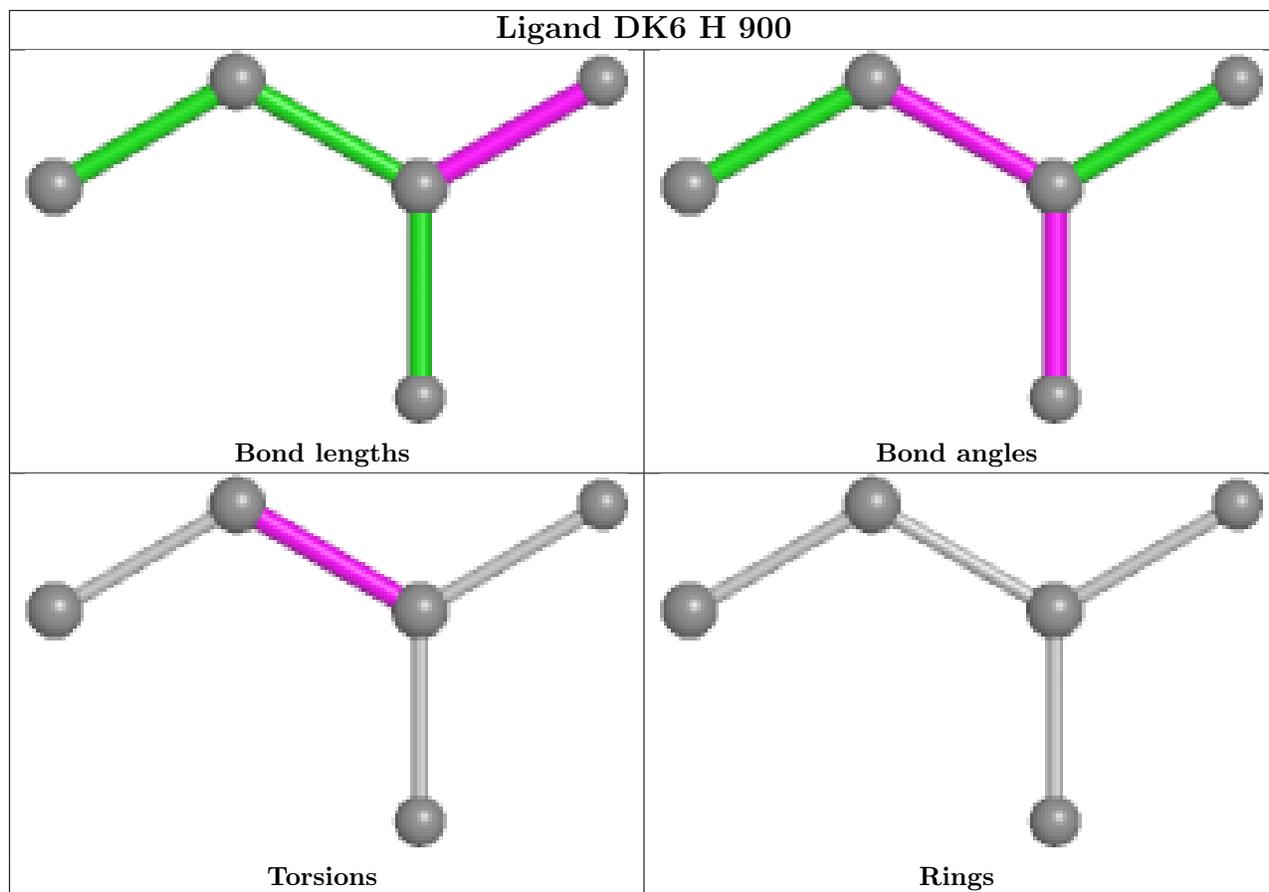


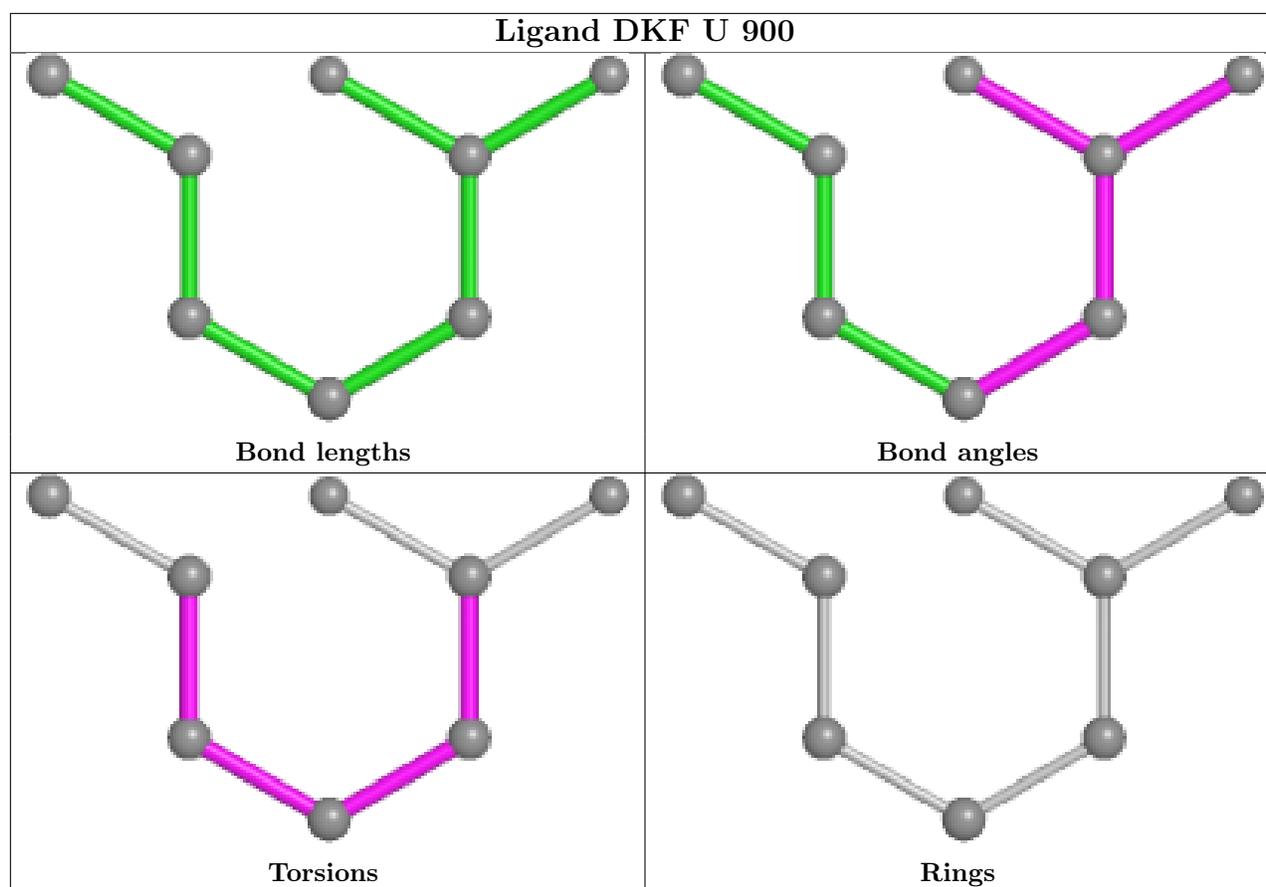












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed      | <RSRZ> | #RSRZ>2      | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|---------------|--------|--------------|-----------------------|-------|
| 1   | A     | 310/317 (97%) | -0.40  | 3 (0%) 79 76 | 19, 28, 49, 94        | 0     |
| 1   | B     | 309/317 (97%) | -0.48  | 4 (1%) 74 71 | 19, 27, 44, 81        | 0     |
| 1   | C     | 309/317 (97%) | -0.47  | 1 (0%) 90 88 | 18, 27, 46, 77        | 0     |
| 1   | D     | 308/317 (97%) | -0.51  | 2 (0%) 85 83 | 18, 27, 45, 77        | 0     |
| 1   | E     | 311/317 (98%) | -0.40  | 7 (2%) 61 58 | 20, 28, 46, 89        | 0     |
| 1   | F     | 308/317 (97%) | -0.50  | 0 100 100    | 18, 26, 46, 74        | 0     |
| 1   | G     | 310/317 (97%) | -0.38  | 2 (0%) 85 83 | 18, 28, 45, 88        | 0     |
| 1   | H     | 309/317 (97%) | -0.49  | 1 (0%) 90 88 | 19, 27, 46, 78        | 0     |
| 1   | I     | 311/317 (98%) | -0.32  | 2 (0%) 85 83 | 19, 31, 50, 97        | 0     |
| 1   | J     | 310/317 (97%) | -0.30  | 3 (0%) 79 76 | 19, 31, 51, 77        | 0     |
| 1   | K     | 312/317 (98%) | -0.42  | 2 (0%) 85 83 | 17, 27, 48, 80        | 0     |
| 1   | L     | 312/317 (98%) | -0.51  | 2 (0%) 85 83 | 17, 26, 47, 90        | 0     |
| 1   | M     | 309/317 (97%) | -0.11  | 2 (0%) 85 83 | 23, 36, 57, 102       | 0     |
| 1   | N     | 310/317 (97%) | -0.38  | 2 (0%) 85 83 | 20, 30, 46, 104       | 0     |
| 1   | O     | 310/317 (97%) | -0.37  | 4 (1%) 74 71 | 19, 29, 48, 86        | 0     |
| 1   | P     | 310/317 (97%) | -0.39  | 6 (1%) 66 62 | 19, 28, 49, 93        | 0     |
| 1   | Q     | 311/317 (98%) | -0.34  | 3 (0%) 79 76 | 21, 31, 53, 92        | 0     |
| 1   | R     | 309/317 (97%) | -0.22  | 5 (1%) 70 67 | 22, 34, 58, 105       | 0     |
| 1   | S     | 310/317 (97%) | -0.53  | 1 (0%) 90 88 | 16, 27, 45, 84        | 0     |
| 1   | T     | 309/317 (97%) | -0.47  | 1 (0%) 90 88 | 15, 26, 41, 84        | 0     |
| 1   | U     | 310/317 (97%) | -0.06  | 3 (0%) 79 76 | 25, 38, 60, 86        | 0     |
| 1   | V     | 309/317 (97%) | -0.29  | 1 (0%) 90 88 | 22, 33, 50, 74        | 0     |
| 1   | W     | 310/317 (97%) | -0.21  | 7 (2%) 61 58 | 22, 33, 50, 84        | 0     |
| 1   | X     | 309/317 (97%) | -0.14  | 8 (2%) 57 54 | 21, 34, 56, 96        | 0     |

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| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2       | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|---------------|-----------------------|-------|
| 1   | Y     | 309/317 (97%)   | -0.21  | 4 (1%) 74 71  | 24, 33, 50, 98        | 0     |
| 1   | Z     | 309/317 (97%)   | 0.02   | 5 (1%) 70 67  | 24, 39, 66, 92        | 0     |
| All | All   | 8053/8242 (97%) | -0.34  | 81 (1%) 79 76 | 15, 30, 52, 105       | 0     |

All (81) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | U     | 310 | ASN  | 5.0  |
| 1   | W     | 212 | GLY  | 4.8  |
| 1   | B     | 308 | VAL  | 4.6  |
| 1   | R     | 310 | ASN  | 4.6  |
| 1   | O     | 241 | ASN  | 4.6  |
| 1   | W     | 310 | ASN  | 4.4  |
| 1   | O     | 240 | PRO  | 4.4  |
| 1   | M     | 310 | ASN  | 4.0  |
| 1   | E     | 186 | ASP  | 3.9  |
| 1   | W     | 211 | PHE  | 3.7  |
| 1   | X     | 310 | ASN  | 3.5  |
| 1   | I     | 312 | ARG  | 3.4  |
| 1   | P     | 311 | ARG  | 3.4  |
| 1   | P     | 310 | ASN  | 3.3  |
| 1   | K     | 312 | ARG  | 3.3  |
| 1   | N     | 211 | PHE  | 3.3  |
| 1   | P     | 211 | PHE  | 3.3  |
| 1   | B     | 309 | ALA  | 3.2  |
| 1   | Q     | 211 | PHE  | 3.2  |
| 1   | R     | 211 | PHE  | 3.2  |
| 1   | E     | 185 | GLU  | 3.1  |
| 1   | A     | 211 | PHE  | 3.1  |
| 1   | J     | 310 | ASN  | 3.1  |
| 1   | Q     | 312 | ARG  | 3.1  |
| 1   | O     | 310 | ASN  | 3.1  |
| 1   | R     | 309 | ALA  | 3.0  |
| 1   | D     | 211 | PHE  | 2.9  |
| 1   | I     | 186 | ASP  | 2.9  |
| 1   | A     | 310 | ASN  | 2.9  |
| 1   | E     | 312 | ARG  | 2.8  |
| 1   | D     | 186 | ASP  | 2.8  |
| 1   | O     | 186 | ASP  | 2.8  |
| 1   | G     | 310 | ASN  | 2.8  |
| 1   | Y     | 211 | PHE  | 2.7  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | E            | 160        | ALA         | 2.7         |
| 1          | Z            | 271        | ASP         | 2.7         |
| 1          | Q            | 310        | ASN         | 2.7         |
| 1          | M            | 211        | PHE         | 2.7         |
| 1          | Z            | 310        | ASN         | 2.7         |
| 1          | E            | 6          | ILE         | 2.6         |
| 1          | P            | 186        | ASP         | 2.6         |
| 1          | W            | 185        | GLU         | 2.6         |
| 1          | A            | 311        | ARG         | 2.6         |
| 1          | Z            | 157        | LYS         | 2.5         |
| 1          | Z            | 241        | ASN         | 2.5         |
| 1          | U            | 211        | PHE         | 2.5         |
| 1          | U            | 311        | ARG         | 2.5         |
| 1          | X            | 186        | ASP         | 2.5         |
| 1          | C            | 310        | ASN         | 2.5         |
| 1          | J            | 266        | GLU         | 2.4         |
| 1          | Y            | 153        | LYS         | 2.4         |
| 1          | B            | 310        | ASN         | 2.4         |
| 1          | L            | 211        | PHE         | 2.3         |
| 1          | B            | 211        | PHE         | 2.3         |
| 1          | E            | 211        | PHE         | 2.3         |
| 1          | G            | 211        | PHE         | 2.3         |
| 1          | P            | 128        | GLY         | 2.3         |
| 1          | V            | 211        | PHE         | 2.3         |
| 1          | X            | 211        | PHE         | 2.3         |
| 1          | W            | 127        | PRO         | 2.3         |
| 1          | W            | 311        | ARG         | 2.3         |
| 1          | X            | 4          | GLN         | 2.3         |
| 1          | K            | 211        | PHE         | 2.2         |
| 1          | R            | 128        | GLY         | 2.2         |
| 1          | S            | 186        | ASP         | 2.2         |
| 1          | X            | 309        | ALA         | 2.2         |
| 1          | E            | 128        | GLY         | 2.2         |
| 1          | L            | 313        | ILE         | 2.2         |
| 1          | T            | 211        | PHE         | 2.2         |
| 1          | H            | 6          | ILE         | 2.2         |
| 1          | X            | 185        | GLU         | 2.1         |
| 1          | R            | 186        | ASP         | 2.1         |
| 1          | Y            | 212        | GLY         | 2.1         |
| 1          | P            | 185        | GLU         | 2.1         |
| 1          | J            | 212        | GLY         | 2.1         |
| 1          | X            | 270        | ARG         | 2.0         |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | W     | 161 | THR  | 2.0  |
| 1   | Z     | 163 | PRO  | 2.0  |
| 1   | Y     | 156 | ALA  | 2.0  |
| 1   | X     | 153 | LYS  | 2.0  |
| 1   | N     | 310 | ASN  | 2.0  |

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

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

## 6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

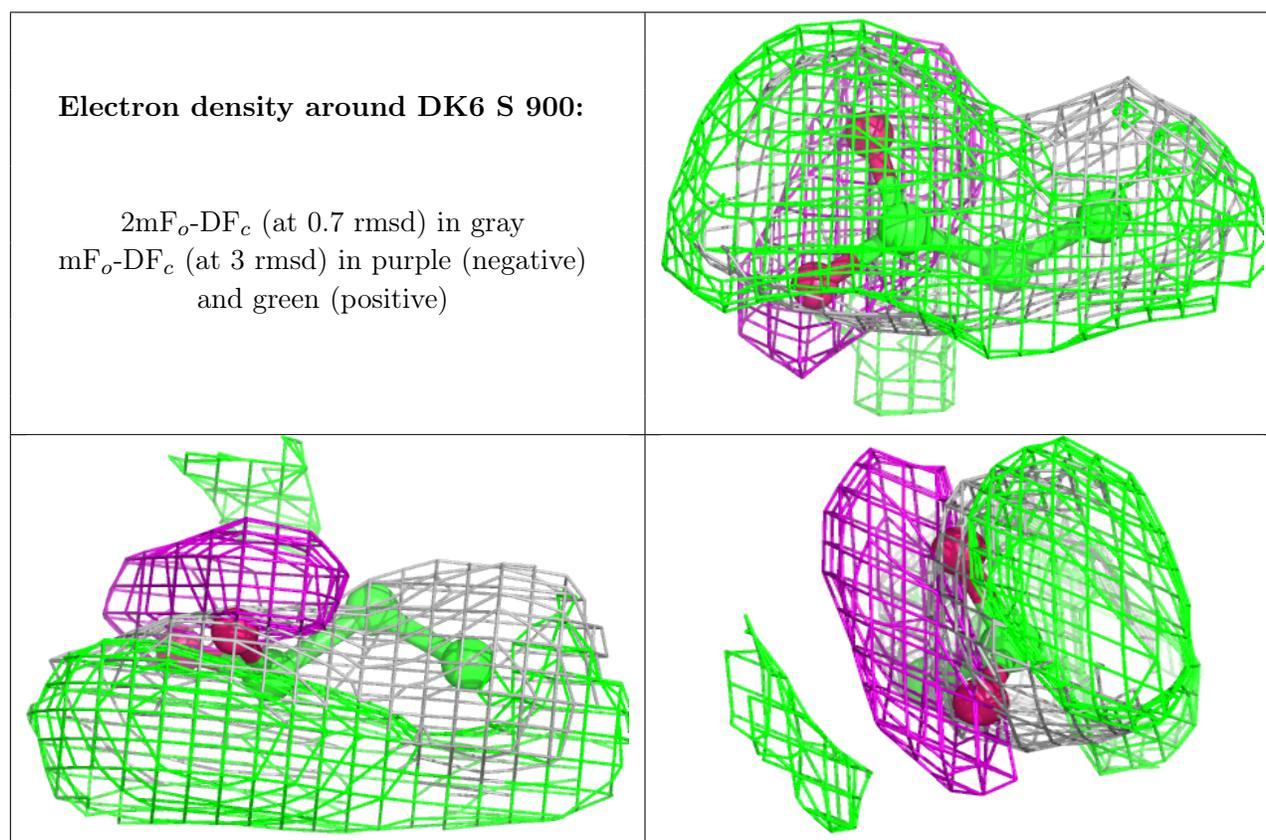
| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 4   | DK6  | S     | 900 | 5/5   | 0.40 | 0.33 | 26,29,34,36                | 0     |
| 2   | DKL  | C     | 900 | 9/9   | 0.54 | 0.32 | 32,51,84,85                | 0     |
| 5   | DKF  | W     | 900 | 8/8   | 0.59 | 0.31 | 37,41,54,56                | 0     |
| 5   | DKF  | G     | 900 | 8/8   | 0.60 | 0.24 | 29,39,43,43                | 0     |
| 2   | DKL  | X     | 900 | 9/9   | 0.62 | 0.24 | 32,44,66,67                | 0     |
| 5   | DKF  | M     | 900 | 8/8   | 0.64 | 0.22 | 35,49,55,56                | 0     |
| 2   | DKL  | T     | 900 | 9/9   | 0.65 | 0.22 | 28,42,72,78                | 0     |
| 3   | DKO  | B     | 900 | 10/10 | 0.67 | 0.25 | 29,48,64,66                | 0     |
| 5   | DKF  | U     | 900 | 8/8   | 0.68 | 0.27 | 40,56,68,68                | 0     |
| 4   | DK6  | Z     | 900 | 5/5   | 0.68 | 0.26 | 34,39,42,43                | 0     |
| 3   | DKO  | R     | 900 | 10/10 | 0.69 | 0.23 | 35,50,68,70                | 0     |
| 4   | DK6  | D     | 900 | 5/5   | 0.71 | 0.22 | 25,28,34,37                | 0     |
| 6   | DK9  | O     | 900 | 7/7   | 0.75 | 0.15 | 27,38,45,45                | 0     |
| 5   | DKF  | V     | 900 | 8/8   | 0.77 | 0.21 | 32,42,52,53                | 0     |
| 5   | DKF  | Y     | 900 | 8/8   | 0.78 | 0.20 | 30,43,54,57                | 0     |
| 5   | DKF  | K     | 900 | 8/8   | 0.78 | 0.19 | 29,39,49,49                | 0     |
| 4   | DK6  | H     | 900 | 5/5   | 0.78 | 0.22 | 28,31,35,37                | 0     |
| 6   | DK9  | P     | 900 | 7/7   | 0.80 | 0.18 | 23,29,39,41                | 0     |

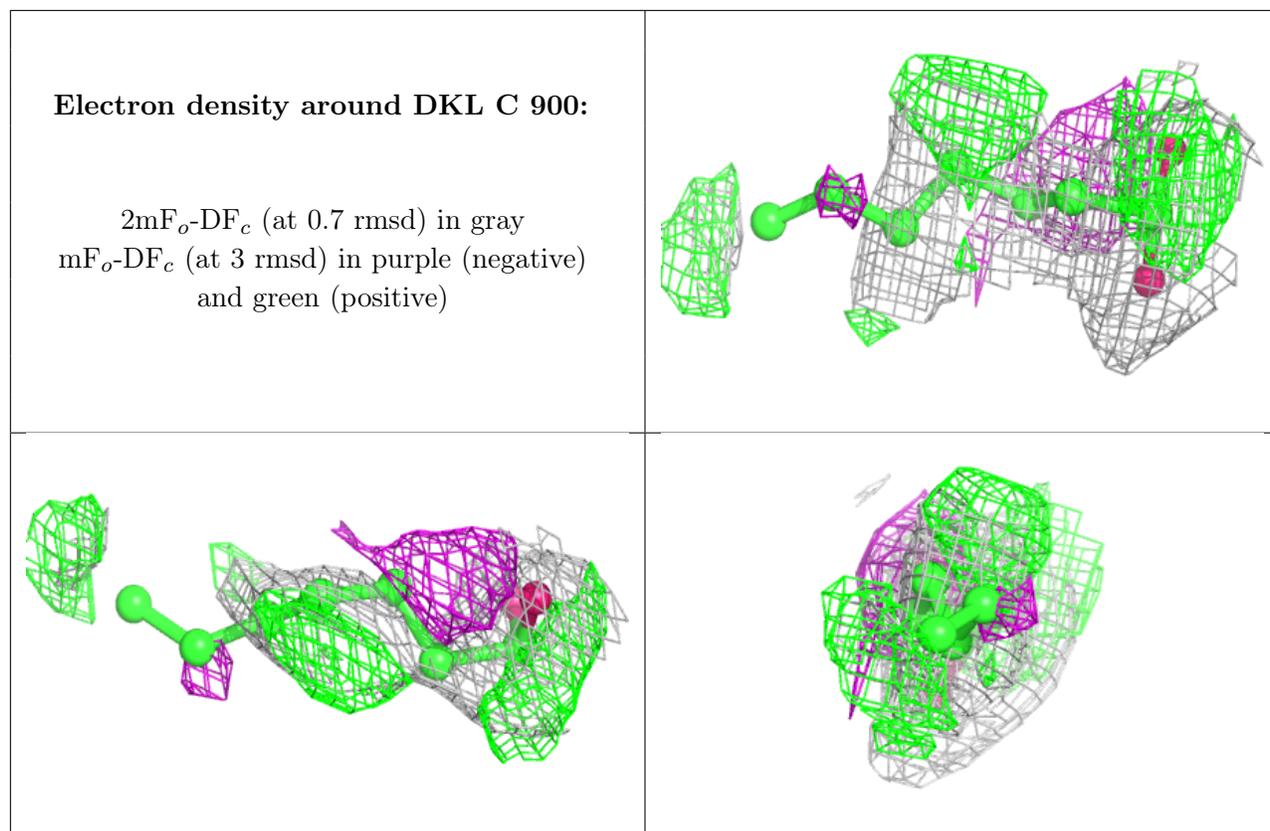
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| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|-----------------------------|-------|
| 2   | DKL  | A     | 900 | 9/9   | 0.81 | 0.20 | 27,39,47,49                 | 0     |
| 5   | DKF  | I     | 900 | 8/8   | 0.81 | 0.21 | 30,48,58,60                 | 0     |
| 2   | DKL  | Q     | 900 | 9/9   | 0.82 | 0.20 | 30,46,54,55                 | 0     |
| 6   | DK9  | F     | 900 | 7/7   | 0.82 | 0.14 | 23,29,34,36                 | 0     |
| 5   | DKF  | J     | 900 | 8/8   | 0.83 | 0.17 | 31,46,53,53                 | 0     |
| 5   | DKF  | E     | 900 | 8/8   | 0.84 | 0.20 | 27,47,57,59                 | 0     |
| 5   | DKF  | L     | 900 | 8/8   | 0.86 | 0.16 | 30,38,45,46                 | 0     |
| 3   | DKO  | N     | 900 | 10/10 | 0.87 | 0.19 | 28,55,82,83                 | 0     |

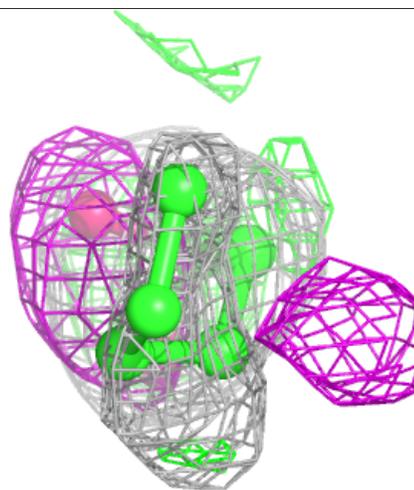
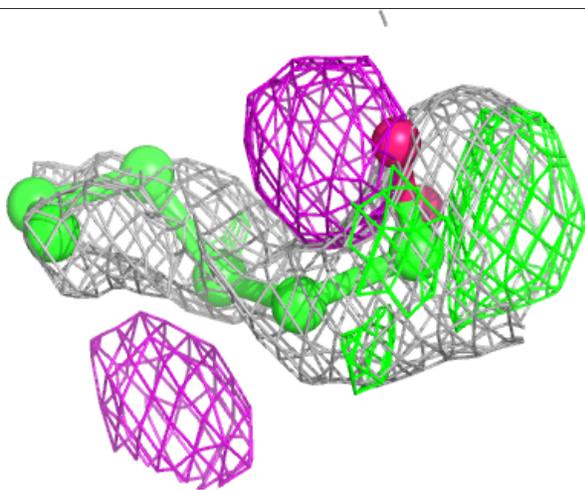
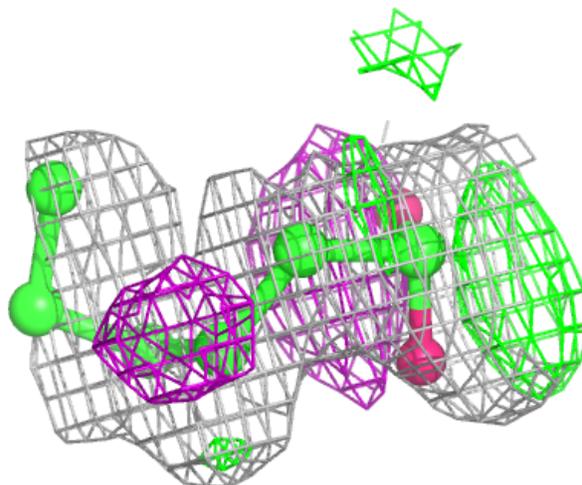
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.





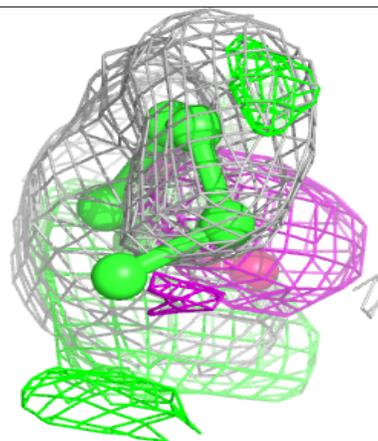
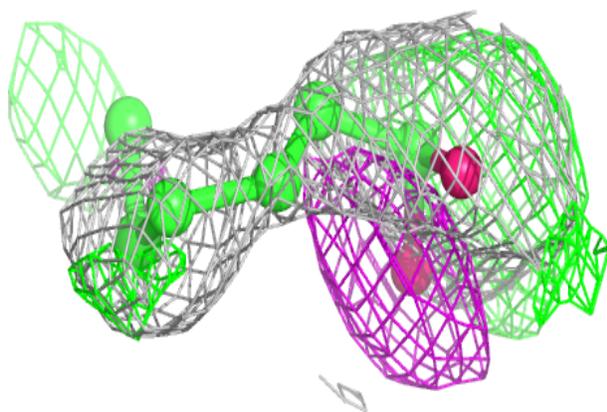
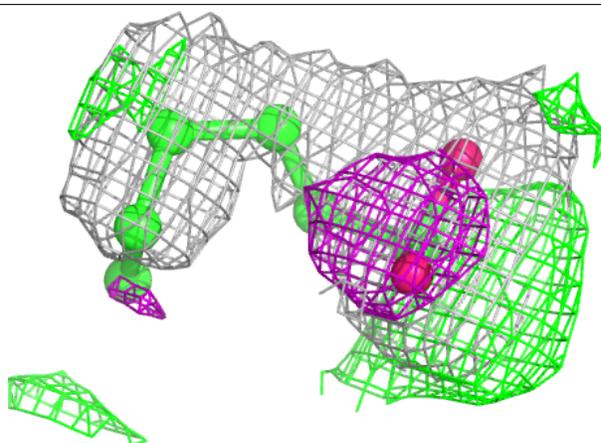
**Electron density around DKF W 900:**

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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

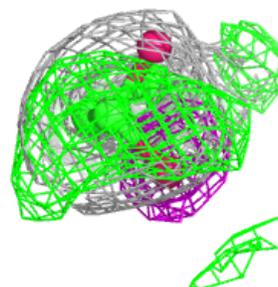
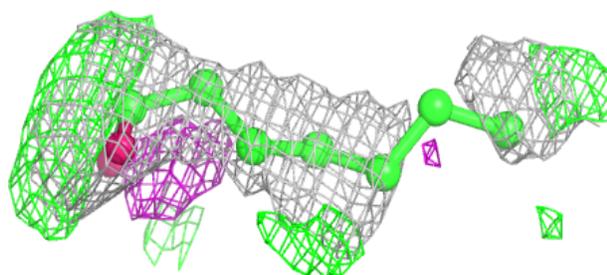
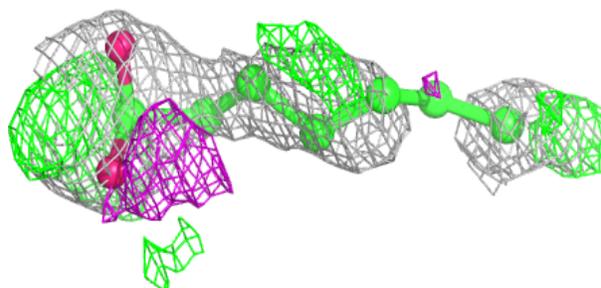


**Electron density around DKF G 900:**

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and green (positive)

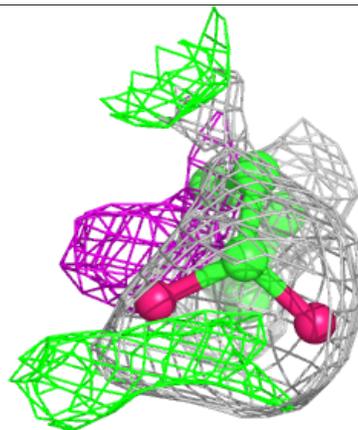
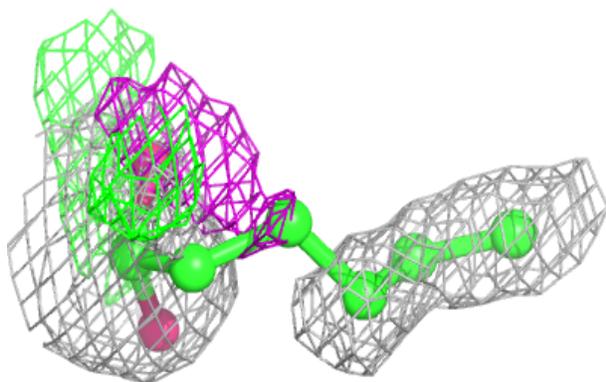
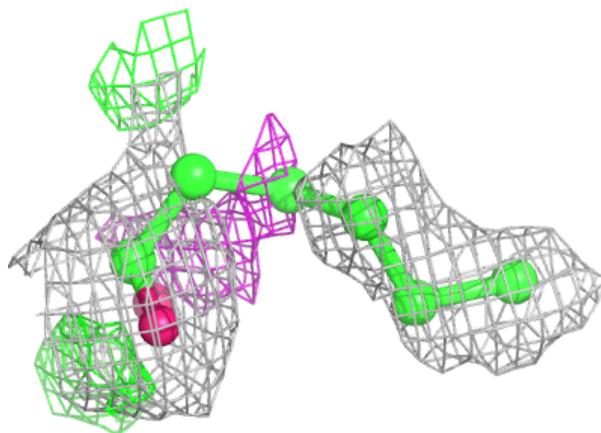
**Electron density around DKL X 900:**

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and green (positive)

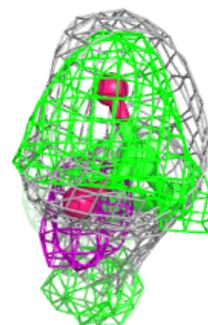
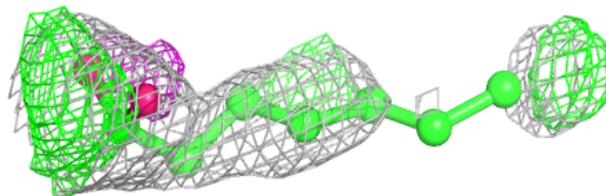
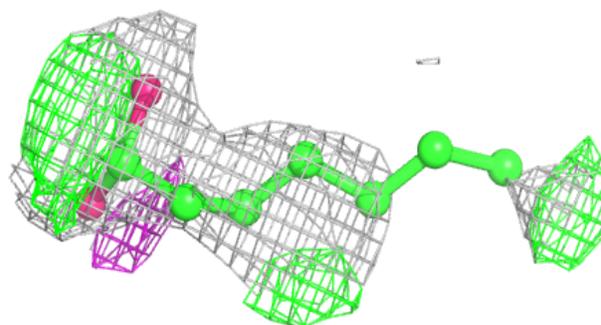


**Electron density around DKF M 900:**

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and green (positive)

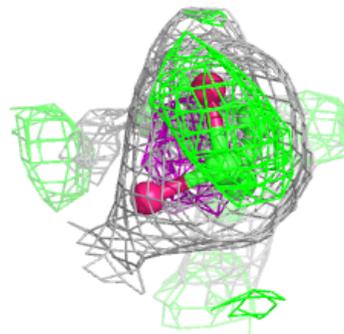
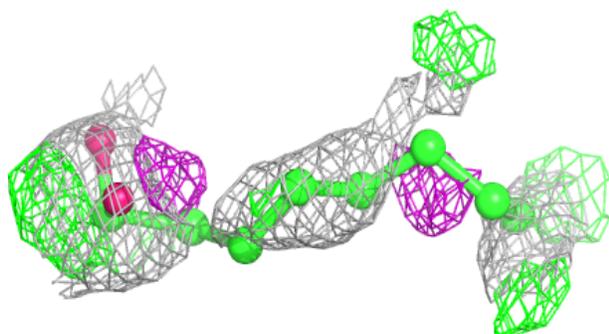
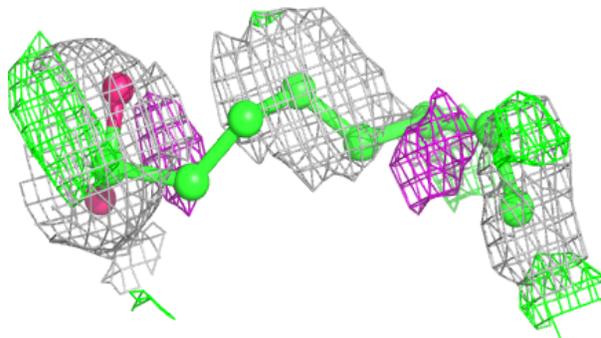
**Electron density around DKL T 900:**

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and green (positive)



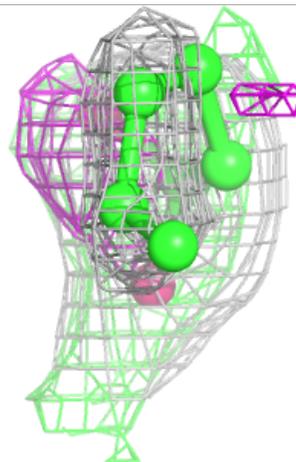
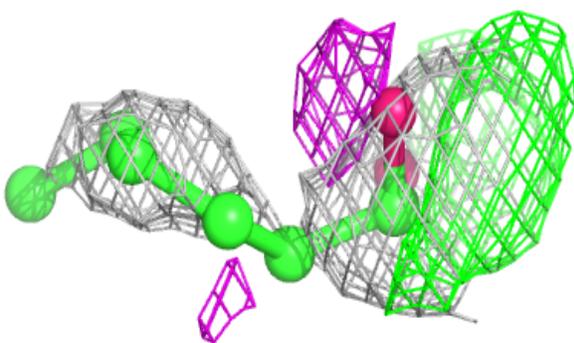
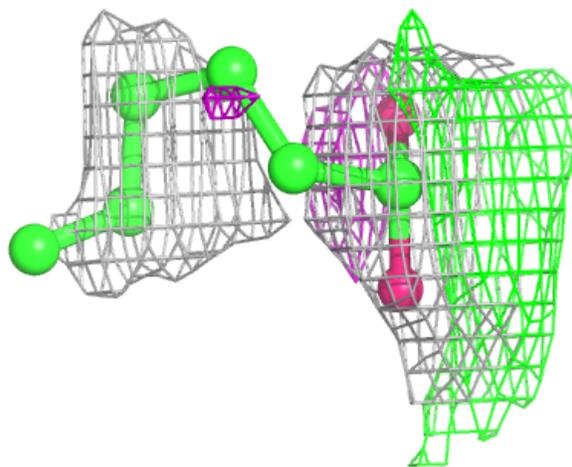
**Electron density around DKO B 900:**

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and green (positive)



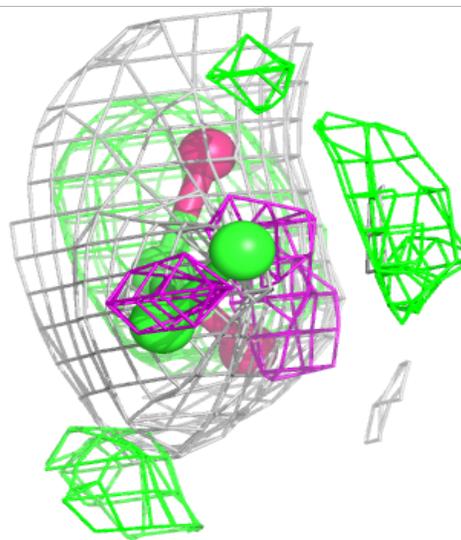
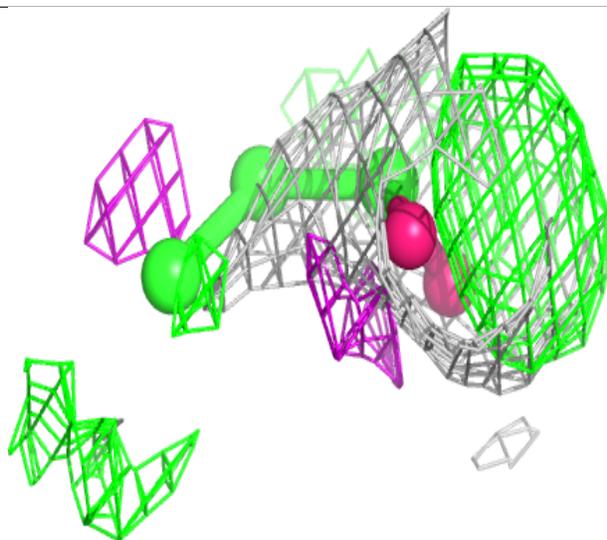
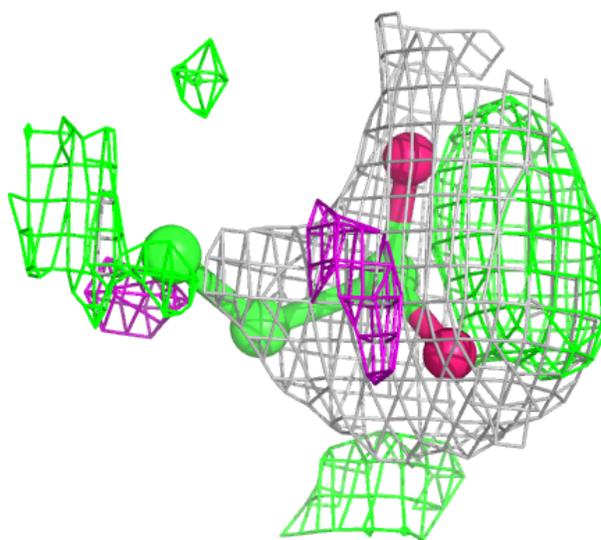
**Electron density around DKF U 900:**

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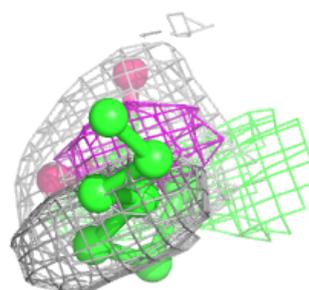
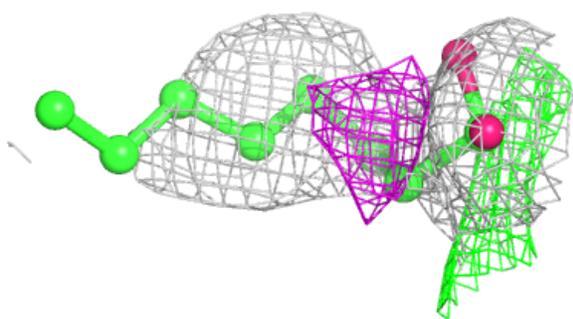
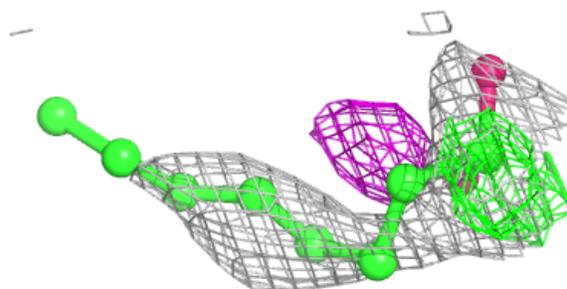
**Electron density around DK6 Z 900:**

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and green (positive)



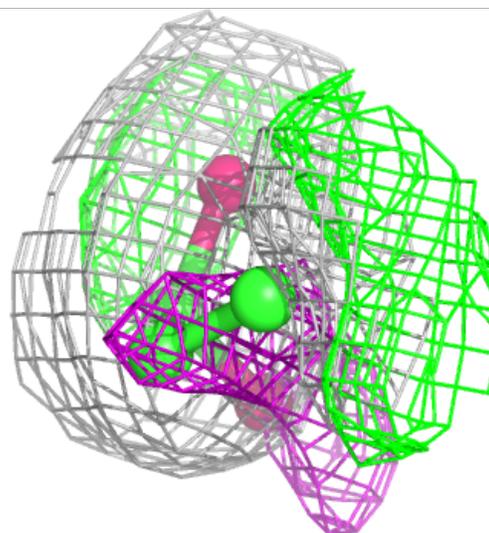
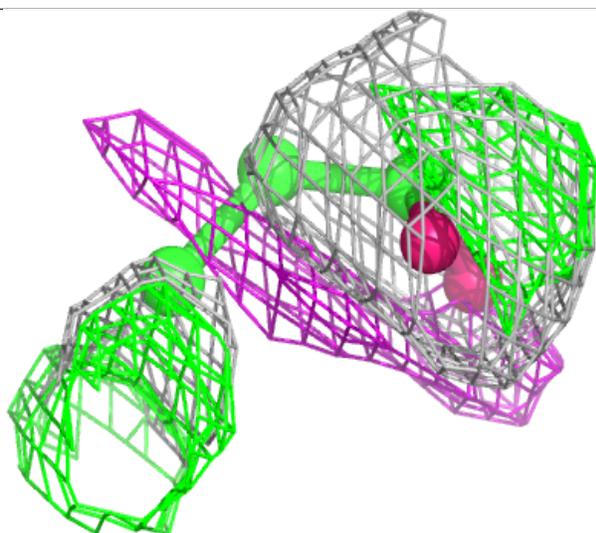
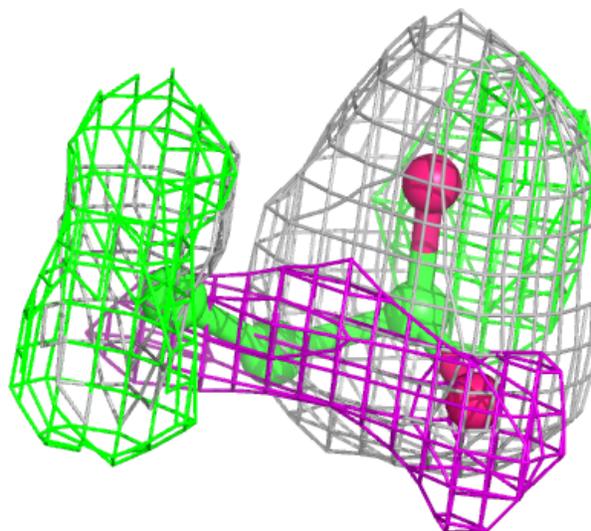
**Electron density around DKO R 900:**

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and green (positive)



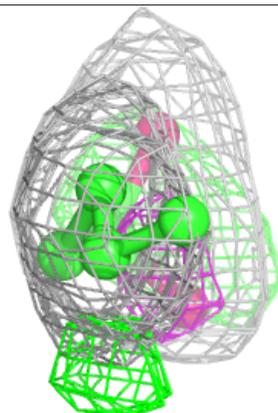
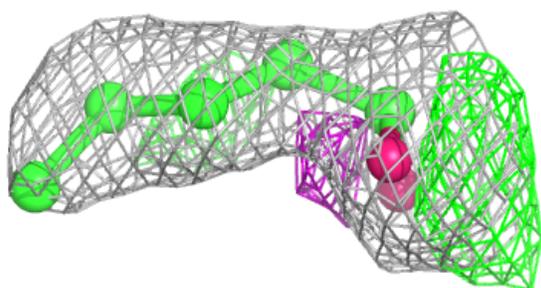
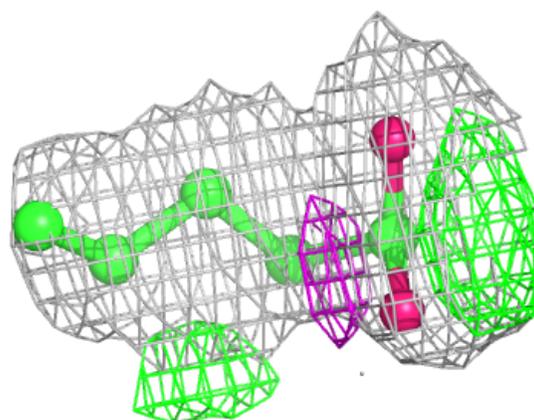
**Electron density around DK6 D 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



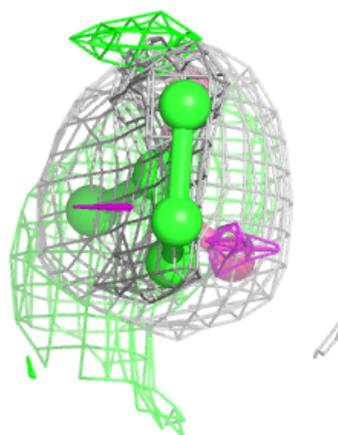
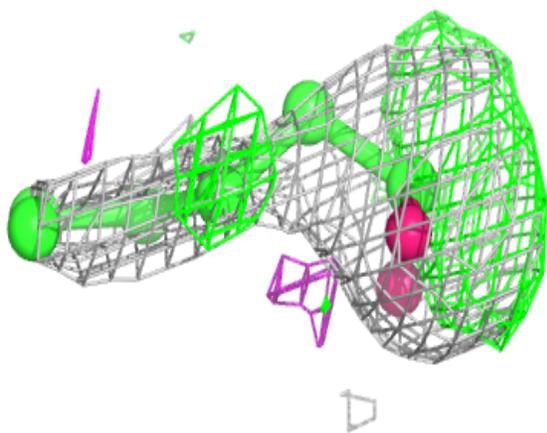
**Electron density around DK9 O 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



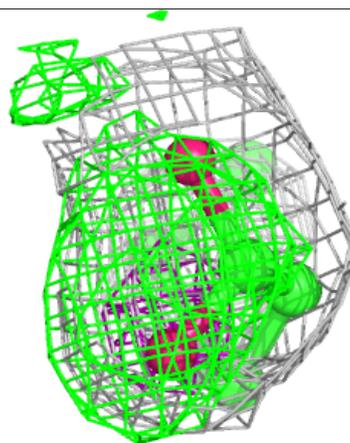
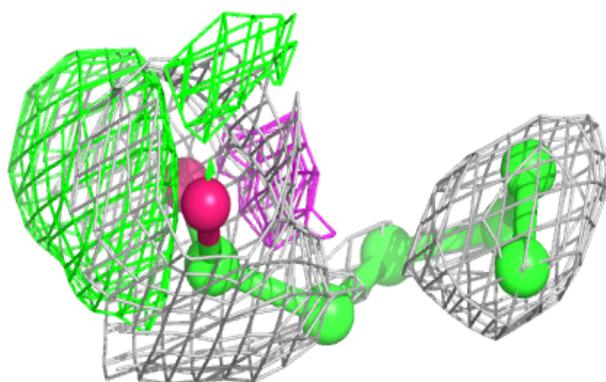
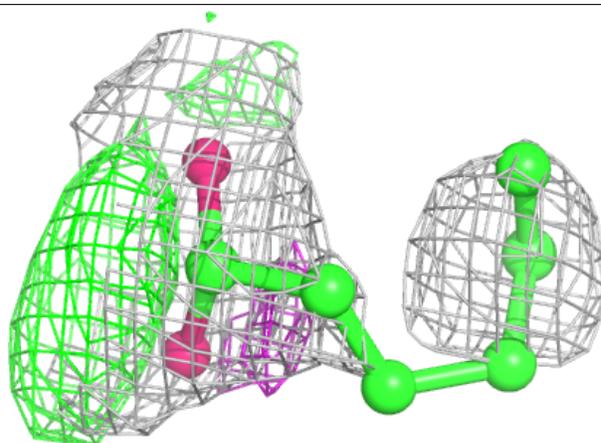
**Electron density around DKF V 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



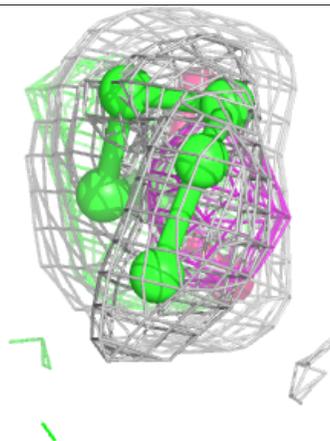
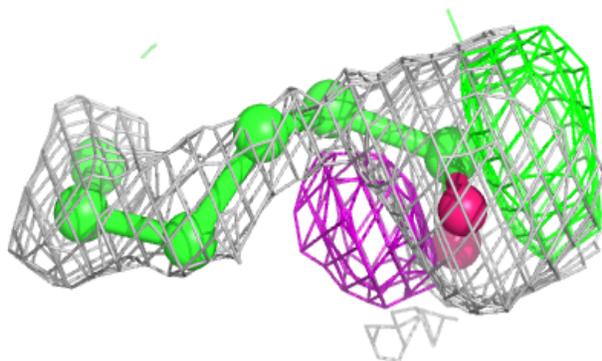
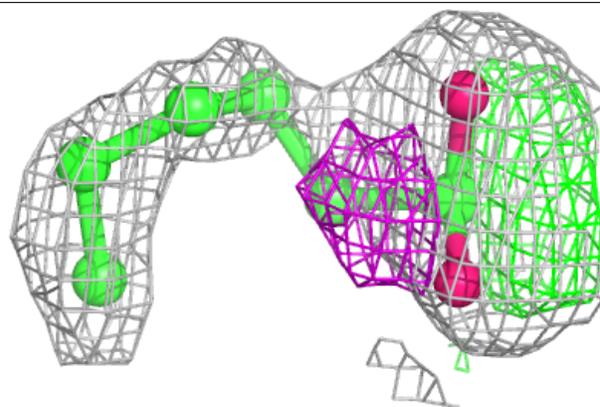
**Electron density around DKF Y 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



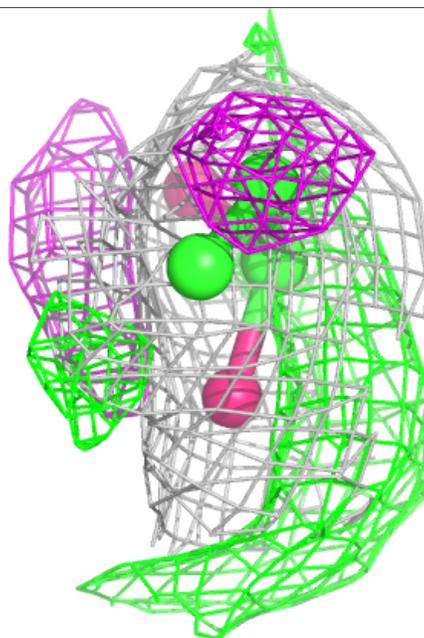
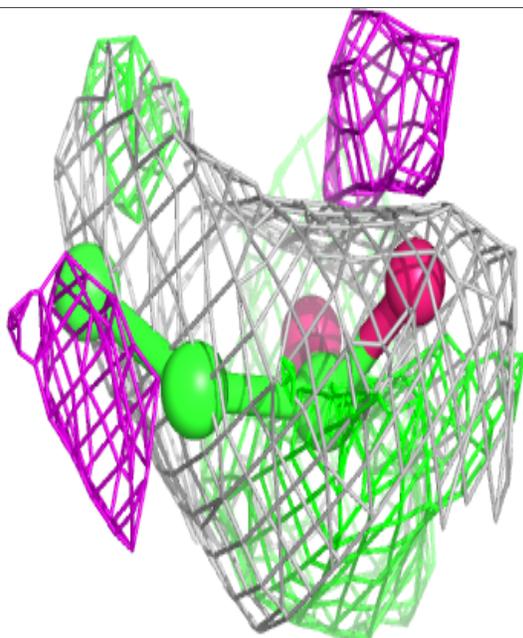
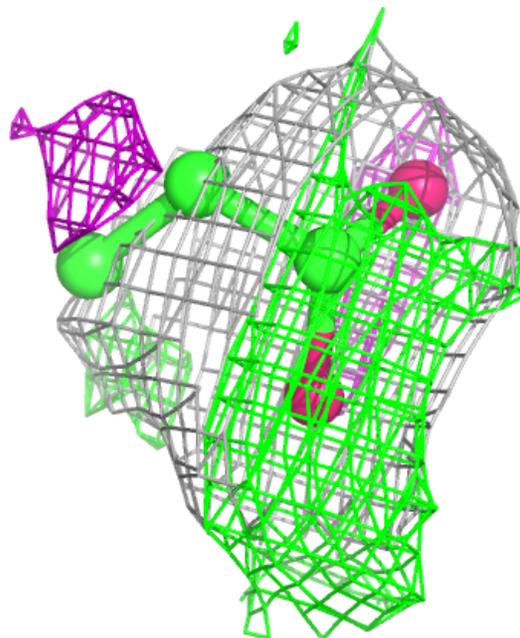
**Electron density around DKF K 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



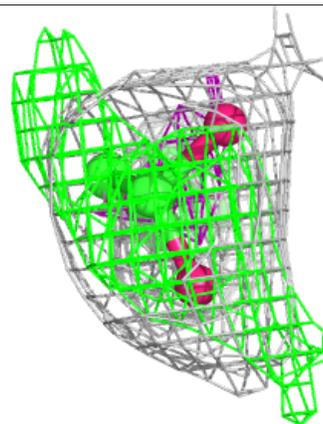
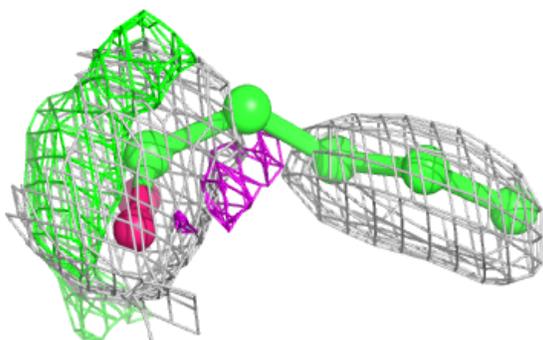
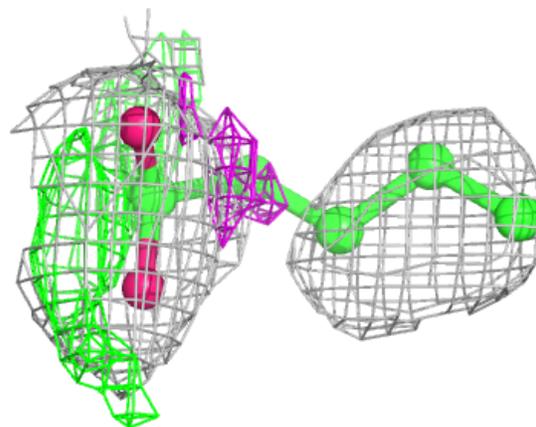
**Electron density around DK6 H 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



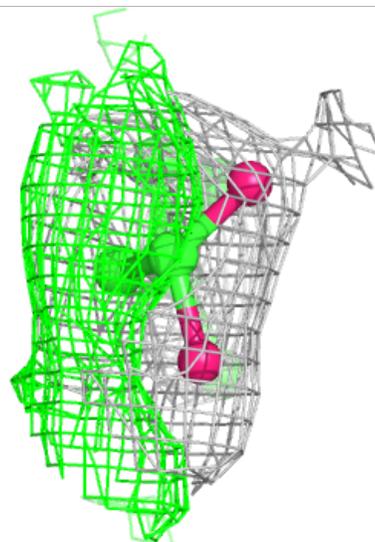
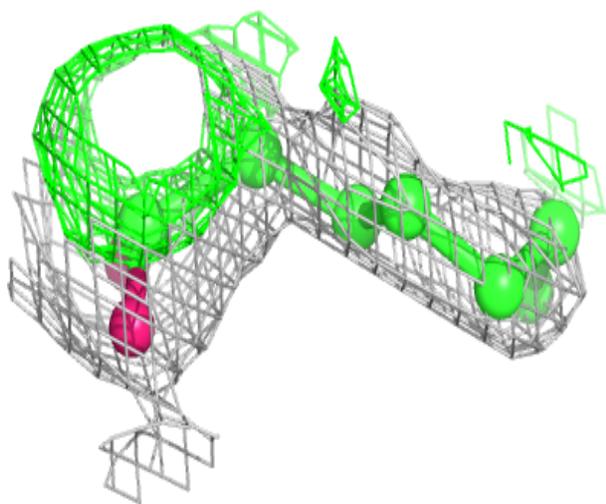
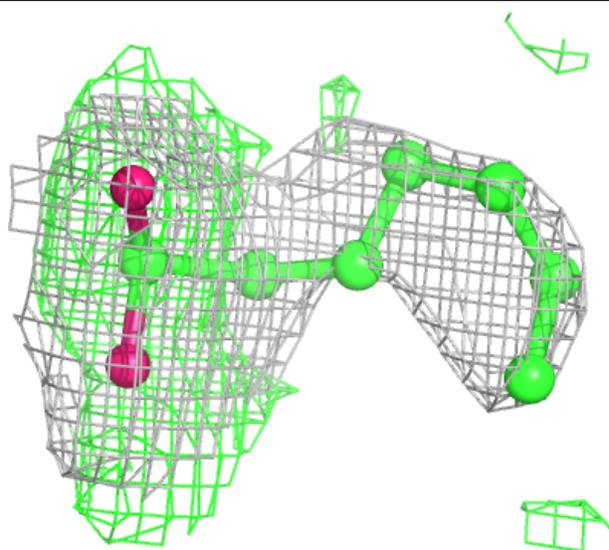
**Electron density around DK9 P 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



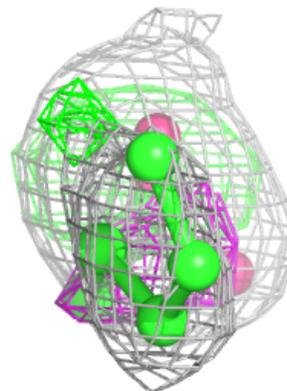
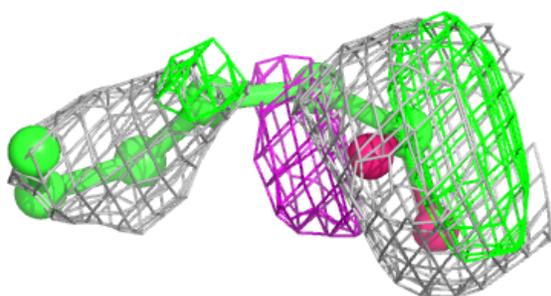
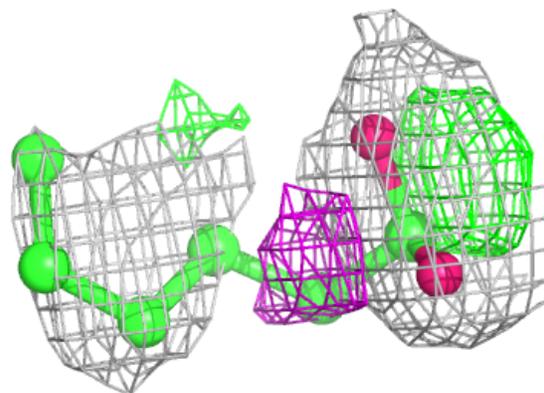
**Electron density around DKL A 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



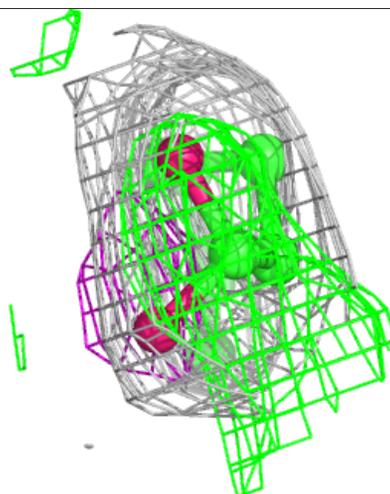
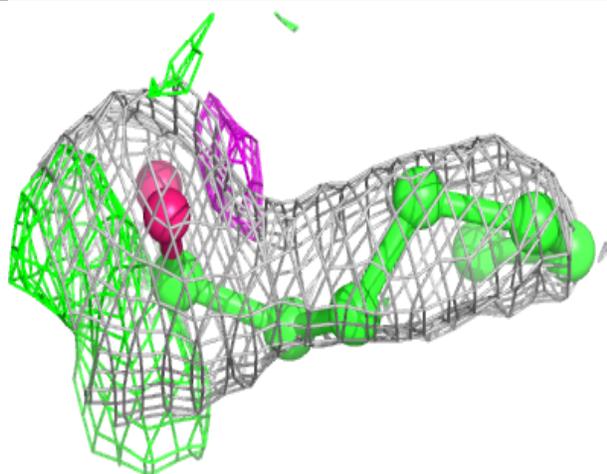
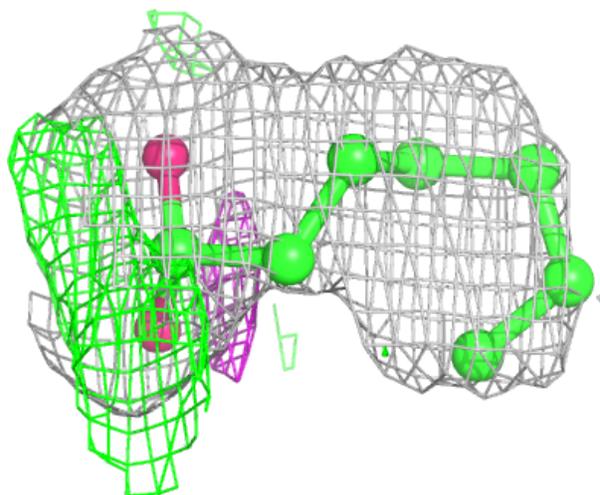
**Electron density around DKF I 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



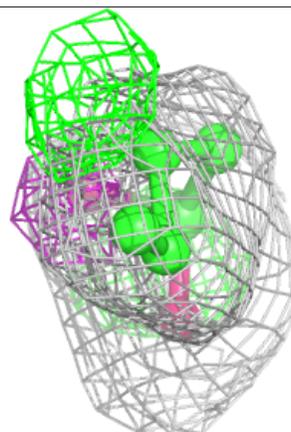
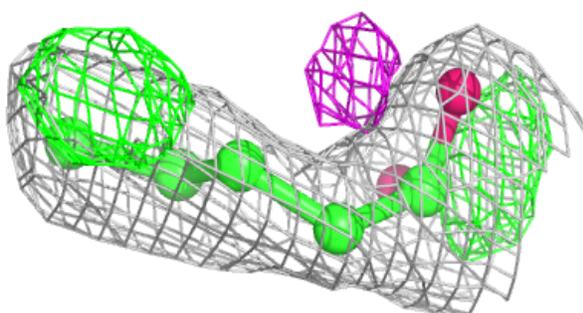
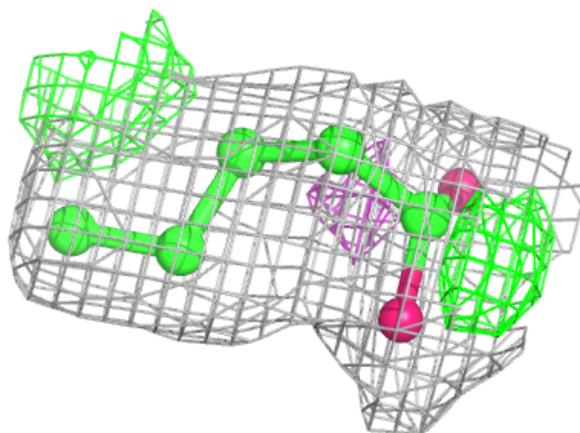
**Electron density around DKL Q 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

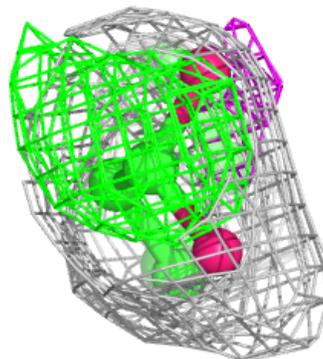
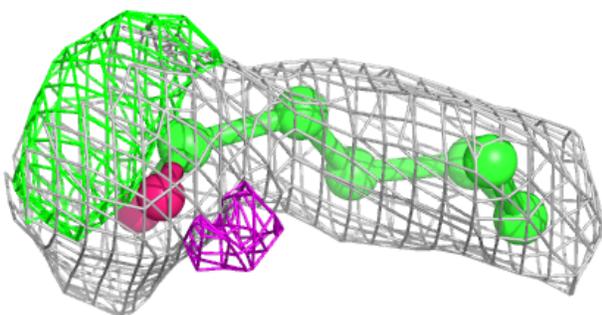
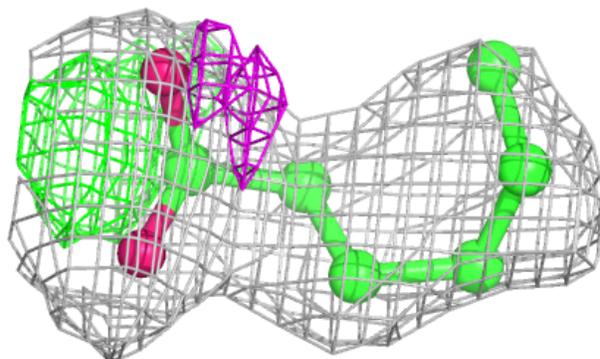


**Electron density around DK9 F 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

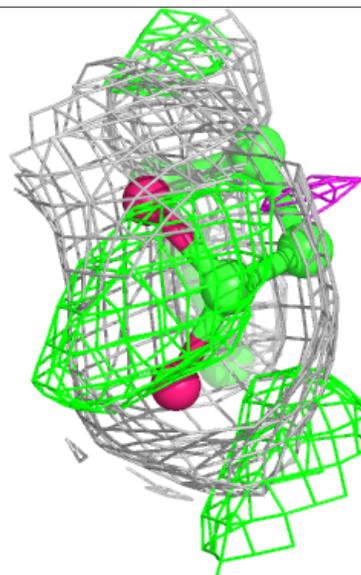
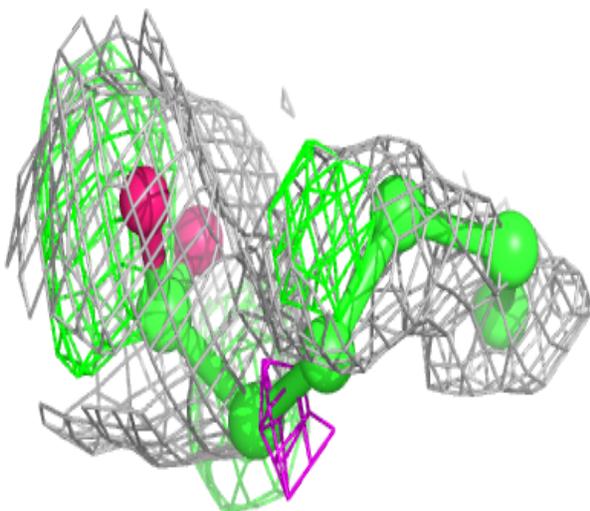
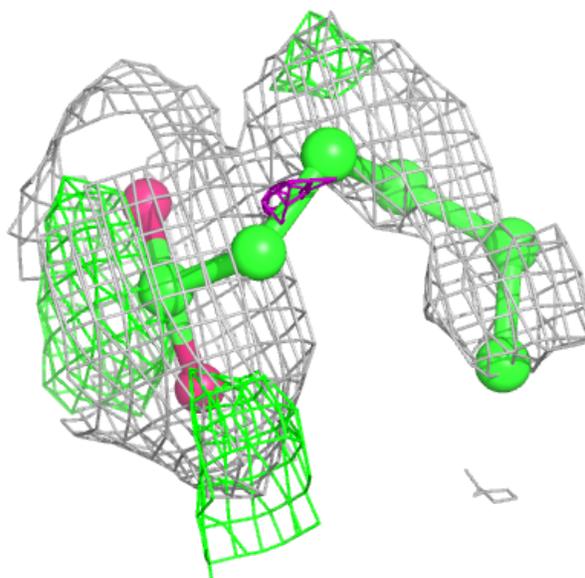
**Electron density around DKF J 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



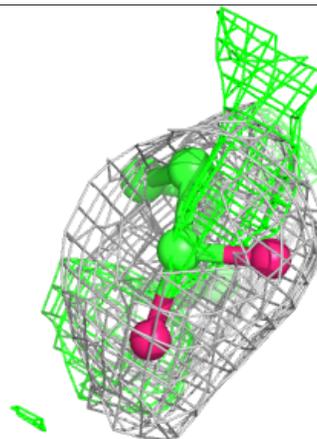
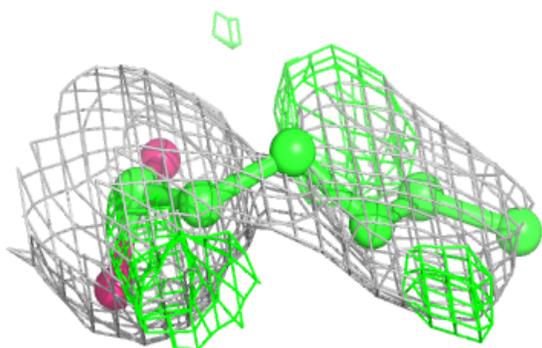
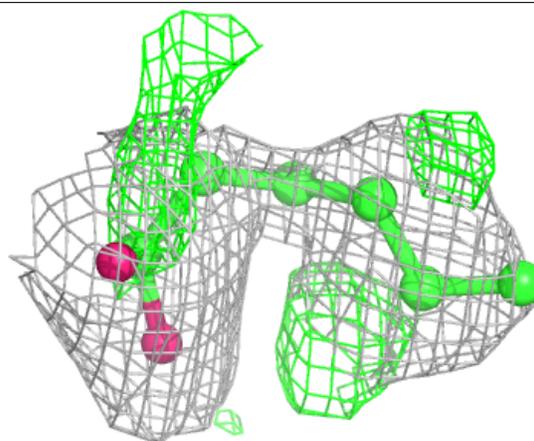
**Electron density around DKF E 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

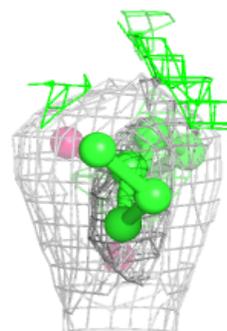
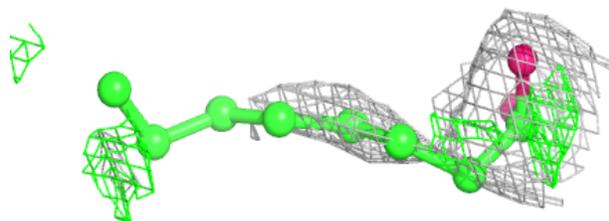
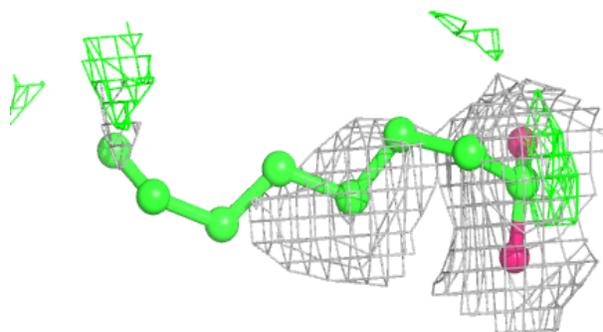


**Electron density around DKF L 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around DKO N 900:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



## 6.5 Other polymers [i](#)

There are no such residues in this entry.