



wwPDB X-ray Structure Validation Summary Report ⓘ

Jul 15, 2026 – 12:17 PM JST

PDB ID : 9WT9 / pdb_00009wt9
Title : Crystal structure of a multiheme cytochrome c selenoprotein mutant (MccSep U325A)
Authors : Mihara, H.; Yoshizawa, T.; Izu, Y.; Inoue, M.; Aono, R.; Zhang, W.; Shibamoto, N.; Tobe, R.; Kurihara, T.; Matsumura, H.
Deposited on : 2025-09-16
Resolution : 1.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

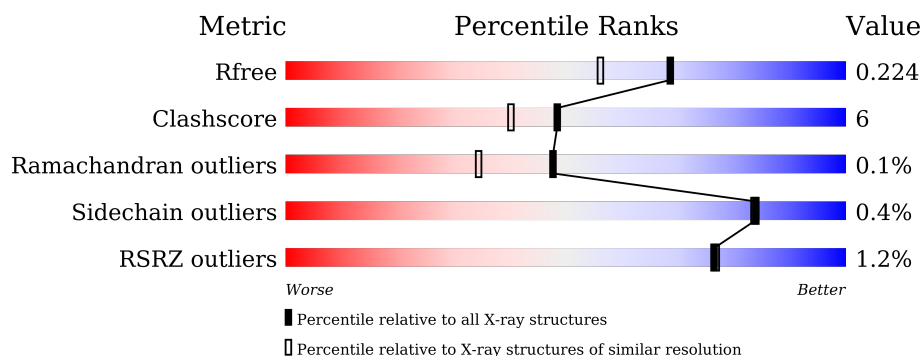
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.80 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	7662 (1.80-1.80)
Clashscore	190562	8479 (1.80-1.80)
Ramachandran outliers	187476	8391 (1.80-1.80)
Sidechain outliers	187428	8390 (1.80-1.80)
RSRZ outliers	180081	7663 (1.80-1.80)

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 ≥ 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	450	83% 11% 6%
1	B	450	87% 7% 6%
1	C	450	83% 11% 6%
1	D	450	84% 10% 6%

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
4	EDO	B	518	-	-	X	-
4	EDO	D	519	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 15437 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 Cytochrome c, Multiheme cytochrome c selenoprotein mutant (MccSep U325A).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	422	Total	C	N	O	S	0	5	0
			3299	2070	571	630	28			
1	B	422	Total	C	N	O	S	0	6	0
			3316	2089	571	628	28			
1	C	422	Total	C	N	O	S	0	6	0
			3304	2073	571	632	28			
1	D	422	Total	C	N	O	S	0	5	0
			3299	2070	570	631	28			

There are 112 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	325	ALA	-	linker	UNP Q748R4
A	326	PRO	-	linker	UNP Q748R4
A	327	THR	-	linker	UNP Q748R4
A	328	PRO	-	linker	UNP Q748R4
A	329	ASN	-	linker	UNP Q748R4
A	330	ARG	-	linker	UNP Q748R4
A	331	LEU	-	linker	UNP Q748R4
A	332	VAL	-	linker	UNP Q748R4
A	333	LEU	-	linker	UNP Q748R4
A	334	SER	-	linker	UNP Q748R4
A	335	VAL	-	linker	UNP Q748R4
A	336	ILE	-	linker	UNP Q748R4
A	337	ALA	-	linker	UNP Q748R4
A	338	LYS	-	linker	UNP Q748R4
A	339	THR	-	linker	UNP Q748R4
A	340	LYS	-	linker	UNP Q748R4
A	341	ASP	-	linker	UNP Q748R4
A	342	GLY	-	linker	UNP Q748R4
A	343	GLU	-	linker	UNP Q748R4
A	344	GLU	-	linker	UNP Q748R4

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Chain	Residue	Modelled	Actual	Comment	Reference
A	345	VAL	-	linker	UNP Q748R4
A	346	PHE	-	linker	UNP Q748R4
A	347	ASN	-	linker	UNP Q748R4
A	348	GLN	-	linker	UNP Q748R4
A	349	GLU	-	linker	UNP Q748R4
A	350	LYS	-	linker	UNP Q748R4
A	351	ILE	-	linker	UNP Q748R4
A	352	TYR	-	linker	UNP Q748R4
B	325	ALA	-	linker	UNP Q748R4
B	326	PRO	-	linker	UNP Q748R4
B	327	THR	-	linker	UNP Q748R4
B	328	PRO	-	linker	UNP Q748R4
B	329	ASN	-	linker	UNP Q748R4
B	330	ARG	-	linker	UNP Q748R4
B	331	LEU	-	linker	UNP Q748R4
B	332	VAL	-	linker	UNP Q748R4
B	333	LEU	-	linker	UNP Q748R4
B	334	SER	-	linker	UNP Q748R4
B	335	VAL	-	linker	UNP Q748R4
B	336	ILE	-	linker	UNP Q748R4
B	337	ALA	-	linker	UNP Q748R4
B	338	LYS	-	linker	UNP Q748R4
B	339	THR	-	linker	UNP Q748R4
B	340	LYS	-	linker	UNP Q748R4
B	341	ASP	-	linker	UNP Q748R4
B	342	GLY	-	linker	UNP Q748R4
B	343	GLU	-	linker	UNP Q748R4
B	344	GLU	-	linker	UNP Q748R4
B	345	VAL	-	linker	UNP Q748R4
B	346	PHE	-	linker	UNP Q748R4
B	347	ASN	-	linker	UNP Q748R4
B	348	GLN	-	linker	UNP Q748R4
B	349	GLU	-	linker	UNP Q748R4
B	350	LYS	-	linker	UNP Q748R4
B	351	ILE	-	linker	UNP Q748R4
B	352	TYR	-	linker	UNP Q748R4
C	325	ALA	-	linker	UNP Q748R4
C	326	PRO	-	linker	UNP Q748R4
C	327	THR	-	linker	UNP Q748R4
C	328	PRO	-	linker	UNP Q748R4
C	329	ASN	-	linker	UNP Q748R4
C	330	ARG	-	linker	UNP Q748R4

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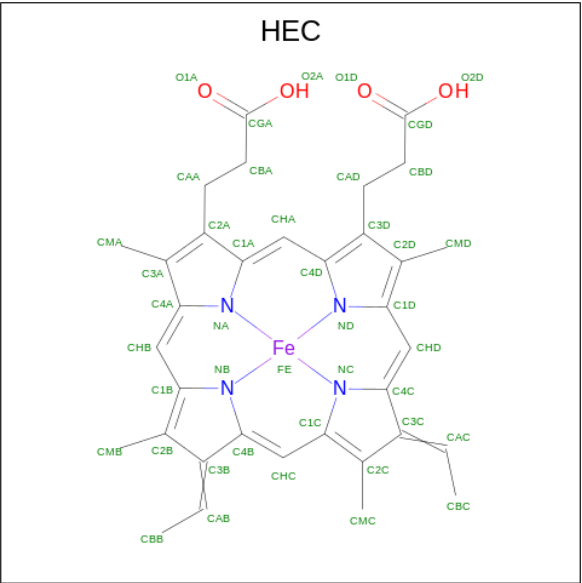
Chain	Residue	Modelled	Actual	Comment	Reference
C	331	LEU	-	linker	UNP Q748R4
C	332	VAL	-	linker	UNP Q748R4
C	333	LEU	-	linker	UNP Q748R4
C	334	SER	-	linker	UNP Q748R4
C	335	VAL	-	linker	UNP Q748R4
C	336	ILE	-	linker	UNP Q748R4
C	337	ALA	-	linker	UNP Q748R4
C	338	LYS	-	linker	UNP Q748R4
C	339	THR	-	linker	UNP Q748R4
C	340	LYS	-	linker	UNP Q748R4
C	341	ASP	-	linker	UNP Q748R4
C	342	GLY	-	linker	UNP Q748R4
C	343	GLU	-	linker	UNP Q748R4
C	344	GLU	-	linker	UNP Q748R4
C	345	VAL	-	linker	UNP Q748R4
C	346	PHE	-	linker	UNP Q748R4
C	347	ASN	-	linker	UNP Q748R4
C	348	GLN	-	linker	UNP Q748R4
C	349	GLU	-	linker	UNP Q748R4
C	350	LYS	-	linker	UNP Q748R4
C	351	ILE	-	linker	UNP Q748R4
C	352	TYR	-	linker	UNP Q748R4
D	325	ALA	-	linker	UNP Q748R4
D	326	PRO	-	linker	UNP Q748R4
D	327	THR	-	linker	UNP Q748R4
D	328	PRO	-	linker	UNP Q748R4
D	329	ASN	-	linker	UNP Q748R4
D	330	ARG	-	linker	UNP Q748R4
D	331	LEU	-	linker	UNP Q748R4
D	332	VAL	-	linker	UNP Q748R4
D	333	LEU	-	linker	UNP Q748R4
D	334	SER	-	linker	UNP Q748R4
D	335	VAL	-	linker	UNP Q748R4
D	336	ILE	-	linker	UNP Q748R4
D	337	ALA	-	linker	UNP Q748R4
D	338	LYS	-	linker	UNP Q748R4
D	339	THR	-	linker	UNP Q748R4
D	340	LYS	-	linker	UNP Q748R4
D	341	ASP	-	linker	UNP Q748R4
D	342	GLY	-	linker	UNP Q748R4
D	343	GLU	-	linker	UNP Q748R4
D	344	GLU	-	linker	UNP Q748R4

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Chain	Residue	Modelled	Actual	Comment	Reference
D	345	VAL	-	linker	UNP Q748R4
D	346	PHE	-	linker	UNP Q748R4
D	347	ASN	-	linker	UNP Q748R4
D	348	GLN	-	linker	UNP Q748R4
D	349	GLU	-	linker	UNP Q748R4
D	350	LYS	-	linker	UNP Q748R4
D	351	ILE	-	linker	UNP Q748R4
D	352	TYR	-	linker	UNP Q748R4

- Molecule 2 is HEME C (CCD ID: HEC) (formula: $C_{34}H_{34}FeN_4O_4$) (labeled as "Ligand of Interest" by depositor).



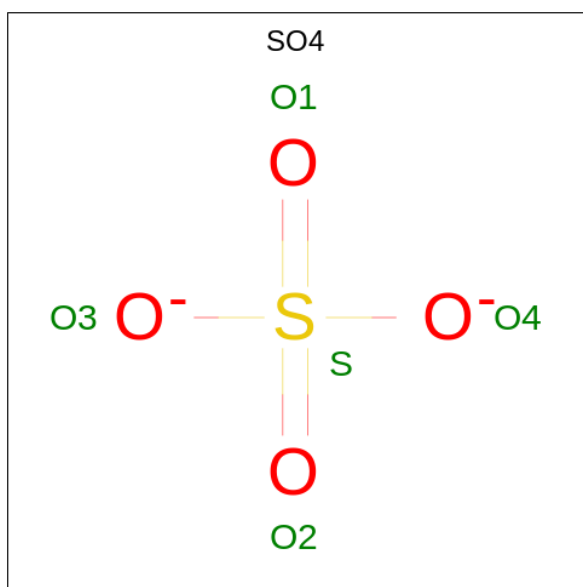
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula: O₄S) (labeled as "Ligand of Interest" by depositor).



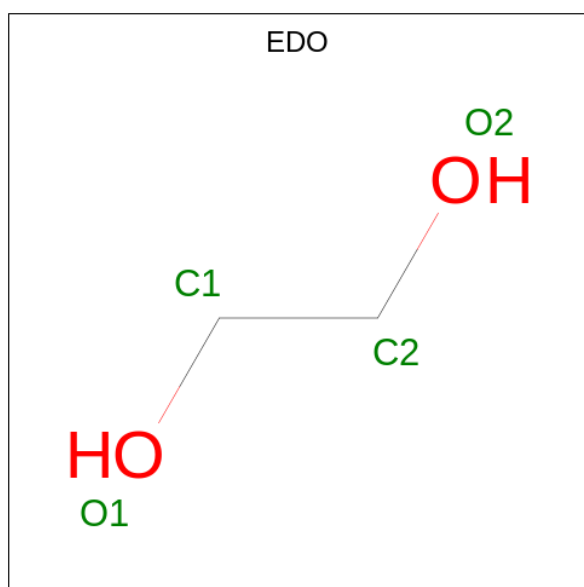
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		

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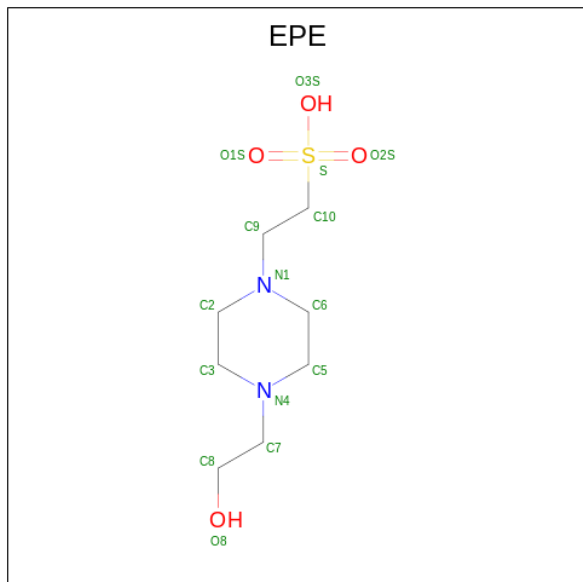
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	B	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	C	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		
4	D	1	Total	C	O	0	0
			4	2	2		

- Molecule 5 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (CCD ID: EPE) (formula: $C_8H_{18}N_2O_4S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total	C	N	O	S	0	0
			15	8	2	4	1		
5	D	1	Total	C	N	O	S	0	0
			15	8	2	4	1		

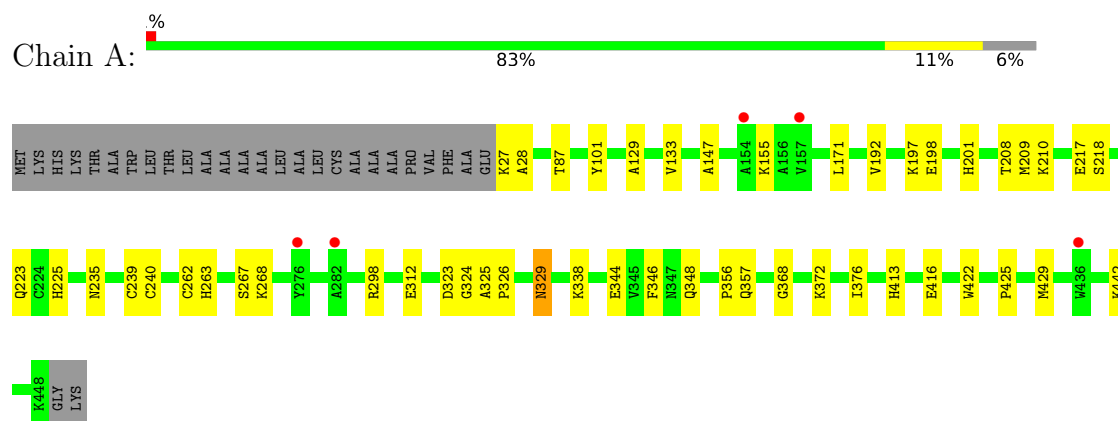
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	288	Total	O	0	0
			288	288		
6	B	259	Total	O	0	0
			259	259		
6	C	209	Total	O	0	0
			209	209		
6	D	282	Total	O	0	0
			282	282		

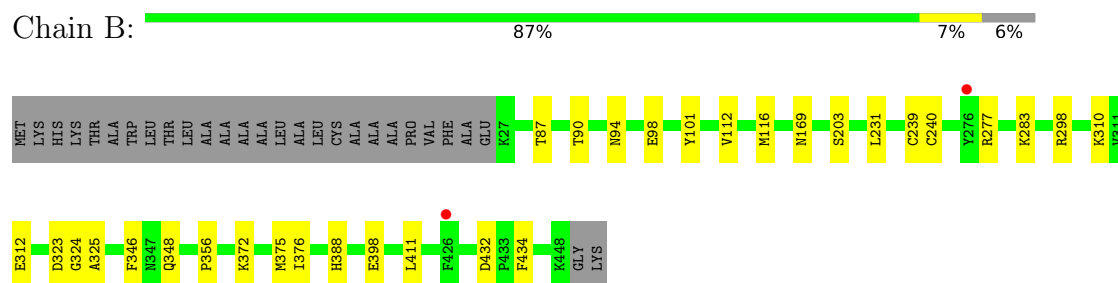
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.

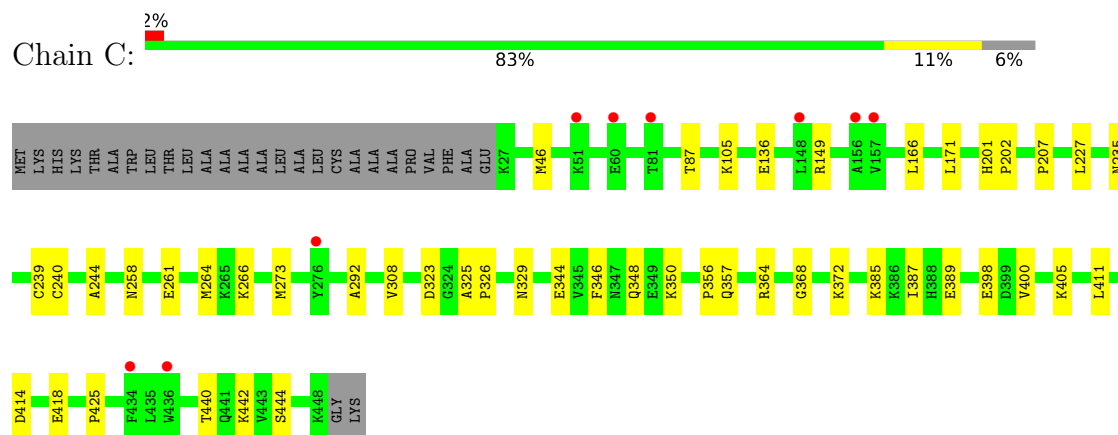
- Molecule 1: Cytochrome c, Multiheme cytochrome c selenoprotein mutant (MccSep U325A)



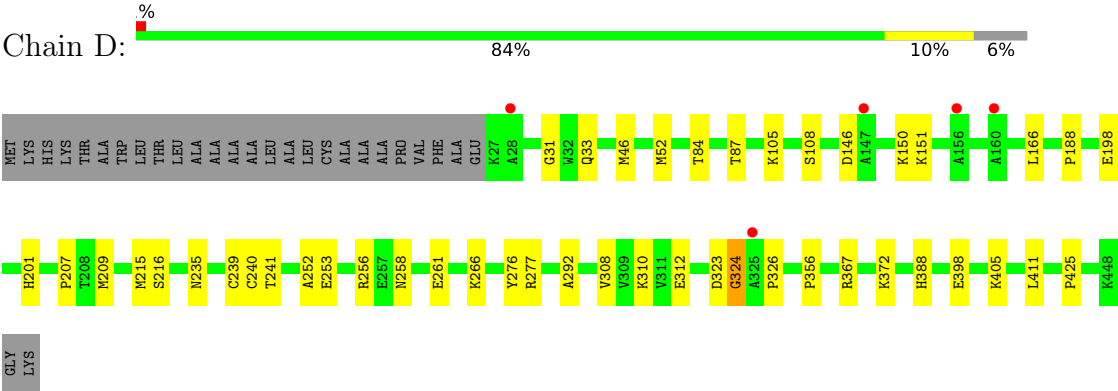
- Molecule 1: Cytochrome c, Multiheme cytochrome c selenoprotein mutant (MccSep U325A)



- Molecule 1: Cytochrome c, Multiheme cytochrome c selenoprotein mutant (MccSep U325A)



● Molecule 1: Cytochrome c,Multiheme cytochrome c selenoprotein mutant (MccSep U325A)



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	83.17Å 122.65Å 116.45Å 90.00° 92.15° 90.00°	Depositor
Resolution (Å)	48.53 – 1.80 48.53 – 1.80	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.53-1.80) 99.9 (48.53-1.80)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.19 (at 1.79Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.187 , 0.224 0.187 , 0.224	Depositor DCC
R_{free} test set	10765 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	32.2	Xtriage
Anisotropy	0.576	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 40.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.048 for h,-k,-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	15437	wwPDB-VP
Average B, all atoms (Å ²)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.88% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

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: EPE, HEC, SO4, CSD, EDO

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.35	0/3384	0.56	0/4573
1	B	0.36	0/3408	0.57	0/4606
1	C	0.29	0/3392	0.49	0/4583
1	D	0.35	0/3384	0.55	0/4572
All	All	0.34	0/13568	0.54	0/18334

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	225	HIS	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3299	0	3220	38	0
1	B	3316	0	3236	28	0
1	C	3304	0	3224	36	0
1	D	3299	0	3218	40	0
2	A	215	0	150	8	0
2	B	215	0	150	4	0
2	C	215	0	150	6	0
2	D	215	0	150	5	0
3	A	20	0	0	1	0
3	B	35	0	0	0	0
3	C	30	0	0	1	0
3	D	30	0	0	3	0
4	A	52	0	78	11	0
4	B	60	0	90	9	0
4	C	20	0	30	1	0
4	D	44	0	66	10	0
5	B	15	0	17	1	0
5	D	15	0	17	0	0
6	A	288	0	0	4	0
6	B	259	0	0	5	0
6	C	209	0	0	6	0
6	D	282	0	0	8	0
All	All	15437	0	13796	155	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

The worst 5 of 155 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:240[A]:CYS:SG	6:B:604:HOH:O	2.09	1.09
1:D:310:LYS:HB3	4:D:519:EDO:H22	1.53	0.89
1:C:323[A]:ASP:OD1	6:C:601:HOH:O	1.94	0.84
1:D:388:HIS:HB3	4:D:519:EDO:H11	1.60	0.82
1:A:323[A]:ASP:OD1	6:A:601:HOH:O	1.98	0.81

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	424/450 (94%)	408 (96%)	16 (4%)	0	100	100
1	B	425/450 (94%)	416 (98%)	9 (2%)	0	100	100
1	C	425/450 (94%)	410 (96%)	15 (4%)	0	100	100
1	D	424/450 (94%)	409 (96%)	14 (3%)	1 (0%)	43	31
All	All	1698/1800 (94%)	1643 (97%)	54 (3%)	1 (0%)	48	34

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	324	GLY

5.3.2 Protein sidechains

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	356/368 (97%)	353 (99%)	3 (1%)	73	70
1	B	357/368 (97%)	357 (100%)	0	100	100
1	C	357/368 (97%)	355 (99%)	2 (1%)	78	77
1	D	356/368 (97%)	355 (100%)	1 (0%)	86	86
All	All	1426/1472 (97%)	1420 (100%)	6 (0%)	84	83

5 of 6 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	235	ASN
1	C	400	VAL
1	D	235	ASN
1	A	329[A]	ASN
1	A	235	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	437	HIS
1	C	441	GLN
1	D	437	HIS
1	D	181	HIS
1	B	71	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

4 non-standard protein/DNA/RNA residues 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	$\# Z > 2$
1	CSD	B	239	1,2	3,7,8	1.01	0	1,8,10	3.08	1 (100%)
1	CSD	A	239	1,2	3,7,8	0.76	0	1,8,10	1.30	0
1	CSD	C	239	1,2	3,7,8	0.81	0	1,8,10	0.56	0
1	CSD	D	239	1,2	3,7,8	1.12	0	1,8,10	2.20	1 (100%)

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
1	CSD	B	239	1,2	-	0/2/6/8	-
1	CSD	A	239	1,2	-	0/2/6/8	-
1	CSD	C	239	1,2	-	0/2/6/8	-
1	CSD	D	239	1,2	-	0/2/6/8	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	B	239	CSD	OD1-SG-CB	3.08	111.39	105.54
1	D	239	CSD	OD1-SG-CB	2.20	109.72	105.54

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	239	CSD	1	0
1	C	239	CSD	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

89 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	$\# Z > 2$
3	SO4	C	501	-	4,4,4	0.14	0	6,6,6	0.26	0
4	EDO	B	513	-	3,3,3	0.40	0	2,2,2	0.47	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	EDO	D	514	-	3,3,3	0.46	0	2,2,2	0.63	0
2	HEC	D	506	1	46,50,50	3.64	7 (15%)	60,82,82	1.35	6 (10%)
3	SO4	B	507	-	4,4,4	0.15	0	6,6,6	0.11	0
4	EDO	C	512	-	3,3,3	0.28	0	2,2,2	0.55	0
2	HEC	A	503	1	46,50,50	3.54	7 (15%)	60,82,82	1.39	4 (6%)
3	SO4	C	510	-	4,4,4	0.22	0	6,6,6	0.19	0
5	EPE	D	523	-	15,15,15	0.82	1 (6%)	18,20,20	1.87	5 (27%)
3	SO4	B	506	-	4,4,4	0.25	0	6,6,6	0.23	0
4	EDO	D	517	-	3,3,3	0.48	0	2,2,2	0.53	0
4	EDO	D	522	-	3,3,3	0.44	0	2,2,2	0.41	0
4	EDO	C	513	-	3,3,3	0.51	0	2,2,2	0.48	0
4	EDO	B	528	-	3,3,3	0.37	0	2,2,2	0.47	0
4	EDO	D	513	-	3,3,3	0.16	0	2,2,2	1.11	0
4	EDO	B	524	-	3,3,3	0.63	0	2,2,2	0.23	0
3	SO4	D	501	-	4,4,4	0.12	0	6,6,6	0.10	0
2	HEC	B	501	1	46,50,50	3.51	8 (17%)	60,82,82	1.55	9 (15%)
3	SO4	D	509	-	4,4,4	0.22	0	6,6,6	0.16	0
4	EDO	A	510	-	3,3,3	0.21	0	2,2,2	0.46	0
3	SO4	B	510	-	4,4,4	0.09	0	6,6,6	0.11	0
3	SO4	B	509	-	4,4,4	0.15	0	6,6,6	0.14	0
3	SO4	C	507	-	4,4,4	0.15	0	6,6,6	0.21	0
5	EPE	B	525	-	15,15,15	0.87	1 (6%)	18,20,20	1.98	5 (27%)
4	EDO	B	515	-	3,3,3	0.68	0	2,2,2	0.44	0
4	EDO	A	518	-	3,3,3	0.54	0	2,2,2	0.37	0
2	HEC	B	502	1	46,50,50	3.50	7 (15%)	60,82,82	1.45	5 (8%)
3	SO4	C	511	-	4,4,4	0.13	0	6,6,6	0.12	0
2	HEC	A	501	1	46,50,50	3.62	9 (19%)	60,82,82	1.29	7 (11%)
4	EDO	A	520	-	3,3,3	0.47	0	2,2,2	0.18	0
2	HEC	C	503	1	46,50,50	3.56	5 (10%)	60,82,82	1.48	8 (13%)
2	HEC	C	506	1	46,50,50	3.53	8 (17%)	60,82,82	1.59	11 (18%)
4	EDO	B	519	-	3,3,3	0.41	0	2,2,2	0.57	0
4	EDO	A	519	-	3,3,3	0.45	0	2,2,2	0.72	0
4	EDO	A	513	-	3,3,3	0.54	0	2,2,2	0.30	0
2	HEC	D	505	1	46,50,50	3.49	5 (10%)	60,82,82	1.60	7 (11%)
4	EDO	C	514	-	3,3,3	0.43	0	2,2,2	0.55	0
3	SO4	D	511	-	4,4,4	0.20	0	6,6,6	0.17	0
4	EDO	B	517	-	3,3,3	0.49	0	2,2,2	0.32	0
4	EDO	A	517	-	3,3,3	0.56	0	2,2,2	0.17	0
4	EDO	A	511	-	3,3,3	0.53	0	2,2,2	0.75	0
3	SO4	B	527	-	4,4,4	0.14	0	6,6,6	0.11	0
4	EDO	A	516	-	3,3,3	0.40	0	2,2,2	0.26	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	EDO	D	521	-	3,3,3	0.53	0	2,2,2	0.30	0
3	SO4	A	508	-	4,4,4	0.18	0	6,6,6	0.13	0
4	EDO	B	521	-	3,3,3	0.42	0	2,2,2	0.26	0
4	EDO	B	511	-	3,3,3	0.18	0	2,2,2	0.80	0
2	HEC	B	505	1	46,50,50	3.50	7 (15%)	60,82,82	1.68	8 (13%)
3	SO4	A	522	-	4,4,4	0.11	0	6,6,6	0.18	0
4	EDO	D	518	-	3,3,3	0.38	0	2,2,2	0.59	0
3	SO4	D	508	-	4,4,4	0.13	0	6,6,6	0.33	0
4	EDO	A	521	-	3,3,3	0.47	0	2,2,2	0.38	0
2	HEC	C	504	1	46,50,50	3.50	6 (13%)	60,82,82	1.43	9 (15%)
4	EDO	B	514	-	3,3,3	0.40	0	2,2,2	0.53	0
3	SO4	D	510	-	4,4,4	0.21	0	6,6,6	0.12	0
4	EDO	B	522	-	3,3,3	0.49	0	2,2,2	0.36	0
4	EDO	D	502	-	3,3,3	0.44	0	2,2,2	0.44	0
3	SO4	B	508	-	4,4,4	0.19	0	6,6,6	0.17	0
4	EDO	C	516	-	3,3,3	0.67	0	2,2,2	0.19	0
2	HEC	C	505	1	46,50,50	3.59	4 (8%)	60,82,82	1.52	9 (15%)
4	EDO	D	520	-	3,3,3	0.45	0	2,2,2	0.35	0
4	EDO	D	516	-	3,3,3	0.53	0	2,2,2	0.12	0
2	HEC	A	504	1	46,50,50	3.58	7 (15%)	60,82,82	1.40	10 (16%)
4	EDO	B	518	-	3,3,3	0.56	0	2,2,2	0.50	0
2	HEC	D	503	1	46,50,50	3.64	7 (15%)	60,82,82	1.50	9 (15%)
3	SO4	C	508	-	4,4,4	0.17	0	6,6,6	0.12	0
3	SO4	A	506	-	4,4,4	0.21	0	6,6,6	0.18	0
3	SO4	D	512	-	4,4,4	0.17	0	6,6,6	0.11	0
4	EDO	A	515	-	3,3,3	0.51	0	2,2,2	0.24	0
3	SO4	B	526	-	4,4,4	0.14	0	6,6,6	0.30	0
3	SO4	A	507	-	4,4,4	0.10	0	6,6,6	0.11	0
2	HEC	D	504	1	46,50,50	3.60	9 (19%)	60,82,82	1.48	5 (8%)
2	HEC	A	505	1	46,50,50	3.53	6 (13%)	60,82,82	1.80	14 (23%)
2	HEC	B	504	1	46,50,50	3.51	9 (19%)	60,82,82	1.40	6 (10%)
4	EDO	B	512	-	3,3,3	0.49	0	2,2,2	0.79	0
4	EDO	D	515	-	3,3,3	0.53	0	2,2,2	0.50	0
3	SO4	C	509	-	4,4,4	0.17	0	6,6,6	0.09	0
4	EDO	A	512	-	3,3,3	0.47	0	2,2,2	0.48	0
4	EDO	B	523	-	3,3,3	0.48	0	2,2,2	0.44	0
2	HEC	D	507	1	46,50,50	3.61	9 (19%)	60,82,82	1.54	7 (11%)
4	EDO	B	516	-	3,3,3	0.47	0	2,2,2	0.31	0
4	EDO	C	515	-	3,3,3	0.40	0	2,2,2	0.41	0
4	EDO	D	519	-	3,3,3	0.52	0	2,2,2	0.17	0
2	HEC	C	502	1	46,50,50	3.58	7 (15%)	60,82,82	1.52	11 (18%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	HEC	B	503	1	46,50,50	3.61	5 (10%)	60,82,82	1.59	11 (18%)
4	EDO	A	514	-	3,3,3	0.62	0	2,2,2	0.10	0
4	EDO	A	509	-	3,3,3	0.59	0	2,2,2	0.36	0
2	HEC	A	502	1	46,50,50	3.52	7 (15%)	60,82,82	1.60	8 (13%)
4	EDO	B	520	-	3,3,3	0.45	0	2,2,2	0.62	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	517	-	-	1/1/1/1	-
4	EDO	A	511	-	-	0/1/1/1	-
4	EDO	A	515	-	-	0/1/1/1	-
4	EDO	D	513	-	-	0/1/1/1	-
4	EDO	B	524	-	-	0/1/1/1	-
2	HEC	B	501	1	-	7/14/54/54	-
2	HEC	D	504	1	-	7/14/54/54	-
4	EDO	A	516	-	-	1/1/1/1	-
4	EDO	A	510	-	-	1/1/1/1	-
2	HEC	A	505	1	-	9/14/54/54	-
4	EDO	B	513	-	-	0/1/1/1	-
4	EDO	D	514	-	-	0/1/1/1	-
2	HEC	B	504	1	-	4/14/54/54	-
4	EDO	B	512	-	-	0/1/1/1	-
4	EDO	D	515	-	-	1/1/1/1	-
4	EDO	D	521	-	-	0/1/1/1	-
4	EDO	A	512	-	-	1/1/1/1	-
4	EDO	B	523	-	-	0/1/1/1	-
5	EPE	B	525	-	-	3/9/19/19	0/1/1/1
2	HEC	D	506	1	-	4/14/54/54	-
4	EDO	B	515	-	-	0/1/1/1	-
4	EDO	A	518	-	-	1/1/1/1	-
4	EDO	B	521	-	-	0/1/1/1	-
2	HEC	B	502	1	-	7/14/54/54	-
2	HEC	D	507	1	-	9/14/54/54	-
4	EDO	B	511	-	-	1/1/1/1	-
2	HEC	B	505	1	-	9/14/54/54	-
4	EDO	C	512	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	D	518	-	-	0/1/1/1	-
2	HEC	A	503	1	-	6/14/54/54	-
4	EDO	A	521	-	-	1/1/1/1	-
2	HEC	A	501	1	-	8/14/54/54	-
2	HEC	C	504	1	-	6/14/54/54	-
4	EDO	B	514	-	-	0/1/1/1	-
4	EDO	A	520	-	-	0/1/1/1	-
4	EDO	B	516	-	-	0/1/1/1	-
4	EDO	B	522	-	-	1/1/1/1	-
4	EDO	C	515	-	-	1/1/1/1	-
2	HEC	C	502	1	-	5/14/54/54	-
4	EDO	D	502	-	-	1/1/1/1	-
4	EDO	D	519	-	-	0/1/1/1	-
5	EPE	D	523	-	-	5/9/19/19	0/1/1/1
2	HEC	B	503	1	-	6/14/54/54	-
4	EDO	C	516	-	-	0/1/1/1	-
2	HEC	C	503	1	-	7/14/54/54	-
2	HEC	C	505	1	-	4/14/54/54	-
2	HEC	C	506	1	-	8/14/54/54	-
4	EDO	A	514	-	-	0/1/1/1	-
4	EDO	B	519	-	-	1/1/1/1	-
4	EDO	D	520	-	-	1/1/1/1	-
4	EDO	A	519	-	-	1/1/1/1	-
4	EDO	D	517	-	-	1/1/1/1	-
4	EDO	D	516	-	-	0/1/1/1	-
4	EDO	D	522	-	-	0/1/1/1	-
4	EDO	A	513	-	-	0/1/1/1	-
2	HEC	A	504	1	-	4/14/54/54	-
2	HEC	D	505	1	-	6/14/54/54	-
4	EDO	A	509	-	-	1/1/1/1	-
4	EDO	B	518	-	-	0/1/1/1	-
2	HEC	D	503	1	-	8/14/54/54	-
2	HEC	A	502	1	-	7/14/54/54	-
4	EDO	C	513	-	-	0/1/1/1	-
4	EDO	B	520	-	-	0/1/1/1	-
4	EDO	C	514	-	-	0/1/1/1	-
4	EDO	B	528	-	-	0/1/1/1	-
4	EDO	B	517	-	-	1/1/1/1	-

The worst 5 of 141 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	503	HEC	CAC-C3C	17.04	1.56	1.34
2	A	501	HEC	CAC-C3C	16.88	1.56	1.34
2	A	503	HEC	CAC-C3C	16.78	1.56	1.34
2	C	503	HEC	CAC-C3C	16.76	1.56	1.34
2	D	506	HEC	CAC-C3C	16.74	1.56	1.34

The worst 5 of 174 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	505	HEC	CBB-CAB-C3B	-7.06	114.89	127.86
2	A	503	HEC	CBB-CAB-C3B	-6.88	115.22	127.86
2	A	505	HEC	CBB-CAB-C3B	-6.55	115.82	127.86
2	B	505	HEC	CBB-CAB-C3B	-6.45	116.00	127.86
2	B	502	HEC	CBB-CAB-C3B	-6.22	116.44	127.86

There are no chirality outliers.

5 of 157 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	HEC	C2B-C3B-CAB-CBB
2	A	501	HEC	C4B-C3B-CAB-CBB
2	A	501	HEC	C2C-C3C-CAC-CBC
2	A	501	HEC	C4C-C3C-CAC-CBC
2	A	502	HEC	C2A-CAA-CBA-CGA

There are no ring outliers.

37 monomers are involved in 59 short contacts:

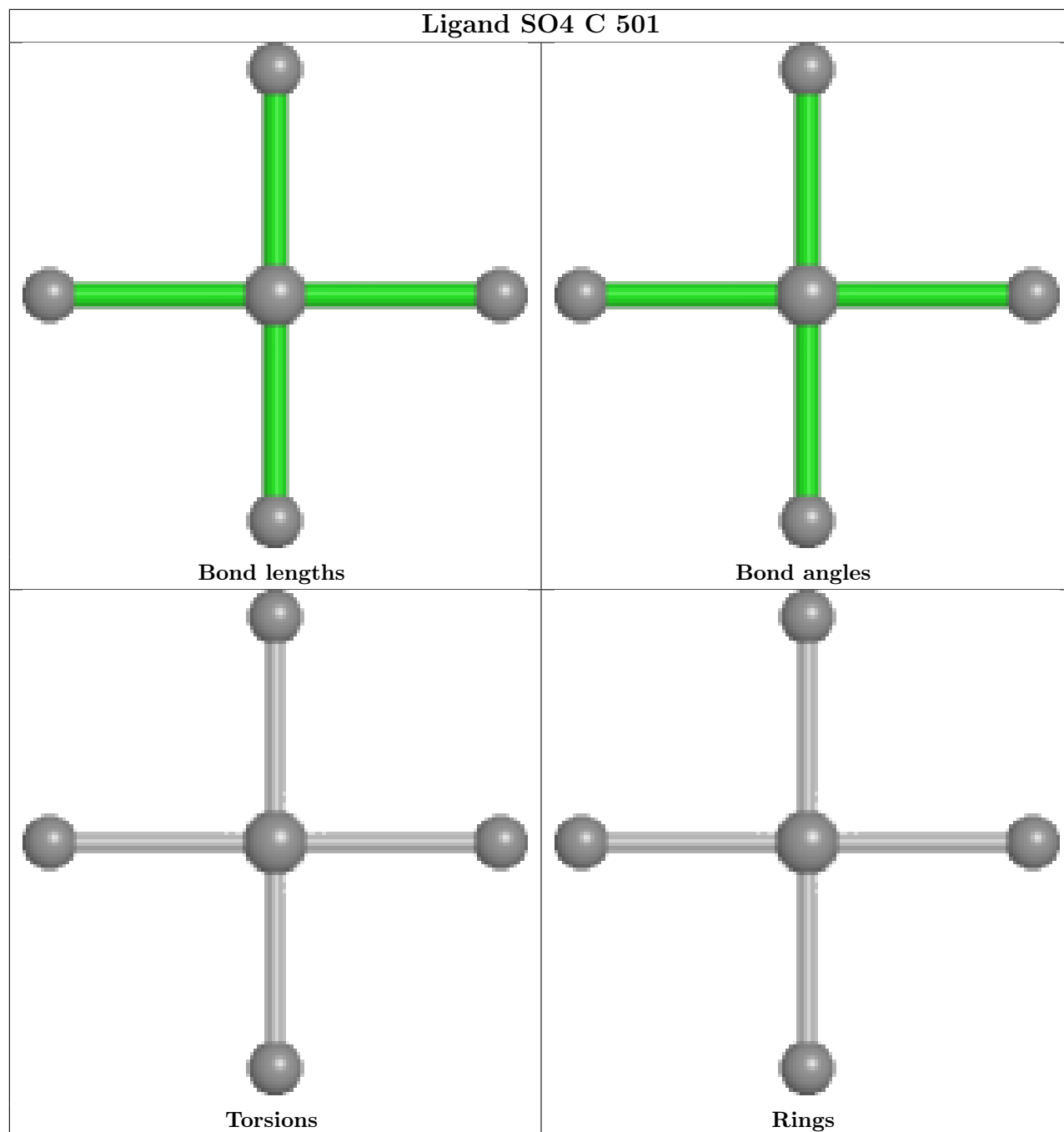
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	512	EDO	1	0
3	C	510	SO4	1	0
4	D	513	EDO	1	0
4	B	524	EDO	1	0
3	D	509	SO4	1	0
4	A	510	EDO	2	0
5	B	525	EPE	1	0
4	A	518	EDO	1	0
2	B	502	HEC	2	0
2	A	501	HEC	1	0
4	A	520	EDO	1	0
2	C	503	HEC	2	0
2	C	506	HEC	1	0

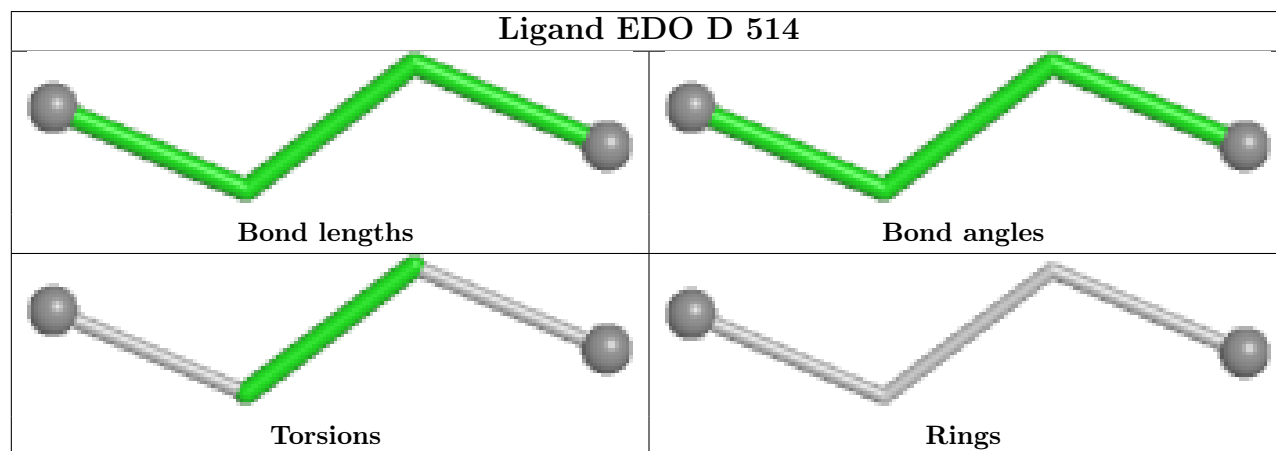
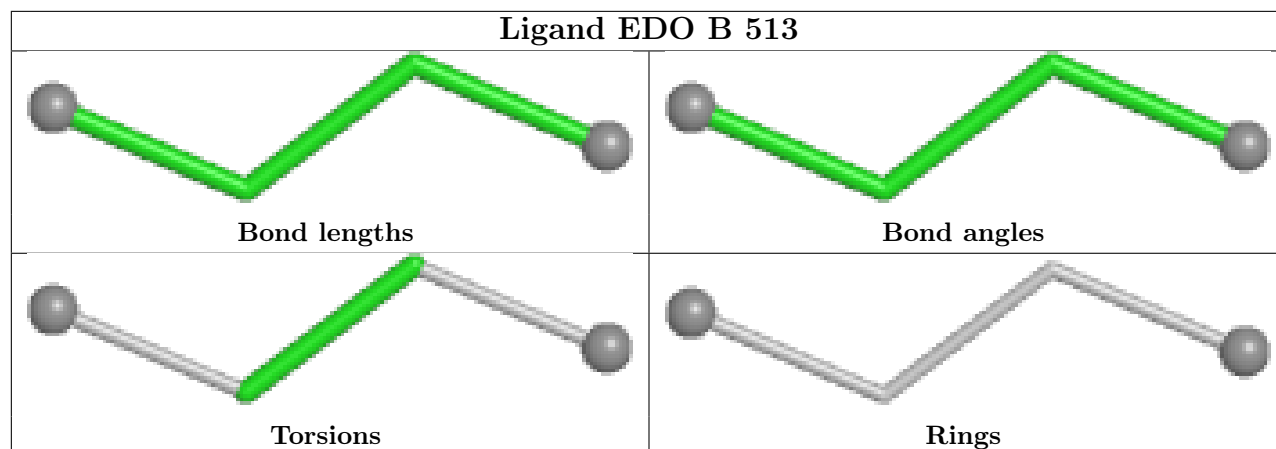
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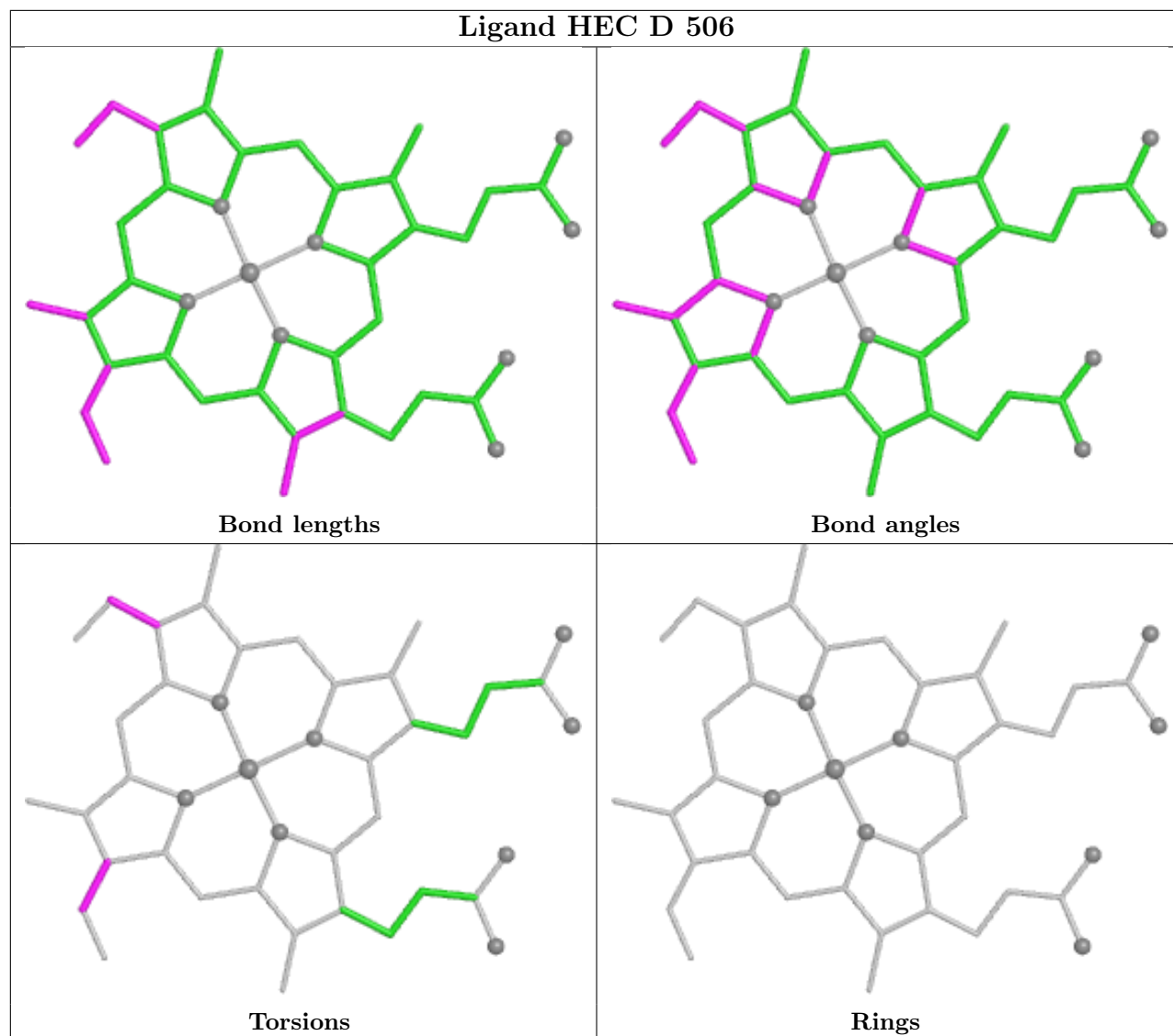
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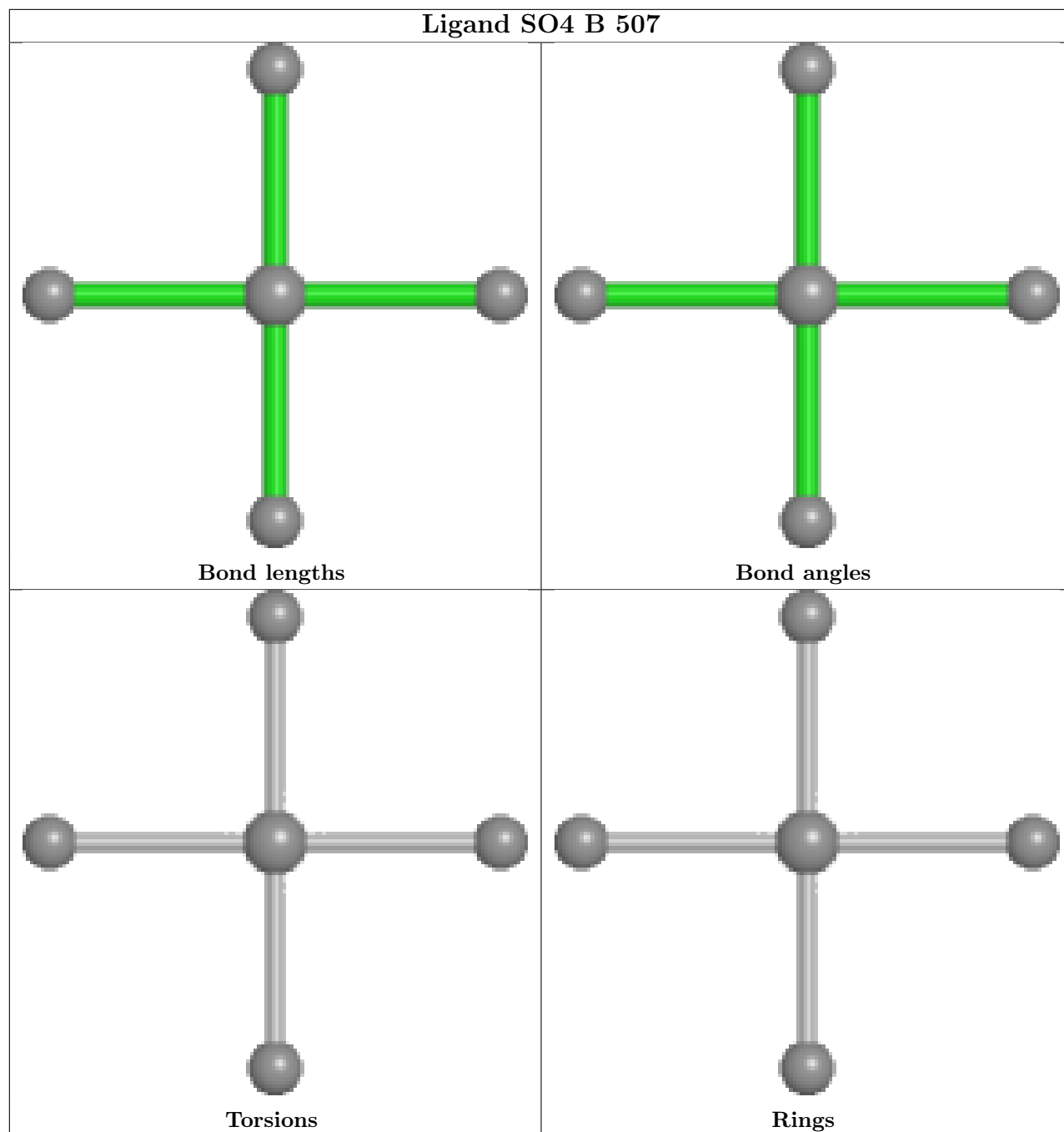
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	511	SO4	1	0
4	A	517	EDO	2	0
4	A	516	EDO	1	0
4	B	511	EDO	1	0
2	B	505	HEC	2	0
3	A	522	SO4	1	0
4	D	518	EDO	3	0
4	A	521	EDO	1	0
4	B	514	EDO	2	0
2	C	505	HEC	1	0
4	D	516	EDO	1	0
4	B	518	EDO	4	0
3	D	512	SO4	1	0
2	D	504	HEC	4	0
2	A	505	HEC	3	0
4	D	515	EDO	1	0
4	B	523	EDO	1	0
2	D	507	HEC	1	0
4	D	519	EDO	4	0
2	C	502	HEC	2	0
4	A	514	EDO	2	0
4	A	509	EDO	1	0
2	A	502	HEC	4	0
4	B	520	EDO	1	0

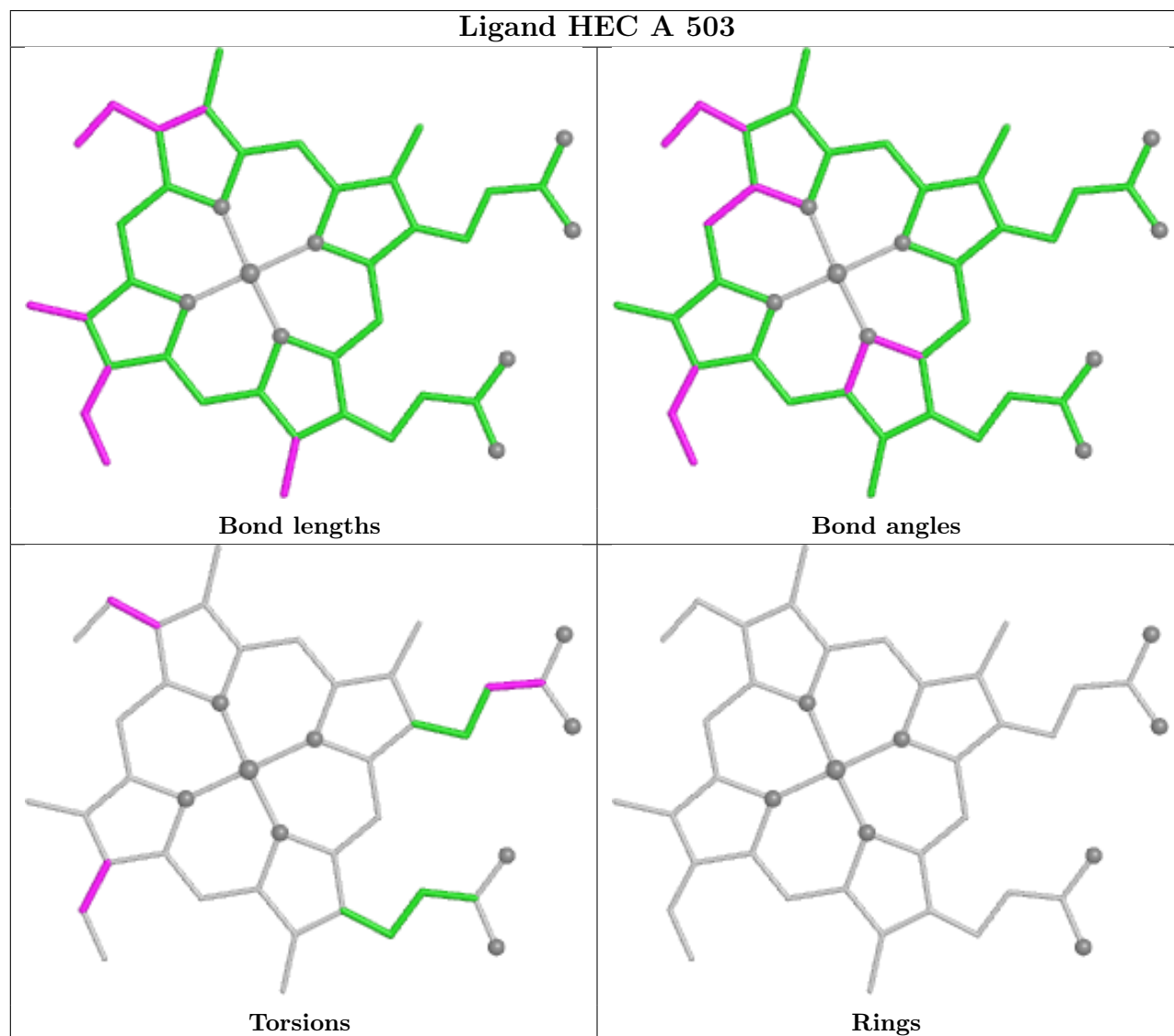
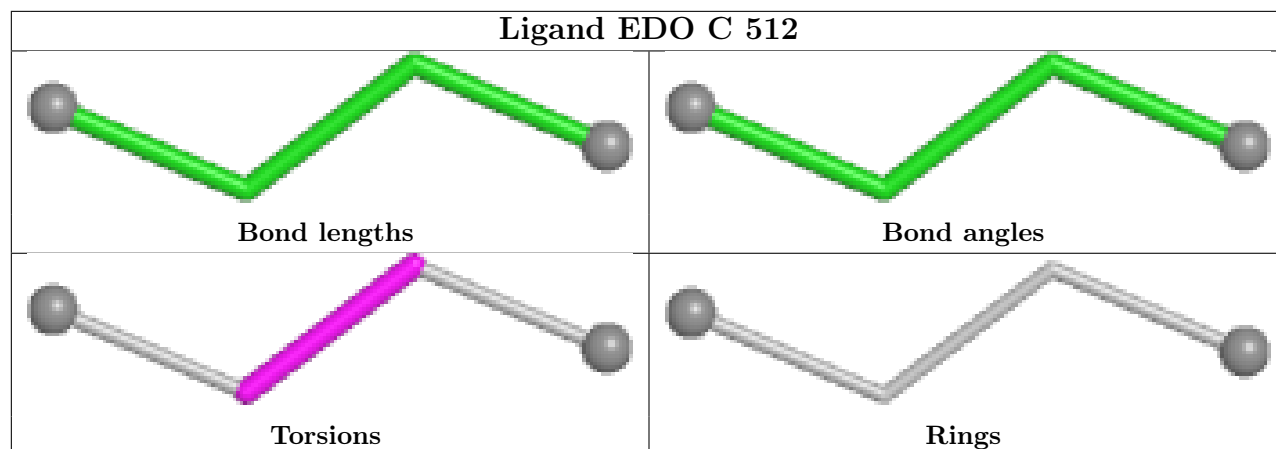
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

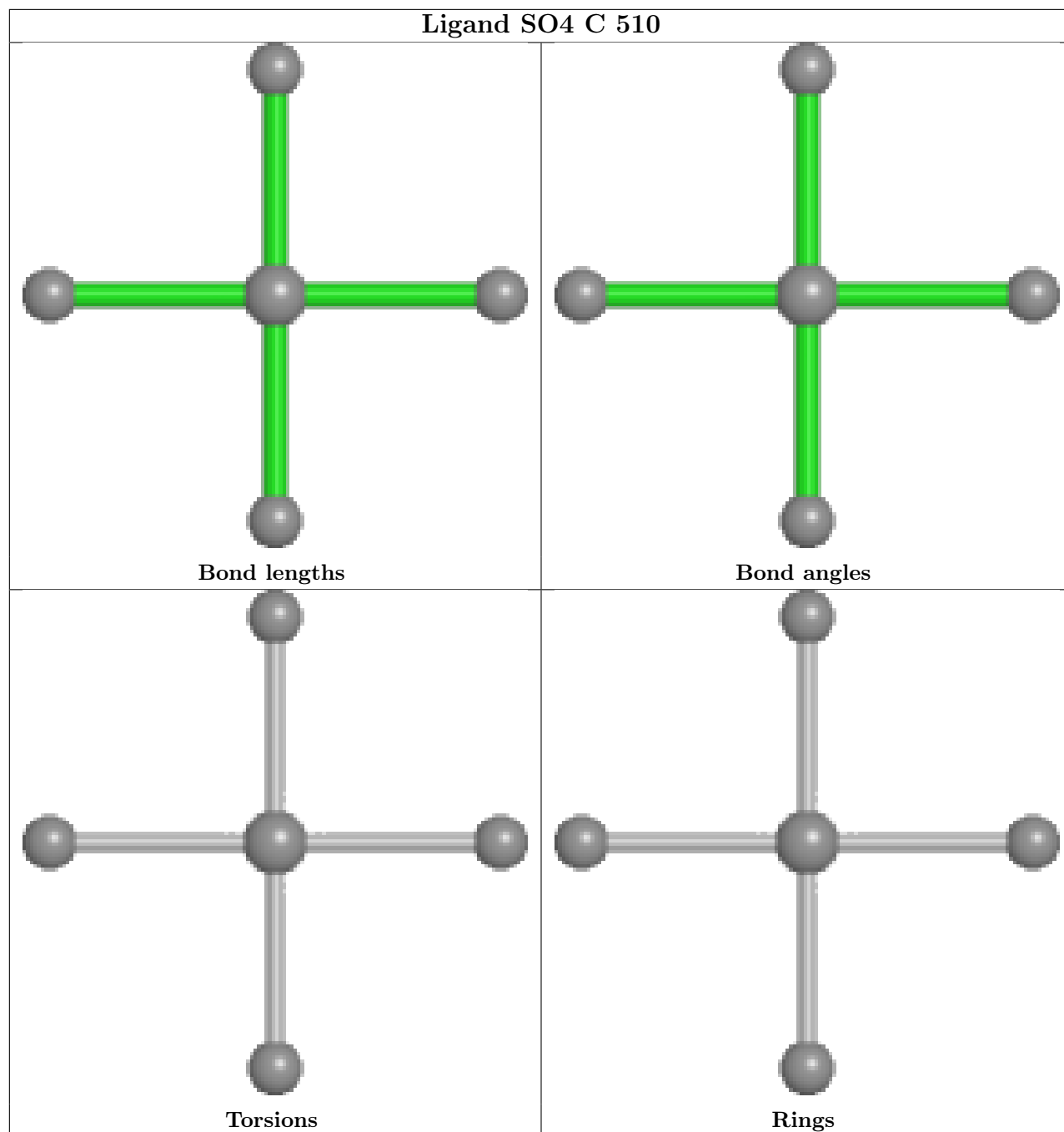


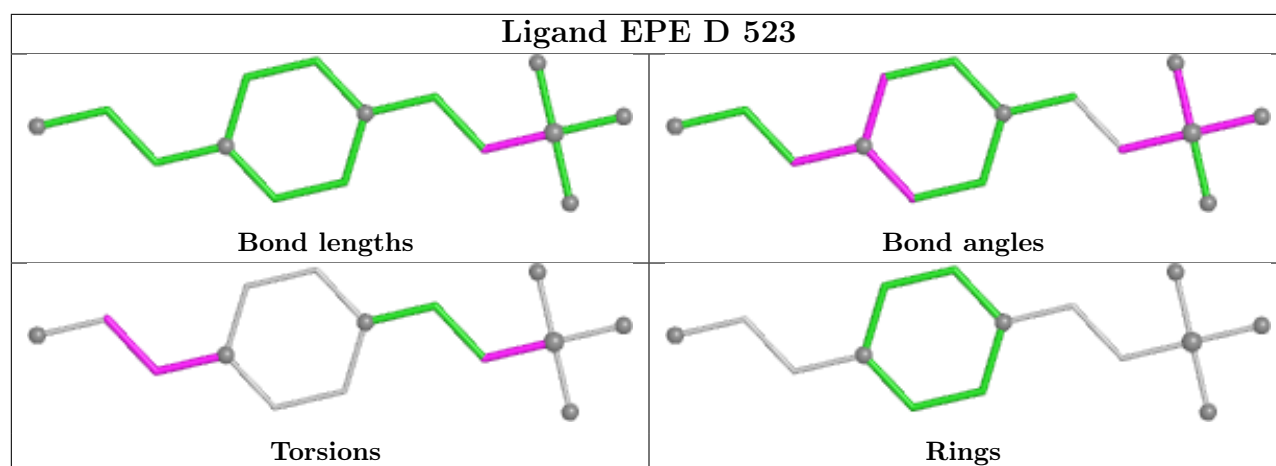


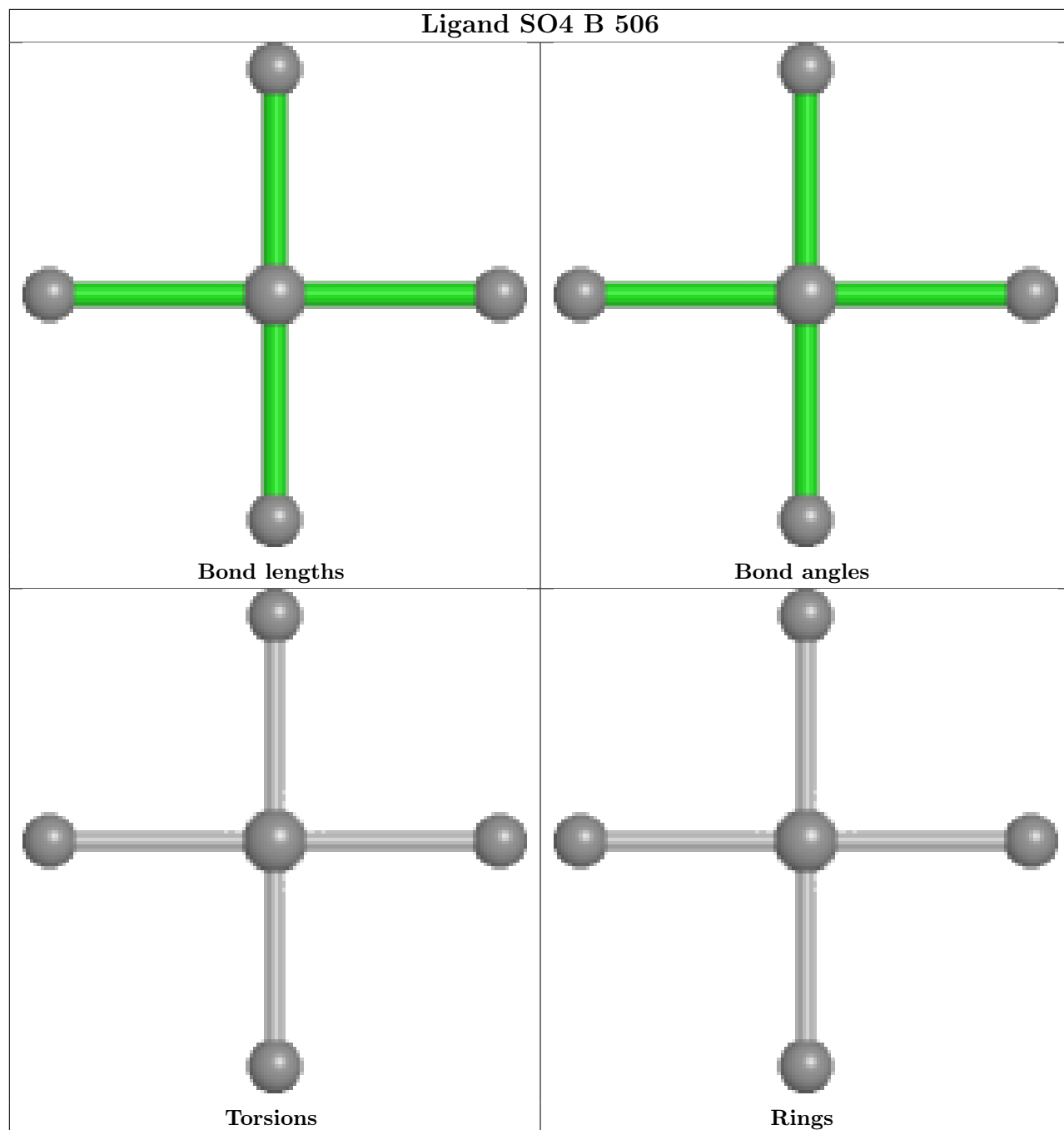


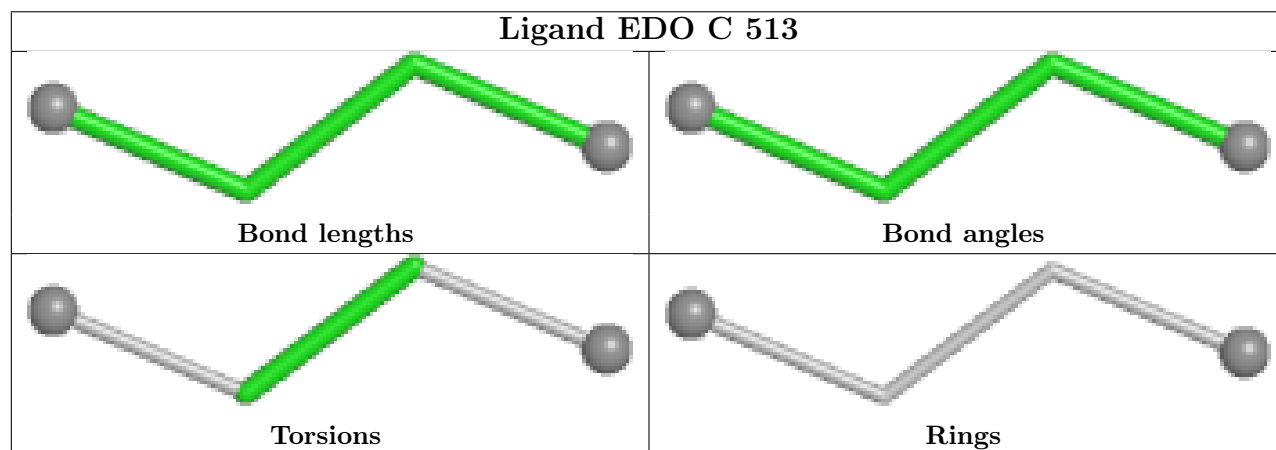
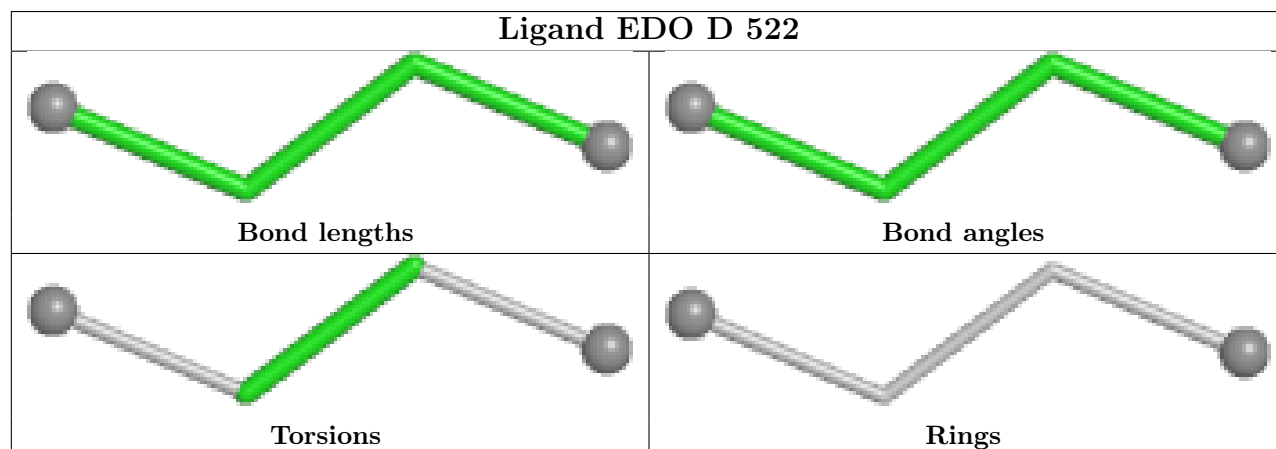
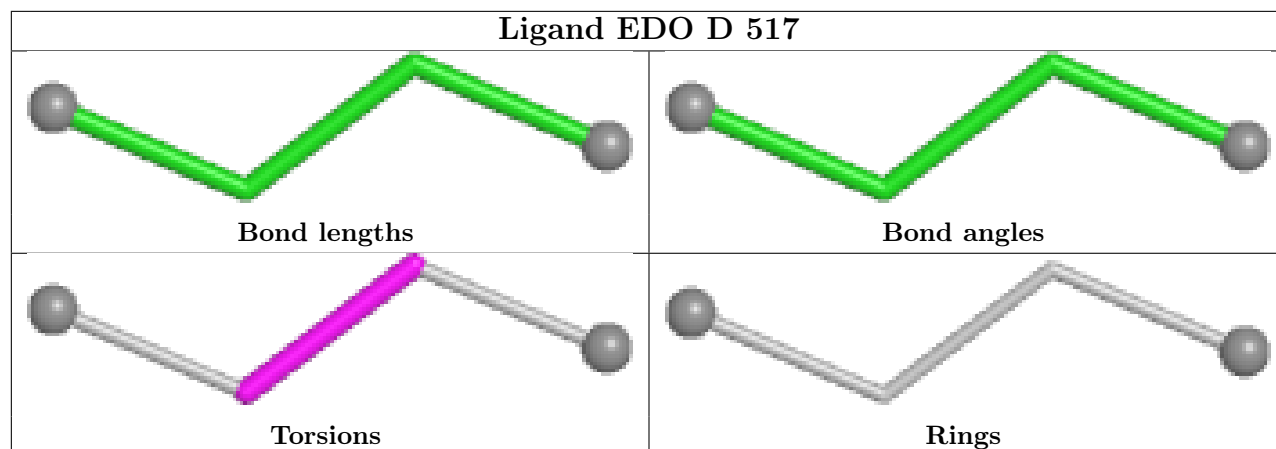


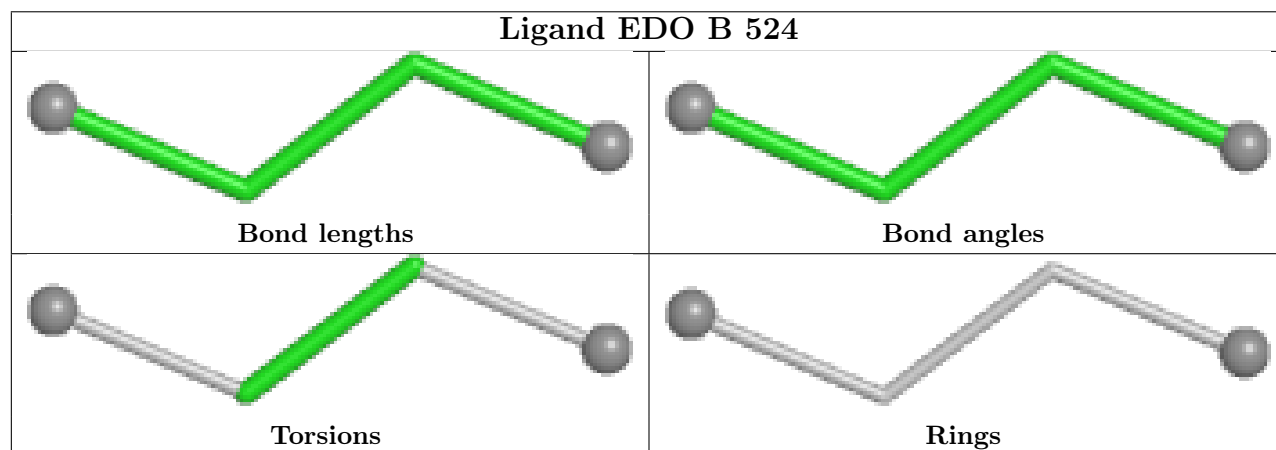
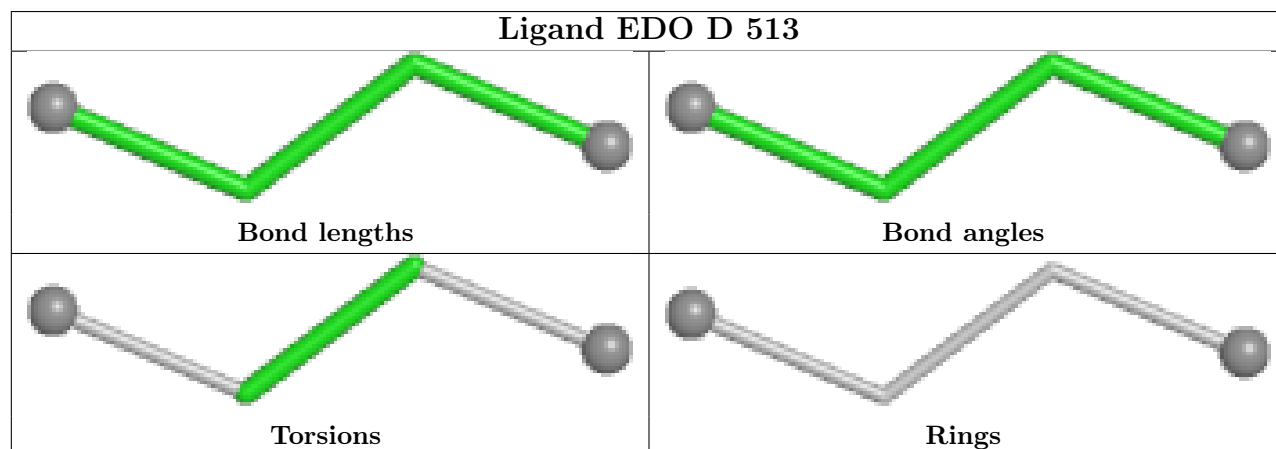
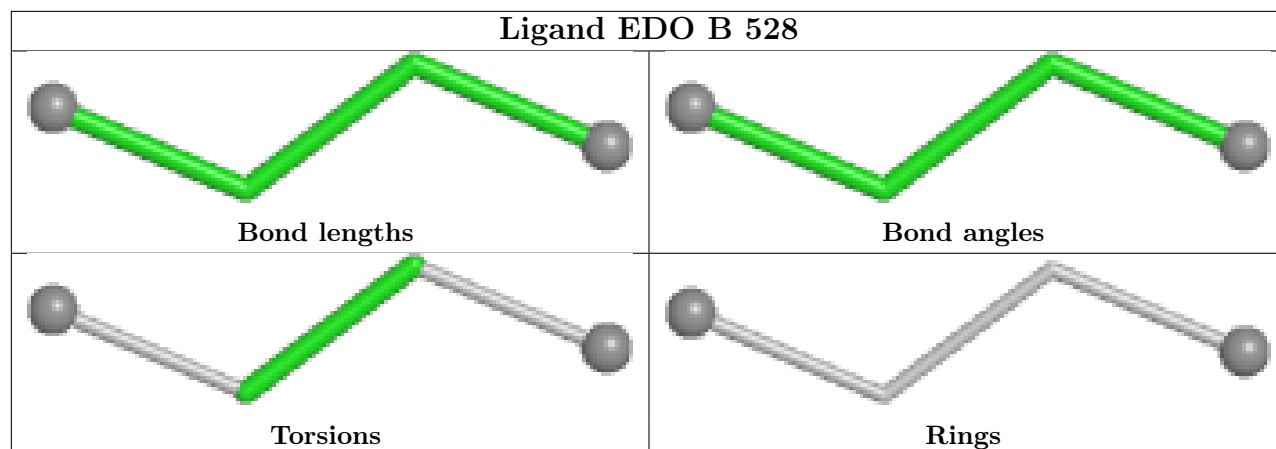


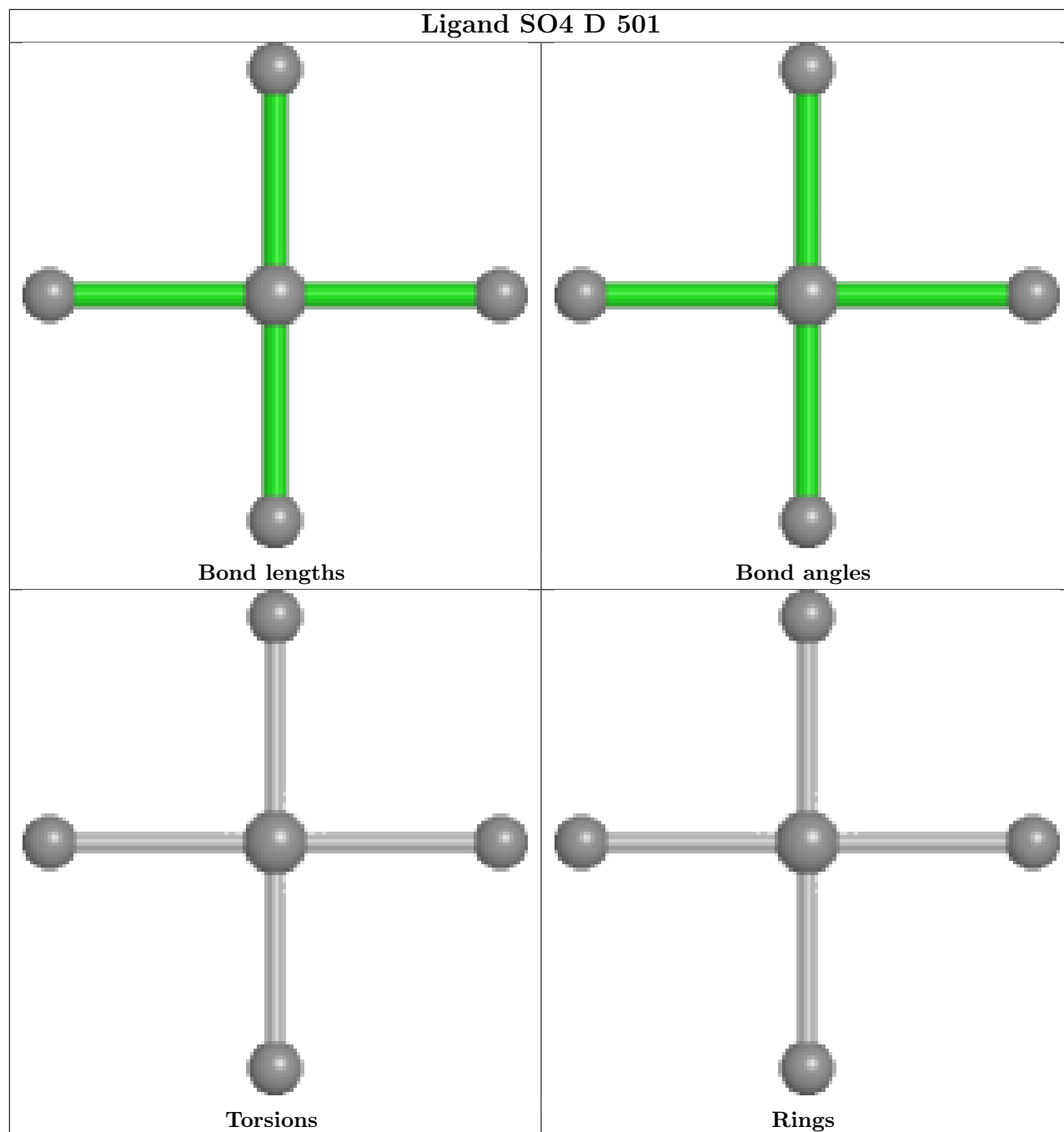




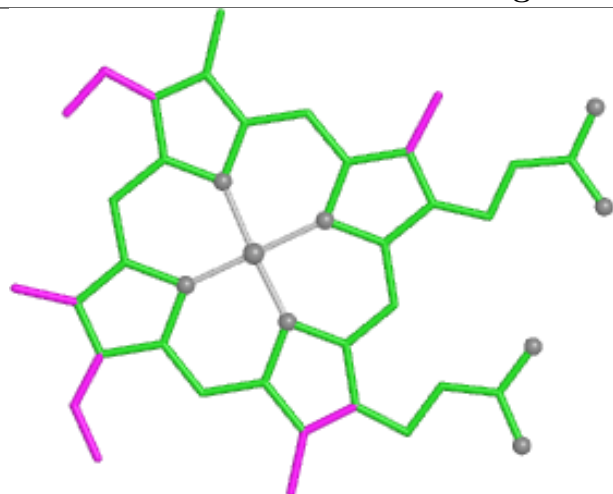




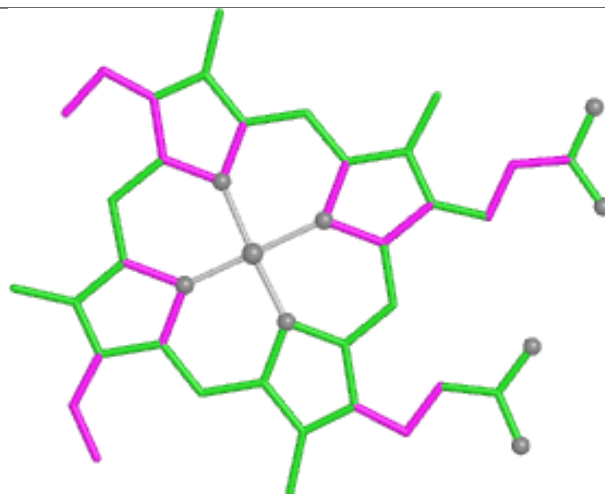




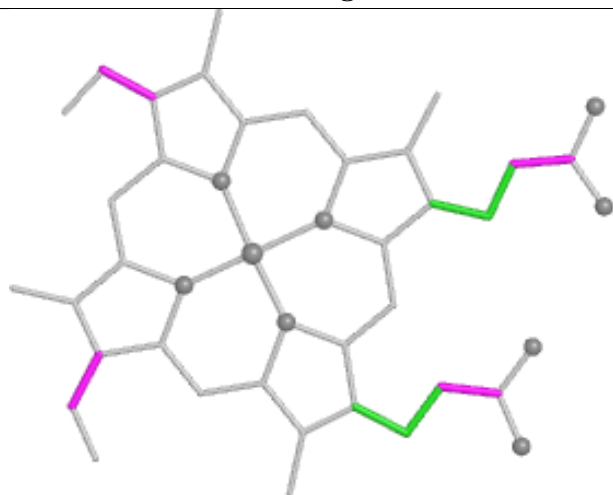
Ligand HEC B 501



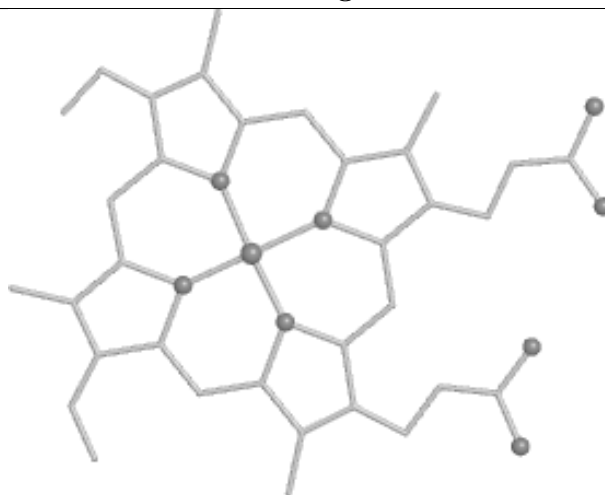
Bond lengths



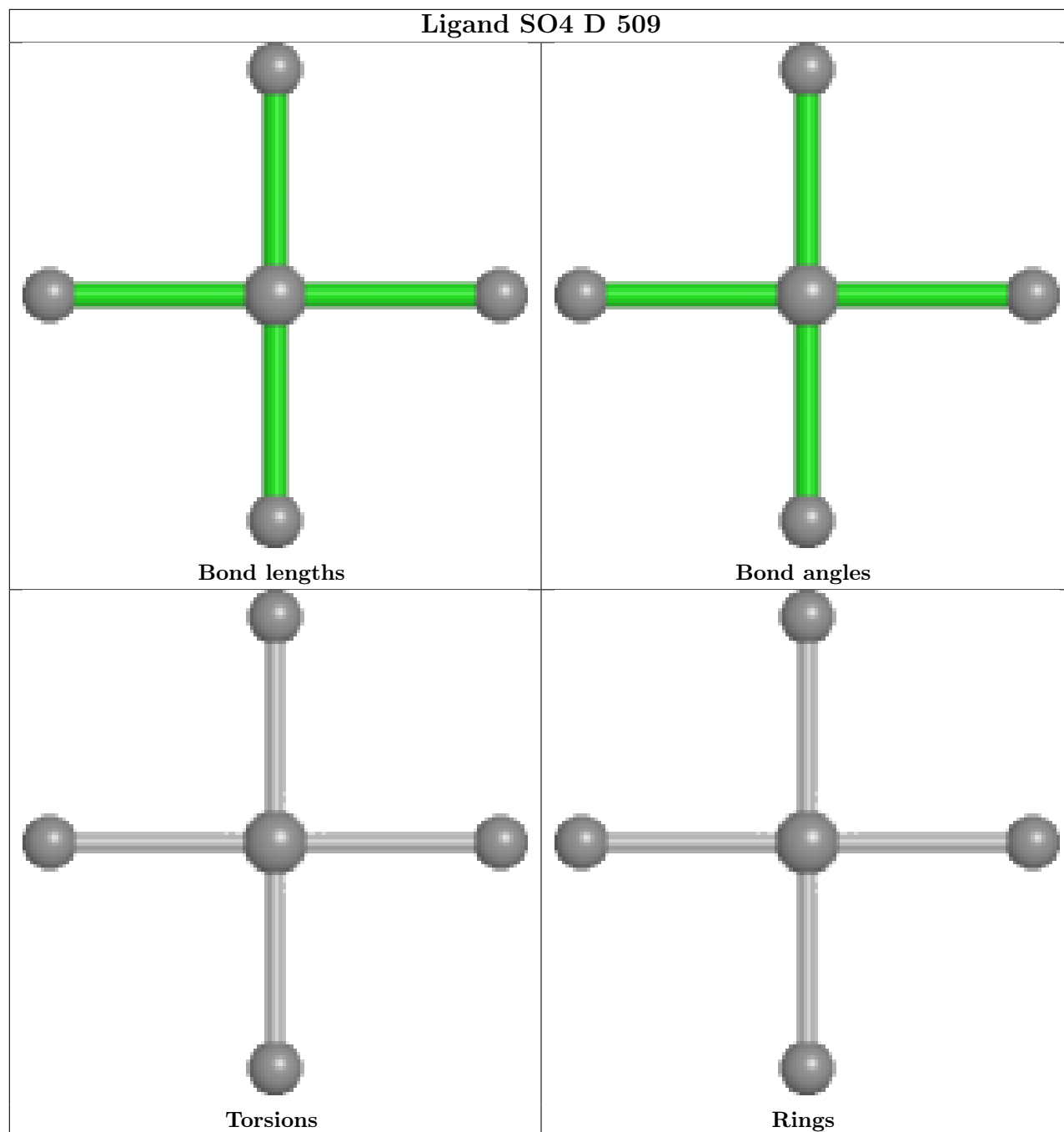
Bond angles

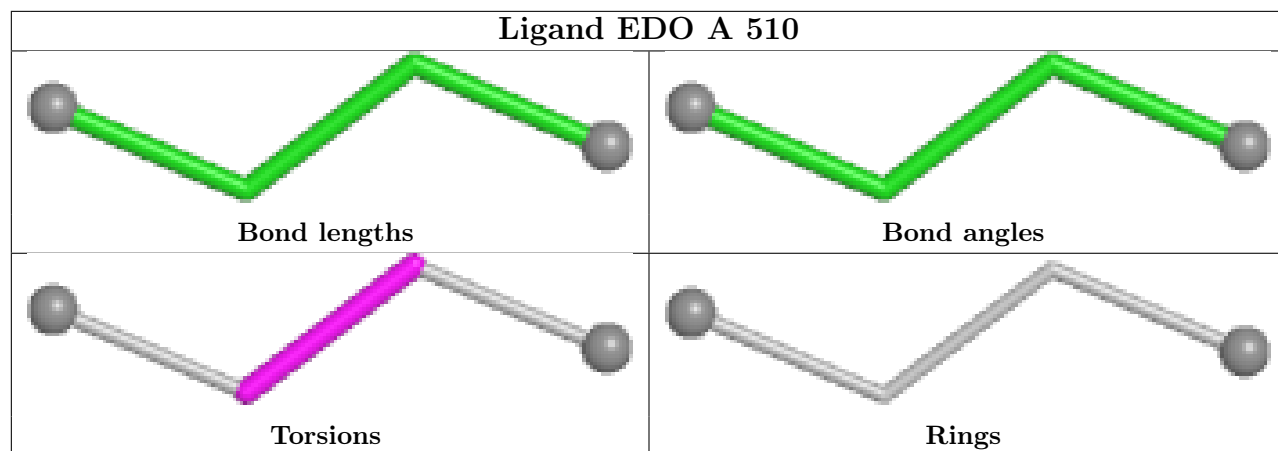


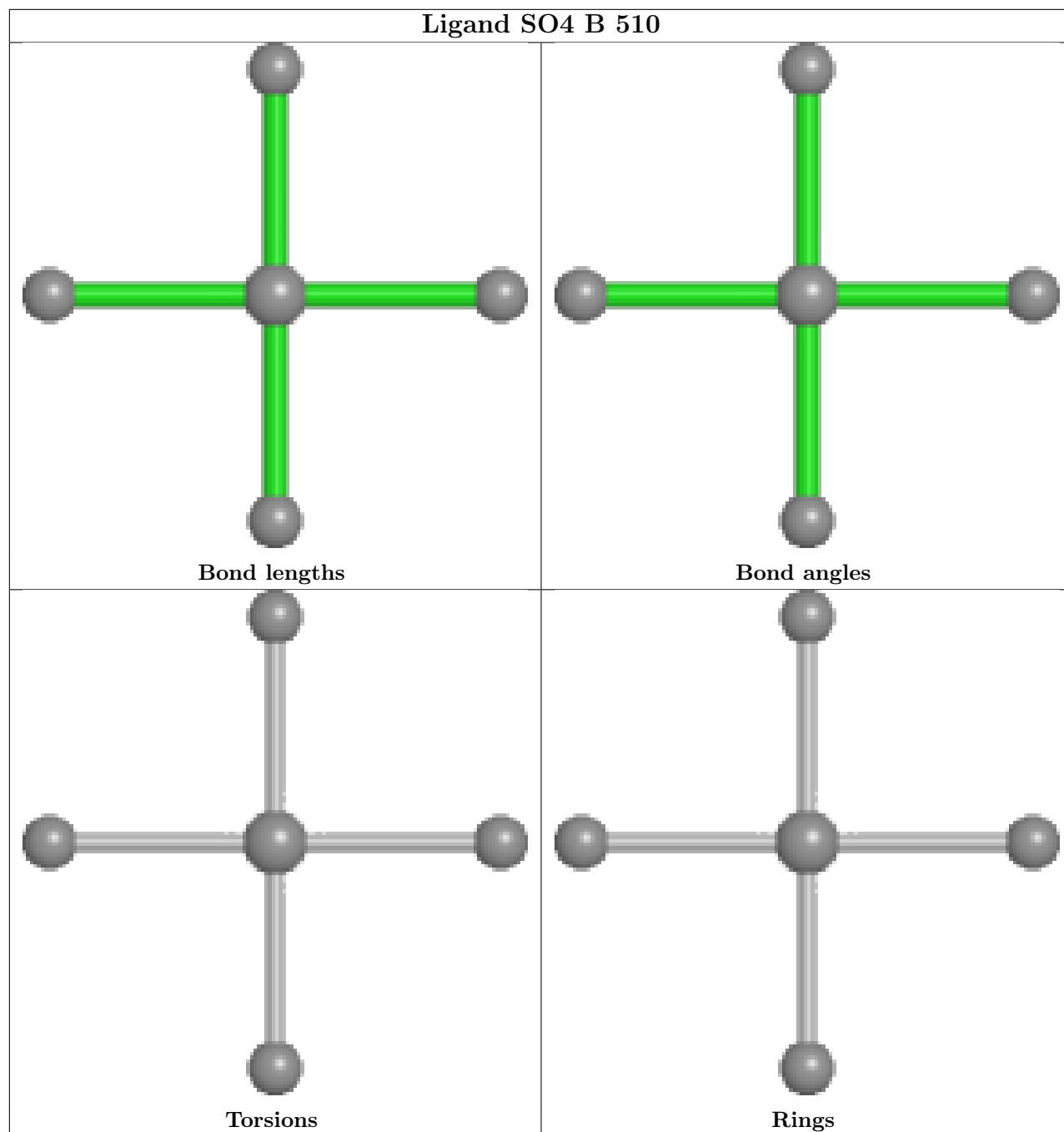
Torsions

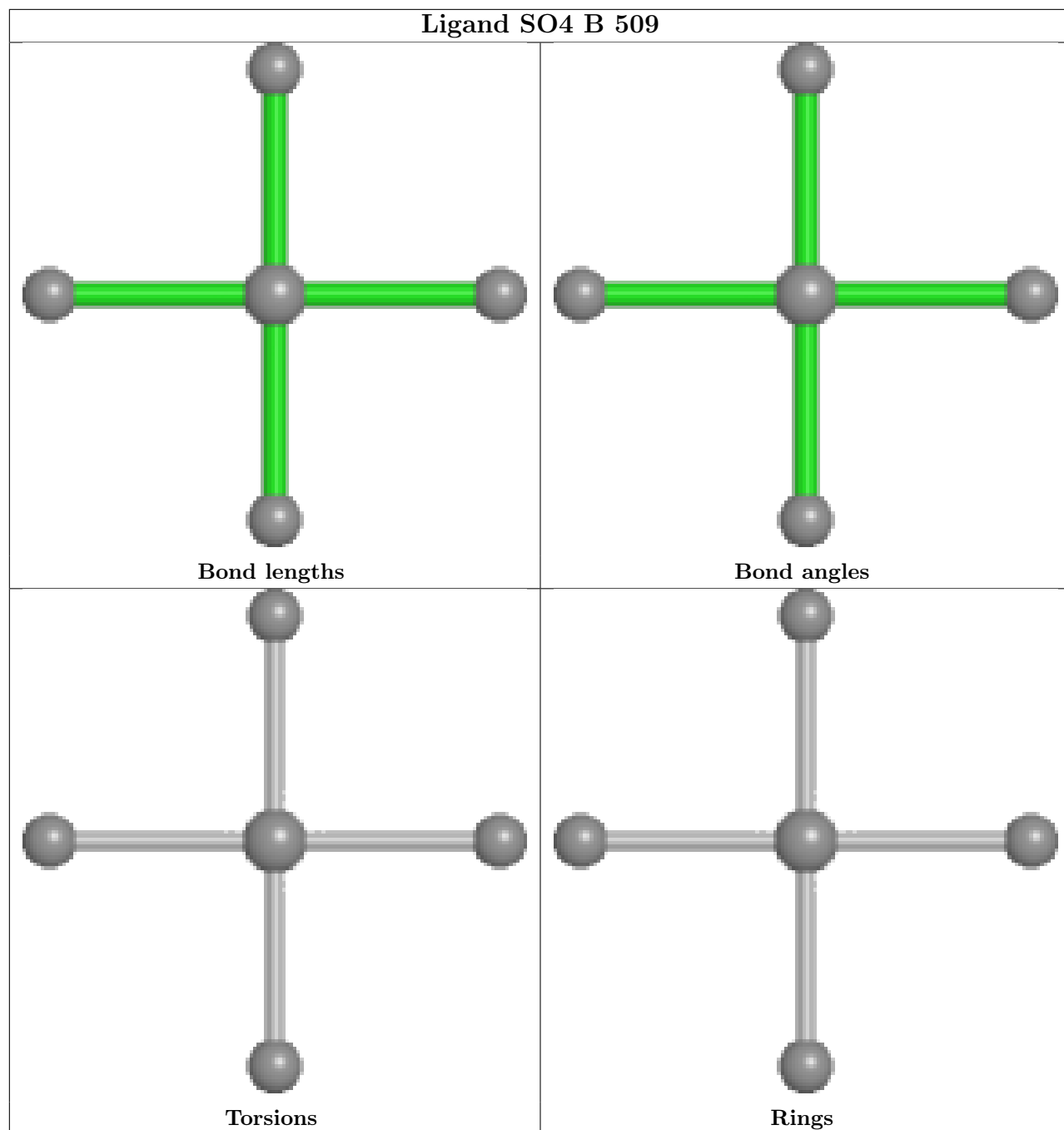


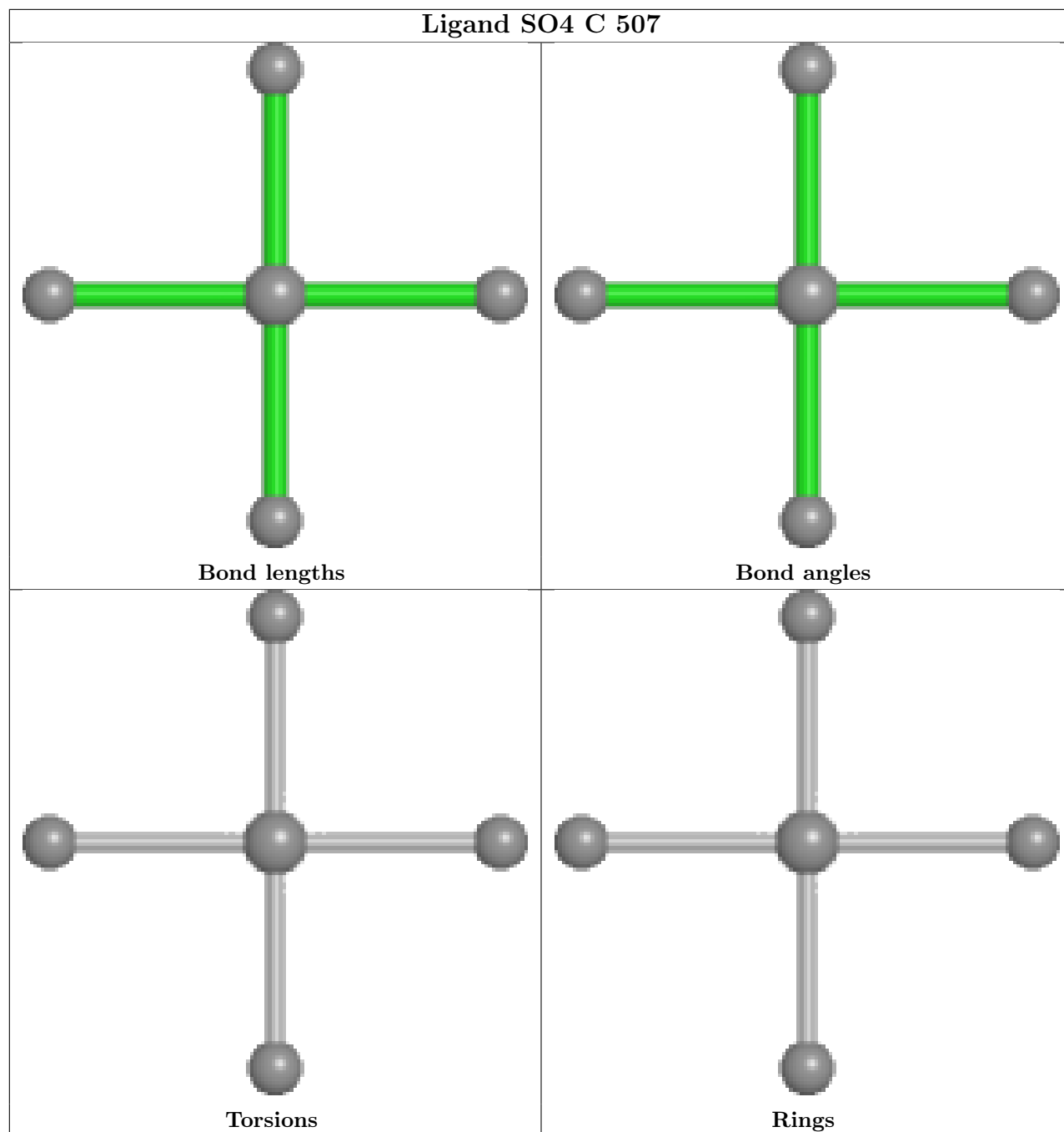
Rings

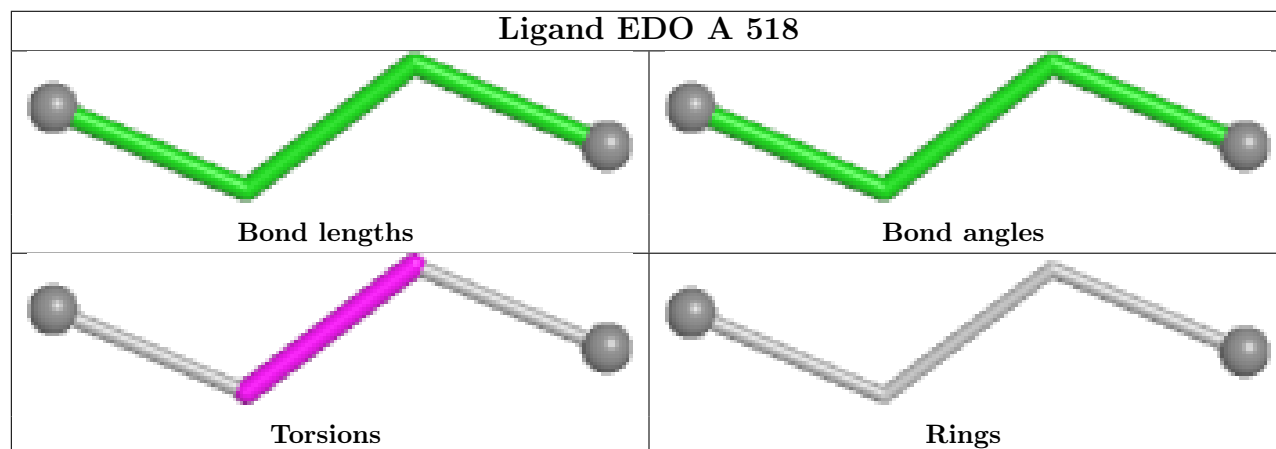
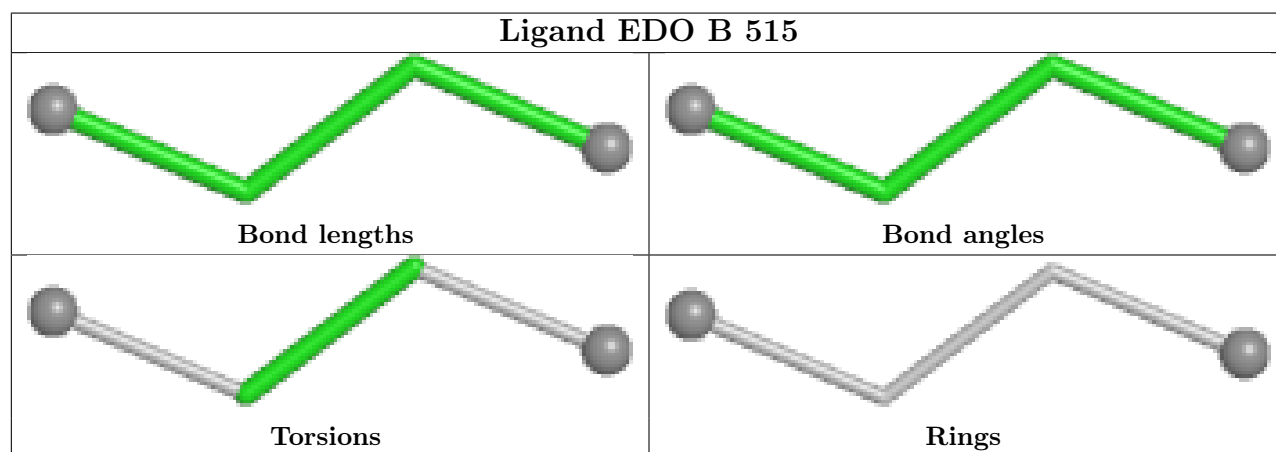
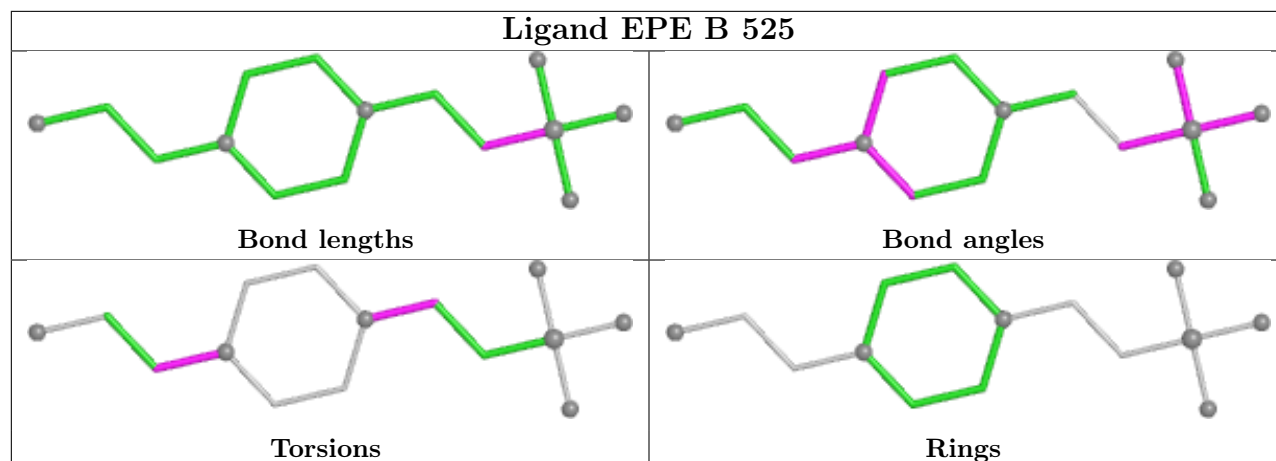




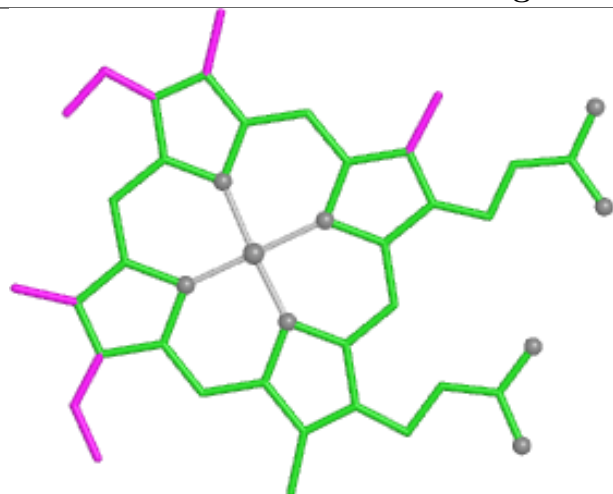




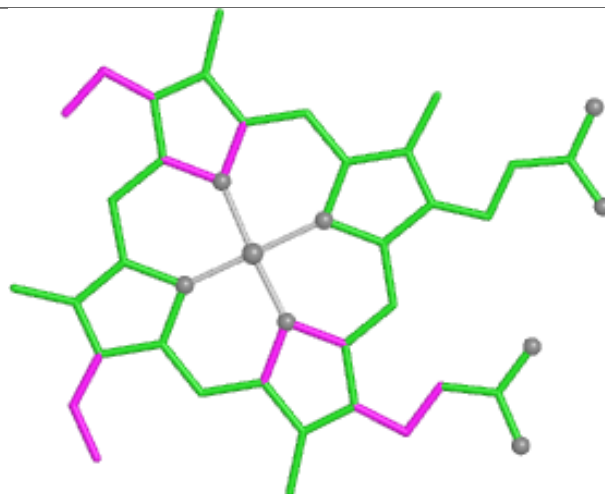




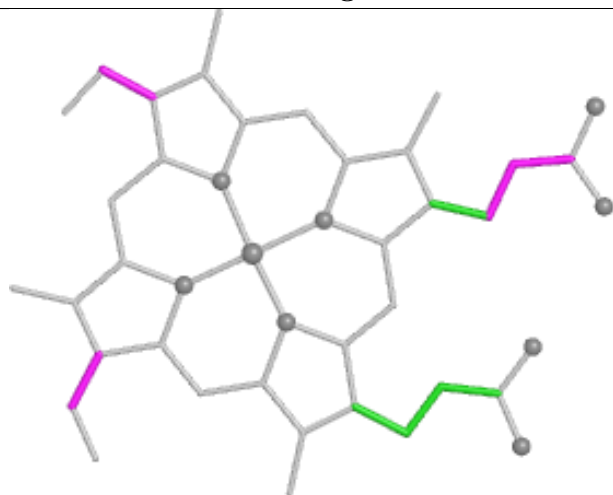
Ligand HEC B 502



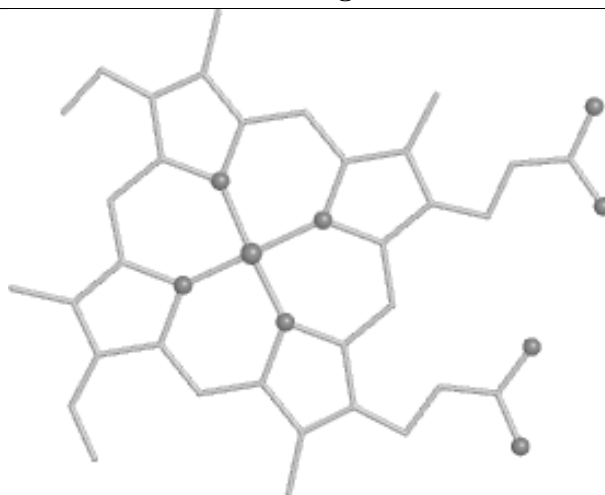
Bond lengths



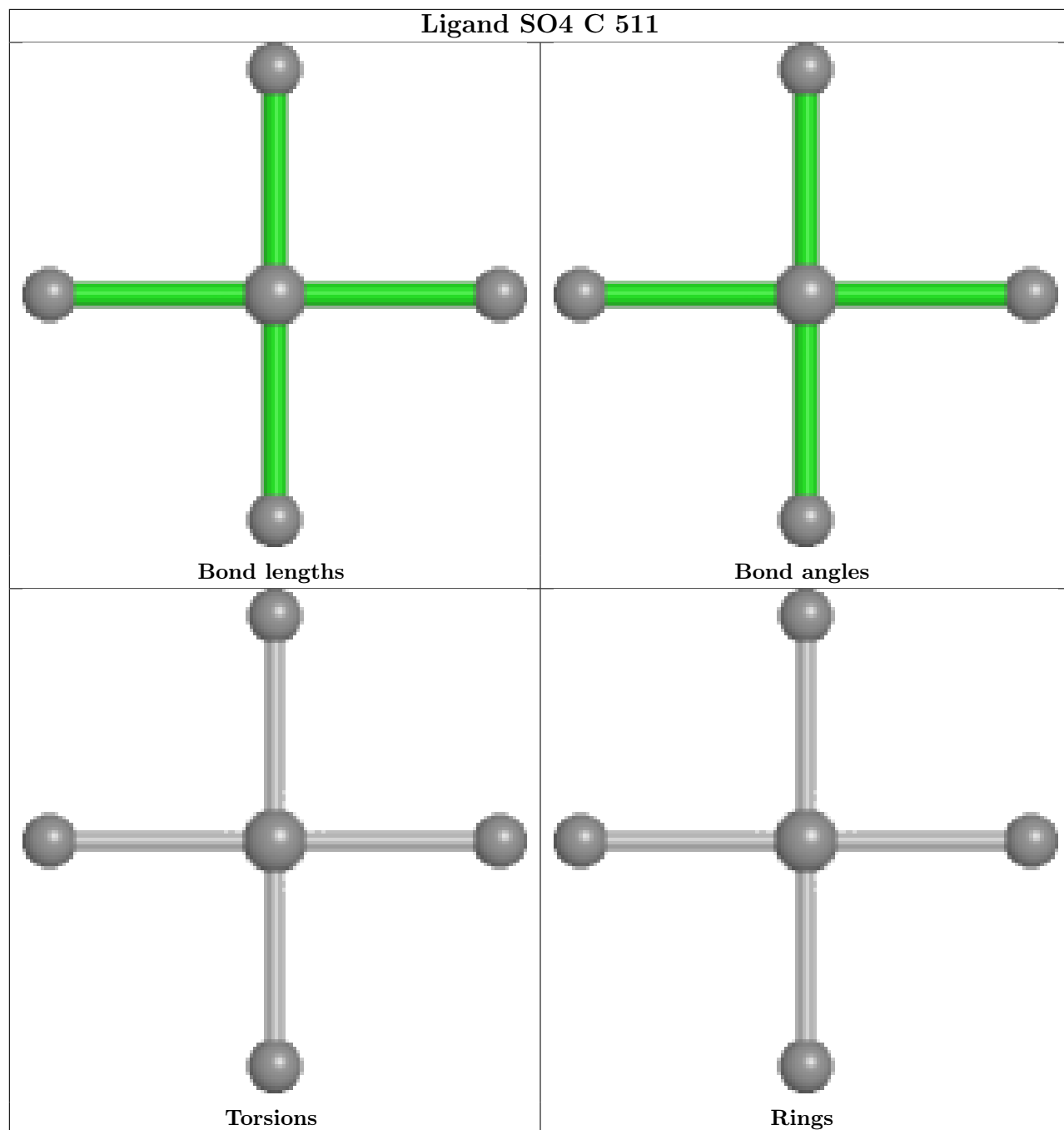
Bond angles

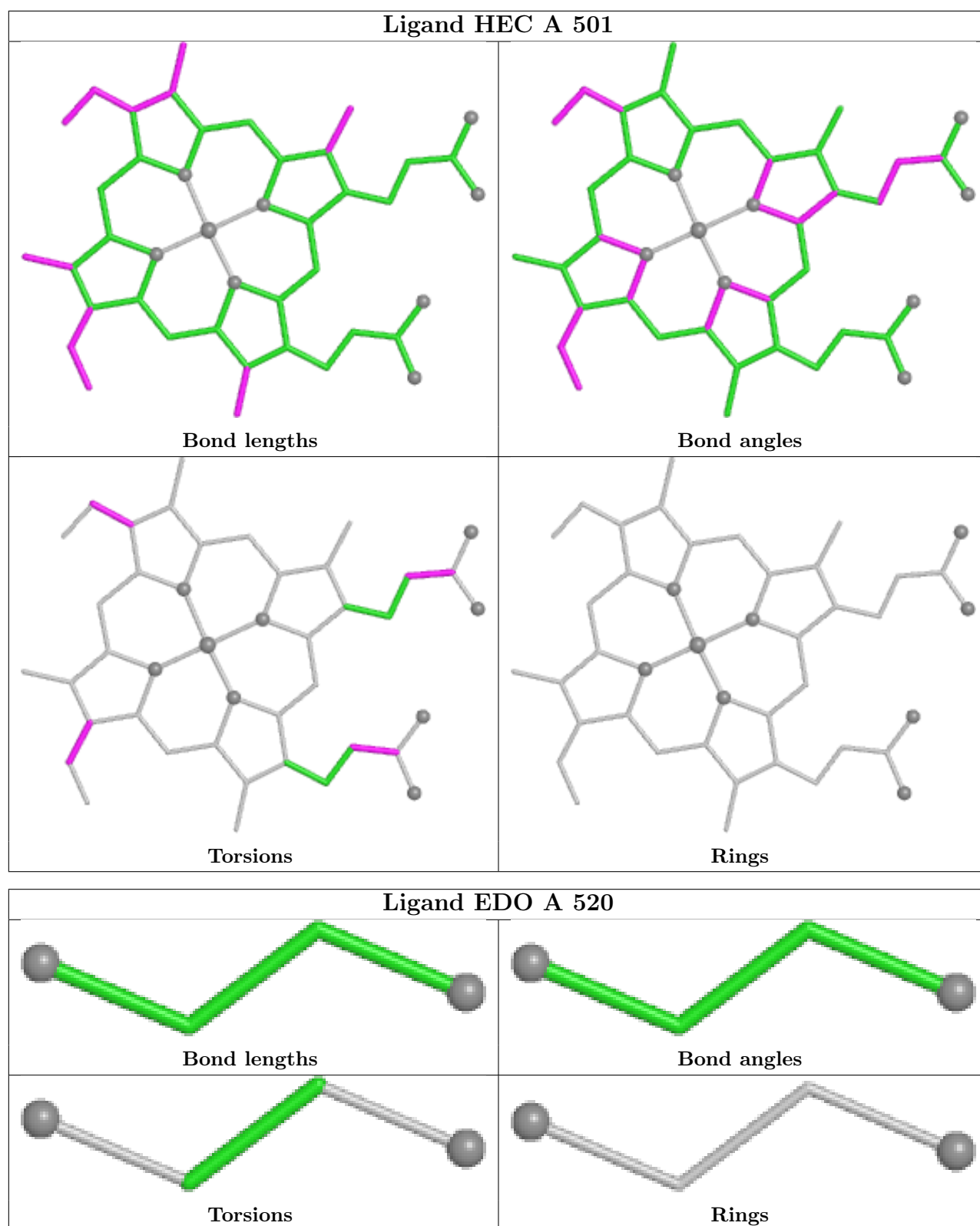


Torsions

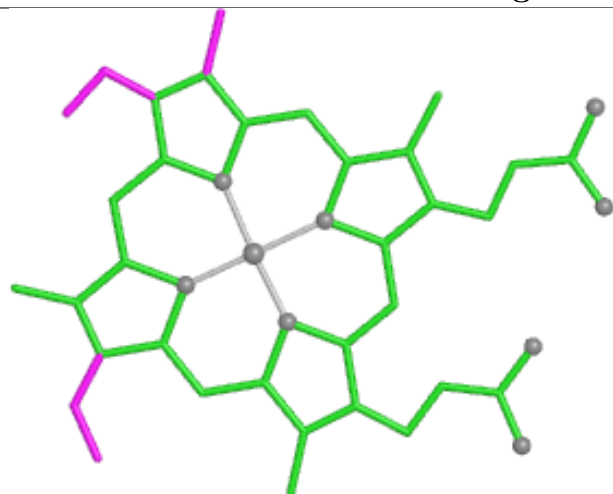


Rings

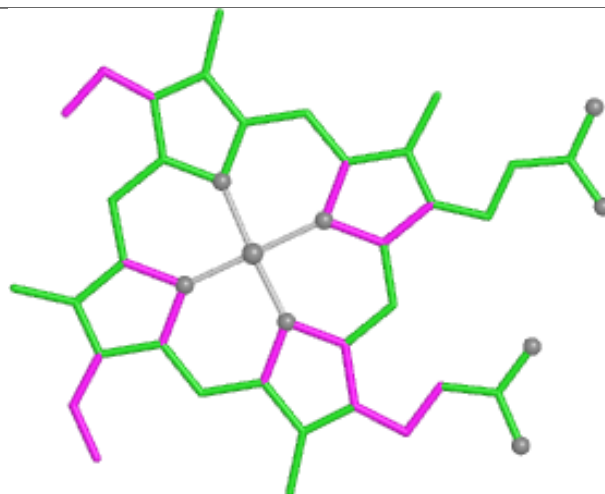




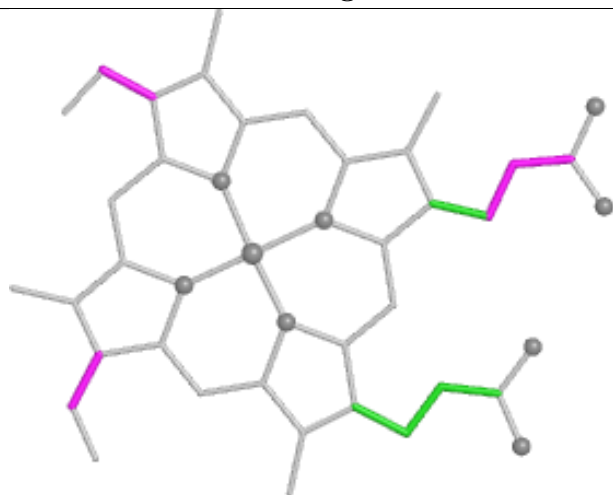
Ligand HEC C 503



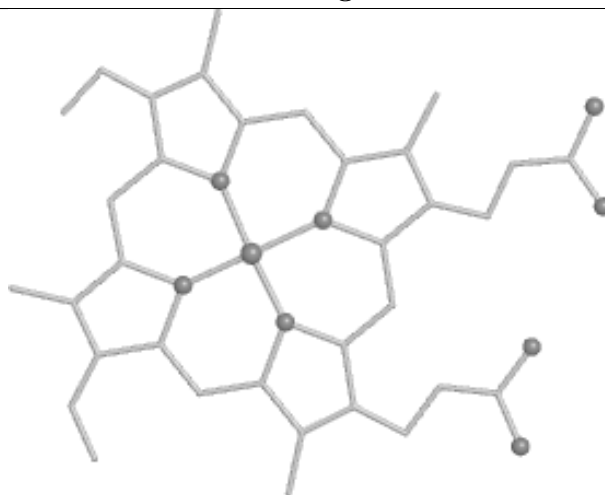
Bond lengths



Bond angles

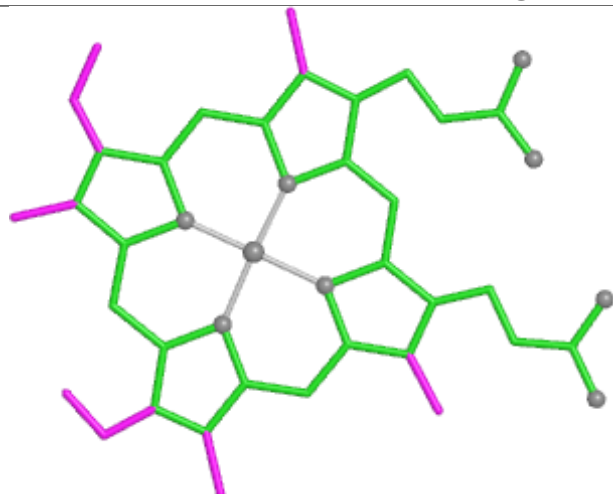


Torsions

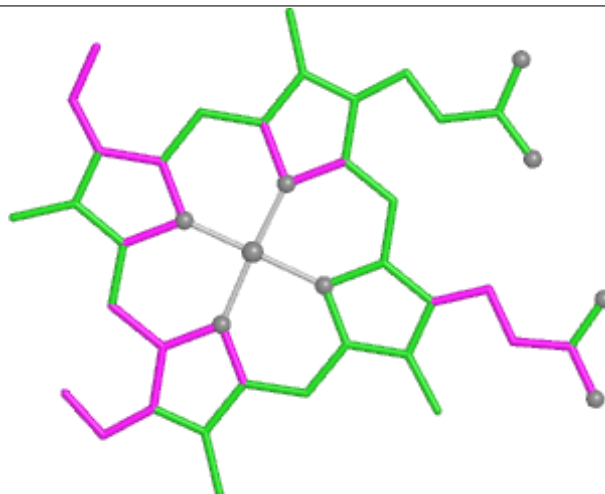


Rings

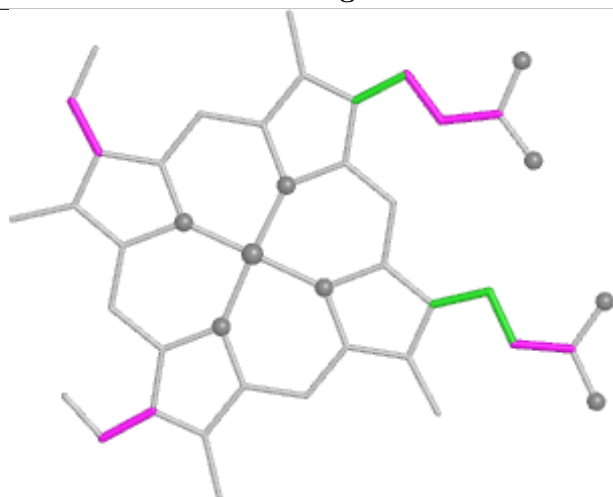
Ligand HEC C 506



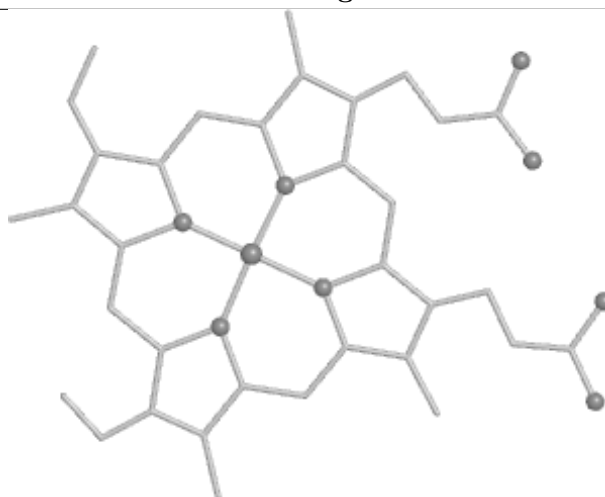
Bond lengths



Bond angles

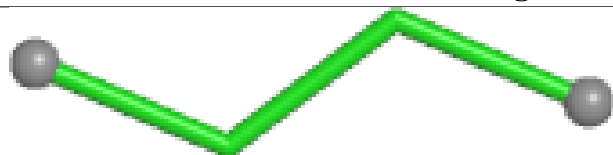


Torsions

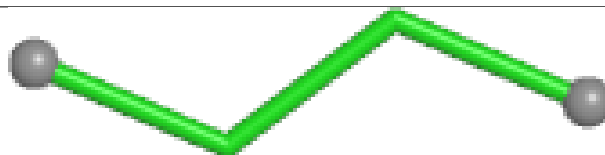


Rings

Ligand EDO B 519



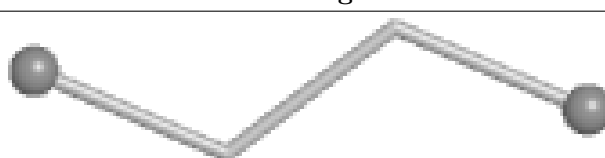
Bond lengths



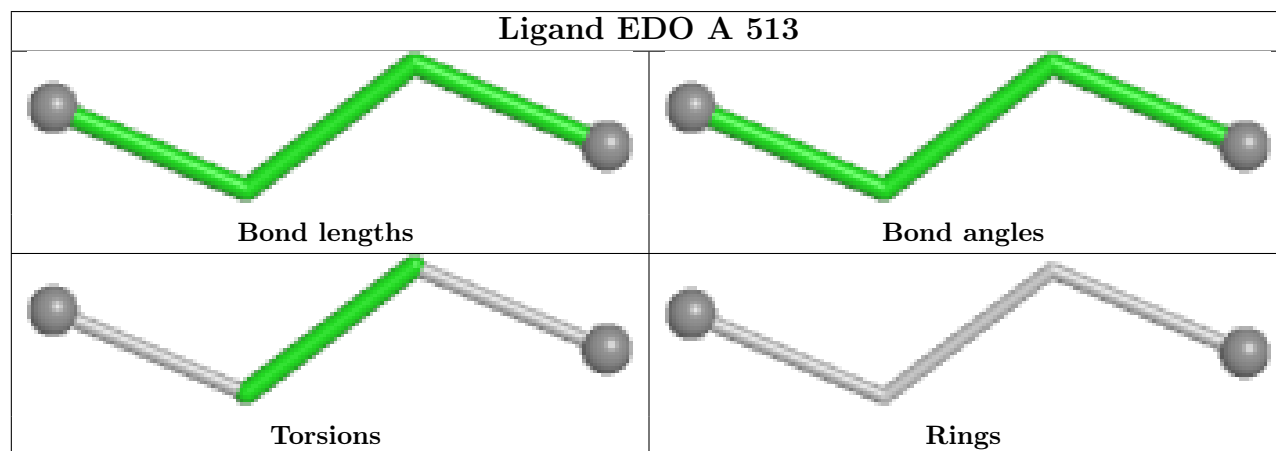
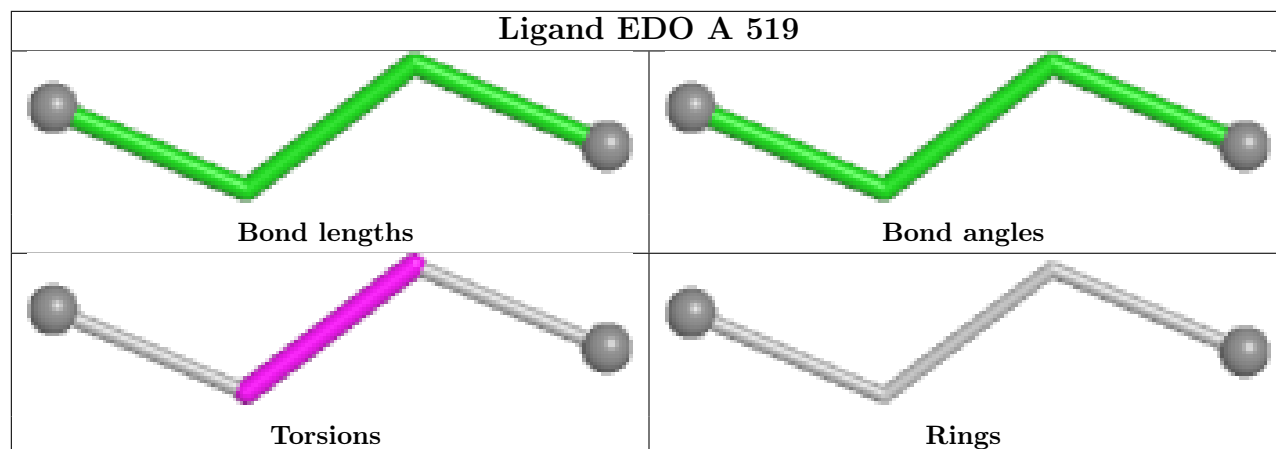
Bond angles



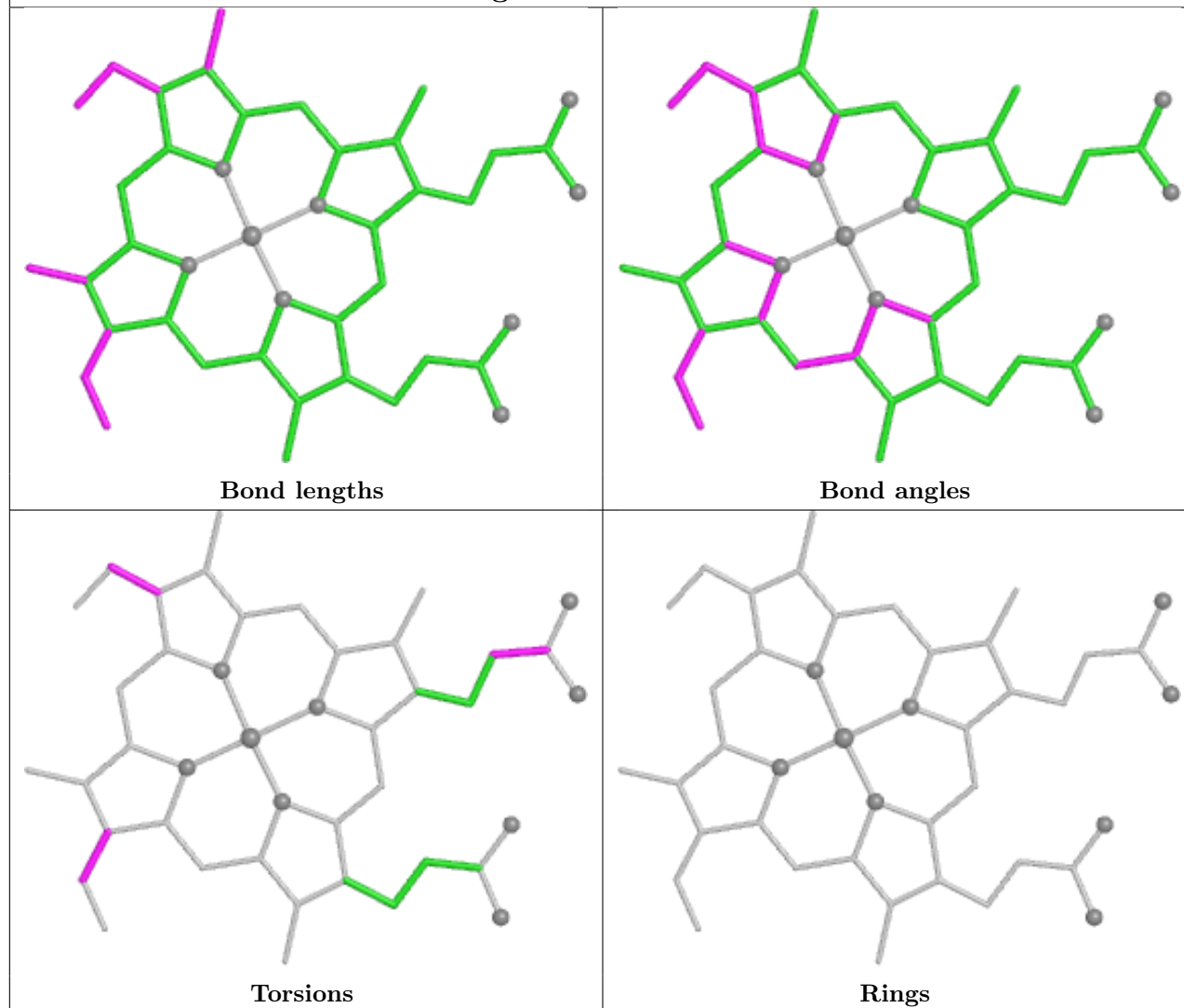
Torsions



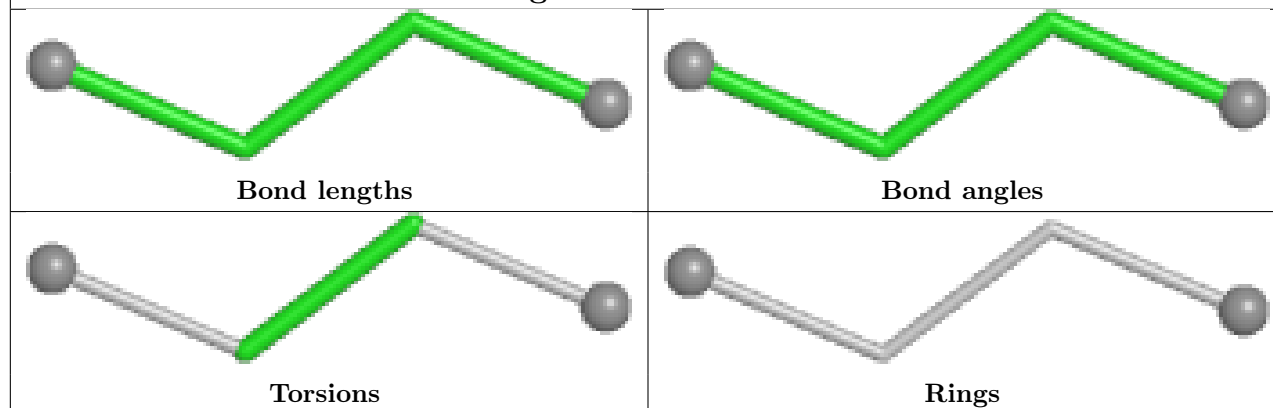
Rings

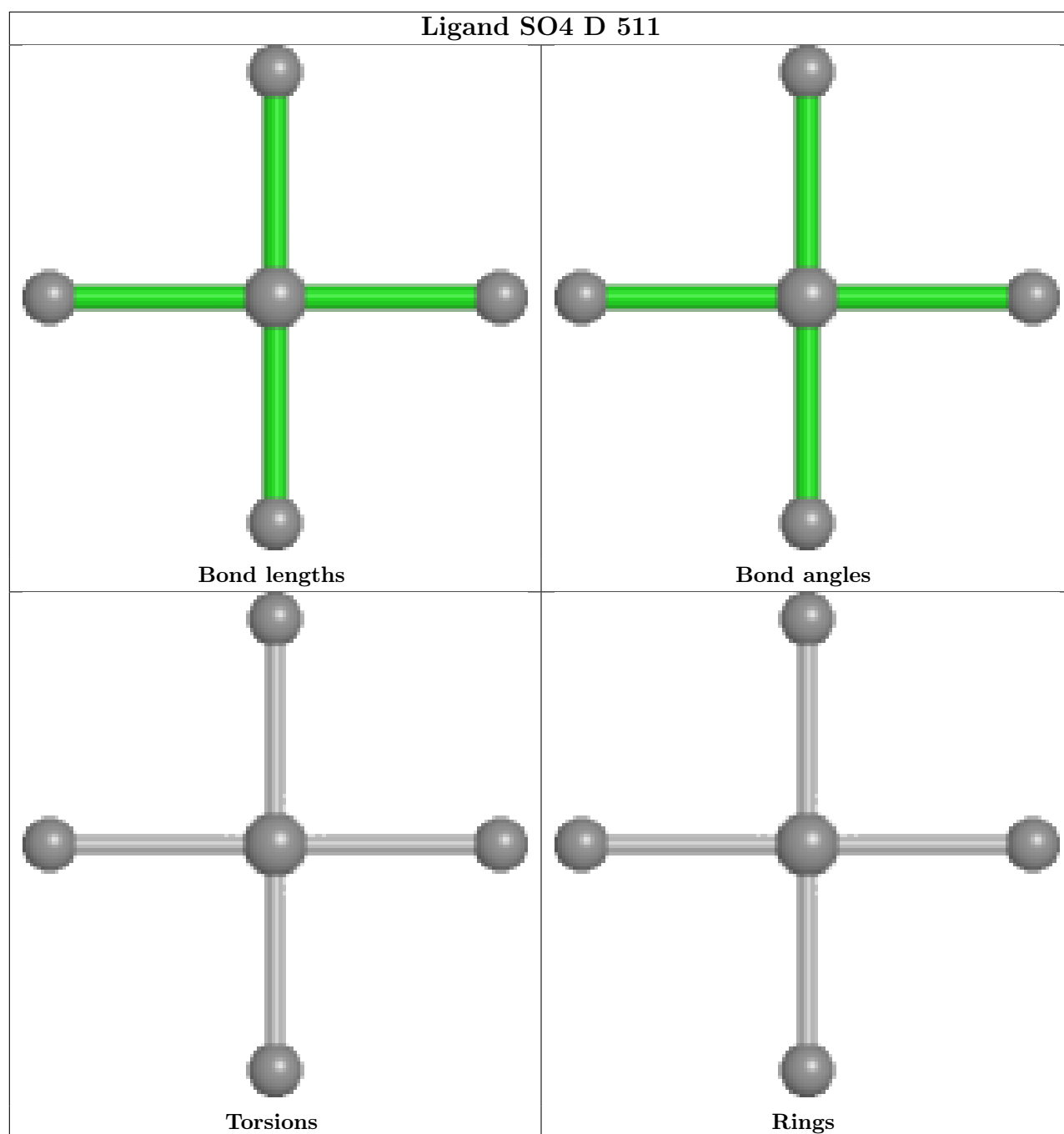


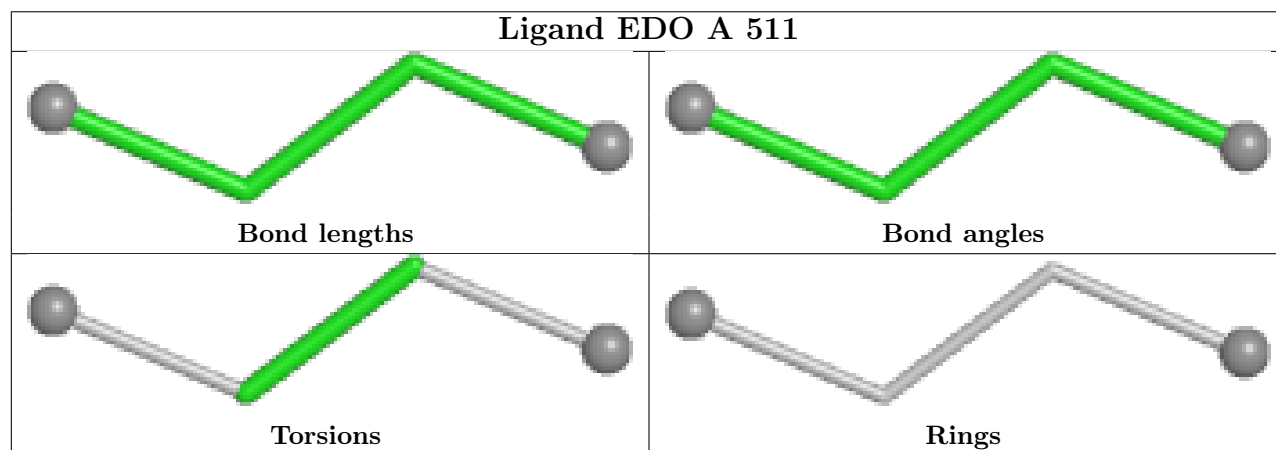
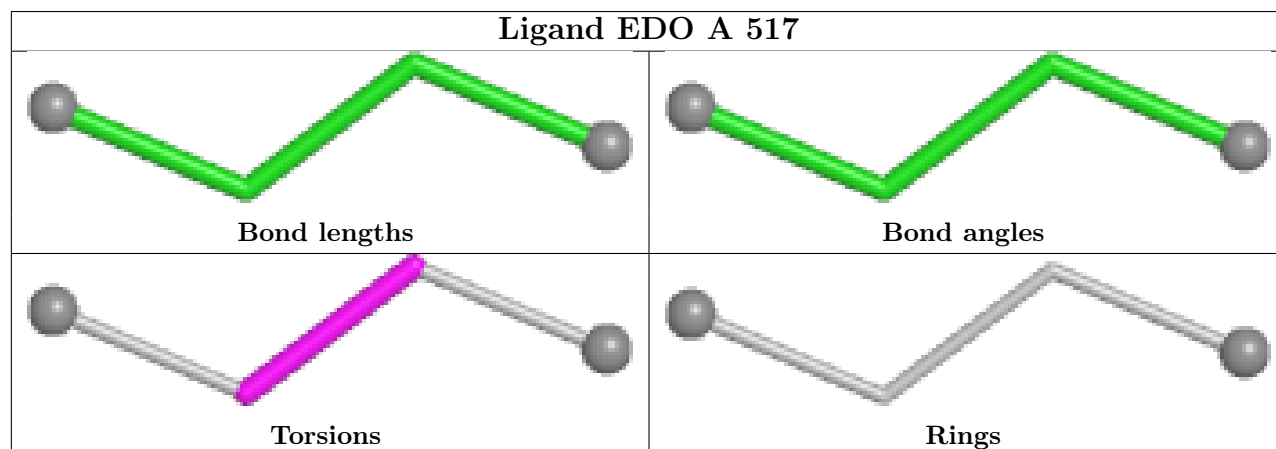
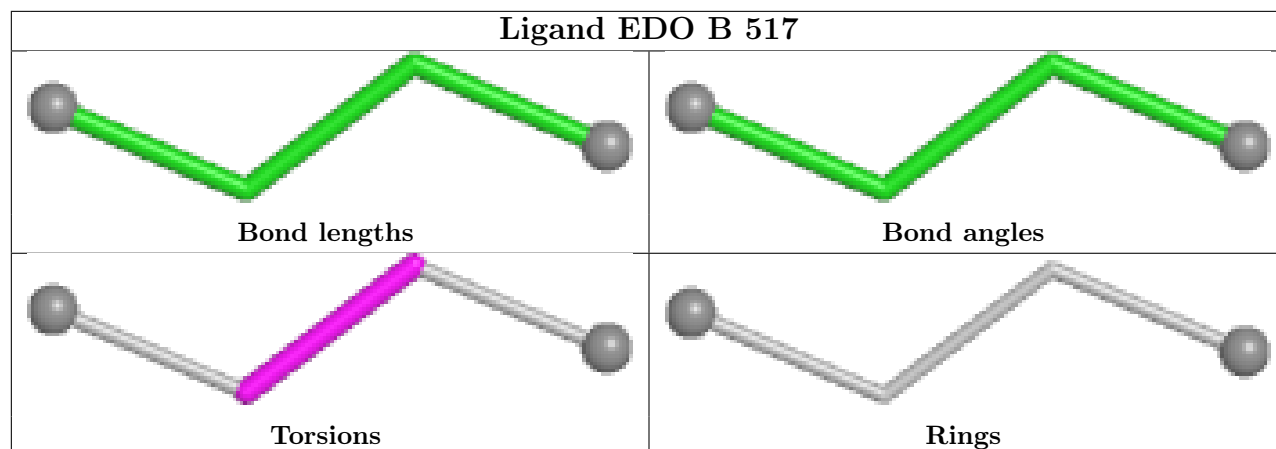
Ligand HEC D 505

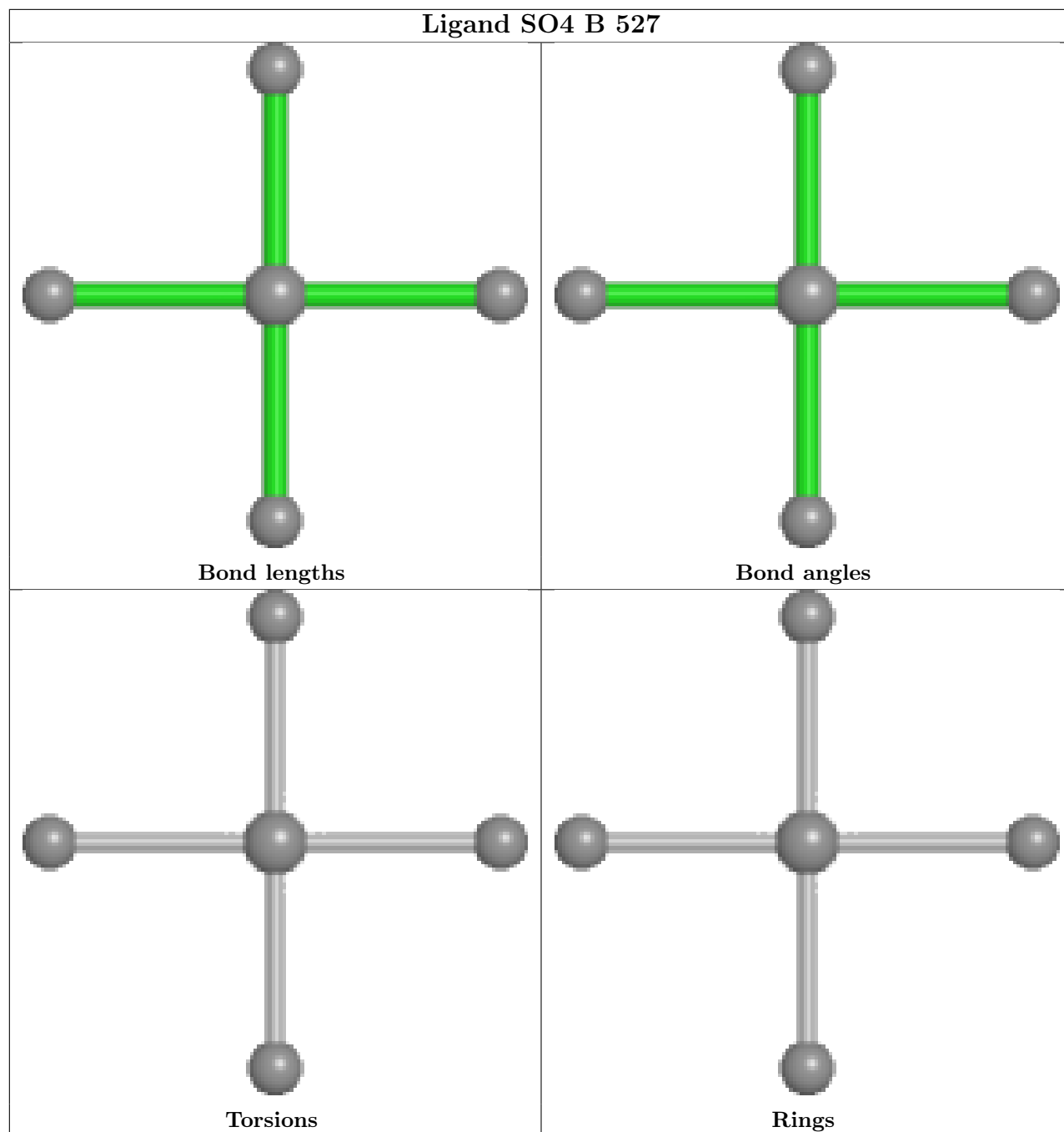


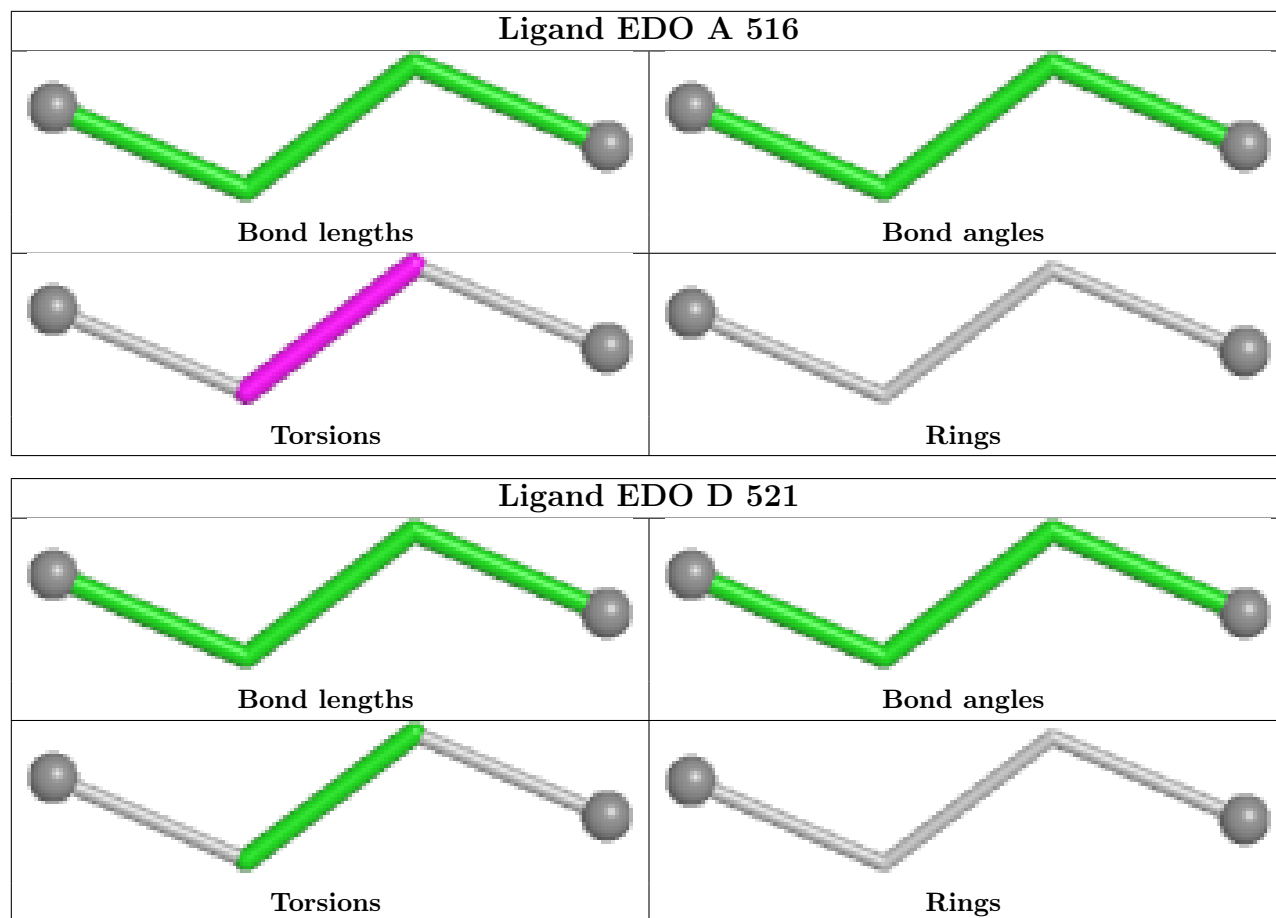
Ligand EDO C 514

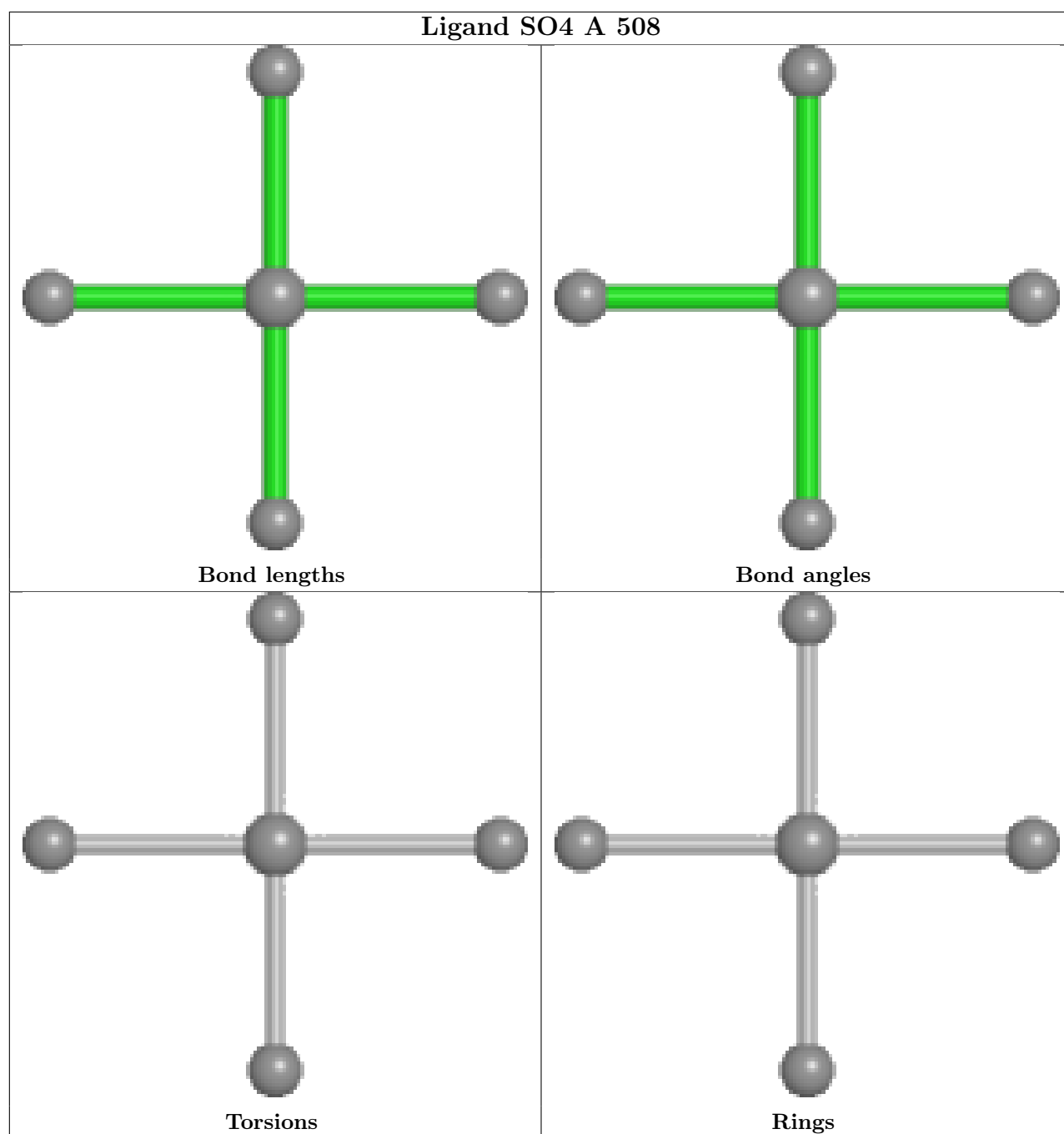


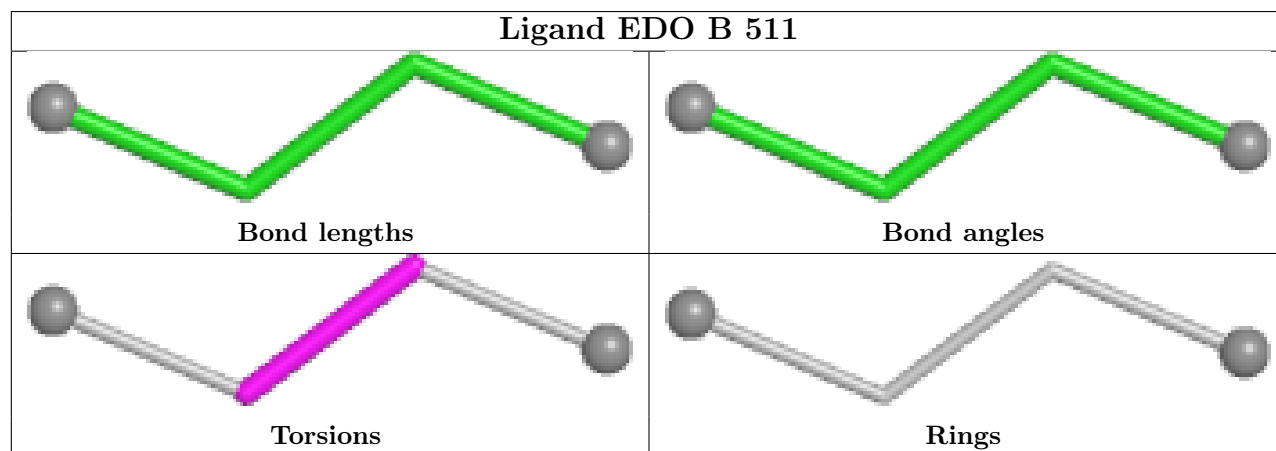
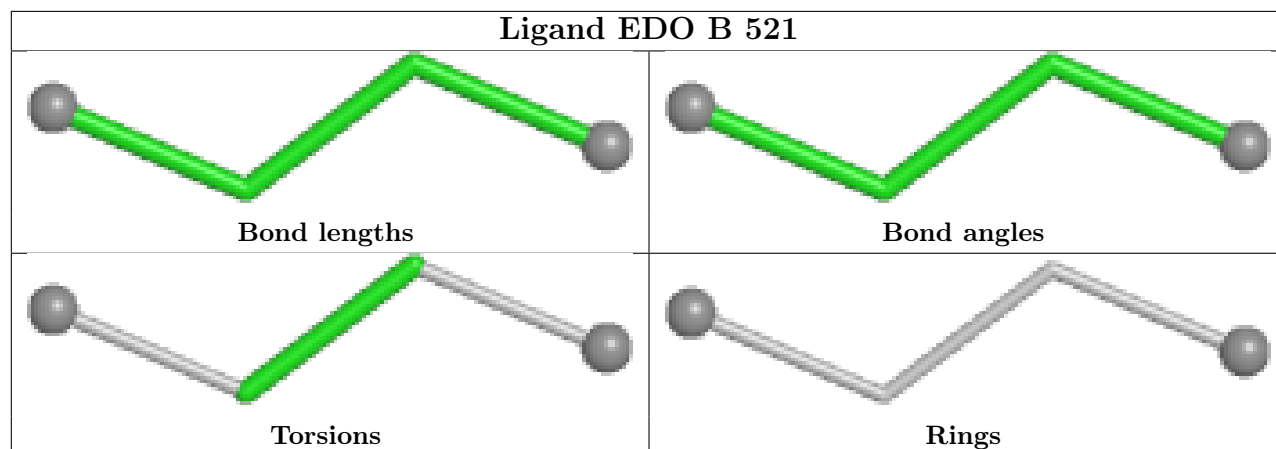




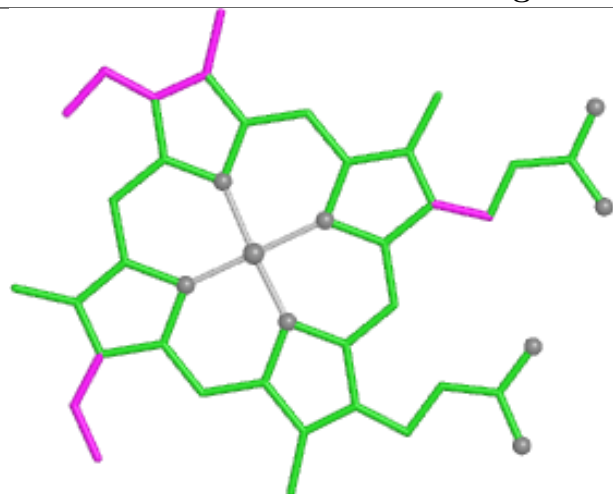




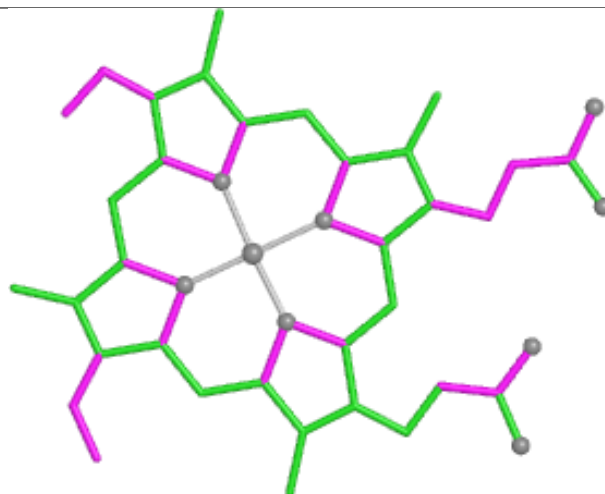




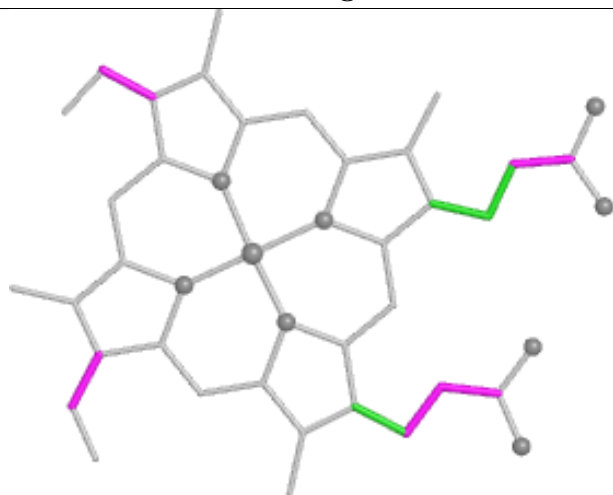
Ligand HEC B 505



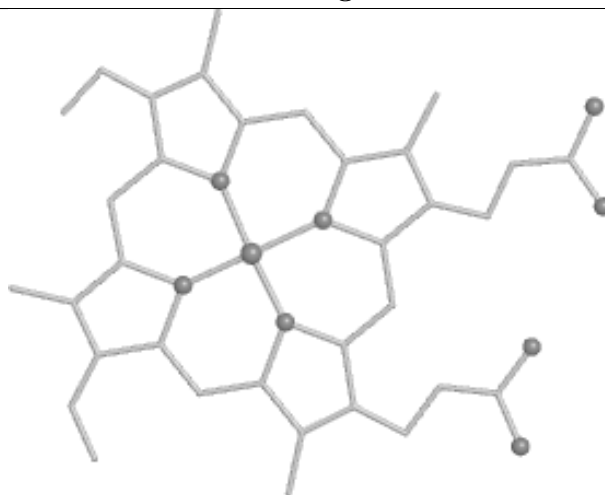
Bond lengths



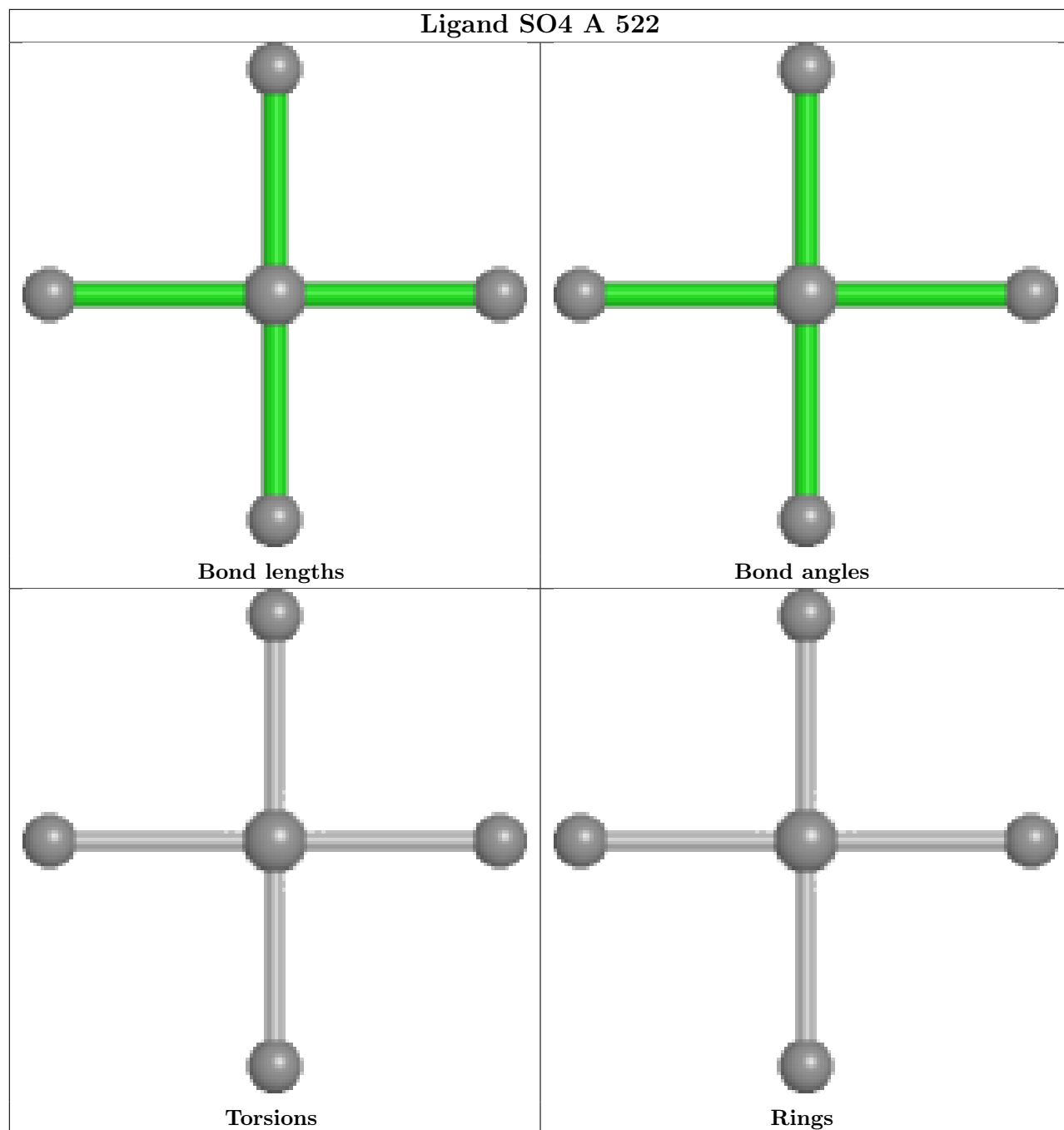
Bond angles

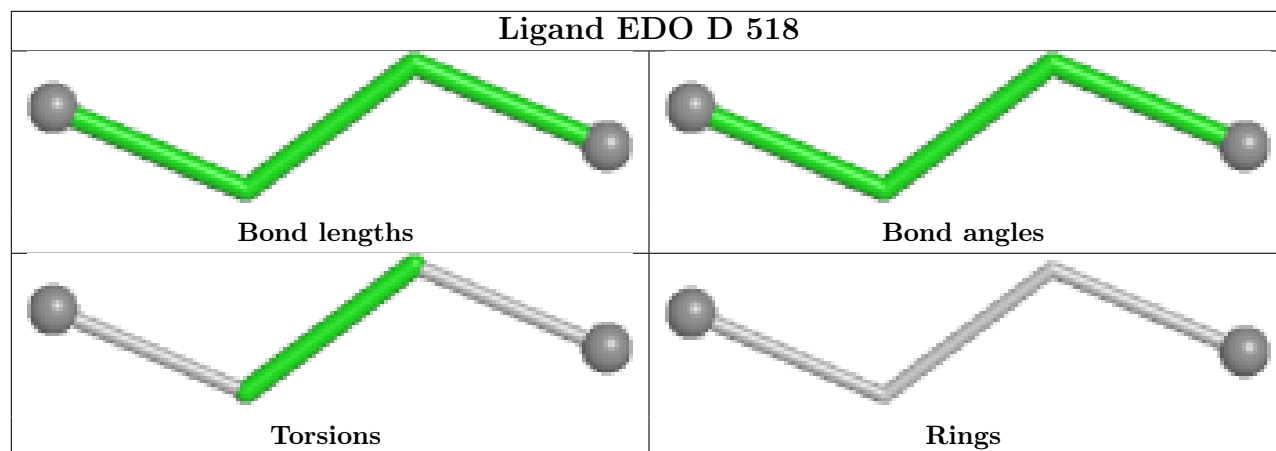


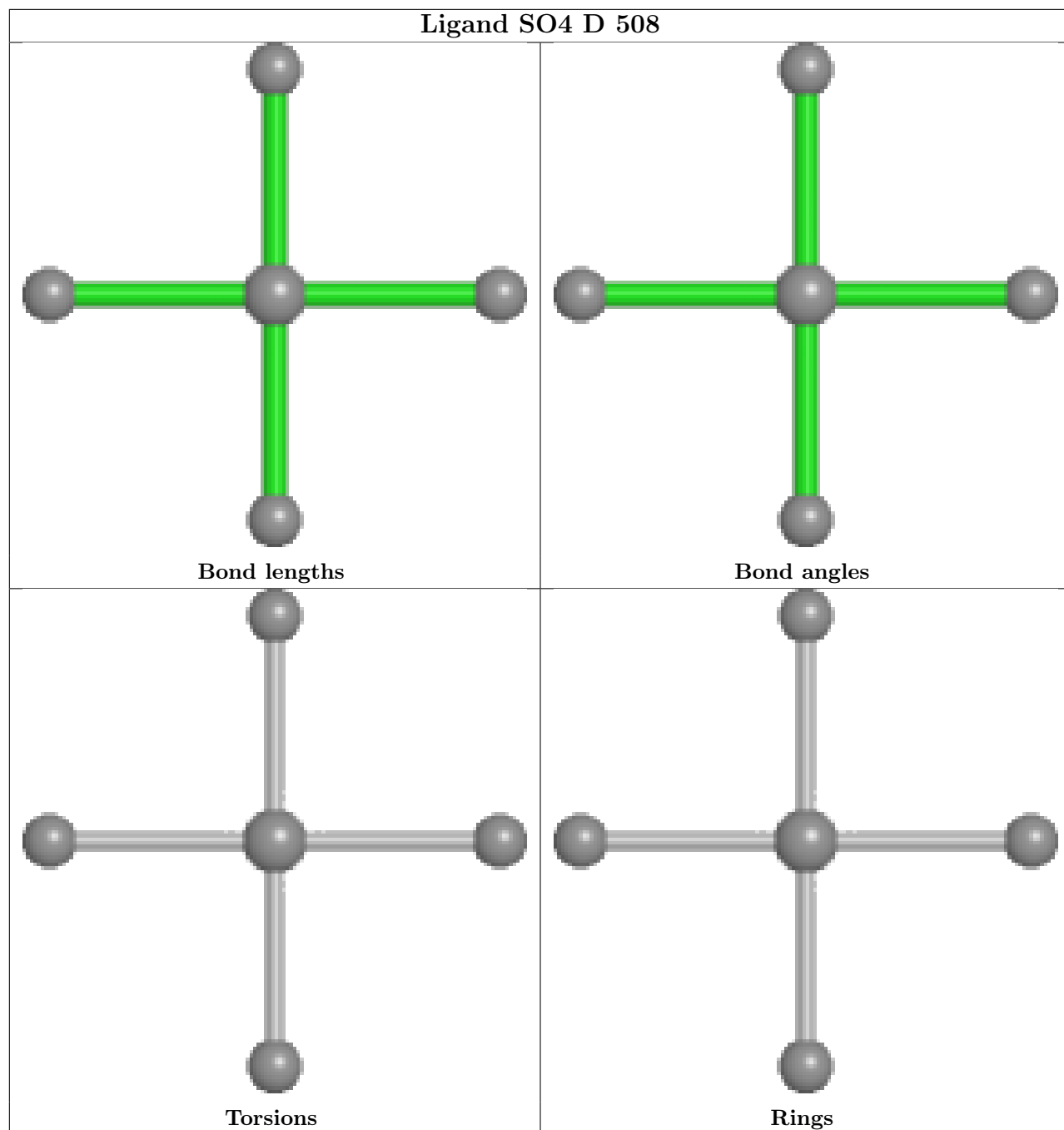
Torsions

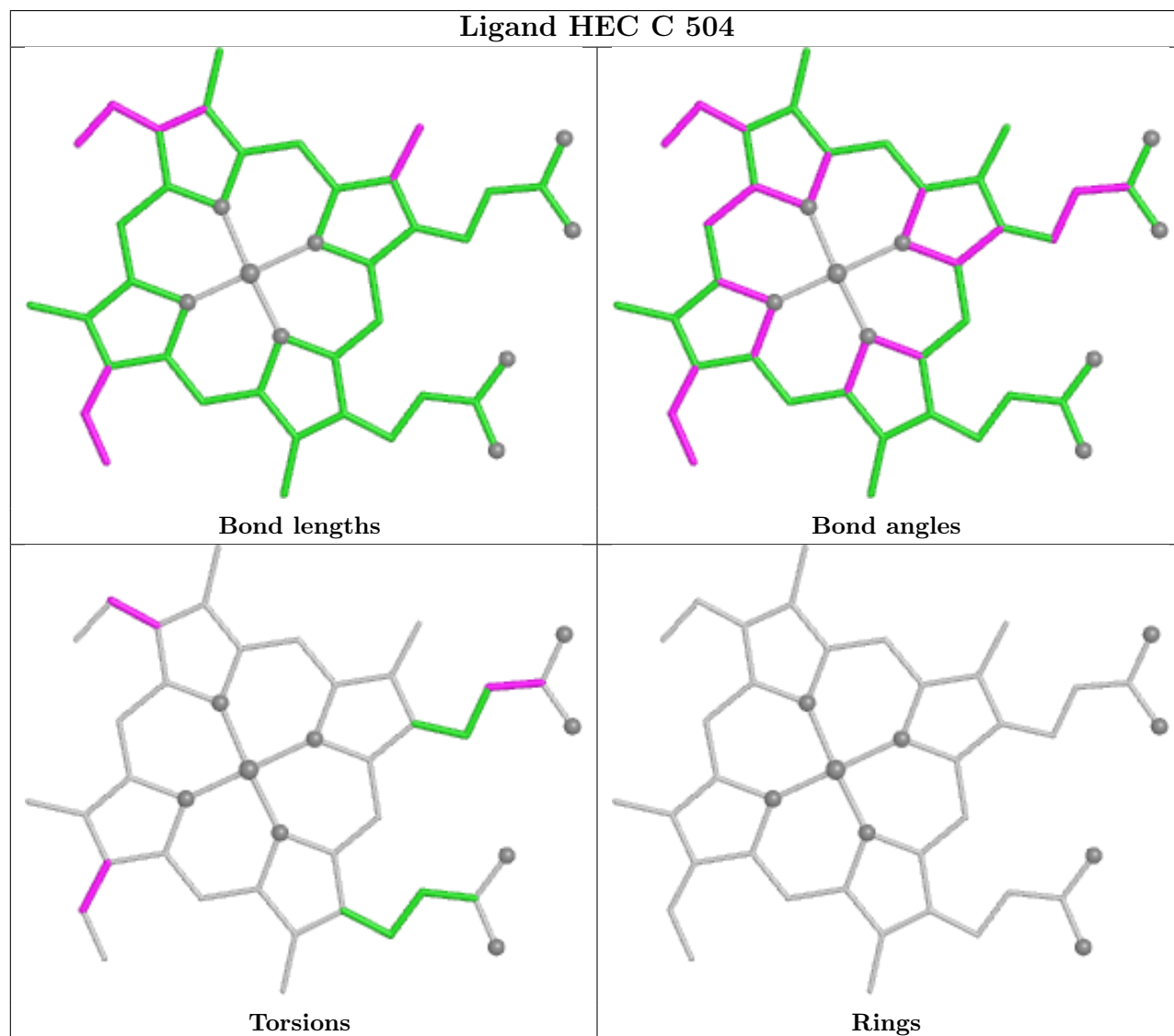
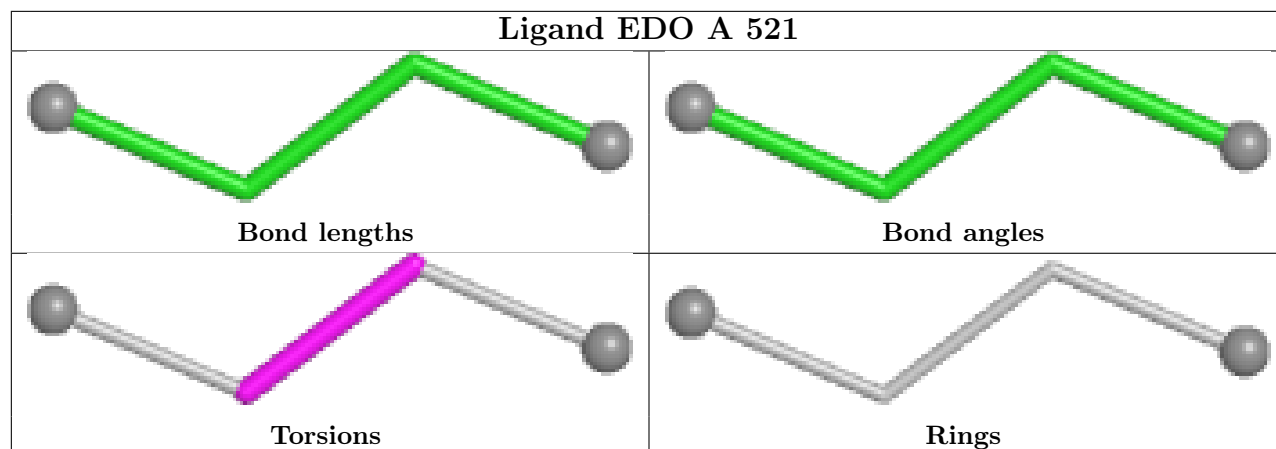


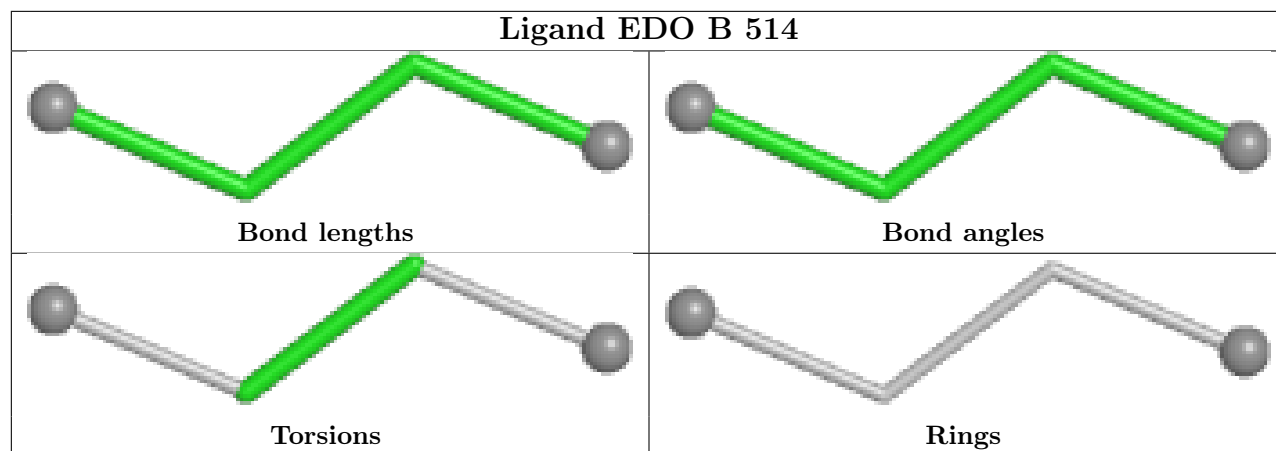
Rings

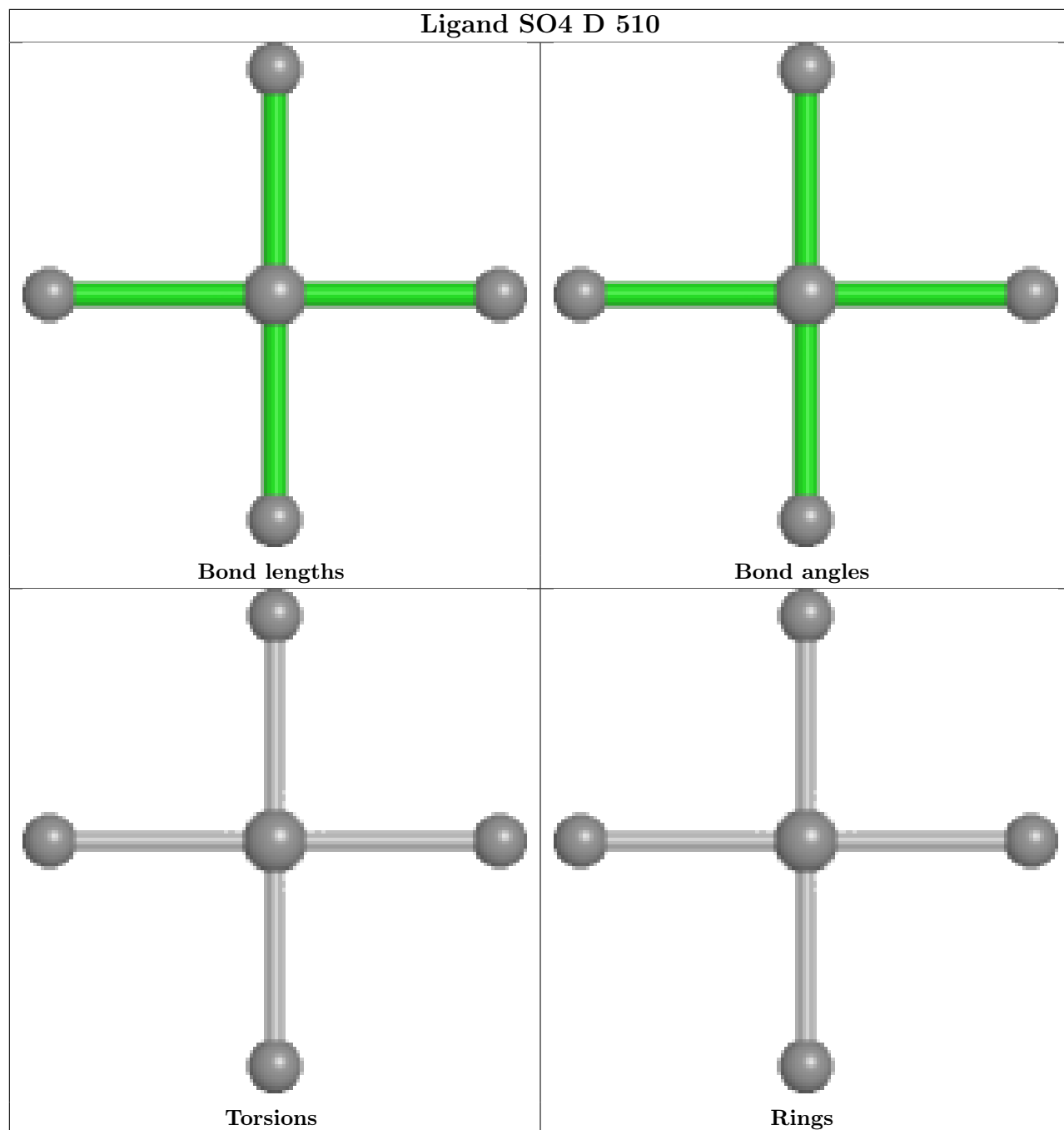


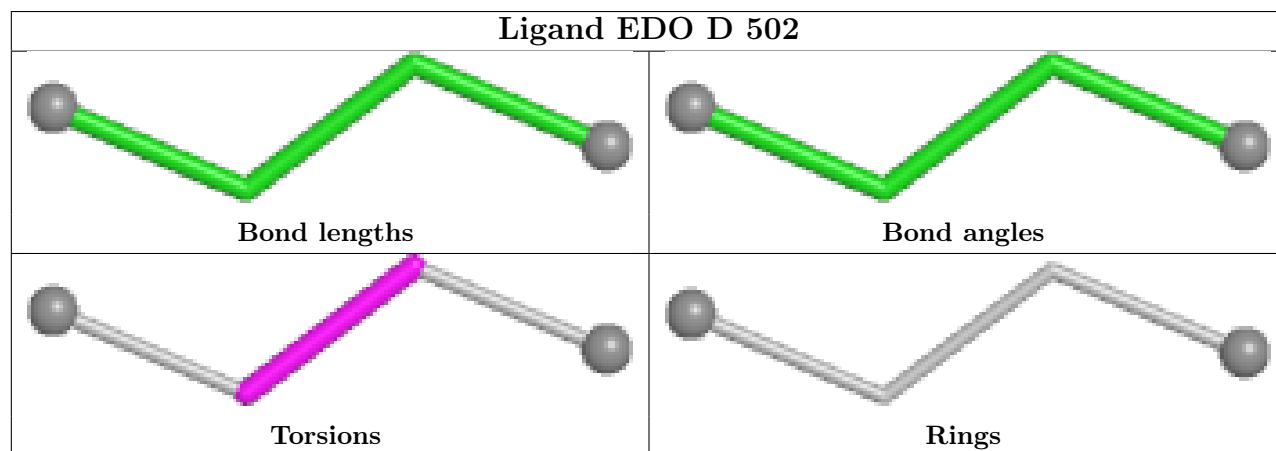
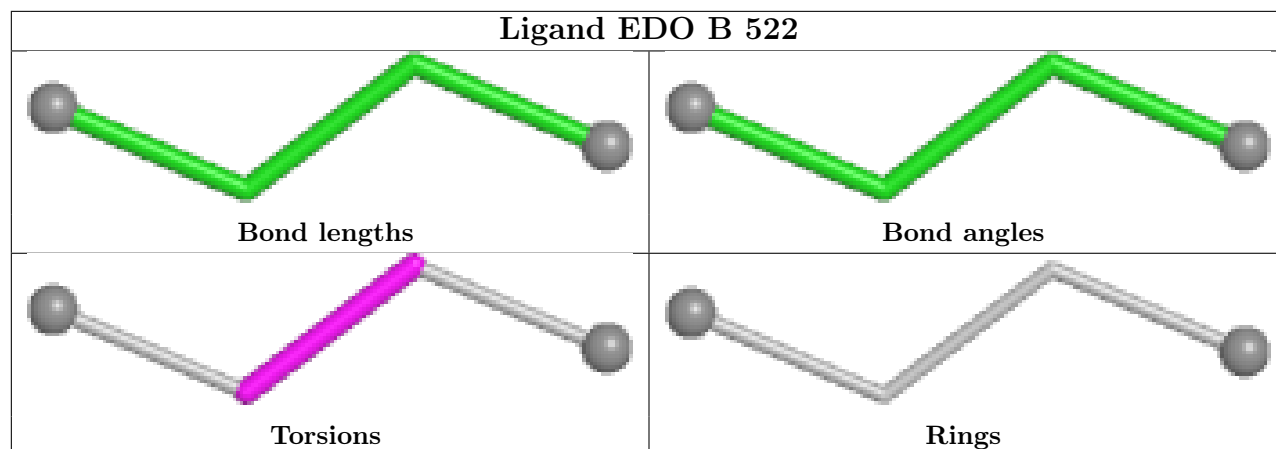


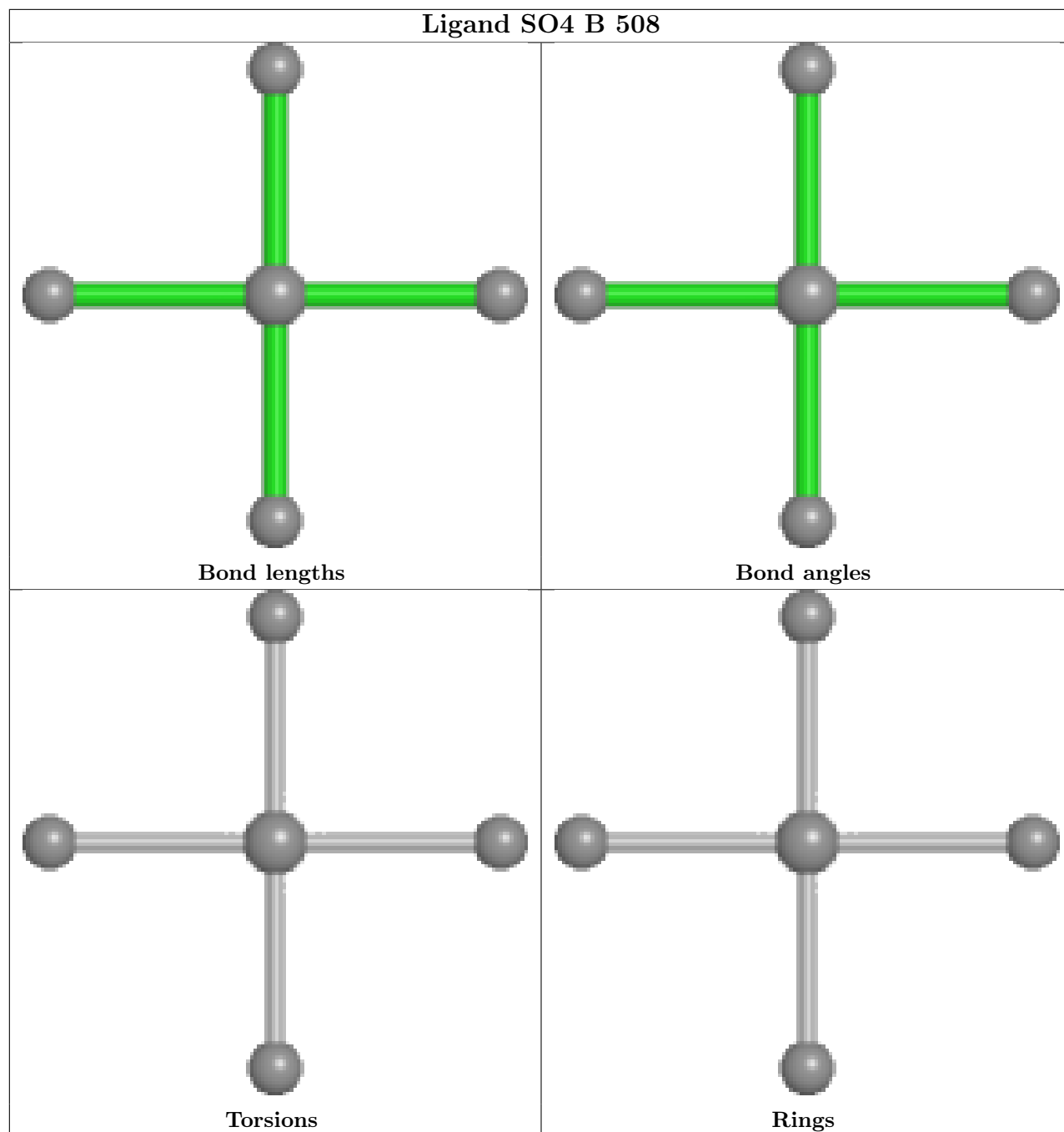


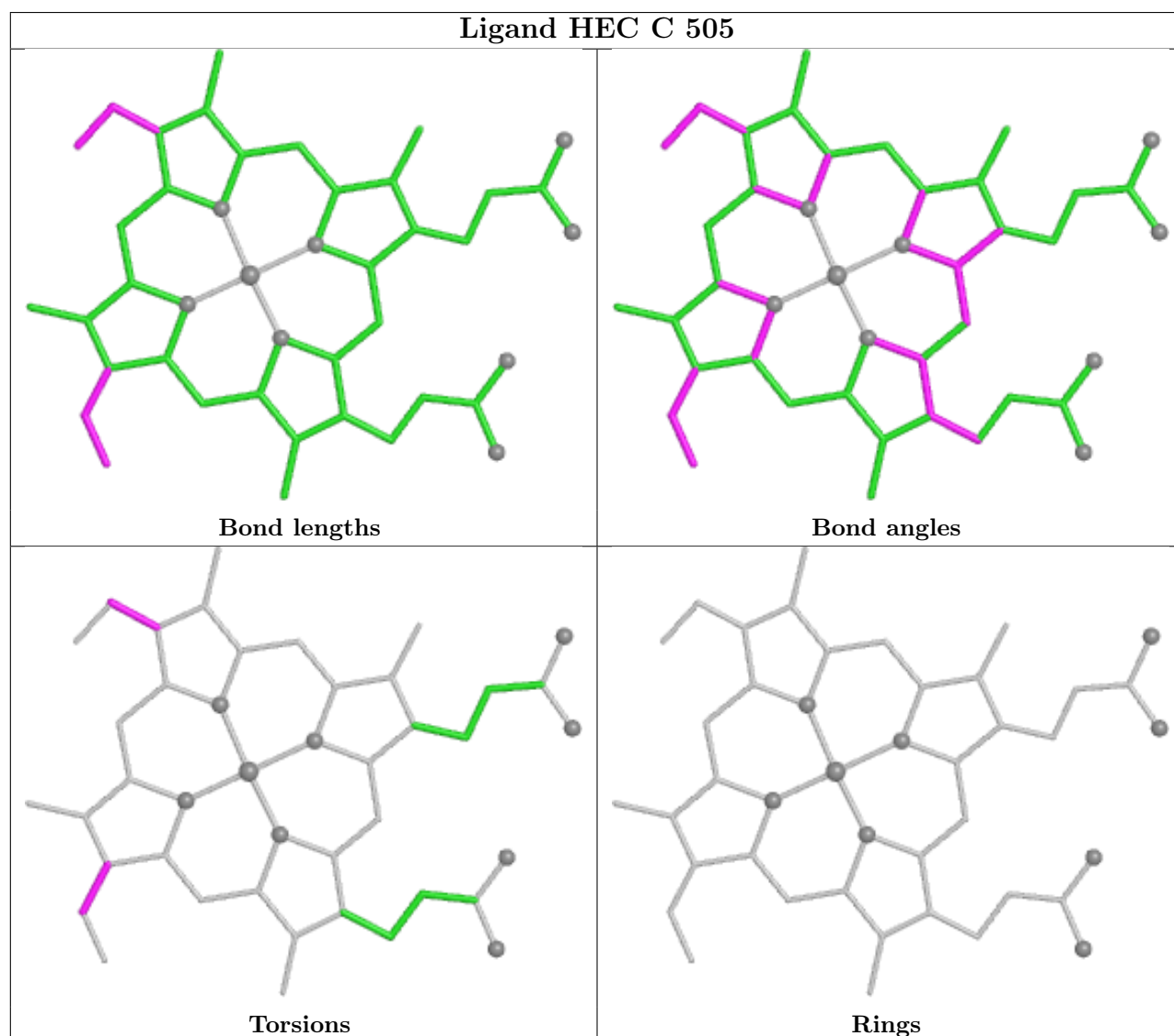
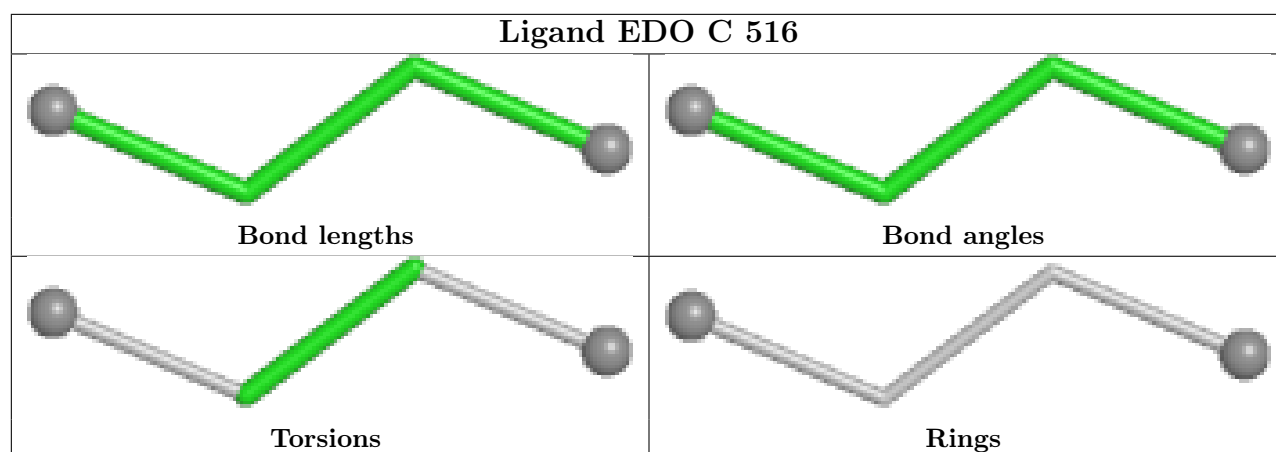


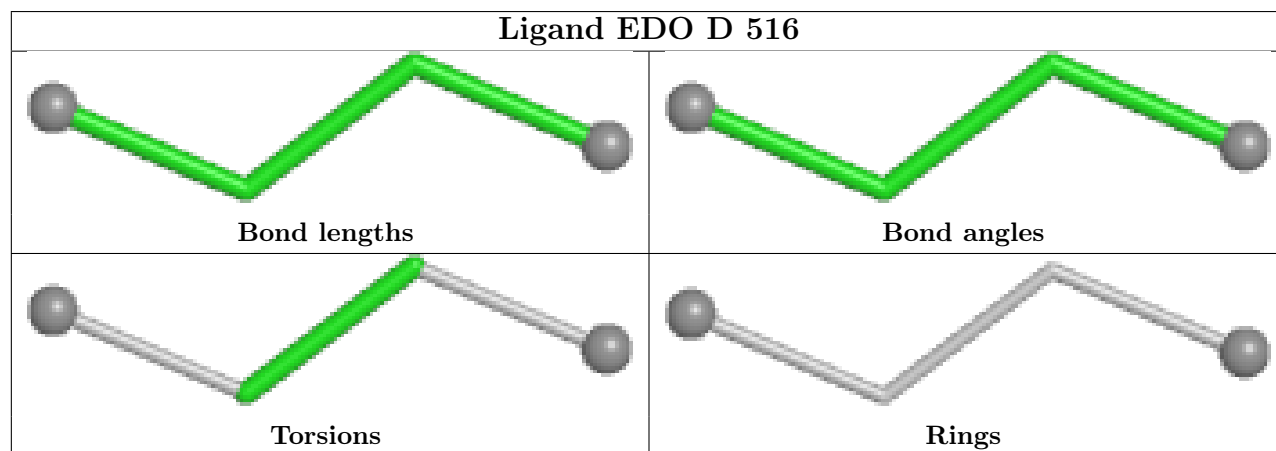
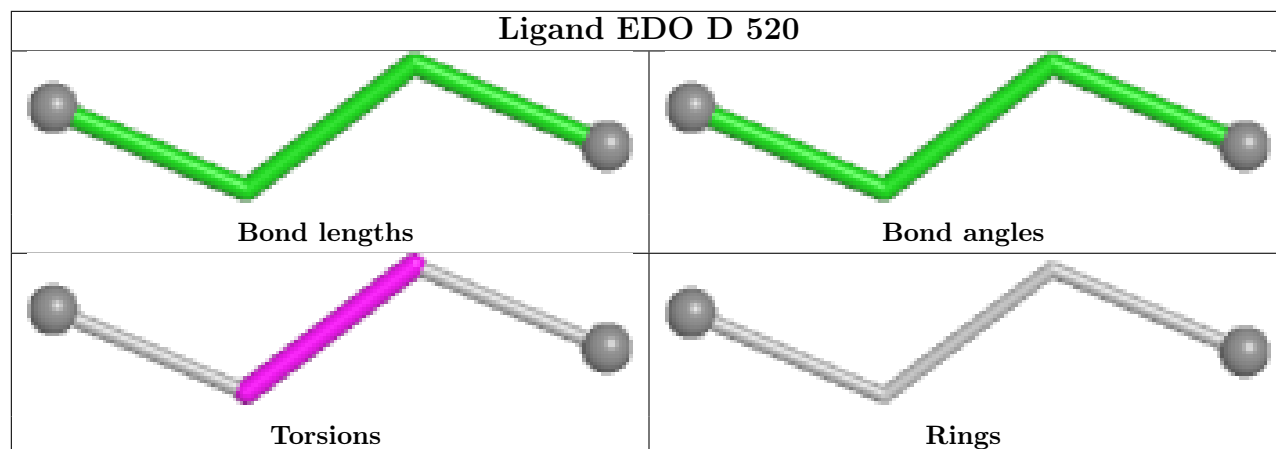




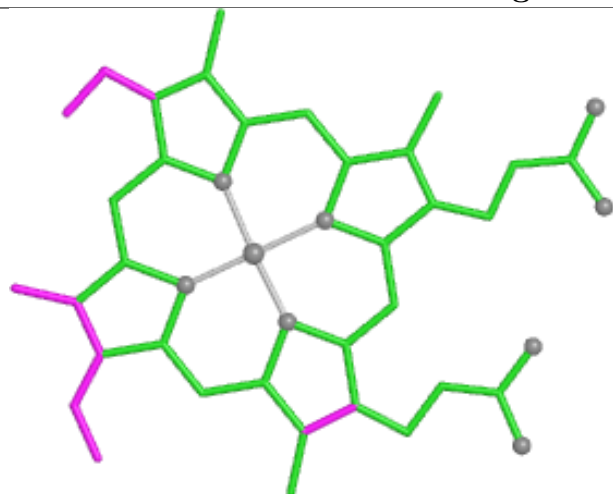




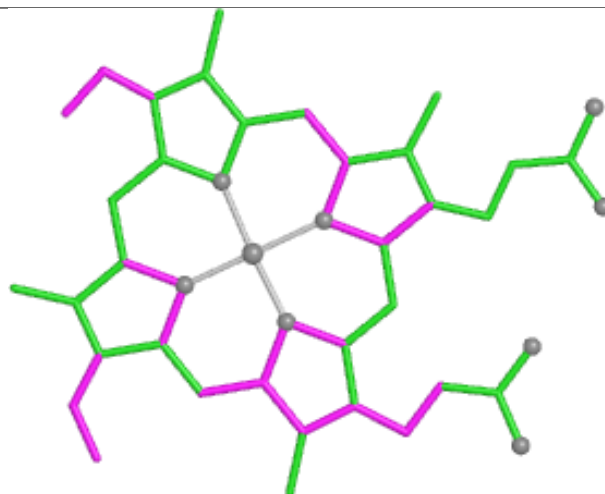




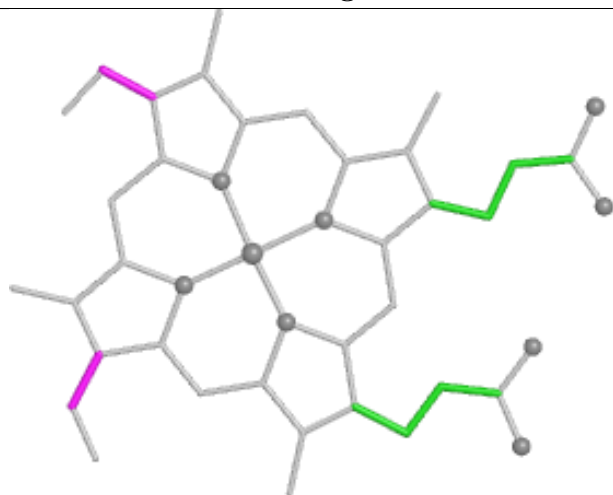
Ligand HEC A 504



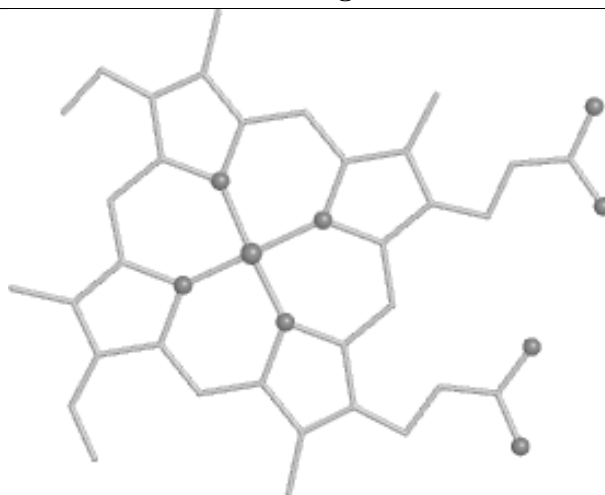
Bond lengths



Bond angles

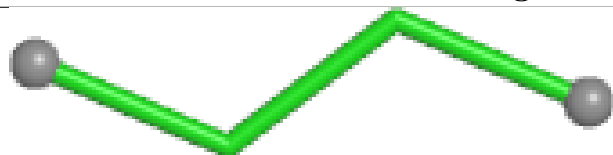


Torsions

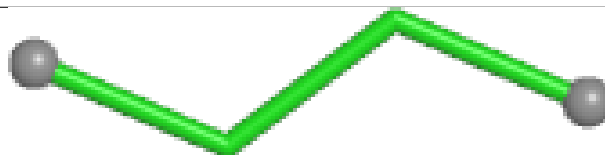


Rings

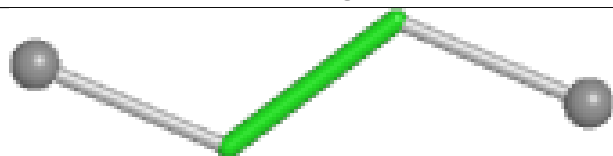
Ligand EDO B 518



Bond lengths



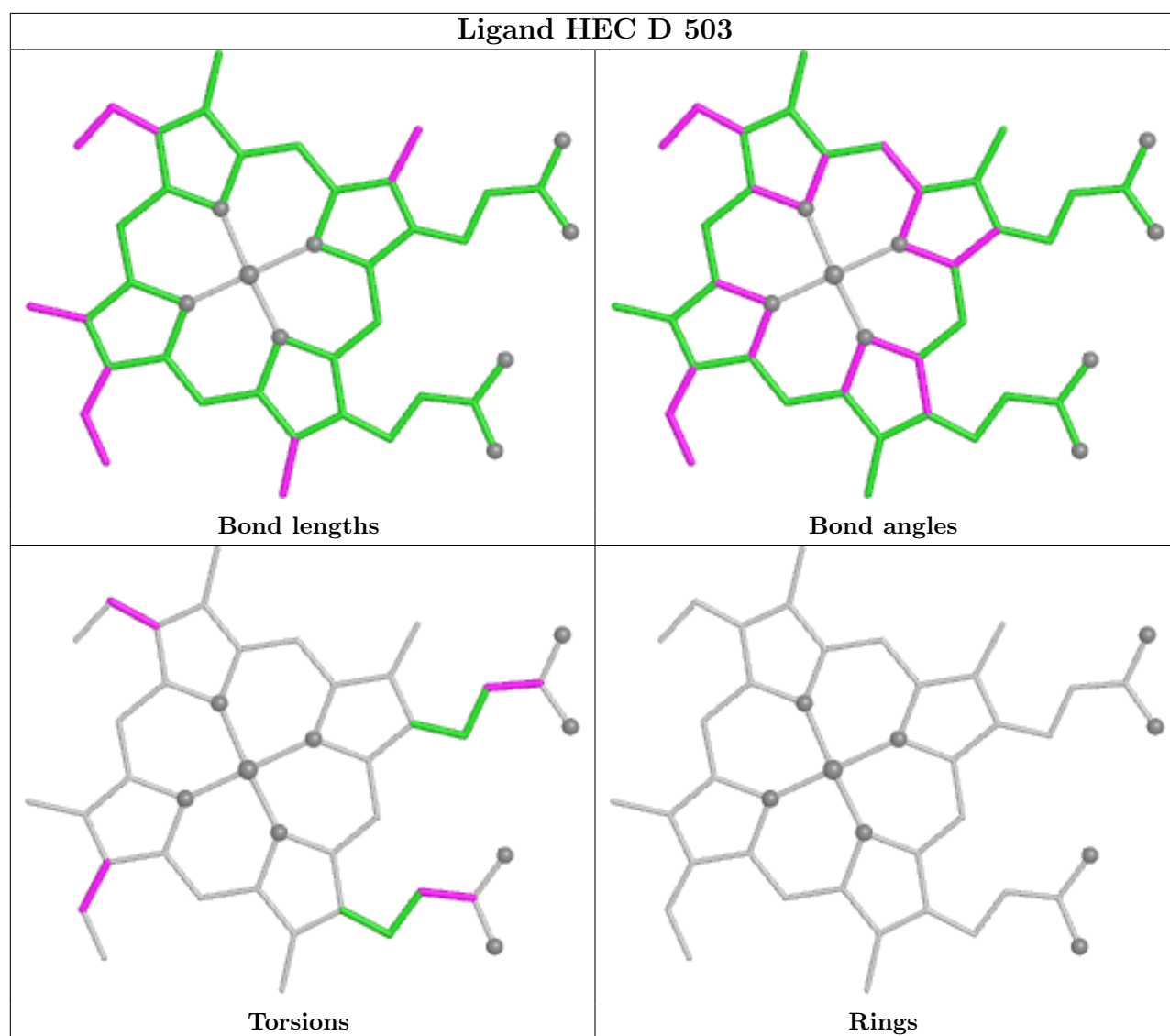
Bond angles

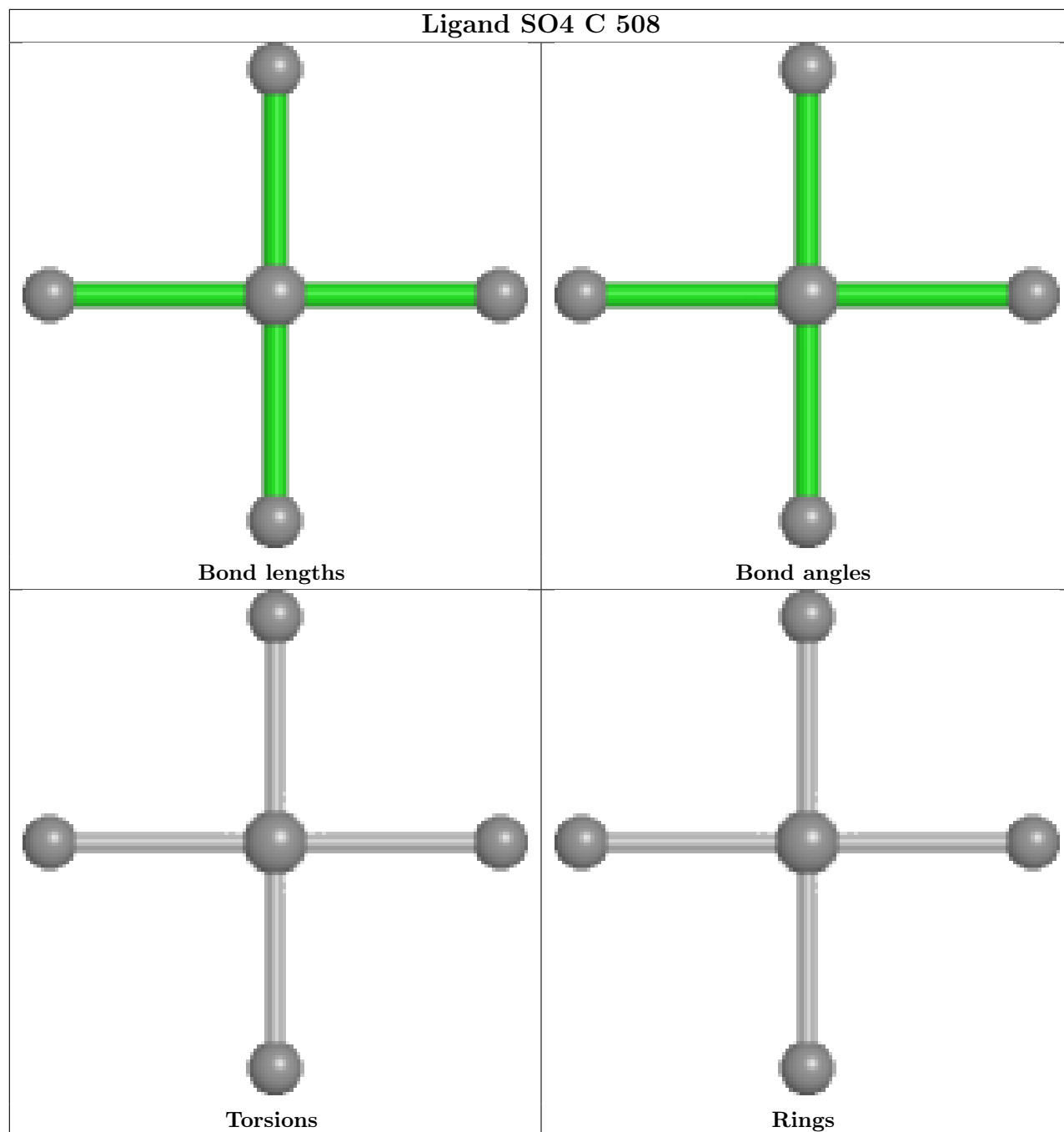


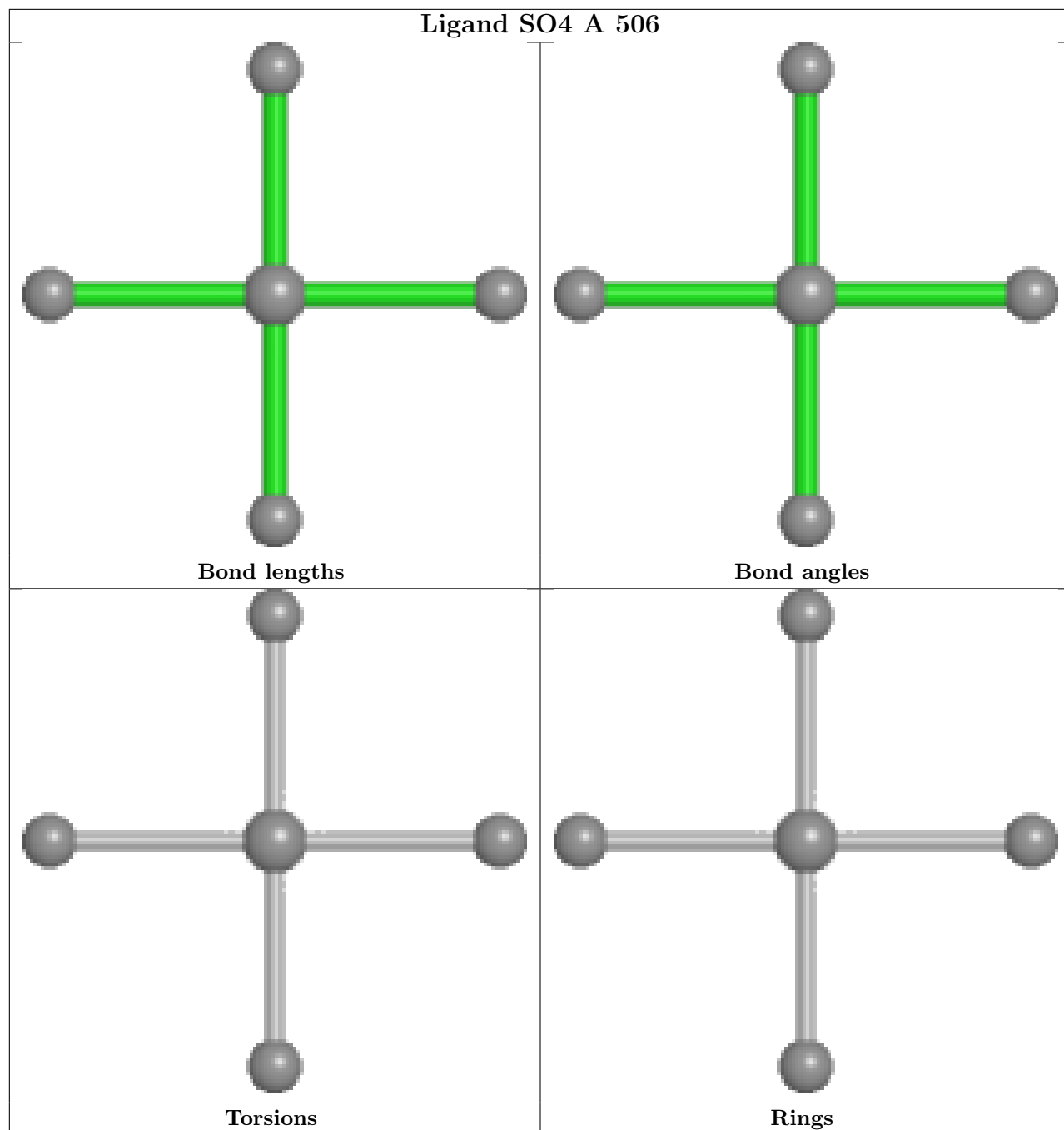
Torsions

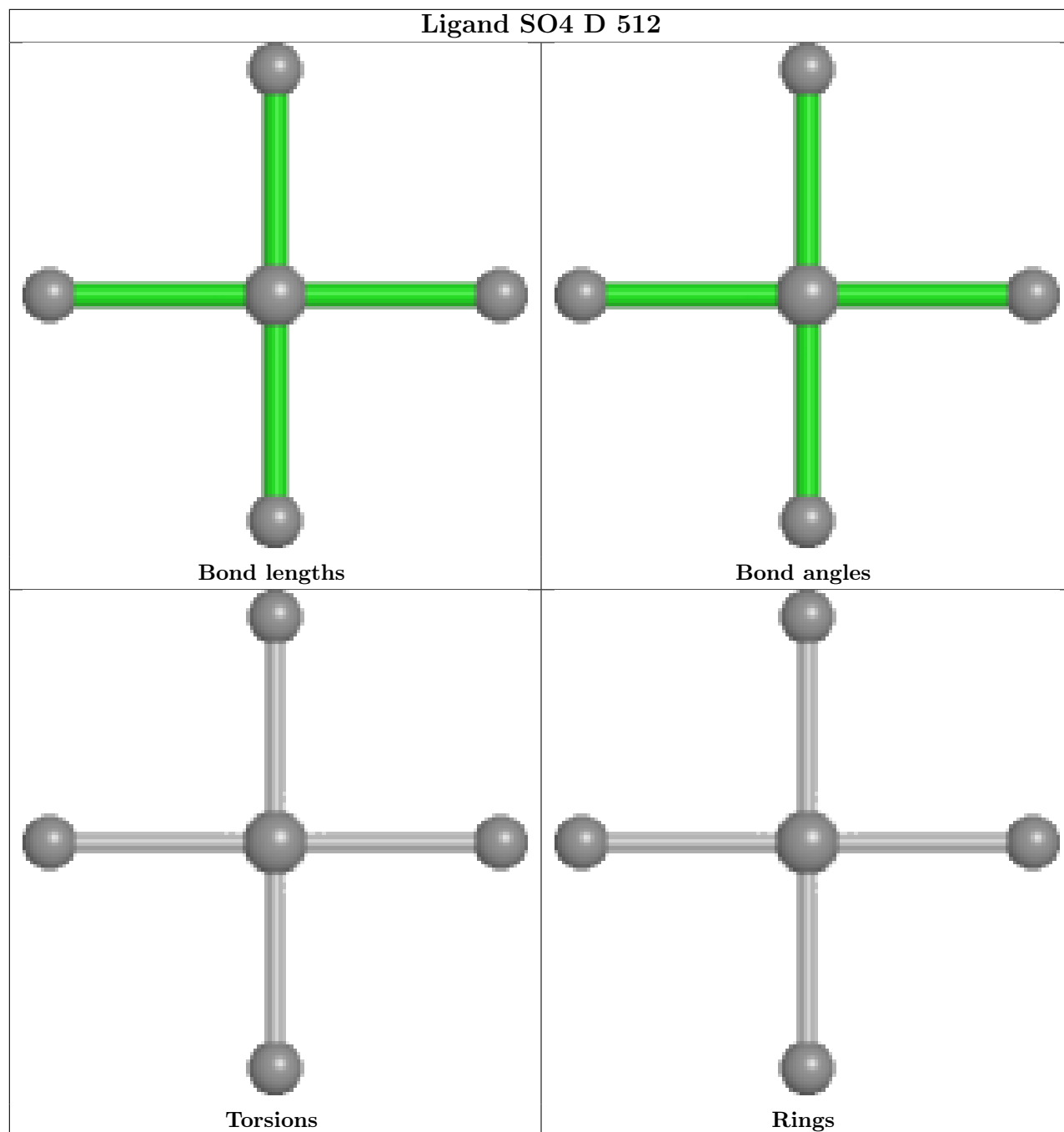


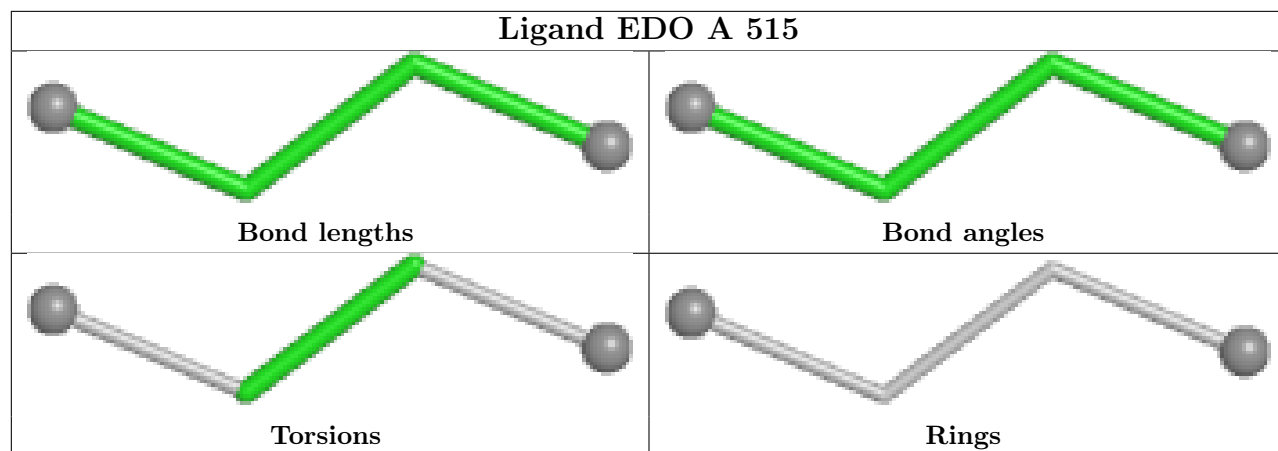
Rings

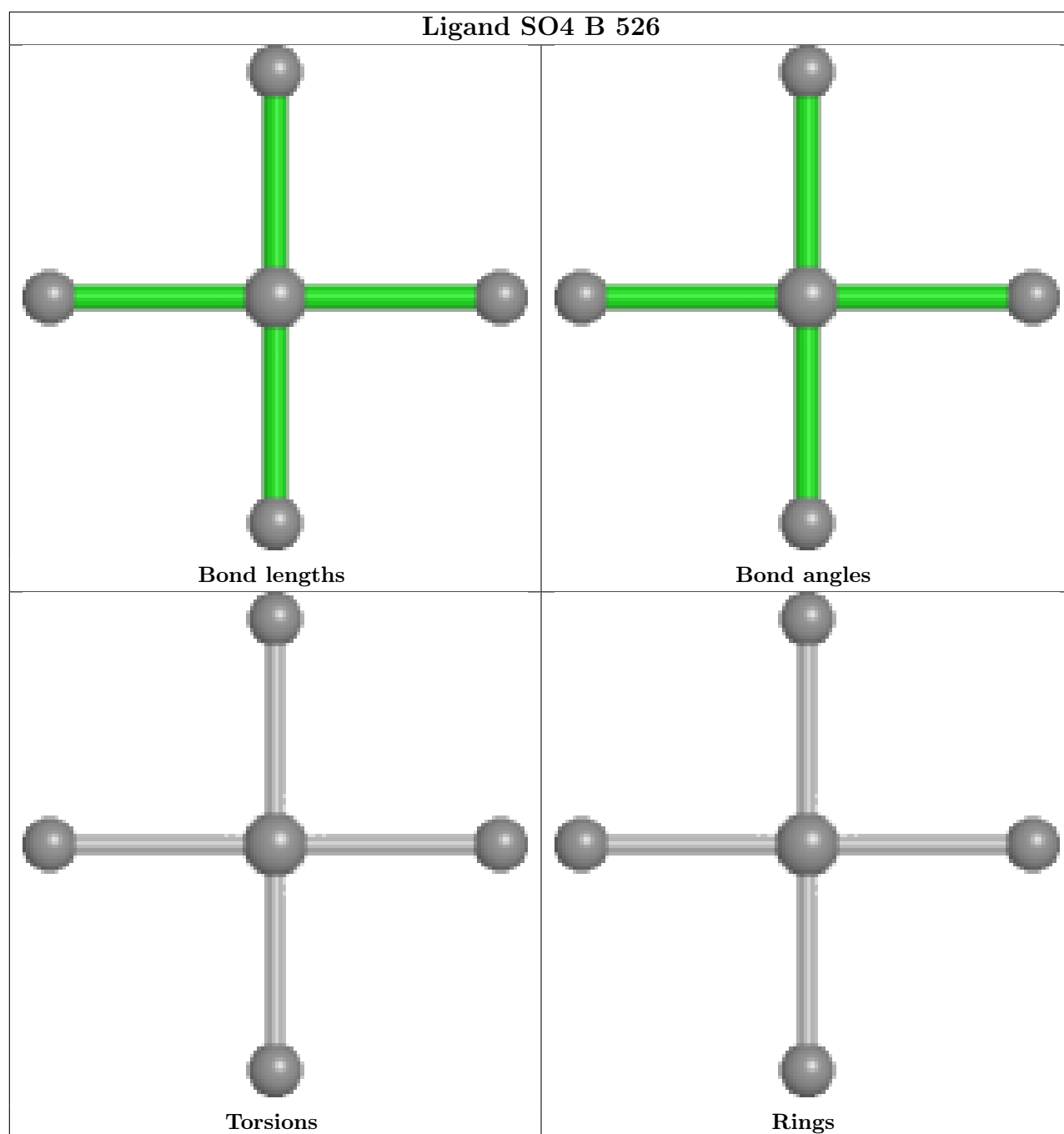


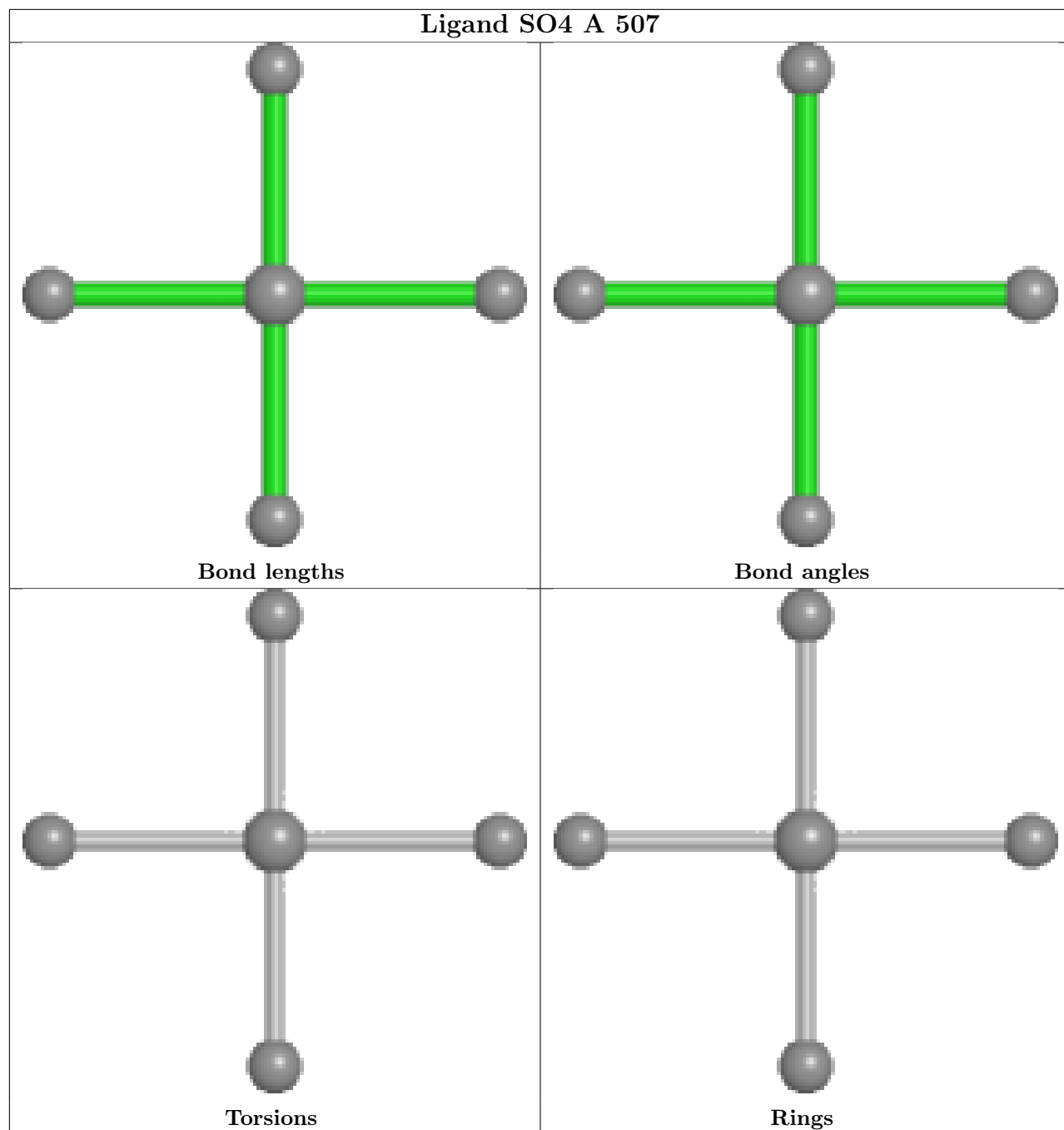


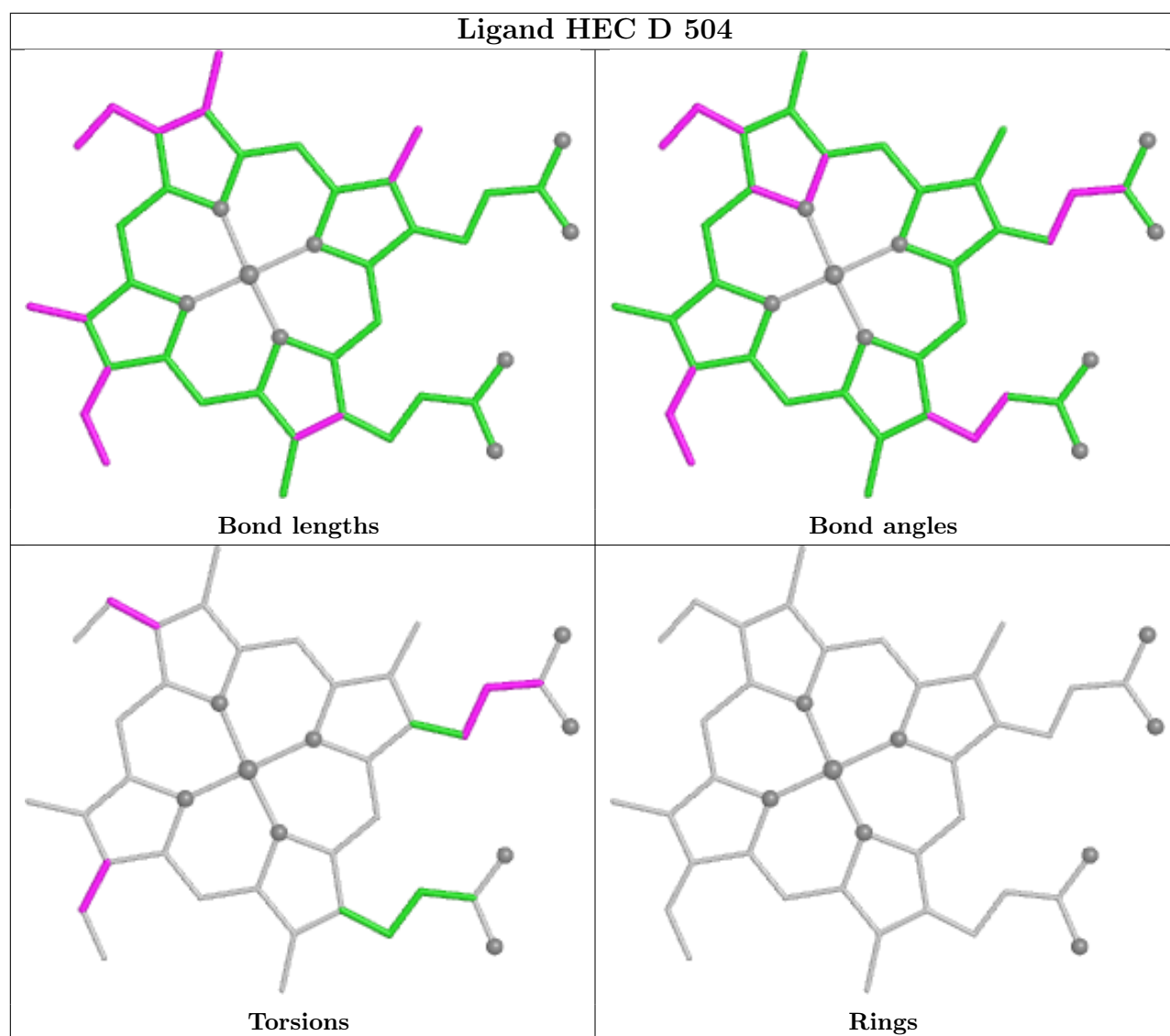


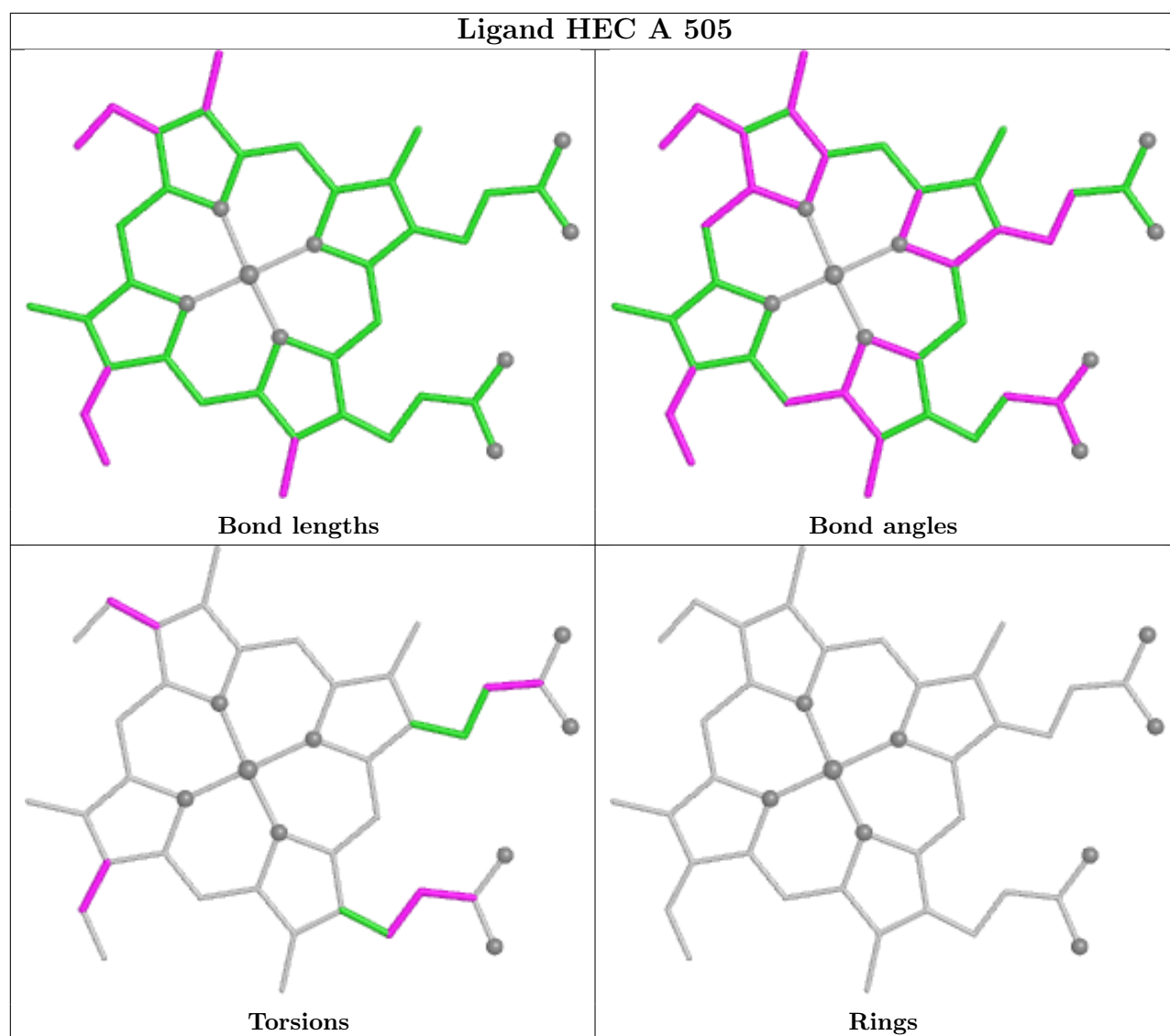




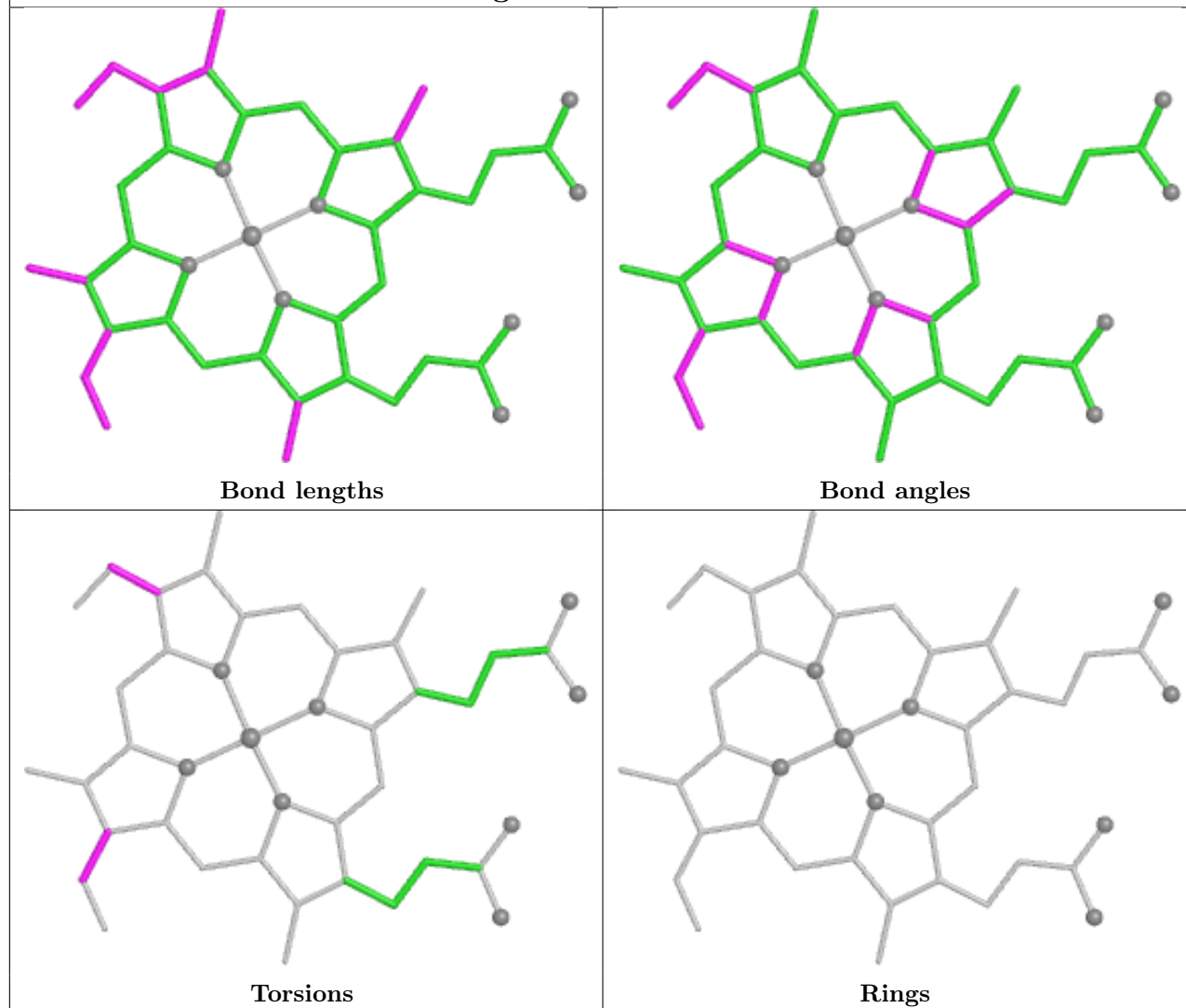




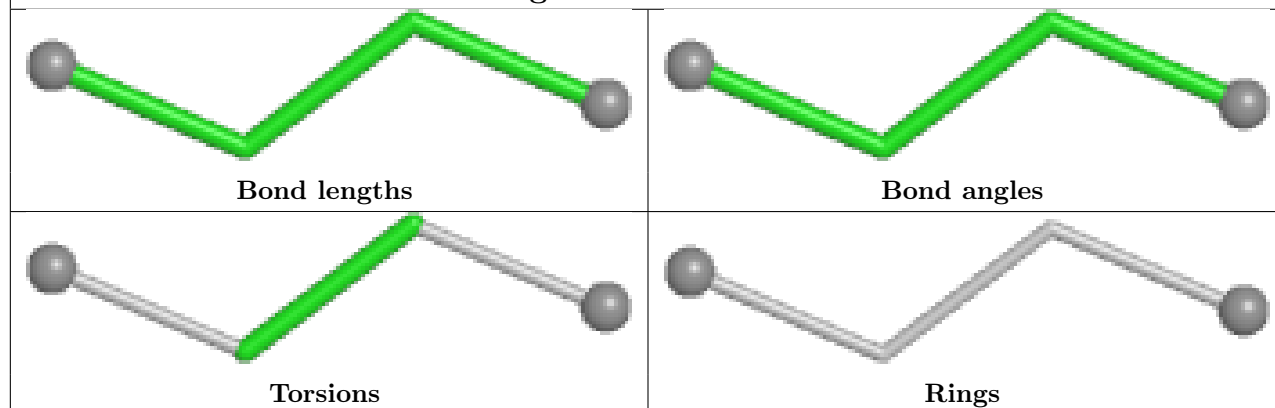


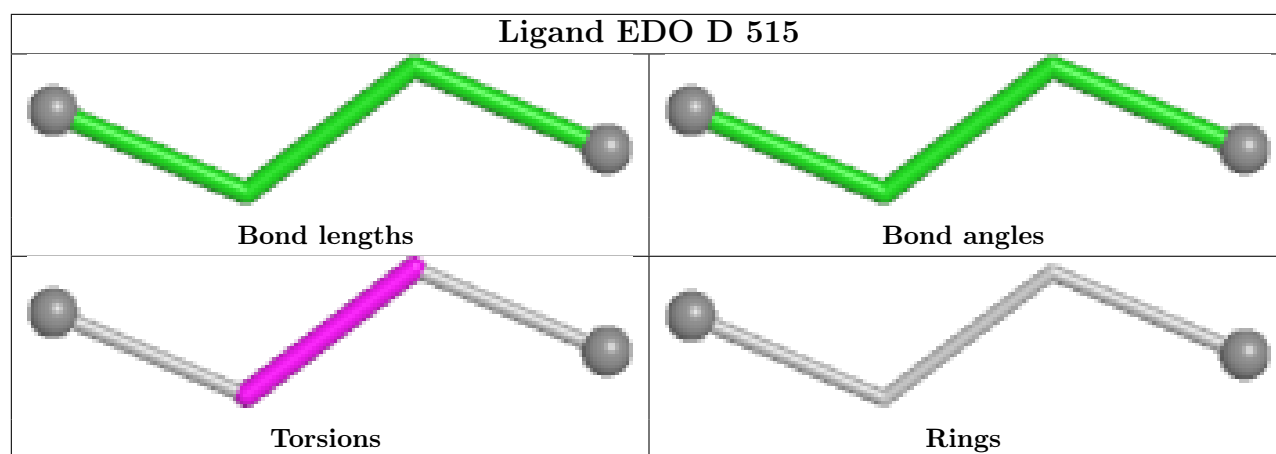


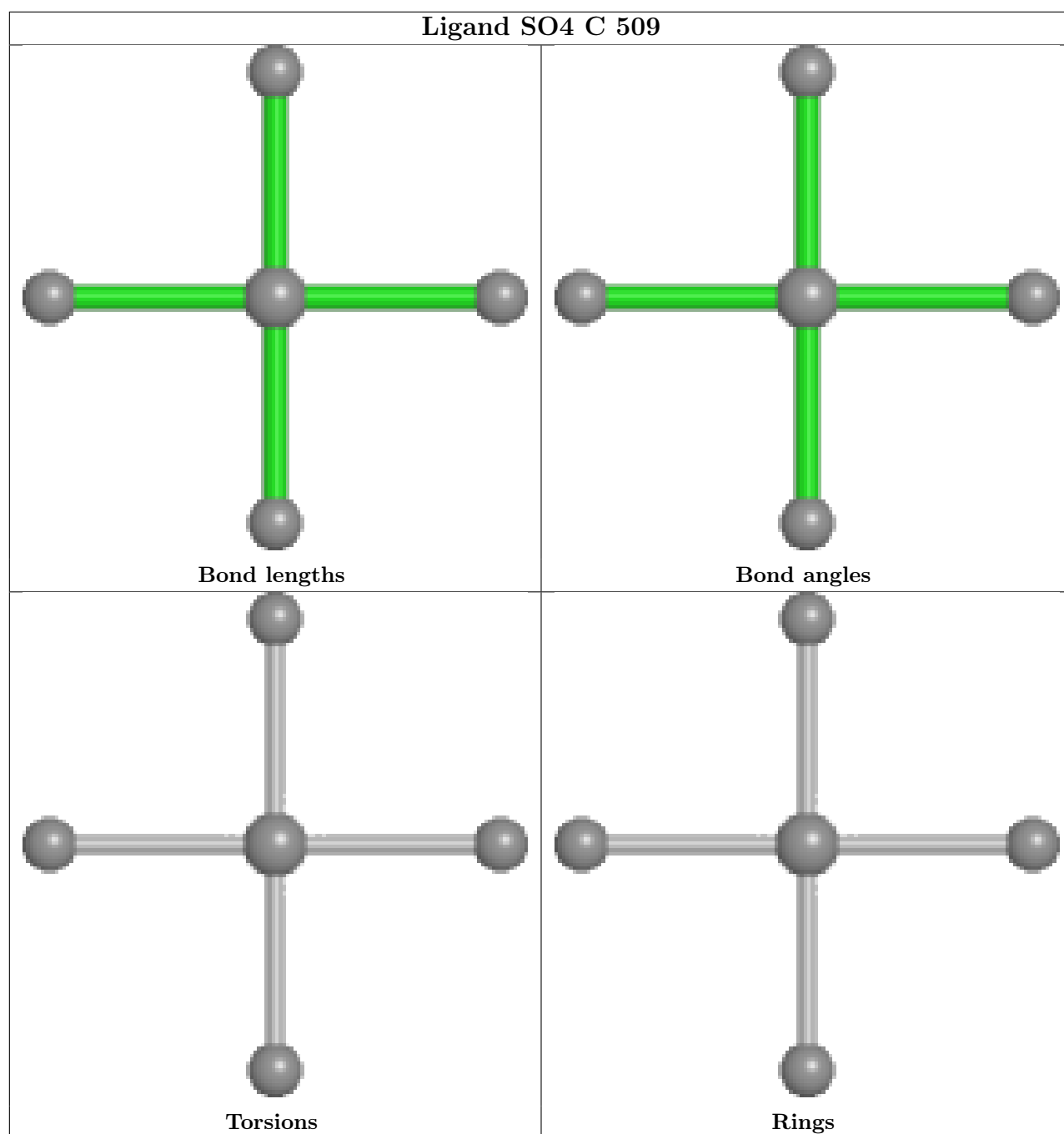
Ligand HEC B 504

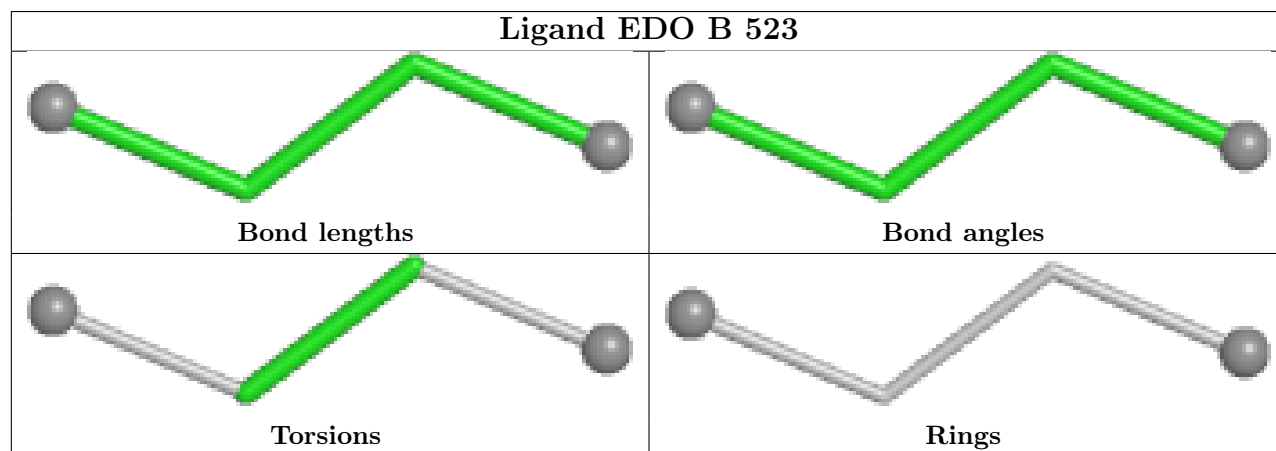
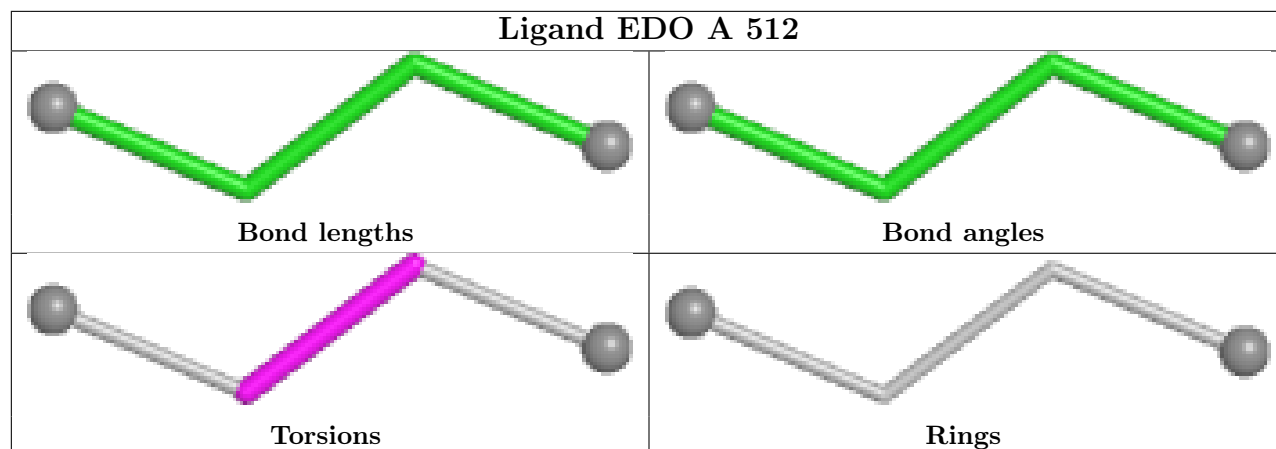


Ligand EDO B 512

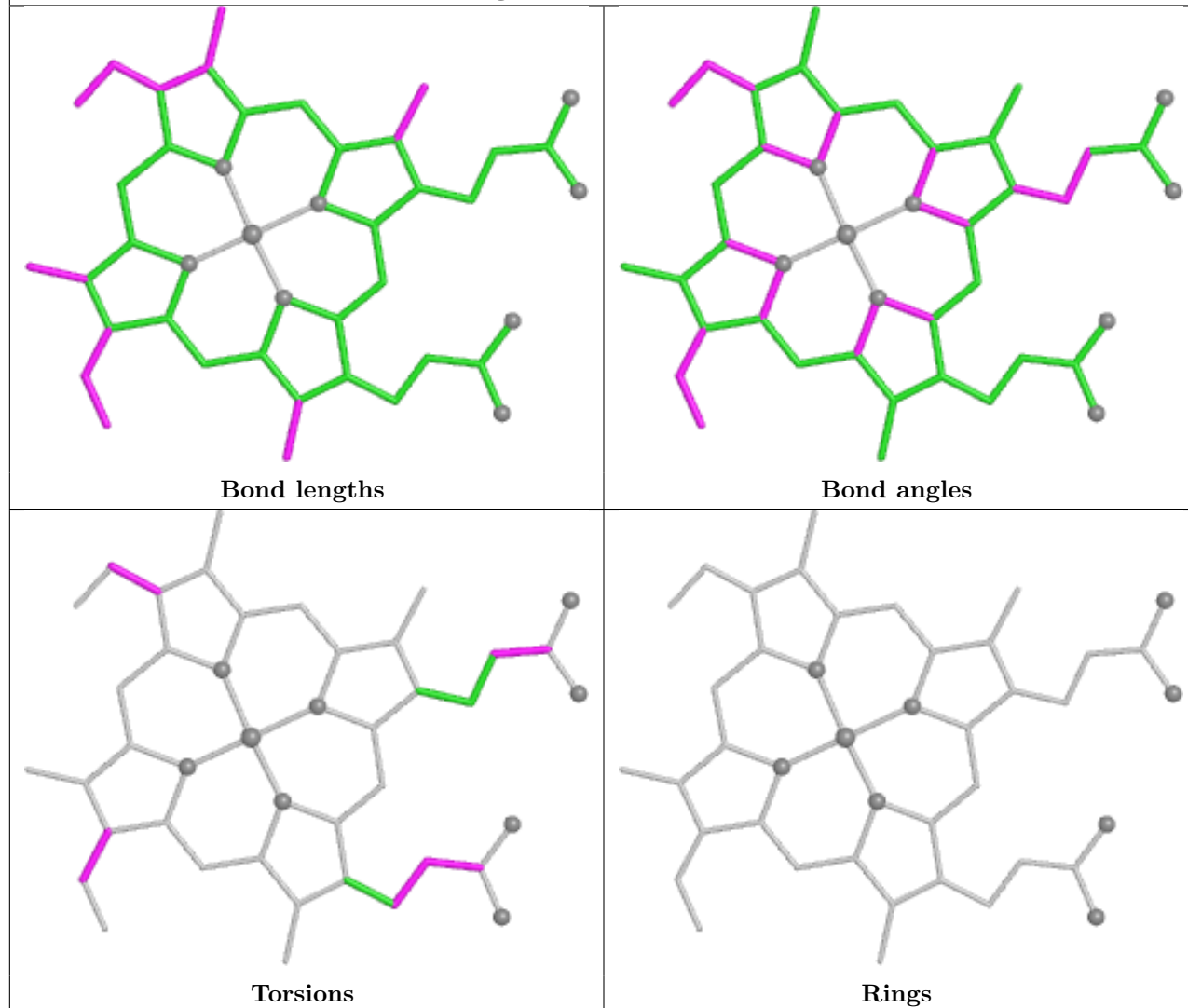




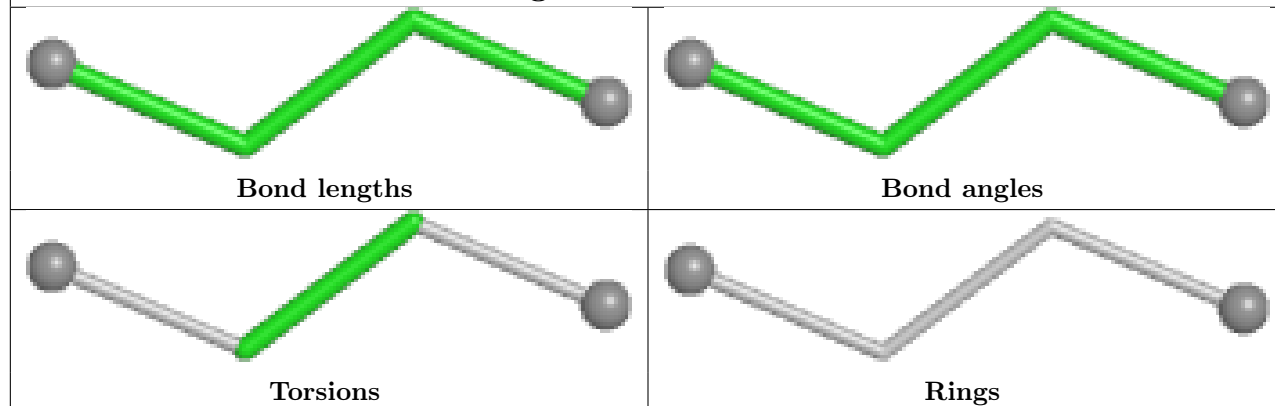


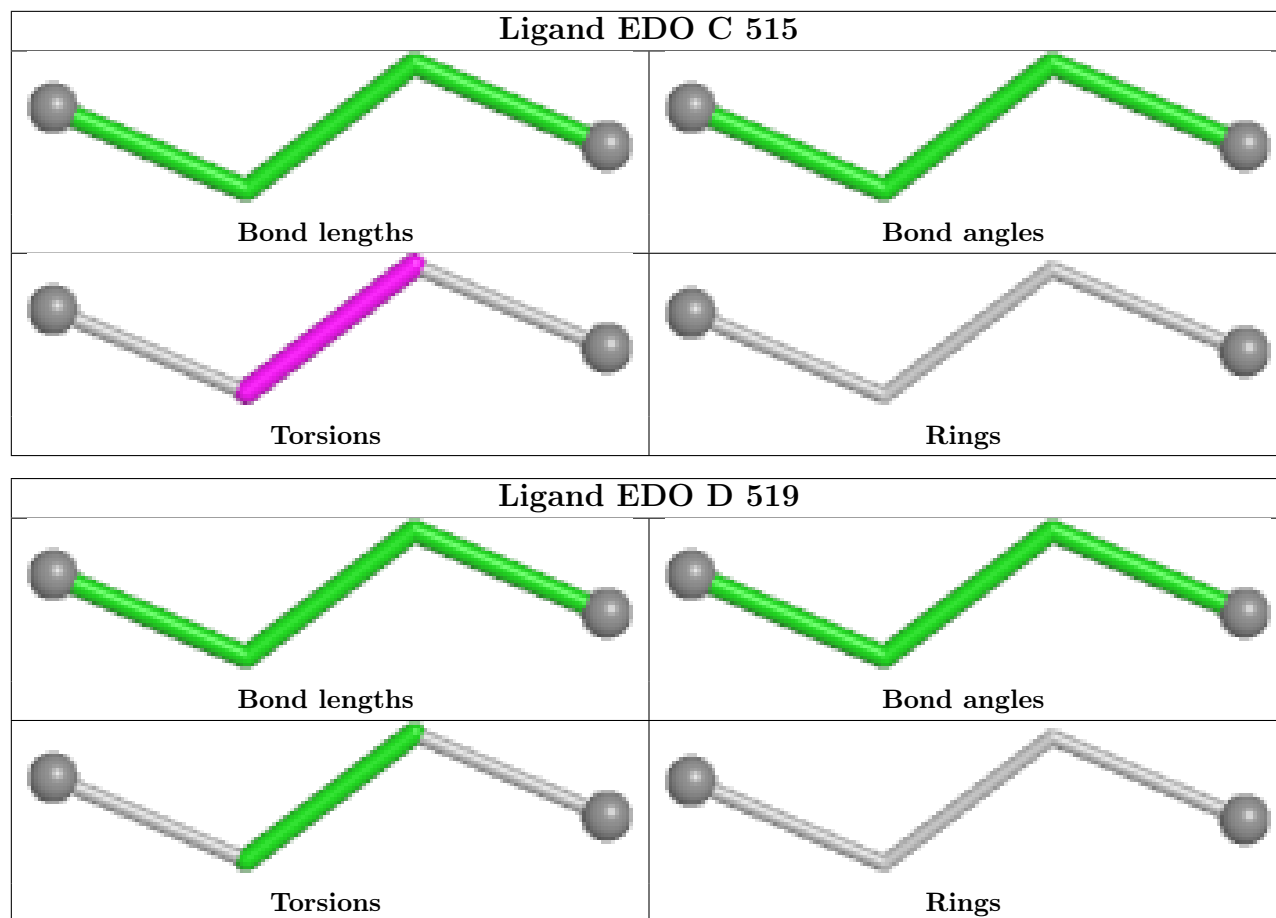


Ligand HEC D 507

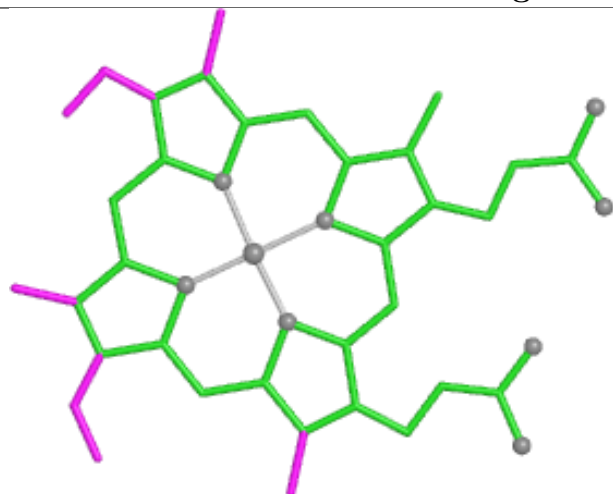


Ligand EDO B 516

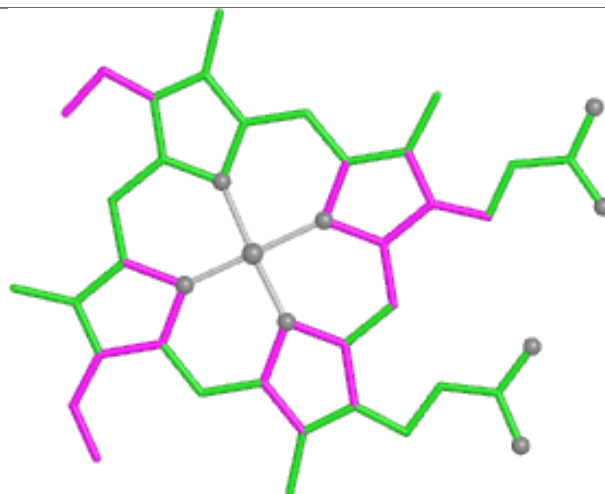




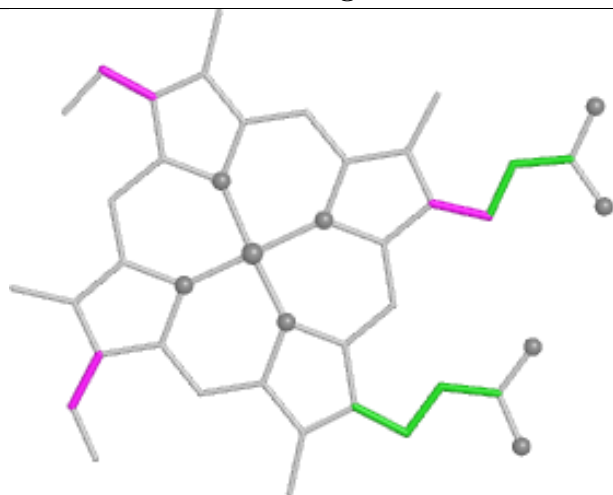
Ligand HEC C 502



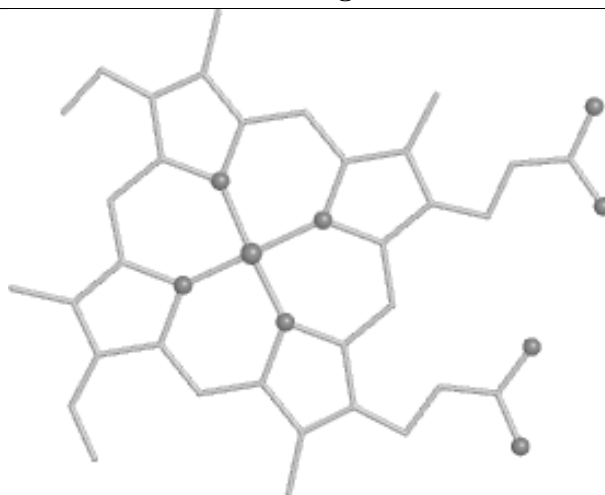
Bond lengths



Bond angles

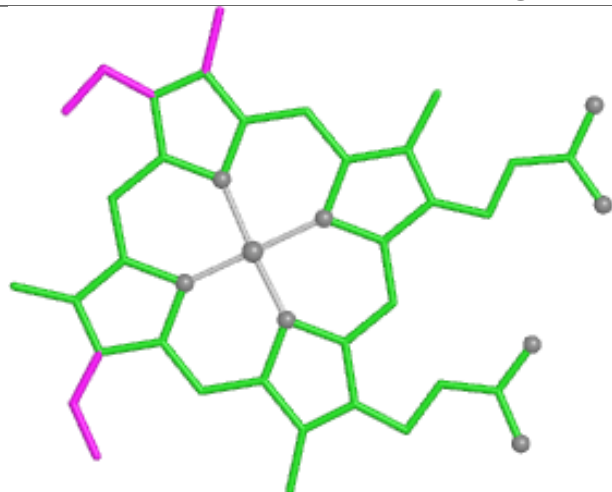


Torsions

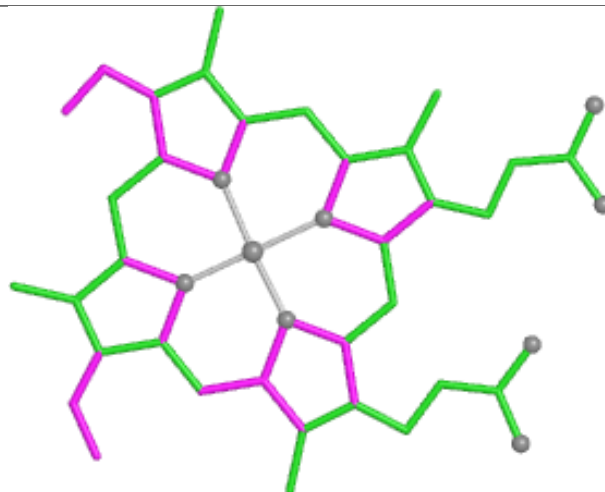


Rings

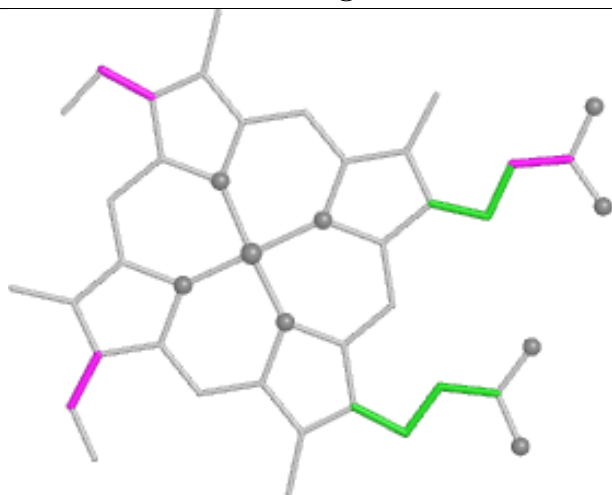
Ligand HEC B 503



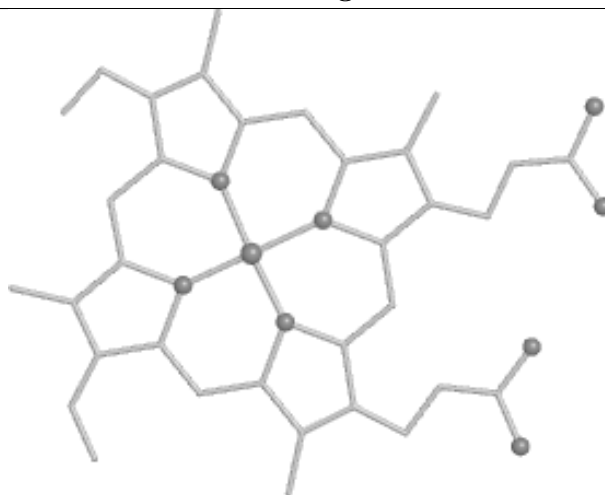
Bond lengths



Bond angles

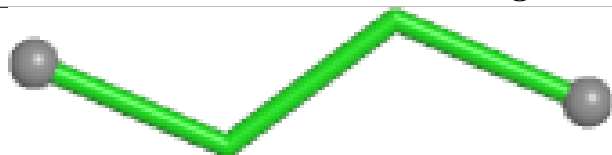


Torsions

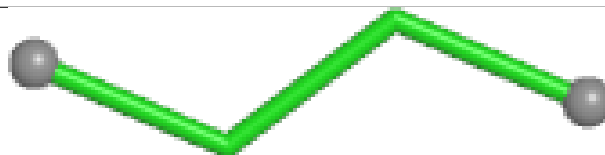


Rings

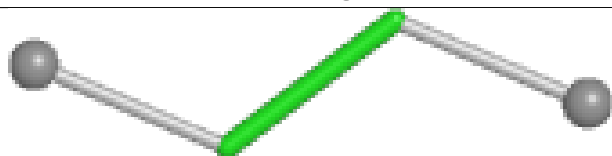
Ligand EDO A 514



Bond lengths



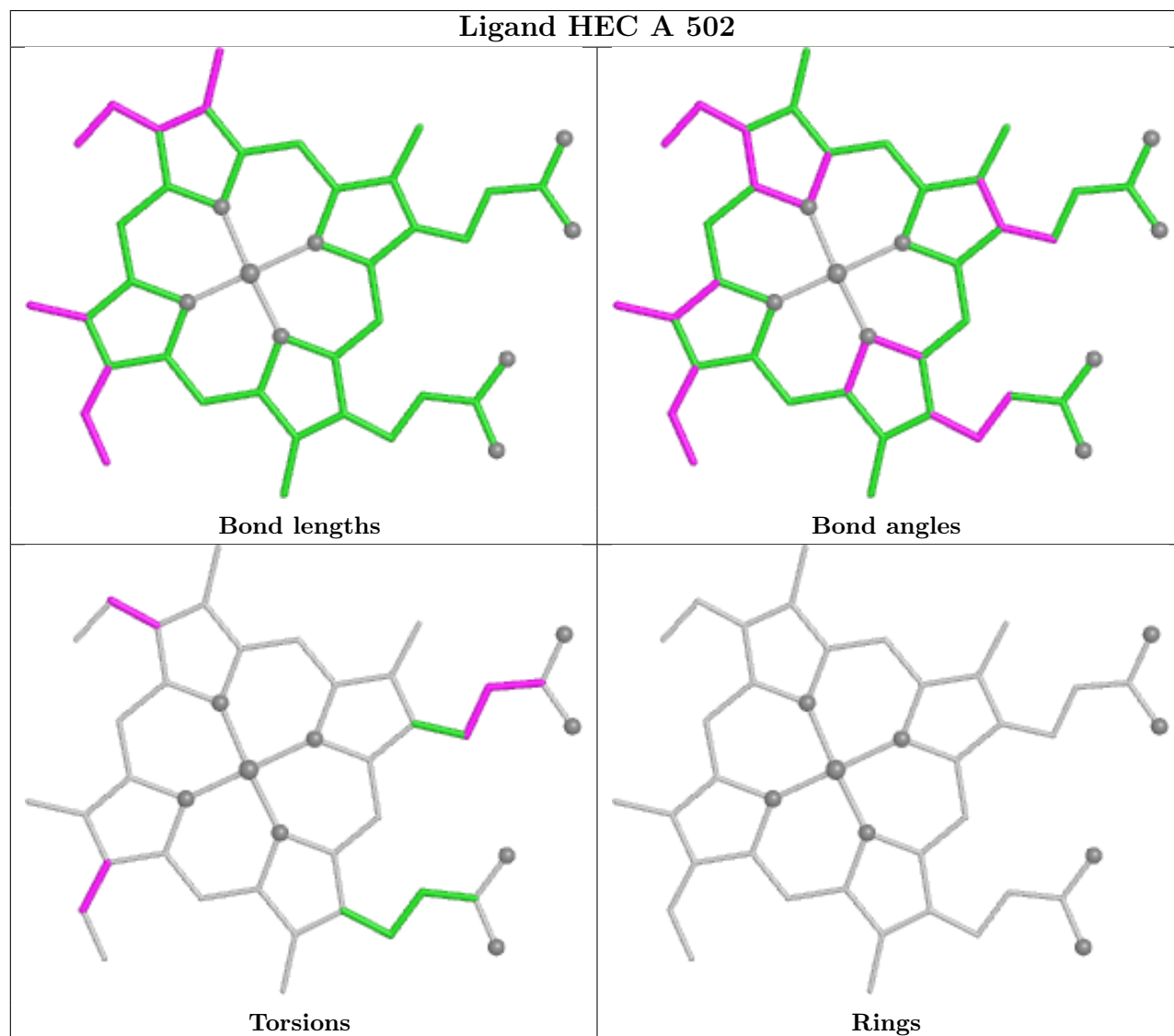
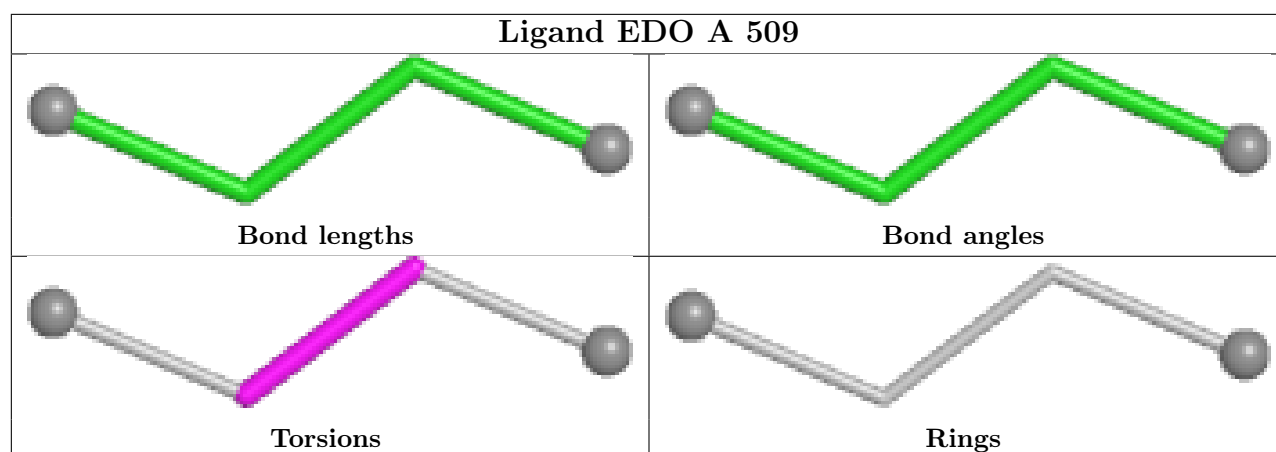
Bond angles

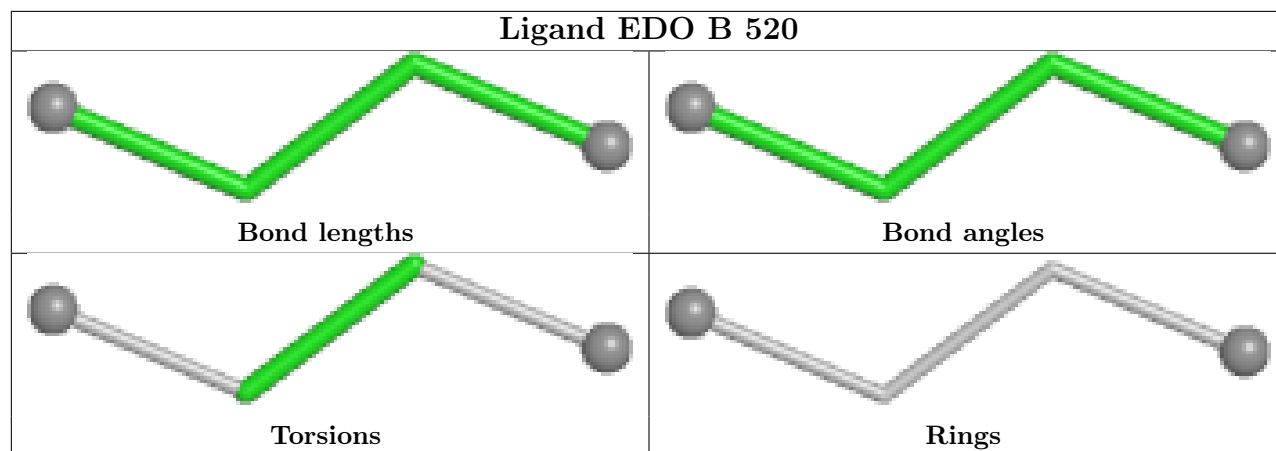


Torsions



Rings





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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, 95th 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 ²)	Q<0.9
1	A	421/450 (93%)	0.17	5 (1%) 76 77	19, 37, 56, 70	5 (1%)
1	B	421/450 (93%)	0.09	2 (0%) 87 88	18, 36, 52, 66	6 (1%)
1	C	421/450 (93%)	0.38	9 (2%) 63 64	22, 42, 62, 86	6 (1%)
1	D	421/450 (93%)	0.17	5 (1%) 76 77	20, 37, 55, 73	5 (1%)
All	All	1684/1800 (93%)	0.20	21 (1%) 76 77	18, 38, 57, 86	22 (1%)

The worst 5 of 21 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	157	VAL	3.6
1	D	325	ALA	3.2
1	B	276	TYR	2.7
1	B	426	PHE	2.7
1	A	276	TYR	2.6

6.2 Non-standard residues in protein, DNA, RNA chains [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, 95th 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 ²)	Q<0.9
1	CSD	B	239	8/9	0.96	0.09	29,33,38,40	0
1	CSD	D	239	8/9	0.96	0.10	30,37,42,44	0
1	CSD	C	239	8/9	0.97	0.07	34,40,42,44	0
1	CSD	A	239	8/9	0.97	0.08	31,36,40,41	0

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, 95th 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($\text{\AA}^2$)	Q<0.9
4	EDO	A	517	4/4	0.72	0.19	55,58,62,64	0
4	EDO	A	514	4/4	0.73	0.23	47,47,48,54	0
3	SO4	C	508	5/5	0.73	0.10	73,77,87,89	0
3	SO4	B	527	5/5	0.74	0.17	55,63,65,66	5
3	SO4	D	512	5/5	0.76	0.12	44,47,61,62	5
4	EDO	C	516	4/4	0.76	0.17	43,46,46,49	0
3	SO4	B	510	5/5	0.78	0.12	49,51,55,63	5
4	EDO	A	521	4/4	0.79	0.14	47,48,57,68	0
3	SO4	D	511	5/5	0.80	0.18	42,43,44,45	5
4	EDO	B	515	4/4	0.80	0.20	38,45,46,47	0
3	SO4	C	510	5/5	0.80	0.17	34,42,45,47	5
4	EDO	D	521	4/4	0.81	0.14	45,49,51,63	0
5	EPE	D	523	15/15	0.81	0.21	48,54,60,64	15
4	EDO	B	513	4/4	0.83	0.13	40,50,50,59	0
4	EDO	C	512	4/4	0.84	0.18	35,35,37,47	0
4	EDO	B	511	4/4	0.84	0.16	34,34,39,42	0
4	EDO	D	517	4/4	0.84	0.13	56,59,60,60	0
4	EDO	B	516	4/4	0.84	0.14	51,53,54,60	0
4	EDO	B	523	4/4	0.84	0.13	50,51,54,57	0
4	EDO	B	512	4/4	0.85	0.17	42,43,45,46	0
3	SO4	C	511	5/5	0.85	0.14	52,57,61,62	5
4	EDO	D	522	4/4	0.85	0.14	45,45,46,46	4
4	EDO	B	517	4/4	0.85	0.13	58,61,62,64	0
4	EDO	D	520	4/4	0.86	0.14	47,50,52,55	0
4	EDO	A	519	4/4	0.86	0.14	42,50,59,64	0
4	EDO	D	513	4/4	0.86	0.15	31,35,37,40	0
5	EPE	B	525	15/15	0.86	0.15	58,62,69,70	0
3	SO4	A	507	5/5	0.86	0.10	46,50,54,58	5
4	EDO	A	509	4/4	0.87	0.16	35,36,39,41	0
4	EDO	A	510	4/4	0.87	0.14	30,32,37,42	0
4	EDO	D	515	4/4	0.87	0.12	41,42,42,51	0
4	EDO	A	520	4/4	0.87	0.12	50,52,52,55	0

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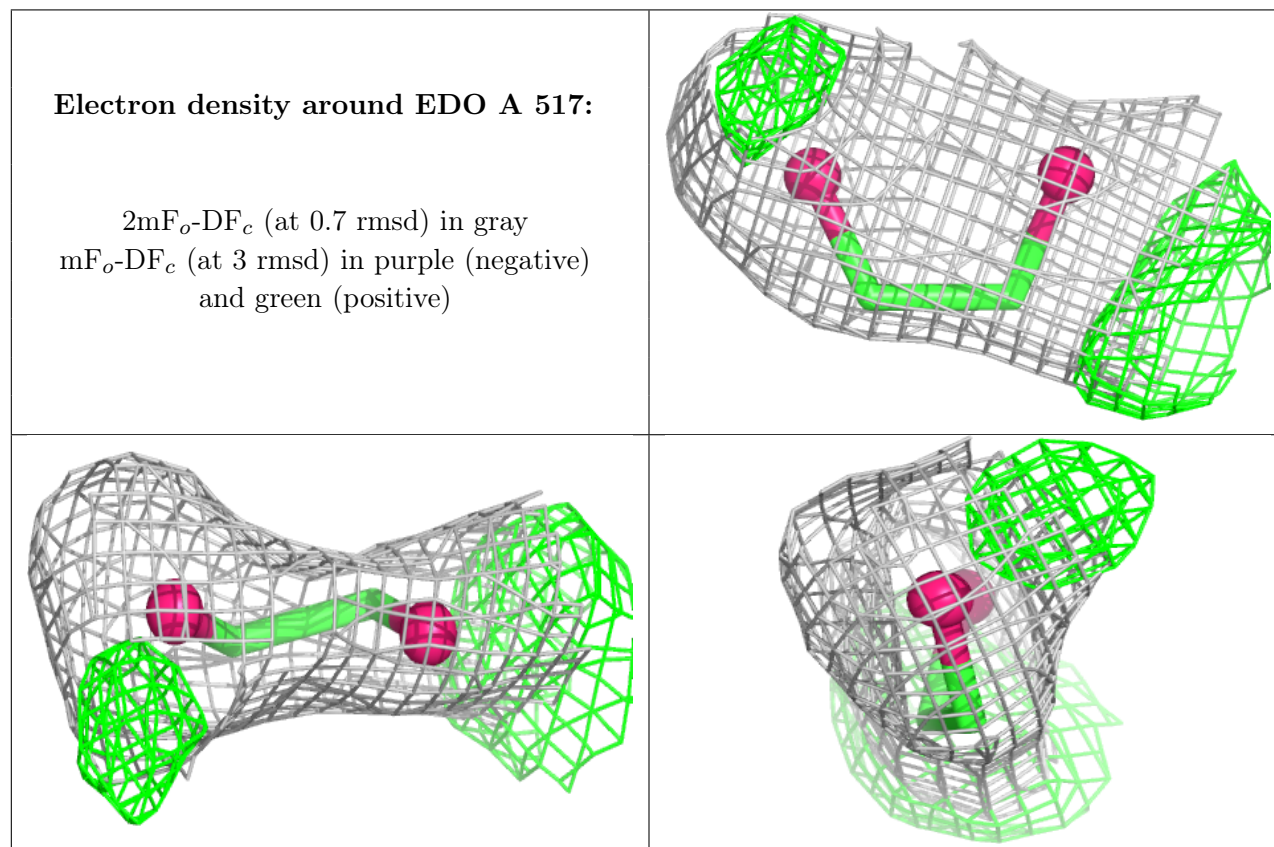
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	EDO	D	518	4/4	0.87	0.23	38,43,44,55	0
4	EDO	A	511	4/4	0.87	0.17	40,42,46,47	0
4	EDO	B	518	4/4	0.87	0.23	41,43,47,49	0
4	EDO	B	520	4/4	0.87	0.15	44,48,48,50	0
4	EDO	A	513	4/4	0.87	0.14	40,41,45,49	0
3	SO4	D	509	5/5	0.87	0.10	44,51,53,54	5
4	EDO	A	518	4/4	0.88	0.21	40,42,46,50	0
3	SO4	B	509	5/5	0.88	0.10	48,52,58,58	5
4	EDO	B	522	4/4	0.88	0.11	41,50,51,52	0
4	EDO	B	524	4/4	0.89	0.13	42,44,51,54	0
4	EDO	C	515	4/4	0.89	0.16	38,39,42,51	4
4	EDO	C	513	4/4	0.90	0.14	43,46,47,48	0
4	EDO	B	521	4/4	0.90	0.17	34,37,39,44	4
4	EDO	B	514	4/4	0.90	0.12	40,46,47,55	0
3	SO4	D	510	5/5	0.90	0.09	40,43,49,52	5
4	EDO	B	519	4/4	0.90	0.13	43,45,49,53	0
3	SO4	A	508	5/5	0.90	0.13	35,40,47,49	5
4	EDO	D	516	4/4	0.91	0.12	39,46,48,54	0
4	EDO	A	515	4/4	0.91	0.11	40,42,44,53	0
4	EDO	A	512	4/4	0.91	0.15	39,43,44,52	0
4	EDO	B	528	4/4	0.91	0.13	41,45,47,48	0
3	SO4	B	508	5/5	0.92	0.10	39,40,45,47	5
3	SO4	C	509	5/5	0.92	0.11	46,46,52,53	5
3	SO4	B	526	5/5	0.92	0.09	46,53,57,62	0
3	SO4	B	507	5/5	0.92	0.09	45,46,51,51	5
4	EDO	D	519	4/4	0.92	0.26	36,40,41,43	0
4	EDO	D	502	4/4	0.93	0.10	33,46,46,47	0
4	EDO	D	514	4/4	0.93	0.12	44,46,47,49	0
4	EDO	A	516	4/4	0.94	0.11	27,35,35,42	4
3	SO4	C	501	5/5	0.95	0.07	50,50,55,61	0
3	SO4	D	501	5/5	0.95	0.07	48,52,57,61	0
4	EDO	C	514	4/4	0.95	0.09	38,40,41,53	0
2	HEC	C	502	43/43	0.96	0.10	46,52,58,66	0
3	SO4	D	508	5/5	0.96	0.07	40,41,44,47	0
2	HEC	A	501	43/43	0.97	0.08	31,34,45,52	0
3	SO4	A	522	5/5	0.97	0.06	53,54,62,63	0
2	HEC	C	503	43/43	0.97	0.09	33,37,51,52	0
2	HEC	C	504	43/43	0.97	0.09	34,42,55,62	0
2	HEC	C	506	43/43	0.97	0.07	28,34,37,44	0
2	HEC	D	503	43/43	0.97	0.07	30,39,49,58	0
2	HEC	D	504	43/43	0.97	0.07	28,35,42,45	0
2	HEC	D	505	43/43	0.97	0.08	27,33,47,54	0

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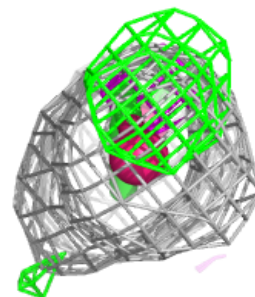
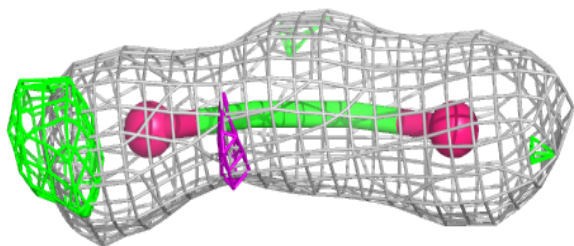
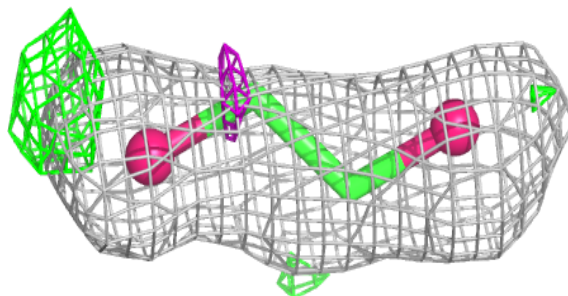
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	SO4	A	506	5/5	0.97	0.06	43,43,49,49	0
3	SO4	C	507	5/5	0.97	0.06	41,43,49,50	0
2	HEC	A	502	43/43	0.97	0.08	28,32,44,48	0
2	HEC	B	504	43/43	0.98	0.07	24,30,38,47	0
2	HEC	D	506	43/43	0.98	0.07	23,30,40,42	0
2	HEC	D	507	43/43	0.98	0.06	23,30,33,40	0
2	HEC	B	505	43/43	0.98	0.07	26,30,36,50	0
2	HEC	A	503	43/43	0.98	0.08	25,31,43,53	0
2	HEC	A	504	43/43	0.98	0.08	24,29,39,42	0
2	HEC	A	505	43/43	0.98	0.08	25,29,35,41	0
3	SO4	B	506	5/5	0.98	0.06	38,38,39,41	0
2	HEC	C	505	43/43	0.98	0.09	30,35,46,51	0
2	HEC	B	501	43/43	0.98	0.07	33,39,46,52	0
2	HEC	B	502	43/43	0.98	0.07	26,33,42,51	0
2	HEC	B	503	43/43	0.98	0.07	26,34,44,57	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.



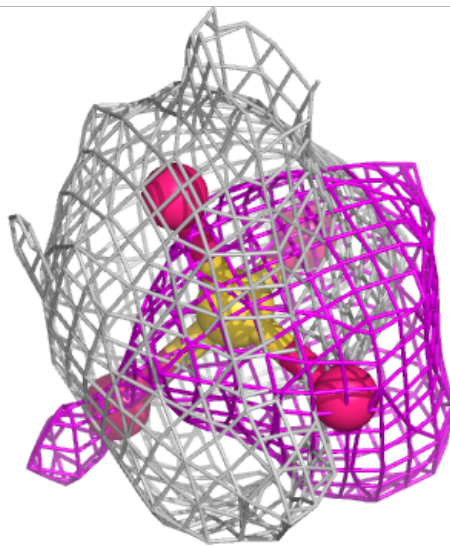
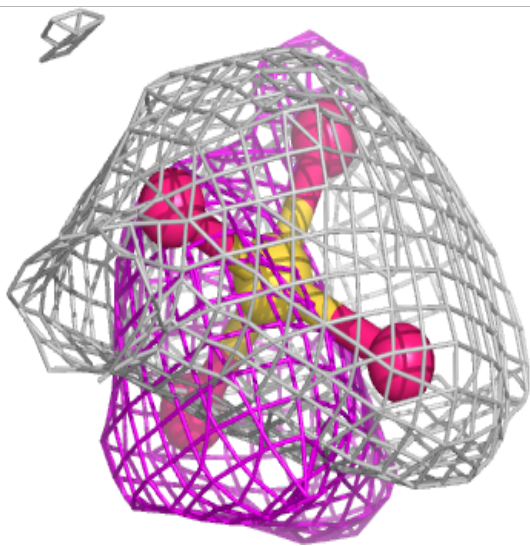
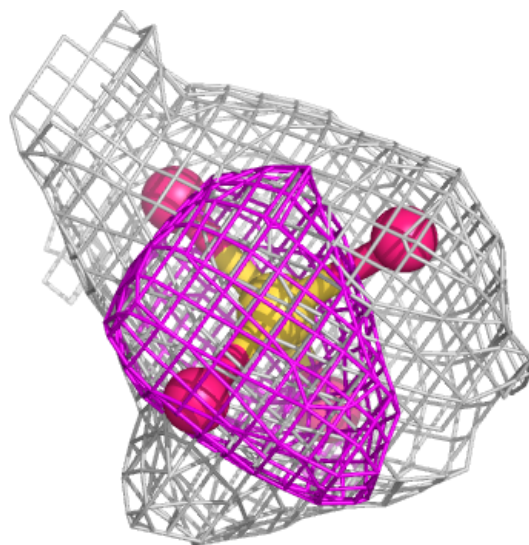
Electron density around EDO A 514:

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



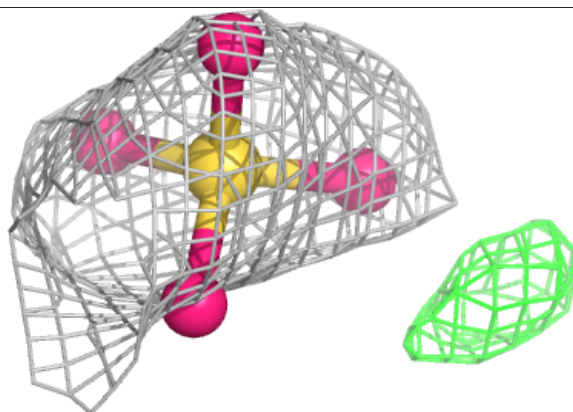
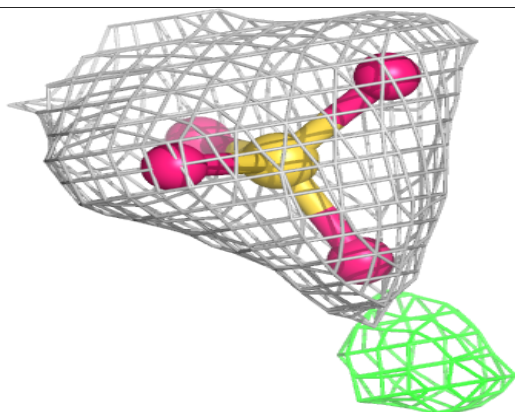
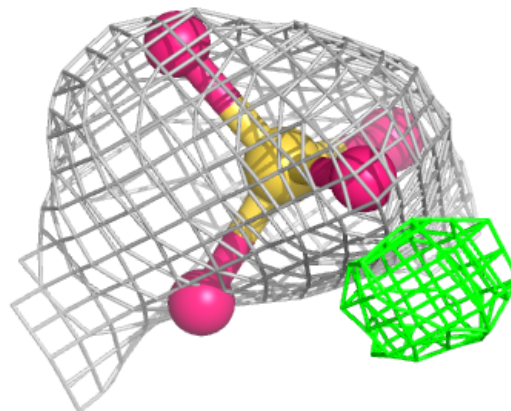
Electron density around SO4 C 508:

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



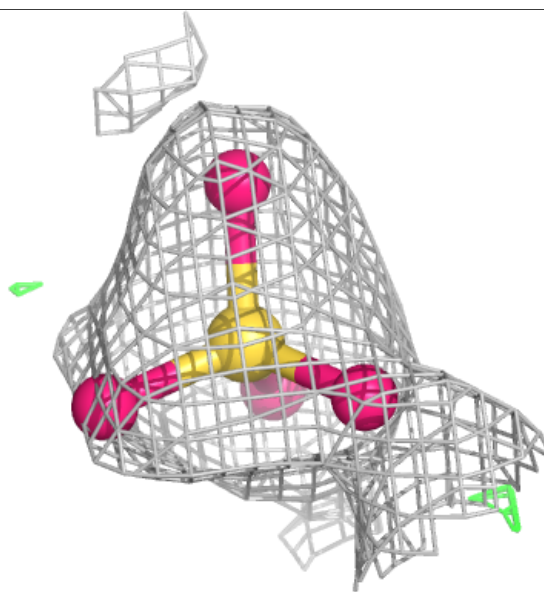
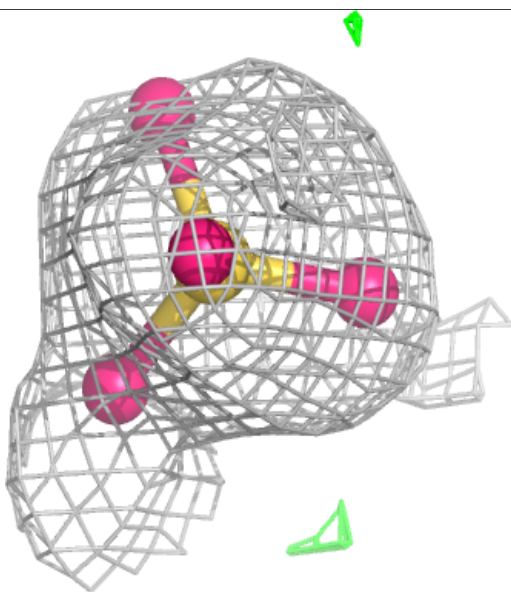
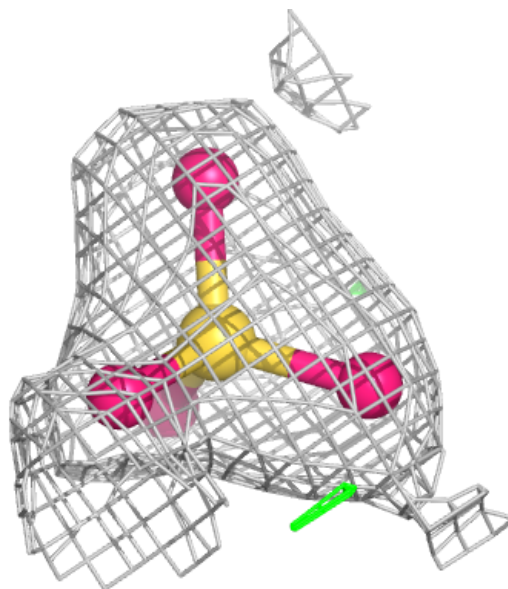
Electron density around SO4 B 527:

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



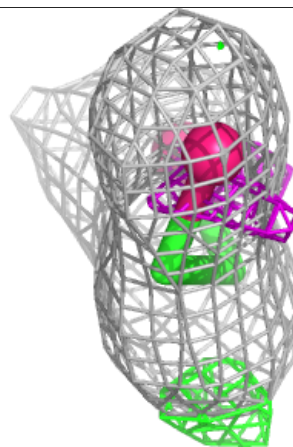
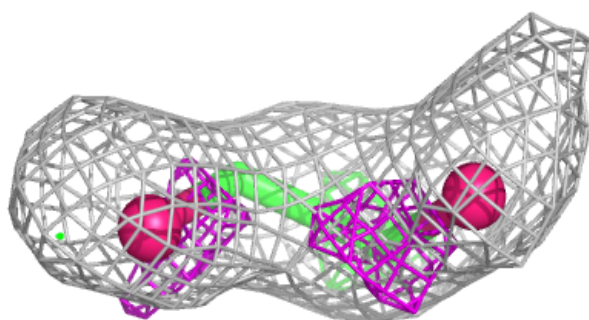
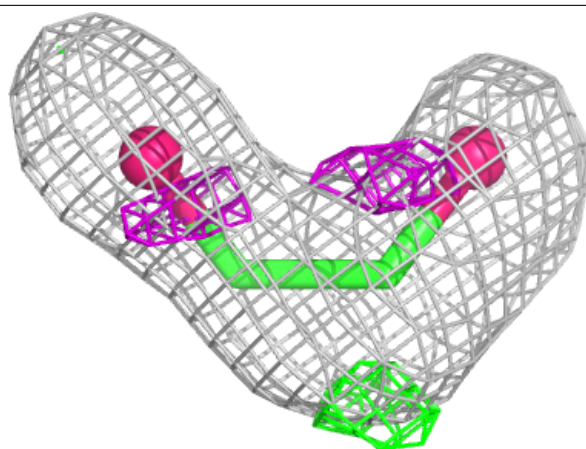
Electron density around SO4 D 512:

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



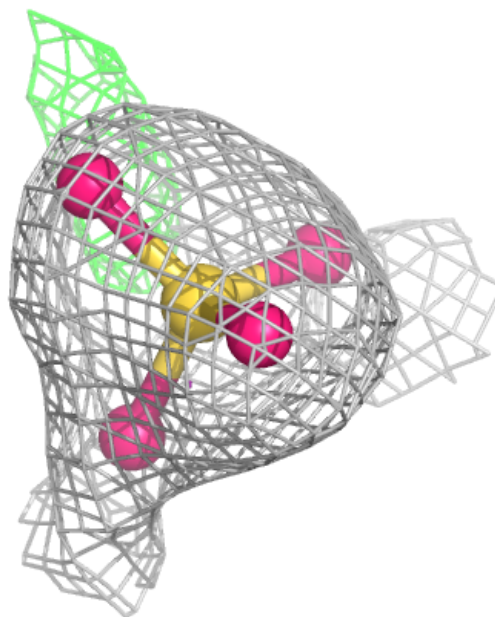
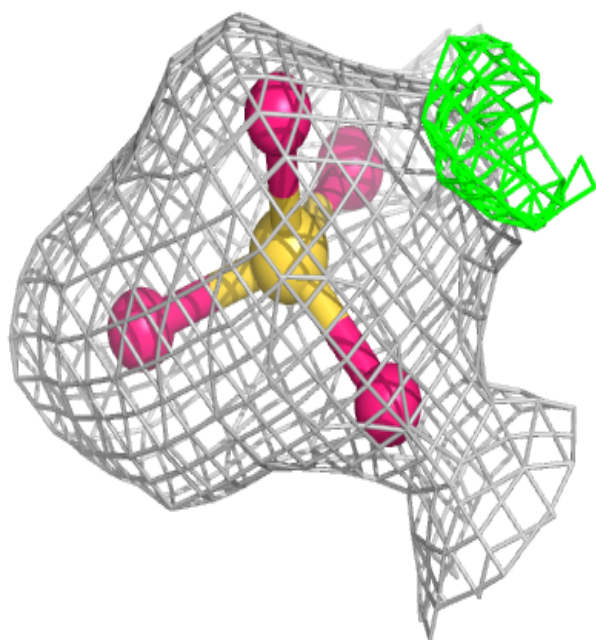
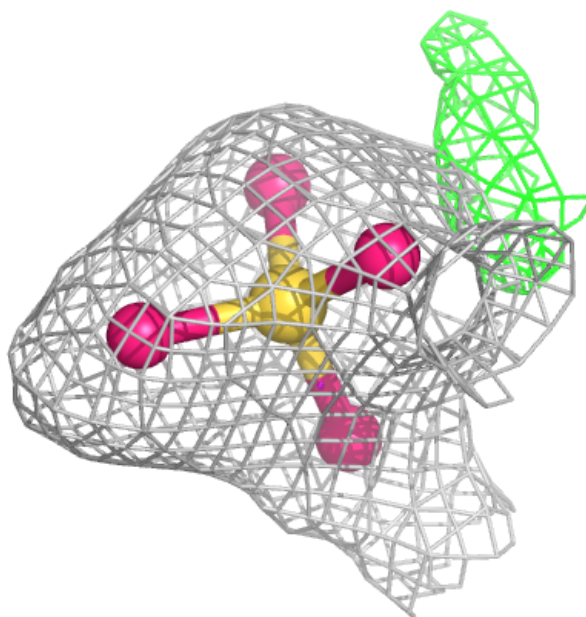
Electron density around EDO C 516:

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



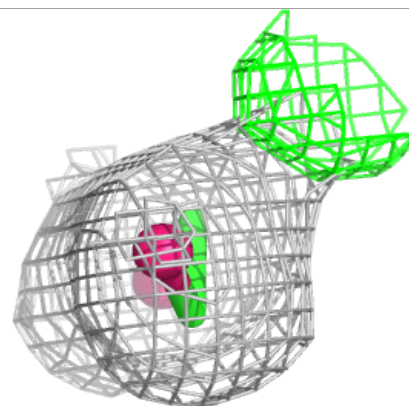
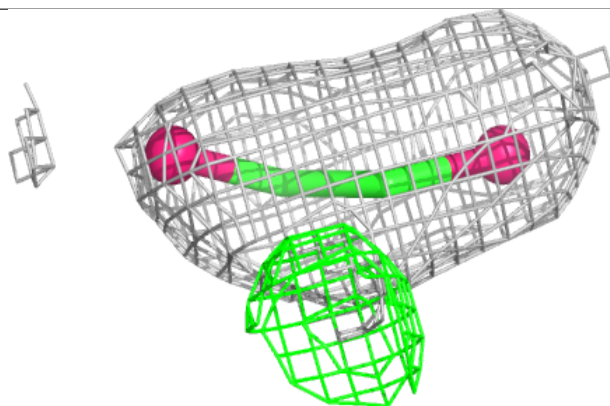
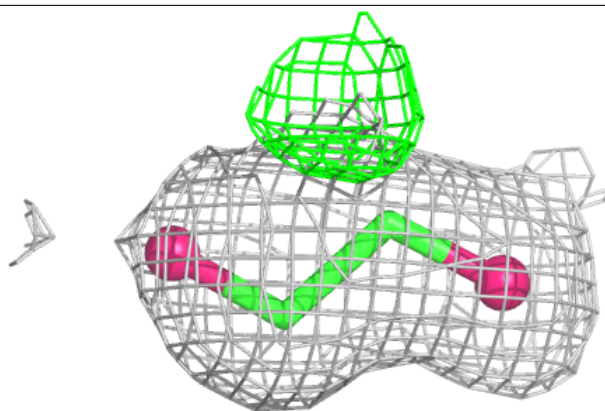
Electron density around SO4 B 510:

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

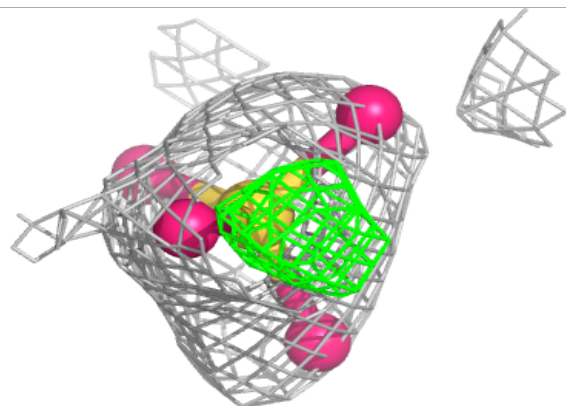
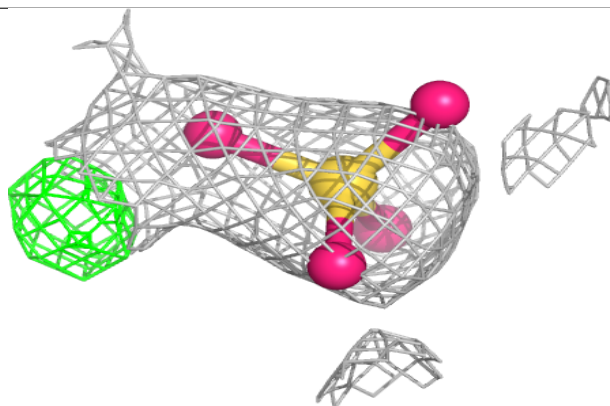
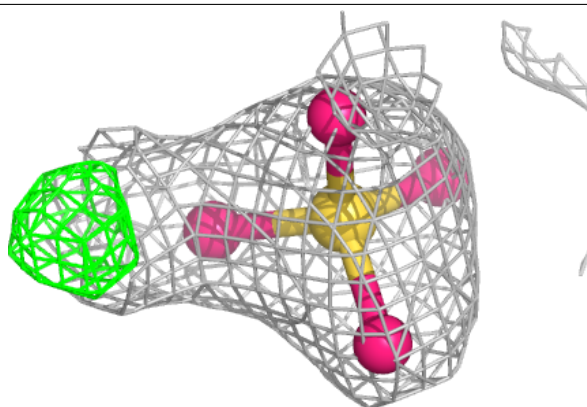


Electron density around EDO A 521:

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

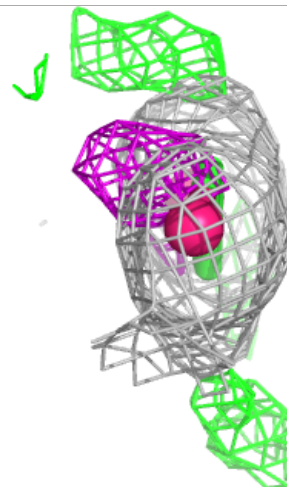
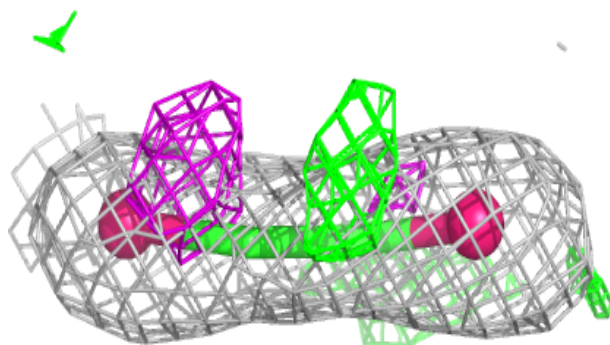
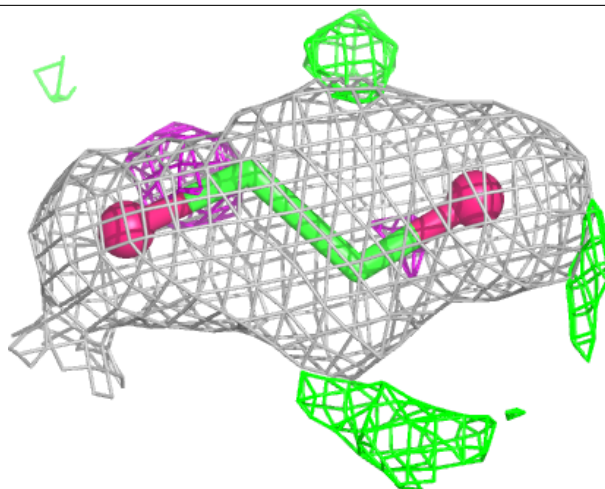
**Electron density around SO4 D 511:**

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



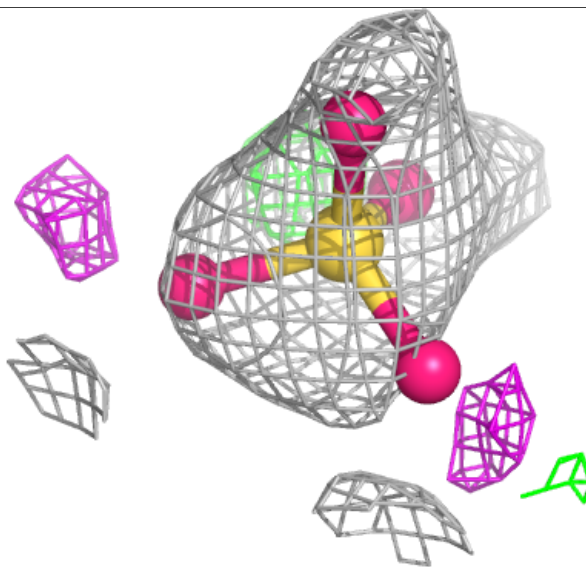
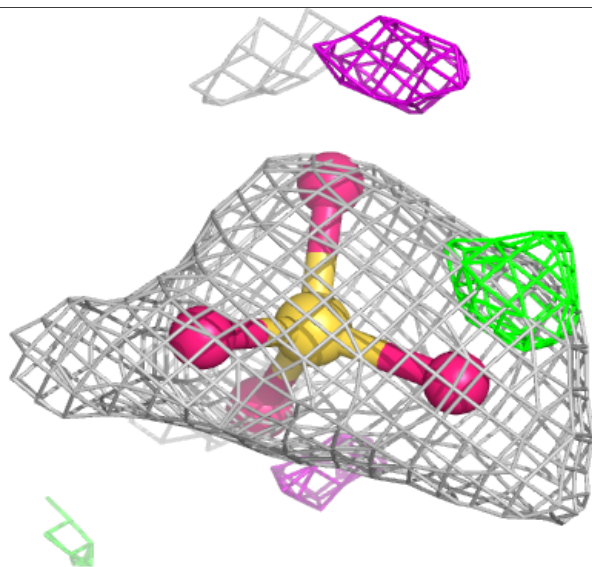
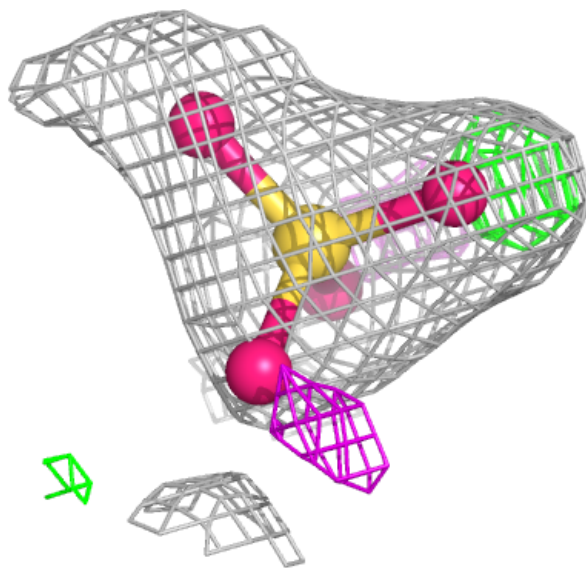
Electron density around EDO B 515:

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



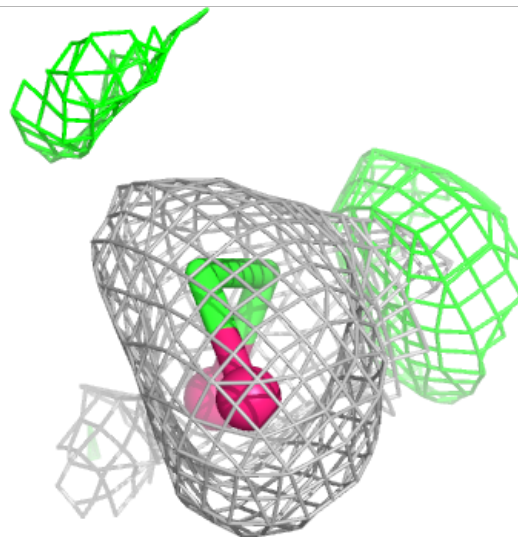
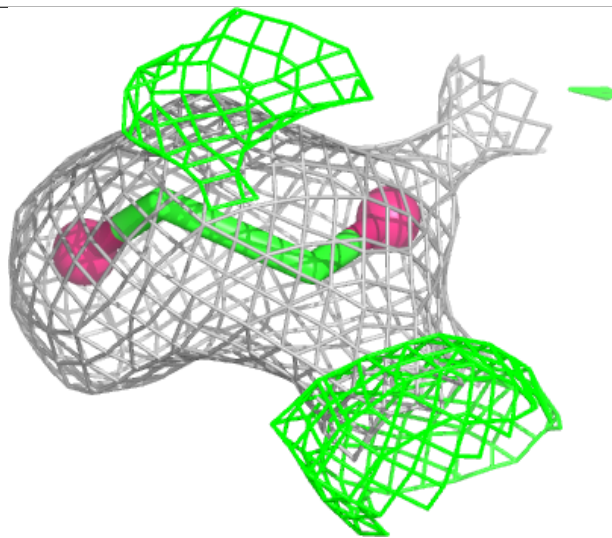
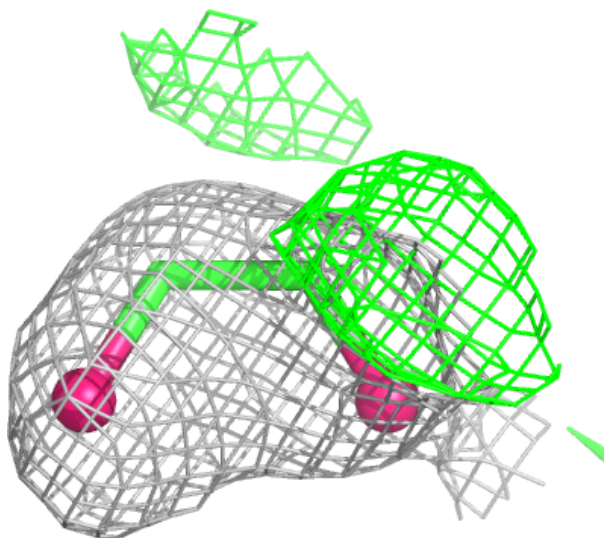
Electron density around SO4 C 510:

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



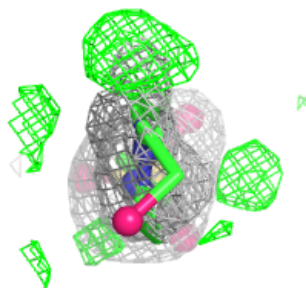
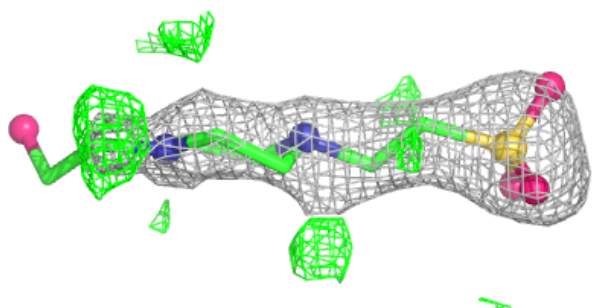
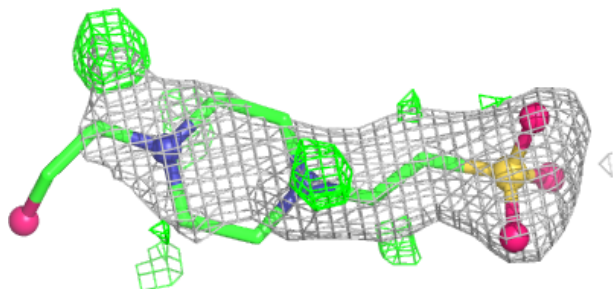
Electron density around EDO D 521:

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



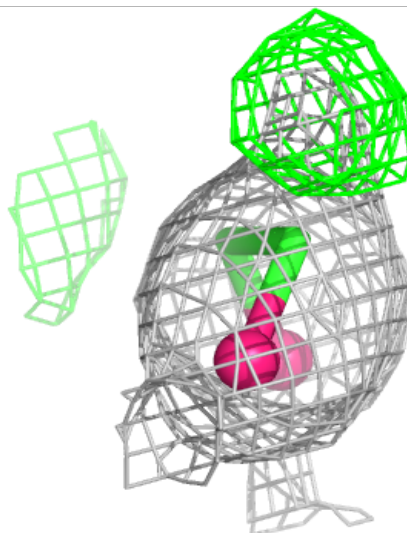
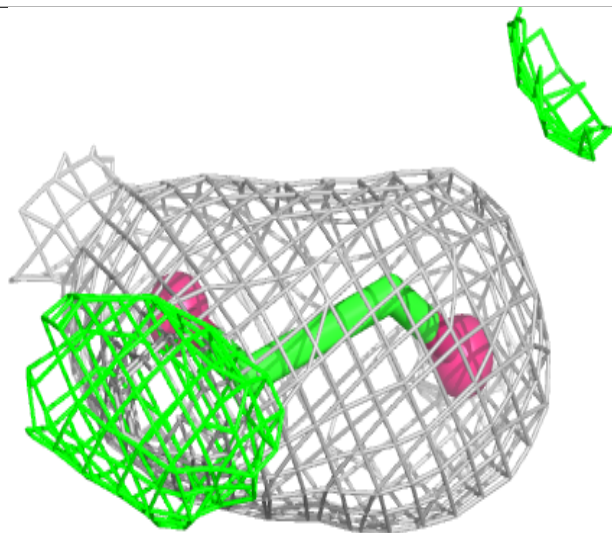
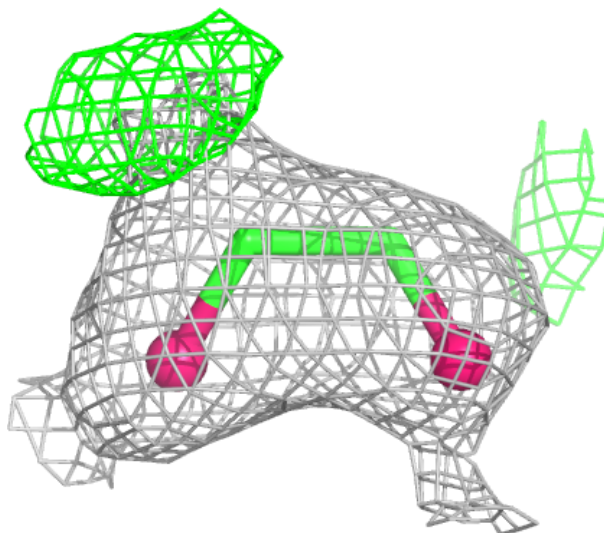
Electron density around EPE D 523:

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



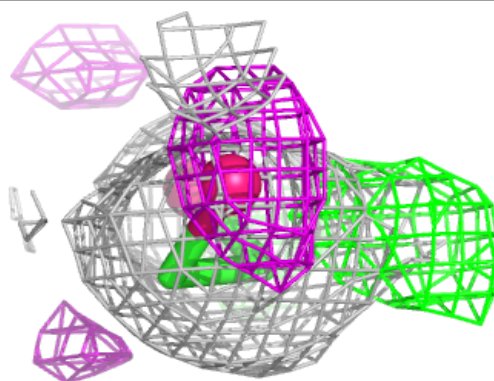
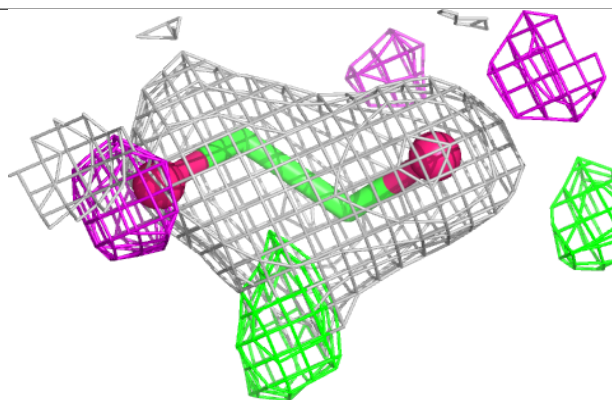
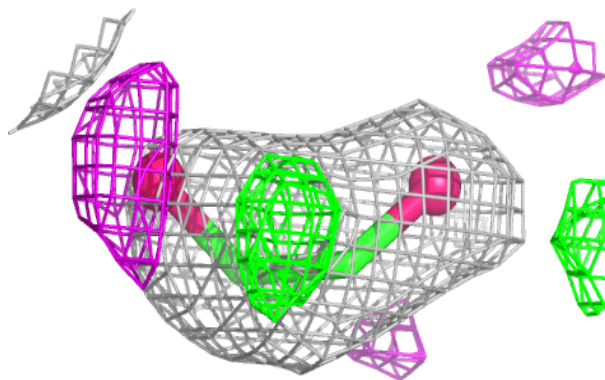
Electron density around EDO B 513:

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



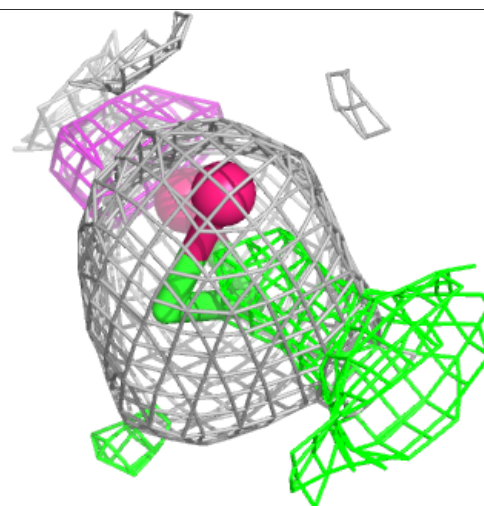
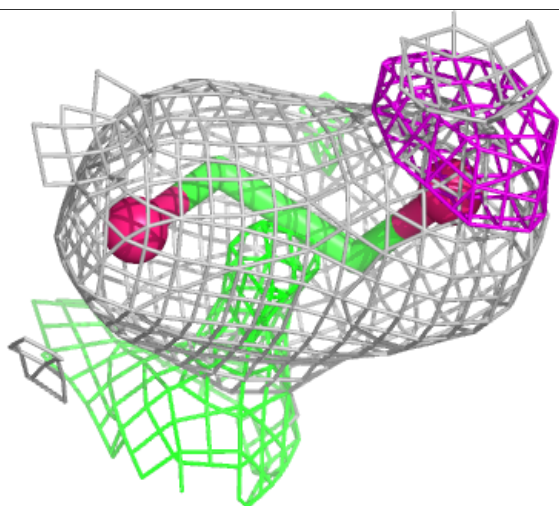
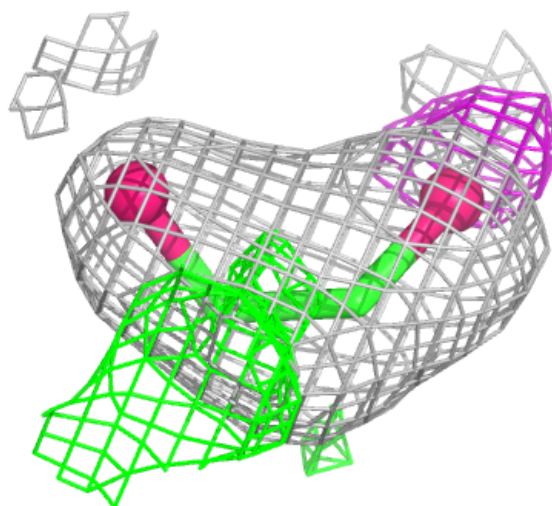
Electron density around EDO C 512:

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



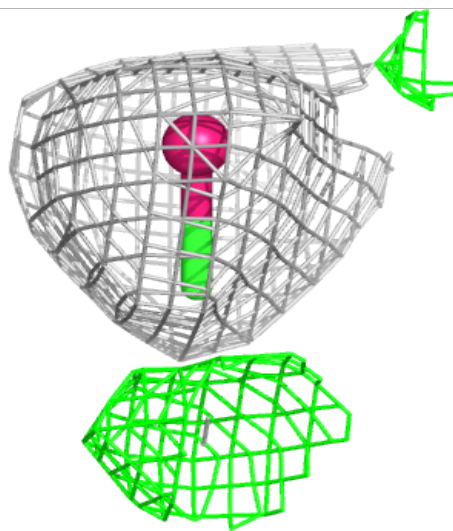
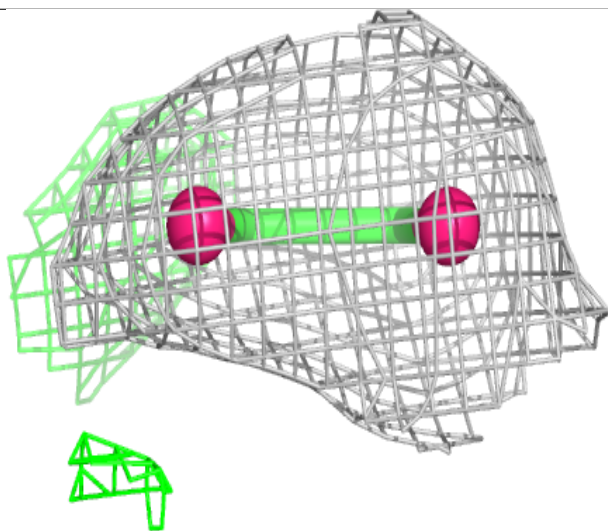
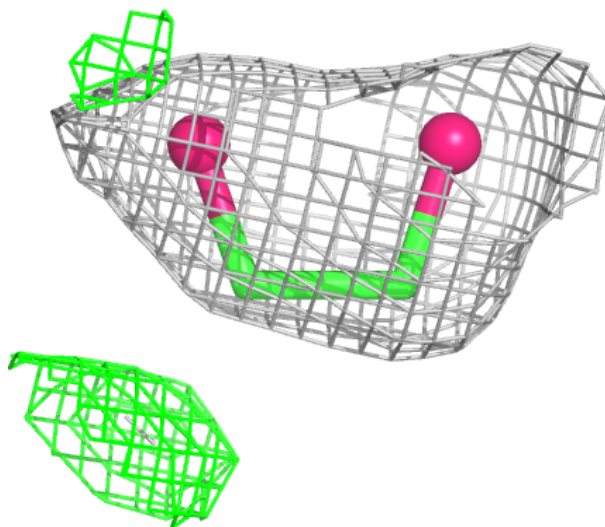
Electron density around EDO B 511:

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



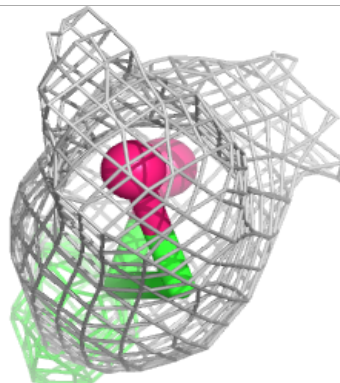
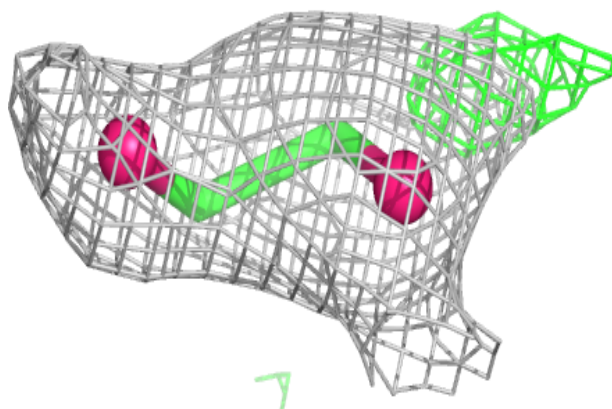
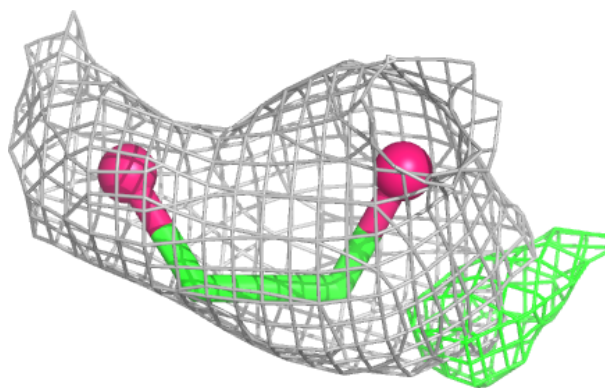
Electron density around EDO D 517:

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



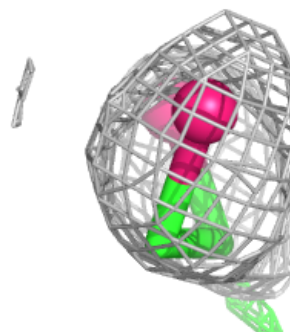
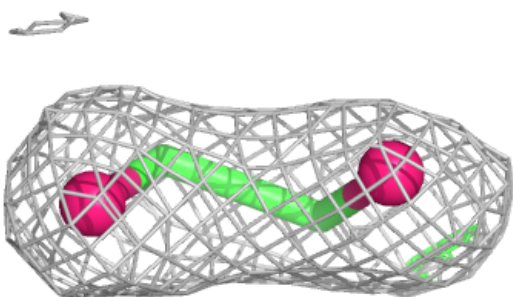
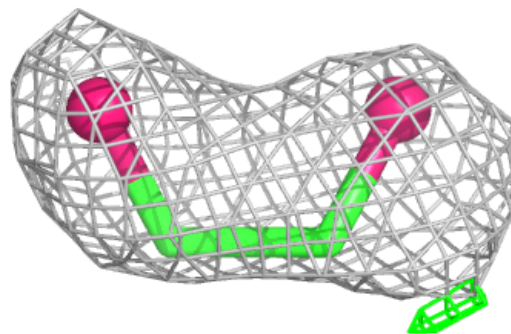
Electron density around EDO B 516:

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



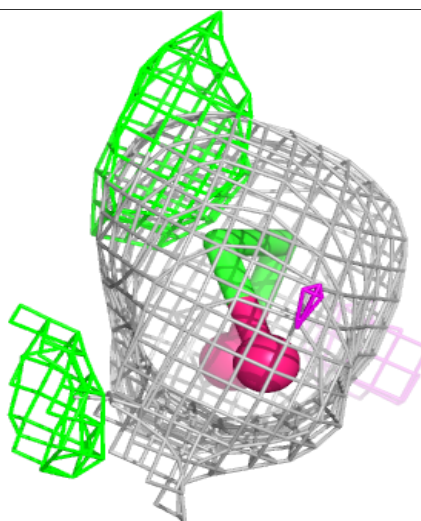
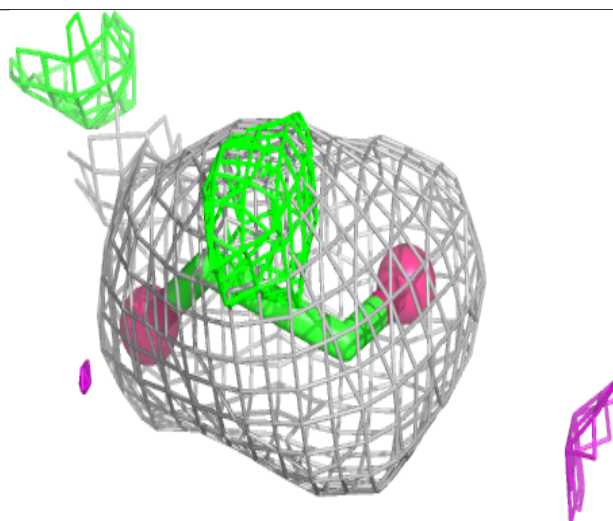
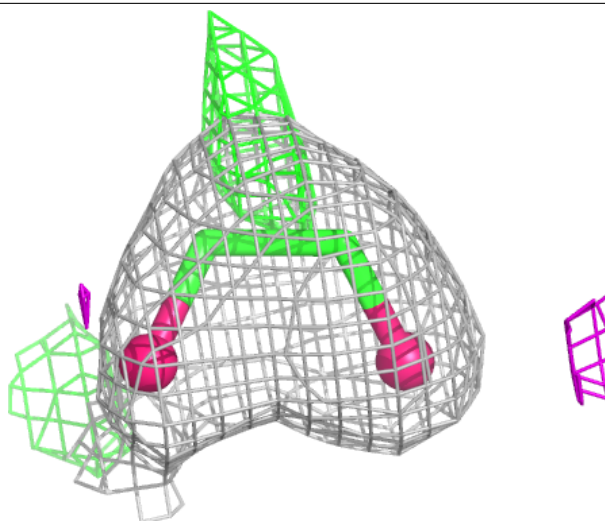
Electron density around EDO B 523:

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



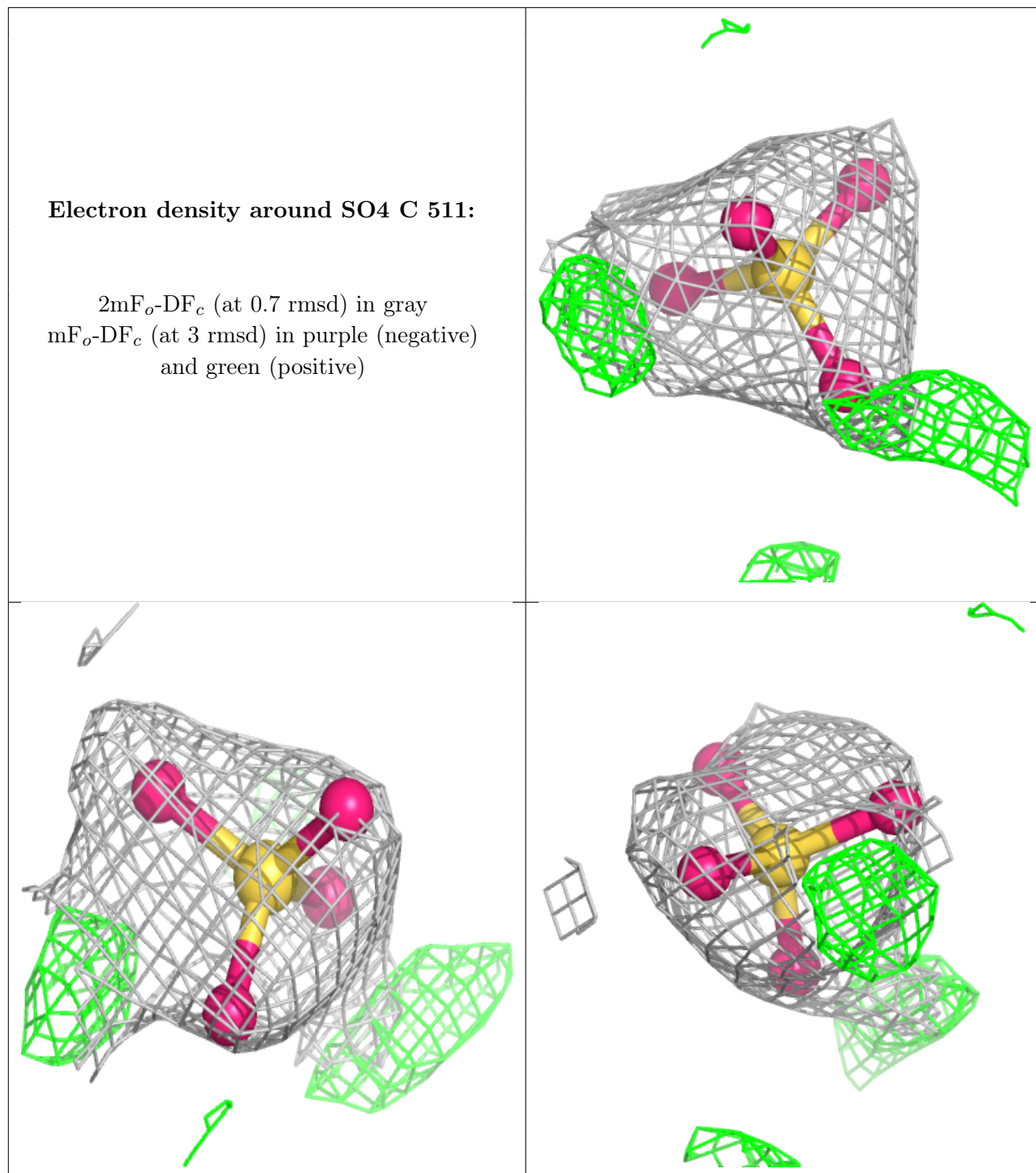
Electron density around EDO B 512:

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



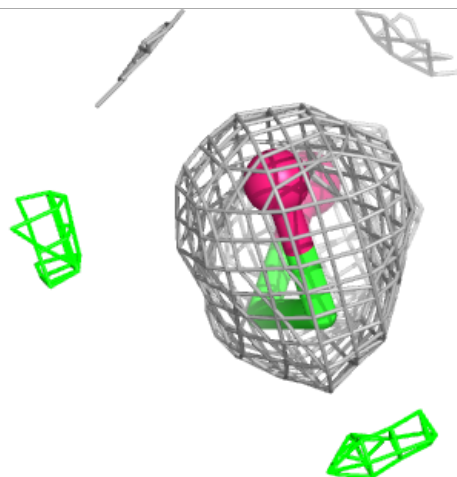
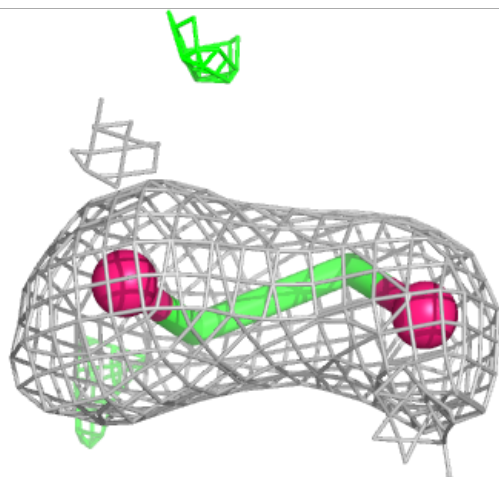
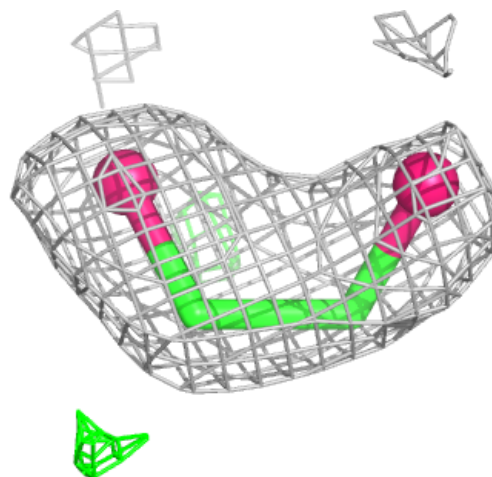
Electron density around SO4 C 511:

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



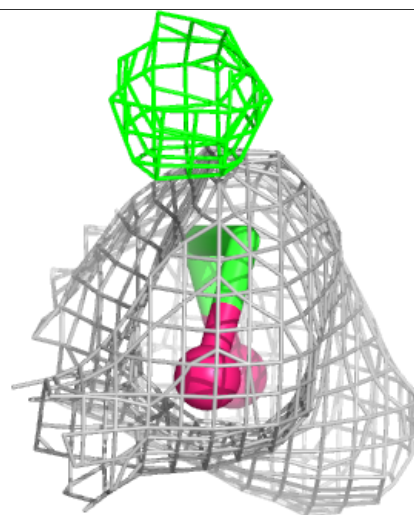
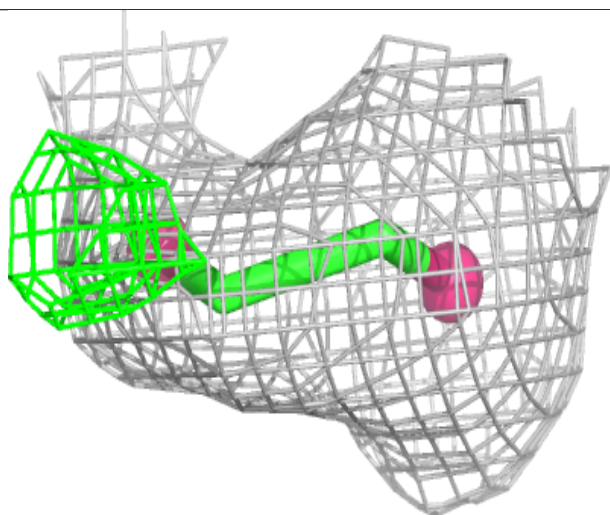
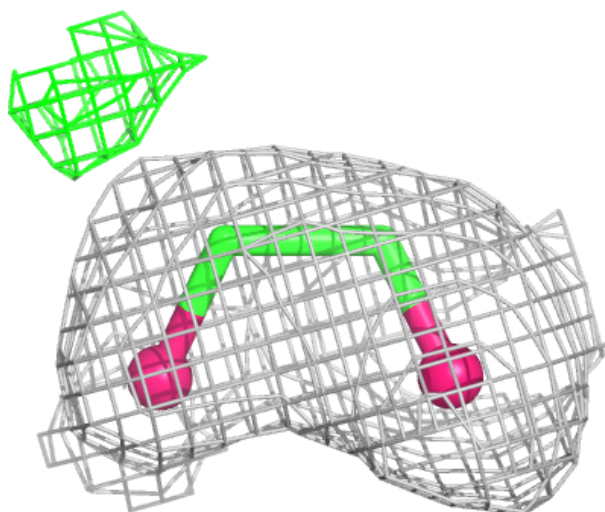
Electron density around EDO D 522:

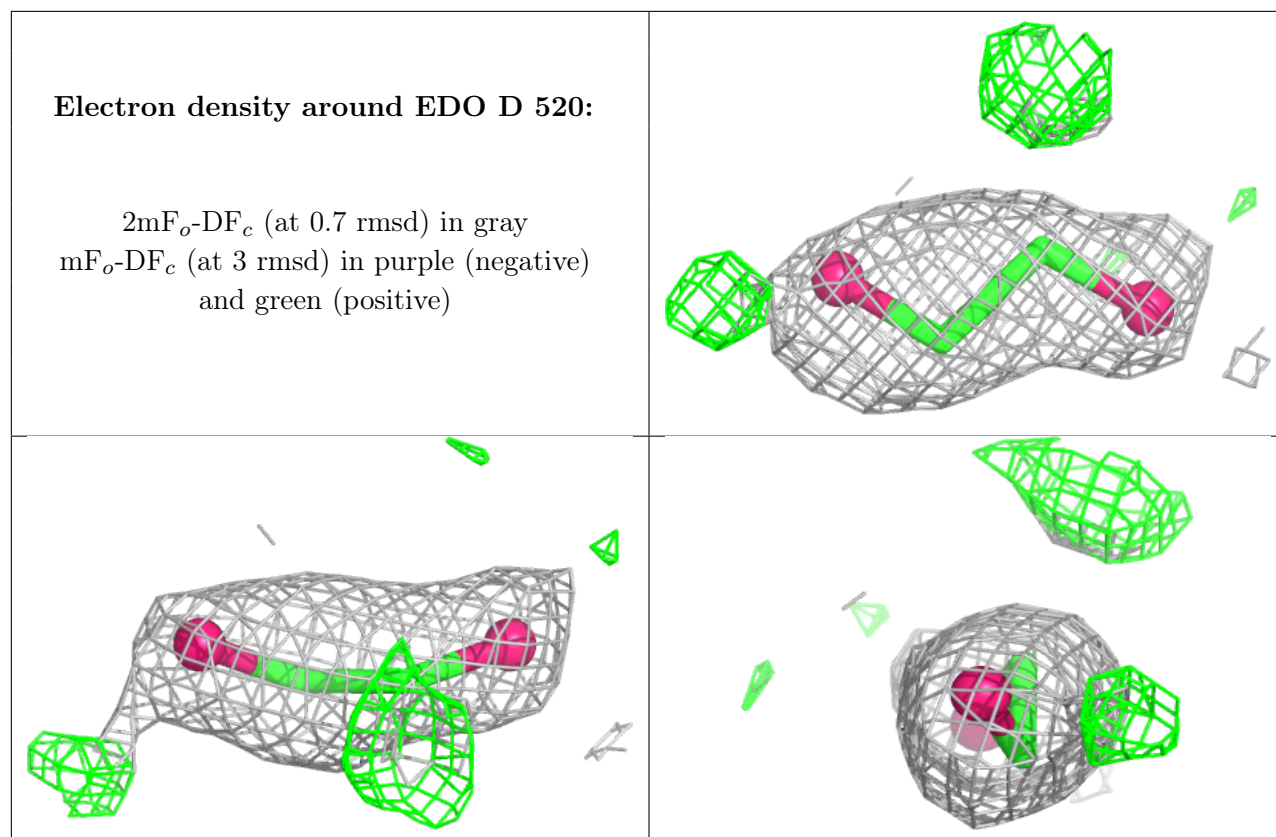
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around EDO B 517:

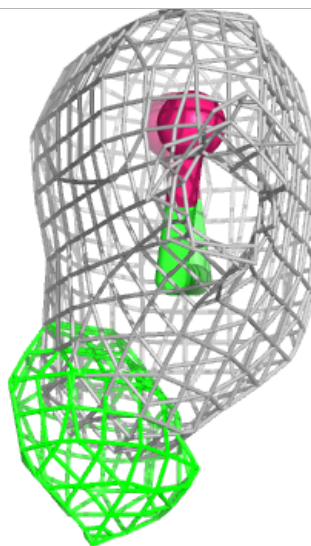
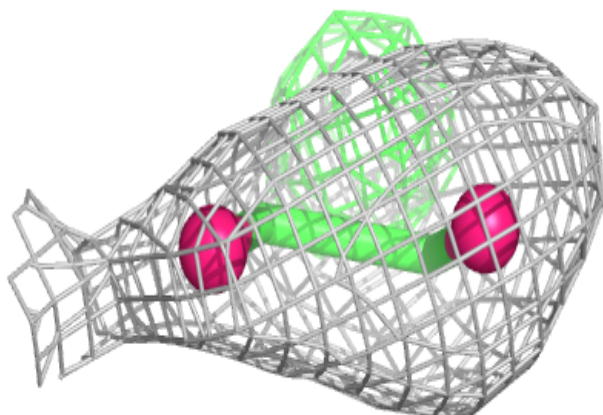
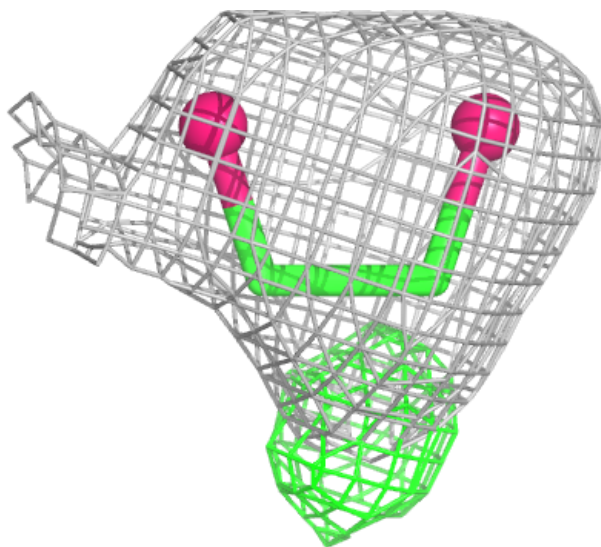
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





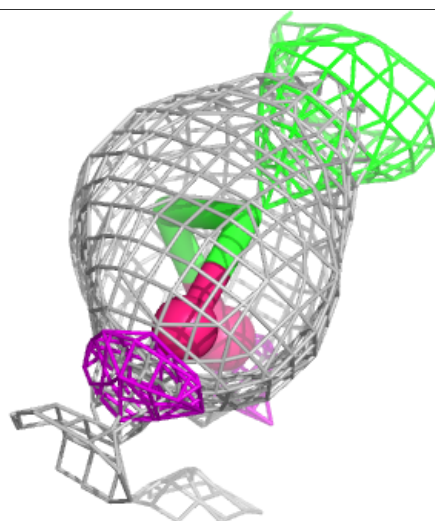
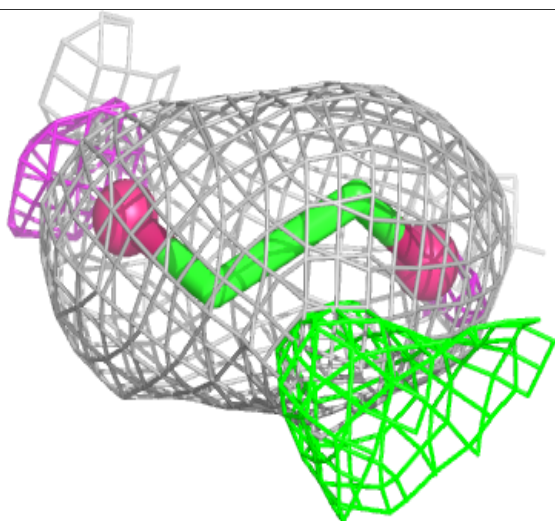
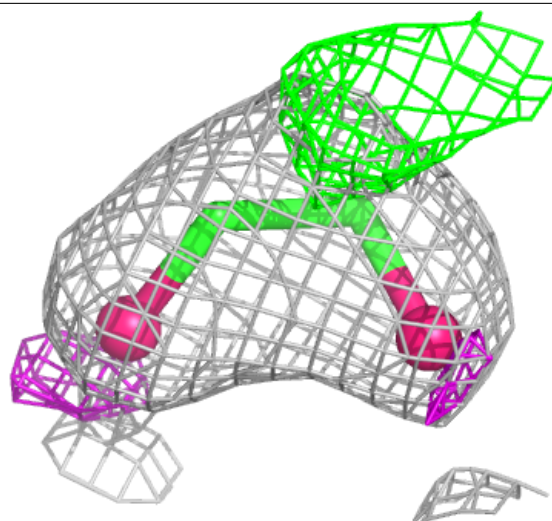
Electron density around EDO A 519:

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



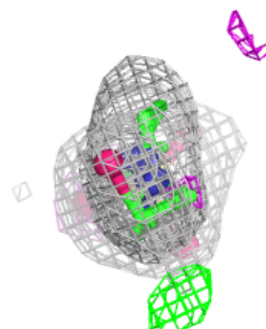
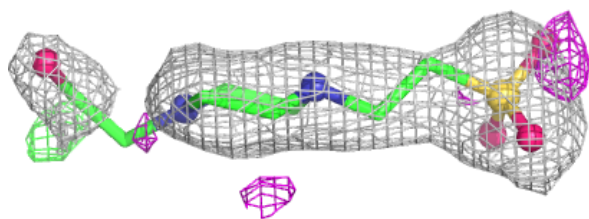
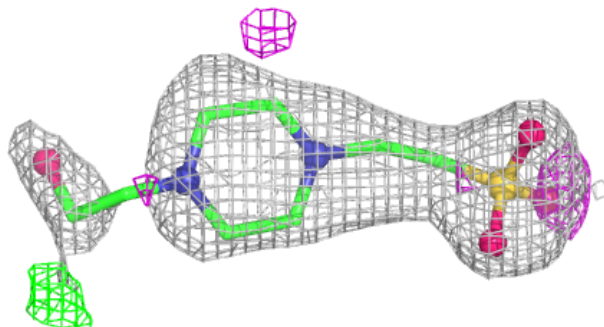
Electron density around EDO D 513:

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



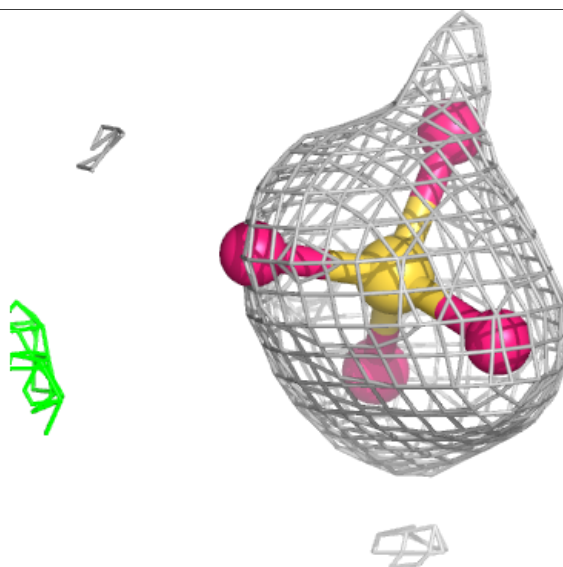
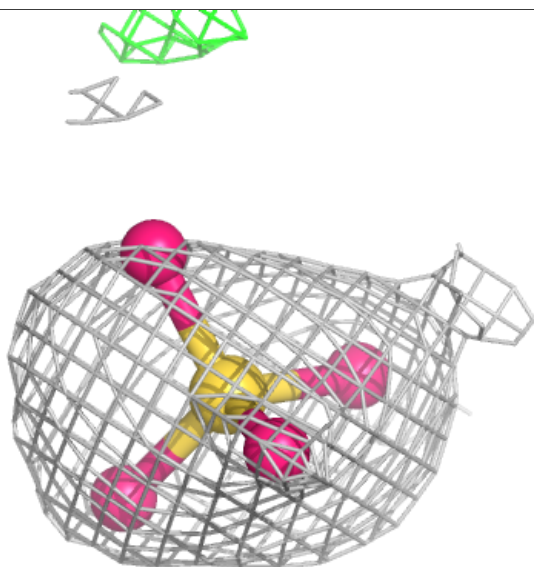
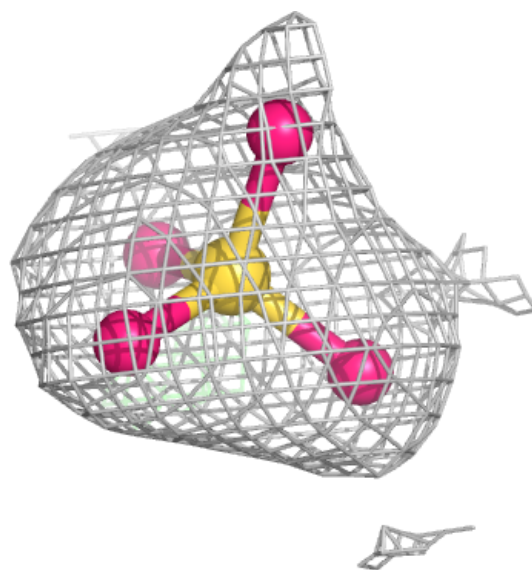
Electron density around EPE B 525:

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



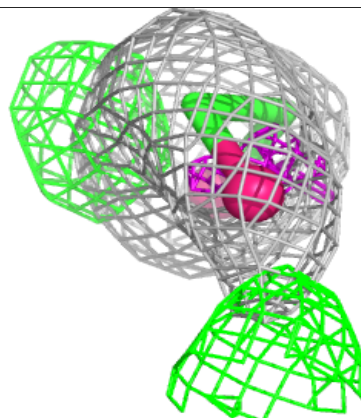
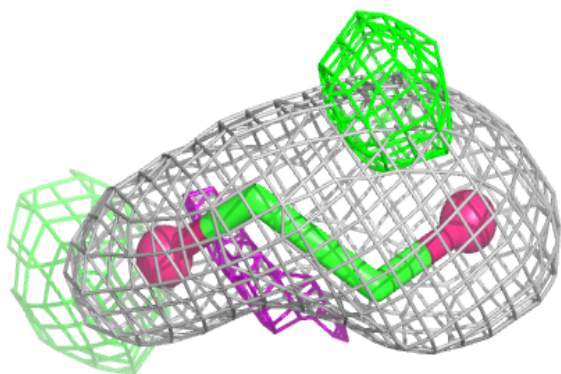
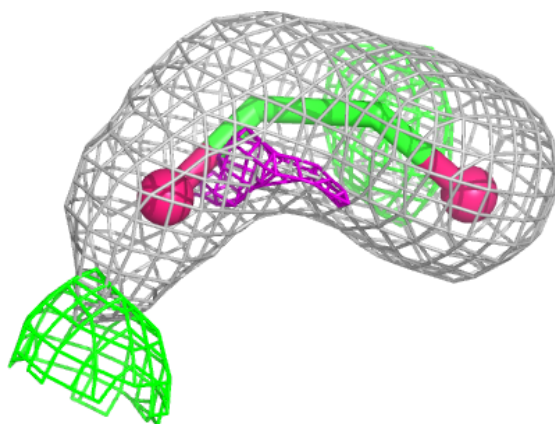
Electron density around SO4 A 507:

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

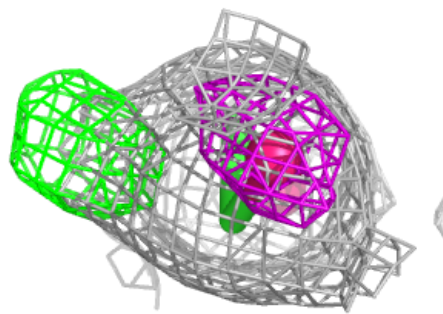
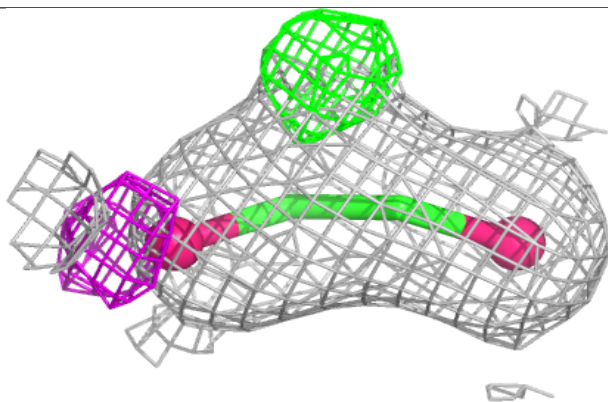
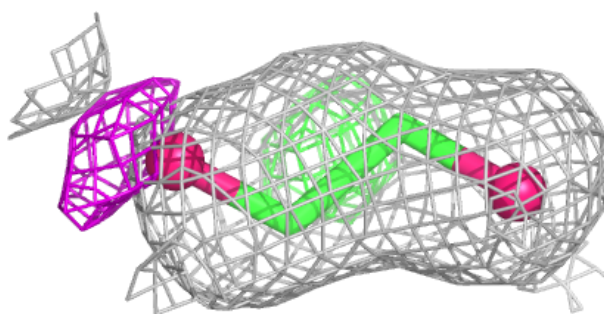


Electron density around EDO A 509:

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

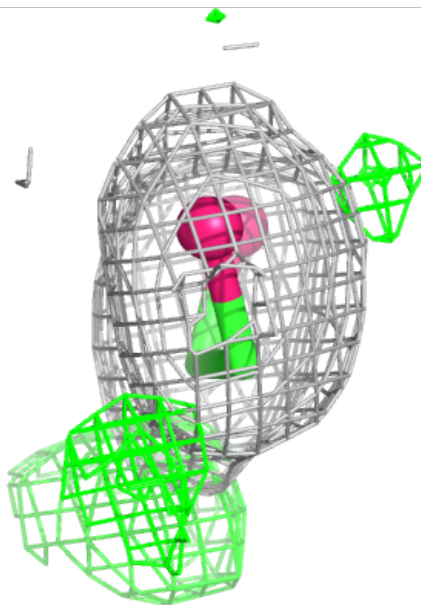
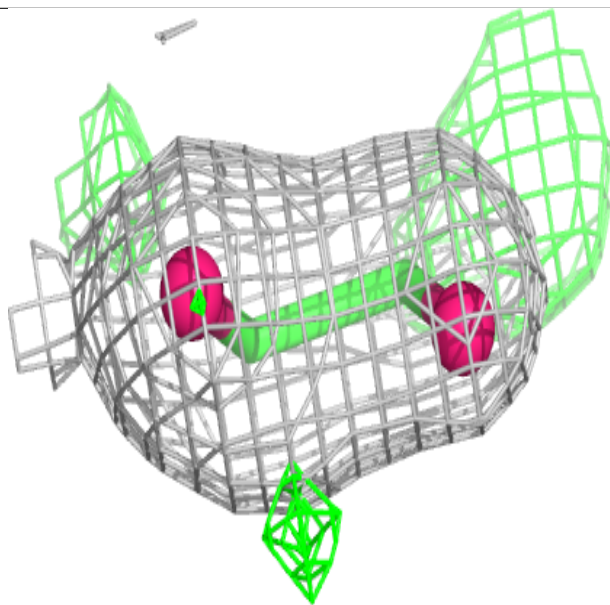
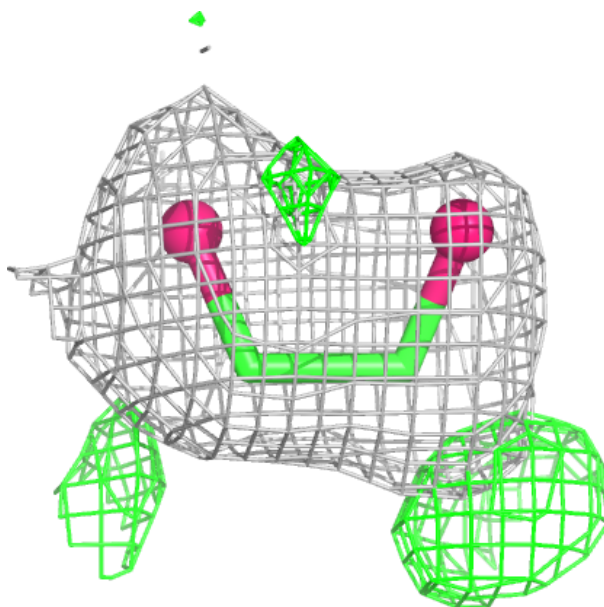
**Electron density around EDO A 510:**

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



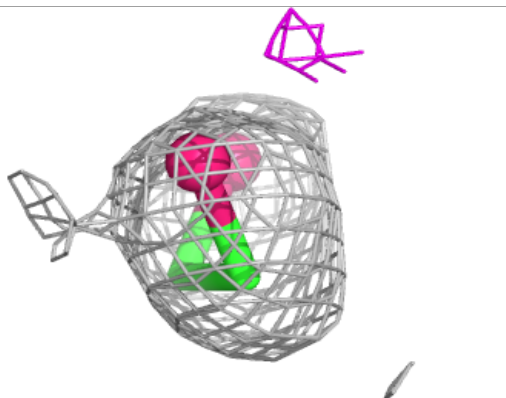
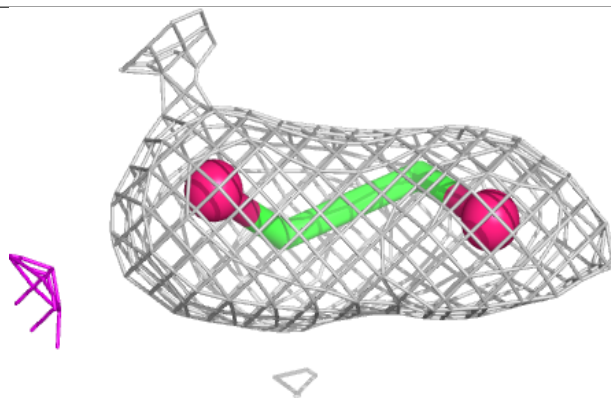
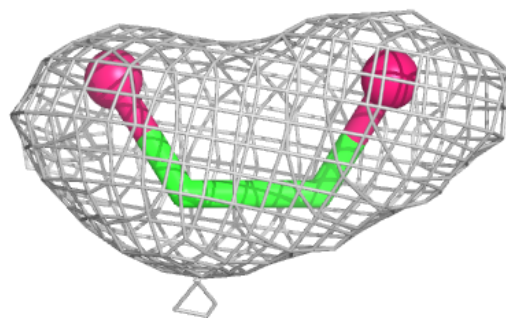
Electron density around EDO D 515:

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

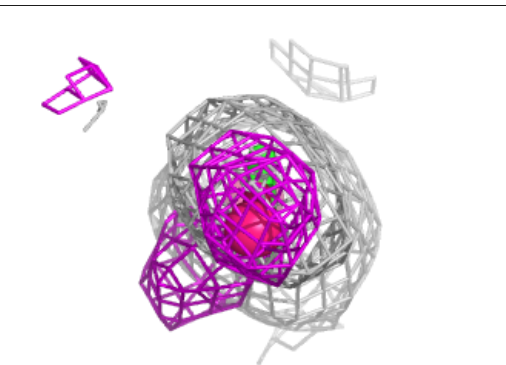
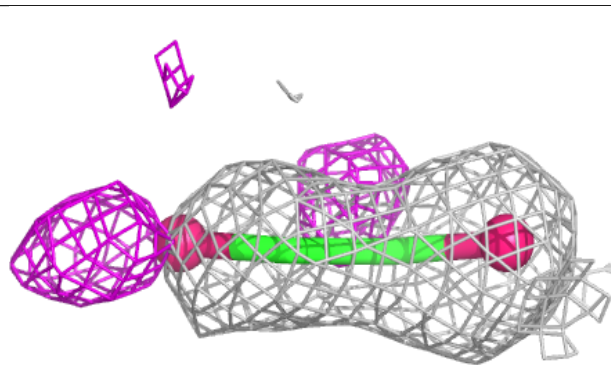
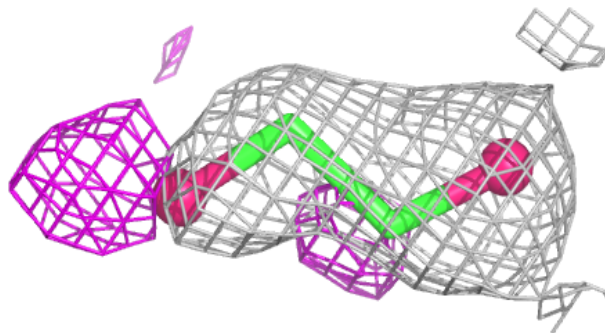


Electron density around EDO A 520:

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

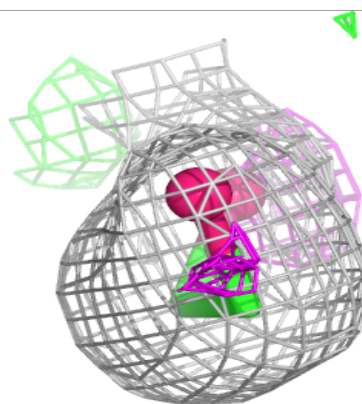
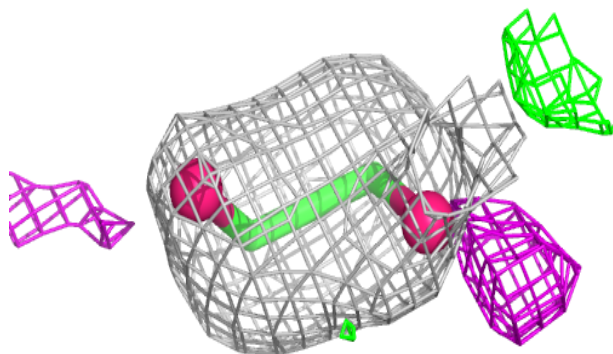
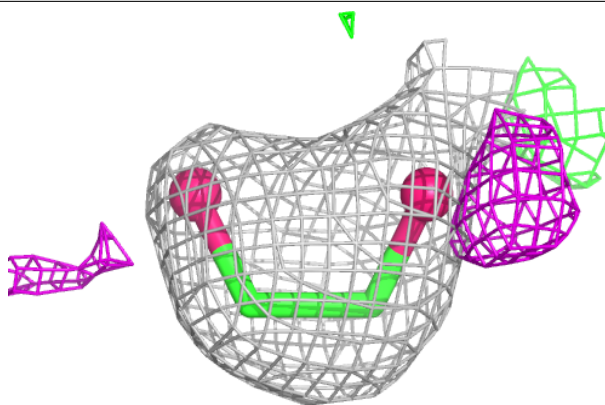
**Electron density around EDO D 518:**

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

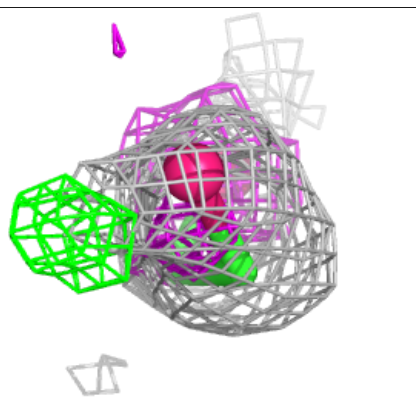
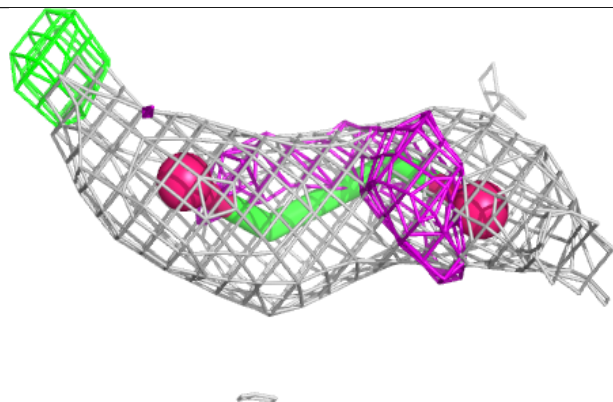
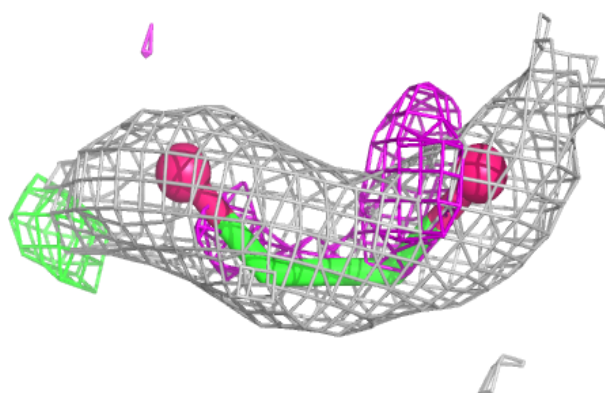


Electron density around EDO A 511:

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

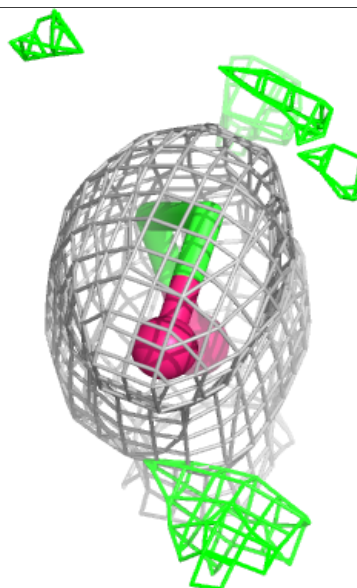
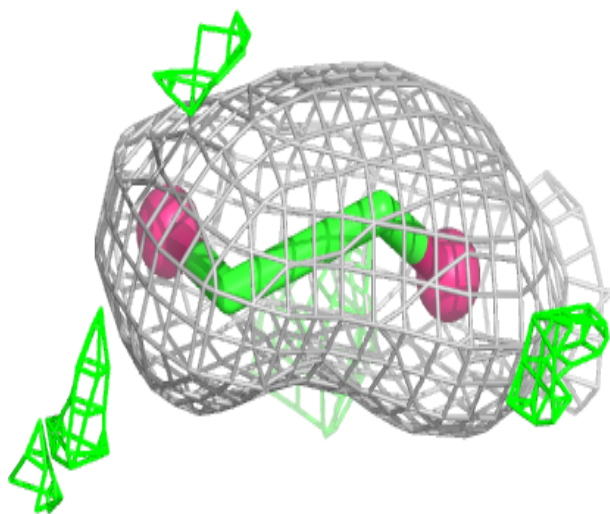
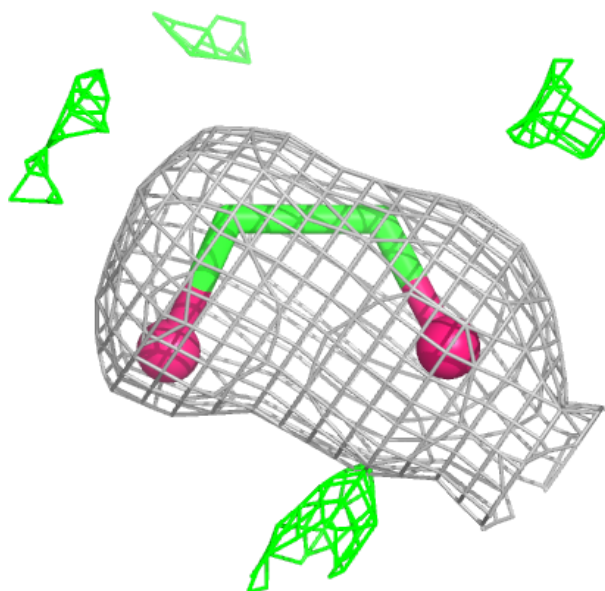
**Electron density around EDO B 518:**

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



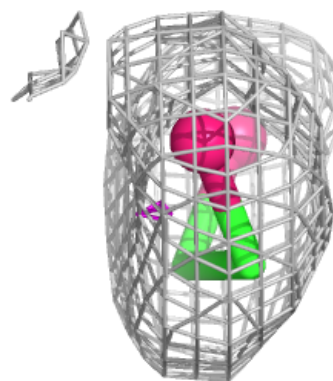
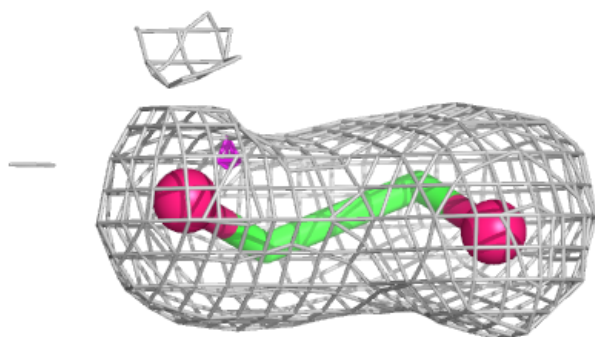
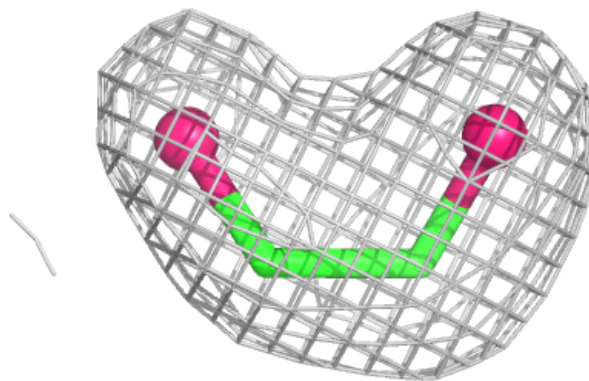
Electron density around EDO B 520:

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



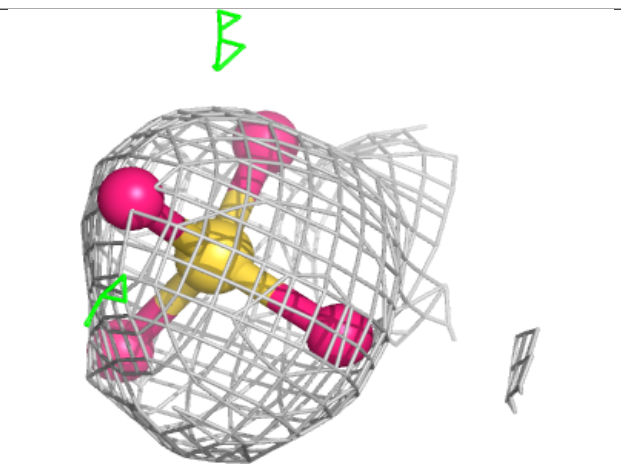
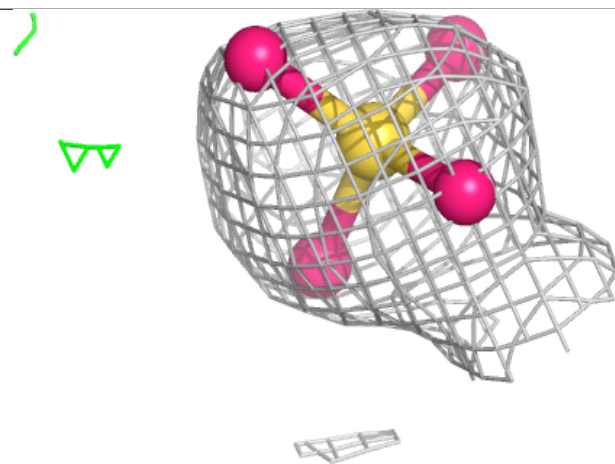
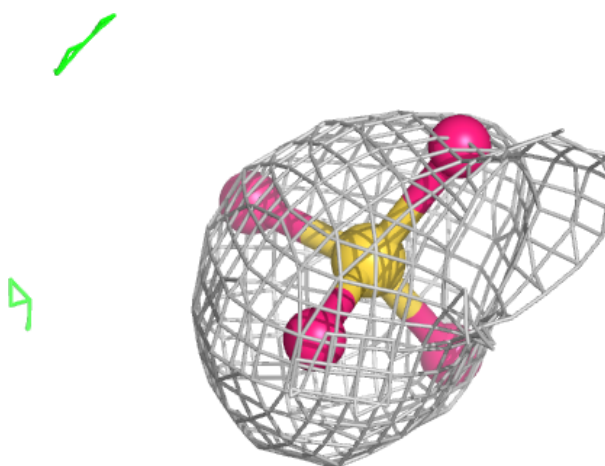
Electron density around EDO A 513:

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



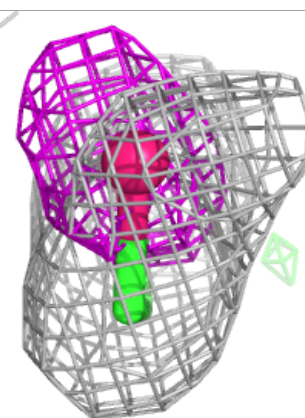
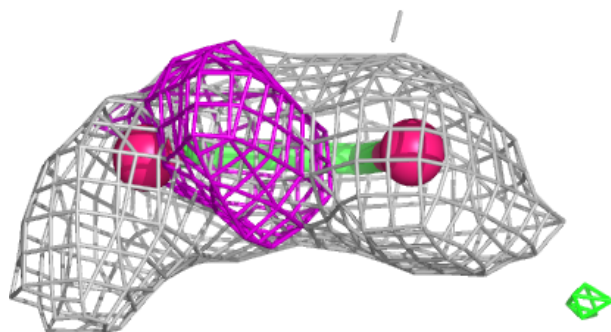
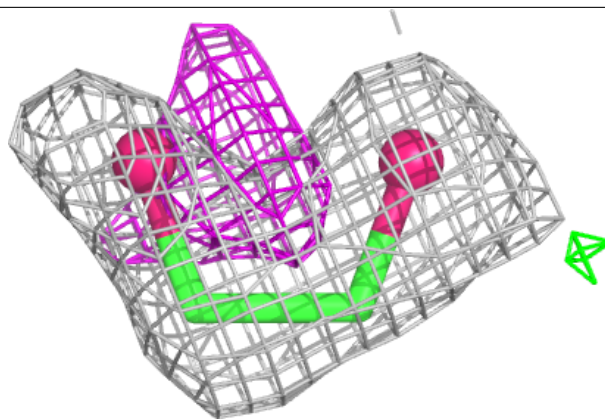
Electron density around SO4 D 509:

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



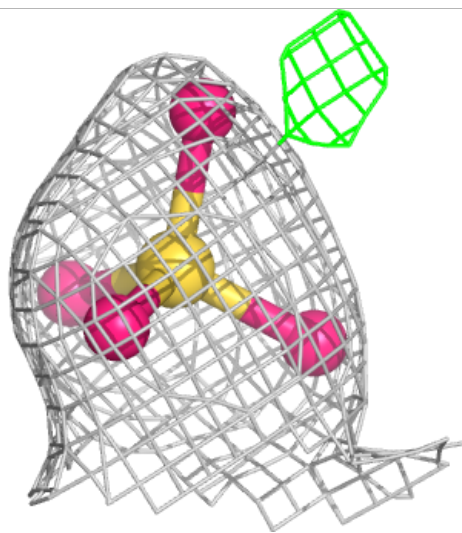
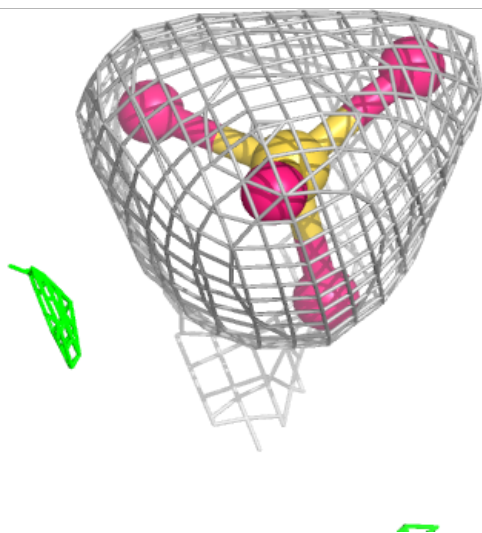
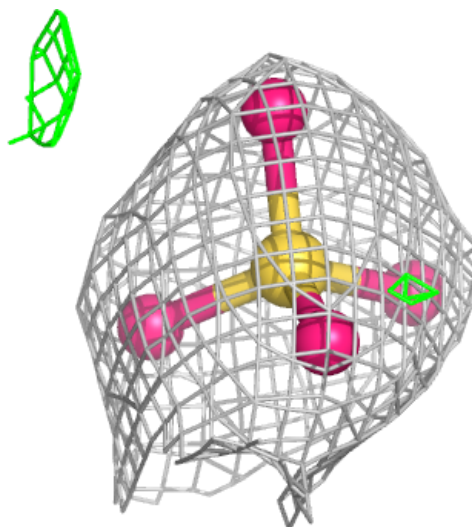
Electron density around EDO A 518:

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



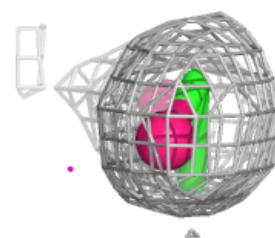
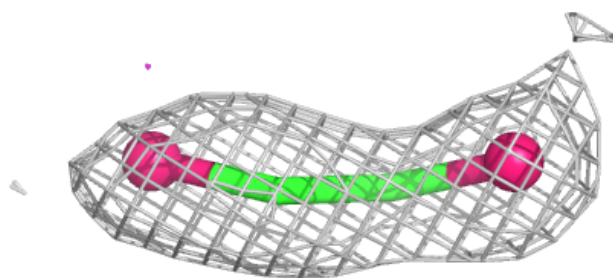
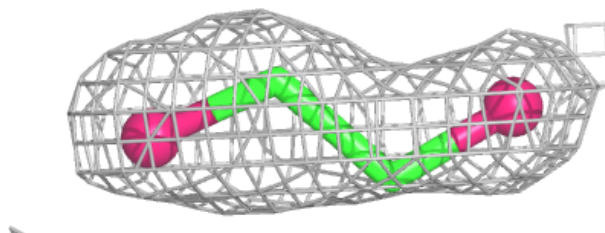
Electron density around SO4 B 509:

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

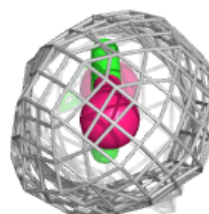
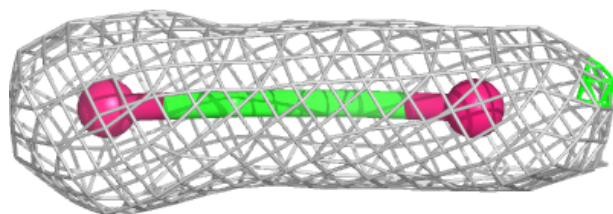
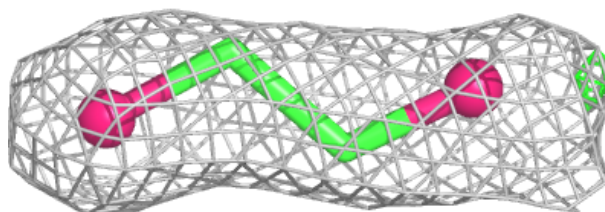


Electron density around EDO B 522:

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

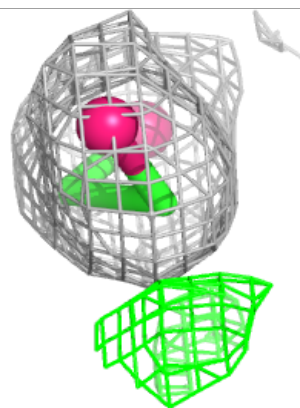
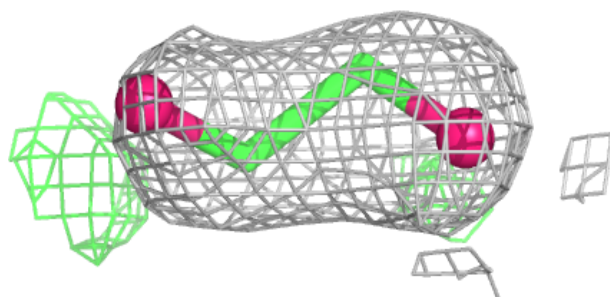
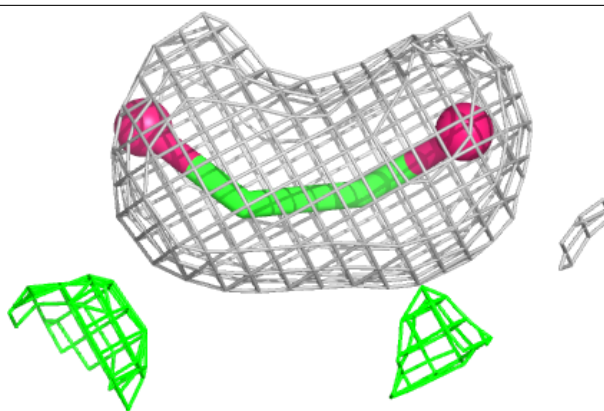
**Electron density around EDO B 524:**

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

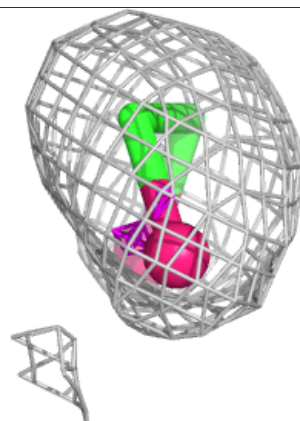
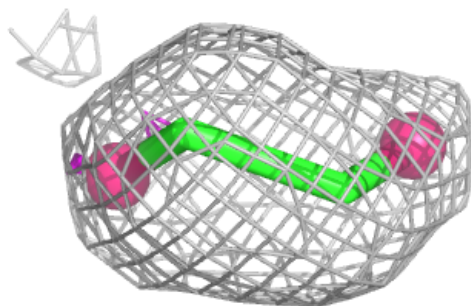
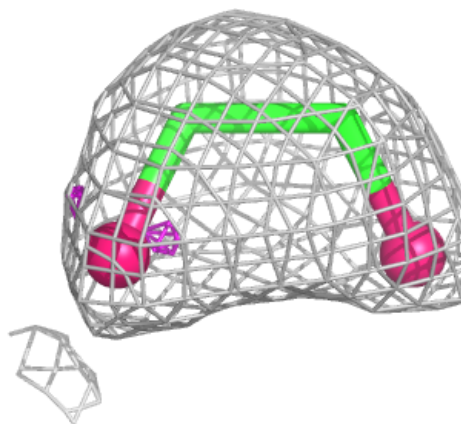


Electron density around EDO C 515:

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

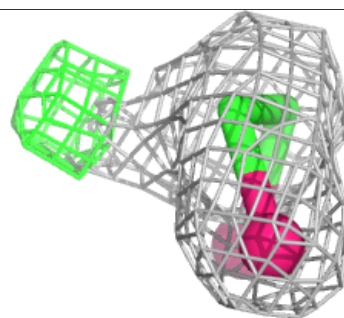
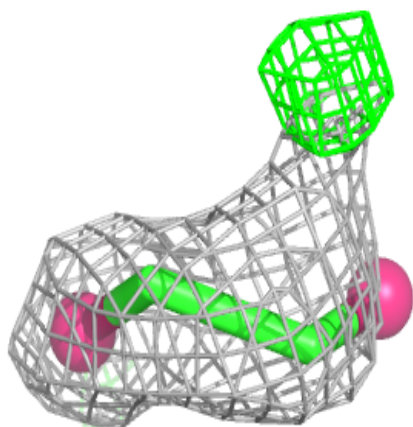
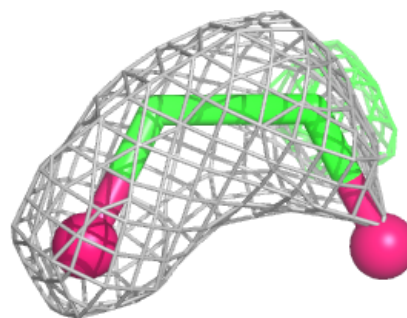
**Electron density around EDO C 513:**

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



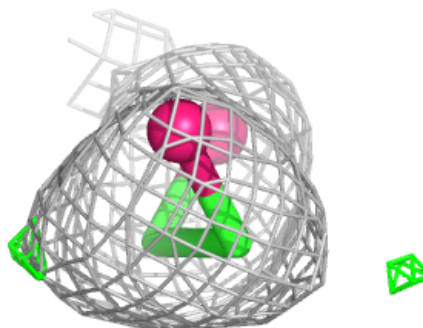
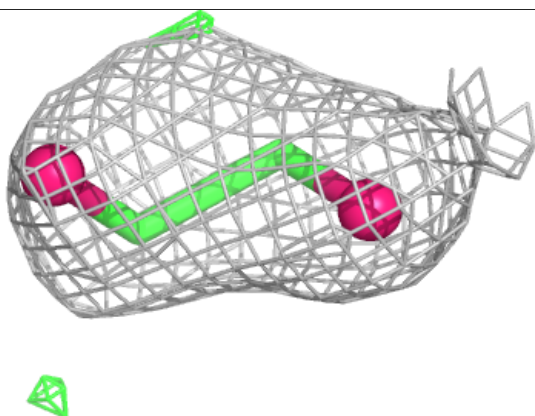
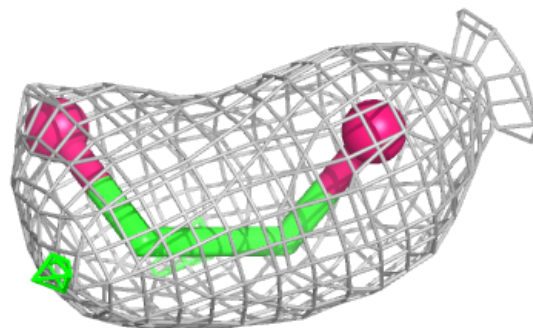
Electron density around EDO B 521:

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



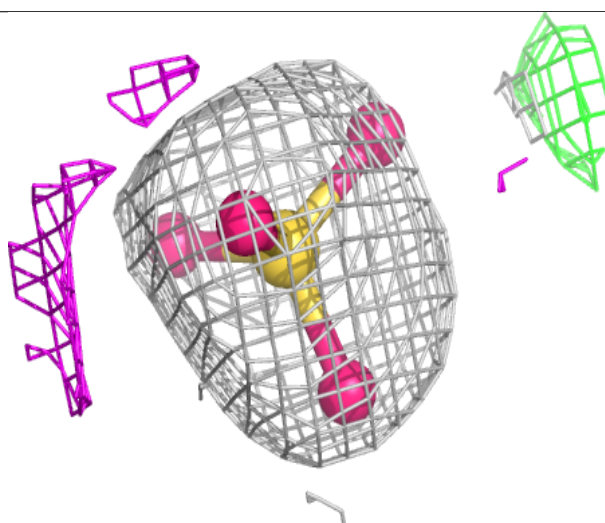
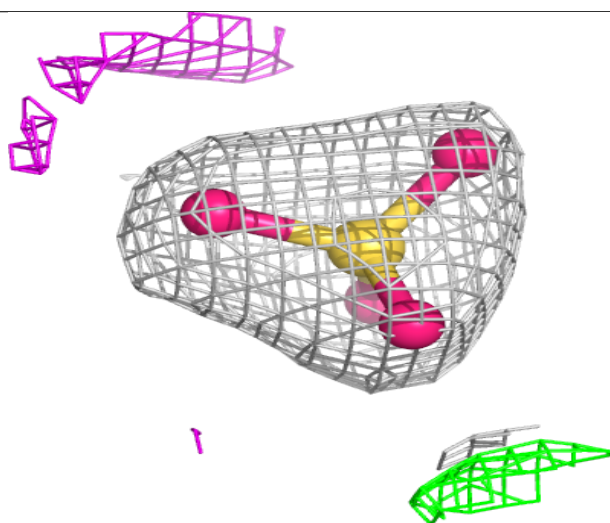
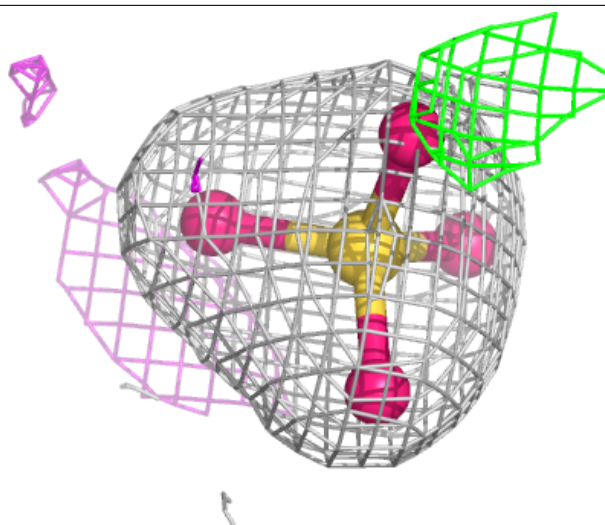
Electron density around EDO B 514:

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



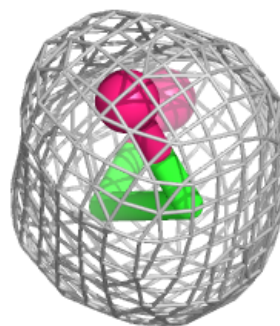
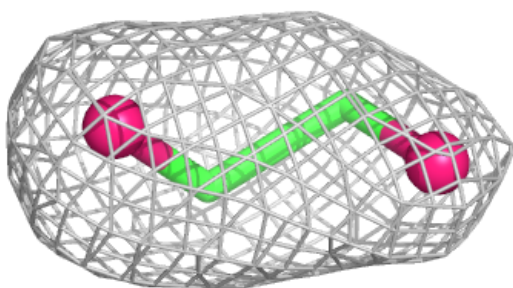
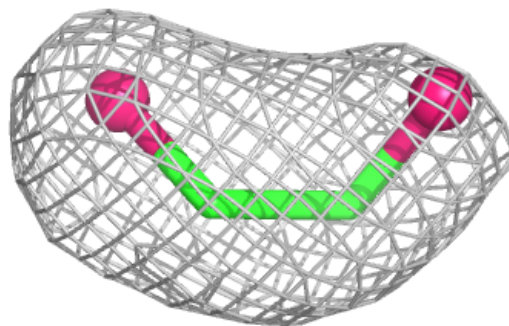
Electron density around SO4 D 510:

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



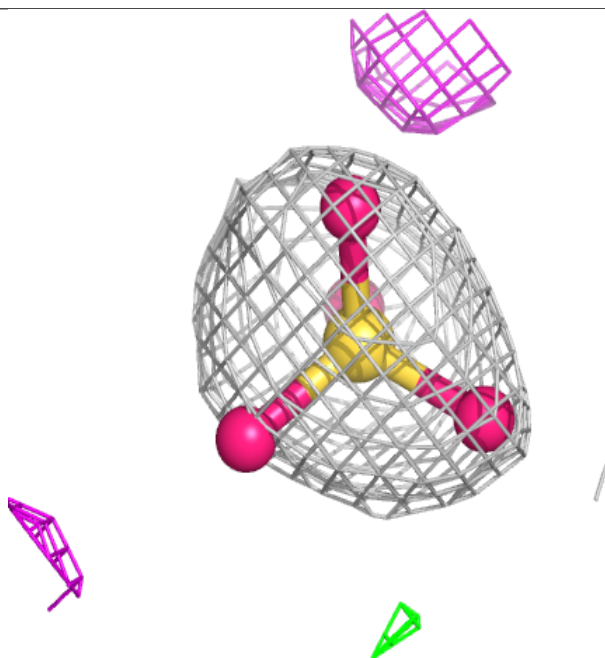
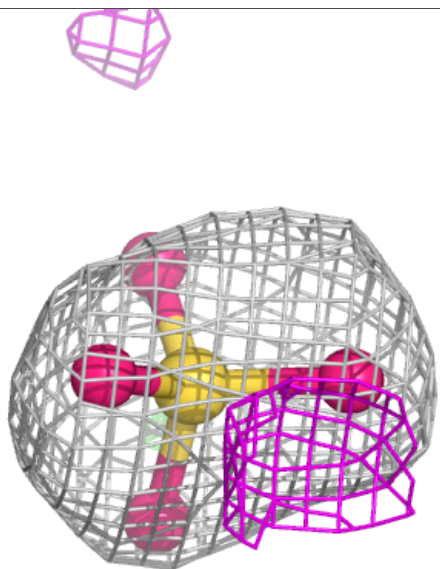
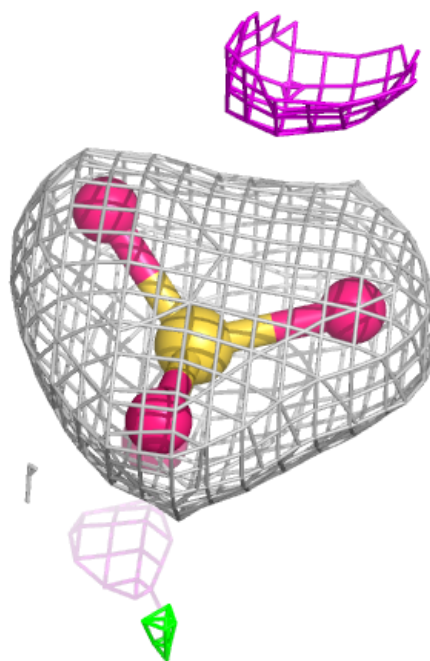
Electron density around EDO B 519:

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



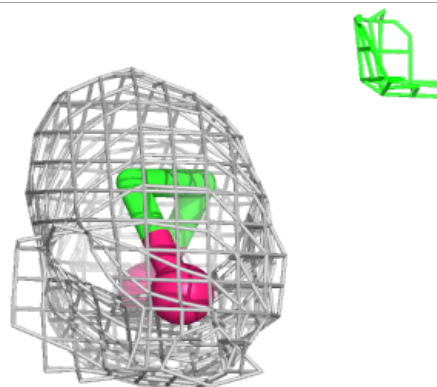
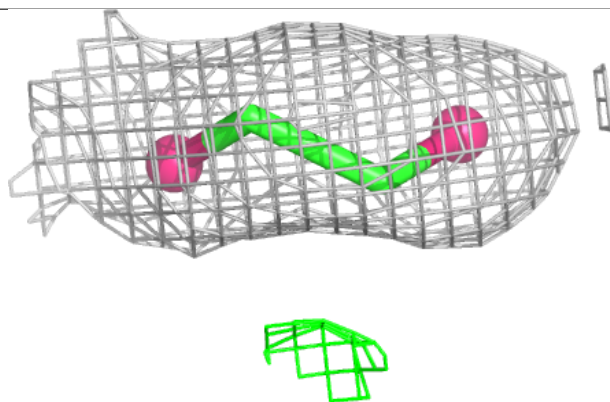
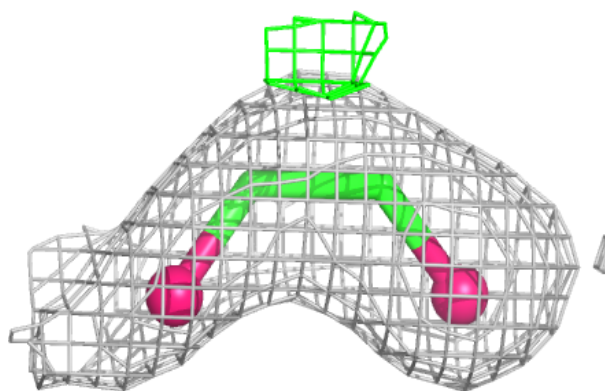
Electron density around SO4 A 508:

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



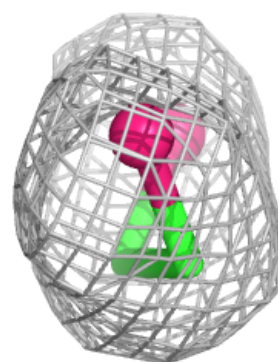
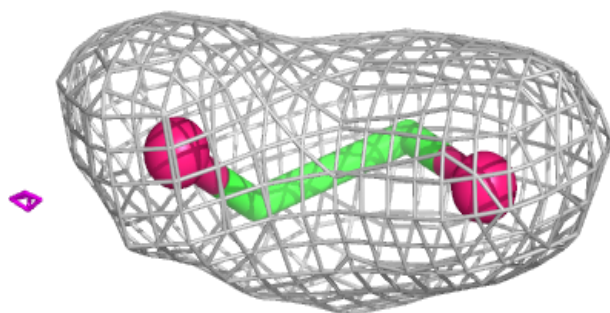
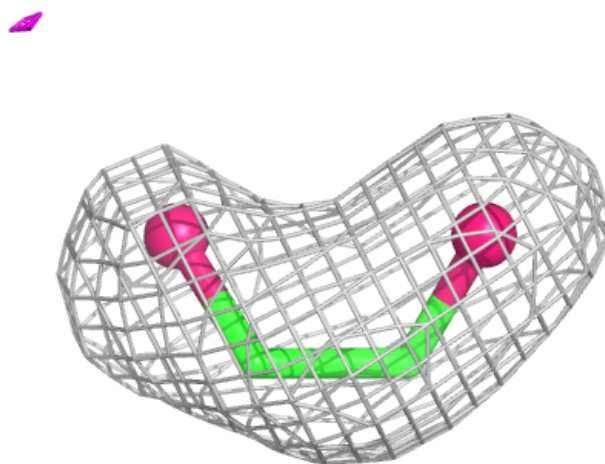
Electron density around EDO D 516:

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



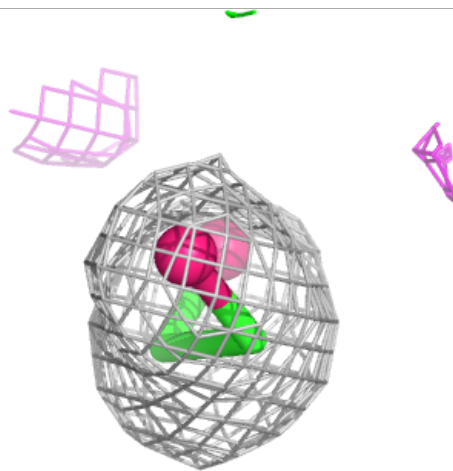
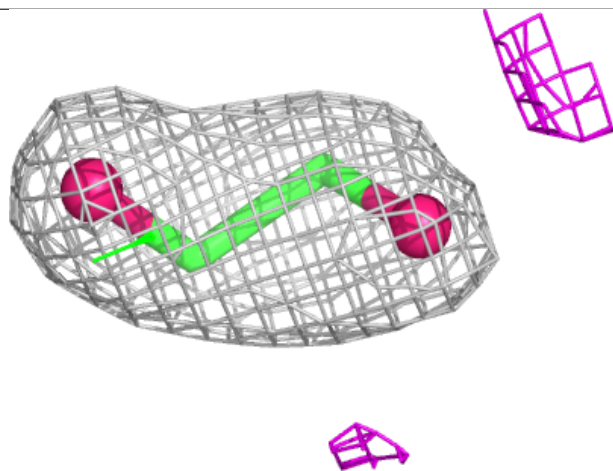
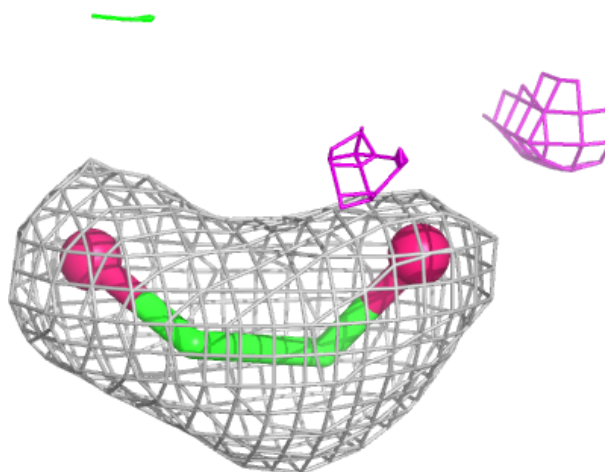
Electron density around EDO A 515:

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



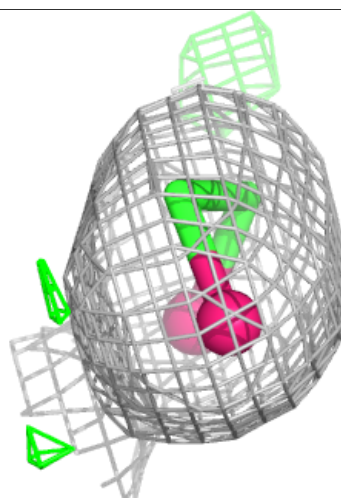
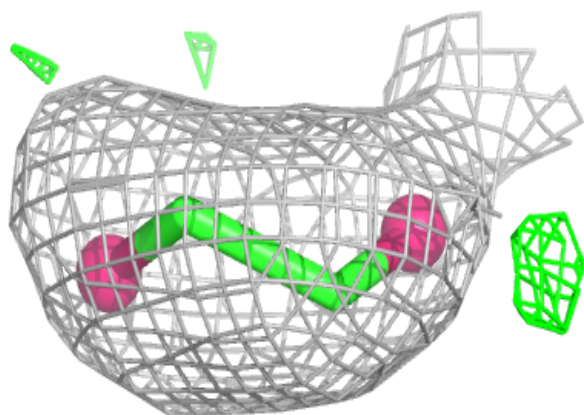
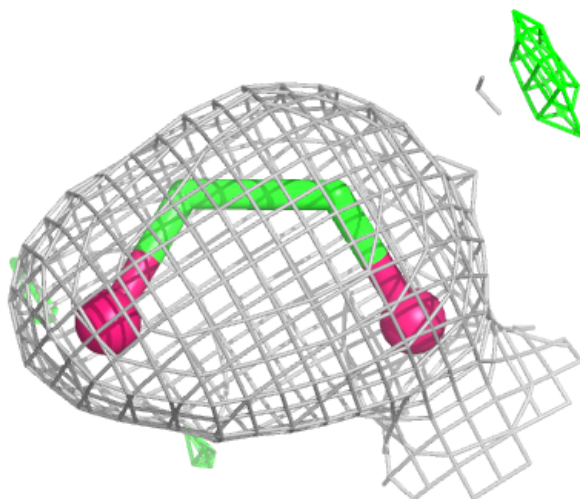
Electron density around EDO A 512:

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



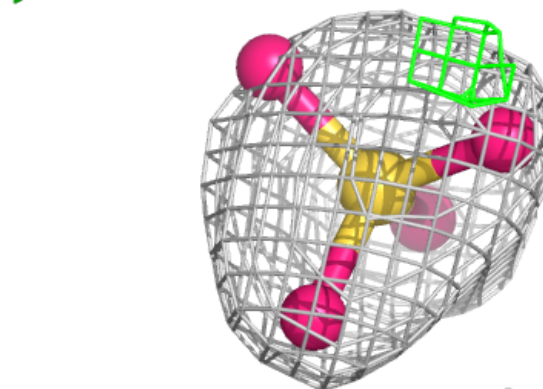
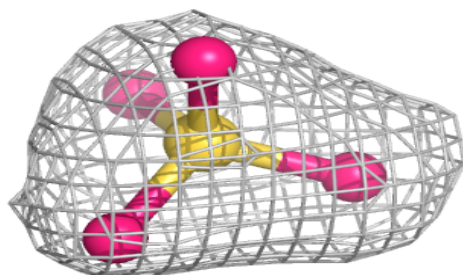
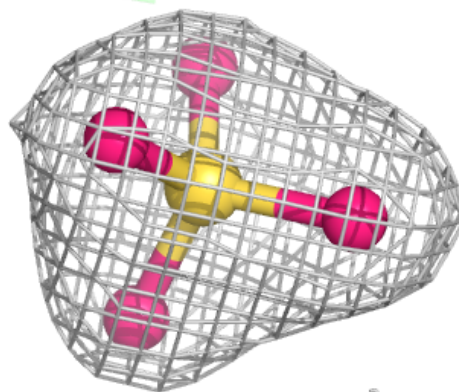
Electron density around EDO B 528:

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

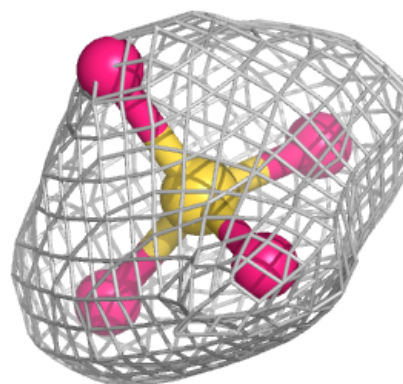
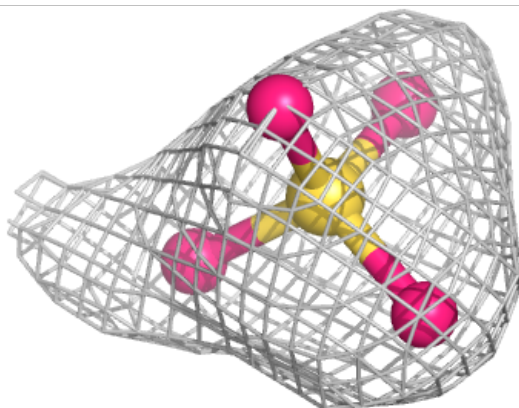
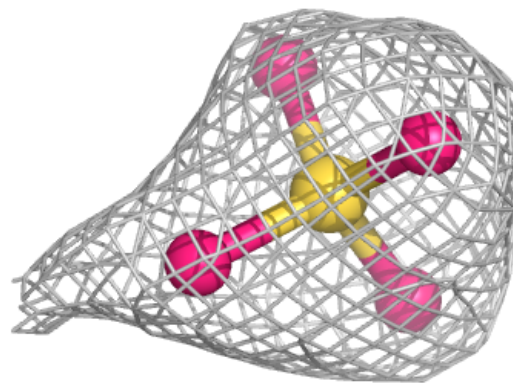


Electron density around SO4 B 508:

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

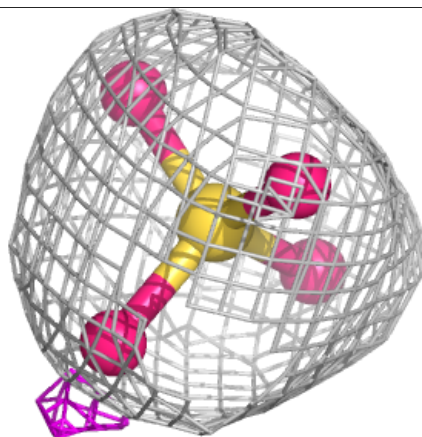
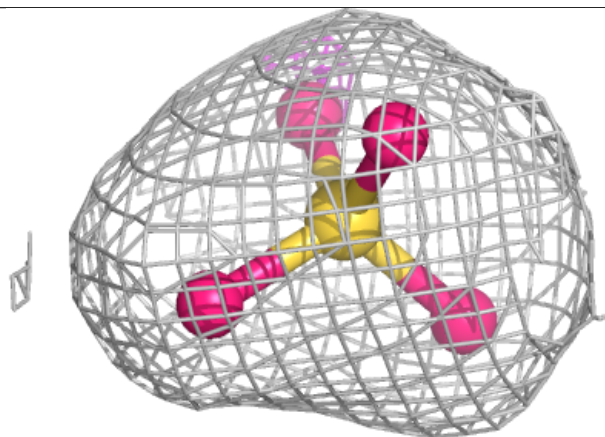
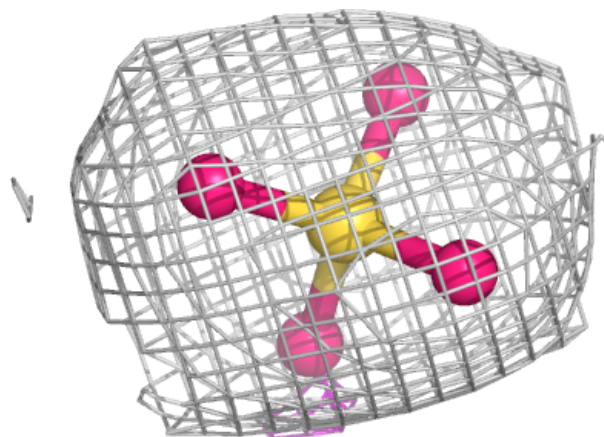
**Electron density around SO4 C 509:**

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



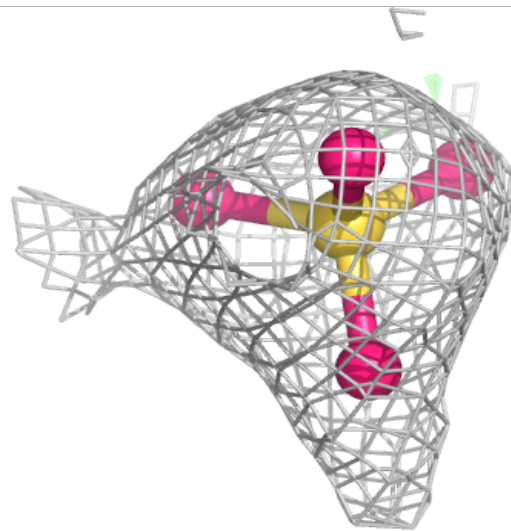
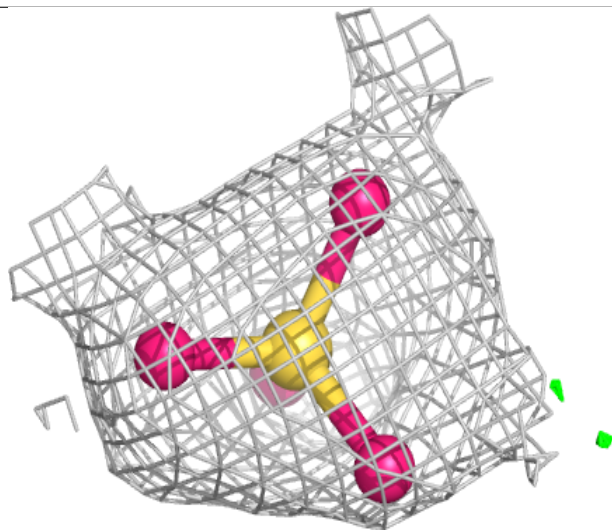
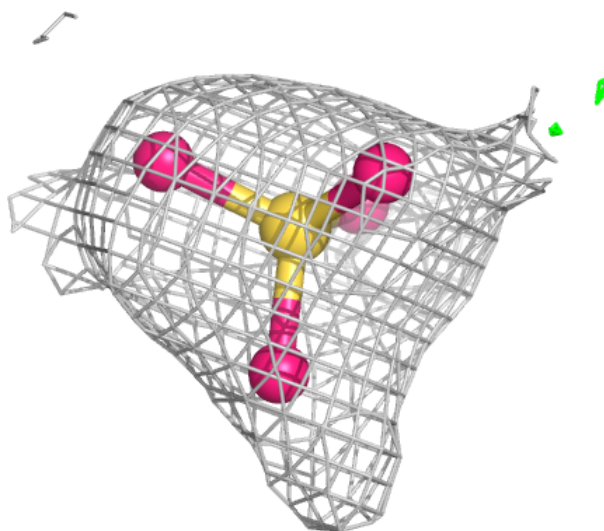
Electron density around SO4 B 526:

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



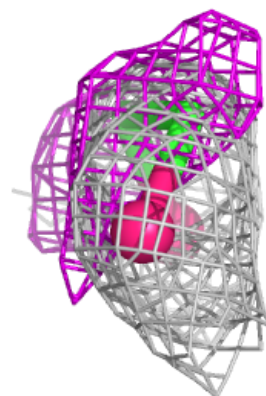
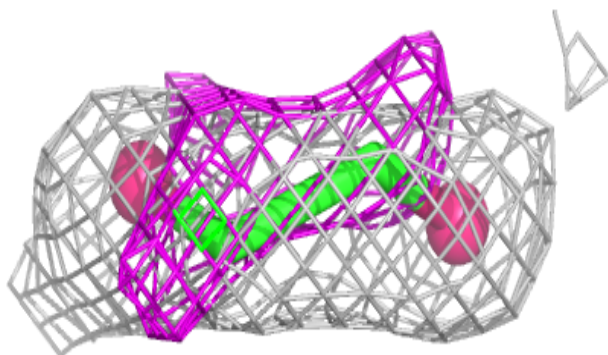
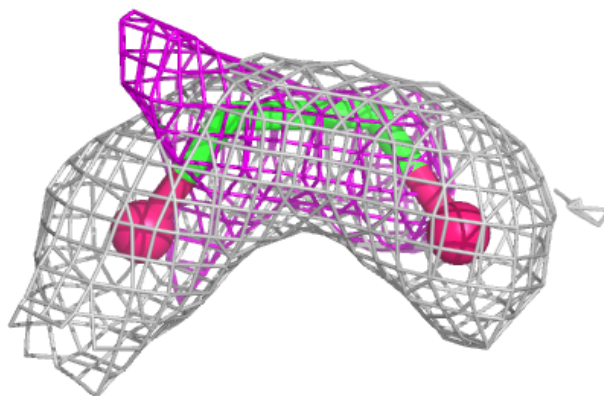
Electron density around SO4 B 507:

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



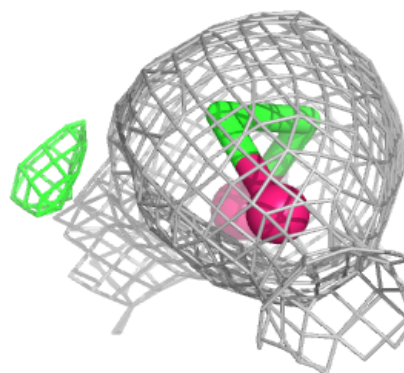
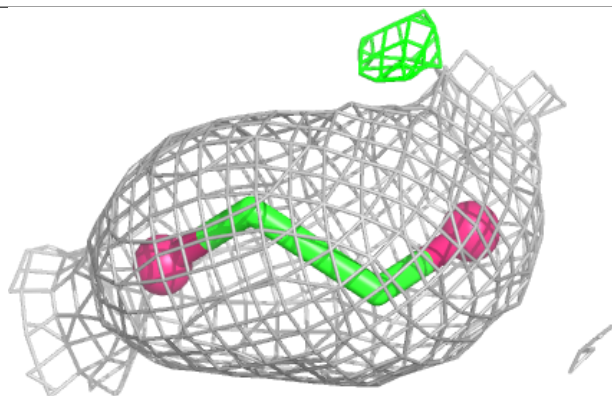
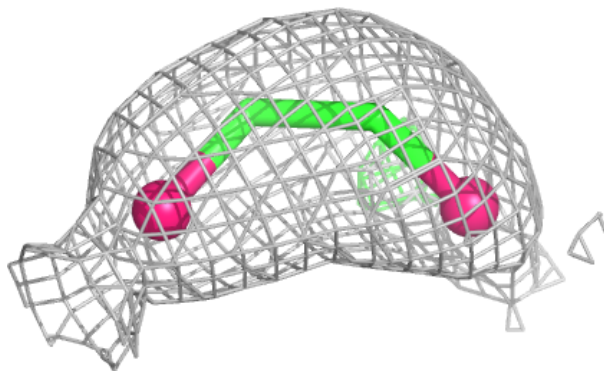
Electron density around EDO D 519:

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

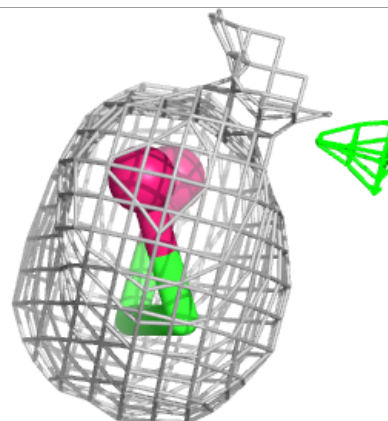
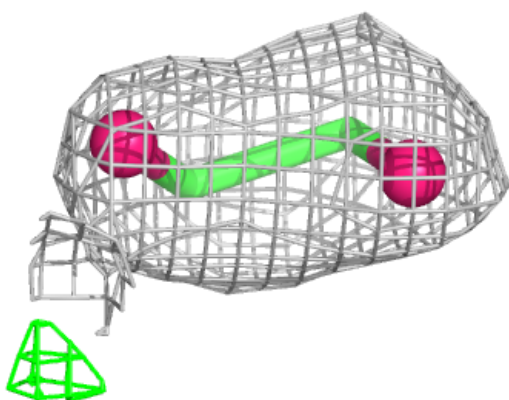
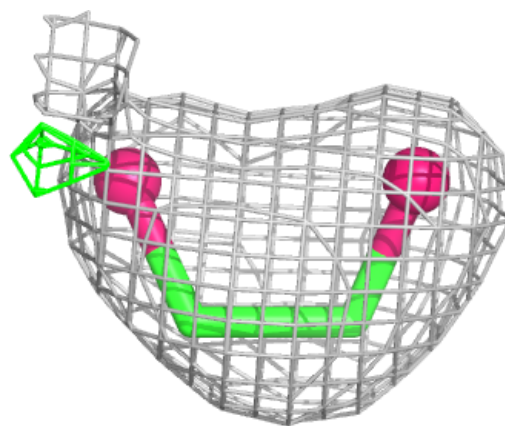


Electron density around EDO D 502:

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

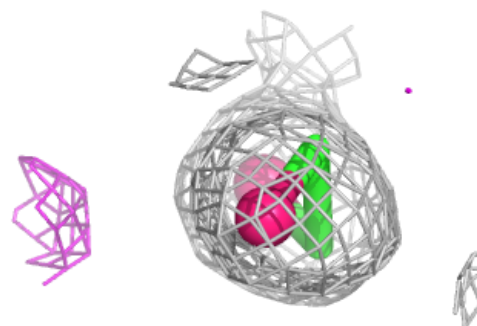
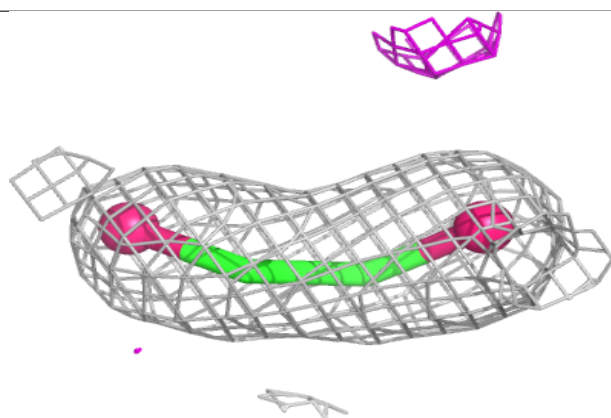
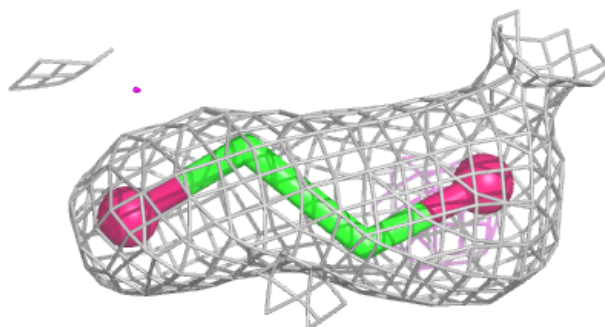
**Electron density around EDO D 514:**

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



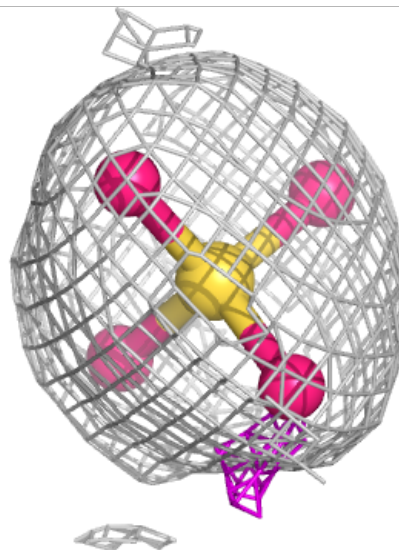
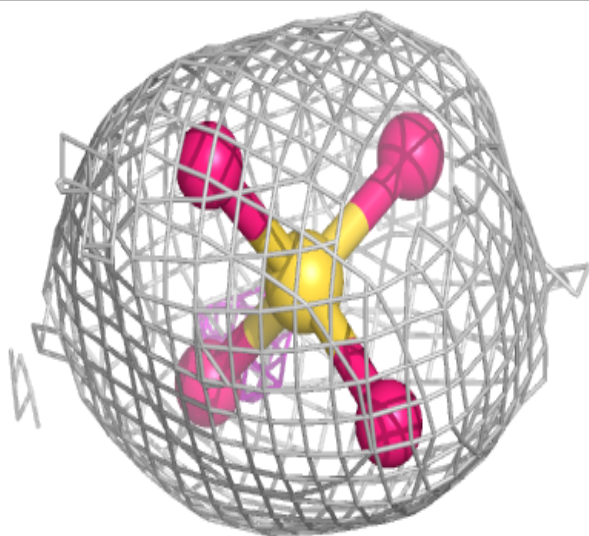
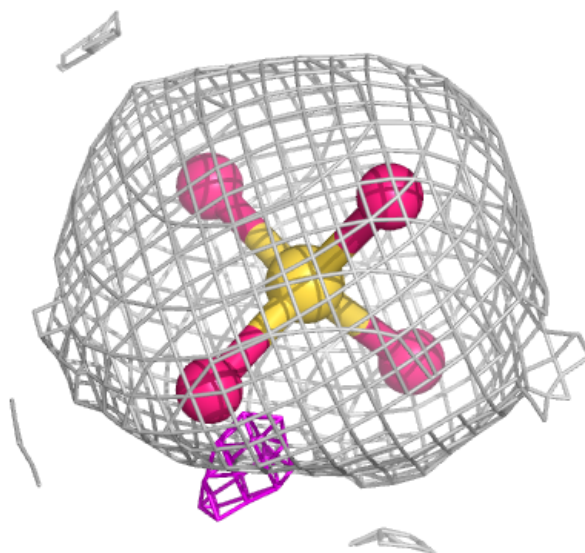
Electron density around EDO A 516:

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



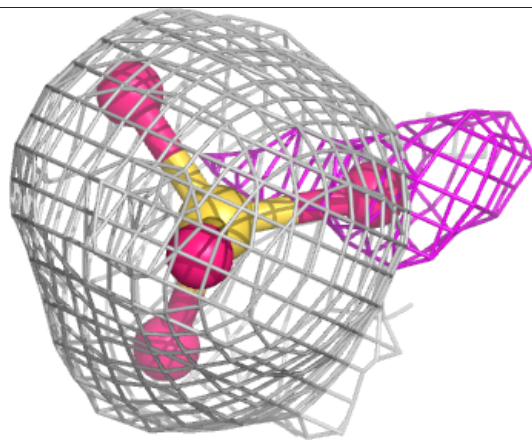
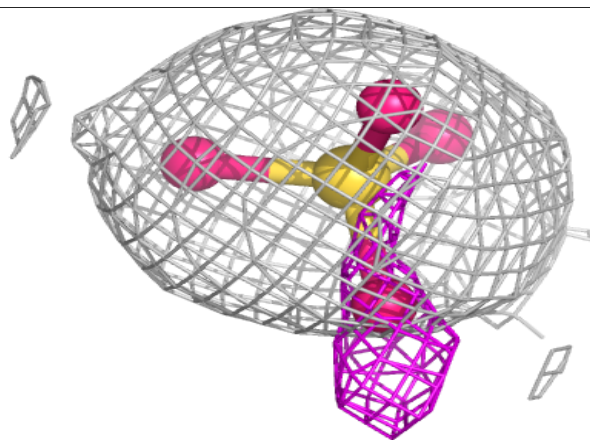
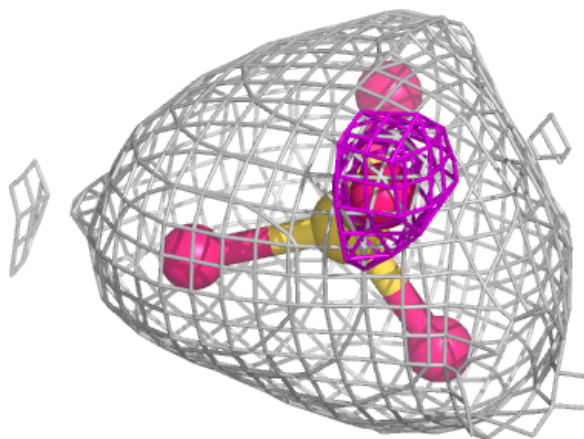
Electron density around SO4 C 501:

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



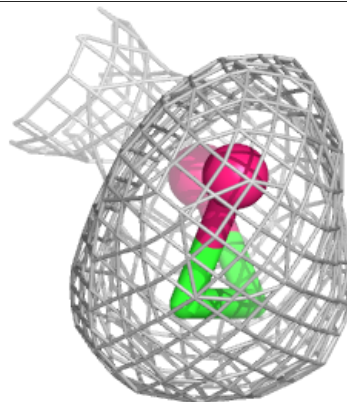
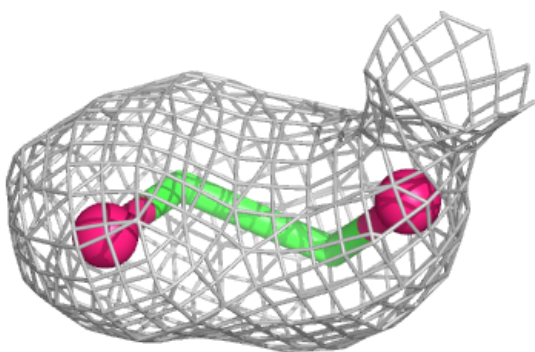
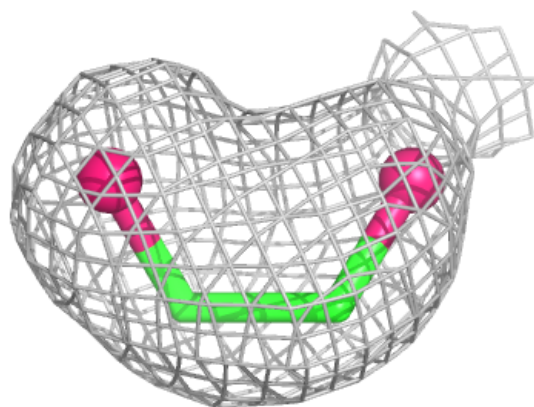
Electron density around SO4 D 501:

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



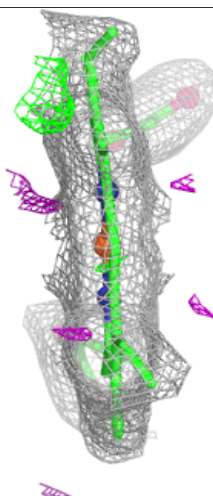
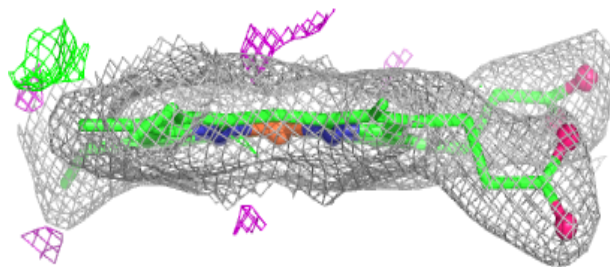
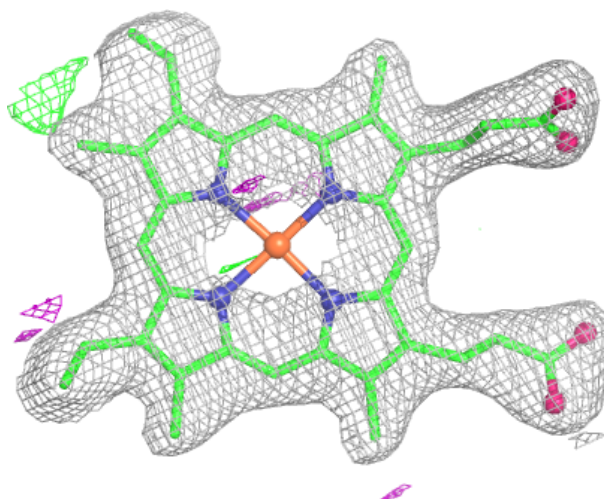
Electron density around EDO C 514:

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



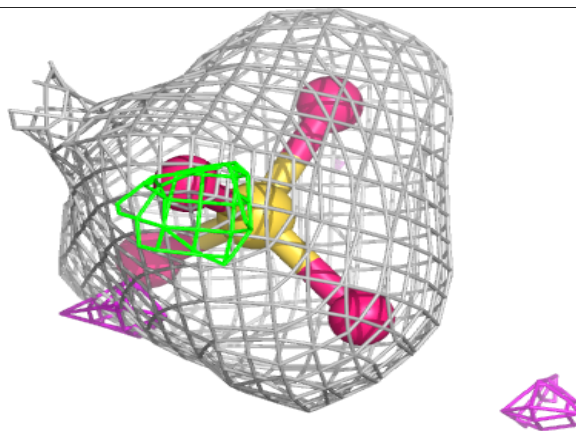
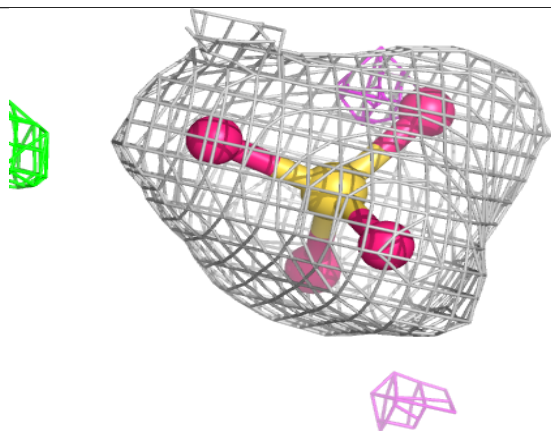
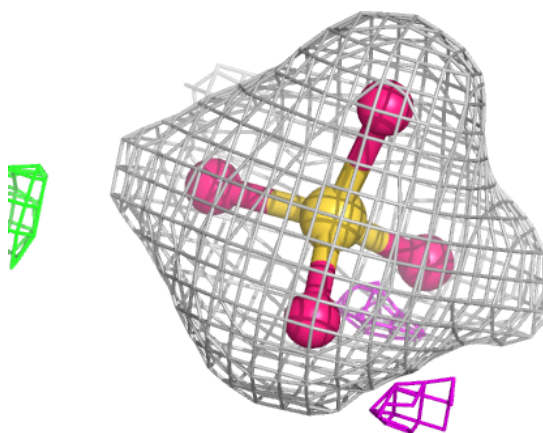
Electron density around HEC C 502:

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



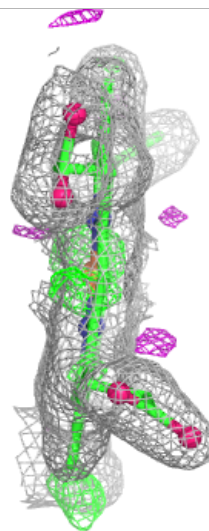
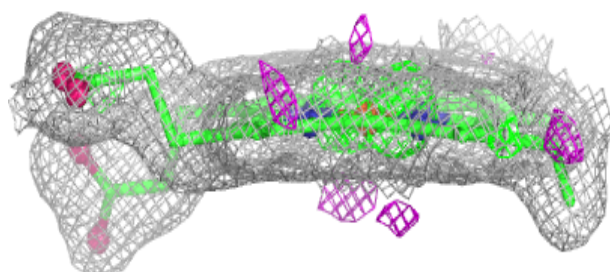
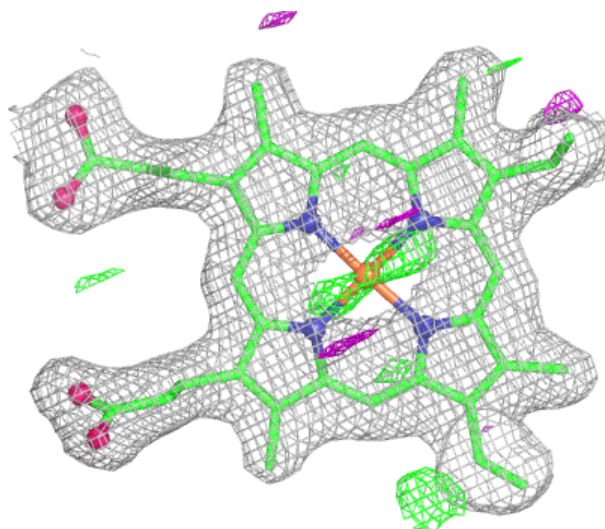
Electron density around SO4 D 508:

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



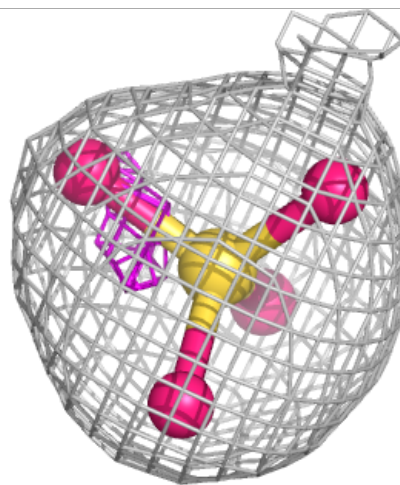
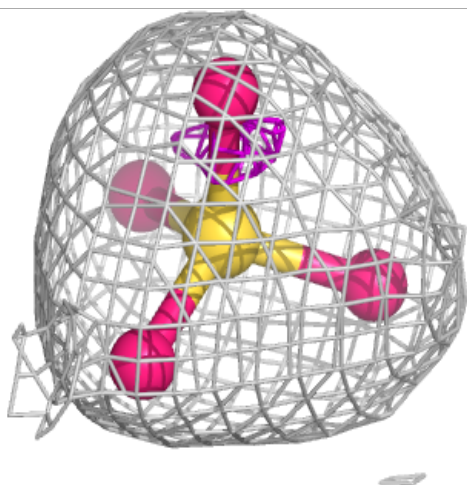
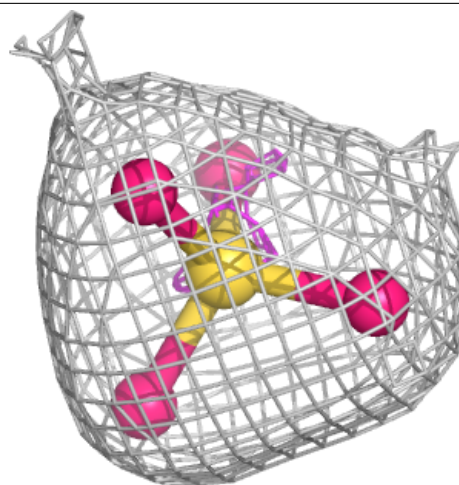
Electron density around HEC A 501:

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



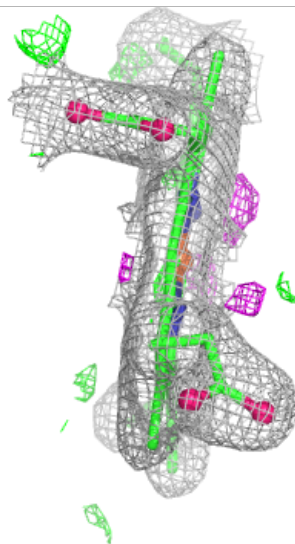
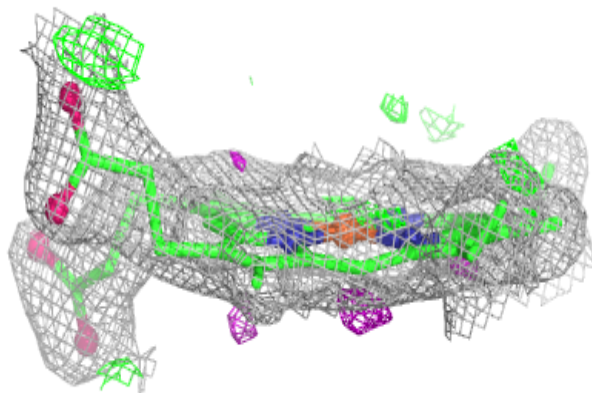
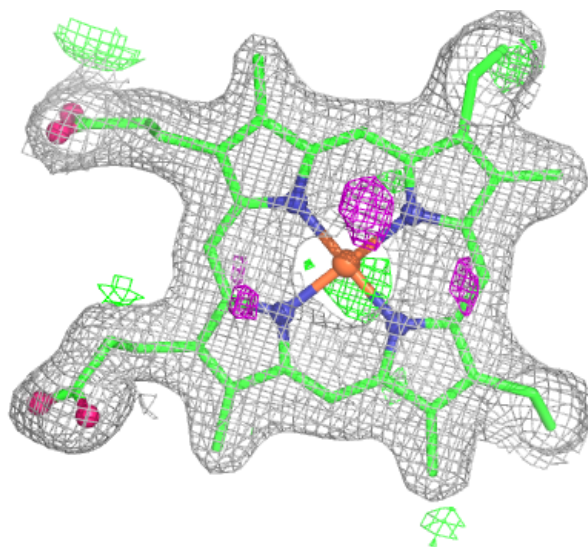
Electron density around SO4 A 522:

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



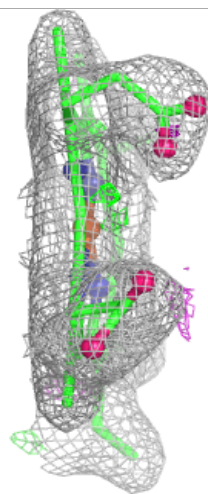
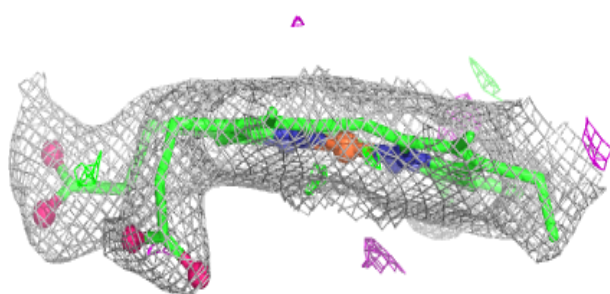
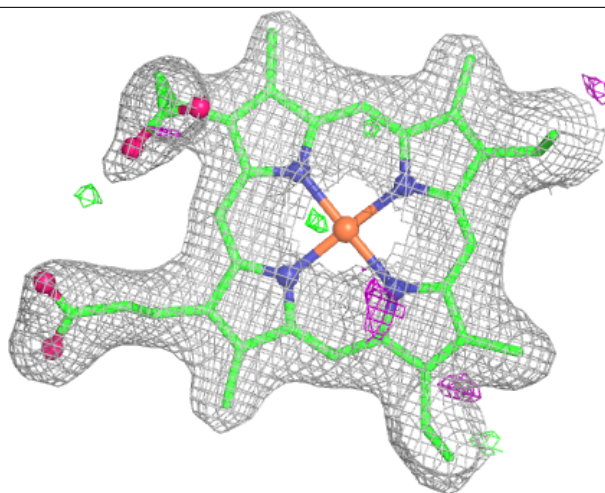
Electron density around HEC C 503:

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



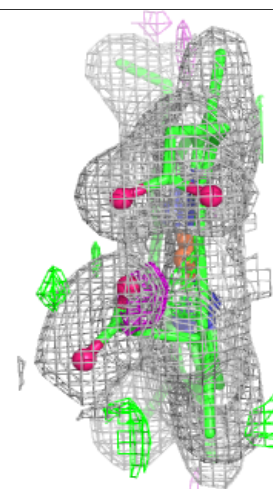
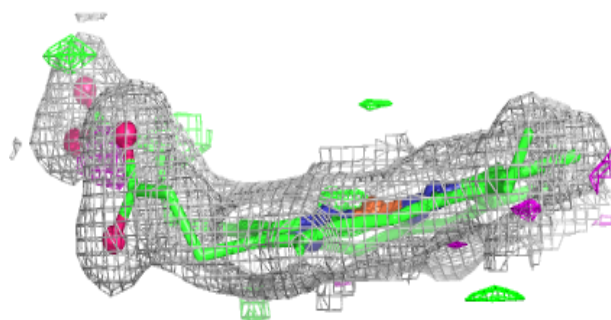
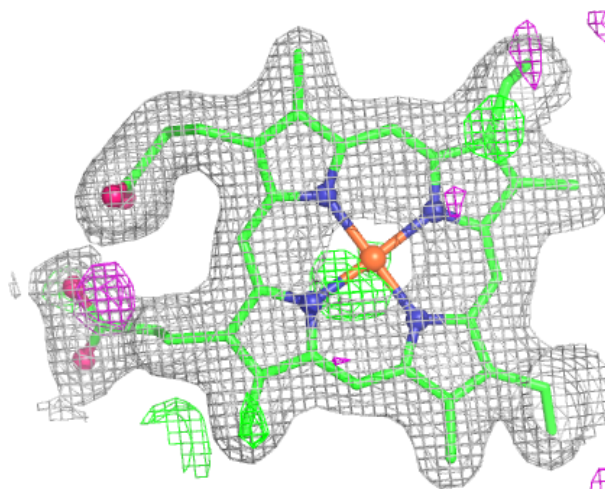
Electron density around HEC C 504:

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



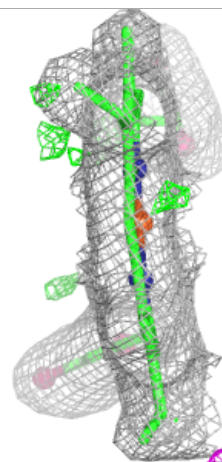
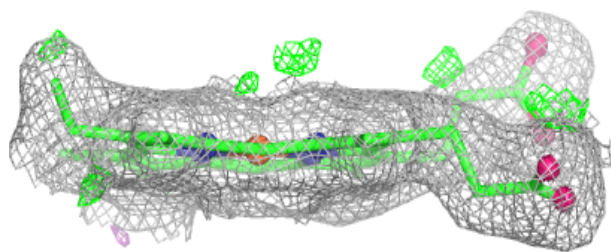
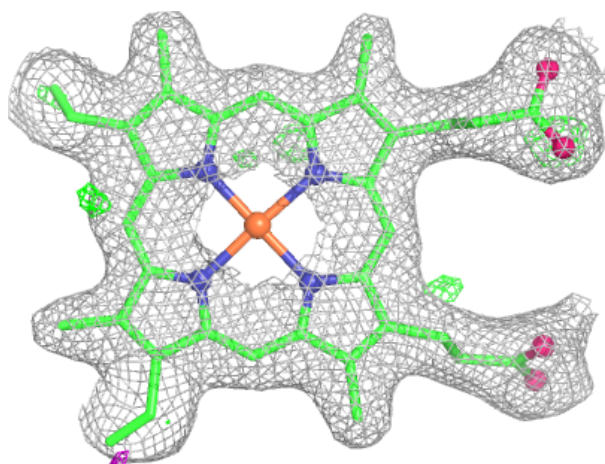
Electron density around HEC C 506:

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



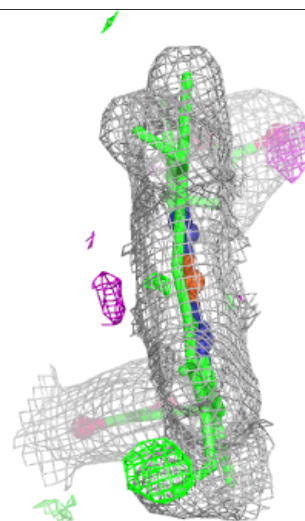
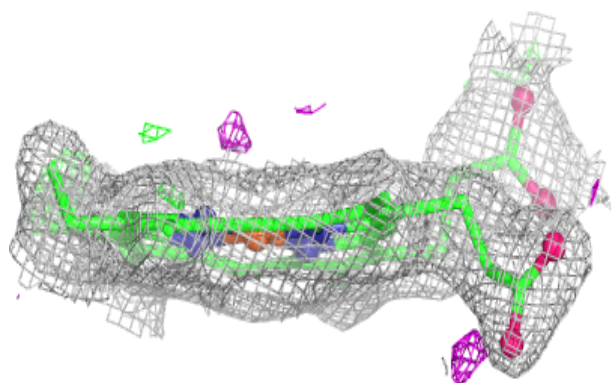
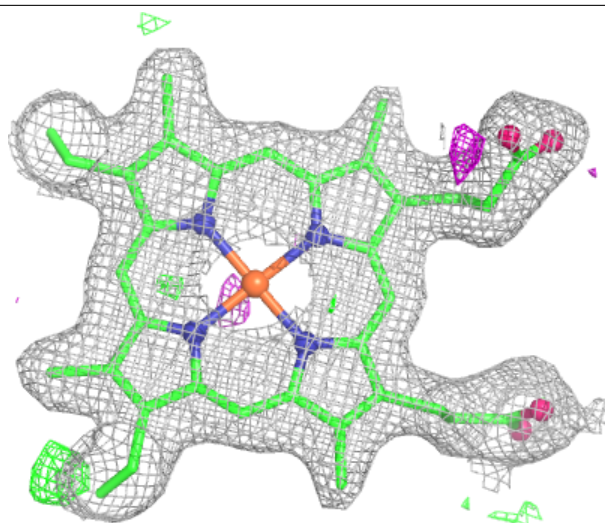
Electron density around HEC D 503:

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



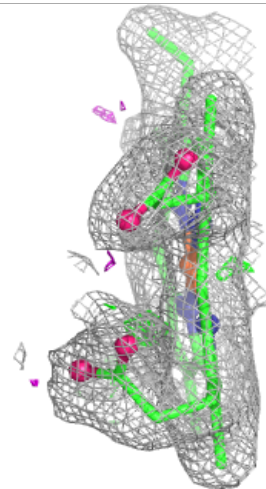
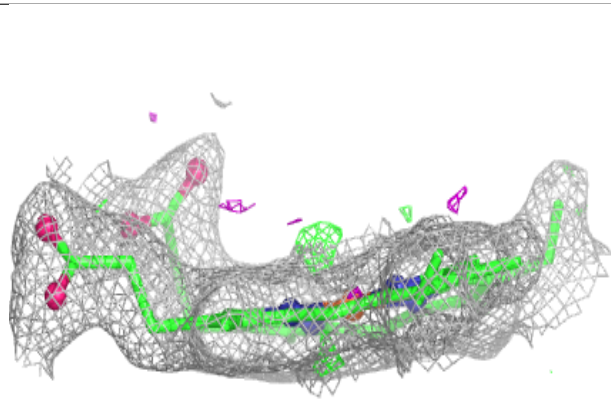
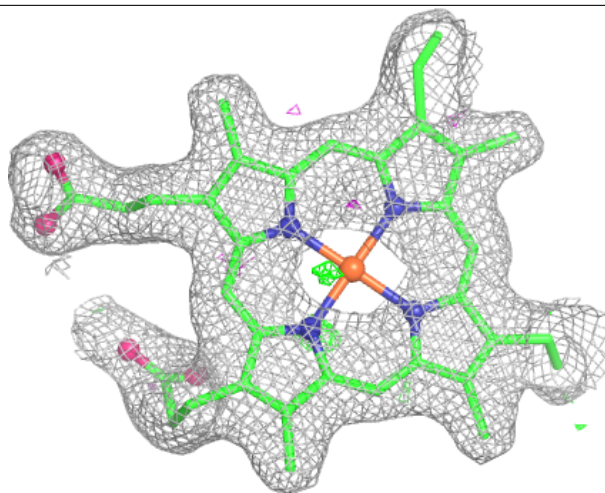
Electron density around HEC D 504:

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



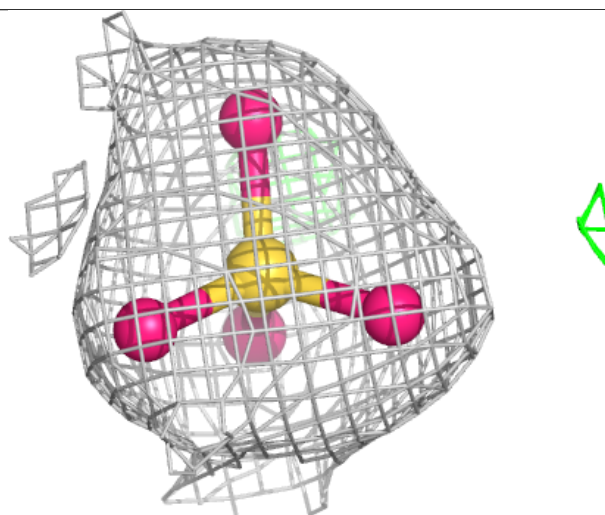
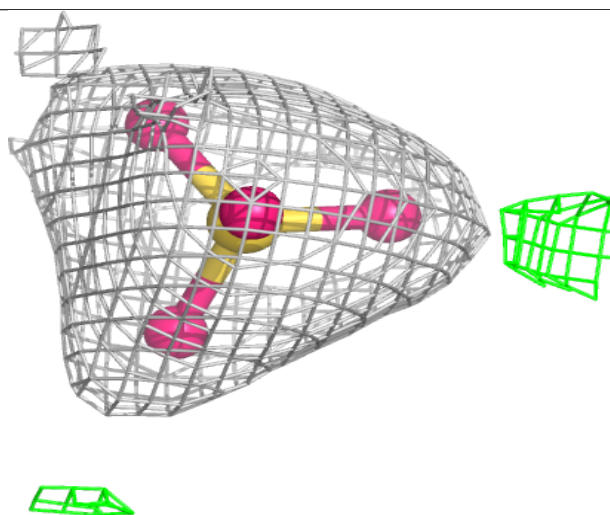
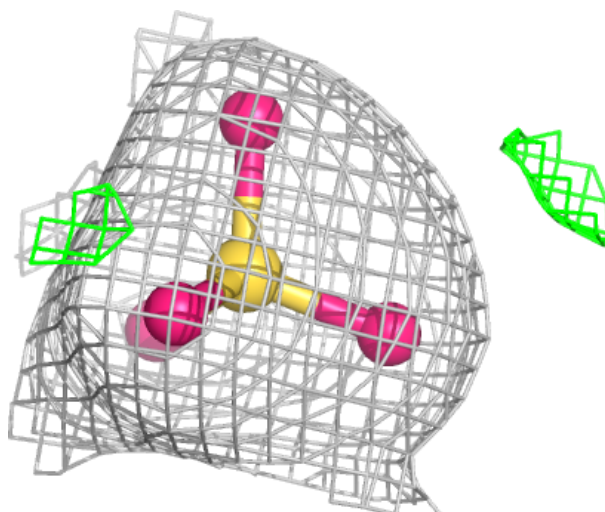
Electron density around HEC D 505:

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



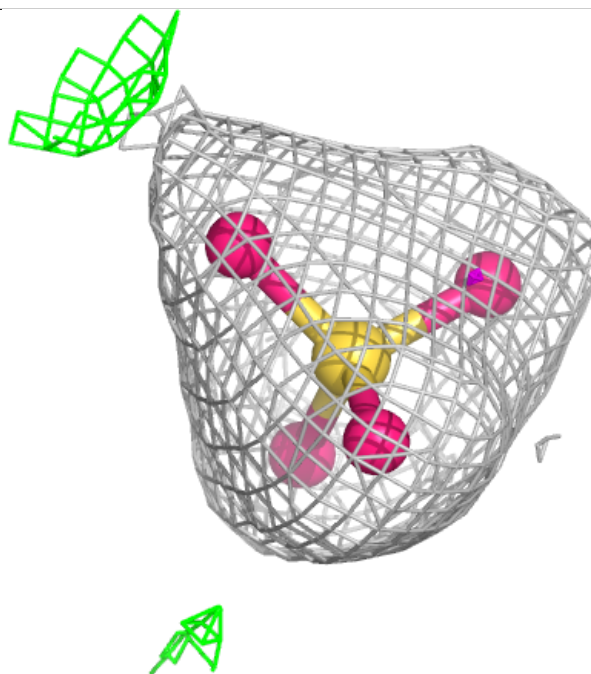
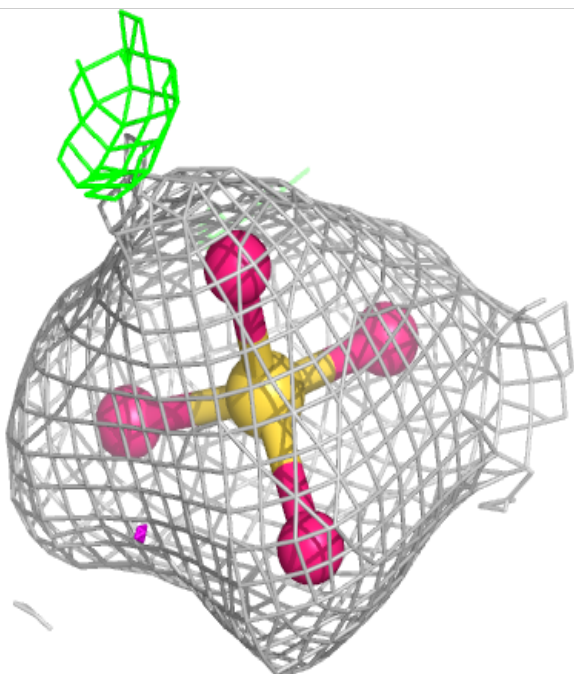
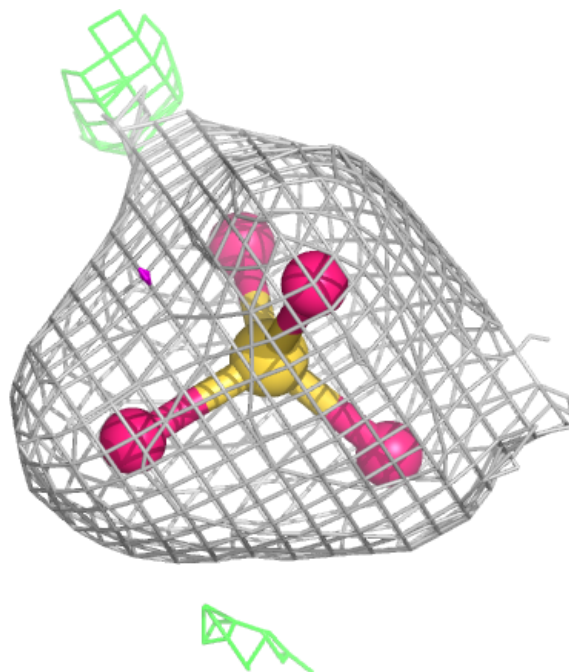
Electron density around SO4 A 506:

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



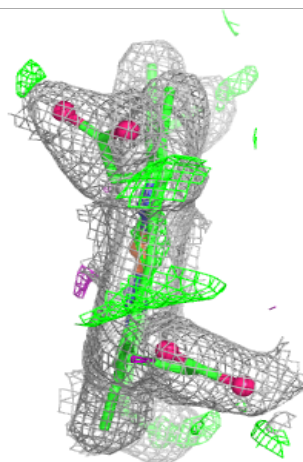
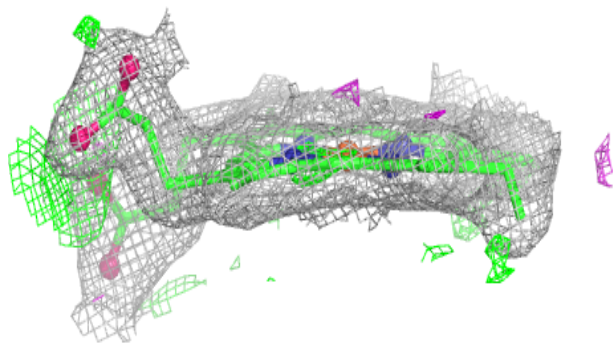
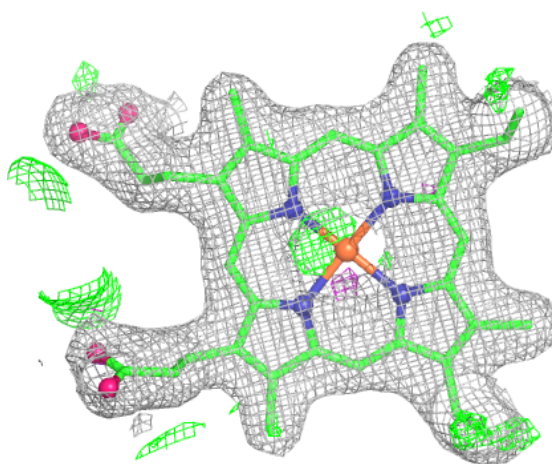
Electron density around SO4 C 507:

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



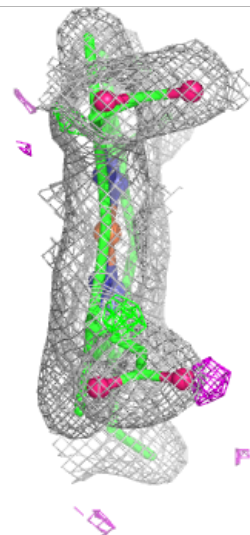
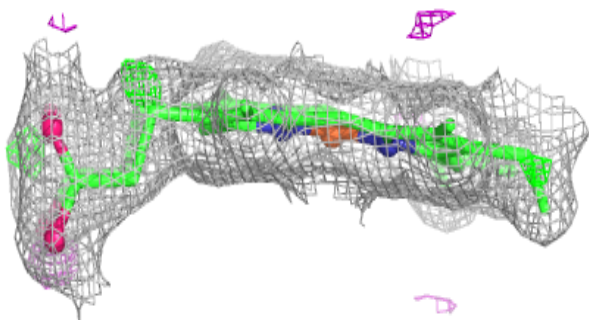
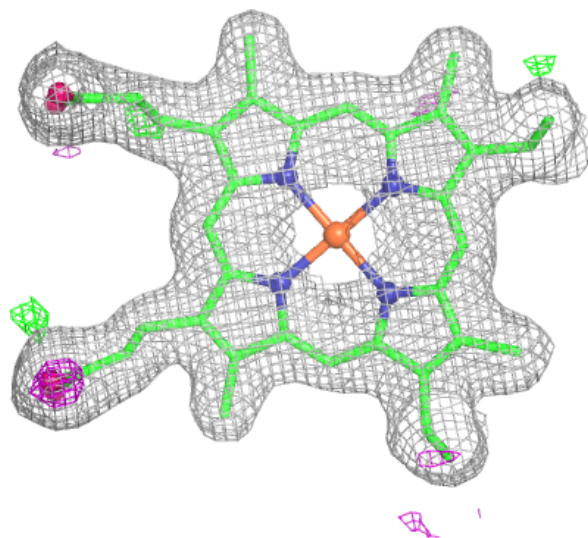
Electron density around HEC A 502:

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



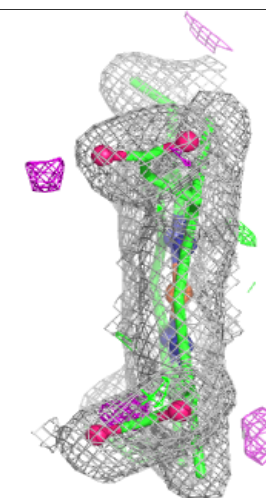
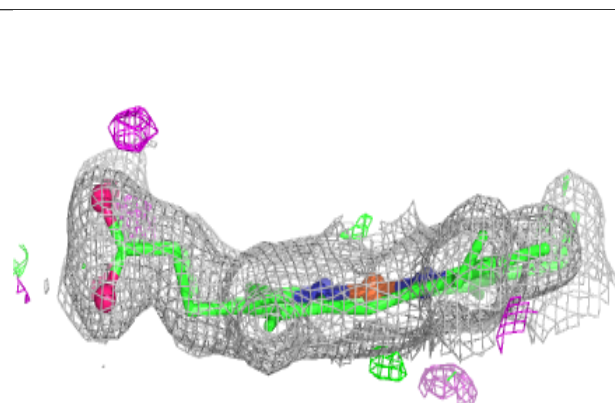
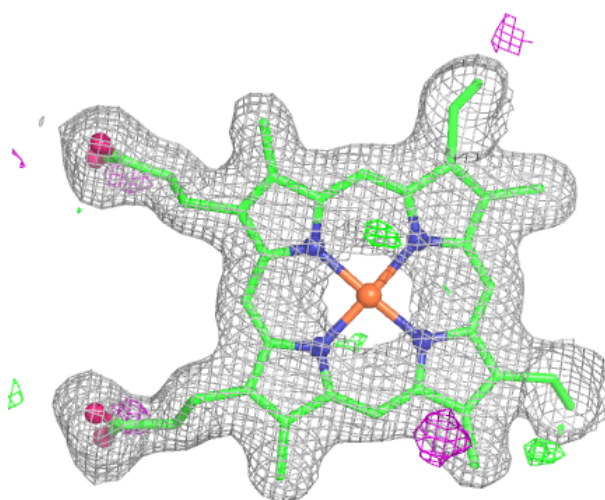
Electron density around HEC B 504:

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



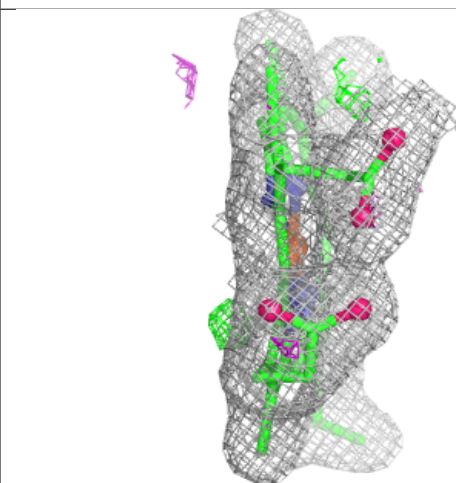
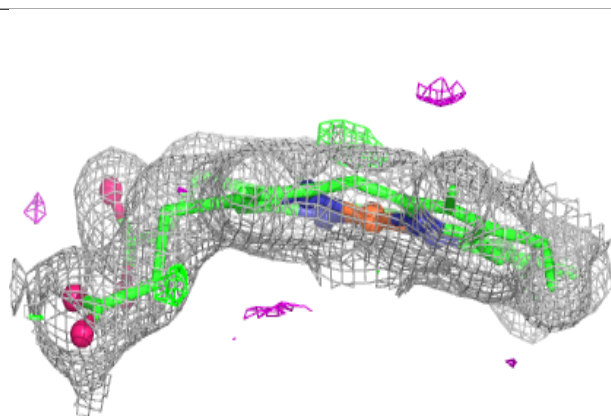
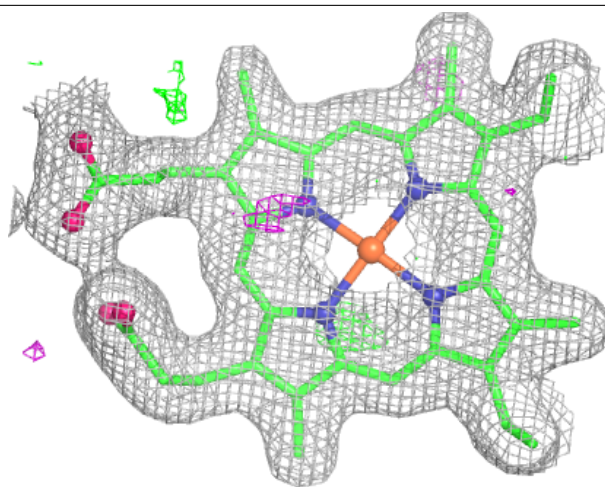
Electron density around HEC D 506:

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



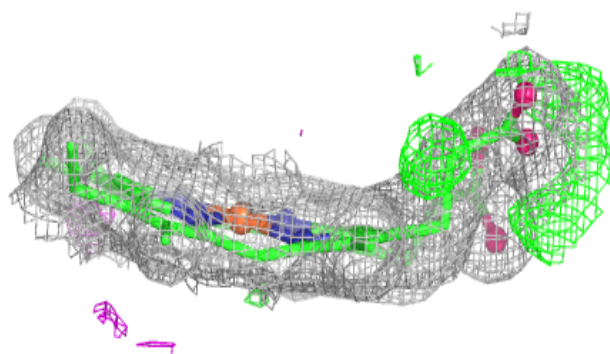
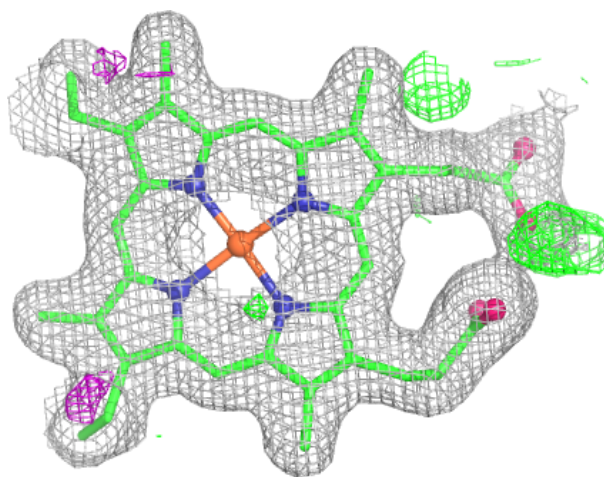
Electron density around HEC D 507:

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



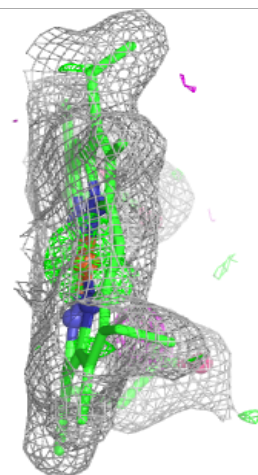
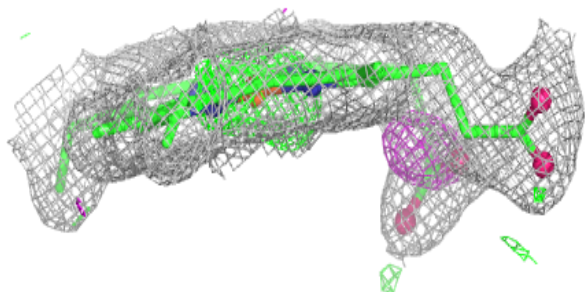
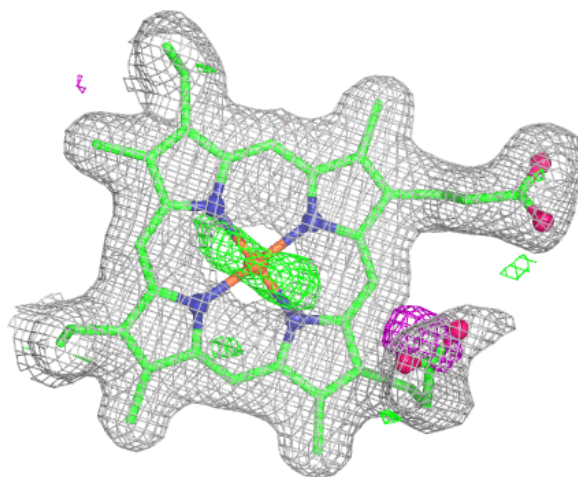
Electron density around HEC B 505:

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



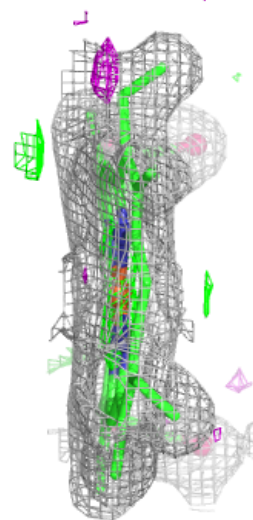
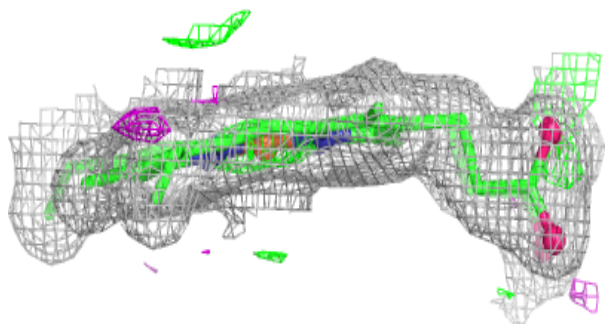
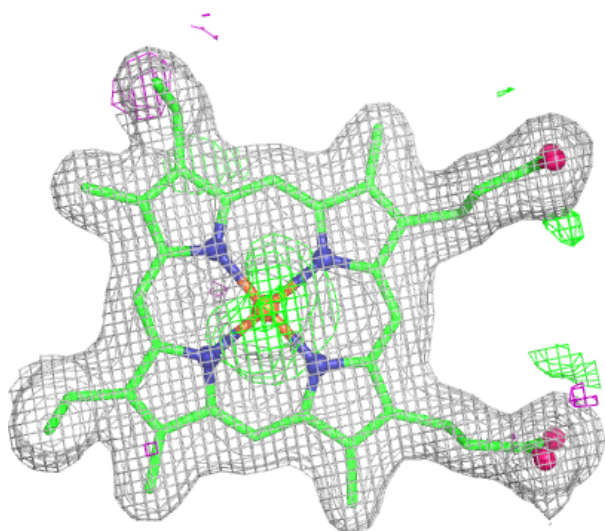
Electron density around HEC A 503:

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



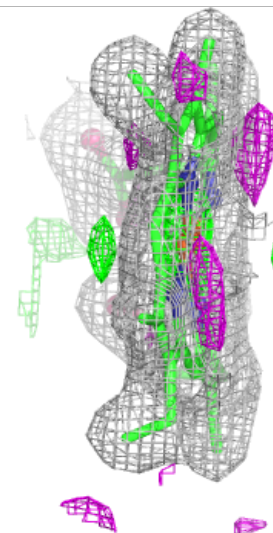
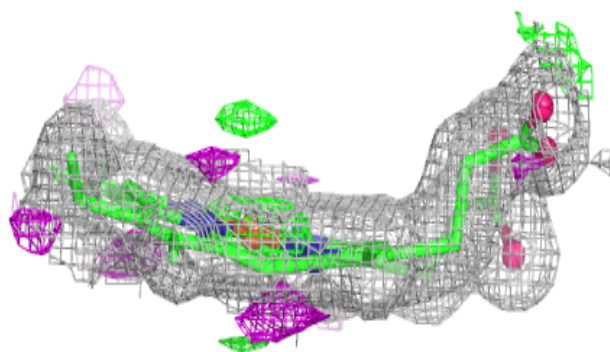
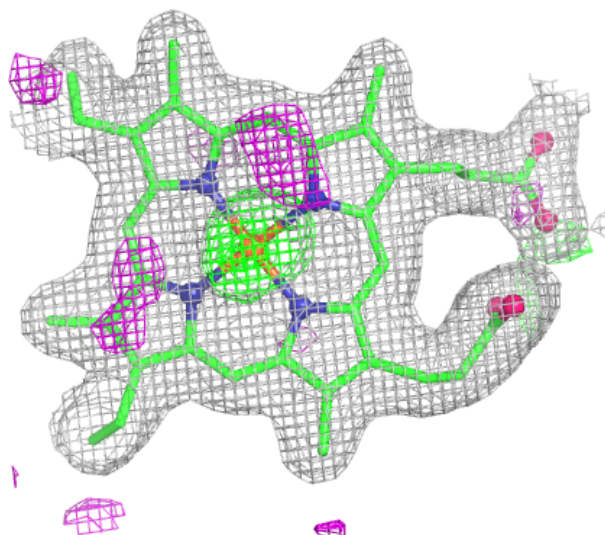
Electron density around HEC A 504:

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



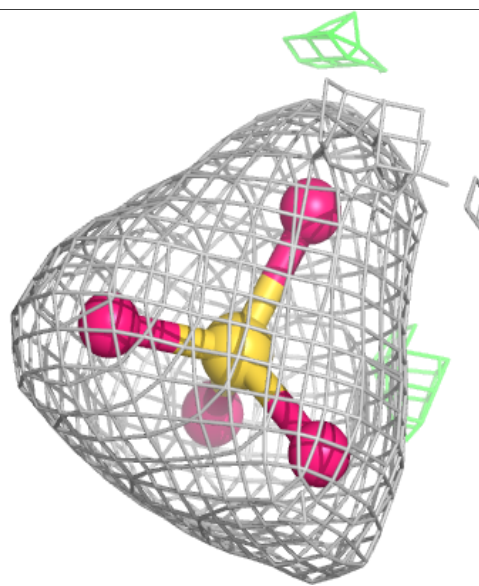
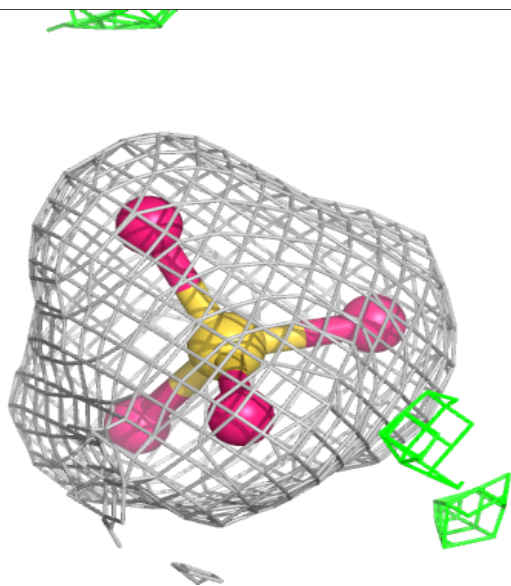
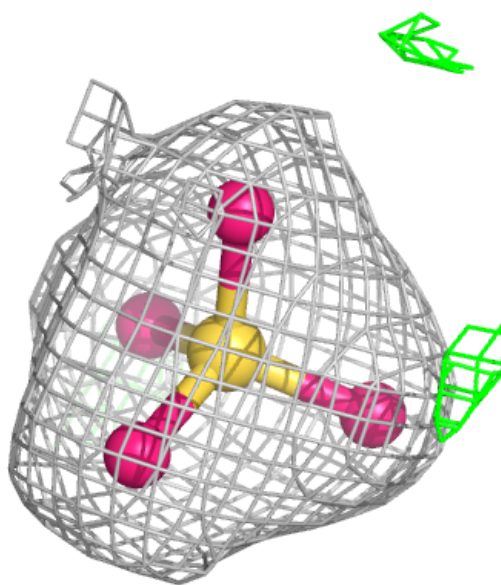
Electron density around HEC A 505:

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



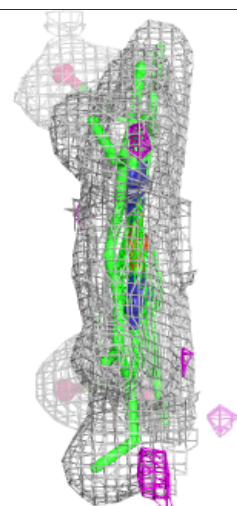
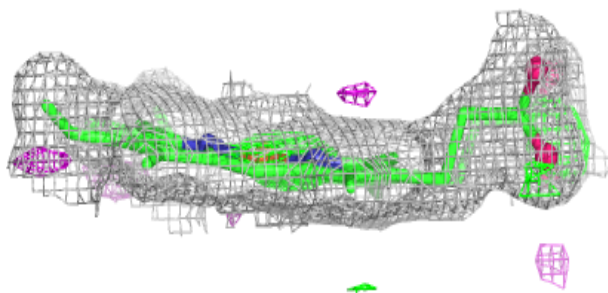
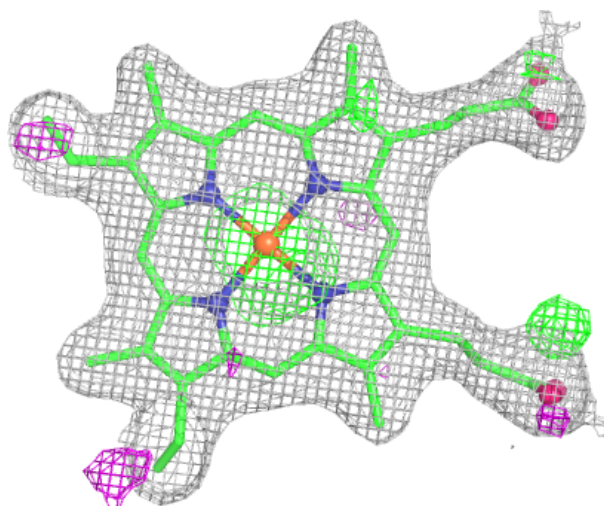
Electron density around SO4 B 506:

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



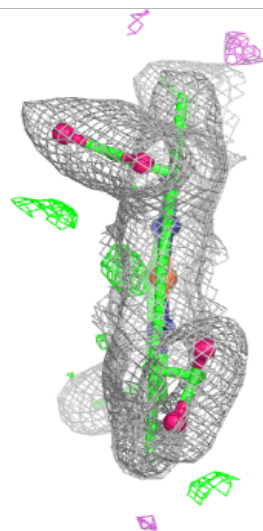
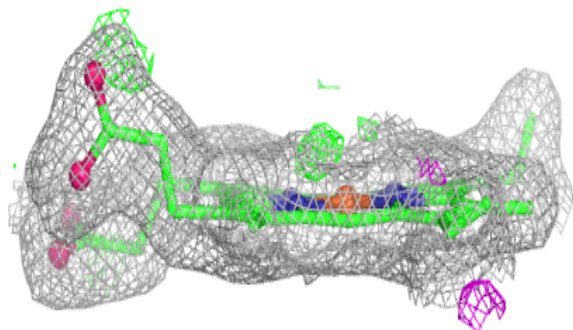
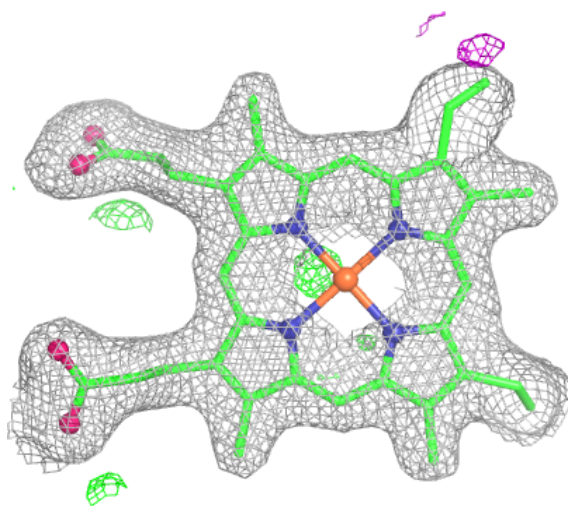
Electron density around HEC C 505:

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



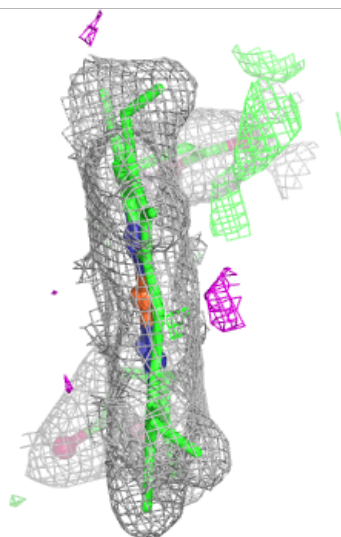
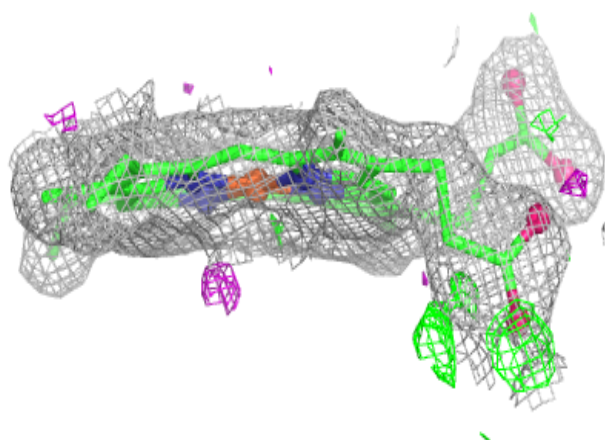
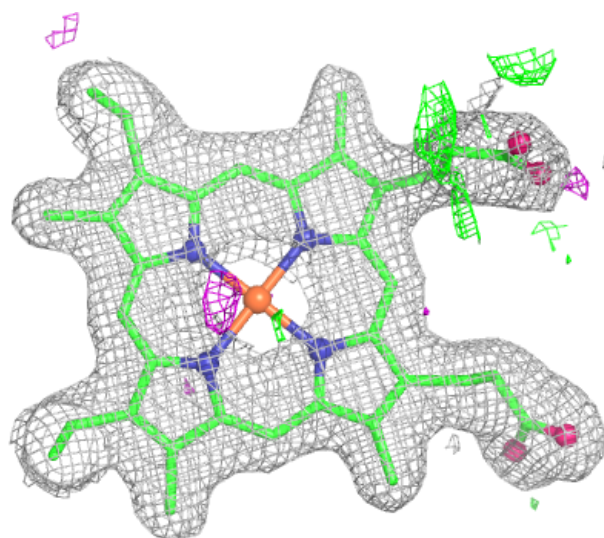
Electron density around HEC B 501:

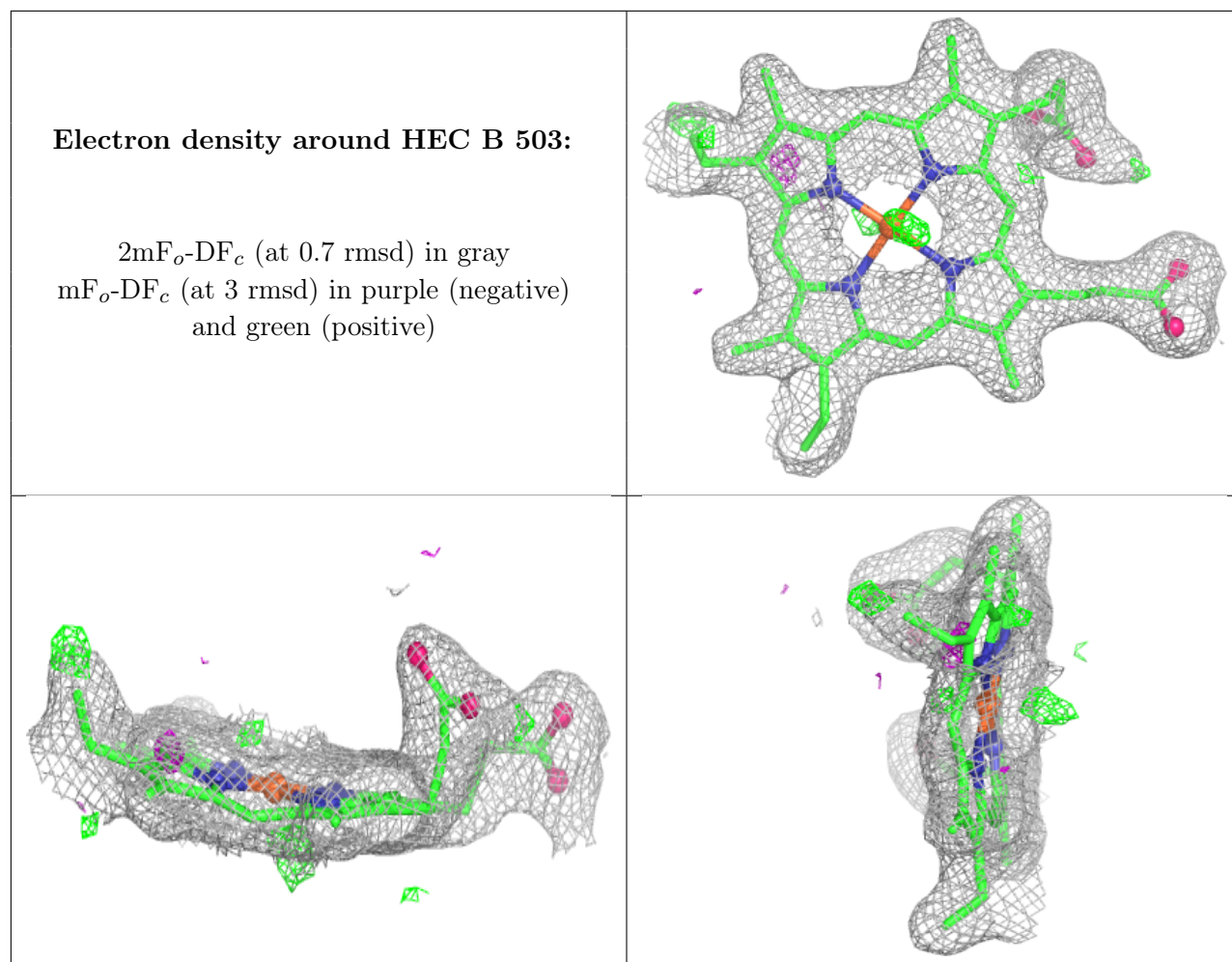
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around HEC B 502:

$2mF_o-DF_c$ (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.