



Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2024 – 03:51 pm BST

PDB ID : 8Q8H
Title : Crystal Structure of Apo beta-D-GalNAcase from Niabella aurantiaca (Structure 2)
Authors : Morth, J.P.; Moreno Prieto, E.S.; Siebenhaar, S.
Deposited on : 2023-08-18
Resolution : 2.50 Å (reported)

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

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

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 : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.36.2
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

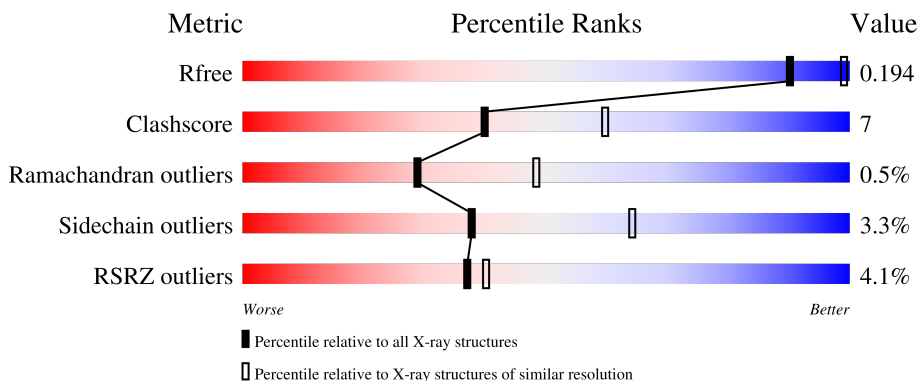
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	536	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: red;"></div> </div> <p style="text-align: center; margin-top: 5px;">83% 14% ..</p>
1	B	536	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: red;"></div> </div> <p style="text-align: center; margin-top: 5px;">85% 12% ..</p>
1	C	536	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: red;"></div> </div> <p style="text-align: center; margin-top: 5px;">85% 12% ..</p>
1	D	536	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 2%; height: 10px; background-color: red;"></div> </div> <p style="text-align: center; margin-top: 5px;">83% 14% ..</p>

2 Entry composition [i](#)

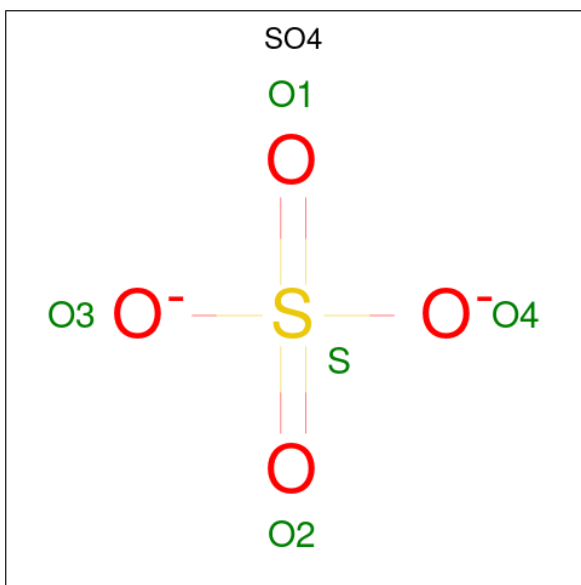
There are 4 unique types of molecules in this entry. The entry contains 35286 atoms, of which 17260 are hydrogens and 0 are deuteriums.

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 beta-D-GalNAcase from *Niabella aurantiaca* DSM 17617.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	536	8770	2896	4315	753	788	18	0	0	0
1	B	536	8770	2896	4315	753	788	18	0	0	0
1	C	536	8770	2896	4315	753	788	18	0	0	0
1	D	536	8770	2896	4315	753	788	18	0	0	0

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O₄S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
2	A	1	5	4	1	0	0
2	A	1	5	4	1	0	0

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

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Na	0	0
			1	1		
3	B	1	Total	Na	0	0
			1	1		
3	C	1	Total	Na	0	0
			1	1		
3	D	1	Total	Na	0	0
			1	1		

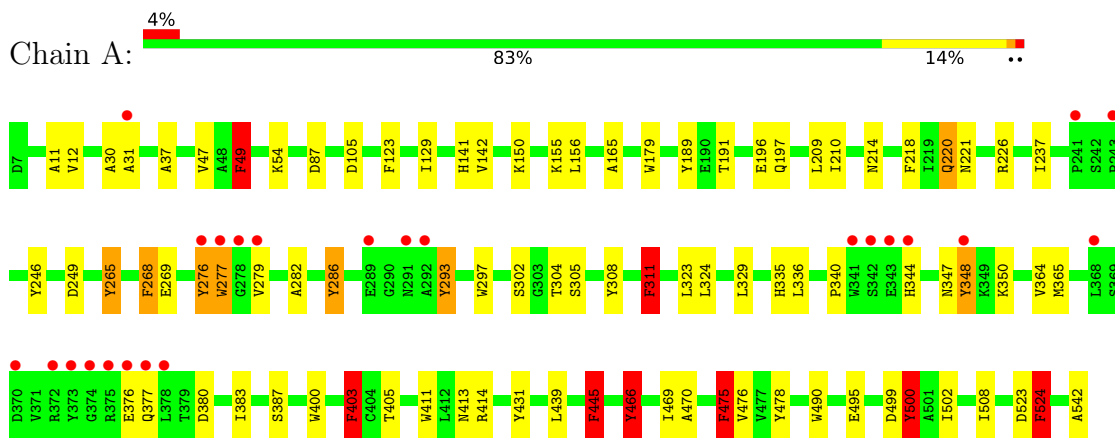
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	32	Total	O	0	0
			32	32		
4	B	44	Total	O	0	0
			44	44		
4	C	38	Total	O	0	0
			38	38		
4	D	38	Total	O	0	0
			38	38		

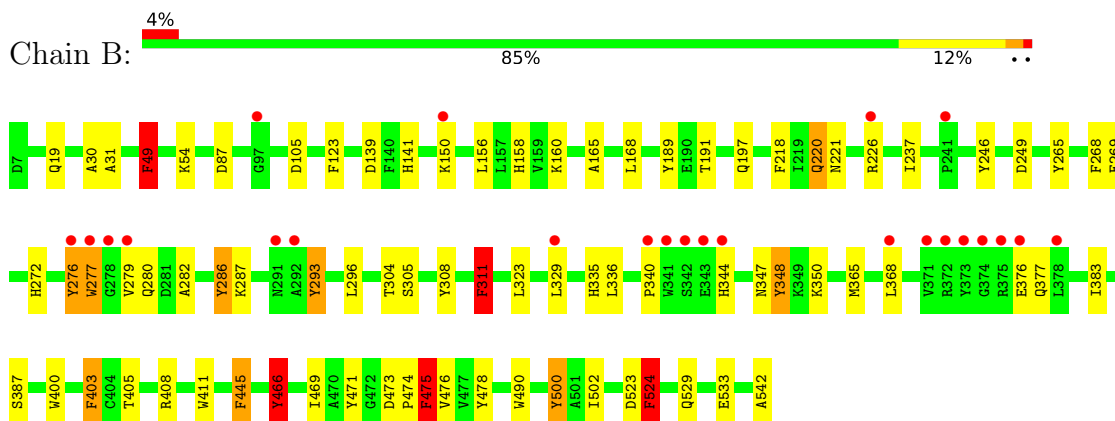
3 Residue-property plots [i](#)

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.

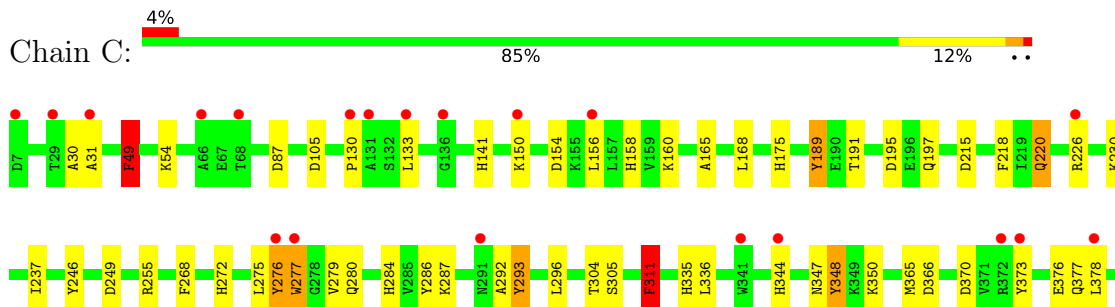
- Molecule 1: beta-D-GalNAcase from *Niabella aurantiaca* DSM 17617



- Molecule 1: beta-D-GalNAcase from *Niabella aurantiaca* DSM 17617

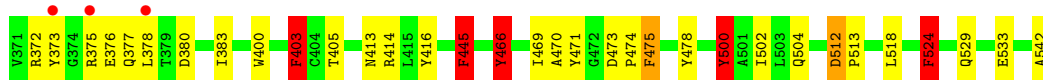
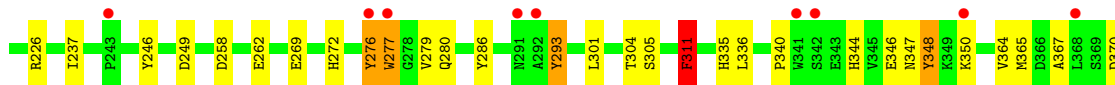
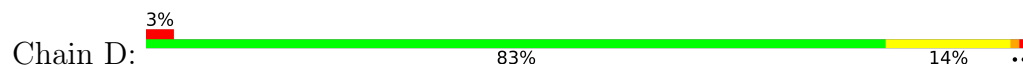


- Molecule 1: beta-D-GalNAcase from *Niabella aurantiaca* DSM 17617





- Molecule 1: beta-D-GalNAcase from *Niabella aurantiaca* DSM 17617



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	173.64Å 195.57Å 82.04Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.29 – 2.50 48.97 – 2.50	Depositor EDS
% Data completeness (in resolution range)	100.0 (47.29-2.50) 100.0 (48.97-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.42 (at 2.51Å)	Xtrriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.188 , 0.232 0.191 , 0.194	Depositor DCC
R_{free} test set	2100 reflections (2.16%)	wwPDB-VP
Wilson B-factor (Å ²)	55.1	Xtrriage
Anisotropy	0.070	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 38.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	35286	wwPDB-VP
Average B, all atoms (Å ²)	69.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 26.14 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.7813e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: SO4, NA

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	0.61	1/4608 (0.0%)	0.86	15/6269 (0.2%)
1	B	0.67	1/4608 (0.0%)	0.87	18/6269 (0.3%)
1	C	0.66	1/4608 (0.0%)	0.88	18/6269 (0.3%)
1	D	0.63	0/4608	0.87	18/6269 (0.3%)
All	All	0.64	3/18432 (0.0%)	0.87	69/25076 (0.3%)

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
1	B	0	1
1	C	0	2
1	D	0	2
All	All	0	6

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	196	GLU	CG-CD	6.09	1.61	1.51
1	C	405	THR	CB-CG2	-5.23	1.35	1.52
1	B	19	GLN	CG-CD	5.07	1.62	1.51

All (69) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	403	PHE	CB-CG-CD2	-9.53	114.13	120.80
1	B	475	PHE	CB-CG-CD2	-8.70	114.71	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	475	PHE	CB-CG-CD2	-8.28	115.01	120.80
1	C	403	PHE	CB-CG-CD2	-8.28	115.01	120.80
1	D	403	PHE	CB-CG-CD1	8.16	126.51	120.80
1	D	475	PHE	CB-CG-CD2	-8.08	115.14	120.80
1	C	524	PHE	CB-CG-CD2	-7.93	115.25	120.80
1	A	403	PHE	CB-CG-CD2	-7.82	115.33	120.80
1	A	311	PHE	CB-CG-CD1	7.74	126.22	120.80
1	A	524	PHE	CB-CG-CD2	-7.73	115.39	120.80
1	B	403	PHE	CB-CG-CD2	-7.58	115.49	120.80
1	D	475	PHE	CB-CG-CD1	7.58	126.10	120.80
1	D	524	PHE	CB-CG-CD2	-7.57	115.50	120.80
1	B	49	PHE	CB-CG-CD2	-7.50	115.55	120.80
1	B	500	TYR	CB-CG-CD2	-7.46	116.52	121.00
1	A	403	PHE	CB-CG-CD1	7.43	126.00	120.80
1	C	403	PHE	CB-CG-CD1	7.29	125.90	120.80
1	C	500	TYR	CB-CG-CD2	-7.28	116.63	121.00
1	C	475	PHE	CB-CG-CD2	-7.25	115.72	120.80
1	B	524	PHE	CB-CG-CD2	-7.10	115.83	120.80
1	A	49	PHE	CB-CG-CD2	-7.05	115.86	120.80
1	B	311	PHE	CB-CG-CD1	7.02	125.72	120.80
1	A	500	TYR	CB-CG-CD2	-6.99	116.81	121.00
1	B	403	PHE	CB-CG-CD1	6.92	125.64	120.80
1	D	49	PHE	CB-CG-CD2	-6.73	116.09	120.80
1	C	445	PHE	CB-CG-CD2	-6.70	116.11	120.80
1	C	311	PHE	CB-CG-CD2	-6.67	116.13	120.80
1	A	466	TYR	CB-CG-CD2	-6.57	117.06	121.00
1	C	49	PHE	CB-CG-CD2	-6.56	116.21	120.80
1	B	311	PHE	CB-CG-CD2	-6.54	116.22	120.80
1	B	445	PHE	CB-CG-CD2	-6.52	116.24	120.80
1	D	311	PHE	CB-CG-CD2	-6.52	116.24	120.80
1	C	524	PHE	CB-CG-CD1	6.50	125.35	120.80
1	D	311	PHE	CB-CG-CD1	6.46	125.32	120.80
1	C	311	PHE	CB-CG-CD1	6.43	125.30	120.80
1	A	311	PHE	CB-CG-CD2	-6.42	116.30	120.80
1	A	475	PHE	CB-CG-CD1	6.38	125.27	120.80
1	A	445	PHE	CB-CG-CD2	-6.38	116.33	120.80
1	D	500	TYR	CB-CG-CD2	-6.36	117.19	121.00
1	C	403	PHE	CB-CA-C	6.31	123.02	110.40
1	D	403	PHE	CB-CA-C	6.31	123.01	110.40
1	C	49	PHE	CB-CG-CD1	6.28	125.19	120.80
1	D	220	GLN	CA-CB-CG	6.18	127.00	113.40
1	B	524	PHE	CB-CG-CD1	6.18	125.13	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	524	PHE	CB-CG-CD1	6.08	125.05	120.80
1	B	403	PHE	CB-CA-C	5.97	122.33	110.40
1	B	475	PHE	CB-CG-CD1	5.94	124.96	120.80
1	A	524	PHE	CB-CG-CD1	5.90	124.93	120.80
1	B	466	TYR	CB-CG-CD2	-5.86	117.48	121.00
1	C	466	TYR	CB-CG-CD2	-5.82	117.51	121.00
1	D	49	PHE	CB-CG-CD1	5.79	124.86	120.80
1	A	403	PHE	CB-CA-C	5.78	121.97	110.40
1	C	220	GLN	CA-CB-CG	5.76	126.08	113.40
1	B	500	TYR	CB-CG-CD1	5.75	124.45	121.00
1	C	500	TYR	CB-CG-CD1	5.68	124.41	121.00
1	B	220	GLN	CA-CB-CG	5.59	125.69	113.40
1	C	366	ASP	CB-CG-OD2	-5.53	113.33	118.30
1	D	466	TYR	CB-CG-CD2	-5.52	117.69	121.00
1	C	499	ASP	CB-CG-OD1	5.42	123.18	118.30
1	C	475	PHE	CB-CG-CD1	5.41	124.59	120.80
1	B	49	PHE	CB-CA-C	5.32	121.04	110.40
1	A	220	GLN	CA-CB-CG	5.31	125.08	113.40
1	D	154	ASP	CB-CG-OD1	5.26	123.03	118.30
1	D	500	TYR	CB-CG-CD1	5.21	124.13	121.00
1	D	445	PHE	CB-CG-CD2	-5.18	117.17	120.80
1	A	466	TYR	CB-CG-CD1	5.11	124.07	121.00
1	B	524	PHE	CB-CA-C	5.11	120.61	110.40
1	B	265	TYR	CB-CG-CD2	-5.08	117.95	121.00
1	D	512	ASP	CB-CG-OD1	5.03	122.83	118.30

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	445	PHE	Sidechain
1	B	475	PHE	Sidechain
1	C	445	PHE	Sidechain
1	C	475	PHE	Sidechain
1	D	445	PHE	Sidechain
1	D	466	TYR	Sidechain

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	4455	4315	4312	68	0
1	B	4455	4315	4312	60	0
1	C	4455	4315	4312	61	0
1	D	4455	4315	4312	73	0
2	A	15	0	0	0	0
2	B	10	0	0	0	0
2	C	20	0	0	1	0
2	D	5	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	32	0	0	1	0
4	B	44	0	0	0	0
4	C	38	0	0	0	0
4	D	38	0	0	0	0
All	All	18026	17260	17248	256	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 7.

All (256) 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:D:365:MET:HE2	1:D:383:ILE:HD11	1.47	0.94
1:C:365:MET:HE2	1:C:383:ILE:HD11	1.53	0.90
1:D:165:ALA:HB3	1:D:542:ALA:HB1	1.64	0.78
1:C:165:ALA:HB3	1:C:542:ALA:HB1	1.67	0.76
1:D:365:MET:CE	1:D:383:ILE:HD11	2.18	0.74
1:A:336:LEU:HD13	1:A:348:TYR:CE1	2.22	0.73
1:A:279:VAL:HG21	1:A:348:TYR:HB2	1.71	0.72
1:B:365:MET:HE2	1:B:383:ILE:HD11	1.71	0.72
1:C:365:MET:CE	1:C:383:ILE:HD11	2.22	0.70
1:B:279:VAL:HG12	1:B:279:VAL:O	1.93	0.69
1:B:279:VAL:HG21	1:B:348:TYR:HB2	1.73	0.69
1:C:405:THR:HG21	1:C:469:ILE:HA	1.74	0.68
1:A:165:ALA:HB3	1:A:542:ALA:HB1	1.76	0.68
1:B:141:HIS:HB3	1:B:156:LEU:HD22	1.78	0.65
1:D:269:GLU:OE2	1:D:335:HIS:NE2	2.26	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:269:GLU:OE2	1:B:335:HIS:NE2	2.29	0.63
1:C:191:THR:HG21	1:C:197:GLN:OE1	1.99	0.63
1:C:530:TRP:HA	1:D:529:GLN:HE22	1.64	0.62
1:B:365:MET:CE	1:B:383:ILE:HD11	2.30	0.62
1:D:30:ALA:O	1:D:31:ALA:HB3	2.00	0.62
1:D:279:VAL:HG21	1:D:348:TYR:HB2	1.81	0.61
1:C:377:GLN:HG2	1:C:377:GLN:O	1.99	0.61
1:A:279:VAL:HG12	1:A:279:VAL:O	2.01	0.60
1:A:365:MET:HE2	1:A:383:ILE:HD11	1.83	0.60
1:D:311:PHE:CD1	1:D:311:PHE:C	2.75	0.60
1:A:311:PHE:C	1:A:311:PHE:HD1	2.05	0.60
1:A:365:MET:CE	1:A:383:ILE:HD11	2.31	0.60
1:A:311:PHE:C	1:A:311:PHE:CD1	2.75	0.59
1:D:171:ARG:HA	1:D:504:GLN:HE22	1.67	0.59
1:B:311:PHE:CD1	1:B:311:PHE:C	2.76	0.59
1:A:405:THR:HG21	1:A:469:ILE:HA	1.84	0.58
1:D:377:GLN:O	1:D:377:GLN:HG2	2.03	0.58
1:D:150:LYS:HD2	1:D:150:LYS:N	2.18	0.58
1:B:405:THR:HG21	1:B:469:ILE:HA	1.85	0.58
1:A:365:MET:HE1	1:A:400:TRP:CD2	2.39	0.57
1:A:150:LYS:N	1:A:150:LYS:HD2	2.20	0.57
1:B:165:ALA:HB3	1:B:542:ALA:HB1	1.86	0.57
1:B:336:LEU:HD13	1:B:348:TYR:CE1	2.39	0.57
1:C:279:VAL:HG21	1:C:348:TYR:HB2	1.84	0.57
1:C:237:ILE:HB	1:C:249:ASP:HB3	1.86	0.57
1:D:336:LEU:HD13	1:D:348:TYR:CE1	2.38	0.57
1:D:279:VAL:HG12	1:D:279:VAL:O	2.05	0.56
1:A:141:HIS:HB3	1:A:156:LEU:HD22	1.86	0.56
1:C:279:VAL:HG12	1:C:279:VAL:O	2.04	0.56
1:B:30:ALA:O	1:B:31:ALA:HB3	2.05	0.56
1:B:377:GLN:O	1:B:377:GLN:HG2	2.06	0.56
1:D:405:THR:HG21	1:D:469:ILE:HA	1.87	0.56
1:A:304:THR:HG21	1:A:350:LYS:HD3	1.87	0.55
1:B:287:LYS:HB3	1:B:296:LEU:HD21	1.89	0.55
1:A:377:GLN:O	1:A:377:GLN:HG2	2.07	0.54
1:A:30:ALA:O	1:A:31:ALA:HB3	2.08	0.54
1:A:191:THR:HG21	1:A:197:GLN:OE1	2.06	0.54
1:D:7:ASP:N	1:D:7:ASP:OD1	2.41	0.54
1:B:158:HIS:CE1	1:B:160:LYS:HE3	2.43	0.53
1:C:311:PHE:C	1:C:311:PHE:CD1	2.81	0.53
1:D:237:ILE:HB	1:D:249:ASP:HB3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:158:HIS:CE1	1:C:160:LYS:HE3	2.44	0.53
1:C:377:GLN:O	1:C:377:GLN:CG	2.57	0.53
1:C:246:TYR:CE2	1:C:311:PHE:HB2	2.44	0.53
1:B:150:LYS:HD2	1:B:150:LYS:N	2.24	0.53
1:B:365:MET:HE1	1:B:400:TRP:CD2	2.44	0.53
1:C:30:ALA:O	1:C:31:ALA:HB3	2.09	0.53
1:C:466:TYR:CD1	1:C:466:TYR:C	2.82	0.53
1:D:304:THR:HG21	1:D:350:LYS:HD3	1.90	0.52
1:B:311:PHE:C	1:B:311:PHE:HD1	2.13	0.52
1:D:466:TYR:CD1	1:D:466:TYR:C	2.82	0.52
1:A:476:VAL:HG21	1:A:490:TRP:CE3	2.44	0.52
1:C:304:THR:HG21	1:C:350:LYS:HD3	1.91	0.52
1:B:304:THR:HG21	1:B:350:LYS:HD3	1.92	0.52
1:C:175:HIS:HD2	1:C:215:ASP:OD2	1.92	0.52
1:D:311:PHE:C	1:D:311:PHE:HD1	2.12	0.52
1:A:49:PHE:CD1	1:A:49:PHE:C	2.84	0.51
1:B:387:SER:HA	1:B:411:TRP:CH2	2.45	0.51
1:B:246:TYR:CE2	1:B:311:PHE:HB2	2.45	0.51
1:C:49:PHE:CD1	1:C:49:PHE:C	2.84	0.51
1:D:370:ASP:OD2	1:D:373:TYR:HD2	1.94	0.50
1:A:340:PRO:HG3	1:A:348:TYR:HD2	1.76	0.50
1:A:387:SER:HA	1:A:411:TRP:CH2	2.47	0.50
1:C:376:GLU:O	1:C:377:GLN:HB3	2.12	0.50
1:C:405:THR:HG23	1:C:473:ASP:OD2	2.10	0.50
1:D:376:GLU:O	1:D:377:GLN:HB3	2.11	0.50
1:C:530:TRP:HA	1:D:529:GLN:NE2	2.27	0.50
1:D:141:HIS:HB3	1:D:156:LEU:HD22	1.94	0.50
1:D:377:GLN:O	1:D:377:GLN:CG	2.59	0.49
1:D:372:ARG:CD	1:D:375:ARG:NH1	2.75	0.49
1:A:344:HIS:O	1:A:347:ASN:HB2	2.12	0.49
1:A:499:ASP:HA	1:A:502:ILE:HD12	1.95	0.49
1:C:348:TYR:HD1	1:C:348:TYR:O	1.96	0.49
1:D:367:ALA:HA	1:D:383:ILE:O	2.13	0.49
1:B:476:VAL:HG21	1:B:490:TRP:CE3	2.48	0.49
1:D:49:PHE:C	1:D:49:PHE:CD1	2.85	0.48
1:B:377:GLN:O	1:B:377:GLN:CG	2.61	0.48
1:B:405:THR:CG2	1:B:469:ILE:HA	2.43	0.48
1:D:226:ARG:HG2	1:D:277:TRP:HE1	1.78	0.48
1:D:60:SER:OG	1:D:112:LYS:HG2	2.14	0.48
1:B:277:TRP:O	1:B:280:GLN:HG2	2.14	0.48
1:C:150:LYS:N	1:C:150:LYS:HD2	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:87:ASP:HA	1:C:54:LYS:HB3	1.95	0.48
1:A:218:PHE:CE2	1:A:220:GLN:HB3	2.49	0.48
1:A:466:TYR:CD1	1:A:466:TYR:C	2.86	0.47
1:A:221:ASN:OD1	1:A:221:ASN:N	2.47	0.47
1:C:168:LEU:HD21	1:C:502:ILE:HG12	1.96	0.47
1:D:518:LEU:HD12	1:D:518:LEU:N	2.29	0.47
1:A:293:TYR:CD1	1:A:293:TYR:N	2.83	0.47
1:C:191:THR:HB	1:C:195:ASP:OD2	2.14	0.47
1:B:30:ALA:O	1:B:31:ALA:CB	2.62	0.47
1:C:524:PHE:CD1	1:C:524:PHE:C	2.88	0.47
1:B:344:HIS:O	1:B:347:ASN:HB2	2.15	0.47
1:B:387:SER:HA	1:B:411:TRP:CZ3	2.50	0.47
1:B:466:TYR:C	1:B:466:TYR:CD1	2.88	0.47
1:A:226:ARG:HB2	1:A:276:TYR:HE1	1.80	0.47
1:A:387:SER:HA	1:A:411:TRP:CZ3	2.50	0.47
1:D:12:VAL:HG22	1:D:155:LYS:HD3	1.96	0.47
1:A:524:PHE:CD1	1:A:524:PHE:C	2.89	0.46
1:D:500:TYR:CD1	1:D:500:TYR:C	2.88	0.46
1:A:495:GLU:OE1	4:A:701:HOH:O	2.21	0.46
1:C:377:GLN:O	1:C:378:LEU:C	2.54	0.46
1:D:524:PHE:CD1	1:D:524:PHE:C	2.89	0.46
1:B:272:HIS:CD2	1:B:335:HIS:HB3	2.51	0.46
1:B:49:PHE:CD1	1:B:49:PHE:C	2.89	0.46
1:A:246:TYR:CE2	1:A:311:PHE:HB2	2.51	0.46
1:B:405:THR:HB	1:B:408:ARG:HH21	1.81	0.46
1:A:377:GLN:O	1:A:377:GLN:CG	2.63	0.46
1:D:344:HIS:O	1:D:347:ASN:HB2	2.15	0.46
1:C:226:ARG:HG2	1:C:277:TRP:HE1	1.80	0.46
1:A:209:LEU:HB3	1:A:214:ASN:HB3	1.97	0.45
1:A:413:ASN:OD1	1:A:414:ARG:N	2.42	0.45
1:B:340:PRO:HG3	1:B:348:TYR:HD2	1.81	0.45
1:D:500:TYR:C	1:D:500:TYR:HD1	2.20	0.45
1:D:168:LEU:HD21	1:D:502:ILE:HG12	1.98	0.45
1:D:293:TYR:N	1:D:293:TYR:CD1	2.85	0.45
1:D:30:ALA:O	1:D:31:ALA:CB	2.63	0.45
1:A:179:TRP:CZ2	1:A:439:LEU:HD21	2.52	0.45
1:D:365:MET:HE2	1:D:383:ILE:CD1	2.30	0.45
1:C:191:THR:CG2	1:C:197:GLN:OE1	2.64	0.45
1:C:387:SER:HA	1:C:411:TRP:CH2	2.52	0.45
1:B:168:LEU:HD21	1:B:502:ILE:HG12	1.99	0.45
1:C:293:TYR:N	1:C:293:TYR:CD1	2.85	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:175:HIS:HD2	1:D:215:ASP:OD2	2.00	0.44
1:A:302:SER:OG	1:A:305:SER:N	2.50	0.44
1:D:364:VAL:O	1:D:380:ASP:HB2	2.18	0.44
1:D:512:ASP:OD1	1:D:513:PRO:HD2	2.17	0.44
1:A:286:TYR:CD1	1:A:286:TYR:N	2.85	0.44
1:C:49:PHE:C	1:C:49:PHE:HD1	2.21	0.44
1:C:275:LEU:HD22	1:C:284:HIS:CD2	2.53	0.44
1:A:210:ILE:HD12	1:A:265:TYR:CD1	2.53	0.44
1:B:54:LYS:HB3	1:D:87:ASP:HA	1.98	0.44
1:B:524:PHE:CD1	1:B:524:PHE:C	2.91	0.44
1:C:154:ASP:OD1	1:C:154:ASP:C	2.56	0.44
1:D:529:GLN:CG	1:D:533:GLU:OE2	2.66	0.44
1:B:473:ASP:N	1:B:474:PRO:CD	2.81	0.43
1:D:301:LEU:HD11	1:D:305:SER:OG	2.18	0.43
1:D:372:ARG:HD3	1:D:375:ARG:NH1	2.33	0.43
1:D:413:ASN:OD1	1:D:414:ARG:N	2.45	0.43
1:A:405:THR:HG22	1:A:470:ALA:H	1.83	0.43
1:B:475:PHE:CD1	1:B:475:PHE:C	2.91	0.43
1:C:387:SER:HA	1:C:411:TRP:CZ3	2.53	0.43
1:B:475:PHE:CD1	1:B:475:PHE:O	2.72	0.43
1:A:237:ILE:HB	1:A:249:ASP:HB3	1.99	0.43
1:D:226:ARG:HB2	1:D:276:TYR:HE1	1.83	0.43
1:D:403:PHE:CD1	1:D:403:PHE:C	2.91	0.43
1:D:416:TYR:CD2	1:D:471:TYR:HB3	2.53	0.43
1:B:237:ILE:HB	1:B:249:ASP:HB3	2.01	0.43
1:C:466:TYR:CD2	1:C:471:TYR:CE2	3.06	0.43
1:A:191:THR:CG2	1:A:197:GLN:OE1	2.67	0.43
1:C:336:LEU:HD13	1:C:348:TYR:CE1	2.54	0.43
1:C:524:PHE:C	1:C:524:PHE:HD1	2.22	0.43
1:A:47:VAL:HG21	1:A:142:VAL:HG11	2.01	0.43
1:B:226:ARG:HG2	1:B:277:TRP:HE1	1.84	0.43
1:C:255:ARG:NH2	2:C:602:SO4:O2	2.52	0.43
1:C:365:MET:HE2	1:C:383:ILE:CD1	2.36	0.43
1:C:405:THR:HG22	1:C:470:ALA:H	1.83	0.43
1:D:105:ASP:HB3	1:D:106:PRO:CD	2.48	0.43
1:A:500:TYR:CD1	1:A:500:TYR:C	2.92	0.43
1:B:226:ARG:HB2	1:B:276:TYR:HE1	1.84	0.43
1:D:277:TRP:HB3	1:D:280:GLN:NE2	2.34	0.43
1:A:37:ALA:HB1	1:A:129:ILE:HG13	2.01	0.42
1:B:348:TYR:CE2	1:B:368:LEU:HD21	2.54	0.42
1:A:500:TYR:C	1:A:500:TYR:HD1	2.23	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:14:LEU:H	1:D:30:ALA:HB3	1.84	0.42
1:D:293:TYR:N	1:D:293:TYR:HD1	2.17	0.42
1:B:293:TYR:CD1	1:B:293:TYR:N	2.87	0.42
1:C:370:ASP:OD2	1:C:373:TYR:HD2	2.02	0.42
1:B:221:ASN:OD1	1:B:221:ASN:N	2.53	0.42
1:D:403:PHE:C	1:D:403:PHE:HD1	2.22	0.42
1:D:405:THR:HG22	1:D:470:ALA:H	1.84	0.42
1:A:523:ASP:O	1:A:524:PHE:HB3	2.18	0.42
1:B:139:ASP:N	1:B:139:ASP:OD1	2.52	0.42
1:C:311:PHE:C	1:C:311:PHE:HD1	2.23	0.42
1:D:473:ASP:N	1:D:474:PRO:CD	2.82	0.42
1:B:87:ASP:HA	1:D:54:LYS:HB3	2.02	0.42
1:B:286:TYR:N	1:B:286:TYR:CD1	2.87	0.42
1:A:268:PHE:N	1:A:268:PHE:CD1	2.88	0.42
1:C:130:PRO:HD2	1:C:133:LEU:HD22	2.02	0.42
1:C:189:TYR:CD1	1:C:189:TYR:N	2.88	0.42
1:C:429:LEU:HD11	1:C:524:PHE:CD2	2.55	0.42
1:D:340:PRO:HG3	1:D:348:TYR:HD2	1.85	0.42
1:D:377:GLN:O	1:D:378:LEU:C	2.58	0.42
1:A:54:LYS:HB3	1:C:87:ASP:HA	2.02	0.41
1:B:191:THR:HG21	1:B:197:GLN:HB3	2.01	0.41
1:B:323:LEU:HD13	1:B:329:LEU:HD23	2.02	0.41
1:C:277:TRP:O	1:C:280:GLN:HG2	2.19	0.41
1:D:246:TYR:CE2	1:D:311:PHE:HB2	2.55	0.41
1:A:293:TYR:N	1:A:293:TYR:HD1	2.17	0.41
1:A:323:LEU:HD13	1:A:329:LEU:HD23	2.02	0.41
1:A:324:LEU:CD2	1:A:329:LEU:HD11	2.50	0.41
1:A:524:PHE:C	1:A:524:PHE:HD1	2.24	0.41
1:C:344:HIS:O	1:C:347:ASN:HB2	2.20	0.41
1:A:336:LEU:HD13	1:A:348:TYR:HE1	1.81	0.41
1:A:376:GLU:O	1:A:377:GLN:HB3	2.21	0.41
1:A:431:TYR:OH	1:A:508:ILE:O	2.26	0.41
1:B:466:TYR:CD2	1:B:471:TYR:CE2	3.08	0.41
1:B:529:GLN:HG2	1:B:533:GLU:OE2	2.20	0.41
1:A:269:GLU:OE2	1:A:335:HIS:NE2	2.33	0.41
1:B:279:VAL:O	1:B:279:VAL:CG1	2.65	0.41
1:C:226:ARG:HB2	1:C:276:TYR:HE1	1.86	0.41
1:D:191:THR:HG21	1:D:197:GLN:OE1	2.19	0.41
1:C:499:ASP:HA	1:C:502:ILE:HD12	2.03	0.41
1:D:277:TRP:O	1:D:280:GLN:HG2	2.21	0.41
1:C:218:PHE:CE2	1:C:220:GLN:HB3	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:348:TYR:CD1	1:C:348:TYR:C	2.94	0.41
1:D:348:TYR:HD1	1:D:348:TYR:O	2.03	0.41
1:D:405:THR:CG2	1:D:469:ILE:HA	2.49	0.41
1:D:445:PHE:C	1:D:445:PHE:HD1	2.23	0.41
1:A:226:ARG:HG2	1:A:277:TRP:HE1	1.86	0.41
1:B:282:ALA:HB1	1:B:308:TYR:CD1	2.55	0.41
1:A:12:VAL:HG22	1:A:155:LYS:HD3	2.02	0.41
1:A:383:ILE:HG12	1:A:400:TRP:HB2	2.02	0.41
1:A:403:PHE:CD1	1:A:403:PHE:C	2.95	0.41
1:C:141:HIS:HB3	1:C:156:LEU:HD22	2.03	0.41
1:C:348:TYR:HD1	1:C:348:TYR:C	2.24	0.41
1:D:365:MET:HE1	1:D:400:TRP:CD2	2.56	0.41
1:A:475:PHE:C	1:A:475:PHE:CD1	2.93	0.41
1:C:287:LYS:HD3	1:C:296:LEU:CD2	2.50	0.41
1:D:75:TYR:CE1	1:D:113:THR:HG21	2.55	0.41
1:D:258:ASP:O	1:D:262:GLU:HG3	2.21	0.41
1:A:11:ALA:O	1:A:49:PHE:HA	2.21	0.40
1:D:405:THR:HG23	1:D:473:ASP:OD2	2.22	0.40
1:A:364:VAL:O	1:A:380:ASP:HB2	2.22	0.40
1:B:336:LEU:C	1:B:336:LEU:HD23	2.42	0.40
1:B:523:ASP:O	1:B:524:PHE:HB3	2.20	0.40
1:A:282:ALA:HB1	1:A:308:TYR:CD1	2.56	0.40
1:B:139:ASP:HB3	1:B:160:LYS:HG2	2.03	0.40
1:B:218:PHE:CE2	1:B:220:GLN:HB3	2.57	0.40
1:B:348:TYR:HD1	1:B:348:TYR:O	2.04	0.40
1:C:230:LYS:O	1:C:292:ALA:HB1	2.21	0.40
1:C:500:TYR:CD1	1:C:500:TYR:C	2.94	0.40
1:D:105:ASP:HB3	1:D:106:PRO:HD3	2.03	0.40
1:A:403:PHE:C	1:A:403:PHE:HD1	2.25	0.40
1:C:272:HIS:CD2	1:C:335:HIS:HB3	2.57	0.40
1:D:272:HIS:CD2	1:D:335:HIS:HB3	2.57	0.40
1:D:346:GLU:O	1:D:347:ASN:C	2.58	0.40
1:A:297:TRP:HH2	1:A:311:PHE:CD2	2.39	0.40
1:A:383:ILE:HD13	1:A:383:ILE:HG21	1.91	0.40
1:B:158:HIS:CE1	1:B:160:LYS:CE	3.05	0.40
1:B:376:GLU:O	1:B:377:GLN:HB3	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	534/536 (100%)	513 (96%)	19 (4%)	2 (0%)	34	54
1	B	534/536 (100%)	513 (96%)	18 (3%)	3 (1%)	25	43
1	C	534/536 (100%)	513 (96%)	18 (3%)	3 (1%)	25	43
1	D	534/536 (100%)	512 (96%)	20 (4%)	2 (0%)	34	54
All	All	2136/2144 (100%)	2051 (96%)	75 (4%)	10 (0%)	29	48

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	277	TRP
1	A	105	ASP
1	A	277	TRP
1	B	105	ASP
1	B	277	TRP
1	C	277	TRP
1	C	105	ASP
1	D	105	ASP
1	B	305	SER
1	C	305	SER

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	474/474 (100%)	457 (96%)	17 (4%)	35	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	474/474 (100%)	458 (97%)	16 (3%)	37	63
1	C	474/474 (100%)	459 (97%)	15 (3%)	39	65
1	D	474/474 (100%)	459 (97%)	15 (3%)	39	65
All	All	1896/1896 (100%)	1833 (97%)	63 (3%)	38	64

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	49	PHE
1	A	123	PHE
1	A	189	TYR
1	A	265	TYR
1	A	268	PHE
1	A	276	TYR
1	A	286	TYR
1	A	293	TYR
1	A	311	PHE
1	A	348	TYR
1	A	403	PHE
1	A	445	PHE
1	A	466	TYR
1	A	475	PHE
1	A	478	TYR
1	A	500	TYR
1	A	524	PHE
1	B	49	PHE
1	B	123	PHE
1	B	189	TYR
1	B	268	PHE
1	B	276	TYR
1	B	286	TYR
1	B	293	TYR
1	B	311	PHE
1	B	348	TYR
1	B	403	PHE
1	B	445	PHE
1	B	466	TYR
1	B	475	PHE
1	B	478	TYR
1	B	500	TYR
1	B	524	PHE

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Mol	Chain	Res	Type
1	C	49	PHE
1	C	189	TYR
1	C	268	PHE
1	C	276	TYR
1	C	286	TYR
1	C	293	TYR
1	C	311	PHE
1	C	348	TYR
1	C	403	PHE
1	C	445	PHE
1	C	466	TYR
1	C	475	PHE
1	C	478	TYR
1	C	500	TYR
1	C	524	PHE
1	D	49	PHE
1	D	189	TYR
1	D	191	THR
1	D	276	TYR
1	D	286	TYR
1	D	293	TYR
1	D	311	PHE
1	D	348	TYR
1	D	403	PHE
1	D	445	PHE
1	D	466	TYR
1	D	475	PHE
1	D	478	TYR
1	D	500	TYR
1	D	524	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	175	HIS
1	C	175	HIS
1	D	175	HIS
1	D	529	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 14 ligands modelled in this entry, 4 are monoatomic - leaving 10 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	SO4	A	602	-	4,4,4	0.18	0	6,6,6	0.88	0
2	SO4	A	601	-	4,4,4	0.26	0	6,6,6	0.83	0
2	SO4	B	601	-	4,4,4	0.09	0	6,6,6	0.60	0
2	SO4	A	603	-	4,4,4	0.26	0	6,6,6	0.46	0
2	SO4	D	601	-	4,4,4	0.29	0	6,6,6	0.67	0
2	SO4	C	601	-	4,4,4	0.15	0	6,6,6	0.51	0
2	SO4	B	602	-	4,4,4	0.63	0	6,6,6	0.93	0
2	SO4	C	604	-	4,4,4	0.65	0	6,6,6	0.58	0
2	SO4	C	603	-	4,4,4	0.33	0	6,6,6	0.30	0
2	SO4	C	602	-	4,4,4	0.36	0	6,6,6	0.48	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

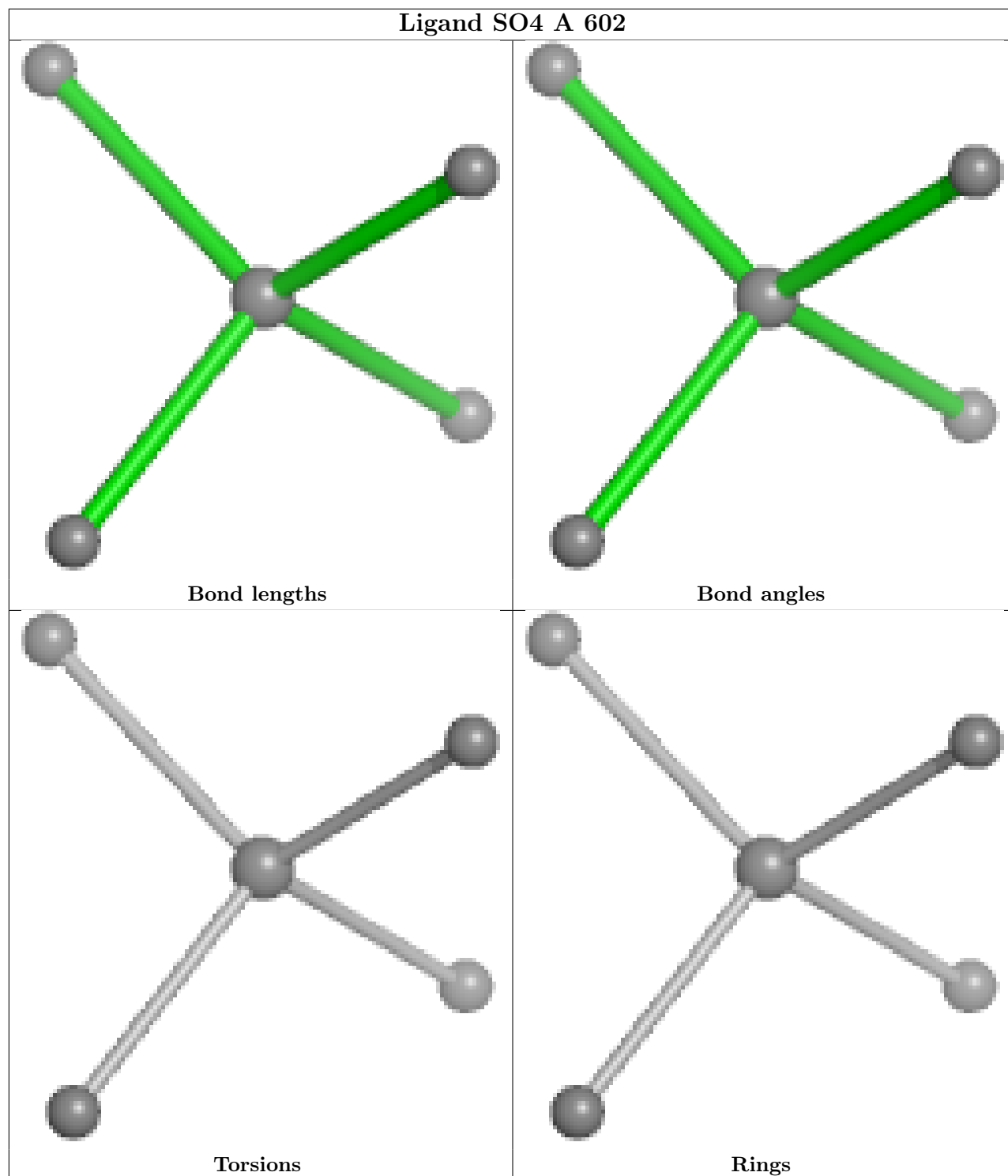
There are no torsion outliers.

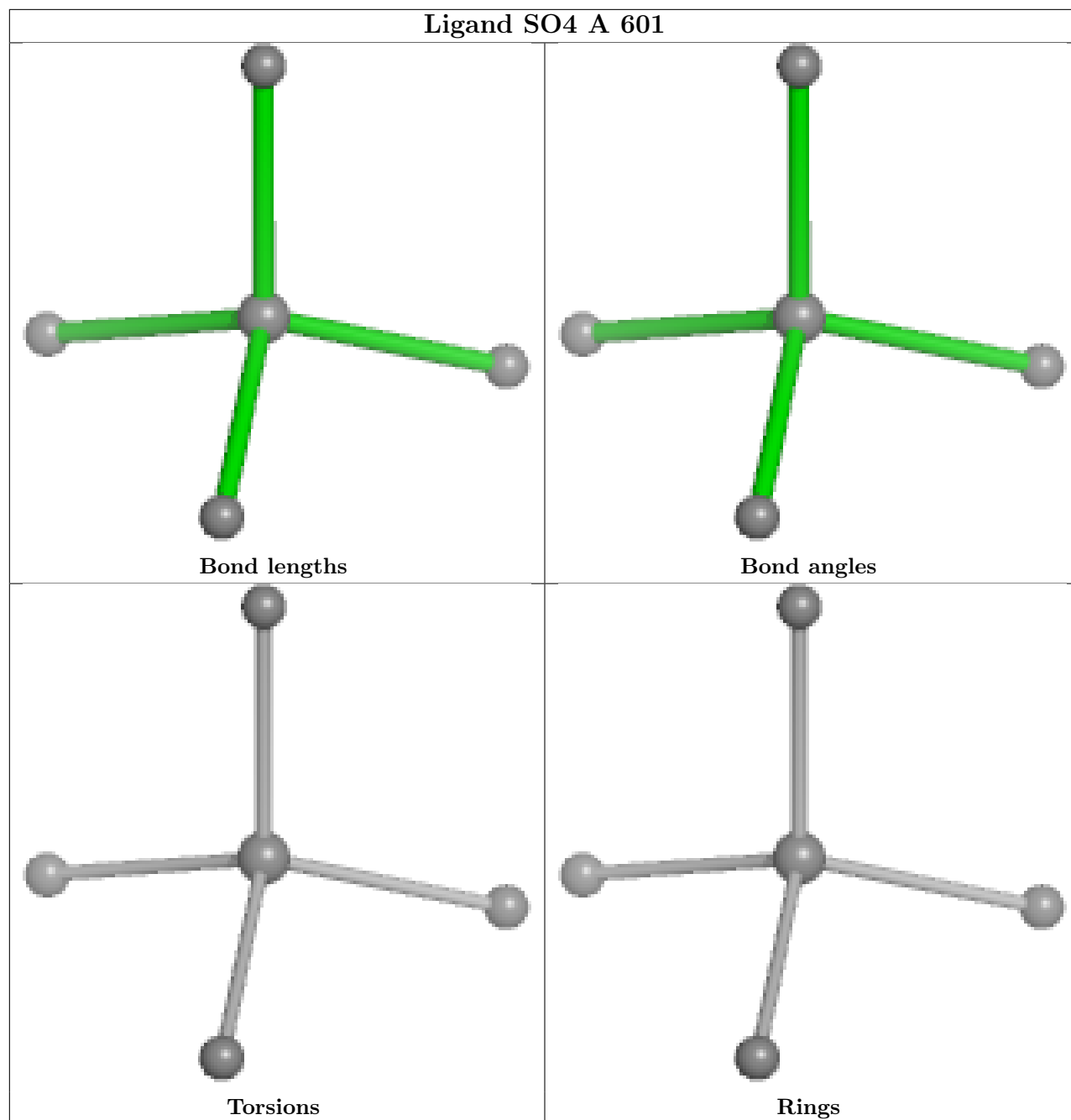
There are no ring outliers.

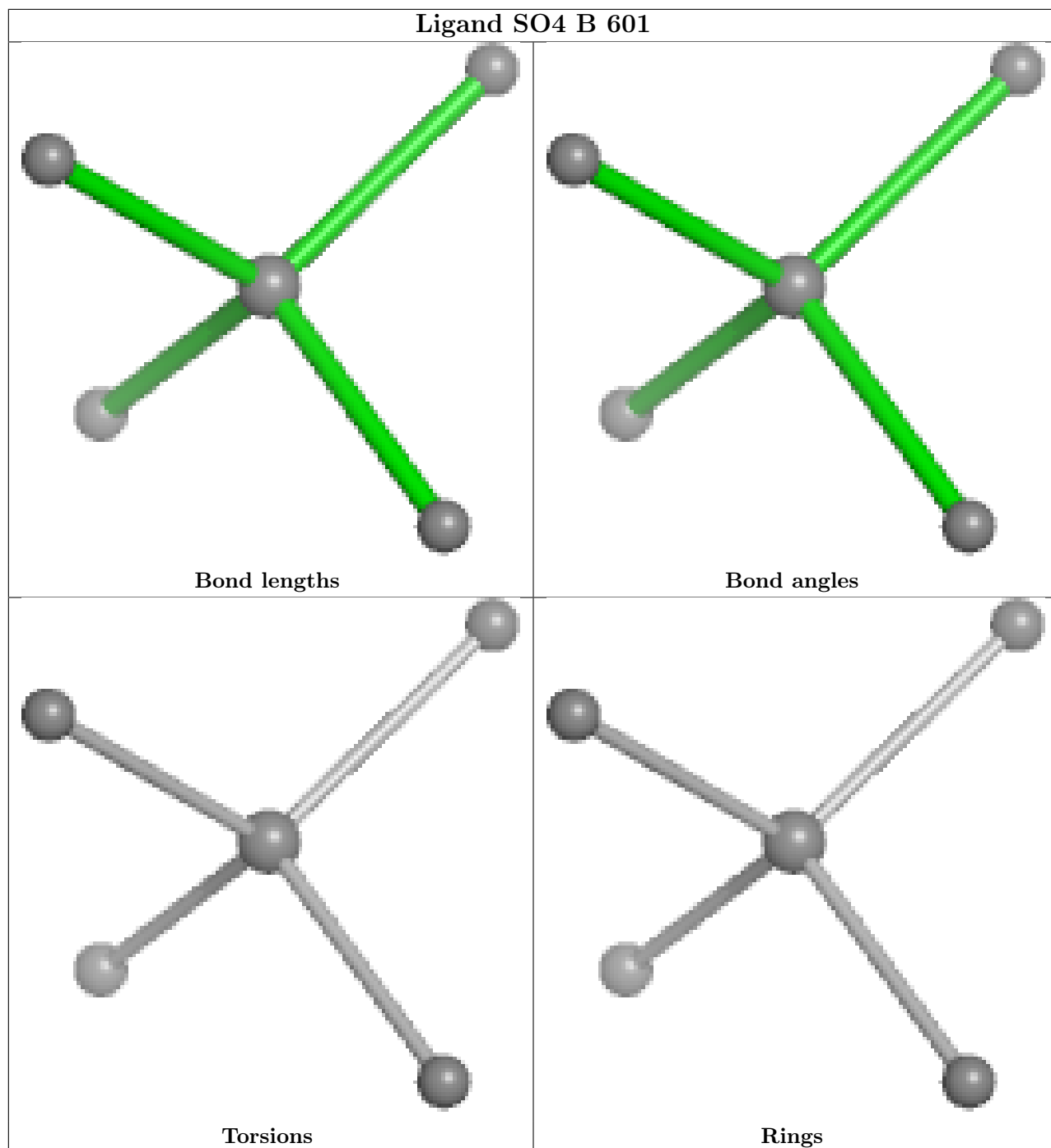
1 monomer is involved in 1 short contact:

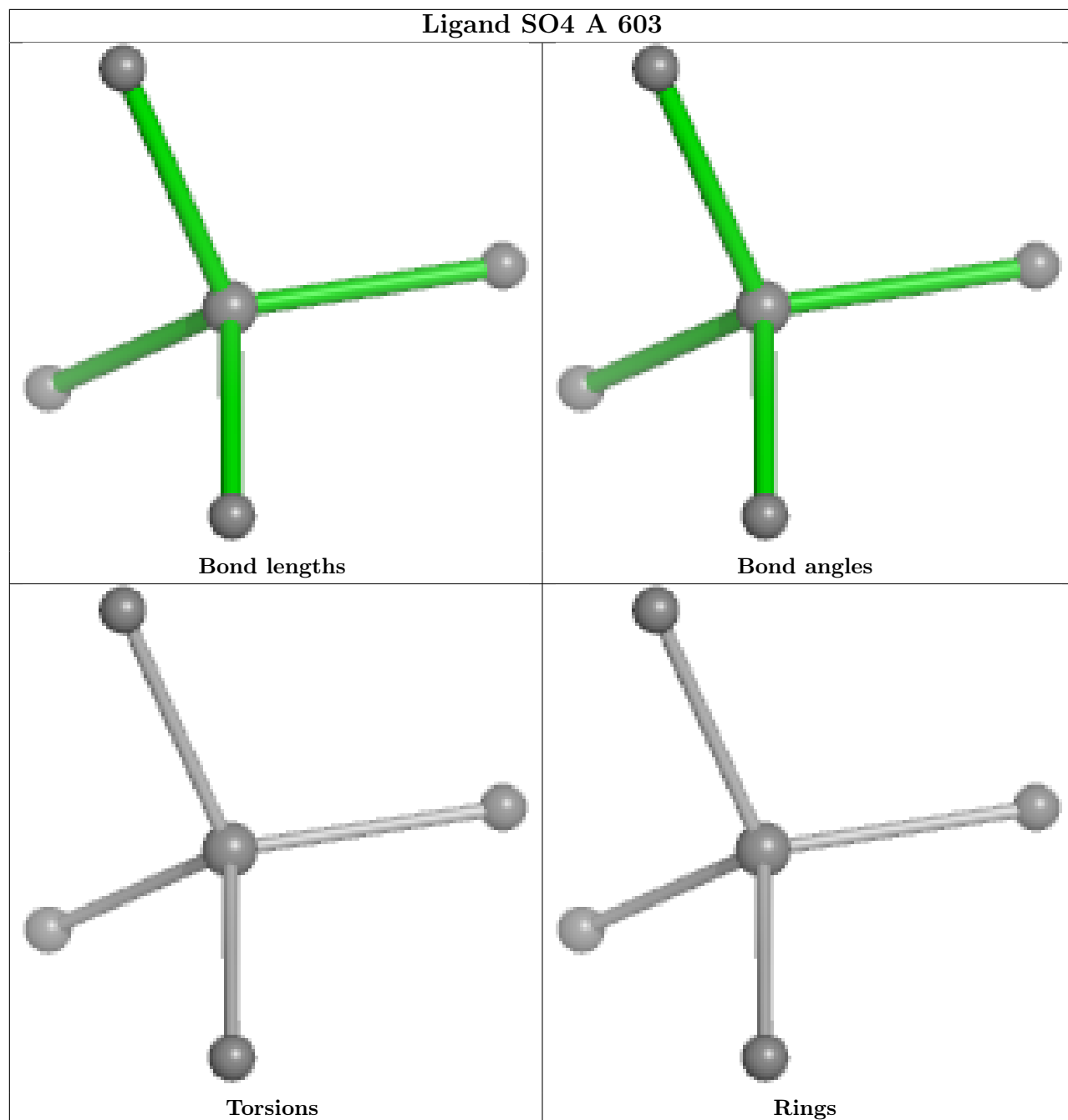
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	602	SO4	1	0

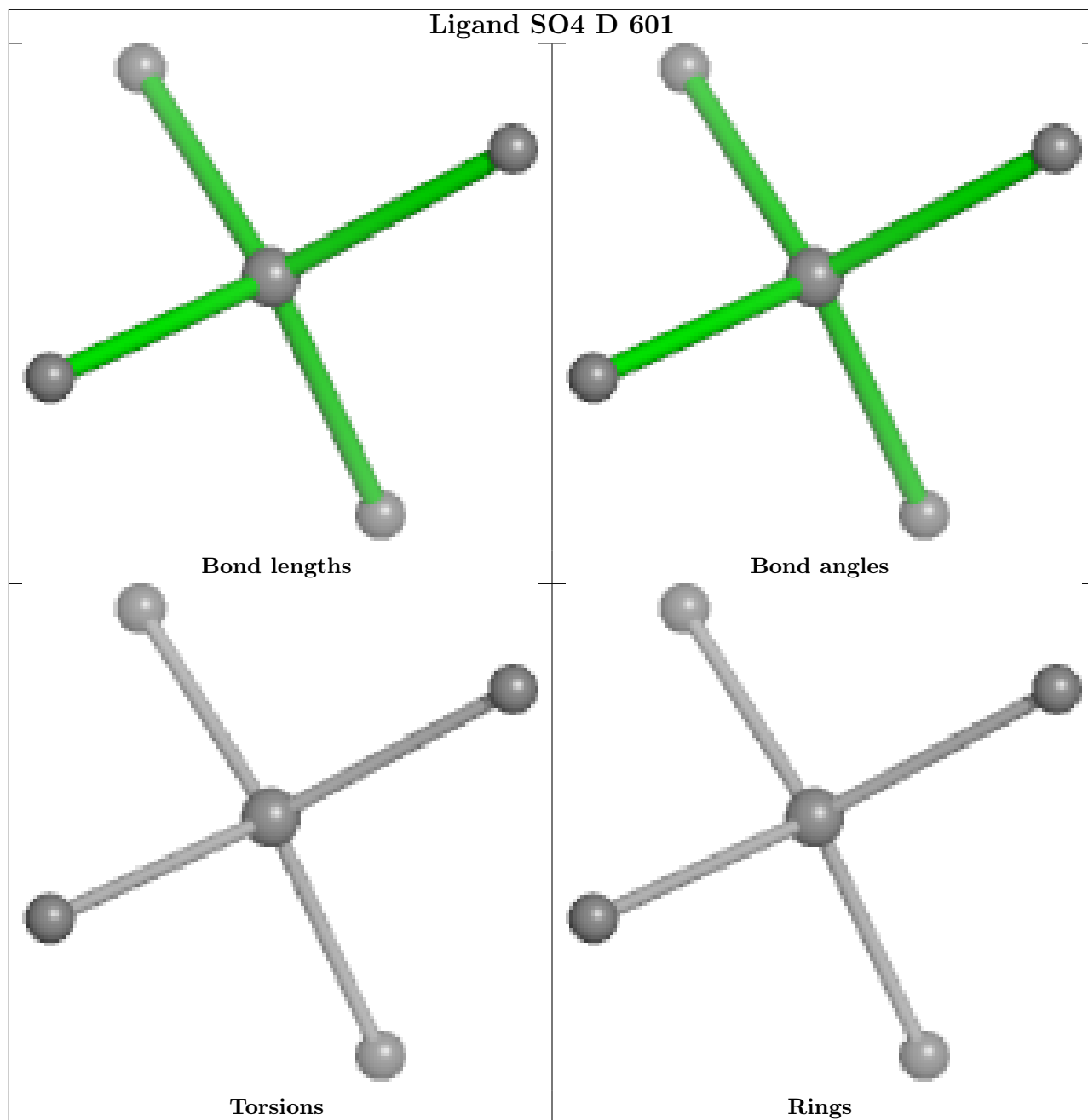
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

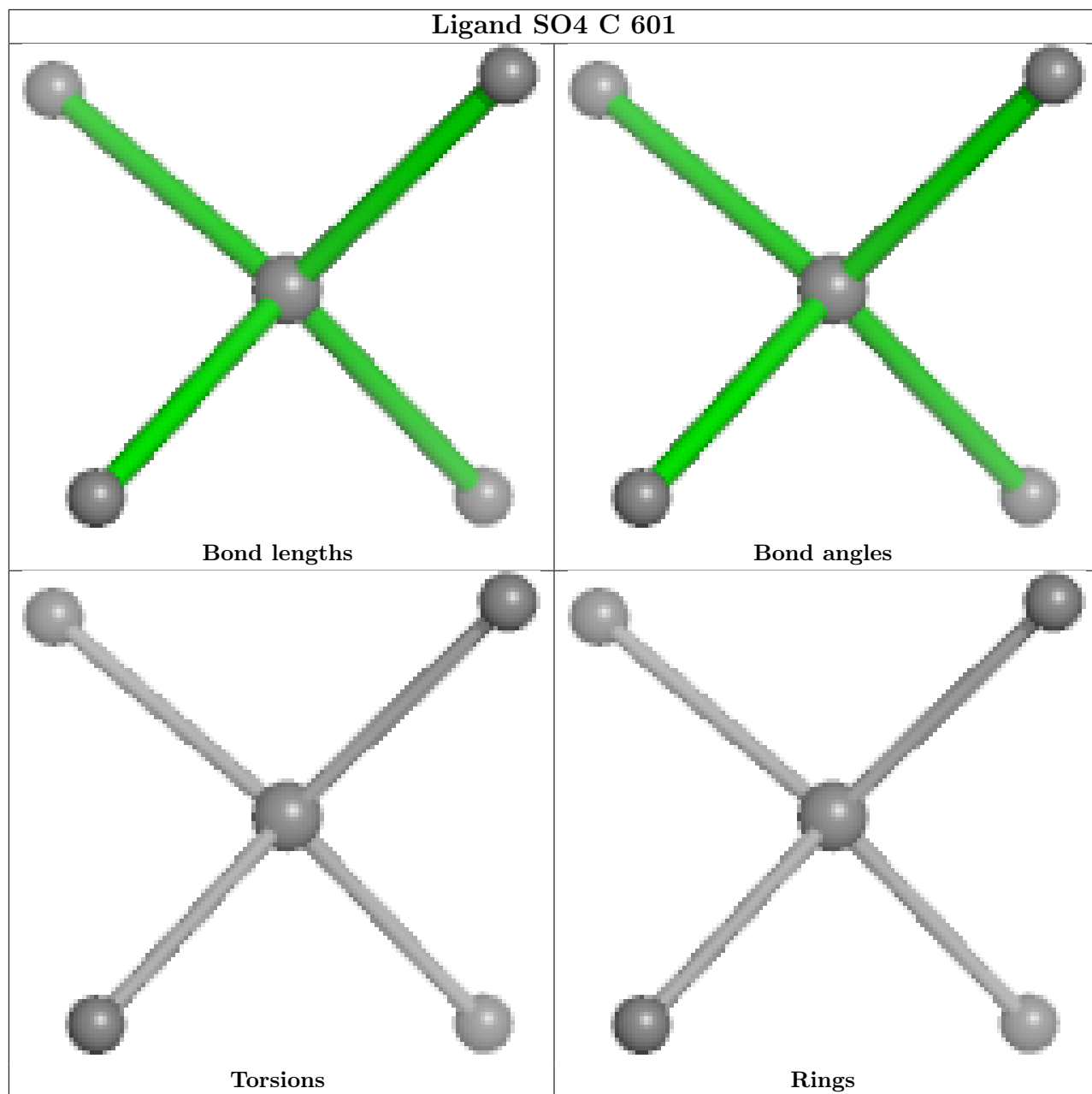


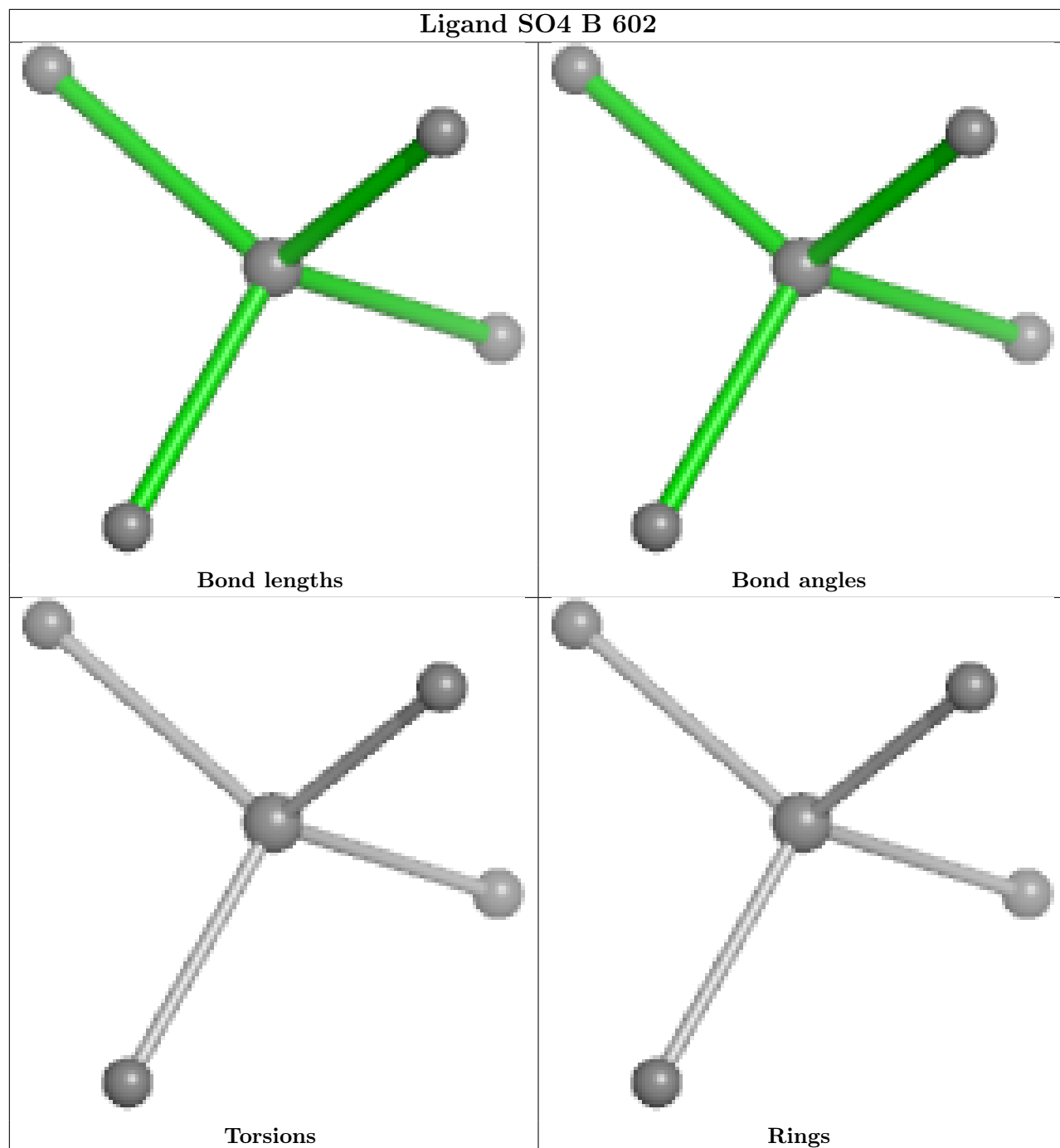


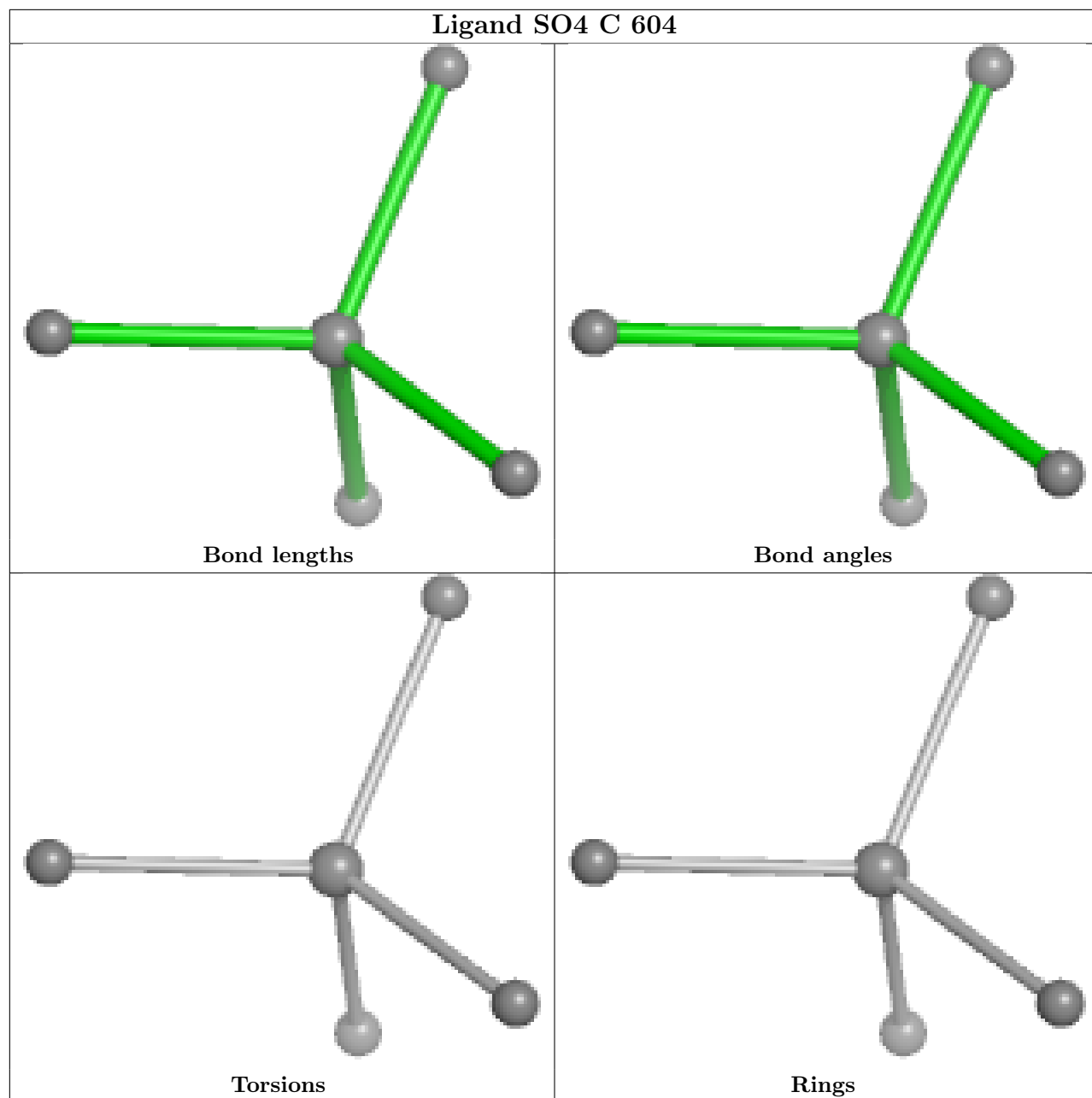


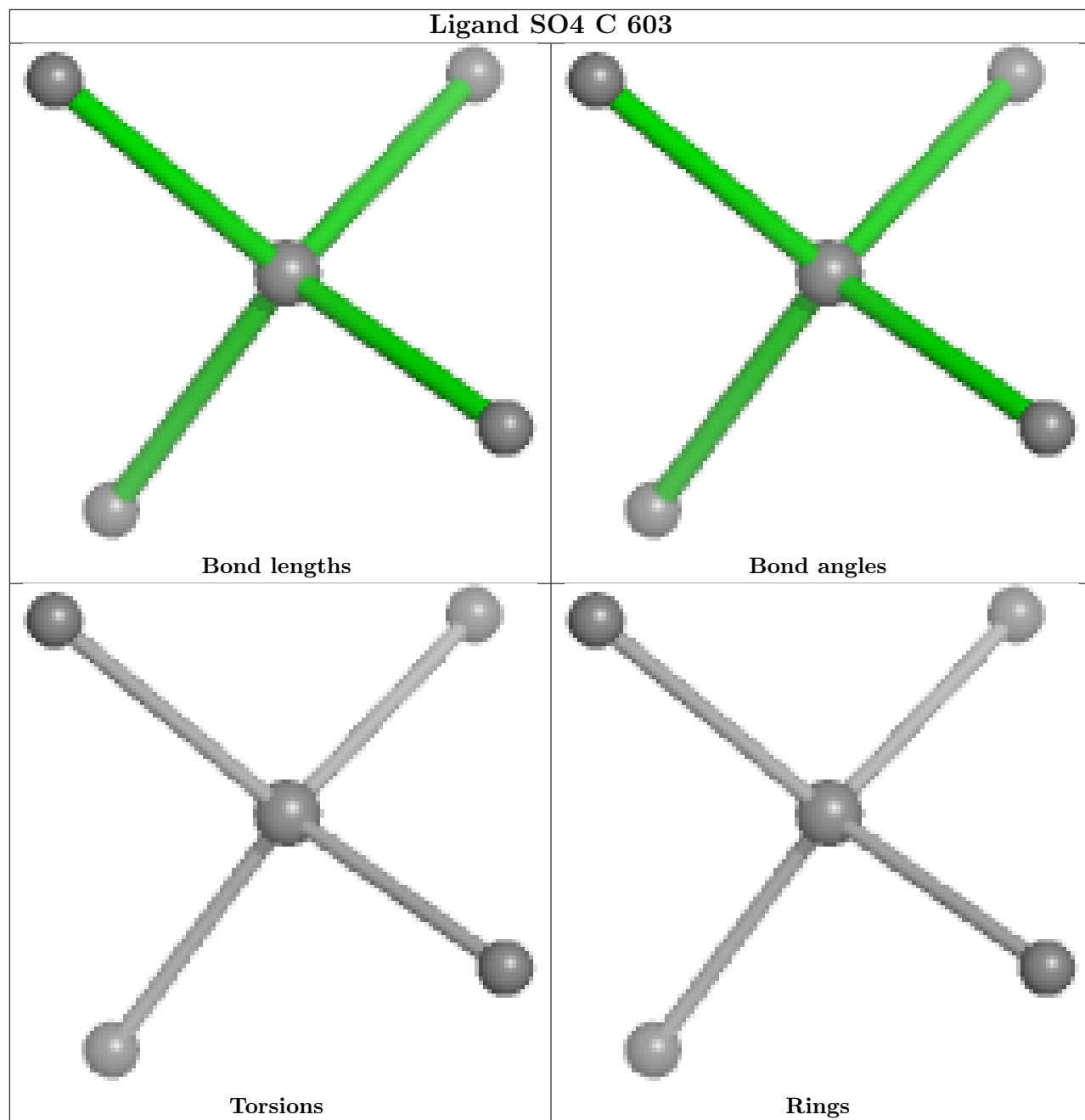


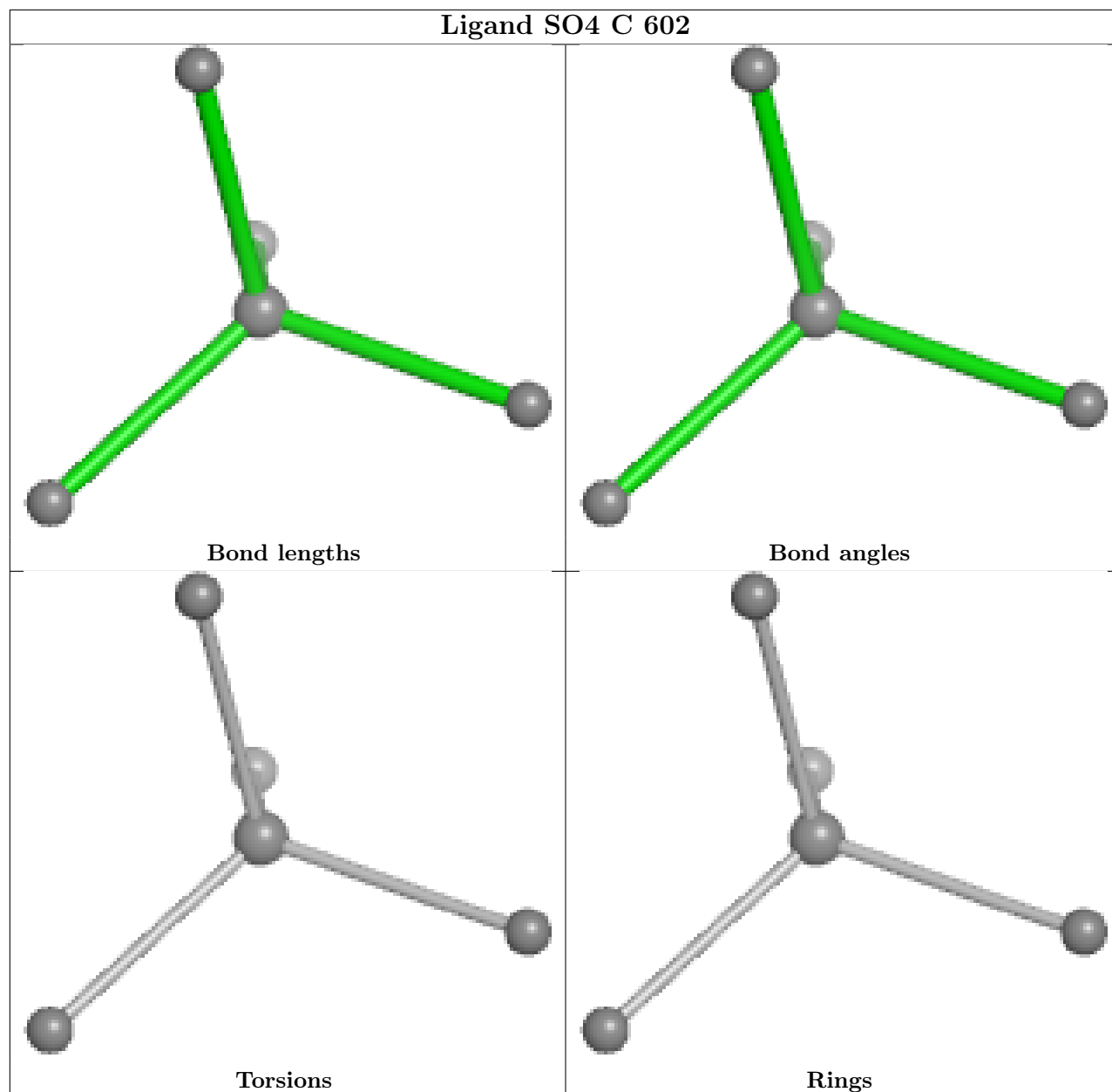












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	536/536 (100%)	0.25	24 (4%) 33 36	42, 58, 109, 171	0
1	B	536/536 (100%)	0.29	24 (4%) 33 36	38, 53, 99, 169	0
1	C	536/536 (100%)	0.27	21 (3%) 39 42	44, 57, 93, 149	0
1	D	536/536 (100%)	0.24	18 (3%) 45 48	44, 59, 98, 165	0
All	All	2144/2144 (100%)	0.26	87 (4%) 37 40	38, 57, 101, 171	0

All (87) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	341	TRP	9.6
1	B	372	ARG	8.7
1	A	341	TRP	8.4
1	B	373	TYR	6.7
1	D	373	TYR	6.7
1	C	277	TRP	6.7
1	A	378	LEU	6.2
1	C	341	TRP	5.9
1	D	341	TRP	5.9
1	A	373	TYR	5.8
1	A	372	ARG	5.3
1	A	342	SER	5.1
1	D	277	TRP	5.0
1	B	276	TYR	4.9
1	C	291	ASN	4.8
1	B	342	SER	4.6
1	C	372	ARG	4.5
1	A	377	GLN	4.4
1	D	342	SER	4.2
1	A	368	LEU	4.1
1	A	344	HIS	4.1

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Mol	Chain	Res	Type	RSRZ
1	A	276	TYR	4.0
1	C	7	ASP	3.9
1	C	542	ALA	3.7
1	D	291	ASN	3.7
1	B	378	LEU	3.7
1	B	376	GLU	3.5
1	B	291	ASN	3.5
1	B	344	HIS	3.4
1	A	370	ASP	3.3
1	A	277	TRP	3.3
1	A	343	GLU	3.2
1	A	374	GLY	3.2
1	B	375	ARG	3.2
1	A	376	GLU	3.1
1	D	7	ASP	3.1
1	A	241	PRO	3.1
1	D	133	LEU	3.0
1	B	292	ALA	3.0
1	C	31	ALA	3.0
1	B	343	GLU	3.0
1	B	241	PRO	3.0
1	B	374	GLY	3.0
1	A	375	ARG	2.9
1	C	373	TYR	2.9
1	C	276	TYR	2.8
1	D	276	TYR	2.8
1	B	97	GLY	2.8
1	D	375	ARG	2.8
1	C	226	ARG	2.7
1	B	150	LYS	2.7
1	C	68	THR	2.6
1	A	292	ALA	2.6
1	D	378	LEU	2.6
1	C	130	PRO	2.5
1	C	150	LYS	2.5
1	C	133	LEU	2.5
1	A	279	VAL	2.5
1	B	329	LEU	2.5
1	B	279	VAL	2.4
1	B	371	VAL	2.4
1	C	131	ALA	2.4
1	A	31	ALA	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	277	TRP	2.3
1	D	136	GLY	2.3
1	D	66	ALA	2.3
1	C	344	HIS	2.3
1	D	27	ALA	2.3
1	B	278	GLY	2.3
1	C	29	THR	2.3
1	B	226	ARG	2.3
1	D	350	LYS	2.3
1	B	368	LEU	2.3
1	D	243	PRO	2.3
1	A	291	ASN	2.2
1	A	243	PRO	2.2
1	C	66	ALA	2.2
1	A	348	TYR	2.2
1	C	378	LEU	2.1
1	C	156	LEU	2.1
1	B	340	PRO	2.1
1	D	368	LEU	2.1
1	D	292	ALA	2.1
1	D	24	GLN	2.1
1	A	289	GLU	2.1
1	A	278	GLY	2.0
1	C	136	GLY	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

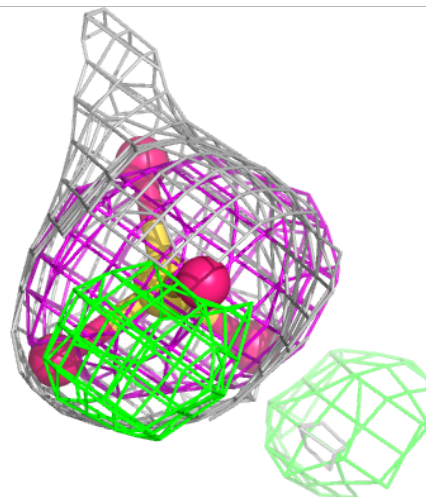
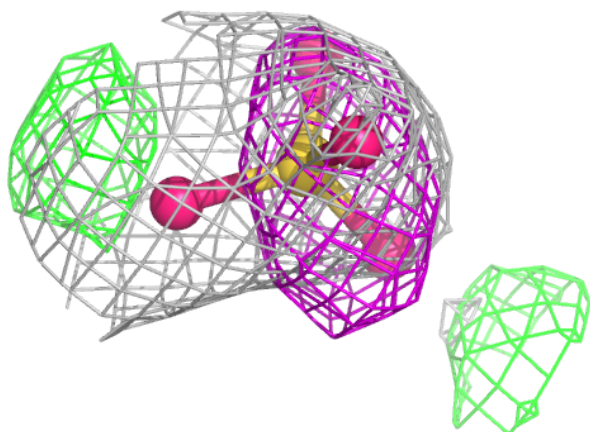
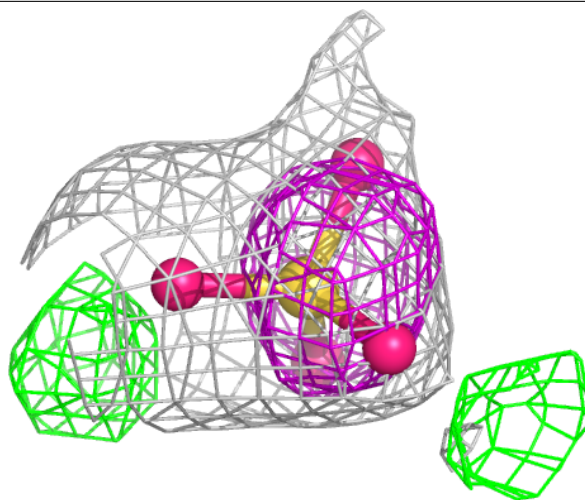
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	SO4	C	604	5/5	0.69	0.33	68,69,71,86	0
2	SO4	B	602	5/5	0.88	0.20	59,60,66,80	0
2	SO4	A	603	5/5	0.92	0.20	73,75,82,84	0
3	NA	D	602	1/1	0.94	0.26	69,69,69,69	0
2	SO4	C	602	5/5	0.95	0.14	57,59,65,70	0
3	NA	A	604	1/1	0.95	0.30	73,73,73,73	0
2	SO4	C	603	5/5	0.95	0.11	70,74,81,83	0
3	NA	B	603	1/1	0.96	0.23	66,66,66,66	0
2	SO4	A	602	5/5	0.96	0.15	64,64,66,68	0
2	SO4	A	601	5/5	0.97	0.14	54,55,58,60	0
3	NA	C	605	1/1	0.97	0.28	52,52,52,52	0
2	SO4	C	601	5/5	0.97	0.11	59,61,63,66	0
2	SO4	B	601	5/5	0.98	0.16	50,55,57,59	0
2	SO4	D	601	5/5	0.98	0.13	54,59,62,62	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.

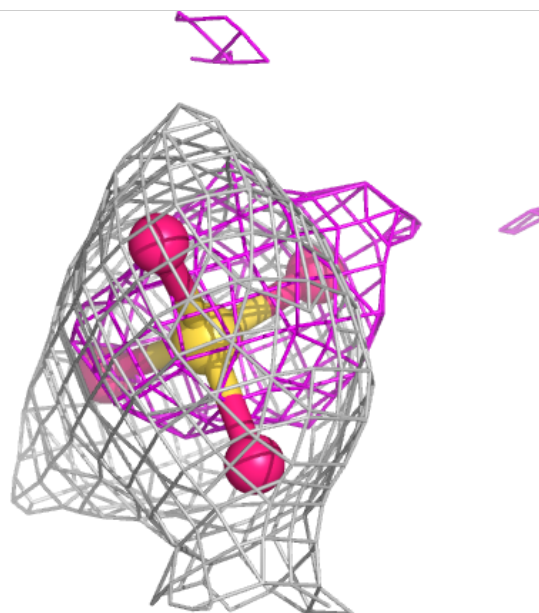
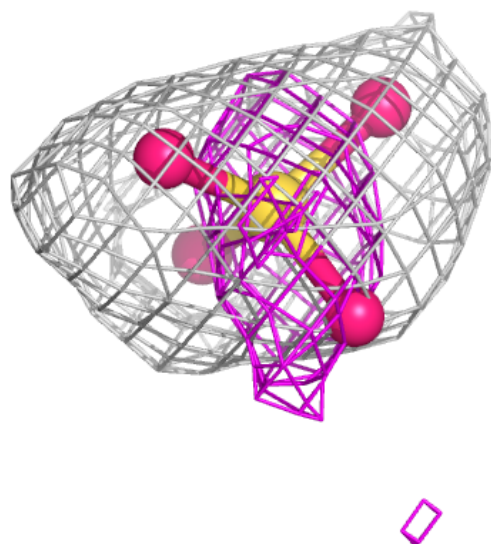
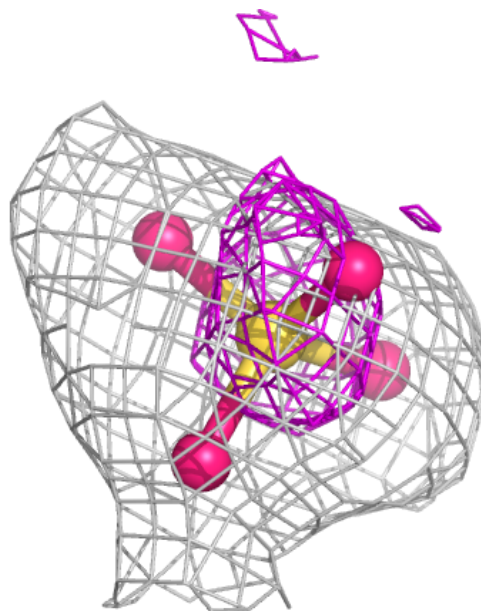
Electron density around SO4 C 604:

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



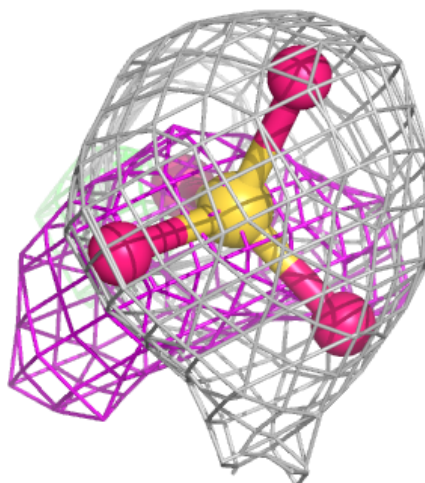
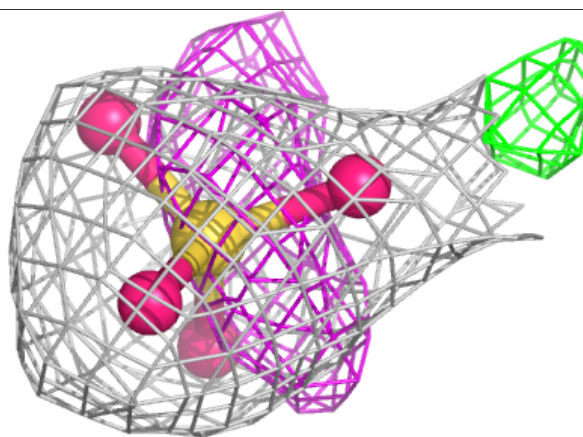
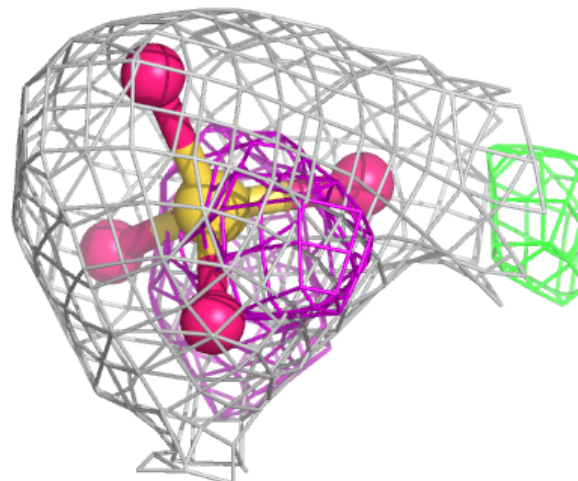
Electron density around SO4 B 602:

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



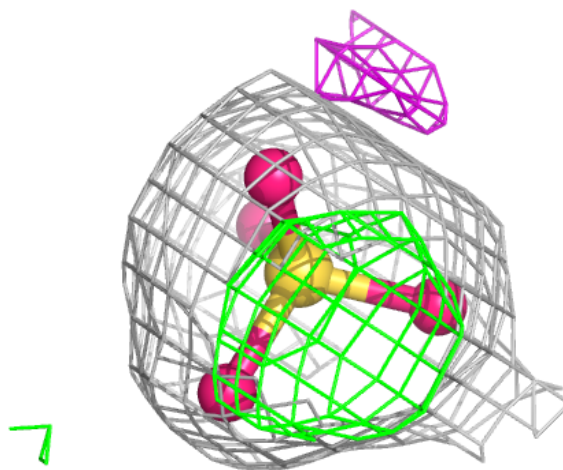
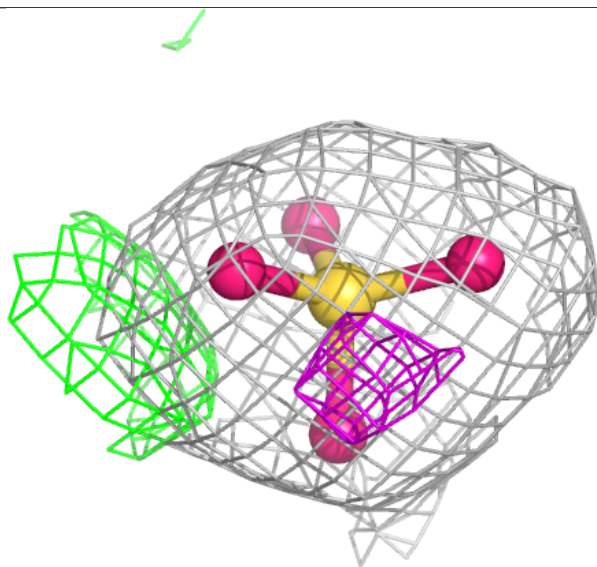
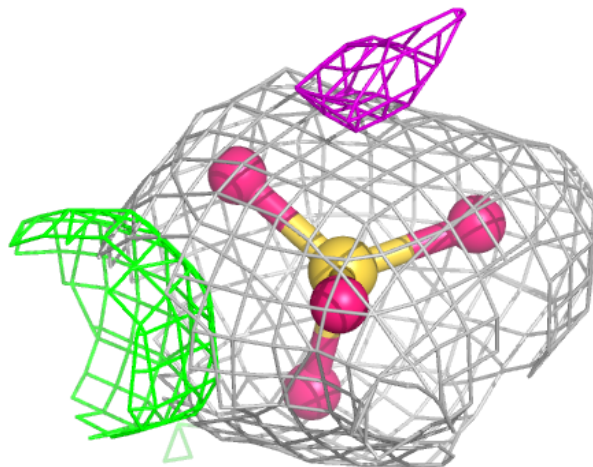
Electron density around SO4 A 603:

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



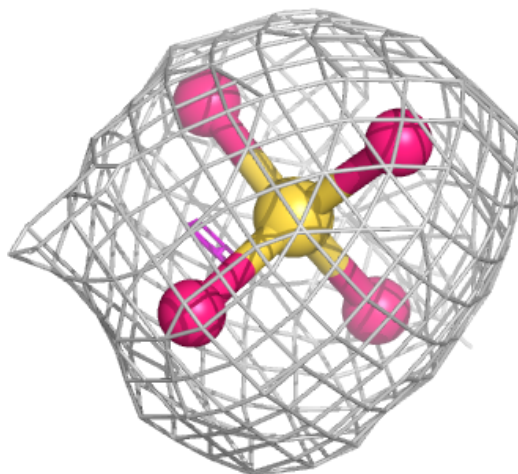
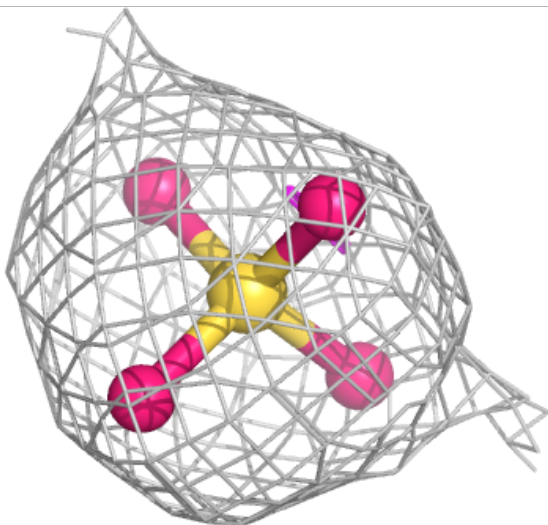
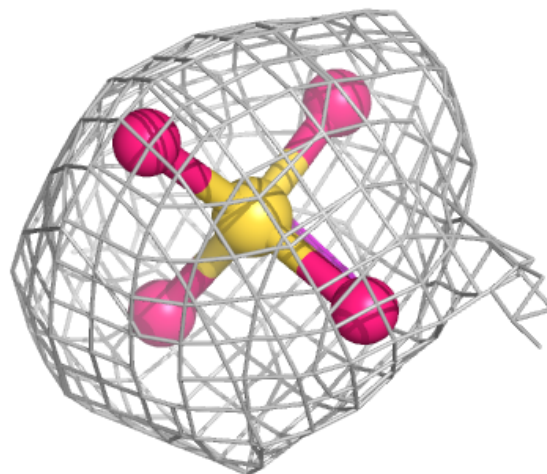
Electron density around SO4 C 602:

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



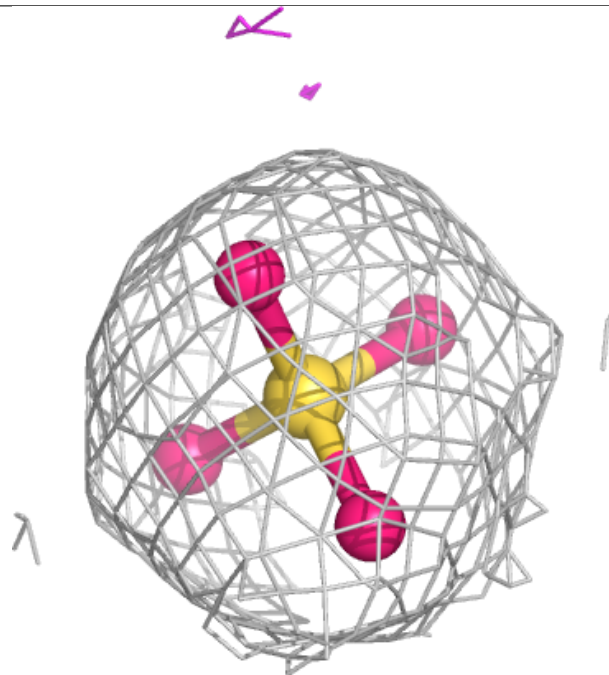
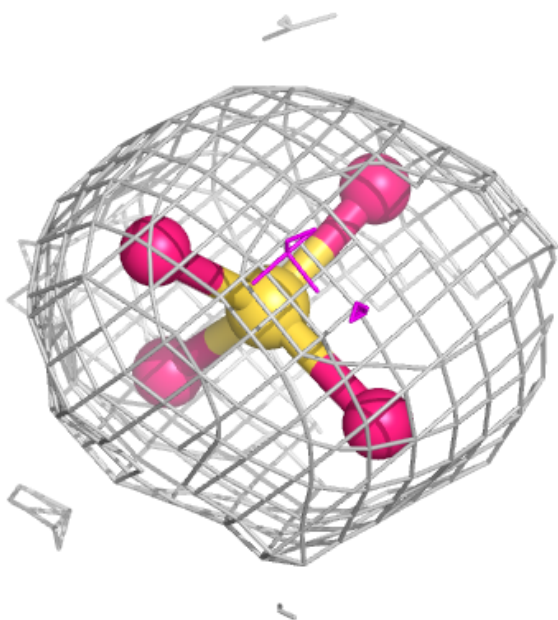
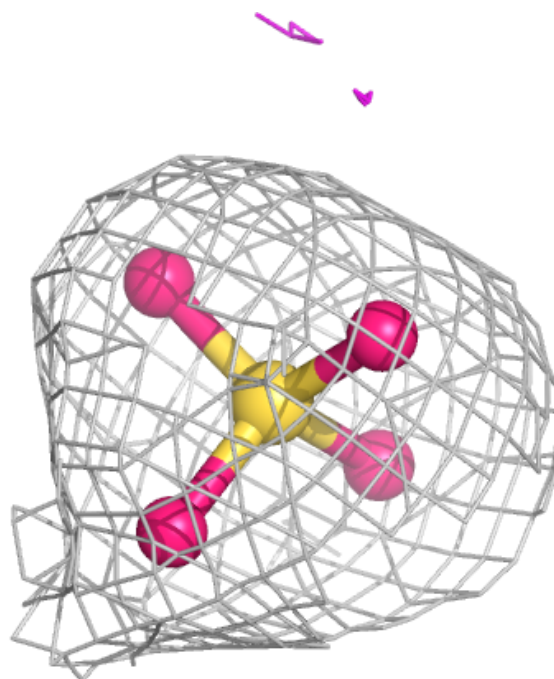
Electron density around SO4 C 603:

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and green (positive)



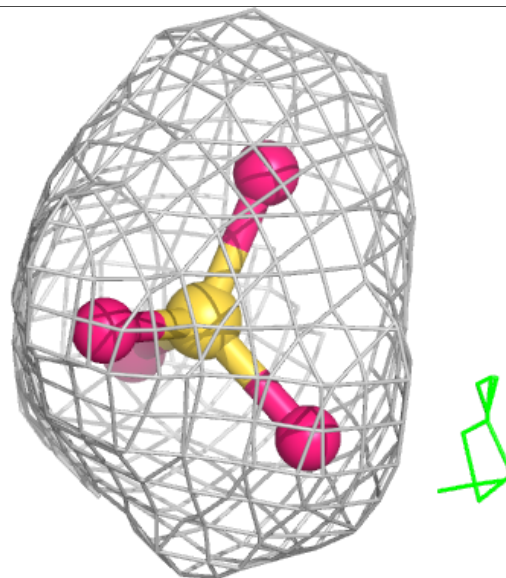
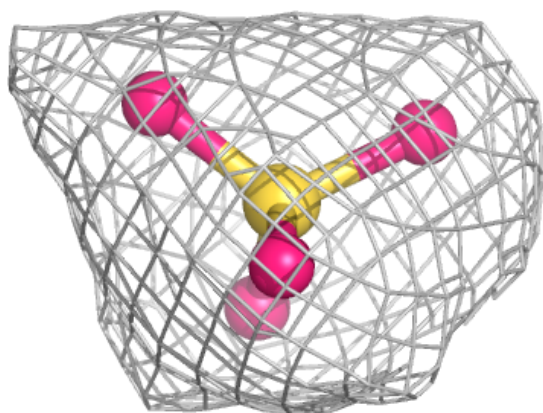
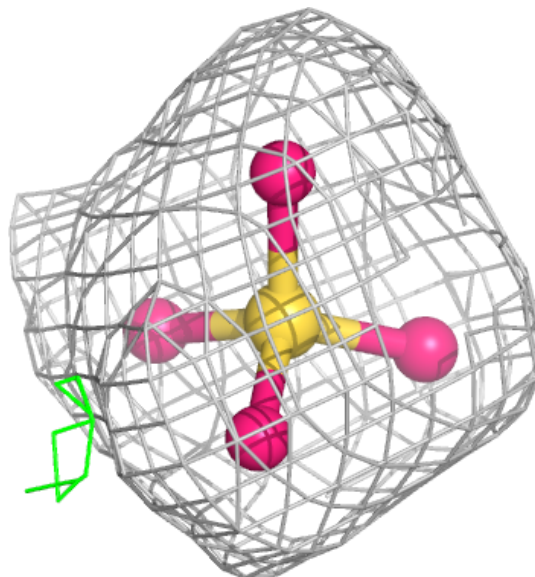
Electron density around SO4 A 602:

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



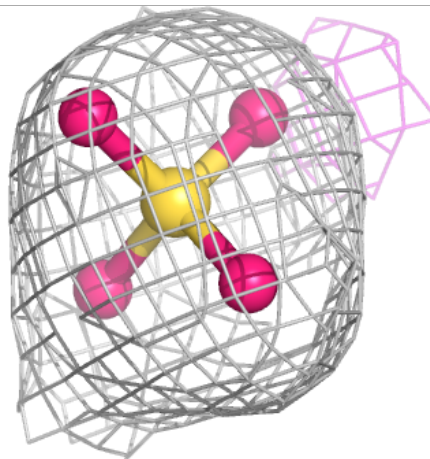
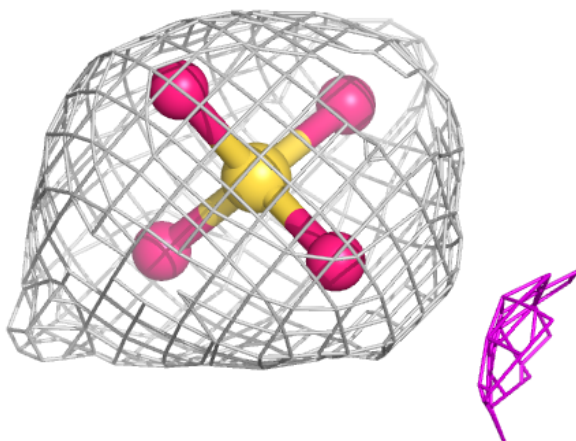
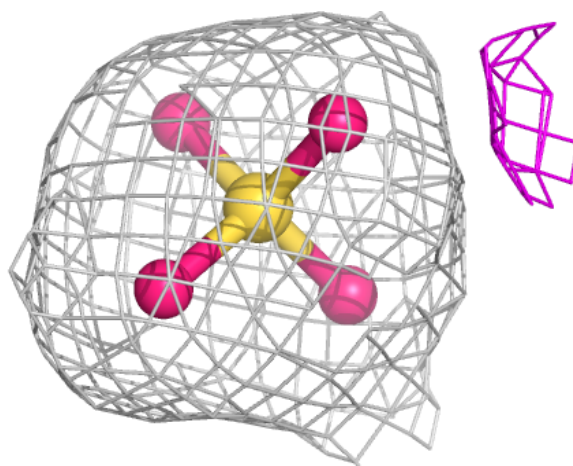
Electron density around SO4 A 601:

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



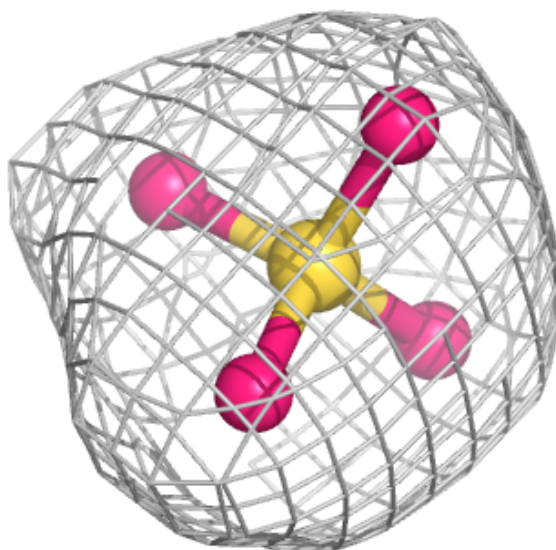
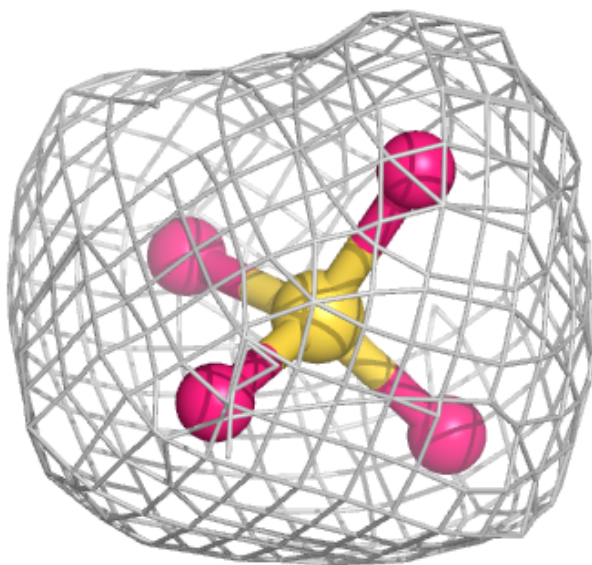
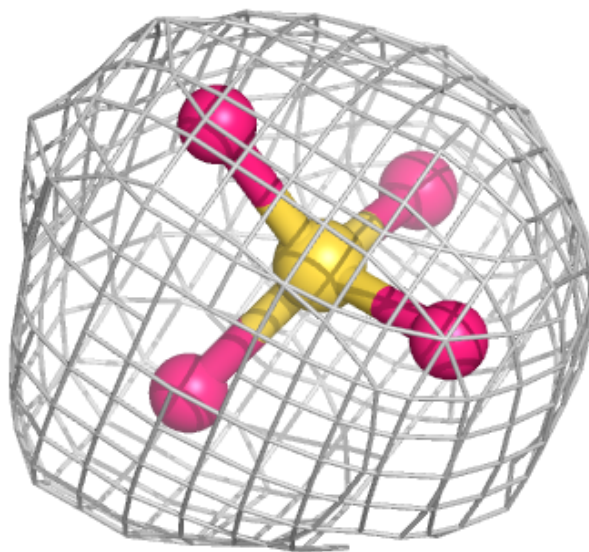
Electron density around SO4 C 601:

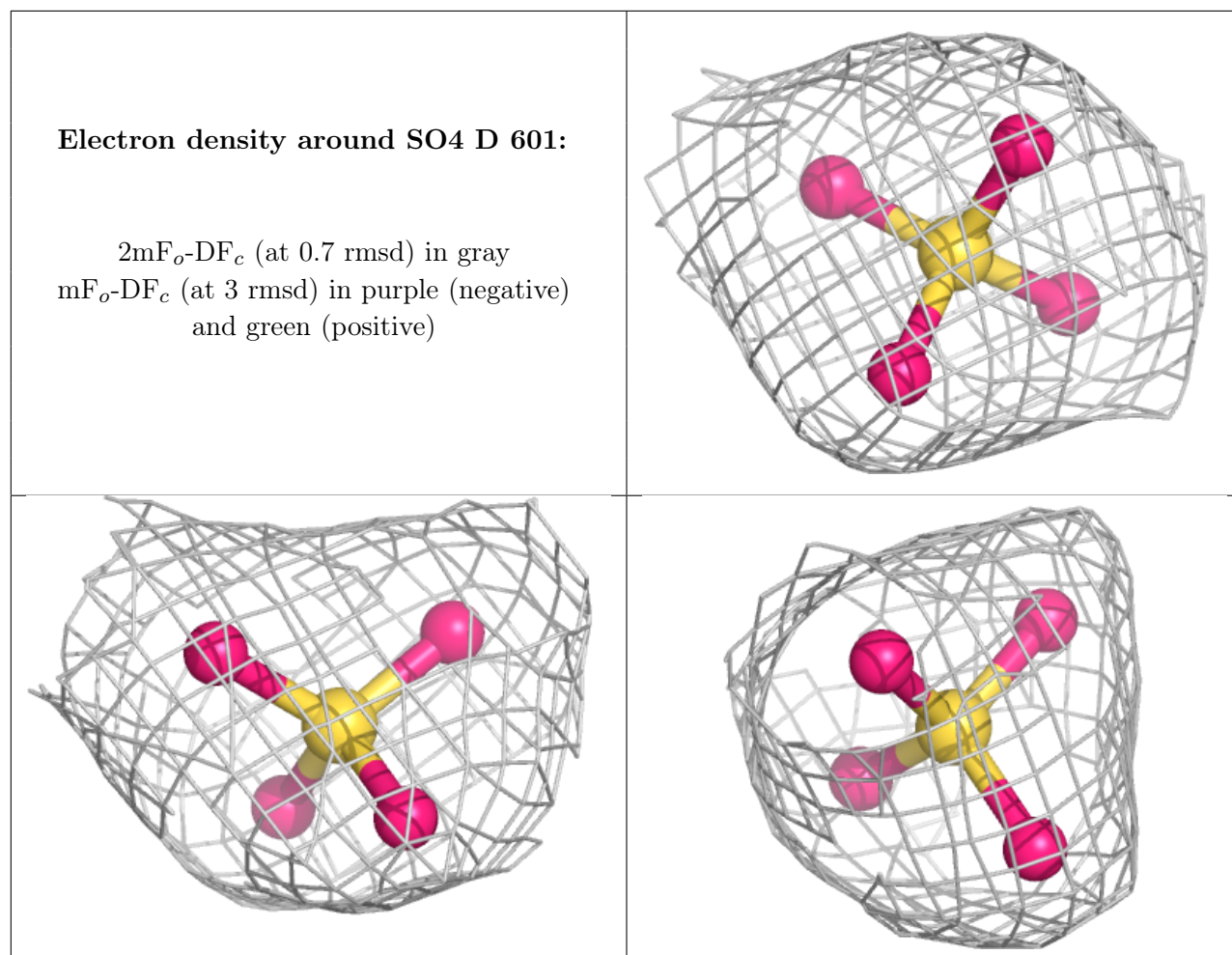
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around SO4 B 601:

$2mF_o-DF_c$ (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.