



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 2, 2026 – 01:38 PM UTC

PDB ID : 7W1D / pdb_00007w1d
Title : Crystal structure of Klebsiella pneumoniae K1 capsule-specific polysaccharide lyase in a C2 crystal form
Authors : Tu, I.F.; Ko, T.P.; Huang, K.F.; Wu, S.H.
Deposited on : 2021-11-19
Resolution : 2.78 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	:	2022.3.0, CSD as543be (2022)
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	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

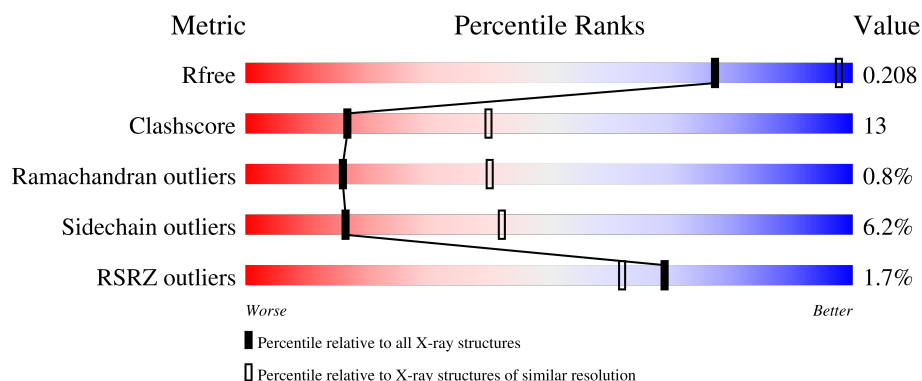
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.78 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	5248 (2.80-2.76)
Clashscore	190562	5693 (2.80-2.76)
Ramachandran outliers	187476	5590 (2.80-2.76)
Sidechain outliers	187428	5592 (2.80-2.76)
RSRZ outliers	180081	5251 (2.80-2.76)

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	671	2% 68% 24% . .
1	B	671	2% 68% 26% . .
1	C	671	69% 25% . .
1	D	671	2% 67% 26% . .
1	E	671	2% 69% 24% . .

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Mol	Chain	Length	Quality of chain
1	F	671	2% 75% 20% . .
1	G	671	68% 26% . .
1	H	671	71% 23% . .
1	I	671	% 64% 30% . .
1	J	671	3% 62% 30% . .
1	K	671	3% 62% 31% . .
1	L	671	4% 59% 32% . .

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 59973 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 K1 LYASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	642	Total	C	N	O	S	0	0	0
			4858	3055	840	944	19			
1	B	644	Total	C	N	O	S	0	0	0
			4870	3063	842	946	19			
1	C	644	Total	C	N	O	S	0	0	0
			4870	3063	842	946	19			
1	D	643	Total	C	N	O	S	0	0	0
			4865	3060	841	945	19			
1	E	643	Total	C	N	O	S	0	0	0
			4865	3060	841	945	19			
1	F	644	Total	C	N	O	S	0	0	0
			4870	3063	842	946	19			
1	G	642	Total	C	N	O	S	0	0	0
			4858	3055	840	944	19			
1	H	646	Total	C	N	O	S	0	0	0
			4885	3074	844	948	19			
1	I	644	Total	C	N	O	S	0	0	0
			4870	3063	842	946	19			
1	J	642	Total	C	N	O	S	0	0	0
			4858	3055	840	944	19			
1	K	642	Total	C	N	O	S	0	0	0
			4858	3055	840	944	19			
1	L	642	Total	C	N	O	S	0	0	0
			4858	3055	840	944	19			

There are 288 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
A	-18	GLY	-	expression tag	UNP A0A068Q5Q5
A	-17	SER	-	expression tag	UNP A0A068Q5Q5
A	-16	SER	-	expression tag	UNP A0A068Q5Q5
A	-15	HIS	-	expression tag	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-14	HIS	-	expression tag	UNP A0A068Q5Q5
A	-13	HIS	-	expression tag	UNP A0A068Q5Q5
A	-12	HIS	-	expression tag	UNP A0A068Q5Q5
A	-11	HIS	-	expression tag	UNP A0A068Q5Q5
A	-10	HIS	-	expression tag	UNP A0A068Q5Q5
A	-9	SER	-	expression tag	UNP A0A068Q5Q5
A	-8	SER	-	expression tag	UNP A0A068Q5Q5
A	-7	GLY	-	expression tag	UNP A0A068Q5Q5
A	-6	LEU	-	expression tag	UNP A0A068Q5Q5
A	-5	VAL	-	expression tag	UNP A0A068Q5Q5
A	-4	PRO	-	expression tag	UNP A0A068Q5Q5
A	-3	ARG	-	expression tag	UNP A0A068Q5Q5
A	-2	GLY	-	expression tag	UNP A0A068Q5Q5
A	-1	SER	-	expression tag	UNP A0A068Q5Q5
A	0	HIS	-	expression tag	UNP A0A068Q5Q5
A	213	THR	ALA	conflict	UNP A0A068Q5Q5
A	256	ILE	SER	conflict	UNP A0A068Q5Q5
A	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
A	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
B	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
B	-18	GLY	-	expression tag	UNP A0A068Q5Q5
B	-17	SER	-	expression tag	UNP A0A068Q5Q5
B	-16	SER	-	expression tag	UNP A0A068Q5Q5
B	-15	HIS	-	expression tag	UNP A0A068Q5Q5
B	-14	HIS	-	expression tag	UNP A0A068Q5Q5
B	-13	HIS	-	expression tag	UNP A0A068Q5Q5
B	-12	HIS	-	expression tag	UNP A0A068Q5Q5
B	-11	HIS	-	expression tag	UNP A0A068Q5Q5
B	-10	HIS	-	expression tag	UNP A0A068Q5Q5
B	-9	SER	-	expression tag	UNP A0A068Q5Q5
B	-8	SER	-	expression tag	UNP A0A068Q5Q5
B	-7	GLY	-	expression tag	UNP A0A068Q5Q5
B	-6	LEU	-	expression tag	UNP A0A068Q5Q5
B	-5	VAL	-	expression tag	UNP A0A068Q5Q5
B	-4	PRO	-	expression tag	UNP A0A068Q5Q5
B	-3	ARG	-	expression tag	UNP A0A068Q5Q5
B	-2	GLY	-	expression tag	UNP A0A068Q5Q5
B	-1	SER	-	expression tag	UNP A0A068Q5Q5
B	0	HIS	-	expression tag	UNP A0A068Q5Q5
B	213	THR	ALA	conflict	UNP A0A068Q5Q5
B	256	ILE	SER	conflict	UNP A0A068Q5Q5
B	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
C	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
C	-18	GLY	-	expression tag	UNP A0A068Q5Q5
C	-17	SER	-	expression tag	UNP A0A068Q5Q5
C	-16	SER	-	expression tag	UNP A0A068Q5Q5
C	-15	HIS	-	expression tag	UNP A0A068Q5Q5
C	-14	HIS	-	expression tag	UNP A0A068Q5Q5
C	-13	HIS	-	expression tag	UNP A0A068Q5Q5
C	-12	HIS	-	expression tag	UNP A0A068Q5Q5
C	-11	HIS	-	expression tag	UNP A0A068Q5Q5
C	-10	HIS	-	expression tag	UNP A0A068Q5Q5
C	-9	SER	-	expression tag	UNP A0A068Q5Q5
C	-8	SER	-	expression tag	UNP A0A068Q5Q5
C	-7	GLY	-	expression tag	UNP A0A068Q5Q5
C	-6	LEU	-	expression tag	UNP A0A068Q5Q5
C	-5	VAL	-	expression tag	UNP A0A068Q5Q5
C	-4	PRO	-	expression tag	UNP A0A068Q5Q5
C	-3	ARG	-	expression tag	UNP A0A068Q5Q5
C	-2	GLY	-	expression tag	UNP A0A068Q5Q5
C	-1	SER	-	expression tag	UNP A0A068Q5Q5
C	0	HIS	-	expression tag	UNP A0A068Q5Q5
C	213	THR	ALA	conflict	UNP A0A068Q5Q5
C	256	ILE	SER	conflict	UNP A0A068Q5Q5
C	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
C	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
D	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
D	-18	GLY	-	expression tag	UNP A0A068Q5Q5
D	-17	SER	-	expression tag	UNP A0A068Q5Q5
D	-16	SER	-	expression tag	UNP A0A068Q5Q5
D	-15	HIS	-	expression tag	UNP A0A068Q5Q5
D	-14	HIS	-	expression tag	UNP A0A068Q5Q5
D	-13	HIS	-	expression tag	UNP A0A068Q5Q5
D	-12	HIS	-	expression tag	UNP A0A068Q5Q5
D	-11	HIS	-	expression tag	UNP A0A068Q5Q5
D	-10	HIS	-	expression tag	UNP A0A068Q5Q5
D	-9	SER	-	expression tag	UNP A0A068Q5Q5
D	-8	SER	-	expression tag	UNP A0A068Q5Q5
D	-7	GLY	-	expression tag	UNP A0A068Q5Q5
D	-6	LEU	-	expression tag	UNP A0A068Q5Q5
D	-5	VAL	-	expression tag	UNP A0A068Q5Q5
D	-4	PRO	-	expression tag	UNP A0A068Q5Q5
D	-3	ARG	-	expression tag	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	GLY	-	expression tag	UNP A0A068Q5Q5
D	-1	SER	-	expression tag	UNP A0A068Q5Q5
D	0	HIS	-	expression tag	UNP A0A068Q5Q5
D	213	THR	ALA	conflict	UNP A0A068Q5Q5
D	256	ILE	SER	conflict	UNP A0A068Q5Q5
D	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
D	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
E	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
E	-18	GLY	-	expression tag	UNP A0A068Q5Q5
E	-17	SER	-	expression tag	UNP A0A068Q5Q5
E	-16	SER	-	expression tag	UNP A0A068Q5Q5
E	-15	HIS	-	expression tag	UNP A0A068Q5Q5
E	-14	HIS	-	expression tag	UNP A0A068Q5Q5
E	-13	HIS	-	expression tag	UNP A0A068Q5Q5
E	-12	HIS	-	expression tag	UNP A0A068Q5Q5
E	-11	HIS	-	expression tag	UNP A0A068Q5Q5
E	-10	HIS	-	expression tag	UNP A0A068Q5Q5
E	-9	SER	-	expression tag	UNP A0A068Q5Q5
E	-8	SER	-	expression tag	UNP A0A068Q5Q5
E	-7	GLY	-	expression tag	UNP A0A068Q5Q5
E	-6	LEU	-	expression tag	UNP A0A068Q5Q5
E	-5	VAL	-	expression tag	UNP A0A068Q5Q5
E	-4	PRO	-	expression tag	UNP A0A068Q5Q5
E	-3	ARG	-	expression tag	UNP A0A068Q5Q5
E	-2	GLY	-	expression tag	UNP A0A068Q5Q5
E	-1	SER	-	expression tag	UNP A0A068Q5Q5
E	0	HIS	-	expression tag	UNP A0A068Q5Q5
E	213	THR	ALA	conflict	UNP A0A068Q5Q5
E	256	ILE	SER	conflict	UNP A0A068Q5Q5
E	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
E	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
F	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
F	-18	GLY	-	expression tag	UNP A0A068Q5Q5
F	-17	SER	-	expression tag	UNP A0A068Q5Q5
F	-16	SER	-	expression tag	UNP A0A068Q5Q5
F	-15	HIS	-	expression tag	UNP A0A068Q5Q5
F	-14	HIS	-	expression tag	UNP A0A068Q5Q5
F	-13	HIS	-	expression tag	UNP A0A068Q5Q5
F	-12	HIS	-	expression tag	UNP A0A068Q5Q5
F	-11	HIS	-	expression tag	UNP A0A068Q5Q5
F	-10	HIS	-	expression tag	UNP A0A068Q5Q5
F	-9	SER	-	expression tag	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-8	SER	-	expression tag	UNP A0A068Q5Q5
F	-7	GLY	-	expression tag	UNP A0A068Q5Q5
F	-6	LEU	-	expression tag	UNP A0A068Q5Q5
F	-5	VAL	-	expression tag	UNP A0A068Q5Q5
F	-4	PRO	-	expression tag	UNP A0A068Q5Q5
F	-3	ARG	-	expression tag	UNP A0A068Q5Q5
F	-2	GLY	-	expression tag	UNP A0A068Q5Q5
F	-1	SER	-	expression tag	UNP A0A068Q5Q5
F	0	HIS	-	expression tag	UNP A0A068Q5Q5
F	213	THR	ALA	conflict	UNP A0A068Q5Q5
F	256	ILE	SER	conflict	UNP A0A068Q5Q5
F	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
F	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
G	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
G	-18	GLY	-	expression tag	UNP A0A068Q5Q5
G	-17	SER	-	expression tag	UNP A0A068Q5Q5
G	-16	SER	-	expression tag	UNP A0A068Q5Q5
G	-15	HIS	-	expression tag	UNP A0A068Q5Q5
G	-14	HIS	-	expression tag	UNP A0A068Q5Q5
G	-13	HIS	-	expression tag	UNP A0A068Q5Q5
G	-12	HIS	-	expression tag	UNP A0A068Q5Q5
G	-11	HIS	-	expression tag	UNP A0A068Q5Q5
G	-10	HIS	-	expression tag	UNP A0A068Q5Q5
G	-9	SER	-	expression tag	UNP A0A068Q5Q5
G	-8	SER	-	expression tag	UNP A0A068Q5Q5
G	-7	GLY	-	expression tag	UNP A0A068Q5Q5
G	-6	LEU	-	expression tag	UNP A0A068Q5Q5
G	-5	VAL	-	expression tag	UNP A0A068Q5Q5
G	-4	PRO	-	expression tag	UNP A0A068Q5Q5
G	-3	ARG	-	expression tag	UNP A0A068Q5Q5
G	-2	GLY	-	expression tag	UNP A0A068Q5Q5
G	-1	SER	-	expression tag	UNP A0A068Q5Q5
G	0	HIS	-	expression tag	UNP A0A068Q5Q5
G	213	THR	ALA	conflict	UNP A0A068Q5Q5
G	256	ILE	SER	conflict	UNP A0A068Q5Q5
G	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
G	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
H	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
H	-18	GLY	-	expression tag	UNP A0A068Q5Q5
H	-17	SER	-	expression tag	UNP A0A068Q5Q5
H	-16	SER	-	expression tag	UNP A0A068Q5Q5
H	-15	HIS	-	expression tag	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
H	-14	HIS	-	expression tag	UNP A0A068Q5Q5
H	-13	HIS	-	expression tag	UNP A0A068Q5Q5
H	-12	HIS	-	expression tag	UNP A0A068Q5Q5
H	-11	HIS	-	expression tag	UNP A0A068Q5Q5
H	-10	HIS	-	expression tag	UNP A0A068Q5Q5
H	-9	SER	-	expression tag	UNP A0A068Q5Q5
H	-8	SER	-	expression tag	UNP A0A068Q5Q5
H	-7	GLY	-	expression tag	UNP A0A068Q5Q5
H	-6	LEU	-	expression tag	UNP A0A068Q5Q5
H	-5	VAL	-	expression tag	UNP A0A068Q5Q5
H	-4	PRO	-	expression tag	UNP A0A068Q5Q5
H	-3	ARG	-	expression tag	UNP A0A068Q5Q5
H	-2	GLY	-	expression tag	UNP A0A068Q5Q5
H	-1	SER	-	expression tag	UNP A0A068Q5Q5
H	0	HIS	-	expression tag	UNP A0A068Q5Q5
H	213	THR	ALA	conflict	UNP A0A068Q5Q5
H	256	ILE	SER	conflict	UNP A0A068Q5Q5
H	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
H	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
I	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
I	-18	GLY	-	expression tag	UNP A0A068Q5Q5
I	-17	SER	-	expression tag	UNP A0A068Q5Q5
I	-16	SER	-	expression tag	UNP A0A068Q5Q5
I	-15	HIS	-	expression tag	UNP A0A068Q5Q5
I	-14	HIS	-	expression tag	UNP A0A068Q5Q5
I	-13	HIS	-	expression tag	UNP A0A068Q5Q5
I	-12	HIS	-	expression tag	UNP A0A068Q5Q5
I	-11	HIS	-	expression tag	UNP A0A068Q5Q5
I	-10	HIS	-	expression tag	UNP A0A068Q5Q5
I	-9	SER	-	expression tag	UNP A0A068Q5Q5
I	-8	SER	-	expression tag	UNP A0A068Q5Q5
I	-7	GLY	-	expression tag	UNP A0A068Q5Q5
I	-6	LEU	-	expression tag	UNP A0A068Q5Q5
I	-5	VAL	-	expression tag	UNP A0A068Q5Q5
I	-4	PRO	-	expression tag	UNP A0A068Q5Q5
I	-3	ARG	-	expression tag	UNP A0A068Q5Q5
I	-2	GLY	-	expression tag	UNP A0A068Q5Q5
I	-1	SER	-	expression tag	UNP A0A068Q5Q5
I	0	HIS	-	expression tag	UNP A0A068Q5Q5
I	213	THR	ALA	conflict	UNP A0A068Q5Q5
I	256	ILE	SER	conflict	UNP A0A068Q5Q5
I	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5

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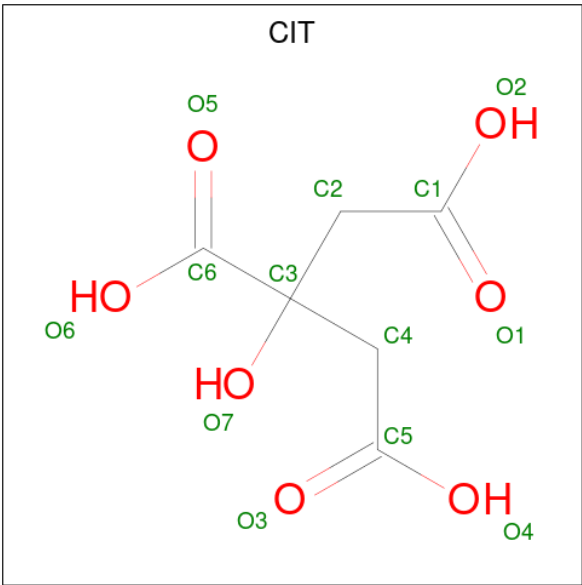
Chain	Residue	Modelled	Actual	Comment	Reference
I	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
J	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
J	-18	GLY	-	expression tag	UNP A0A068Q5Q5
J	-17	SER	-	expression tag	UNP A0A068Q5Q5
J	-16	SER	-	expression tag	UNP A0A068Q5Q5
J	-15	HIS	-	expression tag	UNP A0A068Q5Q5
J	-14	HIS	-	expression tag	UNP A0A068Q5Q5
J	-13	HIS	-	expression tag	UNP A0A068Q5Q5
J	-12	HIS	-	expression tag	UNP A0A068Q5Q5
J	-11	HIS	-	expression tag	UNP A0A068Q5Q5
J	-10	HIS	-	expression tag	UNP A0A068Q5Q5
J	-9	SER	-	expression tag	UNP A0A068Q5Q5
J	-8	SER	-	expression tag	UNP A0A068Q5Q5
J	-7	GLY	-	expression tag	UNP A0A068Q5Q5
J	-6	LEU	-	expression tag	UNP A0A068Q5Q5
J	-5	VAL	-	expression tag	UNP A0A068Q5Q5
J	-4	PRO	-	expression tag	UNP A0A068Q5Q5
J	-3	ARG	-	expression tag	UNP A0A068Q5Q5
J	-2	GLY	-	expression tag	UNP A0A068Q5Q5
J	-1	SER	-	expression tag	UNP A0A068Q5Q5
J	0	HIS	-	expression tag	UNP A0A068Q5Q5
J	213	THR	ALA	conflict	UNP A0A068Q5Q5
J	256	ILE	SER	conflict	UNP A0A068Q5Q5
J	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
J	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
K	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
K	-18	GLY	-	expression tag	UNP A0A068Q5Q5
K	-17	SER	-	expression tag	UNP A0A068Q5Q5
K	-16	SER	-	expression tag	UNP A0A068Q5Q5
K	-15	HIS	-	expression tag	UNP A0A068Q5Q5
K	-14	HIS	-	expression tag	UNP A0A068Q5Q5
K	-13	HIS	-	expression tag	UNP A0A068Q5Q5
K	-12	HIS	-	expression tag	UNP A0A068Q5Q5
K	-11	HIS	-	expression tag	UNP A0A068Q5Q5
K	-10	HIS	-	expression tag	UNP A0A068Q5Q5
K	-9	SER	-	expression tag	UNP A0A068Q5Q5
K	-8	SER	-	expression tag	UNP A0A068Q5Q5
K	-7	GLY	-	expression tag	UNP A0A068Q5Q5
K	-6	LEU	-	expression tag	UNP A0A068Q5Q5
K	-5	VAL	-	expression tag	UNP A0A068Q5Q5
K	-4	PRO	-	expression tag	UNP A0A068Q5Q5
K	-3	ARG	-	expression tag	UNP A0A068Q5Q5

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Chain	Residue	Modelled	Actual	Comment	Reference
K	-2	GLY	-	expression tag	UNP A0A068Q5Q5
K	-1	SER	-	expression tag	UNP A0A068Q5Q5
K	0	HIS	-	expression tag	UNP A0A068Q5Q5
K	213	THR	ALA	conflict	UNP A0A068Q5Q5
K	256	ILE	SER	conflict	UNP A0A068Q5Q5
K	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
K	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
L	-19	MET	-	initiating methionine	UNP A0A068Q5Q5
L	-18	GLY	-	expression tag	UNP A0A068Q5Q5
L	-17	SER	-	expression tag	UNP A0A068Q5Q5
L	-16	SER	-	expression tag	UNP A0A068Q5Q5
L	-15	HIS	-	expression tag	UNP A0A068Q5Q5
L	-14	HIS	-	expression tag	UNP A0A068Q5Q5
L	-13	HIS	-	expression tag	UNP A0A068Q5Q5
L	-12	HIS	-	expression tag	UNP A0A068Q5Q5
L	-11	HIS	-	expression tag	UNP A0A068Q5Q5
L	-10	HIS	-	expression tag	UNP A0A068Q5Q5
L	-9	SER	-	expression tag	UNP A0A068Q5Q5
L	-8	SER	-	expression tag	UNP A0A068Q5Q5
L	-7	GLY	-	expression tag	UNP A0A068Q5Q5
L	-6	LEU	-	expression tag	UNP A0A068Q5Q5
L	-5	VAL	-	expression tag	UNP A0A068Q5Q5
L	-4	PRO	-	expression tag	UNP A0A068Q5Q5
L	-3	ARG	-	expression tag	UNP A0A068Q5Q5
L	-2	GLY	-	expression tag	UNP A0A068Q5Q5
L	-1	SER	-	expression tag	UNP A0A068Q5Q5
L	0	HIS	-	expression tag	UNP A0A068Q5Q5
L	213	THR	ALA	conflict	UNP A0A068Q5Q5
L	256	ILE	SER	conflict	UNP A0A068Q5Q5
L	391	ALA	ASP	engineered mutation	UNP A0A068Q5Q5
L	392	ALA	ASP	engineered mutation	UNP A0A068Q5Q5

- Molecule 2 is CITRIC ACID (CCD ID: CIT) (formula: $C_6H_8O_7$) (labeled as "Ligand of Interest" by depositor).



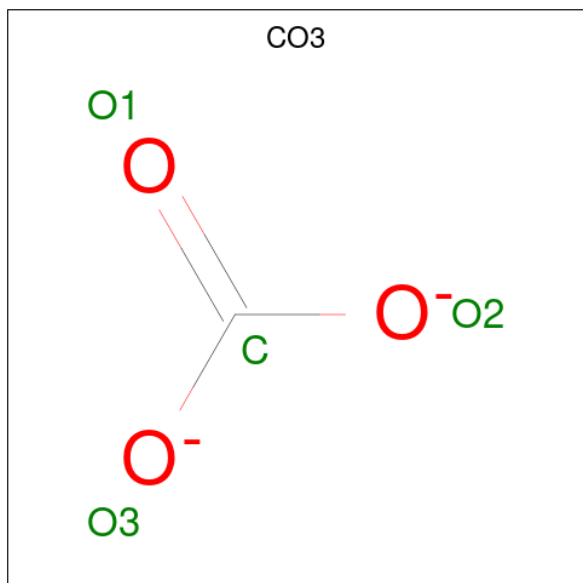
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			13	6	7		
2	A	1	Total	C	O	0	0
			13	6	7		
2	B	1	Total	C	O	0	0
			13	6	7		
2	B	1	Total	C	O	0	0
			13	6	7		
2	C	1	Total	C	O	0	0
			13	6	7		
2	D	1	Total	C	O	0	0
			13	6	7		
2	E	1	Total	C	O	0	0
			13	6	7		
2	F	1	Total	C	O	0	0
			13	6	7		
2	F	1	Total	C	O	0	0
			13	6	7		
2	G	1	Total	C	O	0	0
			13	6	7		
2	H	1	Total	C	O	0	0
			13	6	7		
2	I	1	Total	C	O	0	0
			13	6	7		
2	J	1	Total	C	O	0	0
			13	6	7		
2	K	1	Total	C	O	0	0
			13	6	7		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	K	1	Total	C	O	0	0
			13	6	7		
2	L	1	Total	C	O	0	0
			13	6	7		

- Molecule 3 is CARBONATE ION (CCD ID: CO3) (formula: CO₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total	C	O	0	0
			4	1	3		
3	H	1	Total	C	O	0	0
			4	1	3		
3	K	1	Total	C	O	0	0
			4	1	3		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	170	Total	O	0	0
			170	170		
4	B	151	Total	O	0	0
			151	151		
4	C	169	Total	O	0	0
			169	169		
4	D	117	Total	O	0	0
			117	117		

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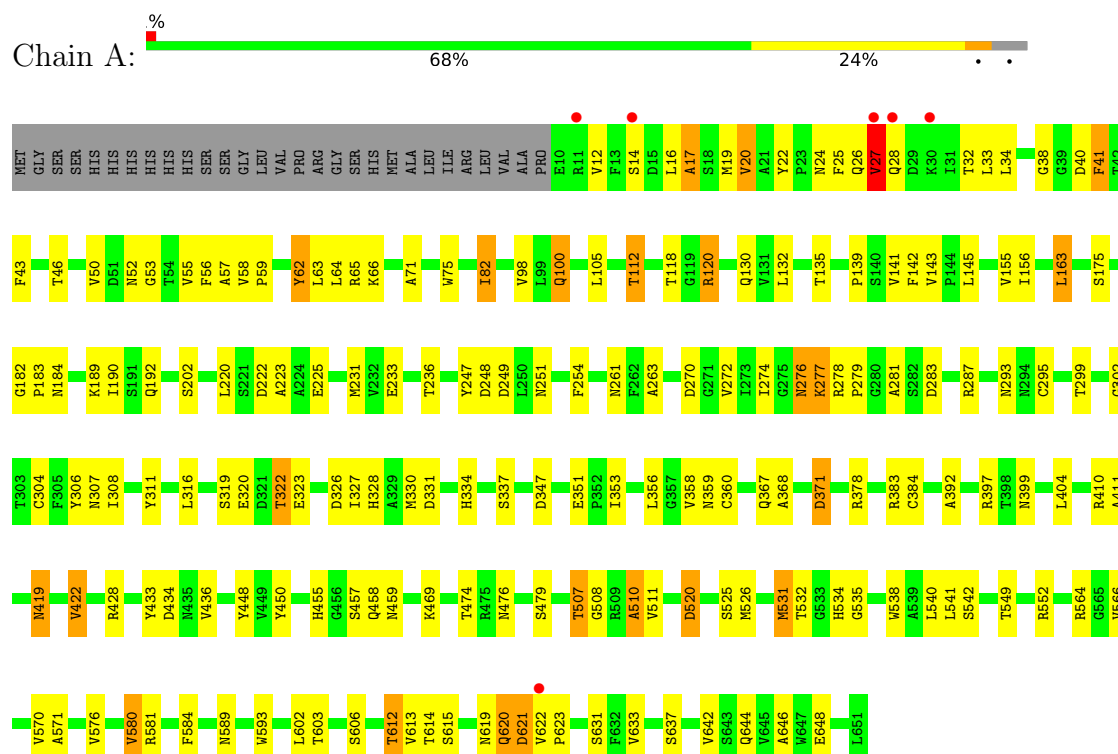
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	118	Total 118	O 118	0	0
4	F	164	Total 164	O 164	0	0
4	G	87	Total 87	O 87	0	0
4	H	106	Total 106	O 106	0	0
4	I	72	Total 72	O 72	0	0
4	J	72	Total 72	O 72	0	0
4	K	74	Total 74	O 74	0	0
4	L	68	Total 68	O 68	0	0

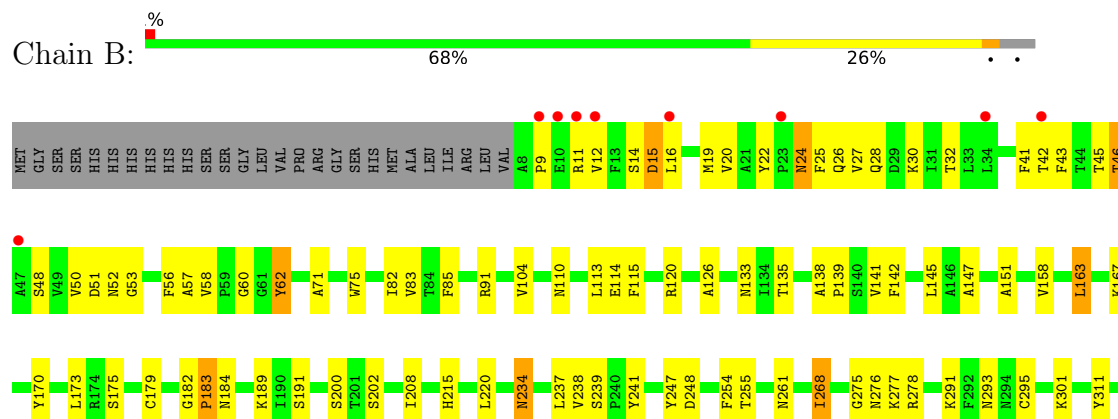
3 Residue-property plots

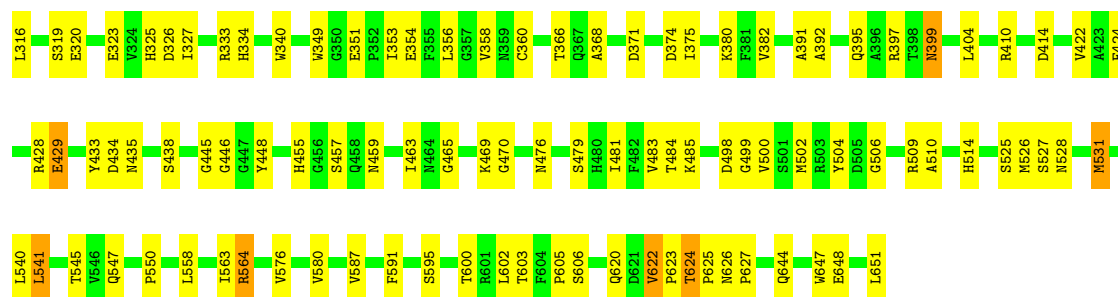
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

• Molecule 1: K1 LYASE



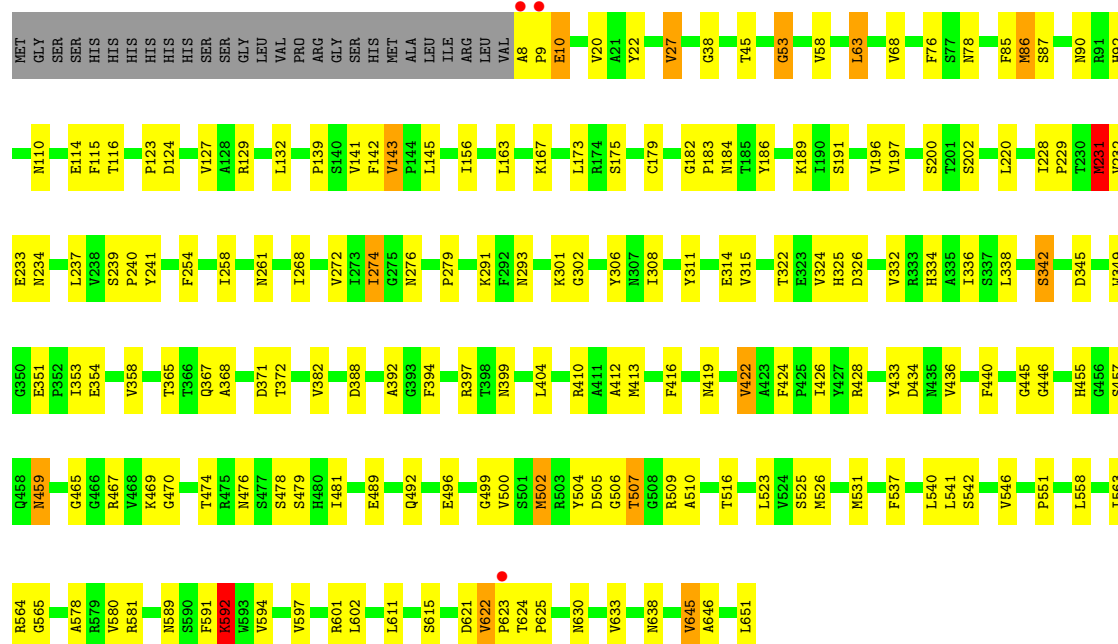
• Molecule 1: K1 LYASE





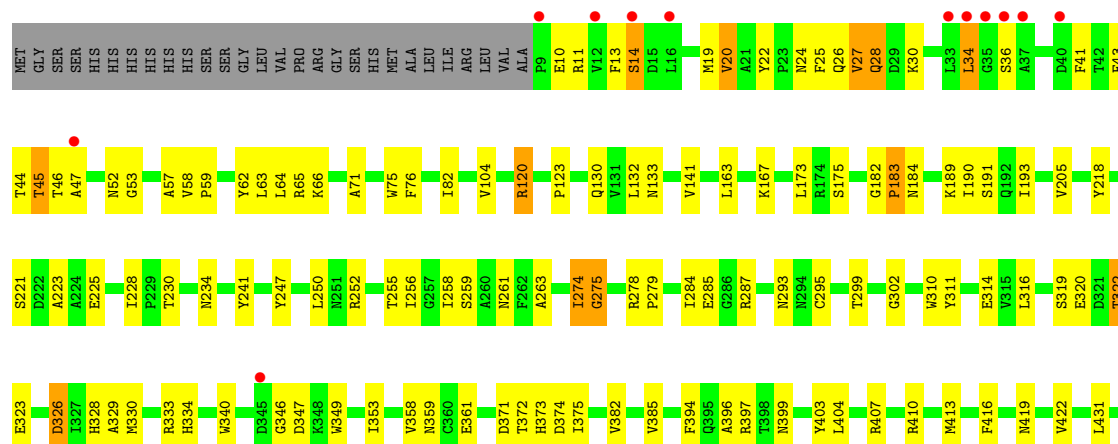
• Molecule 1: K1 LYASE

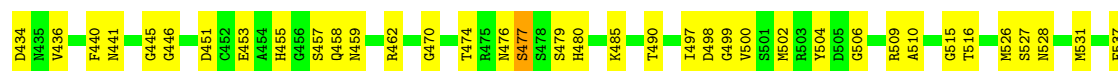
Chain C: 69% 25%



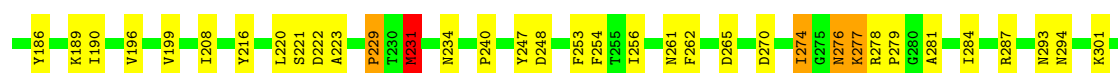
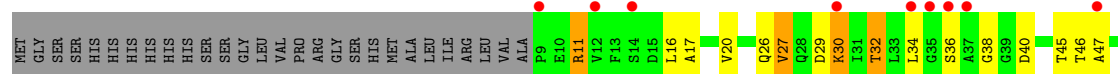
• Molecule 1: K1 LYASE

Chain D: 2% 67% 26%

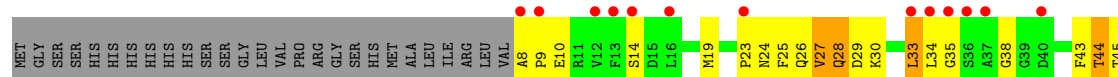
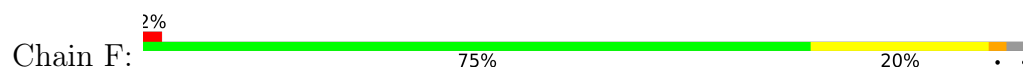




• Molecule 1: K1 LYASE

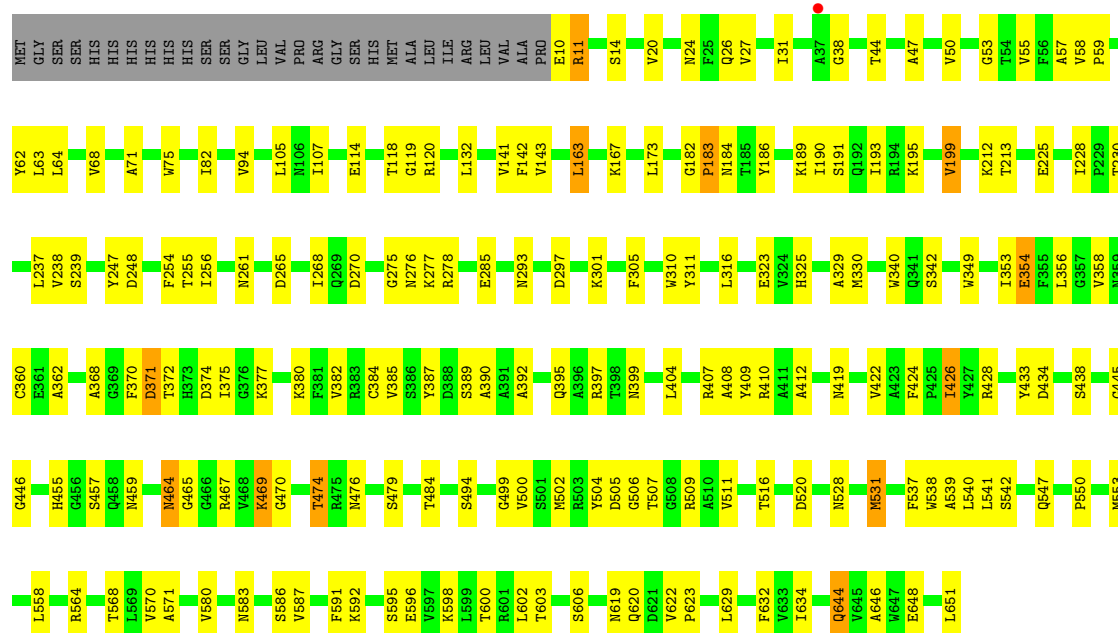


• Molecule 1: K1 LYASE



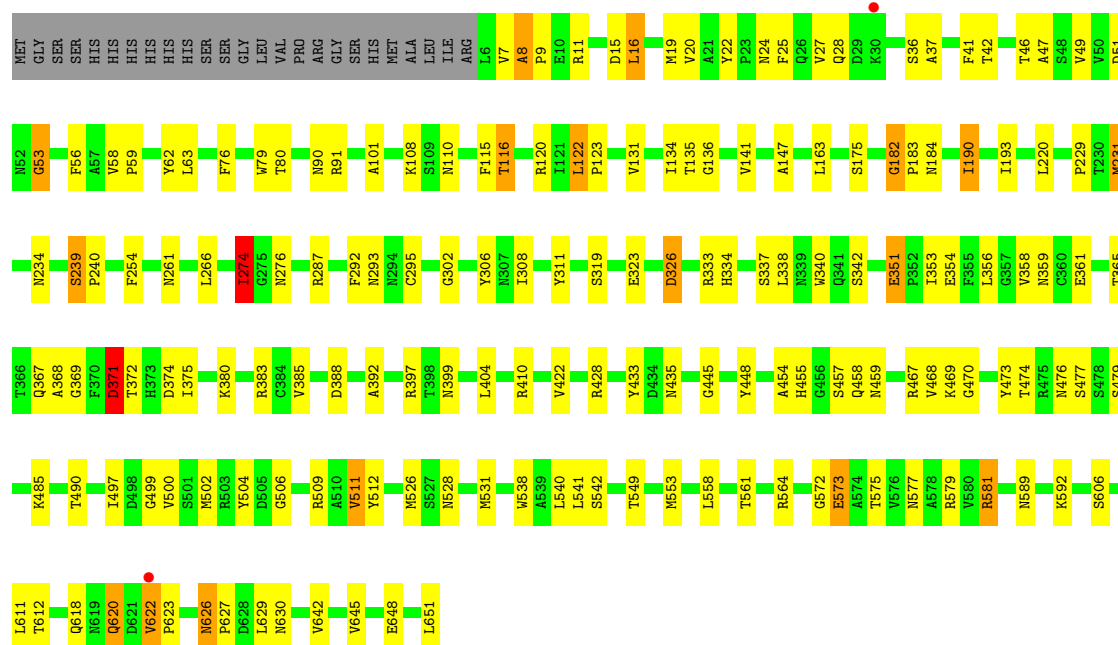
- Molecule 1: K1 LYASE

Chain G: 68% 26% . .



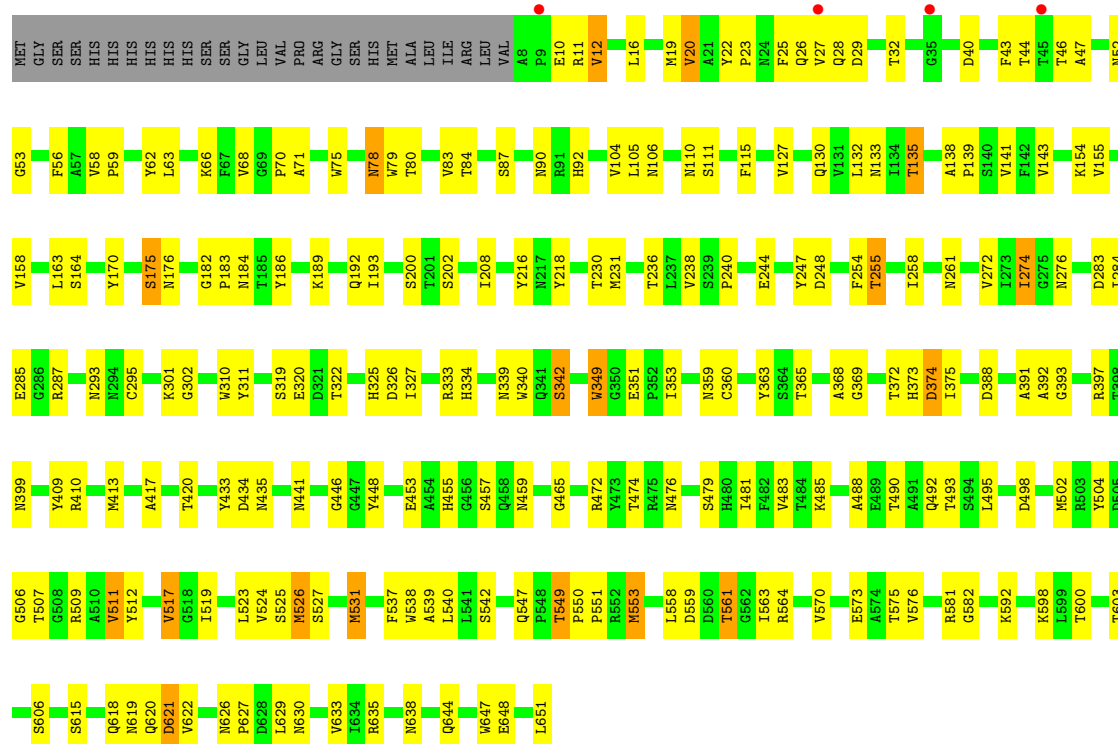
- Molecule 1: K1 LYASE

Chain H: 71% 23% 6%

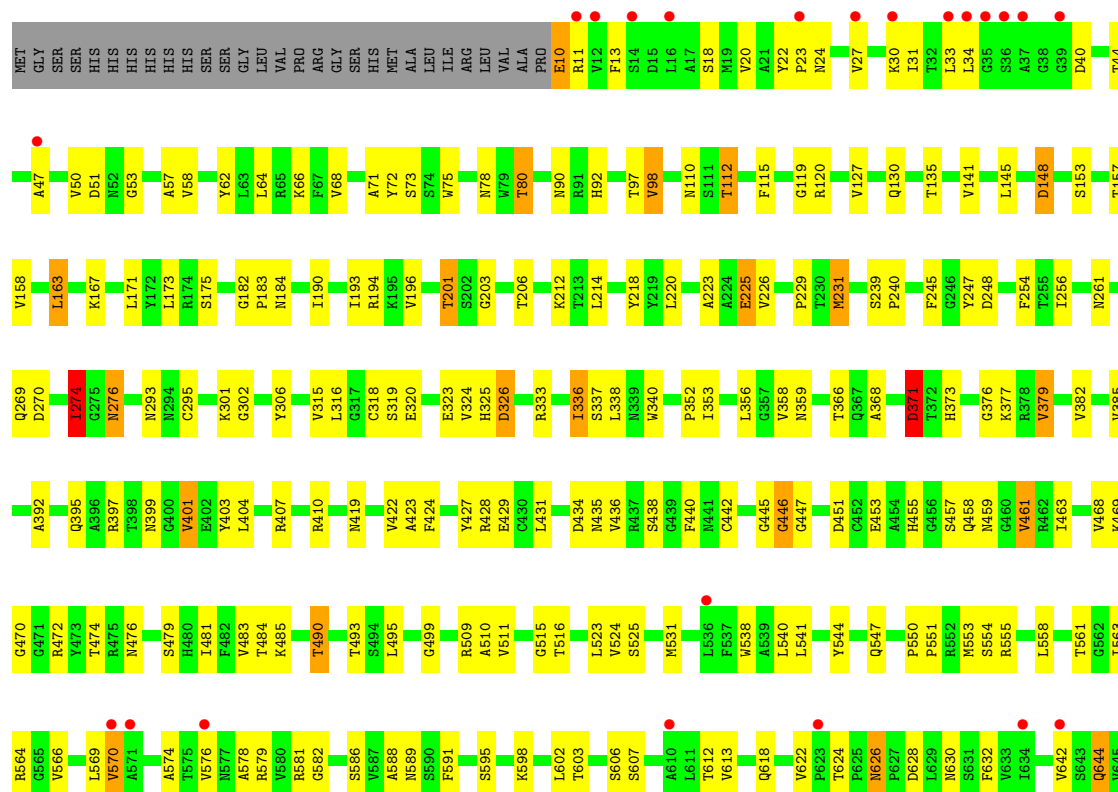


- Molecule 1: K1 LYASE

Chain I: %

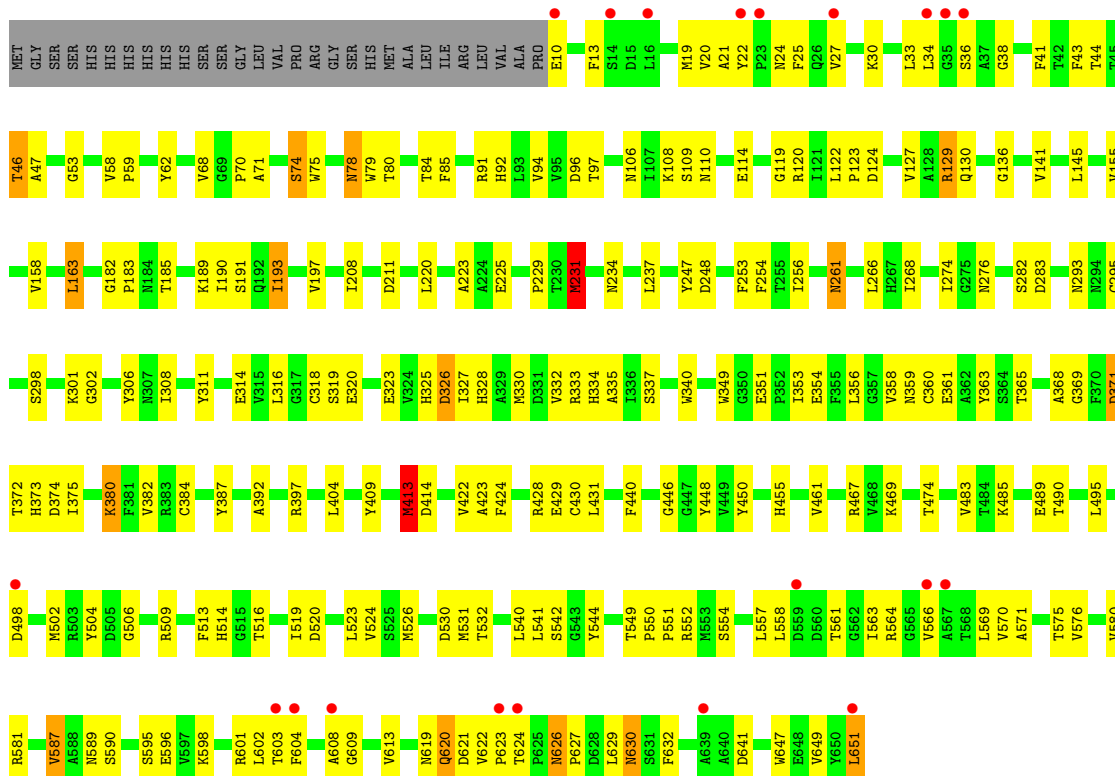


● Molecule 1: K1 LYASE

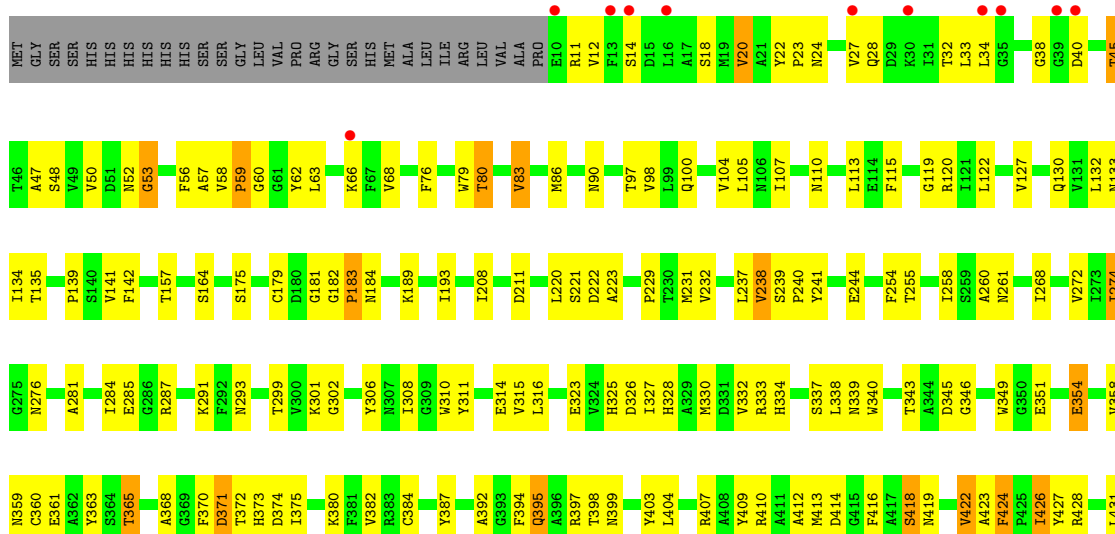


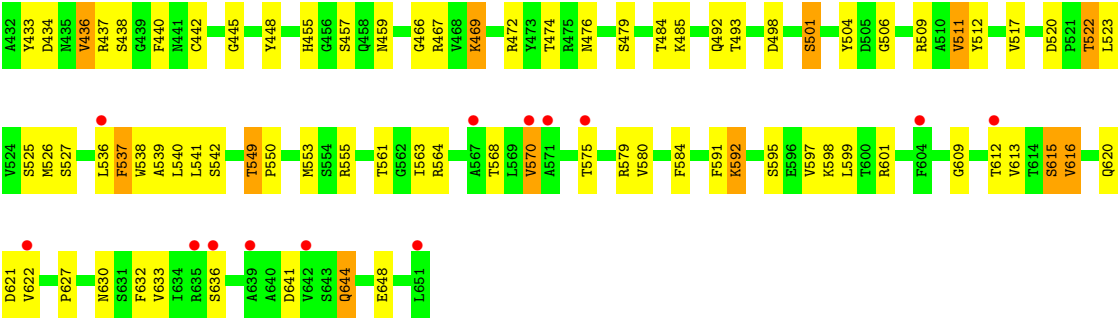


• Molecule 1: K1 LYASE



• Molecule 1: K1 LYASE





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	363.94Å 239.63Å 121.63Å 90.00° 100.13° 90.00°	Depositor
Resolution (Å)	29.95 – 2.78 29.95 – 2.78	Depositor EDS
% Data completeness (in resolution range)	97.9 (29.95-2.78) 98.3 (29.95-2.78)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.01 (at 2.76Å)	Xtriage
Refinement program	PHENIX Phenix1.17.1-3660	Depositor
R, R_{free}	0.182 , 0.219 0.178 , 0.208	Depositor DCC
R_{free} test set	12744 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å ²)	32.7	Xtriage
Anisotropy	0.111	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 37.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	59973	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.92% 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: CIT, CO3

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	1.26	5/4962 (0.1%)	1.23	20/6755 (0.3%)
1	B	1.26	8/4975 (0.2%)	1.20	10/6774 (0.1%)
1	C	1.31	14/4975 (0.3%)	1.23	15/6774 (0.2%)
1	D	1.19	4/4970 (0.1%)	1.18	16/6766 (0.2%)
1	E	1.18	6/4970 (0.1%)	1.18	13/6766 (0.2%)
1	F	1.26	12/4975 (0.2%)	1.20	13/6774 (0.2%)
1	G	1.15	9/4962 (0.2%)	1.17	16/6755 (0.2%)
1	H	1.16	1/4990 (0.0%)	1.19	22/6795 (0.3%)
1	I	1.14	1/4975 (0.0%)	1.16	12/6774 (0.2%)
1	J	1.05	3/4962 (0.1%)	1.15	10/6755 (0.1%)
1	K	1.10	6/4962 (0.1%)	1.14	15/6755 (0.2%)
1	L	1.05	4/4962 (0.1%)	1.14	5/6755 (0.1%)
All	All	1.18	73/59640 (0.1%)	1.18	167/81198 (0.2%)

The worst 5 of 73 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	228	ILE	CA-C	-7.72	1.47	1.53
1	L	229	PRO	CA-C	-7.39	1.43	1.52
1	A	566	VAL	C-O	-6.84	1.17	1.24
1	E	498	ASP	CB-CG	6.76	1.69	1.52
1	C	86	MET	SD-CE	-6.47	1.63	1.79

The worst 5 of 167 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	520	ASP	CA-C-N	-8.15	111.41	119.64
1	A	520	ASP	C-N-CA	-8.15	111.41	119.64
1	J	371	ASP	N-CA-C	7.85	121.00	109.07
1	G	143	VAL	CA-C-N	-7.72	112.25	120.66
1	G	143	VAL	C-N-CA	-7.72	112.25	120.66

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4858	0	4712	124	0
1	B	4870	0	4724	123	0
1	C	4870	0	4724	104	0
1	D	4865	0	4720	129	0
1	E	4865	0	4720	129	0
1	F	4870	0	4724	77	0
1	G	4858	0	4712	112	0
1	H	4885	0	4744	108	0
1	I	4870	0	4724	138	0
1	J	4858	0	4712	144	0
1	K	4858	0	4712	152	0
1	L	4858	0	4712	180	0
2	A	26	0	8	2	0
2	B	26	0	10	7	0
2	C	13	0	5	2	0
2	D	13	0	5	4	0
2	E	13	0	5	3	0
2	F	26	0	10	2	0
2	G	13	0	5	2	0
2	H	13	0	5	1	0
2	I	13	0	5	3	0
2	J	13	0	5	3	0
2	K	26	0	8	1	0
2	L	13	0	5	2	0
3	C	4	0	0	0	0
3	H	4	0	0	0	0
3	K	4	0	0	0	0
4	A	170	0	0	3	0
4	B	151	0	0	4	0
4	C	169	0	0	3	0
4	D	117	0	0	4	0
4	E	118	0	0	6	0
4	F	164	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	G	87	0	0	0	0
4	H	106	0	0	1	0
4	I	72	0	0	1	0
4	J	72	0	0	2	0
4	K	74	0	0	1	0
4	L	68	0	0	2	0
All	All	59973	0	56716	1470	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 13.

The worst 5 of 1470 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:J:40:ASP:HB3	1:J:66:LYS:HE3	1.14	1.10
1:E:36:SER:HB2	4:E:829:HOH:O	1.55	1.07
1:I:526:MET:HE1	1:I:531:MET:HE1	1.35	1.05
1:D:333:ARG:HH21	2:D:701:CIT:H41	1.23	1.03
1:D:120:ARG:HG2	1:D:120:ARG:HH11	1.27	0.98

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	640/671 (95%)	594 (93%)	41 (6%)	5 (1%)	16	40
1	B	642/671 (96%)	598 (93%)	38 (6%)	6 (1%)	14	37
1	C	642/671 (96%)	605 (94%)	32 (5%)	5 (1%)	16	40
1	D	641/671 (96%)	596 (93%)	38 (6%)	7 (1%)	11	32
1	E	641/671 (96%)	599 (93%)	36 (6%)	6 (1%)	14	37

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	F	642/671 (96%)	596 (93%)	40 (6%)	6 (1%)	14	37
1	G	640/671 (95%)	597 (93%)	38 (6%)	5 (1%)	16	40
1	H	644/671 (96%)	595 (92%)	45 (7%)	4 (1%)	21	47
1	I	642/671 (96%)	592 (92%)	48 (8%)	2 (0%)	36	63
1	J	640/671 (95%)	581 (91%)	57 (9%)	2 (0%)	36	63
1	K	640/671 (95%)	585 (91%)	51 (8%)	4 (1%)	21	47
1	L	640/671 (95%)	585 (91%)	47 (7%)	8 (1%)	9	28
All	All	7694/8052 (96%)	7123 (93%)	511 (7%)	60 (1%)	16	40

5 of 60 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	27	VAL
1	A	38	GLY
1	B	27	VAL
1	E	38	GLY
1	E	46	THR

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	520/544 (96%)	490 (94%)	30 (6%)	18	45
1	B	521/544 (96%)	491 (94%)	30 (6%)	18	45
1	C	521/544 (96%)	491 (94%)	30 (6%)	18	45
1	D	521/544 (96%)	494 (95%)	27 (5%)	21	50
1	E	521/544 (96%)	496 (95%)	25 (5%)	23	53
1	F	521/544 (96%)	491 (94%)	30 (6%)	18	45
1	G	520/544 (96%)	489 (94%)	31 (6%)	17	43
1	H	523/544 (96%)	495 (95%)	28 (5%)	20	48
1	I	521/544 (96%)	480 (92%)	41 (8%)	11	31

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	J	520/544 (96%)	483 (93%)	37 (7%)	13	36
1	K	520/544 (96%)	492 (95%)	28 (5%)	20	48
1	L	520/544 (96%)	468 (90%)	52 (10%)	7	21
All	All	6249/6528 (96%)	5860 (94%)	389 (6%)	16	42

5 of 389 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	I	11	ARG
1	J	274	ILE
1	I	111	SER
1	I	525	SER
1	J	570	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 102 such sidechains are listed below:

Mol	Chain	Res	Type
1	H	577	ASN
1	J	441	ASN
1	L	577	ASN
1	H	644	GLN
1	J	133	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

19 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$
2	CIT	K	701	-	12,12,12	1.96	2 (16%)	17,17,17	1.99	2 (11%)
2	CIT	F	701	-	12,12,12	1.93	3 (25%)	17,17,17	2.27	7 (41%)
2	CIT	J	701	-	12,12,12	1.61	1 (8%)	17,17,17	1.50	4 (23%)
3	CO3	H	701	-	3,3,3	0.65	0	2,3,3	0.43	0
2	CIT	E	701	-	12,12,12	1.81	1 (8%)	17,17,17	1.67	4 (23%)
2	CIT	C	701	-	12,12,12	2.36	4 (33%)	17,17,17	1.66	5 (29%)
2	CIT	K	703	-	12,12,12	2.39	4 (33%)	17,17,17	1.22	1 (5%)
2	CIT	L	701	-	12,12,12	1.67	4 (33%)	17,17,17	1.04	1 (5%)
2	CIT	I	701	-	12,12,12	1.53	1 (8%)	17,17,17	1.18	2 (11%)
2	CIT	B	701	-	12,12,12	1.44	1 (8%)	17,17,17	1.60	4 (23%)
3	CO3	C	702	-	3,3,3	0.57	0	2,3,3	1.59	0
2	CIT	B	702	-	12,12,12	2.20	4 (33%)	17,17,17	1.61	2 (11%)
2	CIT	A	701	-	12,12,12	2.07	2 (16%)	17,17,17	1.55	4 (23%)
2	CIT	G	701	-	12,12,12	1.57	2 (16%)	17,17,17	1.12	1 (5%)
2	CIT	D	701	-	12,12,12	1.75	3 (25%)	17,17,17	1.76	3 (17%)
2	CIT	A	702	-	12,12,12	1.63	3 (25%)	17,17,17	1.41	3 (17%)
3	CO3	K	702	-	3,3,3	0.66	0	2,3,3	0.84	0
2	CIT	F	702	-	12,12,12	1.24	0	17,17,17	1.69	5 (29%)
2	CIT	H	702	-	12,12,12	1.87	3 (25%)	17,17,17	1.45	2 (11%)

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
2	CIT	K	701	-	-	5/16/16/16	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CIT	C	701	-	-	6/16/16/16	-
2	CIT	A	701	-	-	5/16/16/16	-
2	CIT	K	703	-	-	3/16/16/16	-
2	CIT	G	701	-	-	10/16/16/16	-
2	CIT	F	701	-	-	3/16/16/16	-
2	CIT	J	701	-	-	4/16/16/16	-
2	CIT	D	701	-	-	5/16/16/16	-
2	CIT	L	701	-	-	4/16/16/16	-
2	CIT	A	702	-	-	3/16/16/16	-
2	CIT	I	701	-	-	3/16/16/16	-
2	CIT	E	701	-	-	0/16/16/16	-
2	CIT	F	702	-	-	2/16/16/16	-
2	CIT	B	701	-	-	5/16/16/16	-
2	CIT	B	702	-	-	2/16/16/16	-
2	CIT	H	702	-	-	0/16/16/16	-

The worst 5 of 38 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	701	CIT	C3-C6	6.07	1.59	1.53
2	B	702	CIT	C3-C6	5.60	1.59	1.53
2	C	701	CIT	C3-C6	5.59	1.59	1.53
2	K	701	CIT	C3-C6	4.90	1.58	1.53
2	E	701	CIT	C4-C3	-4.60	1.48	1.54

The worst 5 of 50 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	K	701	CIT	O7-C3-C6	7.20	119.18	108.96
2	F	701	CIT	O6-C6-C3	4.87	122.47	113.14
2	B	702	CIT	O6-C6-C3	4.27	121.33	113.14
2	A	702	CIT	O7-C3-C6	3.87	114.45	108.96
2	C	701	CIT	O7-C3-C6	3.85	114.42	108.96

There are no chirality outliers.

5 of 60 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	701	CIT	O7-C3-C6-O5

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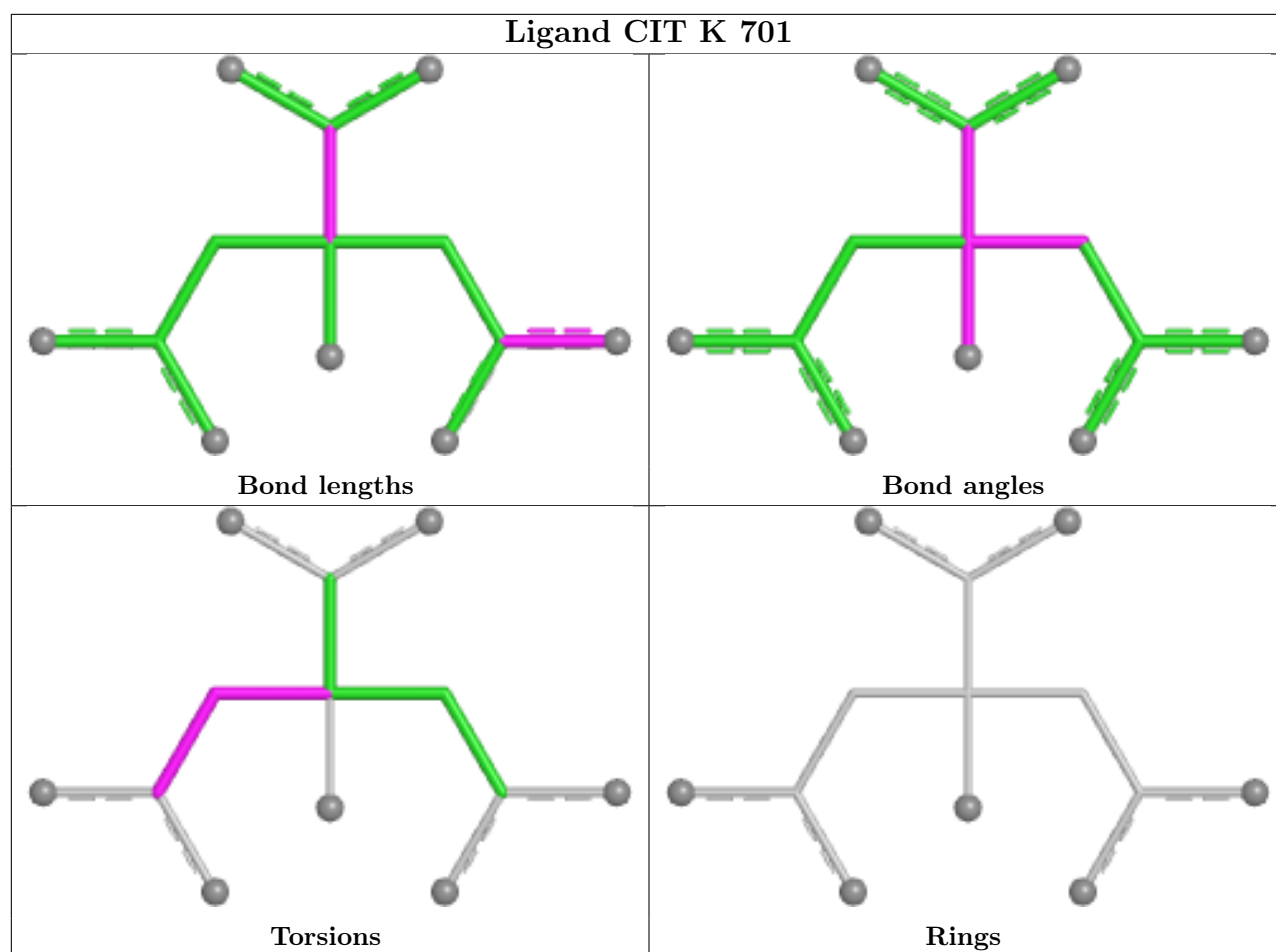
Mol	Chain	Res	Type	Atoms
2	A	701	CIT	O7-C3-C6-O6
2	A	701	CIT	C4-C3-C6-O5
2	A	701	CIT	C4-C3-C6-O6
2	B	701	CIT	O7-C3-C4-C5

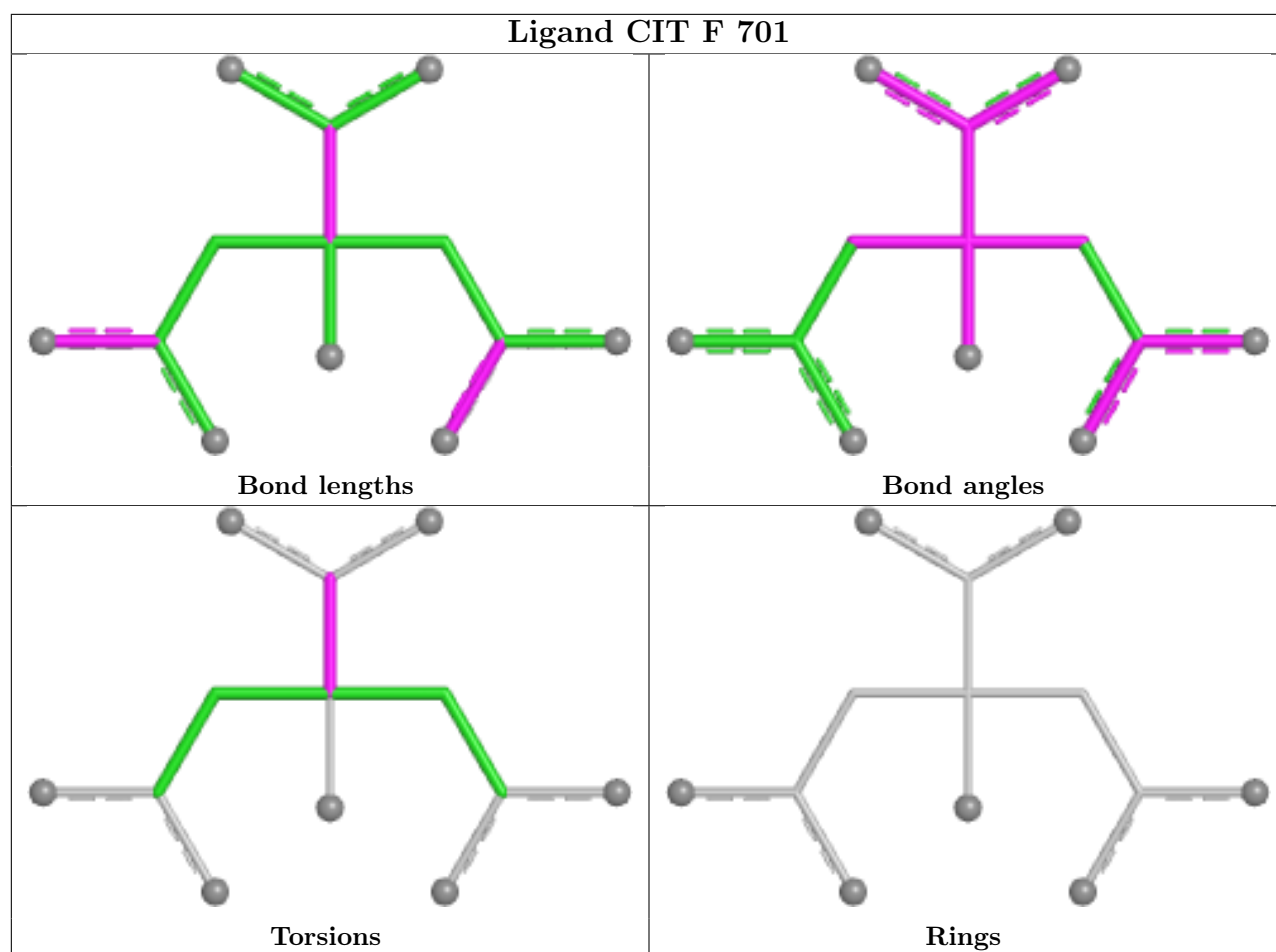
There are no ring outliers.

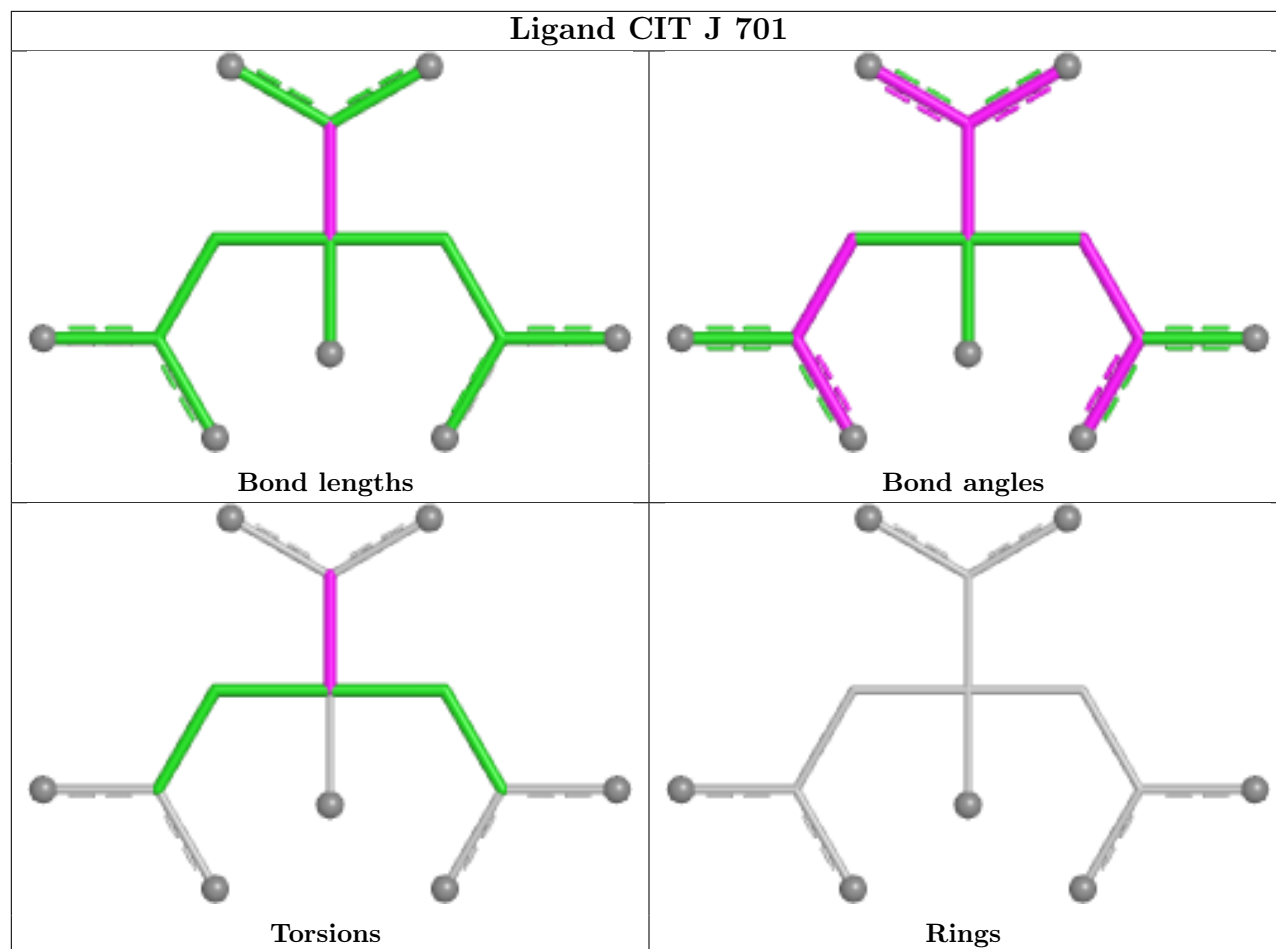
15 monomers are involved in 32 short contacts:

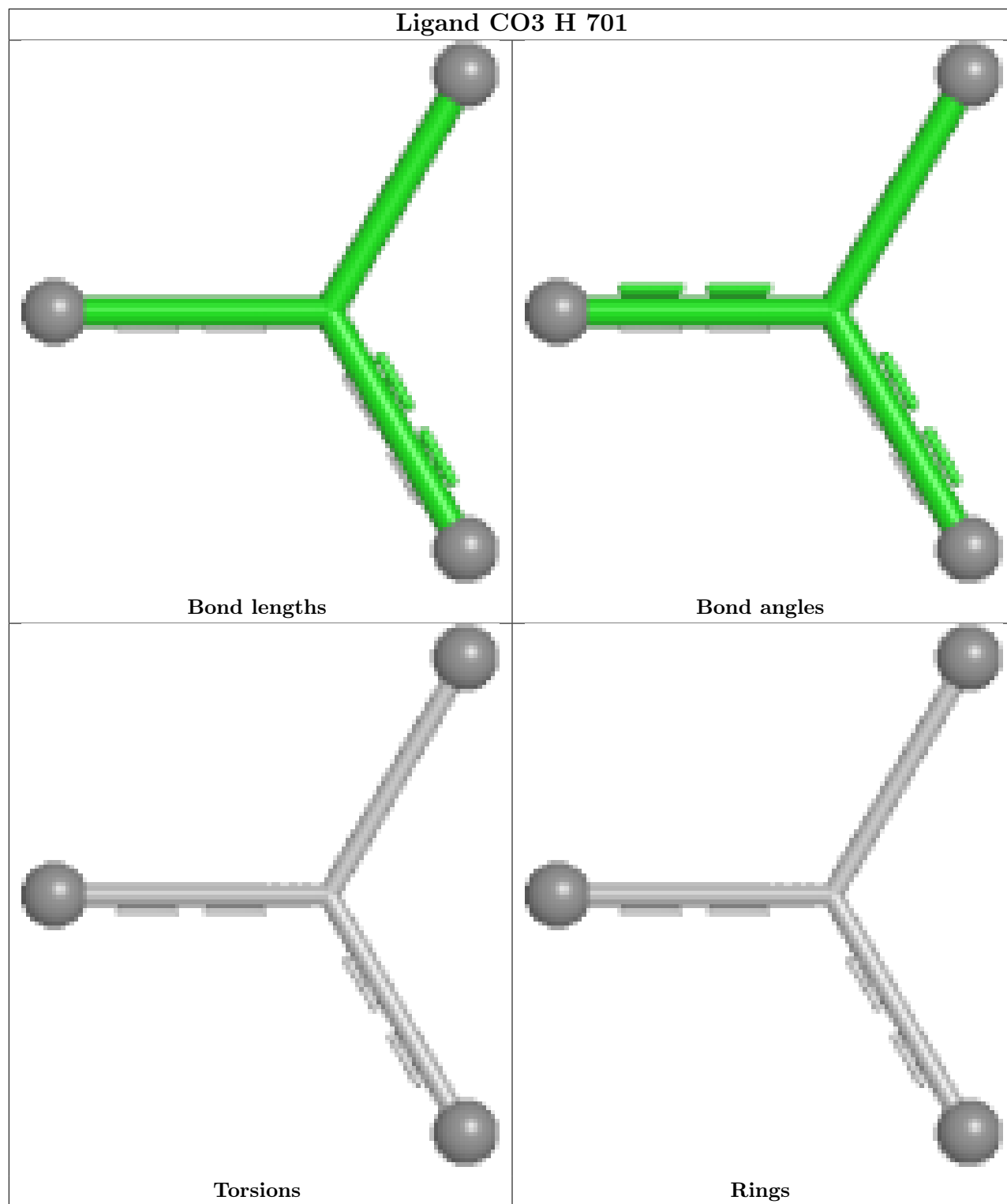
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	701	CIT	1	0
2	J	701	CIT	3	0
2	E	701	CIT	3	0
2	C	701	CIT	2	0
2	K	703	CIT	1	0
2	L	701	CIT	2	0
2	I	701	CIT	3	0
2	B	701	CIT	5	0
2	B	702	CIT	2	0
2	A	701	CIT	1	0
2	G	701	CIT	2	0
2	D	701	CIT	4	0
2	A	702	CIT	1	0
2	F	702	CIT	1	0
2	H	702	CIT	1	0

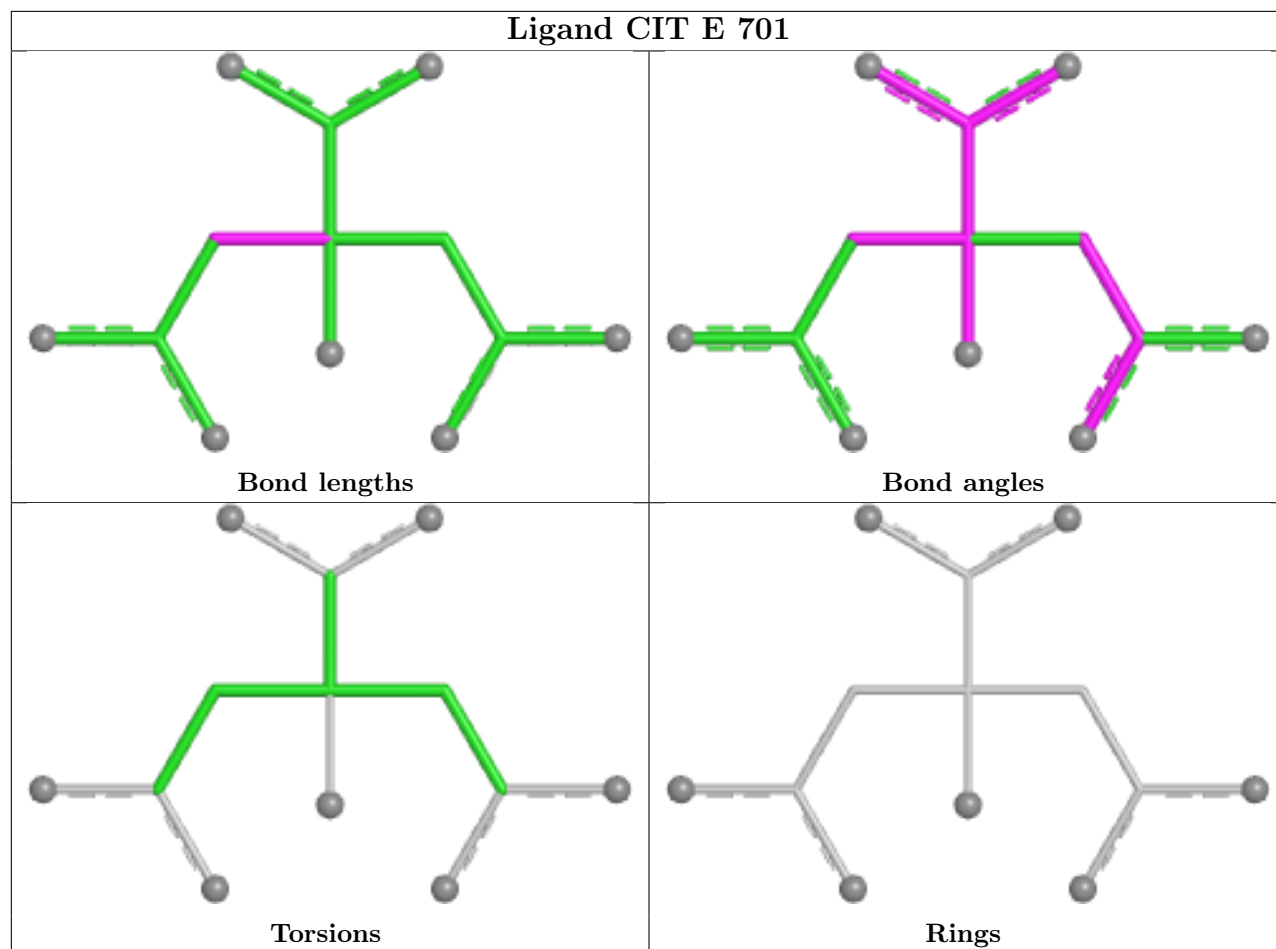
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

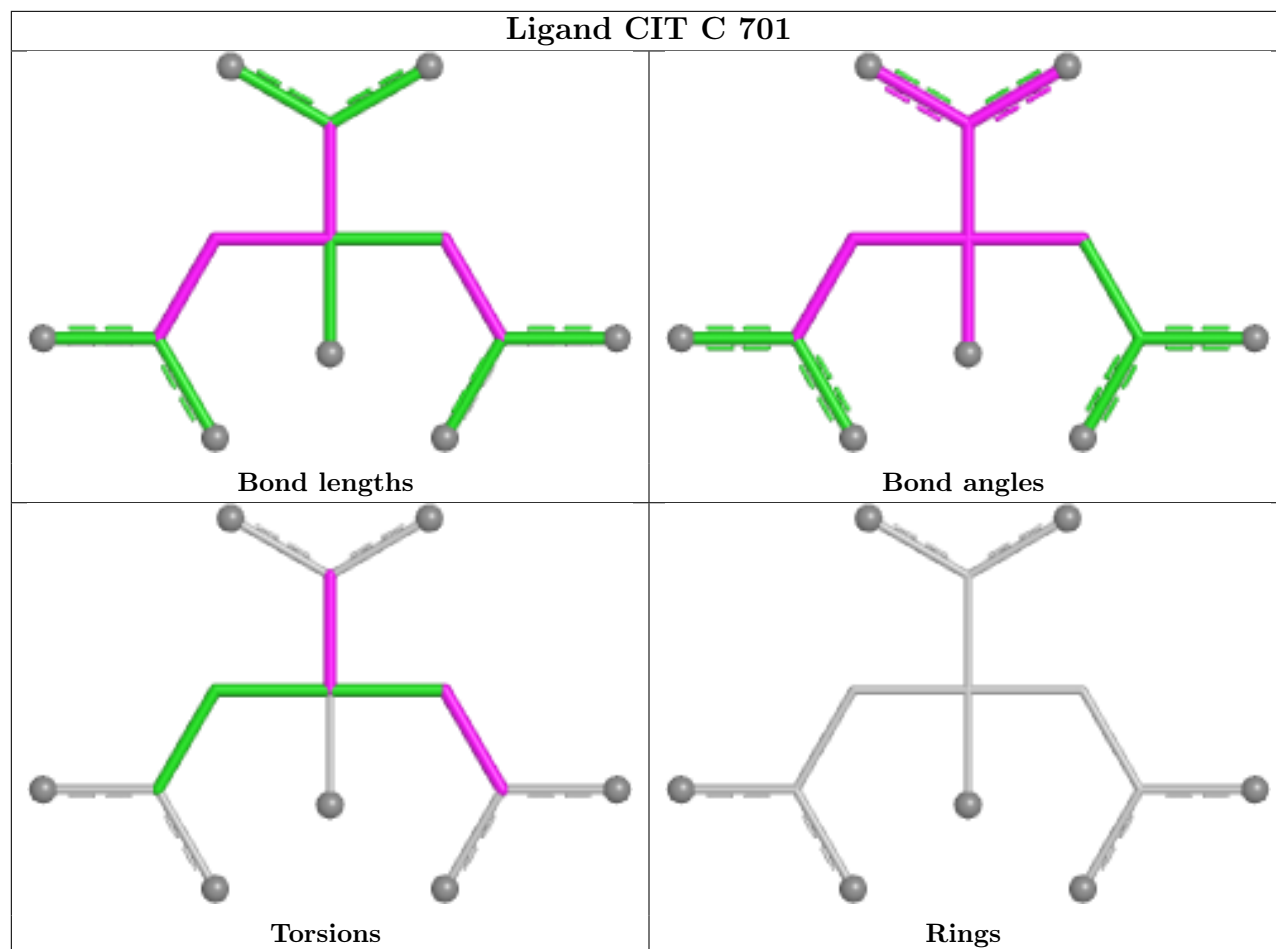


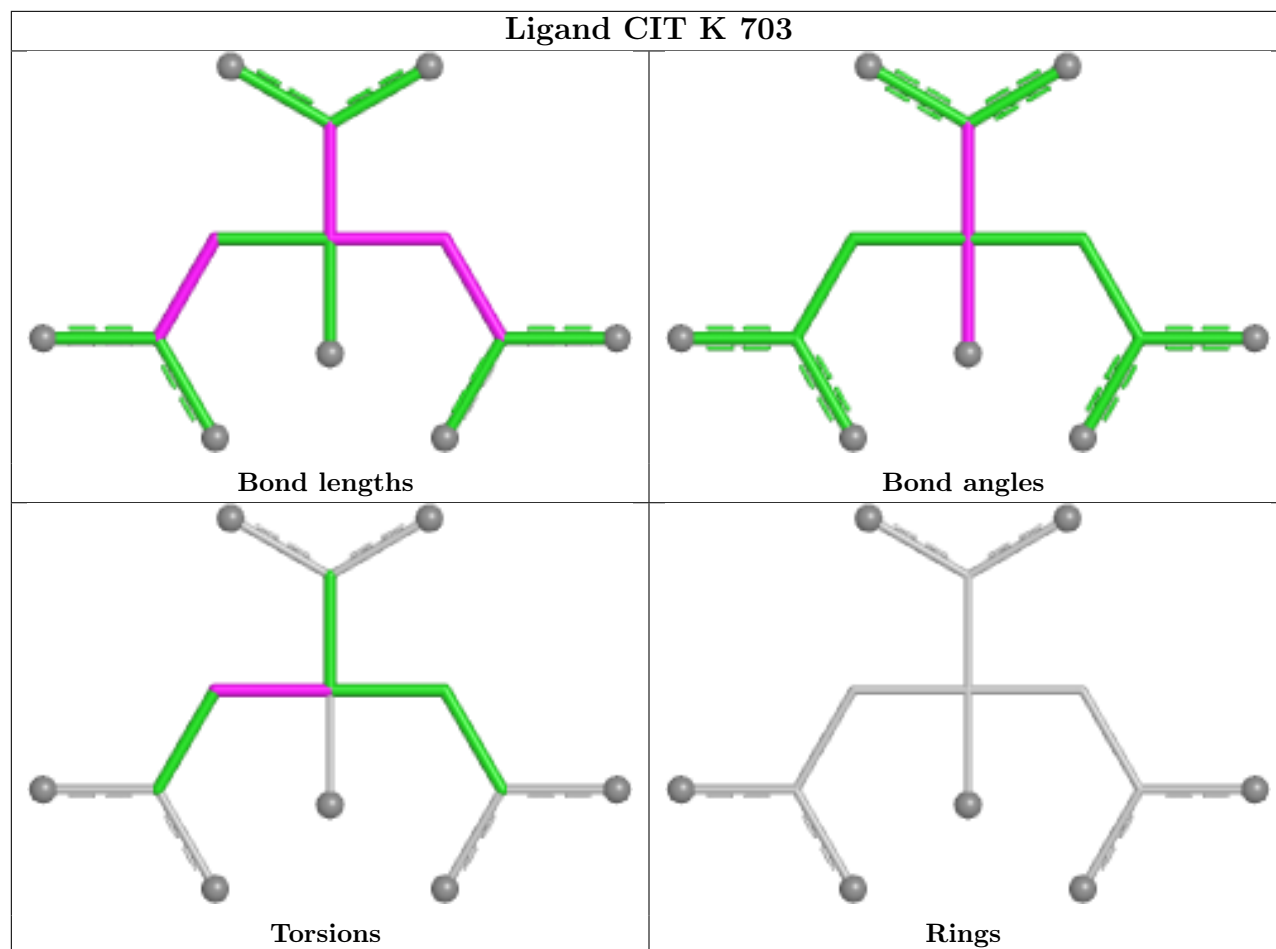


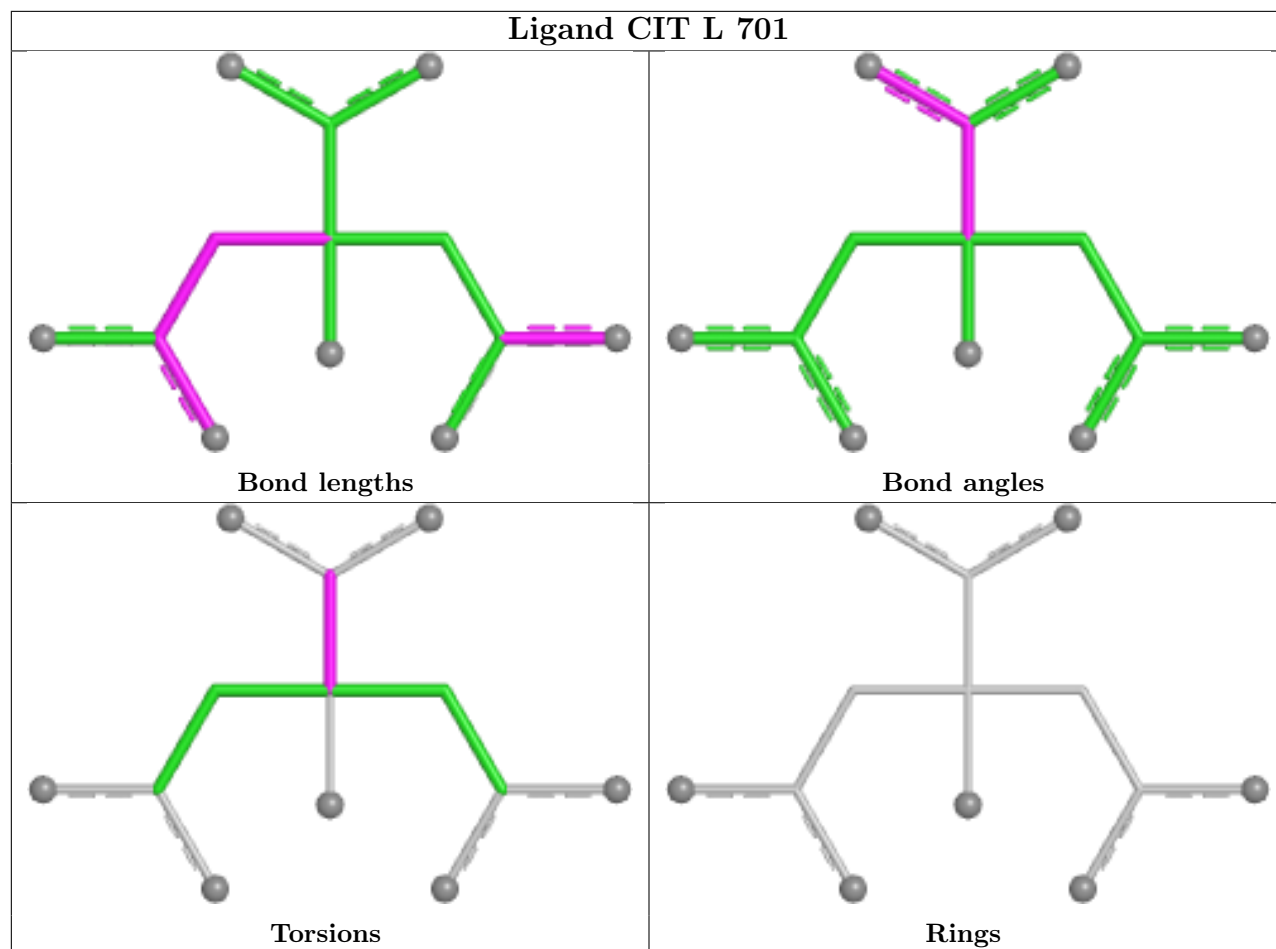


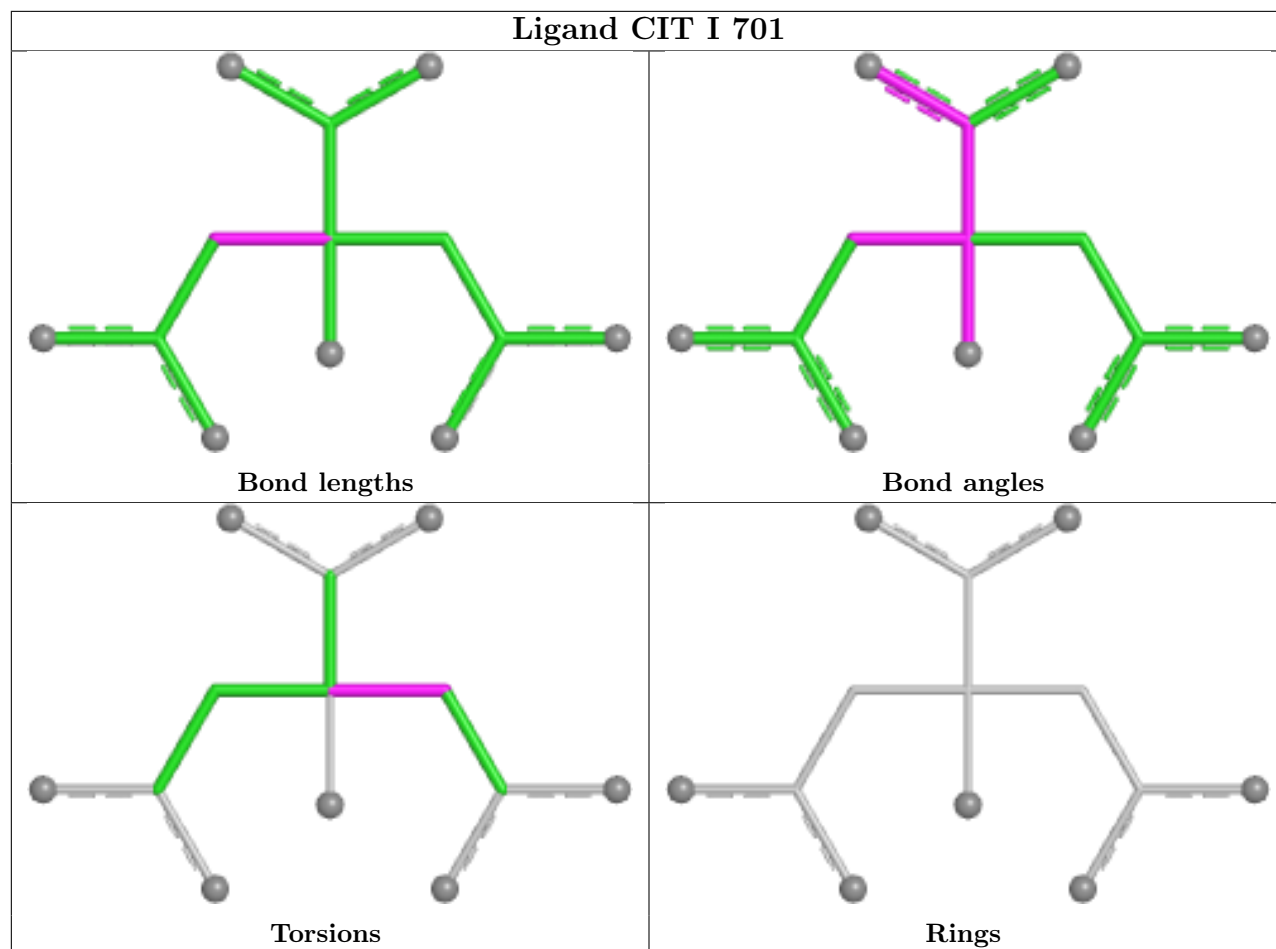


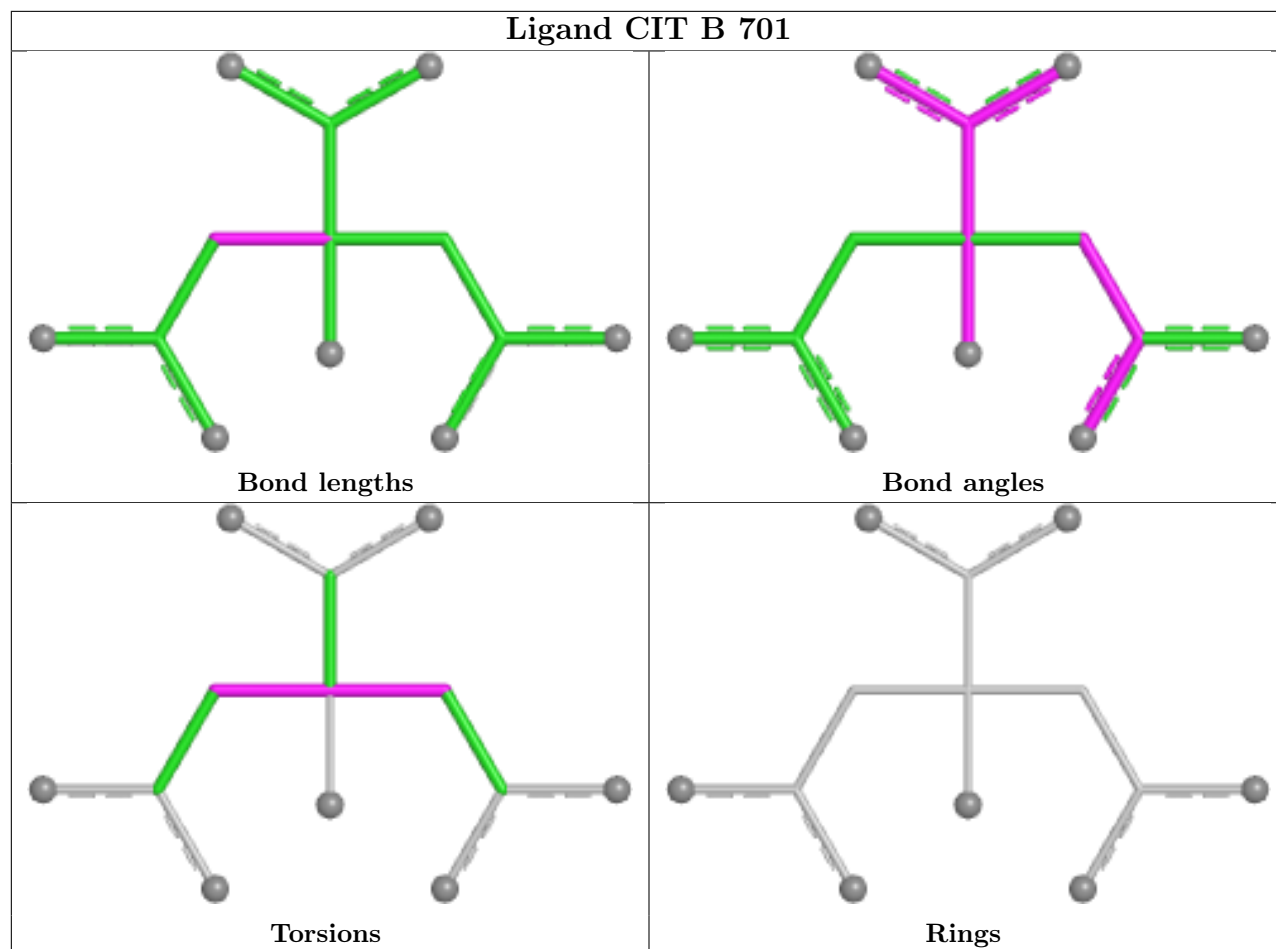


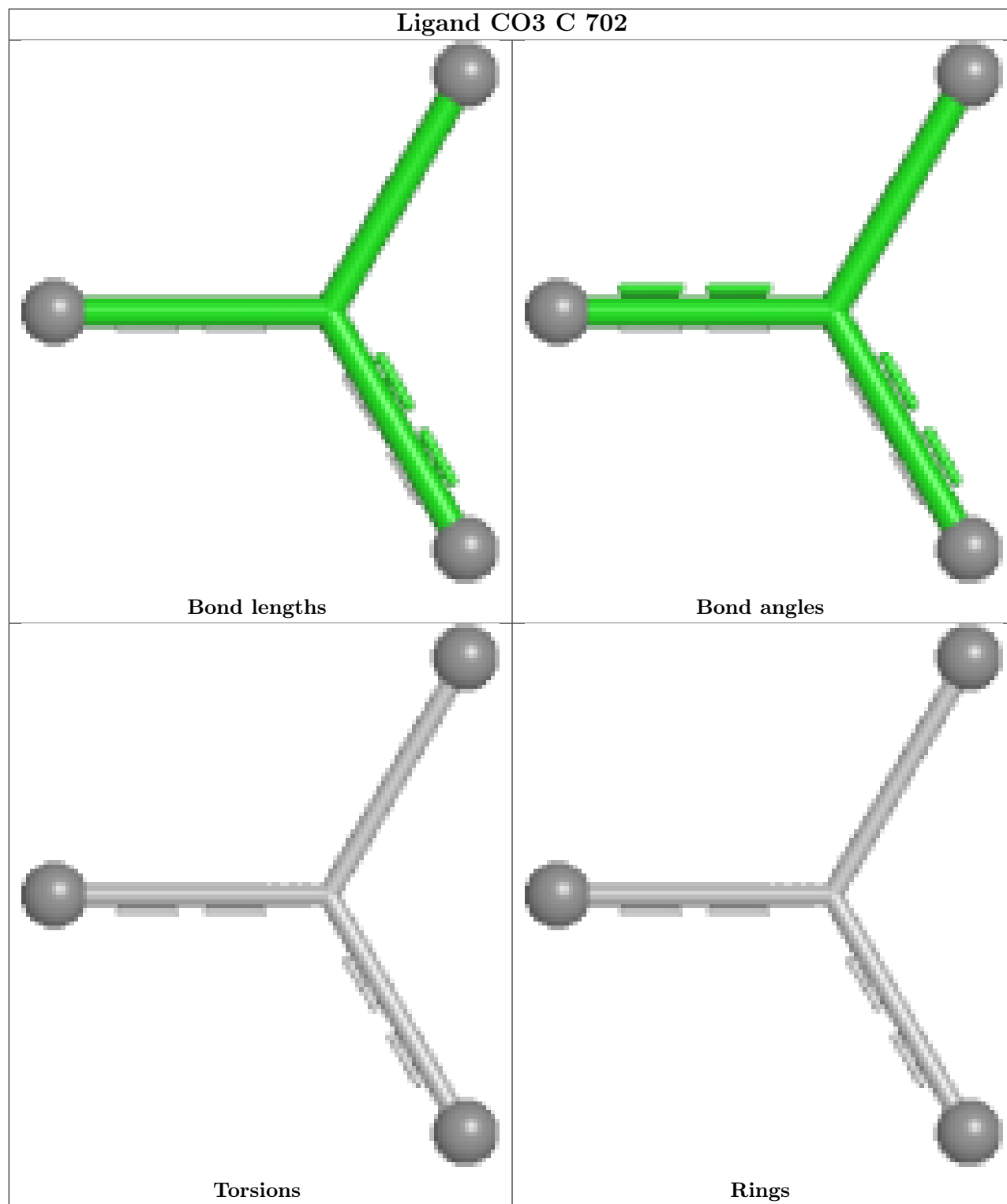


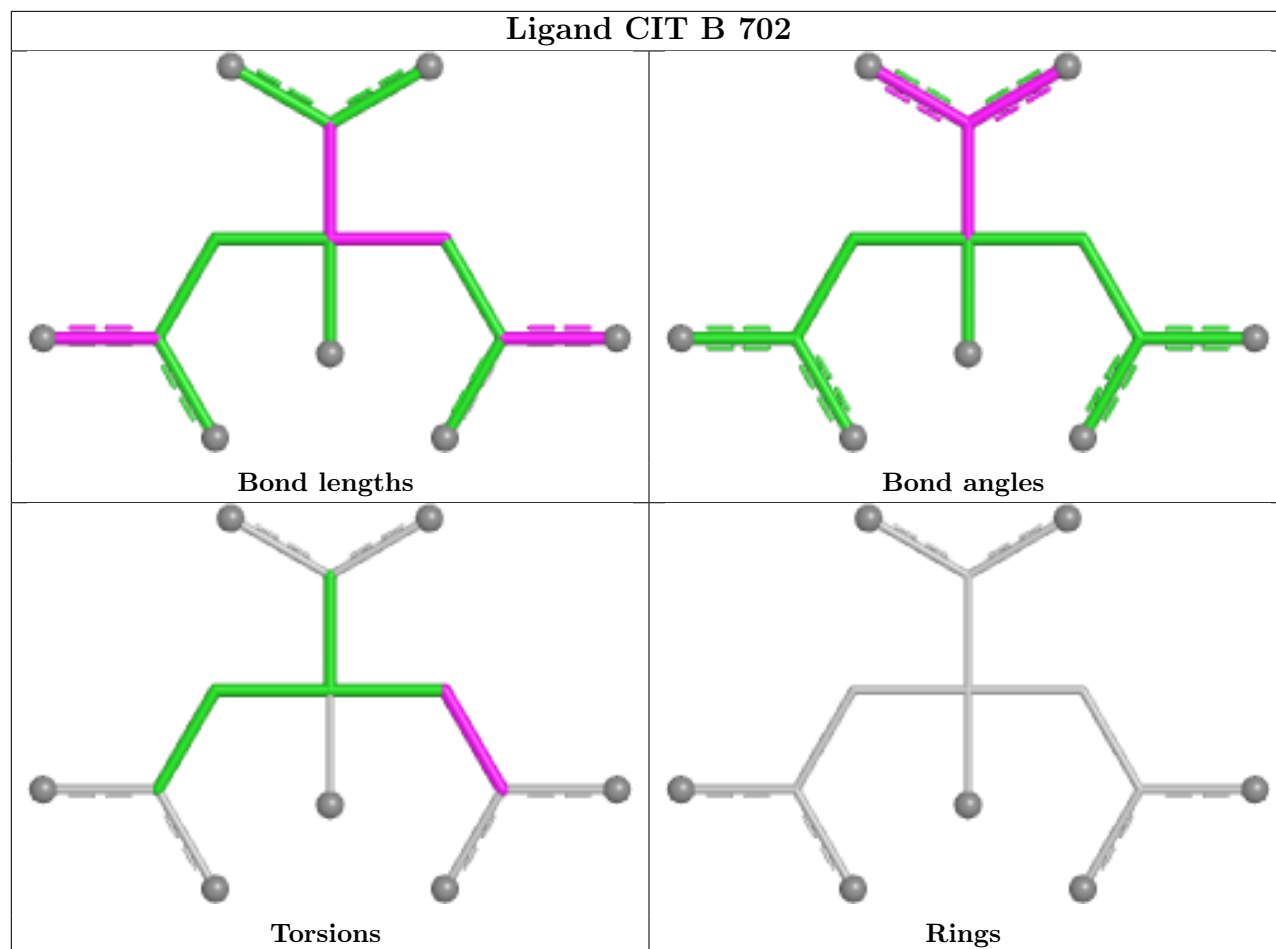


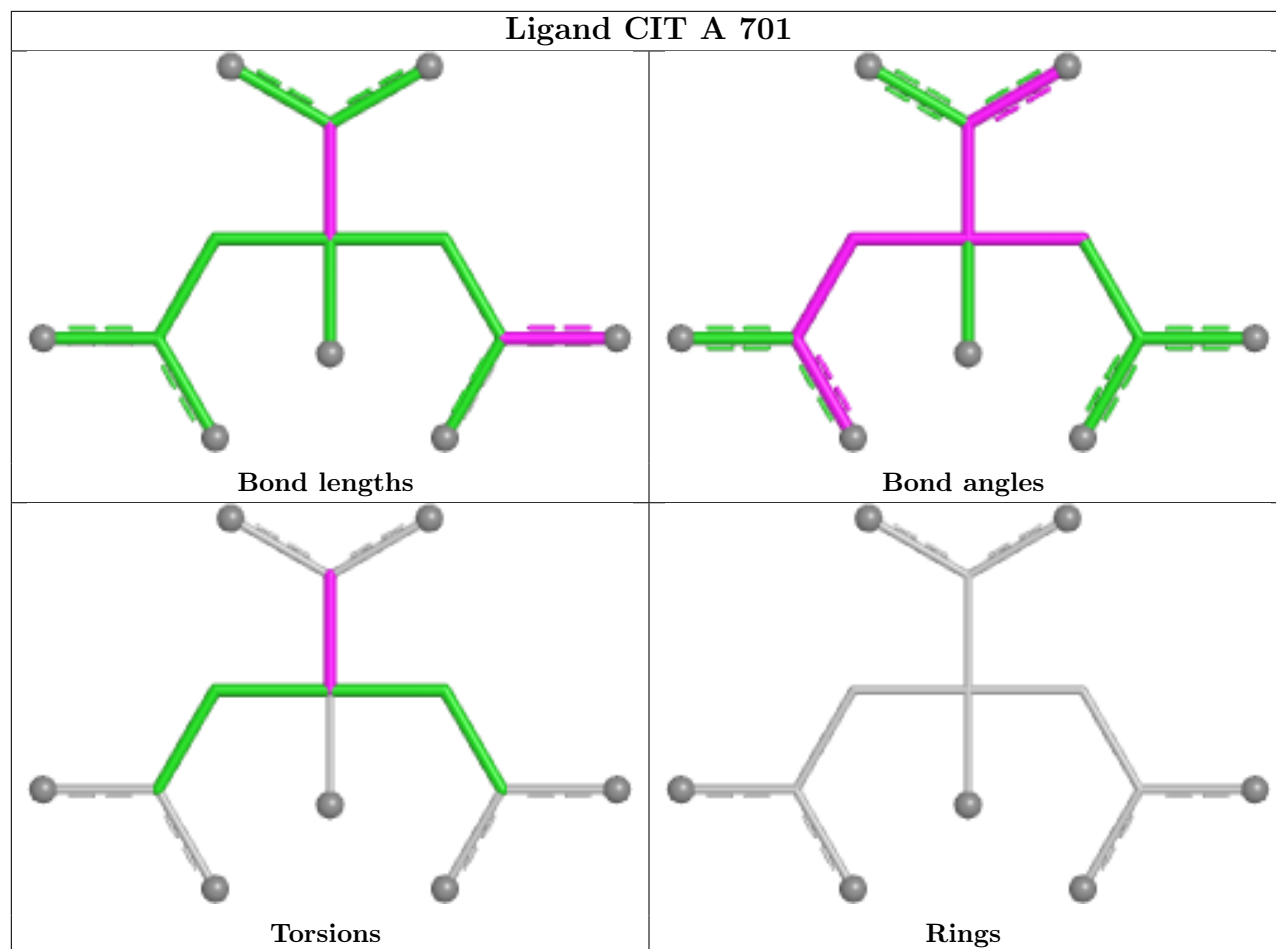


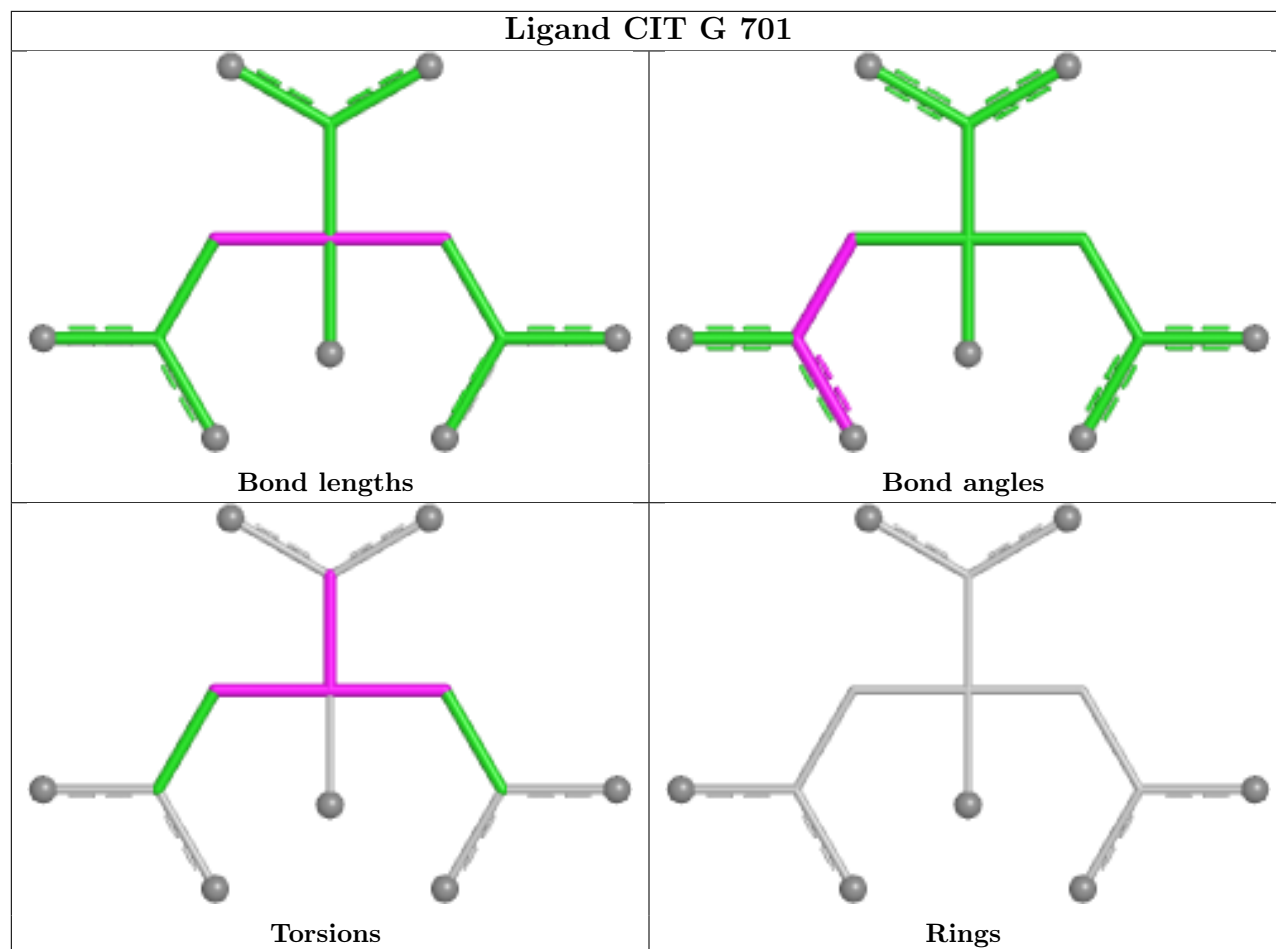


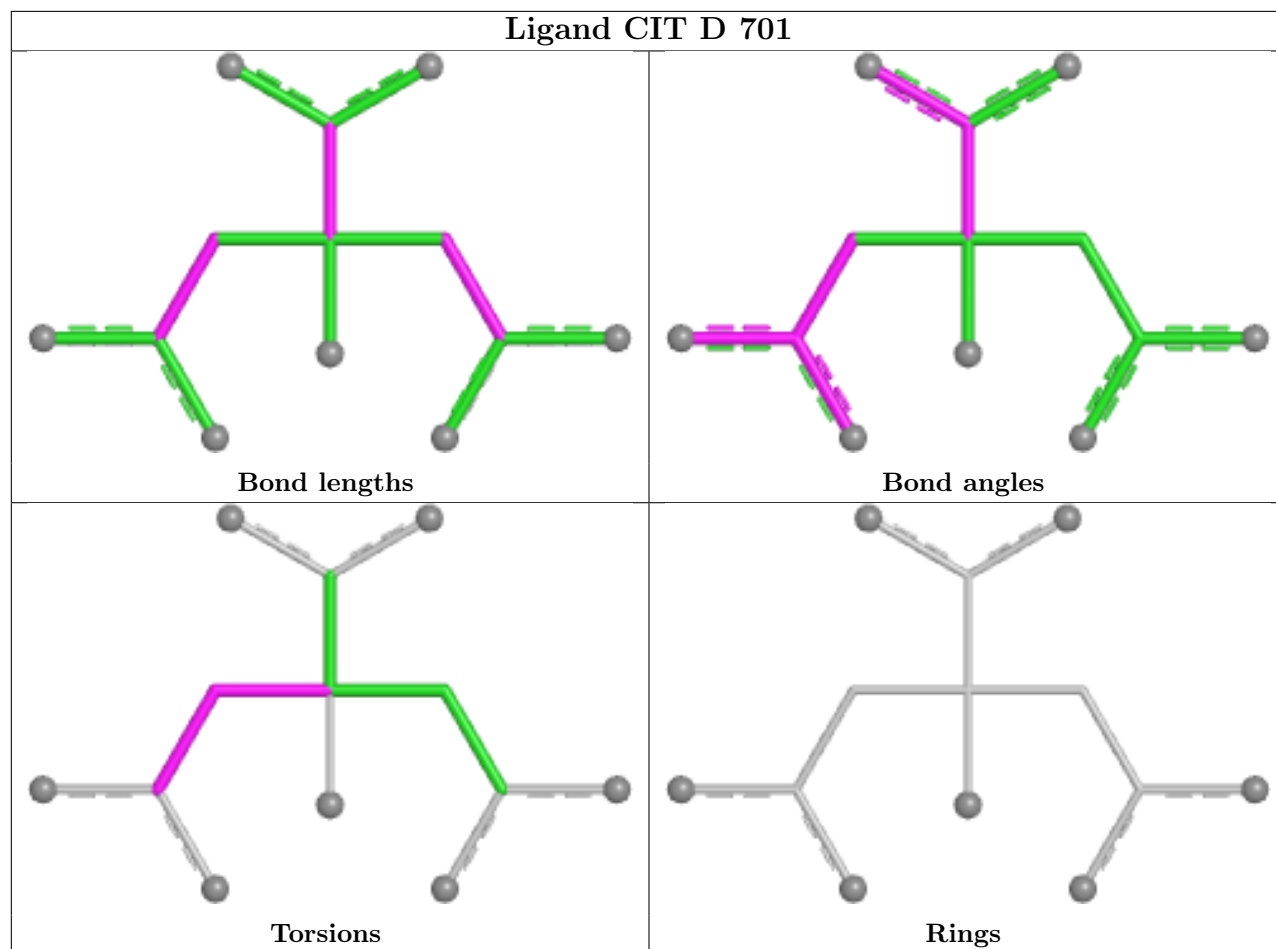


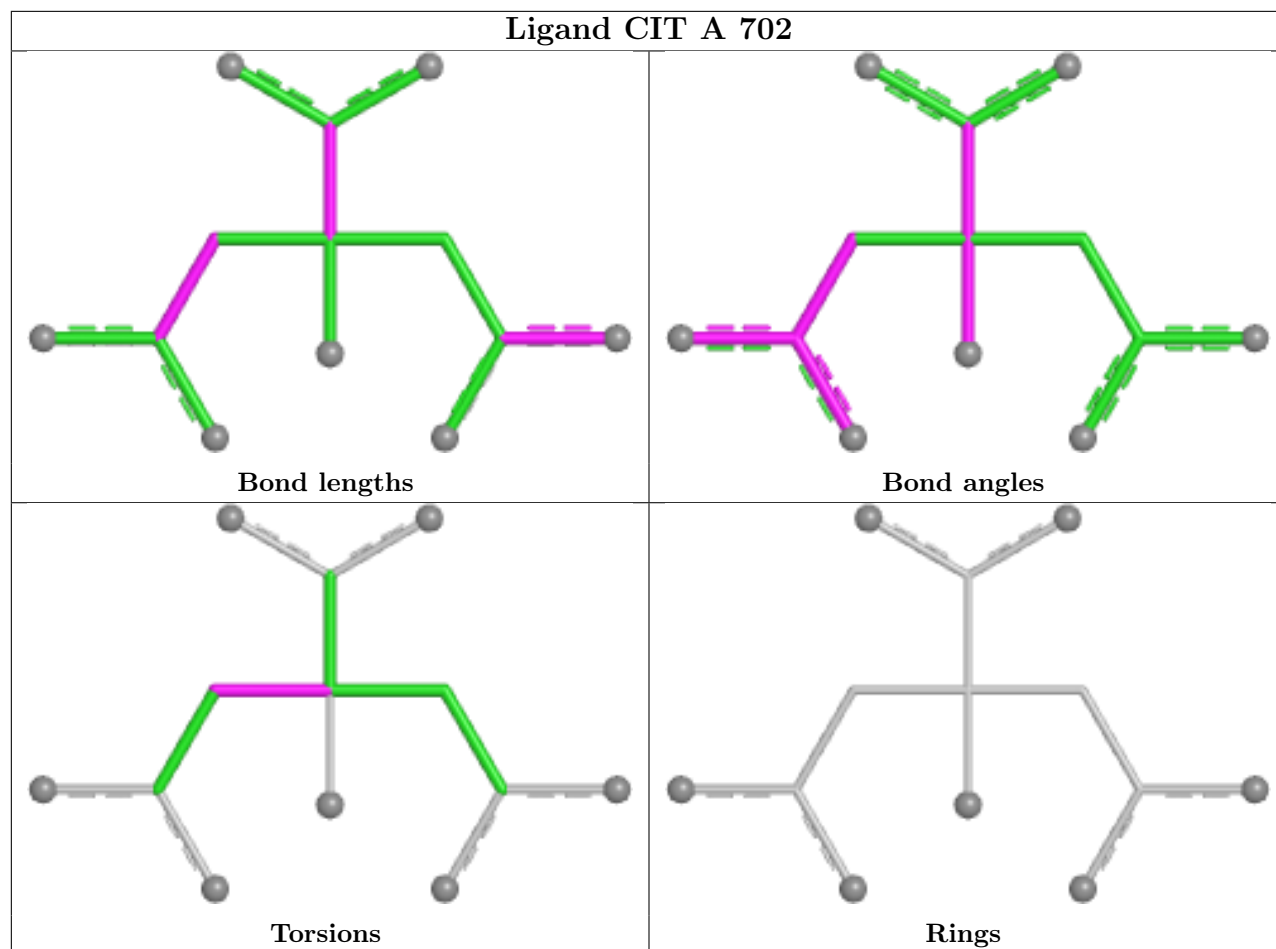


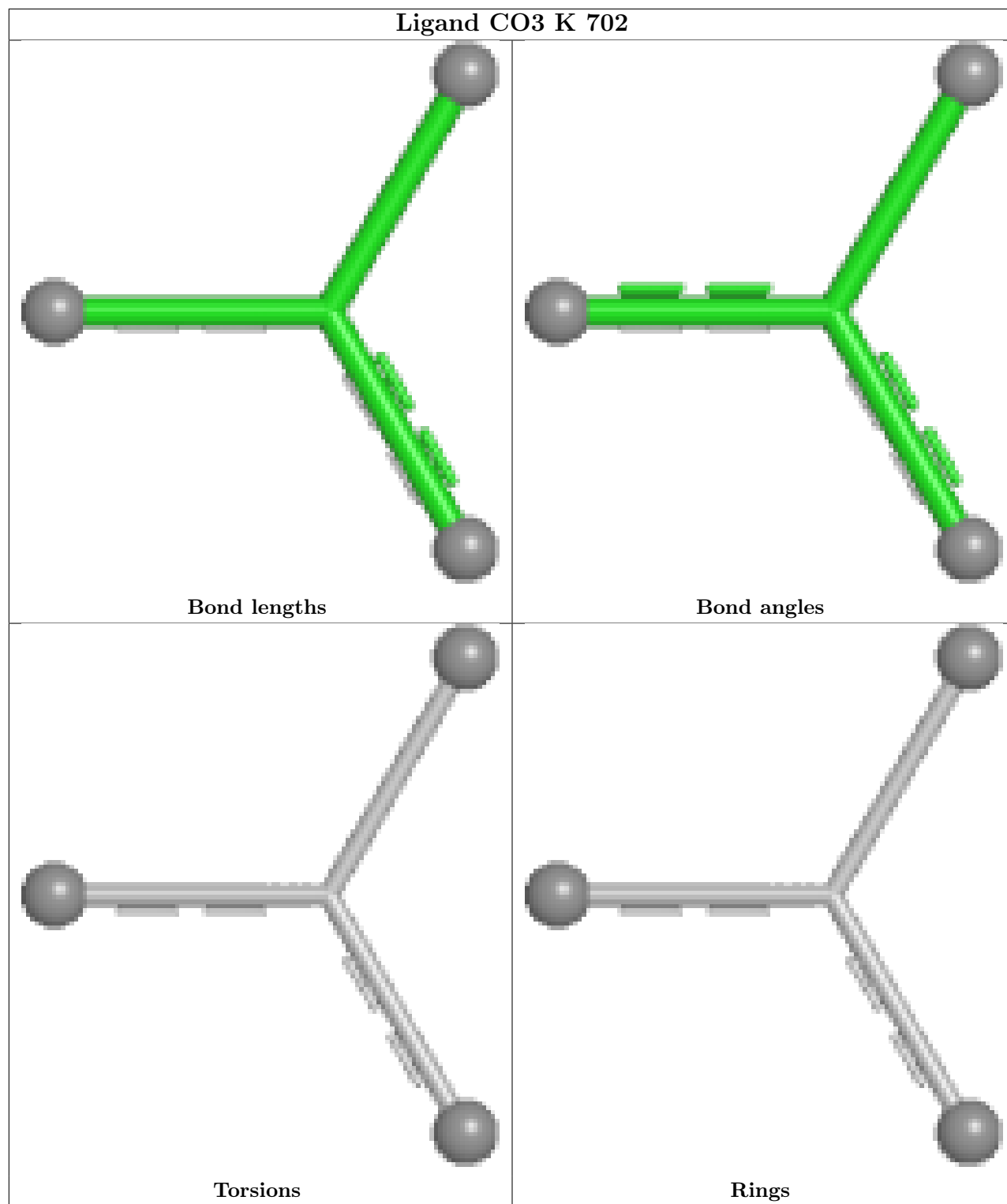


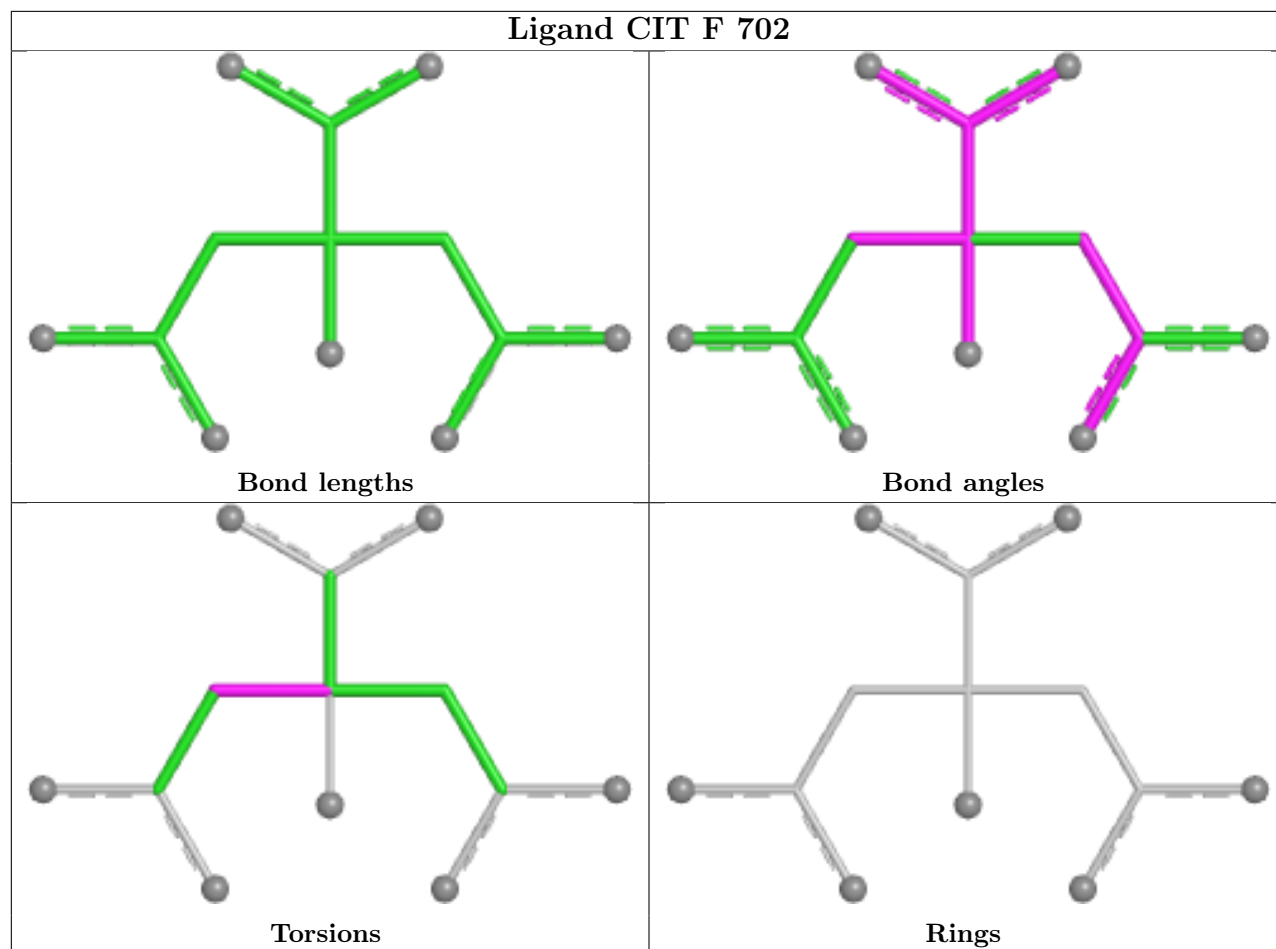


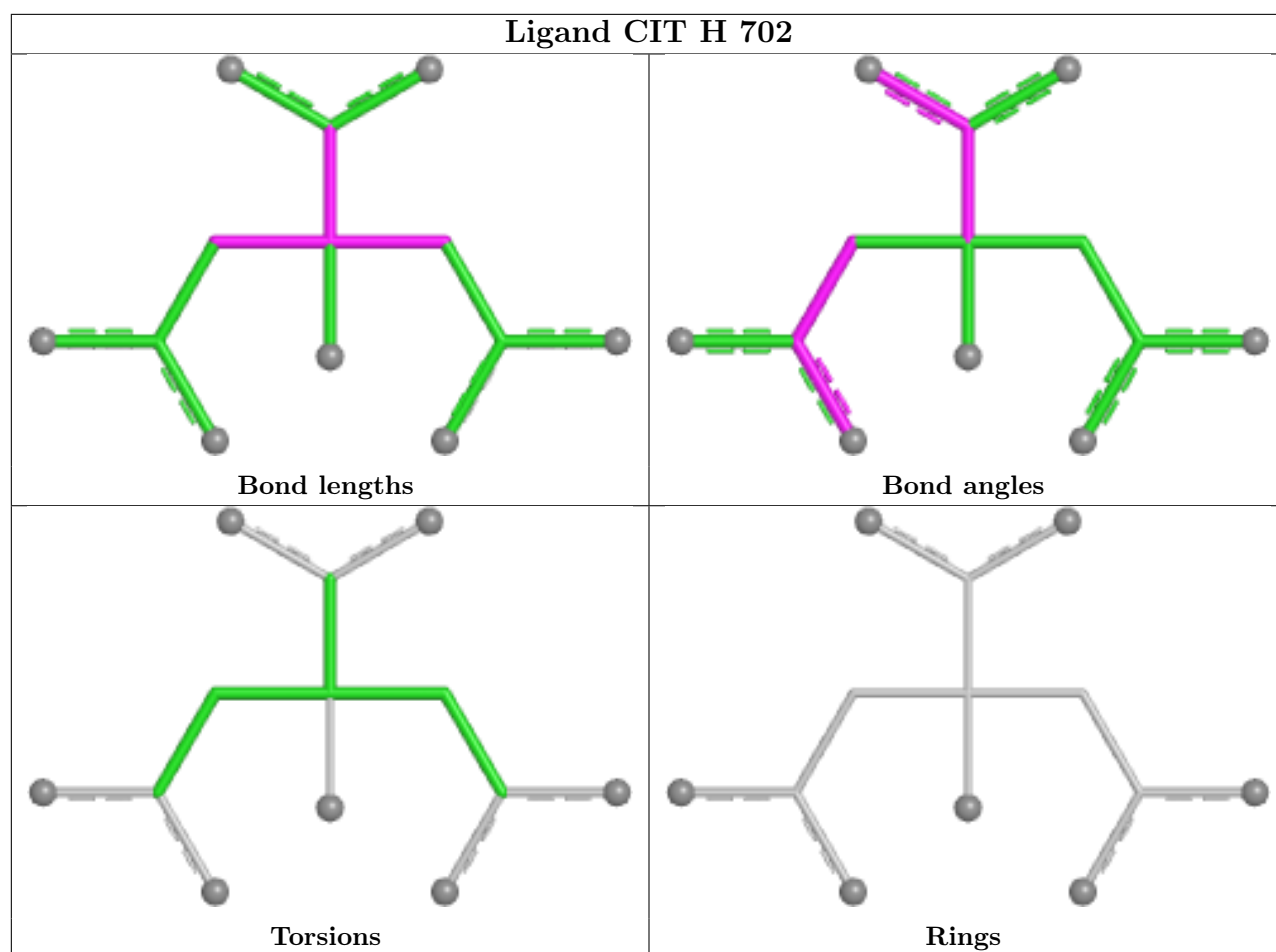












5.7 Other polymers [i](#)

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	642/671 (95%)	-0.53	6 (0%) 81 76	9, 24, 70, 114	0
1	B	644/671 (95%)	-0.51	9 (1%) 73 67	9, 24, 74, 129	0
1	C	644/671 (95%)	-0.62	3 (0%) 87 83	8, 21, 48, 99	0
1	D	643/671 (95%)	-0.47	14 (2%) 62 55	12, 26, 65, 123	0
1	E	643/671 (95%)	-0.44	13 (2%) 65 58	12, 27, 69, 123	0
1	F	644/671 (95%)	-0.52	14 (2%) 62 55	8, 22, 62, 122	0
1	G	642/671 (95%)	-0.48	1 (0%) 91 89	9, 29, 53, 86	0
1	H	646/671 (96%)	-0.50	2 (0%) 90 88	10, 27, 57, 89	0
1	I	644/671 (95%)	-0.32	4 (0%) 85 81	12, 32, 64, 128	0
1	J	642/671 (95%)	0.06	23 (3%) 46 39	13, 39, 88, 112	0
1	K	642/671 (95%)	-0.09	20 (3%) 51 44	12, 34, 84, 109	0
1	L	642/671 (95%)	0.20	24 (3%) 45 38	19, 40, 88, 111	0
All	All	7718/8052 (95%)	-0.35	133 (1%) 69 62	8, 28, 75, 129	0

The worst 5 of 133 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	9	PRO	6.4
1	F	35	GLY	6.3
1	D	34	LEU	5.4
1	C	9	PRO	5.3
1	K	35	GLY	5.2

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

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

6.3 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

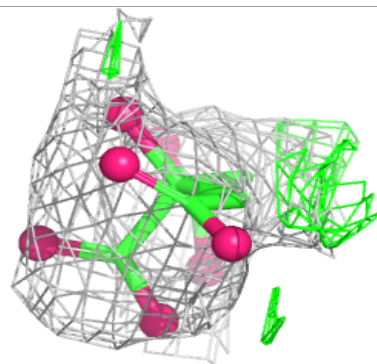
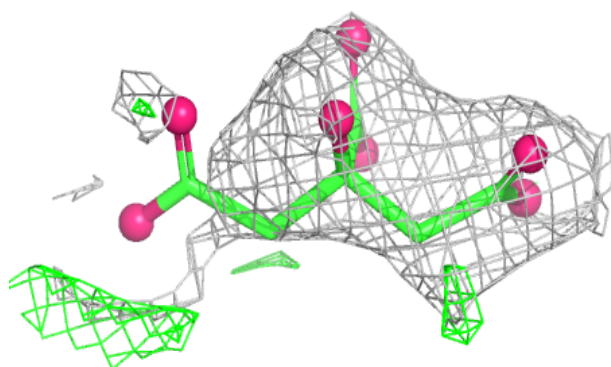
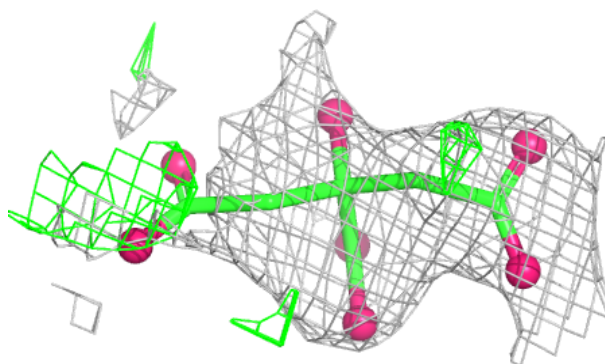
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CIT	H	702	13/13	0.81	0.17	65,69,89,91	0
2	CIT	K	703	13/13	0.81	0.19	64,71,77,79	0
2	CIT	J	701	13/13	0.83	0.12	59,67,73,73	0
2	CIT	F	702	13/13	0.87	0.14	61,66,79,80	0
2	CIT	C	701	13/13	0.87	0.15	57,67,71,74	0
2	CIT	I	701	13/13	0.88	0.11	38,53,55,56	0
3	CO3	C	702	4/4	0.88	0.12	25,32,34,34	0
2	CIT	A	701	13/13	0.89	0.12	53,59,68,71	0
2	CIT	F	701	13/13	0.89	0.15	42,47,55,61	0
2	CIT	K	701	13/13	0.89	0.17	20,28,32,37	13
2	CIT	B	701	13/13	0.89	0.11	52,63,71,72	0
2	CIT	B	702	13/13	0.89	0.14	48,51,60,61	0
2	CIT	A	702	13/13	0.90	0.18	28,36,39,41	13
2	CIT	L	701	13/13	0.91	0.11	41,60,64,70	0
2	CIT	D	701	13/13	0.92	0.11	41,48,51,52	0
3	CO3	K	702	4/4	0.92	0.11	28,33,36,37	0
2	CIT	E	701	13/13	0.93	0.09	36,43,47,52	0
2	CIT	G	701	13/13	0.93	0.10	43,52,63,74	0
3	CO3	H	701	4/4	0.94	0.09	31,42,42,45	0

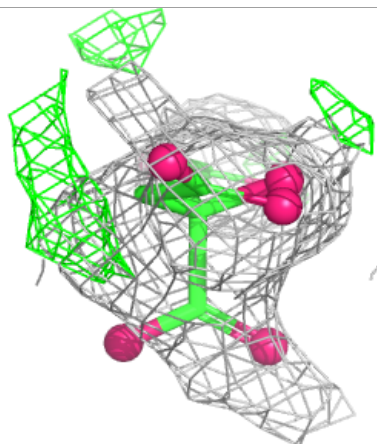
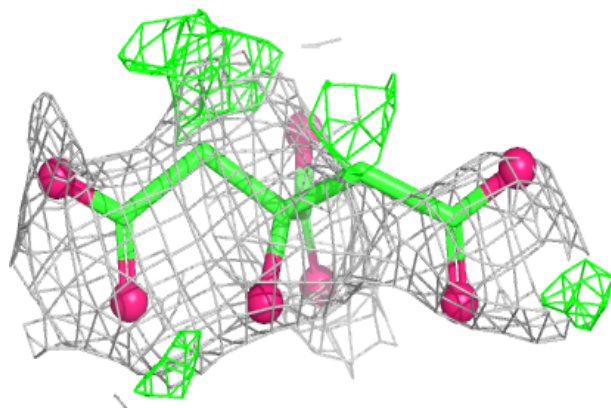
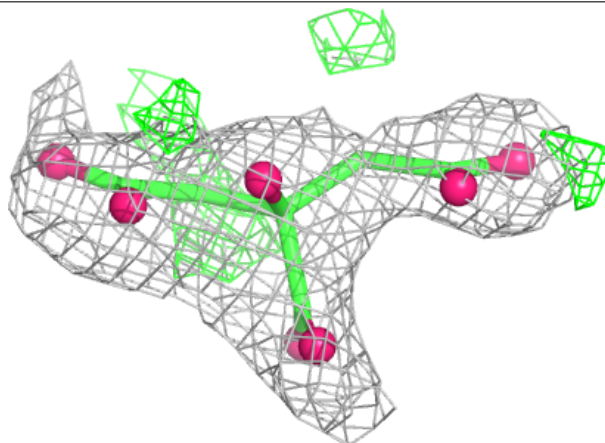
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around CIT H 702:

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

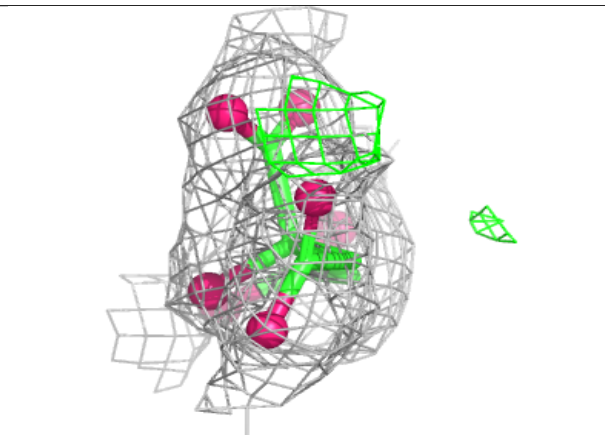
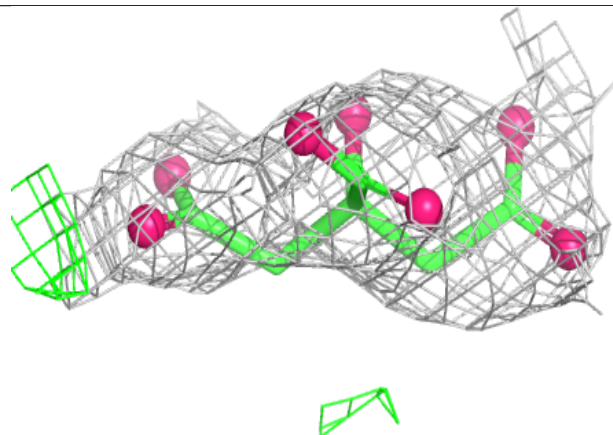
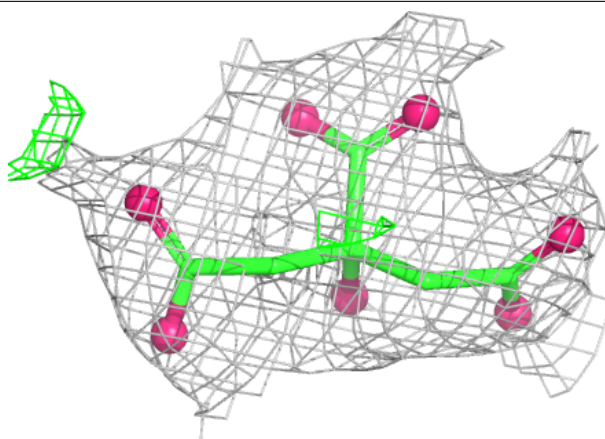
**Electron density around CIT K 703:**

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

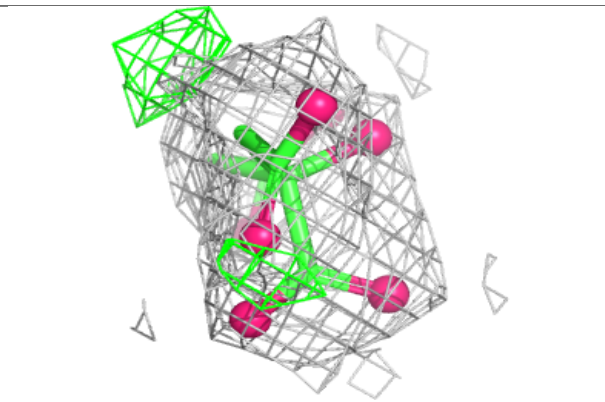
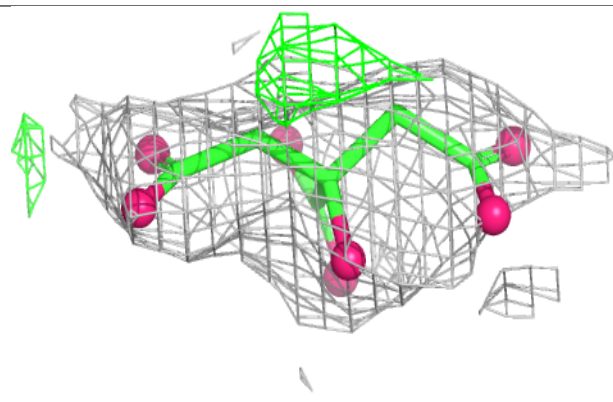
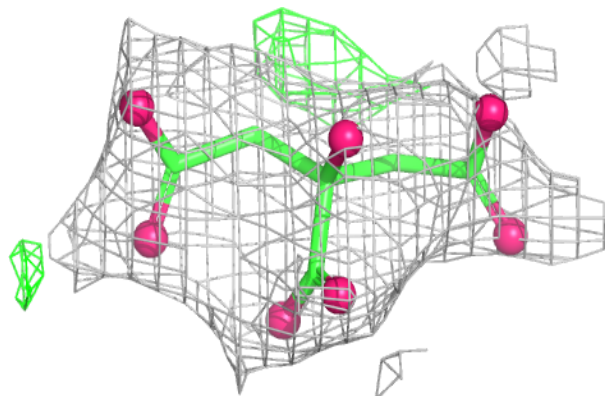


Electron density around CIT J 701:

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and green (positive)

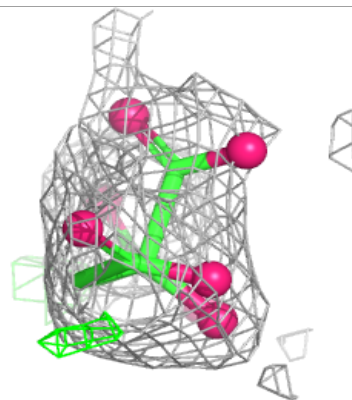
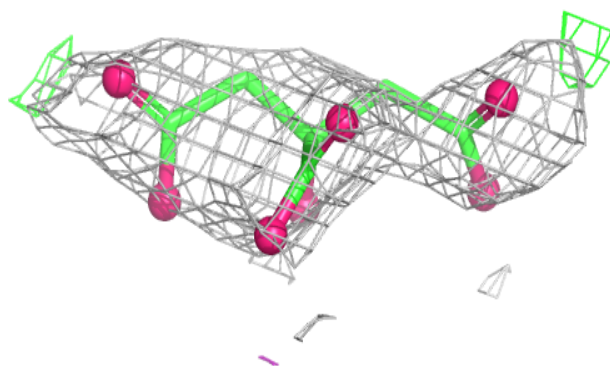
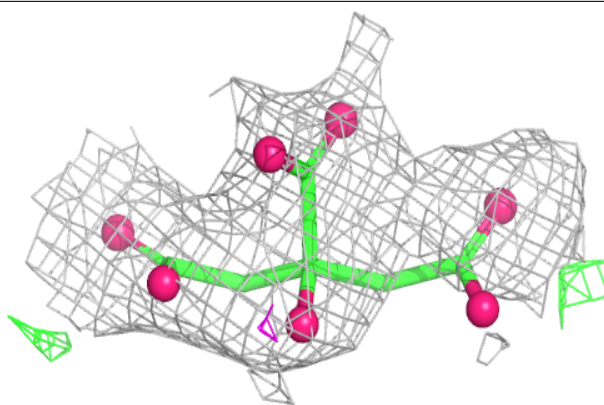
**Electron density around CIT F 702:**

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

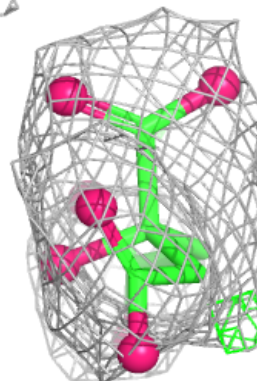
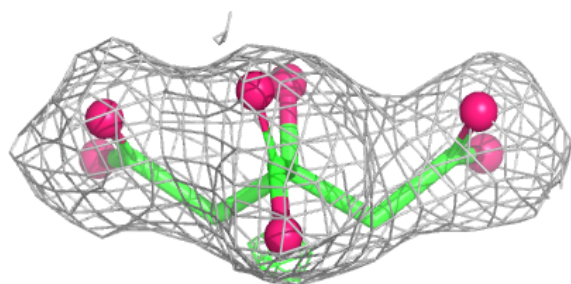
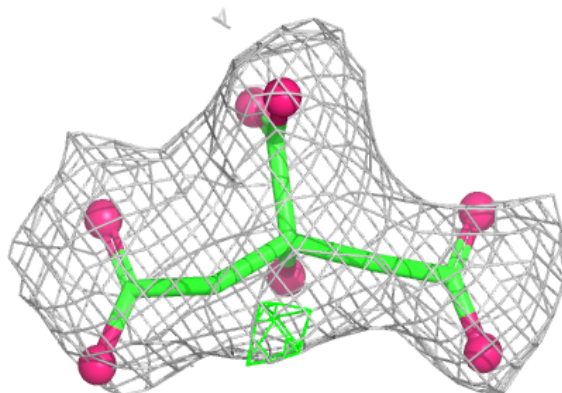


Electron density around CIT C 701:

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

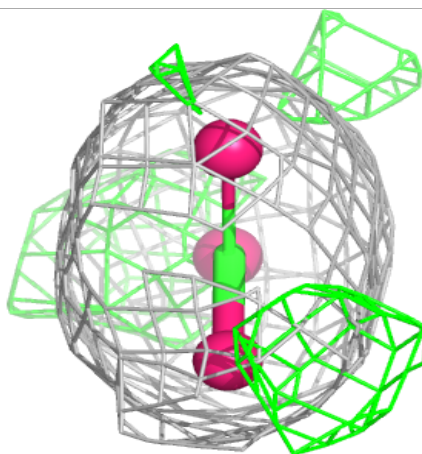
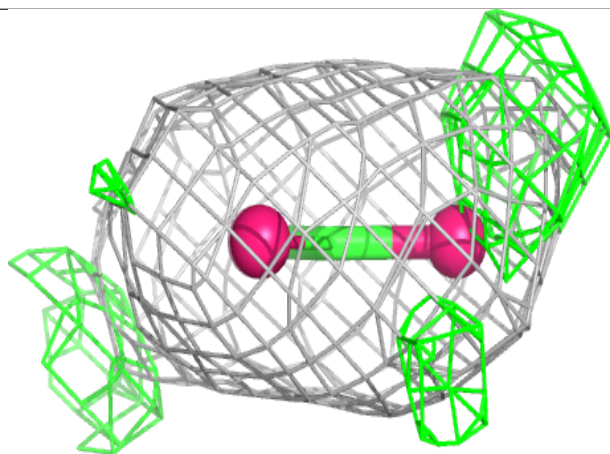
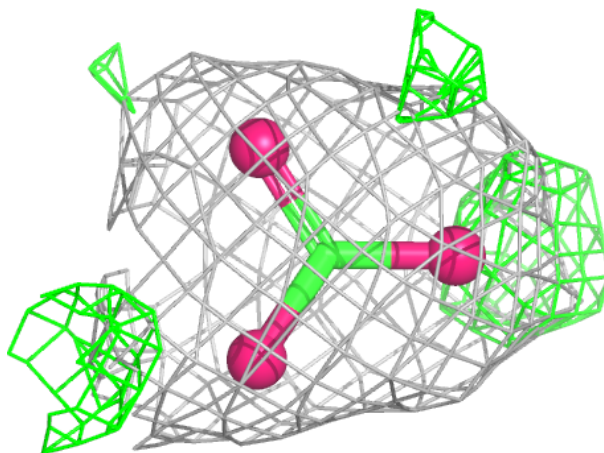
**Electron density around CIT I 701:**

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



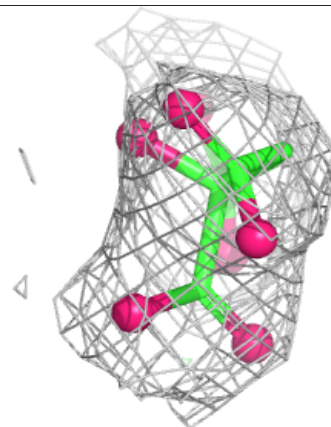
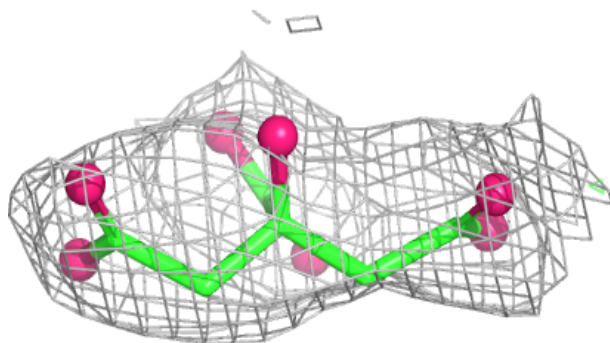
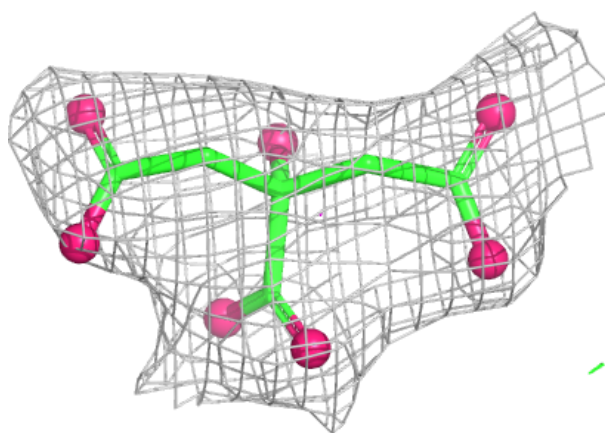
Electron density around CO3 C 702:

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

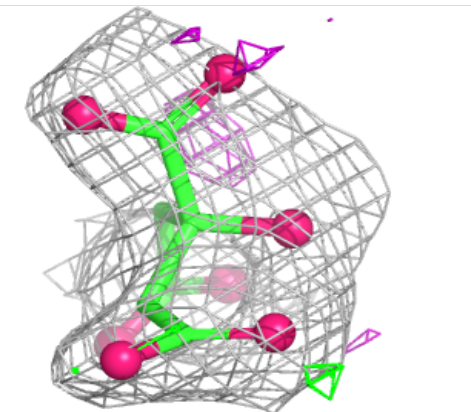
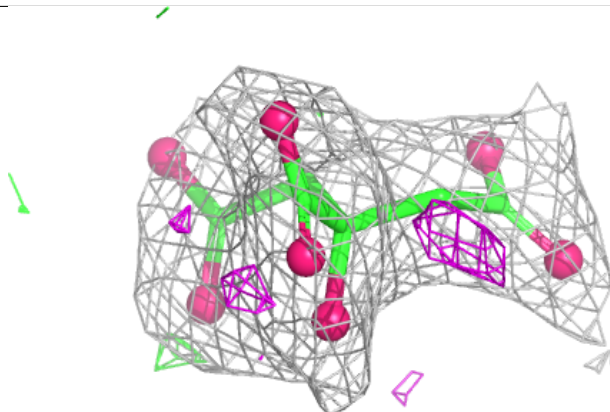
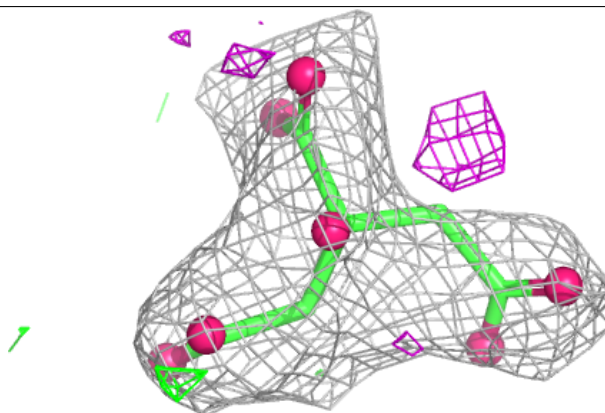


Electron density around CIT A 701:

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

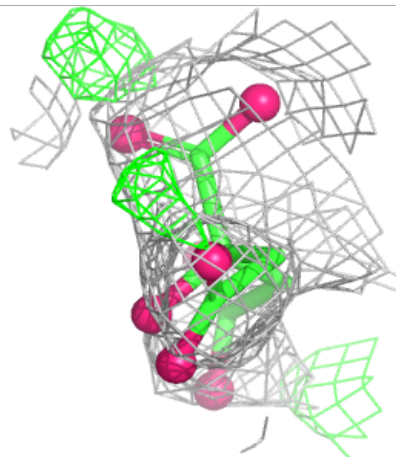
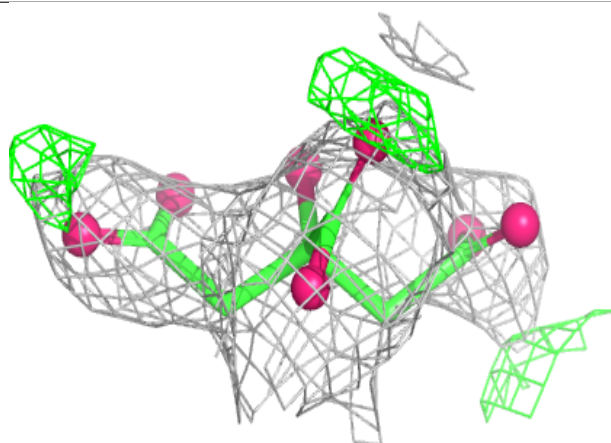
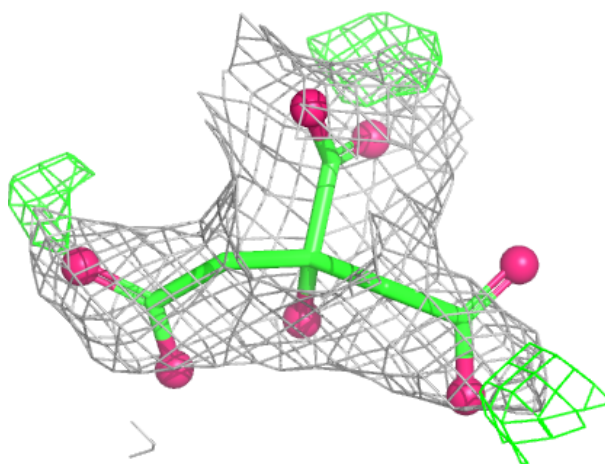
**Electron density around CIT F 701:**

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



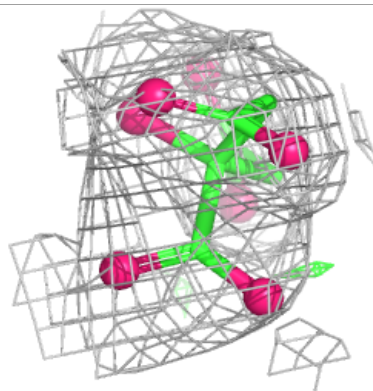
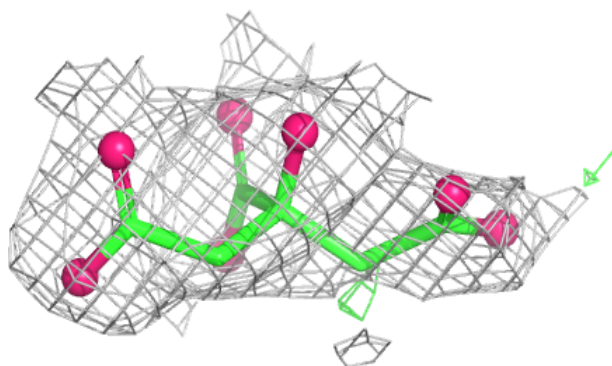
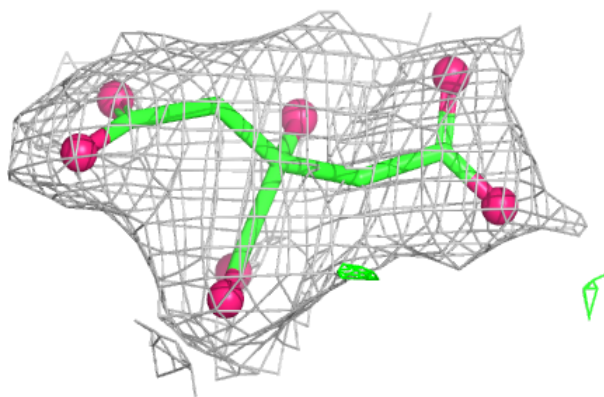
Electron density around CIT K 701:

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



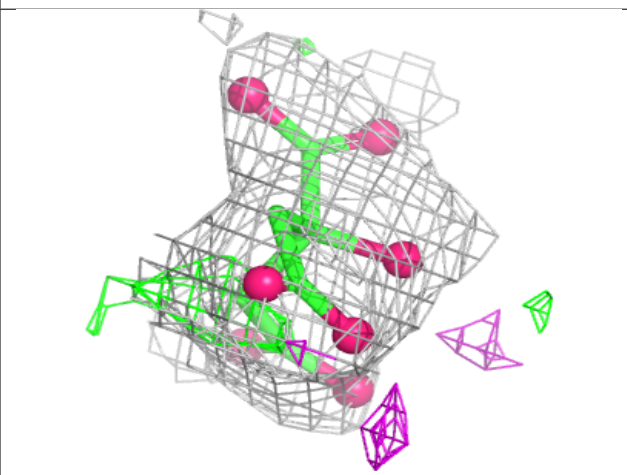
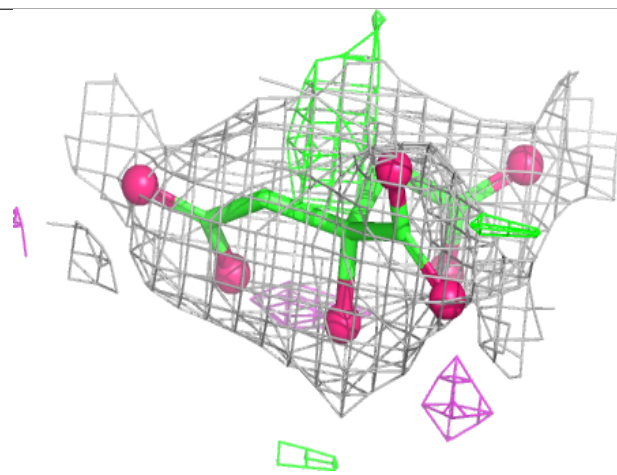
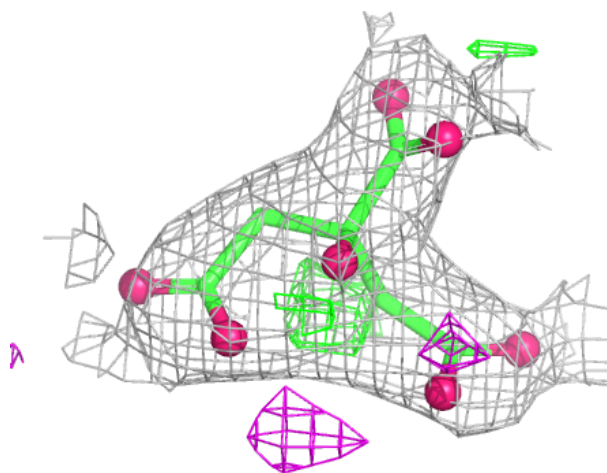
Electron density around CIT B 701:

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



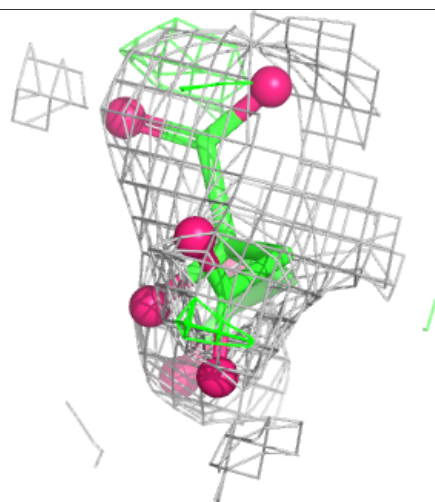
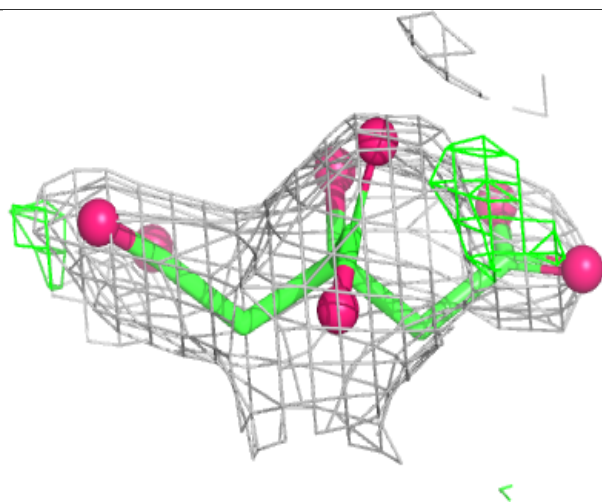
Electron density around CIT B 702:

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



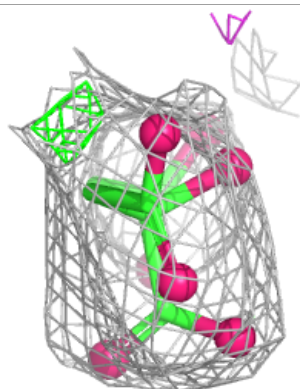
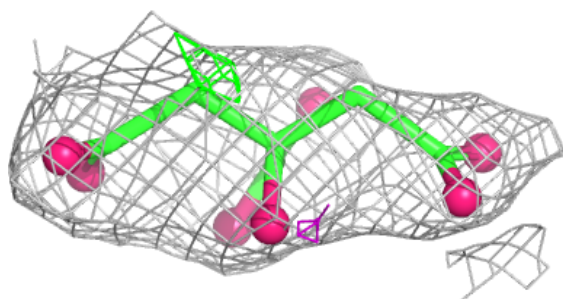
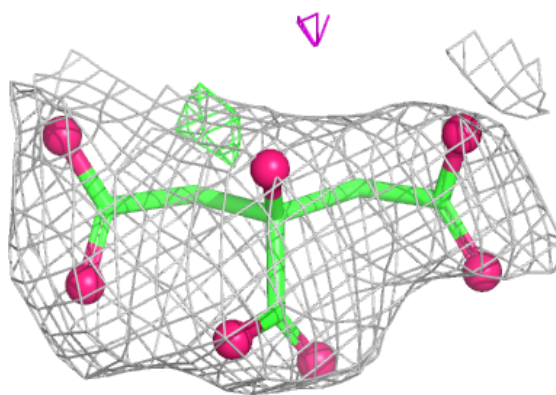
Electron density around CIT A 702:

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

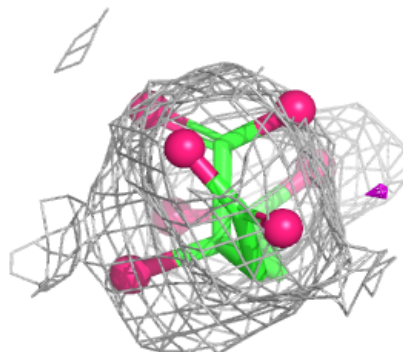
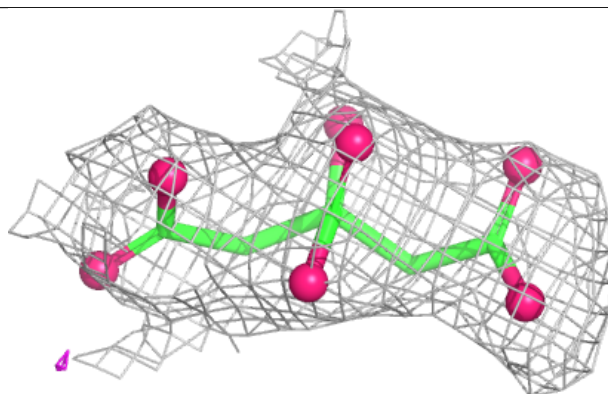
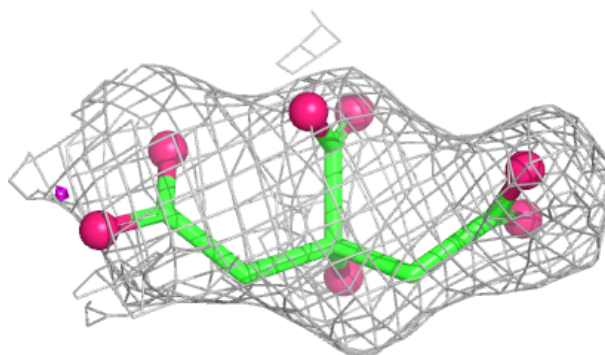


Electron density around CIT L 701:

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

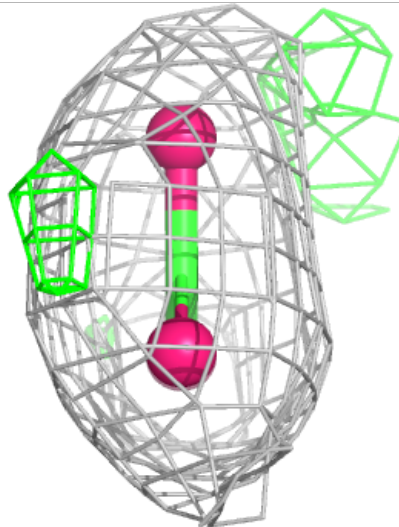
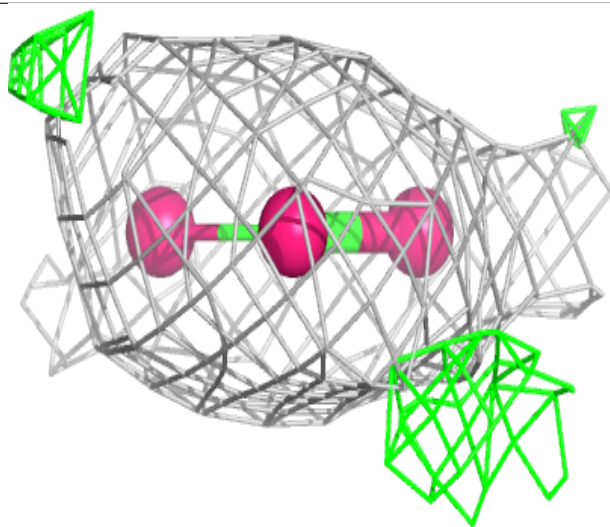
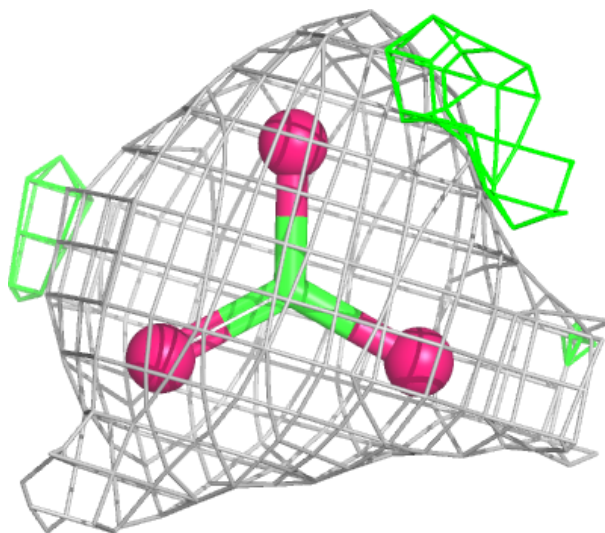
**Electron density around CIT D 701:**

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



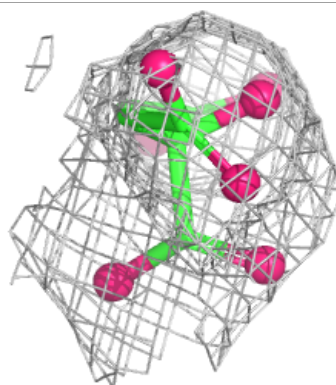
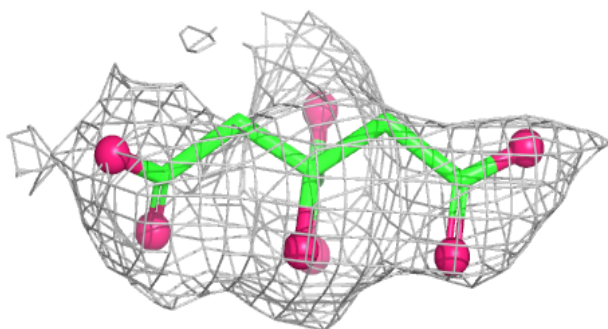
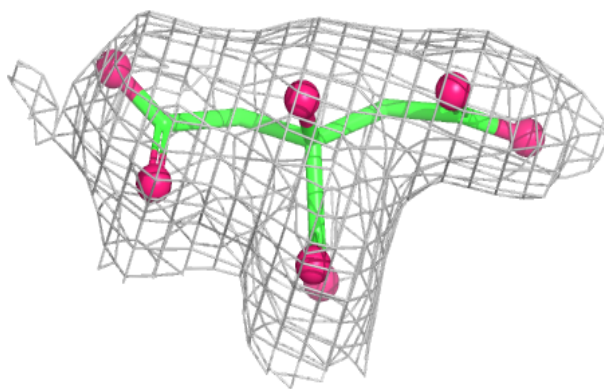
Electron density around CO3 K 702:

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

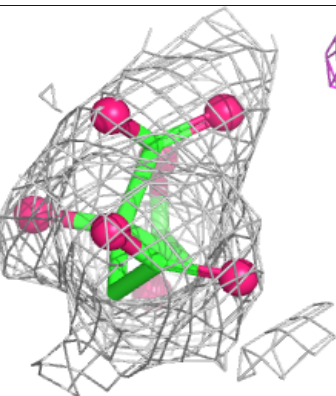
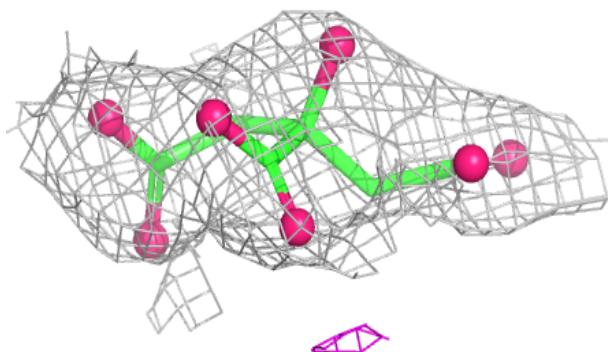
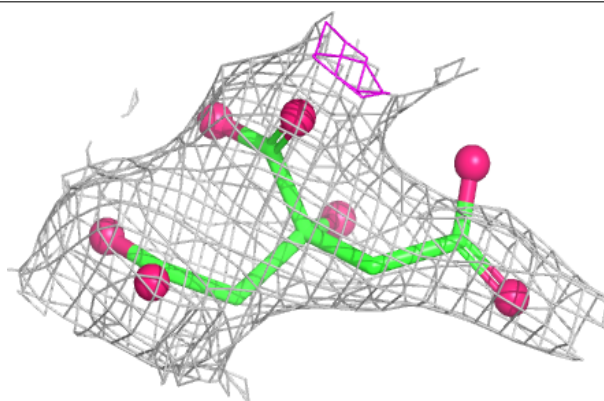


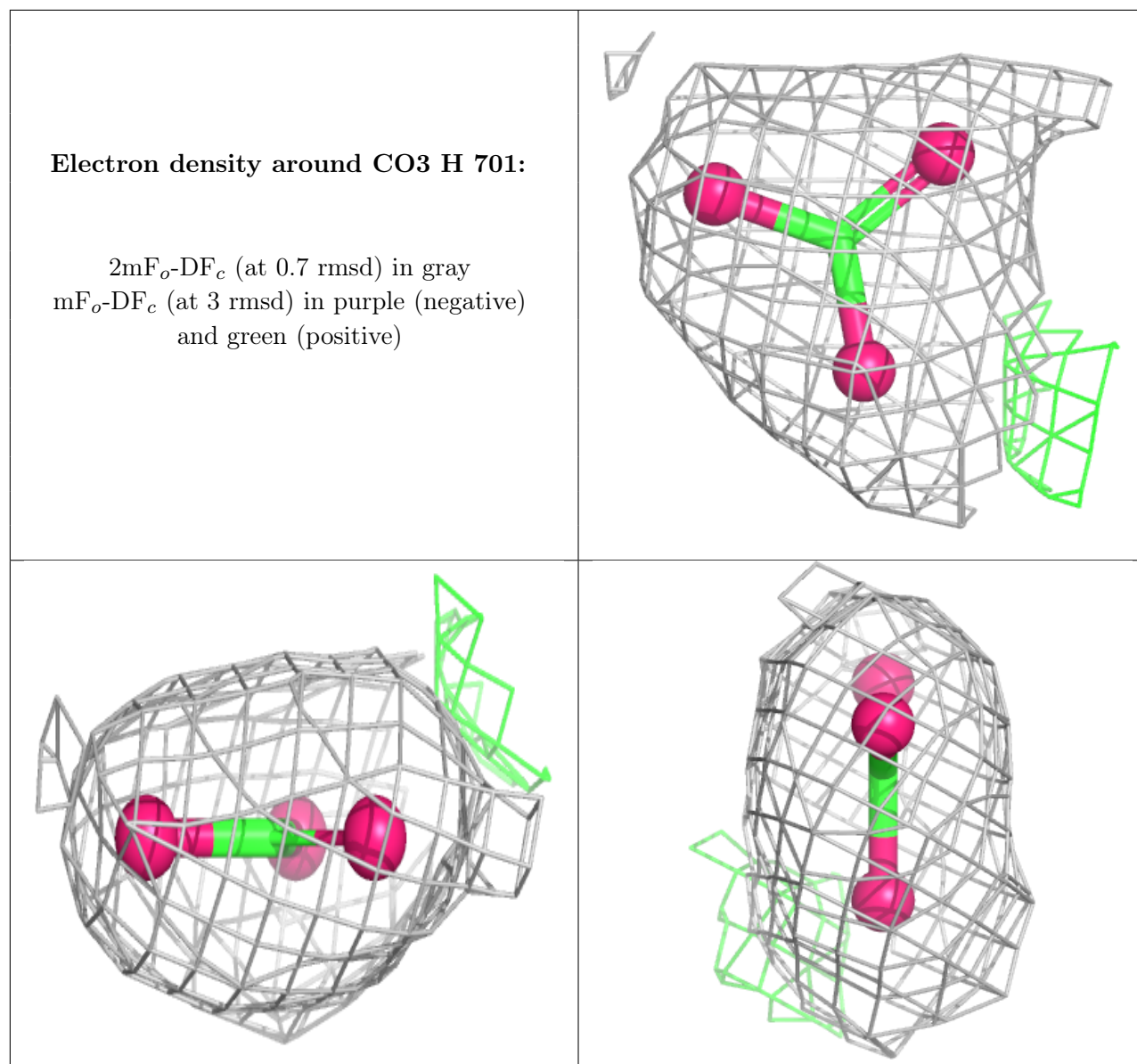
Electron density around CIT E 701:

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

**Electron density around CIT G 701:**

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





6.5 Other polymers ⓘ

There are no such residues in this entry.