CheckMyMetal(CMM) report for PDB code: 7kro

PDB title: Structure of sars-cov-2 backtracked complex complex bound to nsp13 helicase - nsp13(2)-btc (3.6Å)

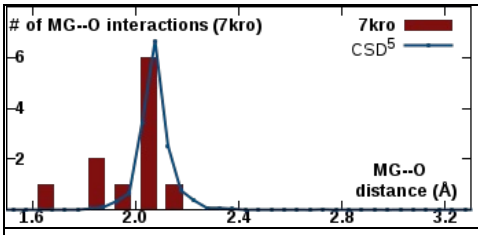
Warning: *Valence* and *nVECSUM* parameters should be interpreted with great care due to potential cation-pi interactions observed around A:1002

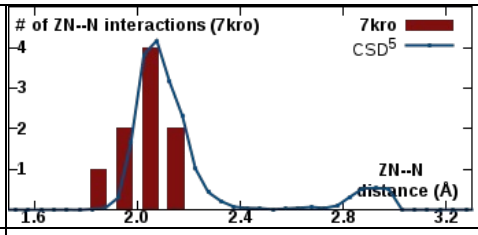
ID	Res.	Metal	*Occupancy*	*B factor (env.)*[1]	*Ligands*	*Valence*[2]	*nVECSUM*[3]	*Geometry*[1,4]	*gRMSD*(°)[1]	*Vacancy*[1]	Bidentate	Alt. metal
A:1001	ZN	Zn	1	N/A	N_2S_3	**2.8**	0.21	Tetrahedral	7.8°	0	1	Cu, Fe
A:1002	ZN	Zn	1	N/A	N_1S_3	2.1	0.095	Tetrahedral	11°	0	0	
A:1003	MG	Mg	1	N/A	O_5	**3**	**0.46**	**Square Planar**	**32.9°**	0	1	Cu, Fe, Ni
E:701	ZN	Zn	1	N/A	S_4	2.1	0.049	Tetrahedral	7.7°	0	0	
E:702	ZN	Zn	1	N/A	N_1S_3	2	0.14	Tetrahedral	*14.4°*	0	0	
E:703	ZN	Zn	1	N/A	N_2S_2	2.2	**0.36**	*Trigonal Bipyramidal*	*14.5°*	20%	0	Mn, Zn, Fe
E:705	MG	Mg	1	N/A	O_3	*2.5*	**0.62**	**Trigonal Bipyramidal**	9.8°	*40%*	0	Mn, Zn, Fe
E:706	AF3	Al	1	N/A		1.7	0.093	**Free**	N/A	N/A	N/A	
F:1000	ZN	Zn	1	N/A	S_4	2.1	0.05	Tetrahedral	7.7°	0	0	
F:1001	ZN	Zn	1	N/A	N_1S_3	2	0.14	Tetrahedral	*14.4°*	0	0	
F:1002	ZN	Zn	1	N/A	N_2S_2	2.2	**0.36**	*Trigonal Bipyramidal*	*14.5°*	20%	0	Mn, Zn, Fe
F:1004	MG	Mg	1	N/A	O_3	*2.5*	**0.62**	**Trigonal Bipyramidal**	9.8°	*40%*	0	Mn, Zn, Fe
F:1005	AF3	Al	1	N/A		1.7	0.092	**Free**	N/A	N/A	N/A	

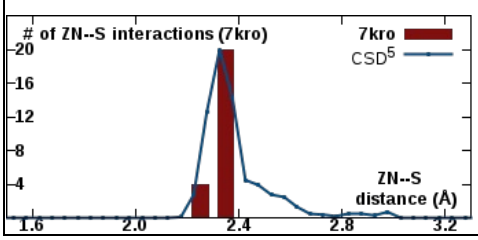
Legend: Not applicable | **Outlier** | *Borderline* | Acceptable

Column	Description
Occupancy	Occupancy of ion under consideration
B factor (env.)[1]	Metal ion B factor, with valence-weighted environmental average B factor in parenthesis
Ligands	Elemental composition of the coordination sphere
Valence[2]	Summation of bond valence values for an ion binding site. *Valence* accounts for metal-ligand distances
nVECSUM[3]	Summation of ligand vectors, weighted by bond valence values and normalized by overall valence. Increase when the coordination sphere is not symmetrical due to incompleteness.
Geometry[1,4]	Arrangement of ligands around the ion, as defined by the *NEIGHBORHOOD* algorithm
gRMSD(°)[1]	R.M.S. Deviation of observed geometry angles (L-M-L angles) compared to ideal geometry, in degrees
Vacancy[1]	Percentage of unoccupied sites in the coordination sphere for the given geometry
Bidentate	Number of residues that form a bidentate interaction instead of being considered as multiple ligands
Alt. metal	A list of alternative metal(s) is proposed in descending order of confidency, assuming metal environment is accurately determined. This feature is still experimental. It requires user discrimination and cannot be blindly accepted

Metal-ligand distance distributions for pdb7kro.ent in comparison with CSD







(1) Zheng H, Chordia MD, Cooper DR, Chruszcz M, Müller P, Sheldrick GM, Minor W (2014) *Nature Protocols, 9(1),* 156-70.
(2) Brown ID (2009) *Chem. Rev., 109,* 6858-6919.
(3) Müller P, Köpke S, Sheldrick GM (2003) *Acta Crystallogr. D Biol. Crystallogr., 59,* 32-37.
(4) Kuppuraj G, Dudev M, Lim C (2009) *J. Phys. Chem. B, 113,* 2952-2960.
(5) *CSD: Cambridge Structural Database*
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Citing CheckMyMetal (CMM):
Validation of metal-binding sites in macromolecular structures with the CheckMyMetal web server. Zheng,H., Chordia,M.D., Cooper,D.R., Chruszcz,M., Müller,P., Sheldrick,G.M., Minor,W. (2014) *Nature Protocols, 9(1),* 156-70.