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Molybdenum and tungsten oxidoreductase model chemistry

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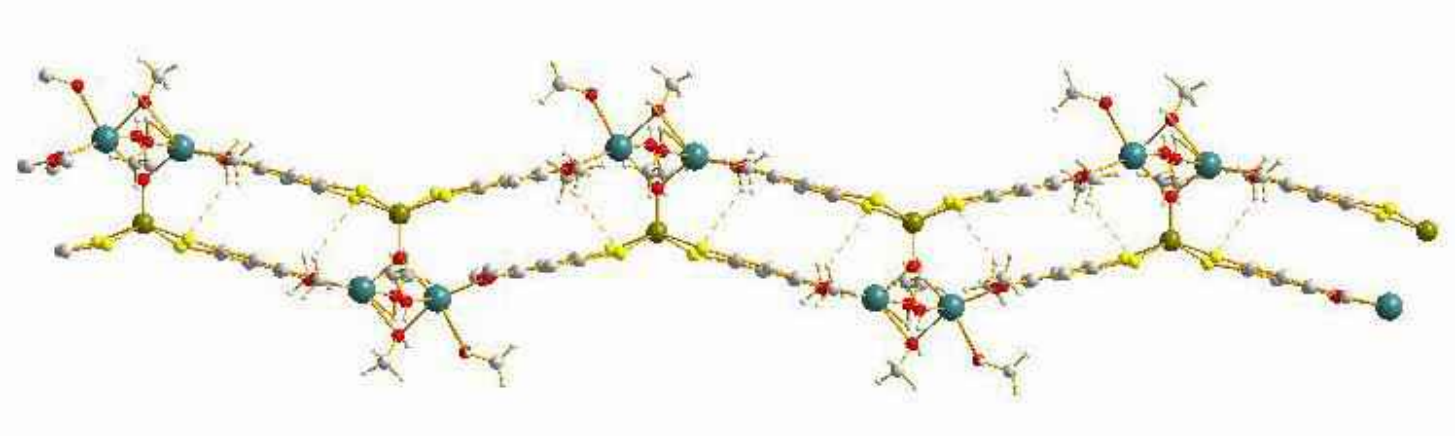
After introducing the general topic of molybdenum and tungsten dependent oxidoreductases[1] our group's strategic approaches relating to issues posed by the structures and functions of these enzymes' cofactors will be presented. Cofactor related questions will be discussed in detail which, at least to some extent, could be answered by model synthesis and crystallographic plus spectroscopic and/or electrochemical evaluation. These are in particular the influence, the type of coordination to the peptide may have on the catalytic performance, the choice of metal (molybdeum versus tungsten) in these enzymes and the respective evolutionary change in preference.[2,3] Finally some exciting and entirly unanticipated crystallographic discoveries will be presented.These are for instance unusual binding motifs, coordination polymer structures, hydrogen bonding and additional non-covalent interactions between dithiolene sulfur ligand atoms and potassium and sodium counter ions.

[1] *H. Russ, Trends Biochem. Sci 2002, 27, 360-367.,* ***[2]*** *X. Ma, C. Schulzke, H.-G. Schmidt, M. Noltemeyer, Dalton Trans. 2007, 1773-1780.,* ***[3]*** *A. Döring, C. Fischer, C. Schulzke, Z. Anorg. Allg. Chem. 2013, 1552-1558.*



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