

Poster Presentation

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Metal Speciation in Macromolecules Using Anomalous Diffraction Method

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Metals play vitally important roles in biological processes and are present in a large fraction of macromolecules. In proteins, the metal species is usually known from previous work or can be assigned using X-ray absorption spectroscopy. The metal can also be assigned looking at the local environment using coordination properties. Several methods exist to determine which metal is present in a given sample, but there is no method that can locally pin point the type of metal in a protein crystal. Anomalous scattering method was used to generate element specific 3D maps for a model protein. The method, that allows to scan for a wide range of metals with minimum X-ray dose will be described and qualitative as well as quantitative results will be presented. The experiment was performed in the 7-10 keV range but the full potential will be achieved with a broader energy range, i.e. 2-10 keV giving access to the absorption K edges of most of the key metals for life science.

Keywords: metal, anomalous diffraction, method