

ФИЗИКА КОНДЕНСИРОВАННЫХ СРЕД

X-RAY ABSORPTION NEAR-EDGE STRUCTURE
SPECTROSCOPIC ANALYSIS OF COPPER (II) MIXED
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X-ray absorption near-edge structure (XANES) spectroscopy based on synchrotron radiation is a dependable technique to obtain details on the structural properties of the complexes. Four physiologically significant copper (II) compounds are being studied through means of X-ray K-absorption spectroscopy. These complexes are: (1) $\text{Cu}(L^1)_2\text{Cl}_2 \cdot 2\text{H}_2\text{O}$, (2) $\text{Cu}(L^2)_2\text{Cl}_2 \cdot 2\text{H}_2\text{O}$, (3) $\text{Cu}(L^1)_2\text{SO}_4 \cdot 5\text{H}_2\text{O}$ and (4) $\text{Cu}(L^2)_2\text{SO}_4 \cdot 5\text{H}_2\text{O}$, where $L^1 = 5\text{-chloro salicylaldehyde benzoyl hydrazone (sbh)}$ and $L^2 = 5\text{-nitro sbh}$. We have obtained XANES spectra at the 2.5 GeV Cu K-Edge EXAFS beamline (BL-09), at Indus-2, RRCAT, Indore, India. From the position and type of absorbed X-ray discontinuities, information concerning the structural and chemical bonding of transition metal complexes has been discovered. Computer programs Origin and Athena have been used to analyze the XANES data. Numerous X-ray absorption features, such as chemical shift, edge width and shift of the Principal absorption maximum, have been found by the current analysis. The information on the chemical shift suggests that the complexes include copper in the +2-oxidation state.

Keywords: chemical shift, edge width, octahedral structure, sbh, XANES.

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