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Synthesis of Hexamolybdate Complexes with Difunctional Amines

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Poster Presentation P2

SYNTHESIS OF HEXAMOLYBDATE COMPLEXES WITH DIFUNCTIONAL AMINES

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Polyoxometalates, highly symmetric transition metal oxide clusters, are known to exhibit anti-viral activity. Modification of polyoxometalate compounds, through the addition of pendant organic groups, may enable the pharmaceutical targeting of diseased cells, which express specific biological macromolecules. Our research involves the synthesis of a naphthalene-hexamolybdate adduct from two equivalents of the hexamolybdate ion ($\text{Mo}_6\text{O}_{18}^{2-}$) and 1 equivalent of 1,5-diaminonaphthalene. Dicyclohexylcarbodiimide was utilized to facilitate the reaction, producing dicyclohexylurea as a byproduct.¹ This reaction was repeated several times, using different conditions, and the products were characterized by ^1H NMR spectroscopy. Downfield shifts of the aromatic, naphthalene resonances in these spectra suggest that the desired molybdenum-nitrogen bonds are forming. Yield and purity have been variable. Attempts to crystallize polyoxometalate compounds of this kind have produced spiny crystals, unsuitable for x-ray diffraction. We hope to explore other methods of purification and crystallization as our research continues.

