



Apr 12th, 9:00 AM - 10:00 AM

Synthesis of Hexamolybdate-Polyether Diamine Complexes

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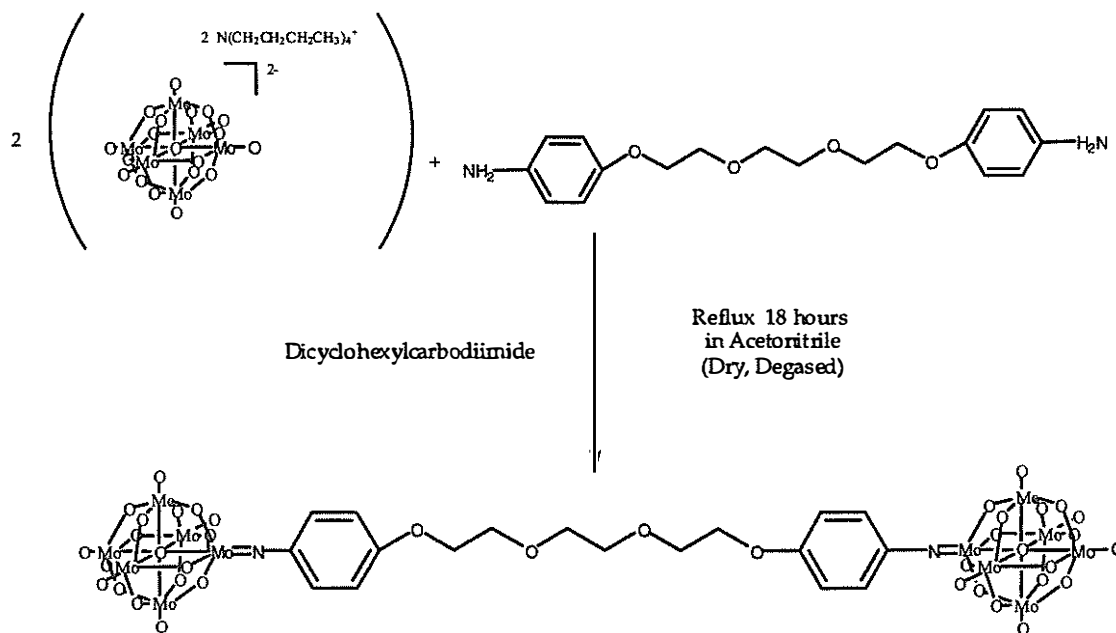
Poster Presentation P1

SYNTHESIS OF HEXAMOLYBDATE-POLYETHER DIAMINE COMPLEXES

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Polyoxometalates are a class of highly symmetric anion clusters that have applications in supramolecular chemistry. These polyoxometalate clusters may be able to act as “ends” which trap macrocyclic rings on linear carbon chains. Polyoxometalates have already been incorporated into polymers¹ and dendrimers.² Our research involves the synthesis of a dumbbell shaped molecule through reaction of two equivalents of tetrabutylammonium hexamolybdate ($[\text{Bu}_4\text{N}]_4[\text{Mo}_6\text{O}_{19}]$) and 1 equivalent of a polyether diamine strap. The diamine was prepared from 4-acetamidophenol and 1,2 bis(2-chloroethoxy)ethane. Further reaction of the prepared diamine with the hexamolybdate ion $[\text{Mo}_6\text{O}_{19}]^{2-}$ was facilitated using dicyclohexylcarbodiimide ($\text{C}_{13}\text{H}_{22}\text{N}_2$) which acts as a catalyst and a dehydrating agent. Dicyclohexylurea ($\text{C}_{13}\text{H}_{24}\text{N}_2\text{O}$) is formed as a byproduct.³ Formation of the diamine-hexamolybdate adduct was verified by ^1H NMR and FT IR. We hope to refine our synthetic procedure to achieve higher yields.



¹ Moore, Aaron R.; Kwen, Haidoo; Beatty, Alicia M.; Maata, Eric A. *Chem. Comm.* **2000**, 1793-1794.

² Zeng, Huadong; Newkome, George R.; Hill, Craig L. *Agnew. Chem. Int. Ed.* **2000**, 39, No. 10, 1772-1774.