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Amy Durkin
Illinois Wesleyan University

Nick Brazis
Illinois Wesleyan University

Rebecca Roesner, Faculty Advisor
Illinois Wesleyan University

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Poster Presentation P14

PREPARATION OF A LINEAR, CONJUGATED AMINE AND ITS REACTIVITY WITH THE HEXAMOLYBDATE ION

Amy Durkin, Nick Brazis and Rebecca Roesner*
 Department of Chemistry, Illinois Wesleyan University

Polyoxometalates are anionic transition metal oxide clusters. The metal ions in these clusters are typically d^0 species: V(V), Nb(V), Ta(V), Mo(VI), W(VI). In some cases, it is possible to form bonds between common organic functional groups and these inorganic clusters. Organic derivatives of polyoxometalates have potential uses in medicine; in catalysis; and in the preparation of macromolecular and supramolecular species, such as polymers and rotaxanes. A rotaxane is a supramolecular entity in which a linear molecule has been threaded through a macrocyclic ring. The ring is held in place through the addition of bulky stoppering groups to the ends of the linear molecule. We propose to build a rotaxane using a conjugated, difunctional amine as the linear molecule, an appropriate macrocycle as the ring, and hexamolybdate ions ($\text{Mo}_6\text{O}_{19}^{2-}$, a common polyoxometalate) as the stoppers. To this end, we have prepared the amine shown below (Figure 1) according to the procedure of Hogarth et al.¹ and have explored its reactivity with n-tetrabutylammonium hexamolybdate (Figure 2).

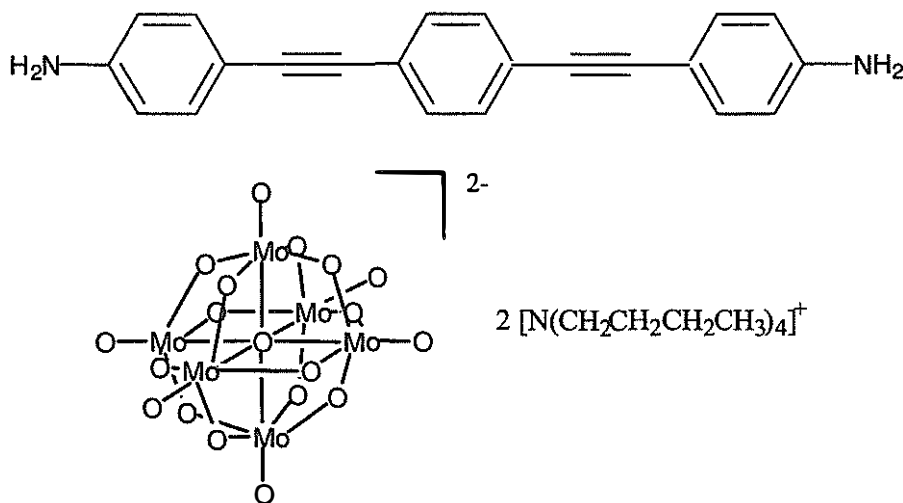


Figure 1. A linear, conjugated amine.

Figure 2. The n-tetrabutylammonium salt of the hexamolybdate ion

¹Hogarth et. al. "Linking metal centers with diimido ligands: synthesis, electronic and molecular structure and electrochemistry of organometallic ditungsten complexes $[\{\text{WCl}_2(\text{Ph}_2\text{PMe})_2(\text{CO})\}_2(\text{N-X-N})]$ ($\text{X} = \pi$ -conjugated organic) *J. Chem. Soc., Dalton Trans.*, 1999. pp 2705-2723.