Derivatization of Keggin-Type Polyoxometalates

Joseph B. Binder, '04
*Illinois Wesleyan University*

Rebecca A. Roesner, Faculty Advisor
*Illinois Wesleyan University*

Follow this and additional works at: [https://digitalcommons.iwu.edu/jwprc](https://digitalcommons.iwu.edu/jwprc)

[https://digitalcommons.iwu.edu/jwprc/2002/posters/7](https://digitalcommons.iwu.edu/jwprc/2002/posters/7)

This is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.
Polyoxometalates (POMs) of the Keggin structure, \([XM_{12}O_{40}]^n^-\), are large metal-oxygen anions. They have shown significant antiviral activity, but failed in clinical trials due to their toxicity at the necessary dosages.\(^1\) However, improving their bioselectivity through the attachment of appropriate ligands might decrease the required treatment levels and increase the POMs’ therapeutic utility.

We have worked to attach organic ligands to lacunary Keggin ions ((\([XM_{11}O_{39}]^n^-\)), POMs in which a W-O group is missing, leaving a hole into which another metal atom may be inserted. From \([PW_{11}O_{39}]^7^-\), we have successfully synthesized \([PW_{11}O_{39}RhCH_2COOH]^5^-\), in which a rhodium atom bonded to a carboxylate group has entered the vacancy. Next, we modified the organic ligand by forming an amide bond to produce \([PW_{11}O_{39}RhCH_2CONPh]^5^-\). Products have been characterized by \(^1\)H and \(^31\)P NMR. We plan to extend this chemistry to include other, more biologically relevant amines.