

Teaching Old Dogs New Tricks: Investigation of Novel Schiff Bases for the Remediation of Heavy Metals

Christopher G. Hamaker, Department of Chemistry, Illinois State University

Heavy metals are significant environmental pollutants. Mercury is highly toxic and known to bioaccumulate in the food chain, lead can lead to birth defects, and cadmium is acutely toxic. These elements are used extensively in industry and are found in many electronic devices and batteries. The noble metals Ru, Os, Rh, Ir, Pd, Pt, and Au and their complexes are commonly used as catalysts in the chemical and pharmaceutical industries. Removal of these metals is important not only because of their cost, but also because of their potential toxicity. The recommended limit according to the European Agency for the Evaluation of Medicinal Products for all six of the above listed noble metals *combined* in active pharmaceutical ingredients (API's) is 5 ppm. Therefore, recovery of these metals is of both environmental and economic importance.

Schiff base ligands have been long known and widely investigated. They are easily synthesized and readily modified both sterically and electronically. Our research group is currently investigating the coordination chemistry of novel Schiff base derivatives with a variety of metals and the potential of these new ligands as agents for the removal of heavy metals. This seminar will present our work on the synthesis and coordination chemistry of novel Schiff base ligands and their potential environmental uses.