Structural chemistry of cyanoximes

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Chemistry Seminar on the chemistry of cyanoximes

Monday February 9 at 4 pm in 126 Schrenk

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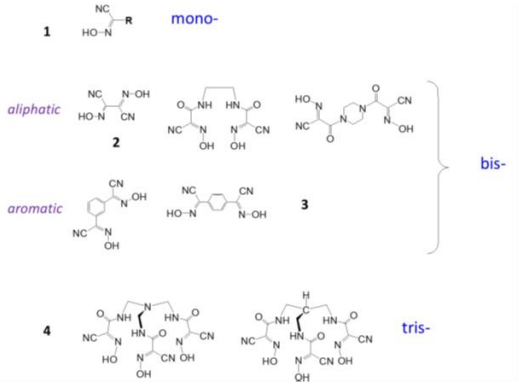
Abstract: During the last three decades my research was dedicated to chemistry of the new subclass of organic ligands – cyanoximes – that have general formula NC-C(=NOH)-R where R is an electron-withdrawing group. Presence of CN-group makes cyanoximes ~10,000 more acidic and better ligands than other known oximes. With 49 different R groups the most abundant is the family of *mono*-cyanoximes **1** (below), followed by *bis*-cyanoximes **2,3** that include aromatic and aliphatic spacers, and lately *tris*-cyanoxime **4** - a tripod - was obtained and characterized.

These simple low molecular weight organic molecules represent series of new excellent ampolydentate ligands for coordination chemistry: new types of molecular Legos. Both un-complexed ligands, their Na+ and K+ salts and other metal complexes show a large spectrum of biological activity from growth regulation in plants to significant in vitro and in vivo cytotoxicity against human cancers. Currently 56 of cyanoximes (45 from my group) are known, and there were more than two hundreds cyanoxime complexes synthesized and studied using the X-ray analysis. Stereochemistry of cyanoximes ligands, their most interesting metal- and organometallic compounds are reviewed, while numerous practical applications will be presented and discussed with interested parties after the talk.



About the speaker: **Nikolay Gerasimchuk** is a distinguished professor at Missouri State University, United States, where he has taught classes on inorganic chemistry for over 23 years. His research interests include synthesis, spectroscopic characterization, and medical-biological applications of oxime-based ligands and their metal complexes, for which he holds 9 patents. His publications include over 140 articles, 2 book chapters, 2 textbooks including a laboratory manual, and 3 editorials in special edition issues of Current Inorganic Chemistry and Molecules.