Current Status Of Pt-Based 1D Solids: Structures, Photoluminescence And Electrical Conductivity.

Prof. Nikolay N. Gerasimchuk[1]
[1]*Missouri State University*
nngerasimchuk@missouristate.edu

Since discovery by Krogman of partially oxidized tetracyanoplatinates (KCP) in 1968 there was huge interest to linear chain Pt-based compounds. These were derivatives of K2[Pt(CN)4] containing up to ~30% Br anions from the formation of mixed valence Pt(II)/Pt(IV) linear chain complexes. Another 1D polymeric chains (called MX solids) based on alternating Pt(II)/Pt(IV) = 1:1 chains quickly followed. Both groups represent Werner-type complexes and demonstrated remarkable close to metals room temperature electrical conductivity supplemented by optical properties (dichroism) later accompanied with bright photoemission in visible region. In these homometallic 1D solids there was observed direct Pt---Pt metallophilic interaction holding planar units into the "poker chips" stacks.

Homometallic Magnus Green Salt and heterometallic Cu---Pt Becton and Milton salts (Figure 1) provided further generalization for the formation of such metallic wires, followed by Pt---Tl and Pt---Pb cases. Recently several groups of highly luminescent organometallic Pt- compounds were discovered and characterized, followed by Pt-oximates that were found to be photo emissive in the NIR region beyond 1000 nm. Current presentation provides brief review of the most important crystallographic features of these 1D solids and offers prospective on their application in different fields of science and technology.

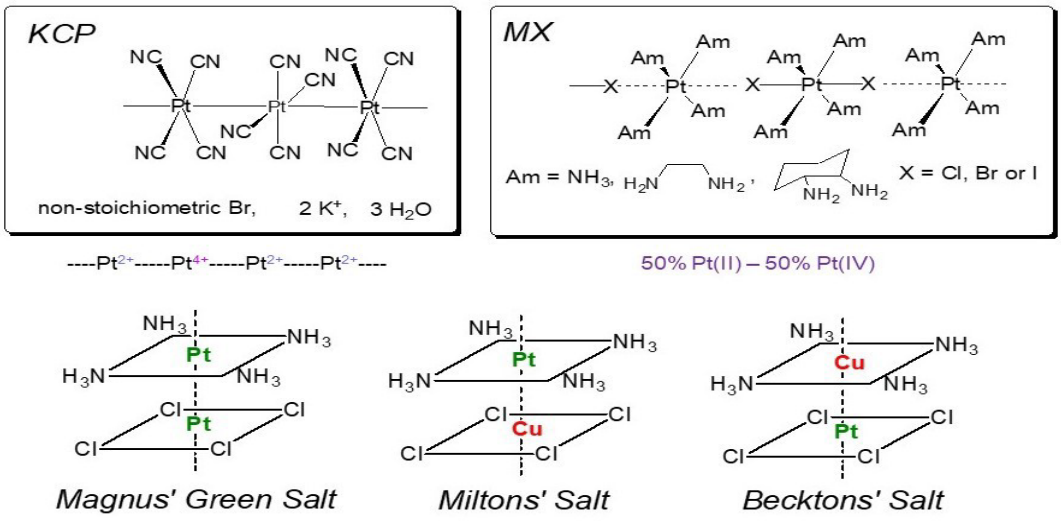

Figure 1