Rhodium-containing Conducting Metallopolymers: Utilizing Electronic Changes on the Polymer Backbone to Remotely Attenuate Metal-ligand Interactions

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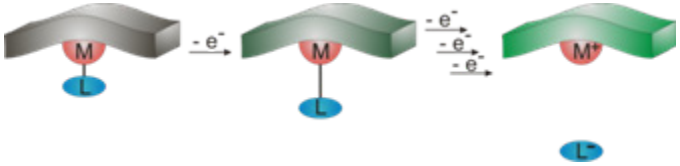

The use of redox-active ligands has been extensively investigated for their ability to affect the reactivity and binding of transition metal complexes. These systems have potential applications in small molecule storage and delivery, electrochemically mediated catalysis, and sensor development. Our approach uses conducting metallopolymers with metal complexes synthetically incorporated directly into a conducting polymer backbone which can therefore take advantage of the conducting polymer as a redox-active ligand.

- The design, synthesis, characterization, and redox-affected properties of this monomer, the corresponding conducting metallopolymer, and several model complexes have been performed.
- Full characterization of monomers including single crystal X-ray diffraction, XPS, and UV-Visible spectroscopy was accomplished.
- Spectroelectrochemistry of electropolymerized platinum complexes (a) reveals expected low energy transitions due to the conjugated polymer backbone (c) as well as a decrease in the amount of electron density at the metal center (b and d).