

**New Iron and Zinc complexes of redox- active iminophenol ligand as model complexes of metalloenzymes: synthesis and characterization**

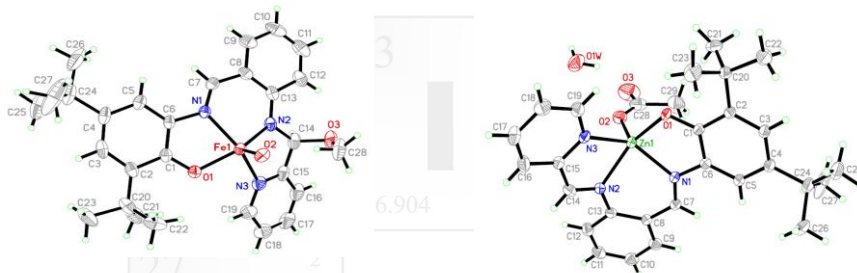
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Iron and zinc model complexes are implicated as key intermediates in several synthetic and biochemical catalytic cycles of some metalloenzymes [1-2]. In this work, synthesis and structural characterization of such these complexes are reported. Treatment of the redox-active iminophenol-iminopyridine hybrid ligand, HLIPIP with iron chloride and zinc acetate afforded new iron and zinc complexes, respectively. The structure and physical properties of the synthesized complexes have been examined in detail by X-ray, FT-IR, UV-Vis and Cyclic Voltammetry. The crystal structure of LIPIPFeO exhibits a square-pyramidal geometry with the Fe center coordinated by three nitrogen atoms, one phenolate oxygen atom with a terminal oxo ligand. It is evident from X-ray crystallography analysis that LIPIPZnOAc exists as a distorted square-pyramidal in which ZnII coordinated by pyridine, imine as well as one phenolate. The acetate group occupies the fifth positions in LIPIPZnOAc (Figure 1). Electrochemical studies conducted to evaluate the redox-active behavior of the complexes, show a ligand-based oxidation process.



Molecular structure of L<sup>IPIP</sup>FeO and L<sup>IPIP</sup>ZnOAc

Figure 1.

**References**

- [1] A. R. McDonald, L. Que, *Coordination Chemistry Reviews* 257 (2013) 414.  
 [2] Y. Kong, Z. H. Zhang, H. F. Zhu, H. Kawaguchi, T. a. Okamura, Q. Chu, W. Y. Sun and N. Ueyama, *Angewandte Chemie* 117 (2005) 4426.