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Synthesis, Single Crystal and Electrochemical Study of a New Symmetrical Schiff Base Molecule

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Abstract:

Schiff bases are important intermediates for the synthesis of some bioactive compounds. Furthermore, they are reported to show a variety of interesting biological actions, including antibacterial, antifungal, anticancer. The ligands form complexes with square planar geometry. Some structures of the Schiff base complexes have a variety of applications in biological, clinical, and pharmacological areas.Transition metal complexes of Schiff bases are of paramount scientific interest, due to their multiple uses as biomimetic systems of enzymes involved in the transport, storage and activation of dioxygen.

In this paper we report the condensation of 2-Hydroxy naphtalaldehyde with 1,5-diaminopentane in absolute MeOH in a 2:1 molar ratio leads to a new tetradentate symmetrical Schiff base ligand, as it is shown below. Then, this ligand is used to prepare some transition metal complexes in order to study the catalytic reactivity towards molecular oxygen.

Crystals of the Schiff base structure (0.45 × 0.20× 0.10 mm^3), were grown by slow evaporation from methanol solution at room temperature. X-ray crystallographic analysis of the tetradentate ligand shows that it crystallizes in the monoclinic with space group P21/c and with unit cell dimensions *a* = 20.9080(13)Å *b* = 4.7429(2) Å, *c*=10.6810(6) Å, α=90°, β=96.419(3)°, γ=90°. V= 1052.54(10) $Å^3$, Z = 2, *R1* = 0.0604 and *wR2* = 0.1399. X-ray structure determination showed that the ligand consists of a $C_{27}H_{26}N_2O_2$ moiety and with any coordinated solvent molecules on the structure.