

Synthesis of Cobalt(III) Schiff base complexes by tetradentate N₂O₂ Schiff bases

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Cobalt Schiff base complexes have been studied extensively. They are investigated as models for the Cobalamine (B12) coenzymes [1] classified as an oxygen carrier [2]. They applied as a catalyst for the preparative oxygenation of phenols [3] and amines [4]. Cobalt(III) salen catalytic activity has been investigated. The catalytically active species contains Co(III) oxidation state [5]. Cobalt(III) Schiff base complexes with formula of [CoL(PR₃)(OH₂)]⁺ (where L = tetradentate N₂O₂ Schiff bases) show that these types of complexes are in equilibrium with phosphines and amines to form [CoL(PR₃)₂]⁺ and [CoL(PR₃)(amine)]⁺ [6]. The [Co(naphen)(PR₃)(OH₂)] ClO₄ (where naphen = bis(naphthaldehyde)ethylene diimine, R = Bu and Ph) complexes were synthesized in methanol. The synthesized compounds were characterized by FT-IR, UV-Vis, ¹H NMR spectroscopy and elemental analysis techniques. These complexes were incorporated into Montmorillonite-K10 nanoclay. The modified clay was identified by FT-IR, XRD, TG/DTA, techniques. According to the XRD results of the new nanohybrid materials, the Schiff base complexes are intercalated in the interlayer spaces of the clay. TG/DTG results show that the intercalation reaction was taken place successfully.

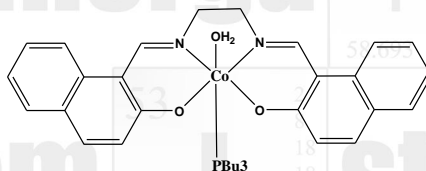


Fig. 1. The chemical structures of complexes [Co(naphen)(PBU₃)(OH₂)]ClO₄.

References

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