Synthesis of Cobalt(III) Schiff base complexes by tetradentate N_2O_2 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 $[CoL(PR_3)(OH_2)]^+$ (where L = tetradentate N_2O_2 Schiff bases) show that these types of complexesare in equilibrium with phosphines and amines to form $[CoL(PR_3)_2]^+$ and $[CoL(PR_3)(amine)]^+$ [6].
The $[Co(naphen)(PR_3)(OH_2)]$ ClO_4 (where naphen = bis(naphthaldehyde)etylenediimine, R = Bu and Ph) complexes were synthesiszed in methanol. The synthesized compounds were characterized by FT-IR, UV-Vis, 1H NMR spectroscopy and elemental analysis techniques. These complexes were incoporated into Montmorillonate-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.

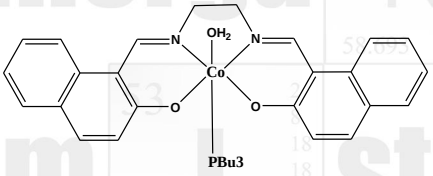

Fig. 1. The chemical structures of complexes $[Co(naphen)(PBu_3)(OH_2)]ClO_4$.

References

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