

Abstract

The current work discusses the heating and stirring method's use in the synthesis, characterization, and fluorescence applications of coordinated cobalt metal complexes produced from 1,2,4,5- benzene tetracarboxylic acid for the chemosensing of nitrogenous substances. By considering the choice of solvent, pH, the function of co-ligand, and the molar ratios of metal and ligand, the synthesis conditions of complexes were enhanced. Through UV-Visible spectroscopic analysis, FT-IR spectroscopy, and photo-luminescence spectroscopy, the characteristics of synthesized products were identified. Complexes' typically different from ligand FT-IR and UV-Visible spectra demonstrated the production of the product. The cobalt metal center, which may either increase or quench the fluorescence, is what caused the noticeable difference in emission intensity against cobalt metal complexes. The complexes had a considerable affinity for the quenchers, according to the quenching investigation. In terms of quenching effect, the effective fluorescence study for nitrogenous chemicals showed that complexes had strong sensing ability against nitrophenol. The carboxylic group of the ligand, which may then transfer energy into the metal ion of the complex, was responsible for the significant affinity of quenchers with the complex.