

ABSTRACT

In this research project, two mixed metal coordination complexes of Nickel and Cobalt with 4,4'-Diphenylmethanediamine ligands were synthesized by using sonication methodology. Effect of co-ligand, choice of solvent, pH and molar ratios of the metal and ligand was also studied to optimize the synthetic conditions of the complexes. The synthesized coordination products were characterized by UV-Visible spectroscopy, FT-IR spectroscopy, Photo-Luminescence spectroscopy, Chemosensing and Thermogravimetric analysis (TGA). The UV-Visible spectroscopic study was used to identify lambda maximum λ_{max} of the samples. The UV-Visible spectra obtained for the complexes and ligands were found to be different and exhibited different λ_{max} values. FTIR spectra revealed the significant position shifts of peaks between free ligand and the synthesized metal complexes. In Photo-Luminescence spectroscopy, concentration of Analyte in the sample solution is used to evaluate the fluorescence property of synthesized complex. Chemosensing is used to study the effect of analyte (quenchers) on sample. Thermogravimetric analysis (TGA) is used to measure the weight changes of a material as it is heated, providing valuable insights into its thermal stability, decomposition kinetics, and composition.