

ABSTRACT

Ultrasonic energy has been utilized for synthesis for coordination complexes of Pyridine-3,5-dicarboxylic acid with the first series of transition metals such as Copper Acetate [Cu(II)OAC, Nickel Chloride, Cobalt Chloride, Zinc Acetate. This rapid and efficient technique generated orange-pink, blue and white crystalline complexes of Co, Ni and Zn respectively. Atomic Absorption spectroscopy, Fourier transform infrared spectroscopy, UV-Visible spectroscopy and spectro fluorometry techniques were used for characterization and analysis. *On the basis of metals percentages and ultimately ligand to metal ratios were calculated by Atomic absorption spectrophotometer.* In [Zn(PDA).3H₂O] (MF 98). Zinc is four coordinated by one nitrogen atom [N(14)] of ligand (PDA) and three oxygen atoms [O (14), (15) and O(16)] from water molecules. In [2Ni (PDA)₂. 5H₂O] (MF108). Nickel 32 is four coordinated by one nitrogen atom [N(4)] of ligand, two oxygen atoms [O (30) and O(16)] from another ligand and one oxygen atom [O (33)] from water molecule. While other Nickel 13 is six coordinated by two oxygen atom [O(11) and O(12)] of ligand and four oxygen atoms [O (14), O(16), O (36) and O(37)] from water molecules. . In [2Co(PDA)₂.3H₂O] (MF 103). Cobalt 13 is four coordinated by two oxygen atom [O (30) and O(16)] of ligand and two oxygen atoms [O (14) and O(15)] from water molecules. While other Cobalt 32 is four coordinated by one nitrogen [N(4)], two oxygen atom [O(30) and O(31)] of other (PDA) ligand and one oxygen atom [O (33)] from water molecule. Photo degradation of methylene blue was also studied and complexes of Cobalt and Zinc showed efficient photo-catalytic activity. Photoluminous properties of Nickel complex with Pyridine-3,5-dicarboxylic acid has been determined against picric acid as quencher. The value of K_{sv} constant ($1.03 \times 10^2 \text{ M}^{-1}$) has been calculated by Stern-Volmer equation.