

ABSTRACT

Pyridine-2,4,6-tricarboxylic acid is an ambidentate, polydentate ligand. It is a rich oxygen and nitrogen donor ligand which has been used to make one, two and three dimensional metal organic frameworks with different transition metals and lanthanides along with alkali metals. It has different binding modes depending upon the metal's geometry. The ligand contains the carboxylate groups which help in making thermally stable and structurally diverse metal organic frameworks. Carboxylate groups also help in charge balance of the central metal atom. This ligand also facilitates the co-ordination of co-ligands like oxalate, Glycine, Alanine and 2,2-bipyridine etc to construct 3D polymer. Keeping in mind these properties of pyridine-2,4,6-tricarboxylic acid, efforts result in complex crystals of 3d metals Mn, Fe, Co, Ni, Cu and IA metals Na, K, along with 4f metals La, Ce and Dy. These complexes were synthesized in water at room temperature and by heating under reflux in a 50.0 ml capacity round bottom flask and also by Hydrothermally in Teflon lined autoclave for 24 to 72 hours at a temperature of 160 °C. Their X-ray diffractometry, FT-IR, TGA and bioactivity studies were carried out. Dy, Sm, Co metals form remarkable complexes with co-ligand 2,2-bipyridine and their XRD data was unreported and these metals show a complex 3D structures by simultaneous co-ordination with ligand and co-ligand. The XRD data of La, Ni and K metals cannot be solved due to very complicated parameters although their FT-IR and TGA analysis show satisfactory indication for complex formation.