

## ABSTRACT

In this research project, two coordination complexes of cerium metal with **Pyridine, 2, 4, 6-Tricarboxylic Acid** were synthesized by using different synthetic strategies ranging from hydrothermal and reflux methodologies. Effect of co-ligand (sodium azide), choice of solvent (water) 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 FT-IR spectroscopy and Photo-Luminescence spectroscopy. FTIR spectra revealed the significant position shifts of peaks between free ligand and the synthesized metal complexes. Best solvent (water & ethanol) and quenchers (picric acid & 4-nitro-aniline) were chosen by various spectroscopic techniques for complexes. Luminescence studies decided that complex 1 and 2 could be used as specific sensors against explosives and degradation of organic pollutants.