

## **Abstract:**

The new metal coordination complexes of Manganese (Mn) with the new ligand 1,2,4,6-benzenetetracarboxylic acid were synthesized, characterized and analyzed. The synthesized complexes were characterized by different spectroscopic techniques such as FT-IR, UV-VIS and fluorescence technique. The change in physical properties like color, melting points and solubility represented the formation of metal new complex. The fluorescence method for the detection of nitro aromatic explosives in the solution phase was successfully applied to these metal complexes. These metal complexes were tested against the explosive substances 2,4,6-TNP, 4-nitrophenol (4NP), 4-nitro-aniline (4NA), and  $\text{Hg}(\text{NO}_3)_2$ . Complex 1 further displays solvent-dependent photo luminescence emissions and is sensitive and selective for the detection of 2,4,6-TNP and complex 2 shows 4-NA detection selectivity and sensitivity.