

Abstract

In this work, three new chiral ligands based on L-tyrosine, namely L-N-(methyl-3-nitro)-Tyrosine [L-H₂Tyr-3-nitro], L-N-(methyl-3-chloro)-Tyrosine [L-H₂Tyr-3-chloro] and L-N-(methyl-3-methoxy)-Tyrosine [L-H₂Tyr-3-methoxy], and their Zn(II) and Cd(II) complexes are prepared in excellent yields. The purity of the ligands is confirmed by ¹H NMR spectroscopy and melting point data. The ligands are characterized further by FT-IR, Fluorescence and UV-Vis spectroscopy, powder X-ray diffraction, and ESI-MS analysis. On the other hand, an extensive structural characterization of the metal complexes is done by elemental analysis, FT-IR and Fluorescence spectroscopy, powder X-ray diffraction. The chirality of ligands and metal complexes is established in the solution state by polarimetry. Utilizing the fluorescence property of both ligands and the metal complexes, these are examined for their sensing ability for various analytes, such as KF, KCl, KBr, KI and NaOAc, which play vital roles in many chemical, physiological and industrial processes. The differential behavior of the ligands based on the solvent polarity is also studied. These are found to be excellent fluorogenic chemosensors for fluoride and iodide ions.