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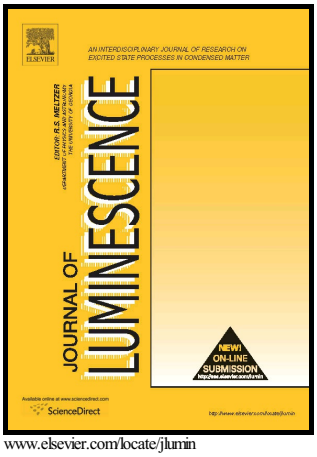

www.elsevier.com/locate/jlumin

PII: S0022-2313(17)32122-1
DOI: https://doi.org/10.1016/j.jlumin.2018.06.056
Reference: LUMIN15718

To appear in: *Journal of Luminescence*

Received date: 7 December 2017
Revised date: 28 May 2018
Accepted date: 18 June 2018

Cite this article as: Priyanka Munjal and H.M. Chawla, Metallo-supramolecular complex of 1,3-di{bis(2-hydroxynaphthyl)}−2-aminothiophenylcalix[4]arene for the detection of L-histidine using secondary interactions, *Journal of Luminescence,* https://doi.org/10.1016/j.jlumin.2018.06.056

Metallo-supramolecular complex of 1,3-di{bis(2-hydroxynaphthyl)}-2-aminothiophenylcalix[4]arene for the detection of L-histidine using secondary interactions

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Abstract: The 1,3-di{bis(2-hydroxynaphthyl)}-2-aminothiophenylcalix [4]arene **(L1)** has been synthesized and characterized by nmr, mass, uv- vis, fluorescence spectroscopy. The *in-situ* mixing of receptor **L1** and copper ions in 1:1 pattern forms metallo supramolecular complex **[L1-Cu2+]** which recognizes l-histidine from among other essential amino acids in the emission spectrum. It seems that receptor **L1** act as a primary sensor for cation recognition and as a secondary sensor for l-histidine.

Key words: Schiff base, Calix[4]arene, Copper ion, Supramolecular complex, L-histidine, Recognition.

1. Introduction

Metallo supramolecular complexes have been synthesized *in-situ* by mixing of supramolecular ligand and metal ions as guest moiety where the non-covalent interactions such as hydrogen bonding, electrostatic, hydrophobic interactions *etc* cling to these metallo supramolecular complexes. Further these primary interactions are extended for the recognition of different analytes such as cations, anions and neutral molecules that have been attracted as a keen attention towards researchers[1]. Recognition of bio molecules is a complex mechanism as compared to recognition of inorganic salts like cations and anions. Therefore the secondary interactions provided by metallo supramolecular complexes solve the problems to some extent. For example, Chan *et al* has reported supramolecular complex for coumarin-Cu^{2+} for detection of l-histidine.[2-3] Similarly, Rao *et al* has also developed new turn on fluorescent assay for cysteine by using secondary interactions of [calix[4]arene-Ag^{+}] supramolecular complex. Prompted by this recent literature reports, in connection with our continuous research interest, fluorescent sensors are developed for bio molecules by using metallo-supramolecular complex of calix[4]arene derivative with copper ions.[4]

Molecular recognition of bio-molecules such as amines, amino acids, peptides, proteins and carbohydrates have gained more attention in supramolecular chemistry. Among all, amino acids play an important role in the biological processes. Besides building blocks of proteins and polypeptides, amino-acids regulates key metabolism pathways which are necessary for growth, maintenance, reproduction and immunity.[5]