



A novel Na^I/Cu^{II} complex Synthesis, Spectral and Structural Characterisation

Somasundaram Ramachitra,* Krishnan Parthipan and Bidhu Bhusan Das

*Dept of Chemistry, Pondicherry University, Puducherry-605014, **INDIA**

Email: psr12in@gmail.com

Received on 18th September and finalized on 22nd October 2013

ABSTRACT

A novel cluster $[Cu_2(L)(\mu_{1,1,2}-ClO_4)Na(ClO_4)(H_2O)].0.25H_2O$, where ($H_3L = 2-(2'-hydroxyphenyl)-1,3-bis[4-(2-hydroxyphenyl)-3-azabut-3-enyl]-1,3-imidazolidine$) has been synthesised and characterized by elemental analyses, IR, UV-Vis spectroscopy and single crystal X-ray diffraction studies. The result shows that a perchlorate ligand in the $\mu_3-1,1,2$ binding mode is seen as the sole support for the assembly of $[Na^I Cu^{II}_2 L]$ unit. The copper atoms of dinuclear unit is in a distorted square-pyramidal environment and are held together by phenolate oxygens, imidazolidinyl nitrogens in the equatorial plane and perchlorate bridge at axial with Cu---Cu separation of av. 3.21 Å, phenolic oxygen atoms of ligand, perchlorate and water molecule are connected to second metal ion sodium. Investigation on the ESR of complexes in frozen DMF solution at 77 K revealed the existence of the imidazolate-bridged dicopper structure in solution. XRD structure shows that extensive hydrogen bonding, C-H... π interactions lead to the formation of 3D framework.

Keywords: N_4O_3 ligand, Cluster, perchlorate ion, $\mu_3-1,1,2$ binding mode, XRD.