

## **Interesting properties of some iron(II), copper(I) and copper(II) complexes with tridentate ligands**

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Tridentate ligands with nitrogen centers, generally well-known as the tripod ligands, have been of considerable interest to inorganic chemists dealing with the preparation of model compounds for hemocyanin, tyrosinase etc. We have found that such ligands when complexed with iron(II) and copper(II) and copper(I) ions produce not only structurally interesting molecules but also those with interesting magnetic and phase transition properties. Most of them exhibit molecular dynamics mainly because of the inherent ligand structure. Furthermore, the relative conformations of the ligands when two such ligands are added to the same metal have temperature dependent properties. There is a beautiful example of exchange coupling with both the ground and excited states involved, as proven by a combination of EPR and magnetic susceptibility. Similarly a combination of Mössbauer, magnetism and NMR spectroscopy – all temperature dependent – prove beyond doubt the nature of the structure-based phase transitions. All these and much more go to prove the versatility and usefulness of such ligands. These are discussed with suitable examples.