Conclusion

The main focus of the thesis remained on searching effective paths to synthesize Schiff base coordinated polynuclearcopper(II) complexes and to examine their magnetic and biological properties. I have presented here the synthesis, crystal structures, variable temperature magnetic behaviour of multinuclear copper(II) complexes using three different multidentate hydroxyl rich Schiff base ligands (E)-2-((1-hydroxybutan-2-ylimino)methyl)phenol, (E)-2-((1-hydroxybutan-2-ylimino)methyl)-6-methoxyphenol and2-ethoxy-6-[(1-hydroxymethyl-propylimino)-methyl]-phenol. By using copper(II) salt and any one of these Schiff base resulted tetranuclearcopper(II) complex having cubane like core framework. On the other hand when we used copper(II) salt and Schiff base in combination with linear dicarboxylate produced either 1D polymeric chain or tetranuclear cationic copper(II) complex having cubane like core framework, where the lattice carboxylate counterbalance the charge of the cationic complex. Variable temperature magnetic measurements of some complexes have been performed in the range 2-300K indicate antiferromagnetic exchange coupling between copper centres in all complexes. Protein and DNA binding studies of some multinuclear complexes were investigated using electronic absorption and emission spectral techniques, and the results shows that all the compounds bind with protein / DNA effectively.

Future Prospect

The work presented in this thesis consists of Synthesis, crystal structure, low temperature magnetic behavior and biological activity of Schiff base coordinated poly-nuclear Cu(II) complexes. So we focused only the synthesis and molecular properties of Schiff base coordinated polynuclear copper(II) complexes. In the future we would like to perform the following works.

i) Synthesis of polynuclear metal complexes of cobalt(II/III), nickel(II), cadmium(II) using multidentate Schiff base ligands and in combination with di/polycarboxylates, azide, dicyanamide as co-ligands.

ii) Synthesis of some fluorescent and magnetic hetero-metallic (3d-4f / 3d-3d) inorganic-organic hybrid compounds and study of the effect of weak interactions in the crystal structure of the compounds.

iii) Characterization of complexes using FT-IR, Uv-vis spectroscopy, ESI-mass, X-ray crystal structure and photoluminescence studies.

iv) Study of magnetic, fluorescence, redox and thermal behaviour of compounds.

v) Photocatalytic and adsorption activities will be explored for the coordination polymers.

vi) Study of biological and radical scavenging activity of different transition metal complexes will be investigated.

vii) DFT and TD-DFT calculations of ligands and complexes for explaining their various spectral properties.