ABSTRACT

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Title	**Thermal, Spectral and Antimicrobial Studies of Newly Developed Co-Ordination polymers of Some Transition Metal Ions**

This thesis has been organized into 7 Chapter:

CHAPTER-1. This chapter includes the possible applications of coordination polymers. In addition, biodegradable and antimicrobial activity of coordination polymers also described here.

CHAPTER-2. introduced the technique used to identify and characterize all the new synthesized coordination polymers.

CHAPTER-3. deals with the formation of coordination polymers with bisphenol-A, formaldehyde and transition metal complexes of ethylenediamine/ o-phenylenediamine (BFE/BFP). The polymer metal complexes were characterized by FT-IR, ^{1}H-NMR, UV-Vis. spectroscopies and TGA. The thermogravimetric analysis (TGA) data suggest that the all the polymer metal complexes are stable than that of corresponding parental ligands. The result of antimicrobial activity revealed that polymer complexes of Cu(II) show highest inhibition zone.

CHAPTER-4. includes the synthesis, characterization and antimicrobial studies of polymeric ligand (BFG/BFL) and its polymer metal complexes containing glycine/leucine moiety.

Polymeric ligand was synthesized by the polycondensation reaction of bisphenol-A and formaldehyde with amino acid in alkaline medium. The materials were characterized by elemental analysis, spectral studies, magnetic moment measurements and thermal analysis. All the synthesized polymer metal complexes showed excellent antibmicrobial activities against the selected microbes.

CHAPTER-5. In this chapter, the reaction for the preparation of polymeric Schiff bases was carried out in two steps. The monomeric Schiff bases were prepared by the reaction of salicylaldehyde with glycine and leucine.The materials were characterized by elemental analysis, spectral studies and magnetic moment measurements. The antimicrobial activities were determined by using agar well diffusion and all the synthesized polymer metal complexes showed excellent antimicrobial activities against the selected bacteria.

CHAPTER-6. This chapter includes the synthesis, characterization and antimicrobial investigation of metal chelated polymeric Schiff bases. All the synthesized polymer metal complexes were characterized by Elemental analysis and various spectroscopic tecniques. Thermal behaviour of all the synthesized compounds was studied by TGA technique. The results of TGA ascribed that SPFE-Cu(II) show better heat resistant properties than other metals chelated polymers. These polymer metal complexes have also been screened for their anti-bacterial and anti-fungal activity against various microbes. The polymer metal complexes show better anti-microbial activity than polymeric Schiff bases.

CHAPTER -7. Conclusion and Future Research Aspects

This chapter briefly describes the future research directions based on the work presented in chapters 3 to chapter 6.