

Preparation of Metal Containing Epoxy Polymer and Investigation of Their Properties as Fluorescent Probe

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Abstract : Metal containing polymers (MCPs) are macro molecules usually containing metal-ligand coordination units and are a multidisciplinary research field mainly based at the interface between coordination chemistry and polymer science. The progress of this area has also been reinforced by the growth of several other closely related disciplines including macro molecular engineering, crystal engineering, organic synthesis, supra molecular chemistry and colloidal and material science. Schiff base ligands are very effective in constructing supra molecular architectures such as coordination polymers, double helical and triple helical complexes. In addition, Schiff base derivatives incorporating a fluorescent moiety are appealing tools for optical sensing of metal ions. MCPs are well-known systems in which the combinations of local parameters are possible by means of fluoro metric techniques. Generally, without incorporation of the fluorescent groups with polymers is unspecific, and it is not useful to analyze their fluorescent properties. Therefore, it is necessary to prepare a new type epoxy polymers with fluorescent groups in terms of metal sensing prop and the other photo chemical applications. In the present study metal containing polymers were prepared via poly functional monomeric Schiff base metal chelate complexes in the presence of dis functional monomers such as diglycidyl ether Bisphenol A (DGEBA). The synthesized complexes and polymers were characterized by FTIR, UV-VIS and mass spectroscopies. The preparations of epoxy polymers have been carried out at 185 °C. The prepared composites having sharp and narrow excitation/emission properties are expected to be applicable in various systems such as heat-resistant polymers and photo voltaic devices. The prepared composite is also ideal for various applications, easily prepared, safe, and maintain good fluorescence properties.

Keywords : Schiff base ligands, crystal engineering, fluorescence properties, Metal Containing Polymers (MCPs)

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