

Metallo-Supramolecular Assemblies based on Terpyridine and Ferrocene units: Formation, Composition and Properties in solution

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A promising approach in today's polymer chemistry is the conjunction of covalent linked polymer species with non-covalent interactions to establish new polymeric systems. For this purpose, supramolecular polymers containing reversible metal–ligand interactions have been widely studied in the past decades. However, in spite of the strong attention on such polymer systems their detailed molecular analysis in solution remains scarce. In the here presented study the attention is focused on the detailed macromolecular analysis of differently structured copolymers embedding terpyridine and ferrocene units by the complementary methods of molecular hydrodynamics namely analytical ultracentrifugation (AUC), viscosity and light scattering approaches. The copolymers were synthesized using the controlled radical addition-fragmentation transfer (RAFT) polymerization technique. Subsequently the macromolecules were treated with Eu^{3+} , Co^{2+} , Fe^{2+} , and Pt^{3+} metal ions. The intercorrelation of obtained results was evaluated via the concept of the hydrodynamic invariants. The special attention was paid to the investigation of the intra- and inter molecular complexation behavior of the metal ions with the ligand containing methacrylate copolymers at different conditions by the sedimentation velocity analysis applying modern solutions for the AUC data treatment.

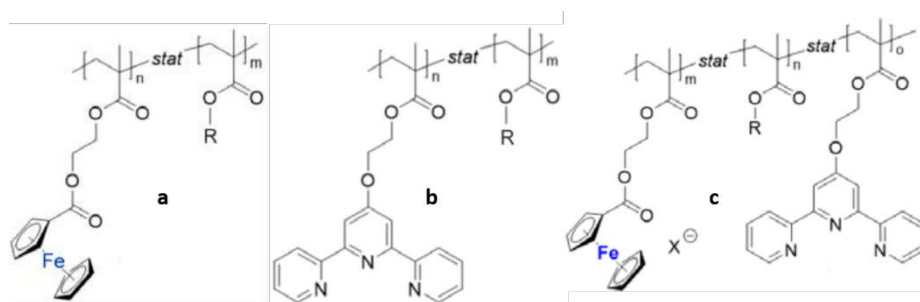


Figure 1. Chemical structures of the studied systems with ferrocene (a), terpyridine (b), ferrocene and terpyridine (d).

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