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Microwave Assisted Synthesis and Metal Complexes of Some Copolymers Based on Itaconic Acid

Authors : Mohamed H. El-Newehy, Sameh M. Osman, Moamen S. Refat, Salem S. Al-Deyab, Ayman El-Faham

Abstract : The two copolymers itaconic acid-methyl methacrylate and itaconic acid-acrylamide have been prepared in different ratio by radical copolymerization in the presence of azobisisobutyronitrile (AIBN) as initiator and using 2-butanone as reaction medium using microwave irradiation. The microwave technique is safe, fast, and gives high yield of the products with high purity in an optimum time, comparing to the traditional conventional heating. All the prepared copolymers were characterized by FT-IR, thermal analysis and elemental microanalysis. The itaconic acid-based copolymers showed a good sensitivity in alkaline media for scavenging Cu (II) and Pb (II). The chelation behavior of both Cu (II) and Pb (II) complexes were checked using FT-IR, thermogravimetric analysis (TGA), and differential scanning calorimetery (DSC). The infrared data are in a good agreement with the coordination through carboxylate-to-metal, in which the copolymers acting as a bidentate ligand.

Keywords : microwave synthesis, itaconic acid, copolymerization, scavenging, thermal stability
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