P-13-1088

SYNTHESIS AND CHARACTERIZATION OF A NOVEL AROMATIC POLYSULFIDE IN THE PRESENCE OF PHASE TRANSFER CATALYST

M.Sheidaie[a], M. R. Kalaee[a*], M. Dadgar[b], M.H.N. Famili[c], A. Shockravi [d], S. M. Samar [d], A.Allahbakhsh[a], H.R. Aliasgari Dehaghi[a], Ali Amirsadri[a]

[a] Department of Polymer Engineering, Islamic Azad University, Tehran South Branch, Tehran, Iran, [b] Department of Chemistry, Islamic Azad University, Tehran South Branch, Tehran, Iran, [c] Polymer Group, Tarbiat Modares University, Tehran, Iran and [d] Faculty of chemistry , Tarbiat Moallem University, Mofatteh Avenue No. 49, Tehran, Iran.

**Corresponding author: mr_kalaei@azad.ac.ir; mohammad.kalaee@gmail.com*

Sulfur-containing polymers are quite important in polymer industry because of their interesting properties which makes them useful in a wide range of applications. Due to these properties, they are used in coatings, adhesives, sealants, insulators, and other applications. Polymers containing sulfur can be prepared by different methods such as ring-opening polymerization or polycondensation reactions.

Phase transfer catalysis (PTC) is a well-established technique in preparative chemistry and has been widely used for organic synthesis, particularly for nucleophilic substitution. Advantages arising from the syntheses of organic chemicals with phase-transfer catalysis (PTC) are: rapid rate of reaction, high selectivity of product, moderate operating temperature and suitability for industrial-scale production. The use of a phase-transfer catalyst (PTC) for carrying out the polymerization reaction is a new method which is recently used for the polymerization of some monomers. Moreover, phase-transfer catalysis is a valuable synthetic technique in polymerization of polysulfide polymers.

In this study a novel Poly(aryltetrasulfide) was synthesized from 1,4-Bis(chloromethyl)-benzene and sodium tetrasulfide by polycondensation technique using methytributyl ammonium chloride and tetrabutyl ammonium bromide as phase transfer catalysts, (PTC). The effects of PTC on the conversion rate of the synthesized polysulfide polymer and improving the physical properties of the product were also investigated. The structures of synthesized polymers were confirmed through CHN analysis, ATR FT-IR, TGA, XRD and DSC techniques.