STRUCTURAL CHANGE OF POLYACRYLONITRILE BY IODINE SORPTION

Hong Sung Kim and Hyun Hok Cho

Dept. of Textile Eng., College of Eng.,
Pusan National University.

In recent year, Halogenated polymer complex have been extensively investigated with the trend of functionalization of polymer materials. The interest in these materials is due to the enhancement of electrical properties. Therefore, the researches in these systems are mainly concerned the increase of electrical conductivity by halogen species sorbed and polymer-halogen complex.

The sorption of halogen species into a polymer can also affect the degree of crystallinity and structural order of parent polymer. One of such halogen species is iodine, of which derivatives are charge transfer complexes in which the derivative structures are best viewed as a perturbation of the structures of the parent polymers. The iodine sorption has been reported to produce significant structural changes in some polymers such as polyacethylene, polyvinylalcohol, and nylon 6.

Polyacrylonitrile(PAN) is well known polymer which had the strong dipolar group per monomer unit. Therefore, it is also possible that PAN forms the charge transfer complex with iodine. Although the crystal structures of PAN have not yet been determined clearly, the study of structural change of PAN by iodine sorption may be helpful to clarifing the structure of PAN as well as appling PAN to an electrical materials.

In this paper, we investigate the structural change of PAN and the structure of PAN-iodine polymer complex by iodine sorption from aqueous solution of iodine and potassium iodide.