Structure and properties of polyether polyurethaneurea elastomers having the aromatic diamine chain extenders(3) -orientation behavior

이 호 경, 고 석 원*
코오롱 기술 연구소
서울대학교 공과대학 섬유공학과*

Polyether polyurethaneurea(PEUU) elastomers based on polytetramethylene ether glycol(PTMG), 4,4'-diphenylmethane diisocyanate(MDI) and 3 kinds of diamine chain extenders i.e. 4,4'-diaminodiphenylmethane, m-phenylenediamine and p-phenylenediamine were synthesized in DMF or DMF-LiCl solvent by prepolymer method. The effect of the hard segment(H/S) structure, hard segment content and block length on the orientation behavior of PEUU elastomers was studied.

Strain-induced crystallization behavior of soft segment(S/S) was observed in the samples with PTMG-2000 irrespective of the kinds of chain extenders by WAXD tests. This behavior was prominent in the samples with higher S/S content and not observed in the samples with PTMG-1000. These results suggested that crystallization behavior should be related with the degree of phase separation of S/S and hard domain.

In the Infra-red dichroism tests, orientation function of well-ordered H/S was negative beyond high strain level, while S/S showed positive orientation behavior from initial strain.