

# Effect of Soft Segment Block Length on the Thermal Properties and Crystallization Behavior in the Blends of Segmented Block Copolyetheresters Based on Poly(butylene terephthalate) and Poly(tetramethylene ether glycol)

이민성, 전병열, 백두현

충남대학교 공과대학 섬유공학과

Segmented block copolyetheresters based on poly(butylene terephthalate) and poly(tetramethylene ether glycol) (4GT/PTMGT) with various hard segment contents were synthesized by the equilibrium melt transesterification of dimethyl terephthalate with 1,4-butanediol and poly(tetramethylene ether glycol) (M.W.=1000 and 2000). The copolyetheresters synthesized were found to be true segmented block copolymers from the results of  $^1\text{H-NMR}$  and melting temperature depression data. The average segment length of the hard and soft segment were calculated with the assumption of high extent of polymerization and a most probable distribution. Blend samples were prepared in solution by blending these copolyetheresters with each other by 1:1 blend ratio both for 1000 and 2000 series. For all the samples examined there showed single sharp crystallization exotherms during cooling, which implied that the component polymer did not crystallize separately. The blends always showed higher melt-crystallization temperature than those of the component polymers. The heats of crystallization of the 1000 series blend samples showed lower values than the calculated values from the the heats of crystallization of the component polymers, while those of the 2000 series blends was nearly the same as the calculated ones. The crystallization behavior of the component polymer of high hard segment content in the blends was found to governed the overall crystallization in the blends.