

α -Methylstyrene의 광중합

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Dipenyliodonium hexafluorophosphate를 광캐티온 중합개시제로 사용하여 CH_2Cl_2 용액중에서 α -methylstyrene의 광중합 거동을 검토하였다. CH_2Cl_2 및 α -methylstyrene은 고진공라인 상에서 충분히 건조한 후 봉관하여 중합시료를 준비하였으며 광중합은 500W UV lamp의 全色光을 사용하여 행하였다. 중합수율은 중량법으로, 중합물의 평균분자량은 GPC를 사용하여 측정하여 개시제 농도, 단량체 농도, 중합 온도, 용액의 극성등의 파라미터가 중합거동에 미치는 영향을 검토하였는 바 그림에 보인 것처럼 중합수율 및 얻어진 중합체의 평균분자량은 0°C 에 비해 -78°C 에서 더 높음을 확인하고 이러한 실험결과를 기초로 하여 반응기구를 검토하였다.

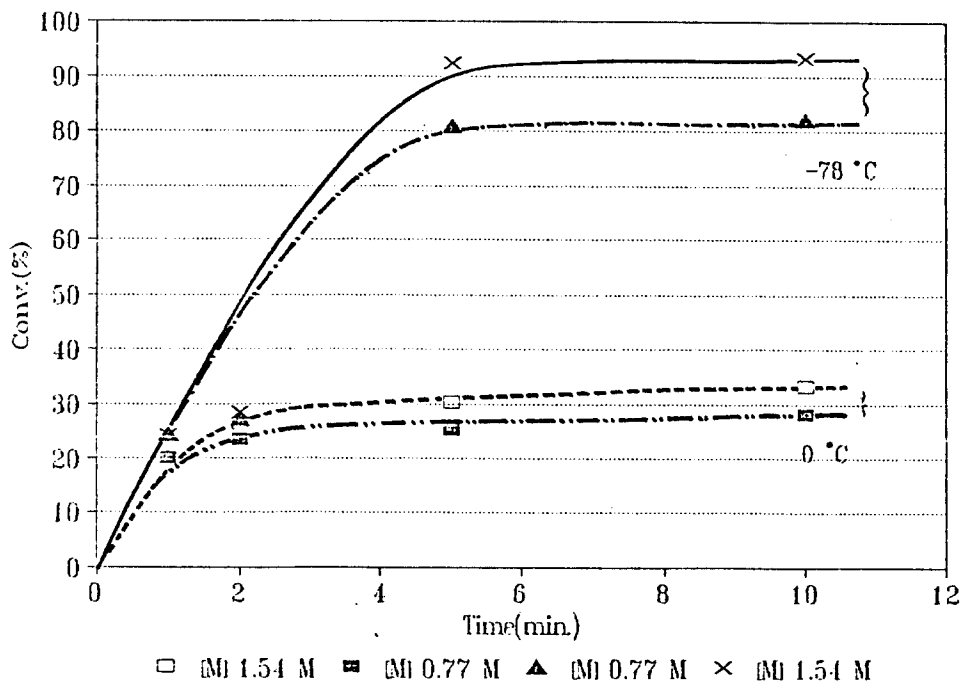
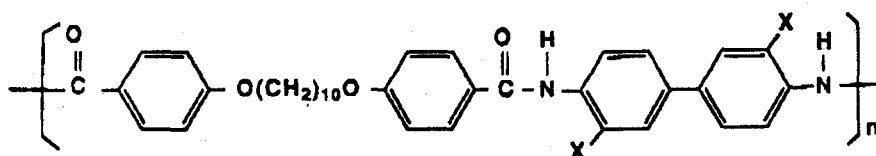
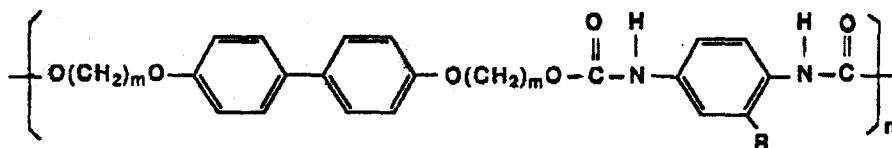


Fig.1. Time-conversion curves for the polymerization of α -methylstyrene in the presence of dipenyliodonium hexafluorophosphate in CH_2Cl_2 . [Initiator]= 6.0×10^{-3} M

strength. The cross section observed on SEM indicated that the polymer had high orientation.



Para-bound polyurethanes obtained by polyaddition of bis(ω -hydroxyalkyleneoxy)biphenyl with 2,5-toluenediisocyanate (2,5-TDI) afforded thermotropic character independently of the molecular weight. However, since the proportion of mesogenic units in the polymer



structure was low, the mesophase temperature range was narrow in the range of 10 to 20 degrees. For example, in the case of $m=2$, i.e., bis(ω -hydroxyethyleneoxy)biphenyl as a diol and $R=CH_3$, i.e., 2,5-TDI as a diisocyanate, the obtained polyurethane exhibited $T_m=274^\circ\text{C}$ and $T_i=284^\circ\text{C}$.

We also investigated side-chain type liquid crystalline polymers. In this case, solid-state polymerization of liquid crystalline or non-liquid crystalline (meth)acrylate monomers was carried out by electron beam irradiation. To cause monomer orientation favorable for solid-state polymerization, a low molecular weight liquid crystalline compound was added. Hydrogen bonding between the monomer and the additive or aggregation of polymerizable double bonds was utilized. Thermotropic poly(meth)acrylates were formed in high conversions, and in some cases the polymer had high molecular weights.