

Double Metal Cyanide Catalyzed Ring-opening Polymerizations of Propylene Oxide

김 일*

부산대학교 고분자공학과

(ilkim@pusan.ac.kr*)

Double metal cyanide (DMC) compounds, the reaction products of a water-soluble metal salt and a water-soluble metal cyanide salt, are well-known catalyst for the polymerization of epoxides and the synthesis of propylene oxide (PO) based polyether polyols (PPG) which are used in a wide range of polyurethane (PU) applications. Recent improvements have made DMC catalysts much more attractive for commercial manufacture of polyether polyols since they give high-quality PPG products that have low level of unsaturation, narrow molecular weight distribution (MWD) and low viscosity, especially compared to conventional base catalysts. In this report we demonstrate that the catalytic behavior of the DMC catalysts in PO polymerization prepared by utilizing ZnF_2 , $ZnCl_2$, $ZnBr_2$, and ZnI_2 changes dramatically. PO polymerizations have also been performed with the DMC catalysts prepared by modifying cyanide moiety to Co(II), Fe(II), Fe(III), and Ni(II), fixing MX_2 to $ZnCl_2$ and complexing agents to tertiary butyl alcohol together with polytetramethylene ether glycol (PTMEG).