

Preparation and Thermal Degradation of Poly(dimethyl - co - methylphenylsilylene) Block Copolymer

Y. Shim, D.W. Kang, J.K. Yang, J.R. Han, C.N. Kihl

Institute of Organosilicon Research and Development  
Dankook University, Seoul KOREA

Quite soluble and high molecular weight polysilane was prepared by copolymerizing dimethyldichlorosilane with methylphenylchlorosilane using Na/K alloy and co-catalyst naphthalene, and characterized by IR, UV, and NMR. According to the mole ratio of the reactant, block unit ( $\text{Me}_2\text{Si}$ ) and ( $\text{PhMeSi}$ ) in copolymer, melting point, molecular weight change, yield, and solubility characteristics were measured. The block copolymer was white solid and depolymerization activation energies were determined by dynamic and isothermal TGA for polydimethylsilane(PDMS), polymethylphenylsilane (PMPS), and poly(dimethyl-co-methylphenylsilylene)(PDMPS). The depolymerization activation energies for PDMS, PMPS, and PDMPS were 52, 71, 58Kcal respectively from dynamic TGA and for PDMPS 32Kcal from isothermal TGA measurement.