

Kinetics of Emulsion Copolymerization of Vinyl Acetate and Vinyl Pivalate

곽영제, 류원석, 하완식

서우대학교 공과대학 섬유고분자공학과

Vinyl acetate(VAc) and vinyl pivalate(VPi) were polymerized and copolymerized *via* the low-temperature redox emulsion polymerization initiated by a manganese chelate. The kinetics of these systems was investigated by introducing mathematical model and estimating the corresponding parameters. Among the parameters, the radical entry rate constant, k_a , the overall rate coefficient for radical desorption, K_d , and the overall termination rate coefficient in the polymer particle, K_p were correlated each other. Since the model was insensitive to the values of k_a , K_d , and the rate coefficient of free radicals from initiator, k_i , these values could not be accurately estimated. The conversion simulated with estimated parameters showed a reasonable agreement with the experimental results of polymerization and copolymerization of VAc and VPi. The copolymer composition in the emulsion polymerization system was highly related to the partitions of the monomers in different phases, and the accurate determination of partition coefficients was required to predict the copolymer composition correctly.