

## Phase Segregation of Binary and Ternary Solution for the P(PA-co-MMA) + Compressed Solvents and Copolymer Preparation by Supercritical Dispersion Polymerization

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Copolymers of poly(pentyl acrylate-co-methyl methacrylate) [P(PA-co-MMA)] were manufactured by using carbon dioxide with dispersion polymerization. The thermophysical characteristics of P(PA-co-MMA) were researched with three kinds ratios (1:20, 1:25, 1:30) of PA vs MMA and AIBN concentrations of (1.0, 2.0, 4.0) wt%. Experimental data at pressures of  $p \leq 206$  MPa and  $T \leq 434$  K was investigated for binary and ternary solution of P(PA-co-MMA) under compressed  $\text{CO}_2$ ,  $\text{CHClF}_2$ ,  $\text{CHF}_3$  and  $\text{CH}_2\text{F}_2$ . Experiments are carried out to get phase segregation for the binary solution of P(PA-co-MMA) [1:25, 1.0, 2.0 and 4.0 wt% AIBN] + compressed fluorine solvents ( $\text{CHF}_3$ ,  $\text{CHClF}_2$ ,  $\text{CH}_2\text{F}_2$ ) solutions at a pressure of  $p < 168$  MPa and at ( $333 \leq T \leq 434$ ) K. It is revealed that the  $\text{CH}_2\text{F}_2$  + P(PA-co-MMA) solution is seen as the UCST type with minus curves, while the  $\text{CHClF}_2$  + P(PA-co-MMA) and  $\text{CHF}_3$  + P(PA-co-MMA) solutions appear in the LCST region. Phase equilibria curves for P(PA-co-MMA) [ $M_w=198,000$ ,  $249,000$ ,  $258,000$ ] + compressed ( $\text{CHF}_3$ ,  $\text{CHClF}_2$ ,  $\text{CH}_2\text{F}_2$ ) solutions depict a minus curves for  $\text{CH}_2\text{F}_2$  + P(PA-co-MMA) and a plus curves for the  $\text{CHF}_3$  + P(PA-co-MMA) and  $\text{CHClF}_2$  + P(PA-co-MMA) solutions at  $T \leq 434$  K and at  $p \leq 168$  MPa.