

## Experimental Measurement for Binary Systems of 1H, 1H-Perfluorooctyl Acrylate and 1H, 1H-Perfluorooctyl Methacrylate in CO<sub>2</sub> at High Pressure

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In this article, phase equilibria for the 1H, 1H-perfluorooctyl acrylate and 1H, 1H-perfluorooctyl methacrylate play an important role as organic solvents in several industrial processes. The solubility curves of binary mixture for 1H, 1H-perfluorooctyl acrylate and 1H, 1H-perfluorooctyl methacrylate in supercritical CO<sub>2</sub> are investigated using a static method at five temperatures of (313.2, 333.2, 353.2, 373.2 and 393.2) K and pressure up to 16.84 MPa. Both CO<sub>2</sub> + 1H, 1H-perfluorooctyl acrylate and CO<sub>2</sub> + 1H, 1H-perfluorooctyl methacrylate systems have critical mixture curves that show maximums in pressure-temperature space between the critical temperatures of CO<sub>2</sub> and 1H, 1H-perfluorooctyl acrylate or 1H, 1H-perfluorooctyl methacrylate. The experimental results for the CO<sub>2</sub> + 1H, 1H-perfluorooctyl acrylate and CO<sub>2</sub> + 1H, 1H-perfluorooctyl methacrylate binary systems are correlated with Peng-Robinson equation of state using a mixing rule including  $k_{ij}$  and  $n_{ij}$ . The critical properties and vapor pressure of 1H, 1H-perfluorooctyl acrylate and 1H, 1H-perfluorooctyl methacrylate were estimated with the group contribution.