Preparation and Characterization of Silicone Liquid Core/Polymer Shell Microcapsules via Internal Phase Separation

Microcapsules with a silicone liquid core surrounded by a polymeric shell were synthesized through the controlled phase separation. The dispersed silicone phase consisted of the shell polymer PMMA, a good solvent for the PMMA (dichloromethane, DCM) and a poor solvent (methylhydrosiloxane dimethylsiloxane) for the PMMA. The morphology of the PMMA micro-capsules was investigated by ATR-FTIR and by optical microscopy. Microcapsules were prepared with different emulsifiers and different concentrations of acetone and PMMA in the oil phase. The thermal stability of the PMMA microcapsules and the content of the silicone oil core were assessed by TGA. 1H-NMR spectroscopy and an extraction method were also used to determine the content of the silicone liquid core in the microcapsules.