

Thermal stability of thermally expandable microcapsules with various crosslinkers using SPG membrane emulsification :Styrene-co-methyl methacrylate polymer

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Abstract

In this study, systematical experimental investigations were conducted on the SPG membrane emulsification processes for the preparation of various thermally expandable microcapsules [2]. The purpose of this study was to investigate the interrelationship between the crosslinking of the polymer shell and the expansion properties of thermally expandable microcapsules [1]. A series of thermally expandable microspheres with n-octane as core were successfully fabricated by modified suspension polymerization using SPG membrane emulsification. The influence of crosslinker type and concentration on microcapsules were examined systemically. The morphology of these microcapsules with different type of crosslinker and various crosslinker concentrations were observed by scanning electron microscopy (SEM). Thermal gravimetric analysis (TGA) curves indicate that the effects of different type of crosslinker and various crosslinker concentrations on thermal stability of microcapsules were significant. Also, SEM micrographs show that all of the thermally expandable microcapsules with various crosslinker concentrations remained intact after heat treatment at 200 °C for 10 min. From above results, the weight loss of thermally expandable microcapsules may be caused by the penetration of decomposed gas of n-octane through the intact shells [3].

References

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Figures

