

The Polymerisation of 2,3,4,5,6-Pentafluorostyrene: Development of an Analogous System

Martha Tomlinson[†], Dr. P. A. Reynolds[†], Dr. R. W. Hughes[†],
Prof. B. Vincent[†], Dr. T. E. Attwood[‡] and Dr. M. J. Shenton[‡]

[†]Bristol Colloid Centre, School of Chemistry, University of Bristol, Bristol BS8 1TS

[‡]AGC Chemicals Europe Ltd, PO Box 4, Thornton Cleveleys, Lancashire FY5 4QD

Abstract

2,3,4,5,6-pentafluorostyrene (PFS) was polymerised in an attempt to create an analogous reaction to study the polymerisation of tetrafluoroethylene (TFE). A batch and semi-batch process were selected for development. Small spherical-like particles were produced as well as larger spheres and long rods. It has been postulated that the spherical particles are formed from clusters of the smaller particles as seen under a TEM. It has been proven that suitable latices can be polymerised without the use of an added surfactant although reproducibility is an issue. PFS is showing that it is very useful as a TFE analogue not only because it is a fluoropolymer that is safe to polymerise without specialist equipment, but also due to the seemingly high degree of crystallinity displayed by the particles.