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Production of highly mono disperse polymers by evaporative purification SHIPEI ZHU, YU CHAI, JUNJIE YIN, DENZIL BARKLEY, JAMES FORREST, University of Waterloo — The polymerization index N is perhaps the most important single parameter describing a polymer. For example this parameter is crucial, especially for small N, in determining the phase separation behavior and glass transition temperature of polymers. Even the best controlled synthetic polymers with excellent polydispersity index (PDI $\sim$ 1.01) are still far from being purely monodisperse. We demonstrate the use of thermal evaporation to separate different monodisperse components in a polymer sample. For example, we are able to use a sample of anionically polymerized polystyrene (with PDI of 1.1) to produce macroscopic amounts of monodisperse polymers (or N-mers) of N values ranging from 2 to 10. We estimate the PDI of these monodisperse samples to be less than 1.005. The measured T_g values of these components range from 220K to 300 K. We will discuss physical characterization of the N-mers, and the application of this technique to other polymers.

James Forrest
None

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