

MULTIDETECTOR THERMAL FIELD-FLOW FRACTIONATION FOR MONITORING THE STRUCTURE AND DYNAMICS OF BLOCK COPOLYMER MICELLES

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ABSTRACT

Block copolymer micelles have attracted much attention as a versatile platform that can readily be adapted to a wide range of applications including drug delivery and the production of nanoscale patterns. However, current analytical techniques are not suitable to provide comprehensive information regarding size, molar mass, chemical composition and micelle stability in different environments. It is shown by the analysis of block copolymer micelles with various corona compositions that, in contrast to current techniques, multidetector thermal field-flow fractionation (ThFFF) is capable of separating micelles according to corona composition and providing comprehensive information on important micelle characteristics such as size, molar mass, chemical composition as well as their respective distributions from a single analysis. Moreover, it is shown that ThFFF is a suitable technique to monitor the dynamics of mixed micelle formation in terms of size, molar mass and chemical composition.

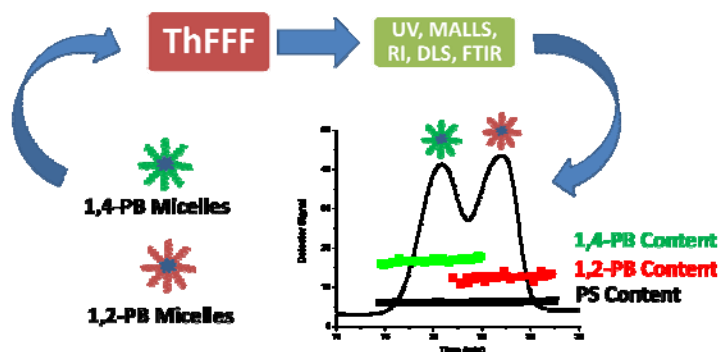


Figure 1: Multidetector ThFFF fractionation of polystyrene-polybutadiene block copolymer micelles.

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