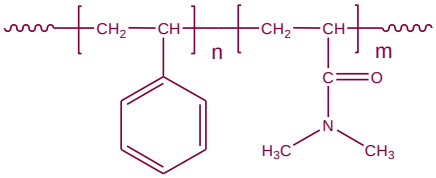
Sample Name: **Poly(styrene-b-N,N-dimethyl acrylamide)**

Sample #: **P6290-SDMA**

Structure:

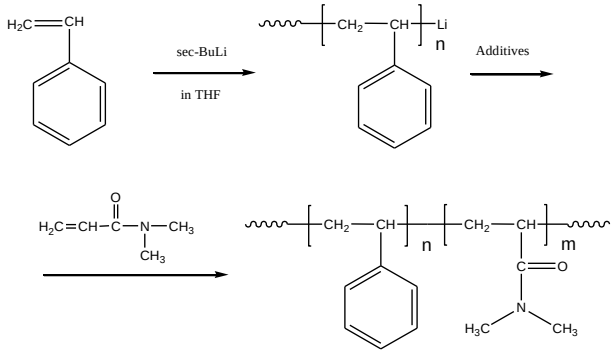


Composition:

Mn x 10^3 S-b-DMA	Mw/Mn (PDI)
53.0-60.0	1.25

Synthesis Procedure:

Poly(styrene-b-NN-dimethyl acrylamide) is prepared by living anionic polymerization in THF at –78 °C an additive. Polystyrene macroanions were end capped[1] before adding N,N-dimethyl acrylamide (DMA) monomer. For further details please see our published article. The scheme of the reaction is illustrated below:



Characterization:

An aliquot of the polystyrene block was terminated before addition of N,N-dimethyl acrylamide and analyzed by size exclusion chromatography (SEC) in THF to obtain the molecular weight (by light scattering detector) and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of N,N-dimethyl acrylamide (N(CH3)2 2.8-3.2 ppm. Block copolymer PDI is determined by SEC in pure DMF.

Purification of the Polymer:

The obtained polymer was precipitated in cold methanol or in cold Hexane/Ethanol depending on the compositions. The polymer was re-dissolved in $CHCl_3$ and wash with water. The polymer was dried in toluene/THF using rota-evaporator. The polymer was precipitated in hexane and dried at 40 °C under vacuum.

Solubility:

Poly(styrene-b-N,N-dimethyl acrylamide) is soluble in Chloroform, DMF, and precipitated in hexanes. Micellization or partial micellization was found in THF or DMF especially in presence of the salts, such as LiCl, LiBr and NaCl etc.

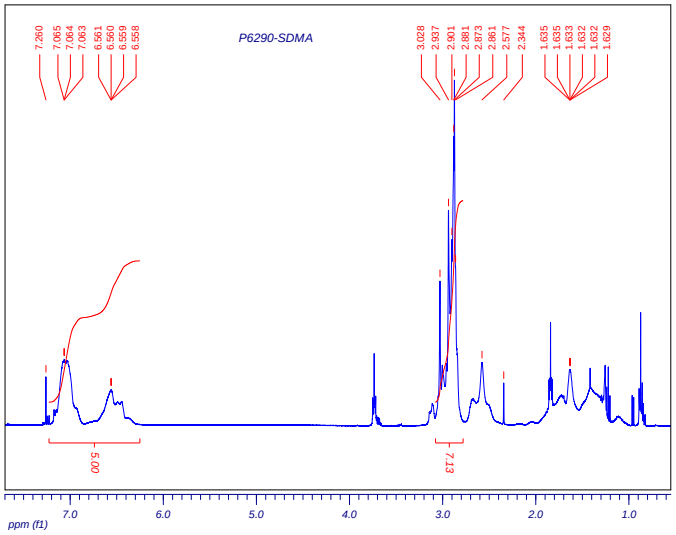


Figure: ^{1}H NMR spectrum of the sample

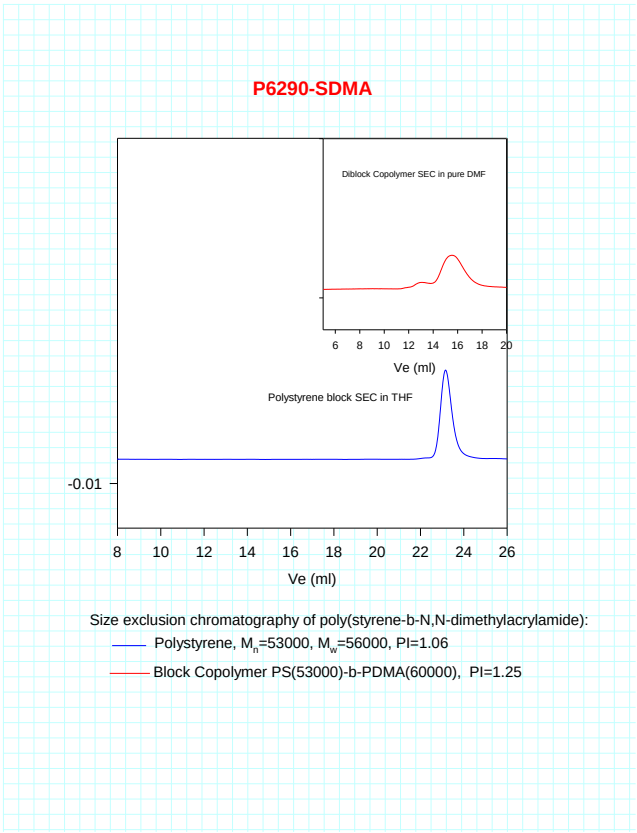


Figure: SEC profile of the block copolymer

References: