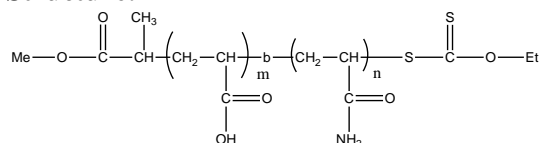


Sample Name: Poly(acrylic acid-b-acrylamide)

Sample #: P7558-AAAMD

Structure:

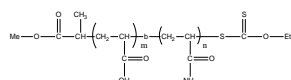
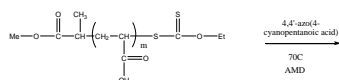
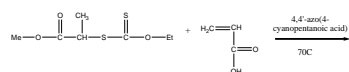


Composition:

Mn x 10 ³ AA-b-AMD	Mw/Mn (PDI)
6.0-b-6.5	1.13

Synthesis Procedure:

Poly (acrylic acid-b-acrylamide) is synthesized by RAFT polymerization of acrylic acid and acrylamide using 4,4'-azo(4-cyanopentanoic acid) as initiator and xanthate as chain transfer agent. After synthesizing poly acrylic acid that bears the terminal xanthate group was used to initiate the polymerization of acrylamide monomer in water. Polymerization was carried out for 2 to 8 h reaction time depending on the amount of acrylamide monomer and the composition of the desired block copolymer. Polymer was purified by column packed with silica and the eluent was de-ionized water. The obtained polymer solution was precipitated in ethanol. The reaction scheme is shown below:



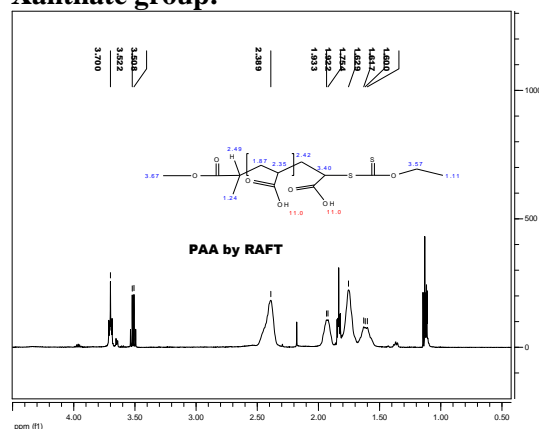
Characterization:

An aliquot of the polyacrylic acid block was terminated by precipitating in hexane before addition of acrylamide and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI) using water containing 0.1M NaNO₃ and 0.01M NaH₂PO₄ as eluent. The block copolymer composition was then calculated from ¹H-NMR spectroscopy by comparing the peak area of the acrylic acid proton at about ppm with the acrylamide protons at ppm. Copolymer molecular weight distribution is determined by SEC.

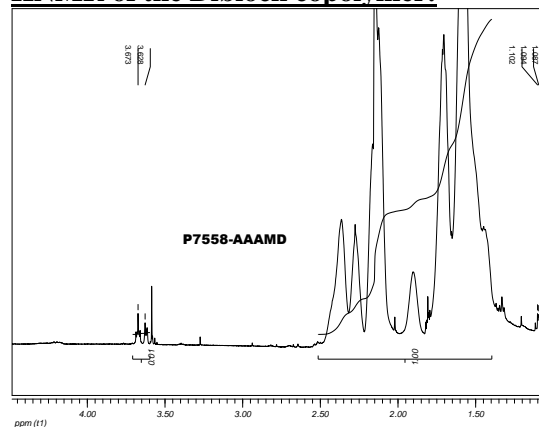
Solubility: Polymer is soluble in water.

¹H-NMR Spectrum of the block copolymer:

1. HNMR of the Poly acrylic acid bearing terminal Xanthate group:



HNMR of the Diblock copolymer:



SEC of Sample of the block copolymer:

P7558-AAAMD

