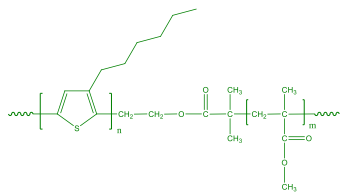


Sample Name: Poly(3-hexylthiophene-2,5-diyl)-b-poly(methyl methacrylate), diblock copolymer

Sample #: P43293A-3HTMMA

Structure:



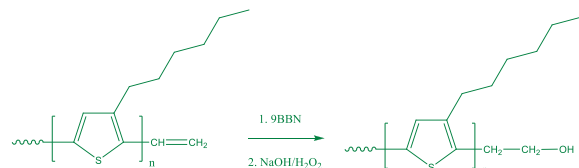
Composition:

| Mn x 10 ³ (3HT-b-MMA) | PDI | Regioregularity of P3HT |
|-------------------------------------|-----|----------------------------|
| 10.0-b-8.0 | 1.3 | ~90% (H-T) |

Synthesis Procedure:

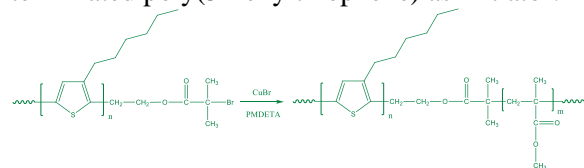
Hydroxy terminated poly(3-hexylthiophene):

Hydroxy terminated poly(3-hexylthiophene) was prepared according to literature, The following reaction scheme shows how the product was prepared:



Block copolymer:

MMA was polymerized by ATRP with bromide terminated poly(3-hexylthiophene) as initiator.



Purification of polymer:

The crude polymer was recovered from reprecipitation into methanol. The inorganic salts were removed by using a Soxhlet extraction with Methanol and homopoly hexyl thiophene was removed by extraction with hot cyclohexane. The pure polymer was dissolved in chloroform and precipitated in cold acetone.

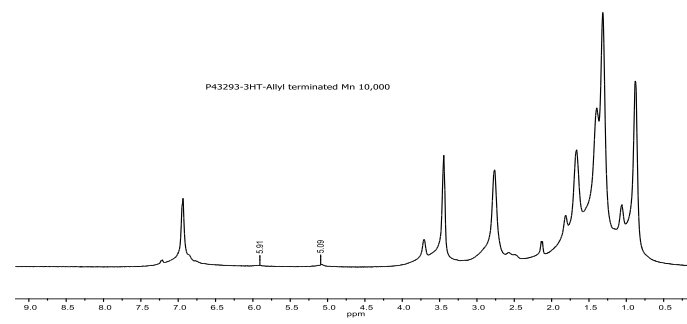
Characterization:

The product was characterized by size exclusion chromatography (SEC) and ¹H NMR data analysis.

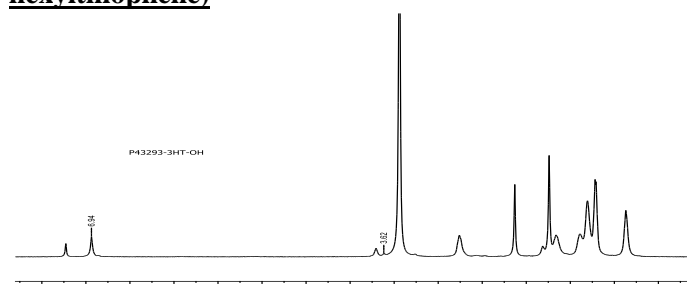
Solubility:

Poly(3-hexyl thiophene-b-MMA) is soluble in THF, Toluene and CHCl₃. It precipitates from methanol and hexane.

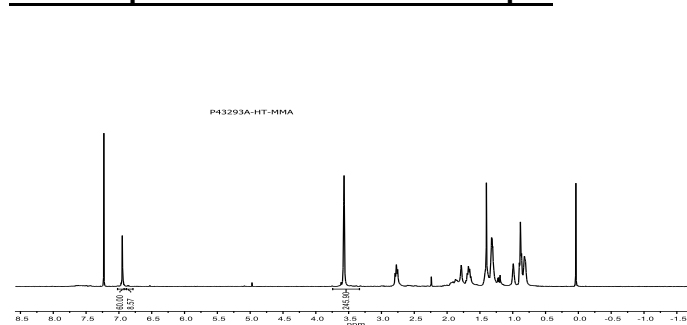
H NMR of Allyl terminated poly(3-hexylthiophene):



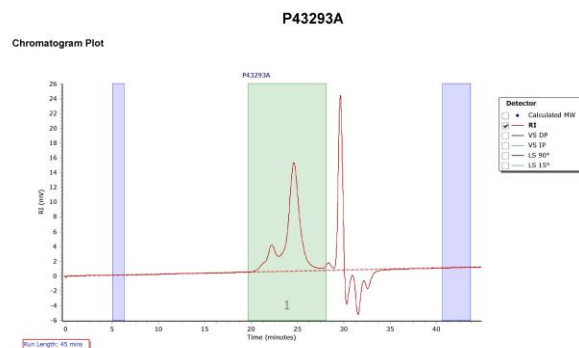
H NMR spectrum of OH terminated poly(3-hexylthiophene)



H NMR spectrum of 3HT-b-MMA Sample:



SEC elugram of the Sample:



| Peak | Mp (g/mol) | Mn (g/mol) | Mw (g/mol) | Mz (g/mol) | Mz+1 (g/mol) | Mv (g/mol) | PD |
|--------|------------|------------|------------|------------|--------------|------------|-------|
| Peak 1 | 16440 | 16737 | 24438 | 33607 | 45897 | 34699 | 1.304 |