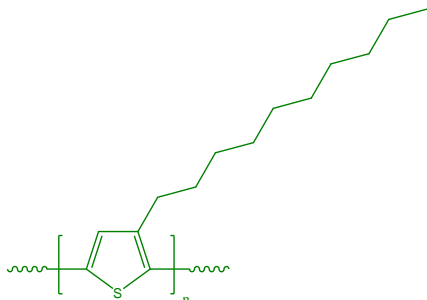


Sample Name: Poly(3-decyl thiophene)

Sample #: P6319-3DeTh

Structure:

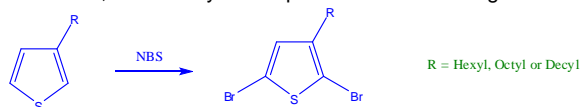


Composition:

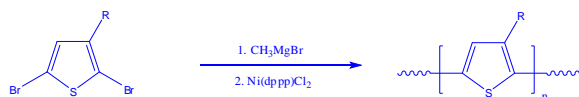
Mn x 10 ³	PDI	Regioregularity
14.6	1.45	~90% (H-T)

Synthesis Procedure:

1. Monomer synthesis:
2,5-Dibromo-3-decyl thiophene was prepared according to literature, the brief synthetic procedure as following:



2. Polymerization:
The obtained monomer was polymerized by the means of Grignard metathesis (GRIM).



3. Purification of polymer:

The crude polymer was recovered from reprecipitation into methanol. The inorganic salts were removed by using a Soxhlet extractor with Methanol. The pure polymer was dissolved in chloroform by the same extractor.

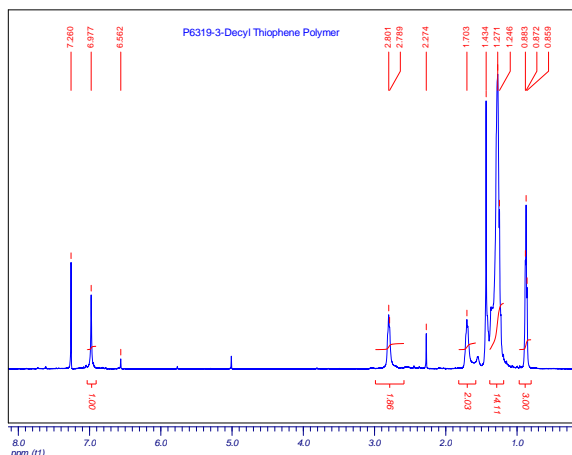
Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF or Chloroform. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co. The molecular weight is calculated based on polystyrene standards. The NMR spectrum was recorded in deuterated chloroform.

Solubility:

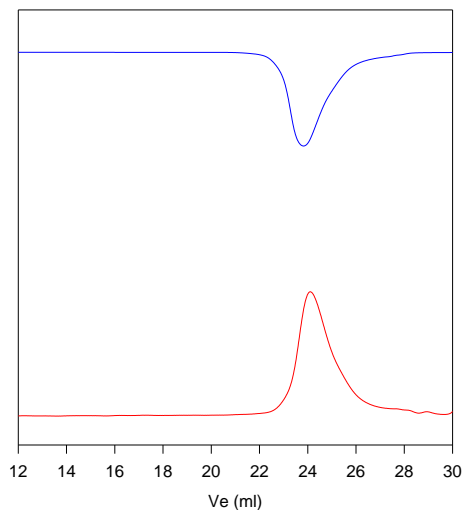
Poly(3-decyl thiophene) is soluble in THF, Toluene and CHCl₃. It precipitates from methanol.

H NMR of polymer:



SEC of Homopolymer:

P6319-3DecylTh



Size exclusion chromatography of poly(3-decyl thiophene):

— RI detector signals

— UV detector at 400nm

M_n=14600, M_w=21000, M_w/M_n=1.45, R_g=4.92nm [η]=0.189 dL/c
data obtained from Viscotek triple detector in THF at 35 °C