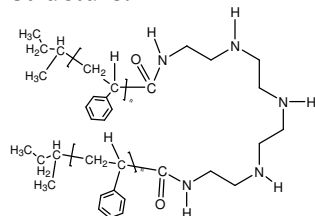


Sample Name: Polystyrene bearing Pent ethyl
Hexamine unit in the middle of polymer chain

Sample #: P18887-S 2PEHA

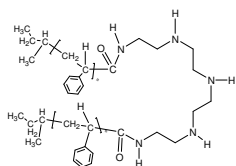
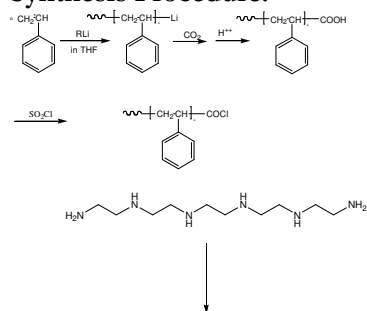
Structure:



Composition:

Mn x 10 ³	PDI
4.0	1.05
Functionality %	98

Synthesis Procedure:



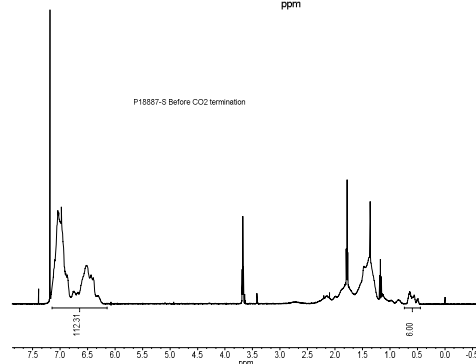
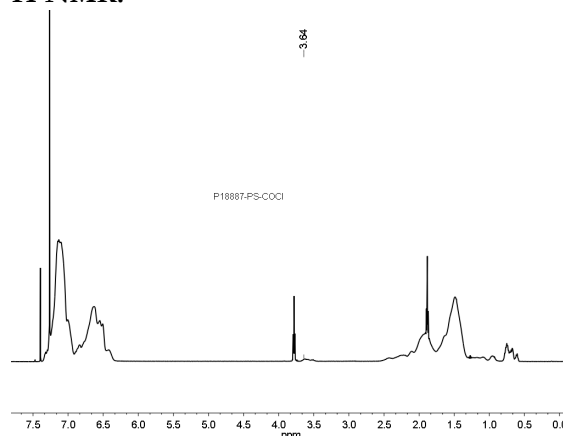
Characterization:

The molecular weight and polydispersity index of this polymer were determined before addition of the CO₂H function, by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. Polymer functionality was determined by titration with NaOH using phenolphthalein as the indicator.

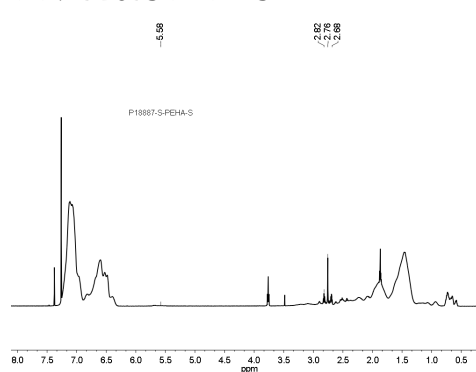
Solubility:

Polymer is soluble in toluene, THF, CHCl₃ and can be precipitated in water and cold methanol.

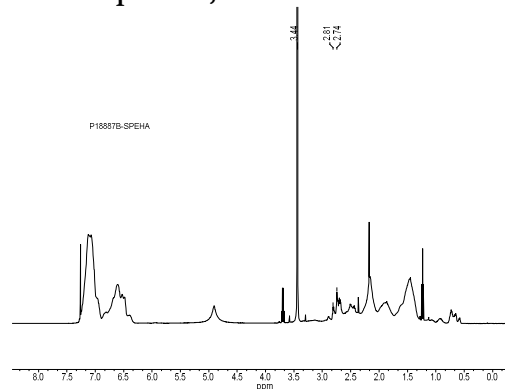
H NMR:



H NMR of S-PEHA-S:



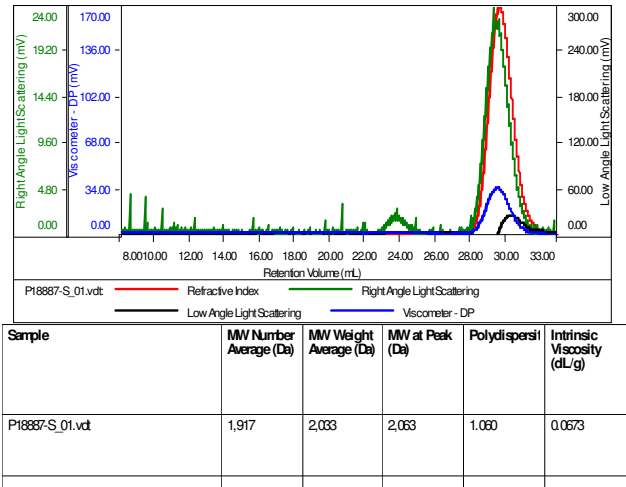
For comparison, H NMR with terminal PEHA:



**SEC of Sample used for end functionaliztion with
Pentaethylene hexamine:**

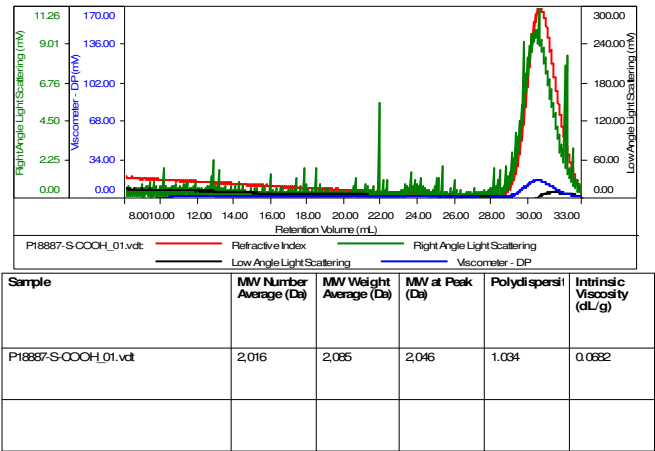
Sample ID: P18887-S Befor termination witj CO2

Concentration (mg/mL)	16.0372
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-0916-2014-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

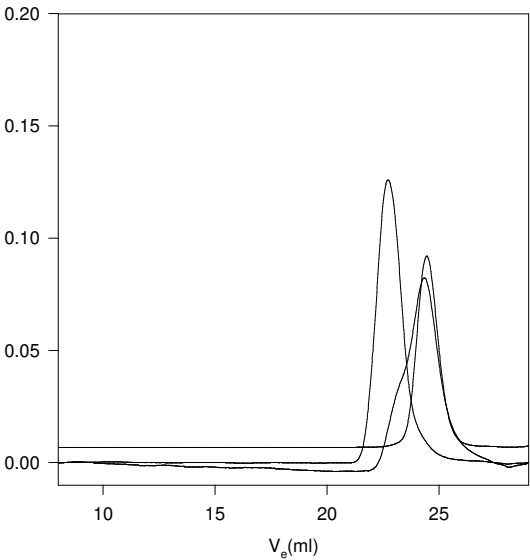


Sample ID: P18887-S -COOH

Concentration (mg/mL)	8.2951
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-0916-2014-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



P18887-SPEHA



Size exclusion chromatography of polymer in THf at 30 oC

- 1. PS-COOH Mn =2,300 Mw: 2,400 Mw/Mn:1.04
- 2. PS-PEHA (terminated with pentaethylene hexamine) Mn 2300
Contain about 16% dimer
- 3. PS-PEHA-PS: unit of pentaethylene hexamine in the midle of polymer chain