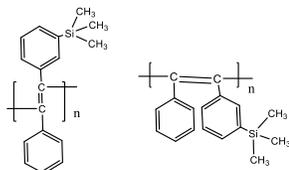


Sample Name: Poly(1-Phenyl-2-[m-(trimethylsilyl)phenyl] acetylene

Other Name: Poly(diphenyl acetylene) containing Trimethylsilyl moiety at meta position

Sample #: P44450-(m-Me3SiDPA)

Structure:

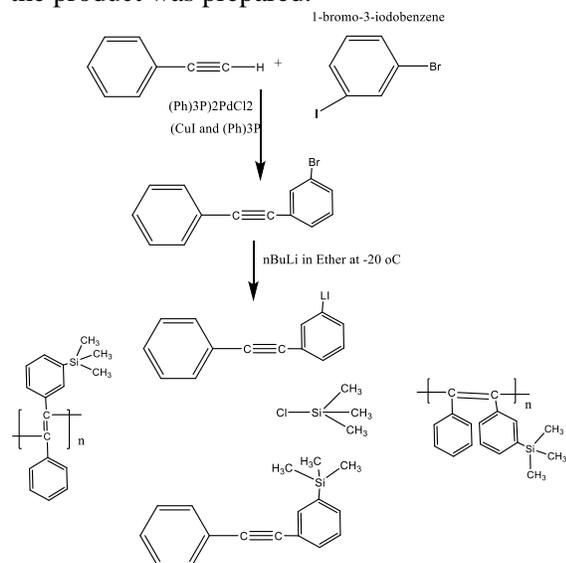


Composition:

Mw x 10 ³	PDI
629.0 (In THF)	1.8
542.0 (in Toluene)	1.8
[-CPh=C(CeH4SiMe3)-]	

Synthesis Procedure:

The following reaction scheme shows how the product was prepared:



Purification Of Monomer:

Polymerization of monomer using TaCl₅ catalyst and (Et)₃SiH co catalyst at 80 °C is dictated by its purity of monomer. The monomer purification require multi steps purification as follows:

1. Prepare a solution of crude monomer in Toluene 50% solution and stirrer over CaH₂ over night at 80 °C. It was distilled under vacuum at oil bath temperature of 280 °C under vacuum of 0.2 mm of Hg.

2. The obtained solution is then treated with dibutyl Mg solution till to get light color solution. It was distilled under vacuum at oil bath temperature of 280 °C under vacuum of 0.2 mm of Hg.

3. The obtained solution is then treated with N BuLi solution (For 100g of monomer used 10 ml of 1.4 M solution) and solution stirrer for 30 minutes at room temperature. It was distilled under vacuum at oil bath temperature of 280 °C under vacuum of 0.2 mm of Hg. A clear solution is prepared and store in cold at 5 °C for further used.

Polymerization:

In a 2 L round bottom flask added freshly distilled Toluene= 500ml and added 8g of TaCl₅ and light-yellow color develop. The solution was kept at 80 °C followed by addition of (Et)₃SiH 5.5g and the solution stirrer for 30 minutes at 80 °C. A deep Ivory-garish color is formed. In another flask taken 50 g of Monomer solution in 50 g of Toluene. It was added to the catalyst solution at 80 °C. In Few second of addition of monomer solution a deep red color solution is form and the viscosity increase tremendously. The solution was kept at 80 °C for 1h. It was taken out from the bath and cooled down and precipitated in cold methanol. A light-yellow color fibrous soft polymer is formed. It was dried under vacuum at 40 °C. -Orange color Crude polymer obtained.

Purification of the polymer:

The crude polymer was redissolved in toluene. The resulting clear orange-yellow color solution was filtered using ordinary paper tissue paper (a thick solution in Toluene because of High molecular weight) and precipitate in methanol. precipitated in cold methanol, it forms light yellow color soft material, it was dried under vacuum at 45 °C temperature. -Orange color soft material obtained.

