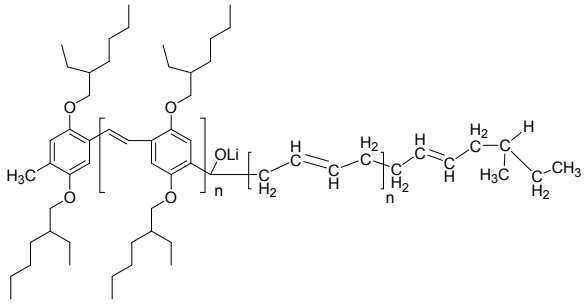
Sample Name:

Poly(2,5-di(2'-ethylhexyloxy)-1,4-phenylenevinylene)-b-Bd (1,4 rich addition)

Sample #: **P10924C-DEHPPV-Bd**

Structure:



Composition:

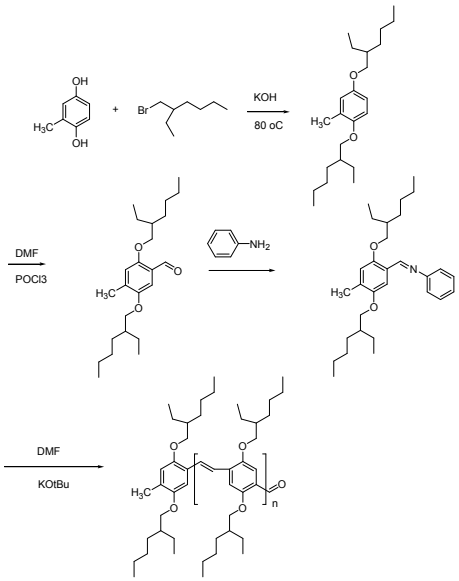
Mn x 10^3 DEHPPV-b-Bd	PDI
3.3-b-12.0	1.9

Synthesis Procedure:

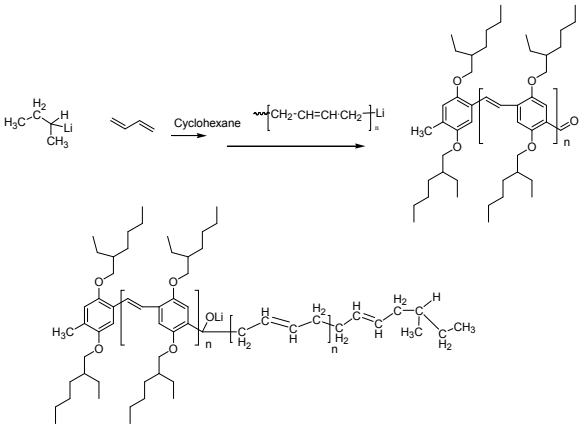
Synthesis of such diblock copolymers was carried out in two steps:

1. synthesis DEH-PPV bearing end group of aldehyde:
2. Reaction of Poly butadiene living lithium salt with aldehyde terminated DEH_PPV. Followed by rigrous fractionation to remove any unreated poly butadiene fractions.
3. Aldehyde end group DEH-PPV is synthesized by polymerization of Seigrist polycondensation under basic condition in DMF, followed by hydrolysis in acidic water. The polymer was then dissolved in chloroform and washed with distilled water until neutral, dried over MgSO4 and precipitated into cold methanol.

Reaction with Poly butadiene



Reaction with Polybudieneyllithium macroanions:



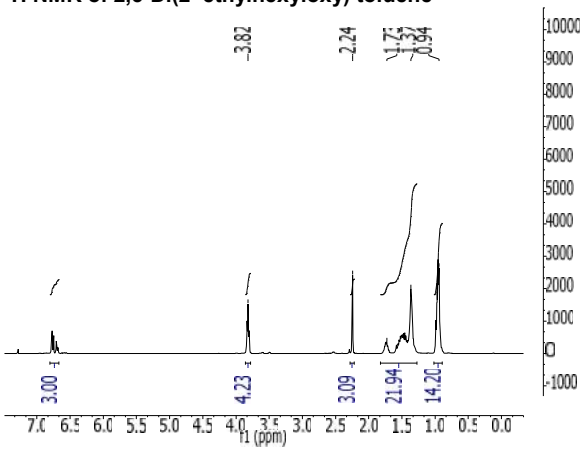
Characterization:

The molecular weight was obtained by ^{1}H NMR by comparing the end aldehyde group at 10.5 ppm to aromatic proton at 7.54 ppm or vinyl proton at 7.26 ppm for the aldehyde end functionalized prepolymer followed by block copolymer.

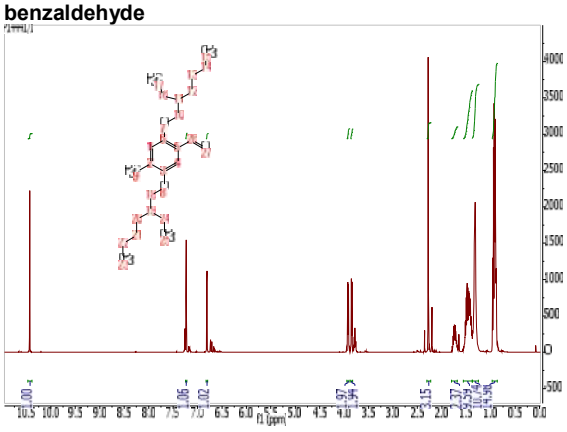
Solubility:

MEH-PPV-Bd is soluble in THF, $CHCl_3$ hexane.

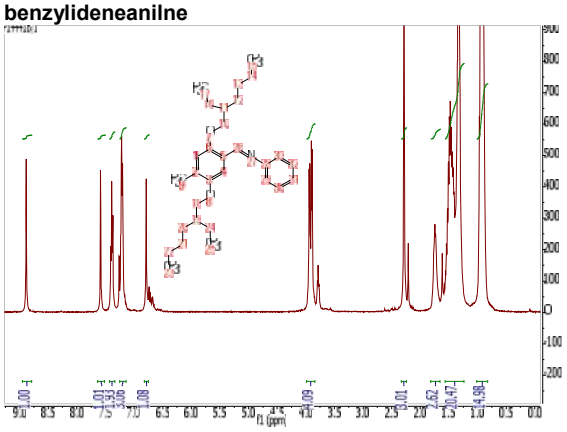
^{1}H NMR of 2,5-Di(2'-ethylhexyloxy) toluene



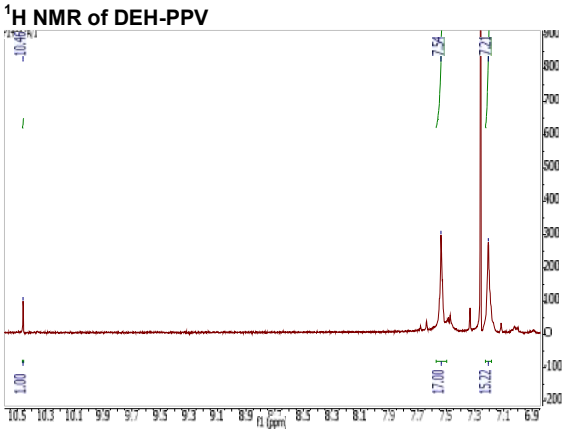
^{1}H NMR of 2,5-Di(2'-ethylhexyloxy)-4-methyl-benzaldehyde



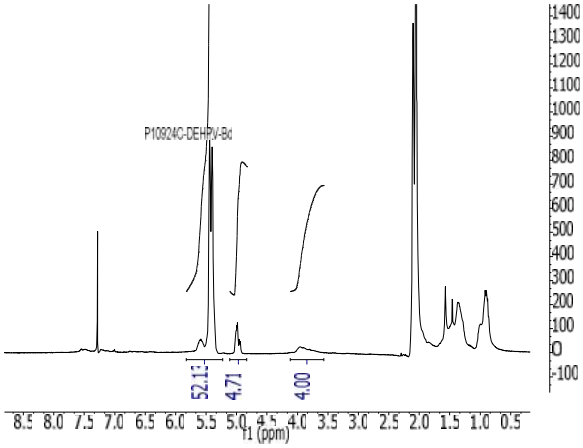
^{1}H NMR of 2',5'-Di(2''-ethylhexyloxy)-4'-methyl-N-benzylideneanilne



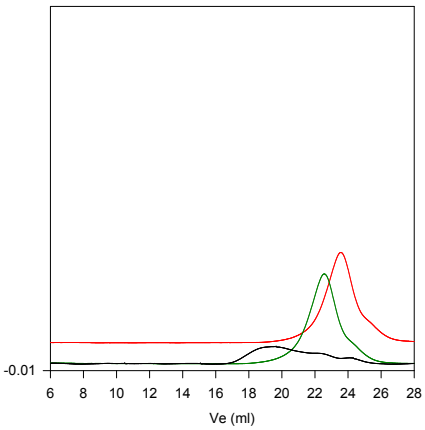
^{1}H NMR of DEH-PPV



HNMR of the Block copolymer:



P10924C-DEHPPV-Bd



Size exclusion chromatography of poly(DEHPPV-Bd)

Poly(2,5-di(2,-ethylhexyloxy)-1,4-phenylenevinylene, M_n=3300, M_w=4800, M_w/M_n=1.45

PBd M_n=12,000, M_w/M_n=1.10

After linking reaction DEHPPV-Bd M_n=DEHPPV (3300)-b-(12,000), M_w/M_n=1.9