<u>Sample Name</u>:
Poly(2,5-di(2'-ethylhexyloxy)-1,4-phenylenevinylene)-b- deuterated poly butadiene (d6)Bd (1,4 rich addition)

<u>Sample #</u>: **P10954-DEHPPV-dPBd**

Structure:
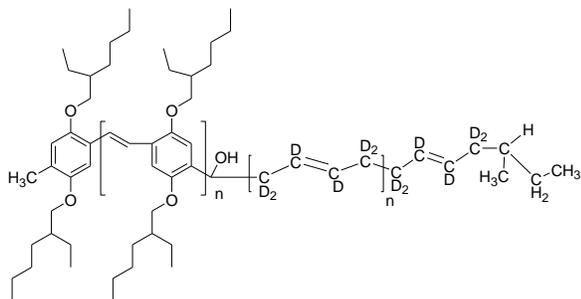
Composition:

| Mn x 10³ DEHPV-b-dPBd	PDI
	1.5
4.0-b-4.0	The Distribution is over estimated due to the formation more compact rod morphology

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
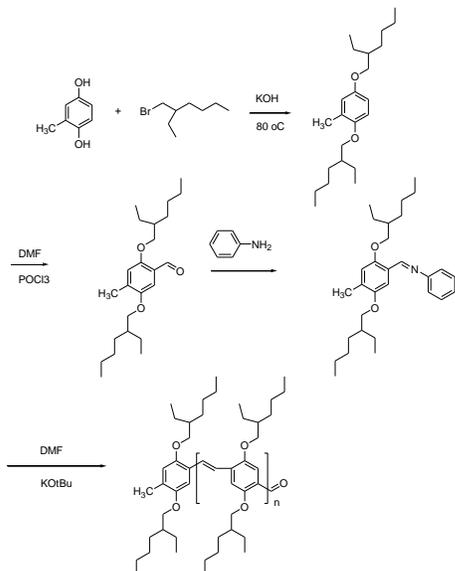
Reaction with deuterated Polybudieneyllithium macroanions:
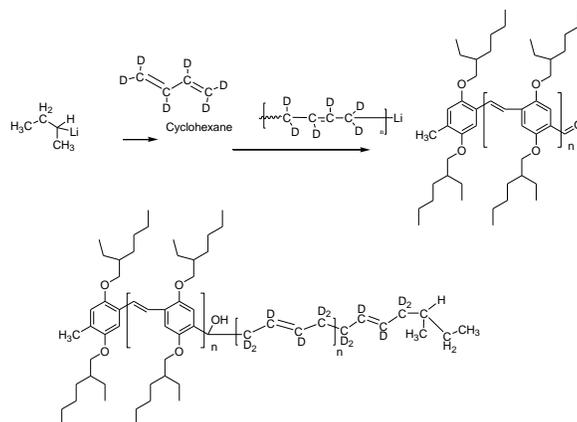

Characterization:

The molecular weight was obtained by ¹H 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, CHCl₃ hexane.

¹H NMR of 2,5-Di(2'-ethylhexyloxy) toluene
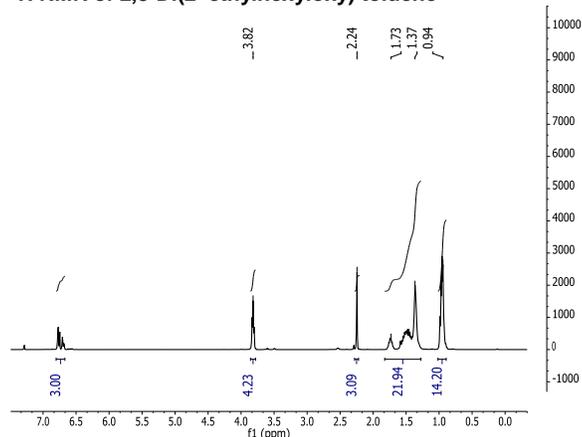
¹H NMR of 2,5-Di(2'-ethylhexyloxy)-4-methyl-benzaldehyde
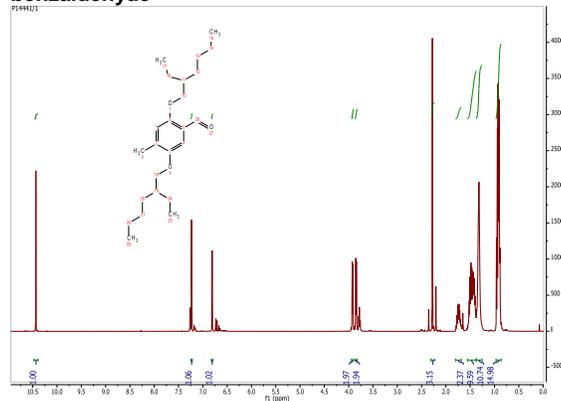
¹H NMR of 2',5'-Di(2''-ethylhexyloxy)-4'-methyl-N-benzylideneanilne
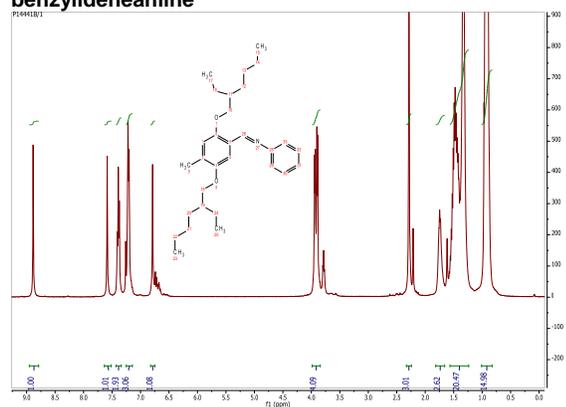
¹H NMR of DEH-PPV
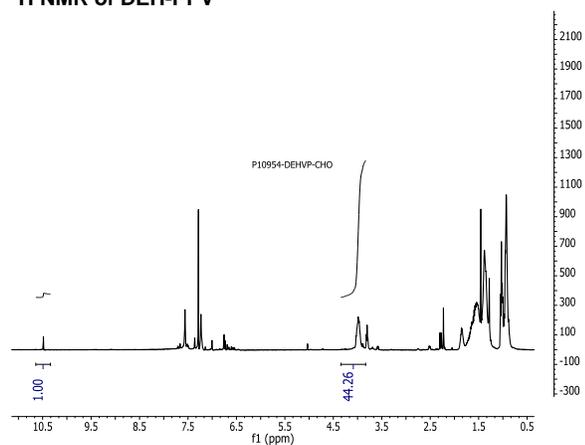
P10954-DEHPV-dPBd
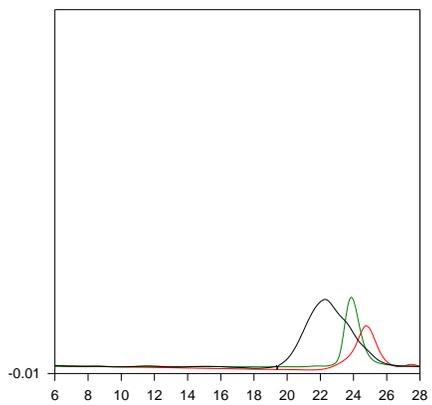
Size exclusion chromatography of poly(DEHPPV-Bd)

— Poly(2,5-di(2,-ethylhexyloxy)-1,4-phenylenevinylene, M_n=4,000, M_w=5200, M_w/M_n=1.3

— PdBd M_n=4,000, M_w/M_n=1.08

— After linking reaction DEHPPV-Bd M_n=DEHPPV (4,000)-b-(4,000), M_w/M_n=1.5