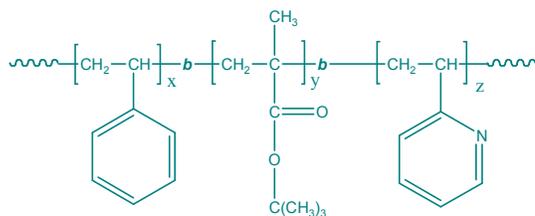


Sample Name:

Poly(styrene-*b*-*tert*.butyl methacrylate -*b*-2-vinyl pyridine)

Sample #: P4355-StBuMA2VP

Structure:



Composition:

$M_n \times 10^3$	PDI
S- <i>b</i> -tBuMA- <i>b</i> -2VP	
33.0- <i>b</i> -2.0- <i>b</i> -76.0	1.30

Synthesis Procedure:

By living anionic polymerization with sequence addition of styrene, tBuMA followed by 2-vinyl pyridine (2VP).

Characterization:

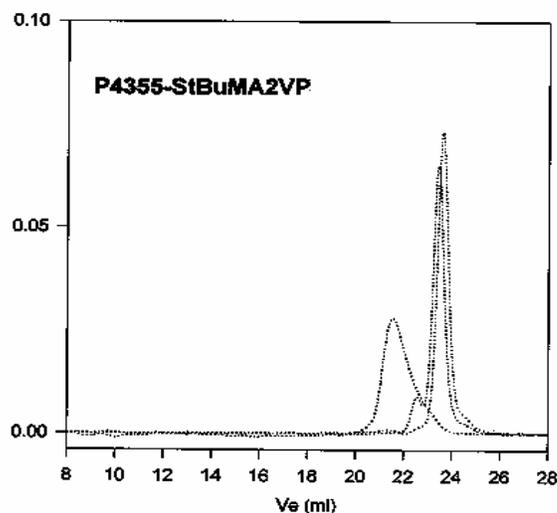
First Block: Varian liquid chromatograph equipped with UV and refractive detector was used to characterize the block polymer. SEC columns from Supelco were used with THF as the eluent. The columns were calibrated with monodisperse polystyrene. The molecular weights and the polydispersity index were calculated.

Second and Third Block: The chemical composition was extracted from proton NMR, which was recorded from Varian 500MHz instrument using $CDCl_3$ as solvent. The molecular weights of second and third block were calculated based on the molecular weight of other blocks and the chemical composition. The polydispersity index of block copolymer was obtained by SEC as described above.

Solubility:

Polymer is soluble in THF, toluene, and $CHCl_3$. The polymer readily precipitates from hexanes, ether and water.

SEC for the polymer:



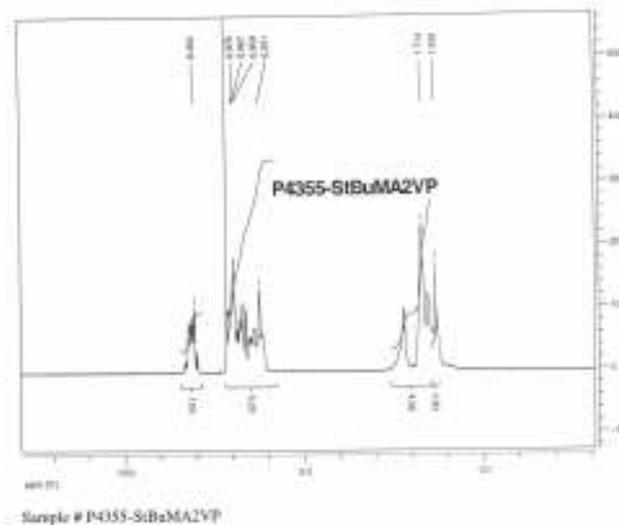
Size exclusion chromatography of poly(St-*b*-tBuMA-*b*-2VP)

..... PSt, $M_n=33000$, $M_w=34600$, $M_w/M_n=1.04$

..... Poly(St-*b*-tBuMA): PSt(33000)-*b*-tBuMA(2000) $M_w/M_n=1.05$

..... Triblock copolymer: P(St)33000-*b*-tBuMA(2000)-*b*-2VP(76000); $M_w/M_n=1.3$
Composition from 1H NMR

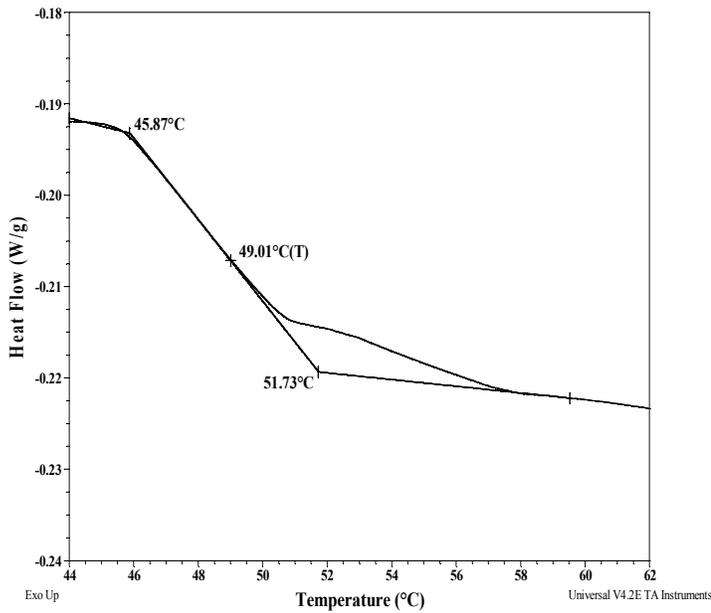
1H NMR of the polymer:



Thermal Analysis of the sample P4353-StBuMA2VP

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

DSC thermogram for tBuMA block:



Thermal analysis results at a glance

For PS block:	For 2VP block:	For tBuMA block:
T_g : 103°C	T_g : Not distinct	T_g : 49°C

DSC thermogram for PS block:

