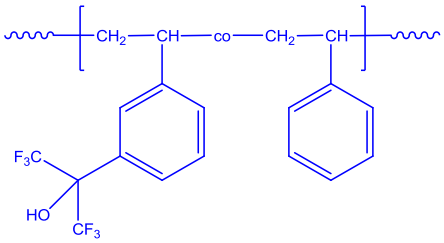
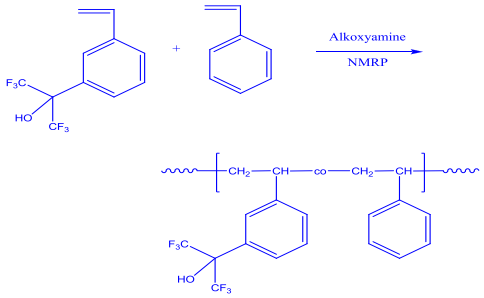
Sample Name: Poly[3-(hexafluoro-2-hydroxypropyl)styrene-co-styrene] Random Copolymer
Sample #: P6641-6FSSran
Structure:



Composition: *Styrene: 65 wt%*

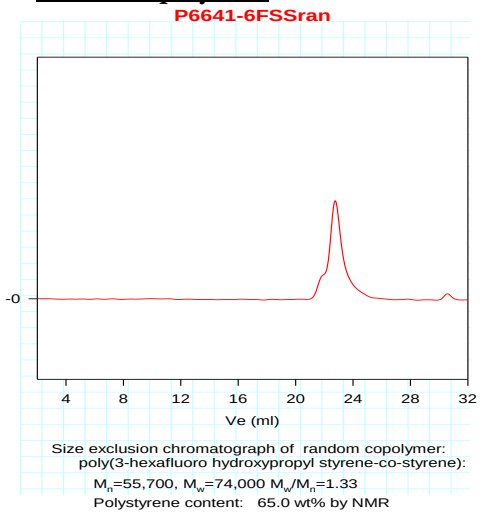
Mn × 10^3	PDI
55.7	1.33
T_g (°C)	71

Synthesis Procedure:
3-(hexafluoro-2-hydroxypropyl)-styrene monomer was prepared from 3-bromostyrene and hexafluoroacetone via Grignard reaction. The random copolymer was synthesized from its monomer by TEMPO stabilized free-radical polymerization. The reaction scheme is shown below.

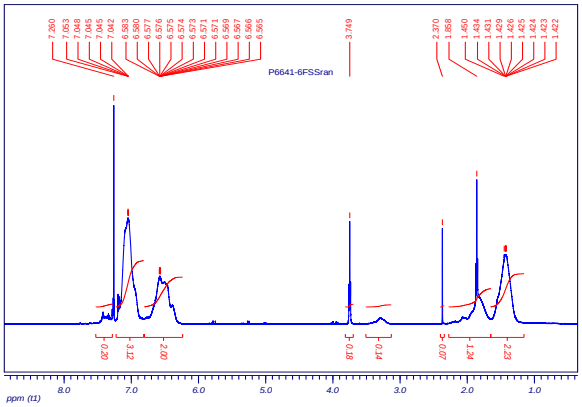
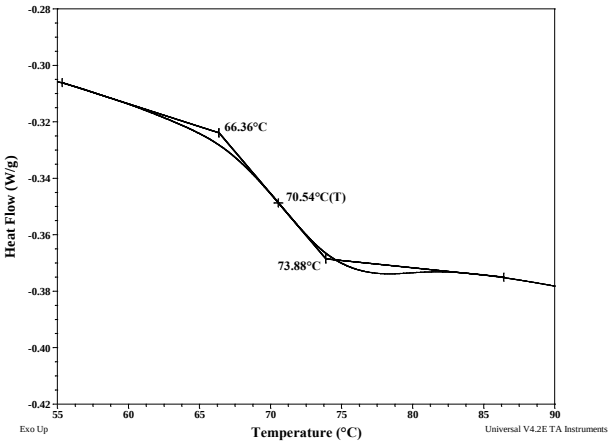


Characterization:
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF using a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors obtained from Viscotek.
It was observed that unprotected Poly (3-(hexafluoro-2-hydroxypropyl)-styrene adsorbed with the column packing material therefore the obtained results by SEC analysis were underestimated. The OH groups of the polymer therefore protected with acetic anhydride in the presence of pyridine and further OH protected polymer was analysed by SEC to obtain the molecular weight of the polymer with reference to polystyrene standards.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min.The inflection glass transition temperature (T_g) has been considered.
Solubility:
Polymer is soluble in DMF, THF, toluene and $CHCl_3$. It precipitates from hexanes.
SEC of copolymer:



NMR of copolymer:



DSC thermogram for the polymer: