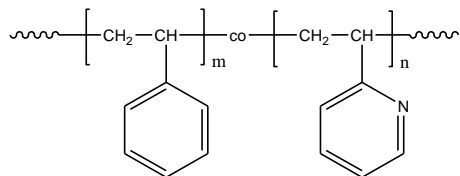


Random Copolymer Poly(styrene-co-2-vinylpyridine)

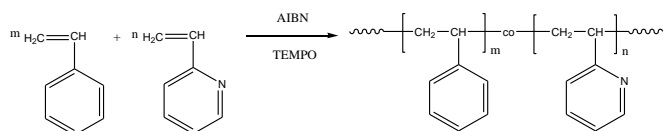
Structure:



P2VP (mol%) : 56

Mn x 10 ³ PS-co-P2VP	PDI
71	1.6
T _g for the random copolymer	98°C

The polymer is prepared by radical polymerization of styrene and 2-vinylpyridine in the presence of TEMPO and AIBN. The scheme of the reaction is illustrated below:



The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ^1H -NMR spectroscopy by comparing the peak area of 2VP protons at 8.3 ppm with the styrene protons at about 6.1-7.2 ppm that deducts the contribution of the 2VP protons.

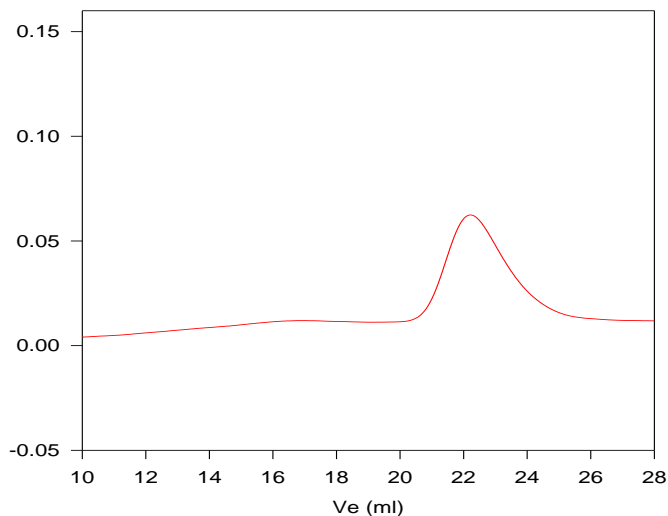
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

The polymer is soluble in CHCl₃, THF, DMF, toluene and precipitated out from hexane

P7308-S2VPPran

Chemical shift (ppm): 8.327, 8.320, 6.443, 6.441, 6.439, 6.437, 6.435, 6.433, 6.431, 6.429, 6.427, 6.425, 6.423, 6.421, 6.419, 6.417, 6.415, 6.413, 6.411, 6.409, 6.407, 6.405, 6.403, 6.401, 6.399, 6.397, 6.395, 6.393, 6.391, 6.389, 6.387, 6.385, 6.383, 6.381, 6.379, 6.377, 6.375, 6.373, 6.371, 6.369, 6.367, 6.365, 6.363, 6.361, 6.359, 6.357, 6.355, 6.353, 6.351, 6.349, 6.347, 6.345, 6.343, 6.341, 6.339, 6.337, 6.335, 6.333, 6.331, 6.329, 6.327, 6.325, 6.323, 6.321, 6.319, 6.317, 6.315, 6.313, 6.311, 6.309, 6.307, 6.305, 6.303, 6.301, 6.299, 6.297, 6.295, 6.293, 6.291, 6.289, 6.287, 6.285, 6.283, 6.281, 6.279, 6.277, 6.275, 6.273, 6.271, 6.269, 6.267, 6.265, 6.263, 6.261, 6.259, 6.257, 6.255, 6.253, 6.251, 6.249, 6.247, 6.245, 6.243, 6.241, 6.239, 6.237, 6.235, 6.233, 6.231, 6.229, 6.227, 6.225, 6.223, 6.221, 6.219, 6.217, 6.215, 6.213, 6.211, 6.209, 6.207, 6.205, 6.203, 6.201, 6.199, 6.197, 6.195, 6.193, 6.191, 6.189, 6.187, 6.185, 6.183, 6.181, 6.179, 6.177, 6.175, 6.173, 6.171, 6.169, 6.167, 6.165, 6.163, 6.161, 6.159, 6.157, 6.155, 6.153, 6.151, 6.149, 6.147, 6.145, 6.143, 6.141, 6.139, 6.137, 6.135, 6.133, 6.131, 6.129, 6.127, 6.125, 6.123, 6.121, 6.119, 6.117, 6.115, 6.113, 6.111, 6.109, 6.107, 6.105, 6.103, 6.101, 6.099, 6.097, 6.095, 6.093, 6.091, 6.089, 6.087, 6.085, 6.083, 6.081, 6.079, 6.077, 6.075, 6.073, 6.071, 6.069, 6.067, 6.065, 6.063, 6.061, 6.059, 6.057, 6.055, 6.053, 6.051, 6.049, 6.047, 6.045, 6.043, 6.041, 6.039, 6.037, 6.035, 6.033, 6.031, 6.029, 6.027, 6.025, 6.023, 6.021, 6.019, 6.017, 6.015, 6.013, 6.011, 6.009, 6.007, 6.005, 6.003, 6.001, 5.999, 5.997, 5.995, 5.993, 5.991, 5.989, 5.987, 5.985, 5.983, 5.981, 5.979, 5.977, 5.975, 5.973, 5.971, 5.969, 5.967, 5.965, 5.963, 5.961, 5.959, 5.957, 5.955, 5.953, 5.951, 5.949, 5.947, 5.945, 5.943, 5.941, 5.939, 5.937, 5.935, 5.933, 5.931, 5.929, 5.927, 5.925, 5.923, 5.921, 5.919, 5.917, 5.915, 5.913, 5.911, 5.909, 5.907, 5.905, 5.903, 5.901, 5.899, 5.897, 5.895, 5.893, 5.891, 5.889, 5.887, 5.885, 5.883, 5.881, 5.879, 5.877, 5.875, 5.873, 5.871, 5.869, 5.867, 5.865, 5.863, 5.861, 5.859, 5.857, 5.855, 5.853, 5.851, 5.849, 5.847, 5.845, 5.843, 5.841, 5.839, 5.837, 5.835, 5.833, 5.831, 5.829, 5.827, 5.825, 5.823, 5.821, 5.819, 5.817, 5.815, 5.813, 5.811, 5.809, 5.807, 5.805, 5.803, 5.801, 5.799, 5.797, 5.795, 5.793, 5.791, 5.789, 5.787, 5.785, 5.783, 5.781, 5.779, 5.777, 5.775, 5.773, 5.771, 5.769, 5.767, 5.765, 5.763, 5.761, 5.759, 5.757, 5.755, 5.753, 5.751, 5.749, 5.747, 5.745, 5.743, 5.741, 5.739, 5.737, 5.735, 5.733, 5.731, 5.729, 5.727, 5.725, 5.723, 5.721, 5.719, 5.717, 5.715, 5.713, 5.711, 5.709, 5.707, 5.705, 5.703, 5.701, 5.699, 5.697, 5.695, 5.693, 5.691, 5.689, 5.687, 5.685, 5.683, 5.681, 5.679, 5.677, 5.675, 5.673, 5.671, 5.669, 5.667, 5.665, 5.663, 5.661, 5.659, 5.657, 5.655, 5.653, 5.651, 5.649, 5.647, 5.645, 5.643, 5.641, 5.639, 5.637, 5.635, 5.633, 5.631, 5.629, 5.627, 5.625, 5.623, 5.621, 5.619, 5.617, 5.615, 5.613, 5.611, 5.609, 5.607, 5.605, 5.603, 5.601, 5.599, 5.597, 5.595, 5.593, 5.591, 5.589, 5.587, 5.585, 5.583, 5.581, 5.579, 5.577, 5.575, 5.573, 5.571, 5.569, 5.567, 5.565, 5.563, 5.561, 5.559, 5.557, 5.555, 5.553, 5.551, 5.549, 5.547, 5.545, 5.543, 5.541, 5.539, 5.537, 5.535, 5.533, 5.531, 5.529, 5.527, 5.525, 5.523, 5.521, 5.519, 5.517, 5.515, 5.513, 5.511, 5.509, 5.507, 5.505, 5.503, 5.501, 5.499, 5.497, 5.495, 5.493, 5.491, 5.489, 5.487, 5.485, 5.483, 5.481, 5.479, 5.477, 5.475, 5.473, 5.471, 5.469, 5.467, 5.465, 5.463, 5.461, 5.459, 5.457, 5.455, 5.453, 5.451, 5.449, 5.447, 5.445, 5.443, 5.441, 5.439, 5.437, 5.435, 5.433, 5.431, 5.429, 5.427, 5.425, 5.423, 5.421, 5.419, 5.417, 5.415, 5.413, 5.411, 5.409, 5.407, 5.405, 5.403, 5.401, 5.399, 5.397, 5.395, 5.393, 5.391, 5.389, 5.387, 5.385, 5.383, 5.381, 5.379, 5.377, 5.375, 5.373, 5.371, 5.369, 5.367, 5.365, 5.363, 5.361, 5.359, 5.357, 5.355, 5.353, 5.351, 5.349, 5.347, 5.345, 5.343, 5.341, 5.339, 5.337, 5.335, 5.333, 5.331, 5.329, 5.327, 5.325,

P7308-S2VPran



Size exclusion chromatograph of the polymer:

$M_n=71000$, $M_w=113000$, $M_w/M_n=1.6$ (PS standard)

2VP%mol= 56% from NMR

Heat Flow (W/g)

Temperature (°C)

95.14°C

98.39°C(T)

101.25°C

Exo Up

Universal V4.2E TA Instruments