

Thiophene- and silarylene-containing polyesters. Resonance effect on conductivity after polarization in an external electric field

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Polyesters were synthesized by direct polycondensation of thiophene-2,5-dicarboxylic acid and five different silarylene-containing diphenols using a tosyl chloride/pyridine/N,N-dimethylformamide system as a condensing agent. Polymers were obtained in good yields and were characterized using Fourier transform infrared and NMR (^1H , ^{13}C , $^{135}\text{-DEPT}$ and ^{29}Si) spectroscopy and elemental analysis. All polymers were completely soluble in aprotic organic polar solvents such as dimethylformamide, dimethylsulfoxide and N-methyl-2-pyrrolidone. The range of effective mass of the polymers (m/z) was 1×10^5 - 2×10^5 , determined using electrospray ionization mass spectrometry. Asymmetry and steric hindrance prevented dense packing of the polymeric chains, showing glass transition temperatures between -78 and -51 °C and loss of thermal stability at 177 - 199 °C (10% weight loss). Additionally, the melting points of the polyesters were found to be in the range 62 - 67 °C. Because of this, the samples wer